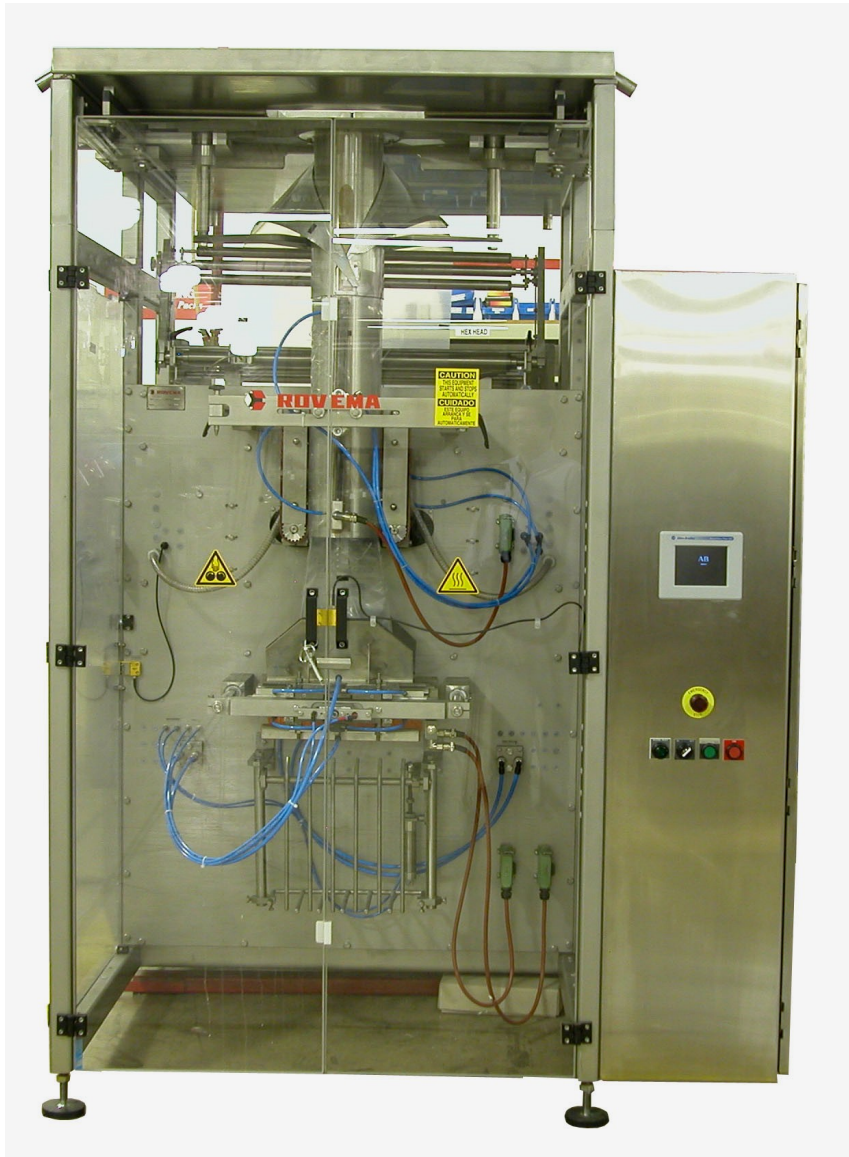


VPI-400
Operator's Manual



Customer: XXXXXXXX
Machine: XXXXXX
Order No.: XXXXX



About this Manual

This manual is a reference tool for the Rovema VPI series bagmakers: models VPI-260 and VPI-400. It should be used in conjunction with instructor lead training.

The following information is included in this manual:

- Introduction
- Safety Instructions
- Installation Procedures
- Parts and Functions
- Operator Controls
- Machine Setup Procedures
- Working with Components
- Maintenance Procedures
- Troubleshooting Guide

How to Use this Manual

There are several ways to find information in this manual:

- The Table of Contents lists the chapters and sections of the manual and their corresponding page numbers.
- The header at the top of every page indicates the name of the section.
- The bottom of every page contains the page number, the manual number, and the revision date.



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Section 1: Introduction

VPI Series Bagmaker

The VPI series bagmaker packages products in bags. It forms flat packaging material into a tube, seals the bottom of the tube, fills the tube with product, cuts the tube to length, seals the top of the tube, and finally discharges the finished bag onto a takeaway conveyor.

The standard bagmaker consists of a film feeding device, a forming set, a vertical sealing device, and a horizontal sealing device. Optional equipment can be added to the bagmaker to print information on the bags, add zipper re-closure, or even change their shape.

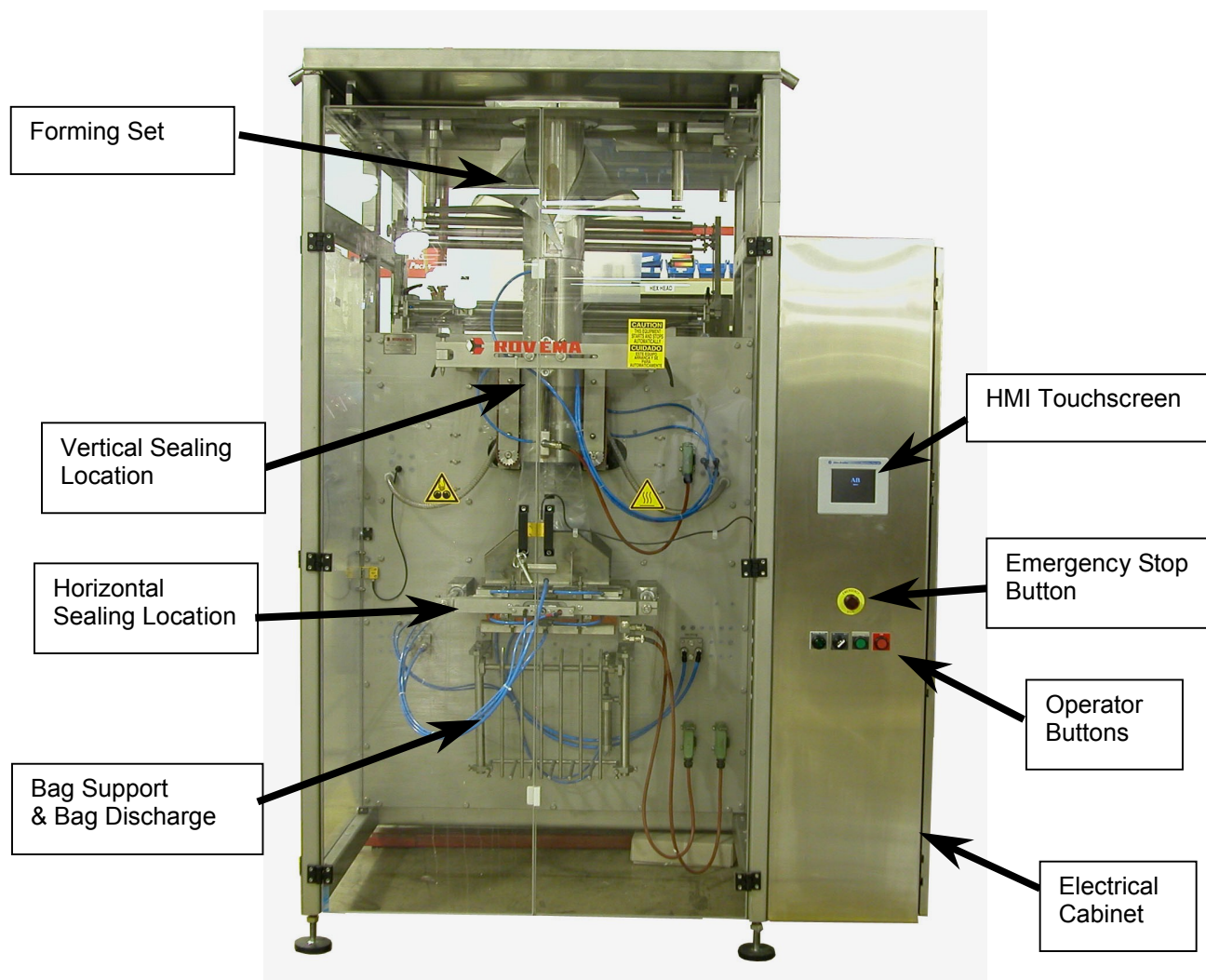


Figure 1.1
Shows an overview of the VPI bagmaker.



Section 2: Safety Instructions

This section contains information on machine safety issues. These issues include:

- Bagmaker Safety Devices
- Component Safety
- Operator Safety
- Machine Lockout Procedure



Safety Devices

The VPI safety devices include guard doors, an EMERGENCY STOP push-button, and safety labels.

Guard Doors

The guard doors isolate the operator from the forming and sealing area. The doors are also equipped with a switch that causes the machine to stop when they are opened.

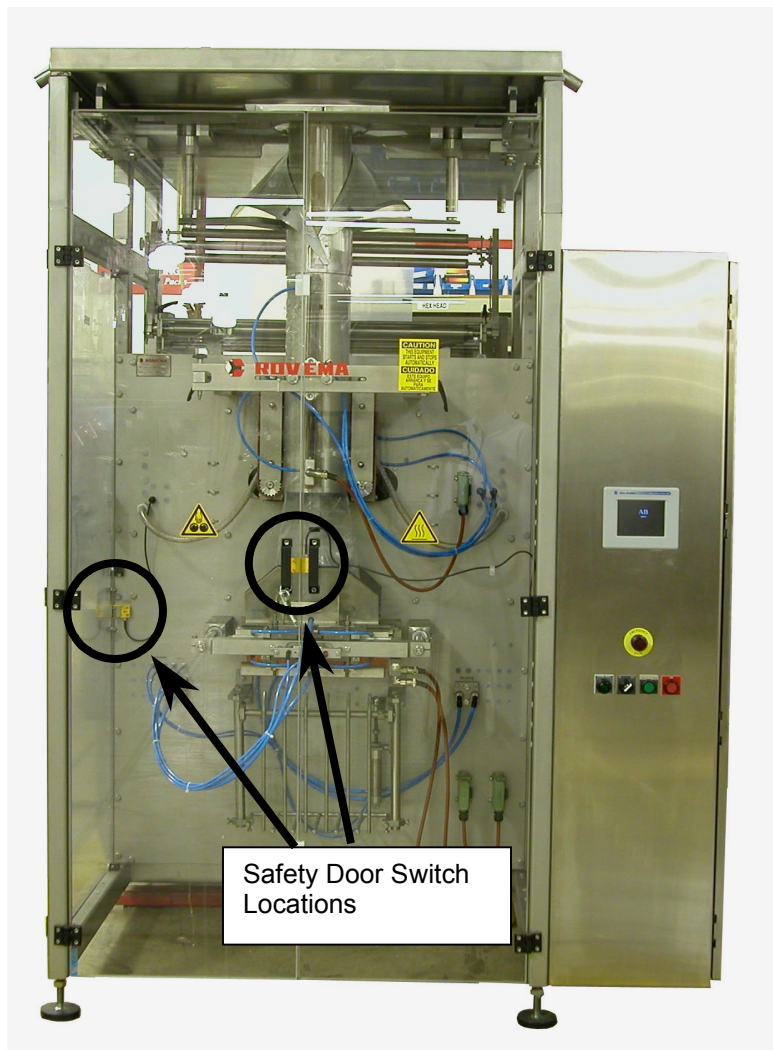


Figure 2.1
Shows the guard door switches. Machines equipped with a side door will also have a safety switch.



Safety Devices

EMERGENCY STOP Push-Button

The EMERGENCY STOP push-button immediately halts bag forming regardless of whether or not the current bag has been made. Press this button to immediately stop all moving parts of the machine. This button should be used whenever there is perceived or actual damage occurring to personnel or to the machine.

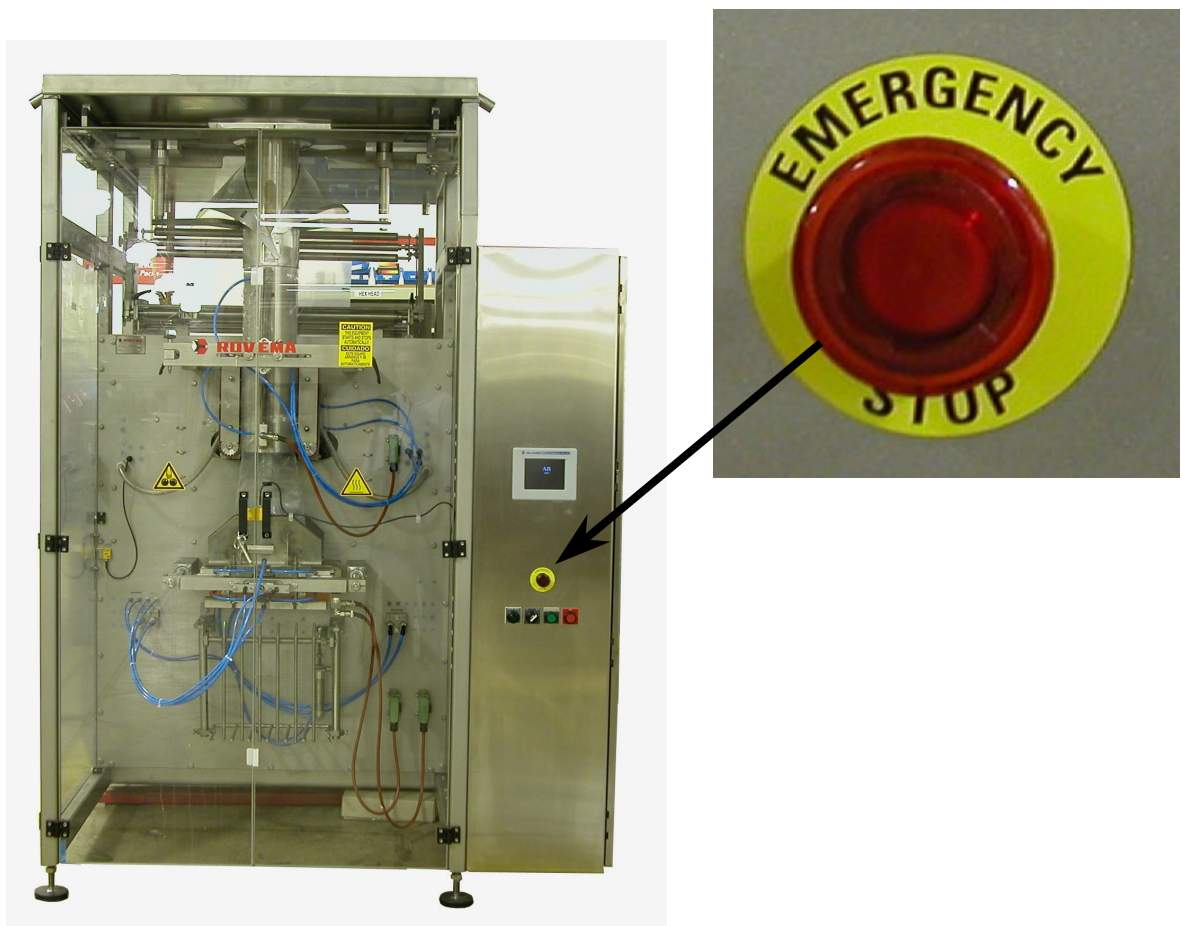


Figure 2.2
Shows the EMERGENCY STOP push-button on the operator control panel.



Safety Devices

Safety Labels

Safety labels alert an operator to a particular hazard. These labels appear at various places on the machine. Look for these labels, read them, and follow their instructions.



Figure 2.3

Caution: There are areas on the machine that are Very Hot and will burn.



Figure 2.4

Caution: Lock Out Power label.



Component Safety

Rovema does not allow any electrical or mechanical modifications to the VPI bagmaker without explicit authorization.

Only original Rovema spare parts and accessories should be used on the bagmaker. This ensures that the machine will perform safely and as designed.

The user must confirm that the wrapping material (film) will not produce harmful gases during sealing. The film supplier should provide such assurances.



Operator Safety

Only properly trained personnel can operate the bagmaker. The operator is responsible for following the operator safety guidelines presented in this section as well as any employer safety guidelines.

Operator Safety Guidelines

Use the following safety guidelines for safe operation of the bagmaker.

1. Do not operate the bagmaker until you have read and understood it's operating instructions and have become thoroughly familiar with them.
2. Do not wear rings, loose jewelry, or loose clothing while operating the bagmaker.
3. Secure long hair under a hair net or bump cap while operating the bagmaker.
4. Follow the lockout procedure before performing any cleaning, maintenance, or repairs on the bagmaker.
5. Never use the MAIN DISCONNECT switch to stop the bagmaker.
6. Do not remove the guards or open doors except during necessary adjustments or repairs. Be sure to lockout the bagmaker before removing any guards or doors.
7. Lockout the bagmaker before clearing jaw jams. Never use your fingers to remove jammed material; Use a tool or a rod.
8. Always wear safety glasses when servicing the bagmaker.



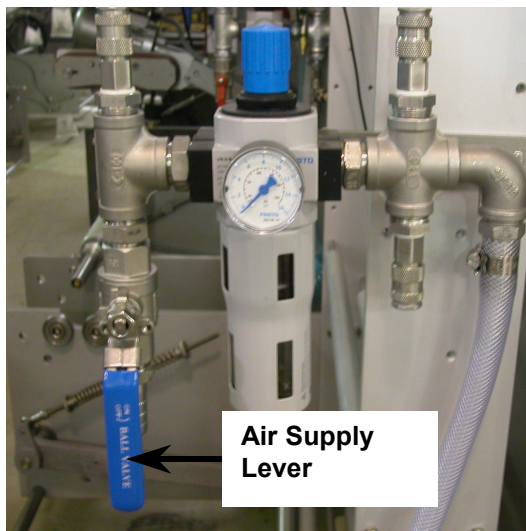
Lockout Procedures

The bagmaker must be properly locked-out before any repair or maintenance tasks can be performed on it. This section describes procedures that should be used to lockout the air and power supplies.

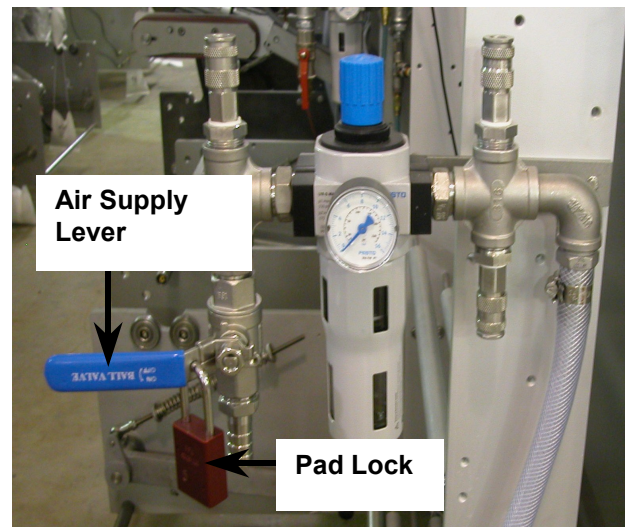
Air Supply Lockout

Use the following procedure to lockout the air supply:

9. Raise the AIR DISCONNECT lever to its horizontal position to disable the air supply to the machine.
10. Place a padlock and tag through the lockout hole.



Before Lockout



Lockout Complete

Figure 2.5
Shows how to disable the bagmaker's air supply.



Lockout Procedures

Electrical Power Supply Lockout

Use the following procedure to lockout the electrical power supply:

1. Press the STOP push-button to halt the machine.
2. Move the Lockout Handle to the OFF position to disable electrical power to the machine
3. Place a lockout clamp through the lockout hole in the Main Disconnect Switch.
4. Place a Pad Lock (with a Lockout Tag) through one of the holes in the lockout clamp.
5. Attempt to move the Lockout Handle to the ON position.
6. If the MAIN DISCONNECT switch will not move to the ON position then the lockout procedure was successful. If the switch will move to the ON position then the lockout procedure was not successful and must be performed again.

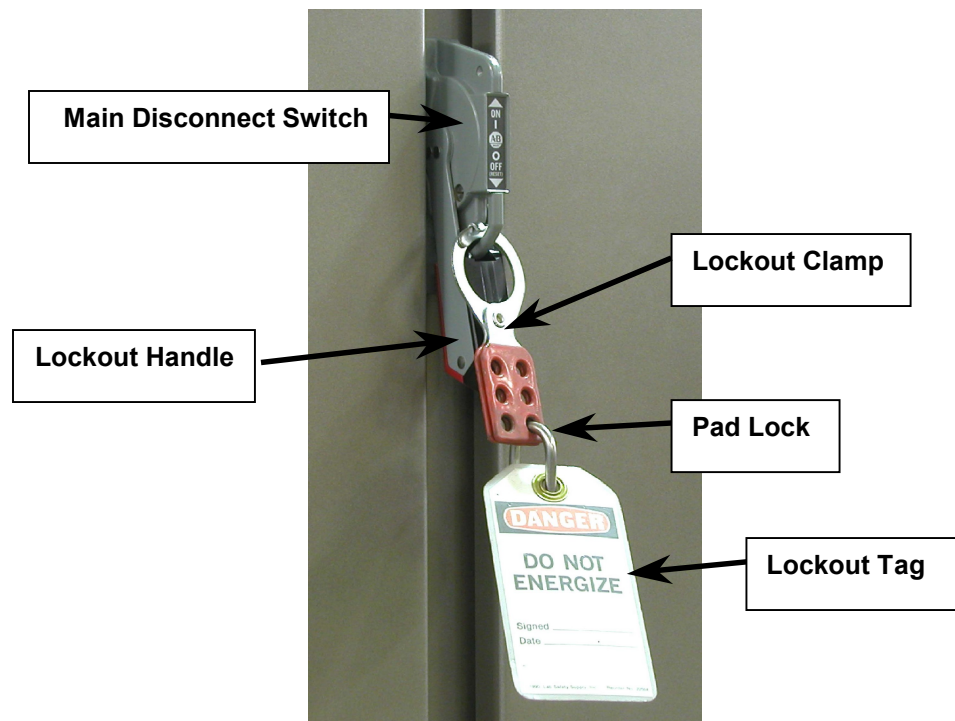


Figure 2.6
Shows how to lockout the electrical supply to the bagmaker.



Section 3: Installation Procedures

This section describes the recommended procedure to install the machine. Special conditions may require special considerations or modifications to these procedures. It is recommended to contact the Rovema Service Department if there are any questions regarding the installation and set up procedure.

The general procedure involves:

- Machine Transportation
- Machine Placement
- Air Connection
- Electrical Connection

CAUTION! Only trained and qualified personnel should be allowed to operate machinery to move the packaging machine or any of the components. Improper techniques could cause damage to the machine and/or harm to personnel.

CAUTION! Only trained and qualified personnel should be allowed to make electrical connections. Improper techniques could cause damage to the machine and/or harm to personnel.



Machine Transportation

1. When first receiving the machine, remove any packaging material covering the machine.
2. Remove the bolts securing the machine to the transportation crate.

Note when lifting the machine: The side of the machine with the electrical cabinet adds additional weight to that side of the machine. Thus, care must be taken not to tip the machine in that direction especially on platforms that are not level or surfaces that are not solid.

3. Position the forks of a forklift device under the machine in the locations shown below. The front doors may need to be opened, and secured open, to avoid contact with the forks. Verify the forks do not contact other options on the machine such as the discharge chute.
4. Do not lift the machine without the Transportation Bar. When the forks are in proper position lift the machine slightly and verify that the machine is secure and not tilting. Clamps may be placed around the transportation bar and forks to secure the machine.

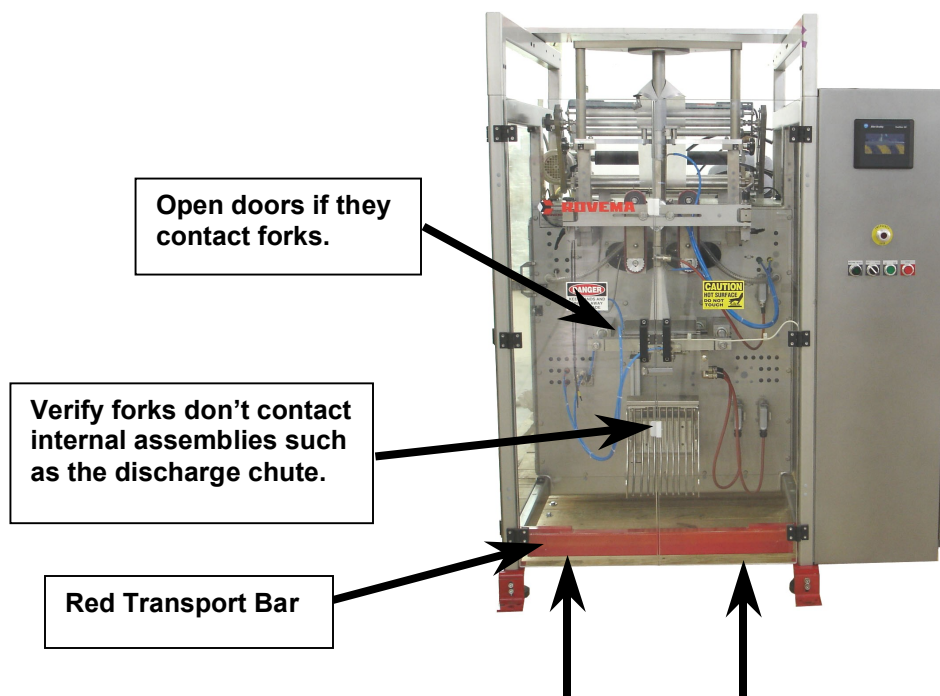


Figure 3.1
Shows the areas to position the forks of a fork lift device.



Machine Placement

1. The machine must only be located on surfaces that have sufficient bearing to support the weight of the machine and any optional equipment.
2. The installation location must be level.
3. The installation location must be large enough to allow safe operation and maintenance of the machine.
4. Use a level gauge on the machine to verify if the machine is level. If necessary, the support legs may be adjusted to level the machine. The machine may need to be lifted with a fork - lift device to adjust the leg height.

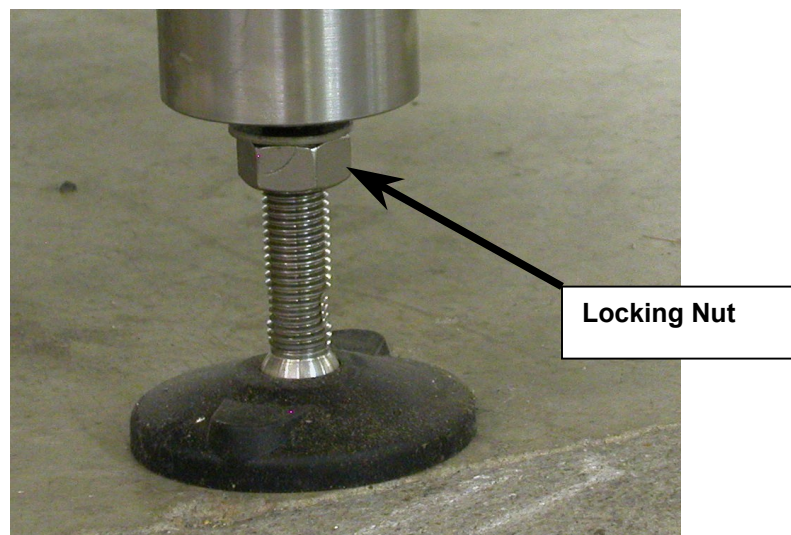


Figure 3.2
Shows the adjustable support legs.



Air Connection

1. Connect the machine to the compressed air system. Note: The bagmaker typically requires 85-120 PSI of air pressure for normal machine operation.
2. Verify that the main supply valve on the machine is in the off position.
3. Connect the hose to the machine and secure all connections.
4. Verify all connections remain secure when the air supply is turned on.

CAUTION! : Unsecured air hoses could blow off the connection causing the hose to spray high-pressure air in the environment that could be dangerous to the machine and/or personnel.

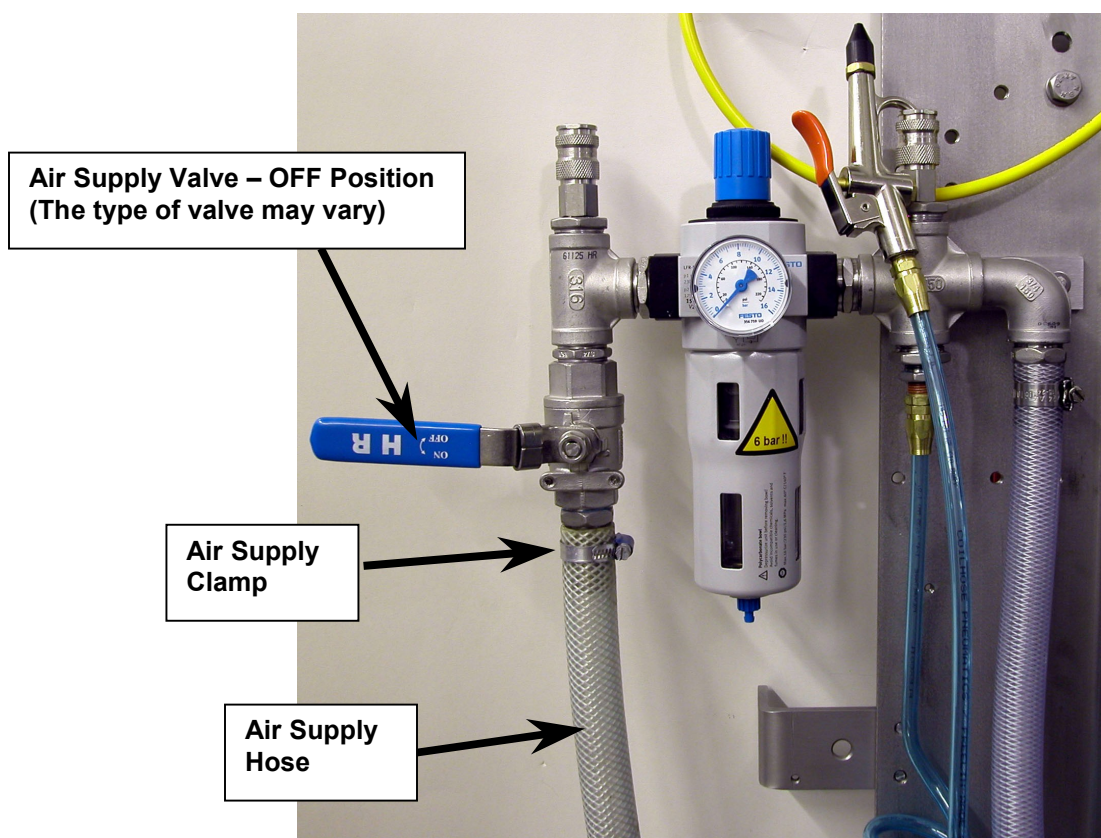


Figure 3.3
Shows the main air supply.



Electrical Connection

1. The electrical connections must be made per the Rovema supplied electrical drawings.
2. Verify the supply power is Locked Out and Tagged Out.
3. Verify all connections are secure.
4. Contact the Rovema Service Department with any questions.

CAUTION! Only trained and qualified personnel should be allowed to make electrical connections. Improper techniques could cause damage to the machine and/or harm to personnel.



Section 4: Parts and Functions

This section describes the major parts and functions of the VPI vertical bagmaker. These parts include the:

- Film Carriage
- Film Feeding Device
- Forming Set
- Vertical Sealing Device
- Horizontal Sealing Device
- Registration Sensor
- Pneumatics System
- Optional Equipment



Film Feeding Device

The film feeding device pulls film from the film carriage and pushes it down the forming tube and past the sealing devices. It includes two belt assemblies, a drive system, an engage/retract device, and touchscreen controls.

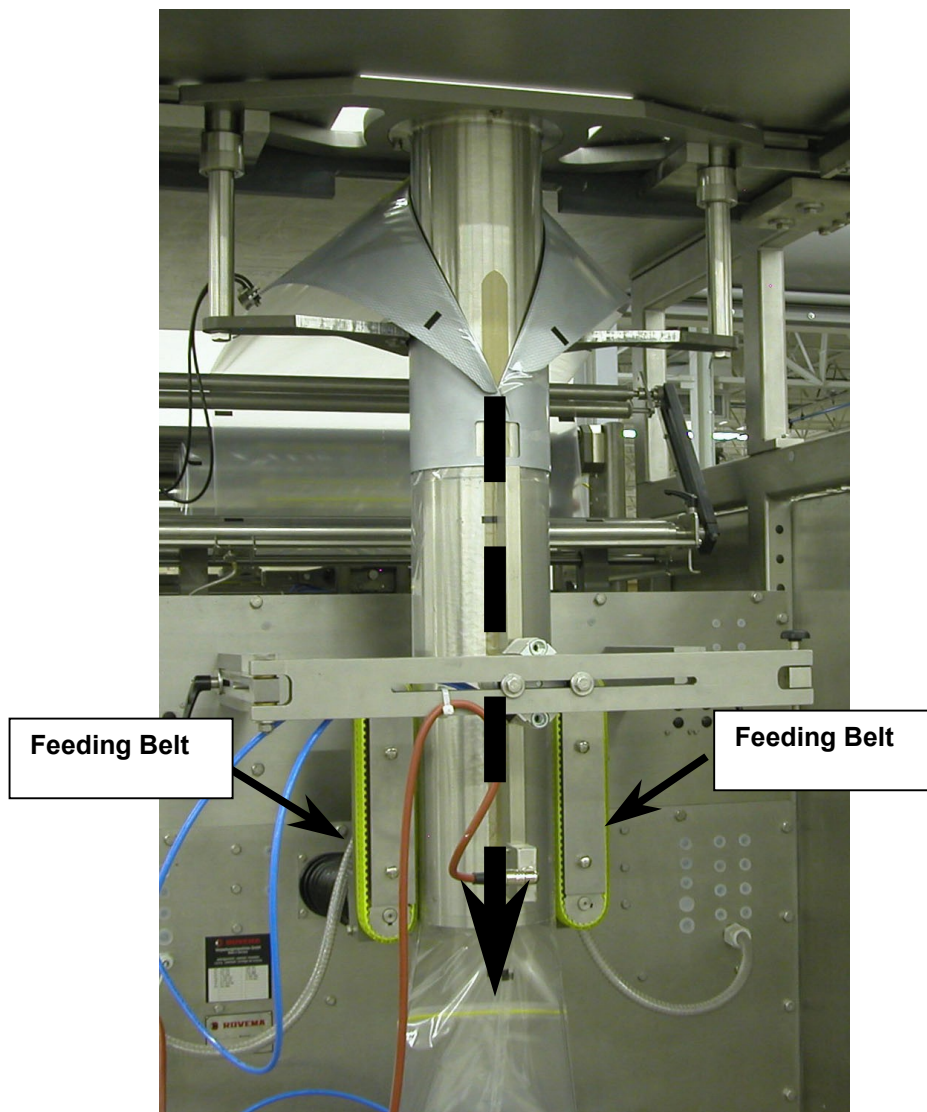


Figure 4.1
Shows the film feeding device.



Film Feeding Device

Belt Assemblies

The belt assemblies grip the film and push it down the forming tube. They are equipped with vacuum assist. The vacuum pulls the film to the belts and makes it easier for the feeding device to move the film. A venture type vacuum generator located inside of the machine housing generates the suction. The air from the vacuum is filtered and exhausted in the machine housing.

The vacuum amount is controlled through a pressure regulator (located inside of the machine housing). The regulator determines the amount of compressed air that the vacuum generator has to create suction.

The amount of pressure that the belts apply against the forming tube to gain traction against the film is adjustable. The pressure regulator for the film feeding device is located inside of the machine housing as well.

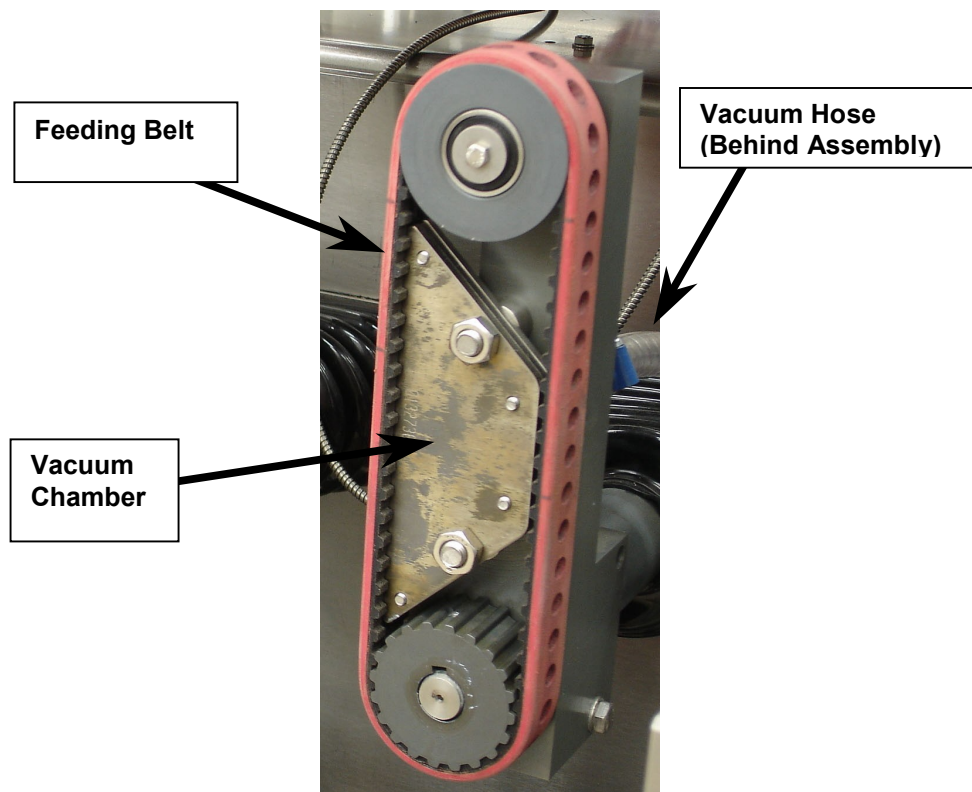


Figure 4.2
Shows a belt assembly.



Film Feeding Device

Drive System

Each belt assembly is turned by a servo-motor. Each servo-motor is powered by a servo-drive (located inside of the electrical enclosure). A motion controller (also located inside of the electrical enclosure) sets the film feeding speed based on the values set for the *bag length* and the *machine speed* parameters; these parameters are located on the *Main submenu* screen.



