

May 18, 2023

Attention: Lucas Dore
DELVAL FLOW CONTROLS USA
6068 HIGHWAY 73
GEISMAR, LA 70734

The design submission, Tracking Number 2023-02743, Web Portal Number 2023-S1588, originally received on April 27, 2023 was surveyed and accepted for registration as follows:

CRN : 0C23199.2 **Accepted on:** May 18, 2023

Reg Type: NEW DESIGN **Expiry Date:** May 18, 2023

Drawing No. : PDBFV131590,-131600,-131610,-131620

Fitting type: Butterfly valves series 58

Design registered in the name of : DELVAL FLOW CONTROLS PVT LTD

The registration is conditional on your compliance with the following notes:

Registration is based on the understanding per client email that design of valves is in full compliance with the standards listed under API 609, ASME B16.42, B16.1, B16.5, B16.47 including material specifications, design, pressure / temperature ratings, fabrication, and testing requirements.

As indicated on AB-41 Statutory Declaration or AB-351 Declaration of Conformity form and submitted documentation, the code of construction are other engineering analysis, API 609

- It is our understanding that the fitting(s), included as the scope of this submission, that is(are) subject to the Safety Codes Act shall comply with the requirements of the indicated Standard or Code of Construction on the AB-41 Statutory Declaration or AB-351 Declaration of Conformity as supported by the attached data which identifies the dimensions, materials of construction, press./temp. ratings and the basis for such ratings, and the identification marking of the fittings.

- This registration is valid only for fittings fabricated at the location(s) covered by the QC certificate attached to the accepted AB-41 Statutory Declaration or AB-351 Declaration of Conformity form.

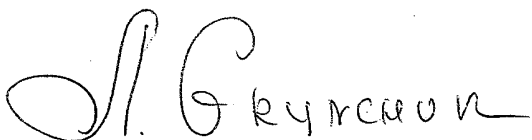
- This registration is valid only until the indicated expiry date and only if the Manufacturer maintains a valid quality management system approved by an acceptable third-party agency, and maintains a valid Certification of Authorization Permit if required by the jurisdiction where manufacturing takes place, until that date.

- Should the approval of the quality management system lapse before the expiry date indicated above, this registration shall become void.

An invoice covering survey and registration fees will be forwarded from our Revenue Accounts.

If you have any question don't hesitate to contact me by phone at (780) 433-0281 ext 3330 or fax (780) 437-7787 or e-mail grynchuk@absa.ca.

Sincerely,



GRYNCHUK, MILLA, P. Eng.
DOP Cert. No. D00005217

**STATUTORY DECLARATION
Registration of Fittings**
Single or Multiple Fitting Designs within one Fitting Category



I, Arun Shiroor, Managing Director
(name of applicant) (position title) (must be in a position of authority)
of Delval Flow Controls Pvt Ltd
(name of manufacturer)
located at Gat #25, Kavathe, Post Javale, tal. Khandala, Dist. Satara-412801
(plant address)

do solemnly declare that the fittings listed hereunder, which are subject to the Safety Codes Act (select only one)

- comply with the requirements of API 609 which specifies the dimensions, (title of recognized North American Standard) materials of construction, pressure/temperature ratings and identification marking of the fittings, or
- are not covered by the provisions of a recognized North American standard and are therefore manufactured to comply with _____ as supported by the (title of code of construction or other applicable document) attached data which identifies the dimensions, materials of construction, pressure/temperature ratings and the basis for such ratings, and the identification marking of the fittings.

I further declare that the manufacture of these fittings is controlled by a quality control program which has been verified as described in the below Table as being suitable for the manufacturing of these fittings to the stated standard, regulation, code, guideline or other applicable document. The fittings covered by the declaration for which I seek registration are as provided in the Supplementary Sheet(s) attached.

Quality Program Verification and Manufacturing Sites

A copy of the Quality Certificate from each manufacturing site must be included

Item #	Product Description, Model or Series	Quality Program	Scope of Certification	Expiry Date	Verifying Organization	Location(s) Plant Name and address
1.	Resilient Seated BFV Series 58	QMS to ISO9001	Design, manufacture & aftersale service of BFV, BLV, Actrs & Valve automation syst	02.03.2025	DNV-GL	Delval Flow Controls Pvt Ltd, Gat #25, Kavathe, Satara dist. PIN412801
2.						

Tracking #: _____

In support of this application, the following information, calculations and/or test data are attached:

C/S GA drawings of Series 58

Product catalogue, Instruction, Opn & Maint Manual of Resilient Seated BFV Series 58

[Handwritten Signature]

(Signature of the Declarer)

04-12-2023

(Date)

DECLARED before me at Baton Rouge in the of Louisiana

this 12th day of April, 2023

(print) ERIN B. CHISHOLM (a Commissioner of Oaths or Notary Public)

(sign) [Handwritten Signature] (a Commissioner of Oaths or Notary Public)

at death (expiry date (mm/dd/yy))

Commissioner of Oaths / Notary Public in and for: Louisiana

For ABSA Office Use Only:

NOTES:

Registration form containing fields for CRN, Registered Date, Expiry Date, Signature, and a red-bordered stamp area with ABSA logo and registration details.

Tracking #:

Table 1 Scope of Fitting Designs**

Item #	Primary Pressure Bearing / Retaining Component	Material of Construction	Port Connections and Size Range	MDMT	Rated Pressure		Pressure Class(es) / Schedule(s)	Design Code(s) of Construction	Reference Catalogue (pages) or Drawing(s)
					At Ambient Temperature	At Maximum Temperature			
Resilient Seated BFV Series 58	Butterfly Valve body	Cl/DI/CS/SS	2" to 48" with Flanged ends	285 psi max	285 psi	Same as at Ambient temp	285 psi	API 609; BS EN 593	PC:BFV. 016.00_R1

Table 2 Additional Scope Information

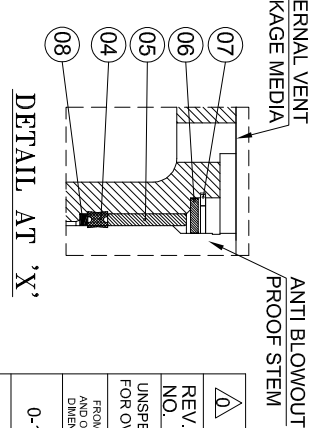
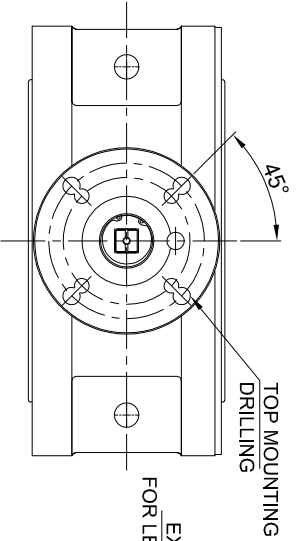
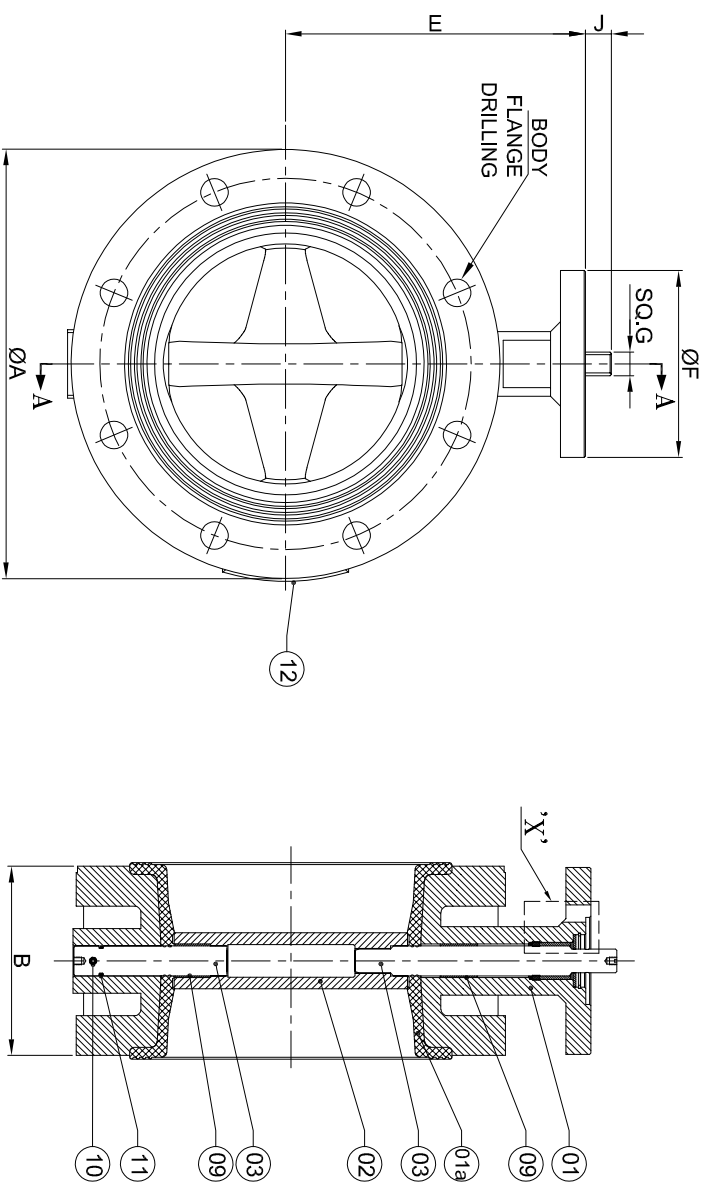
List/Attach Additional Detail and References (Product Configurations, Options, Illustrations, etc.)
Example:
Series X Options
Series 58 in Press rating up to 285 psi max. in flanged ends

** For additional alternatives of Table 1, refer to Form AB-41a, Guide for Completing Form AB-41

CUSTOMER :-	1	2	3	4	5	6	7	8	9	10
INSPECTION BY :-										
ENQ. NO. :-										
LOIP. O. NO. :-										
DATE :-										
DRAWING FOR :- REFERENCE										

VALVE SIZE	ØA	B	E	J	S.Q.G	ØF	TOP MOUNTING DRILLING	Wt.Kg. (APPROX)
DN 2000/8"	345	152	241	21	19	150	F10 / F12	48
DN 2500/10"	405	165	273	24	22	150	F10 / F12	65
DN 3000/10"	485	178	311	29	27	150	F14	100

