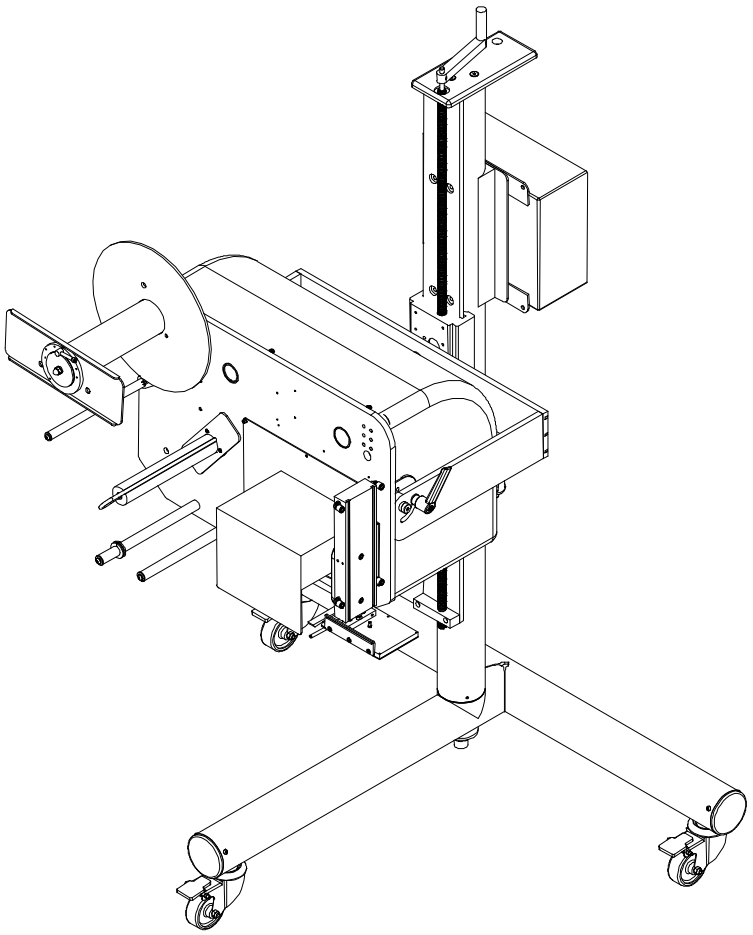
LOVESHAW
an ITW Company

Little David™ Label Application System

LX80 / 800 Series Print and Apply Labeling System



Version: 01C

Operator's Manual

LITTLE DAVID™ LABEL APPLICATION SYSTEM

Labeler Operation

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Chapter 1

Introduction

ICON KEY

Important information

Thank you for purchasing the newest Little David™ labeler, the LX80/LX800. The LX8 series of print and apply labelers is the introductory level labeler 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 long machine life. After reading this manual you will know how to perform the following functions,

- How to position 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 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.

Chapter 2

Operating Safety

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 AGC 1/2A are of type: 250V, 1/2 Amp, Fast Blow.**

Fuses marked MDA 1/2A are of type: 250V, 1/2 Amp, Slow Blow.

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.

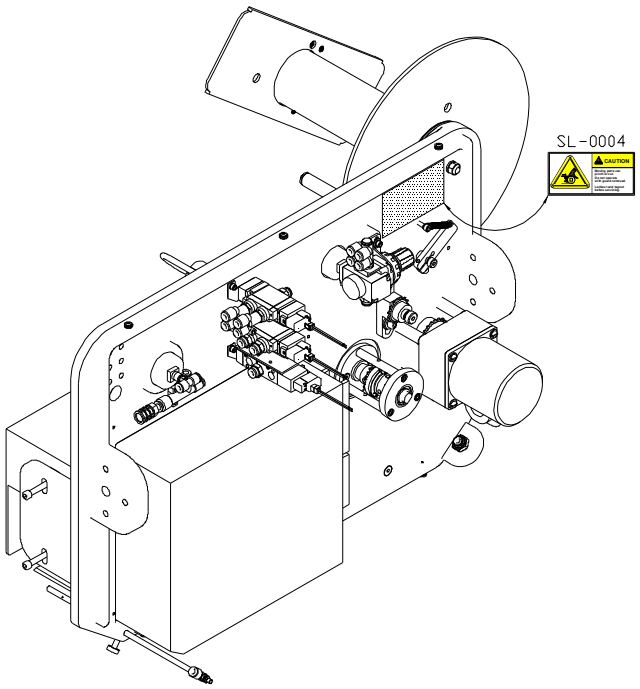
Caution: Potential Machine Damage

Caution: **Do not install the system in direct sunlight.**

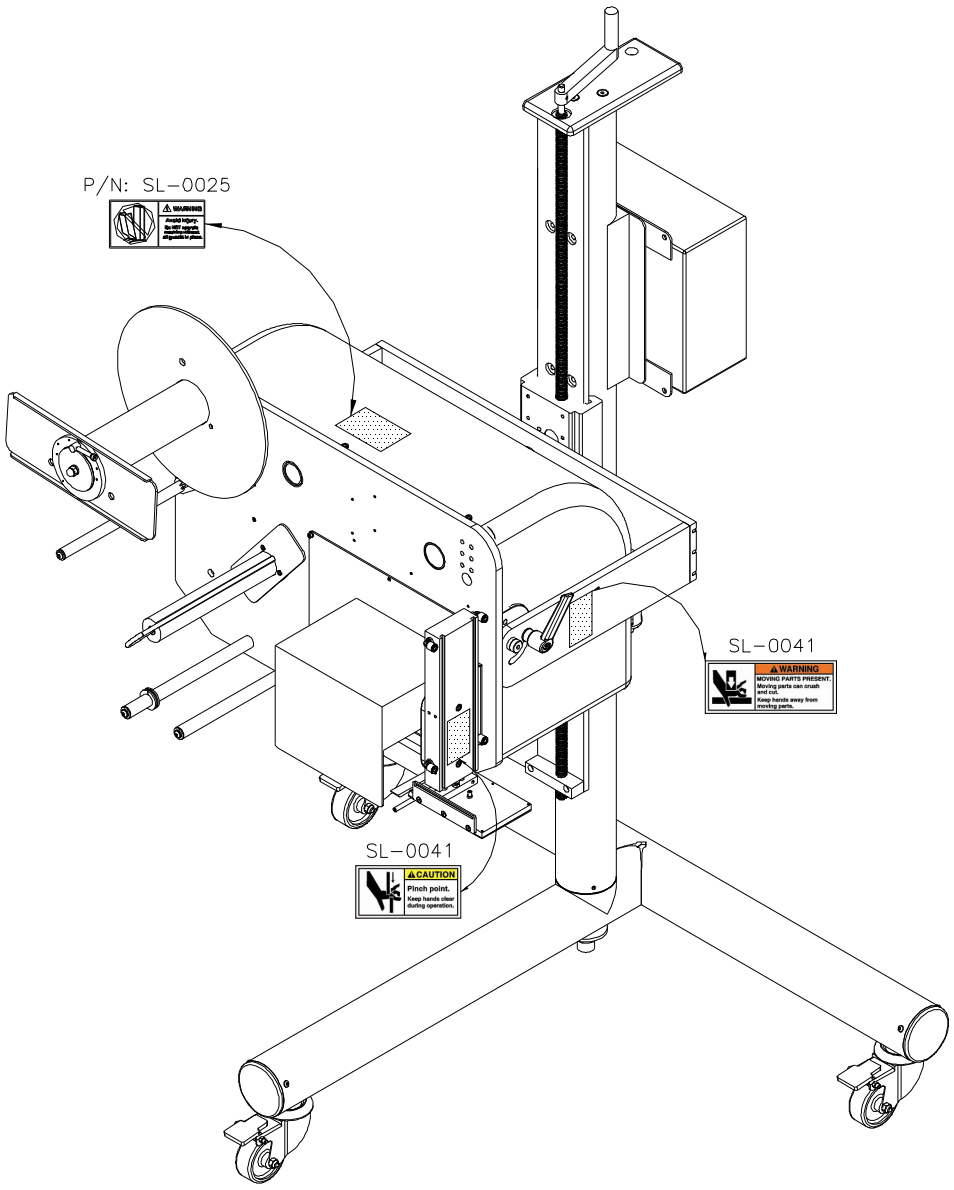
Caution: **Do not install the system near a heater or heat emitting equipment.**

Caution: **Provide and use proper electrical power.**

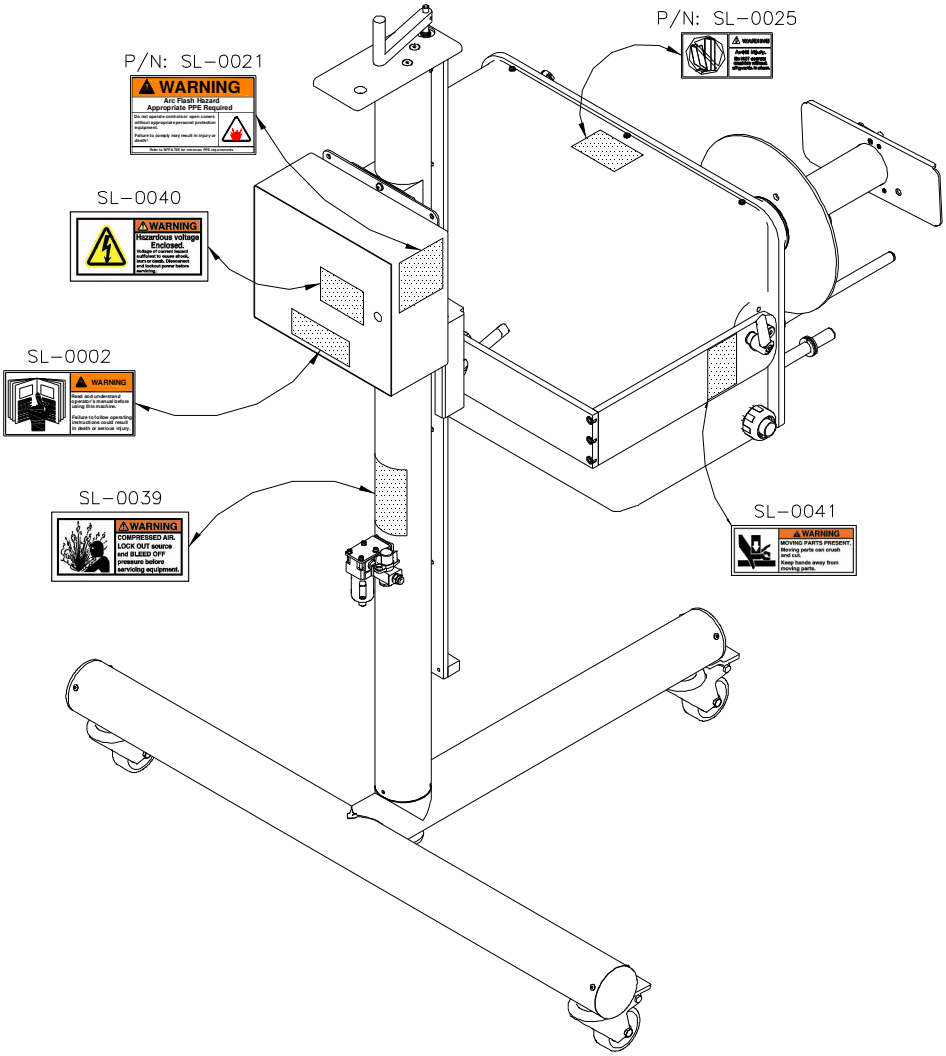
Caution: **Do not operate, maintain, or otherwise use the system, except as described in this manual.**



Safety Decal Locations



Safety Decal Locations



Safety Decal Locations

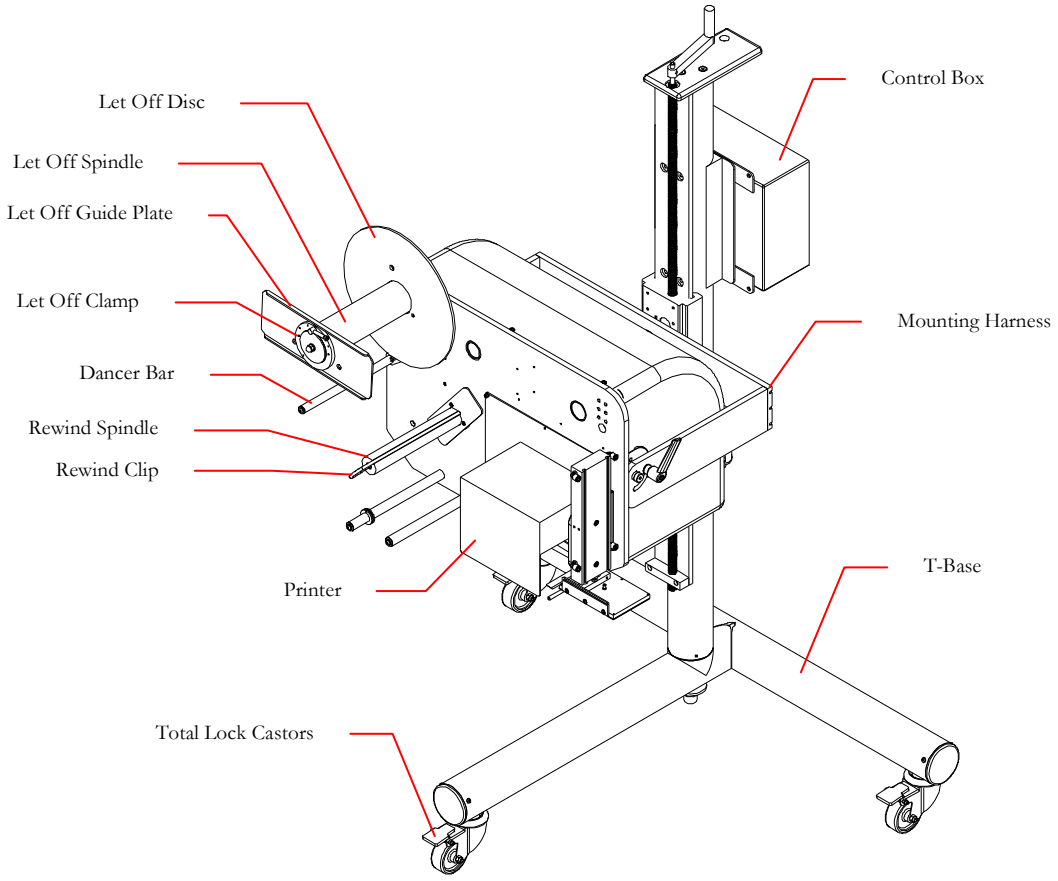
Chapter

3

Labeler Sections

Overview

This manual covers several parts of the machine. The following diagram identifies the key sections of the machine.



Chapter

4

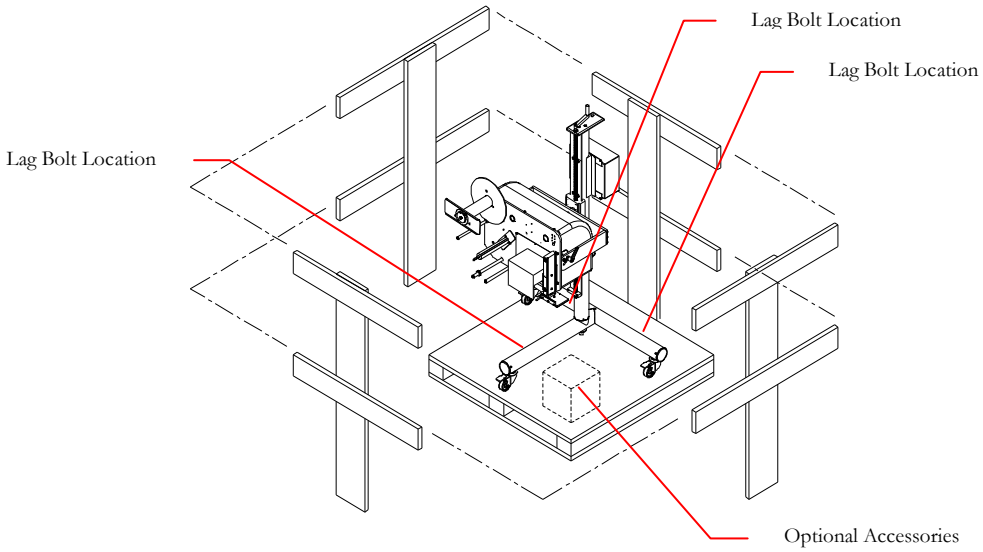
Installation and Threading

Always check for any signs that the machine may have been damaged before fully removing it from the shipping skid.

Section 1: Placing the Machine

The labeler comes fully assembled and already on the mounting stand. The Plant Manager at your facility might have already determined a pre-arranged location for the labeler. If no pre-arranged location exists following the steps below will help determine the ideal spot.

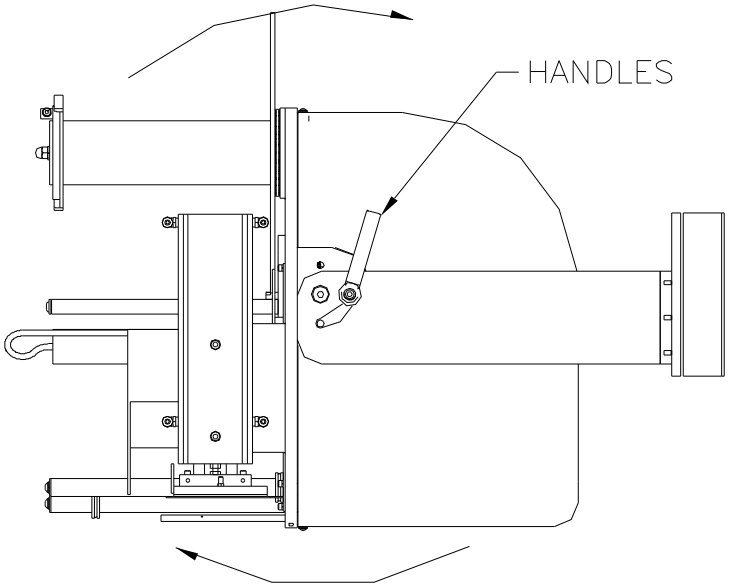
Step One: Carefully remove all of the items in the shipping box and skid. There are three lag bolts fastening the labeler to the base of the skid. While the machine is fully assembled, certain options such as software or spare parts kits may be packaged separately.



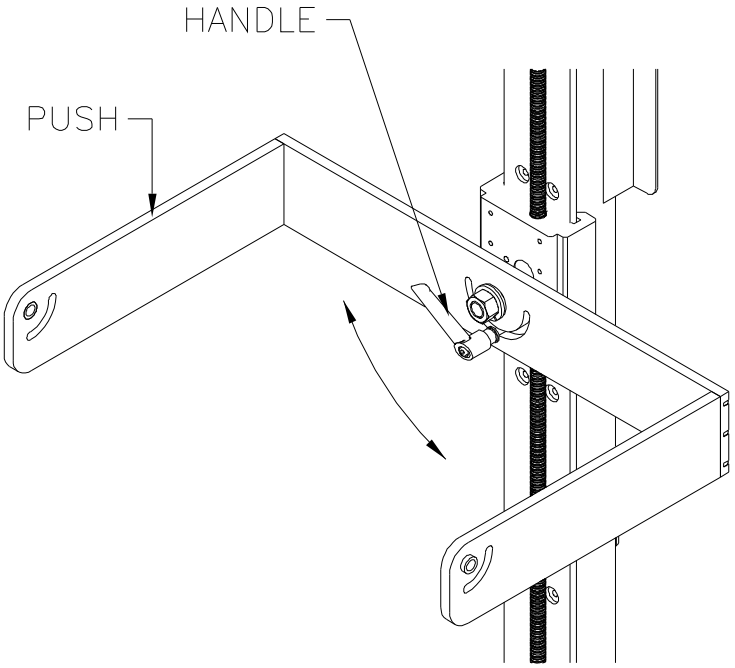
Step Two: *Take care removing the machine from the skid as it weighs 220 pounds!*

Step Three: You will need to move and orient the label machine along your production line in a position relative to your label and product. The enclosed Quick Start Guide details this process and it is reproduced here, as well.

A. Positioning the machine for top application or side application utilizes two handles located on the sides of the machine as shown.

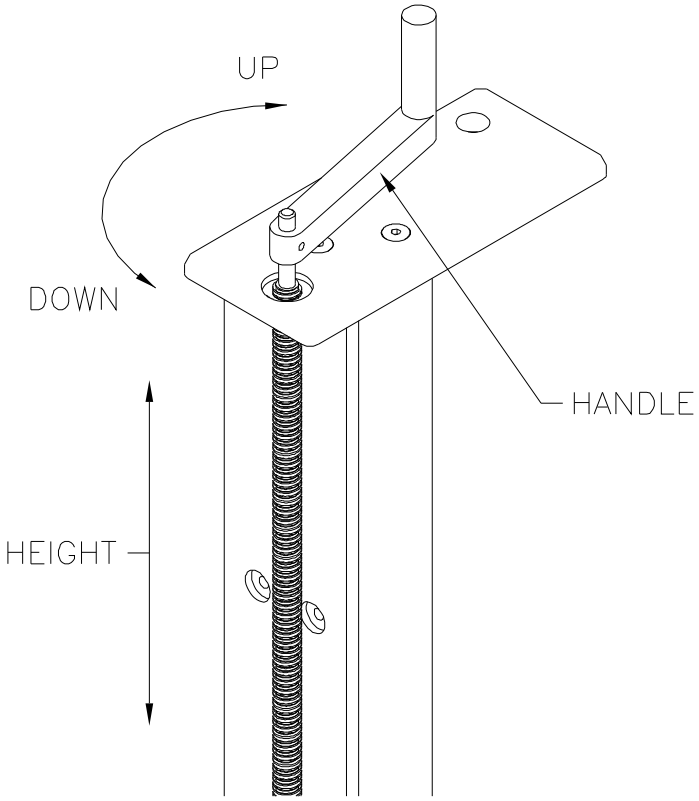


B. Alternatively or additionally, you may want to turn the machine vertically. This is done with the handle found behind the machine.

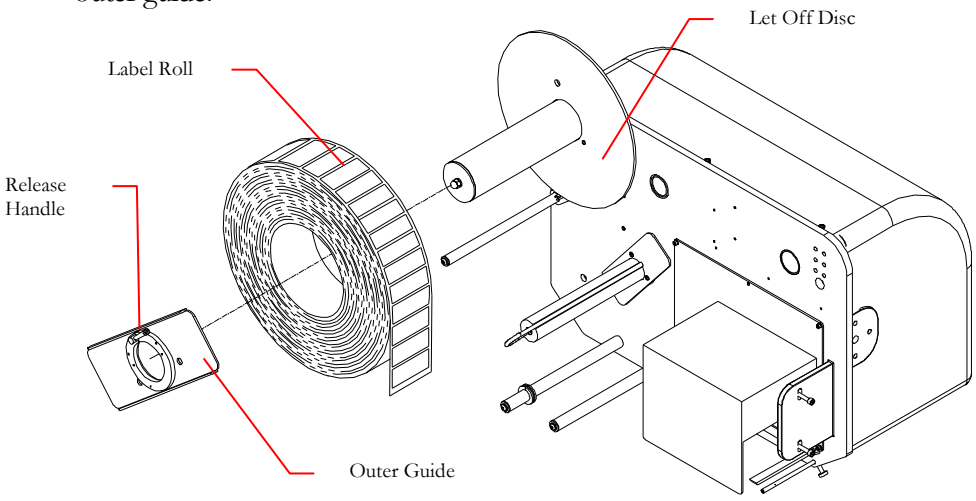


If the machine is to be inverted (sometimes called bottom labeling) the handle should be completely removed to move the machine upside-down. This will expose a new hole that can be used for the lock handle so that the position is maintained.

C. Vertical height is changed with the handle on the top of the machine.



Step Four: Once the labeler has been rotated to the desired position, you will want to load the labels and ribbon. Loosen the outer clamp with the handle and remove it, then load you labels as shown and replace the outer guide.



Ribbon should be loaded according to the diagrams on the inside cover of your printer and further details about the thermal transfer ribbon can be found in the printer manual.

Turn to Section 2: Threading Label Stock.

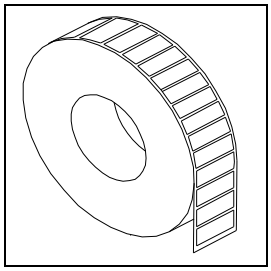
Section 2: Threading the Label Stock

Always make sure that the power is off, the unit is unplugged, and no product is moving past the labeler before threading new label stock or re-threading after a web breaks. The label thread path into and out of the printer is screened onto the label machine. This section will detail the threading operation in detail beyond the illustration on the machine.

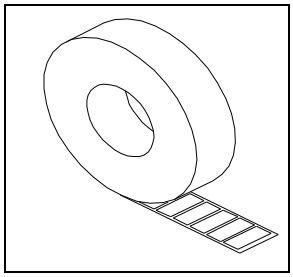
Step One:

- Make sure that the let-off discs are not holding the label roll too tightly. The roll should spin when light pressure is applied to it.
- The label path is justified to the inside edge. Make sure that all guide collars and plates are properly aligned to the Let-Off Disc.
- Make sure that when the leading edge of the label roll is pulled away, the labels face the top of the machine regardless of the machine orientation to top, side, or bottom application.
- The machine is only designed to accept labels that are wound on the outside of the reel. See Label stock windings below.
- Clear the first 36" of labels.

Label Stock Windings

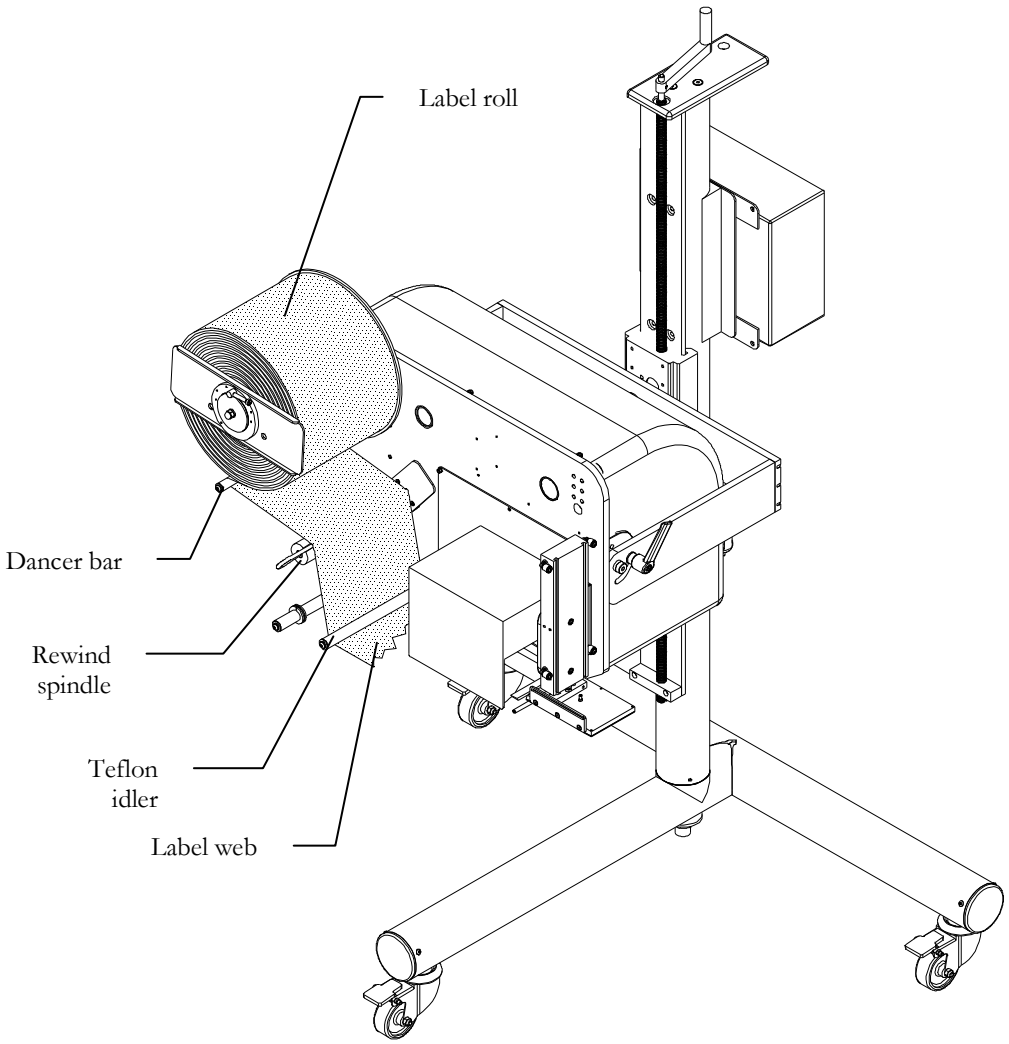


Labels wound outside (mount as shown)



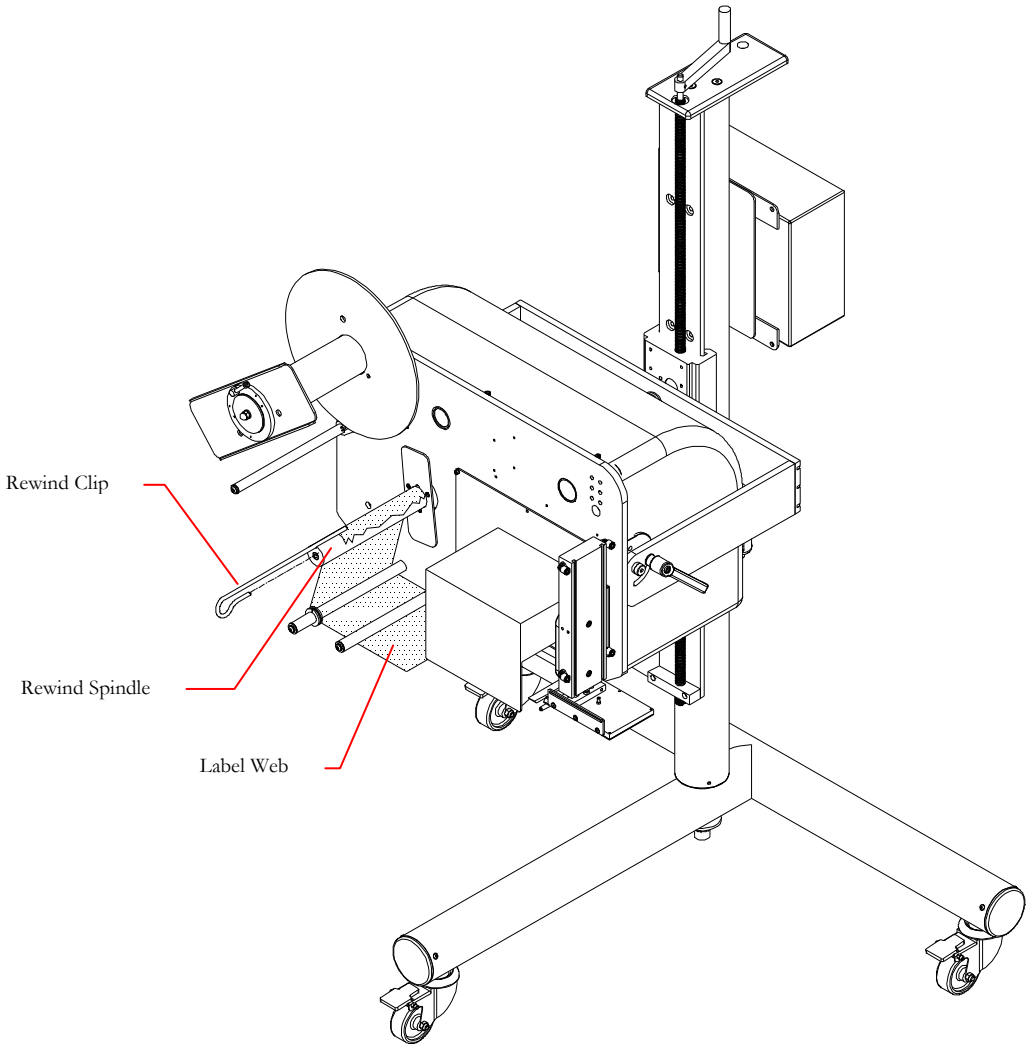
Labels wound inside

Step Two: Take the cleared strip of label web and thread it under the dancer bar, over the rewind spindle, and under the idler roller as shown in the following illustration.



Step Four: Now take the web and pull it through the printer. Your printer may have a thread path instruction on the inside cover. Further details about threading your printer can be found in your printer manual.

Step Five: Take the label web back under the lower idler and attach it to the rewind spindle via the clip.



The labeler is now threaded and ready to be plugged in and turned on. You will need to download labels from a PC, or other device, to the labeler (consult printer and software manuals for detail). Once label data has been transferred, you can use the 'Feed' selection on the control box to advance one label onto the applicator. If the label comes out too far or not far enough adjustments to the printer may be needed. Read your printer manual for how to make the appropriate adjustments.

Chapter 5

Printer Configuration

Your OEM Label Printer

You are at the phase where you will need to configure and communicate from a host computer to the printer in your labeler.

The LX8 series of labelers comes with a communications cable for the type of computer interface specified for the system at time of order. In the event that the cable is of insufficient length, please refer to the *Service* section in Chapter 12.

The LX8 Series of Label Machines comes equipped with an OEM style label printer that was installed by our technicians before shipping it to your facility. Due to the wide selection of printers and configurations available, Loveshaw directs you to consult your printer manual on the included CD ROM for set-up and trouble shooting.

