



PUMP OPERATION & MAINTENANCE MANUAL



T025 - T200 High Purity Air Operated Double Diaphragm Pump

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CAUTIONS – READ FIRST!

READ THESE WARNINGS AND SAFETY PRECAUTIONS PRIOR TO INSTALLATION OR OPERATION. FAILURE TO COMPLY WITH THESE INSTRUCTIONS COULD RESULT IN PERSONAL INJURY AND OR PROPERTY DAMAGE. RETAIN THESE INSTRUCTIONS FOR FUTURE REFERENCE.

⚠ WARNING Pump, valves and all containers must be properly grounded prior to handling flammable fluids and/or whenever static electricity is a hazard.

⚠ WARNING Prior to servicing the pump, ensure that the air and fluid lines are closed and disconnected. While wearing personal protective equipment, flush, drain and process liquid from the pump in a safe manner.

⚠ WARNING The TX marking refers to the maximum surface temperature depending not on the equipment itself, but mainly on operating conditions. In this case, the maximum surface temperature depends upon the temperature of the process fluids.

⚠ CAUTION The temperature of the process fluid and air input must be no more than 36°F (20C) less of the maximum temperature allowed for the appropriate non-metallic material. See the list of temperatures below for each material's maximum recommended temperature:

| | |
|-------------------|-------------------------------|
| Buna-N (Nitrile): | 10°F to 180°F (-12C to 82C) |
| Geolast®: | 10°F to 180°F (-12C to 82C) |
| EPDM: | -40°F to 280°F (-40C to 138C) |
| Santoprene®: | -40°F to 225°F (-40C to 107C) |
| Viton® (FKM): | -40°F to 350°F (-40C to 177C) |
| PTFE: | 40°F to 220°F (4C to 104C) |
| Polyethylene: | 32°F to 158°F (0C to 70C) |
| Polypropylene: | 32°F to 180°F (0C to 82C) |
| PVDF: | 0°F to 250°F (-18C to 121C) |
| Nylon: | 0°F to 200°F (-18C to 93C) |

Temperature limits are solely based upon mechanical stress and certain chemicals will reduce the maximum operating temperature. The allowable temperature range for the process fluid is determined by the materials in contact with the fluid being pumped. Consult a chemical resistance guide for chemical compatibility and a more precise safe temperature limit. Always use minimum air pressure when pumping at elevated temperatures.

⚠ CAUTION Do not lubricate air supply.

⚠ WARNING = Hazards or unsafe practices which could result in severe personal injury, death or substantial property damage

⚠ CAUTION = Hazards or unsafe practices which could result in minor personal injury, product or property damage.

⚠ CAUTION Do not connect a compressed air source to the exhaust port of the pump.

⚠ WARNING Use only with liquid process fluid.

⚠ WARNING Maintenance must not be performed when a hazardous atmosphere is present.

⚠ CAUTION Do not exceed 120 psig (8.3 bar) air-inlet pressure.

⚠ CAUTION Do not exceed 10 psig (0.7 bar) or 23 ft-H₂O suction pressure.

⚠ CAUTION Ensure all wetted components are chemically compatible with the process fluid and the cleaning fluid.

⚠ CAUTION Ensure pump is thoroughly cleaned and flushed prior to installation into a process line.

⚠ CAUTION Always wear Personal Protective Equipment (PPE) when operating pump.

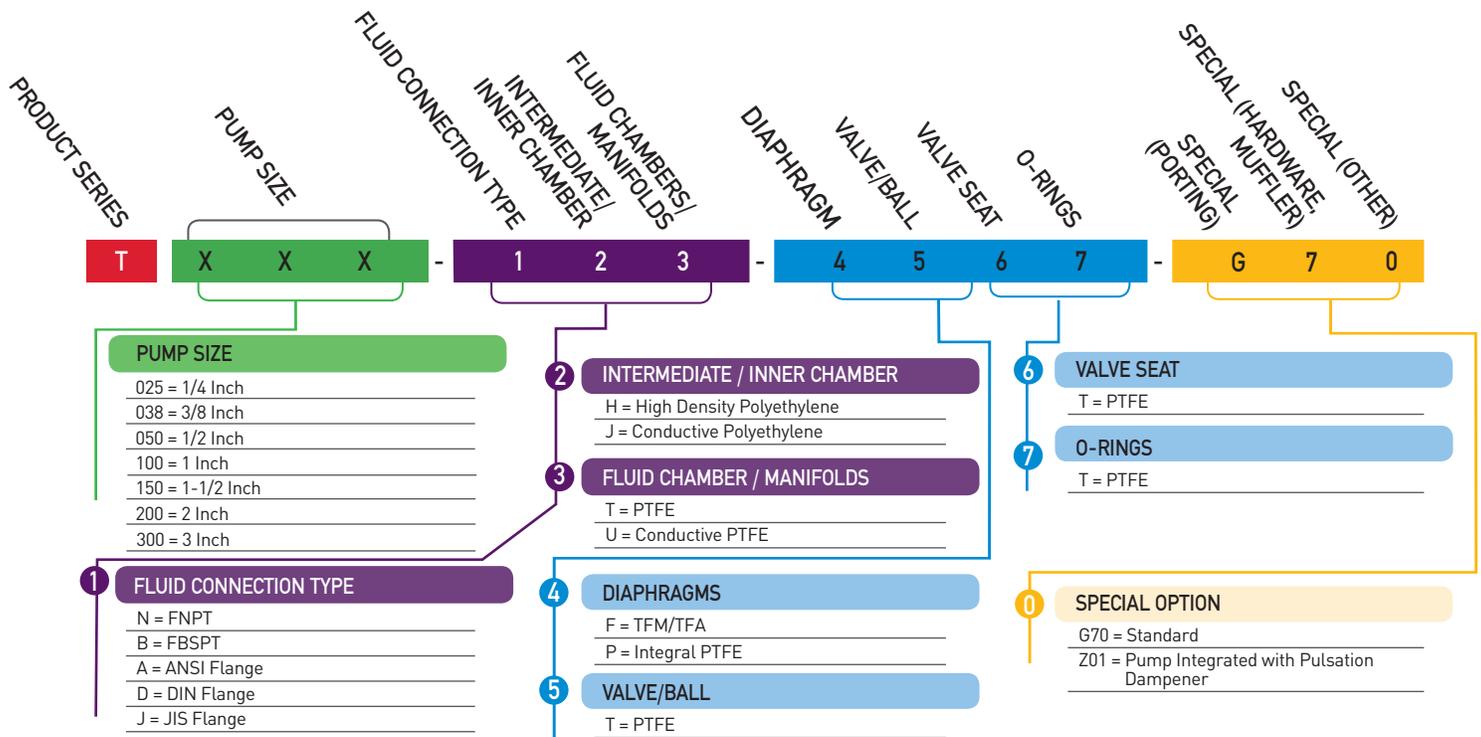
⚠ CAUTION Close and disconnect all compressed air and bleed all air from the pump prior to service. Remove all process fluid in a safe manner prior to service.

⚠ CAUTION Blow out all compressed air lines in order to remove any debris, prior to pump installation. Ensure that the muffler is properly installed prior to pump operation.

⚠ CAUTION Ensure air exhaust is piped to atmosphere prior to a submerged installation.

⚠ CAUTION Ensure all hardware is set to correct torque values prior to operation.

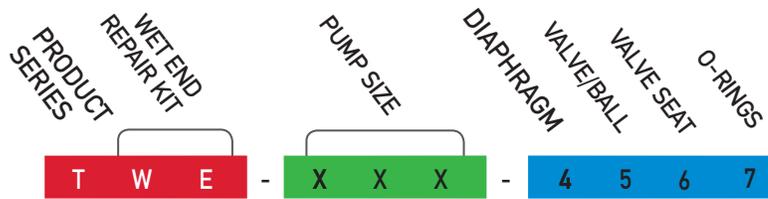
Model Designation Matrix



*Additional fluid connection types available on upon request. Contact factory for details.

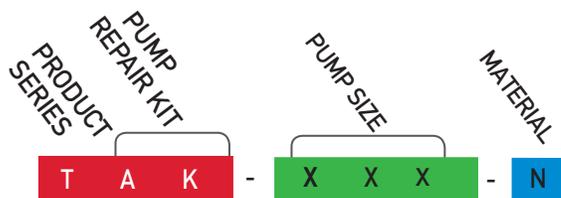
WET END REPAIR KIT

Wet end kit contains 2 diaphragms, (2 back-up diaphragms if required), 4 balls, 4 seats, and 4 seat o-rings.



AIR END REPAIR KIT

Air end repair kit contains pilot sleeve assembly and main air valve.



CONNECTION TYPES

BSP & NPT

ANSI & DIN FLANGE



NON-CONDUCTIVE

CONDUCTIVE

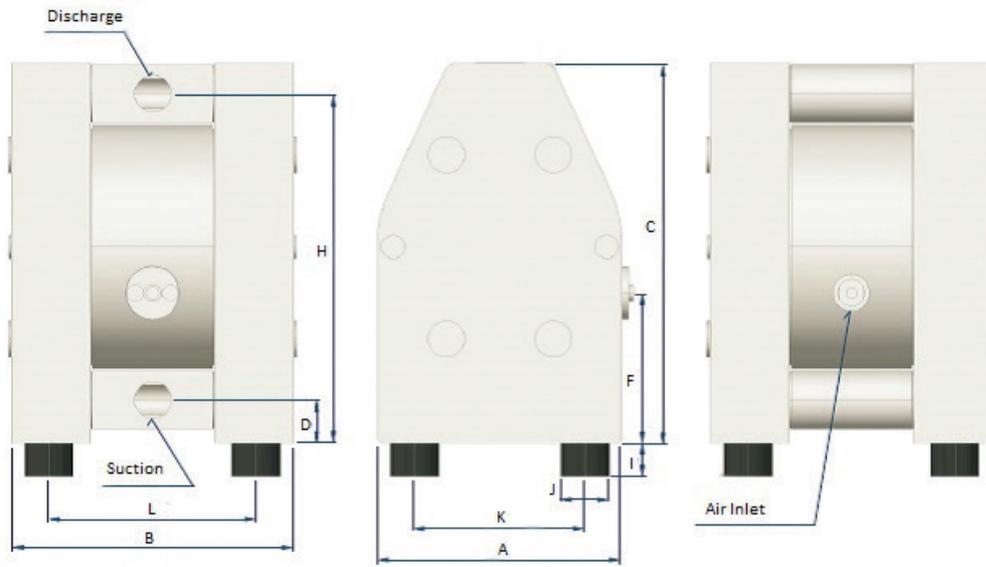
CONDUCTIVITY



Pump Specifications

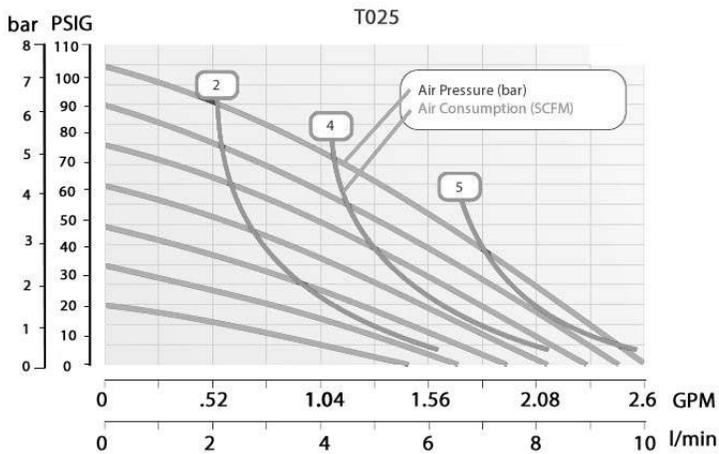
| | T025 | T038 | T050 | T100 | T150 | T200 |
|--------------------|---|---|---|--|--|--|
| DIMENSION | | | | | | |
| Air Inlet | 1/8" | 1/8" | 1/4" | 1/4" | 1/2" | 1/2" |
| Liquid Inlet | 1/4" | 3/8" | 1/2" | 1" | 1-1/2" | 2" |
| Liquid Outlet | 1/4" | 3/8" | 1/2" | 1" | 1-1/2" | 2" |
| Weight | 3.3 lbs (1.5 kg) | 5.3 lbs (2.4 kg) | 15 lbs (6.8 kg) | 36.4 lbs (16.5 kg) | 98.1 lbs (44.5 kg) | 192 lbs (87 kg) |
| PERFORMANCE | | | | | | |
| Max capacity | 2.6 gpm (10 lpm) | 6.4 gpm (25 lpm) | 14.5 gpm (55 lpm) | 33 gpm (125 lpm) | 83 gpm (315 lpm) | 150 gpm (565 lpm) |
| Max pressure | 120 psi (8.2 bar) | | | | | |
| Max Solids | 1/16" (2 mm) | 1/8" (3 mm) | 1/8" (4 mm) | 1/4" (7 mm) | 3/8" (10 mm) | 7/16" (12 mm) |
| Suction lift dry | 1.6 ft-H ₂ O (0.5 m-H ₂ O) | 6.6 ft-H ₂ O (2 m-H ₂ O) | 9.8 ft-H ₂ O (3 m-H ₂ O) | 13.1 ft-H ₂ O (4 m-H ₂ O) | 13.1 ft-H ₂ O (4 m-H ₂ O) | 16.4 ft-H ₂ O (5 m-H ₂ O) |
| Suction lift wet | 29.5 ft-H ₂ O (9.0 m-H ₂ O) | | | | | |
| Temperature limits | 230°F (110°C) | 230°F (110°C) | 248°F (120°C) | 248°F (120°C) | 248°F (120°C) | 248°F (120°C) |

