DNV·GL

Certificate No:
TAD0000074

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Hoisting, Rotation and Pipehandling Equipment

with type designation(s)
150/250/350 Sh.T SMX Elevators

Issued to
National Oilwell Varco - Varco BJ B.V.
Etten-Leur, **Netherlands**

is found to comply with
DNVGL-OS-E101 – Drilling plant, Edition July 2015

Application :

See next page.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2019-12-10**.

Issued at **Høvik** on **2015-12-11**

for **DNV GL**

DNV GL local station: **Drilling Systems**

Approval Engineer: **Morten Wiese**

Per Esvall
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.

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Reference Standards

- API Spec 8C, Specification for Drilling and Production Hoisting Equipment, 5th Edition, October 2012
- F.E.M. Rules for the design og hoisting appliances, 3rd Edition 1998.

Product description

- 150 short ton SMX Elevator P/N: 50006400. Bore size: 6" – 9"
- 150 short ton SMX Elevator P/N: 50006438. Bore size: 6" – 9"
- 150 short ton SMX Elevator P/N: 50006454. Bore size: 9 1/8" – 13-3/8"
- 350 short ton SMX Elevator P/N: 50006440. Bore size: 13– 3/8"
- 150 short ton SMX Elevator P/N: 50006430. Bore size: 3-1/2" – 5-3/4"
- 250 short ton SMX Elevator P/N: 50006460. Bore size: 18" – 24-1/2"
- 250 short ton SMX Elevator P/N: 50006450. Bore size: 13-1/2" – 17-7/8"
- 250 short ton SMX Elevator P/N: 50006426. Bore size: 5-1/2" – 9"
- 250 short ton SMX Elevator P/N: 50006740. Bore size: 9-1/8" - 13-3/8"

Application/Limitation

The elevators are approved for the following particulars:

Design Parameter	Value
- Safe Working Load (P/N: 50006400):	150 short ton (1336 kN)
- Safe Working Load (P/N: 50006438):	150 short ton (1336 kN)
- Safe Working Load (P/N: 50006454):	150 short ton (1336 kN)
- Safe Working Load (P/N: 50006440):	350 short ton (3116 kN)
- Safe Working Load (P/N: 50006430):	150 short ton (1336 kN)
- Safe Working Load (P/N: 50006460):	250 short ton (2226 kN)
- Safe Working Load (P/N: 50006450):	250 short ton (2226 kN)
- Safe Working Load (P/N: 50006426):	250 short ton (2226 kN)
- Safe Working Load (P/N: 50006740):	250 short ton (2226 kN)
- Safe Working Load auxiliary schackle/lifting holes:	12 short ton (109 kN)
- Bore size (P/N: 50006400):	6" – 9"
- Bore size (P/N: 50006438):	6" – 9"
- Bore size (P/N: 50006454):	9 1/8" – 13-3/8"
- Bore size (P/N: 50006440):	13 – 3/8"
- Bore size (P/N: 50006430):	3-1/2" – 5*3/4"
- Bore size (P/N: 50006460):	18" – 24-1/2"
- Bore size (P/N: 50006450):	13-1/2" – 17-7/8"
- Bore size (P/N: 50006426):	5-1/2" – 9"
- Bore size (P/N: 50006740):	9-1/8" - 13-3/8"
- Min. Design Temperature:	-20 °C

Type Approval documentation

Material Specification

Material	Min. Yield strength	Min. Tensile strength
CMS -01 (gr. 120-110)*	110100 psi	120000 psi
BMS-01 (gr. 120)**	120000 psi	140000 psi

Other conditions and comments

- Each product is to be surveyed during fabrication in accordance with the requirements for equipment of Category I as defined in DNV's Offshore Standard DNVGL-OS-E101 Drilling Plant, followed by issuance of Product Certificate Form No. 20.92a. Fabrication records are to be maintained in accordance with DNVGL-OS-E101 Ch.3, Sec.3.2.

- Qualification of welding procedures and qualification of welders shall be in accordance with DNVGL-OS-E101, Ch.2, Sec.6 and DNVGL-OS-C401 Ch.2, Sec.1. For materials with a specific minimum yield strength of at least 310 MPa the average impact toughness shall be at least 42 J with no individual values less than 32 J according to API Spec. 8C.

- This document may be used as part of the documentation required to comply with European Union (EU) Directives referenced in PSA's Acts, regulations and provisions for the petroleum activities. It should however be noted that the scope covered by this document does not necessarily cover all aspects required to issue the EU Declaration of Conformity and to affix the CE-mark. It is the manufacturer's/operator's responsibility to ensure compliance with relevant EU Directives.

- PSL 2 units shall meet the stricter requirements found in API Spec. 8C, section 8.6 (5th edition October 2012).

- This certificate replaces the existing Type Approval Certificate D-5124

Tests carried out

Destructiv design verification test was carried out in accordance with API Spec. 8C, section 5.5. The elevators's main bore were tested by Damen Anchor & Chain Factory. The elevators's auxiliary shackle holes were tested at NOV-Varco Etten-Leur facilities. Both tests were witnessed by DNV.

Marking of product

For traceability the following marking is to be carried out on each product:

- Part No.
- Serial No.
- Relevant PSL number
- Rated Load capacity
- Manufacturer's Name or Mark
- Drillpipe size and style *(if lifting drill-pipes, in accordance with API spec. 8C, Ch. 9.8.2)*

Periodical assessment

For retention of the Type Approval, Det Norske Veritas' representative shall carry out biennial Product Audits.

END OF CERTIFICATE