INTRODUCTION

In order to achieve maximum production and reliability from this system, it is necessary to be familiar with its capabilities. Knowledge of installation, components and set up are essential to initiate operations and maintain the machine. Keep manual near machine for easy reference. This information will provide steps to improved operations and enhanced production. Thorough understandings of these basics are essential.

GENERAL DESCRIPTION

This **COMBI PACKAGING SYSTEMS MODEL 2EZ PLUS SIDE BELT CASE ERECTOR - BOTTOM TAPER** is a medium speed automatic case erector for **RSC** (**R**egular **S**lotted **C**ase) type cases that not only erects the case, but also tapes the bottom utilizing industry standard tape heads.

This machine is designed for easy change over from one size case to another.

CAUTION: ALL ADJUSTMENTS SHOULD BE MADE WITH THE EMERGENCY STOP BUTTON DEPRESSED. THIS MACHINERY CAN CYCLE AUTOMATICALLY WITHOUT MANUAL MANIPULATION. TO PREVENT INJURY, DURING NORMAL OPERATION, KEEP ALL SAFETY COVERS IN PLACE AND DO NOT DISENGAGE SAFETY SWITCHES.

Due to variations in RSC type cases, minor adjustments in set-up procedures may be required.

Machine speeds are dependent on case size and construction.

Main components consist of frame, covers, magazine, side belt drives, vacuum assembly, plow, carriage, hold down guide, taping unit, pneumatic components and electrical components. Refer to section three for detailed drawings of the components.

NOTE: Photos and diagrams in this manual may vary slightly or be mirrored image of actual machine, depending on systems' direction of execution and options purchased.

GENERAL INSTALLATION INSTRUCTIONS

1. SITE LOCATION

Ideally, the main electrical enclosure should be located away from direct heating and cooling or windows where it can "bake" in direct sunlight. Equipment should be located convenient to the required utilities, such as compressed air and power, as well as being convenient to related production facilities.

There should be ample room around the case magazine to provide access for corrugated delivery and loading. There should be clearance around the equipment to accommodate production and maintenance functions. A minimum of 36" clearance must be left to the front of the electrical enclosure (check your local electrical codes).

The flooring must be suitable to secure the proper anchor bolts, as they are required to maintain structural alignment and keep the equipment from "walking".

2. STRUCTURAL ERECTION

When the exact location has been determined, the location for the anchor bolts should be marked on the floor.

The use of tightly drawn wire as a "centerline", and a plumb bob to transfer the stations and centerline to the floor, is an excellent way to begin the anchor bolt layout.

Proper use of a transit and/or triangulation may be used to determine the exact anchor bolt locations. The use of a transit could make it possible to note and record the variation in floor elevation at each anchor location.

The structure should be leveled both longitudinally and transversely by means of the adjustable foot bolts in each leg. Connecting brackets, provided by Combi Packaging Systems, are used to interconnect equipment. Most connections will be labeled.

Exercising proper care in this phase of erection will help to assure that all sections will fit together properly, will contribute to the reliability of the system, and to minimize unnecessary damage.

GENERAL INSTALLATION INSTRUCTIONS CONT.

3. ELECTRICAL CONNECTIONS

All electrical connections between equipment are made terminal to terminal. A junction box is provided on each piece of equipment, other than that which has the main enclosure.

A set or row of terminal strips is located on each sub panel in each terminal box. The terminals are prewired with the internal wiring to that specific component. The terminals are numbered to coincide with the external wiring, which is also numbered. The wiring is disconnected at one end and left generally in flexible conduit ready to reconnect. Check the electrical schematic located in the electrical enclosure for incoming power required.

4. COMPRESSED AIR CONNECTIONS

Compressed air is brought in to one or more locations, (see your equipment layout). Air should be delivered via a 3/4" or larger air line,80 psi minimum supply, to the filter regulator.

Air connections between equipment are generally via polyflow tubing. These must be reconnected directly into the valve or cylinder via a quick connect fitting. Both ends, fitting and tube, will frequently be labeled, (unless connection is obvious).

OPERATOR CONTROL PANEL

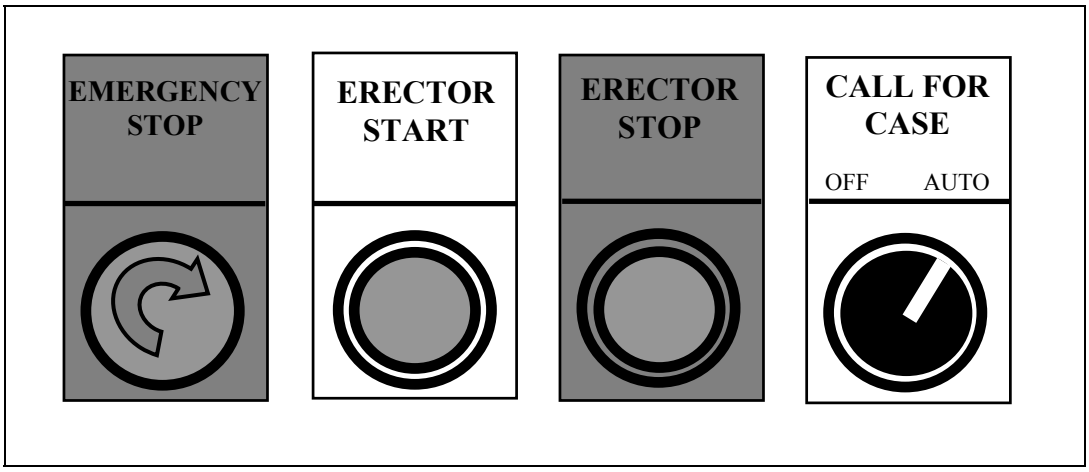


Figure 1. Operator Control Panel

NOTE: SOME PANEL LAYOUTS AND SWITCH LABELS MAY VARY SLIGHTLY FROM MACHINE TO MACHINE.

The Operator Control Panel is used to control the automation of the system.

1. **EMERGENCY STOP:** RED "mushroom" button. Push in for Emergency Stop. Twist and pull out to reset.
2. **ERECTOR START:** GREEN push button. Push in to start Case Erector.
3. **ERECTOR STOP:** RED push button which stops Case Erector.
4. **CALL FOR CASE (OFF/AUTO):** BLACK selector switch initiates "Call for Case".

OFF Call For Case will stop automatically. If "Erector Start" button is pushed and no case is present, machine will pull one case from magazine and stop.

AUTO Machine will continuously erect cases until Discharge Backup Sensor is blocked.

OPERATOR CONTROL PANELS CONTINUED

Figure 2. Case Speed and Emergency Stop Control Panel (if applicable).

1. **EMERGENCY STOP:** RED "mushroom" button. Push in for Emergency Stop. Twist and pull out to reset.
2. **CASE SPEED –** (Cases per minute.) Operator can slow cycle down by turning knob toward desired speed according to case size and construction. Do not use at speed higher than necessary.

