



## **VL – 10 STAMP MACHINE**



## **Service & Installation Manual** **Version 2c**

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## VL-10

### Introduction:

The VL-10 is designed to open cigarette cartons, to apply tax stamps to cigarettes packs and to re-close the cartons at a rate of 72 cartons per minute. The machine maintains this production rate at all times as long as the infeed conveyor is continuously supplied with cartons. The VL-10 can apply stamps to nearly all brands and sizes of cartons from regulars through 120's as long as the cigarette packs are arranged in the standard 2x5 row / column format within the carton. The VL-10 is designed to be simple to operate and maintain. It features a new type of stamping head which uses an easy-to-load cartridge system to automate the stamp roll threading process. The VL-10 uses a hot melt glue system to re-close the cartons after the stamps are applied to them. This stamping machine is designed to work well with several different packing options including angle tables, lateral packing conveyors and fully automatic case packers.

### VL-10 Machine Facility Requirements

Air .....	<b>12cfm @ 80psi dry air.</b> See appendix A "Supplying Compressed Air for your Meyercord Stamping Equipment" for details
Electrical .....	220 - 240 VAC / 30 Amps single phase @ 60hz The VL-10 is supplied with an 8' cord that is terminated with a NEMA L6-30 Plug. See appendix B for drawings.
Weight.....	2000 lbs
Hot Glue .....	Use Meyercord hot melt glue, P/N 168767
Footprint.....	Appendix D

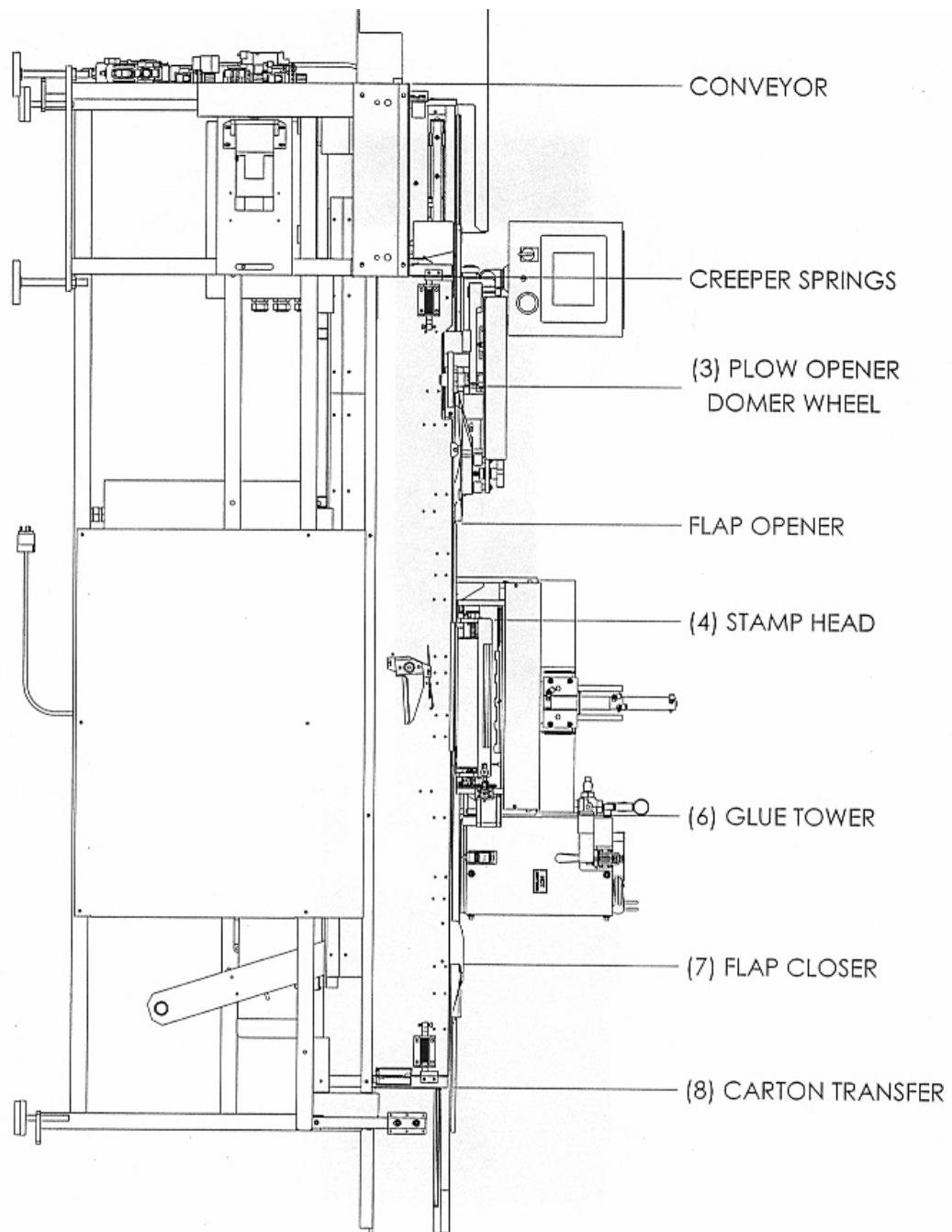


Figure 1. VL-10 Stations

### Overview of Operation:

Each carton passing thru the VL-10 machine follows these steps:

- 1) The carton is placed upright on the infeed conveyor oriented with the large flap side downstream.
- 2) The carton rides the conveyor until it reaches the “carton trough station #1”.
- 3) Once the presence of the carton is detected in the trough, a lifter raises the carton up to, or at least near, the trough ceiling so that the carton will be well oriented with the plow. Then the first “pusher block” pushes the carton downstream to the second “trough station” and then the first pusher block retracts. The carton briefly rests at this second station, while all pusher blocks return to their starting position. At the start of the next cycle, the second pusher block pushes the carton to the third trough station. This series of brief pauses followed by advances continues as the carton travels the length of the stamping machine. Each advance (or index) followed by a pause (or dwell) is considered one machine cycle. During the dwell of each cycle the following processes will occur, if a carton is correctly positioned. See figure 1 for stations references.
  - a. At station 3, the carton passes between a pair of doming wheels which raise the carton flaps up and out so that the leading edge of the carton is opened by the tip of the plow.
  - b. At station 4, stamps are applied to the top of the cigarette packs.
  - c. At station 6 hot melt glue is applied to the large carton flap.
  - d. At station 7 the carton flaps are folded shut.
  - e. At station 8 the carton is pushed out of the carton trough.
- 4) At the end of the stamp machine, depending on the packing options the cartons may be handled in one of several ways:
  - a) If the stamping machine is being used with an auxiliary angle table, the cartons fall onto the angle table and are ready for hand packing.
  - b) If the stamping machine is being used with either a packing conveyor or a case packer, the carton is moved forward by a wedge located between parallel rails inside the stamp machine.

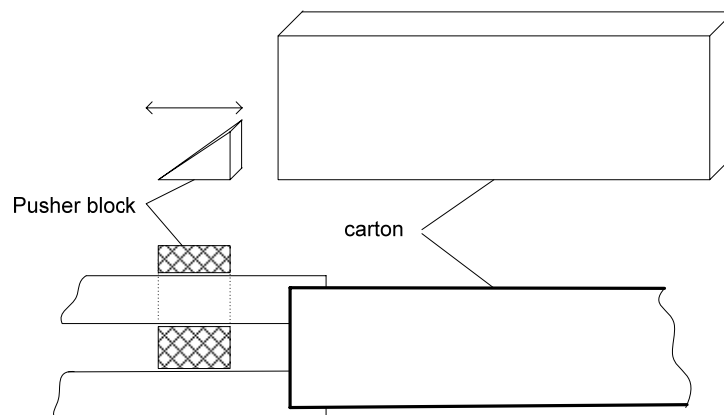


Figure 2. The Carton Transfer Device.

**Carton Trough Assembly:**

The carton trough is formed by the interaction of the front door, the wire springs, the back surface of the shuttle assembly and the ceiling plates. The shuttle-assembly moves back and forth at all times while the machine is operating – even if there are no cartons inside the machine. Spaced along this assembly are a series of “pusher blocks” (figure 3). The pusher blocks (numbered 1 through 8) start at the infeed end (ie upstream) of the shuttle assembly. Pusher #1 is the pusher block which takes the carton from trough station #1 (at the end of the infeed conveyor) and pushes it to trough station #2.

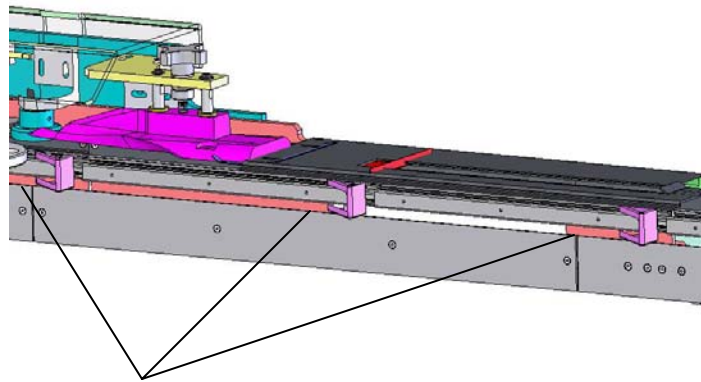


Figure 3. Pusher Blocks on the carton trough shuttle assembly

The return and extension of the first two pusher blocks are controlled by pneumatic cylinders and the remaining pushers are simply “spring loaded”. Each pusher block moves one carton in the downstream direction from one station to the next during each cycle of the stamp machine. During the upstream stroke of the shuttle assembly, the spring loaded pushers retract into the shuttle assembly and then pop back out when the shuttle is ready to move in the downstream direction again.

In addition to the wire springs at the bottom of the trough (which are used to float the cartons up to the ceiling), a series of leaf springs (paddles) located on the front wall of the trough (ie the door) are used to press the cartons in the trough up against the back wall. Some of the leaf springs also serve a second purpose which is to keep the cartons from sliding in the upstream direction when the shuttle is moving upstream. These special ‘anti-backup’ springs are illustrated in figure 4 below.



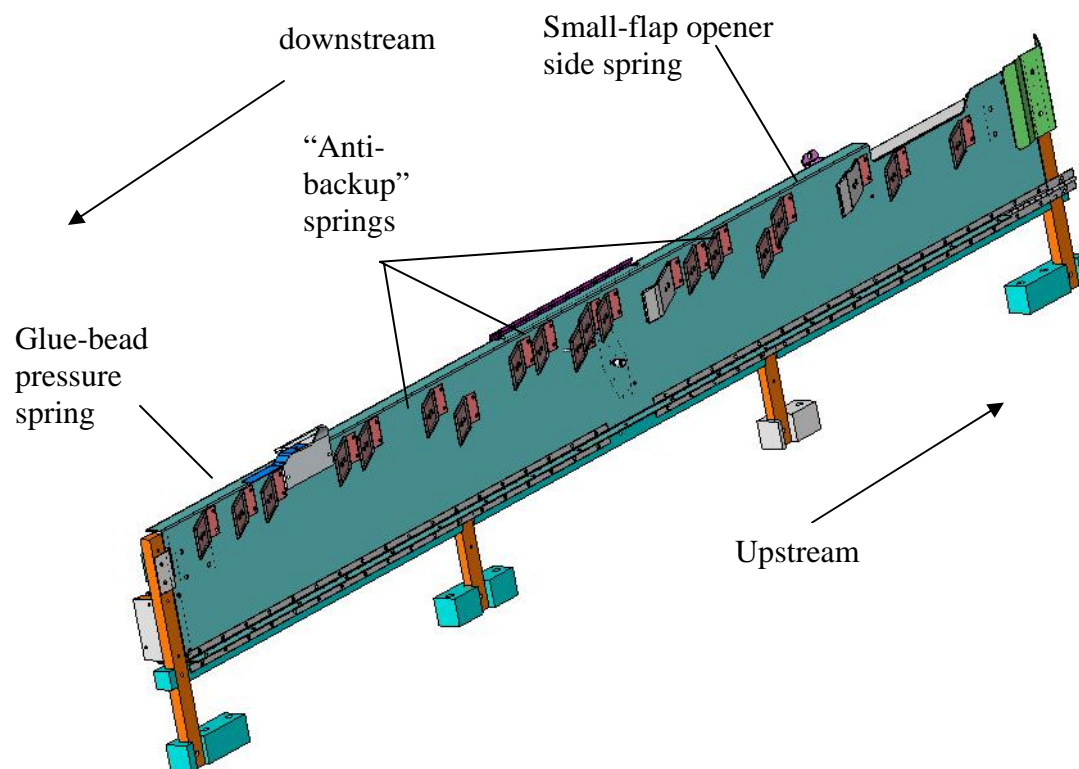


Figure 4. View showing the inside surface of the front door. The door springs (leaf springs) perform a variety of functions as shown.

During the entire time that the carton is traveling through the stamp machine, the carton is “floating” on a bed of wire springs which push the carton up against a fixed height trough “ceiling plate”. In this way, the tops of all cartons in the machine, regardless of the carton size (regular, 100s, kings etc) are all at the same height. This is true even if the cartons inside the carton trough are of different sizes. For example, it is completely acceptable to put a king size carton, immediately followed by a 120 size carton, immediately followed by a regular size carton into the VL-10. It is never necessary for the machine to pause between sizes nor is it necessary to change any settings on the machine when changing sizes. The machine will continue to operate at the same speed whether the cartons passing through the machine are the same size or are of mixed sizes.

## **Powering Up:**

There are 5 simple steps to turning on the VL-10 stamp machine:

- Step 1: Turn on the electricity and compressed air.  
(on electrical panel & pneumatic panel)
- Step 2: Check for moisture in filter bowls
- Step 3: Load the cartridge with the tax stamps into the stamp machine.
- Step 4: Check the glue tower (glue tank), verifying sufficient hot melt glue is available.
- Step 5: Turn the main ON/OFF switch to “ON” on the control panel.

### Turning on Electricity and Compressed Air

To start the VL-10 machine, it is necessary to turn on both electrical power and the compressed air supply at the machine.

#### Electrical

Electrical power is turned on by turning the large red knob on the electrical panel. This switch is located on the door of the main electrical enclosure. The enclosure is on the back side of the stamp machine opposite the infeed table. Turn the switch to the twelve o'clock position to turn it “ON”. To turn off the power rotate the switch to the nine o'clock position.



Figure 5

After main power is turned on, the operator display panel will display the message “Loading...” for approximately 15 seconds followed by the main display screen (figure 6).

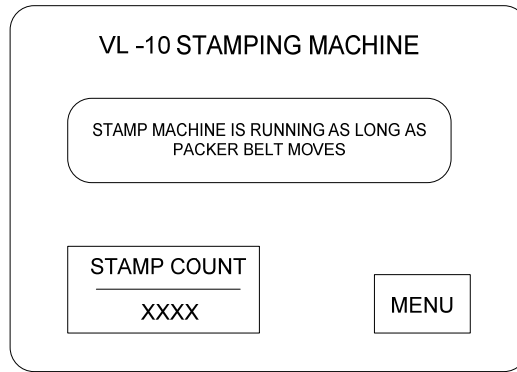


Figure 6. Main Display Screen

### Air

An air control valve is located on the pneumatic panel located at the end of the stamp machine. For the stamp machine to operate the valve must be rotated to the correct orientation.

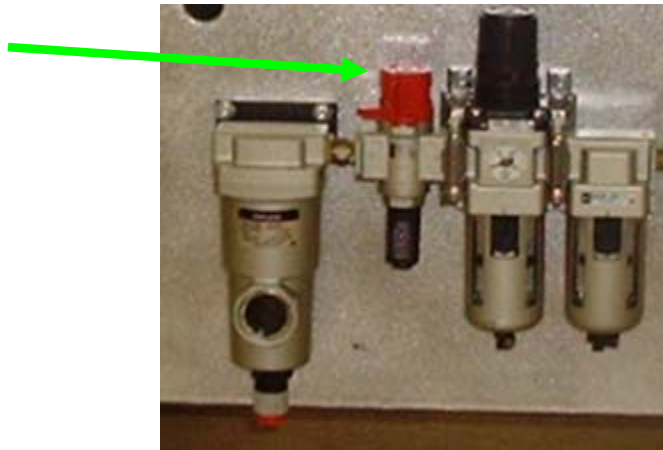


Figure 7. Air control Valve

Prior to turning on the supply of compressed air to the stamping machine, it is important to check for the presence of water in the water separator bowl, the filter bowl, and the coalescing bowl (figure 8). The VL-10 requires that the compressed air supplied to this stamping machine be “dry”. All air coming from an air compressor is “wet” as a result of being compressed by the compressor. After the air compressor, the compressed air must be dried by passing through an aftercooler and/or air dryer. *Types and advantages of different compressed air dryers and other important information about air compressors is contained in Appendix A of this manual “Supplying Compressed Air to your Meyercord Stamping Equipment”.*

### Moisture

If the air to the stamping machine is dry, then there should be little or no moisture in the separator bowl and filter bowl. If there is moisture in the separator bowl it should be drained prior to turning the compressed air supply “ON”. The separator bowl can be drained by unscrewing the fitting at the bottom of the bowl. Air pressure will force the water out of the bowl

through the fitting. The filter and coalescing bowl can be drained by pushing a button located at the bottom of the bowl.