Pump Dimensions

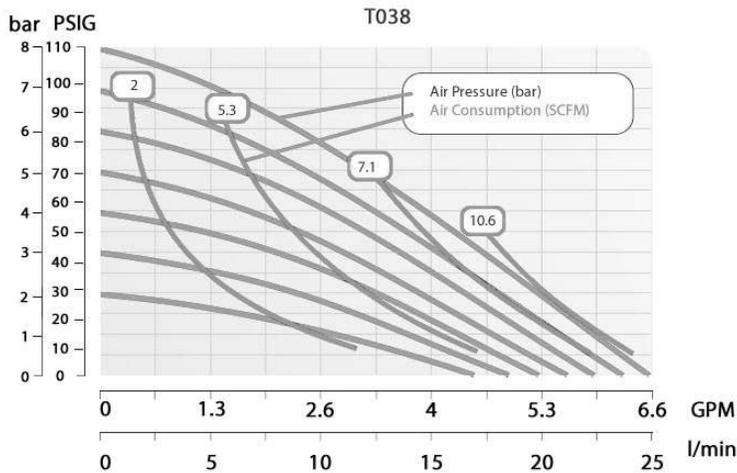


| | A | B | C | D | F | H | I | J | K | L |
|------|--------------------|--------------------|--------------------|------------------|-------------------|--------------------|------------------|------------------|--------------------|--------------------|
| T025 | 2.76" (70 mm) | 4.5" (113 mm) | 4.72" (120 mm) | .59" (15 mm) | 2.28" (58 mm) | 4.23" (107 mm) | .40" (10 mm) | .60" (15 mm) | 1.97" (50 mm) | 3.39" (86 mm) |
| T038 | 4.13" (105 mm) | 5.04" (128 mm) | 6.46" (164 mm) | .71" (18 mm) | 3.31" (84 mm) | 5.91" (150 mm) | .40" (10 mm) | .60" (15 mm) | 2.95" (75 mm) | 3.66" (93 mm) |
| T050 | 6.02" (153 mm) | 6.97" (177 mm) | 9.25" (235 mm) | .98" (25 mm) | 3.43" (87 mm) | 8.54" (217 mm) | .71" (18 mm) | 1.18" (30 mm) | 4.41" (112 mm) | 5.35" (136 mm) |
| T100 | 7.78" (200 mm) | 9.13" (232 mm) | 12.28" (312 mm) | 1.38" (35 mm) | 4.84" (123 mm) | 11.3" (287 mm) | 1.10" (28 mm) | 1.58" (40 mm) | 5.51" (140 mm) | 6.70" (170 mm) |
| T150 | 10.63" (270 mm) | 12.28" (312 mm) | 16.77" (426 mm) | 1.65" (42 mm) | 4.29" (109 mm) | 15.28" (388 mm) | 1.18" (30 mm) | 2.36" (60 mm) | 7.48" (190 mm) | 8.94" (227 mm) |
| T200 | 13.78" (350 mm) | 15.16" (385 mm) | 21.26" (540 mm) | 1.77" (45 mm) | 6.22" (158 mm) | 19.09" (485 mm) | 1.18" (30 mm) | 2.36" (60 mm) | 10.63" (270 mm) | 11.10" (282 mm) |

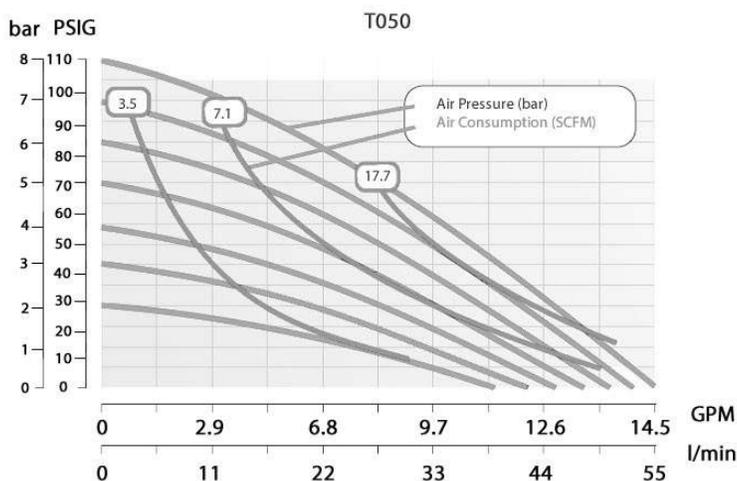
Performance Curves



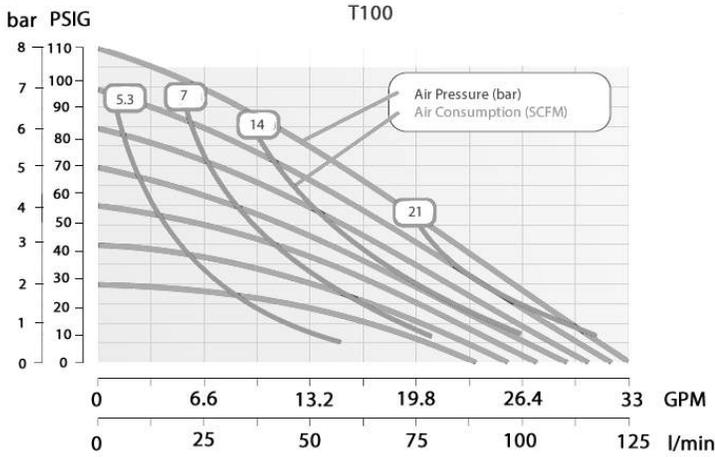
| T025 Performance Specifications | |
|---------------------------------|--|
| Max. Flow: | 2.6 gpm (10 lpm) |
| Max. Air Pressure: | 116 PSI (8 bar) |
| Max. Solids: | 1/16" (2 mm) |
| Max. Suction Lift Dry: | 1.6 ft-H ₂ O (0.5 m-H ₂ O) |
| Max. Suction Lift Wet: | 29.5 ft-H ₂ O (9 m-H ₂ O) |
| Weight: | 3.3 lbs (1.5 kg) |
| Air Inlet: | 1/8" |
| Liquid Inlet: | 1/4" |
| Liquid Outlet: | 1/4" |
| Height: | 5.12" (130 mm) |
| Width: | 4.5" (114 mm) |
| Depth: | 2.76" (70 mm) |



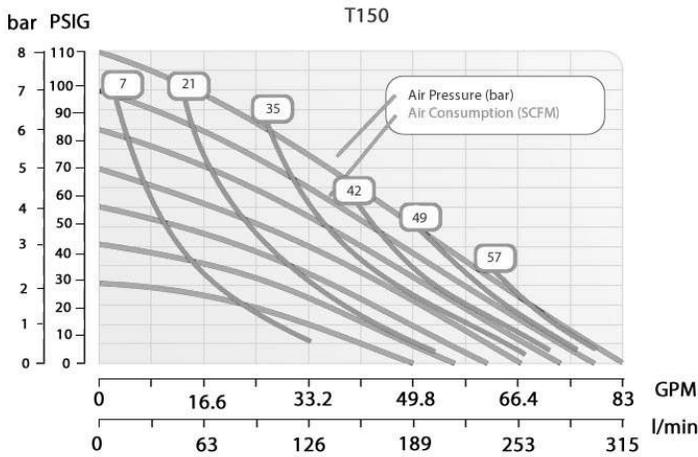
| T038 Performance Specifications | |
|---------------------------------|---|
| Max. Flow: | 6.6 gpm (25 lpm) |
| Max. Air Pressure: | 116 PSI (8 bar) |
| Max. Solids: | 1/8" (3 mm) |
| Max. Suction Lift Dry: | 6.6 ft-H ₂ O (2 m-H ₂ O) |
| Max. Suction Lift Wet: | 29.5 ft-H ₂ O (9 m-H ₂ O) |
| Weight: | 5.3 lbs (2.4 kg) |
| Air Inlet: | 1/8" |
| Liquid Inlet: | 3/8" |
| Liquid Outlet: | 3/8" |
| Height: | 6.86" (174 mm) |
| Width: | 5.04" (128 mm) |
| Depth: | 4.13" (105 mm) |



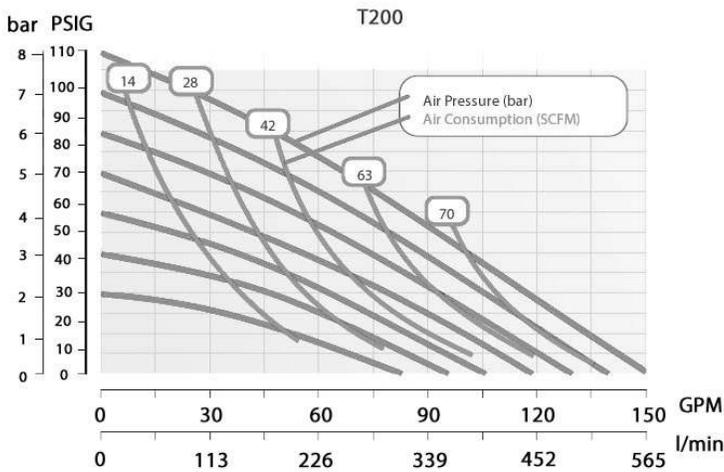
| T050 Performance Specifications | |
|---------------------------------|---|
| Max. Flow: | 14.5 gpm (55 lpm) |
| Max. Air Pressure: | 116 PSI (8 bar) |
| Max. Solids: | 5/32" (4 mm) |
| Max. Suction Lift Dry: | 9.8 ft-H ₂ O (3 m-H ₂ O) |
| Max. Suction Lift Wet: | 29.5 ft-H ₂ O (9 m-H ₂ O) |
| Weight: | 15 lbs (6.8 kg) |
| Air Inlet: | 1/4" |
| Liquid Inlet: | 1/2" |
| Liquid Outlet: | 1/2" |
| Height: | 9.96" (253 mm) |
| Width: | 6.97" (177 mm) |
| Depth: | 6.02" (153 mm) |



| T100 Performance Specifications | |
|---------------------------------|---|
| Max. Flow: | 33 gpm (125 lpm) |
| Max. Air Pressure: | 116 PSI (8 bar) |
| Max. Solids: | 9/32" (7 mm) |
| Max. Suction Lift Dry: | 13.1 ft-H ₂ O (4 m-H ₂ O) |
| Max. Suction Lift Wet: | 29.5 ft-H ₂ O (9 m-H ₂ O) |
| Weight: | 36.4 lbs (16.5 kg) |
| Air Inlet: | 1/4" |
| Liquid Inlet: | 1" |
| Liquid Outlet: | 1" |
| Height: | 13.38" (340 mm) |
| Width: | 19.13" (232 mm) |
| Depth: | 7.78" (198 mm) |



| T150 Performance Specifications | |
|---------------------------------|---|
| Max. Flow: | 83 gpm (315 lpm) |
| Max. Air Pressure: | 116 PSI (8 bar) |
| Max. Solids: | 3/8" (10 mm) |
| Max. Suction Lift Dry: | 13.1 ft-H ₂ O (4 m-H ₂ O) |
| Max. Suction Lift Wet: | 29.5 ft-H ₂ O (9 m-H ₂ O) |
| Weight: | 98.1 lbs (44.5 kg) |
| Air Inlet: | 1/2" |
| Liquid Inlet: | 1 1/2" |
| Liquid Outlet: | 1 1/2" |
| Height: | 17.95" (456 mm) |
| Width: | 12.28" (312 mm) |
| Depth: | 10.63" (270 mm) |



| T200 Performance Specifications | |
|---------------------------------|---|
| Max. Flow: | 150 gpm (565 lpm) |
| Max. Air Pressure: | 116 PSI (8 bar) |
| Max. Solids: | 15/32" (12 mm) |
| Max. Suction Lift Dry: | 16.4 ft-H ₂ O (5 m-H ₂ O) |
| Max. Suction Lift Wet: | 29.5 ft-H ₂ O (9 m-H ₂ O) |
| Weight: | 192 lbs (87 kg) |
| Air Inlet: | 1/2" |
| Liquid Inlet: | 2" |
| Liquid Outlet: | 2" |
| Height: | 22.44" (570 mm) |
| Width: | 15.16" (385 mm) |
| Depth: | 13.78" (350 mm) |

