8855

Technical Manual
and
Parts Catalog

INTRODUCTION

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

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

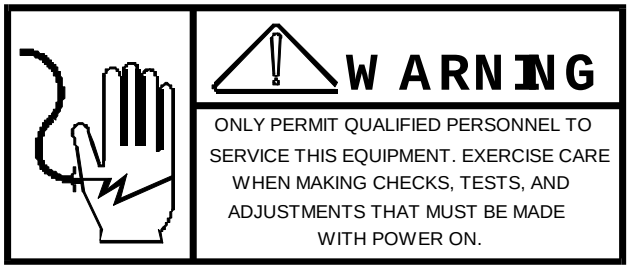
METTLER TOLEDO
Training Center
P.O. Box 1705
Columbus, Ohio 43216
(614) 438-4400

PRECAUTIONS

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

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

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



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

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

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

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

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

CONTENTS

1. GENERAL DESCRIPTION

The 8855 strip printer is intended primarily for use with Toledo Industrial indicators and modules utilizing an ASCII coded 20 mA transmission. An optional RS-232 interface is also available.

FEATURES:

- Double width printing of data, after receiving an ASCII “SO” character.
- 7 wire, dot matrix print head prints characters 0.123” (3.1mm) high.
- Print fields of up to 40 characters at 12 characters per inch.
- Printing of gross, tare, net or all legal characters.
- Unit meets U.L. and C.S.A. design criteria for case flammability, power input connections, fusing and grounding of all metal parts, etc.
- Easy, quick replacement of print ribbon.
- Power input it through attached line cord.
- Multiline Buffer of 128 characters.
- Data input is through a separate data cable selected for the type indicator used (20mA loop at 300 baud).
- 6 lines per inch spacing.
- 3.33 inch (84.6mm) print line on 3.875 inch (98.4mm) paper.
- One or two ply paper (0.003”, 0.076mm to 0.007”, 0.18 mm) accepted.
-Tear bar design permits viewing of last line printed.
- Optional RS-232 Interface PCB.

2. SYSTEM DESCRIPTION

2.1 OPERATING PRINCIPLE

The printer uses a 7 wire, dot matrix print head that moves across the paper with a maximum printing area of 3-1/3”, (84.7 mm). The seven wired are moved within guiding sleeves to impact an ink ribbon against the paper, forming characters in a 5 x 7 dot matrix arrangement. Character height is fixed at 0.123” (3.1mm). Input is via 20mA current loop at 300 baud or optional RS-232 at 1200 baud. The transmitter supplies the current and the printer includes an opto-isolator. The printer does not check parity.

2.2 OPERATING DESCRIPTION

The 8855 printer is composed of three major sub-assemblies which follow.

1. PRINT MODULE - Contains printing mechanism; ribbon, print head drive motor and paperfeed motor.
2. MAIN PCB- Controls printer, processes incoming data from scale and has complete power supply including transformer mounted on OCB.
3. CASE- Molded high impact flame retardant structural foam.

3. SPECIFICATIONS

3.1 ELECTRICAL AND PHYSICAL

3.1.1 ENVIRONMENT

The printer is operable from 0ºc to +50ºC(32ºF to +122ºF) at relative humidities from 5% to 95% non-condensing. The printer is NOT designed for “hose down” areas.

3.1.2 POWER INPUT

The printer is operable at 115VAC, 60 Hz or 230VAC, 50Hz (+10%,-15%) depending on the factory number. Power consumption is approximately 25 watts.

3.1.3 UL & CSA STANDARDS

Materials, components, and electrical design comply with U.L. & C.S.A standards and requirements, including case flammability, power cord retention and grounding, grounding of all metal parts, fusing,etc.

3.1.4 APPEARANCE & DIMENSIONS

The color of the printer is fog white with flat black top and base covers. Base dimensions are 12.5" deep (318 mm) x 6.5" high (165mm) x 10" wide (254mm). The 8855 weighs 10.8 lbs (4.9kg). Shipping weight is 14 lbs. (6.35 kg).

3.2 INTERNAL FUNCTIONS

The printer uses a dot matrix impact printing element driving point wires. The print wires are arranged vertically and the printing elements is driven across the print area by a spirally grooved drive drum. A cam on the driving drum provides for paper advance once each print cycle.

