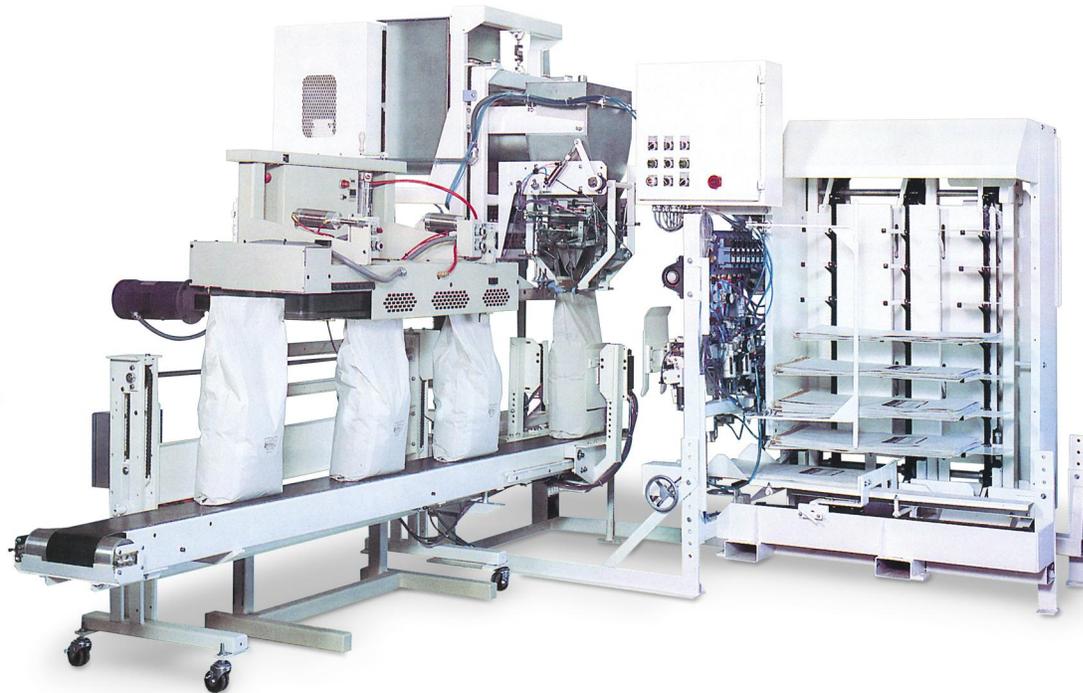


Taylor Open Mouth Placer

Model TOMP



Quick Reference Guide



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Important Information

Conventions

Safety Alert Symbols

The  symbol indicates that important personal safety information follows. Carefully read this text for the warnings information it contains. The signal word next to each safety alert symbol is defined as:

**WARNING**

Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.

**CAUTION**

Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury, or damage to the equipment. This single word may also be used to identify unsafe practices.

**LOCKOUT**

This symbol will be used anytime that a procedure requires an electrical lockout.

Static Sensitive Symbols for Equipment Handling Instructions

The  and  symbols indicate important handling guidelines for proper handling of electronic equipment modules and sensitive components for the prevention of potential damage that could be caused by ESD (electrostatic discharge) during routine maintenance, handling and transportation.

**ESD
NOTICE**

To protect against ESD damage to electronic equipment, follow the Standard ESD Prevention Procedures. Failure to use protective measures could result in permanent equipment damage, either immediate or latent, when handling modules.

**ESD
NOTICE**

To protect against ESD damage to electronic equipment containing components, follow the Standard ESD Prevention Procedures. Failure to use recommended protective measures could result in permanent equipment damage, either immediate or latent, when handling components.

Standard Electro-static Discharge (ESD) Prevention Procedures

The Model TOMP Open Mouth Placer utilizes electronic components that are susceptible to damage from Electro Static Discharge. Anytime electronic components are serviced, the following precautions should be followed:

1. Wear a commercial grounding wrist strap.
2. Remove power from the machine.
3. Leave all static sensitive components in their protective packaging until it is time to install the component
4. Always hold static sensitive components by their metal mounting tabs, and/or by their edges

Important/Notable Information

While all of the information in this manual is important, there are some pieces of information where special attention needs to be paid to avoid equipment damage, or specific information needs to be emphasized. This information will be handled as follows:

***Important:** Indicates an operating procedure, practice, or condition that, if not strictly followed, may cause equipment damage.*

***Note:** Indicates additional information or emphasizes a topic related to the subject being discussed.*

Personal Safety Instructions

Only qualified personnel should work on or around this equipment. To ensure the highest degree of personal safety, all who use this equipment are required to become thoroughly familiar with all safety instructions contained in this document. Successful and safe operation of this equipment depends upon proper handling, operation, maintenance, and application of associated equipment. Refer to Appendix A of this manual for all safety instructions. Safety instructions are also provided where they apply within the body of this manual.



WARNING

No information in this manual supersedes or replaces your employer's operating rules. If there is a difference in instructions between this manual and the employer's operating rules, follow the most restrictive instruction.

Deliberate misuse or abuse of electronic components may cause personal injury or death.

Warranty Information

Seller warrants that the Products will operate substantially in conformance with Seller's published specifications, when subjected to normal, proper and intended usage by properly trained personnel, for a period of one (1) year from the date of shipment to Buyer (the "Warranty Period"). Seller agrees during the Warranty Period, provided it is promptly notified in writing upon the discovery of any defect and further provided that all costs of returning the defective Products to Seller are pre-paid by Buyer, to repair or replace, at Seller's option, defective Products so as to cause the same to operate in substantial conformance with said specifications. Replacement parts may be new or refurbished, at the election of Seller. All replaced parts shall become the property of Seller. Replacement Parts will be billed at list price, unless they are approved as warranty replacement item(s) by the service technician and the technical services manager.

Lamps, fuses, bulbs and other expendable items are expressly excluded from the warranty. Seller's sole liability with respect to equipment, materials, parts or software furnished to Seller by third party suppliers shall be limited to the assignment by Seller to Buyer of any such third party supplier's warranty, to the extent the same is assignable. In no event shall Seller have any obligation to make repairs, replacements or corrections required, in whole or in part, as the result of (i) normal wear and tear, (ii) accident, disaster or event of force majeure, (iii) misuse, fault or negligence of or by Buyer, (iv) use of the Products in a manner for which they were not designed, (v) causes external to the Products such as, but not limited to, power failure or electrical power surges, (vi) improper storage of the Products or (vii) use of the Products in combination with equipment or software not supplied by Seller. If Seller determines that Products for which Buyer has requested warranty services are not covered by the warranty hereunder, Buyer shall pay or reimburse Seller for all costs of investigating and responding to such request at Seller's then prevailing time and materials rates. If Seller provides repair services or replacement parts that are not covered by the warranty, the Buyer shall pay Seller therefore at Seller's then prevailing time and materials rates. ANY INSTALLATION, MAINTENANCE, REPAIR, SERVICE, RELOCATION OR ALTERATION TO OR OF, OR OTHER TAMPERING WITH, THE PRODUCTS PERFORMED BY ANY PERSON OR ENTITY OTHER THAN SELLER WITHOUT SELLER'S PRIOR WRITTEN APPROVAL, OR ANY USE OF REPLACEMENT PARTS NOT SUPPLIED BY SELLER, SHALL IMMEDIATELY VOID AND CANCEL ALL WARRANTIES WITH RESPECT TO THE AFFECTED PRODUCTS.

Field Service

Magnum Systems can provide field service for start-up assistance, training, maintenance, and replacement/spare parts for new and existing equipment. Contact Magnum Systems at (888) 882-9567.

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Model TOMP – Taylor Open Mouth Placer

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Model TOMP – Taylor Open Mouth Placer

Machine Description

The Taylor Open Mouth Placer is a machine that sequences, prepares, and places open mouth bags on the spout of a packaging machine that is equipped with an open mouth bag spout. The TOMP can be paired with a variety of packaging machines. All of the packaging machines will have an interface to the TOMP. This will allow the TOMP to know when a bag is clamped in place correctly and when the scale is ready to drop or fill product into the placed bag.