Figure 3. Main Electrical Shut Off Control With Lock Out Tag Out Switch (if applicable).

FLOW CONTROL ADJUSTMENT – VALVE BANK

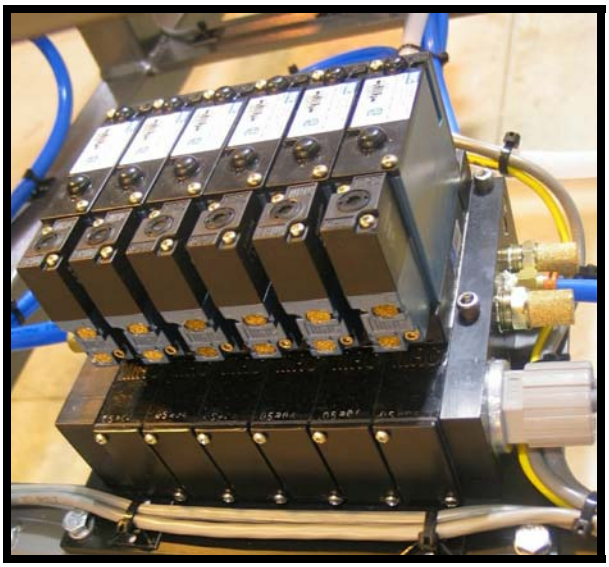


Figure 4. Valve Bank (see note below)

NOTE: SOME MACHINES MAY DIFFER –
PLEASE REFER TO YOUR PNEUMATIC SCHEMATIC FOR "SV" LABELING

Flow control of air-activated components is factory set and should not need adjustment. However, if you are not satisfied with the standard settings, they may be modified at the Valve Bank.

The Extend Flow Control adjustment screw (top) adjusts the flow to the bottom output air line, while the Retract Flow Control adjustment screw (lower) controls the upper output air line. There is air flow in the top air line when the valve is energized (normally closed), and air flow is in the bottom air line when the valve is de-energized (normally open). Turning the Flow Control screw clockwise restricts the flow through the valve while turning it counter-clockwise increases the air flow through the valve. To check your adjustments, depress the manual over-ride button that will actuate the valve without running the machine.

Example: If you desire to slow the extension of a cylinder that is normally retracted (de-energized), loosen the lower flow control nut, turn the screw clockwise, tighten the nut, and test by pressing the manual over-ride button.

Note: If the coil is on the bottom (reversed) the top flow control and lower adjustment may be reversed.

NOTE: <u>DO NOT</u> ADJUST SV/01 – THE AIR FLOW MUST STAY UNRESTRICTED

CASE MAGAZINE

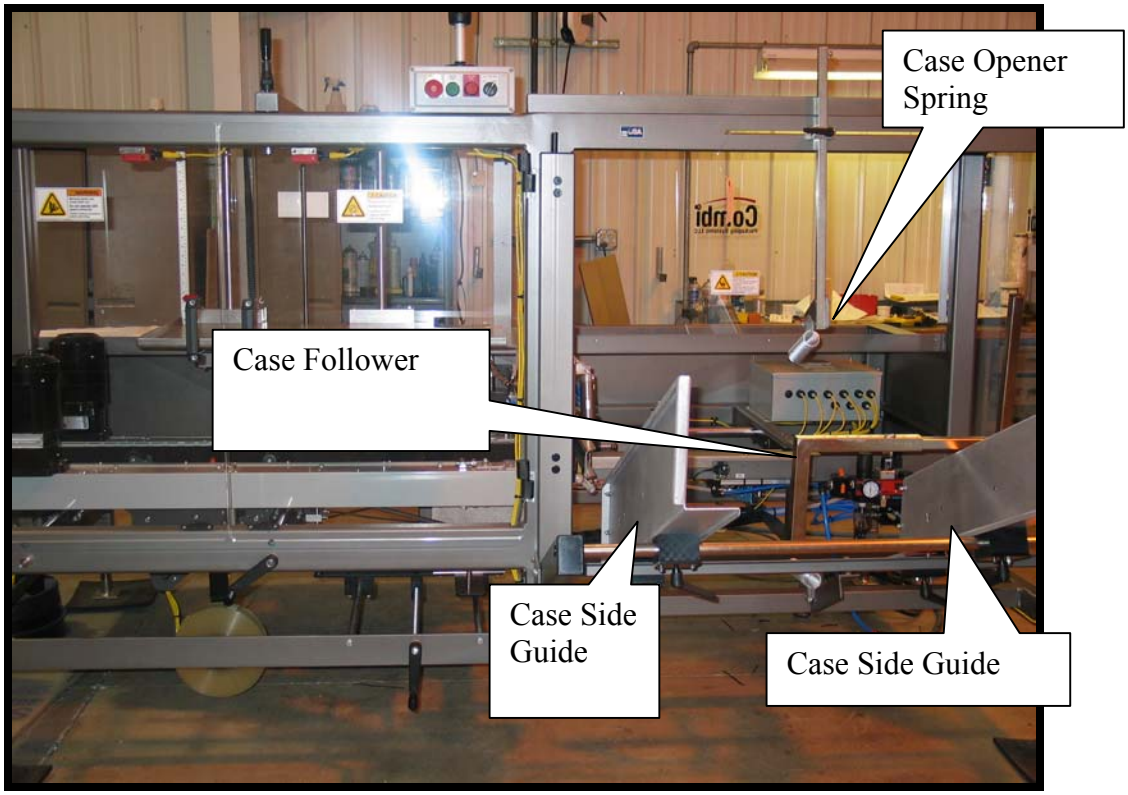


Figure 5. Case Magazine with case follower, spring opener and side guides.

The Case Magazine holds the flat cases before they are formed into box shape.

