

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Lifting set for Offshore containers and Portable Offshore Units

with type designation(s)

Chain Sling Lifting Set Assemblies for Lifting of Offshore Containers and Portable Offshore Units

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

EN 818-4 Short link chain for lifting purposes – Safety – Part 4: Chain slings – Grade 8

ISO 10855-2:2018 Offshore containers and associated liftings sets – Part 2: Design, manufacture and testing of lifting sets

IMO/MSC Circular 860

Application :

1-, 2-, 3- & 4- Part Lifting Sets, with forerunner where fitted, for Lifting of Offshore Containers with a maximum Rating of 25.000 kg or 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**

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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.



Product description

This Type Approval Certificate replaces Type Approval Certificate S-8067.

The Type Approval Certificate covers welded chain slings, assembled by Thiele GmbH & Co. KG, 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 Chain Sling Assemblies consist of components covered by Thiele's respective DNV GL Type Approval Certificates; details are listed in Appendix 1 of this Type Approval Certificate.

Application/Limitation

All production testing should be done according Thiele's internal 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 818 and to be agreed with local DNV GL office. Material to be impact tested by Charpy impact method according to DNV GL 2.7-1, Section 8.4.

All proof load tests during production to be carried out in accordance with EN 818-4.

The manufacturer shall issue product certificates according to Section 8.5 in DNV GL 2.7-1 or Section 7.5 in DNV GL 2.7-3, using the certificate form TVA-U1.4-FB3-001 Rev. 03. This certificate form is only to be used for chain lifting set certified according to this Type approval Certificate.

The WLL to be used in certificates and marked on lifting sets shall be the maximum rating of an offshore container on which the sling can be used, at the given sling leg angle.

For slings certified in accordance with DNV GL 2.7-1

For application of chains the minimum working load limit (WLL) shall be decided according to the strength requirements for lifting sets on offshore containers as given in DNV GL 2.7-1, Section 8 and IWN 2013 rev D.

Lifting sets shall be assembled according to the strength requirements for lifting sets on Offshore Containers as described in DNV GL 2.7-1, Section 8. The angle of the sling legs from vertical should be taken into account when choosing slings. This angle should normally be 45°, but smaller angles can be used. In no case should the WLL of Lifting Sets for Offshore Containers be less than 7.0 tonnes.

Special slings, assembled according to the principles described in DNV GL 2.7-1, Section 8 and Appendix E, are also covered by this Type Approval. However, if unsymmetrical slings are to be assembled, local DNV GL office has to be contacted for reviewing in each case, unless otherwise is agreed with local DNV GL office.

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

For slings certified according to DNV GL 2.7-3

Prior to selection of sling set the minimum required 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 7.3.2 and must be approved by DNV GL. 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 sling manufacturer.

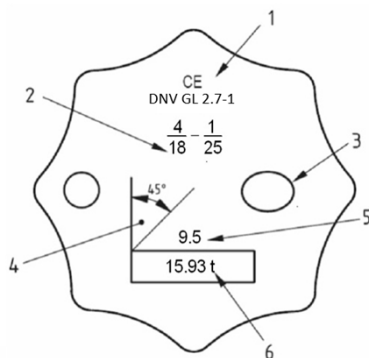
Type Approval documentation

Tests carried out

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

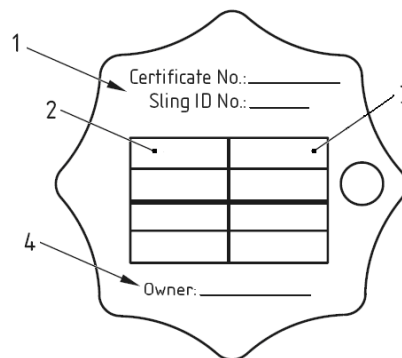
Marking of product

Slings are to be marked with certification tag according to DNV GL 2.7-1, Section 8 or DNV GL 2.7-3, Section 7.6 as shown below:



Example of identification tag for a chain sling – Front

- 1) CE mark and Reference to DNV GL 2.7-1
- 2) 4 legs of 18 mm, 1 forerunner of 25 mm (example)
- 3) Manufacturer's mark
- 4) Sling angle
- 5) Shackle size
- 6) WLL



Example of identification tag for a chain sling – Back

- 1) Certificate number (and unique identification number if applicable)
- 2) Column 1: inspectors mark, inspection suffix and date of periodic inspections (shall be of format YY-MM-DD)
- 3) Column 2: shackle ID number
- 4) The owner's name may optionally be included

The tag shall be 8-sided for grade 8 chain.

Periodical assessment

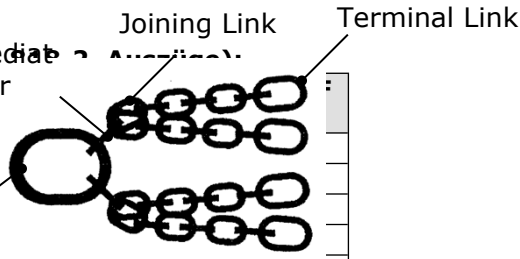
For retention of the Type Approval, a DNV GL surveyor shall perform an assessment every 6 months and before the expiry date of this certificate to verify that the type approval is complied with.

END OF CERTIFICATE

Appendix 1

Product description and details

Chain Type (dwg DWN 0803):



Type	Dia. [mm]	WLL [t]	MPF [kN]	Min. BF [kN]
8 x 24	8			
10 x 30	10			
13 x 39	13			
16 x 48	16			
18 x 54	18	10,0	254	407
20 x 60	20	12,5	314	503
22 x 66	22	15,0	380	608
26 x 78	26	21,2	531	849
28 x 84	28	25,0	616	985
32 x 96	32	31,5	804	1290
36 x 108	36	40,0	1020	1630
40 x 120	40	50,0	1260	2010
45 x 135	45	63,0	1590	2540

Master link Type A (dwg TWN 0803):

Type	Dia. [mm]	WLL [t]	MPF [kN]	Min. BF [kN]
F0803208	20	4,75	116	186
F0803228	22	5,6	137	220
F0803268	26	8	196	314
F0803328	32	12,5	306	490
F0803368	36	16	392	628
F0803408	40	19	466	745
F0803458	45	25	613	981
F0803508	50	31,5	772	1240
F0803568	56	40	981	1570
F0803638	63	50	1230	1960
F0803708	70	63	1540	2470
F0803808	80	80	1960	3140

Job Id: **262.1-017142-2**
Certificate No: **TAS00001JT**

Intermediate links type B (dwg TWN 0804):

Type	Dia. [mm]	WLL [t]	MPF [kN]	Min. BF [kN]
F0804138	13	3,35	82,1	131
F0804168	16	5,6	137	220
F0804208	20	8,5	208	333
F0804228	22	10	245	392
F0804268	26	14	343	549
F0804288	28	16	392	628
F0804328	32	22,4	549	879
F0804368	36	28	686	1100
F0804408	40	33,5	821	1310
F0804458	45	42,5	1040	1670
F0804508	50	53	1300	2080

Quad Assembly (dwg TWN 0797):

Type	Nominal size [mm]	Dia. top link [mm]	Dia. joining link [mm]	WLL [t] 45°
F0797268	26 / 22	26	22	7,9
F0797328	32 / 26	32	26	11,3
F0797368	36 / 32	36	32	16
F0797458	45 / 36	45	36	22,6
F0797508	50 / 45	50	45	26,8
F0797568	56 / 50	56	50	40
F0797638	63 / 56	63	56	50