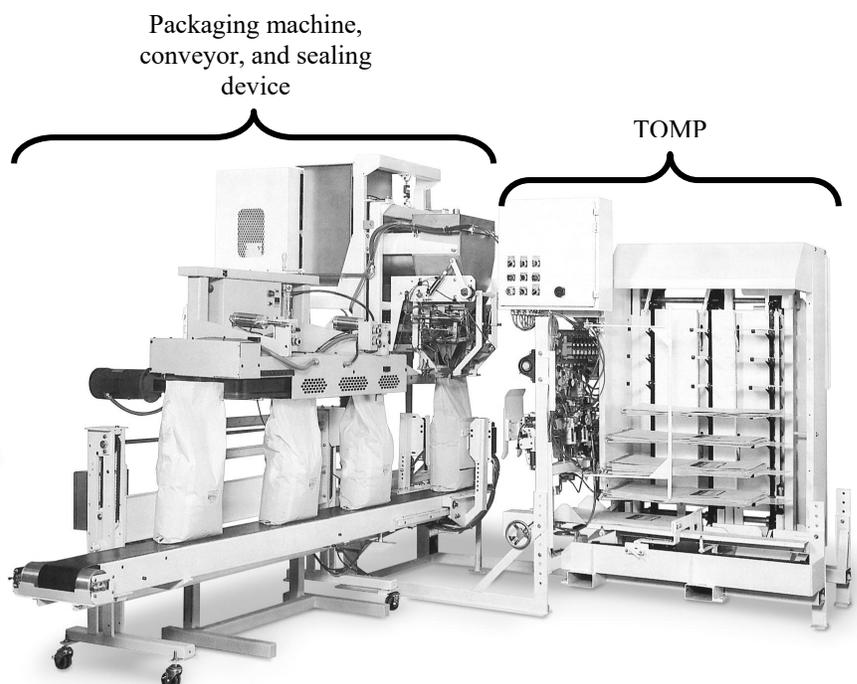


Figure 1. TOMP and Packaging Machine

Component Descriptions

When using the TOMP, it is important to know what components are used and what their individual functions are. The main components are listed below:

- Auto / Manual switch – Used to switch between modes. In automatic operation, the machine will continue through the entire process in sequence, without interruption.
- Bag former – When the grip arm opens the bag, the bag former comes in and holds the mouth of the bag in the proper shape to fit on the spout. After the bag has been filled, the bag former will re-form the top of the bag for sealing.
- Bag on spout switches – These switches provide the input to the controller that a bag is on the spout and ready to be filled.
- Bag paws – These two devices grab the bag inside the opening, one on each side of the bag at the gusset, so the bag can be placed on the spout.
- Bag pusher – When using a take away conveyor, this device helps start the filled bag straight on the conveyor. The pusher has a trough that the filled bag falls on top of. This signals the pusher to push the bag onto the conveyor.
- Bag stack pusher – This device pushes a new stack of bags onto the platform, when the stack on the platform runs out.
- Bag tail mover – This device helps align the bottom of the empty bag when a take away conveyor is used.
- Conveyor – The filled bags drop on the conveyor and are carried to the sealing device by the conveyor.
- Grip arms – Each arm has a bag paw on the end of it. The arm pivots turn the bag paw into the bag to grasp the bag and then pivot back the opposite direction to release the bag. These arms also ride on an actuator that pivots, allowing the arms to move the bag from the magazine platform to the bag spout.
- Interrupt switch – This switch interrupts all machine operation.
- Limit switches – These devices are used to notify the PLC when a component moves outside of its desired range of movement. For example, the rear panel of the magazine is equipped with a limit switch to indicate when the panel is loose or has been removed. If this switch indicates one of these two conditions, the PLC will inhibit machine operation. Limit switches are referenced by a three digit code. The code starts with the letters LS (for Limit Switch) and the third digit is a number. For example, the Magazine Cover Safety Limit Switch is designated LS1.
- Magazine – A stock bin that is filled with empty bags.
- Magazine pan – An individual compartment within the magazine rack that holds a set of empty bags.
- Photo eyes – These devices send out a beam of light onto a reflective surface. When the beam reflects back to the sensor, it indicates that a bag is not in front of the sensor. When the beam is interrupted by the presence of a bag, the beam does not reflect back to the sensor, indicating that a bag is present. There are two photo eye sensors used. One provides the Bag on Platform Input to the PLC. The other provides the Bag at Bag Stop input. Photo eyes are referenced by a three digit code. The code starts with the letters PE (for Photo Eye) and the third digit is a number. For example, the Bags on Platform Photo Eye is designated PE1.

- Proximity switches – Used to indicate the position of a component. These switches are magnetic. When the metal (ferrous) component comes into position in front of the switch, the magnetic force causes the switch to change states. Proximity switches are referenced by a three digit code. The code starts with the letters PR (for Proximity) and the third digit is a number. For example, the Bag Stack Pusher Home Proximity switch is designated PR2.
- Solenoids – The TOMP uses several electro-mechanical solenoids to perform different functions. When energized, the solenoids cause a change in position of the component that they are connected to.
- Suction head and cylinder – Equipped with four suction pads, this arm is lowered onto the bag stack. The vacuum to the pads is turned on to hold the bag to the suction pads. The cylinder then retracts slightly, lifting the arm, which pulls the bag open, and holds it open so the bag former can grab the bag from the inside.
- Swing arm – Performs the task of pivoting grip arms down so they can grab the open bag and then pivoting the grip arms and the bag up from the magazine to the spout.
- Vacuum solenoid – This solenoid turns on the vacuum to the suction head, so that it can open a bag for delivery to the spout.
- Vacuum switch – Located on the magazine, normally just to the right of the FRL (Air Filter/Lubricator) assembly. It is used for the bag opening. When the suction head comes down on the bag, this switch must be made before the suction head can travel upward to open the bag. Vacuum switches are referenced by a three digit code. The code starts with the letters VS (for Vacuum Switch) and the third digit is a number.

General Operation

The description of how the TOMP operates will be based on pairing the TOMP with a TE100 (gross weigh) bag filling scale. Individual applications will vary, depending on the type of packaging machine used. The operation of the packaging machine may differ slightly, but the operation of the TOMP will be very close to what is described here.

The TOMP will not operate if the Magazine Cover Safety Limit Switch (LS1) is not indicating that the rear cover on the magazine is in place and securely fastened. This is a safety feature of the TOMP.

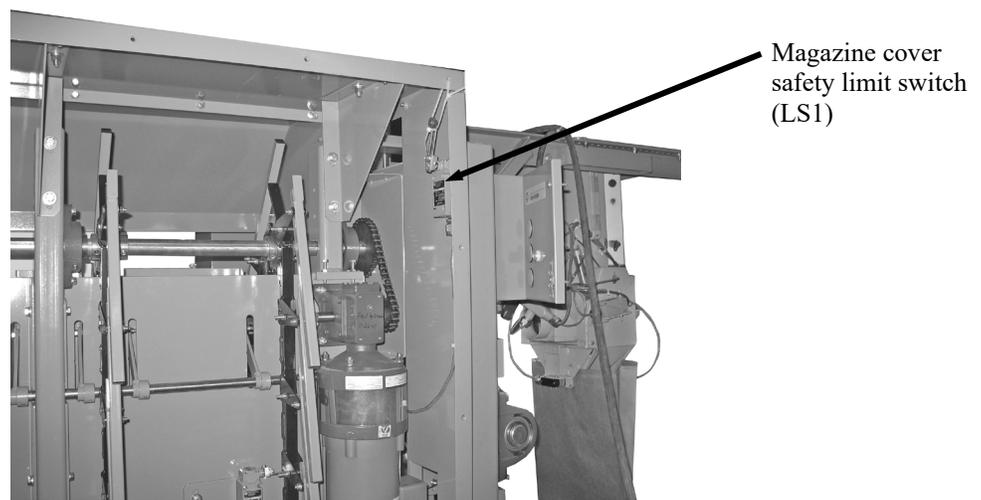


Figure 2. Magazine Cover Safety Limit Switch (LS1)

Model TOMP

The PLC will control pneumatic devices through the use of solenoid valves. Solenoid valves are identified by a three-letter code (SOL) plus a numeric identifier. For example, the Bag Stop Solenoid is identified as SOL7. These valves use an electric solenoid to change the position of a pneumatic valve, thus directing compressed air to a component to create a specific action. There is a block of solenoid valves that are mounted together in one location, and there are other individual solenoid valves mounted elsewhere on the machine.

