

# SAPO<sup>®</sup>

## SAPO Seal Monitoring & Maintenance Manual



### Contents

Introduction .....	2
Visual Oil level Check .....	2
Oil Replenishment.....	3
Oil Sampling/Flushing .....	4
Endoscopic Monitoring (if applicable) .....	5

## Introduction

SAPO seals 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 un-sealed).

The seals are oil filled and pressurized using an external oil accumulator. The accumulators are spring loaded and provide approximately 0.5 BAR of pressure. This is a closed system, with the accumulator and return line mounted outside the guard to allow for monitoring and maintenance purposes.

## Visual Oil level Check

***Can be executed as often as practicable. General advice is monthly at a minimum.***

The level of oil in the accumulator can be used as an indicator of seal performance. Periodical visual checks of the oil level may be carried out to observe for oil loss and rate.

### **Accumulator Oil Level as an indicator of seal performance and condition:**

- Oil level remains constant – Ideal Operation of seal;
- Oil level drops over time (days/weeks) – ‘Normal’ operation of seal in a heavily contaminated environment;
- Oil level drops rapidly (hours) – Seal lip or oil line damaged;

**NOTE: Finding an ‘empty’ accumulator does not indicate seal failure. The system retains sufficient oil within the seal body and lines or ongoing operation. Replenish and monitor oil level as above.**



*SAPO Seal Accumulator at normal fill level, with top of piston (indicated green) and bottom of piston (indicated red)*

## Oil Replenishment

*To be executed on condition-based regime.*

The position of the accumulator piston indicates whether the accumulator is 'empty' or 'full'.

If the piston is observed to be at the bottom of the accumulator, with no visible oil or air bubble observed below, it may be replenished.

To replenish an accumulator:

1. Before attaching to the accumulator, slowly pump oil through the oil pump hose until all air is 'bled';
2. Remove the dust cap (if fitted) from the quick connect coupling on the accumulator and connect the oil pump hose;
3. Slowly pump oil until the top of the white spacer/accumulator piston assembly (indicated green above) reaches the top of the accumulator cap. Stop pumping immediately once this point is reached;
4. Remove the oil hose and replace the dust cap on the quick connect coupling;

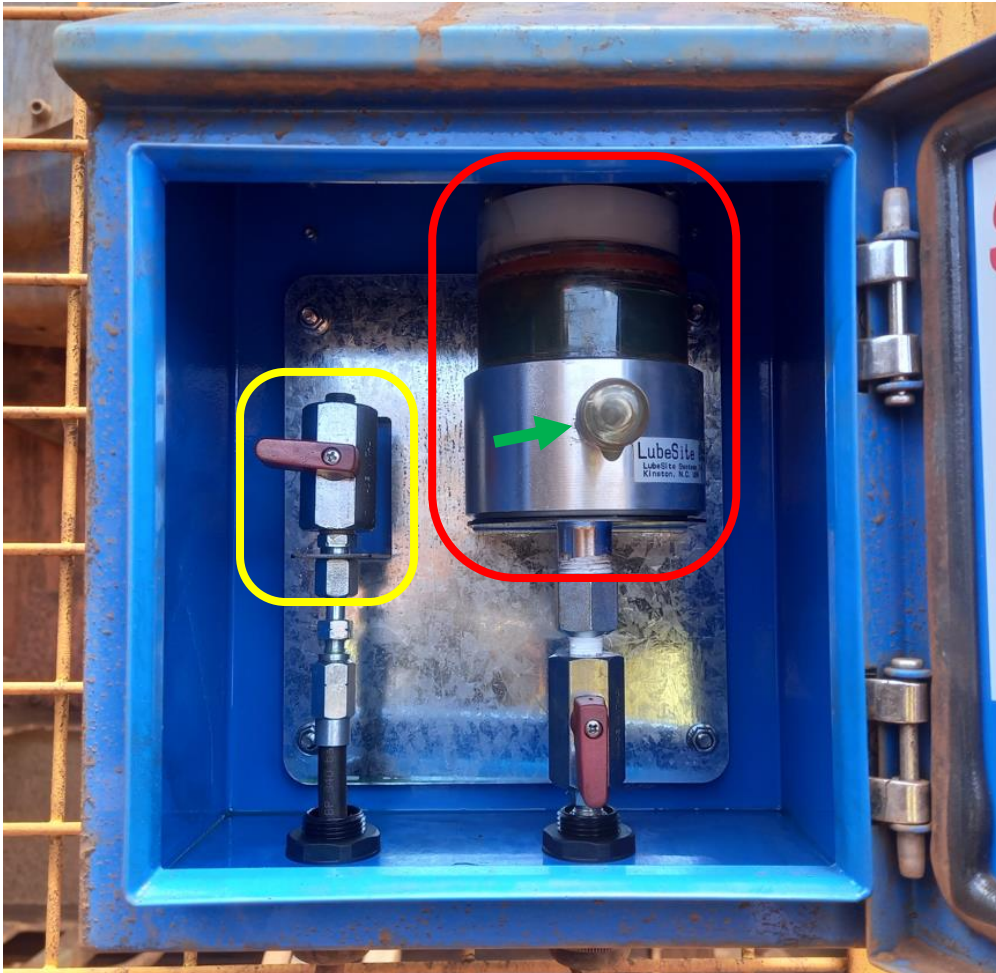
**Note: After filling, there may be a pocket of air trapped under the accumulator piston. This is to be expected and is acceptable if the majority of the accumulator volume is occupied by oil. NEVER ATTEMPT TO ELIMINATE AN AIR POCKET BY PUMPING OIL INTO THE ACCUMULATOR. Contact DASH Engineering for advice on removing air pockets in accumulators.**

