

LM4012TTPAS TABLE-TOP PRINT & APPLY LABEL APPLICATOR SYSTEM OPERATIONS MANUAL



Manufactured in USA by: LabelMill, Inc. 2416 Jackson St. Savanna, IL 61074 (800) 273-4707 info@labelmill.com www.labelmill.com

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SECTION 1

SYSTEM OVERVIEW

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INTRODUCTION

The **LabelMill LM4012TTPAS** is a microprocessor controlled, variable speed, heavy-duty industrial table top thermal printer/label application system. Label dispensing to 1200 linear inches of label web per minute is combined with exceptional label position repeatability. The unit will print and apply high quality labels and bar codes to your product at print speeds up to 14"/second and apply at speeds up to 60 labels/min. Outboard-supported drive roller to minimize vibration induced label misplacement. Hybrid-Servo motor drive. Hardened steel peeler plate for reduced wear. Adjustable label sensor for expediting changeover without sacrificing accuracy. The **LM4012TTPAS** will accept a wide variety of label sizes without the need for part changes. This system can be quickly and easily configured to meet your labeling needs. There is no need for multiple machines with this design. The unique rail mounted application modules makes changeover from one module to another in 5 minutes or less.

STANDARD FEATURES

- Modular Design
- Easy Set-Up
- Photo Electric Label Sensor

OPERATIONAL APPLICATOR MODULES

- Tamp Applicator
- Flag Applicator
- Round Product Applicator

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LM4012TTPAS SPECIFICATIONS

LABEL SPEED	0 - 1200 linear inches of web per minute standard		
LABEL ROLL CAPACITY	12" Max. outside diameter wound on a 3" diameter core. Die cut waste removed with a minimum of 1/8" separation between labels in running direction.		
LABEL SIZE	Minimum: 1" wide x 1/2" long - Maximum: 4-1/4" wide x 10" long		
LABEL PLACEMENT ACCURACY	Up to 1/32" (1mm) when labels are produced to specifications and product handling is controlled.		
INTERFACE SENSORS	Product Sensor-Photo Eye-Limit Switch, Label Sensor Switch, Head Up Limit Switch, and Round Product Tamp Switch.		
ELECTRICAL	100-240 V AC/60 Hz - 5A		
AIR REQUIREMENT	80p.s.i./3 cfm		
SIZE	24"H x 18"W x 34"D		
WEIGHT	75 lb.		
ENVIRONMENT	Operating Temp. 50-95 F. (10-15 C.) - 15-85% RH. non-condensing		

*Options Available

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INVENTORY LIST

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Standard Equipment – LM4012TTPAS

QTY.	Description
1	Print & Apply Base System Assembly
1	12" Diameter Blue Plastic Spools w/ Quick Release Collar
1	Power Cord
1	Photoelectric Label Sensor
1	Thermal Transfer Print Engine w/ Printer Interface Cable
1	Take-up Spool Clip
1	Label Sensor
2	Module Mounting Knobs

Tamp Module – TTPAS-TM

QTY.	Description
1	Tamp Module Assembly

Flag Module – TTPAS-FM

QTY.	Description
1	Flag Module Assembly

Round Product Module – TTPAS-RM

QTY.	Description
1	Round Product Module Assembly

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USER RESPONSIBILITY

This equipment will perform in conformity with the description thereof contained in this manual and accompanying labels and/or inserts when installed, operated, maintained, and repaired in accordance with the instructions provided. This equipment must be checked periodically. Defective equipment should not be used. Parts that are broken, missing, plainly worn, distorted, or contaminated should be replaced immediately. Should such repair or replacement become necessary, we recommend that a request for service advice be made.

This equipment or any of its parts should not be altered without the prior written approval of LABELMILL. The user of this equipment shall have the sole responsibility for any malfunctions which results from improper use, faulty maintenance, damage, improper repair or alteration by anyone other than LABELMILL or a service facility designated by LABELMILL.

SAFETY

Only qualified personnel should use this equipment.

Before installing, inspecting or servicing equipment, turn OFF all power and air controls at the source and lock out in accordance with OSHA Standards.

Be sure all external electrically conductive parts are connected to a good electrical ground.

Never handle live electrical equipment with bare hands while standing in water, or while hands and feet are wet. Dangerous electrical shock can result.

Whenever the equipment is unattended, turn off all control and power supply switches.

Keep equipment clean and in good operating condition. Promptly repair or replace all worn or damaged hoses, cables or parts.

Do not make any repairs to equipment unless you are fully qualified.

This equipment contains fast moving parts that may move without warning. Keep hands, loose hair and clothes clear of machines at all times.

Never place hands or any other body parts under the label platen at any time.

This equipment uses compressed air. Proper care and maintenance must be taken when handling compressed air and its components.

These precautions are further detailed and explained where specifically required in this manual.

READ AND UNDERSTAND THESE INSTRUCTIONS

Protect yourself and others. Be sure this information is read and understood by all operators.

ELECTRICAL SHOCK CAN KILL!

Do not touch live electrical parts with bare skin or work with gloves or wet clothing.

NOISE CAN DAMAGE HEARING!

Wear proper ear protection.

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SETUP & OPERATION

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COMPONENT DESCRIPTION

(Configured with Round Module Shown Below)



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Step	Operation
1	Load web onto label storage spool (A) so it unloads in a clockwise direction.
2	Route web around guide roller (B) and brake arm (C) to print engine (D).
3	Web through print engine, around idle roller (E) and back to idle roller (F).
4	Web through inhibit assembly rollers (G), around idle roller (H), and through wiper (I)
5	Web through peeler arm assembly, and around peeler plate (J).
6	Turn the Pinch Roller Knob (K) 180deg. to open the pinch roller from the drive roller.
7	Feed the web over the top pinch roller (L). Next, slip the web between the pinch roller and the drive roller (M). Continue on by wrapping the web under the drive roller.
8	Finish the process by loading the waste backing paper onto the web take-up spool (N). The take-up spool rotates in a clockwise direction.
9	Turn the Pinch Roller Knob (K) 180deg. so that the pinch roller and drive roller contact each other. When the roller is closed, roll the knob back and forth between your fingers so that you can feel a "flat" on the shaft. NOTE: This must be done to ensure proper label feeding.
10	Adjust the plastic web guide clips so the web is guided straight and even. Make sure the clips do not bind the web. Close wiper assemblies before peel arms and at peel plate.

