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PERMAWICK

**The Industry Standard
for Fractional Horsepower
Motor Lubrication**

Service Manual

L1-802,

7 station

Permajector

SERVICE MANUAL - L1-802
7 STATION PERMAJECTOR

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Machine Setup and Operation

Remove the Permajector from shipping crate and place it level on the floor. It is not advised to use the shipping skid as a machine base.

Connect air supply to the Filter-Regulator-Lubricator (see page 5) and maintain approximately 80 to 90 PSI. A fitting to adapt to your air system may be required.

Using at least one bucket of Permawick to start with, place the bucket upside down on the floor for 15 to 30 minutes before putting the Permawick in the hopper. This will provide even distribution of oil throughout the Permawick material.

Note: Never exceed a total of 2 buckets in the Hopper (see max. fill level page 6).

Connect electrical supply (see page 3). Power to supply the Permajector is usually 480 Volts (3 Phase) unless a different voltage is specified (Ex: 380V).

After power is connected, turn the machine on and open the top door to the hopper, viewing the stirring paddle rotation direction during MORNING START cycle.

If the stirring paddle is rotating counter-clockwise, it will be necessary to switch two of the input supply wires; reversing polarity. Be sure to turn off the main power disconnect switch first.

To operate the machine after the MORNING START cycle is complete:

1. With no parts on the holding fixture, cycle the machine 3 times. Then clean nozzle and fixture with air or wipe with a clean towel. Do not re-use the Permawick material that has been shot from the metering system.
2. Place the designated endbracket and associated parts on the holding fixture; noting proper orientation (see tooling assembly drawing).
3. To operate, select mode of operation and initiate using the CYCLE buttons or FOOT SWITCH, whichever applies to the mode selected (see page 4).

If you plan to relocate the Hopper from the Permajector machine, or you have purchased a stand alone inject station and Hopper; the following are important guidelines to follow.

1. Always try to locate the Hopper as close as possible to the Metering System, preferably 2 to 4 feet; do not exceed 10 feet. Long runs can cause pumping and injection problems.
2. Use steel hydraulic tubing 5/8 inch minimum diameter at .042 - .060 inches thick. A high quality steel-braided hydraulic hose with Teflon lining could be used for short runs if necessary, but is not recommended. The hose could deteriorate over time and can cause plugging and injection problems.
3. Minimize the number unions used, and number of bends in the tubing. Avoid sharp corners when forming the tubing, a 3 to 6 inch radii is recommended.
4. Avoid using reducers and adapters when possible. **Never use 90 degree fittings !**
If it becomes necessary to use a reducer, and the Permawick is to flow through a smaller diameter, you must then chamfer the small diameter at least to match the large diameter to prevent plugging.