ITEM No.	PART NAME	MATERIAL SPECIFICATION
01	BODY	C.I. ASTM A126 CLASS B / D.I. ASTM A395 GR. 60-40-18 / ASTM A216 GR. WCB / ASTM A351 GR. CF8M / CF3M
01a	BODY LINING	EPDM / NBR (BUNA-N) / VITON / SILICONE
02	DISC	D.I. ASTM A536 GR. 65-45-12 + NYLON COATED / AROXY COATED ASTM A216 GR. WCB + NYLON COATED / AROXY COATED ASTM A351 GR. CF8M / CF3M / ASTM A995 GR. 4A45A6A / ASTM B148 GR. C95800
03	UPPER / LOWER STEM	ASTM A479 GR. SS410-L2 / ASTM A182 GR. F51 / F55 ASTM A564 TYPE 630 (17-4PH) / ASTM A479 GR. SS316 NBR (BUNA-N)
04	'U' CUP SEAL	NBR (BUNA-N)
05	STEM BUSHING	RPTE
06	STEM RETAINER	ASTM A 240 SS 304
07	RETAINER CIRCLIP	ASTM A684 GR. 1070 / ASTM 240 GR. SS302
08	PACKING SUPPORT	RPTE
09	SLEEVE BEARING	BEAR-G (IGLIDURE 'G' - IGUS MAKE)
10	SPRING DOWEL PIN	ASTM A684 GR. 1074 / ASTM 240 GR. SS302
11	O RING	NBR (BUNA-N)
12	NAME PLATE	ASTM A240 GR. SS304



PRESSURE RATING	HYDROSTATIC SHELL TEST	HYDROSTATIC SEAT TEST	PNEUMATIC SEAT TEST
	bar (g)	bar (g)	bar (g)
PN 10 (150 psi)	15	11	5-7
PN 16 (230 psi)	24	17.6	5-7
PN 20 (285 psi)	30	22	5-7

- NOTES:-
- 1) ALL DIMENSIONS ARE IN mm.
 - 2) DESIGN STANDARD : API 609 (CATEGORY-A)
 - 3) TESTING STANDARD : API 598
 - 4) ACCEPTANCE CRITERIA : NO VISUALLY DETECTABLE LEAKAGE
 - 5) FACE TO FACE STANDARD : API 609 - CATEGORY 'B' (SHORT PATTERN)
 - 6) BODY STYLE : FLANGE END (FLAT FACE / RAISED FACE)
 - 7) FLOW DIRECTION : BI-DIRECTIONAL
 - 8) PRESSURE RATING : PN 10 (150 psi) / PN 16 (230 psi) / PN 20 (285 psi)
 - 9) COLOR : DELVAL BLUE (RAL 5010) (FOR C.I.D.I & CS VALVE ONLY)
 - 10) FLANGE DRILLING : ASME B 16.5 CLASS 150
 - 11) TOP FLANGE DRILLING : ISO 5211
 - 12) TOLERANCE FOR FACE TO FACE & FLANGE DRILLING DIMENSIONS AS PER APPLICABLE STANDARD.
 - 13) WEIGHT VARIATION :- UPTO 300 Kg(+/-10%), FROM 301 TO 500 Kg (+/-12%), 501 Kg AND ABOVE (+/-15%)

REV. NO.	ECN. NO.	NO.	DESCRIPTION	DATE
			NEW RELEASE	

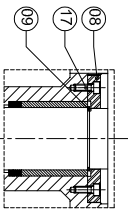
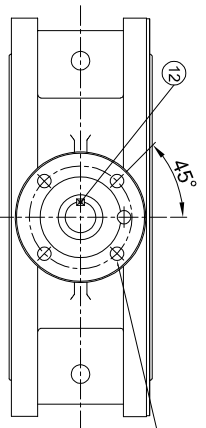
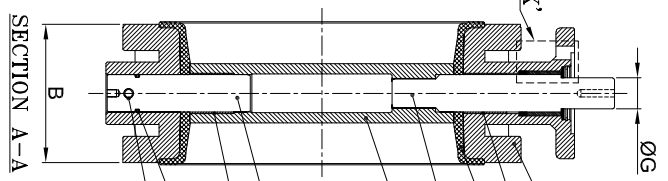
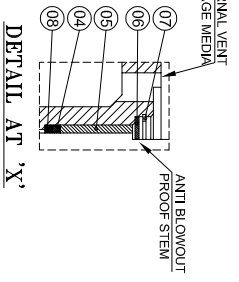
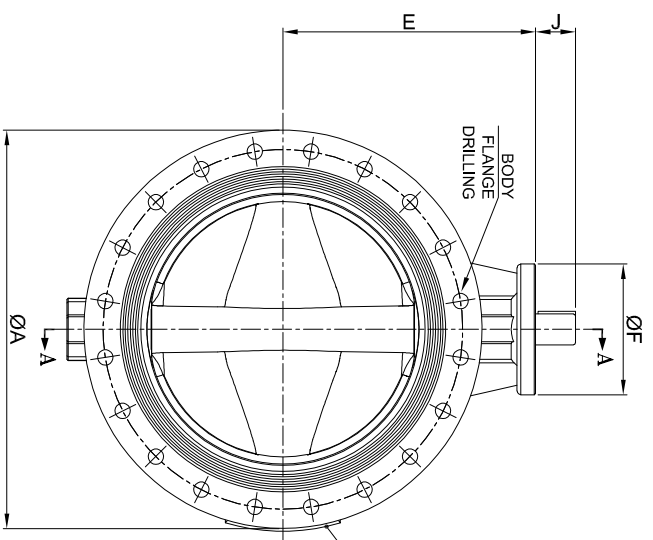
UNSPRIGED TOLERANCE FOR OVERALL DIMENSIONS	DEVIATION
0-150	± 3
151-500	± 5
501-ABOVE	± 15

	REV. ZONE	DESCRIPTION	DRAWN BY	REVIEWED & CHECKED BY	DATE

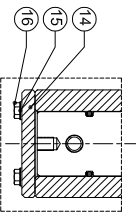
		Delval Flow Controls Private Limited	
GAT. NO. 25/1A, KAVATHE, TAL-KHANDALA, SATARA-412801, INDIA		TITLE :- GENERAL ASSY (FLANGED) B/PV 8" TO 12" BARE STEM (SERIES 58)	
SIGN: K.A.S DATE: 30.03.2023	V.R.M DATE: 30.03.2023	K.D.S DATE: 30.03.2023	DRG. NO. : PDBPV131600 REV. : 0
NO PART OF THIS DRAWING MAY BE REPRODUCED IN ANY FORM WITHOUT WRITTEN PERMISSION OF COPYRIGHT OWNER.		FILE PATH: DESIGN\DELVAL\B/PV/PDBPV131600.DWG	

CUSTOMER :-	1	2	3	4	5	6	7	8	9	10
INSPECTION BY :-										
ENQ. NO. :-										
LOI/P.O. NO. :-										
DATE :-										
DRAWING FOR :- REFERENCE										

VALVE SIZE	ØA	B	E	J	G	KEY	ØF	TOP MOUNTING DRILLING	WT KG (APPROX)
DN 350/14"	535	^{33.33} 190	346	51	Ø40	10X10	210	F16	150
DN 400/16"	595	^{33.33} 216	375	51	Ø40	10X10	210	F16	202
DN 450/18"	635	^{33.33} 222	406	64	Ø50	10X12	210	F16	235
DN 500/20"	700	^{33.33} 229	438	64	Ø50	10X12	210	F16	295
DN 600/24"	815	³⁴ 267	495	102	Ø63.5	15.88x15.88	210	F16	341



TOP VIEW FOR 24" BFW



BOTTOM VIEW FOR 24" BFW

PRESSURE RATING	HYDROSTATIC SHELL TEST	HYDROSTATIC SEAT TEST	PNEUMATIC SEAT TEST
PN 10 (150 psi)	15 bar (g)	11 bar (g)	5-7 bar (g)
PN 16 (230 psi)	24 bar (g)	17.6 bar (g)	5-7 bar (g)
PN 20 (285 psi)	30 bar (g)	22 bar (g)	5-7 bar (g)

ITEM No.	PART NAME	MATERIAL SPECIFICATION
01	BODY	C.I. ASTM A128 CLASS B / D.I. ASTM A395 GR. 60-40-18 / ASTM A216 GR. WCB / ASTM A351 GR. CF8M / CF3M
01a	BODY LINING	EPDM / NBR (BUNA-N) / VITON / SILICONE
02	DISC	D.I. ASTM A536 GR. 65-45-12 + NYLON COATED / AROXY COATED ASTM A216 GR. WCB + NYLON COATED / AROXY COATED ASTM A351 GR. CF8M / CF3M / ASTM A995 GR. 4A/5A/6A / ASTM B148 GR. C995800
03	UPPER / LOWER STEM	ASTM A479 GR. SS410-12 / ASTM A182 GR. F51 / F55 ASTM A564 TYPE 630 (17-4PH) / ASTM A479 GR. SS316 NBR (BUNA-N)
04	'U' CUP SEAL	NBR (BUNA-N)
05	STEM BUSHING	RPTFE
06	STEM RETAINER	ASTM A240 GR. SS304
07	RETAINER CIRCLIP	ASTM A684 GR. 1070 / ASTM 240 GR. SS302
08	PACKING SUPPORT	RPTFE
09	SLEEVE BEARING	BEAR-G (GLIDURE 'G' - IGUS MAKE)
10	SPRING DOWEL PIN	ASTM A684 GR. 1074 / ASTM 240 GR. SS302
11	O RING	NBR (BUNA-N)
12	KEY	BS 970 EN8
13	NAME PLATE	ASTM A240 GR. SS304
14	BOTTOM PLATE	ASTM A516 GR. 70 / ASTM A240 GR. SS304
15	PUNCH WASHER	SS304
16	HEX HEAD SCREW	ISO 3506 A2-70
17	SOC. HEAD CAP SCREW	ISO 3506 A2-70

- NOTES:-
- 1) ALL DIMENSIONS ARE IN mm.
 - 2) DESIGN STANDARD : API 609 (CATEGORY-A)
 - 3) TESTING STANDARD : API 598
 - 4) ACCEPTANCE CRITERIA : NO VISUALLY DETECTABLE LEAKAGE
 - 5) FACE TO FACE STANDARD : API 609 - CATEGORY 'B' (SHORT PATTERN)
 - 6) BODY STYLE : FLANGE END (FLAT FACE / RAISED FACE)
 - 7) FLOW DIRECTION : BHDIRECTIONAL
 - 8) PRESSURE RATING : PN 10 (150 psi) / PN 16 (230 psi) / PN 20 (285 psi)
 - 9) COLOR : DELVAL BLUE (RAL 5010) (FOR CLID & CS VALVE ONLY)
 - 10) FLANGE DRILLING : ASME B 16.5 CLASS 150
 - 11) TOP FLANGE DRILLING : ISO 5211
 - 12) TOLERANCE FOR FACE TO FACE & FLANGE DRILLING DIMENSIONS AS PER APPLICABLE STANDARD.
 - 13) WEIGHT VARIATION :- UPTO 300 Kg(+/-10%), FROM 301 TO 500 Kg (+/-12%), 501 Kg AND ABOVE (+/-15%)

