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# Instructions

## Valve & Valve Cartridge Replacement

### Replacing Valves

Always replace valves in a clean area to prevent dust and dirt from entering the pump.

#### Removal of Existing Valves

The valves are the two hexagon-shaped components on the liquid end assembly (see Figure 1). Inlet valves can be distinguished from outlet valves by the groove on the hexagonal part of the valve. To prevent the internal components of the valve from falling out upon removal keep the pump in its normal position and turn the inlet valve and turn the pump upside down when removing the outlet valve (CAUTION: where appropriate, be sure to plug the oil hole on the top of motor gearbox before turning the pump upside down). Remove the valves with a 1/2" wrench, turning in a counter-clockwise direction. After removal, be careful to keep the valve oriented so the translucent washers face upwards. If you wish to replace the cartridge in the valve, you may purchase replacement cartridges which include the cartridge and instructions.

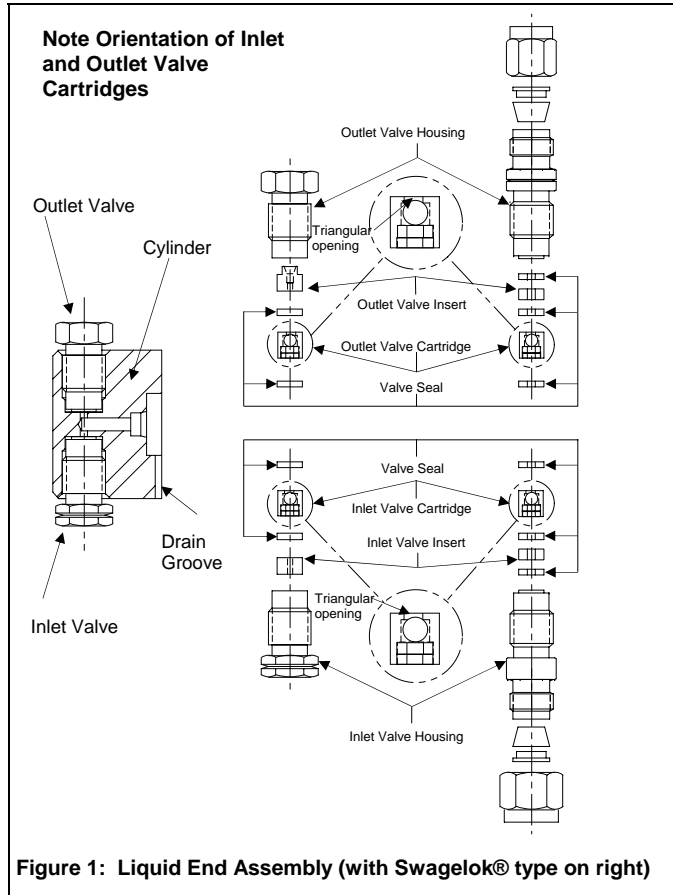


Figure 1: Liquid End Assembly (with Swagelok® type on right)

1. Inlet valves can be distinguished from outlet valves by the groove on the hexagonal part of the valve.
2. Unscrew the shipping nut and remove the metal shipping washer, as these are not used for installation of the valves.
3. Insert the new valve into the liquid end assembly and tighten by hand until just finger-tight. Then use a 1/2" wrench and tighten 1/4 turn more. You should tighten valves to the point at which no further leakage occurs, or not more than 4.5 ft./lbs.

OVER TIGHTENING THE VALVES CAN CAUSE THE SAPPHIRE SEATS TO CRACK.

STABILIZE THE VALVE WITH A 1/2" WRENCH WHEN ATTACHING YOUR FITTINGS TO PREVENT FURTHER VALVE TIGHTENING. DO NOT TIGHTEN FITTINGS TO BEYOND 40 IN/LBS., OR THE POINT WHERE NO LEAKAGE OCCURS.

### Replacing Valve Cartridges

1. Remove the valve from the cylinder (see detailed instructions).
2. Insert the smaller dowel pin provided (1-1/4" long by 1/8" diameter) into the hexagonal end of the valve and press out the internal components of the valve assembly using a steady pressure (you will need a 1/16" dowel pin when disassembling 1373 and 1374). Do not hammer parts through with the dowel pin or hammer on the dowel pin. Do not allow the valve parts to fall out of the valve onto a hard surface.
3. Reassemble the valve by placing the valve insert in the valve housing using the larger (3/16") dowel pin provided (1373 and 1374 valves use a total of 3 washers, one is installed before installing the valve insert). Make sure the insert is oriented correctly (see Figure 1). Press one new CTFE seal into place. Slide the valve cartridge into the valve housing making certain it is oriented correctly. Press another new CTFE seal into place. The CTFE seal will extend approximately 0.020 - 0.030" from the valve housing.
4. Re-install the rebuilt valve into the cylinder (see detailed instructions).

#### Stainless Steel Valves

P/N	Description
1369	Inlet valve assembly, cartridge style.
1372	Outlet valve assembly, cartridge style.
1373	Inlet valve assembly, cartridge style, for use with 1/8" Swagelok® fittings.
1374	Outlet valve assembly, cartridge style, for use with 1/8" Swagelok® fittings.
1371	Inlet valve assembly, cartridge style, "high-pressure."
1370	Outlet valve assembly, cartridge style, "low-pressure."
1381	Valve cartridge.

#### CTFE Valves

P/N	Description
1375	CTFE inlet valve assembly, cartridge style.
1376	CTFE outlet valve assembly, cartridge style.
1382	CTFE valve cartridge.

#### PEEK Valves

P/N	Description
1377	PEEK inlet valve assembly, cartridge style.
1378	PEEK outlet valve assembly, cartridge style; conical bottom
1380	PEEK outlet valve assembly, cartridge style; flat bottom
1383	PEEK valve cartridge.

#### 10K psi Valves

P/N	Description
1421	Inlet valve assembly, cartridge style, for use in 10K psi pumps
1422	Outlet valve assembly, cartridge style, for use in 10K psi pumps
1424	Valve cartridge, 10K

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If there is anything we can do to help you with these instructions, or, if you have comments or suggestions, please contact us at:  
  
**(800) 969-3533.**

### Installation Of New Valves