8844

Technical Manual

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

FCC NOTE

NOTE: This equipment has been tested and found to comply with the limits of the United States of America FCC rules for a Class B digital device, pursuant to Part 15 of the FCC Rules and does not exceed the Class B limits for radio noise set out in 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 residential 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. In the event interference does occur, the user will be required to correct the interference at his own expense.

WARNING:

THIS UNIT HAS NOT BEEN DESIGNED FOR WASH DOWN OR ANY OTHER TYPE OF WET ENVIRONMENT. TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS PRODUCT TO RAIN, LIQUIDS, OR ANY OTHER TYPE OF EXCESSIVE MOISTURE.

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.

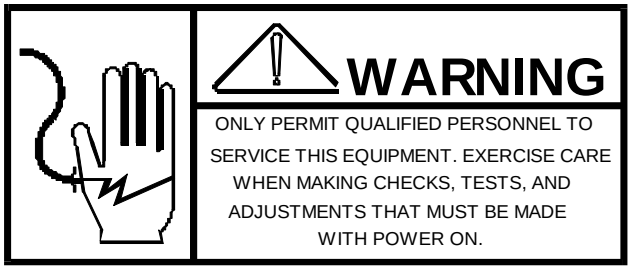
- **DO NOT** connect or disconnect a load cell scale base to the equipment with power connected or damage will result.

- **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.



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1. GENERAL DESCRIPTION

1.1 PRODUCT OVERVIEW

The Model 8844 Document Printer is a versatile, durable, high-quality, 9-pin dot matrix printer designed to meet both Industrial and Retail application printing requirements.

The 8844 is capable of receiving transmitted ASCII data at selectable baud rates of 150, 300, 600, 1200, 2400, 4800, and 9600 baud.

This printer features the EZ Set Operator Panel which allows you to control a wide variety of printing conditions quickly and conveniently. Some of the more than 23 control functions the EZ Set Operator Panel allows you to control are Font, Pitch, and Form length selections, Setting the left, right, and "Top of Form" margins, and setting the Super Quiet mode of operation.

In addition, the 8844 offers burst speed of up to 240 cps (characters per second) in Draft-Micron mode or 38 cps in the Near Letter Quality-Elite mode.

1.2 FEATURES

- Six font selections, 3 Draft and 3 Near Letter Quality
- Pitch selections of 10, 12, and 15 characters per inch and proportional spacing
- Form length selections of 8.5, 11, 11K, 12, and 14 inches
- Super Quiet mode operation which reduces operating noise
- Tear off feature which raises the perforation to the tear bar which eliminates paper waste and maximizes printable area
- Three paper paths: rear, top, and bottom with two user selectable paper feed selections
- Stores Top Of Form information according to paper path
- Bi-Directional Printing at speeds of 240 characters per second in the Draft mode and 38 characters per second in the Near Letter Quality "Elite" mode

2. SPECIFICATIONS

2.1 PHYSICAL DIMENSIONS

Unit dimensions are 18.5 inches wide by 15 inches deep by 6 inches in height with all covers on, but with no paper or cabling installed.

2.2 ENVIRONMENTAL SPECIFICATIONS

2.2.1 Operational Environment

The 8844 Printer is operable from 500 F to 950 F (100 C to 350 C) with 30% to 80% relative humidity, non-condensing.

2.2.2 Storage Environment

The storage temperature range is between -40 F and 1400 F (-200 C to 600 C) with 10% to 90% relative humidity.

NOTE: ALLOW THE PRINTER TO STABILIZE AT ROOM TEMPERATURE PRIOR TO OPERATION.

2.3 POWER REQUIREMENTS

Power input should be at 120 VAC, 60 Hz, at 1 A.

2.4 DATA INTERFACE

The 8844 Printer is capable of receiving transmitted data via RS232C or 20 mA current loop at baud rates of 300, 600, 1200, 2400, 4800, 9600, or 19200 baud.

2.5 PAPER SPECIFICATIONS

2.5.1 Single Sheet

The 8844 Printer is capable of printing on single sheets of paper at a minimum width of 4 inches and a maximum width of 11.7 inches (102 mm to 297 mm) and heights of 5 inches minimum to 14.3 inches maximum (127 mm to 363 mm). The paper thickness should be 0.0047 inch (0.12 mm) thick.

2.5.2 Fanfold Paper

The 8844 Printer is capable of using Fanfold style paper at a minimum width od 4 inches and a maximum width of 10 inches (102 mm to 254 mm). Paper thickness should be 0.013 inch (0.32 mm).

3. PARTS OF THE PRINTER

3.1 FRONT VIEW

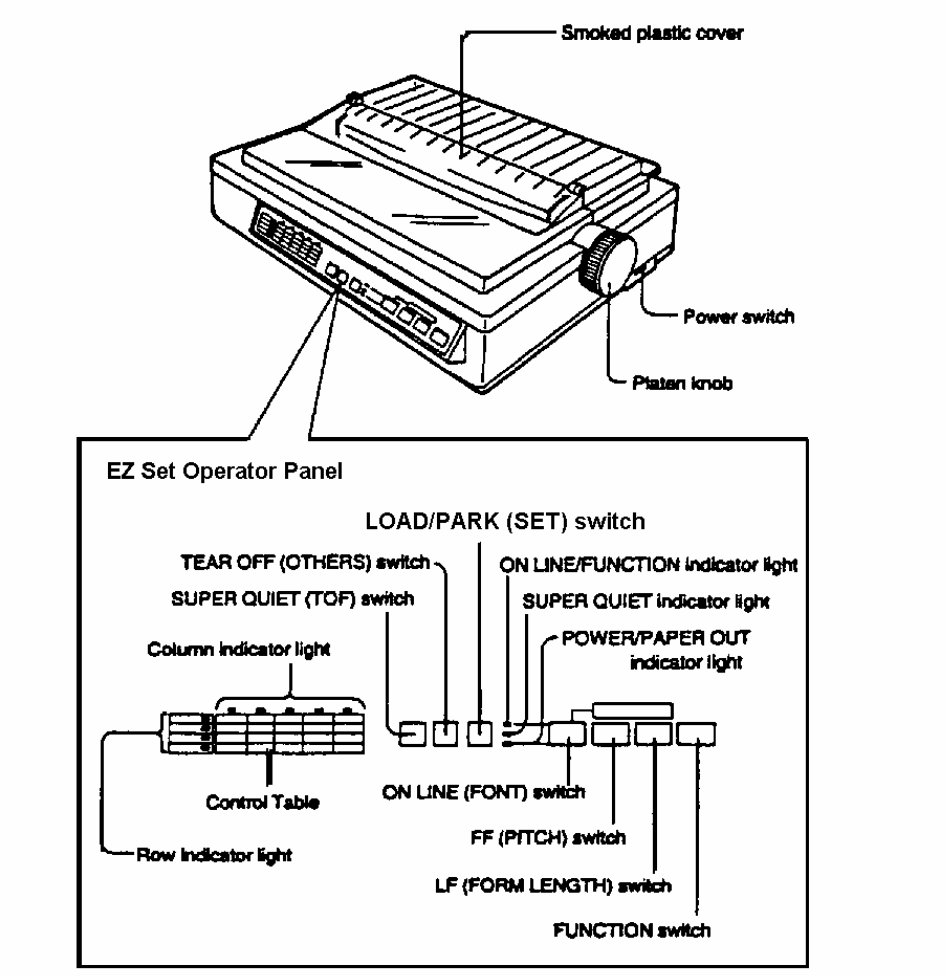


Figure 3.1 Front View

3.2 REAR VIEW

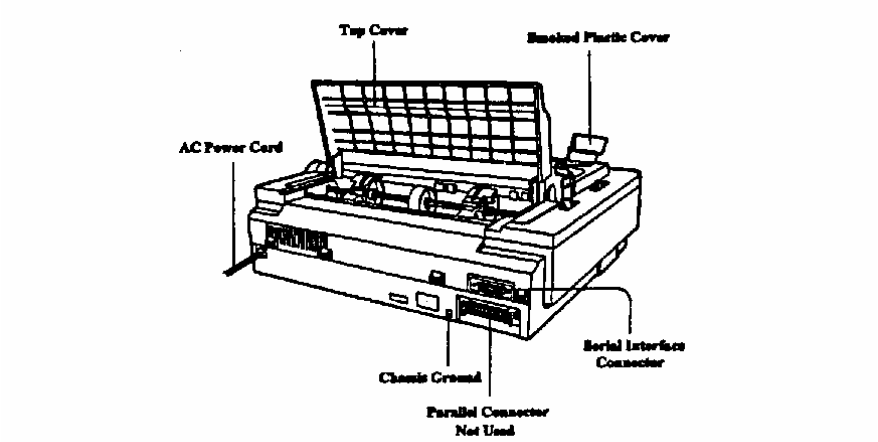


Figure 3.2 Rear View

3.3 TOP VIEW

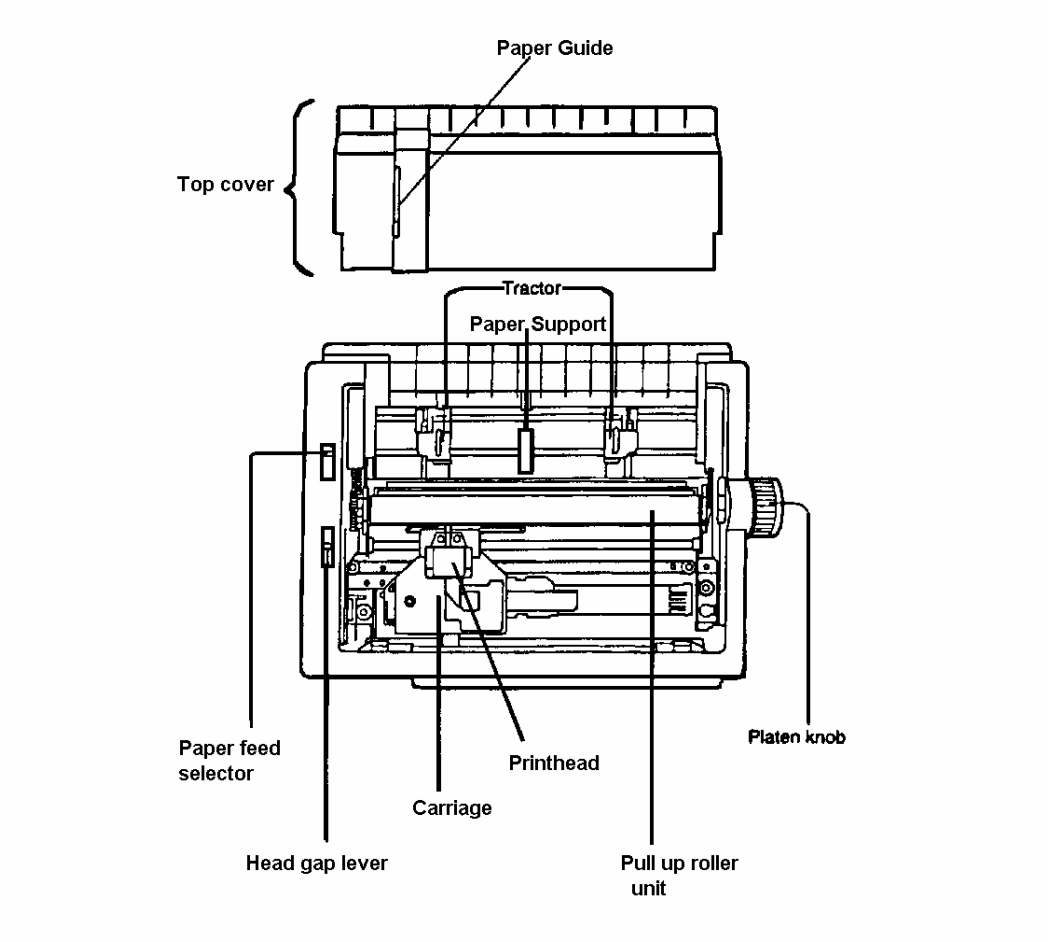


Figure 3.3 Top View

4. SET UP

4.1 SITE REQUIREMENTS

This printer can be installed in any normal office environment. No special wiring or cooling is required. However, do not use the printer under the following conditions:

- extremely high or low temperature [temperature range: 10 TO 35/ C (50 TO 95/ F)]
- extremely high or low humidity (humidity range: 30 TO 80% RH)
- areas of poor ventilation [a minimum of 4" (10 cm) clearance on all sides is necessary to insure proper ventilation]
- areas of high dust concentration
- reas with chemical fume concentration
- areas with extreme vibration or when placed on an unstable or unlevel surface

4.2 UNPACKING AND INSPECTION

Having opened the shipping carton, carefully remove the contents. Inspect the printer and accessories for damage. Report damage or shortages to the authorized local Mettler Toledo sales or service office from which the unit was purchased. Be sure to record all important information regarding the printer, such as the model and serial number, place of purchase, service phone number, and date of purchase, in the space provided inside the manual's front cover.

NOTE: PLEASE KEEP ALL THE PACKING MATERIALS SO THEY MAY BE USED SHOULD YOU WISH TO TRANSPORT THE PRINTER IN THE FUTURE. THEY ARE SPECIFICALLY DESIGNED TO PROTECT YOUR PRINTER DURING SHIPMENT.

4.3 INITIAL SET UP

4.3.1 Installing the platen knob

Insert the platen knob into the hole on the right side of the printer and rotate it slowly until it slips onto the shaft. Push the platen knob onto the platen shaft to secure. Please refer to Figure 4.1

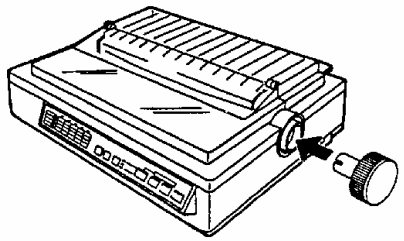


Figure 4.1 Platen Knob Installation

4.3.2 Removing the smoked plastic cover

Open the smoked plastic cover as shown in Figure 4.2.

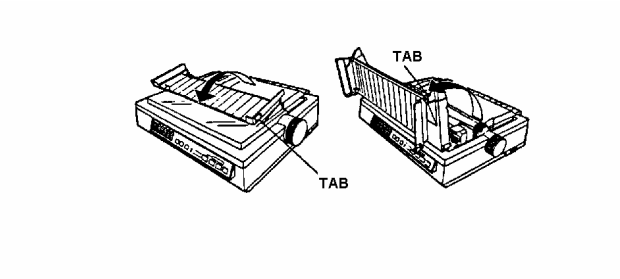


Figure 4.2 Opening Smoked Cover

Raise the smoked plastic cover to vertical position and pull upward as shown in Figure 4.3. Be sure to pull firmly upward as some resistance may be experienced due to the strength of the cover latch.

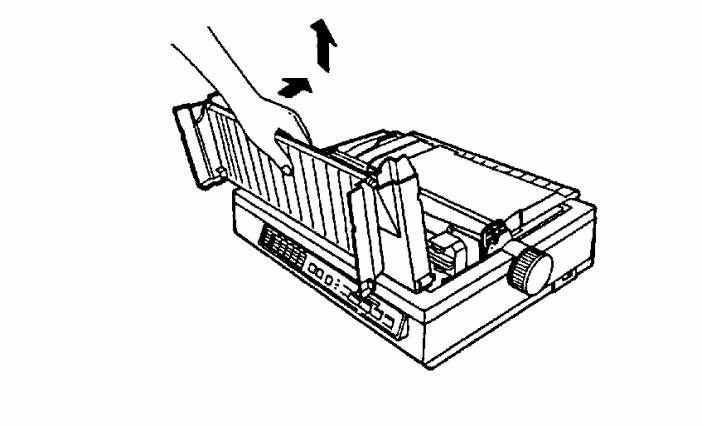


Figure 4.3 Removing Smoked Cover

4.3.3 Removing Internal Packing Material

There are two protective packing material devices that need to be removed prior to operation. Each Model 8844 is shipped with protective paper installed. Simply turn the platen knob clockwise to advance the paper out of the printer. The second piece of shipping material to be removed is the Top Cover Pad. To remove this pad, slide the top cover towards the rear of the printer until it comes off, then remove the pad as shown in figure 4.4.

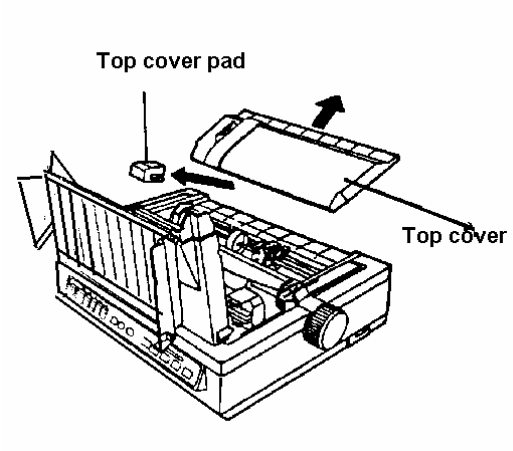


Figure 4.4 Removing Packing Material

4.4 INSTALLING/REMOVING THE RIBBON CASSETTE

WARNING !
THE PRINTHEAD MAY BE HOT, USE CAUTION WHEN REPLACING THE PRINT CASSETTE

With the printer off, open the smoked plastic cover as shown on pages 5 and 6. Gently slide the carriage toward the center of the unit as shown in Figure 4.5.

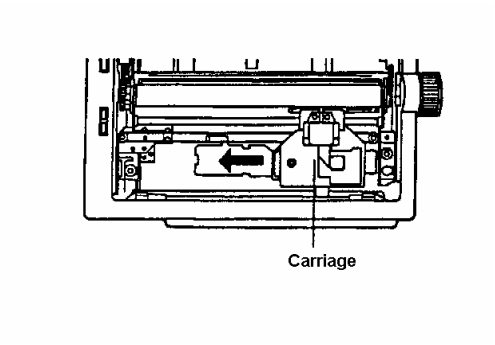


Figure 4.5 Carriage Positioning

Be sure the head gap lever is in the (+) position. Prior to installing the cassette, remove any slack on the ribbon by rotating the knob on the cassette counterclockwise. Refer to Figure 4.6.

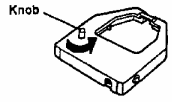


Figure 4.6 Ribbon Cassette

Position the cassette over the printhead and lower it in place as shown in step (1) of Figure 4.7. Visually insure that the ribbon slips between the ribbon mask and the printhead nose. Gently, but firmly, press down on rear of the cassette until the blue wing tab snaps into place as shown in step (2) of Figure 4.7.

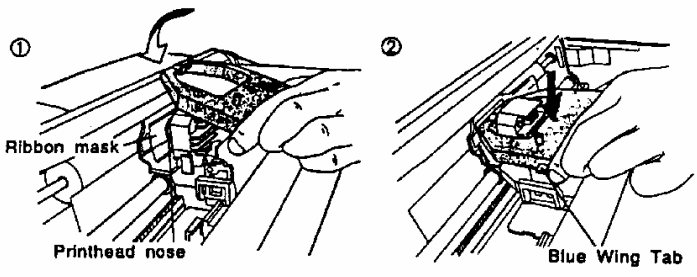


Figure 4.7 Cassette Installation

Close the smoked plastic cover and reposition the head gap lever for the appropriate paper thickness. (Refer to Section 4.7 on page 15).

WARNING !
THE PRINTHEAD MAY BE HOT, USE CAUTION WHEN REPLACING THE PRINT CASSETTE

To Remove the Ribbon Cassette, turn the printer off and open the smoked plastic cover. Spread the blue wing tab and lift the cassette up as shown in Figure 4.8.

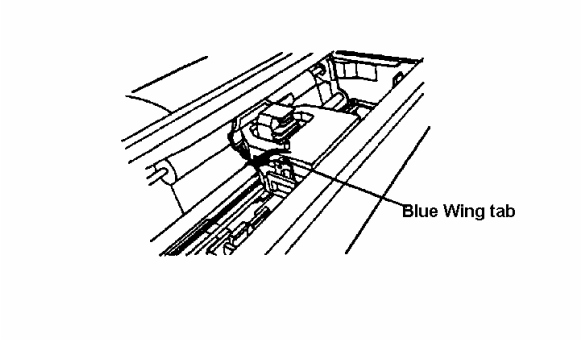


Figure 4.8 Ribbon Cassette Removal

4.5 APPLYING POWER

Plug the power cord into a properly grounded outlet of the proper voltage reading as listed on the nameplate located in the rear of the printer.

The power switch is located on the right side of the printer toward the rear. When the power is supplied to the printer, the power indicator light on the front panel will light. Please refer to Figure 4.9

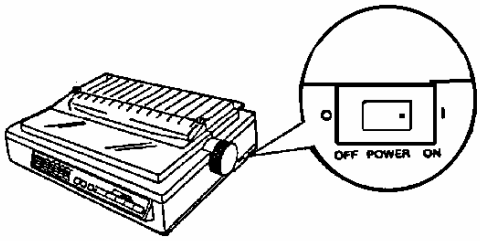


Figure 4.9 Power Switch

4.6 PAPER INSTALLATION

4.6.1 Paper Feed Selection

The Model 8844 printer has two paper feed mechanisms utilized by 3 paper paths. One mechanism is the TRACTOR mode for continuously fed paper. In the tractor mode you can choose between PUSH and PULL. Table 4.1 describes the optimum path selections for various applications of this printer when using the tractor mode.

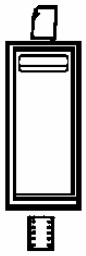
PAPER MODE	PATH	BEST USED WHEN/FOR
Push	Rear	-doing any type of reverse paper feeding -enabling you to do Paper Parking -using single form continuously fed paper
Pull	Bottom	-multipart forms (see Note) -labels

Table 4.1 Tractor Feed Path Selections

The second paper feed mechanism is the FRICTION mode. In the friction mode single sheets of paper can be fed through the top individually.

