NOTE

See separate table of contents for the indiviual sections.

Preface / Description Of Machine

Table Of Contents - Section 1

Preface / Description Of Machine

Preface

Explanation

Attention to all personnel who will be operating, servicing or adjusting this equipment. DO NOT attempt any of these operations until the instruction manual and all other information supplied with this equipment has been read and understood. Although the design of this equipment incorporates safeguards to protect the operating and maintenance personnel, extreme care must always be used when operating, adjusting and or servicing the equipment.

Technical Assistance

For customer convenience, technical assistance is available from the Doboy help line (715-243-2555) between the hours of 7:00 AM to 5:30 PM Central Standard Time, Monday through Friday.

Instructions For Ordering Parts

Always include the model and serial number of your machine along with part name and stock number with every parts order.

Address orders to:

SIG Pack Inc.
Doboy Division
869 South Knowles Ave.
New Richmond, WI. 54017 U.S.A.

Preface / Description Of Machine

Machine Specifications

Description

This Model 7420 Dual Tray/Carton Former is designed to pull tray/carton blanks from a magazine, place them onto a shuttle, move them forward into the forming heads and form them into the finished tray or carton. Each side operates independently of the other with an eccentric drive mechanism at speeds up to 30 cycles per minute and provides a smooth and consistent flow of blanks to the forming heads. It is designed for easy operation and setup and is totally electronically controlled with a touchscreen control panel for ease of operation and maintenance.

Standard Features

Safety interlocks on guards and doors where necessary.
Multiple forming heads, depending on model.
Gravity style spring fed magazine
A variable frequency drive motor for the main drive.
Servo motor powered shuttle for a continuous supply tray/carton blank.
International design standard, ETL approved.
Spare parts available throughout the world.
Steel frame assuring permanent component alignment and minimal vibration.
Full shrouding to minimize dust and protect personnel.
Air pressure operated venturi vacuum system.
Variable speed.
Power requirements of 230 Volt, 60 hertz, 1 phase.
Air pressure requirements of 80 PSI at 6 to 10 CFM depending on options.

Operational Features

- Extensive use of scales and settings for easy changeover.
- Quick and positive adjustments.
- A pivoting control panel with push button keypad with integrated operator interface.
- Motor driven magazine.
- Low magazine for easy open sided loading capability.
- Tray/Carton at shuttle electric eye.

Optional Features

Discharge conveyor.

Preface / Description Of Machine

Machine Specifications

Additional forming heads.
Special power requirements.
Auto-Demand photoelectric eye.
Non-Attendant package.
Spare parts.
Casters.
Custom paint.
Air cylinder operated female head.

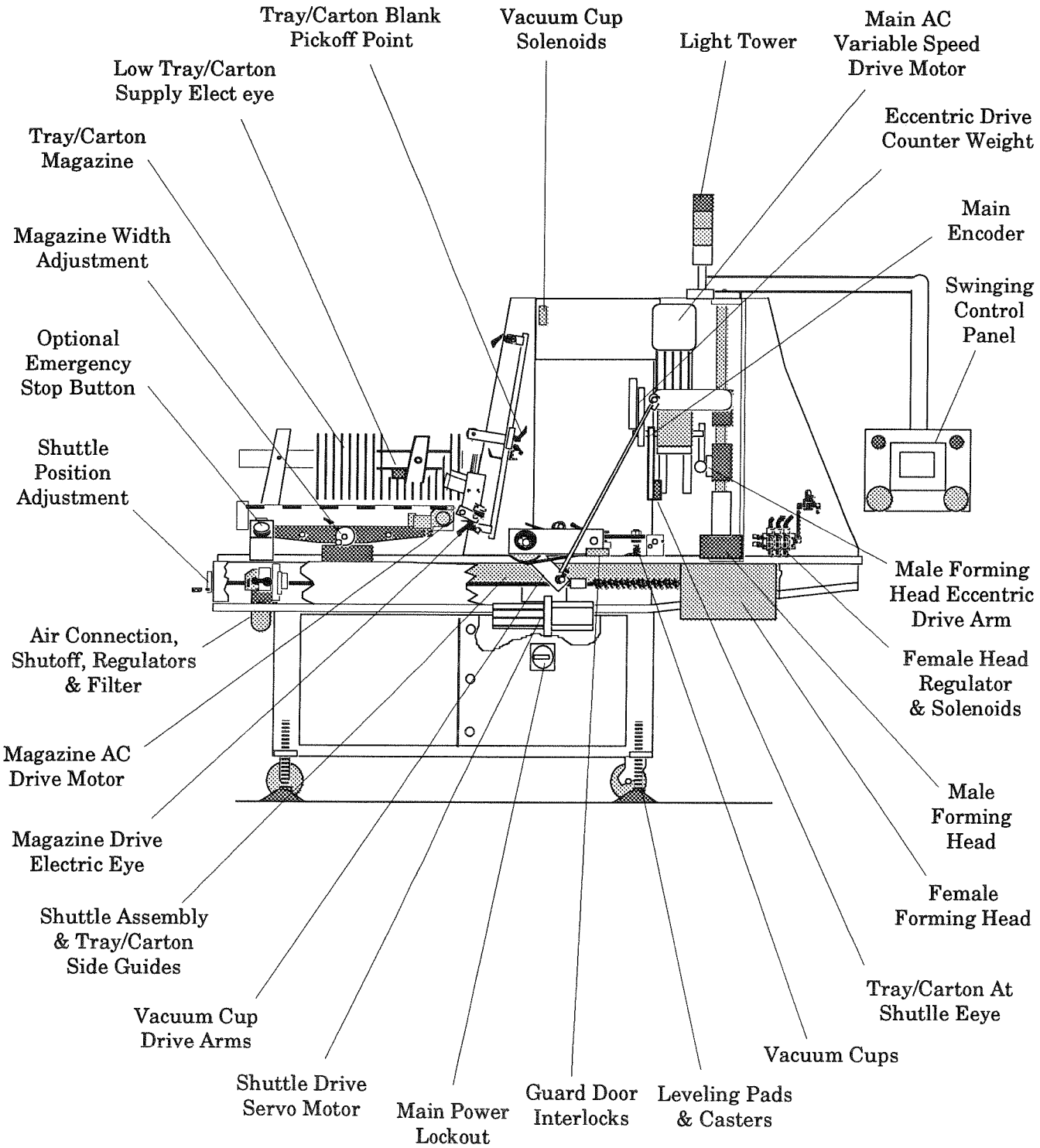
Former Size Specifications

Maximum height:	90 inches (2284mm) with casters.
Length:	112 inches (2848mm).
Width:	55 inches (1408mm ± 300mm).
Magazine height:	52 inches (1314mm).
Maximum weight:	

Preface / Description Of Machine

Description Of Machine

Detail Basic Layout



Preface / Description Of Machine

Description Of Machine

Sequence Of Operation

As stated previously, this is basically two Formers in one with each side having its own drive and operating in the same manner but independently of each other. As the main drive eccentric rotates moving the picker assembly back toward the magazine, the "Vacuum On" solenoid energizes applying vacuum to the cups. When the vacuum cups move against the leading tray/carton blank in the magazine, they grip the leading blank. As the eccentric continues around, the picker assembly reverses and pulls the leading tray/carton blank from the magazine. As the picker assembly directs the blank down toward the shuttle, the "Vacuum On" solenoid de-energizes, shutting the vacuum OFF to the cups. Just as the "Vacuum On" solenoid de-energizes, the "Blow Off" (Purge) solenoid energizes so air blows out the vacuum cups when the blank is released. This air blast helps place the blank down into the shuttle side guides. The "Blow Off" solenoid is only energized momentarily then it de-energizes shutting the air OFF. The picker assembly then reverses and starts back toward the magazine and the pick off operation of a tray/carton blank is repeated.

The servo motor driven shuttle then moves the blank toward the forming head. As it moves forward, it passes under the Tray/Carton At Shuttle eye which is sighting down onto the shuttle area. This eye is used to indicate if there is a tray/carton blank in position. If the eye is not blocked for three consecutive cycles, the Former willl stop and the Carton Jam fault will occur.

The shuttle then moves the blank onto the female forming head and against a pair of stops. The male forming head begins to move down and pushes the blank into the female head beginning the folding sequence. As the male head pushes the tray/carton blank down, first the front and back corner tabs start to fold and tuck into position then the fronts and backs start to fold. After the fronts and backs have started to fold up and the corner tabs will clear, the sides then start to fold. The sides are pushed against the tabs and both are pressed against the male forming head as it continues down into the female forming head.

As the male head continues down, a set of air operated trap gates (shelves) move into position at the bottom of the female head. When the male head reaches the bottom of its stroke, the formed tray/carton is resting on these gates. At this point, the tray/carton is positioned beneath two sets of stripper fingers which snap in over the top edge of the blank. These fingers keep the formed tray/carton from following the male head back up when it retracts. When the male head retracts and clears the female head, the two rotary air cylinder for the minor flap folding tabs activate and the flaps are folded over 180 degrees and locked. The formed tray/carton that was stripped off remains in the female head and is pushed out and onto the discharge conveyor when the next blank is formed.

During the above folding sequence, the shuttle moves back and accepts another tray/carton blank from the vacuum cups, moves it forward and places it onto the shuttle guides and the sequence is repeated.

Preface / Description Of Machine

Description Of Machine

Non-Attendant & Auto-Demand Operation

Non-Attendant

The purpose of this feature is to provide notification of conditions which warrant action by the operator and when necessary, automatic machine shutown when the operators may not be present at the Former.

The option consists of the following:

- Light tower with green, red and blue lights and also a buzzer.
- Diffuse eye to detect low blank supply.
- Retroreflective eye to sense blanks below female forming head.

Light Tower

Green light: This will be ON steady when the Former is in the RUN mode and running production. The light will start blinking if the Auto-Demand function has triggered a stop at which time the Former will be stopped but can automatically restart upon clearing of the Auto- Demand eye. Upon restart the light will once again become steady. The Former can also be programmed so it will continue to cycle but the vacuum will be shut off and it will not pick tray/carton blanks.

Blue light: This will be ON only when in the RUN mode and when the Tray/Carton blank supply is low in the magazine. While running and a low on blanks condition occurs, the buzzer will sound for 1/2 second every five seconds until the low blank condition is corrected. If it is not corrected, the Former will shut down after three cycles when it runs out of blanks.

Red light: This will be ON steady when the Former is stopped and not in the RUN mode. The red light will flash only on the occurrence of an emergency stop generated while in the RUN mode. The red light will flash continuously until the CLEAR button is pressed on the operator touchscreen interface. If the Former is in a non-RUN mode condition and an emergency stop occurs, the light will not flash but remain in the solid ON state.

Buzzer: This will sound for three seconds upon the occurrence of a RUN mode emergency stop condition. It will also cease if the CLEAR button is pressed on the operator touchscreen interface. It will also sound for 1/2 second every five seconds during a low blank condition in the magazine.

Electric Eyes

Description Of Machine

Diffuse eye: This eye is mounted on the side of the magazine and is used to detect the Tray/carton blanks in the magzine. If it does not detect any blanks it will trigger the low blanks supply circuit activating the blue light and the buzzer.

Retroreflective eye: This eye is mounted below the output of the female head. When a blank is detected in the shuttle a counter is incremented. When a blank is detected passing through the eye below the head the same counter is cleared. If this counter becomes greater than two, the Former will shut down with an emergency stop and display the HEAD JAM error message on the RUN screen on the touchscreenl. If no blank is present the eye outputs a logic "High" signal to the controller.

As the blank passes through the retroreflective eye a second counter is incremented. When the eye clears again the counter is cleared. If the counter does not clear due to continuous blockage, the Former will shudown after 3 cycles with a controlled stop, then go to an emergency stop condition and will flash CONVEYOR JAM on the touchscreen.

Auto-Demand

The purpose of the Auto-Demand option is to signal the Former that blanks are no longer required and that product should cease without operator intervention. It consists of a retroreflective eye mounted on the discharge conveyor and downstream of the Former that sends a logic "High" signal to the controller when no blank is present at the eye.

Operation: When a blank blocks the eye a counter is incremented and the counter is cleared when the eye clears. If the eye is blocked continuously for three cycles the Former stops production. If the Former has the Non-Attendant option enabled and the eye is blocked, the Former will go into a controlled stop and flash the green light. Once the eye is cleared, the Former will once again start production.

Description Of Machine

Installation

Remove the Former from the shipping crate and check it carefully for damage. If damaged, notify the carrier immediately and file a claim. Contact Doboy for further instructions if the damage is quite extensive.

Make sure all the items listed on the packing slip are received then remove all packing material, chips, nails, etc., from the equipment. Move the Former to the area where it is to be used in production.

⚠ DANGER

Although the design of this equipment incorporates safeguards to protect operating and maintenance personnel, care must always be used when operating, adjusting and/or servicing. If extreme care is not taken, a very serious or fatal injury could result.

Level the Former by raising with a fork lift or some type of floor jack and turning the adjusting legs down. After leveling, the casters (if equipped with optional casters) must not be touching the floor. The Former must be resting on the adjusting legs and not the casters.

A one inch air drop of 80 PSI at 6 to 10 CFM is required and attached to the connection at the rear of the Tray/Carton Former. The main connection consists of the main shut off, an air filter and regulator. The air can be turned ON and OFF with the shut off by pushing the levers on the shutoff. By pushing down on the lever at the top the lever on the front will push out and the air will be shut OFF. When OFF, a lock can be placed in the hole in the lever on the front to lock the air pressure out. To turn the air ON, push the lever on the front in so the lever at the top pushes out. The air pressure should already be factory set and should not have to be touched. If adjustment is necessary, pull down on the knob on the regulator and turn until the desired pressure registers on the gauge. Push the knob back up to lock in position

Refer to the electrical schematics and make the main power connection. Run the power cord through the hole in the back of the enclosure then attach the red lead to terminal 1 on the main disconnect, the white lead to terminal 3, the black lead to terminal 5 and the green lead to the grounding block..

⚠ DANGER

Make sure the connections are made by a qualified electrician and the line cord is attached to the building electrical ground and in compliance with all National and Local codes. Failure to comply with this could result in death or very serious shock hazard.

Notes

Any information concerning this section or in the operation of this equipment can be recorded on this page.

Safety Regulations / Equipment

Table Of Contents - Section 2

Safety Regulations / Equipment

General Safety Instructions

Safety Precautions

PLEASE READ AND OBSERVE THE FOLLOWING SAFETY PRECAUTIONS FOUND THROUGHOUT THIS MANUAL.

⚠ DANGER

Failure to observe the DANGERS can result in possible death or a very serious injury.

⚠ WARNING

Failure to observe the WARNINGS can result in a very serious injury.

⚠ CAUTION

Failure to observe the CAUTIONS can result in damage to the equipment.

Illustrations in this manual may show the equipment without guards. This is for information purposes only. Guards are supplied and must be in place before operating.

The use of any type of mechanical or electrical spare actuator to bypass or disable the safety interlocks on any guard door can result in a very serious injury to the operating or maintenance personnel.

Safety Regulations / Equipment

General Safety Instructions

Safety Procedures

Do not operate the controls or this equipment until the operating instructions have been thoroughly read and understood.

Equipment must be connected to the building electrical safety ground.

Do not operate this equipment with guards removed or safety switches by-passed.

Electrical power must be OFF and LOCKED OUT before performing any maintenance, cleaning or adjusting.

Air supply must be locked out or removed before performing any maintenance, cleaning or adjusting.

Keep hands, hair and all loose fitting clothing away from moving parts.

Never activate any controls while other persons are performing maintenance or adjustments on the equipment.

Do not start this equipment until all other personnel in the area have been warned of start-up and have moved outside the operating area.

Read and follow all warning labels on the equipment and all DANGERS, WARNINGS and CAUTIONS

Safety Regulations / Equipment

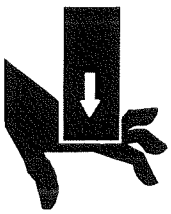
General Safety Instructions

Safety Symbols

The following symbols are used with many of the safety instructions in the manual to graphically indicate the hazards involved.

This symbol indicates the possibility of a serious electrical shock.

This symbol warns the operator of the dangers of rotating parts such as drive rollers and pulleys.

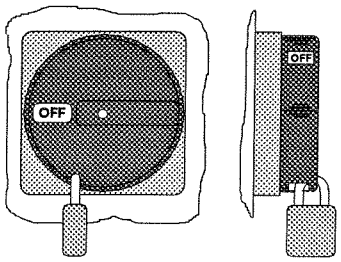


This symbol warns the operator of the dangers of pinching areas such as the male and female forming heads, eccentric drive and the shuttle.

Safety Regulations / Equipment

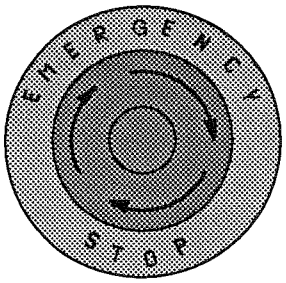
Safety Equipment

Main Disconnect/lockout



This lockout is located on the door of the large enclosure on the left side of the Former as viewed from the front. Its purpose is to disconnect all power to the enclosure and the control circuits. The power can be locked out according to OSHA Standard 1910.147 by rotating the switch to the OFF position and placing a lock through the hole in the lockout as shown.

Emergency Stop Button

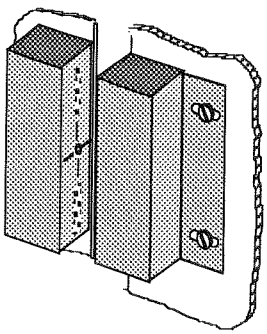


This button is located on the control panel. If the emergency stop button is pushed, the equipment will stop immediately without regard for position and timing. The button must be turned in the direction of the arrows or manually pulled out again before the equipment can be started. There may also be an optional button located on the side of the magazine near the rear of the Former.

This button **should** be pushed then the main power source disconnected and locked out before performing any cleaning, maintenance or mechanical setup procedures.

This button **should not** be used for normal stop situations. Its use will cause the Former to go out of synchronization.

Safety Interlocks



To prevent accidents, certain guards on the Former may be fitted with safety interlocks that must be kept closed during operation. Unauthorized opening of these guards leads to an immediate stoppage of the Equipment. **Do not** use these guards for a regular cycle stop.

Safety interlocks should only be opened or removed when the Former is at a standstill, with the Emergency Stop button pushed in and the main power disconnect/lockout in the OFF position and locked out.

Safety Equipment

Notes

Any information concerning this section or in the operation of this equipment can be recorded on this page.

Operating Elements

Table Of Contents - Section 3

Equipment Overview

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Operating Elements

Equipment Overview

Electrical

Switches, pushbuttons, display units and monitoring elements are part of the Tray/Carton Former's electrical equipment.

Refer to the electrical schematics supplied for additional information concerning the electrical equipment.

⚠ CAUTION

Malfunctions in the electrical equipment must be remedied by a qualified technician.

Mechanical

Operating levers, handwheels, adjusting screws and knobs, are all part of the Tray/Carton Former's mechanical equipment.

⚠ CAUTION

Malfunctions in the mechanical equipment must be remedied by a qualified technician.

Pneumatic

Pressure control valves and pressure gauges are all part of the Tray/Carton Former's pneumatic equipment.

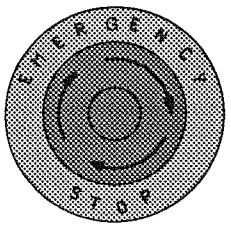
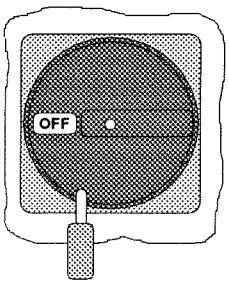
⚠ CAUTION

Malfunctions in the pneumatic equipment must be remedied by a qualified technician.

Operating Elements

Operating Elements - Electrical

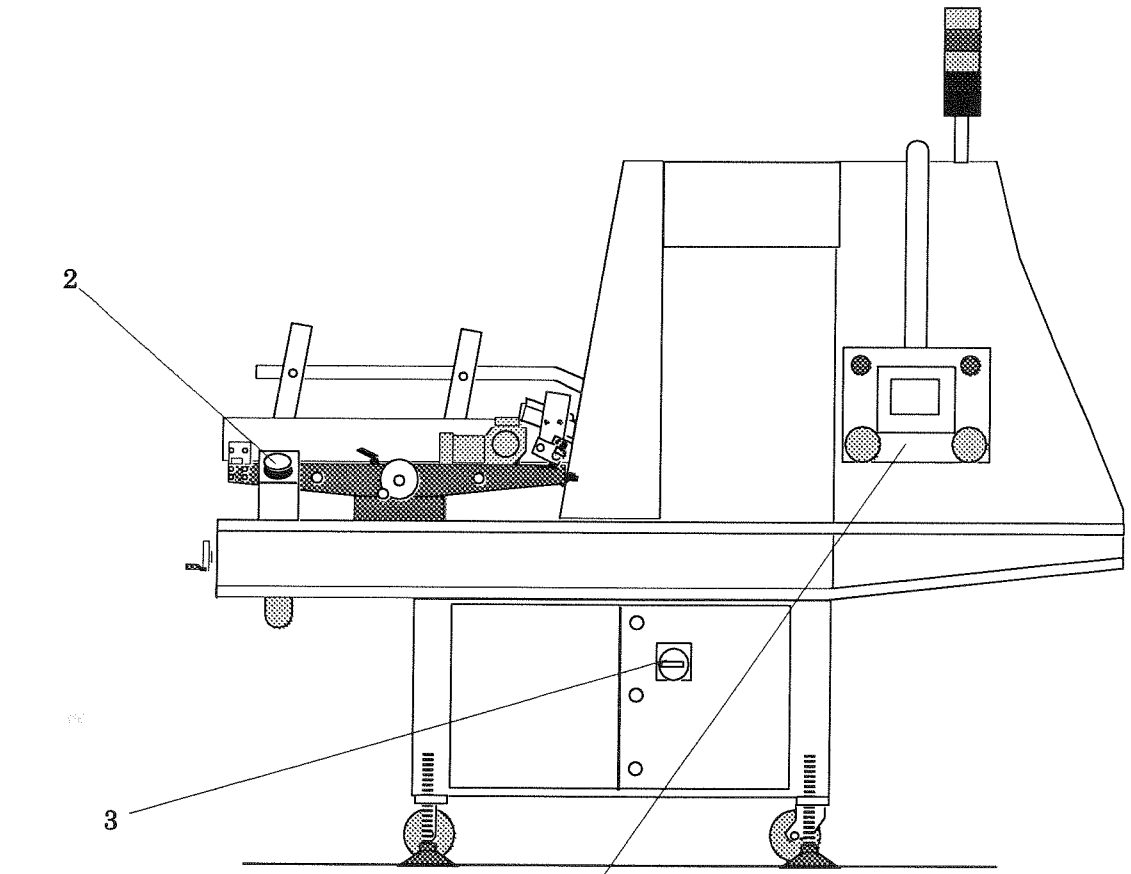
Controls - Description & Overview

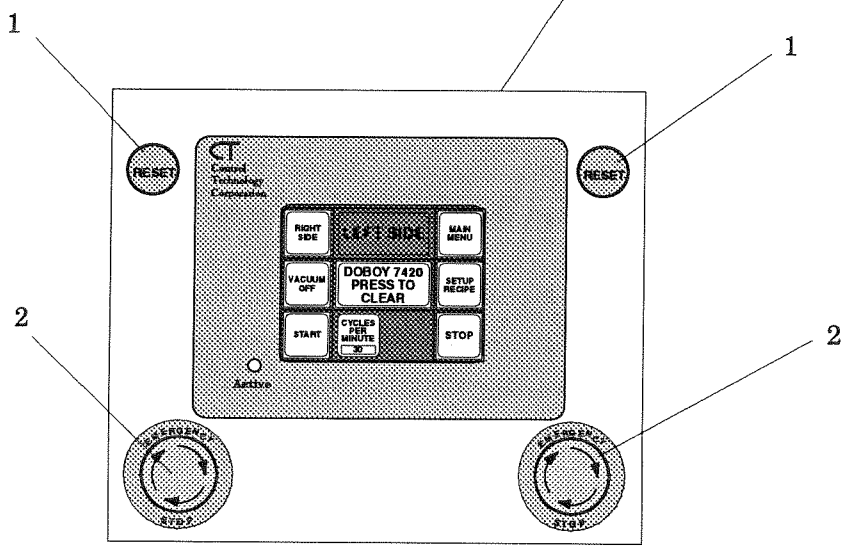
Element	Function
(1) **Reset button** Press  	**Engage power to contactors.** If all guard doors are closed, no emergency stop conditions exist and communication has been established between the control and the operator interface, the power will be engaged by pressing this button. If the Former has not been "Homed", the Former will start a Homing sequence. There are two buttons, one will reset the right side of the Former and one resets the left side.
(2) **Emergency Stop button** Press - Button stays in.  Pull or turn - Button pops out	**Former safety stop.** There are two of these, one for the right side of the Former and one for the left side. When pushed, the appropriate side of the Former will stop immediately without regard for position. Used for emergencies or to disable the Former's control circuits for safety purposes. There may also be optional button on each side of the Former by the magazine. Turn in the direction of the arrows or pull out to activate the control circuits.
(3) **Main Power Disconnect/lockout** Rotate switch  Lockout per OSHA Standard 1910.147	**Used to disconnect and lockout main power source. Explained previously in Section 2.** Located on the door of the large enclosure on the left side of the Former as viewed from the front. Its purpose is to disconnect all power to the enclosure and the control circuits. Rotate the switch to the OFF position and place a lock through the hole in the lockout as shown.

