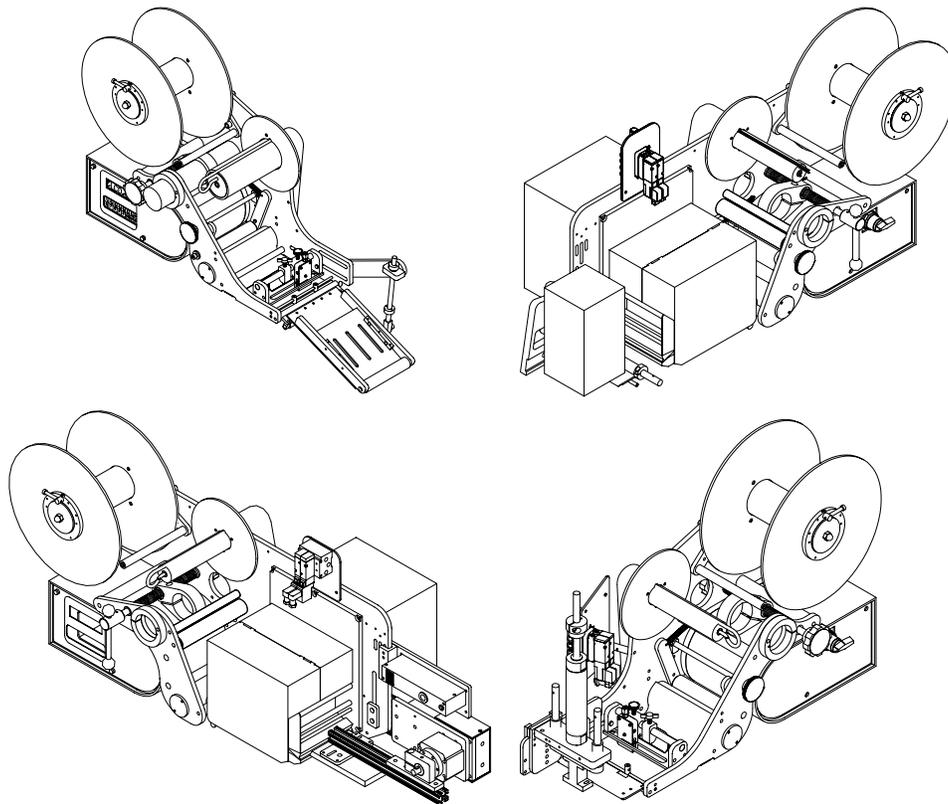




Little David™ Label Application System

Series 900 Labeling System Manual



Version: BMGM-3

Operator's Manual

LITTLE DAVID™ LABEL APPLICATION SYSTEM

Labeler Operation

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Loveshaw, Inc.
2206 Easton Turnpike, PO. Box 83
South Canaan, PA 18459
Tel: 1-800-962-2633 • 570-937-4921
Fax: 570-937-4016
www.LOVESHAW.com
Info@loveshaw.com

Loveshaw Europe A Division of ITW LTD.
Unit 9 Brunel Gate
West Portway Industrial Estate
Andover, Hampshire SP10 3SL
ENGLAND
Tel: 264-357511
Fax: 264-355964
www.LOVESHAW.com
Sales@loveshaw-europe.co.uk

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Monday, July 11, 2005



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Introduction and General Information



ICON KEY

 Important information

Thank you for purchasing Loveshaw's Little David™ Series 900 labeler. This labeler system is designed to be versatile enough to suit a variety of carton labeling requirements with one standard unit. All employees who will be required to operate the labeler should read this manual to ensure proper set-up and a longer machine life. After reading this manual you will know how to perform the following functions,

- How to properly mount the labeler to achieve maximum performance.
- How to thread the labeler and adjust the sensors to apply labels in the most efficient manner.
- How to use the controller interface.
- Troubleshooting and replacing of worn or defective parts.

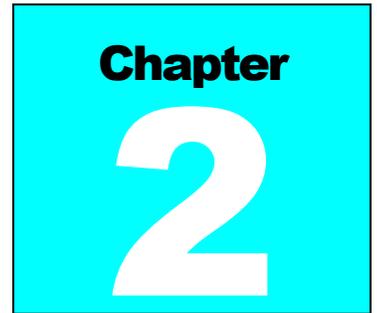
Throughout this manual there are several illustrations designed to help you perform the variety of tasks described. These illustrations all depict the right-hand version of the machine. You can tell a right hand and left hand machine apart by facing the machine. The side with the larger plate holding all of the rollers is the hand version of the machine. The hand designation of your individual machine does not affect any of the procedures or maintenance operations described below only that your left hand machine appears as a mirrored image of the machine depicted in the illustrations.

LABEL CONVERTING SPECIFICATIONS

In order to insure the labeling machines function, the following label specifications are offered as part of this proposal. Seller recommends that Buyer include a copy of these specifications with Buyer's purchase order for labels from Buyer's label converter. There may be exceptions to these specifications, depending upon the particular label construction used.

1. Labels shall be converted with $3 \text{ mm} \pm .13 \text{ mm}$ minimum spacing between labels, and a minimum side gap of $1.5 \text{ mm} \pm .15 \text{ mm}$ slit on each side of the label. Maximum media width is determined as appropriate for the print engine selected. Labels shall not be converted with perforations or other separations between labels. Additional label tolerances specified shall be as per diagram "A"[attached, if any].
2. A standard minimum 76 mm ID core is recommended [101 mm or 152 mm ID cores may also be acceptable]. Standard maximum roll OD shall be 305 mm [rolls up to 406 mm may also be acceptable]. Cores shall be slit cleanly to the final media width, including tolerance, and shall be of such composition so as to resist crushing distortion. The roll end shall not be attached to the core with tape or adhesive.
3. Labels shall be wound to the outside of the roll unless otherwise specified. The labels shall be cleanly die cut, waste removed with no nicks or marks to the outside label perimeter, and centered on the backing media. If possible [unless otherwise specified] the labels shall be oriented: (1) to feed the trailing edge perpendicular to the backing media edge; and, (2) to feed the label with its shortest dimension parallel to the feed path.
4. There shall be no strike-through or fractures of the backing media by the label processing die which can be detected by ink or marker penetration after wiping. There shall be no tears or cuts on the backing media edges. The backing media shall be of a uniform density and thickness. It shall be sufficiently translucent as to assure reliable gap detection, given the label stock selected.
5. All eye marks or sensing notches shall be located with the same tolerance as specified for the labels and located on the backing media as is appropriate for the print engine selected. Eye marks shall be opaque, of a uniform density, and a minimum of 6 mm in width by 3 mm in the feed direction. Sensing notches, if possible, shall be as small as practical and located away from the edge of the backing media.
6. The label rolls shall not be wound so tightly as to cause the adhesive to bleed out from around the label edges nor so loosely as to cause roll telescoping. The labels shall be wound with consistent wind tension and shall be flat within 3 mm when measured from a reference surface.
7. Where splicing is necessary in the label roll, splicing shall be consistent with the requirement of the automatic labeling machinery. Preferred splices, when required, shall be of a diagonal style, using a clear transparent pressure sensitive tape applied to the back side of the backing web only (non-release coated side). All factory splices shall be removed, unless they meet the preferred splice specification.
8. All finished label rolls shall be appropriately marked for identification per customer requirements and shall be packed to assure that the rolls arrive clean, flat and without shipping damage.
9. The label adhesive shall be tested thoroughly to insure the compatibility of the label to the Buyer's product and to have the proper amount of permanence or removability according to Buyer's specifications. All face stock and adhesive combinations are subject to testing for dispensability on automatic labelers prior to acceptance.

Operating and Safety Precautions



Observe the warnings and cautions below when using the Little David Label Application Systems. Within this manual, a warning indicates that the potential for bodily injury exists, and a caution indicates when the machine may suffer damage.

Instruction: Requirement to System Operation

- Instruction:** Socket-outlet shall be installed near the equipment and shall be easily accessible.
- Instruction:** Fuses marked 3A are of type: 250V, 3.0 Amp, Instant Burn
Fuses marked 8A are of type: 250V, 8.0 Amp, Instant Burn

Warning: Potential Bodily Injury

- Warning:** Always turn off the electrical power before clearing jams, and before performing maintenance.
- Warning:** Avoid liquid or excessive moisture when using the system. Do not operate the system with wet hands, nor in a very humid environment. Do not spill liquid on the system.
- Warning:** Do not touch moving parts. Turning hubs can bruise or scrape, rapidly moving label stock can cut like a knife.
- Warning:** If a problem arises that is not covered in this manual, do not attempt to repair the system yourself, instead, call your nearest service office for immediate and correct care of the equipment. Trained personnel should perform all adjustments and service.

This manual contains operator information for Little David Application Equipment. It is directed toward the person who operates that system. You should take the time to read through this manual once before operating it. Thereafter, refer to it as necessary.

Take special note of all warnings, cautions, and maintenance instructions. Like any other piece of equipment, the Little David Label Application System functions best when cared for and used carefully. Note that only an authorized technician should perform any procedures not described in this manual.

Caution: Potential Machine Damage

- Caution:** Do not install the system in direct sunlight.
- Caution:** Do not install the system near a heater or heat emitting equipment.
- Caution:** Provide and use proper electrical power.
- Caution:** Use Loveshaw Corp tested supplies only. Supplies that do not meet Loveshaw Corp standards may result in poor label application quality or may damage the equipment.
- Caution:** Do not operate, maintain, or otherwise use the system, except as described in this manual. The system is not a toy.

Labeling Heads



There are two major types of Labelers described in this manual. The LS600 which do not have a printer. It is also called an Apply-Only Labeler. The other is LS800 which has a printer. It is called a Print & Apply Labeler. This labeler can be of the standard Apply/Print where the label is available waiting for the product or Print/Apply which waits for the product then prints and applies the label. Using this method enough time is needed to print the label before it is applied on to the product. This may also be called Reverse Logic.

Apply-Only Labeling Head 3

Introduction

This is a highly modular automatic labeling system. Each system contains four components: a labeling head, an applicator, a mounting, and a product sensor. The mounting holds the labeling head and applicator in position. The product sensor detects a product at the labeling station, and signals the labeling head. The labeling head dispenses a pre-printed label onto the applicator, and the applicator applies the label to the product.

This chapter includes the following topics:

Frame Assembly

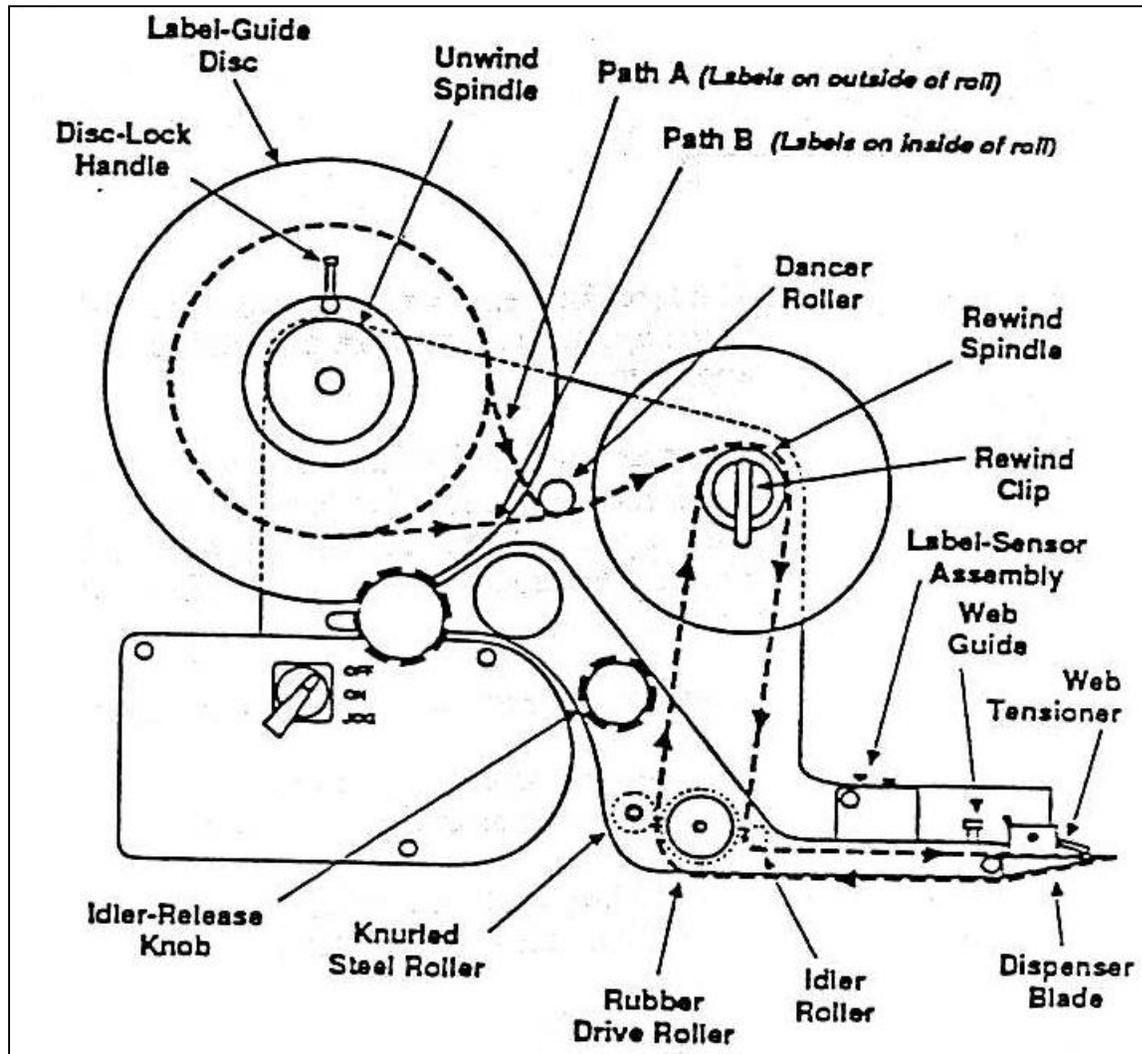
- **Loading Stock** describes how to load a new roll of stock that is the same width as the last roll used.
- **Loading and Centering Stock** describes how to load a new roll of stock that is not the same width as the last roll used.
- **Adjusting the Label Sensor Position** describes how and when to adjust position
- **Adjusting the Label Sensor Sensitivity (Photoelectric & Mechanical)** describes how and when to adjust sensitivity of label sensor
- **Power Pack Assembly**
- **Printer Circuit Board**
- **Electrical Drawings**

This chapter describes how to load stock and make various adjustments to the 906 Labeling Head. The label sensor shipped with this labeling head is most often a photoelectric sensor. For certain applications, however, an electromechanical sensor is used. Both types of sensors are described in this chapter.

The final sections of this chapter describe how to adjust the position and sensitivity of the label sensor. You must adjust the position of the label sensor whenever the label length changes. You may need to adjust the sensitivity when the stock material changes.

Loading Stock

Follow this procedure to load a new roll of stock that is the same width the last roll used. If you are loading stock of a different width than the last roll turn to the Loading and entering Stock



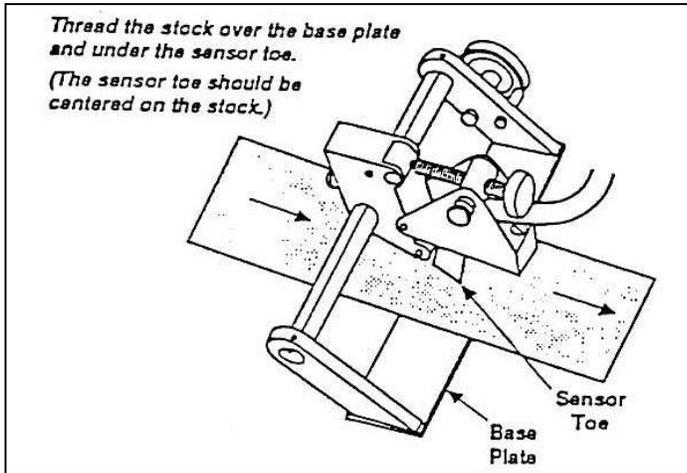
procedure in the next section of this chapter.

- 1) Turn the idler-release knob clockwise to the threading position.
- 2) Remove the web tensioner (bar and flap) from its mountings on each side of the dispenser blade, and set aside.
- 3) Release the label-guide disc from the unwind spindle by lightly turning disc-lock handle. (The disc lock is a cam-action clamp requiring very little movement of the handle.) Then slide the label guide disc off of the unwind spindle. If there is an old stock-roll core on the unwind spindle remove it.
- 4) Pull the rewind clip from the rewind spindle and remove and dispose any backing paper remaining in the stock path.
- 5) Strip three to four feet of labels, from the backing paper of the new roll. Install the new roll on the unwind spindle, with the labels facing up. (If the labels are on the outside of the roll, follow Path A if on the inside follow Path B.) Push the label-guide disc back onto the

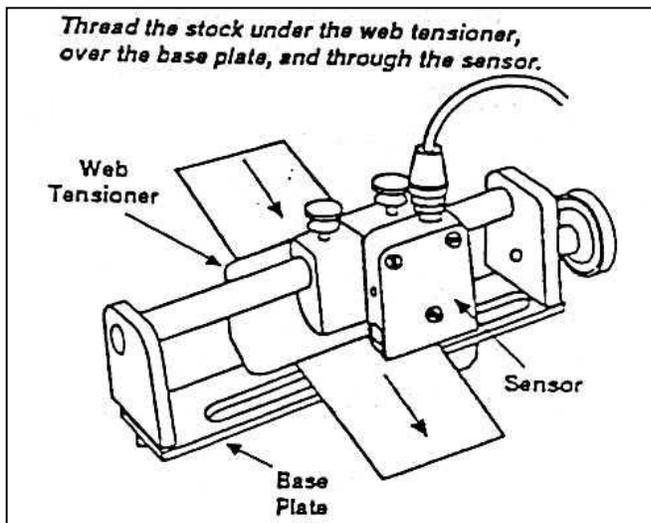
unwind spindle until it lightly touches the new roll. *Do not bind the new roll between the front and back label-guide discs.* Then turn the disc-lock handle to lock the label-guide disc into position.

- 6) Thread the backing paper under the dancer roller, over the rewind spindle, and under the idler roller.

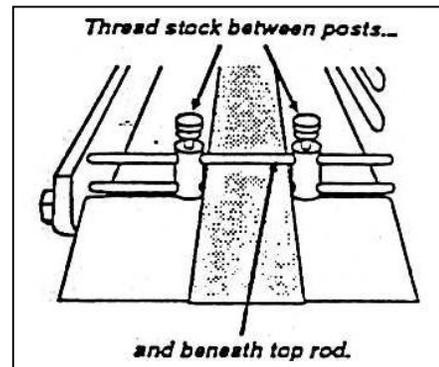
- 7) If your system has a photoelectric label sensor, thread the stock through the sensor assembly, as illustrated below.



If your system has an electromechanical label sensor, thread the stock through the sensor assembly, as illustrated below.



- 8) Thread the stock through the web guide, as illustrated to the right.
- 9) Referring to the threading diagram on page 3-2, thread the stock over the dispenser blade, between the rubber drive and knurled steel rollers



and over the rewind spindle(beneath the backing paper coming from the unwind spindle). wrapping the excess around the rewind spindle by hand.

Caution: Do not turn the rewind spindle manually. This can damage the clutch.
--

10) Replace the rewind clip, taking care to attach only the excess backing to the rewind spindle.

11) Turn the unwind spindle lightly counterclockwise, to take up any slack in the stock path.

12) Replace the web tensioner.

13) Turn the idler release knob counterclockwise to its normal position.

14) Turn the **ON-OFF-JOG** switch to the **JOG** position. A single label should be dispensed onto the center of the applicator.

If the stock binds in the stock path or does not feed onto the center of the applicator, retrace the preceding steps to insure that the stock is threaded properly.

If the stock is threaded properly and the problem persists, you may need to re-center the stock in the path (See Loading and Centering Stock.)

Loading and Centering Stock

Whenever you change label widths, you must center the stock through the stock path. (*You do not need to repeat this procedure each time that you load stock of the same width.*) This procedure ensures that the web and labels track straight and smoothly through the system and that labels are properly dispensed onto the center of the applicator. If the stock is not centered, labels will not feed properly, and a variety of problems may result.

To properly center the stock, you must adjust the front and back label-guide discs on the unwind spindle, the rewind-guide disc on the rewind spindle, and the web guides at the front of the labeling head.

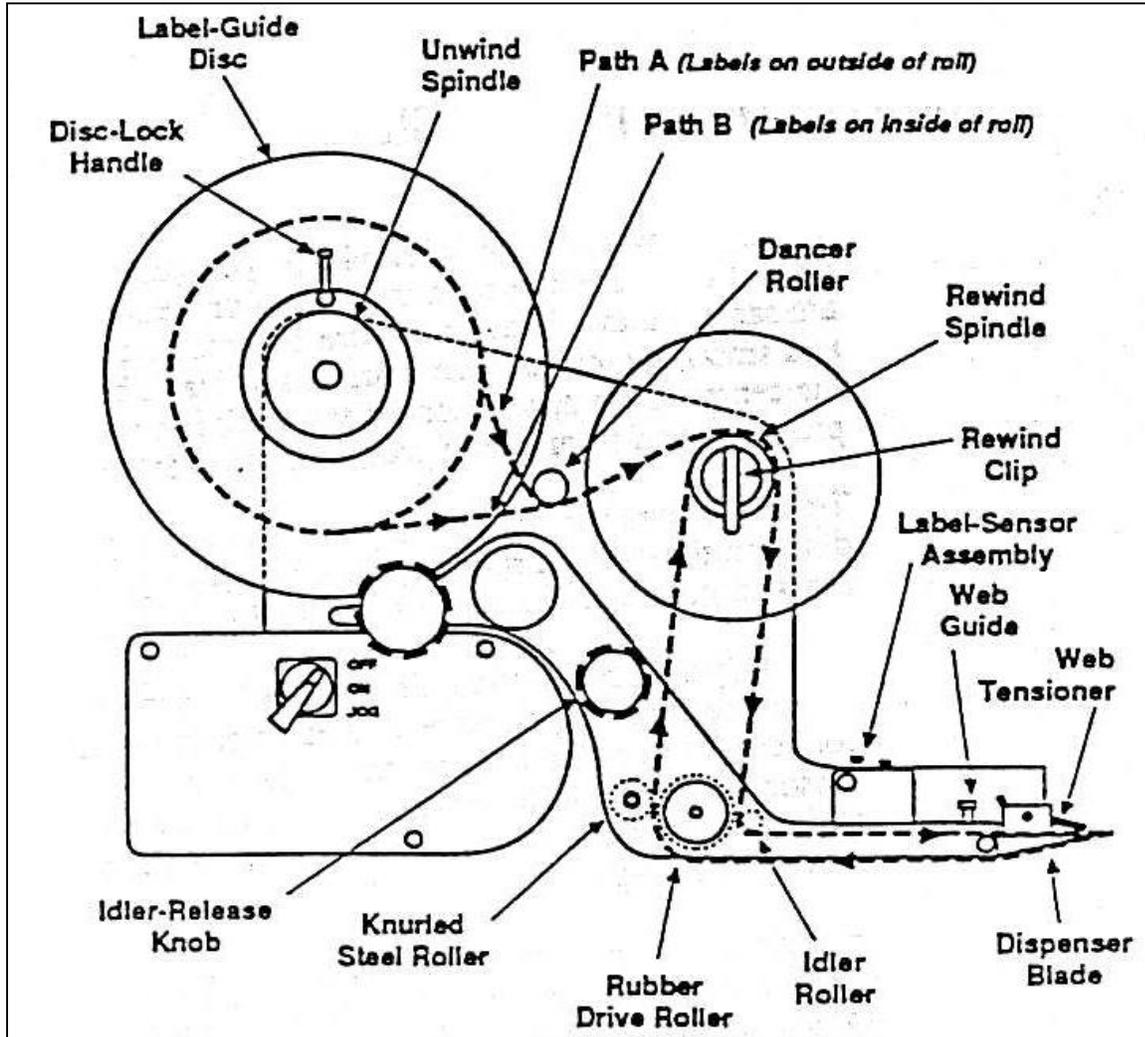
If your system has a photoelectric label sensor, you must reposition the sensor across the web. If you have an electromechanical label sensor, you may or may not need to reposition the sensor across the web. Whichever type of label sensor you have, if the length of the label changes you must adjust the position of the sensor in the web direction. (See “Adjusting the Label Sensor Position”, later in this chapter.)

In addition to the above adjustments, you may have to adjust the applicator (depending on the applicator type). See Chapter 4 for a description of all applicator adjustments.

To begin the stock-centering procedure, refer to the illustration on the next page, and follow the steps below:

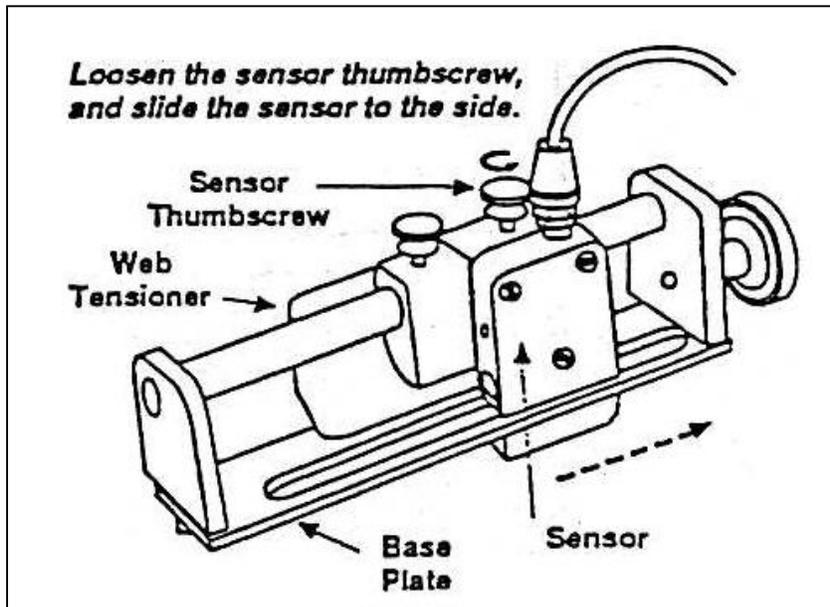
- 1) Turn the idler release knob clockwise to the threading position.
- 2) Remove the web tensioner (bar and flap) from its mountings on each side of the dispenser blade, and set aside.
- 3) Release both the front and back label-guide discs on the unwind spindle, by lightly turning the disc-lock handles. (The disc locks are cam-action clamps requiring very little movement of the handles.) Remove the front label-guide disc by sliding it off the unwind spindle. If there is an old stock roll core on the unwind spindle, remove it.
- 4) Pull the rewind clip from the rewind spindle, and remove and dispose of any backing paper remaining in the stock path. Release the rewind-guide disc on the rewind spindle by lightly turning the rewind-disc lock handle on the back of the disc. (not shown)

- 5) Strip three to four feet of labels from the backing paper of the new roll.



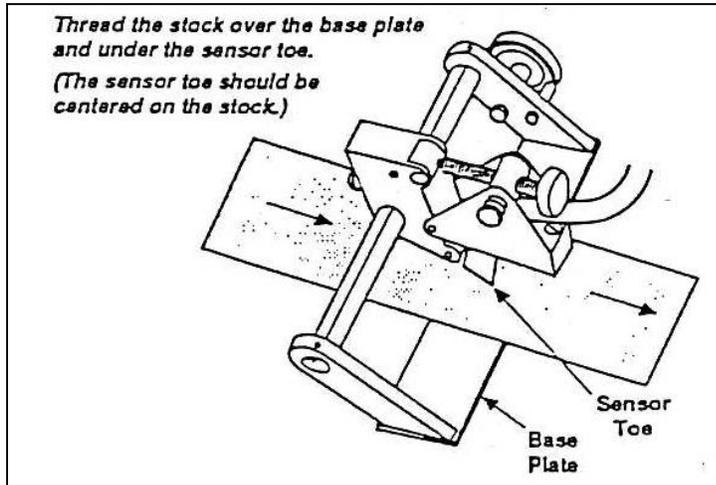
- 6) Install the new roll on the unwind spindle, with the labels facing up. (If the labels are on the outside of the roll, follow Path A; if on the inside, follow Path B.) Slide the front label-guide disc back onto the unwind spindle. Standing behind the unwind spindle (as pictured above), sight down the label path and position the stock roll and label-guide discs in line with the applicator (Not Shown)
- 7) Turn the back disk-lock handle to lock the back label-guide disc in position.
- 8) Position the rewind-guide disc in line with the back label-guide disc, and lock it in position.

- 9) Install the new roll on the unwind spindle, and gently push the front label-guide disk until it touches the new roll. Then back it off slightly, and lightly turn the disc-lock handle to lock the front label-guide disc in position. Do not bind the new roll between the front and back label-guide discs.
- 10) Referring to the threading diagram on the facing page, thread the backing paper under the dancer roller, over the rewind spindle, and under the idler roller.
- 11) If your system is equipped with photoelectric label sensor (see below), loosen the sensor thumbscrew, and slide the sensor to the side of the path, with the opening for the stock facing the center.

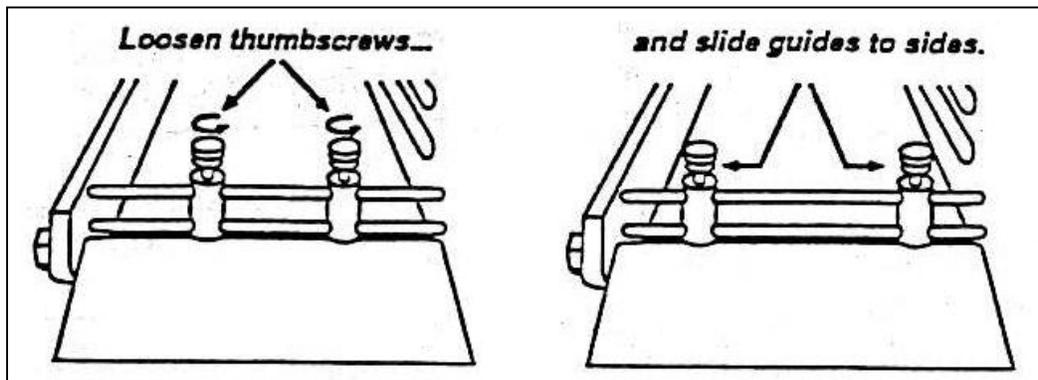


If your system is mounted on its side, with the stock opening in the sensor facing “down”, you will have to tighten the sensor thumbscrew lightly, to hold the sensor at the (top)side of the path.
Then thread the stock under the web tensioner and over the base plate.

If your system has an electromechanical label sensor, thread the stock through the sensor, as illustrated below. (*Do not center the sensor at this time.*)

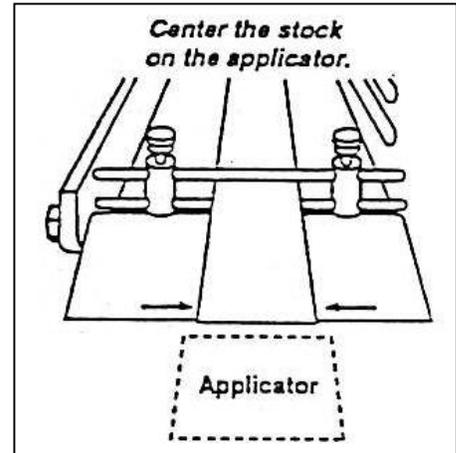


12) Loosen the web guide thumbscrews, and move one guide to each side of the stock path (as illustrated below)



If your system is mounted on its side, you will need to tighten the “top” thumbscrew lightly, to hold that guide at the (top) side of the path.

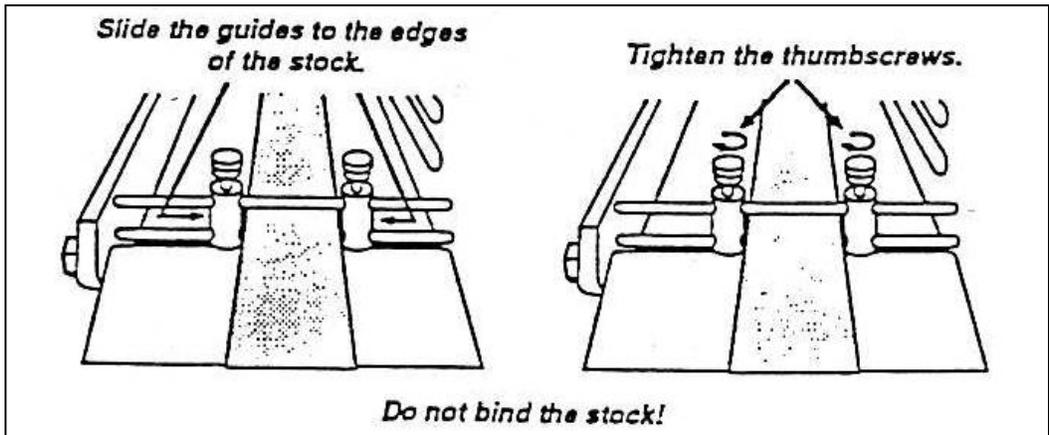
Thread the stock through the web guide, as illustrated to the right. Be sure that the stock passes between the two posts and beneath the upper rod of the web guide. Then carefully center the stock on the applicator.



While holding the stock in its centered position, slide the guides to the edge of the stock, and tighten the thumbscrews as illustrated below. Do not bind the stock between the two posts.

Referring to the threading diagram on page 3-6, thread the stock over the dispenser blade, between the rubber drive and knurled steel over the rewind spindle (beneath the backing paper coming from the unwind spindle), wrapping the excess around the rewind spindle by hand.

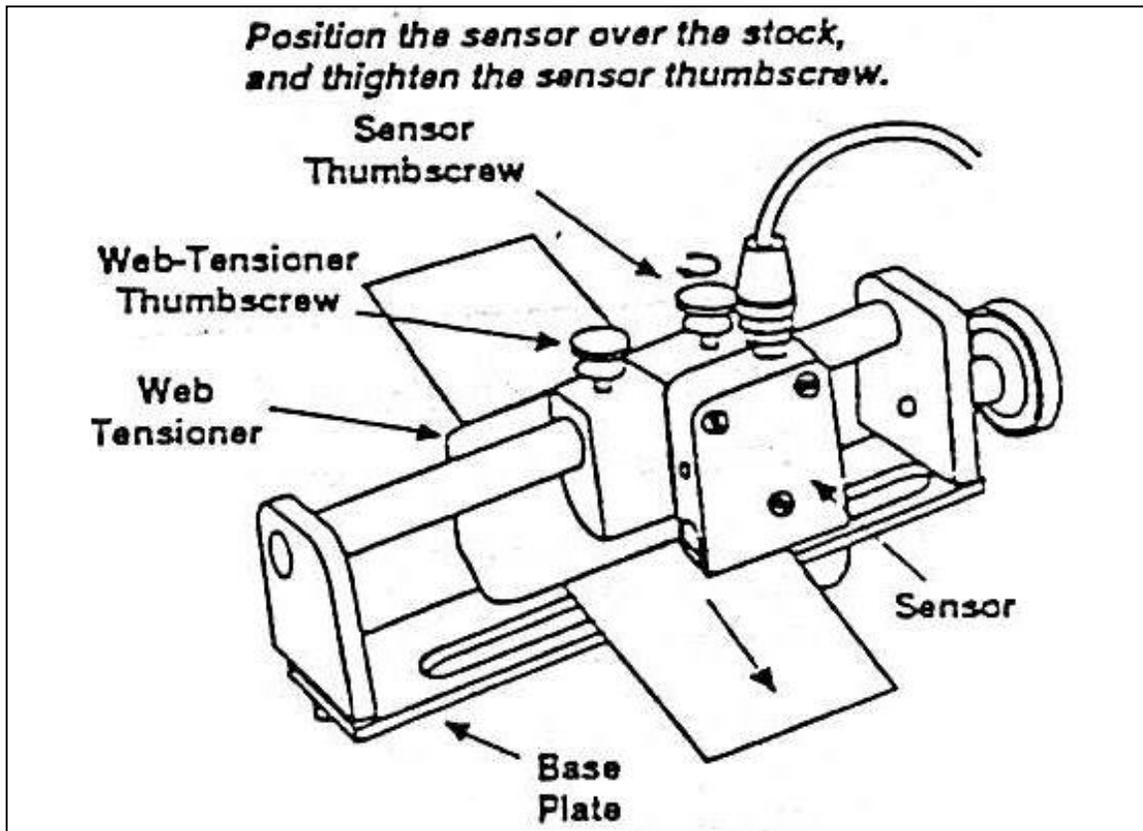
Caution: Do not turn the rewind spindle manually. This can damage the clutch.