A synchronous A>C. motor powers the main drive drum. This drum, with it's spiral groove drives the printhead. Passage over the printing area is at a constant speed of 10.75 inches per second. Outside the printing area the groove is configured to provide a gradual deceleration and acceleration back to printing speed. Because the printing element speed is constant, there is no need for a feedback system to determine the proper timing of the print pulses. These are generated by the electronics as soon as it has received the signal that the printing elements has left the home position. The "Print Home" switch is wired to the I/O connector to provide a Print Complete signal.

The paper feed mechanism provides for paper to be advanced one line each time the main drive cam rotates. This is accomplished by a paper feed eccentric being driven by the main drive cam. As the print head returns to the home position, the eccentric causes the line feed pawl to engage the ratchet teeth on the left hand side of the platen. This rotates the platen and the paper, held to the platen by the pressure roller, 1/6th of an inch. The platen is detented on the right hand side to assure uniformal travel. The continued rotation of the paper feed eccentric extends the line feed pawl in preparation for the next line advance.

3.3 PRINT FORMATS

Print formatting is accomplished by the data source, not by the printer, as the printer responds only to data received. Checksum must be OFF in the indicator being used with the Model 8855 printer.

1. SINGLE WIDTH PRINT

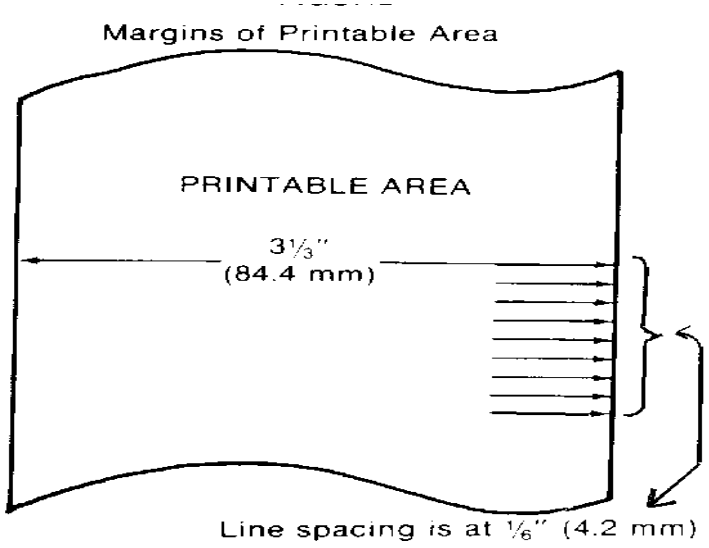
2. DOUBLE WIDTH PRINT

3. MULTI-LINE PRINT

```
PART NO. 1234569
03:48PM APR25 81
   1.4612LB
   0.2500LB TR
   1.2112LB NET
   0.0484LB APW
      25 PIECES
```

3.4 PRINT AREA

The printing area covered by the print element is 3-1/3" wide, providing for a 40 character capacity at a standard 12 character per inch. Vertical spacing is a standard six lines per inch.



3.5 PAPER ROLLS

Width:	2.25 to 3.875 inches
Diameter:	3.25 inches maximum
Thickness:	0.003 to 0.007 inches, one or two ply.

3.6 FACTORY NUMBER GUIDE

Factory Number	Operating Voltage
8855-0001	115VAC 60 Hz
8855-0002	230 VAC 60Hz

4. INSTALLATION INSTRUCTIONS

NOTE: DO NOT OPERATE PRINTER WITHOUT RIBBON AND PAPER INSTALLED.

4.1 SET-UP PROCEDURE

Unpack printer and make visual inspection, checking for missing or damaged parts. Before powering up the printer, install paper and ink ribbon as per the following instructions.

4.2 PAPER INSTALLATION

First verify that the paper feel pawl is disengaged from the ratchet teeth on the platen. If this pawl is engaged, rotating the platen will damage the printer.

The feed pawl is not engaged when the print head is in the home position at the extreme left hand side of the paper. If the print head isn't the left, rotate the drive cam until it is.

NOTE: Always rotate the drive cam such that the top of the cam moves towards the platen. Rotating the cam backwards can jam the print switch actuator arm and bend it.

Use the mandrel supplies to support the paper roll in its supply bracket. Orient the paper so that the paper is fed off the roll in the upward direction on the printhead side of the roll.

Pull the paper release arm (located to the right of the platen) forward and slide the paper under the platen. Release the paper release arm and manually rotate the platen until paper appears under the tear off blade. The proper paper path is shown in the accompanying drawing.