Installation

Piping

Whenever possible ensure the pump is installed using the shortest possible pipe lengths with the minimum amount of pipe fittings. Ensure all piping is supported independent of the pump.

Suction and discharge piping should not be smaller than the connection size of the pump. When pumping liquids of high viscosity, larger piping may be used, in order to reduce frictional pipe loss.

Employ flexible hoses in order to eliminate the vibration caused by the pump. Mounting feet can also be used to reduce vibration effects.

All hoses should be reinforced, non-collapsible and be capable of high vacuum service. Ensure that all piping and hoses are chemically compatible with the process and cleaning fluid.

For processes where pulsation effects should be reduced, employ a pulsation dampener on the discharge side of the pump.

For self-priming applications, ensure all connections are airtight and the application is within the pumps dry-lift capability. Refer to product specifications for further details.

For flooded suction applications, install a gate valve on the suction piping in order to facilitate service. For unattended flooded suction operation, it is recommended to pipe the exhaust air above the liquid source. In the event of a diaphragm failure this will reduce or eliminate the possibility of liquid discharging through the exhaust onto the ground.

Location

Ensure that the pump is installed in an accessible location, in order to facilitate future service and maintenance.

Air

Ensure that the air supply is sufficient for the volume of air required by the pump. Refer to product specifications for further details. For reliable operation, install a 5 micron air filter, air-valve and pressure regulator. Do not exceed the pumps maximum operating pressure of 120 psig.

Remote Operation

Utilize a three way solenoid valve for remote operation. This ensures that air between the solenoid and the pump is allowed to “bleed off,” ensuring reliable operation. Liquid transfer volume is estimated by multiplying displacement per stroke times the number of strokes per minute.

Noise

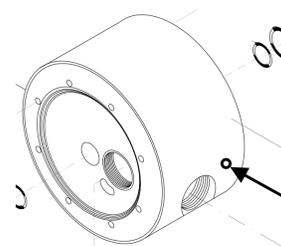
Correct installation of the muffler reduces sound levels. Refer to product specifications for further details.

Submerged Operation

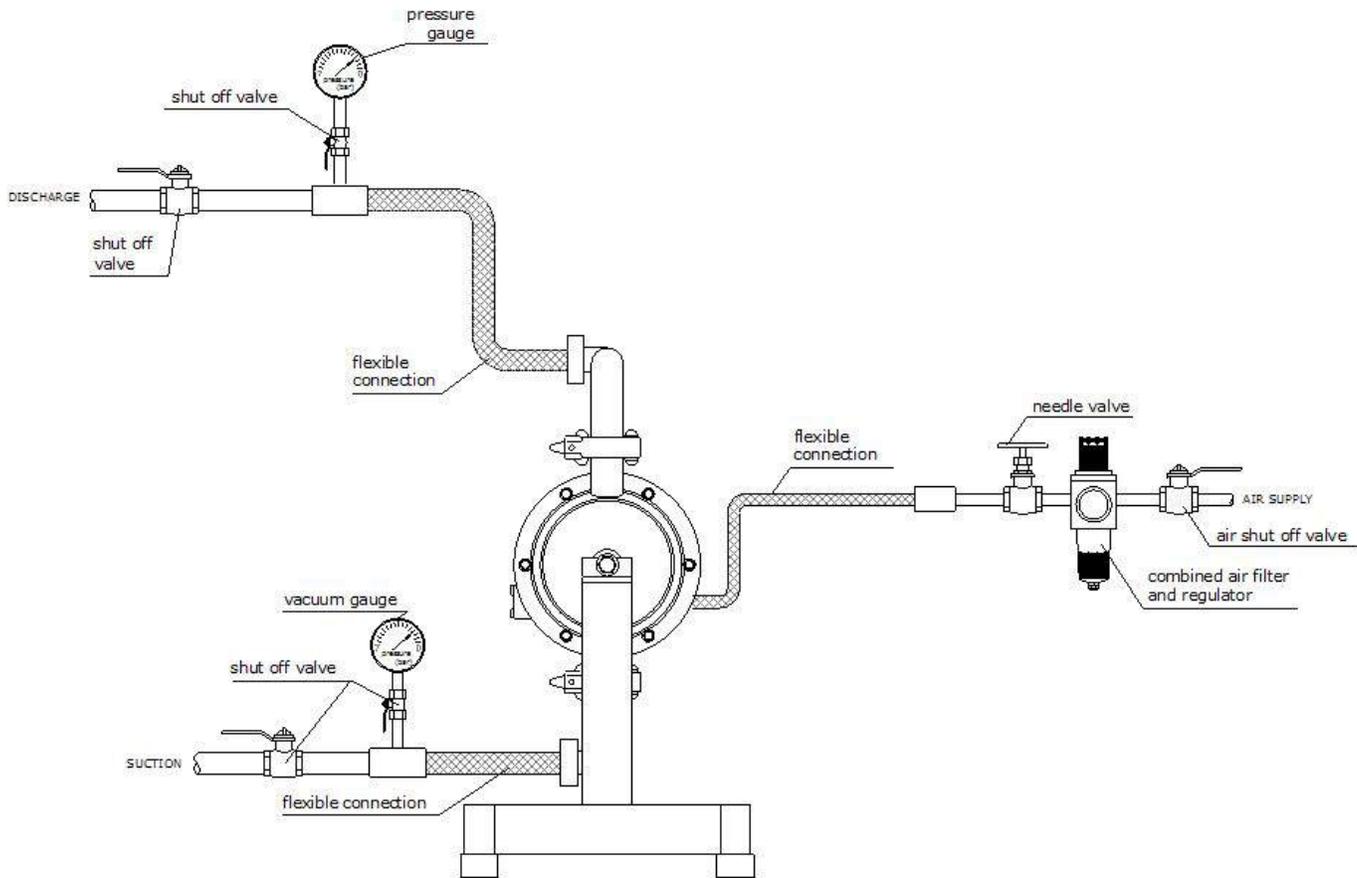
For submersible operation, pipe the air exhaust to atmosphere.

Ground

Connect the pump to ground using a 12 Ga wire in the hole marked with the arrow.

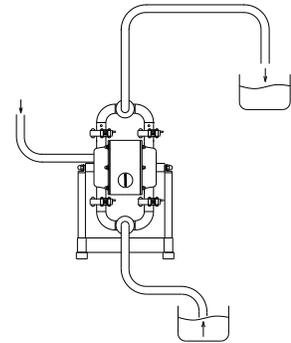


Installation



PRIMING APPLICATION

Suction lift capability may vary depending on the construction materials and application parameters. The range is from 16.4 feet dry to 30 feet in a primed condition (values calculated for pumping water at 68 degrees Fahrenheit).



SUBMERGED OPERATION

All pumps may operate in full submersion. Construction materials must be compatible with surrounding liquid and the air exhaust must be placed above the liquid level.

POSITIVE SUCTION HEAD

Common as a method of drawing off the bottoms of holding tanks and clarifiers. Optimum inlet pressure should be kept at 14.5 PSI.

Troubleshooting

PROBLEM

EFFECT/SOLUTION

Pump Will Not Cycle

Discharge line closed or plugged
 Discharge filter blocked
 Check valve stuck
 Air filter blocked
 Air supply valve closed
 Air supply hooked up to muffler side of pump
 Compressor not producing air or turned off
 Muffler iced or blinded
 Diaphragm ruptured
 Plant air supply line ruptured
 Air valve wear/debris
 Pilot sleeve wear/debris
 Diaphragm rod broken
 Diaphragm plate loose

Pumped Fluid Coming Out of Muffler

Diaphragm ruptured
 Diaphragm plate loose
 Inlet liquid pressure excessive (above 10 psig)

Pump Cycles but no Flow

Inlet strainer clogged
 Suction valve closed
 Suction line plugged
 No liquid in the suction tank
 Suction lift excessive
 Debris stuck in valves
 Excessive wear of check valves
 Air leak on suction side with suction lift

Pump Cycles with Closed Discharge Valve

Debris stuck in check valve
 Excessive wear of check valves

Pump Running Slowly/Not Steady

Air compressor undersized
 Leak in air supply
 Air-line, filter regulator or needle valve undersized
 Muffler partially iced or blinded
 Air valve gasket leak or misalignment
 Air valve wear/debris
 Pilot sleeve wear/debris
 Liquid fluid filter blocked
 Pump may be cavitating, reduce speed of operation
 Suction strainer clogged

Pump Will Not Prime

Air leak in suction pipe
 Air leak in pump manifold connections
 Suction strainer and lines clogged
 Excessive lift conditions
 Check valve wear
 Debris in check valve

If any of the above mentioned causes do not apply to your problem, contact your All-Flo authorized distributor.

Operation



CAUTION

- ! Before starting the pump, check that all piping is properly connected.
- ! Before starting the pump, check that **all the bolts are securely tightened.**
- ! Check that the regulator and the drain valve on the discharge side are closed and that the valve on the suction side is opened if applicable.

- 1) Start the air compressor.
- 2) Open the air valve. Using a regulator to adjust the supply air pressure within the permissible range.
- 3) Open the flow valve on the discharge side.
- 4) First, check that fluid is flowing inside the piping and is being pumped to the discharge side, and then fully open the air valve.

Flow Adjustment

Adjust the flow valve on the discharge side, or adjust the supply air pressure.



CAUTION

- ! The supply air pressure may initially rise during closing the flow valve. Make sure that the pressure is kept within the normal operating range.
- ! The permissible suction flow speed can vary depending upon the viscosity and specific gravity of the fluid, the suction stroke and other factors. However in case of a rapid growth of the pump speed (flow speed of fluid), cavitations will occur. This will reduce pump performance and may cause a malfunction. In order to prevent cavitations, adjust the supply air pressure and the flow.
- ! If fluid is not discharged after you start the pump, or if you hear an abnormal noise or notice any irregularity, shut down the pump immediately.

Maintenance

Cleaning the Pump



WARNING

- ! Make sure that compressed air is not supplied to the pump BEFORE you start cleaning the pump.
- ! Make sure that the pump is not pressurized BEFORE you start cleaning the pump.

- 1) Remove the hose from the suction side of the pump.
- 2) Close the flow valve on the discharge side and open the drain valve. Then start air pressure for a while to discharge possibly much fluid remaining inside the pump.
- 3) Remove the hose from the discharge side, and attach different hoses to the suction side and the discharge side for cleaning.
- 4) Be ready with a vessel with cleaning solution, the kind appropriate for the type of fluid pumped. Next connect the suction-side and the discharge-side hoses of the pump.
- 5) Start the pump air pressure slowly, and let the cleaning solution circulate for sufficient cleaning.
- 6) Flush with clean water.
- 7) Remove the hose from the suction side of the pump, run the pump for a while to purge the pump of remaining fluid as much as possible.