Operating Elements

Operating Elements - Electrical

Controls - Description & Overview





Operating Elements - Electrical

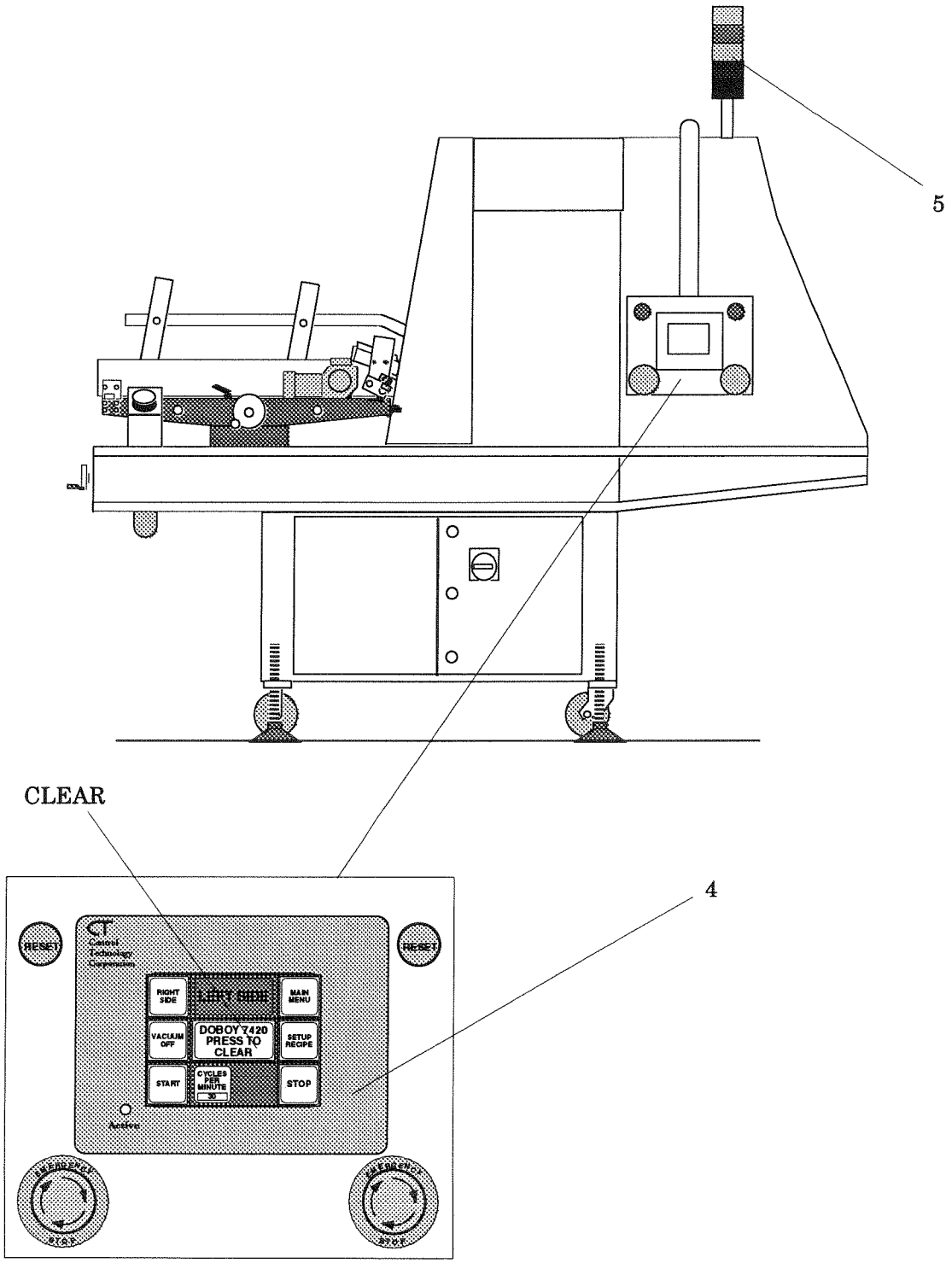
Controls - Description & Overview

Element	Function
(4) Touchscreen Press portions of screen	**Used to enter operating parameters, displays errors and messages. Used to program and run the Former.** Refer to the Operaators Interface portions (touchscreen) starting on page 3.23 in this section for a complete description of the touchscreen.
(5) Light Tower	**Operator information** This tower is used to notify the operator of conditions which warrent action and when necessary, shuts the Former down. It consists of three colored lights, blue, red and green and also an alarm buzzer. **Blue**: Low supply of tray/carton blanks in the magazine. Buzzer will sound for ½ second every five seconds until problem is corrected. If not corrected, the Former will shut down after three cycles when the tray/carton blanks run out. **Red**: Will flash when an emergency stop is generated while in the RUN mode and the buzzer also sounds. Will flash until the CLEAR button on the touchscreen is pressed. If in a non-RUN mode condition and an emergency stop occurs, the light will not flash but remain solid. **Green**: Solid when Former is operating in RUN mode. Flashing when idle in automatic mode and waiting for a down line signal from the auto demand eye to start.

Operating Elements

Operating Elements - Electrical

Controls - Description & Overview



Operating Elements

Operating Elements - Mechanical

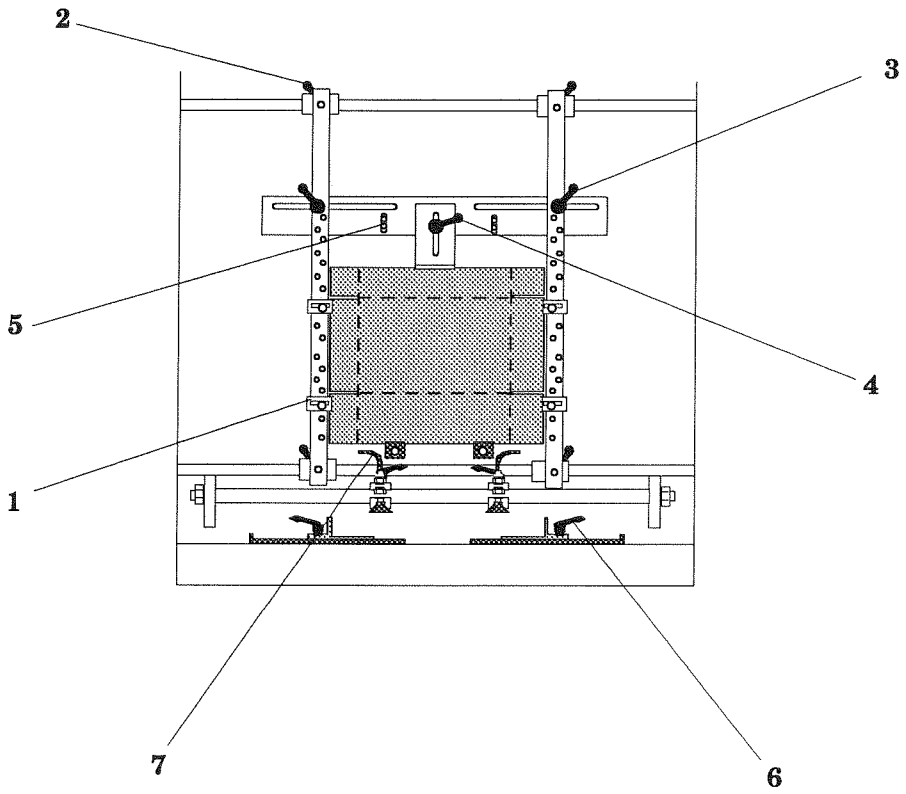
Description & Overview

Element	Function
(1) **Capscrews**	**Holding finger adjustment.** Allows adjustment to the fingers for holding the tray/ carton blanks back in the magazine.
(2) **Locking levers**	**Magazine width adjustment.** Allows the operator to adjust the width of the pick off area to fit the tray/carton blank. There are two at the top and two at the bottom. The top roller and hold down cross bar levers (item 3) must be loosened also.
(3) **Locking levers**	**Top roller and hold-down cross bar adjustment.** Allows the roller and hold-down cross bar to be positioned on the center of the tray/carton blank.
(4) **Locking lever**	**Tray/carton hold-down adjustment.** Allows the tray/carton hold-down to be positioned to the correct height for the tray/carton blank.
(5) **Flat head screws**	**Tray/carton top roller adjustment.** Allows the top roller brackets to be positioned to the correct height for proper support of the tray/carton blanks.
(6) **Locking levers**	**Side guide adjustment.** Used to adjust and lock the shuttle side guides to the correct position for the tray/carton blank.
(7) **Locking levers**	**Vacuum cup adjustment.**

Operating Elements - Mechanical

Description & Overview

Power Feed Magazine



Operating Elements - Mechanical

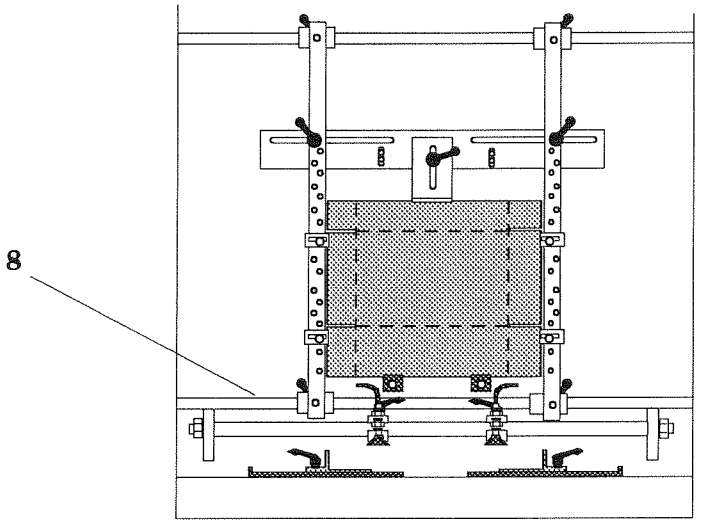
Description & Overview

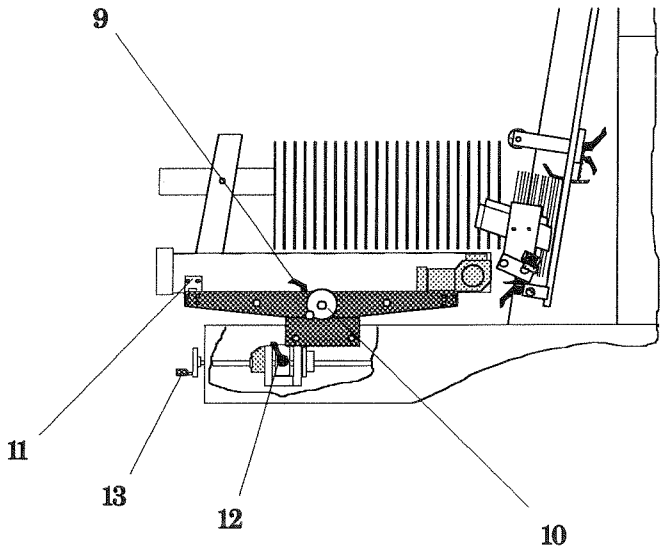
Element	Function
	Used to align and lock the vacuum cups in the correct position for proper pick-off of the tray/carton blank.
(8) Scale	**Magazine centering** This scale and the scale on the top adjusting shaft are used to make sure the tray/carton blanks are positioned on the centerline of the Former when the magazine width is adjusted.
(9) Locking lever	**Magazine long guide adjustment.** Used to lock the magazine's long side guide in the correct position for the tray/carton width. Used with adjustment wheel #10.
(10) Adjustment wheel	**Magazine long guide adjustment.** Used to move the magazine's long side guide in and out. Lock and unlock with lever 9.
(11) Hexhead capscrews	**Magazine adjustment.** Used to adjust the distance between the two magazine feeder chains. Two brackets located on each side. Once set they should not have to be adjusted.
(12) Locking lever	**Shuttle position adjustment.** Used to lock the location of the shuttle drop off position after adjusting with handwheel #13.
(13) Handwheel	**Shuttle position adjustment.**

Operating Elements - Mechanical

Description & Overview

Power Feed Magazine





Operating Elements

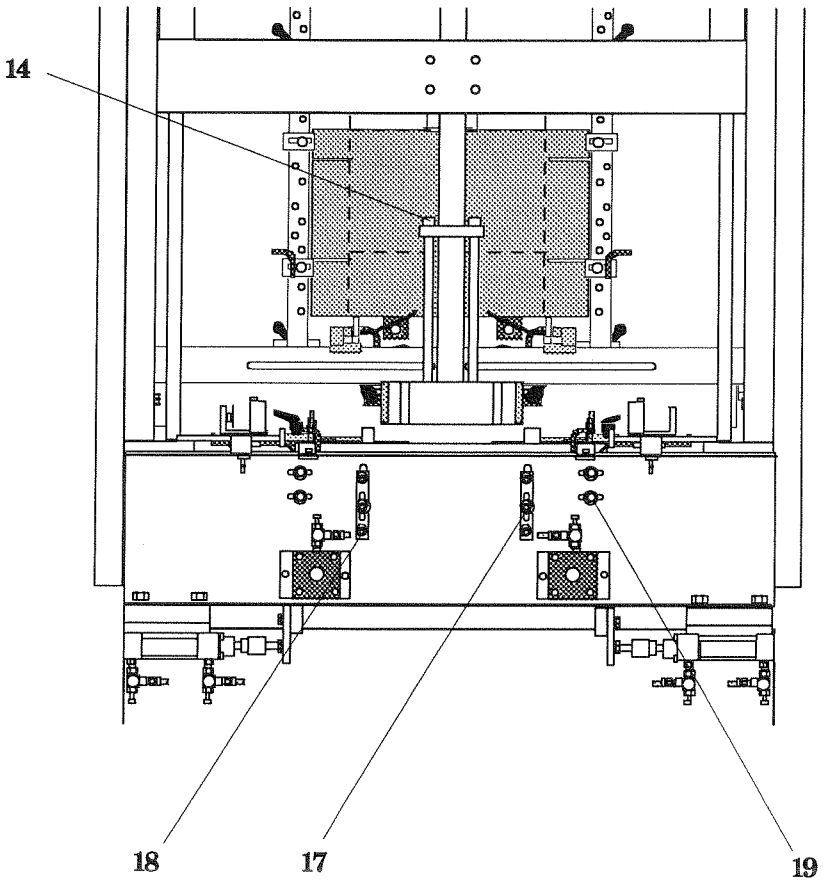
Operating Elements - Mechanical

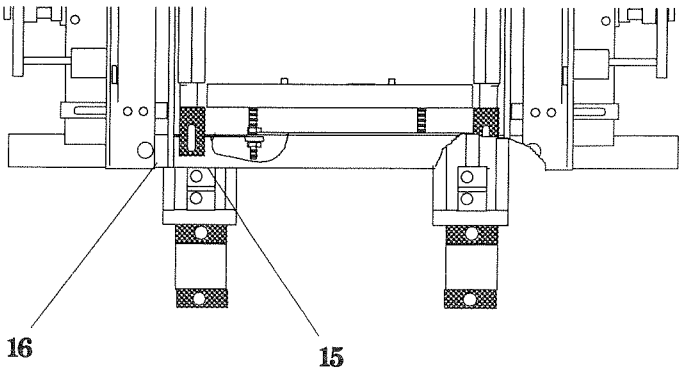
Description & Overview

Element	Function
	Used to reposition the location of the shuttle drop off for placing the tray/carton blank in the proper position on the female head. Must be unlocked with lever #12 before adjusting.
(14) Hexshafts	**Male head mounting.** Allows the operator to remove and change the male forming head.
(15) Capscrews	**Corner tab folder adjustment.** Adjusts the folder for proper folding of the corner tab on the tray/carton blank.
(16) Capscrews	**Carton stop adjustment.** Adjusts the eccentric for stopping the tray/carton blank so it is centered on the female head.
(17) Locknuts	**Spring compression adjustment** Adjusts the spring pressure for the pressure plates on the front and back of the female head.
(18) Capscrews	**Front and back plate adjustment** Adjusts the female head front and back plates up and down.
(19) Capscrews	**Side plate adjustment** Adjusts female head side plates in and out.

Operating Elements - Mechanical

Description & Overview





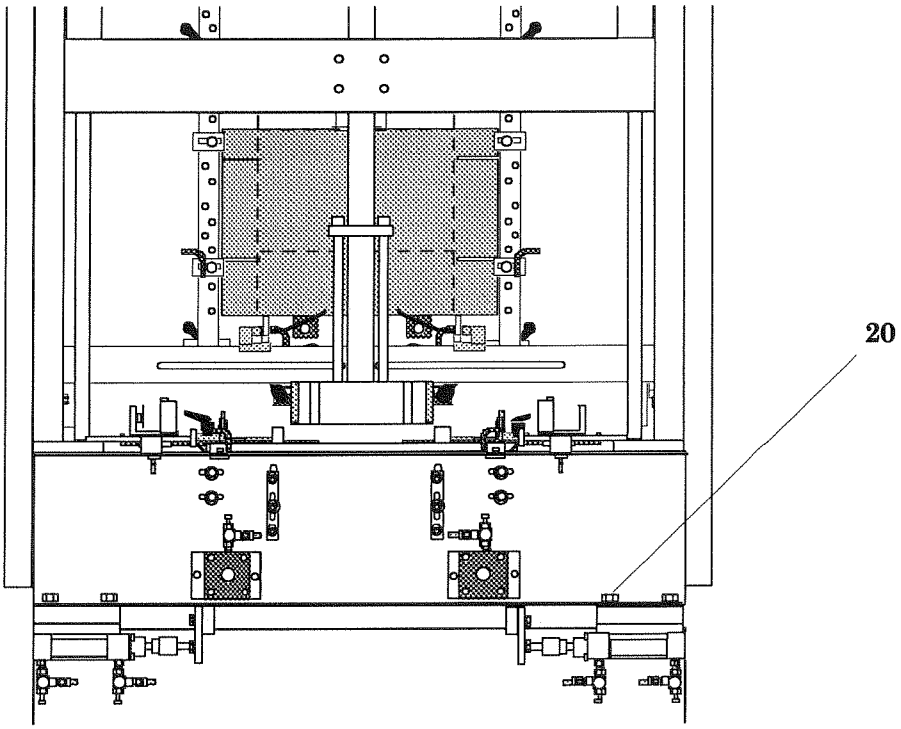
Operating Elements - Mechanical

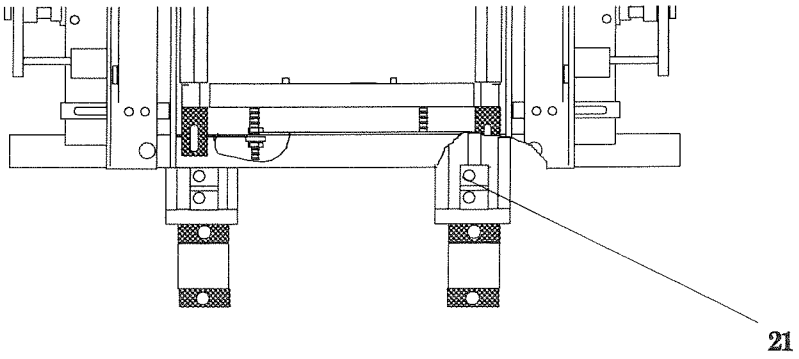
Description & Overview

Element	Function
(20) Capscrews	**Air cylinder adjustment** Adjusts the trap gates in and out.
(21) Capscrews	**Drive coupling adjustment** Used to adjust the minor flap locking tab folders properly.

Operating Elements - Mechanical

Description & Overview





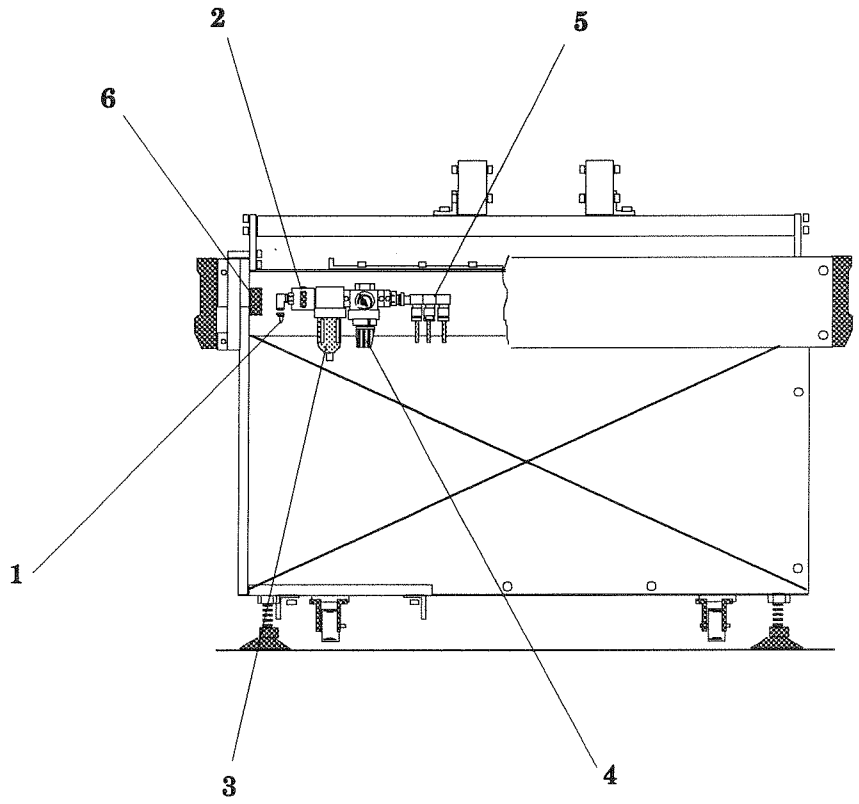
Operating Elements - Pneumatic

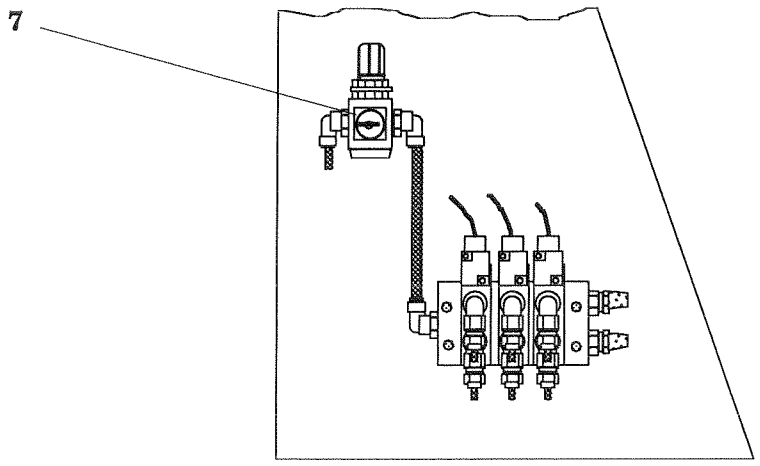
Description & Overview

Element	Function
(1) **Air connection fitting**	**Main air supply.** The main air supply for all the pneumatic functions is attached at this point. Pressure of 80 PSI, 6 to 10 CFM is required.
(2) **Air supply ON/OFF valve**	**Main air supply.** Air supply can be turned ON and OFF by pushing the levers on this valve. Can also be locked out.
(3) **Filter**	**Main air supply.** Filters the main air supply to the Former.
(4) **Regulator**	**Main air supply.** Adjusts and regulates the main air supply to the Former. Typically set for approximately 80 PSI.
(5) **Air splitter**	**Main air supply**. Distributes the main air supply to the female head, the vacuum cups and air nozzle..
(6) **Air pressure switch**	**Monitors air pressure.** If the air pressure should drop below the required pressure for proper operation, this switch will shut the Former down.
(7) **Regulator and gauge**	**Female head air cylinders.** Controls the amount of air being supplied to the sole-

Operating Elements - Pneumatic

Description & Overview





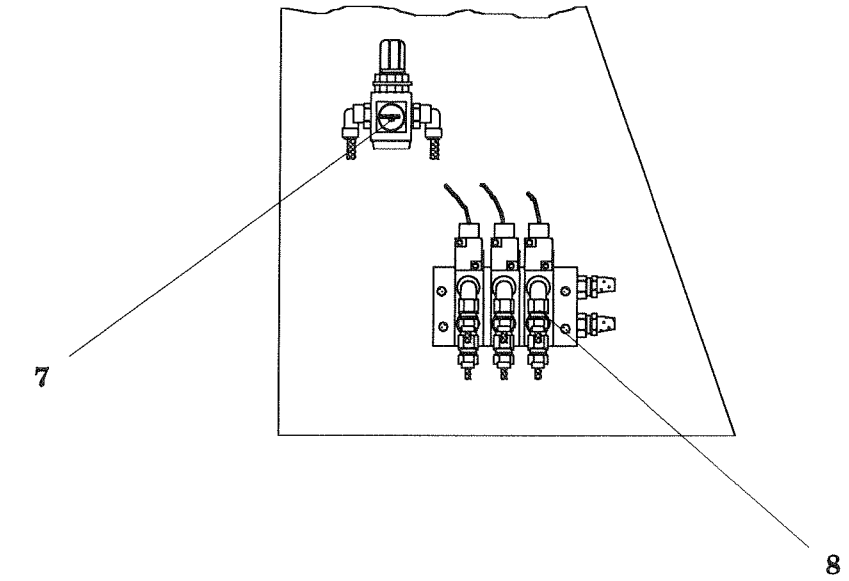
Operating Elements - Pneumatic

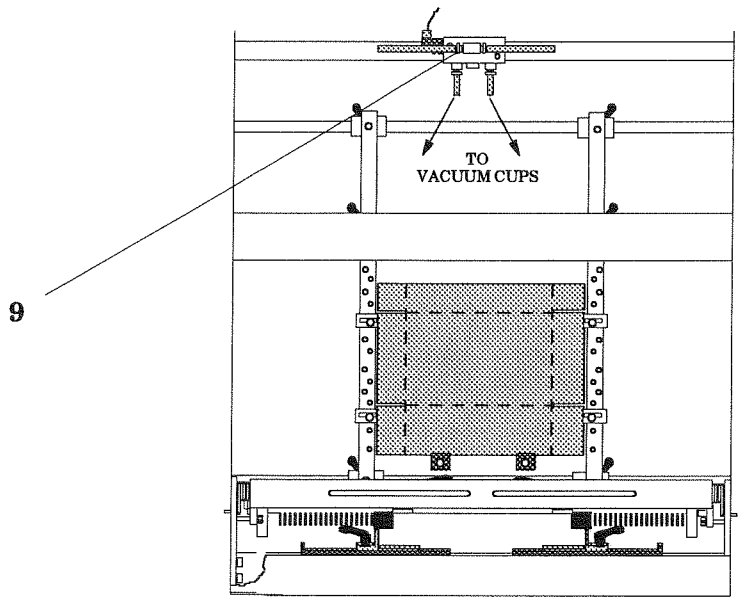
Description & Overview

Element	Function
	noids for the air cylinders for the trap gates and the rotary air cylinders for the minor flap locking tab folders. Typically set for 50 PSI. One on each side of the Former for each forming head.
(8) **Solenoids**	**Trap gates and minor flap locking tabs.** These control the activation time of the air cylinders for the trap gates and the rotarty air cylindes for the minor flap locking tab folders. One bank located on each side of the Former for each forming head.
(9) **Vacuum unit & solenoid**	**Vacuum supply.** Develops vacuum from air pressure. Used by the vacuum cups to pull tray/carton blanks from the magazine. The solenoid turns the vacuum to the cups ON and OFF. One located above the shuttle on each side of the formrer. Also usee to supply a blast of air to the cups to blow the tray/carton blank down onto the shuttole when the vacuum shuts off.