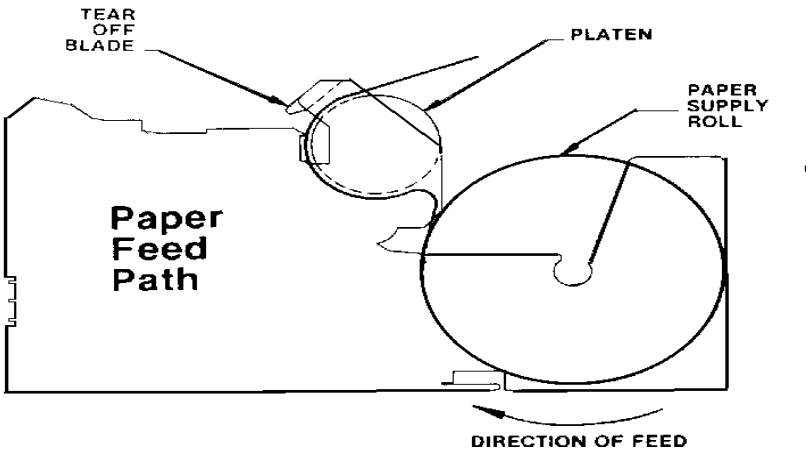


Figure 2

4.3 RIBBON INSTALLATION

The 8855 printer uses a 5/16” wide ribbon. The ink ribbon is a disposable reel to reel type. Ribbon life is determines by number of prints, type of paper, dust and humidity conditions.

The ribbon is replaced by first removing the top cover and removing the old ribbon. The ribbon is loaded by pushing the two spools down on the ribbon posts and insuring that the ribbon lies in the ribbon deflector on the left side of the print head and to the inside of the ribbon tension arm. Be sure that the ribbon feed pawl is not beneath the spool.

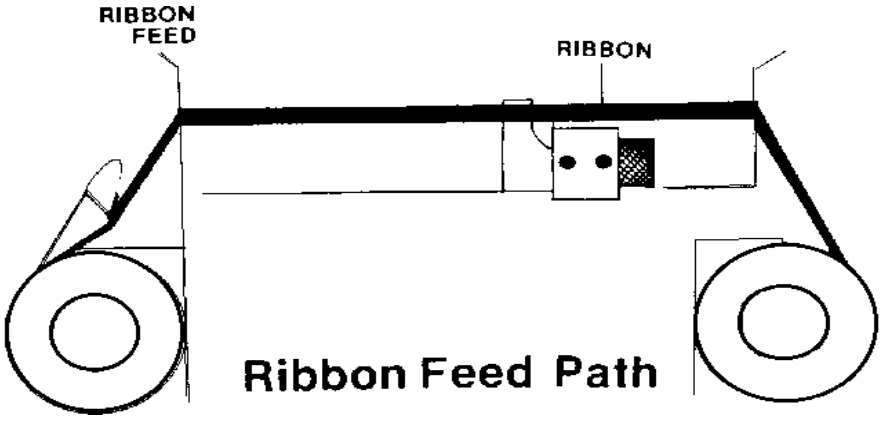


Figure 3

5. OPERATING INSTRUCTIONS

USING YOUR 8855 PRINTER

All print commands must come from the indicator used, either by pushing the print button in the indicator, or by internal programming of the indicator. After the printing is complete, the paper will automatically advance to the next print line.

The only operator control function on the printer is the ON/OFF switch, located on the front panel. This switch removes power from the entire printer.

6. PREVENTATIVE MAINTENANCE

The Model 8855 printer is designed to require a minimum of maintenance and service. This section provides instructions and procedures for both cleaning and maintenance of the printer, as well as a troubleshooting guide to aid in problem analysis.

It is suggested that assistance from Toledo Scale service personnel be requested in the event a problem should arise that is beyond the scope of this technical manual.

6.1 REQUIRED TOOLS AND SUPPLIES

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

1) Volt-Ohm Meter
2) Feeler Gauges
3)Lubricant (Part # 083012020)
4) Isopropyl Alcohol
5) Cleaning Cloths
6) Cotton Swabs

6.2 CLEANING

CAUTION
DO NOT USE A METAL DEVICE TO REMOVE PAPER JAMS AS THIS CAN CAUSE SEVERE DAMAGE TO ELECTRONIC PARTS.

6.2.1 Clean printer mechanism thoroughly, using denatured alcohol, cloths and cotton swabs to remove hardened grease, ink and dirt.