CAUTION

- ! Be extremely careful when removing piping - the fluid will run/flow out.
- ! After cleaning with clean water, turn the pump upside-down to let the water flow out.

Shutdown

Close the air valve of the pump and shut off the supply air.



CAUTION

- ! The pump can be shut down with the flow valve closed while air is being supplied. However DO NOT leave the pump in this condition for many hours without supervision - there is a risk of a leak from the pump or piping, and fluid may continue flowing out of the position of leakage.
- ! When the pump is shut down while pumping slurry, particulate matter contained in the slurry will be deposited and get stuck inside the out chamber. Therefore after finishing work the pump must be cleared of the remaining fluid. Otherwise when starting the pump again, the diaphragm may get damaged and the center rod may bend.



CAUTION

- ! Keep a vessel below the relief valve for any drain off.
- ! Be careful! - Fluid under pressure will gush out the moment you open the valve.
- ! If the pump is unused for a prolonged period, purge and clean it.

Daily check

Before starting pump operation, conduct the following check procedures every day. In case there appears any irregularity, do NOT start running the pump until the cause of the irregularity has been determined and corrective measures have been taken.

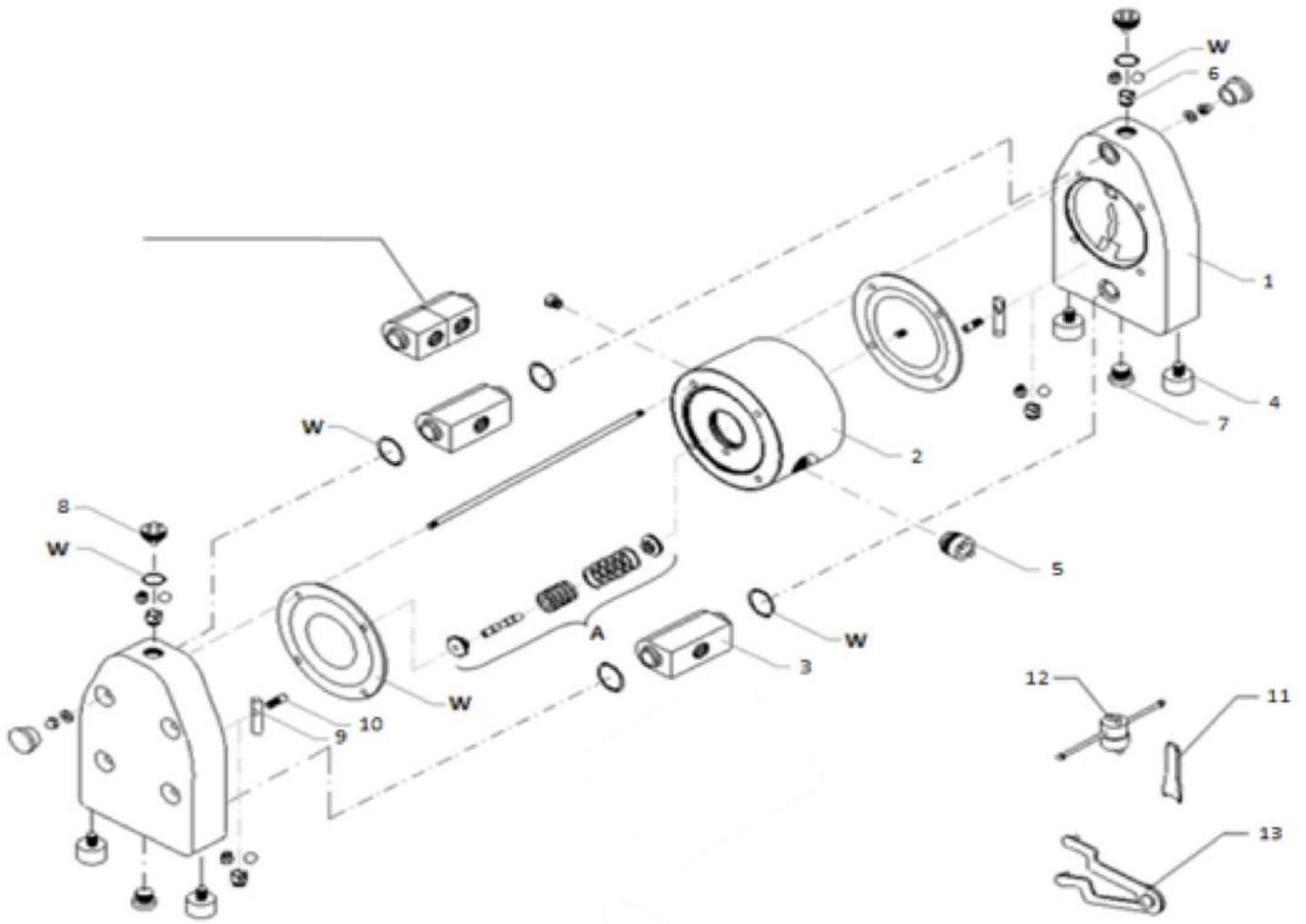
- a) Make sure that there is no leakage of fluid from any connection part or the pump.
- b) Make sure that there are no cracks in the pump casing or piping.
- c) Check the tightness of every bolt of the pump.
- d) Make sure that the connection parts of the piping and peripheral equipment are not loose.
- e) Make sure that any parts of the pump that are to be replaced at regular intervals have been changed.

Maximum Torque Specifications

Torque values for housing bolts

| Pump Size | |
|-----------|---------------------|
| T025 | 18 in-lbs (2 N-m) |
| T038 | 44 in-lbs (5 N-m) |
| T050 | 62 in-lbs (7 N-m) |
| T100 | 97 in-lbs (11 N-m) |
| T150 | 133 in-lbs (15 N-m) |
| T200 | 168 in-lbs (19 N-m) |

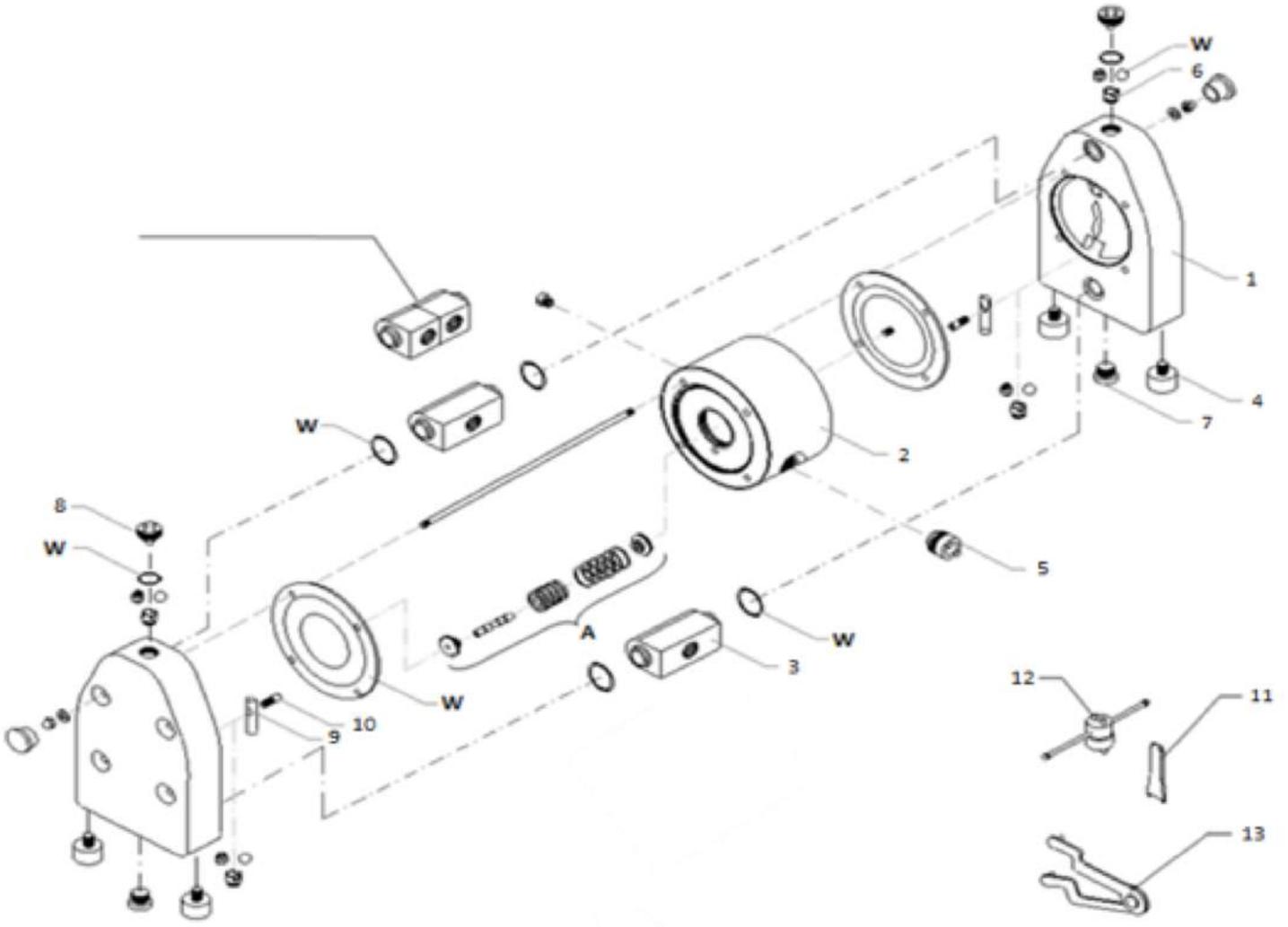
T025 - EXPLODED VIEW



T025 - PARTS LIST

| ITEM | PART NUMBER | QTY | DESCRIPTION | MATERIAL | |
|--------------------|----------------|-----|---|----------------------|-----------|
| 1 | HP-2 08 01 23 | 2 | Pump housing | PTFE | |
| | HP-2 08 01 24 | | | Conductive PTFE | |
| 2 | HP-1 08 10 20 | 1 | Center housing | PE | |
| | HP-1 08 10 21 | | | Conductive PE | |
| 3 | HP-2 08 30 23 | 2 | Suction/Discharge ports BSP | PTFE | |
| | HP-2 08 30 23 | | Suction/Discharge ports NPT | PTFE | |
| | n/a | | Suction/Discharge ports-twin (split connection) NPT | PTFE | |
| | n/a | | Suction/Discharge ports-twin (split connection) BSP | PTFE | |
| | HP-2 08 33 23 | 1 | Suction port-drum | PTFE | |
| 4 | HP-1 08 69 06 | 4 | Shock absorber | NR/St37 | |
| 5 | HP-1 08 99 35 | 1 | Muffler | PE porous | |
| 6 | HP-2 08 54 23 | 4 | Valve seat | PTFE | |
| 7 | HP-2 08 59 23 | 2 | Plug lower | PTFE | |
| 8 | HP-2 08 055 23 | 2 | Plug upper | PTFE | |
| 9 | HP-2 08 39 23 | 2 | Valve stopper | PTFE | |
| 10 | HP-2 08 38 23 | 2 | Bolt | PTFE | |
| 11 | HP-1 08 254 50 | 1 | Valve seat key | AISI 304 | |
| 12 | HP-1 08 158 00 | 1 | Upper/lower plug key (SK1,*- SK2) | diverse | |
| 13 | HP-1 08 58 00 | 1 | Air valve key (SK4) | diverse | |
| REPAIR KITS | | | | | |
| A | TAK-025 | KIT | Air valve | PET/NBR | |
| W | TWE-025-PTTT | KIT | PTFE WET KIT | | |
| | | | 2 | Diaphragm | TFM /PTFE |
| | | | 4 | Valve balls | PTFE |
| | | | 4 | Sealing inlet/outlet | FEP/FPM |
| | | | 2 | Plug upper sealing | FEP/FPM |
| | | | 1 | Muffler | PE porous |

