DNV·GL

Certificate No:
TAD00000TV

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Valve

with type designation(s)
Butterfly Valves, Part Numbers: See Page 2

Issued to
TechnipFMC
Houston, TX, USA

is found to comply with
DNVGL-OS-E101 – Drilling facilities, Edition January 2018
DNVGL-SI-0166 – Verification for compliance with Norwegian shelf regulations, Edition July 2017

Application :

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

THIS CERTIFICATE IS A RENEWAL OF P-14420.

Issued at **Houston** on **2018-04-26**
This Certificate is valid until **2023-04-25**.
DNV GL local station: **Certification & Inspection Services**

for **DNV GL**

Approval Engineer: **Kevin Khoi Bui**

Meindert van Mierlo
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

- ASME, Section VIII, Rules for Construction of Pressure Vessels, 2017 Edition

Product description

- Butterfly Valves, Size 2”, 2.5”, 3”, 4”, 5”, 6”, 8”, 10” & 12”, Model 12, 12N, 22, 22L (Part Numbers are listed with approved drawings)

Application/Limitation

Design Parameter	Value	Note
Max. Working Pressure:	100 psi	Fuel and Lubrication Oil
	175 psi	Other Systems
Shell Test Pressure:	270 - 300 psi	
Design Temperature:	-20 to 140 °F	Fuel and Lubrication Oil
	-20 to 250 °F	Other Systems
Service:	General	Standard

Type Approval documentation

Drawings:

Part No./Rev.	Title	Drawing No./Rev.
3227485/J	BUTTERFLY VALVE ASSEMBLY 2 MOD 12	DU500008880/A
	Body	DU500008658/B
	Disc	DU500008735/A
	Upper Stem	DU500008821/C
	Lower Stem	DU500008456/C
3229885/G	BUTTERFLY VALVE ASSEMBLY 2 MOD 12N	DU500008884/A
	Body	DU500008665/B
	Disc	DU500008735/A
	Upper Stem	DU500008821/C
	Lower Stem	DU500008456/C
3225730/H	2” MOD 22, DUCTILE IRON BODY, DUCTILE IRON DISC, 410 SST STEMS, NITRILE SEAT	3225730/H
	Body	DU500015488/A
	Disc	DU500008735/A
	Upper Stem	DU500013530/A
	Lower Stem	DU500008456/C
3225748/H	2” MOD 22L, DUCTILE IRON BODY, DUCTILE IRON DISC, 410 SST STEMS, NITRILE SEAT	3225748/H
	Body	DU500017089/A
	Disc	DU500008735/A
	Upper Stem	DU500013530/A
	Lower Stem	DU500008456/C
3227486/H	2 ½” MOD 12, DUCTILE IRON BODY, DUCTILE IRON DISC, 410 SST STEMS, NITRILE SEAT	3227486/H
	Body	DU500014857/A
	Disc	DU500014849/A
	Upper Stem	DU500005279/B
	Lower Stem	DU500005269/B

3225731/G	2 ½" MOD 22, DI BODY, DUCTILE IRON DISC, 410 SST STEMS, NITRILE SEAT	3225731/G
	Body	3228986/K
	Disc	DU500014849/A
	Upper Stem	DU500011895/B
	Lower Stem	DU500005269/B
3227487/I	BUTTERFLY VALVE ASSEMBLY 3 MOD 12	DU500008888/A
	Body	DU500008669/B
	Disc	DU500003824/B
	Upper Stem	DU500005279/B
	Lower Stem	DU500005269/B
3230047/F	BUTTERFLY VALVE ASSEMBLY 3 MOD 12N	DU500008890/A
	Body	DU500008672/B
	Disc*	DU500008738/A
	Upper Stem	DU500005279/B
	Lower Stem	DU500005269/B
3224694/G	3" MOD 22, DI BODY, KYNAR CTD., .025 THK, DI DISC, 410 SST STEM, TEFLON SEAT	3224694/F
	Body	DU500012671/A
	Disc	DU500011584/B
	Upper Stem	DU500011895/B
	Lower Stem	DU500005269/B
3225750/H	3" MOD 22L, DUCTILE IRON BODY, DUCTILE IRON DISC, 410 SST STEMS, NITRILE SEAT	3225750/H
	Body	DU500022919/A
	Disc	DU500003824/B
	Upper Stem	DU500011895/B
	Lower Stem	DU500005269/B
3234226/D	4" MOD 12, DUCTILE IRON BODY, DUCTILE IRON DISC, 410 SST STEMS, NITRILE SEAT	3234226/D
	Body	6500DU5011364/B
	Disc	6500DU5011358/B
	Upper Stem	6500DU5011359/B
	Lower Stem	6500DU5011361/C
3225733/I	BUTTERFLY VALVE ASSEMBLY 4 MOD 22	DU500011119/A
	Body	DU500011094/A
	Disc	6500DU5011358/B
	Upper Stem	DU500011077/B
	Lower Stem	6500DU5011361/C
3247514/B	4" MOD 22L, DI BODY, ELECTROLESS NICKEL PLATED DI DISC, 410 SST STEMS, NITRILE SEAT	3247514/B
	Body	DU500013997/A
	Disc	6500DU5011358/B
	Upper Stem	DU500011077/B
	Lower Stem	6500DU5011361/C
3229887/G	BUTTERFLY VALVE ASSEMBLY 5 MOD 12N	DU500008936/A
	Body	DU500008687/B
	Disc	DU500005354/A
	Upper Stem	DU500005295/B
	Lower Stem	DU500001409/B