6.2.2 Rotate platen and clean with an alcohol soaked cloth.

6.2.3 Remove head and clean head and head shaft with alcohol.

6.2.4 Clean guide in extrusion in which the “tail” of the print head travels.

6.2.5 Reassemble head to printer, insuring that proper air gap clearances are maintained (0.012”).

6.3 INSPECTION

6.3.1 Check for easy movement of the head assembly on the print head assembly shaft.

6.3.2 Inspect the ribbon reverse mechanism for free movement. Manually operate the ribbon feed pawl back and forth to check operation. Be sure that both springs are securely in place and of equal tension.

6.3.3 Inspect the printer for any loose or missing screws.

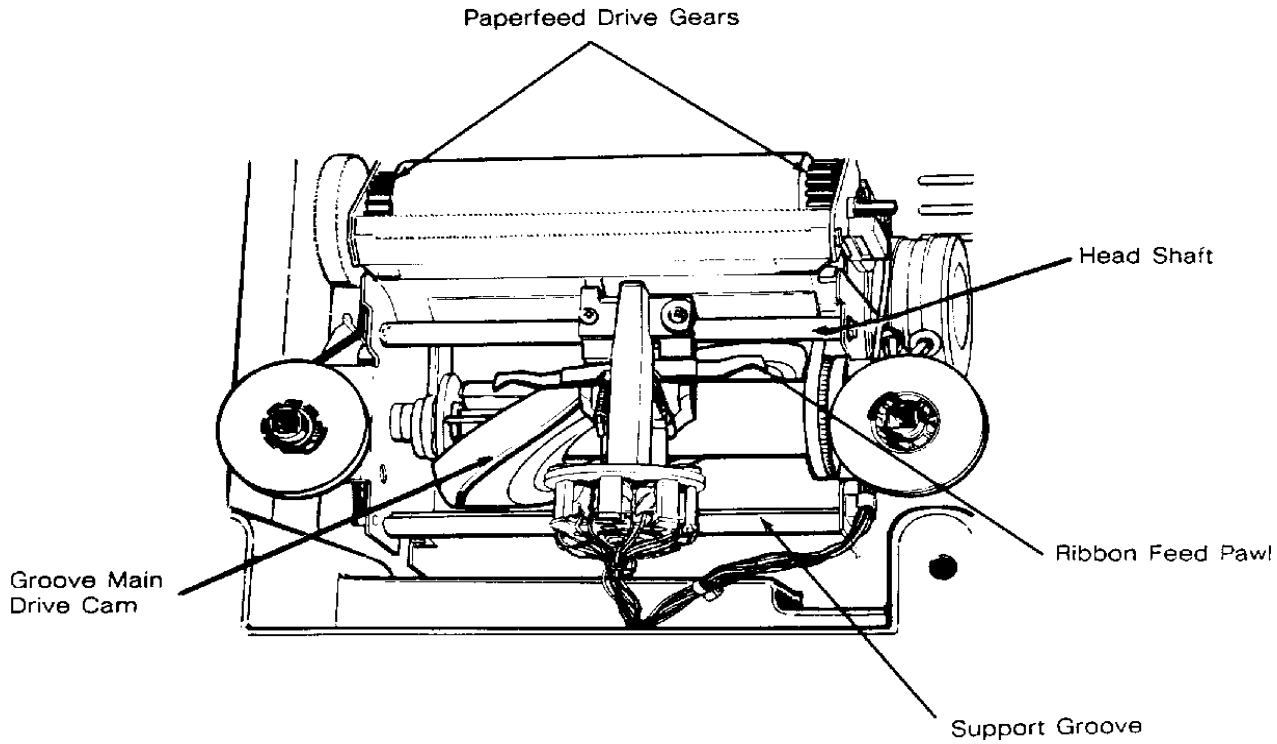
6.3.4 Check the motor belt tension. The tension on the belt should be approximately two (2) pounds. To set the proper tension, loosen the two main motor drive holding screws and apply approximately two pounds pressure to the motor directly away from the main drive cam. Proper adjustment should allow the belt to be deflected at midpoint between 1/8” to 3/16” with light pressure.

NOTE: The newer Model 8855 printers will have a gear drive arrangement in place of the belt drive.

6.4 LUBRICATION

The recommended lubricant is Toledo part number 083012020. After cleaning, lubricate the following areas shown in Figure 4.

NOTE: only a small amount of lubricant, enough to create a film, is needed in each location.



6.5 TROUBLESHOOTING

Troubleshooting is limited to adjustments in the print module, and voltage checks.