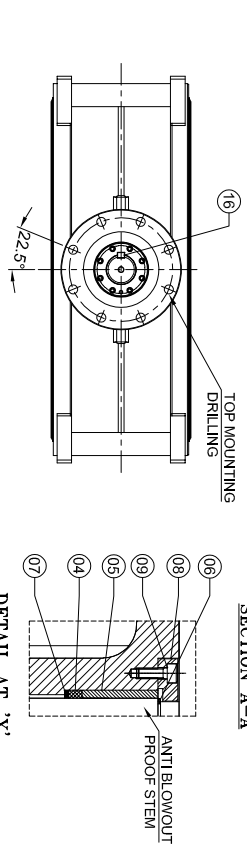
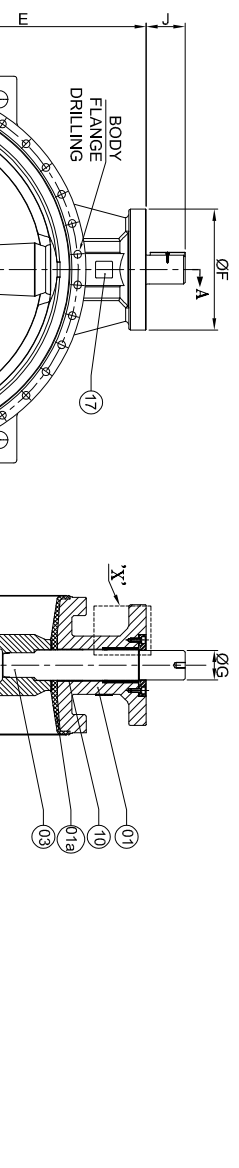
REV. NO.	ECN. NO.	REV. ZONE	DESCRIPTION	DRAWN BY	REVIEWED & CHECKED BY	DATE
			NEW RELEASE			

UNSPRIGED TOLERANCE FOR OVERALL DIMENSIONS		DEVIATION	
FROM UP TO AND OVERALL DIMENSIONS	0-150	± 3	
	151-500	± 5	
	501-ABOVE	± 15	

	GAT. NO. 25/1A, KAVATHE, TAL-KHANDALA, SATARA-412801, INDIA
	TITLE :- GENERAL ASSY (FLANGED) BFW
Flow Controls	14" TO 24" BARE STEM (SERIES 58)
DATE 30.03.2023	DRG. NO. : PDBRV131610
REVIEWED & CHECKED BY	REV. 0
DRAWN BY	SHEET 1 OF 1
	SCALE:- NTS
	WT. (Kg)

CUSTOMER :-	1	2	3	4	5	6	7	8	9	10
INSPECTION BY :-										
ENQ. NO. :-										
LOI/P.O. NO. :-										
DATE :-										
DRAWING FOR :- REFERENCE										
ITEM No.	PART NAME	MATERIAL SPECIFICATION								

VALVE SIZE	ØA	B	E	J	G	KEY	ØF	TOP MOUNTING DRILLING (APPROX)	WT. (Kg)
DN 650/26"	873	292 ^{2d}	555	102	63.5	15.88X15.88	300	F25	510
DN 700/28"	930	292 ^{2d}	580	102	76.2	19.05X19.05	300	F25	585
DN 750/30"	984	318 ^{2d}	595	102	76.2	19.05X19.05	300	F25	690
DN 800/32"	1062	318 ^{2d}	670	102	76.2	19.05X19.05	350	F30	810
DN 900/36"	1168	330 ^{2d}	705	134	88.9	22.23X15.88	350	F30	1030
DN 1000/40"	1289	410 ^{2d}	782	134	101.6	25.4X19.05	415	F35	1345
DN 1100/44"	1403	470 ^{2d}	845	134	101.6	25.4X19.05	415	F35	1760
DN 1200/48"	1514	470 ^{2d}	910	150	110	28X16	415	F35	2050



01	BODY	C.I. ASTM A126 CLASS B / D.I. ASTM A395 GR. 60-40-18 / ASTM A216 GR. WC8 / ASTM A351 GR. CF8M / CF3M
01a	BODY LINING	EPDM / NBR (BUJANA) / VITON / SILICONE
02	DISC	D.I. ASTM A536 GR. 65-45-12 + NYLON COATED / AROXY COATED ASTM A216 GR. WC8 + NYLON COATED / AROXY COATED ASTM A351 GR. CF8M / CF3M / ASTM A995 GR. 4A5A6A / ASTM B148 GR. C95800
03	UPPER / LOWER STEM	ASTM A479 GR. S5470-L2 / ASTM A182 GR. F51/ F55 ASTM A564 TYPE 630 (17-4PH) / ASTM A479 GR. SS316
04	'U' CUP SEAL	NBR (BUJANA)
05	STEM BUSHING	PHOSPHOROUS BRONZE
06	RETAINER CIRCLIP	ASTM A684 GR. 1070 / ASTM 240 GR. SS302
07	PACKING SUPPORT	RPTFE
08	RETAINING RING	ASTM A516 GR. 70 / ASTM A240 GR. SS304
09	SOC. HD. SCREW	ISO 3506 A2-70
10	SLEEVE BEARING	BEAR-G (GLIDURE 'G' -IGUS MAKE)
11	BOTTOM PLATE	ASTM A516 GR. 70 / ASTM A240 GR. SS304
12	THRUST BEARING	PHOSPHOROUS BRONZE
13	O RING	NBR (BUJANA)
14	PUNCH WASHER	ASTM A240 GR. SS304
15	HEX. HEAD CAP SCREW	ISO 3506 A2-70
16	KEY	BS 970 EN8
17	NAME PLATE	ASTM A240 GR. SS304

- NOTES:-
- 1) ALL DIMENSIONS ARE IN mm.
 - 2) DESIGN STANDARD : API 609 (CATEGORY-A)
 - 3) TESTING STANDARD : API 598
 - 4) ACCEPTANCE CRITERIA : NO VISUALLY DETECTABLE LEAKAGE
 - 5) FACE TO FACE STANDARD : API 609 - CATEGORY 'B' (SHORT PATTERN)
 - 6) BODY STYLE : FLANGE END (FLAT FACE / RAISED FACE)
 - 7) FLOW DIRECTION : BIDIRECTIONAL
 - 8) PRESSURE RATING : PN 10 (150 psf) / PN 16 (230 psf)
 - 9) COLOR : DELVAL BLUE (RAL 5010) (FOR CLID & CS VALVE ONLY)
 - 10) FLANGE DRILLING : ASME B 16.47 CLASS 150 SERIES 'A'
 - 11) TOP FLANGE DRILLING : ISO 5211
 - 12) TOLERANCE FOR FACE TO FACE & FLANGE DRILLING DIMENSIONS AS PER APPLICABLE STANDARD.
 - 13) WEIGHT VARIATION :- UPTO 300 Kg(+/-10%), FROM 301 TO 500 Kg (+/-12%), 501 Kg AND ABOVE (+/-15%).

REV. NO.	ECN. NO.	UNSPECIFIED TOLERANCE FOR OVERALL DIMENSIONS FROM UP TO AND OVERALL DIMENSIONS	DEVIATION (MM)
		0-150	± 3
		151-500	± 5
		501-ABOVE	± 15

REV. ZONE	DESCRIPTION	DRAWN BY	REVIEWED & CHECKED BY	DATE
	NEW RELEASE			

		GAT. NO. 25/1A, KAVATHE, TAL-KHANDALA, SATARA-412801, INDIA	
TITLE :- GENERAL ASSY (FLANGED) BFW		DRG. NO. : PDBFV131620	
DATE	30.03.2023	REVIEWED & CHECKED BY	APPROVED BY
DRAWN BY	K.A.S	V.R.M	K.D.S
NO PART OF THIS DRAWING MAY BE REPRODUCED IN ANY FORM WITHOUT WRITTEN PERMISSION OF COPYRIGHT OWNER.		REV.	0
FILE PATH: DESIGN\DELVAL\BFW\BDFV\BDFV131620.DWG		SHEET 1 OF 1	SCALE: NTS



DelVal Flow Controls
Private Limited

DelVal Flow Controls
USA, LLC

INSTALLATION, OPERATION AND MAINTENANCE MANUAL



SERIES 58 BUTTERFLY VALVES

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1. SCOPE

- 1.1. The purpose of this manual is to ensure that the valves supplied are properly installed, handled, operated, and maintained to give trouble free performance.

NOTES



- Read the manual carefully before removal, installation, maintenance, or operation of the valve.
- Refer general arrangement drawings to identify the design, as valves may vary in features and parts.
- Pay attention to cautions and illustrations carefully.

2. INTRODUCTION

- 2.1. DelVal Series 58 centric butterfly valves are bi-directional, resilient seated, one-piece body in Double flanged construction.

3. SAFETY INSTRUCTIONS

- 3.1. **Do not exceed the valve pressure-temperature rating limitations.** Exceeding the pressure-temperature rating limitations marked on the valve may result in significant damage to the valve and personal injury. Users of these valves should ensure that the process design pressure-temperature is less than or equal to the rated pressure-temperature of the valves. If required, user should incorporate appropriate limiting and monitoring devices in the system for safe operation of the valve.
- 3.2. **Use the valve for specified applications only.** User to ensure that the valve is used only for the specified application as agreed between the manufacturer and the purchaser.
- 3.3. **Follow the safety rules and regulations.** User must be aware of all the safety rules and regulations related to the environment in which the valve is to be used.
- 3.4. **Do not disassemble the valve or remove it from the pipeline while the valve is pressurized:** Disassembling or removing a pressurized valve will result in uncontrolled pressure release. Always isolate the relevant part of the pipeline, release the pressure from the valve and remove the media before dismantling the valve. Be aware of the type of media involved. Protect people and the environment from any harmful or poisonous substances. Make sure that no dust or dirt can enter the pipeline during the valve maintenance.
- 3.5. **Beware of disc movement and keep hands, tools and other foreign objects out of valve opening while valve is actuated.** Disconnect supply sources and make sure valve actuation is in "fail safe" state before performing any work. Failure to do this may cause damage and/or personal injury.

4. DELIVERY

- 4.1. DelVal Series 58 centric design butterfly valves are shipped with the disc in 10° open position (refer Fig.1), except for valves fitted with actuation for fail close applications (in which case, valves are shipped in fully closed condition).

