



FULL CIRCLE

FULL-CIRCLE SWIVELS

1299 Lawrence Drive
Newbury Park, Ca. 91320
Phone: 805-498-2589
FAX: 805-499-2867



SMAC-112 90-degree Swivel Joint

Repair Manual for SMAC-series Swivel Joints

This manual contains valuable information on how to correctly disassemble a SMAC-series swivel to replace the seal kit. Follow all instructions in this manual and call us if you have any questions about the repair procedure. This Manual is an addendum to the Operation Manual, CS-2R.

To accomplish a seal repair, the swivel joint must be depressurized. This procedure must be performed according to all applicable Safety Codes and practices consistent with local, State, or Federal law and company procedures. If you do not know how to safely depressurize the swivel joint, either contact your immediate supervisor or call us at 805-498-2589. After the swivel joint is depressurized and isolated from any pipework that contains product under pressure, the procedure that follows in this manual should be implemented.

Always replace all three seal components as shown below. Do not attempt to reuse a used seal component with a new one. A seal leak could develop with resultant fire and/or explosion.



Figure 1.

Seal Kit comprising stationary metallic seal w/o-ring, intermediary seal ring, and dynamic seal on bearing holder.

STEP 1.

After the piping system has been depressurized, remove the swivel joint from the pipework and install in a vice with the rotating portion of the swivel joint facing up.

STEP 2.

Eight bolts hold the bearing retainer plate onto the swivel joint housing. Remove the eight bolts.

STEP 3.

With the bearing retainer plate removed, the rotating female end of the swivel can be removed. The ball bearing is attached to the female rotating portion of the swivel, so it will come out as well. See Figure 2.



figure 2.

STEP 4.

Now remove the intermediary seal ring, the metallic seal and the spring. See Figure 3.



Figure 3.

STEP 5.

With a clean rag, wipe-off any residue, corrosion, oil, or grime that may have deposited inside of the swivel housing. For a successful seal repair, the inside of the main housing must be as clean as possible.

Note: Carefully inspect the spring at this point. The spring can usually be reused. However, if any corrosion or damage is noted, replace with a new one. See Figure 4.



Figure 4.

STEP 6.

Using new seal kit components as shown in Figure 1., install the inspected spring into the main housing first. The spring is not held tightly in the main housing so it has a very loose fit. Either end of the spring can be installed first.

STEP 7.

Now install the metallic seal with o-ring, o-ring end first. Make sure that the two pins pressed into the outside diameter of the metallic seal are aligned with the half-moon grooves in the main housing. Keep your fingers away from the lapped seal face of the metallic seal when applying downward pressure to install it. Once the metallic seal engages the spring and noticeable pressure is felt, the metallic seal has been successfully installed. See Figure 5.



Figure 5.

STEP 8.

This is the most critical step as it involves aligning the intermediary seal ring properly so that it does not break when the bearing retainer plate is bolted onto the main housing.

Note: The intermediary seal ring is lapped on both sides. Keep your fingers away from these lapped surfaces as they must remain clean at all times.

Carefully place the intermediary seal ring on top of the metallic seal making sure that the lapped seal face is perfectly aligned with the lapped seal face of the metallic seal. If the intermediary seal ring is off to one side, it will break when you bolt down the bearing retainer plate. If you have a factory provided fixture such as the one shown in Figure 6., this fixture will

perfectly align the intermediary seal. After the metallic seal is placed into the main housing, the fixture can then be installed through the inside diameter of the metallic seal, bolt-end first. Then, the intermediary seal ring can be slid over the fixture.



Figure 6.
Factory provided fixture

STEP 9.

Now install the rotating female portion of the swivel joint that contains the ball bearing. If the fixture is being used, slide this component over the fixture. At the end of this component is a lapped seal. Keep your fingers away from the lapped surface. You will feel the pressure of the spring as this component is installed. Push the rotating female end with ball bearing all the way in until the ball bearing contacts a step in the housing and cannot be pushed any further. While holding the rotating female end all the way down, place the bearing retainer plate over this component and tighten the bolts.

STEP 10.

Rotate the swivel several times to insure it is rotating smoothly. If the bearing retainer plate was installed off to one side, it may be contacting the rotating female end. If this is the case, loosen the bolts and gently tap on the side of the bearing retainer plate to align it. Proceed to tighten all bolts.

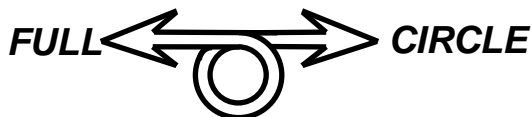
Your repaired swivel joint is now ready to be reinstalled in the pipework. Follow all company procedures for repressurizing the swivel joint. If you are not certain how to do this, contact your immediate supervisor or contact us at 805-498-2589.

Special Notes:

All swivels manufactured by FULL-CIRCLE contain a mechanical seal. As such, care must be taken to insure the lapped seal faces remain clean. The seal replacement procedure discribed in this manual is similar to most procedures discribed in pump seal replacement manuals. Only qualified service personell familiar with mechanical seal component replacement procedures should be authorized to attempt a seal repair.

All FULL-CIRCLE swivels do not require routine greasing. Do not attempt to push grease or other lubricants into the swivel in the event of a leak. Instead, all seal components should be replaced. Pushing grease or other lubricant into the swivel may cause a leak or make a leaking swivel worse.

Your seal kit may include a bearing retainer plate. Make sure that this bearing retainer plate is used. The bearing retainer plate included with the seal kit contains a lip that is machined on the inside diameter. This lip corresponds with a lip machined into the outside diameter of the bearing holder. Old style bearing retainer plates cannot be assembled with new style bearing holders that contain the machined lip. All seal kits contain the new style bearing retainer plate and the new style bearing holder.



FULL-CIRCLE, INC.

P.O. Box 276, Newbury Park, CA 91319 USA

1299 Lawrence Drive, Newbury Park, CA 91320 USA

Telephone: 805/498-2589 FAX: 805/499-2867 email: info@fullcircleswivels.com

web: www.FULLCIRCLESWIVELS.com