MARKING & CODING

MCA IV

Operator's Manual

PA/4600E
LS4600
PA/6000E
LS6000

6000-010
Revision C

Illinois Tool Works Marking & Coding Division continually improves its products, and reserves the right to change or discontinue specifications and designs shown in this manual without notice and without incurring obligation. Illinois Tool Works has made every effort to verify the information contained in this manual, but reserves the right to correct any error at the time of the manual's next revision.

Printed in the United States of America

1.0 Introduction

1.1 The PA/4600E, PA/6000E, LS4600, and LS6000 Printer - Applicators

The PA/4600E, PA/6000E, LS4600, and LS6000 are seventh generation, next label out, print and apply labelers designed for modularity, continuous labeling, self-diagnostics, and ease of use. Modularity of design provides the basis for ease of installation, setup, and maintenance. The electronics system employs a hardware-specific design, thus increasing reliability and throughput. The hardware was developed to simplify construction, and increase longevity by using durable materials. These units will perform 24/7 operation in harsh environments and operate trouble-free, given that the appropriate preventative maintenance is performed on regular service intervals.

1.2 Product Safety

Safety awareness is critical when working with equipment that contains moving parts and extending electric actuators. Please read all warnings and cautions thoroughly before operating this device.

This product meets the requirements of CAN/CSA-22.2 NO.60950-00 * UL 60950 using Illinois Tool Works (Diagraph/FoxJet) approved items. Units are only tested and qualified with Illinois Tool Works (Diagraph/FoxJet) approved parts and accessories. Use of other parts or accessories may introduce potential risks that Illinois Tool Works an ITW Company can assume no liability for.

WARNINGS

- **WARNING - Moving parts of this machine can present hazards. Components that cannot be guarded because of loss of functionality are marked with a warning symbol.**
- **Be aware of the actuator extension distance, and avoid accidental triggering of the photosensor.**
- **When servicing the unit's electronic assemblies, always remove the power cord from the unit to prevent accidental shock.**
- **When running for extended periods of time, use caution when accessing the drive module circuitry. The motor drive power transistors, motor case, and motor heatsink can become hot under constant use.**
- **Wear personal protective equipment, as instructed by your supervisor, when operating or working near this device.**

COMPLIANCE

- **CAUTION: Not for use in a computer room as defined in the Standard for the Protection of Electronic Computer/ Data Processing Equipment, ANSI/NFPA 75.**
- **ATTENTION: Ne peut être utilissé dans une salle d'ordinateurs telle que définie dans las norme. ANSI/NFPA 75 Standard for the Protection of Electronic Computer/ Data Processing Equipment**
- **This unit has been tested and found to comply with the limits for a Class A device, pursuant to part 15 of the FCC Rules.**

- **This unit has been tested to comply with CE Standards.**
- **This unit is equipped with an Emergency Stop switch. Depressing this switch will cause all machine operations to cease.**
- **This unit was tested and it was determined that a potential for tipping exists in certain orientations. In compliance with UL safety standards, the stand must be secured to the surface where it is located. Additionally, this type of securing will result in greater product application accuracy.**

1.3 Warranty Information

The PA/4600E, PA/6000E, LS4600, and LS6000 labelers, including all components unless otherwise specified, carry a limited warranty. For all warranty terms and conditions, contact Illinois Tool Works, Marking & Coding Division, for a complete copy of the Limited Warranty Statement.

1.4 Specifications

General Specifications

Category	Parameter
Dimensions (with Yoke)	**31 in. (*787 mm*) L x 27 in. (*686 mm*) H x 26 in. (*660 mm*) D**
Weight **E-TAMP, E-WASA** **E-FASA, E-BLOW BOX** **Chi-Stand**	**120 lbs (*54.4 kg*) (includes yoke, no stand)** **130 lbs (*58.9 kg*)** **96 lbs (*43.5 kg*)**
Accuracy	**±0.06 in. (*±1.6 mm*) E-TAMP, E-WASA, E-FASA** **±0.09 in. (*±2.4 mm*) E-BLOW BOX, E-TAMP/BLOW**
Certifications	**Œ, CSA, FCC approved, Listed (UL 60950)**
Supply Roll Capacity **PA/4600E** **PA/6000E**	**13 in. (*330.2 mm*) OD with a 3 in. (*76.2 mm*) ID Core** **14 in. (*355.6 mm*) OD with a 3 in. (*76.2 mm*) ID Core**
Label Length	**0.5 in. (*12.7 mm*) Min. to 14.0 in. (*355.6 mm*) Max.**
Label Width	**0.5 in. (*12.7 mm*) Min. to 6.5 in. (*165.1 mm*) Max.**

General Specifications

Category	Parameter
Product Rate	
PA/4600E E-TAMP	50 PPM Max.
PA/4600E E-TAMP/BLOW	25 PPM Max.
PA/4600E E-FASA	Single Apply: 38 PPM Max. Dual Apply: 18 PPM Max.
PA/4600E E-WASA	Dependent on Label Length, Print Speed, and Product Spacing
PA/4600E E-BLOW BOX	250 PPM Max.
PA/6000E E-TAMP	120 PPM Max.
PA/6000E E-TAMP/BLOW	55 PPM Max.
PA/6000E E-FASA	Single Apply: 52 PPM Max. Dual Apply: 28 PPM Max.
PA/6000E E-WASA	Dependent on Label Length, Print Speed, and Product Spacing
PA/6000E E-BLOW BOX	300 PPM Max.
Linespeed	
E-TAMP	150 FPM Max.
E-TAMP/BLOW	150 FPM Max.
E-FASA	75 FPM Max.
E-WASA	125 FPM Max.
E-BLOW BOX	300+ FPM Max.
HIGH SPEED TAMP	300+ FPM Max.
Temperature	41°F - 104°F (*5°C - 40°C*)
Humidity	10 to 85% RH, Non-Condensing

Electrical Specifications

Category	Nominal	Minimum	Maximum
AC Voltage Supply	100 - 240 VAC, 1.6A 50/ 60 Hz	90 VAC 47 Hz	264 VAC 63 Hz
Product Detector	Low: 0 to 3 VDC High: 3 to 5 VDC Supplies 24VDC	0 VDC	24 VDC
Product Detector Pulse Width	10 mS	1 mS	Infinite
Auxiliary Output **Warning Tower**	0 and 24 VDC 1 Amp sinking	0 VDC 0 mA	24 VDC 3 Amps sinking
Discrete Inputs (Optional)	Low: 0 to 10 VDC High: 10 to 24 VDC	0 VDC	26 VDC

Electrical Specifications

Category	Nominal	Minimum	Maximum
Discrete Input Pulse Width Detection	10 mS	1 mS	Infinite
Discrete Outputs (Optional)	0 - 24 V AC/DC at 150 mA	0 V AC/DC, 13 ohms	30 V AC/DC at 400 mA

Performance Specifications - 10 or 20 in. E-Tamp PA/6000E Labeler

Application	Label Size	Stroke Distance (Baseplate edge to product)	PPM Maximum
Side Orientation (Nose-Down)	4x2, 10 ips	4 inches, "A5" Actuator Profile	82 PPM
Side Orientation (Nose-Down)	4x2, 12 ips	4 inches, "A5" Actuator Profile	85 PPM
Side Orientation (Nose-Down)	4x2, 12 ips	3 inches, "A5" Actuator Profile	94 PPM
Side Orientation (Nose-Down)	4x2, 12 ips	1.5 inches, "A5" Actuator Profile	102 PPM

Performance Specifications - 10 or 20 in. E-Tamp PA/4600E Labeler

Application	Label Size	Stroke Distance (Baseplate edge to product)	PPM Maximum
Side Orientation (Nose-Down)	4x2, 6 ips	4 inches, "A5" Actuator Profile	50 PPM
Side Orientation (Nose-Down)	4x2, 6 ips	3 inches, "A5" Actuator Profile	55 PPM
Side Orientation (Nose-Down)	4x2, 6 ips	1.5 inches, "A5" Actuator Profile	60 PPM

Performance Specifications - 10 in. E-FASA PA/6000E Labeler

Application	Label Size	Stroke Distance (Baseplate edge to product)	PPM Maximum
Dual Panels - Front & Side	4x2, 8 ips	4.5 inches, "A5" Actuator Profile	28 PPM
Dual Panels - Side & Rear	4x2, 8 ips	4.5 inches, "A5" Actuator Profile	24 PPM
Single Panel - Front Only	4x2, 8 ips	4.5 inches, "A5" Actuator Profile	52 PPM

Performance Specifications - 10 in. E-FASA PA/6000E Labeler

Application	Label Size	Stroke Distance (Baseplate edge to product)	PPM Maximum
Single Panel - Rear Only	4x2, 8 ips	4.5 inches, "A5" Actuator Profile	46 PPM
Dual Panels - Front & Side	4x6, 8 ips	4.5 inches, "A5" Actuator Profile	18 PPM
Dual Panels - Side & Rear	4x6, 8 ips	4.5 inches, "A5" Actuator Profile	16 PPM
Single Panel - Front Only	4x6, 8 ips	4.5 inches, "A5" Actuator Profile	44 PPM
Single Panel - Rear Only	4x6, 8 ips	4.5 inches, "A5" Actuator Profile	40 PPM

Performance Specifications - 20 in. E-FASA PA/6000E Labeler

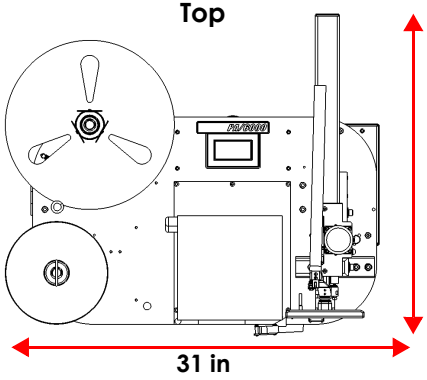
Application	Label Size	Stroke Distance (Baseplate edge to product)	PPM Maximum
Dual Panels - Front & Side	4x6, 8 ips	14 inches, "A2" Actuator Profile	10 PPM
Dual Panels - Side & Rear	4x6, 8 ips	14 inches, "A2" Actuator Profile	12 PPM
Single Panel - Front Only	4x6, 8 ips	14 inches, "A2" Actuator Profile	26 PPM
Single Panel - Rear Only	4x6, 8 ips	14 inches, "A2" Actuator Profile	24 PPM

Performance Specifications - E-WASA PA/6000E Labeler

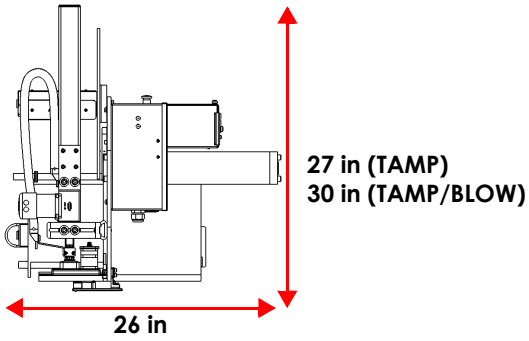
Application	Print Speed		PPM Maximum
6 inch Length WASA	8 ips		11
8 inch Length WASA	8 ips		10
10 inch Length WASA	8 ips		9
12 inch Length WASA	8 ips		8

1.5 System Dimensions - E-TAMP & E-TAMP/BLOW

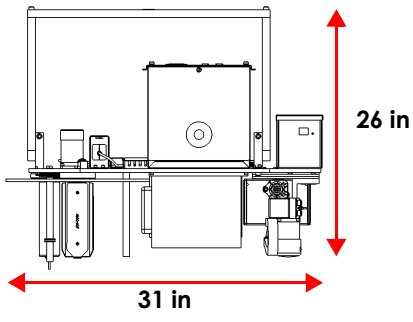
Top



Side

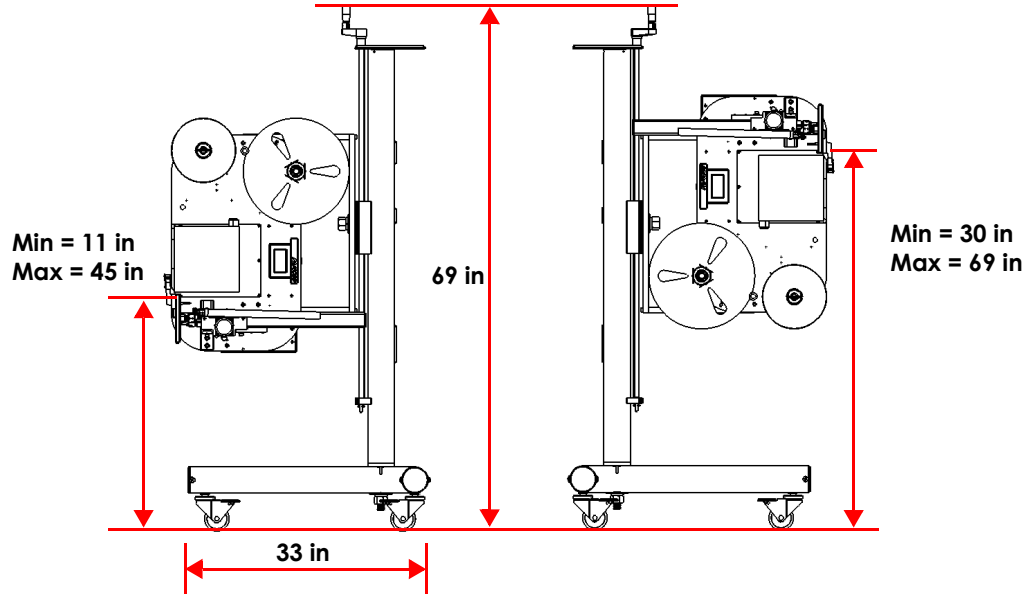


Overhead



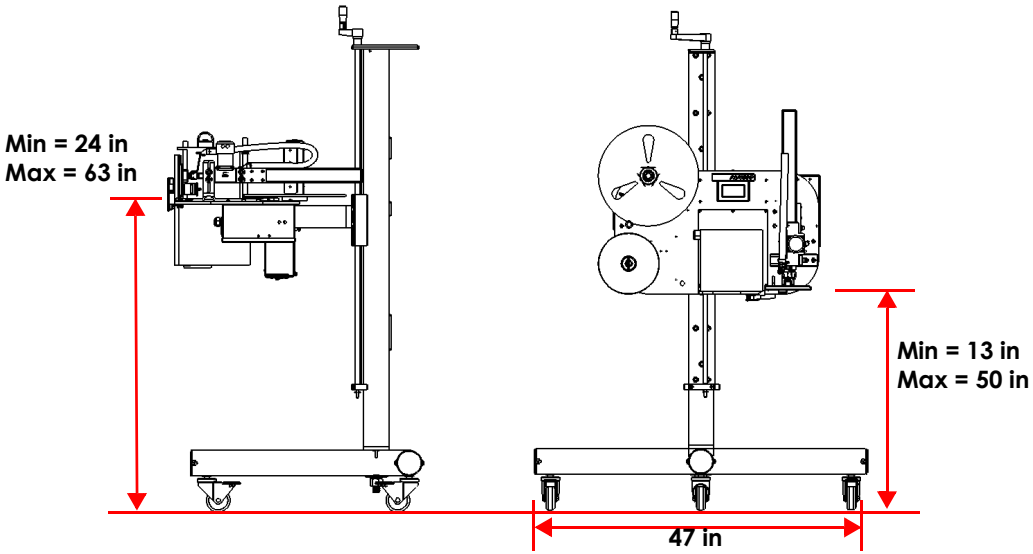
Nose Down

Nose Up



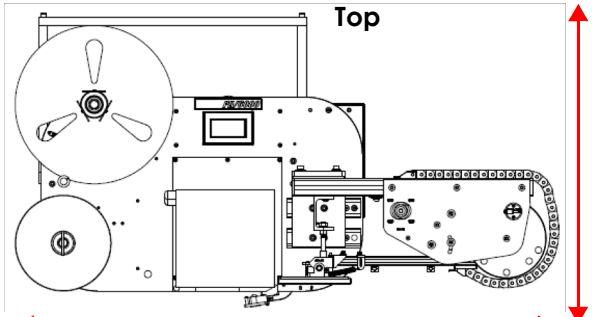
Side Orientation

Top Down

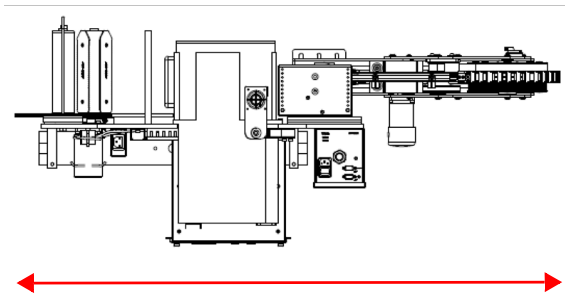


1.6 System Dimensions - E-FASA 10in.

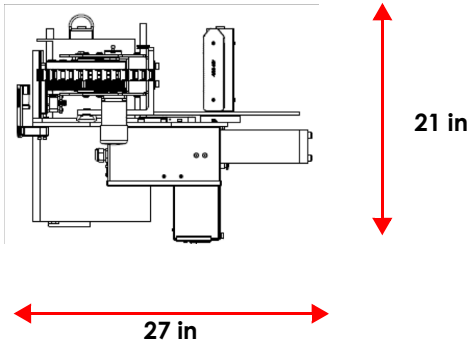
Top



Side

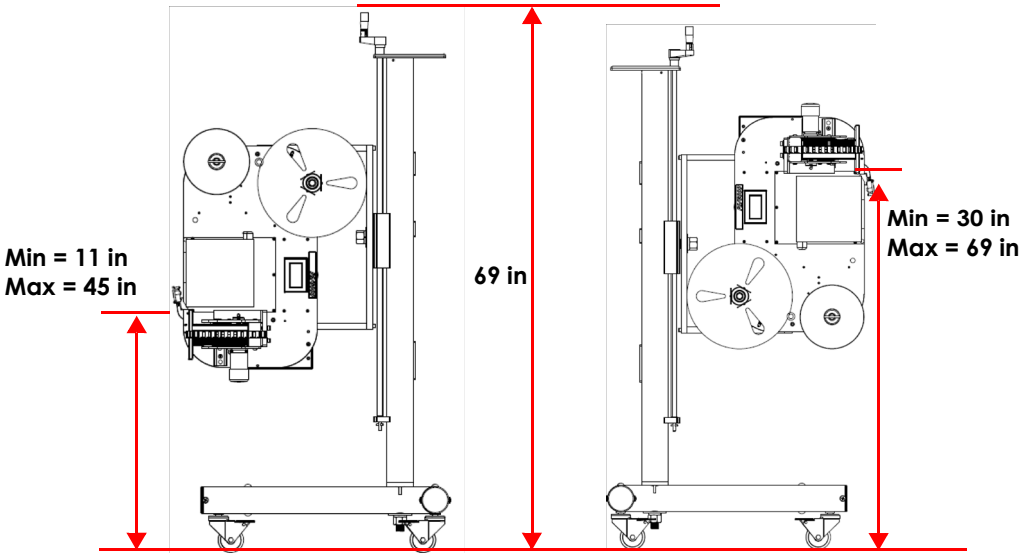


End Profile

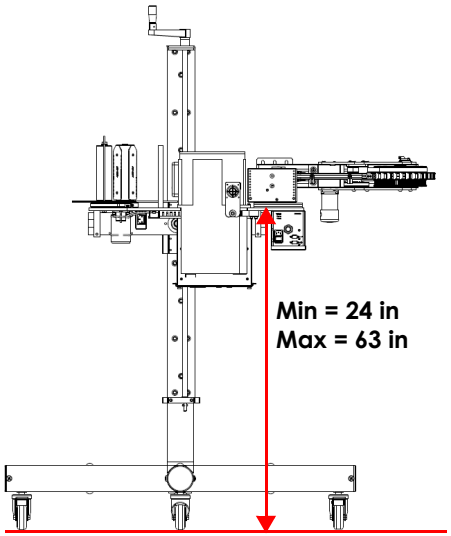


Nose Down

Nose Up

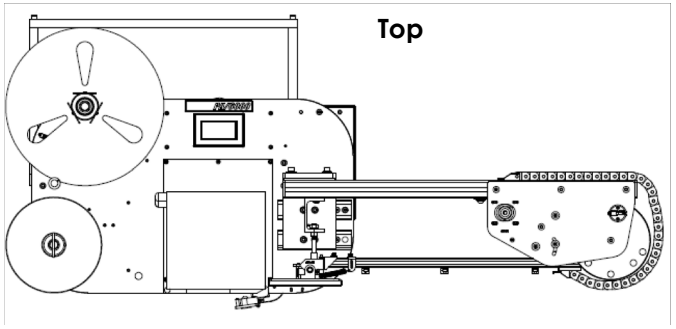


Side Orientation

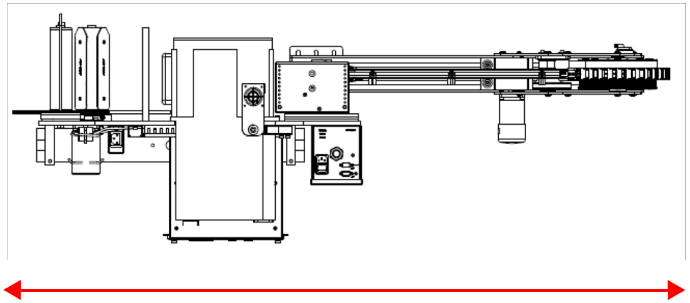


1.7 System Dimensions - E-FASA 20in.

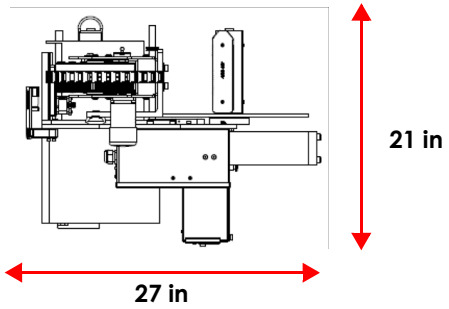
Top



Side

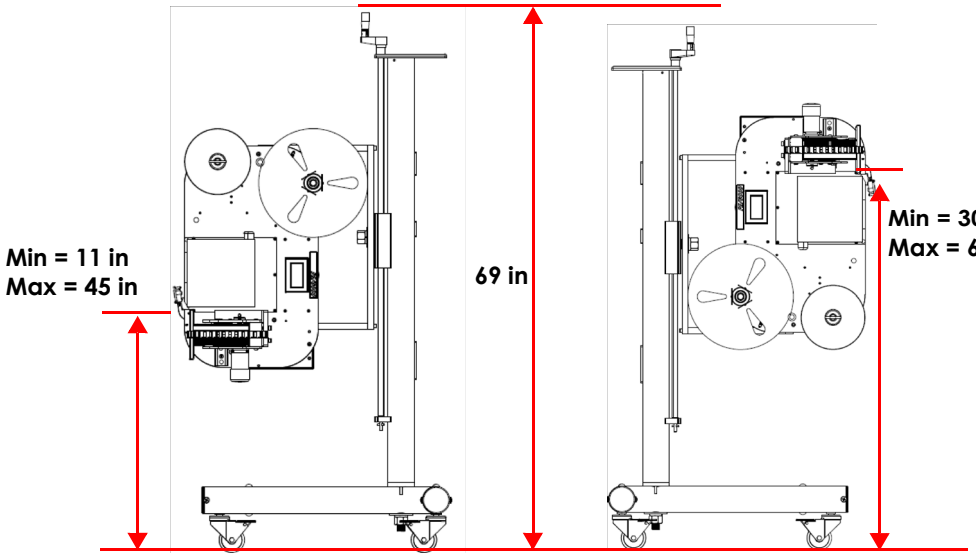


End Profile

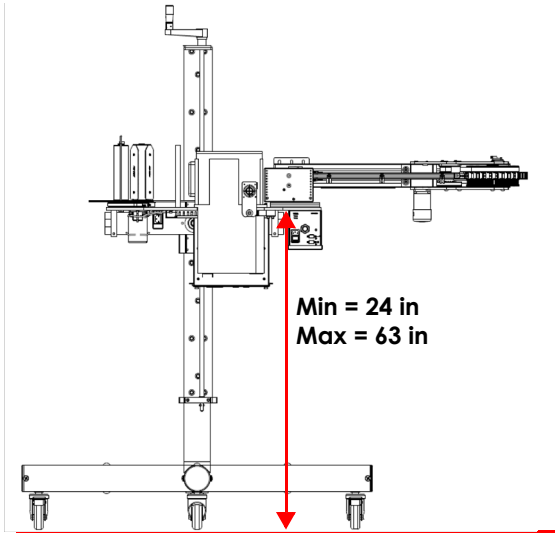


Nose Down

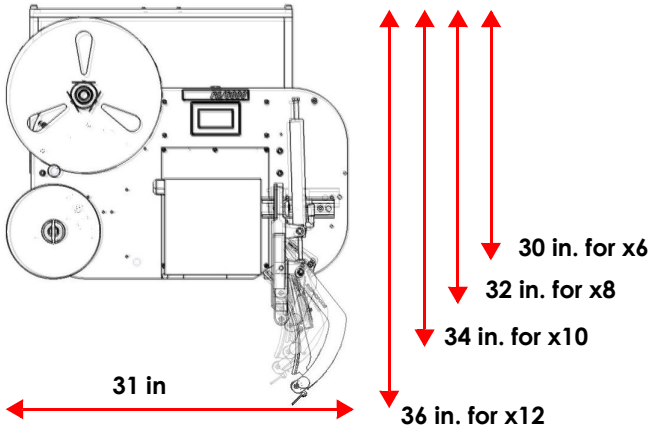
Nose Up



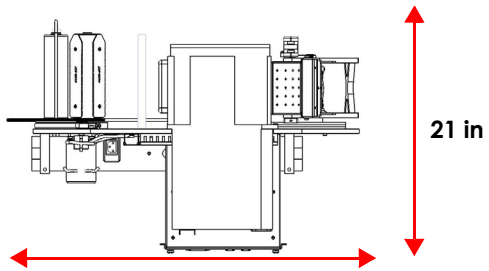
Side Orientation



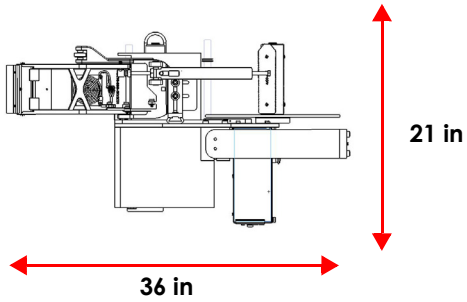
1.8 System Dimensions - E-WASA



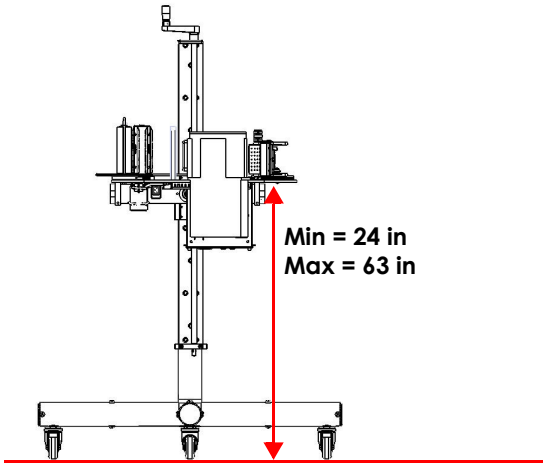
Side



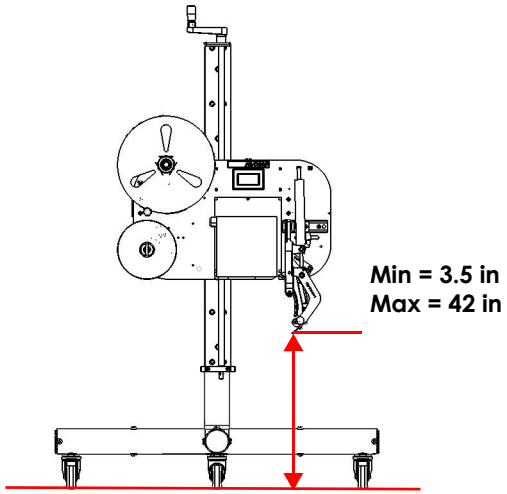
End Profile



Side Orientation



Top- Down



2.0 System Modules - E-TAMP & E-TAMP/BLOW

FRONT

Unwind Supply Roll
- Indestructible ABS Material
- 14 in. (355 mm) Disk
- 3 in. (76 mm) ID Core

4600-605

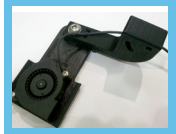
Dancer Arm
- Non-rotating spindle 4600-643
- Performs label/liner braking

4600-617

Rewind Liner Take-Up
- Indestructible ABS 1-pc Material
- Simple clasp liner keep

4600-606

OEM Industrial Printers
- SATO and Zebra Print Engines
- Can be changed from print and apply to Label Applicator with Drive Module

Air Assist Module

- Blower fan to guide label to Tamp Pad
- BLDC Blower Fan
- Swings out of the way for webbing liner

6000-666 [L or R]

* Warning Tower

- Red, Yellow, and Green LED bulbs
- 24 VDC 5 W

6000-828

Main Controller Assy.


- 480x272 Color LCD Graphics
- Touch Screen
- Highly Visible Status

6000-500

E-Tamp Actuator
- 10 or 20 inch variable stroke lengths
- IGUS Energy chain guarding
- Brushless DC Servo motor
- Articulated pivoting pad knuckle

6000-620 x10 or x20

Product Detector

- Diffused light sensor
- 900 mm range
- Light or Dark Operate
- NPN Signal

4600-900

* Tamp Pad Sensors

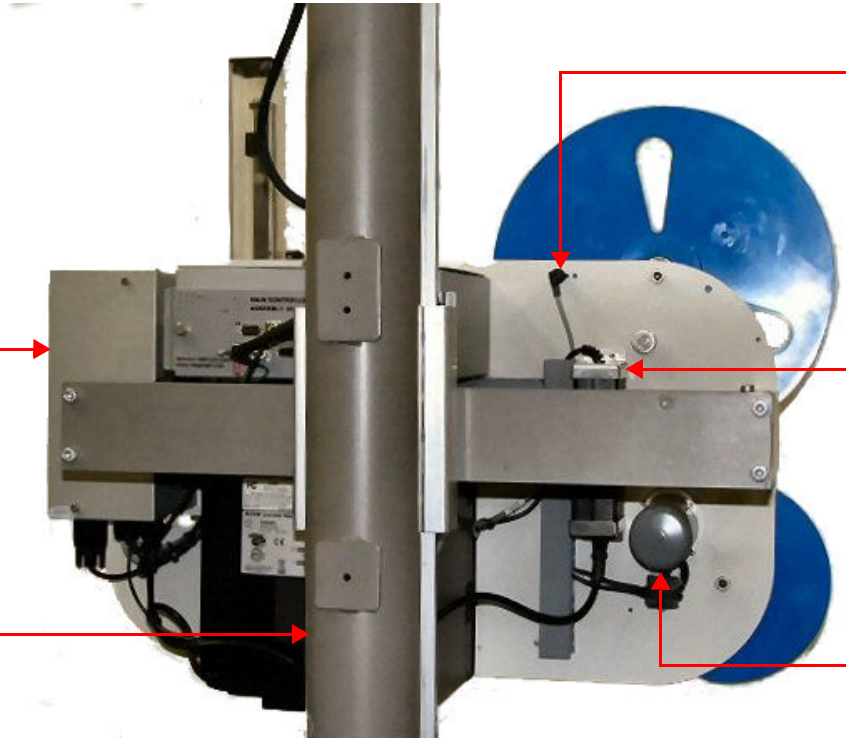
- Label Present sees label
- Auto-Retract sees product
- Focused beam
- Shielded, high flex PUR cabling, M8 Connector

6000-903

*** = Denotes Optional Equipment**

System Modules

REAR



MCM II

- Motor Control Module II
- Handles actuator and fan controls
- Has internal power supply for high-speed movements

6000-570

* Tube Stand

- T-Base stand w/casters
- High Tensile Strength Steel
- Aluminum travel plate
- Mounting locations for options, such as remote user interface

6160-329

* Stand Cleats

- Allows labeler to easily be removed and replaced at the line by locating the casters in position
- Prevents any accidental tipping of the labeler stand

4600-622

* Label Low Sensor

- Signals warning when supply roll is reaching the end
- Adjustable positions for triggering sooner or later into the roll

6000-903

Power Supply

- AutoRanging Voltage
- Protected against surges, spikes, and transients
- Low voltage to electrical enclosure for greater safety

6000-522

Rewind Motor

- Brushless DC Motor
- No clutch rewind eliminates adjustments and wear items
- Keeps up with the fastest print speeds

4600-503

*** = Denotes Optional Equipment**

System Modules

3.0 System Modules - E-WASA

Overview

Fan Box

- Curved surface to allow system to be positioned at line in minimal space
- Moves away from the product to avoid wear

*** 6170-502-WxL (R/L)**

Support Arms

- 4 and 6 inch widths
- Retains brush and roller
- Performs the product's corner wrap

*** 6170-505-WxL**

Fan Assembly

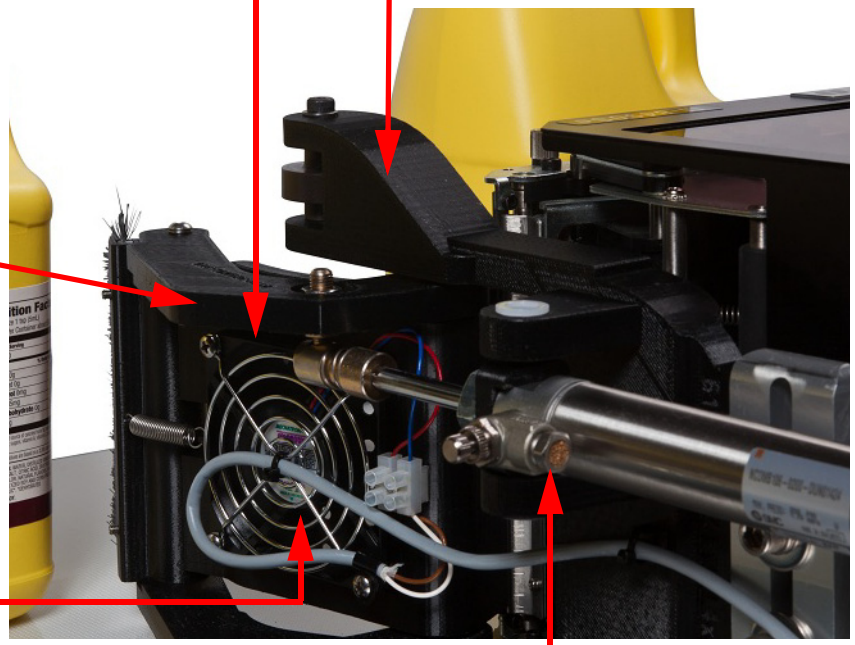
- Fan generates the label holding force prior to application
- Easily removed for service and cleaning

6170-509

Adjustable Cylinder

- Adjusts for various weight products
- Maximizes the wrap around the corner
- Allows the corner wrap fan assembly to come settle at home

6170-515



Mount

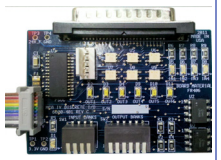
- Mounts the support arms to the dovetail track

*** 6170-501-WxL (R/L)**

*** Note -** W in the part number is width
Standard widths: 4, 6

L in the part number is length
Standard lengths: 6, 8, 10, 12

4.0 Optional Equipment

6000-405 	Discrete I/O Module This module provides four (4) optically-isolated inputs and six (6) isolated solid-state outputs. These I/O lines are event driven by selections made by the operator through the user interface.
6000-903 	Auto Retract, Label Present, and Label Low Sensors The Auto Retract sensor detects the product's surface before contact to allow light touch or varying size (height or width) applications. The Label Present sensor detects the label on the pad to stop the labeler from applying the wrong label to a sequenced product. It will generate another label if one is removed from the pad prior to application, and stops the generation of another label if one is already on the pad. The Label Low sensor is used to signal the operator that the consumable label roll is low and will require replacement soon.

