

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Lifting set for Offshore containers and Portable Offshore Units

with type designation(s)
Master links A1343 and Master link assemblies A1346

Issued to
Crosby Group LLC
Tulsa, OK, USA

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 1677-4 Components for slings – Safety – Part 4: Links, Grade 8
IMO/MSC Circular 860

Application :

Grade 10 Links for offshore container and portable offshore unit lifting sets

Issued at **Aberdeen** on **2021-01-11**

This Certificate is valid until **2025-05-26** .

for **DNV GL**

DNV GL local unit: **Houston**

Approval Engineer: **Elisabeth Legg**

.....
Brendan Ward
Delivery Lead - Containers

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 GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") 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.



Job Id: **262.1-032732-2**
Certificate No: **TAS00002GE**
Revision No: **1**

Manufactured by

Gunnebo Industries AB
Växjö, Sweden
Local DNV GL office: Malmö

Responsibility

Crosby Group LLC takes responsibility that both design and production are in compliance with the Rules, Standards and/or Regulations listed on page 1 of this Type Approval Certificate.

Product description

This type approval replaces previous revisions of TAS00002GE.

This approval covers master links and master link assemblies for use in lifting sets for units certified in accordance with DNVGL-ST-E271 or DNVGL-ST-E273.

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

Application/Limitation

Minimum design temperature: - 40°C

Selection of the correct dimensions of lifting sets and/or lifting set components shall be carried out in accordance with the requirements for lifting sets of offshore containers in DNVGL-ST-E271 section 8 or DNVGL-ST-E273 section 7.

The required Working Load Limit (WLL) for a given offshore container rating should be determined in accordance with DNVGL-ST-E271 Table 8-1. In no case should the lifting set WLL be less than 7.0 tonnes.


Tests to be carried out:

- Production testing: in accordance with DNVGL-ST-E271 and EN 1677-4, in agreement with the DNV GL surveyor.
- Material to be impact tested by Charpy impact method in accordance with DNVGL-ST-E271 section 8.4 or DNVGL-ST-E273 section 7.4.

The manufacturer shall issue product certificates in accordance with DNVGL-ST-E271 section 8.5, using the certificate Form no: 001 rev 3. This certificate form is only to be used for links certified in accordance with this type approval.

For links manufactured in accordance with DNVGL-ST-E273

Prior to selection of links, the minimum required working load limit (WLL) shall be determined in accordance with the strength requirements for lifting sets on portable offshore units as given in DNVGL-ST-E273 section 7.3.5 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.



Job Id: **262.1-032732-2**
Certificate No: **TAS00002GE**
Revision No: **1**

Type Approval documentation

Tests carried out

Prototype testing shall be carried out in accordance with DNVGL-ST-E271 and EN 1677-4.

Marking of product

Components should be marked in accordance with EN 1677-4 chapter 7.1, DNVGL-ST-E271 section 8 or DNVGL-ST-E273 section 7, as appropriate. As specified in Gunnebo instructions "Description of product, production flow and quality flow", the components are to be marked Grade 10 and painted silver.

Periodical assessment

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

END OF CERTIFICATE

Job Id: **262.1-032732-2**
Certificate No: **TAS00002GE**
Revision No: **1**

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.

A1343: Welded Single Master links: Painted Silver. Marked grade 10

Art. No.	Size designation (D x W x L)	WLL [tonnes]	MPF [kN]	MBF [kN]	Manufacturer's safety factor
1247051	13 x 60 x 120	3.2*	78.5	157.0	5
1247087	17 x 90 x 160	4.1*	100.6	201.1	5
1247096	19 x 90 x 160	6.7*	164.3	328.6	5
1247120	22 x 100 x 180	8.8	215.8	431.6	5
1247122	22 x 145 x 275	7.0	171.7	343.4	5
1247124	25 x 115 x 210	11.5	282.0	564.0	5
1247126	25 x 145 x 275	8.9	218.3	436.5	5
1247133	28 x 145 x 275	13.0	318.8	637.7	5
1247142	32 x 145 x 275	17.0	416.9	833.9	5
1247151	36 x 155 x 285	24.0	588.6	1177.2	5
1247163	40 x 140 x 270	31.5	772.5	1545.1	5
1247164	45 x 180 x 340	38.3	939.3	1878.6	5
1247166	51 x 215 x 390	45.0	1103.6	2207.3	5
1247175	55 x 203 x 406	67.0	1643.2	3286.4	5

*) Master links with WLL less than 7.0 tonnes are not allowed to be used in lifting sets for offshore containers

Job Id: **262.1-032732-2**
 Certificate No: **TAS00002GE**
 Revision No: **1**

A1346: Welded Master link assemblies: Painted silver. Marked grade 10

Art. No.	Size designation (D x W x L) / (D x W x L)	WLL Assembly [tonnes]	MPF Master link [kN]	MBF Master link [kN]	WLL Intermediate links [tonnes]	MPF Intermediate links [kN]	MBF Intermediate links [kN]	Manufacturer's safety factor
1256865	13x60x120 / 13x60x120	3.2*	78.5	157.0	2.4	58.9	117.7	5
1256868	17x90x160 / 13x60x120	4.1*	100.6	201.1	3.1	75.4	150.8	5
1256874	19x90x160 / 13x60x120	4.25*	104.2	208.5	3.2	78.2	156.3	5
1256878	22x100x180 / 17x90x160	7.0	171.7	343.4	5.25	128.8	257.5	5
1256880	22x145x275 / 17x90x160	7.0	171.7	343.4	5.25	128.8	257.5	5
1256876	22x100x180 / 19x90x160	8.5	208.5	417.0	6.4	156.3	312.7	5
1256882	25x115x210 / 19x90x160	8.9	218.3	436.5	6.7	163.7	327.4	5
1256892	25x145x275 / 19x90x160	8.9	218.3	436.5	6.7	163.7	327.4	5
1256917	28x145x275 / 22x100x180	14.5	355.6	711.2	10.875	266.7	533.4	5
1256926	32x145x275 / 25x115x210	17.0	417.0	833.9	12.75	312.7	625.4	5
1256929	36x155x285 / 28x110x190	23.6	578.8	1157.6	17.7	434.1	868.2	5
1256930	40x140x270 / 32x145x275	28.1	689.2	1378.3	21.08	516.9	1033.7	5
1256953	45x180x240 / 36x155x285	38.3	939.3	1878.6	28.7	704.5	1409.0	5
1256958	51x215x390 / 40x140x270	45.0	1103.6	2207.3	33.75	827.7	1655.4	5
1256973	55x203x406 / 51x215x390	67.0	1643.1	3286.4	50.25	1232.4	2464.8	5

*) Master link assemblies with WLL less than 7.0 tonnes are not allowed to be used in lifting sets for offshore containers