Chapter 6

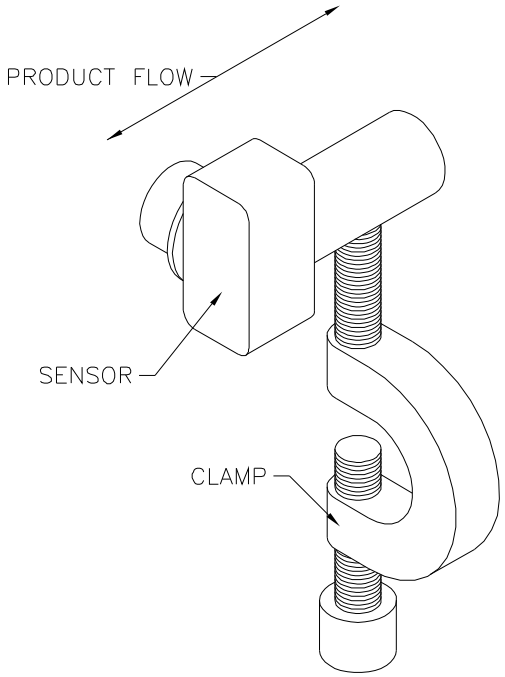
Product Sensing

Proximity Photo-eye

Sensor P/N: E7763-P1-LX

The labeler operates when it gets a signal from the product sensor telling it that the product is in place to receive the label. A standard photoelectric eye comes packaged with the machine and wired, via quick disconnect cable, to the control cabinet.

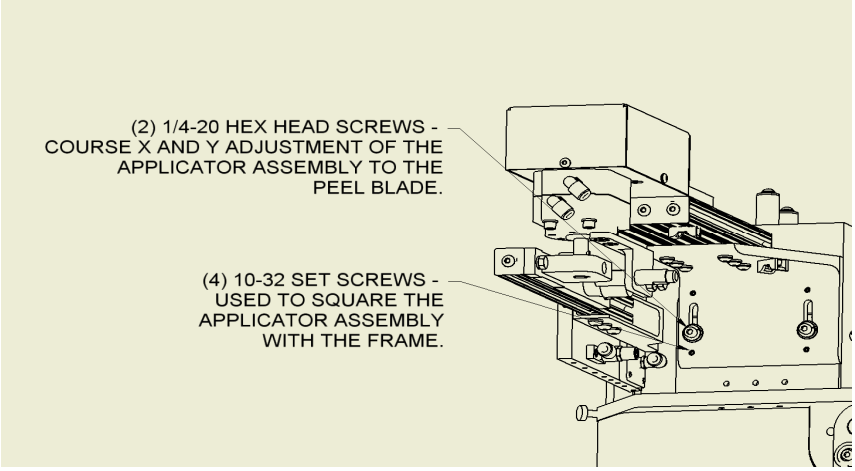
A standard mounting bracket allows the photo-eye to be mounted to a conveyor or guide rail but must be placed so that the eye is no greater than 18 inches (300mm) away from the product. Select the position of the product sensor so that the product will pass in front of it when you want the label apply cycle to start.



applicator pad mount arm and adjust accordingly. Re-tighten screws. Typically, a 1/8" gap is a good starting point.

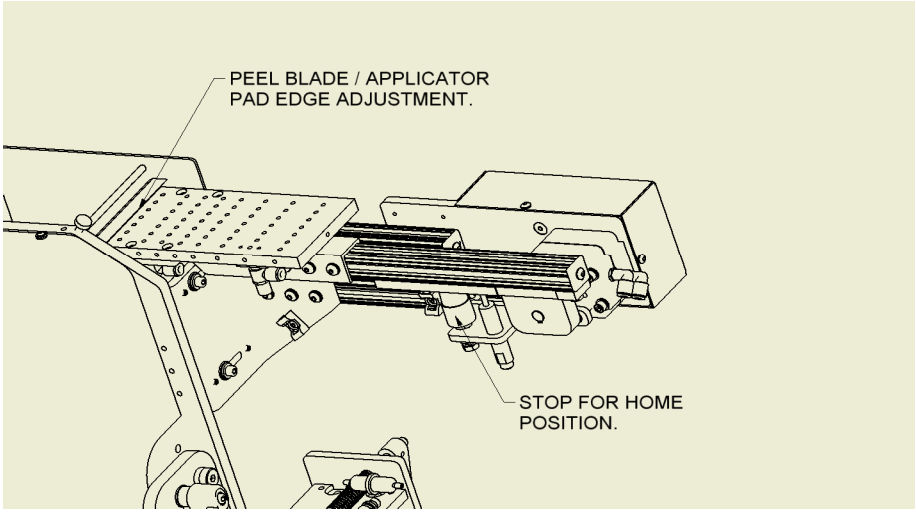
Adjusting the Applicator Pad in Relation to the Peel Blade

Depending on your label size, you may need to move the pad closer (short labels) or further (long labels) from the dispensing edge of the printer. The applicator pad has a pitch adjustment inside the vacuum chamber, under the pad. There is also a side to side adjustment; loosen the M6 hex head screws and adjust accordingly.



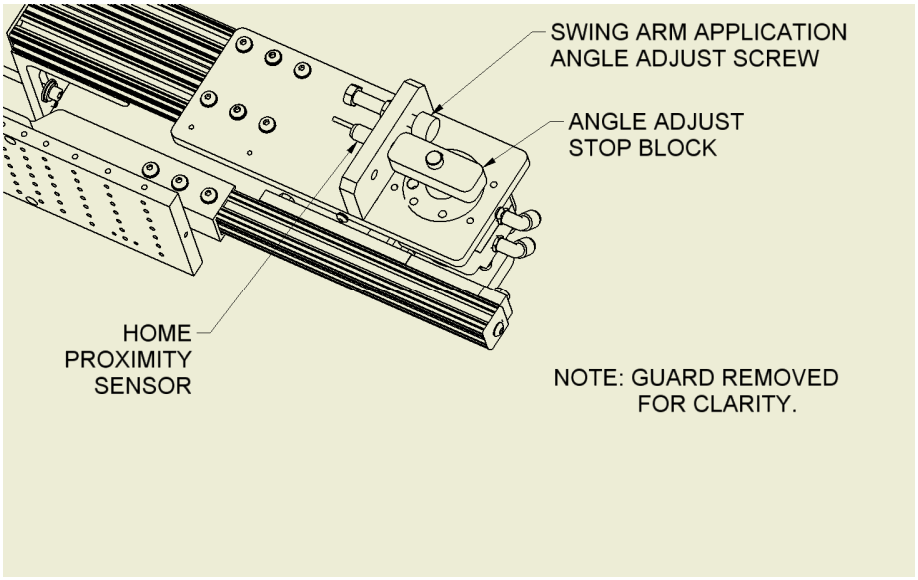
Adjusting the Applicator Pad Home Position

To fine tune the applicator pad home position, loosen the jam nut on the stop adjusting bolt and adjust the home stop as needed to allow proper label feed onto the applicator pad. Typically, the applicator pad is adjusted in the same plane or slightly behind the peel edge.



Adjusting the Swing Arm Maximum Application Angle

After locating the labeler in the application area and locking down the casters, manually swing the application arm out to insure it can apply the label squarely to the box or product. If the applicator pad doesn't place the label squarely on the product (arm stops short of being parallel with application area), you may need to adjust the arms application angle. First, with air removed and locked out, remove the guard covering the shaft of the rotary actuator, then loosen the jam nut on the angle adjust screw. Rotate the screw so the application arm will actually swing 5 degrees past the required application point, then re-tighten the jam nut and re-install the guard. Note: do not adjust the overall angle more than 135 degrees in relation to the applicator arms home position.

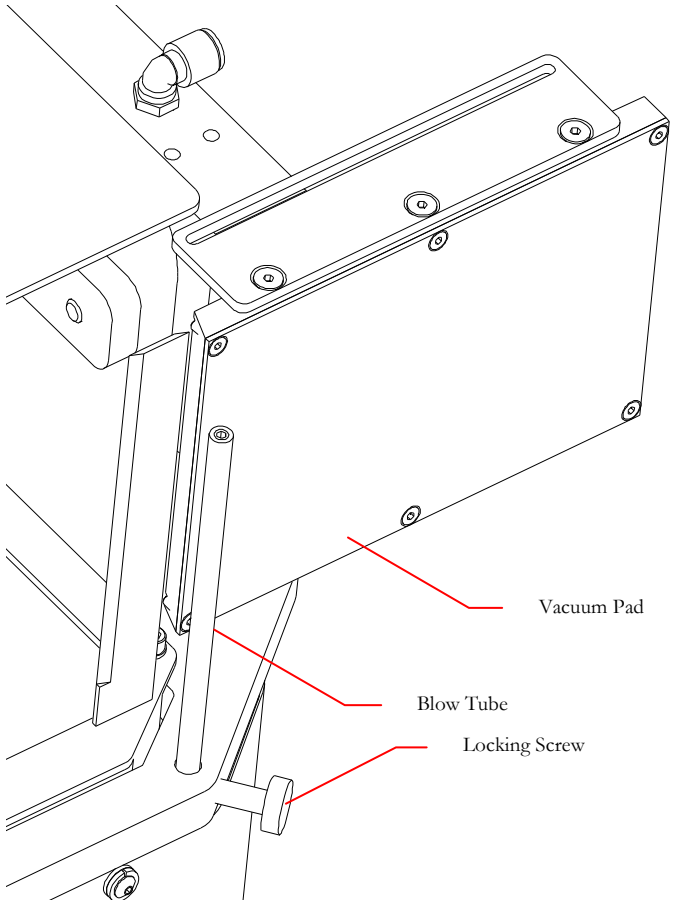


There is a small steel tube below the dispensing edge of the printer. During the dispensing cycle air will flow through the tube to assist guide the label away from the backing and towards the vacuum pad. Adjusting the position is covered here while adjusting the air pressure is covered in Chapter 11 *Maintenance* (page 43) as it requires removal of the rear cover.

Blow Tube Assembly P/N: .14018-LT

Adjusting the Blow Tube Position

The air tube is just to function as an assist. The label will want to curl away from the vacuum pad for various reasons and the blow tube is to ensure that it lays back and flat against the pad for the vacuum to hold it until application.



As a starting position, center the air stream on the width of the label and within the first 1/3 of the length of the label. Fine tune as required.

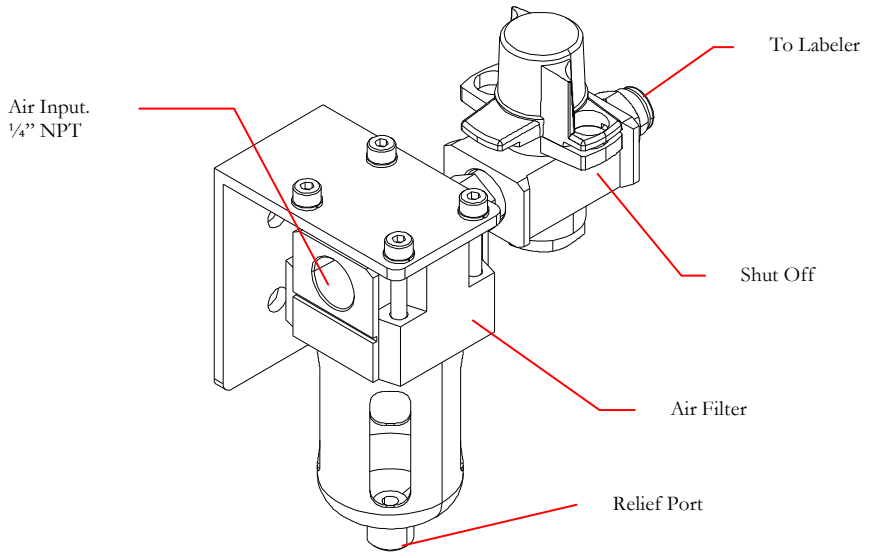
Chapter 8

Pneumatic System

Air Filter and Shut-Off

Assembly P/N: .A1247-02

The air filter and shut off valve is located at the back of the stand and is positioned so that you can bleed you air lines before introducing air into the label system. Loveshaw has placed a Lock Out style shut off on the system for your safety.



You will need to provide the appropriate fitting for your air connections to the unit. The connection port is ¼" NPT.

You must disconnect air before draining any collected water.

Air Regulator – P/N: .A1247-03

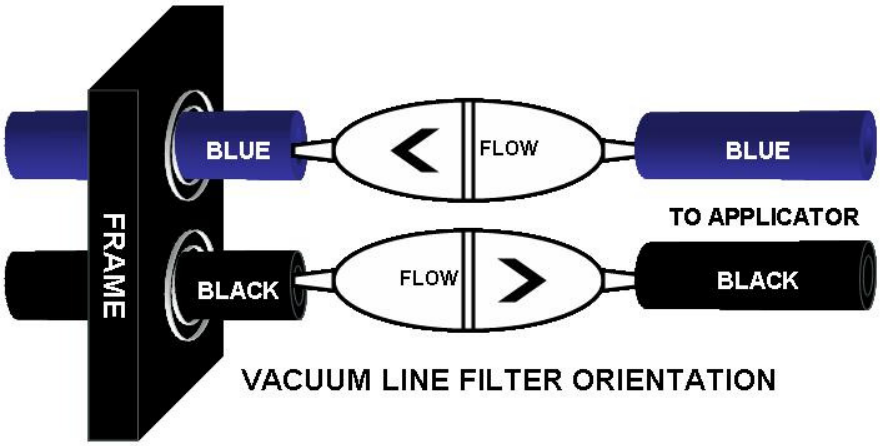
The air pressure is controlled by a regulator which is located behind the safety cover. Loveshaw recommends an operating

pressure of 45 psi and it should have been set to this value at the factory. In the event that the regulator is not at this value; consult chapter 11, *Maintenance* (page 43).

Air Filters – P/N: 14199

For tamp applicators, there are two vacuum line filters on the exterior of the machine. They will keep most debris from entering the vacuum system and clogging the lines. The regularity that these filters need to be replaced will depend on the amount of dust and dirt in the air around the machine throughout its life.

The air filters also serve as in-line check valves for the vacuum and air assist. The air filters are one directional and it is important to install them in the proper direction relative to the air flow of the lines.



VACUUM LINE FILTER ORIENTATION

The blue lines are used for the vacuum and the air flows towards the vacuum generator (**P/N: .14210-S**) while the black hose is the pressure line to the pad for its air assist.

NOTE: For a Dual Tamp (swing arm) applicator, one or two vacuum filters are utilized for vacuum (blue air line).

Further details on the pneumatics can be found in chapter 11, *Maintenance* (page 43).

Chapter 9

Features and Options

Optional: Light Warning Assembly

.LWA-LX-RH3C / LH3C

Low Labels Sensor – P/N: 14021 & 14022

Attached to one of the let off discs may be a low labels sensor. This mechanical sensor, wired to the control box, will let the unit know when the label stock is in small supply. When the labels run low a yellow indicator light will illuminate on the light tower.

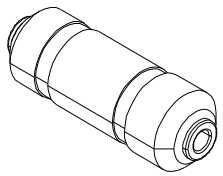
Light Tower

The light tower is an optional accessory that compliments the Low Labels Sensor. The light tower is designed to be mounted to the top of the labeler stand for highest visibility. The light tower will indicate green when no errors are present, yellow when either the labels or ribbon is in low supply or red when there is a total system fault and stop.

Optional: Cleanable Vacuum Filter

P/N: P3587-C1

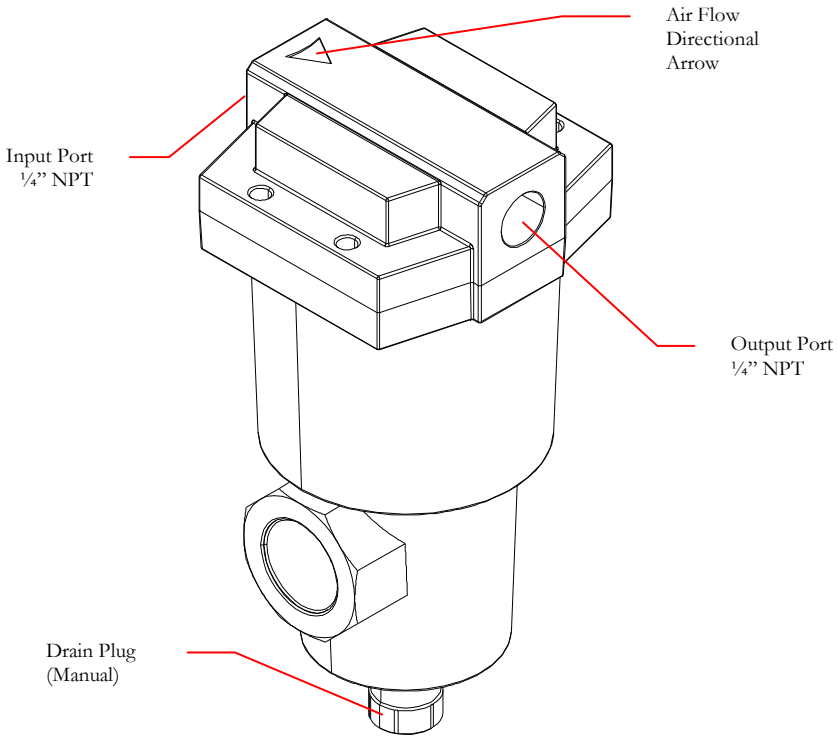
Loveshaw offers an air filter that can be opened and cleaned of dirt and debris.



Optional: Air Dryer

P/N: P3587-D1

Preceding your main-line air filter, you may find an air dryer. The air dryer is designed to contain and trap 99.9% of any incoming moisture and keep your system free of fluid contaminants.



Incoming air pressure should be disconnected before draining any fluid from the unit.

Optional: Portable Data Pad

ASSY P/N: .PDPA-LX-01

A portable Storage Pad (sometimes called a 'print pad') may be included with your system. Please refer to the manual specific to this device for instructions.

Optional: Spare Parts Kit (Straight Tamp)

P/N: .SPK-LX8-T/B

Spare Parts Kits contain common wear parts conveniently in one kit. The list of components is as follows:

- .A1247-03 (Regulator Assembly Qty-1)
- E7367-BS2 (Background Suppressed Sensor Qty-1)
- A125SB-1/2-326 (Fuse, 1/2A, Slow Blow Qty-5)
- A125FB-1/2-312 (Fuse, 1/2A, Fast Blow Qty-5)
- P14606-S1 (Solenoid Coil Qty-1)
- M0055-022 (Tape Release Pin Qty-1)
- B0120-019 (Spring Collar Qty-1)
- .01956 (Let-Off Clamp Qty-1)
- B258824-02A (Rewind Clutch Qty-1)
- .14018-LT (Blow Tube Qty-1)
- B0190-019 (Dancer Bar Spring Qty-1)
- P4010-038 (Bulkhead Union Qty-1)
- 14199 (Vacuum Line Filter Qty 1 - 4 Pack)
- P14606-P1 (Piloted Air Valve Qty-1)
- .14210-S (Vacuum Generator Qty-1)

Optional: Spare Parts Kit (Dual Tamp – Swing Arm)

P/N: .SPK-LX8-DT

Spare Parts Kits contain common wear parts conveniently in one kit. The list of components is as follows:

- .A1247-03 (Regulator Assembly Qty-1)
- B0140-018 (Shock Absorber Qty-1)
- A125SB-1/2-326 (Fuse, 1/2A, Slow Blow Qty-5)
- A125FB-1/2-312 (Fuse, 1/2A, Fast Blow Qty-5)
- P14606-S1 (Solenoid Coil Qty-1)
- M0055-022 (Tape Release Pin Qty-1)
- B0120-019 (Spring Collar Qty-1)
- .01956 (Let-Off Clamp Qty-1)
- B258824-02A (Rewind Clutch Qty-1)
- .14018-LT (Blow Tube Qty-1)
- B0190-019 (Dancer Bar Spring Qty-1)
- P4010-038 (Bulkhead Union Qty-1)
- 14199 (Vacuum Line Filter Qty 1 - 4 Pack)
- .14210-S (Vacuum Generator Qty-1)
- F3MB (Bumper – Rubber Qty-1)

Chapter 10

Control Operation

Overview

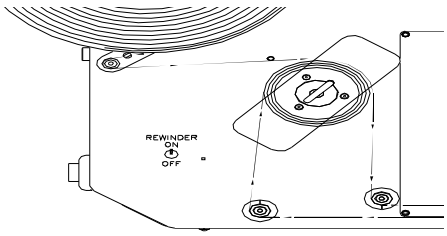
This section will cover the control aspects of the machine and how to change the cycle functions of the labeler. From here you will learn how to:

- Interface with the control panel.
- Change the cycle operation from 'Print-then-Apply' to 'Apply-then-Print' modes.
- Use the 'Reprint' ability of the printer.

Power-On and Motor Control

The labeler takes its power from an auxiliary source provided by the OEM printer. When you turn the printer off, or on, will turn the control box off, or on. Turning the printer off will both clear the printer buffer and deactivate the control box but there will still be incoming power unless the power cord is removed from its source on incoming voltage.

The labeler has a motor used to rewind the waste paper that dispenses from the printer. This motor can be powered separately from the rest of the labeler. The switch to do this is located on the corner of the labeler near the rewind spindle.



Selector Switch (Straight Tamp Models Only)

The selector switch controls the mode that the printer is in and will determine what the machine does.

- **Run**: In this mode the labeler will run a complete cycle when the product sensor photo-eye is triggered. This will be the normal operational mode for your system.

- **Bypass**: This is the mode that the machine must be in if you want to download labels. The mode is primarily designed for either a 'power on troubleshoot' or to 'bypass production' in the event that you do not desire to clear the printer buffer (loaded labels) and do not want to automate the label application, at the time.

- **Feed**: This will dispense a printed label onto the pad. This function can be used in troubleshooting and is of key importance if you are using the system in *Apply-then-Print* mode (see 'Changing Modes' in the next section).

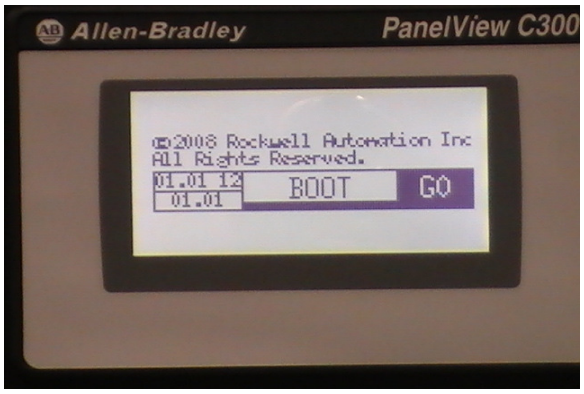
NOTE: The Dual Tamp (Swing Arm) Applicator utilizes a Touch Screen in place of the selector switch and product timer to control labeler function.

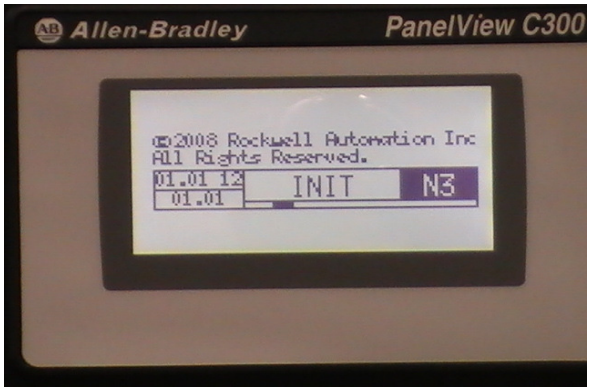
Touch Screen (Dual Tamp model)

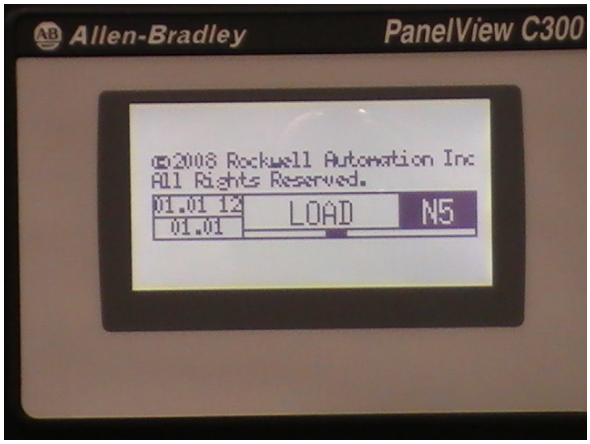
The Dual Tamp utilizes a touch screen to select modes (dual tamp or single tamp), jog a label out on the applicator pad, show machine status and change product / applicator delays.

The unit also has five save areas for each mode for a total of ten save areas. These areas are handy when you are running different boxes/products that require different product delays (label placement) or application delays (the time the applicator arm needs to be engaged on the product).

Upon energizing the labeler, the touch screen can take up to 60 – 70 seconds to load information from the PLC before it can be utilized. The following screens will be displayed on power up.

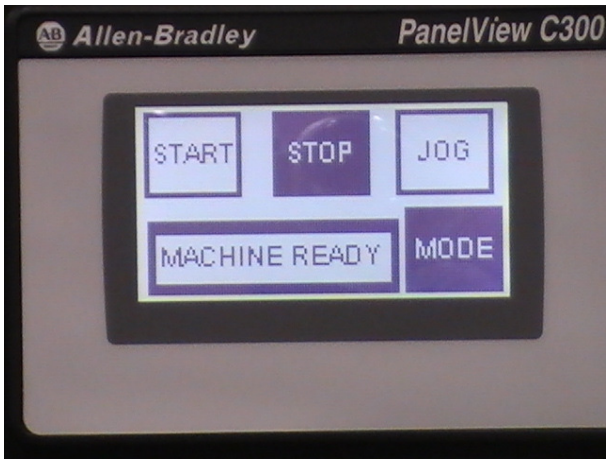




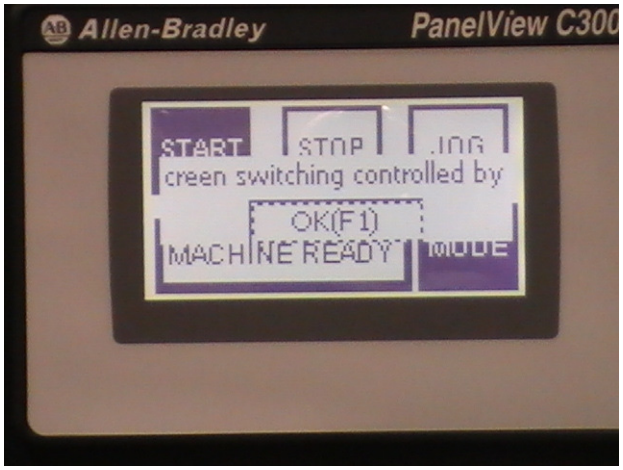


After the touch screen initializes, the main application screen will appear. This screen will allow stopping and starting of the labeler as well as jogging a label out on the applicator pad. The mode button will allow you to access the modes, save areas and timers

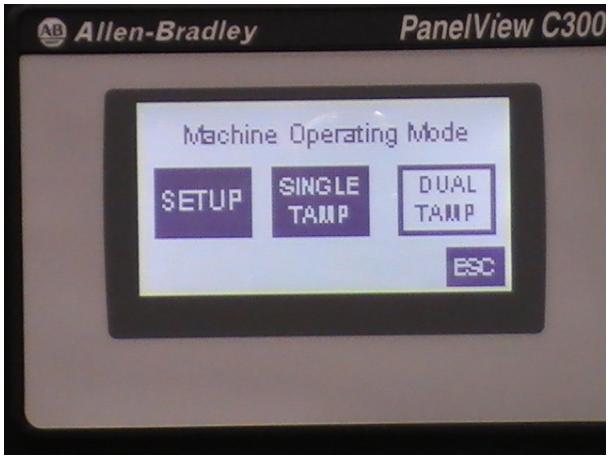
and the display will give machine status (i.e printer fault, machine ready etc.)



The main screen will come up in the Stop condition. If you want to jog a label, depress the Jog button which will momentarily turn black, then return to the Stop. To run the labeler, depress the Run button (run button will toggle to black / stop button will turn white). If you accidentally go from the Start condition right to the Mode button (bypassing the Stop), the following screen will appear:

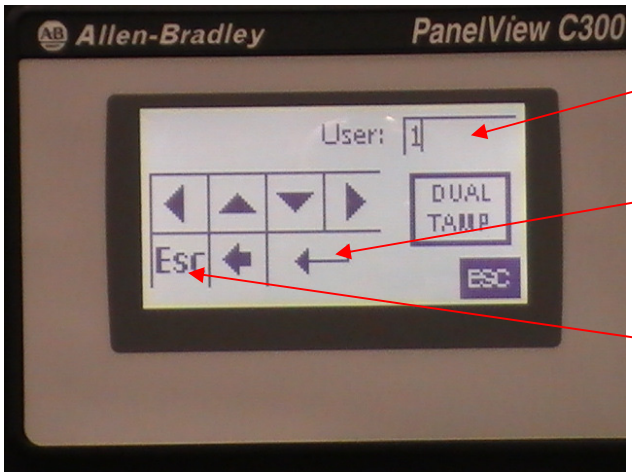


Depressing the OK(F1) button will clear this screen and return it back to the main screen. Remember, always go to the Stop button first prior to going to another function. Once back to the main screen, depress the Mode button to enter other functions. The next screen will appear.

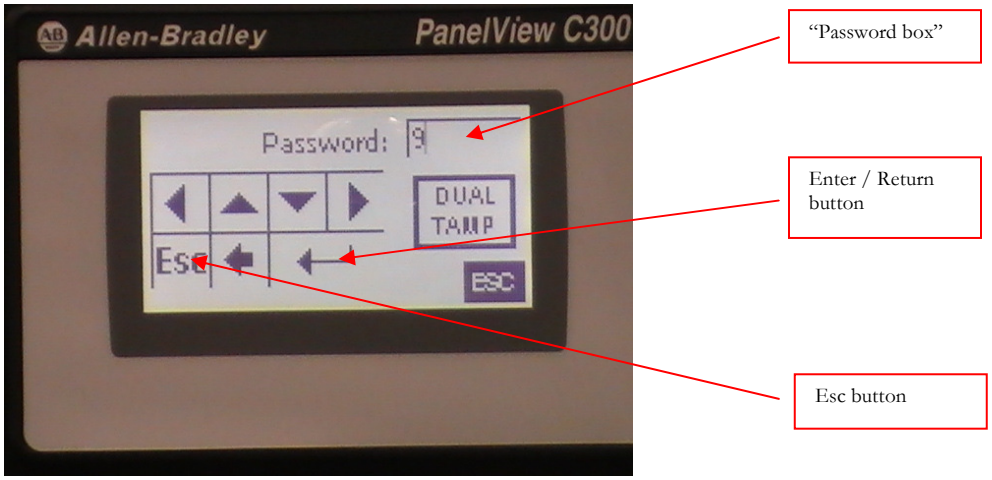


Note: Prior to changing Timers in the individual save areas, select the applicable mode (single or double tamp) that will be adjusted. For example, if the Single Tamp is selected and then timers are changed in the Dual Tamp save areas, the changes will not be saved.

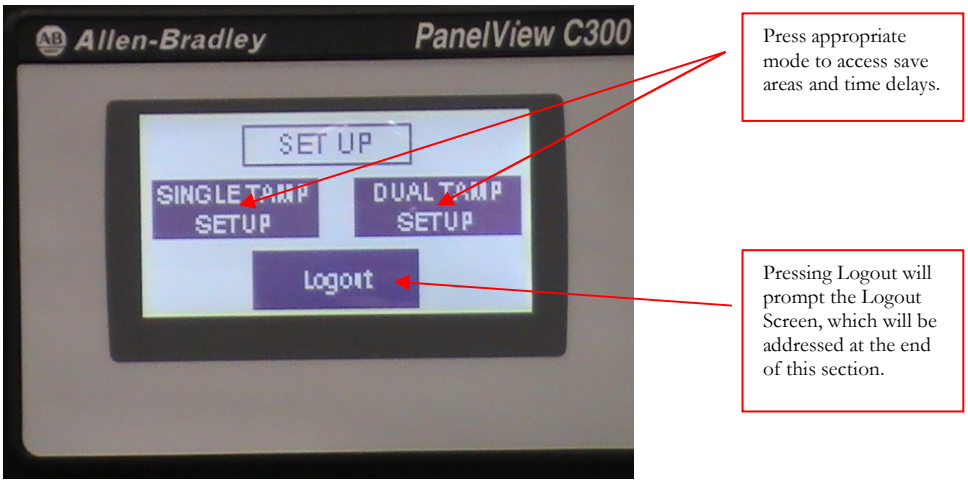
This screen will allow the labeler to be toggled between Single Tamp and Dual Tamp modes as well as enter the Setup menus. Note: When toggling between the Tamp modes, the PLC will use the last saved areas picked under each mode. For example, if save area 1 has been previously selected for Single Tamp mode and save area 3 was previously selected for Dual Tamp mode, these would be the areas for timing that the labeler would be utilizing. If a different save area or change of timer is desired, select the Setup button and the following screen will appear:



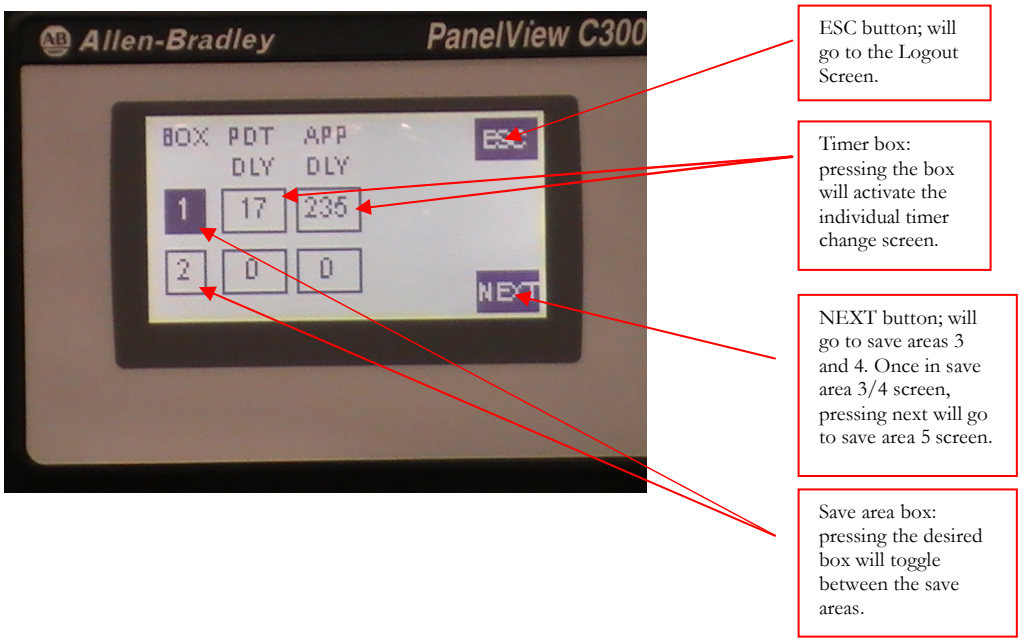
Press the "User" box to activate the area. Then use the arrow up key to place a one (1) in the box, then press the Enter button. The next screen will appear. NOTE: Pressing the Esc button will return to the previous screen.



