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26963

NATIONAL
OILWELL

WARNING
READ THE INSTRUCTIONS
FULLY BEFORE OPERATING

NATIONAL OILWELL
INTERNATIONAL
P.O. BOX 1000
HOUSTON, TEXAS 77252-1000
U.S.A.
PHONE (713) 261-1000
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WARNING
READ THE INSTRUCTIONS
FULLY BEFORE OPERATING



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WARNING
DO NOT OPERATE EQUIPMENT WITHOUT PROPER TRAINING
FILL THE RESERVOIRS
SEE OPERATOR'S MANUAL FOR FURTHER INFORMATION

A close-up photograph of a yellow industrial machine, likely a hydraulic pump or motor. The machine features a large, circular gear on its side and several thick, grey hydraulic hoses connected to various ports. The background shows a clear blue sky and some green foliage. The text 'www.PetroRigs.com' is overlaid in the center of the image.

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DANGER
750VDC

WUGHES

Rayyan
ID # 86963

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A close-up photograph of a yellow industrial machine, likely a generator or motor. The machine features a large, prominent fan with a radial grille pattern on the left side. The entire unit is painted a bright yellow. Various mechanical parts, including bolts, brackets, and a black cable, are visible. The background shows a blue sky and a white building.

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A close-up photograph of industrial machinery, likely a part of an oil rig. The machinery is painted bright yellow. It features a central shaft with a gear or sprocket. The shaft is surrounded by a yellow housing with several bolts. The background shows a concrete structure and a gravel surface. A watermark is overlaid on the image.

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A photograph showing a close-up view of a yellow industrial machine, likely a wellhead or valve assembly. A large black pipe runs across the top of the frame. The machine has a complex structure with various bolts, nuts, and a circular opening in the center. A person wearing dark pants and shoes is visible in the background on the left side, standing near a blue structure. The overall scene is outdoors, possibly on an oil rig.

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A close-up photograph of a metal grate or screen. The grate consists of several horizontal bars with a serrated or ribbed edge. A single vertical bar runs through the center of the grate. The metal appears to be dark and possibly rusty. The background is dark and out of focus.

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NATIONAL OILWELL VARCO

P.O. BOX : 61490, JEBEL ALI, DUBAI, U.A.E.

OEM REFURBISHMENT TAG

EQPT : NATIONAL PS2-500/500 TOPDRIVE

JOB # : JW1581

DATE : 18-DECEMBER-2015

SERIAL # : PS2-127-H

P.O. # : 86963

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PS2-500/500 POWER SWIVEL

-- LUBRICATION SPECIFICATIONS --

SERVICE, MAINTAIN, AND INSPECT THE POWER SWIVEL AS INSTRUCTED IN THE CARE AND OPERATION MANUAL.

HYDRAULIC SYSTEM

	U.S. GALS.	LITRES
RESERVOIR CAPACITY	15	57

RECOMMENDED FLUIDS * *

- FIRST CHOICE:** HYDRAULIC OIL, PREMIUM GRADE WITH ANTI-WEAR AND ANTI-RUST ADDITIVES, 48-55 SUS @ 210°F [6.8-8.9 cSt @ 100°C] TYPICAL VISCOSITY INDEX OF 132, POUR POINT OF -30°F [-34°C] ISO VISCOSITY GRADE 46.
- SECOND CHOICE:** AUTOMATIC TRANSMISSION FLUID, TYPE "F" MEETING FORD MOTOR COMPANY SPECIFICATION ESW-M2C33-F.
- THIRD CHOICE:** HYDRAULIC TRANSMISSION OIL, TYPICALLY 49 SUS @ 210°F [TYPICAL VISCOSITY OF 7 cSt @ 100°C], TYPICAL INDEX OF 100 [MINIMUM], POUR POINT OF -35°F [-37°C], ISO VISCOSITY GRADE 46.

*** * CAUTION:** WHEN ADDING TO OR CHANGING THE HYDRAULIC FLUID EVERY PRECAUTION SHOULD BE TAKEN TO PREVENT ANY CONTAMINATION OF THE HYDRAULIC FLUID. DO NOT MIX DIFFERENT TYPES OF HYDRAULIC FLUIDS.

GEAR BOX, MAIN THRUST BEARING, AND HANDLING RING BEARING *

	U.S. GALS.	LITRES
GEAR BOX RESERVOIR CAPACITY	41	155
HANDLING RING RESERVOIR		



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GEAR BOX, MAIN THRUST BEARING, AND HANDLING RING BEARING *

	U.S. GALS.	LITRES
GEAR BOX RESERVOIR CAPACITY	41	155
HANDLING RING RESERVOIR	2	7.6

RECOMMENDED LUBRICANTS:

USE THE FOLLOWING TABLE TO DETERMINE THE APPROPRIATE LUBRICANT FOR THE OPERATING TEMPERATURE OF THE GEAR BOX, MAIN THRUST BEARING, AND HANDLING RING BEARING.

