314T

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:

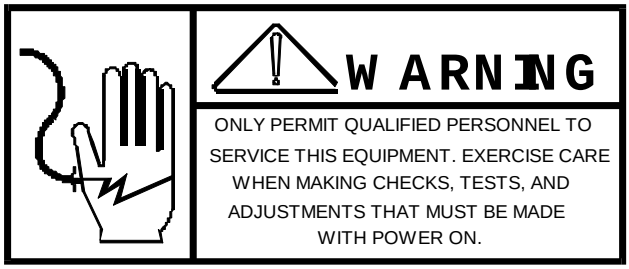
METTLER TOLEDO
Training Center
P.O. Box 1705
Columbus, Ohio 43216
(614) 438-4400

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.

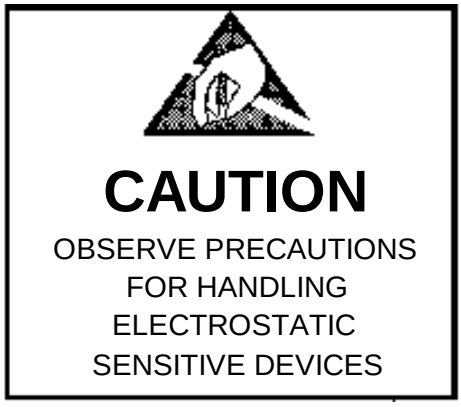
- **ALWAYS** take proper precautions when handling static sensitive devices.



- **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 ***1***
II. SYSTEM DESCRIPTION ***1***
A. OPERATING PRINCIPLE 1
III. SPECIFICATIONS ***4***
A. ELECTRICAL AND PHYSICAL 4
B. INTERNAL FUNCTIONS 4
C. EXTERNAL CONTROLS 5
IV. PROGRAM SWITCH AND JUMPER SUMMARY ***6***
V. PRINTER SET UP AND FUNCTIONAL TEST ***7***
VI. OPERATING INSTRUCTIONS ***8***
A. OPERATION 8
B. LOADING LABEL STOCK 9
C. CARE AND MAINTENANCE 10
VII. PARTS REPLACEMENT AND ADJUSTMENTS ***13***
A. ACCESS TO THE LOGIC BOARD 13
B. ACCESS TO THE TRANSFORMER AND DRIVE BELTS 14
C. PAPER POSITION / TRACKING ADJUSTMENTS 14
D. PRINTHEAD / LABEL SENSOR REMOVAL AND ADJUSTMENTS 15
E. LEVER ARM ADJUSTMENT 16
F. PRINTHEAD VOLTAGE ADJUSTMENT 17
G. PRESSURE ROLLER ADJUSTMENT (see figure 12 a and b) 17
H. PAPER TRACKING (see figure 12 a and b) 18
I. TRACKING PLATE ADJUSTMENT 18
J. BEARING CARRIER REPLACEMENT 19
VIII. TROUBLESHOOTING ***20***
A. MISSING PRINT 20
B. MECHANICAL 20
C. ELECTRICAL 21
IX. FAULT ISOLATION ***22***
X. SYSTEM SCHEMATIC ***24***
XI. PARTS CATALOG ***25***

I. GENERAL DESCRIPTION

The 314 is a compact thermal printer designed to print labels containing human-readable information, s well as a UPC/EAN symbol. The 314's physical appearance and styling will blend with the current Toledo 8301 and 602 labeler.

The 314 is driven by the 8301 pre-pack scale. The printer receives Commodity Description, Date, Weight, Grade, Total Price and Bar Code data from the scale to print labels on command. The 314 printer provides a label printed, label taken and low stock status to the scale so that the transaction can be recorded.

The 314 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 consisting of two side by side thermal printheads, presenting a single row of dots, 0.32mm square (0.33mm 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.

FEATURES

- UPC, EAN 13 Bar Code capability
- Heavy duty stainless steel enclosure
- Switch selectable positioning of print registration
- Removable pressure roller for easy cleaning
- Preheated thermal printhead assembly
- Internal label counter
- Door and Bezel interlock switches
- Dual (large/small) label format capability
- Auto/manual switch selection
- UPC/Non-UPC switch selection

II. SYSTEM DESCRIPTION

A. OPERATING PRINCIPLE

Once the print cycle has been initiated, the label is accelerated by the stepping motor to its nominal speed. The printer utilizes a thermal printhead consisting of a 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 normal 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 shaft).

The 314 consists of four major building blocks:

1.) Logic Board
2.) Printhead
3.) Label Sensors
4.) Motor

1. LOGIC BOARD

The basic function of the Logic Board is to control various operations performed by the printer. This unit controls the Label Position/Label Taken Sensor, Paper Feed Stepping Motor and the Printhead. It also interfaces with the scale via a serial interface loop.

The Serial Current Loop Interface (0-20mA) to & from the printer is used to communicate with the scale. The connection is made to the I/O Connector (2 available) on the Logic Board. Important parameters such as baud rate, parity check, etc., are controlled by software. Input & output are separated from the Internal Electronics in the printer by Opto-isolators. The transmitter & receiver can be active or passive.

Further, all regulated Power Supplies are on the PCB. *The Pass Transistor (Q1) controlling Printhead Voltage (VDD) is mounted to the deck.* The 5 Volt regulator (VR1) is also mounted on the deck (they connect to the Logic Board at J5).

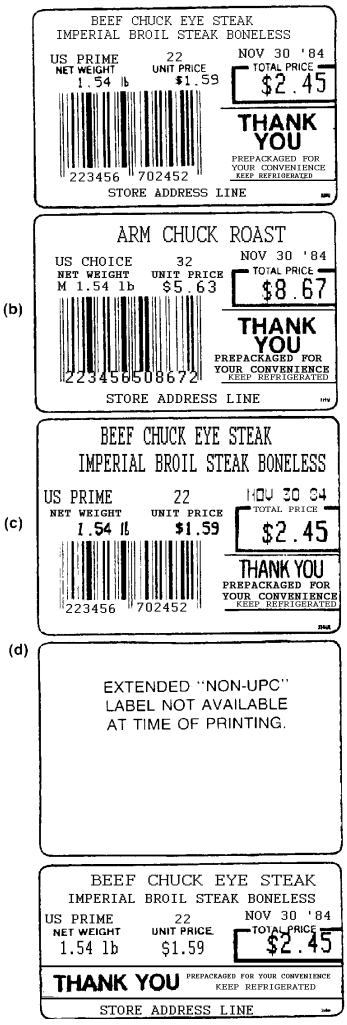
2. PRINTHEAD

The 314 uses a pre-heated 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. By pre-heating the Printhead the amount of power and duration the power is applied to the element is reduced increasing head life.

