



Certificate No:
TAP00002GE

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Hydraulic Locking Cylinders

with type designation(s)

Type 80/40x250-590, Type 63/32x250-530

Issued to

Yancheng Haite Machinery Technology Co., Ltd.
Jianhu, 100, China

is found to comply with

DNV standard DNV-ST-0194 – Hydraulic cylinders

Application :

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

Type	Design pressure (push)	Design pressure (pull)	Cylinder sizes
Type 80/40x250-590	250 bar	250 bar	100 mm cylinder outer diameter
Type 63/32x250-530	250 bar	250 bar	83 mm cylinder outer diameter

Issued at **Høvik** on **2022-11-24**

This Certificate is valid until **2027-11-23**.

for **DNV**

DNV local station: **Nantong**

Approval Engineer: **Christof Kotzmann-Bendrien**

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Oddvar Deinboll
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.



Product description

Hydraulic cylinders for Locking Purpose:

Material Specification:

Cylinder tube:	Q345D
Piston rod:	1.4418
Piston:	42CrMo4
Bottom welded/threaded:	Q345D/42CrMo4
Gland threaded:	Q345D/42CrMo4
Materials as according to detail specifications on the drawings.	

80/40x250

Tube diameter (outside/inside):	100 mm / 80 mm
Rod diameter (outside/inside):	40 mm / 0
Stroke:	S (0 ≤ S ≤ 250) mm
Minimum cylinder length (end eyes center to center):	590 mm + S (≤ 250) mm

63/32x250

Tube diameter (outside/inside):	83 mm / 63 mm
Rod diameter (outside/inside):	32 mm / 0
Stroke:	S (0 ≤ S ≤ 250) mm
Minimum cylinder length (end eyes center to center):	530 mm + S (≤ 250) mm

Application/Limitation

- Design Data:
 - Maximum working Pressure (Push & Pull): 250 bar
 - Test Pressure: 375 bar for max. working pressure (Tests carried out are to be in accordance with DNVGL-ST-0194 - Hydraulic Cylinders)
 - Design Temperature (min/max): -20°C / +55°C
 - Corrosion allowance: 0.3 mm
- Materials for the cylinder tube, piston rods and end connections are to be delivered with material works certificate. All of these materials have to be supplied from an approved manufacturer of DNV for the type and grade of steel being supplied and for the relevant steelmaking and processing route.
- Each cylinder is to be certified by DNV Surveyor as outlined in the Type Approval Program.
- A product certificate endorsed or issued by the DNV Surveyor is to accompany each cylinder/delivery.
- This type approval does not cover Subsea applications. If the cylinders are going to be used for this application, they are subject to case-by-case approval.
- The cylinders are not to be used for ship steering applications.
- Manufacturing, workmanship and testing of each cylinder shall be done according to DNV type approval program.

Type Approval documentation

Tests carried out

Hydraulic Test, Endurance test, Static strength test

Marking of product

Hydraulic cylinders shall be permanently marked in order to enable unique traceability to this type approval the products with:

- Manufacturer's name or trademark
- Type designation/Serial no.
- WP / TP designation in bar

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 Type Approval are complied with. Refer to DNV-CP-0338, Sec.4.

The objective of the Periodical Assessment is to verify that the conditions for the Type Approval are not altered since the Type Approval Certificate was issued.

The main scope of the Periodical Assessment will normally include:

- Verification of the Type Approval applicant's production and quality system w.r.t. ensuring continued consistent production of the Type Approved products at the Type Approval applicant's own premises and at other companies that are given the responsibility for manufacturing of the products.
- Review of the Type Approval documentation and that this is still used as basis for the production
- Review of possible changes to the design, the material and the performance of the product
- Verification of the product marking.

End of Certificate