



E-SERIES ERGOPACK® SYSTEM DESCRIPTION

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 INSTALLATION INSTRUCTIONS

1. SITE LOCATION

Ideally, the main electrical enclosure should be located away from direct heating and cooling or windows where it can be affected 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 moving (or “walking”) out of position.

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.

An air connection between equipment is 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).

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.

MAIN AIR



Figure 1 - Filter Regulated Soft Start (FRSS)

Photo may vary from actual machine.

1. Push **EMERGENCY STOP** before starting set up.
2. Close the Main Air Shutoff Valve at the FRSS Main Air handling unit. (Push Orange Tab Down). **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.

STANDARD E-SERIES ERGOPACK® SYSTEM DESCRIPTION

This COMBI PACKAGING SYSTEMS MODEL E-SERIES CASE ERECTOR, ERGOPACK® SYSTEM is a medium speed automatic case erector, handpack station for Regular Slotted Case (RSC) and Half Slotted Case (HSC) type cases in the vertical position.

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

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

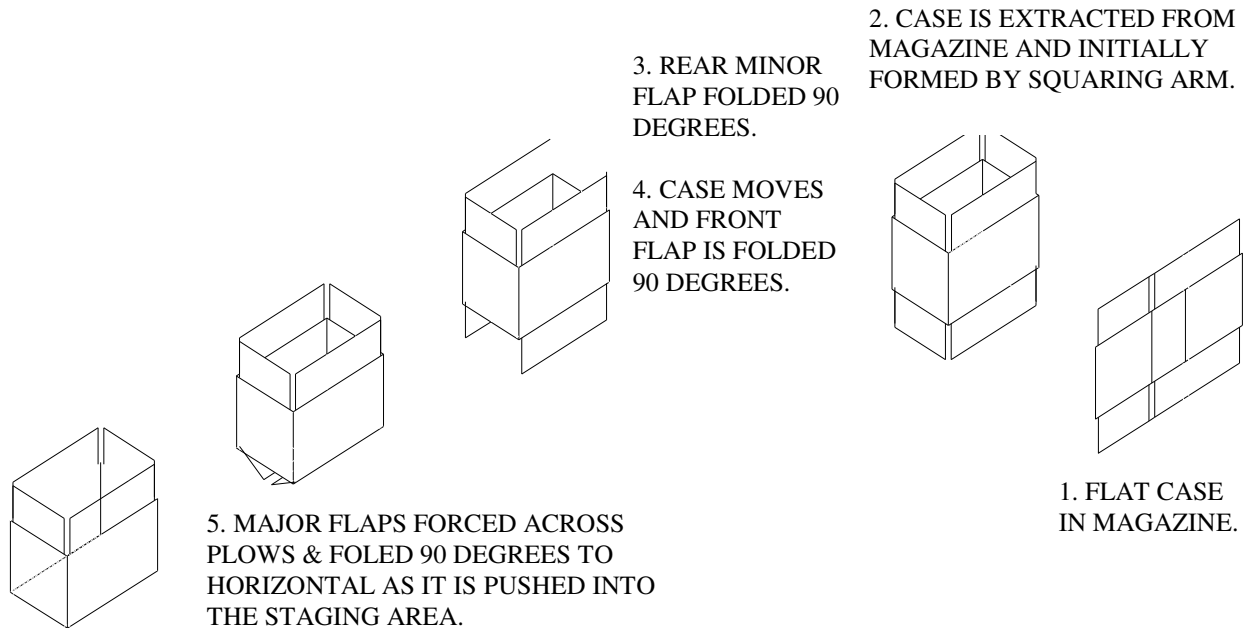
Due to variations in RSC type cases, minor adjustments in set up procedures may be required.

Machine speeds are dependent on case size and construction as well as the operators.

E-Series Case Erectors' main components consist of frame, control panel, vacuum assembly, carriage, magazine, plow, pusher, Ergopack® conveyor and handpack station assembly, pneumatics and electrical components.

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

SEQUENCE OF OPERATION



**Note: Sequence shown is left hand machine drawing.

1. Flat case in magazine.
2. Case is extracted from magazine and initially formed by Squaring Arm.
3. Rear Minor Flap folded by trailing minor flap folder
4. Case moves and Front Flap is folded by the front of the plow
5. Major Flaps forced across plows and folded to Horizontal as it is pushed into the staging area.

OPERATOR CONTROL PANEL



Figure 2 - 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 operation of the system.

1. **EMERGENCY STOP:** RED “mushroom” button. Push in for Emergency Stop. Twist and pull out to reset.
2. **SAFETY RESET – BLUE** push button. Press after releasing Emergency Stop to reset the safeties.
3. **ERECTOR START:** GREEN push button. Press to start the case erector.
4. **ERECTOR STOP:** RED push button. Press to stop the case erector.

FLOW CONTROL ADJUSTMENT – VALVE BANK

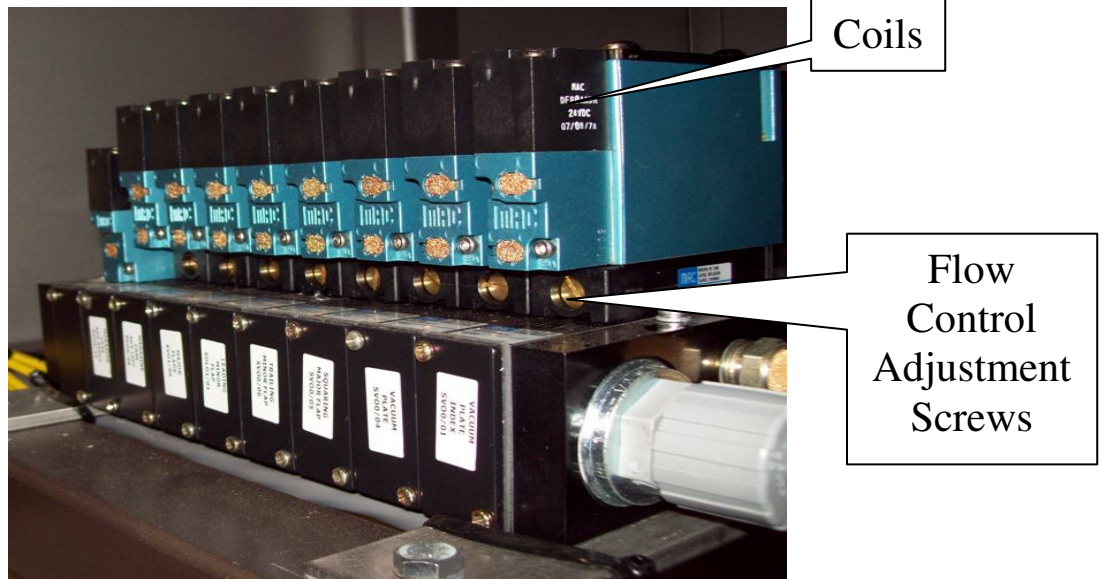


Figure 3 - Valve Bank

**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 Flow Control adjustment screw (coil side) adjusts the flow for the retract output (bottom) air line, while the flow control adjustment screw (opposite coil side) controls the extend output for the (top) 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), turn the screw clockwise, and test by pressing the manual over-ride button.