** To remove the label storage spool (A), turn the spool lock counter-clockwise (approx. 15 deg.) until you reach a stop. The spool will now slide off. To secure the spool, simply turn the spool lock clockwise until snug. DO NOT over tighten the spool lock!







Step	Operation
1	Load web onto label storage spool (A) so it unloads in a clockwise direction.
2	Route web around guide roller (B) and brake arm (C) to idle roller (D).
3	Web around idle roller (E), and through wiper (F) up to peeler arms.
4	Web through peeler arm assembly, and around peeler plate (G).
5	Turn the Pinch Roller Knob (H) 180deg. to open the pinch roller from the drive roller.
6	Feed the web over the top pinch roller (I). Next, slip the web between the pinch roller and the drive roller (J). Continue on by wrapping the web under the drive roller.
7	Finish the process by loading the waste backing paper onto the web take-up spool (K). The take-up spool rotates in a clockwise direction.
8	Turn the Pinch Roller Knob (H) 180deg. so that the pinch roller and drive roller contact each other. When the roller is closed, roll the knob back and forth between your fingers so that you can feel a "flat" on the shaft. NOTE: This must be done to ensure proper label feeding.
9	Adjust the plastic web guide clips so the web is guided straight and even. Make sure the clips do not bind the web. Close wiper assemblies before peel arms and at peel plate.

** To remove the label storage spool (A), turn the spool lock counter-clockwise (approx. 15 deg.) until you reach a stop. The spool will now slide off. To secure the spool, simply turn the spool lock clockwise until snug. DO NOT over tighten the spool lock!

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Z-Z-ELS-100 LABEL SENSOR ADJUSTMENT

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*Note that in legacy systems, the control must be programmed for the label sensor to work properly. The Z-Z-ELS100 label sensor must be set to the "Clear" setting in the Label Sensor menu.



LABEL PLACEMENT IN RELATION TO THE PEELER PLATE

Loosen the lock screw on the photo eye rail assembly and slide it forward or backward on the rails to achieve placement of the label with the peeler plate nose (+/- 1/32). After adjustment, cycle the labeler to verify new label placement.

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Z-Z-ELS100 LABEL SENSOR CALIBRATION INSTRUCTIONS

Teach Mode Setup Procedure:

- 1. Place the web liner in the sensor (remove a label or use the label gap). Press the [+] and [-] buttons at the same time for less than one second. The red LED will begin to flash.
- Place the web liner, <u>with a label</u>, in the sensor. Press the [-] button for less than one second. The red LED will stop flashing.
- 3. The automatic setup is complete. (Steps 1 and 2 can be reversed)



Manual Sensitivity Adjustments:

The "Teach Mode Setup" should always be successful. However, the sensitivity can be adjusted manually by pressing the [+] or [-] buttons. The red LED will flash with each button press.

Locking/Unlocking the Setup:

Press and hold the [+] and [-] buttons for three seconds (but less than six seconds). The red LED will change state. When the buttons are released, the red LED will then indicate locked (red LED on) or unlocked (red LED off).

Light/Dark Switching:

Press and hold the [+] and [-] buttons for six seconds. When the mode is changed, the red LED will begin to flash slowly until the buttons are released.

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OPTIONAL MECHANICAL LABEL SENSOR

The Mechanical Clear Label Detector comes preset from the factory and should require no adjustment. If there is a need to readjust the sensor, the following is a guide: Move the label stock until the gap between the labels is centered under the Star Wheel and the star wheel is laying flat on the label stock as shown above. This can be accomplished by unwinding the label storage spool enough to make the web "loose". To test adjustment, move the label stock gap back and forth under the photo eye slowly. The STAR WHEEL catches the edge of the label stock and flips from one flat to the next. The STAR WHEEL detects the gap between the labels by catching the edge of the label as it is fed. When the star wheel catches the edge of the label, the wheel will quit sliding and rotate. The diameter across the flats of the star wheel is smaller than the diameter across the points. When the star wheel is smaller than the label stock.

If double or multiple label feeding occurs, and the micro switch is always activated, loosen the adjustment nuts and slide the micro switch up away from the label.

If double or multiple label feeding occurs and the micro switch never activates, loosen the adjustment nuts and slide the micro switch down towards the label.

LABEL PLACEMENT IN RELATION TO THE PEELER PLATE:

• Loosen the lock screw on the **Mechanical Label Sensor Assembly** and slide it forward or backward on the adjustment rails to achieve placement of the label with the peeler plate nose (+/- 1/32). After adjustment, cycle the labeler to verify new label placement.

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OPTIONAL ELECTRONIC CLEAR LABEL DETECTOR (ECLD)

Description

The Z-Z-ELC300 Label Sensor uses capacitive technology to sense label edges for registration, counting, splice detection or other applications. Capacitive technology provides the fastest and most accurate edge detection method available. The Z-Z-ELC300 has an integral cable, and uses an M12 connector.

Setup

- 1. Web must remain in contact with the base/mounting plate during operation.
- 2. Label must pass under the [-SENSOR-] indicator.
- 3. Small labels should be centered under the [-SENSOR-] indicator.
- 4. When properly setup, the lights in the gray LABEL area will be on when a label is present, and lights in the gray GAP area will be on when a gap is present.
- 5. All lights flashing rapidly indicates over-current condition, likely caused by wiring error.

AutoGap Setup

- 1. Start with High Gain off.
- 2. Remove a label from the web.
- 3. Place the area of the missing label in the sensor (liner only).
- 4. Press for at least 1 second (lights begin to move back and forth).
- 5. Release the button.
- 6. Setup complete.
- 7. Verify the light bar goes into the gray GAP area during gaps between labels and into the gray LABEL area during labels. If necessary, use arrow keys to adjust manually. If the light bar is not moving at least three or four lights, turn on High Gain.

Manual Adjustment

When running, the light bar should extend from the gray LABEL area to the gray GAP area. The up and down arrows can be used to fine tune the adjustment if necessary. If the adjustments reach the end of their range, the last light in the GAP or LABEL area will flash three times when the button is pressed. The light bar may move toward LABEL while the Up arrow is pressed. This is because the sensor body is deflecting and making the slot smaller. It will return when the button is released and will not affect setup.

Sensor Configuration

Light/Dark Switching In "Light" switching mode, the sensor outputs are active/on during the gap. In "Dark" switching mode, the sensor outputs are active/on during the label. Switch modes by pressing the button. Do not change while running.