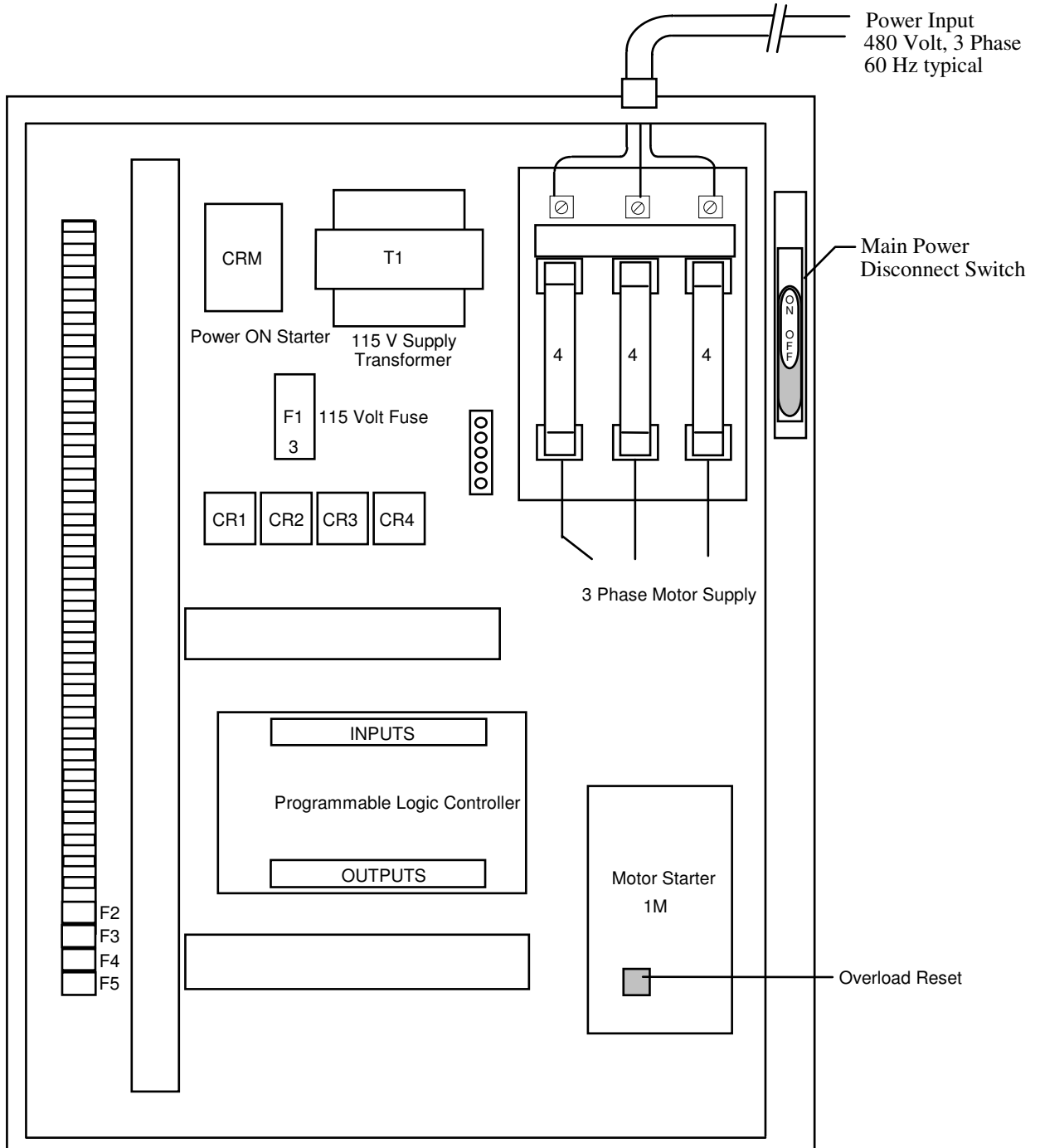
Use the following chart to reference the type of Metering System being installed.

Metering System	Tubing sizes
800-2	5/8" dia. input line, and 5/8" dia. return line*
800	3/4" dia. input line, and 3/4" dia. return line**
802	3/4" dia. input line, and 3/4" dia. return lines
804	3/4" dia. input lines, and 5/8" dia. return lines
804-2	5/8" dia. input lines, and 5/8" dia. return lines

* For 800-2 applications where the Hopper is located over 6 feet from the metering system, a 3/4 inch return line is recommended.

** On special 800 applications, Metering Block porting and Permawick lines may be reduced to 5/8.

Electrical Panel



Controls

Pull to turn the machine on. This will also enable the main air.
Pushing will kill power and air supply. This is also used as the Emergency Stop.

Cycle indicator displays the status and location of the indexer.

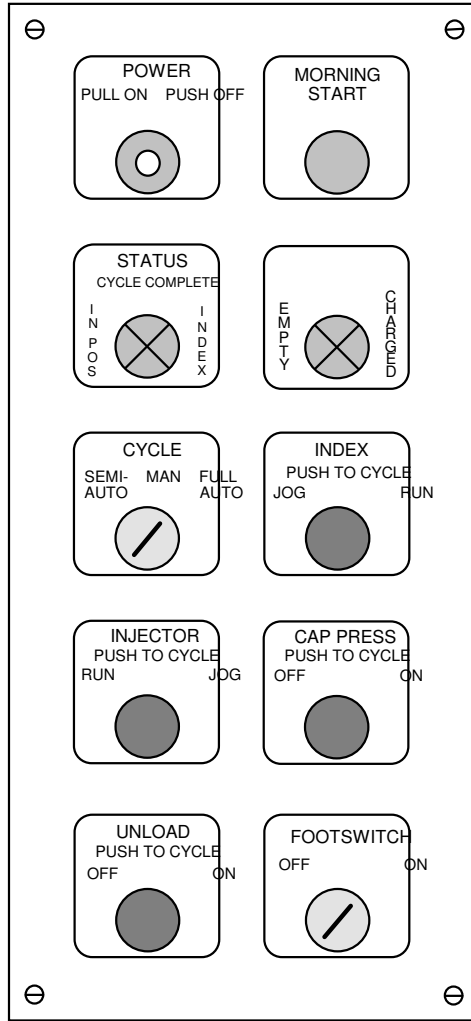
Semi-Auto - machine performs 1 complete cycle, initiated by the Cycle buttons.

Manual - allows independent control of each operation.