Bowl cleaning sequence:

- Drain bowl A
- Turn main air on
- Drain bowls B & C as needed

The separator and filter bowls (A & B) are more likely to fill with water. Check daily for moisture. *The air compressor and air dryer should be checked to determine why moisture is present.*

If there is no moisture in the separator bowl then the compressed air can be turned “ON” by rotating the red compressed air control knob to the “ON” position as shown.

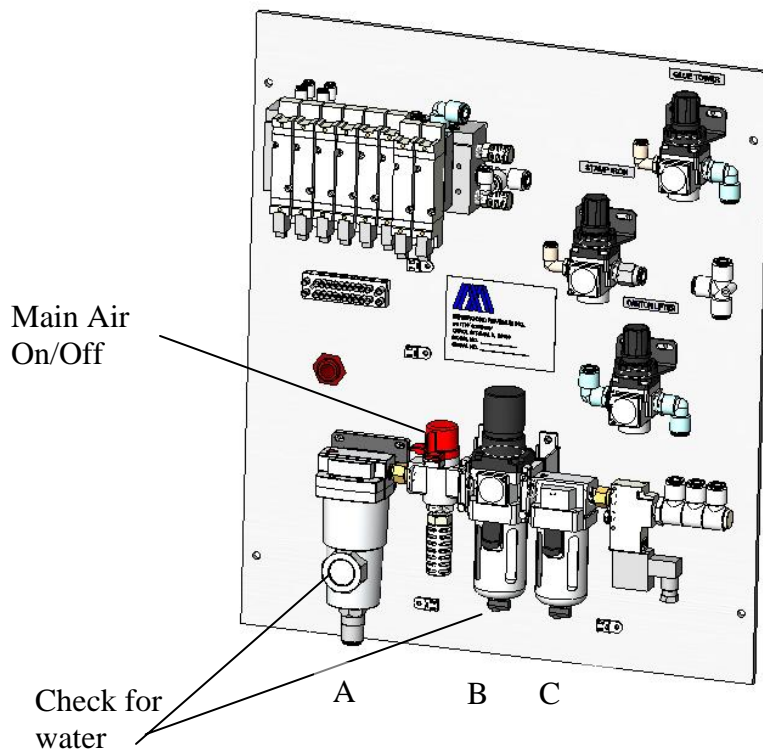


Figure 8

A-Separator  
B-Filter  
C- Coalescing Bowl

### Run Mode

Turn the stamping machine on by momentarily rotating the black ON/OFF knob (figure 9) to the “ON” position. The switch will then return to its default center position. If the stamping iron and glue pot are at the correct temperature, the VL-10 will start running. The infeed conveyor will turn on and the shuttle plate will begin moving back and forth. If the iron and/or glue pot are not at the correct temperature, the operator display will indicate what the problem is and it will indicate what steps to take next.

### Stopping the stamp machine (*while running*)

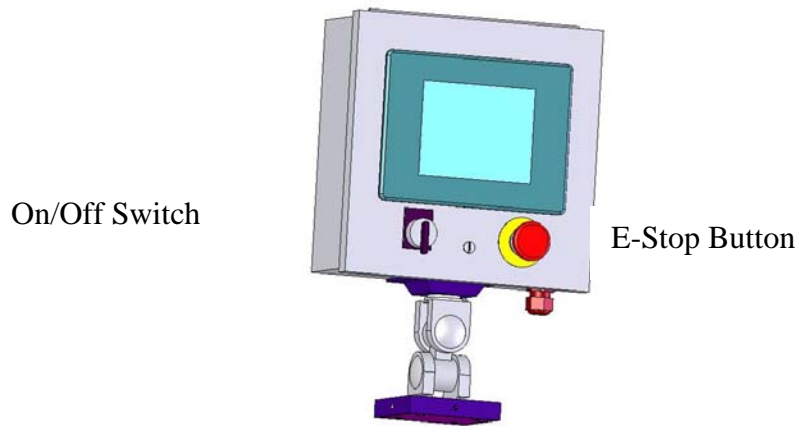


Figure 9. Operator Control Panel

There are 3 ways to stop the stamp machine:

- Push the “Emergency Stop” (E-Stop) button
- Open the door with the “Pull String”
- Using the On/Off switch

The E-Stop removes power (air and electric) from most of the machine. The glue tower and sensors will still have power. After using the “E Stop”, the operator *must restart* the VL-10 by clearing the source of the error. You should ALWAYS press the E-Stop button before opening and/or reaching into the machine.

Opening the front door allows access to the carton trough and/or cartons inside the trough. A cord runs the length of the stamp machine. Pulling the cord allows the operator to open the door. The door has a safety interlock on it which performs an E-Stop whenever the door is opened. The door must be fully closed before the VL-10 will be able to run again.

The black ON/OFF knob will remove power to the stamp machine. The motor turns off with the black knob. Caution is required here as the parts of the machine will remain energized.

**Horn Adjustment:**

A large knob on top of the horn allows for optimization of the height of the horn to open the carton. The horn is designed to smoothly open the carton. Turning the knob clockwise raises the plow while turning the knob counter clockwise lowers the plow. A sensor on the horn determines if the small flap is open. This sensor replaces the microswitch formerly used on earlier machines. The plow height is setup during installation. This procedure is located in the plow height adjustment section.

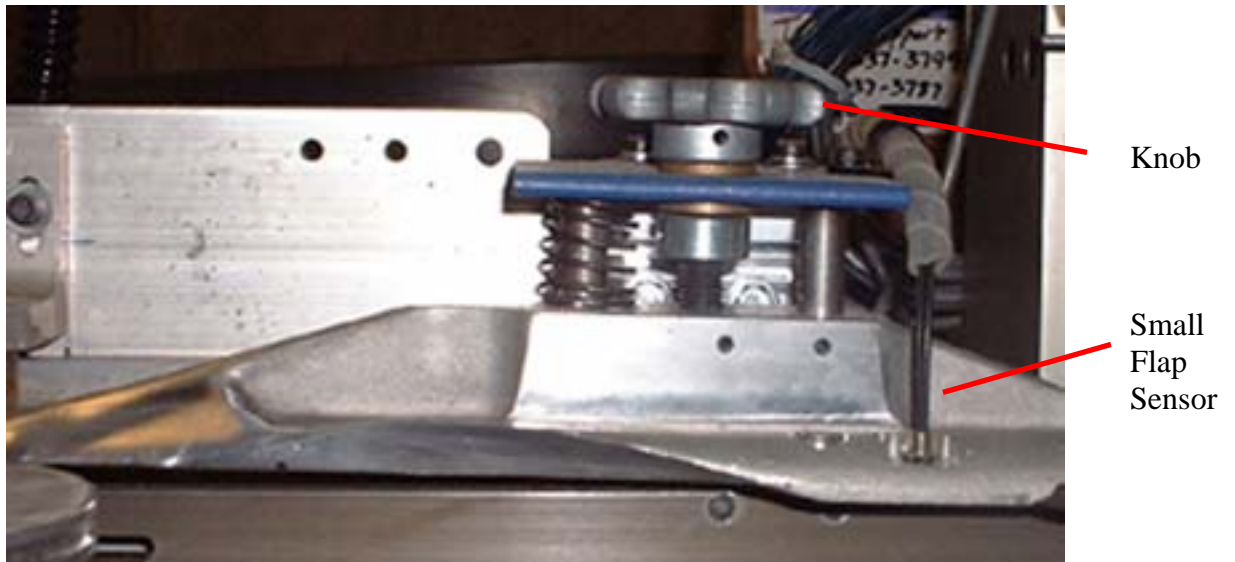


Figure 10. Horn Adjustment Knob

### Tax Stamps:

The loading of stamps with the VL-10 has been greatly simplified. The use of a cartridge allows quick and easy changing of the stamps.

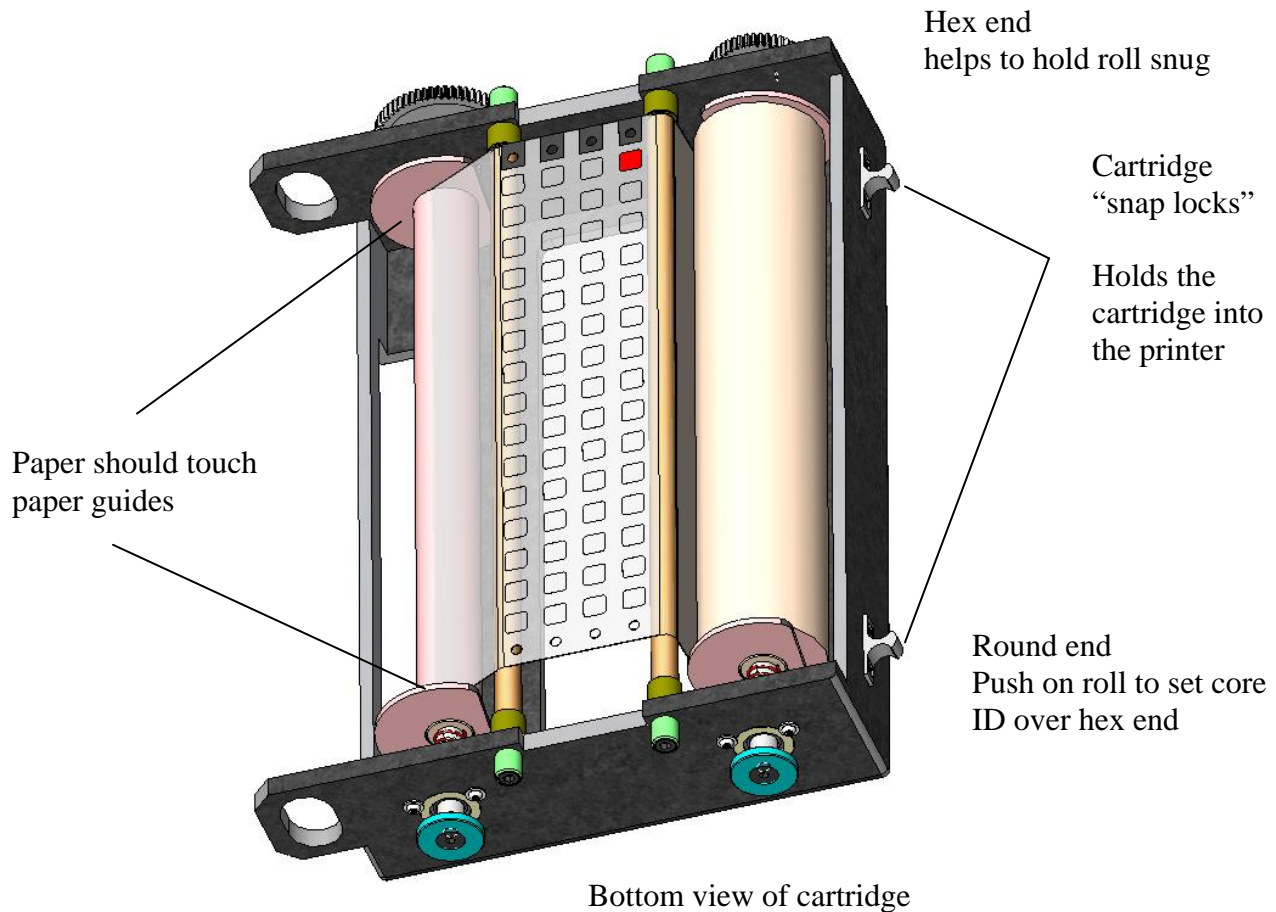


Figure 11. Stamp cartridge shown with new stamp roll

### Cartridge loading

Threading the stamp cartridge is easy.

- Pull the spring loaded knob outwards
- Insert the roll of stamps over the hex end first
- Thread the paper over both brass bars
- Tape the lead paper of the stamp roll to the new core

Note: Both brass bars should be visible from the top side of the cartridge assembly if the paper is properly threaded.

*Before beginning this sequence of steps make sure the E-Stop is not pulled out, the main power switch is on and product is not being run. **Not: when changing cartridges write down the number of stamps. The number may not be saved if power is lost.***



- 1) Push the operator touchscreen in the lower left corner where the “Stamp Count” is displayed. The machine will respond by raising the stamping iron to the “loading” position.

VL -10 STAMPING MACHINE

STAMP MACHINE IS RUNNING AS LONG AS  
PACKER BELT MOVES

STAMP COUNT

XXXX

MENU

- 2) Insert the cartridge until it “snaps” into position.



- 3) Close the green-handle levers to lock the cartridge into place.
- 4) Touch the 2<sup>nd</sup> box labeled “STAMP COUNT” to get the numeric keypad. Enter the number of stamps remaining on the stamp roll. After typing in the number, hit the “Enter” button on the keypad. (Note - there are two boxes with the label “STAMP COUNT”).

LOAD STAMPS #1

1. ENTER THE NUMBER OF STAMPS  
REMAINING ON THE ROLL

STAMP COUNT

██████

TOUCH LEFT NUMBER  
TO BRING UP  
KEYPAD

2. IN STARTING ROWS, SELECT FRACTION  
OF ROWS REMAING

full

2/3

1/3

NEXT

- 5) Look down into the stamp cartridge from above the stamping head. Check to see if the first two rows of stamps are approximately in the correct location. One easy way to check is to compare the position of these two rows with the sticker on the inside of the cartridge which says “align first two stamp rows here”. If the stamps are not in



the correct location, you can move the stamps by pressing the touchscreen buttons labeled “JOG AWAY” or “JOG TOWARDS”.

LOAD STAMPS SCREEN #2

3. CHOOSE TAKE-UP CORE

NEW CORE

SAME

TAKE-UP CORE IS  
NEW/EMPTY

CONTINUATION OF SAME  
TAKE-UP ROLL

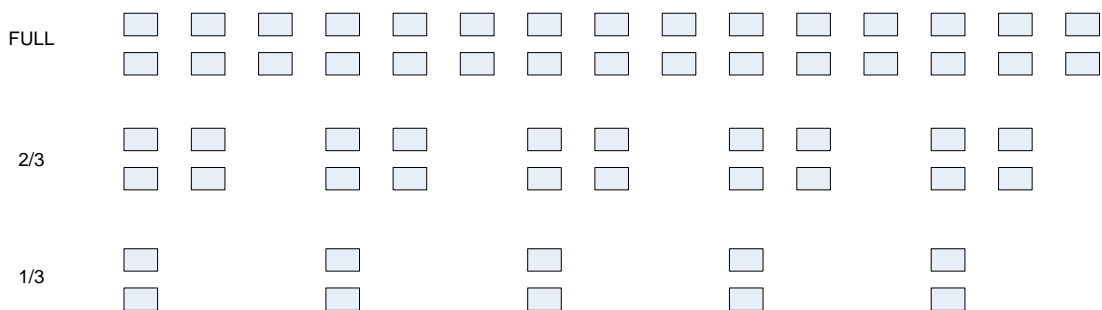
4. JOG PAPER SO STAMPS ARE UNDER IRON

JOG AWAY

JOG TOWARDS

DONE

- 6) A choice must be made to press either “New Core” or “Same” in the above screen. Here is how to decide which button to press: There are two core-rolls in the stamp cartridge. The “supply core” is the roll towards the back of the machine. This is the roll that is supplying new stamps to be applied. The “take-up core” is the roll closest to the operator. This is the roll that takes up the spent paper after the stamps have been applied. If the stamp cartridge is in the middle of a roll of stamps (ie such that there is already a bunch of spent paper wrapped on the take-up core), then you should press “Same”. If the take-up core has no spent paper on it (no more than one or two turns of paper used to tape and attach the paper to the core) then you should press “New Core”. Note that at the beginning of a new roll of stamps you would always choose “New Core”. You would also choose “New Core” if you *had* a partial roll of stamps (for example, 18400 stamps remaining) AND you had removed the spent paper from the first part of the roll so that now the take-up core is empty.
- 7) Next take a look at the first two rows of stamps that you lined up during step 5. If these two rows are full of new stamps (ie 30 new stamps) then you should press the “FULL” button on the touchscreen. (Review the figure in step 4). If these two rows are only 2/3 full (because you previously applied 10 of the stamps and now only 20 stamps are remaining in these two rows) then you should press the “2/3rds” button. If there are only 10 new stamps remaining then you should press the “1/3” button.



