

Voice/FAX: 608/271-2365
www.bopengineering.com

13 Hoff Court
Madison, WI 53711

BOP Engineering Viton® Crankshaft Rear Main Seal Instructions

Thank you for choosing the BOP Engineering Viton® Rear Main Seal, which is a direct replacement for the stock rope seal. The seal may ride on the serrated area of the stock crankshaft. We have not found this to cause any problems. The serration's of the new ESP cast cranks may be more aggressive than the stock crank. If the seal rides on an area of aggressive serration's, we recommend polishing this area prior to installation. If you have questions during installation please call, or contact us through our website.

For longevity and performance of the seal please follow these instructions carefully.

Recommended Installation During Initial Assembly

1. Prior to final installation of the crankshaft in the block, make sure the block and main cap seal cavities are clean and free of obstructions.
2. Place one half of the seal in the block seal cavity noting correct orientation of seal (Figure 1). With the seal fully seated in cavity, square up one end of the seal with the block/cap parting line and measure the amount of the seal that is protruding on the opposite end using a caliper or feeler gauge. The amount protruding should be 0.020 ± 0.005 ". This equates to 0.0075 to 0.0125" per side. If it is more, carefully remove material from the end of the seal with a file while keeping the ends square, until it measures the correct amount. Repeat this procedure for the main cap assembly.

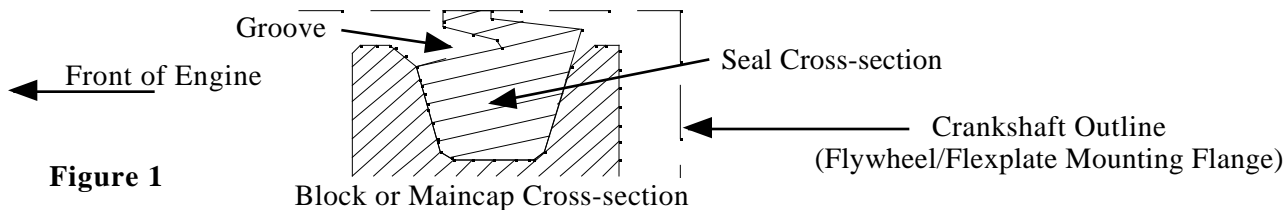


Figure 1

3. Remove seal from block and main cap. Fill the four anti-rotation holes with a high temperature red silicone sealer (Figure 2). This will help prevent any unwanted movement of the seal during operation. **Do not coat the back of the seal or groove area, nor the seal cavities!** This will cause excessive compression and wear on the lip.

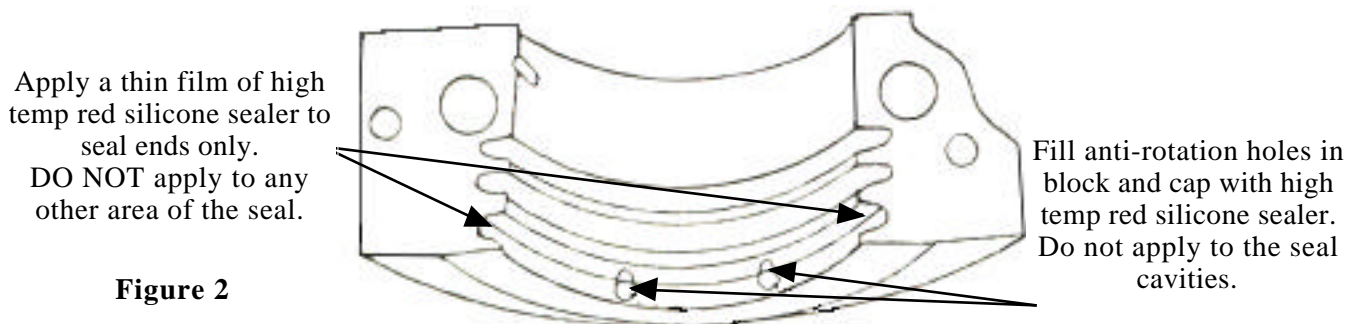
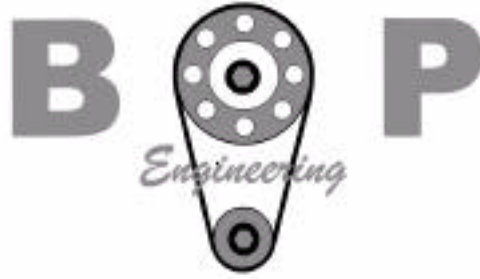


Figure 2

4. Reinstall the seal halves noting correct orientation of seal (Figure 1). Position with an equal amount of protrusion on each end. Place a thin film of high temperature red silicone sealer on the ends of the seal halves only (Figure 2).
5. Lightly coat the crankshaft mating surfaces of the seals with oil or lithium grease. Install crankshaft and torque all main cap bolts to manufacturer specifications.
6. Allow assembly to sit overnight to permit undisturbed curing of silicone sealer.



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Attention! 3 1/4" Rear Main Seal

DO NOT use the Service Replacement Procedure, as the crankshaft must be removed to properly install the 3 1/4" seal. The anti-rotation holes in both block and main cap must be filled with RTV to prevent oil seepage at those locations.

Recommended Service Replacement Procedure

1. Remove oil pan, oil pump and windage tray as per the factory service manual.
2. Remove rear main cap. Loosen, but do not remove the other main caps. Pull the rear of the crankshaft slightly away from the block to remove pressure on the rope seal.
3. Remove the stock rope seal from the main cap. The block-mounted rope seal may be removed by grasping one end firmly with needle-nose pliers and pulling it out.
4. Make sure seal cavities are clean and free of obstructions. Place the BOP Engineering seal in the block noting correct orientation of seal (Figure 1).
5. With the seal fully seated in cavity, square up one end of the seal with the block/cap parting line and measure the amount of the seal that is protruding on the opposite end using a caliper or feeler gauge. The amount protruding should be 0.020 ± 0.005 ". This equates to 0.0075 to 0.0125" per side. If it is more, carefully remove material from the end of the seal with a file while keeping the ends square, until it measures the correct amount. Repeat this procedure for the main cap assembly.
6. Remove seal only from the main cap. Fill the two anti-rotation holes in the cap with a high temperature red silicone sealer (Figure 2). This will help prevent any unwanted movement of the seal during operation. It is not necessary to fill the two anti-rotation holes in the block.
Do not coat the back of the seal or groove area, nor the seal cavities! This will cause excessive compression and wear on the lip.
7. Reinstall the seal in the main cap, noting correct orientation of seal (Figure 1). Position with an equal amount of protrusion on each end. Place a thin film of high temperature red silicone sealer on the ends of the seal halves (Figure 2).
8. Lightly coat the crankshaft mating surfaces of the seals with oil or lithium grease. Install crankshaft and rear main cap. Torque all main cap bolts to manufacturer specifications.
9. Allow assembly to sit overnight to permit undisturbed curing of silicone sealer.
10. Install oil pump, windage tray and pan.