8807

Operators Manual

A141154 00A
1/96

This Manual describes the programming and operation of the 8807 Document Printer with "A" Revision Software. To determine if you have "A" revision Software, print a self test label by inserting paper into the printer, press and hold the print button on the 8807, apply power and then release the print button. The first line printed will include the software revision.

Example: METTLER-TOLEDO P/N A14481300A

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INTRODUCTION

This publication is provided solely as a guide for individuals who have received technical training in servicing Mettler Toledo products.

Information regarding technical training may be obtained by writing to:

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

FCC COMPLIANCE STATEMENT

WARNING: This equipment has been tested and found to comply with the limits of the United States of America FCC rules for a Class A digital device, pursuant to Subpart J of Part 15 of the FCC Rules and the Radio Interference Regulations of the Canadian Department of Communications. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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 printer with respect to the receiver
- Plug the printer into a different outlet so that the printer and receiver are on different circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the "Television Interference Handbook." booklet prepared by the Federal Communications Commission helpful, it is available from the U.S. Government Printing
Office, Washington, DC 20402, Stock No. 004-000-00450-7.

WARNING

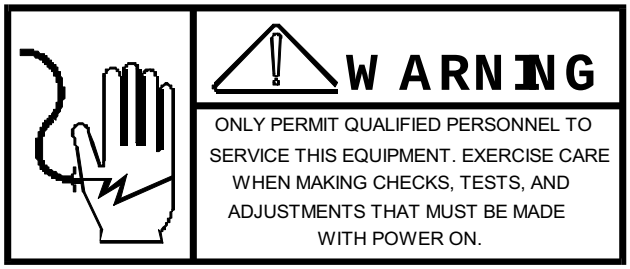
The connection of a non-shielded printer interface cable to this printer will invalidate the FCC Certification of this device and may cause interference levels which may exceed the limits established by the FCC for this equipment.

IMPORTANT!

The correct part number MUST BE used when ordering parts. Parts orders are machine processed, using only the part number and quantity as shown on the order. Orders are not edited to determine if the part number and description agree.

PRECAUTIONS

- **READ** this manual before operating or servicing this equipment.
- **ALWAYS** take proper precautions when handling static sensitive devices.
- **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 8807 printer is a compact, 7-pin, dot matrix, impact ticket printer designed to print alphanumeric data on hand inserted ticket stock. The Model 8807 is compatible with the METTLER TOLEDO models Jaguar, Lynx, Trimweigh, ID1S, ID2SX, ID5, DT, 1938, 2038, 2138, 3026, 3027, 3036, M5000, 8140, M8141, 8142, 8146, 8510, 8511, 8520, 8522, 8525, 8530 Indicators and the models 8571, 8572, 8581, 8582 and Mentor Counting Scales and the Model 9360 Scale Terminal. Some of the features of the 8807 include:

- The 8807 provides an RS-232 serial interface with switch selectable baud rate, 7 data bits, even parity, or 8 data bits, no parity bit and 1 or 2 stop bits. The serial interface provides a 512 byte input buffer with XON/XOFF handshaking.

- The 8807 can print up to 42 characters per line in the default Elite font. Alternate character sets selectable by control code sequences. The maximum printed line width is 66 mm (2.6").

- The 8807 supports the double wide character printing feature of METTLER TOLEDO indicators and parts counters.

- The 8807 is a compact, space efficient design that provides maximum functionality while requiring the least amount of counter space.

- The 8807 provides a Print pushbutton. This button is used to request a print output from any METTLER TOLEDO indicator that accepts ASCII control characters.

- The 8807 provides paper out detectors. If a paper out condition is detected then printing stops immediately, the paper clamp is released, and all incoming data is buffered. Printing does not resume until paper is detected at which time printing is restarted from the top of the paper.

- The 8807 provides flexible paper handling with manual forward and backward paper feeding actuated by pressing the Forward or Backward keys.

- The 8807 provides a switch selectable, inverted print mode that reverses the direction of paper feed and prints all data upside down. This inverted mode permits printing on the left edge of a ticket.

- The 20 mA to RS-232 converter option (P/N 0964-0065) is available for applications that require 20 mA current loop input.

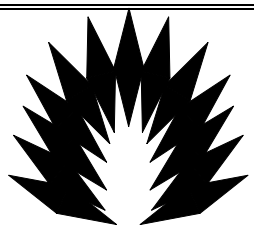
2. SPECIFICATIONS

2.1 ENVIRONMENT

Operating temperature for the 8807 is from 5 to 40 0C (41 to 1040F), at 30 to 85% relative humidity , non-condensing (excluding ribbon and paper).

Storage temperature for the 8807 is from -10 to 50 0C (14 to 122 , at 30 to 90% relative humidity, non condensing (excluding ribbon and paper).

The 8807 is intended for normal indoor industrial environments. The 8807 MUST NOT be used in wet or extremely dusty areas. The 8807 MUST NOT be used in washdown applications or where corrosive or caustic substances will contact with the printer.



DANGER

The 8807 Printer IS NOT intrinsically safe! The 8807 Printer MUST NOT be used in areas classified as HAZARDOUS by the National Electric Code (NEC) because of combustible or explosive atmospheres.

2.2 POWER REQUIREMENTS

The 8807 operates from an external +24 VDC power supply at 600 mA typical, 5500 mA peak which is shipped in a separate box with the printer. The printer is available with external Power supply in either 120 VAC and 230 VAC versions. The external power supply uses a PC style universal AC power connector IEC 320 type for use with country specific line cords.

Factory Number	Operating Voltage	Line Frequency	Power	
			Idle	Active
8807-0001	120 VAC (-15%, +10%)	50/60 Hz	5 W	30 W
8807-0011	230 VAC (-15%, +10%)	50/60 Hz		

Table 2.1 Power Requirements

2.3 STANDARDS COMPLIANCE

The power supply used with the Model 8807-0001 is listed with UL to meet specifications 114, Office Appliances and Equipment.

The power supply used with the Model 8807-0001 is certified by CSA to meet standard C22.2 No. 143-1975, Office Machines.

The Model 8807 meets or exceed the FCC Class A and Canadian Class A requirements for radiated and conducted emissions.

The 8807 has CE and NMI approval.

2.4 APPEARANCE AND DIMENSIONS

The Model 8807 is housed in a two-piece, molded plastic enclosure with a removable front cover and a stainless steel paper deck. The removable front cover permits access to the ink ribbon. The enclosure is 101.5 mm (4.0") high, 180 mm (7.09") wide and 190.5 mm (7.5") deep. Printer weight (excluding paper and ribbon) is 1.6 kg (3.5 lb), AC power adapter weight is 0.7 kg (1.5 lb). Shipping weight is 3 kg (7 lb).