High Gain Mode

Only use High Gain mode when necessary. Very small or very thin labels may not consistently move the light bar between the LABEL and GAP areas. In this case, use the High Gain mode by pressing the button. Do not change while running. AutoGap must be performed after activating High Gain.

Metal/Foil Label Setup

AutoGap Setup on a missing label area may not work reliably for rectangular metallic labels (foil or metalized Mylar). In this case, place an actual gap in the sensor (use alignment groove on the sensor). Then hold the Gap button down for AutoGap as above. Move labels slowly through the sensor. Use manual adjustments if necessary to ensure the light bar is in the LABEL area during labels and GAP area during gaps.

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O HIGH GAIN
GAP 0000000



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To reduce waste web tension, move the lock collar 1/32" away from the take-up spool. To increase web tension, move the lock collar 1/32" toward the take-up spool.

CAUTION! Too much web tension may cause web breakage, label drifting, or premature failure of the take-up spool assembly.

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SECTION 3

PROGRAMMING AND CONTROL OPERATION

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HAND HELD LABELER INTERFACE HLI-200



INTERFACE PORT





PROGRAMMING

All programming is performed via the **HLI-200** keypad and display. All programmed settings are backed in nonvolatile memory and are not lost when the unit is powered off.

Upon power up of the control, the screen will display *MODEL NUMBER & REVISION* of the HLI-200 and then the *MODEL NUMBER & REVISION* of the labeler control. After this, the screen will now display the "Total" counter, "Batch" counter, and Cycle time in the center of the screen. Error messages or warning will be displayed in the box at the bottom of the screen. The top of the screen allows you to Start, Stop, Enable, or Disable the system, and also shows the current state of the system.

KEY FUNCTIONS:

START:

Start key will initialize a full application cycle.

STOP:

Stop key will abort the current system cycle.

ENABLE/DISABLE:

Will enable or disable the system. Current system status will be shown in upper right corner.

PRINT LABEL:

Will signal the connected print engine to dispense (1) printed label (Files must be loaded into Print Buffer).

CYCLE WITHOUT PRINT:

Will cycle the attached applicator module without signaling the printer to print a label or faulting.

CLEAR BUFFER:

Will clear any trigger signals remaining in buffer.

CLEAR BUFFER:

Clear key will clear an error status

PROGRAM:

Program key will enter the system editor.

STARTENABLEDSTOPDISABLEPRINT LABELPRINT LABELCYCLE w/o PRINTCLEAR BUFFERBATCH:0000000TOTAL:0000000CYCLE:100ms

THE STATUS WINDOW WILL DISPLAY SYSTEM MESSAGES (LOW LABEL, FAULT MESSAGE, ETC)



SYSTEM EDITOR

Press the "Program" button from the main run mode screen to enter the system editor. Here you will find the following options:

I/O Panel – Press to enter I/O Screen

Counters – Press to enter Counter configuration menu.

Job Storage – Press to enter Job Storage menu options.

Configuration – Press to enter System Editor Configuration menus.



BACK

Use the "BACK" key to save any changes and return to Run Mode main screen.

SYSTEM PROGRAMMING

I/O PANEL

Displays the status of the inputs and outputs. $X = On \qquad 0 = Off$

A "green" character represents a signal that is currently in an "On" state, while a "grey" character represents a signal that is currently in an "Off" state.



BACK

Use the "BACK" key to return to the main menu options.



COUNTERS

Used to reset the internal counters of the control or set the batch counter parameters.

PROGRAMMABLE BLOCKS:

Batch Preset - Used to set Batch Counter. Once reached, the applicator will Inhibit. Clear Batch Counter - Used to clear the programmed batch counter. Clear Total Counter - Clears the system Total Counter



BACK

Use the "BACK" key to return to the main menu options.

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JOB STORAGE

Used to store frequently used settings pertaining to different labeling jobs. Up to (6) jobs can be stored.

PROGRAMMABLE BLOCKS:

Load Defaults – Reverts system parameters back to factory defaults Restore A Job – Recalls settings of a saved job. Save A Job – Stores settings for the active job. Delete A Job – Deletes a saved job. Show Config – Lists all of the current programmed system parameters.



BACK

Use the "BACK" key to return to the main menu options.

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CONFIGURATION MENU

Used to enter the programmable system parameters. Any changes made the system parameters will take effect immediately allowing the operator to dial, allowing an operator to "dial in" the system for the current application. Once all parameters have been adjusted, the operator must either press the "Save" button to save the settings memory, or the "Cancel" button to revert to the previously saved settings. Pressing either button will return the you to the main menu.



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PRODUCT SENSOR MENU

A Product Sensor is an external device that when "activated" starts the application cycle. Most label applicator systems are provided with an external device (i.e. photo eye) or a trigger cable.

- Product Delay Delays the cycle start (x) seconds after the sensor has been activated.
- Trigger Edge Designates whether product sensor is activated at the leading or trailing edge of trigger input signal.
- Trigger On Debounce Programmable timer that a trigger signal must be held for a start cycle to activate.
- Trigger Off Debounce Programmable time that input triggers will be ignored for after a completed cycle.
- Multifeed Count Programs how many labels are applied to one product with one signal.
- Multifeed List Current programmed parameters for multifeed delay settings.
- Multifeed Delay Programmable delay between each programmed multiple feed.





TAMP SETUP

This is used to adjust the different variables related to the pneumatic "tamp" cycle type.

- Tamp Duration Used to adjust the time that the tamp cylinder valve is actuated.
- Flag Duration Used to adjust the time the flag jaws are held open after label application.
- Head Up Switch Type type: *normally open* (Default), none
- Head Up Debounce –Used to allow time for the tamp cylinder to settle on return.
- Vacuum Release Used to release label when tamping on light products.
- Vacuum Delay On Used to reduce label flutter when feeding large labels while tamping.
- Tamp Sync Logic Used to reverse tamp sync outputs.
- Air Assist Delay -- Used to extend the blow time the Air Assist.





ROUND MODULE SETUP (Available in Custom Software Only)

This is used to control the parameters of the optional Round Module.

