315

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:

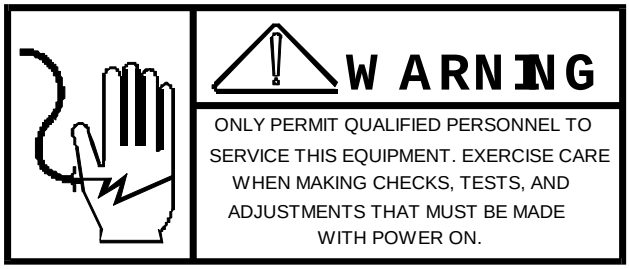
METTLER TOLEDO
Training Center
P.O. Box 1705
Columbus, Ohio 43216
(614) 438-4400

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.

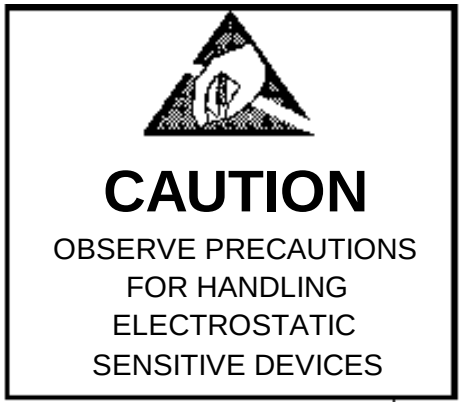
- **ALWAYS** take proper precautions when handling static sensitive devices.



- **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.

I. GENERAL DESCRIPTION

The 315 is a compact thermal printer designed to print labels containing human-readable information, as well as a UPC/EAN symbol. The 315 physical appearance and styling will blend with the Toledo 8301 and 602 Auto-Labeler.

The 315 is driven by the 8301, 8301C and 8423 scales. The printer receives Commodity Description, Date, Weight, Grade, Total Price and Bar CODE data from the scale to print labels on command. The 315 printer provides a label printed, label taken, and low stock status to the scale so that transactions can be recorded.

The 315 utilizes thermal printing technology to produce labels on adhesive-backed stock. The label stock is normally a white color. The label stock is pulled past a printhead, presenting a single row of dots, 0.16mm x 0.2mm (0.167.mm center to center). By selectively activating the dots, an image is transferred to the label stock as it moves by. A stripping edge removes the adhesive-backed label from the release liner and presents it to the user.

II. SYSTEM DESCRIPTION

A. PRINTER FUNCTION

The 315 printer utilizes a thermal printhead consisting of a single row of heating elements which activate chemically treated adhesive-backed label stock causing the paper to turn to a dark hue where heated. The label stock is normally a white color.

By selectively activating the heating elements, human-readable and bar code images can be formed as the label stock is moved past the head. A stripping edge removes the adhesive backed labels form the release liner and presents the labels to the user. The label is presented to the user adhesive side down on the front of the unit (the backing paper is wound up on an internal take-up spool.)

FEATURES:

- Thermal printhead, 6 dot/mm
- 20mA, 9600 baud interface to Toledo pre-pack scales
- UPC, EAN 13 Bar Code
- Program switch selectable label formats
- Alpha-numeric printing on 6 lines plus a bar code
- Heavy duty stainless steel enclosure
- Internal label counter
- Door, Printhead and Bezel interlock switches
- Auto/Manual switch selection
- UPC/non-UPC switch selection
- 4 Label formats available
- Preheated thermal printhead assembly

B. SYSTEM COMPONENTS

The 315 consists of eight major building blocks:

1. Main Logic PCB
2. Printer Driver PCB
3. Power Supply Assembly
4. Printhead
5. Label Sensors
6. Label Stepper Motor
7. Liner Take-up Motor

1. Main Logic PCB

The basic function of the Main Logic PCB is to control various operations performed by the printer. This unit controls the Printer Driver PCB. It also interfaces with the scale via serial interface loops.

The Serial Current Loop Interface (0-20mA) to and from the printer is used to communicate with the scale. The connections are made through the i/o connector located on the Main Logic PCB. Important parameters such as baud rate, parity check, etc., are controlled by software.

2. Printer Driver PCB

The basic function of the Printer Driver PCB is to control the Label Stock/Label Taken Sensors, Label Stepping Motor, and the Printhead.

It receives data from the Main Logic PCB to control the Stepping Motor, the printhead, and sends status data to the Main Logic PCB.

3. Power Supply Assembly

The basic function of the Power Supply Assembly is to generate various kinds of voltages. All regulated power supplies are on this PCB.

NOTE: The switching regular (ICI) controlling Printhead Voltage (+24V) is mounted to the deck. The 5 volt regulator (IC2) is also mounted on the deck, it connects to the Power Supply assembly at CN2.

4. Printhead

The 315 uses a preheated Thermal Printhead. Printing is achieved by applying power to selected elements (dots) on the printhead. Applying power to the dots causes them to heat, producing images on the Thermal (heat activated) paper passing below the printhead.

NOTE: Due to the preheating of the head, a warm-up time is required before maximum print quality is achieved. Depending upon the ambient temperature, the warm-up time will vary between 10 and 20 minutes form the time the unit is powered -up.

4.1 Printing Format

The thermal printhead consists of a single row of thermal dots on 0.167mm center, approximately 152 dots/inch. The Bar Code is formed in the direction of the paper motion while the Human Readable (HR) is formed across the width of the paper, parallel to the Bar Code. A label generated by this configuration appears as in Figure 1. The printer is capable of printing UPC and EAN. The printhead connects to the CN6 and CN7 on the Printer Driver PCB. Printer information is generated by the scales.

4.2 Printed Data

Human readable characters are formed in matrix by the thermal dots in the head. The fonts employed have the following characteristics:

STYLE NO.	HEIGHT mm (inch)	DENSITY(C/cm)
I	2.33 (0.091)	5.0
II	4.67 (0.184)	5.0
III	4.67 (0.184)	3.3
IV	3.00 (0.118)	5.0
V	3.00 (0.118)	5.0
IV	1.67 (0.066)	6.7

NOTE: Style V is the same as Style IV except the horizontal lines are twice as wide on Style V. commodity name lines and store address lines have a maximum length of 32 characters

