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M7
POUCH
BAGGER

December 3, 2013



*****WARNING*****

**ALTERING EQUIPMENT WITHOUT FACTORY
APPROVAL COULD VOID ALL WARRANTIES.**

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Customer Remedies: Any and all liability of Metro Weighing & Automation, d/b/a Dura-Pack, Inc., and the customer's exclusive remedy shall be, at the option of Metro Weighing & Automation, either:

- (a) for Metro Weighing & Automation to remove the material handling system equipment and software, and to refund the purchase price paid; or
- (b) for Metro Weighing & Automation to repair or replace any equipment or software that does not meet Metro Weighing & Automation's Limited Warranty and is removed or retrieved by Metro Weighing & Automation.

Any replacement of material handling system equipment or software will be warranted according to the terms of the Limited Warranty described above for the remainder of the original Limited Warranty period or thirty days, whichever is longer.

Warranties and Remedies Void: The Limited Warranty provided herein is void and the customer is not entitled to any remedy from Metro Weighing & Automation if the failure of the material handling system equipment and/or software is caused by misuse, accident, abuse, or misapplication.

No Other Warranties: To the maximum extent permitted by applicable law, Metro Weighing & Automation, d/b/a Dura-Pack, Inc., hereby disclaims all other warranties not contained herein, whether expressed or implied, including, but not limited to the implied warranty of merchantability, implied warranty of fitness for a particular purpose or use, and any express warranties not contained in writing signed by both parties hereto.

No Liability for Consequential Damages: To the maximum extent permitted by law, in no event shall Metro Weighing & Automation, d/b/a Dura-Pack, Inc., or its suppliers, be liable for any special, incidental, indirect, or consequential damages whatsoever, including but not limited to damages for loss of business profits, business interruption, loss of business information, or any other pecuniary loss, arising out of the use or inability to use the material handling system, its equipment and/or software, even if Metro Weighing & Automation, d/b/a Dura-Pack, Inc., has been advised of the possibility of such damages.

Limitation on Other Damages: The customer acknowledges that this is not a contract for consumer goods or services, and further acknowledges that the remedies provided herein are the sole and exclusive remedies available to the customer in the event of any breach or default of Metro Weighing & Automation and/or of any defect or failure of the material handling system equipment and/or software. Damage claims against Metro Weighing & Automation, d/b/a Dura Pack, Inc., are limited to the return to the customer of monies actually paid to Metro Weighing & Automation, d/b/a Dura Pack, Inc., for goods or services.

To the extent permitted by applicable law, in no event shall Metro Weighing & Automation or the customer have any liability to each other or to any third party for any incidental, consequential, special, punitive, speculative, or exemplary damages occasioned under this agreement and/or based upon a claim of tort (including, but not limited to negligence, warranty, or strict liability), for any cause whatsoever, including without limitation, damages for loss of income, profits, or use, business interruption, loss of goodwill, or damages to persons or property, irrespective of whether either party has advance notice of the possibility of such damages.

Governing Law: The parties hereby acknowledge and agree that this Agreement and all provisions hereto are to be governed, interpreted, and enforced in accordance with the laws of the State of Michigan.

Venue & Jurisdiction: In the event of a dispute regarding matters governed by this Agreement, both parties agree to submit the dispute to binding arbitration pursuant to the rules of the American Arbitration Association or its equivalent. The decision of the arbitrator shall be final and shall have the effect of a judicial determination and be certifiable to an appropriate court of records and judgment. The Arbitrator is expressly authorized to issue preliminary and permanent injunctive relief where appropriate. The sole and exclusive venue for an Arbitration proceeding instituted against Metro Weighing & Automation, d/b/a Dura Pack, Inc. shall be the Detroit, Michigan metropolitan area. The sole and exclusive venue for an Arbitration proceeding instituted by Metro Weighing & Automation, d/b/a Dura Pack, Inc., against the customer shall be the metropolitan area of the customer's registered address or principal place of business. Each party shall bear its own attorney fees and the arbitration costs shall be borne equally by both parties. Regardless of venue, any dispute shall be adjudicated or arbitrated in accordance with the rules of the American Arbitration Association and Michigan law, where applicable.

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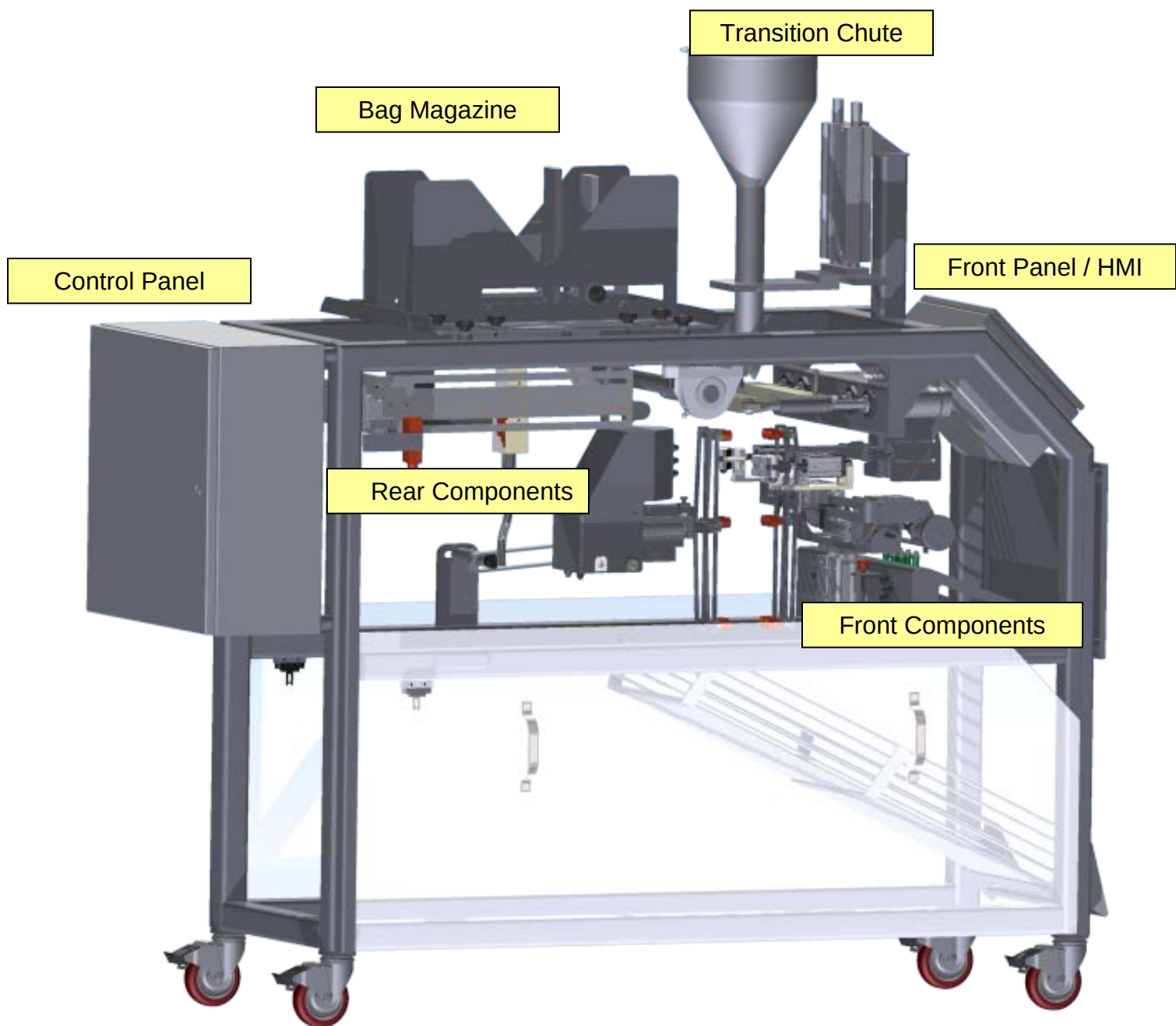
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Spare Parts List

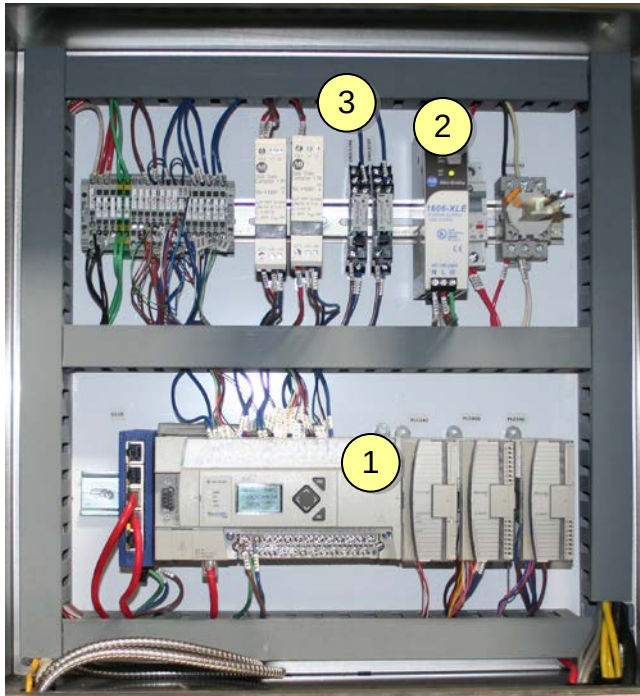
Electrical Drawings

Main Components

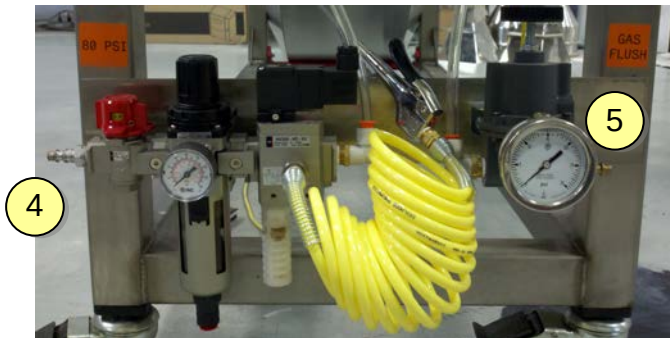
Listed below are the main components of the **M7**. These are discussed in detail on the following pages.