- 8) When you press the “OK” button on the touchscreen, the VL-10 will automatically lower the stamping iron and automatically line up the first two rows of stamps with the stamping iron. Once this is complete (requires approximately 3 seconds) the stamp cartridge is ready to stamp.

### Glue Tower / Tank:

The VL-10 uses a pressurized glue tower to apply a bead of hot melt glue to the large carton flap. It is a generally a good idea to re-fill the glue tower with glue each morning. In order to fill the glue tank, the first step is to move the *safety valve lever* to the open position (see figure 12). The safety valve lever allows the hot pressurized air in the glue tower to safely vent away. A metal plate covers the second lever which opens the glue pot. The cover makes it more difficult to accidentally open the pot with pressure still on it. Next, turn the lever to open the lid to the glue tank. It is very important to keep contaminants from entering and potentially clogging the glue tank nozzle. Hot melt glue chips should be carefully stored in a clean sealed container and care should be used to keep from accidentally letting dirt and all other foreign material from getting into either the glue storage container or the glue tank itself. Close the glue tank door and re-pressurize the glue tank by first turning the opening lever back to its closed position and then by moving the safety valve lever to the “operate” position.

1. Turn safety lever to release pressure in tank

2. Lift red handle to open glue tank (handle will not open if safety lever is not vented first)

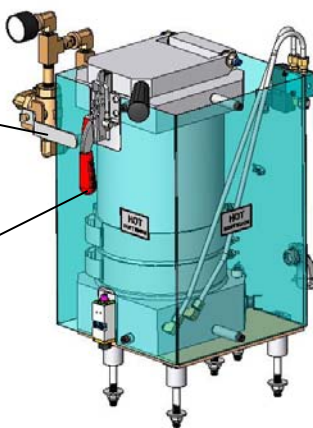


Figure 12. VL-10 Hot Glue Tower / Tank

Application of glue to the box is based on the heartbeat signal. On other machines the box has to break a beam to be detected. This would cause the glue to be applied. The VL-10 instead relies on the PLC program to determine when to apply the glue. The service technician can adjust when the glue is applied by selecting the proper adjustment screen (figure 13). This screen is only accessible by using a password. See the tech screen section for more details.

ADJUSTMENT (2 of 3)  
GLUE TIMING PARAMETERS

1234

DELAY UNTIL APPLY GLUE (x10msec)

Factory setting is 0

1234

DELAY + GLUE APPLY (x10msec)

Factory setting is 20

PREVIOUS

NEXT

DONE

Figure 13. Glue Adjustment Screen

### Stamping Cigarettes:

Once the VL-10 is running you should check to make sure that, if you are using a packing conveyor or a case packer that these devices are also running before you begin stamping. To apply stamps to a carton, simply place the carton on the infeed conveyor such that the side of the carton attached to the large flap enters the trough first. This is called “Large Flap Leading” orientation. The carton should pass thru each portion of the machine and should exit the machine stamped and glued shut.

*If the carton small flap does not open correctly at the plow, the machine will automatically stop and the screen will indicate a small flap error message. Remove the carton under the horn and the carton under the stamp head. Check to determine if stamps were applied to the carton under the stamp head.*

If you need to open the front door of the machine to access the carton trough and/or cartons inside the trough, you simply pull up on the cord running the length of the stamp machine. The door has a magnetic safety interlock on it which initiates an “Emergency Stop” whenever the door is opened. The door must be fully closed before the VL-10 will be able to start running again.

### The Operator Display:

The operator panel will normally display the “Main Screen” (eg VL-10 Stamping Machine). This display shows the number of stamps remaining on the stamp roll. The “Status Screen” may alternatively be displayed by pressing the MENU button. This status screen shows the number of cartons stamped each day and the current speed of the machine.

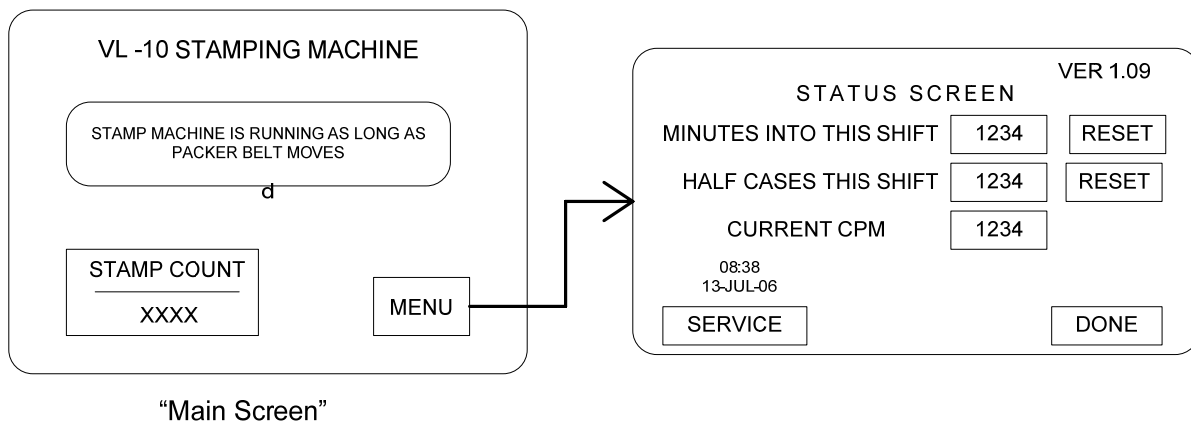


Figure 14

Pressing the “Stamp Count” area of the Main Screen provides access to buttons which are used when changing the roll of stamps in the machine. From the “Status Screen” you can reset the daily carton count. The button labeled “SERVICE” is used by Service Personnel to change machine settings and diagnose machine problems. This button requires a password for access. These screens are explained in the Tech Screen section.

The sequence of user touch screens is illustrated in figure 15. Additional touchscreen displays, normally only used by a service technician are included after the appendix. The service path requires a password.

## Operator Available Screens

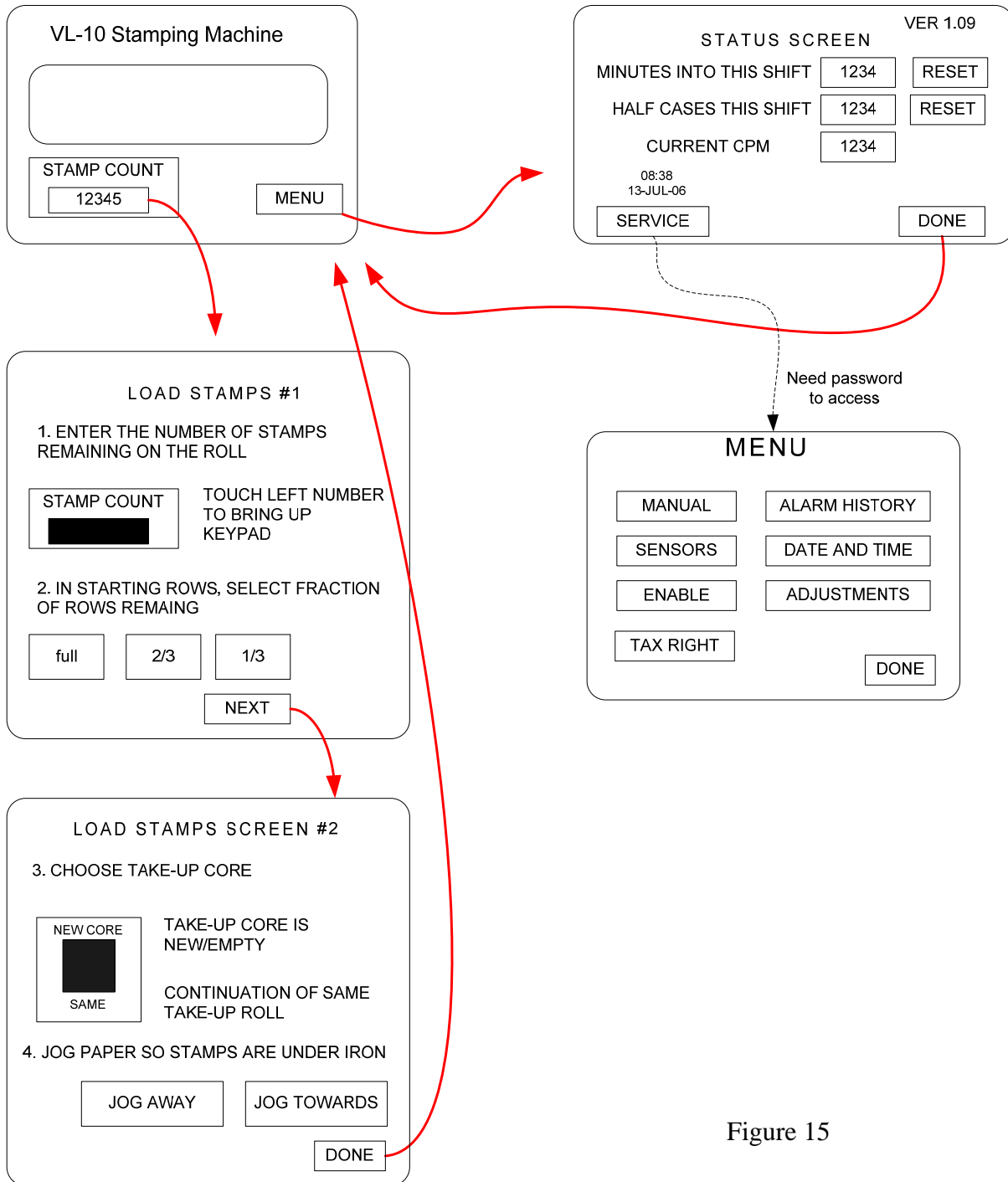


Figure 15

Note: This section contains detailed technical information on the VL-10 stamping machine. This information is intended only for maintenance personnel and is NOT necessary to know for normal operation of the VL-10 stamping machine.

### **The “Heartbeat” Concept:**

The VL-10 main motor drives a gearbox which in turn powers an eccentric driven cam follower which causes the main articulating arm to oscillate. The output shaft of the gearbox turns a standard chain sprocket with 19 teeth (figure 16). One complete revolution of this gear corresponds to one complete machine cycle. The sprocket teeth are sensed by a proximity switch and each tooth is counted as one “heartbeat”. There are 19 heartbeats per machine cycle. A second proximity switch in this area of the machine senses the passing of the eccentric driven cam follower. This occurs once per machine cycle and this is used to establish the machine “home position”. Heartbeat number one is the first heartbeat which is detected AFTER the home position is sensed. Most of the timing of the VL-10 is based upon the heartbeats. For example, the time at which the stamp iron is lowered occurs at a specified number of milliseconds after heartbeat number 8. The machine checks to see if the small flap is opened at heartbeat number 3. Other key events are similarly timed.

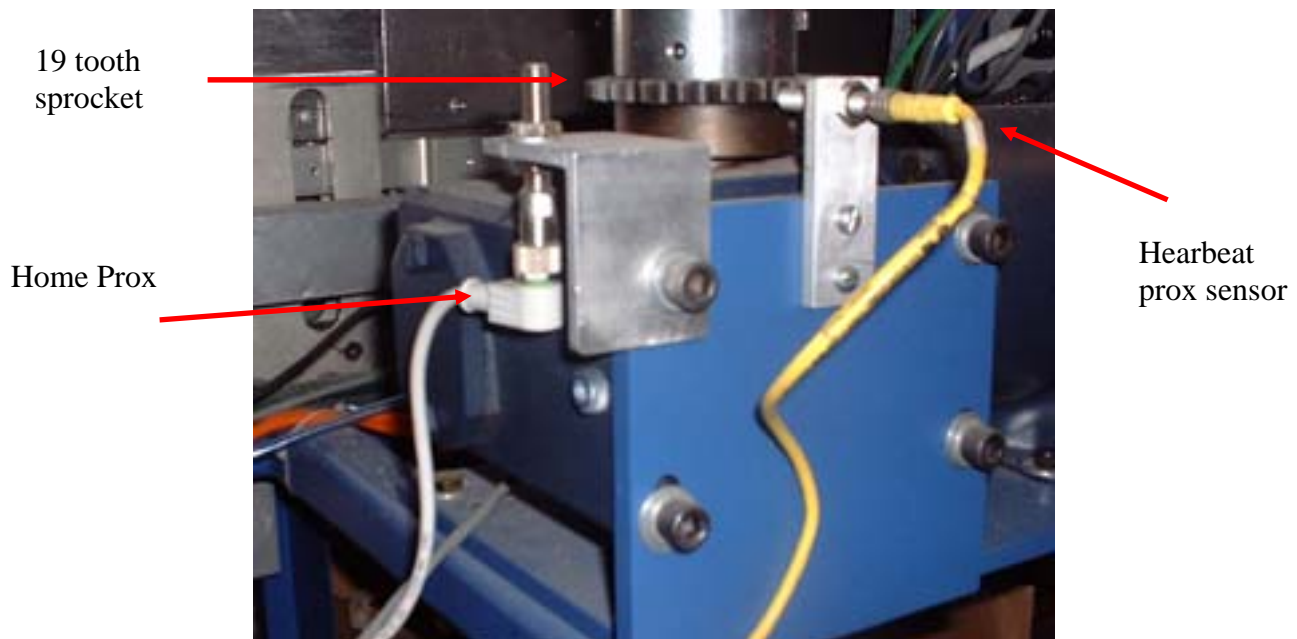


Figure 16. Main drive motor eccentric shaft and sensors.

**Infeed Table:**

The PLC controls when the infeed conveyor is on and off. The operator can turn off the table feed with a switch mounted on the side of the conveyor unit.

When a carton becomes seated at the first position in the carton trough, the carton blocks the thru-beam carton presence sensor. If there is a carton breaking this beam at heartbeat 16 then the first pusher block will be extended at the beginning of the next downward shuttle stroke. If there is no carton breaking the beam at this time then the first pusher will remain recessed for the entire next machine cycle. If the pusher block is to be extended during a particular machine cycle then the first position lifter cylinder will also actuate during that machine cycle. The purpose of the first position lifter is to raise the carton up to or at least near the trough ceiling so that the carton will be well oriented when it approaches the plow.

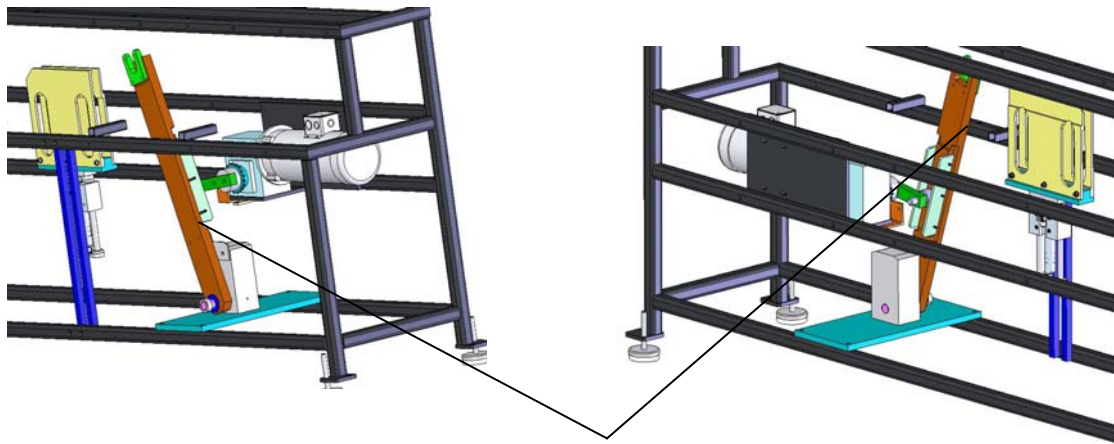


Figure 17. Eccentric Arm

Figure 17. The main drive motor turns an eccentric crank arm that causes the swing arm to oscillate. The “yoke” at the top of the swing arm drives the main shuttle upstream and downstream.

**Infeed Tip-Over Sensing:**

Infeed tip-over sensing is accomplished by two small retro-reflective sensors are located along the side of the infeed conveyor opposite the operator. They are located approximately 1” and 3” above the conveying surface and about 2.5” forward from the back wall of the carton trough. See figure 18.

Located in the same general area is the “presence-at-first-position” sensor. This is a thru-beam sensor located along the back-wall of the trough.