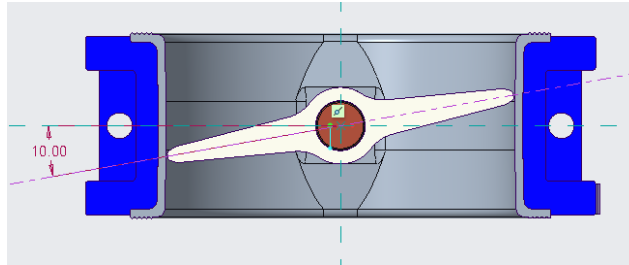


FIG.1. DISC IN 10° OPEN POSITON

- 4.2. The valve specification details are marked on the nameplate and valve body. A typical nameplate is shown in Fig.2.

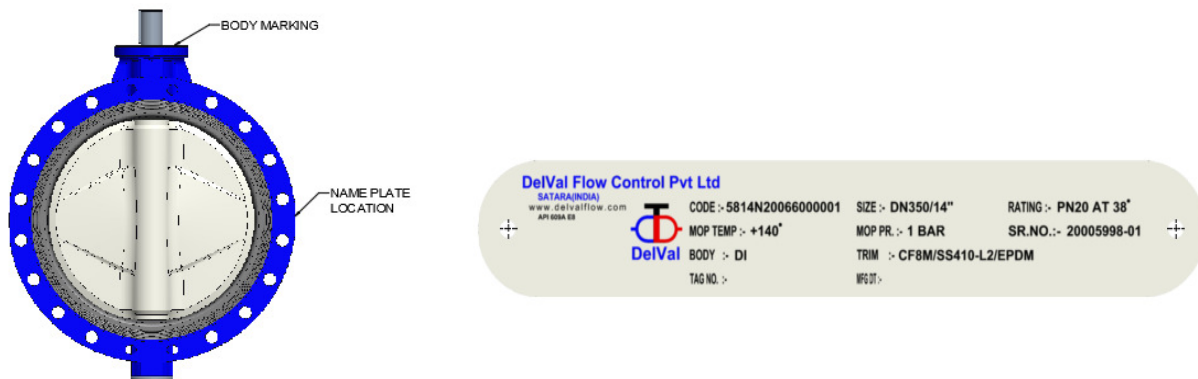


FIG.2. NAMEPLATE LOCATION AND SAMPLE NAMEPLATE

- 4.3. The valves are delivered with protective packaging to avoid damage of internals and flange facing.
- 4.4. Handwheels for gear operated valves are packed separately in the same packing box. The pin is attached to the gear box shaft using an adhesive tape.

CHECK

- Tag numbers and details of valves upon receipt.
- Thoroughly for any damages that may have occurred during transit.
- Conditions of packaging.
- Extension lines and column, if any.
- In case of any discrepancies in the above-mentioned details or discovery of any kind of damage to the valve upon delivery, please contact a DelVal representative.

5. VALVE HANDLING & STORAGE

5.1. HANDLING

- 5.1.1. Valve shall be properly supported and secured before moving to prevent possible damage to valve, property, or harm to personnel.
- 5.1.2. Do not drag the valve on the ground during transportation. A minimum of one foot height from the ground is recommended to be maintained while moving the valve.
- 5.1.3. When handling the valve or the valve package, bear in mind its weight. Never lift the valve or valve package near the actuator or operator. Do not sling crane straps or wires around any automation components such as lever, gear, actuator, accessories and tubing to avoid any load acting on it. Place the lifting device securely around the valve body while handling the valve. Refer to Fig.3 (a) and Fig.3 (b).

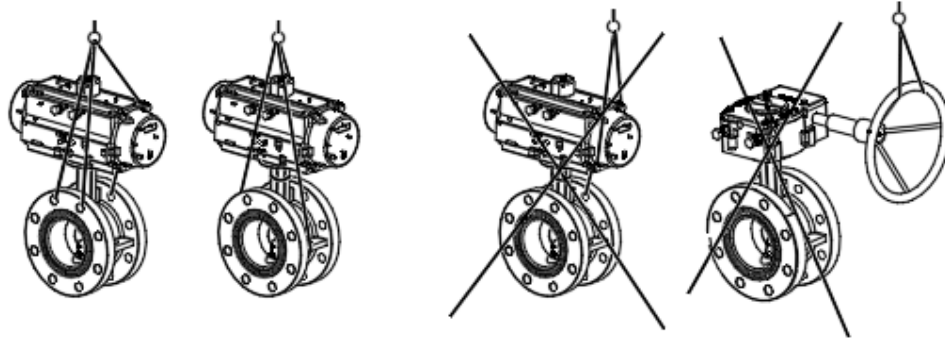


FIG.3. (a) CORRECT VALVE HANDLING

FIG.3. (b) INCORRECT VALVE HANDLING

- 5.1.4. Valve shall not be handled with the handwheel fixed to the gear unit. The handwheel shall be dismantled before handling and transporting of the valve.
- 5.1.5. Extreme care shall be taken to check that the stem and automation components (such as lever, gear, actuator, accessories and tubing) are not bent, pinched or damaged during handling.

5.2. STORAGE

- 5.2.1. Valves are being packed in cartons, boxes or pallets while shipping to the customer. Care should be taken to store them in a suitable place. While unpacking the valves, check that the valves and any other accessories have not been damaged during transportation. Avoid mechanical damage to the valve seat during storage.
- 5.2.2. Valves shall be stored in an indoor/covered area which is dust free, dry, well ventilated to protect from rain and storm. We recommend storing the valves indoors in a dry and dust free atmosphere with temperature range 4°C to 29°C to avoid collection of water droplets on the valve surface (Refer to Fig. 4). Polymer and elastomer parts should not be stored in the presence of sunlight or artificial light with high ultraviolet content, or any source of radiation as these are primary causes of aging.

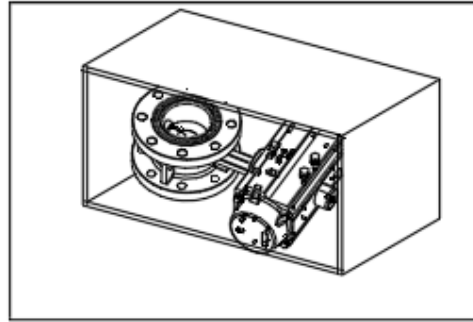


FIG. 4 . PROPER COVERED STORAGE

- 5.2.3. Do not keep the valve directly on the floor. Valve shall be placed on a wooden pallet with at least 6 inches from the floor.
- 5.2.4. Care should be exercised not to damage the extended portions of the stem housing and automation components during storage.
- 5.2.5. Do not apply tar, grease or any other foreign materials inside the valve aside from proper lubrication, as it could impair valve performance of the valve.

CAUTION



- All wrapping and protection on the valves should not be removed until the valve is ready for installation.
- Improper storage and/or handling may cause valve assembly damage or deformation, which will affect performance of the valve.
- When valves are stored for a long time, open and close the valve once every 3 months.
- Valves should be cleaned before installation.
- If the valves are stored for a long time, then valves should be tested before installation. Refer to order specific General Arrangement Drawing, for the appropriate pressure rating and testing standards or contact a Delval representative for more information.

DO NOT



- Store the valve outdoors.
- Store valve without protective packaging.
- or drag the valve on the floor.
- Place valve in position that may damage the valve or its accessories.
- Sling the valve with direct contact with automation portion of the unit during handling.
- Operate the valve without cleaning it properly.

6. VALVE INSTALLATION

6.1. GENERAL

- 6.1.1. Carefully unpack the valve and check for tags or identification plates, etc. If the name plates and/or tags are lost or destroyed during shipment or storage, or if it is not legible, contact a DelVal representative for assistance before installing the valve.
- 6.1.2. Check valve for any damage and check condition of packaging. Upon discovery of any damage, contact a DelVal representative prior installation.
- 6.1.3. Look for any special warning tags or plates attached to the valve; if there is any, take appropriate action.
- 6.1.4. Remove any protective flange covers from the valve.
- 6.1.5. Check the valve identification tag for material and operating pressure to be sure they are correct for the applications.
- 6.1.6. Check the flange bolts or studs for the proper size, threading and length.
- 6.1.7. DelVal elastomer seat has moulded O-rings on the face, gaskets are not needed and should not be used when the valve is installed between pipe flanges.

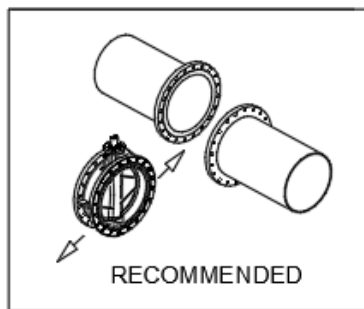


FIG. 5. (a) CORRECT INSTALLATION

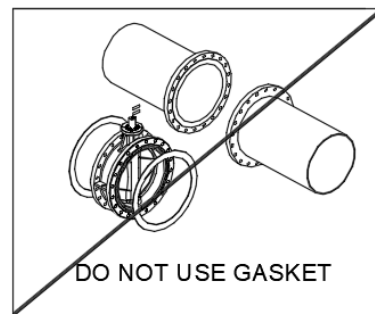


FIG. 5. (b) INCORRECT INSTALLATION

6.2. PROCEDURE

- 6.2.1. Series 58 centric butterfly valves are bi-directional valves and can be installed for flow in either direction.
- 6.2.2. Make sure valve, pipeline and flange faces are clean and remove any foreign material, refer to Section 6.5.
- 6.2.3. Position the connecting pipe flanges in the line to insure proper alignment prior to valve installation. Spread the pipe flange apart enough to allow the valve body to be located between the flanges without contacting the flange face.

Check to see that the valve disc has been positioned to a partially open position, with the disc edge about 1/2 inch to 3/8 inch inside the face of the seat, (approximately 10° open).

Note: See Section 7.2.5. for special consideration for valve with spring return actuator

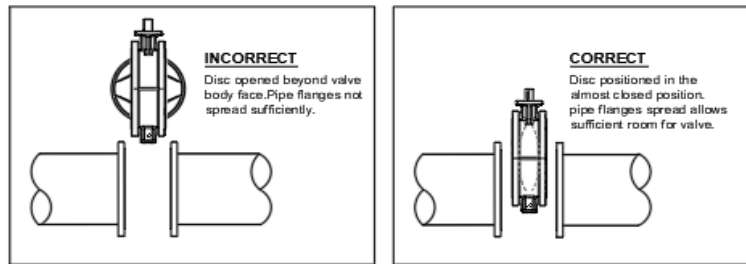


FIG. 6. INSTALLATION OF VALVE INTO PIPELINE

6.2.3.a. For valves installation

- a. Place the valve between the flanges.
- b. Install all bolts between the valve and the mating flanges. Hand tighten bolts as necessary.