Full Auto - enables continuous operation, Foot switch controlled.

Cycle control of the inject station. Turn to Jog and depress the button to cycle the injector once while in manual.

Cycle control of the unload station. Turn to off and depress the button to cycle the unload station while in manual.



Illuminated pushbutton starts the 2.5 minute circulation cycle typically used at shift start-up.

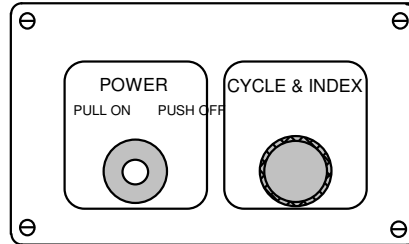
The Empty/Charged indicator simply states the condition of Metering chamber after each injection.

Cycle control of the indexer allows manual control to index to the next station.

Cycle control of the Press station. Turn to Off and depress the button to cycle the Press once while in manual. On = Automatic operation.

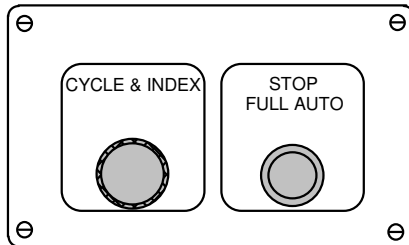
Enable control of the footswitch to be used during automatic operation.

Pull to turn the machine on. This will also enable the main air.
Pushing will kill power and air supply. This is also used as the Emergency Stop.



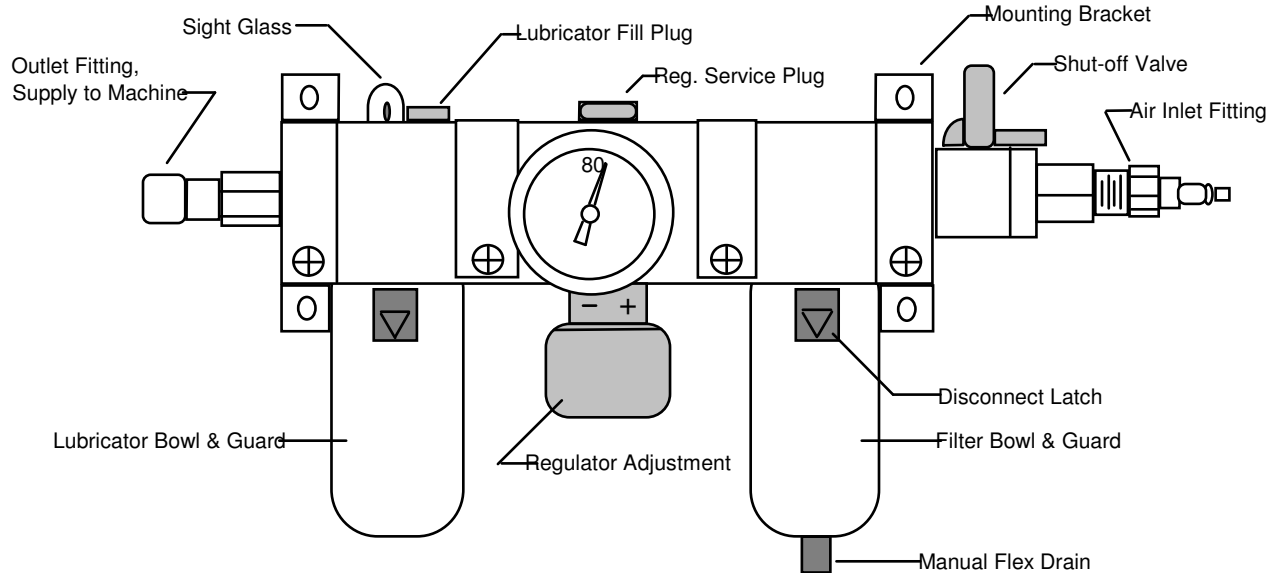
During automatic operation, when both green Cycle buttons are pressed simultaneously then released, the machine will complete 1 cycle of all operations.

During automatic operation, when both green Cycle buttons are pressed simultaneously then released, the machine will complete 1 cycle of all operations.



During automatic operation, depress to halt automatic operation, however the current cycle will be completed first.

