

## About the Ram Proximity Switches, the Switch Post, and the Switch Operation Rod



This document uses Simplified Technical English.  
Learn more at <http://www.asd-ste100.org>.

**NOTICE P1:** "Remove electrical power from the machine" means use the necessary safety procedure for your location. In the USA, this is the OSHA lockout/tagout (LOTO) procedure. More local requirements can also apply.

**Notice [2]:** This document applies to Milnor® 1-station press models made after August, 2009. It also applies to machines made before this date that have a ratchet mechanism installed. This mechanism turns the diaphragm. For machines with no ratchet mechanism, see document BIPPM02 "About the Ram Proximity Switches, Mounting Post, and Guide Rod."

**Notice [3]:** The diaphragm must be correctly filled before you do this procedure. Refer to the document that applies to your machine: BIPPM10 "How to Fill and Maintain the Diaphragm" or BIPPM17 "The Installation and Replacement of the Diaphragm and Gum Rubber for the 1-Station Membrane Press."



**WARNING [4]: Risk of death or serious injury**—The container and ram move independently. During operation these components move without warning. These components can also move down with power off. Spaces can close and cut off your arm.

- Keep personnel not necessary for this maintenance clear of the machine.
- Use special caution when you use the key that bypasses the door guards for maintenance.
- Two qualified technicians are necessary. Each technician must hear the other's voice clearly.

You must examine and adjust the ram proximity switches when you install the machine or replace related components, or if the ram does not move correctly. Two technicians are necessary for switch adjustment. One technician operates the press controls in the *Manual* mode (manual operation) as told in the reference manual. The other examines and adjusts the switch positions. The two technicians must know and obey the safety requirements for this machine.

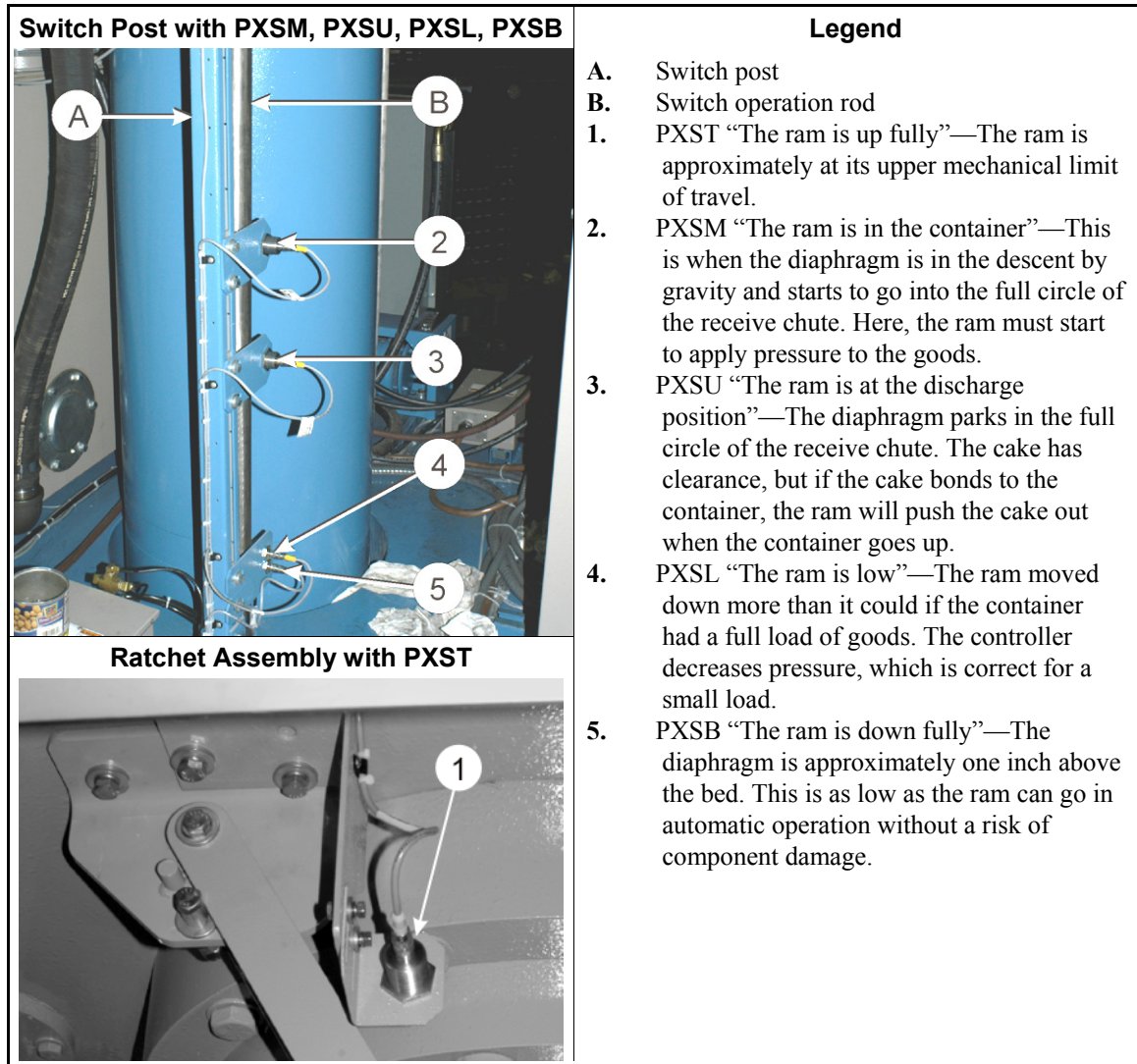
**diaphragm (membrane)**—the rubber component that pushes on the goods during operation