6.2.3. Before completing the tightening of any bolts, the valve should be centred between the flanges. Refer to Fig.7. Do not attempt to correct the line misalignment by means of flange bolt tightening.

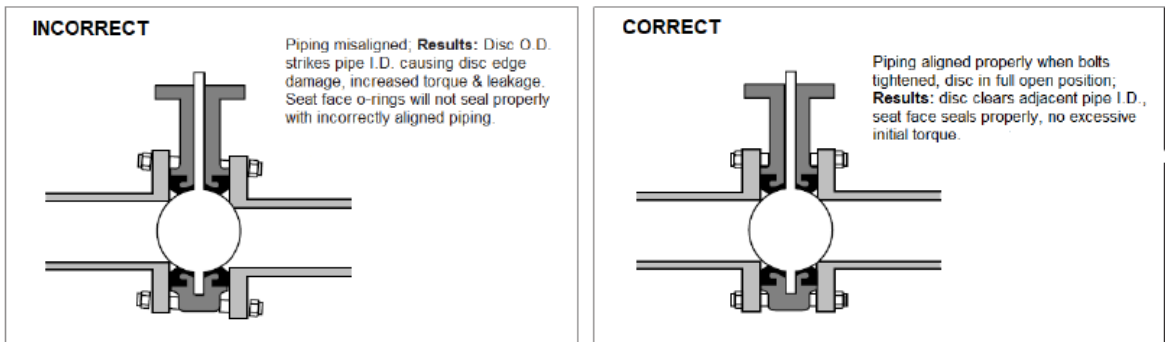


FIG.7. VALVE ALIGNMENT

6.2.4. Using the sequence shown in Appendix A Section A2 and tighten the valve flange bolts evenly to assure uniform compression.

6.2.5. Cycle the valve to fully open position, then back to the fully closed position. Check actuator travel stop setting for proper disc alignment. Make sure valve operation is smooth.

CAUTION



- If valve is not cleaned or if cleaning is done only after valve installation, impurities not dissolved or washed out by the flushing fluid / line fluid may settle and scratch sealing surfaces, and adversely affect valve performance.
- **Only proper qualified personnel must do the installation.**

6.3. VALVE ORIENTATION

- 6.3.1. Never install the valve with the actuator on the underneath side of the pipeline. DelVal resilient seated valve can be installed with the stem in the horizontal / vertical position and the actuator mounted directly on the valve ISO top.

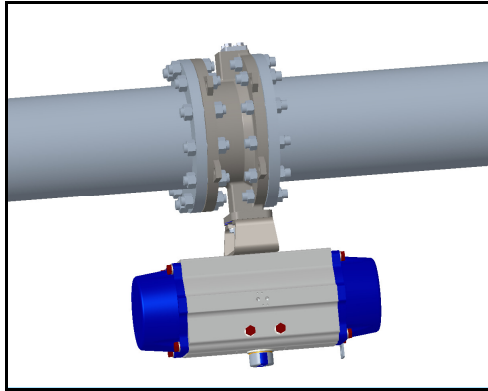


FIG. 8. INCORRECT MOUNTING POSITION

- 6.3.2. DelVal recommends to install the resilient seated butterfly valve with stem in the horizontal position and the lower disc edge opening with flow direction for applications with any abrasive media containing sediments or solid particles (such as slurry, sludge, pulp, dry cement, etc.), as this will create a self-flushing effect to help extend service life. In this position, the disc and stem weight would also be equally distributed between the drive and non-drive end, further minimizing seat wear.

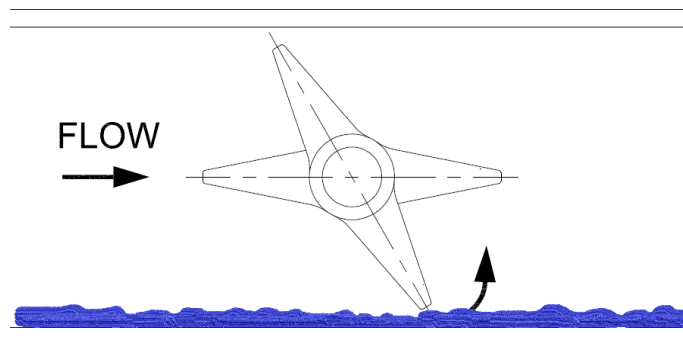


FIG. 9. STEM (HORIZONTAL)

6.4. VALVE LOCATION

- 6.4.1. If possible, butterfly valves are recommended to be installed a minimum of six (6) pipe diameters from upstream components, and a minimum of four (4) pipe diameters from downstream components. DelVal recommends to maintain distance as large as possible.
- 6.4.2. DelVal recommends to keep enough space between the butterfly valve connected to a check valve or pump to ensure the disc does not interfere with the adjacent equipment.

6.5. CLEANING AND TESTING

- 6.5.1. Clean the pipeline by flushing the system with a compatible liquid, to remove any contaminants that may be present in order to avoid scratches being formed on the sealing surfaces by these contaminants.
- 6.5.2. While testing the pipeline, ensure that the media is clean and free from sand, dirt, pebbles etc. Add corrosion inhibitors to the testing media to avoid any internal corrosion of the valve.
- 6.5.3. Operate the valve once to check for smooth operation.
- 6.5.4. If no obvious problems are observed, test pressure according to applicable standard may be applied and leak tightness and operability may be checked.
- 6.5.5. Operate the valve for at least two complete cycles before commissioning.

CAUTION



- Faulty installation may lead to valve and/or pipeline damage.
- Avoid contact with the valve closure element during cycling.
- During shell test, the valve shall be in the partially open position to prevent the seat from being subjected to the shell test pressure.

CHECK



- Installation of the valve as per the piping drawing.
- All wrapping and protection on the valves should not be removed until the valve is ready for installation.
- General pipe and valve cleanliness.
- Face to face / end to end dimensions.
- Conformance of piping connectors with relevant standards or norms.
- Parallelism of piping flanges or piping connectors
- Alignment of the bolt holes of the pipe and valve flanges.
- For availability of enough space for the valve and its accessories and for easy operation.
- The suitability and efficiency of valve and accessories support.

7. VALVE OPERATION

7.1. GENERAL

7.1.1. Valve is intended for use at the pressure indicated on the name plate attached to each Individual valve. Check the valve operating temperature and pressure rating before proceeding with installation. Operational life of the valve can be maximized if the valve is used within the rated range, in accordance with pressure, temperature, and corrosion data.

7.1.2. DelVal recommends to use undercut disc rated at 50psi (PN 3.5) for service operating and design pressure less than or equal to 50 psig (3.5 barg).

CAUTION



- Use the valve only for applications for which it is designed and recommended for to avoid unexpected failure of the valve.
- Suspended particles in the line fluid may damage the soft components in valve.

7.1.3. For arrangement of the internal construction, refer to Section 9 Exploded view of the valve.

7.1.4. For lever operated valves, the hand lever is either assembled with the valve or shipped loose depending upon the size of valve and lever.

7.1.5. For gear operated valves, the gear operator open/close adjustment has been done prior to shipment and must not be changed. Rotation of hand wheel in the clockwise direction closes the valve and counter clockwise rotation opens it. The details of gear operator are shown in Fig.10. The internal details/construction of gear operator may vary as per manufacturer's standard.

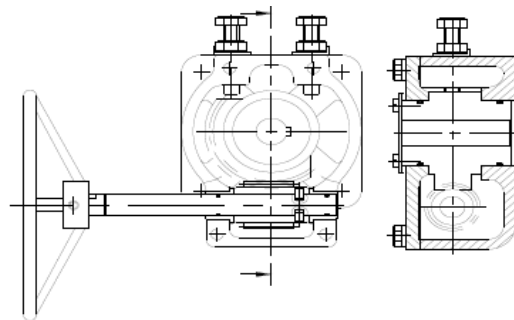


FIG.10. DETAILS OF GEAR OPERATOR

7.1.6. Butterfly valves always close in a clockwise direction. Valve should always be rotated through 90° to the fully opened or fully closed position.

7.1.7. Valve should be opened and closed slowly to avoid hammering effect on the valve and pipeline.

7.1.8. If the valve is not operating to fully open or fully closed position, and/or leaking, do not apply excessive force to operate the valve. This can damage the seats or stem.

- 7.1.9. The hand wheel provided on the gear box can generate the required output torque with a pull of 36Kg / 80lb / 360N on hand wheel, unless specified otherwise. No extra lever / crowbars shall be used with the hand wheel.

CAUTION



- Apply gradual force on the handwheel of the gear operator and do not apply sudden impacts.
- Do not apply extra leverage (using pipe/bar) when the end stops of the gear operator are reached.

- 7.2. **ACTUATION:** (general instructions given below, refer to separate operator IOM's for further details).

- 7.2.1. **Mechanism:** The stem of the valve is rotated by using a wrench/handle/lever for small sized valves and by a gear unit in case of larger valves. Electric/hydraulic/pneumatic actuators can also be used for actuation.

NOTES



- **Bare stem position indicator:** When valve is closed, the position of the notch provided on square stem top surface or keyway is perpendicular to pipeline, when valve is open, the position of the notch provided on square stem top surface or keyway is parallel to pipeline.

CAUTION



- Keep hands, tools and other foreign objects out of the valve bore / internals of valves. A remotely actuated valve might close without warning causing physical damage and personal injury. Disconnect valve from supply sources and make sure valve automation is in fail safe state before performing any maintenance work.
- In cases when valves are supplied as bare stem as per customer requirements, please ensure that the connecting devices for operator do not exert any axial or radial loads on the valve stem as it may lead to bending of the stem and excessive loading on the disc. Ensure the end cover of actuator position is interchanging to valve position when installing/mounting actuator to valve. Brackets, mounting hardware of product, are designed to support the weight of the automation assembly, do not apply additional weight as this may result in leakage and performance failure of the valve assembly, causing possible seat damage and increase of operation torque.

- 7.2.2. **Wrench/handle/lever operated** valves shall be opened or closed by turning the operator by a quarter turn (90°).

- Valve in open position – the operator is in parallel (in-line) with the valve or pipeline.
- Valve in closed position – the operator is perpendicular (crossed) with the valve or pipeline.

- 7.2.3. **Gear units** are provided on valves for easier operation. Usually, clockwise operation is for closing and anti-clockwise is for opening of the valve. The position of the valve can

be noted by the position indicator provided on top of the gear unit. The number of turns will depend on the gear unit used. Gear units are of the self-locking type (i.e., the line fluid will not make the valve rotate) and the gear units have factory set mechanical stopper screws for setting the exact opening and closing positions.