Control Panel: Houses the electrical components required to run the system.



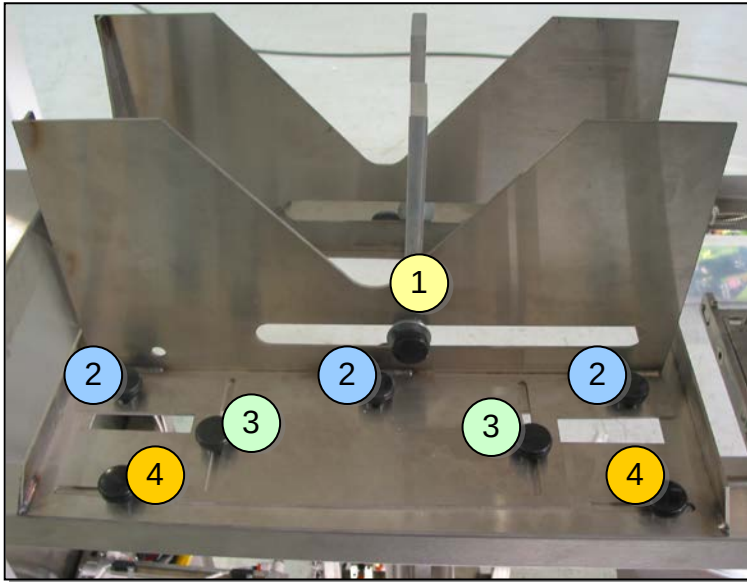
- 1) **PLC:** Controls the machine. The PLC is connected to the HMI via the Ethernet switch. A PC can be plugged into this same switch to simultaneously access the PLC and HMI for programming, data collection, etc.
- 2) **24 VDC Power Supply:** Supplies control power to the Inputs & Outputs. A green LED on the power supply indicates it is operational.
- 3) **Relays:** Two solid-state relays are used to control the heating elements. A mechanical relay is used for the “Bag Ready” output to external equipment.



- 4) **Main FRL:** Connect your plant air supply to the main FRL. Typical operating pressure is 80 PSI. The FRL is equipped with an automatic Dump Valve controlled by the 24 VDC Power Supply. If power is lost (or the E-Stop is pressed), the air supply is cutoff. A blow-off gun is also supplied for convenience.

- 5) If the Gas Flush option is purchased, a precision regulator will be supplied (pictured above on the right). This can be used to hook up plant gas. In this scenario, the **Gas Flush** valve is internally isolated in the valve bank. This allows the rest of the valves to use compressed air, while the **Gas Flush** valve can use the supplied gas.

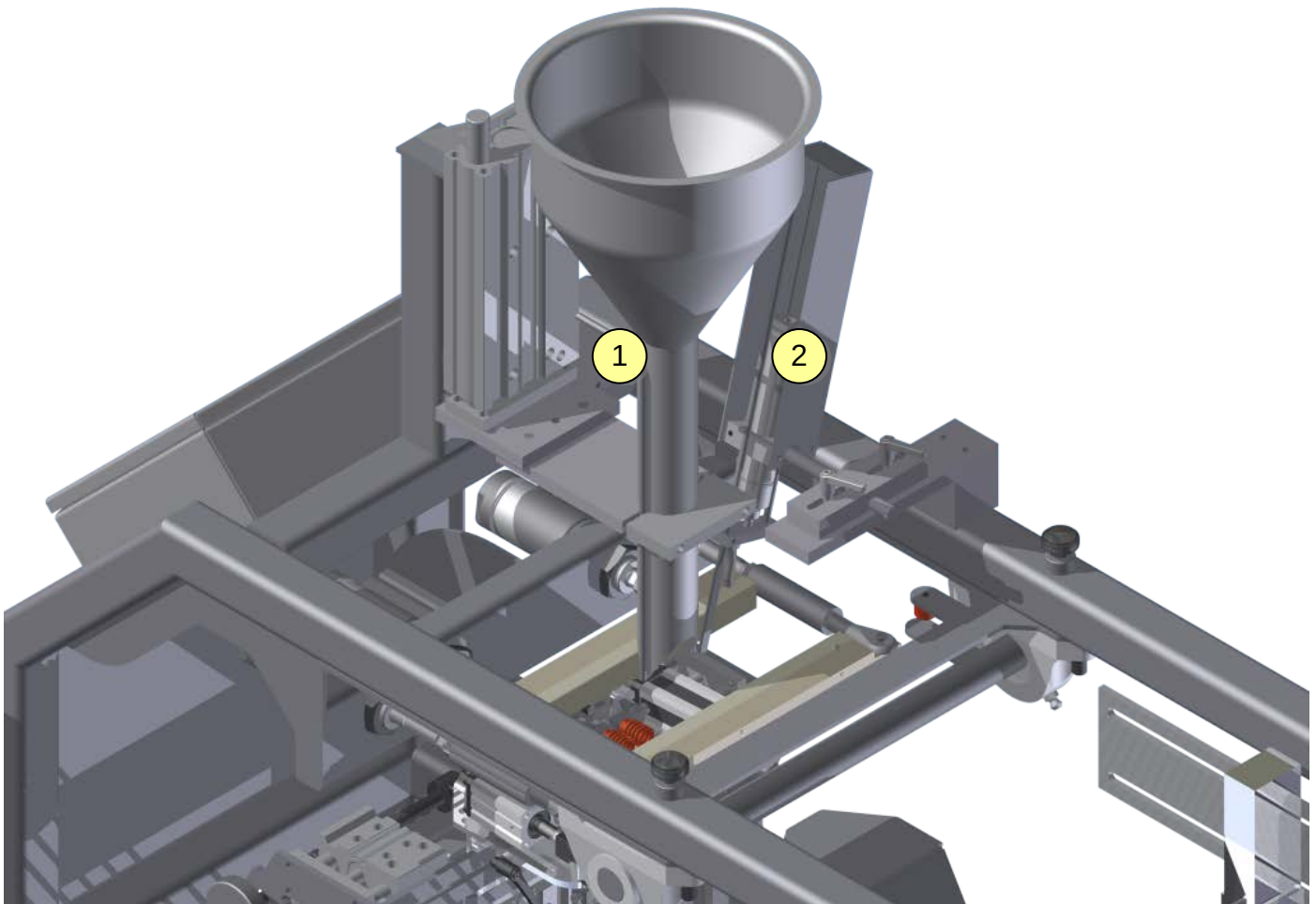
Bag Magazine: Holds the stack of empty bags. Place a single bag in the magazine to adjust.



- 1) **Length Adjustment:** Adjust these bars to the length of the bag.
- 2) **Ledge Adjustment:** Adjusts the ledge that the bags rest on. This should be adjusted far enough out to hold the bag, but not so far that the Vacuum cups cannot pull a bag from the magazine.
- 3) **Width Adjustment:** Adjust to the width of the bag.
- 4) **Pick Point Adjustment:** Moves the entire magazine forward/backward to adjust where the Vacuum cups contact the bag.

Transition Chute: Funnel product from the filling equipment into the bag. The transition chute can also act as a timing hopper to increase throughput in certain configurations. The transition chute is mounted to an air cylinder that moves up & down. An adjustable stop is provided to adjust how far the chute enters the bag.

Note: Transition Chutes are custom made to the bag/product. Your Transition Chute(s) may look different than the one pictured below.



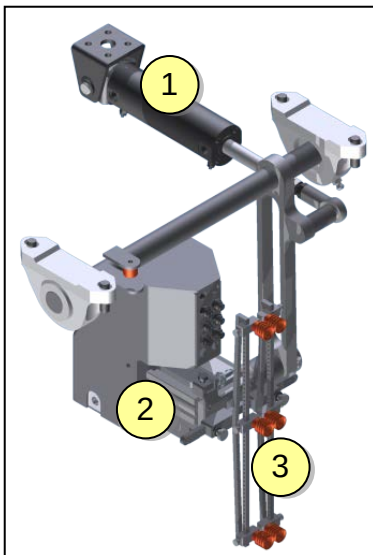
- 1) **Gas Flush Tubes:** Mounted to the outside of the Transition Chute, these tubes deliver the supplied gas into the bag before sealing. This is typically used to lower O₂ levels.
- 2) **Gas Flush / Vacuum Nozzle:** Inserts into the bag to Gas Flush and/or remove excess air.

