



PRODUCT INFORMATION

Product Information Bulletin No. 01-05-01-MP

TRIPLEX MUD PUMPS

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Rev. 06

- Subject:** Power End Lubrication Oil Additive and “wear-in” Period
- Product:** All Triplex Mud Pumps
- Affected Assemblies:** P-Series & F-Series Mud Pumps
- Objective:** Recommended power end lube oil additive to reduce corrective pitting found on mud pump gears. Provide “wear-in” period information.
- Issue:** During the initial mud pump “wear-in” period, it is common to see initial pitting on the tooth faces of Triplex Mud Pump gears.
- Solution:** It is National Oilwell Varco’s recommendation to use a Molybdenum Disulfide oil additive with the Mud Pump Gear Oil during initial running and when signs of corrective (also known as “initial”) pitting are observed on Mud Pump gears. The oil additive will help to polish the gear tooth surfaces and in some cases, if used in the initial Mud Pump “wear-in” period, can reduce the amount of initial pitting common on Mud Pump gears.
- Moly oil additives such as Dow-Corning “Molykote M Gear Guard” (mixture 5% by volume) or TS-90 Moly Gear Concentrate have been used in this application with good results. The oil additive would need to be compatible with the mud pump seals and not adversely affect the oil filtration system. Using gear oil with Moly already included in the gear oil, like the Schaeffer “209A Gear Lube”, would assure the amount suspended in the oil is correct and it is thoroughly mixed. It is also extremely important to follow the National Oilwell Varco gear oil recommendations as seen in Table 1. The recommended gear oils have the film strength necessary to withstand the

impact loading encountered in oilfield drilling operations. The results of not using the recommended gear oil may permit metal-to-metal contact of the gear teeth, which will be noticeable in the form of excessive pitting and wear on the load side of the gear teeth. Excessive pitting and wear can result in an increased risk of mud pump damage. **National Oilwell Varco recommends that an ISO viscosity grade 460 oil be used during the “wear-in” period for all P-Series Mud Pumps.** The duration of the “wear-in” period is considered the first 2000 hours of use but can vary depending on usage.

After the “wear-in” period has been accomplished, the lubricating oil should be selected from the appropriate temperature range in Table 1 below:

P-SERIES MUD PUMPS	
TEMPERATURE	AGMA INDUSTRIAL EP GEAR OIL
50° F to 155° F (10° C to 68° C)	AGMA #7 EP or ASTM/ISO-VG Grade 460 Viscosity 414-506 CST @ 100° F (38° C)
20° F to 100° F (-7° C to 38° C)	AGMA #6 EP or ASTM/ISO-VG Grade 320 Viscosity 288-352 CST @ 100° F (38° C)
-20° F to 60° F (-29° C to 16° C)	AGMA #2 EP or ASTM/ISO-VG Grade 68 Viscosity 61-75 CST @ 100° F (38° C)
F-SERIES MUD PUMPS	
TEMPERATURE	AGMA INDUSTRIAL EP GEAR OIL
30° F to 155° F (-1° C to 68° C)	AGMA #6 EP or ASTM/ISO-VG Grade 320 Viscosity 288-352 CST @ 100° F (38° C)
0° F to 85° F (-18° C to 33° C)	AGMA #4 EP or ASTM/ISO-VG Grade 150 Viscosity 135-165 CST @ 100° F (38° C)

Table 1. Mud Pump Lube Oils

The Mud Pump bull gears may develop corrective pitting during the early stages of the product life. This corrective pitting process can be exaggerated by operating a Mud Pump for extended periods at high load, especially if the lube oil temperature exceeds 140°F (60°C). As a result of the corrective pitting process, small metal particles will be present in the lubrication oil. These metal particles normally accumulate on the power end magnets, in the lube oil filter, in the settling chamber and in the main sump. National Oilwell Varco recommends that the magnets, filter and sumps be checked regularly and maintained/cleaned as needed.

It is further recommended that all commissioning and “endurance” tests be designed such that the pump speed and discharge pressure is gradually increased from the lower speeds and pressures to the higher ones. This is to allow the gears to wear in gradually and reduce the occurrence of excessive gear pitting.

FAILURE TO FOLLOW THESE RECOMMENDATIONS COULD RESULT IN CATASTROPHIC FAILURE OF THE PUMP WHICH MAY RESULT IN DEATH, BODILY INJURY AND/OR PROPERTY DAMAGE.