Figure 4.3
Shows the film feeding drive.



Film Feeding Device

Engage/Retract Device

The engage/retract device moves the film feeding belts to and from the forming tube. It also maintains belt pressure against the tube. The device consists of two pneumatic cylinders, a pressure regulator, and a pressure gauge. Use the pressure regulator and the pressure gauge to adjust and monitor the belt pressure. They are located just inside of the machine housing.

You will retract the film feeding device before you thread film through the bagmaker, or, before you remove the forming set. You will engage the device when you want to form bags or simply advance film down the forming tube.

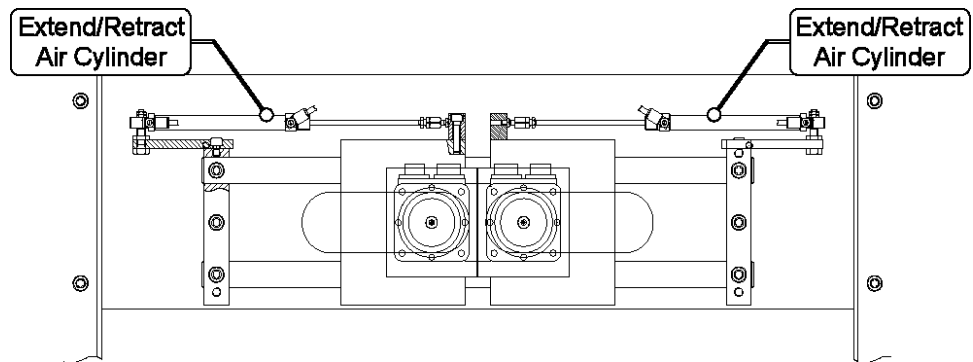


Figure 4.4
Show the engage/retract air cylinders.



Film Feeding Device

Film Feeding Device Controls

The controls for the film feeding device are located on the *Adjustments* screen and on the *Film Parameters* screen.

The control on the *Adjustments* screen is the *Film Feed Belts* button. This button causes the belts to open or close, as indicated by the arrows on the button. It can be used whenever the bagmaker is powered on. To use this switch, press and release it. When this switch is pressed, the belts will close if they are open, or, they will open if they are closed.

The controls on the *Film Parameters* submenu screen are the *Film Transport On* and *Film Transport Off* values. These values determine when film feeding will begin and end. Film feeding should start when the horizontal sealing jaws begin to open and stop before the jaws close. Larger differences between the values give the film feeding device more time to advance the film. This reduces the chance that the belts will slip against the film.

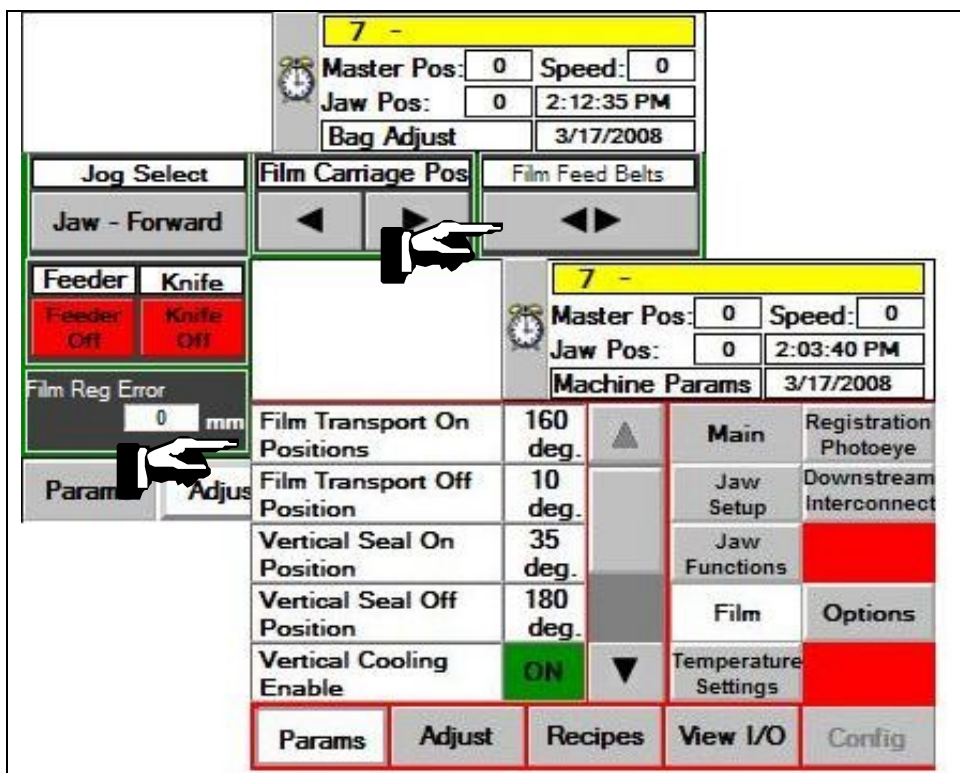


Figure 4.5
Shows the Adjustments screen and Film Parameters screen.



Film Feeding Device

Guide Rollers

The guide rollers provide an almost frictionless path for the film to travel along up to the forming collar. The last set of rollers (setup rollers) are adjustable. These rollers can change the angle of the film web as it moves over the backside of the forming collar. When the angles of the film web and that of the forming collar are not equal, the film web tends to bind as it moves over the crest of the collar; this causes forming problems.

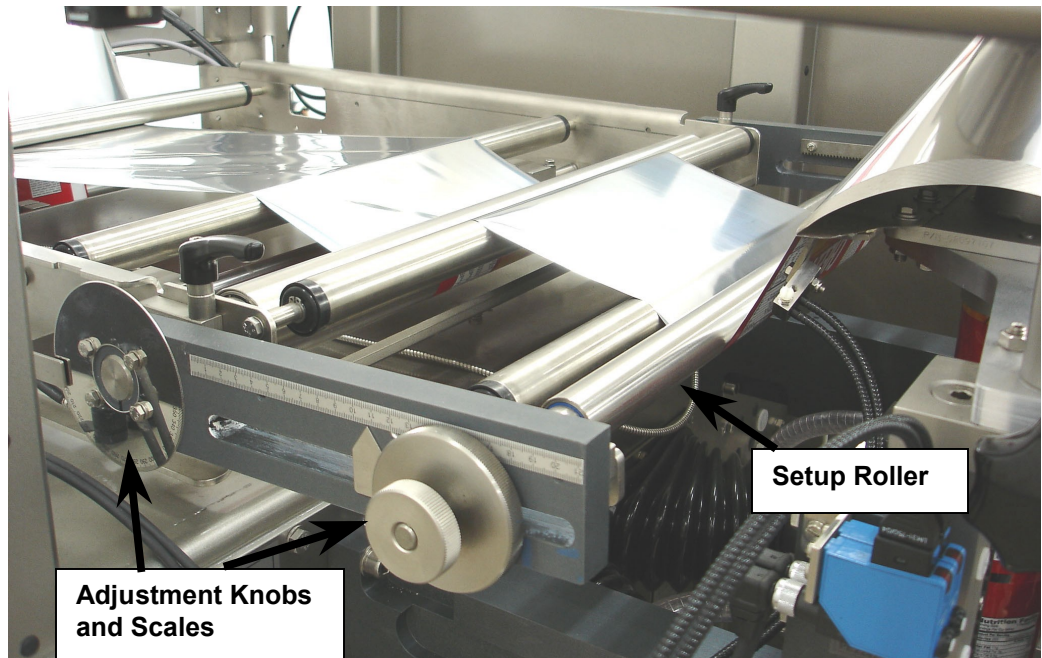


Figure 4.6
Shows the setup roller assembly.



Forming Set

The forming set shapes the flat film into a tube and guides product down the tube. It consists of a forming collar, a forming tube, and securing bolts. The forming collar folds the film into a tube. While doing so, it folds one edge of the tube inside out and lays the opposite edge over it. The forming tube maintains the shape of the film tube and guides product into it. The Teflon® tape on the front of the tube isolates it from the heat of the vertical sealing device. The securing knobs hold the forming set to the machine frame.

The forming set is a changeover item. Each bag style requires a different forming set. The forming set can be identified by the number stamped on the forming collar mount. The number indicates the flat bag width.

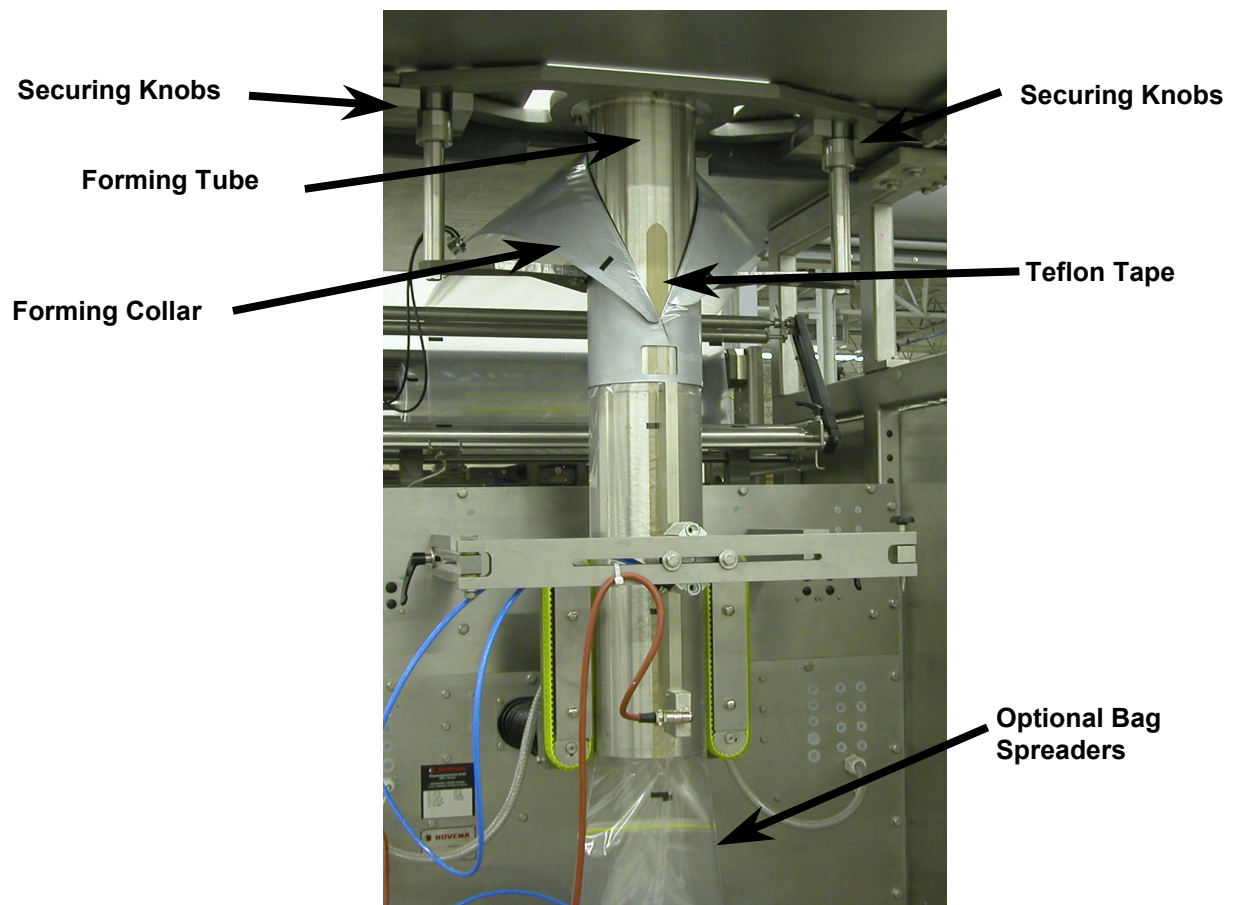


Figure 4.7
Shows a pillow style forming set.



Vertical Sealing Device

The vertical sealing device joins the overlapping sections of the film tube. The device consists of a vertical sealing bar, an engage/retract device, and a vertical seal support.

Danger: Wear protective gloves and verify that the sealing bar is cool when working in this area. **The Sealing Bar becomes very hot!**

The machine must be properly locked-out before any repair or maintenance tasks can be performed on it.

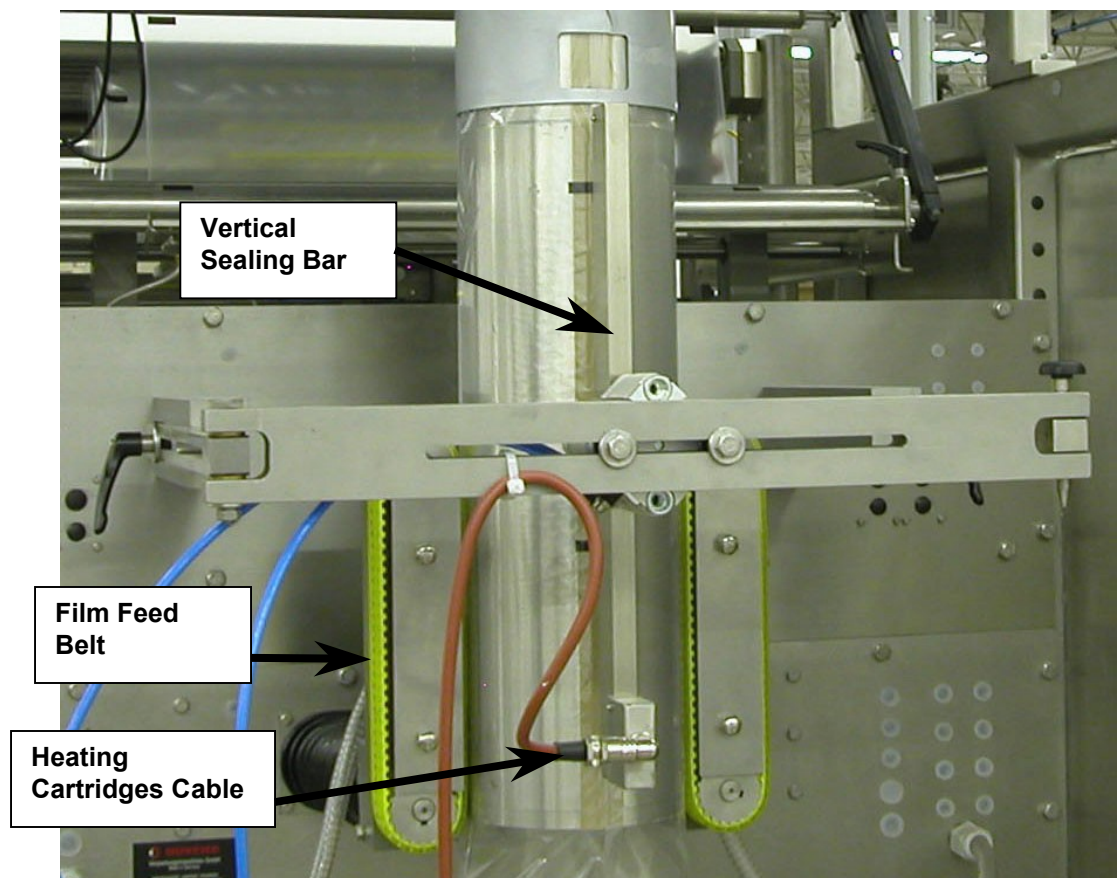


Figure 4.8
Shows a typical vertical sealing device.



Vertical Sealing Device

Vertical Sealing Bar

The vertical sealing bar creates the heat needed to join the overlapping sections of the film tube. Within the sealing bar is a replaceable heating cartridge and a temperature probe. The heating of the bar is controlled by the temperature controls on the HMI.

Engage/Retract Device

The engage/retract device moves the vertical sealing bar into and out of the sealing position. The device consists of a pneumatic cylinder, a pressure regulator, and a pressure gauge. The vertical sealing pressure is controlled by the pressure regulator (located inside the machine housing).

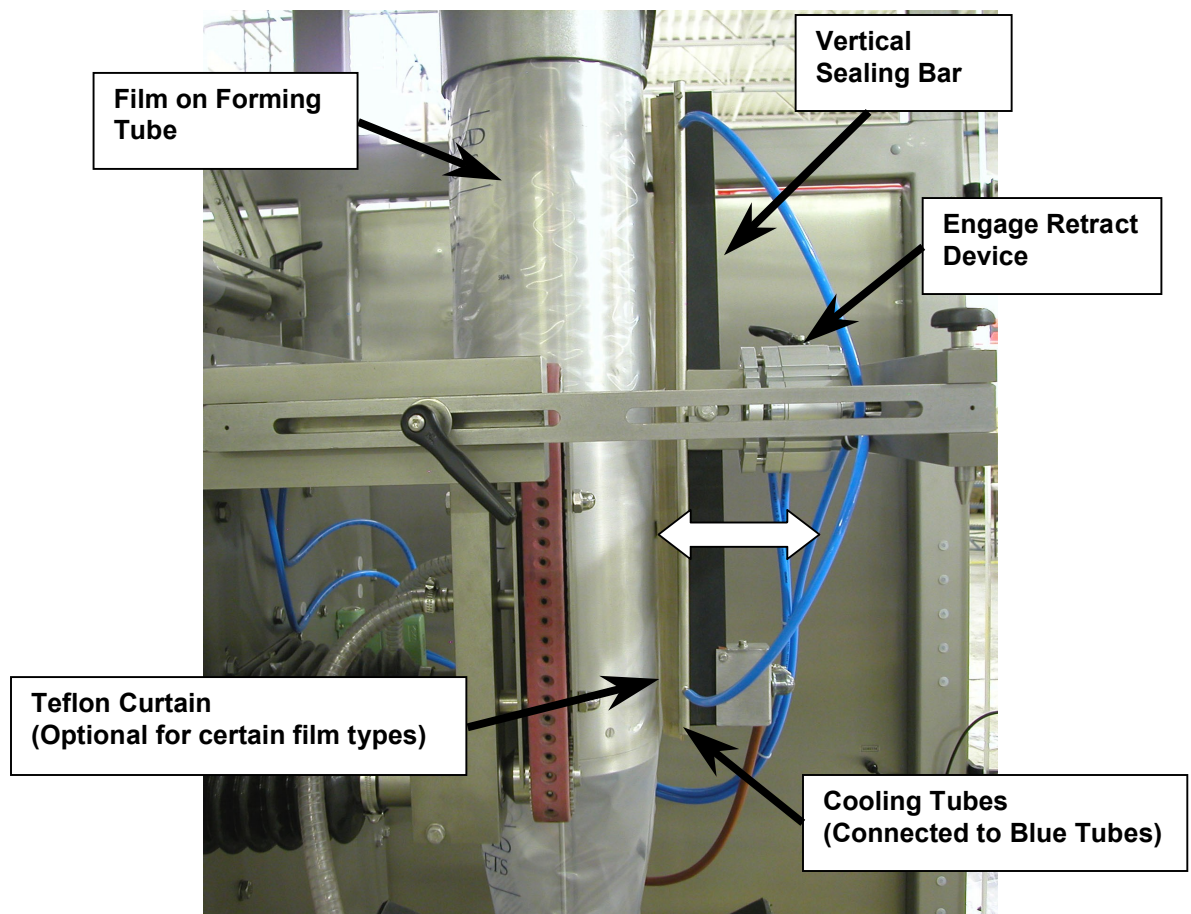


Figure 4.9
Shows the vertical sealing bar.



Vertical Sealing Device

Vertical Seal Support

The vertical seal support holds the vertical sealing device and is used to position the device relative to the forming tube. The device includes position locking levers, a pivot locking pin, and positioning scales.

Loosen the position locking levers to move the vertical sealing device within striking distance of the forming tube. Remove the pivot locking pin to rotate the vertical sealing device away from the forming tube without changing its distance from the tube. Use the positioning scales to position both sides of the vertical sealing device an equal distance from the forming tube.

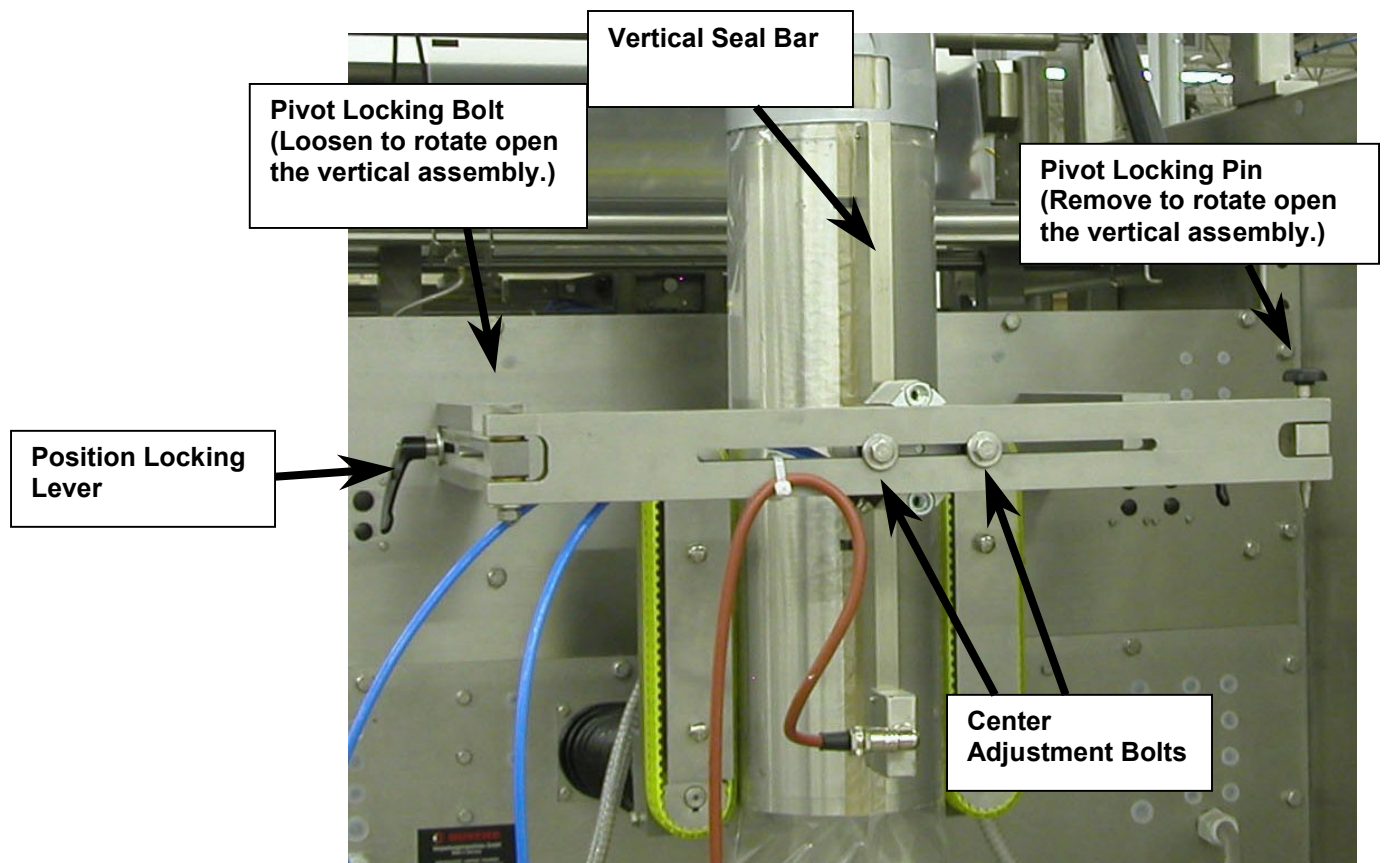


Figure 4.10
Shows the vertical seal support.



Vertical Sealing Device

Vertical Seal Controls

The controls for the vertical sealing devices are located on the touchscreen display and the machine housing

The controls on the touchscreen are the *Vertical Seal On Position* and *Vertical Seal Off Position* values. These values determine when the vertical sealing bar will extend to create a seal and when it will retract to allow film feeding.

The Temperature Settings screen is used to set the vertical sealing temperature.

The control in the machine housing is the pressure regulator for the extend/retract device. It sets the vertical sealing pressure. You will set this regulator when you run a film for the first time and may not need to change it until you use a different film type on the bagmaker.

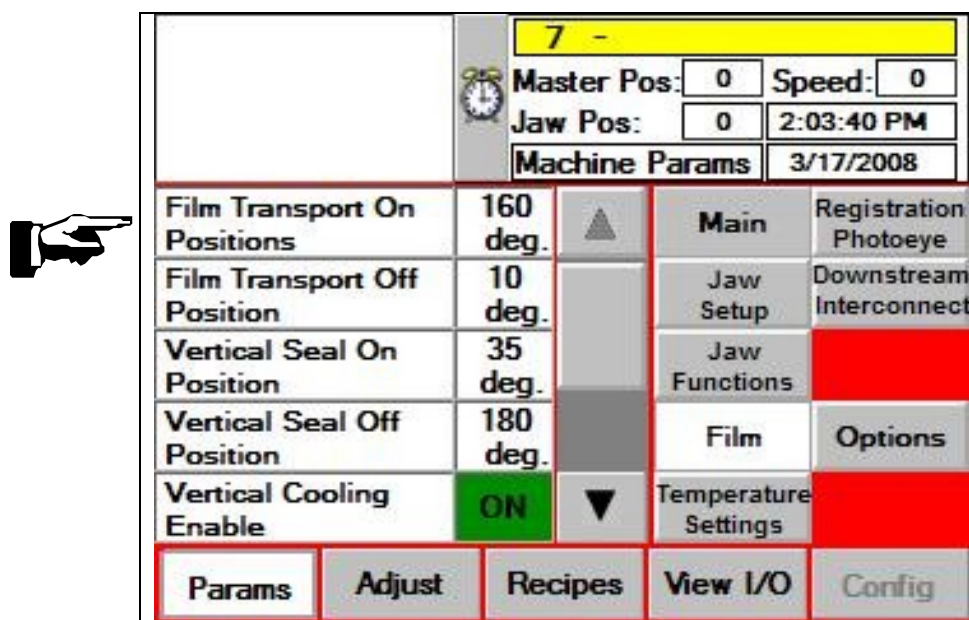


Figure 4.11
Shows the Film Parameters screen.



Horizontal Sealing Device

The horizontal sealing device creates top and bottom seals in the film tube. The device includes two jaw assemblies, a knife assembly, and a cross sealing station.

Danger: Wear protective gloves and verify that the jaws are cool when working in this area. **The Sealing Jaws become very hot!**

Danger: The knife is **very sharp** and may cut the operator. Wear gloves and use proper tools while working on (or near) the knife assembly.

The machine must be properly locked-out before any repair or maintenance tasks can be performed on it.

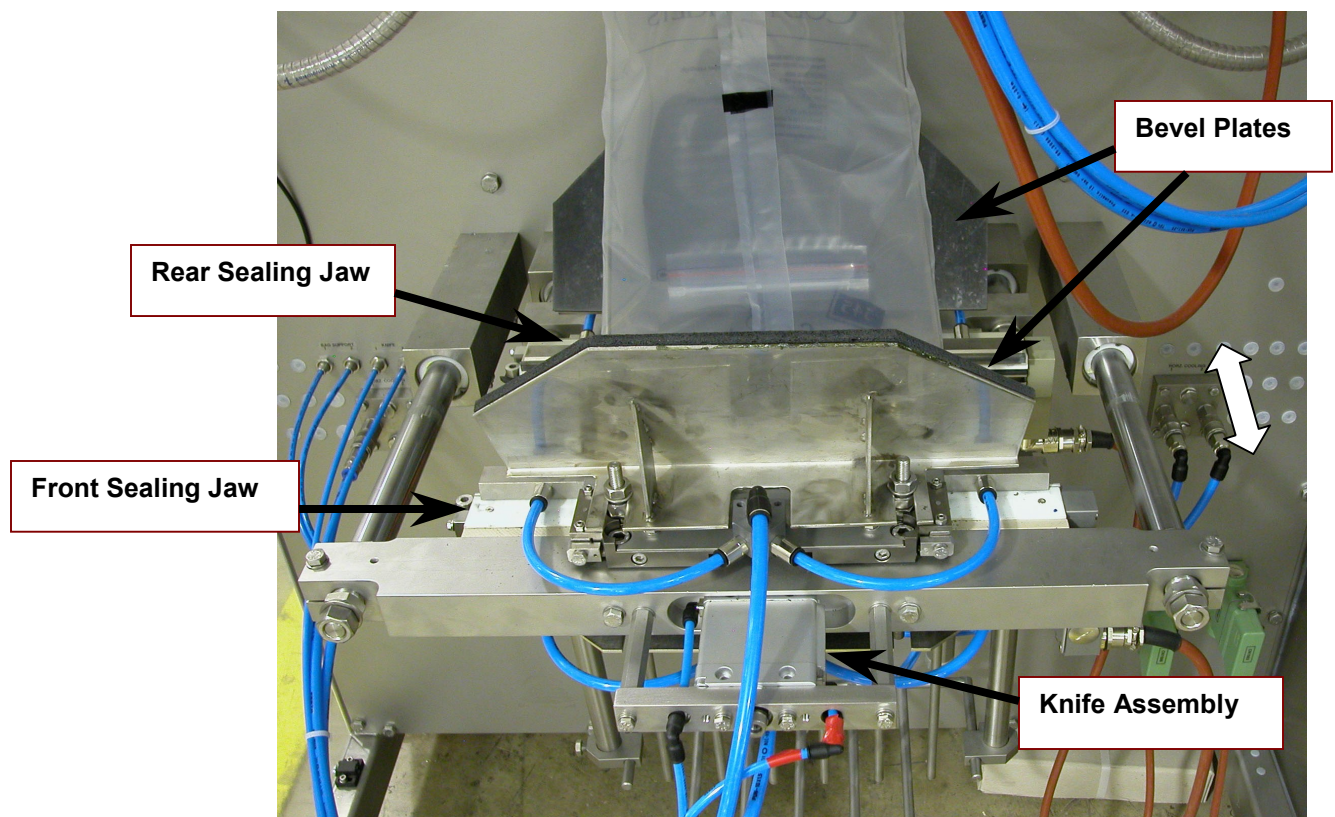


Figure 4.12
Shows the horizontal sealing device.



Horizontal Sealing Device

Jaw Assemblies

The jaw assemblies create the heat needed to create the horizontal seals. There are two jaw assemblies; front and rear. The assemblies are similar except that the front jaw houses the knife assembly and the rear jaw is fitted with alignment set screws. Each jaw consists of a jaw body, an isolation plate, and a jaw carrier.

The jaw bodies create the heat needed to create the seals. Within each jaw body are two replaceable heating cartridges and a temperature probe. The heating of each jaw body is controlled by a temperature controller.

The front of the jaw body shows the jaw profile. Each time a seal is created the profile is pressed into the film. The profile increases the integrity of the seal and improves the appearance of the bags.

The jaw carriers hold the jaw bodies and allow for quick removal of the jaw assemblies for maintenance or changeover.

The isolation plate prevents the jaw carrier from being heated. This ensures that all of the jaw body's heat is used to create seals.

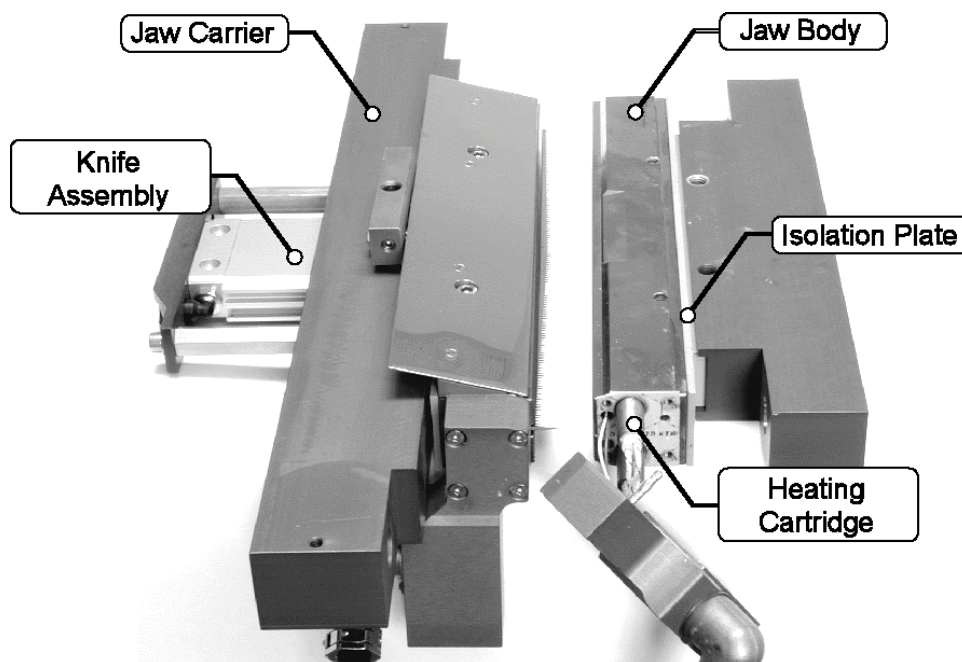


Figure 4.13
Shows the front and rear jaw assemblies.



Horizontal Sealing Device

Knife Assembly

The knife assembly cuts the bags from the film tube. It is housed between the upper and lower sections of the front jaw assembly. When the sealing jaws close, the knife extends and cut through the film. The extend/retract movements are created by a pneumatic cylinder. The timing of the movements is controlled by cam settings on the touchscreen display.

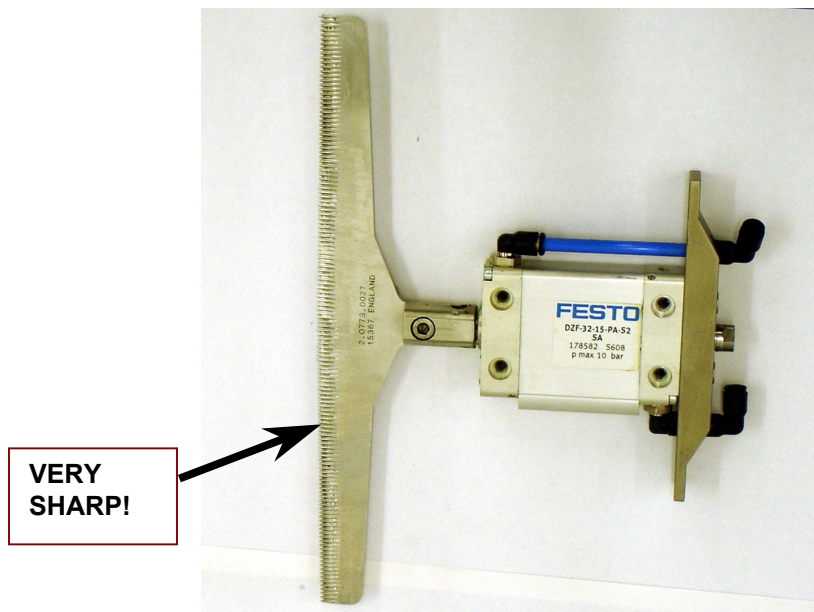


Figure 4.14
Shows the knife assembly removed from the horizontal sealing jaws.



Horizontal Sealing Device

Cross Sealing Station

The cross sealing station creates the opening and closing motion of the horizontal sealing jaws. The station includes a servo drive motor, a gear reducer, drawbars, and swivel arms. As the servo motor turns in the forward direction, the swivel arms push the sealing jaws open. As the servo motor turns in the reverse direction, the swivel arms pull the sealing jaws closed. Because of the gear reducer, it takes multiple turns of the servo motor to fully open or close the sealing jaws. During the sealing cycle, the servo motor torques the jaws to create sealing pressure.

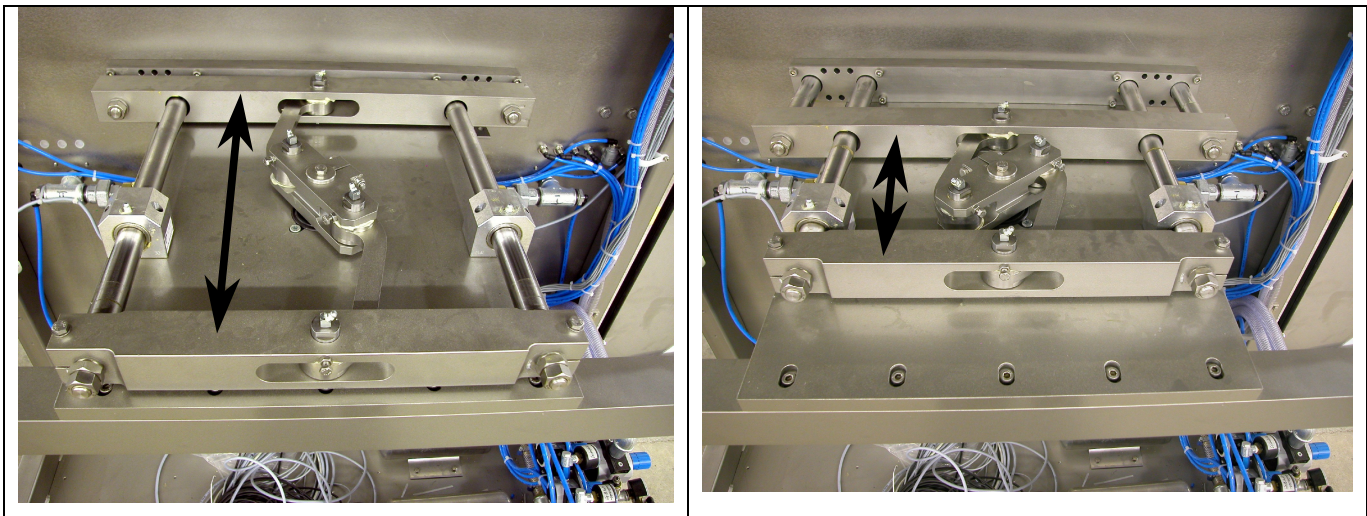


Figure 4.15
Shows the jaws in the open and in the closed position.



Horizontal Sealing Device

Horizontal Sealing Device Controls

Controls for the horizontal sealing device are located on the touchscreen display and on the machine housing.

The touchscreen controls on the *Jaw Setup* screens control the motion of the sealing jaws. A few aspects of the motion are; the distance between the jaws when they are open fully, and; how long the jaws remain closed to create a seal. Refer to the Operator Controls Section, for a full description of the parameters on the *Jaw Setup* screens.

The Temperature Settings screen is used to set the horizontal sealing temperatures.

