

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Pipe Fitting**

with type designation(s)

Hydraulic Oil, Kill & Choke and Mud Booster Hose Swivels with API Spec 6A BX Flanges

Issued to

Sivilingeniør E.J.Wiig AS
OSLO, Norway

is found to comply with

DNV-OS-E101 Drilling Plant October 2013

Application :

Refer page 3 for detailed product application and operating limitations.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2019-10-07**.

Issued at **Høvik** on **2015-10-08**

DNV GL local station: **Stord**

Approval Engineer: **Jan H. Hansen**

for **DNV GL**

Per Esvall
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Job Id: **262.1-015404-2**
Certificate No: **TAD000005B**

Reference Standards

- DNV-OSS-201, Verification for compliance with Norwegian Shelf Regulations, October 2014, Ch.2, Sec.7, Drill (N)
- API 6A Specification for Wellhead and Christmas tree Equipment
- API 16A Specification for Drill through Equipment
- API 16C Choke and Kill Systems
- ASME B31-3 Process Piping
- ASME II Boiler and Pressure Vessel Code, Part D
- ASME VIII Boiler and Pressure Vessel Code, Division 2
- ASME VIII Boiler and Pressure Vessel Code, Division 3
- NACE MR0175 / ISO 15156

Product description

- Hydraulic Hose Swivel, Size 2" 9/16 with 5K Body Working Pressure and 10K API 6A BX Flanges
- Hydraulic Hose Swivel, Size 3" 1/16 with 10K Body Working Pressure and 10K API 6A BX Flanges
- Kill & Choke Hose Swivel, Size 3" 1/16 with 15K Body Working Pressure and 15K API 6A BX Flanges
- Mud Booster Hose Swivel, Size 4" 1/16 with 7.5K Body Working Pressure and 10K API 6A BX Flanges

Application/Limitation

Job Id: **262.1-015404-2**
Certificate No: **TAD000005B**

The approval is valid for the fields of application and operational limitations as follows:

Product/Size	Hydraulic Hose Swivel 2 9/16" 10k API Spec 6A BX Flange	Hydraulic Hose Swivel 3 1/16" API Spec 6A BX Flng	K &C Hose Swivel 3 1/16" 15k API 6A BX Flange	Mud Booster Hose Swivel 4 1/16" API 6A BX Flange
Pressure class	5000 psi	10.000 psi	15.000 psi	7.500 psi
Design Temperature	-20°C to +100°C (API rating B)	-20°C to +140°C	-20°C to +177°C (API rating B+X)	-20°C to +100°C (API rating B)
Max axial tension	100 kN @ 5.000 psi	200 kN @ 10.000 psi	200 kN @ 15.000 psi	200 kN @ 7.500 psi
Max bending moment	10 kNm	20 kNm	20 kNm	20 kNm
Rotation speed	30 rpm	20 rpm	20 rpm	20 rpm
Rotational friction torque	50 Nm @ 100 bar 100 Nm @ 200 bar 200 Nm @ 345 bar	150 Nm @ 250 bar 300 Nm @ 500 bar 400 Nm @ 700 bar	150 Nm @ 250 bar 700 Nm @ 1034 bar	100 Nm @ 100 bar 500 Nm @ 517 bar
Rotational limitation	Unlimited, normally within +/- 5°	Unlimited, normally within +/- 5°	Unlimited, normally within +/- 5°	Unlimited, normally within +/- 5°
Service	Mineral oil, synthetic oil	Hydraulic oil, mineral or water based	Well returns, mud, Crude, H2S, Sour Service	Mud booster fluid
Environment	Offshore, submerged to 30 m water depth	Offshore, submerged to 30 m water depth	Offshore, submerged to 30 m water depth	Offshore, submerged to 30 m water depth

Type Approval documentation

Tests carried out on prototypes

Other Conditions and comments

Job Id: **262.1-015404-2**
Certificate No: **TAD000005B**

- Each product is to be surveyed during fabrication in accordance with the requirements for equipment of Category I as defined in DNV's Offshore Standard DNV-OS-E101 Drilling Plant, Ch.3, Sec.3, followed by issuance of a Product Certificate. Fabrication records are to be maintained in accordance with DNV-OS-E101, Ch.3, sec. 3.2. If the intended installation is DNV classed, then this shall be a DNV product certificate.
- Charpy impact testing to be performed at or below design temperature according to DNV-OS-E101, Ch. 2, Sec. 2 [2].

Marking of product

For traceability the following minimum amount of marking is to be carried out on each product:

- Manufacturer's name and trademark
- NV-TAD000005B
- Serial Number
- Swivel size
- Pressure rating
- Temperature rating

Documentation to be accompanied with each product/delivery

- DNV-GL Product Certificate if delivered to a vessel with DNV DRILL or DRILL(N) notation
- Maintenance/ User Manual

Certificate retention survey

For retention of this Type Approval, DNVGL AS' representative may carry out product audits biennially.

Certificate history

- This Type Approval Certificate is replacing the products first Type Approval Certificate "D-5205" issued 2013-07-05. The upper temperature limits for the 3 1/16" 15K API Spec 16A BX Kill & Choke Hose Swivel has in this new Type Approval been increased from +100 °C to +177°C.

END OF CERTIFICATE