4.3 Label Formats

a. 315U and 315HR Label Format

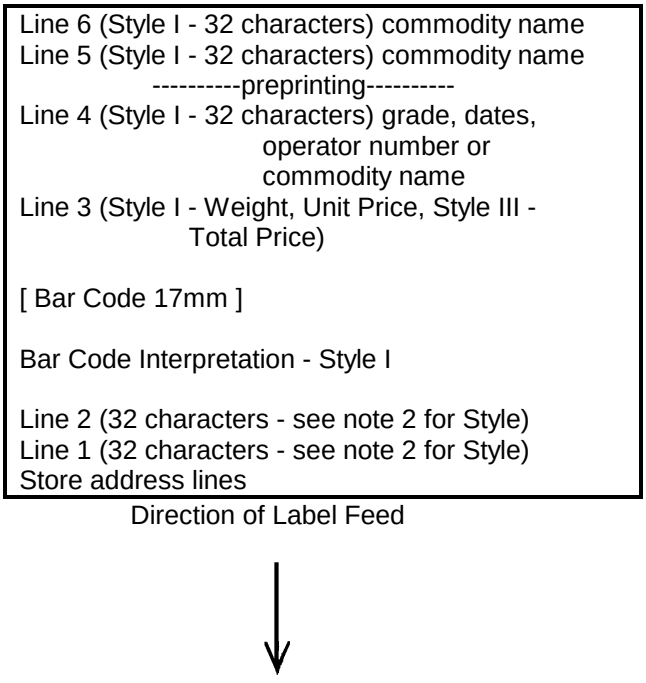


FIGURE 1

i. For detail on character size and location see Toledo drawing numbers:

DESCRIPTION	DRAWING NUMBER
UPC Label Format	126666
Non-UPC Label Format	126667
* Label Specifications	129239

ii. When lines 1 and 2 are both used, they are Style VI. When only one of the lines is used, it is Style I and is centered vertically between the normal locations of lines 1 and 2.

iii. Lines 5 and 6 are replaced by a single Style II line when there is only 1 line of commodity description. The single line is centered vertically between the normal locations of lines 5 and 6.

NOTE: LABEL SPECIFICATIONS - Drawing No 129239 is used in conjunction with the label format drawings.

b. 315 UL and 315 HL Label Format

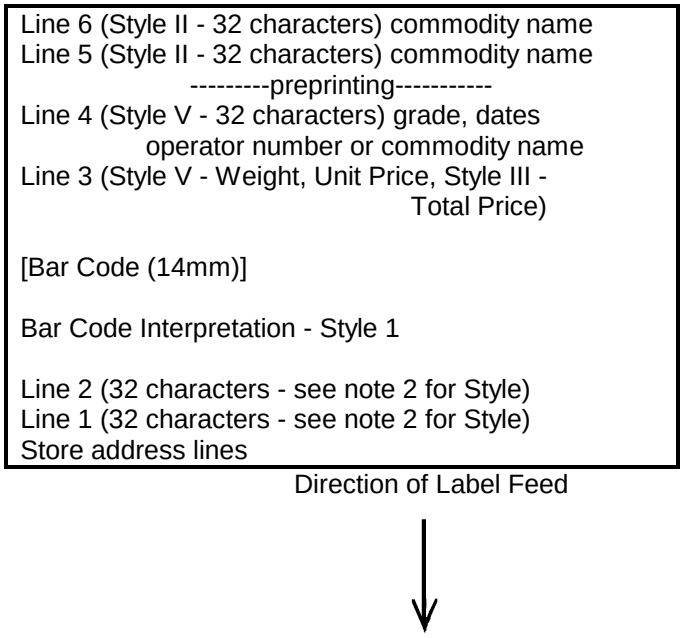


FIGURE 2

i. For detail on character size and location, see Toledo drawing numbers;

DESCRIPTION	DRAWING NUMBER
UPC	126674
Non-UPC	126675
*Label Specifications	129239

ii. When lines 1 and 2 are both used they are Style VI. When only one of the lines is used it is Style I and is centered vertically between the normal locations of lines 1 and 2.
iii. Lines 5 and 6 are replaced by a single Style II line located at line 6 when there is only 1 line of commodity description.

NOTE: Label Specification Drawing No. 129239 is used in conjunction with the label format drawings.

5. Label Sensors

5.1 Label Taken Sensor

The Label Taken Sensor detects the label as it ejects from under the printhead. It consists of a light Emitting Diode and a Photo-Transistor. The LED emits light and the Photo-Transistor receives the light emitted. Both units are connected to CN4 on the Printer Driver PCB.

The Label Taken Sensor detects the label (as the label breaks the beam of light), to prohibit printing until the label is taken.

5.2 Label Sensor

The Label Sensor detects the gap between the labels, it consists of a Light Emitting Diode and a Photo-Transistor. The LED emits light and the Photo-Transistor receives the light emitted. Both units connect to CN5 on the Printer Driver PCB.

The Label Sensor detects the gap between the labels to control label positioning and to detect a no label stock condition.

NOTE: Label format is controlled via program switch settings. See section IV-C

6. Label Stepping Motor

The Label Stepping Motor is connected to the Motor Control PCB. The driving voltage is +24V. The stepping of the motor is accomplished by changing current direction in two windings. The direction is changed in one winding at a time, stepping the motor one step.

7. Motor Control PCB

The basic function of the Motor Control PCB is to divide stepping motor control data from the Printer Driver PCB into two paths.

8. Liner Take Up Motor

The liner Take-Up Motor is connected to the Motor Control PCB. The driving voltage is +24V. Its purpose is to wind up the label backing paper after the labels have been removed.

C. ENVIRONMENT

The printer is designed to operate in the +5º C to 35º C temperature range, with humidity from 10% to 95%, non-condensing. Storage temperature range (excluding stock) is +0ºC to +70ºC.

The printer is not designed for a hose down area. Damp cloth cleaning is required. Avoid us of any type of solvent.

WARNING: DO NOT SPRAY OR WASHDOWN. HAZARD OF ELECTRICAL SHOCK OR BURN.

D. POWER UNIT

Input voltage: 120 VAC from +10% to -15%, 50 or 60 Hz.
Input voltage is provided by the scale (315-0001) or Line Cord (315-000).

E. DATA INPUT / OUTPUT

The 315 accepts 20mA current loop. Baud rate is fixed to 9600. Data format is seven bit serial ASCII, with one start bit, even parity bit and one stop bit.

The printer is designed to meet the Scale Printer Interface Protocol for 8423, 8301 and the 8301C scales.

NOTE: See Program Switch Summary for interface protocol selection (SW1-8).

III. INSTALLATION INSTRUCTIONS

A. SET-UP PROCEDURE

1. Remove the printer from its package.
2. Connect the printer to the scale.
3. Install the label stock per the threading diagram located inside printer cover.
4. Set the Programming Switches as required. Refer to the Program Switch Summary (Section IV-C)
5. Apply power to the scale (Turn power switch "ON" in 315-0002 printers.)
6. Advance the label stock into position by depressing the label feed switch on the printer's front panel.

   Once the label stock is in position, a blank label will deliver each time the label feed switch is pressed.
7. The printer is ready for operation.

