



**Date:** March 14, 2005

**Bulletin No. 686**

**Subject:** Crankshaft Oil Seal Surface Oil Leak Repairs

**Effective:** Immediately

**Model(s) or Series:** All Spark-Ignited Consumer RV and Commercial Mobile Generators and All Performer Engines:

**Purpose:**

This PSB is to inform about a cost effective alternative to crankshaft replacement when repairing oil seal oil leaks with visible crankshaft surface damage. This PSB applies to all gasoline and LP fueled RV and Commercial Mobile generators and Performer engines.

**Explanation:**

Improper machining, poor handling, excessive water, rust, dirt, heat, lack of lubrication, and/or high shaft speed can cause a sealing lip to groove the crankshaft and cause oil leakage.

Oil leakage from the oil seal can be cause by the following:

- A pressurized crankcase. The crankcase operates in a vacuum and can become pressurized due to a faulty breather, loose oil fill cap, or other air leaks into the crankcase. This pressure forces the oil past the seal. For additional information see **PSB 658**
- An improperly installed seal, resulting in:
  - o A nicked seal
  - o Nicks to the seal bore
  - o Debris particles under the seal
  - o A misaligned seal
- A crankshaft surface that is nicked, scratched, or dented
- A crankshaft surface finish that is polished improperly. This imperfection is not visible and cannot be detected or measured in the field.

The root cause of the oil leak should be verified by using an oil dye and black light test. The addition of dye to the crank case and use of a black light will help determine the leak's source when the engine is running. Refer to **PSB 660** for more information and instruction.

The use of a Chicago Rawhide Speed-Sleeve is a cost-effective alternative to replacing the crankshaft. A Speedi-Sleeve is a very thin walled sleeve which is pushed in position over the worn or damaged crankshaft. The Speedi-Sleeve creates a new damage free interface between the crankshaft surface and the oil seal, which results in a leak-proof and corrosion free sealing surface alternative. With a new oil seal installed, the crankshaft performs as new.

## **Installation Procedure:**

- Clean crankshaft surface. File down any burrs or rough areas.
- Apply a thin film of silicone RTV adhesive sealant to the crankshaft surface
- Determine where the sleeve must be positioned to cover the old seal wear tracks. 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.
- Press the Speedi-Sleeve onto the crankshaft with the flanged end first.
  - The installation tool that comes with the Speedi-Sleeve is too short to fit over most crankshafts.
  - Alternative installation tool: Fabricate an installation tool from a length of PVC pipe or tubing of same inside diameter as the outer diameter of the Speedi-Sleeve.
  - Square off the installation end of the tool and file off any burrs
  - Insert a plastic cap over the end of the installation tool or PVC pipe
- Gently tap the Speedi-Sleeve onto the crankshaft until the sleeve covers the seal's worn surface. Be careful not to damage the outside diameter of the Speedi-Sleeve.
- Leave the flange intact unless clearance is required. Follow manufacturer's instructions on removing the flange if needed.
- Check again for burrs that could damage the seal.
- Lightly oil the Speedi-Sleeve surface, and if necessary, the shaft end to ease fitting the seal.

## **Removal**

Speedi-Sleeves can be removed in one of the following ways:

- Applying heat to the sleeve
- Use of a pair of wire cutters starting at or near the flange and applying a twisting action
- Bend, flatten, or peen with a small hammer, across the full width of the sleeve to expand it

## **Speedi-Sleeves cannot be re-used**