The three sensors work together as follows: As soon as the lower tip-over sensor is triggered, the system watches to see if the upper tip-over sensor is also be triggered. If the top sensor is not “made” within about 0.05 seconds, then the machine assumes that a carton has tipped over on the infeed conveyor. This causes the machine to enter a “tip-over mode”. While in tip-over mode,



the touchscreen displays a text message on the main operator screen “REMOVE CARTONS AT INFEED”. As long as the tip-over mode remains active, the first pusher and first position lifter cylinders are prevented from activating. Once the machine is in “tip over mode”, the only way to return to normal operating mode is for all three sensors to simultaneously NOT see any cartons for a period of 1 second (top and bottom tip over sensors AND the carton-at-first-position thru-beam sensor). As soon as this occurs, the touch screen message will go away and the machine will again accept cartons at the infeed. The first pusher and first position lifter will again activate when they sense cartons.

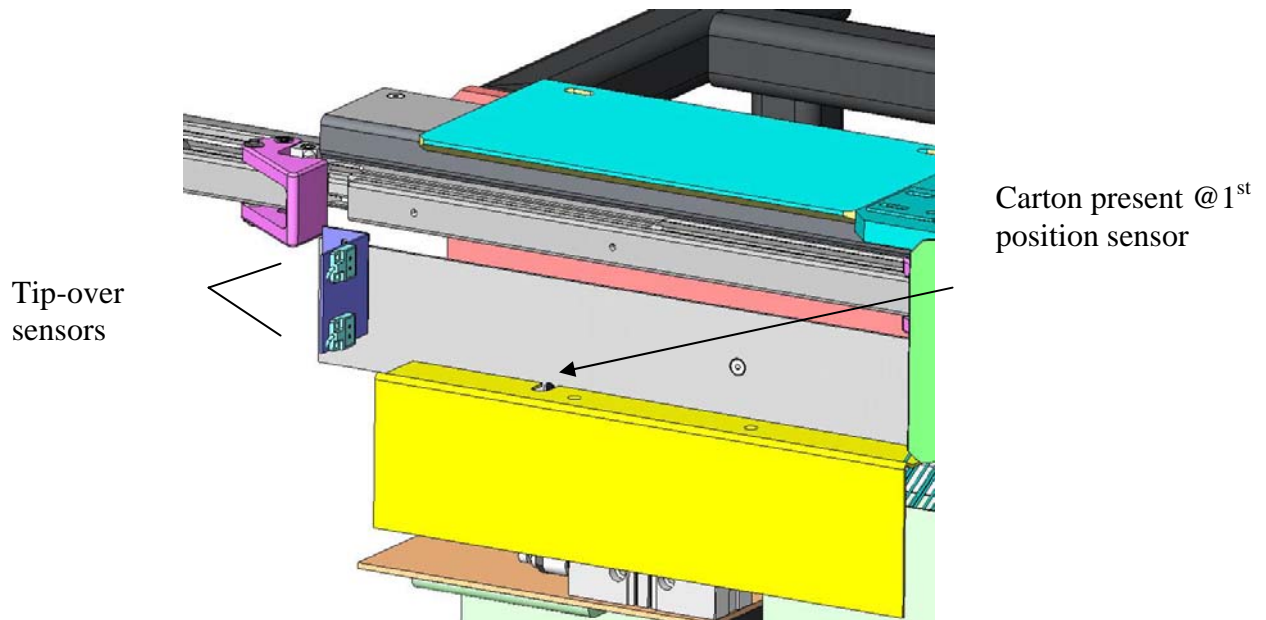


Figure 18. Carton Tip Over Sensors

### Plow Section:

Figure 19 is a close up of the opener area. Included within this area the pinch wheels and related parts. The pinch wheel assembly performs several simultaneous and important functions. The main job of this section of the machine is to open the flaps without damaging the carton and/or cigarette packs. It is very important that the carton remains fully pushed up against AND FLAT against the roof of the trough as it passes through this section of the machine. The creeper springs lifts the carton against the ceiling plate. The length and distribution of creeper springs is very important. Long springs are closely spaced under the fixed roof section. There are fewer springs pushing up on the carton after it leaves the flat roof on its way to the plow top. As the leading (downstream) end of the carton comes out from under the ceiling plate, a specially shaped aluminum block, the “Floating Roof Block”, on the pinch wheel swing arm keeps the carton from “peeking up” prior to the plow AND slowly pre-opens the pinch wheels so as to reduce the impact force felt by the carton as it reaches the pinch wheels.

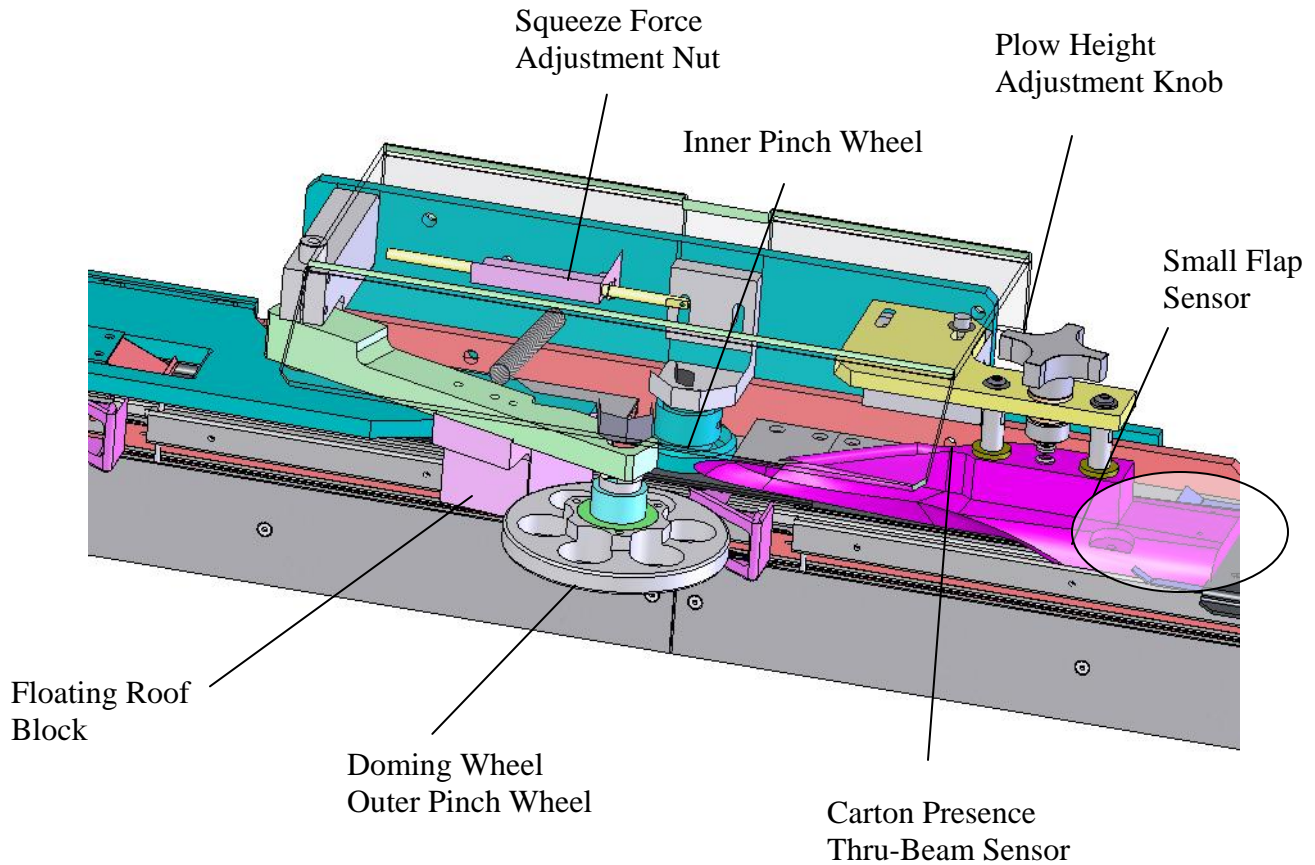


Figure 19. Close-up of the plow opener area.

Also visible in figure 19 is a thru-beam photoeye. The photoeye detects the cartons sitting under the plow. This sensor is used to “know” whether or not a stamp should be applied during the following dwell cycle. It is assumed that if there is a carton under the plow during the current machine cycle - that this carton will need to be stamped during the next cycle (after the shuttle moves the carton from the plow to the stamp head). The only time that the machine would not attempt to apply a stamp is in the event that the small flap sensor determines that the small flap is not open. The small flap is checked by a photoreflective sensor mounted in the plow. **In the event of a small flap error, the machine will stop (mid-cycle) and the operator display will prompt the operator to remove BOTH the carton under the plow and any carton which might also be currently under the stamp head.**

**Plow Height Adjustment: ( PERFORM THIS PROCEDURE AT INSTALL ! )**

Figure 20 illustrates how to make the plow height adjustment. The plow height should be set so that it is approx 1/16" above the height of the "Fixed Roof". This can be verified by placing a straight-edge ruler against the "Fixed Roof" and extending the ruler to the plow tip. A CW turn of the knob raises the plow while a CCW turn of the knob lowers the plow.

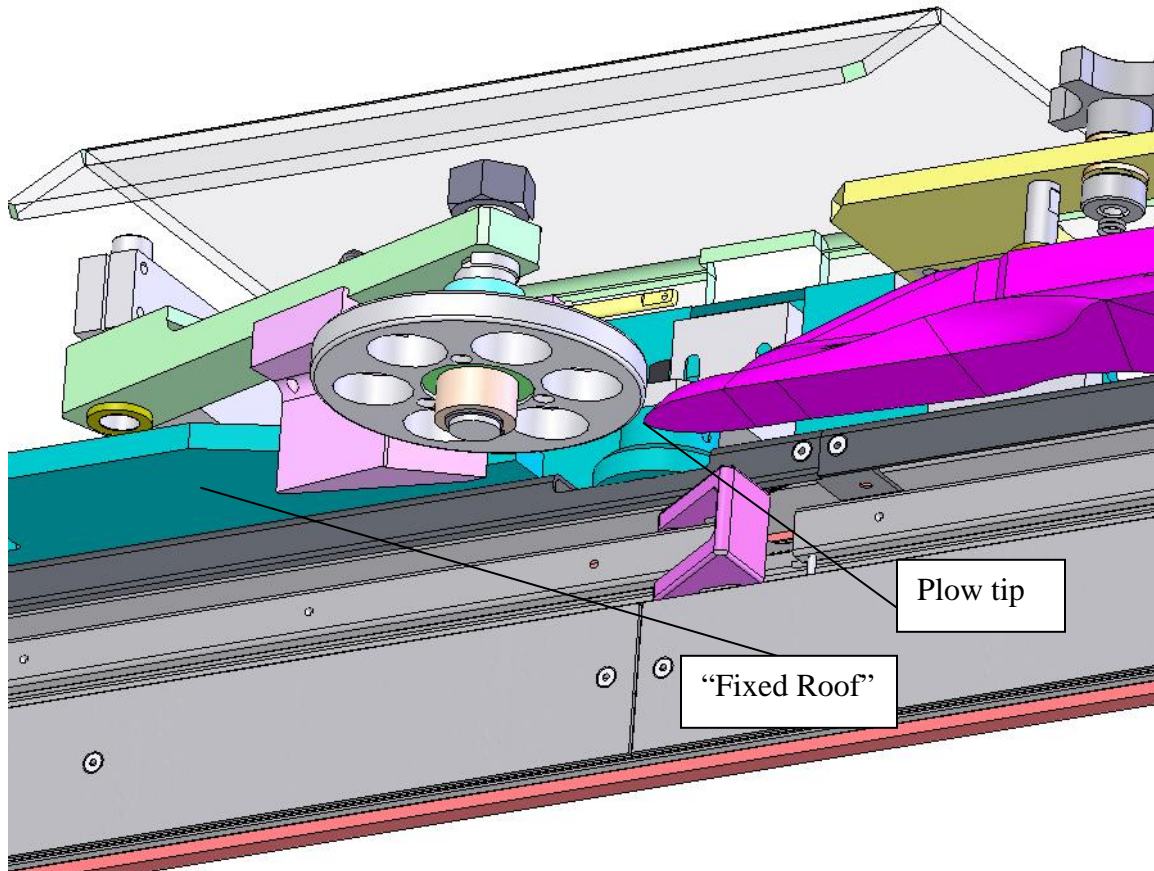


Figure 20. Target adjustment height for the plow opener.

**Stamp Head:**

The VL-10 is a center-area-stamping machine. This means that the stamps are always placed onto the carton at fixed positions as measured from the back end of the carton. The goal of this approach is to optimize this position to the extent possible so as to apply stamps to the relatively smoother and flatter center portion of each pack, avoiding the wrinkled and bumpy “package wrap fold” areas, in order to obtain the best quality stamp transfer. The stamp head is shown in figure 21.

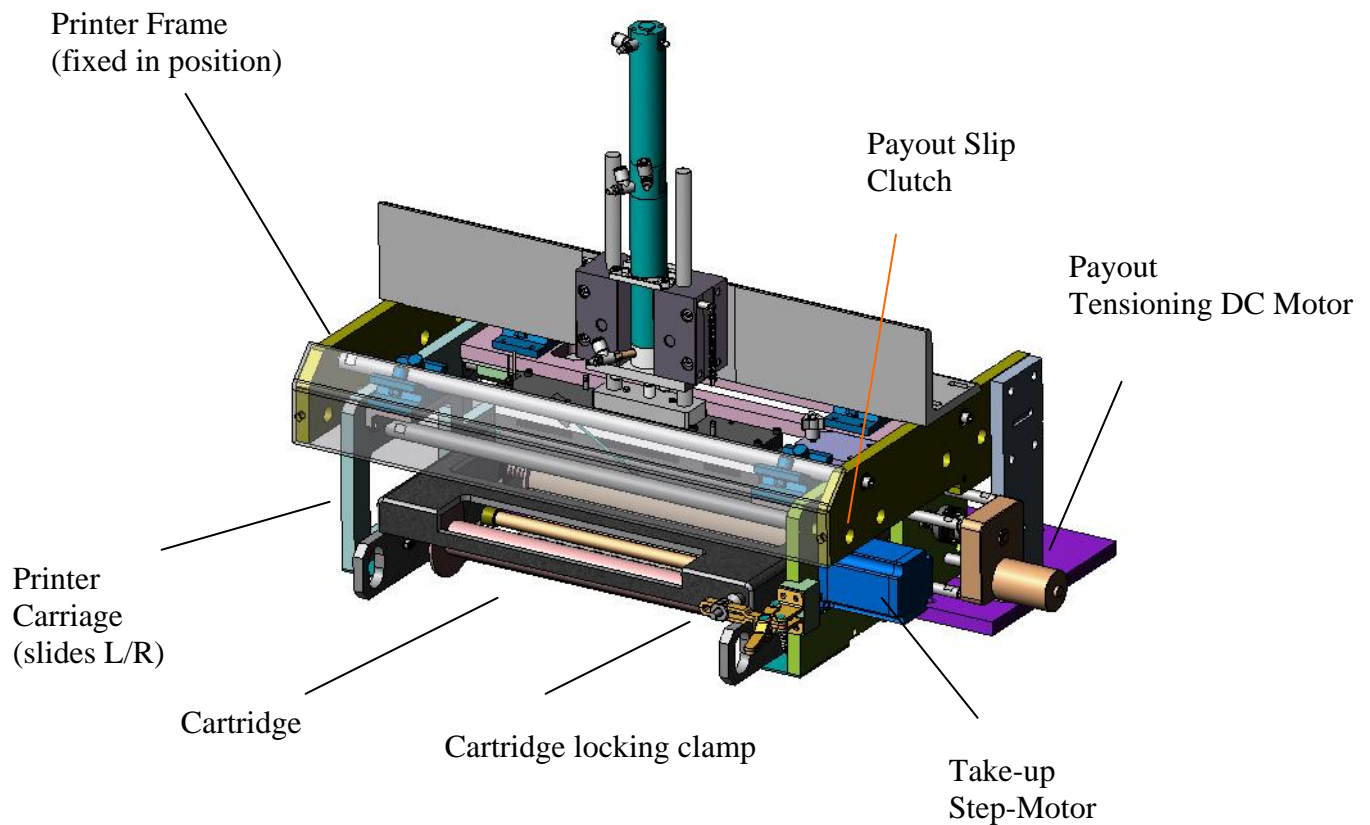


Figure 21. VL-10 Stamping Station

Since the bottom floor of the carton trough is comprised of only soft “creeper springs”, it is not possible to simply push a heated stamp iron down onto the tops of the exposed packs in the cartons. The actual process is slightly more complicated. When a carton arrives under the stamp head assembly, a lift-cylinder located underneath the creeper springs moves upward to provide support for the carton during stamping.