Front Panel / HMI: The front panel is where the E-Stop & HMI are located.



The HMI screens are discussed in detail later on. When the E-Stop is pressed, power is removed from the PLC outputs and the Dump Valve. This ensures that components on the system will not move. **Before performing any maintenance on the machine, make sure the E-Stop is pressed, or power is removed from the system altogether.**

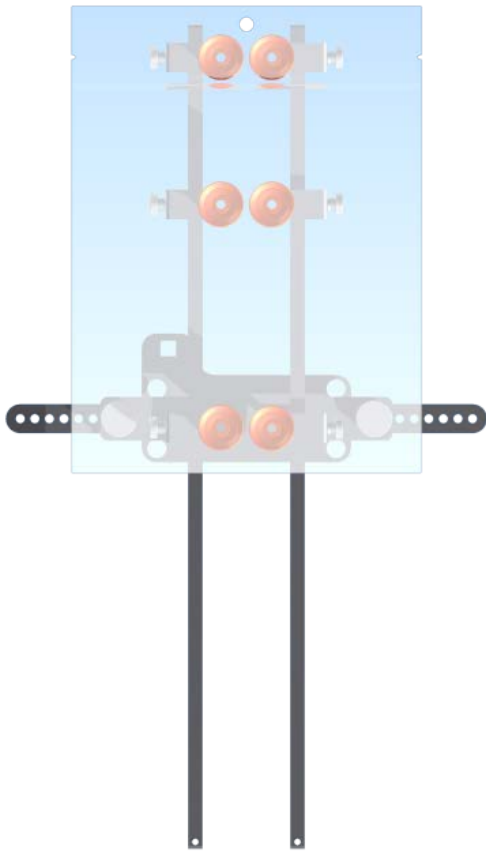
Rear Components: The rear components are responsible for retrieving an empty bag from the magazine, and presenting it to the front components. After the bag is opened, it retrieves the next one while the front components perform the filling/settling & sealing.



- 1) **Rotation Cylinder:** Rotates the Vacuum cups Up/Down.
- 2) **Rear Bag Open Cylinder:** Used in conjunction with the **Front Bag Open Cylinder** to open the bag. An adjustable stop mounted on the cylinder can be used to adjust how much the bag is opened.
- 3) **Vacuum Cups:** The vacuum cups are mounted on adjustable rails. Each cup can be adjusted based on the height of the bag. Each "row" of cups can be adjusted based on the width of the bag.

Vacuum Cups

The top cups and bottom cups are connected to a vacuum sensor. This detects whether or not a bag has successfully opened before allowing the transition chute to dump product.

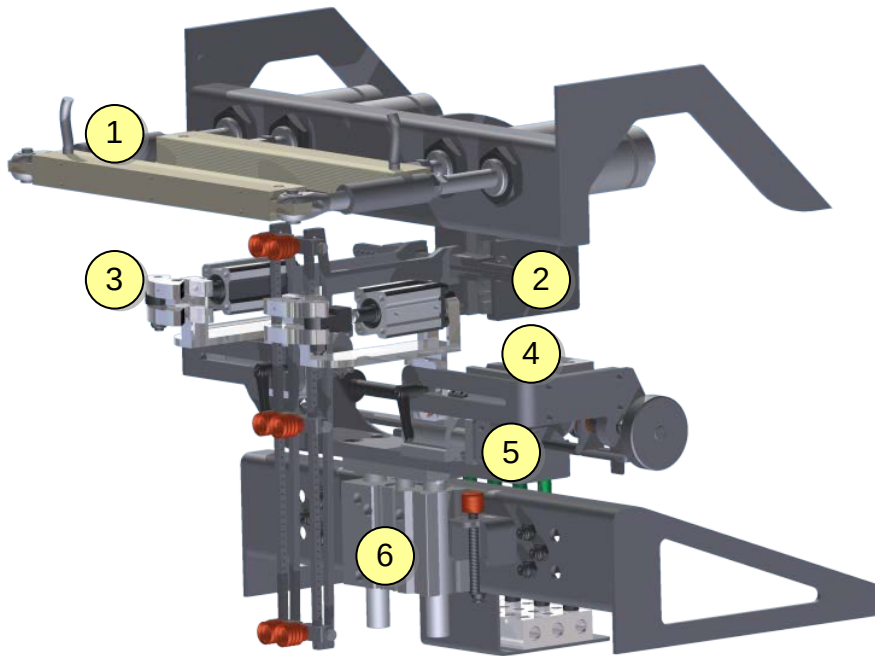


The vacuum cups can be adjusted across the length and the width of the bag. The picture to the left illustrates typical cup placement on a bag. The top 2 cups are placed at the top of the bag. If the bag has a zipper, the cups should typically be located at or slightly above the zipper. If the bag has a hang-hole, care should be taken to make sure the cups are not located over the hang-hole.

The bottom 2 cups are typically located at the bottom of the bag, and the center 2 cups are typically located in the center of the bag.

On narrow bags, the vacuum cup rails are typically pushed together in the center of the bag. When running wider bags, it is often beneficial to separate these rails to help support the bag.

Front Components: The front components are responsible for opening, filling, and sealing the bag.



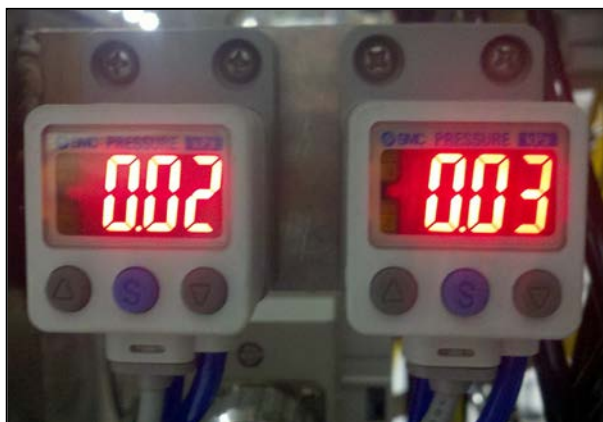
1) Seal Bars: Front and rear seal bars are used to heat seal the bag. They contain a heating rod with an internal thermocouple for temperature control.

2) Front Bag Open Cylinder: Opens the bag with the Rear Bag Open Cylinder. A vacuum system identical to the Rear Bag Open Cylinder is attached to the Front Bag Open Cylinder. A thumb screw mounted on the cylinder can be used to adjust how much the bag is opened.

- 3) Grippers:** The grippers close on the bag to hold it in place while it is being filled & sealed. The grippers can be adjusted in/out to the bag width by loosening the ratcheting handles and sliding them in place.
- 4) Gripper Slide:** The grippers are mounted on slide cylinders that move in while the bag is opening, and back out while the bag is being sealed. An adjustment knob on either side of the machine can be used to control the stroke.
- 5) Stretch Cylinder:** This cylinder energizes with the gripper lift cylinder, and provides additional stretch to the bag to eliminate wrinkles while it is being sealed. A screw adjustment located at the end of the cylinder controls how much the bag is stretched.
- 6) Gripper Lift Cylinder:** Lifts the entire gripper assembly to the seal bars. An adjustment bumper is located to the right of the cylinder to control its stroke. Adjusting this bumper moves the location of the seal. Move the bumper in the direction you want to move the seal.

Vacuum System

The vacuum system for the front and rear of the machine is identical. Each vacuum cup is tied to a venturi for generating vacuum from compressed air. Each vacuum cup also contains a screen/filter for catching debris. An optional automatic purge feature will force air through the cups after every cycle to prevent clogging when running dusty product.



The 2 top-most and bottom-most cups are connected to vacuum sensors. The sensors are used to detect that the bag has opened. If a bag did not open, it is released without being filled, and a new bag is brought into place. The bottom sensors are used to verify the gusset has opened, and they can be disabled via the HMI if a pillow style bag is being used.

The vacuum sensors work off an adjustable set-point. The set-point is the pressure reading at which the vacuum cup has a good seal. The set-point is typically set between -2.00 to -4.00 PSI.

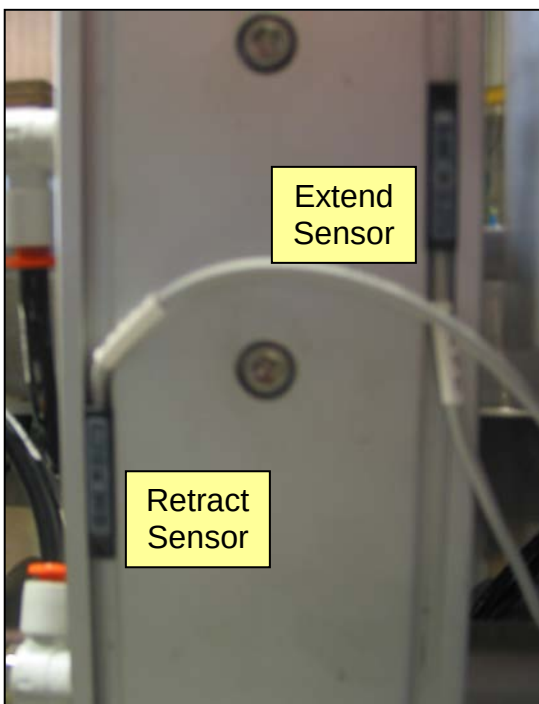
The set-point for the vacuum sensor may need to be adjusted from time to time. To adjust the set-point, perform the following steps:

- 1) Press the center **S** button momentarily. The display will flicker between **P_1** and the current set-point value.
- 2) To adjust the set-point, press the **▲** and **▼** buttons, and press **S** when done.
- 3) The display will flicker between **P_2** and the current set-point value. This parameter is not used, so simply press **S** to continue.