NOTE: WHEN FEEDING PAPER FROM THE BOTTOM, DO NOT USE REVERSE LINE FEED. PAPER MAY NOT FEED CORRECTLY AND PRINT QUALITY MAY NOT BE OPTIMUM.
NOTE: PAPER PARKING IS NOT AVAILABLE WHEN THE PAPER IS INSTALLED FROM THE BOTTOM.
NOTE: MULTIPART FORMS CONSISTING OF 2 PARTS MAY BE USED FOR REAR FEEDING (PUSH MODE). FOR 3 OR 4 PART FORMS, WE RECOMMEND BOTTOM FEEDING (PULL MODE) FOR OPTIMUM PRINT QUALITY.

To select the paper feed method you wish to use, slide the Paper Feed Selector lever located on the left, top side of the printer to the desired position. Please refer to Figure 4.10 for selection identification.



POSITION	USE FOR
(Friction)	Single sheets and Envelopes
(Tractor)	Fanfold paper

4.10 Paper Feed Selection

To install Fanfold paper follow these procedures.

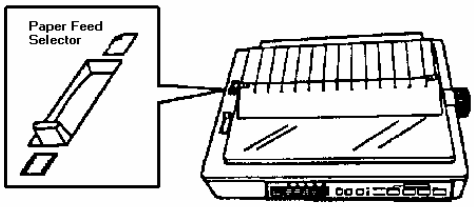
4.6.2.1 Rear Feeding (Fanfold Paper)

For rear feeding of fanfold paper, please follow these simple steps:

1. Turn the power switch on. A beep will sound once and the PAPER OUT indicator will flash. This indicates that paper needs to be installed in the printer.

2. Make sure the head gap lever position is appropriate for the thickness of the paper being used. Refer to Section 4.7 on page 15.

3. Set the paper feed selector to the "Tractor Feed" position. Refer to Figure 4.11



4. Fold the rear part of the smoked plastic cover over the front part, and then remove the top cover. Please refer to Figure 4.12

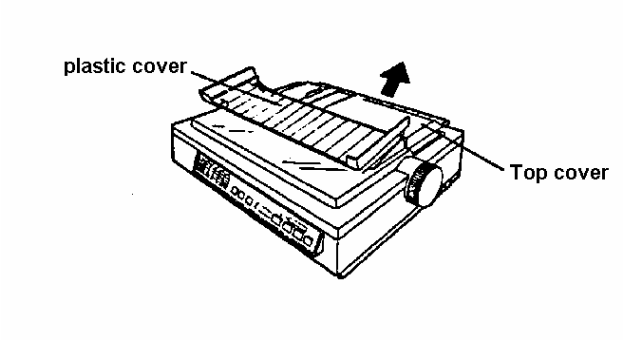


Figure 4.12 Cover Removal

5. Unlock the tractors by pulling the tractor clamping levers forward. Slide the tractors toward the sides of the printer to accommodate the approximate width of the paper being used. Center the paper support between the tractors. Please refer to Figure 4.13.

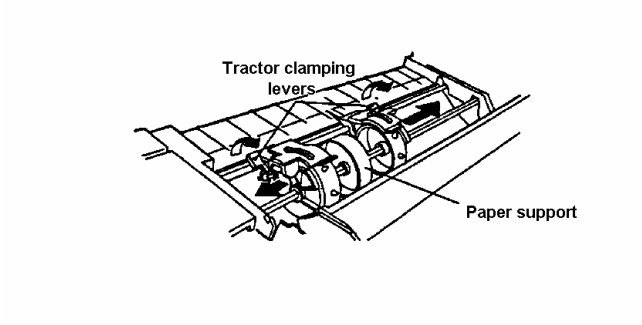


Figure 4.13 Tractor Spacing

6. Open both tractor covers as shown in Figure 4.14.

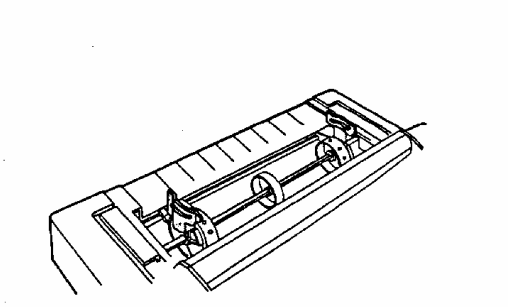


Figure 4.14 Opening the Tractor Covers

8. Align the paper sprocket holes with the tractor pins, and be sure the paper is straight before closing the tractor covers as shown in Figure 4.15.

NOTE: AT THIS TIME YOU ARE ONLY TEMPORARILY INSTALLING THIS PAPER AS A TEMPLATE TO ALIGN THE TRACTORS.

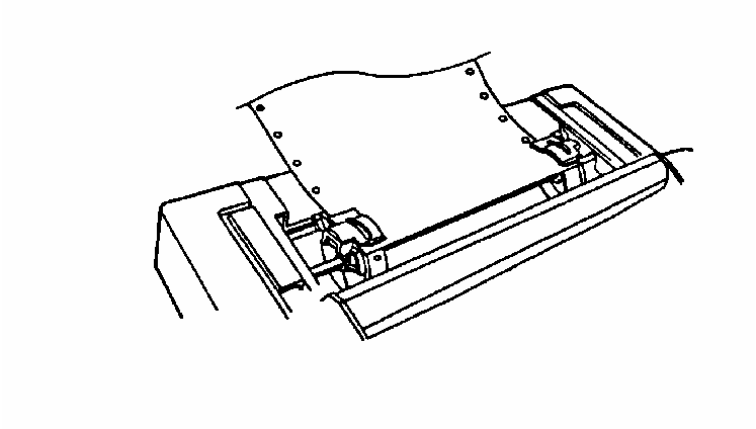


Figure 4.15 Aligning Paper

9. Pull the tractors outward to remove any slack, then lock the tractors into position by pushing the tractor clamping levers back.

10. Open the tractor covers and remove the paper, then close the tractor covers.

11. Press the FF (Form Feed) switch **while** pressing the ON LINE switch. The tractor will rotate automatically for ten seconds.

12. While the tractor is rotating, insert the fanfold paper behind the pinwheel evenly, between the paper insertion guides, until the tractor pins catch the paper sprocket holes. Please refer to Figure 4.16.

NOTE: VERIFY THE PAPER IS INSTALLED STRAIGHT. IF JAMMING OCCURS, REMOVE THE PAPER BY ROTATING THE PLATEN KNOB BACK.

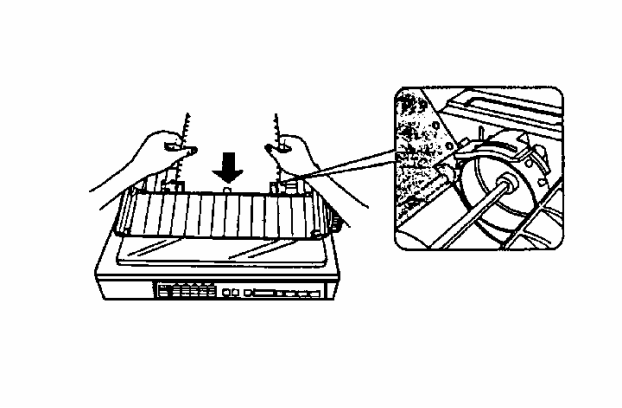


Figure 4.16 Paper Feeding

13. Press the **LOAD/PARK** switch once, the printer will load the paper automatically to the first print line. Verify the paper is straight.

14. Replace the smoked plastic cover and the top cover.

15. You can now adjust your Top of Form position (see SECTION 7.10) or press the **ON LINE** switch to get ready to print.

NOTE: IF A PAPER JAM OCCURS WHILE USING FANFOLD PAPER, FLIP PAPER FEED SELECTOR LEVER FROM "TRACTOR" TO "FRICTION" AND PULL THE JAMMED PAPER OUT THROUGH REAR. THIS PROCEDURE WILL ELIMINATE PAPER DEBRIS GETTING LODGED UNDERNEATH PINWHEEL TRACTOR MECHANISM.

4.6.2.2 Bottom Feeding (Fanfold Paper)

The installation of fanfold paper for bottom feeding is very similar to that of rear feeding. Duplicate steps 1 through 9 of section 4.6.2.1 on pages 9,10, and 11 of this manual. At this point the tractors should be properly spaced and the tractor covers opened. Follow these simple steps:

1.Remove the pull up roller unit as shown in Figure 4.17.

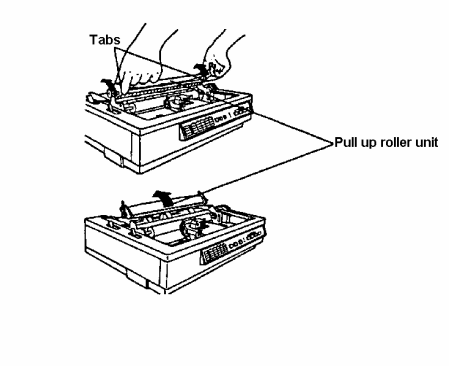


Figure 4.17 Removing the Pull Up Roller

2.Push the fanfold paper up through the bottom slot until it appears on the platen. Make sure the side on which you wish to print is facing up.

3.Align the paper sprocket holes with the tractor pins and make sure the paper is straight before closing the tractor covers.

4.Pull the tractors outward to remove any slack, then lock the tractors in place by pushing the tractor clamping levers back. Refer to Figure 4.18.

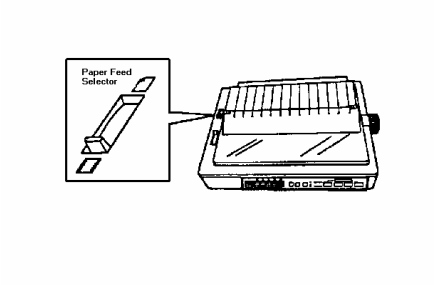


Figure 4.18 Aligning Bottom Fed Paper

5. Reinstall the pull up roller unit.

6. Close both the top cover and the smoked plastic cover.

7. You can now adjust your Top of Form position (see SECTION 7.10) or press the **ON LINE** switch to get ready to print.

NOTE: REVERSE FEED IS NOT AVAILABLE IN BOTTOM FEEDING.

4.6.3 Installing Single Sheets

To install a single sheet of paper, follow the instructions below:

1. Turn the power switch on. A beep will sound and the "paper out" indicator will flash. This indicates that paper should be installed in the printer.

2. Make sure the head gap lever position is appropriate for the thickness of the paper being used. Refer to Section on page .

3. Set the paper feed selector to the "Friction" position as shown in Figure 4.19.

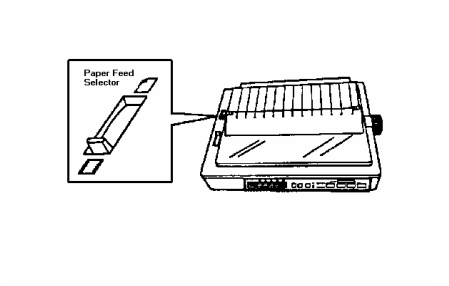


Figure 4.19 Selecting Friction Feed

4. Fold back the rear portion of the smoked plastic cover. Then insert the pins of the top cover into slots in the upper cabinet. These slots are indicated by black arrows (®,¬) on the left and right sides of the upper cabinet. Please refer to Figure 4.20.

