This manual should be read and understood prior to installing, operating or servicing the Linear Displacement Pump.
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# WARNINGS

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<th><strong>STATIC SHOCK:</strong></th>
<th>Can cause fire or explosion resulting in severe injury or death. Ground metering systems in accordance with all federal, state and local regulations.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HAZARDOUS PRESSURE:</strong></td>
<td>Sudden pressure release can cause severe injury or death. The metering system can remain pressurized when the system is not operation. Relieve system pressure before attempting service or adjustments.</td>
</tr>
<tr>
<td><strong>EXPLOSION HAZARD:</strong></td>
<td>Do not operate a PK electronic control unit in an environment of flammable gases or vapor unless it is equipped with a class I, division 1 air purge system</td>
</tr>
<tr>
<td><strong>SAFETY GOGGLES:</strong></td>
<td>Must be worn at all times while installing, servicing, operating, or observing this equipment. Sudden release of air or fluid pressure can cause serious damage to the eyes.</td>
</tr>
<tr>
<td><strong>ELECTROCUTION HAZARD:</strong></td>
<td>Disconnect power before servicing electrical controls. Never defeat electrical safety devices. Doing so can cause electrocution resulting in severe injury or death.</td>
</tr>
<tr>
<td><strong>INJECTION HAZARD:</strong></td>
<td>Any material injected into flesh can cause severe injury or death. Keep body parts away from material discharge ports. If injection occurs, seek medical attention immediately.</td>
</tr>
</tbody>
</table>
### FIRE HAZARD:
When flammable solvents are used, smoking or other ignition sources should be prohibited. Provide adequate ventilation to prevent ignitable concentrations of flammable vapors. Never allow the temperature of process fluids to reach or exceed their flash points. Doing so can cause fire or explosion resulting in severe injury or death.

### PINCH HAZARD:
Moving parts such as LDP’s, servo motor drives and transfer feed pumps can pinch or amputate your fingers. Keep clear of moving parts when the pump is in operation.

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**IMPORTANT SAFETY INFORMATION**

⚠️ **Installation**

Fluidic Systems equipment should be installed by a qualified manufacturer’s representative who can provide instruction on proper safety, installation, operating and maintenance procedures.

⚠️ **Operation**

Always disconnect electrical power and relieve pressure (air and fluid) before making adjustments or servicing.

Do not operate equipment if fluids have solidified. A blockage in the fluid circuit (hoses, valves, gauge, etc) can cause immediate damage to the system.

Before operating, check entire system for loose fittings, loose fasteners, damaged or leaking hoses and air lines.

Only trained personnel should operate and/or service this equipment.

⚠️ **Material**

Consult material manufacturer’s technical representative or bulletins to determine if their materials are safe to use in this system.

Consult material manufacturer for safe handling procedure and what precautions are required when exposed to the materials.
Description

1.1 Introduction
This manual describes maintenance, repair, disassembly and reassembly procedures of the Fluidic System Linear Displacement Pump. The Fluidic Systems PK Dispense and PK Spray units are positive displacement, volumetrically accurate plural component metering systems capable of maintaining ratio and flow rate accuracy to better than ±1%. They are provided with an Operator Interface Terminal (OIT) and a Programmable Logic Controller (PLC) control system for ease of use, flexible configuration, detailed diagnostics, high performance, and exceptional reliability.

1.2 Patented Pump Technology
The variable ratio metering system is based on a closed loop PLC controlled DC servo drive system coupled to volumetrically efficient Linear Displacement Pumps (LDP’s). The system is accurate and reliable and can be integrated with user PC/PLC controls for automation. The SPC Closed Loop Control System monitors, controls, and reports metering parameters such as material ratios, flow rates, pressures, and material usage.

The patented LDP (PATENT NO. US 6,398,514 B1) is a double acting rod pump with two sets of metering cylinders. As one set of cylinders is dispensing, the other set is filling. When the LDP reciprocates, the dispense/fill cycle is reversed between the two sets of cylinders. The reciprocation happens in milliseconds to provide a continuous material flow.

In order to maintain the LDP +/-1% metering accuracy and smooth continuous material flow, it is imperative that the material feed pressure (input) be balanced with the LDP dispense (output) pressure. In short, the PK units must be pressure fed from pressure pots or transfer pumps with pressure/flow rates respective to the LDP pressure/flow rates.

