

# TYPE APPROVAL CERTIFICATE

**This is to certify:****That the Lifting set components for Offshore containers and Portable Offshore Units**

with type designation(s)

**Master links A-344 and Master link assemblies A-347**

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 8 links for offshore container and portable offshore unit lifting sets**Issued at **Aberdeen** on **2021-01-11**This Certificate is valid until **2025-06-09** .for **DNV GL**DNV GL local unit: **Houston**Approval Engineer: **Elisabeth Legg**

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**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: **262.1-033673-2**  
Certificate No: **TAS00002GF**  
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 TAS00002GF.

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.



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## **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 8 and painted gold.

### **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**

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## 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.

### A-344: Welded Single Master links: Painted Gold. Marked grade 8

Art. No.	Size designation (D x W x L)	WLL [tonnes]	MPF [kN]	MBF [kN]	Manufacturer's safety factor
1256988	13 x 60 x 120	3.2*	78.5	157.0	5
1257002	17 x 90 x 160	4.1*	100.6	201.1	5
1257072	19 x 90 x 160	6.7*	164.3	328.6	5
1257212	22 x 100 x 180	8.8	215.8	431.6	5
1257268	22 x 145 x 275	7.0	171.7	343.4	5
1257282	25 x 115 x 210	11.5	282.0	564.0	5
1257332	25 x 145 x 275	8.9	218.3	436.5	5
1257382	28 x 145 x 275	13.0	318.8	637.7	5
1257422	32 x 145 x 275	17.0	416.9	833.9	5
1257492	36 x 155 x 285	24.0	588.6	1177.2	5
1257502	40 x 140 x 270	31.5	772.5	1545.1	5
1257562	45 x 180 x 340	38.3	939.3	1878.6	5
1257632	51 x 215 x 390	45.0	1103.6	2207.3	5
1257573	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

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**A-347: Welded Master link assemblies: Painted Gold. Marked grade 8**

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
1257755	13x60x120 / 13x60x120	3.2*	78.5	157.0	2.4	58.9	117.7	5
1257762	17x90x160 / 13x60x120	4.1*	100.6	201.1	3.1	75.4	150.8	5
1257832	19x90x160 / 13x60x120	4.25*	104.2	208.5	3.2	78.2	156.3	5
1258058	22x100x180 / 17x90x160	7.0	171.7	343.4	5.25	128.8	257.5	5
1258067	22x145x275 / 17x90x160	7.0	171.7	343.4	5.25	128.8	257.5	5
1258049	22x100x180 / 19x90x160	8.5	208.5	417.0	6.4	156.3	312.7	5
1258076	25x115x210 / 19x90x160	8.9	218.3	436.5	6.7	163.7	327.4	5
1258102	25x145x275 / 19x90x160	8.9	218.3	436.5	6.7	163.7	327.4	5
1258142	28x145x275 / 22x100x180	14.5	355.6	711.2	10.875	266.7	533.4	5
1258182	32x145x275 / 25x115x210	17.0	417.0	833.9	12.75	312.7	625.4	5
1258185	36x155x285 / 28x110x190	23.6	578.8	1157.6	17.7	434.1	868.2	5
1258187	40x140x270 / 32x145x275	28.1	689.2	1378.3	21.08	516.9	1033.7	5
1258402	45x180x240 / 36x155x285	38.3	939.3	1878.6	28.7	704.5	1409.0	5
1258471	51x215x390 / 40x140x270	45.0	1103.6	2207.3	33.75	827.7	1655.4	5
1258491	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