The printhead consists of a carrier and seven print solenoids. The solenoids are arranged so that the solenoid print wires from a vertical bar with the top wire corresponding to solenoid #1 and the lowermost wire corresponding to solenoid #7. By energizing the solenoids at the proper time as the printhead traverses the printing area, any desired character may be formed.

The solenoids are driven by a 40 volt D.C> power supply and current peaks at 2 amps D.C. Resistance of the coils is 7.9 ohms ±7.5% (7.3A to 8.5A) when measured at 20ºC (68ºF). The resistance rises rapidly with temperature. Printhead life is 100,000,000 average characters, where the averages character is the character "B". The printhead is connected to the electronics with a 14 pin connector. The pin assignments for this connector are:

SOLENOID NUMBER	PINS
1	1,8
2	2,9
3	3,10
4	4,11
5	5,12
6	6,13
7	7,14

It is possible to assemble this connector to the printed circuit card backwards. If this happens, the print characters are printed upside down. No harm is done to the printhead, but to correct the problem, simply reverse the connector.

TROUBLESHOOTING GUIDE

SYMPTOM	CORRECTION ACTION

Print motor stars but no print occurs.	A. Check home position micro-switch.
Uneven line feed.	A. Dirty Platen B. Weak pressure roll spring.
Excessive variation in character size (width)	A. Drive belt tension excessive B. Clean and lubricate printhead shaft.
Missing dots in characters.	A. Printhead or Main PCB failure. B. Use Ohm meter on coils, if coils check out, replace Main PCB. If coils are defective, replace printhead.
Print motor pr line feed motor stalls, will not start, or will not stop.	A. Check belt tension. B. Remove obstructions fin print module. C. Replace print module, or Main PCB.
Overlapping Print Character	A. Clean and lubricate Head Shaft and Head Support Groove.

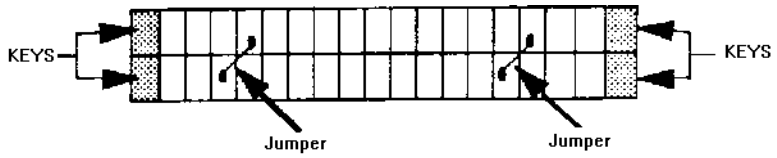
6.6 SELF TEST FEATURE

The Model 8855 strip printer has a self test function that can be accessed with a jumper when the Interface PCB is removed. Using the parts listed below, a tool can be assembled to check the operation of the print module and Main PCB. The input circuitry and buffer for the 20 mA current loop is not checked with this self test feature.

Parts Required:

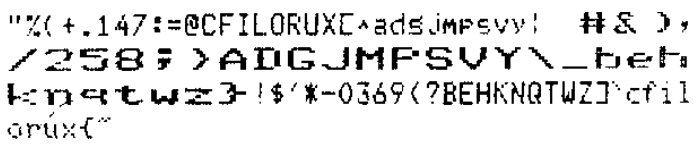
Part Number	Description	Quantity
117444 00A	Dual 19 Pin Connector	1
107162 00A	Contact Pin (Female)	4
094052	Key	4
Purchase Locally	1-1/2" of 22 gauge wire	2

Assemble the test tool as shown disregarding the pin numbers on the connector.



Rear of Connector Shown

To use the tool, turn the power switch OFF and remove the Interface PCB. Connect the test tool to the dual 17 pin male plus at the rear of the Main PCB. The keys at the end s of the connector will prevent the connector from being inserted incorrectly. When the power switch is turned ON again, the printer should start its self test print. A sample of the test print follows.



6.7 INPUT AND OUTPUT CONNECTIONS

6.7.1 20mA Current Loop Interface

The following interconnecting Cable Chart shows the correct pin connections for interconnecting cables between the Model 8855 printer and other Toledo Scale 20mA devices. Locate the other device's model number in the following Model Number Listing and use the letter after the model number to locate the correct column in the Interconnecting Chart.

INTERCONNECTING CABLE CHART

Signal Name	8855	A	B	C	D	E	F	G*	H
20mA (+)	3	15	25	3	6	15	9	J	2
Busy (Low true)	4								
Logic Ground	7								
20mA (-)	22	14	10	1	1	14	22	Y	4
Print Complete (Low true)	25								
Jumpers shown are located in the indicator end of the interconnecting cable chart			11 12		16 19	14 15	P R		

MODEL NUMBER LISTING

150 - A	2126 - B	8132 - B	8185 - A
151 - B	2127 - E	8136 - B	8186 - F
280 - C	2136 - F	8139 - B	8301 - H**
2026 - B	2137 - F	8140 - F,G*	8580 - F,G*
2027 - E	3200 - D	8142 - F,G*	8581 - F
2036 - F	3205 - E	8146 - F,G*	8582 - F
2037 - F	3210 - E	8182 - A	8622 -F,G*

* - This indicates the wall enclosure pin letters.