**container (can)**—the cylinder that the goods, the diaphragm, and the platen go into during operation

**switch operation rod (guide rod)**—a vertical rod that moves up and down with the movement of the ram. On 1-station presses made after August, 2009, this component is the target for four ram proximity switches, but is not attached to the platen. On machines made before this date, this component is the target for all five ram proximity switches. On these machines, the platen and diaphragm cannot turn because the rod is attached to the platen.

Look at [Figure 1](#). Four of the five ram proximity switches are attached to the switch post above the top plate near the switch operation rod. One switch is attached to the ratchet assembly below the top plate. You install the switch post and the switch operation rod as a part of machine installation. Each ram proximity switch has a name related to its function (example: PXST). This name identifies this component on related electrical schematics.

**Figure 1: Ram Proximity Switches, Related Components, and Switch Functions**



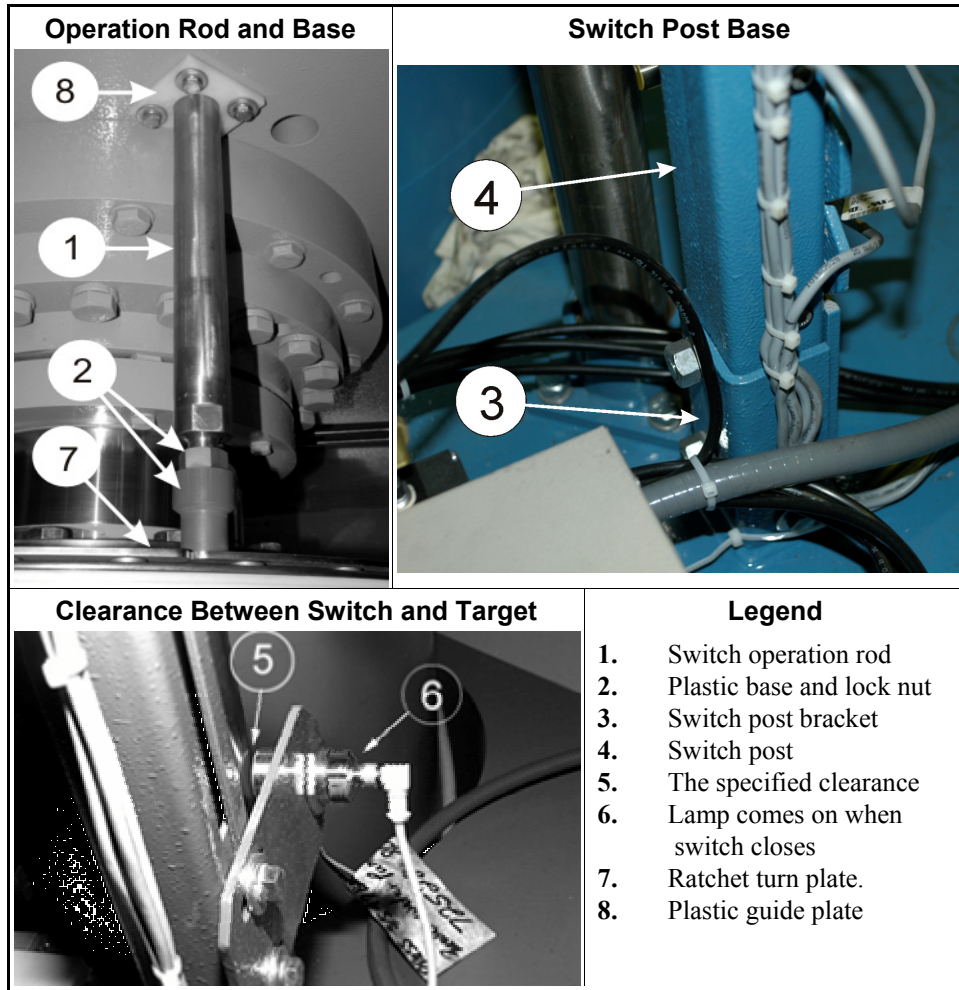
**1. Install the switch operation rod and the switch post, if necessary**