Filter-Regulator-Lubricator

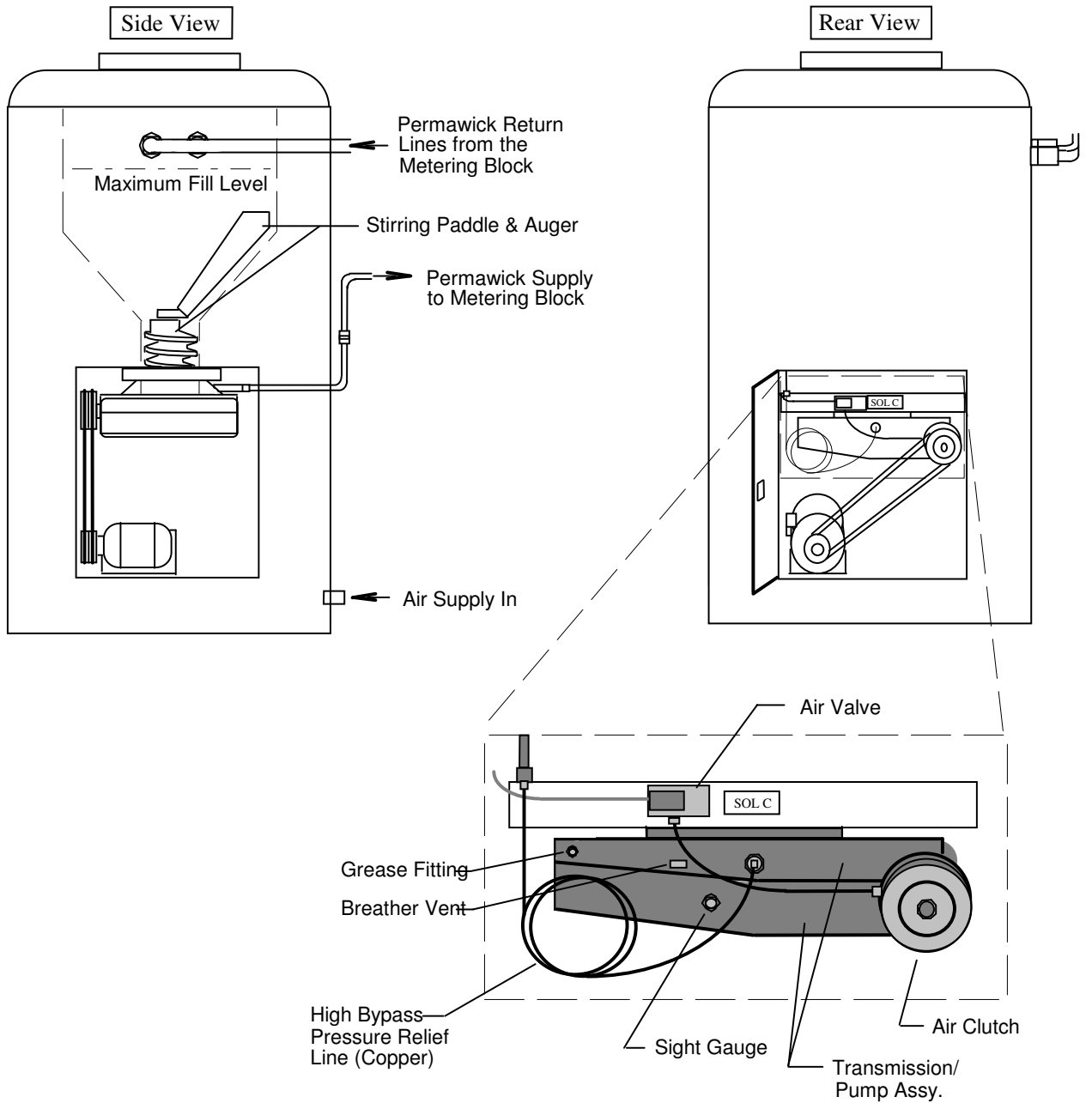


After connecting your air supply, turn the shut-off valve to the ON position. Proper air pressure (80-90 PSI) can be obtained using the regulator adjustment knob.

WARNING ! Before performing any maintenance to the F-R-L, turn valve to the OFF position, and vent any pressure in the system.

The Filter unit will separate contaminated liquids from the air, and will collect in the bowl. The Bowl can then be cleared of liquids using the Manual Flex-Drain by pushing it to one side.

The Lubricator will continuously supply lubricant throughout the air system. Add oil to the Lubricator bowl as needed via the Fill Plug. Recommended oil is SAE-10 or similar light oil for air systems.