** - The 8301 must be a Memory Expansion version.

INTERCONNECTING CABLES

Letter from Model Number Listing	Enclosure Type	Cable Length	Part Number	Factory Number
A	Desk	6'	A114283 00A	0900-0074*
	Desk	20'	A114406 00A	0900-0075*
A	Wall	20'	A113237 00A	0900-0091*
B	Desk	6'	114285 00A	0900-0078
	Desk	20'	114408 00A	0900-0079*
B	Wall	6'	114104 00A	0900-0084*
	Wall	20'	114105 00A	0900-0085
C	- -	6'	114286 00A	0900-0080*
	- -	20'	114409 00A	0900-0081*
D	- -	6'	A114284 00A	0900-0076*
	- -	20'	A114407 00A	0900-0077*
E	Desk	6'	117141 00A	0900-0115*
	Desk	20'	117142 00A	0900-0116*
F	Desk	6'	B119722 00A	0900-0197
	Desk	20'	B119723 00A	0900-0198*
G	Wall	6'	A122578 00A	0900-0186*
	Wall	20'	A122579 00A	0900-0187
H	- -	8'	116299 00A	0900-0099

* - Not available through Toledo Scale by factory number. Use the part number to order.

6.7.2 RS-232 Interface

An optional interface must be installed to make the Model 8855 Printer RS-232 compatible. The following two kits are available to convert the standard Model 8855 for RS-232 use with certain Toledo Scale products.

Scale Model For Interface	Kit Part Number	Kit Factory Number
3025, 3035,3045,3055	A special cable configuration is required. Contact Toledo Scale Factory for details.	
8571	129618 00A	0900-0244
8188	123654 00A	0900-0193*

* - Not available through Toledo scale by factory number. Use Part number to order.

6.7.3 Journal Printer Interface

The Model 8855 may be used as a journal printer when connected to the output of a Model 8810, 8820 Printer or a Model 8806 ticket printer.

6.7.3.1 Connection to 8810-20-30 Printer

When used with a Model 8810-20-30 Printer, each data field will be printed on a separate line regardless of how the 8810-20-30 is programmed to print. The 8810-20-30 printer must be a Factory Number -0002 or -0003 and must be programmed for external data processing with no reply message.

CABLE CONFIGURATION	
8810-20-30 J26	**8855 J1**
9	3
19	22
14	
15	

Cable Length	Part Number	Factory Number
6’	111321 00A	0900-0089*
20’	111322 00A	0900-0090*

* - Not available through Toledo Scale by factory number.

6.7.3.2 Connection to Model 8806 Printer

When used with a Model 8806 printer, the print format to the Model 8855 will be the same as the format printed on the 8806 ticket.

The 8806 must be a Factory Number -0002 or -0003 and the serial output must be enabled in setup. Certain special 8806’s with a Factory Number of -0001SS may also have the data output for a journal printer.

CABLE CONFIGURATION	
8806 J26	**8855 J1**
9	3
7	22
14	
15	

7. PARTS REPLACEMENT

Recommended Spare Parts

Qty.	Part Number	Description

1	115331 00A	Interface PCB
1	115332 00A	Main PCB
1	115336 00A	Print Head
5	133619 00A	Fuse (1.5 Amp)
1	114287 00A	Ribbon Assembly

