8804

Technical Manual
and
Parts Catalog

INTRODUCTION

This publication is provided solely as a guide for individuals who have received METTLER TOLEDO Technical Training in servicing the METTLER TOLEDO product.

Information regarding METTLER TOLEDO Technical Training may be obtained by writing to:

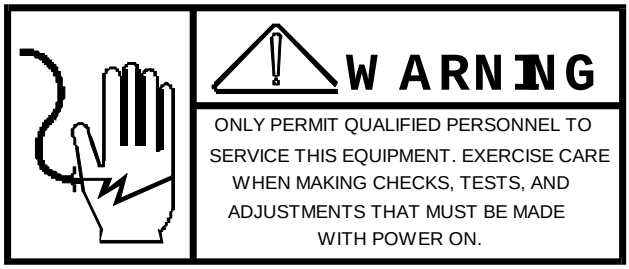
METTLER TOLEDO
Training Center
P.O. Box 1705
Columbus, Ohio 43216
(614) 438-4400

PRECAUTIONS

- **READ** this manual before operating or servicing this equipment.

- **ALWAYS REMOVE POWER** and wait at least 30 seconds **BEFORE** connecting or disconnecting any internal harnesses. Failure to observe these precautions may result in damage to, or destruction of the equipment.

- **ALWAYS** take proper precautions when handling static sensitive devices.



- **DO NOT** connect or disconnect a load cell scale base to the equipment with power connected or damage will result.

- **SAVE** this manual for future reference.

- **DO NOT** allow untrained personnel to operate, clean, inspect, maintain, service, or tamper with this equipment.

- **ALWAYS DISCONNECT** this equipment from the power source before servicing.

- **CALL** METTLER TOLEDO for parts, information, and service.

CONTENTS

1. GENERAL DESCRIPTION

The Model 8804 is a dot matrix impact printer that provides high-speed, bi-directional operation. It can be used for printing on single or multiple ply, carbonless or carbon interleaf, documents and tickets. Three document clamp modes are selectable to suit operator requirements and adapt to a variety of system configurations. The Model 8804 will interface with the Models 0150, 0141, 0280,3200, 3205, 3210, 8132, 8136, 8139*, 8140*, 8142, 8182, 8185, 8186*, 8188, 8622* and 8806-0002.

* - with data output option

FEATURES

Double width printing of data depending on indicator being used.

Seven wire printhead for 5x7 or 10x7 dot matrix print.

Prints up to 40 standard characters per line at 12 characters per line at 12 characters per inch.

Offers four selectable line spacings.

Normal or inverted print.

Snap-in ink cartridge for easy replacement.

Accepts a variety of tickets and forms up to .015" thick.

Sensor to inhibit printing if paper is not present.

Built-in self test.

Can be located up to 50 feet from source device using RS232C transmission or up to 10000 feet using 20mA current loop transmission.

2. SYSTEM DESCRIPTION

2.1 PRINTER FUNCTION

The Model 8804 contains a long life printhead that prints bi-directionally at a rate of three lines per second. The print field has a width of 3.33 inches which can be located anywhere from the edge of the paper by an adjustable document guide. Communication to the printer can be accomplished by either of two different hardware formats:

Serial RS232C or Serial 20mA Current Loop

The printer operates with 96 characters of the ASCII character set and the baud rate for serial communication can be set for 110, 300, 600, 1200, 2400, 4800, or 9600* baud.

* - RS232C format ONLY!

The printer can be self tested to ensure proper operation. A message is printed indicating satisfactory completion of the self test and also prints the printer setup selections that have been made.

The print mechanism is protected against head jams. Should a jam occur, the drive motor will turn off automatically.

2.2 SYSTEM COMPONENTS

The 8804 consists of three major system components:

2.2.1 Print Module - contains the print head, print drive mechanism, line feed mechanism and ink cartridge.

2.2.2 Logic PCB - controls the print mechanism and communications as well as providing the various voltages required to operate the printer.

2.2.3 Transformer/Line Filter - supplies primary power to the Logic PCB.

2.3 EXPENDABLES

2.3.1 Ink Ribbon- ink cartridge holds twelve yards of continuously inked ribbon material in a permanently sealed, plastic, throw away container. The snap-in cartridge is easily installed between two spring clips for printer servicing or cartridge replacement. Ribbon life is determined by number of prints, type of ticket and environmental conditions.

2.3.2 Print Medial - the 8804 accepts a variety of individual tickets and forms not to exceed .015" in thickness, either single or multiple copies.

3. SPECIFICATIONS

3.1 PHYSICAL

The 8804 printer is constructed of aluminum and steel measuring 8.3" high, 12" wide and 10.9" deep. Unit weight is 16 lbs. The document table is 9" wide and 10.9" deep. Unit weight is 16 lbs. The document table is 9" wide.

3.2 ENVIRONMENT

The printer is operable form 32 degrees F (0 degrees C) to 122 degrees F (50 degrees C) with relative humidity to 95% non-condensing. The unit is NOT designed for "wash-down" applications. Storage temperatures is -40 degrees F (-40 degrees C) to 160 degrees F (70 degrees C).

3.3 POWER REQUIREMENTS

The power input is selectable at 120V or 240V AC (+/- 10%) 50 or 60 Hz. Power consumption is 200 Watts maximum.

3.4 DATA OUTPUT

The 8804 accepts 20 mA current loop or RS232C. Baud rate is selectable for 100, 300, 600, 1200, 2400, 4800 and 9600 baud. (NOTE! 9600 baud can only be used with the RS232C format) Data format is seven bit serial with one start bit, one even parity bit and two stop bits.

4. INSTALLATION INSTRUCTIONS

4.1 SET-UP PROCEDURE

4.1.1 Inspect the printer for loose or damaged parts.

4.1.2 Check the line filter/fuse holder assembly to insure that the proper voltage and fuse size are selected for use in your application.

CAUTION: All units are shipped for 120 VAC operation. See below for alternate voltage operation.

Figure 1. Voltage Selection
(See Section 6 part 3, Sub Section 13 for additional information).

4.2 SELF TEST

To initiate a self test, the power switch must first be OFF. Insert a document into the printer. Depress and hold the clamp switch (located on the rear panel) and turn the power switch on. Once printing, the clamp switch can be released. When printing is complete, the clamp switch must be depressed again to release the document. A message similar to the one shown in Figure 2 is printed. This message , besides indicating satisfactory completion of the self test, also provides information about the revision of the printer and the switch settings of the SW1 that have been made. Should the printer fail the self test, a message will not be printed and the printer will not operate. (See Section 6, part 4 for Trouble Shooting Guide.)

```
REV 1.7                          MK  072
MEMORY STATUS  :OK

SW :
123:  BAUD RATE = 2400
 45:  LINES/ INCH = 6
  6:  AUTO LF      = OFF
  7:  PRINT MODE = NORM
  8:  POLARITY
      RTS             = +12V
     BUSY             =    0V
  9: TOF BUSY       = ON

DIPSW            123456789
0CC0CCCCC
```

Figure 2. typical Self Test Printout

Rev. indicates the version of your printer.

Memory Status indicates successful completion of the RAM and ROM memory diagnostics.

SW indicates how the 9 DIP switches on the bottom of the unit have been set as explained to the right of the switch numbers.

DIPSW shown the physical position of each of the nine DIP switches.
C - closed (On) O -open (Off)

4.3 PROGRAM SWITCH SUMMARY

Initial setup of the Model 8804 is accomplished via a nine bank switch (SW1) located on the bottom of the unit. These switches are read only when power is applied. If a switch is changed, power must be removed and re-applied before the new setting will be read. Figure 3 shows the ON and OFF positions for the type of switch which may be used.

NOTE: Throughout this manual, a switch in the ON position, refers to the CLOSED position. A switch in the OFF position, refers to the OPEN position..

The bottom line of the self-test will print out the switch positions using a "C" for CLOSED and an "O" for open.

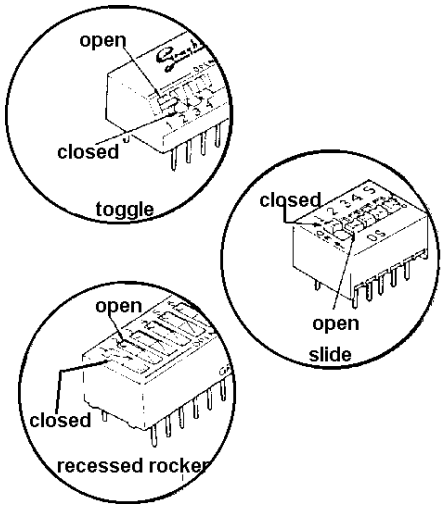


Figure 3. Several Types of Dip Switches
Showing Open and Closed Positions.

Baud Rate

Switches SW1-1, SW1-2 and SW1-3 are used to set the baud rate for serial communication. The baud rate for serial communication. The baud rate of the transmitting source and the baud rate of the printer must be identical or the printer will not respond correctly to the transmitted information.

Baud Rate	SW1-1	SW1-2	Sw1-3
110	ON	ON	ON
300	ON	ON	OFF
600	ON	OFF	ON
1200	ON	OFF	OFF
2400	OFF	ON	ON
4800	OFF	ON	OFF
9600*	OFF	OFF	ON

*RS232C Format Only

Line Spacing

SW1-4 and SW1-5 are used to select line spacing. The printer can advance the paper such that 5,6,7 or 8 printed lines per inch are printed.

Lines per Inch	SW1-4	SW1-5
5	OFF	OFF
6	OFF	ON
7	ON	OFF
8	ON	ON

Auto Line Feed

SW1-6 is used to change the function of the Carriage Return Function. Normally, a carriage return would cause a line to be printed without advancing the paper. However, if SW1-6 is OFF, a carriage return instruction will cause both a line to be printed and a line feed.

Carriage Return Instruction	SW1-6
Print line and line feed	OFF
Print line only	ON

Inverted Reverse Printing

SW1-7 is used to select normal or Inverted Reverse printing. SW1-7 ON selects the Normal Print Mode. (See Figure 4.) When using the Normal Print mode, printing is read from the front of the unit and text will be left justified. Line feeds will cause the document to move toward the rear of the printer. SW1-7 OFF selects the Inverted Reverse Print mode, printing is read from the back of the unit and text will be right justified. Line feeds will cause the document to move toward the front of the printer.