Refer to Section 10.4 for how to adjust the mechanical stoppers, if required.

- Worm gear operators are packed with grease. Normally the grease is suitable for -20°C (-4°F) to 80°C (176°F). For other applications, consult the nearest DelVal representative.
- Grease should be changed as follows: If operated frequently, after approx. 3 years. If operated rarely, after approx. 5 years.
- Recommended Greases- Servo gem EP2 (Extreme Pressure), Mobilux EP2, Oline EP2, Chevron EP2.

CAUTION



- Apply gradual force on the handwheel of the gear operator and do not apply sudden impacts.
- Do not apply extra leverage (using pipe/bar), when the end stops of the gear operator are reached to its extreme position.


7.2.4. **Electric actuator**, which gives a multi-turn output, is fitted on the gear unit. The actuator drives the gear unit which in turn rotates the stem. Electrically actuated valves are provided with declutching mechanism for manual operation of the valve. For electric actuators, DelVal recommends to strictly adhere to the instructions as per actuator manufacturer's manual.

7.2.5. **Pneumatic or hydraulic actuator** is fitted directly on the valve, without a separate gear unit, unless a separate manual override is requested as these actuators have built-in quarter turn mechanisms. For these actuators, DelVal recommends to strictly adhere to the instructions as per actuator manufacturer's manual.

7.2.5.1. Valves with Spring Return Actuators

7.2.5.1.a. **Fail Closed Assemblies:** If the valve is supplied with an actuator, the butterfly valve is shipped in the full closed position (as no air pressure is present to compress the springs and open the disc).

7.2.5.1.b. **Fail Open Assemblies:** If the valve is supplied with an actuator, the butterfly valve disc is shipped in the full open position (as no air pressure is present to compress the springs and close the valve disc.) The sealing surface, or disc edge, is therefore exposed. Damage to that surface will cause premature seat failure.



CAUTION

- Installing the valve with the disc in the full closed position may create a compression set on the seat causing higher than expected torques or premature seat failure.
It is recommended to:
 - Remove the actuator. Be sure to take note of the valve and actuator positions to ensure the re-installed actuator is in the exact same quadrant as originally configured.
 - Install the valve per the attached installation tag instructions.
 - Re-install the actuator ensuring it is in the proper quadrant.

8. TROUBLE SHOOTING

8.1. The table below lists some common problems that may be encountered with Series 58 centric butterfly valves, the probable causes, and recommended remedy to the problems. However, judgment and experience must be applied when working on the valves in actual field based on site conditions.

Sr. No.	Problem	Possible cause	Recommended
1	Valve leaks when closed	Seat is worn or damaged.	Contact to Factory**
		Chemical incompatibility with valve construction materials.	Consult factory for proper material selection.
		Disc edge worn or damaged.	Clean and/or repair disc edge or replace disc.
		Incomplete closing of the disc.	Adjust actuator/operator travel stop position.
2	Leakage between valve and actuator	Stem seal worn or damaged.	Contact to factory**
		Disc seal in seat is worn or damaged.	Contact to Factory**
3	Leakage from bottom cover	O-ring worn or damaged.	Replace O-ring
4	Valve hard to operate	Possible presence of foreign material in valve.	Strip and clean valve seat and re-test.
5	Automated valve does not actuate	Actuator cannot perform the maneuver.	Check actuator sizing and verify that actuator size correctly.
		Insufficient air supply to produce the required torque.	Check system air pilot pressure is above minimum actuator operating pressure.
		Mechanical stop not properly adjusted.	Adjust actuator stop necessary to little open position and re-test.
		Incorrect fixing between actuator output hole and valve stem.	Check for proper connecting kit between valve and actuator.

**** Seat bonded to the body and therefore it is not easily field replaceable, please contact DelVal for seat repair**

TABLE 1. TROUBLE SHOOTING CHECK LIST

9. EXPLODED VIEW

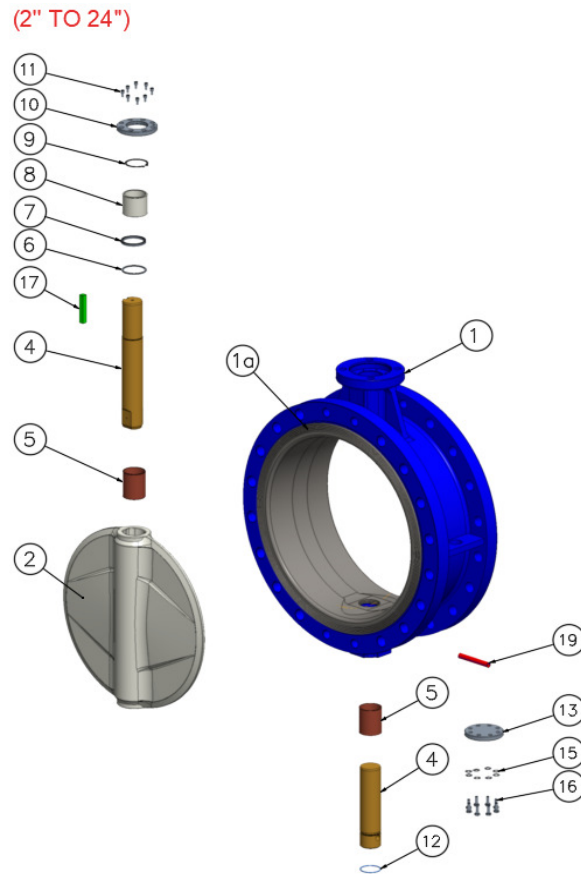


FIG.9 (a). EXPLODED VIEW FOR VALVE SIZE 2" TO 24"

Item	Description	Item	Description
1	Body	9	Retainer Ring
1a	Seat (Bonded)	10	Retainer Circlip
2	Disc	12	O-Ring Seal
4	Stem(Upper/Lower)	13	Bottom Plate (24")
5	Sleeve Bearing	15	Punch Washer (24")
6	Packing Support	16	Hex Hd.Screw (24")
7	Stem Seal	17	Key (14" TO 24")
8	Stem Bushing	19	Spring dowel pin

TABLE.2

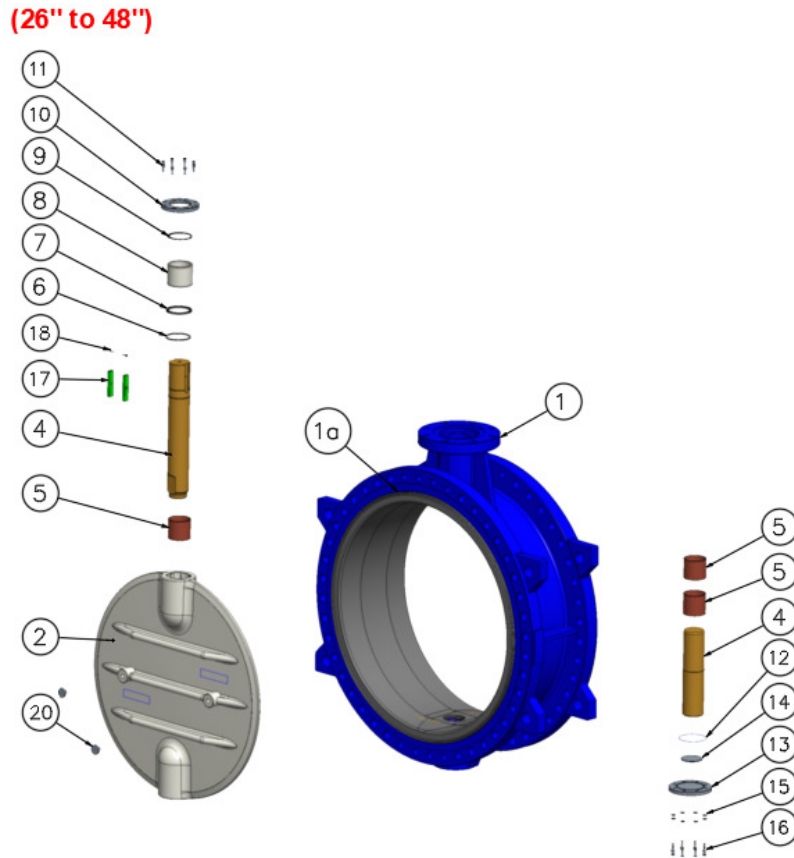


FIG.9 (b). EXPLODED VIEW FOR VALVE SIZE 26" & ABOVE

Item	Description	Item	Description
1	Body	11	Soc.Hd. Screw
1a	Seat (Bonded)	12	O-Ring Seal
2	Disc	13	Bottom Plate
4	Stem (Upper/Lower)	14	Thrust Bearing
5	Sleeve Bearing	15	Punch Washer
6	Packing Support	16	Hex.Hd.Bolt
7	Stem Seal	17	Key
8	Stem Bushing	18	Soc.Hd. Cap Screw
9	Retaining Ring	20	Plug
10	Retainer Circlip		

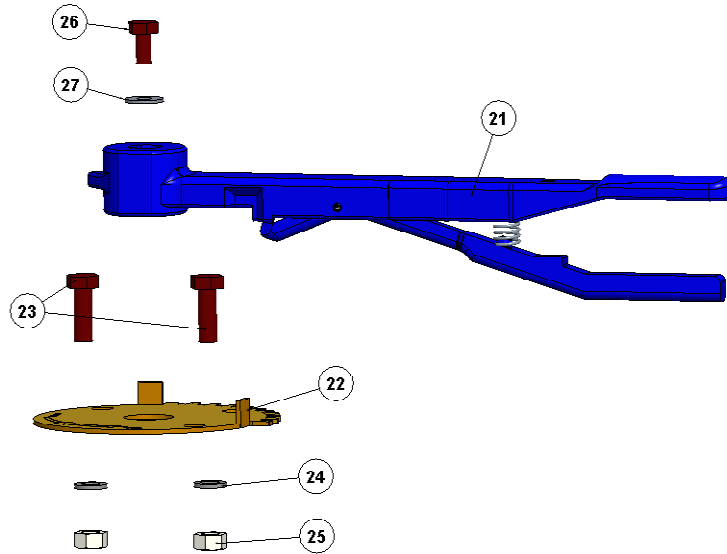


FIG.9(c). LEVER EXPLODED VIEW

Sr.No	Description	Sr.No	Description
21	Lever	25	Hex Nut
22	Notch plate	26	Hand lever locking screw
23	Hex Head Screw	27	Washer
24	Plain Washer		

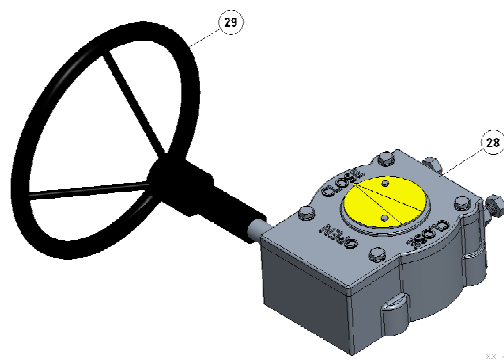


FIG.9(d) GEAR EXPLODED VIEW

Sr.No	Description
28	Gear Operator
29	Hand wheel

10. PERIODIC MAINTENANCE

CAUTION



- For your safety, it is important that these precautions be taken before removal of the valve from the line or before dismantling.
- De-pressurize the line before removing the bolting.
- Wear protective clothing and equipment appropriate for the line fluid.
- Ensure cavity pressure is relieved.
- Cycle the valve several times before dismantling to relieve pressure completely.
- Disconnect valve from supply sources and make sure valve actuation is in fail safe state before performing any maintenance work.

