

Installing The Milnor Diaphragm in MP160xxx Single Stage Presses

This procedure applies to all MP1604xx, MP1603xx and MP1602xx single stage presses and any MP1601xx press manufactured after 99323 (see the machine nameplate for date of manufacture). These presses were supplied with a brown diaphragm manufactured by Milnor. MP1601xx machines manufactured on or before 99323 were equipped with white diaphragms manufactured by Passat and require different installation instructions, (see “INSTALLING the PASSAT DIAPHRAGM in the MP1601xx SINGLE STAGE PRESS...MSSM0953AE,” for additional information.)

Before starting procedure, understand the crush and sever hazards associated with the can and ram. During movement of these components, gaps can form, then close between:

- The ram and press bed (ram descending).
- The can and press bed (can descending).
- The raised can and lowered ram (can descending and/or ram ascending).
- The raised ram and lowered can (ram descending and/or can ascending).
- The can and press top plate (can ascending).

1. Advance Preparations

1. This service procedure requires two qualified service technicians who fully understand the safety precautions described in this section and know how to actuate manual functions from the keypad. See “MANUALLY OPERATING THE SINGLE STAGE PRESS” in the reference manual.
2. Kit KYSSPMRA01 is used to change to a new diaphragm. This kit includes a new diaphragm, bolts and washers, o-ring, sealant, Scotch Brite pads™, Loctite thread locker 242™, Loctite gasket eliminator 518™, Loctite cleaner/degreaser™, Loctite Chisel Gasket Remover™, Loctite Primer N™ and other necessary parts for installation.
3. If a cake is still present under the ram, use the appropriate manual functions to remove it and clear the bed.



DANGER 1: Crush and Sever Hazard—Moving can and ram will crush or sever body parts caught between closing gaps. Raised can and/or ram can drift down even with power off.

- Before reaching into any of these gaps, lock out and tag out power to the machine.
- Before working under a raised can, install factory-supplied safety stands.
- Know how to use factory-supplied emergency stop switches and where they are located.
- Ensure personnel are clear of the press before operating it in manual or automatic mode. The can and/or ram may move automatically when certain controls are used, such as when ① is pressed or cake data is entered.

2. Removing the old diaphragm

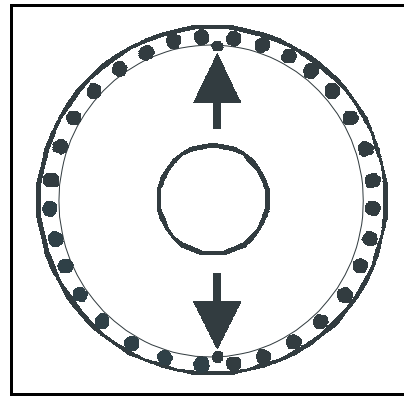
1. Using manual functions, raise the load/unload doors (if so equipped) and secure in place, then open the side doors. Use the bypass door interlock key switch (Figure 1) to enable operation with the side doors open. Use manual function **7** to lower the platen until the diaphragm is approximately two to three inches above the press bed then lock out and tag out power at the wall disconnect. **Install the can safety stands.** Remove the diaphragm bolts. Push-off

holes (Figure 2) are provided if diaphragm weight alone is not enough to free the diaphragm from the platen.

Figure 1: Bypass door interlock key switch

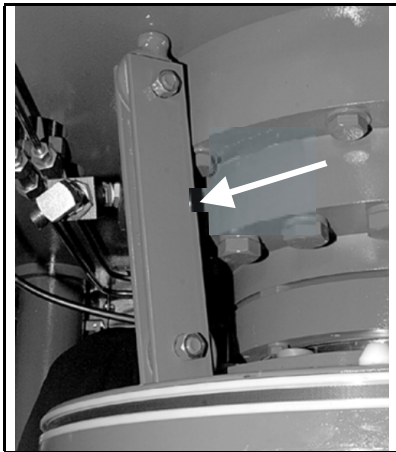


Figure 2: Diaphragm push-offs (32 hole diaphragm)



2. After diaphragm is free of platen, restore power to the machine and use manual function **7** to raise the ram. Once the ram is in the full up position, lock out and tag out power at the wall disconnect. **Install the diaphragm safety bars** (Figure 3).

Figure 3: Diaphragm safety bars



3. Pull the old diaphragm (135 pounds, 61.4 kilograms) free of the bed.

3. Cleaning out the platen and the new diaphragm

1. Using a 3/8 - 16 tap (available locally or from Milnor as part number 97C058T), clean out the bolt hole threads in the new diaphragm before installation. This will prevent diaphragm bolts from seizing and/or shearing off during installation. **Do not run the tap deeper than 5/8" to avoid damaging the diaphragm material.** An extra long "pulley tap" is available (Milnor part number 97C058AT) for those cases when an individual bolt seizes during the installation process.
2. Spray the platen sealing surface with a heavy coat of Chisel Gasket Remover™ and allow to foam for five minutes. Wipe off with a rag. Repeat as necessary. After cleaning, scrub the platen sealing surfaces and the diaphragm ring with the supplied Scotch Brite pads. Concentrate on removing rust and other contaminants.

