

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

with type designation(s)

**Anchor Bolt Shackles G-2130-CT, Anchor Bolt Shackles G-2140-CT**

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****IMO/MSC Circular 860****EN 13889 Forged steel shackles for general lifting purposes - Dee shackles and Bow shackles - Grade 6 - Safety****Application :****Shackles for offshore container and portable offshore unit lifting sets**Issued at **Aberdeen** on **2021-01-18**This Certificate is valid until **2025-10-29** .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: **262.1-007730-6**  
Certificate No: **TAS00002T2**  
Revision No: **1**

## Manufactured by

Manufacturing of the G-2130-CT and G-2140-CT products are undertaken at the following locations:

Place of manufacture	Activities	Local DNV GL Office
McKissick Products, Tulsa, Oklahoma	<ul style="list-style-type: none"><li>• forging of bows</li><li>• forging of pins</li><li>• machining of parts</li><li>• assembly of parts</li><li>• QC activities such as material testing and issuance of certificates.</li></ul>	Houston
Lebus Manufacturing, Longview, Texas		

## Responsibility

Crosby Group LLC takes responsibility that both design and production at all places of manufacture are in compliance with the Rules, Standards and/or Regulations listed on page 1 of this type approval certificate.

## Product description

This certificate replaces previous versions of TAS00002T2.

This type approval covers shackles for use in lifting sets for offshore containers certified in accordance with DNVGL-ST-E271 or DNVGL-ST-E273.

Detailed product information and range of certified products covered by this type approval are listed in Appendix 1.

## Application/Limitation

Minimum design temperature: -20°C


The minimum shackle working load limit ( $WLL_s$ ) shall be calculated in accordance with the strength requirements for lifting sets on offshore containers as given in DNV GL-ST-E271 section 8.

All production testing shall be carried out in accordance with DNVGL-ST-E271 and EN 13889, in agreement with the local DNV GL office. Material shall be Charpy impact tested in accordance with DNVGL-ST-E271 section 8.4.

The manufacturer shall issue product certificates in accordance with DNVGL-ST-E271 section 8.5. This certificate shall only be used for shackles certified in accordance with this type approval.


### For shackles manufactured in accordance with DNVGL-ST-E273

Prior to selection of shackles, 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 7.3.3 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**



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**Tests carried out**

Prototype testing shall be carried out in accordance with DNVGL-ST-E271 and EN 13889.

**Marking of product**

Components shall be marked in accordance with DNVGL-ST-E271 section 8, DNVGL-ST-E273 section 7, EN 13889 and Crosby Group LLC internal procedures.

**Periodical assessment**

In order to maintain the validity of this type approval, periodic assessments shall be carried out by a DNV GL surveyor. Intervals between assessments shall not exceed 12 months.

**END OF CERTIFICATE**

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## Appendix 1

Product description and details:

### **Anchor Bolt Shackles Type G-2130-CT**

Nominal Size		Working Load Limit (WLL)	Proof Load (PL)	Breaking Load (BL)	Crosby Part Number
in	mm	tonnes	kN	kN	
3/4	19.1	4.75	93.2	251.6	1260568
7/8	22.2	6.5	127.5	344.3	1260577
1	25.4	8.5	166.8	450.3	1260586
1 1/8	28.6	9.5	186.4	503.3	1260595
1 1/4	31.8	12	235.4	635.7	1260604
1 3/8	34.9	13.5	264.9	715.1	1260613
1 1/2	38.1	17	333.5	900.6	1260622
1 3/4	44.5	25	490.5	1324.4	1260633

### **Anchor Bolt Shackles Type G-2140-CT**

Nominal Size		Working Load Limit (WLL)	Proof Load (PL)	Breaking Load (BL)	Crosby Part Number
in	mm	tonnes	kN	kN	
1 1/2	38.1	30	588.6	1589.2	1260801
1 3/4	44.5	40	784.8	2119.0	1260812
2	50.8	55	1079.1	2913.6	1260823
2 1/2	63.5	85	1667.7	4502.8	1260834
3	76.2	120	2354.4	6356.9	1260843
3 1/2	88.9	150	2943.0	7946.1	1260852
4	101.6	175	3433.5	9270.5	1260861
4 3/4	120.7	200	3924.0	10594.8	1260870
5	127.0	250	4905.0	13243.5	1260889