10.1. GENERAL

- 10.1.1. In order to avoid valve failure during operation, all valves in a process plant should be periodically inspected thoroughly to detect the wear of disc, seats, seals and even body. It is recommended that on such occasion's seats, seals and bushings should be replaced.
- 10.1.2. The type of process, fluids involved, working conditions and location of the valves in the process plants will determine the frequency of periodic inspection / maintenance to be made at the time of partial or total shutdown of the plant. Preventive maintenance is essential, as failure to do so may cause an emergency shutdown of the plant.
- 10.1.3. Use genuine DelVal spare parts only for maintenance and replacements. Refer to Section 11.
- 10.1.4. Section 10.5, 10.6 and 10.7 describes the procedure for disassembly, repair and assembly of the valve.
- 10.1.5. Once the valve is repaired, it should undergo a complete set of tests to make sure that the valve is adequate for required working conditions. Hydro/Pneumatic tests should be carried out as per the specifications relevant to the valve (Refer to GAD or specifications specific to order).

10.2. OPERABILITY AND TORQUE

- 10.2.1. Check for ease of operation of the valve.

10.3. STEM LEAKAGE

- 10.3.1. Any major leakage at the stem region can easily be detected by observing for unexpected pressure drops in the pipeline.
- 10.3.2. Minor leakage at the stem region may be detected by using soap bubbles, after removing the operator (actuator / gear / lever) unit.

10.4. GEAR STOPPER ADJUSTMENT PROCEDURE

- 10.4.1. Before changing the setting, ensure that the nut locking washer is intact, If not intact then only proceed for resetting.
- 10.4.2. Loosen the lock nut by unlocking the nut washer. Loosen left side bolt for one rotation. Rotate the handwheel in the clockwise direction to close the valve till it is stopped by the left side bolt.
- 10.4.3. The adjustment of valve should be within $\pm 5^\circ$ of mean position indicated by the indication plate.

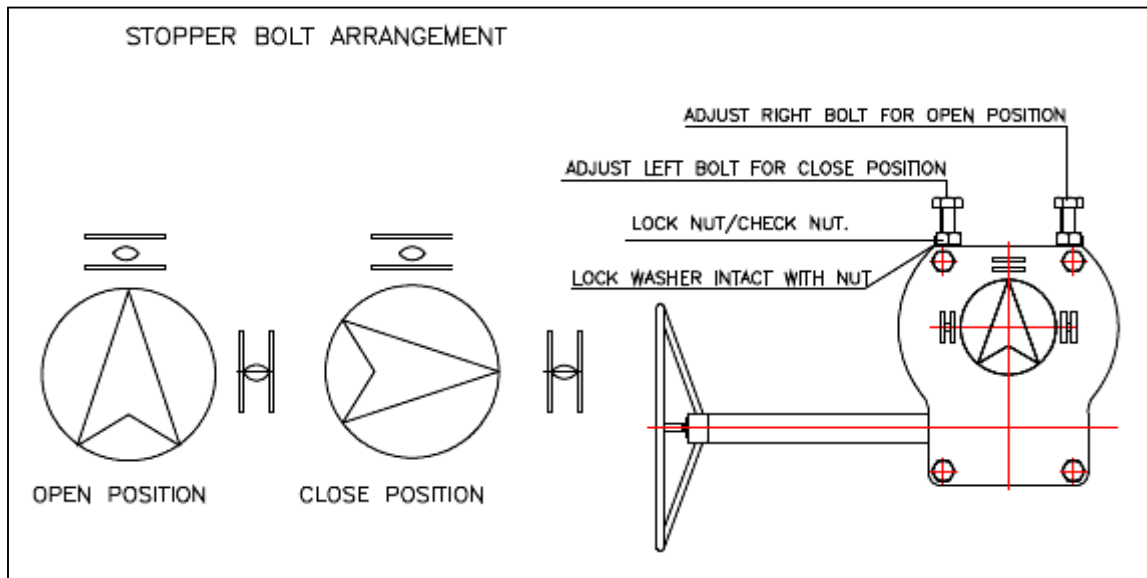



FIG.12. GEAR UNIT

- 10.4.4. Check valve leakage after above adjustment. If valve is found leaking again repeat the above procedure. if no leakage is detected then tighten the lock nut and lock washer.

10.5. DISASSEMBLY PROCEDURE

NOTES

-  For numbers of the components refer to exploded view diagram in Section 9.

CAUTION



- Before removal of the valve, ensure that the line is fully depressurized.
- Improper handling may cause disc/seat damage or deformation of stem or seat, which will affect sealing and operational torque of the valve.
- Ensure that the dismantled components are kept in a clean place so that there will be no damage to the components.

- 10.5.1. Depressurize the line and open the valve to drain the line by rotating the valve stem manually to keep the valve in the half-open position.
- 10.5.2. Always fully close valve before removing from line to avoid damage to disc.
- 10.5.3. Valve shall be slung and supported properly before loosening flange bolts. (See handling of valve Sec. 5.1) Loosen and remove all flange bolts and spread the flanges with adequate tools before removing the valve.
- 10.5.4. Place the valve on a platform or base and transport to repair shop.
- 10.5.5. Before disassembly, cycle (open and close) the valve several times to clear it of fluid; then flush with water.
- 10.5.6. Secure body (1) in a suitable clamping device, without damaging it.
- 10.5.7. Close the valve completely and remove operator unit. Do not remove a spring return actuator unless a stop-screw is carrying spring force.
- 10.5.8. Remove the handle sub-assembly (21-27), gear operator (28) with handwheel (29), or power actuator from actuator mounting flange as applicable.
- 10.5.9. Remove key (17) associated with soc hd. cap screws (18) as applicable.
- 10.5.10. Remove the retainer circlip (10), retainer ring (9), along with associated socket head cap screws (11) as applicable from the body.
- 10.5.11. Then Remove the upper stem (4), bushing (8), sleeve bearing (5), stem seal (7), packing support (6).
- 10.5.12. Remove bottom plate (13) along with punch washers (15) and hex head screw (16) as applicable.
- 10.5.13. Then remove the lower stem (4), thrust bearing (14), o'ring (12), sleeve bearing (5), as applicable
- 10.5.14. Remove the disc (2) from the seat (1a), protecting the disc edge at all times, remove sleeve bearing (5) as applicable

NOTES



- **The seat bonded to the body and therefore it is not easily field replaceable, please contact DelVal for seat repair**

10.6. REPAIR OF COMPONENTS

- 10.6.1. The metallic parts should be cleaned.
- 10.6.2. To clean the seat and seals use a dry clean cloth.

- 10.6.3. After cleaning components examine for damaged parts. Ensure that there are no scoring marks on the metallic sealing surfaces. Check the seals for scratches / wear.
- 10.6.4. Replace the damaged parts. The soft parts are recommended to be replaced with new ones whenever the valve is disassembled:

10.7. ASSEMBLY PROCEDURE

NOTES



- Carry out body test and seat leakage test corresponding to the valve pressure rating and testing standards after assembling the valve. Refer to order specific General Arrangement Drawing for the appropriate pressure rating and testing standards.

- 10.7.1. Place the body (1) on a clean work surface. Inspect and clean all parts to make sure they are free of dust, grit, or other material.
- 10.7.2. Push stem (4) / alignment bar through stem bore of the body (1)
- 10.7.3. Install a light coating of silicone free grease on the across flat of seat (1a). Insert the disc (2) into the seat (1a) by lining up the disc holes with the stem holes of the seat (1a). Special care must be taken not to damage the seat surface.

NOTES



- The broached double “D” flats / Square in the disc must be toward the upside of the valve body.
- Do not apply mineral based grease or oil during assembly of EPDM seat. Clean the grease inside the valve by cloth.

- 10.7.5 install sleeve bearing (5) & into the body (1)
- 10.7.5 Lightly lubricate the upper stem (4) & push into the body (1) with pressure and rotating the stem back and forth, push the stem until
- 10.7.6. Make certain that when pushing the upper stem (4) through the disc (2), the broached flats of stem (4) and disc (2) are aligned.
- 10.7.7. Install packing support (6), stem seal (7), stem bushing as applicable into the upper stem bore.
- 10.7.8 Lightly lubricate the lower stem (4) & push into the body (1) along with O-ring (12) as applicable with pressure and rotating the stem back and forth, push the stem (4) until the stem (4) touches the disc face.
- 10.7.9. Install sleeve bearing (5), thrust bearing (14), o'ring (12) as applicable into the bottom stem bore.

- 10.7.10. Replace the retainer circlip (10), retainer ring (9), along with associated socket head cap screws (11) back into position as applicable.
- 10.7.11. Replace the bottom plate (13) along with punch washers (15) and hex head screw (16), o-ring seal (12) as applicable.
- 10.7.12. Replace handle sub-assembly (21-27), gear operator (28) with handwheel (29) or power actuator on the valve ISO mounting flange.
- 10.7.13. Make 2-3 cycles of the valve from fully open position to the fully closed position to make sure that Valve operation is smooth.

CAUTION



- Improper handling may cause disc and seat damage or deformation of stem, which will affect sealing and operational torque of the valve.
- Faulty installation may lead to valve and/or pipeline damage.
- Ensure that the soft parts are changed once they are removed from the valve.
- Avoid contact with the valve closure element during cycling.

11. DISPOSAL ACTION

12.1. DISPOSAL INSTRUCTIONS:

- 12.1.1. Metallic components of product are to be cleaned and recycled.
- 12.1.2. Foam, Rubber, Elastomer, Polymers and Plastics components along with packing material are to be scrapped according to regional regulations in which they are to be disposed.
- 12.1.3. Wooden boxes may be reused based on the condition of the boxes.