- 14) Replace the rewind clip, taking care to attach only the excess backing to the rewind spindle.
- 15) Turn the unwind spindle lightly counterclockwise, to take up any slack in the stock path, and to center the stock in the path.
- 16) If you have an electromechanical label sensor, skip ahead to the next page.

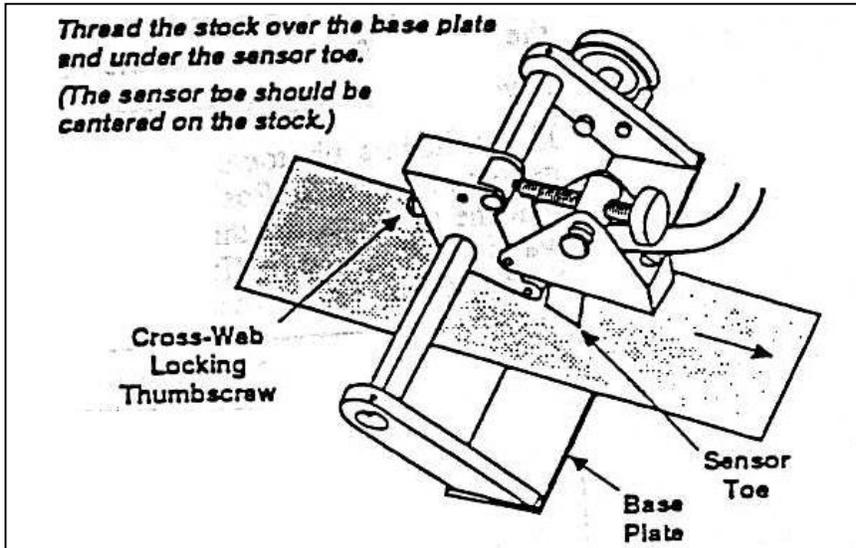
If you have a photoelectric label sensor, slide the sensor towards the center of the path. Position the sensor as illustrated below, taking care that the stock passes through the sensor opening, to a point about half-way into the sensor.

(It may be necessary to loosen the web-tensioner thumbscrew, and move the web tensioner to accomplish this.)



Once the sensor is positioned, tighten the sensor thumbscrew (and also the web-tensioner thumbscrew, if you have moved the web tensioner).

If you have an electromechanical label sensor, check that the sensor toe is approximately centered on the stock path. If not, loosen the cross-web locking thumbscrew, adjust the sensor position, and retighten the thumbscrew.



- 17) Replace the web tensioner.
- 18) Turn the idler release knob counterclockwise to its normal position.
- 19) Turn the ON-OFF-JOG switch to the JOG position, and watch the stock path carefully to see if the stock binds against any of the guide discs, the web guide, or the label sensor.

If the stock tracks straight through the labeling head, and the labels feed onto the center of the applicator, the centering and loading procedure is complete.

If the stock binds at any point, re-adjust the component against which it is binding.

If the label does not feed onto the center of the applicator, move the entire path to one side or the other, as appropriate.

If the label length changes (in addition to the width), see the following section of this chapter to adjust the position of the label sensor in the web direction.

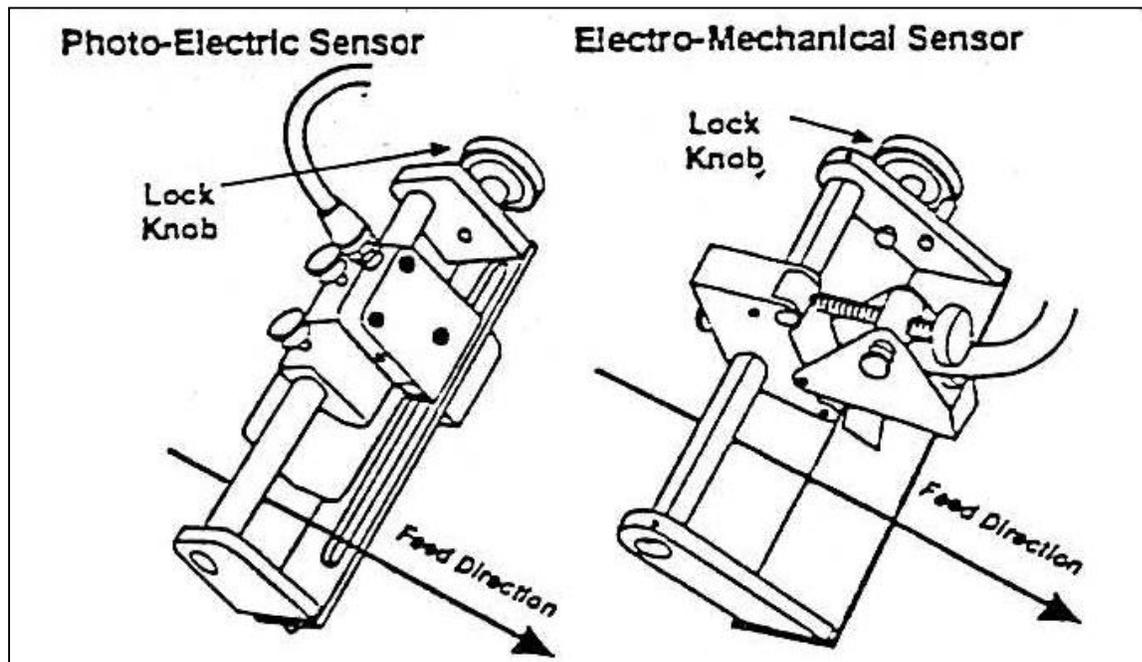
Depending on the type of applicator you use, you may need to adjust the applicator when changing label sizes. See Chapter 4 for a description of applicator adjustments.

Adjusting the Label Sensor Position

When the label sensor detects the gap between two labels, it signals the labeling head to stop feeding stock. At that instant, a label must be properly positioned on the applicator. Thus if you change the label length, you must adjust the position of the label-sensor assembly.

The correct stopping position for the label depends on the type of applicator used. See Chapter 4 for the correct stopping position for your type of applicator.

Regardless of whether you have a photoelectric or electromechanical label sensor, you move the assembly along the stock travel direction in the same way. Both type of assemblies are illustrated below:



To adjust the position of the label-sensor assembly, first loosen the large lock knob, then slide the assembly backward or forward as appropriate, and retighten the lock knob. Test the new position by turning the ON-OFF-JOG switch to the JOG position, and checking the positioning of the label on the applicator. It may be necessary to repeat this procedure several times before the labels feed onto the applicator correctly.

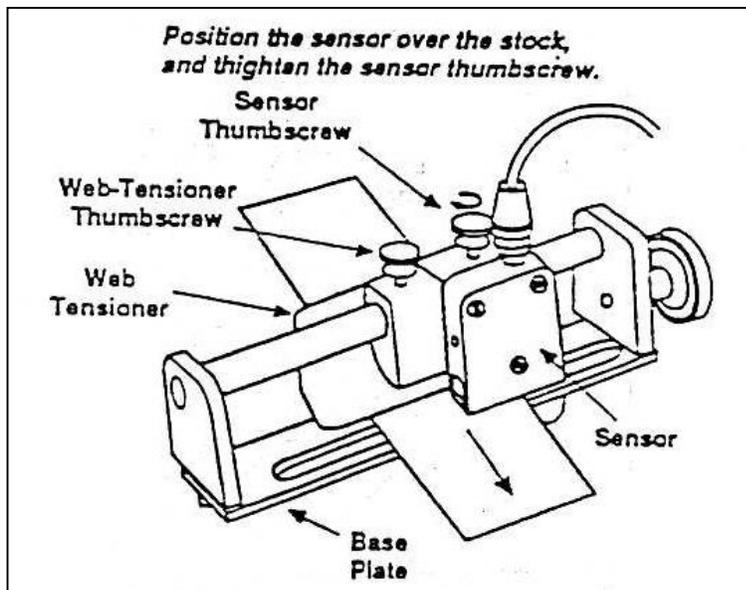
Adjusting the Label Sensor Sensitivity

This section describes how to adjust the sensitivity of both types of label sensors. You may need to adjust the sensitivity when switching from one type of stock to another. The photoelectric label sensor sensitivity adjustment is described first.

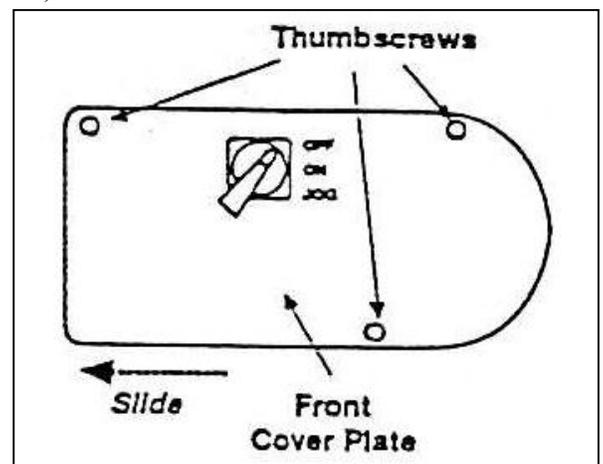
PHOTOELECTRIC LABEL SENSOR

You adjust the sensitivity of the photoelectric label sensor by turning a potentiometer located on the printed circuit board within the power pack. To adjust the sensor, follow the procedure outlined below.

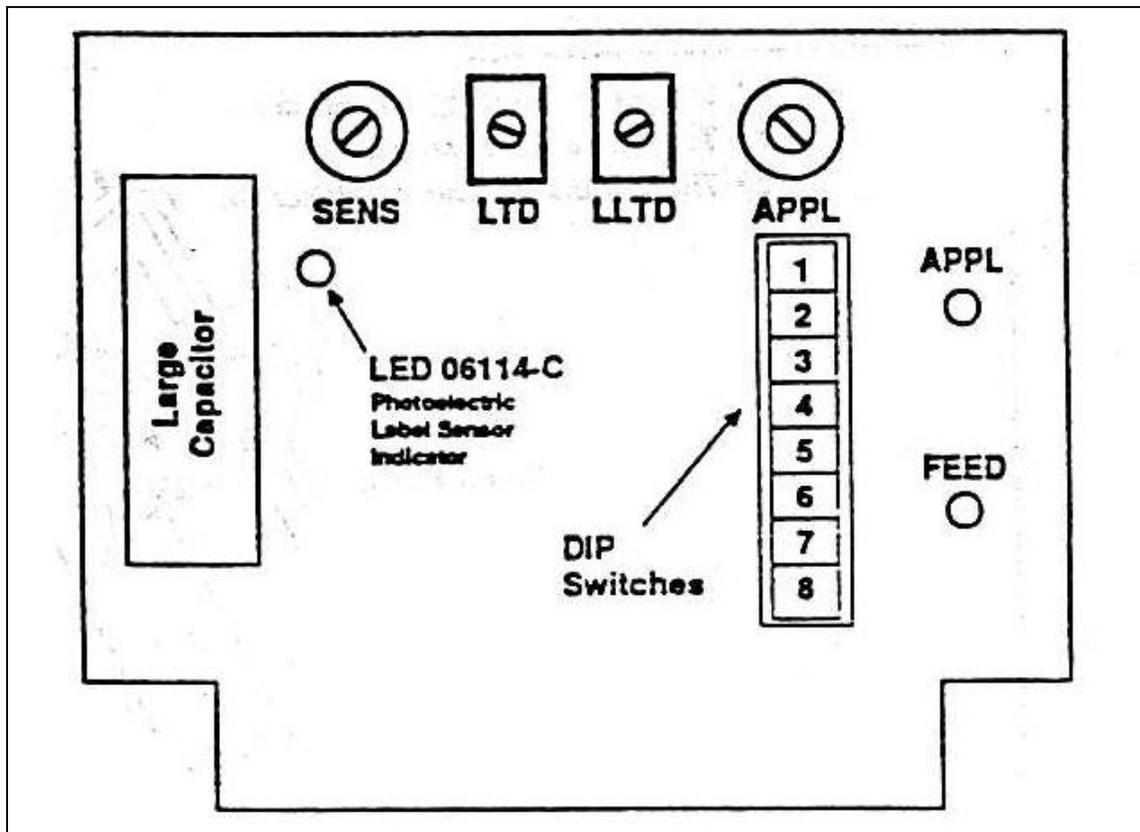
- 1) Check that the sensor is positioned correctly across the web, as illustrated below.



- 2) Place a piece of backing paper (with no label) under the label sensor.
- 3) Remove the three thumbscrews on the front of the power pack, and slide the cover plate off, as shown to the right



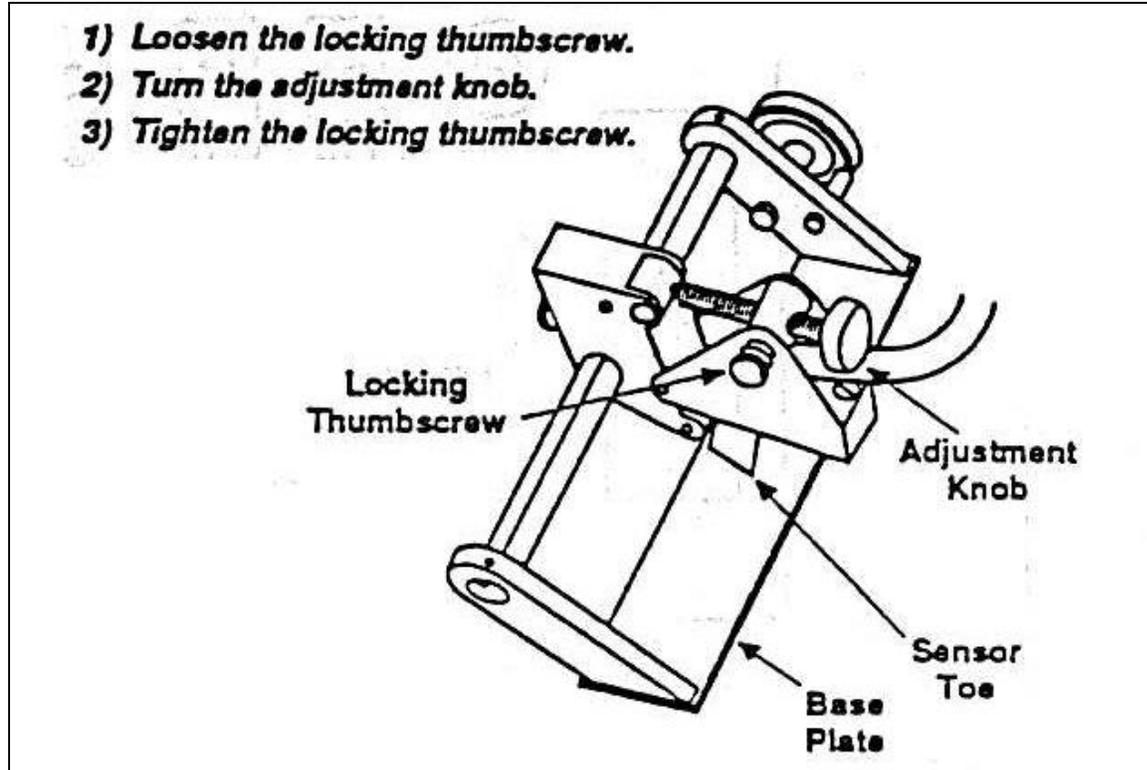
- 4) On the printed circuit board (illustrated below), turn the potentiometer labeled SENS until the red indicator labeled LED 06114-C lights. Clockwise rotation increases the sensitivity, counterclockwise decreases the sensitivity.



- 5) After the indicator lights, turn the potentiometer an addition sixteenth of a turn clockwise.
- 6) Slide the power pack cover back into position, and replace the three thumbscrews.

ELECTROMECHANICAL LABEL SENSOR

If you use different thickness' of stock, you may need to adjust the sensitivity of the electromechanical sensor. To adjust the sensor, first make sure that the sensor is centered on the stock, and then raise or lower the sensor toe as illustrated below.



As the sensor toe moves from its upper position (on a label) to its lower position (between labels), you should hear a soft click. To test the position of the sensor, gently slide a length of label stock through the assembly, and listen for the click as the sensor toe encounters each label gap.

Apply-Only Labeling Head Controller Printed Circuit Board - 06114

Technical Bulletin

The 06114 Controller PCB is used in conjunction with the 906 Apply-Only Dispenser. The controller function and adjustment are outlined in this bulletin.

Selection of the various options and operating ranges discussed below are made by manipulating the four PCB potentiometers [**SENS**, **LTD**, **LLTD** and **APPL**; see PCB diagram], single potentiometer within the Label Sensor Assembly [See Sensor diagram], and the eight (8) switch DIP also located on the PCB [see PCB diagram]. The 06114 board also contains a single ribbon cable connector with a two pin jumper installed [See PCB diagram].

Theory of Operation

The controller monitors two signals during the application cycle:

- *Product-In-Position Signal* - The Product-In-Position Signal is received by the controller from one of the several standard Product Sensors available or as an input signal [parameters] from a PLC, relay, [other] or similar device which will indicate that the product to be labeled is in the appropriate position for labeling.
- *Stop Feed Signal* - The controller receives the Stop Feed Signal from the Label Sensor which indicates a label edge has passed the Label Sensor.

The application cycle generally begins with a label on the applicator pad. The air tube and vacuum are controlled by a standard air-vac package. When the product-in-position signal is detected, the controller operates the applicator solenoid [indicated by the illumination of the solenoid lamp on the device], the applicator cylinder extends and the label is applied to the product.

The total time for which the solenoid is activated can be varied by adjusting the *apply cycle* potentiometer [**APPL**; see PCB diagram]. **Clockwise** rotation of the potentiometer **increases** the applicator apply cycle time. There are two total time ranges available:

<i>Standard Cycle</i>	50-350 msec	DIP switch #1 in the OFF position
<i>Extended Cycle</i>	250-1800 msec	DIP switch #1 in the ON position

When the apply cycle is completed, the applicator solenoid shuts off and the applicator cylinder returns to the home position. Since the 906 cannot begin to dispense the next label until the applicator is home, the label feed must be locked out during the return cycle. This delay, which begins at the end of the applicator cycle, can be varied by adjusting the *label lockout* potentiometer [**LLTD**; see PCB diagram]. **Clockwise** rotation of the potentiometer **increases** label lockout cycle time. The maximum lockout time is approximately 500 msec. When the label lockout cycle is completed, the dispense signal is activated and the motor drive immediately dispenses the next label.

NOTE - It is possible for the label lockout to be *event determined* rather than *time determined* by the incorporation of a Home Position Proximity Sensor [Part # 064-02] to replace the dispense signal [E.G. - This would be necessary in the case of applicator return cycle times in excess of the maximum LLTD setting of approximately 500 msec]. See DIP switch #5 notes.

The motor drive will continue to operate until the leading edge of the next label is detected by the label sensor. However, it is possible to continue feeding beyond the label edge detection by adjustment of the *label stop point* potentiometer [LTD; See PCB diagram]. This potentiometer creates a delay of up to 18 msec from label edge detection to motor stop, allowing the label edge stop point to be finely adjusted relative to the dispensing blade. **Clockwise** rotation of the potentiometer **increases** delay time, thereby increasing label travel. When the LTD cycle is completed, the product sensor is enabled for the next cycle.

Label Sensor Setup and Adjustment

Proper setup of the Label Sensor involves both mechanical and electrical adjustment. This bulletin will only cover electrical considerations.

LED Function

Proper sequence of operation can be diagnosed from observation of the two (2) function LED's on the PCB [DS1 and DS2; see PCB diagram].

While the unit is under power, but idle, both LED's are OFF. When the applicator solenoid is activated, DS1 [Applicator Active] is ON brightly. When the applicator cycle [controlled by APPL] is completed [label lockout cycle begins], DS1 is OFF. As a label begins feeding, DS2 is ON brightly. DS2 remains ON brightly until the entire label dispense cycle is completed.

Ribbon Cable Connection

The five pin ribbon cable connector is used in conjunction with the DC Valve package piggyback PCB [Part #09115]. If this PCB is not installed, then the connector *must* be jumpered between pins 3 and 4 [counting from the bottom of the 06114 when installed]. If the jumper is missing or improperly installed, the unit will not operate normally.

Other DIP Switch Setting Selections

DIP Switch #2 - Complete Jog Cycle

If this DIP switch is ON the jog switch mimics a product signal input and the unit will perform a complete application cycle

Factory selected option; See your system configuration in Manual

DIP Switch #3 - Dispense Only Jog Cycle

If this DIP switch is ON the jog switch will initiate a label feed only

Factory selected option; See your system configuration in Manual

DIP Switch #8 - Single NPN Sinking Transistor Product Sensor

Normal Condition - OFF

Depending on Product Signal Input Device requirements may be - ON

Factory selected option; See your system configuration in Manual

Sequence Logic Selection

Only one (1) of the Sequence Logic Switches should be selected
If more than One (1) is ON, then the Controller will default to the highest switch setting

DIP Switch #4 - Normal Cycle [Typically DIP Switch #7 is also ON]

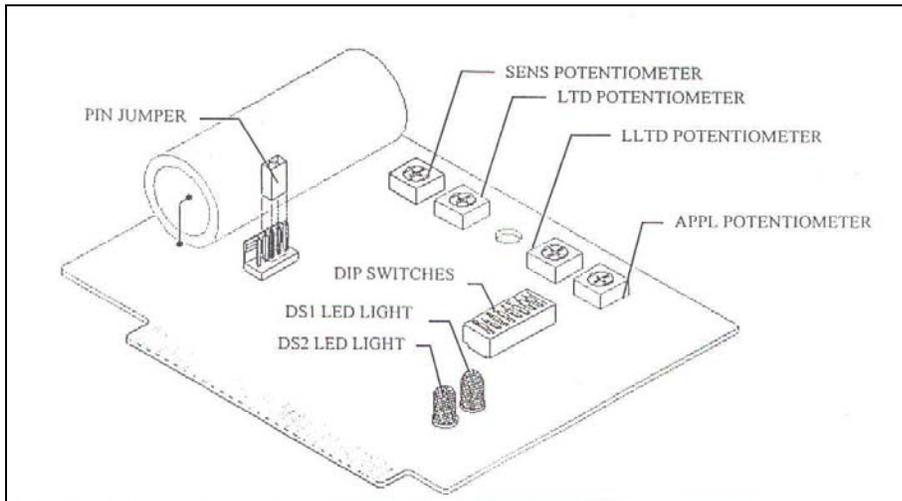
Sequence: Product Signal ↓
 Applicator Cycle [APPL] ↓
 Label Lockout [LLTD] ↓
 Dispense

DIP Switch #5 - Custom Applicator Cycle
For 913 Applicator or Long Cycle Tamp-On Applicators [DIP Switch #7 is OFF]

Sequence: Product Signal ↓
 Applicator Cycle [APPL] ↓
 Dispense

DIP Switch #6 - Coincident Cycle [Not a Common Setting]

Sequence: Product Signal ↓
 Applicator Cycle [APPL] ↔ Dispense occur simultaneously



Print & Apply Labeling Head Controller Printed Circuit Board - #08814

Technical Bulletin

The 08814 Controller PCB is used in conjunction with the 908 Print & Apply Dispenser and the SATO 8400 series print engines. The controller function and adjustment are outlined in this bulletin.

Selection of the various options and operating ranges discussed below are made by manipulating the two potentiometers [**APPL** and **LLTD**; see PCB diagram] and the eight (8) switch DIP also located on the PCB [see PCB diagram].

Theory of Operation

The controller monitors two signals during the print & apply cycle:

- *Product-In-Position Signal* - The Product-In-Position Signal is received by the controller from one of the several standard Product Sensors available or as an input signal [parameters] from a PLC, relay, [other] or similar device which will indicate that the product to be labeled is in the appropriate position for labeling.
- *Printer Signal* - The controller receives the Printer Signals through the IF cable [See SATO interface diagram] which outputs print-in-progress and end-of-feed conditions.

The 8400 series print engine prints and dispenses a label onto the 908 applicator pad. The air tube and vacuum are controlled by a standard pneu-vac air package. When the product-in-position signal is detected, the controller operates the applicator solenoid [indicated by the illumination of the solenoid lamp on the device], the applicator cylinder extends and the label is applied to the product.

The total time for which the solenoid is activated can be varied by adjusting the *apply cycle* potentiometer [**APPL**; see PCB diagram]. **Clockwise** rotation of the potentiometer **increases** the applicator apply cycle time. There are two total time ranges available:

<i>Standard Cycle</i>	50-350 msec	DIP switch #8 in the OFF position
<i>Extended Cycle</i>	250-1800 msec	DIP switch #8 in the ON position

When the apply cycle is completed, the applicator solenoid shuts off and the applicator cylinder begins to return to the home position. Since the SATO cannot begin to print and feed the next label until the applicator is home, the label feed must be locked out during the return cycle. This delay can be varied by adjusting the *label lockout* potentiometer [**LLTD**; see PCB diagram]. **Clockwise** rotation of the potentiometer **increases** label lockout cycle time. There are two total time ranges available:

<i>Standard Cycle</i>	50-350 msec	DIP switch #7 in the OFF position
<i>Extended Cycle</i>	250-1800 msec	DIP switch #7 in the ON position

When the label lockout cycle is completed, the print enable signal is activated and the SATO immediately prints and dispenses the next label.

NOTE - It is possible for both the applicator apply cycle and the label lockout to be *event determined* rather than *time determined* by the incorporation of the Pressure Applicator Modifications [Part # 06426 & 088-45] for automatic variable stroke lengths and a Home Position Proximity Sensor [Part # 064-02] to replace the print enable signal. In this case, the LLTD and the APPL timers are set at maximum and act as “watch dog” default timers.

LED Function

Proper sequence of operation can be diagnosed from observation of the three (3) function LED's on the PCB [DS1, DS2 and DS3; see PCB diagram].

While the unit is under power, but idle, DS3 [Printer Drive Powered] will glow dimly. DS 2 [Print Enable] may or may not be illuminated depending on the state of the SATO. If the SATO is ON, but off-line or otherwise waiting to feed a label, DS2 is ON brightly. If a label has been fed, printed and fed then DS2 is OFF.

When the applicator solenoid is activated, DS1 [Applicator Active] is ON brightly. When the applicator cycle [controlled by APPL] is completed [label lockout cycle begins], DS1 is OFF. When LLTD is completed DS2 is momentarily ON brightly. As a label begins feeding, DS2 is OFF and DS3 is ON brightly. DS3 remains ON brightly until the entire label print and dispense cycle is completed.

Other DIP Switch Setting Selections

DIP Switch #1 - DC Applicator Solenoid

Normal Condition - ON

If the system is designed with DC solenoids - OFF

Uses DC Interface Circuit Board [Part # 09115]

Factory selected option; See your system configuration in Manual

DIP Switch #2 - Single NPN Sinking Transistor Product Sensor

Normal Condition - OFF

Depending on Product Signal Input Device requirements may be - ON

Factory selected option; See your system configuration in Manual

DIP Switch #3 - Touch and Go Operation

Normal Condition - ON

If Touch and Go Applicator [Part # 914-38] is installed then - OFF

Requires Proximity Control Assembly [Part # 088-35]

Factory selected option; See your system configuration in Manual

Sequence Logic Selection

Only one (1) of the Sequence Logic Switches should be selected
If more than One (1) is ON, then the Controller will default to the highest switch setting

DIP Switch #4 - Normal Cycle

Sequence: Product Signal ↴
 Applicator Cycle [APPL] ↴
 Label Lockout [LLTD] ↴
 Print & Dispense

DIP Switch #5 - Custom Applicator Cycle [Typical for 913 Applicator]

Sequence: Product Signal ↴
 Applicator Cycle [APPL] ↴
 Print & Dispense

DIP Switch #6 - Instant Cycle

Sequence: Product Signal ↴
 Applicator Cycle [APPL] ↔ Print & Dispense occur simultaneously

Printer & Labeling Head

Introduction

The printer and labeling head is the key component of the Little David Label Application System. It prints labels, dispenses labels to the applicator, monitors the product sensor, and (if necessary) activates the applicator.

This chapter describes how to load stock and ribbon and how to make various adjustments to the Printer & Labeling head. It includes the following topics. (Note: that there are two stock loading procedures):

Loading Ribbon describes how to load a new roll of ribbon.

Loading Stock describes how to load a new roll of stock that is the same width as the last roll used.

Loading and Centering Stock describes how to load a new roll of stock is not the same width as the last roll used.

Printer Controls and Connectors describes the controls and connectors with which the operator must be familiar.

Control Panel describes the printer control panel.

User Mode Configuration Settings explains how to change those settings that can be changed without entering the system password (the password protected configuration settings are described in the Programmer's Reference).

Startup Procedure outlines the procedure to use when starting the unit.

Shutdown Procedure describes the steps to follow when shutting down.

Cleaning describes routine cleaning procedures.

Replacing Fuses provides instructions for replacing fuses.

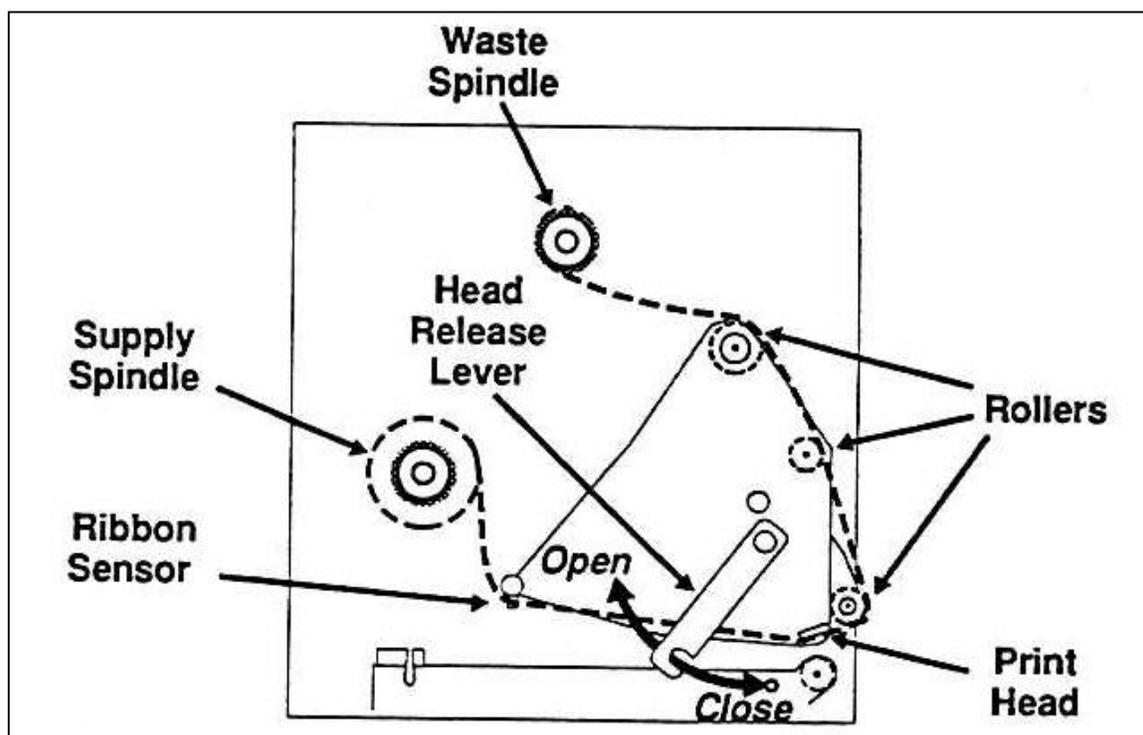
Troubleshooting describes the most common problems you may encounter with system and how to correct them.

Loading Ribbon

When the ribbon runs out, the ribbon indicator on the control panel lights, the on-line indicator (also on the control panel) goes out, and printing stops. You must replace the ribbon before the printer can be put back on-line.

To replace the ribbon, follow the procedure outlined below.

1. Open the printer cover (not shown).
2. Move the head release lever to the OPEN position.
3. Remove the old ribbon from the waste spindle and discard it.
4. Remove the empty core from the supply spindle and install it on the waste spindle. (Do not discard the empty core, as it is used to wind the waste from the next ribbon.)
5. Push the new ribbon onto the supply spindle, with the ribbon unwinding as shown. (The dull side of the ribbon must be facing the label stock as the ribbon passes through the print head assembly.)
6. Feed the new ribbon around the print head assembly, following the path shown below. Make sure the ribbon passes through the ribbon sensor, the ribbon light will not extinguish and the printer will not operate.



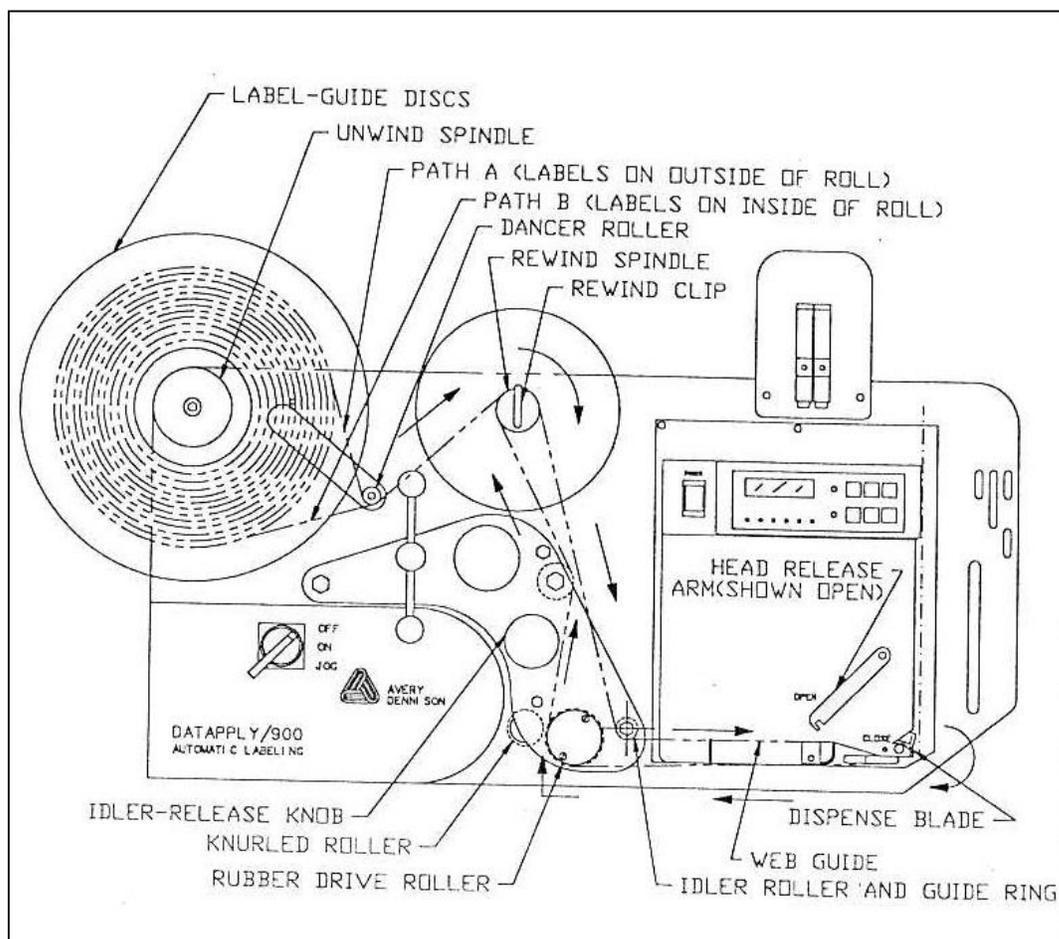
7. Use cellophane tape to secure the new ribbon to the empty core on the waste spindle, wrapping the ribbon as shown.
8. While watching the ribbon path, turn the waste spindle one or two turns until the ribbon is taut against all surfaces, wrinkle-free and fold-free.
9. Move the head release to the CLOSE position.
10. Close the printer cover (not shown).