CASE VACUUM

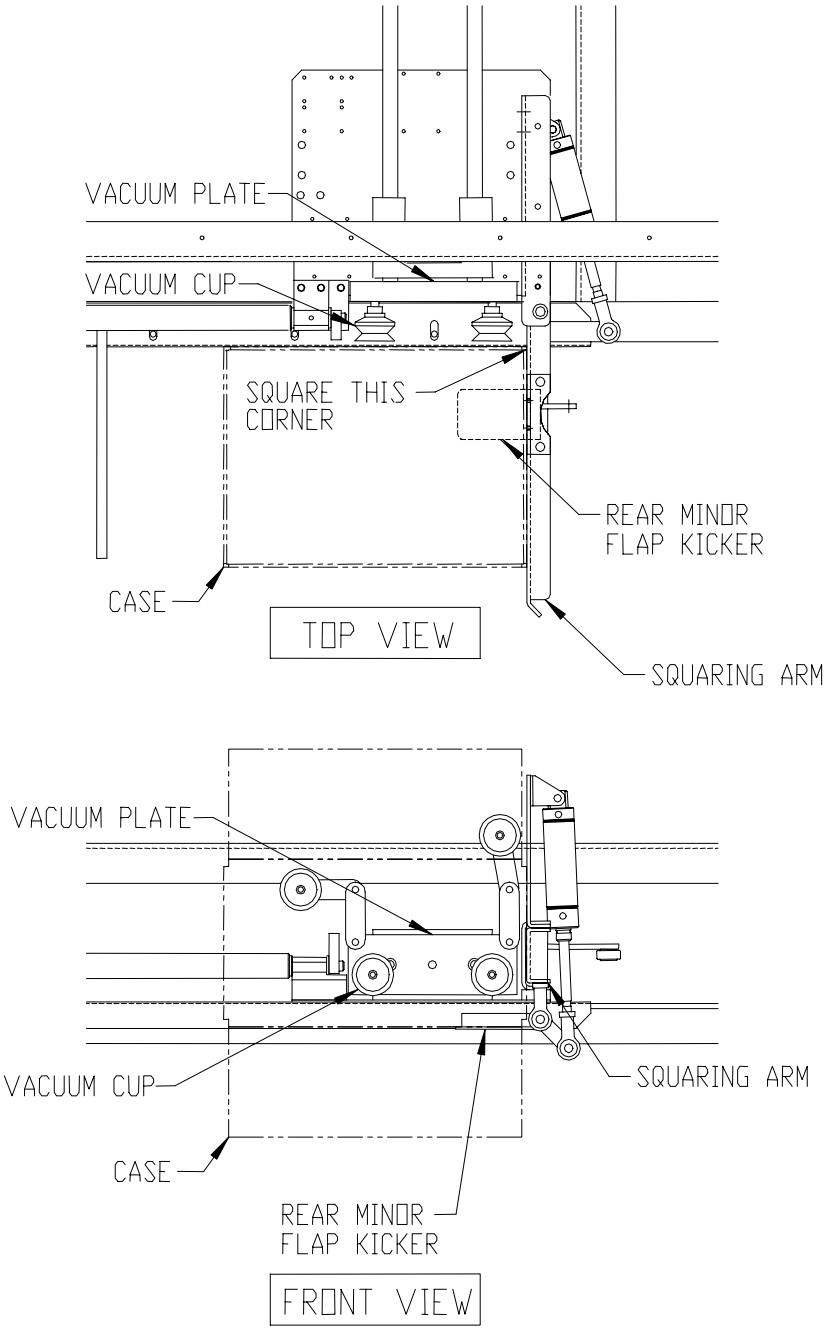


Figure 6. Vacuum Assembly

Figures 6, 7A, 7B, and 7C illustrate the Case Vacuum. The Case Vacuum grabs the flat case from the magazine.

CASE VACUUM CONTINUED

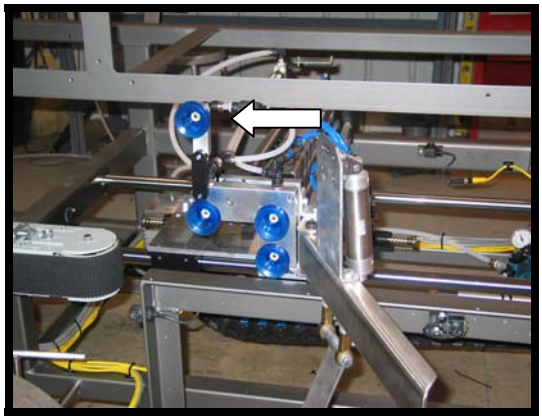


Figure 7A and 7B. Vacuum cups can be adjusted for correct placement for varying case sizes. (See set up procedures).

Note: This option only pertains if the small vacuum cup option was selected at time of purchase.

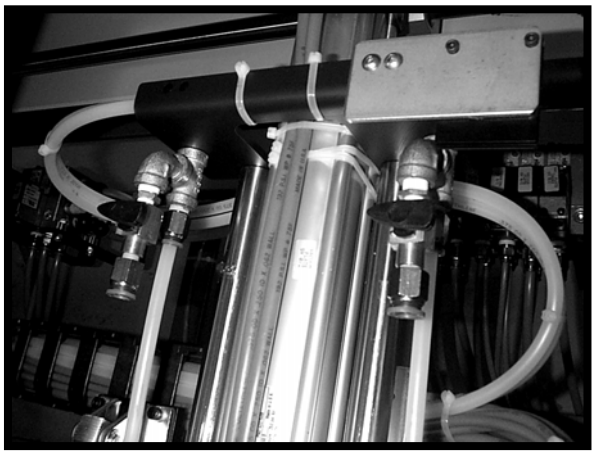


Figure 7C. Shut off any unused vacuum lines.

CASE PLOW

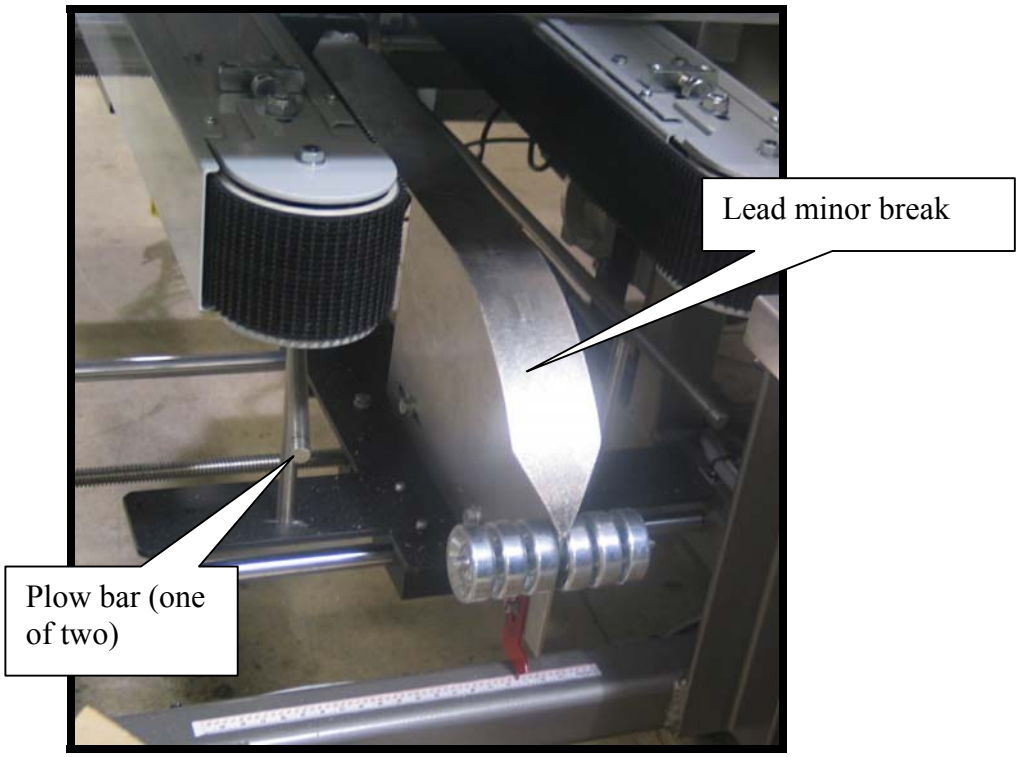


Figure 8. Plow and Scale.