NOTE: Due to the pre-heating 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 from the time the unit is powered up.

PRINTING FORMAT

The thermal printhead consists of a single row of thermal dots on 0.33mm center, approx. 76 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 would appear as in figure 1. The printer is capable of printing UPC and EAN. The printhead connects to J6 (A & B) and J13 on the Main Logic Board. Printed information is generated by the 8301 Scale, figure 1.



a. Standard label with two lines of Commodity Description and UPC.

b. Standard label with single line of Commodity Description and UPC.

c. Extended (enhanced) label with two lines of Commodity Description and UPC.

d. Extended (enhanced) and Standard Non-UPC label.

** Refer to Section XI for Label Specifications*

The bottom line (the store address line) is printed in standard height characters only (30 characters maximum). Description lines have a maximum length of 32 characters.

FIGURE 1

3. LABEL SENSOR

Photo Sensors detect the label as it ejects from the Printhead. They consist of a light emitting Diode and a Photo-Transistor. One unit emits light and the other unit receives the light emitted. Both units connect to J1 on the Main Logic Board with a four wire cable. The Photo Sensor detects the label (as the label breaks the beam of light), to maintain control of label position and provide label take status (to prohibit delivery of another label until the previously printed label is removed).Label position can be controlled via Program Switch Settings. See Section IV. In the event the unit should begin misfeeding labels, stop feeding labels or feeds labels with a label present refer to Sections VIII 3.2, 5.0, 6.0 and 7.0.

4. MOTOR (STEPPING)

The Stepping Motor is connected to J4 on the Main Logic PCB. Driving voltage is VDD. The stepping of the motor is accomplished by changing the current direction in two windings. The direction is changed in on winding at a time stepping the motor one step.

III. SPECIFICATIONS

A. ELECTRICAL AND PHYSICAL

1. ENVIRONMENT

The printer is designed to operate in the +5ºC to 35ºC 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 hose down areas!** Damp cloth cleaning is required.

> **WARNING:** DO NOT SPRAY-WASH DOWN.
> HAZARD OF ELECTRICAL SHOCK OR BURN.

2. POWER REQUIREMENTS

Input voltage is: 120 VAC from +10% to -15%, 50 or 60 Hz. Input voltage is provided by the scale.

3. INTERFACE

The printer is designed to meet the Scale Printer Interface Protocol for 8301 scale.

4. PHYSICAL SIZE

Dimensions: 18.00 inches high X 12.00 inches wide X 17.00 inches deep.
Weight: Approximately 30 pounds

B. INTERNAL FUNCTIONS

1. PRINT INITIATION

Print is initiated via the scale

2. PRINT SPEED

Manual mode: 60 labels / minute
Automatic mode: 40 labels / minute

3. PRINT FORMAT

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

	FONT	HEIGHT (INCHES)	HEIGHT (MM)	DENSITY (CPI)	PITCH (INS)
SMALL	5 X 7	.091	2.3*	11.0	.091
LARGE	10 X 7	.181	4.6	11.0	.091
BAR CODE INTERPRETATION	5 X 7	.091	2.3	11.0	.091

** Price and Grade line characters on the extended print label format are 3.0mm in height.*

The single, double or triple module width bars are formed by turning on a single dot, two or three dots together respectively. The Bar Code is truncated to 17mm* sufficient that it is over square, i.e. the height of either of the halves is greater than the halves width. Figure 1 shows the 314 printing format. The labels depicted provide for 32 characters of human-readable information on the description lines, 30 characters on the store address line.

*Large label code is truncated to 13mm.

4. POWER INTERLOCK

Switches are provided inside the door and behind the removable label guide (bezel) assembly to remove power from the printhead and to interrupt the printer when these areas are open for maintenance or service.

C. EXTERNAL CONTROLS

1. FRONT PUSH-BUTTON SWITCH (314 FRONT PANEL**)**

a. LABEL ADVANCE - By depressing and releasing the switch after loading label stock, the label stock is indexed by the printer to the print station. A blank label will be issued.

b. TEST LABEL - Press and hold in the push-button switch 2-3 seconds. A test label will eject. Each time the button is depressed and held a ticket will be delivered showing a pattern which exercises all print elements and printer electronics excluding the receive / transmit loop.

NOTE: PROGRAM SWITCH SW2-6 GOVERNS THE LABEL FORMAT OF THE TEST LABEL.
ON - WILL PROVIDE A PRINT PATTERN TESTING ALL ELEMENTS OF THE PRINTHEAD
OFF - WILL PROVIDE A SCANABLE SAMPLE TEST LABEL

2. AUTO / MANUAL (INSIDE PRINTER DOOR ON DECK**)**

A toggle switch is provided (on the operator accessed side of the printer deck) to select the print speed for an automatic labeler or a manual labeling situation.

a. AUTO POSITION - automatic labeler in use.

b. MANUAL POSITION - labels are being applied manually

NOTE: TO MAXIMIZE PRINTHEAD LIFE, PLACE THE TOGGLE SWITCH TO THE AUTO POSITION FOR ALL APPLICATIONS

3. UPC / NON-UPC SWITCH (INSIDE PRINTER DOOR ON DECK**)**

A toggle switch is provided (on the operator accessed side of the printer deck) to select for UPC or non-UPC type labels.

*NOTE: PROGRAM SWITCH SW1-1 (on the Main Logic PCB) MUST BE **OFF** FOR THE TOGGLE SWITCH TO FUNCTION*

4. EXTENDED / STANDARD LABEL FORMAT

A program switch (SW2-7) allows selection between the extended and standard label formats in both UPC and Non-UPC sizes. See Section II-A-2, PRINTING FORMATS and Section IV for program switch settings.