- Roller Stop Delay Used to adjust how long the carriage is lifted and the yellow rollers continue to spin after the end of the label is detected. In some applications, additional rotations may be required to fully adhere the label to the product.
- Label Feed Delay Used to add a delay in the feed of the label. This will allow the product to stabilize as the carriage lifts it to contact the yellow rollers before the label is fed and applied.
- Roller Speed Used to adjust the rotation speed of the Round Module (Yellow Rollers).
- Roller Acceleration Used to adjust the "ramp up" speed of the round module motor. This is set to 50,000 by default and should only be adjusted for high-speed applications.



LABEL SPEED

This is used to control the feed of the label.

- Inches/Minute Used to adjust the speed at which the label is fed (drive motor speed).
- Acceleration Used to adjust the "ramp up" speed of the drive motor. This is set to 2.0 by default and should only be adjusted for high-speed applications.



LABEL SENSOR

This is used to program the system parameters, in conjunction with the external label sensor.

PROGRAMMABLE BLOCKS:

- Label Length Used to program the length of the label being used in the current application. The programmed length works in conjunction with the external label sensor. The label feed will stop when the Gap between labels is identified by the external label sensor. If the sensor does not see the Gap in 1.5x of the programmed Label Length, the system will fault display a "Gap Not Found" error.
- Label Gap Length Used to program the gap between each label.
- Label Stop Position Used to offset the label stop position (in inches). Programming a value in this setting will tell the system to feed xx inches after the sensor sees the gap.
- Missing Label Used to advance the label web when a label is missing on the liner. This parameter may require additional system hardware to function as intended.



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CYCLE TYPE

Cycle Type programs the application type and sequence in relation to the label feed. Use the "Up" or "Down button to select the appropriate cycle type for your configuration.

PROGRAMMABLE BLOCKS:

- Printer Enable Used to activate the signals required when a printer is "loose-looped" into the applicator system. Set to "Enable" for a print and apply configuration, or to "Disable" for an apply only configuration.
- Print Repeat Activates the "Print Repeat" signal to the print engine. Engine must also be enabled and configured for this to function properly (Not available on all engines)
- Printer Ready Activates the "Printer Ready" signal. This is set to "Off" by default, and is not needed in most applications.
- Printer Fault Timer Programmable fault timer (0-5 seconds). If the label applicator system does not receive an "End of Print" signal by the expiration of the programmed timer, a "Printer Timeout Fault" will occur.

Available Cycle Types

- Feed Only
- Tamp Before Label Feed
- Tamp After Label Feed
- Blow On Before Label Feed
- Blow On After Label Feed
- Clam Shell Module Before Feed
- Clam Shell Module After Feed
- Auto-Round
- Round Module

Cycle Type

PRINTER ENABLE

PRINT REPEAT

PRINTER READY

PRT FAULT TIMER

UP
DOWN
< BACK</p>

ENCODER

An external encoder provides a more consistent way to apply labels to a product, especially in variable speed applications. With this option, a precise distance from the trigger point can be set at which the label is to be applied.

Note: An optional encoder must be used with this feature.

PROGRAMMABLE BLOCKS:

- Encoder Enable Used to toggle the encoder option on or off.
- Trigger Mode Selectable "Product Delay" or "Distance" mode.
- Trigger Distance Used to apply the label a certain distance from the trigger point.
- Enc lines/inch Programs how many pulses the encoder will count with 1 inch of travel.



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ALARMS

A "Label Feed Error" may be required in some custom applications, and this output can be enabled or disabled in the Alarms menu. For example, a tamp pad may be outfitted with a fiber-optic assembly to sense when a label is present on the pad. If the system is triggered and fiber-optic assembly does not sense the label, a "Label Feed Error" will occur. The use of this option may require custom software and/or hardware.

PROGRAMMABLE BLOCKS:

• Label Feed Error – Used to toggle the Label Feed Error option on or off.



ENABLE PASSWORD

The Enable Password is used to lock the menus of the control. This option is used to prevent unauthorized access to variable data. When shipped from the factory, the pass word is to 7074 and NO MENUS are locked. The password cannot be changed.



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QUICK START GENERAL SETUP

INITIAL MANUAL SETUP

- 1. Inspect applicator system and verify all cables are installed properly.
- 2. Web system with labels.
- 3. Turn power switch on and connect air supply.
- 4. Select "PROGRAM" key on HLI-200 input device.
- 5. Select the "JOB STORAGE" option.
- 6. Select the "LOAD DEFAULTS" option.
- 7. Select the "YES" option to load the system defaults.
- 8. Select the "BACK" option to return to the main menu.
- 9. Select the "CONFIGURATION" option to enter parameters menu.
- 10. Select the "LABEL SPEED" option, and program the settings as needed.
- 11. Select the "LABEL SENSOR" option, and program the settings as needed.
- 12. Select the "CYCLE TYPE" option, and Enable or Disable the Printer feature, as needed.
- 13. Also in the "CYCLE TYPE" menu, use the arrow keys to select the cycle type for the attached module
- 14. Once setup is complete press "SAVE" key to save the settings to memory exit the programming menu.
- 15. Calibrate print engine for labels to be used and send print file(s) to print engine.
- 16. Cycle system by pressing the "START" key or by using an input device.
- 17. Observe label feed speed and change if required.
- 18. Ensure printer is printing a label after each system cycle.
- 19. Manually move the label sensor so the label stops flush with the peeler plate tip.
- 20. System is now ready for set up of advanced features and options.

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SETUP OF KEY FEATURES

LABEL STOP POSITION

The LABEL STOP POSITION is used to electronically move the stop position of the label on the applicator only. The setup below describes how to use the LABEL STOP POSITION feature. This is used to delay the "stop" position of the label relative to the peeler plate. Once a distance is entered into the LABEL STOP POSITION, the label will advance the programmed length past the sensing of the label gap by the label sensor.

- 1. Set basic applicator up first, (refer to quick setup on the previous page).
- 2. Operate applicator at desired label speed.
- 3. Manually move the label sensor to adjust the label stop position of the label. The proper stop position will be with the leading edge of the label stopping flush with the tip of the peeler plate.
- 4. Operate the applicator again at the same speed.
- 5. Does the label stop at the tip of the peeler plate? Yes = task complete / NO = continue
- 6. Measure the distance required to stop the label flush with the peel plate, and enter this value (in inches) in the "LABEL STOP POSITION" menu option.
- 7. Operate system at the same speed again and check label offset.
- 8. Test again; repeat, if necessary, until label is in proper registration to the peeler plate tip.

Note: The label stop position distance CANNOT be greater than half the length of the label. If the label stop position is too large, it may result in inconsistent feeding and/or double label feeding may occur.