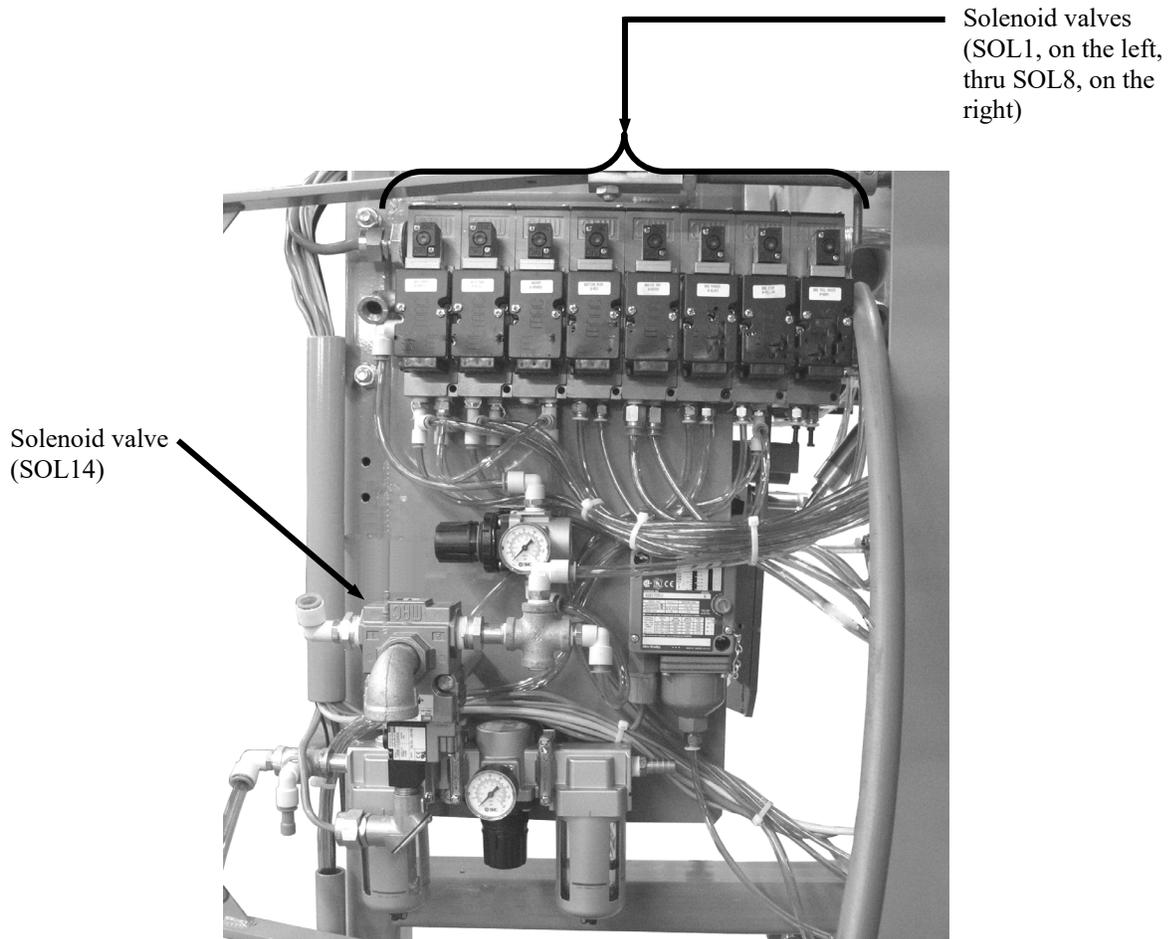


Figure 3. Solenoid Valves (SOL1 thru SOL8, and SOL14)

Magazine Operation

When the Magazine switch is turned on and the Pause button is pulled out, the PLC will check the input from the Bags On Platform Photo Eye (PE1) to determine if there are bags on the platform. If no bags are detected in the magazine, the placer will move the magazine until bags are in place.

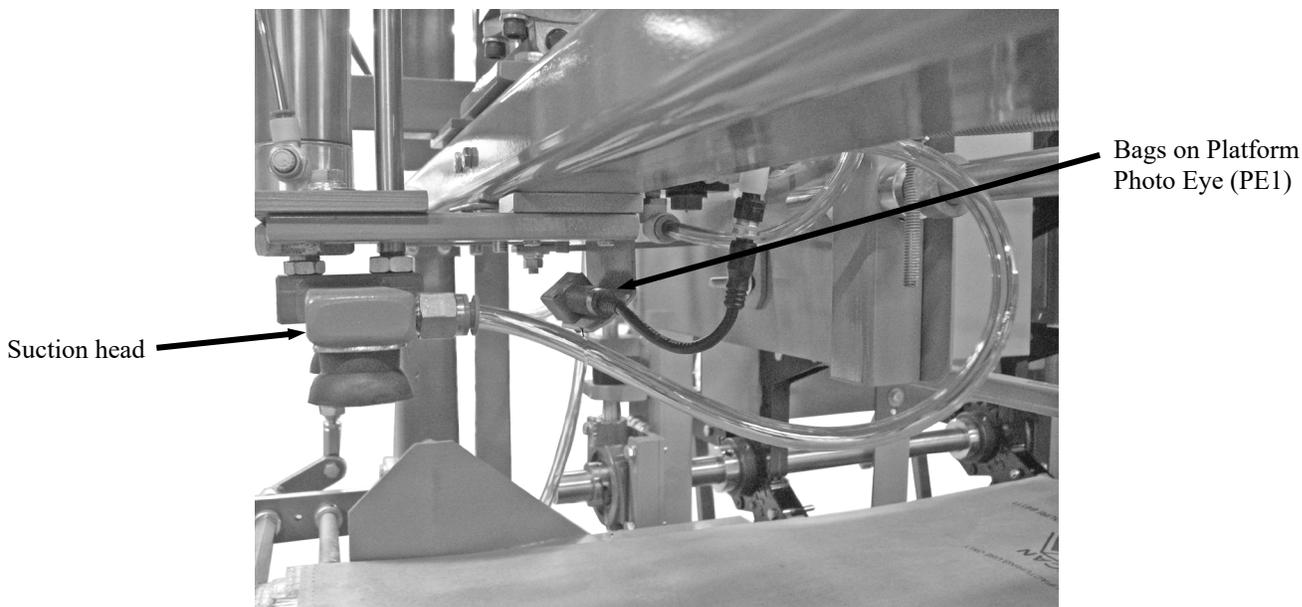


Figure 4. Bags On Platform Photo Eye (PE1)

Once the input from PE1 shows that a bag is in place, the magazine will run until the Magazine Stop Limit Switch (LS2) makes. At this point, the magazine rotation will stop until that stack of bags is gone, resulting in the input from PE1 indicating that no bags are on the platform.

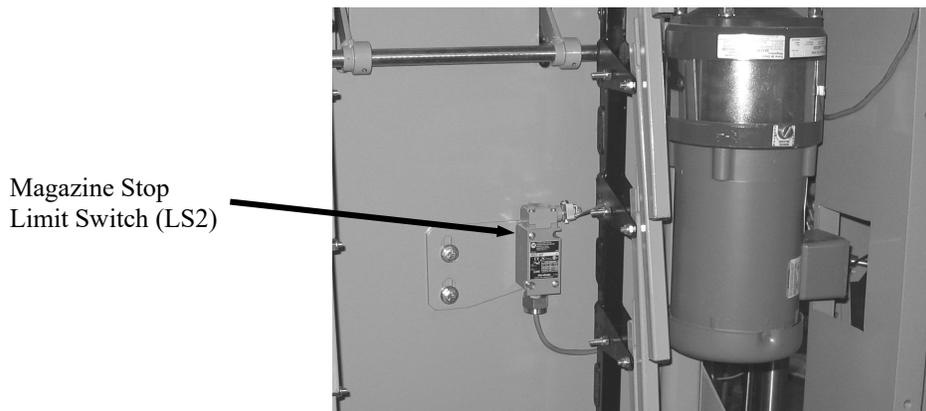


Figure 5. Magazine Stop Limit Switch (LS2)

With bags on the platform, after the magazine motor has stopped, the magazine bag pusher cylinder will push against the tail of the bag stack. The stack will slide forward until the beam from the Bags at Bag Stop Photo Eye (PE2) is broken, indicating that the bag stack is in proper position under the suction head. Once all of the bags in the stack have been used, the beam from PE2 will now be reflected off of the reflector back to the photo eye, indicating that there are no bags in position under the suction head. This will result in the magazine advancing the next bag stack.