IV. PROGRAM SWITCH AND JUMPER SUMMARY

(314-1001 314T Printer)

BANK SW1 :

SW1-1 UPC / NON-UPC LABEL

ON - UPC label format only - overrides the toggle switch mounted on the operator side of the deck.

OFF - Non-UPC label format - the operator accessed toggle switch is active and UPC label format can be selected via the toggle switch

SW1-2 Printhead Bias Voltage Selection * *See Table*

SW1-3 Printhead Bias Voltage Selection * *See Table*

SW1-4 Printhead Bias Voltage Selection * *See Table*

NOMINAL HEAD VOLTAGE	SW1 2	3	4
33	OFF	OFF	OFF
NOT USED	OFF	OFF	ON
32	OFF	ON	OFF
31	OFF	ON	ON
30	ON	OFF	OFF
NOT USED	ON	OFF	ON
29	ON	ON	OFF
28	ON	ON	ON

CAUTION: The selected bias voltage should be less than or equal to the voltage indicated on the printhead. ***NEVER*** *over voltage the printhead.*

BANK SW2 :

SW2-1 PRINT POSITION ADJUSTMENT DIRECTION SELECT

ON - Will **raise** the print position on the label. See switches 2, 3 & 4 to select the number of steps you wish to raise the printing

OFF - Will **lower** the print position on the label. See switches 2, 3 & 4 to select the number of steps you wish to lower the printing.

SW2-2 PRINT POSITION ADJUST (4 steps)

ON - Print position will shift 4 steps (see note *)

OFF - No Effect

NOTE: Placing combinations of switches 2, 3 & 4 ON (or OFF) will add/subtract in the number of steps the printing moves: example, SW2-2 ON / SW2-3 off / SW2-4 ON = moves 5 steps.

SW2-3 PRINT POSITION ADJUST (2 steps)

ON - Print position will shift 2 steps (see note * above)

OFF - No Effect

SW2-4 PRINT POSITION ADJUST (1 step)

ON - Print position will shift 1 step (see note * above)

OFF - No Effect

SW2-5 Manual, Rewrap, and Combination flags.
ON - M, R and C will be printed in store line.
OFF - M, R and C will be printed in price line.
SW2-6 PRINTHEAD TEST LABEL FORMAT
ON - Printhead element test pattern will be printed.
OFF - Scanable sample test label will be printed.
SW2-7 EXTENDED OR STANDARD LABEL FORMATS
ON - Extended label format
OFF - Standard label format
SW2-8 Place in OFF position for US/Canada or ON for UK format.

BANK SW3 :
SW3 NOT USED (ALL OFF)

V. PRINTER SET UP AND FUNCTIONAL TEST

1. **REMOVE** the printer form its shipping container.

2. **CONNECT** the printer to the scale. The printers power cable mates to J31 and the Data Cable mates to J33 on the back of the 8301.

3. **INSTALL** the label stock per the threading diagram located inside the printer cover.

4. **SELECT** the Program Switch Position (SW2-7) required for Extended or Standard label stock and select the Toggle Switch Position for UPC or Non-UPC stock.

5. **SELECT** the Toggle Switch Position for AUTO or MANUAL labeling applications.

6. **APPLY** power to the scale and printer (place the scale ON/OFF switch to **ON** position)

7. **ADVANCE** the label stock into position by depressing the FRONT PUSH-BUTTON on the printer's front panel.
Once the label stock is in position a blank label will deliver each time the FRONT PUSH-BUTTON is pressed.

8. **POSITION** the clip on the Label Guide (bezel). The clip should be down when the unit is used in an Auto Labeler, and up for manual label applications.

9. The printer is now **ready** for operation.

VI. OPERATING INSTRUCTIONS

A. OPERATION

1. POWER

The Toledo Model 314 Printer operates on 120 VAC (+ 10%, - 15%) provided through the Toledo Scale Model 8301.

WARNING: UNDER NO CIRCUMSTANCES SHOULD POWER BE APPLIED DIRECTLY TO THE PRINTER. WHEN APPLYING POWER TO THE TOLEDO MODEL 8301 SCALE CONNECT TO PROPERLY GROUNDED GROUNDED OUTLET ONLY. DO NOT REMOVE THE GROUND PRONG.

2. PRINTING AND LABEL DELIVERY

a. To generate a printed label, refer to manual TM008301R01 or the 8301C Operator's Manual for operation instructions.

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

b. 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 of labels.

NOTE: SW1-1 on the Main Logic PCB must be in the OFF position for this switch to function.

d. STANDARD / EXTENDED LABEL - A Program Switch (SW2-7) allows selection between two label sizes. One position uses the extended label, allowing two lines of printing in **4.6 mm** characters, **3.0 mm** characters (price and grade lines) and 2.3 mm characters on the store address line. The other position uses the standard label which, when two lines of description are used, they will be printed in **2.3mm** characters (all other characters are 2.3mm). When one line of description is printed, 4.6 mm characters are used.

3. ENTERING STORE ADDRESS LINE

Store Address line is entered via the 8301 as follows:

a. Place the key switch to "Special Names". The operator switch must be in the "RUN" position.

b. Enter in an unused commodity number (1 to 4 digits). For the 8301C models enter # "9".

c. Enter in the codes for the characters "Z" , "X" , (46, 44), then enter in the codes for the desired characters or words.

d. When the entry for the description is complete press the slash (/) key, a verification label should be delivered.

e. Place the Price-Rite Switch to “ENTER ALL” and create a file using the address line stored in Special Names. Do not enter Grade, Price, Tare, Shelf Life or a UPC number. A verification label will be delivered.

f. To call up the Address Line, return the key switch to “RUN” and enter in the Commodity Number, Item or PLU number (8301C) assigned to the address line description and press “ENTER”. The scale will cycle past Grade, Tare and Shelf Life. Reset the scale and resume operation. The entered description will remain as long as the scale is turned “ON”. To recall the address line, (or call up a new one), repeat step (f).