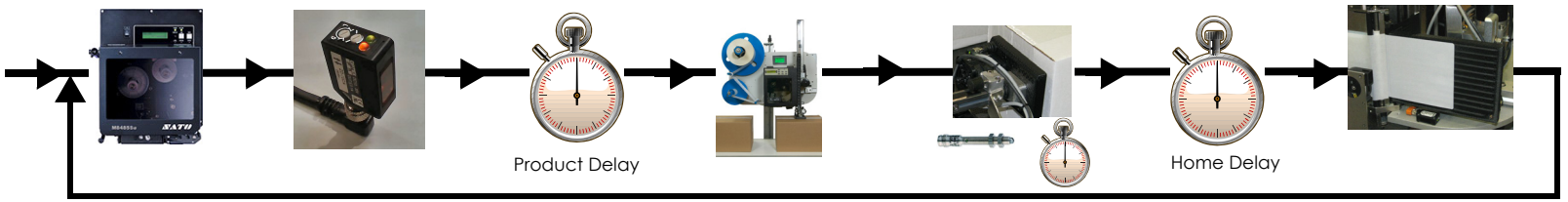
6000-828 6000-828AUD 	Warning Tower The three (3) segment warning tower visually displays Online-Running in green, Warning-Offline in yellow, and Error-Offline in red. The tower comes with LED bulbs. The tower is offered with an audible alarm siren for the error condition with the 6000-828AUD part number.
4600-901 4600-902 	Product Detectors - Break-Beam & Laser The standard diffuse light sensor works well for standard corrugate, but for shrink wrapped pallets the 4600-901 Break-Beam sensor is a better choice. For small products, or better accuracy the 4600-902 Laser sensor is ideal. All sensors have a quick disconnect M8 connector, shielded cable, and can be mounted on the baseplate or on-line with included brackets.

5.0 Theory of Operation

Next Label Out

Pro's: Maximum Throughput
Label Print and Tamp Time Drives PPM

Con's: Batch Change Could Leave Mismatched Label On Pad
Slow Product Rates Leave Label Adhesive Exposed Longer

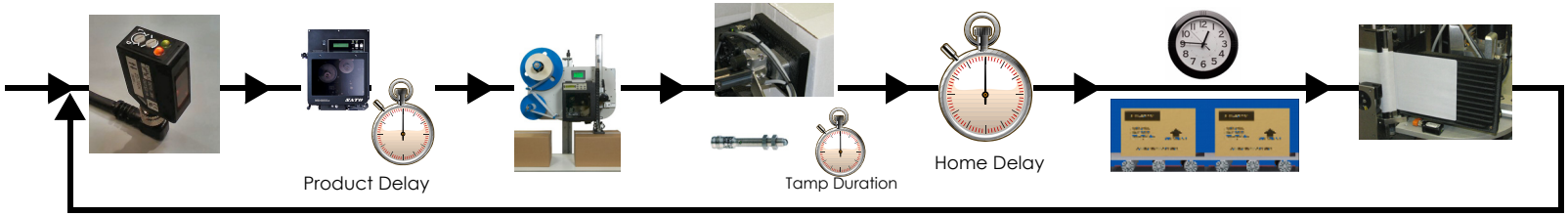


Labeler is placed online	The printer immediately prints the label if a format is loaded	The Product Detector triggers upon detecting the product	The Product Delay timer counts down to expiration	The Tamp Actuator is extended to the product to apply the label	The Tamp Actuator returns home when the first of these occurs: - Tamp Duration Expires - Auto-Retract triggers and delay expires - Hit Sense detects contact	Home Delay timer counts down to expiration	Label Present sensor checked for label. If no label is present, next label is fed out and cycle repeats

Print on Demand

Pro's: Label Adhesive is Exposed Shorter
Vacuum Fan Runs Less Often

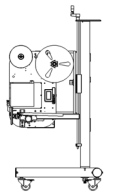
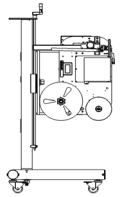
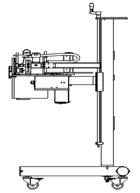
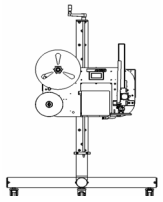
Con's: PPM Rate Determined by Product Length and Print Time
Requires Relocating Product Detector or 2nd Detector



Labeler is placed online. The labeler is now waiting for either Detector 1 or Detector 2 (depending on Label Activation setting in Job Setting Menu).	The Product Detector triggers upon detecting the product	The printer begins feeding the label and the Product Delay timer counts down to expiration	If the label is on the pad and ready to be applied, the Tamp Actuator is extended to the product to apply the label. If not, there will be a "Timing Violation". The Product Delay must be increased or print time decreased.	The Tamp Actuator returns home when the first of these occurs: - Tamp Duration Expires - Auto-Retract triggers and delay expires - Hit Sense detects contact	Home Delay timer counts down to expiration	The next label cannot be generated until the product has cleared the Product Detector	Label Present sensor checked for label. If a label is still present, an error can be set. The labeler will not generate a new label on the next Product Trigger, but will apply the label

6.0 Setup

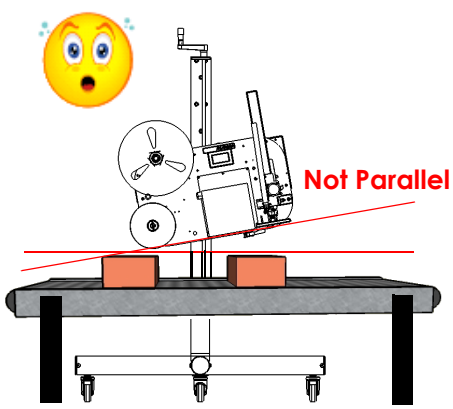
STEP 1 Determine Labeler Orientation

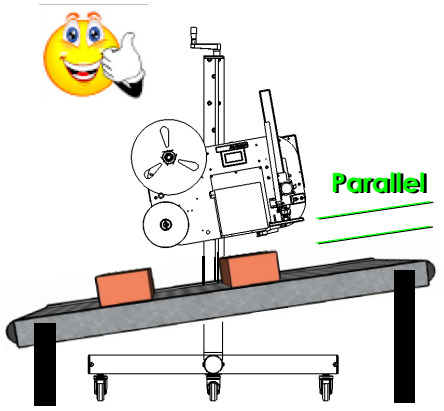
Orientation			View
Nose-Down Apply	• Side panel of product is to be labeled • Placing label close to top edge of product • Conveyor is low to ground, thus keeping unwind/rewind change out within reach	• Not for applying label toward lower edge of product • Not for tall conveyors where roll change out would be difficult	
Nose-Up Apply	• Side panel of product is to be labeled • Placing label close to bottom edge of product • Conveyor is standard height, thus keeping unwind/rewind change out within reach	• Not for applying label toward upper edge of product • Not for lower height conveyors • Not for label lengths greater than 6 inches (153 mm.)	
Side Orientation	• Side panel of product is to be labeled • Corner wrapped panels • Label is to be applied in landscape orientation	• Not for tall conveyors where roll change out would be difficult	
Top-Down / Bottom-Up Apply	• Top or Bottom panel of product is to be labeled	• More material handing is required for Bottom-Up applications	

STEP 2 Labeler Alignment with Product

Optimum Labeling Head Positioning

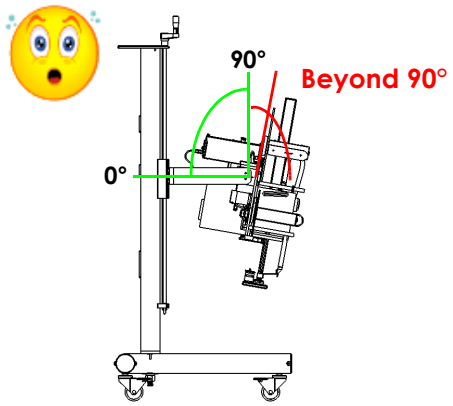
The labeler should be adjusted for position to the product through the yoke, which rotates about two axes. The labeler must be rotated on these axes to obtain a parallel surface contact when the tamp pad meets the product's surface. The systems are equipped with an articulated knuckle to accommodate some product skew and variances. The setup should not depend on this small amount of pivoting to avoid the proper alignment of the yoke.

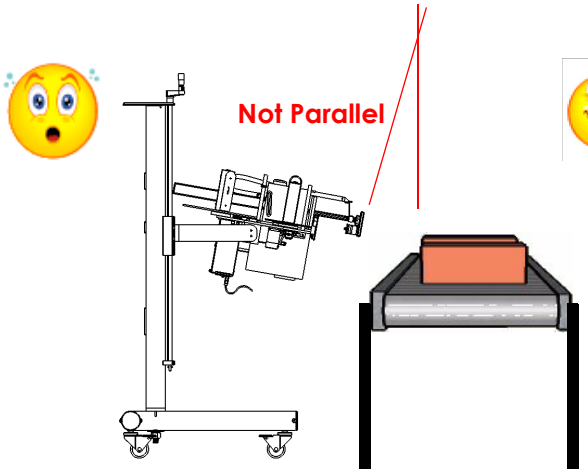


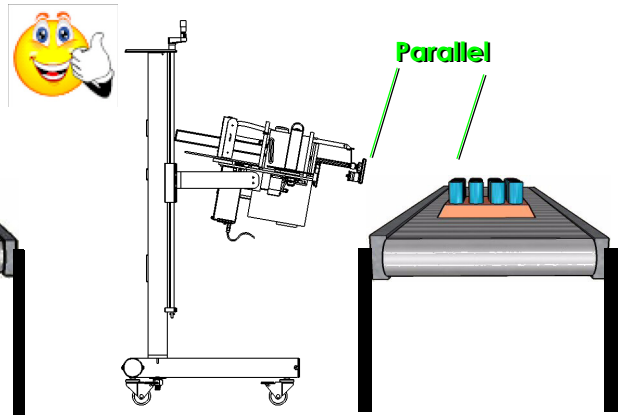


Label Supply Roll Positioning

The labeler will not work properly if the label supply angle is beyond 90 degrees, with respect to the ground. This will allow the label roll to slip off of the labeler and can cause liner tracking problems within the printer.







STEP 3a Basic User Interface Screens

The User Interface

The MCA IV uses a micro computer to handle all of the user interface graphics, USB and microSD file actions, Ethernet and serial communication, and real time clock. It employs a dedicated I/O controller processor to handle all of the time-critical events and maintain timing accuracies to less than 1 millisecond. Since the system settings are located on the internal microSD card, the user must return to the Home Screen to save changes to the settings.

Home Screen

Saving or Recalling files/parameters to/from the internal microSD card

Communication active (incoming Serial/Ethernet or outgoing to printer)

External USB Memory Device Connected

Heartbeat - Visual indication of system health

Passcode

The factory default passcode is 00000000, which can be individually set for Administrator and User access levels. Administrator access allows for changes to all settings and parameters, while the user access allows for job parameter changes. Run/stop operation and Informational Menus are not passcode protected. Setting the Admin passcode to “0” allows unrestricted access to all settings. Setting the User passcode to “0” allows unrestricted access to Job Parameters, but not the higher level Admin settings.

Job Menu

From the Home Screen, there are four Menu choices that subdivide all of the system controls. The Job Menu allows immediate access to change all of the parameters that are particular to a product run by selecting the job number. This menu is passcode protected by the User and Admin codes.

USR SUP

Recall a job by either using the up/down arrows or press the Job button to use a keypad

The job will be recalled when the Home button is pressed

If the job number is new, the default values will be recalled

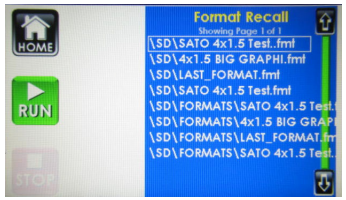
There are other methods to automated switching jobs. Another method is through the label format. A control code can be used switch the job within the label format

STEP 3b Basic User Interface Screens (Cont.)

Label Menu

From the Home Screen, the second main menu choice is the Label Menu. The Label Menu allows immediate access to change any of the parameters that are particular to the label. This menu is passcode protected by the User and Admin codes.

USR SUP



Rewind Tension sets the "electric clutch" for the label take-up. There are five settings, which are toggled with each keypress. This setting will depend on the print speed, label length, and the liner material type.

Make Label sets the time when the next label is dispensed.

- **At Home** immediately prints a label when the actuator returns to the home position
- **P1 Detect** prints a label when product detector 1 is triggered. This is used for labels that require up-to-the-second data or slower throughput lines that benefit from minimizing label adhesive exposure before application time. In this mode, the Product Delay must be long enough to allow the label to print out before the delay expires.
- **P2 Detect** prints a label when product detector 2 is triggered. Similar to above, but the label trigger and apply trigger are separate. Used to keep placement accuracy as high as possible, while allowing the label to be printed on demand. Requires two sensors.

Force Feed immediately prints a label to the pad. The vacuum, air assist, and rewind are activated. Will not print if there is already a label on the tamp pad

Delete allows the user to select which format from the internal microSD card should be deleted

Clear empties the printer's batch and cancels the current queued label format

Test allows the user to select from a list for "known good" label formats to send to the printer. Used to verify setup and operation

Recall allows the user to select from a list of application formats to send to the printer. Formats with the extension *.fmt or *.prn will be displayed

Press the selection once to select, and a second time to load into the printer
Both the internal microSD and the external USB drives will be displayed (although the USB files can be transferred to the microSD)
If the Format Logging mode is enabled, the LAST_FORMAT.fmt file will be the last transmission sent to the system
This file must be in the printer's syntax (SATO SPL, Zebra ZPL, etc.) in order to directly load. This is usually done by performing a "Print to File" within the label formatting software or the printer driver

Setup Menu

From the Home Screen, the third main menu choice is the Setup Menu. The Setup Menu contains the majority of system controls. Most of these controls require a one time setup, and therefore are made accessible to the Administrator only. This menu is passcode protected by the Admin code, and is not accessible to the User.

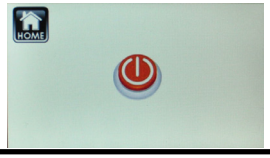
SUP

Job Settings

Smart Settings

File Operations

Power Off/On



Ethernet Settings

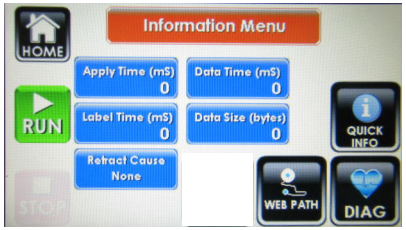
System Settings

I/O Settings

STEP 3c Basic User Interface Screens (Cont.)

Information ("INFO") Menu

From the Home Screen, the last main menu choice is the Info (Information) Menu. This menu is not passcode protected. From this menu, the system Web Path, Information and Diagnostic screens are accessible.



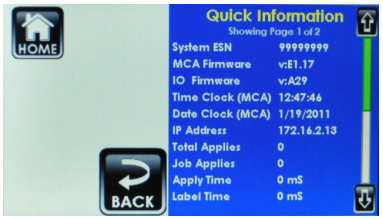
Apply Time displays the round-trip time in milliseconds that it takes to apply the label to the product

Label Time displays the time in milliseconds that it takes to fully print out the label

Retract Cause shows the reason why the actuator returned to the home position. Possible reasons are Duration and Auto Retract. Used to ensure that the Auto Retract sensor is controlling the return versus a timeout of the Apply Duration.

Data Time displays the time in milliseconds that has elapsed sending the label format to the system. Useful to determine maximum throughput of the system and relative speed of the serial or Ethernet transmission.

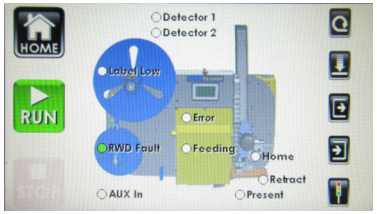
Data Size shows the message size in bytes of the label format transmission. Updates as the data is being sent to the system. Useful to understand how large the message being sent is to minimize transmission time by using more resident printer fonts or decrease graphic sizes.



Web Path provides views of the system and printer to illustrate the label liner path through the system

Quick Info contains a list of system values for versions, clock, and measured times

Diag is a troubleshooting screen that visually shows all of the system sensor states and allows for activation of output signals (when offline). The sensors can be monitored while the system in running online, or tested manually when the system is offline

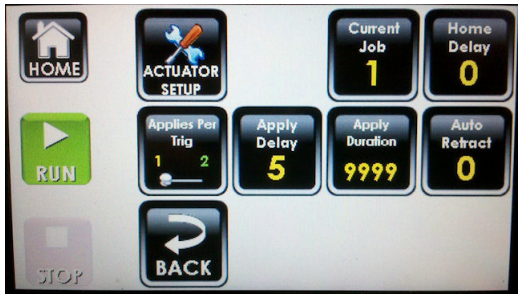


STEP 3d Basic User Interface Screens (Cont.)

JOB SETTINGS

Entering the Job Setting Parameters

The system can be either online or offline to access the Job Settings menus. If the labeler is using the passcode protection, the correct value must be entered to proceed to making changes to the Job Settings.



Actuator Setup

Press this button to make selection changes to the Actuator Speed and other application module-specific settings.

Blow

There are three blow modes. Blow set to ***No*** will deactivate the Blow output. Blow set to ***Sensor*** will only blow the label onto the product if the product is seen by the Auto Retract Sensor. This prevents a mis-trigger from blowing a label into the air, since it will return with the pad on retract. Blow set to ***Retract*** will activate the blow function upon retracting the actuator. That can be due to the auto retract sensor or apply duration.

Current Job

The labeler has a total of 99 jobs that can be recalled. When changes are made to any of the following job settings, they are automatically stored under the current job number. When the Select Job value is changed, all of the parameters are recalled and loaded as the current settings.

Home Delay

In this screen, a waiting period between the actuator returning home and the next label printed can be adjusted. This delay can be useful for allowing the tamp pad to settle, before the next label is printed.

Applies Per Trig

Determines if the system will apply one or two labels for each product trigger. Used for dual panel labeling applications, such as E-FASA swing arms or to place two labels on one panel with an E-Tamp system. Selecting 2 Applies Per Trigger will add another row of second application parameters.

Apply Delay

This time value is the delay between product detector trigger and application start. This delay can be calculated by taking (5000 / linespeed in FPM) * the distance from the product detector to peel blade edge in inches). This will yield the delay in milliseconds to be entered on the screen. Some adjustment of this value will be required to position the label on the product at the desired location on the product.

2nd Apply Delay (only if Applies Per Trig is 2)

Calculated the same as above, but include extra time to allow the second label to print and be ready for the second application. If the second label is not ready in time, a **Timing Violation** warning will be given. Increase the delay to avoid this warning.

Apply Duration

This setting controls the extension stroke time. If the auto-retract sensor is not used, this is the only setting that controls the retract of the actuator. Make sure the apply duration does not allow the actuator to stroke to the maximum extension position.

2nd Apply Duration (only if Applies Per Trig is 2)

This controls the second application extension time.

Auto Retract

The optional auto retract sensor will detect the product surface before contact. This allows the lightest touch of the label to the product, which can accomplish nearly the same effect as a tamp/blow on many products and have the benefit of positive contact to ensure label transfer onto the product surface. Since the speed of the actuator can vary, based on the actuator profile setting, the auto retract employs an adjustable delay. This delay is started when the sensor first “sees” the product, and allows additional time to contact the product. If the delay is set too short, the tamp pad may never hit the product. If set too long, it will hit the product too hard. If it is set to zero, the auto-retract will be disabled, and the labeler will only use the apply duration timer to cause retract.

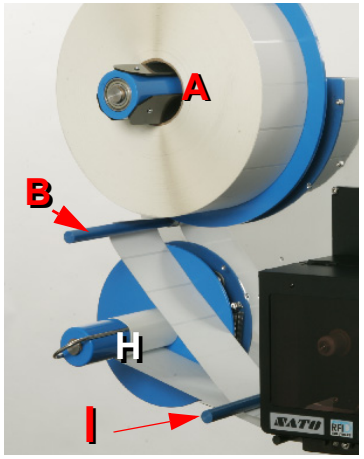
2nd Auto Retract (only if Applies Per Trig is 2)

This controls the second auto retract delay time.

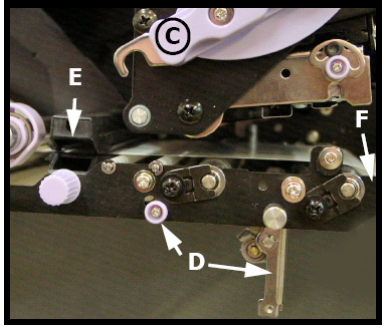
STEP 4 Load the Media

LABEL SUPPLY CHANGEOUT

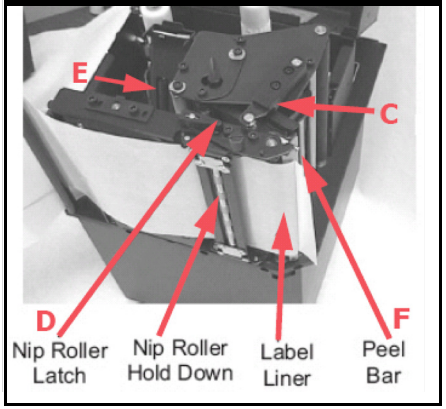
Begin by removing the last supply roll core and remaining label liner from the labeler. Insert the new roll over the unwind fins and press roll firmly against the unwind disk (A). Remove 2 feet of labels from the liner to create a leader. Route the liner around the dancer arm (B) and feed into the printer, under spindle (I), for PA/6000E systems. Unlatch the printhead (C) and nip roller arm lever (D). Feed the liner through the gap sensor (E), under the printhead, and around the peel blade (F). ***Be sure to avoid webbing over the air assist blower***. Once around the peel blade, feed liner through the nip roller arm and close printhead latch and nip roller arm. Take the liner to the rewind (H), and use the clasp to retain it. With the printer offline, press the feed button to register the first label; before the printer is returned online and the labeler begins running. The label change out can be accomplished in less than a minute by an experienced user.



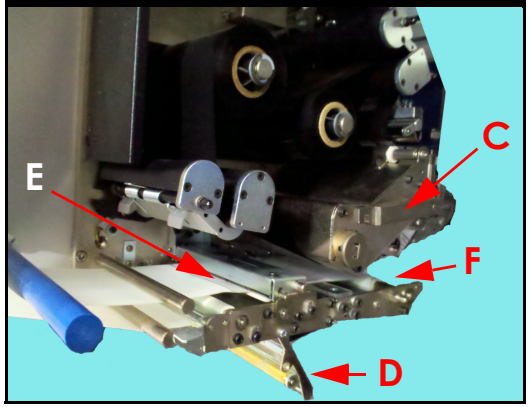
SATO Lt408 (4600)



SATO M84xxSe (6000)



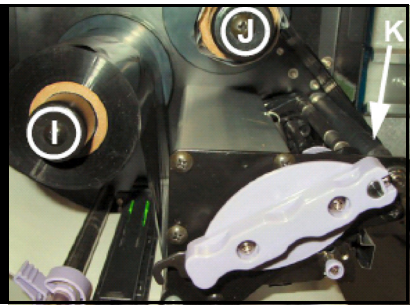
Zebra 110PAX4 (6000)



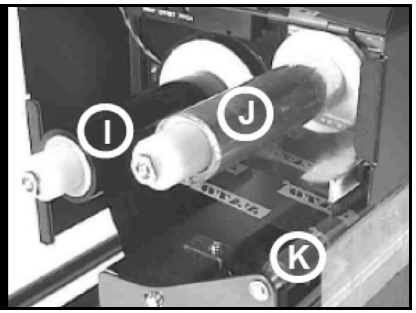
RIBBON MATERIAL CHANGEOUT

Remove the last ribbon take-up roll from spindle (J), and move the old supply-side core from spindle (I), and place it on spindle (J). Insert the new ribbon, observing the ribbon type (face-in or face-out) on the supply-side spindle (I). Route the ribbon under the printhead support arm, around the ribbon roller (K), and wrap around the take-up spindle (J). Make a few wraps and close the printhead latch. Try a few test feeds before going back online.

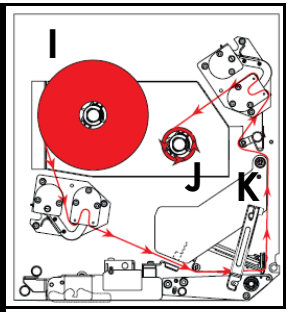
SATO Lt408



SATO M84xxSe



Zebra 110PAX



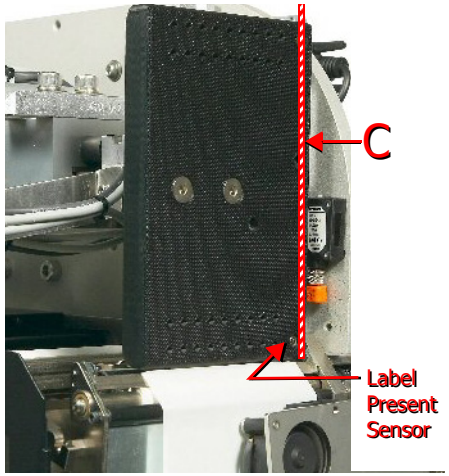
E-TAMP

The next 2 steps are for E-TAMP Only

E-TAMP - STEP 5 Alignment of the E-TAMP Assembly

Tools Required:

- 6 mm Allen Wrench
- 7 mm Open End Wrench



Lineal (X) Position Adjustment

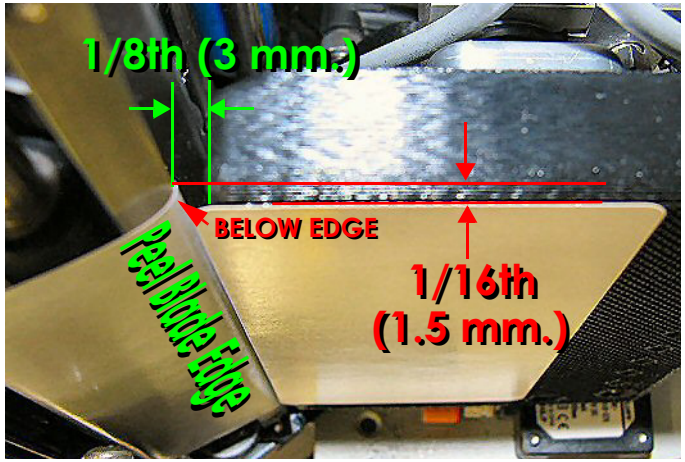
- Loosen the two screws (A) [use 6 mm Allen wrench] on the dovetail slider
- Slide assembly in and out from the printer until there is approximately 1/8th inch (3 mm.) of space between printer peel blade and tamp pad edge
- Tighten the two screws (A) on the dovetail slider

Lateral (Y) Position Adjustment

- Loosen the two screws (B) [use 6 mm Allen wrench] on the tamp actuator L-bracket
- Slide the assembly in and out from the baseplate until the label present sensor is within the feed position of the label. Line (C) shows the projected path of the label where the label present sensor would be fully covered once the label is printed
- Tighten the two screws (B) on the tamp actuator L-bracket. Keep the actuator parallel to the baseplate during tightening

Height (Z) Position Adjustment

- Loosen the 7 mm square head jam screw on the actuator rod end located by the tamp pad
- Turn the rubber bumper by hand to adjust the tamp pad height position. Turn clockwise to decrease height, counter-clockwise to extend height
- The optimum position will be an 1/16th inch (1.5 mm) below the peel blade. This is important in order to stop the label from backfeeding into the printer and prevent label rotation upon actuator extension
- With the E-Tamp controller on, check the resting position of the pad. Once the proper position is set, tighten the square-headed jam screw to lock the bumper in position. ***Failure to re-tighten the jam screw will cause feed errors over time as the bumper becomes loose.***



E-TAMP - STEP 6 E-TAMP Parameter Setup

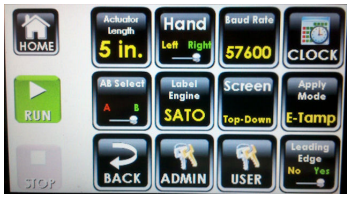
Setup Overview

E-Tamp applications allow the label to be placed on the Top, Side, or Bottom of a product. Typically, these are applying only one label to a product, but two can be applied as well.

