

Spincat SC-H-S Swivel

US Patent 5,909,848 and International Patents

Description:

The **Spincat** is a self-rotating swivel designed for coil tubing well service. The powerful rotating jets cover a large area for efficient cleaning. Jet reaction force powers rotation of the head. An internal centrifugal speed control maintains rotation speeds of 80 to 150 rpm. The Spincat uses a high viscosity synthetic gear oil for lubrication, such as Texaco Pinnacle 220, Chevron HiPerSyn 220 or equivalent. The oil is available from StoneAge as part number TMC 048.

The tool has a straight flow-through design with a leak-free high pressure seal so pump power is not wasted. It has a 1-1/2 AMMT box inlet thread. The tool can be used at temperatures up to 200°C, and can be used with up to 30% HCL and Nitrogen injection. (Note: if used with HCL, flush tool with clean water after use.)

If the Spincat will be used with high external borehole pressures, make certain that the body of the tool is completely full of lubricating fluid; air pockets are compressible and this could lead to oil seal failure and loss of lubrication.

The Spincat can be used at operating pressures of 1000 to 5000 psi and flow rates of 1 to 3 bpm (40 to 120 gpm) with standard head porting. Custom porting can be ordered for use up to 5 bpm (200 gpm).

The standard nozzle head has five ports with 1/8 npt threads; one at 15 degrees forward, two at 45 degrees forward and two at 90 degrees to the axis of rotation. Some of the ports may be plugged in a balanced pattern to concentrate the flow in a particular direction. Alternate head porting patterns may be added to the same head to accommodate different flow rates.

Troubleshooting:

If the head will not rotate when at operating conditions, check head by hand to make sure it rotates freely. If it does not rotate freely by hand, the tool needs to be disassembled and repaired.

If the head rotates freely by hand, check the jet sizes and calculate pressure loss thru the coil tubing and check with your distributor or StoneAge to make certain there is enough jet torque to provide rotation.

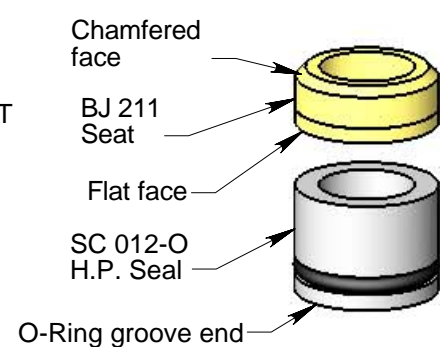
If the head rotates too fast, clean out old lubricating fluid and replace with fresh lubricant.

Maintenance:

The Spincat uses synthetic gear oil for a lubricant. To top off the tool with lubricant, follow steps below. If the tool is being rebuilt or the seal replaced, the lubricant may be poured directly into the body around the shaft before the inlet nut is installed. Once the inlet nut is installed, it is recommended to use the syringe with the port screw ports to completely remove all air bubbles. To replace the high pressure seal, follow the steps on the right.