Model TOMP

Bags at Bag Stop
Photo Eye (PE2)



Reflector

Figure 6. Bags at Bag Stop Photo Eye (PE2)



Bag stack pusher
home proximity
switch (PR2)

Figure 7. Bag Stack Pusher Home Proximity Switch (PR2)

Suction Head Operation

Once the bags are in place, breaking the beam on PE2, the TOMP is ready to hang a bag on the bag clamps. The operator will pull the Pause button out and turn the AUTO / MANUAL switch to the AUTO position to begin the automatic placing and filling of bags.

In most applications, the conveyor must be running, and the bag in place switch(es) must not be made. In other words, a bag must not be on the spout.

Important: *When setting up the placer, the R-1 relay in the control box can be removed. With the relay removed, the PLC thinks that the conveyor is running, even though it isn't. This will allow the TOMP to place bags even though the conveyor isn't running.*

Once the initial setup is complete, with the bag conveyors running, the placer will start the process of placing a bag on the spout. The first thing that must happen is that the bag mouth must be opened. This is accomplished as the bag stop rotates against the front edge of the bag. The bag hold down finger is rotated into position and applies pressure to the back of the bag, through the thumbhole (if available) in the bag, and holds down the bottom lip of the bag.

The suction head cylinder will move down against the front of the bag and apply vacuum. The vacuum holds the bag to the suction cups of the suction head. The vacuum switch is preset and when vacuum pressure changes the suction head cylinder moves back up and pulls the top side of the bag up, opening the bag. Now the bag mouth is open and ready for placement on the spout

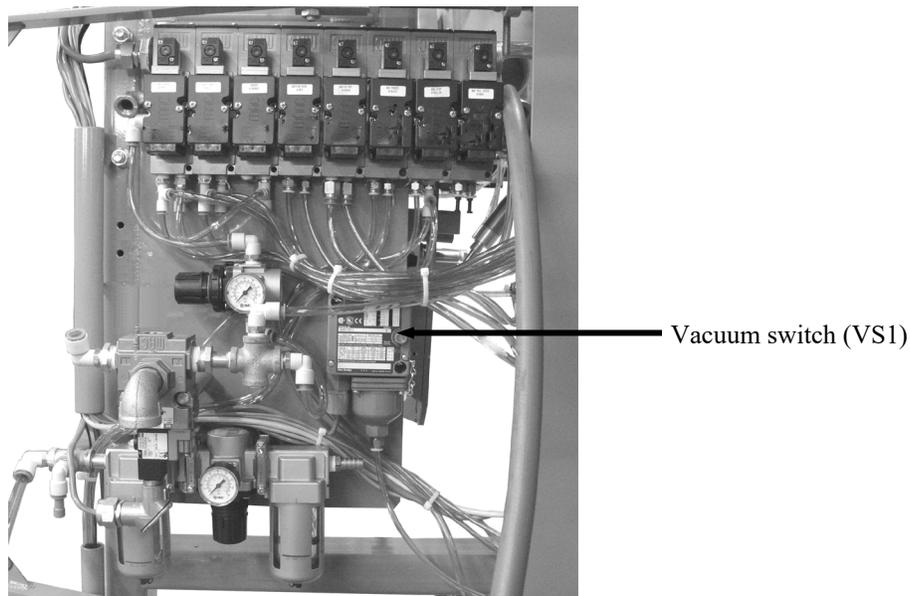


Figure 8. Vacuum Switch (VS1)

Model TOMP

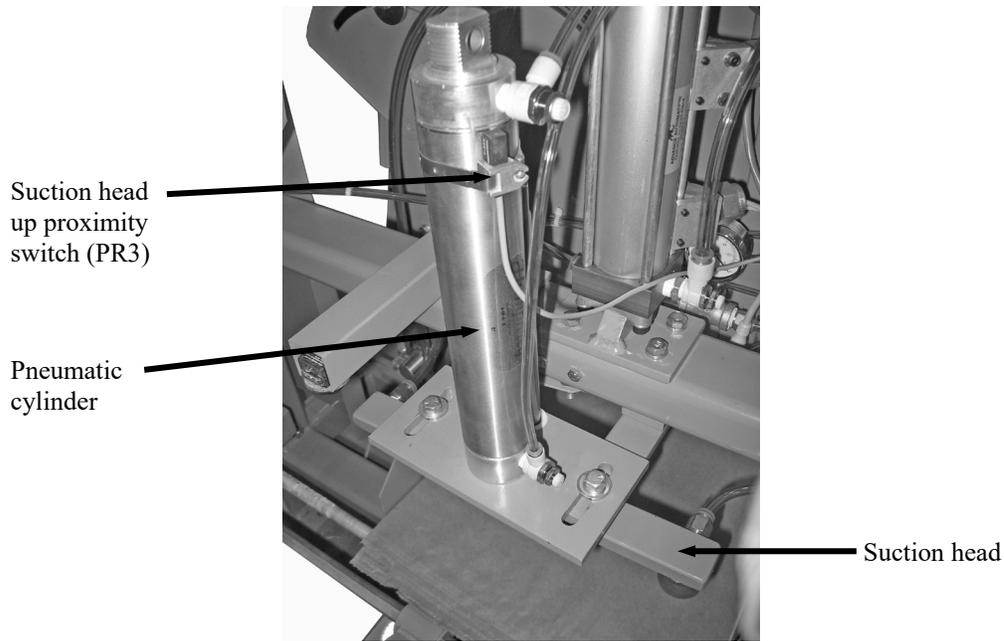


Figure 9. Suction Head, Pneumatic Cylinder, and Suction Head Up Proximity Switch (PR3)

While the bag mouth is opening, the placer grip arms are in the down position, waiting to rotate the bag paws into the opened bag mouth. Once the suction head cylinder reaches the top of its stroke, the Suction Head Up Proximity Switch (PR3) is made. When this indication is received by the PLC, the PLC will send an output to rotate the bag paws around and into the opened bag mouth. Once the bag paws have been rotated to the position where they are gripping the bag, an indication to the PLC commands the vacuum switch to release the vacuum at the suction head. At the same time, a command is sent to release the bag hold down finger. The grip arms can now swing outward, to place the bag on the spout where the bag clamps can hold it. Once the bag clamps have been applied and are holding the bag on the spout, the grip arms will swing outward, releasing the bag.



Figure 10. Bag Ready to be Placed

Placing Bags On The Spout

The TOMP must receive an input to signal when it is appropriate to place the next bag. This signal will vary, depending on how the TOMP is equipped. The TOMP may be ordered with a reformer and bag carriage or without a reformer and bag carriage.

Placing Bags On The Spout – TOMP with Reformer and Bag Carriage

The carriage clear signal from Swing Arm Proximity Switch (PR7) triggers the placing of the next bag. The carriage moving the filled bag away from the clamps will activate the PR7 input, signaling that the next bag can be hung.

Placing Bags On The Spout – TOMP without Reformer and Bag Carriage

On machines that are not equipped with a reformer and bag carriage, the pacing timer will determine the intervals between placing attempts.

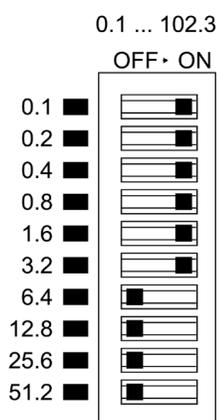


Figure 11. Pacing Timer Settings (Current Setting is 6.3 Seconds)

The pacing timer is a Digi-Set TDML style timer. This is the same style used on the OLD TE10 and the TEVN. The timer is equipped with 10 dipswitches. The switches are either ON or OFF. To calculate the amount of delay that is currently set, the operator will need to add the value of all of the switches that are in the ON position.

In the graphic shown above, the delay is set to 6.3 seconds. If the switch for position 3.2 were switched to the OFF position, the amount of delay would be 3.1 seconds.

Placing Bags On The Spout – Swing Arm Assembly Operation

Once all of the conditions that are required to place a bag have been met, the swing arm cylinder is energized, resulting in the arms rotating with the empty bag to the up position, with the bag on the spout. The Swing Arm Up Proximity switch (PR5) should now be made.

