

# General Lubrication Bulletin

## General Lubrication Bulletin for CE Drilling Equipment

REFERENCE	REFERENCE DESCRIPTION	
<p>This document contains proprietary and confidential information which is the property of National Oilwell Varco, L.P., its affiliates or subsidiaries (all collectively referred to hereinafter as "NOV"). It is loaned for limited purposes only and remains the property of NOV. Reproduction, in whole or in part, or use of this design or distribution of this information to others is not permitted without the express written consent of NOV. This document is to be returned to NOV upon request or upon completion of the use for which it was loaned. This document and the information contained and represented herein is the copyrighted property of NOV. © National Oilwell Varco</p>	<p><b>National Oilwell Varco RIG SOLUTIONS 11000 Corporate Centre Drive Houston, TX 77041</b></p>	
<p>DOCUMENT NUMBER</p> <p><b>CE-538E</b></p>		<p>REV</p> <p><b>06</b></p>



## **REVISION HISTORY**

Rev	Date (dd.mm.yyyy)	Reason for issue	Prepared	Checked	Approved
06	14.02.2012	Engineering Requested Change	TMH	GDH	GDH
05	07.12.2011	Spelling Corrected	TMH		
04	06.12.2011	Spelling Corrected	TMH		
03	24.03.2005	Updated Logo	BKF		
02	28.02.2005	Updated to new template	PG		

## **CHANGE DESCRIPTION**

Revision	Change Description
02	Updated to electronic format from pdf to ms word in new template
03	Updated Logo
04	Spelling changed from Overrunning to Overruning.
05	Spelling changed from Overrunning to Overruning.
06	Removed Recommended Lubrication Product Chart from the document.

## **TABLE OF CONTENTS**

<b>1</b>	<b>GENERAL LUBRICATION INSTRUCTIONS FOR CONTINENTAL EMSCO PRODUCTS DRILLING EQUIPMENT .....</b>	<b>4</b>
1.1	Crown and Traveling Blocks: .....	4
1.2	Swivels: .....	4
1.3	Rotary Machines and Unitized Rotary Chain Coupling: .....	4
1.4	GB & GBH CATHEADS: .....	5
1.5	Drawworks, Compound Transmissions, Unitized Rotary Transmissions, ECR Units & Pump Drives: .....	5
1.6	Electrohoist II Gear Box .....	5
1.7	Electrohoist II, IV & V Gear Box .....	5
1.8	Airline Lubricators: .....	5
1.9	Duplex & Triplex MUD & Slurry Pumps: .....	5
1.10	Overrunning Clutch: .....	6
1.11	Caution: .....	6
<b>2</b>	<b>SUPPLEMENTARY INSTRUCTIONS FOR TRIPLEX MUD PUMP TRANSMISSION LUBE OIL .....</b>	<b>6</b>
<b>3</b>	<b>GENERAL LUBRICATION BULLETIN .....</b>	<b>7</b>

## 1 GENERAL LUBRICATION INSTRUCTIONS FOR CONTINENTAL EMSCO PRODUCTS DRILLING EQUIPMENT

Using the right kind of oil or grease on a regular basis extends the service life of machinery. Where and how to lubricate is described in each Maintenance Manual for the particular piece of equipment.

The following information lists the recommended type of lubricant to use. The equipment user must insure that the lubricant selected meets or exceeds the specifications provided.

### 1.1 Crown and Traveling Blocks:

#### 1.1.1 Grease - Use a multipurpose lithium base grease.

Ambient temperatures	0°F to 125°F (-18°C to 52°C) NLGI #2
	-20°F to 40°F (-29°C to 4°C) NLGI #0

### 1.2 Swivels:

#### 1.2.1 Main reservoir – Use an extreme pressure, non-corrosive, anti-foaming gear lubricant.

Ambient temperatures	0°F to 155°F (-18°C to 68°C) AGMA #6EP
	-20°F to 40°F (-29°C to 4°C) AGMA #4EP

#### 1.2.2 Wash pipe packing, oil seals and bail pins – Use a multipurpose lithium base grease.

Ambient temperatures	0°F to 125°F (-18°C to 52°C) NLGI #2
	-20°F to 40°F (-29°C to 4°C) NLGI #0

### 1.3 Rotary Machines and Unitized Rotary Chain Coupling:

#### 1.3.1 Main Reservoir – Use an extreme pressure, non-corrosive, anti-foaming gear lubricant.

Ambient temperatures	0°F to 155°F (-18°C to 52°C) AGMA #6EP
	-20°F to 40°F (-29°C to 4°C) AGMA #4EP

#### 1.3.2 Pinion Cartridge – Use a multipurpose lithium base grease

Ambient temperatures	0°F to 125°F (-18°C to 52°C) NLGI #2
	-20°F to 40°F (-29°C to 4°C) NLGI #0

**1.4 GB & GBH CATHEADS:**

Use a multipurpose lithium base grease.