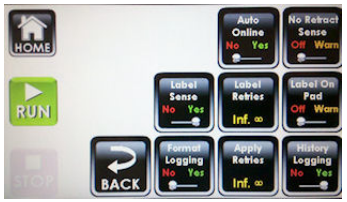
Key Settings

Home > Setup > Job

Home > Setup > System



Home > Setup > Smart



Home > Label

Job Screen

Apply Delay — keep as small as possible by locating the product sensor as close to the peel blade as possible. Exception - if print on demand is used

Apply Duration — With Auto Retract, this should be used as a backup retract timer. Set Auto Retract to zero to properly adjust this time, then re-enable AR

Auto Retract — If installed, the Auto Retract (AR) time depends on the actuator speed. Speeds higher than A3 should not use the AR. Speeds of A1 to A3 benefit from AR, and typical values range from 1 mS to 100 mS

Home Delay — Most E-Tamp applications will not need much Home Delay. Large label sizes will benefit with a minimal delay of 20 to 100 mS

System Screen

Apply Mode — E-Tamp for this application

Leading Edge — Typically leading edge product triggers will offset the label placement from the front. If the product lengths vary, and the label needs to be placed off of the trailing edge of the product, set this value to No

Smart Screen

Label Sense — Determines if the system is being used with the optional Label Present sensor

Label Retries — Determines how many times the label will be printed without an application. To ensure a 1 Label to 1 Product match, set this to 1

Label On Pad — Provides a warning if the system is onlined with a prior label on the tamp pad. Helps avoid a potential label to product mis-match

Apply Retries — Determines how many times the system will attempt to apply the same label. To ensure a 1 Label to 1 Product match, set this to 1

Label Screen

Rewind Tension — Sets the amount of tension applied to the rewind on a print cycle. Set lower for print speeds less than 6 ips or labels shorter than 4 inches

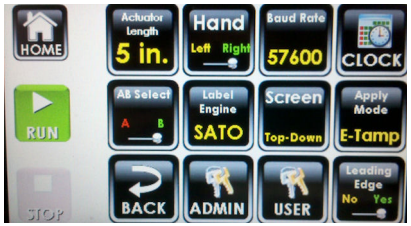
Make Label — Determines the label generation mode. For slow applications, like pallets, make this P1 Detect. This will reduce the time the label adhesive is exposed to air and drying. For highest throughput, use At Home, for batch runs. User P2 Detect for the highest accuracy (by using two detectors) when print on demand is required

E-TAMP - STEP 7 E-TAMP MCM II Setup

Overview

The MCM II controls the actuator of the system for applying labels and communicates serially to the MCA IV, where all of the settings are changed and stored.
The MCM II controls these functions:
AIR ASSIST - Turns the air assist blow on when the system enters online mode and turns off when the system enters offline mode. This fan directs the label up to the pad from the printer so the vacuum fan can hold the label in place for application.
VACUUM FAN - Turns the vacuum fan on with five (5) discrete settings of increasing suction to hold the label in place prior to application. Turns off when the label is removed and 10 seconds expire. There are five vacuum fan profile settings to match the application label size. See following chart for recommended setting

Profile	Label
Low	Label length > 8 inches
Med-Low	Label length > 8 inches
Medium	Label size closely matches pad size (i.e.- 4x6 label on 4x6 pad)
Med-High	Label area is smaller than pad size by 50% (i.e.- 4x2 label on 4x4 pad)
High	Label area is smaller than pad area by 70% (may require custom pad to accommodate)



ACTUATOR MOTOR - Controls the direction and speed of the actuator with five (5) discrete speeds for label application to the product. MCM II monitors speeds of the actuator, stalls, and position of the actuator during travel.
ACTUATOR HOME SENSOR - Monitors the magnetic reed sensor that determines if the actuator is in the home position, ready to accept the next label. Prevents mis-feeds of labels and allows system to operate at maximum throughput.

NOTE:
All speeds are valid for 5, 10, and 20" E-TAMP Applicator Modules. Control of actuator is based on settings of:
SETUP->JOB->ACTUATOR SETUP **Actuator Speed** to set the overall speed
SETUP->JOB->ACTUATOR SETUP **Distance Limit** to set the furthest extension of the tamp for this application
Use this limit if the product distance to the labeler is consistent.

SETUP->JOB->ACTUATOR SETUP **Hold Delay** to set how long the actuator should hold the same position once it reaches the first of these conditions:

- Actuator Delay Expires
- Auto Retract Sense
- Angle Limit Threshold Reached

For most tamp applications, this value should be zero. For slow linespeed applications, this hold value can be used to keep the pad in contact with the product longer, but with weaker (non-crushing) force. Holds the last position, versus continuing forward.

SETUP->SYSTEM **AB Select** to set the direction of the actuator to the Home Position
SETUP->SYSTEM **Screen** to inform the system of the orientation of the system (Top-Down, Nose-Up, Nose-Down, Side)
SETUP->SYSTEM **Actuator Length** to the maximum distance for stroke on the actuator

E-TAMP/BLOW

The next 2 steps are for E-TAMP/BLOW Only

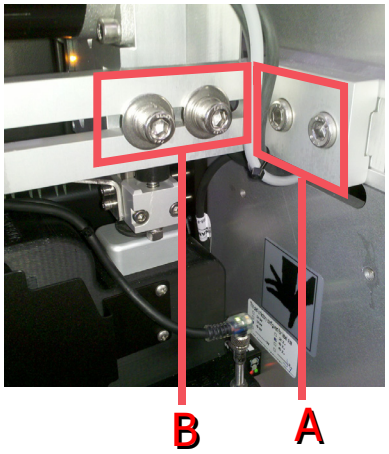
E-TAMP/BLOW - STEP 5 Alignment of the E-TAMP/BLOW Assembly

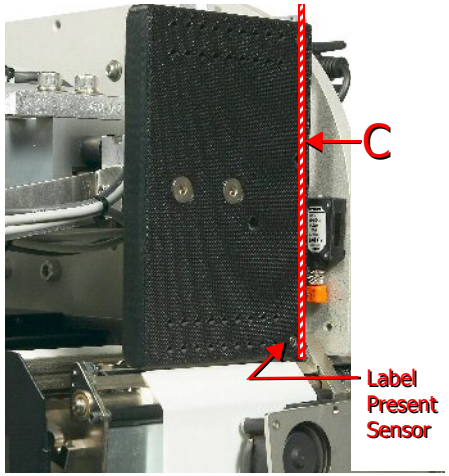
Tools Required:

- 6 mm Allen Wrench
- 7 mm Open End Wrench

Lineal (X) Position Adjustment

- Loosen the two screws (A) [use 6 mm Allen wrench] on the dovetail slider
- Slide assembly in and out from the printer until there is approximately 1/8th inch (3 mm.) of space between printer peel blade and tamp pad edge
- Tighten the two screws (A) on the dovetail slider



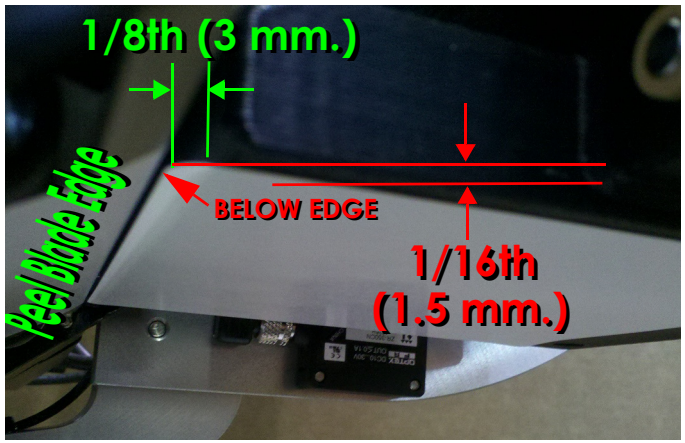


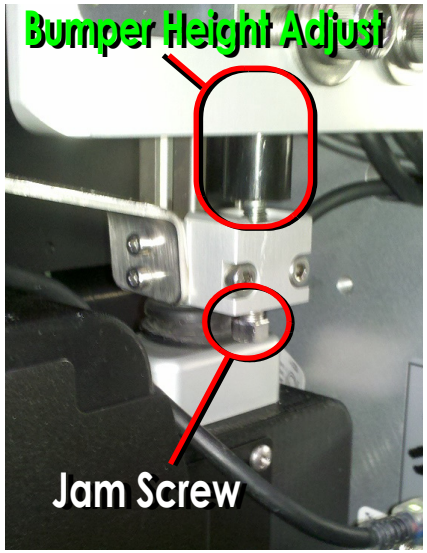
Lateral (Y) Position Adjustment

- Loosen the two screws (B) [use 6 mm Allen wrench] on the tamp actuator L-bracket
- Slide the assembly in and out from the baseplate until the label present sensor is within the feed position of the label. Line (C) shows the projected path of the label where the label present sensor would be fully covered once the label is printed
- Tighten the two screws (B) on the tamp actuator L-bracket. Keep the actuator parallel to the baseplate during tightening

Height (Z) Position Adjustment

- Loosen the 7 mm square head jam screw on the actuator rod end located by the tamp pad
- Turn the rubber bumper by hand to adjust the tamp pad height position. Turn clockwise to decrease height, counter-clockwise to extend height
- The optimum position will be an 1/16th inch (1.5 mm) below the peel blade. This is important in order to stop the label from backfeeding into the printer and prevent label rotation upon actuator extension
- With the E-Tamp controller on, check the resting position of the pad. Once the proper position is set, tighten the square-headed jam screw to lock the bumper in position. ***Failure to re-tighten the jam screw will cause feed errors over time as the bumper becomes loose.***





E-TAMP/BLOW - STEP 6 E-TAMP/BLOW Parameter Setup

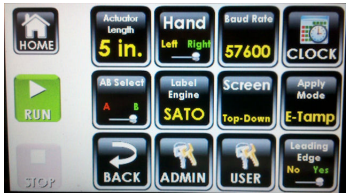
Setup Overview

E-TAMP/BLOW applications allow the label to be placed on the Top or Side of a product. Typically, the label is transferred in a contact-less manner to the product. Alternatively, the tamp pad can make contact with the product and then blow (tamp-touch-blow) to help place a label into a recess or void area.

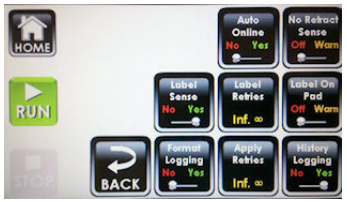
Key Settings

Home > Setup > Job

Home > Setup > System



Home > Setup > Smart



Home > Label

Job Screen

Blow — Choices of No, On Sensor, or On Retract. No disables the Blow function. On Sensor only actives the Blow function when the product is detected in front of the Auto Retract Sensor. On Retract activates the Blow function when the actuator is returning due to Apply Duration expiring.

Apply Duration — With Auto Retract, this should be used as a backup retract timer. Set Auto Retract to zero to properly adjust this time, then re-enable AR

Auto Retract — If installed, the Auto Retract (AR) time depends on the actuator speed. Typical values range from 1 mS to 100 mS

System Screen

Apply Mode — E-Tamp for this application

Leading Edge — Typically leading edge product triggers will offset the label placement from the front. If the product lengths vary, and the label needs to be placed off of the trailing edge of the product, set this value to No

Smart Screen

Label Sense — Determines if the system is being used with the optional Label Present sensor

Label Retries — Determines how many times the label will be printed without an application. To ensure a 1 Label to 1 Product match, set this to 1

Label On Pad — Provides a warning if the system is onlined with a prior label on the tamp pad. Helps avoid a potential label to product mis-match

Apply Retries — Determines how many times the system will attempt to apply the same label. To ensure a 1 Label to 1 Product match, set this to 1

Label Screen

Rewind Tension — Sets the amount of tension applied to the rewind on a print cycle. Set lower for print speeds less than 6 ips or labels shorter than 4 inches

Make Label — Determines the label generation mode. For slow applications, like pallets, make this P1 Detect. This will reduce the time the label adhesive is exposed to air and drying. For highest throughput, use At Home, for batch runs. User P2 Detect for the highest accuracy (by using two detectors) when print on demand is required

E-TAMP/BLOW - STEP 7 E-TAMP/BLOW MCM II Setup

Overview

The MCM II controls the actuator of the system for applying labels and communicates serially to the MCA IV, where all of the settings are changed and stored.
The MCM II controls these functions:
AIR ASSIST - Turns the air assist blow on when the system enters online mode and turns off when the system enters offline mode. This fan directs the label up to the pad from the printer so the vacuum fan can hold the label in place for application.
VACUUM SPEED - Turns the vacuum fan on with five (5) discrete settings of increasing suction to hold the label in place prior to application. Turns off when the label is removed and 10 seconds expire. There are five vacuum fan profile settings to match the application label size.

VACUUM SPEED SHOULD BE MEDIUM-HIGH

OR HIGH FOR E-TAMP/BLOW APPLICATIONS

ACTUATOR MOTOR - Controls the direction and speed of the actuator with five (5) discrete speeds for label application to the product. MCM II monitors speeds of the actuator, stalls, and position of the actuator during travel.
ACTUATOR HOME SENSOR - Monitors the magnetic reed sensor that determines if the actuator is in the home position, ready to accept the next label. Prevents mis-feeds of labels and allows system to operate at maximum throughput.

NOTE:
All speeds are valid for 5, 10, and 20" E-TAMP/BLOW Applicator Modules. Control of actuator is based on settings of:
SETUP->JOB->ACTUATOR SETUP **Actuator Speed** to set the overall speed
SETUP->JOB->ACTUATOR SETUP **Distance Limit** to set the furthest extension of the tamp for this application
Use this limit if the product distance to the labeler is consistent. Set distance just short of the product to blow label to the product

SETUP->JOB->ACTUATOR SETUP **Hold Delay** to set how long the actuator should hold the same position once it reaches the first of these conditions:

- Actuator Delay Expires
- Auto Retract Sense
- Angle Limit Threshold Reached

Use this delay to keep the tamp pad at a fixed distance while the blow function is operating. A value between 50 and 100 mS makes the blow more effective

SETUP->SYSTEM **AB Select** to set the direction of the actuator to the Home Position
SETUP->SYSTEM **Screen** to inform the system of the orientation of the system (Top-Down, Nose-Up, Nose-Down, Side)
SETUP->SYSTEM **Actuator Length** to the maximum distance for stroke on the actuator

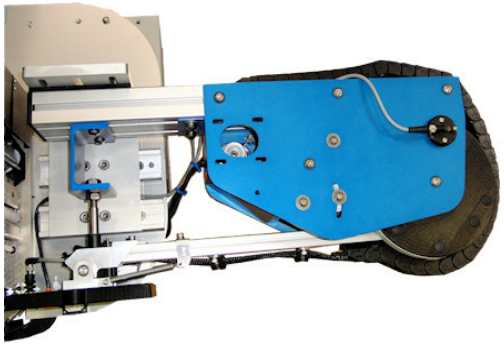
E-FASA

The next 2 steps are for E-FASA Only

E-FASA - STEP 5a Alignment of the E-FASA Assembly

Tools Required:

- 6 mm Allen Wrench
- 17 mm Open End Wrench



Lineal (X) Position Adjustment

The X adjustment provides the in-out adjustment of the E-FASA arm

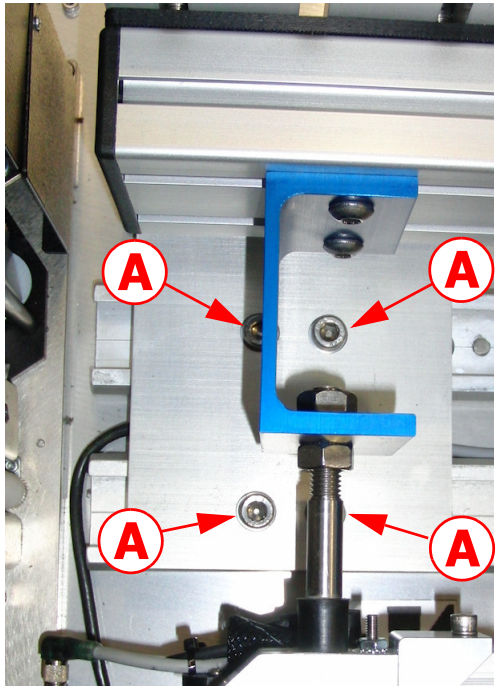
- Loosen the four screws (A) [use 6 mm Allen wrench] on the dovetail slider
- Slide assembly in and out from the printer until there is approximately 1/8th inch (3 mm) of space between printer peel blade and tamp pad edge
- Tighten the four screws (A) [use 6 mm Allen wrench] on the dovetail slider

Lateral (Y) Position Adjustment

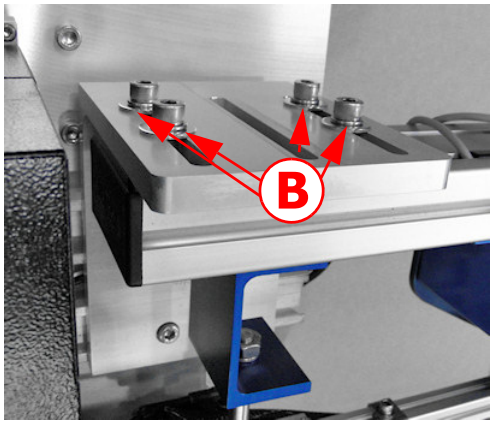
The Y adjustment provides the alignment of the label feed to the pad for centering

- Loosen the four screws (B) [use 6 mm Allen wrench] on the E-FASA actuator L-bracket
- Slide the assembly in and out from the baseplate until the label present sensor is within the feed position of the label.
- Tighten the four screws (B) [use 6 mm Allen wrench] on the tamp actuator L-bracket. Keep the actuator parallel to the baseplate during tightening

X-Adjust



Y-Adjust



E-FASA - STEP 5b Alignment of the E-FASA Assembly

Height (Z) Position Adjustment

The Z adjustment controls the pad alignment in relation to the printer

- Loosen the 17mm top bumper jam nut, and then rotate the lower nut to set the height
- Turn clockwise to decrease height, counter-clockwise to extend height
- The optimum position will be an 1/16th inch (1.5 mm) below the peel blade. This is important in order to stop the label from backfeeding into the printer and prevent label rotation upon actuator extension
- With the E-FASA MCM on, check the resting position of the pad. Once the proper position is set, tighten the jam nuts to lock the bumper in position.

Pad Level Adjustment

This adjustment allows the pad to be leveled to the label feed path and to correct for the rotation of the arm that occurs from the above adjustment

- Loosen the 11/32" nut on the bumper shaft
- Turn clockwise to decrease height, counter-clockwise to extend height
- The optimum position will level out the pad and keep it even with the feed of the label

Spring Pivot Tension Adjustment

This adjustment increases or decreases the rigidity of pad movement for pivoting. Adjust to avoid "slapping" the label onto the side of the product

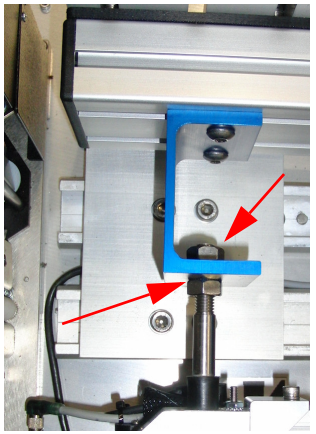
- Loosen the screw [4 mm Allen wrench] on the spring anchor bracket
- Slide the bracket closer to the pivot to decrease tension, further away to increase the tension
- Tighten the screw once the desired tension is set

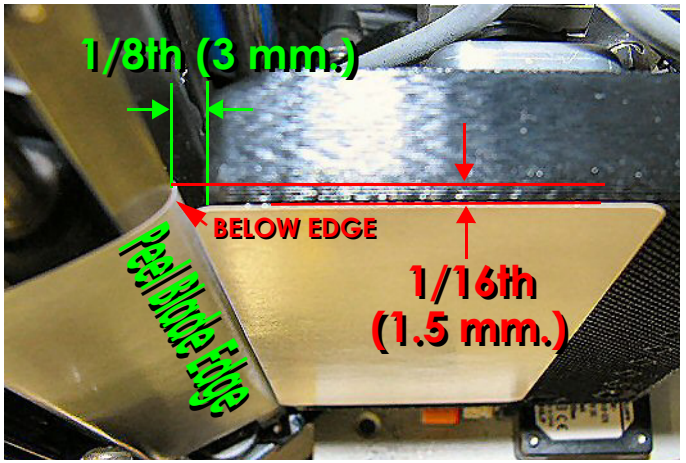
Home Sensor Adjustment

This adjustment allows the system to recognize when the arm is home, and feed the next label. It also reduces power to the motor once home.

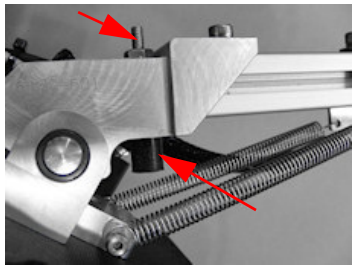
- Loosen the setscrew on the Home Sensor Body with 1/4" Allen wrench.
- With the arm in the home position, start with the sensor slid out away from the system (until light goes off), and then slowly slide the sensor inward until the home sensor lights. Tighten the setscrew.
- Verify that the light goes out when the arm leaves the home position and is approximately an inch away from the bumper stop.

Z-Adjust

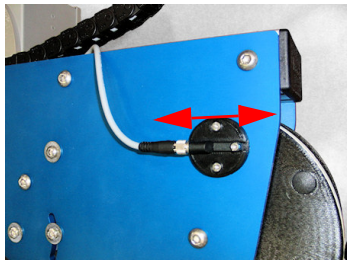




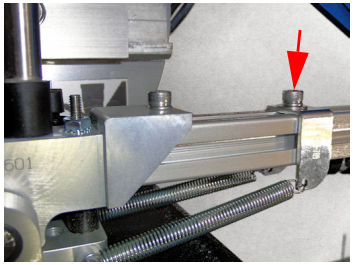
Pad Level



Home Sensor



Spring Pivot Tension



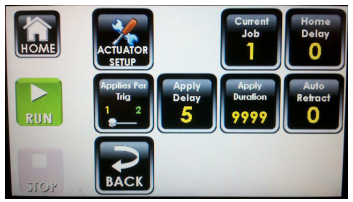
E-FASA - STEP 6 E-FASA Parameter Setup

Setup Overview

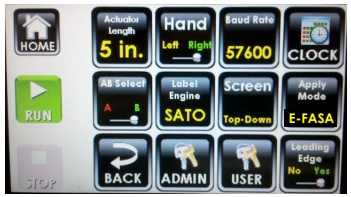
The E-FASA application module allows for either one or two product panel applications. In single label applications, either the front or rear panels can be labeled. In dual label applications, either the front and side or side and rear panels can be labeled.

Key Settings

Home > Setup > Job



Home > Setup > System



Home > Setup > Smart

Home > Label

Job Settings

Apply Delay — If the application requires two labels, side and rear panels, the delay can be kept minimal. If the application is side and rear panels, the product sensor will have to be relocated, and the delay will therefore need to increase

Apply Duration — Should be incrementally set from low values higher to adjust the contact point with the product. For the front or rear panels, the optimum contact point is a little beyond 90 degrees. This allows the pad to pivot, and place the label squarely on the product.

Auto Retract — Not very useful for the front and rear panels, but mainly used for the side application. Values between 1 and 50 mS are typical

2nd Apply Delay — Time value here should be greater than the time required to print two labels (if using Make Label PD Sens 1 or 2) or print one label (Make Label = At Home mode) and the first apply cycle

2nd Apply Duration — Same as Apply Duration above

2nd Auto Retract — Values between 1 and 50 mS are typical

Home Delay — Most E-FASA applications benefit from some minimal delay between 50 to 200 mS, to allow the pad to settle when arriving home

System Settings

Apply Mode — E-FASA for this application

Leading Edge — Typically leading edge product triggers will offset the label placement from the front. If the product lengths vary, and the label needs to be placed off of the trailing edge of the product, set this value to No

Smart Settings

Label Sense — Determines if the system is being used with the optional Label Present sensor

Label Retries — Determines how many times the label will be printed without an application. To ensure a 1 Label to 1 Product match, set this to 1

Label On Pad — Provides a warning if the system is onlined with a prior label on the tamp pad. Helps avoid a potential label to product mis-match

Apply Retries — Determines how many times the system will attempt to apply the same label. To ensure a 1 Label to 1 Product match, set this to 1

Label Menu

Rewind Tension — Sets the amount of tension applied to the rewind on a print cycle. Set lower for print speeds less than 6 ips or labels shorter than 4 inches

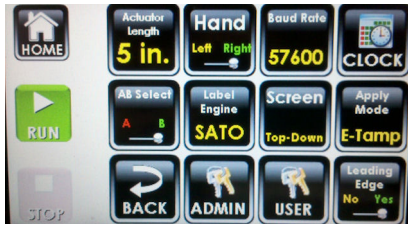
Make Label — Determines the label generation mode. For slow applications, like pallets, make this P1 Detect. This will reduce the time the label adhesive is exposed to air and drying. For highest throughput, use At Home, for batch runs. User P2 Detect for the highest accuracy (by using two detectors) when print on demand is required

E-FASA - STEP 7 E-FASA MCM II Setup

Overview

The MCM II controls the actuator of the system for applying labels and communicates serially to the MCA IV, where all of the settings are changed and stored.
The MCM II controls these functions:
AIR ASSIST - Turns the air assist blow on when the system enters online mode and turns off when the system enters offline mode. This fan directs the label up to the pad from the printer so the vacuum fan can hold the label in place for application.
VACUUM FAN - Turns the vacuum fan on with five (5) discrete settings of increasing suction to hold the label in place prior to application. Turns off when the label is removed and 10 seconds expire. There are five vacuum fan profile settings to match the application label size. See following chart for recommended setting

Profile	Label
Low	Label length > 8 inches
Med-Low	Label length > 8 inches
Medium	Label size closely matches pad size (i.e.- 4x6 label on 4x6 pad)
Med-High	Label area is smaller than pad size by 50% (i.e.- 4x2 label on 4x4 pad)
High	Label area is smaller than pad area by 70% (may require custom pad to accommodate)



ACTUATOR MOTOR - Controls the direction and speed of the actuator with five (5) discrete speeds for label application to the product. MCM II monitors speeds of the actuator, stalls, and position of the actuator during travel.
ACTUATOR HOME SENSOR - Monitors the magnetic reed sensor that determines if the actuator is in the home position, ready to accept the next label. Prevents mis-feeds of labels and allows system to operate at maximum throughput.

NOTE:
All speeds are valid for 5, 10, and 20" E-FASA Applicator Modules. Control of actuator is based on settings of:
SETUP->JOB->ACTUATOR SETUP **Actuator Speed** to set the overall speed
SETUP->JOB->ACTUATOR SETUP **Angle Limit** to set the furthest swing angle for this application
Use this limit for the front or rear panel swing (typically 90 degrees). Can be used in conjunction with the Hold Delay to swing out and wait for the product's front panel. If Hold Delay is long enough, will perform a corner wrap on product.

SETUP->JOB->ACTUATOR SETUP **Hold Delay** to set how long the actuator should hold the same position once it reaches the first of these conditions:

- Actuator Delay Expires
- Auto Retract Sense
- Angle Limit Threshold Reached

SETUP->SYSTEM **AB Select** to set the direction of the actuator to the Home Position
SETUP->SYSTEM **Screen** to inform the system of the orientation of the system (Top-Down, Nose-Up, Nose-Down, Side)
SETUP->SYSTEM **Actuator Length** stroke length of the arm length
This is an important setting, since it regulates the overall speed of the arm. Faster speeds are allowable for the 5" arm and reduced for the 10" and 20". Proper function of the system requires the correct match of the Actuator Length and the physical length of the E-FASA arm. Remember, the length of the E-FASA is the usable length of the arm, measured between the baseplate edge and the tamp pad center.

E-WASA

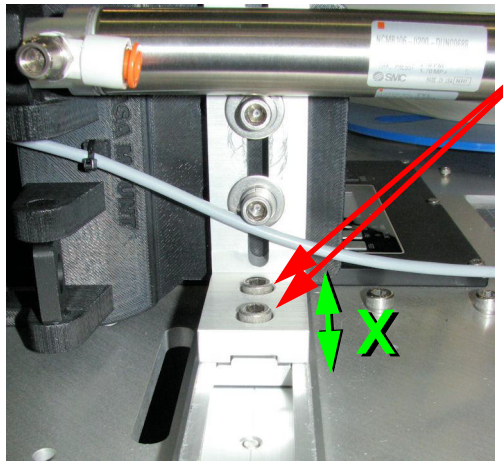
The next 2 steps are for E-WASA Only

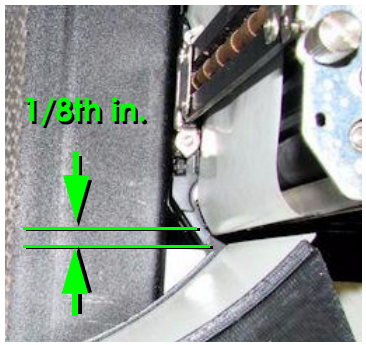
E-WASA STEP 5 Alignment of the E-WASA

Tools Required:

6 mm Allen Wrench, 13 mm open-end wrench, 24 mm open-end wrench

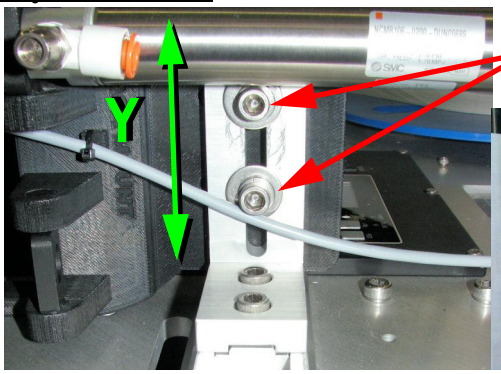
Adjust X Position:

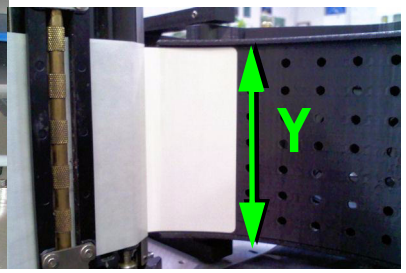




- Start by loosening the two screws **"Sx"** on the slider track
- Slide the WASA module over to the printer until there is approximately an 1/8th inch between the printer's peel blade and the edge of the Fan Box
- Tighten the screws in place once the position is set

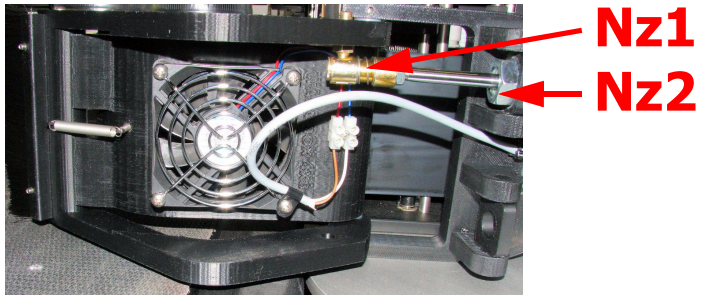
Adjust Y Position:

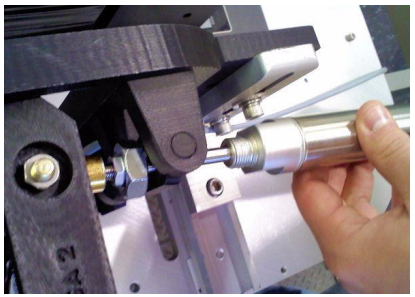


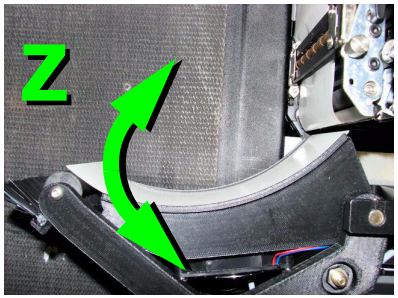


- Loosen the screws **"Sy"** to adjust the WASA module across the width of the label
- With the label liner threaded through the system, feed the label out to the fan box
- Determine if the WASA module needs to be moved up or down to align the bottom edge of the WASA (closest to the baseplate) with the feed position of the label
- The label must not ride up on the raised edge of the Fan Box
- Ensure that the WASA module is aligned parallel with the baseplate

Adjust Rotation Angle Position:







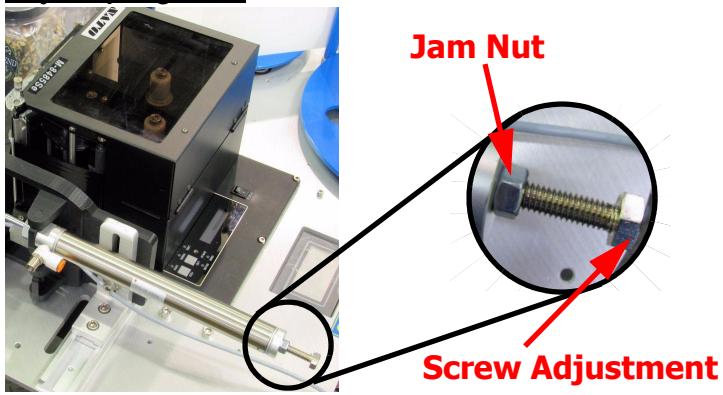
- Loosen nuts **"Nz1"** (13 mm.) and **"Nz2"** (24 mm.) on the cylinder
- Turn the cylinder body to thread the rod in or out of the coupling to adjust the Z rotational position of the Fan Box
- Adjust the rotation so that the label feeds out to the Fan Box without stalling on the surface of the face
- Tighten both nuts and feed a few labels to determine if position is ideal

E-WASA STEP 6 Runtime Adjustments

Tools Required:

13 mm. Open-End Wrench, 14 mm. Open-End Wrench, Flat blade screwdriver

Adjust Spring Rate:



- Loosen the Jam Nut with the 13 mm. open-end wrench
- Turn the screw (14 mm.) clockwise to increase the spring force and counter-clockwise to reduce it. Products that are under 5 ~ 10 lbs require less spring force, in order to allow the label to be wrapped without making the product stall on the conveyor. Too light of a spring tension will result in a poorly wrapped label. The full range of spring tension is accomplished within a 2 inch screw threading distance.
- **WARNING** - Do not decrease the spring tension so far that the WASA Fan Box does not consistently return home. If the spring is too weak, friction and product placement will begin to effect the performance of the label wrap.
- Once the WASA travel has been checked for the swing range of motion, lock in the spring tension position by tightening the jam nut.