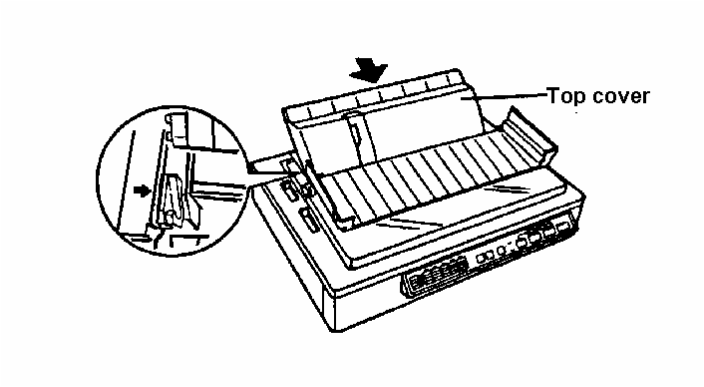


Figure 4.20 Adjusting Top Cover

5. Set the paper guide to the approximate width of your paper or envelope. Insert the paper behind the platen as shown in Figure 4.21.

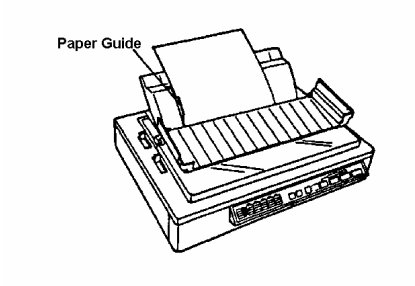


Figure 4.21 Single Sheet Installation

6. To align the paper horizontally or vertically, set the paper feed selector to the "Tractor" position. This releases the paper and allows the paper to be positioned manually as required. Set the selector back to the "Friction" position before printing.

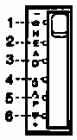
7. You can now adjust your Top of Form position (see SECTION 7.10) or press the **ON LINE** switch to get ready to print.

NOTE: WHEN THE AUTOMATIC LOADING IS SET TO OFF IN THE INITIAL SETUP MODE, THEN PRESS THE LOAD/PARK SWITCH TO LOAD THE PAPER TO THE FIRST PRINT LINE.

NOTE: WHEN THE PAPER FEED SELECTOR IS IN THE "TRACTOR" POSITION, THE BUZZER WILL SOUND TO INFORM YOU THAT THE SELECTOR IS IN THE WRONG POSITION.

4.7 SETTING THE HEAD GAP

To compensate for the different thicknesses of paper that will be fed through the unit, there is a head gap lever that allows the operator to adjust the gap between platen and printhead. This is accomplished by moving the lever forward (-) for thin sheets of paper and backward (+) for thick sheets. The lever moves in increments of 0.0028 inch (0.07 mm). Please refer to Figure 4.22



POSITION	USE FOR
1 or 2	Thinner sheets
3, 4, 5, and 6	Thick or multiple sheets Envelopes

Figure 4.22 Head Gap Setting

NOTE: IF AN INK SMEAR OCCURS WHEN LOADING PAPER OR DURING PRINTING, MOVE THE LEVER TOWARD THE LOWER POSITION (+) UNTIL THE SMEAR NO LONGER APPEARS.

4.8 CHARACTER ALIGNMENT

The center of all characters printed on this printer will be aligned with the ribbon mask line (RML). The RML is a useful marker that shows you exactly where your print line is located. Refer to Figure 4.23.

NOTE: REMEMBER THAT ONCE YOU ROTATE THE PLATEN KNOB, THE TOP OF FORM (TOF) WILL NO LONGER BE RECOGNIZED.

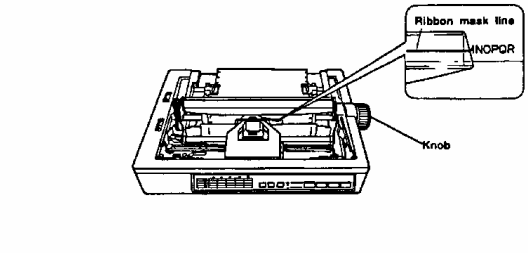


Figure 4.23 Character Alignment

4.9 SELF TEST

The printer has a self test feature which allows you to test the printer. Perform the Self Test now to verify the print ribbon is properly installed and the printer is functioning properly. To start the test, simply turn on the power switch while pressing the **LF** switch on the front panel to enable self test. First, all ASCII characters will be printed in draft and then all six NLQ fonts in 10 cpi. Afterwards, they will be printed in draft mode for approximately **20 minutes**. During this phase, you may change the font by pressing the **SUPER QUIET** switch. (The change will not occur until the current line is finished.) To release the self test mode at any time during the self test print, turn the power switch off. A sample of a self test print is shown in Figure 4.24.

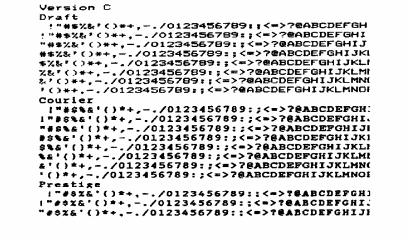


Figure 4.24 Self Test Print Sample

5. INSTALLING THE INTERFACE CABLE

The printer communicates with the scale or indicator through an interface cable which you must purchase separately. Mettler Toledo offers a variety of standard cables for quick and easy interfacing. Please refer to section 10.2 of this manual for cable part numbers. If you wish to transmit via 20 mA current loop, it will be necessary to construct your cable. Reference section 10.3 for connector and cable part numbers.
The 8844 printer comes equipped with a combination of RS232C and 20 mA current loop (RAM 1).
To install the cable simply follow the instructions below.

1. Be sure the power switches of both the printer and the scale/indicator are turned off.

2. Plug printer end of the cable into the serial interface printer connector located in the rear of the printer and fasten the screws securely into place. Please refer to Figure 3.2 on page 3 for the connector location.

3. Plug the other end of the cable into the scale/indicator serial connector.

NOTE: IF THE CONNECTORS AT BOTH ENDS ARE ALIKE, MAKE SURE TO PLUG THE APPROPRIATE END INTO EACH DEVICE.

NOTE: WHEN INTERFACING TO AN 8530 INDICATOR, IT IS RECOMMENDED THAT 20 mA CURRENT LOOP BE USED TO INSURE MAXIMUM LIGHTNING PROTECTION. USE CABLE PART NUMBER 138216 00A.

6. PROGRAM SWITCH SUMMARY AND JUMPER SETTINGS

6.1 REMOVING THE TOP COVER

To set the interface programming switches it will be necessary to gain access to the dip switches located on the Serial Interface PCB. Follow these simple steps to remove the top cover and access the PCB.

1. Remove the smoked plastic cover, top cover, and the platen knob as shown in Figure 6.1

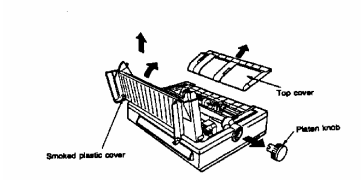


Figure 6.1 Removing covers
Figure 6.1 Removing covers

2. To remove the upper cabinet, remove the two screws from the front side in the printer. Refer to Figure 6.2 for screw locations

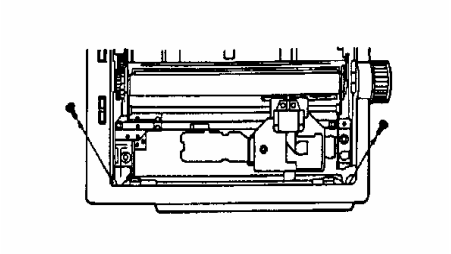


Figure 6.2 Cabinet Screws

3. Carefully raise and remove the upper cabinet as shown in Figure 6.3

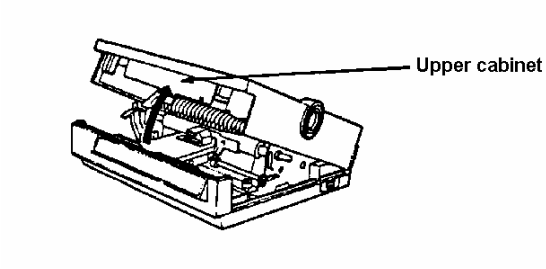


Figure 6.3 Removing the Upper Cabinet

4. Locate the Serial Interface PCB in the rear of the printer. The dip switches are shown in Figure 6.4.

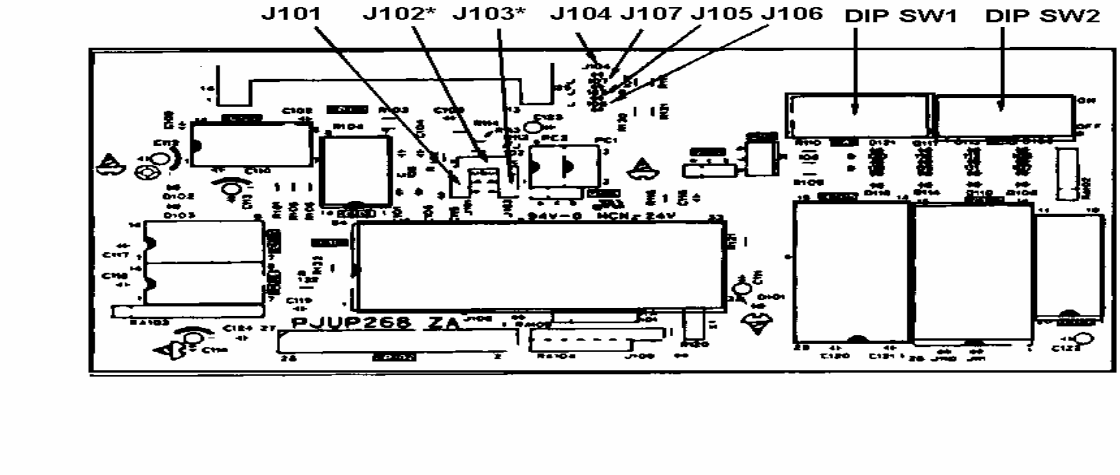


Figure 6.4 Dip Switch Locations

6.2 PROGRAM SWITCH SUMMARY

The following tables define how the switches on the Serial Interface PCB. The description of operation of the Switch Bank 1 switch settings are self explanatory. A more detailed description of the Switch Bank 2 switch operation follows Table 5-4.