The Case Plow is the mechanism that holds down the major and minor flaps of the case until case is sealed on bottom. The main parts of the plow are the Lead Minor Break, the Inside Plow and Outside Plow.

TOP CASE GUIDE

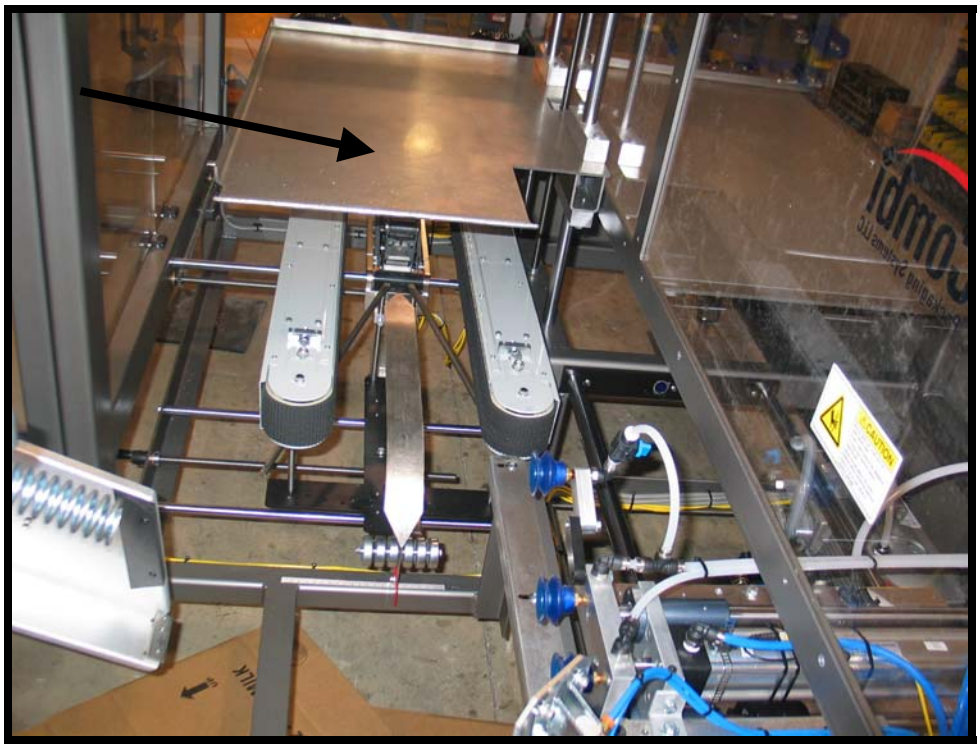


Figure 9. Top Case Guide (also known as Top Hold Down Plate).

The top case guide supports the case, while containing it in plow and side belt assembly areas.

SIDE BELT DRIVE

Figure 10. Side Belts and Motors.

A case is moved into plow area and the belt drives' continuous movement directs the case through taping unit.

TAPE HEAD (IF APPLICABLE)

Refer to tape head manual in section five for specific set up, maintenance and safety procedures.

1. Stop the Case Erector by pushing **EMERGENCY STOP** button on the Operator Control Panel.
2. Remove cases from the taping area.
3. Follow tape head manual for set-up, safety, maintenance and safety procedures.

ALARMS

This only pertains if the alarm options were selected at time of purchase.

Any tape faults will shut down the taper automatically.

BLUE - SOLID	Low Case or Low Tape
BLUE – FLASHING	No Tape or No Tape Cut

Correct problem as noted by the alarm and push “ERECTOR START”.

STANDARD 2-EZ PLUS SIDE BELT SET UP PROCEDURES

WARNING!

Carefully follow the Combi installation and set up procedures. The manufacturer will not be responsible for damages caused by improper installation and set up.

1. Push Emergency Stop before starting set up. See Figure 12 and 13.
2. Close the Main Air Shut Off Valve at the FRSS Main Air handling unit on the back of the machine. (Push the orange tab down. See Figure 11). Note: Airflow to the machine must be stopped to manually set up the machine.
3. Stopping the main air releases air pressure to all pneumatic components and allows them to be moved manually. See final step to reset the FRSS.
4. Proceed to the vacuum set up procedure section.

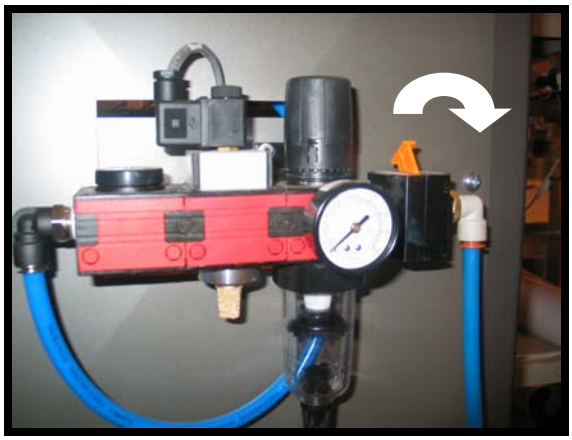


Figure 11. Main Air

Figure 12. E-Stop Location

OPERATOR CONTROL PANEL

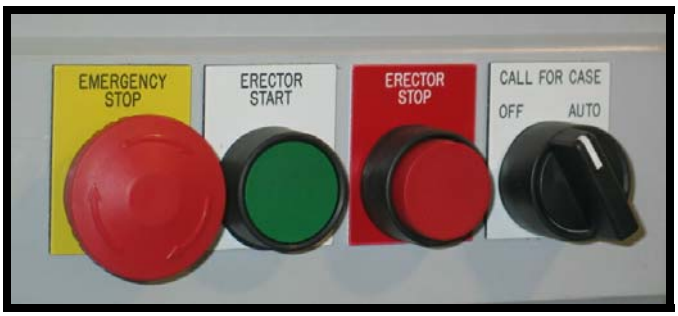


Figure 13. Operator Panel

Operator Control Panels may vary slightly from machine to machine.

EMERGENCY STOP: RED "mushroom" button. Push in for Emergency Stop. Twist and pull out to reset.

ERECTOR START: GREEN pushbutton. Push in to start Case Erector.

ERECTOR STOP: RED pushbutton which stops Case Erector. Also, when operator presses button in for more than one second, it will cause main air to turn off for the system.