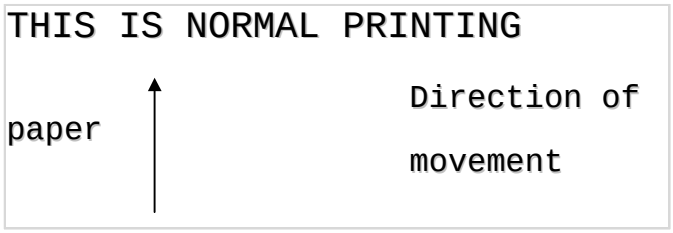


Figure 4. Normal Print Mode

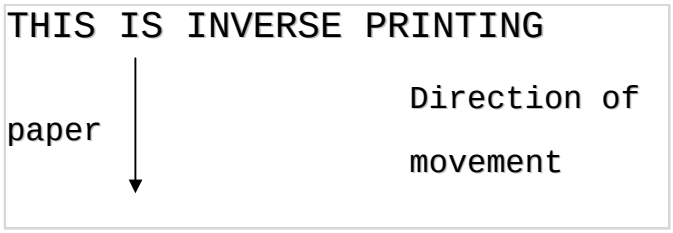


Figure 5. Inverted Reverse Print Mode

Busy Signal Polarity

SW1-8 is used to control the polarity of the busy Signal line for serial communication. The printer gives a busy signal whenever any of the following conditions exist:

* Buffer is full.

* Carriage is stalled.

* Self-test is in progress.

* Document is not covering the "top of form" sensor (when SW1-9 is closed).

Busy Signal Polarity	SW1-8
-13 VDC output when busy +13 VDC output when busy	ON OFF

Top of Form Busy Signal

SW1-9 is used to provide a busy signal whenever a document is not covering the "Top of Form" sensor.

For the Condition of No Document Detected	SW1-9
Busy Signal Sent No Busy Signal Sent	ON OFF

5. OPERATION INSTRUCTIONS

The Model 8804 printer is designed so that a minimum of operator training is required. This section explains document insertion and clamping storage buffer, ribbon replacement and fault detection.

To insert a document, start from the left hand side of the printhead. Sweep the document, start from the left hand side of the printhead. Sweep the document under the printhead and into position so it rests against both the document stop and the edge guide . Both the document guide and the document stop are adjustable . Refer to the Maintenance section for procedure to adjust the document guides and document stop.

When the document is squarely aligned against both the document guide and document stop, it will cover two photo sensors. This allows activation of clamping system. (See Figure 6.)

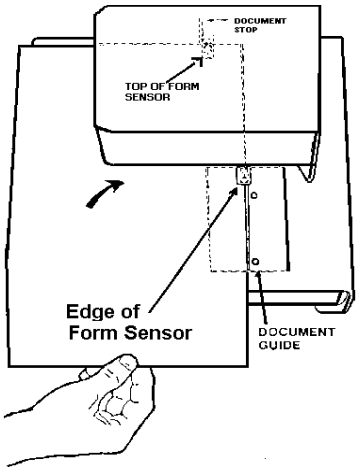


Figure 6. Correct Document Insertion.

In some applications, operation without the document stop may be desired. The white line located on the side of the shroud is then used to align the document. The document stop is easily removed by loosening the one screw attaching it. Documents must still be inserted far enough to cover the top of form and edge of form sensor for clamping operation to begin.

The setting of the printhead to print bar gap, determines the thickness of the forms that can be inserted into the printer. Adjusting the print bar gap to printhead gap varies the range of form thickness that the printer can handle. The printhead has a factory set gap of .018". At this setting the head will effectively print on documents ranging form .003" to .015" thick.

Table 1 shows the average thickness of several type documents and tickets, based on 10 pound carbonless paper 10 pound paper with 10 pound carbon for carbon interleaf.

TICKET THICKNESS

	2 Part	**3 Part**	**4 Part**
Carbonless	.006"	.009"	.012"

.

	2 Ply	3 Ply	4 Ply
Carbon Interleaf	.008"	.013"	.018"

Table 1.

5.1 PRINT FIELD

The print field is 3.3" wide. By adjusting the edge guide, it can be located anywhere from the edge of the document to one inch in form the edge. Additionally, the depth the document can be inserted is controlled by the document stop. the document stop can be adjusted to locate the first line of print anywhere from 1.45" to 2.24" form top the paper. (See Figure 7.)

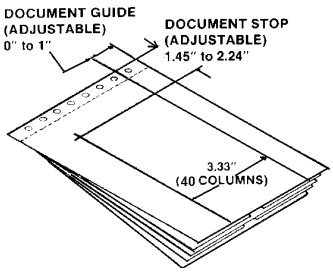


Figure 7. Locating Print Field on a Document.

The normal print filed can be expanded by using the inverted print feature. After printing down the right half of the document to the desired location. As the unit prints, the document will travel toward the front of the machine. (See Figure 8).

Inverted printing can also be performed by reversing the lines of information. In this application, it will print from the bottom of the page upward.

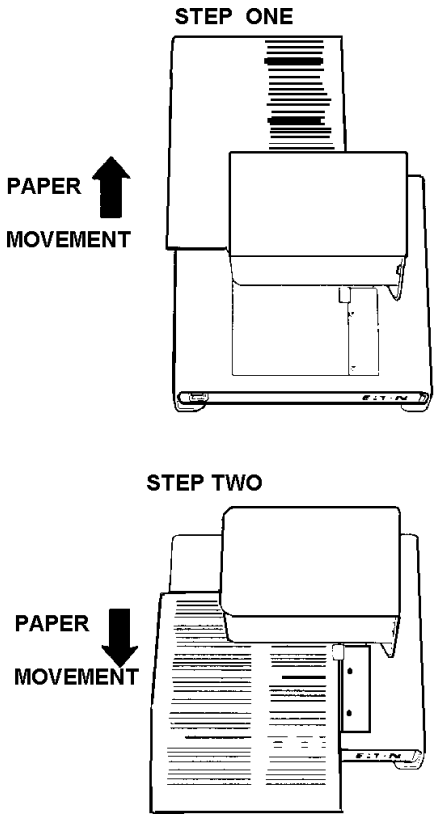


Figure 8. Double Wide Print Field on a Document

5.2 AUTOMATIC DOCUMENT CLAMP OPERATION

(Document Inserted Before Data is Received)

The automatic clamp can be utilized whenever a document is inserted before any data is received. When a document is correctly inserted, the printer automatically clamps the document and lifts the top of the form stop when it receives the first data to be printed. After all transmitted data has been printed, the document is released automatically after a 1/2 second delay. This type of operation utilizes the automatic clamp feature of the printer. If desired, the printer can be set up such that a busy signal is sent whenever a document is not inserted over the top of form sensor. In this mode of operation, the busy signal can be sued to ensure data is not sent until a document is inserted, thus assuring automatic clamp/unclamp operation of the printer. If pauses in the transmission of data occur, such that the printer does not print for 1/2 second, the document clamp releases automatically. Printing can continue only after the document is manually clamped again.

However, if the document has advanced off either the top of form sensor or edge of form sensor, the document cannot be clamped and the remainder of the document cannot be clamped and the remainder of the document will not be printed. (See next section for proper operation when pauses in data transmission can occur.)

5.3 AUTOMATIC DOCUMENT "CLAMP INSTRUCTION" OPERATION

(Document Inserted Before Data is Received)

When pauses in data transmission can occur such that the printer does not print for 1/2 second, the clamp instruction mode of operation should be used to ensure the document remains clamped until printing is completed.

The clamp instruction overrides the automatic clamp release feature of the printer. To release the document after printing has been completed, a clamp release instruction should be given at the end of the message. The sequence of data transmission should be as follows:

Clamp Instruction (ESC, FS)*
Data to be Printed
Clamp release Instruction (ESC, FF)*

* See Section 6.5, 3 for more information.

For the "clamp instruction" operation, first insert a document as shown in Figure 6. The printer will automatically clamp the document and lift the top of form stop when it receives the first data to be printed.

The clamp instruction ensures the document remains clamped until an unclamp instruction is received. delays or pauses in transmission of data will not affect the document clamp operation. After all data has been received and printed, the document clamp release instruction automatically releases the document.

5.4 MANUAL DOCUMENT CLAMP OPERATION

(Document Inserted After Data has been Received)

Data may be sent to the printer when a document is not inserted. This data is stored in the print storage buffer until it can be printed. In this mode of operation, automatic clamping or clamp instruction does not clamp the document; instead, the document clamp must be operated manually. The clamp may be actuated after a document is inserted, as shown in Figure 6 by momentarily depressing the clamp switch on the back side of the printer. Once the printer senses a document is in place and the document is clamped, the data in thestorage buffer is printed automatically. When printing has been completed, depress the clamp switch, to release the document. (Note, when a document is clamped by using the clamp switch is clamped by using the clamp switch, automatic unclamping is inhibited. The document clamp can be released only by actuating the clamp switch.)

5.5 STORAGE BUFFER

The storage buffer is used to store data received when the data received when the data cannot be printed immediately. The storage buffer has the capacity to store 1000 characters. This is the equivalent of 25 full lines of normal characters printed or 50 full lines of double wide characters printed When the storage buffer is full, a busy signal is given. The busy signal is maintained until 100 characters have been removed from the storage buffer. If the busy signal is ignored, and additional data is sent, the first-in data in the buffer can be lost. Data is stored in the buffer for the following conditions:

Document is not present. Printing cannot be initiated unless the top of form and side of form sensors are covered by a document.

Data is received faster than the printer can print.

Less than one full line of printing has been received without a print instruction. The printer has a capacity to print 40 normal width characters per line. When the 41st character is received, the printer automatically prints the line and advances the paper one line. When less than a full line of print is stored in the storage buffer, printing of this data can be forced by use of one of the various print instructions.

5.6 RIBBON REPLACEMENT

CAUTION

DISCONNECT POWER FROM WALL PLUG BEFORE REMOVING RIBBON CARTRIDGE OR SERVICING. REPLACE COVER BEFORE RETURNING POWER OR OPERATING MACHINE.

The ribbon cartridge used in the printer has a rated life of 6,000,000 characters. To replace the ribbon cartridge, turn the power switch off. Depress and hold the clamp switch down while turning the power on. This causes the printhead to stop near the center of the print area for easier insertion of the new ribbon. After the printhead stops - turn the power switch to OFF. Remove the mechanism shroud be grasping it at the lower edges and pulling apart until it releases from the mechanism cover and then slide it off (See Figure 9).

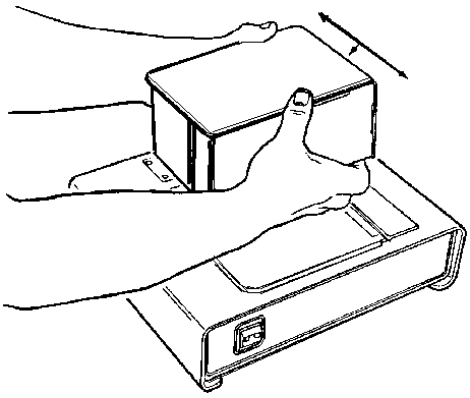


Figure 9. Removing Mechanism Shroud.