Press the "Password" box to activate the area, arrow down or up to place a nine (9) in the box, then press the Enter button. The next screen (SETUP) will appear. NOTE: Pressing the Esc button will return you to the Machine Operating Mode screen.

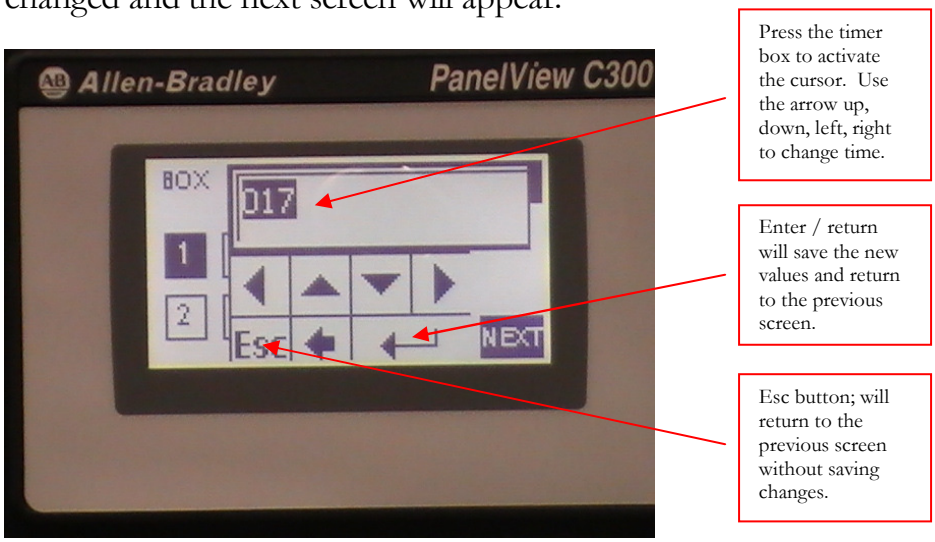


To change save areas or time delays in the Single Tamp mode, press the Single Tamp Setup button. The next screen will appear:

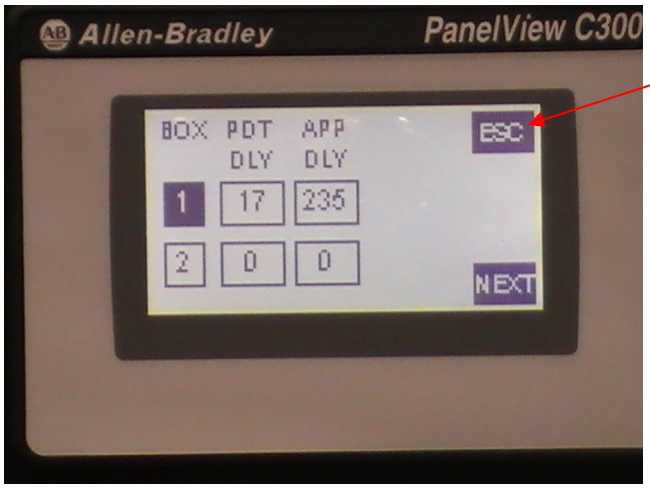


The PDT DLY (Product Delay) is the time from which the product sensor senses the leading edge of the product to when it tells the labeler to apply the label. The APP DLY (Applicator Delay) is the time the applicator arm is extended and engaging the product.

To change a time value, press the appropriate timer box to be changed and the next screen will appear:

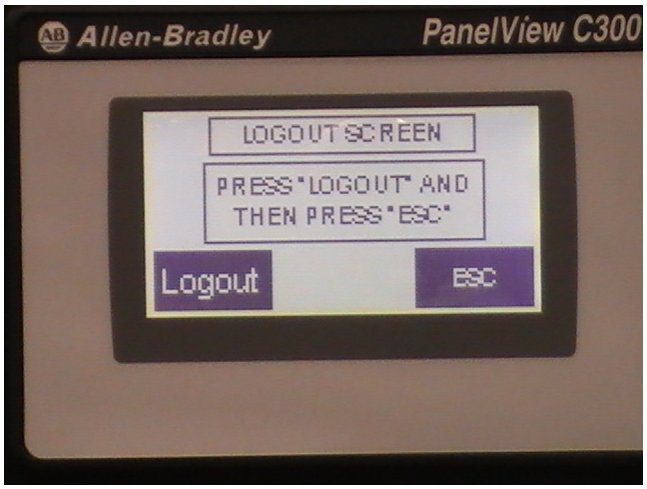


Once the Enter/Return button is pressed, the changes will be saved and the previous screen will displayed.



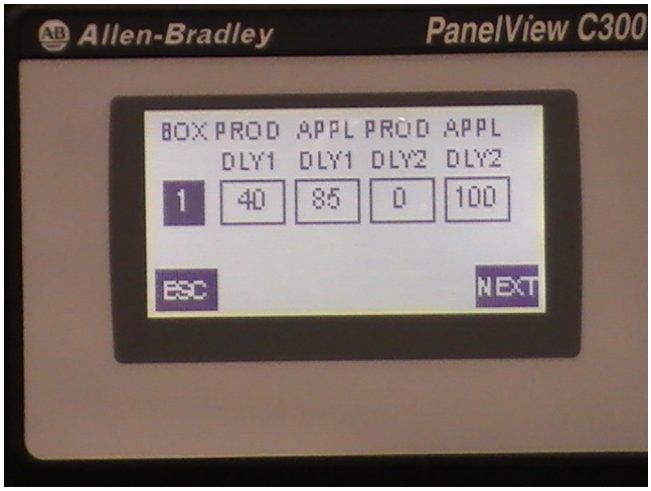
Press ESC to go to the Logout Screen.

If the desired timers are correct and the appropriate save area is selected, then press ESC which will display the Logout Screen.



To completely logout (require User and Password screen to be completed to re-enter the set-up in the future), press Logout then ESC. The display will return back to the Main (Start/Stop/Jog) Screen. If easy re-entry is desired, then just press the ESC button, which will allow re-entry into the Set-up screens without prompting the User and Password screens.

Note: If the Dual Tamp Setup is selected instead of the Single Tamp Setup (in the SETUP screen), the save areas are very similar and the timer change screens are identical as the Single Tamp screens. See below.



There are five screens each having a separate save areas. Pressing ESC will access the Logout Screen; pressing NEXT will scroll through the save areas. To change a timer value, follow the same procedures previously outlined.

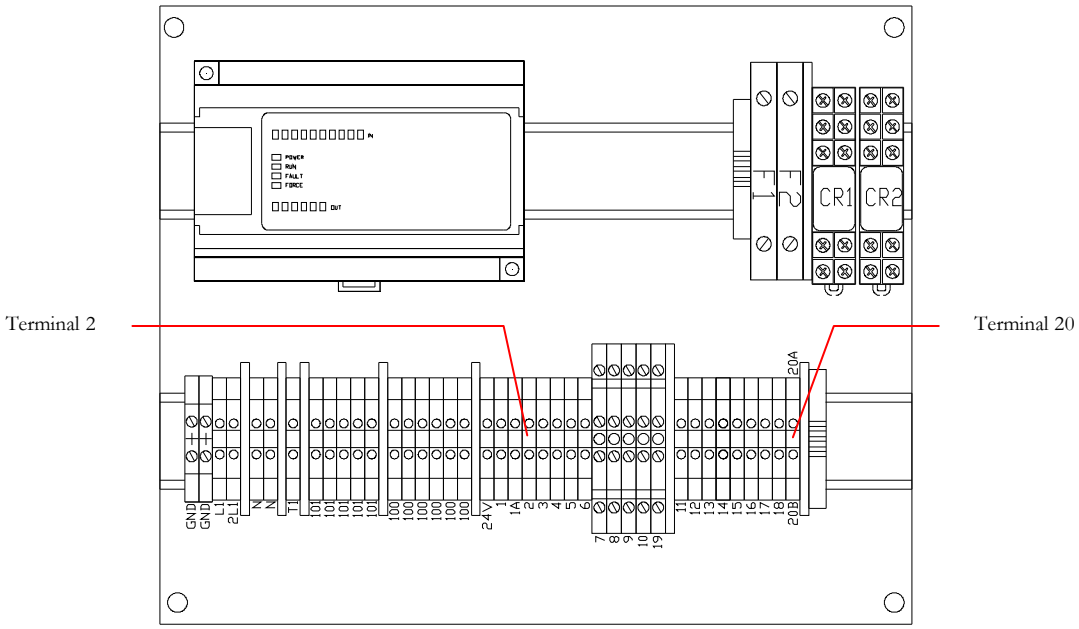
Notice there are four timers required for the Dual Tamp mode. PROD DLY1 (Product Delay 1) is the time delay between the product sensor sensing the leading edge of the product to when the applicator applies the first label; APPL DLY1 (Applicator Delay 1) is how long the applicator engages the product for the first label prior to returning home. PROD DLY2 (Product Delay 2) is the time delay after the applicator returns home until the next label is applied and APPL DLY2 (Applicator Delay 2) is how long the applicator engages the product (second label) prior to returning home.

Changing Modes (all models)

The labeler has two possible modes of operation:

- **Print-then-Apply**: Upon triggering the product sensor, the machine will print one label and immediately apply it.
- **Apply-then-Print**: Upon triggering the product sensor, the machine will activate the air cylinder and then print one label. You will need to feed one label, via the feed selection, before automating the system.

In order to select one mode or the other you will need to open the control box and access the panel. When you open the box, you should see the following (for Sato printer): *Note: A Zebra printer will have an additional terminal 21A/B.*



Terminal 2 is a keyed terminal that controls the mode of the labeler. With the key inserted (default operation) the machine runs in Apply-Then-Print (A/P) mode. Removing the Terminal Key (**A124-AB-DPL**) will change the function to Print-Then-Apply (P/A) mode.

Reprint Mode (all Models)

Reprint mode allows you to download a quantity of One Label (Two Labels for a Zebra printer) into the printer and forces the labeler to continually print that label until another label is downloaded.

FOR SATO PRINTER: This function is enabled by inserting a Terminal Key (**A124-AB-DPL**) into terminal 20A/B (see illustration above) and enabling the repeat function in the printer menu (see CD-ROM supplied for the Sato printer for specific directions to change). Download a single label to the printer. Turn the selector switch to "run". FOR ZEBRA PRINTER: Insert the terminal key also into 20A/B. As with the Sato, enable the repeat function utilizing the menu system of the Zebra printer. Download a quantity of (2) labels to the printer. Turn the selector switch to "feed" (if in A/P mode, leave label on the pad, if in P/A mode, manually remove the label). Turn the selector switch to "run".

Chapter 11

Maintenance

In normal operation, the labeler is simply turned-on and products are moved past its sensor equipment and the labeler responds by printing and applying a label. There may be times when a part of the machine wears down and part of the machine's operation fails. This section will guide you through servicing and maintaining your labeler. Many of these operations will require access to components behind the protective cover and should be done by a technician with access to tools.

Pneumatic System

Do NOT Use Lubricated Air!

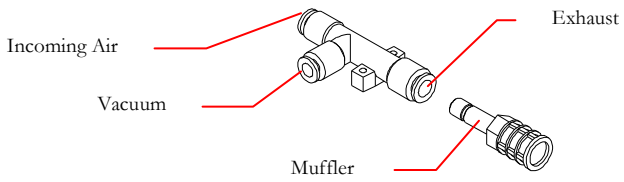
The label machine is designed to run on clean dry air. The components used are not specified for use with oils of any kind.

Do NOT Try to service the machine with the air engaged.

Your labeling system was factory installed with a lock-out ready disconnect valve. Air should be deactivated from the system prior to servicing the lines or components and even if lock-out procedures are not used in your plant, it is recommended that the valve be at least tagged to prevent anyone from energizing the system while work is performed on it.

Loss or Decline of Vacuum

The most likely cause of poor vacuum performance may be due to blocked filters. In the event that the vacuum filters are clean, check the exhaust mufflers of the venturi vacuum generators (**P/N: .14210-S**). The exhaust mufflers may have collected some particulate that the filter missed. Simply removing it and making sure that it is clear will improve performance.



Blow Tube Pressure

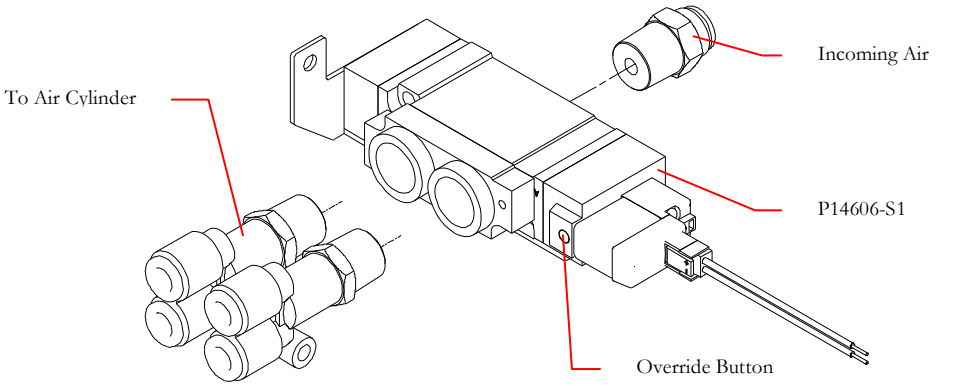
The Blow Tube (**P/N: .14018-LT**) that guides the label onto the pad from the dispensing edge of the printer is regulated by a flow control. **DO NOT** increase air pressure to the system instead of adjusting this control.

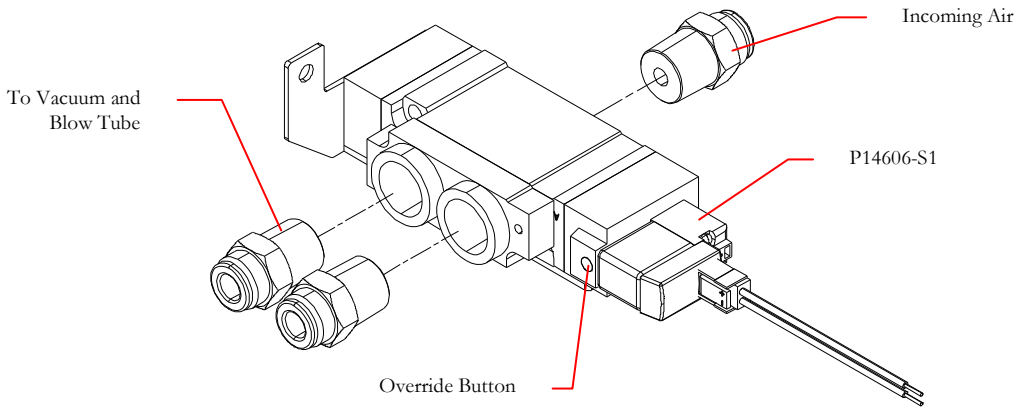
Air Pressure and Regulation

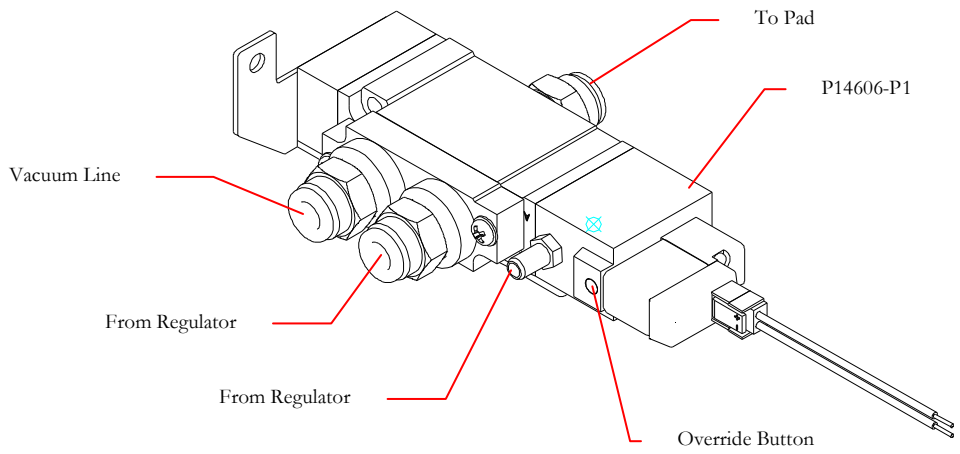
The incoming air pressure of the machine should not exceed 100psi. You may damage the pneumatic components if the pressure exceeds this value. Your labeler was optimized for performance at the factory using between 45 and 60 pounds of incoming air pressure.

Solenoids

The **Straight Tamp** labeler uses three solenoids of two different types to perform its operations. There is a typical 4-way solenoid coil (**P14606-S1**) and a piloted valve (**P/N: P14606-P1**) that operates the air assist. The **Dual Tamp** labeler uses only two of the (**P14606-S1) solenoids.** Each valve has a spring return override that can be depressed to determine functionality, diagnosis, and piping in conjunction with the pneumatic diagram in the next chapter.







Motor

Your label machine utilizes a synchronous motor and chain along with a slip clutch to rewind the waste paper from your label roll.

DO NOT Work on the Chain while Unit is Plugged In.

The motor does have an 'on/off' switch (see page 24) but it is best to make sure that power is off to the whole system and that the unit is unplugged before working on the motor or chain drive.

Lubrication

The motor (**P/N: 08872**) requires no lubrication and the chain will need very little lubricant over its lifetime. Over lubricating the chain may have adverse effects on the rewind clutch (see below). To lubricate the chain simply supply a few drops of machine or motor oil to the chain. The continuous run of the motor during normal operation will work the lubricant into the chain.

Slip Clutch

The slip clutch (**P/N: B258824-02A**) on the rewind spindle is a fixed spring tension. Make sure to keep the clutch dry and free of corrosives and oils. Over time the components of the clutch will wear and when the tension (8oz-in torque) prevents the rewind from turning under weight, it should be replaced.

Chain Tension

The use of a slip clutch means that very little tension is desired on the system. The chain should have a little sag when properly installed.

Control Box

Your system uses an Allen-Bradley MicroLogix1000 PLC to control its function along with a series of terminal blocks and relays. Enclosed with this manual is a copy of the PLC program for your reference. It is not advised that you alter this program unless you have Rockwell Software on your computer and are experienced with PLC programming.

DO NOT Work on the Control Box while Unit is Plugged In.

The control box is supplied power by the 'on/off' switch on your OEM printer but it is best to make sure that power is removed from the whole system and that the unit is unplugged before working on the control panel.

All diagrams and schematics are located in the Service Chapter following.

Chapter 12

Assemblies and Schematics

This section contains assembly drawings and schematics required to repair or rebuild your label machine. The drawings are organized under the following sub-headings.

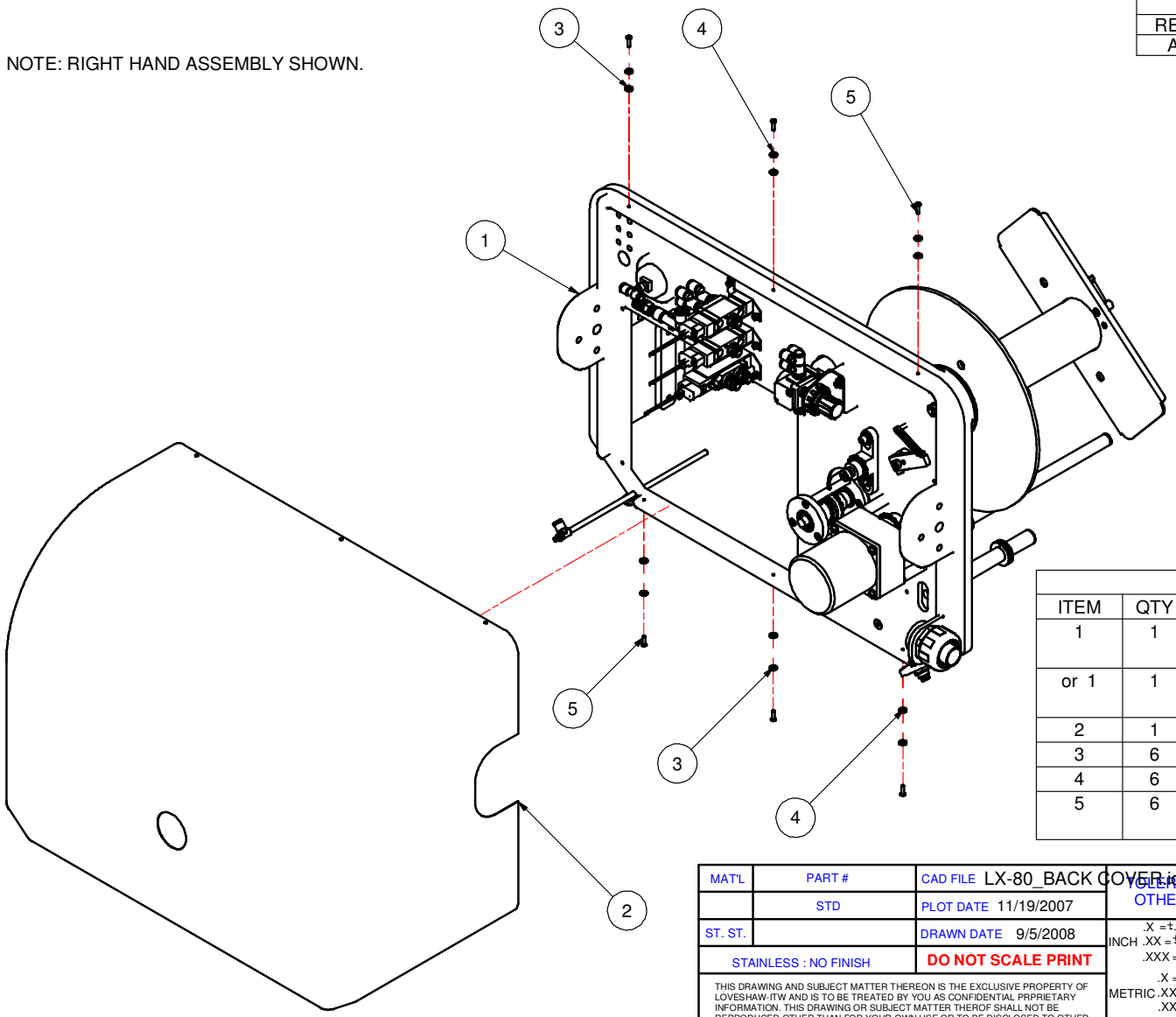
1. **Main Frame and Stand Assemblies (for all models)**
2. **Pneumatic Assemblies (for all models)**
3. **Pneumatic Diagram (Straight Tamp models)**
4. **Pneumatic Diagram (Dual Tamp/CW – Swing Arm model)**
5. **Applicator Assemblies (Straight Tamp models)**
6. **Applicator Assembly (Dual Tamp/CW – Swing Arm model)**
7. **Electrical Assembly and Schematics for Sato and Zebra Printers (Straight Tamp models)**
8. **Electrical Assembly and Schematics for Sato and Zebra Printers (Dual Tamp/CW – Swing Arm model)**

MAIN FRAME AND STAND ASSEMBLIES

(FOR ALL MODELS)

NOTE: RIGHT HAND ASSEMBLY SHOWN.

REVISION HISTORY				
REV	DESCRIPTION	DATE	AUTHOR	APPROVED
A	ADDED LH	10/14/09	KK	



Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	B0080-880	LABELER FRAME PLATE (RIGHT HAND)
or 1	1	B0080-881	LABELER FRAME PLATE (LEFT HAND)
2	1	B7233-0LT	BACK COVER
3	6	FFWSAS	FLAT WASHER
4	6	FLWSAP	LOCK WASHER 6-32
5	6	FBHSA050S08	BUTT. HD. CAP SCREW 6-32 X 1/2 LG.

MAT'L	PART #	CAD FILE LX-80_BACK COVER.idw	TOLERANCES UNLESS OTHERWISE NOTED:
	STD	PLOT DATE 11/19/2007	
ST. ST.		DRAWN DATE 9/5/2008	INCH .X =±.050 .XX =±.015 .XXX =±.005 ANGLES ±1/2°
STAINLESS : NO FINISH		DO NOT SCALE PRINT	METRIC .X =±1.0mm .XX =±.3mm .XXX =±.1mm MACH. FINISH 125
			FRACTIONS ±1/64

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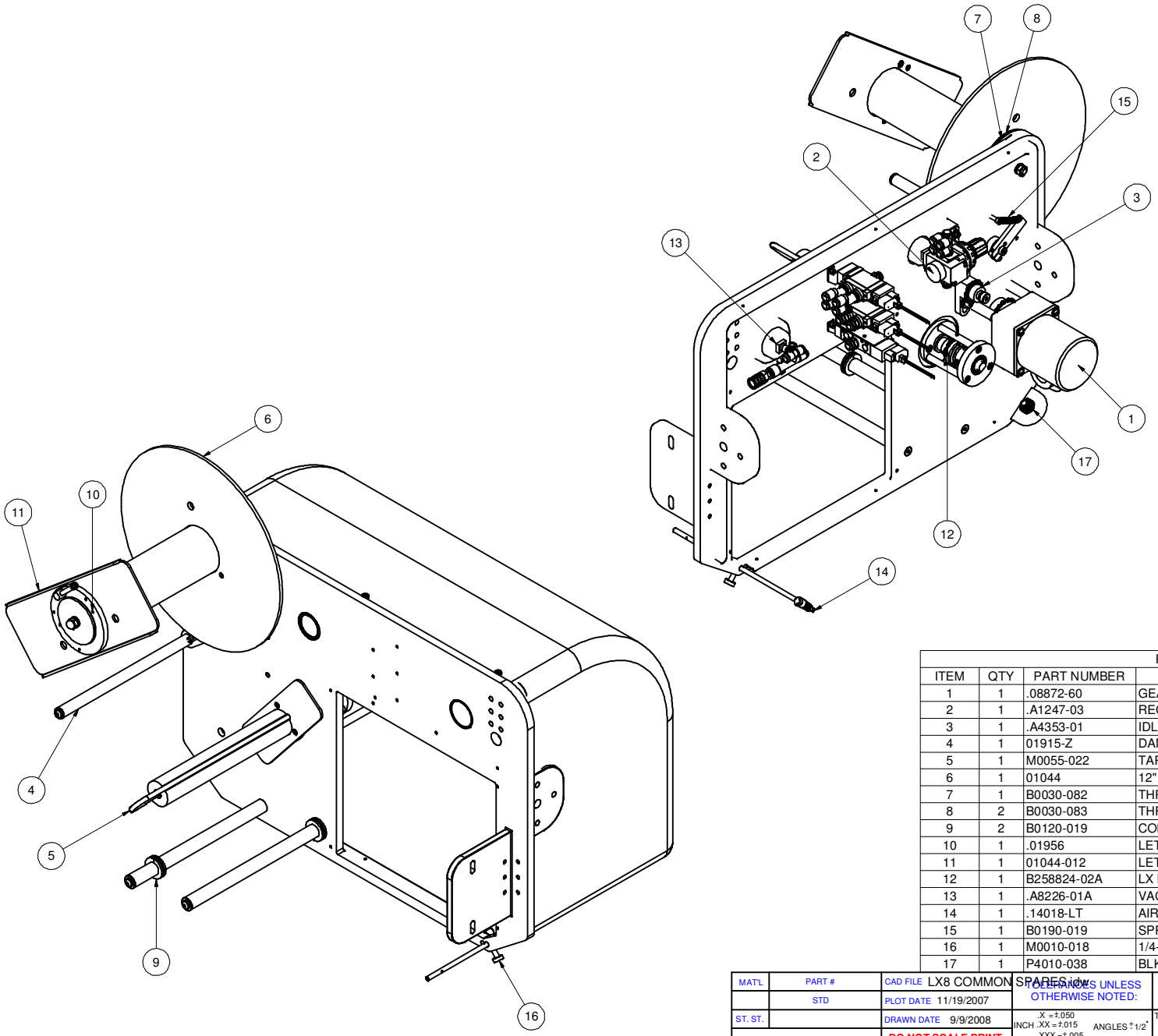
LOVESHAW an ITW Company
RT. 296, SOUTH CANAAN, PA.

TITLE
LX REAR COVER ASSEMBLY

DWG NO LX-80	SCALE 3/16
MATERIAL	CHECKED
DRAWN ADAM	APPROVED ADAM

REVISION HISTORY				
REV	DESCRIPTION	DATE	DESIGNER	APPROVED

NOTE: RIGHT HAND ASSEMBY SHOWN.



Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	.08872-60	GEAR MOTOR, 220V, 60Hz
2	1	.A1247-03	REGULATOR ASSEMBLY
3	1	.A4353-01	IDLER ASSEMBLY
4	1	01915-Z	DANCER ASSEMBLY
5	1	M0055-022	TAPE RELEASE PIN
6	1	01044	12" LET-OFF DISC
7	1	B0030-082	THRUST NEEDLE ROLLER AND CAGE ASSEMBLY
8	2	B0030-083	THRUST WASHER
9	2	B0120-019	COLLAR, SPRING CLOSURE
10	1	.01956	LET-OFF CLAMP ASSEMBLY
11	1	01044-012	LET-OFF GUIDE PLATE
12	1	B258824-02A	LX REWIND CLUTCH
13	1	.A8226-01A	VACUUM GAUGE ASSEMBLY
14	1	.14018-LT	AIR TUBE ASSEMBLY - 1 HOLE
15	1	B0190-019	SPRING
16	1	M0010-018	1/4-20 THUMB SCREW
17	1	P4010-038	BLKHEAD UNION

MAT'L	PART #	CAD FILE LX8 COMMON SPARES.idw	TOLERANCES UNLESS OTHERWISE NOTED:	LOVESHAW an ITW Company RT. 296, SOUTH CANAAN, PA.
	STD	PLOT DATE 11/19/2007		
ST. ST.		DRAWN DATE 9/9/2008	INCH .X =±.050 .XX =±.015 .XXX =±.005 ANGLES ±1/2°	TITLE COMMON SPARES
STAINLESS : NO FINISH		DO NOT SCALE PRINT	METRIC .X =±1.0mm .XX =±.3mm .XXX =±.1mm MACH. FINISH 32	DWG NO LX-80 SCALE 1:4
			FRACTIONS ± 1/64	MATERIAL CHECKED
				DRAWN ADAM APPROVED ADAM

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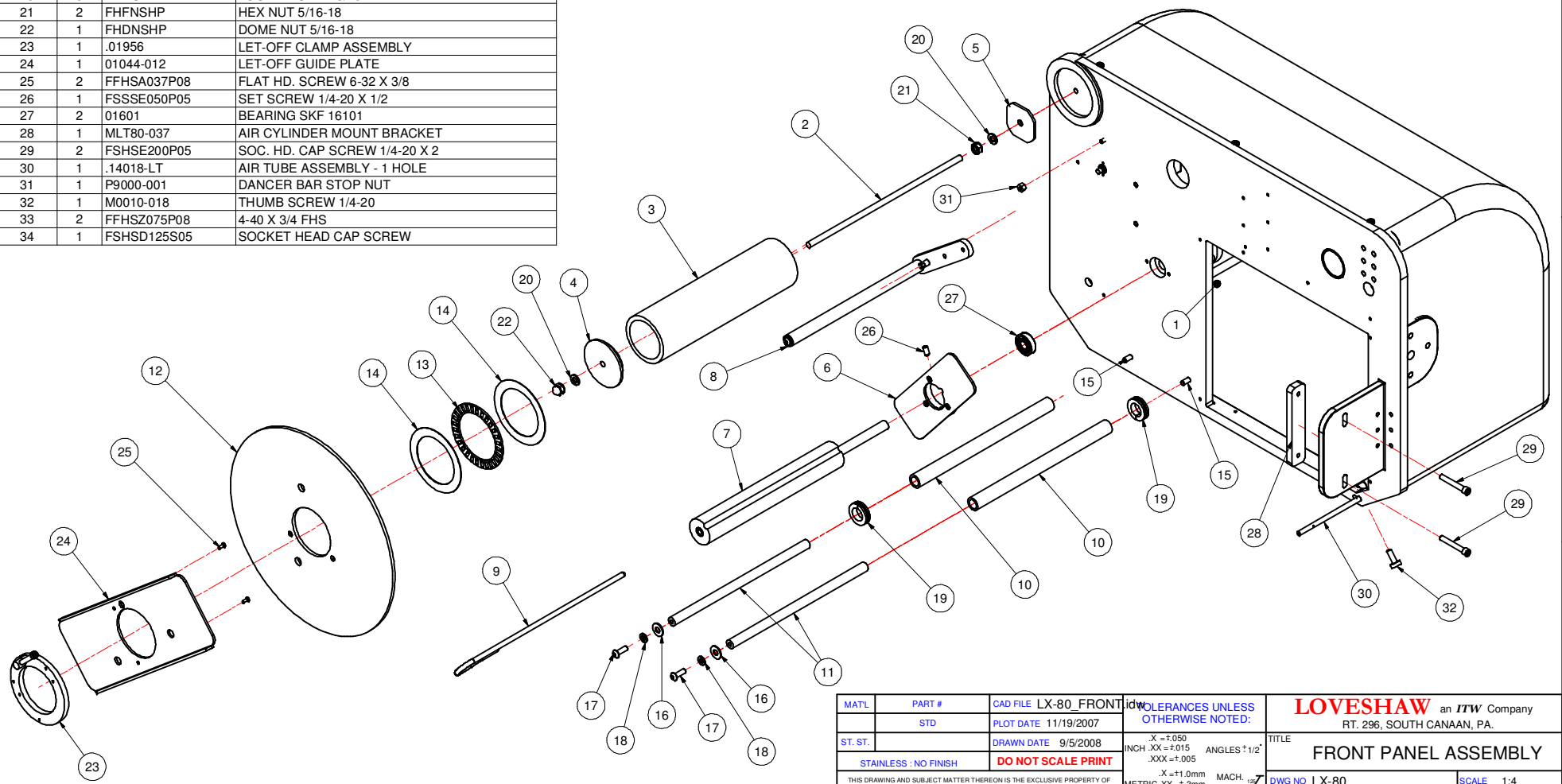
Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	B0080-880	LABELER FRAME PLATE (RIGHT HAND)
or 1	1	B0080-881	LABELER FRAME PLATE (LEFT HAND)
2	1	M0035-0030	5/16-18 THREADED ROD
3	1	M0060-011	LET OFF SPINDLE
4	1	01530	LET OFF TUBE CAP
5	1	M0060-001	LET OFF ROLLER INSERT RETAINER
6	1	.01960-80	REWIND GUIDE
7	1	01810-LT	REWIND SPINDLE
8	1	01915-Z	DANCER ASSEMBLY
9	1	M0055-022	TAPE RELEASE PIN
10	2	MLT80-030	TEFLON ROLLER
11	2	M0030-051	IDLER ROLLER SHAFT
12	1	01044	12" LET-OFF DISC
13	1	B0030-082	THRUST NEEDLE ROLLER AND CAGE ASSEMBLY
14	2	B0030-083	THRUST WASHER
15	2	FFHSE100P08	FLAT HD. CAP SCREW 1/4-20 x 1 LG.
16	2	FFWSDP	FLAT WASHER 1/4
17	2	FBHSE075S05	BUTT. HD. HEX HEAD, 0.25 UNC x 0.625
18	2	FLWSDP	LOCK WASHER 1/4
19	2	B0120-019	COLLAR, SPRING CLOSURE
20	5	FLWSEP	LOCK WASHER 5/16
21	2	FHFNSHP	HEX NUT 5/16-18
22	1	FHDNSHP	DOME NUT 5/16-18
23	1	.01956	LET-OFF CLAMP ASSEMBLY
24	1	01044-012	LET-OFF GUIDE PLATE
25	2	FFHSA037P08	FLAT HD. SCREW 6-32 X 3/8
26	1	FSSSE050P05	SET SCREW 1/4-20 X 1/2
27	2	01601	BEARING SKF 16101
28	1	MLT80-037	AIR CYLINDER MOUNT BRACKET
29	2	FSHSE200P05	SOC. HD. CAP SCREW 1/4-20 X 2
30	1	.14018-LT	AIR TUBE ASSEMBLY - 1 HOLE
31	1	P9000-001	DANCER BAR STOP NUT
32	1	M0010-018	THUMB SCREW 1/4-20
33	2	FFHSZ075P08	4-40 X 3/4 FHS
34	1	FSHSD125S05	SOCKET HEAD CAP SCREW

NOTE: RIGHT HAND ASSEMBLY SHOWN.

REVISION HISTORY				
REV	DESCRIPTION	DATE	DESIGNER	APPROVED
A	08-232	11/14/08	A.L.S.	W.M.
B	ADDED LH	10/14/2009	KK	



MAT'L	PART #	CAD FILE	LX-80_FRONT.idw
	STD	PLOT DATE	11/19/2007
ST. ST.		DRAWN DATE	9/5/2008
STAINLESS : NO FINISH		DO NOT SCALE PRINT	

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TOLERANCES UNLESS OTHERWISE NOTED:

INCH .X = ±.050, .XX = ±.015, .XXX = ±.005, ANGLES ± 1/2°

METRIC .X = ±1.0mm, .XX = ±.3mm, .XXX = ±.1mm

MACH. FINISH 125

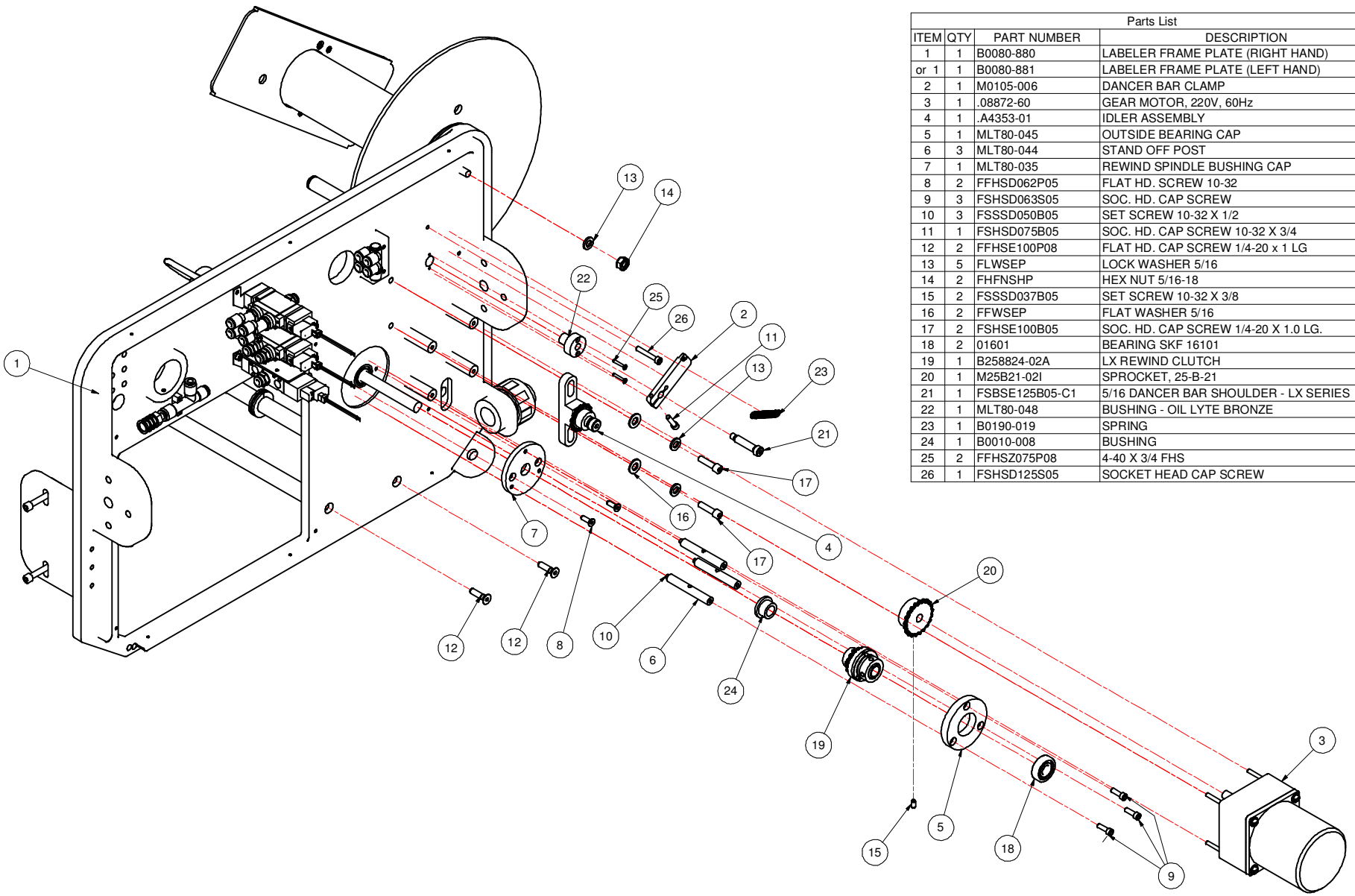
FRACTIONS ± 1/64

LOVESHAW an ITW Company
RT. 296, SOUTH CANAAN, PA.

TITLE: FRONT PANEL ASSEMBLY

DWG NO LX-80	SCALE 1:4
MATERIAL	CHECKED
DRAWN ADAM	APPROVED ADAM

REVISION HISTORY				
REV	DESCRIPTION	DATE	DESIGNER	APPROVED
A	08-232	11/14/08	A.L.S.	W.M.
B	ADDED LH	10/14/09	KK	



Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	B0080-880	LABELER FRAME PLATE (RIGHT HAND)
or 1	1	B0080-881	LABELER FRAME PLATE (LEFT HAND)
2	1	M0105-006	DANCER BAR CLAMP
3	1	.08872-60	GEAR MOTOR, 220V, 60Hz
4	1	.A4353-01	IDLER ASSEMBLY
5	1	MLT80-045	OUTSIDE BEARING CAP
6	3	MLT80-044	STAND OFF POST
7	1	MLT80-035	REWIND SPINDLE BUSHING CAP
8	2	FFHSD062P05	FLAT HD. SCREW 10-32
9	3	FSHSD063S05	SOC. HD. CAP SCREW
10	3	FSSSD050B05	SET SCREW 10-32 X 1/2
11	1	FSHSD075B05	SOC. HD. CAP SCREW 10-32 X 3/4
12	2	FFHSE100P08	FLAT HD. CAP SCREW 1/4-20 x 1 LG
13	5	FLWSEP	LOCK WASHER 5/16
14	2	FHFNSHP	HEX NUT 5/16-18
15	2	FSSSD037B05	SET SCREW 10-32 X 3/8
16	2	FFWSEP	FLAT WASHER 5/16
17	2	FSHSE100B05	SOC. HD. CAP SCREW 1/4-20 X 1.0 LG.
18	2	01601	BEARING SKF 16101
19	1	B258824-02A	LX REWIND CLUTCH
20	1	M25B21-02I	SPROCKET, 25-B-21
21	1	FSBSE125B05-C1	5/16 DANCER BAR SHOULDER - LX SERIES
22	1	MLT80-048	BUSHING - OIL LYTE BRONZE
23	1	B0190-019	SPRING
24	1	B0010-008	BUSHING
25	2	FFHSZ075P08	4-40 X 3/4 FHS
26	1	FSHSD125S05	SOCKET HEAD CAP SCREW

NOTE: RIGHT HAND ASSEMBLY SHOWN.

MAT'L	PART #	CAD FILE	LX-80_MECHANICAL.idw
	STD	PLOT DATE	11/19/2007
ST. ST.		DRAWN DATE	9/9/2008
STAINLESS : NO FINISH		DO NOT SCALE PRINT	

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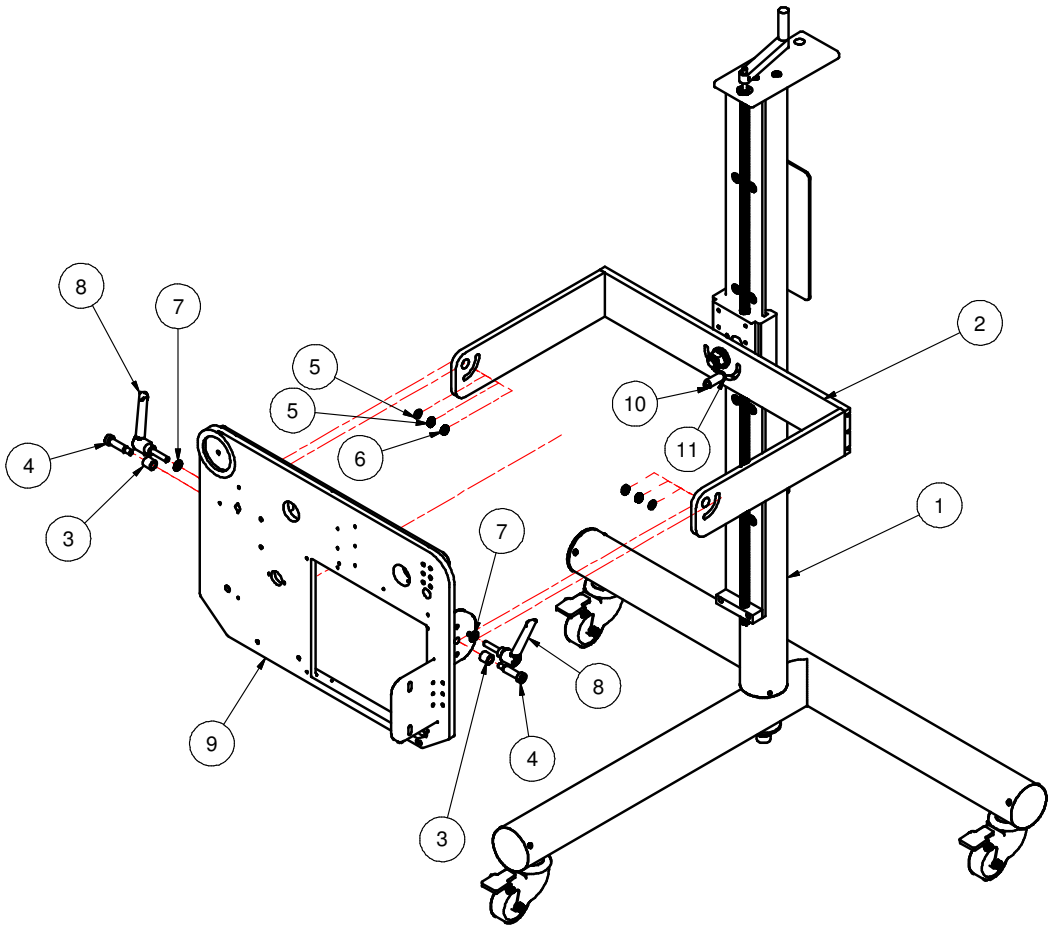
TOLERANCES UNLESS OTHERWISE NOTED:
INCH .X =±.050 .XX =±.015 .XXX =±.005 ANGLES ±1/2°
METRIC .X =±1.0mm .XX =±.3mm .XXX =±.1mm MACH. FINISH 125
FRACTIONS ± 1/64

LOVESHAW an ITW Company
RT. 296, SOUTH CANAAN, PA.

TITLE: MECHANICAL ASSEMBLY

DWG NO LX-80	SCALE 1:4
MATERIAL	CHECKED
DRAWN ADAM	APPROVED ADAM

REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
A	RELEASED	10/19/2009	KK



Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	.UMS-01	LABELER MOUNTING STAND ASSY.
2	1	22-U03A	MOUNTING HARNESS
3	2	MLT80-041	PIVOT BUSHING
4	2	FSBSN175B05	1/2 x 1-3/4 SHOULDER BOLT
5	4	FFWSHP	FLAT WASHER 1/2"
6	2	FNLNSJP	HEX NYLOK NUT 3/8-16
7	2	FFWSFP	FLAT WASHER 3/8
8	2	202669	RATCHET HANDLE
9	1	B0080-880	LABELER FRAME PLATE, RIGHT HAND
OR 9	1	B0080-881	LABELER FRAME PLATE. LEFT HAND
10	1	B0140-102	HANDLE
11	1	FFLSEP	FLAT WASHER, 5/16"

MAT'L	PART #	CAD FILE LX80 Station R1.idw
N/A	STD	PLOT DATE 10/19/2009
ST. ST.	N/A	DRAWN DATE 10/19/2009
STAINLESS : NO FINISH		DO NOT SCALE PRINT

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TOLERANCES UNLESS OTHERWISE NOTED:

INCH .X =±.050 .XX =±.015 .XXX =±.005 ANGLES ±1/2°

METRIC .X =±1.0mm .XX =±.3mm .XXX =±.1mm MACH. FINISH 125

FRACTIONS ±1/64

LOVESHAW an ITW Company
RT. 296, SOUTH CANAAN, PA.

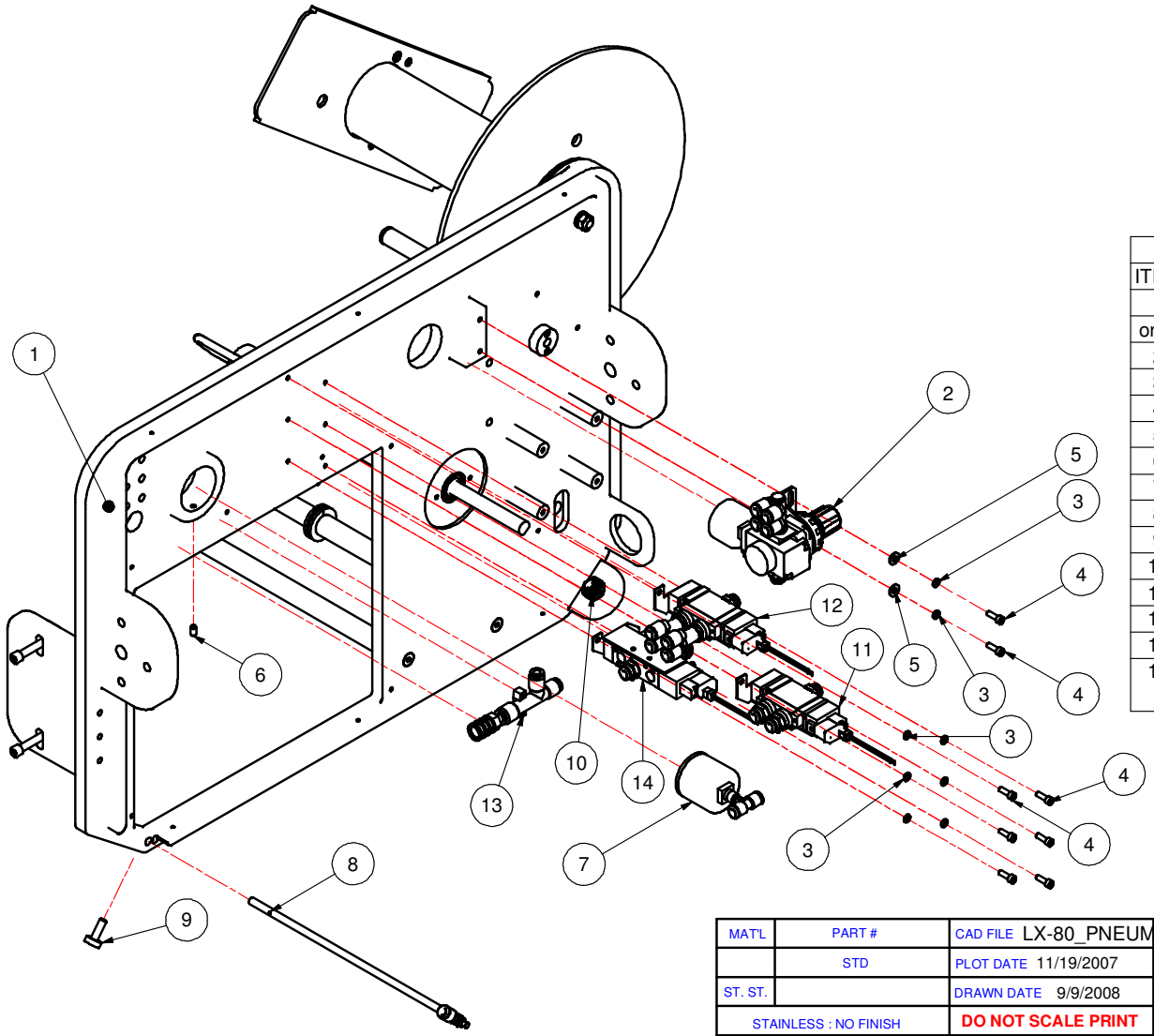
TITLE MOUNTING STAND WITH FRAME

DWG NO	LX80 Station	SCALE	N/A
MATERIAL	N/A	CHECKED	
DRAWN	KENK	APPROVED	

PNEUMATIC ASSEMBLIES

(FOR ALL MODELS)

REVISION HISTORY				
REV	DESCRIPTION	DATE	DESIGNER	APPROVED
A	ADDED LH AND NOTE	10/14/09	KK	



Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	B0080-880	LABELER FRAME PLATE (RIGHT HAND)
or 1	1	B0080-881	LABELER FRAME PLATE (LEFT HAND)
2	1	.A1247-03	REGULATOR ASSEMBLY
3	12	FLWSBP	#8 LOCK WASHER
4	8	FSHSB050B08	8-32 X 1/2 SHCS
5	2	FFWSBP	Type A Plain Washer
6	2	FSSSD037B05	10-32 X 3/8 SET SCREW
7	1	.A8226-01A	VACUUM GAUGE ASSEMBLY
8	1	.14018-LT	AIR TUBE ASSEMBLY - 1 HOLE
9	1	M0010-018	1/4-20 THUMB SCREW
10	1	P4010-038	BLKHEAD UNION
11	1	.A765-T_B-01A	VACUUM/BLOW SOLENOID ASSEMBLY
12	1	.A765-A_R-01A	APPLY/RETRACT SOLENOID ASSEMBLY
13	1	.14210-S	VACUUM GENERATOR ASSEMBLY
14	1	.A765-B_V-01A (SEE NOTE 2)	PILOTED VACUUM/BLOW SOLENOID COIL

NOTE:
1. RIGHT HAND ASSEMBLY SHOWN.
2. ITEM 14 IS NOT REQUIRED FOR DUAL TAMP (LX80_DT) LABELERS; ONLY FOR TAMP (LX80_T) MODELS.

MAT'L	PART #	CAD FILE	LX-80_PNEUMATIC.idw
	STD	PLOT DATE	11/19/2007
ST. ST.		DRAWN DATE	9/9/2008
STAINLESS : NO FINISH		DO NOT SCALE PRINT	

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TOLERANCES UNLESS OTHERWISE NOTED:

INCH .X =±.050 .XX =±.015 .XXX =±.005 ANGLES ±1/2°

METRIC .X =±1.0mm .XX =±.3mm .XXX =±.1mm MACH. FINISH 125

FRACTIONS ±1/64

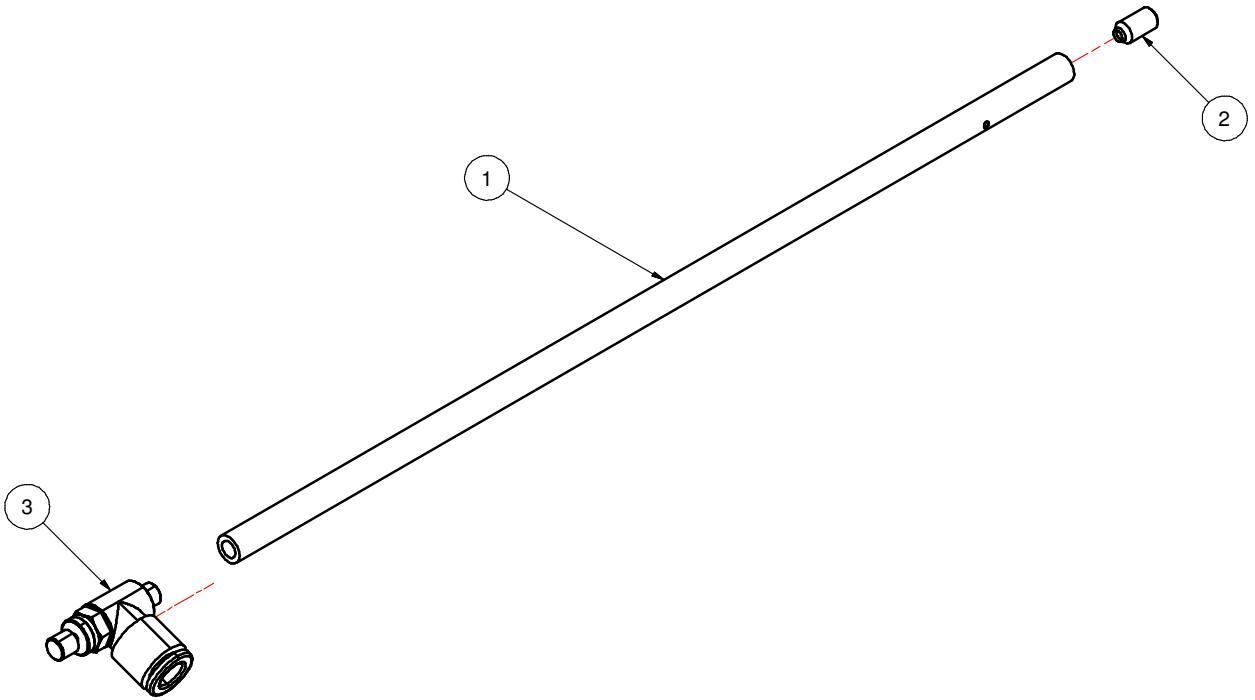
LOVESHAW an *ITW* Company
RT. 296, SOUTH CANAAN, PA.

TITLE: PNEUMATIC ASSEMBLY

DWG NO LX-80	SCALE 1:4
MATERIAL	CHECKED
DRAWN ADAM	APPROVED ADAM

Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	08056-SS	SINGLE HOLE AIR TUBE
2	1	FSSSD037B05	10-32 X 3/8 SET SCREW
3	1	P6010-007A	FLOW CONTROL ELBOW - METER IN

REVISION HISTORY				
REV	DESCRIPTION	DATE	DESIGNER	APPROVED
A	08-192	9/25/08	A.L.S.	W.M.



MAT'L	PART #	CAD FILE .14018-LT.idw	TOLERANCES UNLESS OTHERWISE NOTED:	LOVESHAW an ITW Company RT. 296, SOUTH CANAAN, PA.
	STD	PLOT DATE 11/19/2007		
ST. ST.		DRAWN DATE 8/29/2008	.X =±.050 INCH .XX =±.015 .XXX =±.005 ANGLES ±1/2°	TITLE AIR TUBE ASSEMBLY - 1 HOLE
STAINLESS : NO FINISH		DO NOT SCALE PRINT	.X =±1.0mm METRIC .XX =±.3mm .XXX =±.1mm MACH. FINISH 125	DWG NO .14018-LT / SCALE
			FRACTIONS ±1/64	MATERIAL / CHECKED
				DRAWN ADAM / APPROVED ADAM

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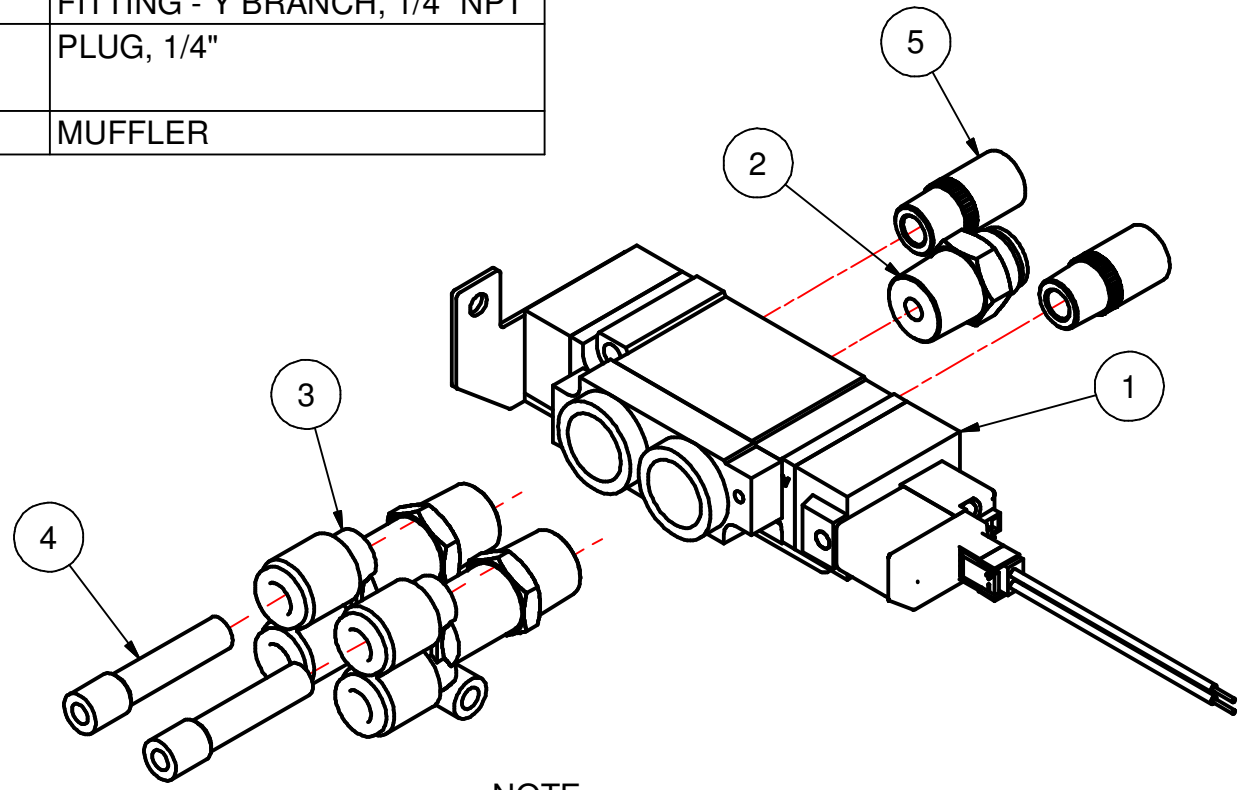
Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	P14606-S1	SOLENOID COIL
2	1	P4010-027	FEMALE AIR CONNECTOR
3	2	P4010-Y25	FITTING - Y BRANCH, 1/4" NPT
4	2	P4010-007 (SEE NOTE)	PLUG, 1/4"
5	2	P0000-006	MUFFLER

REVISION HISTORY				
REV	DESCRIPTION	DATE	DESIGNER	APPROVED
A	ADDED ITEM 4 , 5 & NOTE	10/14/09	KK	



NOTE:
ITEM 4 IS NOT USED ON A STANDARD STROKE TAMP (LX80_T) LABELER; THEY ARE USED ON THE EXTENDED STROKE TAMP LABELER AND THE DUAL TAMP (LX80_DT) LABELER.