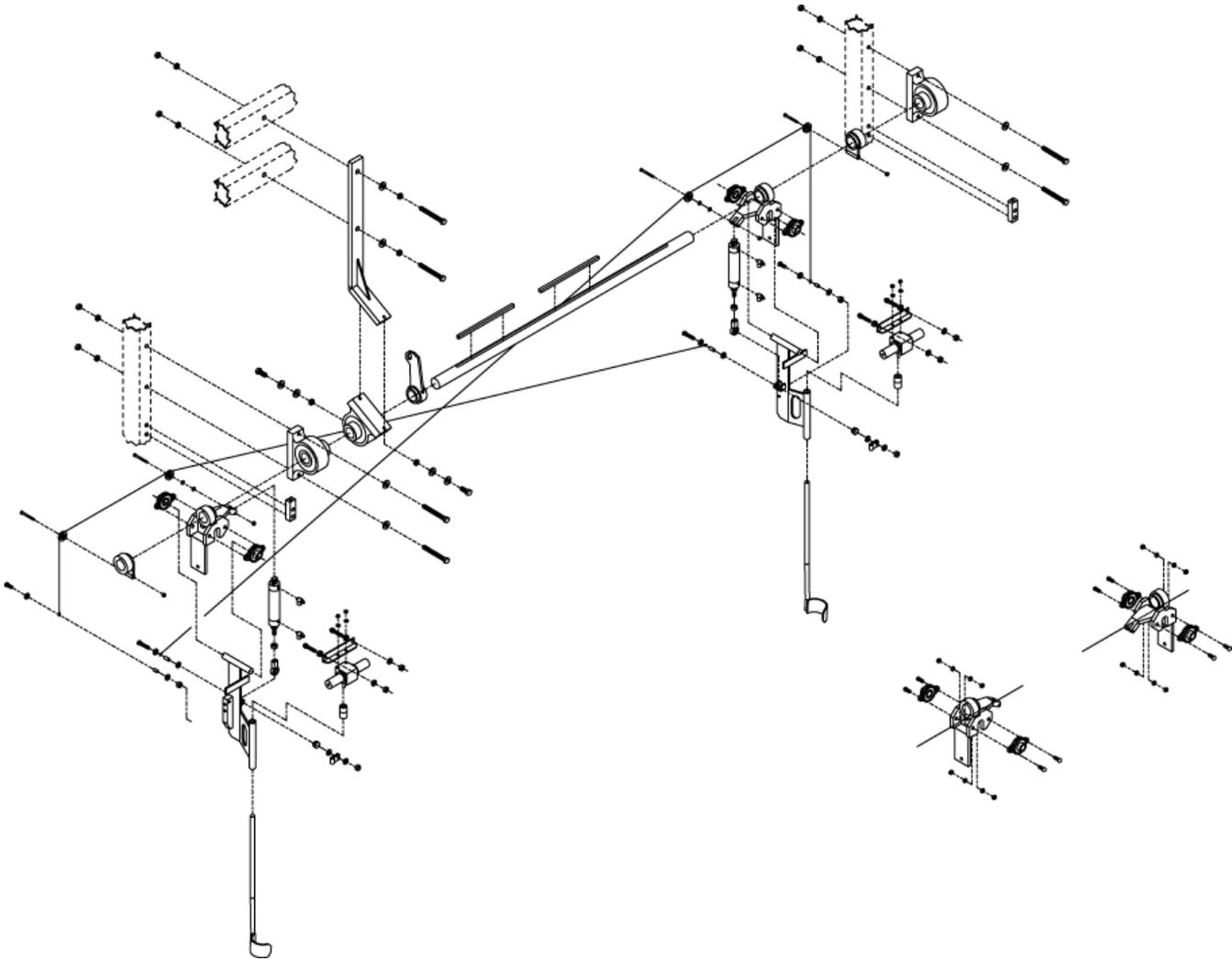


Figure 12. Swing Arm Assembly, Exploded View

The bag clamps will apply to physically hold the bag on the spout. Any bag in place switches should become made at this time if the bag is hung properly. The location and style of these switches will vary depending upon the model of filler that the TOMP is placing bags for.

The Bag Paws Solenoid (SOL2) is activated, causing the bag paws to rotate out of the bag.

For machines equipped with a reformer, a Double Clamp action occurs. This action clamps the bag, then the reformer will be activated, then the bag clamps will release the bag to allow it to center itself for more accurate reforming, then the clamps will apply again. For machines that are not equipped with a reformer, the Double Clamp action is not used.

Once the bag paws have rotated out of the bag, the swing arm will begin rotating downward. While the swing arm is traveling down, the Swing Arm Middle Proximity Switch (PR4) will be activated. This activation lets the PLC know the bag area is clear for the bag carriage to return safely to the bag filling area. The swing arm actuator will stop when the swing arm cylinder has bottomed out. At this point, the Swing Arm Down Proximity Switch (PR6) is made.

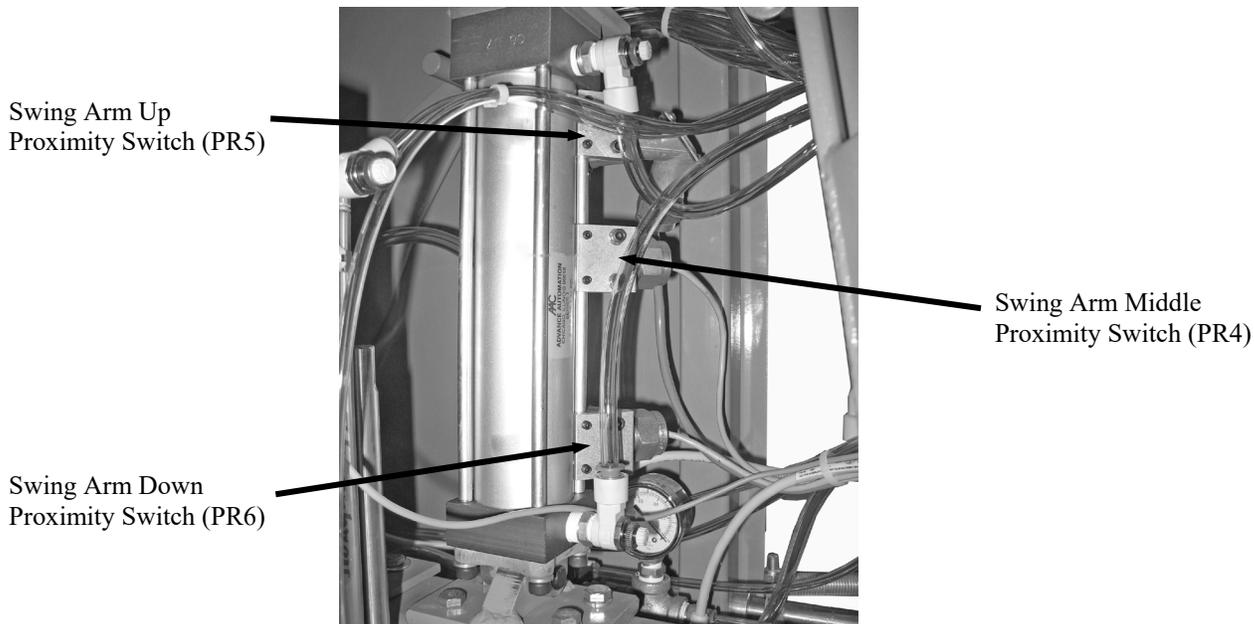


Figure 13. Swing Arm Cylinder and Swing Arm Cylinder Position Proximity Switches (PR4, PR5, and PR6)

When both the Suction Head Up Proximity Switch (PR3) and the Vacuum Switch (VS1) are made, the Grip Arm Solenoid (SOL1) de-energizes. Once SOL1 is de-energized, the swing arms will move inward. The Bag Paw Solenoid (SOL2) will energize, resulting in the bag paws rotating into the opened bag. After a fixed internal timer expires, SOL1 energizes, which moves the grip arms outward to grip the bag. Once the grip arms have a grip on the bag, the vacuum pump will shut off and the suction head will release the bag. The bag is now staged for placing.

Once the shut off gate closes at the completion of the fill cycle, there will be a slight delay before the bag clamps release. This delay allows the operator enough time to catch the filled package. If too much delay is used, the operator will end up waiting for the clamps to release, which reduces the operational efficiency. If too little delay were used, the operator would not be able to keep up, resulting in other operation issues, such as product spillage. The Digi-Set timer mechanism that is located inside the control box is used to set the delay.

Reformer

For machines equipped with a reformer and bag carriage, during the process of placing a bag on the spout, as the swing arm reaches the center of its range of travel, the Swing Arm Middle Proximity Switch (PR4) will be made. This is an indication to the PLC to open the pinch bars so the bag can be placed on the clamps. The PLC sends an output to energize coil A on the Pinch Bar Solenoid (SOL10), which results in the pinch bars being moved to the open position. At this point, the double fingers of the reformer are in their retracted (narrowest) position. The swing arm will continue up and place the bag on the spout. The bag on spout switches (LS3 & LS4) will be made, indicating that the bag is on the spout and the PLC will activate the bag clamps. Once clamped, the bag paws will release the bag and the grip arms will move down out of the way.