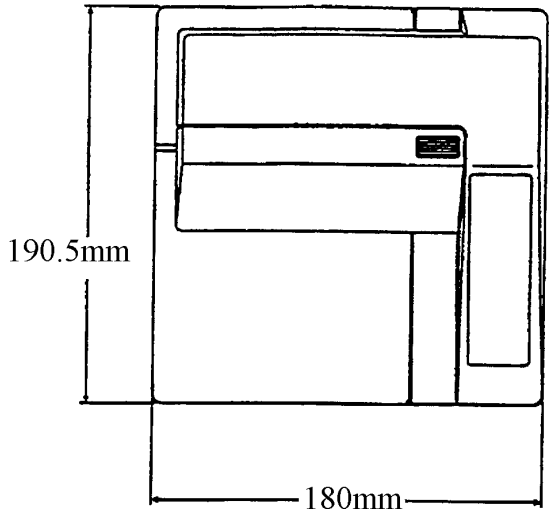


Figure 2.1 Top View, Dimensions (in mm)

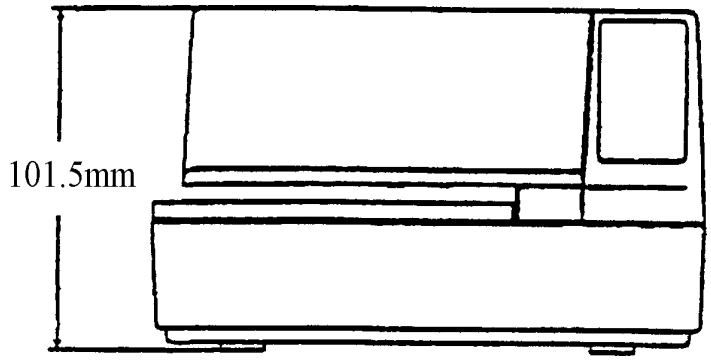


Figure 2.2 Front View, Dimensions (in mm)

2.5 MEDIA (PAPER) SPECIFICATIONS

The 8807 will print on normal paper, pressure sensitive paper or carbon copy paper. Paper dimensions range from 80 mm (W) x 80 mm (L) minimum to 182 mm (W) x 257 mm (L) maximum.

Copy capacity and paper thickness: One-part paper thickness 0.09 to 0.25 mm. Multi-part carbonless (maximum 3 layers) from 0.09 to 0.35 mm total thickness.

2.6 INK RIBBON SPECIFICATIONS

The 8807 uses a replaceable ribbon cassette part number 14716100A. The ribbon cassette uses purple ink and has a life expectancy of 1,500,000 characters. Ribbon cassette dimensions are showm in Figure 2.3.

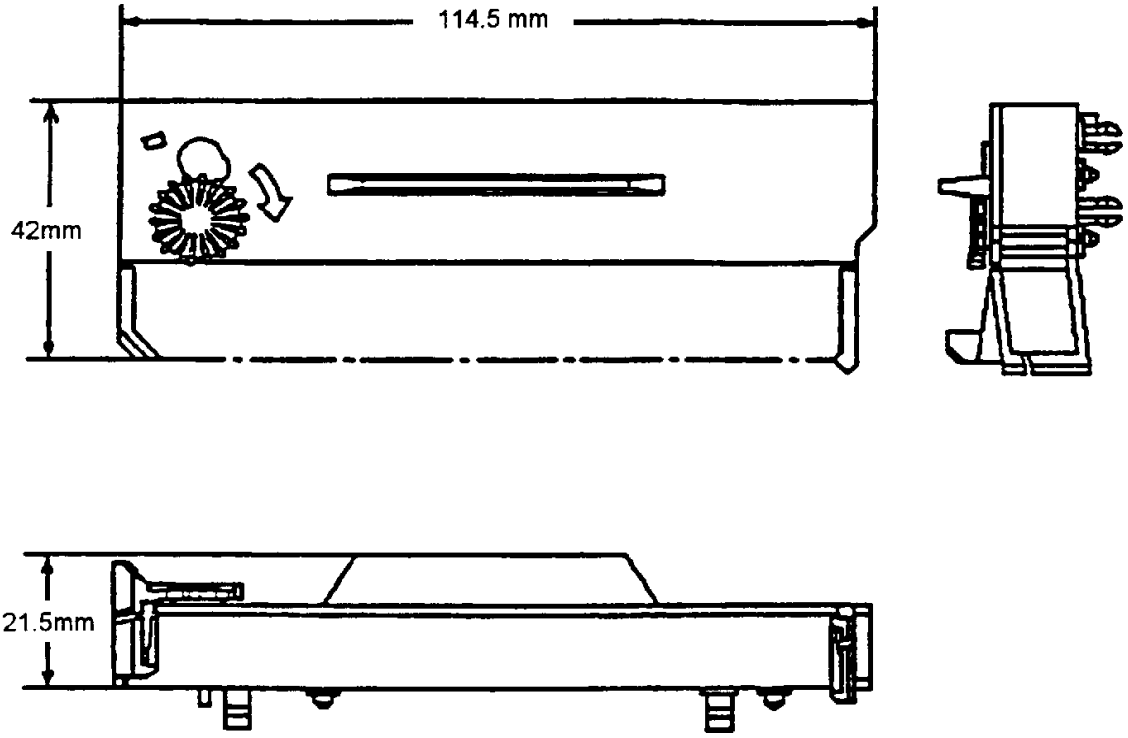


Figure 2.3 Ink Ribbon Cassette Dimensions (in mm)

3. INSTALLATION

Read this section before installing your printer. Select a location for the printer that satisfies the following concerns:

- Choose a location with a stable, flat surface, that has sufficient space to permit the printer to be used easily.
- Avoid locations with excessive vibration or mechanical shocks which may damage the printer.
- Avoid exposure to direct sunlight, excessive heat or moisture.
- Do not use or store the printer in very dusty or dirty locations.

3.1 UNPACKING

Inspect the shipping container and printer for loose or damaged parts. If any damage is found, immediately notify the freight carrier.

As your unpack the printer, check that you have the following parts:

8807 Printer
Ribbon Cassette
Operators Manual (this manual)
AC Power Supply (packed in separate box)
AC Line Cord (packed with AC Power Supply)
2 Hexagonal Locking Screws

Note: The 230 VAC power supply for the 8807-0011 uses a PC style universal AC power connector (IEC 320 type) for use with country specific line cords.