Ambient temperatures

0°F to 125°F (-18°C to 52°C) NLGI #2  
-20°F to 40°F (-29°C to 4°C) NLGI #0

**1.5 Drawworks, Compound Transmissions, Unitized Rotary Transmissions, ECR Units & Pump Drives:**

Grease lubricated bearings, drum brake centralized lubrication system, and all miscellaneous grease fittings – Use a multipurpose lithium base grease.

Ambient temperatures

0°F to 125°F (-18°C to 52°C) NLGI #2  
-20°F to 40°F (-29°C to 4°C) NLGI #0

Motor couplings require a multipurpose lithium base NLGI #1 grease.

Electrohoist III, IV & V gear couplings require Texaco Crater Compound #0 or equivalent.

Oil lubricated bearings and roller chains – Use a non-detergent machine oil as follows;

Ambient temperatures

80°F to 125°F (27°C to 52°C) SAE 40  
32°F to 100°F (0°C to 38°C) SAE 30  
0°F to 40°F (-18°C to 4°C) SAE 20

**1.6 Electrohoist II Gear Box**

Use an extreme pressure, non-corrosive, anti-foaming gear lubricant.

Ambient temperatures

0°F to 155°F (-18°C to 68°C) AGMA #6EP  
-20°F to 40°F (-29°C to 4°C) AGMA #4EP

**1.7 Electrohoist II, IV & V Gear Box**

Use an extreme pressure, non-corrosive, anti-foaming, mineral base gear lubricant.

Ambient temperatures

Below 40°F\* to 80°F (4°C to 26°C) AGMA #3EP  
80°F to 120F (27°C to 49°C) AGMA #6EP

\*Heaters are required to bring oil to 40°F (4°C) for starting.

**1.8 Airline Lubricators:**

Use SAE 10 Wt. Motor Oil.

**1.9 Duplex & Triplex MUD & Slurry Pumps:**

Use a extreme pressure, non-corrosive, anti-foaming gear lubricant.

Ambient temperatures

0°F to 155°F (-18°C to 68°C) AGMA #6EP  
-20°F to 40°F (-29°C to 4°C) AGMA #4EP

**Note:** See Section 2 for initial filling of triplex pumps.

**1.10 Overrunning Clutch:**

Use SAE 50 Wt. Non-detergent machine oil.

Equipment not manufactured by National Oilwell should be lubricated as specified by the manufacturer.

**1.11 Caution:**

Do not mix greases with different bases. Always clean reservoirs thoroughly when changing to grease with a different base.

**2 SUPPLEMENTARY INSTRUCTIONS FOR TRIPLEX MUD PUMP TRANSMISSION LUBE OIL**

National Oilwell has recently made a change in the design and material of the gears used in our triplex mud pump line. The new gears will be made from a harder material which will ultimately provide better performance and longer life but they do require some special treatment during the break-in period. Effective immediately National Oilwell will begin using specially designed gear oil, for the test runs in our manufacturing facilities, which is highly saturated with liquid soluble molybdenum disulfide, and other extreme pressure and corrosion resistant additives.

This oil will help to polish the gear tooth surfaces to prevent initial pitting which is common on mud pump gears. This is especially important on the new harder gears as they are more susceptible to cold welding and scoring during the break-in period. The product will also provide rust prevention during storage periods. It is strongly recommended that the End User also use this product for at least the initial filling of the pumps. At the first oil change it would be at the user's discretion whether to continue its use or change to another AGMA EP gear oil that meets the general specifications.

A manufacturer of the above product is made by: Schaeffer Oil & Grease Mfg. C.O.  
Phone (800) 325-9962  
Fax (314) 865-4107  
Website: [www.schaefferoil.com](http://www.schaefferoil.com)

If the operator chooses not to use this oil for the initial filling, then a 5% by volume of a good Moly product, such as Dow Corning M Gear Guard, should be added to the approved AGMA EP gear oil.