Important: The descriptions of the reformer function are given in a step-by-step fashion. Keep in mind that some of these individual steps may be occurring at the same time.

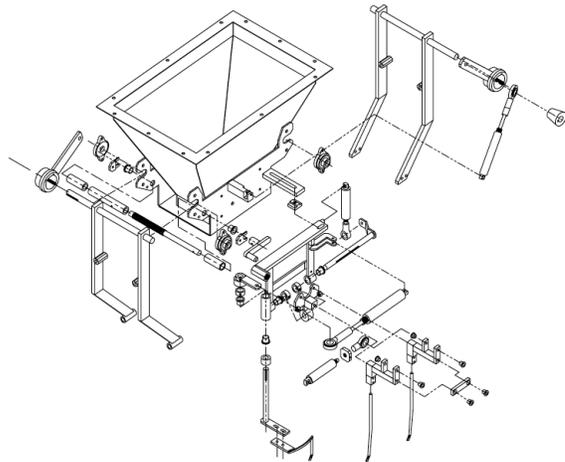


Figure 14. Reformer Assembly, Exploded View (Showing the Front Side of the Assembly, Rear Side is Identical)

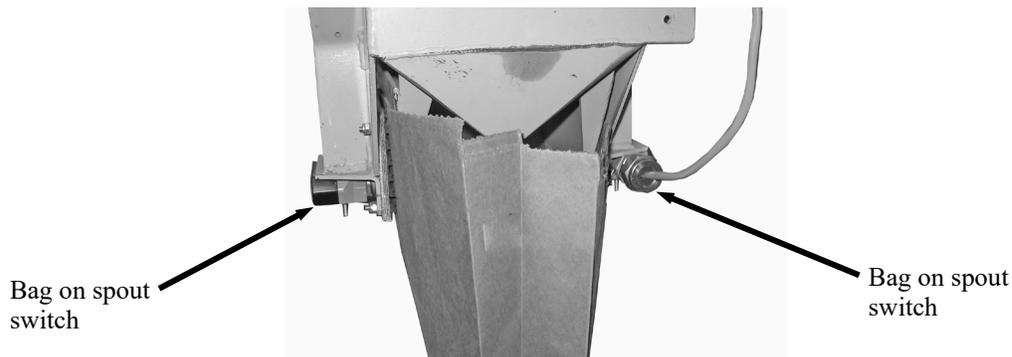


Figure 15. Bag On Spout Switches (LS3 & LS4)

When the Swing Arm Up Proximity Switch (PR5) is made, the PLC energizes coil A of the Double Finger Face Solenoid (SOL12), this action causes the fingers to tilt out for the width of the face of the bag. They will tilt out for the distance that they were set. At this point, the bag clamps will release slightly, and re-clamp, allowing the top of the bag to be clamped in the correct place. They will remain in the out position throughout the fill cycle.

During the fill process, if equipped, a bag lifter will lift up on the bottom of the bag to assist the product in settling into the bag so that there is more room at the top of the bag.

Once the bag has achieved target weight, a signal will be given to drop the filled bag. The bag-drop signal initiates several operations. The bag top former re-forms the top of the bag so it will feed into the sealer correctly. To re-form the bag top, the PLC will energize coil A of the Single Finger Solenoid (SOL13) to rotate the single finger in, where it will fold the center of the gusset in, helping to fold the bag closed. SOL13 will remain energized to allow the single finger to hold tension on the fold.

The bag clamps will release, allowing the bag to start dropping. The weight of the filled bag causes the bag to slide off of the fingers. Once the top of the filled bag has landed on the grip and go paddle on the conveyor, the Double Finger Face Solenoid (SOL12) will be de-energized, allowing the double fingers to collapse together. The PLC will de-energize coil A on the Pinch Bar Solenoid (SOL10) to close the pinch bars. An internal timer is used to set the amount of delay between when the double fingers release and the closing of the pinch bars. The bag slides down through the pinch bars and clears both the single and double fingers. The bag clamps are still in the released position, ready for the next bag to be placed, starting the next fill cycle.

***Important:** The pile of product in the bag must be below the pinch bars when they close together. If material is above the pinch bars, the bag will not seal correctly and the bag top will not form correctly.*

Bag Carriage

Once the filled bag has dropped onto the conveyor, the next phase of operation is to transfer the filled and reformed bag to the sealing device. This is the function of the bag carriage. Thumper plates are used to catch and hold the filled bag upright, so the bag is properly positioned for the carriage. Thumper plates are adjusted so they are just tight enough to control the drop of the bag, without preventing the bag from sliding down between the thumper plates to the conveyor belt when the bag clamps are released.

Once the bag falls onto the bag pusher, the pusher trough moves down, actuating the pusher cylinder, which moves the bag down the conveyor belt. As the bag moves down the conveyor, the top of the bag feeds through the pinch bars, along the bag gate, and into the in-feed of the sealing line. The bag will feed on down the conveyor line and the bag will seal shut and feed out of the sealer.

The upper bars of the carriage must be set so there is a minimum of a ½-inch of clearance between them and the lower edge of the infeed for the automatic sealer.

When the filled bag has moved far enough down the sealing line, the next bag can place and start the process again. The pacing timer determines how quickly the next bag will place. The pacing timer is inside the TOMP control enclosure and can be manually set to control the distance the last bag has moved down the conveyor before the next bag is placed.

Machines Not Equipped With Reformer or Bag Carriage

For machines that are not equipped with a reformer and bag carriage, the filled bag will drop from the spout. The operator will manually remove the bag from under the spout and will manually reform the bag for sealing by hand. At this point the filled and reformed bag can be fed by hand into a sewing / sealing device.

Reformer Adjustment

Use the following steps to adjust the bag forming fingers.

1. Measure the width of the gusset.

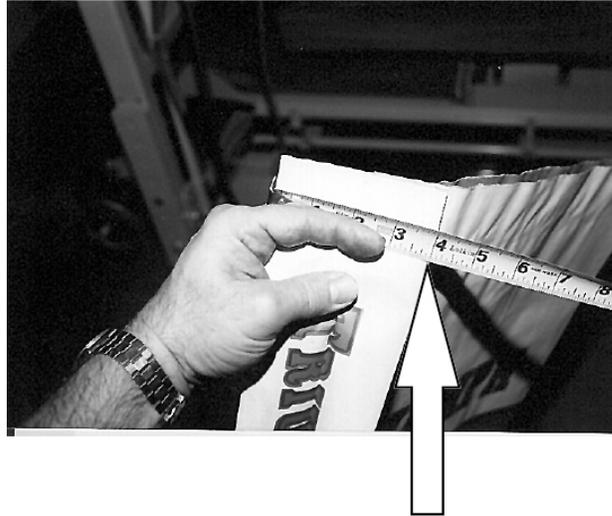


Figure 16. Measuring the Width of the Gusset

2. Adjust the fingers (equally) so that the gap between them is the same width as the bag gusset.

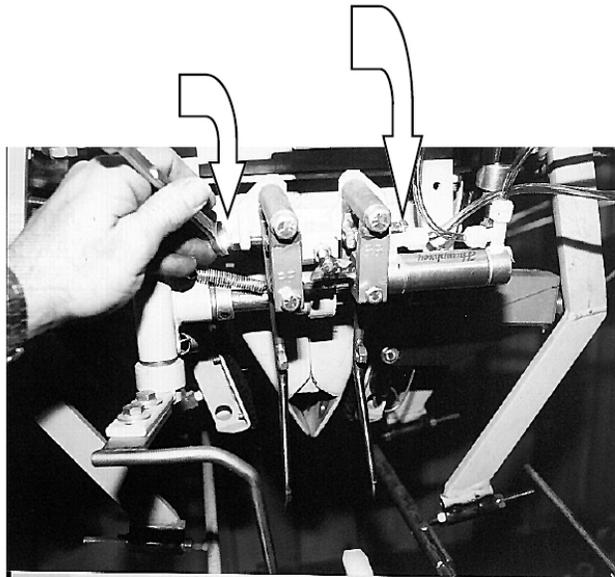


Figure 17. Adjusting the Double Fingers

3. Measure from outside edge to outside edge at the finger tips to make sure they are set to the bag width.

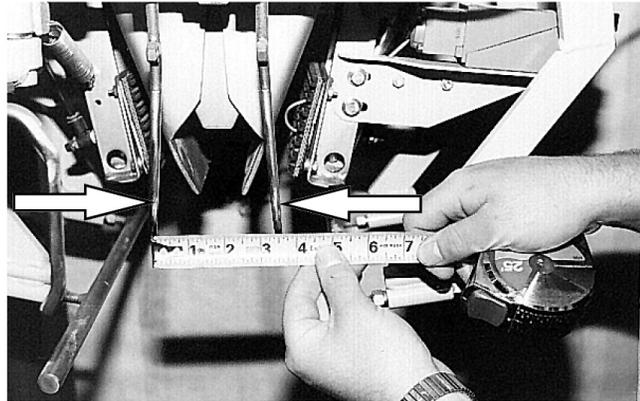


Figure 18. Measure From Outside Edge to Outside Edge at the Finger Tips

4. Unlock the two gusset folding depth adjustment screws.
5. Set the gusset fold depth to $\frac{1}{2}$ of the overall gusset width. For example, if the overall gusset width is 4-inches, set the gusset fold depth to 2-inches.