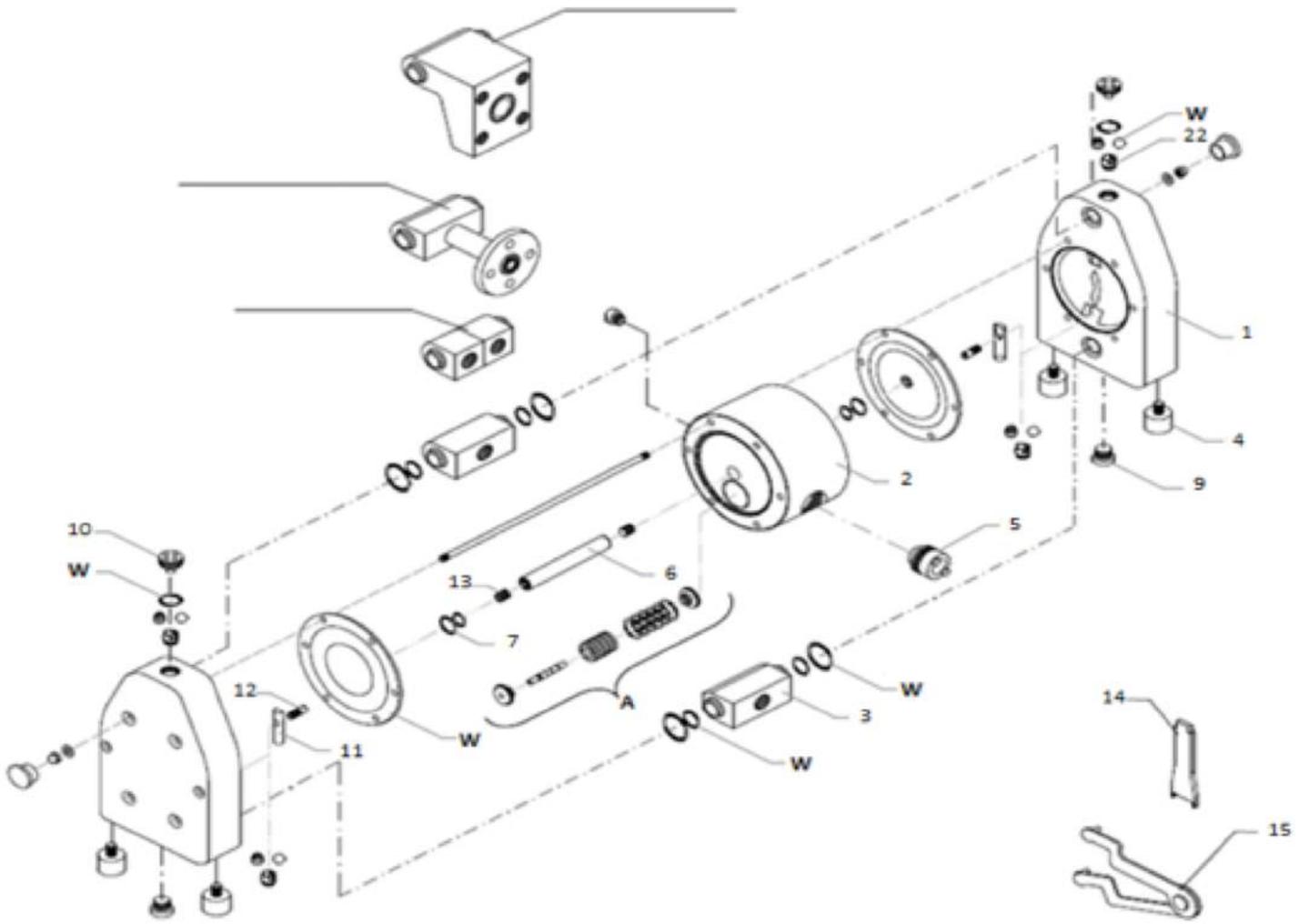
T038 - EXPLODED VIEW



T038 - PARTS LIST

| ITEM | PART NUMBER | QTY | DESCRIPTION | MATERIAL |
|--------------------|------------------|-----|---|-----------------|
| 1 | HP-2 10 01 23 | 2 | Pump housing | PTFE |
| | HP-2 10 01 24 | | | Conductive PTFE |
| 2 | HP-1 10 10 20 | 1 | Center housing | PE |
| | HP-1 10 10 21 | | | Conductive PE |
| 3 | HP-2 10 30 23 | 2 | Suction/Discharge ports BSP | PTFE |
| | HP-2 10 30 23 | | Suction/Discharge ports NPT | PTFE |
| | HP-2 10 31 23NPT | | Suction/Discharge ports-twin (split connection) NPT | PTFE |
| | HP-2 10 31 23BSP | | Suction/Discharge ports-twin (split connection) BSP | PTFE |
| | HP-2 10 33 23 | 1 | Suction port-drum | PTFE |
| 4 | HP-1 08 69 06 | 4 | Shock absorber | NR/St37 |
| 5 | HP-1 08 99 35 | 1 | Muffler | PE porous |
| 6 | HP-2 10 54 23 | 4 | Valve seat | PTFE |
| 7 | HP-2 10 59 23 | 2 | Plug lower | PTFE |
| 8 | HP-2 10 055 23 | 2 | Plug upper | PTFE |
| 9 | HP-2 10 39 23 | 2 | Valve stopper | PTFE |
| 10 | HP-2 10 38 23 | 2 | Bolt | PTFE |
| 11 | HP-1 10 254 50 | 1 | Valve seat key | AISI 304 |
| 12 | HP-1 10 158 00* | 1 | Upper/lower plug key (SK1,*- SK2) | diverse |
| 13 | HP-1 08 58 00 | 1 | Air valve key (SK4) | diverse |
| REPAIR KITS | | | | |
| A | TAK-038 | KIT | Air valve | PET/NBR |
| W | TWE-038-PTTT | KIT | PTFE WET KIT | |
| | | 2 | Diaphragm | TFM /PTFE |
| | | 4 | Valve balls | PTFE |
| | | 4 | Sealing inlet/outlet | FEP/FPM |
| | | 2 | Plug upper sealing | FEP/FPM |
| | | 1 | Muffler | PE porous |

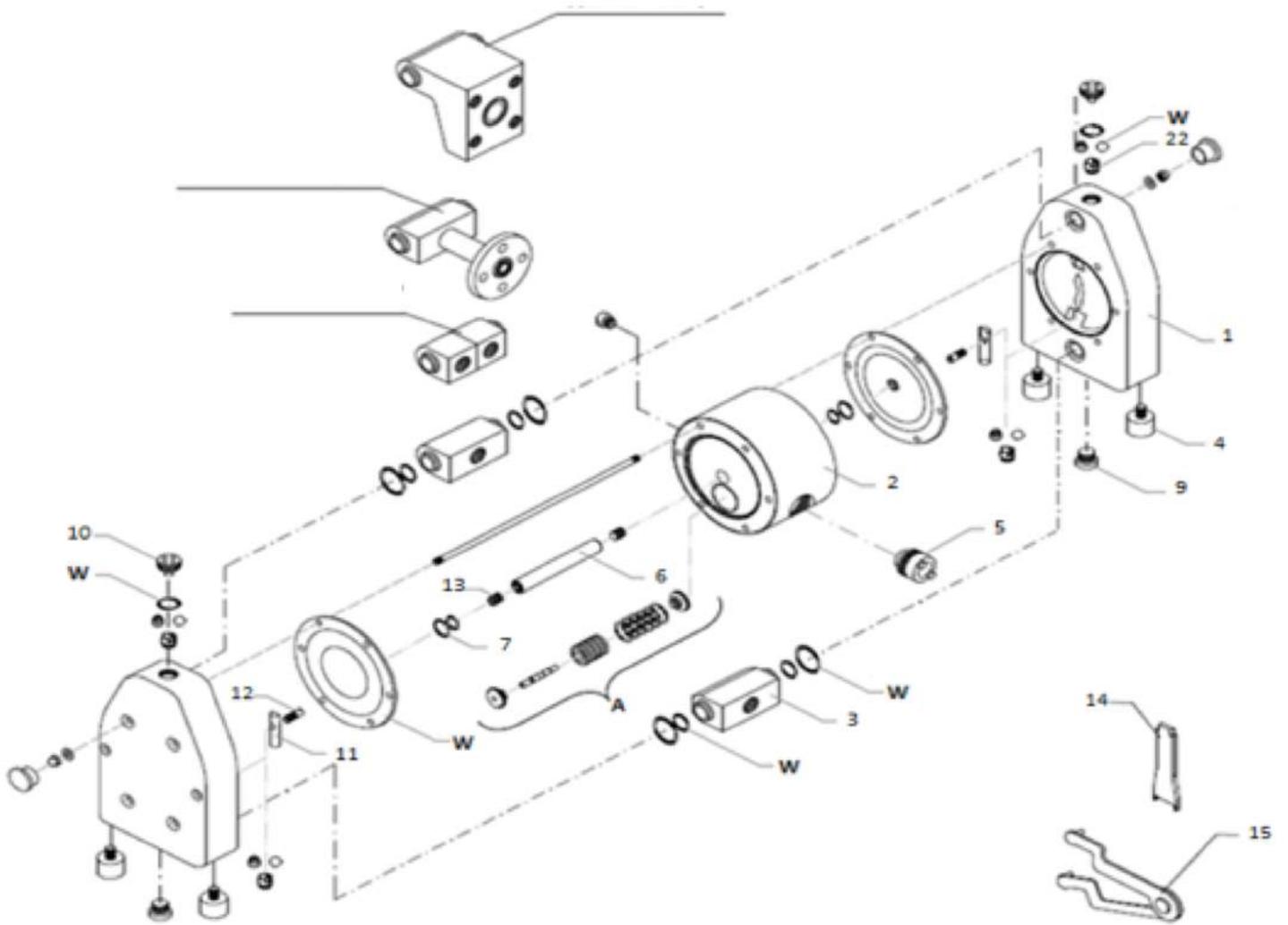
T050 – EXPLODED VIEW



T050 – PARTS LIST

| ITEM | PART NUMBER | QTY | DESCRIPTION | MATERIAL |
|--------------------|----------------|---------------|--|------------------------------|
| 1 | HP-2 15 01 23 | 2 | Pump housing | PTFE |
| 2 | HP-1 15 10 20 | 1 | Center housing | PE |
| 3 | HP-2 15 30 23 | 2 | Suction/Discharge ports BSP | PTFE |
| | HP-2 15 30 23 | | Suction/Discharge ports NPT | PTFE |
| | HP-2 15 125 33 | | Suction/Discharge ports ANSI Flange | PTFE |
| | HP-2 15 25 33 | | Suction/Discharge ports DIN Flange | PTFE |
| | HP-2 15 525 23 | | Suction/Discharge ports JIS Flange | PTFE |
| | | HP-2 15 31 23 | | Suction/Discharge ports-twin |
| | HP-2 15 33 23 | 1 | Suction port-drum | PTFE |
| 4 | HP-1 15 69 06 | 4 | Shock absorber | NR/St37 |
| 5 | HP-1 15 99 35 | 1 | Muffler | PE porous |
| 6 | HP-1 15 40 50 | 1 | Shaft | AISI 304 |
| 7 | HP-1 15 85 22 | 2 | Center housing seal | PE |
| 8 | HP-2 15 54 23 | 4 | Valve seat | PTFE |
| 9 | HP-2 15 59 23 | 2 | Plug lower | PTFE |
| 10 | HP-2 15 055 23 | 2 | Plug upper | PTFE |
| 11 | HP-2 15 39 23 | 2 | Valve stopper | PTFE |
| 12 | HP-2 15 38 23 | 2 | Bolt | PTFE |
| 13 | HP-1 15 540 50 | 2 | Shaft allen pin screw | AISI 304 |
| 14 | HP-1 15 254 50 | 1 | Valve seat key | AISI 304 |
| 15 | HP-1 08 58 00 | 1 | Upper/lower plugs and air valve key (SK3, SK4) | diverse |
| REPAIR KITS | | | | |
| A | TAK-050 | KIT | Air valve | PET/NBR |
| W | TWE-050-PTTT | KIT | PTFE WET KIT | |
| | | 2 | Diaphragm | TFM/PTFE |
| | | 4 | Valve balls | PTFE |
| | | 4 | Sealing inlet/outlet | FEP/FPM |
| | | 2 | Plug upper sealing | FEP/FPM |
| | | 1 | Muffler | PE porous |