With a balanced material feed, the PLC controlled LDP’s provide smooth continuous and virtually pulse free outputs from 5 to 3500 psi. Precision flow rates range from 1 cc/minute to over 2 gallons per minute. The LDP’s can meter/mix and dispense differential viscosities from water to heavy abrasive pastes. The system functions without piston or gear pumps, check valves, and flow meters.

The variable ratio PK units have one LDP for each material component. The mix ratio of the components is achieved by controlling the relative velocity of one pump to the other. Example: for 1:1 volumetric ratio, both LDP’s run at the same speed; for 4:1 volumetric ratio, one LDP runs four times faster than the other. With the velocities of the LDP’s set for a specific ratio, variable flow rates are achieved by running the LDP’s slow for low flow rates or fast for higher flow rates.
To achieve the best performance from this system, it is critical that operators understand and use the controls and safety features in the correct manner.

## Before You Start

### 2.1 Operator Qualifications

Owners of Fluidic Units are responsible for ensuring that operators:

- Receive proper safety training from a qualified individual
- Understand accident prevention and first-aid procedures
- Are physically capable of performing job
- Are not under the influence of any substance that inhibits physical or mental capacity
- **Note:** Contact Fluidic Systems in order to receive specific equipment installation, repair and maintenance training

### 2.2 Intended Use

- Installation, repair, maintenance and any other use of this equipment should be confined to the limits described in this document and the on-screen instructions of the particular unit
- Do not use unauthorized auxiliary devices or material. Contact Fluidic Systems with any questions regarding the use of non-standard auxiliary devices or material
- Do not modify the Fluidic Unit

### 2.3 Grounding

The cabinet must be grounded to prevent static and electric shock. This is done by an escape wire that electrical current, due to static build, can travel through. To ground the cabinet, take the grounding-clamp at the end of the ground wire and connect it to a true earth ground. The other end of the grounding wire is already connected to the cabinet.
2.4 Required Tools and Supplies

Special tools provided:
A: Mechanical Pump Lift (013-PR-PL-003)
B: Pump Oiler with Throat Seal Oil or ISO Oil (012-AC-PO-006)
C: 3/4 in. drive x 22 in. Breaker Bar (013-PR-BB-009)
D: Bench Vise Cylinder Clamping Fixture (013-ST-CF-001)
E: 1/4 in. x 9 in. x 3/8 in. Ball Driver (013-ST-BD-006-FP)
F: 1 3/4 in. Socket Wrench (013-PR-ST-008)

2.5 Special Tools Diagram
Tools you will need that are not provided

1. 5” Cable Ties
2. Cutters (for cable-ties)
3. Small Flat-Head Screwdriver
4. 1/8 in. Hex Wrench
5. 5/16 in. Hex Wrench
6. Crescent Wrench (to remove Flex Hose compression nut)
7. Pliers (to remove old seals from nuts)
8. Pick (to remove o-ring from nuts)
9. Anaerobic Teflon Pipe Sealant (Perma-Lok LH 150, Loctite 567PTS or equivalent)

2.5 Acronyms

- LDP- Linear Displacement Pump
- SHCS- Socket Head Cap Screw
- XV2- Cross-Over Valve #2
Daily Procedures

3.1 Start-Up
- Perform maintenance at frequency described in this manual
- Check material supply vessels to insure adequate supply is available
- Make sure the spray valve and dispense gun air passages are clean and unobstructed
- Pressurize material supply reservoirs, tanks and pumps
- Pressurize Fluidics System compressed air inlet
- Make sure ALL pressure settings are correct
- Check that the Ratio, Flow Rate, and Pump Select controls are properly set
- Check the proper “Mode” is selected (Dispense or Ratio-check mode)
- Check that the Ratio-check station valve set for proper operation
- Make sure the spray valve and dispense gun are connected to fluid lines
- Press the ENABLE keypad to begin operation
- After material reaches the spray valve/gun, allow material to flow for 4 to 5 seconds before applying to the work surface. This will guarantee that there is good, on-ratio material applied to the work surface

3.2 Shutdown
- Perform a line flush procedure (for spray systems).
- Press the DISABLE keypad.
- Depressurize Fluidic Systems compressed air inlet.
- Depressurize material supply reservoirs, tanks, and pumps.
**Part Callout**