The ribbon cartridge is now visible with the ribbon guide pointer near the center of the cartridge (See Figure 10.) Note that replacing the ribbon cartridge can be done somewhat easier if the unit is stood on end such that the ribbon cartridge is facing upwards. Before standing the printer on end, be sure to unplug the printer from the AC line and then remove the line cord and the communications cable form the back of the unit. Grasp the ribbon cartridge near the top and slowly pull it outward while observing the ribbon path. Remove slack form the new ribbon by turning the ribbon advance knob clockwise. Slide the ribbon between the clear plastic tab and the ribbon guide pointer and then over the outside tabs of the ribbon guide (See Figure 10). Snap cartridge into position by pressing on both edges. Turn ribbon advance knob clockwise to remove slack.

Install mechanism shroud into place and test operation by running the self test. See installation section of this manual for self-test operations.

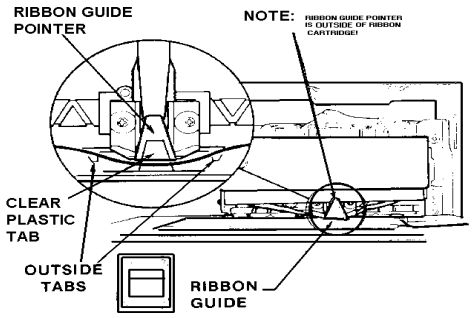


Figure 10. Ribbon Replacement.

5.7 FAULT DETECTION

To prevent damage to the printer mechanism, the logic printed circuit board detects stalled or "runaway" DC motor conditions and turns off the motor drive. Additionally, a communication signal is provided to indicate a fault has occurred.

Head Jams

A jammed ribbon or something preventing the printhead form moving can stall the drive motor. Should a jam occur, turn the printer power switch off and clear the jam.

If it is necessary to remove the shroud to clear the jam, be certain to reinstall the shroud before tuning power back on. When power is reapplied, the fault signal is automatically cleared and the printer powers up to a reset condition. The document that was being printed cannot be completed and should be discarded.

Runaway Motor

A runaway DC motor condition is evidenced by the printhead beginning to noticeably sweep faster across the paper, or the printhead accelerating suddenly and then stopping. When either of these conditions exists, turn off power. Turning the power switch back on should clear the fault, automatically power-up reset condition. The document that was in the process of being printed cannot be completed and should be discarded.

6. MAINTENANCE AND REPAIR

6.1 CASE DISASSEMBLY

WARNING! Disconnect the AC line power supply before removing covers.

6.1.1 Remove shroud by pulling apart sides and sliding off (See Figure 11).

6.1.2 Set the printer on end for access to the cover assembly screws.

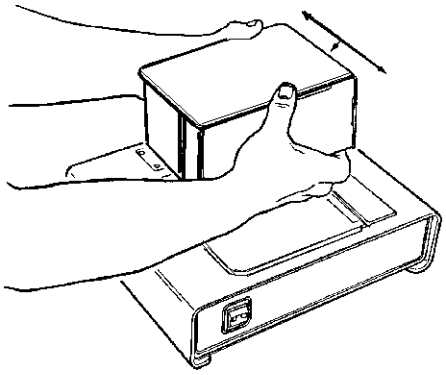


Figure 11. Shroud Cover Removal.

6.1.3 Remove four screws attaching cover assembly to chassis (See Figure 12).
6.1.4 Remove rear cover plate by removing four screws attaching it (See Figure 13).
6.1.5 Remove two screws attaching document guide (See Figure 14).

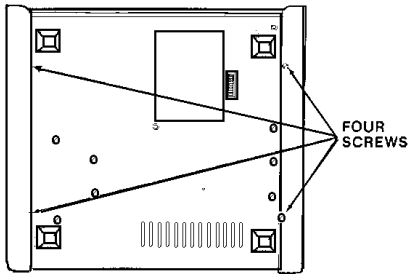


Figure 12. Cover Assembly to Chassis Mount.

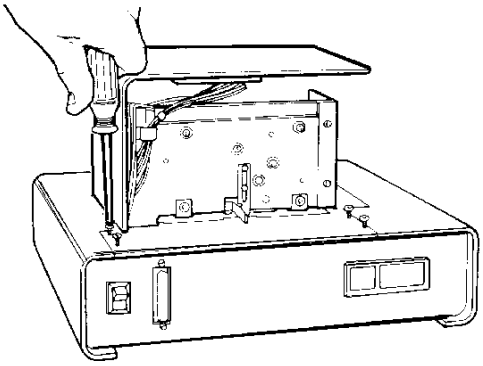


Figure 13. Rear Cover Plate Removal

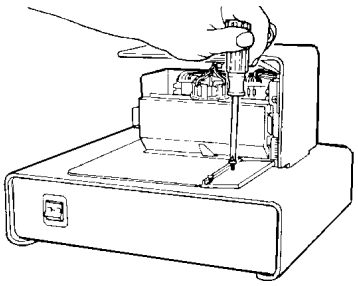


Figure 14. Document Guide Screw Removal

6.1.6 Slide cover assembly forward about 1 inch, and slide the document guide off slotted ears on the cover assembly (See Figure 15).

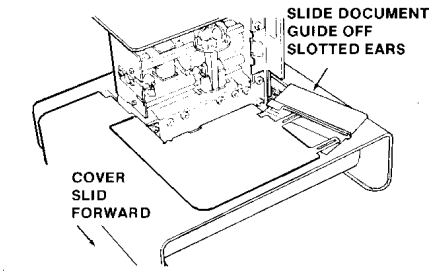


Figure 15. Document Guide Removal.

6.1.7 Hold the document guide out of the way, and slide the cover assembly with document plate forward off the chassis leaving the document guide with the printer mechanism (See Figure 16).

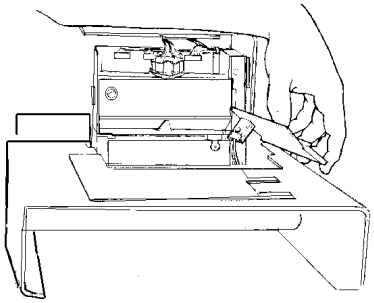


Figure 16. Cover Assembly Removal.

6.1.8 Remove the top cover by removing the three screws holding it to the printer mechanism (See Figure 17).

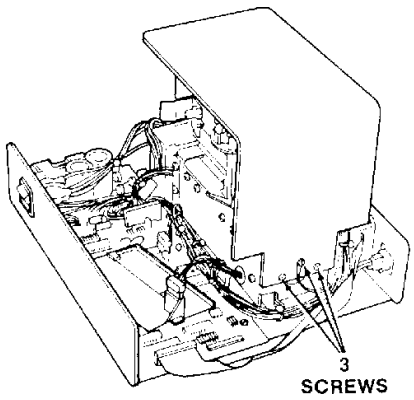


Figure 17. Top Cover Removal

6.2 CLEANING AND LUBRICATION

The Model 8804 printer mechanism is designed to require a minimum of maintenance and service. This section provides complete instructions and procedures for both cleaning and maintaining he printer mechanism.

6.2.1 Required Tools and Supplies

The following items are recommended for printer maintenance and repairs. Common hand tools are also required.

a). Volt-Ohm Meter
b). Feeler Gauges
c). Flag Adjusting Tool (P/N 115530 00A)
d). Grease (P/N 083012 020)
e). Light Machine Oil
f). Isopropyl Alcohol
g). Cleaning Cloths
h). Cotton Swabs
i). Static Strap and Bags

Normal maintenance (cleaning, lubrication, and inspection) should be performed once a year when the printer is installed in a clean office environment. If the printer is subjected to heavy usage and/or dirty environment, the frequency should be increased as required.

NOTE: When cleaning and lubricating the printer mechanism, take care not to get grease or oil on the printed circuit boards. Covering the boards before beginning maintenance will help prevent accidental contamination of the printed circuit boards.

6.2.2 Cleaning

a). Clean printer thoroughly ;using alcohol, cloths and cotton swabs to remove grease, ink and dirt.

b). Rotate pressure rollers and clean with alcohol.

6.2.3 Inspection

a). Check for easy movement of the head assembly on the print drive cam.

b). Check the ribbon advance mechanism for proper movement (See Figure 18).

c). Inspect for loose or missing screws.

d). Check for excessive vertical movement of the printhead drive cam.

e). Check top-of-form and right hand edge guides.

f). Check that al cables are secured and that no interference exists in the moving mechanism.

g). Check the printhead to printbar gap. (See Figure 19).

6.2.4 Lubrication

a). Grease square printhead guide shaft.

b). Grease groove and surface of main drive cam.

c). Grease drive gears.

d). Oil pivot points of ribbon feed and clamp mechanisms (See Figure 18).

6.3 REPAIR AND ADJUSTMENT

6.3.1 Printbar Adjustment

The printbar may need readjustment in order to maintain the proper printhead to printbar gap. Feeler gauges corresponding to the gap are required. If the gap does not fall into the proper range at both ends of the print area, the print bar must be moved or else smudging may occur with thin forms. Table 2 shown the factory setting for the printbar gap.

Medium Stroke
.018" ±.001" (.003" to .015" forms)

Table 2. Printhead to Printbar Gap Chart.

To adjust the printbar:

a). Disconnect the AC line power before removing covers.

b). Remove shroud, cover assembly, rear cover plate (See Case Disassembly - Section 4. 1).

c). Remove ribbon cartridge.

d). Loosen the four screws which secure the printbar (See Figure 18).

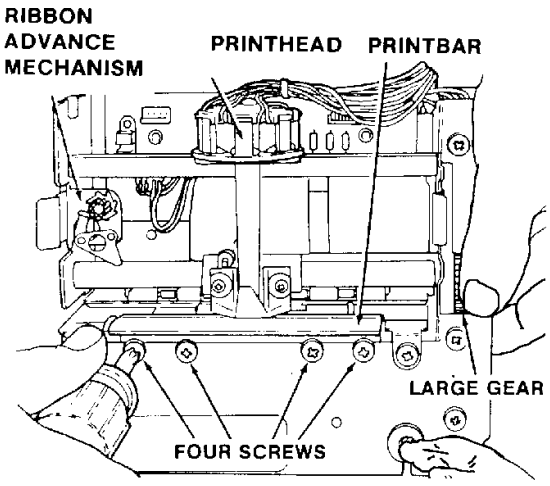


Figure 18. Loosening Printbar.

e). Manually move the printhead to the extreme left hand side of the printer by turning the large gear attached to the right side of the drive cam.

f). Using the proper feeler gauge, place it between the printhead and printbar. Push the printbar upward until there is slight pressure on the feeler gauge. Snug up one screw at the end of the printbar.

g). Move the printhead to the right-hand end repeat step f)..