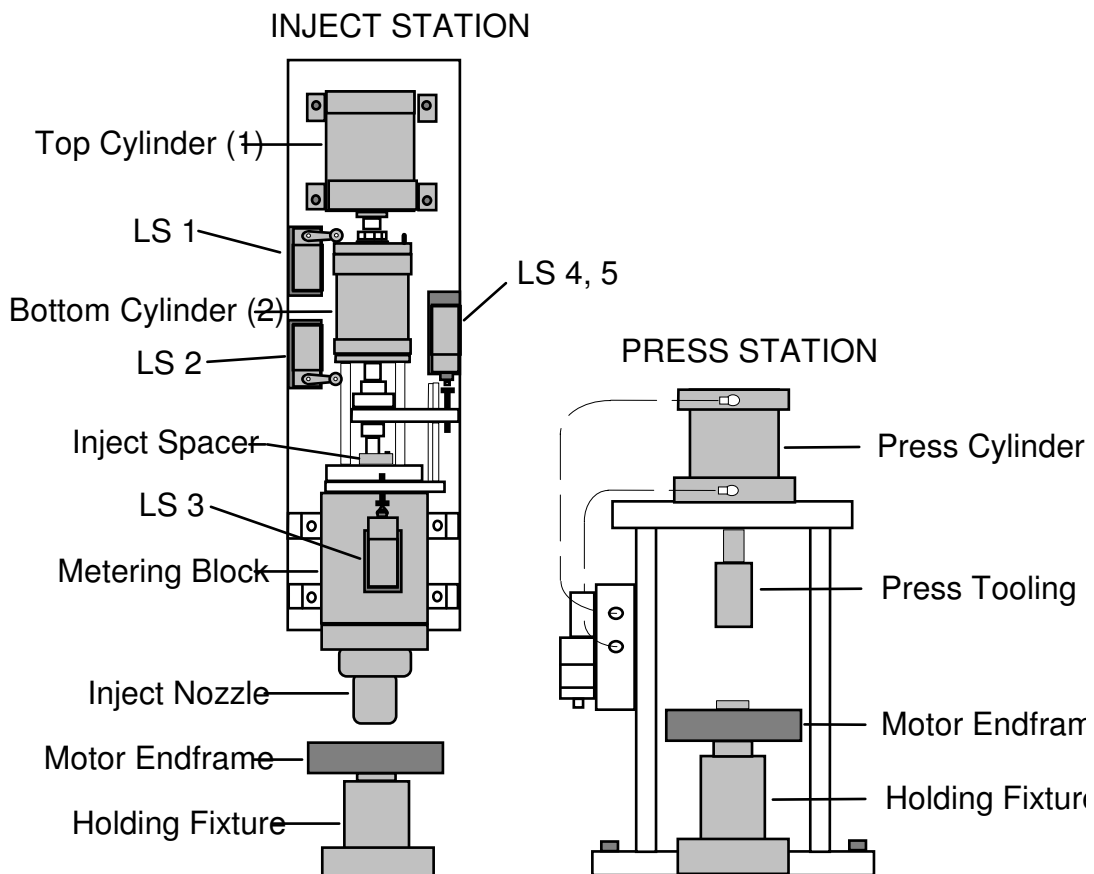


Metering System

The Metering System Assembly controls the amount of Permawick that will enter the cavity of the part during the injection. The amount of Permawick to be injected can be regulated by the metering system injection spacers. For example: a thinner spacer would increase the shot amount of Permawick material injected.

The top air cylinder (10149-4) on the metering system will locate the injection tooling to the part to be injected, then, the bottom air cylinder (10149-9) will lower and make the injection (Refer to Sequence of Operation drawing 10240 and pages 12/13 of this manual).

Holding fixtures are individually designed per application to provide a suitable nest for mating parts to be properly positioned together. Usually a rubber seal is used in the nozzle assembly and/or the fixture assembly to ensure Permawick is injected in the proper areas, and to permit proper bearing contact. Check these rubber seals for wear frequently. Replacements can be ordered from Permawick Company. See the inject tooling assembly drawings for rubber seal part numbers.



Overall, the Permajector (all components included) requires minimal maintenance. However, listed below are some typical maintenance guidelines to follow.

Hopper/Transmission

1. Check the belts for wear and proper tension.
2. Grease fitting, apply a minimal amount only after rebuilding transmission.
3. Inspect/tighten the flathead bolts mounting the tie plate to the rod and piston.
4. The oil level in the transmission can be determined by inspecting the level from the sight glass window. In the event that a leak develops, use 90W grade gear oil after correcting the leak. See page 11 for seal information.
5. If the unit requires to be rebuilt, remove it from the hopper as follows:
 - a) Disconnect the Permawick supply line from the side of the metering block, then pump the material (if possible) from the hopper into an empty yet clean container using the morning start cycle. Turn the power off.
 - b) Loosen the auger bolt and remove the stirring paddle. If a hoist is available, replace auger bolt with an eyebolt or hook assembly; then remove mounting and lower the unit - exiting through a side access panel.