B. LOADING LABEL STOCK

A low label stock condition will be indicated when the Label Sensor fails to see a label. The scale’s low stock lamp will illuminate to alert the operator. When this occurs, perform the following steps:

WARNING: TURN OFF POWER TO THE PRINTER BEFORE CLEANING OR LOADING LABELS. POWER IS TURNED OFF BY SWITCHING THE “ON / OFF” SWITCH ON THE LEFT HAND SIDE OF YOUR 8301 SCALE TO THE OFF POSITION.

1. **OPEN** the printer door to expose the drive system and label supply.

2. **ROTATE** Lift Arm clockwise to lift printhead and release label stock.

3. **REMOVE** the spent paper core.

4. **REMOVE** the liner from the take-up spool

5. **PLACE** a new roll of labels on the hub. **STRIP** off ten labels before threading the liner through the drive system and into the liner take-up spool. THREAD per the diagram inside the printer door. **INSERT** the liner clip into the take-up spool.

6. **LOWER** the printhead by rotating the Lift Arm counter-clockwise. **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.

C. CARE AND MAINTENANCE

WARNING: DO NOT SPRAY OR WASH DOWN. HAZARD OF ELECTRICAL SHOCK OR BURN. REMOVE FROM PRINTER BEFORE SERVICING.

1. TURN OFF POWER TO THE PRINTER. Power is turned off by switching the "ON/OFF" switch on the left hand side of the 8301 to the "OFF" position.

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 & DRIVE MECHANISM FREQUENCY, APPROX. 200,000 LABELS)

WARNING: REMOVE POWER FROM THE PRINTER BEFORE CLEANING.

DO NOT USE ANY SHARP TOOL OR INSTRUMENT TO REMOVE FOREIGN MATERIAL FROM THE PRINTHEAD. THIS CAN CAUSE SEVERE DAMAGE TO ELECTRICAL PARTS.

a. Printhead and Drive Roller (figure 2)
(Cleaning solvent: ISC-108B, Toledo Part No. 12587500A)

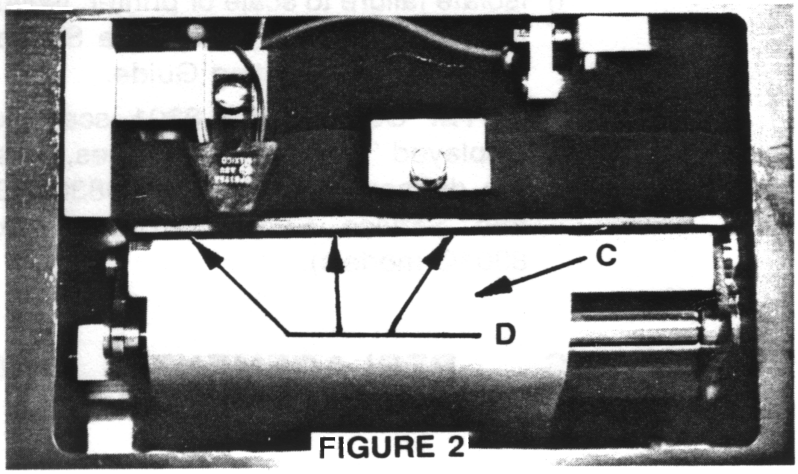


FIGURE 2

WARNING: BEFORE CLEANING THE PRINTHEAD AND/OR DRIVE ROLLER, WITH ISC-180B, READ THE MANUFACTURER INSTRUCTIONS. REMOVE ALL FOOD PRODUCTS AND PACKAGING MATERIAL FROM THE AREA OR CAREFULLY PROTECT THEM FROM ODORS AND SOLVENTS. DISSIPATE ALL ODORS ASSOCIATED WITH THE SOLVENTS BEFORE FOOD PRODUCTS OR PACKAGING MATERIALS ARE RE-EXPOSED IN THE AREA. FOLLOW THE CLEANING SOLVENT MANUFACTURER'S INSTRUCTIONS.

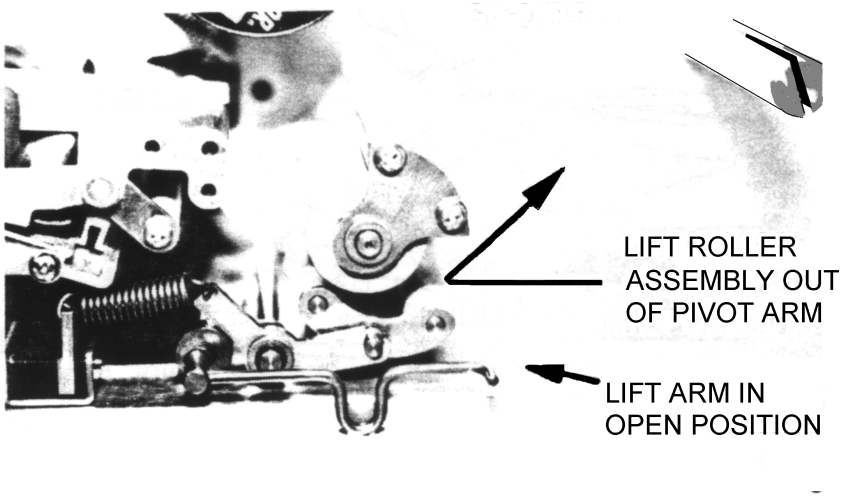
Remove the Label Bezel Assembly.

Rotate the lift arm clockwise to lift the printhead. The Printhead may be raised further by lifting the post by hand.
Remove label stock.
Clean the black resistor line with ISC-108B using a cotton tipped swab. Never scrap the printhead with any object. Should the head require removal for thorough cleaning, refer to Section VII-D.
Wipe the Drive Roller surface using a towel moistened with ISC-108B.
Allow surfaces to dry.
Reload paper and rotate lift arm counter-clockwise.
Re-attach the Label Bezel Assembly.

b. Pressure Rollers (figure 3)

WARNING: IF THE PRESSURE ROLLER ASSEMBLY IS NOT REMOVED FROM THE FOOD PROCESSING AREA, REMOVE ALL FOOD PRODUCTS AND PACKAGING MATERIALS FROM THE AREA OR CAREFULLY PROTECT THEM FROM SOLVENTS. DISSIPATE ALL ODORS ASSOCIATED WITH THE SOLVENTS ODORS AND BEFORE FOOD PRODUCTS OR PACKAGING MATERIALS ARE RE-EXPOSED IN THE AREA. FOLLOW THE CLEANING SOLVENT MANUFACTURER'S INSTRUCTIONS.

