LM-4005

AUTOMATIC LABEL APPLICATOR

OPERATIONS MANUAL

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SECTION 1

APPLICATOR OVERVIEW

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LabelMill LM4005
DYNAMIC LABEL APPLICATOR

The **LabelMill 4005** is a state of the art, medium speed, heavy-duty industrial Label Applicator. Label applications to 1400 linear inches of label web per minute are combined with an exceptional placement accuracy of up to +/- 1/16", with its wipe-on method of application. Products may be labeled in any attitude (top, side or bottom) when used in conjunction with available product handling systems. Outboard-supported drive roller to minimize vibration induced label misplacement. Heavy duty DC motor drive. Hardened steel peeler plate for reduced wear with high-speed continuous label application. Adjustable label sensor for expediting changeover without sacrificing accuracy. The **Model 4005** is transferable from one production line to another when mounted on the **LabelMill Model T-150 Stand.** The **Model 4005** Applicator is of modular design and features rapid changeover from a wipe-on system to a tamp system using the same applicator platform and controller. The microprocessor controls the DC motor for accurate and consistent label placement. The **Model 4005** has a HLI-100 (Hand Held Labeler Interface) with digital LCD display and key pad for ease of set-up to include IPM, product delay, batch count, total count, tamp duration and more.

SPECIFICATIONS

Size:	26”H x 32"W x 23"D Weight – 60 lbs.
Electrical:	115V AC, 60 Cycle, 4 amps
Product Sensing:	Photoelectric or mechanical limit switch
Label Roll Size:	12" O.D., wound on 3" I.D. core
Labeling Speed:	1400 linear inches of web per minute standard
Label Style Requirements:	Die-cut, waste removed, with minimum of 1/8" separation between labels in running direction
Label Placement accuracy:	Up to +/- 1/16" when labels are produced to specifications and product handling is controlled
Options:	Right or left handed Wipe-On, Tamp Unit or Corner Wrap*
Standard Label Sizes:*	41/4" wide, 12" long or optional 6 1/2" wide, 12" long

*Optional lengths and sizes available
*Customs Available

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INVENTORY LIST

QTY.	Description
1	Applicator Assembly
2	12-½" dia. Blue Plastic Spools w/Quick Release Collar
1	7-¾" dia. Blue Plastic Spool w/screws
2	½" – 13 bolts w/washers
1	6' Power Cord
1	Product Switch (Manual Limit Switch/Photo Switch as Specified)
1	Take-up Spool Clip
1	Web Sensor
1	Peeler Arm Assembly w/2 (¼-20) Screws
1	Model LM-4005 Operators Manual

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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 MM2, Inc. 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 MM2, Inc., or a service facility designated by MM2, Inc.

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, which 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.

⚠ WARNING

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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SECTION 2

WEBBING, SETUP AND GENERAL OPERATION

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Web Sensor Adjustment **2-4**
Drive Motor Pack **2-5**
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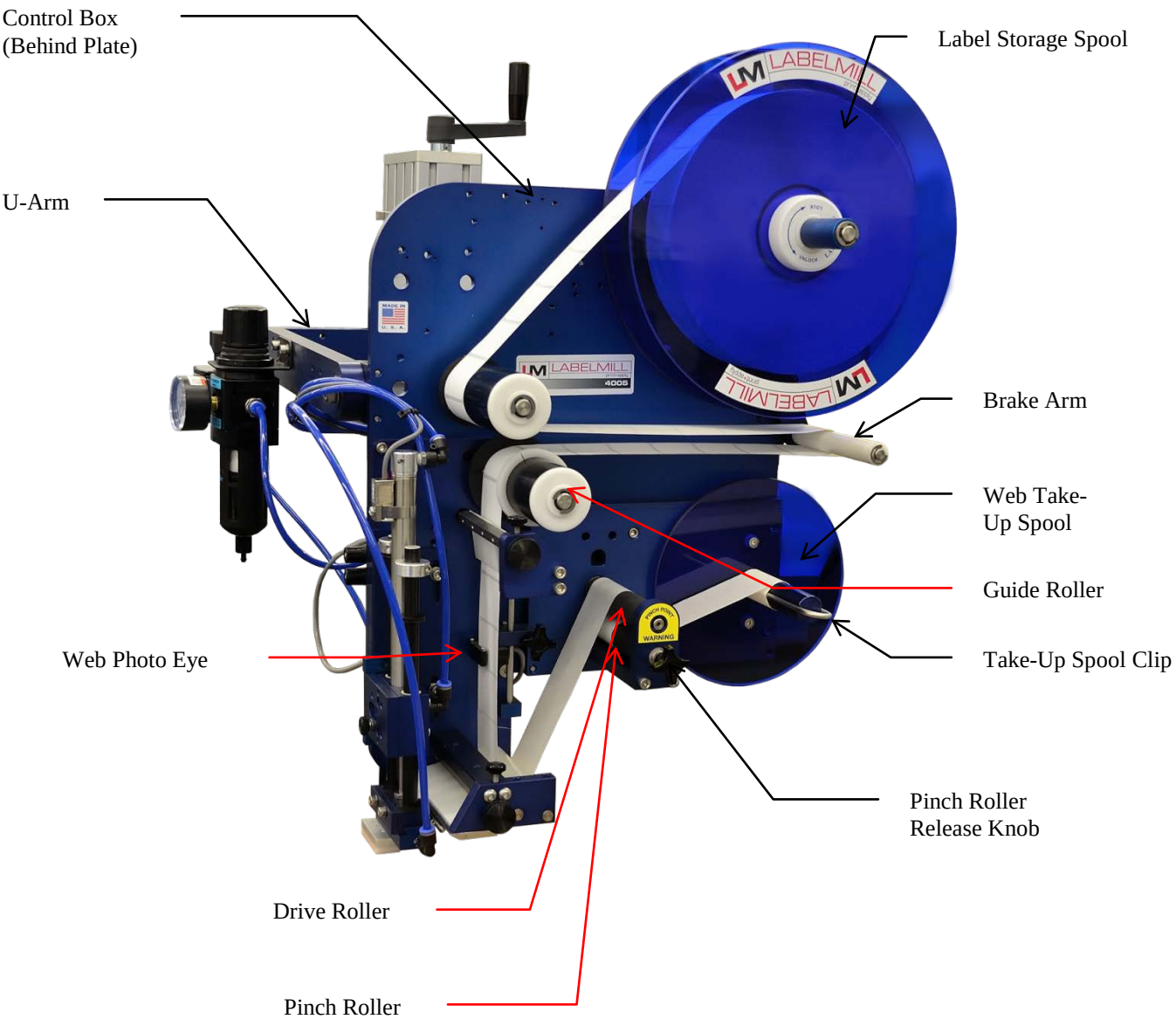
COMPONENT DESCRIPTION

NOTE: LM4005 TAMP CONFIGURATION (LEFT HAND) SHOWN FOR REFERENCE ONLY



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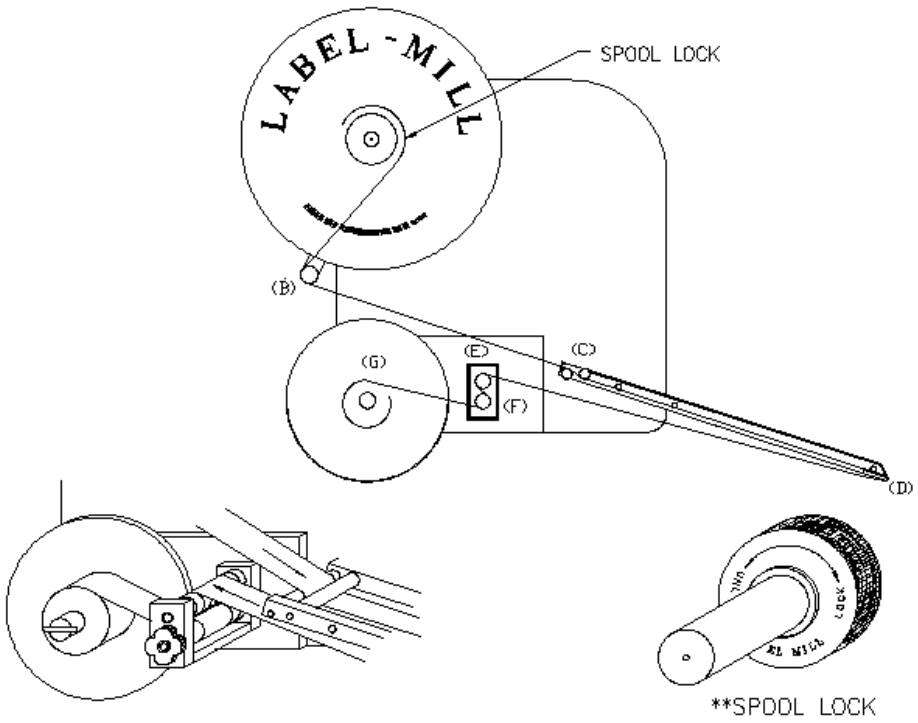
WEB ROUTING
(Right Hand - Synchronous Feed)



Step	Operation
1	Load web onto label storage spool (A) so it unloads in a clockwise direction.
2	Feed the web to the left and under the brake arm (B).
3	Insert the web above the first guide roller and under the second guide roller (C).
4	Wrap the web around the peeler plate (D), continuing on to the drive roller (E).
5	Feed the web over the top drive roller (E). Next, slip the web between the drive roller and the pinch roller (F). Continue on by wrapping the web under the pinch roller (F).
6	Finish the process by loading the waste backing paper onto the web take-up spool (G). Install the take-up spool clip over the end of the waste backing paper. The take-up spool rotates in a counter-clockwise direction.
7	Adjust the plastic web guide clips so the web is guided straight and even. Make sure the clips do not bind the web.

** To remove the label storage spool (A), turn the spool lock counterclockwise 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!

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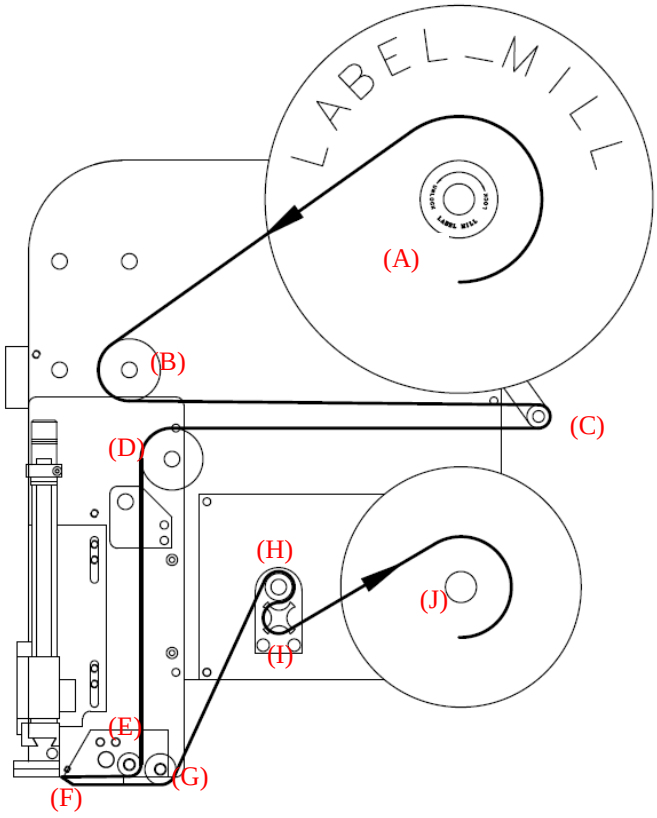
WEB ROUTING
(Left Hand Tamp w/ Extra Upper Roller)



Step	Operation
1	Load web onto label storage spool (A) so it unloads in a counter-clockwise direction.
2	Feed the web to the left and under the guide roller (B).
3	Then to the right and under the brake arm (C).
3	Insert the web above the first guide roller (D) and under the second guide roller (E).
4	Wrap the web around the peeler plate (F), continuing on under roller (G).
5	Feed the web over the top of drive roller (H). Next, slip the web between the drive roller and the pinch roller (I). Continue on by wrapping the web under the pinch roller.
6	Finish the process by loading the waste backing paper onto the web take-up spool (J). Install the take-up spool clip over the end of the waste backing paper. The take-up spool rotates in a clockwise direction.
7	Adjust the plastic web guide clips so the web is guided straight and even. Make sure the clips do not bind the web.