PRODUCT DELAY

PRODUCT DELAY is used to electronically move the placement of the label on the product. Product delay will move the label placement in time (00.000). Because the product delay feature utilizes time, the speed of the product MUST be constant and consistent.

- 1. Set basic applicator up first, refer to quick setup
- 2. Ensure that applicator is operating properly before starting this procedure.
- 3. Set Product delay to 00.000
- 4. Start system and apply label at the desired speed.
- 5. Check the placement of the label on the product.
- 6. Measure the OFFSET of the label placement. Note: A label CANNOT be advanced on the product ONLY moved "back" since the applicator can only delay the product signal.
- 7. Apply a small delay to the product delay or if too great, it may be necessary to physically move the product switch. Keep product delays to a minimum for best results.
- 8. Operate system again and measure offset.
- 9. Apply a small delay to the product delay or reduce if too much.
- 10. Test again; repeat, if necessary, until label is in proper registration.

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KEY DEFINITIONS

- ASYNCHRONOUS OPERATION The term "ASYNCHRONOUS OPERATION" is used because the speed
 of the applicator motor (label speed) does not necessarily match the speed of the product conveyor. In other
 words, their speeds are set independently of one another and have NO interrelation. An example of this is
 when the applicator is configured with a pneumatic tamp module.
- SYNCHRONOUS OPERATION The term "SYNCHRONOUS OPERATION" is used because the speed of the applicator motor (label speed) is matched to the speed of the product conveyor. An example of this is a synchronous feed (wipe-on / merge) module.
- PRODUCT DELAY is used to electronically move the placement of the label on the product. Product delay will move the label placement in time (00.000) seconds. Because the product delay feature utilizes time, the speed of the product MUST remain constant. A product traveling at a higher velocity will travel further in a given time, thus effecting the placement of the label.

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DESCRIPTION OF I/O

All user inputs and outputs are "SINKING" type.

Status display legend.

	INPUTS			(OUTPUTS		
S	Р	Н	Y	А	F	V	Т
SMART TAMP	PRODUCT SENSOR	HEAD UP TAMP SENSOR	AUX OUT #1	AIR ASSIST SOL	FLAG SOL	VACUUM SOL	TAMP SOL

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Control Interface Connections Shown Below

REMOTE TRIGGER CONNECTOR (PRODUCT SWITCH)	P7 PIN #	I/O	I/O Monitor Address
+24vdc	1		
+24vdc	2		
Trigger Input #1	3	Input	X0.0
Two Hand Start AUX1	4	Input	X0.1
24v Common	5		
24v Common	6		
Shield			



HEAD-UP / AUX IN	P8 PIN #	I/O	I/O Monitor Address
+24vdc	1		
+24vdc	2		
Head – Up/ Index Dwell	3	Input	X0.2
RM Part Present / Smart Tamp	4	Input	X0.3
24v Common	5		
24v Common	6		
Shield			

SMART TAMP	P2 PIN #	I/O	I/O Monitor Address
+24vdc	1		
+24vdc	2		
2 nd Trigger / Pre-Print AUX1	3		X0.1
Smart Tamp	4		X0.3
24v Common	5		
24v Common	6		
SHIELD			

TAMP SOLENOIDS	P6 PIN #	I/O	I/O Monitor Address
Aux Output #2 / Tamp Slide / Powered Label Platen	1	Output	Y1.7
+24 Volt	2		
No connection	3		
Air Assist Sol 24vdc	4	Output	Y0.0
Vacuum Sol 24vdc	5	Output	Y0.2
Tamp Sol 24vdc	6	Output	Y0.3
Flag Sol 24vdc	7	Output	Y0.1
Shield			



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WEB SENSOR (LABEL)	P4 PIN #	I/O	I/O Monitor Address
Clear Label Detector	1	Input	X0.4
24v Common	2		
(+5dvc) LED	3		
Take-up output	4	Output	Y1.3
Logic Gnd	5		
Sensor Emitter (+)	6		
Sensor Collector (-)	7		
+24vdc	8		
Shield			



HMI RJ Conn	P3 PIN #	Jumpers
422RX+ (TXB)	1	
422RX- (RXB)	2	
	3	
	4	
24V Common	5	
+24vdc	6	
422TX+	7	
422TX-	8	

Light Bar/Auxiliary Connector <i>1 & 2</i> DB-15 Female	P10 Pin #	I/O	I/O Monitor Address	
+24vdc	1			
+24vdc	2			
24 Com	3			
24 Com	4			
Low Label In	5		X0.5	
ERROR LITE (Red Light)	6	0	Y0.6	On=GREEN Off=RED
LOW LABEL (Yellow Light)	7	0	Y0.7	
Run Status Ok (Green Light)	8	0		Green = /Red
Tamp Sync Out	9	0	Y1.1	
Inhibit In	10		X0.6	
Reprint / Aux Input #2	11	I	X0.7	
Aux Input #3 / Slide Home Input	12	I	X1.1	
Aux Input #4 / Feed Error Input	13		X1.2	
Applicator In Cycle Output (Applicator Busy)	14	Ó	Y1.2	
Batch Done Aux Output #1	15	0	Y1.6	

Serial Plus Port / RM Stepper Motor DB9 Female <i>(Optional)</i>	P11 PIN #	I/O	I/O Monitor Address
SHIELD	1		
+485 RS232 XMIT (port D) to motor	2		
-485 RS232 RECV (port D) to motor	3		
24C	4		
24C	5		
Tamp Slide / Aux Output #2 High current	6	0	Y1.7
REPRINT / Aux Input #2	7	I	X0.7
+24	8		
+24	9		



Conveyor Encoder Interface DB9 Female Male (Optional)	P14 PIN #	I/O Monitor Address
A+	1	
A-	2	I
B+	3	I
B-	4	I
+5V	5	
GND	6	
Shield	7	
No Connection	8	
No Connection	9	

Printer Interface 14 pin Centronix <i>(Optional)</i>	P9 PIN #	I/O	I/O Monitor Address
Paper End	1	Input	X1.3
Printer Ground	2		
Ribbon End	3	Input	X1.4
Printer Error	4	Input	X1.5
Print Start	5	Output	Y0.4
Print End	6	Input	X1.6
Reprint	7	Output	Y0.5
	8		
ONLINE (Sato Only) (Zebra Data Ready)	9	Input	X1.7
Ribbon Near End	10	Input	X1.0
	11		
	12		
+5vdc From Printer	13		
	14		
Shield			