	Function	ON	OFF	Factory Setting
SW 1-1	Data Length	7 bit	8 bit	OFF
SW 1-2	Parity Check	Valid	Invalid	OFF
SW 1-3	Parity Bit	Even	Odd	OFF
SW 1-4	DIR Signal Polarity	Reversed	Normal	OFF
SW 1-5	Baud Rate	Refer to Table 5-2 Baud Rate Select		OFF
SW 1-6	Baud Rate			ON
SW 1-7	Baud Rate			OFF
SW 1-8	Baud Rate			OFF

Table 6-1
Switch Bank One Settings

BAUD RATE	SW 1-5	SW 1-6	SW 1-7	SW 1-8
300	ON	OFF	ON	OFF
600	ON	OFF	OFF	ON
1200	ON	OFF	OFF	OFF
2400	OFF	ON	ON	OFF
4800	OFF	ON	OFF	ON
9600*	OFF	ON	OFF	OFF
19200	OFF	OFF	ON	ON

Table 6-2
Baud Rate Selections

	FUNCTION	ON	OFF	FACTORY SETTING
SW 2-1	Resume Data Transfer	2048 Bytes Enable	256 Bytes Enable	OFF
SW 2-2	Buffering Enable			ON
SW 2-3	Suspend Data Transfer	Refer to the table 6-3 on Page 21.		OFF
SW 2-4	Suspend Data Transfer			ON
SW 2-5	Self Test Enable	Enable	Disable	OFF
SW 2-6	Self Test Mode Select	Hex. Dump	Loop Back	OFF
SW 2-7	DIR Control	Enable	Disable	ON
SW 2-8	Protocol	ETX / ACK	X / ON - X / OFF	OFF

Table 6-3
Switch Bank 2 Settings

REMAINING BUFFER CAPACITY	SW 2-3	SW 2-4
16 Bytes	OFF	OFF
256 Bytes*	OFF	ON
1024 Bytes	ON	OFF
2048 Bytes	ON	ON

Table 6-4
Buffer Full Recovery Timing

NOTE: 1. THE 8K BYTE BUFFER CAN BE ENABLED OR DISABLED BY SW 2-2.
2. WHEN THE DIR CONTROL IS ENABLED (SW 2-7 IS ON), X/ON-X/OFF, ETX/ACK PROTOCOL IS AUTOMATICALLY DISABLED.

Switches 2-1, 2-2, 2-3, and 2-4 allow you to designate the number of bytes remaining in the buffer before the printer instructs the Scale or Indicator or computer to suspend data transmission. The buffer input capacity is 8192 bytes. When the amount of byte space remaining in the buffer becomes either 16, 256, 1024, or 2048, depending on the setting of these switches, the printer will signal to suspend data transfer. The signal to resume data transfer will be sent when the unused portion of the buffer increases by the amount of byte space set by switch 2-1.

Switches 2-5 and 2-6 execute two types of self tests. Please refer to section 9.3.2 of this manual for a more in depth description of these features.

6.3 JUMPER SETTINGS

The only jumpers that need to be addressed are Jumpers 101 and 102 located on the Serial Interface PCB. Please refer to Figure 6.5 for the jumper locations. For an explanation on printer operation pertaining to the jumpers, please refer to Table 6-5.

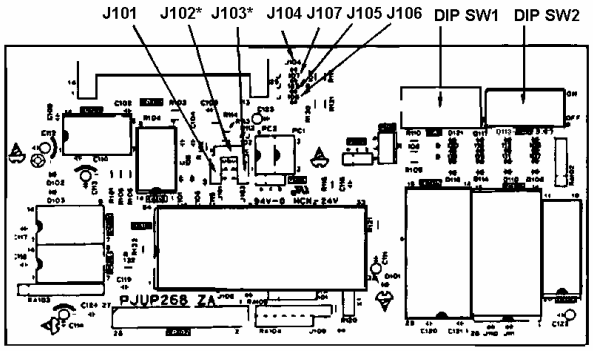


Figure 6.5 Jumper Selections

*J102 connection is fixed at b - c as factory setting.
**Use the socket provided on J102 for connection of J103, otherwise the socket should stay at factory setting on J102.

	When using RS - 232C		When using Current Loop		Factory Setting
	DIR Control	X/ON-X/OFF or ETX/ACK	DIR Control	X/ON-X/OFF or ETX/ACK	
J101 a - b b - c	ON OFF	ON OFF	OFF ON	OFF ON	ON OFF
J102 a - b b - c	X X	OFF ON	X X	X X	OFF ON
J103 a - b b - c	X X	X X	OFF ON	ON OFF	OFF OFF
J104 J105 J106 J107	OFF OFF OFF OFF	OFF OFF OFF OFF	OFF (ON) OFF (ON) OFF (ON) OFF (ON)	OFF (ON) OFF (ON) OFF (ON) OFF (ON)	OFF OFF OFF OFF

Table 6-5 -Jumper Selections

(ON): When the computer has no current source, please connect.
X: Irrelevant

7. PRINTER OPERATION

7.1 EZ SET OPERATOR PANEL

This printer has an EZ Set Operator Panel with seven switches and a Control Table. These switches allow you to select various important features and functions of the printer. They allow you to access the different features of the printer (such as fonts, pitch, form length, etc.) which are displayed on the Control Table. This mode of operation is described on the following pages.

FUNCTION

EXIT

FUNCTION switch: This switch allows you to enter and exit the FUNCTION mode. In the FUNCTION mode, you can operate the Control Table, and Set the Top of Form. When it is active, the ON LINE indicator will be blinking.

ON LINE

ON LINE (FONT) switch: This switch opens and closes the communication lines with the computer. In the ON LINE mode, the indicator is lit, and the printer is ready to receive data.

FONT

In the FUNCTION mode, pressing this switch advances the column position for the Font on the Control Table.

FF

(PITCH) switch: In the OFF LINE mode or when the printer is not printing in the ON LINE mode, pressing this switch moves the printhead to the center and advances the paper to the top of the next page.

PITCH

In the FUNCTION mode, pressing this switch advances the column position for the PITCH on the Control Table.

LF

LF (FORM LENGTH) switch: In the OFF LINE mode or when the printer is not printing in the ON LINE mode, pressing this switch advances the paper one line at a time. Holding this switch will advance the paper continuously until the switch is released.

FORM LENGTH

In the FUNCTION mode, pressing this switch advances the column for the FORM LENGTH on the Control Table.

SUPER QUIET	**SUPER QUIET (TOF) switch:** In the OFF LINE mode or when the printer is not printing in the ON LINE mode, pressing this switch alternately turns the SUPER QUIET mode on/off. When the SUPER QUIET mode is active, the SUPER QUIET indicator is lit. Refer to page 29 for further information.
TOF	In the FUNCTION mode, pressing this switch sets the Top of Form (TOF). Refer to page 32 for further information.
TEAR OFF	**TEAR OFF (OTHERS) switch:** In the OFF LINE mode or when the printer is not printing in the ON LINE mode, pressing this switch will advance or reverse the paper for tearing off. Refer to page 30 for further information.
OTHERS	In the FUNCTION mode, pressing this switch will advance the column position for the others on the Control Table.
LOAD PARK	**LOAD/PARK (SET) switch:** In the OFF LINE mode or when the printer is not printing in the ON LINE mode, pressing this switch will load/park the paper. Refer to page 31 for further information.
SET	In the FUNCTION mode, pressing this switch will set or release the items on the Control Table.

7.2 SETTING THE CONTROL TABLE

The setting of the Control Table is used to make temporary changes in font, pitch, form length, etc. To permanently store any of these combinations refer to MACRO on page 28. Before changing any settings on the Control table, you should verify the current settings.

7.2.1 Setting the FONT

In order to temporarily set the Font, follow these simple steps:

1. Press the **FUNCTION** switch to enter the FUNCTION mode. The ON LINE/FUNCTION indicator should blink.

2. Setting Font: Press and release the **ON LINE** (FONT) switch to reach the desire font.

3. Press the **LOAD/PARK** (SET) switch to store that setting into the temporary memory. A beep will sound and the indicator light will be on steady.

4. Press the **FUNCTION** switch to exit the FUNCTION mode.

Refer to Figure 7.1 for an example of a Font Change.

		C1	C2	C3	C4	C5
		0	0	0	0	8
R1	FONT 8	PROGRAM	DRAFT	COURIER	PRESTIGE	BOLD PS
R2	PITCH 0	PROGRAM	10	12	15	PS
R3	FORM LENGTH 0	11"	12"	14"	8.5"	11K"
R4	OTHERS 0	| ¬MARGIN	MARGIN® |	MACRO	FACTORY	OPTION

Figure 7.1 Example of a Font change

7.2.2 Changing the PITCH

In order to temporarily set the Pitch, follow these simple steps:

1. Press the **FUNCTION** switch to enter the FUNCTION mode. The ON LINE/FUNCTION indicator should blink.

2. Setting Pitch: Press and release the **FF** (PITCH) switch to reach the desire pitch.

3. Press the **LOAD/PARK** (SET) switch to store that setting into the temporary memory. A beep will sound and the indicator light will be on steady.

4. Press the **FUNCTION** switch to exit the FUNCTION mode.

Refer to Figure 7.2 for an example of a Pitch Change.

		C1	C2	C3	C4	C5
		0	0	8	0	0
R1	FONT 0	PROGRAM	DRAFT	COURIER	PRESTIGE	BOLD PS
R2	PITCH 8	PROGRAM	10	12	15	PS
R3	FORM LENGTH 0	11"	12"	14"	8.5"	11K"
R4	OTHERS 0	| ¬MARGIN	MARGIN® |	MACRO	FACTORY	OPTION

Figure 7.2 Example of a Pitch change

7.2.3 Changing the FORM LENGTH

In order to temporarily set the Form Length, follow these simple steps:

1. Press the **FUNCTION** switch to enter the FUNCTION mode. The ON LINE/FUNCTION indicator should blink.

2. Setting Form Length: Press and release the **LF** (FORM LENGTH) switch to reach the desired form length.

3. Press the **LOAD/PARK** (SET) switch to store that setting into the temporary memory. A beep will sound and the indicator light will be on steady.

4. Press the **FUNCTION** switch to exit the FUNCTION mode.

Refer to Figure 7.3 for an example of a Form Length Change.

		C1	C2	C3	C4	C5
		8	0	0	0	0
R1	FONT 0	PROGRAM	DRAFT	COURIER	PRESTIGE	BOLD PS
R2	PITCH 0	PROGRAM	10	12	15	PS
R3	FORM LENGTH 8	11"	12"	14"	8.5"	11K"
R4	OTHERS 0	| ¬MARGIN	MARGIN® |	MACRO	FACTORY	OPTION

Figure 7.3 Example of a Form Length Change

NOTE: WHEN ALL THE COLUMN INDICATORS ARE BLINKING, PRESS THE LOAD/PARK (SET) SWITCH TO PRINT OUT THE CURRENT SETTING, THE MACRO SETTING AND THE FACTORY SETTING.

WHEN C1 (FIRST COLUMN) INDICATOR IS ON, THE PRINTER IS IN PROGRAM MODE WHICH ALLOWS SOFTWARE TO DETERMINE WHICH FONT AND/OR PITCH WILL BE USED.

IF THE DEFAULT IS AN NLQ FONT, OUTPUT WILL BE PRINTED IN THAT FONT. IF THE PRINTER IS IN AN NLQ FONT MODE WHEN A DRAFT COMMAND IS ISSUED, THE COMMAND WILL BE IGNORED AND OUTPUT WILL BE PRINTED IN THAT NLQ FONT.
THE SETTING OF FORM LENGTH ALSO CAN BE CHANGED THROUGH SOFTWARE COMMANDS, OVERRIDING THE CONTROL TABLE SETTINGS. CHANGES THROUGH SOFTWARE COMMANDS WILL NOT BE REFLECTED IN THE CONTROL TABLE INDICATORS.

7.3 SETTING THE LEFT/RIGHT MARGIN

1. Make sure that the ON LINE/FUNCTION indicator is blinking. (If not, press the **FUNCTION** switch to enter the FUNCTION mode.)

2. Press and release the **TEAR OFF** (OTHERS) switch until the COLUMN indicator is blinking over the desired margin to be set.

