

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Lifting Gear - Load Measuring Bolts**with type designation(s)
Model Series F53

Issued to

teccis GmbH
Offenbach, Germany

is found to comply with

DNV GL standard DNVGL-ST-0377 – Standard for shipboard lifting appliances**DNV GL standard DNVGL-ST-0378 – Standard for offshore and platform lifting appliances****Application :****Product(s) approved by this certificate is/are accepted for DNV GL product certification.**Issued at **Hamburg** on **2017-02-28**This Certificate is valid until **2022-02-27**.DNV GL local station: **Augsburg**for **DNV GL**Approval Engineer: **Stefan Heuer**

Jörg Kallies
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.



Product description

Load Measuring Bolts model series F53

Application/Limitation

Working conditions:

- Design temperature: -20°C
- Load "SWL" (excluding dynamic coefficients)
- 150.000 load cycles, load spectrum S7 (full stress spectrum)

This type approval is related to the strength of the bolts, the measuring function is not part of this approval.

Scope of our type approval are general types of load measuring bolts model series F53 in their most unfavourable dimension / load combination. Favourable deviations are accepted (e.g. shorter length between bearings, decreased loads).

Each single bolt shall be load tested in presence of DNV GL:

- $SWL \leq 25t$: Static test load $L_{Pstat} = 2 \times SWL$
- $SWL > 25t$: Static test load $L_{Pstat} = [(1.22 \times SWL) + 20t]$

Type Approval documentation

<i>Drawing No.</i>	<i>Rev. No.</i>	<i>Sheets</i>	<i>Title</i>
A5112X015542	3	1	Messfeder 1,5t/3t Ø50x144
A5112X015713	3	1	Messfeder 80kN Ø70x150
A5112X015797	3	1	Messfeder 150kN Ø50x298
A5112X050358	3	2	Messfeder 2370kN Ø240x770
A5112X050409	2	1	Messfeder 40kN D50(65)x272,5
A5112X050587	2	1	Messfeder Ø40x172
A5112X050662	2	1	Messfeder 175t Ø150x279
A5112X050677	3	1	Messfeder 20kN Ø30x91
A5112X050698	3	1	Messfeder 250kN Ø110x615
A5112X050748	2	1	Messfeder 16kN Ø50x147

Tests carried out

Product test witnessed by DNVGL dated 2016-12-12, report no.: N141B54S
Product test witnessed by DNVGL dated 2016-12-12, report no.: N141B54G
Product test witnessed by DNVGL dated 2016-12-12, report no.: N141B54J

Marking of product

Each bolt shall be marked by the manufacturer with at least:

- Manufacturer's name or trademark
- Serial number
- Year of construction
- Permissible load in t or kN [1t = 9.81 kN]



Job Id: **262.1-023179-1**
Certificate No: **TAS00000WC**

Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform a periodical assessment after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.