

40 kpsi Slim Rotary Couplings (SL-H9H9-C, SL-H9H9-CL & SL-H9H9R-CL)

Pat. 6,059,202 and Pat. Pending

Description:

The **SL 40kpsi** swivels were 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. 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.

The SL-H9H9s have a straight flow through design with a leak free high pressure seal Cartridge Assembly, so no pump power is wasted. The high pressure seal can be expected to last a minimum of 40 to 60 hours, and is simple to replace. The tool can be used at operating pressures up to 40,000 psi (2800 bar) and flow rates from 4 to 12 gpm. The tool has a **9/16 high pressure autoclave female inlet**, a **9/16 high pressure autoclave male outlet**.

Maximum Operating Pressure	40,000 psi (2800 bar)
Inlet Connection	9/16 HP
Rotation Rate, Max	2000 rpm
Flow Rating	.43 Cv
Shaft Connection	9/16 HP

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.

Troubleshooting:

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

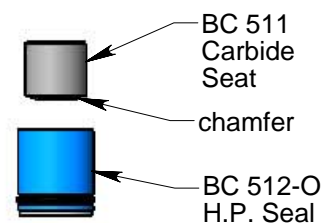
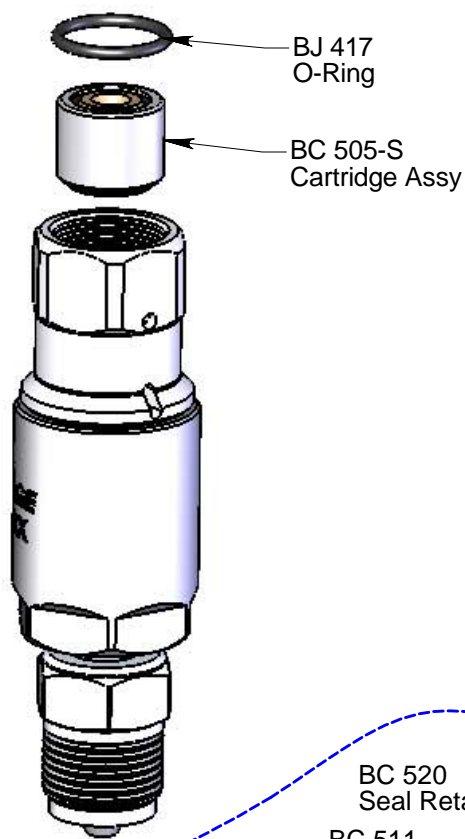
Seal Leak: The seal may leak initially up to several thousand psi, but should pop closed as pressure is increased. If operating pressure is reached and the seal is leaking continuously, the high pressure seal may need to be replaced. Refer to the maintenance below. Inspect the face of the shaft for grooves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

Seals wear out quickly: Remove and inspect the cartridge parts. The carbide seat should be checked for chips or erosion marks on it. When the life of the high pressure seal becomes noticeably less, the seal retainer needs to be replaced. Also replace the carbide seat if it has not been replaced with each seal change.

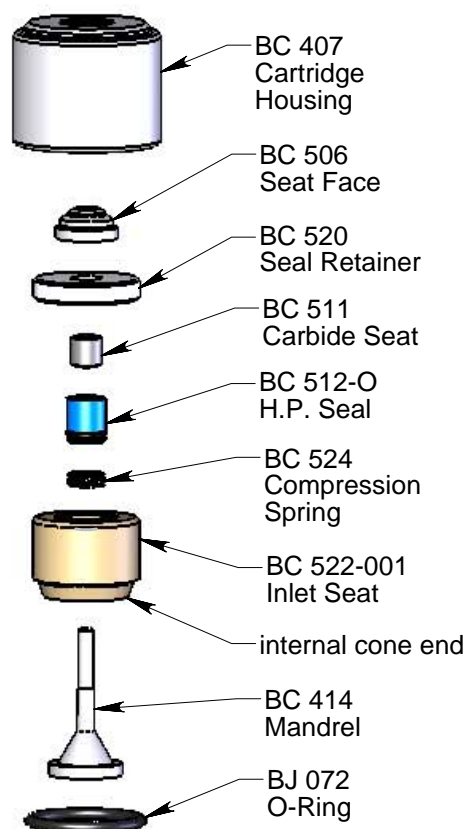
Maintenance:

To replace the high pressure seal:

1. Remove the O-Ring (BJ 417) from inlet port. It is easiest to push it upward from the round weep hole.
2. If necessary, use two picks inserted thru the slots to pry the Cartridge Assy (BC 505-S) up and out of the Body.
3. Turn the swivel inlet end up; insert a fresh Cartridge Assy into the inlet port and re-insert the O-ring behind the Cartridge Assy to secure it in place.