**Do this work with electrical power removed (see Notice P1).**

Refer to [Figure 2](#). The switch operation rod goes through a hole in the press top plate. Plastic guide plates are attached to the top and bottom of this hole. When you move the rod, make sure that you hold it tightly and that the surface does not become damaged. From above the press top plate, put the end of the rod with the plastic base through the hole. Let it go down slowly until the base is on the ratchet turn plate (which is attached to the platen). During operation, the plastic base will move across the ratchet turn plate while the diaphragm turns.

Put the switch post in its bracket on the top plate as shown in [Figure 2](#). Tighten the post in the bracket.

Figure 2: Installation of the Switch Operation Rod and Switch Mounting Post



## 2. Examine the clearance between each switch and its target

Do this work with electrical power removed (see Notice P1).

The target for the switches on the switch post is the operation rod. The target for PXST is the ratchet arm. Make sure that each of the four switches on the switch post horizontally aligns with the switch operation rod. Examine the clearance between each switch and its target (Figure 2, Item 5). Adjust if necessary. The clearance must be approximately:

PXST, PXSM, and PXSU (large switches) = 0.2" (5 mm)

PXSL and PXSU (small switches) = 0.13" (3 mm)

## 3. Examine each switch vertical position

You start each of the switch adjustments with electrical power on. You do some steps with electrical power off, as told in the instructions.

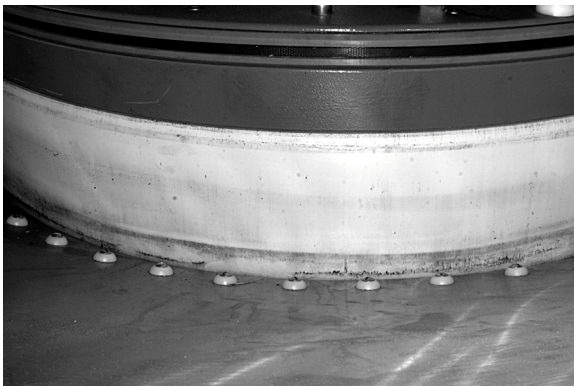
Slots on the switch bracket or on the component it attaches to let you vertically adjust the position of each proximity switch. The press must have a properly filled diaphragm before you examine and adjust the vertical position of the proximity switches (see Notice 3).

- 3.1. **PXST “The ram is up fully”**—This switch is on the ratchet assembly below the top plate (see [Figure 1](#)). This is the only ram proximity switch that operates in the *Manual* mode. The switch must close immediately before the ram touches the top mechanical limit of travel.