Metering System

1. If the metering block assembly is damaged/worn and requires to be rebuilt, it is strongly recommended that these components be sent to Permawick Machine Division to be remanufactured. If only the seals are worn, new seals can be ordered from Permawick.
2. To remove metering block, simply remove limit switches from backplate (leave wires connected) then, remove the metering block assembly and ship it to Permawick Machine Division in a crate.

Electrical

1. Occasionally inspect the relay and starter contacts (CR1, CR2, CRM, M1).
2. The programmable controller is equipped with an EEPROM memory chip, which permanently contains the electrical program. Therefore, when power is removed from the machine, the program will be maintained.

Indexer

1. Inspect/monitor motor operation and follow recommendations for preventative maintenance from manufacturer.

Troubleshooting Guide

- I. Things to check if the machine will not cycle, or will not complete the cycle:

- A) Air supply, or main air valve.
- B) LS 6 (Slide Returned) calibration.
- C) Blown fuse or a bad relay.
- D) Pump motor starter overload reset.
- E) Table is not position - indexer Limit LS 2.
- F) Safety Gate Limit Switch (LS 1).
- G) Press Station has not returned - LS 10.
- H) Unload Station not ready - LS 11, 12
- G) The red EMPTY lamp is on, the green CHARGED lamp is off.
 - 1. Pump did not run; metering system not charged.
 - a) The Hopper is out of Permawick.
 - b) The Charged Limit Switches (LS 7, 8) are out of adjustment.
 - c) Slide Returned Limit Switch (LS 4) is out of adjustment.

II. Partial cycle:

- A) Metering System lowers and stops, will not return.
 - 1. Inject Nozzle or Metering Block may be plugged with Permawick material.
 - 2. The Inject Advanced Limit Switch (LS 8) may be out of adjustment.
- B) System will not actuate the Inject Cylinder (Cyl 2).
 - 1. Part out of location.
 - 2. Defective solenoid valve (Sol D)
 - 3. Slide Advanced Limit Switch (LS 5) is out of adjustment.
 - 4. Blown fuse or bad relay.
- C) Metering System will not Inject:
 - 1. Check Part present Limit Switch (LS 3).
 - 2. Check LS 2, Table In Position.
 - 3. Check LS 4, Slide Returned switch.
 - 4. Check LS 7, 8 Charged Limit Switches.

Service Policy

Components such as controls, air valves, air cylinders, limit switches, and the hopper

motor, are all standard parts that can be easily obtained from industrial suppliers. Parts for the hopper assembly, transmission/pump, and metering system must be ordered from the Permawick Company.

Replacement parts for the hopper assembly and metering system will be covered under a 1 year warranty by Permawick. Standard and purchased components will be warranted by Permawick for 90 days. Warranties will be voided if the damaged assembly has been tampered with.

It is not recommended that a Permawick customer attempt major repairs to a metering system, rotary nozzle unit, or the transmission/pump assembly. Although they rarely require major repair, these units usually provide ample warning of impending failure. If it is determined that an assembly is in need of remanufacture, a replacement can be purchased, then, return the unit which is damaged to Permawick Machine Division for rebuild, and the customer will only be charged for those parts that are required to restore the unit to new condition.