Note: When adjusting the set-point, make sure the set-point value is negative.

The pressure sensors are pre-programmed before the system is shipped. In the event that you have to replace the sensor, it will first need to be configured. Use the following process to configure the sensor. This process only needs to be done once.

- 1) Press and hold the **S** button for 2 seconds.
- 2) The display will read **F0**; press **S**.
- 3) The display will flash **UNI**. Press the **▲** and **▼** buttons until the display reads **PSi** and press **S**.
- 4) The display will read **F0**. Press **▲** to select **F1** and press **S**.
- 5) The display will flash **OU1**. Press the **▲** and **▼** buttons until the display reads **HYS** and press **S**.
- 6) The display will flash **1OT**. Press the **▲** and **▼** buttons until the display reads **1_P** and press **S**.
- 7) The display will flash **P_1**. Press the **▲** and **▼** buttons to the desired set-point (-2.00 to -4.00) and press **S**.
- 8) The display will flash **H_1**. Press the **▲** and **▼** buttons until the display reads **0.00** and press **S**.
- 9) The display will flash **Col**. Press the **▲** and **▼** buttons until the display reads **SoG** and press **S**.
- 10) Hold **S** for 2 seconds to exit program mode.



Cylinder Sensors

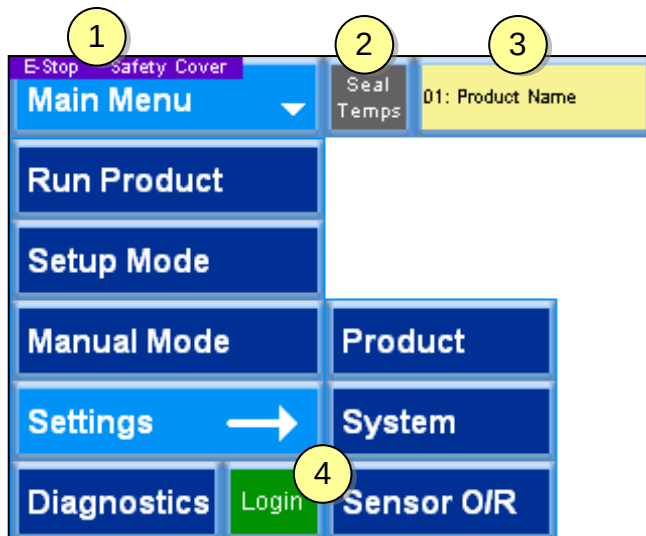
Many of the cylinders in the system are equipped with sensors to detect their position (extended or retracted). The system has built-in alarming and will display alarm information if the appropriate sensor has not been tripped.

You can use the **Manual Mode** feature of the HMI (described later) to extend/retract the cylinder. ***Make sure the extend sensor is lit when extended, and the retract sensor is lit when retracted.***

Some of the cylinders are equipped with a quick-adjust thumb screw. When adjusting these cylinders, simply turn the thumb screw to adjust the stroke of the cylinder. No further adjustments have to be made to the sensors.

Main Menu

The **Main Menu** can be displayed by touching the blue area in the upper-left corner of the screen.



- 1) **E-Stop / Safety Cover:** Displays notification if the E-Stop is pressed or one of the Safety Covers is off. This is visible from every screen.
- 2) **Seal Bar Temps:** Displays a pop-up window for the seal bar temperatures. This button is available on every screen.
- 3) **Current Product:** Displays the number & name of the current product. Touching this button will display the product selection window (described later).

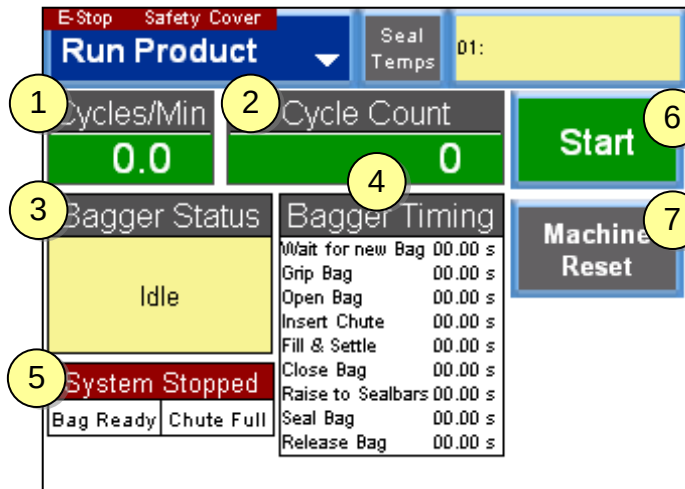
- 4) **Login:** Prompts for a password. The **Product Settings** and **System Settings** screens can be password protected. Use this button to login and gain access.

Menu Options:

1. **Run Product:** Allows the system to be Start/Stopped, and displays run-time information.
2. **Setup Mode:** Steps through the sequence of the machine to aid in change-over.
3. **Manual Mode:** Manually actuates each device for setup & troubleshooting.
4. **Settings:** Expands the Menu to select:
 - a. **Product:** Product-related settings that are saved & recalled with the current product recipe.
 - b. **System:** Global system-wide settings not tied to a particular product.
 - c. **Sensor O/R:** Allows the sensors on the machine to be overridden.
5. **Diagnostics:** Displays PLC diagnostic information.

Run Product

Allows you to Start/Stop the system. Useful run-time information is also displayed on this screen.



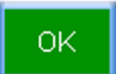
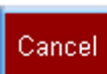
- 1) Cycles/Min:** Displays the current production rate. This value uses an average of the last 5 cycle times.
- 2) Cycle Count:** Displays the number of cycles since the counter was last reset. Touching the value will reset the count.
- 3) Bagger Status:** Displays the current status of the bagger.
- 4) State Times:** Displays the time spent in each individual state of the machine cycle. This is useful for optimizing speed.

5) System Status: Indicates whether the system is running or not. Also indicates if the Transition Chute is full, and if the “Bag Ready” signal is on.

6) Start / Stop: Press to Start/Stop the system.

7) Machine Reset: Resets the current state of the machine. When the system is stopped, it will pause in its current state. Pressing this button will cause all components to return to their default state.

Product Selection

1	Product 1	 
2	Product 2	
3	Product 3	
4	Product 4	
5	Product 5	
 		

The Product Selection screen can be accessed by touching the current product in the top-right corner of the screen.

A scrollable list will be displayed with the available products. Simply select a product by touching it, and press OK to load the selected product into the system.

Setup Mode

E-Stop Safety Cover		Seal Temps	00:
Setup Mode			
Current Step 1. Rotate up to Magazine 2. Energize Vacuum Cups 3. Rotate Down 4. Extend to Grippers 5. Open Bag 6. Insert Chute 7. Fill Bag & Settle 8. Raise Bag to Seal Bars 9. Seal Bag 10. Release Bag		Cycle Machine  	
Vac OK Rear Vac OK Front		Footswitch Cycle: Enabled Warning: Make sure scale is NOT connected.	

This screen is useful for mechanical change-over and verifying the system is in working order. By continually pressing the **Next Step** button, the machine will cycle through its normal operation step-by-step.

The current status of the machine will be highlighted in green. Pressing the **Reset** button will reset the machine to its default state.

Note: If a Scale or other filler is wired into the system, make sure the Footswitch Cycle feature is disabled. If enabled, the filler may cause the system to move unexpectedly.

Manual Mode

E-Stop Safety Cover		Seal Temps	01: Product Name
Manual Mode			
Bag Open Cylinders	Gripper Close	Chute Up/Down	Vacuum: Rear
Rotation Cylinder	Gripper Slide	Chute Doors	Vacuum: Front
Gripper Lift	Bag Blow-Off	Bag Shelf	Gas Flush Cylinder
More	Seal Bars Front	Seal Bars Rear	Gas Flush Supply

Every component in the system can be operated manually via this screen. This is useful for making adjustments, verifying sensor placement, and diagnosing problems with the machine. The screen will vary based on the purchased options of the system.

Product Setup

Changes product-related settings. Up to 50 different product recipes can be saved in the system.

The screenshot shows the 'Product Setup' screen. At the top, there are buttons for 'E-Stop', 'Safety Cover', and 'Seal Temps' (displaying '00:'). The main area is divided into two columns. The left column contains: 'Dump Delay' (0.00 s), 'Front Seal Temp' (0 °F), 'Seal Time' (0.00 s), 'Dumps Per Bag' (0), 'Settle Time' (0.00 s), 'Rear Seal Temp' (0 °F), 'Hold Bag Open: Disabled', and 'Settle Between Dumps: Disabled'. The right column contains three buttons: 'Filling & Sealing' (highlighted with a yellow circle and the number 1), 'Settle & Gas Flush', and 'Ink Jet & Misc. Options'.