B. INSTALLATION WITH THE MODEL 602 AUTO-LABELER

1. Place the 315 Printer onto the Printer Place being sure the Printer Legs are in the Leg Locators on the Printer Plate (Figure 3).
2. Slide the Printer as far back on the Printer Plate as possible to prevent any damage to the Label Pick-Up Head.

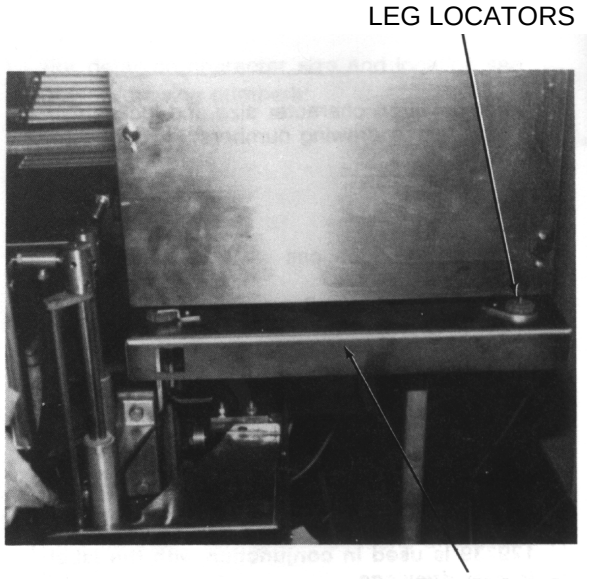


FIGURE 3

NOTE: Other Leg Locator found diagonally across from Locator shown.

3. Cycle the Auto-Labeler until the Label Pick-up Head has reached its full travel towards the Printer and is in its fully down position and parallel to the **PRINTER PLATE**.

   NOTE: (figure 4), Pick-Up Tube Stop may need to be adjusted. See Section III-P of the 602 Technical Manual TM000602R00.

4. Place the Auto-Manual Switch of the **Printer** in the Auto Position (See figure 4).

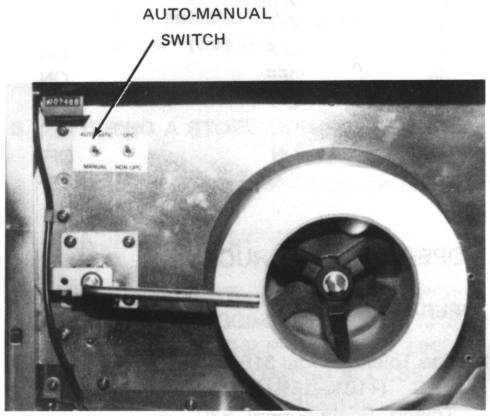
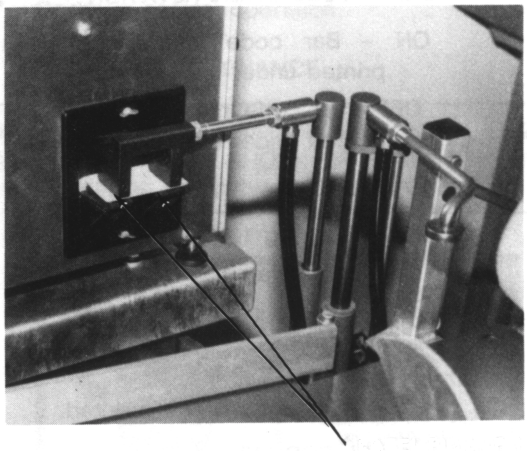


FIGURE 4

5. Cycle the Printer to obtain a Label.
6. Slide the Printer forward on the Printer Plate until the trailing edge of the Label Pick-Up Head is flush with the leading edge of the label. (figure 5)
7. Slide the Printer sideways on the Printer Plate until the Label Pick-Up Head is centered on the label. (figure 5)
8. Raise or lower the Printer as required until the Label Pick-Up Head just depresses the flat label.
9. Cycle the Auto-Labeler with the Printer issuing labels to check the label alignment and to be sure that the Label Pick-Up Head does not contact the Printer.



LABEL

PICK UP HEAD MUST BE FLUSH WITH

THE LEADING EDGE OF THE LABEL

FIGURE 5 .

10. After the final adjustments are made to the Printer, secure the Printer Locators to the Printer Plate. Place the Printer Leg clamps over the remaining two Printer Legs. Secure the Printer Legs using the Locking Nuts on the Printer Legs. (figure 6)

NOTE: Other Leg Clamp located diagonally across from leg shown.

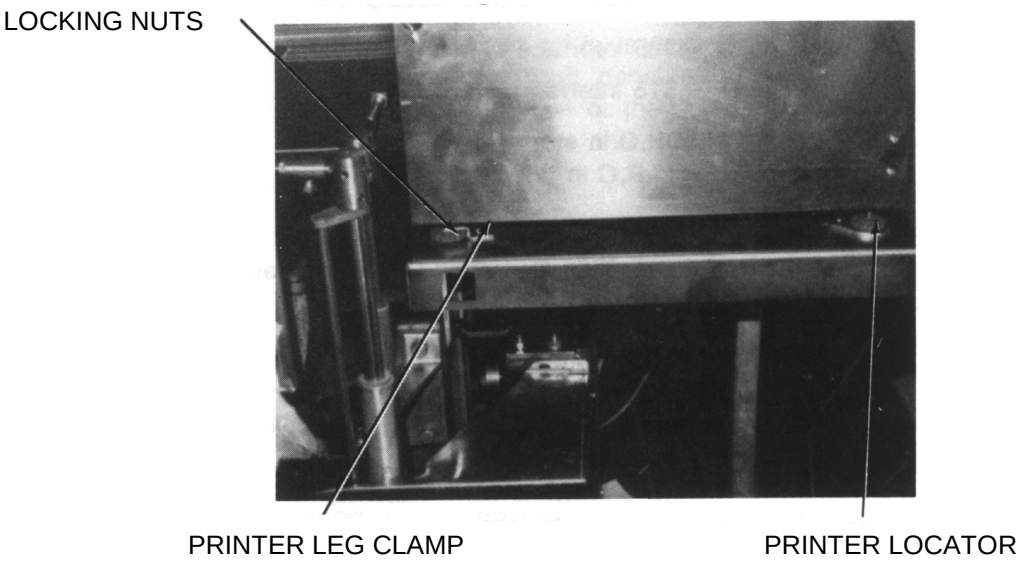


FIGURE 6

C. PROGRAM SWITCH SUMMARY

BANK SW1, SW2 (ON THE MAIN LOGIC PCB)

SW-1 L/$ SELECTION
ON - L (pound sterling) is printed as the currency symbol
OFF - $ is printed as the currency symbol

SW-2 BAR CODE INTERPRETATION
ON - Bar Code interpretation will be printed under the bar code.
OFF - Bar Code interpretation will NOT be printed under the bar code.