NOTE: DO NOT ADJUST SV/01 – THIS IS THE FLOW CONTROL FOR THE INDEX CYLINDER. THE AIR FLOW MUST STAY UNRESTRICTED, (FULLY OPEN)

CASE MAGAZINE

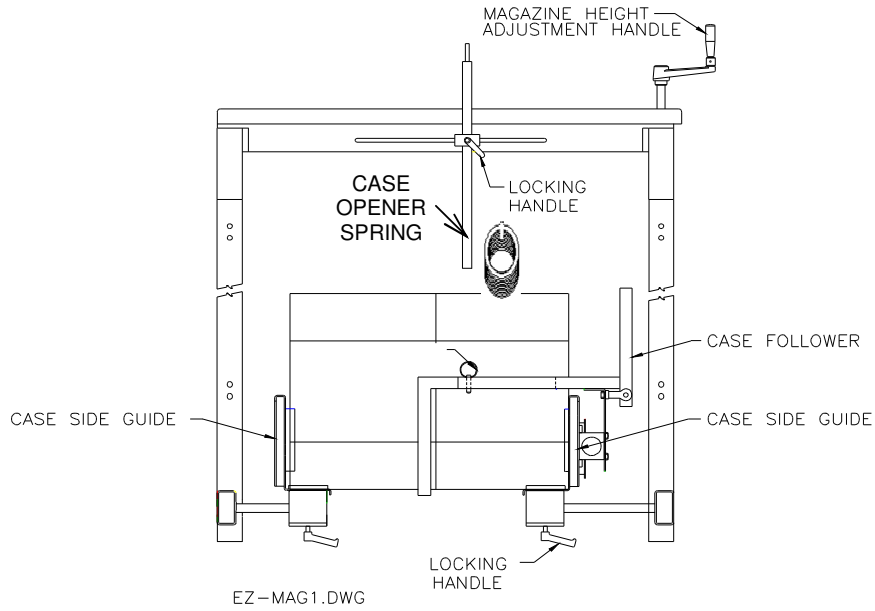


Figure 4 - Case Magazine

The Case Magazine holds the flattened cases.

CASE VACUUM

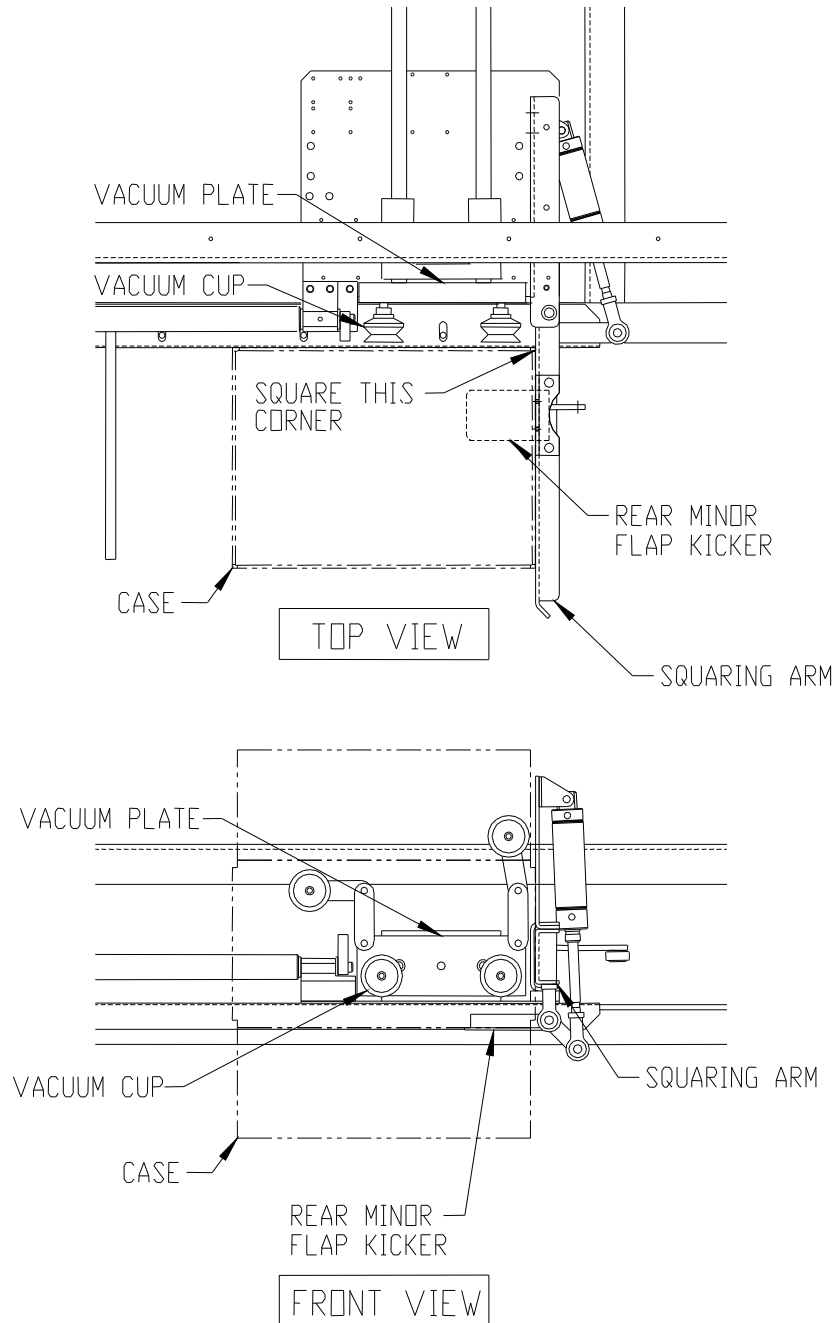


Figure 5 - Vacuum Cup Assemblies

Figure 5 illustrates the case vacuum assembly. The case vacuum grasps the case from the magazine. The squaring arm initiates the formation of the case. The rear minor flap kicker snaps rear minor flap into horizontal position.

CASE VACUUM CONTINUED

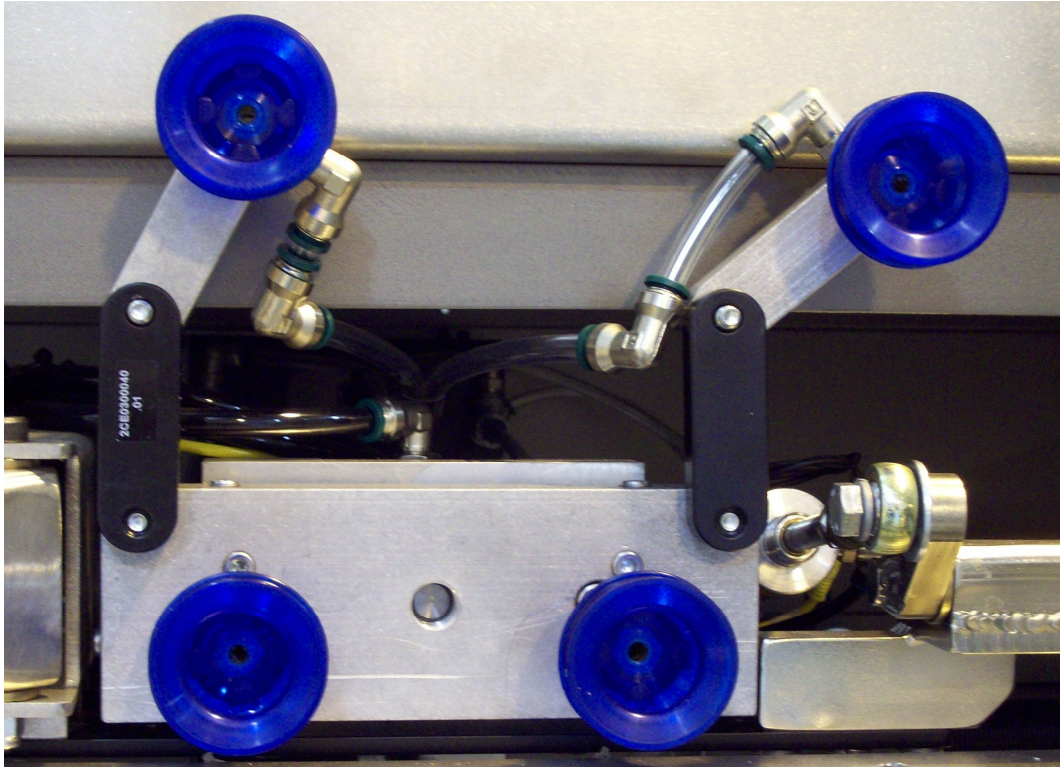


Figure 6 - Vacuum Plate Assembly

Upper cups should be spaced to allow the most surface contact while not coming in contact with cut-outs or score lines.