The settings can be modified while the system is running.

The Level 1 password must be entered to change values on this screen.

The settings are divided into 3 groups:

- 1) **Filling & Sealing:** Contains timers & options related to filling product, along with the seal temperatures and seal time.

The screenshot shows the 'Product Setup' screen. At the top, there are buttons for 'E-Stop', 'Safety Cover', and 'Seal Temps' (displaying '00:'). The main area is divided into two columns. The left column contains: 'Bag Release Time' (0.00 s), 'Seal Delay' (0.00 s), 'Raise Chute Before Grippers: Disabled', 'Chute Raise Delay' (0.00 s), 'Early Verify Bag' (0%), 'Configure Gas Flush', 'Configure Timing Hopper', and 'Configure Settling'. The right column contains three buttons: 'Filling & Sealing', 'Settle & Gas Flush' (highlighted with a yellow circle and the number 2), and 'Ink Jet & Misc. Options'.

- 2) **Settle & Gas Flush:** Contains timers & options to settle product, and control Gas Flushing (if available), and the Timing Hopper (if available). Pressing the **Configure Gas Flush**, **Configure Timing Hopper**, & **Configure Settling** buttons will display additional screens described in detail on the following pages.

The screenshot shows the 'Product Setup' screen. At the top, there are buttons for 'E-Stop', 'Safety Cover', and 'Seal Temps' (displaying '00:'). The main area is divided into two columns. The left column contains: 'Ink Jet: Disabled', 'Verify Gusset: Disabled', 'Chute Door: Disabled', 'Heavy Bag Assist: Disabled', 'Verify Bag Before Opening: Disabled', and buttons for 'Rename' and 'Copy To...'. The right column contains three buttons: 'Filling & Sealing', 'Settle & Gas Flush', and 'Ink Jet & Misc. Options' (highlighted with a yellow circle and the number 3).

- 3) **Ink Jet & Misc. Options:** Settings related to the Ink Jet Printer and other available options. Buttons to Rename and Copy the current product are also on this screen.

The settings are described in greater detail in the tables that follow.

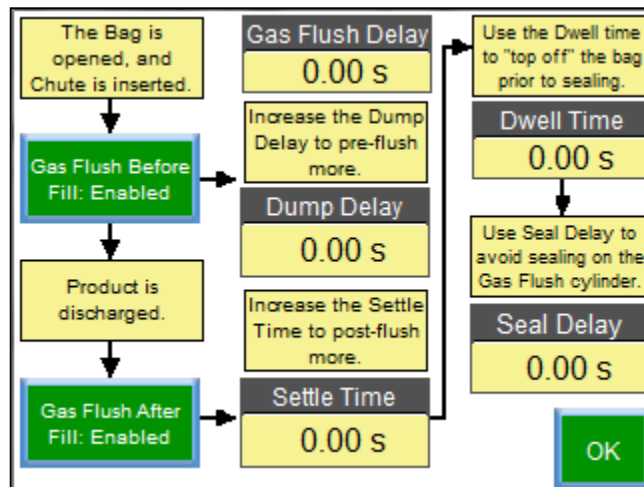
Filling & Sealing

Setting	Description	Typical Value
Dump Delay	Time to wait after the Transition Chute is sent down, before the Bag Ready signal is sent to external equipment. Setting this value to 0 will use the Transition Chute as a timing hopper.	0.0 - 1.0 s
Settle Time	Time to wait after product leaves the Transition Chute before the bag is sealed. This allows product to settle inside the bag.	0.25 - 2.0 s
Front Seal Temp	Temperature to maintain the Front Seal Bar .	325 - 425 °F
Rear Seal Temp	Temperature to maintain the Rear Seal Bar .	325 - 425 °F
Seal Time	Time to energize the seal bars.	0.5 - 2.0 s
Hold Bag Open	When Enabled, the Rear Bag Open Cylinder will be used to hold the bag open while it is filled instead of rotating back up to grab the next bag.	Enabled
Dumps Per Bag	Allows the filling equipment to discharge multiple times before the bag is sealed. A value of 1 is typical. Larger values can be used in cases where the filling equipment does not support a multi-dump feature.	1
Settle Between Dumps	If Dumps Per Bag is greater than 1, this specifies if settling should occur between dumps. If Enabled (and the Bag Shelf, Gripper, or Chute Settling options are enabled), settling will begin after the 1 st dump, and continue until the final dump. If Disabled, settling won't start until the final dump.	N/A

Settle & Gas Flush

Setting	Description	Typical Value
Bag Release Time	The amount of time to allow for a Bag to be sealed and released before introducing a new bag. This timer is used to optimize speed such that a new bag is presented as soon as the previous bag is filled & sealed.	0.5 – 0.75 s
Chute Raise Delay	If set to 0, the Chute will remain in the bag until the Settle Time expires. If set greater than 0, the Chute will lift from the bag after the specified delay. This allows the chute to be removed while the product is still settling.	0.0 – 0.75 s
Seal Delay	Provides an optional delay after the bag is raised, before energizing the Seal Bars.	0.0 s
Early Verify Bag	If set greater than 0, this setting will override the Verify Bag Delay on the System Setup screen. This setting will check the vacuum sensors to verify the presence of a bag after the bag is opened X percent. If set to 0, the vacuum sensors will be checked after the bag is fully opened. Using this setting will optimize speed.	10% – 50%
Raise Chute Before Grippers	When Enabled, the Transition Chute will fully raise before the Gripper Lift raises the bag into the Seal Bars. This is typically used in high-dust applications where the Transition Chute is extended further into the bag than normal.	Disabled
Configure Gas Flush	Displays the Gas Flush configuration screen (detailed on the following page).	
Configure Timing Hopper	Displays the Timing Hopper configuration screen (detailed on the following page).	
Configure Settling	Displays the Settling configuration screen (detailed on the following page).	

Configure Gas Flush



Enabling **Gas Flush Before Fill** will pre-fill the bag with gas before product enters the bag. Increase the **Dump Delay** to pre-flush the bag for a longer duration.

Enabling the **Gas Flush After Fill** will turn the gas on during settling. Increase the **Settle Time** to flush the bag for a longer duration.

The **Gas Flush Delay** can be used to delay inserting the nozzle and flushing. This can be useful if the Gas Flush nozzle impedes product flow. A delay can be entered so the nozzle inserts **after** product has partially settled into the bag.

Configure Timing Hopper

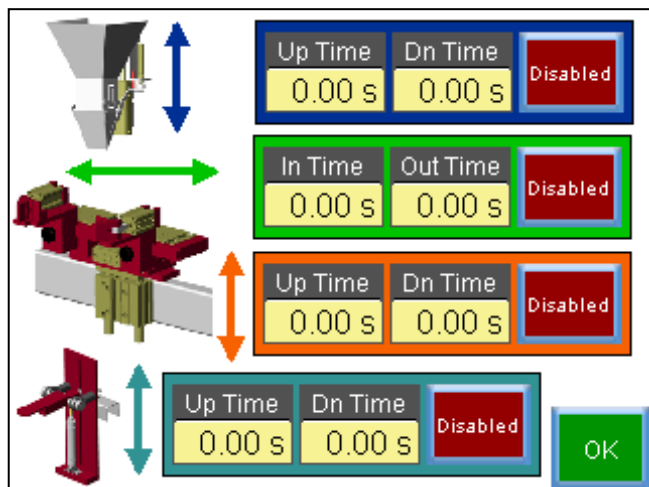
Timing Hopper Mode		Product will be queued in the Timing Hopper.
Diverter	Holding Hopper	
Open Time		
0.00 s		
Refill Delay		
0.00 s		
		OK

The **Timing Hopper Mode** selection dictates the behavior of the timing hopper. If **Diverter** is selected, the timing hopper door will remain open as the Multihead discharges. If **Holding Hopper** is selected, product will be queued in the timing hopper at all times.

The **Open Time** specifies the amount of time to keep the door open to allow product to fully exit.

The **Refill Delay** specifies the delay after the door opens, before the Multihead is signaled to dump.

Configure Settling



This screen allows the configuration of various settling options. The available settling options are:

- Bounce Chute Up/Down
- Slide Grippers In/Out
- Bounce Grippers Up/Down
- Bounce Bag Shelf Up/Down

Note: The Bag Shelf is an option that must be purchased with the system.

Each settling option has separate timers to control how fast the associated air cylinder is cycled. Use these timers in conjunction with the air cylinder flow controls to adjust the speed and intensity of the settling. Each option can be independently enabled/disabled allowing multiple settling techniques to be utilized simultaneously.