CALL FOR CASE (OFF/AUTO): BLACK selector switch initiates "Call for Case".

OFF "Call For Case" will stop automatically. If "Erector Start" button is pushed and no case is present, machine will pull one case from magazine and stop.

AUTO Machine will continuously erect cases until discharge backup sensor is blocked.

If the operator needs to watch case erector cycle, press erector start button followed immediately by pressing the erector stop button. Will halt machine so cycles such as flap kicker, and squaring arm placement can be observed.

Fold bottom flaps and measure to determine dimensions (length, width, height) of the case. Record the dimensions.

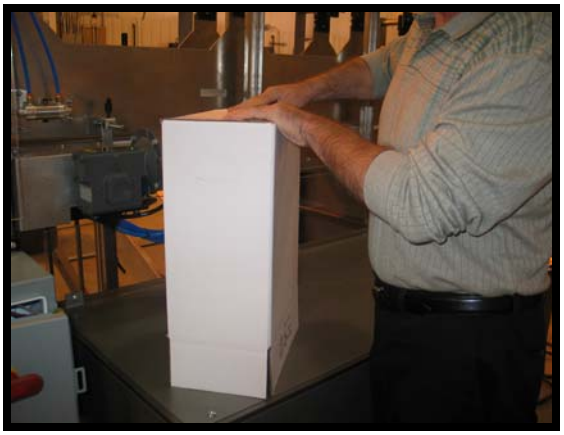


Figure 14. Fold bottom flaps

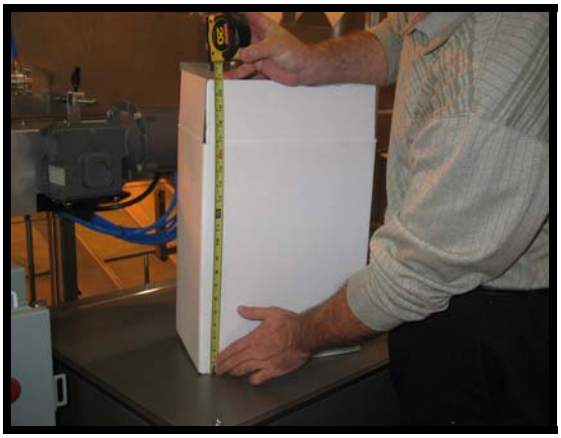


Figure 15. Measure height (minus bottom flaps)

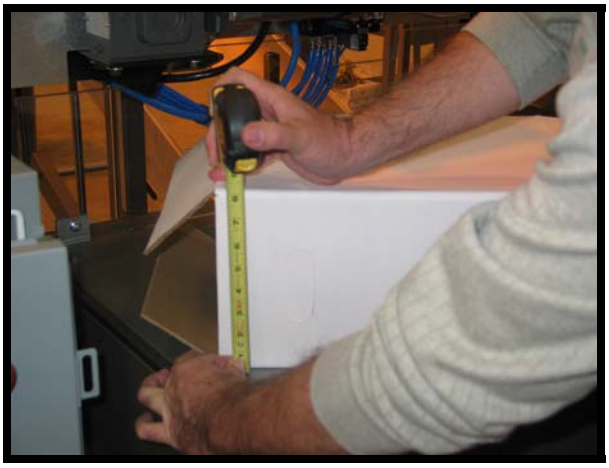


Figure 16. Measure width

**NOTE: SPECIAL INSTRUCTIONS FOR CASES WITH MEETING MINORS

If minor flaps meet in middle, use length instead of case width for magazine height adjustment.

Case shown: minor flaps meet in middle of case.

Use scale on back of machine (if applicable) to measure and record length of case.

Crank the Magazine Height Adjustment Handle until pointer reads proper case width measurement. ** See special notes on previous page if case has minor flaps that meet.

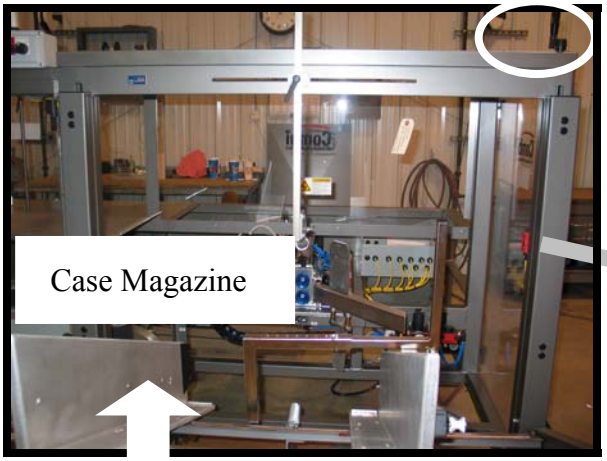


Figure 17. Case Magazine

Figure 18. Scale (if applicable)

1. Measure the width and height of the case to be erected. (Height equal to height with the top flap up, top flap only, see Figure 15). Use the measuring ruler on the machine for easy reference.
2. Move the Magazine Case Guide (minor side to the proper width measurement). See Figures 17 through 22.
3. Move the Magazine Case Guide (major side) to allow the case to flow down the magazine freely but also retained by the Hyfax Wedge or stopping plates (see Figure 20 and 22) at the end of the magazine. Loosen the opposite Case Side Guide so that there are a 3/8" – 1/2" gap between it and the side of the case.
4. Crank the Magazine Height Adjustment to the same width measurement.

Loosen locks and move the Magazine Case Guide (minor side) until pointer reads proper width measurement.

Figure 19. Magazine Case Guide Handle

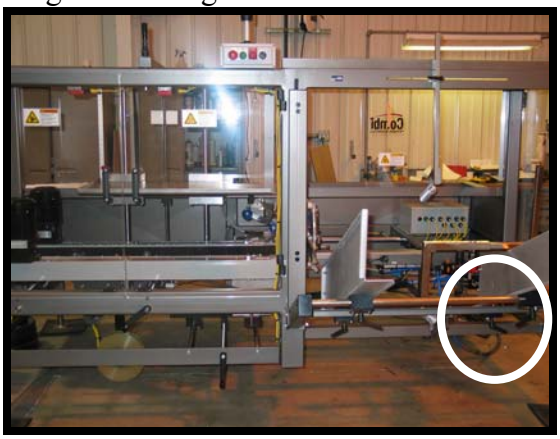


Figure 20. Stopping Plate

Adjust the Magazine Case Guide (major side) similarly but leave a 3/8”-1/2” gap between guide and case.