SW-3 EAN FLAG !
ON - EAN flag 1 is enabled.
OFF - EAN flag 1 is disabled.

SW1-4 PRINT UPC/EAN
ON - Bar Code is printed.
OFF - Bar Code is NOT printed.

SW1-5 LABEL FORMAT

SW1-6, *NOT USED (PLACE IN "OFF" POSITION)*
SW1-7 LABEL FORMAT

SW2-1 LABEL FORMAT

SW1-5	SW1-7	SW2-1	LABEL FORMAT	BAR CODE	LABEL TYPE
ON	OFF	ON	Figure 1	ON	315U
OFF	ON	ON	Figure 2	ON	315UL
ON	OFF	OFF	Figure 1	OFF	315HR
OFF	ON	OFF	Figure 2	OFF	315HL

SW1-8 INTERFACE PROTOCOL SELECTION

ON - 325 interface is selected.
OFF - 315 interface is selected.

SW2-2

ON - M,R,C in store address line
OFF - M,R,C in price line

SW2-3

ON - 315/8301 Export Character Set
OFF - 315/8301 Domestic Character Set

SW2-4

ON - 315 Printer
OFF - 325 Printer

SW1-5,6,7 and 8, *NOT USED (PLACE IN "OFF" POSITION)*

BANK SW1 (ON THE PRINTER DRIVER PCB)

SW1-1,2,3,4 THERMAL HEAD SETTING

SW1-1	SW1-2	SW1-3	SW1-4	THERMAL HEAD'S RESISTANCE (ohm)
ON	OFF	OFF	OFF	500
OFF	ON	OFF	OFF	510
ON	ON	OFF	OFF	520
OFF	OFF	ON	OFF	530
ON	OFF	ON	OFF	540
OFF	ON	ON	OFF	550
ON	ON	ON	OFF	560
OFF	OFF	OFF	ON	570
ON	OFF	OFF	ON	580
OFF	ON	OFF	ON	590
ON	ON	OFF	ON	600

The burn time of the thermal head is selected by the above switches setting (according to the thermal head's resistance).

D. JUMPER SELECTION (MAIN LOGIC PCB)

	315-001	315-002		315-001	315-002
J1	OFF	OFF	**J6**	OFF	ON
J2	ON	ON	**J7**	ON	ON
J3	OFF	OFF	**J8**	ON	ON
J4	ON	ON	**J9**	ON	OFF
J5	OFF	ON	**J10**	ON	OFF

IV. OPERATOR INSTRUCTIONS

A. OPERATION

1. Specifications

The Toledo Model 315 Printer operates on 120 VAC (+10% to -15%) provided through the Toledo scale Model 8301 and the 8301C. When the printer is used with the 8412 scale, power is applied through a line cord.

2. Printing and Label Delivery

a. To generate a printed label, refer to the Toledo Scale Model 8423, 8301 or 8301C Operator's Manual for operation instructions.

NOTE: Due to the preheated printhead, a warm-up time of approximately 10 to 20 minutes is required before maximum print quality is achieved.

b. Auto / Manual - The Auto/Manual switch is located in the upper left hand corner of the printer deck (when facing the machine, opening the right side door will reveal the switch.) Place the switch in the auto position when an Auto Labeler is in use.

c. UPC / NON UPC - The UPC/NON UPC Switch (located in the upper left hand corner of the printer deck, inside the operator accessed door) allows selection for UPC or NON UPC printing and labels.

NOTE: SW2-1 on the main logic PCB must be in the "ON" position for this switch to function.

d. Label Format - Program Switches (SW1-5, 7, SW2-2) allow selection among four types of label sizes. (See Section IV-C).

B. ENTERING A STORE ADDRESS LINE

Refer to the Operator's Instructions of the scale.

C. LOADING LABEL STOCK

NOTE: REMOVE ALL POWER FROM THE PRINTER (UNPLUGGING THE SCALE (315-0001) OR UNPLUGGING THE PRINTER A.C. LINE CORD (314-0002)) BEFORE GAINING ACCESS TO ELECTRICAL PARTS OF THE PRINTER.

A low label stock condition will be indicated when the Label Sensor fails to see a label. The 8301 and 8301C low stock lamp will illuminate or the 8423 will display message to alert the operator. When this occurs, perform the following steps:

1. Open the door and label bezel to expose the drive system and label supply.
2. Lift the printhead.

3. Remove the spent paper core.
4. Remove the liner take-up clip from the take-up spool.
5. Place a new roll of labels on the hub. Thread per the label threading diagram inside the cover. Insert the liner take-up clip into the take-up spool.
6. Lower the printhead. Close the door and replace label bezel assembly. Press the button on the front of the printer. The printer will advance the paper until a label can be removed. Remove the label.
7. Continue normal operation.

D. CARE AND MAINTENANCE

WARNING: DO NOT SPRAY OR WASHDOWN. HAZARD OF ELECTRICAL SHOCK OR BURN. REMOVE POWER BEFORE SERVICING.

WARNING: REMOVE POWER FROM THE PRINTER BEFORE CLEANING.

1. Turn OFF power to the printer.
Power is turned off by switching the ON/OFF switch on the front panel of the 8301 and 8301C for 315-0001 or the ON/OFF switch inside the printer to the “OFF” position for 315-0002.

2. Exterior Cleaning
Use only a clean damp cloth to wipe the exterior surfaces. Solvents and chemicals may harm the surface of the printer.

3. Recommended Cleaning
Printhead and drive mechanism frequency, approximately 1000,000 labels.

CAUTION: Do not use any sharp tool or instrument to remove foreign material from the printhead or the platen. This may cause severe damage to electrical parts.

3.1 Printhead and Drive Roller
Cleaning Solvent: Use Toledo Part No. 12587500A (1SC-108B) or equivalent.

WARNING: Before cleaning the printhead and/or drive roller with ISC-108B. Read mfg. instructions.

a. Lift the printhead. The printhead may be raised further by lifting the head locking lever.
b. Remove the label stock.
c. Clean the black resistor line with Part No. 12587500A using a cotton tipped swab. Never scrape the printhead with any object. Should the head require removal for thorough cleaning, refer to Section VI-G.
d. Clean all built-u adhesive or debris from the drive roller. NEVER use a metal object to remove jammed labels. This may cause severe damage to electronic parts.
e. Reload the labels.
f. Lower the printhead.

3.2 Label Sensors
(Label Taken and Label Stock Sensor).
Dust off with soft brush

3.3 Stainless Steel Covers
Damp cloth cleaning is required. Do not use any type of solvent on the covers.

4. Printer Malfunction
An apparent printer malfunction could be caused by either the printer , the 8423, 8301 or 8301C scales.