		7 -			
		Master Pos:	0	Speed:	0
		Jaw Pos:	0	2:01:35 PM	
		Machine Params		3/17/2008	
Jaw Cool Position	50 mm	▲	Main	Registration Photoeye	
Jaw Cool Time	0 msec		Jaw Setup	Downstream Interconnect	
Jaw Seal Pressure	102 %				
Jaw Homing Pres.	95 %				
		7 -			
		Master Pos:	0	Speed:	0
		Jaw Pos:	0	2:01:05 PM	
		Machine Params		3/17/2008	
Params	Adjust	Rec	Auto Seal Enable	ON	▲
			Jaw Seal Time	259 msec	
			Jaw No Seal Position	31 mm	
			Jaw Open Position	140 mm	
			Jaw Open Time	259 msec	▼
					Temperature Settings
			Params	Adjust	Recipes
			View I/O		Config

Figure 4.16
Shows the Jaw Setup screens.



Horizontal Sealing Device

Horizontal Sealing Device Controls

The controls on the *Jaw Functions* screen controls the knife assembly and whether or not horizontal cooling will be used. The On and Off indicators determine when the item will be activated, then when it will be deactivated.

Note: Setting the Knife parameter to OFF during bag production creates a continuous string of bags. This is useful during machine setup procedures.

		7 -	
		Master Pos: 0	Speed: 0
		Jaw Pos: 0	2:02:35 PM
		Machine Params	3/17/2008
Knife Enable	OFF	▲	Main
Knife On Position	120 deg		Jaw Setup
Knife Off Position	170 deg		Jaw Functions
Jaw Seal Cooling	ON		Film
Jaw Seal Cooling On Position	195 deg	▼	Temperature Settings
Params	Adjust	Recipes	View I/O
			Config

Figure 4.17
Shows the Jaw Functions screen.



Film Registration System

The film registration system allows the bagmaker to use registered film. Registered film is designed to be sealed at a specific location. To use registered film, the bagmaker must detect this location and then position the film for sealing.

The bagmaker detects this location by detecting marks (registration marks) printed at the edge of the film. Once the bagmaker has identified one of these evenly spaced marks, it can create horizontal seals at any location relative to these marks.

To identify the marks, the bagmaker uses a sensor (registration sensor) which detects the color contrast between the film and the marks. Any evenly spaced, high contrast marking on the film can serve as a registration mark.

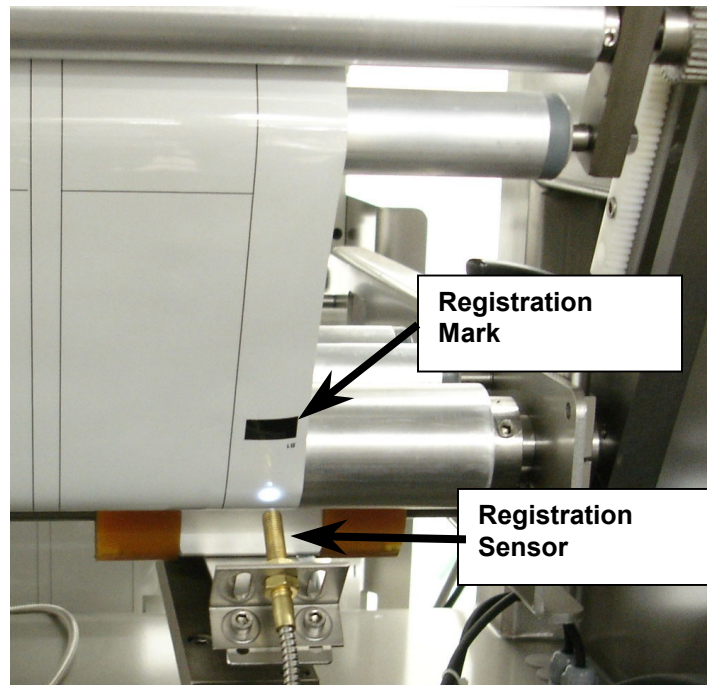


Figure 4.18
Shows the registration sensor.



Film Registration System

Film Registration System Controls

The registration system buttons that control its operation include the *Film Registration Enable/Disable* button, the *Film Photoeye Offset Distance* button, and the *Maximum Missed Film Registration Marks* button. The *Film Registration Enable/Disable* setting determines whether film registration will be used during bag production. The *Film Photoeye Offset Distance* setting changes the sealing and cutting location based on the positions of the registration marks. The *Max Missed Registration Marks* setting determines the consecutive cycles the bagmaker will run without detecting a registration on the film.

Note: The Film Registration Enable/Disable setting must be set to DISABLED when the bagmaker is using non-registered film.

		7 -	
		Master Pos: 0	Speed: 0
		Jaw Pos: 0	2:09:42 PM
		Machine Params	3/17/2008
Film Registration	OFF	Main	Registration Photoeye
Film Photoeye Offset Distance	42 mm	Jaw Setup	Downstream Interconnect
Max Missed Film Registration Marks	3	Jaw Functions	
		Film	Options
		Temperature Settings	
Params	Adjust	Recipes	View I/O
		Config	

Figure 4.19
Shows the Photoeye screen.



Film Carriage

The film carriage controls the supply of packaging material that the bagmaker uses to form bags. It includes a:

- Film Spindle
- Dancer Assembly
- Film Unwind Device
- Film Tracking Assembly
- Out of Film Sensor Assembly
- Guide Rollers

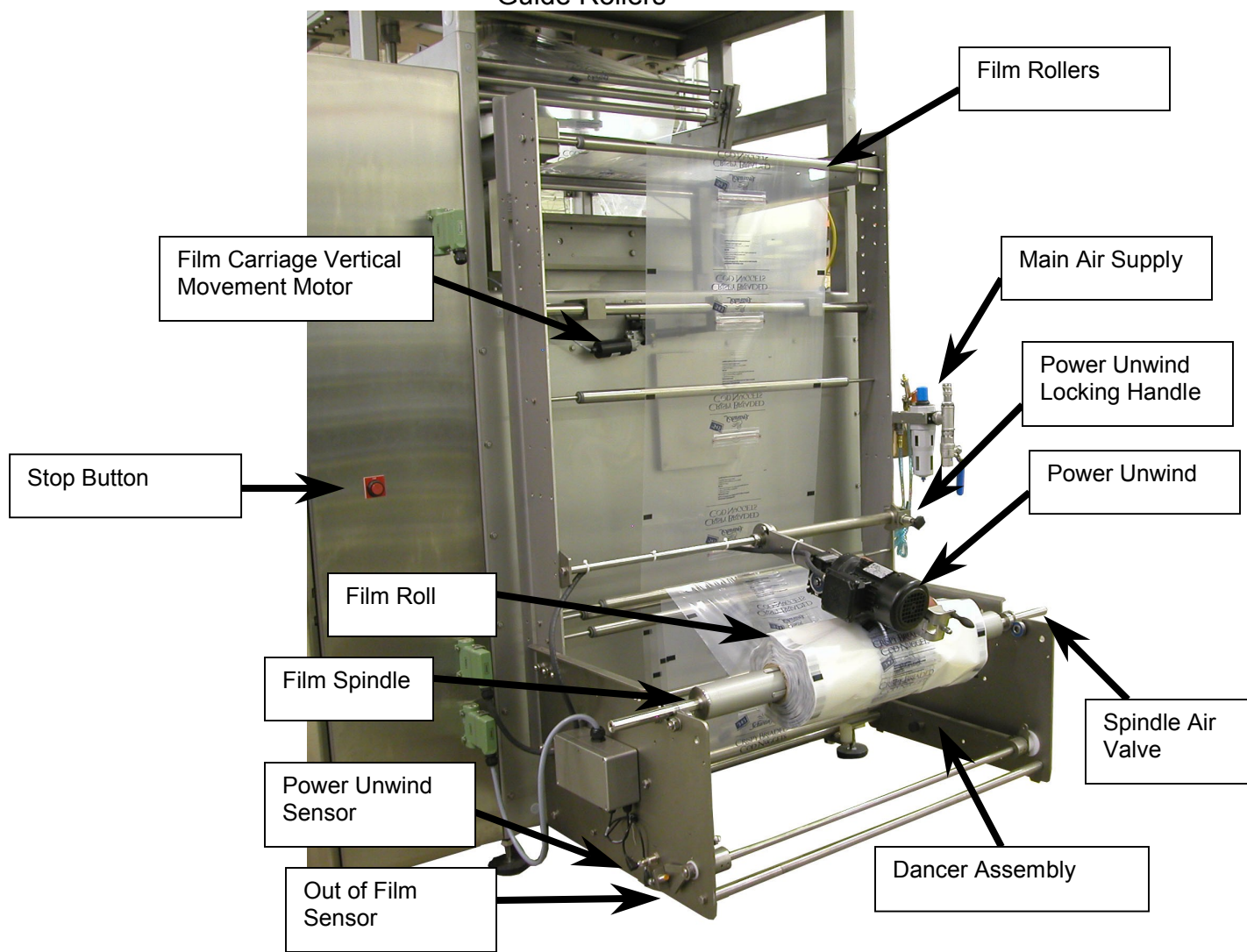


Figure 4.20
Shows the basic components of the film carriage.



Film Carriage

Film Spindle

The film spindles hold the film rolls on the film carriage. It includes an air bladder that is enclosed within a metal housing. The housing has slots that allow sections of spindle clamps to protrude through it. When the bladder is inflated, the spindle clamps press against the inside of the film core, holding the film on the spindle. The bladder is inflated and deflated through an air valve located in the end of the spindle. Inflate the spindle so that it securely holds the film roll, in most cases 80-100 PSI is recommended.

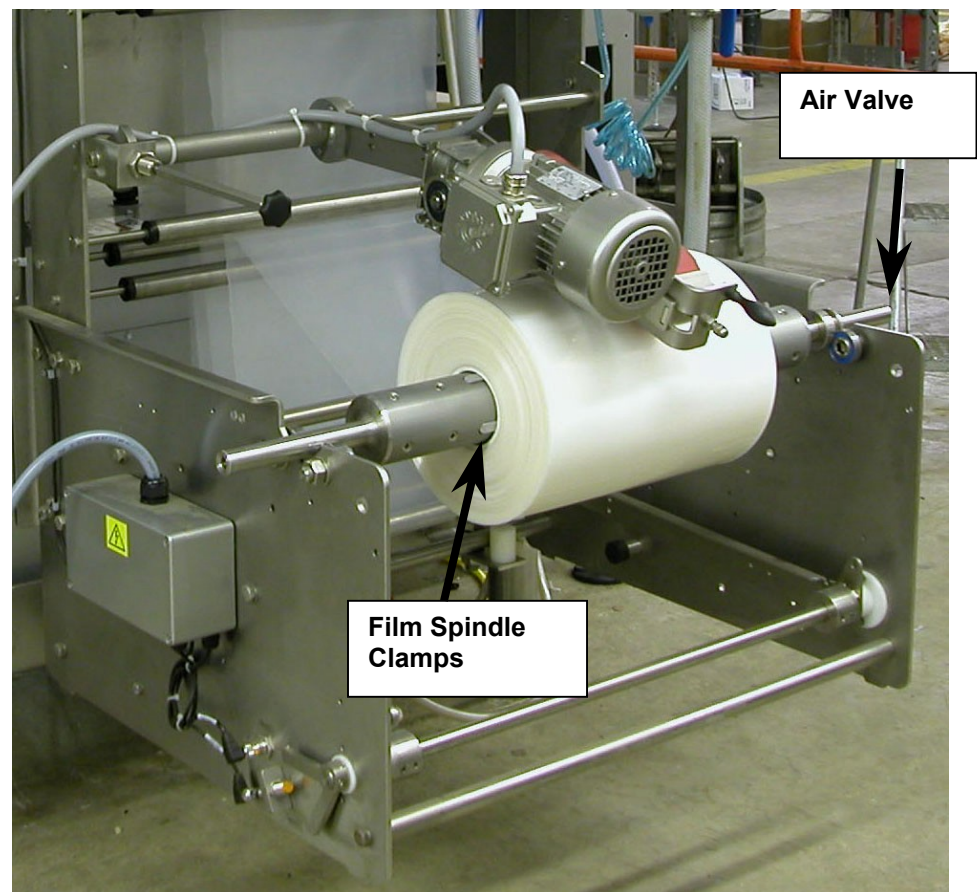


Figure 4.21
Shows the film spindle and air valve.



Film Carriage

Dancer Assembly

The dancer assembly maintains tension on the film web. It includes one fixed roller and a dancer arm assembly.

When film is threaded through the bagmaker, a film loop forms between the fixed roller and the floating rollers of the dancer assembly. As film is pulled out of the film carriage during bag forming, the film loop pulls the dancer arms upward and tensions the arm springs. The tensioned springs cause the dancer arm assembly to push downward on the film loop. This prevents any slack from forming in the loop.

Note: Slack in the film web causes film registration and film tracking problems.

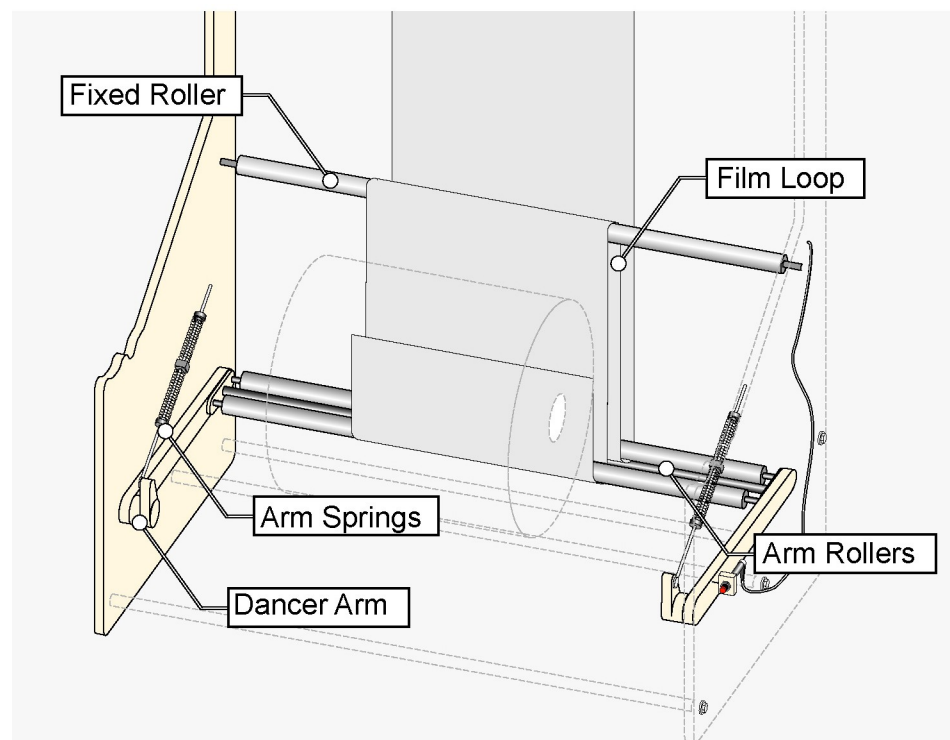


Figure 4.22
Shows how the dancer assembly functions.



Film Carriage

Power Unwind Device

The power unwind device unwinds the film roll. The speed of the device is controlled by the height of the dancer arms. As the arms rise, the unwind device turns faster to put film in the loop. As the arms lower, the device slows to prevent too much film from being unwound. The position of the arms are detected by an unwind sensor.

The locking handle holds the power unwind unit up when changing rolls.

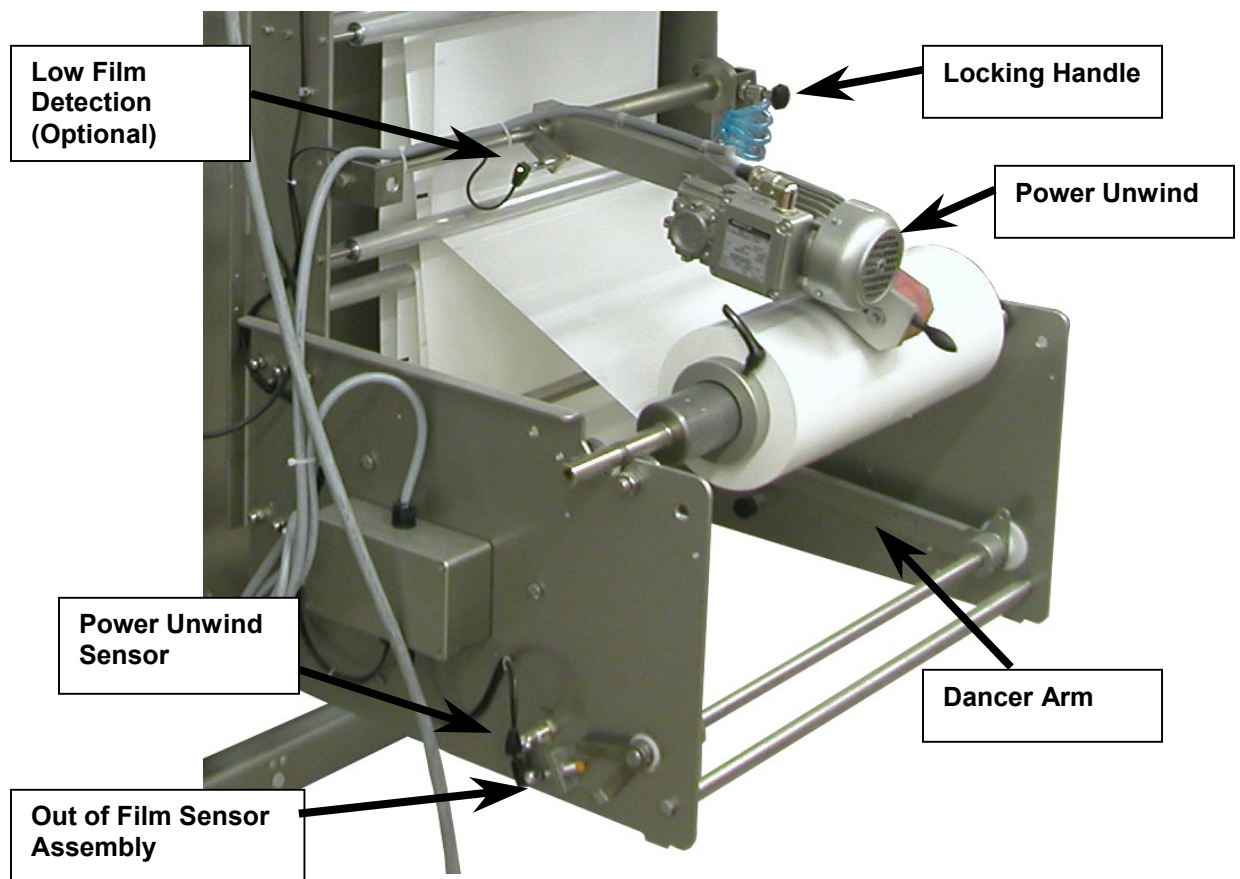


*Figure 4.23
Shows the power unwind device.*



Film Carriage

Film Tracking Assembly

The film tracking assembly controls the position of the film carriage relative to the forming collar; thus controlling the alignment of the vertical seal. The assembly includes a DC drive motor and two limit switches. The drive motor moves the upper and lower sections of the film carriage towards either side of the forming collar. The limit switches limit the movement of the film carriage to just a few inches.

You will make film tracking adjustments to align the edges of the film tube (vertical seal). It is best if you make your adjustments while jogging the film feeding device or while running the bagmaker in automatic mode. This will allow the film web to slide across the guide rollers and the forming collar with ease.

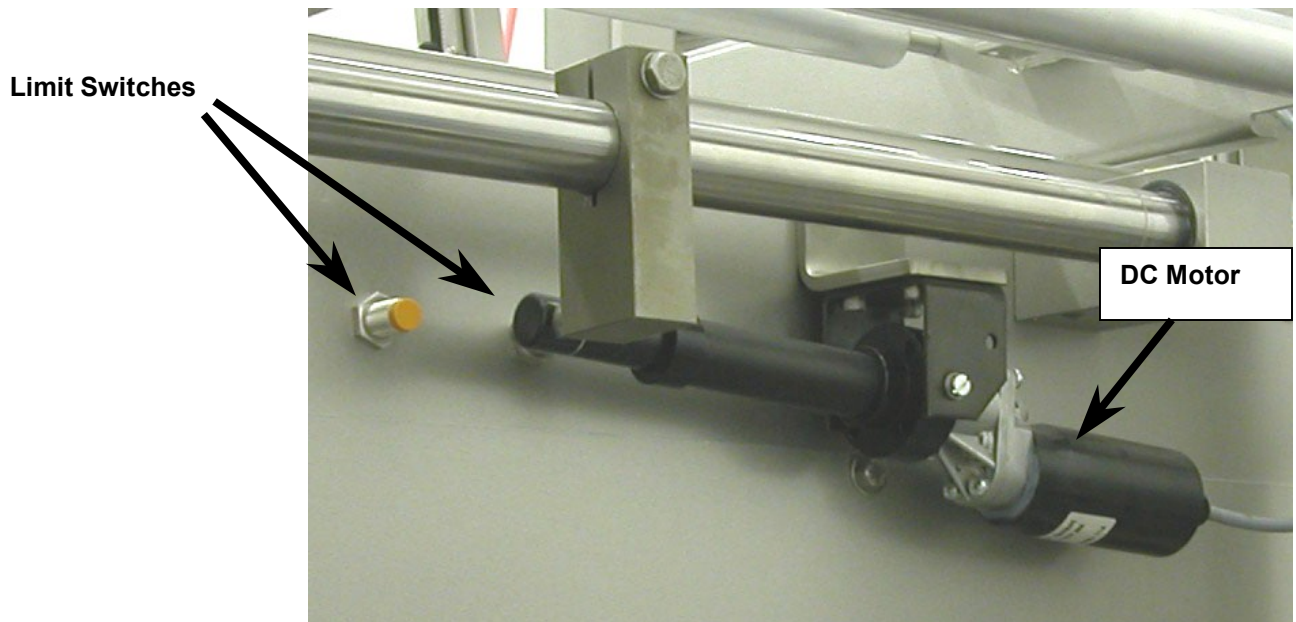


Figure 4.24
Shows the film tracking assembly.



Film Carriage>Film Tracking Assembly

Film Tracking Controls

The film carriage movements are controlled by the *Film Carriage Position* buttons on the touchscreen display. Whenever the bagmaker is turned on, pressing either of these switches will cause the film carriage to move (except when the E-STOP button is depressed). The movements will be slow yet steady.

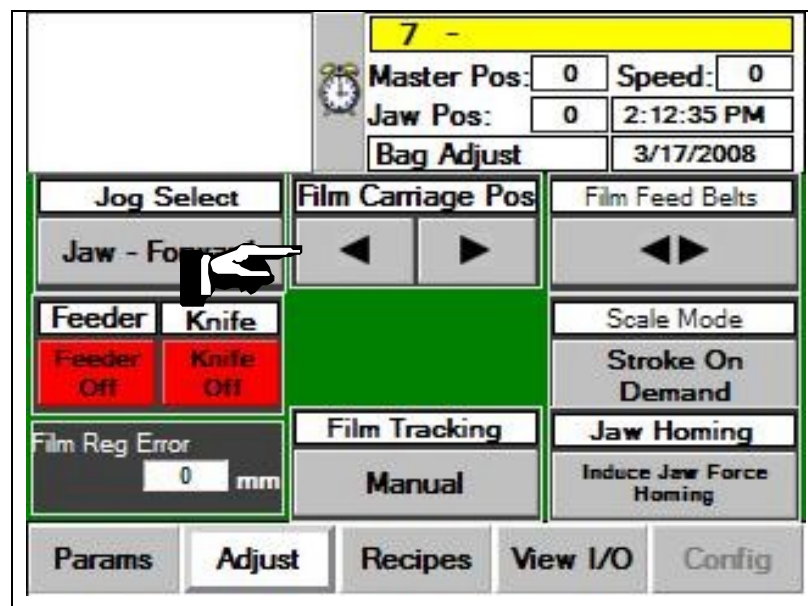


Figure 4.25
Shows the buttons that control film tracking.



Film Carriage

Out of Film Sensor Assembly

The out of film sensor assembly causes the bagmaker to stop forming bags when the film roll runs-out or when the roll cannot unwind. It includes a proximity sensor and two metal flags that are connected to the dancer arms.

When the film roll runs-out, the dancer arms fall to the bottom of the film carriage and rotates the upper flag in front of the proximity sensor: This signals the bagmaker to stop forming bags.

When the film roll cannot unwind, the film loop pulls the dancer arms to the top of the film carriage and rotates the lower flag in front of the sensor: This also signals the bagmaker to stop forming bags.

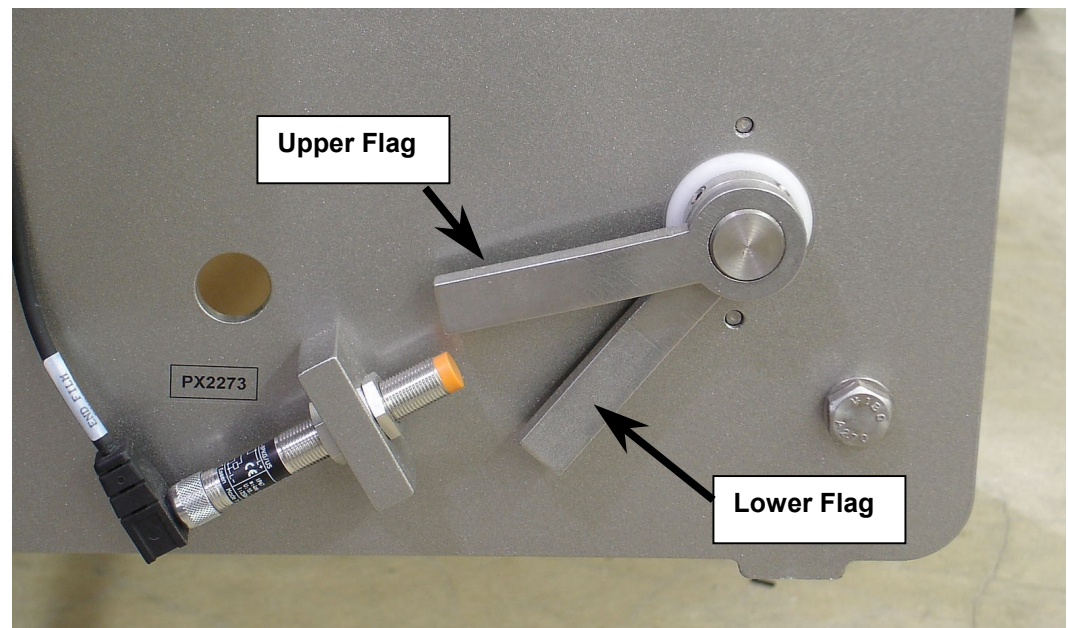


Figure 4.26
Shows the out of film sensor assembly.



Pneumatics System

The pneumatics system controls the compressed air supply to the bagmaker. The system distributes compressed air to the bagmaker's pneumatic cylinders, the vacuum generator, and the cooling devices. The system includes a primary manifold and an air filter/regulator.

The pictures in this section are for illustration purposes. The controls included on each machine may vary depending on the machine's specific options. The controls are numbered with a corresponding master list identifying the controls on the inside of the housing door.

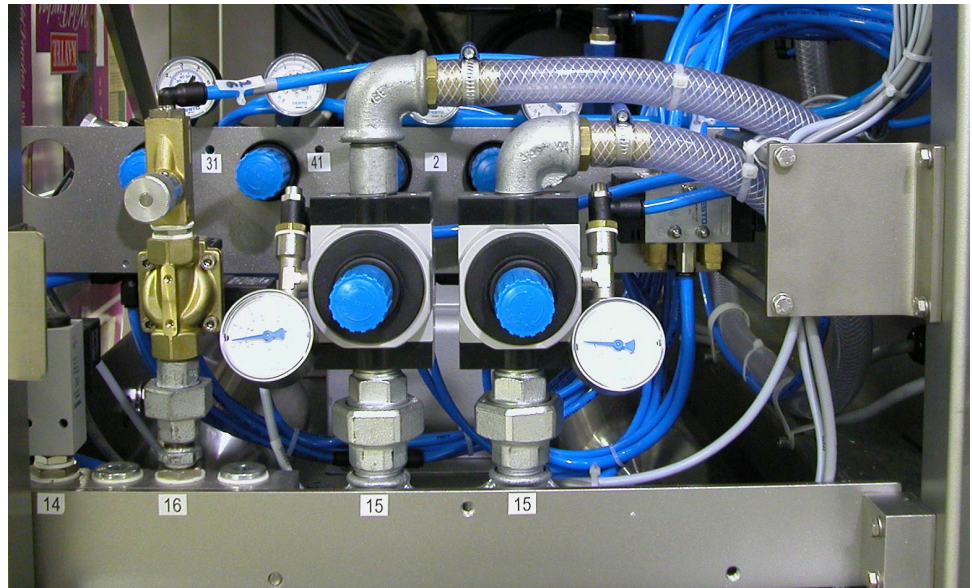


Figure 4.27
Shows a typical pneumatic system.



Pneumatics System

Primary Manifold

The primary manifold distributes compressed air to the horizontal and vertical cooling devices, the vacuum system, and the solenoid bank. A pressure switch is also connected to the primary manifold.

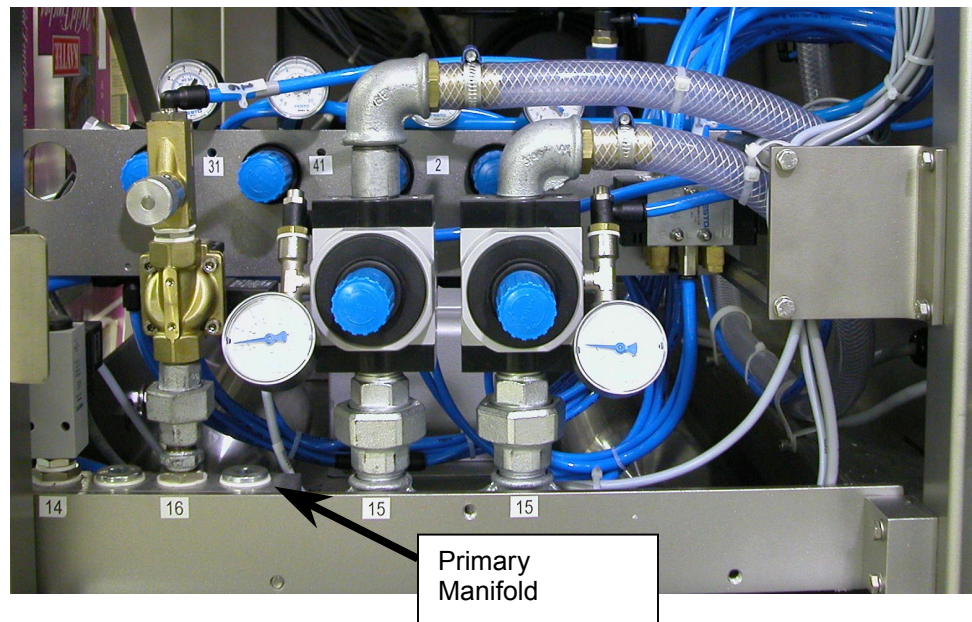


Figure 4.28
Shows the primary manifold.



Pneumatics System

Pressure Switch

The pressure switch monitors the available air pressure in the primary manifold. If the pressure falls below the preset limit, the switch signals the bagmaker to stop forming bags and to display the "LOW AIR PRESSURE" alarm message on the touchscreen. Once the air pressure is restored, the alarm can be cleared.

The low air pressure limit is typically set to around 60 PSI before the alarm will activate. The limit is set using the knob on top of the pressure switch.

Note: The bagmaker typically requires 85-120 PSI of air pressure for normal machine operation.

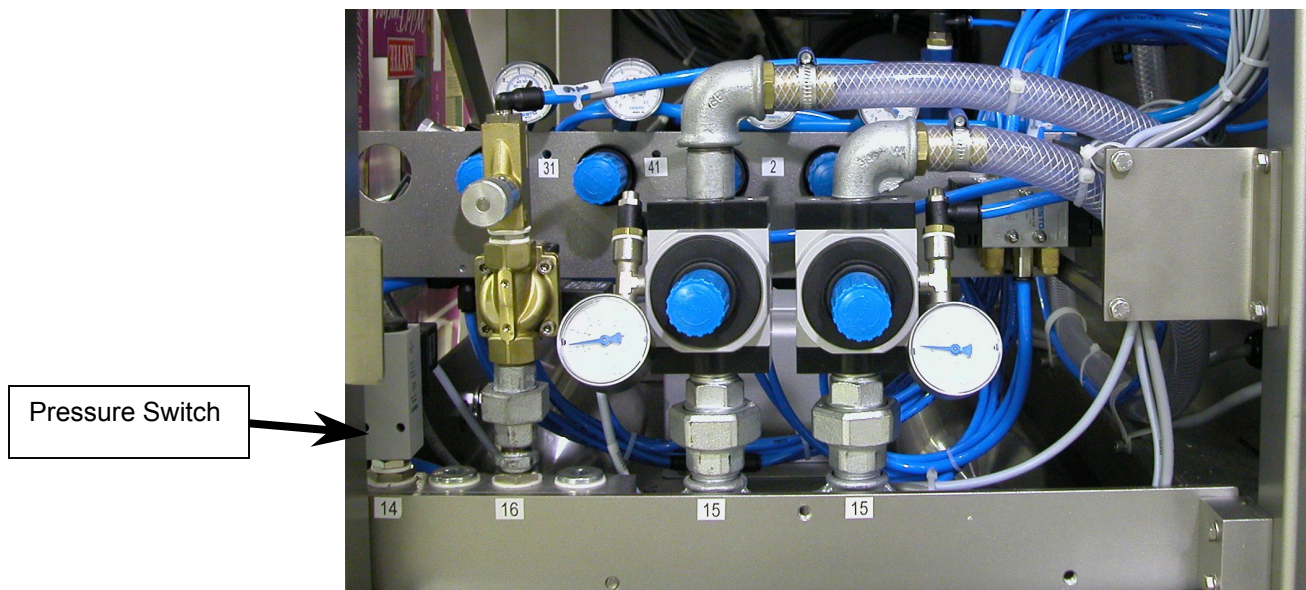


Figure 4.29
Shows the pressure switch.



Pneumatics System

Horizontal and Vertical Cooling Devices

The horizontal and vertical cooling devices release compressed air onto the horizontal and vertical seals. These devices direct compressed air from the primary manifold, through valves, through air lines, to cooling wands. The valve for the horizontal cooling device is a pressure regulator with a pressure gauge. The amount of horizontal cooling is set using the regulator's adjustment knob. The pressure gauge allows for precise adjustments. The valve for the vertical sealing device is a flow control valve. The amount of vertical cooling is set using the valve's adjustment knob.

Note: There is no pressure gauge for the vertical cooling device because the amount of airflow is not as critical as it is for the horizontal cooling device.

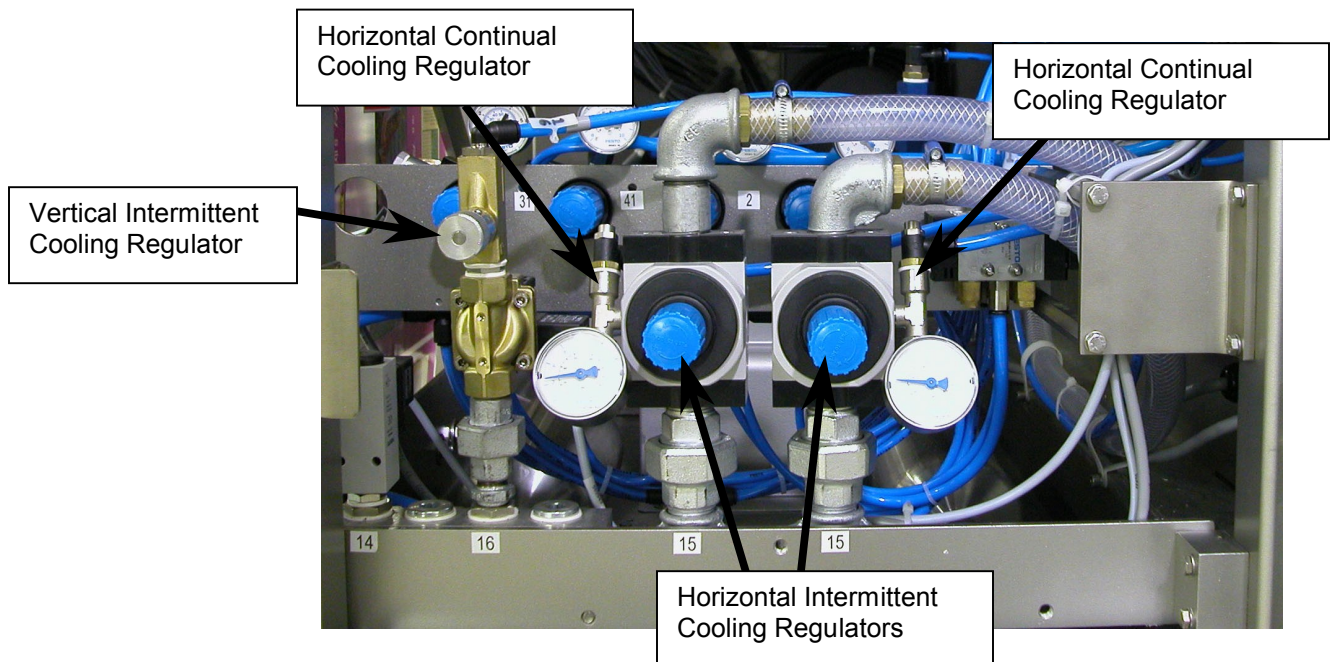


Figure 4.30
Shows the cooling device controls.



Pneumatics System

Vacuum System

The vacuum system creates the suction for the film feed belt assemblies. The system includes a vacuum generator, an air filter, and a vacuum gauge. The vacuum generator uses compressed air to generate a vacuum. The vacuum is directed through the air filter, past the vacuum gauge, and to the film feed belt assemblies. The air filter removes film debris from the system. The gauge is used to verify that the system is functioning properly. When the system is functioning properly, the gauge should read above 10 Hg for 260 models and 20 HG for 400 models.