CASE ERECTOR PLOW

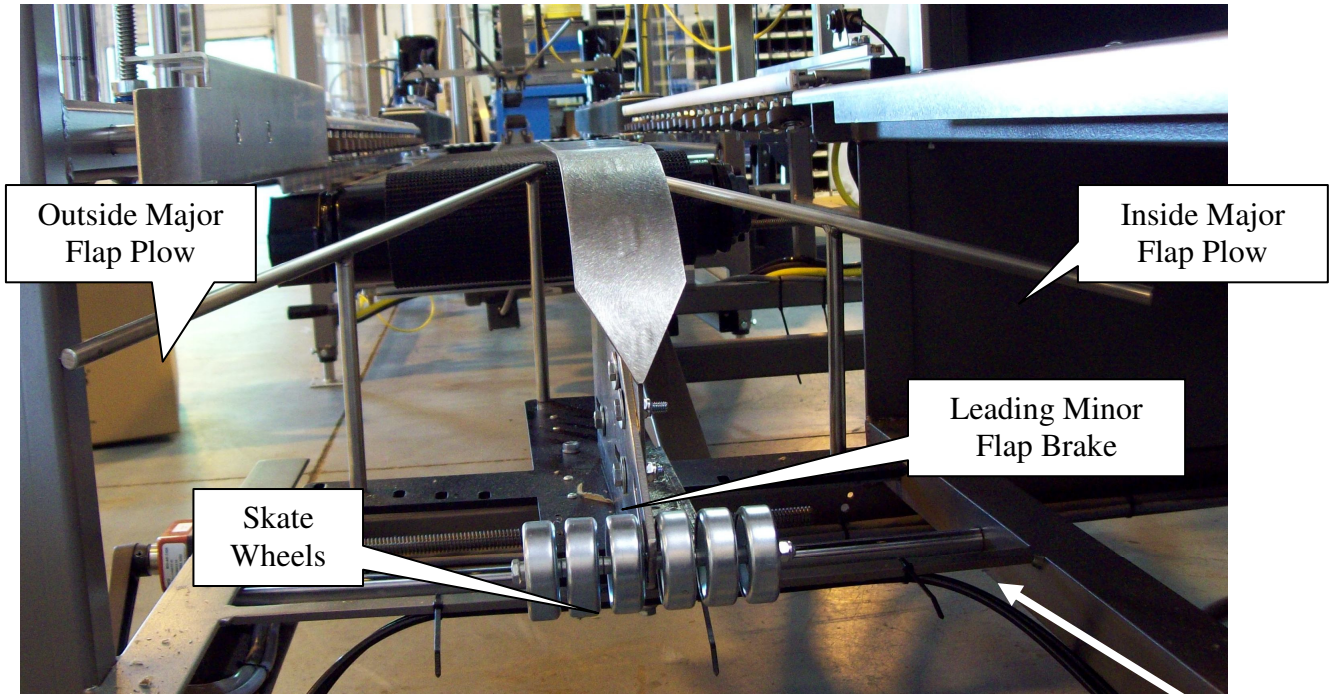


Figure 7 - Case Plow Assembly

The Case Plow on the case erector is the mechanism that folds the bottom leading minor and major flaps of the case into position. The main parts of the plow are the Skate Wheels, Leading Minor Break, the Inside Plow and Outside Plow.

TOP CASE GUIDE AND SIDE GUIDE



Figure 8 - Side guide case guide)



Figure 9 - Hold down plate (top case guide)

The side guide and top hold plate support the case, while containing it in the plow area.

ERGOPACK® PACK STATION

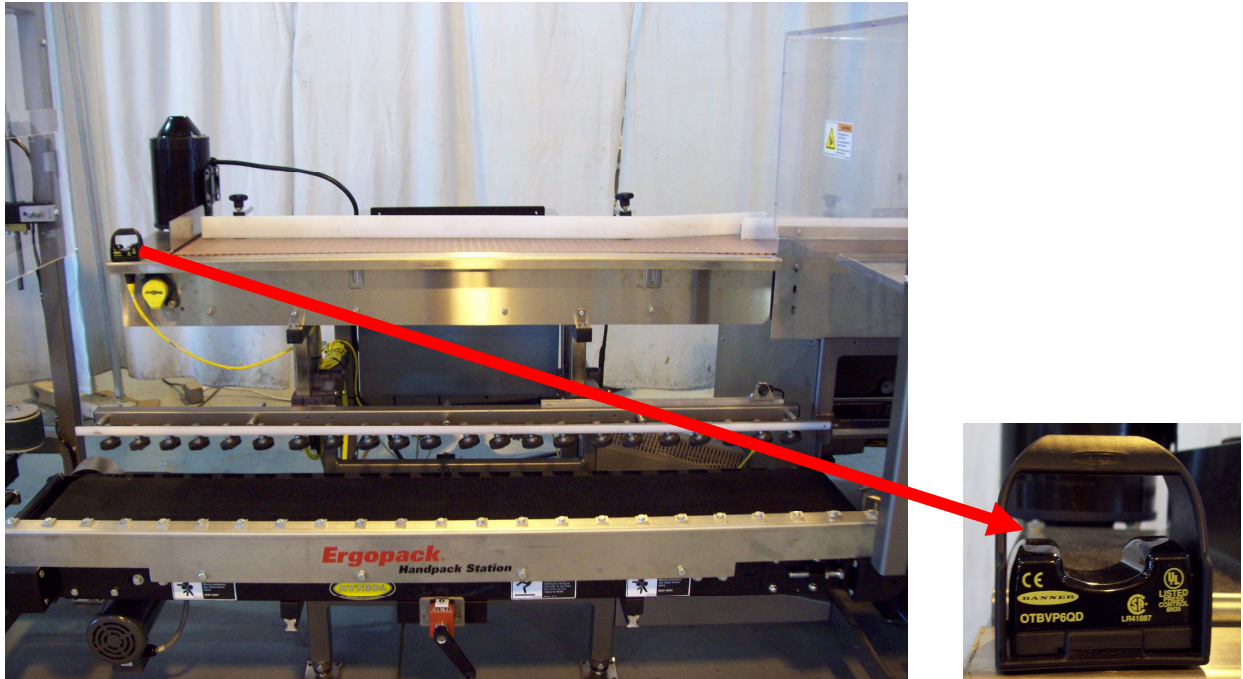


Figure 10 - Two-person Ergopack® Handpack Station.