** To remove the label storage spool (A), turn the spool lock counter-clockwise 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!

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LABEL SENSOR ADJUSTMENT
(Synchronous Feed Configuration Shown)

Manual adjustment of the label in relation to the peeler plate is achieved by loosening the thumbscrew on the backside of the label sensor and sliding the assembly up or down on the peeler arm rail.

Once the label sensor is manually adjusted, trigger the applicator to test the position of the label in relation to the peeler plate.

After the “rough” adjustment is made, refer to page 4-13 for label sensor fine adjustments.

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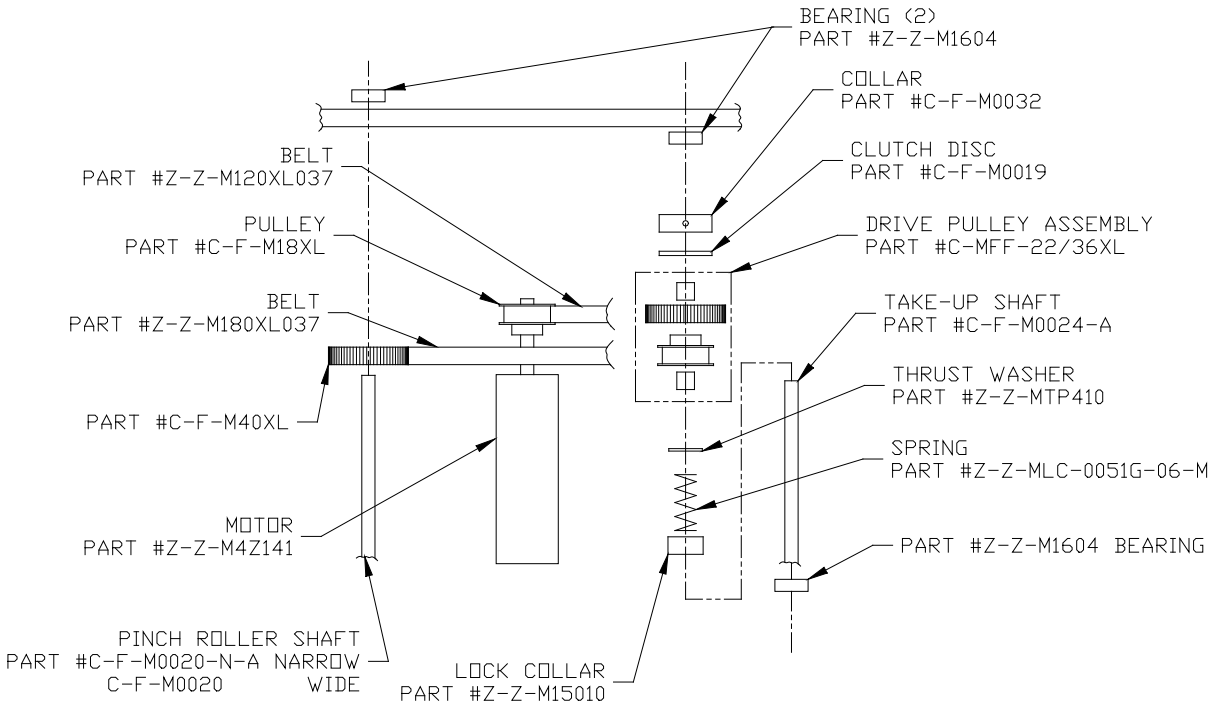
DRIVE MOTOR PACK



To reduce waste web tension, move the lock collar 1/32” toward the take-up spool. To increase waste web tension, move the lock collar 1/32” away from 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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T-150 MOUNTING STAND

(OPTIONAL)

2-6

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T-STAND ADJUSTMENT

Column Crank

Column Lock

To adjust the T-150 mounting stand, simply loosen the headlocks and adjust to the desired height by turning the column crank. Be sure to lock the headlocks when finished.

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SECTION 3

SETUP & ADJUSTMENT

Valve Pack **3-1**
Tamp Assembly & Setup **3-2**
Flag Assembly & Setup **3-3**
Synchronous Feed (Wipe-On Assembly) **3-4**

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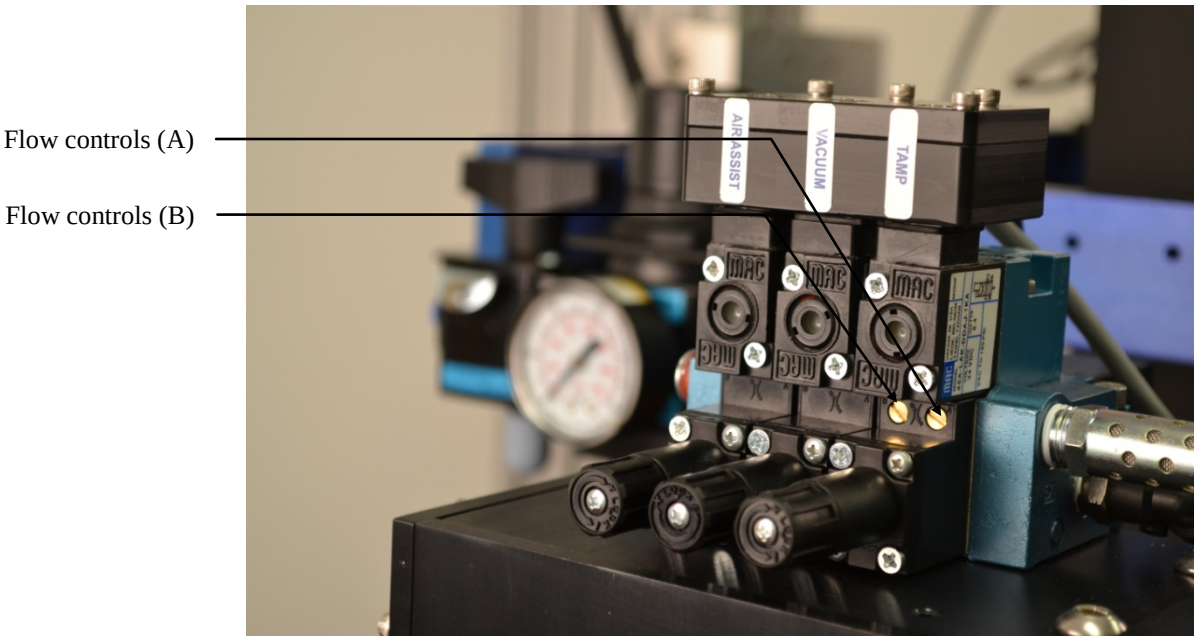
VALVE PACK
(Not Included in Synchronous Feed Configuration)

There are solenoid valves associated with applicators using pneumatics. They are supplied with pre-wired cables that connect to the necessary components.

There is an adjustment for airflow for each valve. This will change the rate at which air will flow through each valve. It may be necessary to adjust each valve for optimum performance after installation. The adjustments are performed as shown below.

(Pictures may not show actual model)



FLOW CONTROLS (Tamp & Corner-Wrap Applications)
Control A: This is used to adjust the speed that the tamp cylinder moves in the upward direction.
Control B: Controls the tamp cylinder in the downward direction.

VACUUM REGULATOR
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.

FLAG REGULATOR (Only present if configured with flag applicator head)
The flag regulator is used to adjust the pressure that the flag jaws apply to the label as it is applied.

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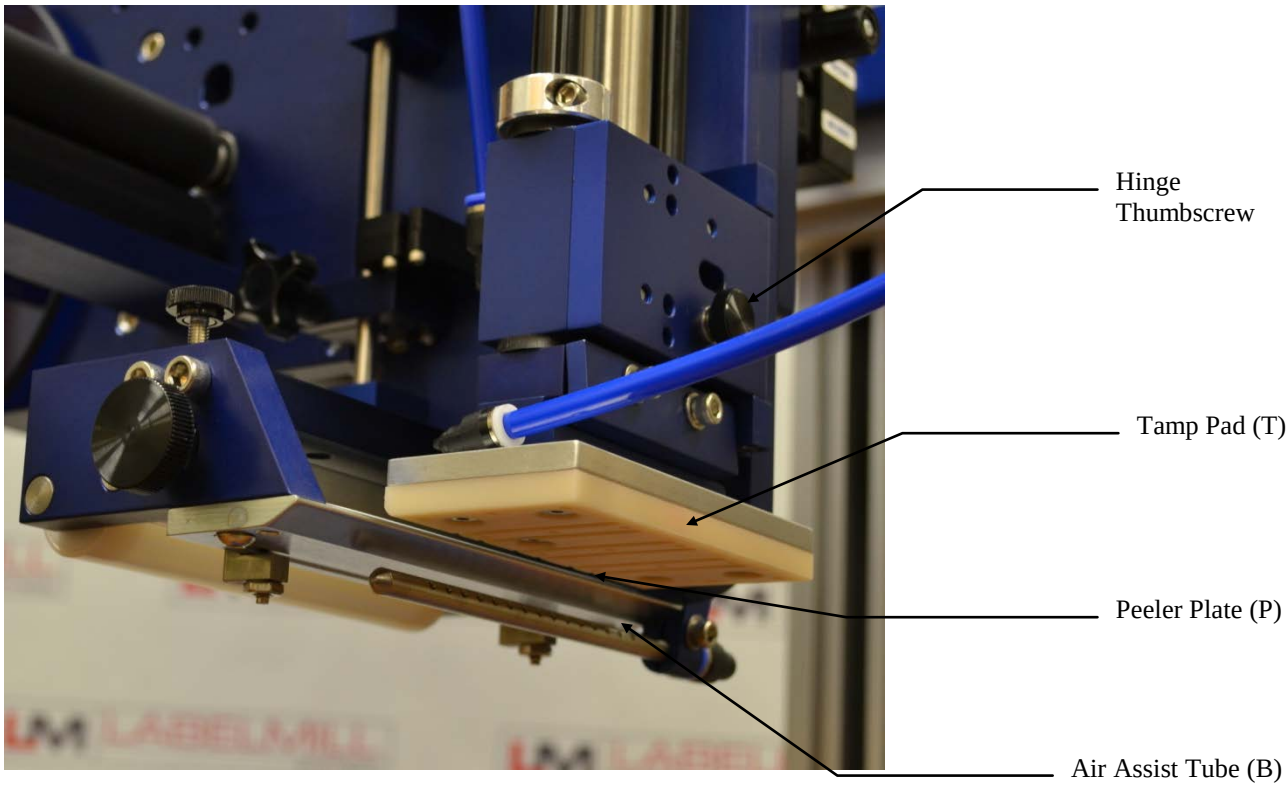
Tamp Assembly & Factory Setup

NOTE: PICTURES SHOWN MAY NOT RESEMBLE YOUR MODEL



Tamp pad adjustment

1. To adjust the tamp pad (T) in relationship to the peeler plate (P) in the horizontal plain, loosen the (2) button-head screws and move the peeler plate forward or backward in the slots. There should be approximately 0.020" (A) gap between the tamp pad (T) and the peeler plate (P).
2. To adjust the tamp pad (T) in relationship to the peeler plate (P) in the vertical position, loosen the hinge thumbscrew, swing the tamp assembly out, and loosen the (4) cap head bolts that secure the tamp mount assembly in place. Adjust the up or down to achieve the 0.020", tighten the (4) bolts, and secure the tamp assembly in place by tightening the thumbscrew. This adjustment is very important! If this is not adjusted properly, the label will run into the back of the tamp pad (T) and fold or bunch up.