Before you use the printer, you will first need to remove the transport damper, install the ink ribbon cartridge, connect the power supply to the printer, and connect the printer to the scale or computer. The following sections explain how this is to be done.

Remove the transport damper from the left side of the printer and remove the strip of tape from the top of the printer. Save the packaging materials and the transport damper for future use.

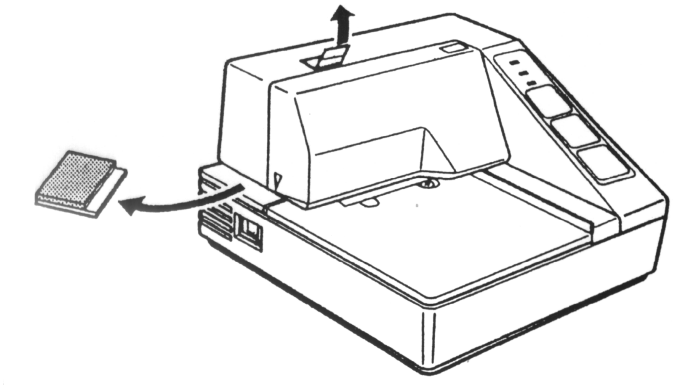


Figure 3.1 Remove Transport Damper

3.2 INSTALL THE INK RIBBON CASSETTE

The ink ribbon cartridge is stored separately so that it remains fresh until you are ready to use the printer. Follow these steps to install the ribbon cartridge:

WARNING

Do not operate the printer without an ink ribbon cartridge installed as damage to the print head may result.

Open the front cover by slightly pressing the ridges on the top left and pulling the right corner of the topcover forward. Refer to Figure 3.2.

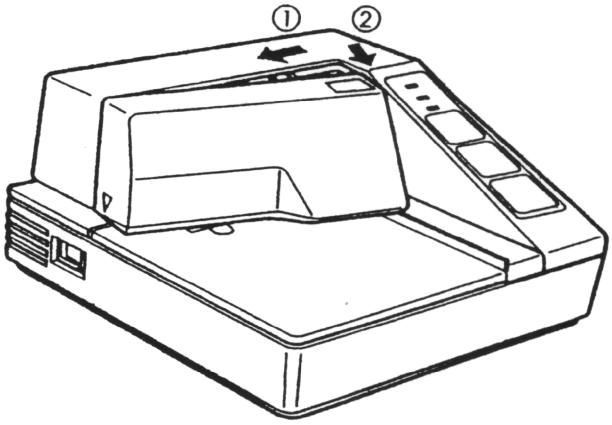


Figure 3.2 Removing Front Cover

Turn the ribbon cassette's tightening knob in the direction of the arrow. This removes slack in the ribbon and makes it easier to install.

Insert the ribbon in the printer as shown in Figure 3.3. The cassette should click securely into position with moderate pressure. To remove the ribbon cassette pull the protruding tab on the cassette towards the front.

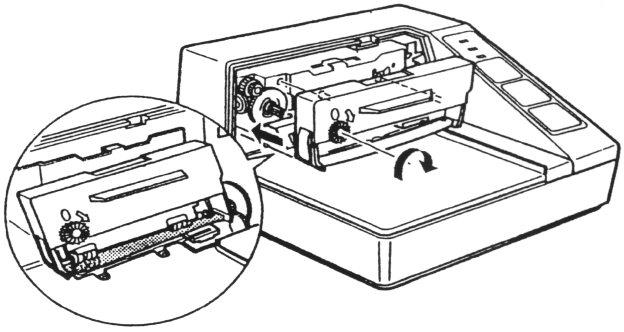


Figure 3.3 Inserting Ink Ribbon Cassette

Reinstall the Front Cover as shown in Figure 3.4. Be sure to insert the tab on the left end of the Front cover first, then snap the right end of the Front cover into place.

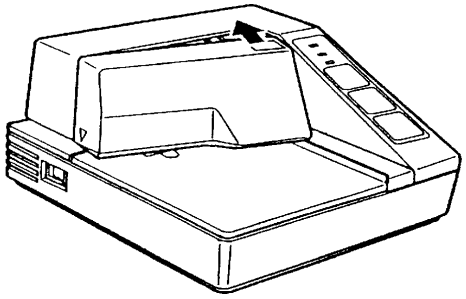


Figure 3.4 Reinstalling Front Cover

3.3 CONNECT THE INTERFACE CABLE

Connect the correct printer interface cable to the RS-232 connector on the rear of the printer, it can only fit one way. Refer to Figure 3.5. Refer to Section 4.3 of this manual for interface cable selection.

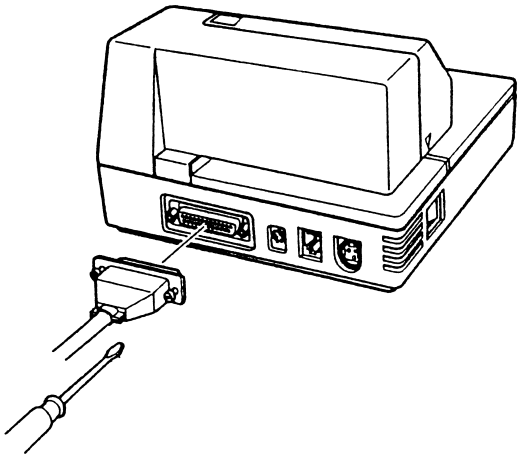
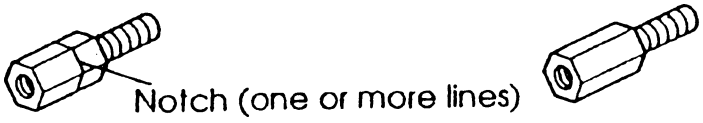


Figure 3.5 Plug in the Interconnect Cable

Note: The 8807 Printer is shipped with inch-type hexagonal lock screws installed. If you plan to use an interface cable that requires millimeter-type lock screws, replace the inch-type with the millimeter-type screws which were shipped with the 8807. Refer to Figure 3.6 for information on how to distinguish between the two.



Inch-Type Millimeter-Type

Figure 3.6 Locking Screws

Plug the other end of the serial interface cable into the scale or computer. Tighten the locking screws at both ends of the interface cable connector.

3.4 CONNECT THE AC POWER SUPPLY

Remove the twist fasteners from the power supply cable and plug the power cable connector securely into the receptacle at the rear of the printer. **DO NOT FORCE the connector!** It can fit only one way, with the flat side up. Refer to Figure 3.7.