Should the printer fail to deliver a label, make the following checks:

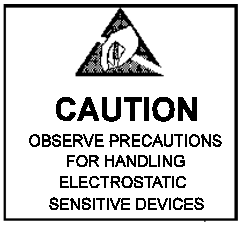
a. Check paper supply (for jams or breaks, etc.). Verify paper is made to specification.
b. Check the door and removable bezel interlock switches. Be sure switches close properly.
c. Cycle printer by pressing the Front label advance/test button.
d. Power down the scale and printer and then restore power. Re-try operation.
e. Check the printer's fuses and inter-connecting cables (scale to printer, harness or power cords).
f. Isolate failure to the scale or the printer. Isolate the failed part (or parts). See Section VII Trouble Shooting Guide.

NOTE: Observe the 8301 or 8423 scale for displayed "ERROR" messages or codes that are defined in the Technical Manual.

V. PARTS REPLACEMENT AND ADJUSTMENTS

WARNING: REMOVE ALL POWER FROM THE PRINTER (UNPLUGGING IT FROM THE SCALE OR UNPLUGGING THE SCALE A.C. LINE CORD) BEFORE GAINING ACCESS TO ELECTRICAL PARTS OF THE PRINTER.

A. THE MAIN LOGIC PCB AND THE PRINTER DRIVER PCB REPLACEMENT



1. Remove the phillips head screws which retain the side cover.
2. The circuit boards are retained by four phillips head screws. Remove the screws and harnesses as your remove the boards.
3. Electrical Test Point. Refer to System Schematic (Section VIII) and the Trouble Shooting Guide (Section VII) to make electrical tests.

NOTE: IF THE PCB IS REPLACED REFER TO SECTION IV-C FOR SWITCH SELECTION.

B. THE POWER SUPPLY ASSEMBLY REPLACEMENT

1. The power supply board is retained by two phillips head screws and the Switching Regulator is soldered on the board and retained to the deck by two phillips head screws. Remove the screws and disconnect the interconnecting harnesses as you remove the board.
2. Electrical Test Point - Refer to System Schematic (Section VIII) and the Trouble Shooting Guide (Section VII) to make electrical tests.

C. MAIN DRIVE BELT REPLACEMENT

Access to the drive belt and pulleys is gained by removing the Main Logic PCB and the Printer Driver PCB (Section VI-A).

1. Remove the drive belt by holding and pulling the belt away from 32 tooth pulley while rotating the pulley. (figure 8)
2. Install a new belt over the 20 tooth pulley.
3. Push in a new belt, reversing the above steps.

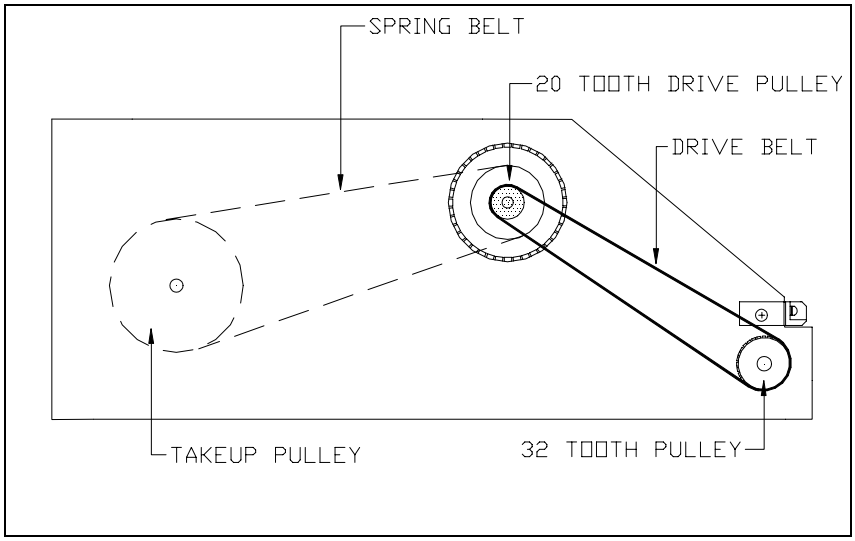


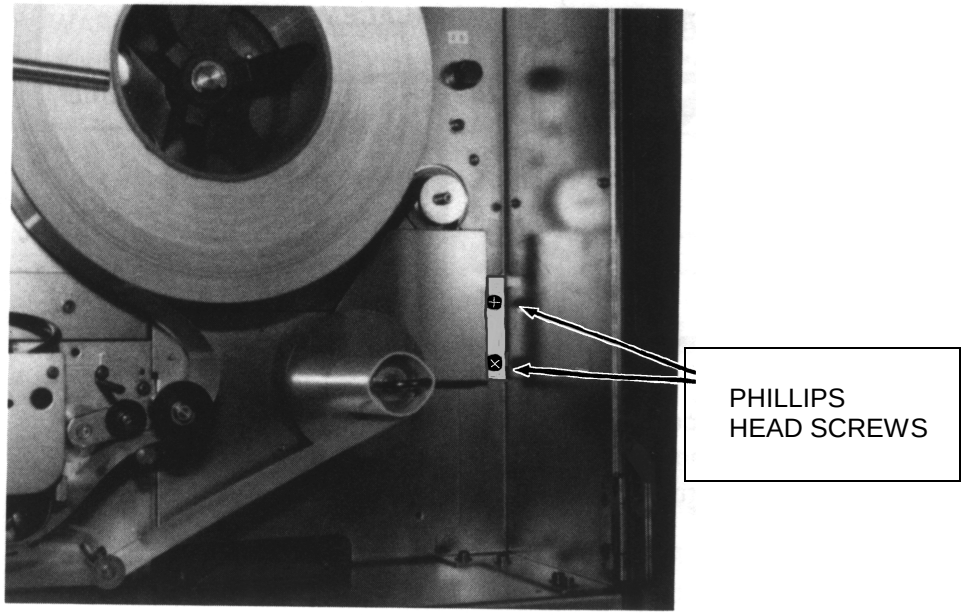
FIGURE 8

D. LINER TAKE-UP (SPRING) BELT REPLACEMENT

Access to the Liner Take-Up Belt is gained by removing the belt cover.

Replacement (figure 9)

a. Remove the belt cover by removing the two phillips head screws.



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GURE 9

b. Remove the liner take-up belt.

c. Install the new belt and the belt cover, reversing the above.

E. TRANSFORMER ASSEMBLY REPLACEMENT

1. Remove the side cover.
2. Remove the phillips head screws which retain the rear cover.
3. The transformer is retained by four phillips head screws. Remove the screws and disconnect the interconnecting connector and harnesses.