3. Press the **LOAD/PARK** (SET) switch to enter the MARGIN SET mode, the COLUMN indicator will be lit.

4. Press the **SUPER QUIET** (TOF) switch to move the printhead to the left or **TEAR OFF** (OTHERS) switch to move the printhead to the right until you reach the desired margin location.

- Pressing the **SUPER QUIET** (TOF) switch when the printhead is at the far left location, a beep will sound a few times and the printhead will move to the far left location.

- Pressing the **TEAR OFF** (OTHERS) switch when the printhead is at the far right location, a beep will sound a few times and the printhead will move to the far left location.

5. Press the **LOAD/PARK** (SET) switch to specify the margin location. A beep will sound twice, the COLUMN indicator will return to blinking state, and the printer will exit the MARGIN SET mode.

- If the left margin is set to the right of the right margin, the right margin is reset to 80 (10 cpi) automatically.

- If the right margin is set to the left of the left margin, the left margin is reset to 0 automatically.

6. Press the **FUNCTION** switch to exit the FUNCTION mode.

NOTE: YOU CAN SET EITHER THE LEFT OR THE RIGHT MARGIN FIRST.

YOU CAN CHANGE THE MARGINS BY SOFTWARE COMMANDS. THIS WILL OVERRIDE THE CONTROL TABLE SETTINGS.

7.4 SETTING A MACRO

The MACRO allows you to store a combination of your most frequently used Font, Pitch, Form Length, Left/Right Margin, Color*, and Super Quiet mode settings into the printer's memory which can be easily recalled and/or changed. This will enable you to recall the combination (MACRO) at the touch of a button eliminating the need to reset all your features each time you have a print job that uses a previously set combination. When you turn the power switch on, the printer reads MACRO automatically.

7.4.1 Defining a MACRO (MACRO SAVE)

1. Make sure that the ON LINE/FUNCTION indicator is blinking. (If not, press the **FUNCTION** switch to enter the FUNCTION mode.

2. Set the print features you wish to store (FONT, PITCH, FORM LENGTH, LEFT and RIGHT MARGIN, COLOR*, SUPER QUIET) as the current settings.

3. If you wish to change your SUPER QUIET mode setting, press the **FUNCTION** switch to exit the FUNCTION mode. Set the SUPER QUIET mode by pressing the **SUPER QUIET** switch. Then, press the **FUNCTION** switch again to return to the FUNCTION mode (ON LINE/FUNCTION indicator is blinking).

4. Press and release the **TEAR OFF** (OTHERS) switch until the column indicator is blinking over the MACRO.

5. Press the **LOAD/PARK** (SET) switch to save the MACRO. A beep will sound, and the column indicator will stop blinking.

6. Press the **FUNCTION** switch to exit the FUNCTION mode.

7.4.2 Printing Current MACRO Status

1. Make sure that paper is installed and the ON LINE indicator is blinking. (If not, press the **FUNCTION** switch to enter the FUNCTION mode.)

2. Press and release the **TEAR OFF** (OTHERS) switch until all column indicators are blinking.

   - When the column indicator is over the OPTION (COLOR), then press the **TEAR OFF** (OTHERS) switch once, all column indicators are blinking.

3. Press the **LOAD/PARK** (SET) switch to print out the current setting, MACRO setting and the FACTORY setting.

4. Press the **FUNCTION** switch to exit the FUNCTION mode.

7.5 PRINTING FACTORY DEFAULT FACTORY SETTINGS

This is for recalling the settings for: Font, Pitch, Form Length, Left and Right Margin, and Super Quiet mode as they were originally set when the printer was shipped. However, it **does not** change any of the settings which are stored in MACRO. You can recall the FACTORY setting anytime. The FACTORY settings may only be called, you cannot write to (change) the FACTORY setting as you can a MACRO.

1. Make sure that the ON LINE/FUNCTION indicator is blinking. (If not, press the **FUNCTION** switch to enter the FUNCTION mode.)

2. Press and release the **TEAR OFF** (OTHERS) switch until the column indicator is blinking over the FACTORY position.

3. Press the **LOAD/PARK** (SET) switch to read the FACTORY setting. A beep will sound, and the column indicator will stop blinking.

4. Press the **FUNCTION** switch to exit the FUNCTION mode.

NOTE: ONCE RECALLED THE FACTORY SETTING (NOW CURRENT SETTING) MAY BE STORED AS A MACRO. SEE PAGE 28 MACRO, STARTING AT ITEM #4.

THE FACTORY SETTINGS (NOW CURRENT SETTINGS) ARE:

FONT	**PROGRAM**
PITCH	**PROGRAM**
SUPER QUIET MODE	**OFF**
FORM LENGTH	**11"**
LEFT MARGIN	**0 (10 cpi)**
RIGHT MARGIN	**80 (10 cpi)**
COLOR	**BLACK**

7.6 SUPER QUIET MODE

The Super Quiet mode reduces printing noise, however, it also reduces the printer's speed. The printer can also store this function in the MACRO as one of the printing conditions. To simplify the MACRO setting process, you should set the Super Quiet mode **before** setting any other item on the control table.

1. Make sure that the ON LINE/FUNCTION indicator is not blinking. (If blinking, press the **FUNCTION** switch.)

2. Press the **SUPER QUIET** switch to turn the Super Quiet mode on and off. A beep will sound.

7.7 FEEDING/POSITIONING PAPER

You can adjust the paper position by using the front panel switches when the printer is in the **OFF LINE** mode or when the printer is not printing in the ON LINE mode. For initial instructions on installing the paper, refer to section 4. , page of this manual.

7.7.1 Form Feed

Pressing the **FF** switch moves the printhead to the center and advances the paper to the next top of form position.

7.7.2 Line Feed

Pressing the **LF** switch once advances the paper one line. Holding the switch will move the printhead to the center and advances the paper continuously until the switch is released.

7.7.3 Micro Line Feed

Pressing the **FF** switch **while** pressing the **ON LINE** switch once advances the paper one micro line (1/216"). Holding the switch will advance the paper continuously until the switch is released.

When the **PAPER OUT** indicator is blinking, pressing this switch will cause the platen to feed micro lines for ten seconds.

7.7.4 Reverse Micro Line Feed

Pressing the **LF** switch **while** pressing the **ON LINE** switch once reverses the paper one micro line (1/216"). Holding the switch will reverse the paper continuously until the switch is released. The printer cannot reverse the paper past the printable area (See Appendix E).

NOTE: IN THE PULL TRACTOR MODE, REVERSE MICRO LINE FEED WILL NOT FEED PAPER CORRECTLY AND THE RESULTING PRINT OUT MAY NOT BE CORRECT.

WHEN PRESSING THE FF OF LF SWITCH, THE AMOUNT OF PAPER WHICH IS FED IS DETERMINED BY THE CURRENT SETTING FOR LINES PER INCH SPECIFIED BY THE SOFTWARE COMMAND OR THROUGH THE FRONT PANEL.

7.8 TEAR OFF FEATURE (REAR FEEDING ONLY)

This function allows you to advance your fanfold paper's perforation to the tear position. This is not dependent on your top of form position. After tearing off the page you can return your paper to your top of form.

1. Make sure that the ON LINE/FUNCTION indicator is not blinking. (If blinking, press the **FUNCTION** switch to exit the FUNCTION mode.)

2. Press the **TEAR OFF** switch to advance the perforation to the tear bar.

3. Open the rear part of the smoked plastic cover.

4. Tear off the page.

5. Press the **TEAR OFF** switch to reverse the paper back to the top of form.

-- A Top of Form setting (see page 29) in the non-printable area is ignored by Tear Off. Tear Off will use the Top of Form setting that was last saved.

6. Close the rear part of the smoked plastic cover.

7.9 PAPER LOADING (LOAD/PARK)

The LOAD/PARK switch performs a dual function. The use of this switch will reduce the steps and time it takes to load or park you paper (see the "Paper Parking"). Listed in the table below is a helpful guide on how this switch will function with the various paper paths available.

	Paper Out	Paper Installed

Rear feeding	Loads Paper	Parks Paper
Single sheet	Feeds Paper	Feeds Paper
Cut Sheet Feeder	Loads Paper	No Action

Table 7-1 LOAD/PARK FUNCTION GUIDE

NOTE: WHEN BOTTOM FEEDING, DO NOT USE THE AUTOMATIC PAPER LOADING METHOD, PAPER WILL NOT FEED PROPERLY.

7.9.1 Paper Parking (Rear feeding only)

This function allows you to use single sheets without removing or wasting your fanfold paper. To park the Fanfold Paper:

1. Make sure that the power switch is on and that the paper feed selector is in the " " position.

2. Tear off the printed page(s) of the fanfold paper.

3. Press the **LOAD/PARK** switch once. The printer will reverse the fanfold paper to the parked position.

7.9.2 Loading the Cut Sheet Paper

1. Move the paper feed selector to the "FRICTION" position. Raise the top cover. Separate the paper guide to the approximate width of your paper. Insert the paper through the paper guide and behind the platen.

2. Press the **LOAD/PARK** switch once. This will load the paper automatically.

3. When you are finished printing, remove the sheet from the printer.

7.9.3 Reloading the Fanfold Paper

1. Lower the top cover.

2. Move the paper feed selector to the "TRACTOR" position.

3. Press the **LOAD/PARK** switch. The fanfold paper will advance to the top of form which was set before using the single sheet.

7.10 SETTING TOP OF FORM (TOF)

This printer has a Top of Form function which stores the first print line position and loads the paper to the designated position automatically. The first print line position will be stored even after the power switch is turned off. Additionally, the printer can store 2 different Top of Form positions depending on the paper feed method (fanfold paper and single sheet).
To Set the Top of Form follow these simple steps:

1. Set the FORM LENGTH of the paper you are using through the Control Table

2. Load the paper by pressing the **LOAD/PARK** switch. (See section for paper installation.)

-- The paper type you insert determines the first print line position for that type. (If using single sheets, you set the top of form for single sheets.)

-- This printer **stores** 2 Top of Forms concurrently. However, each Top of Form (Single Sheets, Rear Feeding) must be set individually.

3. Adjust the paper position by using the Line Feed, Micro Line Feed, or Reverse Micro Line Feed.

-- **Do not rotate the platen knob, the printer will not be able to count the number of lines.**

4. Press the **FUNCTION** switch then the **SUPER QUIET** (TOF) switch to set the Top of Form for that current position. **A TEMPORARY TOP OF FORM SETTING IS INDICATED BY ONE BEEP. SAVED TOP OF FORM IS INDICATED BY TWO BEEPS.**

-- A Top of Form position will be saved (between 0.6 and 5 inches from the top of page) even after the power switch is turned off. Pressing the **LOAD/PARK** switch will advance the paper to the most recently saved Top of Form setting.

-- A Top of Form position set in the area less than 0.6 inch and greater than 5 inches will not be saved after the power switch is turned off, after parking the paper, or after using Tear Off.

5. Press the **FUNCTION** switch to exit the Function mode.

6. Press the **ON LINE** switch (if the ON LINE indicator is off) to receive the data.

NOTE: WHEN YOU USE FANFOLD PAPER, THE TOP OF FORM POSITION MUST BE SET ON THE FIRST PAGE BECAUSE THE PRINTER DOES NOT ACCEPT A TOP MARGIN WHICH IS LONGER THAN ONE PAGE.

