DNV·GL

Certificate No:
TAS00002TN

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
Mak Kee International H.K. Ltd.
Hong Kong, China

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
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 **2020-11-20**
This Certificate is valid until **2025-11-19** .
DNV GL local unit: **Guangzhou**

Approval Engineer: **Elisabeth Legg**

for **DNV GL**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") 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.

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Job Id: **262.1-013438-9**
Certificate No: **TAS00002TN**

Manufactured by

Branch office location	DNV GL local office	Range of wire sizes
Mak Kee International H.K. Ltd. Hong Kong, China	Hong Kong	18 to 48 mm
Mak Kee Hardware & Machinery (Shanghai) Company Limited, Shanghai, China	Shanghai	18 to 48 mm

Responsibilty

Mak Kee International H.K. Ltd. takes responsibility that both design and production are in compliance with the Rules, Standards and/or regulations listed on page 1 of this Type Approval Certificate.

Product description

This Type Approval Certificate replaces TAS00000NB.

The Type Approval Certificate covers wire rope lifting sets assembled with turn back or Flemish eye in accordance with DNVGL-ST-E271 or DNVGL-ST-E273.

The wire rope lifting sets consist of components from the following sub suppliers:

Component	**Sub supplier** *(DNV GL to be informed and review new sub suppliers)*	**DNV GL TAC number**
Master link & quad assembly	Scaw South Africa (Pty) Limited – McKinnon Chain Gunnebo Industrier AB Crosby Group LLC	TAS000013Z TAS00000TE TAS00002KR
Wire rope [1)]	Guizhou Wire Rope Incorporated Company Jiangsu Langshan Wire Rope Company Limited Kiswire Limited, Hyrope Factory Young Heung Iron & Steel Co. Manho Rope & Wire Ltd.	N/A
Shackles [2)]	Gunnebo-Anja Industrier AS Van Beest B.V. Crosby Group LLC	TAS00001B8 TAS000011V TAS00002GA
Ferrules [3)]	Goodcomer Company Limited Wirop Industrial Company Limited Crosby Group LLC Talurit Machinery (Ningbo) Co., Ltd	N/A
Thimbles [4)]	Anchorman Machinery Company Limited Crosby Group LLC	N/A

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/mm^2 or 1960 N/mm^2, 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 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 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 done in accordance with Mak Kee International H.K. Ltd. procedures, to be agreed with the local DNV GL office.

The manufacturer shall issue product certificates in accordance with DNV GL-ST-E271 Section 8.5, using the certificate form F0611 (4/2012). This certificate form is only to be used for lifting sets certified in accordance with this Type Approval Certificate.

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 DNVGL-ST-E271.

For lifting sets manufactured in accordance with DNVGL-ST-E271
Lifting sets shall be assembled in accordance with 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 in accordance with the principles described in DNVGL-ST-E271 Section 8 and Appendix E, are also covered by this Type Approval. If unsymmetrical slings are to be assembled, the local DNV GL 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 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

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