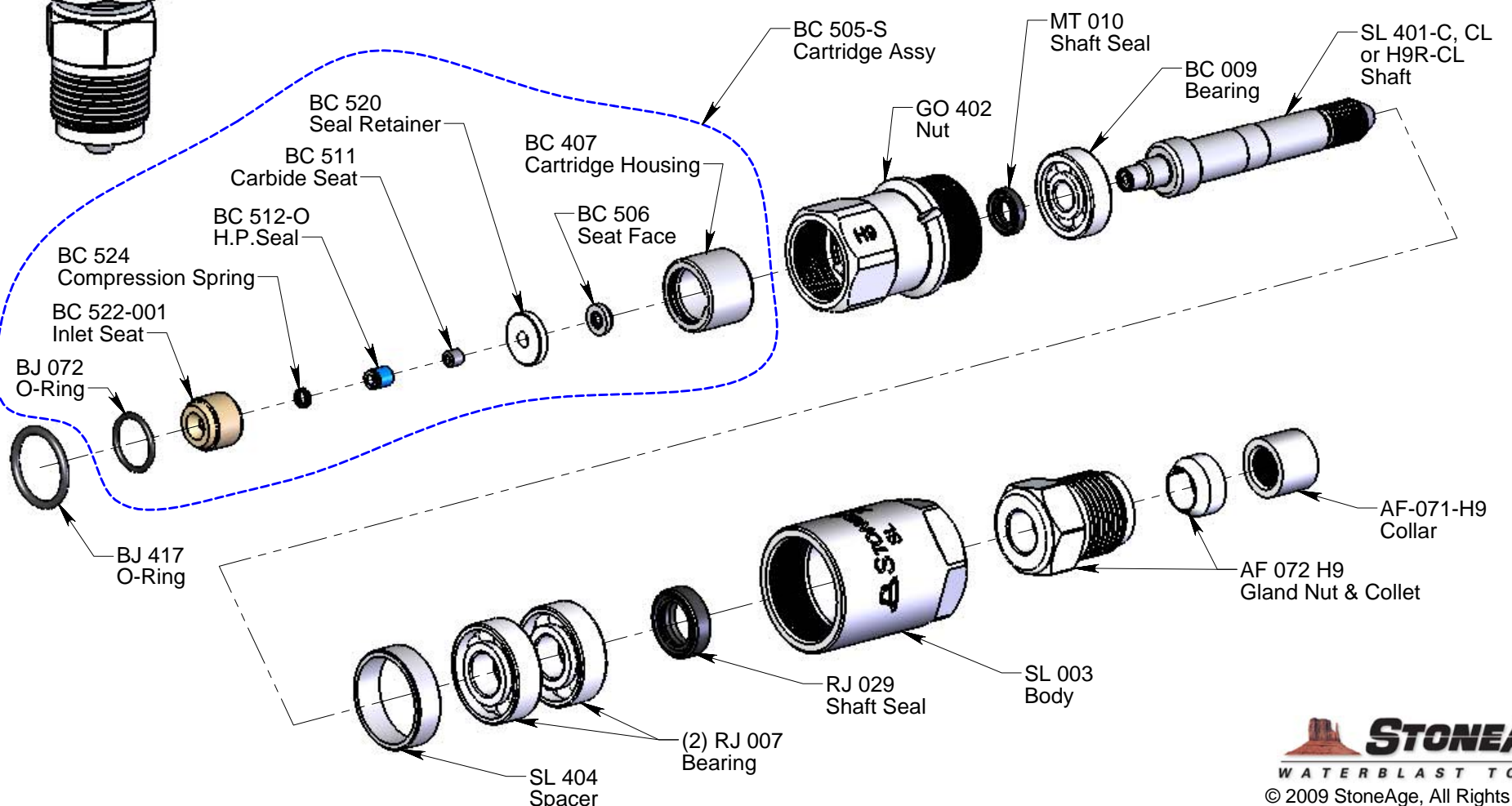


Seal & Seat Detail



To assemble the Cartridge Assy:

1. Place Mandrel (BC 414) on a flat surface.
2. Stack the Inlet Seat (BC 522-001) with the internal cone at the bottom onto the Mandrel.
3. Insert Compression Spring (BC 524) into bore of Inlet Seat.
4. Insert H.P. Seal (BC 512-O) into bore of Inlet Seat making sure the end with the O-Ring and seal support goes in first. (see detail)
5. Stack the Carbide Seat (BC 511) making sure the chamfered end is against the H.P. Seal. (see detail)
6. Stack the Seal Retainer (BC 520) around the Carbide Seat.
7. Stack the Seat Face (BC 506).
8. Slip the Cartridge Housing (BC 407) over entire stack and pick up the whole assembly with mandrel still inserted.
9. Insert O-Ring (BJ 072) into slot in Cartridge Housing to capture the components. Be sure to check that the entire O-Ring is seated properly.
10. Remove the Mandrel.

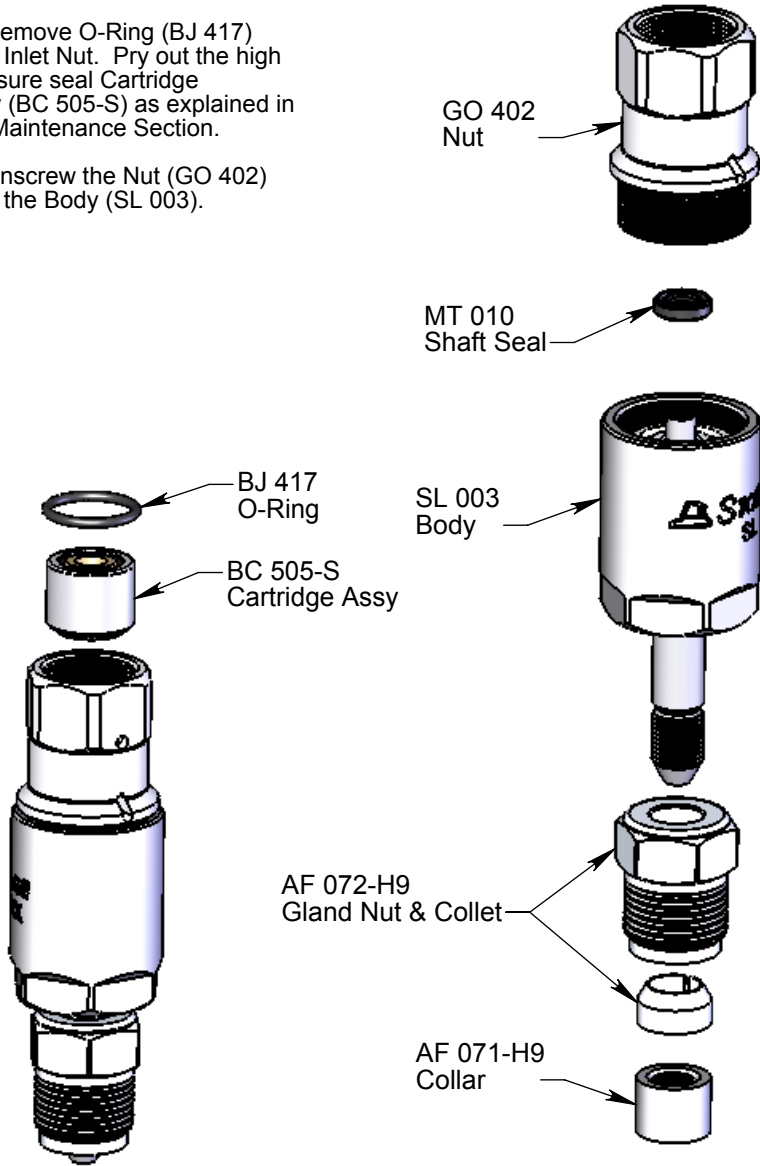


40 kpsi Slim Rotary Couplings with Cartridge (SL-H9H9-C, SL-H9H9-CL, SL-H9H9R-CL)

