



Certificate No:
TAD00001GX

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Valve

with type designation(s)
NMHBB1040133117A NEXGEN TOP DRIVE VALVE

Issued to
Packard International
Conroe, TX, USA

is found to comply with
DNV-OS-E101 – Drilling facilities, Edition July 2021
DNV statutory interpretations DNV-SI-0166 – Verification for compliance with Norwegian shelf regulations, Edition July 2021

Application :

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

Issued at **Houston** on **2022-09-16**

This Certificate is valid until **2027-09-15**.

for **DNV**

DNV local station: **Certification & Inspection Services**

Approval Engineer: **Parna Deljo**

.....
Mark Miser
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.

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: 2021-03

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Product description

The Packard NEXGEN Valve is a ball valve designed to be operated manually or automatically through the movement of the stem in a 90-degree motion between the open and closed positions to allow/restrict the passage of mud through the valve.

Reference Standard

- API Spec 7-1, *Specification for Rotary Drill Stem Elements*, 1st Edition.
- API 8C, *Drilling and Production Hoisting Equipment (PSL 1 and PSL 2)*, 5th Edition.
- NACE MR0175/ISO 15156, *Petroleum and Natural Gas Industries Material for Use in H₂S-Containing Environments in Oil and Gas Production*, 2nd Edition.

Application/Limitation

<u>Parameter</u>	<u>Value</u>	<u>Equivalent</u>
Maximum Working Pressure (MWP)	: 7,500 psi	(51.7 MPa)
Maximum Internal Shell Pressure	: 15,000 psi	(103.4 MPa)
Minimum Design Temperature	: 14°F	(-10°C)
Maximum Design Temperature	: 194°F	(90°C)
Sealing System Temperature Range	: 14°F - 194°F	-10°C to 90°C
Maximum Tensile Capacity: ¹	: 5,059,252 lbf	(22,504.7 kN)
at Maximum Internal Pressure and 120,000 ft-lbf maximum Drilling Torque Capacity (<i>excluding the end connection</i>)		
Maximum Tensile Capacity: ¹	: 2,721,300 lbf	(12,105.0 kN)
at Maximum Internal Pressure and 110,600 ft-lbf maximum torsional load for NC70 End Connection (<i>including the end connection</i>)		
Maximum Torsional Load for NC70 Box Up End Connection	: 110,600 ft-lbs	149,953.50 N-m
API 7-1 Service Class	: Class 1 & 2	
API 7-1 Supplement	: H ₂ S Trim	
System	: Well Control System; Blowout Prevention	
Equipment	: Valves in Drill String	

Note 1: All operating conditions for the product shall be within the limits specified in the Combined Loading Curves reported by the manufacturer in the design package listed under "Calculation." Capacities may be further limited by end connections.

Type Approval documentation

Tests carried out

<u>Doc. No.</u>	<u>Date</u>	<u>Title</u>
NMHBB1040133117AD	2022-11-18	Functional Procedure Per API 7-1
NUL-1000400-08A	2016-06-10	Class 2 Verification Report
--	2016-09-12	Class 2 Verification Report 1 – 1/8" C2 Stem Mechanism
DP-5.7.7	2020-10-12	Hydrostatic Test Procedure

Marking of product

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

1. Serial No.
2. Manufacturer's name or trademark.
3. Marking as specified in API 7-1.

Periodical assessment

Periodical assessments for type approvals will be required after two years (+/- 90 days) and after three-and-a-half years (+/- 90 days) in accordance with DNV-CP-0338, Section 4.

Other Conditions/comments

1. Procedures related to testing, welding, NDT, and other quality control requirements are to be reviewed/approved by DNV's local surveyor.
2. When DNV Product Certification is required, each product is to be surveyed during fabrication in accordance with the requirements for Category I equipment as defined in DNV's Offshore Standard DNVGL-OS-E101.
3. DNV ref.: A1247812



Job Id: **262.1-038333-1**
Certificate No: **TAD00001GX**

END OF CERTIFICATE