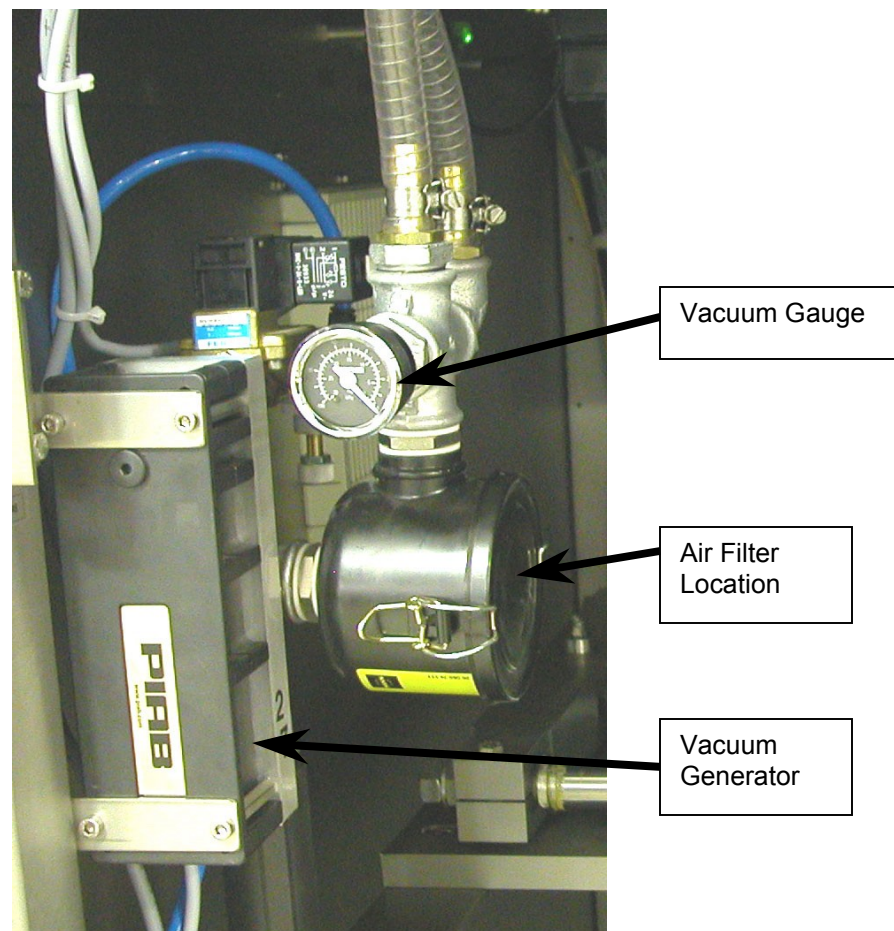


Figure 4.31
Shows the vacuum system.



Pneumatics System

Solenoid Bank

The solenoid bank supplies compressed air to all of the bagmaker's pneumatic cylinders. The PLC activates each solenoid valve in the bank at a specific time to perform a specific operation.

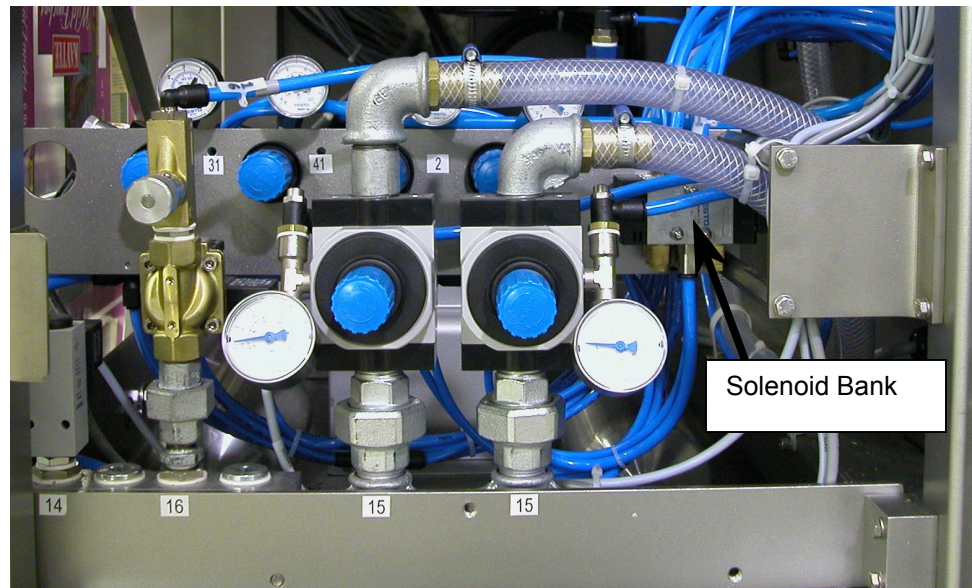


Figure 4.32
Shows the solenoid bank.



Optional Equipment

Optional equipment enhances the capabilities of the bagmaker. This equipment includes:

- Bevel Plates
- Foam Deflators
- Horizontal Cooling
- Automatic Film Tracking System
- Gusseting Device
- Splice Table
- Discharge Area



Optional Equipment

Bevel Plates

The bevel plates isolate the horizontal seals from the impact of the product drop. Because they hold the product drop above the horizontal seals, they also allow the seals additional cooling time.

Foam Air Deflators

Foam air deflators push the air out of the bags to help remove air and to prevent the bag from possibly bursting. They are positioned slightly ahead of the sealing jaws, so before the jaws close, the foam deflators push the excess air in the bag up the forming tube.

Bag Grippers

The bag grippers pinch the film above and below the horizontal sealing jaws. This allows the seals to be created in a stress free environment.

Horizontal Cooling

The horizontal cooling tube blows air on the seal to help it to solidify and complete the seal. The flow of air is adjusted with the pneumatic knob located inside the machine housing.

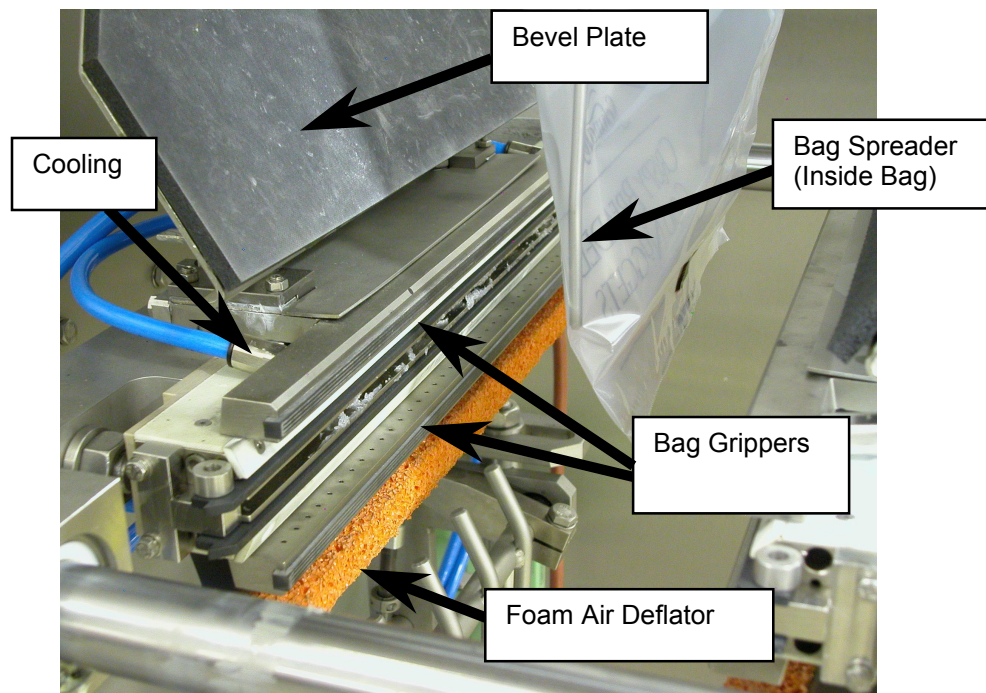


Figure 4.33
Shows optional sealing support devices.



Optional Equipment

Automatic Film Tracking System

The automatic film tracking system automatically keeps the edges of the vertical seal aligned. There are two sensors; one positioned just inside of the film web (inner sensor) and one positioned just outside of the film web (outer sensor). The inner sensor should always remain blocked by the film web and the outer sensor should always remain unblocked by the web. If the outer sensor becomes blocked, the bagmaker moves the film carriage until it becomes unblocked. If the inner sensor becomes unblocked, the bagmaker moves the film carriage until it becomes blocked.

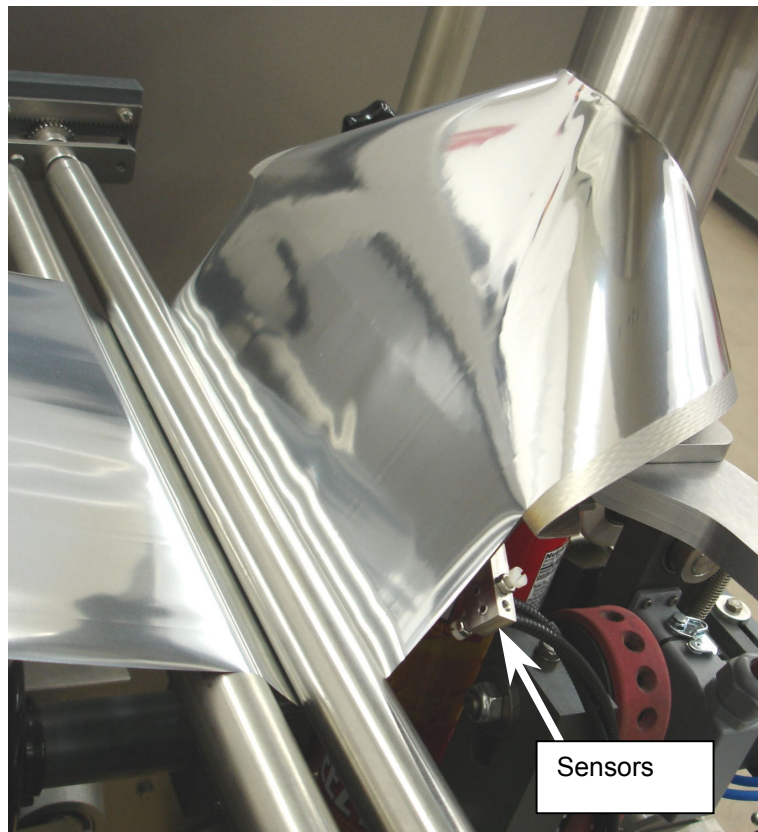


Figure 4.34
Shows the collar mounted automatic film tracking sensors.



Optional Equipment

Automatic Film Tracking Touchscreen Display

Settings on the touchscreen display determine when the bagmaker can perform automatic film tracking adjustments. When the machine cycle position is between the cam values, the motion controller signals the PLC to perform any necessary film tracking adjustments.

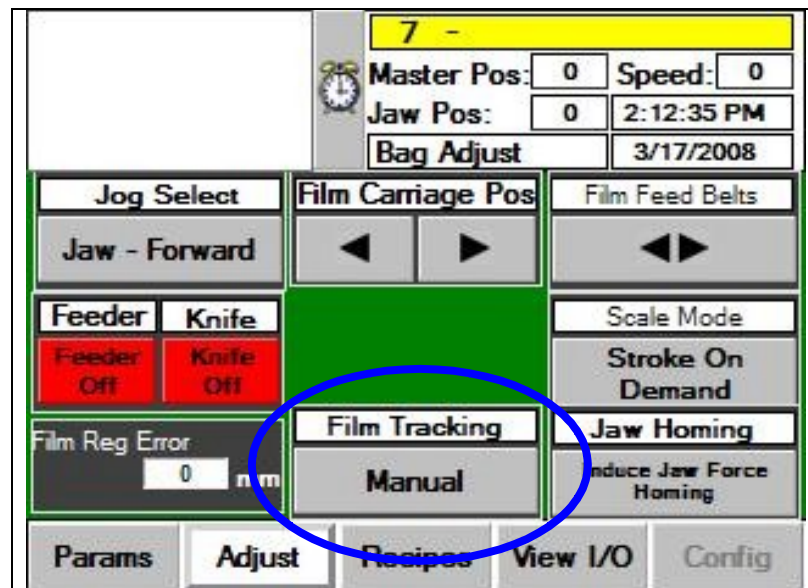


Figure 4.35
Shows the Adjustments screen.



Optional Equipment

Splice Table

The splice table is used to attach the beginning of a full film roll to the end of an exhausted film roll. When the bagmaker runs out of film, the out of film sensor causes the bagmaker to stop forming bags and it triggers the automatic clamping bar to grab the film end before it leaves the film carriage. Once a new roll of film is loaded on the film carriage and threaded up to the splice table, the manual clamping bar is used to hold the end of the new film roll while the two film ends are taped together.

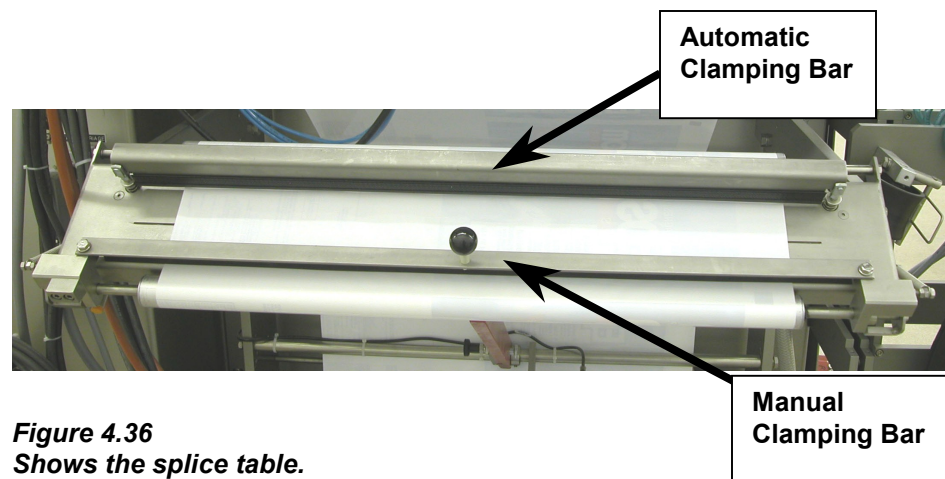


Figure 4.36
Shows the splice table.

Clamp/Unclamp Push-Button

This push-button clamps or unclamps the automatic clamping bar on the splice table. Press and release this push-button to clamp or unclamp the clamping bar.



Figure 4.37
Shows the CLAMP/UNCLAMP push-button.



Discharge Area

The lower discharge area may include several optional devices. The devices used depend on the type of product and the type of bag being produced.

The discharge chute allows the finished bags to be transitioned from the bagger to downstream equipment.

The lower support rods may be adjusted to support the bag while it is being sealed. The discharge rods then rotate to push the bag off the support rods.

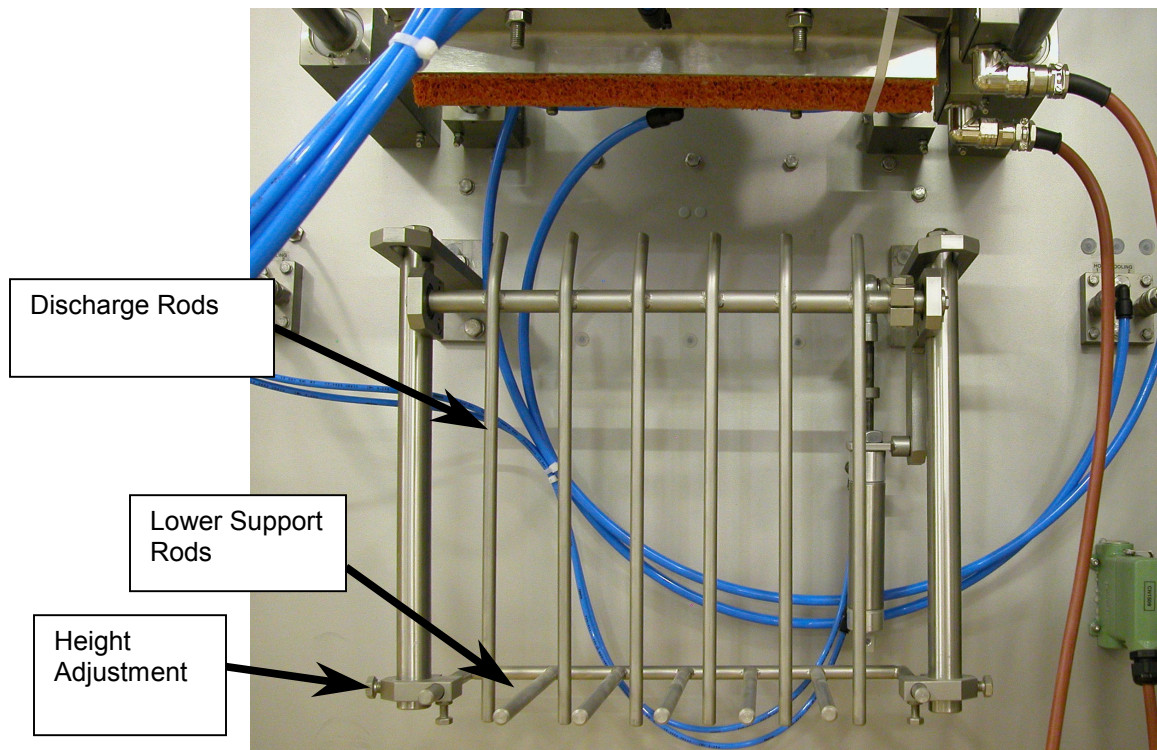


Figure 4.38
Shows the discharge area.



Section 5: Operator Controls

The operator controls allow you to setup and run the bagmaker. These controls include push buttons, switches, and a touchscreen display (HMI) Human-Machine-Interface.



Figure 5.1
Shows the HMI.



HMI (Human-Machine-Interface)

The HMI (human-machine-interface) allows you to load, modify, and save a product recipe; a recipe holds all of the forming parameters necessary to create a particular bag style. The HMI consists of sections that are accessed through the Menu Tree located along the edge of the touchscreen.

Menu Tree

The sections of the HMI are as follows:

- Parameters
- Adjustments
- Recipes
- View Data
- View Input / Output Data
- Configuration
- Alarms

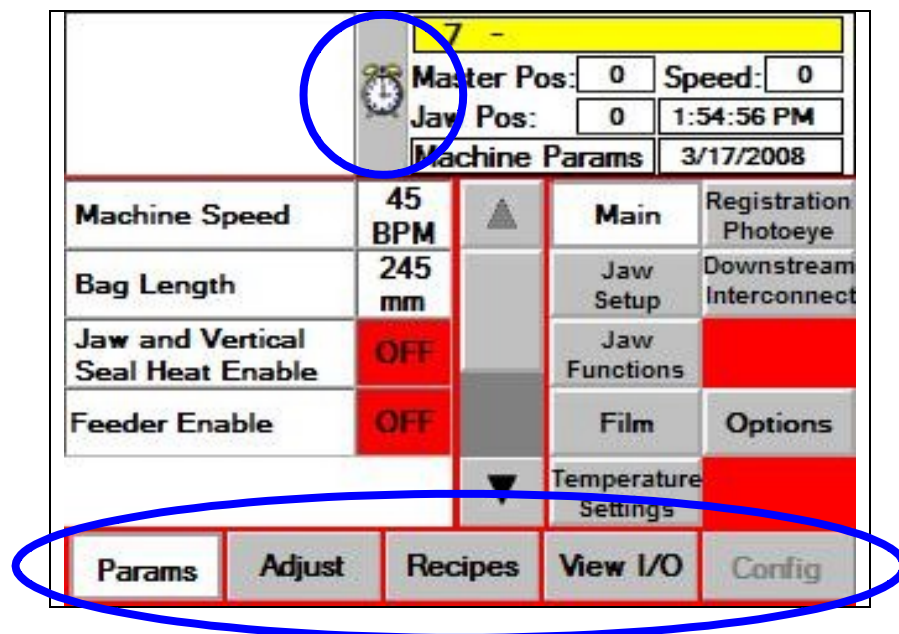


Figure 5.2
Shows the items on the Main Menu Tree.



Parameters and Submenus

Parameters and Submenus

The settings of the parameters, for each submenu screen, control all of the bagmaker's forming operations; horizontal sealing, code dating, product settling, and etc. Others determine when a forming operation will occur during the bag forming cycle.

The Parameters screens are accessed from the Main Menu. The parameter descriptions for each submenu are described on the following Parameters Charts.

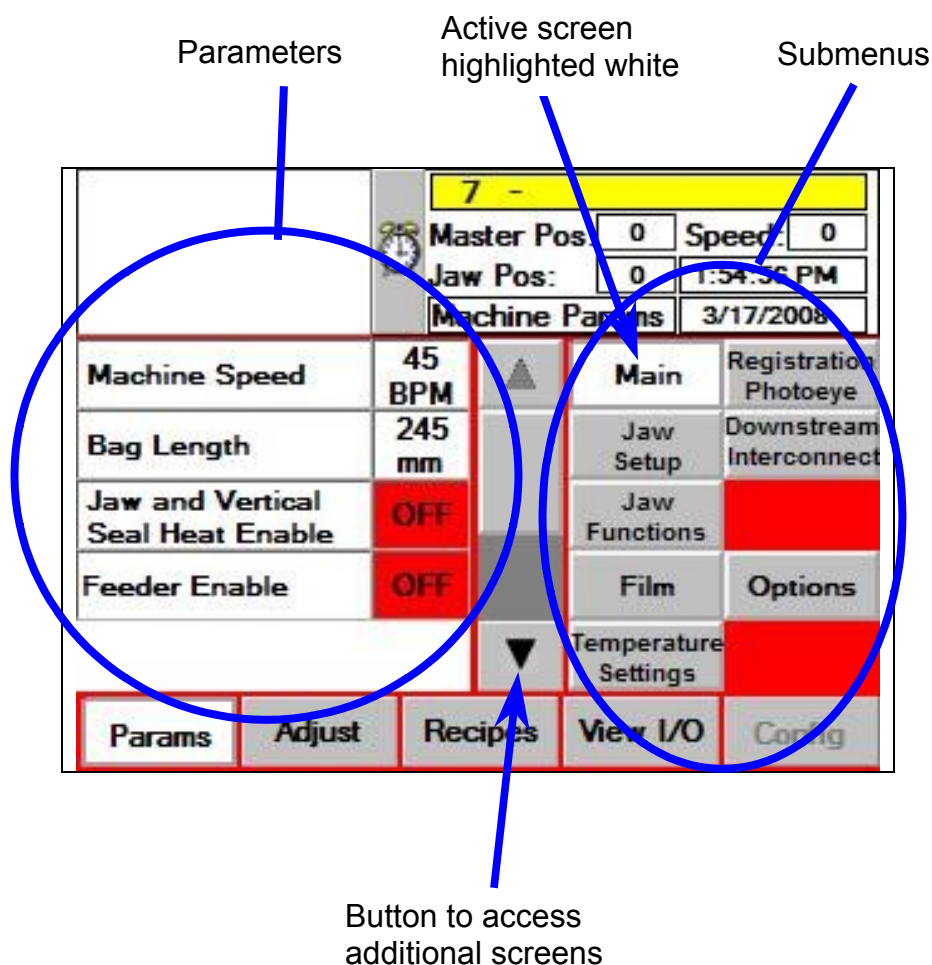


Figure 5.3
Shows the settings on the Main Parameters screen.



Parameters Values

Some parameters will have a pop up box, as shown below, to enter a numeric value. The top left corner will list the range of values that may be entered for the specific parameter.

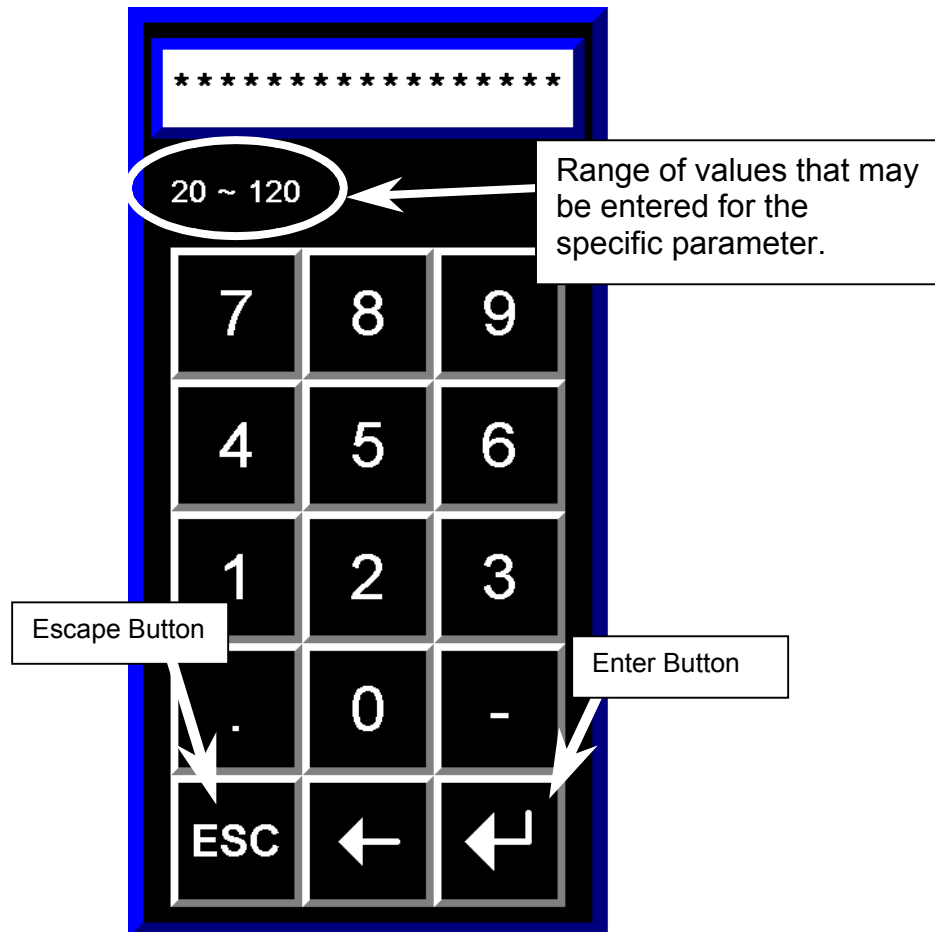


Figure 5.4
Shows a numeric pop up box.



Timing Theory Chart - 360° Cycle

The following timing theory chart demonstrates the timing relationships between the various mechanical, electrical and pneumatic operations. The timing values are approximate and are based on a machine speed of approximately 60 bags per minute. The values indicate the start and stop points of each forming operation. The chart also shows the relationship between other forming operations.

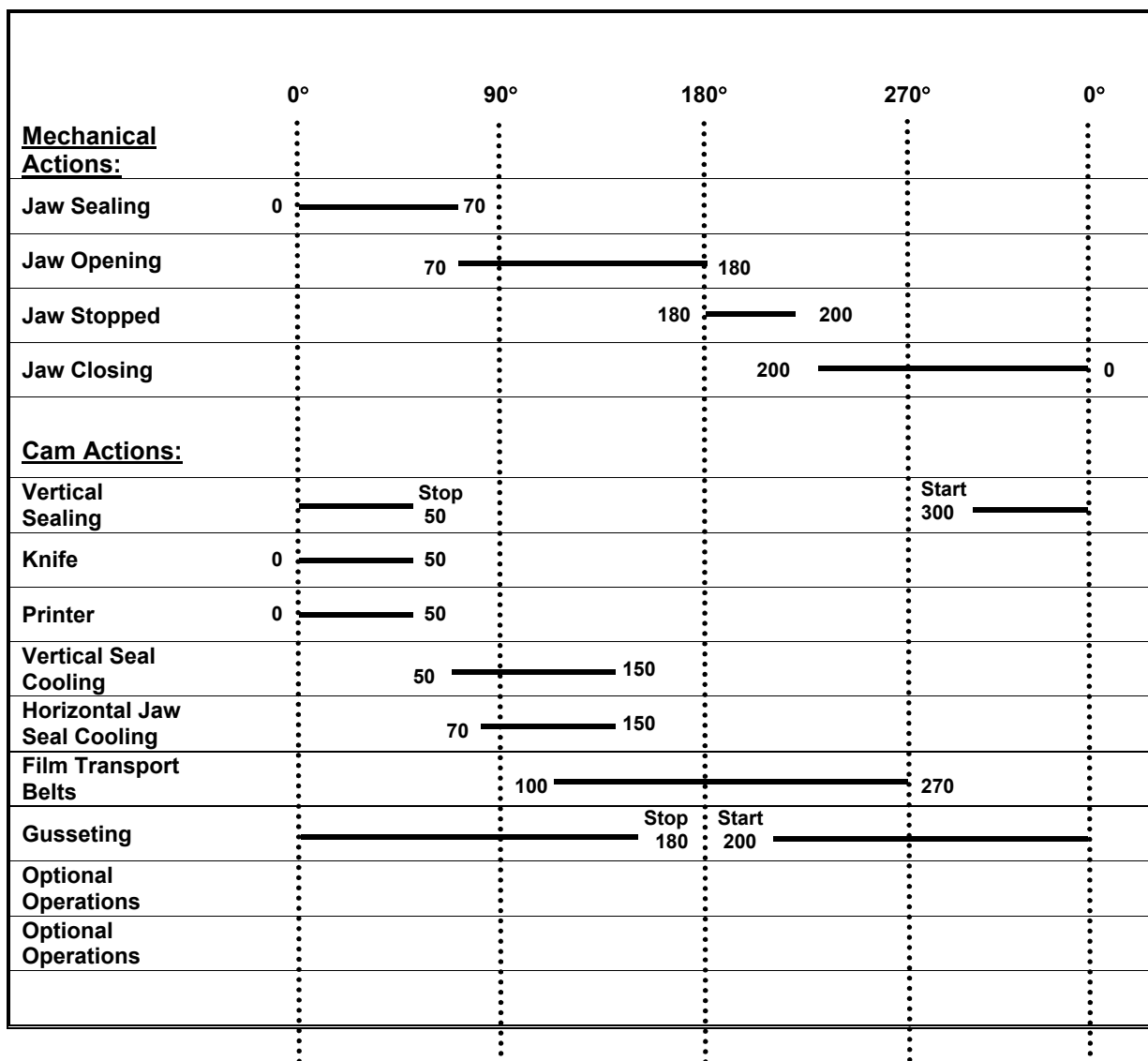


Figure 5.5

Shows the Timing Theory Chart – Individual machine values may vary.

(The values indicate example Start and Stop values for each forming operation, the start and stop values are read from left to right, except as noted.)



HMI (Human-Machine-Interface)

Parameter Charts

The following charts describe the parameters under each submenu on the parameters screens.

Parameter Chart	
Main Submenu Descriptions	
Parameter(s)	Parameter Description
Machine Speed	Determines the number of bags that the bagmaker will produce in one minute.
Bag Length	Determines the length of the bags that the bagmaker will produce during bag production.
Jaw and Vertical Seal Heat Enable	Turns the power to the horizontal and vertical sealing device temperature controllers On and Off. When set to On, the sealing devices will heat to the set sealing temperatures. When set to Off, the sealing devices will begin to cool to room temperature.
Feeder Enable	Determines whether the product feeder will deliver product to the bagmaker during bag production.
Feeder Drop Time	This is the amount of time it takes for the product to fall from the feeder device into the bag.
Drop Time Confirmation Delay	This is the duration of the "dump request signal".

Figure 5.6
Describes the settings under the Main submenu

**HMI (Human-Machine-Interface)**

Parameter Chart	
Jaw Setup Submenu Descriptions	
Parameter(s)	Parameter Description
Auto Seal Enable	Toggles the bagmaker between automatic and manual jaw profiling modes. When set to On, the bagmaker automatically calculates the postseal time, the postseal angle, and the preseal time values. When set to Off, these settings must be determined by the operator.
Jaw Seal Time	Determines how long the sealing jaws should remain closed to create a seal. It is also the amount of time that the horizontal sealing jaws have to move through the jaw seal angle—which controls the speed of the jaws during the sealing portion of the forming cycle.
Jaw No Seal Position	Determines the distance between the jaws when the bagmaker dry cycles.
Jaw Open Position	Determines the distance between the jaws when they are fully opened. This setting depends on the amount of space a filled bag needs to travel between the jaws.
Jaw Open Time	Determines how long the jaws will remain in the fully open position.
Jaw Cool Position	Determines the distance between the jaws when they open to allow the horizontal cooling device to cool the horizontal seal.
Jaw Cool Time	Determines how long the jaws will remain in the cooling position.
Jaw Seal Pressure	Determines the amount of torque that the horizontal sealing devices use to create a seal.
Jaw Homing Pressure	Determines the amount of torque that the jaws will use when homing.

Figure 5.7
Describes the settings under the Jaw Setup submenu.



HMI (Human-Machine-Interface)

Parameter Charts	
Jaw Function Submenu Descriptions	
Parameter(s)	Parameter Description
Knife Enable	Determines whether the knife will be used during bag production. When set to Off, the bagmaker will create a continuous string of bags.
Knife On Position Knife Off Position	These parameters determine when the knife will extend and retract during the forming cycle. When using the constant-heat sealing technique, the knife should cut the film just before the jaws touch. When using the heat-seal sealing technique, the knife should extend after the jaws have touched.
Jaw Seal Cooling Enable	Determines whether intermittent horizontal cooling will be used during the forming cycle.
Jaw Seal Cooling On Position Jaw Seal Cooling Off Position	These parameters determine when the intermittent horizontal cooling device will be activated to cool the horizontal seal.

Figure 5.8

Describes the settings under the Jaw Function submenu.



HMI (Human-Machine-Interface)

Parameter Charts	
Film Submenu Descriptions	
Parameter(s)	Parameter Description
Film Transport On Position	Determines the point in the forming cycle when film feeding will begin.
Film Transport Off Position	Determines the point in the forming cycle when film feeding must end.
Vertical Seal On Position	Determines the point in the forming cycle when the vertical sealing device will extend to create a seal.
Vertical Seal Off Position	Determines the point in the forming cycle when the vertical sealing device will retract to allow film feeding.
Vertical Cooling Enable	Determines whether vertical cooling will be used during bag production.
Vertical Cooling On Position Vertical Cooling Off Position	These parameters determine when the intermittent vertical cooling device will be activated to cool the vertical seal.

Temperature Settings Submenu	
Parameter(s)	Parameter Description
Front Jaw Temperature	Sets the sealing temperature for the front horizontal sealing jaw assembly; should equal the rear temperature setting.
Rear Jaw Temperature	Sets the sealing temperature for the rear horizontal sealing jaw assembly; should equal the front temperature setting.
Vertical Seal Temperature	Sets the sealing temperature for the vertical sealing device.

Figure 5.9

Describes the settings under the Film and Heat Control submenus.

**HMI (Human-Machine-Interface)**

Parameter Charts	
Registration Photoeye Submenu Descriptions	
Parameter(s)	Parameter Description
Film Registration Enable	Determines whether film registration will be used during bag production. If the bagmaker is using registered film, this parameter must be set to On. If the bagmaker is using non-registered film, this parameter must be set to Off.
Film Photoeye Offset Distance	Changes the horizontal sealing/cutting location. Makes the bagmaker advance ###mm of additional film so that the horizontal sealing jaws land at the desired location on the film tube.
Max Missed Registration Marks	When operating with film registration enabled, this is the number of consecutive cycles the bagmaker will run without detecting a registration mark on the film. The bagmaker will cycle stop and display the appropriate alarm if this number is exceeded.

Printer Submenu Descriptions	
Parameter(s)	Parameter Description
Code Dater Enable	Determines whether code dater (printer) will be used during production.

Downstream Interconnect Submenu	
Parameter(s)	Parameter Description
Downstream Interconnect	When enabled, the bagmaker will monitor the "downstream ready signal" before starting to produce bags.

Options Submenu Descriptions	
Parameter(s)	Parameter Description
Bag Discharge Enable	Determines whether the Bag Discharge device will be used to turn the bag over during production. This will cause the discharge chute rods to push the bag off the bag support rods.
Bag Discharge On Position Bag Discharge Off Position	These parameters determine when the bag flipper device will extend and retract during the forming cycle.

Figure 5.10

Describes the settings under the Photoeye, Printer, Downstream and Options submenus.



Adjustments Screen

The buttons on the *Adjustments* screen allow you to perform the most common machine adjustments during bag production.

Jog Select Button

The *Jog Select* button allows you to select the machine jogging mode. Pressing this button toggles its state between *Jog Jaws Forward* and *Jog Film*. Once the jogging mode has been selected and the JOG/AUTO selector switch has been set to JOG, press and hold the JOG/RUN push button to jog bagmaker.

Film Carriage Position Buttons

The *Film Carriage Position* buttons allow you to move the film carriage left or right to align the edges of the vertical seal. Press and hold one of these buttons to move the film carriage. When the button is released, the film carriage will stop moving.

Film Feed Belts Button

The *Film Feed Belts* button allows you to open and close the film transport belts. Press and release this button to open or close the film transport belts.

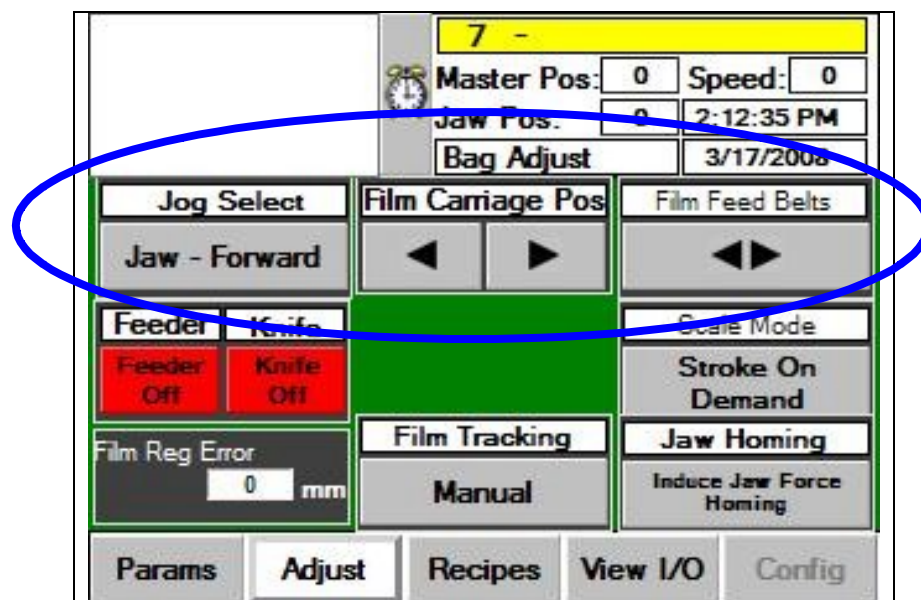


Figure 5.11
Shows the Adjustments screen.