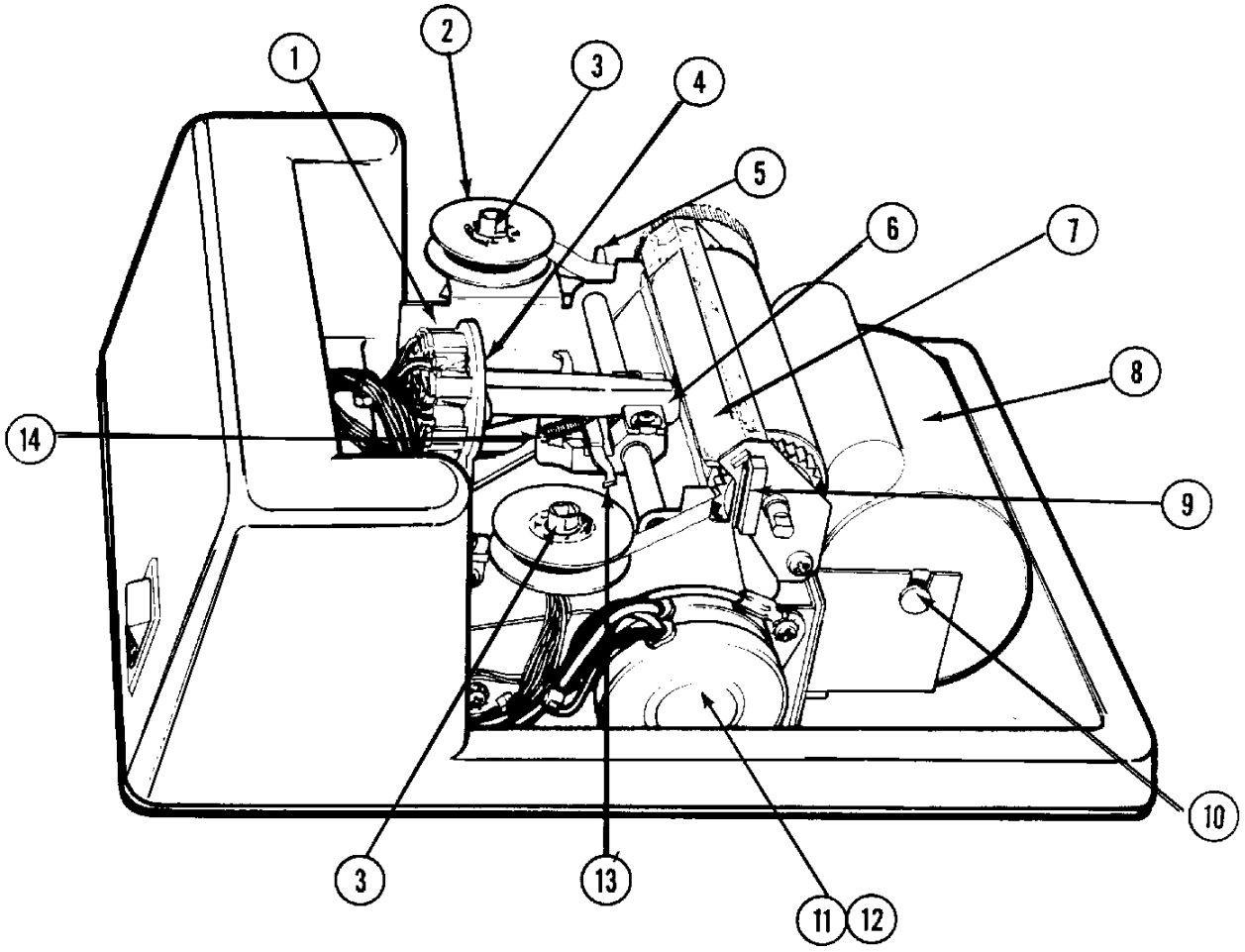
Other items that will aid in servicing are:

Qty.	Part Number	Description
A.R.	112736 00A	Static Bag 8”x10”
A.R.	112737 00A	Static Bag 12”x16”
1	083012 020	Lubricant

