SOP Number:	**Company Logo** **Company Information**	Page: **1 of 3**
Date Written:		Revised By:
Date Revised:		Approved By:
Tree Location: **Pump**		
Title: Pump re-lubrication and inspection instructions.		

Safety/ Environmental Requirements

☐ **H** = **H**azardous Material

☐ **S** = **S**ubstance Containment Procedure Required

☐ **C** = **C**onfined Space Requirement

☐ **L** = **L**ockout/ Tagout Procedures Required

☐ **T** = Care Must Be Used Not To Exceed **T**olerance Levels

☐ **E** = Specialty Safety **E**quipment Required

☐ **R** = Special Safety / **E**nvironmental Requirements

Unique / Special Safety or Environmental Requirements:

N/A

Equipment / Materials Required (Safety Items. Tools and Other Materials):

Appropriate PPE, Temperature gun, grease gun, Viberation Pen, 8” adjustable wrench, oil dispensing jug, catch pan, clean rag and correct oil – Refer to the Utilities Lubrication List

References:

- Goulds Pump Care Manual

STEPS	AWARENESS

Re-lubrication Steps:

1. Clean pump before starting re-lubrication steps.
2. Drain oil into catch pan when unit has been shut down.
3. Clean area around fill port prior to removing fill plug.
4. Using **ISO VG 68**, fill pump until oil level is halfway in the sight glass.
5. Replace fill plug.
6. Dispose of used oil IAW disposal policy.

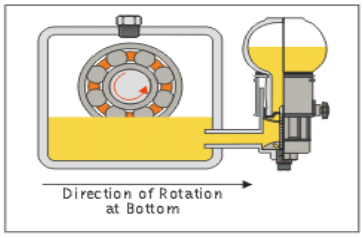


Fig. 1

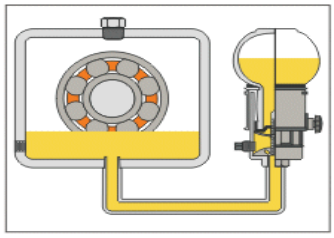
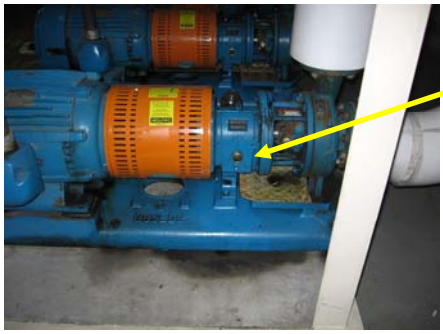


Fig. 2



Oil level should be halfway in sight glass. If sight glass is too dirty to see oil level, remove and clean on first available shut down. Ensure pump is shut down before removing.

General Tips:

Oil Level

For oil bottle (see picture left), the bearings are lubricated as long as lubricant is visible in the bottle. The round sight glasses should be installed so that the oil level measures to the center of the oil glass. Level must be set to approximately ½ half the height of the bottom roller in the bearing (reference the picture in Fig. 1 and Fig. 2).

Oil Condition

Visually inspect oil. Oil in pumps should have a golden color if regular mineral oil is used. If synthetic oil is used refer to original color of oil. Milky oil indicates that there is water or air in the oil. Milky oil calls for corrective action. If the pump is critical, or if the pump has had repetitive failures, a full oil analysis test should be performed.

Oil turns milky around 1000 ppm, where only about 15-25% of the original life is left if the problem isn't corrected.

Debris in oil may enter bearing clearances and cause excessive wear.

Inspect the breather condition. Make sure the breather isn't clogged.

Pump breather

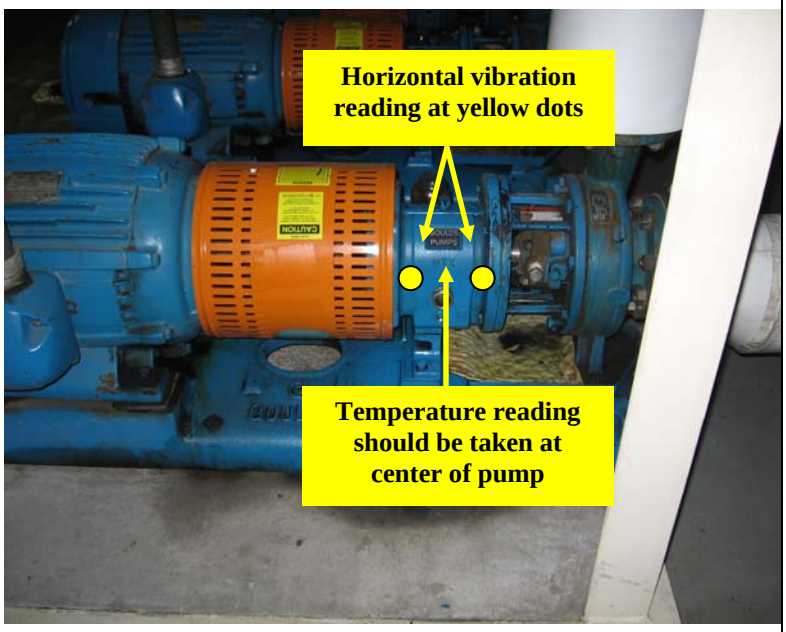
General Tips:

The breather filters air that enters the oil compartment of the pump. A clogged air filter may cause very high temperatures inside the oil compartment due to pressure changes.

STEPS	AWARENESS

Check pump for abnormal noise and vibration. Cavitation sounds as small stones are going through the pump. Air bubbles implode around the impeller and chips off small metal particles, often due to "starvation" on the inlet side or increased pressure on the discharge side. Cavitation also causes high vibration in the pump.

When taking vibration readings with a vibration pen, it is usually enough to take the vibration reading in the horizontal plane. The highest vibration value will usually appear in the horizontal plane. Too ensure the reading is compatible with the last reading taken on the pump take readings at the marks placed the pump in the horizontal position.



Check bearing temperature with an infrared temp gun. Ball and roller bearings should not have a temperature exceeding 170 deg F. Take temperature readings at the same location the vibration readings are taken.

Ensure coupling guard is in good condition and fully installed.

Date: Operator:	Motor Temperature (deg F): _____ **If temperature exceeds 170 deg F write work order**
Drive End Bearing Vibration Reading (in/sec): _____ **If vibration level exceeds .300 in/sec write work order**	Non-Drive End Bearing Vibration Reading (in/sec): _____ **If vibration level exceeds .300 in/sec write work order**

General Tips:

Noise and vibration is caused by:

- Pipe Strain
- Misalignment or coupling wear
- Cavitation
- Entrained air
- Pump or drive not securely mounted
- Impeller clogged or damaged
- Bearing damage

Any substantial change in temperature usually indicates some fault:

- Excessive lubrication
- Insufficient lubrication
- Bearing damage
- Overload
- Induced vibration
- Shaft misalignment
- Imbalanced impeller

Normal operating temperatures should not exceed 30 deg F higher than ambient temperature. Temperature will vary due to speed, load and condition of lubricant.

General Purpose horizontal pump – direct coupled vibration levels:

0-.200in/sec	Good
.201-.300in/sec	Fair
.301-.449in/sec	Alarm 1 (Warning)
.450in/sec & up	Alarm 2 (Fault)

Temperature Levels:

Ambient – 130 deg F	Good
131 deg F – 150 deg F	Fair
150 deg F – 170 deg F	Alarm 1 (Warning)
170 deg F & higher	Alarm 2 (Fault)

Issues with this pump due to high vibration, high temperature or any other issue write work order.