To restart the printer after loading a new ribbon:

11. Press the line button on the control panel. The line indicator (also on the control panel) should light, indicating that the printer is back on-line.
12. Press the feed button once, to feed one (blank) label past the printhead and align the next label correctly for printing.
13. Press the 2nd (Red or Orange) button or JOG button to JOG a new label and remove the blank label from the applicator.

Loading Stock

Follow this procedure to load a new roll of stock.



Turn the idler release knob clockwise to the threading position.

1. After opening the printer cover (not shown), move the head release lever to the OPEN position.
2. Open the label lid, pulling forward on the clip at the front of the lid.
3. Release the label-guide disc from the unwind spindle by lightly turning the disc-lock handle. (The disc lock is a cam-action clamp requiring very little movement of the handle.) Then slide the label-guide disc off of the unwind spindle. If there is an old stock-roll core on the unwind spindle, remove it.
4. Pull the rewind clip from the rewind spindle, and remove and dispose of any backing paper remaining in the stock path.
5. Strip three to four feet of labels from the backing paper of a new roll. Install the new roll on the unwind spindle, with the labels facing up. (If the labels are wrapped on the outside of the roll, follow PATH A; if they are wrapped on the inside of the roll, follow PATH B.)

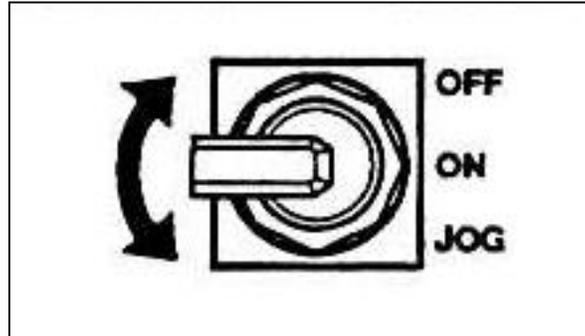
6. Push the label-guide disc back onto the unwind spindle until it lightly touches the new roll. Do not bind the new roll between the front and back label-guide discs. Then turn the disc-lock handle to lock the label-guide disc into position.
7. Referring to the illustration on the facing page, thread the backing paper under the dancer roller, over the rewind spindle, under the idler roller, under the label lid, over the dispenser blade, between the rubber drive and knurled steel rollers, and over the rewind spindle (beneath the backing paper coming from the unwind spindle), wrapping the excess around the rewind spindle by hand.
8. Replace the rewind clip, taking care to attach only the excess backing to the rewind spindle.
9. If necessary, adjust the web guide until it touches very lightly against the edge of the backing paper.
10. Turn the unwind spindle backwards, to take up any slack stock.
11. Close the label lid. The label indicator on the front of the printer controller should go out. If it does not go out, open the label lid and push the stock toward the back of the printer, making sure it passes under the label-present sensor at the base of the lid. Re-adjust the web guide as described in Step 10, then close the label lid again.
12. Move the head release lever to the CLOSE position.
13. Close the printer cover (not shown).
14. Turn the idler release knob counterclockwise to its normal position.
15. Press the feed button once, to feed one (blank) label past the printhead and align the next label correctly for printing. A single label should be dispensed onto the center of the applicator. If the stock binds in the stock path or does not feed onto the center of the applicator, retrace this procedure to insure that it is threaded properly.
16. Press the JOG button and remove the blank label from the applicator.

Controls and Connectors

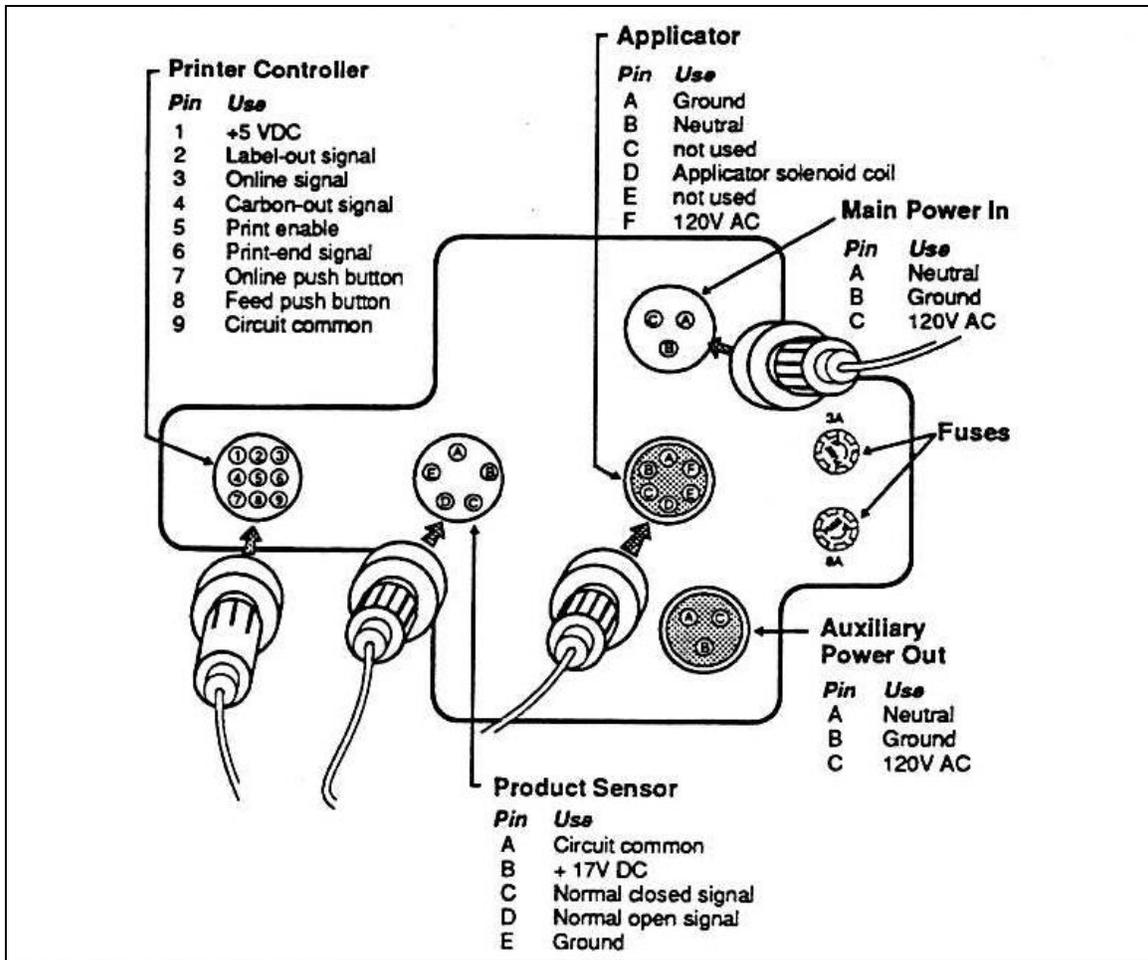
This section describes controls and connectors with which the operator must be familiar, on the printer and labeling head. The controls and connectors on the other components (the applicator or stand, for example) are described in other chapters.

The ON/OFF/JOG switch on the front of the labeling head turns power to the labeling head ON or OFF, or when turned to the JOG position, activates the applicator cylinder (a single label will be applied from the applicator pad to the product.) This switch is always powered on before the printer power switch (on the control panel, described later).

The labeling head connector panel is located behind the ON/OFF/JOG switch, and contains the components illustrated and described on the following page.



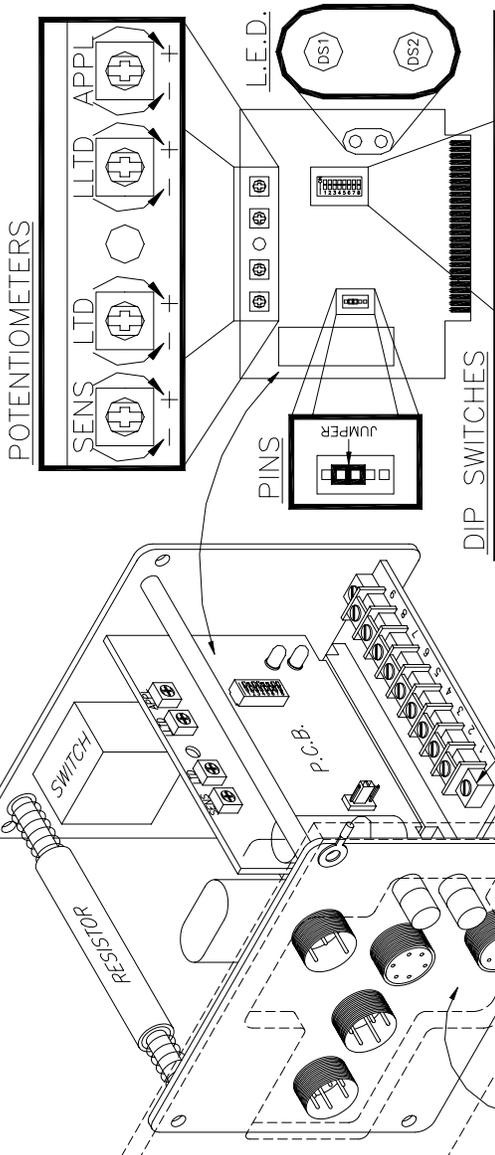
The keyboard and Jog switch on the Labeler controller when unlocked (5863434), the jog (2nd) Orange or Red button dispenses a label on to the applicator.



PART	DESCRIPTION
PRINTER CONNECTOR	This port is connected by a cable to the interface port on the printer connector panel (on the back of the unit, behind the control panel).
APPLICATOR MAIN POWER IN	This port is connected by a cable to the applicator cylinder. This socket is connected by a cable to a grounded 115 volt AC power outlet.
AUXILIARY OUT	Unused in the standard configuration, this socket is available to POWER power out optional components.
PRODUCT SENSOR	This port is connected by a cable to the product sensor.

LIST OF PARTS		
QTY	PART NUMBER	DESCRIPTION
X	XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
		MATERIAL
		XXXXXX
		NO.
		X

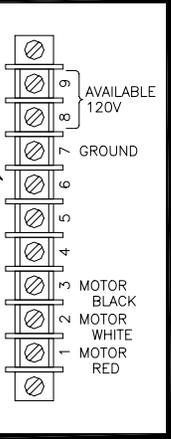
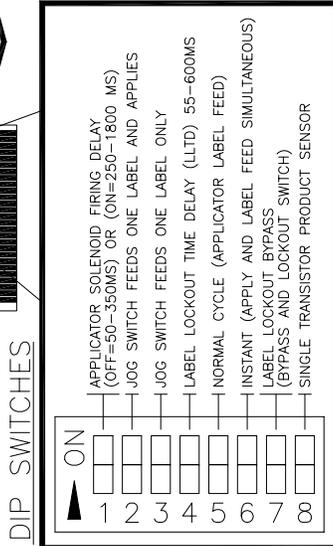
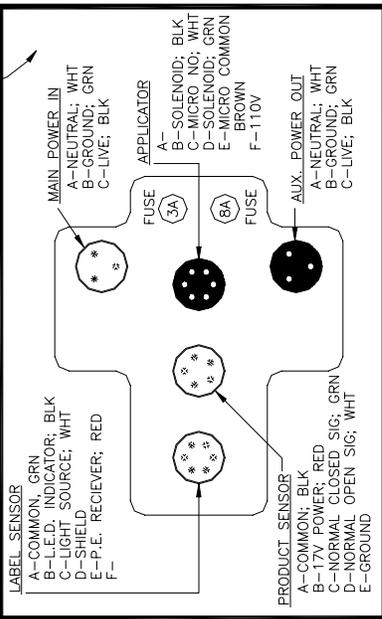
ISOMETRIC VIEW OF 906 RIGHT HAND CONTROLLER WITH THE COVER REMOVED AND THE MOTOR NOT SHOWN.



POTENTIOMETER FUNCTIONS:

- SENS: ADJUSTS THE SENSITIVITY OF THE LABEL SENSOR. LOW SENSITIVITY FOR THICK LABELS AND RELEASE LINERS TO HIGH SENSITIVITY FOR VERY THIN LABELS AND LINERS.
- LTD: LABEL TIME DELAY. ADJUSTS THE TIME FROM THE LABEL DETECTION TO THE TIME THE LABEL STOPS FEEDING.
- LLTD: LABEL LOCKOUT TIME DELAY. THE TIME BETWEEN THE APPLICATOR HOME AND LABEL FEED.
- APPL: CONTROLS THE TIME THE AIR CYLINDER TRAVELS OUT BEFORE RETURNING TO ITS HOME POSITION.

CONNECTOR PANEL

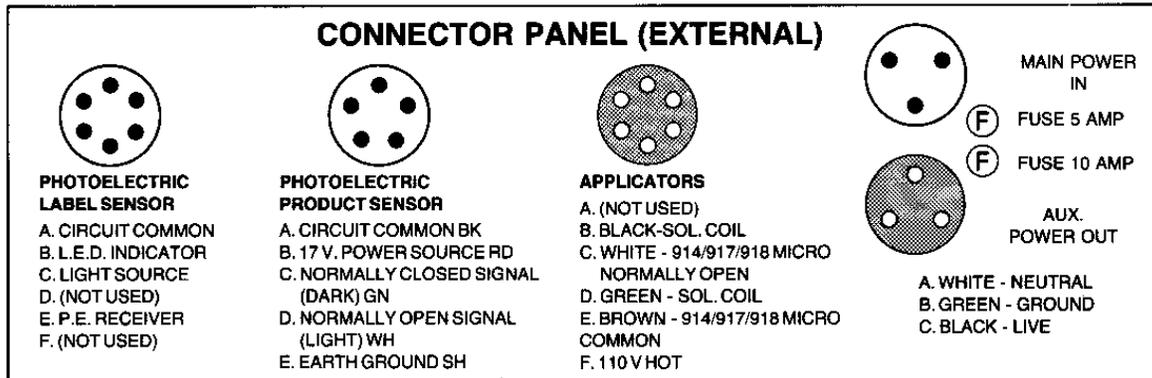


REV	DESCRIPTION	DATE	BY	APPR	F.S.
A	POTENTIOMETER FUNCTIONS	7/31/00	A.L.S.		

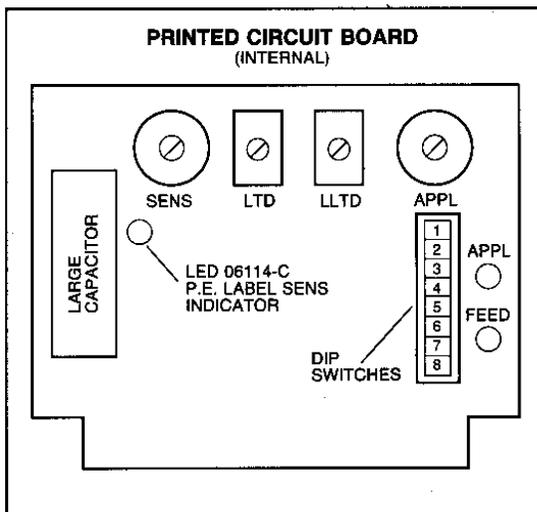
REVISIONS LIST	
DRAWN BY:	SCHALLER
CHECKED:	XXXXXXXXXX
SCALE:	6"=1'-0"
FRACTIONS ANGLES:	6-20-00
DATE:	6-20-00
CONTROLLER DATA	
SIZE:	B

Data Sheet No. 906-6

906 ADJUSTMENTS & LOCATIONS



NOTE 1. MAY BE USED WITH **MECHANICAL LABEL SENSOR** - SWITCH COMMON TO A AND NORMALLY OPEN TO E AND NORMALLY CLOSED TO C.
2. MAY BE USED WITH **PRODUCT SENSOR MICRO SWITCH** OR OTHER TWO WIRE CONTACTS - CONNECT TO A AND C&D.

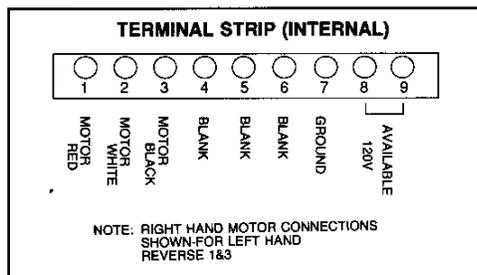


POTENTIOMETERS

SENS ADJUST P.E. LABEL SENSOR SENSITIVITY
LTD ADJUST LABEL STOP TIME DELAY (CLOCKWISE ROTATION MAX. TIME)
LLTD ADJUST LABEL LOCKOUT TIME DELAY (CLOCKWISE ROTATION MAX. TIME)
APPL ADJUST APPLICATOR PULSE LENGTH (CLOCKWISE ROTATION MIN. TIME)

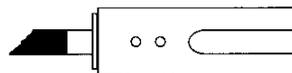
DIPSWITCHES

#1 LONG TIME DELAY 2 RANGES (50-350 MS) (250-1800 MS)
#2 JOG CYCLE (ONE LABEL & APPLICATOR CYCLE) (250-1800 MS)
#3 JOG LABEL FEED
#4 LABEL LOCKOUT TIME DELAY (55-600 MS)
#5 NORMAL CYCLE (APPLICATOR LABEL FEED)
#6 INSTANT (APPLICATOR & LABEL FEED SIMULTANEOUSLY)
#7 LABEL LOCKOUT BYPASS (BYPASS & LOCKOUT SWITCH)
#8 SINGLE TRANSISTOR PRODUCT SENSOR

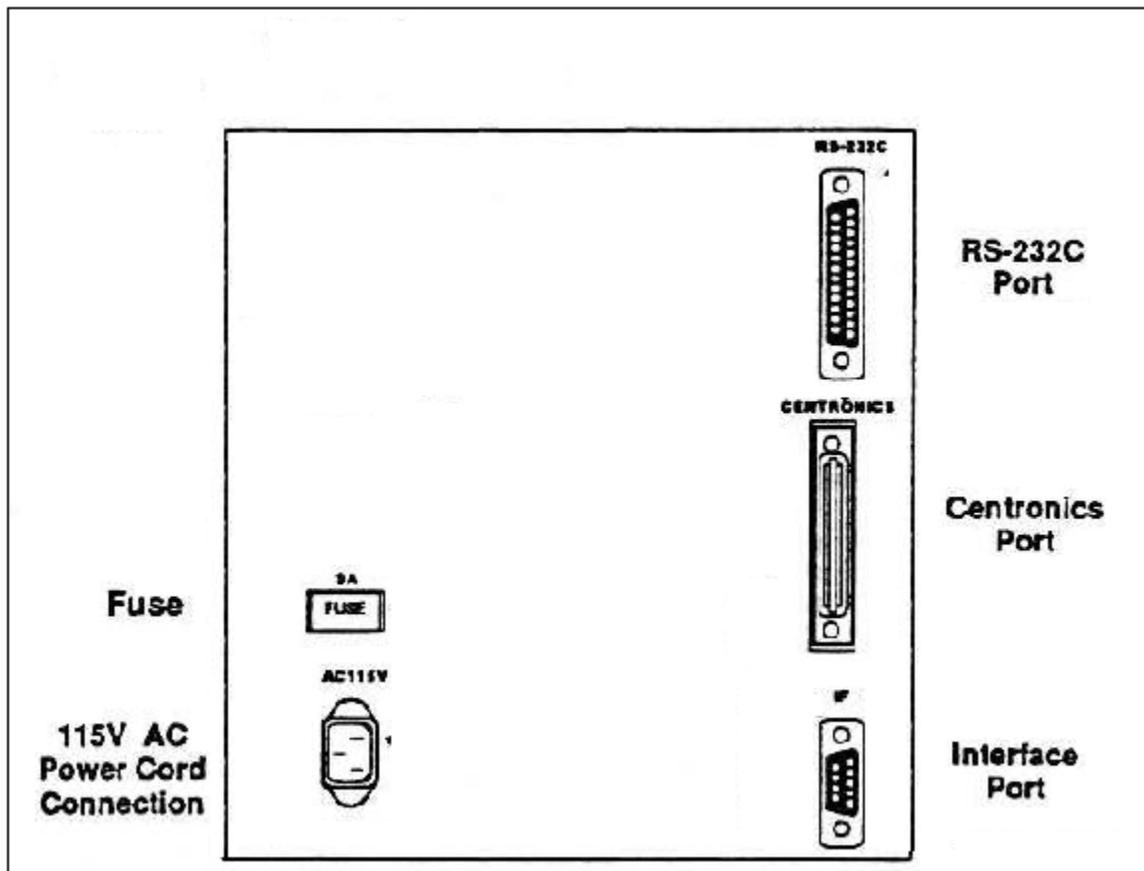


06114-C CIRCUIT BOARD WITH 06020 SENSOR

TO ADJUST THE 06020 LABEL SENSOR WITH A LABEL IN THE SENSOR, ADJUST THE SENS POT SO THAT THE LED JUST GOES OUT. THEN A TURN A FRACTION MORE.



06020 PHOTO ELECTRIC LABEL SENSOR

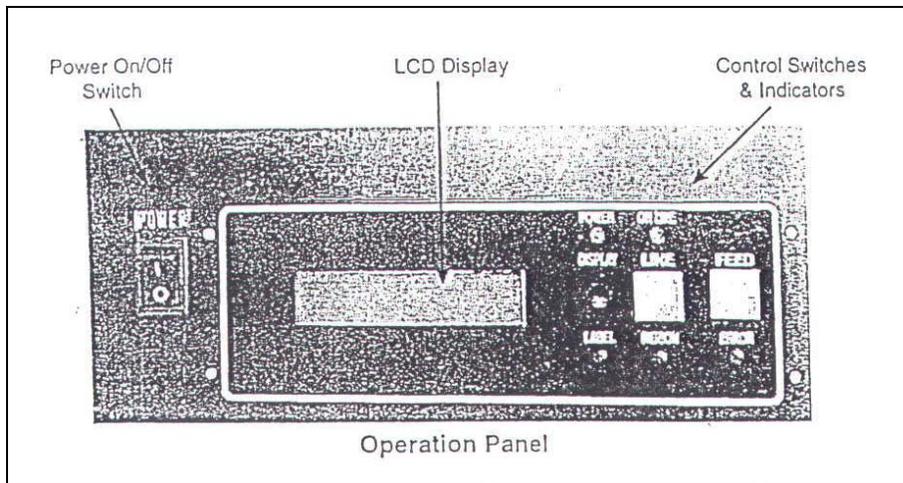


The printer connector panel (above) is located on the back of the printer, behind the control panel. It contains the following components:

PART	DESCRIPTION
RS-232C PORT	If serial communications are used, a cable to this port connects the printer to the host computer.
CENTRONICS PORT	If parallel communications are used, a cable to this port connects the printer to the host computer.
INTERFACE PORT	This port is connected by a cable to the labeling head connector panel on the back of the applicator.
115V AC POWER CORD CONNECTION	The 115V AC socket is connected by a power supply cable to a grounded 115 volt AC outlet.
FUSE	If the power indicator on the control panel does not light, and the unit fails to operate when powered on, the fuse may be blown (see Replacing Fuses).

SATO Interface Connector

PIN	DIRECTION	SIGNAL DESCRIPTION
1	To Host	Vcc +5VDC
2	To Host	Ribbon Near End – This pin goes high when the amount of ribbon on the unwind shaft is approximately 46 feet (14m). The output will be low when the ribbon is completely out.
3	To Host	Error – This pin goes low when the printer detects an error condition such as head open or receiving buffer full.
4	To Printer	Reprint – The last label will be printed when this signal is received.
5	To Printer	Print Start – The printer will print one label when this pin is pulled to ground. This signal must be enabled by placing switch DSW3-5 on the Controller Panel in the OFF position.
6	To Host	End Print – It is used to drive an applicator or other external device requiring synchronization with the print cycle. You may choose between four types of output signals using control panel DSW3-6 and DSW3-7 selections.
7	To Host	Label Out – This pin goes low (0V) when a label out error exists.
8	To Host	Ribbon Out – This pin goes low when ribbon is out.
9	Reference	Signal Ground.



- LCD Display 2 Line X 16 character display.
- LABEL LED Illuminated when label is out.
- RIBBON LED Illuminated when ribbon is out. Not used on the M-8459S.
- ERROR LED Illuminated when errors have occurred.
- ON-LINE LED Illuminated when the printer is On-Line.
- LINE Key Switches the printer On-Line or Off-Line. It can also be used as a Pause function key to stop label during the printing process.
- FEED Key To feed one blank label.
- DISPLAY Potentiometer for adjusting the contrast of the LCD screen. Use a small flathead screwdriver to turn the display control screw clockwise to make the display panel image darker, or counterclockwise to make the image lighter.
- LINE Toggles the printer between on-line and off-line mode. When on-line (ready to receive data from the host), the on-line indicator light (described above) is lit.

At startup time, after loading label stock, or after loading a new ribbon, you must place the printer on-line by pressing the line button. If the label ribbon, or error indicators are lit, the printer cannot be placed on-line (you must first correct the indicated condition).

FEED Pressing the feed button advances one label beyond the print head and onto the applicator pad, such that the next label is perfectly aligned to the beginning position. At startup time or after loading new stock, press the feed button to insure that the first label is aligned properly. (Then press the Jog switch to remove the blank label from the applicator.)

FI When configuring the printer (see Configuration Settings), returns from any option to the mode titled, or from the mode title to off-line mode.

ARROW KEYS When configuring the printer (see Configuration Settings) the left and right arrow keys are used to cycle through the options or values available. Press the right arrow key to see the next option or value, and the left arrow key to see the previous option or value.

ENTER When configured the printer (see Configuration Settings) selects the current option or value. For example, if the value 3 displays for the print darkness prompt, pressing Enter stores 3 as the current setting for the print darkness.

User Mode Configuration Settings

The SATO is an extremely flexible printer. It can be configured to print at slower or faster speeds, at varying darkness, and to control various types of product sensors and applicators. The Configuration settings can be changed from the control panel, but most settings are password protected (meaning that you must enter the correct password before being allowed to change the setting). In this manual, only the non-password protected settings are described.

The settings that can be modified without first entering the password are called the “User Mode” settings.

TO ACCESS USER MODE:

1. If the printer is not powered on, power it ON using the power switch on the left side of the control panel.
2. Press the line key (if necessary) to place the printer off-line. The word “Off-line” should appear on the top of the display panel.
3. Press Enter to display the user mode title screen (“Mode U” on the first line of the display panel).
4. Press Enter again to display the first user mode option. The option title will appear on the first line of the display panel, and the current setting for that option will appear on the second line.

TO CHANGE A SETTING:

1. Use the left or right arrow key to cycle through the possible values. The right arrow key displays the next possible value, the left arrow key displays the previous value.
2. When the desired value displays, press Enter. The displayed value for the current option will be saved, and the next option (or the mode title) will then display.

Each user mode configuration setting is described below:

SETTING	DESCRIPTION
---------	-------------

PRINT	This is the primary darkness control. The values from 1 (lightest) to 5 (darkest). The factory default is 3. To make a fine adjustment between two settings, use the print darkness control screw (described earlier) on the front of the control panel.
-------	--

PRINT SPEED	The values range from 2” (50mm) to 5” (125mm) per second. The factory default is 4” (100mm) per second.
-------------	---

PITCH OFFSET	Specifies where printing starts relative to the top of the label. When adjusting this setting, be sure to use a label format that prints at the top of the label.
--------------	---

USER DEFAULTS	Restores the user default settings, (Note that these may differ from the factory setting shown above – check with your programmer if you are unsure about any user defaults that may have been set for your printer.
---------------	--

Startup Procedure

To start printing using the Labeler, perform the following steps:

1. Check that the input air pressure setting is correct for the applicator being used. (It is usually in the range of 30-35 PSI).
2. Power the host computer.
3. Power on the labeling controller by the switch on the back of the controller.
4. Power on the printer using the power switch on the front control panel. The power indicator on the control panel should light.
5. Press the feed button on the control panel to feed a single (blank) label past the printhead and onto the applicator pad. This ensures that the first label is to be printed is aligned properly.
6. Unlock the controller and press the Jog button labeled (2nd) to activate the applicator cylinder (and dispose of the blank label on the pad).
7. Press the line button on the control panel to place the printer on-line. The on-line indicator on the control panel should light.

The printer is now ready to receive communications from the host computer.

Shutdown Procedure

Follow the procedure outlined below to shut down the Labeler system.

1. If necessary, press the line button on the front of the printer controller. Printing should cease immediately, and the on-line indicator on the controller should go out.
2. Power off the printer, using the power switch on the control panel. All indicator lights on the control panel should go out.
3. Power off the Labeler Controller using the switch on back of the Controller. The LCD screen will go blank.
4. Power off the host computer.

The Labeler system is now shut down.

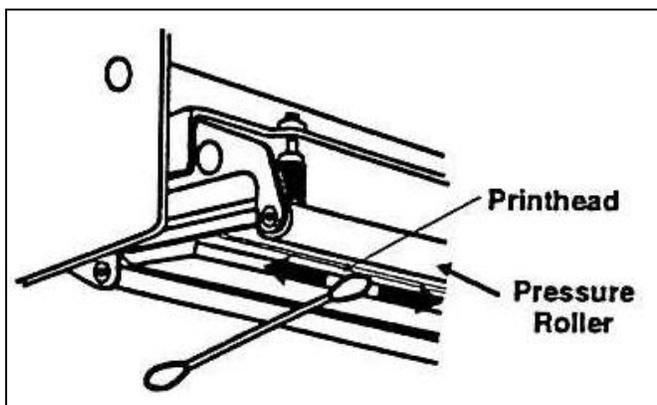
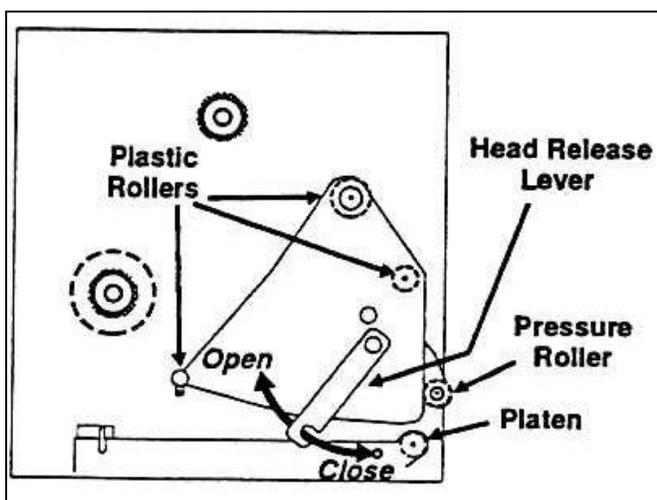
If any unexpected behavior occurs during the shutdown process, first ensure that the procedure was followed correctly. If the unexpected behavior persists, refer to the TROUBLESHOOTING topic.

Cleaning

Clean the printhead, platen, and rollers after every five rolls of labels, or at least once a week. Since the ribbon must be removed for proper cleaning you will find it most convenient to clean the unit every time the ribbon is changed. Some residue is expected during normal use, but excessive residue on the printhead and rollers will cause poor print quality. To clean the printhead and rollers, follow the steps below.

CAUTION: Never use water or a hard object (such as a screwdriver) to clean the SATO printer. Water damages the printer, and hard objects can destroy surfaces and disable the printer.

1. Raise the printer cover (not shown).
2. Move the head release lever to the OPEN position.
3. If it is not removed, remove the ribbon.
4. Clean the printhead, platen, pressure roller, and plastic rollers using a cotton swab dipped in isopropyl alcohol. Dispose of the swab when it becomes soiled. Take care to clean all dust, carbon, and label adhesive residue from these areas.
5. Replace the ribbon (see Loading Ribbon).
6. Move the head release to the CLOSE position.
7. Close the printer cover (not shown).



Replacing Fuses

If a component of the Labeler fails to operate when powered on, a fuse may be blown. To change a fuse, follow the steps below.

WARNING: ALWAYS TURN THE POWER OFF AND REMOVE POWER CORD BEFORE REPLACING A FUSE.

1. Power off the applicator and the printer (in that order).
2. Disconnect the power cable from the component containing the fuse to be replaced.
3. In the Controller there is a 3 AMP fuse for the control circuitry and 8 AMP fuse for the stepper motor. Use a flat blade screwdriver to twist the inside cap and replace with same AMP rating.
4. There are also two 3 AMP fuses in the CORCOM where the power cord is plugged into the Controller. Remove the cord and use a flat blade screwdriver to lift the compartment open. Replace with same AMP rating fuses.
5. Reconnect the power cable.
6. Power on the applicator and printer (in that order). If the component still fails to function, the problem may not be with the fuse. Contact a Loveshaw distributor for assistance.

Troubleshooting

The list below describes some of the problems you may encounter when using the 908-10. For each problem, it includes the probable causes and recommended solutions. If a problem persists after trying to resolve it by following the steps below, contact Loveshaw Service Office for support.

WARNING: IF A PROBLEM ARISES THAT IS NOT COVERED IN THIS MANUAL, DO NOT ATTEMPT TO REPAIR THE PRINTER YOURSELF. INSTEAD, CALL LOVESHAW SERVICE OFFICE FOR IMMEDIATE AND CORRECT CARE OF THE EQUIPMENT. ALL ADJUSTMENTS AND SERVICE SHOULD BE PERFORMED BY TRAINED PERSONNEL.

CALL THE FOLLOWING NUMBER:

Pennsylvania - 1-(800) 572-3434 or 570-937-4921

PROBLEM Probable Cause(s) and Solution(s)

On-line indicator (line indicator) fails to light.	If the label out indicator is lit, the label stock is exhausted. Load a new roll of label stock.
	If the ribbon out indicator is lit, the ribbon is out. Load a new ribbon.
	The line button on the front of the control panel was not pressed. Press the line button.
	The printer cover is open. Close the printer cover.
	The head release lever on the front of the printer(behind the printer cover) is OPEN. Move the lever to the CLOSE position.
On-Line Indicator (line indicator) fails to light. (cont'd)	A signal cable is disconnected or loose. Check that all signal cables are connected.

A component fails to start The AC power cord is disconnected or loose.
Ensure that the AC power cord is connected properly.
There are two AC power cords in the standard configuration:
one for the printer, and one for the labeling head.

A fuse is blown. Check the fuse.

Poor Print Quality The printhead or pressure rollers are dirty.
Clean the printhead and pressure rollers.

The ribbon is loose, wrinkled, folded, or damaged.
Adjust or replace the ribbon.

Print begins at wrong location on label. The pitch scale setting is incorrect. Reset the pitch scale.

Applicator

Chapter

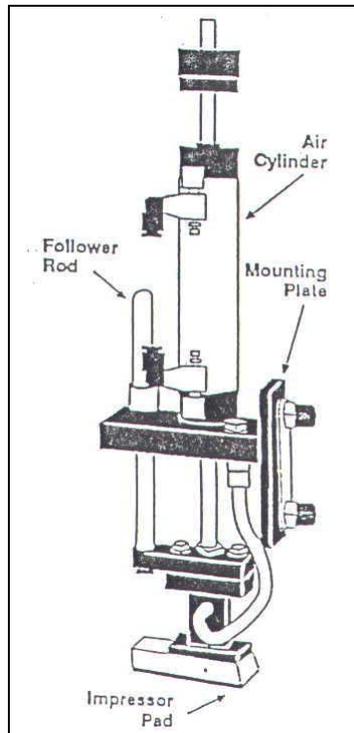
4

- Loveshaw offers a wide variety of label application methods, each engineered specifically for the label and product being identified. The following applicators in this section represent the primary methods used in applying a label. A “Label Application Site Survey” along with the label and product to be identified, will determine the appropriate method and applicator cylinder required. Please consult your Authorized Little David Distributor for a Label Application Site Survey Form.