F. STEPPER MOTOR REPLACEMENT

Access to the Stepping Motor is gained by removing the side cover.

1. PLATEN DRIVE STEPPING MOTOR
   a. Remove the main Logic PCB and the Printer Driver PCB>
   b. Remove the main drive belt.
   c. Remove the screws and disconnect the interconnecting connector and harnesses as you remove the motor.

2. LINER TAKE-UP STEPPING MOTOR
   a. Remove the belt cover and the liner take-up belt.
   b. Remove the screws and disconnect the interconnecting connector and harnesses as you remove the motor.

G. PRINTHEAD REPLACEMENT AND ADJUSTMENTS

1. REPLACEMENT

a. Remove the label bezel assembly.
b. Disconnect the printhead harness from the printer driver PCB>
c. Raise the printhead by releasing the printhead locking bar and locking lever.
d. Remove the four phillips screws which retain the printhead.
e. Reverse the procedure to install a new printhead.

NOTE: Repositioning the printhead will affect printhead alignment. Printhead resistor elements should be centered over the drive roller. See Section VI-G2 Printhead Adjustment.

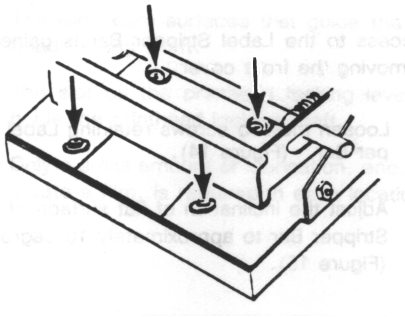
2. PRINT QUALITY ADJUSTMENT

Maximum print quality is achieved when the resistor line is centered on top of the drive roller. Clean the black register line (See Section V-C, 3.1) before proceeding to adjust the printhead.

2.1 Misalignment of Characters or Light Print:

Loosen the four screws (figure 10) holding the printhead and position the printhead such that the resistor line is centered over the drive roller.

FIGURE 10



2.2 A Difference in Density Across Width of Labels

Loosen the two screws holding the head support bearing plate. Move the bearing plate vertically until even density is gained. Then tighten the screws. (figure 11)

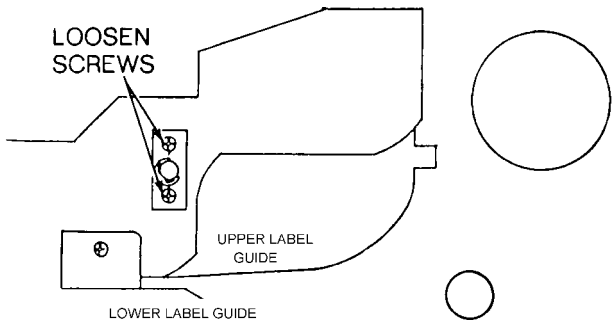


FIGURE 11

2.3 Print a test label and check the quality. Continue to adjust the head until the print quality is acceptable. If the print quality is inadequate, check the following:

a. Has the proper burn time been selected for the head?

CAUTION: DO NOT over-burn time the printhead to darken the print. This will drastically reduce the printhead life.

b. Are the printhead compression springs damaged? Replace if necessary.

c. Does the head support pivots freely on the bearing shaft?

d. Is the head preheat functioning properly? (Should be warm to touch, (49ºC.)

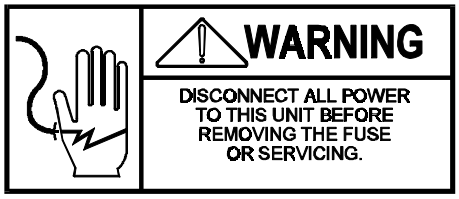
If poor print quality still exists, the print head may be bad. Install a new print head and check the print quality after the adjustment.

3. PRINTHEAD BURN TIME ADJUSTMENT

When a new printhead is installed, program switches on the Printer Driver PCB must be set to select the correct burn time of the thermal head. The burn time will be set correctly by the resistance value indicated on the new head.

Refer to the program switch summary for switch settings Section IV-C. Select the setting equal to the rating indicated on the head.

H. LABEL SENSOR REPLACEMENT AND ADJUSTMENT



1. Low Stock Sensor

Access to the Low Stock Sensor is gained by removing the Main Logic PCB and the Printer Driver PCB.

a. Remove the two screws mounting the Low Stock Sensor bracket to the vertical plate.
b. Disconnect low stock harness from PCB>
c. Remove the low Stock Assembly through the round hole on the vertical frame.
d. Reverse the procedure to install a new low stock sensor assembly.
e. Adjust the position of Low Stock Sensor bracket to the proper position as head of label appeared approximately 3.5mm beyond the printhead assembly. (figure 12)

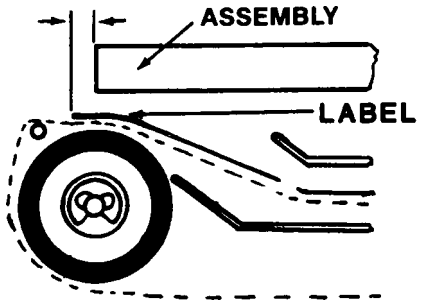


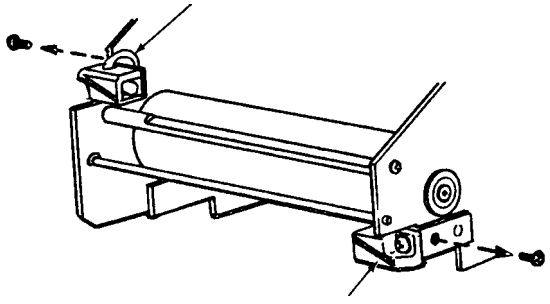
FIGURE 12

2. Label Taken Sensor

Access to the Label taken Sensor is gained by removing the side cover, guard plate, & label bezel assy.

a. Remove the two screw (one each side) mounting the label taken sensor bracket to the vertical plate. (figure 13)
b. Disconnect label taken sensor harness from the Printer Driver PCB.
c. Reverse the procedure to install a new label taken sensor assembly.

TRANSMITTER - ORANGE & YELLOW WIRES



RECEIVER - RED & BROWN WIRES

FIGURE 13

I. LABEL STRIPPER BAR ADJUSTMENT

Access to the Label Stripper Bar is gained by removing the front cover.

a. Loosen the two screws retaining Label Strip per Bar. (figure 14)
b. Adjust the inclination of flat surface of the Stripper Bar to approximately 10 degrees. (figure 15)

NOTE: Stripped Label discharges upward proportionally to the angle of flat surface of the Stripper Bar.

c. Tighten the two screws.