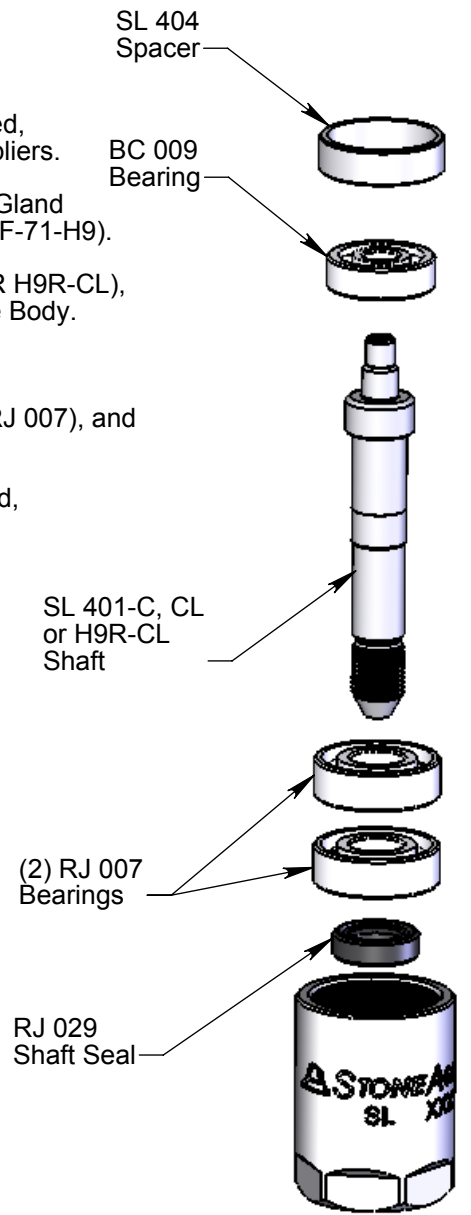
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Disassembly:

1. Remove O-Ring (BJ 417) from Inlet Nut. Pry out the high pressure seal Cartridge Assy (BC 505-S) as explained in the Maintenance Section.
2. Unscrew the Nut (GO 402) from the Body (SL 003).



3. If the Shaft Seal (MT 010) is damaged, remove it from the Nut using snap ring pliers.
4. Remove the Coupling (AF 073-H9), Gland Nut & Collet (AF-072-H9), and Collar (AF-71-H9).
5. Remove the Shaft (SL 401-C, CL OR H9R-CL), Bearings, and Spacer (SL 404) from the Body.
6. Remove the Spacer.
7. Remove the Bearings (BC 009, (2) RJ 007), and from the Shaft.
8. If the Shaft Seal (RJ 029) is damaged, remove it from the Body and replace.



Assembly:

1. If Shaft Seal (RJ 029) was damaged or removed, replace with a new one. Install in the Body (SL 003) with lip facing up as shown. Apply grease or Armour All to lip of seal.
2. Install Bearing (BC 009) on small end of the Shaft (SL 401-C, CL or H9R-CL). Grease pack bearing.
3. Install Bearings (2X RJ 007) on Shaft (SL 401-C, CL or H9R-CL). These bearings are angular contact and need to be installed as shown. Grease pack bearings.

4. Install Shaft and Bearings into Body (SL 003).
5. Slide Spacer into body over BC 009 Bearing.
6. If Shaft Seal (MT 010) was damaged or removed, replace with a new one. Install in the Nut (GO 402) with lip facing up as shown. Apply grease or Armour All to lip of seal.
7. Apply anti-sieze to threads of Nut; thread into Body. Tighten to 40 ft-lb.

8. Install the Gland Nut & Collet (AF-072-H9), Collar (AF-71-H9), and Coupling (AF 073-H9).
9. Install the high pressure seal Cartridge Assy as shown in the Maintenance Section.