Air assist tube adjustment

1. Adjust the air assist tube (B) so that the small holes aim towards the center of the tamp pad. The air assist tube (B) aids the label 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 described on page 3-1.
   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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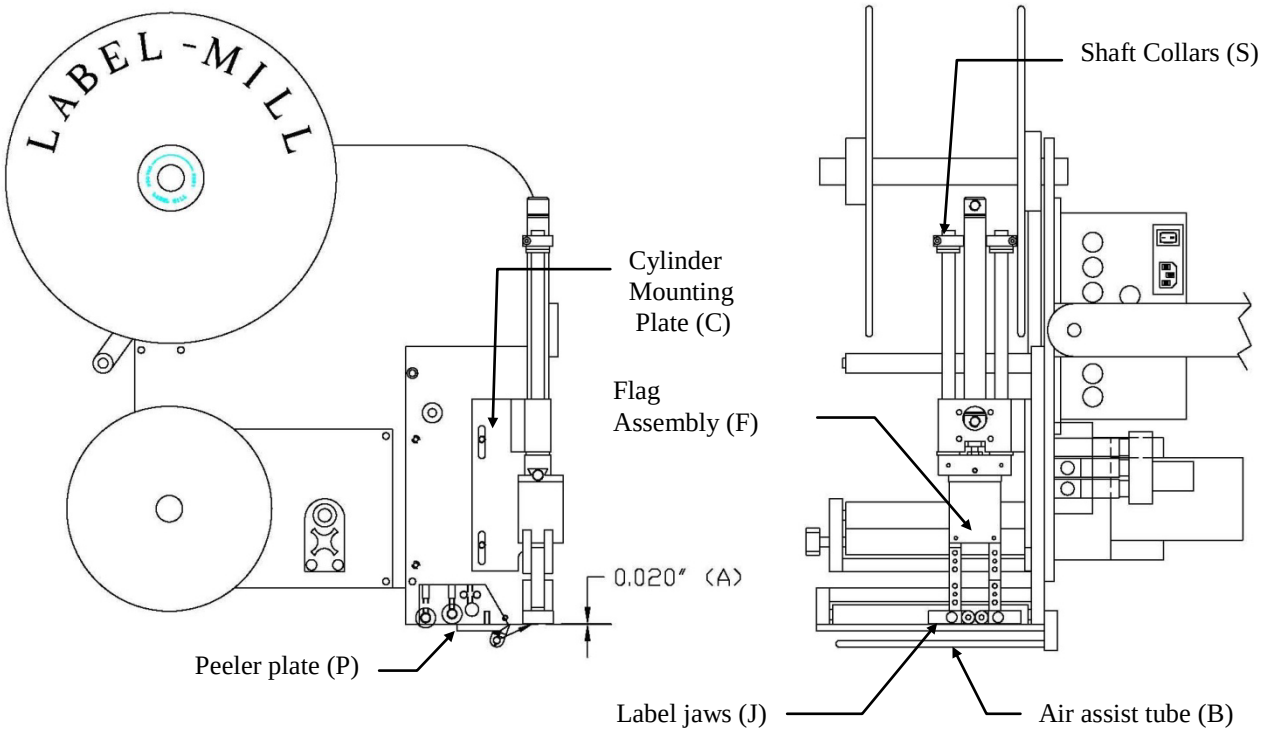
Flag Assembly & Factory Setup

NOTE: PICTURES SHOWN MAY NOT RESEMBLE YOUR MODEL



Label jaw to peeler plate clearance and maximum cylinder travel

To adjust the label jaws (J) in relationship to the peeler plate (P), the cylinder mounting plate (C) and the shaft collars (S) must be adjusted accordingly. The cylinder mounting plate (C) is used to adjust the gap between the peeler plate and the label jaws (A). The shaft collars (S), along with the air valves, are used to adjust the label jaws maximum travel.

1. To adjust the label jaws to peeler plate clearance (A), loosen the two button head cap screws and adjust the cylinder mounting plate to reach the desired 0.020" (A) clearance.
2. After this is set, retighten the cap screws. The dimension (A) should now be double-checked to insure proper clearance. This adjustment is very important! If this is not adjusted properly, the label will run into the back of the label jaws (J) and fold or bunch up.

Air assist tube adjustment

1. Adjust the air assist tube (B) so that the small holes aim towards the center of the label as shown by the arrowhead shown above. The air assist tube (B) aids the label to adhere to the bottom of the label jaws (J). Once the label 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.
   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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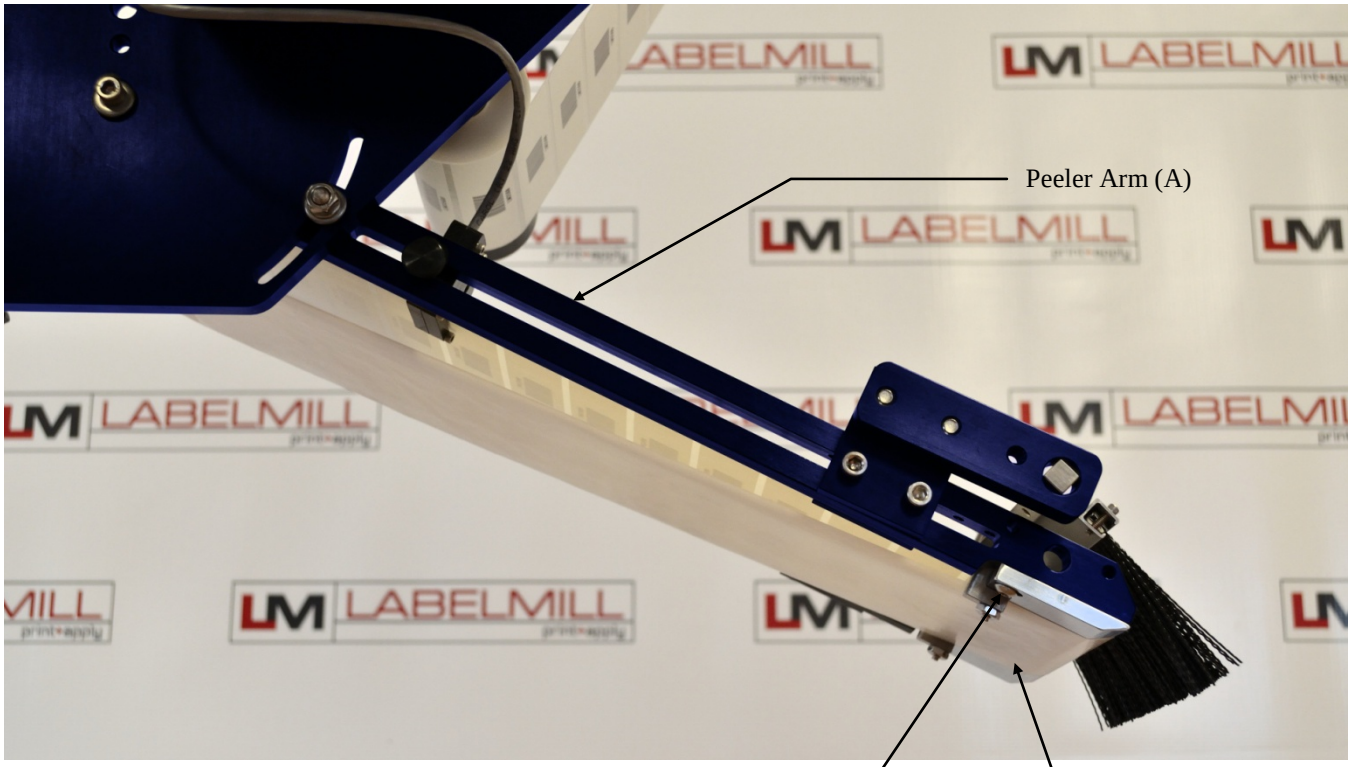
Synchronous Feed Assembly & Factory Setup



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 back plate, adjust the end of the peeler plate (P) that is closest to the back plate away from the back plate or the opposite end toward the back plate. Adjust the peeler plate (P) in the opposite direction if the web tracks away from the back plate.

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SECTION 4

PROGRAMMING AND CONTROL OPERATION

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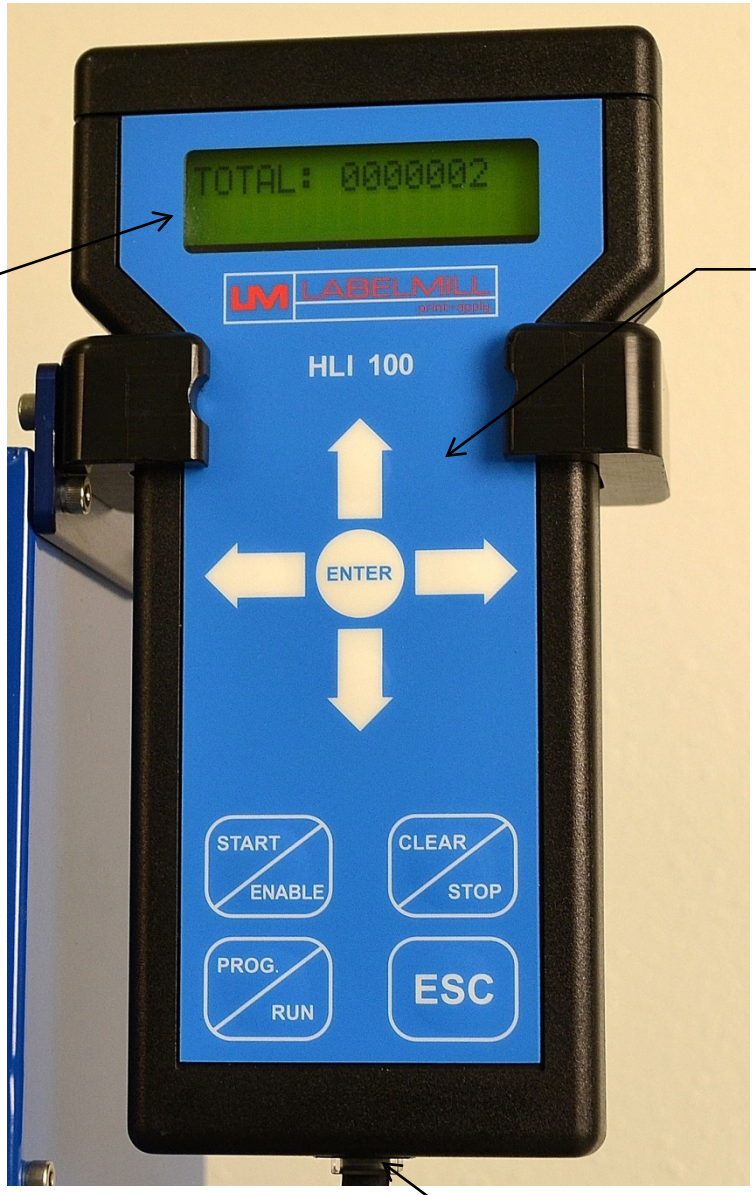
HAND HELD LABELER INTERFACE
HLI-100



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ACCESSORY CONNECTIONS

LOCATED ON BACK OF LABELER BACK PLATE

START INPUT

HEAD UP

LABEL SENSOR - DETECTS LABEL GAP

VALVE PACK

LABELER DRIVE MOTOR

LOW LABEL WARNING LIGHT KIT

OPTIONAL LOOSE LOOP PRINTER INTERFACE

AUX 120VAC MOTOR / 120VAC AUX OUTPUT DO NOT CONNECT DRIVE MOTOR HERE!