3. Ensure the platen holes are clean of residual loctite and debris before sliding the new diaphragm under the platen.

4. Test fitting the diaphragm to the platen

Tip: Cover the press bed with paper or cardboard to make diaphragm and platen alignment easier.

1. Slide the new diaphragm into place (Figure 4). Visually align the platen and the new diaphragm. **Remove diaphragm safety bars** and restore power to the machine.
2. Use manual function **7** to slowly lower platen to within 1" of the diaphragm (Figure 5). Turn off and lock off power to the machine. Insert an all-thread guide through one of the platen bolt holes.
3. Adjust the diaphragm as necessary so that the all thread guide aligns with a bolt hole in the diaphragm. Thread guide into the diaphragm. Install remaining guides.
4. Restore power after all the guides are installed. Continue lowering the platen until it contacts the diaphragm.
5. Test fit the diaphragm bolts and realign the diaphragm as necessary.
6. Remove the diaphragm bolts and guides.
7. Raise the platen, lock out and tag out power, then **install the diaphragm safety bars**.

Figure 4: Aligning the diaphragm with the platen

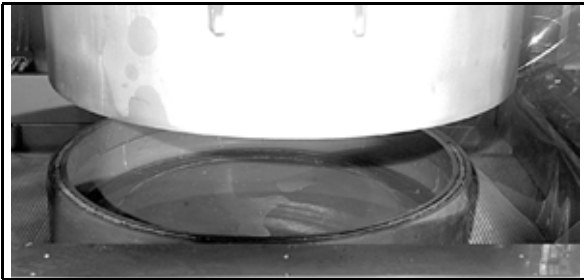
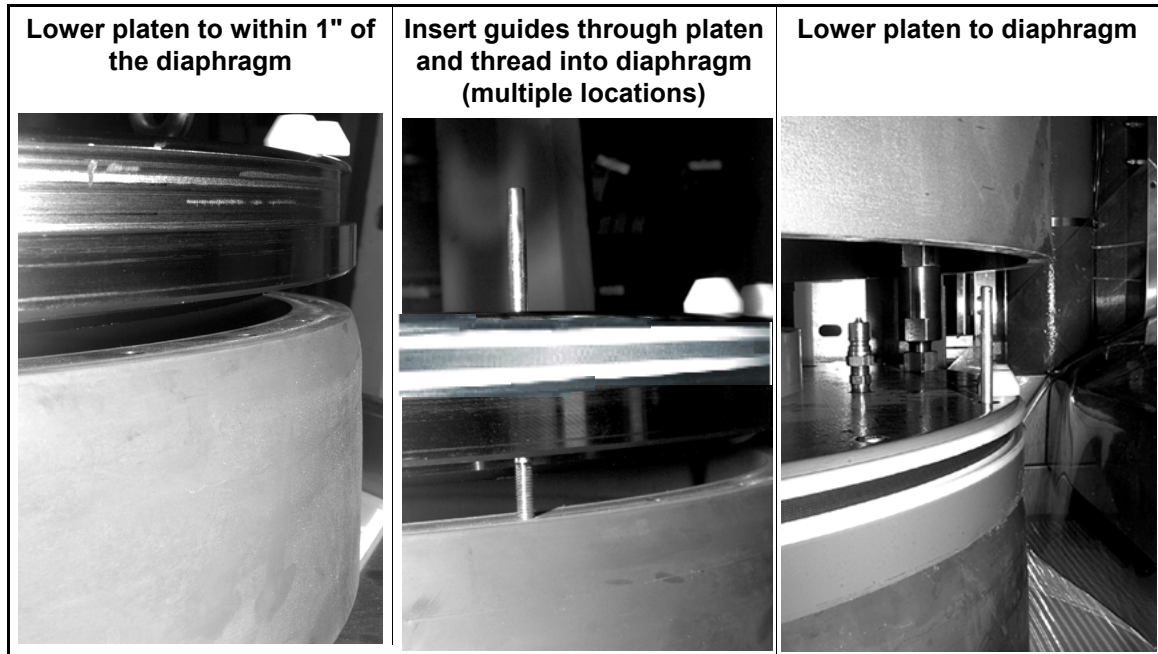


Figure 5: Installing the diaphragm



5. Prepare the platen and diaphragm sealing surfaces

1. Check expiration dates on the supplied Loctite products. Discard and replace with fresh products as required.
2. Spray the bolt areas of the platen and diaphragm with Loctite ODC-Free Cleaner/Degreaser then wipe off with a clean cloth. **Do not touch surfaces after cleaning.**
3. Spray the sealing surface on the underside of the platen with Loctite Primer N.™ Allow primer to dry for 3 - 5 minutes before continuing.
4. Apply a very generous bead of Loctite 518 along the metal diaphragm ring (Figure 6). **Do not allow the Loctite 518 to enter bolt holes.** Excess 518 should squeeze out of the diaphragm/platen joint as diaphragm bolts are tightened.