WHEN BOTTOM FEEDING, DO NOT USE THIS FUNCTION.

7.11 Detector Operation

7.11.1 Paper Out Detector

The Paper Out detector is located under the platen and senses the absence of paper. When an out-of-paper condition occurs, printing stops, the printer goes to the OFF LINE mode, the alarm sounds and the Paper Out light starts blinking. To continue printing to the end of the current page when an out of paper condition occurs, press the ON LINE switch repeatedly until the page is completed. To start printing the next page, install new paper and press the ON LINE switch. The printer will resume printing.

NOTE: THE PAPER OUT DETECTOR CAN BE DISABLED THROUGH THE INITIAL SETUP MODE.

7.11.2 Overheat Detector

If the printer is printing continuously for extended periods of time, the printhead may become overheated. When this occurs, an internal protective circuit will cause the printer to pause until the head temperature decreases sufficiently, at which time the printer will automatically resume printing without loss of data. This feature is included to extend the life of the printhead.

7.11.3 Overload Detector

An overload condition can occur when the path of the printhead is blocked. At that time the carriage will stop moving and all indicators will start blinking. To resume printing, eliminate the cause of the overload then turn the power switch off and on again.

8. MAINTENANCE

The printer does not require any routine maintenance. However, reasonable care of the printer will extend its life. The following precautions and periodic measures are recommended:

8.1 PRECAUTIONS

- Keep all liquids away from the printer. Accidental spillage of a liquid into the printer can cause severe damage.
- Do not block the air flow around the printer. Do not place books, paper, or other items on top of the printer.
- Special care should be taken to protect the printer if it is used in a harsh environment such as a machine shop, a dusty or sandy area, etc.
- The life of the printhead can be extended by observing a few simple precautions:
    - Do not operate the printer without paper and a ribbon cassette installed.
    - Avoid prolonged use without allowing the printhead time to cool.
    - Do not obstruct the movement of the printhead while in operation.
- If the printer is not going to be used for an extended period, unplug the power cord.

8.2 PERIODIC MAINTENANCE

WARNING !
THE PRINTHEAD MAY BE HOT, USE CAUTION WHEN REPLACING THE PRINT CASSETTE

- Cleaning the unit is the most important service the user can perform. The required fequency of cleaning is dependent upon the environment.
- Turn the power OFF.
- Clean the case and covers with a soft cloth. Use any mild commercial cleaner on the cloth, do not spray directly on to the printer.
- Remove the top and the smoked plastic covers. Vacuum or dust the inside area of the unit. Be very careful not to damage the flex ribbon cable and the carriage drive belt.
- The platen should be cleaned with denatured alcohol only.
- The carriage guide bar can be lubricated with a very light oil.

9. TROUBLESHOOTING

9.1 REPLACEMENT PROCEDURE

THE MODEL 8844 PRINTER IS NOT FIELD REPAIRABLE. IN THE UNLIKELY EVENT A PROBLEM CANNOT BE RESOLVED BY USING THE FOLLOWING INFORMATION THE PRINTER MUST BE REPLACED. CONTACT YOUR LOCAL METTLER TOLEDO SERVICE FACILITY FOR ASSISTANCE.

NOTE: PRINTER REPLACEMENT MUST BE PERFORMED BY AN AUTHORIZED METTLER TOLEDO FIELD SERVICE FACILITY.

9.2 SYMPTOM/SOLUTION CHART

Most problems associated with the printer can be traced to improper setup, installation, or cabling. The following table will assist the user in identifying and correcting some of the more likely problems.

SYMPTOM	POSSIBLE CAUSE	PROBABLE SOLUTION
Printer does not power up.	No AC power.	Check power cord. Check AC Outlet.
Power on but printer is not printing.	Printer is not ON LINE. Scale Programming doesn't match Printers. Interface cable is not connected.	Press ON LINE switch. Perform Self Test 1 to verify printer operation. Check programming and jumper settings. Secure connection. Verify proper wiring.
Printer won't go ON LINE . . .	Out of Paper.	Check paper and install.
Paper slips around platen.	Paper feed selector is in "TRACTOR" position.	Set selector to "FRICTION". position.
Head moves but does not print.	Ribbon is not installed correctly.	Re-insert ribbon.
Paper wrinkles when using tractor feed.	No reverse tension on paper. Selector switch is in "FRICTION" position.	Set paper supply lower than printer. Set selector to "TRACTOR" position.
Print is smeared.	Head Gap may be set incorrectly.	Adjust the Head Gap Lever.
Print is to light.	Head Gap is set incorrectly. Ribbon Cassette running out of ink.	Adjust the Head Gap lever. Push Counter Spring in ribbon cassette. Replace ribbon cassette.
Cannot change form length.	*Cut sheet feeder is ON.	*Set CSF to OFF.
Printout doublespaced.	*Auto LF in On.	*Set Auto LF as required.
Cannot print ASCII characters with code above 127.	*Data length is set incorrectly	*Set Data length as required
Wrong character set is printed.	*Wrong characters set is selected	*Set the character set as required
Cannot change print mode.	FONT and PITCH modes are set incorrectly	Set to PROGRAM mode
Fanfold paper is jamming.	Paper not installed correctly in tractor	Set selector switch to "Friction" position to easily remove jammed paper. Set paper correctly with tractor again.
Prints for awhile then stops.	Overheat Detector is operating fine	

Table 9-1 Troubleshooting

9.3 SELF TESTS

9.3.1 Test 1

The printer has a self-test feature which allows you to test the printers ability to print and function properly. To start the test, simply turn on the power switch while pressing the **LF** switch on the front panel to enable self test. First, all ASCII characters will be printed in draft and then all six NLQ fonts in 10 cpi. Afterwards, they will be printed in draft mode for approximately **20 minutes**. During this phase, you may change the font by pressing the **SUPER QUIET** switch. (The change will not occur until the current line is finished.) To release the self test mode at any time during the self test print, turn the power switch off. A sample of a self test print is shown in Figure 9.1.

Figure 9.1

9.3.2 Test 2 and 3

To initiate these tests, DIP switch SW2-5 on the serial interface PCB must be turned on. Depending upon the switch positioning of SW2-6, also on the serial interface PCB, two different tests may be accessed. Refer to the following table.

SW2-5	SW2-6	Test Mode
ON	OFF	Loop Back
ON	ON	Hex. Dump

Table 9-2
Self Test Switch Settings

9.3.2.1 Loop Back

This test checks the input and output RS-232 circuitry and the printing mechanism with associated logic. To initiate this test, turn power OFF then connect a jumper wire between pin 2 and pin 3 on the 25 pin connector at the back of the printer. Turn switches SW2-5 ON and SW2-6 OFF. When AC power is turned on again, ASCII data from (20 Hex) to (7E Hex) will be transmitted from pin 2, received at pin 3 and printed. For an example of the printout, refer to figure 9.1.

If the printout from the test resembles the printout of Figure 9.1, Test the output from the Scale/Indicator. Please refer to Section 9.4 or 9.5 of this manual.

To end the test, turn AC power OFF, turn SW2-5 OFF and remove the jumper wire from pin 2 to pin 3.

9.3.2.2 Hexadecimal Dump

When switches SW2-5 and SW2-6 are both turned ON, all data sent to the Model 8844 will be printed in hexadecimal notation for the ASCII code received. When a complete line of data is received (40 characters for draft or 68 characters for compressed), the printer will automatically print. To print lines of less characters, a print must be initiated using the line feed (LF) switch on the top of the printer.

Refer to the "Decimal to HEX to ASCII" conversion chart on page 41, Section 12 of this manual.

To end the test, turn AC power OFF then turn switches SW2-5 and SW2-6 both OFF. When AC power is reapplied, the printer will be ready for normal use.

9.4 TESTING THE 20 MA OUTPUT OF THE SCALE OR INDICATOR

If you suspect the Scale/Indicator may not be transmitting data to the printer when using 20 mA current loop, following is a test procedure which will assist you in determining wether the current loop is operational.

-Remove power from both units and dissconnect the Data cable from the 8844.

-Connect your red meter lead to pin 25 on the printer end of the cable. Now connect the black lead to pin 23 of the printer end of the cable. Set your meter to read milliamps.

-Apply power. Your meter should read as follows:

300 to 9600 Baud **on demand**: The meters display should have a stable reading between 18.0 and 40.0 mA. Any reading below 18.0 mA or above 40 mA indicates there is a malfunction in the sending device.

2400 to 9600 **continuous**: The meters display should be fluctuating continuously between 16 mA and 22 mA.

In the **continuous mode**, the constant fluctuation on the meter display indicates the Scale/Indicator is transmitting information. To test the **demand** baud rates, press the Print Button on the Scale/Indicator and the display should fluctuate to half to three quarters of the initial reading then become stable again. This indicates the Scale/Indicator has transmitted data.

NOTE: WHEN MEASURING THE HIGHER BAUD RATES IN THE DEMAND MODE, THE METER DISPLAY WILL FLUCTUATE FOR A SHORTER PERIOD OF TIME.

9.5 TESTING RS232 OUTPUT OF SCALE/INDICATOR

If you suspect the Scale/Indicator may not be transmitting data to the printer when using RS232, follow this testing procedure which will assist you in determining whether the Scale/Indicator is operational.

-Remove power from both units and dissconnect the Data cable from the 8844.

-Set your meter to read 20 volts DC. Connect the red lead to pin 2 of the printer end of the data cable and the black lead to pin 7.

-Apply power, your meter should read as follows:

300 to 9600 baud on **demand**:	Your meter should read between -5 and -15 with no fluctuation.
2400 to 9600 baud **continuous**:	The display on your meter will be fluctuating betwee -5 volts and +5 volts continuously.

In the **continuous mode**, the constant fluctuation on the meters display indicates the Scale/Indicator is transmitting information. To test the **demand** Baud rates, press the Print Button on the Scale/Indicator and the display should fluctuate to between -5 volts to +5 volts for the duration of the transmission, then become stable again. This indicates the Scale/Indicator has transmitted data.

NOTE: WHEN MEASURING THE HIGHER BAUD RATES IN THE DEMAND MODE, THE METER DISPLAY WILL FLUCTUATE FOR A SHORTER PERIOD OF TIME.

9.6 RIBBON CASSETTE

A single ribbon permits the printing of about 4 million characters. When the printing starts to fade, gently push the counter spring in the ribbon cassette hole with the tip of a ballpoint pen or other object. **Once the ribbon cassette is mounted onto the carriage and printing is performed for a short time, the characters will become darker.**

NOTE: DO NOT RE-INK THE RIBBON BEFORE PRINTING STARTS TO FADE. IF THE RIBBON HAS TOO MUCH INK THE CHARACTERS MAY SMEAR WHEN PRINTED.

WEAR AND TEAR OF THE PRINTHEAD PINS MAY CAUSE SERIOUS DAMAGE TO THE RIBBON AND PRINTING TO FADE. IN SUCH CASES THE PRINTER NEEDS SERVICING.