3225608/D	5” MOD 22, DI BODY, AL BRZ DISC, 410 SST STEM, EPR SEAT	3225608/D
	Body	DU500011143/A
	Disc*	DU500008756/A
	Upper Stem	DU500011146/B
	Lower Stem	DU500001409/B
3225752/G	5” MOD 22L, DUCTILE IRON BODY, DUCTILE IRON DISC, 410 SST STEMS, NITRILE SEAT	3225752/G
	Body	DU500022758/B
	Disc	DU500005354/A
	Upper Stem	DU500011146/B
	Lower Stem	DU500001409/B
3227493/I	BUTTERFLY VALVE ASSEMBLY 6 MOD 12	DU500008973/A
	Body	DU500008696/B
	Disc	DU500003863/B
	Upper Stem	DU500005295/B
	Lower Stem	DU500001409/B
3229888/H	BUTTERFLY VALVE ASSEMBLY 6 MOD 12N	DU500008982/A
	Body	DU500003973/B
	Disc	DU500003863/B
	Upper Stem	DU500005295/B
	Lower Stem	DU500001409/B
3225609/D	6” MOD 22, DI BODY, AL BRZ DISC, 410 SST STEM, EPR SEAT	3225609/D
	Body	DU500019980/A
	Disc*	DU500008790/A
	Upper Stem	DU500011146/B
	Lower Stem	DU500001409/B
3232417/D	BUTTERFLY VALVE ASSEMBLY 8 MOD 12	DU500009007/A
	Body	DU500008703/B
	Disc	DU500003855/B
	Upper Stem	DU500005281/B
	Lower Stem	DU500005270/B
3225736/I	BUTTERFLY VALVE ASSEMBLY 8 MOD 22	DU500015993/A
	Body	DU500012418/A
	Disc	DU500003855/B
	Upper Stem	DU500011890/B
	Lower Stem	DU500005270/B
3225754/H	8” MOD 22L, DI BODY, DUCTILE IRON DISC, 410 SST STEMS, NITRILE SEAT	3225754/H
	Body	DU500012728/A
	Disc	DU500003855/B
	Upper Stem	DU500011890/B
	Lower Stem	DU500005270/B
3227495/H	BUTTERFLY VALVE ASSEMBLY 10 MOD 12	DU500009017/A
	Body	DU500008705/B
	Disc	DU500005442/A
	Upper Stem	DU500005298/B
	Lower Stem	DU500005272/B
3225737/G	10” MOD 22, DI BODY, DUCTILE IRON DISC, 410 SST STEMS, NITRILE SEAT	3225737/G
	Body	DU500017489/A
	Disc	DU500005442/A
	Upper Stem	DU500013539/A
	Lower Stem	DU500005272/B

3225755/H	10" MOD 22L, DI BODY, DUCTILE IRON DISC, 410 SST STEMS, NITRILE SEAT	3225755/H
	Body	DU500037305/A
	Disc	DU500005442/A
	Upper Stem	DU500013539/A
	Lower Stem	DU500005272/B
3227496/J	BUTTERFLY VALVE ASSEMBLY 12 MOD 12	DU500009023/A
	Body	DU500008713/D
	Disc	DU500005383/A
	Upper Stem	DU500008851/C
	Lower Stem	DU500005274/B
3225738/G	12" MOD 22, DI BODY, DUCTILE IRON DISC, 410 SST STEMS, NITRILE SEAT	3225738/G
	Body	DU500025786/B
	Disc	DU500005383/A
	Upper Stem	DU500013551/A
	Lower Stem	DU500005274/B
3225756/G	12" MOD 22L, DI BODY, DUCTILE IRON DISC, 410 SST STEMS, NITRILE SEAT	3225756/G
	Body	DU500033341/A
	Disc	DU500005383/A
	Upper Stem	DU500013551/A
	Lower Stem	DU500005274/B

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 GL's local surveyor shall verify the change before issuance of Product Certificate.

Calculations:

Document No.	Rev.	Description
--	--	Design package submitted June 28th 2017

Materials:

Component	Material Spec./Rev.	Description	Min. Yield Strength
Body	M15020/F	60-40-12 casting	40 ksi
Disc	M15021/F	80-55-06 casting	55 ksi
Disc*	M45019/B	C95300 casting	25 ksi
Stem	M35049/A	416 S.S.	100 ksi

Note: see Material Specifications for additional requirements.

Test carried out

Hydrostatic Pressure Test Certificates for P/Ns: 3227486, 3227493, 3227495, 3227496, 3229885, 3229886, 3229887, 3230052 & 3251643.

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 shall be in accordance with DNVGL-OS-E101.

Certificate Retention Survey

For retention of the Type Approval, DNV GL's surveyor shall perform periodical assessment after 2 years and after 3.5 years in accordance with DNV GL'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 GL's local surveyor.
2. DNV GL ref.: A0424119.

END OF CERTIFICATE