914-8 Air Cylinder Applicator

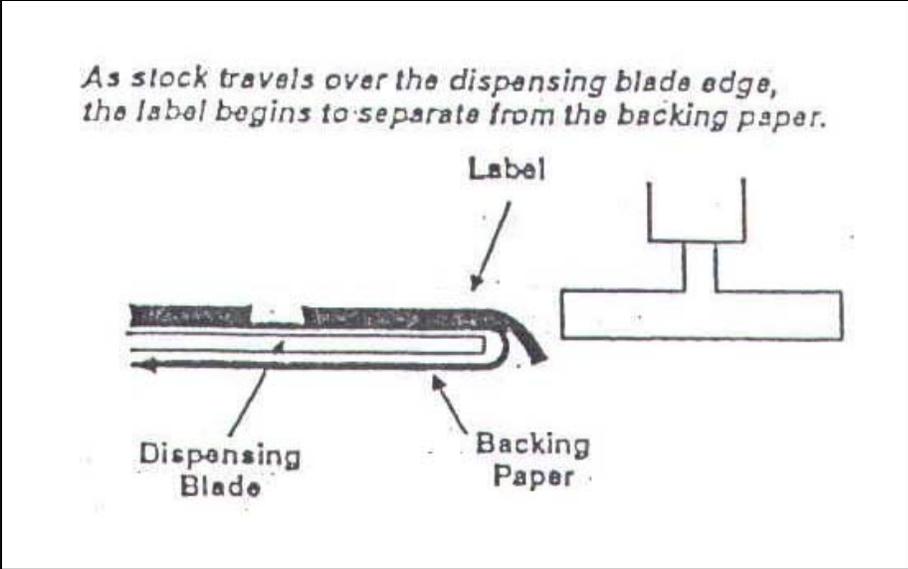
Introduction

The applicator receives labels from the labeling head and applies them to the product. The major components of the Air Cylinder Applicator are the air-cylinder assembly, the air and vacuum assembly, and the input pressure regulator. All three components attach to the frame of the labeling head, and are mounted, positioned, and tested at the factory. The air-cylinder assembly is illustrated on the right.

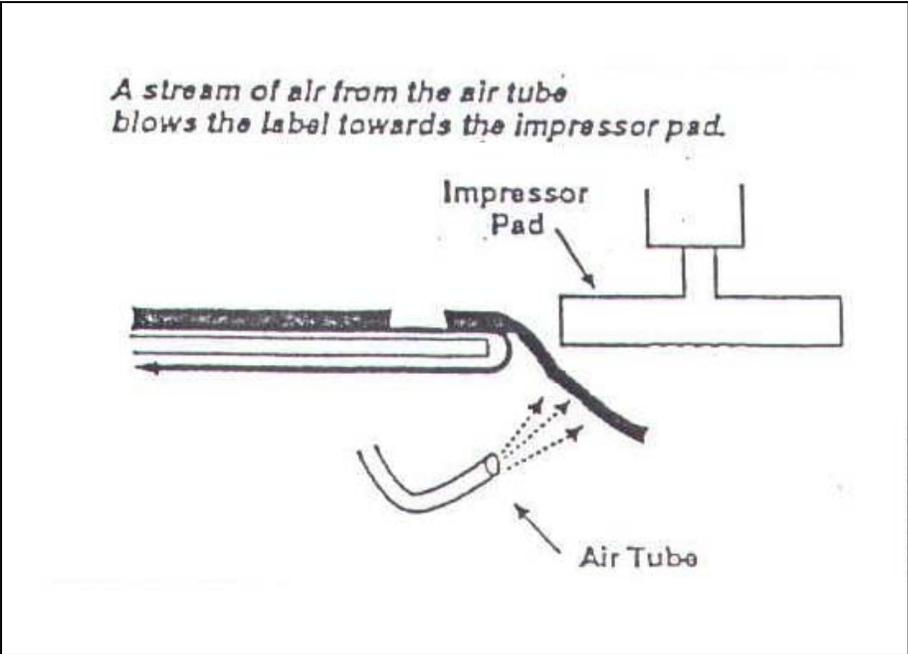


The events that occur during a single cycle of the label application process are described in detail beginning on the following page.

DISPENSING

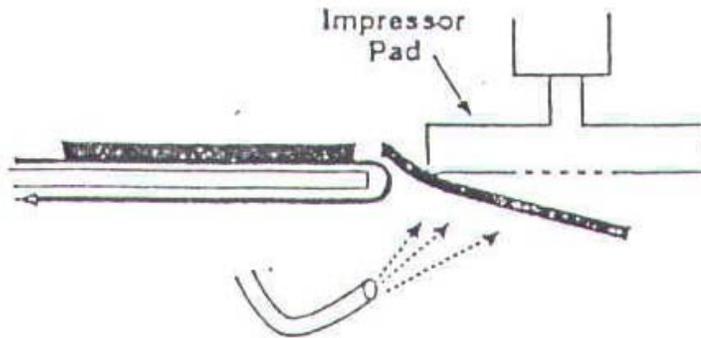


To dispense a label onto the applicator, the labeling head starts the stock-drive motor. As label stock travels over the edge of the dispense blade, the label begins to separate from the backing.



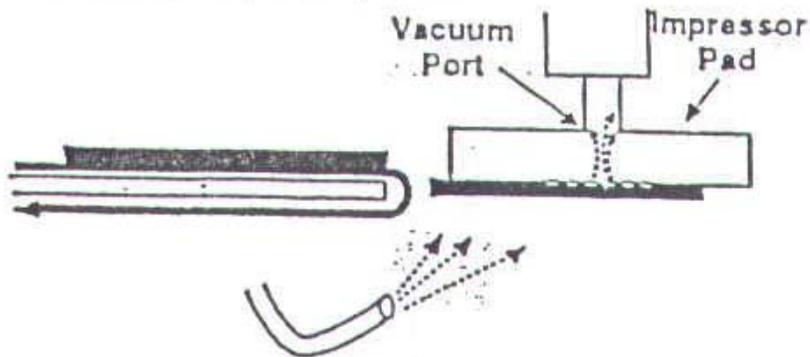
The label follows the backing paper in its downward turn, but an air stream from the air tube blows the label away from the backing paper and towards the impressor pad at the bottom of the air cylinder assembly.

*When almost detached from the backing paper,
the label hinges on the near edge of the impressor pad.*



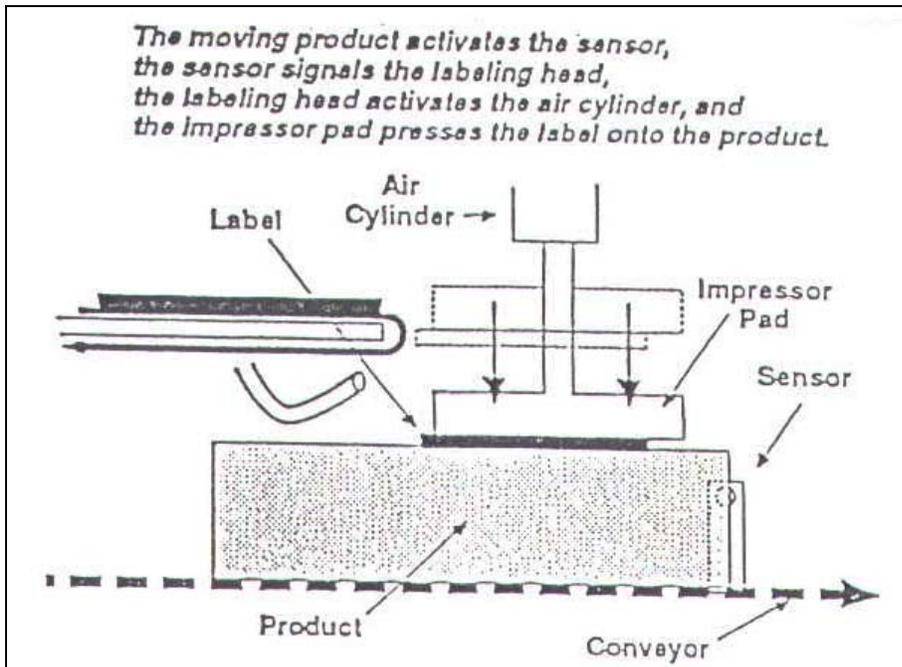
The motion of the stock over the dispensing blade edge and the force of the air against the bottom of the label continue to peel the label from the backing paper. When the label is almost detached, it strikes the near edge of the impressor pad and hinges toward the pad.

*The label is blown flat against the impressor pad,
detaches from the backing paper,
and is held in place by vacuum.*



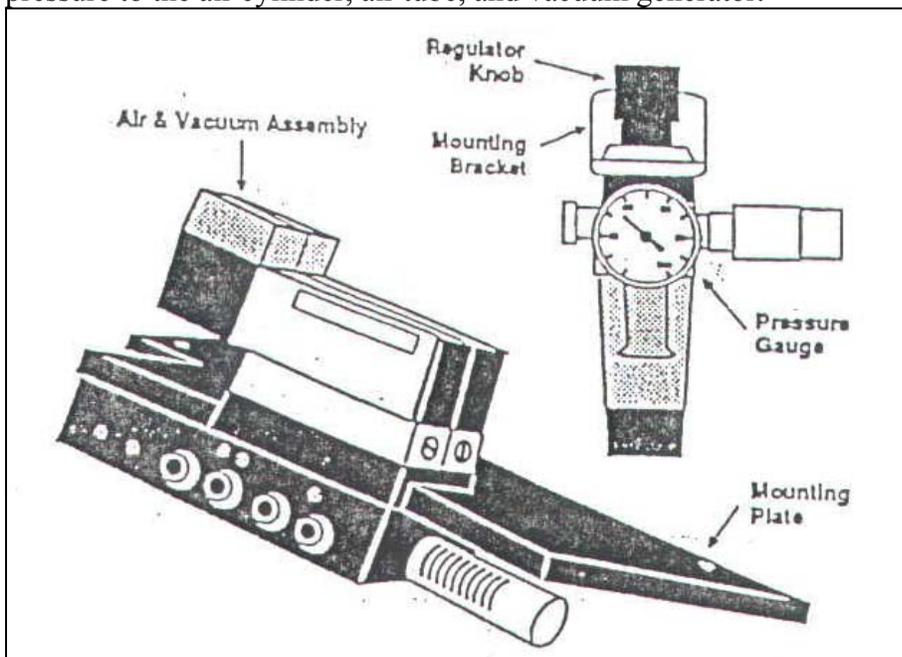
*The drive motor and air blower stop,
the vacuum remains on,
and the label is ready for application.*

The label is blown flat against the impressor pad and detaches from the backing. The vacuum applied from within the pad holds the label in place. The labeling head then stops both the stock-drive motor and the air blower. The label is now ready for application.



The label remains on the applicator pad until the product sensor, detects the arrival of the product. When this occurs, the product sensor signals the labeling head, which activates the applicator air cylinder. When the cylinder extends, the impressor pad presses the label onto the product, and the air cylinder retracts to its starting position. At this point, the labeling head dispenses the next label to the applicator, and the cycle repeats itself.

The air and vacuum assembly and input air regulator are illustrated below. The regulator controls the pressure of the (shop) air entering the air and vacuum assembly, which supplies air pressure to the air cylinder, air tube, and vacuum generator.



The only adjustment required is the setting of the input air pressure. To set the pressure, first make sure that the shop air is on and properly connected to the regulator, then turn the regulator knob until the pressure gauge registers in the range of 30-35 PSI.

Adjustments

The remainder of this chapter describes various adjustments you may need to make to the Air Cylinder Applicator. To properly apply labels, the air cylinder, dispensing blade, and blower must all be positioned to feed the proper length of label onto the applicator. Unless you change label sizes, you should not need to adjust any of these components. However, if you change label sizes, or if the unit is bumped or treated roughly, you may need to adjust the position of one or more of these components.

NOTE: If you move or reposition your Labeler system, do not lift the unit by the applicator, as the weight of the system may force the air cylinder out of alignment.

When changing label sizes, first load and center the new stock following the “Loading and Centering Stock” procedure in Chapter 3, then perform the following adjustments in the sequence in which they are presented.

Changing the Impresser Pad

If you change label sizes, you must change the custom-sized impresser pad on the bottom of the air cylinder assembly. To replace the pad, loosen the two bolts on either side of the cylinder, remove the old pad, and tighten the two bolts.

Label Sensor Positioning

The position of the label sensor in the web direction determines when the labeling head stops feeding stock. It thus determines how much of the label is fed out onto the applicator pad. Before making any adjustment to the applicator, make sure that the label sensor is positioned correctly.

Position the label sensor so that a label feeds completely past the dispensing blade, with the next label stopping at the edge of the blade, as illustrated to the right.

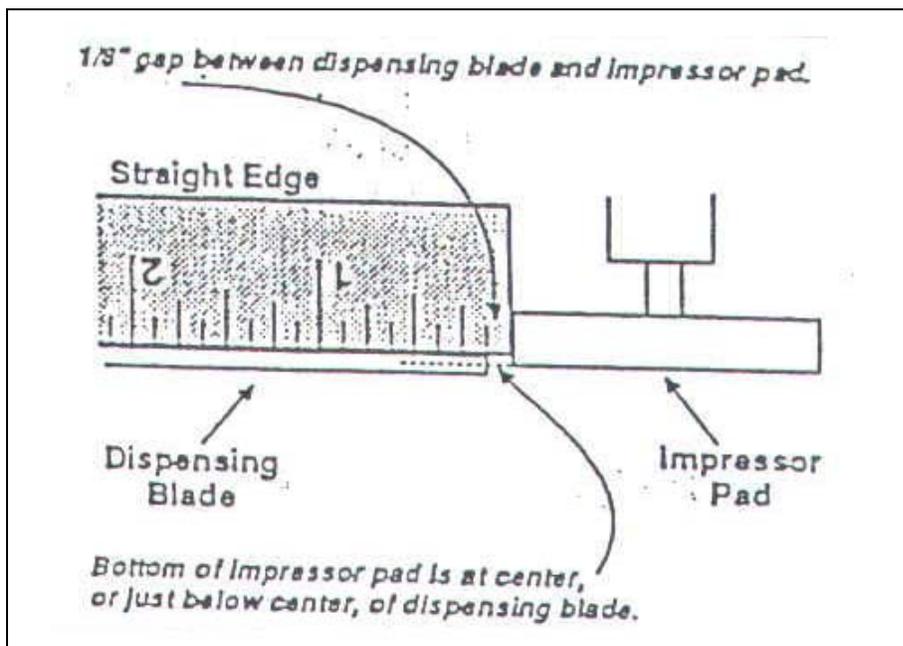
There are two types of label sensors, both of which are positioned in the same way: loosen the lock knob, slide the entire sensor assembly backward or forward along the stock path, and retighten the lock knob.

Unlock the controller and press the Jog (2nd) button to dispense a label and check its position. You may need to repeat this procedure several times to obtain the correct positioning.

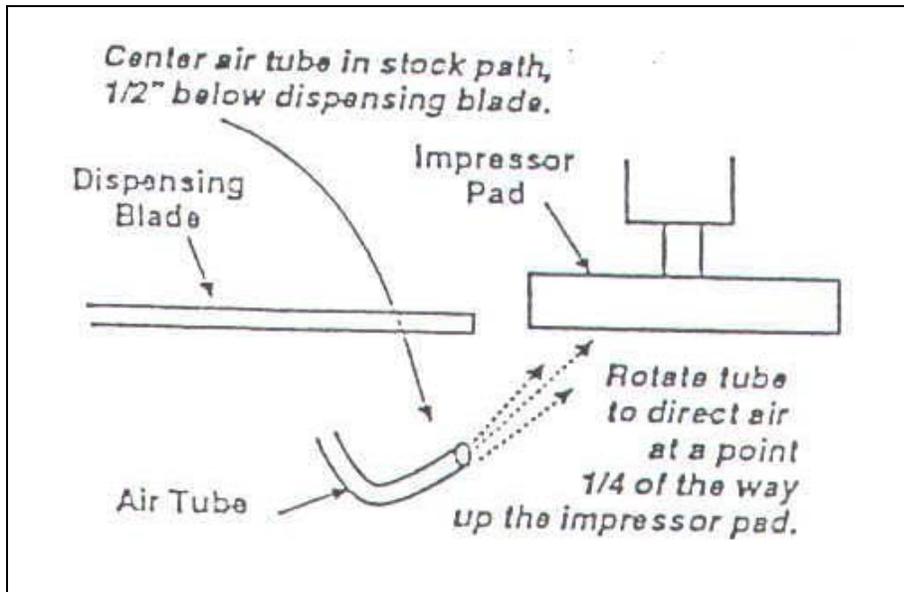
Adjusting the Air Cylinder Position

The air cylinder assembly must be positioned correctly relative to the dispensing blade on the labeling-head frame. Before performing this adjustment, be sure that the label sensor is positioned properly, and that the correct custom-sized impressor pad is installed.

To move the air-cylinder assembly up or down, or towards or away from the dispensing blade, loosen the appropriate pair of bolts on the mounting plate, move the assembly, and then retighten the bolts.



The correct positioning of the impressor pad relative to the dispensing blade is illustrated to the right. There should be a gap of 1/8" between the dispensing blade and the impressor pad, and the bottom of the impressor pad should be at or just below the middle of the dispensing blade. Do not position the impressor pad above or level with the top of the dispensing blade.



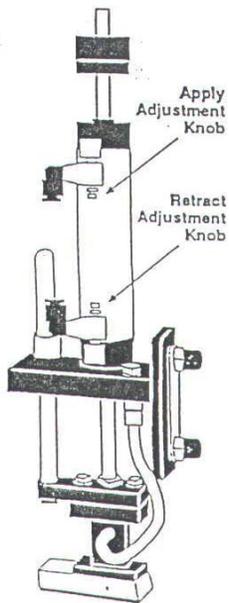
After positioning the air cylinder assembly, position the air tube, as illustrated on the right. First loosen the air tube $\frac{1}{2}$ " below the dispensing blade, and retighten the air tube bolt. Next, loosen the air tube clamp screw, center the air tube in the stock path, rotate the tube so that the blow holes are directed at a point $\frac{1}{4}$ of the way up the applicator pad, and retighten the air tube clamp screw.

To test the position of the air cylinder assembly, turn Controller on and unlock it. Press the Jog button (2nd). The labeling head should dispense a single label onto the impressor pad. The label should be centered on the pad, squared and in line with the stock travel, with the trailing edge of the label just off the dispensing blade (and backing paper). The stock should stop with the next label just at the edge of the dispensing blade.

If the label is not positioned properly on the impressor pad, check one or all of the adjustments in this section of this chapter, and repeat the test.

Adjusting the Air Cylinder Flow-Control Valves

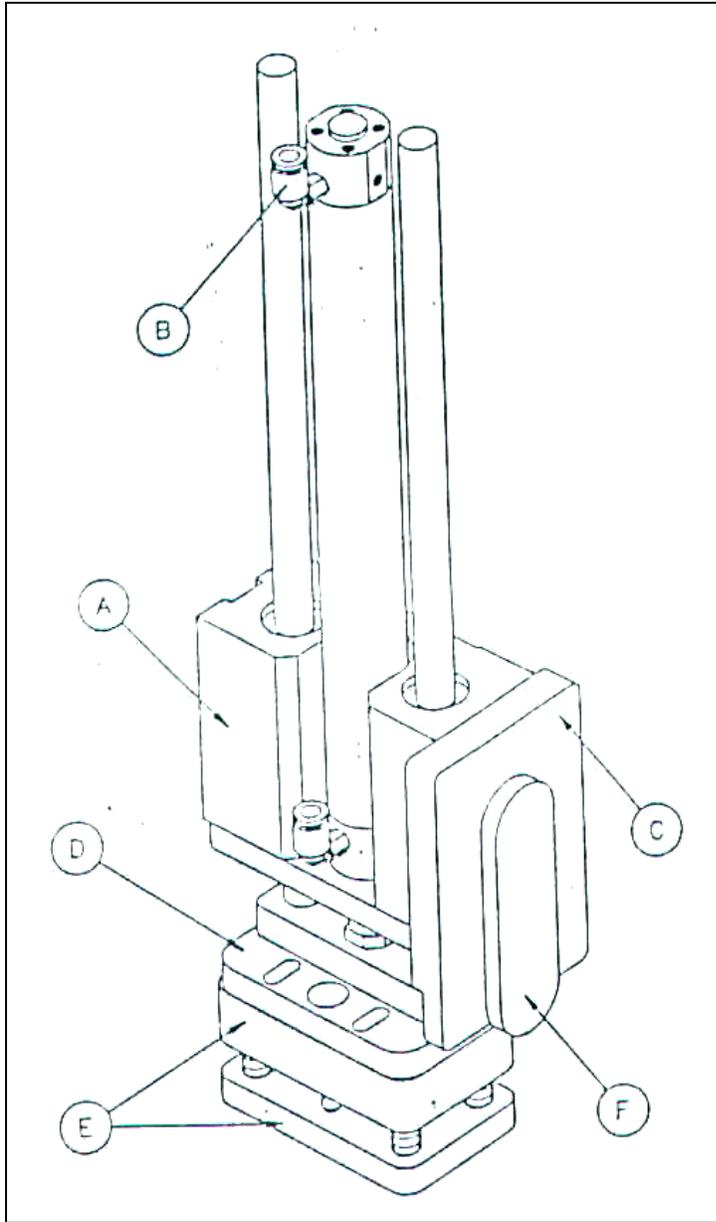
There are flow-control valves with adjustment knobs located at both the top and bottom of the air cylinder (as shown on the right). These are factory set, and should not require adjustment under normal circumstances.



If it becomes necessary to adjust the speed at which the air cylinder operates:

1. Use the top knob to adjust the apply-stroke speed.
2. Use the bottom knob to adjust the retract-stroke speed.

On some labeling systems the flow control is located behind the solenoid valve. A screwdriver will be necessary to make adjustments. (To open turn counterclockwise. To close turn clockwise).

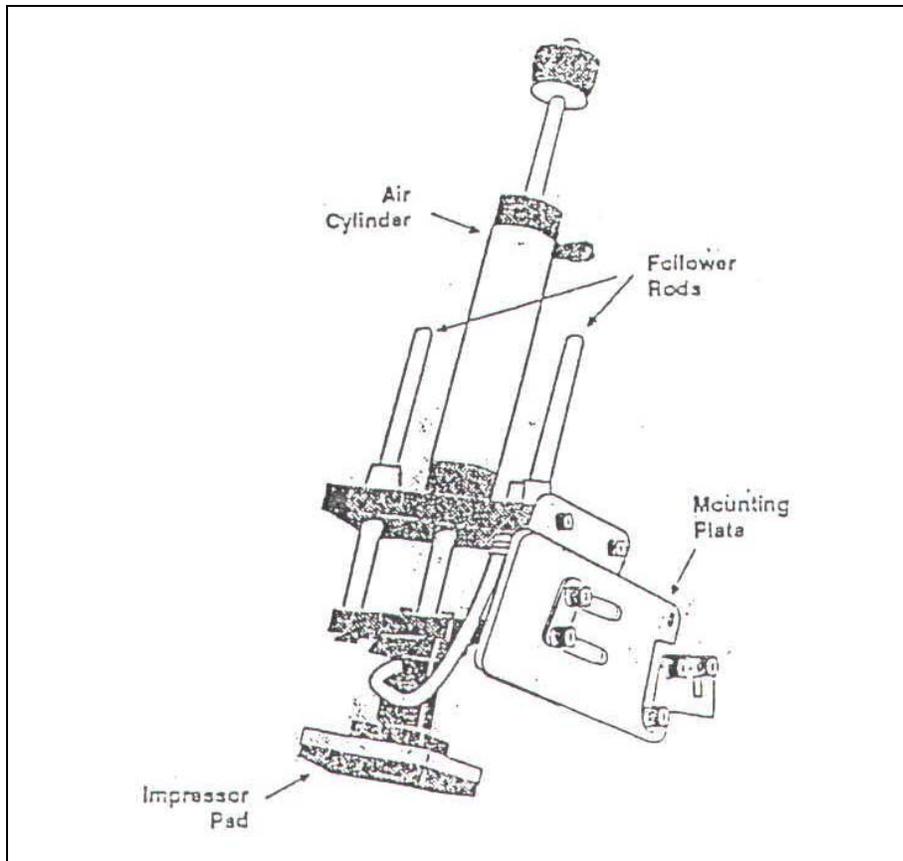


LIST OF PARTS			
QTY	PART NUMBER	DESCRIPTION	
1	P8010-216	AIR CYLINDER	
2	14012	10-32 AIR FITTING	XXXXXX
1	M0020-257	MOUNTING PLATE	XXXXXX
1	M0020-262	RETAINER PLATE	XXXXXX
1	14812	SPRING BLOCK	XXXXXX
1	14859	MOUNTING BAR	XXXXXX

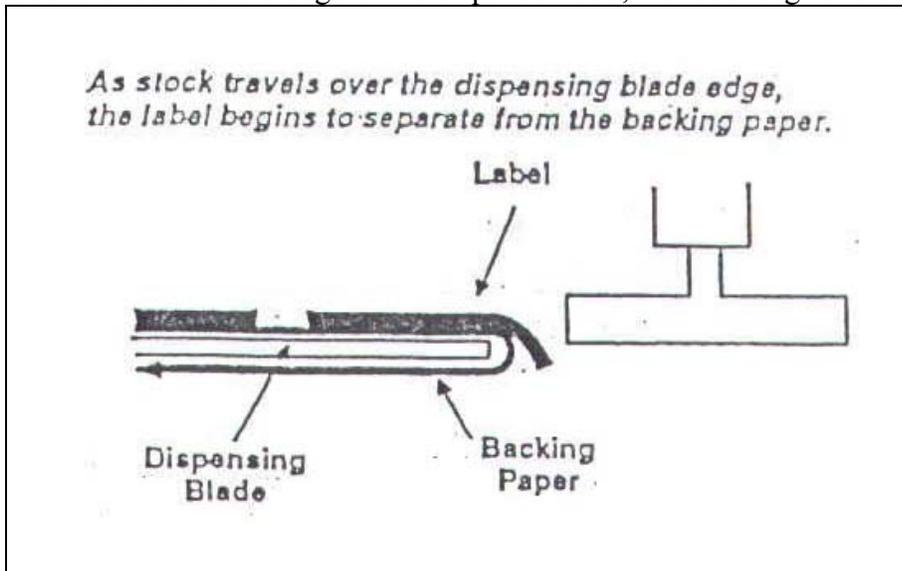
914DD Air Cylinder Applicator

Introduction

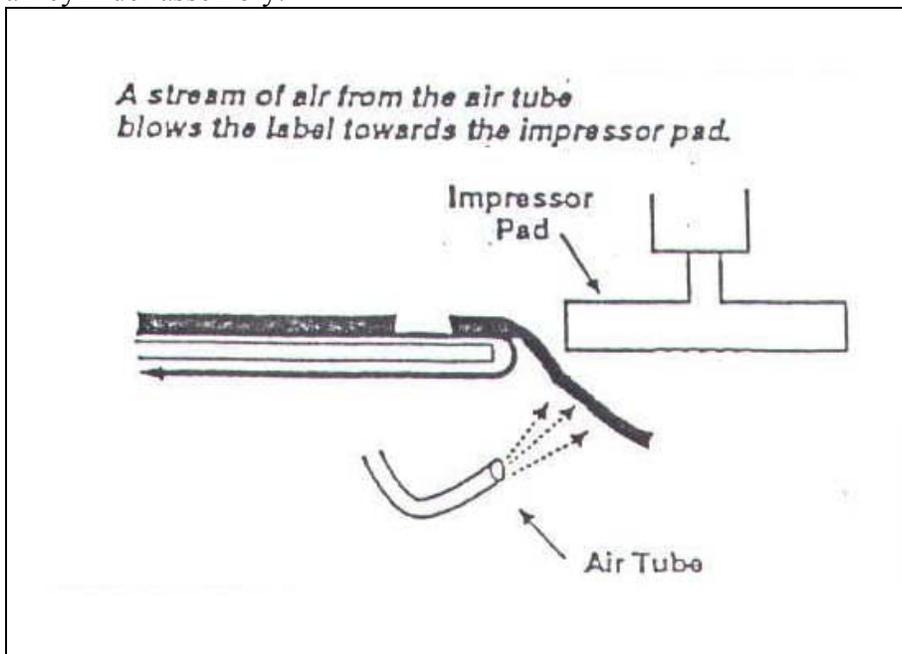
The applicator receives labels from the labeling head and applies them to the product. The major components of the Air Cylinder Applicator are the air-cylinder assembly, the air and vacuum assembly, and the input pressure regulator. All three components attach to the frame of the labeling head, and are mounted, positioned and tested at the factory. The air-cylinder assembly is illustrated below.



To dispense a label onto the applicator, the labeling head starts the stock-drive motor. As label stock travels over the edge of the dispense blade, the label begins to separate from the backing.

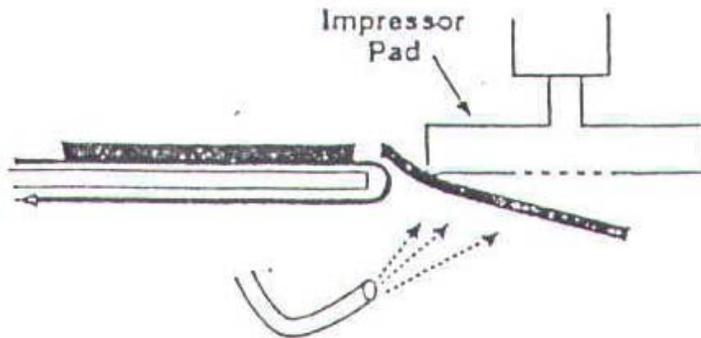


The label follows the backing paper in its downward turn, but an air stream from the air tube blows the label away from the backing paper and towards the impressor pad at the bottom of the air cylinder assembly.

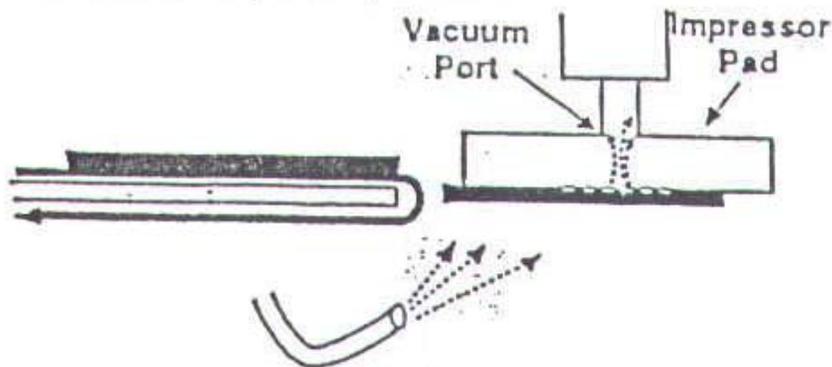


The motion of the stock over the dispensing blade edge and the force of the air against the bottom of the label continue to peel the label from the backing paper. When the label is almost detached, it strikes the near edge of the impressor pad and hinges toward the pad.

When almost detached from the backing paper, the label hinges on the near edge of the impressor pad.

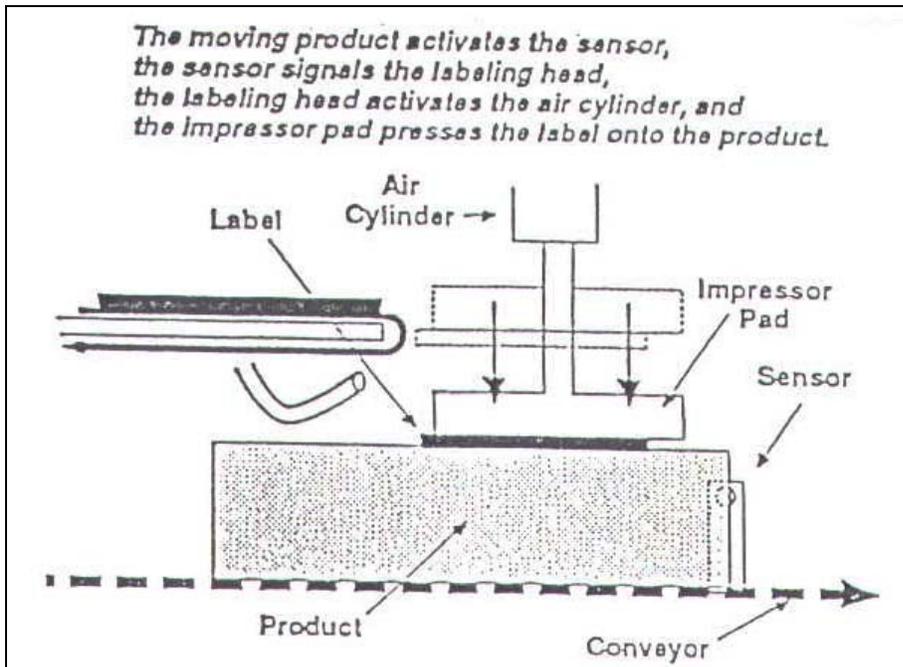


The label is blown flat against the impressor pad, detaches from the backing paper, and is held in place by vacuum.



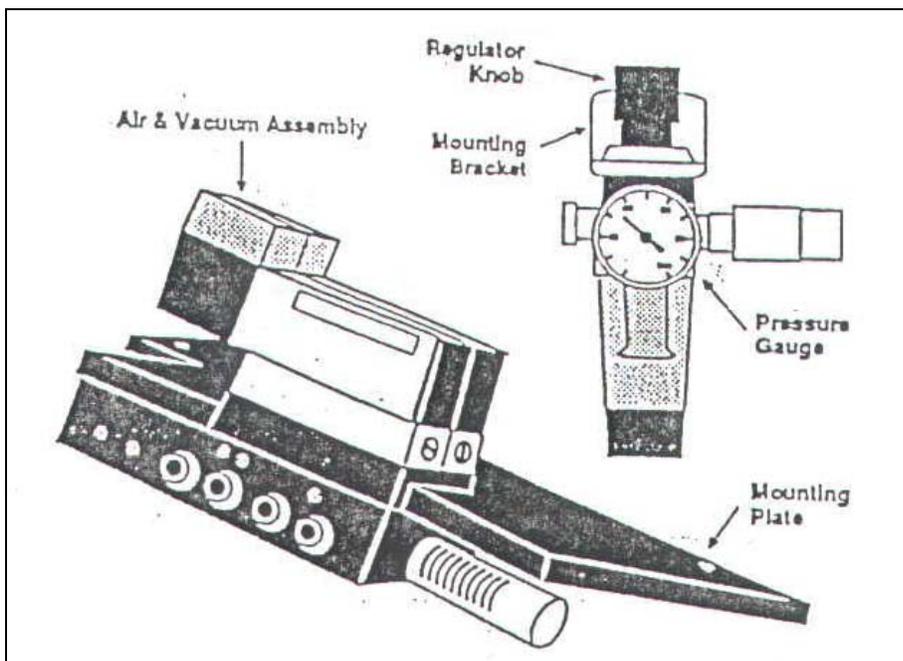
The drive motor and air blower stop, the vacuum remains on, and the label is ready for application.

The label is blown flat against the impressor pad and detaches from the backing. The vacuum applied from within the pad holds the label in place. The labeling head then stops both the stock-drive motor and the air blower. The label is now ready for application.



The label remains on the applicator pad until the product sensor, detects the arrival of the product. When this occurs, the product sensor signals the labeling head, which activates the applicator air cylinder. When the cylinder extends, the impressor pad presses the label onto the product, and the air cylinder retracts to its starting position. At this point, the labeling head dispenses the next label to the applicator, and the cycle repeats itself.