**Legend:**

- **A**: Mount Screws
- **B**: Cartridge Nuts
- **C**: Upper Cylinder Set
- **D**: Linear Transducer
- **E**: Electrical Connector
- **F**: Linear Shafts
- **G**: Ball Screw
- **H**: Ball Nut
- **J**: LDP Rod
- **K**: Lower Cylinder Fitting
- **L**: Bottom Cylinder Set
- **M**: Upper Cylinder Fitting
4.1 Pump Removal

1. Refer to warning section before beginning removal process.
2. Take a picture of the setup to ease the reassembly and installation of the pump. **NOTE:** Refer to step 8 on page 16 to understand the assembly orientation of your pump.
3. Relieve air and fluid pressure to atmospheric pressure; refer to Pressure Relief Procedure and Pump Flush Procedure in manual#.
4. Detach the upper hose nut (1) from the fitting (2) that is located on the upper cylinder set (3).
5. Detach the stainless steel line (4) from the fitting (5) that is located on the bottom cylinder set (6).
6. Detach the electrical connector (13) from the Linear Transducer (12) by using a medium-sized Phillips screwdriver (refer to Fig. 6, pg.13).
7. Cut cable ties that connect the Linear Transducer to the LDP assembly.
8. Center the mechanical pump lift (7) under the LDP (8) and raise it until it comes in contact with the bottom plate (27) of the LDP as shown below.

![Fig. 4](image1.png)

9. Remove the 5/16-24 x 1" SHCS (9), with a hex wrench, that mount the top plate (10) and the cabinet (11).

![Fig. 5](image2.png)

10. Slowly lower the Pump Lift until the pump disengages from the drive shaft. Remove LDP from cabinet and place it on the work bench.
4.2 Disassembly of Pump

1. Remove the 10-32 x 1 ¼” FHCS (14), with a hex wrench, and the spacer (16) from the Linear Transducer rod (17). Remove the two 10-32 x 1” SHCS (15), with hex a wrench, and spacers from the Linear Transducer bracket (18).

Fig. 6
2. Remove the four 1/4-20 x 7/8” SHCS (19), with a hex wrench, that secure the top plate (10) to the four linear shafts (26).

3. Remove the two 5/16-24 x 1” SHCS (9), with a hex wrench, and washers (21) that connect top plate to the two LDP rods (34). Now remove top plate.
4. Remove the four 1/4-20 x 7/8” SHCS (19), with a hex wrench, that connect the center plate (20) to the upper cylinder set (22). Now remove the upper cylinder set from the LDP assembly.
5. Remove the two 5/16-24 x 1” SHCS (9), with a hex wrench, that connects the center plate (20) to the two LDP rods (34).
6. Secure two cable-ties (23), one to the ball screw (24) which is located above the ball nut (25) and the other cable-tie below the center plate (this prevents ball screw from unwinding out of the ball nut).
7. Lift the center plate ball screw assembly off the linear shafts (26).

Fig. 9 Orientation A
Fig. 10 Orientation B/C
8. Remove the four \( \frac{3}{8} \)-20 x 7/8” SHCS (19), with a hex wrench, connecting the bottom plate (27) to the bottom cylinder set (28). Now remove the bottom cylinder set from the LDP assembly.
9. Mount the cylinder assembly into bench vise (29) using the LDP cylinder clamping fixture (30). NOTE: the cylinder clamping fixture eliminates stress applied to the cylinder manifold (33) that connects the two cylinders while ensuring maximum holding power on the cylinder. A broken cylinder manifold cannot be repaired. **WARNING:** Bench vise must be torque to more than 50 lb-ft because the cartridge nuts must be torque to 50 lb-ft.

10. Remove cylinder rods by hand. Take care not to ding or scratch the rods (scratches or dings on rods can shorten seal life).

11. Use a 1 3/4 in. socket (31) and breaker bar (35) to loosen the LDP cylinder cartridge nuts (32) (the clamping fixture holds cylinder assembly without imparting stress to the welded cylinder manifold joints (33). If welded interfaces are broken, assembly cannot be repaired).
4.3 Pump Seal Replacement (Single and Dual Seal Nuts)

1. Remove the cylinder cartridge nuts (32).
2. Remove the old Teflon O ring (36) from the cylinder set by using a mini tool pick or an equivalent tool (not included).