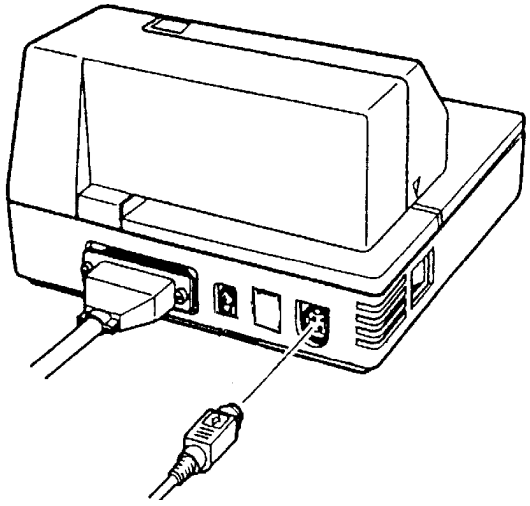


Figure 3.7 Power Supply Connection

Plug the AC line cord into a properly grounded electrical outlet. Refer to Section 2.2 for power specifications.

3.5 SETUP PROGRAMMING SWITCHES

The operation of the 8807 printer is controlled by a bank of switches location on the bottom of the printer. Refer to Figure 3.7 for dip switches location.

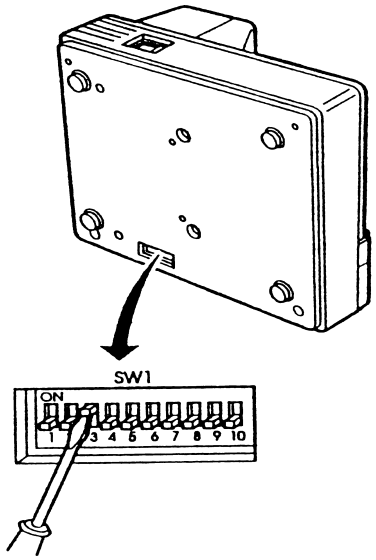


Figure 3.8 Programming Switches Location

3.5.1 SETUP SWITCH SELECTION PROCEDURE

The programming switches are numbered SW1 to SW10 from left to right. Change a dip switch setting by using the following procedure:

- Turn the power switch off.
- Change the desired programming switch using a pointed object such as a ball-point pen. Switches are ON when up and OFF when down.
- Turn the power switch on.

Note: Changes to the programming switch settings take effect only after power is disconnected then reconnected.

3.5.2 SETUP SWITCH DEFINITIONS

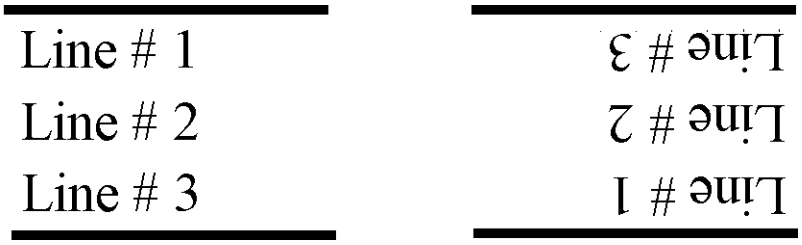
Refer to the following programming switch definitions. Default switch selections are shown in ***BOLD ITALICS.***

- SW1, SW2 and SW3: Select International Alternate Character Set:

Country	SW1	SW2	SW3
USA	***ON***	***ON***	***ON***
France	OFF	ON	ON
Germany	ON	OFF	ON
UK	OFF	OFF	ON
Denmark I	ON	ON	OFF
Sweden	OFF	ON	OFF
Italy	ON	OFF	OFF
Spain	OFF	OFF	OFF

Mote: Refer to Section 5.8 of this manual for the international alternate character set definition.

- SW4, Data word size: ***ON = 7 data bits, Even Parity***
  OFF = 8 data bits, no parity
- SW5, Inverted Print: ON = Inverted print, reverse paper feed.
  OFF = Normal print, forward paper feed.



Note: Inverted printing reverses the direction of paper feed during printing and uses the rear paper sensor to detect an out of paper condition. The objective of inverted printing is to permit printing along the left edge of a ticket instead of the right edge refer to example printouts above.

- SW6, Print Key Select: ***ON = Send ASCII 'P' when Print Button is pressed***.
  OFF = Send ASCII 'S' <CR> <LF>when Print Button is pressed.

- SW7, SW8 Baud Rate Selection.

Baud Rate	SW7	SW8
300	ON	ON
1200	OFF	ON
2400	ON	OFF
9600	***OFF***	***OFF***

- SW9 and SW10 Are not used and must be off. Problems may occur if either of these switches is enabled during operation.

4. OPERATION

4.1 INSERTING PAPER

Be sure to use paper that meets the paper specifications in Section 2.5.

Insert paper according to the following procedure.

- Before inserting paper, open the front cover and make sure the ribbon cassette is installed. Install the ribbon cassette if needed and close the cover. Refer to Section 3.2 for ribbon cassette installation instructions.

WARNING

Do not operate the printer without an ink ribbon cartridge installed as damage to the print head may result.

- Connect power to the printer. The POWER light goes on.

- Insert the paper all the way into the printer until it contacts the form stopper. The form stopper helps locate the paper in the printing position. You can also align the printing position on the paper to the print position mark on the document table. Refer to Figure 4.1.

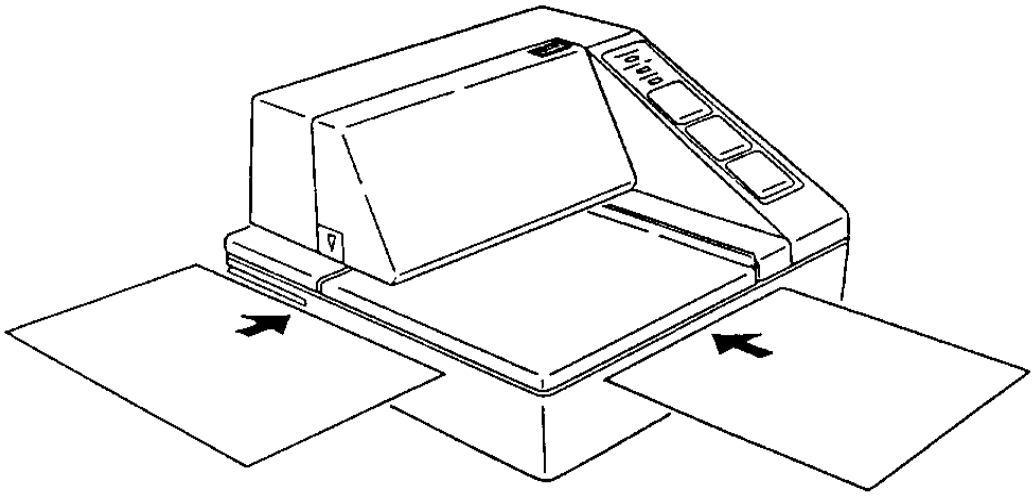


Figure 4.1 Paper Insertion

Note: The PAPER OUT light will go out when the paper is correctly positioned in the printer. If the PAPER OUT light is still on, remove the paper and reinsert it correctly.

