

# TYPE APPROVAL CERTIFICATE

Certificate No:  
**TAS000033J**  
Revision No:  
**3**

## This is to certify:

**That the lifting set component for offshore containers and portable offshore units**

with type designation(s)  
**Green Pin Standard and Green Pin Polar shackles**

Issued to  
**Van Beest B.V.**  
**Slidrecht, Zuid-Holland, Netherlands**

is found to comply with  
**DNV standard DNV-ST-E271 – 2.7-1 Offshore containers, January 2021 (Amended October 2021)**  
**DNV standard DNV-ST-E273 – 2.7-3 Portable offshore units, April 2016 (Amended October 2021)**  
**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**  
**Federal Specification Chains and Attachments, Carbon and Alloy Steel, RR-C-271G**

## Application :

**Shackles for lifting sets for offshore containers and portable offshore units**

Issued at **Aberdeen** on **2022-07-20**

This Certificate is valid until **2026-06-29** .

for **DNV**

DNV local unit: **Rotterdam**

Approval Engineer: **Elisabeth Legg**

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**Satya Shyamala Kuppili**  
**Team 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.



## Manufactured by

Manufacturing of the products are undertaken at the following locations:

Place of manufacture	Activities	Local DNV office
Van Beest B.V. Slidrecht, Netherlands	<ul style="list-style-type: none"> <li>• forging of shackle bows</li> <li>• forging of shackle pins</li> <li>• machining of parts</li> <li>• quenching and tempering shackle bows and pins</li> <li>• coating the parts</li> <li>• assembly of parts</li> <li>• QC activities: inspection, testing and issuance of product certificates.</li> </ul>	Rotterdam, Netherlands
	<ul style="list-style-type: none"> <li>• forging of shackle pins</li> <li>• machining of shackle pins</li> <li>• quenching and tempering shackle pins</li> <li>• coating the shackle pins</li> <li>• QC activities: inspection, testing of shackle pins</li> </ul>	
	<ul style="list-style-type: none"> <li>• forging of shackle bows</li> <li>• bending of shackle bows</li> <li>• machining of shackle bows</li> <li>• quenching and tempering shackle bows</li> <li>• coating the shackle bows</li> <li>• QC activities: inspection, testing of shackle bows</li> </ul>	

## Responsibility

Van Beest B.V. 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 type approval certificate replaces previous versions of TAS000033J.

This type approval covers shackles for use in lifting sets for offshore containers certified in accordance with DNV-ST-E271 or portable offshore units certified in accordance with DNV-ST-E273:

Type	Grade	Green Pin Standard	Green Pin Polar	Dee shackle	Bow shackle	Safety bolt	Safety bolt with fixed pin
<b>G-4133</b>	6	X		X			X
<b>G-4143</b>	6	X			X		X
<b>G-4153</b>	6	X		X		X	
<b>G-4163/ G-4163H</b>	6	X			X	X	
<b>G-5133</b>	8		X	X			X
<b>G-5143</b>	8		X		X		X
<b>G-5153</b>	8		X	X		X	
<b>G-5163</b>	8		X		X	X	

With the following exemptions from EN13889 for the Green Pin Polar shackles, dee and bow shackles:

- Green Pin Polar shackles, Type G-5133, G-5143, G-5153 and G-5163 are manufactured to Grade 8 strength.
- Green Pin Polar shackles, Type G-5133, G-5143, G-5153 and G-5163 are approved for design temperature -40°C.

Implementation of RFID on Green pin shackles from 17 t and upward.

Dimensions of shackles are in compliance with Federal Specification Chains and Attachments, Carbon and Alloy Steel, RR-C-271G.

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

### Application/Limitation

The minimum shackle working load limit (WLL<sub>s</sub>) shall be calculated in accordance with the strength requirements for lifting sets on offshore containers as given in DNV-ST-E271 section 8.

Shackles shall be of bolt type with hexagon nut and split pin. Screw pin shackles shall not be used.

Testing to be carried out:

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

The manufacturer shall issue product certificates in accordance with DNV-ST-E271 section 8.5, using the certificate form no KF-10-490B. This certificate shall only be used for shackles certified in accordance with this type approval.

### For shackles manufactured in accordance with DNV-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 DNV-ST-E273 section 7.3.3 and must 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.

Shackles that will experience significant out-of-plane loading, shall be derated in accordance with the guidance provided in DNV-ST-E273 section 7.3.3.

### Type Approval documentation



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**Tests carried out**

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

**Marking of product**

Components shall be marked in accordance with DNV-ST-E271 section 8, EN 13889 and Van Beest B.V. internal procedures.

**Periodical assessment**

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

**END OF CERTIFICATE**

## Appendix 1

Product description and details

**Grade 6 Green Pin Standard and Grade 8 Green Pin Polar Shackles:**  
 - dee and bow with safety bolt / dee and bow with safety bolt and fixed nut.

Type								Nominal size [mm]	Working Load Limit (WLL) [t]	Manufacturing Proof Force <sup>2)</sup> (MPF) [kN]	Minimum Breaking Force <sup>2)</sup> (BF) [kN]	Safety Factor <sup>1)</sup>
G-4133	G-4143	G-4153	G-4163/H	G-5133	G-5143	G-5153	G-5163					
X	X	X	X	X	X	X	X	13.5	2.0	39.2	98.1	6
X	X	X	X	X	X	X	X	16	3.25	63.8	160	6
X	X	X	X	X	X	X	X	19	4.75	93.2	233	6
X	X	X	X	X	X	X	X	22	6.5	127.5	319	6
X	X	X	X	X	X	X	X	25	8.5	166.8	417	6
X	X	X	X	X	X	X	X	28	9.5	186.4	466	6
X	X	X	X	X	X	X	X	32	12.0	235.4	589	6
X	X	X	X	X	X	X	X	35	13.5	264.9	662	6
X	X	X	X	X	X	X	X	38	17.0	333.5	834	6
X	X	X	X	X	X	X	X	45	25.0	490.5	1226	6
X	X	X	X	X	X	X	X	50	35.0	686.8	1717	6
X	X	X	X	X	X	X	X	57	42.5	834.0	2085	6
X	X	X	X	X	X	X	X	65	55.0	1079.2	2698	6
X	X	X	X	X	X	X	X	75	85.0	1667.7	4169	6

<sup>1)</sup> Manufacturer's factor of safety against breaking