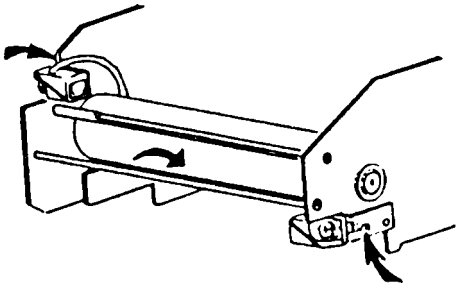


Figure 14

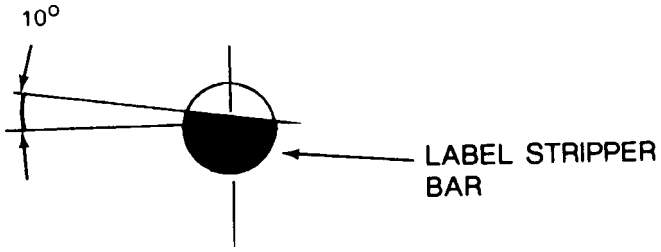


FIGURE 15

J. LUBRICATION

The recommended grease is silicone grease. The following areas will require lubrication. (figure 16)

1. The slide cam surfaces that guide the printhead locking shaft.
2. The slot on the printhead locking lever that guide the printhead locking shaft.
3. Only a small amount of lubrication, enough to create a film, is required in each location.

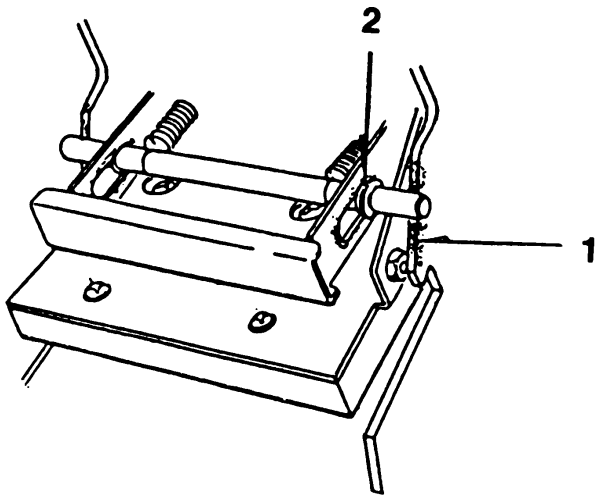


FIGURE 16

VI. TROUBLESHOOTING GUIDE

A. MISSING PRINT (Dots missing across label.)

Check the printhead for adhesive build-up, a piece of label adhering to the printhead, label dust, etc. Clean as directed in Sec. V-D 3.1. If the printhead is clean and elements still fail to print, refer to Sec. VI-G 2.0.

B. MECHANICAL

1. Staging Problems
- 1.1 Insufficient drive function.
  - a. Loose timing belt. Replace faulty belt.
  - b. Drive Roller slipping. Clean or replace drive roller.
- 1.2 Binding stepping motor and/or drive roller binding. Replace pulley bearings.

2. Tracking Problems
- 2.1 Improperly threaded take-up roll. Thread roll properly.
- 2.2 Improperly positioned label roll. Reposition roll.
- 2.3 Improper positioning of removable label guide. Reposition.

3. Labels Stripping Improperly
- 3.1 Adjust low stock sensor assembly (Section VI-1)
- 3.2 Adjust flat surface of stripper bar.

4. Spent Liner Tears and Breaks
- 4.1 Spring belt is worn. Replace the belt.
- 4.2 Glue adhering to stripping edge. Clean it.
- 4.3 Improper positioning of removing label guide. Reposition.

C. ELECTRICAL

To help isolate a failure to an area in the printer, the scale, or cable to the scale, place the printer in the diagnostics mode. Enter the diagnostics mode by:

Depressing and holding the push button switch on the front of the printer.

Continue to hold the push-button until it prints a label.

1. Printer fails to deliver a test label.

If the correct test labels (figure 17) are not delivered:
- 1.1 The Main Logic PCB is defective. See Section VII-5.2.d.
- 1.2 The Printer Drive PCB is defective. See Section VII-4.
- 1.3 The scale to printer power cable is defective (315-0001), power cable 315-0002 is defective.
- 1.4 The scale is defective.

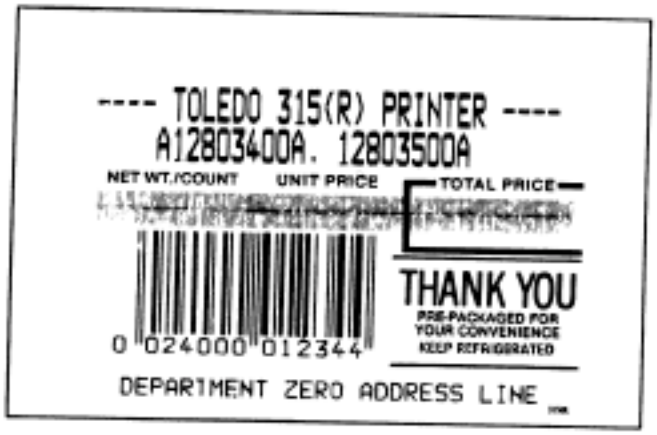


FIGURE 17

2. Printer Fails to Deliver Blank Labels

Do the interconnecting harnesses check OK? Refer to Section VII-D (fault isolation).

3. Printer Delivers Black Labels

3.1 If printed correctly but are excessively dark, check the Printer Driver PCB. See Section VII-D4.1.

3.2 If streaked by lines (print elements do NOT turn off), the print head is defective. Replace the print head.

3.3 If the specific characters are broken off (print element NOT turned on), the print head is defective. Replace the print head.

3.4 If burnt (label delivered all black), IMMEDIATELY remove power from printer. See Section VI-D-4.

4. Blown Fuses

Replace fuse. If fuse continues to blow, refer to Section VII-D (fault isolation).

5. Label Delivery Problem

Labels do not stage properly and/or Low Stock LED on the printer blinks.

5.1 Is the label bezel assembly properly installed?

5.2 Is the door closed?

5.3 Do the interconnecting harnesses check OK?
The Printer Driver PCB is defective. See Section VII-D-4.
The Main Logic PCB is defective. See Section VII-D-5.

6. Registration

Printing is consistently high or low on label. Refer to Section VI-1.

D. FAULT ISOLATION

1. Disconnect the thermal head connector from the Printer Driver PCB.

2. Check the Transformer

a. Disconnect CN1 on the Power Supply Assembly

b. Check the voltage between Pin 1 and Pin 2 at CN1, it should be 16.1V AC (+/- 5%)

c. Check the voltage between Pin 1 and Pin 3 at CN1, it should be 16.1 V AC (+/- 5%)

d. Check the voltage between Pin 4 and Pin 5 at CN1, it should be 30.0V AC (+/_ 5%).

e. Check the voltage between Pin 6 and Pin 7 at CN1, it should be 8.25V AC (+/- 5%).

f. If all AC voltages are 0 V AC, check the fuse.

g. If the AC voltage is not correct, replace the transformer.