Fig. 14
3. Remove old seals (37) and Teflon bearing (38) from the cartridge nuts (32) by using the bearing removal tool (39) as shown below. **NOTE: Bearing removal/replacement is only done on dual seal cartridge nuts (Fig. 16).**

4. Replace lip seals and/or bearing for respective cartridge nuts. Make sure lip seal spring faces downward when installing into cartridge nut.

5. Clean the cylinder cartridge nuts and LDP rods of any resin/catalyst residues. Take care not to scratch or dent the LDP rod surface. Soft tools made of plastic, wood or soft abrasives (like 3M Scotch Brite) are safe to use. If resin/catalyst remains, soak the part overnight in chemical stripper to dissolve or soften the residue.
4.4 Cartridge Nut Installation

1. Lubricate the new Teflon O rings (36) with light oil. Install the O ring into the cylinder O ring groove (40). To seat the O ring in the groove, screw in the cartridge nut (32) hand tight. Then remove the nut and inspect the O ring to ensure it has seated properly. If the O ring sustains ANY damage, install a new one and repeat.

2. Apply anaerobic Teflon pipe sealant (Perma-Lok LH 150, Loctite 567PTS or equivalent) to the cartridge nut threads (41) to prevent thread galling (can be augmented with stainless steel grade Teflon thread tape).
3. Mount the LDP cylinder assembly in the bench vise (29) using the cylinder clamping fixture (30). **WARNING:** Bench vise must be torque to more than 50 lb-ft because the cartridge nuts must be torque to 50 lb-ft. NOTE: the cylinder clamping fixture eliminates stress applied to the welded manifold (33) that connects the two cylinders while ensuring maximum holding power on the cylinder. A broken cylinder manifold cannot be repaired.

4. Install the cartridge nuts (32) into the cylinders and torque to 50 lb-ft using the breaker bar (35) and the 1 3/4 in. socket (31) to tighten the nuts. **WARNING:** Do not use an open-end wrench as this can damage the cartridge nuts (box wrench is acceptable). Once completed, remove cylinder set from the bench vise and set on work bench.
5. Lubricate the LDP rods (34) with light oil. Align the rods vertically and by hand, push the rods into the installed cartridge nut (32). You will feel resistance when the rod reaches the seal; apply more force until the rod is fully inserted. **WARNING:** Handle the rods with care as dents, dings and scratches significantly reduce the seal life and performance.

6. Repeat steps 1-6 for all cylinder sets.
4.5 Reassembly of Pump

1. Replace bottom cylinder set (28) in between the linear shafts (26) and secure to the bottom plate (27) with four 1/4-20 x 7/8” SHCS (19).
2. Slide the center plate ball screw assembly onto the linear shafts (26). **Make sure the center plates are properly oriented for A or B/C configuration.**

![Fig. 21 Orientation A](image)

3. Extend the LDP rods (34) about a half-inch as shown in the above figure. Then hand tighten the two 5/16-24 x 1" SHCS (9), with the washers, to connect the center plate (20) to the LDP rods of the bottom cylinder set (28) (**ONLY** tighten with a hex wrench after pump has been fully assembled). Cut the cable-ties after center plate assembly has been secured.

![Fig. 22 Orientation B/C](image)
4. Replace the upper cylinder set in between the linear shafts and secure to the center plate with four 1/4-20 x 7/8” SHCS. **Make sure the top cylinder is properly oriented to the A or B/C configuration for PK2 and PK3 pumps. PK1 pumps have only one orientation shown below.**
5. Extend LDP rod (34) of the upper cylinder set (22) about a half-inch using the pump coupler tool (refer to special tools diagram, pg.5) or rotate the coupler (44) by hand. Install the top plate to the linear shafts (26) with four 1/4-20 x 7/8” SHCS (19). Then secure the top plate (10) to the LDP rods of the upper cylinder set with two washers (21) and two 5/16-24 x 1” SHCS (9).
6. Secure the Linear Transducer (12) with three spacers (16) and three 10-32 screws to the Linear Transducer rod (17) and Linear Transducer bracket (18) with hex wrench.

Fig. 25
7. Center the bottom plate (27) of the LDP (7) on the mechanical pump lift (6) and raise it to the cabinet.