AUX 2 Auxiliary Connector 3rd DB-15 Male <i>(Optional)</i>	P13 PIN #	I/O	I/O Monitor Address	
AUX 232 TXC Port C	1	0		RS232 Output
GND	2			
GND	3			
Batch Done Aux Output #1	4	0	Y1.6	
REPRINT / Aux Input #2	5	I	X0.7	
Aux Input #4 / Feed Error Input	6	I	X1.2	
+24V	7			
+24V	8			
AUX 232 RXC Port C	9	I		RS232 Input
24MCR	10			24 Volts when not in E-Stop
24MCR	11			24 Volts when not in E-Stop
Estop relay	12	relay		Used to seal E-Stop
Aux Input #3	13	I	X1.1	
Tamp / Aux Output #2 / Powered Label Platen	14	0	Y1.7	High current
+24V	15			

Optional connections; consult factory for custom programming and connection.

SECTION 4

OPTIONAL APPLICATION MODULES

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Tamp Applicator Module Installation

The LM4012TM Tamp Applicator Module shown below can be installed in a few minutes to the existing LM4102TTPAS peeler arm guide rails.



ACTIONS TO INSTALL TAMP MODULE

- 1. Set the main power switch to the OFF position.
- 2. Disconnect the AC power cable from the rear of the console.
- 3. Remove any installed module or photoeye mounted to the guide rails.
- 4. Carefully slide the tamp module onto the rails until the unit is on all the way.
- 5. Install and tighten the mounting knobs through the slotted holes on either side of the mounting rails.
- 6. Install the 7-pin DIN plug from the valve assembly into the connector on the main control box tagged "SOLENOIDS", if it is not already connected.
- 7. Install the 6-pin DIN plug from the tamp module reed switch into the connector on the accessory connector tagged "HEAD UP/AUX".
- 8. Install the four (4) air lines fitted with quick disconnect style fittings on the plate above the solenoids. They are marked 1, 2, 3, and 4.
- 9. Program the LM4012TTPAS Cycle Type for either "Tamp Before Feed" or "Tamp After Feed".
- 10. Install the 6-pin DIN plug from the Trigger Input (Foot Switch, Palm Button, etc.) into the connector on the main control box name "REMOTE TRIGGER".
- 11. Connect the power cable and turn the unit on.
- 12. Adjust the label sensor as needed to feed and stop the label flush with the peel plate.
- 13. Adjust the Tamp Setup settings to cycle the pneumatic tamp appropriately.

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 To adjust the tamp pad (T) in relationship to the peeler plate (P) in the vertical position, loosen the mounting screw (M) and adjust the vertical screws (V) in or out to achieve the .020" (B). NOTE: The tamp pad (T) must maintain parallelism with the peeler plate (P).

Air assist tube adjustment

- Adjust the air-assist tube (B) so that the small holes aim towards the center of the label as shown by the arrowhead (F) shown above. The air assist tube (B) aids the label (L) to adhere to the bottom of the tamp pad (T). Once the label (L) is "blown" onto the tamp pad (T), it is held there by vacuum.
- 2. Once the above adjustments are made, adjust the vacuum regulator, the air assist regulator, and the flow controls as necessary.

Note: Too much pressure on the air assist will cause the label to flutter and/or blow off of the vacuum platen.



Flag Applicator Module Installation

The LM4012FM Flag Applicator Module shown below can be installed in a few minutes to the existing LM4012TTPAS peeler arm guide rails.



ACTIONS TO INSTALL FLAG / CLAMSHELL MODULE

- 1. Set the main power switch to the OFF position.
- 2. Disconnect the AC power cable from the rear of the console.
- 3. Remove any installed module or dispenser photo-eye mounted to the guide rails.
- 4. Carefully slide the flag module on to the rails until the unit is on all the way.
- 5. Install and tighten the mounting knobs through the slotted holes on either side of the mounting rails.
- 6. Install the 7-pin DIN plug from the valve assembly into the connector on the main control box tagged "SOLENOIDS", if it is not already connected.
- 7. Install the 6-pin DIN plug from the tamp module reed switch into the connector on the accessory connector tagged "HEAD UP/AUX".
- 8. Install the airlines (up to 6) fitted with quick disconnect style fittings on the plate above the solenoids. They are marked 1, 2, 3, 4, 5, and 6.
- 9. Program the LM4012TTPAS for the appropriate Cycle Type (Tamp for standard flag module, Clamshell for Clamshell flag module).
- 10. Install the 6-pin DIN plug from the Trigger Input (Foot Switch, Palm Button, etc.) into the connector on the main control box name "REMOTE TRIGGER".
- 11. Connect the power cable and turn the unit on.
- 12. Adjust the label sensor as needed to feed and stop the label flush with the peel plate.
- 13. Adjust the Tamp and Flag duration settings in the Tamp Setup to cycle the components appropriately.
- 14. Adjust the flag jaw pressure as needed to apply the labels correctly and consistently. To adjust the jaws, start with the pressure low and increase pressure to achieve proper wrap of the label on the product. NOTE: Low pressure will not close the jaws, and high pressure will not label consistently or cause product breakage.

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Flag Module Setup

Label jaw adjustment

- To adjust the label jaws (J) in relationship to the peeler plate (P) in the horizontal plain, loosen the thumbscrews (S) and move the flag module forward or backward in the slots. There should be approximately .020" (A) gap between the label jaws (J) and the peeler plate (P). The jaws (J) can also be adjusted left to right in relation to the peeler plate (P) via the slot in the top of the crossbar (D). NOTE: The center of the jaws should be at the center of the label.
- To adjust the label jaws (J) in relationship to the peeler plate (P) in the vertical position, loosen the mounting screw (M) and adjust the vertical screws (V) in or out to achieve the .020" (B). NOTE: The label jaws (J) must maintain parallelism with the peeler plate (P).

Air assist tube adjustment

- Adjust the air assist tube (B) so that the small holes aim towards the center of the label as shown by the arrowhead (F) shown above. The air assist tube (B) aids the label (L) to adhere to the bottom of the label jaws (J). Once the label (L) is "blown" onto the label jaws (J), it is held there by vacuum.
- 2. Once the above adjustments are made, adjust the vacuum regulator, the air assist regulator, and the flow controls as nessesary.