Adjust Return Flow Control:

- Loosen the thumb wheel jam nut and turn the flow control clockwise to reduce the speed that the WASA returns to the home position. Increase the flow by turning the control counter-clockwise, which will allow the WASA box to return home faster
- **WARNING** - The adjustment on the return speed will determine the maximum throughput rate. If the application can tolerate a slower return rate, it will result in a smoother and gentler return which will result in longer life.

NOTE:

The E-WASA is highly dependent on a rear guide rail for optimal performance. Since the E-WASA is spring-loaded to apply pressure to the front and side of the product, the guide rail prevents possible product skew. Operation without the proper material handling will result in poor wrap angle or label wrinkle.

E-WASA - STEP 7 E-WASA Parameter Setup

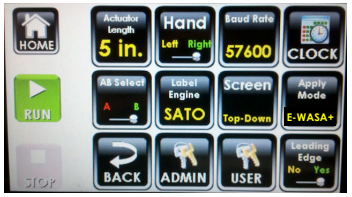
Setup Overview

E-WASA applications allow the label to be placed on two adjacent panels, typically front and side, but front and top is also possible. Since the E-WASA cannot accept the next label until the arm returns home, it is a label print on demand by default.

Key Settings

Home > Setup > Job

Home > Setup > System



Home > Setup > Smart

Home > Label

Job Settings

Apply Delay — Determines the amount of time to delay from the product detector trigger to the label printing. Usually kept at a minimum value

System Settings

Apply Mode — E-WASA for this application, if there is no Home Sensor
E-WASA+ for this application, if there is a Home Sensor

Smart Settings

Label Sense — Currently, no Label Sense (Label Present) is available on the E-WASA

Label Menu

Rewind Tension — Sets the amount of tension applied to the rewind on a print cycle. Set lower for print speeds less than 6 ips or labels shorter than 4 inches

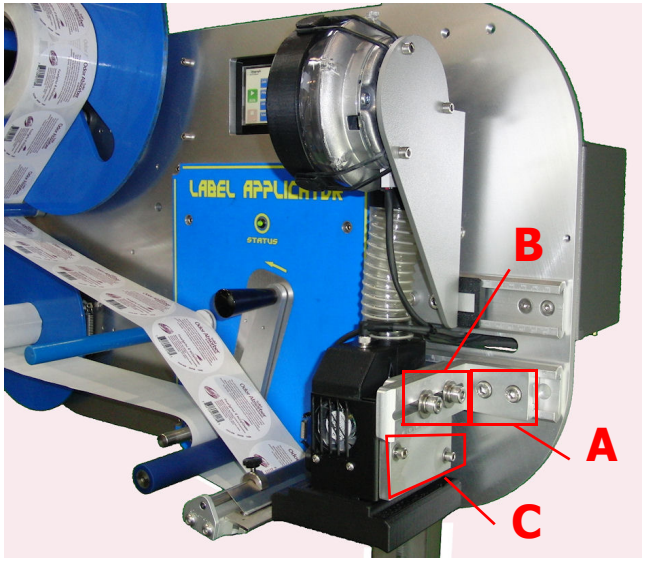
E-BLOW BOX

The next 2 steps are for E-BLOW BOX Only

E-BLOW BOX - STEP 5 Alignment of the E-BLOW BOX Assembly

Tools Required:

- 6 mm Allen Wrench
- 4 mm Allen Wrench



Lineal (X) Position Adjustment

- Loosen the two screws (A) [use 6 mm Allen wrench] on the dovetail slider
- Slide assembly in and out from the printer until there is approximately 1/8th inch (3 mm.) of space between printer peel blade and tamp pad edge
- Tighten the two screws (A) on the dovetail slider

Lateral (Y) Position Adjustment

- Loosen the two screws (B) [use 6 mm Allen wrench] on the tamp actuator L-bracket
- Slide the assembly in and out from the baseplate until the label present sensor is within the feed position of the label. Tighten the two screws (B) on the tamp actuator L-bracket. Keep the actuator parallel to the baseplate during tightening

Height (Z) Position Adjustment

- Loosen the two screws (C) [4 mm Allen wrench] to adjust the height of the Blow Box to the peel blade edge
- The optimum position will be an 1/16th inch (1.5 mm) below the peel blade. This is important in order to stop the label from backfeeding into the printer and prevent the label from hinging on the liner when the blow is activated
- Once the proper position is set, tighten the 4mm screws.

E-BLOW BOX - STEP 6 E-BLOW BOX Parameter Setup

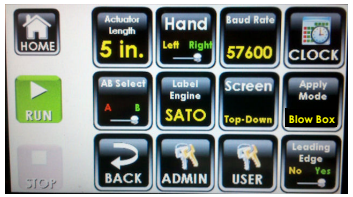
Setup Overview

E-TAMP/BLOW applications allow the label to be placed on the Top or Side of a product.

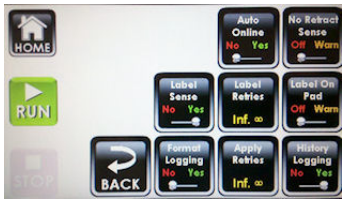
Key Settings

Home > Setup > Job

Home > Setup > System



Home > Setup > Smart



Home > Label

Job Screen

Apply Duration — Determines the length of time the blow function is performed when the Apply Delay expires

System Screen

Apply Mode — Blow Box for this application

Leading Edge — Typically leading edge product triggers will offset the label placement from the front. If the product lengths vary, and the label needs to be placed off of the trailing edge of the product, set this value to No

Smart Screen

Label Sense — Determines if the system is being used with the optional Label Present sensor

Label Retries — Determines how many times the label will be printed without an application. To ensure a 1 Label to 1 Product match, set this to 1

Label On Pad — Provides a warning if the system is onlined with a prior label on the pad. Helps avoid a potential label to product mis-match

Apply Retries — Determines how many times the system will attempt to apply the same label. To ensure a 1 Label to 1 Product match, set this to 1

Label Screen

Rewind Tension — Sets the amount of tension applied to the rewind on a print cycle. Set lower for print speeds less than 6 ips or labels shorter than 4 inches

Make Label — Determines the label generation mode. For slow applications, like pallets, make this P1 Detect. This will reduce the time the label adhesive is exposed to air and drying. For highest throughput, use At Home, for batch runs. User P2 Detect for the highest accuracy (by using two detectors) when print on demand is required

E-BLOW BOX - STEP 7

E-BLOW BOX MCM II Setup

Overview

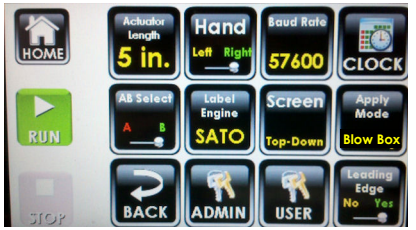
The MCM II controls the blower speed and valve action of the system for applying labels and communicates serially to the MCA IV, where all of the settings are changed and stored.

The MCM II controls these functions:

VACUUM FAN - Turns the vacuum fan on with five (5) discrete speeds of increasing suction to hold the label in place prior to application. Turns off when the label is removed and 10 seconds expire. There are five vacuum fan profile settings to match the application label size. See following chart for recommended setting

VACUUM SPEED SHOULD BE INCREASED FOR SMALLER LABELS

GRID PLATE PORTING IS SPECIFIC TO LABEL DIMENSIONS



ACTUATOR MOTOR - Controls the Blow Force with five (5) discrete speeds for label application to the product. The Blow Force should be reduced for very short blow distances and for smaller label sizes.

ACTUATOR HOME SENSOR - Monitors the magnetic reed sensor that determines if the actuator is in the home position, ready to accept the next label. Prevents mis-feeds of labels and allows system to operate at maximum throughput.

NOTE:

SETUP->JOB **Apply Delay** to set how long the Blow should activate

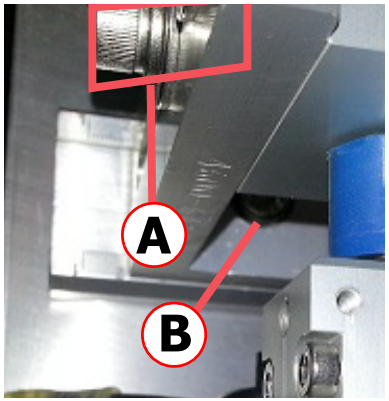
HIGH SPEED TAMP

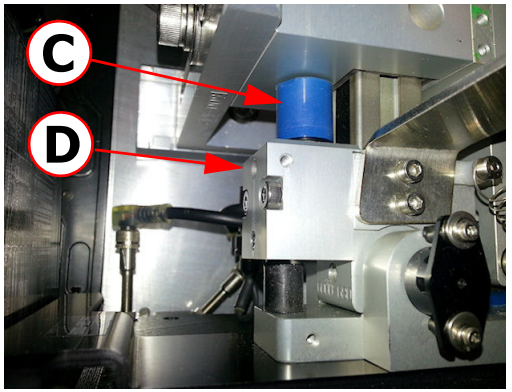
The next 2 steps are for HIGH SPEED TAMP Only

HST - STEP 5 Alignment of the HST Assembly

Tools Required:

- 6 mm Allen Wrench
- 4 mm Allen Wrench
- 2.5 mm Allen Wrench



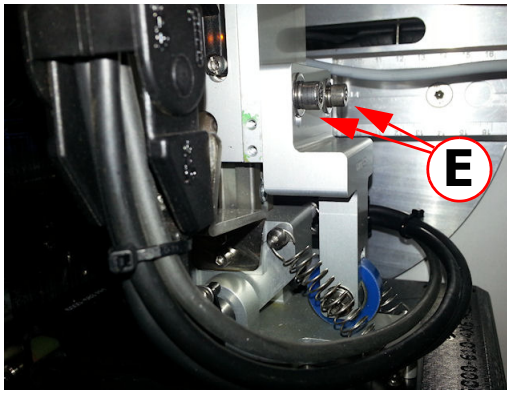


Lineal (X) Position Adjustment

- Loosen the two screws (A) [use 6 mm Allen wrench] on the dovetail slider
- Slide assembly in and out from the printer until there is approximately 1/8th inch (3 mm.) of space between printer peel blade and tamp pad edge
- Tighten the two screws (A) on the dovetail slider

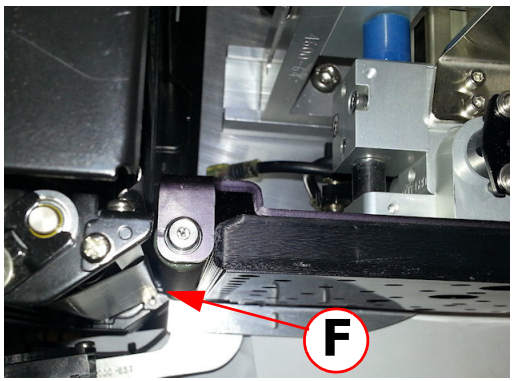
Lateral (Y) Position Adjustment

- Loosen the two screws (B) [use 6 mm Allen wrench] on the tamp actuator L-bracket
- Slide the assembly in and out from the baseplate until the label present sensor is within the feed position of the label.
- Tighten the two screws (B) on the tamp actuator L-bracket. Keep the actuator parallel to the baseplate during tightening



Height (Z) Position Adjustment

- There are two adjustments for the height position. One is the pad position in relation to the height of the peel blade. The other sets the angle of the pad to accept the label from the printer. Loosen screw D [2.5 mm Allen wrench] to adjust the height bumper C. The bumper can be rotated by finger to increase or decrease the height position of the tamp pad to the peel blade. The height should be adjusted so that the tamp pad roller is just slightly below the peel blade (see position F), around 1/16th of an inch. This allows the label to break the edge of the liner and avoid label rotation upon extension that can result in label jams.
- Once the bumper position is set, tighten the setscrew D.
- Now adjust the angle of the pad to the peel blade by loosening screws E [4 mm Allen wrench], and sliding the roller in the Z axis to set the angle. The pad face should be set level to the bottom edge of the baseplate. Set this position and then re-tighten the E screws.



HST - STEP 6

HST Parameter Setup

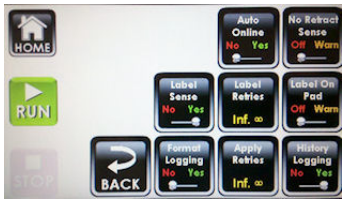
Setup Overview

High Speed Tamp applications allow the label to be placed on the Top or Side of a product. Typically, this application method allows for linespeeds higher than a standard tamp module can handle. The actuator extends the pivoting plate down to the product and holds this position to allow the product to receive the label via the roller. Alternatively, the HST can be used to follow the contour of the product. Same principles apply, the plate should not be setup to make flat contact with the product, but rather stop short, hold position, and let the pivoting-action of the tamp plate glide along the product's surface.

Home > Setup > Job

Home > Setup > System

Home > Setup > Smart



Home > Label

Key Settings

Job Screen

Apply Duration — With Auto Retract, this should be used as a backup retract timer. Set Auto Retract to zero to properly adjust this time, then re-enable AR

Auto Retract — If installed, the Auto Retract (AR) time depends on the actuator speed. Typical values range from 1 mS to 100 mS

System Screen

Apply Mode — HS-Tamp for this application

Leading Edge — Typically leading edge product triggers will offset the label placement from the front. If the product lengths vary, and the label needs to be placed off of the trailing edge of the product, set this value to No

Smart Screen

Label Sense — Determines if the system is being used with the optional Label Present sensor

Label Retries — Determines how many times the label will be printed without an application. To ensure a 1 Label to 1 Product match, set this to 1

Label On Pad — Provides a warning if the system is onlined with a prior label on the tamp pad. Helps avoid a potential label to product mis-match

Apply Retries — Determines how many times the system will attempt to apply the same label. To ensure a 1 Label to 1 Product match, set this to 1

Label Screen

Rewind Tension — Sets the amount of tension applied to the rewind on a print cycle. Set lower for print speeds less than 6 ips or labels shorter than 4 inches

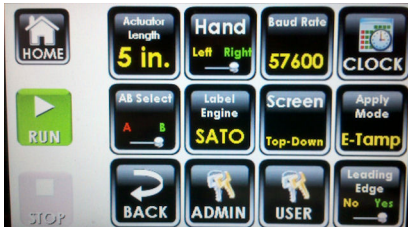
Make Label — Determines the label generation mode. For slow applications, like pallets, make this P1 Detect. This will reduce the time the label adhesive is exposed to air and drying. For highest throughput, use At Home, for batch runs. User P2 Detect for the highest accuracy (by using two detectors) when print on demand is required

HST - STEP 7 HST MCM II Setup

Overview

The MCM II controls the actuator of the system for applying labels and communicates serially to the MCA IV, where all of the settings are changed and stored.
The MCM II controls these functions:
AIR ASSIST - Turns the air assist blow on when the system enters online mode and turns off when the system enters offline mode. This fan directs the label up to the pad from the printer so the vacuum fan can hold the label in place for application.
VACUUM FAN - Turns the vacuum fan on with five (5) discrete speeds of increasing suction to hold the label in place prior to application. Turns off when the label is removed and 10 seconds expire. There are five vacuum fan profile settings to match the application label size. See following chart for recommended setting

Profile	Label
Low	Label length > 8 inches
Med-Low	Label length > 8 inches
Medium	Label size closely matches pad size (i.e.- 4x6 label on 4x6 pad)
Med-High	Label area is smaller than pad size by 50% (i.e.- 4x2 label on 4x4 pad)
High	Label area is smaller than pad area by 70% (may require custom pad to accommodate)



ACTUATOR MOTOR - Controls the direction and speed of the actuator with five (5) discrete speeds for label application to the product. MCM II monitors speeds of the actuator, stalls, and position of the actuator during travel.
ACTUATOR HOME SENSOR - Monitors the magnetic reed sensor that determines if the actuator is in the home position, ready to accept the next label. Prevents mis-feeds of labels and allows system to operate at maximum throughput.
NOTE:

FOR HIGH-SPEED APPLICATIONS - Minimize stroke length and hold time. Keep the tamp plate engaged to the roller bumper, and extend just long enough to pivot. Lower Actuator Speeds are better for this action.

FOR CONTOURING APPLICATIONS - Use the Distance Limit to set the fixed position to pivot from and increase the Hold Delay to apply all of the label. May need to increase Apply Duration to keep actuator in position for the whole Hold period.

All speeds are valid for 5, 10, and 20" HST Applicator Modules. Control of actuator is based on settings of:
SETUP->JOB->ACTUATOR SETUP **Actuator Speed** to set the overall speed
SETUP->JOB->ACTUATOR SETUP **Distance Limit** to set the furthest extension of the tamp for this application
SETUP->JOB->ACTUATOR SETUP **Hold Delay** to set how long the actuator should hold the same position once it reaches the first of these conditions:

- Actuator Delay Expires
- Auto Retract Sense
- Distance Limit Threshold Reached

Use this delay to keep the tamp pad at a fixed distance while the pivoting-plate is engaging the product's surface.
SETUP->SYSTEM **AB Select** to set the direction of the actuator to the Home Position
SETUP->SYSTEM **Screen** to inform the system of the orientation of the system (Top-Down, Nose-Up, Nose-Down, Side)
SETUP->SYSTEM **Actuator Length** to the maximum distance for stroke on the actuator

The next steps are for All Systems

STEP 8 Product Detector

Product Detector for the Application

The standard product detector offered is the Diffuse Light 4600-900 sensor. There are two optional sensor types, one is a break-beam sensor, and the other is a laser with background suppression. The proper product detector can make the difference in label placement and operation.

Product Detector Selector			
Application Detail	Diffuse Light (4600-900)	Break-Beam (4600-901)	Laser (4600-902)
Corrugated brown case, no pre-print	✓	✓	✓
Corrugated brown case, pre-print	×	✓	✓
Tray packs with product gaps in pack	×	✓	✓
Pallets	✓	✓	×
Shrink wrapped products	×	✓	✓
Primary product	✓	✓	✓
Primary product, high speed, high accuracy	×	×	✓

NOTE:

When using two product detectors for "Print On Demand Mode" or Make Label on Prod Sens 2, a y-cable must be used to provide connections to both detectors. The y-cable is part number 6000-518.

Product Detector Mounting Location

The product detector is mounted on the baseplate from the factory. This location ensures that any movement of the equipment with not effect the Product Delay. There are application set ups where this location will not work, and there are brackets included for remotely mounting the product detector elsewhere. Listed below are the applications that will require the detector to be relocated:

- Using Demand Mode for print (Label Activation is set to Prod Sens 1 or Prod Sens 2)
- High line speeds (greater than 75 FPM) and desired label placement close to the front edge of the product, or FASA swing arms performing a leading edge application
- Triggering off of the trailing edge for the product

Product Detector Adjustments

All three of the sensors have the same controls for adjustment. Setting S2 (as shown to the right) controls the sensitivity of the detector. With a sample target product in front of the sensor, adjust this setting. The output LED, L2 in the image, will illuminate with the sensitivity adjustment is correct. The power LED, L1 in the image, will show the signal return strength when the output LED is on. Make sure the sensitivity is set so the green LED is on solid so that slightly less reflective products will still cause a trigger. Once the product is removed from the field of view of the sensor, the green LED will return to indicating power, and will be strongly illuminated.

For break-beam applications using the 4600-902 sensor, the Light/Dark setting S1 should be changed. This inverts the output signal mode to the applicator. Since a break-beam application will normally have an active output for no product detected, the change of S1 will allow the triggering to react to the presence of the product.

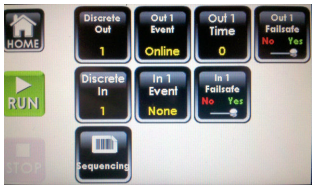
Sensor Notes

The break-beam sensor has a polarized retro-reflective lens. This means that it requires a suitable reflector that can provide the correct light phase shift to satisfy the sensor. This prevents reflective products (shrink-wrap, glass, etc.) from falsely triggering the sensor.

The laser sensor incorporates a triangulation method to receive the reflected beam. Using this method, the sensor detects true distance rather than product reflectivity. The setting made on S1 will determine distance to the target product. If products will range in distance, the furthest distance product should be used for adjustment. Ensure that objects beyond the target product range are not detected to avoid false triggers.

STEP 9a Configure I/O Settings (optional)

Entering the I/O Menus



Discrete Outputs Electrical Characteristics

There are six (6) solid state isolated outputs that are each capable of switching up to 400 mA of current with a maximum voltage of 24 Volts AC or DC. Since these outputs are "closing contacts" in nature, they require a power source on one lead of the contact to flow current to the circuit it is connected to. The Discrete I/O module provides a fused 24 VDC source, limited to 0.5 Amps for this purpose. The bank of 6 dipswitches on the IO Card allow the common side (B-side) of the relay to be connected to the fused 24 VDC internal power.

Discrete Output Events

The individual output line can be selected with the ***Discrete Out*** toggle button. The predefined events are listed below, and are selected with the ***Out # Event*** button.The output duration can be set to a value in milliseconds, or set to zero, using the ***Out # Time*** button. For certain events, this may not be useful, because they may have multiple occurrences. The final output selection is ***Out # Failsafe***, which inverts the closure method. A setting of Yes normally closes the contact, and opens the contact when the event occurs. The opposite is true when set to No.

Output Event	Description	Out Time
None	No output event selected	None
Media Out	Label and/or Ribbon supply is exhausted	0 or time acceptable
Media Low	Label and/or Ribbon supply is low	0 best, can multiple trigger
Online	Unit is online (ready to print and apply)	0 or time acceptable
No Format	There is no format in the printer to print	0 or time acceptable
Error	Unit is offline, due to error. This includes: Media Out, MCM Error, Printer Errors, Repeat Label or Apply threshold exceeded, etc.	0 or time acceptable
Warning	Unit has experienced a condition that requires attention, but it is still able to run online.	0 best, can multiple triggers
Cycle End	The apply cycle is finished	0 or time acceptable
Cycle Start	The apply cycle is beginning	0 or time acceptable
Pad Label	The label is present on the tamp pad	0 best, can multiple triggers

Discrete Input Electrical Characteristics

There are four (4) optically-isolated inputs that are activated by supplying them a voltage source between 5 to 24 VDC with 25 mA minimum current. Each input has two differential lines that require a source of current to flow to activate an input event. The Discrete I/O Module's built-in 24 VDC source is a good choice for powering an input, utilizing an external relay or solid state output from the connecting device to open and close the contact and control the event input. The bank of 4 dipswitches on the IO Card allow one side of the input channel to be connected to ground, to reduce external connections.

Discrete Input Events

Of the four (4) input signal lines, any of them can be configured for any of the predefined system events using ***In # Event***. Multiple inputs can be configured to the same event for various application reasons. For example, if there is an application where a bad scan signal from a barcode scanner can stop the system and there is an E-Stop chain that does the same, Input A can be assigned to "Error" for the scanner and Input B can be assign to "Error" for the E-Stop. Now, either conditions can stop the labeler without interfering with each other. Each input can be individually set to Failsafe mode, where the trigger is an absence of the signal voltage to the input. Use ***In # Failsafe*** set to Yes for this mode selection.

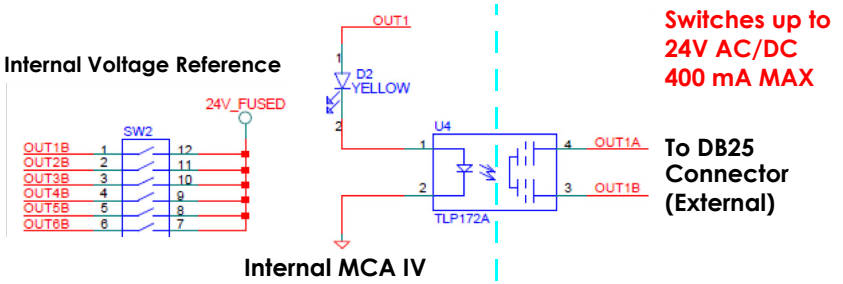
Input events should remain energized for a minimum of 10 mS.

Input Event	Description
None	No input event assigned
Online	Enter online mode. Pulse activated. Cannot enter online mode if there is an error.
Offline	Enter offline mode. Pulse activated.
Product Detector 1	Trigger product detector 1 signal. This can start the print cycle (if print activation is set for Prod Sens 1), and start the apply cycle. Pulse activated.
Product Detector 2	Trigger product detector 2 signal. This can start the print cycle (if print activation is set for Prod Sens 2). Pulse activated.
Error	This input allows an external device to halt operation, resulting in an error. Pulse activated.
Warning	This input allows an external device to flag a warning, resulting in an yellow warning tower and display state. Pulse activated.

STEP 9b Configure I/O Settings (optional)

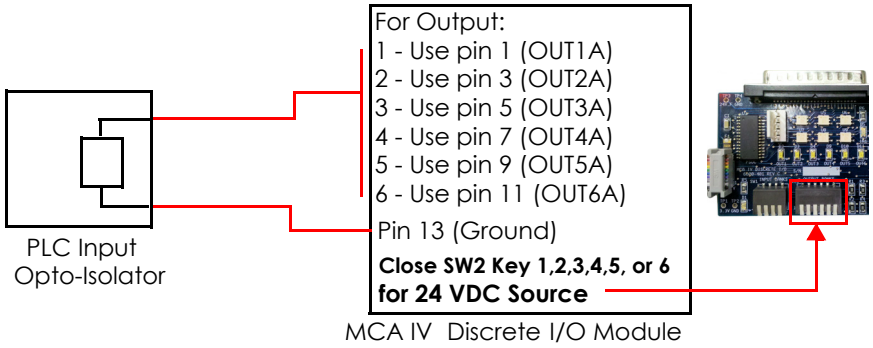
Interfacing the Outputs

Typical Output Circuit on Discrete I/O Module

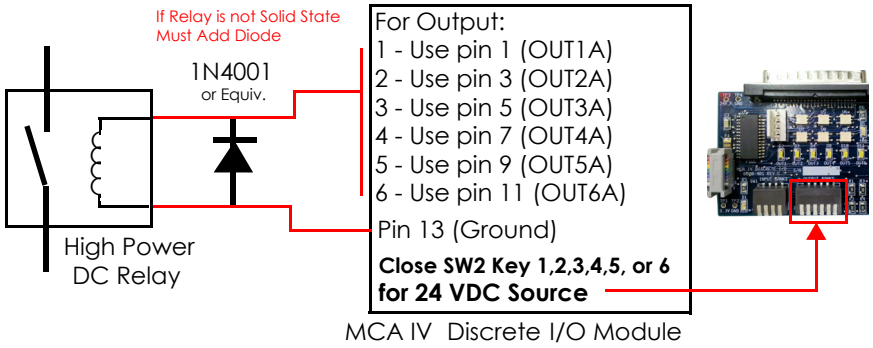


Example Hook-Ups

Connection to PLC from MCA IV Output, MCA IV Sourcing Power

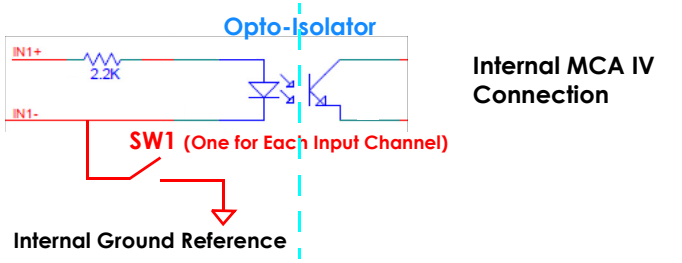


Connection to High Power Relay from MCA IV Output



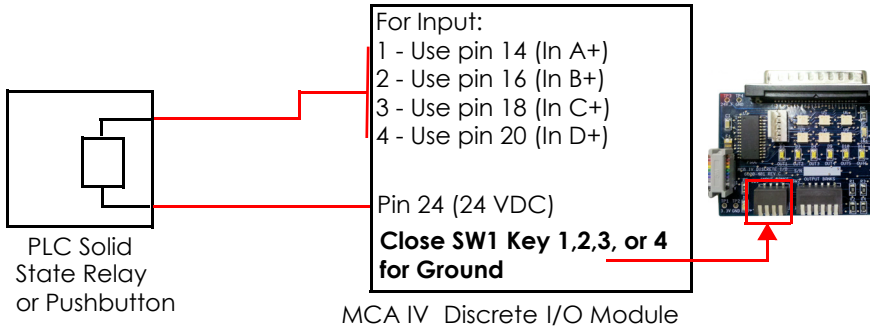
Interfacing the Inputs

Typical Input Circuit on Discrete I/O Module

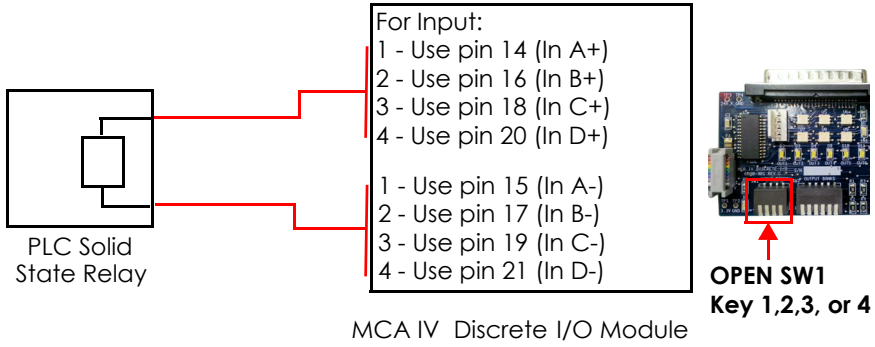


Example Hook-Ups

Connection to PLC or Pushbutton triggering MCA IV Input, MCA IV Sourcing Power



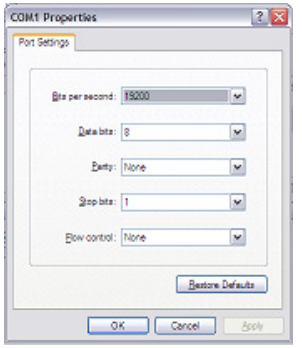
Connection to PLC triggering MCA IV input, PLC Sourcing Power



STEP 10 Create the Label Format

Printer Configuration

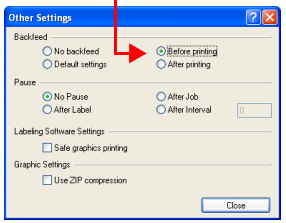
Although label software programs will differ in look and functionality, there are some key similarities. Most importantly, the correct driver for the printer should be selected. For the Sato Lt 408 print engine, the 8485Se driver will work, if there are existing formats created for this model. Formats created for tabletop printers will require some changes for correct operation on a printer-applicator system. Some of these changes include: applicator mode, backfeed distance, offsets in print, and a few others.
Shown below are typical screenshots from NiceLabel, which is the premiere software package that Illinois Tool Works offers.



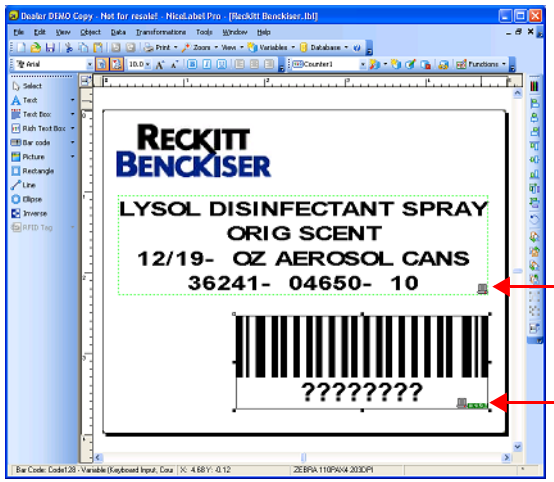
Select the baud rate, and other communication-specific parameters. This is typically found under the Windows>Printers> select *specific printer* >Properties>Ports> select *port number* >Configure Port
In the program's printer setup screens, check to make sure:

- Cutter is not selected
- **Backfeed Before Print** (suggested)
- Continuous Print is not selected
- Speed is set to a rate optimal for both print quality and throughput requirements
- Label size entered matches the actual label dimensions
- Darkness is set for good quality print and long life operation

Must be set to Backfeed Before



Create your format with text, barcodes, graphics, and other required fields. Try to use printer resident fonts and functionality (such as time, date, and counters), which will greatly reduce download time. Once created, send the format with the desired quantity and adjust positioning as required.