Figure 10: Operator Finger Touch Control (see small photo). When sensor detects finger, current case is forwarded to sealer or discharge conveyor and new case from case erector is forwarded to handpack station.

Pack station allows packers to control timing of cases brought to pack station area. Operators manually pack product into awaiting cases until desired amount placed in case. Full case is discharged from handpack area into case sealer or discharge conveyor.

ERGOPACK SYSTEM SEQUENCE OF OPERATION

1. Release the **EMERGENCY STOP** button.
2. Push the **ERECTOR START** button once, (the main air valve will energize).
CAUTION: If the Case Erector (CE) is not in the home position, it will automatically move to the home position. Push START a second time to start machine operation. Pushing ERECTOR STOP momentarily will stop the CE from cycling (Cycle Stop). Push the start button a second time will start the erector cycle.
3. Vacuum Plate Cylinder (SV) will extend and actuate a sensor, causing the cylinder to retract and will continue extending and retracting (up to four times) until a box is held against the case present photo eye. The Vacuum Pump will be on at this time. NOTE: The Vacuum Pump will run as long as the Case Erector Emergency Stop Button is not depressed.
4. When the Case Present photo eye indicates a case is present, the Squaring, Minor Flap and Pusher Bar are energized. At this time the case is squared and the rear minor flap is folded up to 90 degrees. The machine will then wait for a “Call for Case” signal manually (or automatically, if timer option is purchased.)
5. In the final part of the sequence, the Slider SV is actuated and the Slider Cylinder extends, plowing the leading Minor Flap up to 90°, and then folding the Major Flaps to approximately 90 degrees. At the end of the stroke, the Slider Cylinder will actuate a sensor, turning off the vacuum, and index cylinder. The index cylinder will retract about 1 in. We then shoot a puff of air through the vacuum lines, this lets go of the case and cleans corrugated dust from the system.
6. The Pusher Bar indexes upward and then Slider Cylinder returns to home position.
7. As the Slider retracts, a Photo Eye will be actuated indicating that the Slider has reached home position and will allow the Vacuum Plate to extend to retrieve the next case. The cycle then repeats.
8. Upon exiting the CE, the Erected Case is presented to the Ergopack station area. The case is held down with Hold down Rollers, and will stop at the Case Position Sensor (adjustable) on the Ergopack station.
9. The case is held in this position until the operator signals the machine that the packing cycle is complete via the Call for Case Sensor. This will cause the Ergopack conveyor to discharge the packed case and at the same time the Case Erector to cycle, presenting an additional case for packing. On a two or three person Ergopack, the Call for Case Sensor moves the case to the next operator or station while presenting the next erected case to the first operator.
10. The cycle is then repeated.

STANDARD CASE ERECTOR 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.

NOTE: ALL ADJUSTMENTS ARE TO BE USED AS A GUIDELINE FOR INITIAL SET-UP. THESE ADJUSTMENTS MAY HAVE TO BE CHANGED AFTER ACTUAL RUNNING CONDITIONS ARE ACHIEVED. EACH PRODUCT IS DIFFERENT, AND MACHINE MUST BE ADJUSTED ACCORDINGLY.

OPERATOR CONTROL PANEL



Figure 2 - Operator Control Panel

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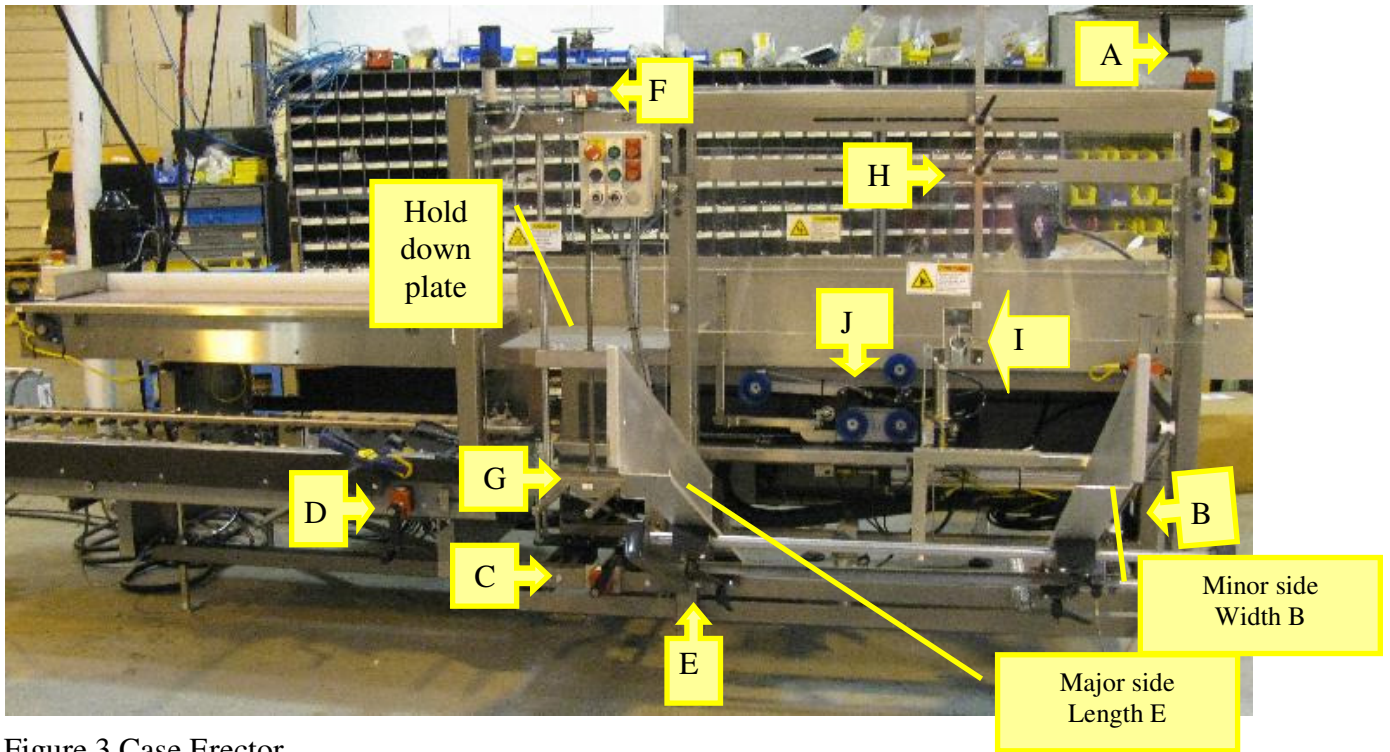


Figure 3 Case Erector

- A. Magazine Height Adjustment (Width of Case)
- B. Magazine Minor Side Adjustment (Width Of Case)
- C. Center Plow Adjustment (Width of Case)
- D. Ergopack Conveyor (Width of Case)
- E. Magazine Major Side Adjustment (Length of Case)
- F. Hold Down Plate Adjustment (Height of Case With Bottom Flaps Folded)
- G. Side Guide Adjustment
- H. Spring Adjustment Top
- I. Spring Adjustment Bottom
- J. Vacuum Head
- K. Major Flap Opener (not shown)



Figure 4 - Measure Case Width

Case erector set up procedures. See figures 3 – 15

1. Measure the width of the case to be erected (minor side) (See figure 4)



Figure 5 - Handle for Case Magazine (A)