Note: Too much pressure on the air assist will cause the label to flutter and/or blow off of the vacuum platen.

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Round Product Applicator Module Installation

The LM4012RM Round Product Applicator Module shown below can be installed in a few minutes to the existing LM4012TTPAS peeler arm guide rails.



ACTIONS TO INSTALL ROUND PRODUCT MODULE

- 1. Set the main power switch to the OFF position.
- 2. Disconnect the AC power cable from the rear of the console.
- 3. Remove any installed module mounted to the guide rails.
- 4. Carefully slide the round product module on to the rails until the unit is on all the way.
- 5. Install and tighten the mounting knobs through the slotted holes on either side of the mounting rails.
- 6. Install the connector plug from the round product module into the connector on the main control box tagged "Round Module".
- 7. Install the 7-pin DIN plug from the valve assembly into the connector on the main control box tagged "SOLENOIDS", if it is not already connected.
- 8. Install the 6-pin DIN plug from the round product module limit switch into the connector on the accessory connector tagged "HEAD UP/AUX".
- 9. Install the two (2) airlines fitted with quick disconnect style fittings on the plate above the solenoids. They are marked 3 and 4.
- 10. Program the LM4012TTPAS Cycle Type for "Round Module".
- 11. Install the 6-pin DIN plug from the Trigger Input (Foot Switch, Palm Button, etc.) into the connector on the main control box name "REMOTE TRIGGER".
- 12. Adjust the roller cradle up or down for the product. There should be enough room to get the product in and out, with roughly 1" of gap between the product and yellow rubber roller.
- 13. Adjust the rollers on the cradle so the centerline of the product and the rubber roller are lined up.
- 14. Connect the power cable and turn it on.
- 15. Adjust the label sensor, roller speed, and label feed speed until all are functioning properly. The label feed speed should match to the roller motor speed. If the label motor speed is to fast, the label will bunch up. If it is to slow the product will pull the web.

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Peeler Plate (P) Application Roller (Q) Thumbscrew (S) - 1/2" (A) 1/4″ (B) Adjustment Holes (H) Centerline (G) Thumbscrew (R) Support Rollers (D) Carriage Rail (F) Roller Thumbscrews (E) Peeler plate alignment Ŵ

Round Product Applicator Module Setup

1. To adjust the round

product applicator in relationship to the peeler plate (P) in the horizontal plain, loosen the thumbscrews (S) and move the round product module forward or backward in the slots. There should be approximately 1/4" - 1/2" (A) gap between the application roller (Q) and the peeler plate (P).

Product Carriage adjustment

- 1. Loosen the thumbscrews (E) and adjust the support rollers (D) until the product is supported securely. These supports (D) are moved to adjust for the size, location and height of the product in relation to the label application roller (Q).
- 2. Thumbscrew (R) is loosened and removed to allow the carriage assembly to be moved from hole to hole on the carriage rail (F). This is a product rough adjustment.
- 3. Move the carriage assembly up or down and the support rollers horizontally until the desired 1" (B) of clearance between the product and the label application roller (Q) is achieved.
- 4. Adjust the Tamp flow controls as necessary. Flow controls in this configuration will control the speed at which the carriage moves the product up and down.

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Remote Start Module

The optional LM4012TTPAS Remote Start Modules shown below can be connected to the LM4012TTPAS Remote Trigger Port on the control box.



PB-32 Push Button (Remote start trigger)



FS-42 Foot Switch (Remote start trigger)

ACTIONS TO INSTALL REMOTE START MODULE

- 1. Set the main power switch to the OFF position.
- 2. Disconnect the AC power cable from the rear of the accessory connector panel.
- 3. Install the 5-pin DIN plug from the remote start module into the connector on the accessory connector panel tagged "Remote Trigger.
- 4. Connect the power cable and turn the unit on.

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Valve Pack

The LM4012TTPAS valve pack is used to control the air pressure & flow on the tabletop system.



Regulator Adjustment: Clockwise - Increase pressure / Counterclockwise - Decrease pressure

MAIN AIR REGULATOR

Controls maximum air pressure available to entire applicator. Should be set between 40 & 80 PSI.

FLAG REGULATOR

The flag regulator is used to adjust the pressure that the flag jaws apply to the label as it is applied. For complete jaw adjustment, refer to flag applicator module installation.

VACUUM REGULATOR (only used on the flag and tamp applicator system)

The vacuum regulator is used to control the vacuum that is used to hold the label to the flag jaws or the tamp pad.

AIR ASSIST REGULATOR

The air assist regulator is used to change the pressure that is applied to the blow tube. The blow tube is below the front edge of the peeler plate and is used to help "push" the label onto the bottom of the tamp pad or the flag jaws.

FLOW CONTROLS (tamp, bottle roller, and flag applications)

Control A: This is used to adjust the speed that the tamp cylinder moves in the upward direction. Control B: This is used to adjust the speed that the tamp cylinder moves in the downward direction.

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Peeler Plate Adjustment



Peeler Plate Adjustment (used to adjust tracking)

- 1. Loosen the mounting screws (S) and slide the peeler plate (P) in the direction needed to make the label web track in the desired direction.
- 2. Retighten the mounting screws (S) to secure the peeler plate (P) after adjustments are made.
- 3. Now that the plate is adjusted, test run the machine to see if the web tracks correctly.

NOTE: If the web tracks towards the main control console, adjust the end of the peeler plate (P) away from the console or the opposite end toward the console. Adjust the peeler plate (P) in the opposite direction if the web tracks away from the control console.



Label Wiper Adjustment

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(Peeler Plate)

Label Wiper Adjustment (used to keep the web tight & assist in label peel)

- 1. Loosen the lock handle (S) and slide the label wiper assembly on the shaft (T) over the web.
- 2. Rotate the wiper assembly slightly more to contact the web and apply light pressure on the label wiper (W).
- 3. Now that you have applied slight pressure on the label web, tighten the lock hanle (S).

NOTE: The main reason for the label wiper is to assist separation of the label from the liner and to feed the label out flat or parallel to the peeler plate. This will aid in proper placement of the label on the tamp pad or flag jaws.



Label Wiper Adjustment

(Before Label Sensor)



Label Wiper Adjustment (used to keep the web tight)

- 1. Remove tension of the wiper on the web by loosening the lock.
- 2. Slide the wiper assembly in or out on the shaft to center over the label web.
- 3. Once webbed with labels, rotate the assembly down on shaft and lock the wiper down with slight pressure.