Operating Elements - Pneumatic

Description & Overview





Operating Elements

Operating Elements - Monitoring

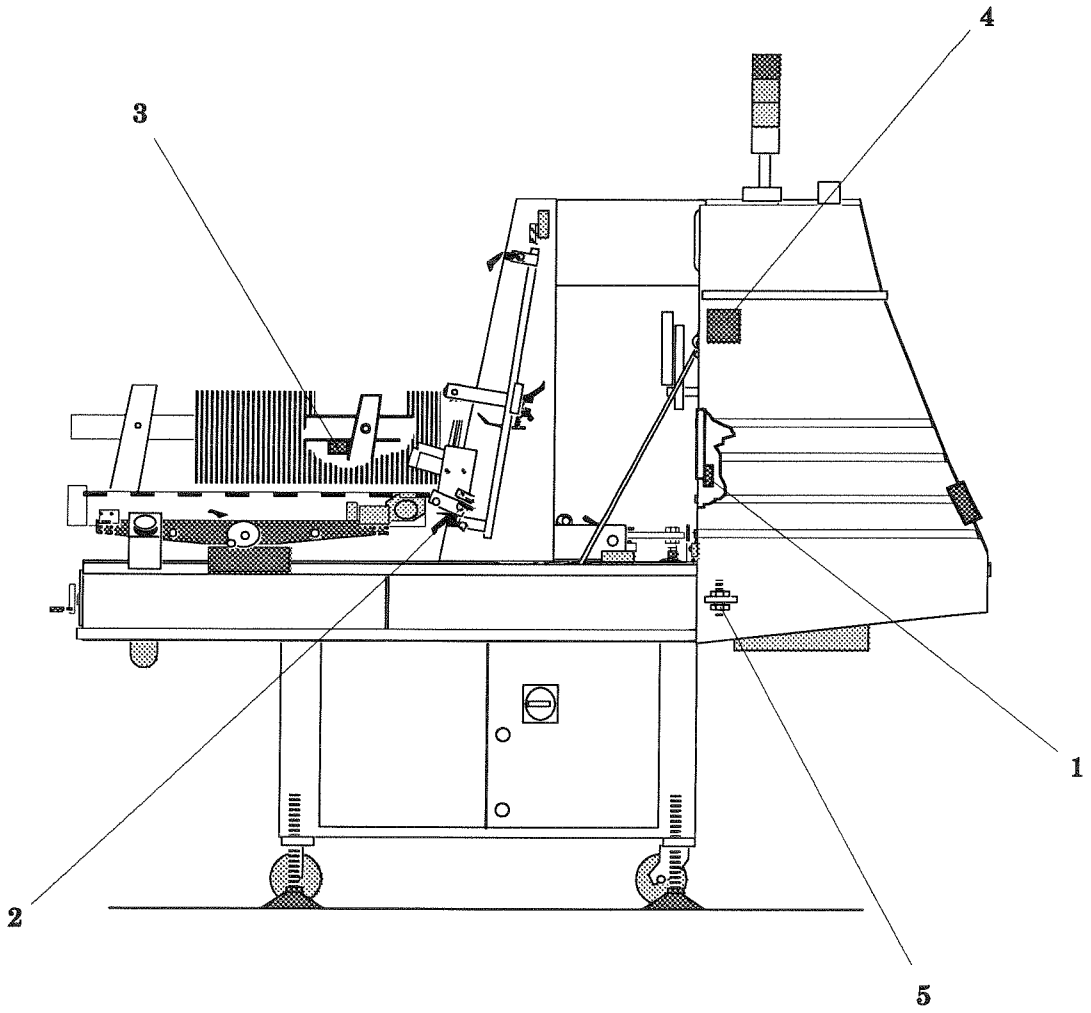
Description & Overview

Element	Function
(1) **Photoelectric eye**	**Tray/Carton at shuttle.** Monitors the presence of a tray/carton blank on the shuttle then sends a signal to the controller. If it does not detect a tray/carton blank for three consecutive cylces the Former will shut down.
(2) **Photoelectric eye (Power Feed)**	**Magazine feed.** Detects the presence of blanks in the slanted staging area for pickoff. When unblocked it sends a signal to the controller that more blanks are needed.
(3) **Photoelectric eye (Low Blank Supply)**	**Low tray/carton supply** Used to signal the operator when the supply of tray/carton blanks in the magazine becomes low by turning the blue light on the tower ON. It will also sound a buzzer for approximately 1/2 second every five seconds.
(4) **Encoder**	**Former position.** Located by and driven with a belt from the main drive motor. Sends counts to the controller indicating the head position for exact timing of the vacuum and the air cylinder operatations on the female head and all electronic gearing.
(5) **Proximity sensor**	**Shuttle position.** This sensor is located at the end of the shuttle's stroke. When tripped, it signals the controller board so the shuttle will stop in the correct position for proper timing to the forming heads.

Operating Elements

Operating Elements - Monitoring

Description & Overview



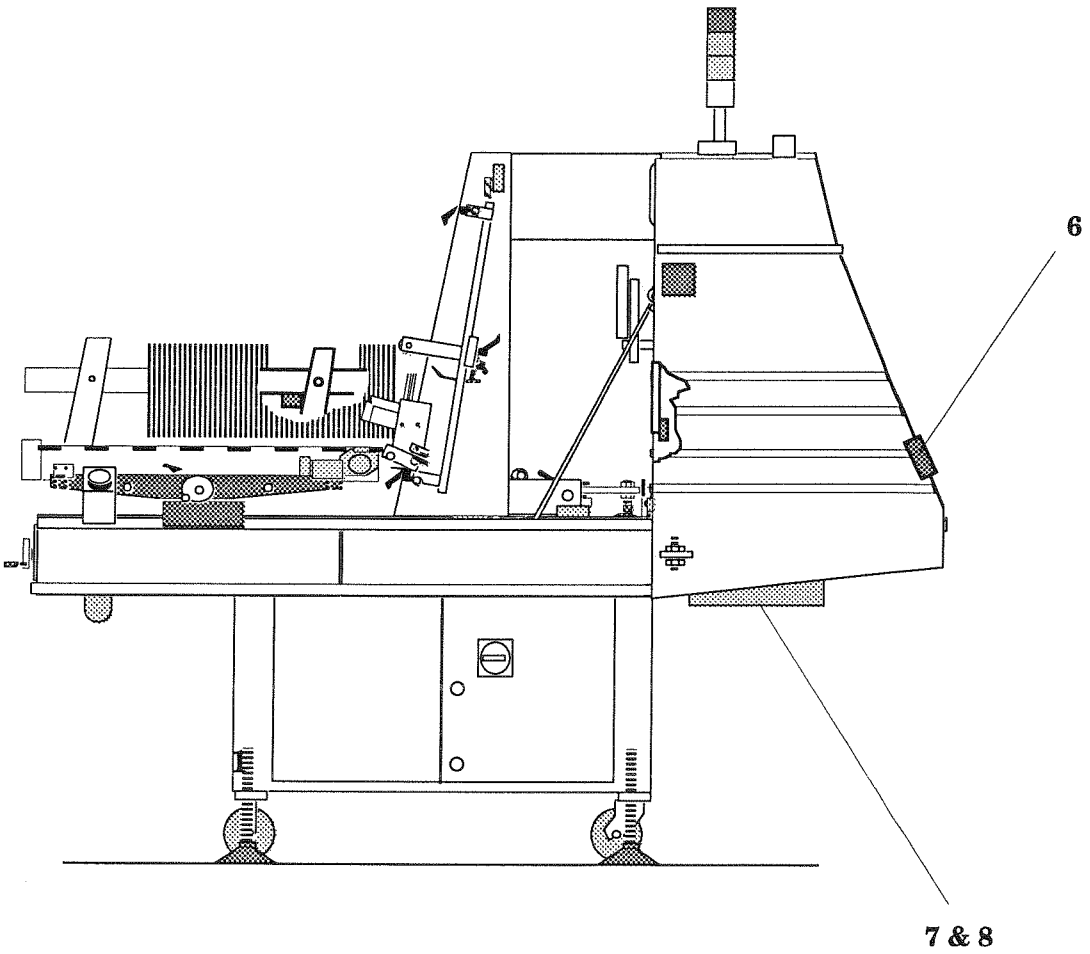
Operating Elements - Pneumatic

Description & Overview

Element	Function
(6) Electrical actuators	**Safety interlocks.** Located on each of the two side guard doors and also one on each of the two front lift up guards. When opened, they disrupt the electrical power so the Former will not cycle on the sdie that is opened.
(7) Photoelectric Eye	**Non-Attendent** Located beneath the female head and checks to make sure the tray/carton has been removed from the female head and placed on the conveyor.
(8) Photoelectric Eye	**Auto-Demand** Located down stream of the Former. Is used to shut the Former down if the equipment down stream should not be able to take all the tray/cartons on the conveyor. Former will start automatically again.

Operating Elements - Pneumatic

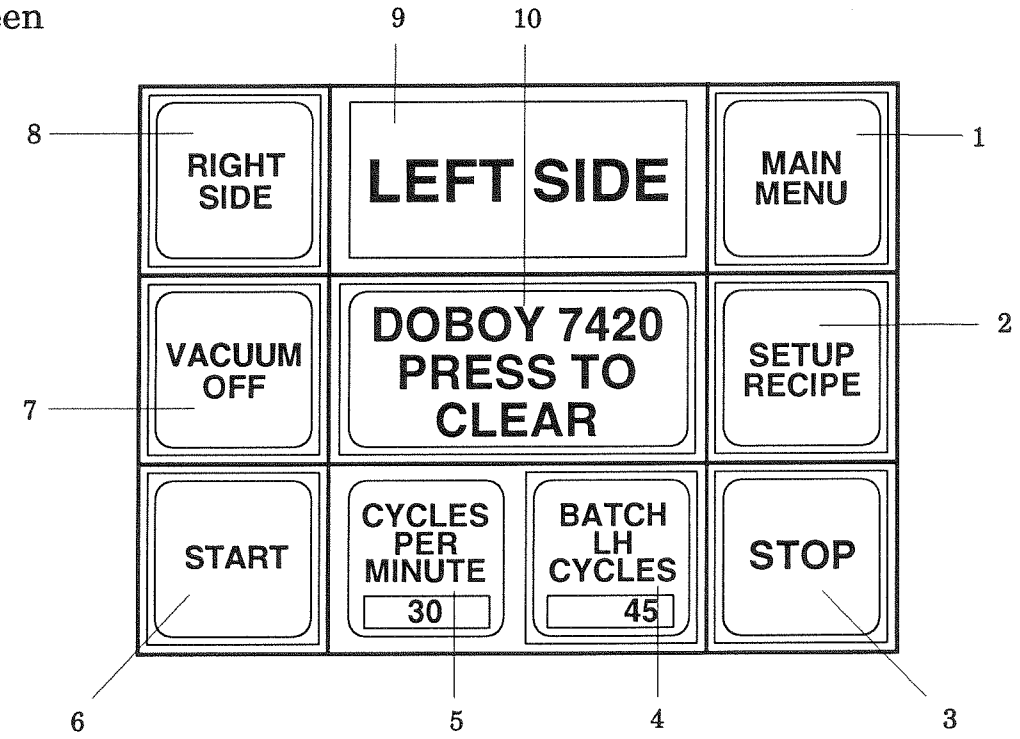
Description & Overview



Operating Elements

Touchscreen

Run Screen

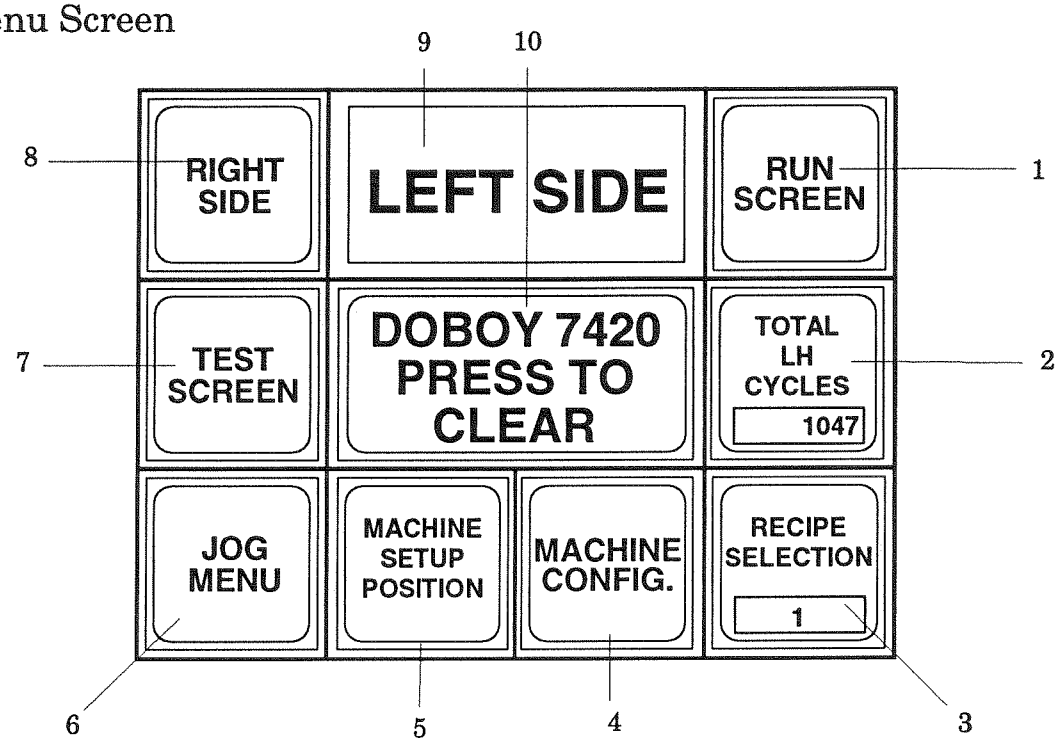


Display Unit	Function
1. MAIN MENU	When pushed it leaves the current screen and displays the MAIN MENU screen. Former must be stopped before this button will function.
2. SETUP RECIPE (Password protected)	When pushed it leaves the current screen and displays the SETUP RECIPE screen. **This screen cannot be accessed without proper password.**
3. STOP	Stops the Former.
4. BATCH CYCLES	Displays the number of cycles run since the last reset. Press to reset.
5. CYCLES PER MINUTE	Displays the operating speed of the Former in cycles per minute.
6. START	Starts Former if there are no faults.
7. VACUUM OFF	Turns the vacuum to the sucker cups On and OFF. Will be lit when ON.
8. RIGHT SIDE / LEFT SIDE	Used to select which side of the Former the touchscreen will control. Will be opposite of number 9.
9. LEFT SIDE / RIGHT SIDE	This will display either RIGHT SIDE or LEFT SIDE indicating the side of the Former being controlled. It will also flash when there is a message. Messages will only displayed on this screen but can be cleared from any screen. Will be opposite of number 8.
10. PRESS TO CLEAR	When pressed it clears a displayed message.

Operating Elements

Touchscreen

Main Menu Screen

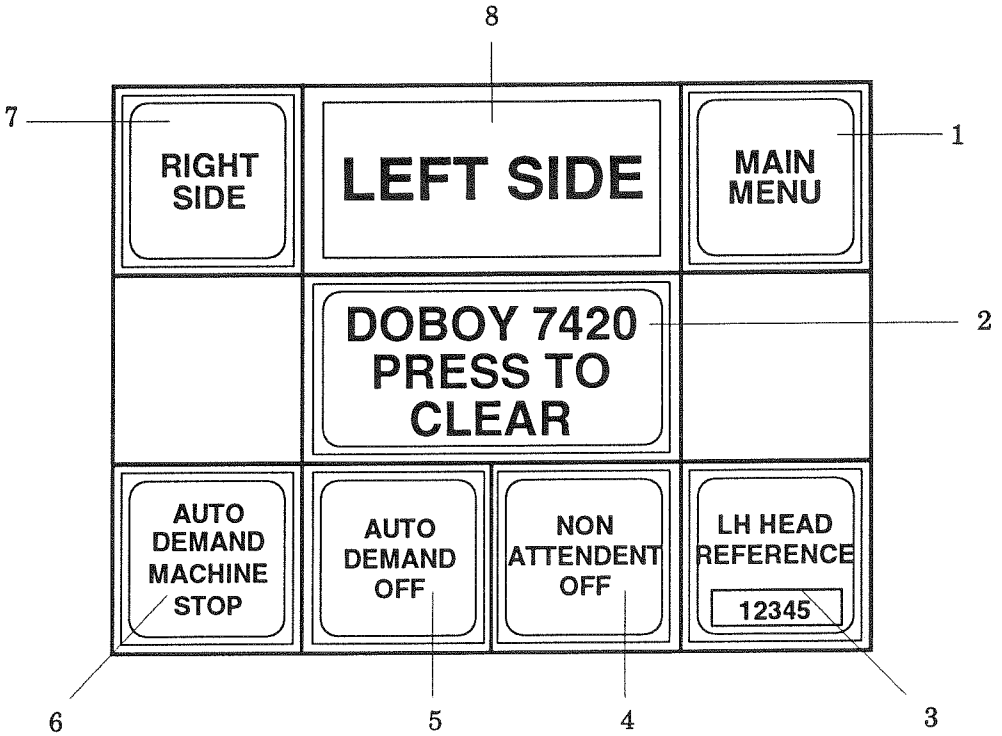


Display Unit	Function
1. RUN SCREEN	When pushed it leaves the current screen and displays the RUN screen.
2. TOTAL CYCLES	Displays the total number of cycles run per side. Not resettable.
3. RECIPE SELECTION	Displays a Data Entry screen to select a recipe. Press #, then Enter , then Done to come back to this screen. Lower portion displays recipe being run.
4. MACHINE CONFIG. (Password protected)	Leaves the current screen and displays the CONFIG screen. **This screen cannot be accessed without proper password.**
5. MACHINE SETUP POSITION	When pushed the shuttle will move all the way forward and stop and the male head will stop slightly above the female head.
6. JOG MENU	Leaves the current screen and displays the main JOG MENU screen.
7. TEST SCREEN	Leaves the current screen and displays the first TEST screen.
8. RIGHT SIDE / LEFT SIDE	Used to select which side of the Former the touchscreen will control. Will be opposite of number 9.
9. LEFT SIDE / RIGHT SIDE	This displays either RIGHT SIDE or LEFT SIDE indicating the side of the Former being controlled. It will also flash indicating there is a message displayed on the RUN screen. Will be opposite of number 8.
10. PRESS TO CLEAR	Used to clear a message. Messages are only displayed on the RUN screen.

Operating Elements

Touchscreen

Configure Screen

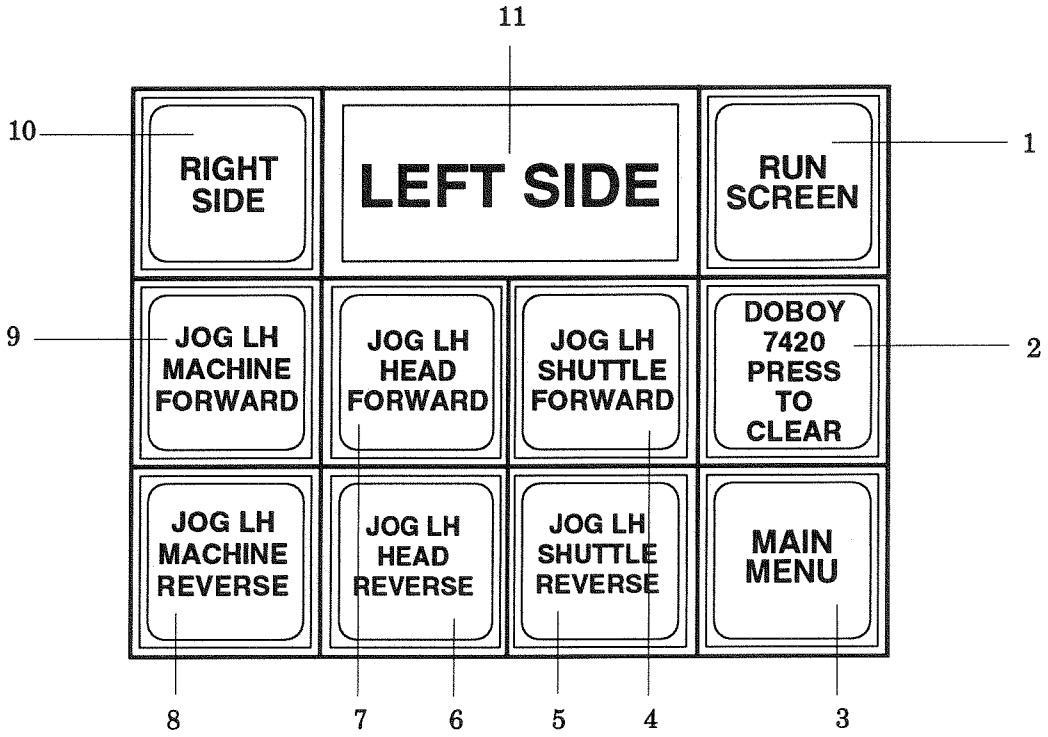


Display Unit	Function
1. MAIN MENU	Leaves the current screen and displays the MAIN MENU screen.
2. PRESS TO CLEAR	Used to clear a message. Messages are only displayed on the RUN screen.
3. LH HEAD REFERENCE	Displays a Data Entry screen for the head reference. Press #, then Enter, then Done to come back to this screen. Lower portion displays the current value run.
4. NON ATTENDENT	Turns the Non-Attendent package ON and OFF. Will be lit when ON.
5. AUTO DEMAND	Turns the Auto-Demand package ON and OFF. Will be lit when ON.
6. AUTO DEMAND MACH STOP	Used to select if the former should keep cycling without vacuum or stop when the Auto-Demand ey on the conveyor is blocked.
7. RIGHT SIDE / LEFT SIDE	Used to select which side of the Former the touchscreen will control. Will be opposite of number 8.
8. LEFT SIDE / RIGHT SIDE	This displays either RIGHT SIDE or LEFT SIDE indicating the side of the Former being controlled. It will also flash indicating there is a message displayed on the RUN screen. Will be opposite of number 7.

Operating Elements

Touchscreen

Jog Screen

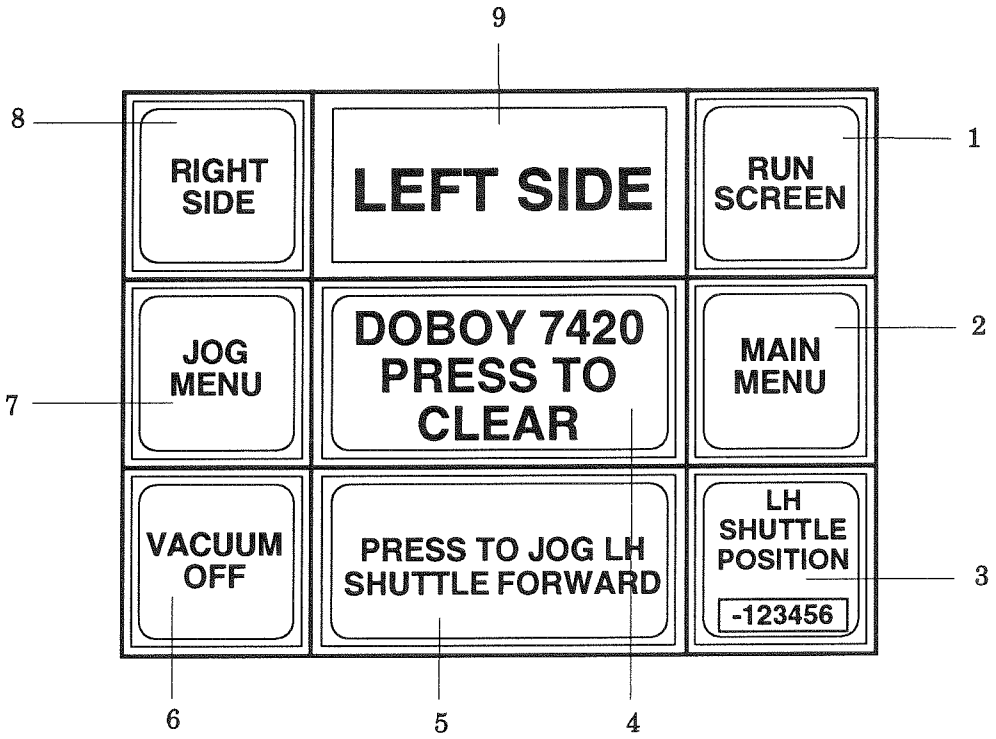


Display Unit	Function
1. RUN SCREEN	Leaves the current screen and displays the RUN screen.
2. PRESS TO CLEAR	Used to clear a message. Messages are only displayed on the RUN screen.
3. MAIN MENU	Leaves the current screen and displays the MAIN MENU screen.
4. JOG SHUTTLE FORWARD	Leaves the current screen and displays the JOG SHUTTLE FORWARD screen.
5. JOG SHUTTLE REVERSE	Leaves the current screen and displays the JOG SHUTTLE REVERSE screen.
6. JOG HEAD REVERSE	Leaves the current screen and displays the JOG HEAD REVERSE screen.
7. JOG HEAD FORWARD	Leaves the current screen and displays the JOG HEAD FORWARD screen.
8. JOG MACHINE REVERSE	Leaves the current screen and displays the JOG MACHINE REVERSE screen.
9. JOG MACHINE FORWARD	Leaves the current screen and displayt the JOG MACHINE FORWARD screen.
10. RIGHT SIDE / LEFT SIDE	Used to select which side of the Former the touchscreen will control. Will be opposite of number 9.
11. LEFT SIDE / RIGHT SIDE	This displays either RIGHT SIDE or LEFT SIDE indicating the side of the Former being controlled. It will also flash indicating there is a message displayed on the RUN screen. Will be opposite of number 8.

Operating Elements

Touchscreen

Jog Shuttle Forward Screen

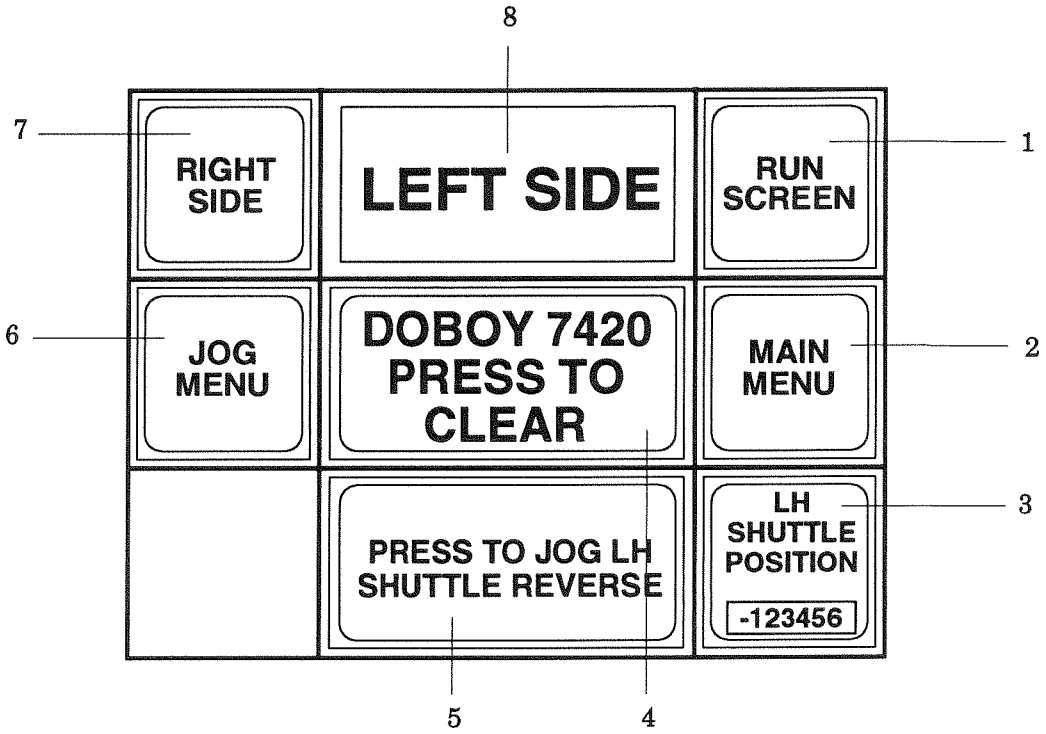


Display Unit	Function
1. RUN SCREEN	Leaves the current screen and displays the RUN screen.
2. MAIN MENU	Leaves the current screen and displays the MAIN MENU screen.
3. SHUTTLE POSITION	The numbers in the lit block below indicate the shuttle's position.
4. PRESS TO CLEAR	Used to clear a message. Messages are only displayed on the RUN screen.
5. PRESS TO JOG FORWARD	When pressed the button will light and the shuttle will cycle in the forward direction as long as the button is held down. When released it will stop.
6. VACUUM OFF	This can be used to turn the vacuum to the sucker cups ON and OFF. When the vacuum is ON the button will be lit.
7. JOG MENU	Leaves the current screen and displays the JOG MENU screen.
8. RIGHT SIDE / LEFT SIDE	Used to select which side of the Former the touchscreen will control. Will be opposite of number 9.
9. LEFT SIDE / RIGHT SIDE	This displays either RIGHT SIDE or LEFT SIDE indicating the side of the Former being controlled. It will also flash indicating there is a message displayed on the RUN screen. Will be opposite of number 8.

