

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

ACRO CABOS DE ACO INDUSTRIA E COMERCIO LTDA
Macaé, RJ, Brazil

is found to comply with

DNV standard DNV-ST-E271 – 2.7-1 Offshore containers, March 2023
ISO 10855-2:2018 Offshore containers and associated liftings sets – Part 2: Design, manufacture and testing of lifting sets
IMO/MSC Circular 860
ABNT NBR 13541-1:2017 Wire rope slings Part 1: Requirements and test methods

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

Issued at **Aberdeen** on **2024-09-25**

This Certificate is valid until **2029-09-24**.

for **DNV**

DNV local unit: **Macaé**

Approval Engineer: **Brendan Ward**

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 certificate covers wire rope lifting sets with wire rope diameter from 19 mm to 35 mm, assembled with Flemish eyes by ACRO CABOS DE ACO INDUSTRIA E COMERCIO LTDA in accordance with DNV-ST-E271.

The wire rope lifting sets assembled by ACRO CABOS DE ACO INDUSTRIA E COMERCIO LTDA 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 Gunnebo Industrier Aktiebolag McKinnon Chain South Africa (Pty) Ltd Pewag Austria GmbH Yoke Industrial Corp., Ltd. Royal Van Beest Group B.V.	TAS00002KR TAS00002VZ TAS0000337 TAS00001UX TAS00002SZ TAS000033J
Wire rope ¹⁾	Bridon Bekaert BBRG Osasco Cabos Ltda. IPH Do Brasil Comercio e Representações Ltda Kiswire Ltd. Sivaco Inc. Usha Martin Limited	N/A
Shackles ²⁾	Crosby Group LLC Gunnebo-Anja Industrier AS Royal Van Beest Group B.V. Yoke Industrial Corp.	TAS00002F8 TAS00001B8 TAS000033J TAS0000241
Ferrules ³⁾	Presstécnica (Esperença) H-Lift Industries Co., Ltd. Klifting Industrial Co., Ltd. Talurit AB The Toho Group	N/A
Thimbles ⁴⁾	Coforja Correntes e Acessórios Brasil Ltda. Fischer Industria Mecânica Ltda. H-Lift Industries Co., Ltd. Klifting Industrial Co., Ltd.	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/mm² or 1960 N/mm², in accordance with EN 12385-4, 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:

- 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 lifting set certificate where that wire is used.

All production testing should be carried out in accordance with ACRO CABOS DE ACO INDUSTRIA E COMERCIO LTDA 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 8.5, using the ACRO CABOS DE ACO INDUSTRIA E COMERCIO LTDA form F-PROD 8.6.D rev. 01 dated 23.07.2024. This certificate 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 E, 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.

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.

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>