

Document Number:	<b>903132</b>	Revision:	<b>A</b>
Description:	<b>Seal Replacement Instructions</b>	Date:	<b>March 22, 2016</b>
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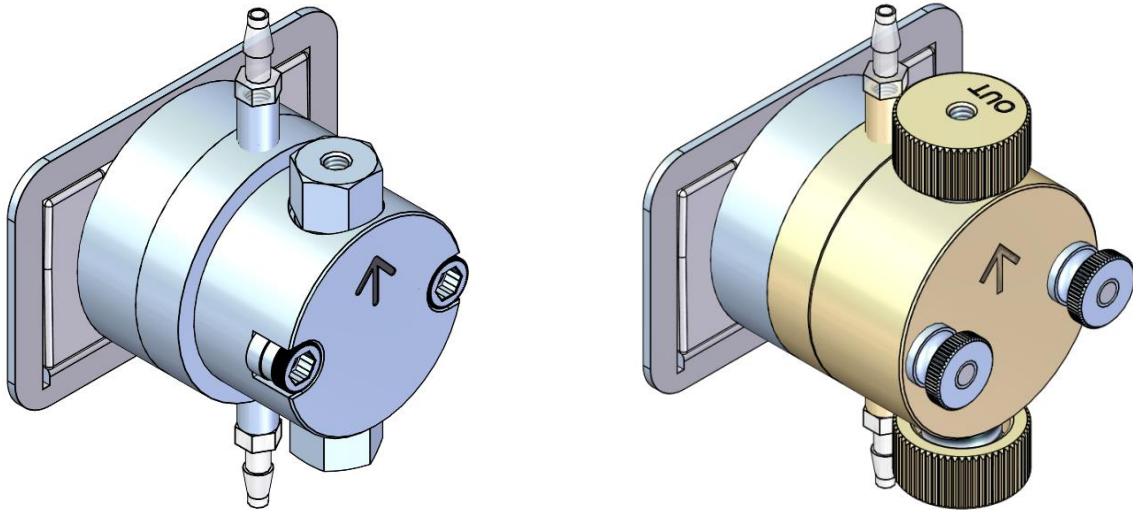
REV	CHANGE DESCRIPTION	ECO #	INITIALS	DATE
A	Release	-	SF	3/22/15

## 1.0 Overview

This procedure describes the proper installation and conditioning of seals for direct drive pumps: Mini Series-I, Series-I, Series-I+, M1-Class and MX-Class.

SSI pumps require regular service, typically seal and check valve replacement. The spare parts and procedures for replacing individual components are covered in other documentation.

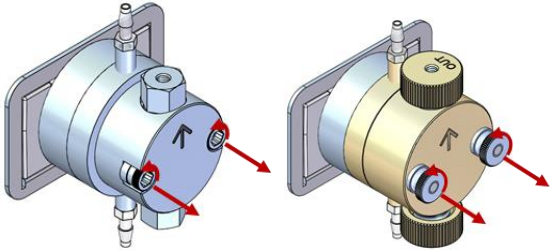
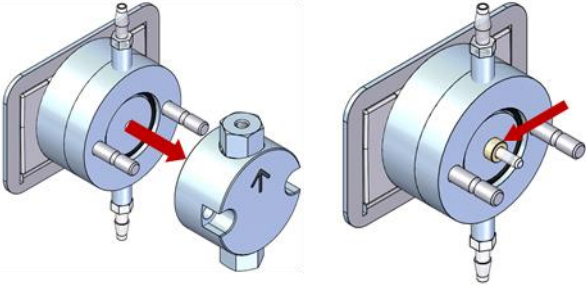
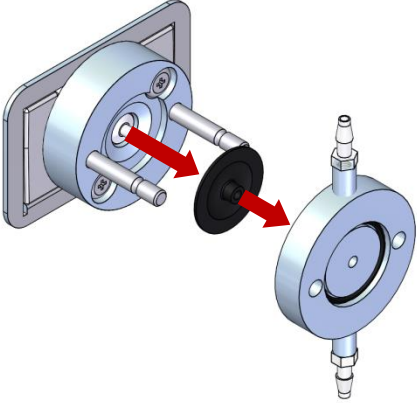
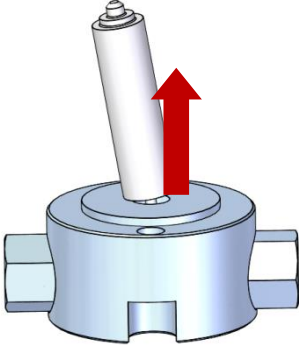
The head and self-flush should look similar to the following:



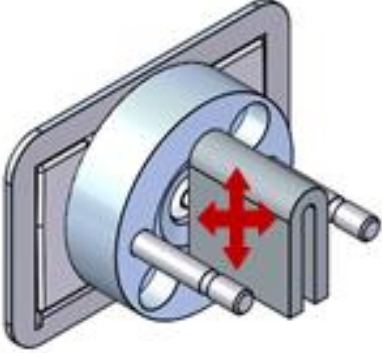
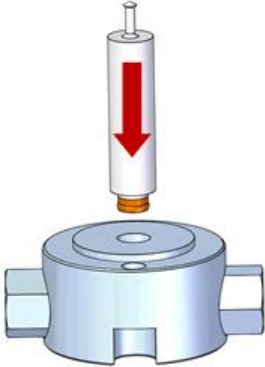
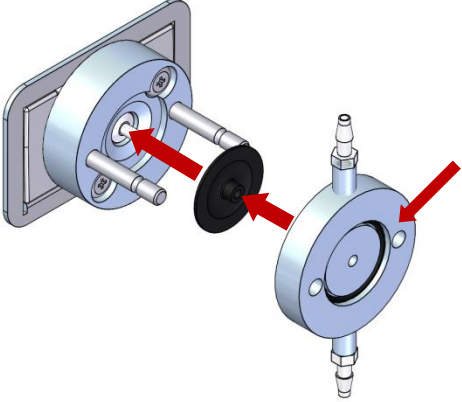
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## 2.0 Installation Procedure

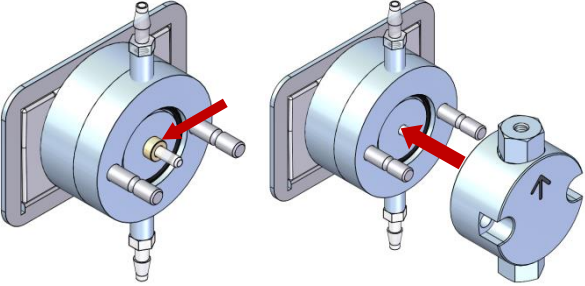
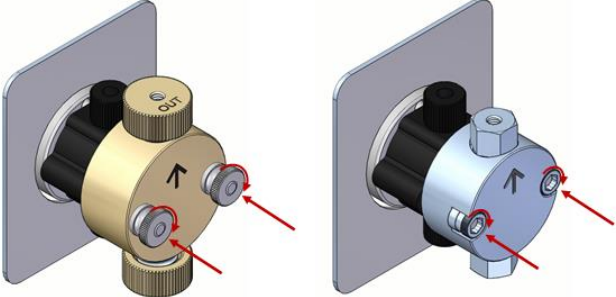
Before removing the pump head, turn OFF the pump power, and disconnect the inlet and outlet lines from the check valve housings.

