



Canoil Canada Ltd.

MOV

LONG LIFE & EXTRA
HIGH PERFORMANCE EP GREASES

MOV Specialty Greases





MOV Long Life Grease - Approved for Nuclear Applications

MOV Long Life uses a state of the art thickener combined with hydro-treated Group II base oil to give outstanding performance. It is specially formulated to offer solutions to the past problems associated with the lubrication of manual and motorized valve operators, and to provide a much longer service life. This grease has proven performance as a replacement for the discontinued Exxon Nebula EP™. MOV Long Life meets or exceeds user expectations for motor operated valve gearboxes, limit switch gearboxes, quarter turn gearboxes, and valve/stem nut interface lubrication. MOV Long Life is proven with years of performance evaluations and documented approvals, and is used globally in many types of valve operators, in nuclear power stations and also fossil fuel stations..

MOV Long Life is compatible with the calcium complex thickener in the Nebula EP grease and may be used without stripping down the operators or rigorously cleaning the valve stems of the old grease. Improper lubrication can result in costly consequences including loss of design capability and premature wear on gears and stem nuts.

MOV Long Life grease is approved by Limitorque™ for the main gear box for safety related motor operated valve actuators.

Features

- Meets or exceeds the 8 Limitorque "minimum lubricant qualities".
- Chemically compatible with Nebula EP for "top off".
- Equivalent or better to Nebula EP for basic lubricating performance.
- The only grease suggested by Electric Power Research Institute (EPRI) for use on SMB stems and limit switch gearboxes and main gearboxes..
- Recommended by MOV Users Group (MUG) as the replacement for Nebula EP.
- Provides excellent performance without the need for halogens such as chlorine or fluorine.

Benefits

- Protects against corrosion.
- Equivalent or better ability than Nebula EP to handle high temperatures
- Able to withstand accident level radiation.
- Longer life than currently used competitive products.
- Resistant to oil/thickener separation and excellent resistance to water washout.
- Can be removed with standard mineral oil solvents.
- Not prone to age hardening.

Advantages of MOV Long Life

Compatibility: Generally compatible with calcium complex, lithium complex and some clay based greases

Stability: More resistant to age hardening than calcium complex greases.
Proven radiation resistant to at least 220 Mrads.
Excellent corrosion protecting capabilities.
The only grease tested that passed the oven panel 96 hour test at 150°C.

*Nebula EP and Exxon are registered trademarks of Exxon Mobil Corporation

*Limitorque is a registered trademark of Flowserve Flow Control Division

**MOV Long Life Grease**

Safety & Environmental: Contains no artificial coloring agents.
Contains no added lead or chlorinated substances.

Multipurpose: MOV Long Life 2 can also be an excellent choice for a variety of bearings. MOV Long Life 2 is also being used in Bernard™ actuator gearboxes.

Quality Benefits: Based on proven technology that has been in use for over decade.
Manufactured and packaged in an ISO 9001 and ISO 14001 facilities.
Produced by one of North America's largest grease producers.

PHYSICAL PROPERTIES OF MOV LONG LIFE GREASE**General Properties**

NLGI Grade	0	1	2
Thickener	calcium sulfonate	calcium sulfonate	calcium sulfonate
Color	tan	tan	tan
Texture	smooth	smooth	smooth
Penetration: mm/10 worked at 25 °C, ASTM D-217	370	325	280
Dropping Point: °C, ASTM D-2265	300	318	318
Base Oil Viscosity: cSt, ASTM D-445 @ 40 °C	95	95	95

Extreme Pressure/Wear Properties

Timken OK Load: kg, ASTM D-2509	24.9	27.2	27.2
4 Ball Extreme Pressure, ASTM D-2596: load wear index, kgf	55.0	62.5	63.4
weld point, kgf	400	500	500
4 Ball Wear: scar diameter (mm), ASTM D-2266	0.49	0.49	0.49

Leakage Separation Characteristics

Separation: mass %, ASTM D-1742	0.1	0.1	0.1
Oil Separation: %, ASTM D-6184, cone bleed at 100 °C, 24 hrs,	8.1	4.7	1.9
Wheel Bearing Leakage: grams, ASTM D-4290	Not tested	6.0	0.4

Corrosion Resistance

Salt Fog Rust Protection: hours, ASTM B-117, 1 mil d.f.t.	➤ 300	➤ 300	>300
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Oxidation Resistance

Bomb Oxidation: psi drop after 500 hours, ASTM D-942	5.5	5.5	5.5
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Packaging: These are available in 14 oz (400 gm) tubes, 37 lb (17 kg) pails, 120 lb (55 kg) kegs and 400 lb (180 kg) drums

*Bernard is a registered trademark of Bernard Controls Incorporated Inc.



