



Certificate No:
TAD00001JY

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pipe Fitting

with type designation(s)
THOP Assembly 7In VXT, RWP 15Ksi and 10Ksi

Issued to
Aker Solutions AS avd Tranby
Tranby, Norway

is found to comply with
DNV-OS-E101 – Drilling facilities, Edition July 2021

Application :

Tubing Hanger Orientation Pin (THOP) is a tool used to correctly orient the TH (Tubing Hanger) prior to landing it in a Wellhead (WH). The pin is primarily extended or retracted within the tool by applying hydraulic pressure to either side of a master piston chamber.

Issued at **Høvik** on **2023-07-04**

This Certificate is valid until **2028-07-03**.

for **DNV**

DNV local unit: **Oslo Drilling Systems & Lifting Appliances**

Approval Engineer: **Nishant Koti**

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 AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") 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.



Form code: TA 251

Revision: 2022-12

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Codes and Standards used as reference

ISO10423: 2009 – Petroleum and natural gas industries -Drilling and production equipment -Wellhead and Christmas tree equipment

NACE MR0175: 2015 – Petroleum and natural gas industries - Materials for use in H2S-containing environments in oil and gas production

Product description

Tubing Hanger Orientation Pin (THOP) is a tool used to correctly orient the TH (Tubing Hanger) prior to landing it in a Wellhead (WH). The pin is primarily extended or retracted within the tool by applying hydraulic pressure to either side of a master piston chamber.

The Tool will typically mount to one of the Blowout Preventer (BOP) spare choke or kill outlets via a standard API (American Petroleum Institute) flange connection. To enable the THOP to be used on different BOP stacks, an adaptor flange is designed that ensures the correct flange connection and the correct pin extension required for each BOP specified.

Application/Limitation

Type Approval documentation

Tests to be carried out

- Charpy testing shall be performed in accordance with DNV-OS-E101, Ch.2, Sec.2.
- NDE/NDT shall be performed in accordance with DNV-OS-E101, Ch.2, Sec.8.3.
- Functional and pressure testing shall be performed in accordance with DNV-OS-E101, Ch.2, Sec.8.3.

Marking of product

Marking shall be in accordance with DNV-OS-E101, Ch.2, Sec.8.2.

Other conditions/comments

- Non-metallic seal had been validated in accordance with ISO 10423, Annex F PR2 performance requirement.
- Fabrication records shall be maintained by the manufacturer in accordance with DNV-OS-E101, Ch.3, Sec.3.2.
- Qualification of welding procedures and qualification of welders shall be in accordance with DNV-OS-E101, Ch.2, Sec.8.2.
- All main load bearing components are to be delivered with 3.1 material traceability certificate per EN 10204.
- All wetted components for sour service shall be tested and verified for hardness in accordance with NACE MR-0175.
- Closure bolting delivered shall be in accordance with API 20E, BSL3 and relevant documentation shall be verified by DNV Surveyor.
- Non-metallic seals delivered shall be in accordance with DNV-OS-E101, Ch.2, Sec.2 §2.7 and relevant documentation shall be verified by DNV Surveyor.
- This Type Approval is based on Design Verification Reports previously issued by DNV for the design, see DVR-32497-J-10850 Rev.: 0, DVR 261.1C-J-34609 Rev 0, DVR-72700000-J-3116 Rev 0.

Periodical assessment

For retention of the Type Approval Certificate, DNV Surveyor shall perform a survey – every second year and before expiry date of this certificate. This is in order to verify that the conditions for the type approval are complied with, ref. DNV-CP-0338, DNV Type approval scheme.