**Ordering Information:
Permajectors, components, Permawick**

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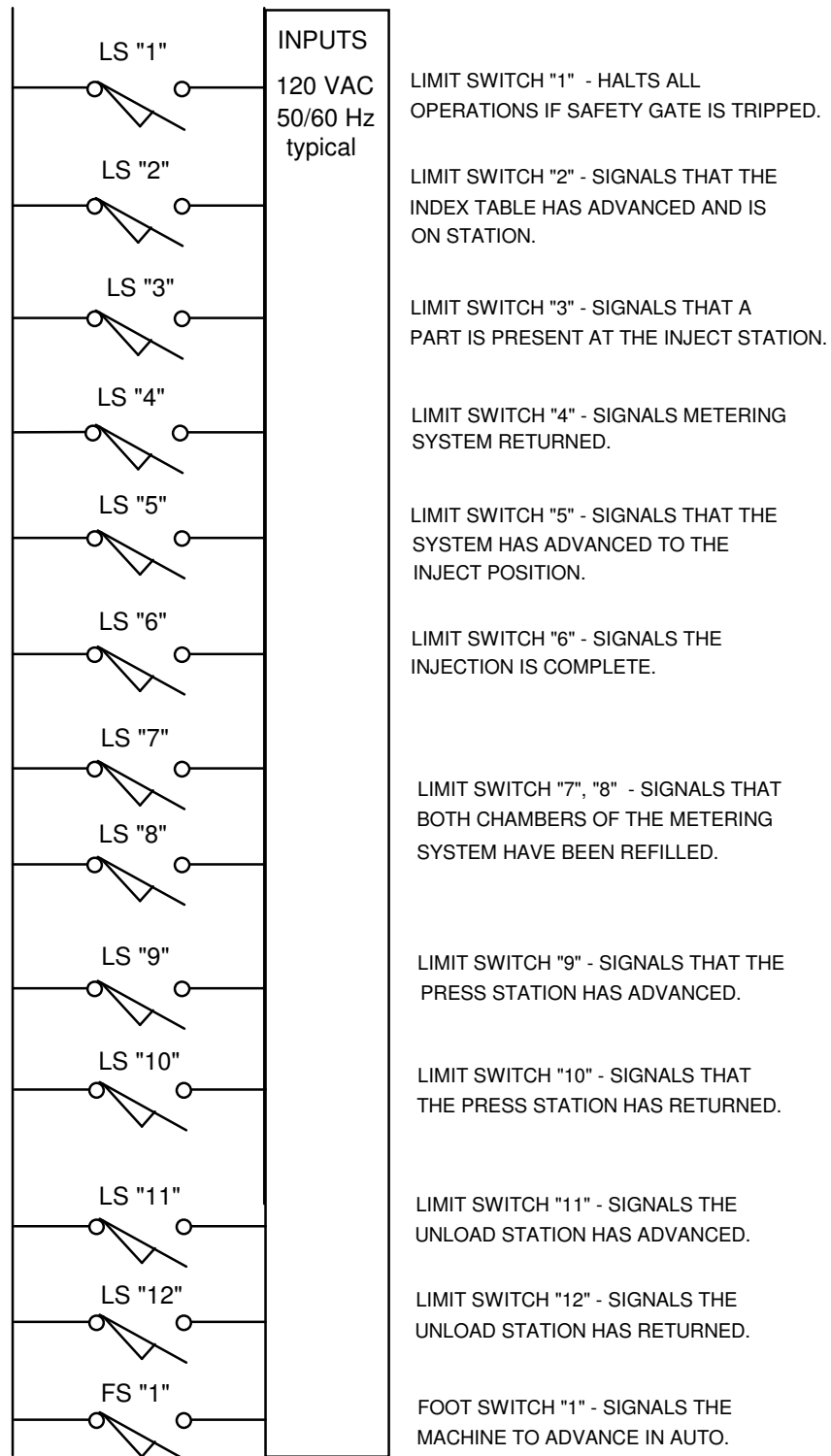
**Seal Chart
802 Metering System**