Operating Elements

Touchscreen

Jog Shuttle Reverse Screen

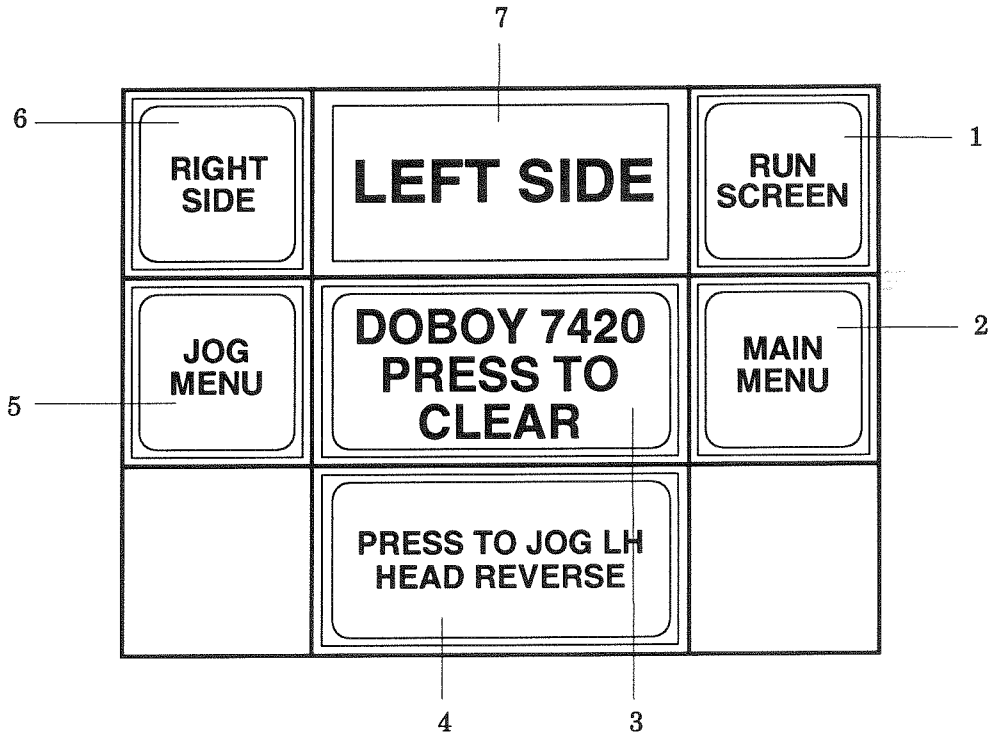


Display Unit	Function
1. RUN SCREEN	Leaves the current screen and displays the RUN screen.
2. MAIN MENU	Leaves the current screen and displays the MAIN MENU screen.
3. SHUTTLE POSITION	The numbers in the lit block below indicate the shuttle's position.
4. PRESS TO CLEAR	Used to clear a message. Messages are only displayed on the RUN screen.
5. PRESS TO JOG REVERSE	When pressed the button will light and the shuttle will cycle in the reverse direction as long as the button is held down. When released it will stop.
6. JOG MENU	Leaves the current screen and displays the JOG MENU screen.
7. RIGHT SIDE / LEFT SIDE	Used to select which side of the Former the touchscreen will control. Will be opposite of number 9.
8. LEFT SIDE / RIGHT SIDE	This displays either RIGHT SIDE or LEFT SIDE indicating the side of the Former being controlled. It will also flash indicating there is a message displayed on the RUN screen. Will be opposite of number 8.

Operating Elements

Touchscreen

Jog Head Reverse Screen

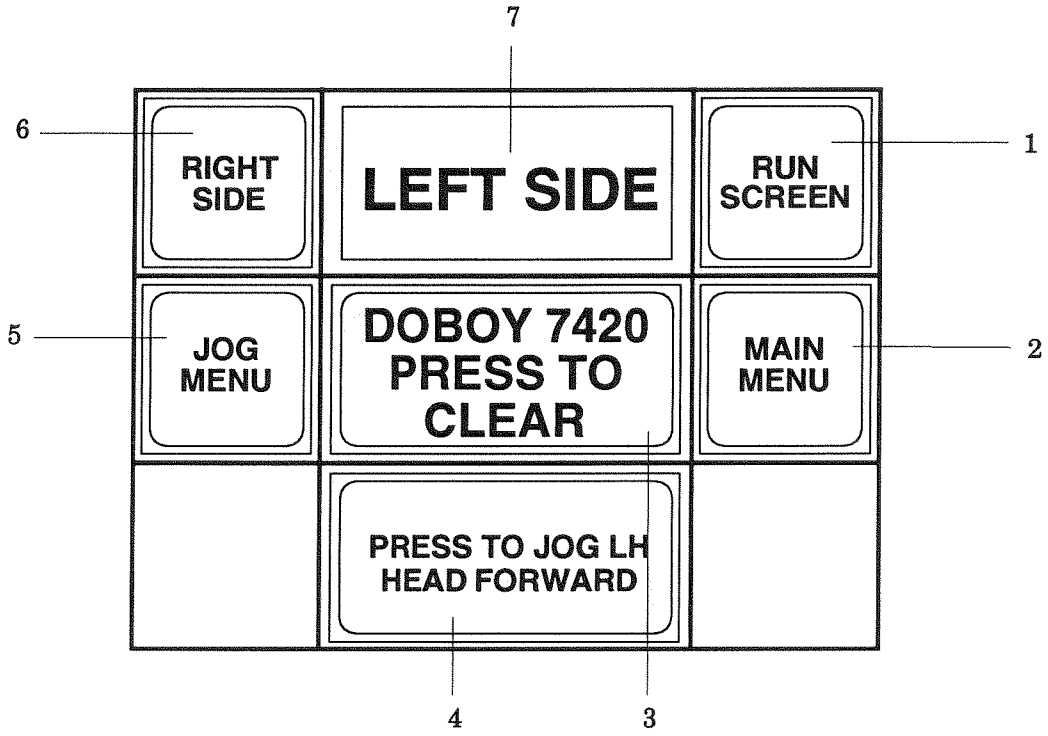


Display Unit	Function
1. RUN SCREEN	Leaves the current screen and displays the RUN screen.
2. MAIN MENU	Leaves the current screen and displays the MAIN MENU screen.
3. PRESS TO CLEAR	Used to clear a message. Messages are only displayed on the RUN screen.
4. PRESS TO JOG REVERSE	When pressed the button will light and the male head will cycle in the reverse direction as long as the button is held down. When released it will stop.
5. JOG MENU	Leaves the current screen and displays the JOG MENU screen.
6. RIGHT SIDE / LEFT	Used to select which side of the Former the touchscreen will control. Will be opposite of number 9.
7. LEFT SIDE / RIGHT	This displays either RIGHT SIDE or LEFT SIDE indicating the side of the Former being controlled. It will also flash indicating there is a message displayed on the RUN screen. Will be opposite of number 8.

Operating Elements

Touchscreen

Jog Head Forward Screen

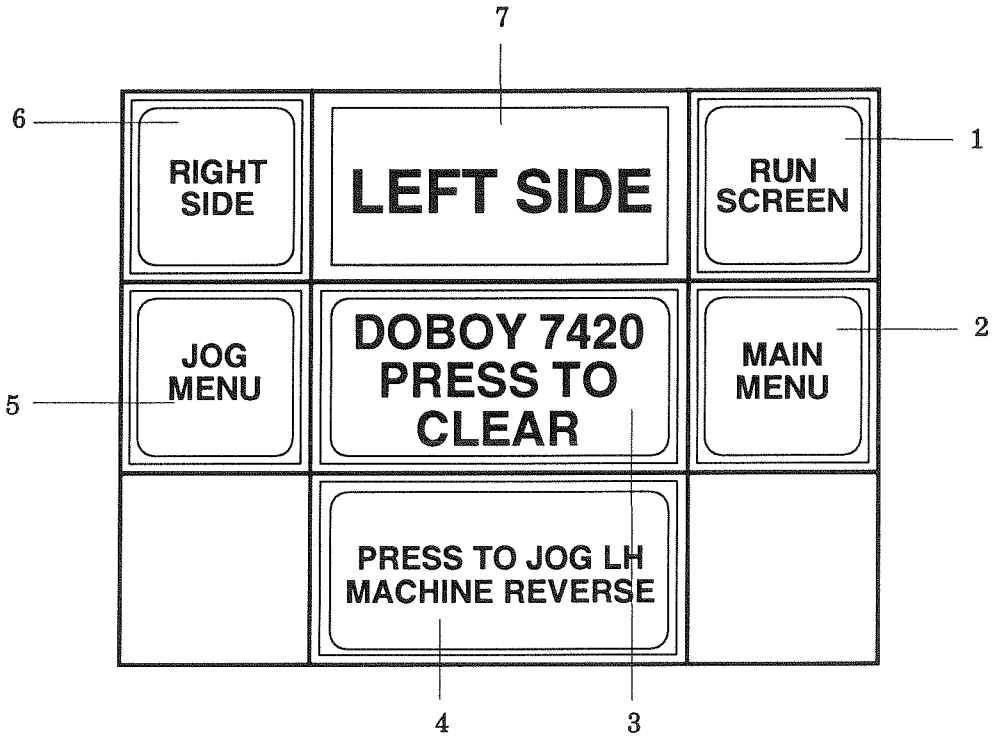


Display Unit	Function
1. RUN SCREEN	Leaves the current screen and displays the RUN screen.
2. MAIN MENU	Leaves the current screen and displays the MAIN MENU screen.
3. PRESS TO CLEAR	Used to clear a message. Messages are only displayed on the RUN screen.
4. PRESS TO JOG FORWARD	When pressed the button will light and the male head will cycle in the forward direction as long as the button is held down. When released it will stop.
5. JOG MENU	Leaves the current screen and displays the JOG MENU screen.
7. RIGHT SIDE / LEFT	Used to select which side of the Former the touchscreen will control. Will be opposite of number 9.
8. LEFT SIDE / RIGHT	This displays either RIGHT SIDE or LEFT SIDE indicating the side of the Former being controlled. It will also flash indicating there is a message displayed on the RUN screen. Will be opposite of number 8.

Operating Elements

Touchscreen

Jog Machine Reverse Screen

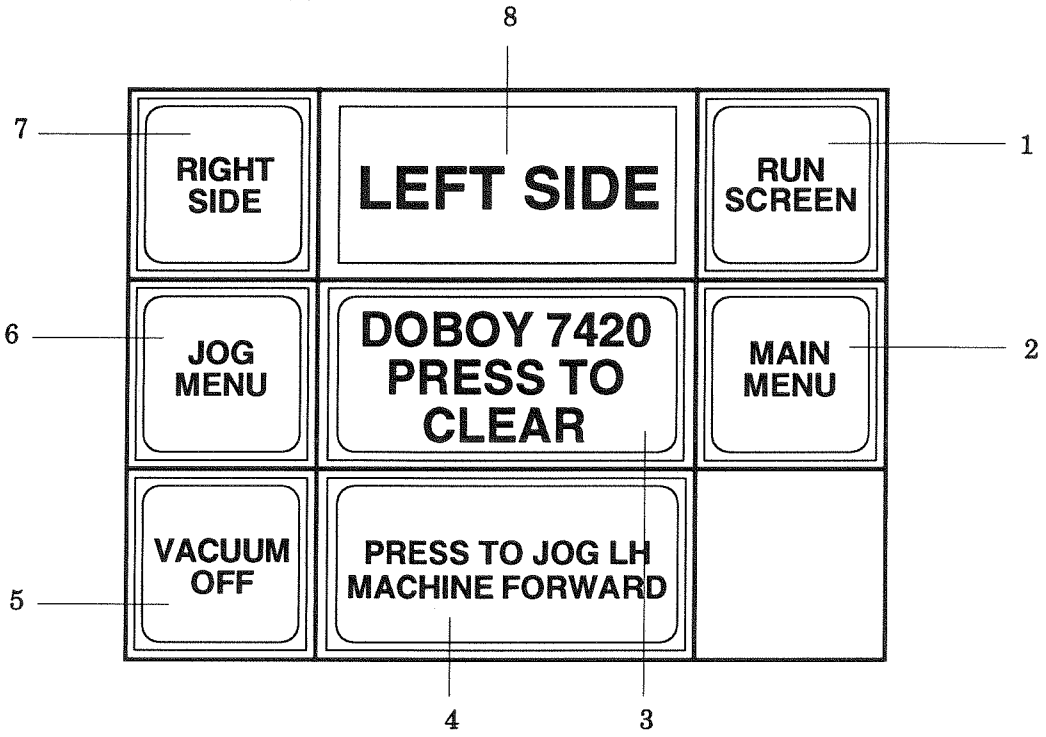


Display Unit	Function
1. RUN SCREEN	Leaves the current screen and displays the RUN screen.
2. MAIN MENU	Leaves the current screen and displays the MAIN MENU screen.
3. PRESS TO CLEAR	Used to clear a message. Messages are only displayed on the RUN screen.
4. PRESS TO JOG REVERSE	When pressed the button will light and the machine will cycle in the reverse direction as long as the button is held down. When released it will stop.
5. JOG MENU	Leaves the current screen and displays the JOG MENU screen.
6. RIGHT SIDE / LEFT SIDE	Used to select which side of the Former the touchscreen will control. Will be opposite of number 7.
7. LEFT SIDE / RIGHT SIDE	This displays either RIGHT SIDE or LEFT SIDE indicating the side of the Former being controlled. It will also flash indicating there is a message displayed on the RUN screen. Will be opposite of number 6.

Operating Elements

Touchscreen

Jog Machine Forward Screen

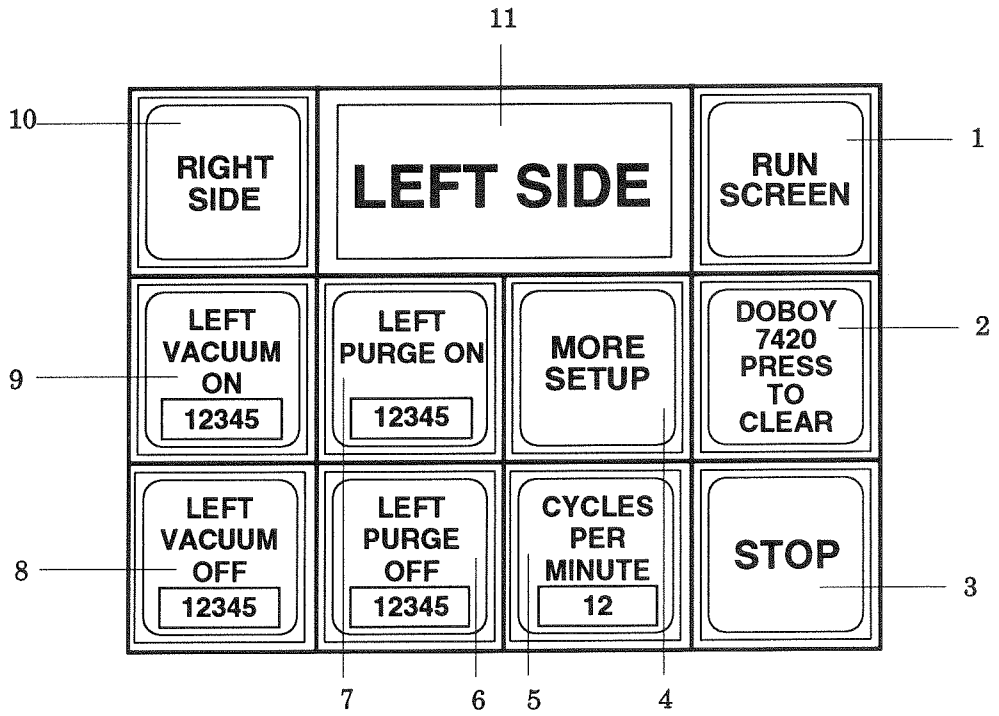


Display Unit	Function
1. RUN SCREEN	Leaves the current screen and displays the RUN screen.
2. MAIN MENU	Leaves the current screen and displays the MAIN MENU screen.
3. PRESS TO CLEAR	Used to clear a message. Messages are only displayed on the RUN screen.
4. PRESS TO JOG FORWARD	When pressed the button will light and the machine will cycle in the forward direction as long as the button is held down. When released it will stop.
5. VACUUM OFF/ON	Turns the vacuum to the sucker cups ON and OFF. Will be lit when ON.
6. JOG MENU	Leaves the current screen and displays the JOG MENU screen.
7. RIGHT SIDE / LEFT SIDE	Used to select which side of the Former the touchscreen will control. Will be opposite of number 9.
8. LEFT SIDE / RIGHT	This displays either RIGHT SIDE or LEFT SIDE indicating the side of the Former being controlled. It will also flash indicating there is a message displayed on the RUN screen. Will be opposite of number 8.

Operating Elements

Touchscreen

Setup 1 Screen

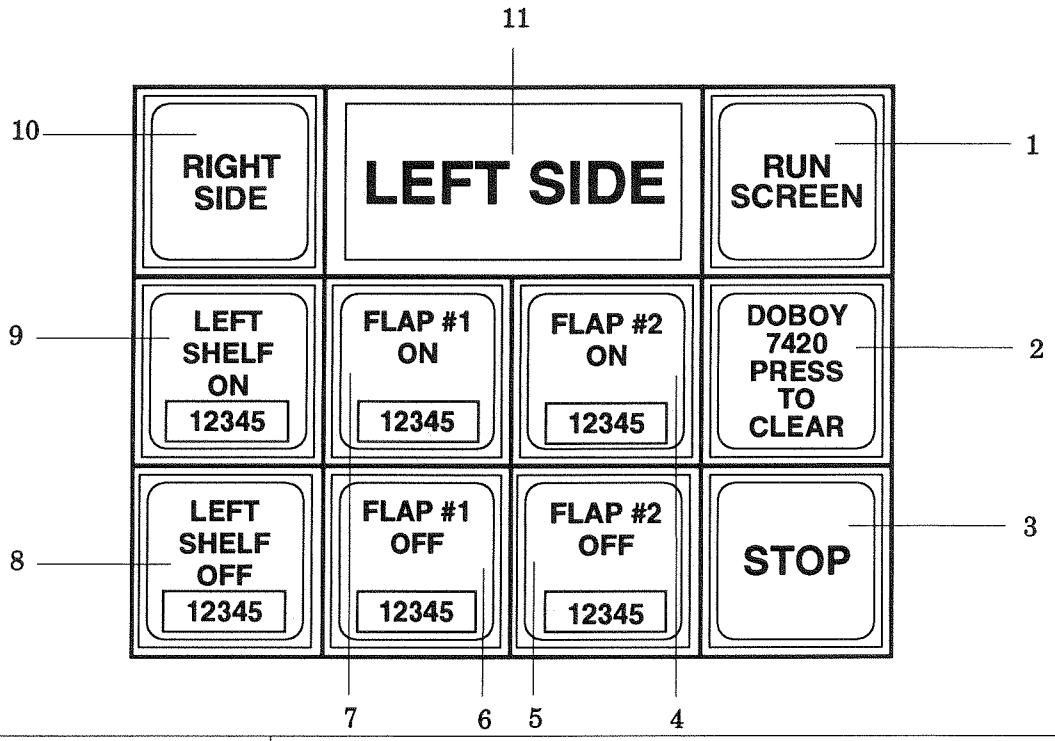


Display Unit	Function
1. RUN SCREEN	Leaves the current screen and displays the RUN screen.
2. PRESS TO CLEAR	Used to clear a message. Messages are only displayed on the RUN screen.
3. STOP	Stops the Former.
4. MORE SETUP	Displays the next setup 2 screen for left shelf, Flap 1 and Flap 2.
5. CYCLES PER MINUTE	Displays the number of cycles per minute the Former is operating.
6/7. PURGE OFF/ON	Each displays a Data Entry screen to set the OFF and ON times of the air blast for placing the tray/carton blank onto the shuttle. After setting press Enter then Done to come back to this screen. Lower portion displays the setting.
8/9. VACUUM OFF/ON	Each displays a Data Entry screen to set the OFF and ON times of the vcuum for picking and placing a tray/carton blank on the shuttle. After setting press Enter then Done to come back to this screen. Lower portion displays setting.
10. RIGHT SIDE / LEFT SIDE	Used to select which side of the Former the touchscreen will control. Will be opposite of number 9.
11. LEFT SIDE / RIGHT SIDE	This displays either RIGHT SIDE or LEFT SIDE indicating the side of the Former being controlled. It will also flash indicating there is a message displayed on the RUN screen. Will be opposite of number 8.

Operating Elements

Touchscreen

Setup 2 Screen

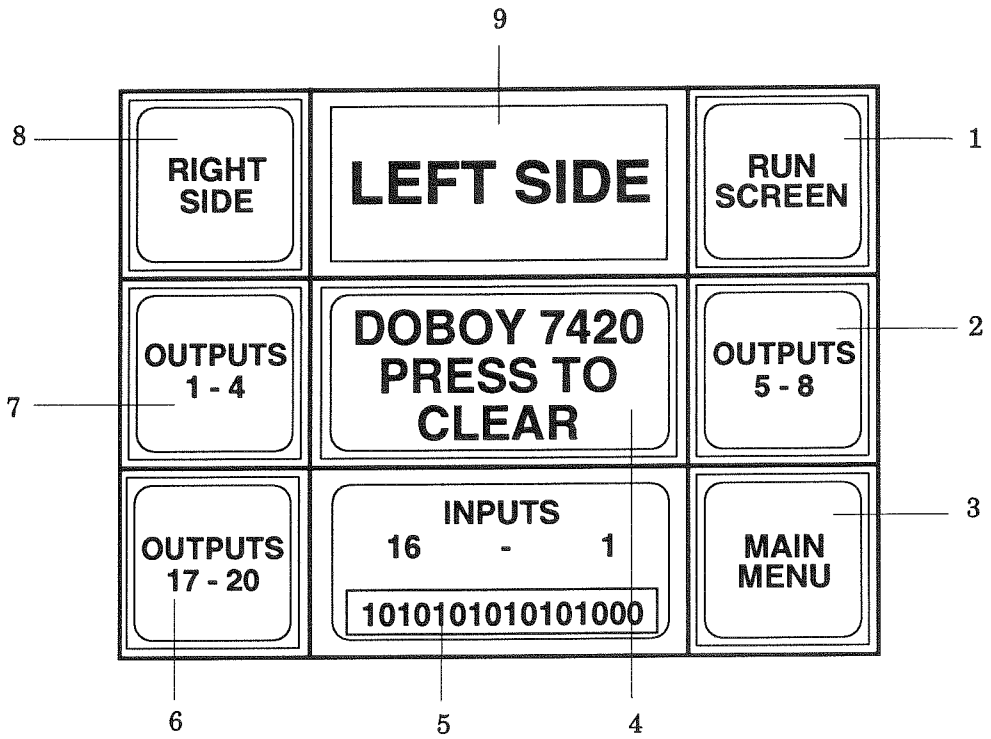


Display Unit	Function
1. RUN SCREEN	Leaves the current screen and displays the RUN screen.
2. PRESS TO CLEAR	Used to clear a message. Messages are only displayed on the RUN screen.
3. STOP	Stops the Former.
4/5. FLAP #2 ON/OFF (Right forming head is #4)	Each displays a Data Entry screen to set the extending and retracting times of the rotary air cylinder for the right minor flap folder. After setting press Enter then Done to come back to this screen. Lower portion displays the setting.
6/7. FLAP #1 ON/OFF (Right forming head is #3)	Each displays a Data Entry screen to set the extending and retracing times of the rotary air cylinder for the left minor flap folder. After setting press Enter then Done to come back to this screen. Lower portion displays the setting.
8/9. SHELF ON/OFF	Each displays a Data Entry screen to set the extending and retracing times of the air cylinders for the shelves (trap gates). After setting press Enter then Done to come back to this screen. Lower portion displays the setting.
10. RIGHT SIDE / LEFT SIDE	Used to select which side of the Former the touchscreen will control.
11. LEFT SIDE / RIGHT SIDE	This displays either RIGHT SIDE or LEFT SIDE indicating the side of the Former being controlled. It will also flash indicating there is a message displayed on the RUN screen. Will be opposite of number 8.

Operating Elements

Touchscreen

Test Screen

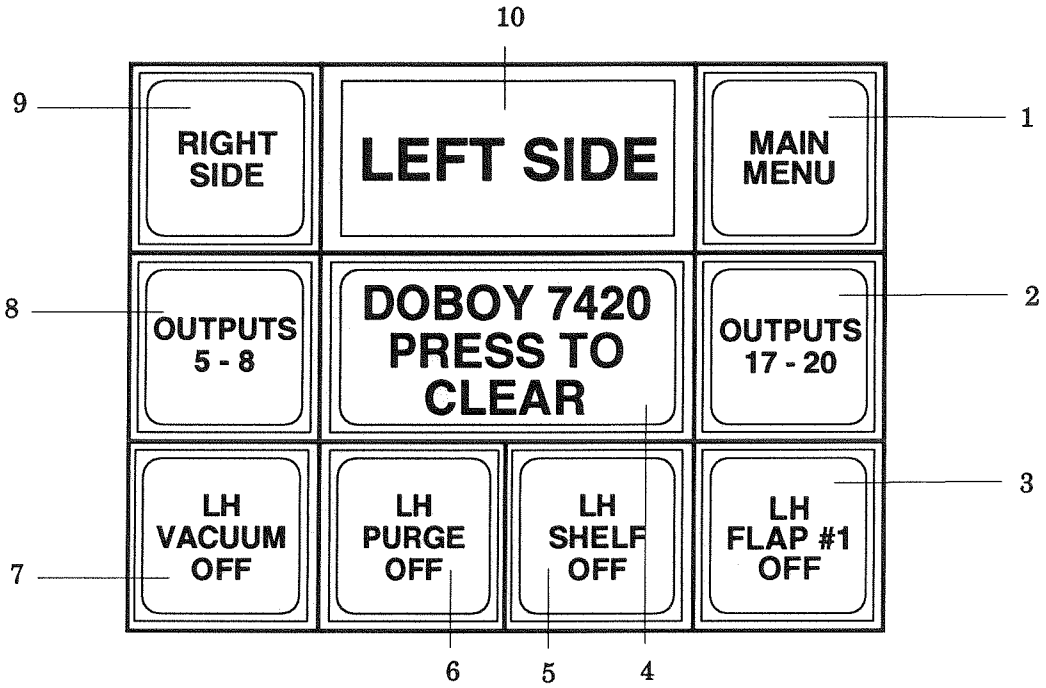


Display Unit	Function
1. RUN SCREEN	Leaves the current screen and displays the RUN screen.
2. OUTPUTS 5 - 8 (Left Side) OUTPUTS 13 - 16 (Right Side)	Leaves the current screen and displays the TEST 2 screen. On the right side of the Former these are labeled 13 - 16.
3. MAIN MENU	Leaves the current screen and displays the MAIN MENU screen.
4. PRESS TO CLEAR	Used to clear a message. Messages are only displayed on the RUN screen.
5. INPUTS 16 - 1 (Left side) INPUTS 32 - 17 (Right side)	Displays the ON and OFF of the inputs 16 thru 1. Zero indicates OFF and 1 indicates ON. On the right side of Fomrer there are labeled 32 - 17.
6. OUTPUTS 17 - 20 (Left Side) OUTPUTS 25 - 28 (Right Side)	Leaves the current screen and displays the TEST 3 screen. On the right side of the Former these are labeled 25 - 28.
7. OUTPUTS 1 - 4 (Left Side) OUTPUTS 9 - 12 (Right Side)	Leaves the current screen and displays the TEST 1 screen. On the right side of the Former these are labeled 9 - 12.
8. RIGHT SIDE / LEFT SIDE	Used to select which side of the Former the touchscreen will control.
9. LEFT SIDE / RIGHT SIDE	This displays either RIGHT SIDE or LEFT SIDE indicating the side of the Former being controlled. It will also flash indicating there is a message displayed on the RUN screen. Will be opposite of number 8.