MAT'L	PART #	CAD FILE .A765-A_R-01A.idw	TOLERANCES UNLESS OTHERWISE NOTED:	LOVESHAW an ITW Company RT. 296, SOUTH CANAAN, PA.
	STD	PLOT DATE 11/19/2007		
ST. ST.		DRAWN DATE 9/17/2008	INCH .X =±.050 .XX =±.015 .XXX =±.005 ANGLES ±1/2°	TITLE APPLY/RETRACT SOLENOID ASSEMBLY
STAINLESS : NO FINISH		DO NOT SCALE PRINT	METRIC .X =±1.0mm .XX =±.3mm .XXX =±.1mm MACH. FINISH 125	DWG NO .A765-A/R-01A / SCALE 1:1
			FRACTIONS ± 1/64	MATERIAL / CHECKED
				DRAWN ADAM / APPROVED ADAM

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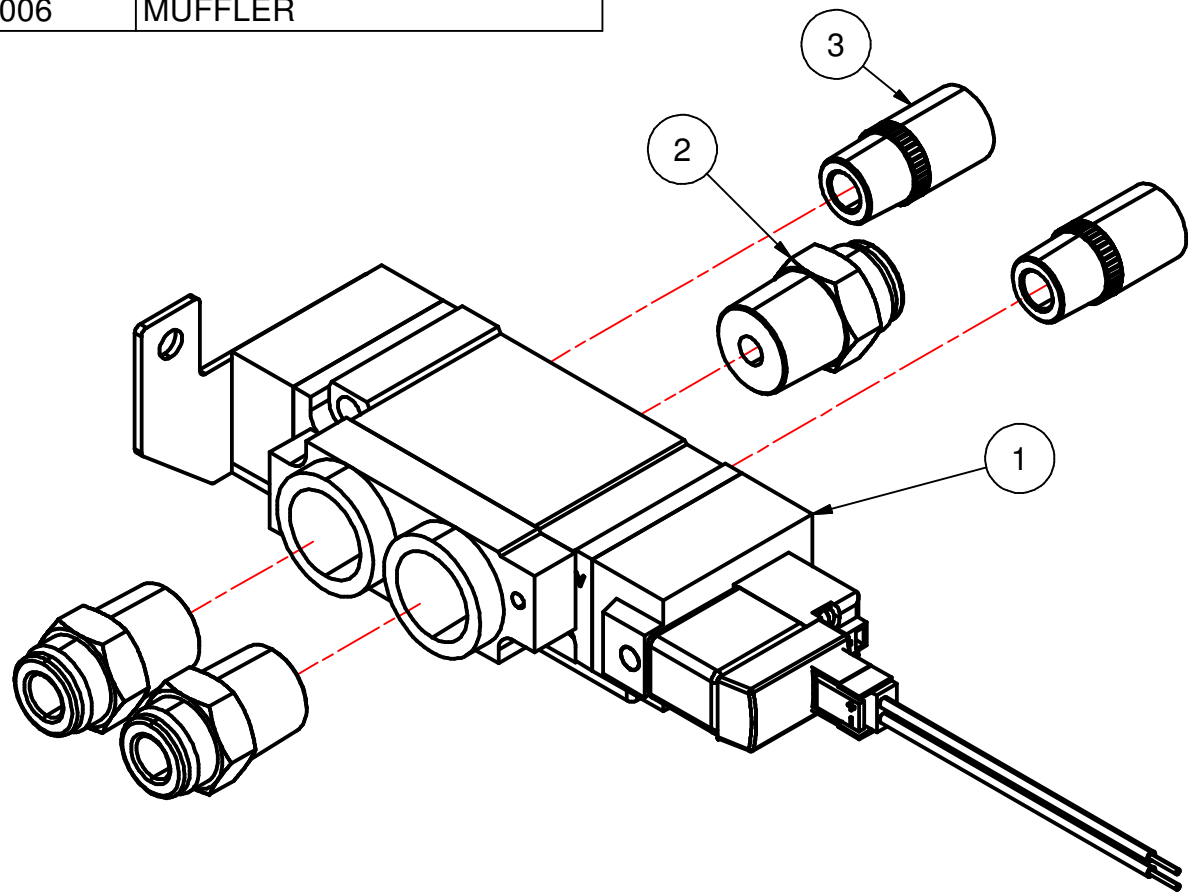
Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	P14606-S1	SOLENOID COIL
2	3	P4010-027	FEMALE AIR CONNECTOR
3	2	P0000-006	MUFFLER

REVISION HISTORY				
REV	DESCRIPTION	DATE	DESIGNER	APPROVED
A	ADDED ITEM 3	10/14/09	KK	



MAT'L	PART #	CAD FILE .A765-T_B-01A.idw	TOLERANCES UNLESS OTHERWISE NOTED:	LOVESHAW an ITW Company RT. 296, SOUTH CANAAN, PA.
	STD	PLOT DATE 11/19/2007		
ST. ST.		DRAWN DATE 9/16/2008	INCH .X =±.050 .XX =±.015 .XXX =±.005 ANGLES ±1/2°	TITLE VACUUM/BLOW SOLENOID ASSEMBLY
STAINLESS : NO FINISH		DO NOT SCALE PRINT	METRIC .X =±1.0mm .XX =±.3mm .XXX =±.1mm MACH. FINISH 125	DWG NO .A765-T/B-01A / SCALE 1:1
			FRACTIONS ± 1/64	MATERIAL / CHECKED
				DRAWN ADAM / APPROVED ADAM

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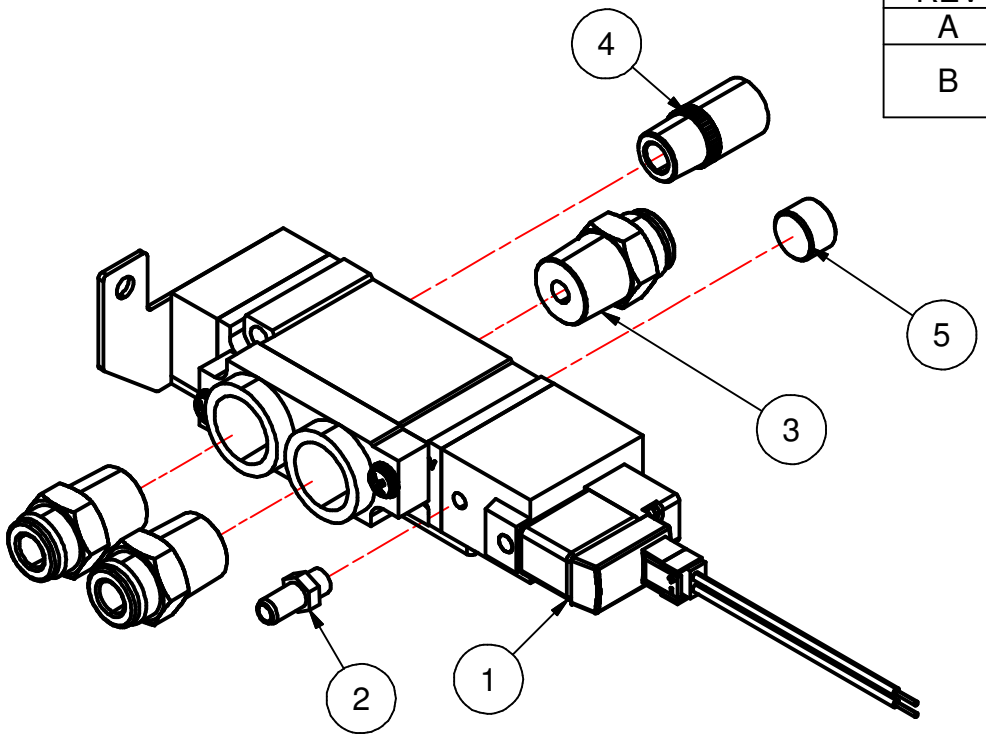
REVISION HISTORY				
REV	DESCRIPTION	DATE	DESIGNER	APPROVED
A		10/9/2008	A.L.S.	
B	ADDED ITEMS 4,5 & NOTE	10/14/09	KK	



NOTE: THIS SOLENOID ASSY. IS ONLY USED ON THE TAMP (LX80_T) LABELER; NOT THE DUAL TAMP (LX80_DT) LABELER.

Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	P14606-P1	PILOTED SOLENOID COIL
2	1	14030	FITTING
3	3	P4010-027	FEMALE AIR CONNECTOR
4	1	P0000-006	MUFFLER
5	1	P7584-125	1/8" NPT PLUG

MAT'L	PART #	CAD FILE .A765-B_V-01A.idw	TOLERANCES UNLESS OTHERWISE NOTED:	LOVESHAW an ITW Company RT. 296, SOUTH CANAAN, PA.
	STD	PLOT DATE 11/19/2007		
ST. ST.		DRAWN DATE 10/9/2008	INCH .X =±.050 .XX =±.015 .XXX =±.005 ANGLES ±1/2°	TITLE PILOTED VACUUM/BLOW SOLENOID COIL
STAINLESS : NO FINISH		DO NOT SCALE PRINT	METRIC .X =±1.0mm .XX =±.3mm .XXX =±.1mm MACH. FINISH 125	DWG NO .A765-B/V-01A SCALE 1:1
			FRACTIONS ± 1/64	MATERIAL CHECKED
				DRAWN ADAM APPROVED ADAM

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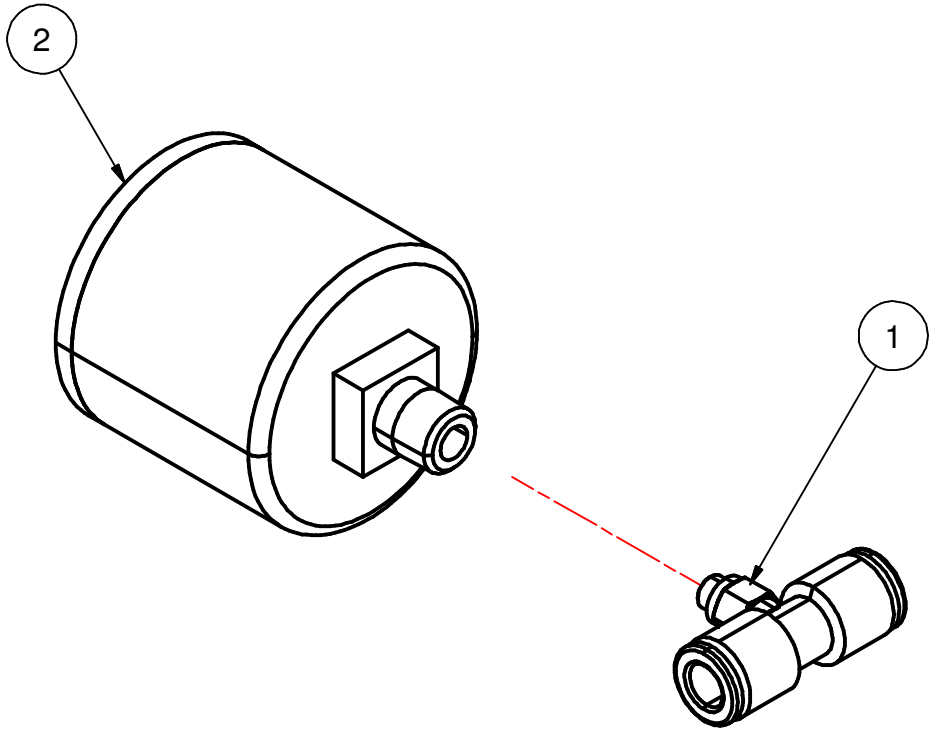
REVISION HISTORY				
REV	DESCRIPTION	DATE	DESIGNER	APPROVED



Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	P34864-01	FITTING - TEE, 1/4" HOSE
2	1	P3010-005	PRESSURE GAUGE

MAT'L	PART #	CAD FILE .A8226-01A.idw	TOLERANCES UNLESS OTHERWISE NOTED:	LOVESHAW an ITW Company RT. 296, SOUTH CANAAN, PA.
	STD	PLOT DATE 11/19/2007		
ST. ST.		DRAWN DATE 8/27/2008	INCH .X =±.050 .XX =±.015 .XXX =±.005 ANGLES ±1/2°	TITLE VACUUM GAUGE ASSEMBLY
STAINLESS : NO FINISH		DO NOT SCALE PRINT	METRIC .X =±1.0mm .XX =±.3mm .XXX =±.1mm MACH. FINISH 125	DWG NO .A8226-01A / SCALE 1:1
			FRACTIONS ± 1/64	MATERIAL / CHECKED
				DRAWN ADAM / APPROVED ADAM

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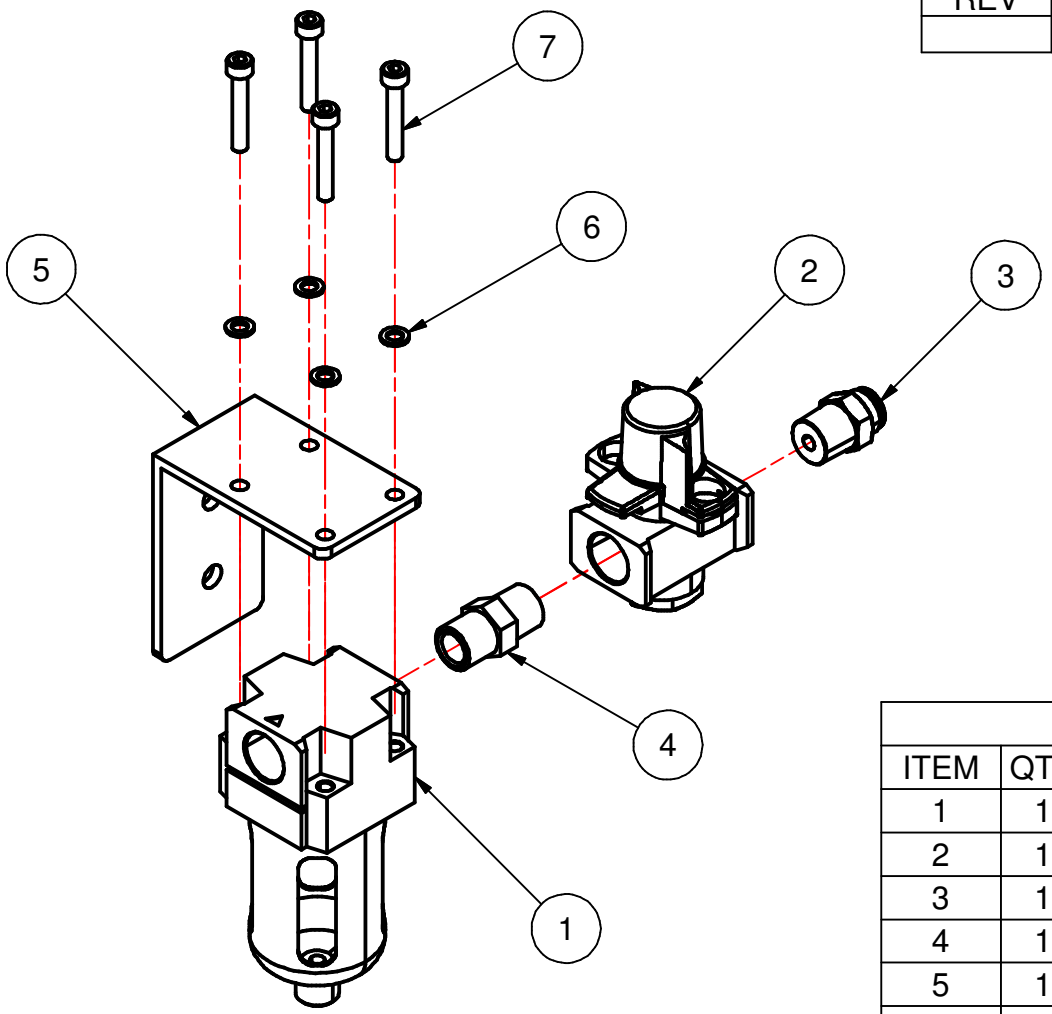
REVISION HISTORY				
REV	DESCRIPTION	DATE	DESIGNER	APPROVED



Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	P14058-S1	AIR FILTER
2	1	14405-B	AIR SHUT-OFF
3	1	P4010-027	FEMALE AIR CONNECTOR
4	1	P4000-036	THREADED UNION
5	1	MLT80-038	REGULATOR MOUNT
6	4	FLWMEP	LOCK WASHER M4
7	4	FSHME025P10	SHCS M4 X 0.7 X 25 LG.

MAT'L	PART #	CAD FILE A1247-02.idw	TOLERANCES UNLESS OTHERWISE NOTED:
	STD	PLOT DATE 11/19/2007	
ST. ST.		DRAWN DATE 7/30/2008	INCH .X = ±.050, .XX = ±.015, .XXX = ±.005 ANGLES ± 1/2°
STAINLESS : NO FINISH		DO NOT SCALE PRINT	METRIC .X = ±1.0mm, .XX = ±.3mm, .XXX = ±.1mm MACH. FINISH 125
			FRACTIONS ± 1/64

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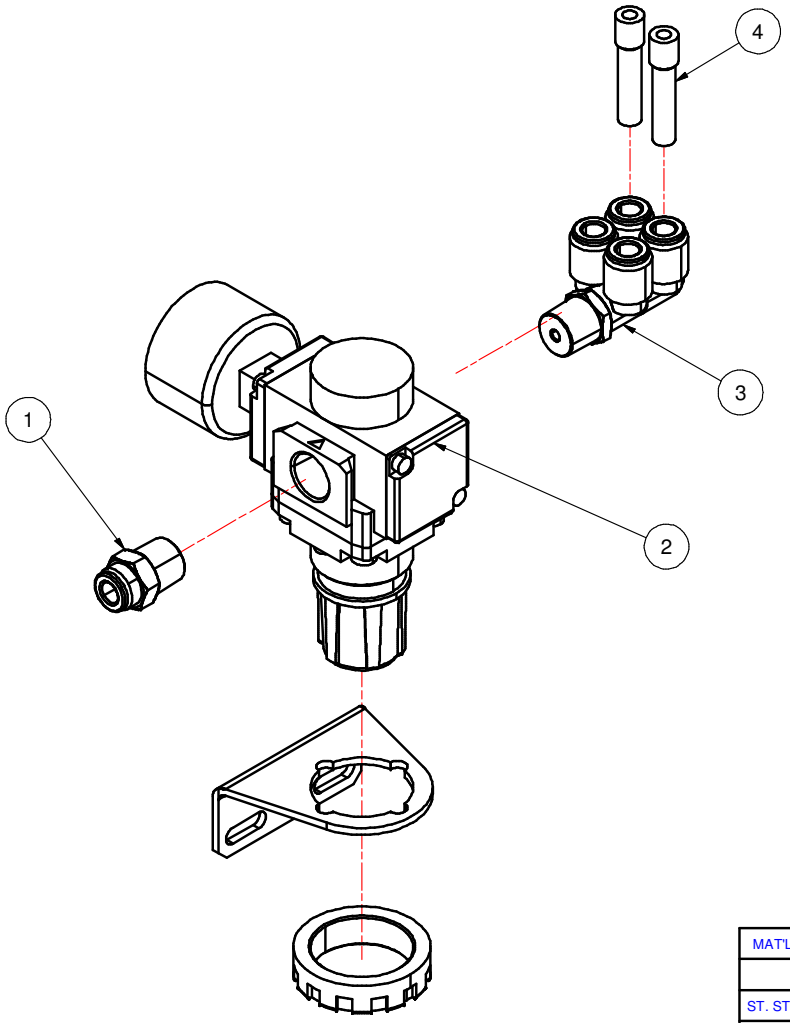
LOVESHAW an ITW Company
RT. 296, SOUTH CANAAN, PA.

TITLE
AIR FILTER

DWG NO .A1247-02	SCALE 1:2
MATERIAL	CHECKED
DRAWN ADAM	APPROVED ADAM

REVISION HISTORY				
REV	DESCRIPTION	DATE	DESIGNER	APPROVED
A	08-180	9/16/08	A.L.S.	W.M.
B	08-191	9/22/2008	A.L.S.	W.M.
C	ADDED ITEM 4 & NOTE	10/15/09	KK	



NOTE:
1. RIGHT HAND ASSEMBLY SHOWN.
2. ITEM 4 IS ONLY REQUIRED ON THE DUAL TAMP (LX80_DT) LABELER; NOT THE TAMP (LX80_T) LABELER.

Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	P4010-027	FEMALE AIR CONNECTOR
2	1	P0020-003	REGULATOR WITH GAUGE
3	1	P4010-U14	FITTING, Y-DOUBLE STACK
4	2	P4010-007 (SEE NOTE 2)	PLUG, 1/4"

MAT'L	PART #	CAD FILE	A1247-03.idw
	STD	PLOT DATE	11/19/2007
ST. ST.		DRAWN DATE	8/1/2008
STAINLESS : NO FINISH		DO NOT SCALE PRINT	

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INCH .X =±.050 .XX =±.015 .XXX =±.005 ANGLES ±1/2°

METRIC .X =±1.0mm .XX =±.3mm .XXX =±.1mm MACH. FINISH 125

FRACTIONS ±1/64

LOVESHAW an *ITW* Company
RT. 296, SOUTH CANAAN, PA.

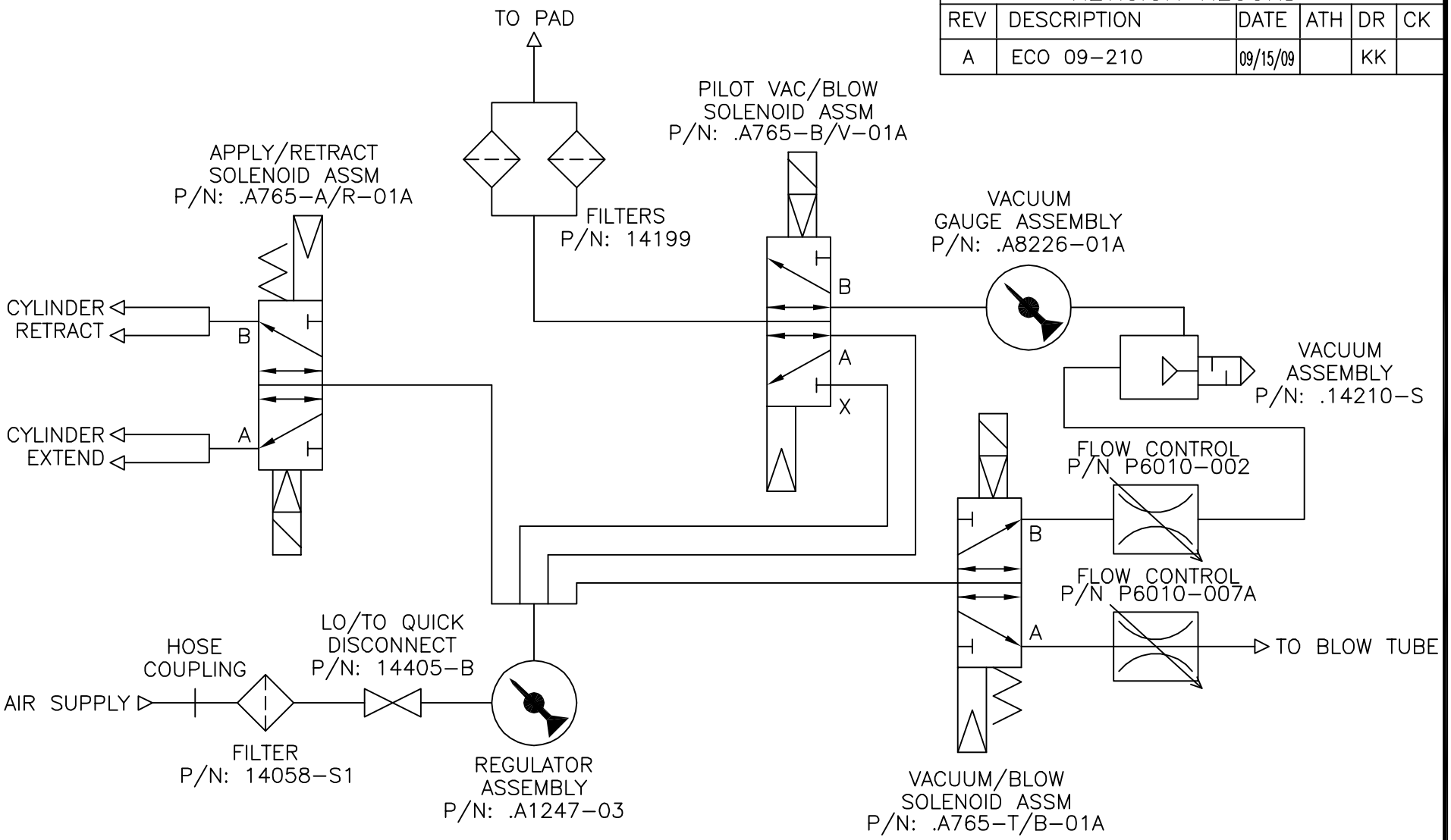
TITLE
REGULATOR ASSEMBLY

DWG NO	.A1247-03	SCALE	1:1
MATERIAL		CHECKED	
DRAWN	ADAM	APPROVED	ADAM

PNEUMATIC DIAGRAM

(STRAIGHT TAMP MODELS)

REVISION RECORD					
REV	DESCRIPTION	DATE	ATH	DR	CK
A	ECO 09-210	09/15/09		KK	



MAT'L	PART #	CAD FILE: 601910
–	STD	PLOT DATE: 10/14/08
		DRAWN DATE: 10/2/08
STAINLESS: NO FINISH		DO NOT SCALE PRINT

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TOLERANCES UNLESSS OTHERWISE NOTED:

INCH .X = ± .050, .XX = ± .010, .XXX = ± .005

METRIC .X = ± 1.0mm, .XX = ± .3mm, .XXX = ± .1mm

ANGLES ±1/2° FRACTIONS ±1/64

MACHINE FINISH 125

LOVESHAW an ITW Company
ROUTE 296, SOUTH CANAAN, PA

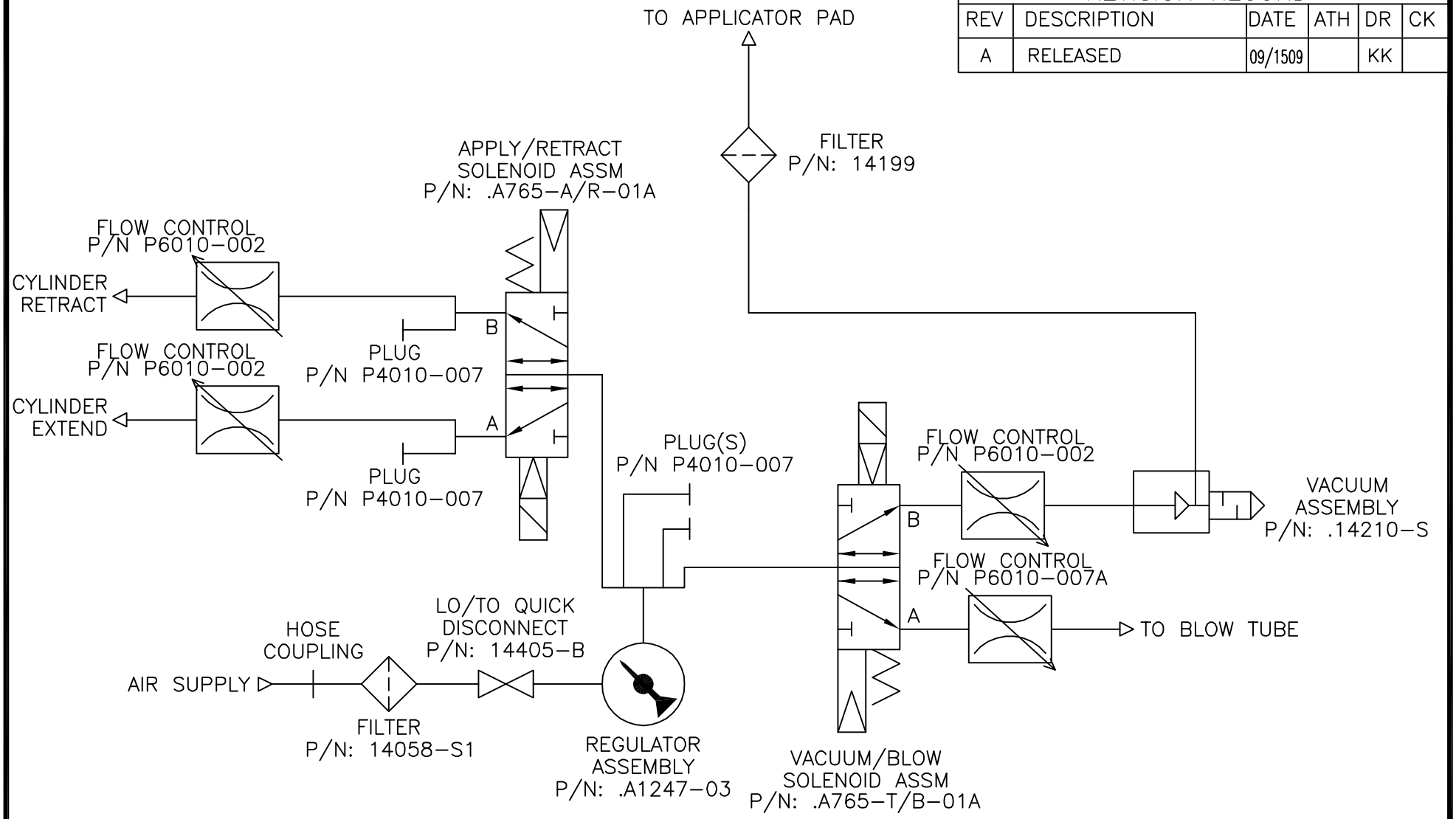
TITLE: LX80/LX800
PNEUMATIC DIAGRAM

PART #: –		SCALE: N/A
MATERIAL: –		CHECK'D:
DESIGNED: A.L.S.	DRAWN: A.L.S.	APPRV'D:

PNEUMATIC DIAGRAM

(DUAL TAMP – SWING ARM MODEL)

REVISION RECORD					
REV	DESCRIPTION	DATE	ATH	DR	CK
A	RELEASED	09/1509		KK	



MAT'L	PART #	CAD FILE: 601913
–	STD	PLOT DATE: 09/15/09
		DRAWN DATE: 09/15/09
STAINLESS: NO FINISH		DO NOT SCALE PRINT

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TOLERANCES UNLESSS OTHERWISE NOTED:

INCH .X = ± .050, .XX = ± .010, .XXX = ± .005

METRIC .X = ± 1.0mm, .XX = ± .3mm, .XXX = ± .1mm

ANGLES ±1/2° FRACTIONS ±1/64

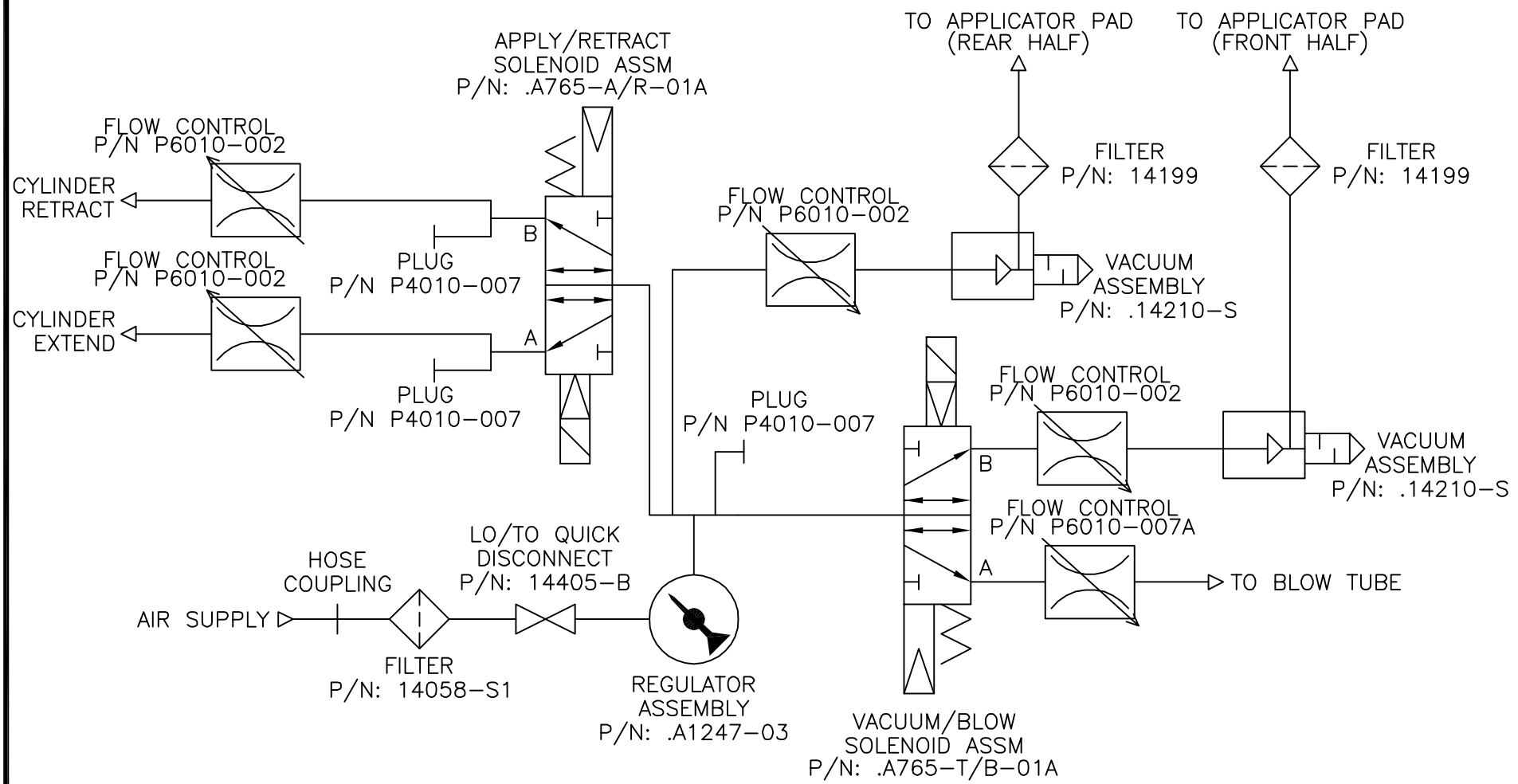
MACHINE FINISH 125

LOVESHAW an ITW Company
ROUTE 296, SOUTH CANAAN, PA

TITLE: LX80 / 800 DT
PNEUMATIC DIAGRAM

PART #: –		SCALE: N/A
MATERIAL: –		CHECK'D:
DESIGNED: KK	DRAWN: KK	APPRV'D:

REVISION RECORD					
REV	DESCRIPTION	DATE	ATH	DR	CK
A	RELEASED	12/02/09		KK	



MAT'L	PART #	CAD FILE: 601914
–	STD	PLOT DATE: 12/02/09
		DRAWN DATE: 12/02/09
STAINLESS: NO FINISH		DO NOT SCALE PRINT

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TOLERANCES UNLESSS OTHERWISE NOTED:

INCH .X = ± .050, .XX = ± .010, .XXX = ± .005

METRIC .X = ± 1.0mm, .XX = ± .3mm, .XXX = ± .1mm

ANGLES ±1/2° FRACTIONS ±1/64

MACHINE FINISH 125

LOVESHAW an ITW Company
ROUTE 296, SOUTH CANAAN, PA

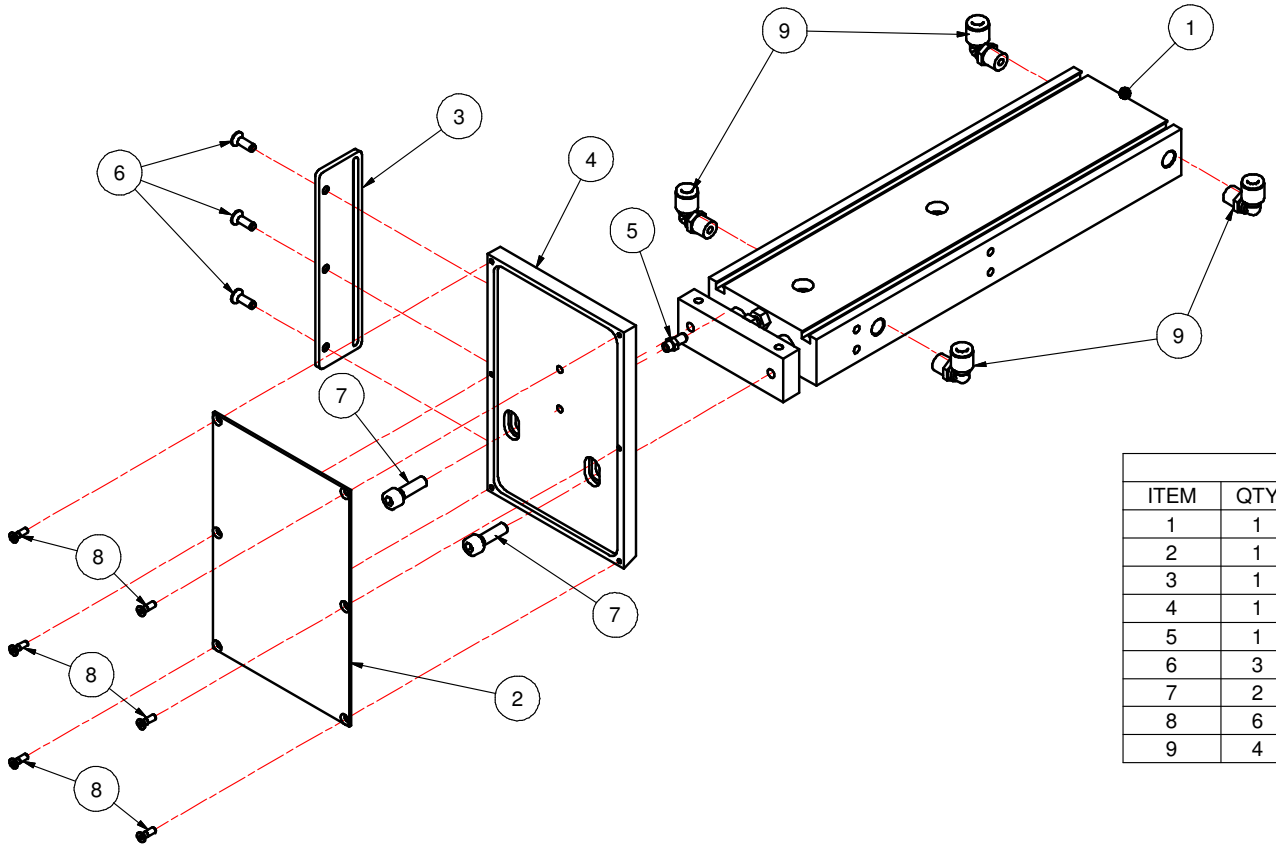
TITLE: LX80 / 800 DT w/ SECONDARY VACUUM – PNEUMATIC DIAGRAM

PART #: –		SCALE: N/A
MATERIAL: –		CHECK'D:
DESIGNED: KK	DRAWN: KK	APPRV'D:

APPLICATOR ASSEMBLIES

(STRAIGHT TAMP MODELS)

REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
A		10/31/2008	AR
B	ADDED ITEM 10	04/27/2009	KK



Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	P8010-416	TWIN ROD AIR CYLINDER
2	1	140LT-046	VACUUM GRID
3	1	MLT80-042	SENSOR MOUNT PLATE
4	1	MLT80-033	VACUUM CHAMBER
5	1	14030	FITTING
6	3	FFHSB050B05	FLAT HD.CAP SCREW #8-32 x 1/2
7	2	FSHMG020P10	SOC. HD. CAP SCREW M6 X 20 LG.
8	6	FFHMD010P10	FLAT HD. CAP SCREW M3 X 10 LG.
9	4	P4010-34S	LOW PROFILE ELBOW

MAT'L	PART #	CAD FILE	TP-LX80-40X60
C.R.S.	STD	PLOT DATE	
ST. ST.		DRAWN DATE	10/31/2008
STAINLESS : NO FINISH		DO NOT SCALE PRINT	

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METRIC .X =±1.0mm .XX =±.3mm .XXX =±.1mm MACH. FINISH 125

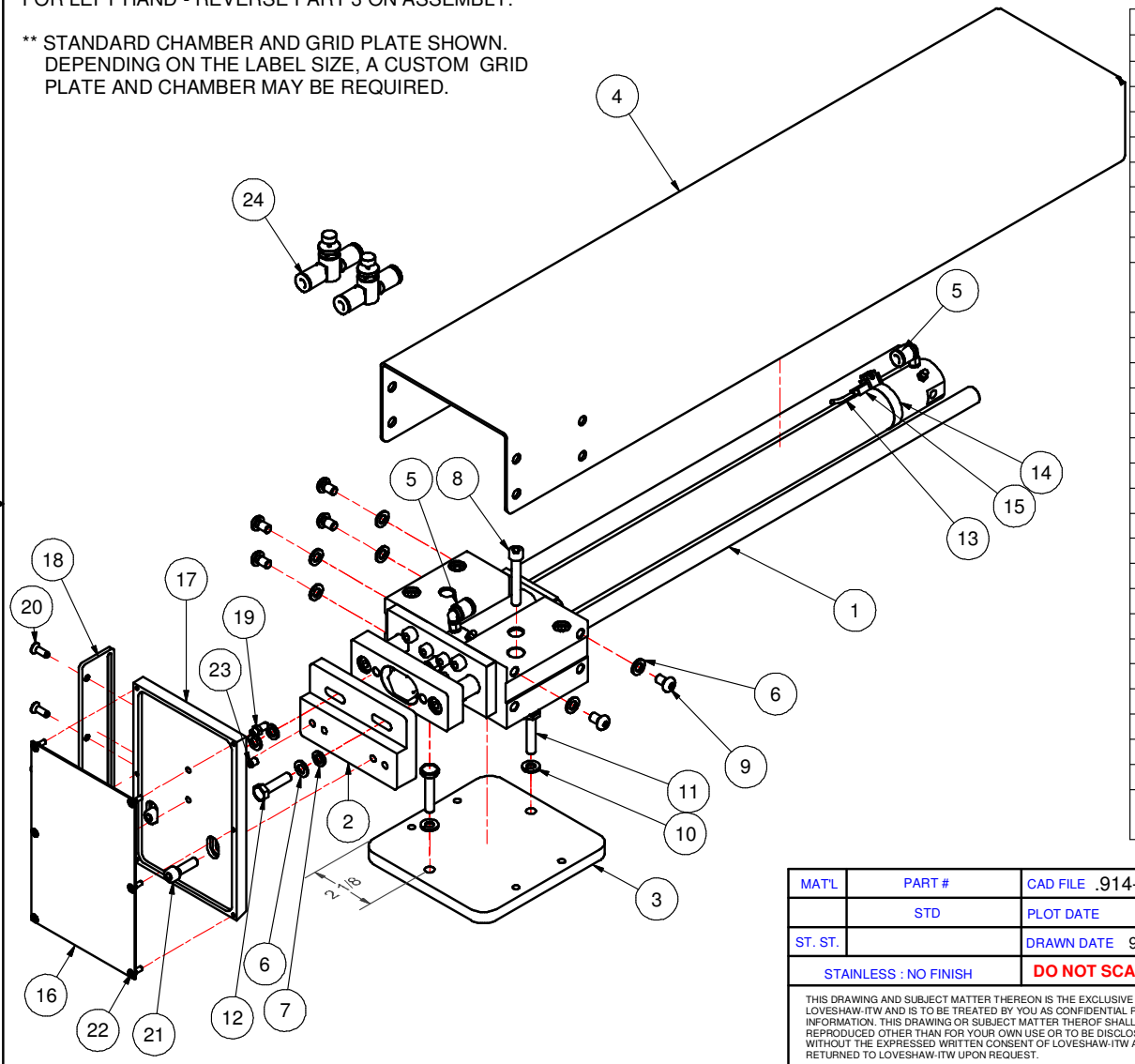
FRACTIONS ±1/64

LOVESHAW an *ITW* Company
RT. 296, SOUTH CANAAN, PA.

TITLE	
DWG NO	SCALE
MATERIAL	CHECKED
DRAWN amyr	APPROVED

NOTE: RIGHT HAND (STANDARD) IMAGE SHOWN.
FOR LEFT HAND - REVERSE PART 3 ON ASSEMBLY.

** STANDARD CHAMBER AND GRID PLATE SHOWN.
DEPENDING ON THE LABEL SIZE, A CUSTOM GRID PLATE AND CHAMBER MAY BE REQUIRED.



REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
A	RELEASED	9/4/2009	KK

Parts List

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	P8010-420	AIR CYL. 350mm (13.75") STROKE
OR			
1	1	P8010-421	AIR CYL., 500mm (19.68") STROKE
2	1	LABN-0013-4	INTERFACE BLOCK, EXT. CYL.
3	1	LABN-0014-4	INTERFACE PLATE, EXT CYL LX80
4	1	LABN-0015A-4	GUARD, EXT. CYL. (350mm STROKE)
OR			
4	1	LABN-0015-4	GUARD, EXT. CYL. (500mm STROKE)
5	2	14012	1/4" HOSE X 10-32 TH 90 DEG. FITTING
6	8	FLWMGP	LOCK WASHER M6
7	2	FFWMGP	FLAT WASHER M6
8	4	FSHMG040P10	SHCS M6 X 1.0 X 40 LG.
9	6	FBHMG010P10	BUTT. HD. CAP SCERW M6 X 10 LG.
10	2	FLWSDP	LOCK WASHER 1/4
11	2	FHHSE125P05	HHCS, 1/4-20 X 1.25
12	2	FHHMG025P10	HHCS M6 X 25
13	1	E2000-127	SENSOR, AUTO SWITCH
14	1	P0010-037	STRAP, SENSOR (25mm BORE)
15	1	P0010-038	ADAPTER PLATE, SENSOR
16	REF.	140LT-046 **	VACUUM GRID
17	REF.	MLT80-033 **	VACUUM CHAMBER
18	1	MLT80-042	SENSOR MOUNT PLATE
19	1	14030	FITTING
20	3	FFHSB050B05	FLAT HEAD CAP SCREW #8-32 x 1/2
21	2	FSHMG020P10	SHCS M6 X 20
22	6	FFHMD010P10	FLAT HEAD CAP SCREW M3 X 10 LG.
23	1	FSSSD025P05	10-32 X 1/4 SET SCREW
24	2	P6010-002	FLOW CONTROL, IN-LINE 1/4"
25	2	P4010-007 (NOT SHOWN)	PLUG, 1/4"

MAT'L	PART #	CAD FILE .914-LX-350-500.idw
	STD	PLOT DATE
ST. ST.		DRAWN DATE 9/4/2009
STAINLESS : NO FINISH		DO NOT SCALE PRINT

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METRIC .X =±1.0mm .XX =±.3mm .XXX =±.1mm MACH. FINISH 125

FRACTIONS ±1/64

LOVESHAW an *ITW* Company
RT. 296, SOUTH CANAAN, PA.

TITLE EXTENDED STROKE ASSY, LX SERIES

DWG NO .914-LX-350-500	SCALE
MATERIAL	CHECKED
DRAWN KENK	APPROVED

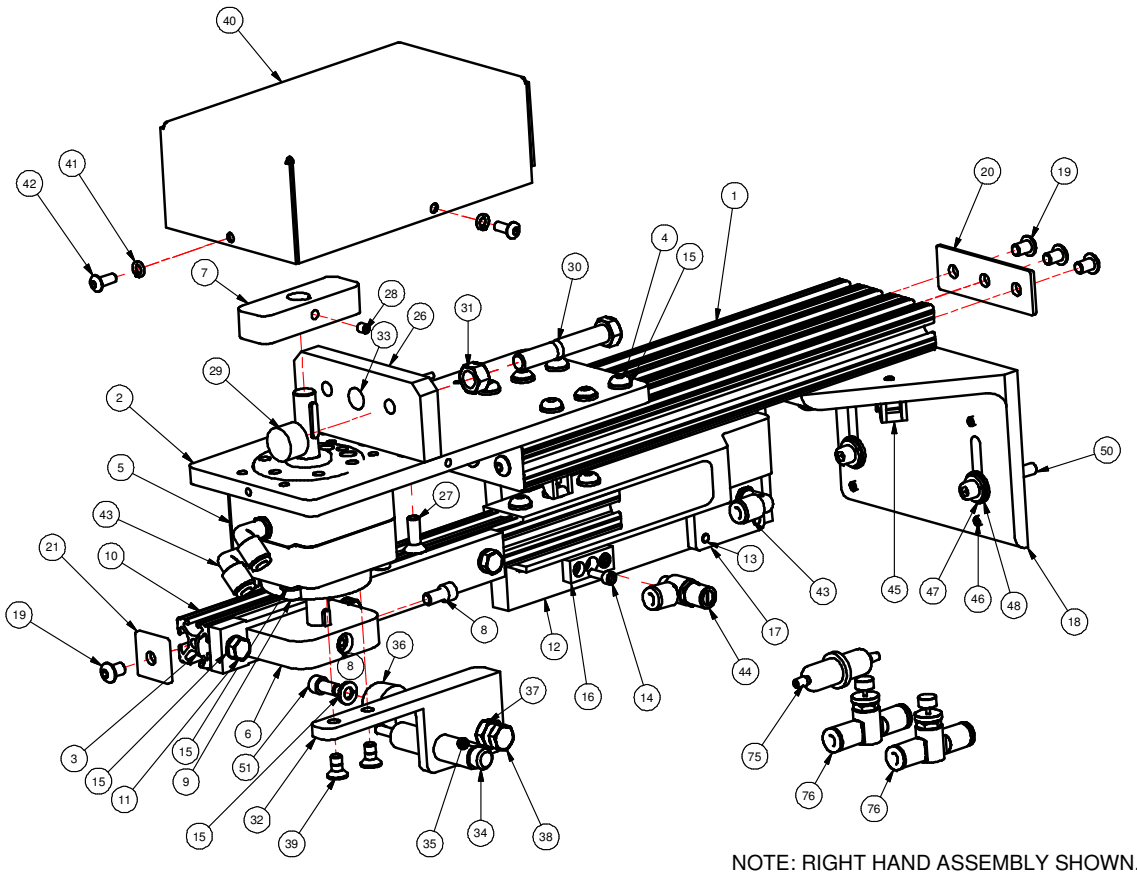
APPLICATOR ASSEMBLY

(DUAL TAMP – SWING ARM MODEL)

REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
A	RELEASED	10/14/2009	KK

Parts List

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	R000-004/BLK__	EXTRUSION, 1" X 3", BLACK
2	1	LABN-0017-4	MOUNTING PLATE, ROTARY
3	5	B0020-016	DOUBLE T-NUT, 1/4-20 THREADS
4	6	FBHSE075P05	BUTTON HEAD, 1/4-20 X 3/4
5	1	P8010-405	ROTARY ACTUATOR
6	1	M0040-049	ACTUATOR BLOCK
7	1	M0040-050	ACTUATOR STOP BLOCK
8	2	FSHSE050P05	SOCKET HEAD SCREW, 1/4-20 X 1/2
9	4	FSHSE225P05	SOCKET HEAD SCREW, 1/4-20 X 2.25
10	1	R0000-003/BLK__	EXTRUSION, 1" X 1", BLACK
11	3	FHHSE075P05	HEX HEAD SCREW, 1/4-20 X 3/4
12	1	14000-XXX	APPLICATOR PAD, CUSTOMER SPECIFIC
13	4	FSHSD050P05	SOCKET HEAD SCREW, 10-32 X 1/2
14	2	FSHSB050P05	SOCKET HEAD SCREW, 8-32 X 1/2
15	26	FLWSDP	LOCK WASHER 1/4
16	1	M0020-267	FITTING ATTACHMENT PLATE
17	1	LABN-0001-4	APPL. PAD MOUNTING ARM
18	1	LABN-0003R-4	MOUNTING ANGLE (RIGHT HAND)
OR 18	1	LABN-0003L-4	MOUNTING ANGLE (LEFT HAND)
19	7	FBHSE037B05	Button Head, Hex, 0.25 UNC x 0.625
20	2	B0020-060	END CAP
21	1	B0020-005	END CAP
22	6	B0020-039	T-NUT, 3 HOLE
23	6	FBHSE050P05	1/4-20 BHS
24	8	FBHSE075S05	Button Head, Hex, 0.25 UNC x 0.625
25	1	LABO-0006-4	SUPPORT PLATE
26	1	LABN-0018-4	MOUNT, PROXIMITY SENSOR
27	3	FFHSE075P05	FLAT HEAD SCREW 1/4-20 X 3/4"
28	1	FSSSD025P05	10-32 X 1/4 SET SCREW, WITH PATCH
29	1	M0160-202	STOP CUSHION
30	1	FHHSJ250P05	HEX BOLT 3/8-16 X 2 1/2
31	1	FHFNSJP	HEX NUT 3/8-16
32	1	LABN-0019R-4	BRACKET, SHOCK AND STOP (RIGHT HAND)
OR 32	1	LABN-0019L-4	BRACKET, SHOCK AND STOP (LEFT HAND)
33	1	A219-PF-6 and A219-PF-6/CON	PROXIMITY SENSOR WITH QD CONNECTOR
34	1	B0140-018	SHOCK ABSORBER
35	1	LABO-0005-3	STOP ADJUST BRACKET
36	1	F3MB	RUBBER BUMPER
37	2	FHJNSHP	5/16-18 HEX JAM NUT
38	1	FHHSH125P05	HEX HEAD, FULL THREAD, 5/16-18 X 1.25
39	2	FFHMG012P10	FHCS M6x12 LG.
40	1	LABN-0020-4	GUARD, ROTARY
41	3	FLWSCP	#10 LOCK WASHER
42	5	FBHSD050P05	BUTTON HEAD, HEX, 10-32 x 0.5
43	3	14441	FITTING, ELBOW
44	1	P6010-004	FLOW CONTROL VALVE
45	2	AH206	WIRE / HOSE CRADLE
46	4	FSSSD050B05	10-32 X 1/2 SET SCREW
47	2	FLWSEP	LOCK WASHER 5/16
48	2	FFWSEP	FW 5/16
49	1	B0020-006	ECONO T-NUT 10-32
50	2	FSHSE200P05	1/4-20 X 2 SHCS
51	1	FSHSE050B08	SHCS, 1/4-20 x 1/2" LG.
75	1	P5000-001 (4-PACK P/N 14199)	VACUUM LINE FILTER
76	2	P6010-002	FLOW CONTROL, IN-LINE 1/4"



NOTE: RIGHT HAND ASSEMBLY SHOWN.

MAT'L	PART #	CAD FILE .914-LX-DT.idw
N/A	STD	PLOT DATE 10/14/2009
ST. ST.	N/A	DRAWN DATE 10/14/2009
STAINLESS : NO FINISH		DO NOT SCALE PRINT

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METRIC .X =±1.0mm, .XX =±.3mm, .XXX =±.1mm, MACH. FINISH 125

FRACTIONS ±1/64

LOVESHAW an *ITW* Company
RT. 296, SOUTH CANAAN, PA.

TITLE: DUAL TAMP APPLICATOR ASSEMBLY

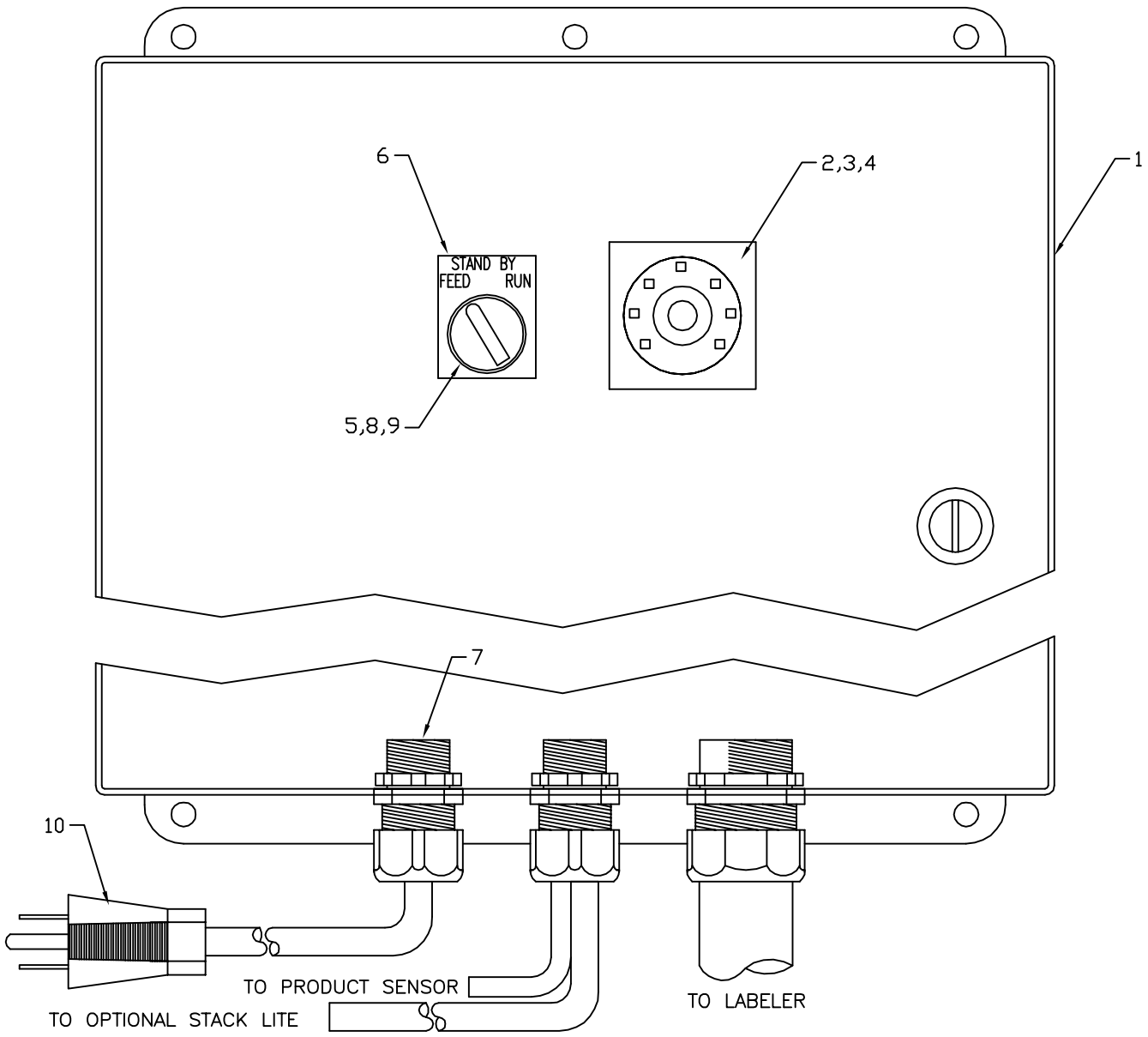
DWG NO .914-LX-DT	SCALE 3:8
MATERIAL N/A	CHECKED
DRAWN KENK	APPROVED

ELECTRICAL ASSEMBLY AND SCHEMATICS FOR SATO AND ZEBRA PRINTERS

(STRAIGHT TAMP MODELS)

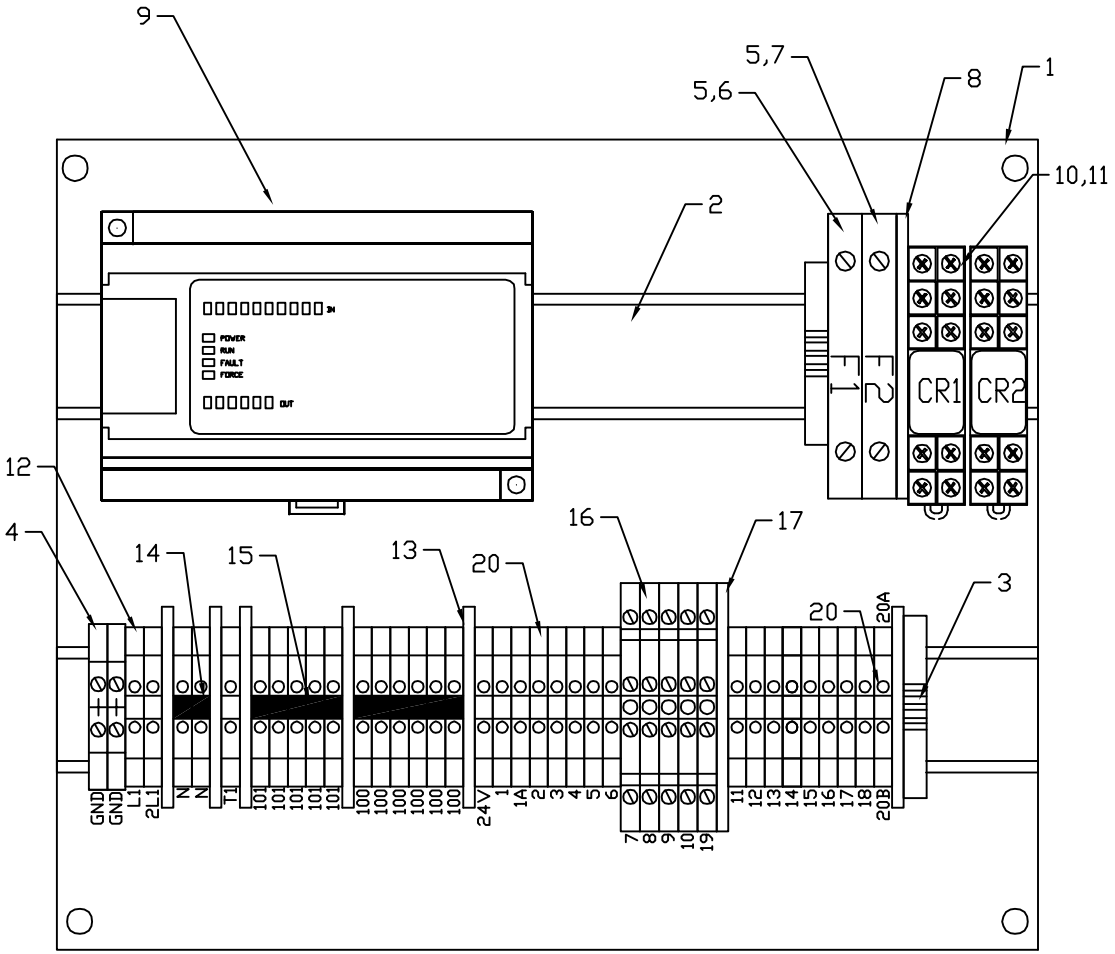
REVISION RECORD					
REV	DESCRIPTION	DATE	ATH	DR	CK

KEY	PART NUMBER	PART DESCRIPTION
1	ED01921	ELECTRICAL ENCLOSURE
2	A184-AB-TR	RELAY BASE - OCTAL
3	A183-AB-TR	TIMING RELAY
4	A183-AB-TR-FA	MOUNTING CLIP
5	A149-95AB	SEL. SWITCH 3 POSITION
6	A214-AB-15I	LEGEND PLATE
7	AH199B	CONNECTOR 1/4 - 3/8
8	A149-40ABF	N.O. CONTACT BLOCK
9	A149-34ABF	MOUNTING LATCH
10	PSC505A-115-4	LINE CORD



TOLERANCES EXCEPT AS NOTED	***THE LOVESHAW CORPORATION*** RT 296, SOUTH CANAAN, PA.	
DECIMAL (3 PLC) +/- .005	TITLE: ELECTRICAL ENCLOSURE ASSEMBLY LX80_T LABELER - 120 VAC	
FRACTIONAL +/- 1/64	DWG. NO. ED1790	SCALE: 3 : 4
	MATERIAL: COMMERCIAL	DATE: 02/02/07
ANG. - 1/2°	DESIGNED: MENTA / DRAWN: WM	APPRVD: --

REVISION RECORD					
REV	DESCRIPTION	DATE	ATH	DR	CK

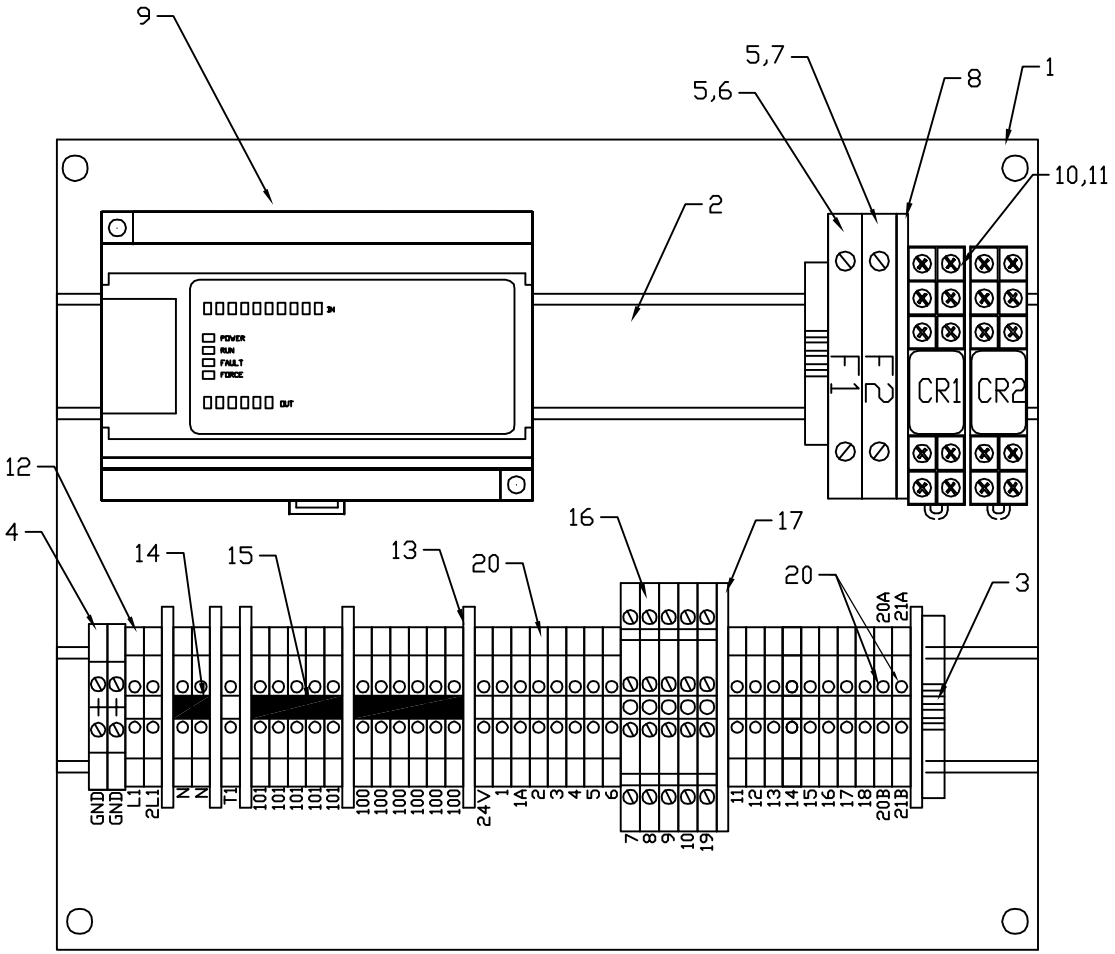


KEY	PART NUMBER	PART DESCRIPTION
1	A100N–1210P	ELECTRICAL PANEL
2	A209–AB–2	DIN RAIL
3	A128–AB–ERL35	TERMINAL ANCHOR
4	A124–AB–JG4	GROUND BLOCK
5	A125BH–AB–DIN	FUSE HOLDER
6	A125SB–1/2–326	FUSE, 1/2 AMPS, SLOW BLOW
7	A125FB–1/2–312	FUSE, 1/2 AMPS, FAST BLOW
8	A128B–AB16	FUSE BARRIER
9	A241AB–1000–6	PLC
10	A184–AB–3	RELAY BASE – DPDT
11	A183–AB–9	RELAY, 24VDC SLIMLINE
12	A124–AB–J3	SINGLE TERMINAL
13	A128–AB–PPJ3	BARRIER PLATE
14	A124–AB–CJS–2	2 POLE JUMPER
15	A124–AB–CJJ–10	10 POLE JUMPER
16	A124–AB–J3–RES	SINGLE TERM. W/ RESISITOR
17	A128–AB–PPJD3	BARRIER PLATE
18	A124–AB–MARK–ST	TERMINAL MARKER CARD
19	A124–AB–MARK–DT	TERMINAL MARKER CARD
20	A124–AB–J3P	SINGLE DISCONNECT TERMINAL BLOCK
21	A124–AB–DPL	SINGLE DISCONNECT TERMINAL PLUG

NOTE: ITEM #21 (A124–AB–DPL) IS USED FOR OPTIONAL LABELER FUNCTIONS. PLUGS ARE TO BE SHIPPED WITH CONTROL BOX AND PANEL.