8. Secure the top plate (10) of the LDP pump to the cabinet (11) with the 5/16-24 x 1” mounting SHCS (9). Remove the mechanical pump lift from the cabinet area.
9. Reconnect the electrical connector (13) to the bottom of the Linear Transducer (12) (refer to Fig.25, pg. 27). Secure the linear transducer cables with cable-ties.
10. Reattach the stainless steel line (4) to the lower cylinder manifold tube fitting (5)
11. Reattach the stainless steel flex hose compression nut (1) to the upper cylinder manifold to the compression fitting (2).

12. Do not forget to tighten the two 5/16-24 x 1" SHCS (9) with a hex wrench to connect the center plate (20) to the LDP rods of the bottom cylinder set
Maintenance

5.1 Cylinder Nut Fluid Reservoirs
The liquid in the cylinder nut fluid reservoirs should be checked every day and changed at least every 30 days. If reservoirs are not full:
   1. Fill the reservoirs to the rim with throat seal liquid (TSL) or ISO oil (for Urethanes).
      NOTE: It is normal for the TSL and/or ISO oil to take on the color of the fluid being dispensed.
   2. A vacuum powered oil extractor (013-PR-OE-021) is available to ease the hassle of thoroughly changing the oil in the fluid reservoirs.

5.2 Grease Ball Screw
The ball screw should be re-greased every 6 months using a molly fortified (NLGI #2 GC-LB) or equivalent such as Valvoline Synthetic Grease #986 or #278.

5.3 Grease XV2 (cross-over valve)
Lubricant the XV2 Cross-Over Valve at a minimum of once a week or as duty cycle requires. Abrasive compounds or moisture sensitive materials such as isocyanate catalysts will require more frequent lubrication. Inspection of the purged grease will help gauge the lubrication interval. Thickened or discolored grease from the purge port is an indicator for the lubrication interval. Lubricate with Fluidic grease PN 012-AC-GC-014 – 3oz cart.
## Spare Parts List