<p><b>Step 1</b></p>	<p><b>Removing the Fasteners:</b> Remove the two pump head fasteners. Use a 3/16" hex key for recessed nuts. If necessary, use pliers for thumb nuts.</p>	
<p><b>Step 2</b></p>	<p><b>Removing the Pump Head:</b> Carefully pull the pump head forward and off the guide pins. Pull straight and slowly to prevent damage to the piston. <b>Note:</b> The seal back-up washer may remain on the piston. Remove the washer from the piston if it did not stay in the pump head.</p>	
<p><b>Step 3</b></p>	<p><b>Removing the Self-Flush:</b> Carefully separate the flush housing from the pump. Pull straight and slowly to prevent damage to the piston. Remove the self-flush diaphragm from the piston by carefully grasping the sealing flange on two sides and sliding it straight out on the piston being careful not to exert side pressure that may break the piston.</p>	
<p><b>Step 4</b></p>	<p><b>Removing the Seal:</b> Insert the flanged end of the seal insertion/removal tool into the seal cavity on the pump head. Tilt it slightly so that the flange is under the seal, and pull out the seal. <b>Caution:</b> Using any other "tool" will scratch the finish of the sealing surface and create a leak.</p>	

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<p><b>Step 5</b></p>	<p><b>Cleaning the Piston:</b> Use the scouring pad included in the seal replacement kit to clean the piston. Gently squeeze the piston within a folded section of the pad and rub the pad along the length of the piston. Rotate the piston frequently to assure the entire surface is scrubbed. After scouring, use a lint-free cloth, dampened with alcohol, to wipe the piston clean.</p> <p><b>Note:</b> Do not exert pressure perpendicular to the length of the piston, as this may cause the piston to break.</p>	
<p><b>Step 6</b></p>	<p><b>Replacing the Seal:</b> Place a high pressure replacement seal on the rod-shaped end of the seal insertion/removal tool so that the spring (energizer) is visible when the seal is fully seated on the tool. Insert the tool into the pump head.</p> <p><b>Note:</b> Be careful to line up the seal with the cavity while inserting.</p>	
<p><b>Step 7</b></p>	<p><b>Reinstalling the Self-Flush:</b> Gently place the new diaphragm onto piston with center hub protruding towards you. Push diaphragm all the way back into recess and against metal base of piston. Carefully replace the self-flush housing, making sure that the O-ring is properly installed in the self-flush housing.</p> <p><b>Caution:</b> Do not exert pressure perpendicular to the length of the piston, as this may cause the piston to break.</p>	

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<p><b>Step 8</b></p>	<p><b>Reinstalling the Pump Head:</b> Place the seal back-up washer on the piston. Replace the pump head. Make sure that the inlet check valves are on the bottom and the outlet check valves are on top.</p> <p><b>Note:</b> Push onto guide pins straight and slowly to prevent damage to the piston. Do not force the self-flush housing or pump head into place.</p>	
<p><b>Step 9</b></p>	<p><b>Reinstalling the Fasteners:</b> Reinstall fasteners. As you tighten, alternate side-to-side until snug. For recessed nuts, turn 1 flat past snug using a 3/16" hex key. For thumb nuts, turn 1/6 rotation past snug; if necessary, use pliers.</p>	

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### 3.0 Condition the Seal(s)

New seals must be conditioned prior to use. Conditioning is the process of running the seals wet under controlled conditions to allow surfaces to seat and break-in for proper function of the seal.

**Note:** Use only pure solvents to condition new seals. Buffer solutions and salt solutions should never be used to condition new seals. Recommended solvents are HPLC-grade methanol, IPA and water, and mixtures of these liquids.

**Suggested Conditioning Parameters:** Using a restrictor coil or a suitable column, run the pump with a 50:50 solution of IPA/Water or Methanol/Water for 30 minutes at the back pressure and flow rate listed under PHASE 1 below, according to the pump head type. Then run the pump for another 15 minutes under conditions for PHASE 2 below, according to head type.

	<b>PHASE 1</b>	
<b>Pump Type</b>	<b>Pressure</b>	<b>Flow Rate</b>
24 ml/min or less pump	1,000 psi	<3 mL/min
40 ml/min or higher pump	250 psi	<3 mL/min
	<b>PHASE 2</b>	
<b>Pump Type</b>	<b>Pressure</b>	<b>Flow Rate</b>
24 ml/min or less pump	2,000 psi	3-4 mL/min
40 ml/min or higher pump	500 psi	<6 mL/min

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