

SL Rotary Couplings (SL-P8P4, SL-MP9AV9, SL-MP9MP9R-L)

Description:

The **SL** swivel was designed to be a versatile, compact union for use in conveying high pressure fluid from a stationary line to a rotating or twisting assembly. Due to the unique seal design, the torque necessary to rotate the swivel is relatively small, even at high pressures. At 10,000 psi only 5 in-lb is required for rotation.

Several types of the SL swivel are available. The SL-P8P4 has a 1/2 NPT inlet and a 1/4 NPT shaft, and is rated up to 15,000 psi (1035) and 35 gpm. The SL-MP9AV9 and SL-MP9MP9R-L have a 9/16 medium pressure inlet and a 9/16 medium pressure shaft. Both are rated up to 22,000 psi (1500 bar) and 25 gpm. All of these swivels are available with 0 degree or 90 degree inlet ports.

| Model | SL-P8P4 | SL-MP9AV9, SL-MP9MP9R-L |
|--------------------------|--------------------|----------------------------|
| Operating Pressure Range | 1,000 - 15,000 psi | 2,000 - 22,000 psi |
| Inlet Connection | 1/2 npt 0° or 90° | 9/16 MP 0° or 90° |
| Rotation Rate, Max | 1000 rpm | 800 rpm |
| Flow Rating | 1.6 Cv | 1.1 Cv |
| Shaft Connection | 1/4 npt | 9/16 MP |

A single high pressure seal is used to provide near leak free operation. It is quite durable, but is considered a wearable item. The simple design allows the seal to be replaced easily and inexpensively. Note that when ordering replacement parts, the SL-P8P4 and the SL-MP9AV9 and SL-MP9MP9R-L use different high pressure seals, seats and springs.

Operation:

If the SL is being used as an inlet swivel to a handgun, the swivel shaft should be connected to the gun inlet and the high pressure hose connected to the inlet nut. This swivel should not be used as a self-rotating tool (rotated by waterjet thrust) as it does not have any type of speed control.

Use Parker Thread Mate and teflon tape for pipe thread connections and use anti-seize for the medium pressure autoclave connections. The bearings should be greased or replaced when high pressure seal maintenance is performed.

Troubleshooting:

Swivel will not rotate: Bearings need to be replaced. If there is water in them and they are corroded, replace the shaft seals.

Seal Leak: The seal may leak initially up to several thousand psi, but should pop closed as pressure is increased. If operating pressure is reached and the seal is leaking continuously, the high pressure seal may need to be replaced. Refer to the maintenance below. Inspect the face of the inlet nut for pitting or grooves from erosion; if present, the swivel will leak until the inlet nut is refaced or replaced.

Seals wear out quickly: The tool must be disassembled and inspected. The carbide seat should be checked for being installed in the right direction, and it should not have any chips or erosion marks on it. The bore of the shaft where the high pressure seal is located should be checked for grooving. If it is worn larger than .319" or larger than .383", the shaft will need to be replaced.