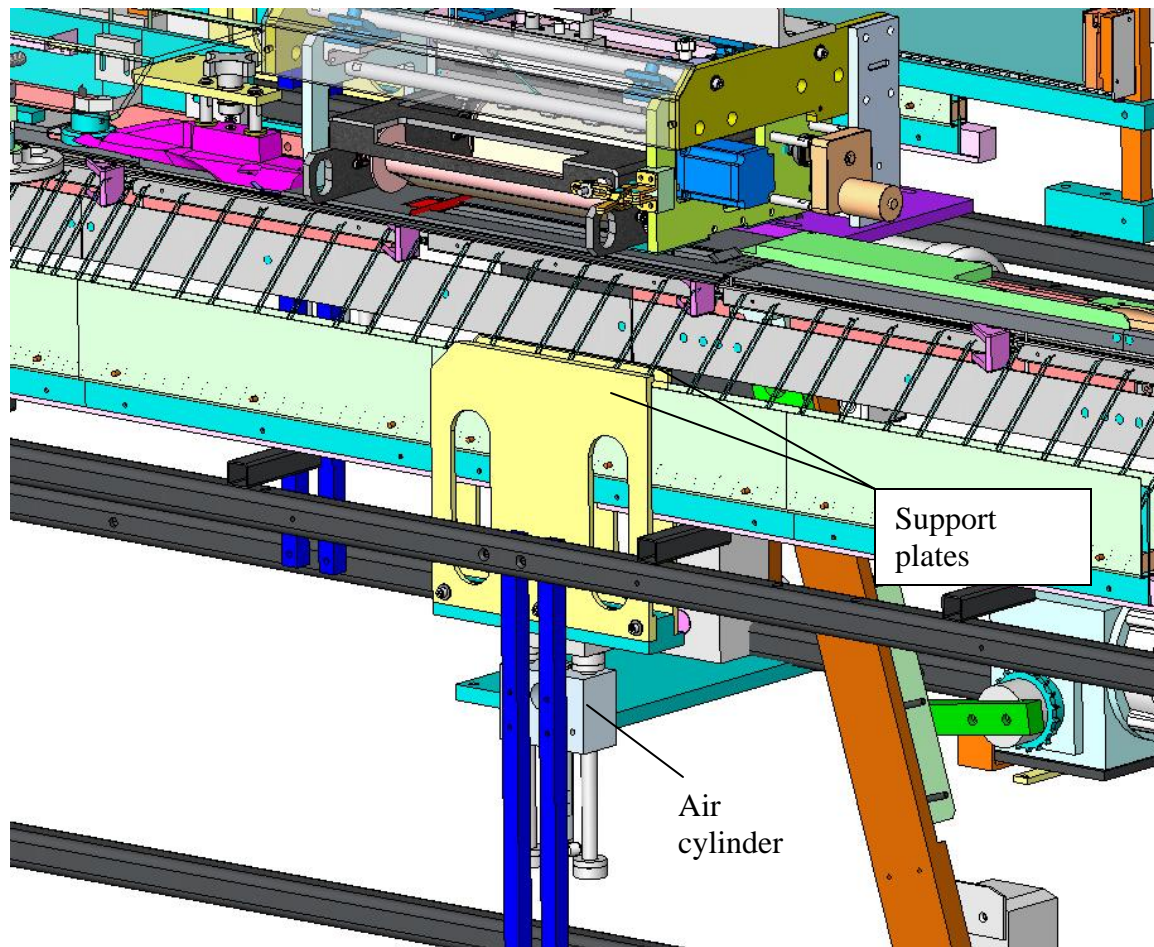


Figure 22. The stamp station lifter raises the two plates (on either side of the creeper springs) to support the bottom of the carton while it is being stamped.

The lift cylinder raises two plates, one in front and one behind the creeper springs (figure 22). These plates support the carton and the two rows of packs inside the carton. The pressure applied to this lift cylinder is always the same for every carton, independent of the carton size, so that the applied lifting force is also always the same. The lifting force temporarily pushes the carton up against the roof panel under the stamper. The lift cylinder starts for a position which is low enough below the roof to allow a 120 sized carton to pass. When activated, the lift cylinder continues to rise until it is stopped by the presence of the carton. Tall cartons such as 120s are quickly encountered during the lift process while it takes a little while longer to reach shorter cartons such as “regulars”. Shortly after the lifting cylinder is commanded to rise, the stamping iron is commanded to drop. The timing is arranged so that the cartons will be fully lifted and supported (by the lift cylinder) before the heated stamping iron begins to press the stamps onto the packs. As soon as the application time is reached, both the stamping iron and the lifter cylinder retract. The lift cylinder is designed to retract sufficiently quickly so that it is completely retracted before the next carton begins to arrive at the stamping station (even in the worst case where a regular has just been stamped and a 120 sized carton is about to be stamped.)

### Shifting Between the Lanes of Stamps on the Stamp Roll:

The stamps are loaded into the VL-10 using cartridges. These cartridges slide and snap into a stamp carriage. Together the carriage and cartridge slide upstream and downstream between each stamp application so as to position fresh stamps under the stamping iron. The stamp iron position along the carton trough is fixed and the cartons always stop *at the same position* along the carton trough. The stamp cartridge shifts so as to be able to position one of three “lanes” of stamps under the iron pads.

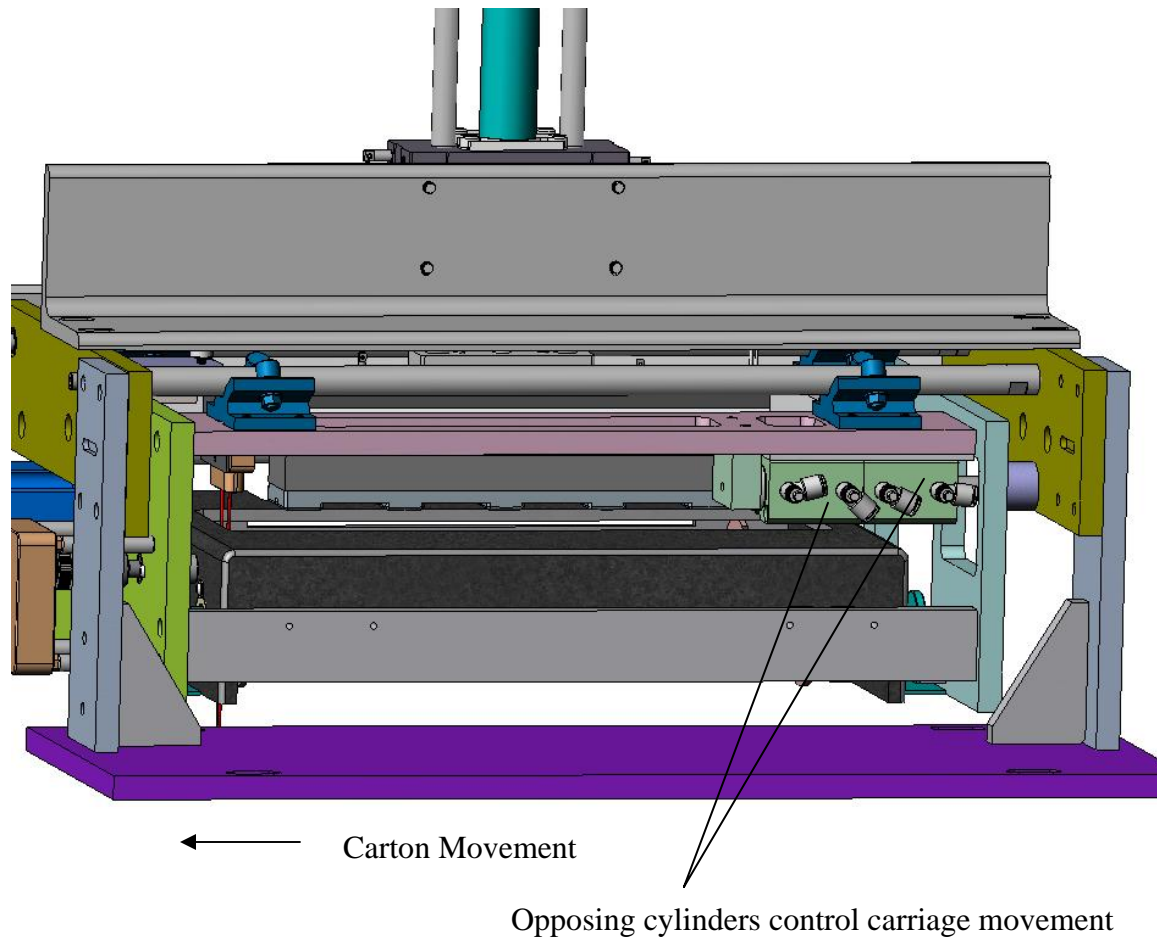


Figure 23. Rear view of stamp head.

For the first application, the carriage shifts to the rightmost position (from the operators point of view). The second application uses the center stamping position and for the third application, the carriage is shifted to the leftmost position. After the third application, the carriage shifts back to the rightmost position – and at the same time, advances TWO rows of stamps to be ready for the next application. Lane shifting between each application is accomplished using a pair of opposed air cylinders mounted between the fixed frame of the stamping head and the carriage. In the rightmost position, both lane shift cylinders are extended, at the center position, one of the lane shift cylinders is extended and one is retracted. At the leftmost position, both lane shift cylinders are retracted.

### Stamp Paper Advancement Mechanism:

The VL-10 paper advancement is controlled by a pair of opposed drive motors (figure 21 - page 28 stamp head section). The payout shaft of the stamp cartridge is located away from the operator. As the stamps are used up the paper advances toward and is wound up onto the take-up core located nearer the operator. While the VL-10 is ON and the machine is not in E-Stop, the *payout* tensioning motor continuously turns so as to maintain back-tension on the stamp paper. The payout motor drives a slip-clutch mechanism which is set to maintain one in-lb of torque. The takeup core is direct-driven by a PLC controlled *takeup* step-motor which has significantly more torque capability than the payout motor. The takeup motor turns the takeup core at a set speed during a given paper advance movement. The drive speed is set by the PLC so as to maintain a nearly constant linear-paper-advancement speed past the stamp head. The advancement speed is designed to move the paper two stamp rows in approximately 0.40 seconds. Early in a new stamp roll, the takeup core has a small diameter so the takeup motor speed needs to be fairly quick. Later, as the takeup roll diameter grows, the takeup motor speed is reduced so that the paper advances two rows in about that same 0.40 seconds.

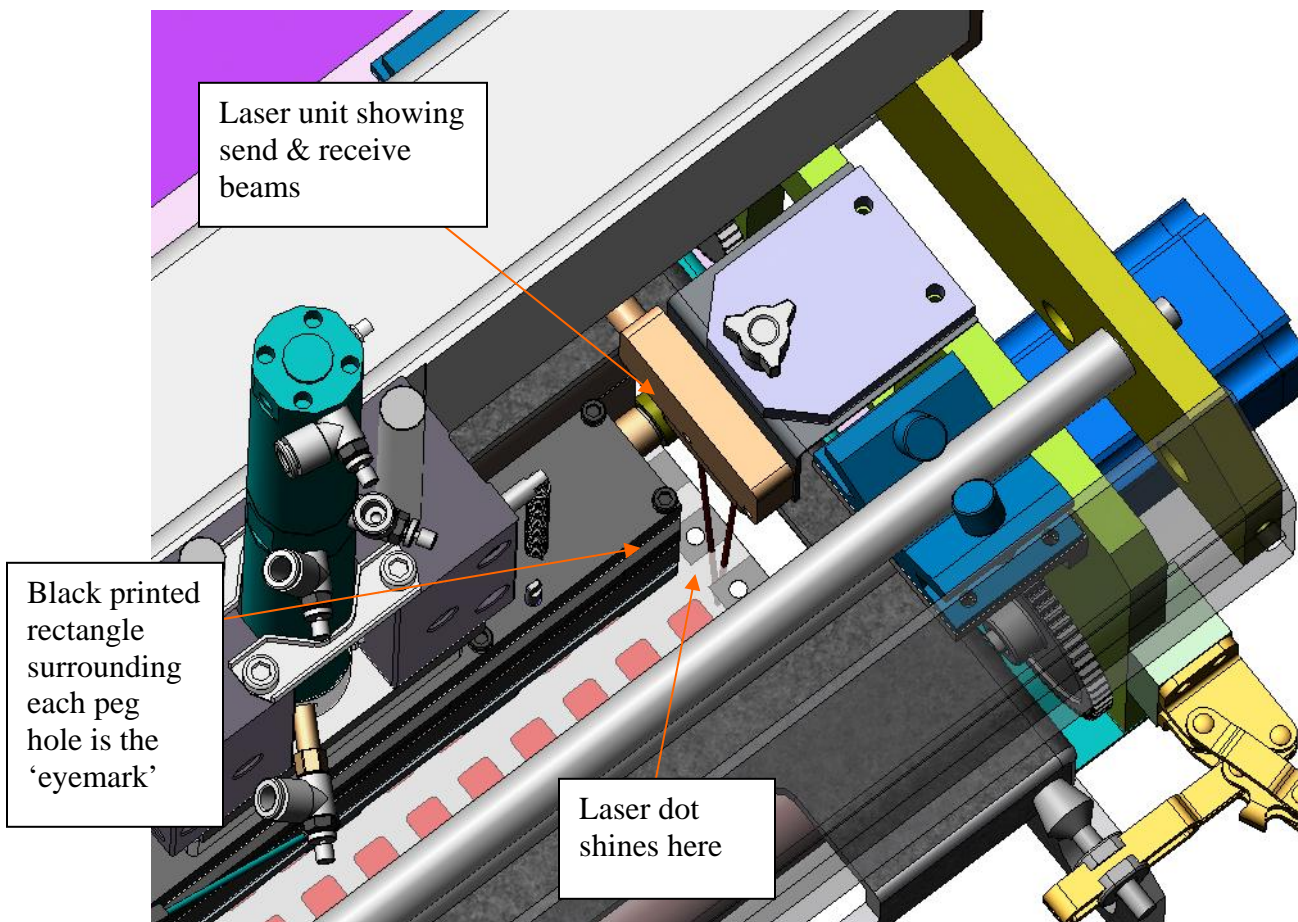


Figure 24. Top View of printer area.

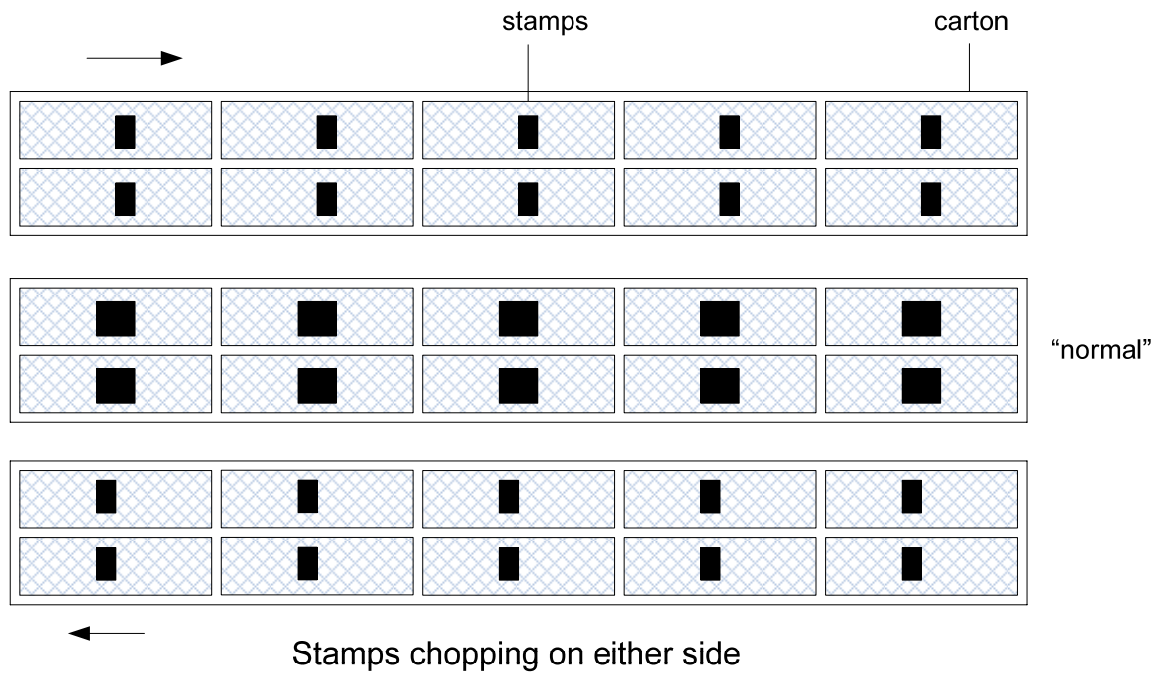
Tech Note: The goal is to keep the linear speed of the paper constant. As the takeup roll changes in diameter the PLC changes the angular speed ( $\omega$ ) to compensate for roll diameter. In general this occurs at intervals of 2500 or 5000 stamps. This results in several “steps” in the roll speed as stamps are used up!