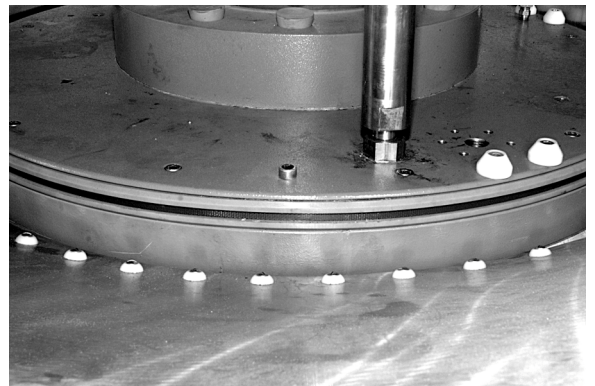
**The container must stay down during this procedure. Use special caution because one technician will be in the path of container movement while the other operates the controls.**

1. Move the PSXT switch bracket as high as it will go and tighten the bracket with your hand.
  2. The PXST lamp will be off. One technician operates the controls to hold the ram against the top mechanical stop. While this occurs, the other technician slowly moves the switch down until the switch circuit closes (lamp on). Tighten the switch bracket with your hand.
  3. **Remove electrical power from the machine (see Notice P1).**
  4. Tighten the switch bracket with tools.
- 3.2. **PXSM “The ram is in the container” and PXSU “The ram is at the discharge position”**—These switches are on the switch post. The adjustment procedures are almost the same for each. Start with the container down and the ram up. To adjust PXSM:
1. The PXSM lamp will be on. One technician looks at PXSM and tells the other technician to stop when the switch circuit opens (lamp off). The other technician slowly moves the ram down and stops ram movement when told.
  2. Examine the diaphragm position. If the bottom edge of the diaphragm is immediately in the full circle of the receive chute, ([Figure 3](#)), the switch position is correct. If not:
    - a. Move the ram to the position shown in [Figure 3](#).
    - b. Move the switch up on the post. The switch lamp will be on.
    - c. Slowly lower the switch until the switch lamp goes off.
    - d. Tighten the switch bracket with tools.

**Figure 3: Where to Start to Apply Pressure (PXSM)**



**Figure 4: Where to Park the Ram (PXSU)**



Examine the PXSU switch. This switch must stop ram movement when the diaphragm is in the position shown in [Figure 4](#). Use the same general procedure that you used to adjust PXSM.

- 3.3. **PXSL “The ram is low” and PXSB “The ram is down fully”**—These switches are on the switch post. Adjust switch PXSB first then put PXSL immediately above PXSB (switch brackets touch as shown in [Figure 5](#)).



**CAUTION [5]: Risk of diaphragm damage and unsatisfactory extraction**—If the PXSB position is too low, this can decrease diaphragm life. If the PXSB position is too high, this can decrease the extraction. Small loads or an incorrectly filled diaphragm will make these

problems worse.

- Do this procedure accurately.
- Fill the diaphragm correctly (see [Notice 3](#)).



**CAUTION 6: Risk of machine damage**—You can bend machine components if you push the expanded diaphragm through the bottom of the container with force.

- The correct sequence to put the ram down and the container up is 1) container down, 2) diaphragm down, 3) container up. The correct sequence to put the container and ram in their usual positions is 1) ram up, 2) container down.

To adjust PXS<sub>B</sub>:

1. Put the ram down and the container up (see [caution statement 6](#)). Install the container safety stands.
2. Move the ram up approximately six inches (150 mm).
3. The PXS<sub>B</sub> lamp will be on. One technician looks at PXS<sub>B</sub> and tells the other technician to stop when the switch circuit opens (lamp off). The other technician slowly lowers the ram and stops when told.
4. **Remove electrical power from the machine (see Notice P1).**
5. Measure the clearance between the diaphragm and the bed. If this measures one inch (25 mm) as shown in [Figure 6](#), the switch is adjusted correctly. If not:
  - a. Connect electrical power. Put the diaphragm on the press bed.
  - b. Move the PXS<sub>L</sub> switch up approximately six inches (150 mm).
  - c. Move the PXS<sub>B</sub> switch to a position one inch (25 mm) above where the top of the switch operation rod is at this time.
  - d. Tighten the switch bracket with your hand.
  - e. Do [Item 2](#) through [Item 5](#) again to make sure that this switch position is correct. Adjust the switch position if necessary.
6. When PXS<sub>B</sub> is in the correct position, tighten the switch bracket with tools.
7. Move the PXS<sub>L</sub> switch down until the PXS<sub>B</sub> and PXS<sub>L</sub> brackets touch, as shown in [Figure 5](#). Tighten with tools.

**Figure 5: PXS<sub>L</sub> and PXS<sub>B</sub> With Brackets Together**



**Figure 6: Correct Clearance—PXS<sub>B</sub> Adjustment**