4.2 OPERATOR INTERFACE

The control panel consists of a three position, tactile keyboard that lets you control the printer and three indicator LEDs that show the current status of the printer. Refer to Figure 4.2.

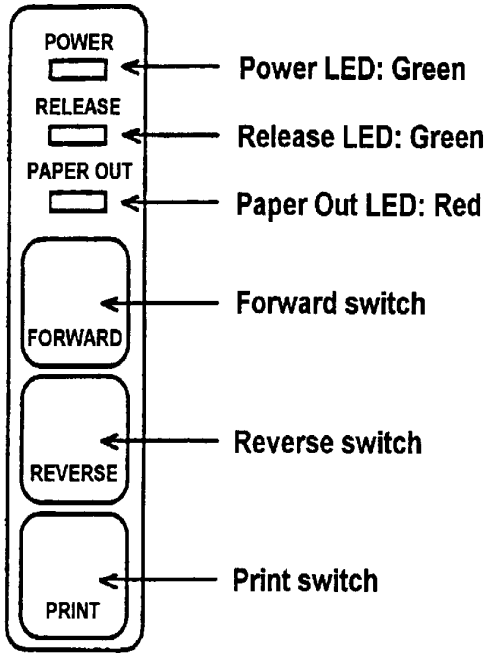


Figure 4.2 Control Panel

4.2.1 LED DISPLAYS

POWER: (green) On when the printer has power.

RELEASE: (green) On when the paper clamp is released and the printer is ready for the operator to insert or remove paper. This LED goes out during printing or feeding. This LED will flash to indicate an error, refer to Section 7.3.

PAPER OUT: (red) On when there is no paper in the printer. The 8807 has two paper sensors along the right edge of the paper path. Printing is inhibited if the 8807 does not detect paper.

4.2.2 KEYBOARD

FORWARD: This key will feed paper forward (towards the rear) into the printer as long as it is held. This function ignores the paper sensors.

REVERSE: This key will feed paper reverse (towards the front) out of the printer as long as it is held. This function ignores the paper sensors.

PRINT: This key will cause the printer to transmit an ASCII "P" or “S” <CR> <LF> character to the scale of printer. Most METTLER TOLEDO products will accept an ASCII "P" character as a remote print request. High Precision products will respond to an ASCII “S” <CR> <LF> as a print request.

4.2.3 SELF TEST MODE

The control panel provides access to a self test that lets you check the current operating status of the 8807 including the functioning of the printer control circuits, the print head and the paper advance mechanism. To access the printer self test, press and hold the **PRINT** key while turning on power to the printer. Make sure the 8807 has a ribbon cassette and paper installed before performing the self test. Remove power to the printer to stop the self test.

```
METTLER-TOLEDO P/N A14481300A

DIP Switches:
 1   2   3   4   5   6   7   8   9   10
 ON  ON  ON  ON  ON  ON  OFF OFF --  --

Configuration:
   Int'l character set:      USA
   Serial data bits/parity:  7/even
   Print Direction:          Normal
   Release Code Key:     "P"
   Baud Rate:                9600 baud


 !"#$%&'()*+,-./0123456789:;<=>?@AB
!"#$%&'()*+,-./0123456789:;<=>?@ABC
"#$%&'()*+,-./0123456789:;<=>?@ABCD
#$%&'()*+,-./0123456789:;<=>?@ABCDE

                .
                .
                .

{|}~ !"#$%&'()*+,-./0123456789:;<=>
|}~ !"#$%&'()*+,-./0123456789:;<=>?
}~ !"#$%&'()*+,-./0123456789:;<=>?@
~ !"#$%&'()*+,-./0123456789:;<=>?@A

         ***   completed   ***
```

Note: The self test printout will continue until it has cycled through all 95 characters in the standard character set, (95 lines of text) or power is removed from the printer.

5. INTERFACING

5.1 SERIAL I/O INTERFACE

The 8807 serial RS-232 interface connector is located at the rear of the printer. The serial interface operates from 300 to 9600 baud. The 8807 provides a 512 byte input buffer with X-ON/X-OFF or DTR/DSR flow control handshaking. The serial interface connection is to a DB-25-S miniature connector.

5.2 SERIAL INTERFACE CABLING

A serial interface cable is not included with the Model 8807 printer, but is often shipped in a separate box. If an interface cable was not ordered with the 8807 then refer to Table 5.1 for cable wiring information. Refer to Section 5.4 for serial interface cable part numbers.

8807 DB-25		DE-9 1938, 2038, 2138, 8510-2001, Mentor, 9 pin P/C	DB-25[*1] 8140, M8141, 8142, 8146, 8525, 8530, 8571, 8581, 8582	Washdown[*2]	Jaguar Lynx	8572	3026 8510SS Trimweigh	8520 8522	25 Pin P/C
Function	Pin	Pin	Pin	Pin	Pin	Pin	J3/TB2	TB1	Pin
Shield	1	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.
TxD	2	2	3	C	RxD	3	3	2	3
RxD	3	3	2	B	TxD	2	2	1	2
DSR	6	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.
Ground	7	5	7	G	Ground	7	1	6	7
DTR	20	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.
Jumpers	None	7 - 8 1 - 4 - 6[*3]	4 - 5 6 - 8 - 20[*3]	D - E	None	None	None	None	

Table 5.1 Serial Interconnect Cable Wiring

NOTES:

(*1): Model 8140 requires the data output KOP, M8141 requires the fiber optic data output KOP, 8525 Requires the fiber optic data output KOP, The 8571 Parts Counter requires the data output KOP, The 8581 Parts Counter must have the RS-232 option installed.

(*2): Washdown refers to wall mount versions of the Mettler Toledo Models 8140 (with data output KOP), 8142, 8146, and 8530.

(*3): Jumpers shown are in the scale end of the interface cable. Install them only when using RS232. Installing them when using 20 mA current loop will cause problems.

N.C. No connection.

Note : Remote print pushbutton mode of operation requires the scale or indicator to be configured for ASCII input commands.