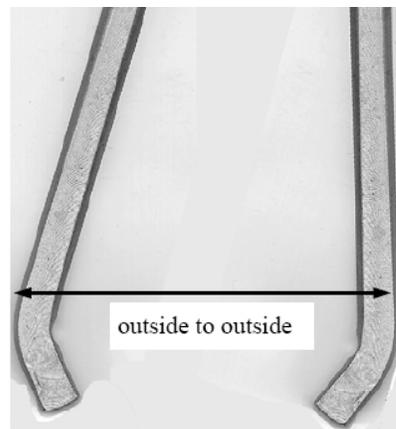


Figure 19. Measure From the Outside Edge to the Outside Edge

6. Measure the width of the bag.

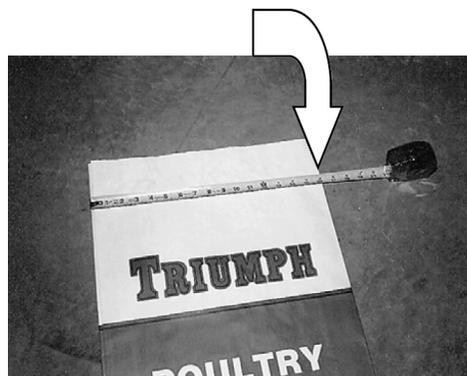


Figure 20. Measuring Bag Width

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- Adjust the finger spread equally from both sides. The desired adjustment is the bag width, plus $\frac{1}{4}$ -inch.

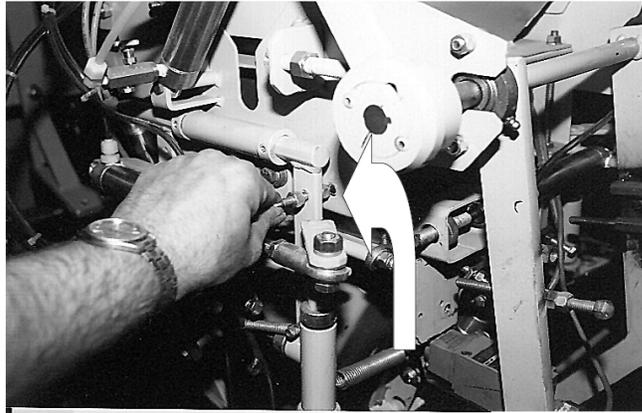


Figure 21. Adjusting the Finger Spread to Bag Width, Plus $\frac{1}{4}$ -inch

- Take a measurement of the span of the lower finger tips. This measurement is taken from the outside of the lower finger tips.

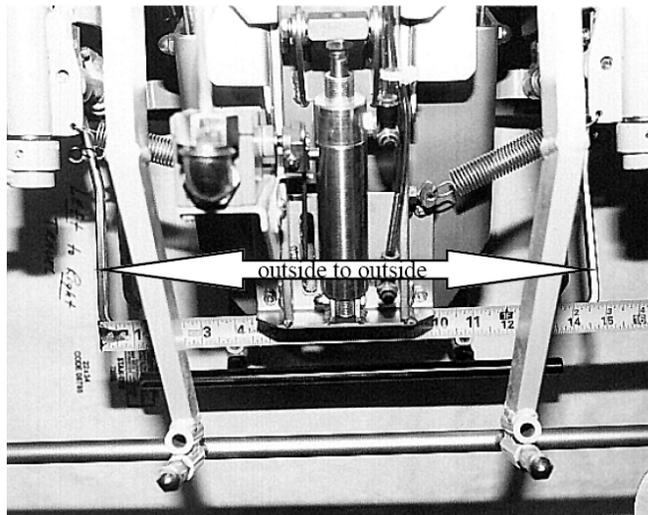


Figure 22. Measuring the Distance Between the Lower Finger Tips (Outside to Outside)

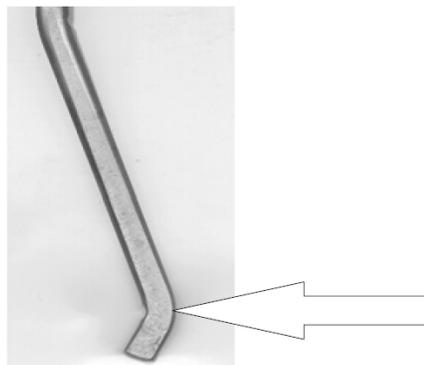


Figure 23. Measure From This Point

- Set the pinch bar gap. The setting will vary, depending on the type of bag being filled. For non-gusseted bags and plastic bags, the narrowest gap is 3/16-inch. For gusseted paper bags, the gap should be set to 1/4-inch to 5/16-inch.

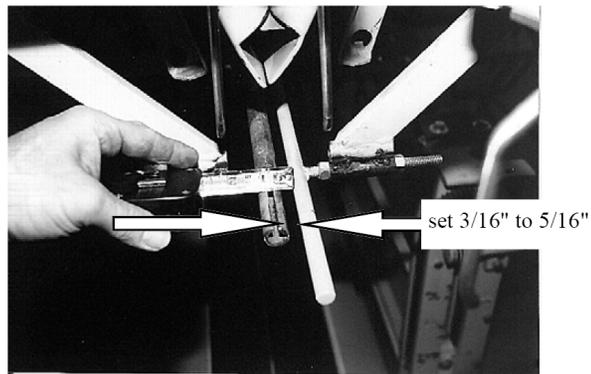


Figure 24. Setting Pinch Bar Gap

Troubleshooting

Magazine Will Not Advance

If the magazine will not advance, and there are no bags on the pan, check for the following situations.

1. The Bag On Platform photo eye (PE1) must be clear. The sensor must be functional and the reflector must be in place correctly to reflect the photo-eye beam. The red indicator on the head of the bag-in photo-eye should be off when no bag is present.
2. The bag pusher cylinder must be in the out position and the magnetic sensor switch on the bag pusher cylinder must be made before the magazine will run.
3. The Magazine Cover Safety Switch (LS1) is used to indicate the back cover is in place on the magazine. If the safety switch is not made the magazine will not run.
4. If the magazine has run empty for 8 consecutive compartments, the magazine will stop and cause a fault. Push the Pause button in and then pull it back out to clear the fault.
5. Check to see if the output for the magazine motor starter is energized. If the output is energized, check the motor starter to see if it has tripped. Reset the motor starter if necessary. Check to see if the proper amount of voltage is available to the magazine motor starter. If the proper amount of voltage is not present, correct the voltage supply issue. If voltage is present, check connections and make sure the motor has a good ground.

Suction Head Will Not Pull a Bag

If the suction head will not come down and pull a bag up to open it, check for the following situations.

1. Check to see if the suction head down output is on.
2. The bag in photo eye must know that the hand of bags is in place. The photo-eye input should be on to show the bags are in place.
3. The indicator light on the photo eye head should be on when the beam is broken and a bag is in place.
4. Check the suction cups to see if there is a blockage in the vacuum lines. If the vacuum switch thinks there is already a bag on the cups the suction head will not try to get another bag. If the input is on, the vacuum switch is made, and thinks a bag is on the cups.
5. There is a filter in the vacuum pump that may become clogged. In this case, the suction head may be down and not be able to pick up a bag because of lack of suction.
6. Once the bag is opened, the bag paws are ready to move into the open bag.
7. The signal to send the bag paws into the bag is the vacuum switch input, the up limit of the suction head cylinder, and the signal for the suction head to come in. The grip arm cylinders must have the paws moved inside the gussets of the bag before the paws can rotate.

