

# SAPO<sup>®</sup>

## SAPO Seal Installation Manual for Pulley Manufacture / Rebuild



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## Introduction

SAPO seals (photo below) are designed to allow angular misalignment of the shaft with respect to the housing within the acceptable limits of the installed spherical roller bearing (sealed or open). They are simple to install and do not require modification to the housing.

Whilst straight-forward, care must be taken whilst assembling to ensure success.

## General Notes / Cautions

- Do Not Paint any component of the SAPO seal;
- Ensure seals are full of oil and fitted correctly prior to Acceptance testing;
- No not lift the pulley via the shaft once SAPO seals and bearings/housings are installed;

## Seal Installation Instructions



*SAPO Seal Assembly (indicated green), wear collar (indicated blue), o/ring (indicated yellow) and grub screw (indicated red)*

SAPO Seals are packaged as a complete assembly, with the seal seated on the wear collar (as pictured above). Prior to assembly, separate the SAPO Seal and wear collar and check for transportation damage.

## Step 1 – Fit Wear Collar

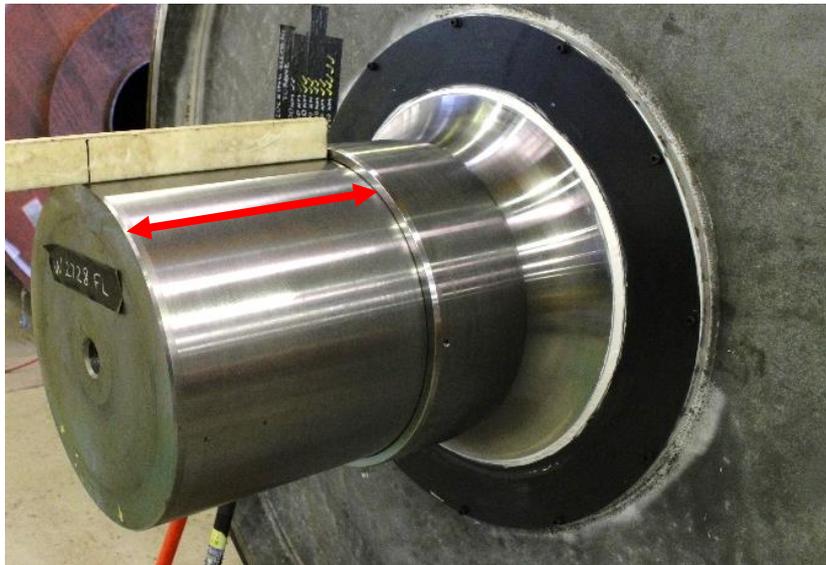
The wear collar rotates with the shaft and provides a machined surface for the oil seals to run on. This component eliminates the risk of shaft damage due to seal 'wear'.

To Fit the wear collar:

**NOTE: Do not use oil, grease or permanent lubricant on the shaft whilst fitting wear collar.**

1. Ensure the shaft and wear collar bore are clean and free from damage;
2. Calculate the required 'drive-up' location of the collar. The centre of the collar must be positioned co-incident (in line with) the centre of the SAPO seal once assembled. To calculate the required drive-up distance;

$$\text{Drive Up Distance} = \text{Housing Centre from end of shaft} + \text{Half housing width} + \text{Half SAPO seal width} - \text{Half wear collar width}$$



*Drive-up distance (Shaft end to wear collar) (indicated with arrow)*

3. Remove the grub screws and position the collar such that the grub screw holes are on the shaft end/bearing side of the collar;
4. Spray the shaft with CRC 5.56 (or equivalent) and drive the collar up to 25mm from the final position on the shaft using a soft bolster and soft blow hammer with alternate blows on either side.
5. Apply a suitable silicone adhesive-sealant to the area of shaft that is to be covered once final sleeve drive-up is complete;
6. Drive the collar up the remaining 25mm to the calculated final position;
7. Chamfer / Finish the front edge of the collar with silicone.