The paper advancement is monitored by a retroreflective laser sensor (figure 24) attached to the stamp carriage. This sensor shines a small red laser dot on the back side of the stamp roll paper and is aimed so that the laser dot “travels” across the center of each peg-hole on the right side of the stamping paper. The laser sensor watches for the time when the laser dot “disappears” from view when it falls into a peg hole and then watches again for when it reappears at the other side of the peg hole. There is one peg hole on the edge of the paper for every row of stamps so when the stamp head advances two rows of stamps at a time, the laser sensor “sees” two peg holes. To simplify the advancement, the system ignores any peg holes it sees during the first 0.30 seconds and then only watches for the first peg hole it sees after that time (which, if everything is working correctly, should be the second peg hole). The system is designed to stop the paper advancement with the laser dot halfway between the peg hole for the most recently spent row of stamps and the first available new row of stamps. If during an advancement process, the laser detector does not see the second peg hole within 0.48 seconds, the machine stops and displays an error message onto the touchscreen indicating that the “EYEMARK WAS NOT FOUND”. There can be a couple different causes for this type of error:

- If the tracking of the laser dot is not aligned with the centers of the peg holes, the laser dot may eventually miss the edge of a peg hole altogether causing the error. There is a tracking adjustment knob located on the VL-10 stamp carriage which allows the operator to make small adjustments to the tracking if needed.
- If the takeup roll is significantly smaller than the PLC expects then the paper advancement will be very slow and the laser may advance only one row, or in some cases might not find an eyemark at all within the 0.48 second window causing an “EYERMARK NOT FOUND ERROR”.
- If the takeup roll is significantly larger diameter than the PLC expects, then the paper advancement will be faster than expected and the laser sensor may actually advance three rows instead of two.

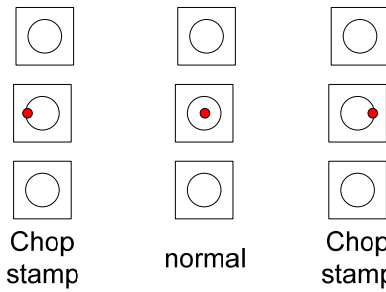
It is important to note that the position of the laser dot on the stamp roll ultimately determines the side-to-side placement position of the stamps onto the cartons. The two figures below illustrate this concept. Note how adjusting the laser to the edge affects stamp placement on the carton. The actual amount of displacement may be exaggerated.



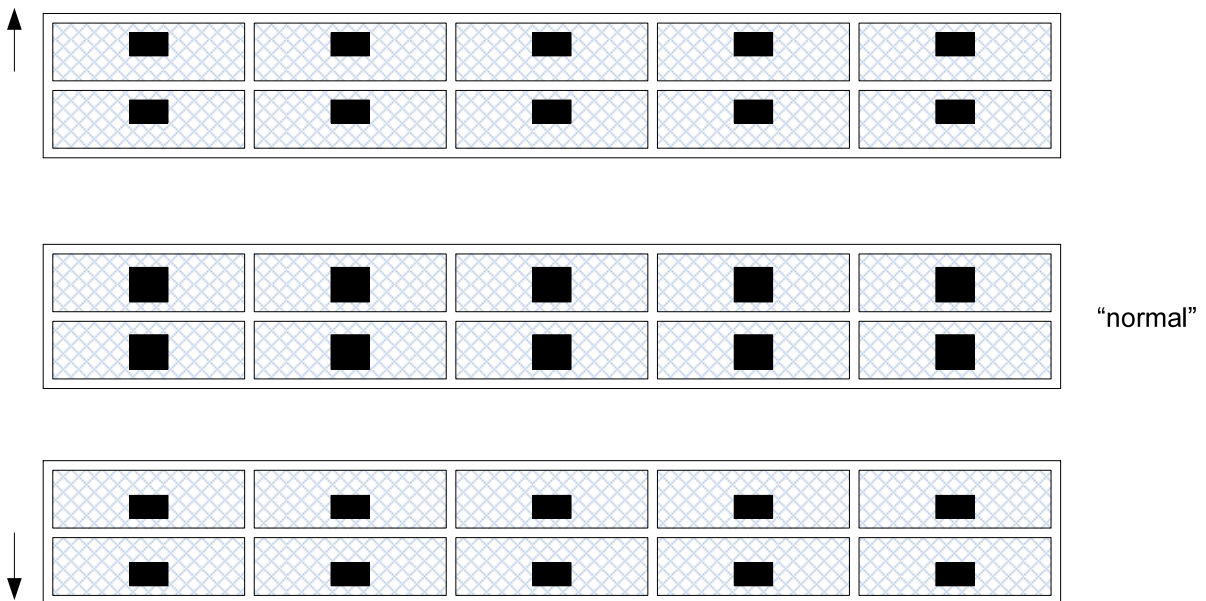


Stamp chopping can be caused by the cartridge not loading correctly or the stamp head not being in a correct position on a new stamp machine.

### Laser alignment with holes on edge of paper



Stamp placement on carton varies with laser adjustment above



If the stamps are being placed too close to the edge of the carton, the laser unit may need to be repositioned. In effect the “timing” is off.

## Troubleshooting:

### 1) Replacing Fuses

Fuses are located inside the main electrical box.

### 2) Checking tip over sensors.

The tip-over-sensors determine when the carton is inside the trough. Each sensor has two lights; one green light and one orange light. The sensor is retro-reflective. Light bounces off of the carton back to the sensor. When the light is reflected back the orange light on the sensor will be on. The green light should be on all the time. The sensors can be adjusted up & down. Both sensors have to be activated for the first pusher block to extend

### 3) Adjusting Doming Pinch Wheel Pressure

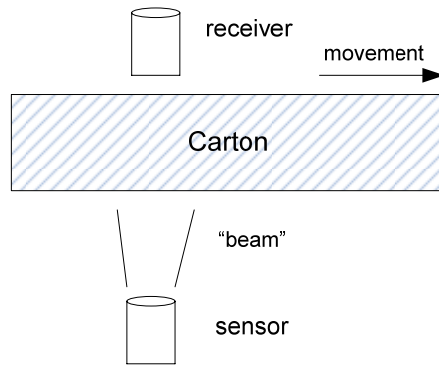
The block the arrow points to has a threaded rod going through it. Tension can be adjusted by loosening the screws on both side of the rod and shifting the rod one direction or the other. The adjustment is very sensitive.



Figure 25. Doming Wheels Adjustment

#### 4) Carton Presence Sensor under the Plow

The VL-10 determines when a carton is present, under the plow when the beam is broken as below. The FX300 unit located behind the horn receives the signal and sends it on to the PLC.



#### 5) Small Flap Open Sensor

The small flap open sensor can be checked at two points. Directly under the sensor a dime size spot can be seen on the rail when no carton is present. This light will always be present. The signal is reflected off the small flap (when small flap is present) and returns to the FX-300 unit located directly behind the horn. Typical values on the FX-300 is about 4000 with no carton present and less than 20 with a carton present. See Appendix E for more details.

#### 6) Timing for the Glue Bead Application

To adjust glue timing the tech screen "Adjust 1 of 3 screen" will need to be accessed using the tech password.

ADJUSTMENT (1 of 3)  
STAMP TIMING

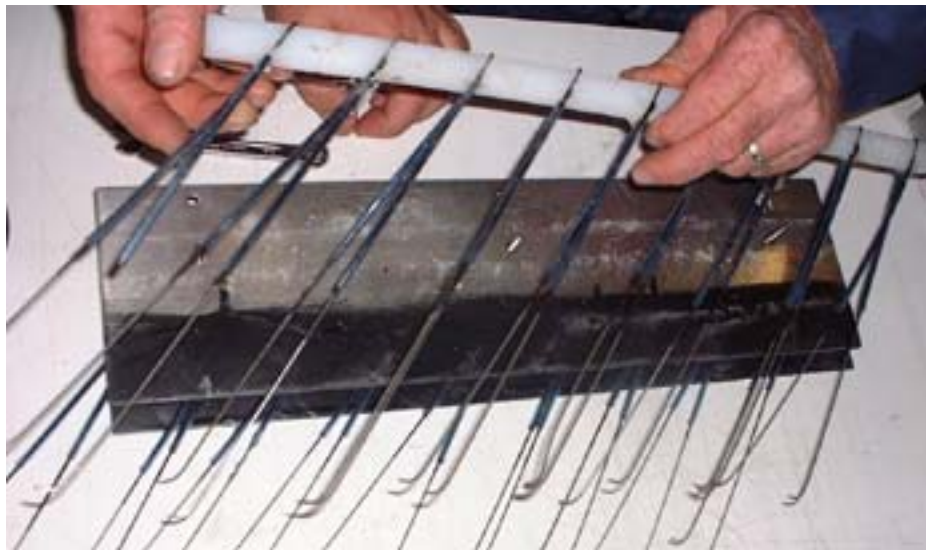
1234	DELAY UNTIL APPLY START (x10msec) Factory setting is 15
1234	DELAY & STAMP DURATION (x10msec) Factory setting is 15

NEXT

DONE

#### 7) Replacing Creeper Springs

Proper lockout / tagout procedures should be performed before attempting to replace the creeper springs. There are four “identical” unit mounted on the stamp machine. The identical is quoted to highlight the fact that there may not be the same number of springs in each section nor are the springs necessarily identical. Three screws on the cover need to be removed for access. Disassembly is shown below. Be careful to replace springs in the same location.



#### 8) Replacing Pusher Block Springs

#### 9) Home Position Sensor

#### 10) Heartbeat Sensor

#### 11) Iron Temperature Sensor - Set Watlow to 300 F

The iron temperature is monitored by a Type J thermocouple located on the iron which can be seen on the front part of the stamp head. The glue pot and iron use the same thermocouple (part #745409). Temperature control is performed by the Watlow unit.

#### 12) Glue Pot Temperature Sensor

The glue pot temperature is monitored by a Type J thermocouple located on the glue pot located at the lower rear of the glue pot.. The glue pot and iron use the same thermocouple (part #745409). Temperature control is performed by the Watlow unit.

#### 13) E-Stop System

The E-Stop can be activated by the mushroom button on the main panel or by opening the front door. Mounted on the front door is a red magnetic switch located at the end of the stamp machine. Either of these two items will force the safety module, located inside the electrical panel, to remove power from parts of the stamp machine.

#### 14) Adjusting Infeed Conveyor Belt Tracking

Two 9/16” bolt heads located at the end of the infeed table can be loosen or tightened to effect belt tracking.

#### 15) Replacing the Infeed Conveyor Belt – See tech bulletin XXX

#### 16) Setting the Iron/Glue Pot Temperature – Watlow Procedure

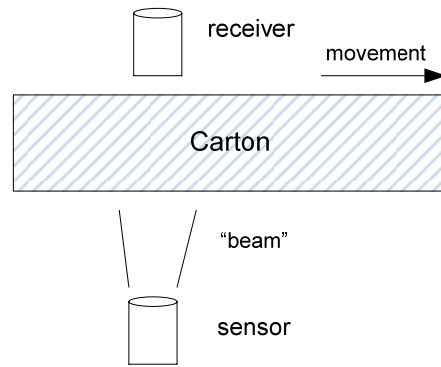
This can be accomplished by adjusting the Watlow units.

#### 17) Carton flap errors

If the carton small flap does not open correctly at the plow, the machine will automatically stop and a message about the small flap error.

Two sensors are used at station 3 to check on the status of the carton. Depending on what the sensors ‘see’ the machine either stops or passes the carton through.

The first sensor checks to see if a carton is present by sending a beam from the front side of the trough to the backside of the trough. This is also called a ‘thru-beam’. This sensor feeds back to the FX301 amplifier located on the rear of the stamp machine. Typical values on the FX301 amplifier is 4000 with no carton present and less then 20 with a carton present. See appendix E for more details on the FX301 amplifier.



- Carton Present Sensor

The second sensor checks to see if the small flap is opened properly. This is a reflective beam located in the boxed in area below.



**Figure n** – Small Flap Sensor

<u>Carton Present</u>	<u>Small Flap sensor</u>	<u>Machine State</u>
No	Flap Open	Machine Runs
No	Flap not open	Machine Runs
Yes	Flap not open	Machine Stops
Yes	Flap Open	Machine Runs

## Appendix A: Supplying Compressed Air for your Meyercord Stamping Equipment

Several of Meyercord Revenue's Cigarette Stamping Machines require a source of compressed air in addition to electrical power. The quality and quantity of compressed air you supply to this equipment will affect the reliability of the equipment, the frequency and cost of service calls and downtime on this equipment, as well as the initial cost and ongoing energy costs of the compressed air equipment you select.

Key Questions for you to consider:

### 1) How Much Compressed Air Capacity Do I Need ?

The values listed in table 1 show the volume of compressed air at 90 psi which is necessary to be available on a *full-time continual basis* while each piece of equipment is operating.

Equipment	Compressed Air at 90 psi Required per single head machine
M120 stamp machine w/ cold glue	2.0
M120 stamp machine w/ hot glue	3.7
SSM stamp machine	5.1
SSMP stamp machine	5.5
LSM stamp machine	2.0
Meyercord Pneumatic Case Packer	5.7
Universal Case Packer	10.5
12M Case Cutter w/o built-in compressor	7.0

The first step is to add together these requirements for each piece of stamping equipment you intend to operate simultaneously. A worksheet has been provided at the end of this document. Next add in any equipment which you expect you are likely to add within the next 3-5 years. Most air delivery systems have significant leaks and losses within them. Even a small leak at a fitting, for example, can result in a large loss of compressed air. For new, high quality piping systems which have a total line length less than 25 feet, of large diameter, solid copper lines with few bends and connections, we recommend that you add at least 20% margin on top of your computed total air requirements. If your lines are old, longer, threaded pipe and or contain multiple quick-disconnect or other type fittings, you should add at least 30-40% margin on top of your calculated total air requirements.

For example, if you have a cold-glue M120 stamp line with a Meyercord Case Packer, no plans to add additional equipment and an air run of threaded pipe 50' from your compressor to stamping equipment, you should select a compressor which can supply at least  $1.30 \times (2.0 + 5.7) = 10$  CFM of compressed air at 90 psi. If you are planning to use a reciprocating air compressor, it is typical practice to size the output of the compressor to be 1.5 to 2.0 times larger than the amount of air you expect to consume on an ongoing basis. In this way, the compressor will not need to run continuously.

Following the example of the cold-glue M120 with a Meyercord Case Packer, you would need to specify 15 to 20 CFM of compressed air at 90 psi to allow your compressor to run at a reduced duty cycle. Reciprocating compressor manufacturers often recommend that running on a reduced duty cycle will extend the life of your reciprocating compressor.



(Scroll style compressors, on the other hand, are more commonly run 100% of the time and as a result, it is not necessary to include this extra factor when selecting a scroll compressor. Still, specifying a larger compressor always allows for future compressed air capability.)

When selecting an air compressor, it is important to note that the volume of air it can provide, usually stated in SCFM or CFM depends upon what pressure you are supplying the air at. For the purposes of selecting a compressor system to drive your Meyercord Stamping equipment, you need only be concerned with how much air the compressor can supply at 90 psi. If a compressor is specified for an air output at a higher pressure, for example, 19 scfm @ 135 psi, you can estimate the amount of air this compressor will deliver at 90 psi by multiplying as follows:  $19 \text{ scfm} \times (135 \text{ psi} / 90 \text{ psi}) = 28 \text{ scfm}$ .

2) Can I use a shared source (“shop air”) of compressed air for the Stamping Equipment ?

While some customer facilities already have an available source of compressed air, typically known as “shop air”, Meyercord Revenue strongly recommends **against** using these sources of compressed air for operating our stamping equipment. Typically “shop air” is shared among multiple uses within a facility and the available volume of compressed air varies from moment to moment and day to day. Each time the available air volume on these shared systems drops below the levels required by our equipment, the stamping equipment will begin to perform irregularly. In addition, “shop air” is typically intended for low performance machines such as air-operated hand-tools. The air used to operate these lower performance machines typically has much higher levels of air line contamination (from grit, water and oil) than can be well tolerated within the precision machinery of the Meyercord Stamping Equipment. The use of contaminated shop air can lead to costly and lengthy stamping equipment downtime. Meyercord Revenue recommends dedicated, clean, dry air for use with our equipment.

3) What about moisture, dirt and oil in the compressed air system ?