MAIN POWER

FUSE

POWER SWITCH

4-2

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SERIAL INTERFACE
TO HLI-100
HAND HELD LABELER
INTERFACE

OPTIONAL LIMITED
SERIAL INTERFACE
PORT

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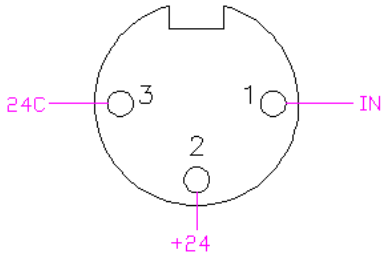
T-50 PHOTO EYE



4-4

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PROGRAMMING

All programming is performed via the **HLI-100** keypad and display as shown on page 2-6. 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-100 and then the *MODEL NUMBER & REVISION* of the labeler control. After this, the screen will now display the counter, *TOTAL XXXXXXX*.

- **KEY FUNCTIONS:**

"PROG" PROGRAM KEY IS USED TO:

1. **Enter and exit** the program menu.

"ENTER" KEY IS USED TO:

1. Access or "Enter" the selected "PROGRAM BLOCK". (example PRODUCT SENSOR or TAMP SETUP)
2. Access or "Enter" the ***data selection/options*** line (bottom line of display) of the "PROGRAM BLOCK" ***Sub Menus.***
3. Store the selected data.

UP / DOWN ARROW KEYS ARE USED TO:

1. Scroll up & down through the primary menu "PROGRAM BLOCKS" . (Header name)
2. Scroll ***sub menus*** inside of "PROGRAM BLOCKS". (top line of display while ***IN*** a "PROGRAM BLOCKS")
3. Increment and decrement programmable values.
4. Select different display views while in the "RUN" mode.

Left / Right ARROW KEYS ARE USED TO:

1. Move the "up carrot" left or right when programming a value.

START / ENABLE KEY:

1. Start key will initialize the application cycle.
2. Enable key will "Enable" the drive after it has been disabled.

CLEAR / STOP KEY:

1. Stop key will abort the cycle only when not in the program menu.
2. Clear key will delete stored values while in the edit mode.
3. Clear key will disable the drive.

ESC (escape) KEY:

1. Will back out of the sub programming menu without saving changes.

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- **PASS WORD**

The PASS WORD 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 pass word can not be changed.

- **AUTO SET GAP**

  The AUTO SET GAP function is used to set label sensor values. (Note that when using a Clear label detector the sensor values are not relevant) The label speed (IPM) can be set to fine tune this option. It is recommended to leave the IPM set to 300 or set it at the current application speed.

- **PRODUCT SENSOR**

  This is an external device that when "activated" starts the application cycle.

PROGRAMMABLE BLOCKS:

Product Delay – delays the application of the label (x) seconds after the sensor has been activated.
Sensor Trigger – designates whether the product sensor is activated at the leading or trailing edge of the product.
Multiple Feed – how many labels are applied to one product with one signal.
Interval Delay – amount of time in seconds between multiple fed labels Note: only active if quantity 2 or higher

- **TAMP SET UP**

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

PROGRAMMABLE BLOCKS:

Tamp duration – used to adjust the time that the tamp cylinder valve is actuated. (0.000 to 9.999)
Flag duration – used to adjust the time the flag jaws are held open after label application. (00.00 to 99.99)
Head up limit switch – type: ***normally open-***standard, normally closed, none
Head up Dbounce – Debounce is used to allow time for the tamp cylinder to settle on return. (00.00 to 01.00)
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.

- **LABEL SPEED**

This is used to set the speed that the label is fed.

PROGRAMMABLE BLOCKS:

Inches per minute – feeds the label at (x) inches per minute. Note that the speed that is entered is only for reference. The LM4005 has an open loop DC motor drive that will cause the speed to vary based on the label size.

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• COUNTER

Used to reset the internal counter of the control.

• LABEL SENSOR

Provides the ability to select different label sensor types and also set the parameters within these sensor types.

PROGRAMMABLE BLOCKS:

I-Mark/Gap/CLR – used to select type of label sensor; “I-MARK” labels, normal “GAP” & “Clear” labels
Manual Set Gap – automatically sets the emitter voltage when sensor is held on gap between label stock.
Gap Threshold – voltage differential needed to trigger control. (sensitivity)
Label Stop Posn – electronically adjusts label stop position in reference to the peeler plate point.

• CYCLE TYPE

Cycle Type determines the application type and sequence in relation to the label feed.

PROGRAMMABLE BLOCKS:

No Tamp
Tamp Before Feed
Tamp After Feed
Blow Before Feed
Blow After Feed

• JOB STORAGE

Used to store frequently used settings pertaining to different labeling jobs.

PROGRAMMABLE BLOCKS:

SAVE JOB – stores settings for active job.
RESTORE JOB – Restores saved job.

• DEFAULT SETTINGS

This setting will return the controller to the default settings. (Wipe on mode)

• I/O STATUS

Displays the status of the inputs and outputs.

• MOTOR TEST

For factory use only.

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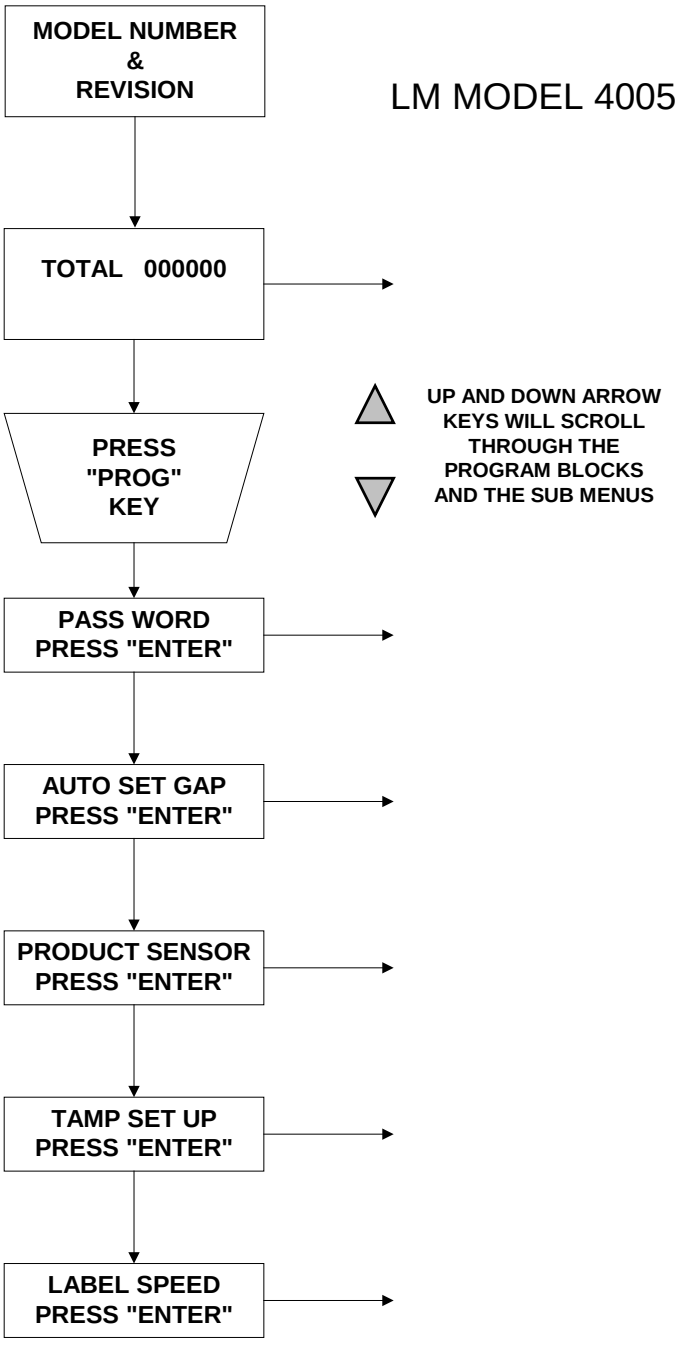
QUICK PROGRAMMING CHART



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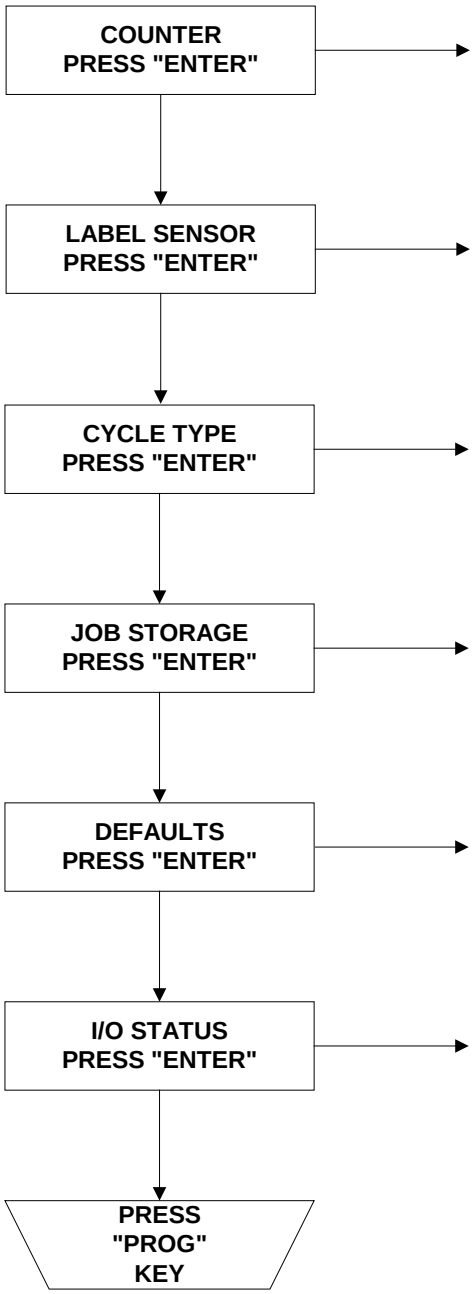