Ink Jet & Miscellaneous Options

Setting	Description	Typical Value
Ink Jet	When Enabled, cycles the Ink Jet Drive cylinder and signals the Ink Jet Printer when the Rotation cylinder is in the down position.	N/A
Heavy Bag Assist	When Enabled, energizes the optional Bag Shelf to absorb the initial shock load of product falling into the bag.	Disabled
Verify Gusset	When Enabled, checks the vacuum sensor tied to the bottom-most vacuum cups to verify the gusset has opened. Disable this option when running pillow-style bags that do not have a bottom gusset.	Enabled
Verify Bag Before Opening	When Enabled, checks the vacuum sensors tied to the top and bottom vacuum cups to verify the bag is in place before it is opened. This is typically Enabled when running pillow-style bags that do not have a bottom gusset.	Enabled
Chute Door	Enables/Disables the Chute Door cylinder. This option should be Enabled when a chute with doors is used, and Disabled when a chute without doors is used.	N/A
Bag Open Attempts	Number of times to attempt to open a bag. After the specified number of attempts, the bag is dropped and a new bag is retrieved.	3
Rename	Touch to rename the current recipe.	N/A
Copy To...	Touch to copy the current recipe to a different recipe number.	

System Settings

This screen displays timers and settings that impact the entire system. The Level 2 password must be entered to gain access to this screen. Settings are described in detail below.

System Settings – Bag Retrieval & Opening

Setting	Description	Typical Value
New Bag Timeout	When grabbing a new bag from the magazine, the maximum amount of time to wait for the Vacuum sensor to be met. If it is not met within this time period, the system will assume there is a bag and continue.	0.25 - 0.5 s
Grip Time	Time to energize the Grippers before the bag is opened.	0.1 - 0.25 s
Verify Bag Delay	Time to wait after a bag is opened before the Vacuum sensors are checked.	0.01 - 0.25 s
Chute Insert Delay	Provides a delay before inserting the Transition Chute . This is typically used if the system is equipped with the Bag Open Assist option. This allows the Bag Open Assist to lower and open the bag before the Transition Chute is inserted.	0.1 – 0.75 s
Bad Bag Release Time	Time to wait for a “Bad Bag” (bag that would not open) to be released before the next empty bag is introduced.	0.5 - 1.0 s
Max Bag Open Failures	The maximum number of bag open failures before an alarm occurs (typically the machine has ran out of bags, the bags are not pre-opened, or there is a setup problem).	3 – 5

System Settings – Fill, Seal, & Release

Setting	Description	Typical Value
Chute Full Time	The amount of time it takes product to reach the Transition Chute .	0.25 - 1.0 s
Ungrip Delay	Time to wait after a bag is sealed before the Grippers release the bag. This timer can be extended to release the bag in a more controlled fashion. This is useful if the bag is being dropped directly onto the take-away conveyor.	0.0 - 0.75 s
Bag Blow-Off Dwell	Amount of time to energize the Blow-Off air nozzle. This nozzle is mounted in the front of the machine, and prevents bags from getting stuck on the vacuum cups.	0.5 – 1.0
Bag Open Retry Delay	Delay after a bag fails to open before attempting to re-open the bag.	0.25 – 1.0 s
Unsealed Bags After Metal Detect Fault	If the system is equipped with an interface to a metal detector, this specifies the number of bags to release unsealed when a metal detector fault is received.	1 – 2
Seal Temp Tolerance	The amount the current seal temperature can be from the desired seal temperature before an alarm is raised.	25 °F

System Settings – Vacuum Cups

Setting	Description	Typical Value
Cup Purge Dwell Short	If the system is equipped with the Vacuum Purge option, this timer controls how long the vacuum cups are purged after each cycle.	0.5 s
Cup Purge Dwell Long	If the system is equipped with the Vacuum Purge option, this timer controls how long the vacuum cups are purged on startup and after a vacuum clog is detected.	0.5 s
Cup Clog Detect Time	Specifies the length of time to energize the vacuum cups to check for a clog.	0.25 s
Max Cup Clog Count	Specifies the number of consecutive clogs before an alarm is raised.	1 - 3

System Settings – Passwords & Miscellaneous

Setting	Description	Typical Value
Bag Shelf Extend Time	If the system is equipped with a Bag Shelf , this timer specifies the amount of time to extend the Bag Shelf before it is cycled for settling.	0.5 - 1.0 s
Bag Deflate Dwell Time	If the system is equipped with a Bag Deflator , this timer specifies the amount of time to extend the Front Bag Open cylinder to deflate the bag.	0.5 - 1.0 s
Footswitch Start/Stop	If enabled, the footswitch can be used to Start/Stop the machine.	N/A
Max Gas On Time	If the system is equipped with Gas Flush , this specifies the maximum time to keep the Gas Flush solenoid on. This setting prevents wasting gas when running out of product.	10 s
Password Level 1	Password to use for Level 1 access. The default password is 0.	
Password Level 2	Password to use for Level 2 access. The default password is 0.	

Sensor Override

E-Stop Safety Cover			Seal Temps 00:
Sensor O/R			
Rear Bag Open In [I:0/0]	Vacuum OK Rear [I:0/4]	Front Bag Open In [I:0/9]	Cylinder Travel Timeout 0.00 s
Rear Bag Open Out [I:0/1]	Vacuum OK Front [I:0/16]	Front Bag Open Out [I:0/10]	Sensor Override Time 0.00 s
Rotation Up [I:0/2]	Chute Up [I:0/13]	Gripper Lift Up [I:0/11]	
Rotation Down [I:0/3]	Chute Down [I:0/14]	Gripper Lift Down [I:0/12]	
Scale Level OK [I:0/7]	Chute Closed [I:0/15]	Metal Detector OK [I:0/8]	

All sensors in the system can be overridden. This feature can be useful in the event that a sensor fails and a new sensor is not readily available.

To override a sensor, simply touch the corresponding button on this screen. If a button is highlighted in green, the sensor is overridden.

The override is effective immediately.

The **Cylinder Travel Timeout** specifies the maximum amount of time to wait for a cylinder's sensor to be met before an alarm occurs.

The **Sensor Override Time** specifies the assumed time it takes a cylinder to reach its position when a sensor is overridden.

Seal Bar Temps

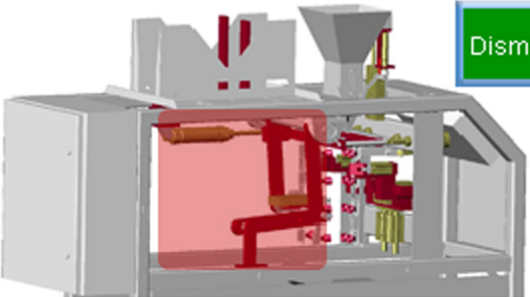
Seal Bar Temps			
Front Seal		Rear Seal	
SP:	350 °F	SP:	350 °F
PV:	349 °F	PV:	351 °F
Enabled		Enabled	
SP is set on the Bag Setup screen SP = Preset Temp PV = Current Temp			Close

Pressing the **Seal Bar Temps** button (at the top of every screen) will display this screen as a pop-up window. To close this window, press the **Seal Bar Temps** button again, or the **Close** button in the lower-right corner.

The **SP** (set-point, or preset temperature) is displayed for both seal bars. This value is set on the **Product Setup** screen. The **PV** (process variable, or current temperature) is also displayed. If the **PV** display is green, then the seal bar heater is currently on.

The **Enable/Disable** buttons can be used to turn the seal bar heaters on or off. **It can take up to 15 minutes for the seal bars to reach a stable temperature. It will take several minutes for them to cool off.**

System Alarms

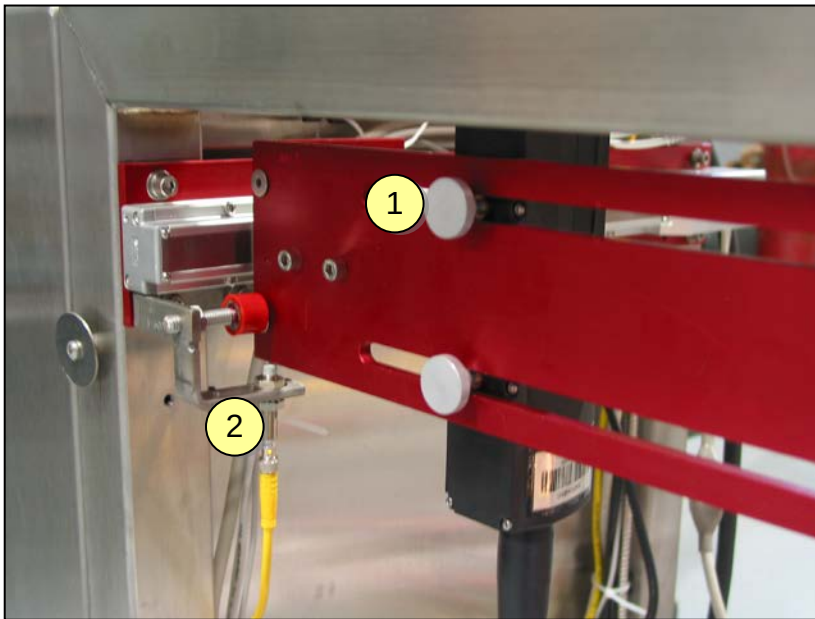
System Alarm	
	Dismiss
The Rear Bag Open Cylinder timed out retracting.	- Check Air Pressure - Check location of Extend & Retract sensors on cylinder

System Alarm	
	Dismiss
The Rear Bag Open Cylinder timed out retracting.	- Check Air Pressure - Check location of Extend & Retract sensors on cylinder

If the system encounters a problem, the **System Alarm** screen will be displayed. This screen will display a 3D picture illustrating the problem. Touching this picture will drill down into more detail. Touching the **Dismiss** button will reset the alarm and close the **System Alarm** screen. The screen will also explain the problem, along with a check list to resolve the problem.

