Certificate no.:
TAD00001MH

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Hoisting, Rotation and Pipehandling Equipment

with type designation(s)
KTR-STOP L-200 MHW, KTR-STOP L-300 MHW

issued to
KTR Brake Systems GmbH
Schloß Holte-Stukenbrock, Nordrhein-Westfalen, Germany

is found to comply with
DNV-OS-E101 – Drilling facilities, Edition July 2024
DNV statutory interpretations DNV-SI-0166 – Verification for compliance with Norwegian shelf regulations, Edition July 2021

Application:

Fail safe, spring applied, hyraulically released brake calipers L-200 and L-300. Maximum applied brake force is 200kN and 300kN respectivley.

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

Issued at **Houston** on **2024-10-11**
This Certificate is valid until **2029-10-10**.
DNV local unit: **Magdeburg**

Approval Engineer: **Parna Deljo**

for **DNV**

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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.

Product description

The KTR-STOP L-XXX MHW series brake calipers are designed as a fail-safe spring-applied, hydraulically released disc brake. The calipers are connected to a foundation or bracket with a slip resistant joint consisting of 8 bolts.

Reference standards

- VDI-Richtlinie 2230 Blatt 1, Systematic calculation of high duty bolted joints – Joints with one cylindrical bolt.
- NORSOK R-002, Lifting equipment, 2012

Application/Limitation

Design temperature: -20˚C to 50˚C
Max. operating pressure 200 bar

Brake type	Clamping force [kN]	Loss of force*) [%]	Opening pressure [bar]
KTR-STOP L-200 MHW	200	4.5	120
KTR-STOP L-300 MHW	300	6,0	180

*) Loss of force pr. 1 mm pad wear.

Type Approval documentation

Tests to be carried out

Other conditions and comments

- This certificate only covers the caliper and the bolted connection. Mounting brackets and supporting structure is not included and shall be approved separately.
- The calipers shall not be supplied with brake pads with a higher coefficient of friction than μ=0.30 unless this has been proven by appropriate testing according to DNV-OS-E101 Ch. 2 Sec.5 - 5.1.4
- The structure of the brake calipers can handle a clamping force equivalent to a coefficient of friction of μ=0.40.
- Bolts above and equal to 25mm diameter shall be delivered with 3.1 certificates and charpy V-notch values min 42J at -20˚C.
- Load bearing bolts smaller than25 mm shall be delivered with 3.1 certificates.
- The hydraulic system (control system) is not covered by this type approval and shall be approved for each system which incorporates the calipers.
- Eyebolts for installation lifting are not included in this type approval.

Marking of product

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

- Part No.
- Serial No.
- Rated braking capacity
- Manufacturers name or mark

Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNV-CP-0338.

This certificate replaces TAD-6214.

END OF CERTIFICATE