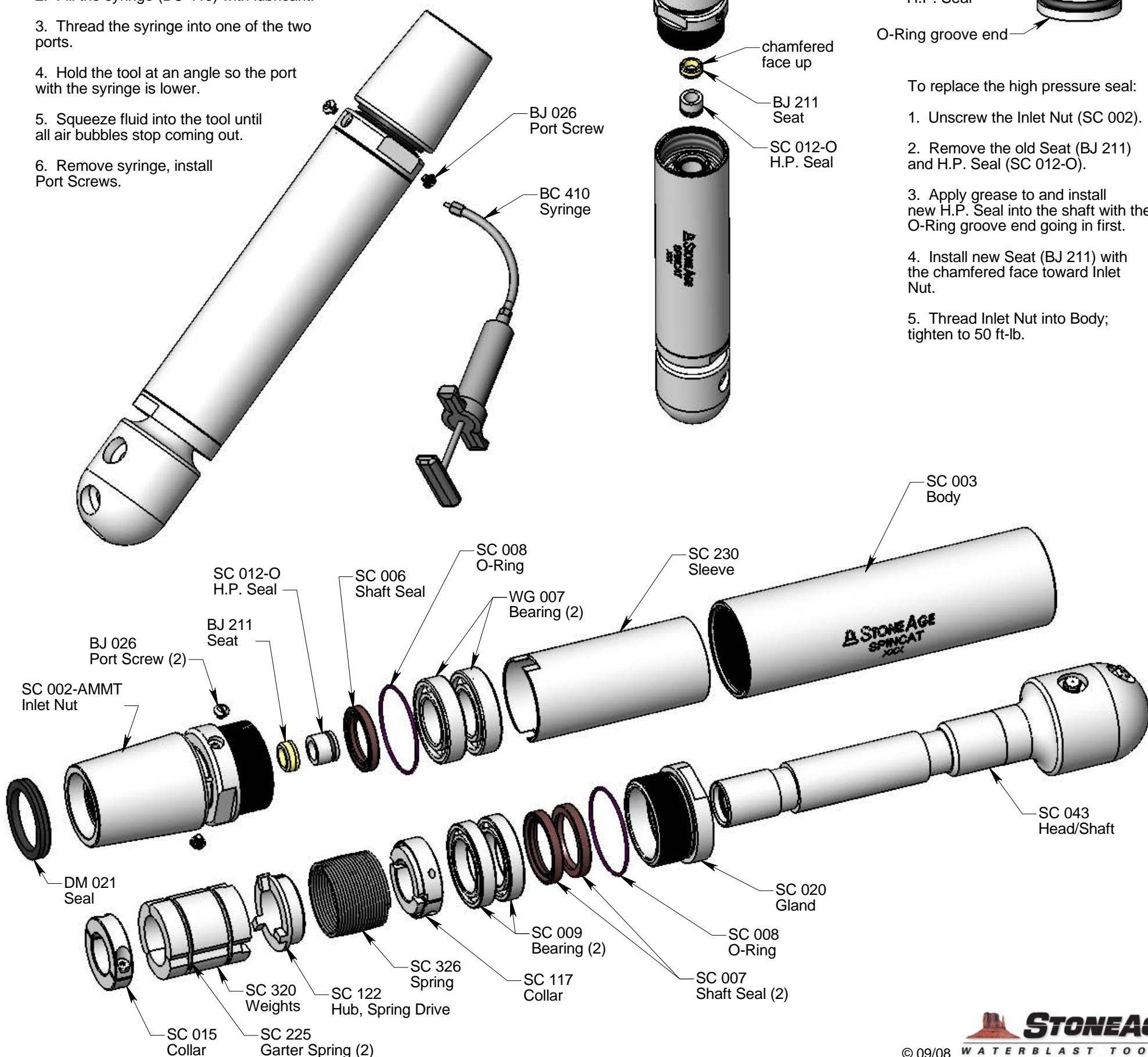
1. Remove both Port Screws (BJ 026).
2. Fill the syringe (BC 410) with lubricant.
3. Thread the syringe into one of the two ports.
4. Hold the tool at an angle so the port with the syringe is lower.
5. Squeeze fluid into the tool until all air bubbles stop coming out.
6. Remove syringe, install Port Screws.

Detail View of Seat & H.P. Seal



To replace the high pressure seal:

1. Unscrew the Inlet Nut (SC 002).
2. Remove the old Seat (BJ 211) and H.P. Seal (SC 012-O).
3. Apply grease to and install new H.P. Seal into the shaft with the O-Ring groove end going in first.
4. Install new Seat (BJ 211) with the chamfered face toward Inlet Nut.
5. Thread Inlet Nut into Body; tighten to 50 ft-lb.