A.R. - AS REQUIRED

8. PARTS CATALOG

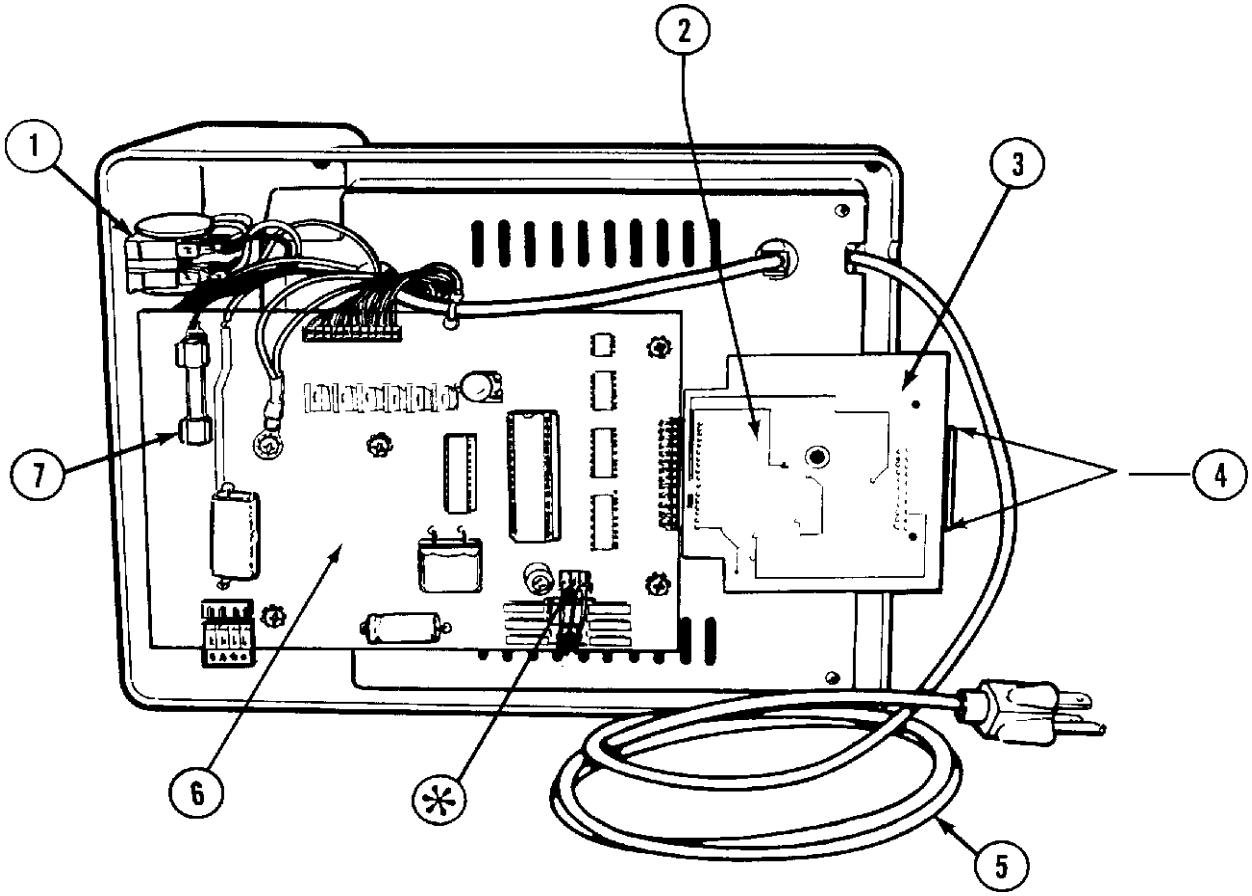
8.1 PRINT MODULE ASSEMBLY



REF	PART NUMBER	DESCRIPTION	QTY
1	115335 00A	Print Module Assembly	1
2	114287 00A	Ink Ribbon and Spools	1
3	110880 00A	Ribbon Post Assembly	2
4	115336 00A	Printhead Assembly	1
5	110868 00A	Ribbon Tension Spring (NS)	1
6	114415 00A	Ribbon Guide Clip	1
7	109119 00A	Tear Off Blade	1
8	KT665024 XAS	Paper Roll (3-7/16” wide) (2 ply = KN000000I11)	1
9	129875 00A	Paper Release Lever Spring	1
10	109118 00A	Paper Mandrell	1
11	129876 00A	Motor Assembly	1
12	129874 00A	Drive Belt (NS - Early Design)	1
13	110871 00A	Ribbon Reverse Arm	1
14	110866 00A	Ribbon Reverse Arm Spring	2

(NS) - Not Shown

8.2 PCB'S AND HARDWARE



REF	PART NUMBER	DESCRIPTION	QTY
1	115333 00A	Power On/Off Switch	1
2	115331 00A	20mA Interface PCB**	1
	123654 00A	RS-232 Interface PCB (for 8188)	1
	129618 00A	RS-232 Interface PCB (for 8571)	1
3	109120 00A	Interface PCB Insulator (NS)	1
4	126861 00A	Hex Standoff Kit (NS)	1
5	115334 00A	Power Cord	1
6	115332 00A	Main PCB (120 VAC)	1
7	133619 00A	Fuse, 1.5A Conventional (120 VAC)	1
	133618 00A	Fuse, 0.75A Conventional (220 VAC)	1
8	115332 00B	Main PCB (220 VAC) (NS)	

NS - Not Shown

* - The White wire in this harness does not connect to a pin on the Main PCB. The other two wires will connect to the two pins on the PCB.

** - This is the standard interface used with the Model 8855.