

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Lifting set for Offshore containers and Portable Offshore Units**with type designation(s)
Bow shackle SL-362

Issued to

**AS Einar Kunsts Eftf.
Oslo, Norway**

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****EN 13889 Forged steel shackles for general lifting purposes - Dee shackles and Bow shackles
- Grade 6 - Safety****ISO 10855-2:2018 Offshore containers and associated liftings sets – Part 2: Design,
manufacture and testing of lifting sets****IMO/MSC Circular 860****Application :****Shackles for Lifting Sets for Offshore Containers and Portable Offshore Units**Issued at **Høvik** on **2020-09-23**This Certificate is valid until **2025-09-22**.for **DNV GL**DNV GL local station: **Oslo**Approval Engineer: **Igor Antonijevic**

**Inger-Helene Hals
Head of Section**

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: **262.1-026569-1**
Certificate No: **TAS00002ND**

Manufactured by

Shandong Shenli Rigging Co., Ltd, Shandong, China

AS Einar Kunsts Eftf. LLC takes responsibility that production is in compliance with the Rules, Standards and/or Regulations listed on page 1 of this Type Approval Certificate.

Product description

This type approval certificate covers shackles for use in lifting sets certified according to standard DNVGL-ST-E271 Offshore Containers (DNV GL 2.7-1) or to DNVGL-ST-E271 Standard 2.7-3 Portable Offshore Units (DNV GL 2.7-3).

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

Application/Limitation

Design temperature: -20°C

For application of shackles the minimum shackle working load limit (WLL_s) shall be decided according to the strength requirements for lifting sets on offshore containers as given in DNV GL 2.7-1, Section 8.

All production testing to be according to DNV GL 2.7-1 and EN 13889 in agreement with the DNV GL surveyor. Material to be Charpy impact tested according to DNV GL 2.7-1, Section 8.4.

The manufacturer shall issue product certificates according to Section 8.5 in DNV GL 2.7-1, using the certificate form JL-SL-355/B as listed below. This certificate form is only to be used for slings certified according to this type approval certificate.

For shackles manufactured according to DNVGL-ST-E273:

Prior to selection of shackles the minimum required shackle working load limit (WLL) shall be decided according to the strength requirements for lifting sets on portable offshore units as given in DNV GL 2.7-3, Section 7.3.3. Resulting sling force (RSF) can be found in the Design Verification Report (DVR) issued by DNV GL for the Portable Offshore Unit. The DVR shall be available for the shackle manufacturer.

Type Approval documentation

Tests carried out

Prototypes tested according to EN 13889 and DNV GL 2.7-1.

Marking of product

Marking shall be according to DNV GL 2.7-1 Section 8, EN 13889 and Crosby Group LLC internal procedures.

For shackles for Portable Offshore Units, each item has to be marked according to chapter 7.6 in DNV GL 2.7-3.

Periodical assessment

For retention of the Type Approval, a DNV GL surveyor shall perform a survey every 6 months and before the expiry date of this certificate to verify that the type approval is complied with.

END OF CERTIFICATE

Appendix 1

Bow shackles, Type SLR-362:

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Variant	Product no.	Nom. size	WLL _s [t]	MPF [kN]	Min. BF [kN]
202816M	902416	5/8"	3,25	63.7	160.0
902820M	902420	3/4"	4,75	93.1	233.0
902822M	902422	7/8"	6,5	128.0	319.0
902825M	902425	1"	8,5	167.0	417.0
902828M	902428	1 1/8"	9,5	187.0	466.0
902832M	902432	1 1/4"	12	236.0	589.0
902835M	902435	1 3/8"	13,5	265.0	662.0
902838M	902438	1 1/2"	17	334.0	834.0
902845M	902445	1 3/4"	25	491.0	1226.0