Ink Jet Drive Option

The Ink Jet Drive option is pictured below. This option sweeps an Ink-Jet head across the bag magazine to print date and lot code information onto the bag before it is grabbed from the magazine. This happens automatically while the rotation assembly is rotated down and out of the way. A home sensor on the drive mechanism ensures the Ink-Jet head is out of the way before the rotation assembly is rotated up.



- 1) Ink Jet Slide Adjustment:**
Controls the position of the Ink-Jet head. Use this adjustment to control where information is printed along the height of the bag.
- 2) Home Sensor:** Detects when the drive mechanism is in the home position. This ensures the rotation mechanism does not rotate up until the Ink-Jet head is fully retracted.

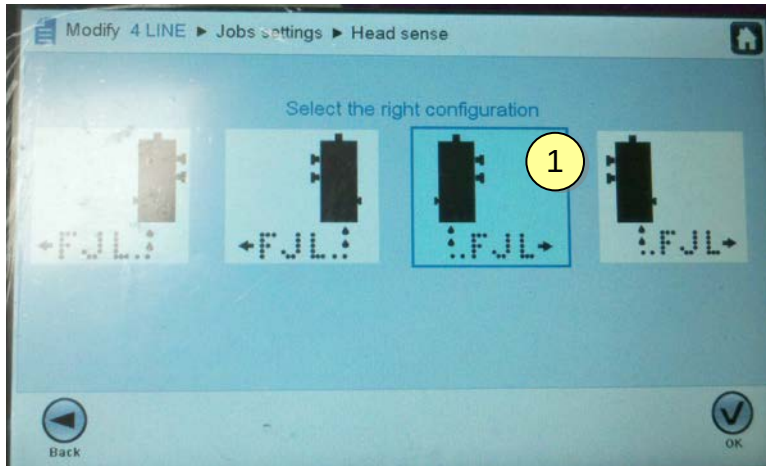
The Ink Jet Drive is an electric actuator that requires homing whenever power is cycled. This happens automatically the first time the system is started. On startup, the message 'Press Start to Home Ink Jet' will flash on the screen. This message will disappear once the Ink Jet is successfully homed.

If the Ink Jet Drive crashes or faults out for any reason, press and release the E-Stop. This will automatically reset any fault conditions.

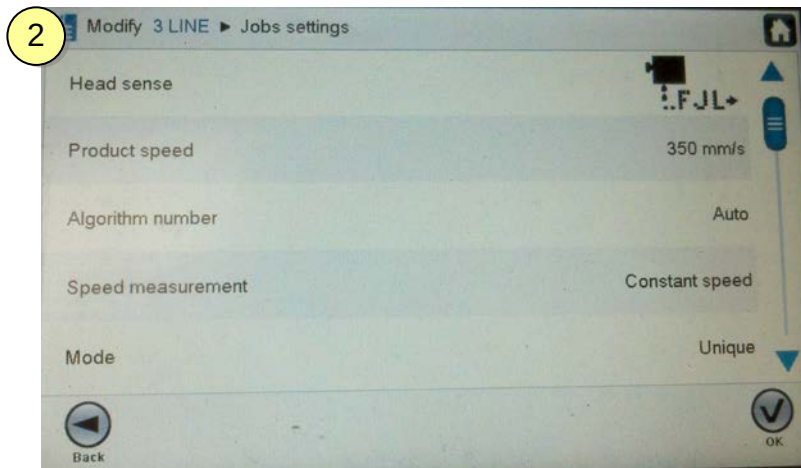
Note: Before powering on the system, ensure the Ink Jet Drive is fully retracted to the Home sensor. This will protect against any crashing on startup.

Markem-Imaje 9232 Setup Tips

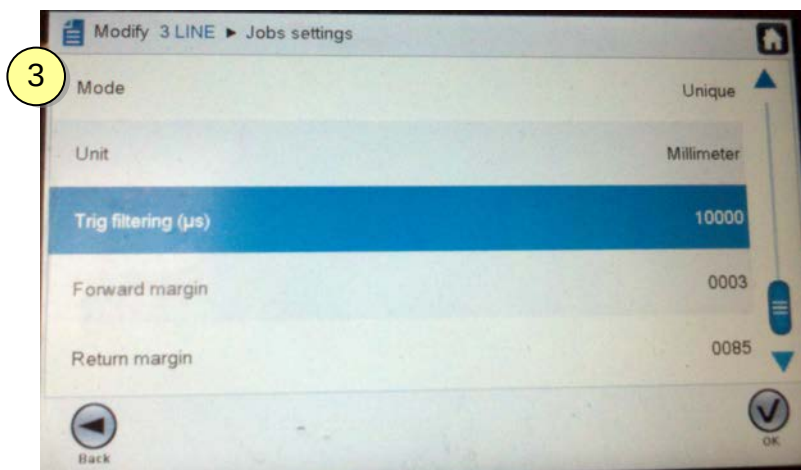
The Markem-Imaje 9232 manual contains all necessary information for setup and message programming. The settings below are necessary to make the system work with the Ink-Jet Drive. These settings will typically be set at the factory.



- 1) Head sense:** This setting (located under Message/Job Settings) specifies the orientation of the print relative to the target. The proper orientation is displayed in the picture.



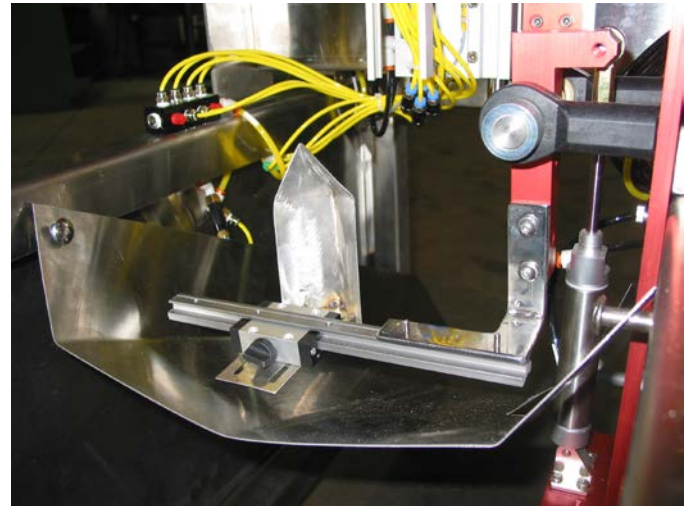
- 2) Message/Job Parameters (Part 1):** This is a good starting point for the message parameters.



- 3) Message/Job Parameters (Part 2):** This is a good starting point for the message parameters.

Note: Adjust the **Return margin** to control where the Ink-Jet begins to print on the bag.

Bag Deflator Option



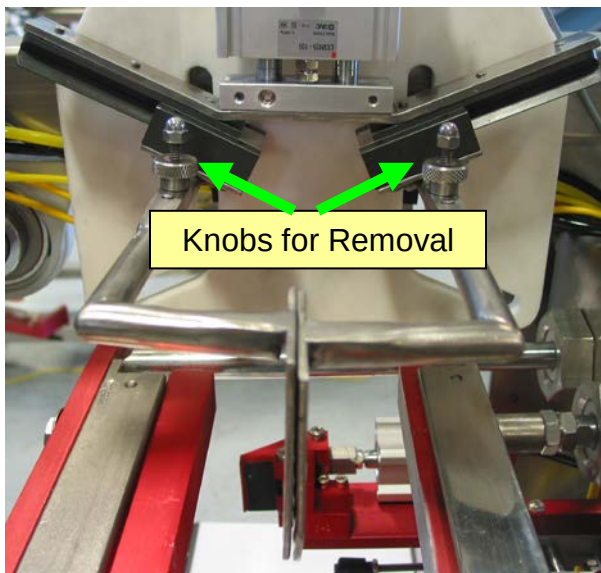
The **Bag Deflator** option comprises of an adjustable wedge that can swing up to the vacuum cups after a bag is filled. After the wedge is in the up position, the **Front Bag Open** cylinder is extended to push the excess air out of the bag.

The picture to the left shows the **Bag Deflator** in the up position. The picture to the right shows the **Bag Deflator** in the down position. The wedge is mounted to an adjustable slide, for simple change-over to multiple bag sizes.