Turn off scale power
Rotate the lift arm clockwise to release the Pressure Roller Assembly
Lift the Pressure Roller Assembly out of the pivot arms.



Clean any built-up adhesive or debris from the rollers using ISC-108B
If the pressure rollers do not rotate freely on the shafts, disassemble the assembly, clean the roller(s) and shaft(s) and lubricate the shaft(s) with a light machine oil. Reassemble the pressure roller assembly and allow any cleaning fluids to dry.
Replace Pressure Roller Assembly in Pivot Arms and rotate lift arm counter-clockwise.

c. Optical Label Sensor (figure 4)

Dust off with a soft brush.

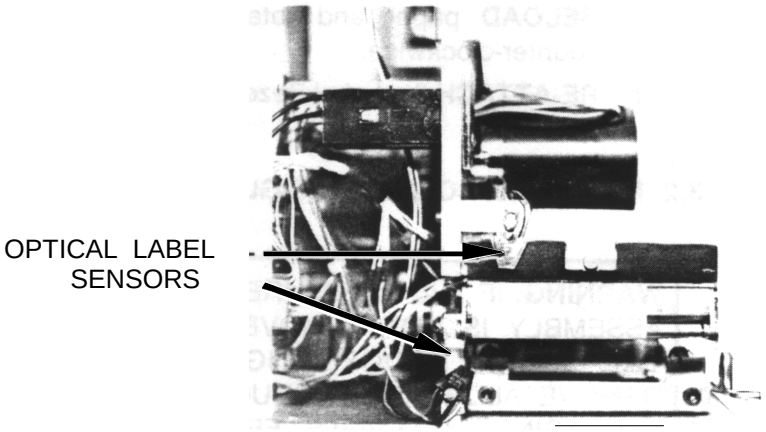


FIGURE 4

d. Label Guide Strip (figure 5)
Clearing Label Jams from under printhead: **NEVER** use a **METAL** object to remove jammed labels. This can cause **severe damage** to electronic parts.

Turn off scale power.
Rotate Lift Arm to lift Printhead and release label stock.
Remove label stock and spent liner from the Printhead area.
Remove the clear plastic Label Guide Strip from the Printhead area with a jammed label attached.

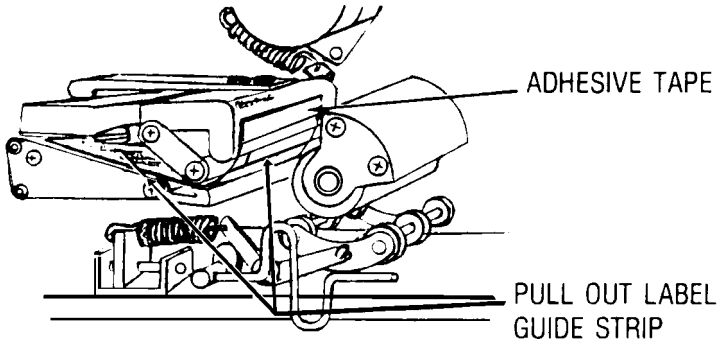


FIGURE 5

The jammed label may be removed from the Label Guide Strip or the Strip may be discarded and a new one installed.
Thread the label Guide Strip into the Printhead area. Attach to Printhead Support with adhesive strip.
Re-load label stock and Release Lift Arm.

4. PRINTER MALFUNCTION

An apparent printer malfunction could be caused by either the printer or the 8301 scale. Should the printer fail to deliver a label/or deliver a partial label, make the following checks:

a. Check paper supply for jams, breaks, etc. Verify paper is made to specification.
b. Check door and label 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 interconnecting cables (scale to printer harness).
f. Isolate failure to scale or printer. Isolate the failed part(s). See Section VIII, Trouble Shooting Guide.

NOTE: Observe the 8301 scale for displayed "ERROR" messages. These are defined in manual TM008301R01 and Service Bulletin RB-24-85 (for 8301C models).

VII. PARTS REPLACEMENT AND ADJUSTMENTS

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

A. ACCESS TO THE LOGIC BOARD

1. Remove the 6 Phillips head screws which retain the left hand side panel.

2. The Circuit Board is retained by two nuts in the upper left and right hand corners of the circuit board. Remove the nuts and disconnect the interconnecting harnesses as you remove the board.

3. ELECTRICAL TEST POINTS - Refer to System Schematic (Section X) and the Trouble Shooting Guide (Section VIII) to make electrical tests.

B. ACCESS TO THE TRANSFORMER AND DRIVE BELTS

Access to the Transformer, all Drive Belts and Pulleys is gained by removing the Logic PCB (Section VII-A). See figure 6.

1. 110 TOOTH BELT REPLACEMENT
   a. Loosen the two (2) set screws on both the 18 and 50 tooth pulleys.
   b. Remove the 110 Tooth Belt by simultaneously pulling off both pulleys. Do not pull the pulleys off by prying against the sides of the bearings.
   c. Remove any burrs from the shafting by filing in a direction away from the bearings. Remove all metal filings. Reverse the above steps to install a new belt.

2. 75 TOOTH BELT REPLACEMENT
   a. Remove the 110 Tooth Belt (See Section VII-B-1)
   b. Remove the four (4) screws mounting the Stepper Motor to the Vertical Plate.
   c. Remove the 75 Tooth Belt
   d. Install a new belt over the 36 Tooth Pulley and Stepper Motor Pulley. Fasten the four (4) Stepper Motor Mounting Screws, but, DO NOT TIGHTEN. Check that no wires are trapped between the Vertical Plate and Stepper Motor Flange. Rotate the Stepper motor to take up slack on the belt and tighten the four (4) mounting screws.