NOTE: The main reason for this wiper is to reduce web "flutter" from the wiper through label sensor, and to the peel point. This will aid consistent readings by the label sensor, and in turn result in proper placement of the label on the tamp pad or flag jaws, or consistent placement on round products with the round module.

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Module Air Connections

Module Air Hose Connections

- 1. After installing one of the 3 modules, connect the airlines (A) to the Manifold Plate (D) shown above.
- 2. The Air Line Numbers (C) should be matched with the numbers on the Manifold Plate (D).
- 3. To connect the Air Line (A) to the Manifold Plate (D), simply push the male connector of the Air Line (A) into the Female Coupler (E). It will "snap", automatically "locking" it into place. NOTE: If the male connector of the Air Line (A) won't slide easily into the Female Coupler (E), it may be necessary to push the Release Tab (B) towards the center of the plate, locking the tab in the "open" position.
- 4. To release the Air Line (A) from the Manifold Plate (D), simply push the Release Tab (B) towards the center of the plate and remove the Air Line (A).

Manifold Plate (D) Number Reference

- 1) Vacuum
- 2) Air Assist
- 3) Tamp Cylinder Down/Bottle Roller Carriage Up
- 4) Tamp Cylinder Up/Bottle Roller Carriage Down
- 5) Flag Jaws Open
- 6) Flag Jaws Closed

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System Inhibit Assembly



System Inhibit

The System Inhibit Assembly is used to pause the system when the web is no longer advancing through the print engine. As the system is cycled and the web slack is consumed, the dancer arm roller assembly will rotate back and forth to keep proper web tension. If this assembly rotates clockwise too far, the system will automatically be inhibited and will no longer cycle until the dancer arm roller assembly rotates back, adding more slack to the web.

The System Inhibit Assembly is typically activated due one of the reasons below:

- 1. Improper system webbing
- 2. Printer fault, resulting the printer being paused/disabled
- 3. Printer has run out of labels in the print buffer

Take the appropriate corrective action below to re-enable the system:

- 1. Correct the system web path
- 2. Correct printer fault and un-pause/enable the printer
- 3. Load more labels into the printer buffer

Once the corrective action has been taken, the Manual Print Button mounted on the system backplate (to the upper-right corner of the print engine) can be used to manually print single labels out of the printer to allow the System Inhibit Assembly to rotate back to the correct position, and automatically re-enable the system.

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SECTION 5

TROUBLESHOOTING & MAINTENANCE

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Replacing the Main Power Fuse	59

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TROUBLE SHOOTING GUIDE

If the system malfunctions, it is necessary to determine where the problem exists in a normal sequence of operation. The procedure of the unit is outlined in the left-hand column of the table below to provide a systematic approach to troubleshooting.

	Problem	Possible Cause	Corrective Action
1.	Unit will not turn on.	A. Blown Main Fuse	Check main power fuse and replace if necessary.
2.	Take-up unit does not turn.	A. Friction plate failure in clutch.B. Mechanical failure in clutch.	Consult Factory
3.	Waste web tension too loose.	A. Clutch tension too low.	Adjust clutch.
4.	Waste web breaks.	A. Clutch adjusted too tight.B. Machine Webbed wrong.C. Low quality webbing.D. Friction plate failure in clutch.E. Mechanical failure in clutch.	Adjust clutch. Re-web system. Consult label mfg. Consult factory. Consult factory.
5.	Label double feeds.	A. Label sensor out of adjustment.	Calibrate Sensor
6.	Tamp cylinder not up	A. No airB. Hoses not connected correctly	Connect air and/or adjust regulator Match hose with manifold
7.	Tamp module won't work	A. Incorrect MODE set in HLI-200B. Hoses not connected correctly	Adjust Cycle Type Setting Match hose with manifold
8.	Flag module won't work	A. Incorrect MODE set in HLI-200B. Hoses not connected correctly	Adjust Cycle Type Setting Match hose with manifold
9.	Round module won't work	A. Incorrect MODE set in HLI-200B. Hoses not connected correctly	Adjust Cycle Type Setting Match hose with manifold
10.	Power ON tamp/flag system unit will not cycle	A. Cylinder not up.B. Reed Switch out of adjustmentC. Incorrect MODE set in HLI-200	Refer to #6 Adjust up or down Adjust Cycle Type Setting

LM4012TTPAS Table-Top P&A Label Applicator System

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FAULT CODES

DISPLAYED FAULT	DESCRIPTION	CORRECTIVE ACTION
Memory Checksum	Data lost in serial EEPROM	Consult factory or service provider
Gap Not Detected	Too many labels missing on web Labeler not webbed properly Label sensor not adjusted properly	Check label stock Check for proper webbing Tune Label Sensor
Printer Not Responding	End of Print Signal Not Received	Load Labels into Printer Buffer Put Printer into Ready Status Check Printer Interface Cable Check Printer Mode Setting
Head Up Fault	Head up limit switch on tamp did not trigger	Check for proper adjustment of head up limit switch Check air to system Check programming of Tamp switch
Head Down Fault	Head up limit switch failed to switch during the tamp cycle	Tamp duration too small Faulty limit switch Check air to system Check programming of Tamp switch
Part Present Fault	Micro switch on Round Module did not change state.	Adjust product carriage Replace micro switch

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REPLACING THE MAIN POWER FUSE

The circuitry is protected from a current overload by GMA 2A a slow blow fuse. Should the applicator fail to operate, the condition of this fuse should be checked. If the fuse is open, the cause of the overload condition must be determined and corrected prior to replacing the fuse. NEVER replace the fuse with one of a greater amp rating. The specified rating has been selected to prevent damage and/or injury.

ACTIONS TO REPLACE THE MAIN FUSE

- 1. Set the main power switch to the OFF position.
- 2. Disconnect the AC power cable from the rear of the console.
- 3. Locate the fuse holder/power cord assembly.
- 4. Gently press down the fuse holder cover while pulling away from the console.
- 5. Replace with the spare fuse provided in the holder.



Fuse / Spare Fuse Drawer



LM4012TTPAS TABLE-TOP PRINT & APPLY LABEL APPLICATOR SYSTEM OPERATIONS MANUAL



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LabelMill 2416 Jackson St. Savanna, IL 61074

Phone: (800) 273-4707; Fax (815) 273-7074 **www.labelmill.com** info@labelmill.com

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