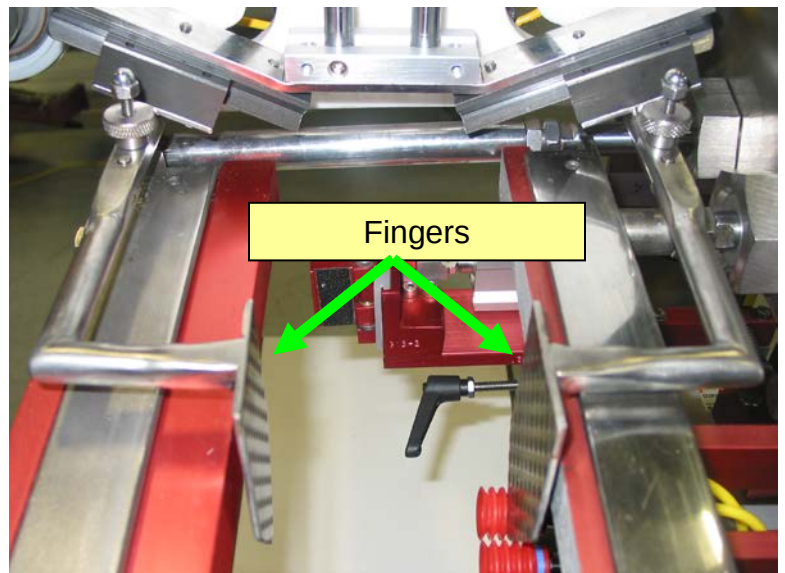
The **Bag Deflator** can be Enabled/Disabled via the **Product Setup** screen. The dwell timers can be adjusted via the **System Setup** screen.

Bag Open Assist Option

The **Bag Open Assist** option is typically used on systems where the **Transition Chute** does not have doors, but the edges of the bag need to be held open to prevent the chute from colliding with the edges of the bag. A single cylinder drives the “fingers” up and down. As they are extended, the “fingers” spread out to hold the bag open.



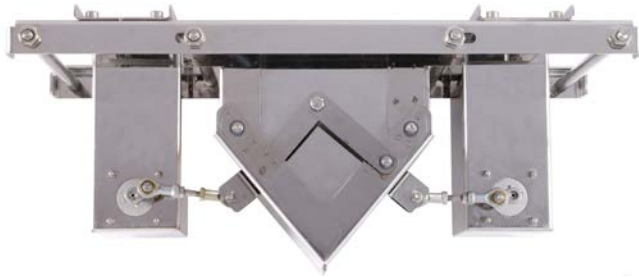
Bag Open Assist Retracted



Bag Open Assist Extended

Timing Hopper Option

The Timing Hopper option is used to divert product between two M7 Pouch Baggers. In this configuration, one M7 controls the Timing Hopper and is configured as the Master. The Master M7's interface cable is wired to the Multihead. The second M7's interface cable is wired to the Master.

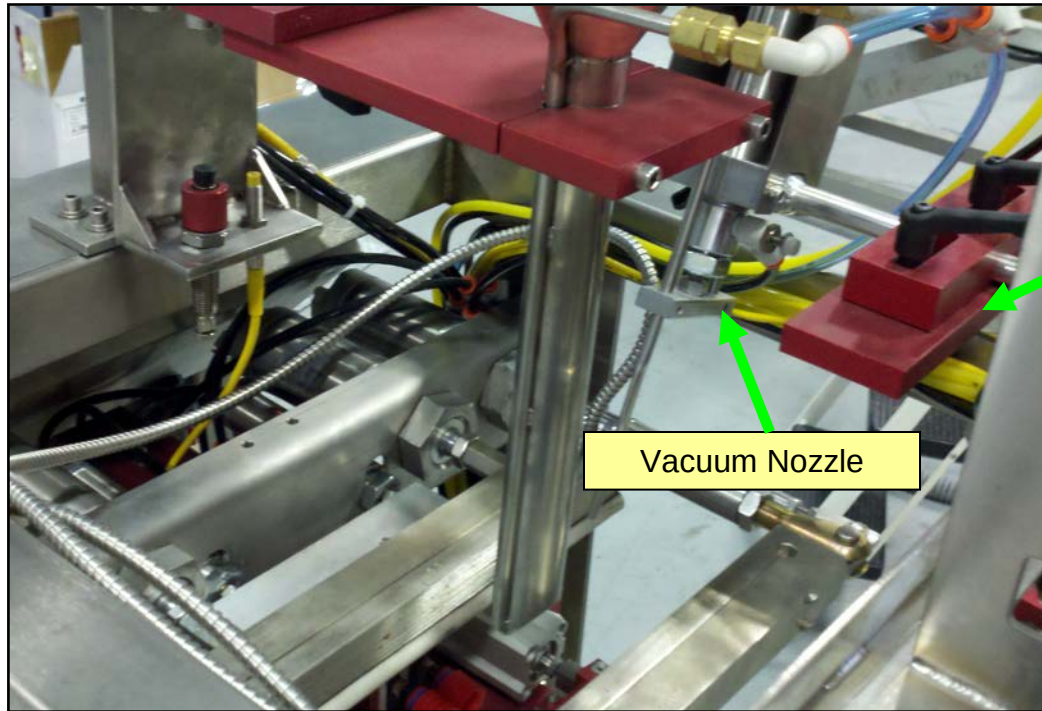


To configure an M7 as the Master, set the Timing Hopper Master setting (under System Setup) to Enabled, and wire it accordingly. It is important to make sure this setting is Disabled on the slave M7.

The behavior of the Timing Hopper is configured under Product Setup on the Master M7.

Vacuum Option

The Vacuum option is used to remove excess air from a bag. An indexing nozzle is tied to a venturi to generate a vacuum. This nozzle is inserted into the bag prior to sealing. A set of clamp cylinders surrounds the nozzle to form an air-tight seal. After the programmed dwell period has elapsed, the nozzle is retracted and the bag is sealed.



Vacuum Nozzle
Adjustment

Vacuum Nozzle



The pressure of the clamp is adjustable. This allows the pressure to be fine-tuned. It should be set high enough such that an airtight seal is formed around the nozzle, but not so high that the nozzle does not retract easily from the bag.

Typical operating pressure is 30-45 PSI.

Spare Parts List

The following is a detailed list of components used in the system. Parts highlighted in yellow are recommended spare parts.

Actuators		
Part Number	Description	Vendor
MGPM32-50*	Gripper Lift Cylinder	SMC
MGPM25-20*	Stretch Cylinder/Gripper Slide Cylinder	SMC
CQ2D25-40DM**	Gripper Cylinder	SMC
NCDGDA50-0400**	Rotation Cylinder	SMC
MGPM32-100* / MGPM32-200*	Transition Chute Cylinder	SMC
NCDMC075-0200	Transition Chute Door Cylinder	SMC
NCMB 200-0200**	Heat Seal Cylinders	SMC
MGPM25-50*	Front/Rear Bag Open Cylinder	SMC
LEFS16A-300-R36P3D	Inkjet Drive Electric Actuator	SMC

*washdown version add -XC6A to end of part number

**washdown version add -XC6 to end of part number

Miscellaneous Components		
Part Number	Description	Vendor
9546K61	Red Urethane Bumper	McMaster-Carr
6362K211	Transition Chute Bearing	McMaster-Carr
3668K23	Transition Chute Track Roller	McMaster-Carr
94035A200	Transition Chute Shoulder Bolt (Door)	McMaster-Carr
94035A203	Transition Chute Shoulder Bolt (Linkage)	McMaster-Carr
2460T85	Caster	McMaster-Carr
7129T33	Plastic Knobs	McMaster-Carr
SR400P	Gripper Silicone	Dura-Pack
6721K5	Rotation Track Roller	McMaster-Carr
Friction	Gripper Friction Tape	Dura-Pack
51069	Embossed Stamps	Dura-Pack

Vacuum Components		
Part Number	Description	Vendor
BL20-2.20.02AF	Vacuum Cups (w/ fitting)	PIAB
BL20-2.20	Vacuum Cup (rubber only)	PIAB
01.22.895	In-Line Vacuum Pump	PIAB
ZSE40A-C4-T	Vacuum Sensors	SMC
01.15.314	Blow-Off Check Valve	PIAB

Valve Components		
Part Number	Description	Vendor
SV2100-5FU	Valves	SMC
SV2000-50-22A	Valve Manifold Cassette Block	SMC
VVQ1000-51A-N7	1/4" Valve Manifold Fitting	SMC
SV2000-52U-2A -N11	Valve Manifold Supply Exhaust Block	SMC
SV2000-51D-32A-N11	Valve Manifold Circular Connecting Block	SMC
AXT100-MC26-030	Circular Connector Cable	SMC
SV2000-67-1A	Valve Manifold Place Holder (Blanking Plate)	SMC
AW30-N03BDG-Z	3/8" Modular Filter Regulator	SMC
NAV3000-N03-5DZ	Soft Start Valve	SMC
VHS30-N03-Z	Shut Off	SMC
Y30	Filter Regulator Spacer Bracket	SMC
NAN300-N03	Muffler	SMC
SV3100-5W1U-02N	Vacuum Purge Valve	SMC
SV1100-5W1U-01N	Gas Flush Valve	SMC

Control Panel / Electrical Components		
Part Number	Description	Vendor
NI 4U-EG08K-AP6X-V1131	8MM PNP Proximity Sensor	TURCK
BIM-UNT-AP6X-0.5M-PSG 3M	Cylinder Sensors	TURCK
BI 2-EG08K-AP6X-V1131	Proximity Sensor (thumbscrew adjustment)	TURCK
KLR-UNT2	Rotation Cylinder Sensor Bracket	TURCK
PKG 3M-2-PSG 3M	2M Patch Cable (for all sensors)	TURCK
HS20918	Heating Element (for Seal Bars)	Dura-Pack
SPA-20lb	Load Cell for Scale (20 lb.)	Dura-Pack