Pause Button Flashes a Fault Signal

The suction head will try to get a bag three times in a row before it faults. If the Pause button flashes the fault signal, perform the following steps:

1. Press the Pause button in and then pull it back out to clear the fault. Once this is done, initiate the sequence again to see if the fault resets.
2. Switch the Auto / Manual switch to the MANUAL position and use the MANUAL CYCLE button to place the next bag and reset the fault.
3. After 8 counts of the magazine, the magazine will fault and the Pause button will flash. This will happen when the magazine is empty. To reset, either press the Pause button in and then pull it back out, or turn the magazine power switch OFF and then ON.
4. If the Magazine Stop Limit Switch (LS2) on the back of the magazine chain does not function correctly, it will cause the fault signal to flash the Pause button. The reason for this is to prevent the magazine from “crashing” several hands of bags onto the bag pan. If the lever for the switch falls off, or the switch is out of position, or if the switch ceases functioning, the hand of bags will come down onto the bag tray, which would break the beam on the Bags On Platform Photo Eye (PE1). If the limit switch does not signal, the alarm will initiate.
5. Monitor the inputs from the Magazine Stop Limit Switch (LS2) and the Bags On Platform Photo Eye (PE1).

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Table 1. Switch, Valve, and Photo Eye Identification

Switches, Valves, and Photo Eyes		
Limit Switches		
LS1	Magazine cover safety limit switch	Mounted behind the rear cover of the magazine, upper right corner.
LS2	Magazine Stop Limit Switch	Mounted behind the rear cover of the magazine, middle of machine.
LS3	Bag on Spout Switches	Mounted on the spout front and rear
LS4	Bag on Spout Switches	Mounted on the spout front and rear
LS5	Thumper Carriage at Sealer	Mounted on the sealing conveyor toward the downstream end.
LS6	Grip On	Mounted on the very upstream end of the sealing conveyor. This is the switch a filled bag drops onto to initialize the transfer to the sealer.
Proximity Switches		
PR1	Bag Tail Pusher Retracted Proximity Switch	Mounted on the Tail Pusher cylinder, inboard end
PR2	Bag Stack Pusher Home Proximity Switch	Mounted on the large band cylinder, outboard end
PR3	Suction Head Up Proximity Switch	Mounted on the top of the Suction Head cylinder
PR4	Swing Arm Middle Proximity Switch	Mounted on the Swing Arm cylinder, middle proximity switch
PR5	Swing Arm Up Proximity Switch	Mounted on the Swing Arm cylinder, lower proximity switch
PR6	Swing Arm Down Proximity Switch	Mounted on the Swing Arm cylinder, top proximity switch
PR7	Carriage Clear For Swing Arm Proximity Switch	Mounted on cylinder beneath sealing conveyor, downstream end
PR8	Thumper Carriage at Spout	Mounted on the cylinder beneath sealing conveyor, upstream end
PR9	Bag Tail Pusher Extended Proximity Switch	Mounted on the Tail Pusher cylinder, outboard end
Solenoid Valves		
SOL1	Grip Arm Solenoid	The solenoid valves are all mounted in one gang assembly. It is located above the FRL and the vacuum switch.
SOL2	Bag Paws Solenoid	
SOL3	Vacuum Solenoid	
SOL4	Suction Head Solenoid	
SOL5	Swing Arm Solenoid	
SOL6	Bag Stack Pusher Solenoid	
SOL7	Bag Stop Solenoid	
SOL8	Bag Tail Pusher Solenoid	
SOL9	Bag Clamp Solenoid	
SOL10	Pinch Bar Solenoid	
SOL11	Double Finger Gusset Expand Solenoid	
SOL12	Double Finger Face Solenoid	
SOL13	Single Finger Solenoid	
SOL14	Placer Air Dump Solenoid	
SOL15	Thumper Solenoid	
SOL16	Thumper Stop Solenoid	
SOL17	Belt Latch Solenoid	
SOL18	Thumper Carriage Solenoid	
SOL19	Bag Top Transfer Solenoid	
Photo Eyes		
PE1	Bags on Platform Photo Eye	Reflective type eye mounted above the magazine and looking through the platform at the reflector mounted below.
PE2	Bags at Bag Stop Photo Eye	Reflective type eye mounted to the Suction Head cross member assembly looking downward to the reflector mounted below.
Vacuum Switches		
VS1	Vacuum Switch	Mounted on the Magazine frame just to the right of the FRL (Filter/Lubricator) and below the Solenoid stack.

Glossary

Term	Definition
AC	Alternating Current. Usually referred to in relation to main power source. The controller plugs into a 120/240 Volt AC electrical outlet.
Auto / Manual switch	Used to switch between modes. In automatic operation, the machine will continue through the entire process in sequence, without interruption.
Bag former	When the grip arm opens the bag, the bag former comes in and holds the mouth of the bag in the proper shape to fit on the spout. After the bag has been filled, the bag former will re-form the top of the bag for sealing.
Bag on spout switches	These switches provide the input to the controller that a bag is on the spout and ready to be filled.
Bag paws	Positioned at the end of the swing arms, these devices are rotated into the open end of the bag to grasp the bag for placing.
Bag pusher	When using a take away conveyor, this device helps start the filled bag straight on the conveyor. The pusher has a trough that the filled bag falls on top of. This signals the pusher to push the bag onto the conveyor.
Bag stack pusher	This device pushes a new stack of bags onto the platform, when the stack on the platform runs out.
Bag tail mover	This device helps align the bottom of the empty bag when a take away conveyor is used.
Conveyor	The filled bags drop on the conveyor and are carried to the sealing device by the conveyor.
DC	Direct Current.
Electrical enclosure	The metal box that contains all of the control switches and indicators of the TOMP.
Input	A voltage signal that is supplied to the controller.
Interrupt switch	This switch interrupts all machine operation.
Limit switches	These devices are used to notify the PLC when a component moves outside of its desired range of movement. For example, the rear panel of the magazine is equipped with a limit switch to indicate when the panel is loose or has been removed. If this switch indicates one of these two conditions, the PLC will inhibit machine operation. Limit switches are referenced by a three digit code. The code starts with the letters LS (for Limit Switch) and the third digit is a number. For example, the Magazine Cover Safety Limit Switch is designated LS1.
Magazine	A stock bin that is filled with empty bags.
Magazine pan	An individual compartment within the magazine rack that holds a set of empty bags.
Output	A voltage signal that is sent by the controller that is used to change the state of a device.
Photo eyes	These devices send out a beam of light onto a reflective surface. When the beam reflects back to the sensor, it indicates that a bag is not in front of the sensor. When the beam is interrupted by the presence of a bag, the beam does not reflect back to the sensor, indicating that a bag is present. There are two photo eye sensors used. One provides the Bag on Platform Input to the PLC. The other provides the Bag at Bag Stop input. Photo eyes are referenced by a three digit code. The code starts with the letters PE (for Photo Eye) and the third digit is a number. For example, the Bags on Platform Photo Eye is designated PE1.
Proximity switches	Used to indicate the position of a component. These switches are magnetic. When the metal (ferrous) component comes into position in front of the switch, the magnetic force causes the switch to change states. Proximity switches are referenced by a three digit code. The code starts with the letters PR (for Proximity) and the third digit is a number. For example, the Bag Stack Pusher Home Proximity switch is designated PR2.

Term	Definition
Solenoids	The TOMP uses several electro-mechanical solenoids to perform different functions. When energized, the solenoids cause a change in position of the component that they are connected to.
Suction head and cylinder	Equipped with four suction pads, this arm is lowered onto the bag stack. The vacuum to the pads is turned on to hold the bag to the suction pads. The cylinder then retracts slightly, lifting the arm, which pulls the bag open, and holds it open so the bag former can grab the bag from the inside.
Vacuum solenoid	This solenoid turns on the vacuum to the suction head, so that it can open a bag for delivery to the spout.
Vacuum switch	Located on the magazine, normally just to the right of the FRL (Air Filter/Lubricator) assembly. It is used for the bag opening. When the suction head comes down on the bag, this switch must be made before the suction head can travel upward to open the bag. Vacuum switches are referenced by a three digit code. The code starts with the letters VS (for Vacuum Switch) and the third digit is a number.

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