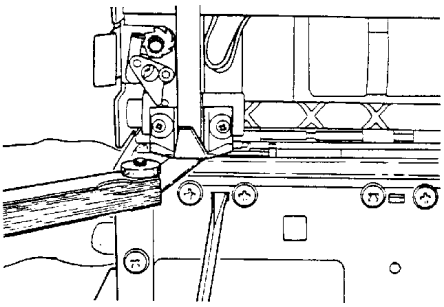


Figure 19. Adjusting Printbar

h). Snug up one screw on the right end of the printbar, recheck the left end. Make any necessary adjustments and then sung up the remaining screws in the printbar.

i). When the printbar gap is set correctly, a 0.19" feeler gauge will be snug between the printhead and printbar and a .107" feeler gauge will pass freely between the printhead and printbar.

j). When this gap has been correctly established, tighten the printbar mounting screws. After tightening these screws, re-check the gap setting to insure that it has not been disturbed.

6.3.2 Clamp Solenoid Adjustment

NOTE: This is adjusted at the factory and is not normally required to be set in the field unless paper feed is erratic or hesitant.

The clamp solenoid is mounted with two screws on the back of the printer (See Figure 20). The mounting holes are slotted to allow up and down adjustment of the solenoid.

a). Remove power to the printer by unplugging the line cord form the AC line power supply.

b). Remove the mechanism shroud (See Case Disassembly).

c). Loosen the two screws that secure the clamp solenoid (See Figure 20).

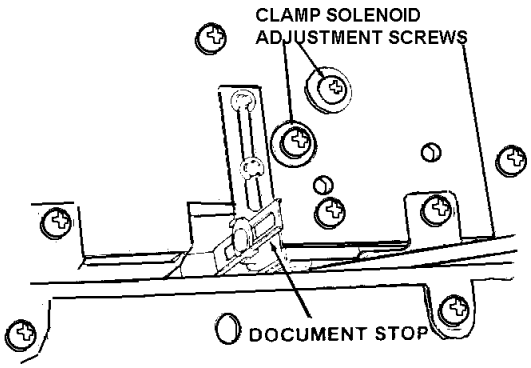


Figure 20. Clamp Solenoid Adjustment

d). Place one finger under the document stop and lift gently with"one finger" pressure until the stop will not move (indicating the clamp rollers and feed rollers are touching).

e). Tighten one of the solenoid mourning screws while assuring that the solenoid body is aligned as vertically as possible. Release the document stop and tighten the other solenoid mounting screw. (The solenoid body can be seen from the front of the printer after removing the ribbon cartridge.)

f). Test the adjustment for proper operation before installing the mechanism shroud.

g). Install the power cord, plugging it first into the back of the printer and then into the line power supply.

WARNING

Before applying power to the printer, make sure that hands, tools, equipment etc. are clear of the mechanism. The print head will sweep when power is applied. Operation of the printer print head mechanism against a foreign object could cause personal injury or damage to the mechanical printer parts.

h). Insert a document into the printer and run the self test operation by holding the clamp switch down and turning the printer power switch on.

i). If the paper feed is still erratic or hesitant, repeat steps a through 3, changing the solenoid body position small up or down increments until the desired result is achieved.

j). When the adjustment is correct, reinstall the mechanism shroud (See Case Assembly).

6.3.3 Document Stop Adjustment

After adjusting the clamp mechanism, or when setting up a job, the document stop may have to be adjusted. The stop can be set so that printing can be located from 1.45" to 2.24" from top of the document. It may also be removed if not required.

To change the document stop setting:

a). Remove the mechanism shroud (See Case Disassembly).

b). Loosen the document stop adjustment screw located on the back of the printer mechanism (See Figure 21).

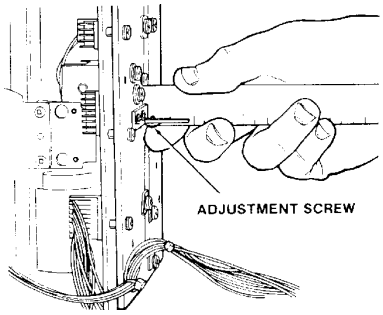


Figure 21. Document Stop Adjustment.

c). Hold a straight edge flush against the printer mechanism case and measure document stop protrusion (See Figure 21).

d). Use the figures in Table 3 to convert document stop protrusion to start of print point.

Document Stop Protrusion	**Document Start to Print (Measured form Top Edge of Document)**
1-3/8"	2-1/4"
1-1/8"	2"
7/8"	1-3/4"
5/8"	1-1/2"

Table 3. Document Stop Adjustments.

e). Tighten the adjustment screw, replace the mechanism shroud and rung the self test to check for correct adjustment.

NOTE: When adjusting the document stop, it is possible to slide the stop too far in, resulting in the document not covering the top form sensor, which will keep the printer form starting.

6.3.4 Right Hand Edge Guide Adjustment

a). Loosen the two screws holding the edge guide (See Figure 22).

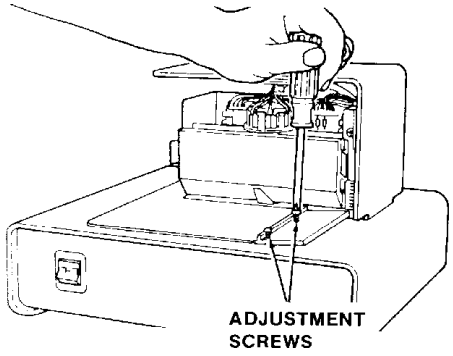


Figure 22. Edge Guide Adjustment.

b). Slide the edge guide in or out to obtain the proper position.

c). Retighten the locking screw, taking care not to overtighten, as the plastic threads could strip out.

6.3.5 Ribbon Cable Replacement

WARNING!
Disconnect AC line power supply to printer.

a). Remove the cover assembly with document plate, the rear cover plate and the mechanism shroud.

b). Disconnect the ribbon cable from the Logic PCB by carefully removing the connector form the pins on PC board.

c). Move to the rear of the printer two screws holding the 25-pin connector to the chassis (See Figure 23). Remove the cable and connector form the unit.

d). Install a replacement cable and connector in the unit, fastening the 25-pin connector to the chassis with the No. 1 pin at the top.

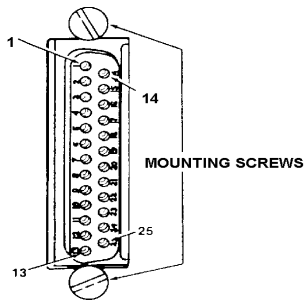


Figure 23. 25-Pin Connector.

e). Carefully remove any twists from the cable and route it to the Logic board (See Figure 24).

f). Bend the ribbon cable toward the Logic PCB and install the connector on the SERIAL terminal.

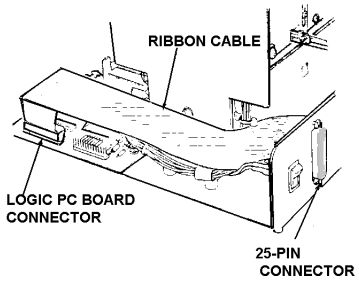


Figure 24. Proper Ribbon Cable Orientation.

g). Check that the connector is properly seated on the pins and is not off by one pin. To check for proper orientation of the connector, trace the wire connected to the No. 1 pin the PC board back to the 25-pin connector. The wire should be connected to the No. 1 pin on the 25-pin connector. If it is not, reverse the connector on the PC board.

h). Install the covers (See Case Assembly).

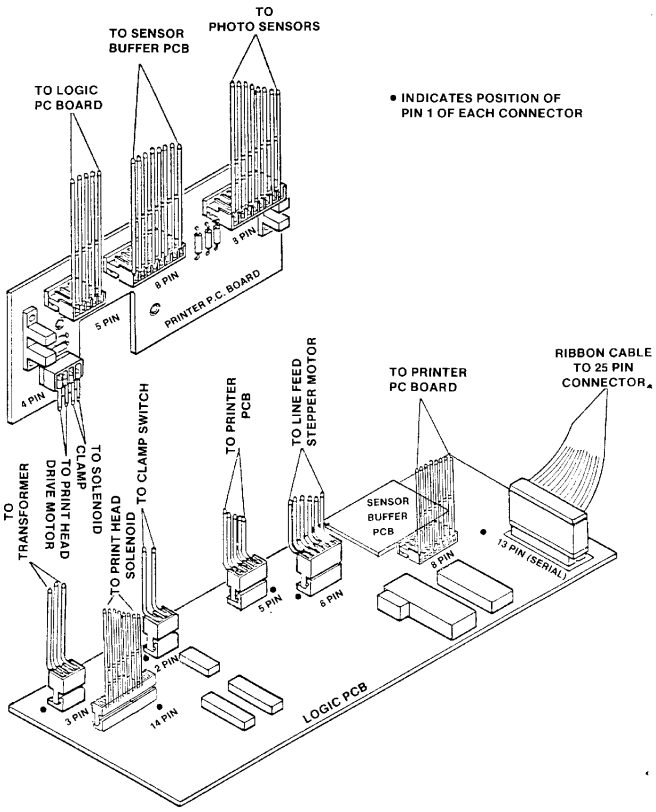


Figure 25. Terminal Pin Schematic

6.3.6 Manual Clamp Switch Replacement

WARNING!
Disconnect the AC line power supply to printer.

a). Remove the cover assembly with document plate and the rear cover plate for access to the manual camp switch (See Case Disassembly).

b). Remove the clamp switch Cable 2-pin connector at the Logic PC board (See Figure 25).

c). Pull away two tabs to remove the switch (See Figure 26).

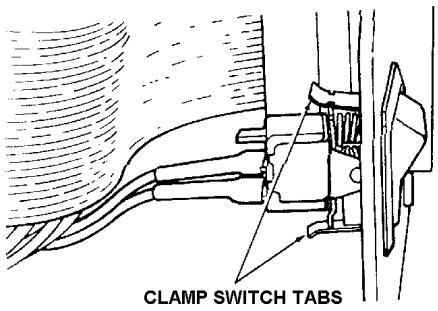


Figure 26. Clamp Switch Removal.

d). Install the new clamp switch in its frame, pushing it in until it seats between the base.

e). Install the 2-pin cable connector on the Logic PC board.

NOTE: The 2-pin connector is keyed, and can be put on only one way.

f). Reinstall the covers (See Case Assembly) and run the printer to check for correct operation of the switch.

6.3.7 Power Switch Replacement

WARNING!
Disconnect the AC line power supply to printer.

a). Remove the cover assembly with document plate (See Case Disassembly) for access to the power switch.

b). Remove the six wires connected to the power switch noting their location for reassembly (See Figure 27).

CAUTION!
Wires must be reinstalled in the same orientation or damage to the printer could result.

c). Push together the four mounting tabs and remove the switch by pulling it out the front of the chassis (See Figure 27).