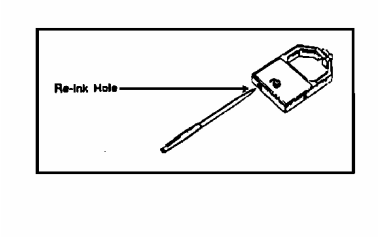


FIGURE 9.2 - RE-INK HOLE

10.0 INPUT CONNECTIONS

The model 8844 printer has both RS-232 and passive 20 mA current loop interfaces standard. The baud rate and word length are selected using DIP switches inside the printer. Refer to Section 3.6 for a full description of the setup selections.

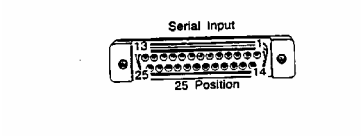


Figure 10.1

10.1 PROTOCOL (HANDSHAKING)

The 8844 printer has both hardware (DIR) and software (X-ON/X-OFF or ETX/ACK) handshaking signals available. The status of these signals is determined by the state of the data storage buffer. This status is expressed in two ways.

10.1.1 Printer Ready

When the printer is Ready (able to receive data) the signal level on pins 11 and 20 is + 12 VDC. (Assuming switch SW1-4 is at the factory setting.) Whenever the printer status changes from a Busy to a Ready state, the X-ON code (Hex 11) is sent via pin 2. This assumes that switch SW2-8 is at the factory setting.

10.1.2 Printer Busy

When the printer is Busy, the level on pins 11 and 20 is -12VDC. (Assuming switch SW1-4 is at the factory setting.) Whenever the printer status changes from a Ready to a Busy state the X-OFF code (Hex 13) is sent via pin 2. This assumes that switch SW2-8 is at the factory setting.

Jumpers 101, 102 and 103 may need repositioned if non-standard interface is required. The following chart will help to determine the correct positioning.

	When Using RS-232C		When Using Current Loop	
Jumper Position	Flag Control	X / ON - X / OFF or ETX / ACK	Flag Control	X / ON - X /OFF or ETX / ACK
J101 a - b b - c*	ON OFF	ON OFF	OFF ON	OFF ON
J102 a - b b - c*	X X	X X	OFF ON	ON OFF

Table 10-1 -Protocol Jumper Selections

X - Does Not Matter. * - Indicates Factory Settings.

10.2 INTERFACE CONNECTOR

The printer is fitted with a standard 25 pins DB type connector on the rear cover, with pin numbers and signal descriptions as follows:

PIN	SIGNAL NAME	FLOW
1	Chassis Ground	
2	TxD (Transmit Data RS-232)	OUT
3	RxD (Receive Data RS-232)	IN
6	DSR (Data Set Ready)	IN
7	Signal Ground	
8	DCD	
11	REV (Reverse Channel)	OUT
17	20 mA TxD (+)	OUT
20	DIR (Data Terminal Ready)	OUT
23	20 mA RxD (-)	IN
24	20 mA TxD (-1)	OUT
25	20 mA RxD (+)	IN

Figure 10.2 - Interface Connector

NOTE: 1. ALL PINS NOT SHOWN ARE NOT CONNECTED.

10.3 INTERCONNECTING NOTES

1. RS232-C has a medium amount of noise immunity. Performance of the communication link may be improved by not bundling the cable with other wiring and routing the cable away from devices which produce electrical noise.

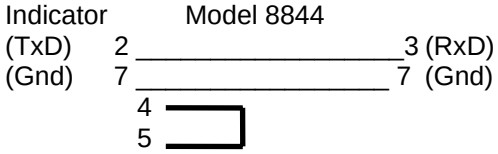
2. RS232-C has a recommended maximum distance of 50 feet. Long distances of successful communications are highly dependent on the electrical environment.

3. 20 mA current loop has a recommended distance of 1000 feet. Longer distances of successful communications are highly dependent on the electrical environment.

10.4 CABLE CONFIGURATIONS

The following diagrams show the wiring connections of the standard Mettler Toledo interconnecting printer cables.

10.4.1 Standard industrial products (cable with DB-25 connector). RS232 Interface.



10.4.2 Standard industrial products (cable with DE9 connector). RS232 Interface.

Indicator		Model 8844	
(TxD)	3	3	(RxD)
(Gnd)	5	7	(Gnd)
(RxD)	2	2	
(RTS)	7		
(CTS)	8		

10.4.3 Standard industrial products (cable with 10-pin bayonet connector used for NEMA 4X enclosures). RS232 Interface.

Indicator		Model 8844	
(TxD)	B	3	(RxD)
(Gnd)	G	7	(Gnd)

10.4.4 Cable to Model 8305 controller, Model 8422 scale and Model 8423 controller using a DE-9 pin connector. RS232 Interface.

8305/8422/8423		Model 8844	
(TxD)	2	3	(RxD)
(RxD)	3	2	(TxD)
(Gnd)	7	7	(Gnd)
(CTS)	5	11	(REV)
		19	(N.C.)

10.4.5 Cable to Model 8301-C scale using a 9 pin cannon connector. RS232 Interface.

8301-C		Model 8844	
(Gnd)	3	7	(Gnd)
(TxD)	5	3	(RxD)
Chassis)	8	1	(Chassis)

NOTE: THE PART NUMBERS FOR THESE CABLES CAN BE FOUND IN SECTION 10.2 OF THIS MANUAL.

10.4.6 Standard interface cable wiring for 20 mA current loop interface.

Scale/Indicator	Model 8844
+20 mA Transmit	Pin 25
-20 mA Transmit	Pin 23

NOTE: For some scales and Indicators it may be necessary to install a jumper on the Scale/Indicator side of the cable to supply the 20 mA loop. Reference the units Technical Manual For more information concerning wiring of the 20 mA current loop.

11. ACCESSORIES

11.1 REPLACEMENT PARTS

Description	Part Number
Ink Ribbon Cassette	143554 00A
Remanufactured Printer	8844-0001-RMD

11.2 INTERCONNECTING CABLES

DESCRIPTION	PART NUMBER	FACTOR NUMBER
Industrial 6' cable with DB-25 connector. (RS232)	B128220 00A	0900-0214
Industrial 20' cable with DE-9 connector. (RS232)	131911 00A	0900-0255
Industrial 20' cable with 26 pin bayonet connector. (RS232)	128221 00A	0900-0215
Industrial 6' cable with DB-25 connector (bi-directional) (RS232)	129609 00A	0900-0243 (132305 00A)
10 foot cable from Retail Models 8422, 8423 and 8305. (RS232)	A127164 00A	0900-0209
25 foot cable from Retail Models 8422, 8423 and 8305. (RS232)	A127177 00A	0900-0213
6 foot cable from 8530 (20mA current loop)	138216 00A	0900-0290 (138219 00A)

Table 11-1 -Cables

11.3 PRINTER MATING CONNECTOR

DESCRIPTION	PART NUMBER	FACTORY NUMBER
Complete connector kit	128881 00A	0917-0144
- Male connector	107187 00A	- - - - -
- Metal cable clamp	125389 00A	- - - -
- Male connector pins	107189 00A	- - - -
Raw Cable (sold by the foot)	510422 190	

12.0 DECIMAL TO HEX TO ASCII CONVERSION CHART

ASCII	DEC	ASCII	DEC	ASCII	DEC	ASCII	DEC	ASCII	DEC	ASCII	DEC	ASCII	DEC	ASCII	DEC
NUL	000	DLE	016	SP	032	0	048	@	064	P	080	`	096	p	112
SOH	001	DC1	017	!	033	1	049	A	065	Q	081	a	097	q	113
STX	002	DC2	018	"	034	2	050	B	066	R	082	b	098	r	114
ETX	003	DC3	019	#	035	3	051	C	067	S	083	c	099	s	115
EOT	004	DC4	020	$	036	4	052	D	068	T	084	d	100	t	116
ENQ	005	NAK	021	%	037	5	053	E	069	U	085	e	101	u	117
ACK	006	SYN	022	&	038	6	054	F	070	V	086	f	102	v	118
BEL	007	ETB	023	`	039	7	055	G	071	W	087	g	103	w	119
BS	008	CAN	024	(	040	8	056	H	072	X	088	h	104	x	120
HT	009	EM	025	)	041	9	057	I	073	Y	089	i	105	y	121
LF	010	SUB	026	*	042	:	058	J	074	Z	090	j	106	z	122
VT	011	ESC	027	+	043	;	059	K	075	[	091	k	107	{	123
FF	012	FS	028	'	044	<	060	L	076	\	092	l	108	|	124
CR	013	GS	029	-	045	=	061	M	077	]	093	m	109	}	125
SO	014	RS	030	.	046	>	062	N	078	^	094	n	110	~	126
SI	015	US	031	/	047	?	063	O	079	_	095	o	111	DEL	127

Table 12-1 -HEX CONVERSION CHART

13.0 TECHNICAL MANUAL ADDENDUM

On the following page is a chart listing the recommended switch settings for standard retail and industrial applications of the Model 8844 Document Printer.

For more information on programming refer to Technical Manual TM008844 100.

NOTES:

1) The selected baud rate for industrial products is 9600 baud.

2) The selected baud rate for the 8301C scale is 1200 baud.

3) The following program selections are required for the Model 8422 scale and the Models 8423 and 8305 controllers.

BUSY HI?	**[NO]**
PTR BAUD RATE?	**94800]**
COMPRESSED PRINT HEX CODE	**[0F] (MUST BE ENTERED AS CAPITALIZED LETTERS]**

For controllers with EPROMS 130967 00A and 130983 00A:

NORMAL PRINT HEX CODE	**[12]**

4) To maintain maximum lightning protection when installing the 8844 Document Printer with a Model 8530 Indicator, Mettler Toledo recommends that the 20 mA current loop method of transmitting data be used.

As a reminder:

The 8844 Printer is shipped from the factory to receive transmission in RS232. J101 on the serial interface PCB is jumpered between pins A and B. If passive 20 milliamp current loop is needed it will be necessary to place the J101 jumper between pins B and C as shown in Figure 1.

Refer to section 6 on page 19 of this technical manual for information on how to gain access to J101.

Figure 1

Switch Number	Switch Function	Industrial Products	Model 8301C	Models 8305, 8422, 8423	Model 8460M
SW 1-1	Word Length	ON	ON	OFF	OFF
SW 1-2	Parity Check	ON	ON	OFF	OFF
SW 1-3	Parity Selection	ON	ON	ON	ON
SW 1-4	DTR Polarity	OFF	OFF	OFF	OFF
SW 1-5	Baud Rate	OFF	ON	OFF	OFF
SW 1-6	Baud Rate	ON	OFF	ON	ON
SW 1-7	Baud Rate	OFF	OFF	OFF	OFF
SW 1-8	Baud Rate	OFF	OFF	ON	ON
SW 2-1	Resume Data Transfer	OFF	OFF	OFF	OFF
SW 2-2	Buffer Enable	ON	ON	ON	ON
SW 2-3	Suspend Data Transfer	OFF	OFF	OFF	OFF
SW 2-4	Suspend Data Transfer	ON	ON	ON	ON
SW 2-5	Self Test Mode Enable	OFF	OFF	OFF	OFF
SW 2-6	Self Test Mode Enable	OFF	OFF	OFF	OFF
SW 2-7	DTR Control	ON	ON	ON	OFF
SW 2-8	Protocol Selection	OFF	OFF	OFF	OFF