HMI (Human-Machine-Interface)

Feeder Enable Button

The *Feeder* button determines whether the product feeder will deliver product to the bagmaker during bag production.

Knife Enable Button

The *Knife* button determines whether the knife will be used during bag production. When set to OFF, the bagmaker will create a continuous string of bags.

Film Registration Error

The *Film Registration Error* indicates the difference, in millimeters, between where the bagmaker detected the registration mark and where it should have been detected. This is used in order for the graphics to be aligned properly with the bag cut.

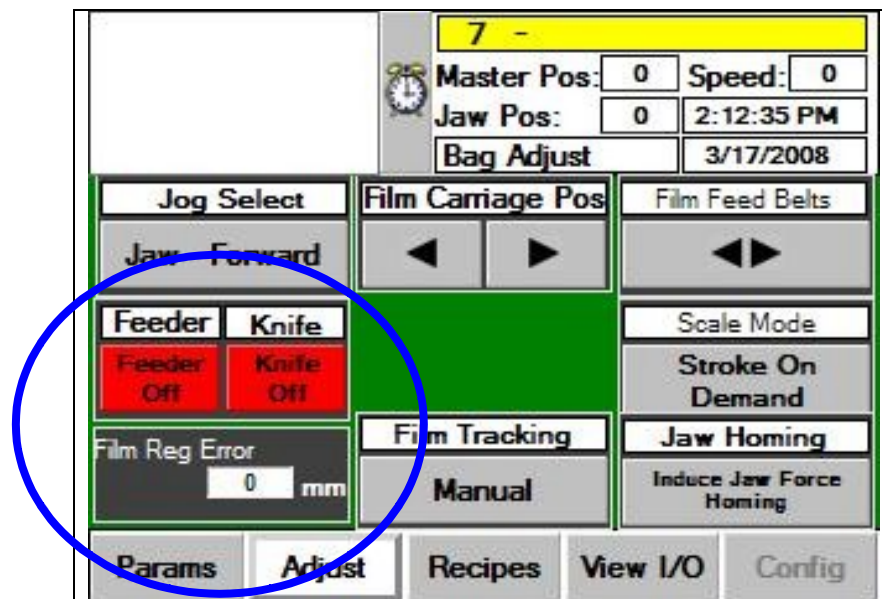


Figure 5.12
Shows the Adjustments screen.



HMI (Human-Machine-Interface)

Scale Mode Button

The *Scale Mode* button toggles between *Stroke on Demand* and *Master-Slave* Mode to communicate with the feeder scale.

In *Master-Slave* mode, this is the amount of time after the “dump request signal” that the bagmaker will wait for the “dump confirmation signal”. This mode is normally used with Scale Feeders.

In *Stroke-On-Demand* mode, this is the duration of the “dump request signal”. This mode is normally used with Auger Feeders.

Film Tracking Button

The *Film Tracking* button determines whether automatic film tracking will be used during bag production.

Jaw Homing Button

The *Jaw Force Homing* button allows the operator to force the bagmaker to home the jaws.

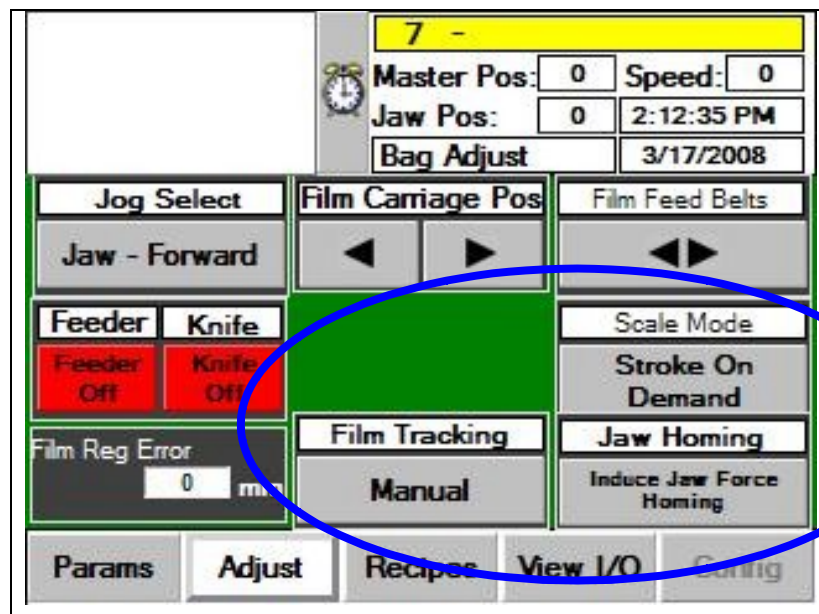


Figure 5.13
Shows the Adjustments screen.



Recipe Management Screen

The *Recipe Management* screen helps you manage up to 100 product recipes. It allows you to save all of the forming parameters for the current recipe under the same name or under another existing recipe name. It also allows you to load or rename any of the recipes. The *Recipe Management* screen is accessed from the *Main Menu*.

In order to work with recipes you will need to first Login.

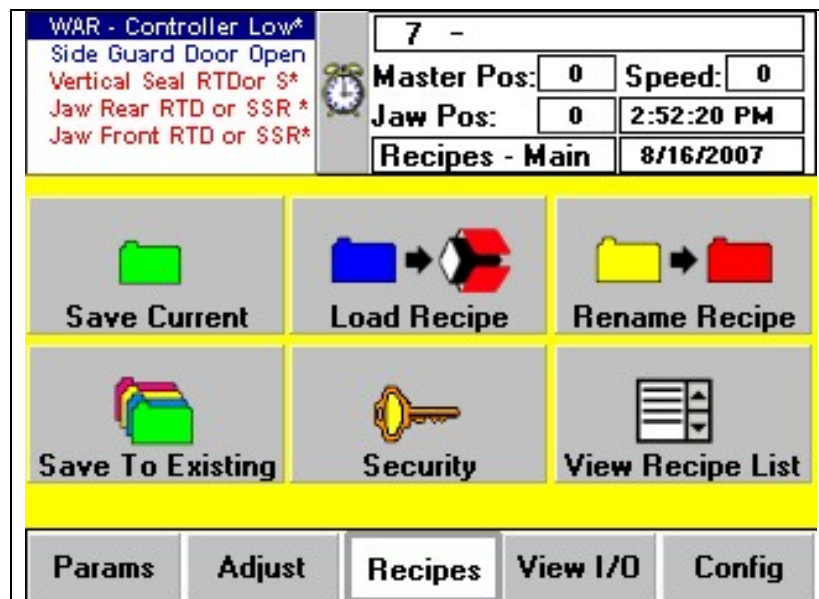


Figure 5.14
Shows the Recipe Management screen.



Log In Procedure

This procedure describes how to log onto the HMI as a manager, supervisor, or an operator. At this point, the bagmaker should be turned on but not running.

To log onto the HMI:

1. From the Menu Tree, press the Security button. This will display the Login screen.
2. From the Login screen, type in the desired access level: manager, supervisor, or operator.
3. Enter the Password and then press the ENTER key.
4. Confirm the access level by looking at the "Password Level" text box on the status display.

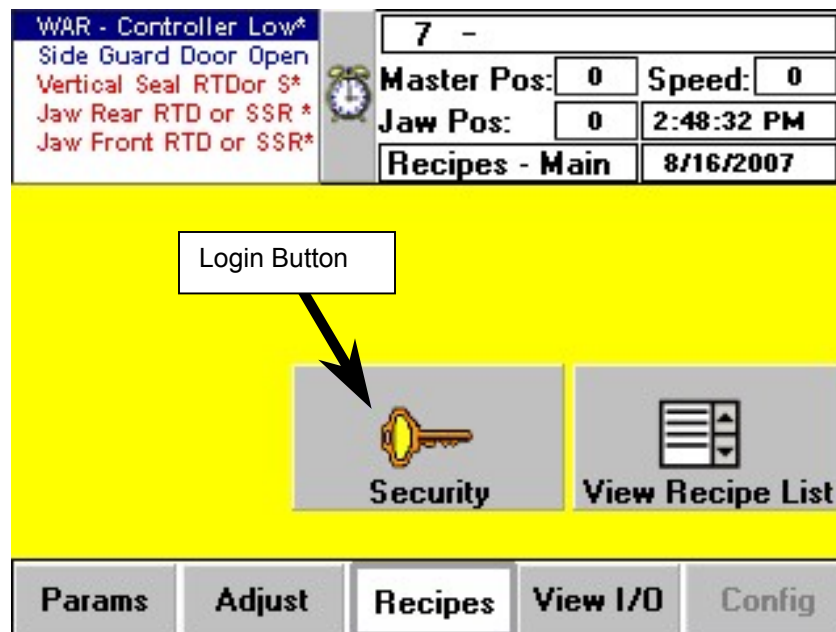


Figure 5.15
Shows the Login Button.



Login Screen

Login Screen

The Login screen controls access to the items on the Menu Tree. There are four access levels; manager, supervisor, operator, and log off.

The operator must be logged into the machine to be able to do anything with the recipes. Here is how the recipes correspond to the password level:

Password Level: (No Password): User can view recipes from the "Show Recipe List" button. All other buttons are disabled.

Password Level: Operator(1st Level): User can view recipes from the "Show Recipe List" button. User can load recipes from the "Load Recipes" button. All other buttons are disabled.

Password Level: Supervisor(2nd Level): User has access to all Recipe functions. However, the Supervisor password will automatically time-out after 2 minutes. The user can extend this time by going back to the Login screen and pressing the "Extend Privileges" button (this button is only visible while under the Supervisor Access level).

Password Level: Manager(3rd Level): User has access to all Recipe functions. This Access level will not log out automatically.

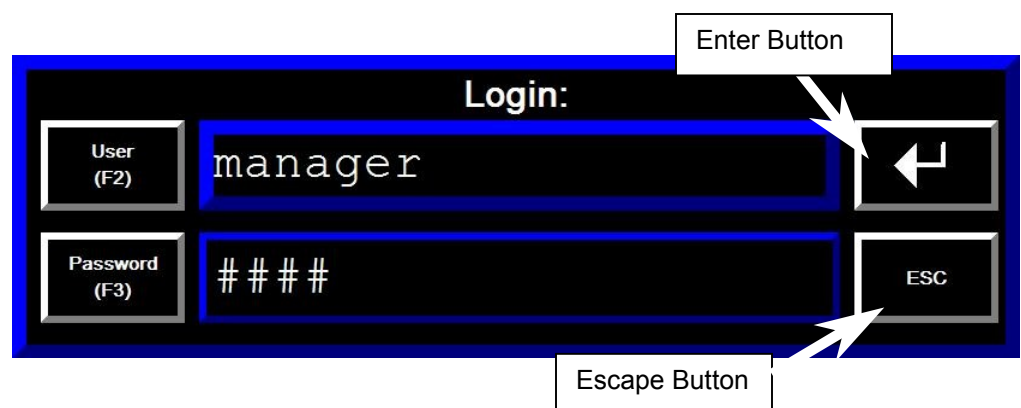


Figure 5.16
Shows the Login screen



HMI (Human-Machine-Interface)

Loading a Recipe

Loading a recipe is one of the first tasks that you will perform before setting up or running the bagmaker. You can load any of 100 recipes. The following procedure describes how to load a recipe.

To load a recipe:

1. From the *Menu Tree*, press the *Recipes* button to display the *Recipe Management* screen.
2. From the *Recipe Management* screen, press the *Load Recipe* button to display the *Recipe Load* screen.
3. From the recipe list on the *Recipe Load* screen, use the Up and Down arrow keys to select the desired recipe.
4. From the *Recipe Load* screen, press the *Load From Selected Recipe* button to load the recipe.
5. From the *Recipe Load* screen, press the *Exit* button to exit the *Recipe Load* screen.

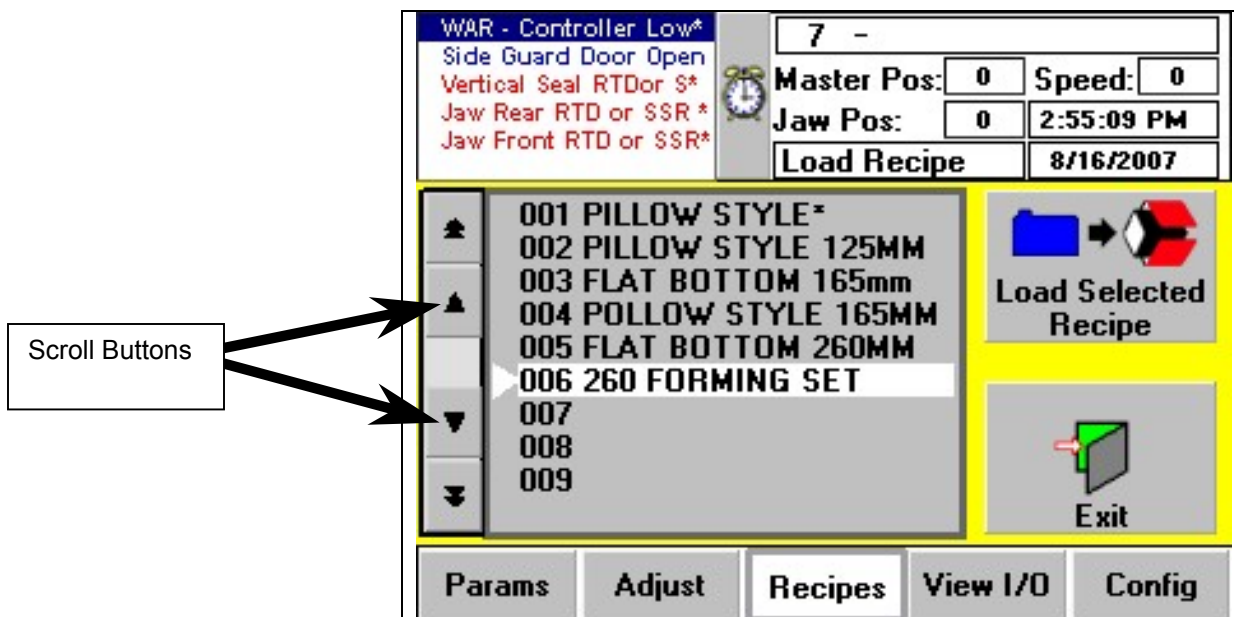


Figure 5.17
Shows the Recipe Load screen.



HMI (Human-Machine-Interface)

Changing Recipe Parameters

At some point, you will want to change the values for some or all of the parameters under the *Parameters* screen to fine-tune a product recipe or to create a new recipe. The follow procedure describes how to change a value.

To change a recipe:

1. From the *Parameters* screen, press the submenu button (*Main*, *Jaw Setup*, or etc.) that contains the parameter that you want to change.

For example, press the *Main* button to access the *Machine Speed* parameter.

2. Press the name of the parameter that you want to change; a numeric keypad will appear.

For example, press the Machine Speed parameter to change the number of bags that the machine creates per minute.

3. Use the keypad to input the desired parameter change, then, press the Enter key to set the value.

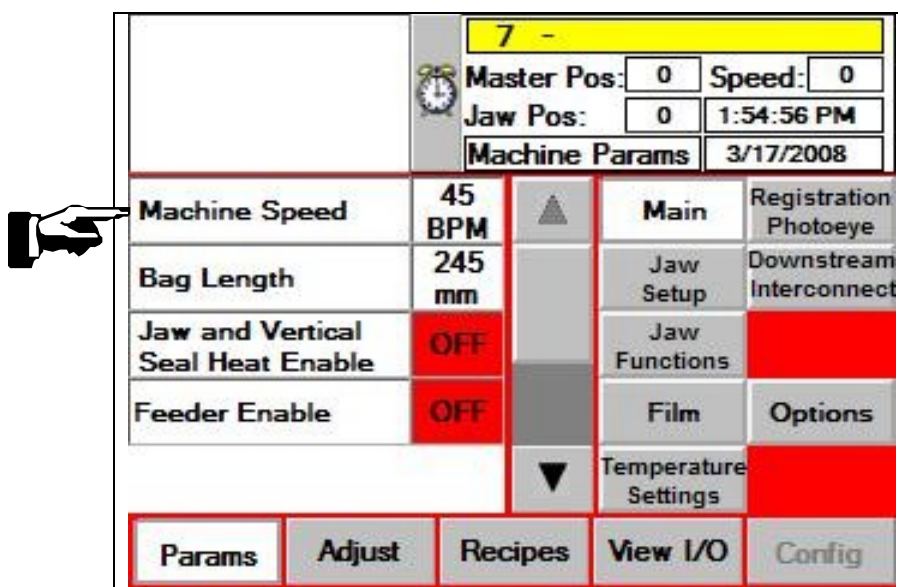


Figure 5.18
Shows the Main Parameters screen.



HMI (Human-Machine-Interface)

Enabling/Disabling a Forming Operation

When a forming operation is disabled, it simply does not operate during bag forming. You can disable forming operations that you will not use during bag production or you can disable one forming operation to facilitate setting up another.

The following procedure describes how to enable or disable a forming operation. At this point, the bagmaker should be turned on but not running.

To enable/disable a forming operation, simply press the parameter name to toggle it between ON and OFF.

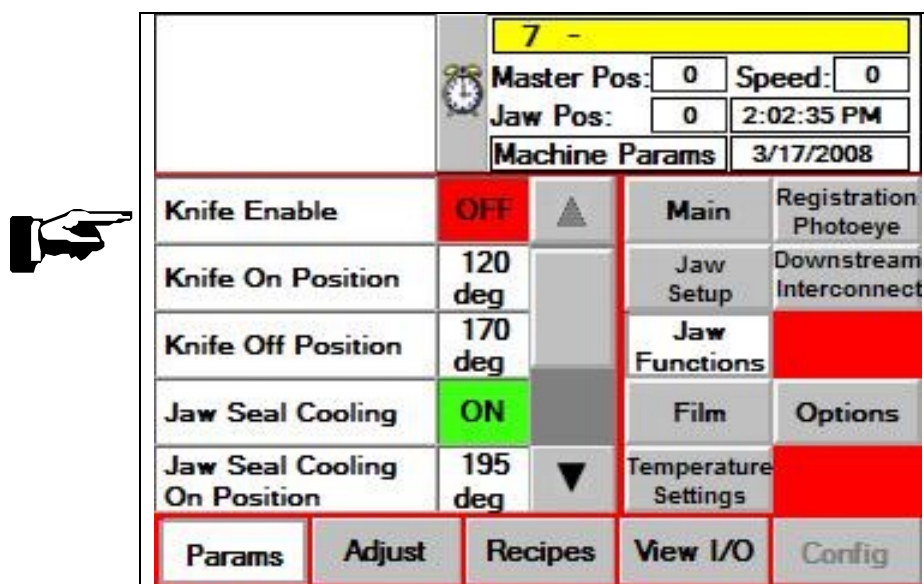


Figure 5.19

Shows an example of a parameter that may be enabled or disabled.



HMI (Human-Machine-Interface)

Saving a Recipe

Once you have changed recipe parameters, you must save them to a recipe or they will be lost when the bagmaker is turned off. You can save your changes to the current recipe and overwrite the old values, or, you can save them to another recipe and leave the current recipe unchanged. The following procedures describe how to save recipe changes. At this point, the bagmaker should be turned on but not running.

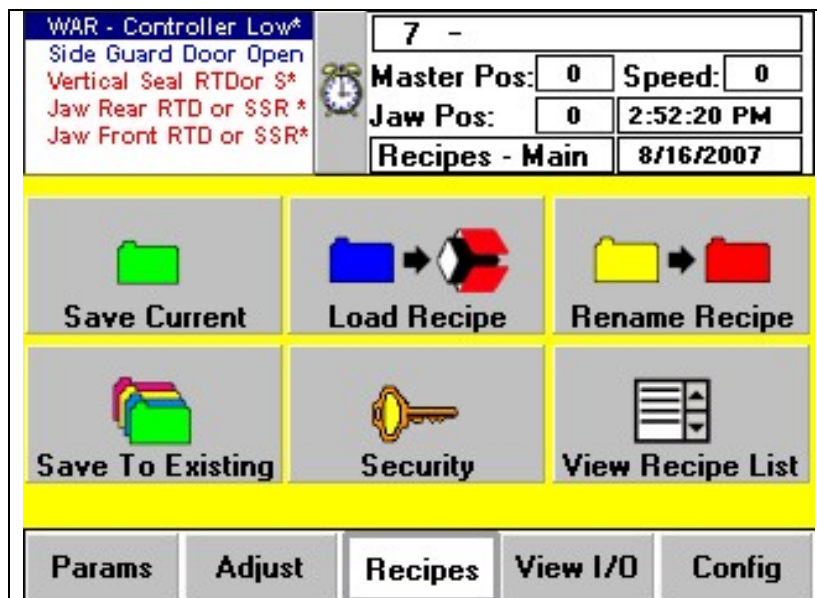


Figure 5.20
Shows the Recipe Management screen and the recipe save options.



HMI (Human-Machine-Interface)

Save to Current

Use the following procedure to save your changes to the current recipe and overwrite the previously saved values.

To save your changes to the current recipe:

1. From the *Menu Tree*, press the *Recipes* button to display the *Recipe Management* screen.
2. From the *Recipe Management* screen, press the *Save To Current* button; a password dialog box will appear.
3. From the password dialog box, input the password and then press the *Enter* key to validate the password. Once the password has been validated, the *Save To Current Recipe* screen will appear.
4. From the *Save Recipe* screen, press the *Save Parameters To Current Recipe* button to save your changes.

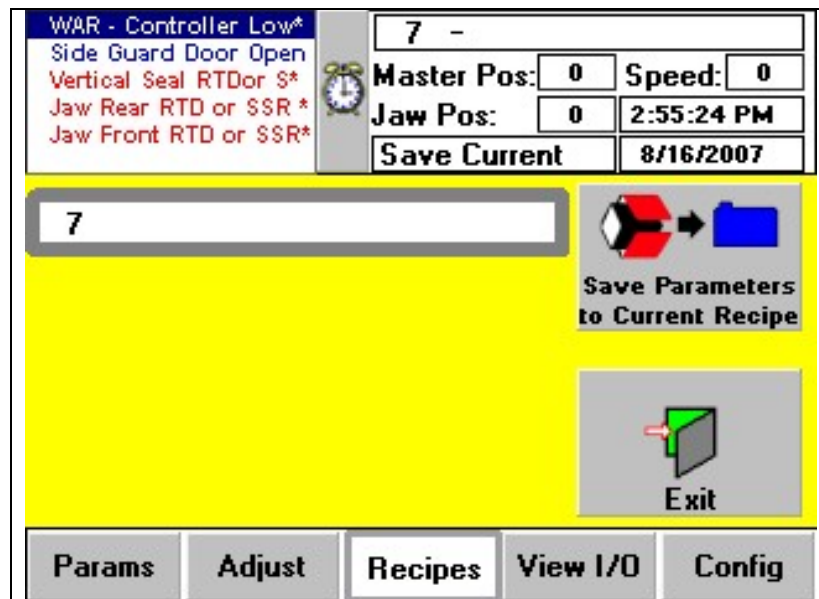


Figure 5.21
Shows the *Save Recipe* screen.



HMI (Human-Machine-Interface)

Save to Existing

Use the following procedure to save your parameter changes to an existing recipe and leave the current recipe unchanged.

To save your changes to an existing recipe:

1. From the *Menu Tree*, press the *Recipes* button to display the *Recipe Management* screen.
2. From the *Recipe Management* screen, press the *Save To* button; a password dialog box will appear.
3. From the password dialog box, input the password and then press the *Enter* key to validate the password. Once the password has been validated, the *Save Recipe* screen will appear.
4. From the recipe list on the *Save Recipe* screen, use the Up and Down arrow keys to select the desired recipe to overwrite.
5. From the *Save Recipe* screen, press the *Save to Selected Recipe* button to save your changes.

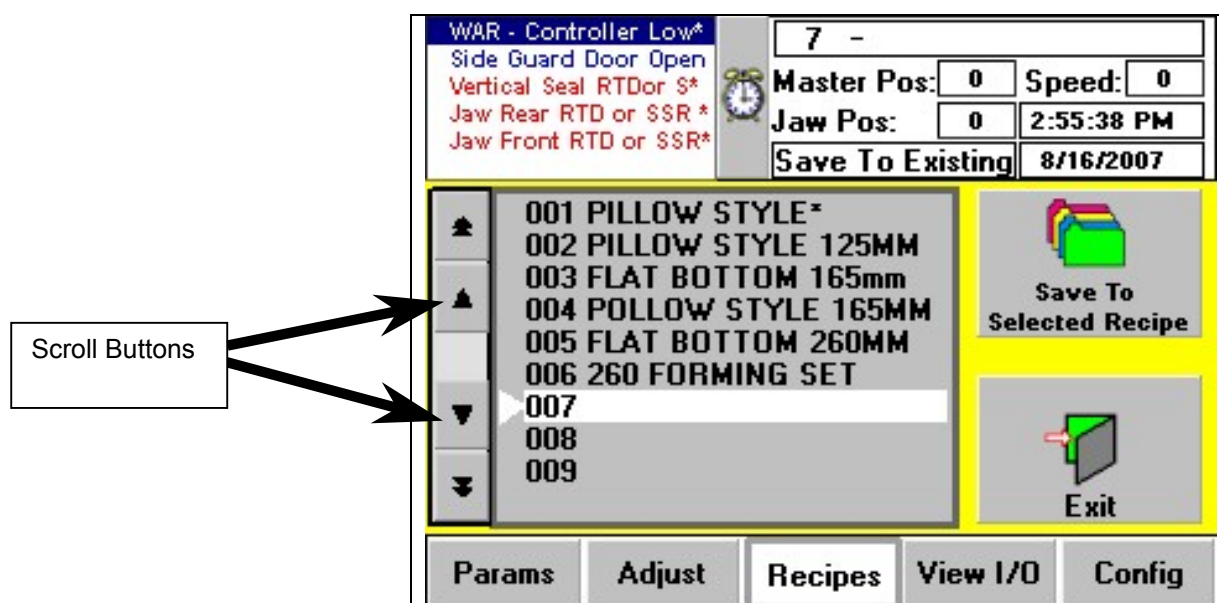


Figure 5.22
Shows the *Save Recipe* screen.



HMI (Human-Machine-Interface)

Renaming a Recipe

The HMI can store 100 recipes. To better manage the recipes you can give them names that describe the bag styles that they create. Use the following procedure to rename a recipe.

To rename a recipe:

1. From the *Menu Tree*, press the *Recipes* button to display the *Recipe Management* screen.
2. From the *Recipe Management* screen, press the *Rename Recipe* button to display the *Rename Recipe* screen.
3. From the recipe list on the *Rename Recipe* screen, use the Up and Down arrow keys to select the desired recipe to rename.
4. From the *Rename Recipe* screen, press the *Rename Selected Recipe* button to display an alpha/numeric keypad.
5. Use the keypad to input the characters for the new name and then press the *Enter* key on the keypad to set the name change.

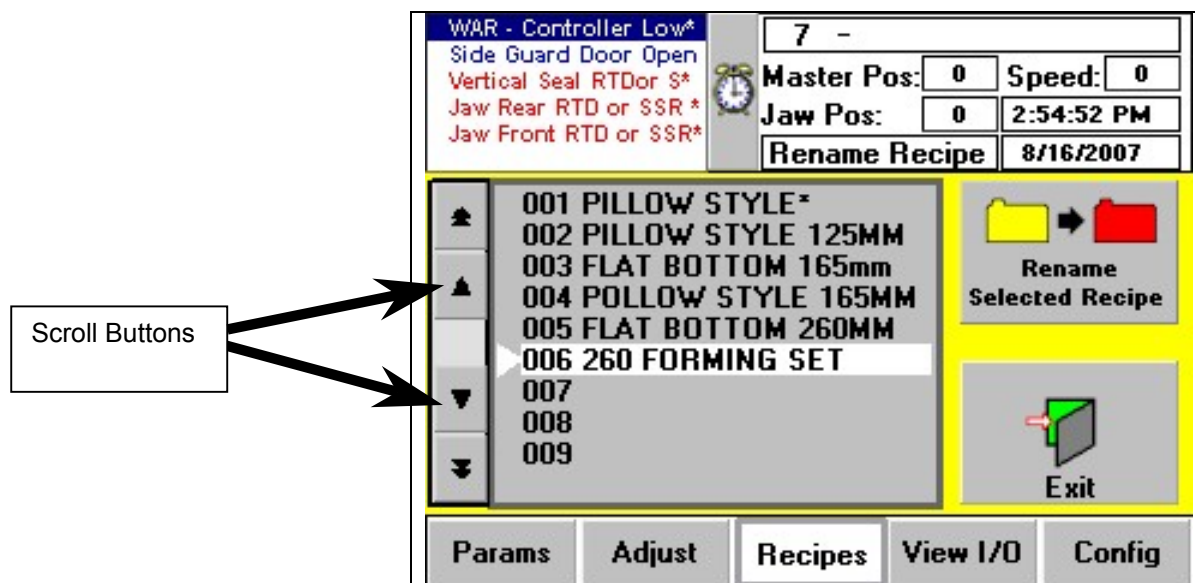


Figure 5.23
Shows the Recipe Rename screen.



HMI (Human-Machine-Interface)

View I/O Screen

The *View I/O* screen is used to troubleshoot the bagmaker. It displays the same information that can be obtained by looking at the L.E.D. indicators on the programmable logic controller (located inside of the electrical enclosure). The screen shows the status of the various bagmaker input and output signals.

		7 -	
		Master Pos: 0	Speed: 0
		Jaw Pos: 0	2:19:01 PM
		slot 4	3/17/2008
DI2200 Slot 4	DI2240 Slot 5	DO2500 Slot 7	DO2540 Slot 8
0 ☒ Front Estop PB		8 ☐ Film Carriage Left Prox	
1 ☒ MCR		9 ☐ Film Carriage Right Prox	
2 ☐ Machine Ready PB		10 ☐ Spare	
3 ☐ Machine Run/Jog PB		11 ☐ Spare	
4 ☒ Machine Stop PB		12 ☐ Spare	
5 ☐ Jog/Auto Selector		13 ☐ Downstream Ready	
6 ☒ Main Air Pressure Switch		14 ☐ Feeder Ready	
7 ☐ Spare		15 ☐ Feeder Dump Confirm	
Params Adjust Recipes View I/O Config			

Figure 5.24

Shows the View I/O screen. When an input or output is high, it is highlighted in green.



HMI (Human-Machine-Interface)

Alarms Screen

The *Alarms* screen displays any malfunction that the bagmaker has experienced since it was turned on. This screen may be accessed by pressing the Alarms button (looks like an alarm clock) located on the top of the HMI.



Figure 5.25
Shows the Alarms screen.



Buttons and Switches

The push buttons and switches on the bagmaker are the:

- MAIN DISCONNECT Switch
- MACHINE READY Push-Button
- JOG/AUTO Selector Switch
- JOG/RUN Push-Button
- STOP Push-Button
- EMERGENCY STOP Push Button



Buttons and Switches

MACHINE READY Push-Button

This lighted push-button indicates the operating status of the machine. When this button is pressed it will check for alarm conditions, if no alarms are present it will light up. When this button is lit, it indicates that the machine is ready to operate. When the button is flashing, it indicates that the machine is homing. When the button does not light up, it indicates that there is an active alarm present that must be resolved.



Figure 5.26
Shows the MACHINE READY push-button.



Buttons and Switches

JOG/AUTO Selector Switch

This two position selector switch determines the bagmaker operating mode. When this switch is set to the JOG position, device jogging (film feeding device or horizontal sealing device) can be performed. When this switch is set to AUTO, automatic bag forming can be performed.



Figure 5.27
Shows the JOG/AUTO selector switch.

JOG/RUN Push-Button

The JOG/RUN push button runs the bagmaker in the JOG or AUTO mode. When the JOG/AUTO selector switch is set to JOG, press and hold the JOG/RUN push-button to jog the film feeding or horizontal sealing device. When the JOG/AUTO selector switch is set to AUTO, press this button for 3 seconds and then release it to start automatic bag forming.



Figure 5.28
Shows the JOG/RUN push-button.



Buttons and Switches

STOP Push-Button

The STOP push-button ends automatic bag forming once the current bag has been made. Press and release this push-button to end bag forming under normal circumstances.



Figure 5.29
Shows the STOP push-button.

EMERGENCY STOP Push-Button

The EMERGENCY STOP push-button immediately halts bag forming regardless of whether or not the current bag has been made. Depress this button to immediately stop all moving parts of the machine. This button should be used whenever there is perceived or actual damage occurring to personnel or to the machine. (Using this button may cause additional work to clear the machine to resume production.)



Figure 5.30
Shows the EMERGENCY STOP push-button.



Section 6: Machine Setup Procedures

This section describes how to setup the bagmaker to form bags. Use the following procedures when setting up the bagmaker for the first time or when using a new film type on the machine.

The procedures are listed in the order that they should be performed. Once you have gained some experience in setting up the machine, you can perform them in an order that suits your production needs.

- Installing the Forming Set
- Loading the Film
- Threading the Film
- Setting the Film Tension
- Adjusting the Setup Roller Assembly
- Establishing the Vertical Seal
- Establishing the Horizontal Seal



Installing the Forming Set

The first step in preparing the bagmaker for production is to install the forming set. Each bag style requires a different forming set. Each forming set can be identified by the number stamped on its forming collar mount; the number represents the flat bag width.

To install the forming set:

1. Locate the forming set for the bag/pouch style that the bagmaker will create.
2. Remove any film or material thread threaded through the existing forming set.
3. Move the vertical sealing assembly away from the forming tube.
4. Disconnect all cabling and tubing from the forming set (gas flushing lines, sensor cables, etc.).
5. Loosen the securing knobs of the forming set currently installed on the machine frame.

Warning: Forming sets can be very heavy. Practice safe lifting techniques when handling the forming set.

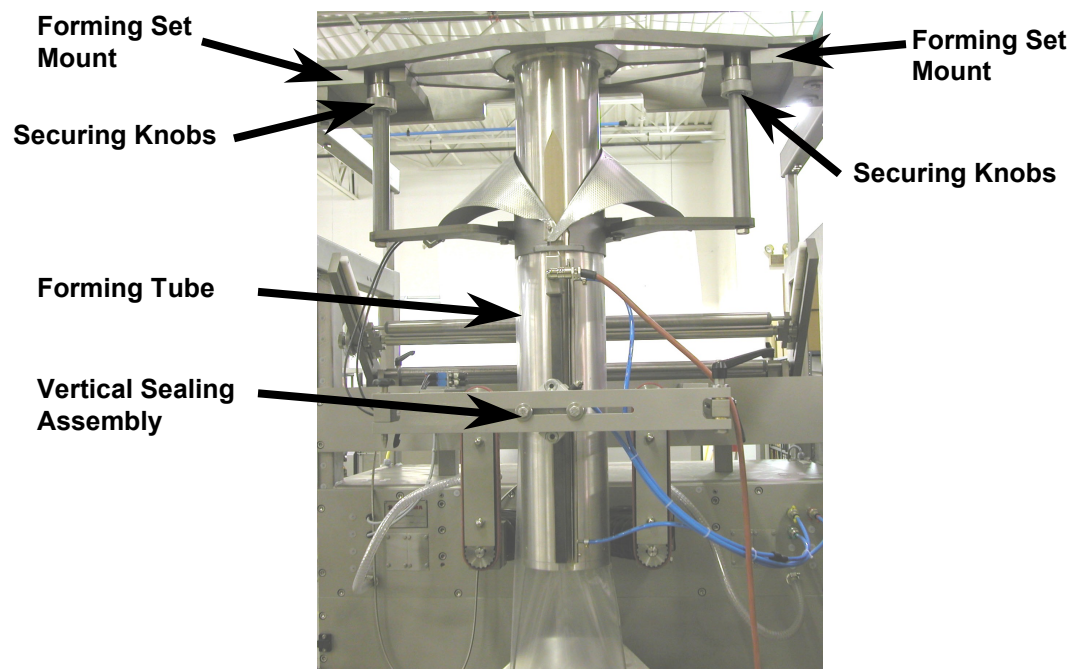


*Figure 6.1
Shows the forming set.*



Installing the Forming Set - Continued

6. Use an appropriate lifting device to lift and remove the forming set from its mount (a forklift or a crane may be used).
7. Use an appropriate lifting device to lift the desired forming set onto the forming set mount (a forklift or a crane may be used).
8. Secure the forming set to the machine frame by tightening the securing knobs.
9. Attach any needed cabling or tubing to the forming set (gas flushing lines, sensor cables, etc.).

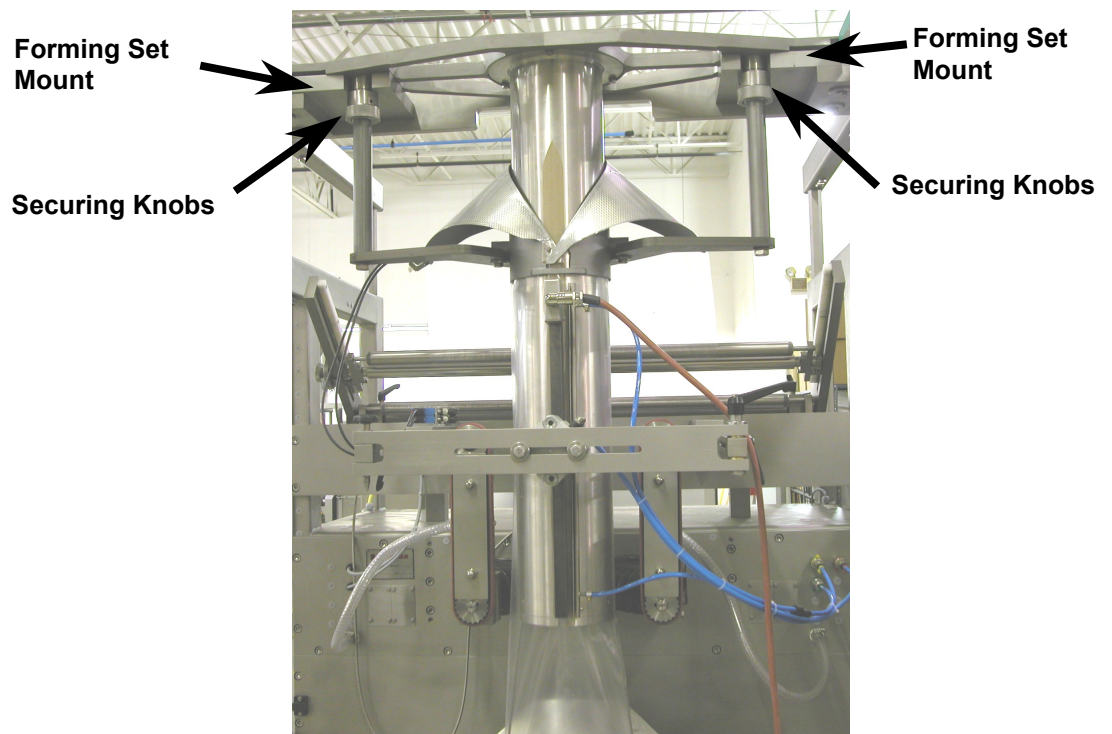


Figure 6.2
Shows the forming set.



