



Certificate no.:
TAS0000434

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Cranes, gen.

with type designation(s)
Knuckle Boom Crane

issued to

SMST Designers & Constructors B.V.
Drachten, Friesland, Netherlands

is found to comply with

DNV standard DNV-ST-0378 – Offshore and platform lifting appliances

Application:

Offshore knuckle boom crane intended for:

- deck lifts in harbour or offshore conditions
- offshore lifts (with or without motion compensating)
- personnel lifts

Issued at **Høvik** on **2023-11-24**

This Certificate is valid until **2028-11-23**.

for **DNV**

DNV local unit: **Netherlands VMC**

Approval Engineer: **Luisa Brites**

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.



Form code: TA 251

Revision: 2023-09

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Product description

Knuckle boom crane consisting of: Base Frame, Main Boom and Motion Compensated Knuckle (MCK).

For offshore lifts the crane may operate with or without motion compensating. For non-motion compensated lifts, the MCK is in fully retracted position.

Application/Limitation

- Design temperature: -20 °C
- Maximum heel/trim: 5°/2°
- Governing loading conditions:

Lift type	Maximum Safe Working Load (SWL)*	Outreach	Reeving	Dynamic Factor (DF)
Deck operation in harbour	20 t	20 m	2-fall	1.15
Offshore	10 t	25 m	1-fall	1.3
Offshore – with motion compensating	5 t	-	1-fall	1.7
	6 t	-	1-fall	1.4

* The maximum SWL is dependent on boom tip position, number of falls and lifting modes as specified in the Load Curves (doc. no. 1800735-B-00-13 Rev. B and doc. no. 1800735-B-00-14 Rev. B).

- Environmental conditions for motion compensated lifts, at boom tip position:
 - Maximum wind speed: 25 m/s
 - Maximum horizontal accelerations (longitudinal and transverse): 3.2 m/s²
 - Maximum vertical acceleration (in addition to gravity): 2.5 m/s²
- Personnel lift:
 - Maximum SWL: 1 t
 - Mean wind velocity: 10 m/s
 - Significant wave height: 2 m
 - Visibility: daylight or equivalent
- General comments:
 1. The various components transferring load (loose gear) such as hook, wire rope, sockets, shackles, etc. shall be manufactured according to recognized standards or codes and shall be delivered with relevant ILO form certificates.
 2. The following components are not covered by this approval and shall be delivered with DNV Product Certificate:
 - Slewing bearing
 - Winch gears and brakes
 - Luffing, knuckle, swing and tilt cylinders
 - Telescopic drives
 - Accumulators
 3. The sheaves for the crane are not covered by this approval and shall be delivered with the applicable product certificate as per DNV-ST-0378 Table 2-3.
 4. The structure below the top flange of the pedestal is not covered by this approval and shall be subject of separate approval.
 5. Pad eyes (lifting lugs) and service cranes used for maintenance and installations are not covered by this approval.
 6. The control system is not covered by this approval and shall be subject of separate approval.

Type Approval documentation

Tests carried out

This Type Approval covers design(s) only, i.e. the Type Approval is not valid for the final product, but may be used as basis for obtaining a product certificate.

If a DNV Product Certificate is required, the crane shall be subject to overload testing as per DNV-ST-0378 Table 14-1. Overload test with 12.5 t at maximum radius of 25 m is to be carried out during SAT.

Marking of product

The crane shall be marked according to DNV-ST-0378, section [14.5].

Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNV-CP-0338.

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>

END OF CERTIFICATE