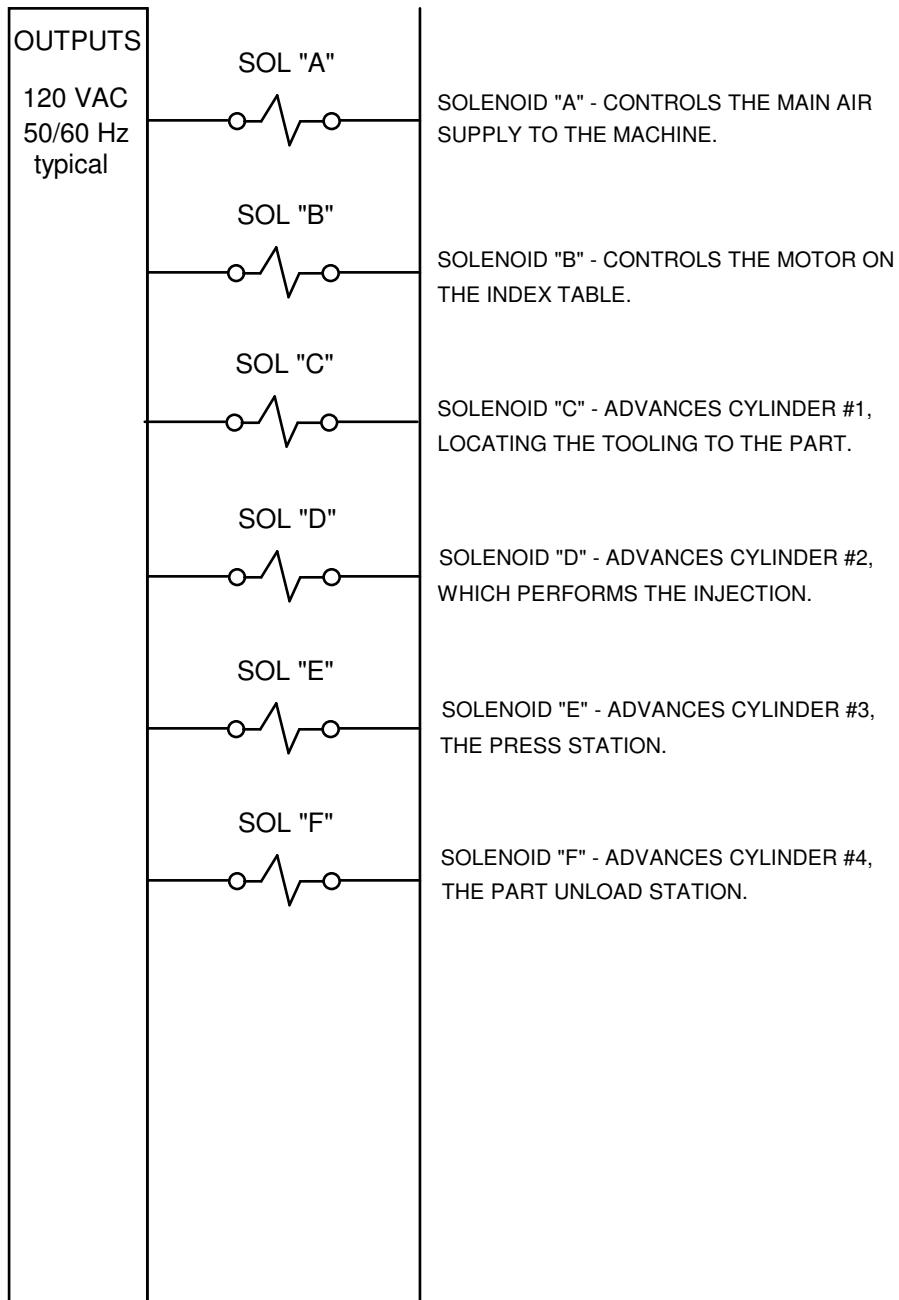
Piston Diameter	Uneepac Seal No.	Description	Quantity Required	Order in sets	Permawick Equivalent
1"	9883	Standard	4	4 sets	10149-23
	13691	Flat Bottom	2		

15000 C Transmission Assembly

	Seal Numbers	Description	Quantity Required	Permawick Equivalent
Worm Shaft	8700	7/8"	2	7308-13
Auger Shaft	12336	1 1/4"	1	7308-42
Piston 1 1/2"	8919	Standard	2	7308-27
	14210	Flat Bottom	1	
Rod 1 1/4"	9901	Standard	2	7308-32
	14108	Flat Bottom	1	

Select the corresponding piston diameter for your metering system.
When using the Permawick part number specify piston diameter.





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Permajector Standard Cycle

1. SOL "A" ENERGIZES PROVIDING AIR TO THE MACHINE.
2. AS NOTED EARLIER, THE SYSTEM IS SUPPLIED WITH A 2.5 MINUTE PUMP

- CYCLE (MORNING START) TO MIX THE PERMAWICK AT SYSTEM START UP, AND WHEN NEW PERMAWICK IS ADDED TO THE HOPPER.
3. METERING SYSTEM IS CHARGED (FILLED WITH PERMAWICK), LS 7 AND LS "8" ARE CLOSED.
 4. PART PRESENT LIMIT LS 3
 5. **SOL C ENERGIZES, ACTUATING TOP CYLINDER AND ADVANCING TOOLING.**
SOL ENERGIZES, ACTUATING THE INDEX TABLE, ADVANCING TO NEXT STATION.
 6. **SOL ACTUATES THE SECOND STATION (PRESS/ASSEMBLE ETC.) CYLINDER.**
ONLY IF PRESS AND INJECT IS SELECTED)
 7. LS 1 OPENS AND DISABLES SOL C, WHICH TURNS THE PUMP OFF.
 8. LS 2 CLOSES, BOTTOM CYLINDER IS THEN ACTUATED, PART IS INJECTED.
 9. LS 3 CLOSES, INJECTION COMPLETE - SOL "B" DE-ENERGIZES, RETURNING CYLINDER #2, THEN A 0.2 SECOND DWELL.
 10. SOL A DE-ENERGIZES; RETURNING CYLINDER #1.
 11. LS 1 CLOSES - SOL C ENERGIZES, AND REMAINS SO UNTIL 0.5 SECONDS
 12. AFTER LS 4 AND LS 5 ARE CLOSED (METERING BLOCK IS CHARGED), OR UNTIL CYCLE IS RE-INITIATED.