CAUTION: Do not overtighten the 75 tooth belt by stretching it between the pulleys. This can result in premature motor and bearing failure.

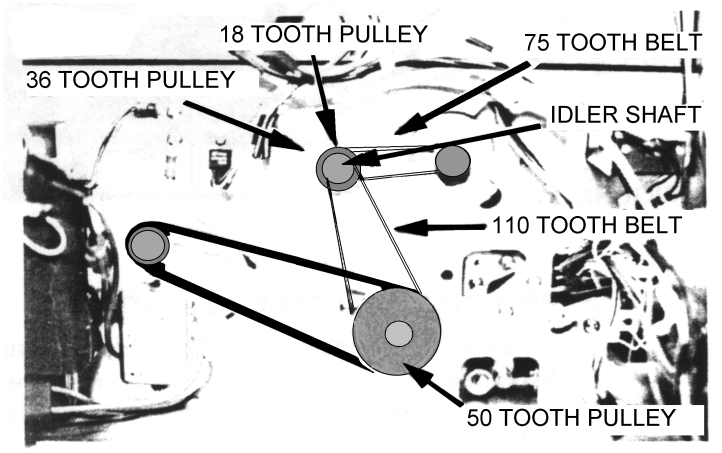


FIGURE 6

C. PAPER POSITION / TRACKING ADJUSTMENTS

There are two adjustments that can be made to affect the liner tracking:

1. OUTER PAPER GUIDE

Thread label stock under the printhead and position the inside edge of the liner adjacent to the inner paper guide. Move the outer paper guide so it is adjacent to the outer edge of the liner being certain not to bend or crush the liner edge. No greater than .064 inch (1/16") gap is allowed between the edge of the liner and guide. (Figure 7)

2. ROLLER TENSIONING SPRINGS

The force balance between the roller tensioning springs will affect liner tracking. Refer to Section VII-G2.

D. PRINTHEAD / LABEL SENSOR REMOVAL AND ADJUSTMENTS

1. PRINTHEAD REMOVAL
   a. Remove the stainless steel front panel.
   b. Disconnect printhead harness from PCB. Disconnect preheat harness from PCB. Remove wiring from cable clamps.
   c. Remove optical sensor bracket (upper) leaving sensor attached. (Figure 8)
   d. Rotate lift arm clockwise to raise printhead.
   e. Lift spring clip away from printhead block and slide printhead assembly off printhead shaft.
   f. Reverse procedure to install printhead assembly.

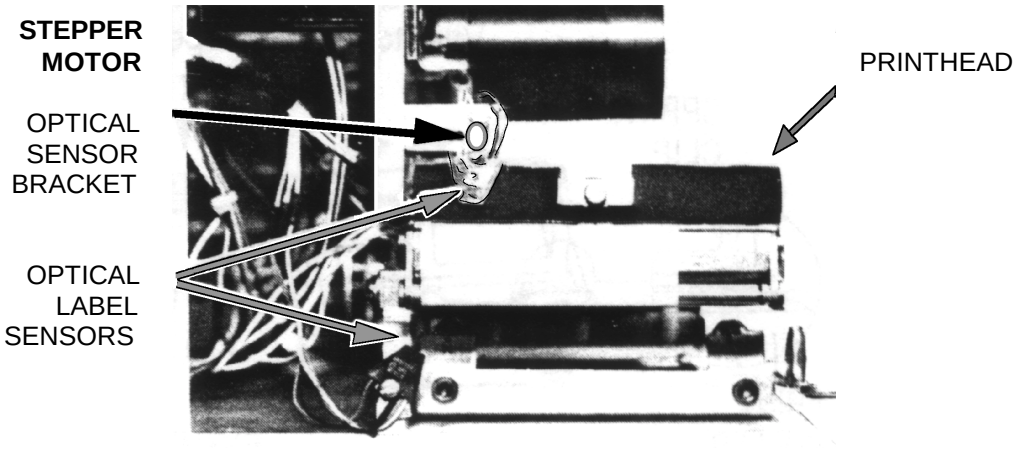


FIGURE 8

NOTE: Repositioning the mounting clip will affect printhead resistor elements should be centered over the front roller. See VIi-D2 printhead adjustment.

2. PRINTHEAD ADJUSTMENT

Maximum print quality is achieved when the resistor line is on top of the front roller (platen). Clean the black resistor line (see Section VI-C-3-a) before proceeding to adjust the printhead.

   a. Loosen the two (2) screws holding the spring clip and position the printhead such that the resistor line is over the front roller (figure 9).
   b. Print a test label and check the quality. Continue to adjust the head until the print quality cannot be improved.
   c.. If the print quality is inadequate, check the following:

      i. Check the proper voltage is being applied to the head. (Section VII-F)

CAUTION: DO NOT OVER-VOLTAGE THE PRINTHEAD TO DARKEN THE PRINT. THIS WILL DRASTICALLY REDUCE PRINTHEAD LIFE

      ii. Check that printhead extension spring is not damaged. Replace if necessary. (see figure 10)
      iii. Check that head support pivots freely on the bearing shaft. Remove extension spring from spring post to perform this test.
      iv. Check that lever arm roller is not coming into contact with the head cam when the lift arm is in the closed position. See lever arm adjustment (section VII-E).

iv. Check that head preheat is functioning properly. The printhead block should be warm to the touch. If poor print quality still exists, the printhead may be bad. Install a new printhead and check print quality after adjustment. Refer to Section VII-F to set the proper head voltage.