Operating Elements

Touchscreen

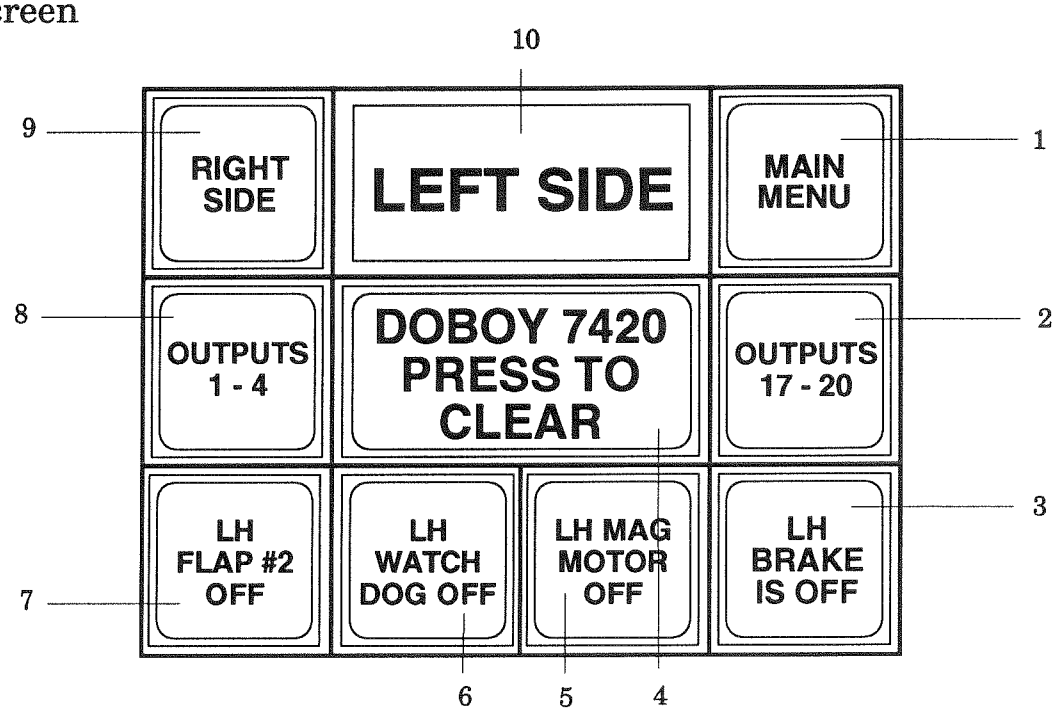
Test 1 Screen



Display Unit	Function
1. RUN SCREEN	Leaves the current screen and displays the MAIN MENU screen.
2. OUTPUTS 17 - 20 (Left Side) OUTPUTS 25 - 28 (Right Side)	Leaves the current screen and displays the TEST 3 screen. On the right side of the Former these are labeled 25 - 28.
3. PRESS TO CLEAR	Used to clear a message. Messages are only displayed on the RUN screen.
4. FLAP #1 OFF/ON (Right forming head is # 3)	Will activate the minor flap folder air cylinder on the left side of the female head. Used for test purposes or setup. On the right forming head it is flap #3.
5. SHELF OFF/ON	Will activate the shelves (trap gates). Used for test purposes or setup.
6. PURGE OFF/ON	Will activate the air blast for placing the tray/carton down onto the shuttle. Used for test purposes.
7. VACUUM OFF/ON	Will activate the vacuum for picking and placing the tray/carton blank down onto the shuttle. Used for test purposes.
8. OUTPUTS 5 - 8 (Left Side) OUTPUTS 13 - 16 (Right Side)	Leaves the current screen and displays the TEST 2 screen. On the right side of the Former these are labeled 13-16.
9. RIGHT SIDE / LEFT SIDE	Used to select which side of the Former the touchscreen will control.
10. LEFT SIDE / RIGHT SIDE	This displays either RIGHT SIDE or LEFT SIDE indicating the side of the Former being controlled. It will also flash indicating there is a message displayed on the RUN screen. Will be opposite of number 8.

Operating Elements

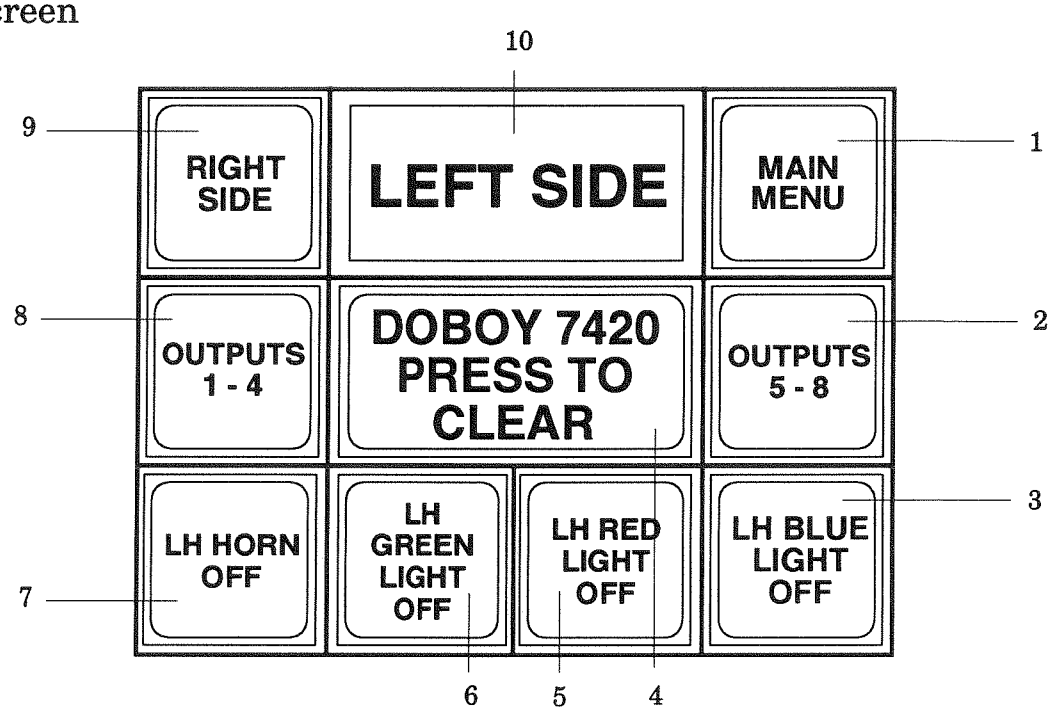
Test 2 Screen



Display Unit	Function
1. MAIN MENU	Leaves the current screen and displays the MAIN MENU screen.
2. OUTPUTS 17 - 20 (Left Side) OUTPUTS 25 - 28 (Right Side)	Leaves the current screen and displays the TEST 3 screen. On the right side of the Former these are labeled 25 - 28.
3. BRAKE IS OFF/ON	Turms the brake ON or OFF. Used for test purposes
4. PRESS TO CLEAR	Used to clear a message. Messages are only displayed on the RUN screen.
5. MAG MOTOR OFF/ON	Turns the magazine motor ON and OFF. Used for test purposers.
6. WATCH DOG OFF/ON	Turns the output for the watchdog circuit which contiually monitors the operation ON and OFF.
7. FLAP #2 OFF/ON	Will activate the minor flap folder air cylinder on the left side of the female head. Used for test purposes or setup. On the right forming head it is flap #4.
8. OUTPUTS 1 - 4 (Left Side) OUTPUTS 9 - 12 (Right Side)	Leaves the current screen and displays the TEST 1 screen. On the right half of the Former these are labeled 9 - 12.
9. RIGHT SIDE / LEFT SIDE	Used to select which side of the Former the touchscreen will control.
10. LEFT SIDE / RIGHT SIDE	This displays either RIGHT SIDE or LEFT SIDE indicating the side of the Former being controlled. It will also flash indicating there is a message displayed on the RUN screen. Will be opposite of number 8.

Operating Elements

Test 3 Screen



Display Unit	Function
1. MAIN MENU	Leaves the current screen and displays the MAIN MENU screen.
2. OUTPUTS 5 - 8 (Left Side) OUTPUTS 13 - 16 (Right Side)	Leaves the current screen and displays the TEST 2 screen. On the right half of the Former these are labeled 13 - 16.
3. BLUE LIGHT OFF/ON	Will turn the blue light ON and OFF. Used for test purposers.
4. PRESS TO CLEAR	Used to clear a message. Messages are only displayed on the RUN screen.
5. RED LIGHT OFF/ON	Will turn the red light ON and OFF. Used for test purposers.
6. GREEN LIGHTOFF/ON	Will turn the green light ON and OFF. Used for test purposes.
7. HORN OFF/ON	Will turn the horn ON and OFF. Used for test purposes.
8. OUTPUTS 1 - 4 (Left Side) OUTPUTS 9 - 12 (Right Side)	Leaves the current screen and displays the TEST 1 screen. On the right half of the Former these are labeled 9 - 12.
8. RIGHT SIDE	Used to select which side of the Former the touchscreen will control. Will be opposite of number 9.
9. LEFT SIDE	This displays either RIGHT SIDE or LEFT SIDE indicating the side of the Former being controlled. It will also flash indicating there is a message displayed on the RUN screen. Will be opposite of number 8.

Notes

Any information concerning this section or in the operation of this equipment can be recorded on this page.

Doboy

Operating Checklist

Table Of Contents - Section 4

Checklist - Starting Production

Troubleshooting

Operating Checklist

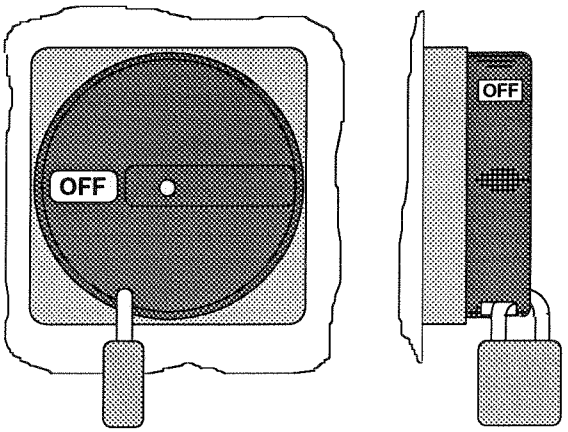
Checklist - Starting Production

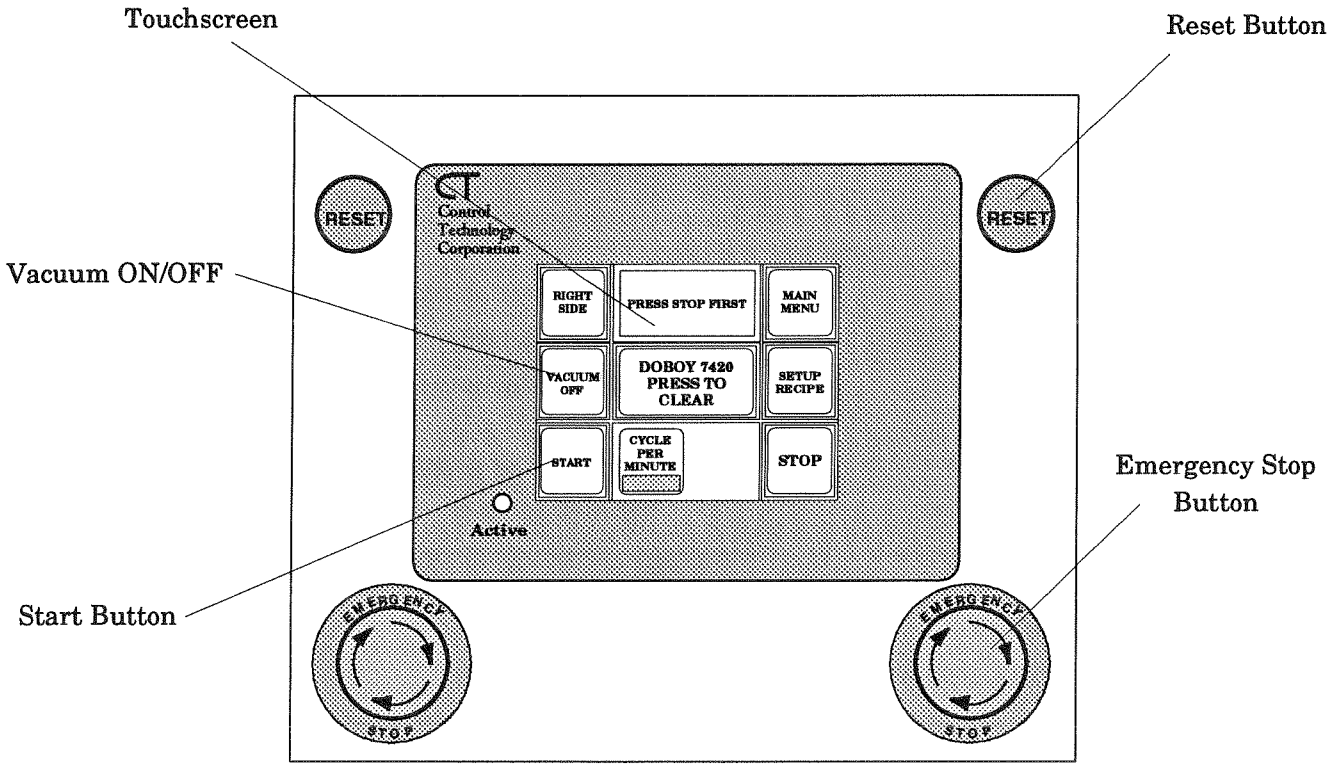
Check Item	Procedure/Remarks
Start-up procedure	
Former checked according to the checklists in the MAINTENANCE Section.	Refer to MAINTENANCE information in Section 7.
All doors closed and guards installed.	Check touchscreenl to make sure there are no messages indicating any door or guard is open.
Supply of Tray/Carton blanks.	Have enough tray/carton blanks on hand for a day's production then load the magazine(s).
Main power disconnect lever on the electrical enclosure door in the ON position.	Lever must be in ON position to supply power to the control circuits.
EMERGENCY STOP button.	All EMERGENCY STOP buttons must be out or the controls will not function.
Main air supply attached.	Turn the air ON by pushing the levers on shutoff control. Adjust main regulator to 80 PSI and female head to 60 PSI.
Select the correct recipe.	Using the touchscreen, select the desired side then the correct recipe for the tray/carton being run. If no recipes has been previously set, refer to the following for information for setup procedure. Screen were explained in Section 3.
Press the RESET button	This must be done in order to engage the motor contactors for the head and shuttle(s). The Former will then enter a "Homing" sequence where the male head will stop in the up position and the shuttle(s) will stop movement near the forming head.
Check the Touchscreen and see if the vacuum is turned ON.	If not, push the button to turn the vacuum ON so there is vacuum to the cups so they will pick tray/carton blanks.
Press the START button on the Touchscreen.	This will start the Former. It will continue to run until the

Operating Checklist

Checklist - Starting Production

Main Disconnect/Lockout





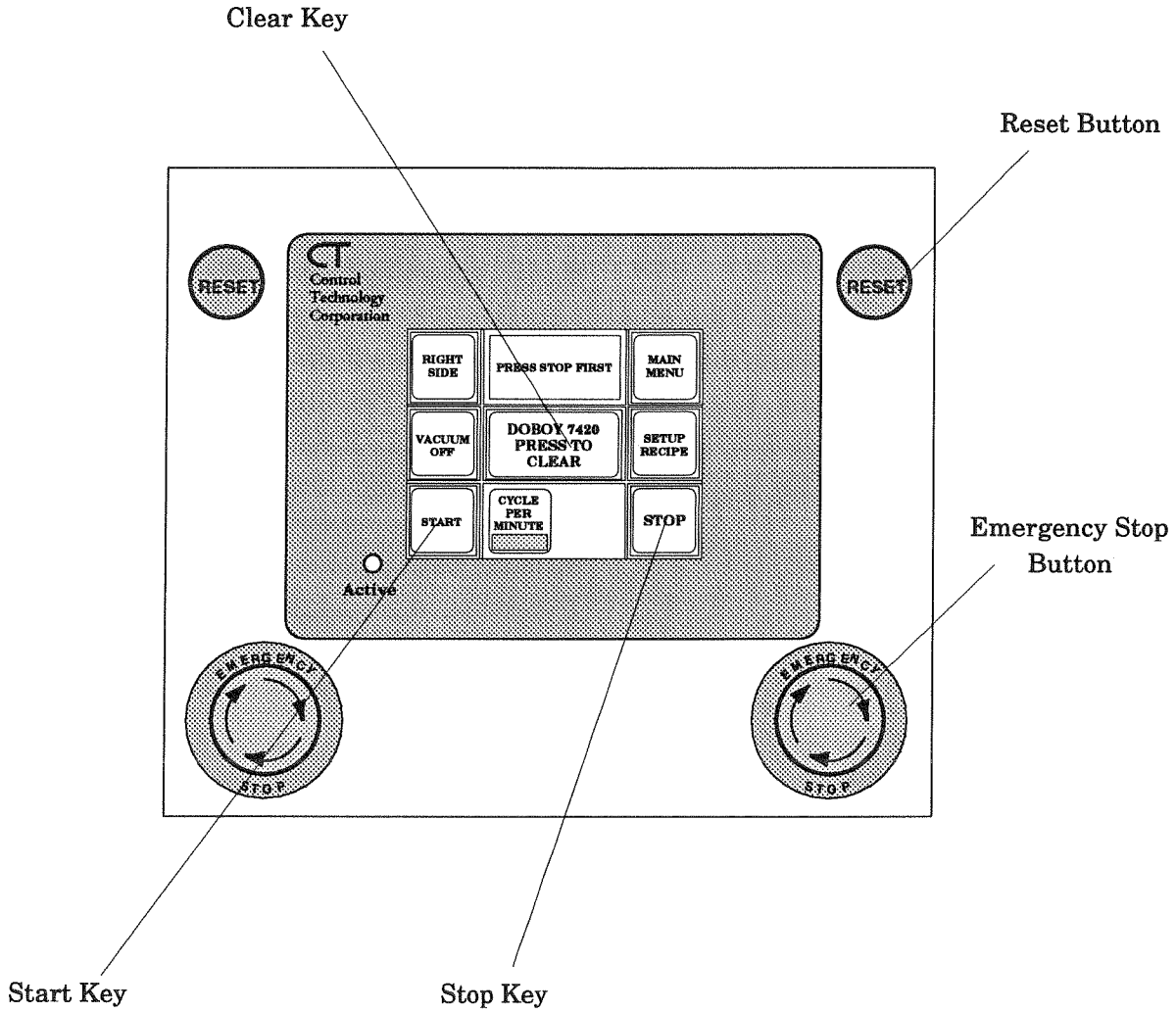
Operating Checklist

Checklist - Starting Production

Check Item	Procedure/Remarks
	STOP key is pushed or a fault condition occurs.
Recipe set-up procedure	
Make sure all EMERGENCY STOP buttons are out. If not, turn or pull button.	These buttons must all be out or the controls will not function.
Press the RESET button.	This must be done in order to engage the motor contactors for the head and shuttle(s). The Former will then enter a "Homing" sequence where the male head will stop in the up position and the shuttle(s) will stop movement near the forming head.
Using the touchscreen, enter the correct password to go to the the SETUP screen.	In the SETUP screens, make all necaessary setup information required to run a specific tray/carton and give it a recipe number. Push the RUN SCREE button to go back to the RUN screen. Screen were explained in Section 3.
Press the START button on the Touchscreen.	This will start the Former. It will continue to run until the STOP key is pushed or a fault condition occurs.
Stopping procedures - Cycle stop.	
Press STOP key.	When this button is pressed the vacuum will be turned OFF for the next cycle and the machine will process the last blank that was picked. It then goes into a "Slow Down" mode so the shuttle and male head stops in the correct positions.
Emergency stop.	
Push EMERGENCY STOP button.	Press an EMERGENCY STOP button or open an interlocked guard and the side of the Former where this action occured will stop immediately. If the EMERENCY STOP button is pushed it will remain in. It must be pulled out or turned and the guard closed before the side

Operating Checklist

Checklist - Starting Production



Checklist - Production

Check Item	Procedure/Remarks
	can be started. The message **Emergency Stop** will be displayed on the touchscreen. **NOTE** Stopping the equipment in this manner will result in tray/carton loss.
Fault stops The following is a list of faults. All of these faults are the same to each side of the Former and will only effect that side. Each will be preceeded with either a "Left Side" or "Right Side". Their explanations are explained in Section 9. Emergency Stop Door Open Fault Door Switch Fault Front Door Open Fault Front Door Switch Fault Main Drive Fault Shuttle Drive Fault Head Axis Following Error Shuttle Axis Following Error Head Jam Shuttle Jam Head Axis Homing Error Shuttle Axis Homing Error Missed Pick Fault Conveyor Jam fault Air Pressure Fault Magazine Motor Overload Press Reset Button Machine Is Homing	There are certain faults that when and if they should happen, will stop the Former immediately. The reason for the stoppage will also be displayed only on the RUN screen on the TOUCHSCREEN. When the fault is cleared, the CLEAR button must be pushed to clear the fault from the screen then push the RESET button. Each side of the Former operates independently of the other so all faults are duplicated for the RIGHT and LEFT sides. If operating on the right side and a fault occurs on the left side stopping the left side, the touchscreen must be switched to the left side before the message will be displayed.

Operating Checklist

Checklist - Production

Check Item	Procedure/Remarks
Press Stop First	
Clearing A Head Jam	
Press the CLEAR button	When this button is pressed the message will be cleared from the RUN screen.
Press the RESET button	This must be done in order to engage the two motor contactors.
Press the MAIN MENU button.	MAIN MENU screen is displayed.
Press the JOG MENU button.	JOG screen is displayed.
Press the JOG HEAD REVERSE button.	JOG HEAD REVRESE screen is displayed.
Press and hold the Press To Jog Head Reverse button.	Former will operate in the reverse direction.
Release the Press To Jog Head Reverse button.	Former will stop then reselect the desired action.
Press RUN SCEEN button.	Former will go back to RUN screen and can be started.
Clearing A Shuttle Jam	
	Move the shuttle by hand insted of going through the JOG menu then remove the blank from the shuttle area.
Press the CLEAR button.	When this key is pressed the message will be cleared from the screen.
Press the RESET button	This must be done in order to engage the two motor contactors.
Press the START button.	Former will Home then start.

Operating Checklist

Troubleshooting

Error Message	Cause	Remedy
EMERGENCY STOP	EMERGENCY STOP button is in.	Pull or turn button so it is out.
DOOR OPEN FAULT	The access door on the side of the Former is open.	Close the open door.
DOOR SWITCH FAULT	Controller observed the side door was opened without dropping the safety circuit.	Press CLEAR button. Check switch operation and alignment of the safety switch.
FRONT DOOR OPEN	The large swing up guard on the fThe drive for the male head has faulted.	Lower and close the open guard.
FRONT DOOR SWITCH FAULT	Controller observed the front door was opened without dropping the safety circuit.	Press CLEAR button. Check switch operation and alignment of the safety switch.
MAIN DRIVE FAULT	The drive for the male head has faulted. Head jam or overload has occurred.	Clear by jogging head in the reverse direction then clearing the head.
SHUTTLE DRIVE FAULT	Shuttle drive has faulted.	Check fuses to amp, check for free shuttle motion.
HEAD AXIS FOLLOWING ERROR	Head axis is not rotating.	Check to see that brake is releasing. Check encoder wiring.
SHUTTLE AXIS FOLLOW-ING ERROR	Shuttle axis not positioned properly.	Check for jam or faulty cables.
HEAD JAM	Blank was not detected leaving the head at the proper time.	Clear blanks from discharge chute area.
SHUTTLE JAM	A blank did not clear the shuttle eye in the proper time.	Clear blank from shuttle area. If no blank in the area, check the operation of the electric eye.

Operating Checklist

Troubleshooting

Error Message	Cause	Remedy
HEAD AXIS HOMING ERROR	During "Homing", the head axis did not see the zero encoder pulse.	Retry "Homing". Check encoder wiring.
SHUTTLE AXIS HOMING ERROR	During shuttle "Homing", the axis traveled more than one complete revolution.	Check for proximity sensor operation. Try re-homing the axis.
MISSED PICK FAULT	Blank was not detected by the eye above the shuttle. Miss three and the Former shuts down.	Check for proper vacuum and electric eye operation.
CONVEYOR JAM FAULT	Blank was not detected leaving the area below the head.	Clear out the blanks below the head.
AIR PRESSUE FAULT	Air pressure switch has detected air pressure is too low for proper operation.	Attach main air or readjust the air pressure.
MAG MOTOR OVERLOAD	Magazine motor has overloaded.	Reset overload in high voltage cabinet then check for jam or wiring.
PRESS RESET BUTTON	Main contactor is de-energized	Press the blue RESET button on the control panel.
MACHINE IS HOMING	Former has entered its homing sequence.	Wait for homing to be completed.
PRESS STOP FIRST	Former must be stopped before going to the MAIN MENU screen from the RUN screen.	Stop the Former.
LEFT SIDE	Indicates the side that is operating. If it is the right side it will say RIGHT SIDE.	None.

Operating Checklist

Troubleshooting

Problem	Possible Cause	Possible Remedy
Tabs on tray/carton blanks tearing or not locking.	1. Tray/carton blank not being positioned properly to female forming head.	Reposition eccentric stops or the shuttle stoke with the handwheel at the rear of the Former.
	2. Female forming head not set up properly or has moved out of adjustment.	Refer to Forming Head portion of Section 8 and readjust. If necessary call Doboy Customer Service.
	3. Parts worn or broken on the forming head.	Refer to Forming Head poriton of Section 8 in the manual and inspect and replace as required.
	5. Incorrect tray/carton blanks.	Replace with the correct blanks.
Tray/carton not stripping from male forming head as it retracts.	1. Tray/carton not being pushed below stripper fingers.	Readjust the stripper fingers. Refer to Forming Head portion of Section 8.
	2. Stripper fingers not snapping in above the tray/carton to hold it properly.	Check for broken spring and replace as necessary. Refer to Forming Head portion of Section 8.
Vacuum cups not picking tray/carton blanks from the magazine.	1. No vacuum.	Check main air regulator and vacuum lines.
	2. Faulty vacuum solenoid mounted on upper cross member.	Check solenoid and valve and replace as necessary.
	3. Magazine not set properly for tray/carton blank.	Refer to Magazine portion of Section 8 for adjustments.
	4. Worn or ripped vacuum cups.	Replace.
	5. Not programmed properly.	Check and reprogram as necessary.
	6. Screen still installed in new	Remove.

Operating Checklist

Troubleshooting

Problem	Possible Cause	Possible Remedy
	vacuum cup.	
	7. Worn rakes on end of magazine at pickoff pont.	Loosen mounting screws and rotate to unworn surface, or replace.
Former stopping or will not start.	1. Main drive overload.	Inspect and remove the jam or obstruction then push the RESET button.
	2. Guard door is open.	Close safety interlocked guard door.
	3. EMERGENCY STOP button is in.	Pull or turn the EMERGENCY STOP button so it is out.
	4. Not reset.	Push RESET button.
	5. Low air pressure.	Check for proper air pressure.
Trays not being folded properly.	1. Female forming head out of adjustment.	Readjust the head.
Tray/carton blanks falling off the end of the magazine.	1. Holding fingers, top roller or rakes broken or out of adjustment.	Inspect, radjust and/or replace as necessary.
Magazine motor not moving tray/carton blanks forward.	1. Faulty photoelectric eye.	Check and replace as necesary.
	2. Faulty motor.	Check and replace as necesary.

Operating Checklist

Notes

Any information concerning this section or operation of this equipment can be recorded on this page.

