Certificate no.:
TAS00004E0

TYPE APPROVAL CERTIFICATE

This is to certify:

that the lifting set for offshore containers and portable offshore units

with type designation(s)
wire rope lifting sets

issued to
Technical Oilfield Supplies Centre
Doha, **Qatar**

is found to comply with
DNV standard DNV-ST-E271 – 2.7-1 Offshore containers, March 2023
DNV standard DNV-ST-E273 – 2.7-3 Portable offshore units, April 2016 (Amended May 2022)
ISO 10855-2:2018 Offshore containers and associated liftings sets – Part 2: Design, manufacture and testing of lifting sets
IMO/MSC Circular 860
EN 13414-1 Wire rope slings

Application:

1, 2, 3 and 4 leg lifting sets, with forerunner where fitted, for lifting of:
- offshore container, with maximum gross mass 0 to 25000 kg
- portable offshore units

Issued at **Aberdeen** on **2024-08-23**
This Certificate is valid until **2029-08-22**.
DNV local unit: **Abu Dhabi**

for **DNV**

Approval Engineer: **Satya Shyamala Kuppili**

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.

Product description
This type approval covers wire rope lifting sets with wire rope diameter from 16 mm to 64 mm assembled with turnback and Flemish eyes by Technical Oilfield Supplies Centre in accordance with DNV-ST-E271 and DNV-ST-E273.

The wire rope lifting sets assembled by Technical Oilfield Supplies Centre consist of components from the following sub suppliers:

Component	**Sub supplier** *(DNV to be informed and review new sub suppliers)*	**DNV type approval reference**
Master link and Quad assembly	Crosby Group LLC	TAS00002GF TAS00002KR TAS00002T3 TAS0000302
	Gunnebo Industrier Aktiebolag	TAS00002VZ
	Kito chain Chain Italia Srl	TAS00001U6
	McKinnon Chain South Africa (Pty) Ltd	TAS0000337
	William Hackett Lifting Products Limited	TAS00003J2
Wire rope [1)]	Bharat Wire Ropes Ltd Britx Wire Rope Industry Corp. Brunton Wire Ropes FZCo. DSR Wire Corp. Kiswire Ltd.	N/A
Shackles [2)]	Crosby Group LLC Gunnebo-Anja Industrier AS Royal van Beest Group B.V. Yoke Industrial Corp.	TAS00002GA TAS00001B8 TAS000033J TAS0000241
Ferrules [3)]	Crosby Group LLC Sahm Splice Ltd. Toho Group Wirop Industrial Company Limited	N/A
Thimbles [4)]	Crosby Group LLC Qingdao Qinde Rigging Hardware Co., Ltd (Liftingear) Sahm Splice Ltd. Toho Group	N/A

1) Wire ropes used in forerunner and bottom legs of lifting sets shall be 6-stranded and of type 6x19 or 6x36 and may be fibre cored or steel cored, with wire rope grades 1770 N/mm^2 or 1960 N/mm^2, in accordance with EN 12385, or equivalent.
2) Shackles are only considered part of the lifting set if captive (i.e. cannot be removed after assembly of lifting set).
3) Ferrules/sleeves shall be in accordance with EN 13411-3, or equivalent.
4) Thimbles shall be in accordance with EN 13411-1, or equivalent.

Components shall be delivered with the following certificates:
- Master Links, Quad assemblies and Shackles: Certificates based on DNV type approval.
- Wire Ropes: To be supplied with traceable material certificates in accordance with EN 10204, inspection certificate, type 3.1.
- Thimbles and ferrules: To be supplied with a material certificate in accordance with EN 10204, test report, type 2.2.

Application/Limitation
For each delivered drum of wire rope, a test leg with one eye in each end shall be prepared and tested to breaking. A reference should be made to the wire drum test report in each sling set certificate where that wire is used.

All production testing should be carried out in accordance with Technical Oilfield Supplies Centre procedures, to be agreed with the local DNV office.

The WLL to be referenced in certificates and marked on lifting sets shall be the maximum working load limit (WLL) of the lifting set, as per the definition in DNV-ST-E271.

For lifting sets manufactured in accordance with DNV-ST-E271
Lifting sets shall be assembled in accordance with the strength requirements described in DNV-ST-E271 section 8. The angle of the sling legs from vertical should be taken into account when choosing slings. This angle should normally be 45°, but smaller angles may be used.

The manufacturer shall issue product certificates, in accordance with DNV-ST-E271 section 8.6, using the Technical Oilfield Supplies Centre doc. no. TOSC-ST-FRM-03. These certificates shall only be used for lifting sets certified in accordance with this type approval certificate.

Special lifting sets, assembled in accordance with the principles described in DNV-ST-E271 section 8 and appendix D, are also covered by this type approval. If unsymmetrical slings are to be assembled, the local DNV office shall be contacted to review each case, unless otherwise agreed in advance.

Note: The sling leg is not necessarily the weakest part of the lifting set. Master Link assemblies selected for lifting sets with legs at 45˚ may not be suitable for lifting sets with a smaller angle.

For lifting sets manufactured in accordance with DNV-ST-E273
Prior to selection of the lifting set, the minimum required working load limit (WLL) shall be calculated in accordance with the strength requirements in DNV-ST-E273 section 7.3. The resultant sling force (RSF) is provided in the DNV design verification report (DVR) for the portable offshore unit. The DVR should be made available for the lifting set manufacturer.

The manufacturer shall issue product certificates, in accordance with DNV-ST-E273 section 7.5, using the Technical Oilfield Supplies Centre doc. no. TOSC-ST-FRM-03. These certificates shall only be used for lifting sets certified in accordance with this type approval certificate.

Type Approval documentation

Tests carried out
Prototype breaking load test of assembled wire rope sling leg.

Marking of product
For lifting sets manufactured in accordance with DNV-ST-E271: refer to section 8.
For lifting sets manufactured in accordance with DNV-ST-E273: refer to section 7.6.

Periodical assessment
In order to maintain the validity of the type approval certificate, periodical assessments should be carried out by a DNV surveyor every **6 months** in accordance with DNV-SE-0284. Periodical assessments will, where possible, be harmonised with other surveys and audits conducted by DNV.

This certificate is only valid if required periodical assessments are carried out with satisfactory results. To check the validity of this certificate, please look it up in https://approvalfinder.dnv.com