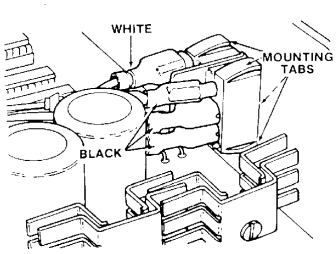


Figure 27. Power Switch Removal.

d). Install the replacement power switch securely in the chassis.

NOTE: The new switch must be installed with the #5 and #6 terminals at the top, or damage to the printer will occur (See Figure 28).

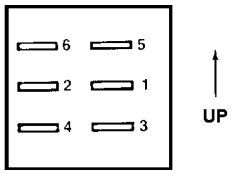


Figure 28. Power Switch Orientation

e). Attach the six wires to the appropriate switch terminals. The upper two wires come from the transformer and supply power for an internal light. The middle two come from the "L" and "N" terminals on the fuseholder. The lower two come from the "J" and "B" terminals on the fuseholder. One column of wires must be all white, one column must be all black.

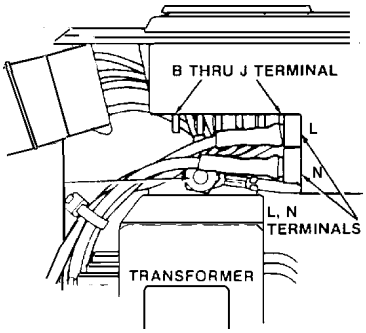
f). Reinstall the cover assembly (See Case Assembly).

g). Reconnect the AC line power and test the switch for proper operation.

6.3.8 Fuse Holder Replacement

a). Remove the cover assembly with document plate, and the rear cover assembly with document plate, and the rear cover (See Case Disassembly).

b). Early fuseholders feature an in-line connector for terminals "B" through "J". Uncouple this connector. On non-connector equipped models, pull the wires from the terminals including L & N, noting the position of each wire for reassembly (See Figure 29).



Terminal	Color Wire
B	Black
J	White
C	Orange
D	Violet
E	Blue
F	Yellow/White

Figure 29. Fuseholder Removal

c). Remove the ground screws on the transformer and remove the ground wire (See Figure 29).

d). Push together the fuseholder tabs and remove the fuseholder from the back of the chassis.

e). Push together the fuseholder tabs and remove the fuseholder from the back of the chassis.

f). Attach the wires form the middle two terminals on the power switch to the "L" and "N" terminals on the fuseholder.

g). Attach the green ground wires to the ground screw on the transformer, making certain the ground goes under the transformer leg and fasten securely.

h). Reconnect the four wire terminal connector, or attach the wires to the correct terminal as noted in step b depending on your model.

i). Install the covers (See Case Assembly).

j). Check the line PCB on the new fuseholder to ensure that it is correctly oriented for the corresponding incoming power supply (See Changing Power Supply).

k). Reconnect the power supply to the printer and run the self test to check for correct operation.

6.3.10 Transformer Replacement

a). Remove cover assembly with document plate, and the rear cover (See Case Disassembly).

b). Disconnect the violet, yellow/white, blue and orange wires at the fuseholder, noting their location for reassembly (See Figure 29).

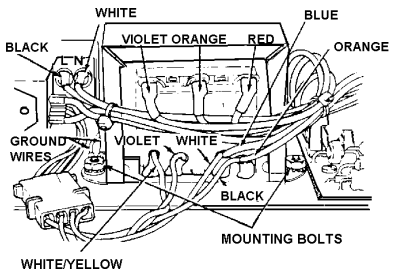


Figure 30. Transformer Replacement.

c). Disconnect the 3-wire connector on the Logic PCB (See Figure 25).

d). Disconnect the black and white wires on power switch terminals 5 & 6, noting the locations for reassembly (See Figure 28).

e). Remove the two nuts holding the transformer to the chassis (See Figure 30). Lift out transformer.

f). Before installing the new transformer, make certain the two green ground wires are mounted over the left side mounting stud (See Figure 30).

g). Slide the new transformer over the two studs and fasten into place with nuts and lockwashers.

h). Connect the three-wire connector at the Logic PCB, noting the orientation of the stepped lock on the connector.

i). connect the four wires to the fuseholder terminals as noted in step b.

j). Attach the black and white wires to the power switch as noted in step d.

k). Install the covers (See Case Assembly) and run the self test to check for proper operation.

6.3.11 Logic PCB Replacement

WARNING!
Disconnect power supply to printer.

a). Remove the mechanism shroud, the rear cover plate, the cover assembly with document plate and the top cover (See Case Disassembly).

b). Remove the single screw holding the photo sensor to the edge guide, and remove the photo sensor from the edge guide (See Figure 32).

c). Remove the two connectors (8 and 5 pin) form the Printer PCB (See Figure 31). Cut the cable ties that bundle these wires to the head solenoid wires.

NOTE: 5 pin is on the left hand side and the 8 pin connector is in the center of the Printer printed circuit board.

d). Remove the connector (6 pin) running from the drive motor to the Logic PCB at the PCB, and cut the cable ties bundling it to the printer PC board wires (See Figure 31).

e). Remove the head solenoid connector (14 pin) at the Logic PC board (See Figure 31).

f). Remove the four screws attaching the printer mechanism to the chassis standoffs and lift the printer mechanism out of the chassis (See Figure 31).

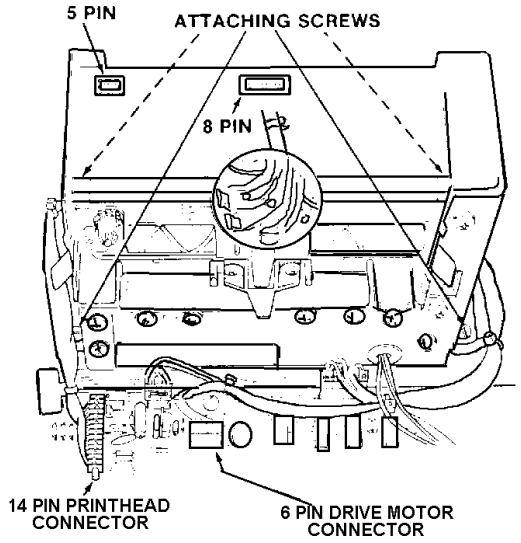


Figure 31. Printer Mechanism Replacement.

g). Install the new printer mechanism to the chassis standoffs, making certain the white cable guide is mounted on the right rear standoff.

h). Install the 5 and 8 pin connectors to their respective terminals on the Printer PCB (See step c).

i). Install the 14 pin solenoid connector and 6 pin connector to the Logic PCB (See steps d and e).

j). Install new cable ties to ensure correct wire routing.

k). Attach the photo sensor to the edge guide aligning the sensor flush with the paper path (See Figure 32).

NOTE: Sensor must be installed in the connector with symbols as shown, or printer will not operate.

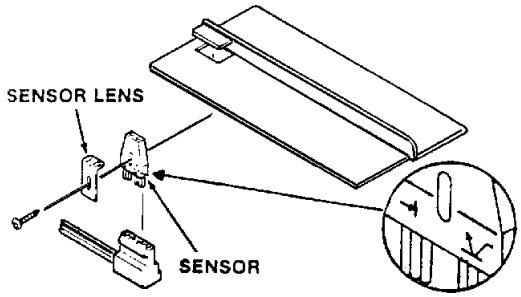


Figure 32. Edge guide Photo Sensor Installation

l). Install the covers (See Case Assembly) and test the printer for correct operation.

6.3.13 CHANGING INPUT POWER
(120V to 240V or 240V to 120V)

WARNING!
Disconnect power supply to printer.

To switch the printer form 120V to 240V operation, the following must be changed:

a). To switch the fuse form 2 amps (120V) to 1 amp (240V) (See Figure 33).

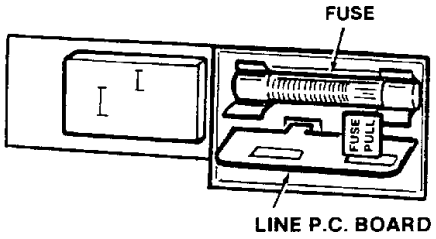


Figure 33. Fuse and Line PCB Location

b). Pull line PC board out using needle nose pliers (See Figure 33) and turn the board so the 240 figure reads toward the outside (See Figure 34) and reinsert the board.

To switch the unit form 240V to 120V, reverse the sequences in Steps a and b.

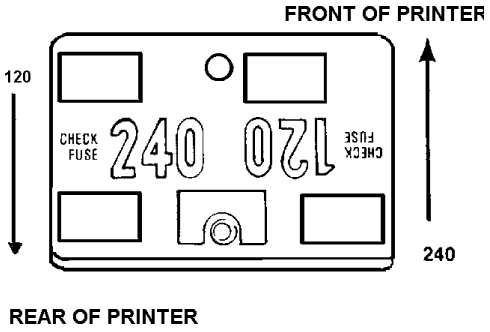


Figure 34. Line PC Board Orientation.

6.3.14 CASE ASSEMBLY

a). Check that all components inside the chassis are securely mounted and wiring is correctly routed.

b). Attach the top cover to the printer mechanism with three screws, making certain the green ground wire is fastened under the middle screw (See Figure 17).

c). Slide the cover assembly with document halfway onto the chassis (See Figure 16).

d). Slide the edge guide onto the slotted ears on the cover assembly document plate (See Figure 15).

e). Slide the cover assembly the rest of the way onto the chassis. Fasten it securely to the chassis with the four screws under the unit (See Figure 12).

f). Adjust the edge guide to the desired position for document alignment. Secure with two screws, being careful not to overtighten the screws and strip out the plastic (See Figure 14).

g). Install the rear cover plate with four screws (See Figure 13).

h). Pull the sides of the mechanism shroud apart and slide the shroud into the slots on the top cover (See Figure 11).

i). Connect power and self test the unit for proper operation. Refer to the Troubleshooting section if problems develop.

6.4 MODEL 8804 TROUBLESHOOTING GUIDE

6.4.1 Poor Print Quality

PROBLEM	POSSIBLE CAUSE	PROBABLE SOLUTION
Print faded.	Ribbon cartridge worn out.	Replace cartridge.
Random dots missing or faded.	Printhead to print bar gap is incorrect.	Clean head.
Print is smeared.	Printhead dirty. Printhead to print bar gap incorrect	Clean head. Set printhead gap to correct setting.

6.4.2 Transmitted Data Not Printing

PROBLEM	POSSIBLE CAUSE	PROBABLE SOLUTION
Printer powers up and self tests correctly but will not print.	Command not given (either software or manual clamp). Connections to communications connector incorrect, loose or disconnected. DIP switch settings incorrect for serial mode. Ribbon cable installed incorrectly on Logic PCB. Connectors form Logic PCB to Printer PCB incorrectly installed. Ribbon cable defective. Logic PCB defective.	Manually clamp and retest machine. Fasten connections correctly. Check DIP switch settings for proper baud rate. Check ribbon cable installation. Check connector installation. Check continuity of ribbon cable and replace if necessary. Replace Logic PCB.