Cleaning

Table Of Contents - Section 5

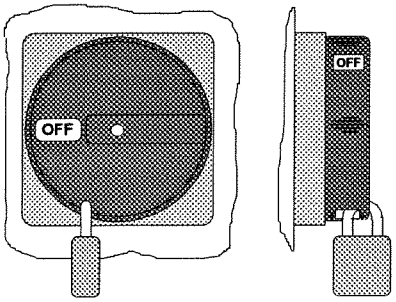
General Safety Information

General Instructions

Cleaning

General Safety Information

Main Disconnect/lockout



This lockout is located on the door of the electrical enclosure on the left side of the Tray/Carton Former. Its purpose is to disconnect all electrical power to the Former and the control circuits. The power can be locked out according to OSHA Standard 1910.147 by rotating to the OFF position then placing a lock through the lockout as shown.

Cleaning

General Instructions

Safety Precautions

⚠ DANGER

Whenever cleaning this equipment, always lockout the main power source with the disconnect on the door of the electrical enclosure per OSHA Standard 1910.147. This precaution must be taken to avoid the possibility of a serious shock hazard, or an accidental cycling of the Former which could cause a very serious injury. It is also recommended that the air supply be disconnected before beginning.

To prevent malfunctions and damage to the equipment, each time it is cleaned it must be checked for correct reassembly and for any cleaning tools, supplies etc. left lying in or on the equipment.

Cleaning Intervals

Cleaning intervals depend upon the product and the operating conditions.

The equipment must be cleaned in the manner described on the following pages.

Certain areas of the equipment especially prone to soiling should be cleaned immediately as required.

Cleaning Supplies

Industrial vacuum cleaners, cleaning cloths, dusters, brushes and industrial soap or product compatible cleaning agents are required for cleaning. Also an air hose to blow out any product residue from the Former. The Former is equipped with an air hose by the main air connection at the rear of the Former.

Cleaning

General Instructions

Daily/Weekly Cleaning Procedure

These procedures are recommended for an 8 hour operation. For a shift operation, these cleaning tasks should be performed after every shift.

All parts which come into contact with the product must be cleaned. In general, a moist cloth should be used. For additional tools, refer to the tables.

Assembly	Cleaning Tool	Cleaning Procedure
General machine	Air hose	Blow all debris clear of the Former. Do not use a high pressure hose. Use hose at rear of Former.
	Damp cloth	Wipe all guards.
	Brush	Sweep all debris from around and beneath the Former.
Shuttle tray/carton blank guides.	Industrial soap solution.	Clean any buildup from the guides then wash down as required.
Deck plates beneath magazine.	Vacuum cleaner.	Vacuum all tray/carton residue from the deck plates and Former.
Forming heads.	Industrial soap solution.	Clean any buildup from the forming head.

Cleaning

General Instructions

Monthly Cleaning Procedure

These procedures are recommended for an 8 hour operation. For a shift operation, these cleaning tasks should be performed more often.

Proceed with Daily/Weekly cleaning tasks first.

Assembly	Cleaning Tool	Cleaning Procedure
Electric eyes	Soft cloth.	Clean the lenses.
Proximity sensors	Soft cloth.	Clean the sensor ends.

Cleaning

Notes

Any information concerning the cleaning or operation of this equipment can be recorded on this page.

Lubrication

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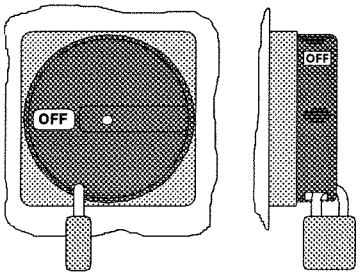
Lubrication

General Safety Information

Main Disconnect/lockout



This lockout is located on the door of the electrical enclosure on the left side of the Former. Its purpose is to disconnect all electrical power to the Former and control circuits. The power can be locked out according to OSHA Standard 1910.147 by rotating to the OFF position then placing a lock through the hole in the lever as shown.

Lubrication

Lubrication Instructions

Safety Precautions

⚠ DANGER

When lubricating this equipment, always lockout the main power source with the disconnect on the door of the electrical enclosure per OSHA Standard 1910.147. This precaution must be taken to avoid the possibility of a serious shock hazard, or an accidental cycling of the Former which could cause a very serious injury. It is recommended that the air supply also be disconnected before beginning.

To prevent malfunctions and damage, each time the equipment is lubricated it must be checked for correct reassembly and for any tools, supples etc. which may be left in or on the equipment. See instructions on next page.

Lubrication

Lubrication Instruction

Lubrication Areas

All the bearings are sealed and require no lubrication except for three bearings. There is one bearing on each side of the male head where it slides up and down on the rods and one bearing on the eccentric drive for the male head where it slides sideways.

Lubrication Schedule

Grease approximately every 1000 operating hours.

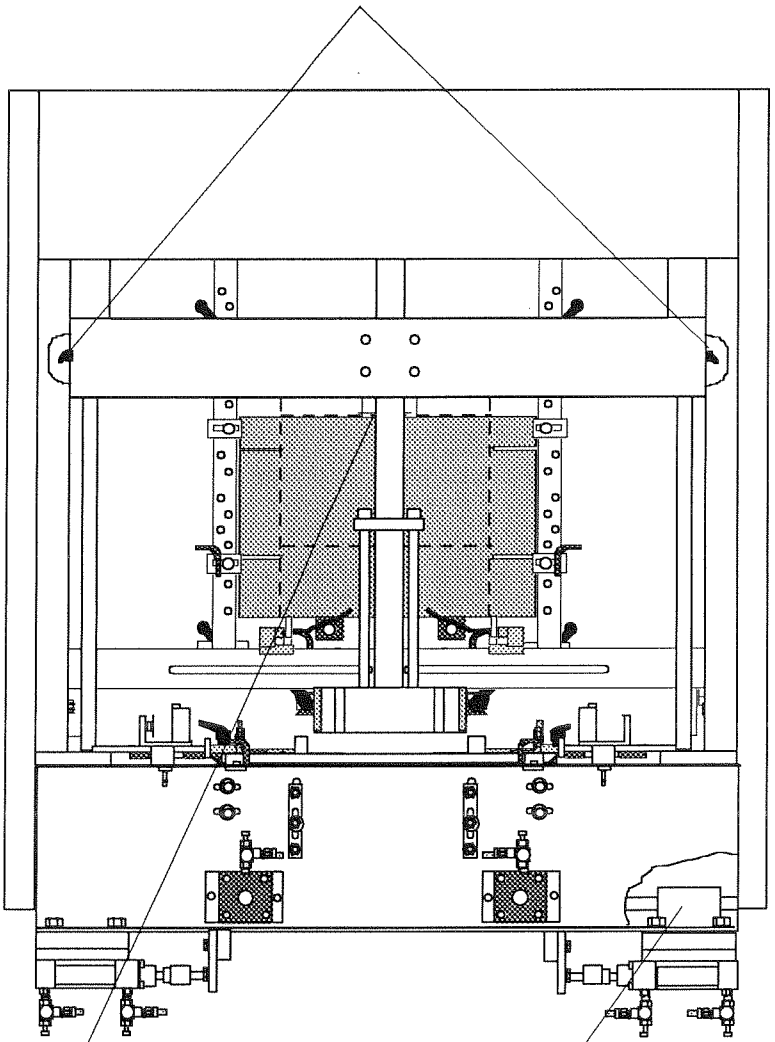
One or two small pumps is sufficient. ***Do not overgrease or the seals will give***. If this happens, it will cause the bearings to leak creating a mess. The bearings will also have to be greased at more frequent intervals.

Lubricant

Use LUBRIKO HI grease or equivalent. See page 6.5 for lubricant specifications.

Lubrication

Lubrication Instruction



Lubricant Specifications

LUBRIKO HI GREASE
MASTER LUBRICANTS CO.
(Doboy Part No. 273164)

TYPICAL CHARACTERISTICS	
CONSISTENCY	
ASIM PENETRATION @ 77° F, WORKED	265-295
ASIM DROPPING POINT, DEGREES F	480 MIN.
THICKENER TYPE	ALUMINUM COMPLEX
THICKENER CONTENT, %	8 - 10
CORROSION TEST	PASS #1
WATER STABILITY:	
PENETRATION AFTER 1,000,000 STROKES:	
10% WATER	400 (EXCELLENT)
OXIDATION BOMB TEST:	
MAXIMUM DROP IN 100 HOURS	#5 PSI
ADDITIVE TYPE	ZINC OXIDE
ADDITIVE CONTENT, %	APPROX. 5
OIL:	
VISCOSITY @ 100° F, SUS	300 - 350
VISCOSITY INDEX	90
POUR POINT, F°	0
COMPATIBILITY:	
PENETRATION AFTER 1,000,000 STROKES:	
WATER - 10%	400
WATER - 5%	385
TOMATO JUICE - 50%	404
BEER - 50%	349
PINEAPPLE JUICE - 50%	349
SEA WATER - 50%	396
DETERGENT (0.5% SOLUTION) - 50%	355
5% ACETIC ACID - 50%	385

Lubrication

Notes

Any information concerning this lubrication section or operation of this equipment can be recorded on this page.

Mechanical Checks

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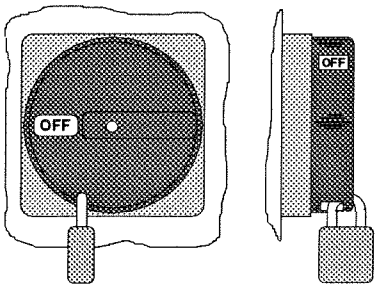
Mechanical Checks

General Safety Information

Main Disconnect/lockout



This lockout is located on the door of the electrical enclosure on the left side of the Former. Its purpose is to disconnect all electrical power to the Former and control circuits. The power can be locked out according to OSHA Standard 1910.147 by rotating to the OFF position then placing a lock through the hole in the lockout as shown.

Mechanical Checks

Maintenance Instructions

Safety Precautions

⚠ DANGER

Whenever doing maintenance on this equipment, always lockout the main power source with the disconnect on the door of the electrical enclosure per OSHA Standard 1910.147. This precaution must be taken to avoid the possibility of a serious shock hazard, or an accidental cycling of the Former which could cause a very serious injury. It is also recommended that the air supply by disconnected before beginning.

To prevent malfunctions and damage to the Former, after performing maintnance tasks, the equipment must be checked for correct reassembly and for any tools, supplies etc. left lying in or on the equipment.

Maintenance Intervals

Maintenance intervals depend upon the product and the operating conditions.

The equipment must be maintained in the manner described on the following pages.

Mechanical Checks

Maintenance Instructions

Daily Checklist

Item	Check For	Action
Vacuum System	Ripped or frayed vacuum cups. Broken springs on vacuum cups.	Replace. Replace
Air System	Water in filter. Clogged filter.	Drain. Replace filter.
Frame & Guards		Clean
Gear Boxes	Oil leaks	Replace seals.

Weekly Checklist (Do Daily checklist first).

Item	Check For	Action
Vacuum System.	Damaged vacuum hoses.	Replace.
Slide Shafts & Bearings.	Wear.	Wipe clean and lubricate.
Magazine Chain.	Tightness and wear.	Tighten or replace.
Rod Ends.	Wear.	Replace.
Bearings	Wear	Replace or lubricate.
Female Forming Head(s)	Damaged or broken compression springs.	Replace.

Mechanical Checks

Maintenance Instructions

Monthly Checklist (Do daily and weekly checklist first).

Item	Check For	Action
Doors and Guards.	Damage.	Replace or paint.
Slide Shafts & Bearings.	Wear.	Replace or lubricate.
Gear Boxes	Oil level. (Not necessary if not leaking).	Fill.
Magazine Chain	Wear	Replace.

Yearly Checklist (Do Daily, Weekly & Monthly checklists first).

Item	Check For	Action
Air System.	Filters.	Replace elements.
Gear Boxes		Change oil. Refer to manufacturers information for recommended oil to use.

Mechanical Checks

Notes

Any information concerning this section or operation of this equipment can be recorded on this page.

Functional Descriptions / Settings

Table Of Contents - Section 8

Table Of Contents - Section 8

Electric Eyes

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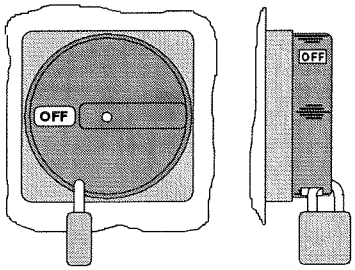
General Safety Information

Main Disconnect/lockout



This lockout is located on the door of the electrical enclosure on the left side of theFormer. Its purpose is to disconnect all electrical power to the Former and control circuits. The power can be locked out according to OSHA Standard 1910.147 by rotating to OFF position and placing a lock through the hole in the lockout as shown.

Safety Instructions

Safety Precautions

⚠ DANGER

Whenever adjusting this equipment, always lockout the main power source with the disconnect on the electrical enclosure door per OSHA Standard 1910.147. This precaution must be taken to avoid the possibility of a serious shock hazard, or an accidental cycling of the Former which could cause a very serious injury. It is also recommended that the air supply be disconnected before beginning.

To prevent malfunctions and damage to the Former, each time any of the following operations are performed, the equipment must be checked for correct reassembly and for any tools left lying in or on the equipment.

Functional Descriptions / Settings

Magazine

Explanation

The type of magazine used on this Former is a Motor Driven style which consists of one long and one short side guide, a pair of chains, an AC motor, an electric eye and an adjustable picture frame at the pick-off point containing the rakes, holding fingers, top holdback roller and holddown. With this style magazine, the supply of tray/carton blanks are positioned on the two chains, against the side guide with the leading blank down an incline and against the fingers on the picture frame. As the blanks are removed by the vacuum cups, the blanks on the inclined section of the magazine move down. When enough tray/carton blanks are removed and the electric eye sighting across this area becomes unblocked, the controller pulses the motor and the two chains move forward. As they move forward, the leading tray/carton blanks move down the inclined area and the eye becomes blocked again. When blocked, the controller stops pulsing the motor. Through this operation, a continuous supply of blanks will be delivered to the picture frame for removal by the vacuum cups.

Rakes: These are located at the bottom of the magazine by the pick-off point. Their purpose is to allow the vacuum cups to pick only one tray/carton blank at a time. They should be positioned so the back edge is even with, or slightly behind the holding fingers and rollers. These have been factory set and should not have to be touched.

Holding Fingers: These are located on the upright frame bars on each side at the lower end of the magazine where the tray/carton blank is picked off by the vacuum cups. Their purpose is to hold back the tray/carton blanks in the magazine and should be positioned so they extend approximately 3 to 10mm (1/8 to 3/8 inch) in front of the tray/carton blanks. There are normally three on each side and all of them may or may not be used.

Holddown Crossbar: This is the bar located at the top of the magazine at the pickoff point that mounts the holdback roller and holdown. This bar can be positioned in different sets of holes to obtain the proper height for the tray/carton to be formed. To move. simply loosen the locking lever on each side and reposition. Be sure to tighten the locking levers securely.

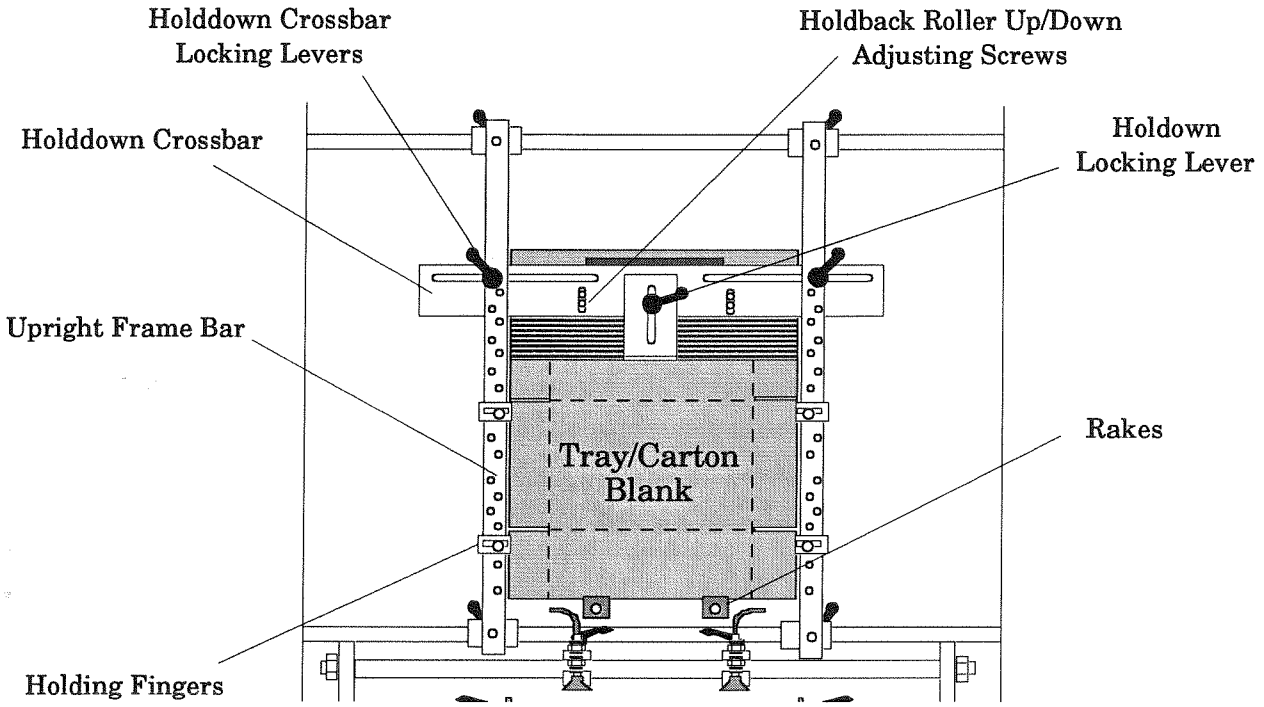
Holdback Roller: This is located at the top of the tray/carton blank and on the holddown crossbar. The purpose of this roller is to hold the tray/carton blanks on the magazine back until the electric eye is unblocked and calls for more blanks to the vacuum cups. It can be adjusted up or down as necessary for best operation by loosening the capscrews in the crossbar and sliding in the slots. Be sure to retighten securely.

Hold-down: This is located on the holddown crossbar and should be positioned so it is approximately 1mm (1/32 inch) above the tray/carton blanks in the magazine. If this is set too high, the rakes located on the bottom of the magazine may not hold the next tray/carton blank back properly. It must also be positioned parallel

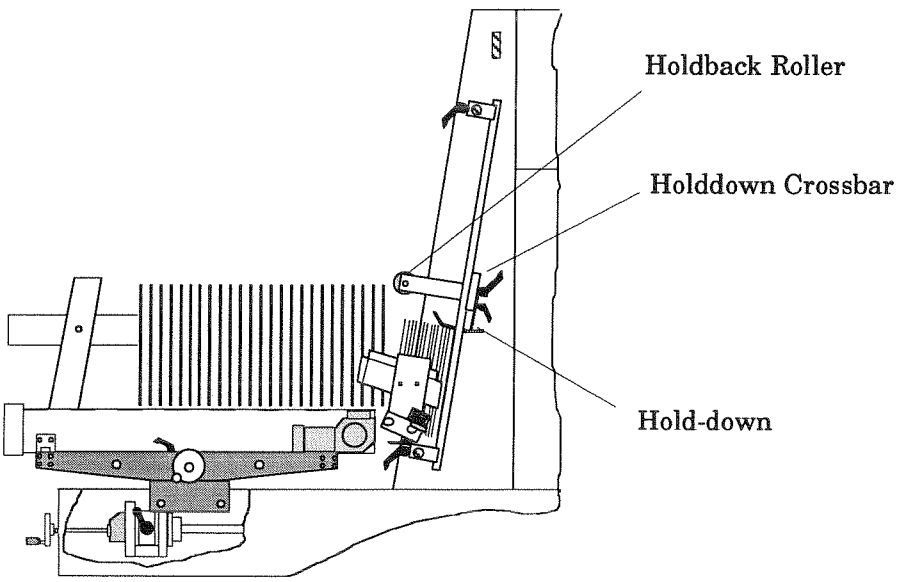
Functional Descriptions / Settings

Magazine

Front view



Left Side View



Magazine

to the top of the tray/carton blanks. To adjust, loosen the locking lever and slide in the slot. **This guide must not be positioned until the top roller and side guides have been positioned properly.**

Upright Frame Bars: These are the vertical bars on each side of the magazine at the pick-off point. They can be adjusted in and out to the width of the tray/carton blank. To adjust, loosen the two upper locking levers, the two lower levers and the two levers in the holddown crossbar and slide on the two shafts. Located on the two shafts are scales which can be used to make sure the pick-off point remains centered. These settings should be recorded in the Upright Frame In & Out Positioan column on the CHANGEOVER SHEET in Section 9 for future reference if more than one size tray/carton is to be run.

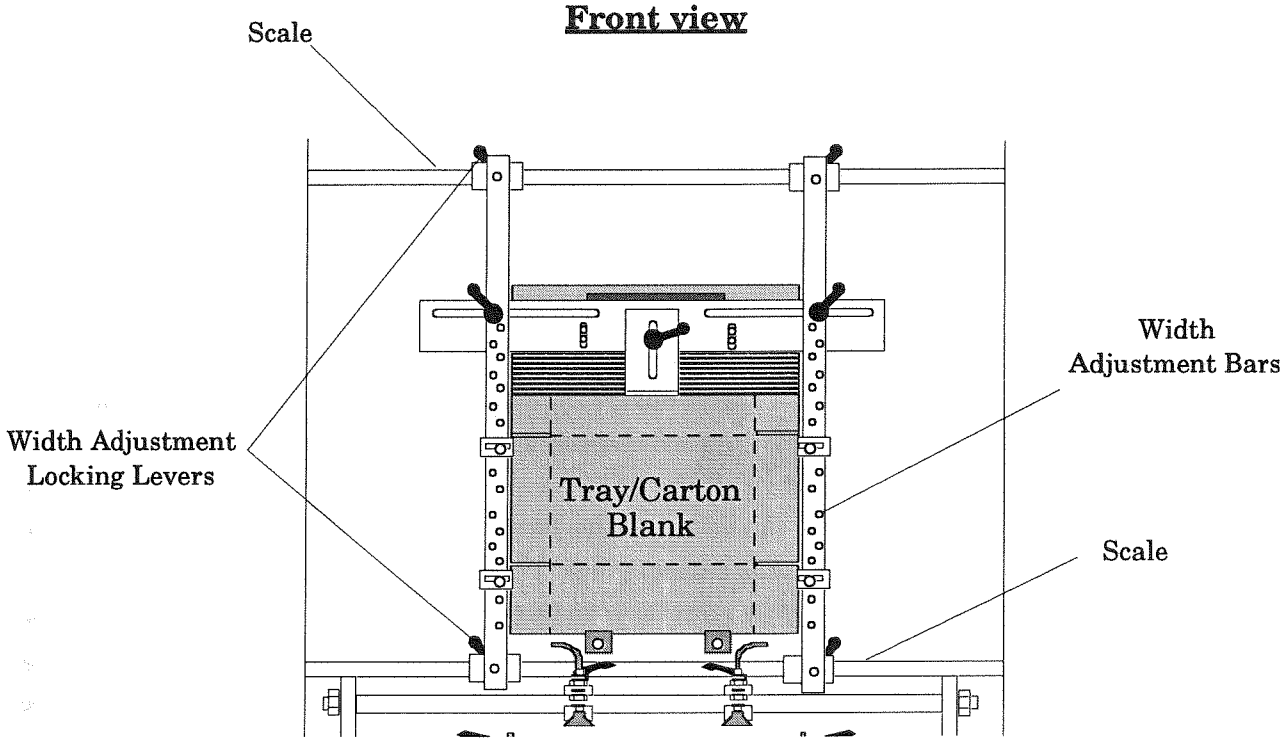
Long Side Guide: This is located opposite the loading side of the magazine. It must be positioned so the tray/carton blank is centered on the magazine. To adjust, loosen the locking lever and turn the handwheel on the side of the magazine. It can also be adjusted up and down by placing in a different setof holes. If only running one side tray/carton once this set it should not have to be touched. Record position on the appropriate column on the CHANGEOVER SHEET for future reference.

Short Side Guide: This is located on the loading side of the magazine and at the discharge end by the picture frame. It must be positioned so the tray/carton blank is centered on the magazine. To adjust, loosen the locking lever and slide on the shaft. It can also be adjusted up or down by placing in a diffeent set of holes. If only running one side tray/carton, once this set it should not have to be touched. Record position on the appropriate column on the CHANGEOVER SHEET for future reference.

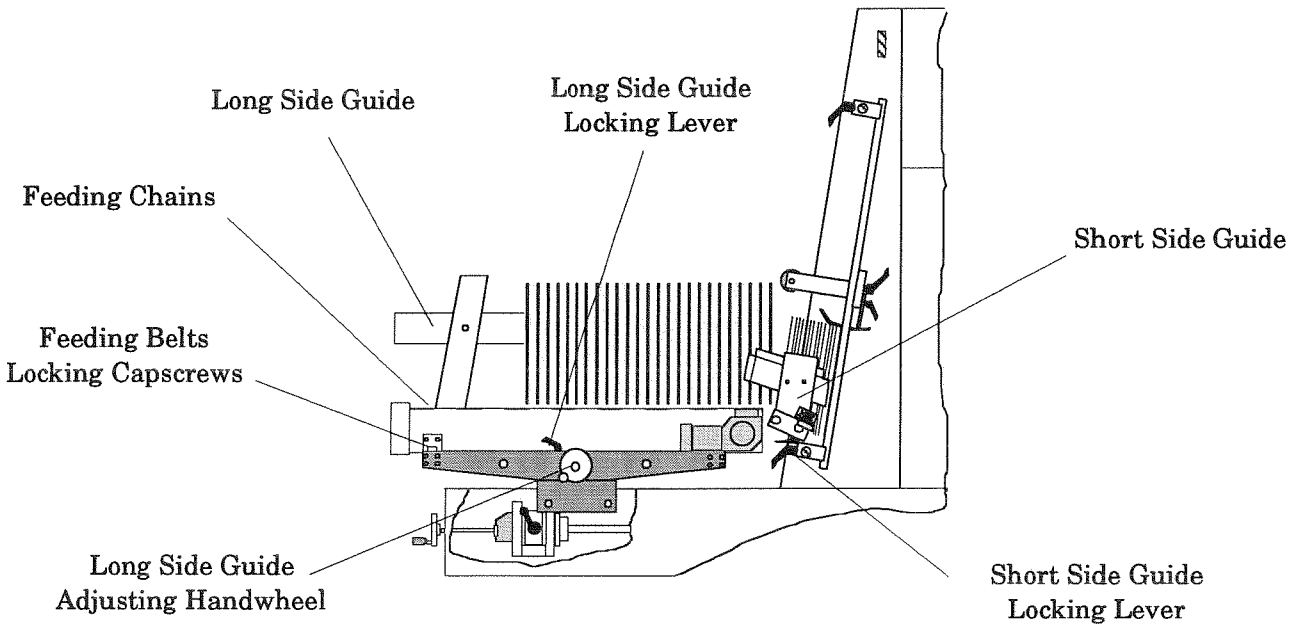
Feeding Chains: These feed more tray/carton blanks to the inclined portion of the magazine when the motor starts. They can be moved in or out to the desired position for the tray/carton blank being run. If only running one size tray/carton blank once these are set they should not have to be touched. If adjustment is necessary, simply loosen the locking capscrews in the two brackets for each belt and slide in the mounting bars. Each side should be positioned an equal distance from the centerline of the magazine. Be sure to retighten the capscrews securely.

Magazine

Front view



Left Side View



Shuttle

Explanation

This is the unit that receives the tray/carton blanks from the vacuum cups and moves them forward and places them on the female forming head. The shuttle operates with a servo drive motor, a chain equipped with a pusher which is driven around two sprockets and a proximity sensor. There is also a pair of tray/carton guides.

Operation

The shuttle is powered by a servo motor. As the motor rotates, the pusher moves forward toward the female forming head. As the chain rotates around the sprocket the cam on the chain slides across underneath the pusher and carries it back toward the magazine. The shuttle is electronically geared to the head except during "Homing", single axis jogging and repositioning after a fault.

