

TYPE APPROVAL CERTIFICATE**This is to certify:****That the Lifting set for Offshore containers and Portable Offshore Units**

with type designation(s)

Wire Rope Slings for Offshore Containers and Portable Offshore Units

Issued to

Anchor Industries (Pty) Ltd
Cape Town, South Africa

is found to comply with

DNV 2.7-1 Offshore Containers (2013)**DNV Standard for Certification No. 2.7-3 Portable Offshore Units (2011)****EN 12079-2 Offshore containers and associated lifting sets Part 2: Lifting sets Design, manufacture and marking****EN13414-1 Wire rope slings****IMO/MSC Circular 860****Application :****1-, 2-, 3- & 4-Part Lifting Sets for Lifting of Offshore Containers with Maximum Gross Mass 0 - 25000 kg or Portable Offshore Units.**This Certificate is valid until **2019-06-30**.Issued at **Høvik** on **2015-04-15**DNV GL local station: **Cape Town**Approval Engineer: **Nina Thorvaldsen Moberg**

for

for **DNV GL****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.

Certificate No: **S-8682**
File No: **911.53**
Job Id: **262.1-018499-1**

Product description

The Type Approval Certificate covers wire rope slings from 12 mm to 77 mm assembled with turnback eye by Anchor Industries (Pty) Ltd, according to DNV 2.7-1 Offshore Containers or DNV 2.7-3 Portable Offshore Units.

Those wire rope slings assembled by Anchor Industries consist of components from the following sub suppliers:

Component	Sub supplier <i>(DNV GL to be informed and review new sub suppliers)</i>	DNV GL TA Cert. number
Master link & quad assembly	- Kjættingfabriken AS - Gunnebo Industrier AB - Crosby Group Inc.	S-6405 S-7154 TAS000001V
Wire rope ¹⁾	- Hascelik Ve Halat - Kiswire Ltd. - Usha Martin Ltd - Jiangsu Langshan Wire Rope Co. Ltd	NA
Shackles ²⁾	- Van Beest B.V. - Crosby Group Inc.	S-7593 S-8357
Ferrules ³⁾	- WIROP Industrial Co., Ltd	NA (Aluminum)
Thimbles ⁴⁾	- Van Beest B.V. - GN Rope Fittings	NA

1) Wire ropes used in fore runner and bottom legs of lifting slings shall be 6-stranded and of type 6x19 or 6x36 steel cored or fibre cored, with wire rope grades 1770 N/mm² or 1960 N/mm², in accordance to EN12385 or equivalent.

2) Shackles are only considered part of sling if captive (i.e. can not be removed after assembly of sling).

3) Ferrules/sleeves: According to EN 13411-3 or equivalent.

4) Thimbles: According to EN 13411-1 or equivalent.

Components should be delivered with the following certificates:

- Master Links, Quad assemblies and Shackles: Certificates based on DNV GL Type Approval.
- Wire Ropes: To be supplied with traceable material certificates according to EN 10204, inspection certificate, type 3.1.
- Thimbles and ferrules: To be supplied with a product certificate to 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 sling set certificate where that wire is used.

All production testing should be done according to Anchor Industries internal procedures W.I.25 Rev 1 and W.I.3 Rev 2 and to be agreed with local DNV GL office.

The manufacturer shall issue product certificate according to Section 8.5 in DNV 2.7-1, using the certificate form 205 Rev 01/2015. This certificate form is only to be used for slings certified according to this Type Approval Certificate.

The WLL to be used in certificates and marked on lifting sets shall be the maximum rating of an offshore container on which the sling can be used, at the given sling leg angle.

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For slings manufactured according to DNV 2.7-1 Offshore Containers

Lifting sets shall be assembled according to the strength requirements for lifting sets on Offshore Containers as described in DNV 2.7-1 Offshore Containers, Section 8 and Anchor Industries internal procedure – Excel documents with selection of components. 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 can be used.

Special slings, assembled according to the principles described in DNV 2.7-1 Offshore Containers, Section 8 and Appendix E, are also covered by this Type Approval. However, if unsymmetrical slings are to be assembled, local DNV GL office has to be contacted for reviewing in each case.

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

For slings manufactured according to DNV 2.7-3 Portable Offshore Units

Prior to selection of sling set the minimum required working load limit (WLL) shall be decided according to the strength requirements for lifting sets on portable offshore units as given in DNV 2.7-3, Section 7.3.2 and must be approved by DNV GL. 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 sling manufacturer.

Type Approval documentation

Document No.	Rev.	Title
W.I.3	2	Swaging of EN 13411-3 Aluminium Ferrule (12 sheets)
135104-2013-AQ-ARE-UKAS		Management System Certificate ISO 9001:2008 by DNV
205	01/2015	Certificate for Offshore Container Lifting Slings
AIDP 2	2d	Title page – Sub Supplier Detail
		Anchor Industries – Excel documents with selection of components
W.I.25	1	Manufacturing Slings Sets to DNV 2.7-1

Checklist for Initial Audit of Manufacturers endorsed by DNV GL Cape Town, dated 2015-03-11.
Audit of Manufacturer – Type Approval of Lifting Sets 2015-03-11

Prototype Test Report of Proof Load and Breaking Load for 18mm, 36mm and 52mm witnessed by DNV GL Cape Town, dated 2014-12-02.

Fatigue test reports by Wirop Industrial Co. of wire rope size 22mm, 28mm, 31.5mm and 35.5mm.

Tests carried out

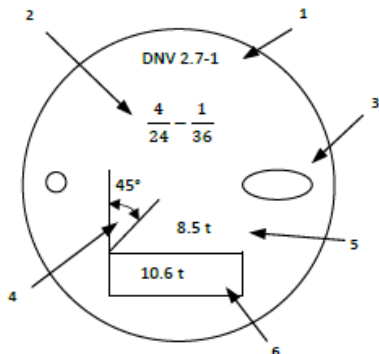
Prototype test to Breaking Load of assembled wire sling leg.

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Marking of product

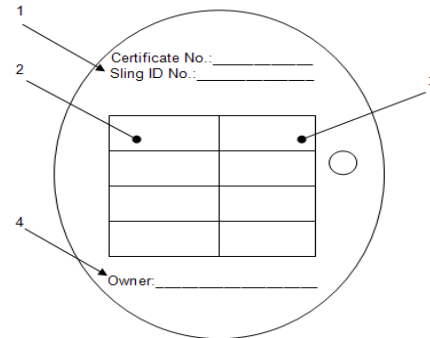
For slings manufactured according to DNV 2.7-1 Offshore Containers

Slings are to be marked with certification tag according to DNV 2.7-1 Offshore Containers, Section 8, as shown below:



Example of identification tag for a wire rope sling – Front

- 1) Reference to DNV 2.7-1
- 2) 4 legs of 24 mm, 1 forerunner of 36 mm (example)
- 3) Manufacturer's mark
- 4) Sling angle
- 5) Shackle size
- 6) WLL



Example of identification tag for a wire rope sling – Back

- 1) Certificate number (and unique identification number if applicable)
- 2) Column 1: inspectors mark, inspection suffix and date of periodic inspections (shall be of format YY-MM-DD)
- 3) Column 2: shackle ID number
- 4) The owner's name may optionally be included

For slings manufactured according to DNV 2.7-3 Portable Offshore Units

Each item to be marked according to DNV 2.7-3, Section 7.6.

Periodical assessment

In order to maintain the validity of the type approval, certificate retention surveys are to be carried out according to DNV 2.7-1 by DNV GL surveyor. Intervals are not to exceed 6 months.

END OF CERTIFICATE