

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 set for Offshore Containers and Portable Offshore Units

Issued to

Kolos Lifting AS
Sola, 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****ISO 10855-2:2018 Offshore containers and associated liftings sets – Part 2: Design, manufacture and testing of lifting sets****EN 13414-1 Wire rope slings****IMO/MSC Circular 860****Application :****1-, 2-, 3- and 4 leg Lifting Sets, with Forerunner where fitted for Lifting of:**

- Offshore Containers with Maximum Gross Mass 0 - 25000 kg,**
- Portable Offshore Units.**

Issued at **Aberdeen** on **2018-10-03**This Certificate is valid until **2023-10-02**.for **DNV GL**DNV GL local station: **Stavanger**Approval Engineer: **Andrzej Lange**

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Elisabeth Legg
Principal Engineer

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.



Job Id: **262.1-016366-5**
Certificate No: **TAS00001RF**

Product description

This Type Approval Certificate replaces S-7871.

The Type Approval Certificate covers wire rope lifting sets from 13mm to 83mm assembled by KOLOS Equipment AS. These shall be assembled with turnback eye, in accordance with DNVGL-ST-E271 or DNVGL-ST-E273.

The wire rope lifting sets assembled by KOLOS Equipment AS consist of components from the following sub suppliers:

Component	Sub supplier (DNV GL to be informed and review all new sub suppliers)	DNV GL TAC No.
Master link & quad assembly	- Kjættingfabrikken AS - Gunnebo Industrier AB	TAS0000047 TAS00000TE
Wire rope ¹⁾	- Chung Woo Rope Co., LTD - DSR Wire Corp - Usha Brunton Wolf / Usha Martin - KISWIRE Europe BV	NA
Shackles ²⁾	- Gunnebo-Anja Industrier AS - Van Beest B.V.	TAS00001B8 TAS000011V
Ferrules ³⁾	- Talurit AB	NA
Thimbles ⁴⁾	- AS Einar Kunst - GN Rope Fittings - Talurit	NA

- 1) Wire ropes used in fore runner 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/mm² or 1960 N/mm², in accordance to EN 12385, or equivalent.
- 2) Shackles are only considered part of the lifting set if captive (i.e. can not 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:

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|---|--|
| - Master links, quad assemblies and shackles: | Certificates based on DNV GL 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 to be prepared and tested to breaking. A reference should be made to the wire drum test report in each lifting set certificate where that wire is used.

All production testing should be carried out according to KOLOS Equipment AS internal procedures.

The manufacturer shall issue product certificates in accordance with DNV GL-ST-E271 Section 8.5, using the certificate FORM 271. This certificate form shall only be used for lifting sets certified according to this Type Approval Certificate.

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

For lifting sets manufactured in accordance with DNVGL-ST-E271

Lifting sets shall be assembled according to the strength requirements described in DNVGL-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.

Special lifting sets, assembled according to the principles described in DNVGL-ST-E271 Section 8 and Appendix E, are also covered by this Type Approval. KOLOS Equipment AS is permitted to assemble unsymmetrical slings in accordance with calculation L-KS-PVT.110 rev. 01.

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 DNVGL-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 DNVGL-ST-E273 Section 7.3. The Resulting Sling Force (RSF) is provided in the DNV GL Design Verification Report (DVR) for the Portable Offshore Unit. The DVR should be made available for the lifting set manufacturer.

Type Approval documentation



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Tests carried out

Prototype breaking load test of assembled wire rope sling leg.

Marking of product

For lifting sets manufactured in accordance with DNVGL-ST-E271: refer to Section 8.

For lifting sets manufactured in accordance with DNVGL-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 every 6 months.

END OF CERTIFICATE