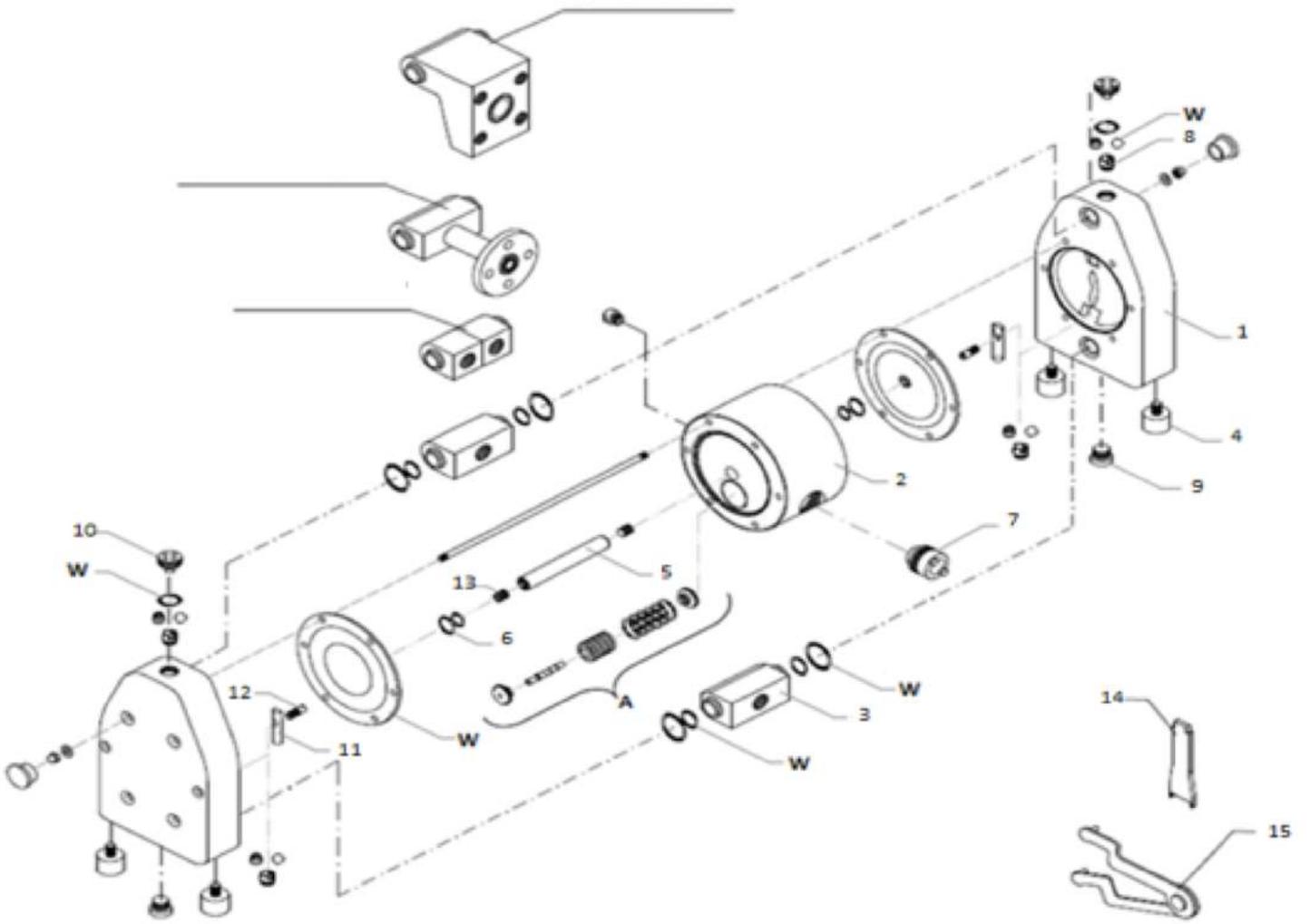
T100 – EXPLODED VIEW



T100 – PARTS LIST

| ITEM | PART NUMBER | QTY | DESCRIPTION | MATERIAL | |
|--------------------|----------------|-------------------|--|----------------------|-----------|
| 1 | HP-2 25 01 23 | 2 | Pump housing | PTFE | |
| 2 | HP-1 25 10 20 | 1 | Center housing | PE | |
| 3 | HP-2 25 30 23 | 2 | Suction/Discharge ports BSP | PTFE | |
| | HP-2 25 30 23 | | Suction/Discharge ports NPT | PTFE | |
| | HP-2 25 125 33 | | Suction/Discharge ports ANSI Flange | PTFE | |
| | HP-2 25 25 33 | | Suction/Discharge ports DIN Flange | PTFE | |
| | HP-2 25 525 23 | | Suction/Discharge ports JIS Flange | PTFE | |
| | HP-2 25 31 23 | 1 | Suction/Discharge ports-twin | PTFE | |
| HP-2 25 33 23 | 1 | Suction port-drum | PTFE | | |
| 4 | HP-1 25 69 06 | 4 | Shock absorber | NR/St37 | |
| 5 | HP-1 15 99 35 | 1 | Muffler | PE porous | |
| 6 | HP-1 25 40 50 | 1 | Shaft | AISI 304 | |
| 7 | HP-1 25 85 22 | 2 | Center housing seal | PE | |
| 8 | HP-2 25 54 23 | 4 | Valve seat | PTFE | |
| 9 | HP-2 25 59 23 | 2 | Plug lower | PTFE | |
| 10 | HP-2 25 055 23 | 2 | Plug upper | PTFE | |
| 11 | HP-2 25 39 23 | 2 | Valve stopper | PTFE | |
| 12 | HP-2 25 38 23 | 2 | Bolt | PTFE | |
| 13 | HP-1 25 540 50 | 2 | Shaft allen pin screw | AISI 304 | |
| 14 | HP-1 25 254 50 | 1 | Valve seat key | AISI 304 | |
| 15 | HP-1 08 58 00 | 1 | Upper/lower plugs and air valve key (SK3, SK4) | diverse | |
| REPAIR KITS | | | | | |
| A | TAK-100 | KIT | Air valve | PET/NBR | |
| W | TWE-100-PTTT | KIT | PTFE WET KIT | | |
| | | | 2 | Diaphragm | TFM/PTFE |
| | | | 4 | Valve balls | PTFE |
| | | | 4 | Sealing inlet/outlet | PTFE/FPM |
| | | | 2 | Plug upper sealing | FEP/FPM |
| | | | 1 | Muffler | PE porous |

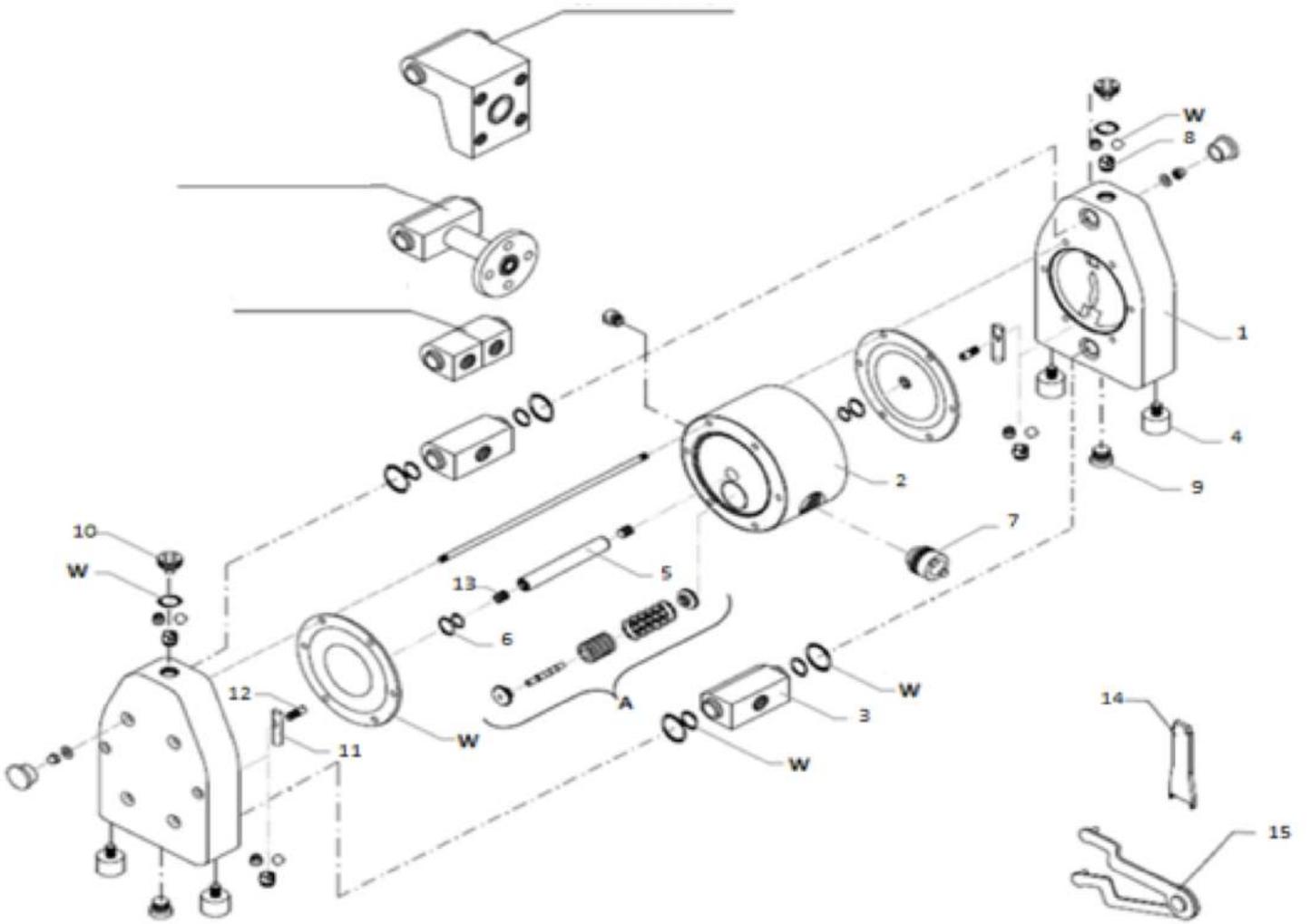
T150 – EXPLODED VIEW



T150 – PARTS LIST

| ITEM | PART NUMBER | QTY | DESCRIPTION | MATERIAL | |
|--------------------|----------------|-------------------|--|----------------------------|-----------|
| 1 | HP-2 40 01 23 | 2 | Pump housing | PTFE | |
| 2 | HP-1 40 10 20 | 1 | Center housing | PE | |
| 3 | HP-2 40 30 23 | 2 | Suction/Discharge ports BSP | PTFE | |
| | HP-2 40 30 23 | | Suction/Discharge ports NPT | PTFE | |
| | HP-2 40 125 33 | | Suction/Discharge ports ANSI Flange | PTFE | |
| | HP-2 40 25 33 | | Suction/Discharge ports DIN Flange | PTFE | |
| | HP-2 40 525 23 | | Suction/Discharge ports JIS Flange | PTFE | |
| | HP-2 40 31 23 | 1 | Suction/Discharge ports-twin | PTFE | |
| HP-2 40 33 23 | 1 | Suction port-drum | PTFE | | |
| 4 | HP-1 40 69 06 | 4 | Shock absorber | NR/St37 | |
| 5 | HP-1 40 40 50 | 1 | Shaft | AISI 304 | |
| 6 | HP-1 40 85 22 | 2 | Center housing seal | PE | |
| 7 | HP-1 40 99 35 | 1 | Muffler | PE porous | |
| 8 | HP-2 40 54 23 | 4 | Valve seat | PTFE | |
| 9 | HP-2 40 59 23 | 2 | Plug lower | PTFE | |
| 10 | HP-2 40 055 23 | 2 | Plug upper | PTFE | |
| 11 | HP-2 40 39 23 | 2 | Valve stopper | PTFE | |
| 12 | HP-2 40 38 23 | 2 | Bolt | PTFE | |
| 13 | HP-1 40 540 50 | 2 | Shaft allen pin screw | AISI 304 | |
| 14 | HP-1 40 254 50 | 1 | Valve seat key | AISI 304 | |
| 15 | HP-1 08 58 00 | 1 | Upper/lower plugs and air valve key (SK3, SK4) | diverse | |
| REPAIR KITS | | | | | |
| A | TAK-150 | KIT | Air valve | PET/NBR | |
| W | TWE-150-PTTT | KIT | PTFE WET KIT | | |
| | | | 2 | Diaphragm | TFM/PTFE |
| | | | 4 | Valve balls | PTFE |
| | | | 4 | Sealing inlet/outlet - SET | PTFE/FPM |
| | | | 2 | Plug upper sealing | FEP/FPM |
| | | | 1 | Muffler | PE porous |