<table>
<thead>
<tr>
<th>ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>001-CN-SS-051</td>
<td>Cartridge Nut .1&quot; Kit, w/TFE Dual Seal Bearing, Seal &amp; O-Ring</td>
</tr>
<tr>
<td>001-CN-SS-049</td>
<td>Cartridge Nut 3/4&quot; (2:1), Used on 2:1 ratio pumps, w/TFE Single Seal &amp; O-ring</td>
</tr>
<tr>
<td>001-CN-SS-050</td>
<td>Cartridge Nut 1/2&quot; (4:1), Used on 2:1 ratio pumps, w/TFE Single Seal &amp; O-ring</td>
</tr>
<tr>
<td>001-CN-SS-054</td>
<td>Cartridge Nut .316&quot; (10:1), w/TFE Single Seal Bearing, Used on 10:1 pumps</td>
</tr>
<tr>
<td>001-PC-DC-043</td>
<td>Dual Cylinder 1&quot; 316SS, Casting - No Flush Ports,</td>
</tr>
<tr>
<td>001-PC-DC-045</td>
<td>Dual Cylinder 1&quot; 316SS, Casting with Flush Ports,</td>
</tr>
<tr>
<td>001-PC-DC-026</td>
<td>Dual Cylinder (9/16)L, 303 S.S.</td>
</tr>
<tr>
<td>001-PC-DC-027</td>
<td>Dual Cylinder (9/16)R, 303 S.S.</td>
</tr>
<tr>
<td>001-PR-ST-005</td>
<td>Pump Rod 1&quot;, Finished Part</td>
</tr>
<tr>
<td>001-PR-ST-052</td>
<td>Pump Rod 3/4&quot;, Used on 2:1 ratio pumps, Finished Part</td>
</tr>
<tr>
<td>001-PR-ST-053</td>
<td>Pump Rod 1/2&quot;, Used on 4:1 ratio pumps, Finished Part</td>
</tr>
<tr>
<td>001-PR-ST-055</td>
<td>Pump Rod .316&quot;, Used on 10:1 ratio pumps, Finished Part</td>
</tr>
<tr>
<td>001-SC-SS-010</td>
<td>Single Cylinder 1&quot;-dia 1.25, SS</td>
</tr>
<tr>
<td>001-SC-SS-047</td>
<td>Single Cylinder - 3/4&quot;, Used on 2:1 ratio pumps</td>
</tr>
<tr>
<td>001-SC-SS-048</td>
<td>Single Cylinder - 1/2&quot;, Used on 4:1 ratio pumps</td>
</tr>
<tr>
<td>001-SC-SS-055</td>
<td>Single Cylinder - .316&quot;, Used on 10:1 ratio pumps</td>
</tr>
<tr>
<td>002-PR-OR-001</td>
<td>O-ring, Cartridge Nut</td>
</tr>
<tr>
<td>002-PR-OR-002</td>
<td>O-Ring, Lip Seal Insert-1&quot;</td>
</tr>
<tr>
<td>002-PR-OR-035</td>
<td>O-Ring, Lip Seal Insert-9/16</td>
</tr>
<tr>
<td>002-PR-OR-036</td>
<td>O-Ring, Lip Seal Insert-3/4&quot;, Used on 2:1 ratio pumps</td>
</tr>
<tr>
<td>002-PR-OR-037</td>
<td>O-Ring, Lip Seal Insert-1/2&quot;, Used on 4:1 ratio pumps</td>
</tr>
<tr>
<td>002-PR-OR-038</td>
<td>O-Ring, Lip Seal Insert-.316, Used on 10:1 ratio pumps</td>
</tr>
<tr>
<td>002-PR-PS-007</td>
<td>Lip Seal, Pump Rod - 1&quot;</td>
</tr>
<tr>
<td>002-PR-PS-028</td>
<td>Lip Seal, Pump Rod - 9/16&quot;</td>
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<tr>
<td>002-PR-PS-032</td>
<td>Lip Seal, Pump Rod - 3/4&quot;, Used on 2:1 pumps</td>
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<td>002-PR-PS-033</td>
<td>Lip Seal, Pump Rod - 1/2&quot;, Used on 4:1 pumps</td>
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<tr>
<td>002-PR-PS-034</td>
<td>Lip Seal, Pump Rod - .316&quot;, Used on 10:1 pumps</td>
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<tr>
<td>100-SA-SC-142</td>
<td>Single Cylinder Assy 1&quot;, w/ ctrg nut, rod and seals</td>
</tr>
<tr>
<td>100-SA-SC-143</td>
<td>Single Cylinder Assy 3/4&quot;, used on 2:1 ratio pumps, w/ ctrg nut, rod and seals</td>
</tr>
<tr>
<td>100-SA-SC-144</td>
<td>Single Cylinder Assy 1/2&quot;, used on 4:1 ratio pumps, w/ ctrg nut, rod and seals</td>
</tr>
<tr>
<td>100-SA-SC-145</td>
<td>Single Cylinder Assy .316&quot;, used on 10:1 ratio pumps, w/ ctrg nut, rod and seals</td>
</tr>
<tr>
<td>100-SA-SK-106</td>
<td>Seal Kit 1&quot; - Dual Seal, LDP - One Pump Set</td>
</tr>
<tr>
<td>100-SA-SK-126</td>
<td>Seal Kit 9/16&quot; - Dual Seal, LDP - One Pump Set</td>
</tr>
<tr>
<td>100-SA-SK-136</td>
<td>Seal Kit 1&quot;-1/2&quot;-Dual Seal, Used on 4:1 ratio pumps, LDP - One Pump Set</td>
</tr>
<tr>
<td>100-SA-SK-139</td>
<td>Seal Kit 1&quot;-3/4&quot;-Dual Seal, Used on 2:1 ratio pumps, LDP - One Pump Set</td>
</tr>
<tr>
<td>100-SA-SK-150</td>
<td>Seal Kit 1&quot;-.316&quot;-Dual Seal, Used on 10:1 ratio pumps, LDP - One Pump Set</td>
</tr>
</tbody>
</table>
## Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low air pressure in system</td>
<td>Air pressure in Fluidic unit has dropped below the 80psi threshold</td>
<td>Make sure air supply has not been disconnected or turned off</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increase pressure to the unit to 90psi</td>
</tr>
<tr>
<td>Power Failure</td>
<td>Power supply to the system at sometime has been disrupted</td>
<td>Press the RESET button on the top of the Fluidic touch screen</td>
</tr>
<tr>
<td>Pump Failure</td>
<td>Over Pressure</td>
<td>Place cups under Ratio-Check spouts. Lower the Ratio-Check Lever, located at the back of the unit, very slowly and do not let liquid splash</td>
</tr>
<tr>
<td></td>
<td>Bad connection between Linear Transducer and Pump</td>
<td>Check electrical connector is connected to Linear Transducer</td>
</tr>
<tr>
<td></td>
<td>Amplifier can shutdown motor for a number of reasons</td>
<td>Refer to on-screen image to ensure pumps are situated as shown</td>
</tr>
<tr>
<td></td>
<td>Pump over travel</td>
<td>Check the status light on each Amplifier inside the cabinet. If they are not ALL green, power down the system for 30 seconds. Then turn it back on. Verify all lights are green before proceeding. If this does not resolve the problem, please call 714-556-6747 to speak to a service technician</td>
</tr>
<tr>
<td>Pump Seals Leaking</td>
<td>Damaged or worn seals</td>
<td>Replace all seals</td>
</tr>
<tr>
<td></td>
<td>Rods not aligned to cylinder nuts</td>
<td>Loosen all 4 rods and cycle pump up and down, then tighten all 4 screws</td>
</tr>
<tr>
<td></td>
<td>Oil cups damaged or worn</td>
<td>Replace all seals</td>
</tr>
</tbody>
</table>
## Standard Fluidic Systems Warranty