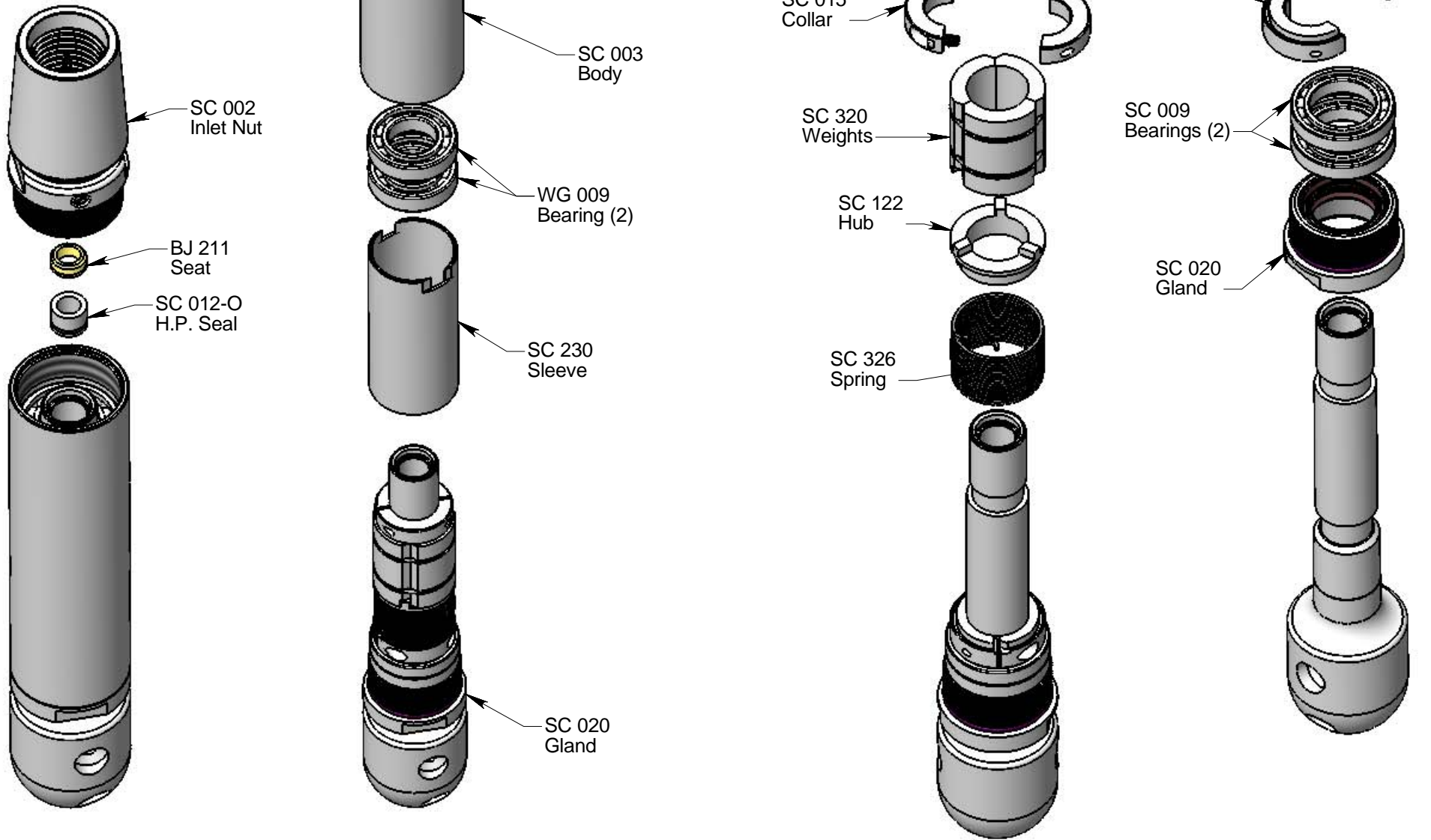


Disassembly:

1. Unscrew the Inlet Nut (SC 002) from the Body.
2. Remove the Seat (BJ 211) and H.P. Seal (SC 012-O) from the bore of the Shaft.
3. Remove the Shaft Seal (SC 006) from the Inlet Nut if it is damaged and needs replacing.

4. Unscrew the Body (SC 003) from the Gland (SC 020).
5. Pull off Bearings (WG 009) from Shaft; remove the Sleeve (SC 230).
6. Remove Collar (SC 015) from Shaft; lift off Weights (SC 320), Hub (SC 122) and Spring (SC 326).