T200 – EXPLODED VIEW



T200 – PARTS LIST

| ITEM | PART NUMBER | QTY | DESCRIPTION | MATERIAL |
|--------------------|----------------|-------------------|--|-----------|
| 1 | HP-2 50 01 23 | 2 | Pump housing | PTFE |
| 2 | HP-1 50 10 20 | 1 | Center housing | PE |
| 3 | HP-2 50 30 23 | 2 | Suction/Discharge ports BSP | PTFE |
| | HP-2 50 30 23 | | Suction/Discharge ports NPT | PTFE |
| | HP-2 50 125 33 | | Suction/Discharge ports ANSI Flange | PTFE |
| | HP-2 50 25 33 | | Suction/Discharge ports DIN Flange | PTFE |
| | HP-2 50 525 23 | | Suction/Discharge ports JIS Flange | PTFE |
| | HP-2 50 31 23 | 1 | Suction/Discharge ports-twin | PTFE |
| HP-2 50 33 23 | 1 | Suction port-drum | PTFE | |
| 4 | HP-1 40 69 06 | 4 | Shock absorber | NR/St37 |
| 5 | HP-1 50 40 50 | 1 | Shaft | AISI 304 |
| 6 | HP-1 50 85 22 | 2 | Center housing seal | PE |
| 7 | HP-1 50 99 35 | 1 | Muffler | PE porous |
| 8 | HP-2 50 54 23 | 4 | Valve seat | PTFE |
| 9 | HP-2 50 59 23 | 2 | Plug lower | PTFE |
| 10 | HP-2 50 055 23 | 2 | Plug upper | PTFE |
| 11 | HP-2 50 39 23 | 2 | Valve stopper | PTFE |
| 12 | HP-2 50 38 23 | 2 | Bolt | PTFE |
| 13 | HP-1 50 540 50 | 2 | Shaft allen pin screw | AISI 304 |
| 14 | HP-1 50 254 50 | 1 | Valve seat key | AISI 304 |
| 15 | HP-1 08 58 00 | 1 | Upper/lower plugs and air valve key (SK3, SK4) | diverse |
| REPAIR KITS | | | | |
| A | TAK-200 | KIT | Air valve | PET/NBR |
| W | TWE-200-PTTT | KIT | PTFE WET KIT | |
| | | 2 | Diaphragm | TFM/PTFE |
| | | 4 | Valve balls | PTFE |
| | | 4 | Sealing inlet/outlet - SET | PTFE/FPM |
| | | 2 | Plug upper sealing | FEP/FPM |
| | | 1 | Muffler | PE porous |

High Pressure System (option code HP)

All-Flo PTFE diaphragm pumps can be fitted with High Pressure option. It is a very compact unit that can be mounted directly to the filter press. It has been designed for charging filter presses with chemical wastes and special sludge. An external pressure booster doubles or quadruples the delivery pressure.

Filter presses with HP pump

Automatic adaptation

When slurry is transferred to a chamber filter press, first the chambers get filled while the pressure tends to zero. Under the increasing filling-level the solids assemble at the filter cloths. This requires a pressure that continuously rises with the increasing content of solids. Under a constant flow quantity the pressure would rise extremely fast.

The drive of the HP pump by compressed air causes a diminution of the flow quantity according to the increasing counter-pressure in the filter press. This produces a soft filtration curve, automatically self-regulating according to the filling level of the filter press. This is independent from the properties of the slurry. No pressure tank nor pressure transmitter nor speed control are required. The complete HP pump works without electric energy.

End of filtration process

When the filter press is filled with the solids so far that no more slurry can be taken up, the pressing period is terminated. The air operation of the All-Flo pumps then reduces the flow rate to zero while the outlet pressure holds the required level compressing the filter cake. Excellent results in drying are obtained. At the end of the pressing period the pump simply stops.

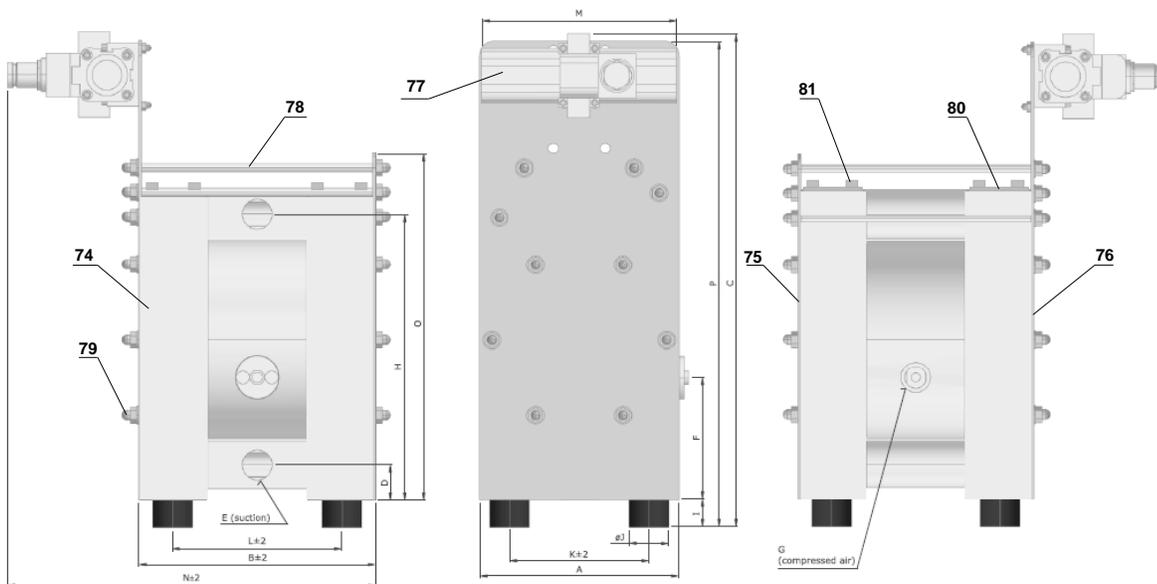
Pressure adjustment

The required pressure in the filter press is comfortably adjusted by the height of the air pressure supplying the charging station. For a required pressure of 12 bar the HP pump has to be supplied with 6 bar when the pump with a pressure transmission of 1:2 is applied. In the case that higher pressures are necessary or there is only a lower air pressure available, the HP pump with 1:4 transmission is applied.

Low air consumption

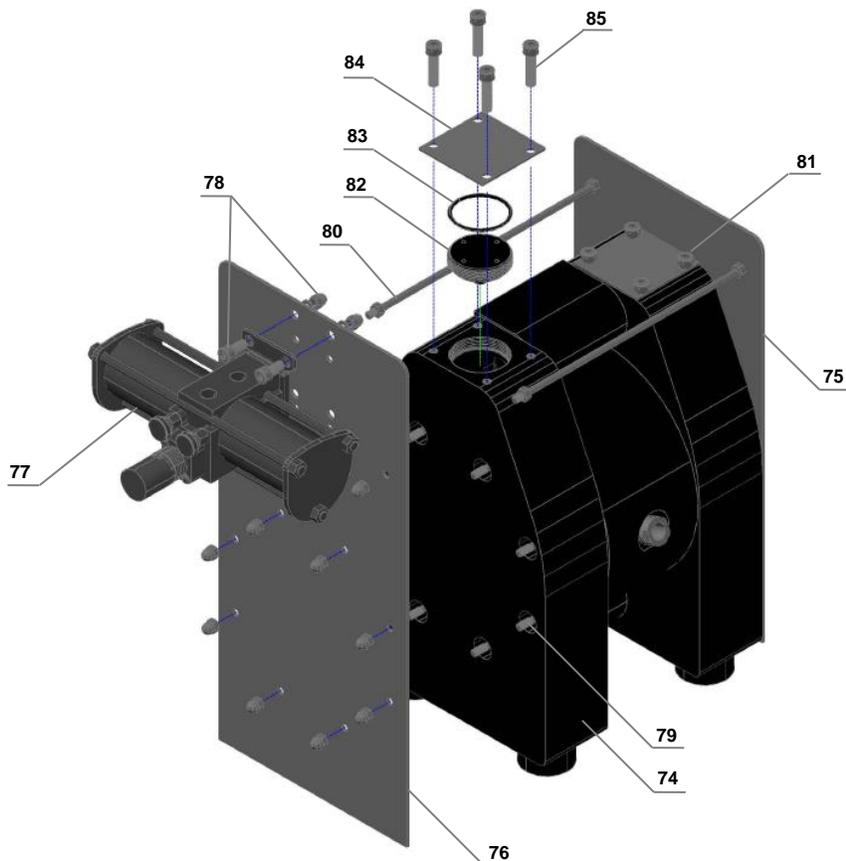
The charging stations needs the maximum air quantity only during the filling period. The more the press is filled, the more slowly the pump works. So the air consumption slowly reaches zero during progressing filtration.

Appearance and dimensions of high pressure system (pump with HP option)



| | A | B | C | D | E | F | G | H | I | ØJ | K | L | M | N | O | P |
|-------------|-----------------------|-----------------------|-----------------------|---------------------|--------|----------------------|------|-----------------------|---------------------|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| H050 | 6.02 in. (153 mm) | 7.16 in. (182 mm) | 14.64 in. (372 mm) | .98 in. (25 mm) | 1/2" | 3.43 in. (87 mm) | 1/4" | 8.54 in. (217 mm) | .71 in. (18 mm) | 1.18 in. (30 mm) | 4.41 in. (112 mm) | 5.35 in. (136 mm) | 7.67 in. (195 mm) | 12.64 in. (321 mm) | 9.96 in. (253 mm) | 13.11 in. (333 mm) |
| H100 | 7.87 in. (200 mm) | 9.37 in. (238 mm) | - | 1.38 in. (35 mm) | 1" | 4.84 in. (123 mm) | 1/4" | 11.29 in. (287 mm) | 1.10 in. (28 mm) | 1.57 in. (40 mm) | 5.51 in. (140 mm) | 6.69 in. (170 mm) | 11.45 in. (291 mm) | 16.61 in. (422 mm) | 13.74 in. (349 mm) | 18.19 in. (462 mm) |
| H150 | 10.63 in. (270 mm) | 12.52 in. (318 mm) | - | 1.65 in. (42 mm) | 1 1/2" | 4.29 in. (109 mm) | 1/2" | 15.27 in. (388 mm) | 1.18 in. (30 mm) | 2.36 in. (60 mm) | 7.48 in. (190 mm) | 8.94 in. (227 mm) | 11.45 in. (291 mm) | 20.83 in. (529 mm) | 19.69 in. (500 mm) | 23.62 in. (600 mm) |
| H200 | 13.78 in. (350 mm) | 15.47 in. (393 mm) | - | 1.77 in. (45 mm) | 2" | 6.22 in. (158 mm) | 1/2" | 19.09 in. (485 mm) | 1.18 in. (30 mm) | 2.36 in. (60 mm) | 10.63 in. (270 mm) | 11.10 in. (282 mm) | 15.91 in. (404 mm) | 24.17 in. (614 mm) | 22.05 in. (560 mm) | 27.17 in. (690 mm) |