The air and vacuum assembly and input air regulator are illustrated below. The regulator controls the pressure of the (shop) air entering the air and vacuum assembly, which supplies air pressure to the air cylinder, air tube, and vacuum generator.



The only adjustment required is the setting of the input air pressure. To set the pressure, first make sure that the shop air is on and properly connected to the regulator, then turn the regulator knob until the pressure guage registers in the range of 30-35 PSI.

Adjustments

The remainder of this chapter describes various adjustments you may need to make to the Air Cylinder Applicator. To properly apply labels, the air cylinder, dispensing blade, and blower must all be positioned to feed the proper length of label onto the applicator. Unless you change label sizes, you should not need to adjust any of these components. However, if you change label sizes, or if the unit is bumped or treated roughly, you may need to adjust the position of one or more of these components.

<p>NOTE: If you move or reposition your Labeler system, do not lift the unit by the applicator, as the weight of the system may force the air cylinder out of alignment.</p>

When changing label sizes, first load and center the new stock following the “Loading and Centering Stock” procedure in Chapter 3, then perform the following adjustments in the sequence in which they are presented.

Changing the Impresser Pad

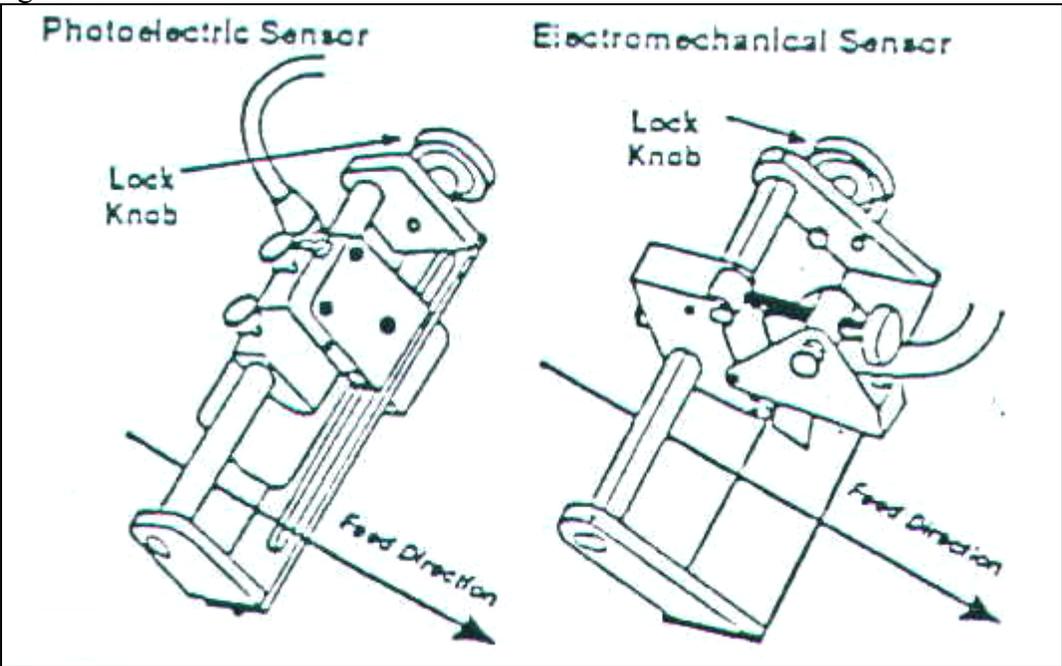
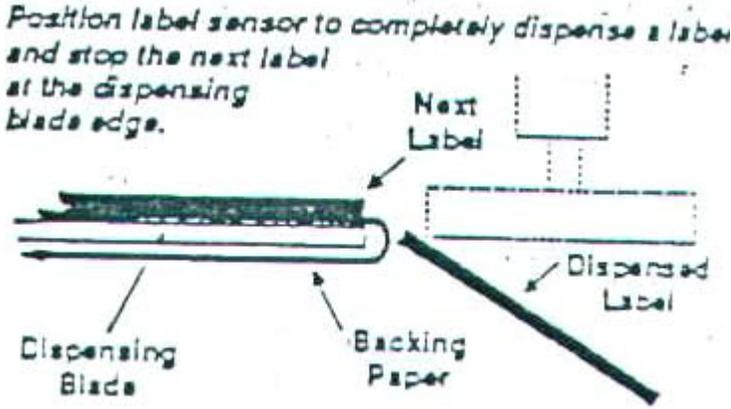
If you change label sizes, you must change the custom-sized impresser pad on the bottom of the air cylinder assembly. To replace the pad, loosen the two bolts on either side of the cylinder, remove the old pad, and tighten the two bolts.

Label Sensor Positioning

The position of the label sensor in the web direction determines when the labeling head stops feeding stock. It thus determines how much of the label is fed out onto the applicator pad. Before making any adjustments to the applicator, make sure that the label sensor is positioned correctly.

Position the label sensor so that a label feed completely past the dispensing blade, with the next label stopping at the edge of the blade, as illustrated to the right.

There are two types of label sensors, both of which are positioned in the same way: loosen the lock knob, slide the entire sensor assembly backward or forward along the stock path, and tighten the lock knob.



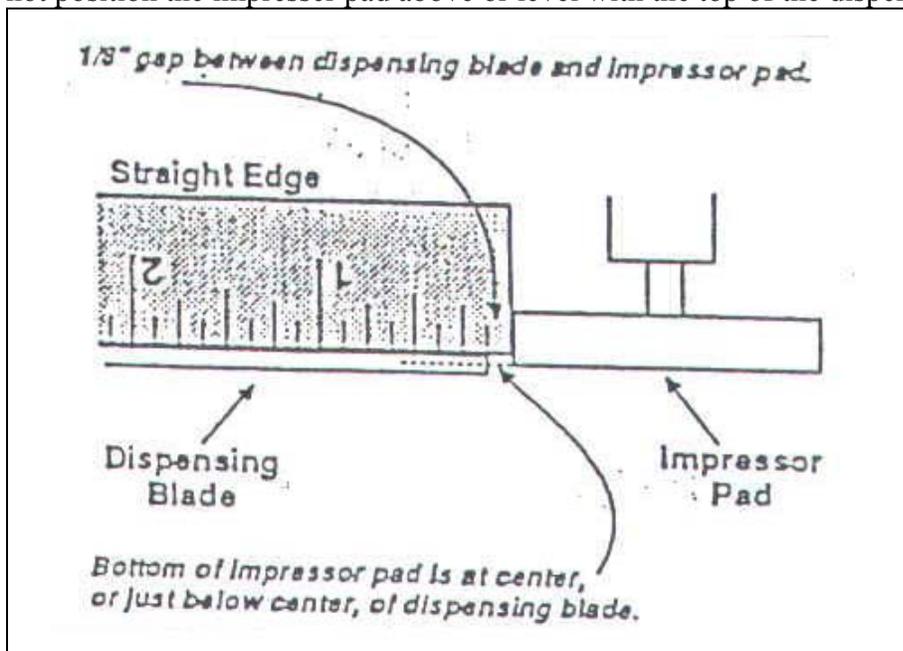
Turn the ON/OFF/JOG switch to JOG position to dispense a label and check its position. You may need to repeat this procedure several times to obtain the correct positioning.

Adjusting the Air Cylinder Position

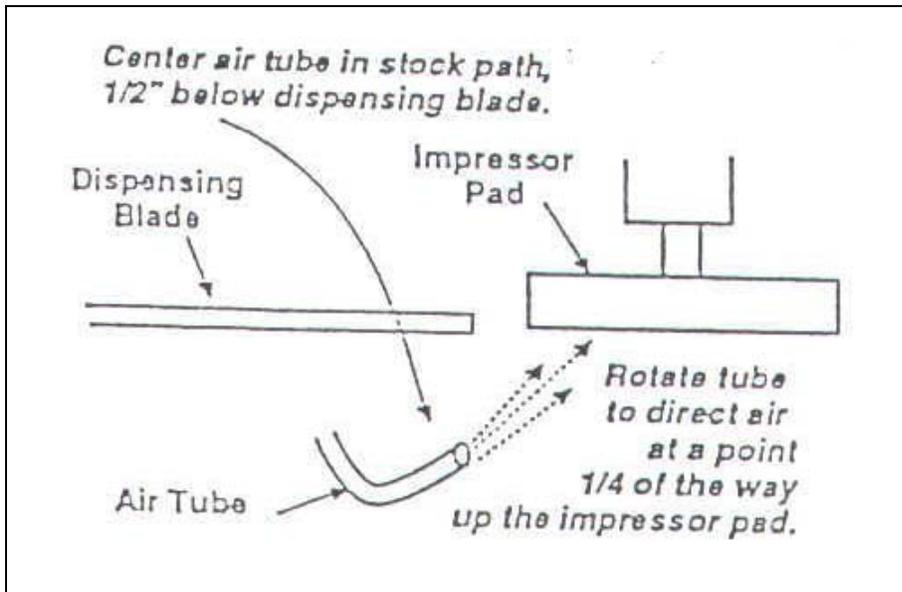
The air cylinder assembly must be positioned correctly relative to the dispensing blade on the labeling-head frame. Before performing this adjustment, be sure that the label sensor is positioned properly, and that the correct custom-sized impressor pad is installed.

To move the air-cylinder assembly up or down, or towards or away from the dispensing blade, loosen the appropriate pair of bolts on the mounting plate, move the assembly, and then retighten the bolts.

The correct positioning of the impressor pad relative to the dispensing blade is illustrated to the right. There should be a gap of $1/8$ " between the dispensing blade and the impressor pad, and the bottom of the impressor pad should be at or just below the middle of the dispensing blade. Do not position the impressor pad above or level with the top of the dispensing blade.

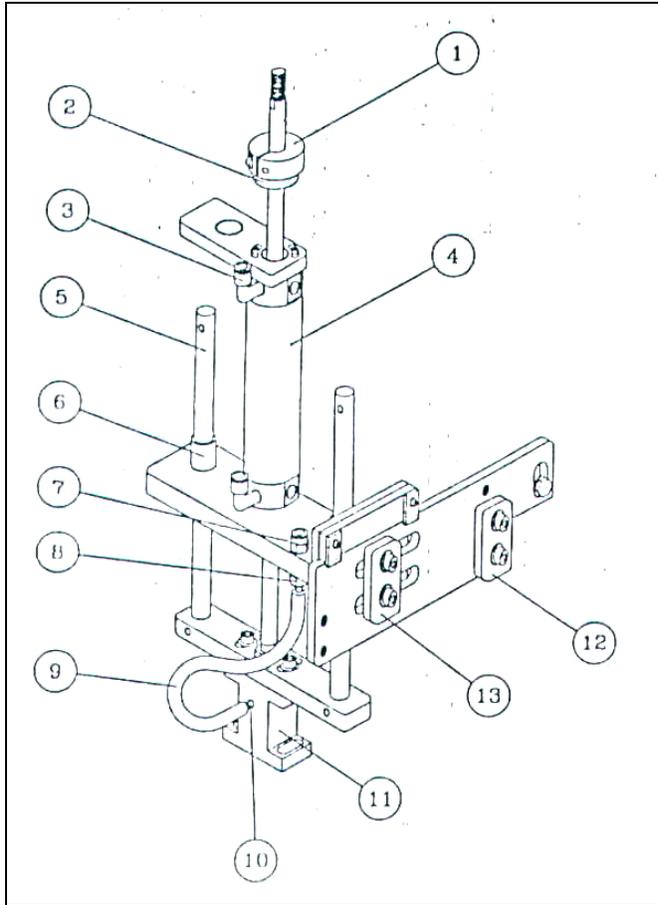


After positioning the air cylinder assembly, position the air tube, as illustrated on the right. First loosen the air tube $1/2$ " below the dispensing blade, and retighten the air tube bolt. Next, loosen the air tube clamp screw, center the air tube in the stock path, rotate the tube so that the blow holes are directed at a point $1/4$ of the way up the applicator pad, and retighten the air tube clamp screw.



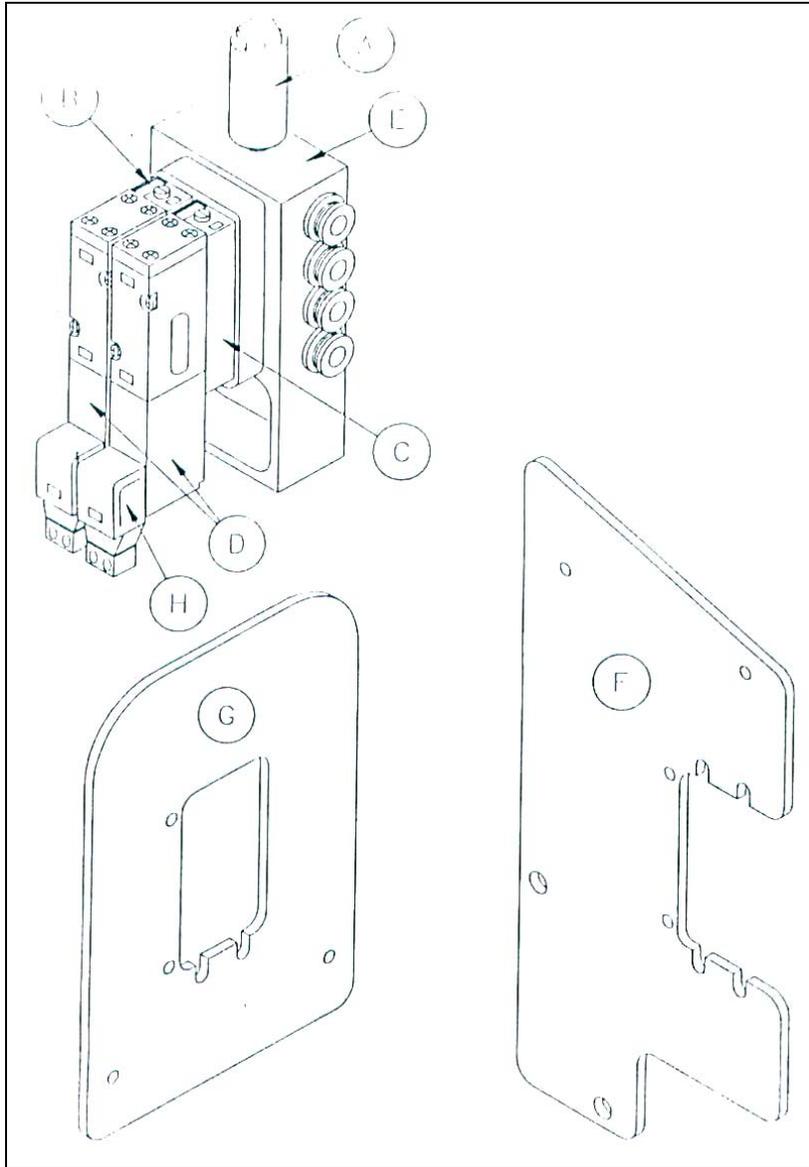
To test the position of the air cylinder assembly, turn Controller on and unlock it. Press the Jog button (2nd). The labeling head should dispense a single label onto the impressor pad. The label should be centered on the pad, squared and in line with the stock travel, with the trailing edge of the label just off the dispensing blade (and backing paper). The stock should stop with the next label just at the edge of the dispensing blade.

If the label is not positioned properly on the impressor pad, check one or all of the adjustments in this section of this chapter, and repeat the test.



PARTS IDENTIFICATION

NO.	DESCRIPTION OF PART	PART NUMBER
1	STOP COLLAR 12MM I.D.	14641
2	RUBBER STOP CUSHION (2-PART)	14642
3	90° AIR CONNECTOR 1/8 PIPE	14441
4	6 INCH AIR CYLINDER	14615
5	Ø 3/4 INCH FOLLOWER ROD	14438
6	FOLLOWER BUSHING .507 I.D.	14443
7	AIR CONNECTOR STRAIGHT 1/8"	P4010-003
8	10-32 x 1/8" REDUCER FITTING	P4000-029
9	1/8" x 1/4" TYGON TUBING	P7000-017
10	AIR & VAC CONNECTOR	14030
11	I-BLOCK MOUNT FOR APPLICATOR PAD	14815
12	RETAINER BAR (NOT THREADED)	M0100-058
13	RETAINER BAR (NOT THREADED)	M0100-060



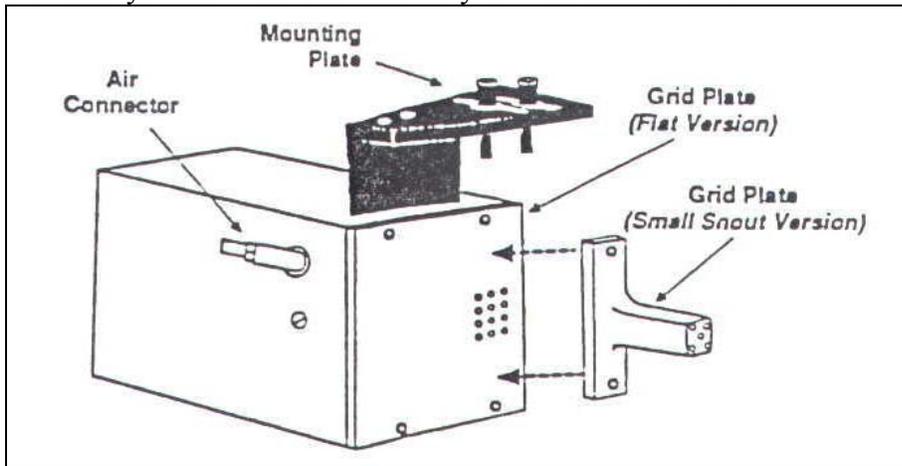
QTY	PART NUMBER	LIST OF PARTS DESCRIPTION	MATERIAL
1	14609	MUFFLER	XXXXXX
1	14614	VACUUM FLOW BLOCK	XXXXXX
1	14607	FLOW BLOCK	XXXXXX
2	14606-AC	AC SOLENOID	XXXXXX
1	14651	MANIFOLD BLOCK ASSEMBLY	XXXXXX
1	14620	906 MOUNT PLATE	XXXXXX
1	M0020-001	908 MOUNT PLATE	XXXXXX
1	14606-DC	DC SOLENOID	**SEE BELOW**

916 Pneu-Vac Applicator

Introduction

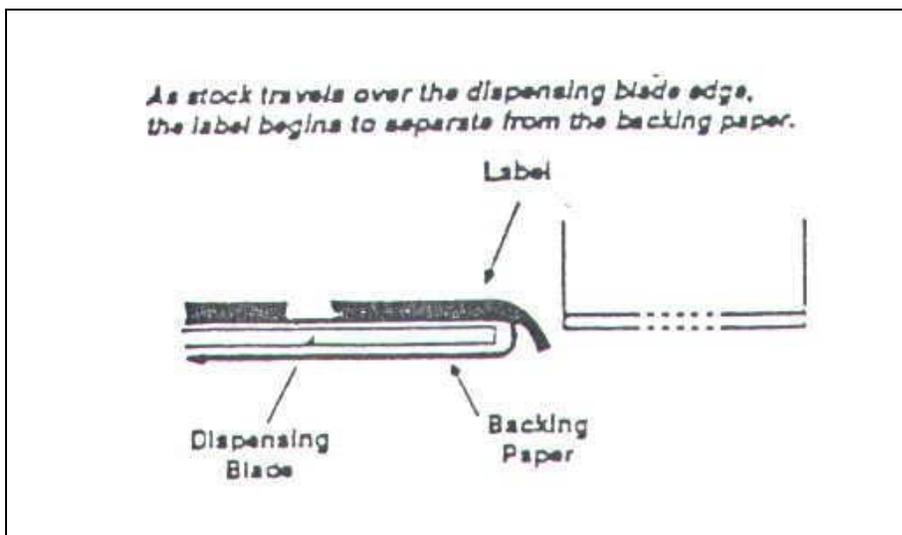
The applicator receives labels from the labeling head and applies them to the product. The Pneu-Vac Applicator provides no-contact pressure-sensitive labeling to a wide variety of products, and is ideally suited to in-line price, promotional, bar-code, or other spot labeling of filled packages or products.

The major components of this system is the Pneu-Vac and air-package assemblies. Both components attach to the frame of the labeling head, and are mounted, positioned, and tested at the factory. The Pneu-Vac assembly is illustrated below.

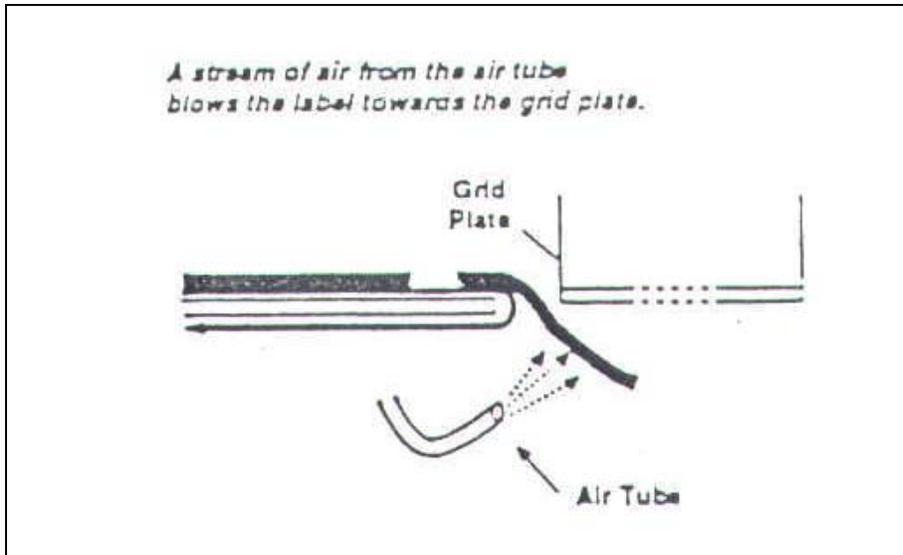


Depending on the size and type of labels used, you may have one or more custom-drilled grid plates of either or both the “flat” and “small snout” versions (one of each is illustrated above).

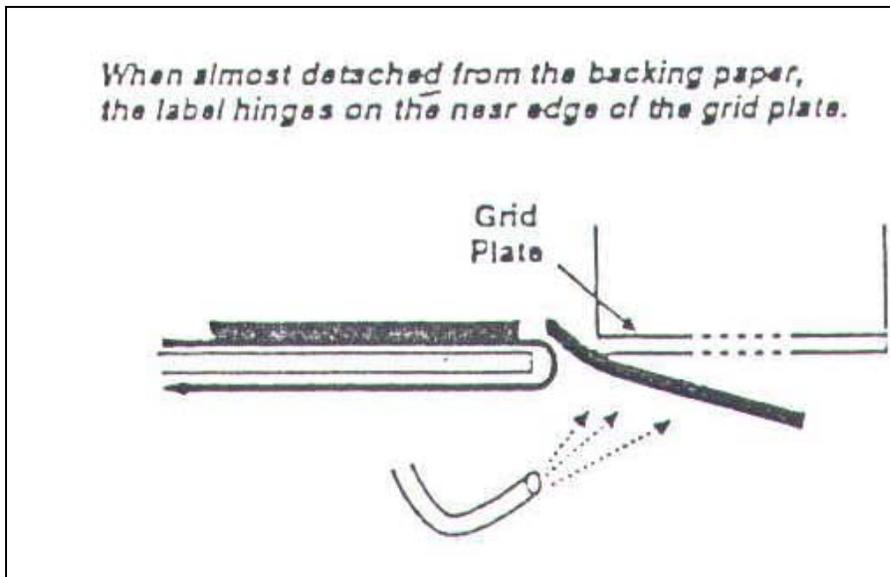
The events that occur during a single cycle of the label application process are described in detail beginning on the following page.



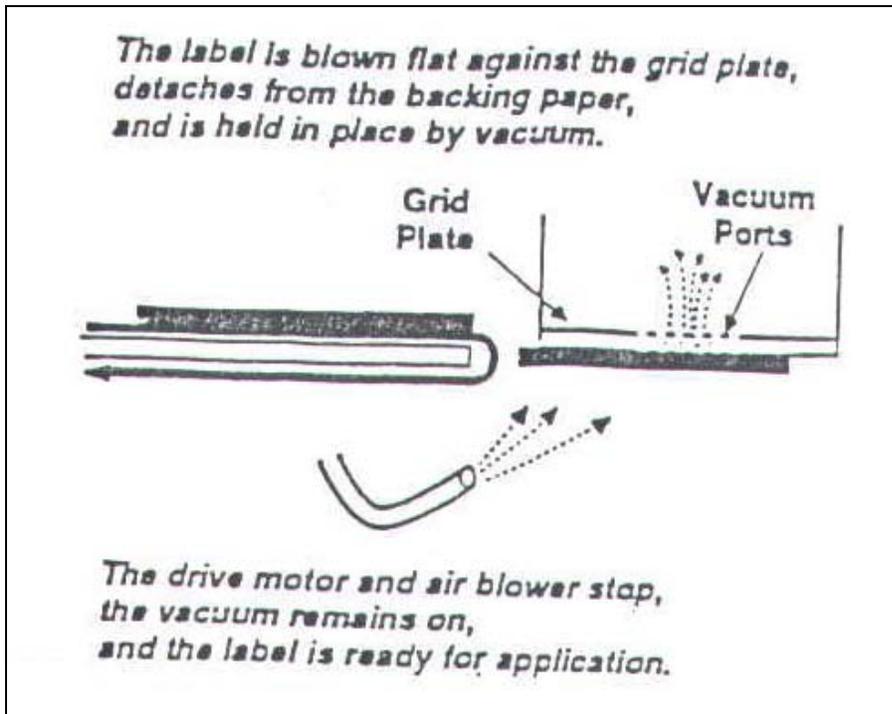
To dispense a label onto the applicator, the labeling head starts the stock-drive motor. As label stock travels over the edge of the dispense blade, the label begins to separate from the backing.



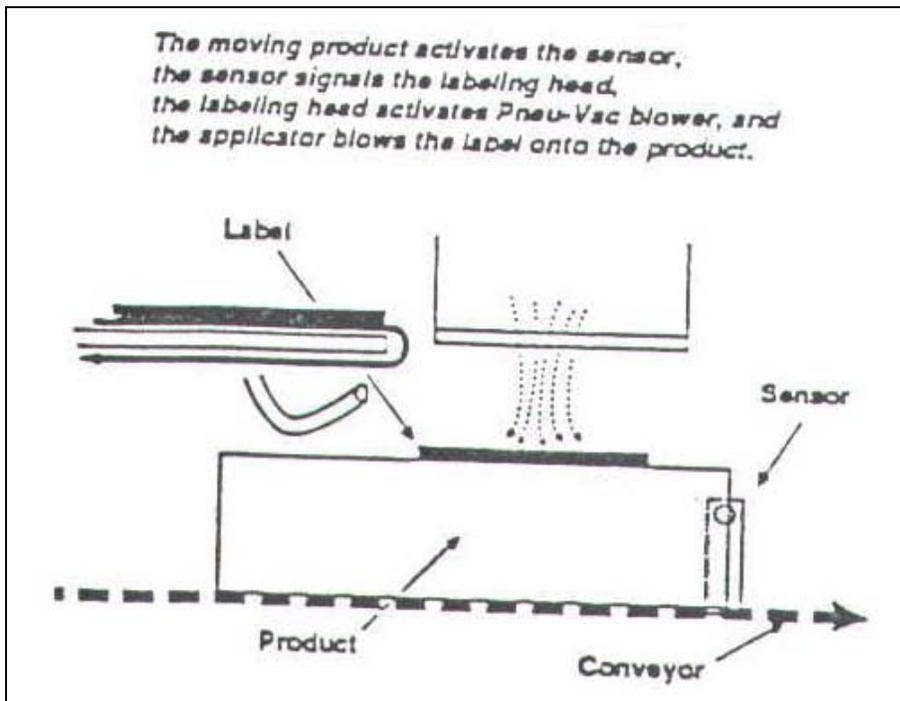
The label follows the backing paper in its downward turn, but an air stream from the air tube blows the label away from the backing paper and towards the grid plate on the bottom of the Pneu-Vac assembly.



The motion of the stock over the dispensing blade edge and the force of the air against the bottom of the label continue to peel the label from the backing paper. When the label is almost detached, it strikes the near edge of the grid plate and hinges toward the plate.

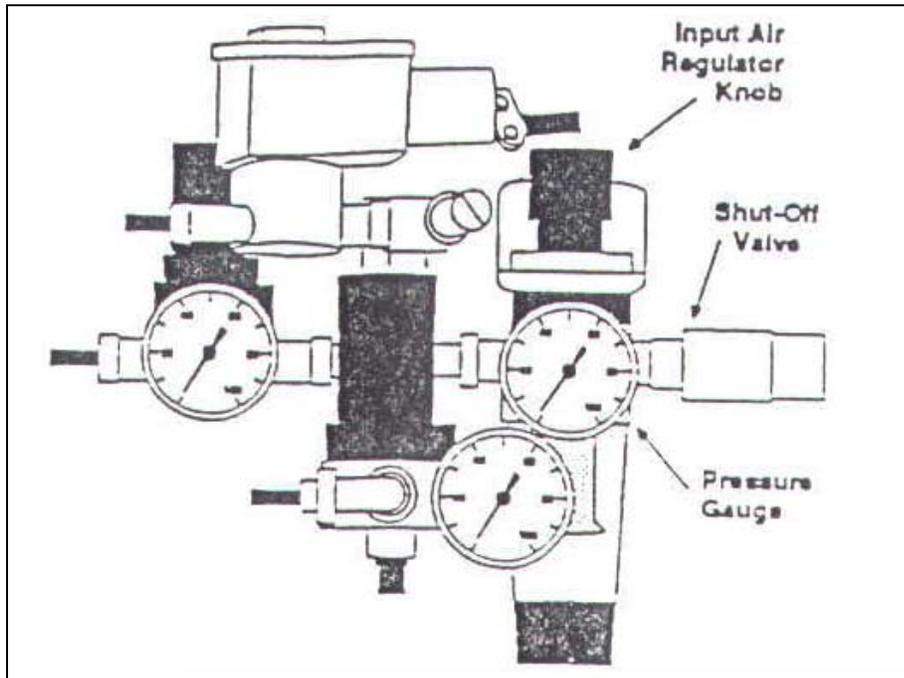


The label is blown flat against the grid plate and detaches from the backing. The vacuum applied from within the Pneu-Vac assembly holds the label in place. The labeling head then stops both the stock-drive motor and the air blower. The label is now ready for application.



The label remains on the grid plate until the product sensor, detects the arrival of the product and signals the labeling head, which in turn signals the applicator. The applicator then switches off the vacuum and blows the label onto the product. After a brief delay, the labeling head dispenses the next label to the applicator, and the cycle repeats itself.

The air and vacuum assembly and input air regulator are illustrated below. The input air regulator and filter is connected to your (shop) air supply. This is the only regulator you may have to adjust.



The input air pressure should be set in the range of 60-80 PSI, depending primarily on the size and weight of the label being used. To set the pressure, first make sure that the shop air is on and properly connected to the regulator, then turn the regulator knob until the pressure gauge registers 60 PSI.

From time to time (depending on the amount of moisture in your shop air supply), you must also drain the water trap on the bottom of the input air regulator.

Adjustments

The remainder of this chapter describes various adjustments you may need to make to the Pneu-Vac Applicator. To properly apply labels, the Pneu-Vac assembly, dispensing blade, and air tube must all be positioned correctly relative to one another. In addition, the label sensor must be positioned to feed the proper length of label onto the applicator. Unless you change label sizes, you should not need to adjust any of these components. However, if you change label sizes, or if the unit is bumped or treated roughly, you may need to adjust the position of one or more of these components.

<p>NOTE: If you move or reposition your Labeler, do not lift the unit by the applicator, as the weight of the system may force the Pneu-Vac assembly out of alignment.</p>

When changing the label sizes, first load and center the new stock following the “Loading and Centering Stock” procedure in Chapter 3, then perform the following adjustments in the sequence in which they are presented.

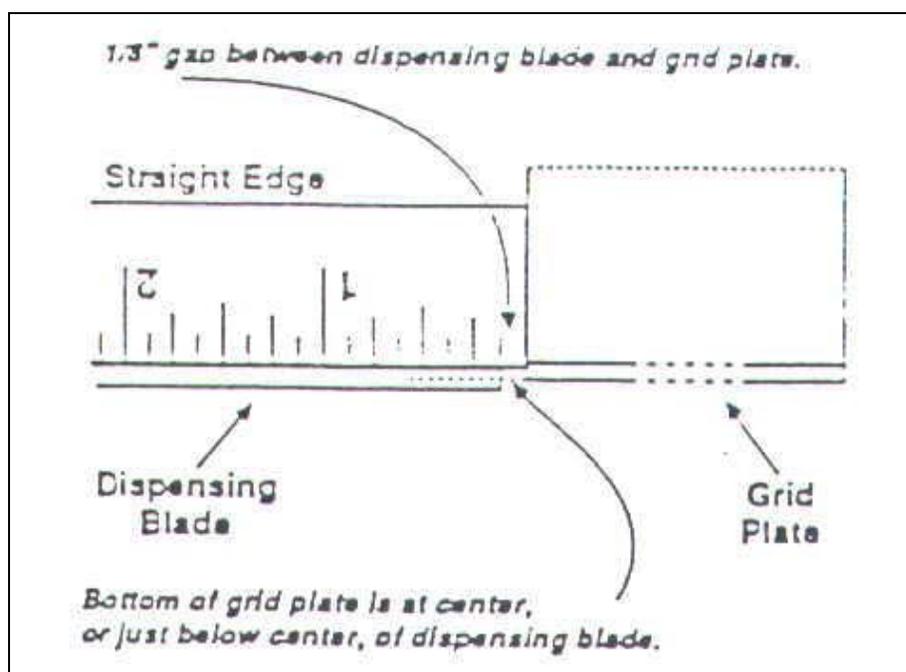
Changing the Grid Plate

If you change label sizes, you may need to change the custom-drilled grid plate on the bottom of the Pneu-Vac assembly. To replace, remove the screws on the bottom of the old grid plate, install the new one, and replace the screws.

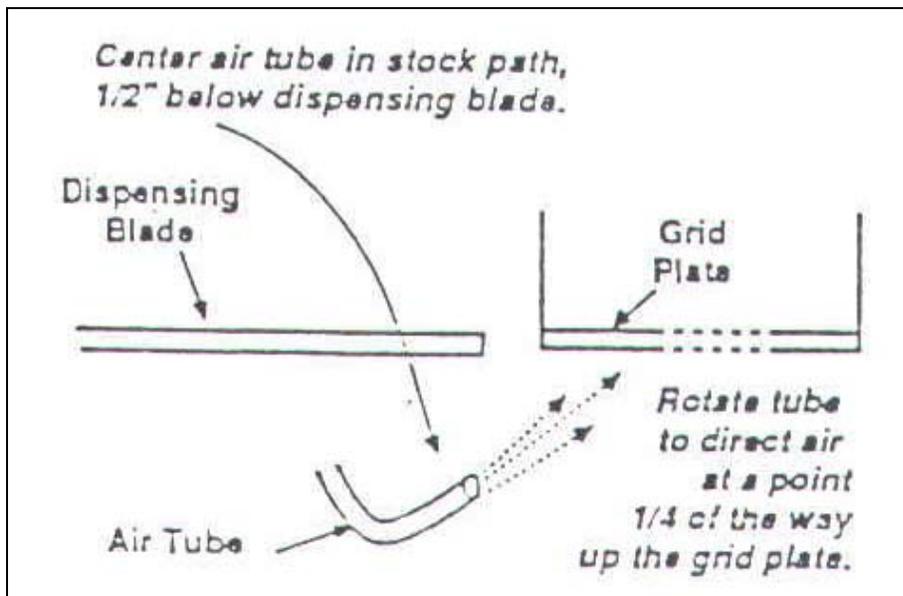
Adjusting the Air Cylinder Position

The Pneu-Vac assembly must be positioned correctly relative to the dispensing blade on the labeling-head frame. Before performing this adjustment, be sure that the label sensor is positioned properly, and that the correct custom-drilled grid plate is installed. (Both of these adjustment procedures are described earlier in this chapter).