Loading Film

Once the forming set has been mounted to the machine frame, the next step in the machine's setup is to load the film used to create the desired bag.

Typically, films vary in material structure and width. When loading the film roll, the only concern is the width. Regardless of how wide the film is it should be centered between the walls of the film carriage, or, centered on the film spindle.

Use the following procedure to load a film roll.

To load a film roll:

1. Set the film roll to be loaded next to the film carriage.
2. Remove the spindle from the carriage and check that its air bladder is deflated.
3. Slide the air spindle through the film roll core and center it within the core.
4. Inflate the spindle to 80 PSI so that it holds the film roll.
5. Place the spindle with the film roll on the film carriage.

Warning: Film rolls can be very heavy. Practice safe lifting techniques when handling the roll.

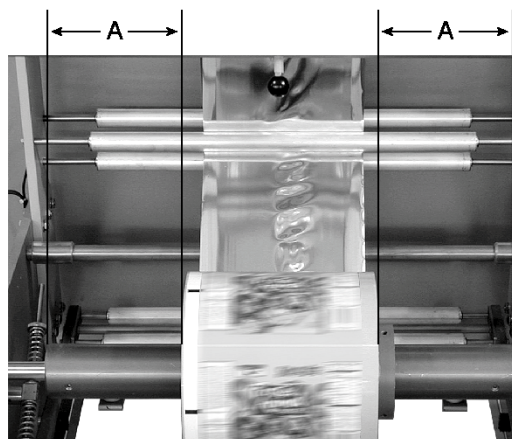


Figure 6.3
Shows the film roll loaded and centered in the film carriage.



Film Routing Label

Use the film routing label (also referred to as the film unwind diagram), located on the side of the bagmaker, to pull the film through the film carriage and up to the forming collar.

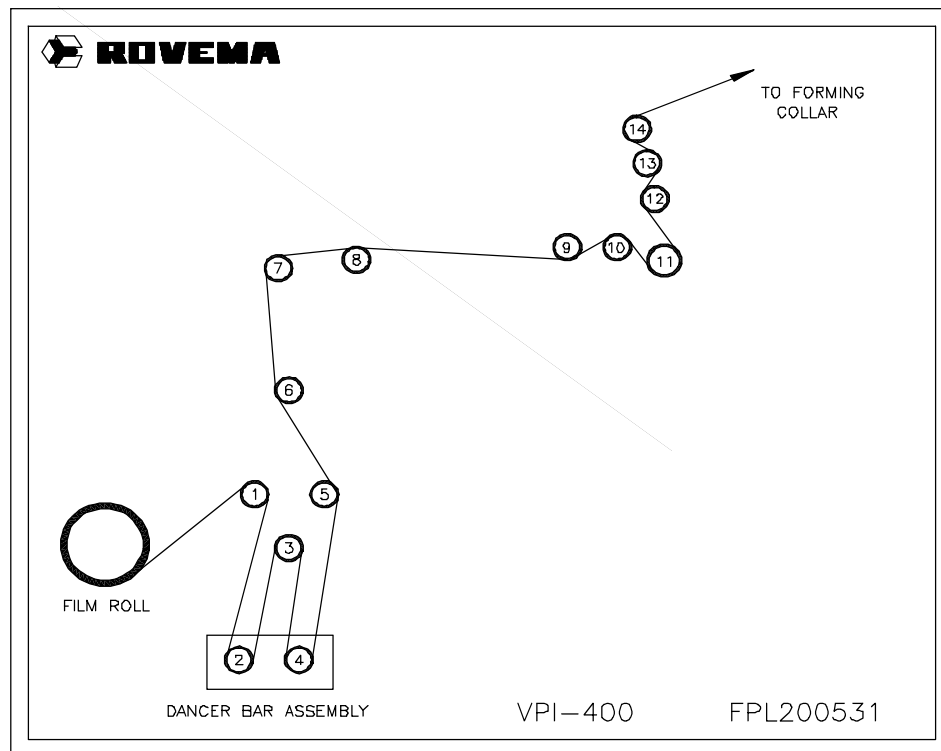


Figure 6.4
Shows the Film Unwind Diagram.

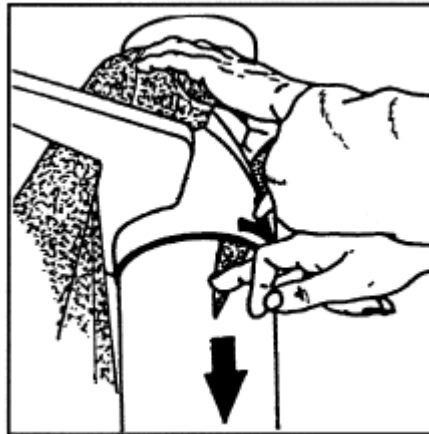


Threading a Film Roll

After the film roll is loaded on the film carriage, it can be threaded through the bagmaker.

To thread the film:

- a. After using the film routing label to pull the film through the film carriage and up to the forming collar.
- b. Cut the film at a 45 degree angle and slide the pointed end of the film between the forming collar and the forming tube. (Note: Some forming tubes may require an adjustment to the slit angle, to feed the film.)



- c. Work the film around the forming collar and down the forming tube.

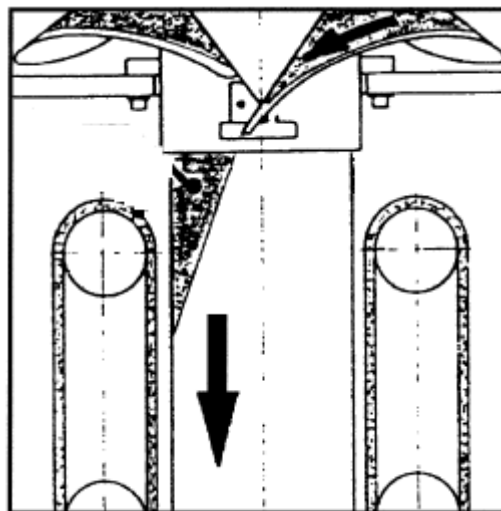


Figure 6.5
Shows the steps used to thread film on the tube.



Setting the Film Tensions

Once the film has been loaded and threaded, the dancer assembly can be setup to maintain tension on the web. Proper film tensioning prevents slack from forming in the web.

Note: Slack in the film web causes film tracking and vertical seal alignment problems.

To setup the dancer assembly and tension the film web:

1. Push the dancer assembly down onto the rubber stops at the bottom of the film carriage and hold it there.
2. Adjust the left and right upper spring tensioners so that they just touch the tops of their respective springs, without compressing them.
3. Next, pull the dancer assembly upwards as far as possible (top of stroke) and hold it there.
4. Adjust the left and right lower spring tensioners so that they just touch the bottoms of their respective springs, without compressing them.

Normally, this setup produces sufficient film tension. However, you can increase the film tension by turning the upper spring tensioners so that they compress the upper springs, or, you can decrease the film tension by turning the lower spring tensioners so that they compress the lower springs.

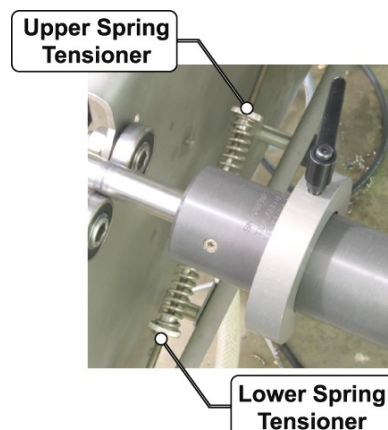


Figure 6.6
Shows the spring tensioners.



Guide Rollers Set Up

The film web should lie flatly against the forming collar. If it does not, you may encounter bag-forming problems like wrinkles in the film or misaligned vertical seals. To prevent these problems, the angle of the film as it leaves the film carriage must match the angle at the back of the forming collar, allowing the film to lie flatly against the forming collar.

1. Loosen the two setup roller pivot locking levers.
2. Pivot the assembly so that the film web is close to lying flatly against the forming collar, then, tighten the locking levers so that the setup roller assembly maintains this position.
3. Fine tune the film web angle by loosening the locking knob, turning the adjustment knob until the film web conforms to the shape of the forming collar, and then tightening the locking knob. Note: Stabilo forming sets have a number stamped on the rear of the forming set which indicates the recommended distance from the edge of the forming tube to the edge of the set up roller.

Note: Laying a straight edge on the forming collar, to the set up roller will help in making the correct angle setting. If there are still problems with the film lying on the forming collar, try moving the setup roller further away from the forming collar, while maintaining the same angle. After setup is complete, record the value of the Position of the Roller Arm and the Angle of the Rotation of Roller Arm, for future use.

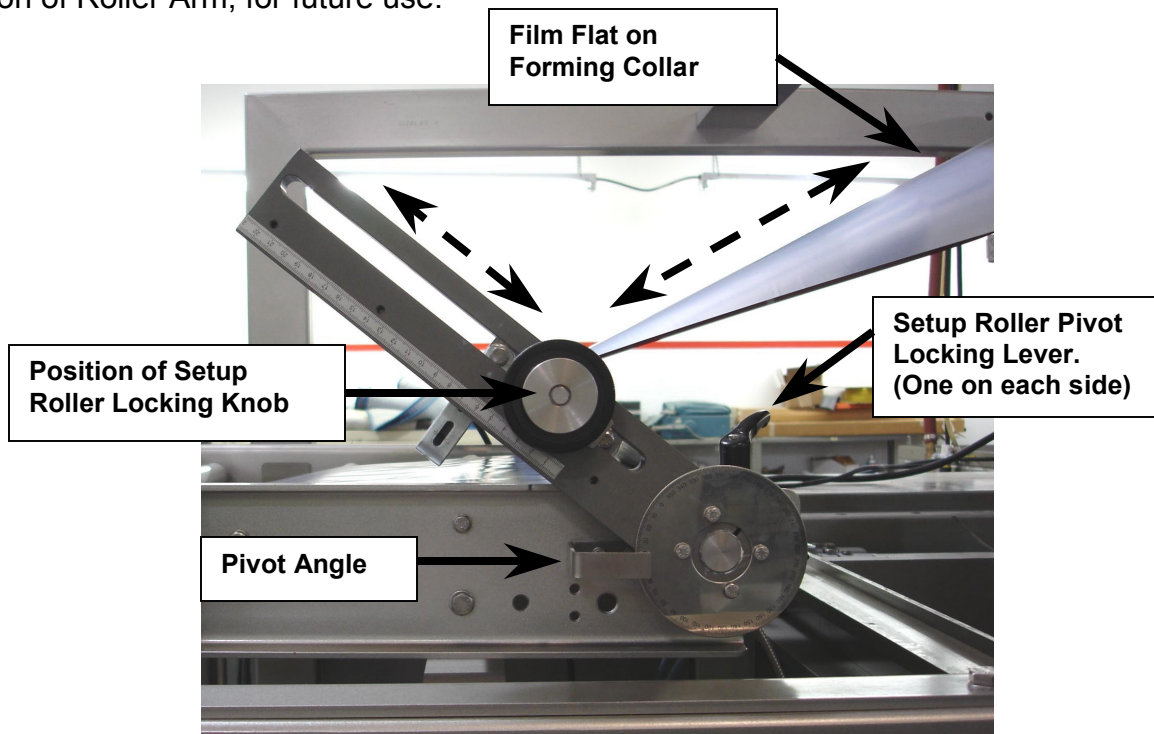


Figure 6.7

Shows an example of the setup rollers adjusted to the angle of the film to match the angle of the forming collar.



Adjusting the Backstop

The backstop supports the forming tube while the vertical sealing device presses against the tube to create a vertical seal. It must be positioned as close as possible to the forming tube without interfering with film feeding. Use the following procedure to position the backstop.

To position the backstop:

1. Loosen the set screw in the backstop collar.
2. Screw or unscrew the backstop to position it relative to the forming tube. There must be just enough space between the tip of the backstop and the forming tube so that the film tube can slide between the two of them without snagging.

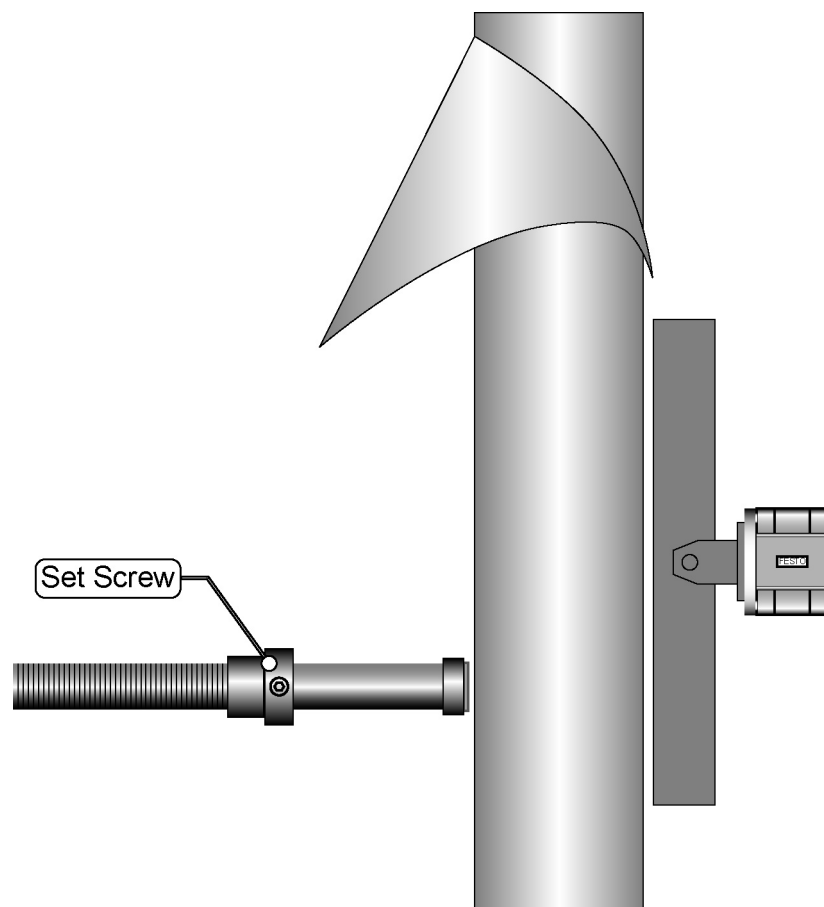


Figure 6.8
Shows how to adjust the backstop.



Disabling Forming Operations

You will run the bagmaker to establish the horizontal and vertical seals in the film tube. It will be easier to establish the seals if certain devices and systems are disabled. These devices and systems are the knife assembly, the gusseting device, the automatic film tracking system, and the film registration system. All of these device and systems can be disabled by setting their enable/disable switches to Off.

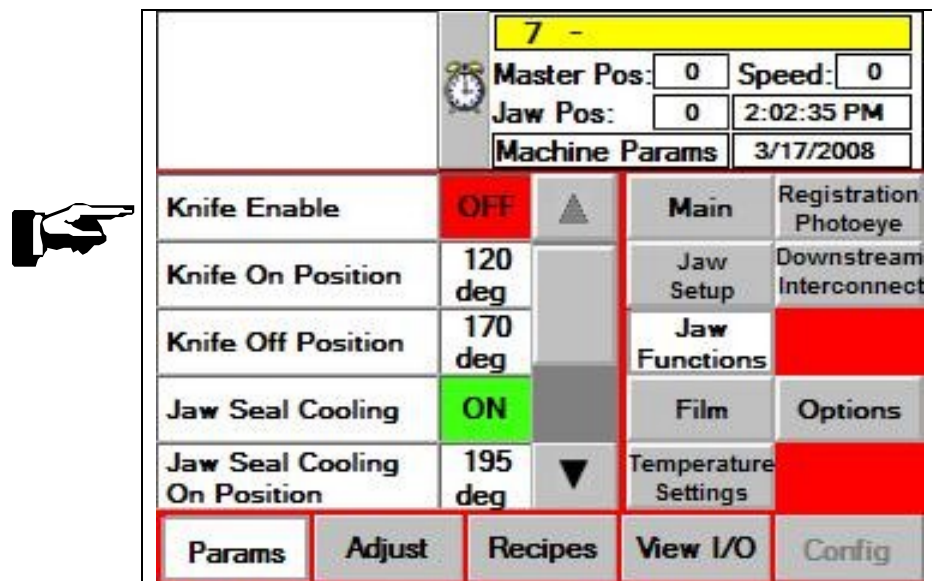


Figure 6.9
Shows the button to disable the knife.



Temperature Controls

Temperature Controls

The temperature controls monitor and adjust the sealing temperatures. There are controls for the horizontal and vertical sealing assemblies. The controllers apply full voltage to the heating cartridges until the desired sealing temperature is reached, then, they cut the power to the cartridges. While the controllers are turned on, they continually toggle the power to the heating cartridges on and off to maintain the sealing temperature.

The controls monitor the sealing temperatures with the temperature probes. When a control detects that the sealing temperature is a certain number of degrees above or below the desired temperature, it causes the bagmaker to stop forming bags, or, prevent it from starting to form bags. The *Jaw and Vertical Seal Heat* button must be set to ON to heat the horizontal and vertical sealing devices.

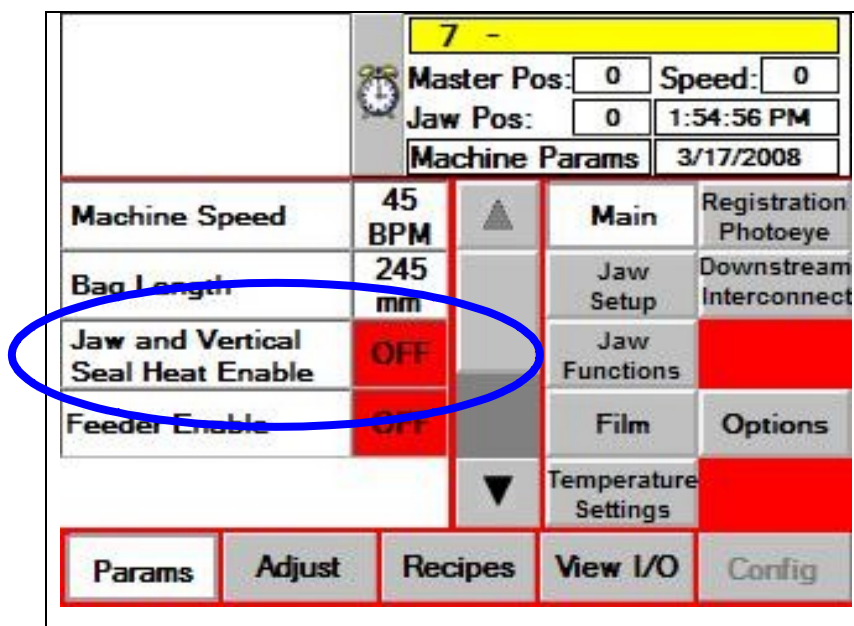


Figure 6.10

Shows the Main parameters screen to turn on the heating devices.



Temperature Controls

Temperature Settings

Use the following procedure to set the sealing temperatures. The *Jaw and Vertical Seal Heat Enable* button on the *Main* parameters screen must be set to *ON*.

To set the sealing temperatures:

1. From the *Parameters* screen, press the *Temperature Settings* button.
2. From the *Temperature Settings* screen, press the *Temperature* parameter you want to adjust; a keypad will appear.
3. Use the keypad to enter the desired sealing temperature and then press the *ENTER* key on the keypad to set the temperature.

A good starting temperature is 280 Degrees Fahrenheit. You may need to increase or decrease this value to obtain the optimal sealing temperature for your film.

		7 -		
		Master Pos: 0	Speed: 0	
		Jaw Pos: 0	2:04:44 PM	
		Machine Params	3/17/2008	
Heat Zones °F	Set-Point	Actual	Main	Registration Photoeye
Front Jaw	325	79	Jaw Setup	Downstream Interconnect
Rear Jaw	325	79	Jaw Functions	
Vertical Seal	330	79	Film	Options
			Temperature Settings	
Params	Adjust	Recipes	View I/O	Config

Figure 6.11
Shows the *Temperature Settings* screen.



Establishing the Vertical Seal

The following procedures will describe how to establish the vertical seal in the film tube. These procedures include:

- Positioning the Vertical Sealing Device
- Setting the Vertical Sealing Pressure
- Setting the Vertical Cooling Pressure
- Making the Vertical Seal
- Aligning the Edges of the Vertical Seal



Establishing the Vertical Seal

Positioning the Vertical Sealing Device

You must position the vertical sealing device so that it is within striking distance of the forming tube. At this point, the machine should be turned on but not running.

To position the vertical sealing device:

1. Loosen the lateral adjustment bolts and center the sealing bar on the desired sealing location, then, tight the adjustment bolts.
2. Loosen the position locking levers on the vertical seal support.
3. Slide the vertical sealing device until the sealing bar is 18mm away from the forming tube in the retracted position.
4. Use the scales on the support arms to ensure that both arms are extended the same distance.
5. Tighten the position locking levers.

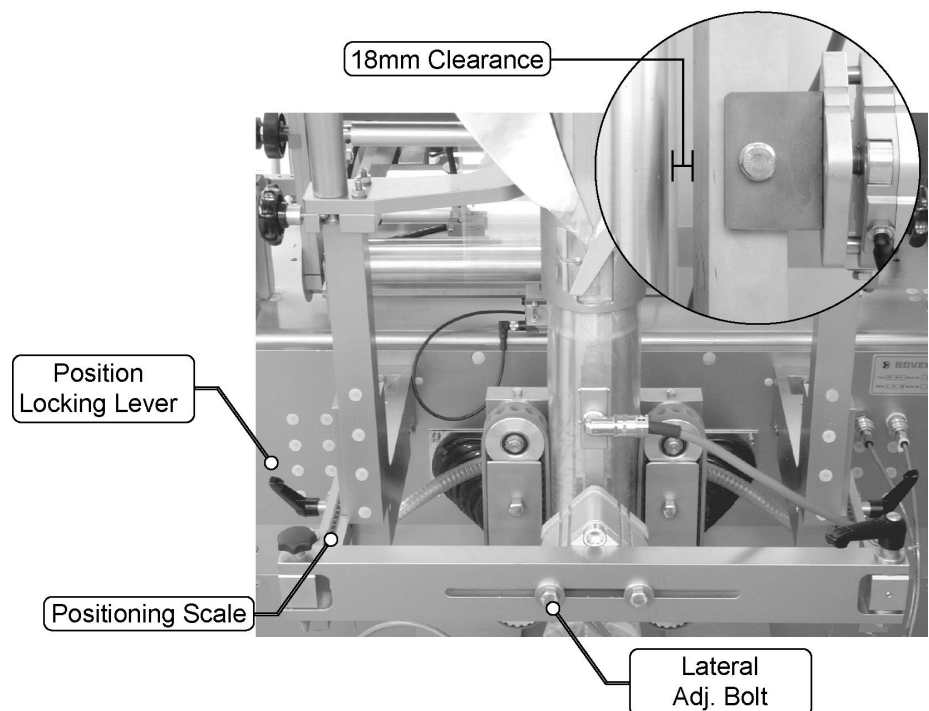


Figure 6.12
Shows how to position the vertical sealing device.



Establishing the Vertical Seal

Setting the Vertical Sealing Pressure

Use the following procedure to set the vertical sealing pressure.

To set the vertical sealing pressure:

1. Locate the vertical sealing pressure regulator inside of the machine housing.
2. While looking at the regulator gauge, set the sealing pressure to about 2 bar.

Note: You may need to adjust this setting higher or lower depending on the film thickness and sealing temperature.

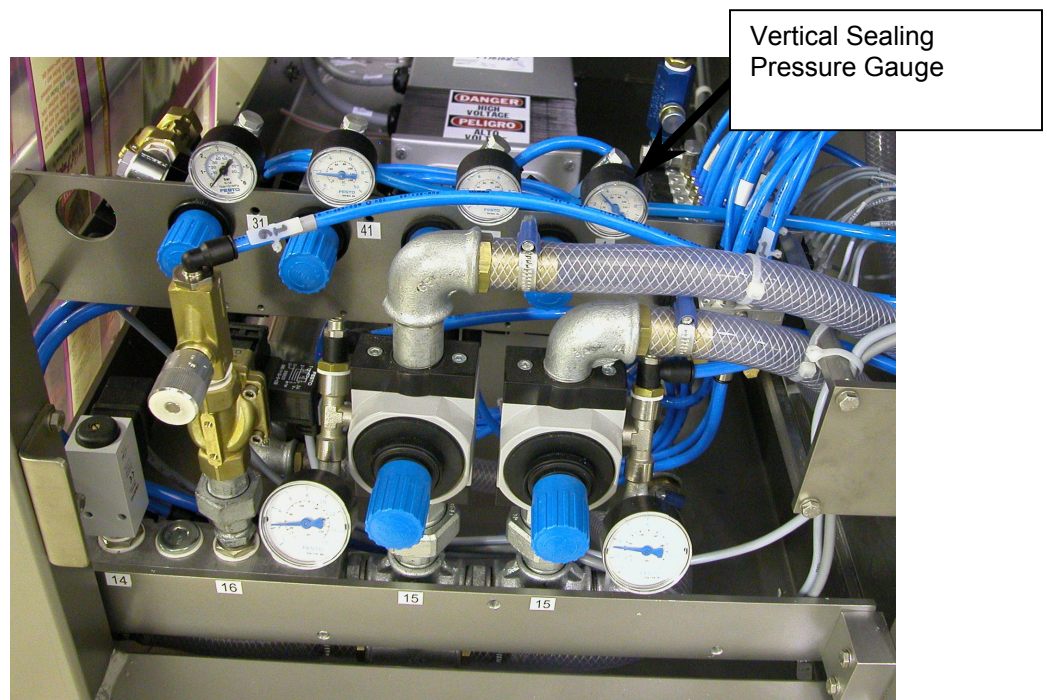


Figure 6.13
Shows the vertical sealing pressure regulator and gauge.



Establishing the Vertical Seal

Setting the Vertical Cooling Pressure

Use the following procedure to set the vertical cooling pressure.

To set the vertical cooling pressure:

1. Locate the vertical cooling pressure regulator inside of the machine housing.
2. Turn the flow control knob to about 2 on the knob's dial.

Note: You may need to adjust this setting higher or lower depending on the film thickness and sealing temperature.

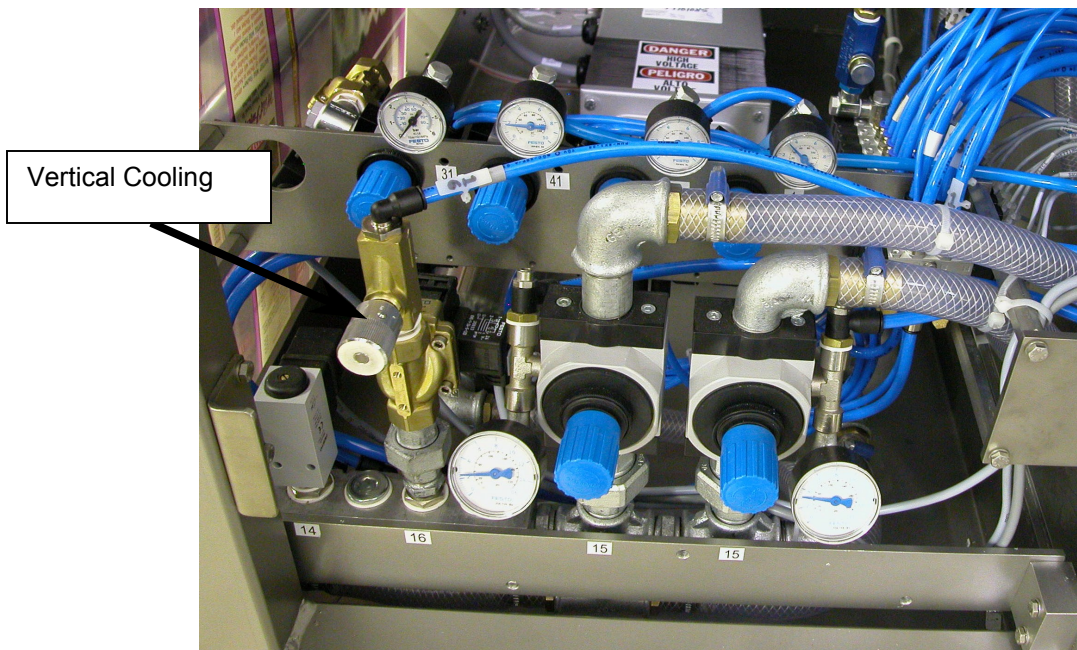


Figure 6.14
Shows the vertical cooling pressure regulator



Establishing the Vertical Seal

Making the Vertical Seal

Now that you have the vertical sealing device positioned, the vertical sealing temperature set, and the vertical sealing pressure set, you can run the bagmaker and establish the vertical seal.

To run the bagmaker and establish the vertical seal:

1. From the operator control panel, set the JOG/AUTO selector switch to the AUTO position.
2. From the operator control panel, press the MACHINE READY push-button. The push-button should light-up and stay lit.
3. From the operator control panel, press the JOG/RUN push-button to begin automatic bag forming.
Let the machine run for a few forming cycles.
4. From the operator control panel, press the STOP push-button to stop automatic bag forming.
5. Check the vertical seal in the film tube.
If the film tube edges are not sticking together, increase the vertical sealing temperature by a few degrees.
If the film edges are sticking together but the film is warped or wrinkled, decrease the vertical sealing temperature.
6. Repeat steps 1 through 5 until the bagmaker is producing a quality vertical seal.

Note: The vertical sealing temperature should never exceed 400 Degrees Fahrenheit when using laminated films.



Establishing the Vertical Seal

Setting the Film Tracking Position

After you have established the vertical seal, you may need to align the edges of the film tube so that they are even. This process is called setting the film tracking position.

To set the film tracking position:

1. From the operator control panel, set the JOG/AUTO selector switch to the AUTO position.
2. From the operator control panel, press the MACHINE READY push-button. The push-button should light-up and stay lit.
3. From the operator control panel, press the JOG/RUN push-button to begin automatic bag forming.
4. From the *Adjustments* screen, press and hold the film carriage position button that corresponds to the direction in which you want the outer film edge to move.
5. Once the vertical seal edges are aligned, press the *STOP* push button on the operator control panel to stop the machine.

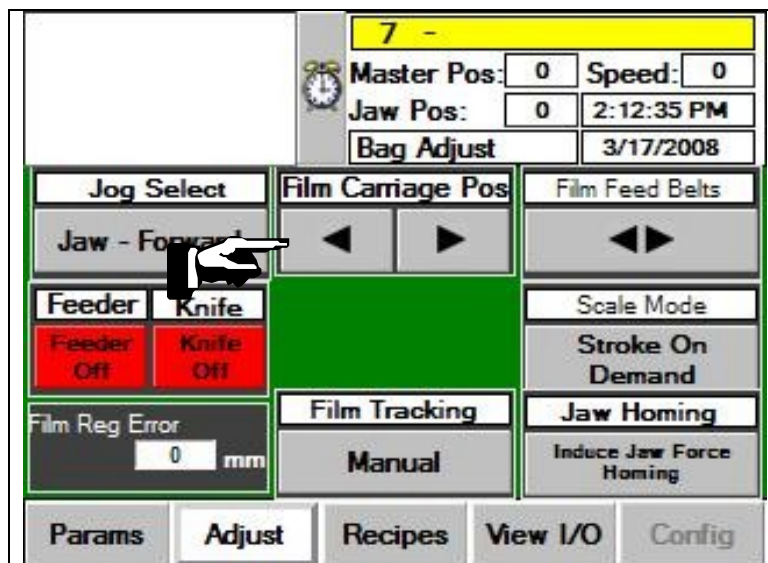


Figure 6.15
Shows the film carriage adjustment buttons.



Establishing the Horizontal Seal

The following procedures will describe how to establish the Horizontal seal. These procedures include:

- Setting the Horizontal Sealing Pressure
- Setting the Horizontal Cooling
- Making the Horizontal Seal
- Setup the Film Registration System

After you have established the vertical seal in the film tube, you can establish the horizontal seal. The process is similar to establishing the vertical seal except that the horizontal sealing pressure is adjustable from the HMI.



Establishing the Horizontal Seal

Setting the Horizontal Sealing Pressure

Use the following procedures to set the horizontal sealing pressure.

To set the horizontal sealing pressure:

1. From the HMI, access the Jaws Setup Screen 2.

		7 -	
		Master Pos: 0	Speed: 0
		Jaw Pos: 0	2:01:35 PM
		Machine Params	3/17/2008
Jaw Cool Position	50 mm	▲	Main
Jaw Cool Time	0 msec		Jaw Setup
Jaw Seal Pressure	102 %		Jaw Functions
Jaw Homing Pres.	95 %		Film
		▼	Options
			Temperature Settings
Params	Adjust	Recipes	View I/O
			Config

Figure 6.16
Shows Jaw Setup Screen 2

2. Enter the Jaw Seal Pressure and the Jaw Homing Pressure on the Jaw Setup 2 screen. (An initial recommended setting is to set the Jaw Seal Pressure at 100% and set the Jaw Homing Pressure at 70%.)



Establishing the Horizontal Seal

3. With the bagger stopped, access the Adjustments Screen.

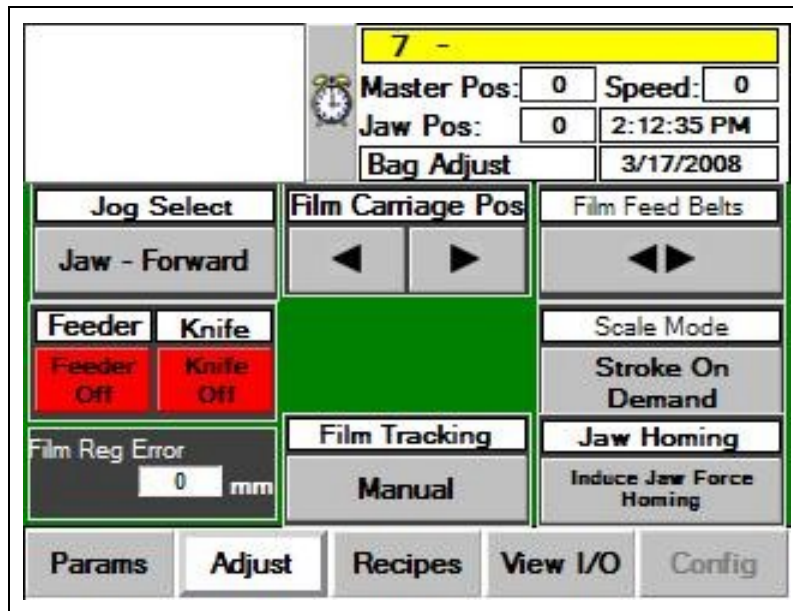


Figure 6.17
Shows the Adjustments Screen

4. Press the Induce Jaw Force Homing on Start button.
5. Press the Ready button and you will get the green light.
6. Press the Start button to allow the jaws to home. This will establish the zero reference position.
7. After the jaws have homed, they will move to the open position and the machine will begin cycling. At this time, press the Stop button.



Establishing the Horizontal Seal

Setting the Horizontal Cooling

Use the following procedure to set the cooling for the intermittent horizontal cooling system.

To set the horizontal cooling:

1. From the HMI, access the Jaws Setup Screen 2.
2. Set the Jaw Cool Position.
3. Set the Jaw Cool Time.
Note: Must be in Manual Seal Mode, otherwise, Jaw Cool Time = 0 msec.
4. Locate the horizontal cooling pressure regulator inside of the machine housing.
5. While looking at the regulator gauge, set the cooling pressure to about 2 bar.

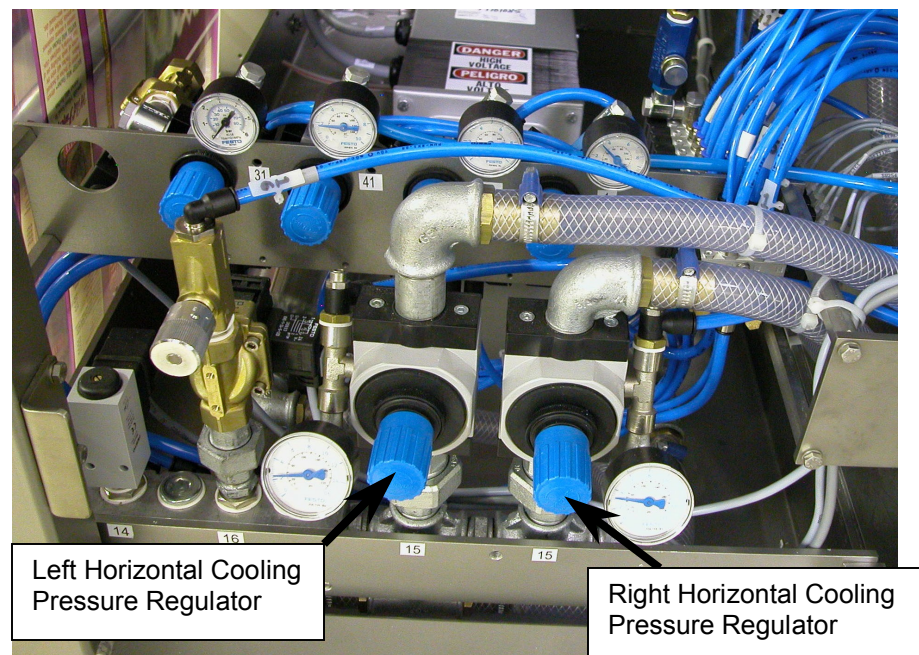


Figure 6.18
Shows the horizontal cooling pressure regulators.