**Note: Use VG220 Mineral oil (unless otherwise advised)**

## Oil Sampling/Flushing

*To be executed on condition-based regime. For heavily contaminated locations, it is recommended to conduct regular (fortnightly/monthly) flushing.*

The oil return line allows for oil 'flow' through the system for sampling and flushing purposes.



*SAPO Seal Monitoring Box with accumulator (circled red), drain line tap (circled yellow), accumulator fill quick connect coupling (indicated green)*

**Note: Use VG220 Mineral oil (unless otherwise advised)**

## To sample/flush the SAPO System:

1. Secure a sample bottle or waste oil container to the guard local to the drain line tap (*circled blue above*);  
*Note: a 1/8<sup>th</sup> BSP hose-tail and flexible tube can be screwed to the tap to allow for more effective routing of oil.*
2. Open the drain line tap and observe for oil flow;
3. Remove the dust cap from the quick connect coupling on the accumulator (*indicated green above*) and attach the mating coupling on the oil pump supplied;
4. Slowly pump oil until the accumulator piston reaches the top of the sight glass;
5. Apply a light but constant pressure to the oil pump to lightly pressurize the system (the weight of your hand on the handle will suffice). Oil should 'flow' slowly from the drain line;  
**NOTE: Do not over-pressurize the system. This may result in irreversible damage, and will not increase the flow rate of oil.**
6. Continue applying a light pressure until the desired oil sample/flush volume is achieved;
7. Once the desired oil volume is achieved, close the drain line tap, disconnect the quick connect coupling from the accumulator and replace the dust cap;

## Endoscopic Monitoring (if applicable)

***Can be executed as often as practicable. General advice is monthly at a minimum.***

If the housing is fitted with an endoscope, the USB plug will be contained in the accumulator mounting box.

To view the housing for contamination ingress, plug the USB into a compatible device (mobile phone, laptop or tablet) and download a free 'Endoscope Viewer' app from the App/Play Store. This should allow the user to observe and photograph the inside of the housing for evidence of contamination ingress (*see example photo below*).



*Endoscopic view of vertically mounted bearing housing cavity with parting line at the gravitational bottom (indicated)*

**Please call DASH Engineering for Technical Support & Troubleshooting**

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