Certificate No:
TAS0000347

TYPE APPROVAL CERTIFICATE

This is to certify:

That the lifting set for offshore containers and portable offshore units

with type designation(s)
Chain sling assemblies

Issued to
J.D. Theile GmbH & Co. KG
Schwerte, Nordrhein-Westfalen, Germany

is found to comply with
DNV GL standard DNVGL-ST-E271 – 2.7-1 Offshore containers, January 2021
DNV GL standard DNVGL-ST-E273 – 2.7-3 Portable offshore units, December 2016
ISO 10855-2:2018 Offshore containers and associated liftings sets – Part 2: Design, manufacture and testing of lifting sets
IMO/MSC Circular 860
EN 818-4 Short link chain for lifting purposes – Safety – Part 4: Chain slings – Grade 8

Application :

1, 2, 3, and 4 leg Grade 8 chain lifting sets, with forerunner where fitted, for lifting of:
- offshore containers, with maximum gross mass 0 to 25000 kg,
- portable offshore units

Issued at **Aberdeen** on **2021-11-03**
This Certificate is valid until **2026-11-02** .
DNV local unit: **Essen**

Approval Engineer: **Elisabeth Legg**

for **DNV**

Brendan Ward
Senior Engineer

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

This approval covers chain lifting sets for units certified in accordance with DNVGL-ST-E271 or DNVGL-ST-E273.

The chain liftings sets will be assembled from J.D. Theile GmbH & Co. KG type approved products as listed in Appendix 1 of this type approval certificate.

Application/Limitation

All production testing shall be carried out in accordance with EN 818-4 and J.D. Theile GmbH & Co. KG internal procedures. Testing shall be agreed with local DNV office and be in accordance with DNVGL-ST-E271 section 8 and Appendix F.

The manufacturer shall issue product certificates, in accordance with DNV GL-ST-E271 section 8.5 and DNVGL-ST-E273 section 7.5, using the certificate form FQW32 Rev. 0. These certificates shall only be used for lifting sets certified in accordance with this type approval certificate.

The working load limit (WLL) to be referenced in certificates and marked on lifting sets shall be the maximum WLL of the lifting set, as per the definition in DNVGL-ST-E271, at the given sling leg angle.

For lifting sets manufactured in accordance with DNVGL-ST-E271
Lifting sets shall be assembled in accordance with the strength requirements described in DNVGL-ST-E271 section 8. The angle of the sling legs from vertical should be taken into account when choosing sling legs. This angle should normally be 45°, but smaller angles may be used.

The required WLL for a given container rating should be determined in accordance with DNVGL-ST-E271 Table 8-1 and J.D. Theile GmbH & Co. KG procedure. In no case should an offshore container lifting set WLL be less than 7.0 tonnes.

Special lifting sets, assembled in accordance with the principles described in DNVGL-ST-E271 section 8 and appendix E, are also covered by this type approval. If unsymmetrical slings are to be assembled, the local DNV office shall be contacted to review each case, unless otherwise agreed in advance.

> *Note: The sling leg is not necessarily the weakest part of the lifting set. Master link assemblies selected for lifting sets with legs at 45˚ may not be suitable for lifting sets with a smaller angle.*

For lifting sets manufactured in accordance with DNVGL-ST-E273
Prior to selection of the lifting set, the minimum required WLL shall be calculated in accordance with the strength requirements in DNVGL-ST-E273 section 7.3. The resultant sling force (RSF) is provided in the DNV design verification report (DVR) for the portable offshore unit. The DVR should be made available for the lifting set manufacturer.

Type Approval documentation

Tests carried out
Prototype testing shall be carried out in accordance with DNVGL-ST-E271 and EN 818-4.

Marking of product
Components shall be marked in accordance with EN 818-4 clause 7, DNVGL-ST-E271 section 8 or DNVGL-ST-E273 section 7, as appropriate.

Periodical assessment
In order to maintain the validity of the type approval certificate, periodical assessments should be carried out by a DNV surveyor every 12 months.

END OF CERTIFICATE

Appendix 1

Product description and details:

The values of the working load limit (WLL) specified below are nominal for each component and the correct selection shall be made in accordance with DNVGL-ST-E271 section 8.

Masterlinks:

Type	Diameter [mm]	Working Load Limit (WLL) [t]	Manufacturing Proof Force (MPF) [kN]	Minimum Breaking Force (BF) [kN]
TOL A14*	14	2.74	67.2	134
TOL A16*	16	4.1	101	201
TOL A22*	22	11.0	270	540
TOL A22-2	22	7.0	172	343
TOL A26	26	9.3	228	456
TOL A29*	29	19.5	478	956
TOL A29-2	29	14.5	356	711
TOL A32	32	19.0	466	932
TOL A36	36	26.0	638	1270
TOL A40	40	30.5	748	1500
TOL A45	45	40.0	981	1960
TOL A52	52	51.0	1250	2500
TOL A68	68	75.0	1840	3680

*) This size shall only to be used for portable offshore units.

Intermediate, joining and terminal links:

Type	Diameter [mm]	Working Load Limit (WLL) [t]	Manufacturing Proof Force (MPF) [kN]	Minimum Breaking Force (BF) [kN]
TOL B16	16	5.3	130	260
TOL B20	20	8.0	196	392
TOL B22	23	12.5	307	613
TOL B26	26	16.0	392	785
TOL B32	32	21.2	520	1040
TOL B36	36	26.5	650	1300

Chain:

Type	Diameter [mm]	Working Load Limit (WLL) [t]	Manufacturing Proof Force (MPF) [kN]	Minimum Breaking Force (BF) [kN]
K13	13	5.3	133	212
K6	16	8.0	201	322
K22	22	15.0	380	608
K26	26	21.2	531	849

Quad assemblies:

Type	Masterlink d x t x b [mm]	Sublinks d x t x b [mm]	Working Load Limit (WLL) [t]	Manufacturing Proof Force (MPF) [kN]	Minimum Breaking Force (BF) [kN]
TOA 16*	16x150x75	14x125x60	4.1	101	201
TOA 22*	22x162x90	22x162x90	11.0	270	540
TOA 22-2	22x270x140	22x162x90	7.0	172	343
TOA 26	26x270x140	22x162x90	9.3	228	456
TOA 29*	29x200x110	22x162x90	16.5	405	809
TOA 29-2	29x270x140	22x162x90	14.5	356	711
TOA 32	32x270x140	29x200x110	19.0	466	932
TOA 36	36x270x140	29x200x100	26.0	638	1280
TOA 40	40x280x155	32x270x140	28.5	699	1400
TOA 45	45x320x175	36x270x140	39.0	956	1910
TOA 52	52x350x195	45x320x175	51.0	1250	2500
TOA 68	68x410x220	52x350x195	75.0	1840	3680

*) This size shall only to be used for portable offshore units.