Establishing the Horizontal Seal

Making the Horizontal Seal

Now that you have the horizontal sealing temperature, sealing pressure, and cooling pressure set, you can run the bagmaker and establish the horizontal seal.

To run the bagmaker and establish the horizontal seal:

1. From the operator control panel, set the JOG/AUTO selector switch to the AUTO position.
2. From the operator control panel, press the MACHINE READY push-button. The push-button should light up and stay lit.
3. From the operator control panel, press the JOG/RUN push-button to begin automatic bag forming.
4. Let the machine run for a few forming cycles to create a continuous string of bags; the knife must be set to DISABLED to create a continuous string of bags.
5. From the operator control panel, press the STOP push-button to stop automatic bag forming.
6. Check the horizontal seals in the film tube. Adjust the sealing temperature if necessary.

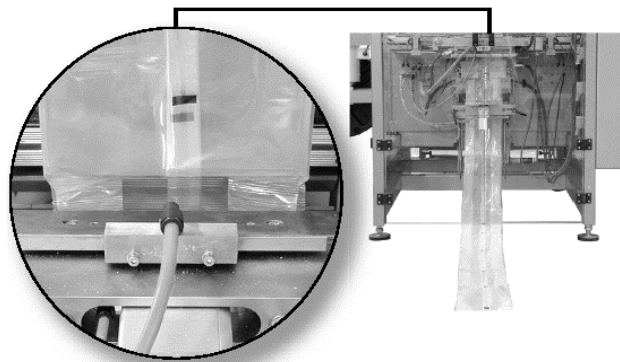


Figure 6.19

Shows how the seals should look and shows a continuous string of bags.



Setting the Film Registration System

Registration Sensor Setup

The registration sensor must be setup according to the film type. If the bagmaker is using non-registered film, the sensor must be disabled or it will cause registration errors during bag forming. If the bagmaker is using registered film, the sensor must be positioned relative to the registration marks, enabled, and the the *Film Photoeye Offset Distance* value must be set.

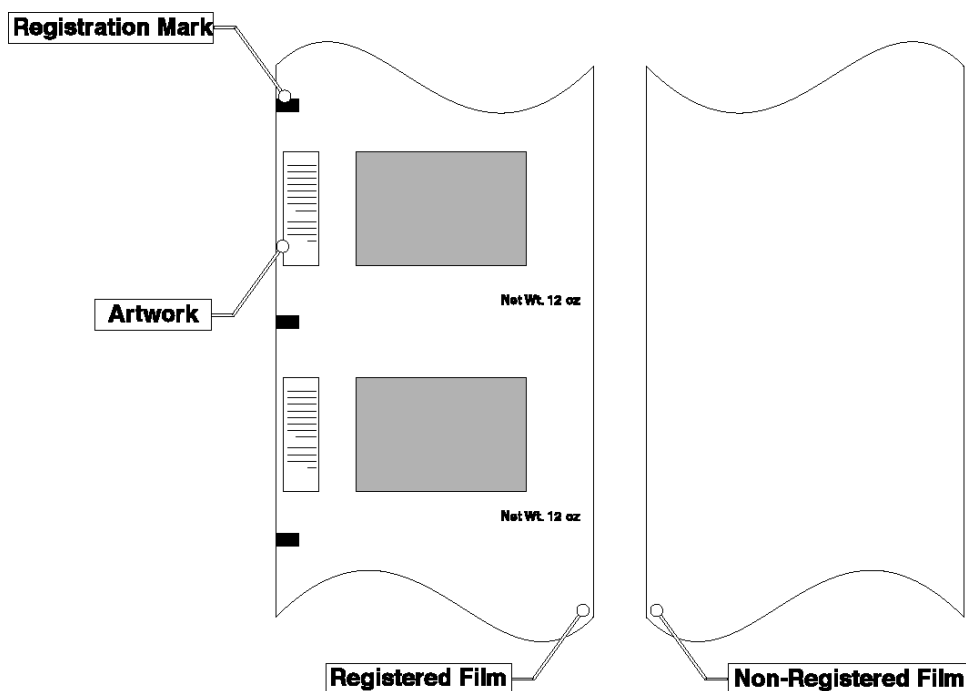


Figure 6.20
Shows registered and non-registered film.



Establishing the Horizontal Seal

Setup for Non-Registered Film

If the bagmaker is using non-registered film, the only setup task that needs to be performed is to disable the sensor. To disable the sensor, set the *Film Registration* button to *Off*.

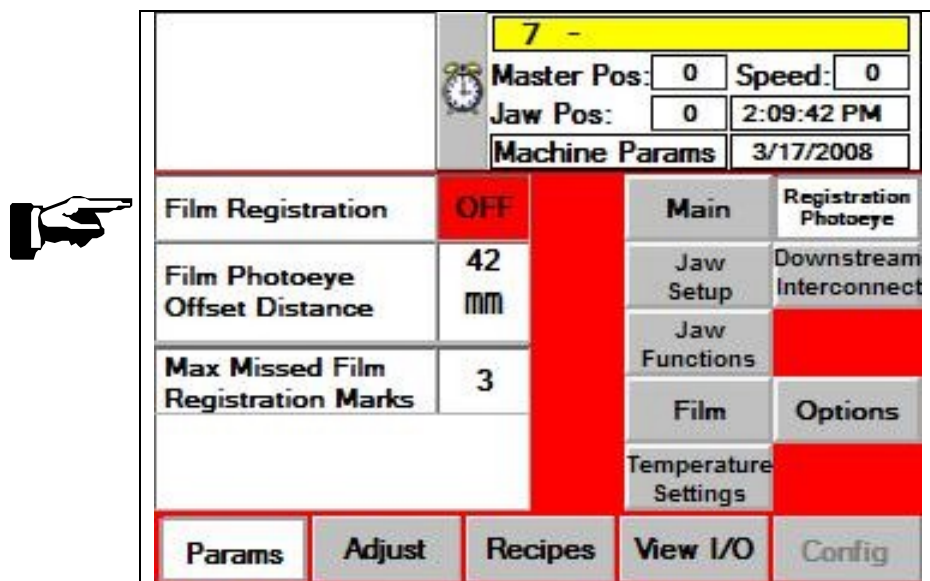


Figure 6.21
Shows the Photoeye screen.



Establishing the Horizontal Seal

Positioning the Photoeye

The first step in setting up the registration system is to determine which film markings you will use for film registration. The marks must appear at regular bag length intervals and must be much lighter or darker than the rest of the film so that they are detectable.

Once you have determined which set of marks to use, you must position the lens of the registration sensor in the path of these marks.

To position the sensor, loosen the sensor's position locking lever and move the sensor under the path of the registration marks; move it into the registration field.

Note: You may need to adjust the sensitivity of the sensor to detect the registration marks. The photoeye specifications sheet in your Manufacturer's Documentation will explain how to adjust the sensor.

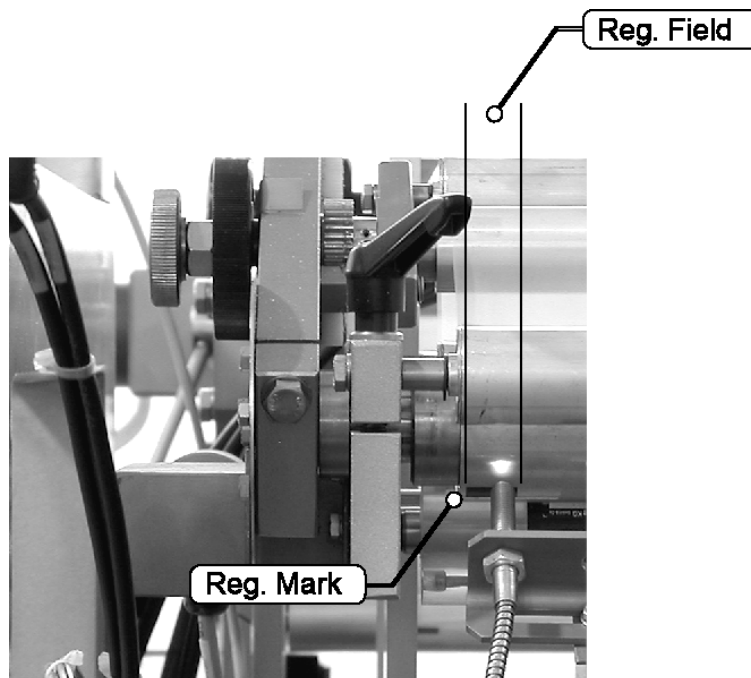


Figure 6.22
Shows how to position the film registration sensor.



Establishing the Horizontal Seal

Film Photoeye Offset Distance

The value for the *Film Photoeye Offset Distance* setting will depend on the film layout.

The *Film Photoeye Offset Distance* setting offsets the cutting and sealing location. This is the distance the bagmaker moves the film after detecting the registration mark.

When operating with film registration enabled, the *Max Missed Reg Marks* is the number of consecutive cycles the bagmaker will run without detecting a registration mark on the film. The bagmaker will cycle stop and display the appropriate alarm if this number is exceeded.

To determine the *Film Photoeye Offset Distance* value, you must create a few empty bags so that you can see where the bagmaker is creating the horizontal seals. Then, you must determine how much additional film needs to be advanced to position the seal in the desired location.

The following procedures describe how to determine the value for the *Film Photoeye Offset Distance* setting.



To determine the Film Photoeye Offset Dist value:

1. From the *Main* submenu of the *Parameters* screen, check that the *Feeder Enable* button is set to *Off*. From the *Jaw Functions* submenu of the *Parameters* screen, check that the *Knife Enable* button is set to *Off*.

You want to make a continuous string of empty bags with this procedure.

2. From the *Photoeye* submenu of the *Parameters* screen, check that the *Film Registration* is set to *On* and check that the *Film Photoeye Offset Distance* is set to *20mm*.
3. Start the bagmaker and allow it to form five or six bags.
4. If the horizontal seal is not in the desired location on the film, measure the distance from the seal -upstream to the desired location. Add that distance to the 20mm and this should be the *Film Photoeye Offset Distance*.

Note: If your machine is equipped with a film registration adjustment roller. You should adjust the roller so that the Film Photoeye Offset Distance is approximately 25-35% of bag length. A larger offset could allow more error in bag length. An offset less than 20mm is not allowed because the bagmaker would not have time to detect the mark and stop at the proper location.

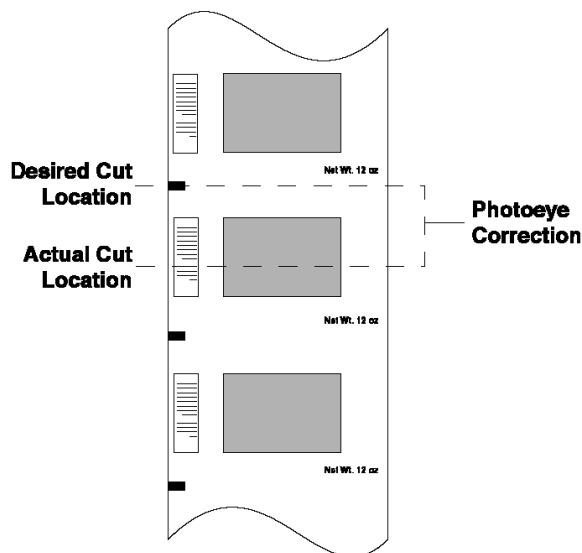


Figure 6.23
Shows how to determine the Photoeye Correction value.



Section 7: Working with Components

This section describes procedures that can be used to replace or realign components. These procedures include:

- Replacing Heater Cartridges and Probes
- Replacing the Feeding Belts
- Replacing the Cutting Knife
- Aligning the Forming Collar
- Aligning the Film Feeding Belt Assemblies



Replacing Heater Cartridges and Probes

This section describes how to replace the heating cartridges and the temperature probes in the horizontal sealing jaws and in the vertical sealing bar.

Horizontal Sealing Jaws

At some point, the heating cartridges and the temperature probes inside of the horizontal sealing jaws must be replaced. Use the following procedure to replace these items. Before starting this procedure, make sure that the bagmaker is locked-out.

To replace the heater cartridges and probes:

1. Remove the nuts that secure the front and rear jaw assemblies to the drawbars.
2. Remove the jaw assemblies from the drawbars.

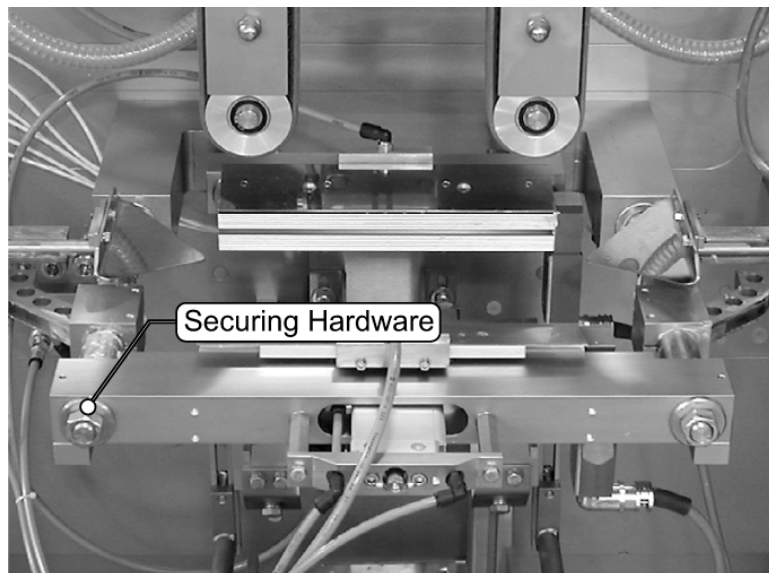


Figure 7.1
Shows the nuts that secure the jaw assemblies to the drawbars.



Replacing Heater Cartridges and Probes

Horizontal Sealing Jaws

3. Remove the terminal housings from the jaw bodies.
4. Remove the terminal housing covers to expose the ceramic connectors.
5. Disconnect the heater cartridges and the temperature probes from the ceramic connectors.
6. Remove the heater cartridges and the temperature probes from the jaw bodies.
7. Insert new heater cartridges and temperature probes into the jaw bodies.
8. Connect the new heater cartridges and the temperature probes to the ceramic connects.
9. Assemble the jaw assemblies and install them on the drawbars.

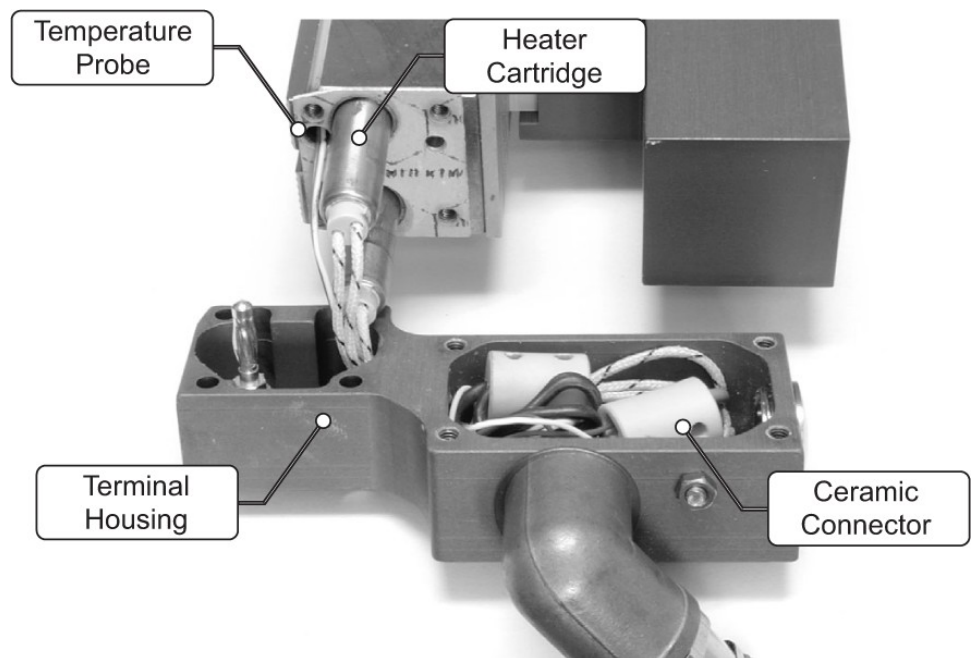


Figure 7.2
Shows a jaw body disassembled.



Replacing Heater Cartridges and Probes

Vertical Sealing Bar

At some point, the heating cartridge and the temperature probe inside of the vertical sealing bar must be replaced. Use the following procedure to replace these items. Before starting this procedure, make sure that the bagmaker is locked-out.

To replace the heater cartridge and the probe:

1. Remove the vertical sealing bar terminal housing.
2. Disconnect the heater cartridge and the temperature probe from the ceramic connectors.
3. Remove the heater cartridge and the temperature probe from the vertical sealing bar.
4. Insert a new heater cartridge and temperature probe in the bar.
5. Connect the new heater cartridge and the temperature probe to the ceramic connectors.
6. Install the terminal housing on the vertical sealing bar.

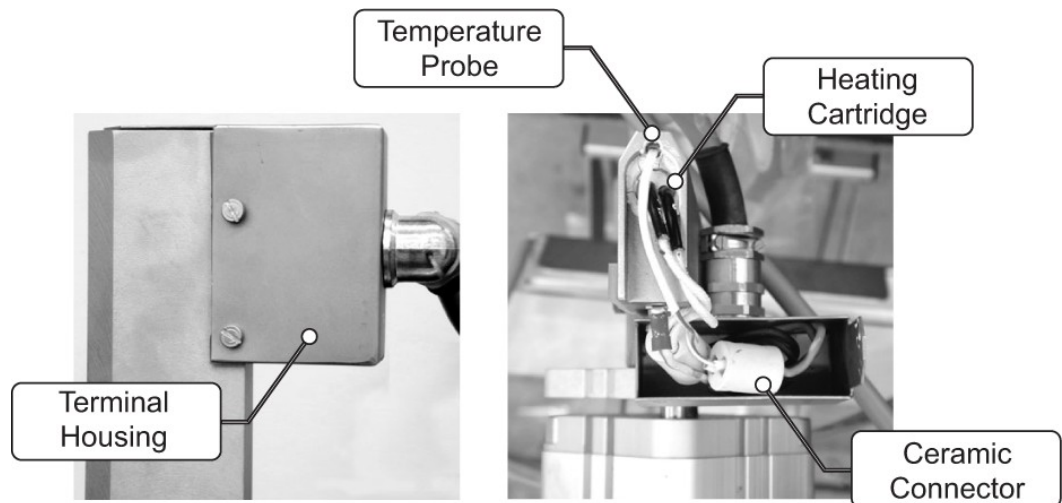


Figure 7.3
Shows the vertical sealing bar components.



Replacing the Film Feed Belts

Over time, the film feed belts will begin to lose traction against the film because of wear. At that point, it is time to replace the belts. Use the following procedure to replace them. Before starting this procedure, make sure that the bagmaker is locked-out.

To replace a film feed belt:

1. Loosen the securing nut that holds the upper belt pulley in place.
2. Loosen the belt tensioner until there is enough slack in the belt to remove it from around the belt pulleys.
3. Install the new belt.
4. Tension the belt using the belt tensioner.
5. Tighten the securing nut that holds the upper belt pulley in place.

Note: Always replace both belts at the same time.

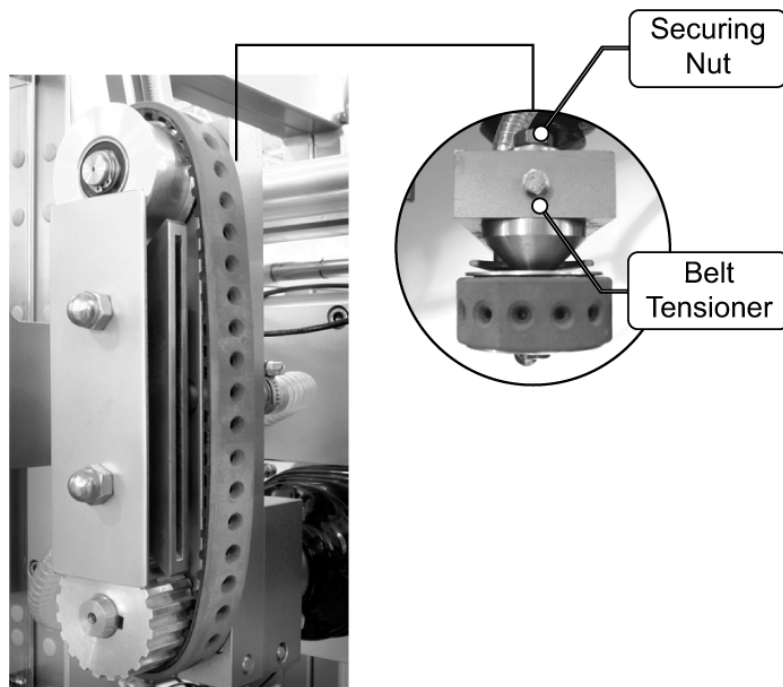


Figure 7.4
Shows how to replace a film feed belt.



Replacing the Cutting Knife

When the cutting knife consistently fails to produce a crisp cut it is time to replace it. Use the following procedure to replace the knife. Before starting this procedure, make sure that the bagmaker is locked-out.

To replace the knife:

1. Check that the jaws are in the fully open position.
2. Push the knife extender inward to extend the knife.
3. Locate the knife securing screw under the front jaw body.
4. Loosen the screw until the slotted knife can be removed from between the jaws.

Warning: Use a pair of pliers to remove the knife. Knives remain sharp and may cut the operator.

5. Insert the new knife into the knife assembly.

Warning: Use a pair of pliers to install the new knife. New knives are extremely sharp.

6. Tighten the knife securing screw.



Figure 7.5
Shows the knife assembly.



Aligning the Forming Set

Forming set alignment is critical to bag forming. If the forming set is not properly aligned, the vertical seal may not form or the bags may appear twisted. The forming set alignment positions the forming tube so that it is square with the machine frame and so that there is equal clearance between the forming tube and the forming collar on all sides.

To align the forming tube to the machine frame, adjust the height of the standoffs so that the forming tube is square with the machine frame.

To align the forming collar to the forming tube, loosen the forming collar securing bolts and slide the collar until there is equal clearance (on all sides) between the forming collar and the forming tube.

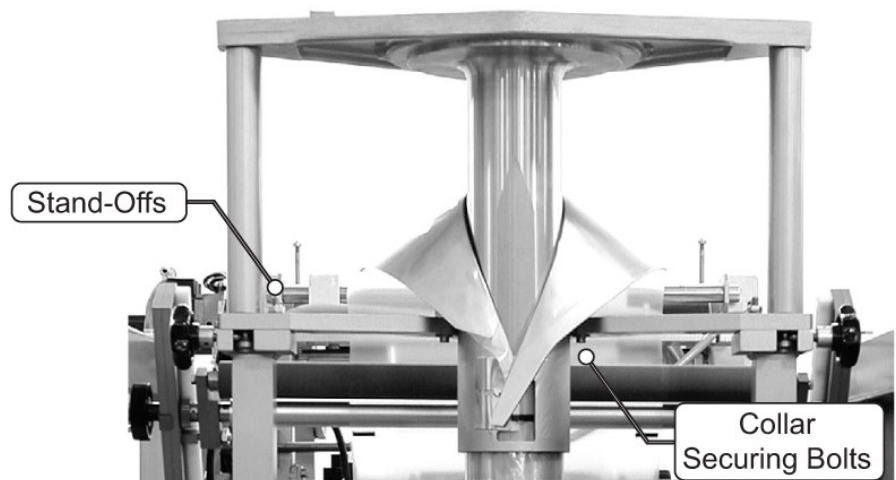


Figure 7.6
Shows the forming set standoffs and the forming collar securing bolts.



Aligning the Belt Assemblies

Whenever the belt assemblies are removed from their drive shafts, they must be aligned to the flat surfaces on the forming tube when they are reinstalled. The following procedure describes how to align the belt assemblies to the forming tube.

To align a belt assembly to the forming tube:

1. Loosen the collar bolt on the belt assembly.
2. Rotate the assembly away from the tube and then back to the tube until it is flush with the flat surface on the side of the forming tube; let the forming tube align the belt assembly.
3. Tighten the collar bolt.

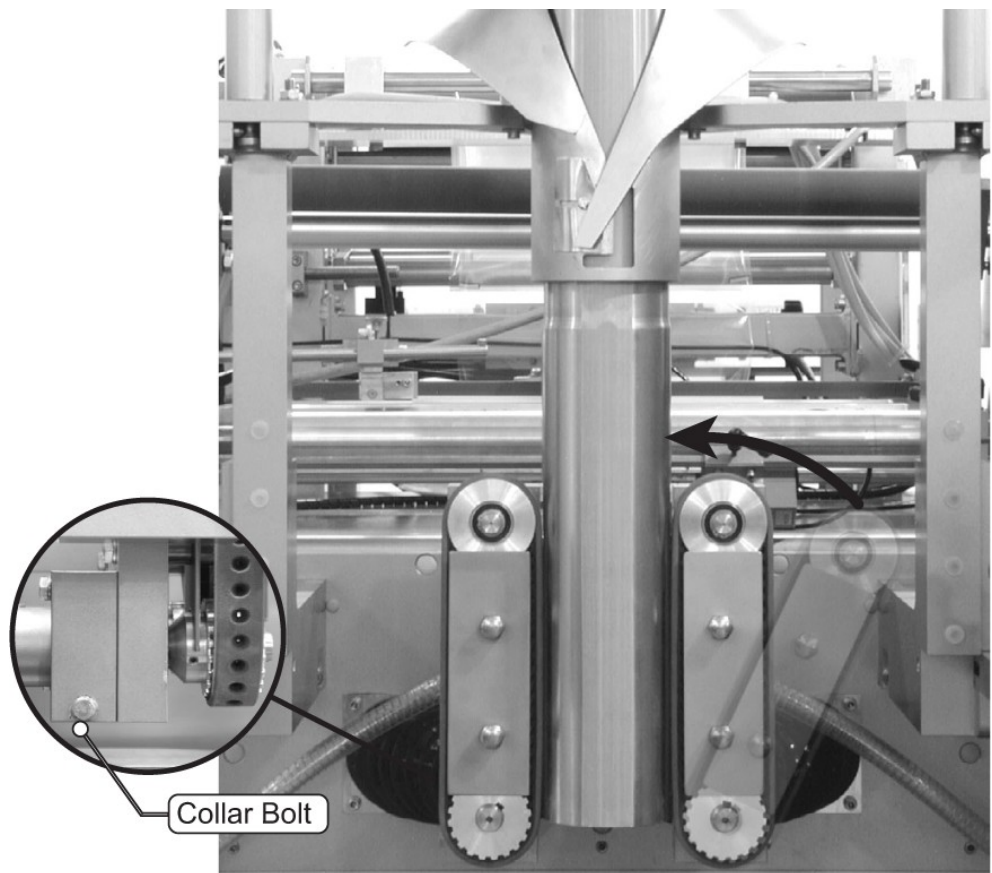


Figure 7.7
Shows how to align a belt assembly to the forming tube.



Horizontal Sealing Jaws Alignment

NOTE: Work with cold sealing jaws only!

The following procedure may be used to check the alignment of the horizontal sealing jaws. This is known as the carbon paper test.

1. Obtain white paper, carbon paper and tape.
2. Place the coated side of carbon paper on the white paper and fold it, as shown in the figure below.

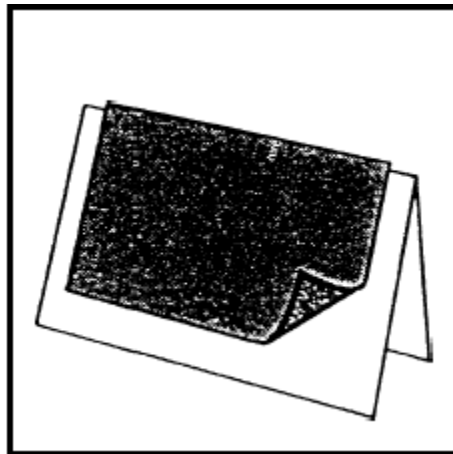


Figure 7.8
Shows the carbon and white paper folded.



How to Check Alignment - Continued

3. Open the protective doors.
4. Place the carbon and white paper between the sealing jaws and fasten them to the front jaw using tape. (As shown in the figure below.)

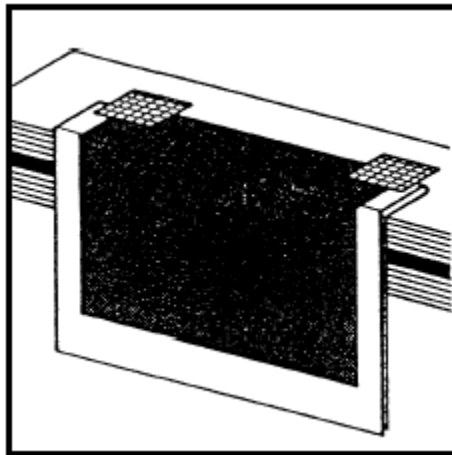


Figure 7.9
Shows the paper taped to the sealing jaws.

5. Close the protective doors.
6. Access the JOG MENU on the HMI of the machine and close the horizontal jaws in the jogging mode.
7. Open the horizontal jaws, open the protective doors, lift off the carbon paper and inspect the impressions on the paper.

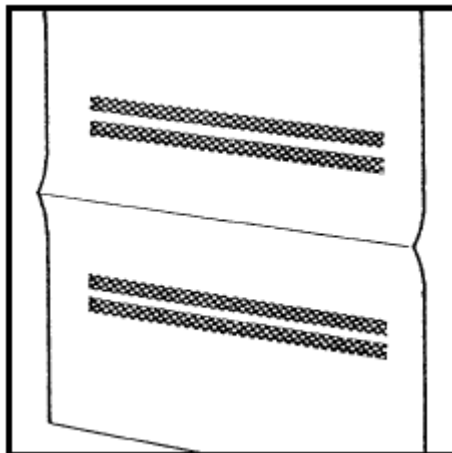


Figure 7.10
Shows an example of the sealing profile.



Aligning the Horizontal Jaws

How to Adjust the Pressure Distribution

Note: If satisfactory results were not obtained on the carbon paper test, adjust the pressure distribution by following these procedures.

1. Allow the jaws to cool.
2. Close the horizontal jaws until they are touching each other.
3. Loosen both screws (#1) in the rear jaw carrier. The front jaw assembly remains unchanged.
4. To obtain an equal pressure distribution, tighten or loosen the adjusting screws (#2), as required, per the results from the carbon paper test.

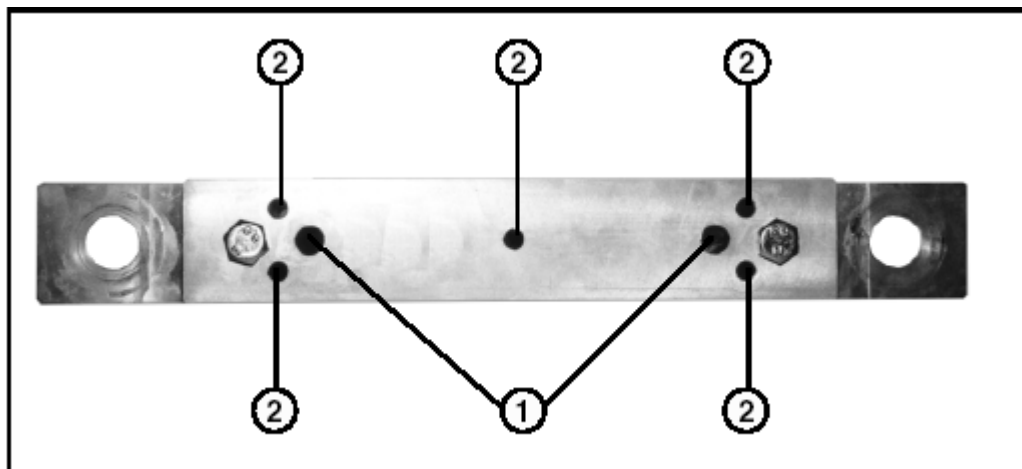


Figure 7.11
Shows rear jaw carrier.

Note: The following tables show examples of how to adjust the pressure distribution



Adjusting Pressure Distribution		
Pressure displacement on the bottom seal.	Loosen the two upper setting screws. Or Tighten the two lower setting screws.	
Pressure displacement on the top seal.	Loosen the two lower setting screws. Or Tighten the two upper setting screws.	
Pressure displacement to the center.	Tighten the central setting screws. Or Loosen the two right and left setting screws.	
Pressure displacement from the center.	Loosen central setting screws. Or Tighten the two right and left setting screws.	
Pressure displacement to the left side.	Loosen two right setting screws. Or Tighten two left setting screws.	
Pressure displacement to the right side.	Tighten two right setting screws Or Loosen two left screws.	

After the setting procedure, retighten the two loosened screws in the rear jaw carrier.

Repeat the carbon paper test. (It may be necessary to repeat these steps to obtain the desired results.)



Section 8: Maintenance Procedures

Rovema bagmakers are built to last and therefore require very little maintenance. Maintenance consists mostly of daily cleaning and component inspection. The following procedures describe how to clean and maintain the bagmaker. The scheduling of maintenance procedures is based on the bagmaker running one shift per day, eight hours per shift. If the machine is run for more or fewer hours, adjust the cleaning and maintenance schedule accordingly.

Note: Before performing any cleaning or maintenance procedures on the bagmaker, ensure that the electrical power and pneumatic supplies are properly locked-out and tagged-out (Refer to the Safety Instructions Section for Lock-Out Procedures).

Daily Cleaning

Daily cleaning is one of the most important measures that you can take to maintain the bagmaker. Product debris builds up very quickly and should be removed from the machine once each day. This section describes the parts of the bagmaker that should be cleaned.



Daily Cleaning

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Food Contact Surfaces

Proper sanitation of food contact surfaces is of the utmost importance. It will help prevent contamination of your bagged product. There are three bagmaker surfaces that contact the product; the product funnel, the filling tube, and the bag spreaders. These parts must be removed from the machine and sanitized in accordance with all Federal, State, and Local regulations.

Warning: The food contact surfaces must not be reinstalled until they are clear of product debris and the disinfectant used to sanitize them.

If you need assistance in determining how to sanitize the food contact surfaces for your particular application, please contact the Rovema Service Department.

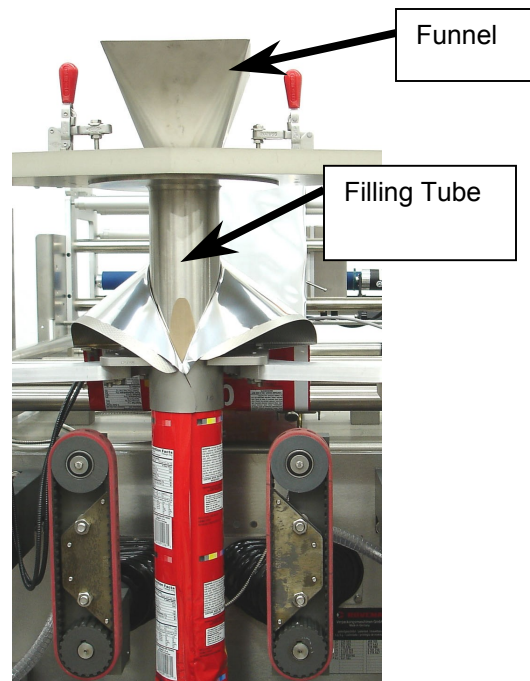


Figure 8.1
Shows the food contact surfaces. The bag spreaders are not shown but would be located at the bottom of a round forming tube.



Daily Cleaning

Machine Housing

Cleaning the machine housing will help prevent sanitation problems. Remove product debris by vacuuming or sweeping it from the horizontal surfaces of the machine.

When cleaning stainless steel surfaces, commercially available stainless steel cleaning and polishing agents can be used.

When cleaning plastic protective coverings, we recommend that you use an antistatic cleanser or a mild cleansing agent.

When cleaning the touchscreen display, use only a moist cloth. Do not use any cleaners; they may damage the surface of the touchscreen.

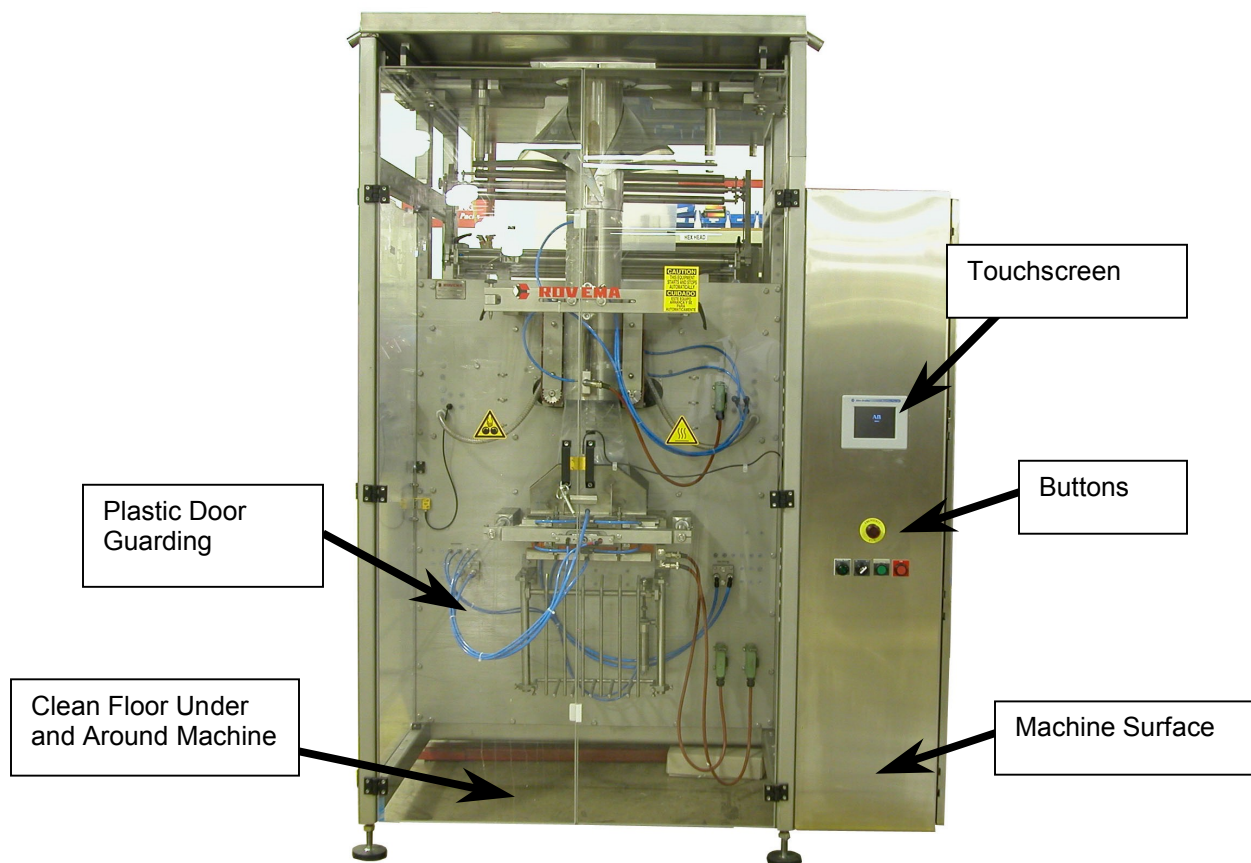


Figure 8.2
Shows the areas of the housing to clean.