3. Check the Power Supply Assembly

a. *Check Pin 1 at CN5 (+24V) and Pin 2 at CN5 (Ground), it should be 24.0V DC (+0.5V, -0.2V).

b. Check Pin 3 at CN5 (+5V) and Pin 4 at CN5 (Ground), it should be 5.0V DC (+/-0.2V).

c. Check Pin 8 at CN6 (-12V) and Pin 4 at CN6 (Ground), it should be -12.0V DC (+/-0.6V).

4. The Printer Driver PCB. Remove the Main Logic PCB from the printer

4.1 Check the switch settings. Refer to the Program Switch Summary. Section IV-C.

4.2 Variable Resistor (VR1) and Adjustment. When the Low Stock Sensor is interrupted by the backing paper, TP4 should be 1.0V (+/- 0.1V).
(TP2 is ground). If not, adjust VR1 to be 1.0V (+/-0.1V at TP4).
After adjustment, check TP4 when the Low Stock Sensor is interrupted by the Label.
It should be more than 2.0V.
If TP4 is 0 V, check the voltage levels (section 4.3).
*Door, Bezel Assembly & Printhead interlock switches must be closed.

4.3 Check the Voltage Levels

a. Check Pin 3 at CN1 (+5V) and Pin 4 at CN1 (Ground), it should be 5.0V DC (+/-0.1V).

b. Check Pin 1 at CN1 (+24V) and Pin 2 at CN1 (Ground), it should be 24.0V DC (+0.5V, -0.2V).

If either the of voltage levels is 0 V, suspect interconnecting wires. If interconnecting wire is okay, replace the Printer Drive PCB.

c. Check TP5, it should be +3.48V DC (+/-0.10V). If not, replace the Printer Driver PCB.

d. Check TP6, it should be +2.00V DC (+/-0.06V). If not, replace the Printer Driver PCB.

4.4 Check the Switch (SW1)
When the switches are set as shown below, TP1 should be at the levels at the right.

SW1				Voltage Level
1	2	3	4	at TP1
ON	OFF	OFF	OFF	0.198V (± 0.009)
OFF	ON	OFF	OFF	0.291V (± 0.012)
OFF	OFF	ON	OFF	0.541V (± 0.021)
OFF	OFF	OFF	ON	1.094V (± 0.040)

If voltage level at TP1 is out of range, replace the Printer Drive PCB.

5. The Main Logic PCB

5.1 Check TP4 (TPO is a ground pin), it should be +5VDC (+/-0.1V).
Check the lower Pin at J10, it should be +12V (+/-0.6V).
Check Pin 9 at CN1, it should be -12V (+/-0.6V).

If any voltage level is 0 V, suspect the interconnect wiring. If the interconnect wiring is okay, replace the Main Logic PCB.

5.2 Check TP1 (Reset), it should be more than +3.5VDC (“H level).
If not, replace the Main Board.

5.3 Perform the following checks while sending data from the scale to printer.

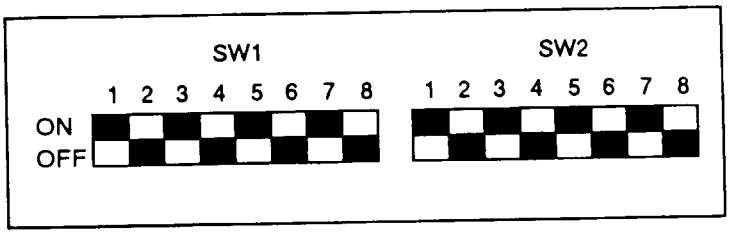
a. Check TP8, it should not be fixed to “H” level or “L” level.
If TP8 is fixed, replace the Main Board.

b. Check TP7, it should not be fixed to “H” level or “L” level. If TP7 is fixed, check jumper switches on the Main Logic PCB.
If jumper switch settings are okay, suspect the interface cables or the scale.

6. Check the Switch Function (SW1, SW2)

6.1 Set the Label Bezel Assembly switch and the door switch ON (Switches closed)

6.2 Set the switches on the Main Logic as shown below.



6.3 Depress and hold the push-button switch on the front of the printer, turn the power switch ON.

6.4 A printed label as shown below, (figure 18), will be delivered..

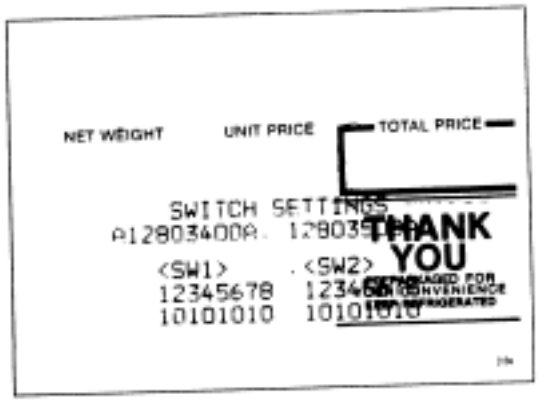
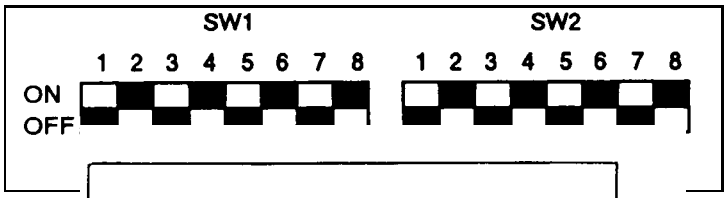
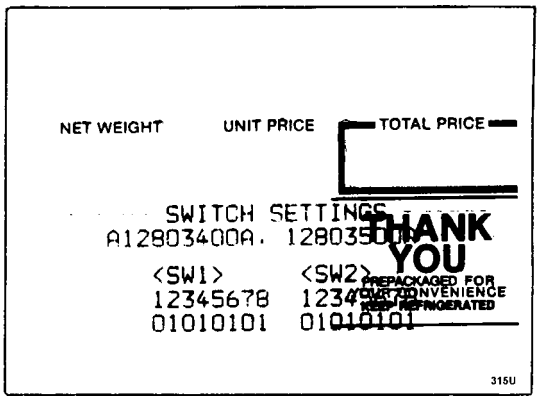


FIGURE 18

6.5 Turn the power switch OFF

6.6 Set the switches as shown below.





6.7 Depress a

6.8 A printed

6.9 If the labels shown in Figure 18 and Figure 19 are not delivered, replace the Main Logic PCB.