2. Set magazine height (A) to case width (See figure 5)

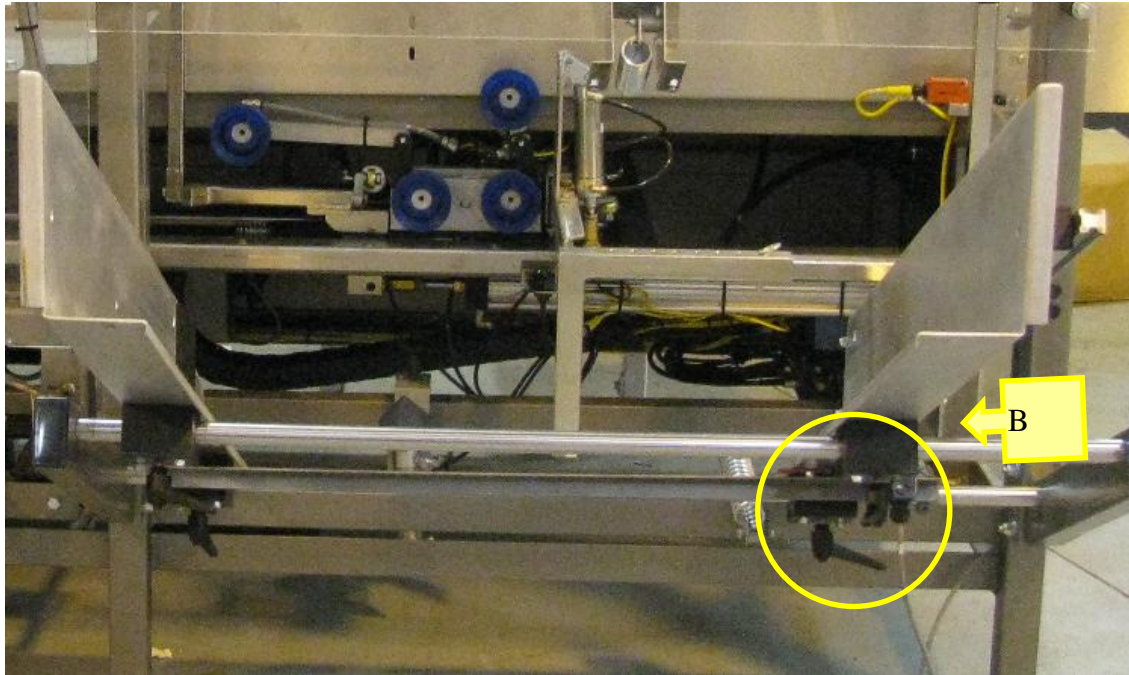


Figure 6 - Magazine Minor Side (B) (Squaring Arm Side)

3. Adjust the magazine case guide minor side (B) to case width. (See figure 6)
Loosen the ratchet handles underneath the magazine and manually sliding the minor side case guide to the proper measurement on the scale (See Figure 6A) located inside the magazine. .

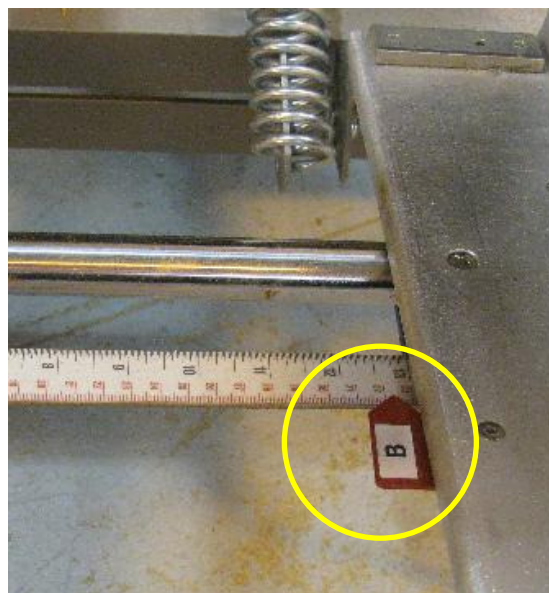


Figure 6A – Magazine Minor Side Case Guide Scale

Be sure to tighten the ratchet handles after positioning the case guide.

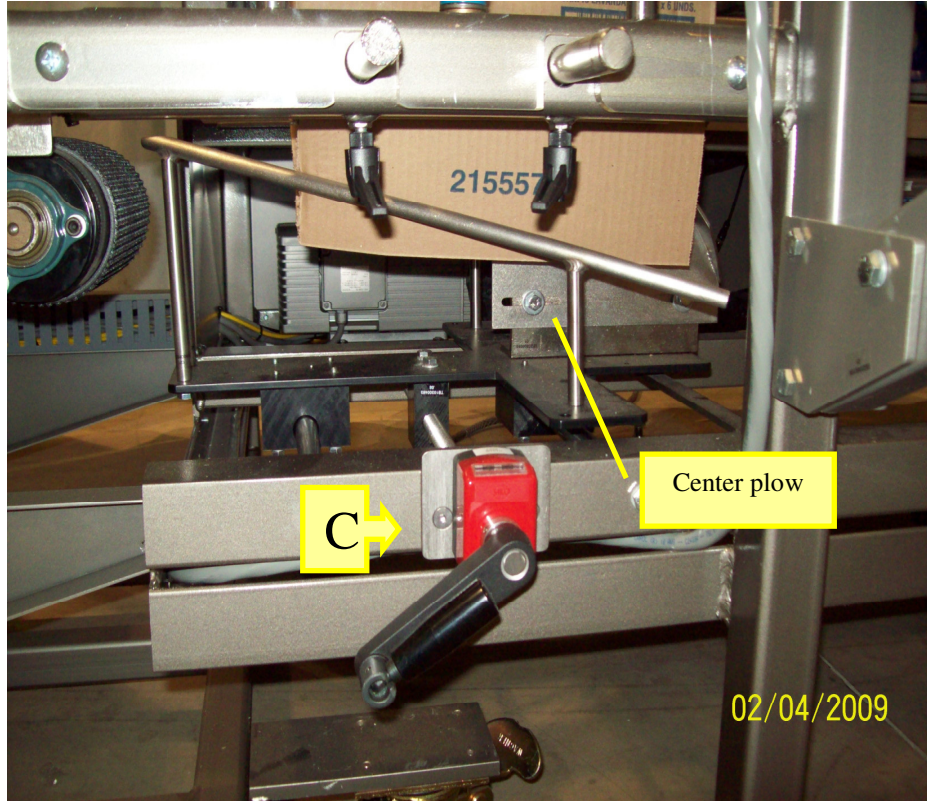


Figure 7 - Center Plow Adjustment (C)

4. Set case center plow (C) to case width (See figure 7) by using the crank handle until the indicator shows the appropriate measurement.