Daily Cleaning

Sealing Surfaces

Film residue will buildup on the sealing surfaces; especially when using printed film. Excessive buildup will make it more difficult to create good seals. To remove the residue, use a brass bristle brush to scrub it away. The sealing surfaces are on the faces of the horizontal sealing jaws and the vertical sealing bar. If your machine is equipped with a zipper applicator and/or a Stabilo Seal® Sealing System, you will also need to scrub the zipper tacking bar, the zipper sealing jaws, and the Stabilo sealing jaws. This should be done just after the machine is locked-out and tagged-out, while the sealing tools are still warm.

Danger: Be sure to wear appropriate protective gloves when working around the sealing tools. The gloves must protect your hands from the hot sealing jaws and from the sharp serration of the cutting knife.

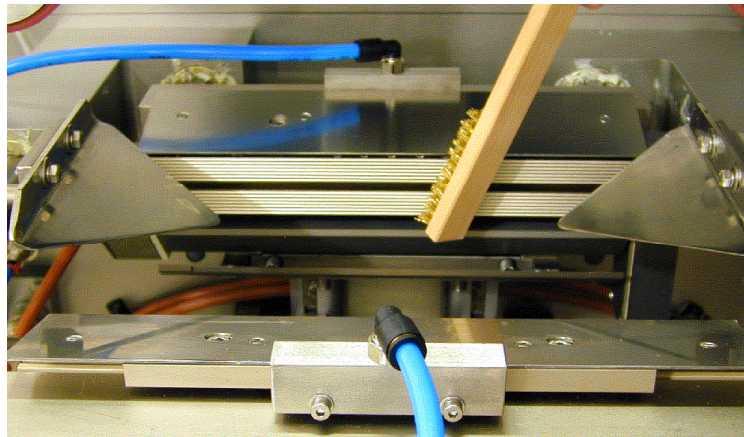


Figure 8.3
Shows the sealing tools to clean with a brass bristle brush.



Daily Cleaning

Air Filter/Regulator

The air filter/regulator removes condensation from the air supply. Depending on the quality of your air supply, water can accumulate in the bowl of the regulator very quickly. Use the following procedure to drain the bowl.

To remove water from the bowl:

1. Enable the air supply to the air filter regulator.
2. Set the regulator pressure to about 5 psi.
3. Open the drain at the bottom of the regulator bowl.
4. When the bowl is empty, close the drain.

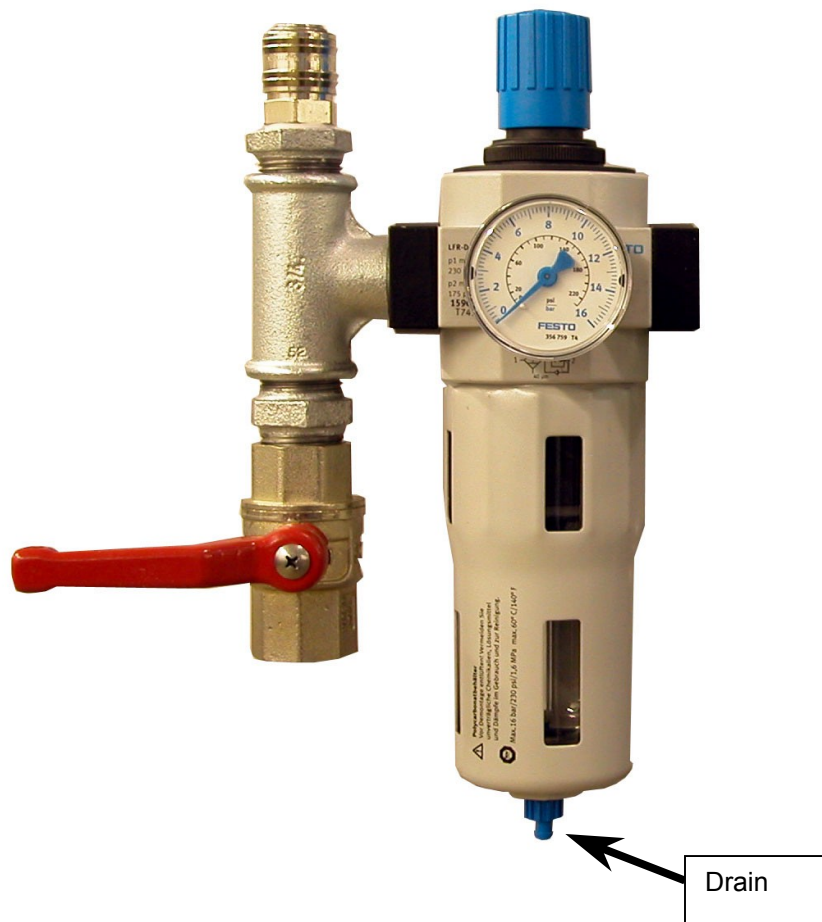


Figure 8.4
Shows the air filter/regulator.



Weekly Inspection

Weekly inspection of your machine will help prevent mechanical malfunctions. When inspecting your machine, you should look for component wear and check for proper component operation. This section indicates which components should be inspected and what to look for during the inspection.

Knife Actuation

Check that the cutting knife extends and retracts smoothly. You can screw a 6mm bolt into the end of the extend/retract air cylinder to manually actuate it.

Examine some of the bags from the last production run to see if the knife is cutting cleanly through the packaging material. If it is not, replace it (refer to the Working with Components Section for Replacing the Cutting and Perforation Knives).

Danger: Be sure that your hands are clear of the cutting area when extending the cutting knife, and, wear protective gloves.

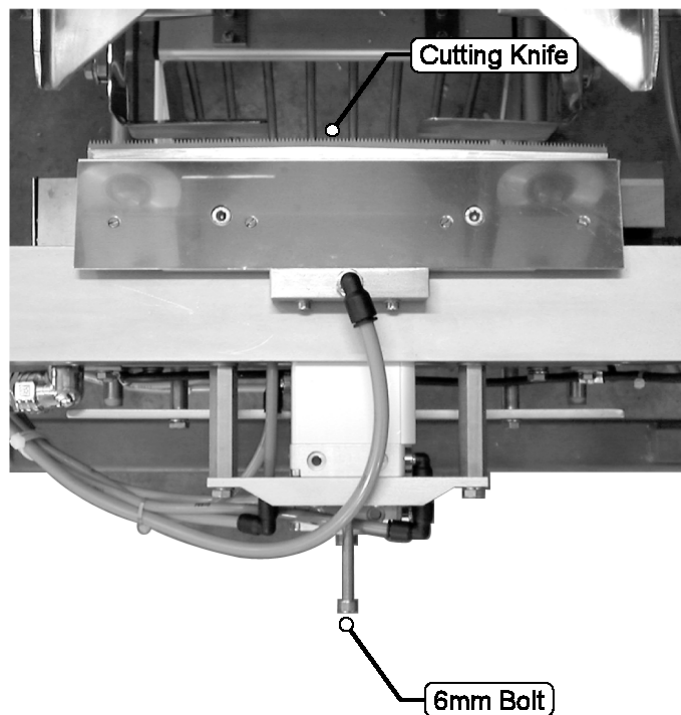


Figure 8.5
Shows how to use a 6mm bolt to extend and retract the knife.



Weekly Inspection

Film Transport Belts

Check the surfaces of the film transport belts for excessive wear. Replace them if necessary (refer to the Working with Components Section for Replacing the Film Transport Belts).

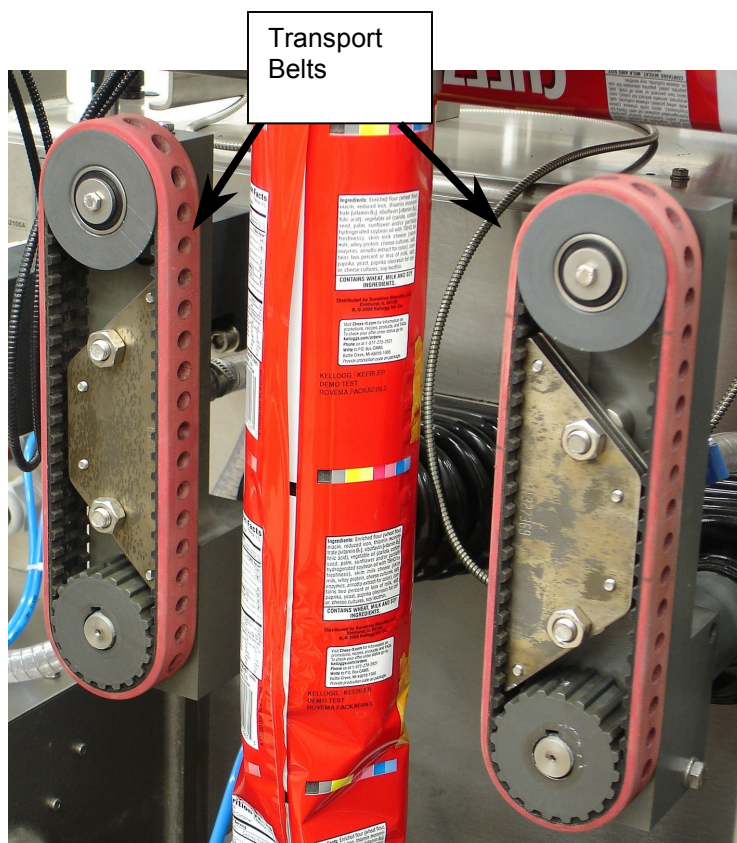


Figure 8.6
Shows the film transport belts.



Weekly Inspection

Forming Tube Tape

Check the condition of the Teflon® tape on the forming tube. If there are holes or tears in the tape, replace it.

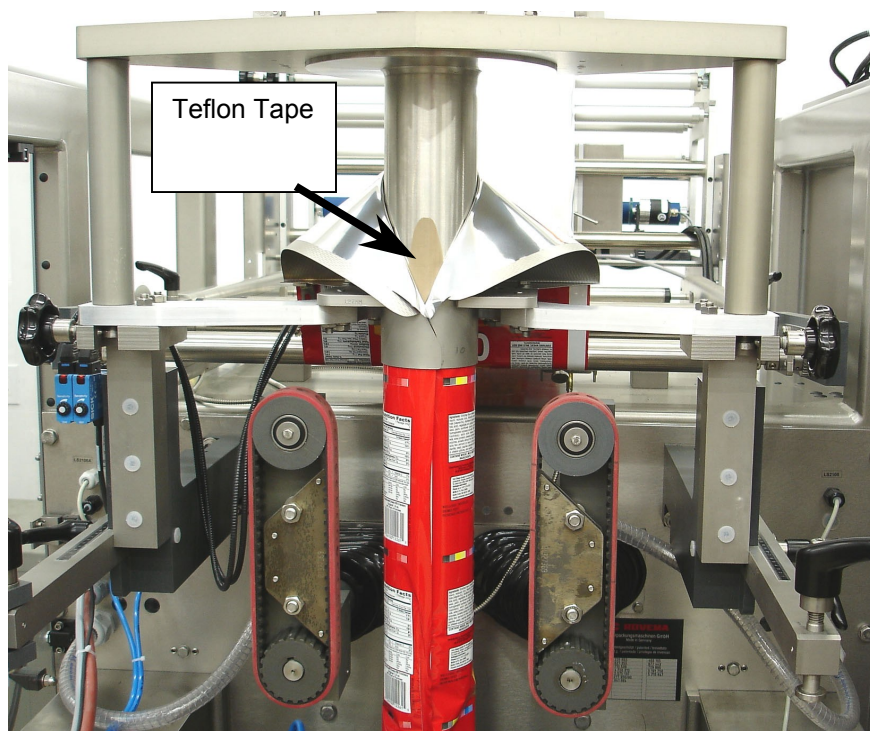


Figure 8.7
Shows the Teflon® tape on the forming tube.



Weekly Inspection

Guide Rollers

Check that the guide rollers from the dancer assembly up to the setup roller assembly spin freely. If a roller spins sluggishly, repair or replace it.

Vacuum System

Check the condition of the vacuum system by reading the vacuum gauge. This should be done during normal bag product, while the vacuum system is active. If the vacuum gauge reads below 10 Hg, replace the filter.

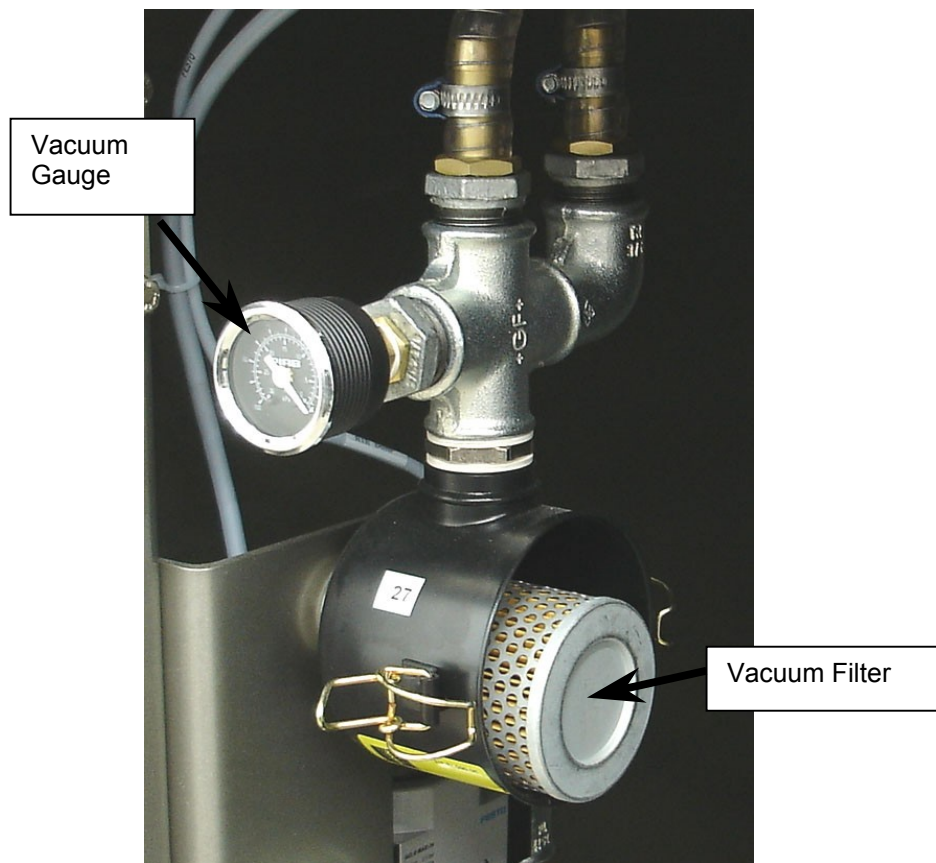


Figure 8.8
Shows the vacuum filter.



Monthly Maintenance - Lubrication

Monthly maintenance consists of lubricating components of the horizontal sealing device. These components are the bearings that support the drawbars and the rails that guide the gusseting pneumatic cylinders.

Both the bearings and the rails are greased through grease fittings. The fittings for the inside and outside sections of the drawbars are located on the two grease manifolds (located just inside of the side access door and side guard door). Each gusset rail has a grease fitting located on it.

You can use any brand name "No. 2 Food Grade" grease. Before injecting the grease into a fitting, follow its grease line to its destination. Continue injecting the grease until you see it starting to come out of the bearing and onto its drawbar or slide rail.

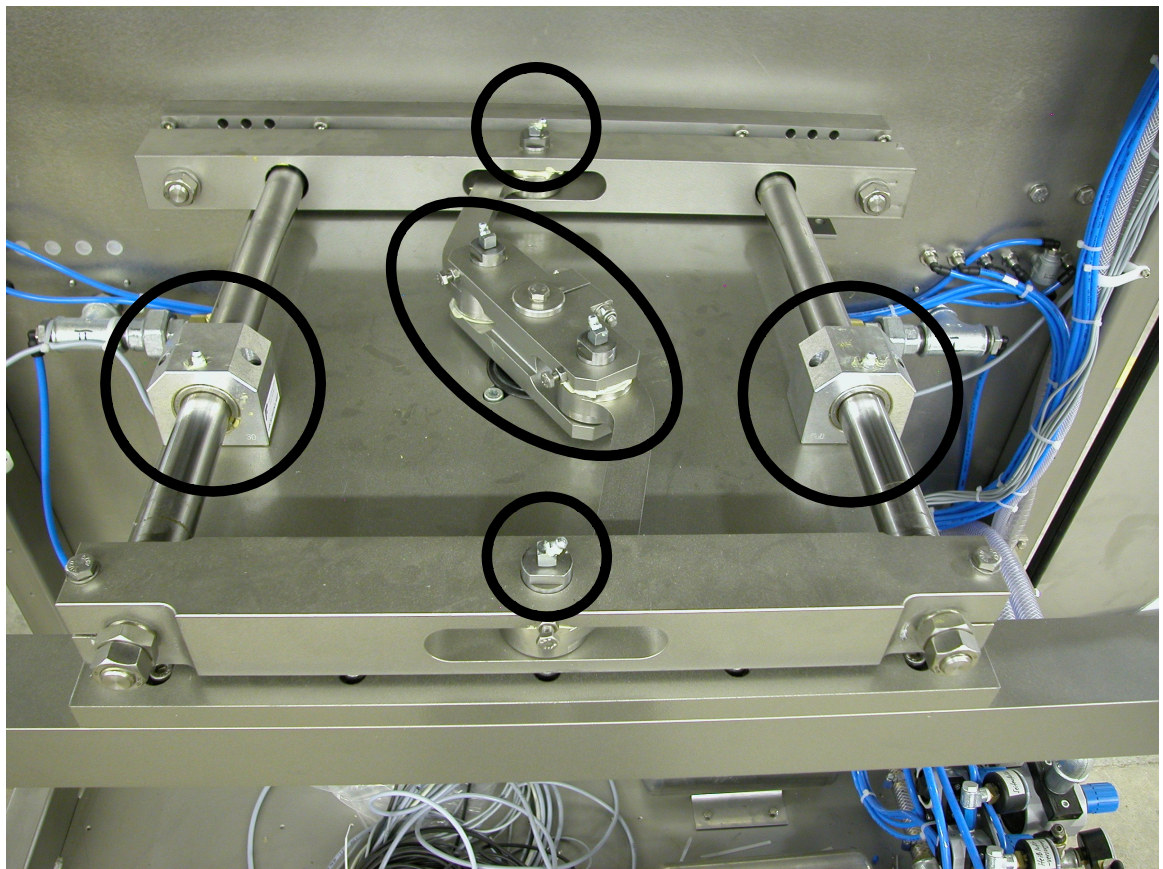


Figure 8.9
Shows the grease fittings used to lubricate the drawbars located inside the machine housing.



Monthly Maintenance - Continued

You can use any brand name “No. 2 Food Grade” grease.
Continue injecting the grease until you see it starting to come out of the bearing and onto its drawbar.

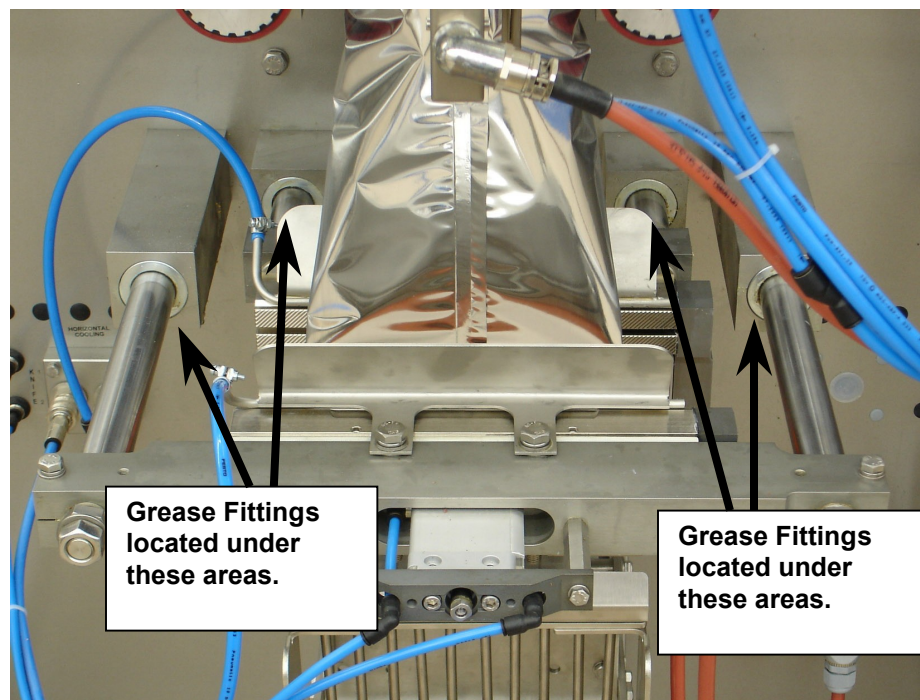


Figure 8.10
Grease fittings are located under these areas on the front of the machine.



Section 9: Troubleshooting

This section describes the warning and alarm messages that may appear on the operator interface, their possible cause(s), and their possible solution(s). Generic alarms are listed first, followed by specific alarms (in alphabetical order). Warning messages and potential operation issues are described on tables at the end of this section.

Note: Always check signal wiring if the cause of the alarm cannot be determined

Alarm Messages		
Message	Possible Cause(s)	Possible Solution(s)
Any Axis Drive Fault	1) This fault may sometimes accompany other faults such as *Any Axis* Feedback Fault, Feedback Noise Fault, or Position Error Fault. 2) This fault will usually be accompanied by an error code flashed on the servo drive itself.	1) Diagnose and correct the faults listed above first, if any are present. 2) Note the error code on the drive and refer to your Allen-Bradley 3000 Digital Servo documentation. 3) If Allen-Bradley documentation does not help to diagnose the problem, call the Rovema service department. 4) Call Allen-Bradley technical support directly.
Any Axis Feedback Fault	1) The servo feedback cable is loose, has a broken wire or is otherwise damaged. 2) The servo drive module is damaged. 3) The servo motor is damaged.	1) Tighten or replace the feedback cable. 2) Replace the servo drive. 3) Replace the servo motor.
Any Axis Feedback Noise Fault	1) Improper grounding often causes noise problems. 2) The servo motor encoder may be damaged.	1) Ensure that the servo feedback cable connections are secure. Check ground and shielding connections and wiring for the servo drive and other system components. 2) Replace the servo motor.



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Alarm Messages		
Message	Possible Cause(s)	Possible Solution(s)
Any Axis Position Error Fault	1) There is a physical hindrance, which does not allow the servo axis to move properly. 2) The programmed acceleration or speed of the axis may be too high.	1) Visibly inspect the axis looking for problems such as obstructions, broken or misaligned drive trains, and improper lubrication. 2) Make sure that all HMI parameters are set correctly. Load an old program if necessary.
Any Axis Servo Configuration Fault	1) There is a problem with the program configuration of the servo controller module or one or more of the servo drives.	1) Diagnosing this problem requires being on line with the ControlLogix (CLX) processor. 2) Refer to CLX online help or Rockwell Software CLX documentation for instructions on diagnosing this fault. 3) Call the Rovema service department. 4) Call Allen-Bradley technical support.
Any Axis Servo Module Fault	1) This fault indicates a problem with the SERCOS motion controller module itself which controls all the servo drives.	1) Refer to Rovema documentation for the specific part number of the module used on this system. 2) Refer to Allen-Bradley documentation for instructions on diagnosing motion module problems. 3) Call the Rovema service department. 4) Call Allen-Bradley technical support.
Any E-stop Pressed	1) An EMERGENCY STOP push-button is depressed.	1) Pull out the EMERGENCY STOP push-button(s).
Any Guard Door Open	1) The MACHINE READY push-button was pressed while one of the guard doors was open.	1) Close all guard doors and press the MACHINE READY push-button again.
Air Pressure Fault	1) The pressure in the air manifold has dropped below the set limit. 2) The pressure switch has malfunctioned.	1) Check the pressure at the air filter/regulator. 2) Check and/or adjust the pressure switch.



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Alarm Messages		
Message	Possible Cause(s)	Possible Solution(s)
Checkweigher Not Ready	1) You have pushed the MACHINE READY push-button but the checkweigher has not been enabled. 2) You have pushed the MACHINE READY push-button but the checkweigher is experiencing a fault.	1) Enable the checkweigher. 2) Check why the checkweigher is experiencing a fault.
Code Dater Fault	1) The printer (code dater) has experienced a fault.	1) Refer to the operator's manual for the code dater. Clear the code dater's fault, then press the MACHINE READY push-button to reset the machine.
E-stop Pressed	1) An EMERGENCY STOP push-button is depressed.	1) Pull out the EMERGENCY STOP push-button(s).
Film Belts Open	1) The MCR is energized but the film transport belts are open.	1) Close the belts with the BELTS OPEN/CLOSED switch on the Adjustments screen.
Film Missed Registration Mark During Sync Fault	1) The registration sensor did not see the registration mark because of slack in the film web. 2) The sensor lens is dirty. 3) The sensor is not adjusted to distinguish between the marks and the film. 4) The film web has drifted away from the registration sensor. 5) The film registration detect window is not setup correctly. 6) Your using non-registered film but the registration system is turned on.	1) Eliminate the slack in the film web. 2) Clean the sensor lens. 3) Adjust the sensor's sensitivity. 4) Adjust film positioning manually using the MOVE FILM LEFT/RIGHT push-buttons on the Adjustments screen OR adjust the film tracking sensors on the machine. 5) Adjust the film registration detect window for proper sensing of the mark. 6) Turn off the registration system.
Film Roll Empty Fault	1) The film roll is empty. 2) Too much slack in the film web has caused the dancer assembly to fall to the bottom of the film carriage triggering an out of film error.	1) If the film roll is empty, load a new roll of film onto the film carriage. 2) Turn the film roll by hand to rewind it and pull the dancer assembly to the level position.
Film Unwind Drive Fault	1) The power unwind system has experienced a fault.	1) Refer to the troubleshooting section of the 160 SSC controller manual.



Section 9: Troubleshooting

Alarm Messages		
Message	Possible Cause(s)	Possible Solution(s)
Film Unwind Motor Fault	1) The power unwind motor has over heated.	1) Allow the motor to cool. Check for excessive loading on the motor which could cause the overheating.
Front E-Stop Pressed	1) An EMERGENCY STOP push-button is depressed.	1) Pull out the EMERGENCY STOP push-button(s).
Guard Door Open	1) The MACHINE READY push-button was pressed while one of the guard doors was open.	1) Close all guard doors and press the MACHINE READY push-button again.
Jaw Axis Fault	1) The horizontal sealing jaw servo drive has experienced a fault.	1) Refer to the troubleshooting section of the servo drive operator's manual.
Jaw Front RTD Fault	1) The RTD device providing feedback to the temperature controller has failed.	1) Check the wiring. 2) Replace the RTD.
Jaw Rear RTD Fault	1) The RTD device providing feedback to the temperature controller has failed.	1) Check the wiring. 2) Replace the RTD.
Jaw Homing Failed Fault	1) The jaw home prox signal was not seen by the drive during the jaw homing sequence.	1) Refer to the drawings and check the jaw home prox wiring, including the 24v source voltage to the jaw drive.
Jog Mode Fault	1) If the machine is running and the AUTO/JOG selector switch is changed to JOG, this fault is generated.	1) Press the MACHINE READY push-button to clear the fault. Use the STOP push-button to initiate future cycle stops.
Left Film Axis Fault	1) The film feed servo drive has experienced a fault.	1) Refer to the troubleshooting section of the servo drive operator's manual.
Loss of Communications with PLC	1) The HMI has lost communication with the PLC.	1) Check the integrity of the Ethernet connection between the HMI and the Ethernet switch and between the switch and the PLC. 2) Ensure that the communication drivers are running with no errors. Powering the machine down for a minimum of 30 seconds and then back up may be the easiest way to do this. 3) Check the HMI, PLC or Ethernet hardware. 4) Call Rovema service.

**Section 9: Troubleshooting**

Alarm Messages		
Message	Possible Cause(s)	Possible Solution(s)
MCR Not Energized	1) An emergency stop pushbutton has been pressed or a guard door has been opened and disabled the master control relay.	1) If no unsafe conditions exist, reset all e-stops and close all guard doors. Press the MACHINE READY push button to energize the MCR.
Missed Registration Marks Fault	1) The registration sensor did not see the registration mark because of slack in the film web. 2) The sensor lens is dirty. 3) The sensor is not adjusted to distinguish between the marks and the film. 4) The film web has drifted away from the registration sensor. 5) The film registration detect window is not setup correctly.	1) Eliminate the slack in the film web. 2) Clean the sensor lens. 3) Adjust the sensor's sensitivity. 4) Adjust film positioning manually using the MOVE FILM LEFT/RIGHT push-buttons on the Adjustments screen OR adjust the film tracking sensors on the machine. 5) Adjust the film registration detect window for proper sensing of the mark.
Right Film Axis Fault	1) The film feed servo drive has experienced a fault.	1) Refer to the troubleshooting section of the servo drive operator's manual.
Servo Not Ready	1) You pressed the MACHINE READY push-button after changing a touchscreen parameter but the motion controller is still assimilating the changes.	1) Wait for the motion controller to finish assimilating your parameter changes.
Temperature Jaw Front Fault	1) The sealing temperature is above or below the alarm value set for the temperature controller.	1) Allow the sealing device to reach the set point. Check that the heating cartridge and temperature probe are functioning correctly.
Temperature Jaw Rear Fault	1) The sealing temperature is above or below the alarm value set for the temperature controller.	1) Allow the sealing device to reach the set point. Check that the heating cartridge and temperature probe are functioning correctly.
Temperature Vertical Fault	1) The vertical seal device temperature is above or below the alarm value set for the temperature controller.	1) Allow the sealing device to reach the set point. Check that the heating cartridge and temperature probe are functioning correctly.
Vertical Seal RTD Fault	1) The RTD device providing feedback to the temperature controller has failed.	1) Check the wiring. 2) Replace the RTD.



Warning Messages		
Message	Possible Cause(s)	Possible Solution(s)
Warning- Code Dater Low Ribbon	1) The code dater (printer) is about to run out of ribbon.	1) Prepare to add more ribbon to the code dater.
Warning-Controller Low Battery	1) The battery that maintains the PLC memory is almost exhausted.	1) Replace the battery. Refer to the PLC operator's manual for battery installation instructions.
Warning-Downstream Not Ready	1) You have pushed the MACHINE READY push-button but the downstream equipment has not been enabled. 2) You have pushed the MACHINE READY push-button but the downstream equipment is experiencing a fault.	1) Enable the downstream equipment from the Adjustments screen. 2) Check why the downstream equipment is experiencing a fault.
Warning-Downstream Synchronization Signal Missing	1) You have pushed the MACHINE READY push-button but the downstream equipment is not sending a ready signal.	1) Troubleshoot the downstream equipment.
Warning-Feeder Not Ready	1) You have pushed the MACHINE READY push-button but the product feeder has not been enabled. 2) You have pushed the MACHINE READY push-button but the product feeder is experiencing a fault.	1) Enable the product feeder from the Adjustments screen. 2) Determine why the product feeder is experiencing a fault.
Warning-Feeder Wait Timer Expired.	1) The feeder was not ready for a period greater than 15 minutes.	1) Examine the product infeed system.
Warning-Film Carriage At Left Limit	1) The film carriage has reached the end of its leftward travel.	1) Use the FILM CARRIAGE POSITION button on the Adjustments screen to move the film carriage to the right.
Warning-Film Carriage At Right Limit	1) The film carriage has reached the end of its rightward travel.	1) Use the FILM CARRIAGE POSITION button on the Adjustments screen to move the film carriage to the left.
Warning-Film Roll Low	1) The film roll is almost exhausted.	1) Prepare to load a new film roll.



Section 9: Troubleshooting

Warning Messages		
Message	Possible Cause(s)	Possible Solution(s)
Warning-Jaws Not Homed, Jog Failed	1) The jaw axis needs to be homed before the jog sequence will be active.	1) Switch the bag maker back to run mode and start it. Allow the jaws to home before switching back to jog mode.
Warning-Processor has loaded a program from nonvolatile memory	1) The processor battery failed to maintain the program when power was removed and the processor has loaded a program from the nonvolatile memory location when power was reapplied.	1) Replace the processor battery. NOTE: Recipe data saved after the last program store will be lost when a program load from nonvolatile memory occurs.



Operation Issues	
Issue	Possible Cause and Solution
Bag Length Inconsistent	1) The film is not threaded properly. 2) The film feed belts tension are improperly adjusted. 3) The film feed belts need to be cleaned.
Bag Length Is Too Long	1) Bag length is incorrectly set. 2) Reset bag length in control display. 3) Registration Photoeye not set correctly
Bags Not Cutting Or Only Partial Cut	1) Knife is broken. 2) Knife is dull. 3) Knife is improperly adjusted. Check the timing. 4) Knife is dirty. 5) Knife slot needs cleaning.
Bags Tear Next To Cross Seals	1) The sealing temperature is too high. 2) The cross-sealing jaws are out of alignment. 3) The sealing pressure is too high.
Cross Seals Are Not Sealed	1) The temperature of the cross-sealing jaws is too low. 2) The front and rear cross-sealing jaws do not properly mate when they are closed. (Check Jaw alignment) 3) The heating cartridge is defective. 4) The temperature probe is defective. 5) Check seal pressure. 6) Check for broken spring.
Cutting Knife Is Not Retracting	1) The knife slot may be clogged. Dismantle the cutting knife and clean the slot. 2) Clean front cross-sealing jaw knife slot. 3) Knife may be improperly located. 4) Check air pressure.
Film Feed Belts Slipping	1) Not enough pressure on film feed belts. 2) Belts are dirty. 3) Belts are worn. 4) Belts are misaligned to tube. 5) Vacuum filter or hoses clogged. 6) Vacuum turned off. 7) Film not properly threaded.
Film Feed Belts Will Not Move	1) Check for too much air pressure on belts. 2) Check the film drive gear boxes and couplings. 3) Check cables and drive for film feed motor. 4) Check the bearings in the belt drive shaft.
Film Jams at the Forming Tube	1) Vertical seal too hot, causing film to stick. 2) Too much pressure on vertical seal. 3) Film co-efficient of friction is too high.



Operation Issues	
Issue	Possible Cause and Solution
Film Runs Off-Center	1) The roll of film is not centered on the film carriage or spindle 2) The Film roll is improperly wound 3) Film roll is loose on Air Spindle. 4) Belts are misaligned to tube.
Film Shows Creases	1) Forming collar worn out. 2) Forming collar improperly adjusted. 3) Setup roller improperly adjusted. 4) Valve stuck on forming collar or rollers. 5) Contaminated roller in film path.
Film Sticking to the Cross-Sealing Jaws	1) Cross-sealing jaws need cleaning. 2) Heat set too high. 3) Too much pressure. 4) Vertical seal misaligned to expose sealant of inside of bag material to heated sealing jaws.
Film Sticking to the Vertical Seal Device	1) Heat set too high. 2) Too much pressure. 3) Vertical seal needs cleaning. 4) Vertical seal misaligned to expose sealant of inside of bag material to heated seal device.
Guard Door Alarm Will Not Reset	1) Close guard doors completely. 2) Check limit switches for loose or broken bolts.
Jaw Overloads	1) Feed system drop time set too early or too late. 2) Cross-sealing jaw overload safety switch improperly set. 3) Foam Deflators set too close causing product to be pushed up into seal.
Machine Will Not Start	1) Guard doors are open. 2) EMERGENCY STOP switch locked in off position. 3) The high or low limit on the dancer bar is on. 4) Check all safety switches for improper settings. 5) Is power on and ready light illuminated (safety circuit)
Pulling Film Down Forming Tube is Difficult	1) Forming set is dirty 2) Film co-efficient of friction is too high. 3) Valve caught in collar. 4) Splice tape caught in collar. 5) Check guide rollers for foreign materials and free movement. 6) Forming collar not aligned properly to tube. 7) Contact pressure of the belts too high. 8) Setup Rollers out of alignment.
Sealing Pressure Is Incorrect	1) Clean cross-sealing jaws of all product and material. 2) Check the setup in the control display. 3) Check cross-sealing jaws for wear or bowing.



Operation Issues	
Issue	Possible Cause and Solution
Sealing Temperature Is Incorrect	1) Check temperature settings in the control display. 2) Check all plugs on heater cables. 3) Check overloads and fuses. 4) Heater cartridge or thermal probe may be defective.
Seals Are Not Strong Enough, Can Be Easily Opened	1) Heating cartridges of one sealing surface may be defective. 2) The sealing temperature is too low. 3) Too much dust or product in the sealing area. 4) Not enough seal pressure.
Vertical Seal Is Not Sealed	1) The temperature of the vertical seal device is too low. 2) The overlap of the film is not correctly positioned under the vertical seal device. 3) The vertical seal device is not aligned properly with the forming tube. 4) The heating cartridge is defective. 5) The temperature probe is defective. 6) The sealing pressure is too low and must be readjusted. 7) Check air operation of vertical seal bar. 8) The film is not tracking properly.