To move the Pneu-Vac assembly up or down, or towards or away from the dispensing blade, loosen the appropriate pair of bolts on the mounting plate, move the assembly, and then retighten the bolts.



The correct positioning of the impresser pad relative to the dispensing blade is illustrated to the right. There should be a gap of 1/8" between the dispensing blade and the impresser pad, and the bottom of the impresser pad should be at or just below the middle of the dispensing blade. Do not position the grid plate above or level with the top of the dispensing blade.

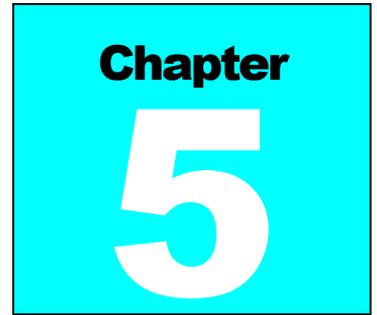


After positioning the Pneu-Vac assembly, position the air tube, as illustrated on the right. First loosen the air tube $\frac{1}{2}$ " below the dispensing blade, and retighten the air tube bolt. Next, loosen the air tube clamp screw, center the air tube in the stock path, rotate the tube so that the blow holes are directed at a point $\frac{1}{4}$ of the way up the applicator pad, and retighten the air tube clamp screw.

To test the position of the air cylinder assembly, turn Controller on and unlock it. Press the Jog button (2nd). The labeling head should dispense a single label onto the grid plate. The label should be centered over the custom-drilled holes on the grid plate, squared and in line with the stock travel, with the trailing edge of the label just off the dispensing blade (and backing paper). The stock should stop with the next label just at the edge of the dispensing blade.

If the label is not positioned properly on the grid plate, check one or all of the adjustments in this section of this chapter, and repeat the test.

Mounting



- Various mounting strategies are offered based on conveyor and product orientation.

Mounting and Pedestals

Introduction

The following mounting, pedestals and casters and lift-off screws are available for the Little David Application System.

Part	Description
------	-------------

921	Vertical mounting for apply labels to the side of the product.
-----	--

922A	Horizontal mounting for applying labels to the top, side or bottom of the product.
------	--

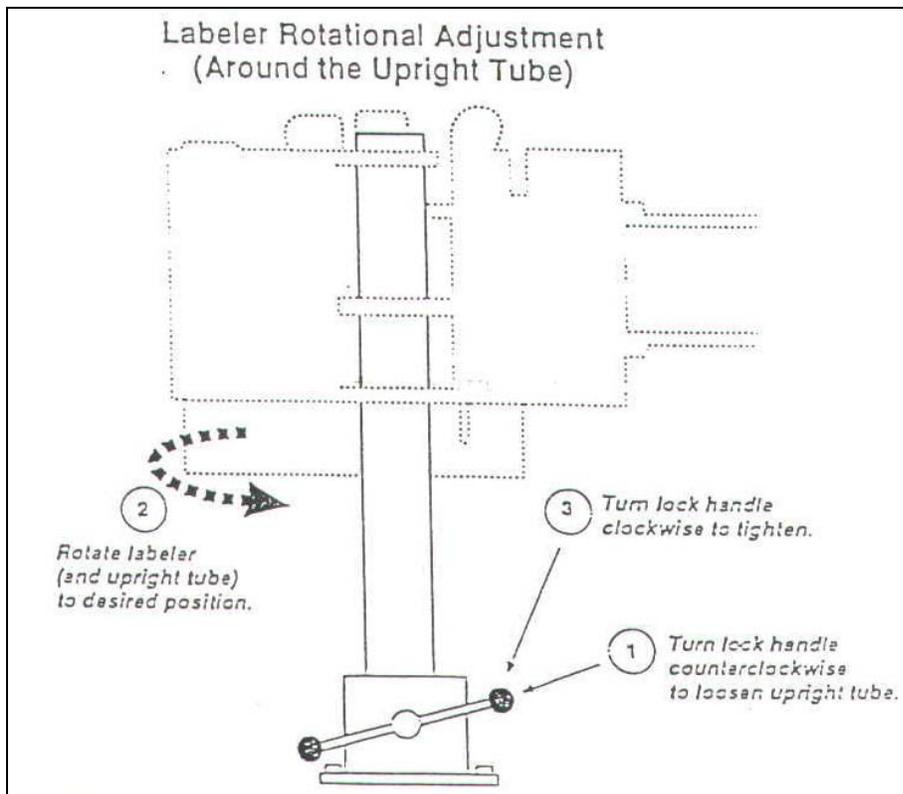
924A/925A	H-Mount Floor Base with pedestal 20" or 30" respectively.
-----------	---

926	Casters and Lift-off Screws for the 924A or 925A.
-----	---

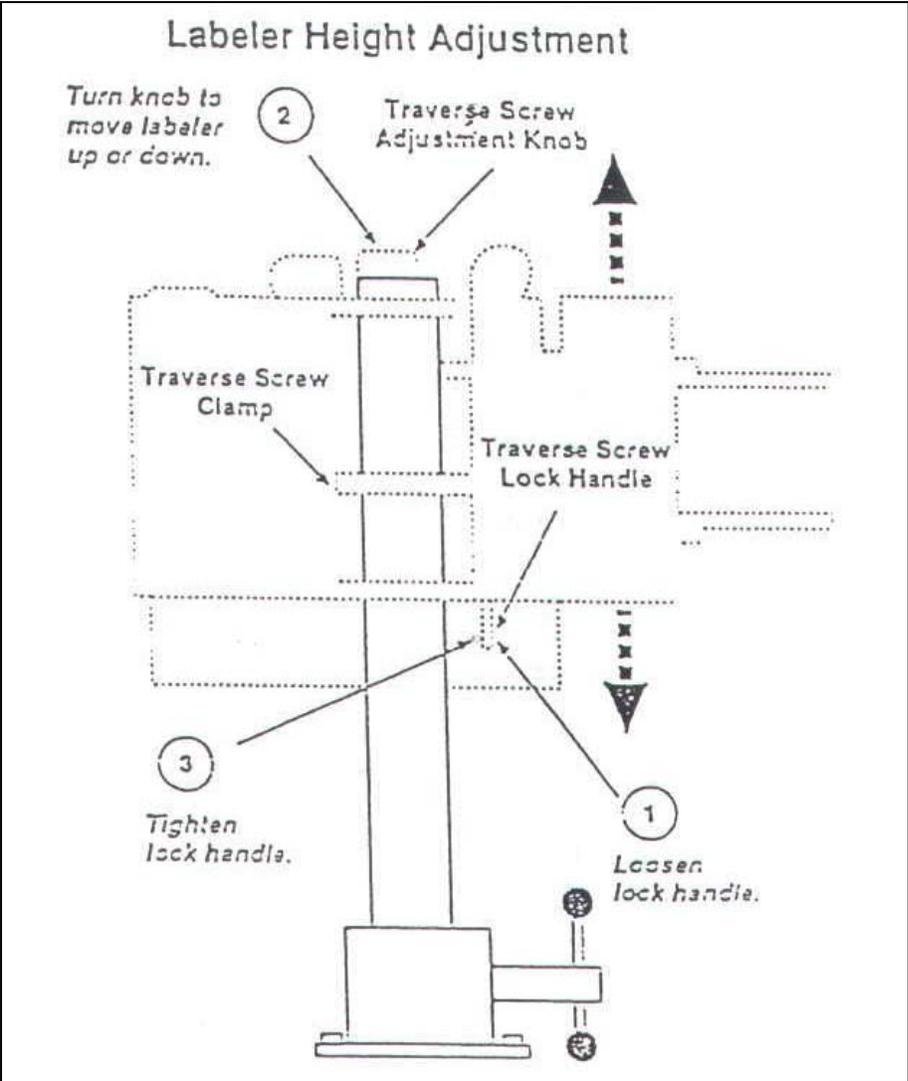
Each of these components is described separately in the following sections.

921 Mounting

The 921 mounting supports the labeling head on its side, for the application of labels to the side of the product. The labeling head can be raised or lowered on the mounting, or can be rotated around the vertical post. To adjust the position of the labeling head on the mounting, follow the appropriate procedure below.



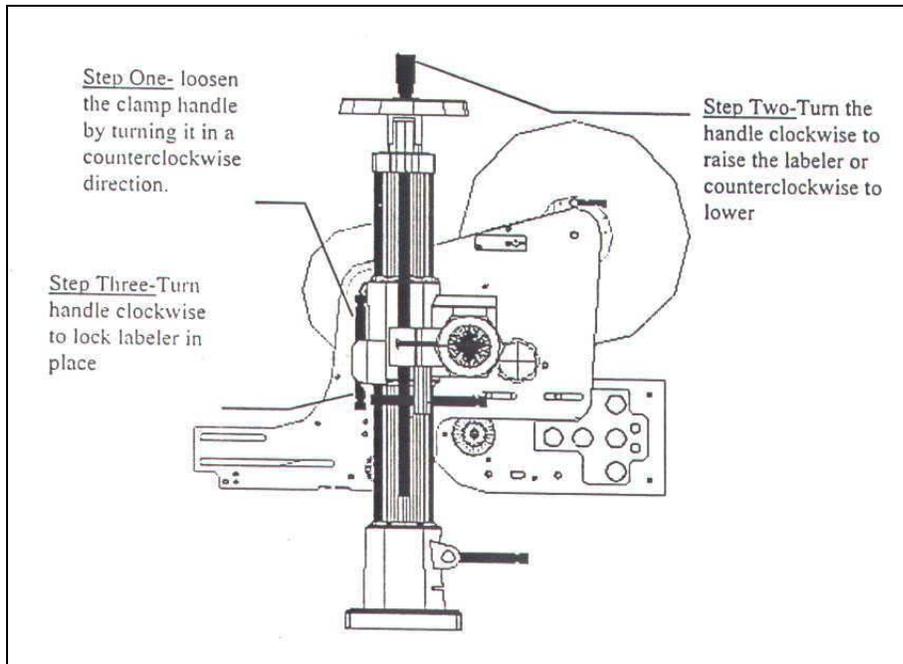
Use the above adjustment procedure to rotate the labeling head to any position around the vertical axis.



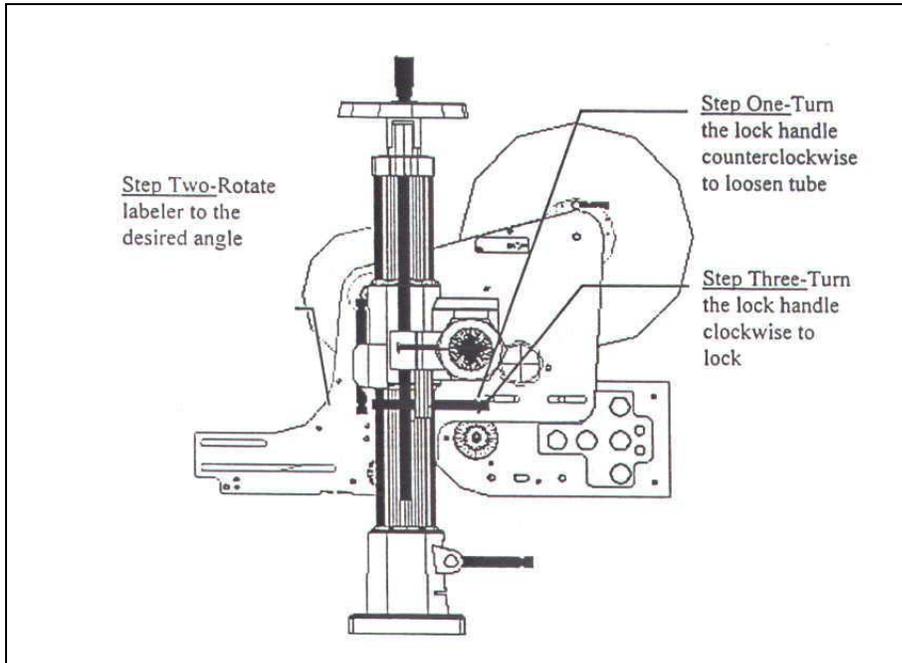
Use the above procedure to raise or lower the labeling head. This procedure is performed using parts of the mounting that are built into the labeling head.

922 Mounting

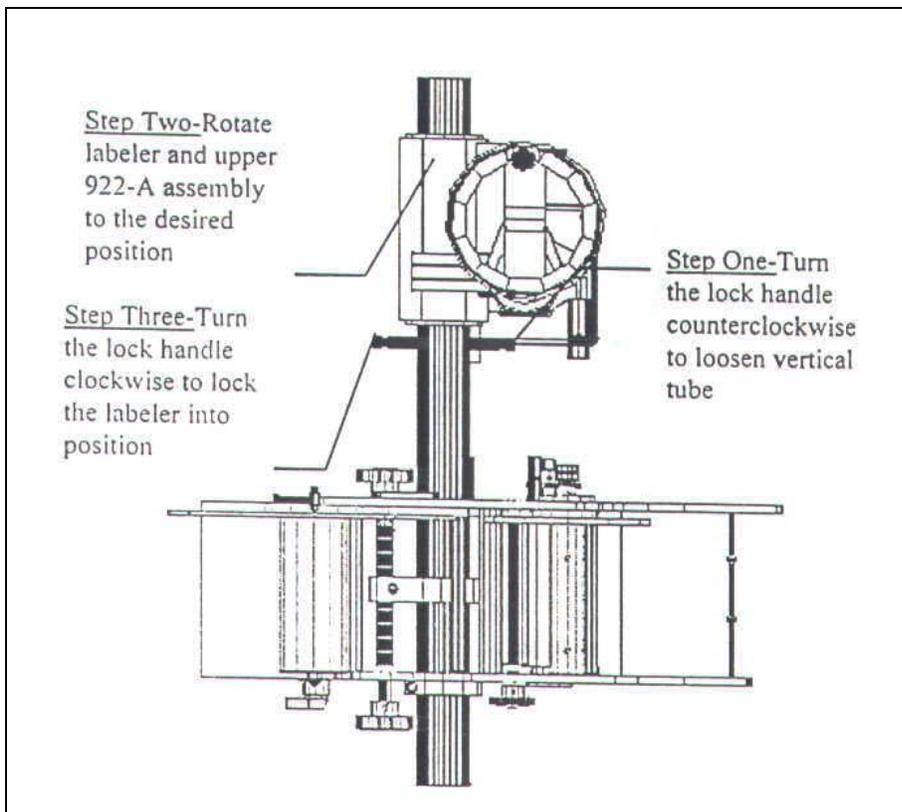
The 922 mounting supports top, bottom, or side labeling. You can adjust the labeling head to any position around both the vertical and horizontal axis. If your product size or conveyor locations changes, follow the appropriate procedure below to adjust the labeling head on the mounting.



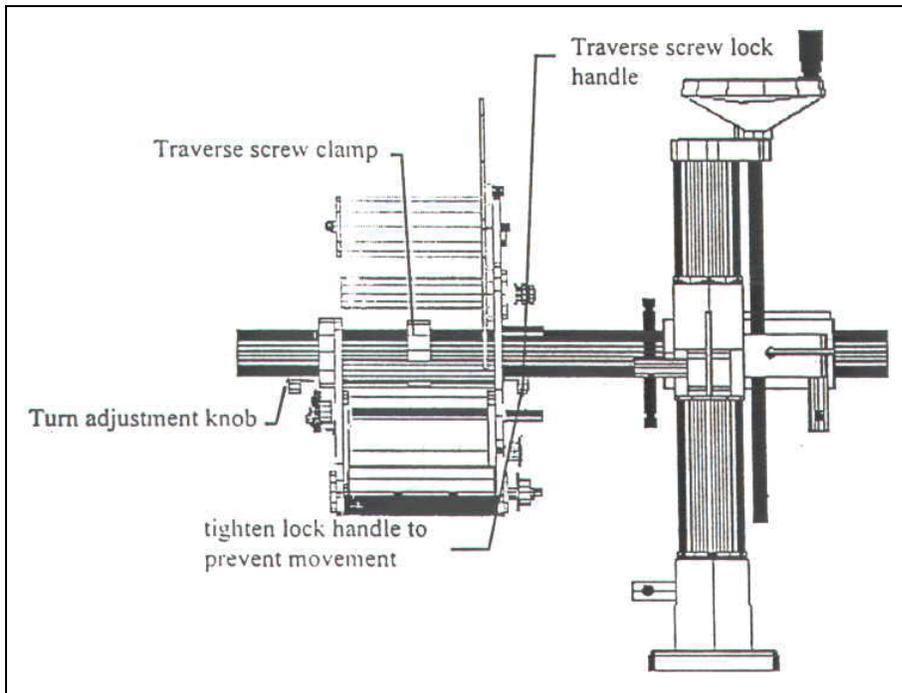
Use the above adjustment procedure to move the labeling head up or down on the vertical tube.



Use this procedure to rotate the labeling head to any angle around the cross tube.



Use the rotational adjustment procedure to rotate the labeling head to any position around the vertical axis.



Use the above procedure to move the labeling head closer to, or further from the mounting. For this procedure, none of the mounting lock levers are moved- you perform this procedure using parts of the mounting that are built into the labeling head.

924A / 925A H-Mount Floor Base & Pedestals

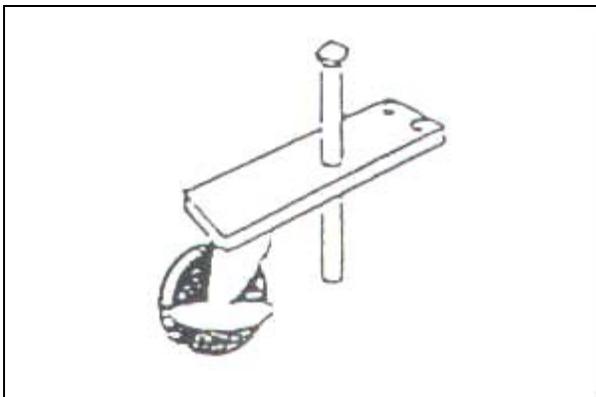


The 924A is a H-shaped base with a 20” pedestal. The 925A is a H-shaped base with a 30” pedestal. Either pedestal can be supplied with the 926 Casters and Lift Off Screw option.

To install a mounting in a pedestal, perform the following steps:

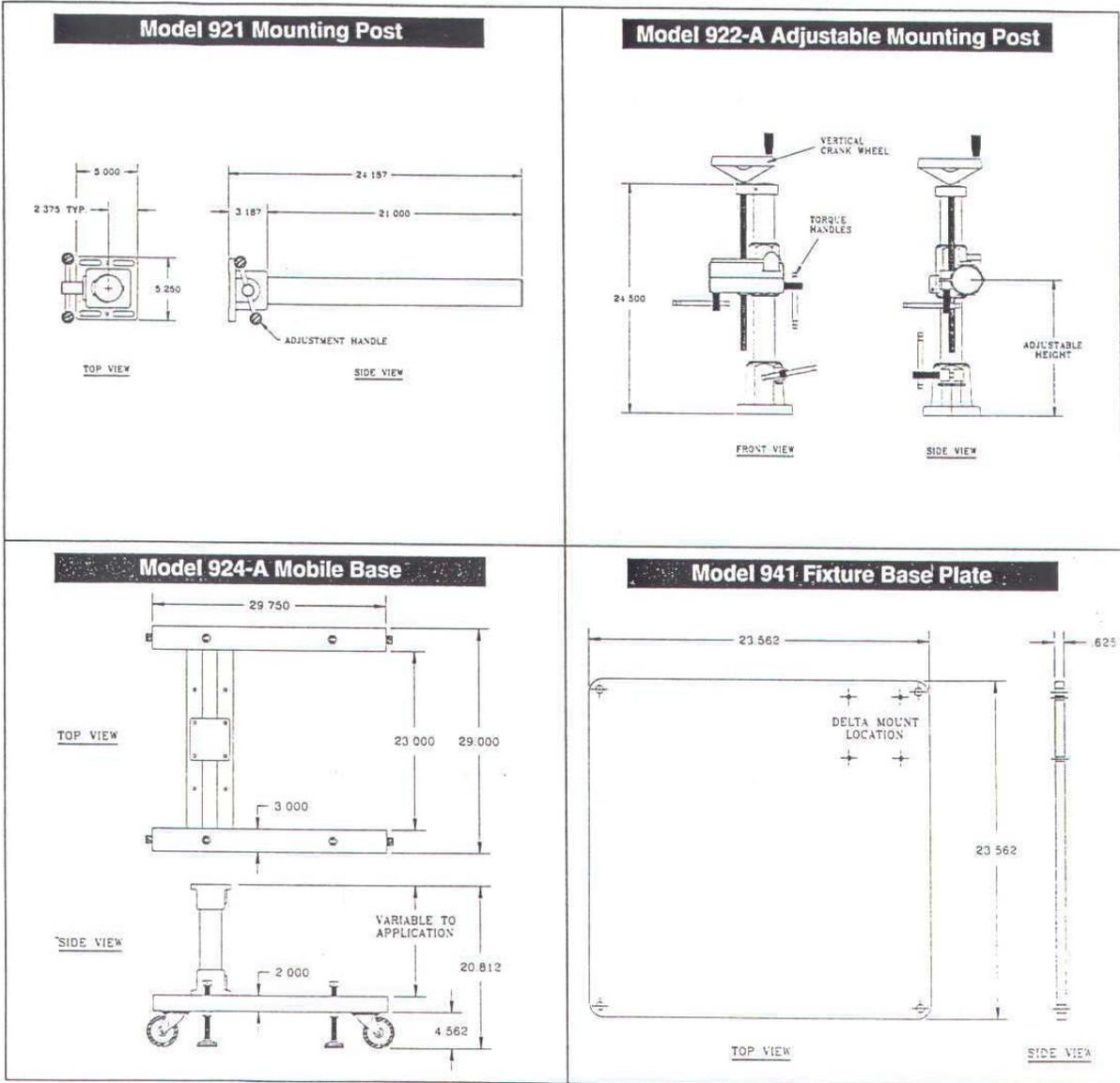
1. Loosen the clamp lock handle on the base of the 921 or 922A mounting, and remove the upright tube from the base.
2. Loosen the clamp lock handle at the top of the pedestal.
3. Insert the 921 or 922A upright tube about 3” into the mounting base at the top of the pedestal.
4. Tighten the clamp lock handle at the top of the pedestal.

926 Casters and Lift-off Screws

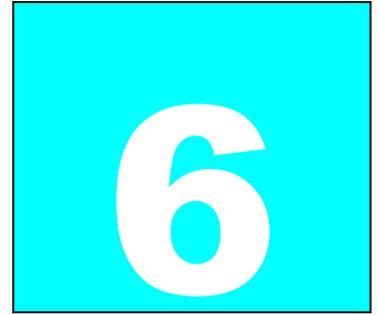


The 926 Casters and Lift-off Screws can be attached to either the 924A or 925A floor pedestal. Each of the four casters attaches by two bolts. Lift-off screws inserted through the caster mounting plates and pedestal base can be raised or lowered.

DIMENSIONAL DRAWINGS



Product Sensor

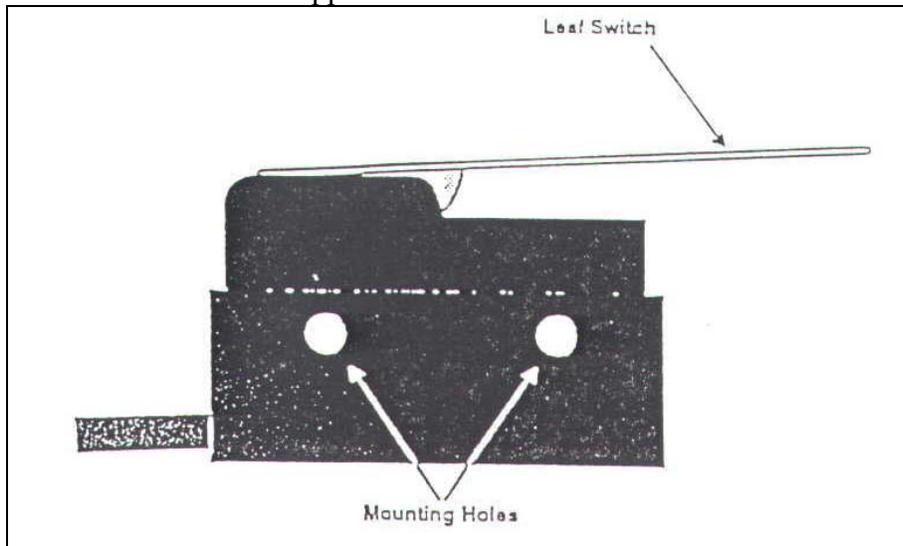


The Product Sensor determines when the labeling process is to start. It should be placed far enough in front of the labeler so that labels can be setup a head of time. Typically a non-contact photoelectric sensor is provided. Although some applications may require a mechanical contact sensor or other photocell like beam break, teach type, fiber optic, etc...

935-A Micro Switch Product Sensor

Introduction

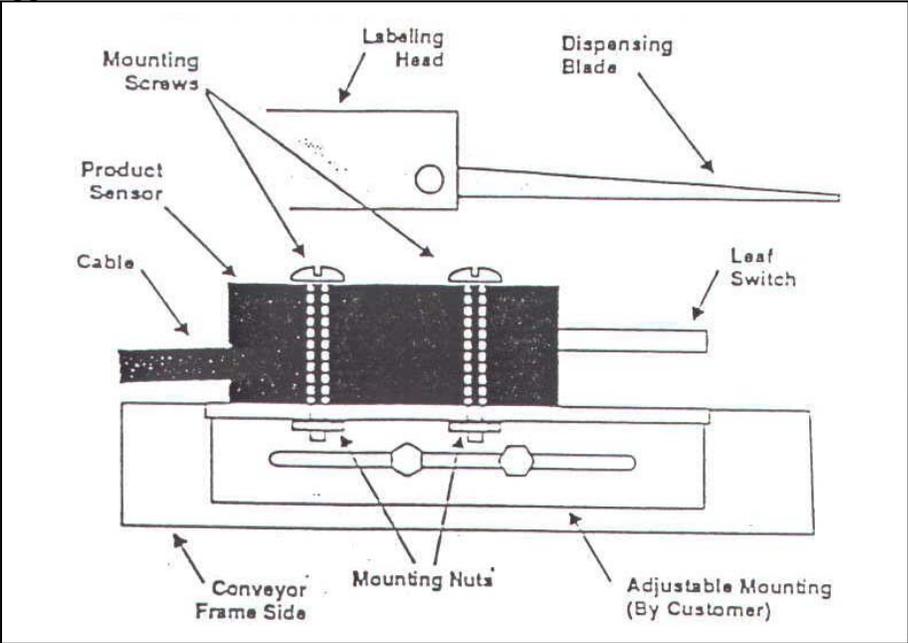
When the product sensor detects a product, it transmits a signal to the labeling head. The labeling head then signals the applicator to apply the label, and after a suitable delay dispenses the next label onto the applicator.



The 935-A electromechanical product sensor is mounted on one side of the conveyor frame, with the leaf switch protruding slightly into the path of the moving product. When a product (or any other object) presses the leaf switch, the sensor signals the labeling head.

Positioning

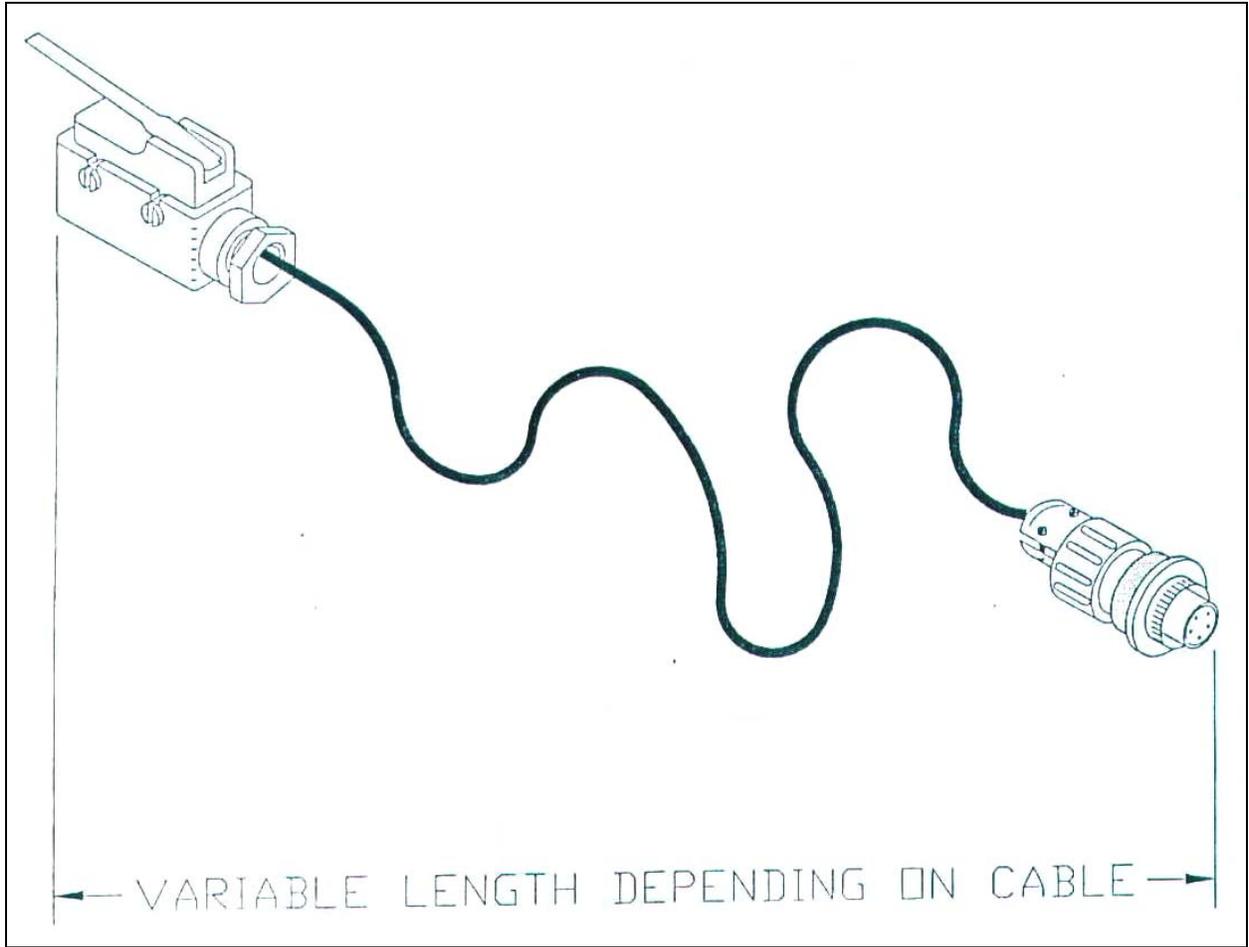
The product sensor must be positioned to the side of the conveyor path (usually on the conveyor frame) such that the moving product presses the leaf switch at the instant when you want a label applied.



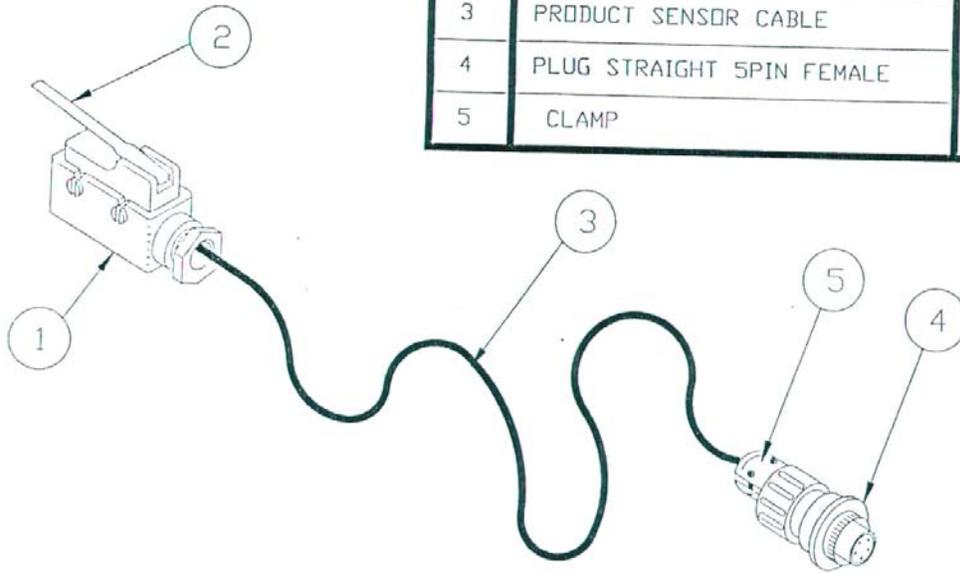
The mounting is supplied by the customer, and should have a wide enough range of adjustment to accommodate all product and label sizes that you will use. To construct an adjustable mounting for the sensor, refer to the dimensional drawings on the appropriate Data Sheet.

Adjustments & Maintenance

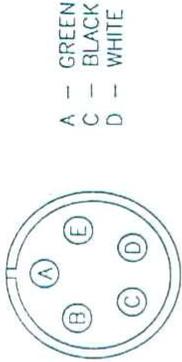
Other than positioning the sensor properly (see above), there are no adjustments for this component. No maintenance is required beyond making sure that no foreign objects become lodged between the leaf switch and the body of the sensor.