7. Remove Collar (SC 117) from Shaft.
8. Press off Bearings (SC 009); remove Gland (SC 020).

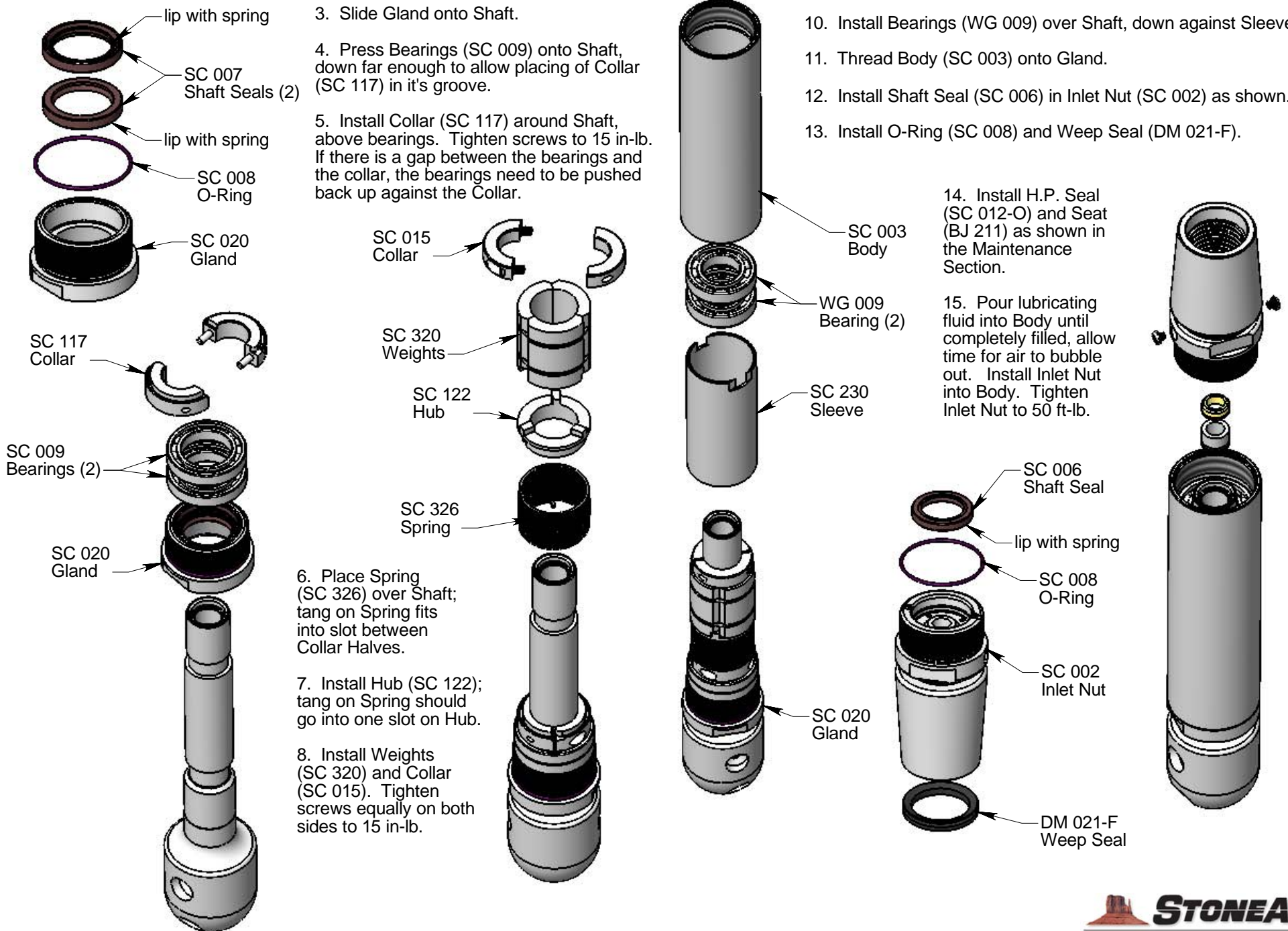


Assembly:

1. Install Shaft Seals (SC 007) in Gland (SC 020) as shown.
2. Install O-Ring (SC 008) over threads of Gland.

3. Slide Gland onto Shaft.
4. Press Bearings (SC 009) onto Shaft, down far enough to allow placing of Collar (SC 117) in it's groove.
5. Install Collar (SC 117) around Shaft, above bearings. Tighten screws to 15 in-lb. If there is a gap between the bearings and the collar, the bearings need to be pushed back up against the Collar.

9. Install Sleeve (SC 230).
10. Install Bearings (WG 009) over Shaft, down against Sleeve.
11. Thread Body (SC 003) onto Gland.
12. Install Shaft Seal (SC 006) in Inlet Nut (SC 002) as shown.
13. Install O-Ring (SC 008) and Weep Seal (DM 021-F).



6. Place Spring (SC 326) over Shaft; tang on Spring fits into slot between Collar Halves.
7. Install Hub (SC 122); tang on Spring should go into one slot on Hub.
8. Install Weights (SC 320) and Collar (SC 015). Tighten screws equally on both sides to 15 in-lb.

14. Install H.P. Seal (SC 012-O) and Seat (BJ 211) as shown in the Maintenance Section.
15. Pour lubricating fluid into Body until completely filled, allow time for air to bubble out. Install Inlet Nut into Body. Tighten Inlet Nut to 50 ft-lb.