TOLERANCES EXCEPT AS NOTED	***THE LOVESHAW CORPORATION*** RT 296, SOUTH CANAAN, PA.	
DECIMAL (3 PLC) +/– .005	TITLE: ELECTRICAL PANEL ASSEMBLY LABELER – 120 VAC – SATO	
FRACTIONAL +/– 1/64	DWG. NO. ED2061	SCALE: 3 : 4
	MATERIAL: COMMERCIAL	DATE:04/22/09
ANG. – 1/2°	DESIGNED: MENTA / DRAWN: KK	APPRVD: ––

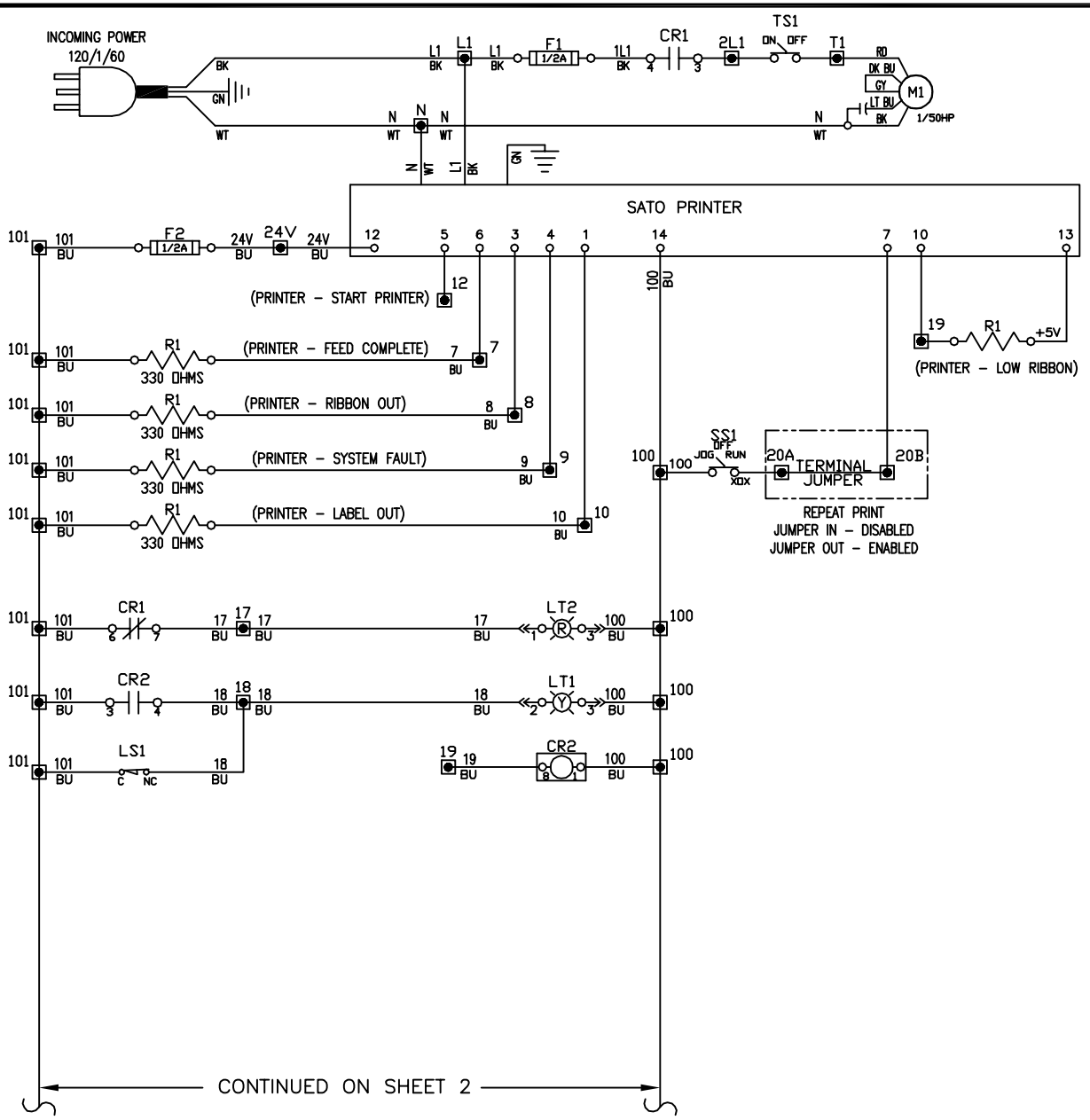
REVISION RECORD					
REV	DESCRIPTION	DATE	ATH	DR	CK



KEY	PART NUMBER	PART DESCRIPTION
1	A100N–1210P	ELECTRICAL PANEL
2	A209–AB–2	DIN RAIL
3	A128–AB–ERL35	TERMINAL ANCHOR
4	A124–AB–JG4	GROUND BLOCK
5	A125BH–AB–DIN	FUSE HOLDER
6	A125SB–1/2–326	FUSE, 1/2 AMPS, SLOW BLOW
7	A125FB–1/2–312	FUSE, 1/2 AMPS, FAST BLOW
8	A128B–AB16	FUSE BARRIER
9	A241AB–1000–6	PLC
10	A184–AB–3	RELAY BASE – DPDT
11	A183–AB–9	RELAY, 24VDC SLIMLINE
12	A124–AB–J3	SINGLE TERMINAL
13	A128–AB–PPJ3	BARRIER PLATE
14	A124–AB–CJS–2	2 POLE JUMPER
15	A124–AB–CJJ–10	10 POLE JUMPER
16	A124–AB–J3–RES	SINGLE TERM. W/ RESISITOR
17	A128–AB–PPJD3	BARRIER PLATE
18	A124–AB–MARK–ST	TERMINAL MARKER CARD
19	A124–AB–MARK–DT	TERMINAL MARKER CARD
20	A124–AB–J3P	SINGLE DISCONNECT TERMINAL BLOCK
21	A124–AB–DPL	SINGLE DISCONNECT TERMINAL PLUG

NOTE: ITEM #21 (A124–AB–DPL) IS USED FOR OPTIONAL LABELER FUNCTIONS. PLUGS ARE TO BE SHIPPED WITH CONTROL BOX AND PANEL.

TOLERANCES EXCEPT AS NOTED	***THE LOVESHAW CORPORATION*** RT 296, SOUTH CANAAN, PA.	
DECIMAL (3 PLC) +/– .005	TITLE: ELECTRICAL PANEL ASSEMBLY LABELER–120 VAC–ZEBRA PRINTER	
FRACTIONAL +/– 1/64	DWG. NO. ED2059	SCALE: 3 : 4
	MATERIAL: COMMERCIAL	DATE:04/20/09
ANG. – 1/2°	DESIGNED: MENTA / DRAWN: KK	APPRVD: ––



REVISION RECORD					
REV	DESCRIPTION	DATE	ATH	DR	CK

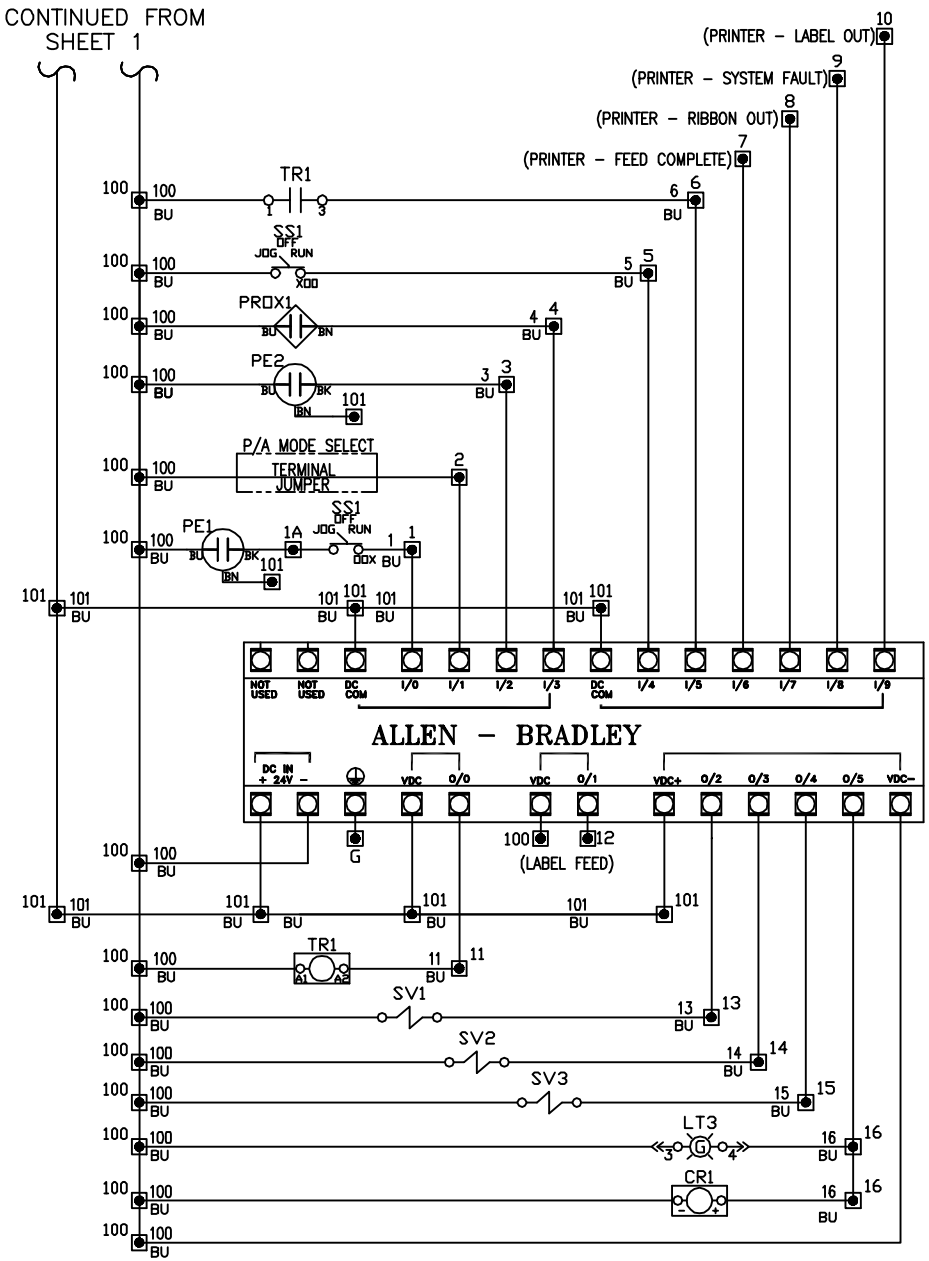
SYMBOL	DEVICE	FUNCTION
CR1	CONTROL RELAY	MOTOR CONTROL
CR2	CONTROL RELAY	LOW RIBBON INTERFACE RELAY
F1	FUSE	MOTOR PROTECTION
F2	FUSE	24 VDC POWER PROTECTION
LS1	LIMIT SWITCH	LOW LABEL ROLL DETECTOR
LT1	LIGHT - YELLOW	LOW LABEL ROLL / LOW RIBBON INDICATOR
LT2	LIGHT - RED	LABEL / RIBBON OUT & SYSTEM FAULT INDICATOR
M1	MOTOR	LABEL TAKE UP MOTOR
R1	RESISTOR	LABEL SIGNAL PULL UP RESISTOR
SS1	SELECTOR SWITCH	LABELER OPERATION MODE
TS1	TOGGLE SWITCH	REWIND MOTOR ON/OFFF CONTROL

PRINTER I/O CABLE CHART

PIN NO.	WIRE COLOR	TERM NO.
1	BLACK	10
2	WHITE	N/A
3	RED	8
4	GREEN	9
5	ORANGE	12
6	BLUE	7
7	WHITE / BLACK	20B
8	RED / BLACK	N/A
9	GREEN / BLACK	N/A
10	ORANGE / BLACK	19
11	BLUE / BLACK	N/A
12	BLACK / WHITE	24V
13	RED / WHITE	+5V
14	GREEN / WHITE	100
SHELL	DRAIN WIRE	SHELL

NOTE:
1. ALL 120VAC LINE WIRES WILL BE 18AWG BLACK UNLESS OTHERWISE NOTED.
2. ALL 120VAC CONTROL WIRES WILL BE 18AWG RED UNLESS OTHERWISE NOTED.
3. ALL 120VAC NEUTRAL WIRES WILL BE 18AWG WHITE UNLESS OTHERWISE NOTED.
4. ALL DC CONTROL WIRING WILL BE 20AWG BLUE UNLESS OTHERWISE NOTED.

TOLERANCES EXCEPT AS NOTED	***THE LOVESHAW CORPORATION*** RT 296, SOUTH CANAAN, PA.		
DECIMAL (3 PLC) +/- .005	TITLE: ELECTRICAL SCHEMATIC LT80 – LABELER – SATO		
FRACTIONAL +/- 1/64	DWG. NO. ED2060S1		SCALE: N/A
	MATERIAL: N/A		DATE:04/22/09
ANG. - 1/2°	DESIGNED: MENTA	DRAWN: KK	APPRVD: --

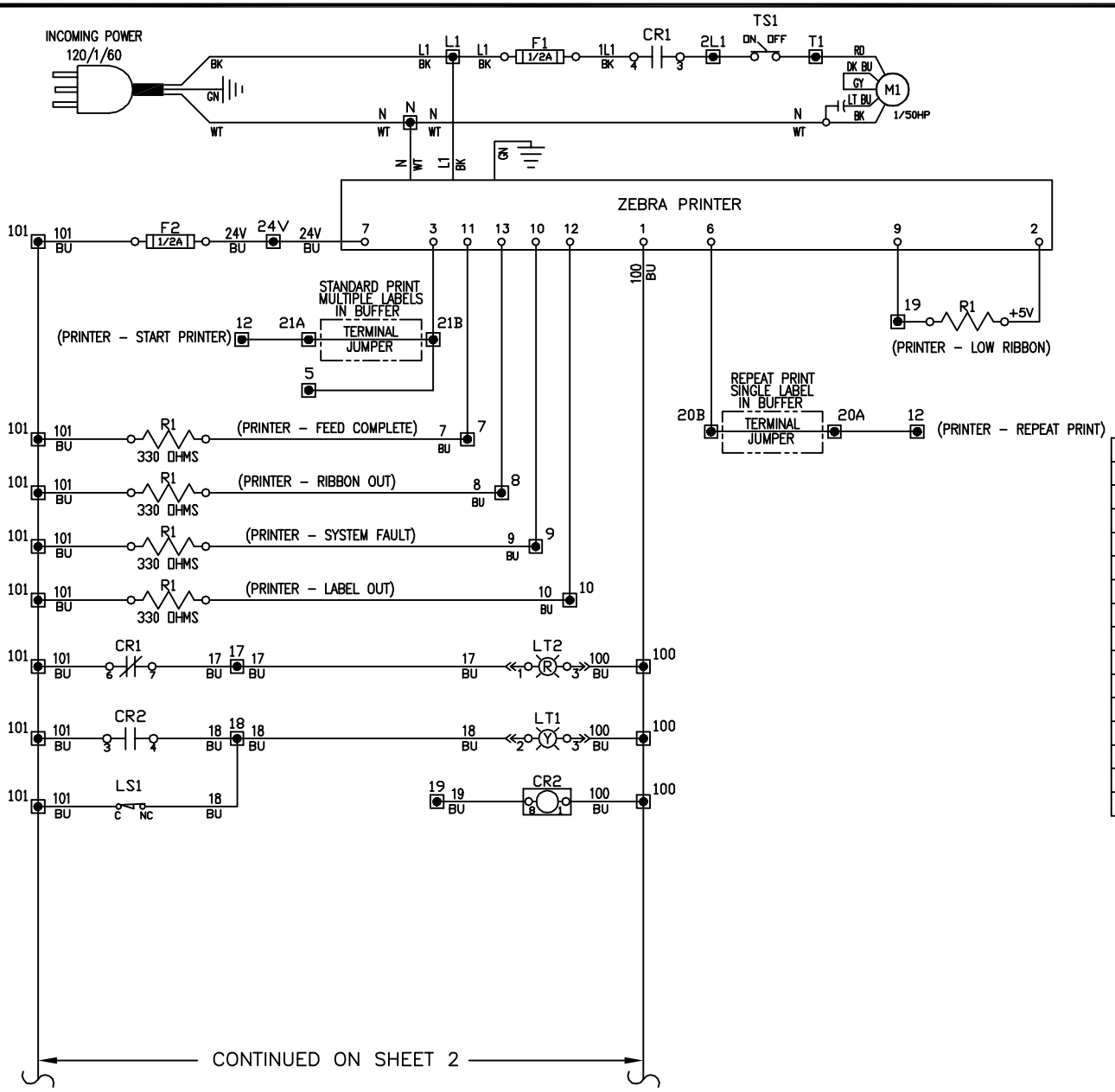


REVISION RECORD					
REV	DESCRIPTION	DATE	ATH	DR	CK

SYMBOL	DEVICE	FUNCTION
CR1	CONTROL RELAY	MOTOR CONTROL
F1	FUSE	MOTOR PROTECTION
F2	FUSE	24 VDC POWER PROTECTION
LT3	LIGHT - GREEN	LABELER READY INDICATOR
PE1	PHOTOELECTRIC	PRODUCT PRESENT SENSOR
PE2	PHOTOELECTRIC	TOUCH AND GO SENSOR
PROX1	REED SWITCH	LABEL APPLICATOR HOME POSITION
SS1	SELECTOR SWITCH	LABELER OPERATION MODE
SV1	SOLENOID VALVE	LABEL APPLICATOR PAD VALVE
SV2	SOLENOID VALVE	LABEL VACUUM / BLOW VALVE
SV3	SOLENOID VALVE	LABEL AIR TAMP VALVE
TR1	TIMING RELAY	PRODUCT SENSOR DELAY TIMER

NOTE:
1. ALL 120VAC LINE WIRES WILL BE 18AWG BLACK UNLESS OTHERWISE NOTED.
2. ALL 120VAC CONTROL WIRES WILL BE 18AWG RED UNLESS OTHERWISE NOTED.
3. ALL 120VAC NEUTRAL WIRES WILL BE 18AWG WHITE UNLESS OTHERWISE NOTED.
4. ALL DC CONTROL WIRING WILL BE 20AWG BLUE UNLESS OTHERWISE NOTED.

TOLERANCES EXCEPT AS NOTED	*THE LOVESHAW CORPORATION* RT 296, SOUTH CANAAN, PA.	
DECIMAL (3 PLC) +/– .005	TITLE: ELECTRICAL SCHEMATIC LT80 – LABELER – SATO	
FRACTIONAL +/– 1/64	DWG. NO. ED2060S2	SCALE: N/A
	MATERIAL: N/A	DATE:04/22/09
ANG. – 1/2°	DESIGNED: MENTA / DRAWN: KK	APPRVD: --



REVISION RECORD					
REV	DESCRIPTION	DATE	ATH	DR	CK

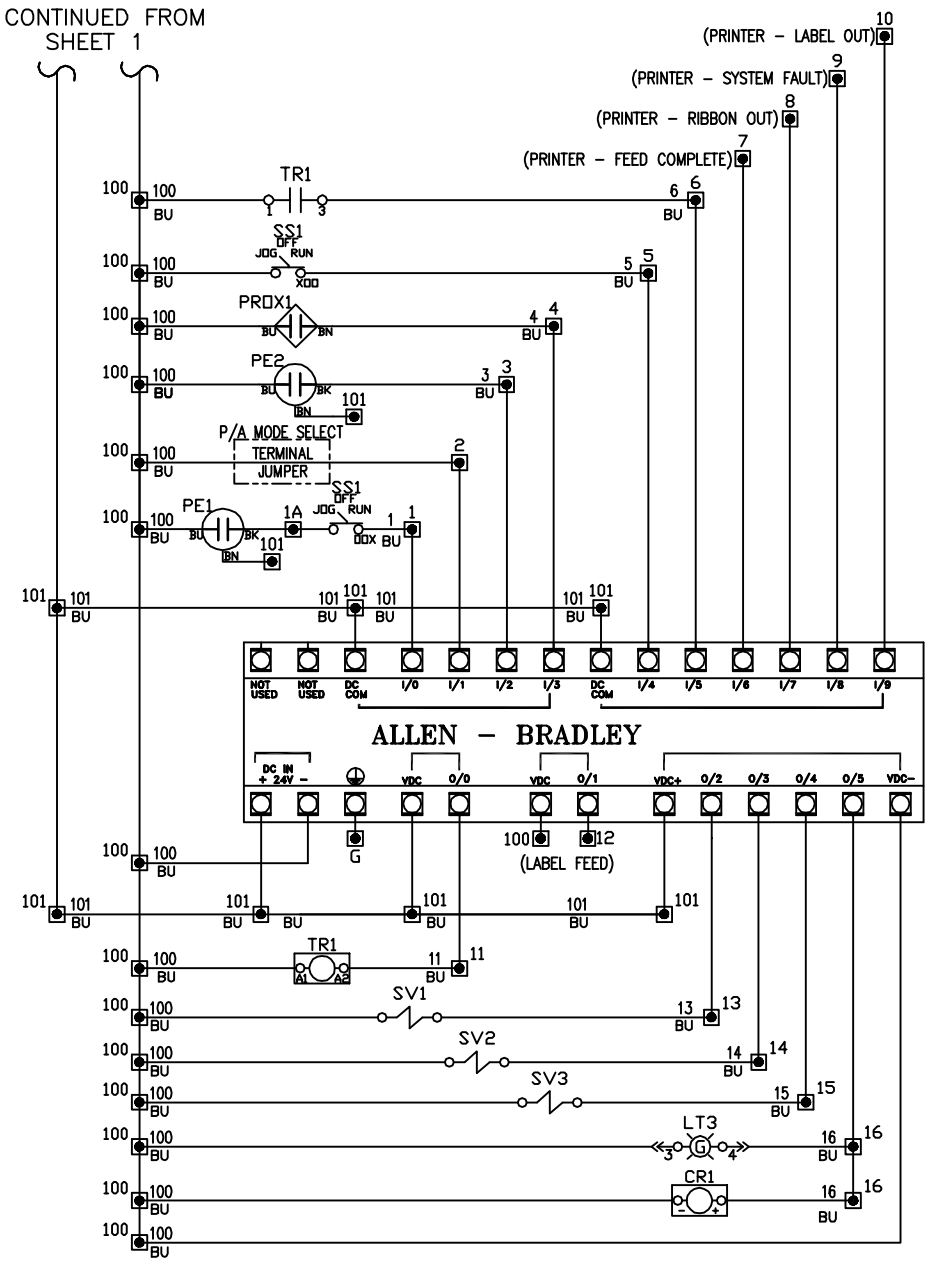
SYMBOL	DEVICE	FUNCTION
CR1	CONTROL RELAY	MOTOR CONTROL
CR2	CONTROL RELAY	LOW RIBBON INTERFACE RELAY
F1	FUSE	MOTOR PROTECTION
F2	FUSE	24 VDC POWER PROTECTION
LS1	LIMIT SWITCH	LOW LABEL ROLL DETECTOR
LT1	LIGHT - YELLOW	LOW LABEL ROLL / LOW RIBBON INDICATOR
LT2	LIGHT - RED	LABEL / RIBBON OUT & SYSTEM FAULT INDICATOR
M1	MOTOR	LABEL TAKE UP MOTOR
R1	RESISTOR	LABEL SIGNAL PULL UP RESISTOR
SS1	SELECTOR SWITCH	LABELER OPERATION MODE
TS1	TOGGLE SWITCH	REWIND MOTOR ON/OFF CONTROL

ZEBRA PRINTER I/O CABLE CHART

DB15 PIN NO.	CENTRONICS PIN NO.	WIRE COLOR	TERM NO.
12	1	BLACK	10
N/A	2	WHITE	N/A
13	3	RED	8
10	4	GREEN	9
3	5	ORANGE	21B
11	6	BLUE	7
6	7	WHITE / BLACK	20B
N/A	8	RED / BLACK	N/A
N/A	9	GREEN / BLACK	N/A
9	10	ORANGE / BLACK	19
N/A	11	BLUE / BLACK	N/A
7	12	BLACK / WHITE	24V
2	13	RED / WHITE	+5V
1	14	GREEN / WHITE	100
SHELL	SHELL	DRAIN WIRE	SHELL

NOTE:
1. ALL 120VAC LINE WIRES WILL BE 18AWG BLACK UNLESS OTHERWISE NOTED.
2. ALL 120VAC CONTROL WIRES WILL BE 18AWG RED UNLESS OTHERWISE NOTED.
3. ALL 120VAC NEUTRAL WIRES WILL BE 18AWG WHITE UNLESS OTHERWISE NOTED.
4. ALL DC CONTROL WIRING WILL BE 20AWG BLUE UNLESS OTHERWISE NOTED.

TOLERANCES EXCEPT AS NOTED	*THE LOVESHAW CORPORATION* RT 296, SOUTH CANAAN, PA.	
DECIMAL (3 PLC) +/- .005	TITLE: ELECTRICAL SCHEMATIC LT80 – LABELLER – ZEBRA PRINTER	
FRACTIONAL +/- 1/64	DWG. NO. ED2058S1	SCALE: N/A
	MATERIAL: N/A	DATE:04/20/09
ANG. - 1/2°	DESIGNED: MENTA / DRAWN: KK	APPRVD: --



REVISION RECORD					
REV	DESCRIPTION	DATE	ATH	DR	CK

SYMBOL	DEVICE	FUNCTION
CR1	CONTROL RELAY	MOTOR CONTROL
F1	FUSE	MOTOR PROTECTION
F2	FUSE	24 VDC POWER PROTECTION
LT3	LIGHT - GREEN	LABELER READY INDICATOR
PE1	PHOTOELECTRIC	PRODUCT PRESENT SENSOR
PE2	PHOTOELECTRIC	TOUCH AND GO SENSOR
PROX1	REED SWITCH	LABEL APPLICATOR HOME POSITION
SS1	SELECTOR SWITCH	LABELER OPERATION MODE
SV1	SOLENOID VALVE	LABEL APPLICATOR PAD VALVE
SV2	SOLENOID VALVE	LABEL VACUUM / BLOW VALVE
SV3	SOLENOID VALVE	LABEL AIR TAMP VALVE
TR1	TIMING RELAY	PRODUCT SENSOR DELAY TIMER

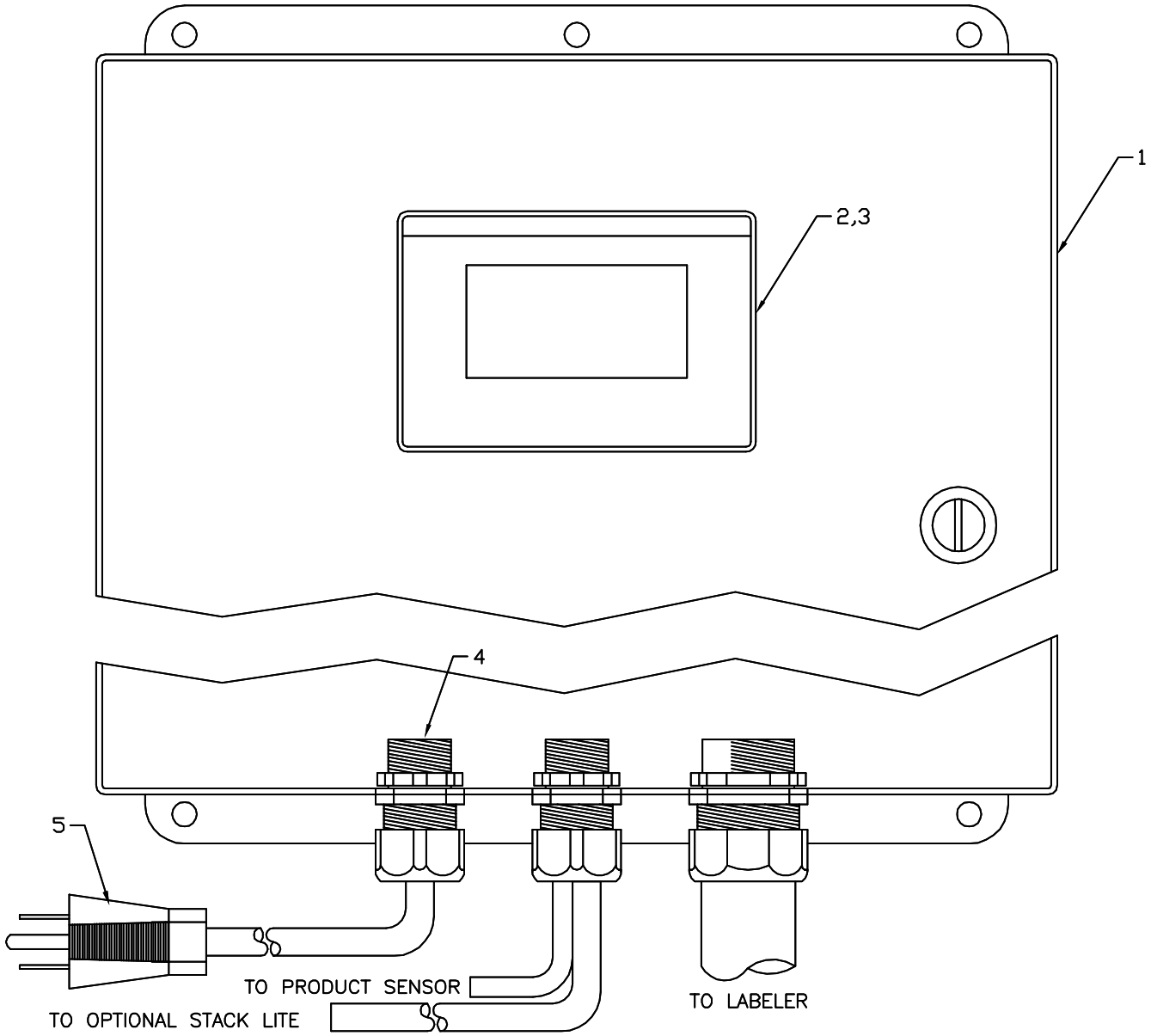
NOTE:
1. ALL 120VAC LINE WIRES WILL BE 18AWG BLACK UNLESS OTHERWISE NOTED.
2. ALL 120VAC CONTROL WIRES WILL BE 18AWG RED UNLESS OTHERWISE NOTED.
3. ALL 120VAC NEUTRAL WIRES WILL BE 18AWG WHITE UNLESS OTHERWISE NOTED.
4. ALL DC CONTROL WIRING WILL BE 20AWG BLUE UNLESS OTHERWISE NOTED.