During the "Homing" sequence, the motor rotates forward until the proximity sensor is tripped. It continues to rotate until the proximity sensor is clear. The controller then positions the shuttle at a point where it is just slightly back from its most forward travel.

Shuttle Pusher Position

When the shuttle pusher is all the way forward the tray/carton blank must be positioned up against the eccentric stops on the female forming head. If it is not, the position can be adjusted by loosening the locking lever and turning the handwheel at the rear of the Former. When adjusted properly, retighten the locking lever securely. When positioned correctly, record the numbers in the handwheels mounting bracket onto the Shuttle Position column on the CHANGEOVER SHEET in Section 9 for future reference for ease of setup when running the same tray/carton blanks.

Shuttle Chain Tension

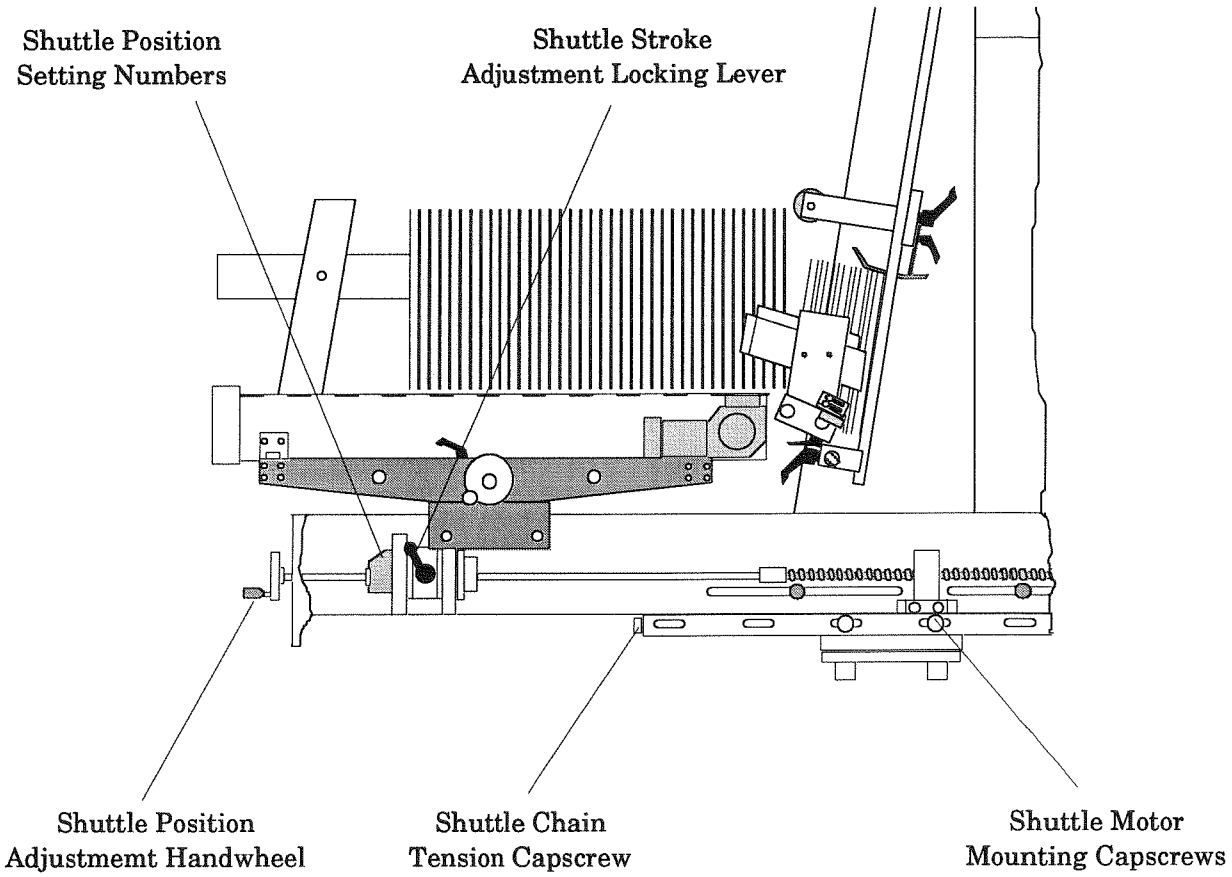
After a period of time the shuttle drive chain may stretch and require tensioning. To do this, simply loosen the tensioning screw jamnut then turn the tensioning capscrew at the rear of the mounting bracket. Retighten the jamnut securely.

⚠ CAUTION

When adjusting the tension, avoid excessive tension. This will cause premature wear on the sprockets and chain. Only enough tension to keep the chain snug is sufficient.

Functional Descriptions / Settings

Shuttle



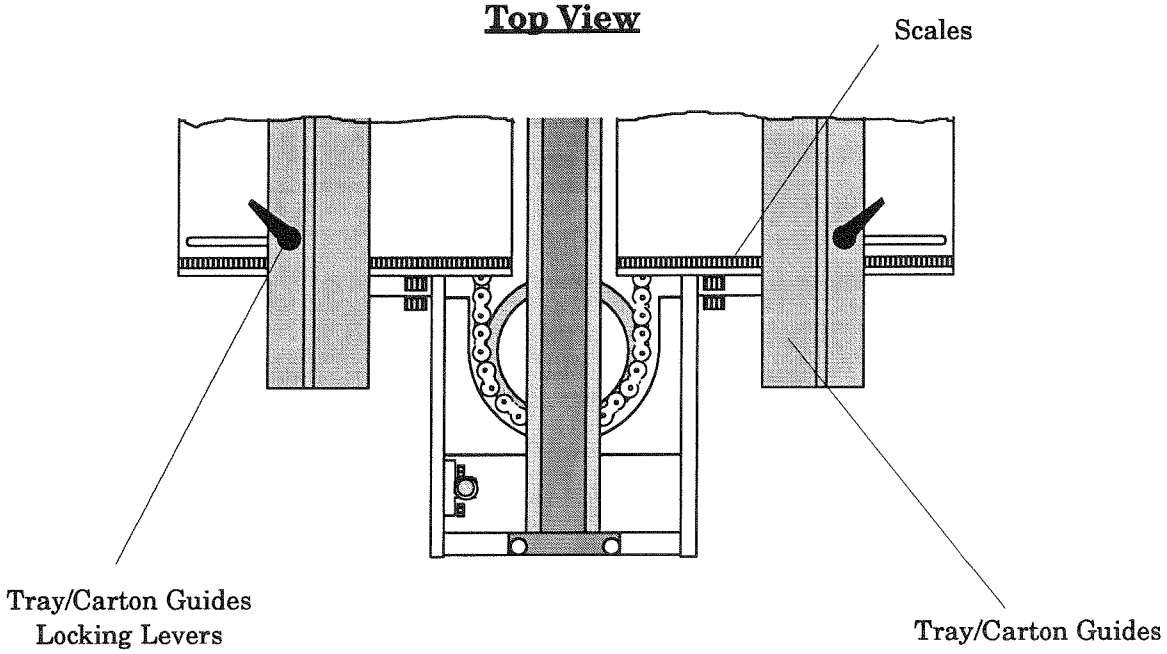
Shuttle

Tray/carton Guides

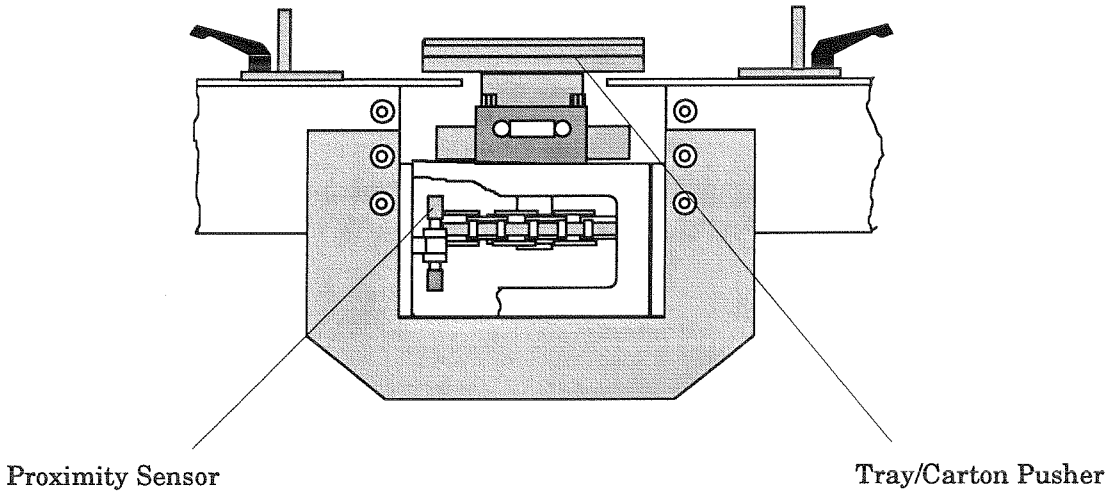
These are mounted on the deckplates and their purpose is to guide the tray/carton blanks so they are centered on the female forming head. They can be adjusted in and out for different width tray/carton blanks by loosening the locking levers and sliding in the slots. The scales can be used to make sure the product guides are centered. These dimensions should also be recorded on the Shuttle Guuide Position column on the CHANGEOVER SHEET in Sectin 9 for future reference for ease of setup for the tray/carton blank size. Retighten securely if adjusted.

Shuttle

Top View



Front View



Vacuum System

Explanation

The vacuum system is used to pick the tray/carton blanks from the magazine and place them on the shuttle for placement into the forming heads. The vacuum is being supplied by converting air pressure to vacuum with the small venturi mounted on the upper bar above the magazine and a solenoid. When the vacuum cups are picking a tray/carton blank, the solenoid will be in one position so the air is being exhausted out the muffler. When the cups have removed the blank and are positioned above the shuttle, the solenoid reverses, shutting off the vacuum. A second solenoid then energizes momentarily and air is blown out of the vacuum cups. The timing of the ON and OFF of the vacuum is done in the Formers electronics and set with the key pad on the control panel. Refer to the RECIPE SHEET in Section 9 for the Factory ON and OFF settings.

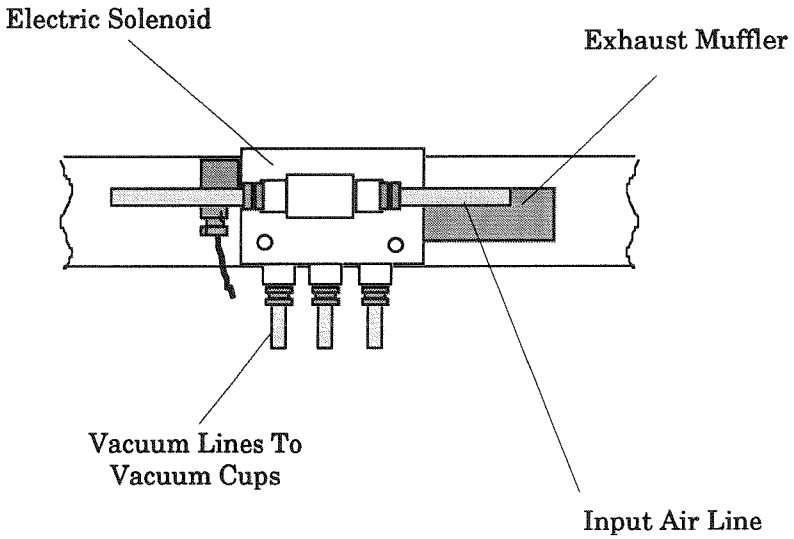
Vacuum Cups

To ensure a proper pick-up, the vacuum cups are spring loaded so they will compress slightly when they move in to pick a tray/carton blank from the magazine. The cups should be positioned so the vacuum heads are compressed approximately 3 to 6mm (1/8 to 1/4 inch) when the cups are all the way against the tray/carton blank. To adjust the cups in or out, alternately loosen and tighten the locknuts on each side of the mounting bar. After adjusting both locknuts must be tight against the bar.

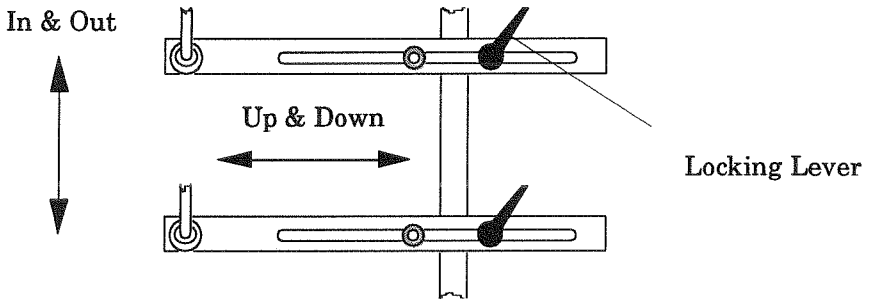
The pick-off position of the cups on the tray/carton blank can also be changed by adjusting the cups in the mounting bars. To move back and forth sideways, loosen the locking lever and slide on the bar. To move up or down, loosen the locking lever and slide in the slot. Be sure the locking lever is tightened securely after adjusting. The position of the cups should be recored on the appropriate column on the CHANGEOVER SHEET in Section 9.

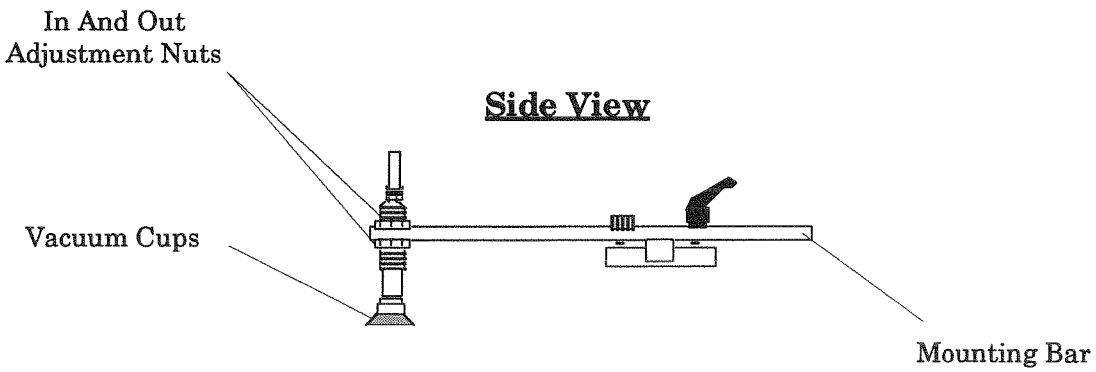
The vacuum cups can be changed if they should become damaged by simply unscrewing them from the end of the vacuum head and screwing the new ones in.

Vacuum System



Top View





Forming Heads

Explanation

This is the area which receives the tray/carton blanks from the shuttle and does the folding and forming of the tray/carton blanks. It consists of an upper male head and a lower female head. The operation of the forming head was explained in the Sequence Of Operation in Section 1. On this Model there two male and two female heads and they are both slightly different but operate in the same manner. Each side can be operated independently of the other. One side forms the tops of the tray/cartons and one forms the bottoms. If only running one size tray/carton, once setup at the factory it should require no further adjusting unless a part is replaced or becomes loose. The detail at the right shows a Simplex Style III female head which operates with air cylinders

⚠ WARNING

Before performing any setup or adjustment procedures, push an EMERGENCY STOP button and leave it in. Next disconnect and lock out the power source with the lever on the enclosure door according to OSHA Standard 1910.147. Also disconnect the air supply.

Upper Male Folding Unit

The drive arms for the upper male heads of this folding assembly have been pinned and do not require any adjusting. They will however, require changing to new heads for each tray/carton size.

Lower Female Folding Unit

Simplex Style III

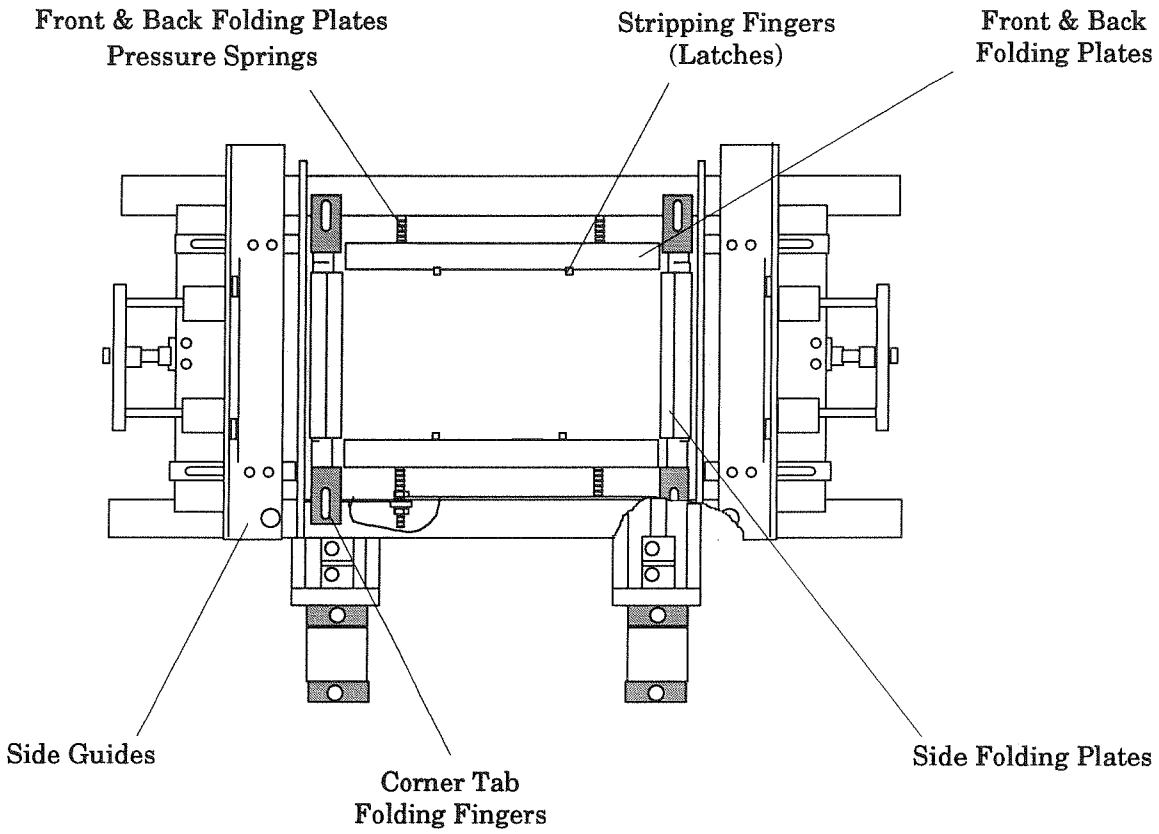
On this style, the female half of the folding assembly consists of two side guides, two side plates, a front and back spring loaded pressure plate, four corner tab folders, (one in each corner at the top), two tray/carton eccentric stops, two sets of stripper fingers, air cylinder operated trap gates and rotary air cylinder operated minor flap locking tab folders.

Side Guides: These are normally the same guides as the shuttle but can be separate. They guide the tray/carton blanks into position above the female head openings and up against the stops. They must be positioned so when the male heads come down the blank is in the proper position to be folded. The guides must be positioned so each corner of the male head is aligned so it is exactly in the corner of the blank or the corner will not fold properly. These have been factory set and should not have to be moved unless the tray/carton size changes.

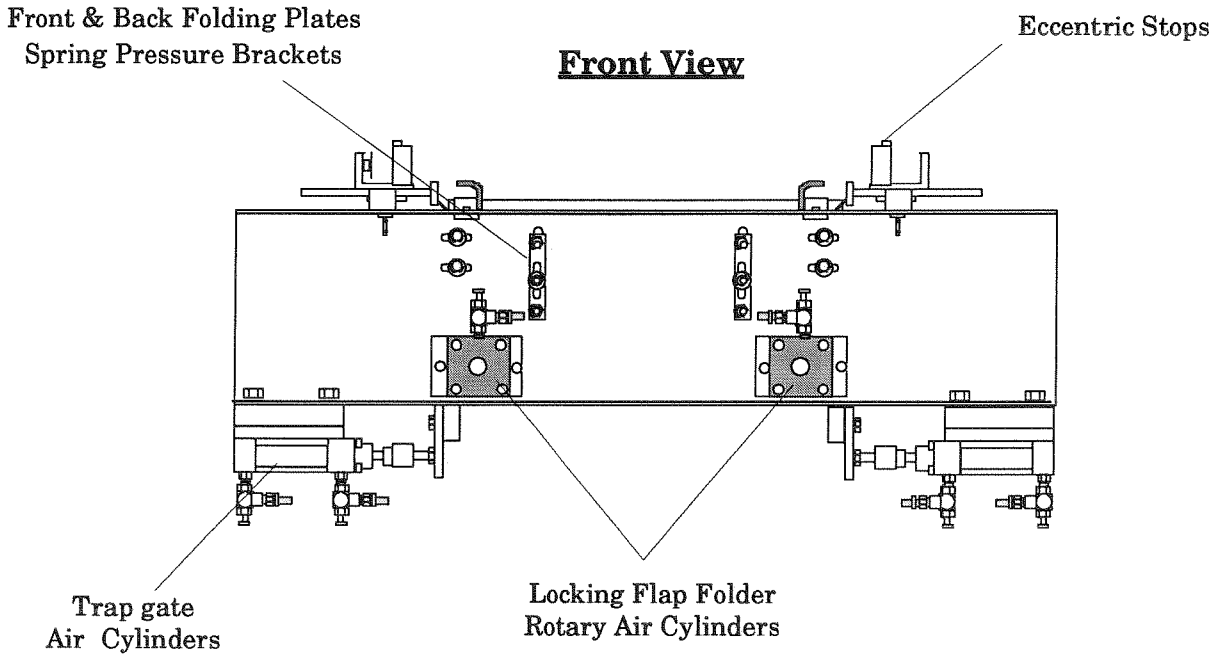
Functional Descriptions / Settings

Forming Heads

Top View



Front View



Forming Heads

Eccentric Stop: These must be positioned so they stop the blank in the correct position. To adjust, loosen the screw on the top of the eccentric and rotate as necessary. Both eccentrics must be positioned the same and once set should not have to be repositioned.

Side Folding Plates: These can be adjusted in and out to align them properly with the upper male units. On this style, both sides are adjusted by loosening the capscrews in the front and back mounting plates and sliding in the slots. The clearance for the side folding plates must be at least the thickness of the tray/carton material. These plates are not adjustable up or down.

Front And Back folding Plates: These are spring loaded and can be adjusted up and down and in and out. They should be set slightly higher than the side plates so the front and back start to fold first. To move up or down, loosen the locknuts in the center of the pressure spring mounting brackets in both the front and back and slide in the slots. Make sure both the front and back plates are positioned at the same height then retighten the locknuts securely. These have been factory set and should not have to be adjusted.

The pressure on each spring loaded plate can be adjusted for fine tuning by turning the top and bottom locknuts on each of the pressure springs in the pressure spring brackets. By turning the nuts out (looseening), the plate will move in and the pressure on the tray/carton blank will be increased. By turning the nuts in (tightening), the plate will be pulled out and the pressure on the tray/carton blank will be decreased. These must be positioned so the tray/carton folds properly on the score lines and does not rip or tear. This clearance must be at least the thickness of the tray/carton material all the way around. These have been factory set and should not have to be adjusted.

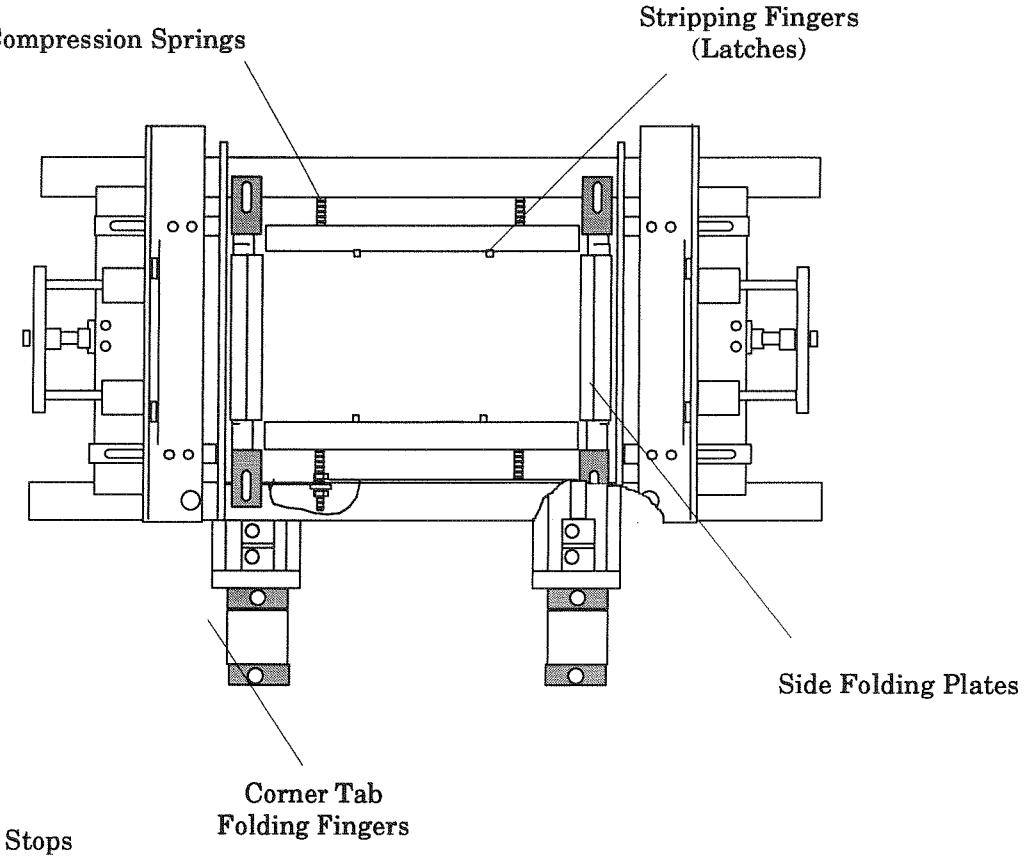
Corner Tab Folding Fingers: These are the tabs in each upper corner and are used to break the corner tabs first. These are adjustable by loosening the capscrews in the mounting brackets and sliding in the slots. Retighten securely. These have been factory set and should not have to be adjusted.

Stripper Fingers: These are the fingers (latches) located near the bottom in the front and back pressure plates. These may or not be used. If they are, their purpose is to snap in above the top of the tray/carton to keep it from following the male head back up when it retracts. These can be adjusted slightly by loosening the flathead capscrews in the face of the pressure plates and sliding slightly. These have been factory set and should not have to be touched.