PARTS IDENTIFICATION		
NO.	DESCRIPTION OF PART	PART NUMBER
1	LIMIT SWITCH COVER GRAY	14022
2	LIMIT SWITCH BZ-2RW80-A2	14021
3	PRODUCT SENSOR CABLE	E8500-002
4	PLUG STRAIGHT 5PIN FEMALE	E8000-001
5	CLAMP	E8000-005



ZONE	REV	DESCRIPTION	DATE	BY
	X	XXXXXXXXXXXXXXXXXXXX	XXXXX	



VIEW FACING CONNECTOR

QTY	PART OR REF. PART NO.	DESCRIPTION	MATERIAL SPECIFICATION	ITEM NO.
3	E8000-096	RING TERMINAL A18-6	XXXXXXXXXXXX	14
.22	E8000-054	SHRINK TUBING BLACK 1/4	XXXXXXXXXXXX	13
.15	E8000-052	SHRINK TUBING 1/8 BLACK	XXXXXXXXXXXX	12
2	H2010-100	WASHER FLAT #6 SS	XXXXXXXXXXXX	11
2	O1134	6-32 HEX NUT MS SS (PKG 6)	XXXXXXXXXXXX	10
2	O1047	6-32 X 1 ROUND HEAD (PKG 6)	XXXXXXXXXXXX	9
3	E8500-002	CABLE 3 CONDUCTOR 18 AWG 8	XXXXXXXXXXXX	8
1	E8000-005	CLAMP W/ SCREWS 97-3057-6	XXXXXXXXXXXX	7
1	E8000-005	CLAMP W/ SCREWS 97-3057-6	XXXXXXXXXXXX	6
1	E8000-001	PLUG STRAIGHT 5 PIN FEMALE	XXXXXXXXXXXX	5
1	E8000-001	PLUG 5PIN FEMALE & CLAMP 1	XXXXXXXXXXXX	4
1	E2500-008	PRODUCT SENSOR CABLE 935-A	XXXXXXXXXXXX	3
1	14021	LIMIT SWITCH BZ-2RW80-A2	XXXXXXXXXXXX	2
1	14022	LIMIT SWITCH COVER GRAY	XXXXXXXXXXXX	1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES FRACTIONS ANGLES ± 1/64 ± 1° DECIMALS .XX ± .01 .XXX ± .001

DO NOT SCALE DRAWING

APPROVALS: EDWIN SCHALLER DATE 7-26-96

SCALE 3" = 1'-0"

CHECKED XXXXXX SIZE

FRESH XXXXXX

PROJECT XXXXXX

SHEETS 5 OF 3

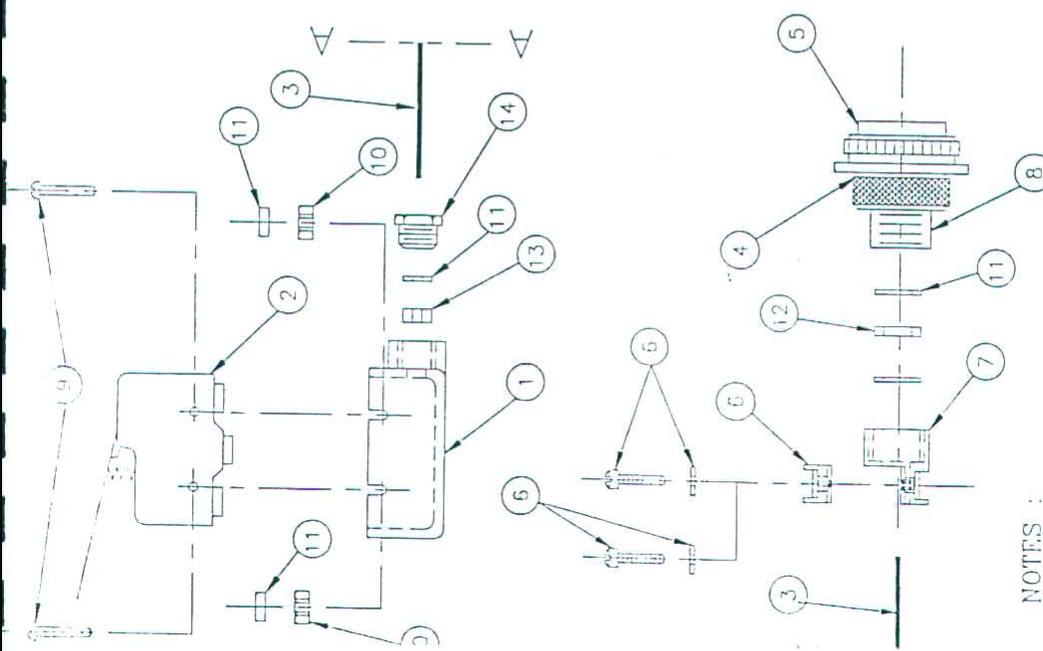
PARTS LIST

SMC STANDARD MOTION CORPORATION

935-A PRODUCT SENSOR ASSEMBLY

TRAC NO 100029

REV X

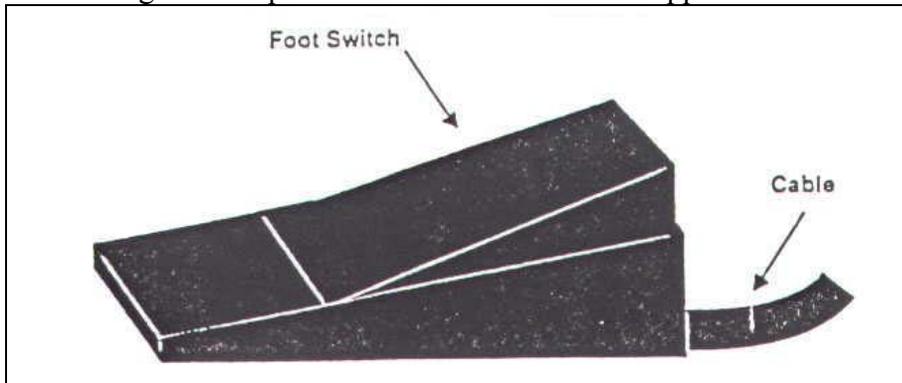


- NOTES:
- 1 - XXXXXXXX
 - 2 - XXXXXXXX

935-B Foot Switch Product Sensor

Introduction

Foot-switch product sensors are used in applications where the operator must manually position the product for labeling. After positioning the product, the operator activates the electromechanical product sensor by stepping on the foot switch. The sensor then transmits a signal to the labeling head, which signals the applicator to apply the label. After a suitable delay, the labeling head dispenses the next label onto the applicator.



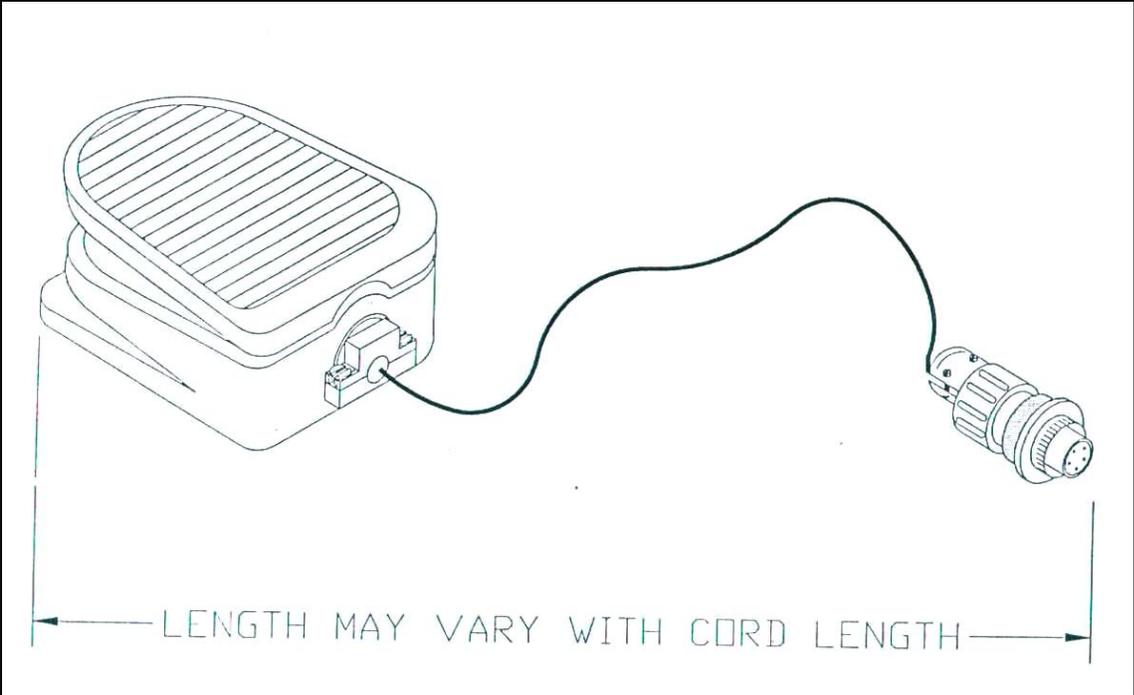
Positioning

The Foot-switch product sensor must be positioned on the floor such that it can be activated conveniently by the operator.

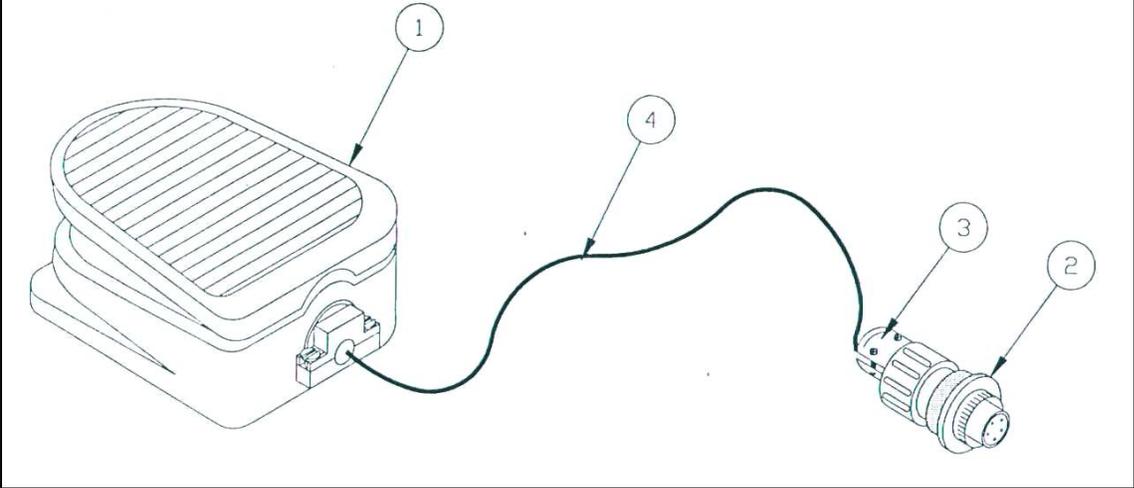
WARNING: Do not place the foot-switch sensor in any location that will cause the operator to be off-balance, or in any position where the operator must look away from moving parts (such as an applicator cylinder) to activate the sensor.

Adjustment & Maintenance

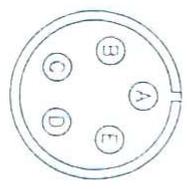
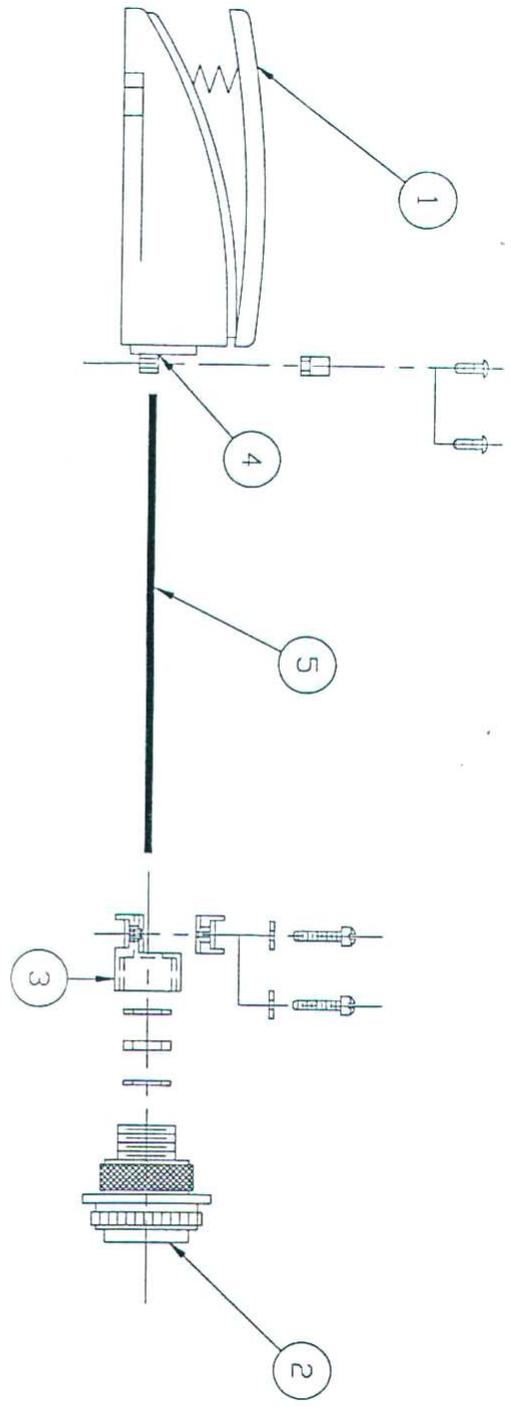
Other than positioning the sensor properly (see above), there are no adjustments for this component. No maintenance is required beyond making sure that no foreign objects become lodged in the sensor assembly.



DESCRIPTION OF PART		
NO.	DESCRIPTION OF PART	PRODUCT NUMBER
1	FOOT SWITCH	E4000-015
2	PLUG STRAIGHT 5PIN FEMALE	E8000-001
3	CLAMP	E8000-005
4	CABLE 3 CONDUCTOR SHEILDDED	E8500-006



REVISIONS			
ZONE	REV	DESCRIPTION	DATE
X		XXXXXXXXXXXXXXXXXXXXXXXXXX	XXXXXX



- A - CLEAR
- B - BLACK
- C - RED
- D - DRAIN WIRE
- E - DRAIN WIRE

VIEW FACING CONNECTOR

NOTES:

- 1 - XXXXXXXXX
- 2 - XXXXXXXXX

QTY	REQD	PART OR EQUIV. NO.	MANUFACTURER OR DESCRIPTION	MATERIAL SPECIFICATION	UNIT NO.
6		EB500-006	CABLE 2AWG 4CON 8723 8'	XXXXXXXXXXXX	5
3		EB000-097	RING TERMINAL 18RA-8	XXXXXXXXXXXX	4
1		EB000-005	CLAMP W/ SCREWS 97-3057-6	XXXXXXXXXXXX	3
1		EB000-001	PLUG STRAIGHT SPIN FEMALE	XXXXXXXXXXXX	2
1		E4000-015	FOOT SWITCH	XXXXXXXXXXXX	1

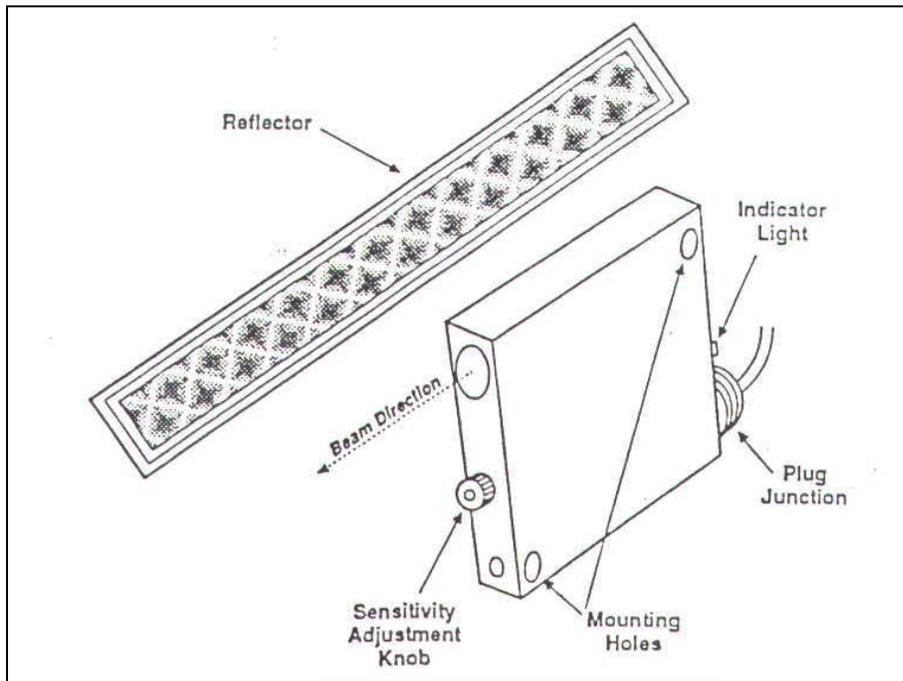
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:		APPROVALS		DATE	
FRACTIONS	MILES	DESIGNED	CHECKED	1-29-98	
± 1/64	± .1"	XXXXXXXXXX	XXXXXXXXXX		
DECIMALS		FINISH	SIZE		
XX ± .01		XXXXXXXXXX	A		
XXX ± .005		PROJECT	DWG NO.		
		XXXXXXXXXX	100032		
DO NOT SCALE DRAWING		SHEETS	X OF X		


SMC
 SYNCR0 MOTION CORPORATION
 935-B PRODUCT
 SENSOR ASSEMBLY
 OF PARTS

935-C Product Sensor

Introduction

When the product sensor detects a product, it transmits a signal to the labeling head. The labeling head then signals the applicator to apply the label, and after a suitable delay dispenses the next label onto the applicator.



The photoelectric product sensor is mounted on one side of the conveyor frame, with its associated reflector mounted on the other side. The sensor transmits a light beam across the conveyor path and onto the reflector, which reflects the beam back to the sensor. When a product (or any other object) passes between the sensor and the reflector, the sensor signals the labeling head, and the indicator light is turned on.

Positioning

The product sensor should be positioned on the conveyor frame such that the product blocks the sensor beam at the instant when you want a label applied.

Sensitivity Adjustment

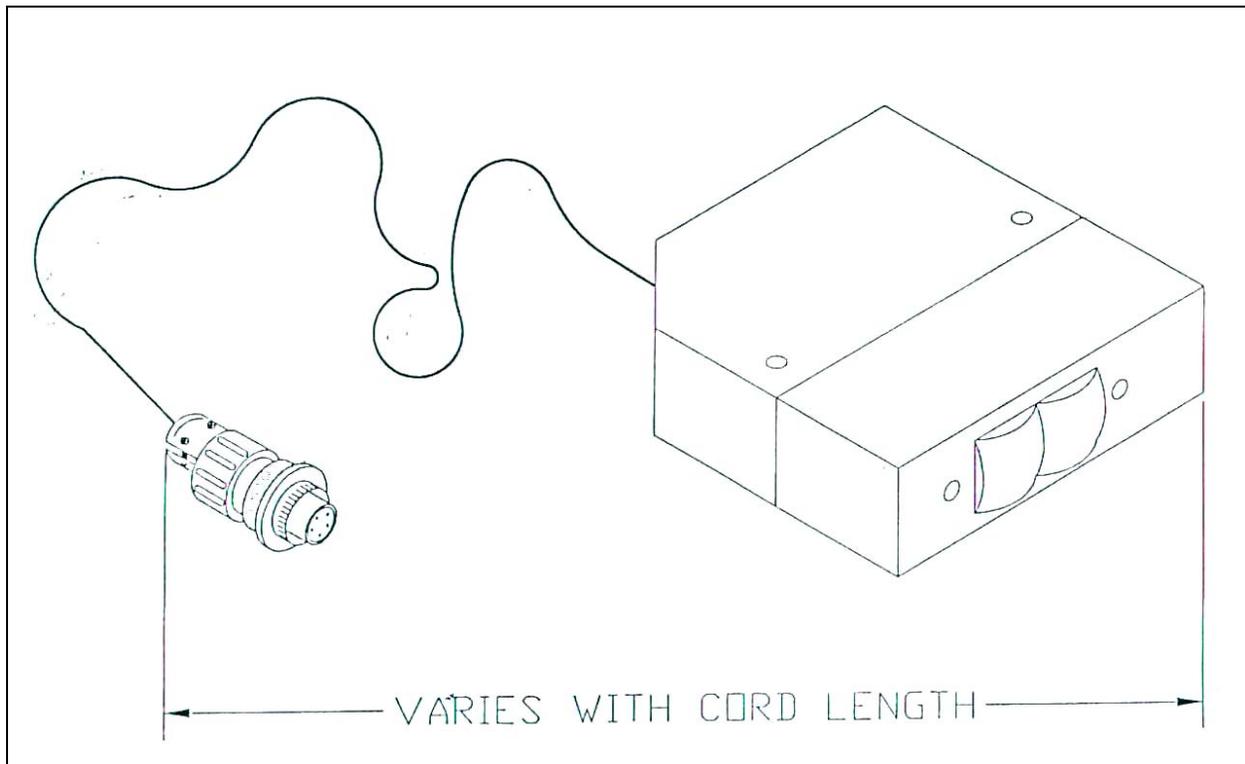
To adjust the sensitivity of the sensor, follow the procedure outlined below:

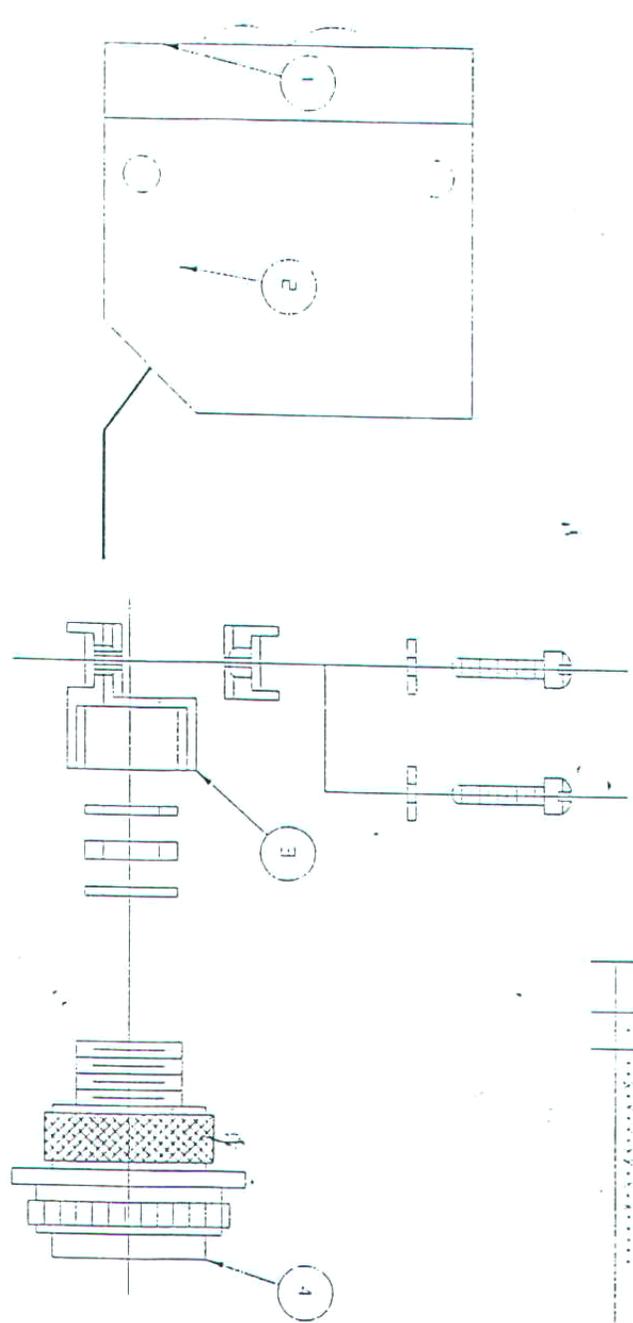
1. With the sensor viewing the reflector directly, turn the adjustment knob until the indicator light just turns OFF. Note the position of the adjustment knob.
2. Place a product in front of the beam, and turn the adjustment knob clockwise until the indicator turns ON, or to the maximum.
3. Set the sensitivity between the two points established in the first two steps above.

Troubleshooting

If a product is clear enough, a reflection can be made through the product. If this occurs, turn the sensor slightly so that the beam does not strike the reflector directly (at 90 degrees).

If a product is highly reflective and is positioned close to the sensor, the product itself may act as a reflector. When this happens, move the sensor further away from the product.





NOTES:

1. XXXXXXXX

ITEM NO.	QTY	DESCRIPTION	UNIT	REVISION
1	1	EB000-001	PLUG SPRING FEMALE	XXXXXXXXXX
1	1	EB000-005	CLAMP W/ SCREENS	XXXXXXXXXX
1	1	E2000-205	PHOTOELECT. DET.-1	XXXXXXXXXX
1	1	357/001	LENS IN BKG. TYPE M1	XXXXXXXXXX
			ASSEMBLY per description	XXXXXXXXXX

PARTS LIST	
DATE: 12-1-68	BY: [Signature]
DESIGNED BY: [Signature]	CHECKED BY: [Signature]
APPROVED BY: [Signature]	DATE: 12-1-68
PRODUCT SLUSOR 430106950-11 IMPACT	

935-E Product Sensor

Introduction

When the product sensor detects a product, it transmits a signal to the labeling head. The labeling head then signals the applicator to apply the label, and after a suitable delay dispenses the next label onto the applicator.

The 935-E photoelectric product sensor is mounted on one side of the conveyor frame, with its associated reflector mounted on the other side. The sensor transmits a light beam across the conveyor path and onto the reflector, which reflects the beam back to the sensor. When a product (or any other object) passes between the sensor and the reflector, the sensor signals the labeling head, and the indicator light is turned on.

Positioning

The product sensor should be positioned on the conveyor frame such that the product blocks the sensor beam at the instant when you want a label applied.

Sensitivity Adjustment

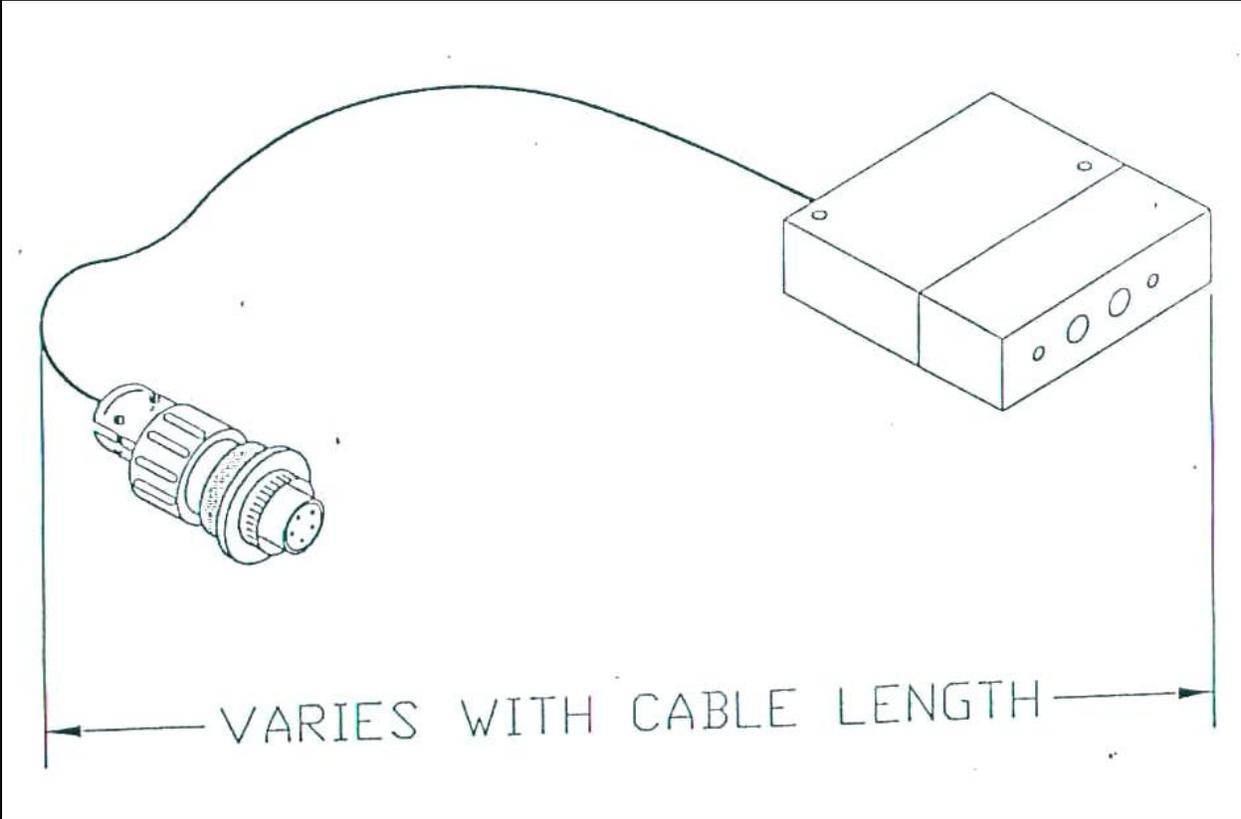
To adjust the sensitivity of the sensor, follow the procedure outlined below:

4. With the sensor viewing the reflector directly, turn the adjustment knob until the indicator light just turns OFF. Note the position of the adjustment knob.
5. Place a product in front of the beam, and turn the adjustment knob clockwise until the indicator turns ON, or to the maximum.
6. Set the sensitivity between the two points established in the first two steps above.

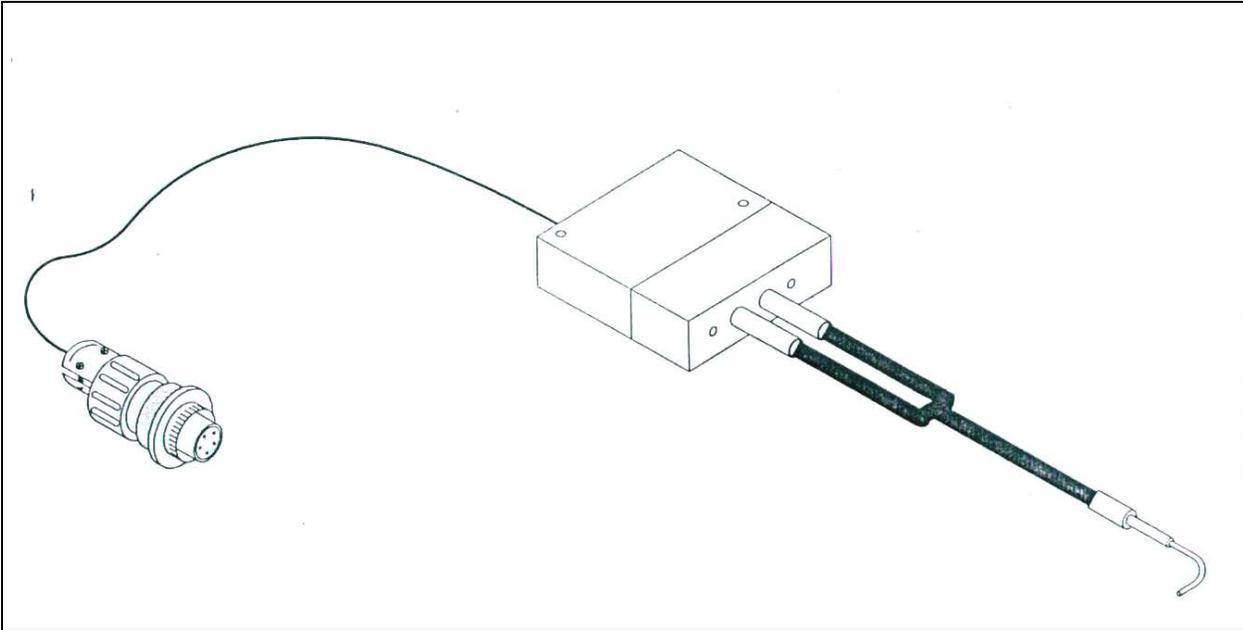
Troubleshooting

If a product is clear enough, a reflection can be made through the product. If this occurs, turn the sensor slightly so that the beam does not strike the reflector directly (at 90 degrees).

If a product is highly reflective and is positioned close to the sensor, the product itself may act as a reflector. When this happens, move the sensor further away from the product.



935-ESS Product Sensor



Additional Information



Controller Operation

Keyboard, Screen

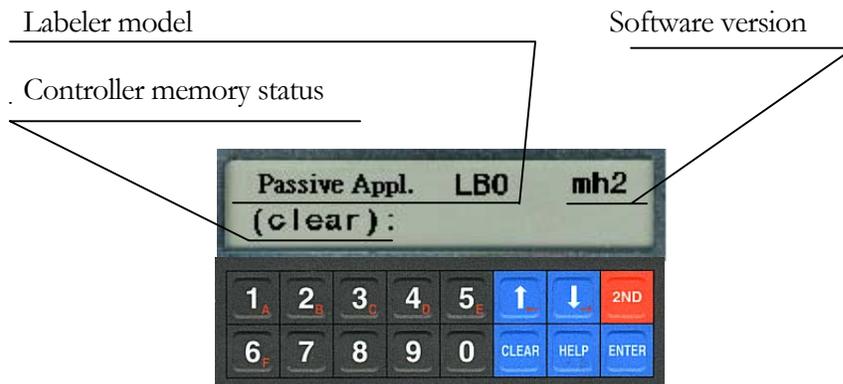
The special-function keys on the keyboard have the following uses:

- **HELP** shows the menu; **CLEAR** exits from the menu, and can be used to delete characters in the data entry screens.
- **2ND** is the “jog” key; pressing this key starts a label-cycle (see Jog below).
- The \updownarrow arrow keys move through menus and menu features.
- **ENTER** is used to complete an entry.



Power-On and Unlock

When the unit is turned on the startup screen is shown; this appears below.



If locked or clear appears on the memory status line unit parameters must be adjusted before labeling will occur.

To unlock the unit, enter the factory code **5863434** followed by **ENTER** — except if the **Unlock code** feature has been used to change the code.

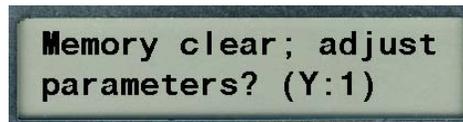
READY

If memory wasn't cleared, or after setting cleared parameters, the normal unit display will appear showing the labeler is ready to operate.



Memory Clear

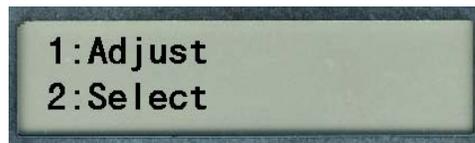
Once the labeler is unlocked, it will usually show the *READY* legend. If instead the *Memory clear* message appears, the unit memory is clear and labeling parameters should be set by pressing the **1** key to enter the parameter section; see **ADJUST** menu, next chapter. Typically all parameter values for your particular labeler installation should be written down in the back of this manual or optionally on a decal somewhere within labeler vicinity of the labeler and those values should be entered at this point; see **Adjust** below.



Using Help Menu

Features

In normal operation, the labeler is simply turned-on and products are moved past its sensor equipment and the labeler responds by applying a label. To adjust system behavior including important labeler parameters, the **Help Menu** must be accessed with the **HELP** key. The unit then displays a list of numbered features, one of which may be selected by pressing the number or letter next to it. The entire menu can't be seen at once, so use the arrow keys to move through it. It is not necessary to move in this way to an entry, it can be selected any time by pressing its associated number.



HELP shows the menu; **CLEAR** exits from the menu, and can be used to delete characters in features. To exit the help menu, press **ENTER, HELP,** or **CLEAR.**

The following text describes each of the features in the help menu by name. The special-function keys on the keyboard have the following uses:

How Help Menu Features Work

Selecting a typical feature will produce a prompt and a number, like *Feature value: 0*. To change the number, use the arrow keys, or press number keys. The system will automatically prevent values too large or small from being entered. When the desired value is set, press **ENTER**. Many features adjust timing and are set in milliseconds; 1,000 milliseconds equal one second. Several features use a similar arrangement, but only permit 0 or 1 as values, to control an *on/off* or *yes/no* labeler function. 1 is *on* or *yes*, 0 is *off* or *no*. **Record all settings values on the chart in the back of this manual.**

Help Menu Feature 1: Adjust

The most important feature on the help menu is **Adjust**, which allows control of labeler parameters. Selecting the feature produces another menu just like the help menu, which is used in the same way and has the following entries. Note that some or all of these features will vary depending on the selected unit (see **Help Menu Feature 2: Select**) and/or software version.

- Product Delay controls the time from product detection to start of labeler activity; default setting is 250 milliseconds or 1/4 second.
- Label Overfeed is the time from label sensor detect until label motor stop. A photoelectric sensor positions the label and stops when the label has moved to the right location. The hardware is deliberately designed so that the sensor detects the label too early so it can be fine tuned with this parameter.
- Hold-Off controls the minimum time from the end of a labeling cycle to the beginning of the next cycle; this default value is 0.

Help Menu Feature 2: Select

Choosing this menu item will simply display *Not Implemented*.

Help Menu Feature 3: Language

The feature determines the language in which the Label Controller menus and other informative screens will be displayed. Pressing the arrow keys will “scroll” to show more of it. Then press the desired number.

Allows selection 1. ENG, 2. ITAL, 3. DEUT, 4. FRAN, 5. ESPA, 6. DUTC, 7. PORT

Available languages are English, Italian, German, French, Spanish, Dutch and Portuguese.

Help Menu Feature 4: Net

Some labeler units can operate within a Loveshaw Corp network, allowing control of multiple units from a central computer. In such networks each unit must have a unique identifying number, which can be set in this feature.

This feature is disabled if set to zero. If set to 1 thru 32 a special network using RS-422 may be possible. This selection changes from the normal RS-232 point to point communications to a network Board. The optional Labels program is required. Labels is a Windows program that runs on PC computers.

Help Menu Feature 5: Speed

This feature sets the feed rate of the label so that it matches the conveyor speed. It is entered in Inches per minute. If the rate is too slow the label might tear or drag/pull off the box and if set too fast the label will crinkle.



