DNV·GL

Certificate No:
TAD00001BU

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Coupling

with type designation(s)
3-1/16" 15K Swivel (P/N AS2927)
3-1/16" 15K Swivel (P/N AS2937)
3-1/16" 15K Swivel (P/N M1308)
3-1/16" 15K Swivel (P/N M3539)
3-1/16" 15K Swivel (P/N M3632)
3-1/16" 15K Swivel (P/N M5762-7)

Issued to
Worldwide Oilfield Machine (UK) Ltd
Aberdeen, United Kingdom

is found to comply with

Application :

See next page.

Issued at **Høvik** on **2020-09-10**
This Certificate is valid until **2025-09-09**.
DNV GL local station: **Oslo Drilling Systems**

Approval Engineer: **Axel Janson**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

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Reference Standards

ISO 15156/NACE MR0175 "Materials for use in H2S-containing environments in oil and gas production", first edition, 2001.

Product Description

The tubing swivels in this certificate are used in flowheads during well testing/well intervention operations. The swivels come in two basic types with either 5.375" or 5.250" pin end sealing diameter.

Application/Limitation

Design Parameter	Value	Equivalent
Maximum working pressure:	15 000 psi	1034 bar
Min./max. temperature rating:	-20 °F /350 °F	-29 °C /177 °C
Max. allowable tension at 0 psi:	700 000 lbf	3110 kN
Max. allowable tension at 15K psi / 1034 bar:	350 000 lbf	1560 kN
API 6A Product Specification Level:	PSL 3 / PSL 3G	(Per order specification)
API 6A Product Requirement:	PR 2	(Per order specification)
Trim:	EE-NL	
End Connections:	5-3/4"-4 Stub ACME-2G pins	

Type Approval Documentation:

Materials

Components	Material	Min. Yield Strength	Min. Charpy Requirements
Upper Housing	LAS AISI 4130 WOM Spec. 4.6.11	75 000 psi	In accordance with API 6A §6.3.2.3
Lower Housing			
Inner Mandrel			

Marking of Product

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

- Part No.
- Serial No.
- Pressure Rating
- API Specification 6A 21st Ed.
- Manufacturers Name or Mark

Fabrication/Testing Procedures

Test Procedures:

1. Pressure testing shall be performed as specified in API 6A §11.2 at 1,5 x WP (in accordance with the applied PSL).

NDE Procedures:

2. NDE/NDT shall be performed as specified in API 6A §10.4.2 (in accordance with the applied PSL).

Comments

- Elastomeric- and non-elastomeric seals are not within the scope of this design verification. Thorough analysis in the seal selection process shall be performed to ensure that seals are in accordance with API 6A requirements and appropriate for the final application.
- Fabrication records shall be maintained by the manufacturer in accordance with API 6A §15.
- If intended for sour service (H2S), hardness testing shall be performed on equipment with wetted surfaces as per ISO 15156/NACE MR0175.
- PSL 3G products shall have satisfied the PSL 3 requirements in addition to the requirements of gas testing specified in API 6A.
- This Type Approval Certificate constitutes design verification solely against API 6A and the designs have not been approved according to the applicable DNV GL CLASS-rules.

Certificate Retention Survey

For retention of this Type Approval Certificate, a DNV GL representative shall carry out surveys every second year in accordance with DNV GL Type Approval Scheme DNVGL-CP-0338.

END OF CERTIFICATE