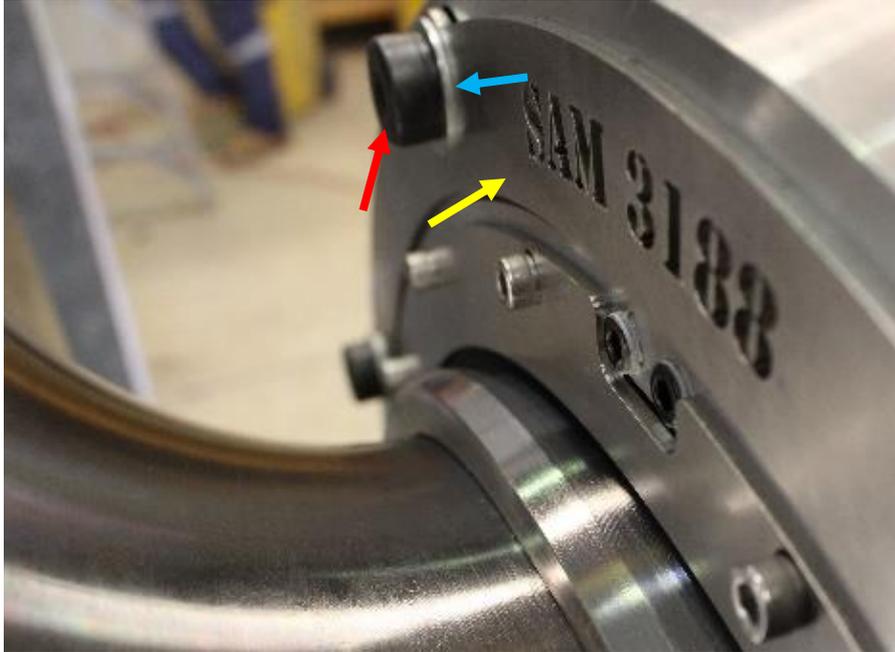
## Step 2 – Fit SAPO Seal

1. Prior to fitting, place the SAPO seal upright on a clean bench and test inner ring articulation with respect to the outer ring. The inner ring should 'misalign' easily in all directions. Contact SAPO solutions or the distributor for advice if 'jamming' is apparent;
2. Apply a coating of mineral gear oil to the wear collar outer surface, oil seal lips, and central seal 'rib', then carefully slide the SAPO seal on to the wear collar with the oil fittings pointing towards the pulley cheek plate;
3. Gently stretch the Neoprene gasket over the SAPO seal such that it sits loosely between the seal and cheek plate;
4. Re-install the wear collar grub screws using tread-locker. Once contact with shaft is felt, tighten by only a quarter of a turn. **NOTE: Do not over-tighten. This will result in 'egging' of the collar;**
5. Rotate the SAPO seal by hand and check for smooth rotation relative to the wear collar, and that the wear collar does not rotate on the shaft;
6. Fit bearings and housings as per Standard fitting procedures. **NOTE: The housing cavity is to be kept completely free from grease. Fill only the bearing free space to OEM specifications.**
7. Gently Stretch the neoprene gasket back over the SAPO seal and position between the housing face and SAPO seal body.
8. Ensure the oil fittings on the front face of the SAPO seal are positioned at the gravitational 12 and 6 o'clock positions;



*SAPO Seal fitted with oil fittings at 12 and 6 o'clock positions on front face (indicated)*

9. Bolt the SAPO seal and two-piece ring washer to the housing using the shoulder bolts and round washers provided (see Photo below). Use thread locker on all bolts and tighten until the bolt shoulders are secure on the housing. The neoprene gasket should have compressed to approximately half of the original thickness;



*Ring Washer (indicated yellow), round washer (indicated blue) and shoulder bolt (indicated red)*

10. Remove the cap from the bottom oil fitting and connect the SAPO oil pump and adapter. Then remove the cap from the top oil fitting and gently pump oil into the seal. Once oil flows from the top fitting, replace top oil cap, remove oil pump adapter and replace the bottom fitting. The SAPO seal should now be full of oil.



*Oil fitting with cap*



Please call **SAPO Solutions** for Technical Support & Troubleshooting

*Rhys Morgan: 0417 070 243*

*Harish Sreekumar: 0408 532 433*