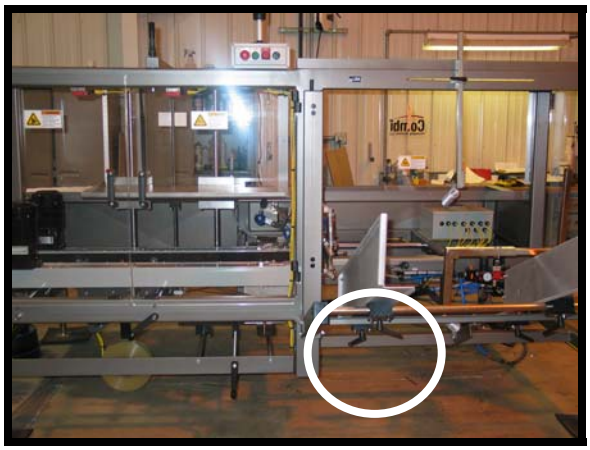


Figure 21. Magazine Case Guide Handle

Figure 22. Hyfax wedge (if applicable)

Once magazine is set to proper specifications, load bundle of cases in magazine and swing Case Follower into position. (See Figure 23.) See Section Two for "Helpful Hints" for proper case placement in magazine. Usually recommend that the operator place cases with seam side facing out, but may need to make adjustments. Major panel nearest vacuum cups must always be first panel towards the direction of the flow of the machine.

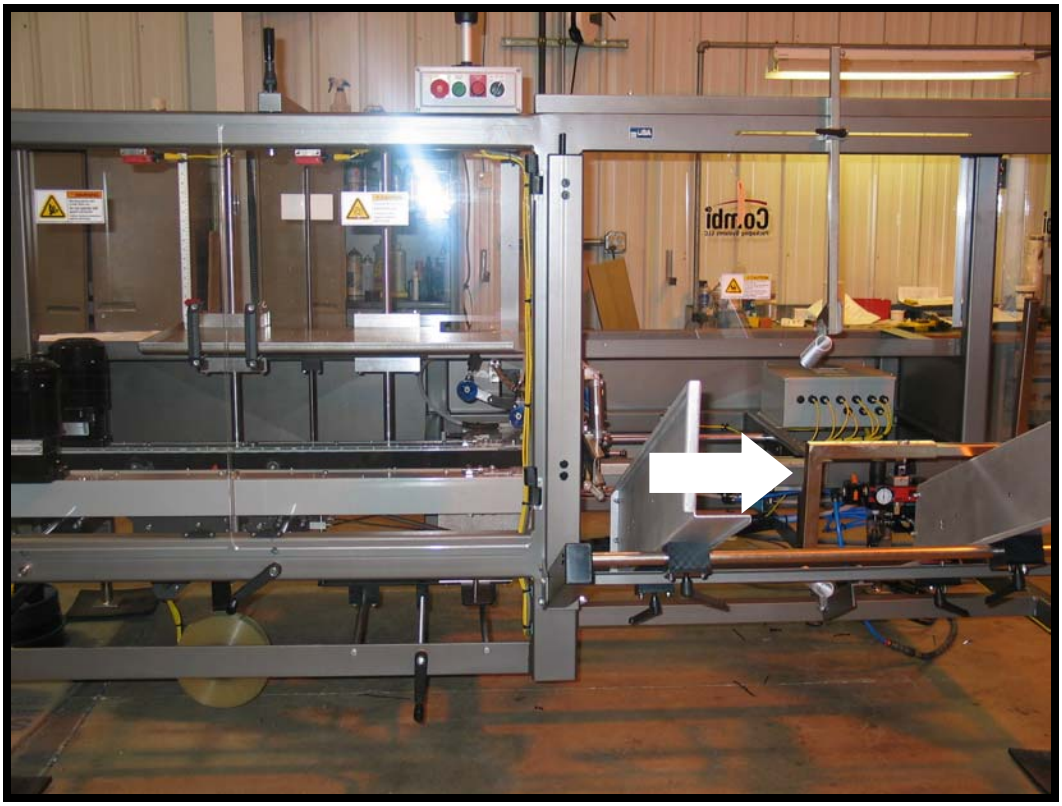


Figure 23. Case Follower Minor Side

23A. Case Follower

Figure 23B. Case Follower on Cases

(Tip: Point of squaring arm at 90° should line up with slots in case. See Figure 25.) Once lined up, loosen the lock handle and adjust the Upper Case Opener Spring so that there is about 3/8”engagement with top of case.

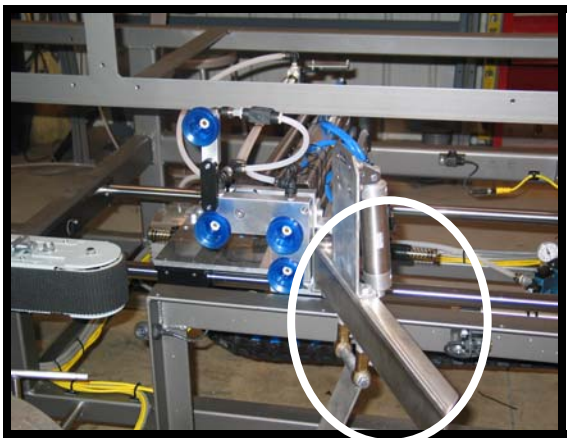


Figure 24. Squaring Arm

Figure 25. Squaring Arm Tip

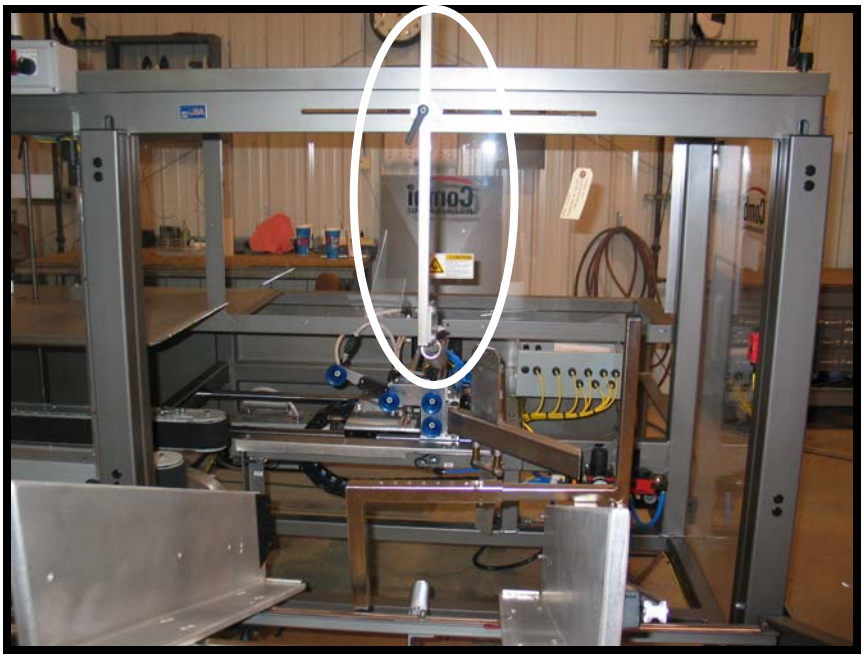


Figure 26. Top Case Opener Spring

Do the same for the Lower Case Opener Spring.