Figure 6: Applying Loctite 518 to metal diaphragm ring

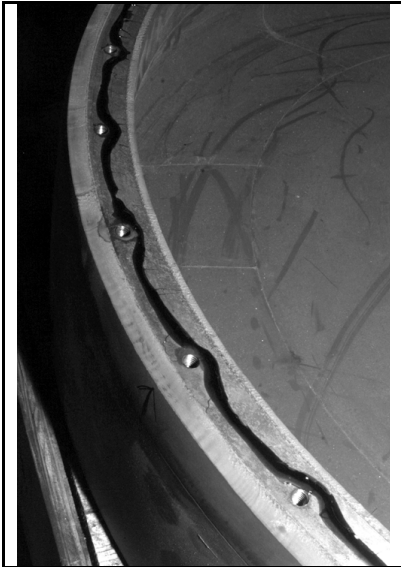
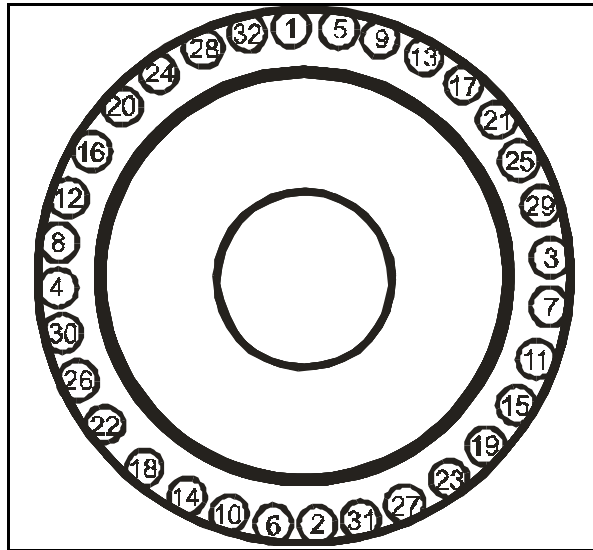


Figure 7: Diaphragm Bolt Torque Sequence



6. Bolting on the diaphragm

1. Restore power and **remove diaphragm safety bars**. Using manual function **7**, slowly lower the platen until it contacts the diaphragm, then lock out and tag out machine.
2. Apply Loctite 242 (or equivalent) to each diaphragm bolt (Figure 8). Install the diaphragm bolts in the sequence shown in Figure 7. Use a torque wrench. Torque bolts to 10 foot-pounds. After finishing the initial torque sequence, retorque all the bolts to **30 foot-pounds**, using the same pattern as above. Wipe off excess Loctite.
3. Wait one hour before performing next step. This allows loctite to cure.
4. See “How to Fill and Maintain the Diaphragm...BIPPM10” for diaphragm filling instructions.

Figure 8: Putting Loctite 242 on diaphragm mounting bolts



7. Retighten the Diaphragm Bolts After One Week

Notice 2: Test—Diaphragm bolts can reseal slightly during the first week of operation. This can cause water to leak from the diaphragm and shorten diaphragm life.

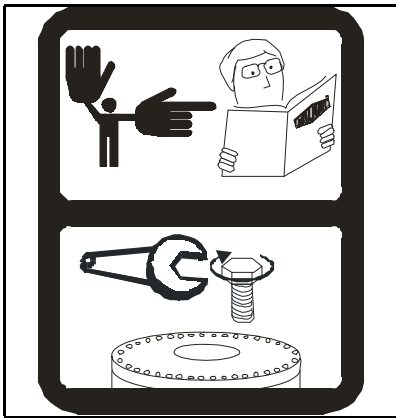
- Check and retighten all diaphragm bolts one week (40 hours) after placing machine in service.
- Check diaphragm shape every week and add water as necessary.

The machine is tagged (Figure 9), alerting service personnel as to the need to check and retighten bolts after one week of operation. Carry out this procedure as follows:

Note 1: If the diaphragm is dry, the can and/or ram may not move freely during the following steps. Spray the diaphragm exterior with water.

1. Using manual function **3**, lower the can to the press bed. See Note above. See Manually Operating the Single Stage Press...MSOP0952BE, in the Reference Manual, for additional information.
2. Use manual function **7**, lower the ram to the press bed.
3. Using manual function **3** again, raise the can to the fully raised position.
4. Insert can safety stands under can (see Single Stage Press Safety for Installation and Service...MSOP0967AE in this manual).
5. Lock out and tag out power to the machine at the wall disconnect.
6. Check diaphragm bolt torque in the sequence shown in Figure 7. Re-tighten bolts if necessary (30 foot pounds).

Figure 9: Tag used to Indicate Bolts to Retighten after One Week of Operation.



— End of BIPPM03 —