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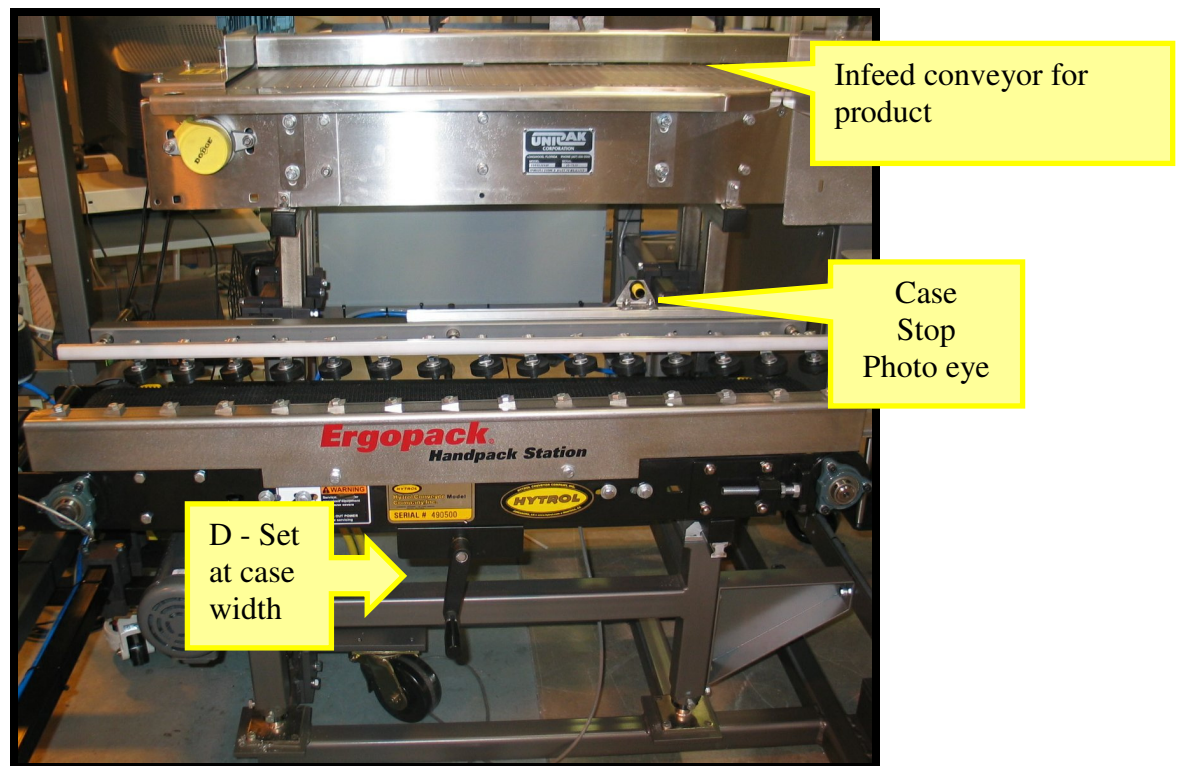


Figure 8 - Hand pack Stations can be for 1-3 operators depending on options purchased.

5. A hand pack station is designed to position cases and product for optimal operator comfort.

The speed of the product conveyor can be adjusted and finger switch provides on-demand case presentation. The case stop photo eye stops the case at the desired pack position.

a. Case speed adjustment is an option

6. The ergo is also set at the case width of the case (see figure 8) by using the crank handle until the indicator shows the appropriate measurement.



Figure 9 - Measure Case Length

7 Measure the length of the case to be erected (See figure 8)

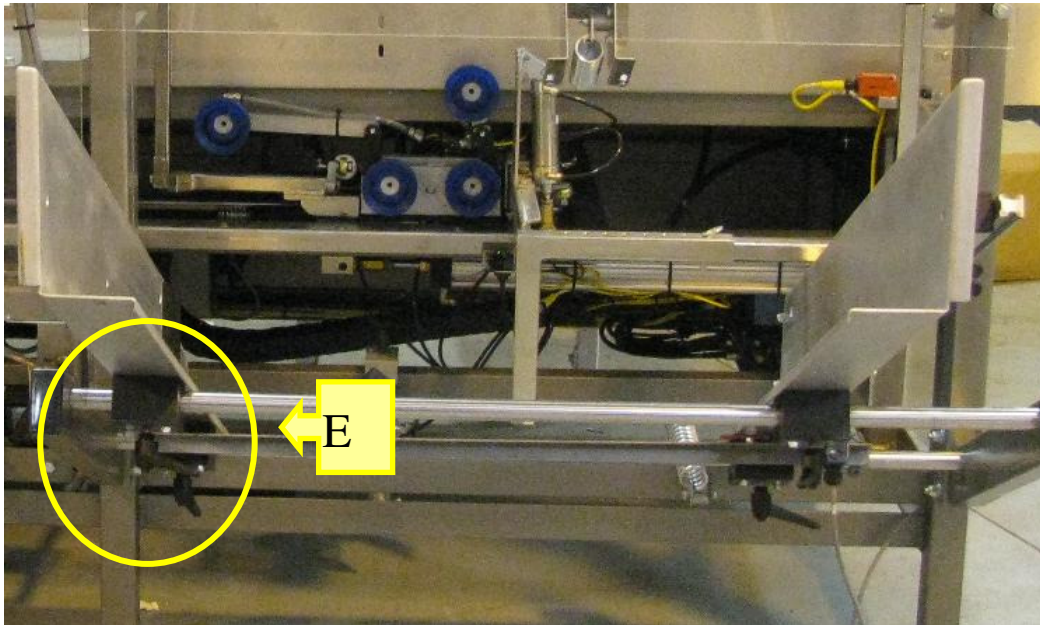


Figure 10 - Handle Major Side Adjustment (E)

8 Move the Magazine Case Guide Major side (E) to case length (See figure 9) by loosening the ratchet handles underneath the Major side of the magazine.

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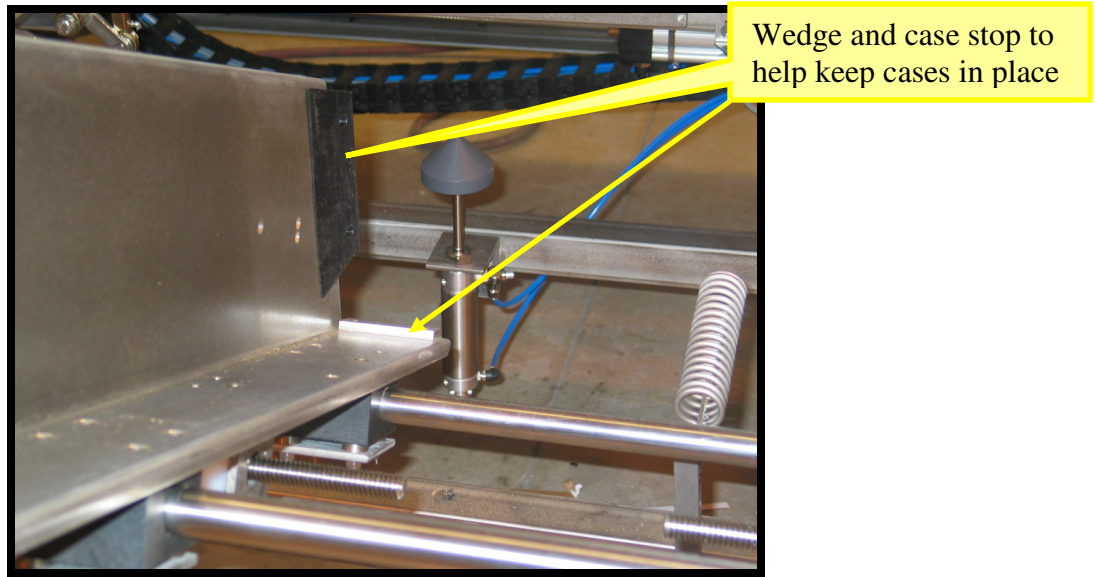


Figure 11 - Side Guide with Wedge and Pin Stop

- a. When adjusting allow the case to flow down the magazine freely but also retained by the Wedge and/case stop at the end of the Magazine. (See figure 10)
 - i. You want about a $\frac{1}{4}$ to $\frac{1}{2}$ in play between the magazine side guide and the case.

