Installing a SPEEDI-SLEEVE® - New life to worn crankshafts

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Tech tip

Sometimes when replacing a crankshaft seal, technicians will find shaft wear so severe that oil leaks are almost certain to occur even after the new replacement seal is installed.

In the old days, the remedy was either to replace the crankshaft or remachine its surface. Either choice was costly. Not so with today's better alternative: the SKF SPEEDI-SLEEVE®. These thin-walled stainless steel shaft repair sleeves can come to immediate rescue when a crankshaft needs a new sealing surface.

Low in cost, a SPEEDI-SLEEVE is slipped over the worn area quickly and easily, and provides a surface that is actually harder than that of a new shaft. The same size seal (as the one being replaced) fits snugly onto the new surface. And each SPEEDI-SLEEVE comes as a kit with a disposable installation tool.

Here's how to install an SKF SPEEDI-SLEEVE:

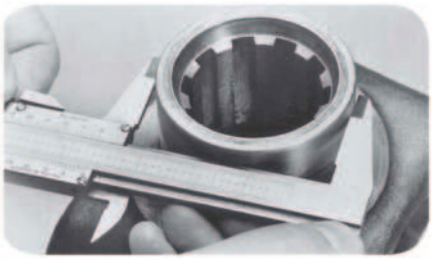


Figure 1

1. Clean the seal counter surface on the shaft. File down any burrs or rough spots.
2. Measure the diameter where the sleeve will be positioned on an unworn portion of the shaft **(see fig. 1)**. Measure in three positions and average the readings (to make sure the shaft is within recommended specifications). If the mean diameter is within the range for a given sleeve size, there is sufficient press fit built into the sleeve to prevent it from sliding or spinning without using an adhesive.
3. Determine where the sleeve must be positioned to cover the seal wear track. Measure to the exact point, or mark directly on the surface. The sleeve must be placed over the worn area, not just bottomed or left flush with the end of the shaft.
4. Shallow wear grooves do not require filling. Optionally, a light layer of a non-hardening sealant, e.g. Loctite 209, can be applied to the inside diameter surface of the sleeve. Clean away sealant that migrates to the shaft or sleeve outside diameter surface.
5. If the shaft is deeply scored (see note above) fill the groove with a powdered metal epoxy type filler*. Install the sleeve before the filler hardens, allowing the sleeve to wipe off any excess filler. Clean away any remaining filler from the sleeve outside diameter surface.

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* Loctite "Quickmetal" (#66010) or similar works well for filling a deep groove and can be used as an adhesive or sealant if desired. Use of an adhesive can, however, make the removal of the sleeve slightly more difficult.

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Installing a SPEEDI-SLEEVE® - New life to worn crankshafts – cont.

6. The flange end of the sleeve goes on the shaft first. Then place the installation tool over the sleeve **(see fig. 2)**.
7. Gently tap the center of the installation tool until the sleeve covers the seal worn surface **(see fig. 3)**. If the installation tool is too short, a length of pipe or tubing with a squared-off, burr-free end can be used. Be sure that the inside diameter of the pipe is the same as that of the installation tool. Use care not to scratch the precision ground sleeve outside diameter.
8. Leave the flange intact unless clearance is required. If the flange is to be removed, cut the flange perpendicular to the tear-off groove with a metal shear. Cut only into the tear-off groove, not onto the finished sleeve surface. After positioning the sleeve, use standard pliers to bend the flange back and forth around its circumference and along the shaft axis **(see fig. 4)**. The flange will break loose along the tear-off groove. Alternately, grasp the flange away from the seal surface and twist it into a coil being careful not to lift the end of the sleeve off the shaft or it will leave a jagged edge. Flange removal must be done with care to avoid damage to the sleeve outside diameter.
9. After the sleeve is installed, check again for burrs, which could damage the seal.
10. Lubricate the sleeve with the system medium before installing the seal.
11. Proceed with the seal installation.



Figure 2



Figure 3

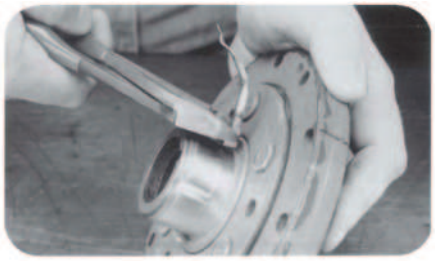


Figure 4

Removing a SPEEDI-SLEEVE

A SPEEDI-SLEEVE can be removed by applying heat to the sleeve with an electric heat blower, which will expand it enough to let it slide off the shaft without causing damage.

Alternatively, the sleeve can be removed in any of the following ways, always using care not to damage the shaft surface

- by relieving the press fit tension using a small hammer to peen across the full width of the sleeve
- by using a cold chisel to cut through the sleeve
- by using a pair of wire cutters starting at or near the flange and applying a twisting motion.

Please note that a SPEEDI-SLEEVE cannot be reused.

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