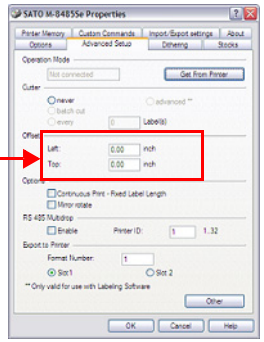


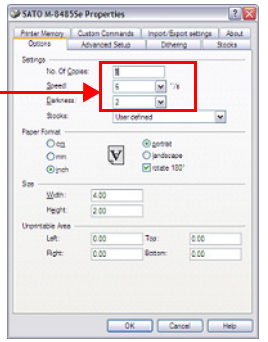
Icon indicates that this is a printer-resident font, which will load faster

Icons show that this is a printer-resident barcode and internal printer counter

Main print attributes

Offset adjusts image position on the label





STEP 11 Runtime Adjustments

Observed	Reason	How to Correct
Label is not feeding out far enough or it is feeding too far	• Label pitch (SATO) position requires adjustment • Tear Off (Zebra) position requires adjustment	• On SATO, the pitch adjustment controls the amount of label overfed on each print cycle. There is a potentiometer adjustment on the front of the printer. • On Zebra, use the printer's menu to find the selection for Tear Off. Adjust this to a higher value for more label overfed or less to keep the next label from "tonguing" out and disturbing the label on the pad
Label is drawn back into the printer	• Not enough label presentation • Tamp pad height incorrect • Vacuum Fan Speed too low	• See correction above • Adjust height of pad to be slightly below the edge of the peel blade. This forces the label to "snap" off of the edge of the tamp pad and avoids the label from relaxing back onto the peel blade • Increase the Vacuum Fan speed to a higher setting. Verify that the pad doesn't just require cleaning
Label is not getting out to the pad or is falling off	• Air Assist Blower is rotated out of the way • Air Assist Blower is damaged • Vacuum Fan Speed too low • Vacuum Fan is damaged	• Rotate the Air Assist Blower under the printer and aim at the tamp pad • Using a flashlight, check that the blower fan is rotating • Try increasing the fan speed to the next higher setting. Make sure that the label is aligned well with the pad • Using a flashlight, check that the fan blades are rotating. Use the lowest setting to see if there is a stationary blade
Double label feed regularly or every so often	• Backfeed mode is not set to Backfeed Before • Rewind Profile is set too high • Label Present sensor adjustment required • Label Present and Auto-Retract Sensor cables are switched at the tamp pad or inside the MCA • Tamp pad alignment with printer requires adjustment (see instructions on Y-Position)- Label Present sensor is not seeing label covering the pad properly	• This should be set in the label format and/or locally at the printer • This can be adjusted in the Label Menu screen. Select a lower profile • The label present sensor (if installed) could be mounted either too far back from the surface of the tamp pad or too close to (or beyond) the edge of the face surface. Loosen the 7 mm jam nut, remove the M8 quick disconnect cable, and screw the sensor in/out to find the optimal position.

STEP 12 Recall Label Formats from USB Drive (optional)

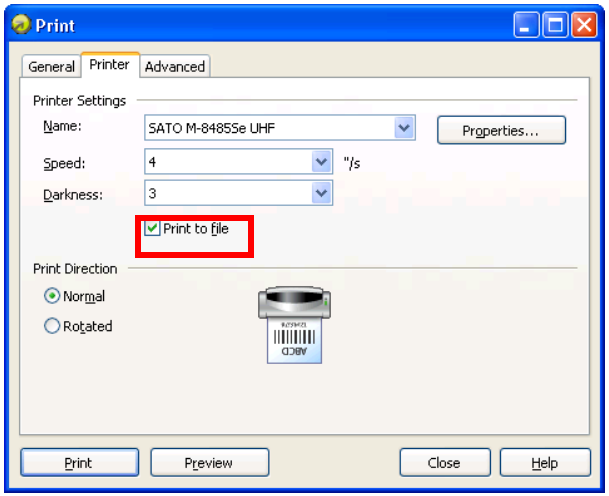
USB Overview

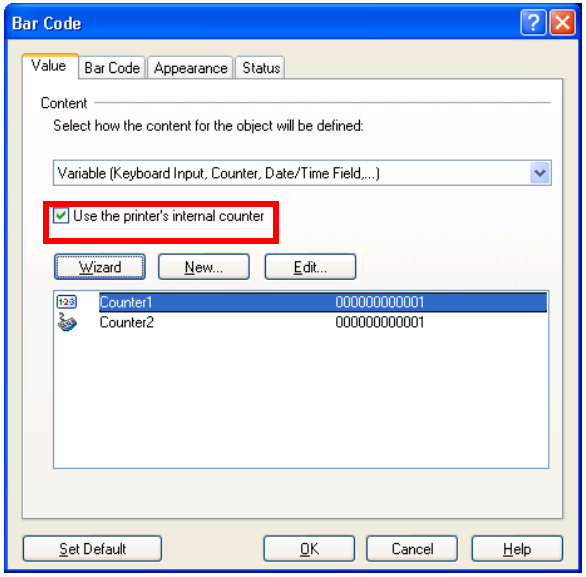
The USB memory storage option allows the recall of a static (non-changing) label format through the user interface. The maximum number of formats that can be stored is only limited by the size of the USB memory device. From the Label Menu, a label can be sent to the printer from the Recall screen. Once the format is selected, it is sent to the printer with the information and quantity defined when the format was created. Internal printer functions for time, date, and sequential counts can be used to create “born-on” or “sell by/best buy” information, provided the label software uses the built-in printer capabilities.

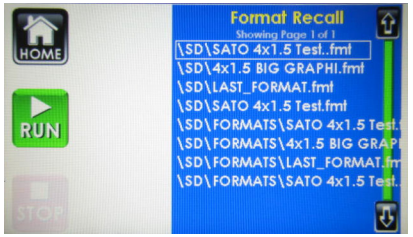
Loading Formats onto the USB Drive

The format loaded onto the USB Drive will depend on which brand of printer is utilized in the labeler. For SATO, the saved file should be an ASCII text file in SATO Programming Language (SPL) and ZPL for Zebra. The format stored on the drive should not be the label file saved from the label program. The format should be an exported or “print to file” version of the format, which would be the output from the label software to the printer. The ASCII export file can have whatever name desired, but only a limited number of characters can be displayed. Use either “prn” or “fmt” as the file extension, so that the system will recognize this as a label format file.

For variable fields, such as date, time, or sequence count, the format will need to use printer-specific commands to utilize internal functions. In many label software programs, there is a choice in the properties menu for the particular field to utilize internal printer functions. This will require the use of printer-resident fonts and barcodes. Once the formats are loaded on the drive, it can be inserted into the back of the MCA in the USB slot.







Recalling Formats

To recall a format from the USB or internal microSD Drive, press the **Recall** button and select the format by using the arrow up and down buttons. When the desired format is located, press the name of the format once to select it, and once again to send it to the printer. It is important that the system baud rate matches the printer baud rate. The format will contain the quantity that was stored with the label when it was designed. A typical practice is to send a large quantity (more than will be needed), and then clear the batch before sending the next one. This is easily done with the **Clear** button on the Label Menu screen.

STEP 13 Recall Label Formats with Scanner (optional)

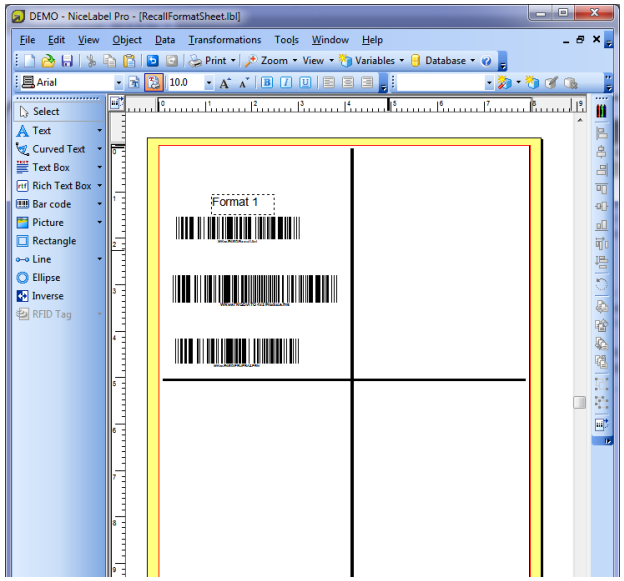
Scanner Recall Overview

Using a handheld USB scanner (Honeywell Voyager), the MCA IV can recall formats stored in the microSD memory card. Before this is possible, the format must be created, printed to file, and transferred from the USB memory device to the internal memory card. The prior sections describe how this is accomplished. In addition to recalling a saved format, there is a built in command barcode to clear the existing batch jobs in the printer.

Once the label formats have been transferred to the microSD memory of the MCA IV, the user must create a set of barcodes that will recall the format. This should be performed with the label format software, such as NiceLabel, but instead of printing this to a print engine or saving the format to a print file, the user can select a standard desktop printer to create a recall "cheat sheet" to be used at the labeler. In this fashion, multiple recall barcodes can be placed on the sheet, along with a human readable text designator next to them.

Setup

The recall barcode should be created as a Code 128 with a 13 mil. size. There is a standard prefix for label recall, which will be required on all of the barcodes used to recall a format. Use *WKwsFN* as this prefix with the proper path of the format on the MCA IV. For the microSD card, \SD\ would be the path. For the USB memory stick, \USB\ would be the path (this would require a USB hub to plug in both devices at the same time). For example, if the format is stored on the microSD card, and the file name is *Format1.fmt*, then *WKwsFN\SD\Format1.fmt* should be used as the Code 128 data. To recall one of the built-in test formats for a SATO printer, the recall code would be *WKwsFN\SD\SATO TEST 4x2.tfmt* which is seen in the barcode example below.



Recall test format **SATO TEST 4x2.tfmt from Controller**

Clear Batch

.

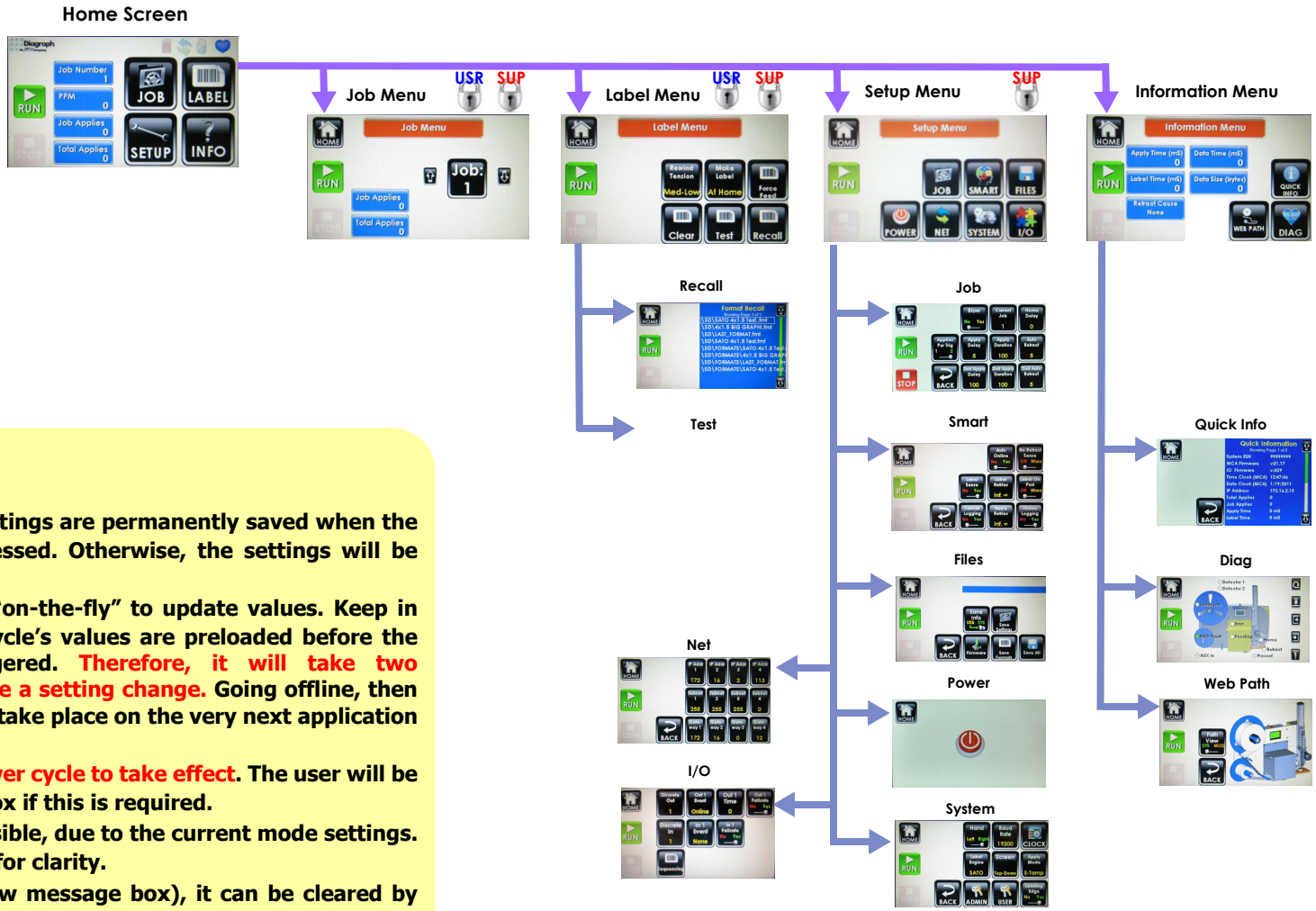
Additional Commands

Clear Printer Jobs, Code 128 as *WKwsCB*.

Change MCA IV Job Number as *WKws02####* , where #### equals the job number with leading zeros (i.e. - switch to Job 3 = *WKws020003*)

7.0 User Interface

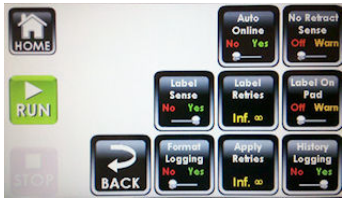
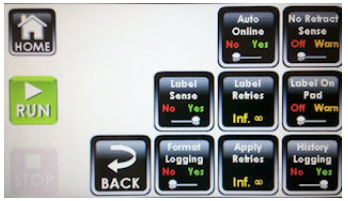
7.1 MCA (Main Controller Assembly) User Interface

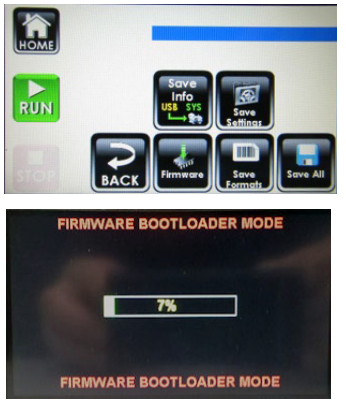


Notes:

- **Any change made to the settings are permanently saved when the Home Screen button is pressed. Otherwise, the settings will be temporary.**
- **Job settings can be made "on-the-fly" to update values. Keep in mind that an application cycle's values are preloaded before the product detector is triggered. Therefore, it will take two application cycles to observe a setting change. Going offline, then online forces the change to take place on the very next application cycle.**
- **Some settings require a power cycle to take effect. The user will be informed with a message box if this is required.**
- **Some buttons will not be visible, due to the current mode settings. All buttons are shown here for clarity.**
- **If there is a warning (yellow message box), it can be cleared by pressing the message box. Press the Run button to change the mode back to Online OK, which resets message warnings and the warning tower to green.**

7.2 User Interface How To

How Do I...	Solution	Screen	Screen Shot
Have the system power up in an Online mode?	Switch the Auto Online to YES	SMART	
Maintain a one-to-one label to product synchronization?	Using the optional Label Present sensor capabilities, set the Label Retries to 1 and Apply Retries to 1. This utilizes two prevention methods: 1. Only one label will be printed and if the label is removed prior to application, the system will halt in an Error condition. 2. If the label is not applied to the product, it will not be applied to the next product.	SMART	
Prevent applying a prior batch's label when placing the system online	Using the optional Label Present sensor, set the Label On Pad to Warn. If the system is onlined, and there is an existing label on the pad, a warning will information the user that a possible out of date or incorrect label is on the tamp pad from a prior run.	SMART	
Run batch 1 product labels of a variable quantity and then switch to batch 2 without mislabeling the first product of batch 2?	Use the Make Label with P1 Detect (using one sensor) or P2 Detect (using two sensors) to only generate a label on the detection of a product. If one sensor is used, the must be enough Apply Delay to allow the label to be printed before Applying. The label format should either be prefaced with a clear batch command, in order to clear the last format.	LABEL	
Save formats from the USB Memory Stick to the Internal microSD card (eliminate having a USB stick inserted)?	To transfer label formats from the external USB Memory device to the internal microSD card, switch the Save Info direction to SYS. Press the Save Formats or Save ALL button, and the System will begin transferring label formats with *.fmt or *.lbl extensions to the microSD card. The formats can be nested in separate directories, but not deeper than one level. I.e. - "\WALMART\filename.lbl", "\TARGET\filename2.lbl", etc. Use Save All to create new directories.	FILES	

How Do I...	Solution	Screen	Screen Shot
Upgrade the firmware?	First, download the MCA_IV.hex file from the Diagraph website. Place this file on a USB Memory device in the root directory. Insert the USB device in the MCA. Under the FILES menu, the Firmware button will be visible if the hex file is located. Press this button, and the system will reboot into the Bootloader Mode. If the load is interrupted, power cycle the unit. It will attempt to load the new firmware. Once the load is interrupted, it will not be able to the run the old firmware, so it will require the MCA_IV.hex load to complete successfully. Do not remove the USB Memory device until it successfully loads, or the load will end in failure with an inoperable system.	FILES	
Automatically save formats at the System that are sent over the Network (or Serially)? Capture a format sent to the System to analyze?	By switching Format Logging to YES, the formats sent to the System are recorded to memory. If the label format uses a naming feature, such as NiceLabel does with SATO formats, the name on the PC will be used to save the label on the microSD card. If no name is provided, the System will give the format a LAST_FORMAT.fmt name. This file can then be saved to a removable USB Memory device, and reviewed on a text editor. Please keep in mind that the LAST_FORMAT.fmt will be overwritten upon the reception of the next format. This functionality can be useful for quickly recalling a format after a power loss, or other situation where the last format can be recalled on the system. Please keep in mind that variable fields and/or sequential indexes will be lost, if utilized.	SMART	
Get notified that the system's Auto Retract Sensor is not seeing the product, and returning home due to duration or another reason?	By switching the No Retract Sense to Warn, the System will display an Informational message box when the actuator returns home for another event, such as Apply Duration or Hit Contact Sense. This is useful to ensure the system is seeing the product, and that the time duration set is not too short, where the system is alternating the return response.	SMART	

7.3 Information, Warning, Error, and Diagnostic Codes

MCA (Main Controller Assembly) Codes

There are three types of message types displayed, informational, warning, and errors. Informational message boxes give feedback to the user that give insight to behavior. They are temporary, and do not change system status. Warnings signify situations and events that require operator intervention in the future. The system will continue to run under a warning condition, and will illuminate the optional warning tower yellow. Error conditions prevent the system from running. The system operation is halted, and the optional warning tower is changed to red until it is cleared by the operator. All of the system messages are numbered to help communicate the status in a terse manner.

Message Number	Type	Message	Reason(s)
MSG 1	Error	ACTUATOR NOT HOME	1. Product Delay expired, but not home 2. Actuator commanded to return home, but after 5 seconds has not returned 3. Going online, but not home
MSG 2	Error	ACTUATOR AT HOME	Actuator commanded to return home, but it never left home
MSG 3	Error	APPLICATION MODULE	MCM II Module has an error
MSG 4	Informational	AUTO RETRACT SENSOR	Upon extending the actuator, the Auto Retract is already detecting
MSG 5	Warning	LABEL LOW	Label Low sensor sees breaks in the signal from the unwind disk and the labels depleting
MSG 6	Error	LABEL OUT	Printer has detected the end of the label supply
MSG 7	Warning	RIBBON LOW	Printer reports the ribbon is at the low level
MSG 8	Error	RIBBON OUT	Printer reports the ribbon is depleted
MSG 9	Informational	MISSING LABEL DETECT	Used for Label Applicator Mode
MSG 10	Error	LABEL MODULE	Used for Label Applicator Mode
MSG 11	Error	PRINT ENGINE	Printer reports an error condition
MSG 12	Informational	NO FORMAT	Printer End of Print signal will not toggle, indicating the label has not started printing
MSG 13	Informational	NO USB DRIVE	The MCA does not detect a Mass Storage Device in the USB slot
MSG 14	Warning	NO microSD CARD	The MCA does not detect a microSD card in the internal connector
MSG 15	Error	LABEL NOT APPLIED	The repeat apply threshold was exceeded
MSG 16	Error	REPEAT LABEL REQUEST	The repeat label threshold was exceeded
MSG 17	Error	REWIND TAKE-UP	The rewind detected a freewheel spin during online take up of the liner
MSG 18	Error	SECOND APPLY ERROR	In a dual apply mode, the first application was not complete before the Second Apply Delay expired. Can't apply second label since the placement would be random. Increase the 2nd Apply Delay
MSG 19	Warning	SYSTEM NOT READY	System was triggered to apply, but the label was not available to apply. Usually due to demand mode printing not allowing enough time to print or product trigger and no label format in the printer
MSG 20	Informational	IO CONTROLLER FAILURE	U2 in the MCA IV is not responding to communication.
MSG 21	Informational	E-STOP	E-Stop previously occurred
MSG 22	Informational	PASSCODE ERROR	Incorrect passcode entered
MSG 23	Informational	PASSCODE LEVEL	Incorrect passcode for that level
MSG 24	Error	REWIND MOTOR FAULT	Motor driver IC reports one or more issues: 1. Disconnected cables 2. Incorrect cable pinout 3. Stalled motor
MSG 25	Informational	POWER CYCLE	Indicates the system will require a soft or hard reset to have settings take effect
MSG 26	Warning	LABEL ON PAD	System detects a label on the pad when going online
MSG 27	Informational	Total Count/Time	These values are non-resettable, so pressing them will display this message
MSG 28	Informational	Job Count/Time	These values can be cleared, but only in the Job Number menu
MSG 29	Informational	OUTPUT TEST	The output diagnostic tests can only be performed when the system is offline
MSG 30	Informational	FORMAT ISSUE	The format sent to the printer contains control codes that can impact the interface of the labeler and the printer
MSG 31	Informational	NVMEM Cleared	The system's non-volatile memory has been erased by the user
MSG 32	Informational	FILE(S) NOT FOUND	System files are not found on the internal microSD card. Affects part number and web path views, as a minimum
MSG 33	Warning	DISCRETE IN WARNING	One or more of the discrete inputs assigned to warning has been triggered
MSG 34	Error	DISCRETE IN ERROR	One or more of the discrete inputs assigned to error has been triggered
MSG 35	Informational	NO RETRACT SENSE	Actuator returned home for a reason other than the auto-retract sensor seeing the product.

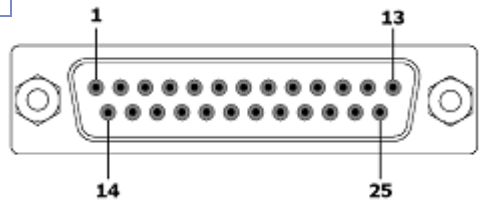
Message Number	Type	Message	Reason(s)
MSG 36	Informational	GAP SENSOR CALIBRATION	Instructions on how to calibrate the label gap sensor located on the peel tip.
MSG 37	Informational	CALIBRATION SUCCESS	Label gap sensor was properly calibrated
MSG 38	Informational	CALIBRATION FAILURE	Label gap sensor was not properly calibrated. This can be due to liner thickness or opacity outside of the system specifications, a faulty connection to the sensor, or the optics require cleaning.
MSG 39	Error	MCM HALL SENSORS	The Hall Effect sensors of the Actuator motor, which determine speed and position of the motor have an issue. Possible causes are disconnected cabling, damaged connector, or damaged motor.
MSG 40	Error	MCM AIR ASSIST	The Air Assist fan output detects a short-circuit. This can be caused by a stalled fan, a damaged fan circuit, or the shorting of the cable leading to the fan.
MSG 41	Error	MCM RETRACT TIMEOUT	The MCM allows up to 10 seconds for the actuator to return to the home position after extension. If it does not return in time, this error is generated.
MSG 42	Error	MCM EXTEND TIMEOUT	The MCM allows up to 10 seconds for the actuator to leave home and travel to the final position. If the actuator exceeds this time, this error is generated.
MSG 43	Error	MCM VACUUM FAN	The MCM monitors the fan output for a short-circuit. This can be caused by a stalled fan, a damaged fan circuit, or the shorting of the cable leading to the fan.
MSG 44	Informational	PRINT ENGINE BUSY	The print engine has exerted the flow control signal to stop sending data. On the SATO, this can occur when the printer is offline. On the Zebra, this can occur while the engine is powering up, and is not receiving communications.

8.0 Electrical Interfacing

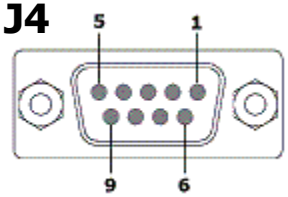
J4 - Module Control	
PIN	Pin Description
1	Ground
2	MODULE 5 VDC
3	Label Start
4	Label End
5	Label Out
6	Reprint
7	Ribbon Out
8	Module Error
9	Ribbon Low

JA1 - Discrete I/O {Optional Connector Presence}			
PIN	Pin Description	PIN	Pin Description
1,2	Out Relay 1A, 1B	13	Ground
3,4	Out Relay 2A, 2B	14,15	In A+, In A-
5,6	Out Relay 3A, 3B	16,17	In B+, In B-
7,8	Out Relay 4A, 4B	18,19	In C+, In C-
9,10	Out Relay 5A, 5B	20,21	In D+, In D-
11,12	Out Relay 6A, 6B	22,23	Ground
		24,25	+24 VDC FUSED 0.5 A

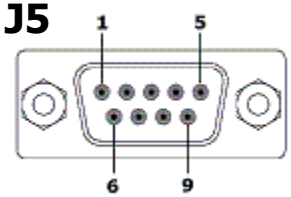
JA1



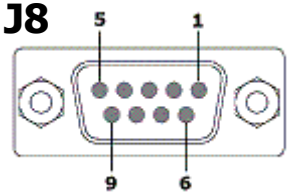
J4



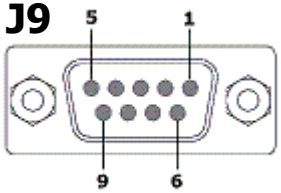
J5



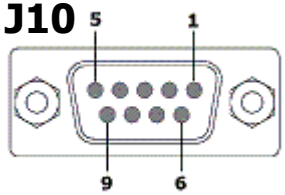
J8



J9



J10



J5 - Module Serial	
PIN	Pin Description
1, 4, 6	N/C
2	RS232 TX (to Module)
3	RS232 RX (from Module)
5	Ground
7	RS232 RTS
8	RS232 CTS
9	+ 5 VDC

J8 - Warning Tower	
PIN	Pin Description
1, 3	Ground
2	Aux Input (NPN)
4	Red (Ground Switched)
5	Yellow (Ground Switched)
6, 9	+ 24 VDC Supply
7	Green (Ground Switched)
8	Aux Output (Sinking)

J9 - Product Detector(s)	
PIN	Pin Description
1, 2, 5	N/C
3	Ground
4	Product Detect Input 2 (NPN)
6	+ 24 VDC Supply
7,9	N/C
8	Product Detect Input 1 (NPN)

J10- Serial Communication	
PIN	Pin Description
1, 4, 6	N/C
2	RS232 TX (to PC/PLC)
3	RS232 RX (from PC/PLC)
5	Ground
7	RS232 CTS
8	RS232 RTS
9	+5 VDC

9.0 Maintenance Schedule

These are average maintenance and repair/replace periods. Applications running higher throughputs will require attention more often.

Area	Daily	Monthly	Two Years	Description
Clean Printer Feed Rollers		√		Use isopropyl alcohol and soft lint-free cloth to wipe all adhesive and paper dust free.
Replace Printer Feed Rollers			√	Follow printer manufacturer's procedures.
Replace Printer Peel Blade			√	Follow printer manufacturer's procedures.
Clean Label Present and Auto-Retract Sensors (if installed)	√			Use isopropyl alcohol and soft lint-free cloth to wipe all dust and contaminants free.
Clean Label Low Sensor (if present)		√		Use isopropyl alcohol and soft lint-free cloth to wipe all dust and contaminants free.
Clean Product Detector Sensor(s)		√		Use a soft lint-free cloth to wipe all dust and contaminants free. Be careful not to damage the plastic lens with alcohol-based solvents.
Inspect Rewind Belt		√		Check for frayed edges and exposed reinforcement fibers.
Replace Rewind Belt			√	Remove Rewind disk by taking off E-clip. Keep belt loose by holding up on the spring-loaded belt tensioner. Replace belt and reinstall the Rewind disk.
Replace Unwind Dancer Spring			√	Unwind spring can be accessed through the slots of the Unwind disk.
Clean Tamp Pad	√			Use compressed air and a hard bristle brush to clean any contaminants in the pad face. Isopropyl alcohol can be used to wipe the pad clean. **DO NOT SPRAY CHEMICALS INTO THE FANS!**
Clean Vacuum and Air Assist Fan	√			Use clean compressed air (computer cleaner aerosol can) to clean any contaminants in the Air Assist or Vacuum fan. **DO NOT SPRAY CHEMICALS INTO THE FANS!**
Clean Actuator Rod		√		Clean the actuator rod with a cleaning cloth. Use a light amount of isopropyl alcohol on cloth to remove build-ups. **DO NOT USE OIL OR GREASE ON ACTUATOR ROD!**
Inspect Actuator Drive Belt		√		Check for frayed edges and exposed reinforcement fibers.
Replace Actuator Drive Belt and Bearing Pads			√	Follow replacement procedures contained with new components.
Clean Baseplate Spindle(s)		√		Use isopropyl alcohol and soft lint-free cloth to wipe all dust and contaminants free.
Replace Baseplate Spindle(s)			√	Replace by unscrewing the old spindle and replace with new spindle and some service-removable Loc-tite.
E-Blow Box: Clean debris from Blower Screen	√			Brush debris from blower intake screen on the E-Blow Box

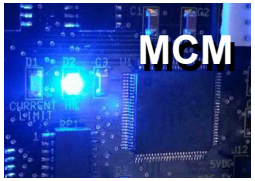
10.0 Diagnostics

Overview

The Illinois Tool Works labeler employs a built-in diagnostic testing system to allow most problems to be identified and corrected without need for more sophisticated test equipment. This is an inherent characteristic of the PA/4600E, PA/6000E, LS4600, and LS6000 labelers, and should be used to save time and efforts. The sections below list the capabilities and how to access them.

Heartbeat Light

As simple as this indicator is, it can help identify a problem with the circuit boards in the labeler. All boards that contain firmware have a flashing blue LED light that indicates a normal, working module. The MCA, Discrete I/O Module, and MCM contain this heartbeat indicator.