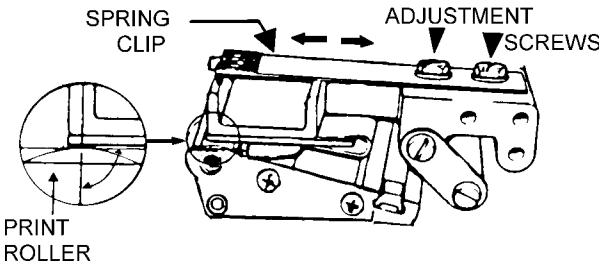


FIGURE 9

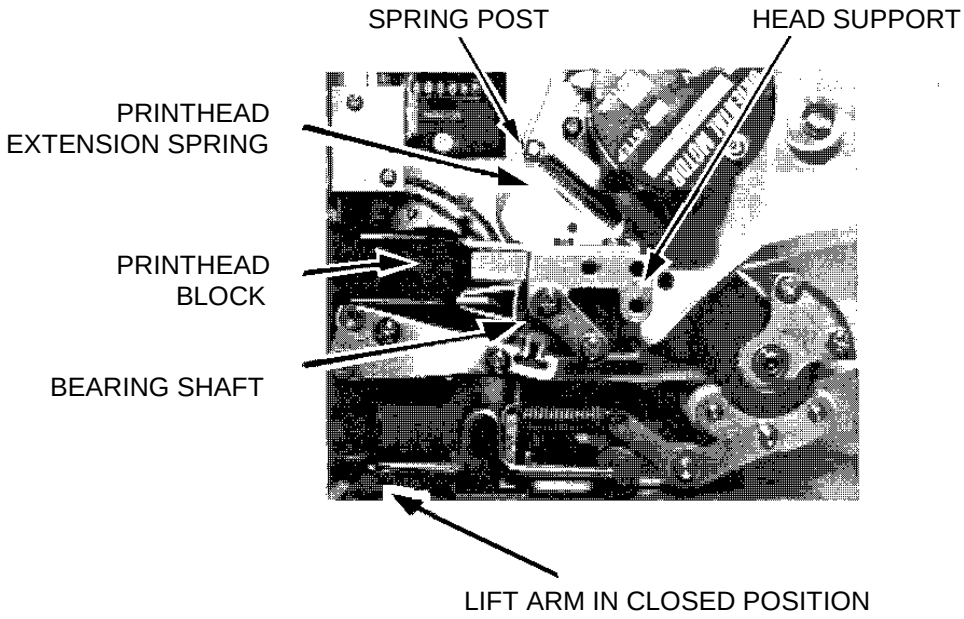


FIGURE 10

E. LEVER ARM ADJUSTMENT

When the printhead rests against the front roller, the distance between the head cam and the lever arm roller should be .025 ± .005" so that the printhead rests against the print roller through the force of the head extension spring.

Place the printhead in the print position (lift arm in closed position) against the front roller. Loosen the two screws which hold the lever arm to the head support. Lever Arm Adjustment screws are accessed from the Electronic side of the Deck, through a hole in the vertical plate. Place a feeler gauge between the head cam and lever arm roller and tighten the screws. (See figure 11.)

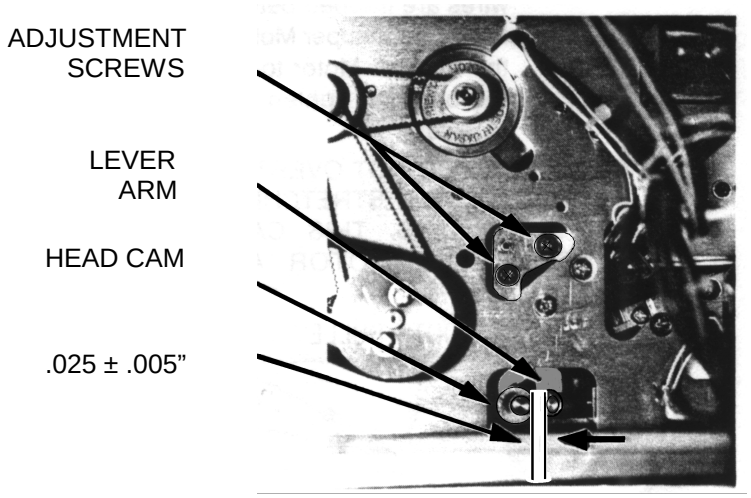


FIGURE 11

F. PRINTHEAD VOLTAGE ADJUSTMENT

When a new printhead is installed, Program Switches must be set to select the correct operating voltage. The operating voltage will be indicated on the new head.

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

CAUTION: DO NOT OVER-VOLTAGE THE PRINTHEAD.

G. PRESSURE ROLLER ADJUSTMENT (see figure 12 a and b)

The Pressure Rollers provide the necessary friction against the Drive Roller to pull the liner and drive the paper supply. Spring tension provides the necessary force between the Pressure Rollers and Drive Roller.
If tension is insufficient, the Liner will slip on the Drive Roller and the printed information will not be disburse properly on the label.

1. TO INCREASE TENSION
   a. Remove the front stainless panel.
   b. Turn both Allen head adjustment screws clockwise. See figure 12 a.

2. TO DECREASE TENSION
   a. Remove the front stainless panel.
   b. Turn both Allen head adjustment screws counter-clockwise. See figure 12 a.

H. PAPER TRACKING (see figure 12 a and b)

Should one tensioning spring be sufficiently tighter than the other, the paper will tend to move left or right on the tracking plate. Adjustment can be accomplished from the operator door (no panels need to be removed).

1. Adjust the outer paper guide (see Section VII-C-1). Clean drive roller and pressure rollers if necessary. (See Section VI-C-3-a, b).

2. PAPER IS MOVING OUT (toward door)
   Decrease tension on the outside spring by turning the Outer Allen Head Screw counter-clockwise Open and close lift arm to re-seat pressure roller assembly.

3. PAPER IS MOVING IN (toward vertical plate)
   Increase tension on the outer spring by turning the outer Allen head screw clockwise. Open and close lift arm to re-seat pressure roller assembly.

4. For additional adjustment, the inner adjustment screw may be used. Rotate this screw opposite to that shown in b and c above to produce the same effect.

