

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

Oilfield Solutions Ltd**Port Harcourt, Rivers State, Nigeria**

is found to comply with

DNV GL standard DNVGL-ST-E271 – 2.7-1 Offshore containers, August 2017**ISO 10855-2:2018 Offshore containers and associated liftings sets – Part 2: Design, manufacture and testing of lifting sets****IMO/MSC Circular 860****DNV GL standard DNVGL-ST-E273 – 2.7-3 Portable offshore units, December 2016****Application :****1-,2-, 3- & 4-Part Lifting Sets, with Forerunner where fitted, for Lifting Offshore Containers with Maximum Gross Mass 0 - 25,000 kg or Portable Offshore Units**Issued at **Aberdeen** on **2019-04-11**This Certificate is valid until **2024-04-10**.for **DNV GL**DNV GL local station: **Lagos**Approval Engineer: **Ronald Quiballo****Alex Doig**
Team Lead

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: **262.1-018067-3**
Certificate No: **TAS00001ZC**

Manufactured By

Oilfield Solutions Ltd
Port Harcourt, Nigeria

Product description

This type approval is a renewal of S-8279.

The Type Approval Certificate covers wire rope slings from 13mm to 52 mm assembled with turn-back eyes by Oilfield Solutions Ltd, according to DNVGL-ST-E271 "2.7-1 Offshore Containers" (DNV GL 2.7-1) or DNVGL-ST-E273 "2.7-3 Portable Offshore Units" (DNV GL 2.7-3).

Those wire rope slings assembled by Oilfield Solutions Ltd consist of components from the following sub suppliers:

Component	Sub supplier (DNV GL to be informed and review new sub suppliers)	DNV TA Cert. number
Master link & quad assembly	- William Hackett	TAS000013Z
Wire rope ¹⁾	- Hasçelik	NA
Shackles ²⁾	- Crosby	TAS00000HA
Ferrules ³⁾	- Talurit AB	NA
Thimbles ⁴⁾	- George Taylor	NA

- 1) Wire ropes used in fore runner and bottom legs of lifting slings shall be 6-stranded and of type 6x36 and may be fibre cored or steel 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 material 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 Oilfield Solutions Ltd internal procedures.

The manufacturer shall issue product certificate according to Sec. 8.5 in DNV GL 2.7-1, using the approved certificate form template dated 2014-08-14. 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.

For slings manufactured according to DNV GL 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 GL 2.7-1 Offshore Containers, Chapter 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 can be used.

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

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.

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.

For slings manufactured according to DNV GL 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 GL 2.7-3, Sec. 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

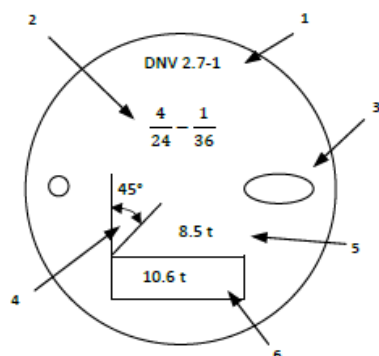
Tests carried out

Prototype test to Breaking Load of assembled wire sling leg.

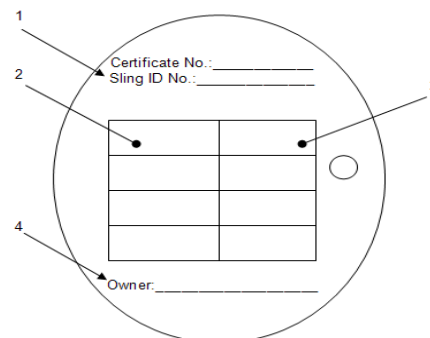
Marking of product

For slings manufactured according to DNV GL 2.7-1 Offshore Containers

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



Example of identification tag for a wire rope sling – Front



Example of identification tag for a wire rope sling – Back

- 1) Reference to DNV GL 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

- 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



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6) WLL

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

Each item to be marked according to DNV GL 2.7-3, Chapter 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 GL 2.7-1. Intervals are not to exceed 12 months.

END OF CERTIFICATE