Figure 27. Lower Case Opener Spring

1. Adjust the Case Opener Spring (Figures 26 and 27) by loosening the Locking Handle until there is about 3/8" of engagement from the top of the case and the spring. Move the spring left or right until it is to the side of the score line between length and width panels of the case. The amount of contact and position of the spring may vary depending on case thickness and construction.
2. In cases where a bottom spring under the magazine is present, adjust the same as for the top spring. Standard procedures have operator set the bottom spring so that the first few cases catch on the last three coils, however the amount of contact and position of the spring may vary depending on case thickness and construction.

Adjust the Case Plow (width) until pointer reads proper case width measurement.

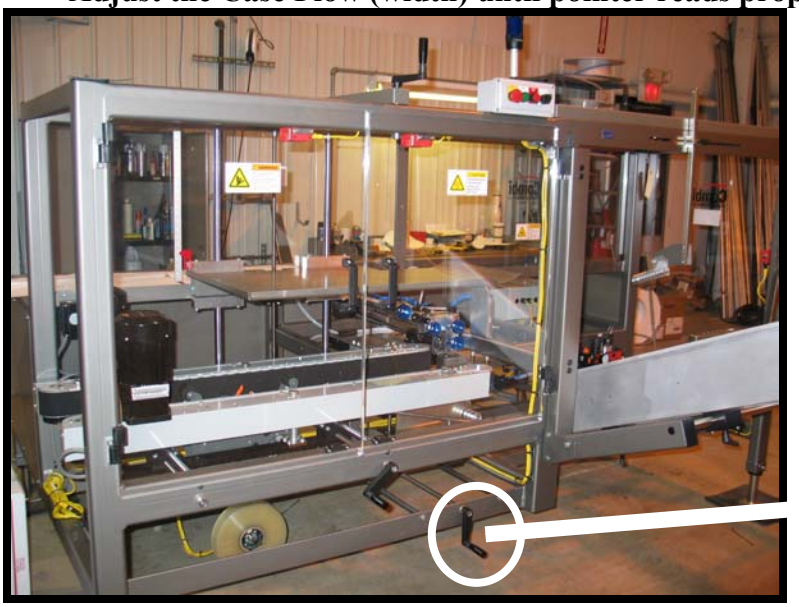


Figure 28. Plow Adj Handle

Figure 29. Plow

1. Adjust the Case Plow Assembly to the same width measurement used to adjust the magazine. (See Handle in Figure 28.)
2. Take the total height of the case with the bottom flaps closed and top flaps in the vertical position (up) and adjust the Top Hold Down Assembly to the proper height (See Crank Adjustment Handle at top of Case Erector in Figure 30.)
3. Take a case and fold in the bottom flaps and place it i Lead minor break of plow flaps up to see where they are located in relation to ea should fold up evenly on the plow and have small gap between flaps and plow. Adjustments to the plow will be necessary if flaps are overlapping each other on the plow. Adjust the Case Side Guide so that there is a slight pressure on the case. (See Figure 32 and 33).
4. Place the same case in the discharge area of the Sealer and adjust the Side Guide for the same pressure.
5. Check to see that the plows are in the center of the case.

Adjust the Case Plow (height) until pointer reads proper case height measurement.

Figure 30. Hold Down Plate Adj Handle

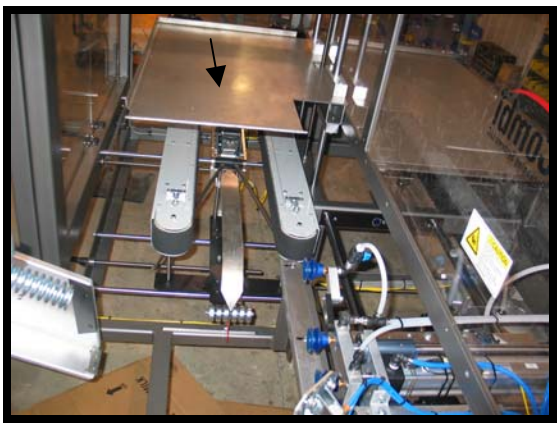


Figure 31. Hold Down Plate

Place a case into the side belt area and adjust side belt so that there is slight pressure on the case.

Figure 32. Side Belt Adj Handle

Figure 33. Side Belt Drive

Take a case and fold the bottom flaps and place it in the plow assembly area. Adjust the Side Belt Drive Assembly so that there is a slight pressure on the case. (Side Belt Adjustment Handle - See Figure 32.) See section two for belt tensioning procedures.

Adjust the Top Vacuum Cups by loosening respective mounting and rotating so that the body area of the case (not the flap) is grasped.

Figure 34. Vac Cup Adj

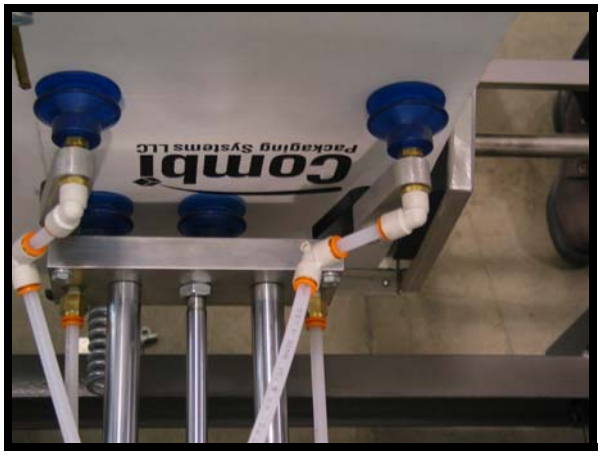
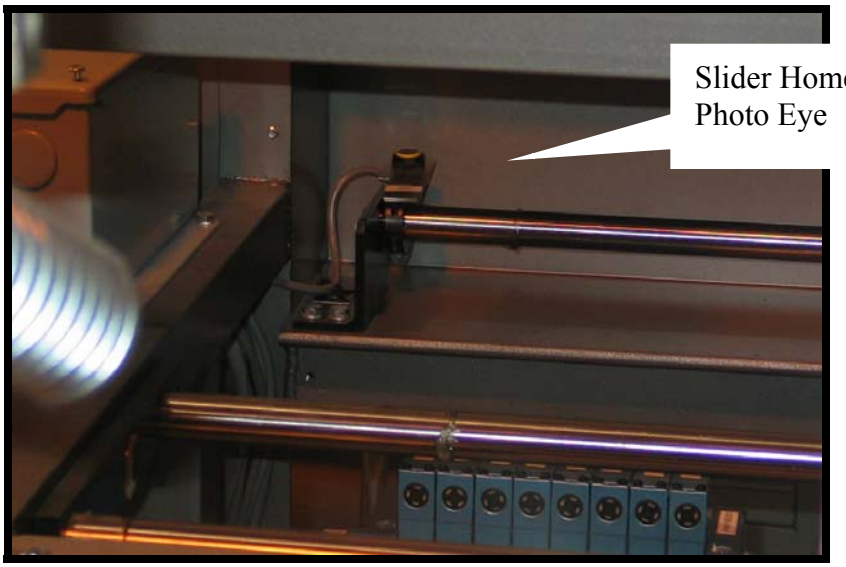