9 Measure the height of the case with bottom flaps folded (See figure 11)

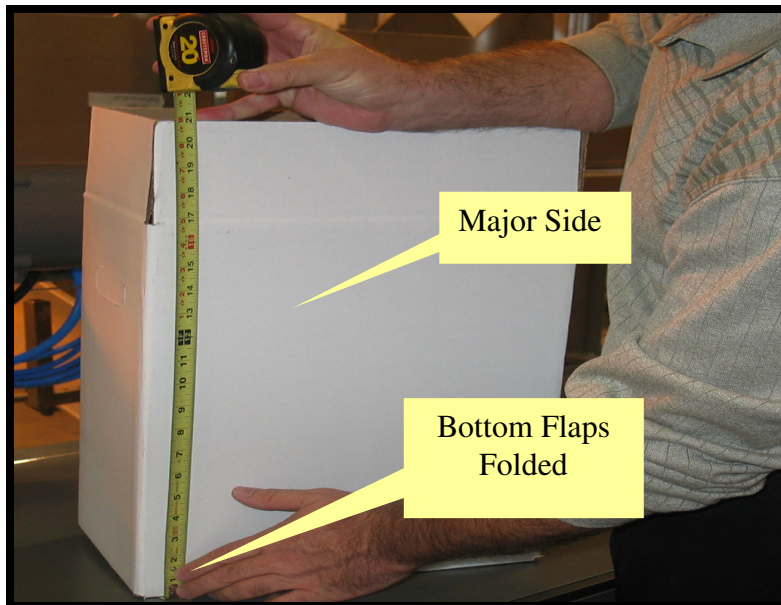


Figure 12 - Measure Height of Case with bottom flaps folded

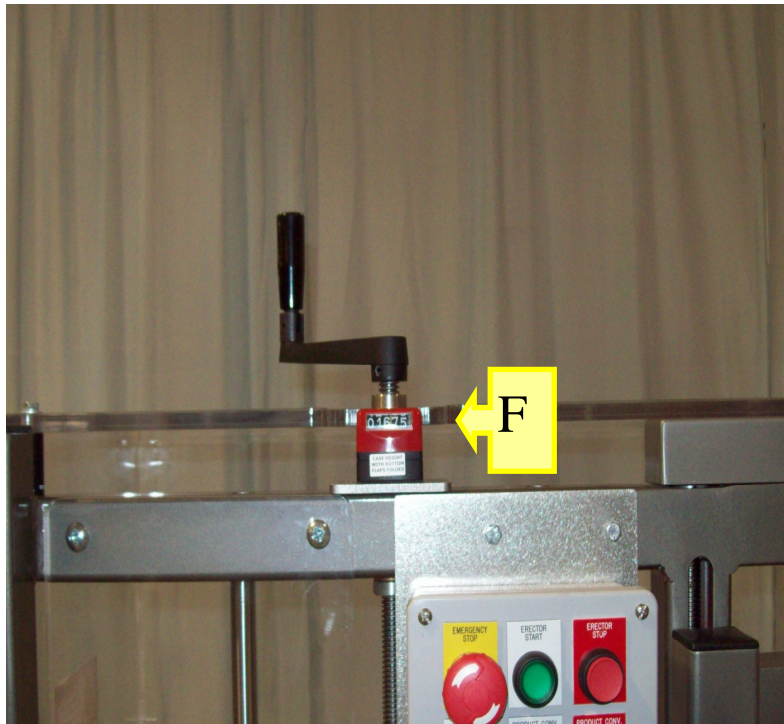


Figure 13 Hold Down Adjustment (F)

10 Set the top hold down plate (F) to this measurement (See figure 12)

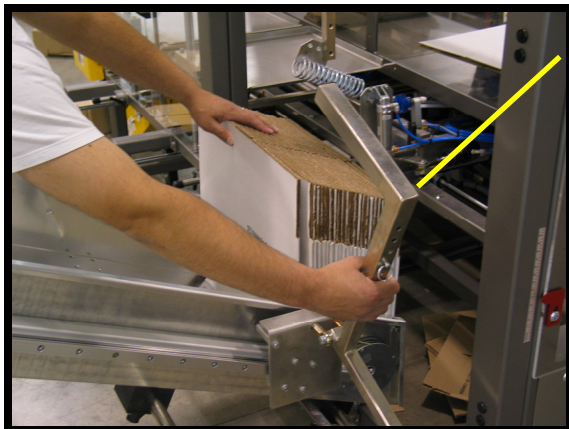


Figure 14 - Case Follower

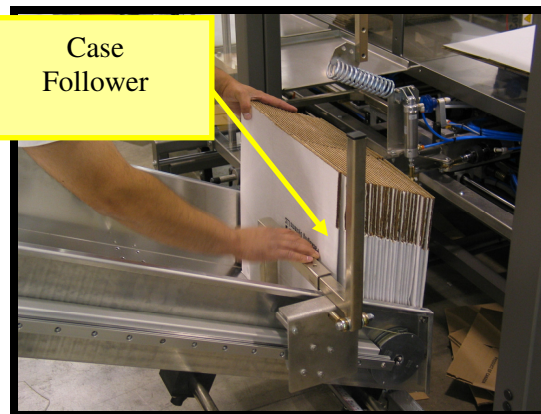


Figure 14A - Case Follower

11 Once magazine is set to proper specifications, load bundle of cases in magazine and swing case follower into position. (See figures 14 and 14A)

Adjusting the upper case opener spring (H)

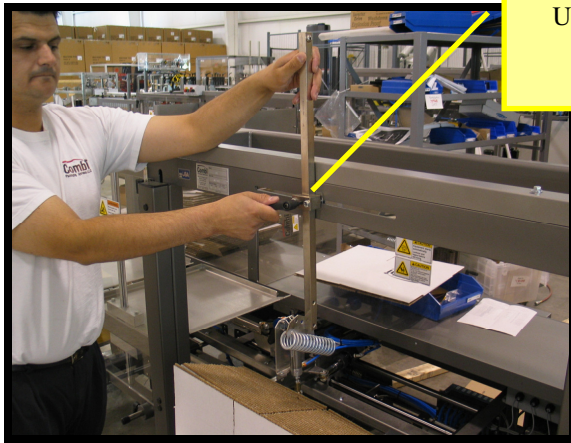


Figure 15 - Upper Case Opener



Figure 16 - Upper Case Opener

12 Adjust the Case Opener Spring (Figures 16 & 17) by loosening the Locking Handle and rest the spring on top of the cases. Move the spring left or right until it is located in the die cut between the major and the minor panels of the leading side of the case. The amount of contact and position of the spring may vary depending on case thickness and construction. The case spring should be the same angle as the magazine.

Do the same for the Lower Case Opener Spring

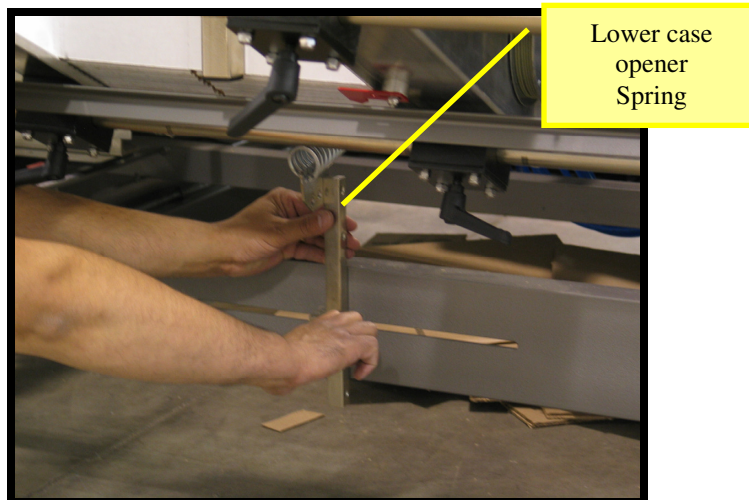


Figure 17 - Bottom Spring Opener

13. In cases where a bottom spring under the case magazine is present, (figure 18) set at about a thumb space between the case and spring, and the spring at about a 5 degree angle upwards.