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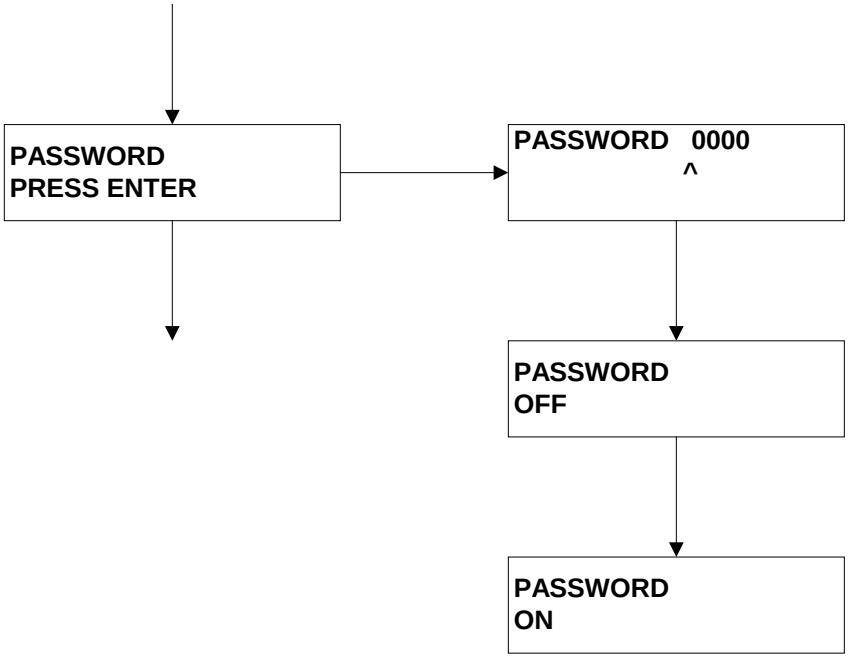
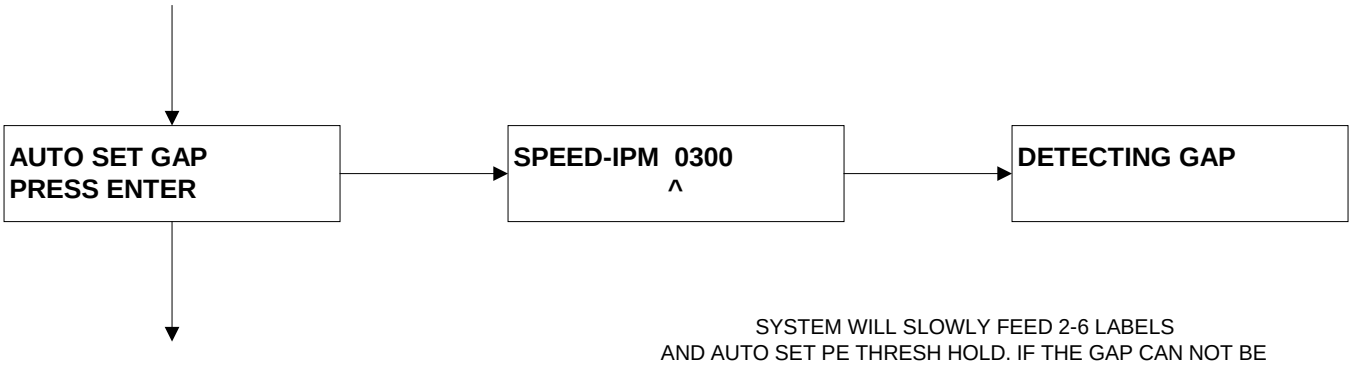
MAIN DISPLAYS



Note: use UP and DOWN arrows to toggle between "ON" and "OFF". The enter key will save selection.



SYSTEM WILL SLOWLY FEED 2-6 LABELS
AND AUTO SET PE THRESH HOLD. IF THE GAP CAN NOT BE
DETECTED THE DISPLAY WILL READ "GAP NOT DETECTED".

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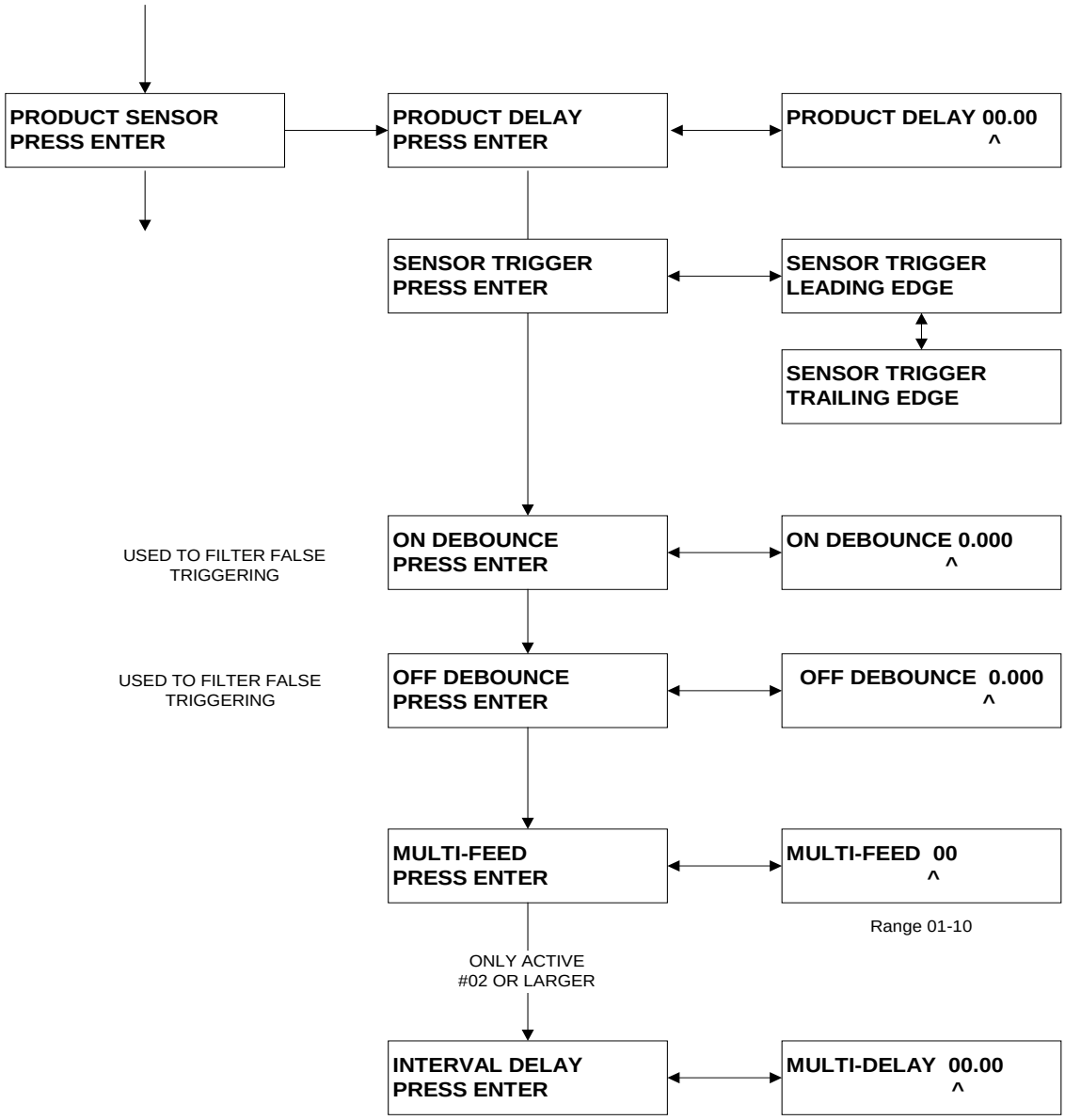

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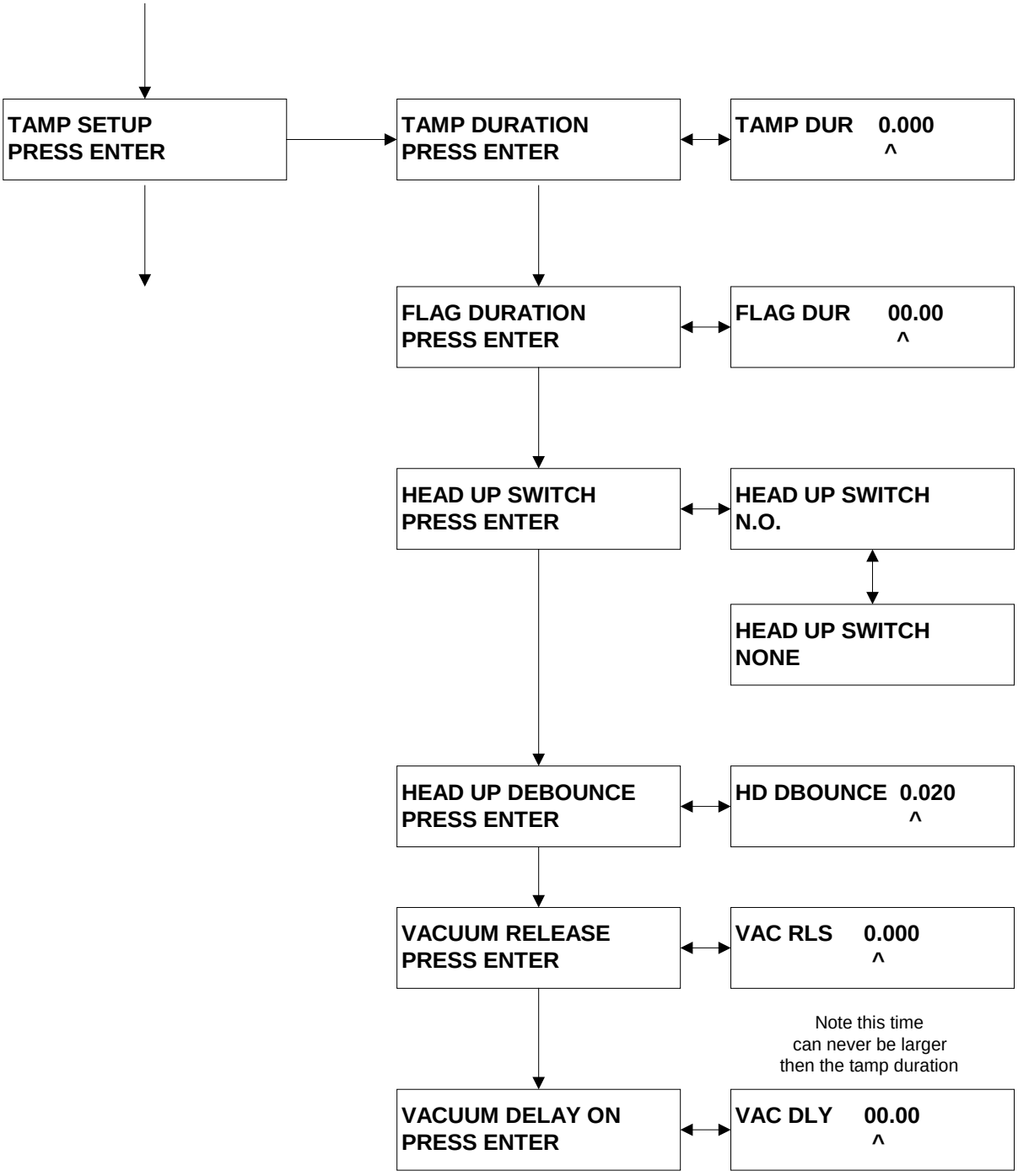

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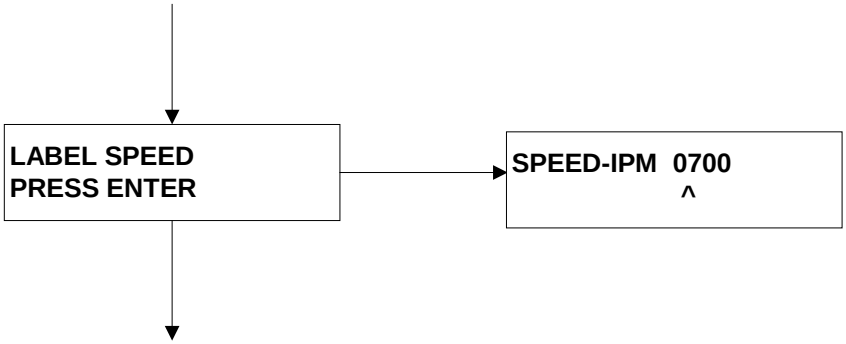