Fluidic Systems warrants all equipment manufactured by Fluidic Systems to be free from defects in materials and workmanship. Fluidic Systems will, for a period of one (1) year from the shipment date to the customer, repair or replace any part of the equipment determined by Fluidic Systems to be defective. This warranty extends to the original purchaser or, in the case of transfer of new equipment title through an authorized Fluidic Systems Distributor, to the intended end-user.

This warranty is conditioned upon the prepaid return of the equipment to the factory with prior written consent. If factory inspection of the equipment verifies the claimed defect, Fluidic Systems will repair or replace any defective parts at no charge and return the equipment to the original purchaser prepaid. If factory inspection does not reveal any defect in material or workmanship, repairs may be made at a reasonable charge.

This warranty does not cover, and Fluidic Systems shall not be liable for, items that in the reasonable judgment of Fluidic Systems malfunction as a result of ordinary wear and tear, misuse, corrosion, abrasion, tampering, damages caused by the result of improper maintenance, or improper installation.

Fluidic Systems makes no warranty, and disclaims all implied warranties in connection with accessories, equipment, materials, or components sold but not manufactured by Fluidic Systems. These items shall be subject to that manufacturer’s warranty policy. Fluidic Systems will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

<table>
<thead>
<tr>
<th>Low Pressure Shutdown</th>
<th>Feed pumps stop supplying material to the unit</th>
<th>Check feed pumps and hoses to ensure material has free, positive flow to the unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Material Shutdown</td>
<td>Feed system has ran out of material</td>
<td>Check feed pumps and hoses to ensure material has free, positive flow to the unit</td>
</tr>
<tr>
<td>Low Speed Pump Command</td>
<td>If flow Rate is set too low, then one pump cannot turn slow enough to match the desired ratio of the other pump. This happens for small ratio units</td>
<td>Increase Flow Rate until error message goes away and take note of this value. This will be the minimum Flow Rate value for this particular ratio</td>
</tr>
</tbody>
</table>

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THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL FLUIDIC SYSTEMS BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

If customer submits a claim for breach of warranty within one (1) year from the shipment date to the customer, it is understood that the customer’s sole and exclusive remedy shall be the repair or replacement of the defective items. It is further understood that the above stated warranty shall not apply if the customer in any way modifies, alters, or misuses Fluidic Systems equipment. This includes the malfunction, damage, or wear caused by the incompatibility of Fluidic Systems equipment with structures, accessories, equipment or materials not supplied by Fluidic Systems.

Materials

Fluidic Systems does not manufacture materials or chemicals. Therefore, it is understood that it is the user’s responsibility to be thoroughly familiar with the materials being dispensed and confirm that they present no hazard when used in the intended operating environment and are compatible with the equipment’s construction materials and operating pressures.

It is further understood that it is the user’s responsibility to be familiar with the hazards of exposure to the various chemicals being dispensed and ensure that all necessary safety precautions applicable to the operation of the equipment and material’s exposure are strictly followed. Additionally, the chemicals associated with the equipment’s use are properly disposed of in accordance with local, state, and federal laws.

Service

Fluidic Systems maintains a trained service staff that is available for installation, field support, and the training of personnel.

To place an order, contact your Fluidic Systems distributor, or call:

714-556-6747
Fax: 714-556-6762

All written and visual data contained in this document reflect the latest product information available at the time of publication. Fluidic Systems reserves the right to make changes at any time without notice.