5.3 20 MA CURRENT LOOP CONVERTER

The 0964-0065, 20 mA to RS-232 converter provides the 8807 with a 20 mA current loop interface for compatibility with products that do not support RS-232 or for applications that require cable lengths longer than 50 ft (15 m). The 20 mA converter permits cable lengths up to 1000 ft (304.8 m).

The 0964-0065, 20 mA to RS-232 converter plugs directly into the DB-25 connector on the rear of the 8807 printer. Refer to Table 5.2 for 20 mA current loop interface cable wiring information for the 0964-0065 converter.

0964-0065 Converter 20 mA Connector		Jaguar	Lynx	8140[*1], 8141[*2], 8142 8525[*2], 8530, 8581[*3] 8582, 8623, 9360	8140[*1], 8142 8530, 9360	8520 8522	8614 8616	M5000	8617 9323 9325
Function	Pin	Com 1	Com 2	DB-25[*4]	Washdown[*5]	TB1	TB1	J1	TB2
+RxD -RxD	25 23	CLTX+ GND	CLTX+ GND	9 22	J Y	4 3	5 6	2 3	11 10
Jumpers	None	None	None	4 - 5 14 - 15	D - E P - R	None	None	JU9-Active	W1-Data W8-Active

Table 5.2 0964-0065 Serial Interconnect Cable Wiring

NOTES:

(*1): 8140 requires data output option.

(*2): 8141 and 8525 require fiber optic data option.

(*3): 8581 20 mA current loop output is not available if RS-232 option or battery option is installed in the 8581.

(*4): DB-25 refers to the desk or rack mount version of the indicators listed and to all versions of the parts counting scale or scale accessories.

(*5): Washdown refers to the stainless steel washdown versions of the products listed.

Jumpers: Jumpers shown are in the scale or accessory end of the interface cable. Jumpers shown for the Model 8617, 9323 and 9325 are located on the Serial Interface Controller PCB, part number 0964-0065, which is located inside the accessory. JU9 shown for the M500 is located on the DPU PCB inside the M5000.

5.4 Serial Printer Interface Cables

Scale Model	Length	Part Number	Factory Number
Desk and rack versions: 8140[*1], 8142, 8146, 8530 Desk and wall versions: 8141[*2], 8525[*3], 8582 All versions: 8571, 8581[*4]	6'	B128220 00A	0900-0214
Wall enclosure versions: 8140[*1], 8142, 8146, 8530	20'	128221 00A	0900-0215
3026, 8510-1001 and 8510-1101	6'	A129051 00A	0900-0236
8572	6'	129609 00A	0900-0243
1938, 2038, 2138, 8510-2001, Mentor	20'	131911 00A	0900-0255
8520, 8522, Jaguar and Lynx	15'	A133218 00A	0900-0258
8505	15'	134639 00A	0900-0264
SM and SMx[*5]	10'	33640	33640
ID1s, ID2sx[*6], ID5[*7]	10'	503755	503755

Table 5.3 Printer Interface Cables

Notes:

*1 - Model 8140 requires Data Output option be installed.
*2 - Model 8141 requires Fiber Optic Data Output option be installed.
*3 - Model 8525 requires Fiber Optic Data Output option be installed.
*4 - Model 8581 requires 0901-0213 RS-232 Data Output option be installed.
*5 - Model SMx requires #217059 interface adapter.
*6 - ID2sx requires GD15x interface adapter.
*7 - ID5 requires 082 or 089 option.

5.5 SERIAL COMMANDS

The 8807 is controlled by commands that can change the size of the characters and perform other functions. There are two types of commands: Single character commands and Escape sequences.

5.5.1 SINGLE CHARACTER COMMANDS

Single character control commands are shown with their abbreviation inside <>, followed by the hexadecimal equivalent value and then their name and a description.
Example: HT = abbreviation, (09h) = ASCII hexadecimal value of the character.

HT (09h) - Horizontal Tab. This command moves the print position to the next horizontal tab position, (default tab positions every 8 characters). The horizontal tab position are set by an <Esc>D command.

LF (0Ah) - Line feed. This command prints the data in the print buffer and performs one line feed based on the current line spacing.

FF (0Ch) - Form Feed. This command prints the data in print buffer and ejects the form.

SO (0Eh) - Shift Out. This command starts printing in double wide mode. Double wide mode is exited when a <SI>, <CR> or <LF> character is received.

SI (0Fh) - Shift In. This command switches back from printing in double wide mode to the normal mode.

5.5.2 ESCAPE CODE SEQUENCE COMMANDS

Escape code sequence commands are typically two or three characters in length. Each escape sequence begins with an Esc character <hex 1B>, followed by a command byte and then by one or more characters argument. The argument character will typically be given with a range ($0 \geq n \geq 128$) for example, means that n can have a value between 0 and 128.

Name - **Esc ! 0**
Format - <1Bh><21h><30h>
Range - Not Applicable
Description - Sending this escape sequence will cause the 8807 to print Double High, Double Wide Characters

Name - **Esc ! NUL**
Format - <1Bh><21h><0h>
Range - Not Applicable
Description - Sending this escape sequence will cause the 8807 to return to the normal size print.

Name - **Esc SP n**
Format - <1Bh><20h><n>
Range - $0 \leq n \leq 32$
Description - Set right side character spacing. <n> is set in 1/2 dot units. The right side spacing for double wide printing is twice the set value.

Name - **Esc ! n**
Format - <1Bh><21h><n>
Range - $0 \leq n \leq 255$
Description - Set print mode. Each bit of n is defined as follows:

Bit	Function	Value	
		0	1
0	Character Font	5 x 7 font	7 x 7 font
1	Undefined		
2			
3			
4	Double Height	Canceled	Set
5	Double Wide	Canceled	Set
6	Undefined		
7	Underline	Canceled	Set

Name - **Esc % n**
Format - <1Bh><25h><n>
Range - $0 \le n \le 1$
Description - Set or cancel the user-defined character set.

n = 0 Disable user-defined character set, select internal character set.
n = 1 Select user-defined character set.

Name - **Esc & s n m [a[p]s*a]m-n+1]**
Format - <1Bh><26h><s><n><m>[<a><p1><p2>...<ps*a>]m-n+1
Ranges - s = 1
$32 \le n \le m \le 126$
$0 \le a \le 6$ (5 X 7 font)
$0 \le a \le 10$ (7 X 7 font)
$0 \le p1...ps*a \le 255$

Description - Define user-defined character set.

s - Specifies the number of bytes in the vertical direction.
n - Specifies the beginning ASCII code for the definition.
m - Specifies the final code to be defined, set n = m to define a single character.