Won't Print

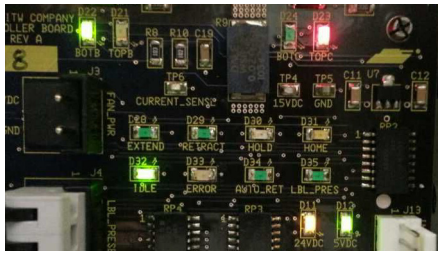
- Is there a format in the print engine?
- Is the print engine online?
- Is system set to Make Label on a Product Sensor?
- Is there already a label on the pad?
- Is the Label Present sensor blocked or active?
- Printer start print signal not configured for correct type and level signal mode
- Try using the ***Force Feed*** button on the Label Menu to bypass the internal print logic

Won't Apply

- Label is not present on the pad at the time the Apply Duration expires
- Actuator is not home - bent rod, broken tooth belt, home sensor not in proper position
- Using demand mode (Make Label on Product Sensor 1 or 2) and label is not ready in time

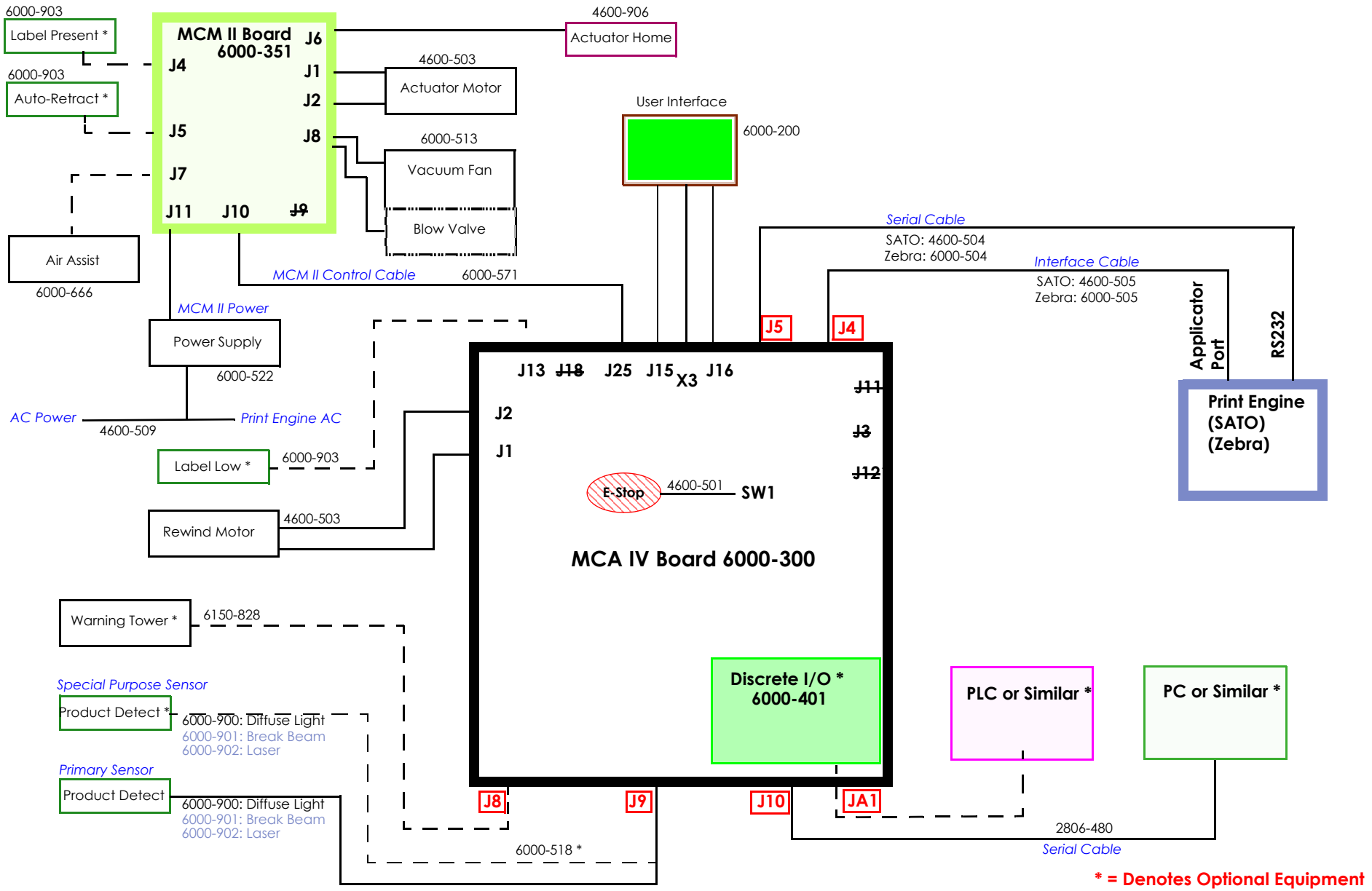
Failure modes leading to missed or no application can be narrowed to the product detection trigger (input) and the extension of the actuator signal (output). The Product Trigger can be viewed on the green LED inside the MCA MCU Board (D2, PD1). It can also be viewed on the Diagnostic screen of the MCA display in the **Diag** screen. The Diagnostic menu allows for the Tamp signal to be exercised.

MCM II Diagnostic LEDs.



LED	COLOR	Meaning
BOTA, BOTB, BOTC	GREEN	Bottom MOSFET Drivers for Phase A, B, C
TOPA, TOPB, TOPC	RED	Top MOSFET Drivers for Phase A, B, C
EXTEND	GREEN	Actuator is in extension mode
RETRACT	GREEN	Actuator is in retraction mode
HOLD	ORANGE	Actuator is holding current position
HOME	YELLOW	Actuator is arriving home
IDLE	GREEN	Actuator is at home and has entered an idle current
ERROR	RED	Actuator/MCM has experienced an error
LBL_PRES	GREEN	Label Present sensor detects a label on the pad
AUTO_RET	GREEN	Auto Retract sensor detects an object near the pad
BLOWR	YELLOW	Blow valve output for reverse motor lead
BLOWF	YELLOW	Blow valve output for forward motor lead
VAC	YELLOW	Vacuum Fan PWM speed voltage to BLDC fan
PD1	GREEN	Product Detector 1 Input
PD2	GREEN	Product Detector 2 Input
AIR	YELLOW	Air Assist Fan output voltage
ACTUATOR HOME	GREEN	Home sensor input (actuator is in home position)

11.0 Interconnection Diagram



Interconnection Diagram

12.0 Spare Parts List - System

Part Number	Recm'd. Spare Part	Apply Module	Description
DOCUMENTATION			
6000-010		ALL	PA/4600E, PA/6000E, LS4600, and LS6000 User Manual
PA/4600E, PA/6000E, LS4600, and LS6000			
6000-522		ALL	MCA Power Supply (Auto-Ranging, 24 VDC 9.2A Output)
4600-511		ALL	AC Power Cord
4600-643		ALL	Unwind Dancer Arm Spindle
6000-200		ALL	MCA IV User Interface Touch Screen LCD
6000-300		ALL	Main MCU PCB Assembly
6000-500	√	ALL	Main Controller Assembly IV (MCA IV) Includes: MCU Board, Color LCD w/touchscreen, E-Stop, Enclosure
6000-351	√	ALL	MCM II Motor Controller PCB Assembly
6000-570		ALL	MCM II Assembly Includes: MCM II Motor Controller PCB, Enclosure
4600-503		ALL	Rewind BLDC Motor
4600-647		ALL	Rewind Clasp
6000-518		ALL	Product Detector Y-Cable
2806-480		ALL	Serial Cable 25 ft DB9M to DB9F Straight Pinout
4600-950	√	ALL	MAINTENANCE KIT: Wear Items Set Includes: (2) Rewind Belts, (3) Spindles, (2/ea.) Springs, (3) Unwind Fins, (3) Web guides
6000-950	√	E-TAMP	E-TAMP MAINTENANCE KIT: Wear Items Set Includes: Actuator Belts, Bearing Pads, Idler Rollers, Belt Clamp, Bumper, Springs, Motor Dust Cap
6000-951	√	E-FASA	E-FASA MAINTENANCE KIT: Wear Items Set Includes: Motor Drive Belt, Swing Arm Belt, Shock Absorber Bumper, Cable Ties, Springs, UHMW

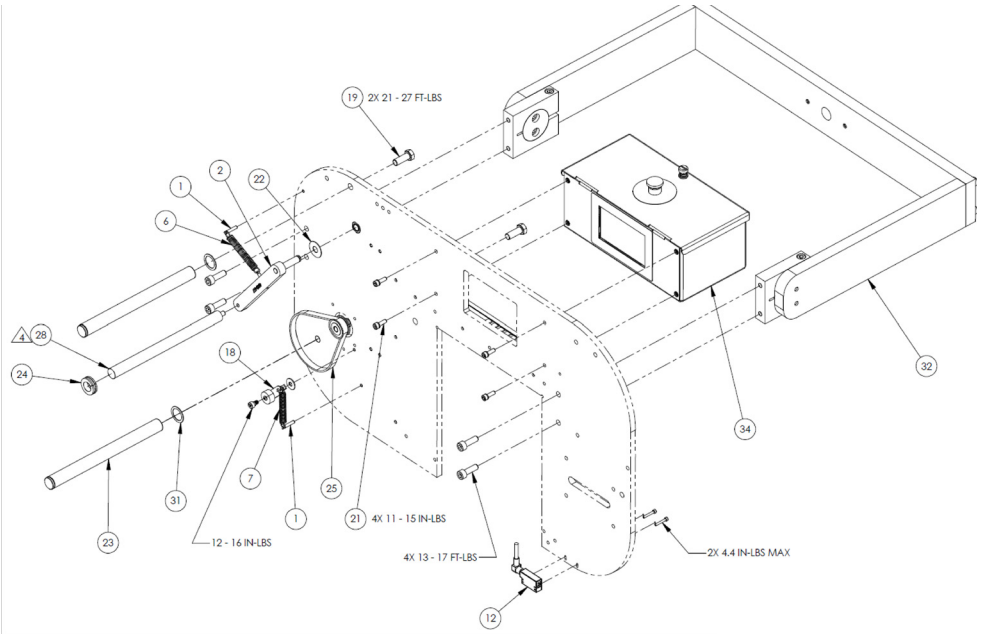
Part Number	Recm'd. Spare Part	Apply Module	Description
6000-952	√	E-WASA	E-WASA MAINTENANCE KIT: Wear Items Set Includes: Springs, UHMW Rollers, Fan Assembly, Nylon Brushes
6000-953	√	E-TAMP/ BLOW & E-BLOW BOX	E-TAMP/BLOW & E-BLOW BOX MAINT. KIT: Wear Items Set Includes: Springs, Linkages, Spring Anchors
6000-520		E-TAMP/ BLOW & E-BLOW BOX	Motor and Cable Assembly
6000-521		E-TAMP/ BLOW & E-BLOW BOX	Fan Assembly, E-Tamp/Blow
6000-620x10		E-TAMP	E-TAMP Actuator Module, 10 inch stroke
6000-620x20		E-TAMP	E-TAMP Actuator Module, 20 inch stroke
6000700x10		E-FASA	10 inch E-FASA Actuator Assembly ONLY - Side Apply (no MCM)
6000700x10ND		E-FASA	10 inch E-FASA Actuator Assembly ONLY - Nose Up/Down (no MCM)
6000700x20		E-FASA	20 inch E-FASA Actuator Assembly ONLY - Side Apply (no MCM)
6000700x20ND		E-FASA	20 inch E-FASA Actuator Assembly ONLY - Nose Up/Down (no MCM)
6000-666	√	ALL	Air Assist Module
6000-516	√	ALL	Vacuum Fan Assy.
4600-900		ALL	Product Detector - Diffused Light
OPTIONS			
6000-828		ALL	LED Warning Tower Assembly
6000-401		ALL	Discrete I/O Board (Optional Device)
6000-903	√	ALL	Auto-Retract, Label low, or Label Present Sensor and PUR cable (1 sensor/cable/cover per kit)

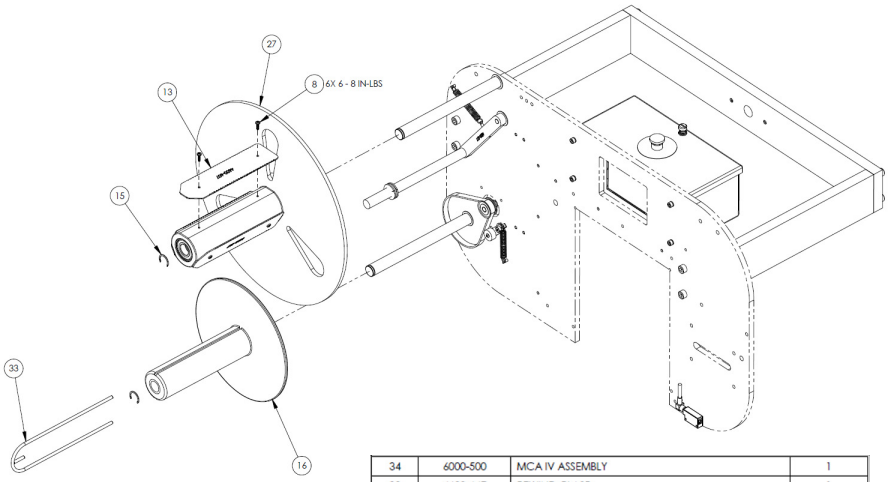
13.0 Spare Parts List - Print Engines

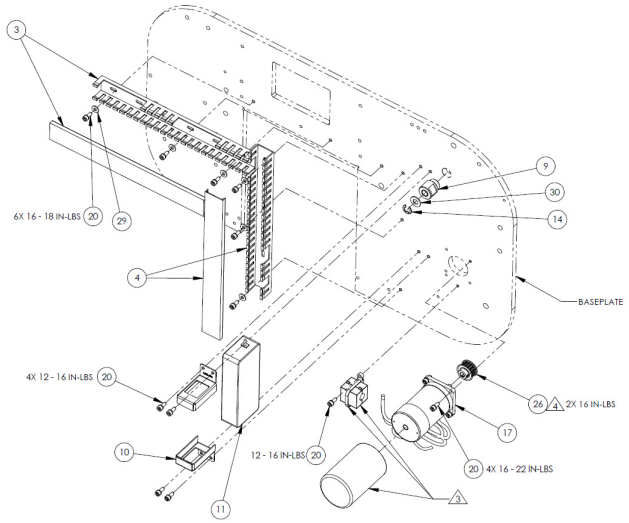
Part Number	Recm'd. Spare Part	Description
SATO SE Print Engine Components		
7500-020		SATO Platen Assy PR0730100
2801-451		SATO Bearing (Inner)
2850-999		SATO Bearing / Ball Supporter (Outer) PT1109050
2803-992		SATO Timing Belt PT8150064
7500-050		SATO Timing Belt PT8190064
6150-856		SATO Timing Belt PT8085048
2806-253	√	SATO 203 dpi Printhead GH000781A
2804-637		SATO Platen Roller Pulley PE8730200
R00017020		SATO Pressure Roller Assembly R00017020
6152-117		SATO Feed Roller PR0730200
SATO Lt408 Print Module Components		
4600-800		SATO Lt 408 Print Engine (Entire Printer)
4600-810	√	SATO Lt 408 Print Head
4600-811		SATO Lt 408 Platen Roller Assy
4600-812		SATO Lt 408 Feed Roller Assy
4600-813		SATO Lt 408 Ribbon Roller Assy
4600-814		SATO Lt 408 Gap Sensor Assy.
4600-815		SATO Lt 408 Main PCB
4600-816		SATO Lt 408 Motor Drive PCB
4600-817		SATO Lt 408 Power Supply
4600-819		SATO Lt 408 Timing Belt 218mm (Ribbon Drive)
4600-820		SATO Lt 408 Timing Belt 260mm (Stepper Main)
4600-821		SATO Lt 408 Timing Belt 186mm (Platen Drive)
4600-822		SATO Lt 408 Ribbon Sensor
4600-823		SATO Lt 408 Torque Limiter (ribbon take-up)
4600-824		SATO Lt 408 Torque Limiter (ribbon supply)
4600-825		SATO Lt 408 Roller bearing (all rollers)

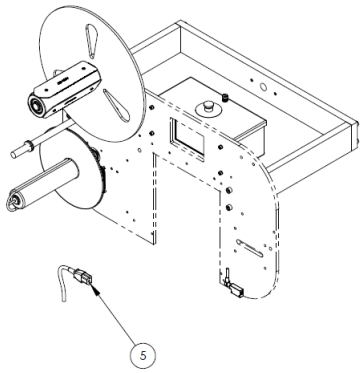
Part Number	Recm'd. Spare Part	Description
SATO 84xx Se Engines		
6000-6152094		Engine Assembly, Sato 8485SE
6000-6152092		Engine Assembly, Sato 8490SE
6000-6152091		Engine Assembly, Sato 8460SE
Zebra PAX Engines		
6000-6153091		Engine Assembly, Zebra 112 PAX4
6000-6153092		Engine Assembly, Zebra 113 PAX4
6000-6153089		Engine Assembly, Zebra 172 PAX4
6000-6153090		Engine Assembly, Zebra 173 PAX4

14.0 System Drawings



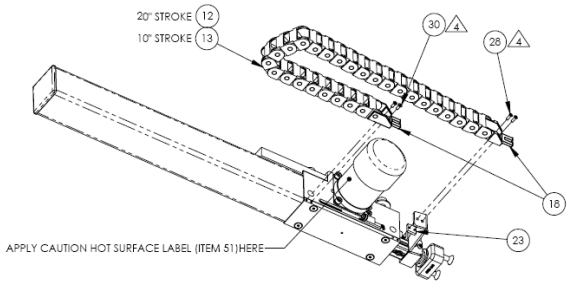






ITEM	PART NO.	DESCRIPTION	Default/QTY.
34	6000-500	MCA IV ASSEMBLY	1
33	4600-647	REWIND CLASP	1
32	4600-628	YOKE ASSEMBLY	1
31	5310-801	WASHER, FLT, RD FIBER, 3/4"ID-1"OD	2
30	5310-810	WASHER, FLAT, NYLON, 3/8ID-3/4OD	1
29	5310-030	WASHER, FLAT, #10, SS	6
28	4600-643	URETHANE SPINDLE	1
27	4600-605	UNWIND ASSY	1
26	4600-648	TIMING PULLEY, 15 TEETH	1
25	4600-649	TIMING BELT	1
24	6105-066	SPRING COLLAR	1
23	4600-608	SPINDLE, UNWIND-REWIND	2
22	6145-665	SPACER, DLERIN, UNWIND/REWIND	1
21	5081-728	SCR, M5 X 0.8 X18, SHCS, SS	4
20	5081-727	SCR, M5 X 0.8 X12, SHCS, SS	15
19	5072-503	SCR, 3/8-24 X 1", HEX HD CAP, SS	2
18	4600-612	REWIND TENSIONER ASSEMBLY	1
17	4600-503	MOTOR KIT, BLDC	1
16	4600-606	REWIND ASSY	1
15	5321-219	RETAINING RING, C-CLIP, 3/4"	2
14	5321-217	RETAINING RING, 3/8, SS	1
13	4600-607	RETAINER, LABEL CORE	3
12	4600-900	PRODUCT DETECTOR	1
11	4600-522	POWER SUPPPLY, 24V, 3.75A, MEANWELL	1
10	4600-618	POWER SUPPLY BRACKET	2
9	4600-616	HOUSING ASSY, PIVOT	1
8	5750-039	FASTENER, #6 X 1/2 HI-LO, PAD HD	6
7	5331-221	EXTENSION SPRING	1
6	5331-222	EXTENSION SPRING	1
5	4600-511	CABLE, LIGHT-DUTY POWER	1
4	4600-510	CABLE RACEWAY	1
3	4600-510	CABLE RACEWAY	1
2	4600-617	ARM ASSY, DANCER	1
1	6150-600	ANCHOR, EXTENSION SPRING, 8-32	3

14.1 System Drawings - E-TAMP Actuator



1. THIS DRAWING DEFINES THE 6000-620X10 AND 6000-620X20 ACTUATORS. SEE BOM FOR APPLICABLE COMPONENTS.
2. THE ACTUATOR CAN BE CONFIGURED TWO WAYS. CONFIGURATION "A" IS SHOWN AND IS APPLICABLE TO RIGHT-HANDED MACHINES WITH TAMP PAD LENGTHS LESS THAN 6.75 INCHES AND FOR LEFT-HANDED MACHINES WITH TAMP PADS LENGTHS OF 6.75 INCHES AND GREATER. CONFIGURATION "B" IS ACHIEVED BY SWAPPING THE POSITIONS OF THE TAMP PAD MOUNT ASSEMBLY AND MAGNET COMPONENTS WITH THE BELT TENSIONER COMPONENTS. CONFIGURATION "B" IS APPLICABLE TO LEFT-HANDED MACHINES WITH TAMP PAD LENGTHS LESS THAN 6.75 INCHES AND FOR RIGHT-HANDED MACHINES WITH TAMP PADS LENGTHS OF 6.75 INCHES AND GREATER.

△3 INSERT AND REMOVE PINS ONLY FROM SIDE OPPOSITE OF MOTOR MOUNT.

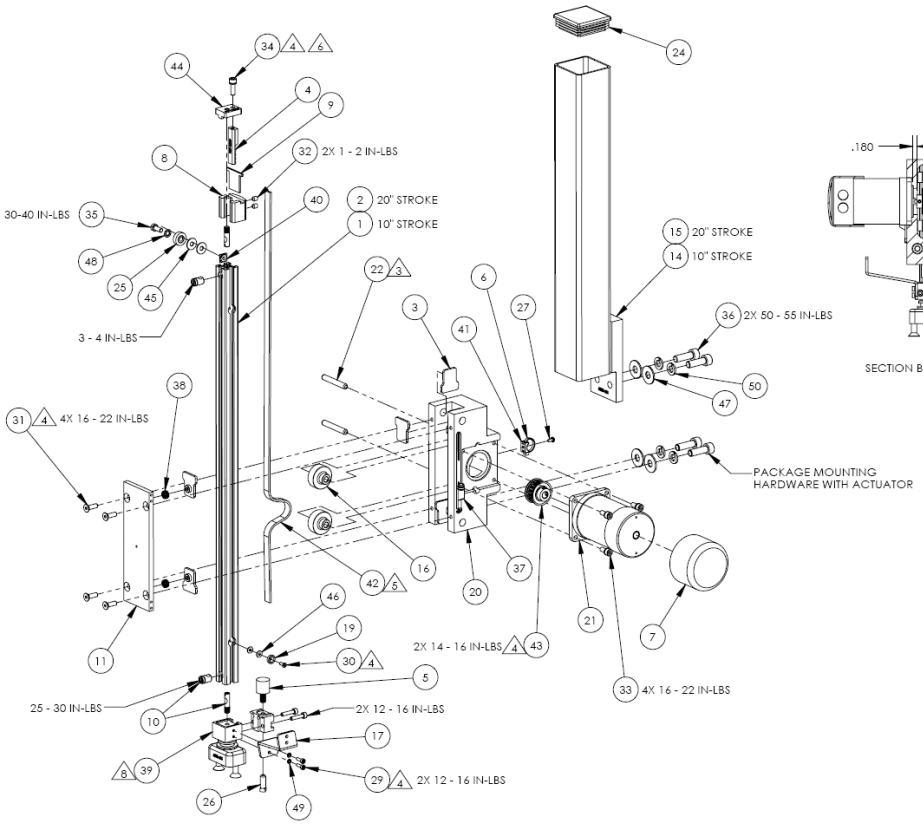
△4 APPLY LOCTITE 242 TO SCREW PRIOR TO ASSEMBLY.

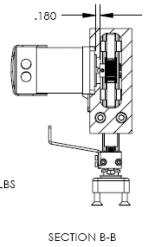
△5 CUT TIMING BELT TO LENGTH DURING ASSEMBLY.

△6 TIGHTEN SCREW UNTIL LOCK WASHER COLLAPSES, THEN TIGHTEN ONE MORE TURN.

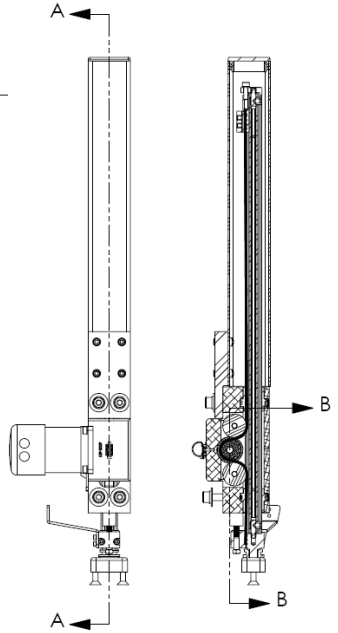
7. TIGHTEN SCREWS TO TORQUE VALUES SPECIFIED ON THE DRAWING.

△8 USE 6000-625-BLUE FOR TAMP PADS UNDER 6". USE 6000-625-RED FOR TAMP PADS OVER 6".





SECTION B-B

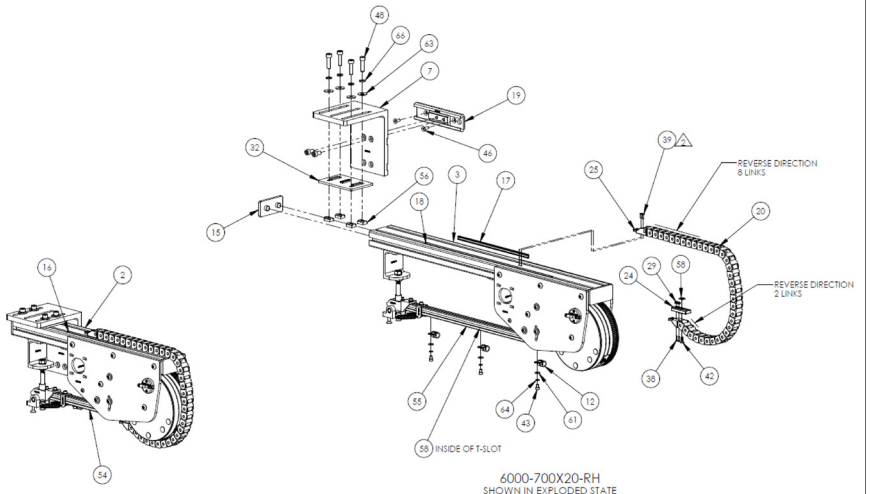


SECTION A-A

ITEM	PART NO.	DESCRIPTION	6000-620X10/QTY.	6000-620X20/QTY.
51	6000-643	LABEL, CAUTION HOT SURFACE	1	1
50	5310-308	WASHER, SPLIT-LOCK, 5/16", SS	4	4
49	5310-315	WASHER, SPLIT LOCK, #4, SS	2	2
48	5310-409	WASHER, LOCK, #10 INT TOOTH	1	1
47	5310-041	WASHER, FLAT, 5/16, SS	4	4
46	5310-037	WASHER, FLAT, #4, SS	2	2
45	5310-030	WASHER, FLAT #10, SS	2	2
44	6000-627	TOP PLATE, ACTUATOR	1	1
43	4600-648	TIMING PULLEY, 15 TEETH	1	1
42	6000-633	TIMING BELT, XL, 240 GROOVES X .375" W	1/2	1
41	6105-423	TIE MOUNT, #4 SCREW	1	1
40	6000-636	THREADED PLATE, M5, MAYTEC	1	1
39	6000-625 △8	TAMP PAD MOUNT ASSY, E-TAMP	1	1
38	5331-002	SPRING, WAVE, .375 O.D. X .15 L, SS	2	2
37	4600-906_ITEM-1	SENSOR, CYLINDER HOME	1	1
36	5081-730	SCR, M8 X 1.25 X 25, SHCS, SS	4	4
35	5072-502	SCR, M5 X.8 X 12, HEX HD CAP, SS	1	1
34	5081-728	SCR, M5 X 0.8 X18, SHCS, SS	1	1
33	5081-727	SCR, M5 X 0.8 X12, SHCS, SS	4	4
32	5030-712	SCR, M5 X 0.8 X 6, SOCSET, CUP PT, SS	2	2
31	5091-712	SCR, M5 X 0.8 X 16, FL HD SOC, SS	4	4
30	5101-601	SCR, M3 X 0.5 X 8, FL HD PH, SS	3	3
29	5081-003	SCR, M3 X 0.5 X 10MM, SHCS, SS	2	2
28	2460-147	SCR, 4-40 X 3/8, PH FH, SS	2	2
27	5152-006	SCR, 4-40 X 1/4, PAN HD, SEMS, PH	1	1
26	6000-637	SCR, 1/4-20 X 5/8", SET, SQ HD, CUP PT, SS	1	1
25	6000-638	ROLLER / BUMPER	1	1
24	6000-632	PLUG, 2-INCH SQUARE	1	1
23	4600-658	PLATE, IGUS MOUNT	1	1
22	5315-105	PIN, DOWEL, .250 X 1.75 L, SS	2	2
21	4600-503_ITEM-1	MOTOR, BRUSHLESS DC	1	1
20	6000-621	MAIN BODY, ACTUATOR	1	1
19	6145-667	MAGNET, RARE EARTH	1	1
18	4600-514	IGUS MOUNTING BRACKETS (SET)	1	1
17	4600-611	IGUS MOUNT, TAMP CYLINDER	1	1
16	6000-623	IDLER ROLLER	2	2
15	6000-631L	GUARD ASSY	-	1
14	6000-631	GUARD ASSY	1	-
13	6000-515_27	ENERGY CHAIN, IGUS	22"	-
12	6000-515_41	ENERGY CHAIN, IGUS	-	33"
11	6000-622	COVER PLATE, ACTUATOR	1	1
10	6000-635	CONNECTOR ASSY, MAYTEC	2	2
9	6000-629	CLAMP PLATE	1	1
8	6000-628	CLAMP	1	1
7	6000-634	CAP, VINYL, ROUND	1	1
6	6150-580	CABLE TIE, 87" DIA. BLK NYLON	1	1
5	6150-601	BUMPER, 5/8" MALE, POLYURETHANE	1	1
4	6000-626	BELT TENSIONER	1	1
3	6000-624	BEARING PAD	8	8
2	6000-630L	ACTUATOR EXTRUSION	-	1
1	6000-630	ACTUATOR EXTRUSION	1	-

14.2 System Drawings - E-FASA Actuator

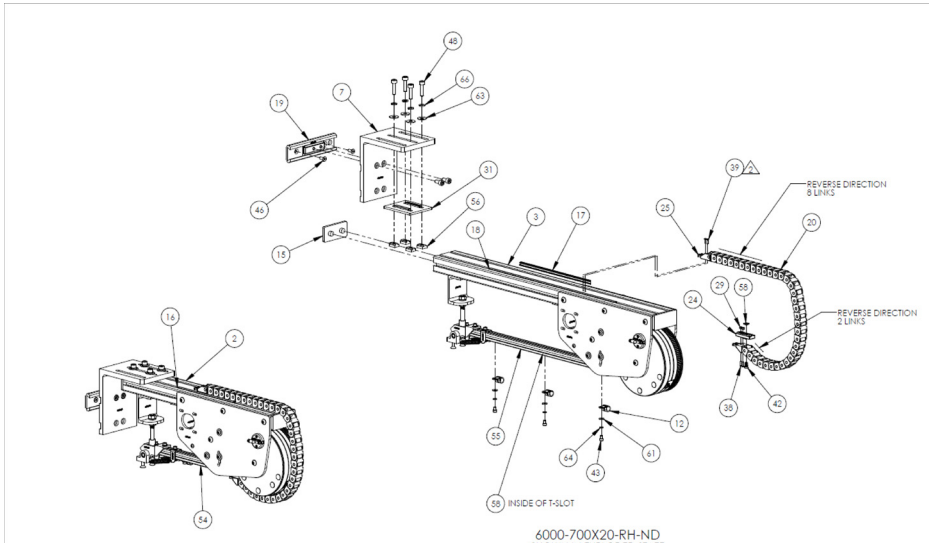
0 Degrees Mount (Side Apply)