6.4.3 Does Not Power Up Correctly

NOTE: Under normal operation, the printhead will sweep back and forth across the print field a maximum of tow times and stop on the right margin, when power is applied. to the printer.

PROBLEM	POSSIBLE CAUSE	PROBABLE SOLUTION
Printhead sweeps continuously.	8 pin connectors improperly installed on either Sensor Buffer or Printer PCB. Sensor buffer PCB improperly installed on Logic PCB. Sensor Buffer PCB, Logic PCB or printer mechanism defective.	Check 8 pin connector orientation (See Fig.25) Run Test #1 to determine defective component.
Printhead sweeps abnormally fast and then stops.	Runaway D.C. motor	Power cycle the unit.

PROBLEM	POSSIBLE CAUSE	PROBABLE SOLUTION
	8 pin connectors installed improperly on Logic PCB or Printer PCB.	Check connector installation and orientation (See Fig. 25).
Printhead does not sweep.	AC power connections loose or disconnected. Fuse bad. Line PC board orientation incorrect for line voltage.	Check power connections at source and printer. Replace fuse (See Fig. 33). Check line PC board orientation (See Fig. 34).
Printhead does not sweep (power indicator lamp in power switch does not light).	Power switch, transformer or filter improperly installed or connected. Power switch defective.	Check component connections. Remove power switch and check continuity. With the switch in the ON position, Pins 1 & 2 and Pins 3 & 4 should be shorted. Pins 5 & 6 are the internal lamp and should show continuity. Replace power switch if readings are incorrect.
Printhead does not sweep.	Printhead jammed by improperly installed or defective ribbon cartridge. Printhead jammed by paper or forms wadded in mechanism or drive gear teeth. Improper printhead to printbar gap binding printhead..	Remove ribbon cartridge and shroud, and rotate manual gear on right side of printer mechanism to check for free movement of printhead. Reassemble and run self test. Adjust printhead to printbar gap and run self test.
Printhead does not sweep.	Fuse holder defective	Remove Chassis cover and run Test #2 to check the fuseholder.
Printhead does not sweep	Power switch defective.	Remove chassis cover and run Test #3 to check the power switch.
Printhead does not sweep (Power switch okay).	Internal circuitry damage.	Run Test #4 & #5

6.4.3 **Does Not Self Test Correctly**

PROBLEM	POSSIBLE CAUSE	PROBABLE SOLUTION
Printhead sweeps on powerup, printhead stops in center of print field and does not run self test.	Both document senors not covered. Edge of form sensor improperly connected. Top of form senor improperly connected. Logic, Sensor Buffer or Printer PCB connectors improperly installed.	Make certain both senors are covered and rerun self test. Remove chassis cover and inspect edge of form sensor. Remove mechanism and inspect top of form sensor. Remove covers and check for correct connections (See Fig. 25).
Printhead sweeps , stops in right margin and does not clamp.	2 pin connector on Logic P.C. board improperly connected. Clamp switch not working properly.	Disconnect AC power, remove chassis cover and check 2 pin connector for correct orientation. Check clamp switch for continuity and external and internal shorts.
Printhead sweeps, stops in right margin and does not clamp.	Logic PCB defective	Replace Logic PC board.
Self test printout is mirror image of correct printout.	14 pin connector on Logic PCB improperly installed.	Check 14 pin connector for correct orientation on pins (See Fig. 25).
Horizontal row(s) of dots mission on printout.	14 pin connector on Logic PCB improperly installed. Defective printhead or Logic PCB.	Check 14 pin connector for correct orientation and installation on pins (See Fig. 25). Replace printhead or Logic PCB.

TROUBLESHOOTING

ELECTRICAL INTERFACE FOR SENSOR ONLY PCB

INCOMING SIGNALS

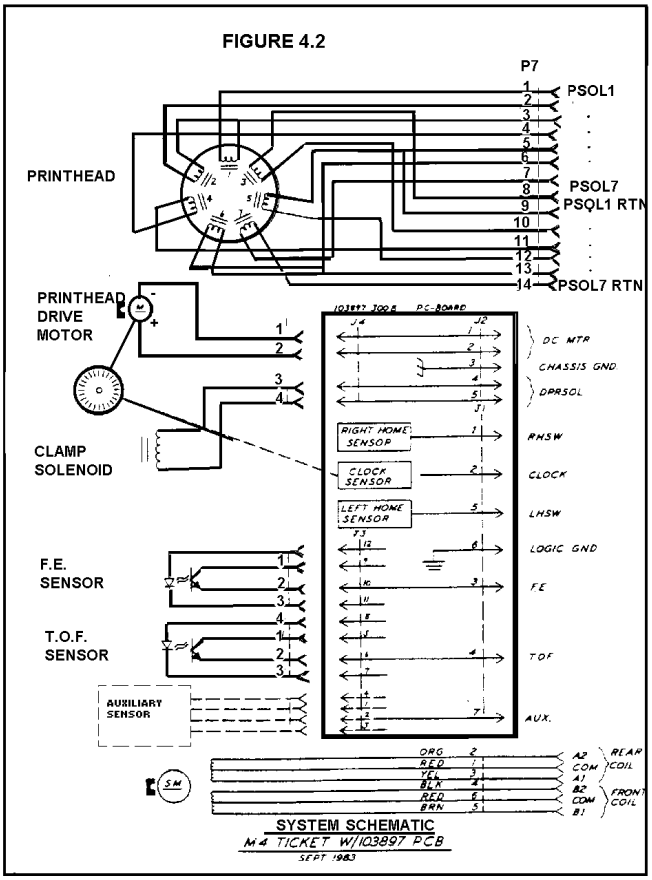
PRINT SOLENOIDS(1-7):The wires for the printhead are tied directly to the user electronics, and are not connected in any way to the sensor only PCB.

FMTRal, LFMTRa2 LFMTRb1, LFMTRb2:These lines are used to provide power to the line feed stepper motor. Two of these lines must be simultaneously turned in the correct sequence to make the motor turn either forward or reverse. These wires, like the print solenoid wires, are tied directly to the customer's electronics, and are not in any way connected to the sensor only PCB.

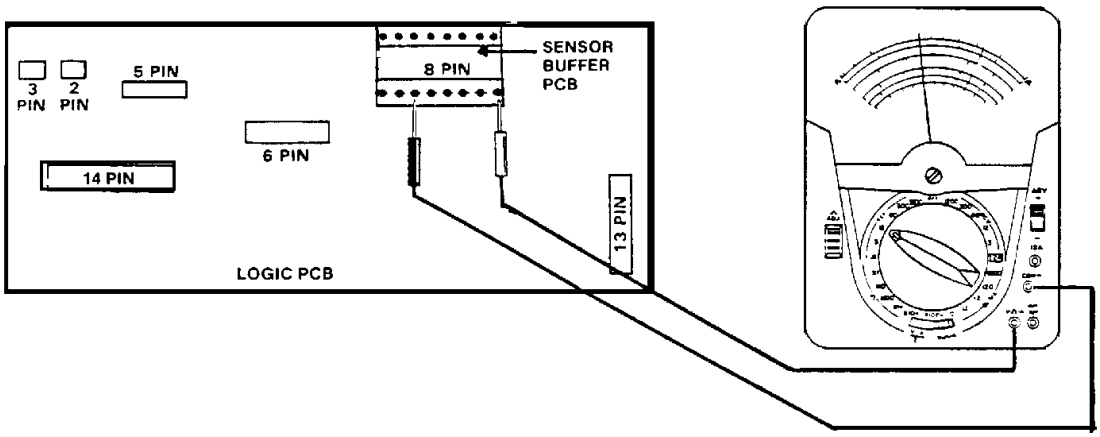
OPRSOL: This is the form clamp solenoid signal which activates the clamp solenoid. The signal is the same for sensor only PCB as for the standard package.

RUN: This is the same LOW true signal that is used in the standard control electronics package to activate the printhead drive motor.

FIGURE 4.2



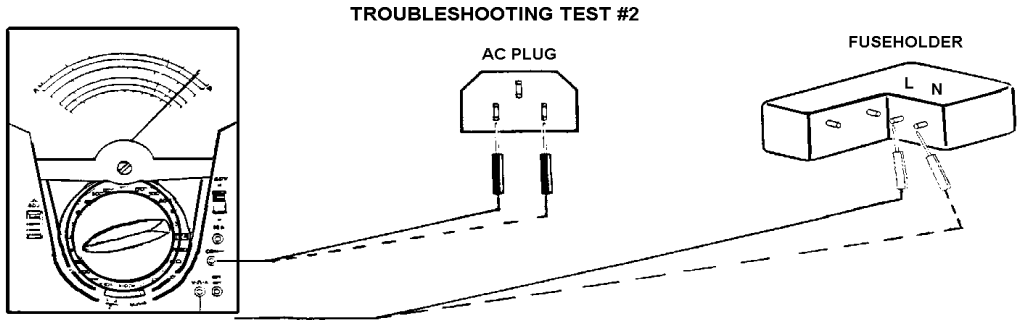
TROUBLESHOOTING TEST #1



With the V.O.M. on the + 12VDC scale, place the minus (-) probe on pin 6, and the plus (+) probe on pin 1 of the Sensor Buffer PCB 8 pin connector. Apply power to the printer. The V.O.M . needle should fluctuate upscale when the printer printhead is in the right margin and then fluctuate down scale when the printhead is out of the right margin.* If the needle fluctuates correctly, the Logic PCB or Sensor buffer PCB is defective. To check the Sensor Buffer PCB, perform this test on the pins at the back edge of the Sensor Buffer PCB where it connects to the Logic PCB. Use the same pins (1 & 6) as were used on the front edge. If this fluctuates correctly, the Logic PCB is defective. If the response is incorrect, replace the Sensor Buffer PCB.

*NOTE: A digital meter will display approx. 4.85 VDC when printhead is in the right margin. Approx. 0 VDC is displayed when the printhead is out of the right margin.