Implementation of the above recommendations will be well worth the extra cost of the products by extending the life of the equipment and power savings due to reduction of friction.

### 3 GENERAL LUBRICATION BULLETIN

#### Oil Capacities for Continental Emsco Equipment

Drawworks		
C-1 Type II	105 U.S. Gal.	400 Liters
C-1 Type III	105 U.S. Gal.	400 Liters
C-2 Type II	110 U.S. Gal.	420 Liters
C-2 Type III	110 U.S. Gal.	420 Liters
C-3 Type I	60 U.S. Gal.	230 Liters
C-3 Type II	60 U.S. Gal.	230 Liters
C-3 Type III	60 U.S. Gal.	230 Liters
D-1	78 U.S. Gal.	296 Liters
D-2	115 U.S. Gal.	436 Liters
D-3	85 U.S. Gal.	332 Liters
EH-II	41 U.S. Gal.	155 Liters
EH-III, IV & V	See Operation & Maintenance Manual	
<b>Type AU=□Catworks</b>	45 U.S. Gal.	170 Liters
W/Right Angle Drive	50 U.S. Gal.	190 Liters
Compounds		
CT-5	130 U.S. Gal.	493 Liters
CT-7	130 U.S. Gal.	493 Liters
CT-9	148 U.S. Gal.	560 Liters
D-221 W/Separate Lube System	80 U.S. Gal.	303 Liters
D-232 W/Separate Lube System	80 U.S. Gal.	303 Liters
F-Series Triplex Pump		
F-350	40 U.S. Gal.	152 Liters
F-500	65 U.S. Gal.	246 Liters
F-650	55 U.S. Gal.	208 Liters
F-750	55 U.S. Gal.	208 Liters
F-800	65 U.S. Gal.	246 Liters
F-1000	75 U.S. Gal.	284 Liters
F, FA, FB & FC-1300	100 U.S. Gal.	380 Liters
F, FA, FB & FC-1600	100 U.S. Gal.	380 Liters
FC-2200	120 U.S. Gal.	454 Liters
<b>Unitized Pump Drive for Electric Motor, Per Guard</b>	20 U.S. Gal	76 Liters
Type "F" Unitized Pump Chain Drive		
F-350	15 U.S. Gal.	57 Liters
F-500	30 U.S. Gal	15 Liters
F-650	30 U.S. Gal.	115 Liters
F-800	30 U.S. Gal.	115 Liters
F-1000	30 U.S. Gal.	115 Liters

### Duplex Pumps

D-225	25 U.S. Gal.	95 Liters
D-375	53 U.S. Gal.	201 Liters
DB-550	58 U.S. Gal.	220 Liters
DC-700	65 U.S. Gal.	246 Liters
DC-1350	100 U.S. Gal.	379 Liters
DC-1650	100 U.S. Gal.	379 Liters

### Rotaries

T-1750 (S/N 181 Only)	6 U.S. Gal.	23 Liters
T-1750 (S/N 182-253)	12 U.S. Gal.	46 Liters
T-1750 (S/N 254-268)	8 U.S. Gal.	31 Liters
T-1750 (S/N 269 & up)	10 U.S. Gal.	38 Liters
T-2050 (S/N 31 Only)	5 U.S. Gal.	19 Liters
T-2050 (S/N 111 & up)	6 U.S. Gal.	23 Liters
T-2750 (S/N 89-94)	9 U.S. Gal.	34 Liters
T-2750 (S/N 95-228)	13 U.S. Gal.	50 Liters
T-2750 (S/N 229 & up)	10 U.S. Gal.	38 Liters
T-3750	15 U.S. Gal.	57 Liters
T-4950	15 U.S. Gal.	57 Liters
T-6050	25 U.S. Gal.	95 Liters

### Rotary Transmissions

RT-3A Vertical	21 U.S. Gal.	80 Liters
RT-3A Horizontal	28 U.S. Gal.	106 Liters
Chain Coupling	1 U.S. Gal.	4 Liters

### Swivels

LB-140	3-3/4 U.S. Gal.	14 Liters
LA, LB-200	4-3/4 U.S. Gal.	18 Liters
LA, LB-300	6-3/4 U.S. Gal.	26 Liters
LA, LB-400	10 U.S. Gal.	38 Liters
LB-500	15 U.S. Gal.	57 Liters
L, LB & LC-650	19-1/2 U.S. Gal.	74 Liters