High pressure system (pump with HP option) – exploded view



Spare part list, high pressure system

| Pump size | | | | H050 | H100 | H150 | H200 | |
|------------|------|------------------------|--|-----------------|----------------|------------------|------------------|-----------------|
| Code | Item | Pc | Description | Material | Part no. | Part no. | Part no. | Part no. |
| HPS HPM | 74 | 2 | Pump housing for HP option | PE | HP-2 15 601 20 | HP-2 25 601 20 | HP-2 40 601 20 | HP-2 50 601 20 |
| | | | | PTFE | HP-2 15 601 23 | HP-2 25 601 23 | HP-2 40 601 23 | HP-2 50 601 23 |
| | | | | PE conductive | HP-2 15 601 21 | HP-2 25 601 21 | HP-2 40 601 21 | HP-2 50 601 21 |
| | | | | PTFE conductive | HP-2 15 601 24 | HP-2 25 601 24 | HP-2 40 601 24 | HP-2 50 601 24 |
| | 75 | 1 | Distance plate short | AISI 304 | HP-2 15 164 50 | HP-2 25 164 50 | HP-2 40 164 50 | HP-2 50 164 50 |
| | 76 | 1 | Distance plate long | AISI 304 | HP-2 15 264 50 | HP-2 25 264 50 | HP-2 40 264 50 | HP-2 50 264 50 |
| | 77 | 1/2* | Air pressure booster SMC | Diverse | HP-9 15 64 00 | HP-9 15 64 00 | HP-9 40 64 00 | HP-9 50 64 00 |
| | | | Air pressure booster MetalWork | Diverse | HP-9 15 964 00 | HP-9 15 964 00 | HP-9 40 964 00 | HP-9 50 964 00 |
| | 78 | 1 | Mounting set for booster SMC (HPS) | AISI 304 | HP-9 15 S42 50 | HP-9 15 S42 50 | HP-9 40 S42 50 | HP-9 50 S42 50 |
| | | | Mounting set for booster MetalWork (HPM) | AISI 304 | HP-9 15 M42 50 | HP-9 15 M42 50 | HP-9 40 M42 50 | HP-9 50 M42 50 |
| | 79 | 6 / 8* | Housing bolt | AISI 304 | HP-2 15 142 50 | HP-2 25 142 50 | HP-2 40 142 50* | HP-2 50 142 50* |
| | 80 | 2 | Distance plate bolt, cpl. | AISI 304 | HP-2 15 942 50 | HP-2 25 942 50 | HP-2 40 942 50 | HP-2 50 942 50 |
| | 82 | | Upper plug for HP option | PE | HP-2 15 655 20 | HP-2 25 655 20 | HP-2 40 655 20 | HP-2 50 655 20 |
| | | | | PTFE | HP-2 15 655 23 | HP-2 25 655 23 | HP-2 40 655 23 | HP-2 50 655 23 |
| | | | | PE conductive | HP-2 15 655 21 | HP-2 25 655 21 | HP-2 40 655 21 | HP-2 50 655 21 |
| | | | | PTFE conductive | HP-2 15 655 24 | HP-2 25 655 24 | HP-2 40 655 24 | HP-2 50 655 24 |
| | 83 | 2/4** | Upper plug O-ring external | NBR | HP-2 15 278 10 | HP-2 25 278 10 | HP-2 40 278 10** | HP-2 50 278 10 |
| EPDM | | | | HP-2 15 278 08 | HP-2 25 278 08 | HP-2 40 278 08** | HP-2 50 278 08 | |
| 84 | 2 | Plate for upper plug | AISI 304 | HP-1 15 464 50 | HP-1 25 464 50 | HP-1 40 464 50 | HP-1 50 464 50 | |
| 85 | 8 | Upper plug plate screw | AISI 304 | HP-1 15 564 50 | HP-1 25 564 50 | HP-1 40 564 50 | HP-1 50 564 50 | |

Z134 Barrier Pump

OPERATING INSTRUCTIONS

HOOKUP:

SENSOR– Terminals 1 & 2 connect to sensor 1. Terminals 3 & 4 connect to sensor 2.

RELAY– 2 Amp maximum NC opens on Red only (either sensor).

POWER– 100-240 VAC.

OPERATION:

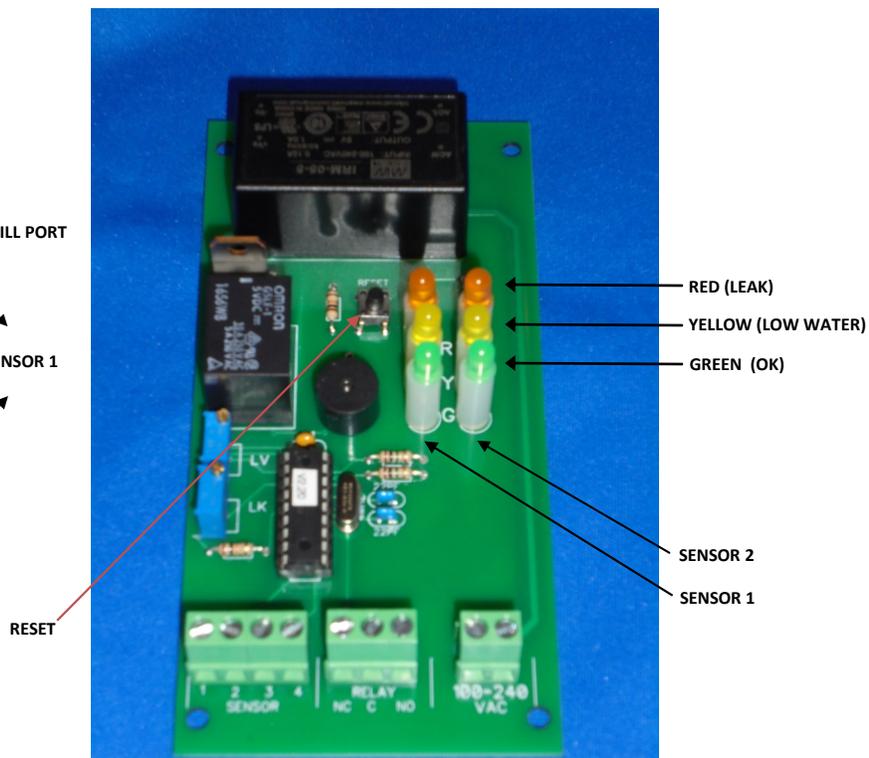
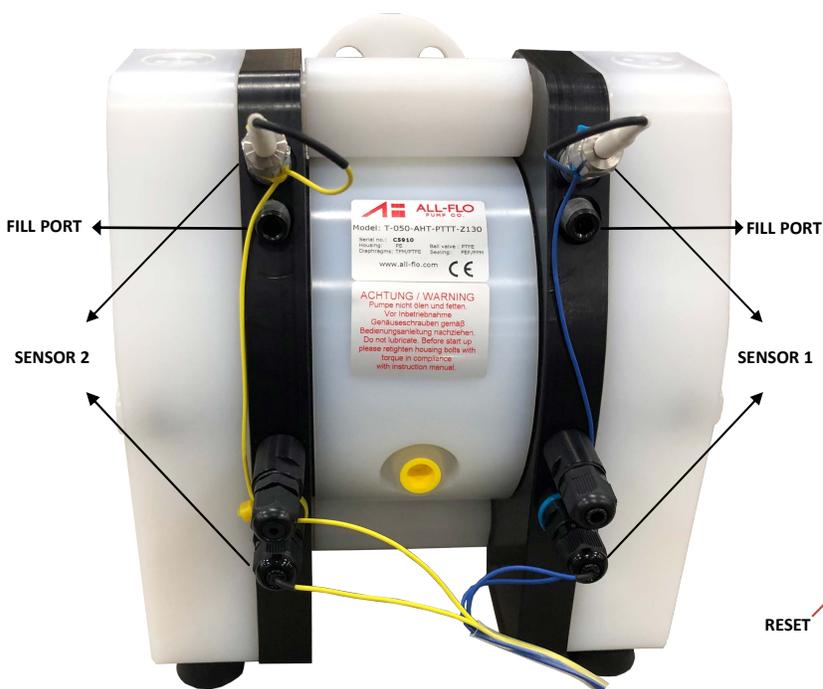
If the pump’s internal water chamber gets low, the **yellow** LED for the sensor will blink on and off while the **green** stays lit.

If the yellow LED is lit, the system can’t look for a diaphragm failure.

If the pump’s diaphragm leaks, the **red** LED will light, the **green** will go out. The **buzzer** with sound and the **relay** will switch.

If the alarm is transient , the **reset** button will stop the **buzzer**, switch the **relay** back and go from **red** to **green**.

If the alarm state is continuous, the **reset** button will shift things for 1-2 seconds then return to the alarm conditions.



Warranty

WARRANTY. All All-Flo products shall be covered by the standard All-Flo Limited Warranty in effect at the time of shipment. This warranty (which may be modified by All-Flo at any time) provides:

MATERIALS SOLD ARE WARRANTED TO THE ORIGINAL USER AGAINST DEFECTS IN WORKMANSHIP OR MATERIALS UNDER NORMAL USE (RENTAL USE EXCLUDED) FOR FIVE YEARS AFTER PURCHASE DATE. ANY PUMP WHICH IS DETERMINED TO BE DEFECTIVE IN MATERIAL AND WORKMANSHIP AND RETURNED TO ALL-FLO, SHIPPING COSTS PREPAID, WILL BE REPAIRED OR REPLACED AT ALL-FLO'S OPTION. CUSTOMER SHALL NOTIFY ALL-FLO IN WRITING WITHIN 30 DAYS OF ANY CLAIMED DEFECTS. NO MATERIALS CAN BE RETURNED WITHOUT THE PRIOR CONSENT OF ALL-FLO, AND IF APPROVED SHALL BE RETURNED TO ALL-FLO FREIGHT PREPAID. ALL-FLO'S LIABILITY FOR ANY BREACH OF THIS WARRANTY SHALL BE LIMITED TO EITHER REPLACEMENT OF THE MATERIALS OR, AT ALL-FLO'S SOLE OPTION, THE REFUND OF THE PURCHASE PRICE. ALL-FLO SHALL NOT BE HELD LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES CAUSED BY BREACH OF THIS WARRANTY. THIS EXCLUSION APPLIES WHETHER SUCH DAMAGES WERE SOUGHT BASED ON BREACH OF WARRANTY, BREACH OF CONTRACT, NEGLIGENCE, STRICT LIABILITY IN TORT, OR ANY OTHER LEGAL THEORY. FURTHER, ALL-FLO SHALL NOT BE LIABLE FOR LOSSES, DELAYS, LABOR COSTS, OR ANY OTHER COST OR EXPENSE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF MATERIALS. ALL-FLO'S LIABILITY IS EXPRESSLY LIMITED TO THE REPLACEMENT OR REPAIR OF DEFECTIVE GOODS, OR THE TOTAL VALUE OF SUCH GOODS. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED, OR ORAL INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY, ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND ANY IMPLIED WARRANTIES OTHERWISE ARISING FROM A COURSE OF DEALING OR TRADE. All-Flo will not, in ANY event, be liable for any loss of profit, interruption of business or any other special, consequential or incidental damages suffered or sustained by Customer. All-Flo's total maximum liability to the customer in respect of sale of materials or services rendered by All-Flo is limited to the total monies received by All-Flo from the customer for the particular. Materials described in Customer's order.

All-Flo does not warrant any part or component that it does not manufacture, but will assign to the original end-user purchaser of any warranty received by it from the manufacturer, to extent such pass through is permitted by the manufacturer.



REGISTRATION FORM

Pump Model _____ Pump Serial Number _____

Company Name _____

Name _____ Email _____

Phone # _____ City _____ State _____ Zip _____

Qty of Pumps _____ Fluid Pumping _____

How did you hear about us? Existing All-Flo user,
Web, Distributor, Magazine...

MAIL TO: All-Flo Pump Co. | Attn: Product Registration
PO BOX 1870 | Mentor, OH 44061



Scan QR code and
complete form
on mobile phone
or visit

www.all-flo.com/registration-form.html

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