

Quality Requirement

Mechanical Assembly General Requirements

RIG/PLANT		
ADDITIONAL CODE	SDRL CODE	TOTAL PGS 7
REMARKS		
MAIN TAG NUMBER	DISCIPLINE	
CLIENT PO NUMBER		
CLIENT DOCUMENT NUMBER		

REFERENCE TM01169	REFERENCE DESCRIPTION Quality Clause	
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REVISION HISTORY

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1	19-Feb-2020	Approved for Use	ROBA	HAH	LUMO
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CHANGE DESCRIPTION

Revision	Change description
2	Updated table of contents and numbering of sections. Removed Section 2; 3; 4 and 5 from CPI; Walkways fastners and locking of bolts. Updated section 1 based on comment from Engineering
1	Removed section 6.1 for formating
0	Overall revision

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1 MECHANICAL ASSEMBLY

All mechanical assembly work by contractor (supplier) shall be performed according to this chapter as minimum requirements if no other guidelines are given by the company (NOV).

- Mechanical assembly work shall be executed in a clean area separated from steelwork such as grinding, welding and blasting.
- The supplier shall ensure that workshop consumables meet the requirements for mechanical properties as specified by the PO documentation package.
- Measures to avoid galvanic corrosion and corrosion in general shall be taken.
- Assembly of components shall be carried out in accordance with instructions given in assembly drawings, part lists, Supplier's assembly instruction, this specification; and reflect good workmanship and professionalism.
- In case of missing information from drawings, specifications and work instruction, supplier shall request guidance through purchaser or company representative as defined in the purchase order.

2 DOCUMENTATION

Marking requirement as Lot or serial marking and monograms can be required for traceability, this will be specified in the requirements on Part Descriptions, Drawings, Parts Lists or Defining Documents.

Serial or Lot numbers on critical components as CPI or delivered by supplier as listed but not limited to: Drives, Slewing rings, gears, Wirer sheaves, Blocks, lifting hooks, Steel wire rope, Critical fasteners, Brakes and Gearboxes needs to be listed and included in the final documentation.

3 TAGGING AND MARKING

- The contractor normally supplies all signs, but Company may provide labels and tag signs if nothing else is stated in the PO
- The tag plates / signs shall be attached to structure steel by means of Marine adhesive and stainless steel, acid proof, rivets or alternatively by bolting or screw fixings, using locking devices, as per section 12 of this specification.
- The tag plates / signs shall be attached to components by means of Marine adhesive or by use of wire.

Note: Plastic tag plates/ sign can be attached by means of Marine adhesive only.

- Tagging and marking shall be performed before the equipment has left the assembly workshop for testing.

4 FASTENERS

General note for all Fasteners:

- Shall follow standards listed as normative references in recognized standards, e.g. ISO 8992.
- Shall be ordered from a recognized supplier.
- If not defined in BOM, bolts \leq M10 shall be A4-70 or applicable material.
- Protrusion of Bolt and Stud ends for all type of Nuts shall be \geq 2P (min. two threads).

5 LUBRIACTION

All lubrication products for the permanent work shall be in accordance with table below if not otherwise specified in Product Datasheet/ Lubrication Charts and/or PO documentation package.

FACTORY LUBRICATION OF NATIONAL OILWELL VARCO EQUIPMENT		
SERVICE	TYPE OF LUBRICANT	NOTES (Check lubrication chart per equipment)
Hydraulic System	Nominated brand: Texaco Rando Oil HDZ, ISO grade 32-46	According to standard DIN 51524 part 3 HVLP.

Mineral based hydraulic oil HEES-fluids	Castrol Biohyd SE	
Water based hydraulic fluids	Erifon 818TLP Houghto-Safe NL1, WL1 (273 CTF)	
Gear box	See gear supplier`s datasheet	
General grease points in: El. Motor, Winch Slew ring (Raceway) Blocks/sheaves Wheel bearing	Texaco Multifak EP2	Lithium based grease NLGI No.: 2. Lead additives. Color: dark green.
Boom bearing / cylinder bearing.	Texaco Multifak EP2	Lithium based grease NLGI No.: 2. Lead additives. Color: dark green. NB! Bearing is self-lubricated. Do not use grease with molybdenum or silicon additives.
Slew pinion teeth Open gear on slew ring rack and pinion drive	Klüberplex AG 11-462 or Moluh Alloy 936 SF Heavy A Klüberplex AG 11-461	Mineral oil based. metal soap complex, powder, graphite additives. When automatic lubricate or below minus 20 °C
Steel wire	Bridon Brilube 70	Only if re- lubrication is required.Steel wire is delivered ready lubricated from wire supplier.
Telescopic jib with sliding pads (Sliding surface only)	Texaco Multifak EP2	Lithium based grease NLGI No.: 2 Lead additives. Color: dark green
Motor shaft, spline Sleeve	Texaco Multifak EP2	Used for initial lubrication.
Threads on: Pipe and hose fittings	Parker Hanifin Nirumont-Flüssig	
Lubrication for assembly and corrosion protection of pins, bearing surface and spherical bearings.	Texaco Multifak EP2	Used for initial lubrication.
Valve lever housing, Spring housing, Internally	Klüber; Klüberpaste 46 MR 401	No re-greasing required.
Pins/bolts in shackles	Klüber; Klüberpaste 46 MR 401	For easy dis-assembly
Threads on:	Klüber;	For easy dis-assembly

Bolts, studs	Staburags NBU-30K MOLYKOTE®G-RAPID PLUS paste	
Dead-weight on wire rope. Including thimble	Klüber; Klüberpaste 46 MR 401	For corrosion protection and easy dis-assembly.
Piston rod extension on Hydraulic cylinders	SLIDER 2000 Special Grease Alt:Petrolon Slick 50 Actuated PTFE Grease	For additional corrosion protection. No re-greasing required.
Assembly of pneumatic high- pressure system >14 bar.	Fuchs: Gleitmo 599 MacDermid: Greasil 4000	Hydro carbon free grease for all connections.

Only non-flammable grease or oil products shall be used in assembly or mounting flanges, fittings or other systems related to air or oxygen high pressure contain equipment. This to prevent “hydrocarbon oxygen reactions”.

Lubricant for gears shall always follow the information given on the manufacturer’s assembly drawings.

For design temperature lower than -20° C special considerations shall be taken when selecting the lubricants to use if not defined by the PO documentation.

When central grease points shall be installed, the grease tubing lines shall not be of a smaller diameter than Ø10 mm.

The tubing quality shall be stainless steel (SS 316), and the tubing shall be properly filled with grease and all air vented out from the system before delivery.

All grease points shall be marked with a red circle around the grease nipple (red donut) and Protective Caps / Dust Caps shall be mounted on all the grease nipples.