The quality of the air supplied to your stamping equipment is important. The three most common contaminants in compressed air supplies are water, grit and oil. Water is the most common contaminant. Water typically enters the system as incoming air is compressed. Air can “hold” less and less humidity as it is compressed. The humidity which is “squeezed out” of the air as it is compressed condenses within the compressor, tank and air lines. This is particularly common if the relative humidity of the incoming air is high such as in facilities near lakes, rivers and oceans. In addition, cold air holds less humidity than warm air. Air leaving a compressor is typically warm – often on the order of 150F or more. If this air is rapidly cooled, for example, if the air line leaves the compressor and then travels thru a cold warehouse or passes between two buildings, moisture can condense out and collect inside the air lines. Compressed air delivery systems need to be designed to remove excess moisture from the air and air lines. This is typically accomplished with a piece of equipment known as a dryer. Two types – desiccant dryers and refrigerated dryers are commonly used.

Most air compressors have built in air filters designed to remove dirt and grit from incoming air. Standard industrial grade air compressor filters typically remove all particles greater than 1 micron in diameter and are sufficient for use with all Meyercord equipment.

Some compressed air systems are designed to ADD lubricant to the compressed air to reduce the wear and improve the performance of certain types of machinery. Other air delivery systems contain air/oil separators to remove oil from the compressed air. All Meyercord Revenue equipment is designed to operate on clean (no particles or oil); dry (no water) air although the 12M case cutter can also accept lubricated compressed air.

All Meyercord Revenue stamping machines which utilize compressed air contain their own, integral coalescing filter bowls which are designed to remove oil, water and dirt which may have passed thru the primary systems in the compressed air delivery system, but these systems are intended only to remove occasional contaminants and do NOT eliminate the need for properly filtered and dried air delivery systems.

#### 4) What Compressor and Related Equipment Do I Need ?

Most compressed air systems include each of the following components:

##### Compressor & Storage Tank

The primary choices among compressor types are piston/reciprocating vs rotary/screw. Among the piston compressors you will select between single and dual head compressors and lubricated vs oil-less. Screw compressors are generally more expensive but significantly quieter, usually less than 70 dBA at a distance of 3 feet from the compressor (a level of sound typical on a busy downtown street) while reciprocating compressors are often above 80 dBA (a level of sound similar to that near a typical residential gasoline powered lawn mower.) The level of sound-output is an important consideration and should not be overlooked. Since it is desirable to have the compressor located near the stamping equipment it should be noted that it is difficult to converse and sometimes distracting to work in the particularly noisy environment surrounding a reciprocating compressor. Ideally the compressor can be moved around a corner, behind a wall, or one floor above or below the area where operators will be working – but keep in mind that it is also important to try to have the compressor, delivery lines and stamping equipment all at nearly the same temperature as described elsewhere in this document. Screw compressors have fewer wearing components and generally require a simpler maintenance schedule. Screw compressors also deliver cleaner air with no oil in the air. This generally extends the life of the stamping equipment by reducing buildup inside of cylinders and air valves. If a reciprocating compressor is used it is important to select a high quality oil-coalescing filter to try to remove as much oil as possible from the compressed air stream. The number of heads (1 or 2) on a piston compressor relates to the total amount of air output. Generally dual head compressors will handle larger CFM requirements (typically 30+ CFM at 90 psi). As mentioned earlier, rotary compressors are usually designed to run a 100% duty cycle while most reciprocating compressors are usually used on a 50%-66% duty cycle. As such, it is usually

necessary to specify a larger capacity reciprocating compressor in order to provide the same output as a rotary compressor.

A storage tank is designed to allow the compressor to not have to run full time to supply all of the necessary air flow. Typically a tank is sized to be 2-4 gallons per CFM output from the compressor (example, a 20 CFM compressor typically has a 40-80 gallon tank). In many cases, water will condense inside portions of the compressed air circuit – including the compressed air tank. These tanks are designed with drains so that the water can be removed regularly (typically daily). Keep in mind that a significant amount of water can be removed, so it is important to have a drain or other means to remove the collected water from your facility.

### Aftercooler

The aftercooler is used to bring the temperature of the compressed air to sufficiently low temperatures so that it can be properly dried by either a desiccant dryer or refrigerated dryer. In some systems, the aftercooler and dryer are integrated into a single system. Most aftercoolers are similar to automobile radiators consisting of a heat exchanger and a fan which forces room air past the heat exchanger to cool the compressed air.

### Dryer

Under typical warehouse operating conditions, a dryer is needed which has a throughput (SCFM) equal to or greater than the total anticipated compressed air requirement. Drying capacity is specified in units of “Dew Point”. A typical refrigerated dryer supplies air with a maximum dew point of around 37F meaning that the air exiting the dryer would not be expected to condense out moisture if it were kept above a temperature of 37F. When selecting a dryer for a facility where the ambient temperatures are expected to fall below the dew point of the dryer, Meyercord Revenue recommends consulting directly with a compressor dryer manufacture to discuss the specific details of the installation. Special Desiccant Dryers are available that can produce very low dew points if needed. Regardless of which type of dryer you use, note that depending upon the conditions of operation, significant quantities of water may be removed by the dryer. It is usually necessary to have a floor drain or other provision near the dryer to allow easy removal of the condensed water from your facility.

### Delivery Piping

Delivery piping is often overlooked in the system design and problems with too small line diameters and too long piping runs can cause significant operational difficulties. Common problems to avoid include:

- Use large diameter piping. All piping should be a minimum of ½” dia for 0-30 CFM and ¾” dia for 30-60 CFM. Above 60 CFM, Meyercord Revenue recommends a custom piping plan be designed or reviewed by your chosen compressor equipment manufacturer.

- Use short piping runs between the compressor and the equipment. Maintain all piping runs of 1/2" tubing to less than 40 feet and 3/4" tubing to less than 75 feet. The maximum distance from the compressor to all pieces of stamping equipment should be less than 75 feet.
- Avoid serial placement of equipment along a single piping run – instead use a central manifold with individual branches to each piece of equipment. (Otherwise the last piece of equipment on the piping run may become “starved” as equipment upstream consumes the air before it reaches the last piece.)
- The temperature of air surrounding the compressed air delivery system is very important. The simplest arrangement is when the compressor, all delivery piping and the stamping equipment all remain at nearly the same temperature. If you are planning to locate the compressor in a different room, or in an outdoor shed, or if the delivery piping will pass thru walls between areas of different temperature (for example, if the compressor is in one building and the delivery piping goes outside and then into the next building before reaching the stamping equipment) Meyercord Revenue recommends that you work with a qualified local compressor company to address the specifics of your installation in a custom piping plan.

5) What Brand(s) of Compressors does Meyercord Revenue recommend ?

Can I purchase my compressed air equipment thru Meyercord ?

Will Meyercord service my compressed air equipment ?

Although Meyercord Revenue does not sell, recommend nor service compressed air equipment, we note that our customers have had success using a wide range of equipment from many different suppliers. Ingersoll-Rand, Speedair, Atlas Copco, Gast and Dayton are among some of the more popular choices we observe in the field. We recommend that the selection be made primarily on the basis of purchase and operational costs, warranty, and service contract terms and availability. Secondary considerations might include noise output, utility requirements, vendor installation/service arrangements and other specifications.

6) What about compliance with local laws / codes ?

Meyercord Revenue equipment is used in many different jurisdictions and regulatory environments. While we endeavor to provide safe and reliable equipment and installation recommendations which represent generally accepted industry practice, the end user is ultimately responsible for selecting, installing and plumbing the compressed air system in such a manner so as to meet all local ordinances and applicable safety and plumbing codes. Meyercord Revenue recommends that each customer work with a locally licensed contractor and/or plumber to ensure that the completed final system is in full compliance. Meyercord Revenue takes no responsibility in this regard and makes no representation that the

recommendations in this document and those of our field service technicians and other employees are necessarily in complete compliance with our customers' site-specific regulatory and/or safety requirements.

## **MEYERCORD STAMPING EQUIPMENT AIR REQUIREMENT WORKSHEET**

Step 1: Complete this table ...

Equipment	COLUMN A Compressed Air at 90 psi Required per single head machine	COLUMN B Number of these machines at your facility, include any extra equipment you may add within 5 years	COLUMN C Multiply each row in Column A by the quantity in Column B
M120 stamp machine w/ cold glue	2.0		
M120 stamp machine w/ hot glue	3.7		
SSM stamp machine	5.1		
SSMP stamp machine	5.5		
LSM stamp machine	2.0		
Meyercord Pneumatic Case Packer	5.7		
Universal Case Packer	10.5		
12M Case Cutter w/o built-in compressor	7.0		

Step 2: Total all of the values in Column C = \_\_\_\_\_ CFM at 90 PSI

Step 3: Review Key Question #1 from this document and use this information to select an appropriate margin percentage based upon your specific site, piping type and length. The minimum recommended margin is 20%, but you may need a larger factor depending upon your facility. Enter your percentage on the line below. Write the value as a decimal number, for example, if your margin is 20%, write 0.20 on the line below.

Margin = \_\_\_\_\_

Step 4: If you are going to use a reciprocating compressor enter 1.75 on the line below. If you are going to use a rotary compressor enter the value 1.00 on the line below.

Compressor Factor = \_\_\_\_\_

Step 5: Multiply the values you wrote in steps 2, 3 and 4 together and write your answer on the line below. This is the minimum number of CFM your compressor will need to supply at 90 psi.

(Step 2 Total) x (Margin) x (Compressor Factor) = \_\_\_\_\_ CFM @ 90 psi

Step 6: Now select an aftercooler, dryer and air line hose and air circuit layout which can all accommodate at least this amount of air thru-put.

## Appendix B

### Electrical plug drawing 30amps 220vac



Receptacle L6-30R

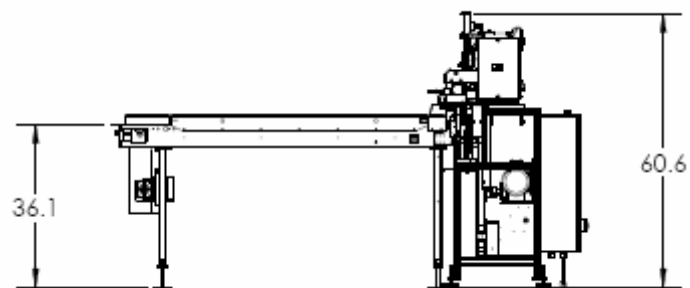
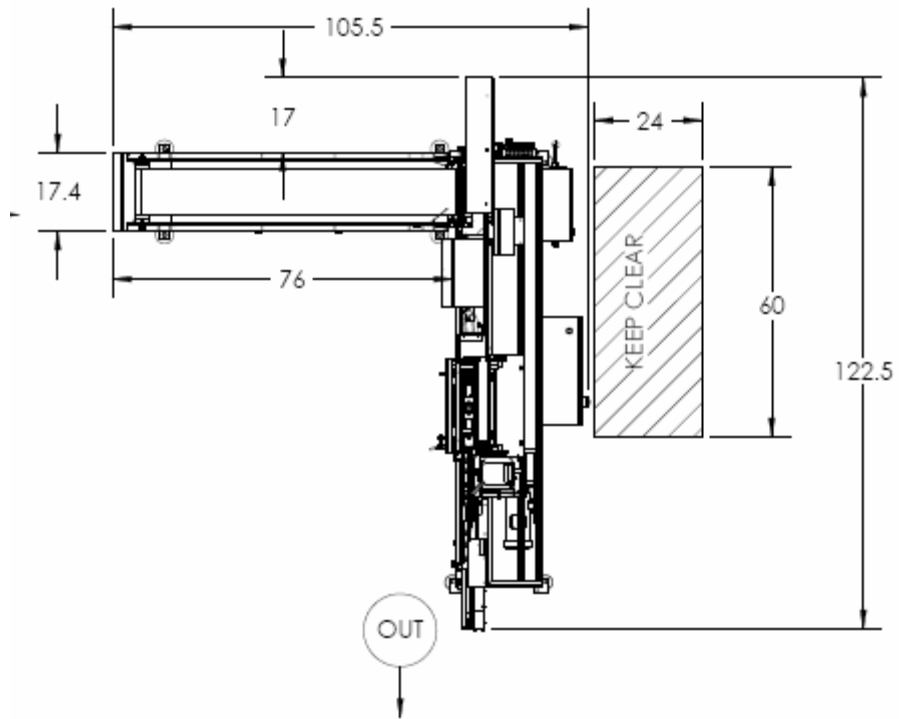
Plug L6-30P

## Appendix C

Adjusting the time and date on the touchscreen – push and hold the upper left corner of the touchscreen for 5 seconds.

<div>Time Entry</div> <div></div>	Enter time in format : 00hrmnsc Where HR is Hours 0 – 23 MN is in minutes 0 – 59 And SC is seconds 0 – 59 There are two leading zeros
<div>Date Entry</div> <div></div>	Enter date in format : YRMODTDY Where YR is year 00 – 99 MO is in month 00 – 12 And DT is numeric date 0 – 31 And DY is day of week 00 – 06 00 is sunday
<div>SET TIME &amp; DATE</div> <div>DONE</div>	

Appendix D  
VL10 Footprint

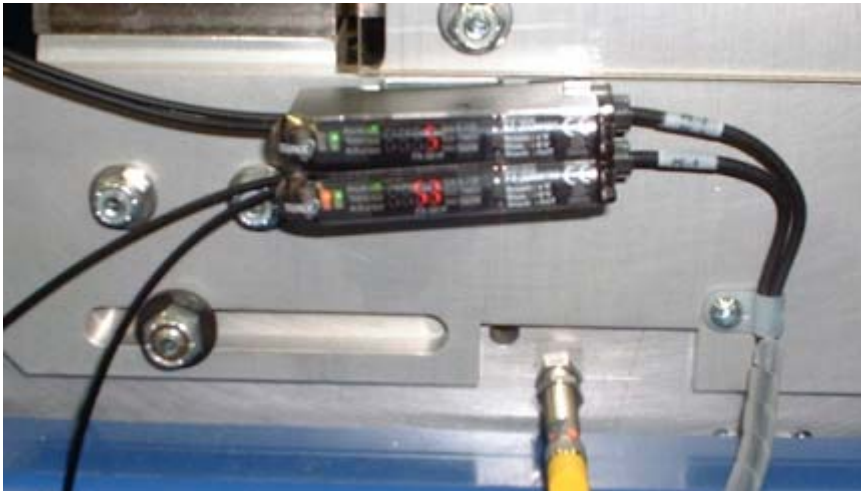




## Appendix E

### FX301

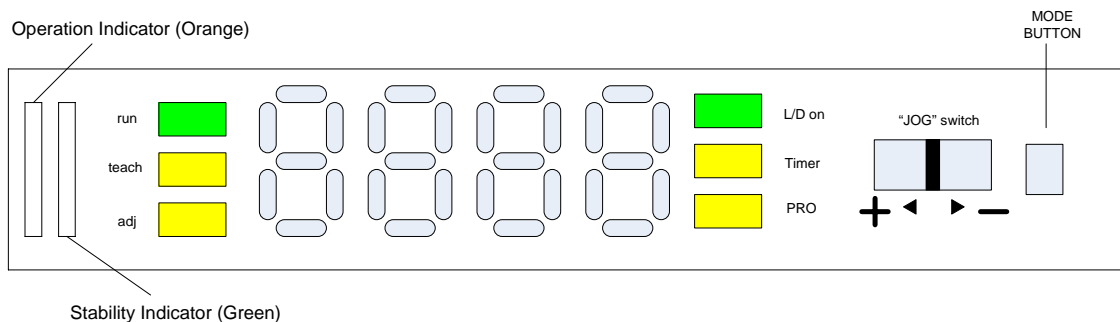
These two units are mounted on the rear of the stamp machine. The top unit receives a signal from the sensor mounted on the horn, which detects if the small flap is present or not. The lower unit works with the sensor that looks at the infeed trough determining if a carton is on the trough. There are only two settings that may need to be adjusted on the unit. The first is whether the unit is in “DARK ON” mode or “LIGHT ON” mode. The second is the “ADJ” setting which affects where the unit activates in response to how much light is detected (threshold setting).



Top unit is PE2 which looks at the small flap

Bottom unit is PE4 which checks for cartons on the carton trough

There are two types of the FX301. There is a PNP or an NPN type available. This terminology refers to the transistor type. The PNP type is listed as FX301 (P), the NPN type may be listed as FX301. Be careful not to order the wrong type. The VL10 uses an PNP type, part number 41170643.



The FX301 has a JOG switch and a MODE switch which are used for setting the unit. The JOG switch is used to select from the detailed functions available within each mode (by moving it left or right), as well as to change numerical values after the mode has been

chosen. The JOG switch can also be pressed to confirm values. Also present are 6 indicator lights {RUN, TEACH, ADJ, L/D ON, TIMER & PRO}. There is also an operation indicator and a stability indicator.