Help Menu Feature 6: Unlock code

The default unlock code **5863434** can be altered with this feature. Note that once it is altered if the new code is forgotten Loveshaw Corp cannot retrieve it and the unit will have to be cleared for features to be accessible again.

Help Menu Feature 7: Other

This menu contains factory setting specific to your application. **Do not alter the settings in this menu unless directed by Loveshaw Corp.**

Other Control Functions

666 Memory Clear

To clear all memory in the labeler — if for instance, the unlock code has been altered and then lost — turn the unit off, press and hold the number **6**, turn the unit on, wait about a second, release the **6**, then press **6, 6**, followed

by **CLEAR, HELP**, and the down arrow key ↓; if any error is made in pressing the keys, the memory clear does not occur.

Jog
Normal
Operation;
Memory
Clear
Failures

It is often desirable to cause the labeler hardware to execute a cycle without actual product processing; this is called a Jog. The **2ND** key starts a jog cycle.

The labeler will normally display the *READY* legend at power-on. When the labeler receives a product signal or the Jog control is used (see above) label cycling will occur and informative messages will appear describing the stages of the cycle.

If, however, memory is clear and parameters have not been adjusted; i.e. if **0** instead of **1** is pressed at power-on in answer to the *Memory clear; adjust parameters?* question, then subsequently whenever the unit should start a cycle, it will instead produce the memory clear prompt all over again. It is easy to exit this prompt without actually adjusting parameters. Pressing **1** followed by **ENTER** will leave parameters in a nominal default state, and during installation could cause equipment malfunction.

LS600 Labeler Sequence of Operation

1. After the power is turned on the operator turns the Jog button. This causes a label to be dispensed. At this time the air assist solenoid will be energized. This provides a stream of air to assist the label onto the applicator pad and turns off the vacuum. In the standard control, the motor will be a Sperior Electric Slo-Syn motor.
2. The motor will run until the label sensor signals the controller to stop. The label sensor will detect the lead edge of the next label. Another timer provides cycle adjustment from 0 msec to 500 msec. This allows for a slight overfeed of the label on the dispense blade.
3. After a label has been dispensed the product sensor is enabled. When a product signal is detected the dwell timer will start (This can be adjusted for a range of 0 msec to 500 msec). This timer allows for ease in placing a product sensor, so that a label is properly dispensed. In some installations, it may be necessary to interlock the product signal with another photo eye or a signal from a PLC or Controller.
4. When the product sensor dwell time has timed out, the applicator timer will start (This can be adjusted from 0 msec to 3 sec). During this time cycle the output to the applicator solenoid will be energized.
5. After the applicator timer has timed out, the solenoid will deenergize and the cylinder will return to the home position. Another timer called the Label Lockout Timer (This can be adjusted for 0 msec to 3 sec). The function of this timer is to hold off a label feed signal until the timer has timed out. The applicator home sensor resets (or bypass) this timer. (Not all installations require a applicator home sensor.
6. A label feed will not occur.

LS800 Labeler Sequence of Operation

1. Upon power up the printer is enabled. (This is done by pulling the Print start signal to ground). If there is data in the print buffer and the printer is on line it will print this label. At this time the air assist solenoid will be energized. This provides a stream of air to assist the label onto the applicator pad and turns on the vacuum. Then the printer ready signal is provided by the printer.

2. After a label has been printed, the product sensor is enabled. When a product signal is detected the dwell timer will start (This can be adjusted for a range of 0 msec to 500 msec).

In some installations, it may be necessary

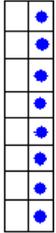
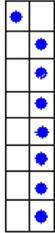
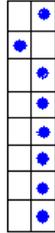
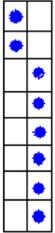
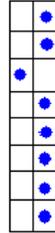
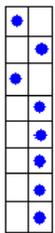
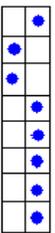
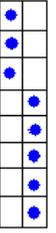
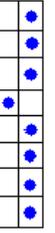
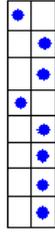
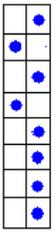
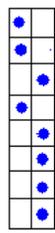
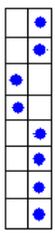
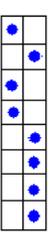
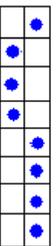
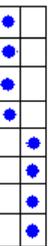
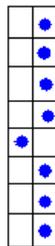
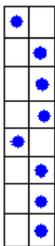
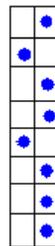
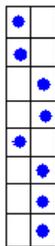
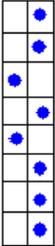
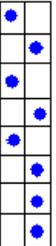
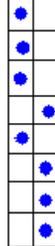
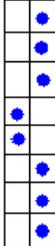
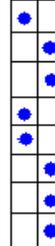
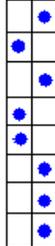
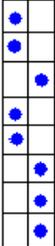
to interlock the product signal with another photo eye or a signal from a PLC or Controller.

3. When the product sensor dwell time has timed out, the applicator timer will start (This can be adjusted from 0 msec to 3 sec). During this time cycle the output to the applicator solenoid will be energized.

4. After the applicator timer has timed out, the solenoid will deenergize and the cylinder will return to the home position. Another timer called the Label Lockout Timer (This can be adjusted for 0 msec to 3 sec). The function of this timer is to hold off a label feed signal until the timer has timed out. The applicator home sensor resets (or bypass) this timer. (Not all installations require a applicator home sensor.)

5. A signal will then enable the printer. If data is present the printer will print and feed a label and the controller will wait for the next product signal.

DIP SWITCH S2

APPLY ONLY 0	APPLY/PRINT(S) 1	PASSIVE APPL 2	DUAL APPL(S) (PH11) 3	CORNER WRAP(S) (PH11) 4	TAMP & BLOW COND. END CYCLE 5 (PH10)	PASSIVEPRINT 6
						
TAMP & BLOW(S) 7	DUAL (Z) 8	DUAL NO PRINT 9	SERIAL APPL(Z) 10	SERIAL DUAL(Z) 11	PRINT/APPLY (S) 12	IR AP/PR(Z) 13
						
IR AO 14	DUAL DISP/A AO 15	CORNER (Z) 16	APPLY/PRINT(Z) 17	PRINT/APPLY(Z) 18	IRAPPLY/PRINT(S) 19	IRPRINT/APPLY(S) 20
						
IRPRINT/APPLY(Z) 21	SERIAL APPLY(S) 22	SERIAL DUAL(S) 23	DUAL A/DISP AO 24	TRIPLE (Z) 25	TRIPLE(S) 26	TAMP & BLOW(Z) 27
						

ANY OTHER SWITCH SETTING GIVES SELECTION MENU
(Z) Zebra (S) Sato

Dip Setting 0 Apply Only

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-9000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 250(0-10000) – time delay of before label moves.
- 4 LabelOverfeed 10(0-10000) – time from label sensor detect until label motor stop.
- 5 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 WebBreak 0(Y:1) – setting for enable/disable of web break feature.

Dip Setting 1 Apply / Print(Sato)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-9000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 100(0-10000) – time stopping the printing of a label.
- 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 5 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 SolenoidSignal 0(Y:1) – wait for stop solenoid signal I9 flag wrap around

Dip Setting 2 Passive Applicator

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 LabelOverfeed 10(0-10000) – time from label sensor detect until label motor stop.
- 3 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 4 WebBreak 0(Y:1) – setting for enable/disable of web break feature.

Dip Setting 3 Dual Applicator

- 1 ProductDelay 250(0-10000) – delay after product detection to start of first label activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the first label.
- 3 ProductDelay2 250(0-10000) – delay start of second label activity.
- 4 ApplSolenoid2 200(0-20000) – time to hold air on solenoid which applies the second label.
- 5 LLTD_LabelDelay 250(0-10000) – time delay of before label moves.
- 6 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.

Dip Setting 4 Corner Wrap (Sato Print/Apply)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 250(0-10000) – time delay of before label moves.

Dip Setting 5 Tamp and Blow

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 250(0-10000) – time delay of before label moves.
- 4 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 5 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 6 WebBreak 0(Y:1) – setting for enable/disable of web break feature.

Dip Setting 6 Passive Print

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 LLTD_LabelDelay 0(0-10000) – time stopping the printing of a label.

Dip Setting 7 Tamp and Blow Print (Sato)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 100(0-10000) – time delay of before label moves.
- 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 5 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 SolenoidSignal 0(Y:1) – wait for stop solenoid signal I9 flag wrap around

Dip Setting 8 Dual Zebra

- 1 ProductDelay 250(0-10000) – delay after product detection to start of first label activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the first label.
- 3 ProductDelay2 250(0-10000) – delay start of second label activity.
- 4 ApplSolenoid2 200(0-20000) – time to hold air on solenoid which applies the second label.
- 5 LLTD_LabelDelay 0(0-10000) – time delay of before label moves.

Dip Setting 9 Dual No Print

- 1 ProductDelay 250(0-10000) – delay after product detection to start of first label activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the first label.
- 3 ProductDelay2 250(0-10000) – delay start of second label activity.
- 4 ApplSolenoid2 200(0-20000) – time to hold air on solenoid which applies the second label.
- 5 LLTD_LabelDelay 0(0-10000) – time delay of before label moves.

Dip Setting 10 Serial Appl(Zebra)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-9000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 100(0-10000) – time delay of before label moves.
- 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 5 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 SolenoidSignal 0(Y:1) – wait for stop solenoid signal I9 flag wrap around

Dip Setting 11 Serial Dual (Zebra)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of first label activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the first label.
- 3 ProductDelay2 250(0-10000) – delay start of second label activity.
- 4 ApplSolenoid2 200(0-20000) – time to hold air on solenoid which applies the second label.
- 5 LLTD_LabelDelay 0(0-10000) – time delay of before label moves.

Dip Setting 12 Print / Apply(Sato)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-9000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 100(0-10000) – time stopping the printing of a label.
- 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 5 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 SolenoidSignal 0(Y:1) – wait for stop solenoid signal I9 flag wrap around

Dip Setting 13 Irregular Apply / Print (Zebra)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 3 PrinterDelay 0(0-10000) – delays the start of printing.
- 4 ApplSolenoid 5000(0-20000) – time to hold air on solenoid which applies the label.
- 5 LLTD_LabelDelay 250(0-10000) – time delay of before label moves.
- 6 ContactDwell 0(0-500)- delays the Applicator return cycle after pressure sensor.

Dip Setting 14 Irregular Apply Only

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 3 PrinterDelay 0(0-10000) – delays the start of printing.
- 4 LLTD_LabelDelay 250(0-10000) – time delay of before label moves.
- 5 WebBreak 0(Y:1) – setting for enable/disable of web break feature.
- 6 LabelOverfeed 10(0-10000) – time from label sensor detect until label motor stop.
- 7 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 8 ApplSolenoid 5000(0-20000) – time to hold air on solenoid which applies the label.
- 9 ContactDwell 0(0-500)- delays the Applicator return cycle after pressure sensor.

Dip Setting 15 Dual Applicator – Dispense/Apply Apply Only

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-9000) – time to hold air on solenoid which applies the label.
- 3 ProductDelay2 250(0-10000) – delay start of second label activity.
- 4 ApplSolenoid2 200(0-20000) – time to hold air on solenoid which applies the second label.
- 5 WebBreak 0(Y:1) – setting for enable/disable of web break feature.
- 6 LLTD_LabelDelay 0(0-10000) – time delay of before label moves.
- 7 LabelOverfeed 10(0-10000) – time from label sensor detect until label motor stop.
- 8 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 9 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.

Dip Setting 16 Corner Wrap (Zebra Print/Apply)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 0(0-10000) – time delay of before label moves.

Dip Setting 17 Apply / Print (Zebra)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-9000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 100(0-10000) – time stopping the printing of a label.
- 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 5 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 SolenoidSignal 0(Y:1) – wait for stop solenoid signal I9 flag wrap around

Dip Setting 18 Print / Apply (Zebra)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-9000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 100(0-10000) – time stopping the printing of a label.
- 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 5 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 SolenoidSignal 0(Y:1) – wait for stop solenoid signal I9 flag wrap around

Dip Setting 19 Irregular Apply / Print (Sato)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 5000(0-20000) – time to hold air on solenoid which applies the label.
- 3 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 4 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 5 PrinterDelay 0(0-10000) – delays the start of printing.
- 6 LLTD_LabelDelay 250(0-10000) – time delay of before label moves.
- 7 ContactDwell 0(0-500)- delays the Applicator return cycle after pressure sensor.

Dip Setting 20 Irregular Print/Apply (Sato)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 5000(0-20000) – time to hold air on solenoid which applies the label.
- 3 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 4 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 5 PrinterDelay 0(0-10000) – delays the start of printing.
- 6 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 7 ALTD 0(0-10000) – Applicator Lockout Time Delay -Delays the applicator after End of Print.
- 8 ContactDwell 0(0-500)- delays the Applicator return cycle after pressure sensor.

Dip Setting 21 Irregular Print/Apply (Zebra)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 5000(0-20000) – time to hold air on solenoid which applies the label.
- 3 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 4 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 5 PrinterDelay 0(0-10000) – delays the start of printing.
- 6 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 7 ALTD 0(0-10000) – Applicator Lockout Time Delay -Delays the applicator after End of Print.
- 8 ContactDwell 0(0-500)- delays the Applicator return cycle after pressure sensor.

Dip Setting 22 Serial Appl(Sato)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-9000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 100(0-10000) – time delay of before label moves.
- 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 5 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 SolenoidSignal 0(Y:1) – wait for stop solenoid signal I9 flag wrap around

Dip Setting 23 Serial Dual (Sato)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of first label activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the first label.
- 3 ProductDelay2 250(0-10000) – delay start of second label activity.
- 4 ApplSolenoid2 200(0-20000) – time to hold air on solenoid which applies the second label.
- 5 LLTD_LabelDelay 0(0-10000) – time delay of before label moves.

Dip Setting 24 Dual Applicator – Apply/Dispense Apply Only

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-9000) – time to hold air on solenoid which applies the label.
- 3 ProductDelay2 250(0-10000) – delay start of second label activity.
- 4 ApplSolenoid2 200(0-20000) – time to hold air on solenoid which applies the second label.
- 5 WebBreak 0(Y:1) – setting for enable/disable of web break feature.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 LLTD_LabelDelay 0(0-10000) – time delay of before label moves.
- 8 LabelOverfeed 10(0-10000) – time from label sensor detect until label motor stop.
- 9 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.

Dip Setting 25 Triple Zebra – Dual Applicator Apply Print

- 1 ProductDelay 250(0-10000) – delay after product detection to start of first label activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the first label.
- 3 ProductDelay2 250(0-10000) – delay start of second label activity.
- 4 ApplSolenoid2 200(0-20000) – time to hold air on solenoid which applies the second label.
- 5 LLTD_LabelDelay 250(0-10000) – time delay of before label moves.
- 6 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.

Dip Setting 26 Triple Sato – Dual Applicator Apply Print

- 1 ProductDelay 250(0-10000) – delay after product detection to start of first label activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the first label.
- 3 ProductDelay2 250(0-10000) – delay start of second label activity.
- 4 ApplSolenoid2 200(0-20000) – time to hold air on solenoid which applies the second label.
- 5 LLTD_LabelDelay 250(0-10000) – time delay of before label moves.
- 6 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.

Dip Setting 27 Tamp and Blow Print (Zebra)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 100(0-10000) – time delay of before label moves.
- 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 5 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 SolenoidSignal 0(Y:1) – wait for stop solenoid signal I9 flag wrap around

1 Adjust

- 2 Select – allows switching unit type when switch is set.
- 3 Language – select menus in different languages.
- 4 Net # - RS422/RS485 ID number used for network communication.
- 5 Speed – stepper motor run speed in inches per minute.
- 6 Unlock Code – allows the access code to be changed.

7 Other

- 1 Continuous Label – when ON:1 provides for continuous application of labels as long product detect is triggered.
- 2 Encoder Delay – same as continuous label except encoder instead of product delay used to start next cycle.
- 3 Feet/minute – converts from inches per minute.
- 4 Gear Ratio – ratio of the size of the motor gear to the drive gear.
- 5 Diameter – diameter of the motor gear.

Controller Hardware Notes

The Label Controller is a 7" Width 6½" Depth 5½" Height enclosure with a twist front piece. When installed it has a metal cover that protects it and the motor. This controller includes a 2 by 20 character display and 2 x 8 button keypad for data entry. This controller interfaces the Print Trigger Devices, solenoids, and other sensors to signal the Stepper Motor or Printer to apply labels to the product.

Overview

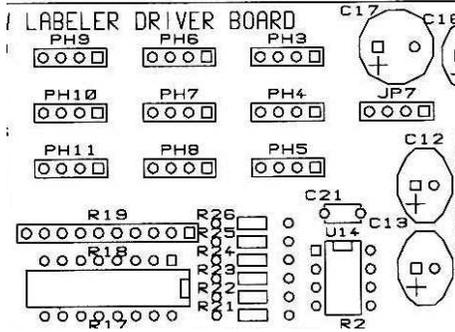
Parts include:



- a) MicroJet Controller Board — is the CPU of the package it provides the user with memory and control to the other subsystems.
- b) Driver Board — connects to the controller board to provided inputs from sensors and outputs for the Motor AC Board/Stepper Board.
- c) The Motor AC and Stepper Board include the voltage power supplies, relays and motor/solenoid controls. These boards provide LED for a visual indication of the motor and solenoids. Two types of motors are available. The AC stepper motor is used with the Motor AC board and DC stepper motor is used with the Stepper board. The power supply on this board has two fuses for the DC circuitry. A 3Amp fuse for the logic and an 8Amp for the stepper motor/relays (depending on the choice of motor the current draw is 3Amp to 7Amp).

- d) A Keypad and LCD screen provide user-friendly interface. Both of these items are on a twistable plate.
- e) A power cord is plugged into a CORCOM. The CORCOM is selectable for 110/220. The AC Stepper Motor is voltage specific either 110 or 220/240 VAC. The Stepper Board uses DC Stepper Motor and can allow for any voltage settings. Two 3Amp fuses are used in the CORCOM.
- f) An RS-232 port is selected standard but included is a jumper changeable to an RS-422 network.

External Inputs



- JP7 — Label Sensor Analog
- PH3 — Label Sensor Digital
- PH4 — Motor Lock-Out
- PH5 — Stop Solenoid
- PH6 — Inhibit Solenoid
- PH7 — Product Sensor
- PH9__ Low Label Input

Product Sensor			Label Sensor		
	9 Pin D	JP7		9 Pin D	PH7
+12 VDC	6	1	+12VDC	6	1
signal NO	3	2	signal	3	2
signal NC	2	3	output	2	3
ground	5	4	ground	5	4

To use switch from the standard Analog sensor to the Digital with built-in amplifier remove U14 and use PH3.

The 3 tower Stack Indicator Lamp Port

Male 9D connector

- 3 Red Alarm
- 4 Yellow Alarm
- 5 Green Alarm
- 8 +12V DC

Inside controller

- 3 yellow wire RED label out, Web Break, printer error
- 4 black wire YELLOW label low, ribbon Low
- 5 red wire GREEN ok
- 8 brown wire +12VDC



RELAY connector

- 1 (No Wire) +12V but maybe +21V
- 2 -----
- 3 (White pin 9)
- 4 (Black pin 4) label low, ribbon Low (AMBER LIGHT)
- 5 -----
- 6 (Red pin 5) OK (GREEN LIGHT)
- 7 (Yellow pin 3) label out, Web Break, printer error (RED LIGHT)
- 8 (White) Ground

NOTE: WebBreak 0(Y:1) – Software setting for enable/disable of web break feature based on time.

When active pin 3, 4, 5 are pulled to ground, this will turn ON a 12 volt light or 12 volt relay.

Interconnect Cables Between The PC And The Label Controllers.

Default setup is RS-232. RS-232 connection is a point-to-point connection where only one COM port may be connected to one Label Controller. A maximum cable length is 300 feet using Braided Shield Extended Quite Cable.

DB9	DB25	Label Controller DB9
2 (RXD)	3 (TXD)	2 (TX)
3 (TXD)	2 (RXD)	3 (RX)
5 (GND)	7 (GND)	5 (Ground)
Shield	Shield	Shield

Some RS-232 boards have different pin-outs, review hardware provided documentation. If RS-232 is used only one unit can be connected to a Windows computer using multitasking. Only one Label Controller can be connected to one RS-232 system at one time. If more units have to be connected or if the cable length is longer than 300 feet, RS-422 must be used. RS-422 allows for up to 32 Label Controller units to be connected to each COM port.

RS-422 connection is a multi drop connection. The PC is the master and the Label Controllers are the slaves to it. A maximum cable length is 1000 feet.

From Master (PC)	to Slave (Labeler)
TXD(PC) (H or +) to RXD	(H or +) TXD(PC) (L or -) to RXD (L or -)
RXD(PC) (H or +) to TXD	(H or +) RXD(PC) (L or -) to TXD (L or -)
Ground(PC) to Ground(Labeler)	pin 5 Shield(PC) to Shield(Labeler)

All units have RS-422; the second Interface connector is used to loop more than one controller. Switching from RS-232 to RS-422 requires a cable and jumper change. RS-232 connection is on the right internal driver board RS2 labeled RS-232. On the Left is RS7 labeled RS-422. Change this ribbon cable connection. It is selected by 3rd pin of RS6 from the two right pins to the two left pins. The last unit must only have pull up resistors on it therefore remove RS4 and RS5 jumper if not the last unit. The cable is specified below.

Pin	Signal Name	Type Labeler Controller Signals
1	RS485 TX-	Output
2	RS485 RX+	Input
3	RS485 RX-	Input
5	DC Ground	Ground
9	RS485 TX+	Output

Each RS485 board has different pin-outs, review the documentation provided by the board manufacturer. The provided RS485 board may or may not require terminator resistor or jumper change. Each Label Controller unit to next Label Controller unit is:

- 1 — 1 (TX-) 2 — 2 (RX+)
- 3 — 3 (RX-) 5 — 5 (Grounds)
- 9 — 9 (TX+) Shield to Shield

These Label Controller units are slaved to the PC master computer and have all their signals connected to each other.

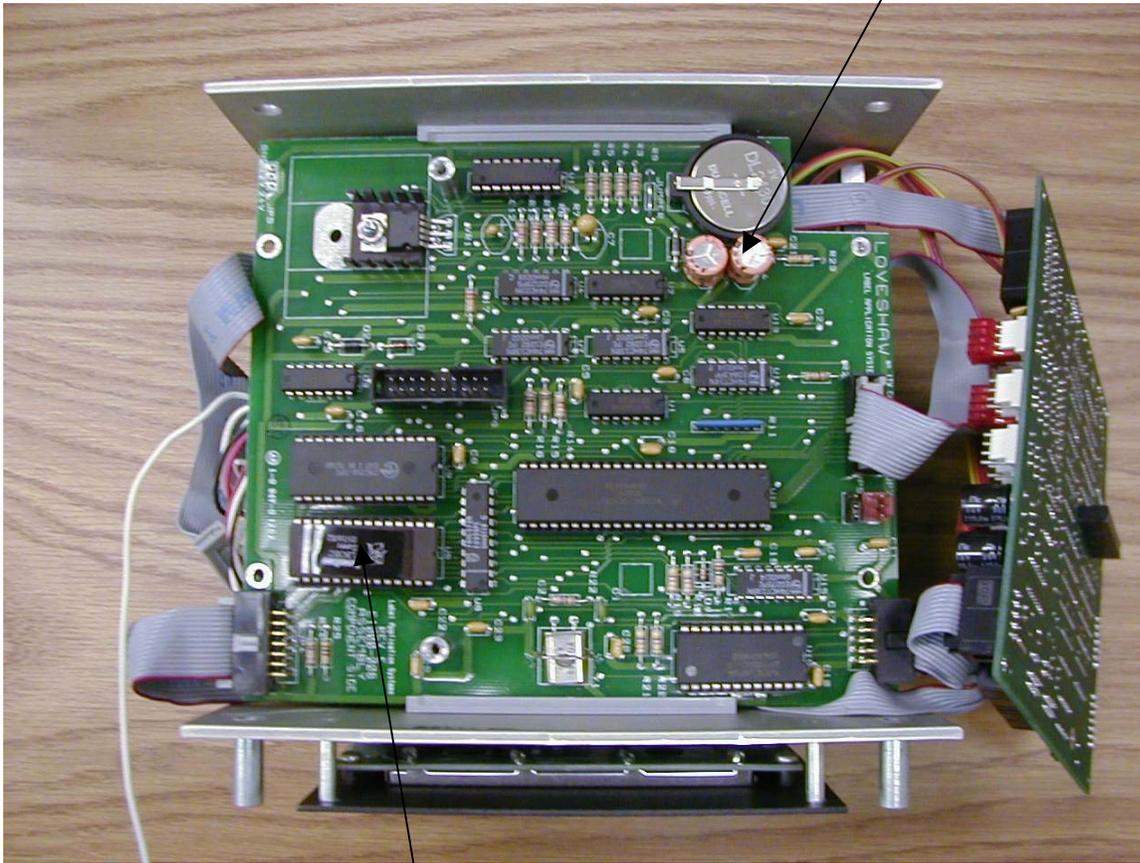
Miscellaneous Notes

Each unit must have a unique Net #. To give the unit a net ID number see **Help Menu** in the preceding chapter. To setup PC computer see Loveshaw Corp *Net RS-232 & RS-485 Setup for Label Controller HR & SI Systems*. For additional information also see the *Label Controller Technical Manual*.

Battery Replacement

Caution, Risk of explosion if battery is replaced by an incorrect type.
Dispose of used batteries according to the instructions.

3 Volt Lithium Battery
Part Number CPMD75-009-0



U9 EPROM

Note where pin 1 is located and insure all pins are correctly in socket.

LITHIUM BATTERY WARNING

CAUTION! This product contains a lithium battery. There is danger of explosion if battery is incorrectly replaced. Replace only with a Duracell DL2430 or equivalent. Make sure the battery is installed with the correct polarity. Discard used batteries according to manufacturer's instructions.

ADVARSEL! Lithiumbatteri - Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt (Duracell DL2430) av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.

ADVARSEL! Lithiumbatteri - Eksplosjonsfare ved feilagtig håndtering. Utskiftning må kun ske med batteri av samme fabrikk (Duracell DL2430) at og type. Levér det brukte batteri tilbake til leverandøren.

VAROITUS! Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin (Duracell DL2430). Hävitä käytetty paristovalmistajan ohjeiden mukaisesti.

WARNING! Explosionsfar vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ (Duracell DL2430) som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

ATTENTION! Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type (Duracell DL2430) ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

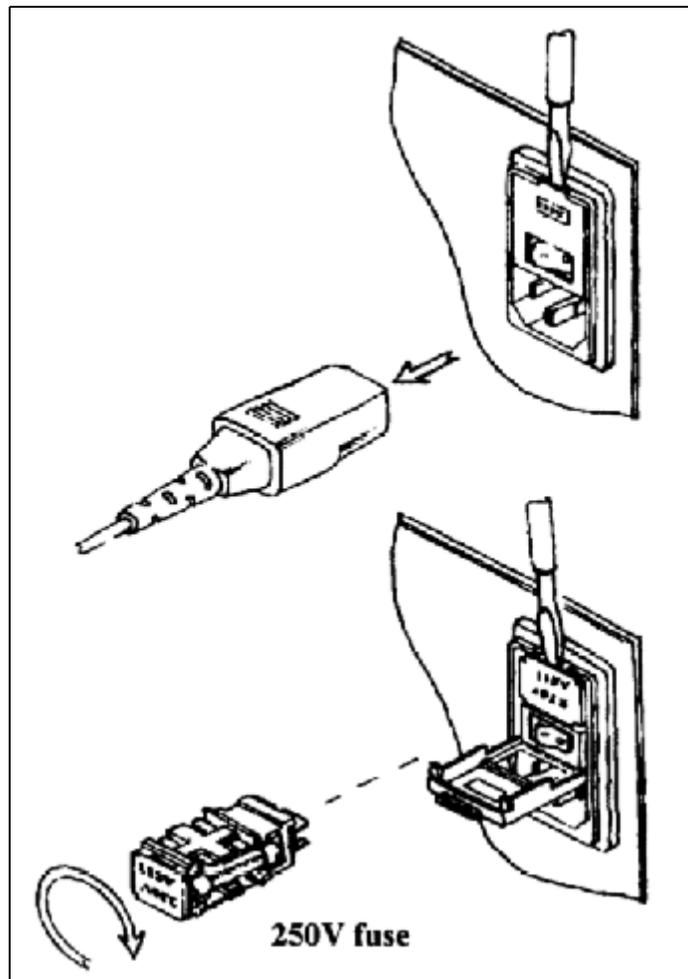


CORCOM

To insure proper operating conditions use dedicated AC drops. Do not use extensions. Use Line Conditioners or UPS to protect against surges, noise, and spikes.

Note: Before plugging in the power cord, ensure the power switch is in the OFF position (Press the 0 on the ON/OFF switch). The ON/OFF switch is located the Power Entry Module on the rear of the Labeler controller.

CAUTION: Double Pole/Neutral Fusing.

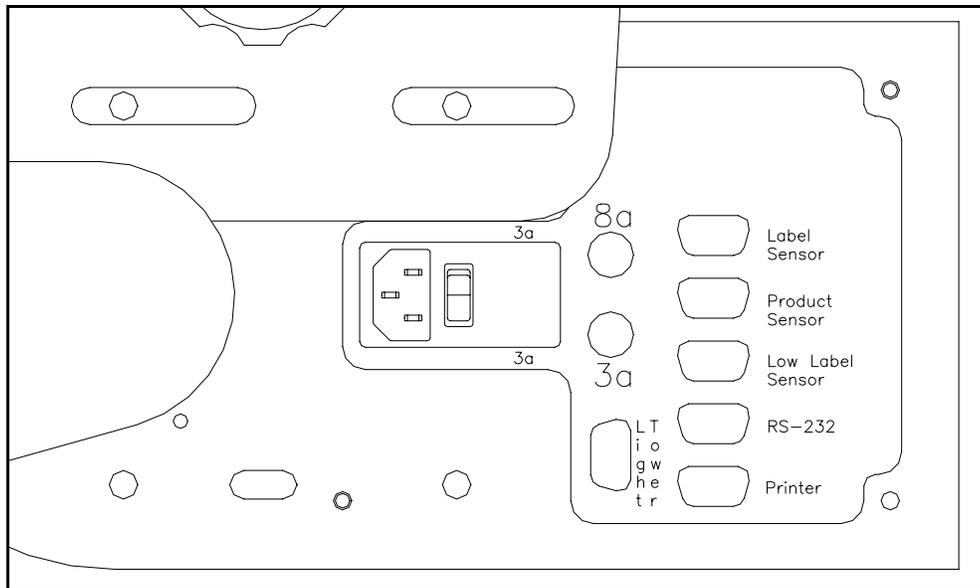


Socket- outlet shall be installed near the equipment and shall be easily accessible.



CORCOM Assembly

Use flat blade screwdriver to expose two 3 Amp fuses and voltage selector.



Maintenance

Daily:

Ensure that the product sensor and label sensor is free of debris. Gently wipe away any dust build up on the lens to ensure reliable product and label sensing.

Peel Blade: Ensure that no adhesive residue is built up on the peel blade. Simply remove and adhesive with Alcohol as required.

Rewind Spindle: Remove excess backing paper as required. Too much backing paper could interfere with proper rewinding and label dispensing.

Note: All bushings are oil-lite and do not require lubrication.

Parts List

*** - Denotes a recommended spare part**

Specifications:

Machine Dimensions:

Length: 46-3/8" (1178 mm)

Width: 18-3/4" (476 mm)

Height: 24-3/16" (614 mm)

Weight: 100 lbs. (45 kg)

Label Dimensions:

Width: 1" – 5-1/4" (25.4 – 133.35 mm)

Length: 1/2" – 14" (12.7 – 355.6 mm)

Label Roll Requirements:

Finish: Pressure sensitive die cut

With 1/8" (3.17 mm) gap

Outside Diameter: 11-7/8" (301.6 mm)

15-7/8" (403.2 mm) optional

Core Diameter: 3" (76.2 mm)

[4" (101.6 mm) for labels over 6" (152.4 mm) long]

6" (152.4 mm) optional

Electrical

115-230 volts; 50/60 cycles; 5 Amps

Air

60 PSI at .5 CFM while dispensing

Imprinter

See Manual provided by Printer Manufacture.

Warranty

Little David® Warranty
For: LABELING SYSTEMS

1 YEAR WARRANTY

(EXCEPT FOR MOVING PARTS WHICH ARE SUBJECT TO NORMAL WEAR, TEAR AND REPLACEMENT WHICH ARE WARRANTED ONLY TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP).

ABOVE WARRANTY EXCLUDES CUSTOMERS SELECTED OEM THERMAL TRANSFER PRINTER OR MATERIAL HANDLING SYSTEM. PRINTER AND/OR CONVEYOR WARRANTY AVAILABLE UNDER SEPARATE COVER.

*LIMITED WARRANTY – *LOVESHAW*, an *ITW* COMPANY (HEREIN AFTER “*LOVESHAW*”)

WARRANTS ONLY THAT THE GOODS SOLD BY IT SHALL BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP, UNDER PROPER AND NORMAL USE AND MAINTENANCE,

AS FOLLOWS:

THE WARRANTY PERIOD SHALL COMMENCE AS OF THE DATE OF DELIVERY TO THE PURCHASER. THE OBLIGATION OF *LOVESHAW* UNDER THIS WARRANTY IS STRICTLY LIMITED TO THE COST OF REPAIRING OR REPLACING, AS *LOVESHAW* MAY ELECT, ANY PART OR PARTS THAT PROVE IN *LOVESHAW*'S JUDGEMENT TO HAVE BEEN DEFECTIVE IN MATERIAL OR WORKMANSHIP AT THE TIME THE GOODS WERE SHIPPED FROM *LOVESHAW*'S PLANT. ANY WARRANTY CLAIM NOT MADE IN WRITING TO *LOVESHAW* AT ITS HOME OFFICE WITHIN THE APPLICABLE WARRANTY PERIOD AND WITHIN 10 DAYS OF FAILURE WILL NOT BE VALID. THIS IS THE SOLE AND EXCLUSIVE REMEDY AVAILABLE UNDER THIS WARRANTY. UNDER NO CIRCUMSTANCES WILL *LOVESHAW* BE LIABLE FOR INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES.

IF REQUESTED BY *LOVESHAW*, PURCHASER SHALL RETURN ANY DEFECTIVE PART OR PARTS TO *LOVESHAW*'S PLANT, FREIGHT PREPAID. ALL WARRANTY PART REPLACEMENTS AND REPAIRS MUST BE MADE BY *LOVESHAW* OR A *LOVESHAW* DEALER AUTHORIZED TO HANDLE THE GOODS COVERED BY THIS WARRANTY. ANY OUTSIDE WORK OR ALTERATIONS DONE WITHOUT *LOVESHAW*'S PRIOR WRITTEN APPROVAL WILL RENDER THIS WARRANTY VOID. *LOVESHAW*, an *ITW* COMPANY WILL NOT ASSUME ANY EXPENSE OR LIABILITY FOR ANY REPAIRS MADE TO ITS GOODS OUTSIDE ITS WORKS WITHOUT ITS PRIOR WRITTEN CONSENT. THIS WARRANTY SHALL NOT APPLY TO ANY ITEM THAT HAS NOT BEEN USED, OPERATED, AND MAINTAINED IN ACCORDANCE WITH *LOVESHAW*'S RECOMMENDED PROCEDURES. *LOVESHAW* SHALL HAVE NO LIABILITY WHATSOEVER WHERE THE GOODS HAVE BEEN ALTERED, MISUSED, ABUSED OR INVOLVED IN AN ACCIDENT.

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LOVESHAW

an *ITW* Company
2206 Easton Turnpike, PO. Box 83
SOUTH CANAAN, PA 18459
570.937.4921 - 800.572.3434 - FAX 570.937.3229