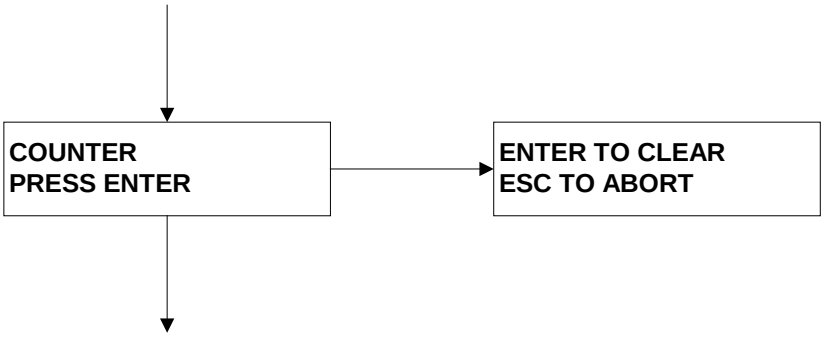

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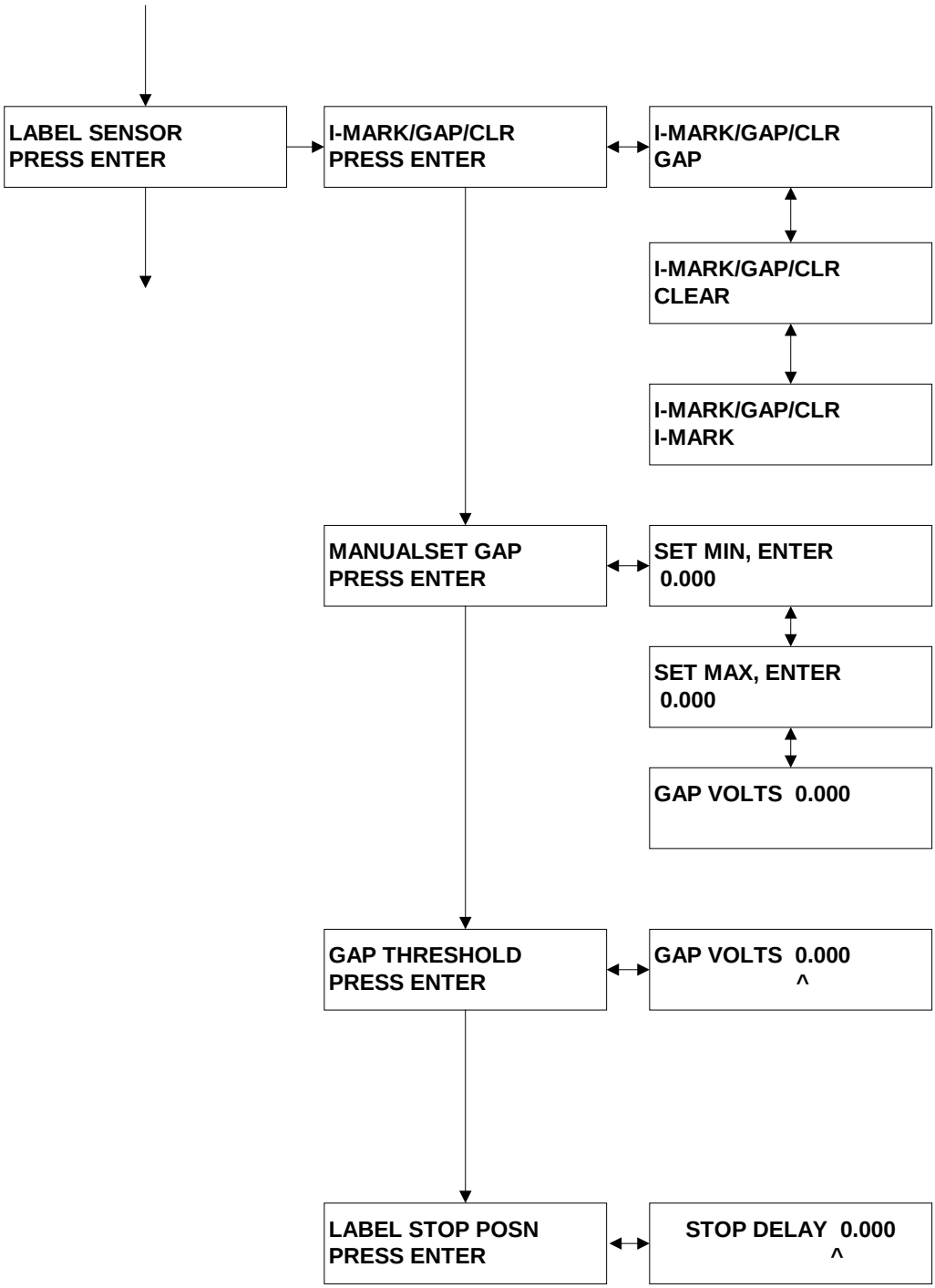

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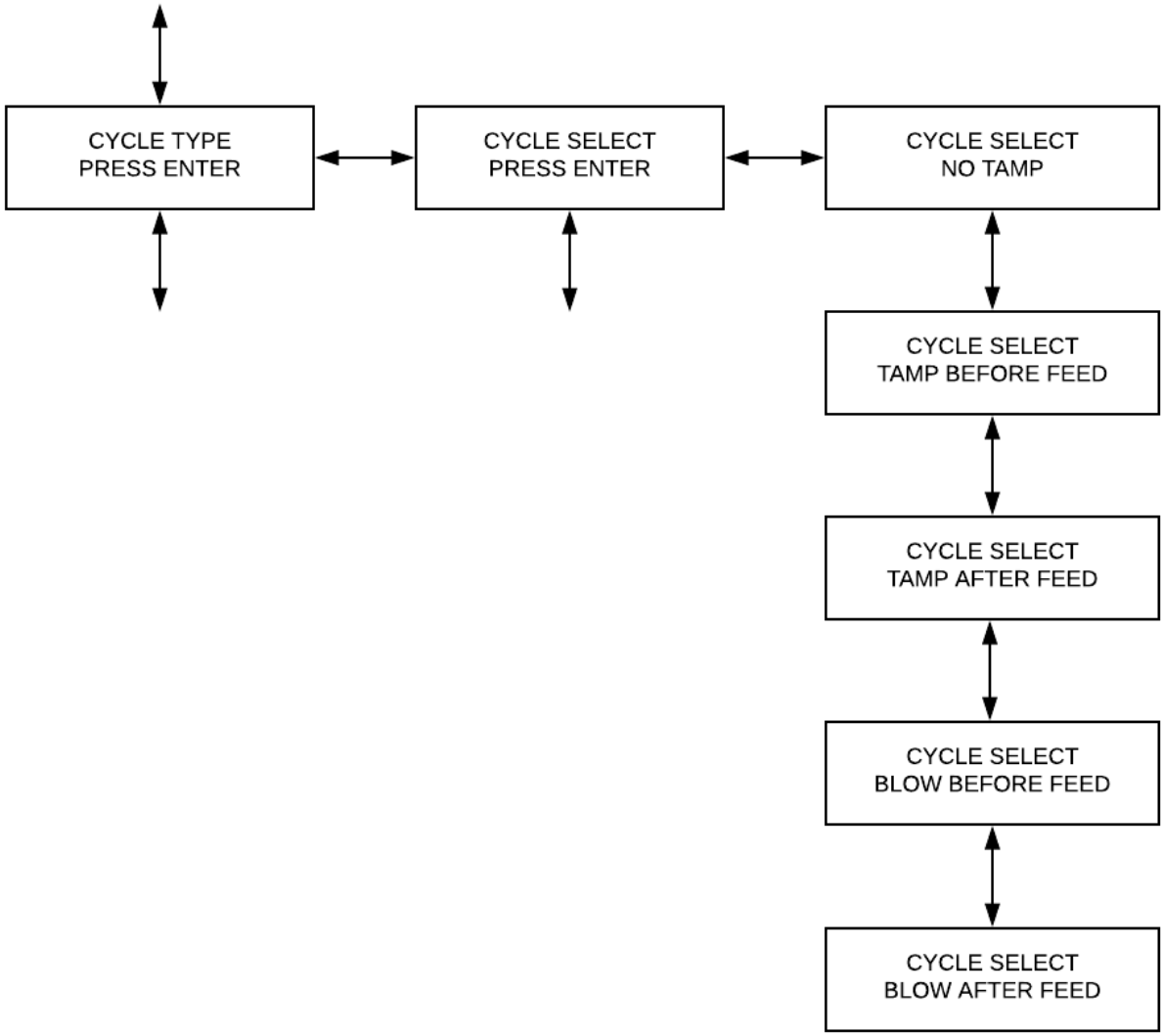

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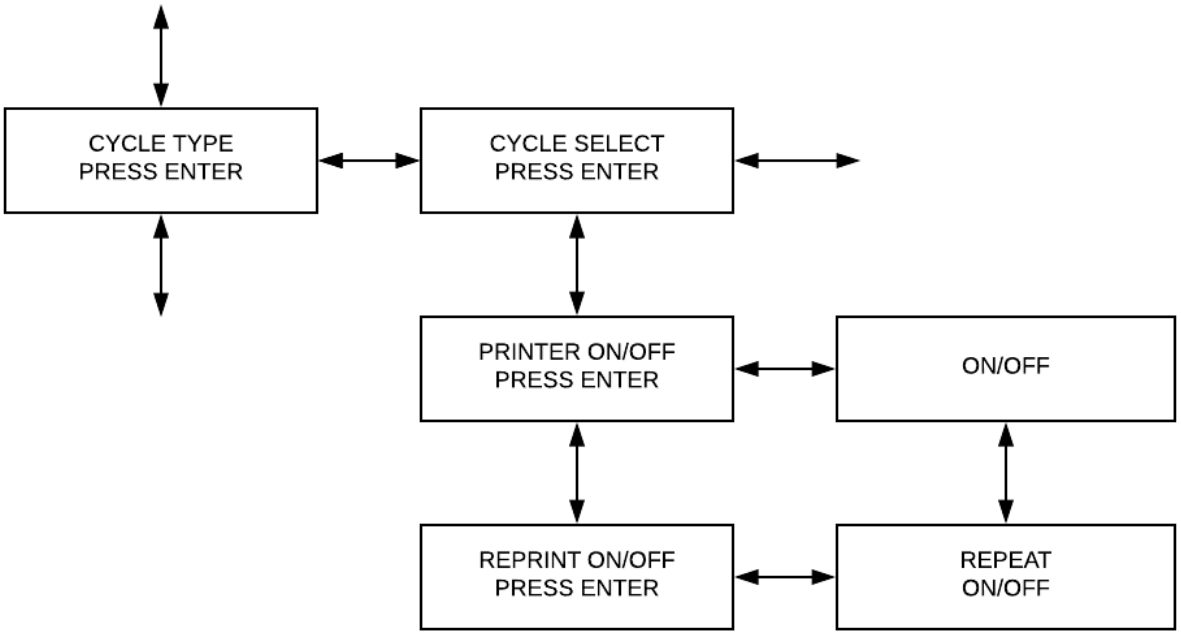