Note: The allowable character code range for n and m is from ASCII code <20h> to <7Eh> and the maximum number of characters is 95.

a - Specifies the number of dots in the horizontal direction.
p - Is the dot data for the characters. The dot pattern is in the horizontal direction from the left side. The remaining dot pattern on the right side is space.

Note: After user definable characters are defined once, they are available until another definition is made, an Esc @ command or power is removed.

Example: User-defined character in 5 X 7 font

p1	p2	p3	p4	p5	P6	
		6				MSB
	6		6			
6				6		
6				6		
6	6	6	6	6		
6				6		
6				6		LSB

This is the pattern at left, defined for code 20H

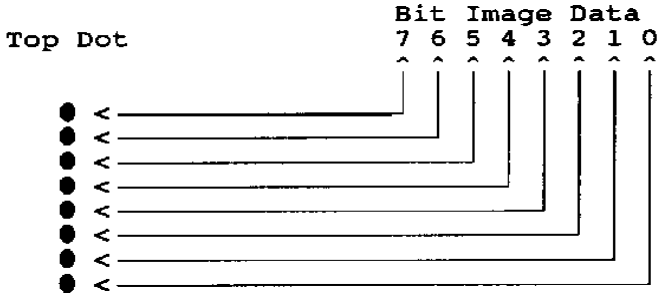
Code	Esc	&	s	n	m	a	p1	p3	p3	p4	p5
Hex	1B	26	01	20	20	05	3E	48	88	48	3E

Name - **Esc * m n1 n2 [d]n1+256*n2**
Format - <1Bh><2Ah><m><n1><n2>[<d>]n1+256*n2
Ranges - m = 0, 1
$0 \le n1 \le 255$
$0 \le n2 \le 3$
$0 \le d \le 255$
Description - Set the bit image mode using m and the number of dots suing n1 and n2. Divide the number of dots to be printed by 256. The integer result is n2 and the remainder is n1. Therefore, the number of dots on the horizontal direction is calculated as: n2 * 256 + n1.

If the bit image data input exceeds the number of dots to be printed on a line, the excess data is ignored. 'd' indicates the bit image data. Set a corresponding bit to 1 to print a dot, otherwise set it to 0. The bit image modes selectable by 'm' are as follows:

m	Number of dots in verticle direction	Horizontal Direction		
		Dot Density	Horizontal Adjacent Dots	Maximum Number of Horizontal Dot Positions
0	8	Single-Density	Permitted	210
1	8	Double-Density	Prohibited	420

Notes: If 'm' is out of range, the data following n1 (including n1) is processed as normal data.
After printing a bit image, the printer returns to the normal data processing mode.
The relationship between the image data and dots to be printed is as follows:



Name - **Esc 2**
Format - <1Bh><32h>
Description - Sets the line spacing to 1/6 of an inch.

Name - **Esc 3 n**
Format - <1Bh><33h><n>

Range - $0 \leq n \leq 255$
Description - Sets the line spacing to n/60 inches. Default is n = 10 (1/6 inch)

Name - **Esc @**
Format - <1Bh><40h>
Description - Initialize Printer. Clears the data in the print buffer and resets the printer to the default configuration.

Note: This command does not cause the printer to read the DIP switches and does not clear the receive buffer.

Name - **Esc C n**
Format - <1Bh><43h><n>
Range - $0 \leq n \leq 127$
Description - Sets eject length to 'n' number of lines for the form feed command.

Name - **Esc D [n]k NUL**
Format - <1Bh><44h>[<n>]k<00>
Range - $0 \leq n \leq 255$
$0 \leq k \leq 32$
Description - Sets horizontal tab positions.

'n' specifies the column number for setting a horizontal tab position (n = column number).
'k' indicates the total number of horizontal tabs to be set.
The horizontal tab position is stored as an absolute value of (character width X n) measured from the beginning of a line. The character width includes the character right-side spacing, and double-width characters should be set with twice the width of normal characters.
Set <n>k in ascending order and place a NUL code (hex 0) at the end.
Esc D NUL clears all tabs. Any HT commands received after clearing tabs are ignored.

Note: When a data value <n>k is less that or equal to the preceding value <n>k-1, the setting is considered to be finished. In this case, the following data is processed as normal data.
Up to 32 tab positions can be set. Data which exceeds 32 tab positions will be processed as normal data.
The default tab positions are at intervals of 8 characters.

Name - **Esc F n**
Format - <1Bh><46h><n>
Range - $0 \leq n \leq 1$
Description - Selects forward or reverse form feed eject direction.

n = 0 Select normal form feed eject direction.
n = 1 Select reverse form feed eject direction.

Name - **Esc J n**
Format - <1Bh><4Ah><n>

Range - $0 \leq n \leq 255$
Description - Print data in line buffer and forward feed paper n/60 inches.

Name - **Esc K n**
Format - <1Bh><4Bh><n>
Range - $0 \leq n \leq 255$
Description - Print data in line buffer and reverse feed paper n/60 inches.

Name - **Esc R n**
Format - <1Bh><52h><n>
Range - $0 \leq n \leq 10$
Description - Selects the international alternate character set from the following table. Refer to Section 5.8 of this manual for the international alternate character set definitions.

n	Country
0	USA
1	France
2	Germany
3	UK
4	Denmark I
5	Sweden
6	Italy
7	Spain
8	Japan
9	Norway
10	Denmark II

Note: The default alternate character set is selected by the programming switches SW1, SW2 and SW3. Refer to Section 3.5 of this manual for programming switch selection.

Name - **Esc c 5 n**
Format - <1Bh><63h><35><n>
Range - $0 \leq n \leq 1$
Description - Disable pushbutton keypad. This disables the forward and reverse feed pushbuttons on the keypad.

n = 0 Keypad is enabled.
n = 1 Keypad is disabled.

Name - **Esc d n**
Format - <1Bh><64h><n>
Range - $0 \leq n \leq 255$
Description - Print data in line buffer and performs n forward line feeds.

Name - **Esc e n**
Format - <1Bh><65h><n>
Range - $0 \leq n \leq 255$
Description - Print data in line buffer and performs n reverse line feeds.

Name - **Esc f m n**
Format - <1Bh><66h><m><n>
Range - m = 0
$0 \leq n \leq 64$

Description - Sets the length of time the printer will wait after data is received for a ticket is inserted and also the time delay after a ticket is inserted before printing begins. Printing starts n X 0.1 seconds after a ticket is inserted. The default values are m = 0 and n = 10 (1.0 seconds).

