



Certificate No:
TAS0000302

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Lifting set components for offshore containers and portable offshore units

with type designation(s)
A345 Master link assemblies

Issued to

Crosby Group LLC
Tulsa, OK, USA

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

A952/A952M-2 - Standard Specification for Forged Grade 80 and Grade 100 Steel Lifting Components and Welded Attachment Links

EN 1677-4 Components for slings – Safety – Part 4: Links, Grade 8

Application :

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

Issued at **Aberdeen** on **2021-04-29**

This Certificate is valid until **2026-04-28** .

for **DNV**

DNV 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 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.



Form code: TA 281

Revision: 2021-03

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Page 1 of 4

Manufactured by

Gunnebo Industries AB
Växjö, Sweden
Local DNV office: Stockholm

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 covers master link assemblies assembled from forged master links made under type approval TAS00001D6 (A-342 OC) and welded sub links manufactured by Gunnebo Industries AB 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 shall be calculated in accordance with DNVGL-ST-E271 Table 8-1. In no case shall 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 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 1. This certificate form shall 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 should be approved by DNV. Resultant sling force (RSF) can be found in the design verification report (DVR) issued by DNV for the portable offshore unit.



Job Id: **262.1-035180-1**
Certificate No: **TAS0000302**

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.

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.

A345: Welded Master link assemblies: Marked grade 10

Item No.	Size Master link and Intermediate links (D x W x L) [mm]	WLL Assembly [tonnes]	MPF Master link [kN]	MBF Master link [kN]	WLL Intermediate links [tonnes]	MPF Intermediate links [kN]	MBF Intermediate links [kN]	Manufacturer safety factor
3014742	22x95x162/ 17x80x170	7.0	171.7	343.4	5.25	128.8	257.5	5
3014766	28x109x191/ 22x95x160	11.8	289.4	578.8	8.85	217.0	434.1	5
3014779	34x140x241/ 28x130x240	17.7	434.1	868.2	13.28	128.8	651.4	5
3014807	41x150x267/ 32x130x270	27.7	679.3	1358.7	20.8	510.1	1020.2	5
3014814	44x152x305/ 36x125x270	38.5	944.2	1888.4	28.9	708.8	1417.5	5
3014832	51x178x356/ 40x140x270	46.5	1140.4	2280.8	34.8	853.5	1706.9	5