6000-700X20-RH
SHOWN IN EXPLODED STATE

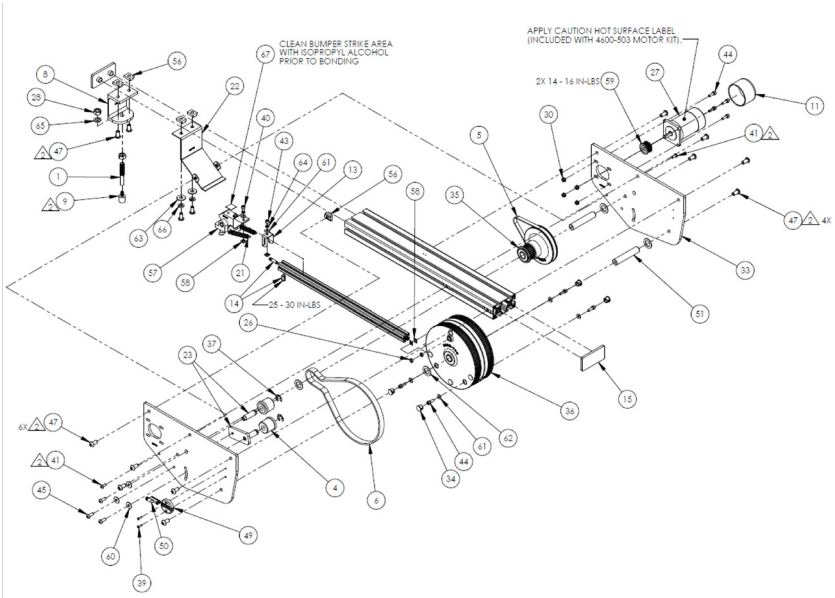
6000-700X10-RH

90 Degrees Mount (Nose-Up/Nose-Down)



6000-700X20-RH-ND
SHOWN IN EXPLODED STATE

6000-700X10-RH-ND



ITEM	PART NO.	DESCRIPTION	6000-700X10-RH/QTY.	6000-700X20-RH/QTY.	6000-700X10-RH-ND/QTY.	6000-700X20-RH-ND/QTY.
48	5081-738	SCR, M8 X 1.25 X 30, SHCS, SS	4	4	4	4
47	5250-032	SCR, M8 X 1.25 X 16, BUT HD CAP, SS	14	14	14	14
46	5091-713	SCR, M6 X 1 X 16, FL HD SOC, SS	2	2	2	2
45	5241-717	SCR, M6 X 1 X 16, BUT HD CAP, SS	3	3	3	3
44	5081-728	SCR, M5 X 0.8 X18, SHCS, SS	8	8	8	8
43	5081-739	SCR, M5 X 0.8 X 8, SHCS, SS	3	4	3	4
42	5091-716	SCR, M5 X 0.8 X 14, FL HD SOC, SS	1	1	1	1
41	5247-001	SCR, M5 X 0.8 X 12, BUT HD CAP, SS	2	2	2	2
40	5081-740	SCR, M5 X 0.8 X 10, SHCS, SS	1	1	1	1
39	5101-602	SCR, M3 X 0.5 X 12MM, FL HD PH, 90D, SS	4	4	4	4
38	5101-103	SCR, 4-40 X 1/2, FL HD PH, 82D, SS	2	2	2	2
37	5321-212	RETAINING RING, 1/2" EXT, E-STYLE, SS	2	2	2	2
36	6000-704	PULLEY ASSY, SWING ARM	1	1	1	1
35	6000-703	PULLEY ASSY, SPEED REDUCING	1	1	1	1
34	5360-001	PLUG, 1/2", HEYCO 2646	4	4	4	4
33	6000-701	PLATE, E-FASA	2	2	2	2
32	6000-707	ORIENTATING PAD, E-FASA, SIDE-APPLY	1	1	-	-
31	6000-708	ORIENTATING PAD, E-FASA, NOSE UP/DOWN	-	-	1	1
30	5309-315	NUT, LOCK, M5 X 0.8, EXT TOOTH, ZN	4	4	4	4
29	5307-102	NUT, LOCK, 4-40, ELASTIC, ZN	2	2	2	2
28	5305-118	NUT, JAM, M10 X 1.5, SS	2	2	2	2
27	4600-803_ITEM-1	MOTOR, BRUSHLESS DC	1	1	1	1
26	6145-667	MAGNET, RARE EARTH	2	2	2	2
25	4600-514	IGUS MOUNTING BRACKETS (SET)	1	1	1	1
24	6000-716	IGUS MOUNT, E-FASA	1	1	1	1
23	6000-705	IDLER ASSY	1	1	1	1
22	6000-715	GUARD ASSEMBLY	1	1	1	1
21	5331-220	EXTENSION SPRING	2	2	2	2
20	4600-513-MOD	ENERGY CHAIN, IGUS	1	1	1	1
19	4600-630	DOVETAIL MOUNTING HARDWARE	1	1	1	1
18	1.41.113-A00A400_480	COVER PROFILE, BLACK, MAYTEC, 480mm	-	1	-	1
17	1.41.113-A00A400_250	COVER PROFILE, BLACK, MAYTEC, 250mm	-	1	-	1
16	1.41.113-A00A400_200	COVER PROFILE, BLACK, MAYTEC, 200mm	1	-	1	-
15	1.42.20408.S	COVER CAP, 40 X 80, BLACK, MAYTEC	2	2	2	2
14	6000-635	CONNECTOR ASSY, MAYTEC	1	1	1	1
13	6000-709	CLEAT, SPRING	1	1	1	1
12	5770-340	CLAMP, P-TYPE, 1/2", #8 MOUNTING	2	3	2	3
11	6000-634	CAP, VINYL, ROUND	1	1	1	1
10	6150-880	CABLE TIE, 87" DIA, BLK NYLON	6	6	6	6
9	6150-601	BUMPER, 5/8" MALE, POLYURETHANE	1	1	1	1
8	6000-710	BRACKET, HARD STOP	1	1	1	1
7	6000-706	BRACKET, E-FASA MOUNT	1	1	1	1
6	6000-712	BELT, SWING ARM	1	1	1	1
5	6000-713	BELT, MOTOR DRIVE	1	1	1	1
4	6170-663	BEARING, STANDARD FOR 1/2" SHAFT	2	2	2	2
3	6000-721-20	BEAM, E-FASA, 20"	-	1	-	1
2	6000-721-10	BEAM, E-FASA, 10"	1	-	1	-
1	6000-711	ADJUSTING ROD, BUMPER	1	1	1	1

REV	ECN	DESCRIPTION	DATE	APPROVED
1		NEW DRAWING - PRE-RELEASE	3/12/2010	

NOTES:

1. THIS DRAWING DEFINES THE 6000-700 FASA ASSEMBLIES. ONLY RIGHT-HAND CONFIGURATIONS ARE SHOWN. EACH LEFT-HAND CONFIGURATION IS A MIRRORED VERSION AND UTILIZES THE SAME PARTS AS ITS CORRESPONDING RIGHT-HAND CONFIGURATION. SEE BOM FOR APPLICABLE COMPONENTS.
2. APPLY LOCTITE 242 TO SCREW PRIOR TO ASSEMBLY.
3. TIGHTEN SCREWS TO TORQUE VALUES SPECIFIED ON THE DRAWING.
4. COMPONENT(S) INCLUDED WITH 4600-503 REWIND MOTOR ASSEMBLY.
5. COMPONENT(S) INCLUDED WITH 6000-719 EXTRUSION KIT, E-FASA, 10".
6. COMPONENT(S) INCLUDED WITH 6000-720 EXTRUSION KIT, E-FASA, 20".
7. COMPONENT(S) NOT SHOWN ON FIELD OF DRAWING.

67	6000-821	TAPE, UHMW, 3/4" SQ. X .012" THK	1	1	1	1
66	5310-308	WASHER, SPLIT-LOCK, 5/16", SS	6	6	6	6
65	5310-322	WASHER, SPLIT LOCK, M10, SS	1	1	1	1
64	5310-318	WASHER, SPLIT LOCK, #10, SS	4	5	4	5
63	5310-041	WASHER, FLAT, 5/16, SS	6	6	6	6
62	5310-055	WASHER, FLAT, .640"ID X 1.062"OD X .060"THK, DELRIN	4	4	4	4
61	5310-030	WASHER, FLAT, #10, SS	8	9	8	9
60	5310-718	WASHER, BELLEVILLE SPRING, .250 I.D X .687 O.D X .052 THK, SS	3	3	3	3
59	4600-648	TIMING PULLEY, 15 TEETH	1	1	1	1
58	6000-636	THREADED PLATE, M5, MAYTEC	9	10	9	10
57	6170-601	TAMP PAD MOUNT ASSY, E-FASA	1	1	1	1
56	1.32.BM8	T-NUT, E-SLOT M8, MAYTEC	14	14	14	14
55	1.10.000020.43LP-A00AA4_700	SWING ARM, E-FASA, 20"	-	1	-	1
54	1.10.000020.43LP-A00AA4_450	SWING ARM, E-FASA, 10"	1	-	1	-
53	6000-724	SPIRAL WRAP TUBING, 5/16" - 3" DIA., NYLON	14"	14"	14"	14"
52	6000-723	SLEEVING, BRAIDED EXPANDABLE, 1/2" DIA.	16"	26"	16"	26"
51	6000-702	SHAFT, E-FASA	2	2	2	2
50	4600-904_ITEM-1	SENSOR, CYLINDER HOME	1	1	1	1
49	6000-714	SENSOR MOUNT, E-FASA HOME	1	1	1	1

ITEM	PART NO.	DESCRIPTION	6000-700X10-RH/QTY.	6000-700X20-RH/QTY.	6000-700X10-RH-ND/QTY.	6000-700X20-RH-ND/QTY.

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TOLERANCES: LINEAR 2 PLACE (.XX) ±.010, 3 PLACE (.XXX) ±.005; HOLE DIAMETERS ±.005; ANGULAR ±1°; MACHINE SURFACE

FILE NAME	6000-700		
DWN	R BIXEN	3/12/10	
APP	XX	XX	
APP			
FIRST PROC			
SEP PROC			
CAGE CODE			
NEXT ASSEMBLY	MODEL	DATE SPEC	

TW MARKING & CODING

TITLE: E-FASA ASSEMBLY

SIZE B | DWG NO 6000-700 | REV 1

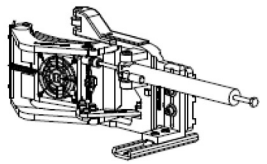
SCALE: 1:8 | SHEET 1 OF 4

14.3 System Drawings - E-WASA

REVISIONS					
REV	ECN	DESCRIPTION	DATE	APPROVED	
A	LPD00483	RELEASE TO PRODUCTION	5/4/2010	RWB	

NOTES:

1. ASSEMBLE AS SHOWN.
2. APPLY LOCTITE 242 TO THREADS PRIOR TO ASSEMBLY.
3. RED WIRE AND BLUE WIRE TO BE PARALLEL AT END OF TERMINAL BLOCK. THE BROWN WIRE TO BE CONNECTED ON THE OPPOSITE END OF THE RED WIRE AND THE WHITE WIRE TO BE CONNECTED ON THE OPPOSITE END OF BLUE WIRE.
4. REFERENCE TABLE FOR PARTS THAT CHANGE PER SIZE AND IF RIGHT HAND OR LEFT HAND.
5. CUT SLIT IN WASHER 6146-650 ON ONE SIDE, TO BE ABLE TO FIT ON BOTTOM SIDE OF CYLINDER PIVOT PIECE.
6. INCLUDED WITH (6170-509) FAN ASSEMBLY, WASA.
7. NOT A FULL SIZE REPRESENTATION OF 6170-510 ON DRAWING.



ITEM NO.	PART NUMBER	DESCRIPTION	Default/QTY.
39	6170-581	WASHER,FLAT, NYLON, M6	3
38	5310-308	WASHER, SPLIT-LOCK, 5/16", SS	3
37	5310-318	WASHER, SPLIT LOCK, #10, SS	2
36	5310-041	WASHER, FLAT, 5/16, SS	2
35	6170-567	TERMINAL BLOCK, 2 CIRCUIT	1
34	4600-642	TAMP APPLICATOR MOUNTING BRACKET	1
33	SEE TABLE	STAND OFF, FEMALE, 10MM	1
32	SEE TABLE	SPRG, EXT	1
31	SEE TABLE	SHAFT, PIVOT	1
30	5081-738	SCR, M8 X 1.25 X 30, SHCS, SS	2
29	5250-033	SCR, M5X.8X6X10, SHLDR, SOC HD, SS	3
28	5250-034	SCR, M5X 0.8X30, SHLDR, SOC HD, SS	1
27	5241-725	SCR, M5X 0.8 X 20, BUT HD CAP, SS	2
26	5250-027	SCR, M5 X.8 X6 X20, SHLDR, SOC HD, SS	1
25	5030-711	SCR, M4 X 0.7 X 6, SOCSET, CUP PT, SS	3
24	5151-104	SCR, 4-40 X 3/4, PAN HD PH, SS	1
23	6170-583	ROLLER, UHMW, .25"ID, .625"OD	1
22	SEE TABLE	ROLLER, DELRIN	1
21	6170-572	RIVET NUT, 8-32	4
20	5309-320	NUT, NYLON INSERT, M5 X 0.8	2
19	5305-029	NUT, JAM, M8 X 1.25, SS	2
18	5305-031	NUT, JAM, 5/16-24	1
17	6170-521	LINKAGE, CURVED	1
16	6170-520	LINKAGE, CAM	1
15	6170-516	LINKAGE, BALL JOINT	1
14	6000-623	IDLER ROLLER	1
13	6146-650	FLAT WASHER, .503 I.D. X 1.120 O.D. X .033 THK, NYLON	1
12	SEE TABLE	FAN BOX, E-WASA	1
11	SEE TABLE	E-WASA MOUNT	1
10	4600-630	DOVETAIL MOUNTING HARDWARE	1
9	6170-515	CYLINDER, ADJUSTABLE	1
8	6170-510	CABLE, WASA	1
7	6170-573	CABLE CLAMP	1
6	6170-509	FAN ASSEMBLY, WASA	1
5	5312-113	BUSHING, FLANGED, PLAS, SWS921	3
4	SEE TABLE	BRUSH, NYLON	1
3	5312-117	BEARING, FLANGED 3/8 ID	6
2	SEE TABLE	ARM, E-WASA	1
1	6150-600	ANCHOR, EXTENSION SPRING, 8-32	2

REFERENCE TABLE

ITEM #	6170-500-4X6RH E-WASA, 4X6 RH, ASSY	6170-500-4X6LH E-WASA, 4X6 LH, ASSY	6170-500-4X8RH E-WASA, 4X8 RH, ASSY	6170-500-4X8LH E-WASA, 4X8 LH, ASSY	6170-500-4X10RH E-WASA, 4X10 RH, ASSY	6170-500-4X10LH E-WASA, 4X10 LH, ASSY	6170-500-4X12RH E-WASA, 4X12 RH, ASSY	6170-500-4X12LH E-WASA, 4X12 LH, ASSY
2	6170-505-4X6	6170-505-4X6	6170-505-4X8	6170-505-4X8	6170-505-4X10	6170-505-4X10	6170-505-4X12	6170-505-4X12
4	6146-653	6146-653	6146-653	6146-653	6146-653	6146-653	6146-653	6146-653
11	6170-501-4X6RH	6170-501-4X6LH	6170-501-4X8RH	6170-501-4X8LH	6170-501-4X10RH	6170-501-4X10LH	6170-501-4X12RH	6170-501-4X12LH
12	6170-502-4X6RH	6170-502-4X6LH	6170-502-4X8RH	6170-502-4X8LH	6170-502-4X10RH	6170-502-4X10LH	6170-502-4X12RH	6170-502-4X12LH
22	6170-518X4	6170-518X4	6170-518X4	6170-518X4	6170-518X4	6170-518X4	6170-518X4	6170-518X4
31	6170-576	6170-576	6170-576	6170-576	6170-576	6170-576	6170-576	6170-576
32	5331-226	5331-226	5331-220	5331-220	5331-220	5331-220	5331-220	5331-220
33	6170-568	6170-568	6170-568	6170-568	6170-568	6170-568	6170-568	6170-568

ITEM#	6170-500-6X6RH E-WASA, 6X6 RH, ASSY	6170-500-6X6LH E-WASA, 6X6 LH, ASSY	6170-500-6X8RH E-WASA, 6X8 RH, ASSY	6170-500-6X8LH E-WASA, 6X8 LH, ASSY	6170-500-6X10RH E-WASA, 6X10 RH, ASSY	6170-500-6X10LH E-WASA, 6X10 LH, ASSY	6170-500-6X12RH E-WASA, 6X12 RH, ASSY	6170-500-6X12LH E-WASA, 6X12 LH, ASSY
2	6170-505-6X6	6170-505-6X6	6170-505-6X8	6170-505-6X8	6170-505-6X10	6170-505-6X10	6170-505-6X12	6170-505-6X12
4	6170-582	6170-582	6170-582	6170-582	6170-582	6170-582	6170-582	6170-582
11	6170-501-6X6RH	6170-501-6X6LH	6170-501-6X8RH	6170-501-6X8LH	6170-501-6X10RH	6170-501-6X10LH	6170-501-6X12RH	6170-501-6X12LH
12	6170-502-6X6RH	6170-502-6X6LH	6170-502-6X8RH	6170-502-6X8LH	6170-502-6X10RH	6170-502-6X10LH	6170-502-6X12RH	6170-502-6X12LH
22	6170-518X6	6170-518X6	6170-518X6	6170-518X6	6170-518X6	6170-518X6	6170-518X6	6170-518X6
31	6170-577	6170-577	6170-577	6170-577	6170-577	6170-577	6170-577	6170-577
32	5331-226	5331-226	5331-220	5331-220	5331-220	5331-220	5331-220	5331-220
33	6170-580	6170-580	6170-580	6170-580	6170-580	6170-580	6170-580	6170-580

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NEXT ASSEMBLY | MODEL

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE SHOWN IN INCHES.
ALL DIMENSIONS APPLY AFTER FINISH.
REMOVE BURRS

TOLERANCES:
LINEAR 2 PLACE (.XX) ±.015
3 PLACE (.XXX) ±.005
HOLE DIAMETERS ±.005
ANGULAR ±1°
MACHINE SURFACE

MATL SPEC

FILE NAME 6170-500-4X8RH

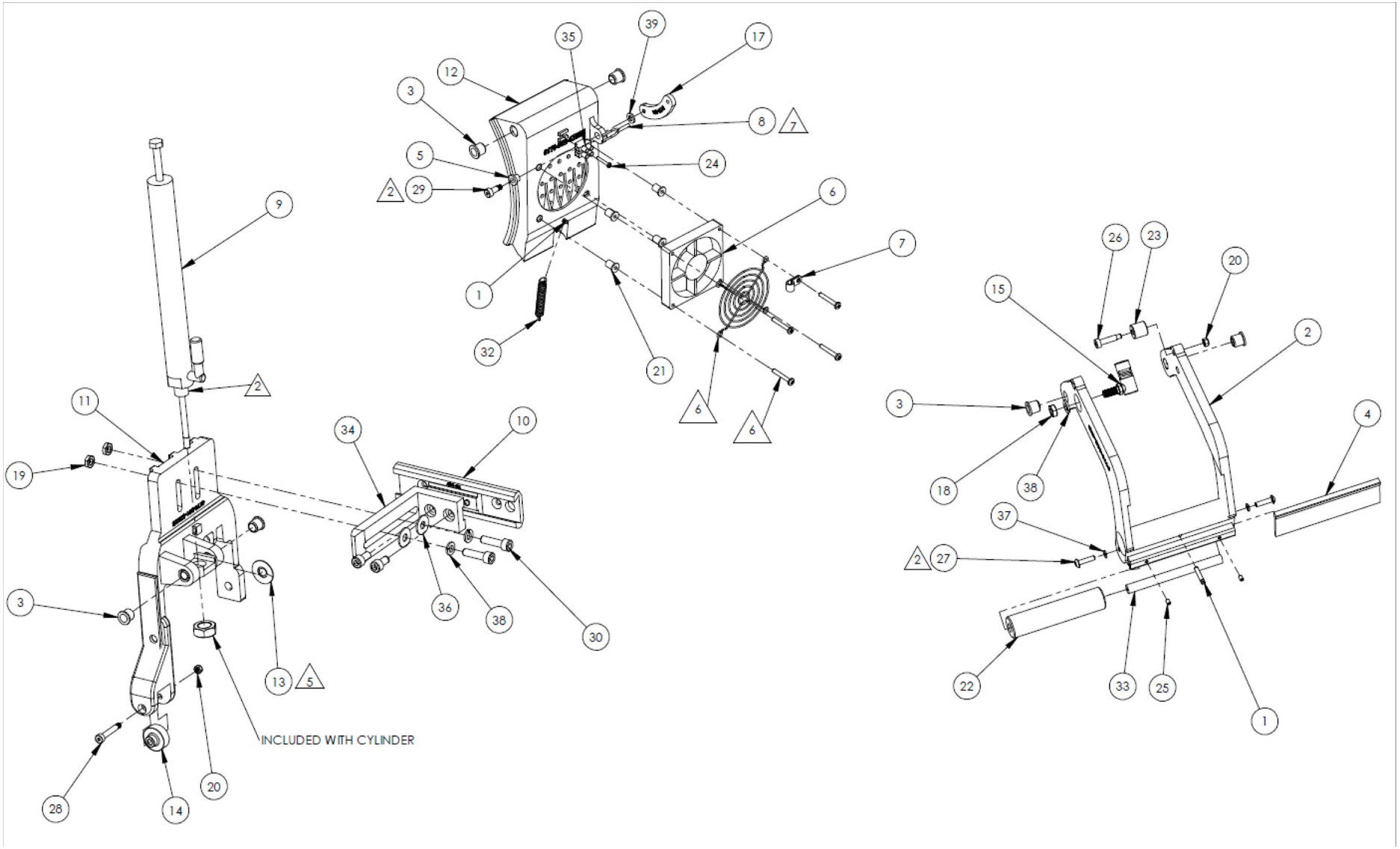
DWN	KROEPEL	05/04/10
APP	RBIXEN	7/26/10
APP	XX	XX

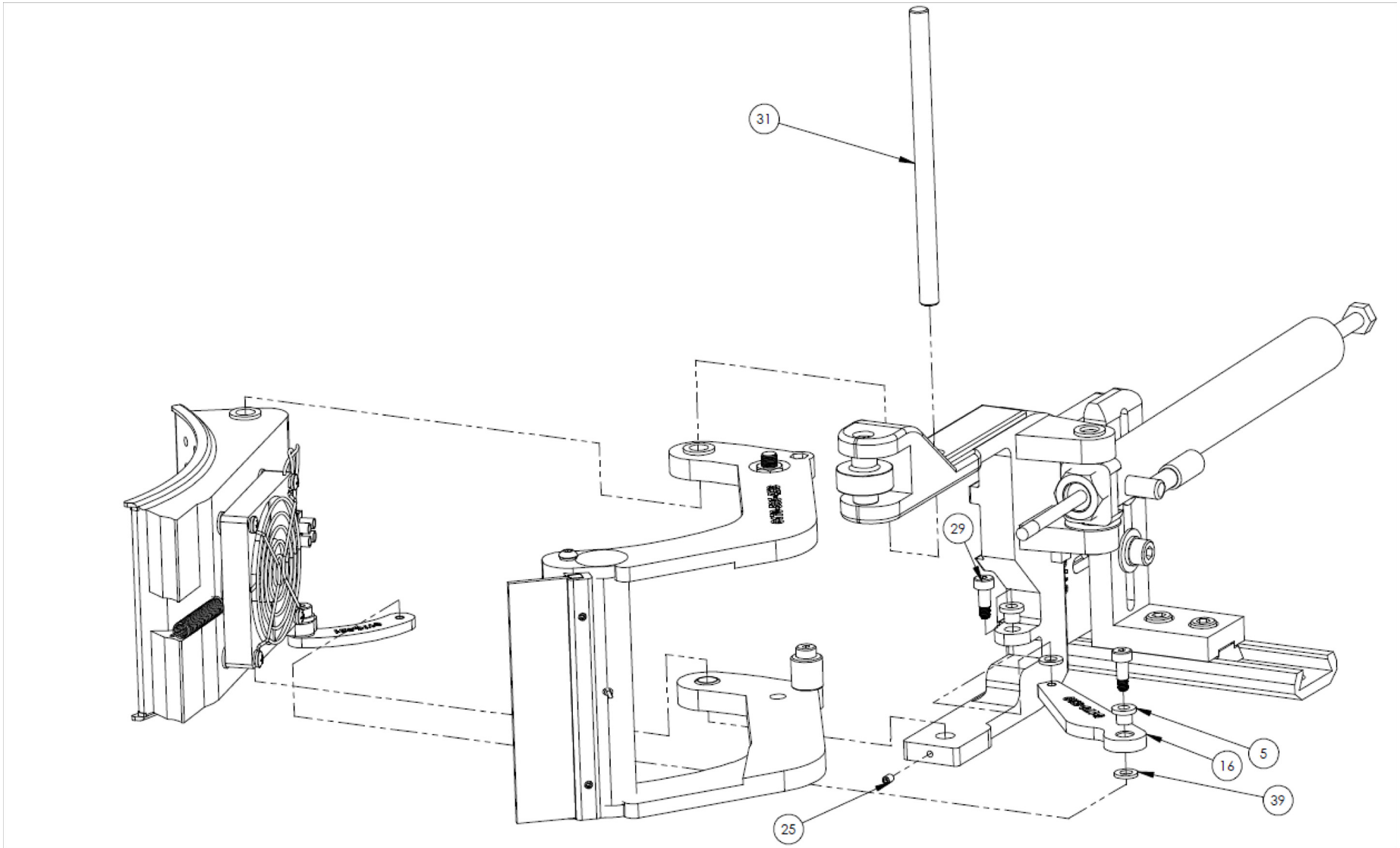
ASSY PROC
INSP PROC
CAGE CODE
SCALE: 1:4 SHEET 1 OF 3

ITW MARKING & CODING

TITLE: E-WASA ASSEMBLY

SIZE	DWG NO	REV
B	6170-500	A


INCLUDED WITH CYLINDER


31
29
5
16
39
25

14.4 System Drawings - E-Tamp/Blow

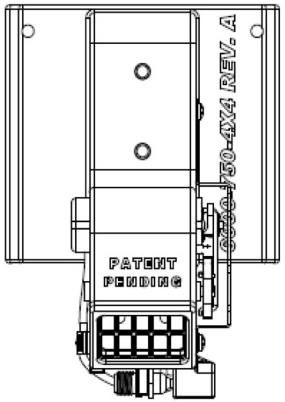
NOTES:

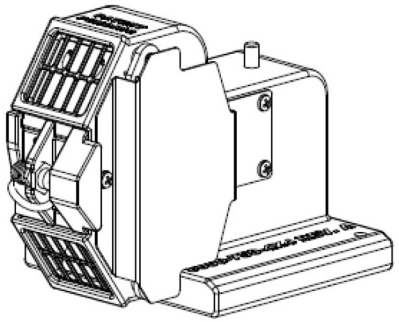
1. THIS DRAWING REPRESENTS SEVERAL DIFFERENT ASSEMBLY CONFIGURATIONS THAT DIFFER BY ONLY THE HOUSING COMPONENT (ITEM 13). REFER TO TABLE "A" FOR DETAILS.
2. ORIENTATE OPEN ENDS OF RETAINING RINGS OPPOSITE THE FLAT ON THE SHAFT.
3. ADJUST THE TOP VALVE BY PLACING THE VALVE IN ITS BLOW POSITION AND ALIGNING THE EDGE OF THE UPPER VALVE ARM SLIGHTLY BEYOND PARALLEL WITH THE TOP SURFACE OF THE HOUSING. TIGHTEN SETSCREWS IN UPPER VALVE.
4. ADJUST THE LOWER VALVE BY POSITIONING THE VALVE SUCH THAT IT CAN ACHIEVE ITS FULL RANGE OF MOTION RELATIVE TO THE EXTREME POSITIONS OF THE UPPER VALVE. TIGHTEN THE SETSCREWS IN THE LOWER VALVE.
5. PORT LABEL REGION OF PAD USING 5/32" DRILL. ANY OTHER MODIFICATIONS OF PORTING SHALL BE DOCUMENTED IN AN "NSL" DRAWING.
6. HOLES SHOWN UNPORTED.
7. COMPONENT IS ONLY USED ON THE 6000-750-4X6 ASSEMBLY AND IS NOT SHOWN ON FIELD OF DRAWING.

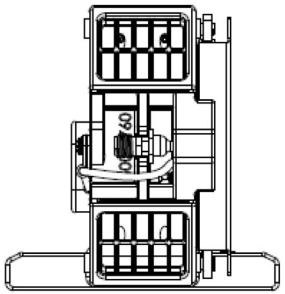
TABLE A

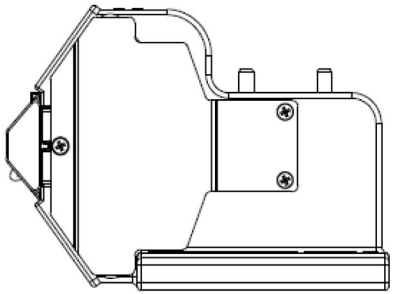
ASSEMBLY PART NUMBER	CONFIGURATION	HOUSING PART NUMBER
6000-750-4X2	4" X 2"	6000-750-4X2-1
6000-750-4X4	4" X 4"	6000-750-4X4-1
6000-750-4X6	4" X 6"	6000-750-4X6-1

REVISIONS						
REV	ECN	DESCRIPTION	DATE	APPROVED		
A	LPD00581	RELEASE TO PRODUCTION	8/24/2011	RWB	EK	SDS









ITEM	PART NO.	DESCRIPTION	Default/QTY.
28	6000-762-4X6 (7)	IMPACT PLATE, E-TAMP-BLOW, 4" X 6"	1
27	5310-417	WASHER, LOCK, #6, INT TOOTH, SS	2
26	6000-751	VALVE	2
25	6000-755	TIE ROD	1
24	6000-821	TAPE, UHMW, 3/4" SQ. X .012" THK	2
23	6000-752	SHAFT	2
22	5030-711	SCR, M4 X 0.7 X 6, SOCSET, CUP PT, SS	5
21	5151-524	SCR, M2 X 0.4 X 5, PAN HD PH, SS	2
20	5151-126	SCR, 6-32 X 3/8, PAN HD PH, SS	4
19	5092-213	SCR, 1/4-20 X 2, FL HD SOC, SS	2
18	5260-602	SCR, #4 X 3/8L, HI-LO, PAN HD PH, SS	4
17	5321-011	RETAINING RING, EXTERNAL, 3/16, ZN	4
16	6170-573	NYLON CABLE CLAMP, 1/8"	1
15	6000-520	MOTOR/CABLE ASSEMBLY	1
14	6000-757	MOTOR MOUNT	1
13	6000-750-_X_-1 (1)	HOUSING, E-TAMP-BLOW MODULE	1
12	6000-760	FAN RETAINER	1
11	6000-761	FAN GUARD	2
10	6000-521	FAN ASSY, E-TAMP-BLOW	1
9	5331-227	EXTENSION SPRING	1
8	6000-756	DRAG LINK	1
7	6000-763	COVER, LINKAGE	1
6	6000-758	COVER PLATE	1
5	5312-123	BEARING, FLANGED SLEEVE, 3/16 ID X 5/16 OD X 1/4 L	4
4	6000-753	ARM, UPPER VALVE	1
3	6000-759	ARM, MOTOR	1
2	6000-754	ARM, LOWER VALVE	1
1	6146-648	ANCHOR, EXTENSION SPRING, 6-32	1

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ALL DIMENSIONS APPLY AFTER FINISH.
REMOVE BURRS
TOLERANCES:
LINEAR 2 PLACE (.XX) ±.015
3 PLACE (.XXX) ±.005
HOLE DIAMETERS ±.005
ANGULAR ±1°
MACHINE SURFACE

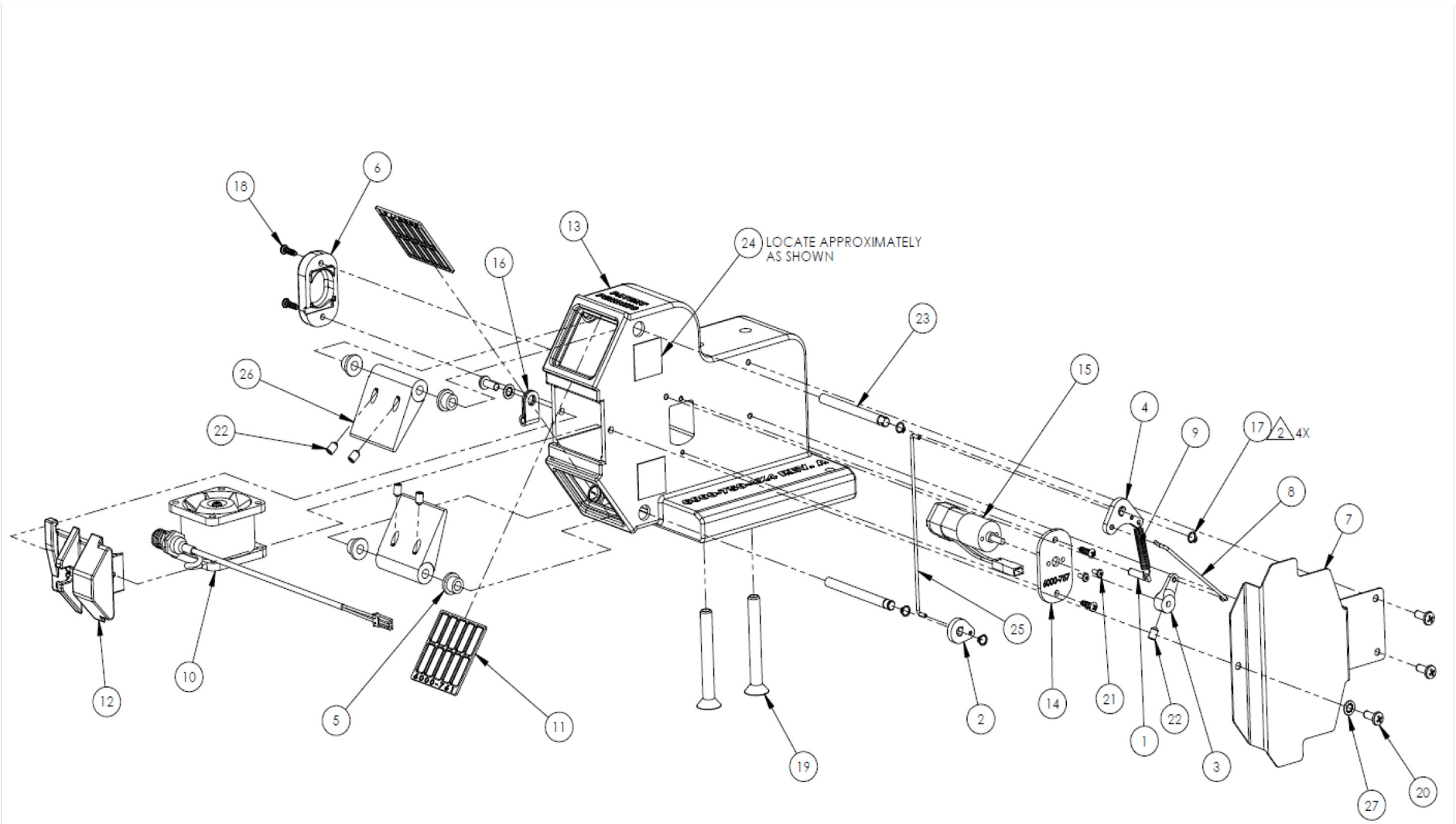
FILE NAME 6000-750
DWN R BIXEN 12/14/2010
APP R BIXEN 8/12/2011
APP E KROEPEL 8/12/2011
ASSY PROC
INSP PROC
CAGE CODE
NEXT ASSEMBLY | MODEL | MATL SPEC
SCALE: 1:2 | SHEET 1 OF 7