TEMPERATURE	AGMA INDUSTRIAL EP GEAR OIL
50°F TO 125°F	AGMA #7 EP OR ASTM/ISO-VG GRADE 460 (TYPICAL VISCOSITY: 2337 SUS AT 100°F)
15°F TO 60°F	AGMA #6 EP OR ASTM/ISO-VG GRADE 320 (TYPICAL VISCOSITY: 1620 SUS AT 100°F)
-20°F TO 25°F	AGMA #4 EP OR ASTM/ISO-VG GRADE 150 (TYPICAL VISCOSITY: 750 SUS AT 100°F)

-- METRIC UNITS OF MEASURE --

TEMPERATURE	AGMA INDUSTRIAL EP GEAR OIL
10°C TO 50°C	AGMA #7 EP OR ASTM/ISO-VG GRADE 460 (TYPICAL VISCOSITY: 460 cSt AT 40°C)
-9°C TO 16°C	AGMA #6 EP OR ASTM/ISO-VG GRADE 320 (TYPICAL VISCOSITY: 320 cSt AT 40°C)
-29°C TO -4°C	AGMA #4 EP OR ASTM/ISO-VG GRADE 150 (TYPICAL VISCOSITY: 150 cSt AT 40°C)

NOTE: FOR ADDITIONAL WEAR PROTECTION, THE USE OF DOW CORNING MOLYKOTE M GEAR GUARD (5% TO 10% BY VOLUME) IS RECOMMENDED.

HANDLING RING ROTATION DRIVE GEAR REDUCER

	U.S. GALS.	LITRES
RESERVOIR CAPACITY	2	7.6

RECOMMENDED LUBRICANT

- FIRST CHOICE:** AGMA #5 EP OR ASTM/ISO-VG GRADE 220 (TYPICAL VISCOSITY: 1047-1283 SUS AT 100°F; 220 cSt AT 40°C)
- SECOND CHOICE:** SOCIETY OF AUTOMOTIVE ENGINEERS 90 WEIGHT GEAR OIL.

EXPOSED GEAR TEETH ON HANDLING RING ROTATION DRIVE

THE TEETH SHOULD BE KEPT COATED WITH AN EXTREME PRESSURE LUBRICANT SUCH AS NATIONAL OILWELL "COPPER TOP" OR JET LUBE, INC. "KOPR-KOTE" COMPOUND. EQUIVALENT COMPOUNDS MAY BE UTILIZED.

CROWN TOOTH GEAR COUPLINGS

RECOMMENDED LUBRICANT

NLGI GRADE NUMBER 1 LITHIUM BASE, GENERAL PURPOSE EP GREASE. GREASE LUBRICATION IS RECOMMENDED FOR ALL STANDARD APPLICATIONS.

DRILLING MOTOR BEARINGS

RECOMMENDED LUBRICANT

NLGI GRADE NUMBER 2 SODIUM SOAP BASE, GREASE PER MOTOR MANUFACTURER'S SPECIFICATIONS. GENERAL ELECTRIC SPECIFICATION IS GE D6A2C4, BALL AND ROLLER BEARING GREASE.

GENERAL GREASE FITTINGS

RECOMMENDED LUBRICANT

WARM WEATHER: NLGI GRADE NUMBER 2 LITHIUM BASE, GENERAL PURPOSE GREASE. COLD WEATHER: NLGI GRADE NUMBER 1 LITHIUM BASE, GENERAL PURPOSE GREASE.

-- LUBRICATION INSTRUCTIONS --

FLUIDS AND LUBRICANTS MUST POUR FREELY AT MINIMUM OPERATING TEMPERATURE. THE LUBRICANT POUR POINT SHOULD BE AT LEAST 9°F (5°C) LOWER THAN THE EXPECTED MINIMUM AMBIENT STARTING TEMPERATURE. IF THE AMBIENT STARTING TEMPERATURE APPROACHES THE LUBRICANT POUR POINT, HEATERS MAY BE REQUIRED TO FACILITATE STARTING AND INSURE PROPER LUBRICATION OF COMPONENTS.

CHANGE LUBRICANTS AND FLUIDS EVERY SIX MONTHS OR AS FREQUENTLY AS OPERATING CONDITIONS REQUIRE TO MAINTAIN A CLEAN, SLUDGE-FREE OIL (LUBRICANT) OF PROPER VISCOSITY.

INITIAL FILLINGS OF LUBRICANTS AND FLUIDS (BREAK-IN LUBRICANTS AND FLUIDS) SHOULD BE CHANGED AFTER THE FIRST THREE MONTHS OF OPERATION.

FOLLOWING THIS INITIAL CHANGE, THE LUBRICANTS AND FLUIDS ARE TO BE CHANGED AS RECOMMENDED ABOVE. THE FILTERS IN THE GEAR BOX LUBRICATION SYSTEM AND THE HYDRAULIC SYSTEM ARE TO BE CHANGED WHEN THE LUBRICANTS AND FLUIDS ARE CHANGED.

FILTERS

THE FILTER ELEMENTS IN THE GEAR BOX LUBRICATION SYSTEM AND THE HYDRAULIC SYSTEM ARE TO BE CHANGED EVERY SIX MONTHS OF OPERATION. THE ELEMENTS ARE ALSO TO BE CHANGED WHENEVER THE LUBRICANTS AND FLUIDS ARE CHANGED.

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WARNING

THE LUBRICATING OIL WAS DRAINED FROM THIS MACHINE BEFORE SHIPMENT. FILL THE RESERVOIRS TO THE CORRECT LEVEL BEFORE PUTTING THE MACHINE INTO SERVICE.