Figure 35. Vacuum Cup Placement

1. Rotate squaring arm to the 90° position and fold the rear minor flap kicker up. Place a case on the flap kicker and adjust the top Vacuum Cups by loosening their mountings and rotating so that the largest amount of the case body is grabbed by the Vacuum Cups as shown. (Spread Vacuum Cups out as far as you can on major panel. Do not grab the minor panel with the Vacuum Cups, because the minor panel will be kicked out by the squaring arm to form the shape of the case.)
2. Turn the Vacuum Pump on by releasing the **EMERGENCY STOP** button on the Operator Control Panel.
3. If the case is so small that the Vacuum Cup cannot contact it, use the factory supplied Manual Shut Off Valves to shut off vacuum and rotate the cup away from the case. The valves are mounted to the Vacuum Manifold that is on the opposite end of the guide rods bolted to the Vacuum Plate. Note that the lower Vacuum Cups are fixed. It is recommended that the upper Vacuum Cups be adjusted so that they contact the body of the case and not the upper flaps. Also, do not move Vacuum Cup Mountings out so far that the cups hit bolts on side of assembly when retracting with case.

A slider home photo eye are located at rear of case erector (under cover). The photo eye should be positioned so that it signals that the case erector slider is at its home position and ready to retrieve a case from the magazine.



Another photo eye position is the call for case photo eye. This photo eye should be positioned on the desired area on a discharge conveyor so that it indicates that enough product has accumulated, and when blocked, the case erector is disabled. The machines will automatically be enabled when the eye is no longer blocked.

In addition to photo eyes, proximity switches are located on all standard systems. The vacuum plate extended proximity switch (under the top cover of the case erector near the vacuum plate) signals that the vacuum plate has made a full stroke towards the magazine and can now retract. The slider extended proximity sensor (located on the back discharge side of the case erector) signals that the slider has reached its final position and for air to blow through the vacuum cups.

FINAL STEP

1. Hit the **EMERGENCY STOP** button to shut off the machine (see Operator Panel figure 13 in set up section).
2. Remove the set-up case from the machine.
3. Re-apply air to the machine by turning the Shut Off Valve Handle at the FRL/FRSS to the "ON" position by squeezing Red (or Orange) Tab and pulling up all the way.
4. Release the EMERGENCY STOP button and press CASE ERECTOR START button (see Operator Panel). **CAUTION:** If the machine is out of position, it will automatically return to its' home position with the Vacuum Plate retracted and in front of the magazine. All safety covers should be in place and general machine safety practices should be followed.
5. Load cases into the magazine and test run several cases to assure all adjustments have been made properly and tape is sealing case in correct position.
6. Toggle "**CALL FOR CASE"** one time, (see Operator Panel) and watch closely as the case is erected making note of any minor adjustments that may be necessary.

Ready to process cases!

SEQUENCE OF OPERATION

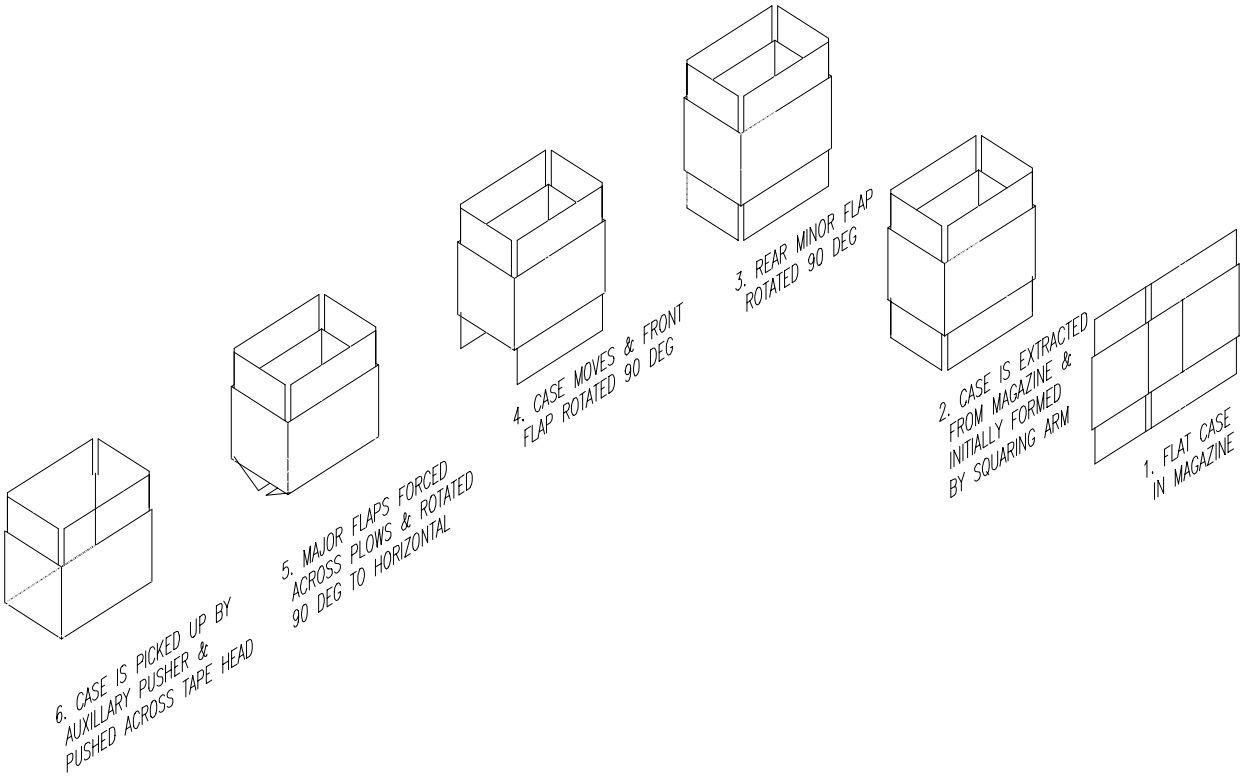


Figure 36. Left hand execution shown in diagram above.

1. Flat case in magazine.
2. Case is extracted from magazine and initially formed by Squaring Arm.
3. Rear Minor Flap is folded in 90°.
4. Case moves and Front Minor Flap folded in 90°.
5. Major Flaps forced across plows and folded in 90° to horizontal.
6. Case is picked up by side belt drive and pushed across tape head and sealed.