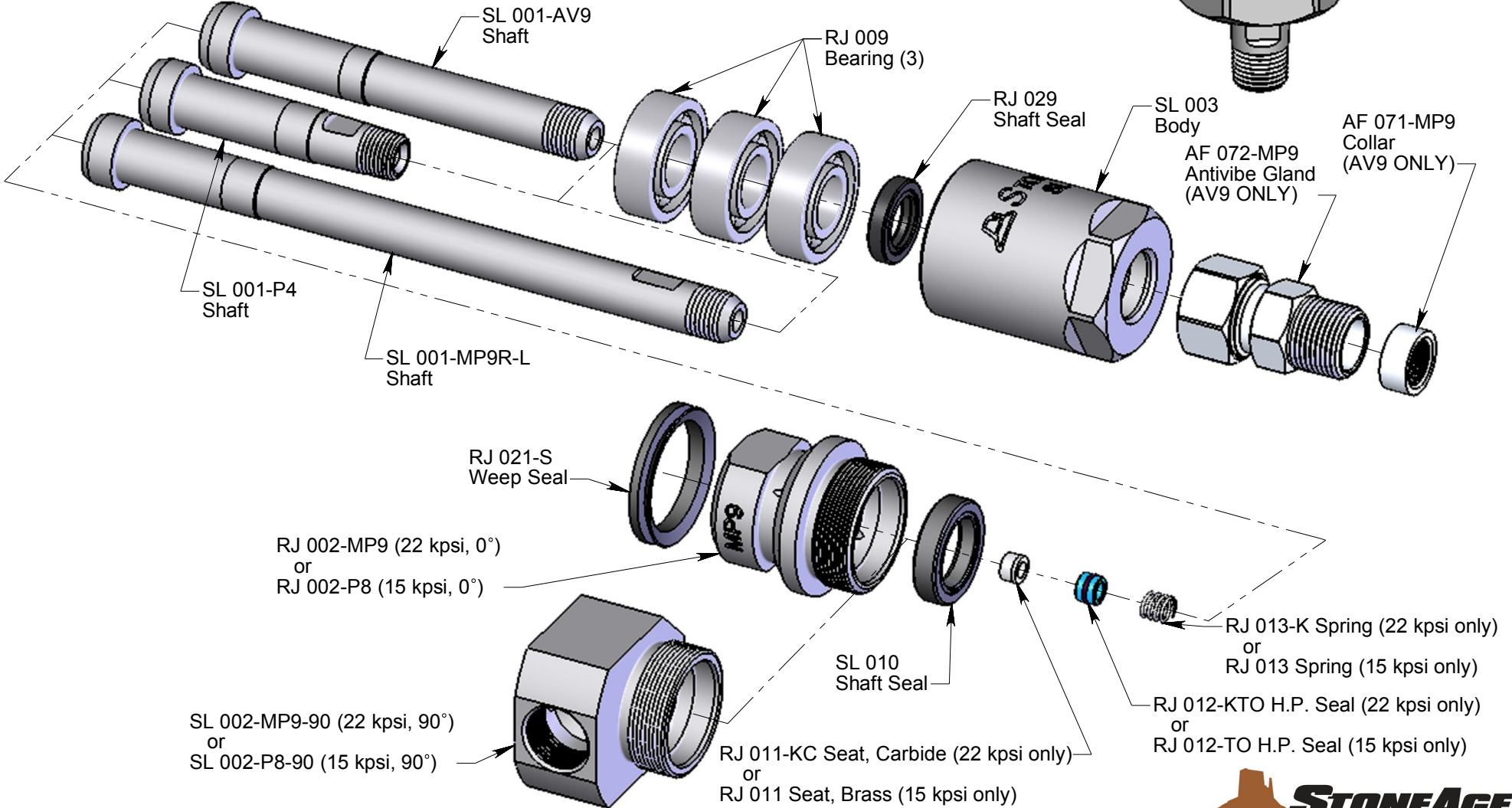
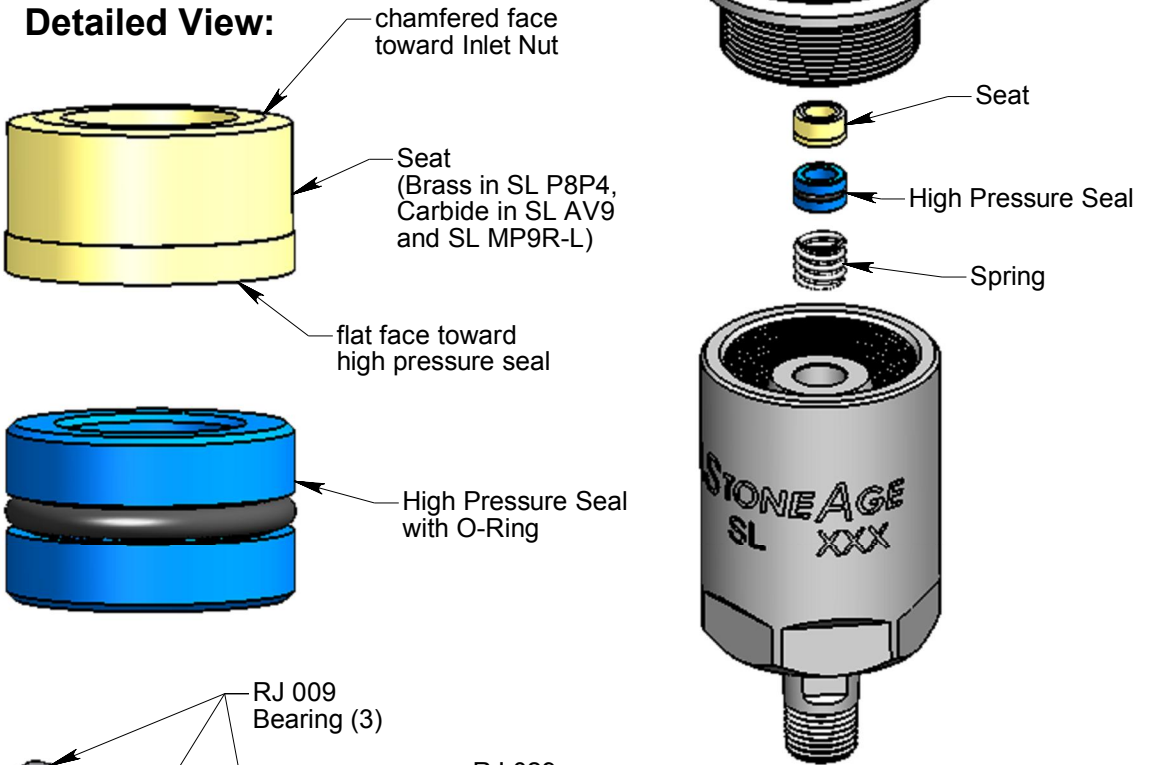
Maintenance: *Blow out all water with compressed air before storing tool!

