

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Lifting set for Offshore containers and Portable Offshore Units**with type designation(s)
Offshore Shackles

Issued to

THIELE GmbH & Co. KG
Iserlohn, Nordrhein-Westfalen, Germany

is found to comply with

DNV GL standard DNVGL-ST-E271 – 2.7-1 Offshore containers, August 2017**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****EN 1677-1 Components for slings – Safety – Part 1: Forged steel components, Grade 8****IMO/MSC Circular 860****Application :****Grade 8 Shackles for Lifting Sets for Offshore Containers and Portable Offshore Units**Issued at **Høvik** on **2018-07-17**This Certificate is valid until **2022-12-30**.for **DNV GL**DNV GL local station: **Essen**Approval Engineer: **Nina Thorvaldsen Moberg****Inger-Helene Hals**
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.



Job Id: **262.1-014498-4**
Certificate No: **TAS00000XJ**

Product description

This Type Approval Certificate replaces Type Approval Certificate S-7302.

Shackles for use in Lifting Sets according to standard DNVGL-ST-E271 - 2.7-1 Offshore Containers (DNV GL 2.7-1) or standard DNVGL-ST-E273 - 2.7-3 Portable Offshore Units (DNV GL 2.7-3).

The shackles according to Thiele's standard TWN 0818 are based on DIN 82101 with regards to dimension, and comply with EN 1677-1 for Working Load Limit and test requirements.

Detailed product information and range of certified products covered by this Type Approval are listed in Appendix 1 of this Type Approval Certificate.

Application/Limitation

All production testing to be according to Thiele's procedure TA DNV 2.7-1 Aug. 2017 App. H.3.1 S8067, 8069, 7302, 7304 v 11.07, DNV GL 2.7-1, EN 1677-1 and in agreement with the DNV GL surveyor. Material to be impact tested by Charpy impact method according to DNV GL 2.7-1, Section 8.4.

For application of shackles the minimum shackle working load limit (WLL_s) shall be decided according to the strength requirements for lifting sets on offshore containers as given in DNV GL 2.7-1, Section 8.

Shackles shall be of bolt type with hexagon nut and split pin. Screw pin shackles shall not be used.

The manufacturer shall issue product certificates according to Section 8.5 in DNV GL 2.7-1, using the certificate form TVA-U1.4-FB3-003 Rev. 03. This certificate form is only to be used for shackles certified according to this Type approval Certificate.

For shackles certified in accordance with DNV GL 2.7-3:

Prior to selection of shackles, the minimum required shackle working load limit (WLL) shall be decided according to the strength requirements for lifting sets on portable offshore units as given in DNV GL 2.7-3, Section 7.3.3. Resulting sling force (RSF) can be found in the Design Verification Report (DVR) issued by DNV GL for the Portable Offshore Unit. The DVR shall be available for the shackle manufacturer.

Type Approval documentation



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Tests carried out

Prototypes tested according to standards listed on the front page of this type approval certificate.

Marking of product

Marking should be according to DNV GL 2.7-1 Section 8, DNV GL 2.7-3 Section 7, EN 1677-1 and Drawing No. TWN 0818.

Periodical assessment

For retention of the Type Approval, a DNV GL surveyor shall perform an assessment every 6 months and before the expiry date of this certificate to verify that the type approval is complied with.

END OF CERTIFICATE

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Appendix 1

Product description and details

Grade 8 shackles:

Type	Nominal size	Bow diameter [mm]	SF	WLL [t]	MPF [kN]	Min. BF [kN]
F30310NV	10-8	15	5	3,15	77,2	157
F30320NV	13-8	19	5	5,3	130	263
F30330NV	16-8	23	5	8,0	196	392
F30340NV	18/20-8	29	5	12,5	306	628
F30350NV	22-8	33	5	15,0	368	745
F30360NV	26-8	37	5	21,2	520	1040
F30370NV	28-8	41	5	25,0	613	1240
F30380NV	32-8	46	5	31,5	772	1570
F30390NV	36-8	50	5	40,0	981	1960
F30400NV	40-8	55	5	50,0	1230	2470
F30410NV	45-8	61	5	63,0	1540	3140