TOLERANCES EXCEPT AS NOTED	*THE LOVESHAW CORPORATION* RT 296, SOUTH CANAAN, PA.	
DECIMAL (3 PLC) +/- .005	TITLE: ELECTRICAL SCHEMATIC LT80 – LABELLER – ZEBRA PRINTER	
FRACTIONAL +/- 1/64	DWG. NO. ED2058S2	SCALE: N/A
	MATERIAL: N/A	DATE:04/20/09
ANG. – 1/2°	DESIGNED: MENTA / DRAWN: KK	APPRVD: --

ELECTRICAL ASSEMBLY AND SCHEMATICS FOR SATO AND ZEBRA PRINTERS

(DUAL TAMP – SWING ARM MODELS)

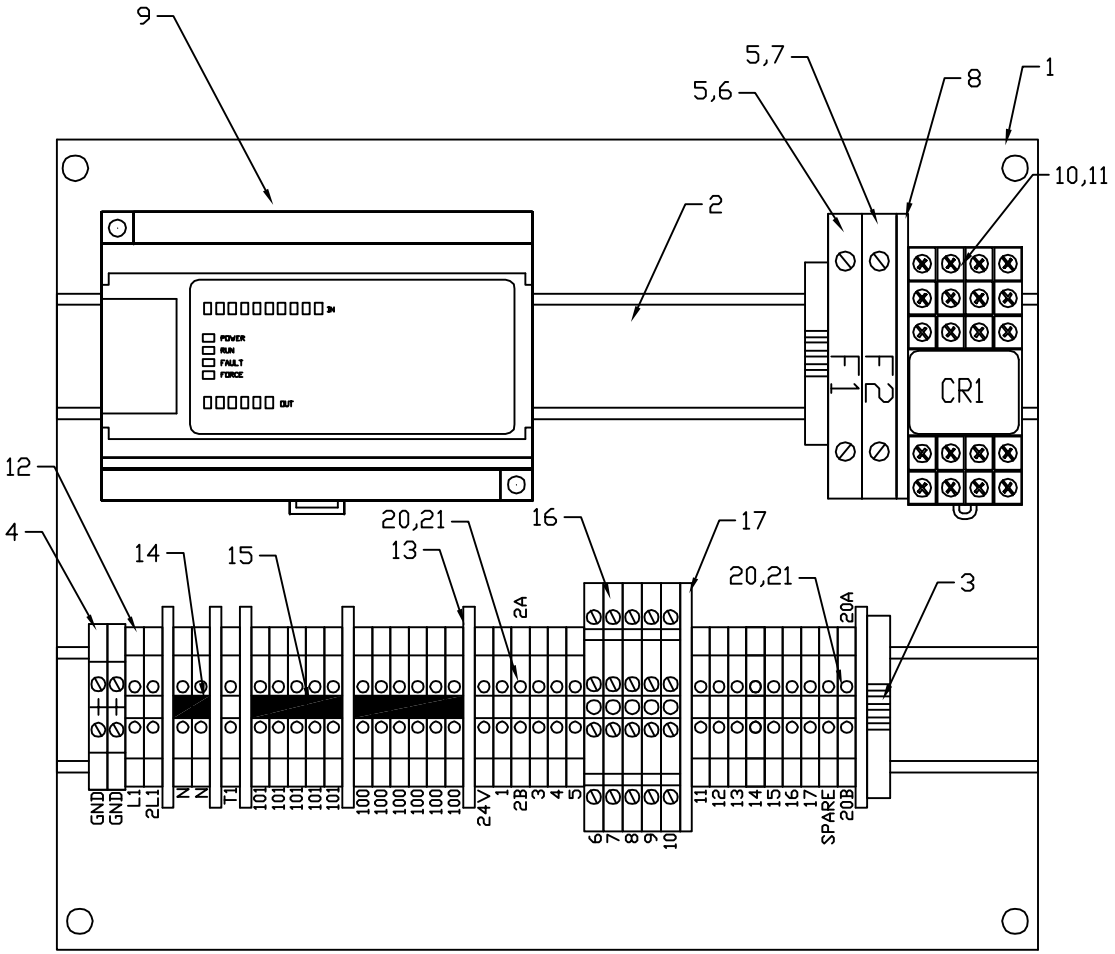
REVISION RECORD					
REV	DESCRIPTION	DATE	ATH	DR	CK



KEY	PART NUMBER	PART DESCRIPTION
1	ED2099	ELECTRICAL ENCLOSURE
2	A241AB-HMI-1	TOUCH SCREEN
3	A241AB-HMI-CBL	CABLE, HMI TO PLC
4	AH199B	CONNECTOR 1/4 - 3/8
5	PSC505A-115-4	LINE CORD

TOLERANCES EXCEPT AS NOTED	*THE LOVESHAW CORPORATION* RT 296, SOUTH CANAAN, PA.	
DECIMAL (3 PLC) +/- .005	TITLE: ELECTRICAL ENCLOSURE ASSEMBLY LX80_DT LABELER - 120 VAC	
FRACTIONAL +/- 1/64	DWG. NO. ED2096	SCALE: 3 : 4
	MATERIAL: COMMERCIAL	DATE: 09/11/09
ANG. - 1/2°	DESIGNED: MENTA / DRAWN: KK	APPRVD: --

REVISION RECORD					
REV	DESCRIPTION	DATE	ATH	DR	CK

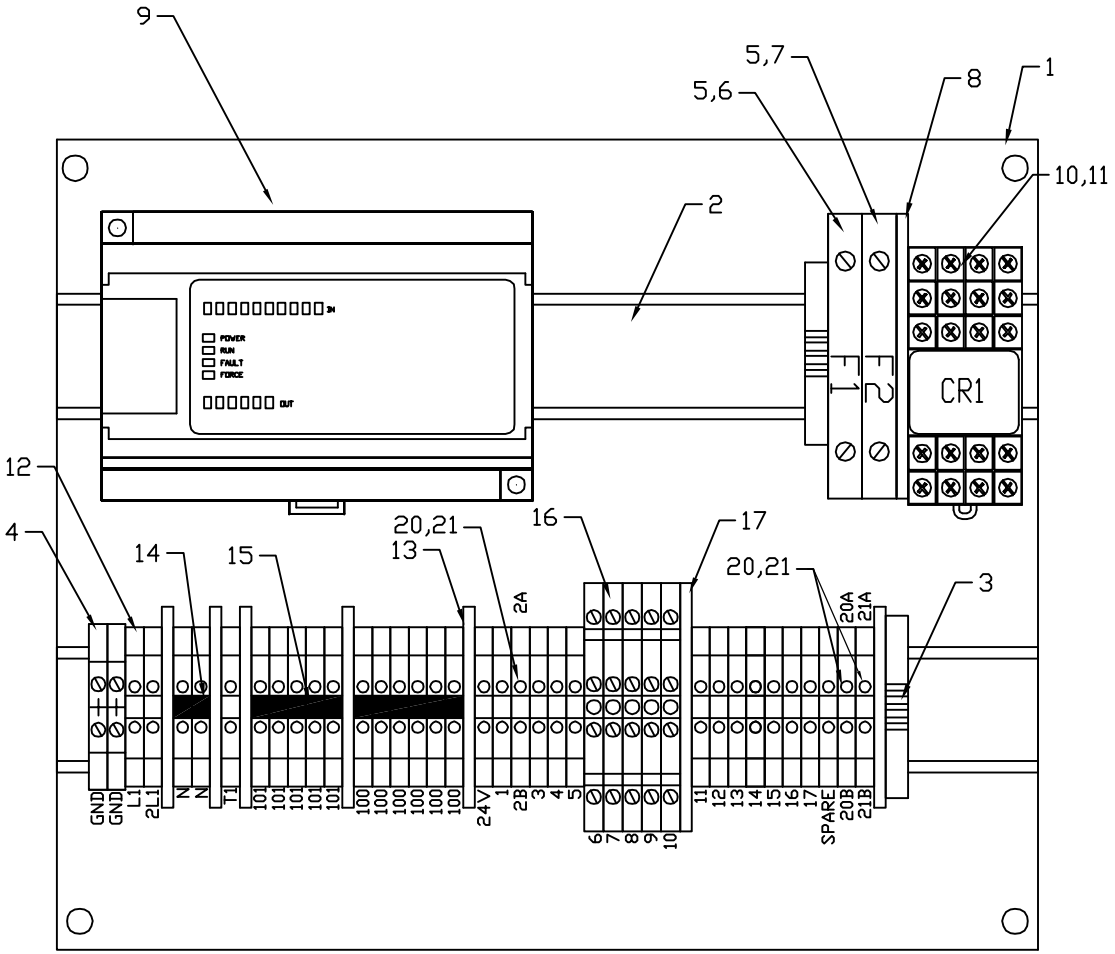


KEY	PART NUMBER	PART DESCRIPTION
1	A100N–1210P	ELECTRICAL PANEL
2	A209–AB–2	DIN RAIL
3	A128–AB–ERL35	TERMINAL ANCHOR
4	A124–AB–JG4	GROUND BLOCK
5	A125BH–AB–DIN	FUSE HOLDER
6	A125SB–1/2–326	FUSE, 1/2 AMPS
7	A125FB–1/2–312	FUSE, 1/2 AMPS
8	A128B–AB16	FUSE BARRIER
9	A241AB–1000–6	PLC
10	A184–AB–4PDT–1	RELAY BASE – 4PDT
11	A183–AB–4PDT–1	RELAY, 24VDC – 4PDT
12	A124–AB–J3	SINGLE TERMINAL
13	A128–AB–PPJ3	BARRIER PLATE
14	A124–AB–CJS–2	2 POLE JUMPER
15	A124–AB–CJJ–10	10 POLE JUMPER
16	A124–AB–J3–RES	SINGLE TERM. W/ RESISITOR
17	A128–AB–PPJD3	BARRIER PLATE
18	A124–AB–MARK–ST	TERMINAL MARKER CARD
19	A124–AB–MARK–DT	TERMINAL MARKER CARD
20	A124–AB–J3P	SINGLE DISCONNECT TERMINAL BLOCK
21	A124–AB–DPL	SINGLE DISCONNECT TERMINAL PLUG

NOTE: ITEM #21 (A124–AB–DPL) IS USED FOR OPTIONAL LABELER FUNCTIONS. PLUGS ARE TO BE SHIPPED WITH CONTROL BOX AND PANEL.

TOLERANCES EXCEPT AS NOTED	*THE LOVESHAW CORPORATION* RT 296, SOUTH CANAAN, PA.	
DECIMAL (3 PLC) +/– .005	TITLE: ELECT. PANEL ASSY, LX80_DT LABELER – SATO – 120 VAC	
FRACTIONAL +/– 1/64	DWG. NO. ED2097	SCALE: 3 : 4
	MATERIAL: COMMERCIAL	DATE:09/10/09
ANG. – 1/2°	DESIGNED: MENTA / DRAWN: KK	APPRVD: ––

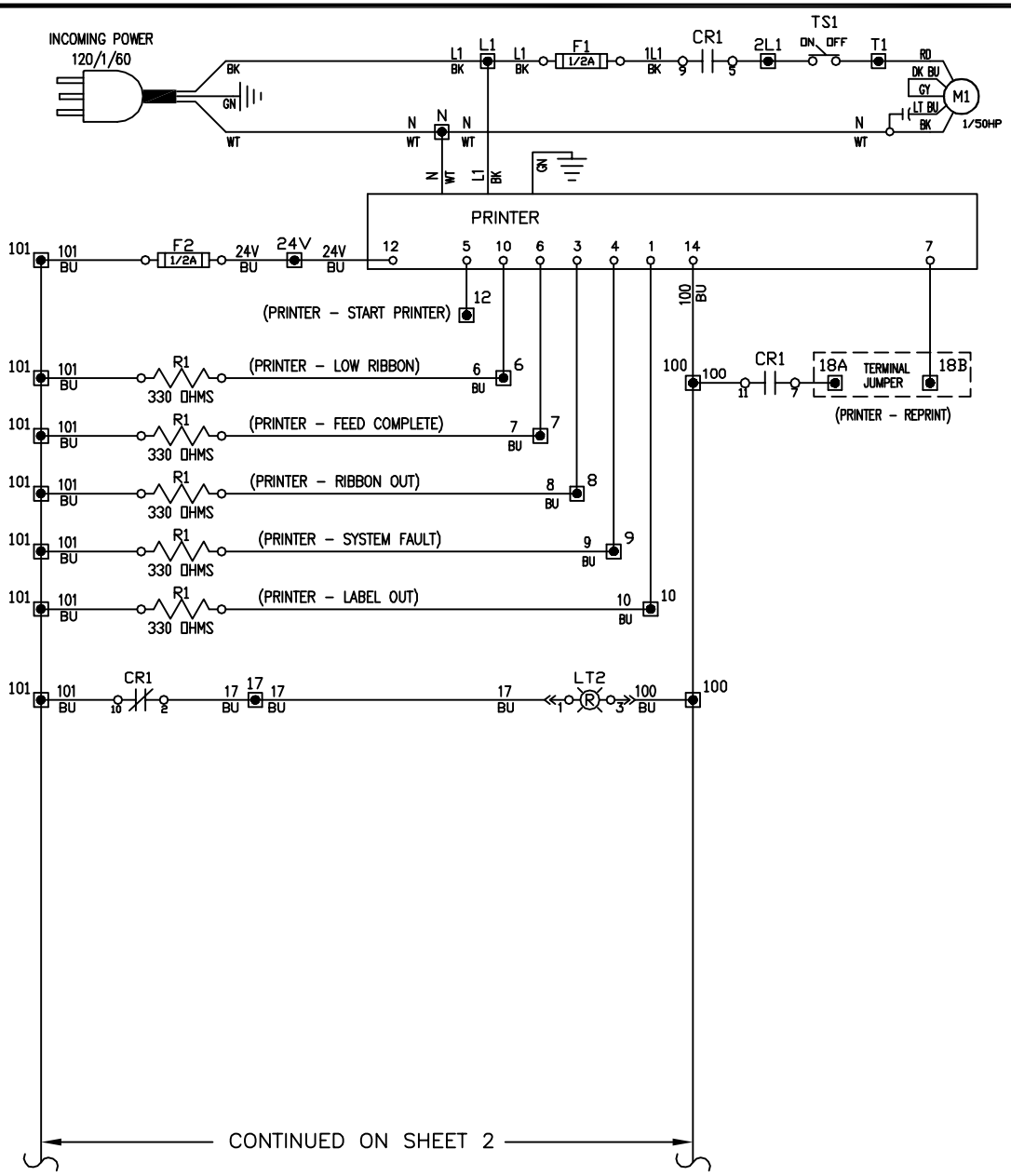
REVISION RECORD					
REV	DESCRIPTION	DATE	ATH	DR	CK



KEY	PART NUMBER	PART DESCRIPTION
1	A100N–1210P	ELECTRICAL PANEL
2	A209–AB–2	DIN RAIL
3	A128–AB–ERL35	TERMINAL ANCHOR
4	A124–AB–JG4	GROUND BLOCK
5	A125BH–AB–DIN	FUSE HOLDER
6	A125SB–1/2–326	FUSE, 1/2 AMPS
7	A125FB–1/2–312	FUSE, 1/2 AMPS
8	A128B–AB16	FUSE BARRIER
9	A241AB–1000–6	PLC
10	A184–AB–4PDT–1	RELAY BASE – 4PDT
11	A183–AB–4PDT–1	RELAY, 24VDC – 4PDT
12	A124–AB–J3	SINGLE TERMINAL
13	A128–AB–PPJ3	BARRIER PLATE
14	A124–AB–CJS–2	2 POLE JUMPER
15	A124–AB–CJJ–10	10 POLE JUMPER
16	A124–AB–J3–RES	SINGLE TERM. W/ RESISITOR
17	A128–AB–PPJD3	BARRIER PLATE
18	A124–AB–MARK–ST	TERMINAL MARKER CARD
19	A124–AB–MARK–DT	TERMINAL MARKER CARD
20	A124–AB–J3P	SINGLE DISCONNECT TERMINAL BLOCK
21	A124–AB–DPL	SINGLE DISCONNECT TERMINAL PLUG

NOTE: ITEM #21 (A124–AB–DPL) IS USED FOR OPTIONAL LABELER FUNCTIONS. PLUGS ARE TO BE SHIPPED WITH CONTROL BOX AND PANEL.

TOLERANCES EXCEPT AS NOTED	***THE LOVESHAW CORPORATION*** RT 296, SOUTH CANAAN, PA.	
DECIMAL (3 PLC) +/– .005	TITLE: ELECT. PANEL ASSY, LX80_DT LABELER – ZEBRA – 120 VAC	
FRACTIONAL +/– 1/64	DWG. NO. ED2098	SCALE: 3 : 4
	MATERIAL: COMMERCIAL	DATE: 09/10/09
ANG. – 1/2°	DESIGNED: MENTA / DRAWN: KK	APPRVD: ––



REVISION RECORD					
REV	DESCRIPTION	DATE	ATH	DR	CK

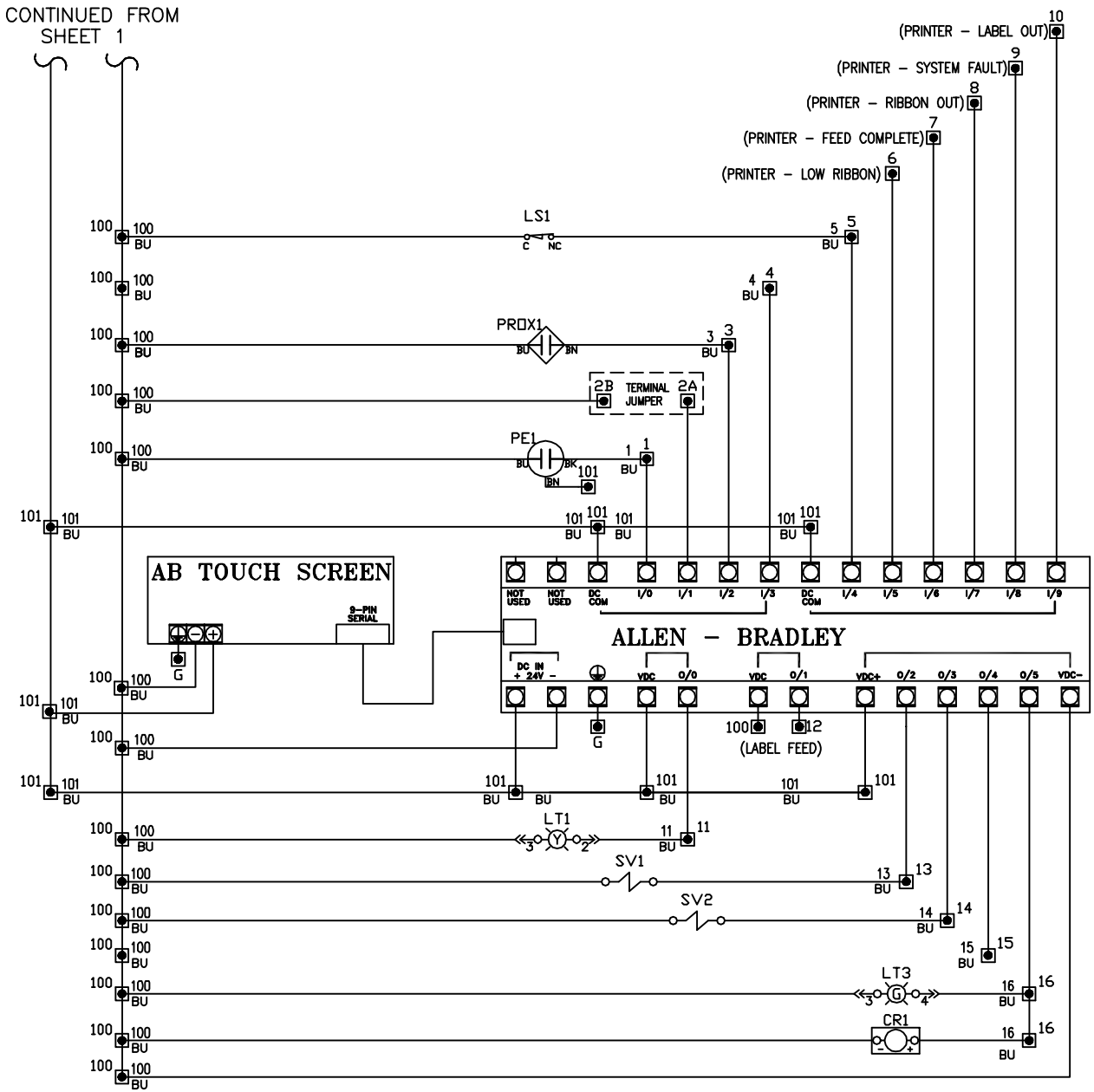
SYMBOL	DEVICE	FUNCTION
CR1	CONTROL RELAY	MOTOR CONTROL
F1	FUSE	MOTOR PROTECTION
F2	FUSE	24 VDC POWER PROTECTION
LS1	LIMIT SWITCH	LOW LABEL ROLL DETECTOR
LT1	LIGHT - YELLOW	LOW LABEL ROLL / LOW RIBBON INDICATOR
LT2	LIGHT - RED	LABEL / RIBBON OUT & SYSTEM FAULT INDICATOR
M1	MOTOR	LABEL TAKE UP MOTOR
R1	RESISTOR	LABEL SIGNAL PULL UP RESISTOR
SS1	SELECTOR SWITCH	LABELER OPERATION MODE
TS1	TOGGLE SWITCH	REWIND MOTOR ON/OFFF CONTROL

PRINTER I/O CABLE CHART

PIN NO.	WIRE COLOR	TERM NO.
1	BLACK	10
2	WHITE	N/A
3	RED	8
4	GREEN	9
5	ORANGE	12
6	BLUE	7
7	WHITE / BLACK	18B
8	RED / BLACK	N/A
9	GREEN / BLACK	N/A
10	ORANGE / BLACK	6
11	BLUE / BLACK	N/A
12	BLACK / WHITE	24V
13	RED / WHITE	N/A
14	GREEN / WHITE	100

NOTE:
1. ALL 120VAC LINE WIRES WILL BE 18AWG BLACK UNLESS OTHERWISE NOTED.
2. ALL 120VAC CONTROL WIRES WILL BE 18AWG RED UNLESS OTHERWISE NOTED.
3. ALL 120VAC NEUTRAL WIRES WILL BE 18AWG WHITE UNLESS OTHERWISE NOTED.
4. ALL DC CONTROL WIRING WILL BE 20AWG BLUE UNLESS OTHERWISE NOTED.

TOLERANCES EXCEPT AS NOTED	*THE LOVESHAW CORPORATION* RT 296, SOUTH CANAAN, PA.	
DECIMAL (3 PLC) +/- .005	TITLE: ELECTRICAL SCHEMATIC LX80_DT LABELER-SATO-120VAC	
FRACTIONAL +/- 1/64	DWG. NO. ED1869S1	SCALE: N/A
	MATERIAL: N/A	DATE:04/20/09
ANG. - 1/2°	DESIGNED: MENTA / DRAWN: WM	APPRVD: --



REVISION RECORD					
REV	DESCRIPTION	DATE	ATH	DR	CK

SYMBOL	DEVICE	FUNCTION
CR1	CONTROL RELAY	MOTOR CONTROL
F1	FUSE	MOTOR PROTECTION
F2	FUSE	24 VDC POWER PROTECTION
LT1	LIGHT - YELLOW	LOW LABEL ROLL / LOW RIBBON INDICATOR
LT3	LIGHT - GREEN	LABELER READY INDICATOR
PE1	PHOTOELECTRIC	PRODUCT PRESENT SENSOR
PROX1	REED SWITCH	SWING ARM HOME POSITION
SV1	SOLENOID VALVE	SWING ARM TRAVEL VALVE
SV2	SOLENOID VALVE	LABEL VACUUM / BLOW VALVE

NOTE:
1. ALL 120VAC LINE WIRES WILL BE 18AWG BLACK UNLESS OTHERWISE NOTED.
2. ALL 120VAC CONTROL WIRES WILL BE 18AWG RED UNLESS OTHERWISE NOTED.
3. ALL 120VAC NEUTRAL WIRES WILL BE 18AWG WHITE UNLESS OTHERWISE NOTED.
4. ALL DC CONTROL WIRING WILL BE 20AWG BLUE UNLESS OTHERWISE NOTED.

TOLERANCES EXCEPT AS NOTED	*THE LOVESHAW CORPORATION* RT 296, SOUTH CANAAN, PA.	
DECIMAL (3 PLC) +/- .005	TITLE: ELECTRICAL SCHEMATIC LX80_DT LABELER-SATO-120VAC	
FRACTIONAL +/- 1/64	DWG. NO. ED1869S2	SCALE: N/A
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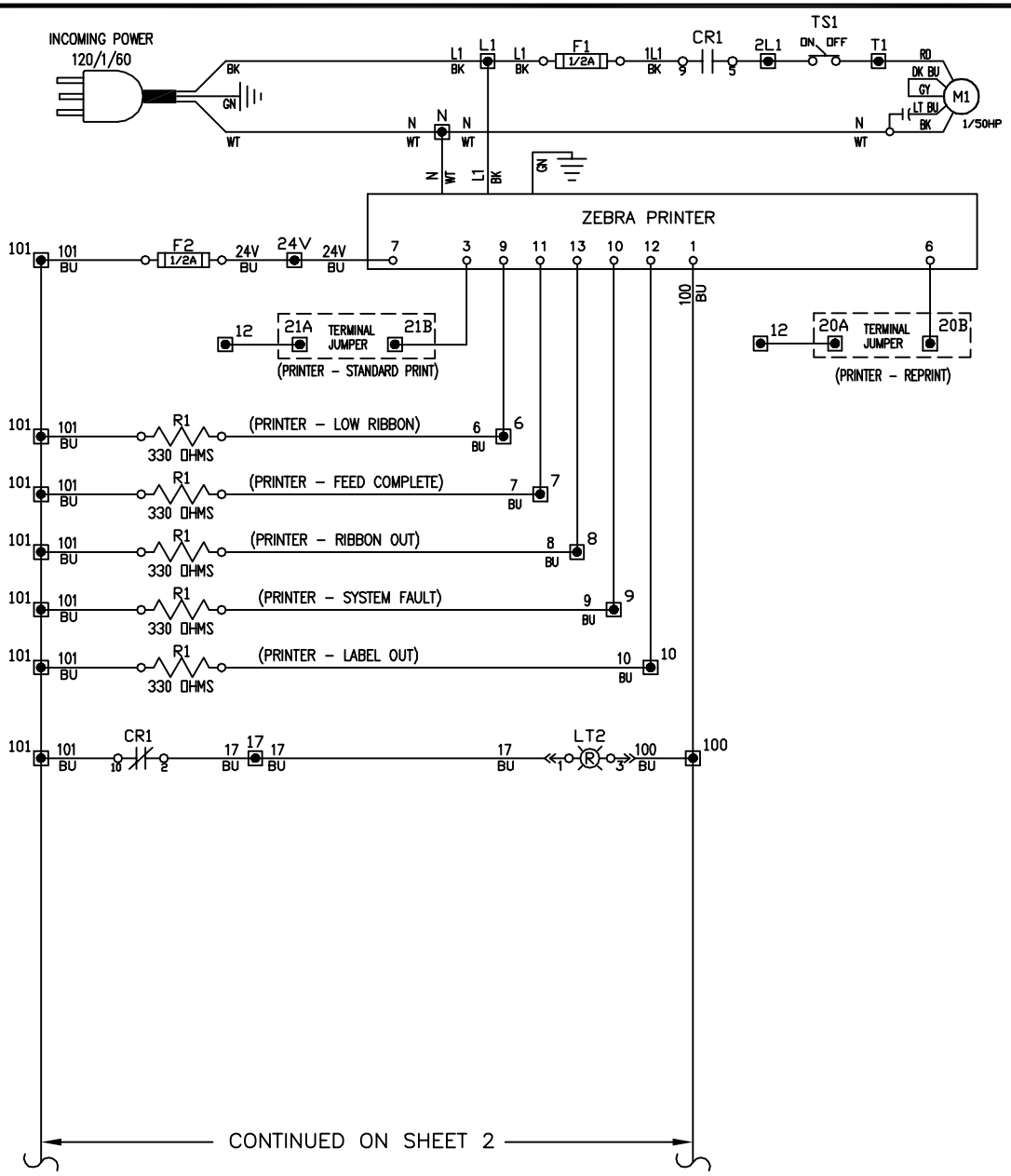

REVISION RECORD					
REV	DESCRIPTION	DATE	ATH	DR	CK

SYMBOL	DEVICE	FUNCTION
CR1	CONTROL RELAY	MOTOR CONTROL
F1	FUSE	MOTOR PROTECTION
F2	FUSE	24 VDC POWER PROTECTION
LS1	LIMIT SWITCH	LOW LABEL ROLL DETECTOR
LT1	LIGHT - YELLOW	LOW LABEL ROLL / LOW RIBBON INDICATOR
LT2	LIGHT - RED	LABEL / RIBBON OUT & SYSTEM FAULT INDICATOR
M1	MOTOR	LABEL TAKE UP MOTOR
R1	RESISTOR	LABEL SIGNAL PULL UP RESISTOR
TS1	TOGGLE SWITCH	REWIND MOTOR ON/OFFF CONTROL

ZEBRA PRINTER I/O CABLE CHART

DB15 PIN NO.	CENTRONICS PIN NO.	WIRE COLOR	TERM NO.
12	1	BLACK	10
N/A	2	WHITE	N/A
13	3	RED	8
10	4	GREEN	9
3	5	ORANGE	21B
11	6	BLUE	7
6	7	WHITE / BLACK	20B
N/A	8	RED / BLACK	N/A
N/A	9	GREEN / BLACK	N/A
9	10	ORANGE / BLACK	6
N/A	11	BLUE / BLACK	N/A
7	12	BLACK / WHITE	24V
2	13	RED / WHITE	N/A
1	14	GREEN / WHITE	100
SHELL	SHELL	DRAIN WIRE	SHELL

NOTE:
1. ALL 120VAC LINE WIRES WILL BE 18AWG BLACK UNLESS OTHERWISE NOTED.
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4. ALL DC CONTROL WIRING WILL BE 20AWG BLUE UNLESS OTHERWISE NOTED.

TOLERANCES EXCEPT AS NOTED	***THE LOVESHAW CORPORATION*** RT 296, SOUTH CANAAN, PA.	
DECIMAL (3 PLC) +/- .005	TITLE: ELECTRICAL SCHEMATIC LX80_DT LABELER-ZEBRA-120VAC	
FRACTIONAL +/- 1/64	DWG. NO. ED2113S1	SCALE: N/A
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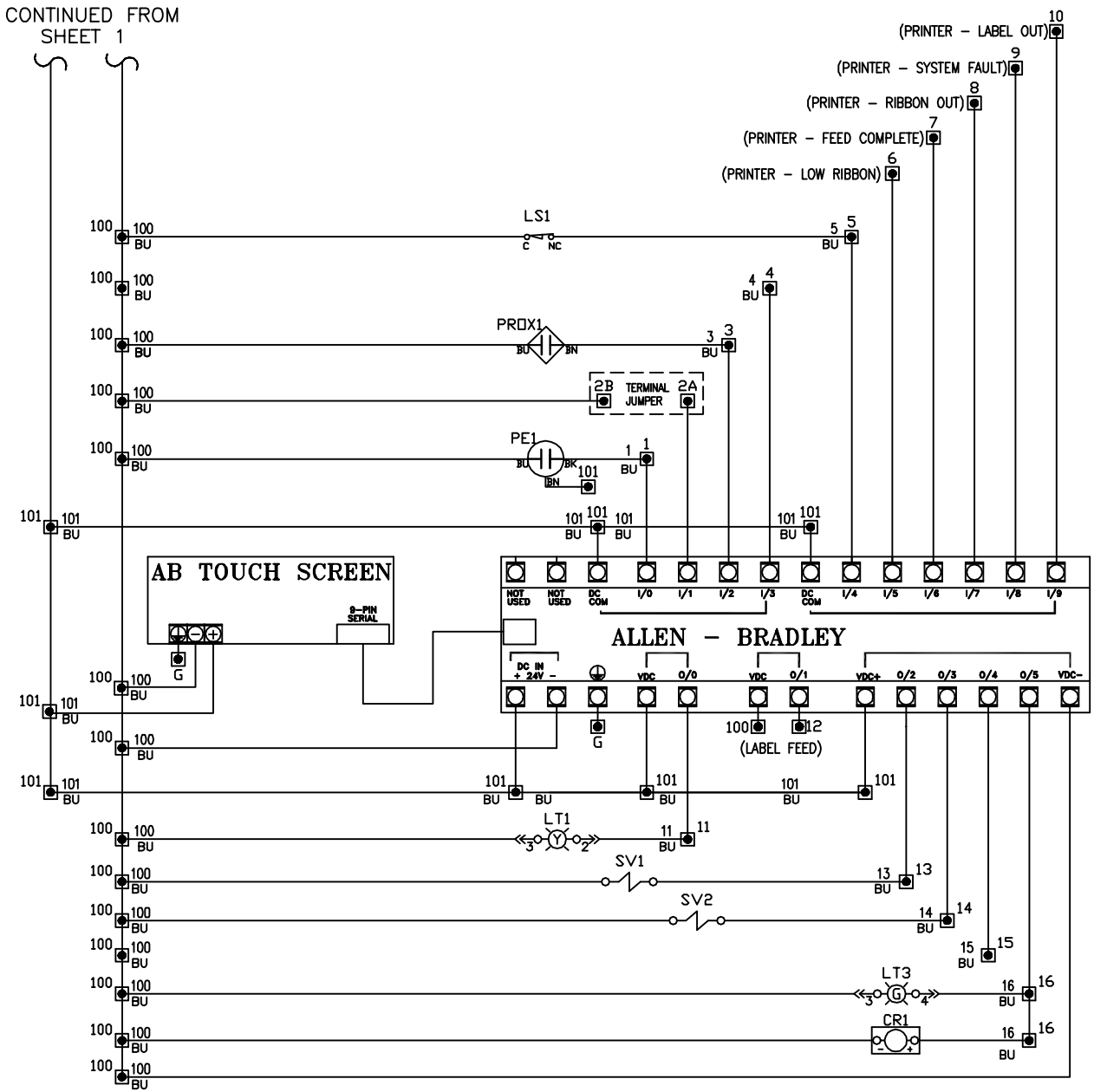
ANG. - 1/2°	DESIGNED: MENTA / DRAWN: KK	APPRVD: --



REVISION RECORD					
REV	DESCRIPTION	DATE	ATH	DR	CK

SYMBOL	DEVICE	FUNCTION
CR1	CONTROL RELAY	MOTOR CONTROL
F1	FUSE	MOTOR PROTECTION
F2	FUSE	24 VDC POWER PROTECTION
LT1	LIGHT - YELLOW	LOW LABEL ROLL / LOW RIBBON INDICATOR
LT3	LIGHT - GREEN	LABELER READY INDICATOR
PE1	PHOTOELECTRIC	PRODUCT PRESENT SENSOR
PROX1	REED SWITCH	SWING ARM HOME POSITION
SV1	SOLENOID VALVE	SWING ARM TRAVEL VALVE
SV2	SOLENOID VALVE	LABEL VACUUM / BLOW VALVE

NOTE:
1. ALL 120VAC LINE WIRES WILL BE 18AWG BLACK UNLESS OTHERWISE NOTED.
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3. ALL 120VAC NEUTRAL WIRES WILL BE 18AWG WHITE UNLESS OTHERWISE NOTED.
4. ALL DC CONTROL WIRING WILL BE 20AWG BLUE UNLESS OTHERWISE NOTED.

TOLERANCES EXCEPT AS NOTED	*THE LOVESHAW CORPORATION* RT 296, SOUTH CANAAN, PA.	
DECIMAL (3 PLC) +/- .005	TITLE: ELECTRICAL SCHEMATIC LX80_DT LABELER-ZEBRA-120VAC	
FRACTIONAL +/- 1/64	DWG. NO. ED2113S2	SCALE: N/A
	MATERIAL: N/A	DATE: 11/23/09
ANG. - 1/2°	DESIGNED: MENTA / DRAWN: KK	APPRVD: --

Chapter

13

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.
NO PERSON IS AUTHORIZED TO MAKE ANY WARRANTY OR TO CREATE ANY LIABILITY BINDING UPON LOVESHAW WHICH IS NOT STATED IN THIS WARRANTY. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES OF ANY KIND, EXPRESSSED OR IMPLIED, WHICH ARE HEREBY EXCLUDED. IN PARTICULAR, THE IMPLIED WARRANTY OF MERCHANTABILITY, AS WELL AS THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY EXCLUDED.

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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.

- Labels shall be converted with 3 mm $\pm$ .13 mm minimum spacing between labels, and a minimum side gap of 1.5 mm $\pm$ .15 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 of other separations between labels.

- 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.

- 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.

- 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.

- 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.

- 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.

- 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.

- 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.

- 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.