When the swivel begins to leak continuously from under the weep seal, it is time to replace the high pressure seal.

To replace the high pressure seal:

- Unscrew the Inlet Nut from the Body.
- Remove the Seat, High Pressure Seal and Spring from bore of Shaft.
- Inspect face of Seat that goes against the Inlet Nut for dings or erosion lines. Replace if damaged. Inspect face of Inlet Nut where the Seat makes contact for the same problems. The Inlet Nut can be refaced if damaged.
- Inspect bore of Shaft for a wear ring. If this ring is deeper than .010", replace the Shaft.
- Place Spring in bore of Shaft.
- Apply grease to a new H.P. Seal and install in bore of shaft.
- Install Seat in shaft bore with flat face toward seal as shown in detail.
- Apply anti-seize to threads of Inlet Nut and thread into Body. Make sure that the Seat stays in bore of Shaft. Tighten Inlet Nut to 40 ft-lb.

Detailed View:



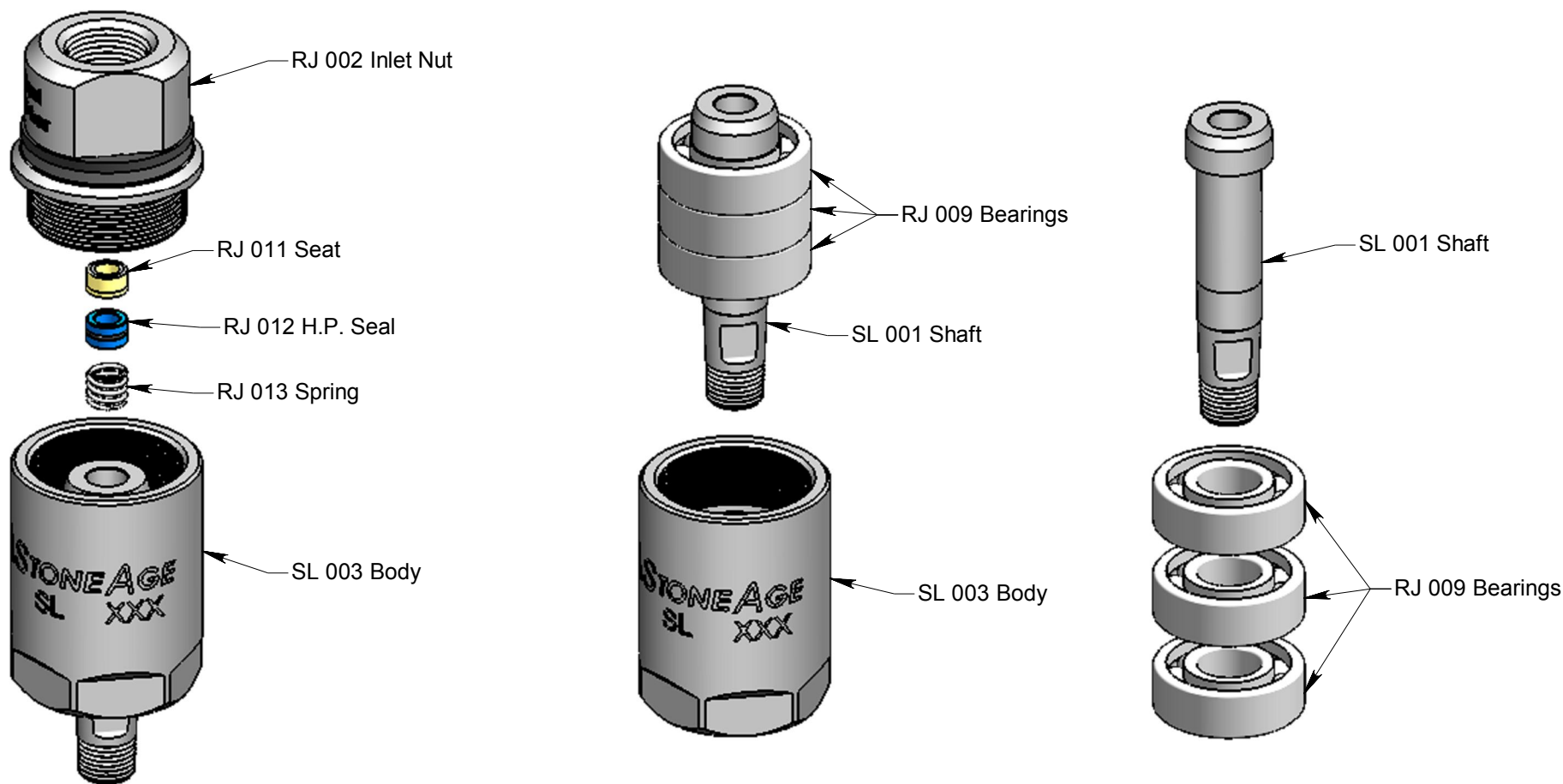
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Disassembly:

1. Unscrew the Inlet Nut from the Body.

2. Remove the Seat, H.P. Seal and Spring from bore of Shaft.
3. Push Shaft with Bearings out of Body.
4. Press Shaft out of Bearings.

5. Inspect Shaft Seals in Body and Inlet Nut for damage; remove them if needed.



Assembly:

1. If Shaft Seals were removed, install new ones in the Inlet Nut and Body as shown. Apply grease to the lips of the seals.

2. Install Weep Seal on Inlet Nut. (There is no weep seal on 90° Inlet Nut.)

3. Grease new bearings (RJ 009) and press them onto shaft one at a time.

4. Push Shaft with bearings into Body.
5. Install Spring in bore of shaft.

6. Apply grease to the H.P. Seal and install in bore of shaft.

7. Install Seat with flat face against H.P. Seal (See Section 6.0 for detail.)

8. Apply anti-seize to threads of Inlet Nut; thread into Body, making sure Seat stays in bore of Shaft. Tighten to 40 ft-lb.