ITW MARKING & CODING

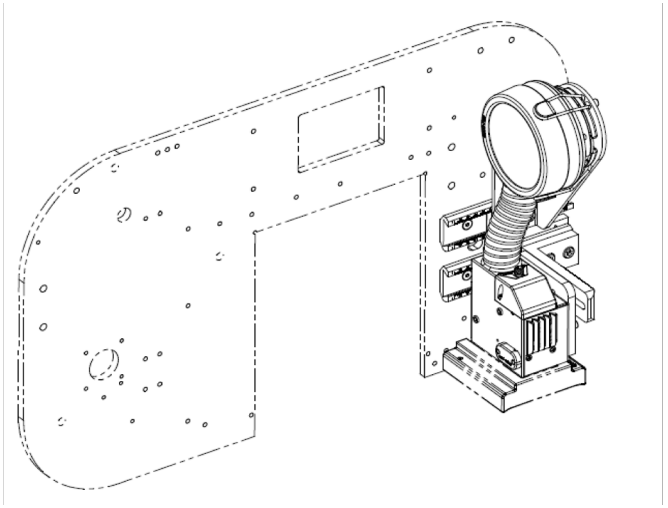
TITLE: ELECTRIC TAMP-BLOW MODULE

SIZE B | DWG NO 6000-750 | REV A

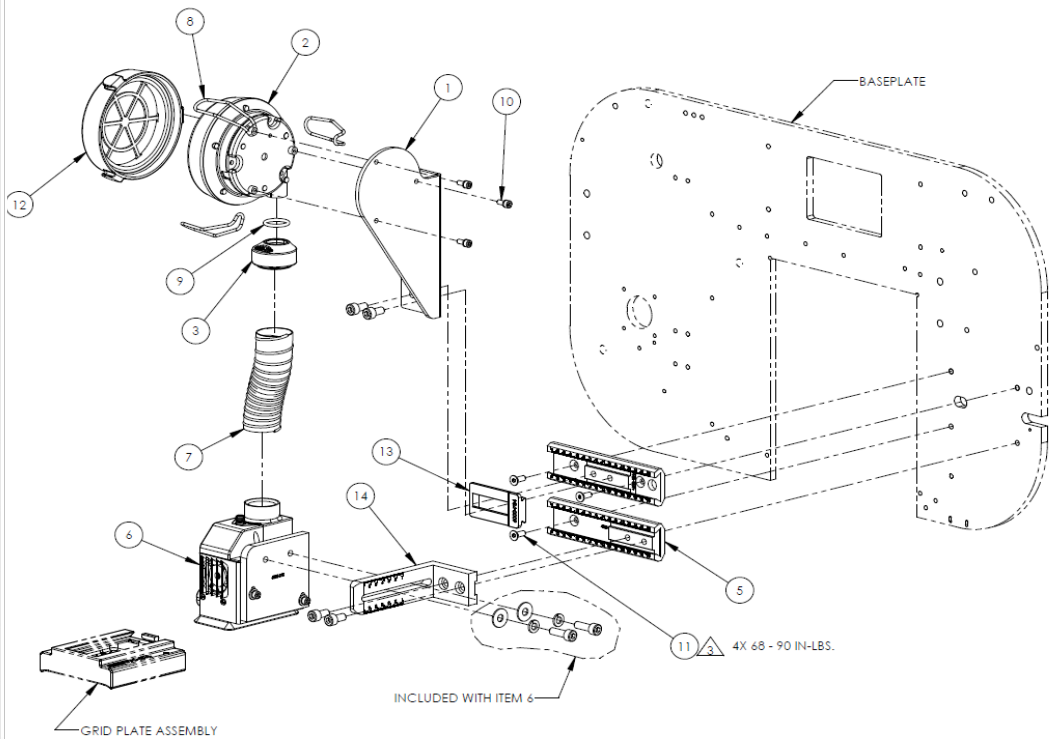
14.5 System Drawings - E-Tamp/Blow



14.6 System Drawings - E-Blow Box



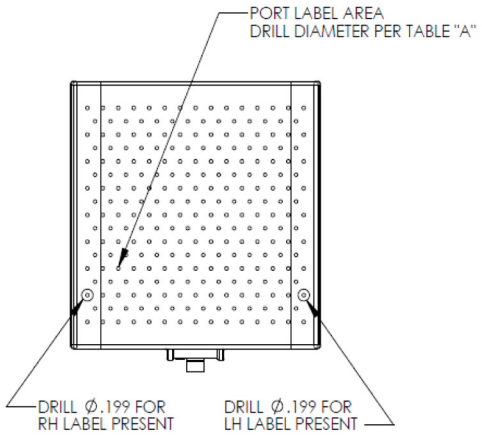
ITEM	PART NO.	DESCRIPTION	QTY.
14	4600-642	TAMP APPLICATOR MOUNTING BRACKET	1
13	6000-784	SHIM, DOVETAIL MOUNT	1
12	6000-782	SCREEN ASSEMBLY	1
11	5091-713	SCR, M6 X 1 X 16, FL HD SOC, SS	4
10	5081-727	SCR, M5 X 0.8 X12, SHCS, SS	3
9	5323-034	O-RING, 7/8" ID X 1-1/8" OD X 1/8" W, BUNA-N	1
8	5323-035	O-RING, 2" ID X 2-1/4" OD X 1/8" W, NEOPRENE	3
7	6000-780	HOSE, 1-1/2" I.D.	5 INCHES
6	6000-770	ELECTRIC BLOW BOX MODULE	1
5	4600-630	DOVETAIL MOUNTING HARDWARE	2
4	6000-513 △5	CABLE, VACUUM FAN	1
3	6000-779	BUSHING, BLOWER	1
2	6000-523	BLOWER, HIGH PRESSURE, 24 VDC BRUSHLESS	1
1	6000-778	BLOWER BRACKET	1

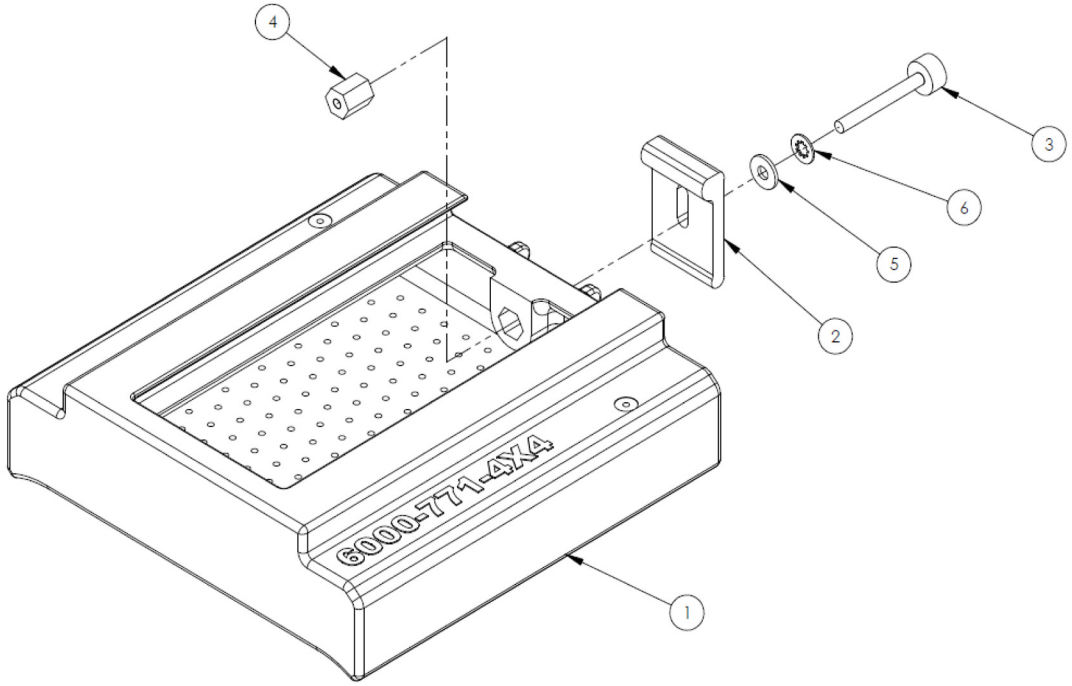


14.7 E-Blow Box Grid Plate

TABLE A.

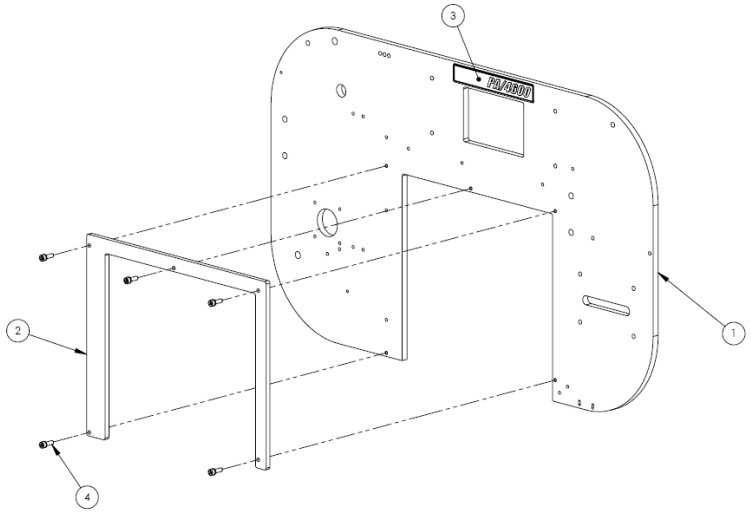
HOLE QUANTITY	DRILL DIAMETER (INCH)
16	7/32
18	13/64
22	3/16
25	11/64
30	5/32
35	9/64
50	1/8
60	7/64
80	3/32
120	5/64
180	1/16



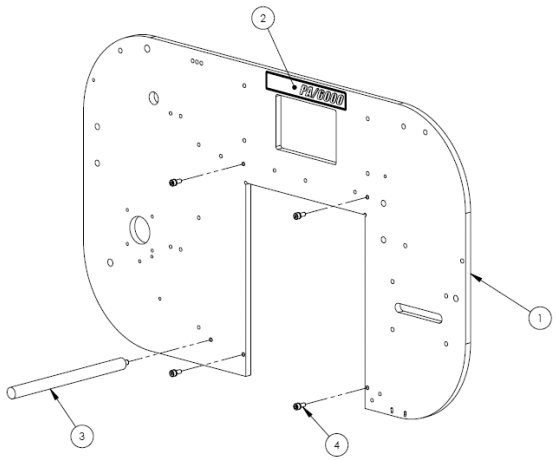


ITEM	PART NO.	DESCRIPTION	QTY.
6	5310-404	WASHER, LOCK, #4 INT. TOOTH, ZN	1
5	5310-037	WASHER, FLAT, #4, SS	1
4	5350-007	STANDOFF, 4-40 X 5/16, 1/4" OD, HEX	1
3	5210-004	SCR, THUMB, 4-40 X 1", SS	1
2	6000-773	PAWL	1
1	6000-771-4X4-1	GRID PLATE, 4X4	1

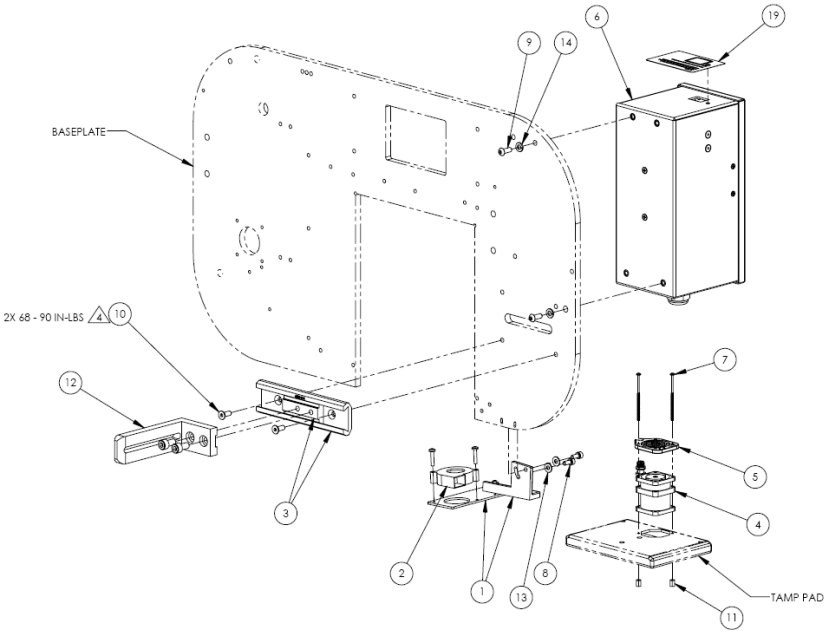
14.8 System Drawings - E-Series Components



ITEM	PART NO.	DESCRIPTION	MFR. / VENDOR	QTY.
4	5081-728	SCR, M5 X 0.8 X18, SHCS, SS		5
3	4600-850	PA/4600 NAMEPLATE DECAL		1
2	4600-609	PRINT ENGINE SPACER		1
1	4600-600	PA/4600 BASEPLATE		1



ITEM	PART NO.	DESCRIPTION	MFR. / VENDOR	QTY.
4	5081-727	SCR, M5 X 0.8 X12, SHCS, SS		4
3	4600-643	URETHANE SPINDLE		1
2	6000-850	PA/6000 NAMEPLATE DECAL		1
1	6000-600	PA/6000 BASEPLATE		1

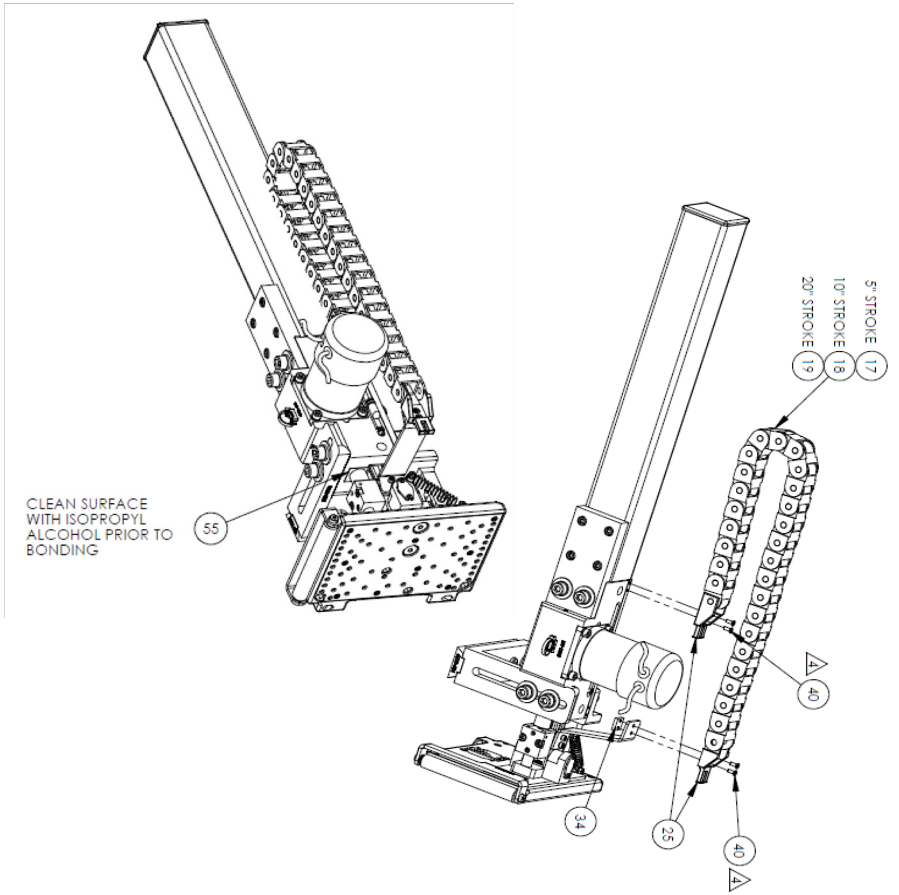


ITEM	PART NO.	DESCRIPTION	Default/QTY.	
19	6000-642	OVERLAY, MOTOR CONTROL MODULE	1	
18	6000-513	CABLE, VACUUM FAN	1	5 7
17	6000-512	CABLE, AC POWER, 3-BRANCH	1	7
16	6000-510	CABLE ASSY, E-TAMP CONTROL	1	5 7
15	6000-509	CABLE, HOME SENSOR INTERFACE	1	6 7
14	5310-313	WASHER, SPRING, 1/4", SS	2	
13	5310-030	WASHER, FLAT, #10, SS	2	
12	4600-642	TAMP APPLICATOR MOUNTING BRACKET	1	
11	5350-007	STANDOFF, 4-40 X 5/16, 1/4" OD, HEX	2	
10	5091-713	SCR, M6 X 1 X 16, FL HD SOC, SS	2	
9	5241-717	SCR, M6 X 1 X 16, BUT HD CAP, SS	2	
8	5081-727	SCR, M5 X 0.8 X12, SHCS, SS	2	
7	5151-508	SCR, 4-40 X 2-1/2", PAN HD PH, SS	2	
6	6000-550	MOTOR CONTROL MODULE	1	6
5	6000-654	FAN GUARD	1	
4	6000-507	FAN ASSY, 2-STAGE	1	6
3	4600-630	DOVETAIL MOUNTING HARDWARE	1	
2	6000-508	BLOWER ASSY	1	5
1	6000-650R	AIR ASSIST MOUNT ASSY, RIGHT	1	3

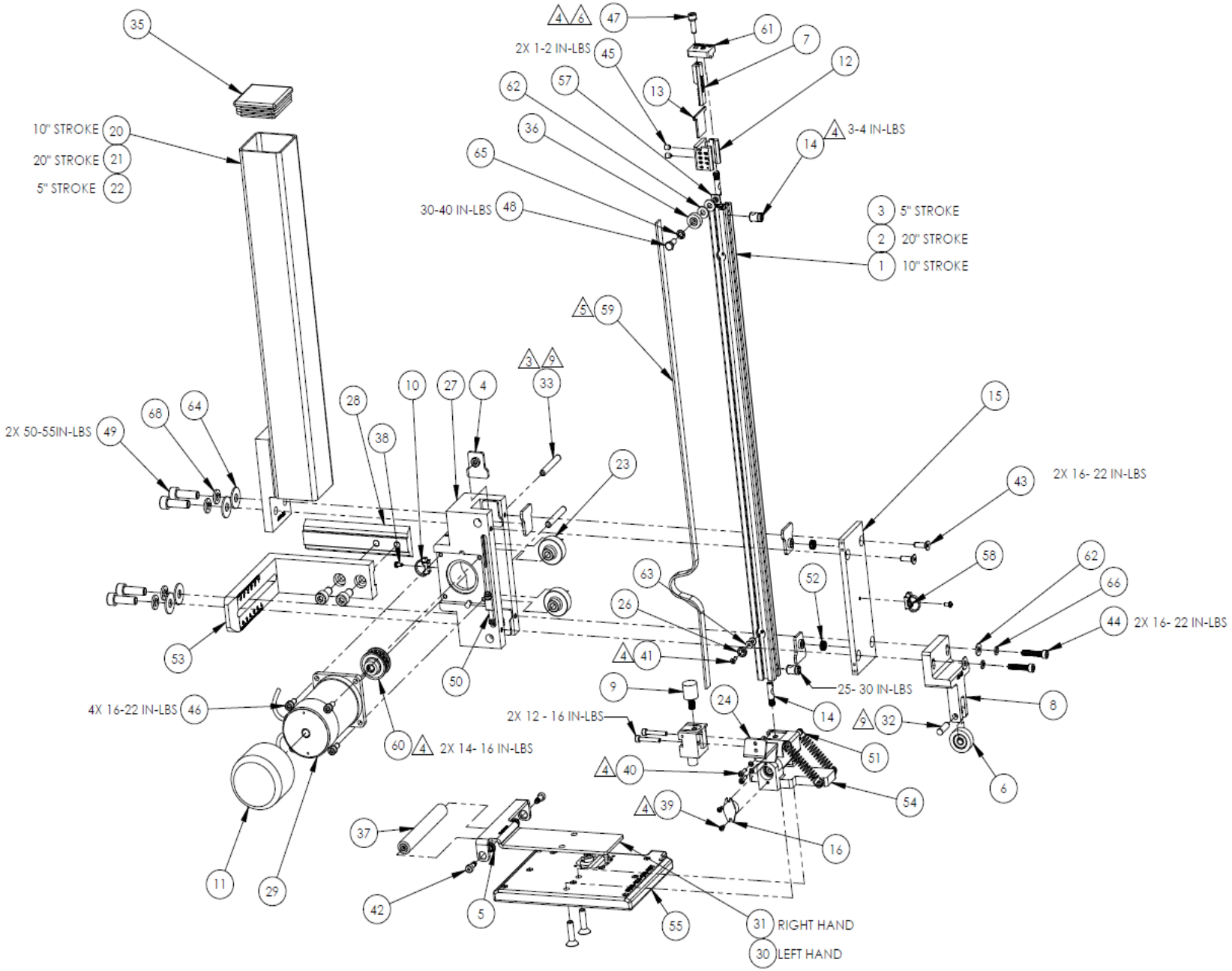
14.9 High Speed Tamp

54	6000-680	TAMP PAD MOUNT ASSY, HST	1	1	1	1	1	1
53	6000-685	TAMP APPLICATOR MNT BRACKET, EXT	1	1	1	1	1	1
52	5331-002	SPRING, WAVE, .375 O.D. X .15 L, SS	2	2	2	2	2	2
51	5331-228	SPRING, EXT, .375" DIA X 1" LNG	2	2	2	2	2	2
50	4600-906_ITEM-1	SENSOR, CYLINDER HOME	1	1	1	1	1	1
49	5081-730	SCR, M8 X 1.25 X 25, SHCS, SS	4	4	4	4	4	4
48	5072-502	SCR, M5 X.8 X 12, HEX HD CAP, SS	1	1	1	1	1	1
47	5081-728	SCR, M5 X 0.8 X18, SHCS, SS	1	1	1	1	1	1
46	5081-727	SCR, M5 X 0.8 X12, SHCS, SS	4	4	4	4	4	4
45	5030-712	SCR, M5 X 0.8 X 6, SOCSET, CUP PT, SS	2	2	2	2	2	2
44	5081-752	SCR, M5 X 0.8 X 25, SHCS, SS	2	2	2	2	2	2
43	5091-712	SCR, M5 X 0.8 X 16, FL HD SOC, SS	2	2	2	2	2	2
42	5250-035	SCR, M4 X 0.7 X 8, SHLDR, SOC HD, SS	2	2	2	2	2	2
41	5101-601	SCR, M3 X 0.5 X 8, FL HD PH, SS	5	5	5	5	5	5
40	5081-003	SCR, M3 X 0.5 X 10MM, SHCS, SS	2	2	2	2	2	2
39	5151-513	SCR, M2.5-.45X6, PAN HD, PHIL, SS	2	2	2	2	2	2
38	5152-006	SCR, 4-40 X 1/4, PAN HD, SEMS, PH	2	2	2	2	2	2
37	6000-682	ROLLER, HIGH SPEED TAMP	1	1	1	1	1	1
36	6000-638	ROLLER / BUMPER	1	1	1	1	1	1
35	6000-632	PLUG, 2-INCH SQUARE	1	1	1	1	1	1
34	4600-658	PLATE, IGUS MOUNT	1	1	1	1	1	1
33	5315-105	PIN, DOWEL, .250 X 1.75 L, SS	2	2	2	2	2	2
32	5315-110	PIN, DOWEL, .2487 X .75 L, SS	1	1	1	1	1	1
31	6000-683RH	MOUNT, ROLLER, RH, HIGH SPEED TAMP	1	-	1	-	1	-
30	6000-683LH	MOUNT, ROLLER, LH, HIGH SPEED TAMP	-	1	-	1	-	1
29	4600-503	MOTOR KIT, BLDC	1	1	1	1	1	1
28	6000-686	MALE DOVETAIL, EXT	1	1	1	1	1	1
27	6000-621	MAIN BODY, ACTUATOR	1	1	1	1	1	1
26	6145-667	MAGNET, RARE EARTH	1	1	1	1	1	1
25	4600-514	IGUS MOUNTING BRACKETS (SET)	1	1	1	1	1	1
24	4600-611	IGUS MOUNT, TAMP CYLINDER	1	1	1	1	1	1
23	6000-623	IDLER ROLLER	2	2	2	2	2	2
22	6000-631NSL-5	GUARD ASSY, NON-STANDARD, 5"	1	1	-	-	-	-
21	6000-631L	GUARD ASSY, 20"	-	-	-	-	1	1
20	6000-631	GUARD ASSY	-	-	1	1	-	-
19	6000-515_41	ENERGY CHAIN, IGUS	-	-	-	-	33"	33"
18	6000-515_27	ENERGY CHAIN, IGUS	-	-	22"	22"	-	-
17	6000-515_21	ENERGY CHAIN, IGUS	17"	17"	-	-	-	-
16	6000-689	DAMPER, HIGH SPEED TAMP	1	1	1	1	1	1
15	6000-622	COVER PLATE, ACTUATOR	1	1	1	1	1	1
14	6000-635	CONNECTOR ASSY, MAYTEC	2	2	2	2	2	2
13	6000-629	CLAMP PLATE	1	1	1	1	1	1
12	6000-628	CLAMP	1	1	1	1	1	1
11	6000-634 (6)	CAP, VINYL, ROUND	1	1	1	1	1	1
10	6150-580	CABLE TIE, 87" DIA. BLK NYLON	2	2	2	2	2	2
9	6150-601	BUMPER, 5/8" MALE, POLYURETHANE	1	1	1	1	1	1
8	6000-681	BRACKET, HOME ROLLER	1	1	1	1	1	1
7	6000-626	BELT TENSIONER	1	1	1	1	1	1
6	6000-688	BEARING, POLY COVERED	1	1	1	1	1	1
5	6000-687	BEARING, BALL, 5MM ID, 9MM OD	2	2	2	2	2	2
4	6000-624	BEARING PAD	8	8	8	8	8	8
3	6000-630NSL-5	ACTUATOR EXTRUSION, NON-STANDARD, 5" STROKE	1	1	-	-	-	-
2	6000-630L	ACTUATOR EXTRUSION	-	-	-	-	1	1
1	6000-630	ACTUATOR EXTRUSION	-	-	1	1	-	-
ITEM	PART NO.	DESCRIPTION	6000-620XSR-HST	6000-620XSL-HST	6000-620X10R-HST	6000-620X10L-HST	6000-620X20R-HST	6000-620X20L-HST

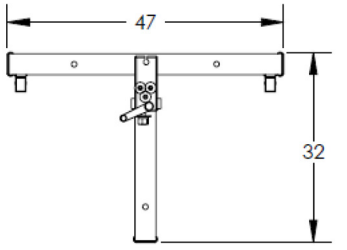
68	5310-308	WASHER, SPLIT-LOCK, 5/16", SS	4	4	4	4	4	4
67	5310-315	WASHER, SPLIT LOCK, #4, SS	2	2	2	2	2	2
66	5310-318	WASHER, SPLIT LOCK, #10, SS	2	2	2	2	2	2
65	5310-409	WASHER, LOCK, #10 INT TOOTH	1	1	1	1	1	1
64	5310-041	WASHER, FLAT, 5/16, SS	4	4	4	4	4	4
63	5310-037	WASHER, FLAT, #4, SS	2	2	2	2	2	2
62	5310-030	WASHER, FLAT, #10, SS	4	4	4	4	4	4
61	6000-627	TOP PLATE, ACTUATOR	1	1	1	1	1	1
60	4600-648	TIMING PULLEY, 15 TEETH	1	1	1	1	1	1
59	6000-633	TIMING BELT, XL, 240 GROOVES X .375" W	1/4	1/4	1/2	1/2	1	1
58	6105-423	TIE MOUNT, #4 SCREW	2	2	2	2	2	2
57	6000-636	THREADED PLATE, M5, MAYTEC	1	1	1	1	1	1
56	6000-821	TAPE, UHMW, 3/4" SQ. X .012" THK	1	1	1	1	1	1
55	6000-610-4X6-HST	TAMP PAD, HIGH SPEED TAMP	1	1	1	1	1	1
ITEM	PART NO.	DESCRIPTION	6000-620XSR-HST	6000-620XSL-HST	6000-620X10R-HST	6000-620X10L-HST	6000-620X20R-HST	6000-620X20L-HST

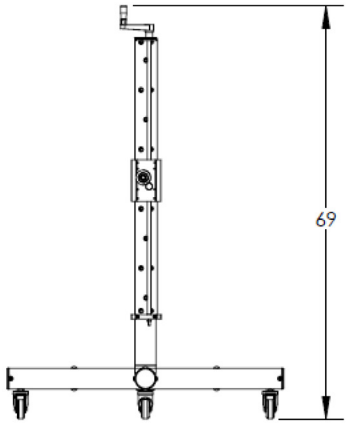


System Drawings


35
10" STROKE 20
20" STROKE 21
5" STROKE 22
4 6 47
2X 1-2 IN-LBS 45
61
7
12
62
57
13
36
65
14
4 3-4 IN-LBS
30-40 IN-LBS 48
3 5" STROKE
2 20" STROKE
1 10" STROKE
5 59
3 9 33
10
27
4
28
38
2X 50-55IN-LBS 49
68
64
23
15
43
2X 16- 22 IN-LBS
58
62
66
63
52
26
44 2X 16- 22 IN-LBS
53
4 41
50
9
24
14
25- 30 IN-LBS
8
4X 16-22 IN-LBS 46
2X 12 - 16 IN-LBS
9 32
60 4 2X 14- 16 IN-LBS
51
4 40
6
54
4 39
37
16
11
29
42
5
55
31 RIGHT HAND
30 LEFT HAND

14.10 System Drawings - Optional "Chi" Stand





ITEM	PART NO.	DESCRIPTION	QTY.
7	6170-459	PLUG, LIQUID TIGHT	6
6	5310-901	WASHER, NORD-LOCK 3/4	1
5	6160-332	SPACER, 1/2" I.D. X 3/4" O.D. X 1/4" L	3
4	5305-108	NUT, 12-13 HEX, SS	3
3	5310-312	WASHER, SPLIT LOCK, 1/2, SS	3
2	6160-330	CASTER, STEEL SWIVEL, TOTAL LOCK	3
1	6160-329 Base	STAND, TBASE & COLUMN, GRAY	1

Recorded By:	Shad Schoen	Date:	10/12/06	Title:	Stand, Universal, Gray, ALP
Checked By:		Date:			
Checked By:		Date:		Drawing No: 6160-329	REV. B

15.0 Declaration of Conformity

DECLARATION OF CONFORMITY

Illinois Tool Works, Marking & Coding Division, hereby declares that the equipment specified below has been tested and found compliant to the following directives and standards-

Directives:

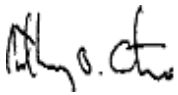
- EMC 89/336/ECC
- Low Voltage 73/23/EEC

Equipment Type:

Printer / Applicator

Model Number:

PA/4600E, PA/6000E, LS4600, and LS6000



Bruce Castro
Quality/Safety Manager
Illinois Tool Works (Diagraph/FoxJet)
1 Missouri Research Park Dr.
St. Charles, MO 63304
USA

Standards:

- Conducted Emissions (EN55 011)
- Harmonics (EN 61000-3-2)
- Flicker (EN 61000-3-3)
- Radiated Emissions (EN55 011)
- Electrostatic Discharge (ESD) (EN 61000-4-2)
- Radiated Immunity (EN 61000-4-3)
- Fast Transient Burst (EN 61000-4-4)
- Surges (EN 61000-4-5)
- Conducted Immunity (EN 61000-4-6)
- Power Frequency Magnetic Field (EN 61000-4-8)
- Voltage Dips and Interrupts (EN 61000-4-11)
- Information Technology (EN60950-1:2001)

CE