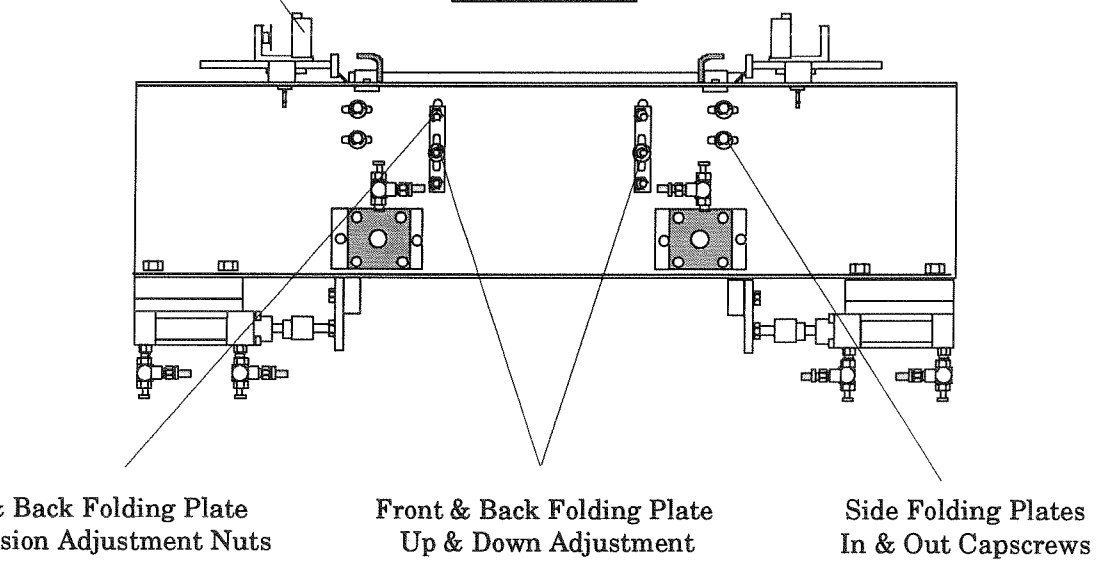
Trap Gates (Support Ledges): These are located at the bottom of the female head and are used as supports for the tray/carton after the male head retracts. They operate with an air cylinder on each side and their in and out position is adjustable by loosening the capscrews in the mounting bracket and sliding in the slots. They must be positioned so when the cylinders are extended, the vertical portion of the gates

Forming Heads

Top View



Front View



Forming Heads

are just up to the tray/carton and hold it secure. Do not position the gates too far in or the tray/carton blank will hit them on the way down and jam. They will also not retract far enough and the formed tray/carton will not clear when its pushed out by the next tray/carton being formed.

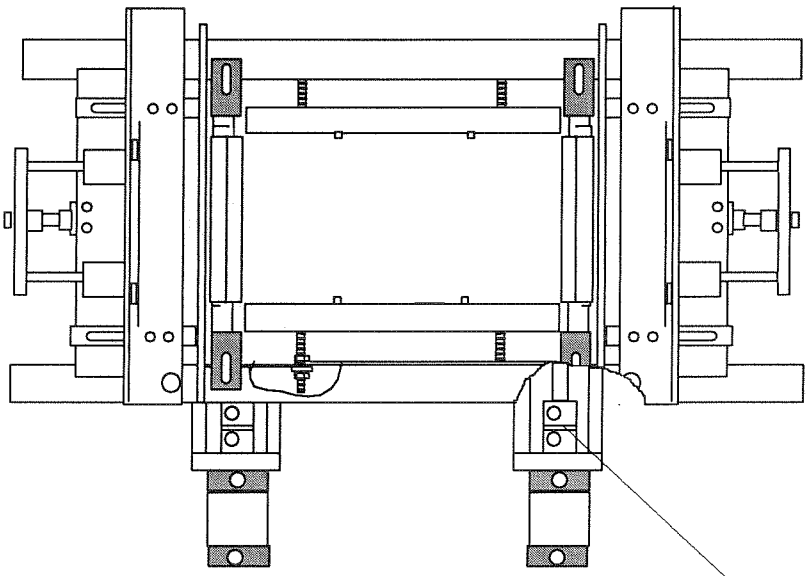
The up and down position of the supports can be adjusted by loosening the capscrews in the trap gates and sliding them up or down as necessary. They must be level and they must be positioned so the tray/cartons are positioned properly under the stripping fingers and are in the correct position when the minor flap folders move in. These have been factory set and should not require further adjustment unless the tray/carton size changes. The speed and smoothness at which the air cylinders operate are adjustable with the flow controls on the air cylinders. These are free flowing in the forward direction and regulate the air being exhausted. The On and OFF timing of the air cylinder is set witht he touchscreen and should be recored on the RECIPE SHEET in Sectin 9.

Minor Flap Locking Tab Folders: These are operated with rotary air cylinders. Their purpose is to fold the sides around 180 degrees and place the locking tabs in their slots. They must be positioned so they are level with the top of the tray/carton when the cylinders are retracted and they must rotate far enough so the tab will tuck properly. When in tucking position they must be positioned vertical and parallel to the side of the tray/carton. Adjustments can be made by loosening the capscrews in the folder brackets on the shafts and adjusting in the slots slightly. They can also be adjusted slighty by loosening the capscrew in the drive coupling and rotating on the shaft slightly. These have been factory set and should not require adjustment. The speed and smoothness at which the air cylinders operate are adjustable with the flow controls on the air cylinder. These are free flowing in the forward direction and regulate the air being exhausted. The On and OFF timing of the air cylinder is set witht he touchscreen and should be recored on the RECIPE SHEET in Sectin 9.

Functional Descriptions / Settings

Forming Heads

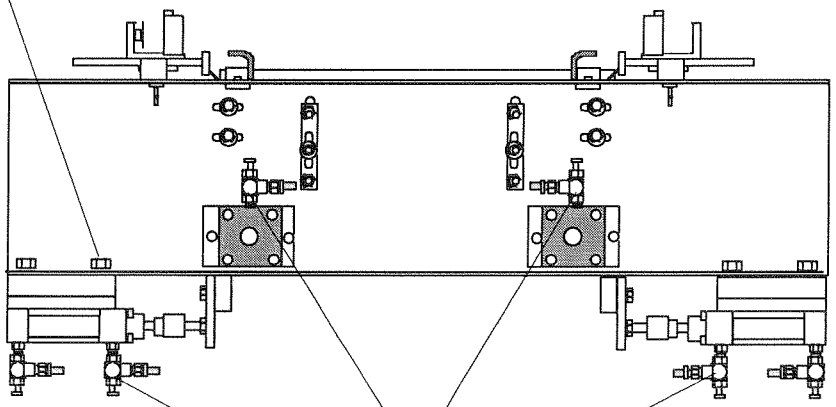
Top View



Drive Coupling

Trap gate Air Cylinders
In & Out Adjustment

Front View



Flow Controls

Air System

Explanation

The air system requires a clean, dry supply of incoming air. It is sometimes necessary to install a drier, or separator in the feed line to remove excess oil and water. Also important to the proper operation of the Former is the pressure and volume of air available. The requirement for this particular machine can be found in Section 1 and also on the pneumatic schematic(s) supplied. These schematics may also show air line routing and labeling, component part information and part numbers.

⚠ WARNING

Before performing any maintenance on the air system, always disconnect the air supply. Also disconnect and lock out the power source with the lever on the electrical enclosure door according to OSHA Standard 1910.147.

Connection

The main air connection, filter, regulator amd pressure switch are located at the rear of the Former and on the left side as viewed from the rear. There is also a main air shut off which can be used to turn the air pressure ON and OFF without disconnecting the air supply. This is done by pushing the lever at the top or on the side. When one lever is pushed the other pops out.

Filter

The air filter is located just after the shutoff and before the regulator. This filter is designed to take out contaminants and also has the capability to trap and hold moisture in the bowl. It has a self-draining feature to get rid of accumulated moisture when it reaches a certain level. This should be checked daily.

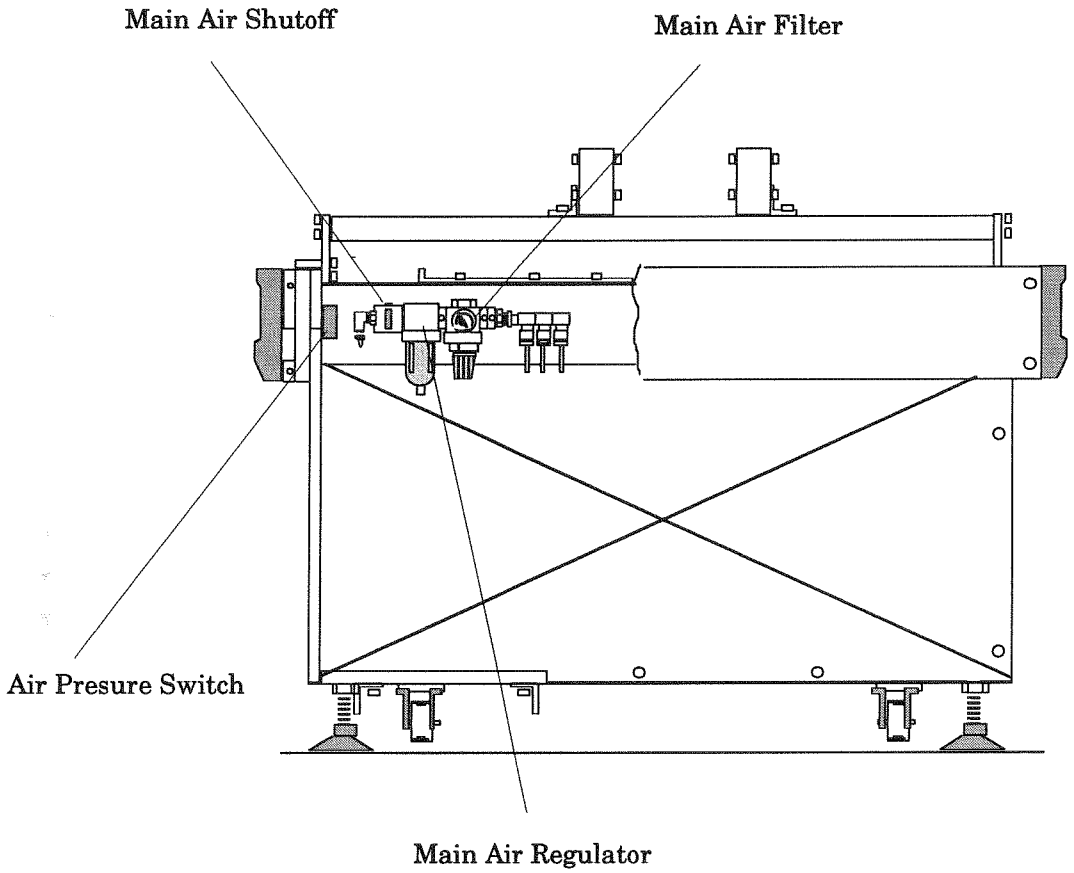
Regulator

The regulator can be adjusted by pulling down on the knob and rotating the knob. Push back up to lock in place. Pressure should be set at approximately 80 PSI.

Pressure Switch

The purpose of this pressure switch is to shut the Former down if the pressure should drop below the setting on the switch. The Former will not start if there is no air pressure.

Air System



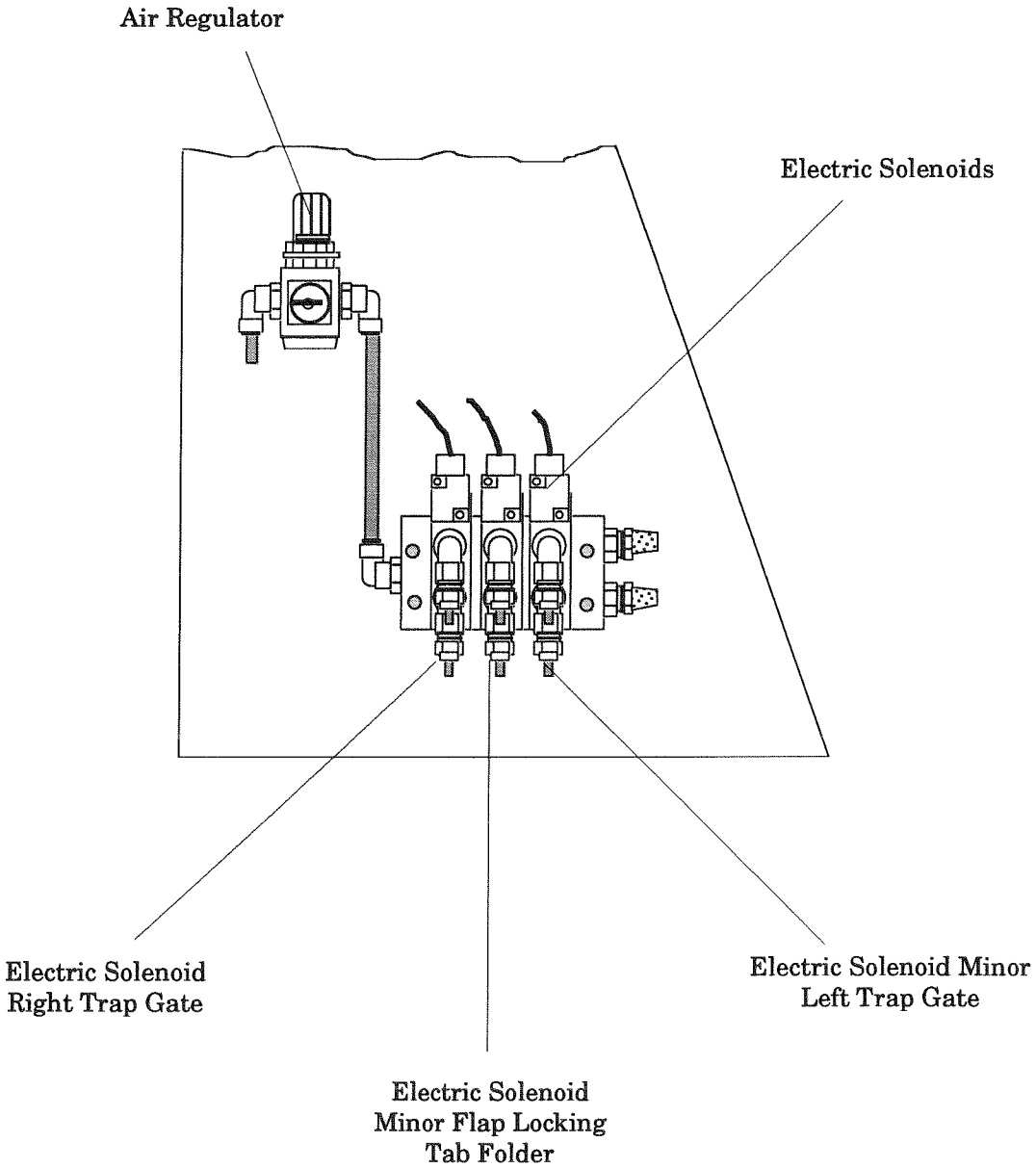
Air System

Regulator & Solenoids

These are for the trap gates and minor flap locking tab folder air cylinders on the female head. There is one regulator and a bank of solenoids located inside each large lift up guard on the front of the sealer and mounted to the side plates. Each regulator controls the air pressure to the solenoids for the air cylinders for the trap gates and minor flap locking tab folder air cylidners on each female head. The pressure can be adjusted by lifting up on the knob and turning the knob until the desired pressure registers on the gauge. Once set they should not have to be touched.

The solenoids are electrically operated and open and close to control the extending and retracting operation of the air cylinders.

Air System



Functional Descriptions / Settings

Electric Eye

Explanation

There are nine electric eyes on this Dual Tray/CartonFormer. Six are Banner SM312DQD (Quick Disconnect) diffuse eyes and the other three are Banner SM312LVQD (Quick Disconnect) which are reflective type eyes. One SM312DQD is mounted above each shuttle and two are mounted on each magazine. One SM312LVQD's is mounted below each female head and one is mounted downstream of the Former.

Banner SM312DQD

This is a diffuse type eye and are mounted at a fixed distance from the object to be detected. When the object passes in front of the eye its emitted light source will be reflected back to the eye and the change in contrast it what makes the eye control function.

The Banner SM312DQD eye mounted above the shuttle is used to detect if there is a tray/carton blank in the shuttle. If it does not detect a tray/carton for three consecutive cycles the Former will shut down.

The Banner SM312DQD eye located at the pick-off point of the magazine operates the motor for feeding more tray/carton blanks to the pick-off point. This eye operates the opposite of the above eye. This eye will perform its function when the eye is not blocked and it does not see it light source reflected back to the receiver.

The Banner SM312DQD eye located on the side of the magazine is used to detect a low tray/carton blank supply in the magazine and will turn ON the blue light on the tower and also sound a short buzzer sound. The buzzer will sound for approximately 1/2 second every five seconds until the eye is blocked again. This eye operates the same as the eye on the pick-off point of the magazine.

Banner SM312LVQD

This is a reflective type eye with the emitter and receiver mounted in the same unit. The light beam from the emitter is aimed at a retroreflective target on the opposite side of the object to be detected and reflected back to the reciever. When the object passes between the light source and reflector breaking the beam, the eys will activate.

The BANNER SM312LVQD eyes located beneath each female head are used to detect the presence of a blanks being cleared from the head. It uses a reflector which sends transmitted light back to the eye. If a blank does not exit the head area during the next cycle, a head jam is triggered.

Electric Eye

The BANNER SM312LVQD mounted on the conveyor down stream of the Former is used to trigger the request for starting and stopping the Former automatically according to the supply of tray/carton blanks.

Eye Adjustments

Located at the back of the unit is a 15 turn clutched potentiometer GAIN control, an led AID indicator light and a Light/Dark operate switch. All of these are used to set up the eye properly and once set up they should not have to be touched.

GAIN Control: This screw is used to adjust the sensitivity of the eye for best operation. It operates with the led AID indicator.

Led AID Indicator: This will light when the sensor sees its own modulated light source and will pulse at a rate proportional to the received light signal. Can be used as an aid in setup.

Light/Dark Operate Switch: In Light-operate (control fully clockwise), the sensor output conducts when an object is present. In Dark-operate (control fully counterclockwise), the sensor output conducts when the object is absent.

For setup instructions or for extensive information on the electric eyes, refer to the manufacturers instruction sheets in the Manufacturers Information three ring binder included with this equipment.

Notes

Any information concerning this lubrication section or operation of this equipment can be recorded on this page.

Table Of Contents - Section 9

Operator Screens

Explanation

The following pages will explain the messages that can be displayed on the touchscreen on the control panel. These messages will only be displayed on the RUN screen but can be cleared from any screen. This touchscreen operates both sides of the Former depending on which screen you are in. Both sides have identical screend except one will say LEFT SIDE before each message and one will say RIGHT SIDE, depending on which side the touchscreen is in. If the touchscreen is in the LEFT SIDE mode the rights side screen messages will not be displayed until the touchscreen is switched and visa-versa.

Informational Messages

RIGHT SIDE - LEFT SIDE
Either RIGHT SIDE or LEFT SIDE will be displayed indicating the operating side of the control panel.

PRESS STOP FIRST
The following screen will be displayed when in the RUN screen. This indicates the Former must be stopped before the MAIN MENU button on the control panel is pushed.

PRESS RESET BUTTON
The following screen will be displayed when the main contactor is de-energized. Press the blue RESET button to energize.

MACHINE IS HOMING
This message indicates the Former has started its Homing sequence when initially started. Wait for the Homing sequence to be completed.

Error Messages

EMERGENCY STOP
This message indicates an EMERGENCY STOP button has been pushed and is still in. Pull or rotate the button so the button is in its farthest out position.

DOOR OPEN FAULT
This message indicates the large guard door on the side of the Former is open and the interlocked safety switch is tripped. Close the door.

DOOR SWITCH FAULT
This error indicates that the side door was detected as being open but the safety string did not de-

Operator Screens

energize. Could be a faulty switch or the door is opened partially still having the switch closed. Close the door and if the problem persists, replace the safety switch.

FRONT DOOR OPEN FAULT
This message indicates the large lift up guard door on the front of the Former is open and the interlocked safety switch is tripped. Close the door.

FRONT DOOR SWITCH FAULT
This error indicates that the large lift up guard door on the front was detected as being open but the safety string did not de-energize. Could be a faulty switch or the door is opened partially still having the switch closed. Close the door and if the problem persists, replace the safety switch.

MAIN DRIVE FAULT
This message indicates the drive for the head has faulted because of a head jam or an overload for some reason has occurred. Clear the jam.

SHUTTLE DRIVE FAULT
This message indicates the shuttle drive has faulted. Check fuses to amp, also check for free shuttle motion.

HEAD AXIS FOLLOWING ERROR
This message indicates that head rotation is not detected. Check to make sure the brake is releasing.

SHUTTLE AXIS FOLLOWING ERROR
This indicates the shuttle axis has not positioned properly. Check for a jam or faulty cables.

HEAD JAM
This message indicates a tray/carton blank was not detected leaving the head at the proper time. Clear the tray/carton blanks from the female head.

SHUTTLE JAM
This message indicates a tray/carton blank did not clear the electric eye in the proper time. Clear the tray/carton blank from the shuttle area..

HEAD AXIS FOLLOWING ERROR
This message indicates that during the Homing sequence the head axis did not see the zero pulse from the encoder by the main drive. Retry the Homing sequence.

Operator Screens

SHUTTLE AXIS HOMING ERROR

This message indicates during the shuttle Homing the axis traveled more than one complete revolution. Check for proper operation of the Proximity sensor then try rehoming the axis.

MISSED PICK FAULT

This error occurs when 3 or more consecutive blanks have been missed. Check for proper vacuum, blanks in the staging area and proper timing of the vacuum cups.

CONVEYOR JAM FAULT

Blanks detected below the head but are not leaving the area. Clear out all blanks below the head.

AIR PRESSURE FAULT

This message indicates there is no air pressure or the pressure has dropped below the setting on the switch in the air line.

MAG MOTOR OVERLOAD

This message indicates the motor for the magazine has overloaded for some reason. Check for a jam or the wiring. Reset the motor overload by pressing the RESET button on the overload.

Changeover Sheet - Sheet One

(Former As viewed from The Front)

No.	Area Changed	RIGHT SIDE				LEFT SIDE			
1	Tray/Carton								
2	Male Forming Hd.								
3	Female Forming Hd								
4	Recipe No.								
5	Magazine Long Side Guide In/Out Position								
6	Magazine Long Side Guide Up/Down Posit.								
7	Magazine Short Side Guide In/Out Position								
8	Magazine Short Side Guide Up/Down Posit.								
9	Left Shuttle Guide In/Out Position								
10	Right Shuttle Guide In/Out Position								
11	Top Roll Position								
12	Female Head Stops								
13	Left Vacuum Cup Position								
14	Right vacuum Cup Position								
15	Left Upright Frame In/Out Position								
16	Right Upright Frame In/Out Position								
17	Discharge Conveyor Side Guide								
18	Shuttle Position								
19									
20									
21									
22									
23									

Recipe Sheet

(Former As viewed from The Front)

No.	Area Changed	RIGHT SIDE				LEFT SIDE			
1	Head Reference Setting								
2	Cycles Per minute								
3	Vacuum On								
4	Vacuum Off								
5	Purge On								
6	Purge Off								
7	Shelf On (Trap Gates)								
8	Shelf Off (Trap Gates)								
9	Flap #1 On								
10	Flap #1 Off								
11	Flap #2 On								
12	Flap #2 Off								
13	Flap #3 On								
14	Flap #3 Off								
15	Flap #4 On								
16	Flap #4 Off								
17	Auto Demand On/Off								
18	Non Attendent On/Off								
19	Auto Demand Machine Stop								
20	Auto Demand Vacuum Off Only								
21									
22									
23									

Allen Bradley Parameter List

Explanation

In case the Varable Frequence drive has to be replaced there are certain parameters that require setup before the unit can be used in this application. The procedures for changing parameters is in the Bulletin 160 manual from Allen Bradley.

Parameters 1thru15 are display values only and cannot be changed.

Parameters 30 thru 76 displayed on page 9.7 may be programmed to suit the needs of the end user.

The values should be in accordance withthe *Typical Value* if the unit is replaced in the field.

Procedure

1. Press the ESCape key and the program indicator will illuminate.
2. Press the Up and Down keys until the desired parameter displays.
3. Press the SELect key. The program indicator flashes indicating that the value can be changed by using the Up and Down keys.
4. Change the value by using the Up and Down keys.
5. When the desired value is displayed, press the ENTER key. This writes the new value to memory.
6. To abort the prcess, press the ESCape key.

NOTE:

If the value does not change while pressing the Up and Down keys, it may be because the unit is still engaged. The unit can be disengaged by pressing the red ZERO key. This should ensure that the unit is disengaged.

Allen Bradley Parameter List

Parameter Number	Description	Typical Value Series B	Typical Value Seroes A
30	Accel Time	1.8	1.8
31	Decel time	1.0	1.0
32	Min. Frequency	0	0
33	Max. Frequency	125	125
34	Stop Mode Select	0	0
35	Base Frequency	60	60
36	Base Voltagae	230	230
37	Max. Voltage	230	220
38	Boost Select	0	4
39	Skip Frequency	240	240
40	SkipFreq. Band	0	0
41	Motor Ovld Select	0	0
42	Motor Ovld Current	5.0	5
43	Current Limit	130	130
44	DC Hold Time	0	0
45	DC Hold Voltage	0	0
46	Input Mode	0	0
47	Output Configure	7	7
48	Output Threshold	125	125
49	PWM Frequency	4	4
50	Restart Tries	0	0
51	Restart Time	5.0	5.0
52	DB Enable	1	1
53	S-Curve	1	1
54	Clear fault	0	0
55	Memory Probe Addr	N/A	N/A
56	Reset Faults	0	0
57	Program Lock	0	0
71	IR Compensation	50	N/A
72	Slip Compensation	2	N/A
73	Reverse Disable	0	N/A
74	Analog Select	1	N/A
75	Analog Input Min.	0	N/A
76	Analog Input Max.	100	N/A

Glossary Of Terms

AIR NOZZLE - A device used to concentrate a blast of air onto a certain area.

CYCLE STOP - Stopping the equipment to a predetermined position that keeps all components in proper synchronization.

DISCHARGE CONVEYOR - A belt conveyor located beneath the female forming head used to remove the completed tray/carton from below the former.

ELECTRIC EYE - Photoelectric sensors used to detect tray/carton blanks in the shuttle area to check for jams. Also used to notify the operator of a low tray/carton blank supply in the magazine and also operate the servo motor for the motor operated magazine.

ELECTRIC SOLENOID - Electric device used to switch or activate an air operated procedure.

EMERGENCY STOP - A method of stopping the equipment immediately without regard for maintaining synchronization. An emergency stop button should be pushed in after a cycle stop to prevent accidental start-up. They must be pulled out before operation can resume.

FLOW CONTROL VALVE - A valve used to control air flow to an air nozzle.

GAIN - A sensitivity adjustment used on some electric eyes.

GUARD - A metal or plastic cover used to protect the operator from moving parts.

INTEGRATED MOTION CONTROLLER - Used to control all the operations of the Former for proper timing.

LEADING EDGE - In reference to a tray/carton blank, the first point of the blank to pass and electric eye or area.

LIGHT TOWER - A pole at the top of the Former made of three different colored segments and a buzzer. These segments will be lit to indicate the mode of the Former.

MALE HEAD - The head which travels down into the female head for forming the tray/carton blank into a finished tray/carton.

Glossary Of Terms

MANUFACTURERS INFORMATION - Any information supplied by manufacturers of components used on the Former. Usually included in a separate binder supplied with the operator manual.

MODE - A condition of machine status such as EMERGENCY STOP, HOMING etc.. Operates with the light tower.

PROXIMITY SENSOR - A device used to sense the presence of a metal component. Used for Homing the Former and certain safety precautions.

SAFETY SWITCH - A device used to disrupt the electrical controls and also opens the safety interlock circuit when a guard door is opened.

SERVO AMPLIFIER - A servo motor control unit. Converts input signals to the proper output voltage to obtain the desired motor speed.

SERVO MOTOR - A type of motor designed to maintain a speed relationship with a given input signal.

SHUTTLE - The servo motor driven chain which pushes the tray/carton blank forward and into position on the female forming head.

STATE - The current operating condition of the Former such as RUN, JOG or STOPPED.

TOUCHSCREEN - The screen on the control panel which is operated by touching certain areas of the screen. Is used to control both sides of the Former for setup and operation.

Notes

Any information concerning this section or operation of this equipment can be recorded on this page.