

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Miscellaneous**

with type designation(s)
Superbolt Tensioners MT and CY Series

Issued to

Nord-Lock AG
St. Gallenkappel, SG, Switzerland

is found to comply with
DNVGL-OS-E101 – Drilling facilities, Edition January 2018

Application :

See next page.

Issued at **Høvik** on **2018-11-29**

This Certificate is valid until **2023-11-28**.

DNV GL local station: **Augsburg**

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.



Reference Standard

- [1] Standard for Offshore and Platform Lifting Appliances, DNVGL-ST-0378, May 2016
- [2] DNVGL-OS-C101 Design of Offshore Steel Structures, General LRFD Method" April 2011
- [3] DNV GL Rules for Classification of Ships, Part 4, Chapter 4 "Rotating Machinery, Power Transmission"
January 2017

Product Description

SUPERBOLT Tensioners are designed as direct replacements for hexagon nuts. They can be threaded onto a bolt, stud, threaded rod or shaft, or similar. The main thread serves to position the tensioner on the bolt against a hardened washer and the load bearing surface. Once the tensioner is positioned, tensioning of the bolt is accomplished with hand wrenches or light power tools by torquing a series of jackbolts that are incorporated in the tensioner and encircle the main thread. By torquing the jackbolts with a relatively low torque a high tension load in the bolt, stud, rod or shaft is generated.

The SUPERBOLT Tensioners MT-Series are mainly used on the property class 8.8 bolting according to ISO 898. The CY-Series are used on large diameters bolting of the property class 8.8 and on the property class 10.9 bolting.

Application/Limitation

This Type Approval is valid only if the use of the products is in compliance with Regulations, DNV GL Rules and Standards, and manufacturer's Specification and Instruction for Assembly and Tightening applicable for the intended service.

This Type Approval Certificate covers standard MT- and CY-Series of SUPERBOLT Tensioners as specified in the manufacturer's product catalogue.

On request, SUPERBOLT Tensioners may be supplied with inch threads, in sizes larger than M160, manufactured in special materials and coated with various anti-corrosion protection systems, etc. Those special products, however, are not covered by this Type Approval Certificate but may be approved on case to case basis.

Type Approval Documentation

Tests Carried Out

The following reports on the tests carried out were reviewed:

- Tests of the effects of various bolt assembly lubricants and tightening procedures, and control of the loss of bolt pretension due to dynamic loading.
- "Results of Measurement and Fatigue Tests on SUPERBOLT Torquenuts M48" EMPA Test Report No.: 113'894, dated 1 September 1989
- Fatigue tests of SUPERBOLT Tensioner MT-M42x4.5/W and standard hexagon nuts for comparison of fatigue performance.
- "Fatigue tests on prestressing system", EMPA Test Report No.: 426,872/e.

Other Conditions and Comments

- Each product is to be surveyed during fabrication in accordance with the requirements for equipment of Category I as defined in DNV GL AS' Offshore Standard DNVGL-OS-E101 Drilling Plant, followed by issuance of Product Certificate Form No. 20.92a. Fabrication records are to be maintained in accordance with DNVGL-OS-E101 Ch.3, Sec.3, 2.1.2.
- This certificate replaces Type Approval Certificate D-5584.

Marking of Product

For traceability to this Type Approval Certificate each tensioner is to be marked as follows:

- Manufacturer's Name or Mark
- Part Number
- Maximum tightening torque [in Nm] per Jackbolt
- Lot No.

Certificate Retention Survey

For retention of the Type Approval, DNV GL's representative shall carry out biennial Product Audits in accordance with DNV GL Type Approval Scheme DNVGL-CP-0338, Chapter 4, dated Oct 2015.

END OF CERTIFICATE