



Certificate No:
TAD00001G0

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Valve

with type designation(s)
2-1/16"-10K MODEL 550 MANUAL F.E. (NON ELASTOMERIC)

Issued to

Worldwide Oilfield Machine, Inc.
Houston, 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 **2022-03-24**

This Certificate is valid until **2027-03-23**.

for **DNV**

DNV local station: **Houston Offshore Services**

Approval Engineer: **Bo Cui**

.....
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

2-1/16"-10K Model 550 Manual F.E. (Non Elastomeric),
P/N: W550210DDPU-HF, W550210EE15PX-CW15, W550210EENLPX-HF

Reference standards

- API 6A Specification for Wellhead and Tree Equipment, 21st Edition
- NACE MR0175/ISO 15156 Petroleum and Natural Gas Industries – Materials for Use in H₂S – Containing Environments in Oil and Gas Production, 3rd Edition

Application/Limitation

- Max. Working Pressure: 10,000 psi
- Test Pressure: 15,000 psi
- Design Temperature: -20 °F to 350 °F
- Service: H₂S
- Material Class: DD, EE
- Product Specification Level: 3
- Performance Requirement: PR-2F

Type Approval documentation

Drawings:

<u>Drawing No.</u>	<u>Rev.</u>	<u>Description</u>	<u>WOM MS</u>
W550210	1	VALVE, GATE 2-1/16"-10K MODEL 550 MANUAL F.E. (NON ELASTOMERIC)	--
W500210-14	1	BONNET	4.6.11/10
W500210-17	0	STEM, OPERATING	4.6.111/119/169
W500210-18	1	GATE	4.6.133/119/138
W500210-19	0	T-NUT	4.6.11/14
W500210-20	2	SEAT	4.6.135/119/140
W500210-22	2	BODY	4.6.11/10
WM2202	6	CAP, BEARING	4.6.50
3090	0	STEM PIN	4.6.29
3098	0	STEM ADAPTER	4.6.50
3104	0	PACKING GLAND	4.6.50
WM317	4	GASKET, BONNET	4.6.17

Note: Other part numbers or updated revisions may be acceptable under this Certificate provided critical aspects of the design remain the same. Changes shall be documented and approved (via Engineering Change Notice or similar) by the Manufacturer's Engineering and/or Quality department as appropriate. DNV's local surveyor shall verify the change before issuance of Product Certificate.

Calculations:

<u>Document No.</u>	<u>Rev.</u>	<u>Description</u>
CAL-W550210	A	GATE VALVE ASSLY 2-1/16"-10K MODEL 550 MANUAL FLANGED END (NON-ELASTOMERIC).

Materials:

<u>Material Spec.</u>	<u>Description</u>	<u>Min. Yield Strength</u>	<u>Req'd Avg. Charpy @ MDT</u>
4.6.10	Low alloy steel	60,000 psi	20 ft-lbf
4.6.11	Alloy steel	75,000 psi	20 ft-lbf
4.6.14	410 S.S.	75,000 psi	-
4.6.17	304 S.S.	30,000 psi	-
4.6.29	ETD 150 material	130,000 psi	-
4.6.50	Low carbon steel	36,000 psi	-
4.6.111	Low alloy steel	85,000 psi	31 ft-lbf
4.6.119	410 S.S.	85,000 psi	31 ft-lbf
4.6.133	AISI 4140	50,000 psi	20 ft-lbf
4.6.135	AISI 4140	70,000 psi	20 ft-lbf

<u>Material Spec.</u>	<u>Description</u>	<u>Min. Yield Strength</u>	<u>Req'd Avg. Charpy @ MDT</u>
4.6.138	AISI 410 S.S.	50,000 psi	20 ft-lbf
4.6.140	AISI 4140	70,000 psi	20 ft-lbf
4.6.73.3	API 20E BSL 3	105,000 psi	20 ft-lbf

Note: (1) See material specifications for additional material requirements. (2) Charpy impact testing is not required on pressure controlling parts. However, Charpy impact testing is required on pressure controlling parts per 2.6.3.1 of OS-E101 if the valve is part of the BOP stack pressure-controlling components in contact with wellbore fluids or diverter valves.

Tests carried out

1. PR2 Validation Testing of VALVE, GATE'3-1/16"-15K MODEL 550 MANUAL F.E.

Additional manufacturing locations

Worldwide Oilfield Machine Pvt. Ltd.
Gat No. 778, at Post Velu
Pune Satara Road
Tal. Bhore, Dist. Pune 412 205, India

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. Additional Marking at manufacturer's discretion.

Periodical assessment

For retention of the Type Approval, DNV's surveyor shall perform periodical assessment after 2 years (+/- 90 days) and after 3.5 years (+/- 90 days) in accordance with DNV's Class Programme DNVGL-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. Non-metallic materials shall be suitable for the intended service and shall be capable of sustaining the design pressures and temperatures. Non-metallic materials in wetted components shall be tested in order to ensure compatibility with all fluids that they will be exposed to during service, as specified.
3. DNV ref.: A1179061.

END OF CERTIFICATE