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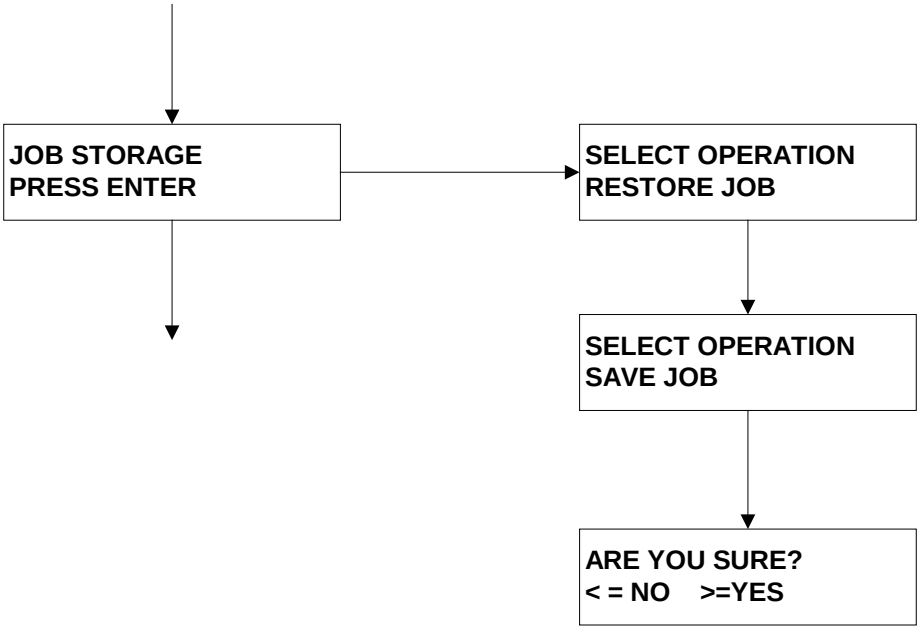

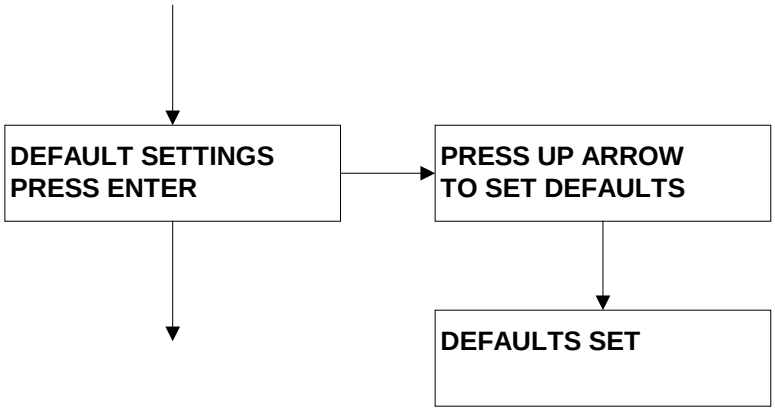

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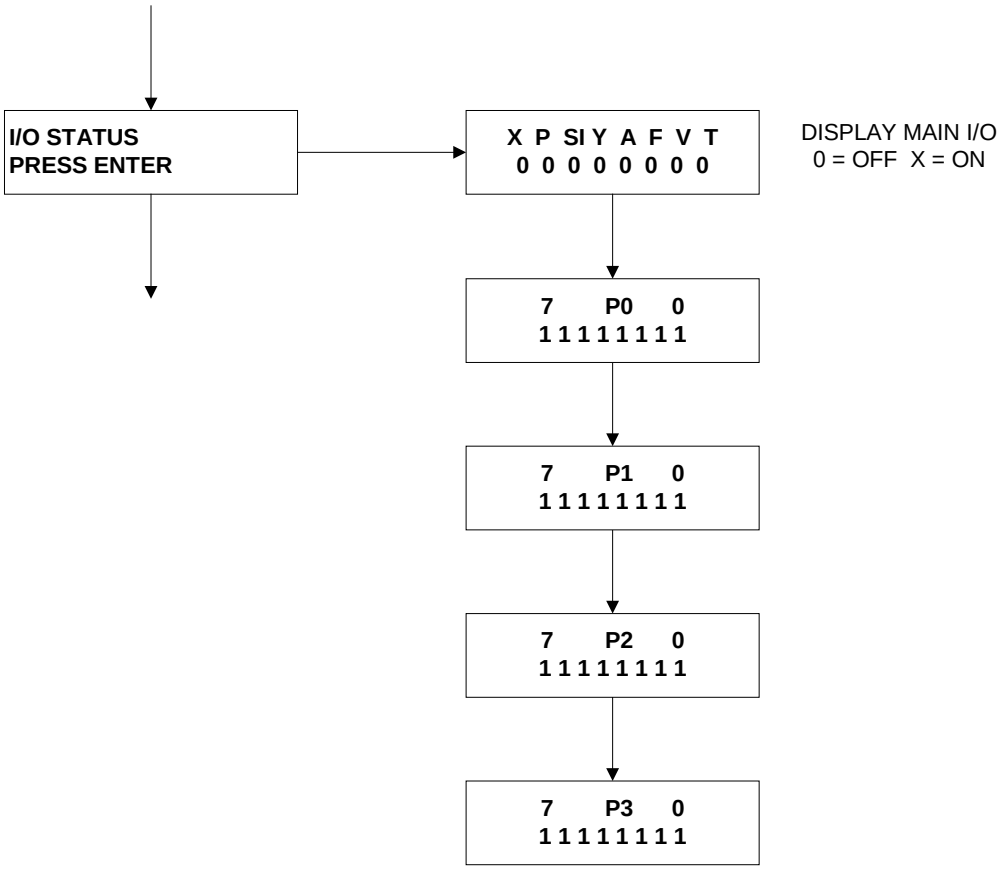

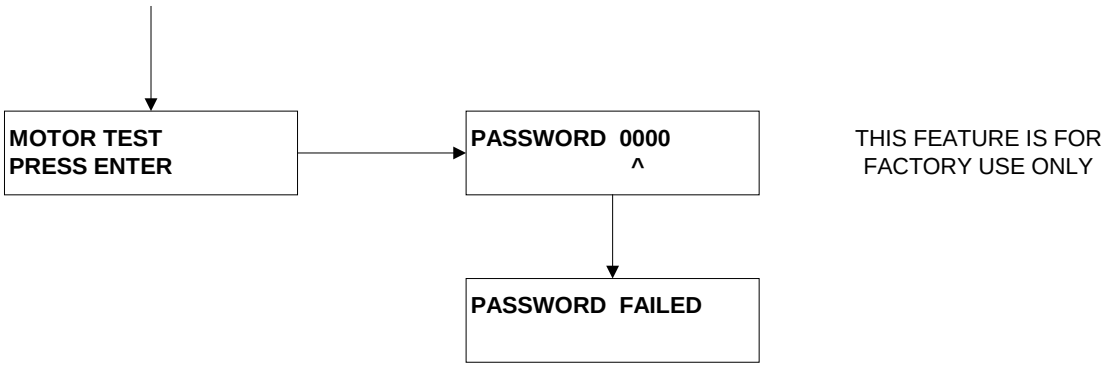

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KEY DEFINITIONS

- 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 in the tamp mode.

- 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.

- 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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SETUP OF KEY FEATURES

- **LABEL STOP POSITION**

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. The STOP DELAY is used to delay the "stop" position of the label relative to the peeler plate. If a "time" is entered into the STOP DELAY, the label will advance further out on the peeler plate.

1. Set basic applicator up first, refer to quick setup.
2. Operate applicator at desired label speed.
3. Manually move the label sensor to adjust the label stop position or the label stop position can also be electronically adjusted using the LABEL STOP POSITION. The proper stop position will be with the leading edge of the label stopping flush with the tip of the peeler plate. If this option is used the distance must be kept to a minimum.
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. Enter a small "time" in the STOP DELAY.
7. Operate system at the same speed again and check label offset.
8. Make the necessary adjustments to the STOP DELAY.
9. Test again; repeat if necessary until label is in proper registration to the peeler plate tip.

Note: The STOP DELAY distance CAN NOT be greater than half the length of the label. If the STOP DELAY time is too large, inconsistent and double label feeding will 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 CAN NOT 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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- **MANUAL SET GAP**

MANUAL SET GAP is used to manually set the label sensor to the label stock that is webbed in the applicator. This step is automatically taken care of in the AUTO SETUP mode covered in QUICK SETUP chapter. If the values the applicator calculated are in question, the following will allow manual calibration of the label.

1. Go to MANUAL SET GAP press “enter”
2. Move label in label sensor gap until the LOWEST value is displayed – press “enter” (center of label)
3. Move label in label sensor gap until the HIGHEST value is displayed – press “enter” (gap between labels)
4. GAP THRESHOLD is now displayed. This is the difference between the highest value and the lowest value.
5. GAP THRESHOLD can be manually over ridden for difficult labels.

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QUICK START GENERAL SETUP

1. Inspect applicator system and verify all cables are installed properly.
2. Web system with labels.
3. Turn power switch on.
4. Press “PROG”
5. Press up arrow
6. “ENTER” AUTO SETUP
7. System will feed out 2 to 10 labels to calibrate system.
8. If calibration fails, check label stock, web routing, cable connections and applicator condition.
9. Attempt “AUTO SETUP” again
10. If AUTO SETUP fails again, manual set up will be required.
11. Once auto set up is complete press PRG key to exit the programming menu.
12. Cycle system twice by pressing the “START” key.
13. Observe label speed and change if required.
14. Manually move the label sensor so the label stops flush with the peeler plate tip.
15. System is now ready for set up of advanced features and options.

MANUAL SET UP

1. Inspect applicator system and verify all cables are installed properly.
2. Web system with labels.
3. Turn power switch on.
4. Press “PROG”
5. Press down arrow until reaching “DEFAULTS” press ENTER
6. Press up arrow to load default settings.
7. Press up arrow
8. Perform “AUTO-SET GAP”
9. Once auto set up is complete press PRG key to exit the programming menu.
10. Cycle system twice by pressing the “START” key.
11. Observe label speed and change if required.
12. Manually move the label sensor so the label stops flush with the peeler plate tip.
13. System is now ready for set up of advanced features and options.

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HOW TO SET UP AN ASYNCHRONOUS APPLICATION

- **“TAMP”**

Determine the following and select it in the software

1. Type of application mode. MENU “CYCLE TYPE”
2. Tamp before or after feed (before feed is standard)
3. Enter a value in the tamp duration (start with 00.20) MENU TAMP SETUP
4. Set head up limit switch, normally open is standard MENU TAMP SET UP
5. Use the product delay to “MOVE” the label on the product

The asynchronous application mode is used to apply labels to products that are either stationary or moving at a constant speed when the label application is to take place.

- **“BLOW”**

Determine the following and select it in the software

1. Type of application mode. MENU “CYCLE TYPE”
2. BLOW before or after feed (before feed is standard)
3. Enter a value in the tamp duration (start with 00.10) MENU TAMP SETUP
4. Set head up limit switch, NONE is standard MENU TAMP SET UP
5. Use the product delay to “MOVE” the label on the product

The asynchronous application mode is used to apply labels to products that are either stationary or moving at a constant speed when the label application is to take place.

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HOW TO APPLY MULTIPLE LABELS TO A SINGLE PRODUCT

Product delay is used to electronically move the placement of the **FIRST** 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. This section will explain how to apply more than one label to a single product with a single start signal. MULTIPLE FEED will allow you to select how many labels to be applied.

