

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Valves

with type designation(s)
15K and 20K Check Valves
Part Numbers: See Page 2

Issued to

FMC Technologies, Inc.
Stephenville, Texas, USA

is found to comply with
DNVGL-OS-E101 – Drilling plant, Edition July 2015
DNVGL-SI-0166 – Verification for compliance with Norwegian shelf regulations, Edition July 2015

Application :

See Page 2

Issued at **Houston** on **2017-04-19**

This Certificate is valid until **2022-04-18**.

DNV GL local station: **Approval CMC**

Approval Engineer: **Kevin Bui**

for **DNV GL**

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Christian Nilsen
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.



Design Codes/Standards Used as References

- API 6A, Specification for Wellhead and Christmas Tree Equipment, 20th Edition
- NACE MR0175, Materials for Use in H₂S-containing Environments in Oil & Gas Production, 2015

Product Descriptions

<u>Part No.</u>	<u>Rev.</u>	<u>Part Description</u>
P524738	B	Check Valve, 1.0-15K, 1502M x F, Standard
P519734	C	Check Valve, 1.5-15K, 1502F x M, Standard, Reverse Flow
P543340	C	Check Valve, 1.5-15K, 1502M x F, Standard
P538169	C	Check Valve, 2.0-15K, 2202M x F, Sour
P558714	A	Check Valve, 2.0-20K, 2002F x M, Standard, Reverse Flow
3269158	G	Check Valve, 2.0-20K, 2002M x F, Standard
P520099	F	Check Valve, 3.0-20K, 2002M x F, Standard

Application/Limitation

<u>Design Parameter</u>	<u>Value</u>
Max Working Pressure, 15K	15,000 psi
Max Working Pressure, 20K	20,000 psi
Shell Test Pressure, 15K	22,500 psi
Shell Test Pressure, 20K	30,000 psi
Temperature Class	-20 to 250 °F
Service	See Part Description above
Performance Requirement	1

Type Approval Documentation

- Drawings:

<u>Drawing No.</u>	<u>Rev.</u>	<u>Part Description</u>
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- Calculations:

See Design Package for Check Valve and Wing Union Calculations.

- Material Specifications:

Material Specifications are listed on Component BOMs. See Design Package for these BOMs and Material Specifications.

- Notes:

Other part numbers or revisions may be acceptable under this TAC provided critical aspects of the design remain the same. Changes shall be documented and approved by FMC Engineering and Quality. DNVGL Surveyor shall verify these changes before issuance of Product Certificates.

Tests Carried Out

Job Id: **262.1-004962-4**
Certificate No: **TAD00000MJ**

Part No.	Test Serial No.	Part Description
P524738	010615A10348	Check Valve, 1.0-15K, 1502M x F, Standard
P519734	102215A10191	Check Valve, 1.5-15K, 1502F x M, Standard, Reverse Flow
P543340	111214A10149	Check Valve, 1.5-15K, 1502M x F, Standard
P538169	060214A10140	Check Valve, 2.0-15K, 2202M x F, Sour
P558714	092115A10186	Check Valve, 2.0-20K, 2002F x M, Standard, Reverse Flow
3269158	020116A10110	Check Valve, 2.0-20K, 2002M x F, Standard
P520099	022616A10058	Check Valve, 3.0-20K, 2002M x F, Standard

Fabrication Procedures

- Procedures related to testing, NDE, welding, marking, etc. shall be reviewed by DNVGL Surveyor.

Marking of Products

- Products shall be marked at least with part and serial numbers for traceability.

Periodical Assessments

- Periodical assessments shall be carried out bi-yearly for retention of TAC.

Comments

- Project No. PP161030-10, Attn. andrew.huf@technipfmc.com
- This TAC replaces TAC No. D-4685.