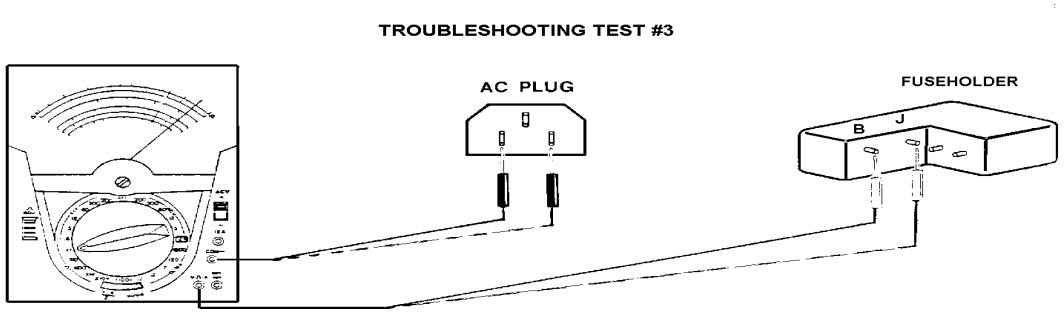
TROUBLESHOOTING TEST #2



Remove the chassis cover, set the V.O.M. on Rx1 scale and connect the negative (-) test probe to the left terminal in the AC plug. Connect the positive (+) test probe to the L terminal on the fuseholder. Resistance should register less than .5 ohms. Switch the negative (-) probe to the right AC plug terminal and the positive (+) probe to the N terminal on the fuseholder. Resistance should register less than .56 ohms. If either or both readings are incorrect the fuse holder is defective and must be replaced.

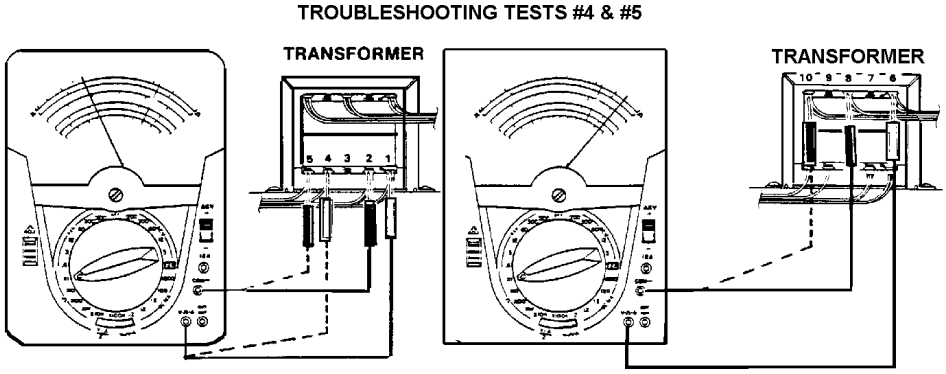
TROUBLESHOOTING TEST #3

NOTE: The power switch must be on, and the wires must remain attached to the fuseholder while performing these tests.



Remove the chassis cover, set the V.O.M. on Rx1 scale and connect the negative (-) test probe to the left terminal of the AC plug, connect the positive (+) test probe to the B terminal on the fuseholder. Resistance should register less than .5 ohms. Switch the negative (-) probe to the right AC terminal and the positive (+) probe tothe J terminal on the fuseholder. Resistance should register less then .5 ohms. If either or both readings are incorrect, the power switch is defective and must be replaced.

TROUBLESHOOTING TESTS #4 & #5



TEST 4

Remove the chassis cover from the unit. Remove the fuse, and the Line PCB form the fuseholder. Disconnect the 3 pin connector on the Logic PCB (See Figure 25). With V.O.M. on the Rx1 scale, measure the resistance between pins 1 & 2 on the transformer. Move the probes to pins 4 & 5. Resistance should register approximately 10 ohms at both points.

TEST 5

Switch the probes to pins 6 & 8 (Test 5) and take a reading. Move the probes to pins 6 and 10 and check resistance. Resistance should register less than 1 ohm in each case. If any of the readings are incorrect, the transformer should be replaced. NOTE! A defective transformer may have damaged the Logic PCB and/or the Print Mechanisms as well.

6.5 DATA INPUT DESCRIPTION

There are two communication Interfaces available on the 8804. These are the RS232C and 20mA Current Loop Serial interfaces. Both of these types are available on the 25 pin connector at the same time. However, only one of these may be sued at a time. Further, when 20mA Current loop is used, an Adaptor Plug, (Part Number 127358 00A) MUST be installed on the output connector. If RS232C is used, the Adaptor Plug MUST be removed.

Communication Interface Type	Cable Length
RS-232C 20mA Current Loop	50 ft. - maximum 500 ft. to 1000 ft. if routed in separate conduit.

6.5.1 **RS-232C**

The RS232C has a medium amount of noise immunity. Long distances of successful communications are highly dependent on the electric environment. Performance of the RS232C communication link can be improved by avoiding bundling the cable with other wiring and routing the cable away form devices which produce electrical noise.

RS232 C Pin Designation

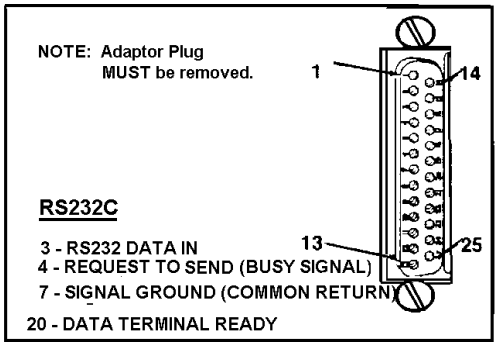


Figure 35.

Signal Levels
Mark -3 to -15 VDC (logic 1)
Space 3 to 15 VDC (logic 0)

Signal Identification

Pin 3 **RS232 Data In**

This input accepts SERIAL ASCII data for print characters and print instructions.

Pin 4 **Request to Send (Busy Signal**)

This output occurs whenever the printer is busy. The output can either be a mark or a space depending on the setting of SW1-8.

Pin 7 **Signal Ground (Common Return)**

Pin 20 **Data Terminal Ready**

This output sends a mark whenever the printer has detected a fault such as a stalled carriage or self-test failure.

6.5.2 20 mA Current Loop

20mA current loop offers good electrical noise immunity. distances to 1000 ft. are possible when the cable is placed in separate conduit which is mounted close to the ground.

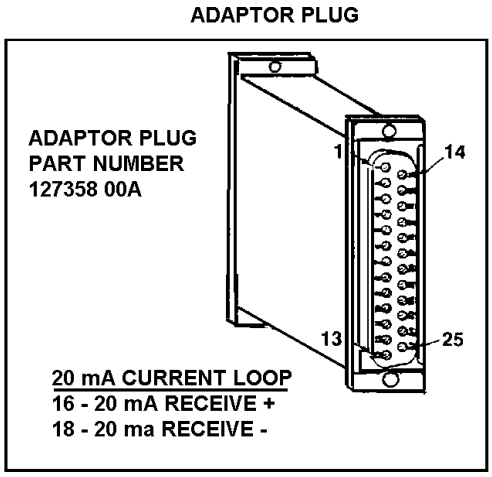


Figure 36.

NOTE: Pinouts are shown with Adaptor Plug installed.

Signal Levels

Logic 1 16 to 20 milliamps
Logic 0 0 to 3 milliamps

Signal Identification

Pin 16 20mA Receive+
This input accepts the current loop ASCII code data for print characters and print instructions.

Pin 18 20mA Receive-
Current loop return.

Serial Data Format

Word length defines a character or the number of bits in a sequence that is handled as a unit and that can be stored in one location in the printer's storage buffer. The word length and format are the same for both RS232C and 20mA current loop. A serial data word consists of four parts: a Start Bit, seven (7) Data Bits which identify the specific character being transmitted, a Parity Bit, and one (1) or more Stop Bit (See Figure 37).

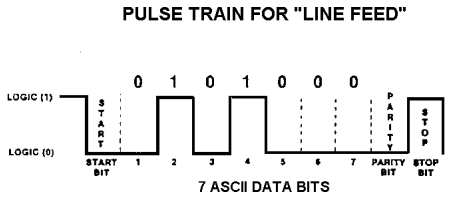


Figure 37. Data Format for Serial Communications.

The Start Bit is used in serial transmissions to signal the beginning of a character and that the next seven bits are the character itself. These seven data bits are sent in ASCII code and identify the character being sent. The Parity Bit must be present but can be even or odd parity since it is ignored by the 8804.

The Stop Bit is the last bit in a character and is used in serial transmissions to insure that the Start Bit of the next character will be recognized. The 8804 will accept transmission using one or more Stop Bits.

Stop Bits are logic (1) and Start Bits are logic (0) when using RS232C or 20mA loop interface.

Baud Rate

Baud rate is defined as the number of bits per second that are sent through the Serial communication interface in either RS232C or 20mA Current Loop format. The 8894 can be set for baud rates of 100, 300, 600, 1200, 2400, 4800, 9600* baud using the switch located on the bottom of the unit (SW1).

*NOTE: 9600 baud may only be used with the RS232C format.

6.5.3 Print Instruction Set

The printer responds to certain ASCII codes instructing it to perform a specific functions. The following lists the instruction which can be sued with the printer and the ASCII MNEMONIC. Refer to the next page foe ASCII bit patterns or decimal, octal or hex equivalence codes.

Carriage Return (CR)

Causes any data in the storage buffer to be printed. If the auto line feed has been selected (SW1-6 OFF), the document will also be advanced one line space.

Line Feed (LF)

Causes any data in the storage buffer to tbe printed and the document is advanced one line space.

Reverse Line Feed (ESC, LF)

Causes any data in the storage buffer to be printed and the document to be retracted one line space.

Vertical Tab (VT)

Causes any data in the storage buffer to be printed and the document is advanced .020" (1 motor step).

Normal Width Characters (SI)

Causes the printer to print all characters normal width (40 characters/line). The printer always powers up in this mode.

Printer Reset (NUL)

Clears the storage buffer and returns the printer to a power up reset condition.

Double Width Characters (SO)

Causes the printer to print all characters double wide (20 characters/line)

Document Clamp (ESC, FS)

Causes the printer to release the document clamp immediately except when the document was clamped manually.

Normal/Inverted Reverse Printing (ESC, RS)

This instruction is used to toggle the printing mode between Normal and Inverted Reverse printing. The printer can be set to power up in either the normal or inverted reverse printing mode.

An ESC, RS instruction will cause the printer to toggle out of its power up setting.
A second ESC, RS instruction will cause the printer to return to its initial settings, etc.

This introduction can be fused for reverse inverted printing on a document or for establishing double column print. Typically, multiple line feeds will be used to advance paper to the proper location (See Figure 8). Note the document must be removed and reinserted with the opposite edge of the document against the edge of form guide to establish double column print.