The amplifier features and settings are generally classified into two main modes; the 'NAVI mode' for items and settings that are frequently reconfigured, and the 'PRO mode' that contains more detailed settings. We do not use the PRO mode but keep in mind that there is a 'key lock function' that can keep an operator from changing the sensor settings by mistake. Consult the FX301 manual for more details.

*When changing the status of any setting, ensure that the selected setting is subsequently confirmed. If confirmation is not performed, the new setting will not take effect.*

When the unit is first powered up the FX301 runs a communication self check. If it passes the RUN indicator lights up GREEN and the digital readout displays the incident light intensity.

Note: Pressing the MODE key for 2 seconds or more causes the sensor to return to the RUN mode. When you press the mode key you can step through a series of available menus. The menu available to you is indicated by the indicator light that is on. The sequence is "TEACH – ADJ - L/D ON - TIMER - PRO". Only the "ADJ" & "L/D ON" modes are used.

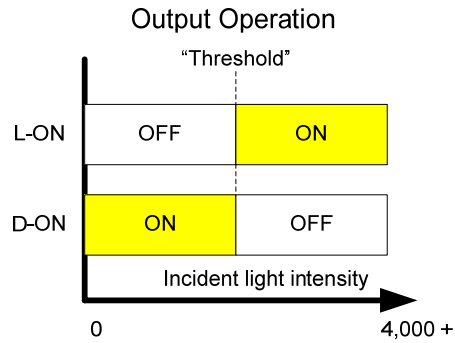
#### **"ADJ" - Threshold Value – Fine Adjustment**

Fine adjustment of the threshold value can be accomplished when the ADJ yellow indicator light is on. Move the jog switch to the plus side and the threshold value **increases** (ie sensitivity decreases). Move the jog switch to the minus side and the threshold value **increases** (ie sensitivity decreases). When the jog switch is pressed, the threshold value is confirmed.

#### **"L/D ON" - Output Operation Setting Mode**

This mode allows the selection of output operation from either L-ON (Light-ON), or D-ON (Dark-ON). The output operation setting can be done when the L/D yellow indicator light is on. The output operation is changed when the JOG switch is moved to the plus side or the minus side. When set to "L-ON" the output will be ON if the incident light intensity becomes greater than the threshold value. When set to "D-ON" the output will be ON if the incident light intensity becomes less than the threshold value. When jog switch is pressed, the threshold value is confirmed.

Note: The first few VL10's had PE2 (flap) set for light mode & PE4 (trough) set for dark mode.



### **“TIMER” - Timer Setting**

This mode sets the timer operation and set the type of timer. The factory setting is ‘without timer’. The timer setting can be performed when the TIMER yellow indicator light is on. The timer mode is not currently used with the VL10. The timer should be left in the off mode.

### **“TEACH” –teaching mode**

Sets the threshold value by “2-level teaching” or “limit teaching”. Not currently used

### **“PRO”**

The PRO mode that contains more detailed settings. Not currently used.

### **“RUN”**

The default setting

The only error that may appear on the sensor is “Error 1” which means that the load has short circuited and excess current is flowing. Turn off the power and then check the load.

## Appendix F

### Laser Unit 7706A

The stamp operation is controlled by the laser unit, “photo electric sensor”. The laser unit has a class-2 laser diode emitting a collimated *modulated* laser beam. The unit has two possible modes. It should be set to the dark mode . The unit also has an adjustable intensity control. Turning the intensity control CCW decreases the intensity. This decreases the sensing range.

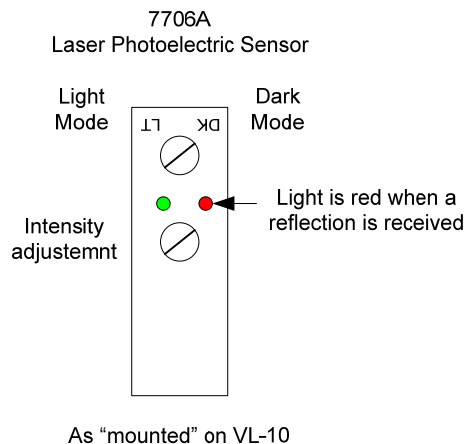
#### Adjustment Procedure

Turn the intensity control CW until the laser spot is visible on the stamp paper. The beam should be reflecting off the paper. Increase the intensity until the red output indicator light turns “ON”, indicating that the reflection is being received.

Remove the paper and continue to increase the intensity CW until the background reflectance causes the output to turn on.

Decrease (CCW) the intensity control half-way between where the output turned on with the paper in view and the previous position where the output turned on through reflectance off the metal. (Also know as “specular” reflection).

If the output did not turn on when the intensity control was turned to max with no object present decrease the intensity to halfway between max and where the output turned on with the object present.



#### Issues:

Make sure the mounting screws are tight.

If the metal surface is irregular (ie scratched up) it may cause the sensor to turn on and off more than once as the beam reflects off of the metal through the hole in the stamp paper.

If dust / dirt covers the metal surface this will interfere with the beam reflection.

## Service Touchscreens / Tech Screens

After entering the correct password to gain access to the “Service” menu, there are several options including:

Manual – This screen allows service personnel to manually test the individual operation of each air-solenoid valve and each control relay.

Sensors – This screen provides real-time access to see which sensors are currently being triggered. This is a useful screen for checking the performance of each sensor.

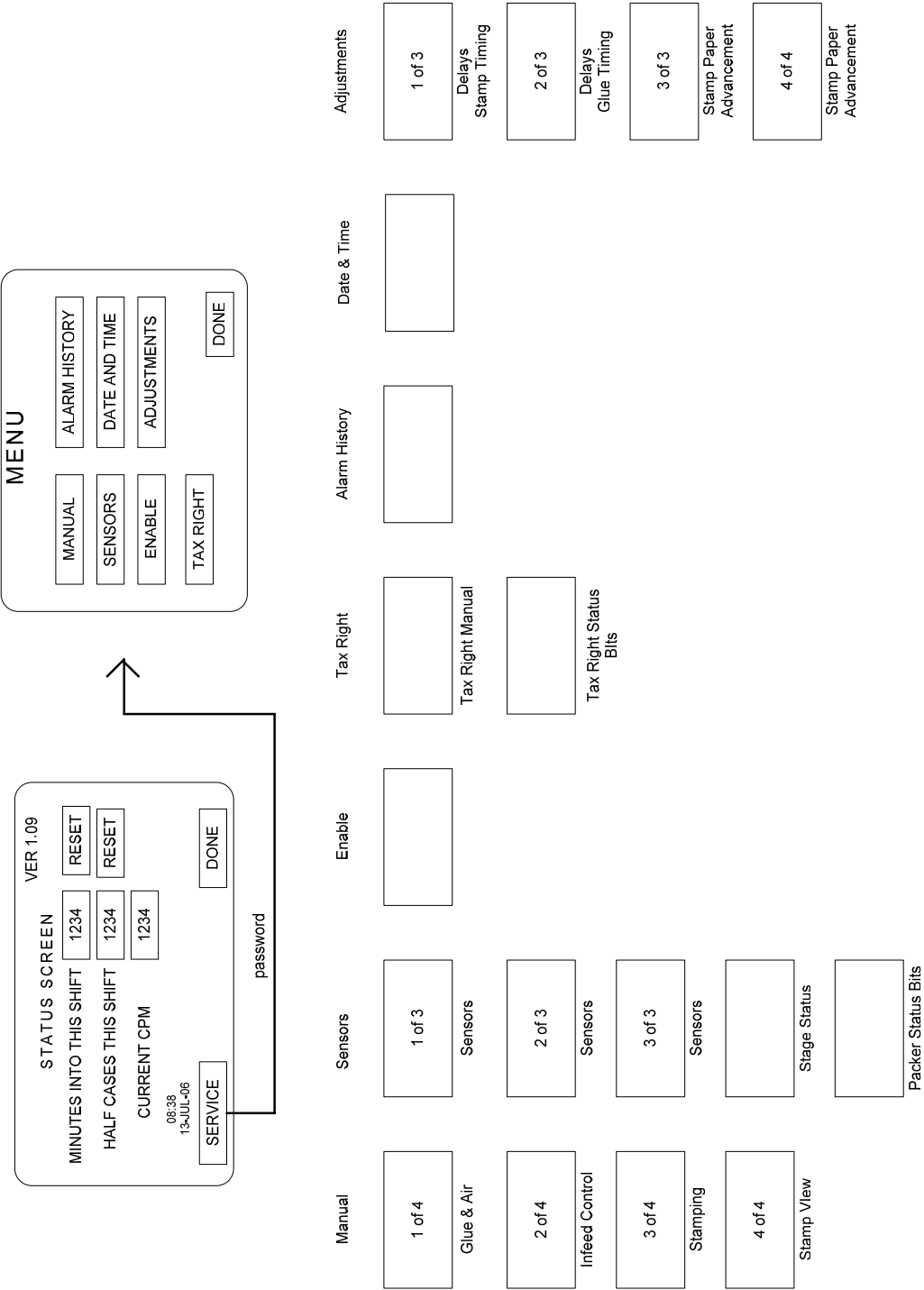
Enable –

Tax Right –

Alarm History –

Date & Time -

Adjustments – This screen allows service personnel to change to timing of the stamping head and to change the start point and length of the hot melt glue bead.



Overview of Tech Screens

Tech Screens  
Group 1 – Manual Control

MANUAL (1 OF 4) - GLUE & AIR

ON

OFF

Y2 – GLUE POT HEATER

SET

RESET

Y14 – FIRE HOT GLUE

AIR ON

OFF

Y4 – MAIN AIR DUMP VLV

NEXT

DONE

MANUAL (2 OF 4) – INFEED CONTROL

ON

OFF

Y12 – INFEED CONVY

ON

OFF

Y13 – MAIN MOTOR ON

RAISE

LOWER

Y15 – INFEED LIFT CYL

OUT

IN

Y16 – 1ST PUSHER BLK

OUT

IN

Y17 – 2ND PUSHER BLK

PREVIOUS

NEXT

DONE

MANUAL (3 OF 4) – STAMPING

EXTND

RETRCT

Y5 – CTN LIFT CYLINDER

EXTEND

RETRCT

Y6 – STAMP APPLY CYL

EXTND

RETRCT

Y7 – ROLL LOAD CLY

EXTND

RETRCT

Y10 - LEFT LANE CYL

EXTND

RETRCT

Y11 - RIGHT LANE CYL

Adv Roll Off

Stage15off

PREVIOUS

NEXT

DONE

MANUAL (4 OF 4) – STAMP VIEW

EXTND

RETRCT

Y5 – CTN LIFT CYLINDER

APPLY 1

Every Sec

Y6 – STAMP APPLY CYL

Delay to Apply

1234

Apply Time

1234

HTBT Iron Down

1234

HTBT Iron Up

1234

# STAMPS

12345123

ADV TIME T40

1234

STD SPD

12645

ADV END HTBT

1234

Adv Roll Off

OFF

I-MK CNT

1234

CYCLING, I-MK CNT

1234

Stage15off

PREVIOUS

DONE

Tech Screens  
Group 2 - Sensors

SENSORS (1 of 3)

X0

X1

X2

X3 – LASER EYEMARK SENSOR

X4 – HEARTBEAT PROX 1

X5 – HOME PROX 2

X6 – CARTON AT PLOW PE1

X7 – OPERATOR ON SWITCH

FLAGS

NEXT

DONE

SENSORS (2 of 3)

X10 – OPERATOR OFF SWITCH

X11 – SPARE

X12 – SMALL FLAP PE2

X13 – SPARE

X14 – E-STOP SIGNAL

X15 – SPARE

X16 – SPARE

X17 – CTN AT 1ST POS PE4

FLAGS

PREVIOUS

NEXT

DONE

SENSORS (3 of 3)

X20 – IRON TEMP ALARM

X21 – BOTTOM TIP OVER PE5

X22 – TOP TIP OVER PE6

X23 – GLUE TEMP ALARM

C470

C463

C472

C461

C464

C477

X100

C642

C643

X101

X102

X103

X104

FLAGS

PREVIOUS

NEXT

DONE



Group 2 sensors cont.

### STAGE STATUS

<input type="radio"/>	S0	POWER-UP
<input type="radio"/>	S0	MANUAL
<input type="radio"/>	S0	RUNNING
<input type="radio"/>	S0	SUPERVISORY
<input type="radio"/>	S0	APPLY STAMPS
<input type="radio"/>	S0	STAMP ROLL HOME
<input type="radio"/>	S0	JOG STAMP TOWARD
<input type="radio"/>	S0	JOG STAMP AWAY

FLAGS

PREVIOUS

NEXT

DONE

### PACKER STATUS BITS

<input type="radio"/>	Y100	REMOTE START
<input type="radio"/>	Y101	REMOTE RESET
<input type="radio"/>	C642	SHOW PKR MSG
<input type="radio"/>	C643	PACKER FAULT
<input type="radio"/>	X100	PACKER CONNECTED
<input type="radio"/>	X101	PACKER COM # 1
<input type="radio"/>	X102	PACKER COM # 2
<input type="radio"/>	X103	PACKER COM # 4
<input type="radio"/>	X104	PACKER COM # 8

PREVIOUS

DONE

Tech Screens  
Group 3 – Enable

ENABLE 1

DISABLE	INFEEED CONVEYOR
DISABLE	STAMP HEAD
DISABLE	GLUE SYSTEM
DISABLE	CARTON LIFTER
DISABLE	SMALL FLAP SENSOR
NORMAL	CARTON SENSOR @ PLOW
NORMAL	TAX RIGHT

DONE

Tech Screens  
Group 4 – Tax Right

TAX RIGHT MANUAL

BYPASS	Y102	BYPASS SWITCH
OUT / IN	Y103	IN CYCLE
ON / OFF	Y104	SCANNER SIGNAL

PREVIOUS

NEXT

DONE

TAX RIGHT STATUS BITS

☐

Y102

BYPASS SWITCH

☐

Y103

IN CYCLE

☐

Y104

SCANNER SIGNAL

☐

X105

STOP AND NO STAMP

☐

X106

STOP AND STAMP

☐

X107

TAX HEAD 0 ENABLE

☐

X110

TAX HEAD 1 ENABLE

PREVIOUS

DONE

Tech Screens  
Group 5 - Alarm History

ALARM HISTORY				TOTAL OF O ALARMS			
ENTRY NO	ALARM NO	MESSAGE	CONFIRM				
Alarm Count	Page Up	Page Down	Line Up	Line Down	Detail \$	Clear All	Exit

Group 6 - Date & Time

<div>Time Entry</div> <div></div>	Enter time in format : 00hrmnsc Where HR is Hours 0 – 23 MN is in minutes 0 – 59 And SC is seconds 0 – 59 There are two leading zeros
<div>Date Entry</div> <div></div>	Enter date in format : YRMODTDY Where YR is year 00 – 99 MO is in month 00 – 12 And DT is numeric date 0 – 31 And DY is day of week 00 – 06 00 is sunday
<div>SET TIME &amp; DATE</div> <div>DONE</div>	

Tech Screens  
Group 7 -Adjustments

ADJUSTMENT (1 of 3)  
STAMP TIMING

1234

DELAY UNTIL APPLY START (x10msec)  
Factory setting is 15

1234

DELAY & STAMP DURATION (x10msec)  
Factory setting is 15

NEXT

DONE

ADJUSTMENT (2 of 3)  
GLUE TIMING PARAMETERS

1234

DELAY UNTIL APPLY GLUE (x10msec)  
Factory setting is 0

1234

DELAY + GLUE APPLY (x10msec)  
Factory setting is 20

PREVIOUS

NEXT

DONE

ADJUSTMENT (3 of 3)  
STAMP PAPER ADV

▲▼

V3630 TAKEUP STEPMOTOR  
FEED ADJUST OVERRIDE  
OVERRIDE Y / N ?

NO

▲▼

HOLE STOP  
COUNT  
(currently working at 1)

PREVIOUS

NEXT

DONE

ADJUSTMENT (4 of 4)  
STAMP PAPER ADV (x10msec)

○

▲▼

V2201, TIME TO PASS FIRST  
HOLE

○

▲▼

V2200, MAX TIME FOR  
PAPER ADVANCE

PREVIOUS

DONE

61

## Default Settings

### Adjustments (1 of 3)

#### Stamp Timing

- 8 Delay until apply start
- 30 Delay + Duration

### Adjustments (2 of 3)

#### Glue Application

- 5 Delay until apply glue
- 25 Delay + apply

### Adjustments (3 of 3)

- 2015 V3630 Take up step motor speed adjust override  
Override Y/N No
- 1 Hole stop count

### Adjustments (4 of 4)

- 0 V2201 Time to pass first hole
- 30 V2200 Max time for paper advance