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

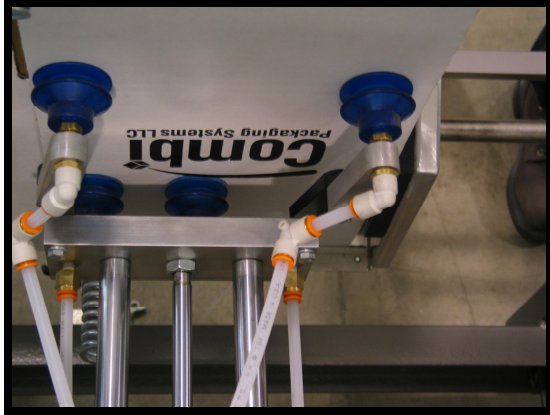


Figure 18 - Vacuum Cup Adjustment

Figures 18A - Vacuum Cup Placement

- 14 Rotate squaring arm to the 90° position and fold the rear minor flap kicker up. Sit 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 (figure 18 & 18A) (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).
- 15 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.

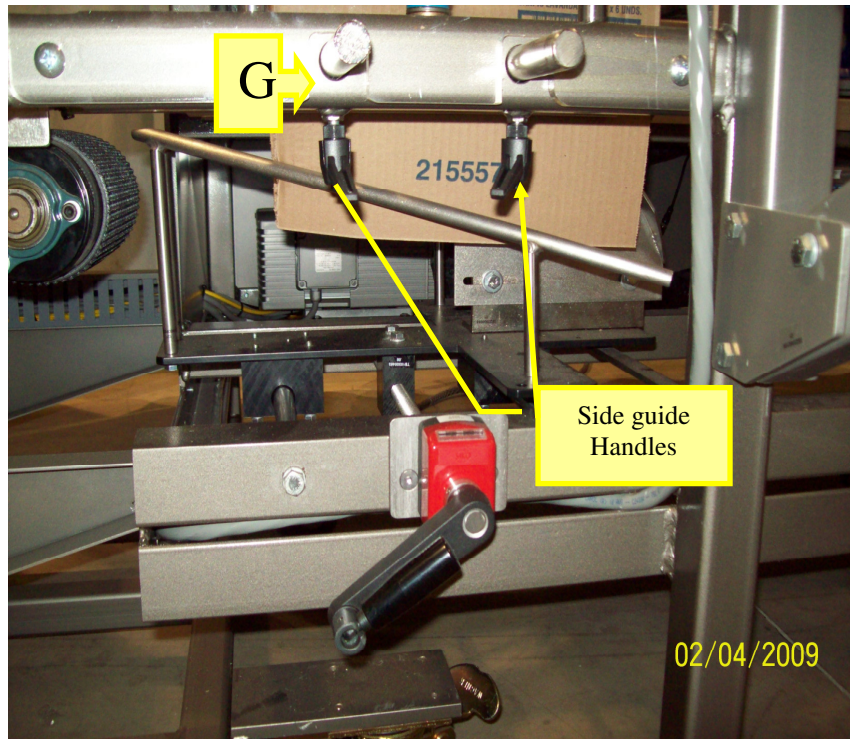


Figure 19 - Side Guide Handles (G)

16 With a box in the plow area adjust the side guides (G side guide lock handles)
(See figure 19)

- b. Set them to the case but not tight
- c. Tighten the ratchet handles after adjustment is complete.

MAJOR FLAP OPENER

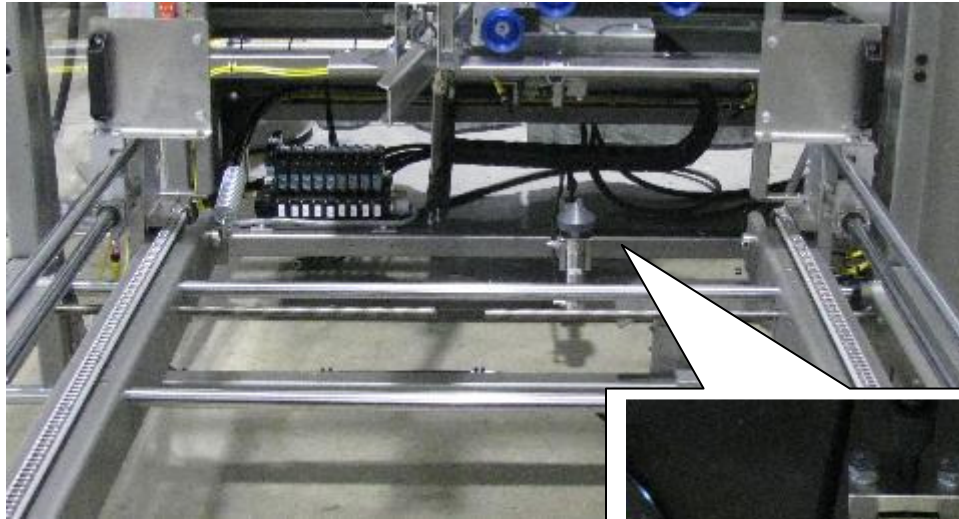
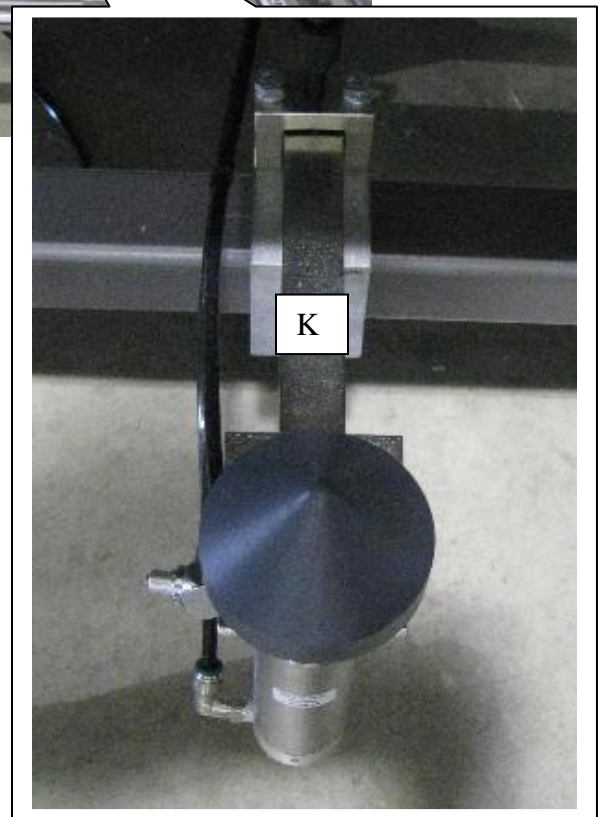


Figure 19 Location of Major Flap Opener (K)



The purpose of the use of the Major Flap Opener is to keep the rear major flap opened on long length cases so that the trailing minor flap can be kicked into position prior to the case entering the plow area.