TABLE 3 ASCII CHARACTER CHART

ASCII CHAR.	DECIMAL	HEX	76543210	ASCII CHAR.	DECIMAL	HEX	76543210
NULL	0	00	00000000	@	64	40	01000000
SOH	1	01	00000001	A	65	41	01000001
STX	2	02	00000010	B	66	42	01000010
ETX	3	03	00000011	C	67	43	01000011
EOT	4	04	00000100	D	68	44	01000100
ENQ	5	05	00000101	E	69	45	01000101
ACK	6	06	00000110	F	70	46	01000110
BELL	7	07	00000111	G	71	47	01000111
BACKSPACE	8	08	00001000	H	72	48	01001000
TAB	9	09	00001001	I	73	49	01001001
LineFeed	10	0A	00001010	J	74	4A	01001010
Vert. Tab	11	0B	00001011	K	75	4B	01001011
Form Feed	12	0C	00001100	L	76	4C	01001100
Carr.Return	13	0D	00001101	M	77	4D	01001101
Shift Out	14	0E	00001110	N	78	4E	01001110
Shift In	15	0F	00001111	O	79	4F	01001111
Data Link Esc	16	10	00010000	P	80	50	01010000
DC1	17	11	000010001	Q	81	51	01010001
DC2	18	12	00010010	R	82	52	01010010
DC3	19	13	00010011	S	83	53	01010011
DC4	20	14	00010100	T	84	54	01010100
NAK	21	15	00010101	U	85	55	01010101
SYNCH IDLE	22	16	00010110	V	86	56	01010110
End Trans. Block	23	17	00010111	W	87	57	01010111
CANCEL	24	18	00011000	X	88	58	01011000
End Of Medium	25	19	00011001	Y	89	59	01011001
SUBSTITUTE	26	1A	00011010	Z	90	5A	01011010
ESCAPE	27	1B	00011011	[	91	5B	01011011
FS (Cursor Right)	28	1C	00011100	\	92	5C	01011100
GS (Cursor Left)	29	1D	00011101	]	93	5D	01011101
RS (Cursor Up)	30	1E	00011110	^	94	5E	01011110
US (Cursor Down)	31	1F	00011111	_	95	5F	01011111
SPACE	32	20	00100000	`	96	60	01100000
!	33	21	00100001	a	97	61	01100001
"	34	22	00100010	b	98	62	01100010
#	35	23	00100011	c	99	63	01100011
$	36	24	00100100	d	100	64	01100100
%	37	25	00100101	e	101	65	01100101
&	38	26	00100110	f	102	66	01100110
'	39	27	00100111	g	103	67	01100111
(	40	28	00101000	h	104	68	01101000
)	41	29	00101001	i	105	69	01101001
*	42	2A	00101010	j	106	6A	01101010
+	43	2B	00101011	k	107	6B	01101011
,	44	2C	00101100	l	108	6C	01101100
-	45	2D	00101101	m	109	6D	01101101
.	46	2E	00101110	n	110	6E	01101110
/	47	2F	00101111	o	111	6F	01101111
0	48	30	00110000	p	112	70	01110000
1	49	31	00110001	q	113	71	01110001
2	50	32	00110010	r	114	72	01110010
3	51	33	00110011	s	115	73	01110011
4	52	34	00110100	t	116	74	01110100
5	53	35	00110101	u	117	75	01110101
6	54	36	00110110	v	118	76	01110110
7	55	37	00110111	w	119	77	01110111
8	56	38	00111000	x	120	78	01111000
9	57	39	00111001	y	121	79	01111001
:	58	3A	00111010	z	122	7A	01111010
;	59	3B	00111011	{	123	7B	01111011
<	60	3C	00111100	|	124	7C	01111100
=	61	3D	00111101	}	125	7D	01111101
>	62	3E	00111110	~	126	7E	01111110
?	63	3F	00111111		127	7F	01111111

TABLE 4

6.5.4 20mA Current Loop Pin Designation

NOTE: Adaptor Plug MUST be installed.

Signal Name	8804 Adaptor Plug	150-J3 18182-J3 8185-J3	151-J2	280-J5	3200-J6	3205-J6 3210-J1	8132-J19	8136-J19 8139*-J4	8140*-J7 8142-JN 8186*-J1 8622*-JN	
No Connection No Connection No Connection No Connection No Connection	8 10 11 12 13	5 22	 9				 7 20	 16	Desk --- 8	Wall --- H
20mA RECEIVE+ 20mA RECEIVE-	16 18	9 19	25 10	3 1	3 4	19 16	25 10	11 12	9 22	J Y
No Connection No Connection No Connection No Connection	231 22 23 24		24 8 23				24 23	 23	10	K
Jumpers shown are in Indicator end of interconnecting cable.		14] 15	11] 12		1] 6	14] 15	11] 12	10] 25	4] 5 14] 15	D] E P] R
Jumpers shown are in printer end of interconnecting cable.			11] 17						12] 23	

* Data Output Option required

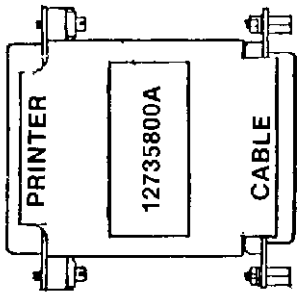
6.5.5 RS-232 Pin Designations

Table 5.

SIGNAL NAME	8804	8188
No Connection No Connection	1 5	1 20
RS232 Data In Signal Ground Data Terminal Ready	3 7 20	2 14 5

6.5.6 Adaptor Plug Pin Connections

Adaptor Plug Pin Connections



127358 00A

127358 00A

Table 6.

PRINTER SIDE	CABLE SIDE
11 25 3 20	18 16

6.5.7 INTERCONNECTING CABLES

Table 7.

MODEL	TYPE	CABLE LENGTH	SERVICE PART NUMBER	SALES PART NUMBER
150, 8182	DESK	6' 20'	A115504 00A A115505 00A	0900-0163-000 0900-0164-000
151	----	6' 20'	118992 00A 118993 00A	----- -----
280	---	6' 20'	115506 00A 115507 00A	0900-0165-000 0900-0166-000
3200	---	6' 20'	115498 00A 115499 00A	0900-0157-000 0900-0158-000
3205, 3210	DESK WALL	6' 20' 6' 20'	115500 00A 115501 00A 115502 00A 115503 00A	0900-0159-000 0900-0160-000 0900-0161-000 0900-0162-000
8132	DESK WALL	6' 20' 6' 20'	A115484 00A A115485 00A 115486 00A 115487 00A	0900-0143-000 0900-0144-000 0900-0145-000 0900-0146-000
8136, 8139*	DESK WALL	6' 20 6' 20'	115494 00A 115495 00A 115496 00A 115497 00A	0900-0153-000 0900-0154-000 0900-0155-000 0900-0156-000
8140*, 8142, 8186*, 8622*	DESK RACK	6' 20'	A115544 00A A115545 00A	0900-0136-000 0900-0137-000
8140*, 8142 8622*	WALL	6' 20'	A122574 00A A122575 00A	0900-0188-000 0900-0189-000
8185	WALL	6' 20'	115508 00A 115509 00A	0900-0167-000 0900-0168-000
8188**	-----	15'	123653 00A	0900-0192-000

* - Requires optional printer output.

** - RS-232C cable. Remove Adaptor Plug

7. PARTS LISTING

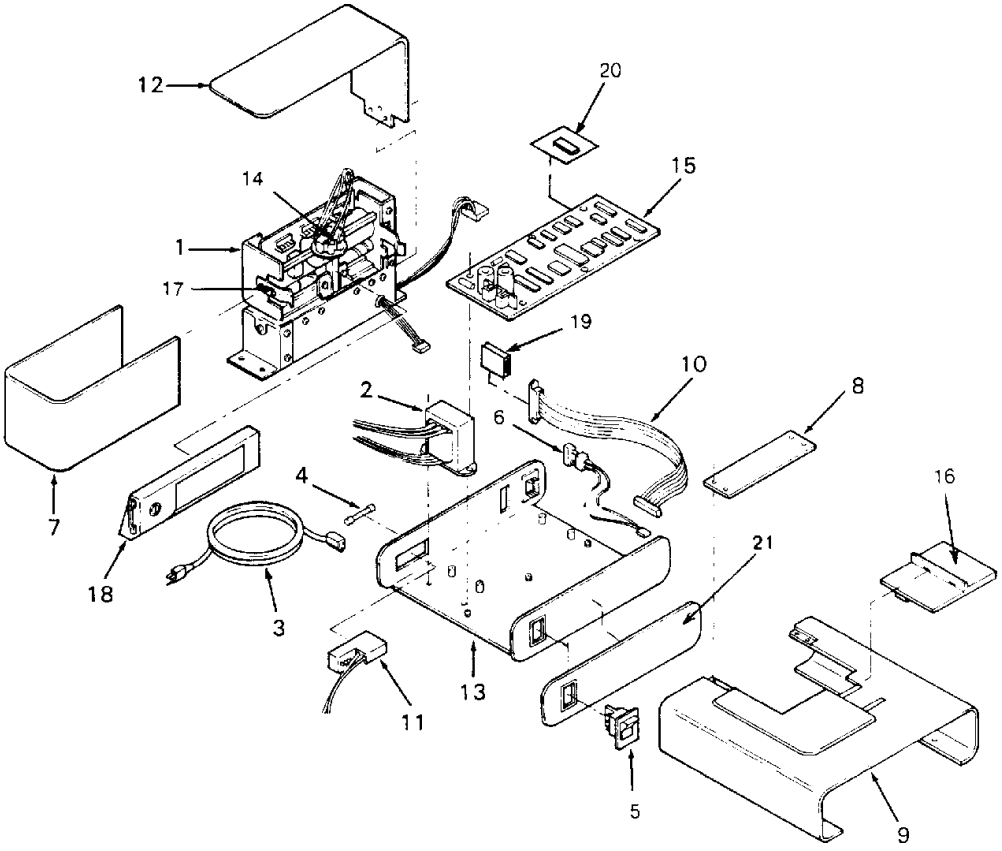


Figure 48.

Description	Part No.	Description	Part No.
1. Printer Module	12807600A	11. Fuseholder Assembly	12807900A
2. Transformer Assembly	12807700A	12. Top Cover Assembly	12808100A
3. Line Cord	10386700A	13. Chassis	12808300A
4. Fuse (2 A Slo-Blo) 120V	09440800A	14. Print Head assembly	12808400A
Fuse (1A Slo-Blo) 240V	11250900A	15. Logic PCB	12808200A
5. Power Switch	12807100A	16. Ticket Guide	12808700A
6. Manual Clamp Switch Cover Assembly	12807000A	17. Spring Clip	11553200A
		18. Ribbon Cartridge (Purple)	1153400A
7. Mechanism shroud (Black)	12807300A	Ribbon Cartridge (Black)	1154200A
8. Rear Cover Plate	12807400A	19. Adaptor Plug	12735800A
9. Cover Assembly w/document plate	12807200A	20. Sensor Buffer PCB	12808900A
10. Ribbon Cable	12807800A	21. Front Panel Decal	127355000A
		22. Sensor (paper) N.S.	11552900A

N.S. Not Shown