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 CAN NOT 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.
11. Go to **MULTIPLE FEED** in PRODUCT SENSOR menu and set the number of labels to be applied to the product.
12. Set the Distance between each label entering a time (0.000) into **“INTERVAL DELAY”**
13. Test the placement of the labels and adjust as necessary. Note: The spacing between each label will be equal. With this feature the space between labels **cannot** be set individually.
14. Note: **TRAILING EDGE TRIGGER** will NOT work with this feature!
15. Note: Product speed fluctuations can effect label placement.
16. Turn back on any options that may have been disabled for setup of this particular feature.

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DESCRIPTION OF I/O

LEGEND

24V OPT: 24V OPTO INPUT WITH INTERNAL 24V COMMON
OH: HIGH CURRENT OUTPUT Rated @ 500ma

All user inputs and outputs are **"SINKING"** type. Example in order for a status light to illuminate for "Run Status Ok" the light should be wired between pins #2 & #4 on the **"Light Bar/Aux."** Connector.

Status display legend.

INPUTS				OUTPUTS			
S	P	H	Y	A	F	V	T
SMART TAMP	PRODUCT SENSOR	HEAD UP TAMP SENSOR	AUX OUT #1	AIR ASSIST SOL	FLAG SOL	VACUUM SOL	TAMP SOL

P0.0	PAPER END INPUT	0=ON
P0.1	RIBBON END INPUT	0=ON
P0.2	PRINER ERROR INPUT	0=ON
P0.3	RIBBON NEAR END INPUT	0=ON
P0.4	PRINT END INPUT	0=ON
P0.5	ON-LINE INPUT	0=ON
P0.6	REPRINT OUTPUT	0=ON
P0.7	PRINT OUTPUT	0=ON
P1.3	RED LIGHT ON (GREEN OFF)	1=ON
P1.4	YELLOW LIGHT ON	1=ON
P1.5	LOW LABEL INPUT	0=ON
P1.6	TAKEUP MOTOR OUT	0=ON
P1.7	AUX INPUT (DISABLE)	0=ON
P2.0	LABEL MOTOR START OUT	0=ON
P2.1	LABEL MOTOR BRAKE OUT	0=ON
P2.4	VACCUM SOL OUT	0=ON
P2.5	AIR ASSIST OUT	0=ON
P2.6	ROUND MODULE OUT	0=ON
P2.7	FLAG SOL OUT	0=ON
P3.4	TRIGGER INPUT	0=ON
P3.5	HEAD UP SWITCH INPUT	0=ON
P3.6	SMART TAMP INPUT	0=ON
P3.7	CLEAR LABEL INPUT	0=ON

The bit not listed above are used for serial clock data, RS232, and internal functions

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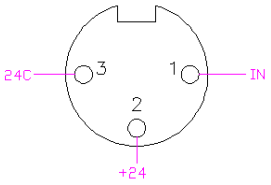
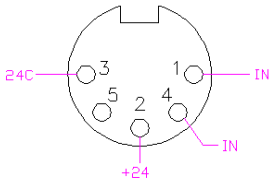
LOGIC BOARD

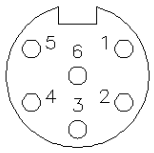
REMOTE TRIGGER CONNECTOR (PRODUCT SWITCH)	P1 PIN #	I/O	ADDRESS
TRIGGER INPUT	1	INPUT	P3.4
+24 VOLT	2		
24V COMMON	3		
SHIELD			



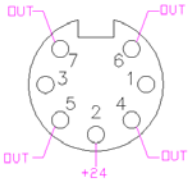
HEAD-UP / AUX IN	P2 PIN #	I/O	ADDRESS
HEAD-UP	1	INPUT	P3.5
+24 VOLT	2		
24V COMMON	3		
SMART TAMP / AUX IN 1	4	INPUT	P3.6
	5		
SHIELD			



WEB SENSOR (LABEL)	P3 PIN #	I/O	ADDRESS
(+5dvc) SENSOR COLLECTOR (220 ohm resistor to) DIODE ANODE	1		
(GND) DIODE CATHODE	2		
SENSOR EMITTER	3		
CLEAR LABEL DETECTOR	4	INPUT	P3.7
24V COMMON	5		
+24 VOLT	6		
SHIELD			



TAMP SOLENOIDS	P4 PIN #	I/O	ADDRESS
	1		
+24 VOLT	2		
	3		
AIR ASSIST SOL 24VDC	4	OUTPUT	P2.5
VACUUM SOL 24VDC	5	OUTPUT	P2.4
TAMP SOL 24VDC (also MTR2 120vac)	6	OUTPUT	P2.6
FLAG SOL 24VDC	7	OUTPUT	P2.7
SHIELD			



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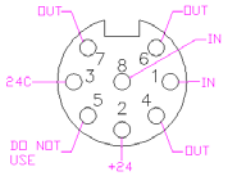
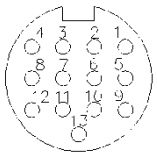
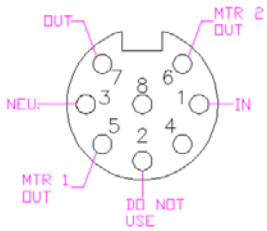
WARNING BEACON / AUX	P5 PIN #	I/O	ADDRESS
LOW LABEL PHOTOEYE 24VDC	1	INPUT	P1.5
+24 VOLT	2		
24V COMMON	3		
RUN STATUS (OK) 24VDC (green light)	4	OUTPUT	P1.3
No connection	5		
LOW RIBBON / LABEL 24VDC (yellow light)	6	OUTPUT	P1.4
ERROR LITE 24VDC (red light)	7	OUTPUT	P1.3
INHIBIT LABELER	8	INPUT	P1.7
SHIELD			



PRINT AND APPLY INTERFACE	P6 PIN #	I/O	ADDRESS
PAPER END	1	INPUT	P0.0
PRINTER GROUND	2		
RIBBON END	3	INPUT	P0.1
PRINTER ERROR	4	INPUT	P0.2
PRINT START	5	OUTPUT	P0.7
PRINT END	6	INPUT	P0.4
REPRINT	7	OUTPUT	P0.6
	8		
ONLINE	9	INPUT	P0.5
	10		
RIBBON NEAR END	11	INPUT	P0.3
	12		
+5vdc from printer	13		
SHIELD			



TAKE-UP MOTOR / ROUND MODULE	P7 PIN #	I/O	ADDRESS
	1		
	2		
MOTOR 2 NEUTRAL	3		
	4		
MOTOR 1 120VAC (take-up / round module)	5	OUTPUT	P1.6
MOTOR 2 120VAC (auto-round)	6	OUTPUT	P2.6 / Tamp
	7		
	8		
GND / SHIELD			



Optional connections; consult factory for custom programming and connection.

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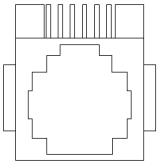
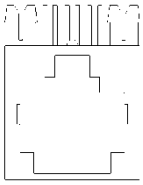
KEYPAD / DISPLAY RS232	P8 PIN #	I/O	ADDRESS
232 XMIT	1		
232 RCV	2		
GND	3		
+24VDC	4		
GND	5		
	6		
	7		
	8		

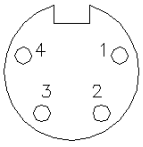


SERIAL AUX RS232	P9 PIN #	I/O	ADDRESS
232 XMIT	1		
232 RCV	2		
GND	3		
	4		
	5		
	6		
	7		
	8		



MOTOR POWER BOARD

MOTOR CONNECTOR	P3 PIN #	
ARMATURE (+)	1	
ARMATURE (+)	2	
ARMATURE (-)	3	
ARMATURE (-)	4	
SHIELD		



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SECTION 5

CLEANING & MAINTENANCE

Troubleshooting 5-1
Fault Codes 5-2
Replacing the Main Power Fuse 5-3

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TROUBLESHOOTING GUIDE

If the system malfunctions, it is necessary to determine where the problem exists in a normal sequence of operation. Possible error conditions are listed in the left-hand column to provide a systematic approach to troubleshooting.

Error Condition	Possible Cause	Corrective Action
Unit will not turn on.	A. Blown Main Fuse	Check main power fuse and replace if necessary as shown on page 3-2.
Air system will not operate.	A. No air pressure. B. Plugged hose. C. Faulty valve.	Check air supply and filter. Fix or replace hose. Consult factory.
Take-up unit does not turn.	A. Friction plate failure in clutch. B. Mechanical failure in clutch.	Consult Factory
Waste web tension to loose.	A. Clutch tension too low.	Adjust clutch as shown on page 2-4.
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 as shown on page 2-4. Re-web system as shown on page 2-2. Consult label mfg. Consult factory. Consult factory.
Label double feeds.	A. Web sensor out of adjustment	Adjust setting as shown on page 2-3.

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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 (10 second time out)	Too many labels missing on web Labeler not webbed properly Web sensor not adjusted properly	Check label stock Check for proper webbing Run Auto Gap Set
Label Not Found	Label not sensed in auto set up	Check label stock Check label sensor Retry auto set up
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

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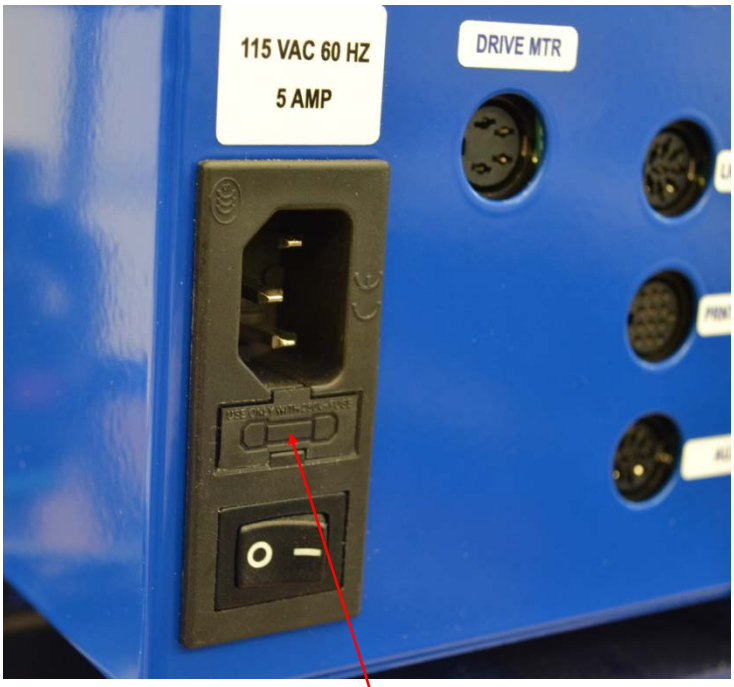
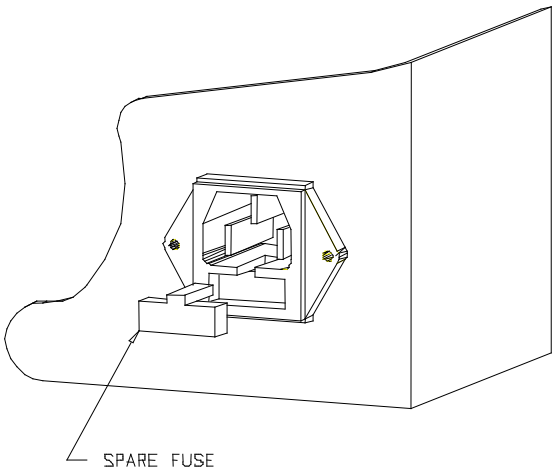
REPLACING THE MAIN POWER FUSE

The circuitry is protected from a current overload by GMA 4A a fast 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.





Spare Fuse Drawer

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LM-4005
AUTOMATIC LABEL APPLICATOR
OPERATIONS MANUAL

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