Name - **Esc v**
Format - <1Bh><76h>
Description - Get printer status. Printer sends a one byte character in response defined as follows.

Bit	Function	0	1
0	Front Paper Sensor	Paper Present	No Paper
1	Rear Paper Sensor	Paper Present	No Paper
2	Undefined		
3			
4			
5			
6			
7			

5.6 ASCII CHARACTER SET

Value	0	1	2	3	4	5	6	7	8	9
0	NUL									HT
10	LF		FF		SO	SI		XON	XOFF	
20								ESC		
30			SP	!	"	#	$	%	&	'
40	(	)	*	+	,	-	.	/	0	1
50	2	3	4	5	6	7	8	9	:	;
60	<	=	>	?	@	A	B	C	D	E
70	F	G	H	I	J	K	L	M	N	O
80	P	Q	R	S	T	U	V	W	X	Y
90	Z	[	\	]	^	_	`	a	b	c
100	d	e	f	g	h	i	j	k	l	m
110	n	o	p	q	r	s	t	u	v	w
120	x	y	z	{	|	}	~	SP	Ç	ü
130	é	â	ä	à	å	ç	ê	ë	è	ï
140	î	ì	Ä	Å	É	æ	Æ	ô	ö	ò
150	û	ù	ÿ	Ö	Ü	¢	£	¥	&	*f*
160	á	í	ó	ú	ñ	Ñ	a	o	¿	+
170	,	½	¼	¡	?	_	!	"	#	*
180	1	I	M	D	@	<	5	7	8	E
190	A	,	.	2	0	/	)	3	G	K
200	9	6	=	;	:	4	>	N	J	L
210	H	F	B	?	C	O	P	-	+	$
220	(	%	'	&	I	ϑ	,	Ξ	;	[
230	T	∴	>	Π	A	Λ	∞	ϕ	M	∩
240	≡	±	≥	≤	∫	⌡	÷	≈	0	.
250	+	√	ɔ	²	8	SP				

Table 5 - 4 ASCII Character Set

Control Character Definition. Refer to Section 5.5.1 for further explanation of these control characters.

NUL = Null Character
HT = Horizontal Tab Character
LF = Line Feed Character
FF = Form Feed Character
SO = Shift Out Character
SI = Shift In Character
XON = Flow Control Character, Start Sending.
XOFF = Flow Control Character, Stop Sending.
ESC = Escape Character
SP = Space

Blank indicates character is ignored.

5.7 INTERNATIONAL ALTERNATE CHARACTER SETS

The international alternate character sets provide a simple method to print the most commonly used international characters without requiring extended 8 bit ASCII characters. The programming switches provide access to the first 7 selections USA though Spain. The Japan, Norway and Denmark II character sets can only be accessed by sending an Escape control code sequence to the serial port. Refer to the <Esc>R command described in Section 5.5.2 of this manual.

Country	ASCII Character Decimal Value											
	35	36	64	91	92	93	94	96	123	124	125	126
USA	#	$	@	[	\	]	^	`	{	|	}	#
France	#	$	à	/	ç	§	^	`	é	ù	è	(
Germany	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
U.K.	£	$	@	[	\	]	^	`	{	|	}	#
Denmark I	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	#
Sweden	#	(	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Italy	#	$	@	/	\	é	^	ù	à	ò	è	ì
Spain	&	$	@	¡	Ñ	¿	^	`	(	ñ	}	#
Japan	#	$	@	[	¥	]	^	`	{	|	}	#
Norway	#	(	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Denmark II	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü

Table 5 - 5 International Caracter set

6.0 TROUBLESHOOTING

The 8807 is a non-field repairable printer. In the unlikely event the unit is not operating, use the following information to determine if the printer is at fault.

6.1 POWER PROBLEMS

If the power light does not come on make sure the power supply cables are plugged into the printer, the power supply, and the power outlet correctly.

To test the power supply, First disconnect the power supply from the AC power. Now disconnect the power cable from the back of the printer and then re-apply AC power. Set your meter to read DC Volts and place your meter leads as shown in Figure 6 - 1on the end of the power cable. Your Meter should read approximately 24 VDC.

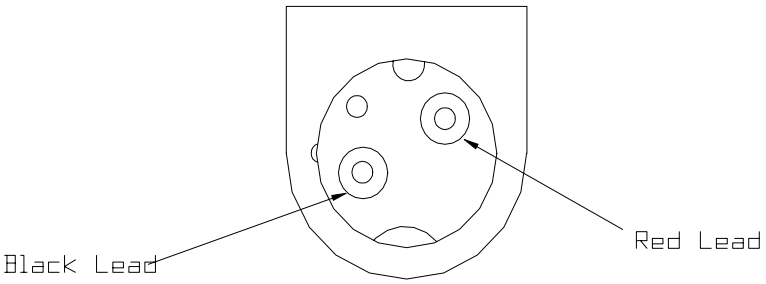


Figure 6 - 1 Voltage test

6.2 PRINTING PROBLEMS

If the PAPER OUT light is on, the paper is not inserted or is inserted incorrectly. If after verifying the paper is inserted correctly and the light is still illuminated, Call for service.

If the RELEASE light is flashing and nothing is printed, turn the printer off, unjam paper, and re-apply power. If the light continues to flash, Call for service.

6.3 TESTING RS232 TRANSMISSION TO THE 8807

The 8807 Printer receives data via RS232C to the printer port . To verify the indicator/scale is transmitting data, remove the interconnect cable from the printer. Put the red lead of your voltmeter directly into pin 3 of the 25 pin DB serial printer connector and your black lead in pin 7. Set your meter to the 20 DC volt range.

The meter should display between -5 and -15 VDC. Press the print pushbutton on the indicator or scale and the meter display should fluctuate between +5 and -5 volts DC and then return to the original reading. This indicates the indicator/scale is transmitting data out the printer port. The amount of time the meter display fluctuates is proportional to the amount of data transmitted and the baud rate. For longer fluctuation and larger voltage swing, set the baud rate to 300 baud and transmit gross, tare, and net.

If there is no fluctuation on the meter display, the problem could be the in the indicator/scale, and not the 8807.

6.4 SPARE PARTS

The only user replaceable part in the 8807 ticket printer is the ink ribbon cassette. Replacement AC power supplies and a remanufactured Model 8807 printer are available in the event of malfunction.

Description	Part Number
Ink ribbon Cassette, Purple	147161 00A
120 VAC Power Supply	145326 00A
230 VAC Power Supply	141151 00A
Remanufactured Printer	8807-0001-REM