MOV Extra Grease - For Non - Nuclear Applications

MOV Extra uses a state of the art thickener to give outstanding performance. It is specially formulated to offer solutions to the past problems associated with the lubrication of manual and motorized valve operators, and to provide a longer service life. MOV Extra meets the Litorque minimum lubricant qualities.

This grease has proven performance as a replacement for the discontinued Exxon Nebula EP. MOV Extra is compatible with the calcium complex thickener in Nebula EP. It may be used without stripping down the operators or rigorously cleaning the valve stems of the old grease. However, recommended maintenance practices are to remove as much of the obsolete grease as possible to optimize the performance of MOV Extra.

MOV Extra is currently available in NLGI Grades '0' and '1' and is being used in fossil fuel powered stations. Consideration is being given to Grade '00' for extremely low temperatures.

MOV Extra has similar properties to the Long Life but is more specific to commercial applications. It also has lower viscosity base oil for much better mobility at lower temperatures. For safety related MOV's at nuclear power plants the MOV Long Life grease is the only grease approved by Litorque, EPRI and MUG.

Features

- Chemically compatible with Nebula EP for "top off".
- Equivalent or better to Nebula EP for basic lubricating performance.
- Meets or exceeds the 8 Litorque "minimum lubricant qualities".
- Provides excellent performance without the need for halogens such as chlorine or fluorine.

Benefits

- Protects against corrosion.
- Equivalent or better ability than Nebula EP to handle high temperatures.
- Longer life than Nebula EP.
- Resistant to oil/thickener separation and excellent resistance to water washout.
- Can be removed with standard mineral oil solvents.
- Not prone to age hardening

Advantages of MOV Extra Grease

Performance: Very good low temperature mobility and low bearing torque.

Compatibility: Generally compatible with both calcium complex and lithium complex based greases

Stability: More resistance to age hardening than calcium complex greases.
Excellent resistance to changes in consistency.
Excellent corrosion protecting capabilities

**MOV Extra Grease**

Safety & Environmental: Contains no artificial coloring agents.
Contains no added lead or chlorinated substances.

Multipurpose: MOV greases can be considered multipurpose grease. As such, they can also be effectively utilized in other applications.

Quality Benefits: Based on proven technology that has been in use for over a decade.
Manufactured and packaged in ISO 9001 and ISO 14001 facilities.
Produced by one of North America's largest grease producers.

PHYSICAL PROPERTIES OF MOV EXTRA GREASE**General Properties**

NLGI Grade	0	1
Thickener	calcium sulfonate	calcium sulfonate
Color	tan	tan
Texture	smooth	smooth
Penetration: mm/10 worked at 25 °C , ASTM D-217	375	325
Dropping Point: C, ASTM D-2265	260	300
Base Oil Viscosity: cSt, ASTM D-445 @ 40 °C	22	22

Extreme Pressure/Wear Properties

Timken OK Load: kg, ASTM D-2509	22.7	25.0
4 Ball Extreme Pressure, ASTM D-2596: load wear index, kgf	50.0	55.0
weld point, kgf	400	400

Corrosion Resistance

Salt Fog Rust Protection: hours, ASTM B-117, 1 mil d.f.t.	> 250	> 300
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Oxidation Resistance

Oil Separation: ASTM D-1742, mass %	1.1	0.2
Bomb Oxidation: psi drop after 500 hours, ASTM D-942	9.0	9.0

Low Temperature Properties

Torque: ASTM D-1478 at -40 C, g.cm, start	2425	-
60 minutes	351	-
USX Mobility: at 150 psi, g/minute @: 0 °F (-18 °C)	287	-
-10 °F (-23 °C)	139	-
-20 °F (-29 °C)	68.5	-
-30 °F (-34 °C)	16.5	-

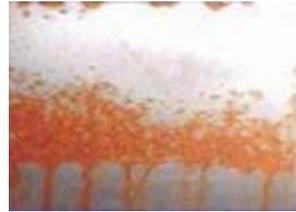
Packaging: These are available in 14 oz (400 gm) tubes, 37 lb (17 kg) pails, 120 lb (55 kg) kegs and 400 lb (180 kg) drums



Salt Fog ASTM B117 Corrosion Test after 150 hours



Clay – PAO 1.5



Old Calcium Complex EP0



MOV Long Life 0

Bulk Aged Samples: 66 hours @ 177 °C

These photos show examples of these and competitive greases that were aged at an independent laboratory. MOV Long Life and MOV Extra provides much better resistance to age hardening and to stiffening caused by heat. The others were no longer “grease like”.



Old Calcium Complex EP0



MOV Long Life 0



Clay PAO 1.5



MOV Long Life 1



Lithium Diester 2



MOV Extra 1

You can go to www.canoilcanadalt.com for more contacts, information, documents and testimonials.