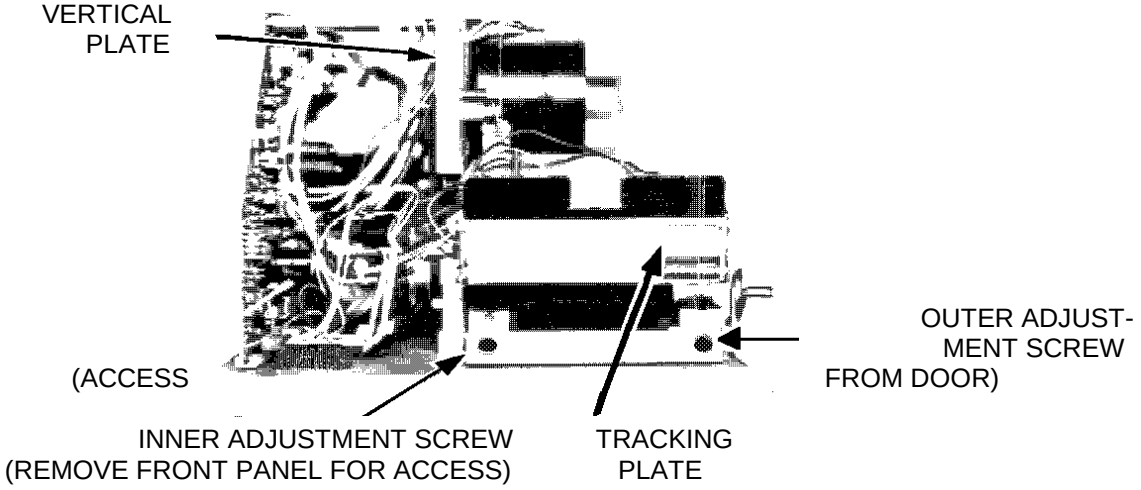


FIGURE 12 (a)

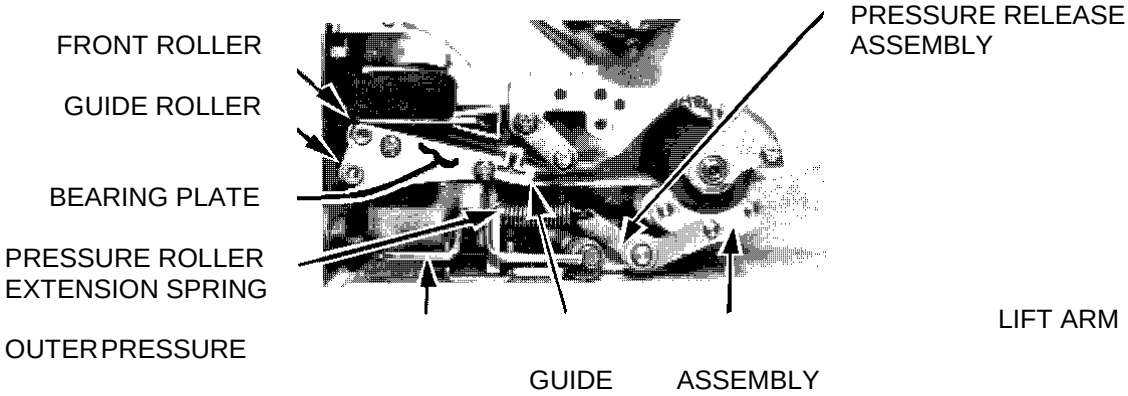


FIGURE 12 (b)

I. TRACKING PLATE ADJUSTMENT

The Tracking Plate needs to be adjusted when:

1. Good label stock does not strip or strips low.
2. The Tracking Plate becomes loose.
3. The Tracking Plate needs to be removed for a thorough cleaning.
4. The Tracking Plate is replaced

Remove the Printhead Assembly, Spring Clip, and Adjuster Assembly. Lay the Printhead Assembly near the PCB side taking care to protect the Printhead resistor line from damage. Move the flexible Label Guide Strip off the Tracking Plate. Remove the two (2) nuts holding the PCB to its standoffs. Slide the PCB to the rear to gain access to the two (2) Tracking Plate mounting screws. Loosen the two (2) screws holding the Outer Bearing Plate Assembly to the Tracking Plate. Remove the two (2) screws holding the Tracking Plate and Inner Bearing Plate Assembly to the Vertical Plate. Remove the outer Bearing Plate Assembly from the Tracking plate. Remove the Front Roller from the Tracking Plate cavity. Insert a Label Guide Strip (must be 0.010 to 0.012 inch thick) into the Tracking Plate Front Roller cavity (2.7 inch dimension along the Tracking Plate width) and press a Front Roller into the cavity.
Fasten the Tracking Plate, Bearing Plate Assemblies, Front Roller, and Guide Roller to the vertical plate by loosely hand turning the four (4) screws. Insert a screwdriver into the gap between the Tracking Plate and Guide Roller near the left edge of the Tracking Plate and lift up gently to take up clearance. Hold the screwdriver in place. Tighten the two (2) screws on the PCB side.
Move the screwdriver to the right side of the Tracking Plate and lift up gently. Tighten the two (2) screws fastening the Outer Bearing Plate Assembly to the Tracking Plate. Pull the trapped Label Guide Strip out from under the Front Roller.
Check that the Front Roller spins freely. If the Roller rubs the Tracking Plate at any point, the Front Roller is out of specification and needs to be replaced. After adjustment, the top of the Front Roller must be equal to or less than 0.015 inch above the stripping edge of the Tracking Plate. The top of the roller may be parallel to the stripping edge or slightly under the edge. If the top of the Front Roller is greater than 0.015 inch above the stripping edge, the Bearing Plate Assemblies, Tracking Plate, and/or Front Roller may be out of specification. Replace necessary parts and repeat adjustment.
Reverse steps to re-assemble PCB. Label Guide Strip, Printhead Assembly, Spring Clip and Adjuster Assembly. Adjust the Printhead resistor line (Section VII-D-2). Adjust paper position (Section VII-C) and tracking (Section VII-G-2) if necessary.

J. BEARING CARRIER REPLACEMENT

The Bearing Carrier Assembly must be replaced when a bearing in the carrier fails.
Remove the 18 and 36 tooth pulleys from the Idler Shaft (See VII-B). Remove the Bearing Carrier Assembly using a 13/16” open end wrench. Remove loose Loctite from tapped hole. Apply Loctite #242 to threads of new Bearing Carrier Assembly and assemble unit into vertical plate. Reassemble all belts and pulleys.