12. ATEX AND CE INSTRUCTIONS

13.1. ATEX instructions for use in potentially explosive environment:

- 13.1.1. Prevent any kind of ignition during installation, adjustment, putting into service & use.
- 13.1.2. Assembly, disassembly & maintenance must be done outside potentially explosive areas.
- 13.1.3. Installation, adjustment, putting into service, use, assembly, disassembly, and maintenance of is strictly reserved to qualified persons.
- 13.1.4. Valve should be insulated if the maximum operating temperature of process fluid flowing is greater than 150°C.
- 13.1.5. Dust deposited on the exterior parts of the valve must be removed regularly. Dust deposition layer should not be more than 5mm.

Note: Special condition for temperature class X: - Maximum surface temperature of the valve depends upon the temperature of fluid flowing through the valve.

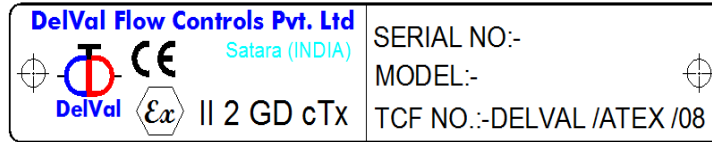


FIG.13. ATEX NAME PLATE

13.2. CE marking instructions

- 13.2.1. Each valve has a stainless steel name plate fixed to the body. The nameplate is marked with details such as the materials of construction, maximum operating temperature and pressure as shown below in Fig.14.

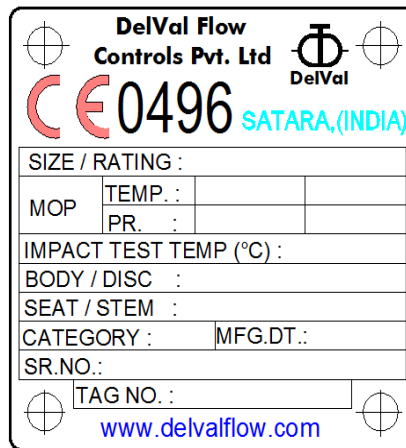


FIG.14. CE NAME PLATE

APPENDIX A

TECHNICAL INFORMATION

A1. REFERENCES

Design / Pressure-Temperature Ratings:

API 609	Butterfly Valves: Double-flanged, Lug and Wafer-type, and Butt-welding Ends
BS EN 593	Industrial valves - Metallic butterfly valves for general purposes
ASME B 16.34	Valves: flanged, threaded and welding ends

Face to face dimensions:

API 609	Butterfly Valves: Double-flanged, Lug and Wafer-type, and Butt-welding Ends
BS EN 558	Industrial valves face to face and centre to face dimensions of metal valves for use in flanged pipe system for PN and Class designated valves.
ASME B16.10	Face-to-face and end-to-end dimensions of valves

End connections:

ASME B16.5	Pipe flanges and flanged fittings (NPS ½ through NPS 24)
ASME B16.47	Large Diameter Steel Flanges (NPS 26 through NPS 60)

A2. TIGHTENING SEQUENCE AND TORQUE

Place the valve between the flanges, centre it and then span the valve body with all flange bolts, but do not tighten the bolts. Carefully open the disc to the full open position, making sure the disc does not hit the adjacent pipe I.D. Now systematically remove jack bolts or other flange spreaders, and hand-tighten the flange bolts as shown in Fig.15. Very slowly close the valve disc to ensure disc edge clearance from adjacent pipe flange I.D. Now open the disc to full open and tighten all flanges bolts as per specification as shown. Finally, repeat a full close to full open rotation of the disc to ensure proper clearance. Tighten body bolts evenly and diagonally opposite to each other or in a crisscross pattern. Use the torque figures as shown in Table 3.

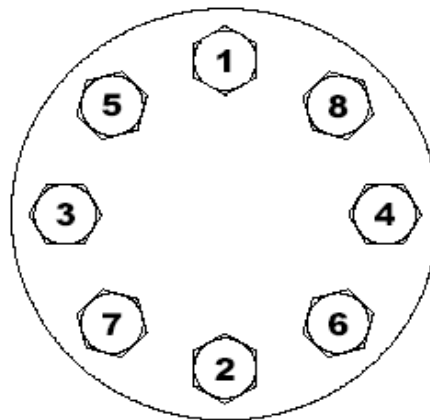


FIG.15. TIGHTENING SEQUENCE

Following are the recommended tightening torques for valve mounting flange hardware.
(Flange Drilling As per ASME B16.5 CI150 / ASME B16.47 SEARIES A/B)

Sr No.	Series	Valve Size	Fastener Size (UNC/UN)	Recommended Tightening Torque	
				(N-m)	Lb-Inch
1	58	DN 50 / 2"	5 / 8" – 11 UNC	55 – 70	487 – 620
2		DN 65 / 2 ½"	5 / 8" – 11 UNC	55 – 70	487 – 620
3		DN 80 / 3"	5 / 8" – 11 UNC	55 – 70	487 – 620
4		DN 100 / 4"	5 / 8" – 11 UNC	55 – 70	487 – 620
5		DN 125 / 5"	3 / 4" – 10 UNC	80 – 100	708 – 885
6		DN 150 / 6"	3 / 4" – 10 UNC	80 – 100	708 – 885
7		DN 200 / 8"	3 / 4" – 10 UNC	80 – 100	708 – 885
8		DN 250 / 10"	7 / 8" – 9 UNC	100 – 120	885 – 1062
9		DN 300 / 12"	7 / 8" – 9 UNC	100 – 120	885 – 1062
10		DN 350 / 14"	1" – 8 UNC	150 – 180	1328 – 1593
11		DN 400 / 16"	1" – 8 UNC	150 – 180	1328 – 1593
12		DN 450 / 18"	1 - 1 / 8" – 8 UN	270 – 300	2390 – 2655
13		DN 500 / 20"	1 - 1 / 8" – 8 UN	270 – 300	2390 – 2655
14		DN 600 / 24"	1 - 1 / 4" – 8 UN	340 – 370	3009 – 3275
15		DN 650 / 26"	1 - 1 / 4" – 8 UN	340 – 370	3009 – 3275
16		DN 700 / 28"	1 - 1 / 4" – 8 UN	340 – 370	3009 – 3275
17		DN 750 / 30"	1 - 1 / 4" – 8 UN	340 – 370	3009 – 3275
18		DN 800 / 32"	1 - 1 / 2" – 8 UN	580 – 610	5133 – 5399
19		DN 900 / 36"	1 - 1 / 2" – 8 UN	580 – 610	5133 – 5399
20		DN 1000 / 40"	1 - 1 / 2" – 8 UN	580 – 610	5133 – 5399
21		DN 1050 / 42"	1 - 1 / 2" – 8 UN	580 – 610	5133 – 5399
22		DN 1100 / 44"	1 - 1 / 2" – 8 UN	580 – 610	5133 – 5399
23		DN 1200 / 48"	1 - 1 / 2" – 8 UN	580 – 610	5133 – 5399

TABLE 3. TIGHTENING TORQUE VALUES

NOTES



- Assumes fastener selected to a grade sufficiently strong for the corresponding torque rating. Torque value is a general recommendation. Specific applications may require additional torque on flange fastener.

A3. TECHNICAL DATA

Valve Series	Size Range	Body Construction	Pressure Rating	Seat Type	Application
58	2"- 24" / DN 50-DN 600	Double flanged	285 PSI / 20 BAR(PN 20)	Bonded	General purpose valve for process industries
58	2"- 24" / DN 50-DN 600	Double flanged	230 PSI / 16 BAR(PN 16)	Bonded	
58	2"- 24" / DN 50-DN 600	Double flanged	175 PSI / 12 BAR(PN 12)	Bonded	
58	2"- 24" / DN 50-DN 600	Double flanged	87 PSI / 6 BAR(PN 6)	Bonded	
58	2"- 24" / DN 50-DN 600	Double flanged	50 PSI / 3.5 BAR(PN 3.5)	Bonded	
58	26"-48" / DN 650-DN 1200	Double flanged	230 PSI / 16 BAR(PN 16)	Bonded	
58	26"-48" / DN 650-DN 1200	Double flanged	175 PSI / 12 BAR(PN 12)	Bonded	
58	26"-48" / DN 650-DN 1200	Double flanged	87 PSI / 6 BAR(PN 6)	Bonded	
58	26"-48" / DN 650-DN 1200	Double flanged	50 PSI / 3.5 BAR(PN 3.5)	Bonded	
58	26"-48" / DN 650-DN 1200	Double flanged	50 PSI / 3.5 BAR(PN 3.5)	Bonded	

TABLE 4. SIZE AND PRESSURE RATING & GENERAL APPLICATIONS

Seat Material	Properties	Recommended for
EPDM	<ul style="list-style-type: none"> • Excellent abrasion resistance. • Good tear resistance. • Good ozone, weather resistance. • Poor resistance to mineral oil products. • Swells in hydrocarbons. 	Alcohols, Acidic Salts, Alkaline Salts, Alkaline Solutions, Beverages, Bleach, Hot Air and Steam, Inorganic Acids (Dilute), Neutral Salts, Water (Cooling, Brackish, Salt).
NBR	<ul style="list-style-type: none"> • Good mechanical properties. • Good low temp. properties. • Higher abrasion resistance. • Good resistance to oil applications. • Fair ozone, weather resistance. • Fair tear resistance. • Fair resistance to gas permeability. • Excellent resistance to compression set. 	Alcohols, Alkaline Salts, Automobile Gasoline (except unleaded), Butane, Dry Bulk Materials, Food Media, Fuel Oils, Petroleum, Oils and Grease, Propane.
Viton / FKM	<ul style="list-style-type: none"> • For high temp. and chemical resistance. • Good oil resistance. • Ozone, weather resistance good. 	Excellent resistance, after Hydrocarbons to a wide range of Alcohols, Acids and Hydrocarbons etc.
Silicone	<ul style="list-style-type: none"> • For high and low temperature applications. • Good weather resistance. • Good physiological properties. • Not resistance to oils. • Poor abrasion and tearing resistance. • Good compression set. 	Hot air and low pressure applications max. up to 6 bar.

Note: - Above chemical recommendation is for general information only, contact factory for proper material selection.

TABLE 5. SEAT MATERIAL PROPERTIES AND GENERAL CHEMICAL RESISTANCE

Seat material	Temperature Range	
	Min.	Max.
EPDM	-20° F (-29° C)	302° F (150° C)
BUNA - N (NBR)	0° F (-18° C)	212° F (100° C)
VITON (FKM)	0° F (-18° C)	392° F (200° C)
SILICONE	-58° F (-50° C)	392° F (200° C)

TABLE 6. TEMPERATURE RANGE FOR SEAT MATERIALS

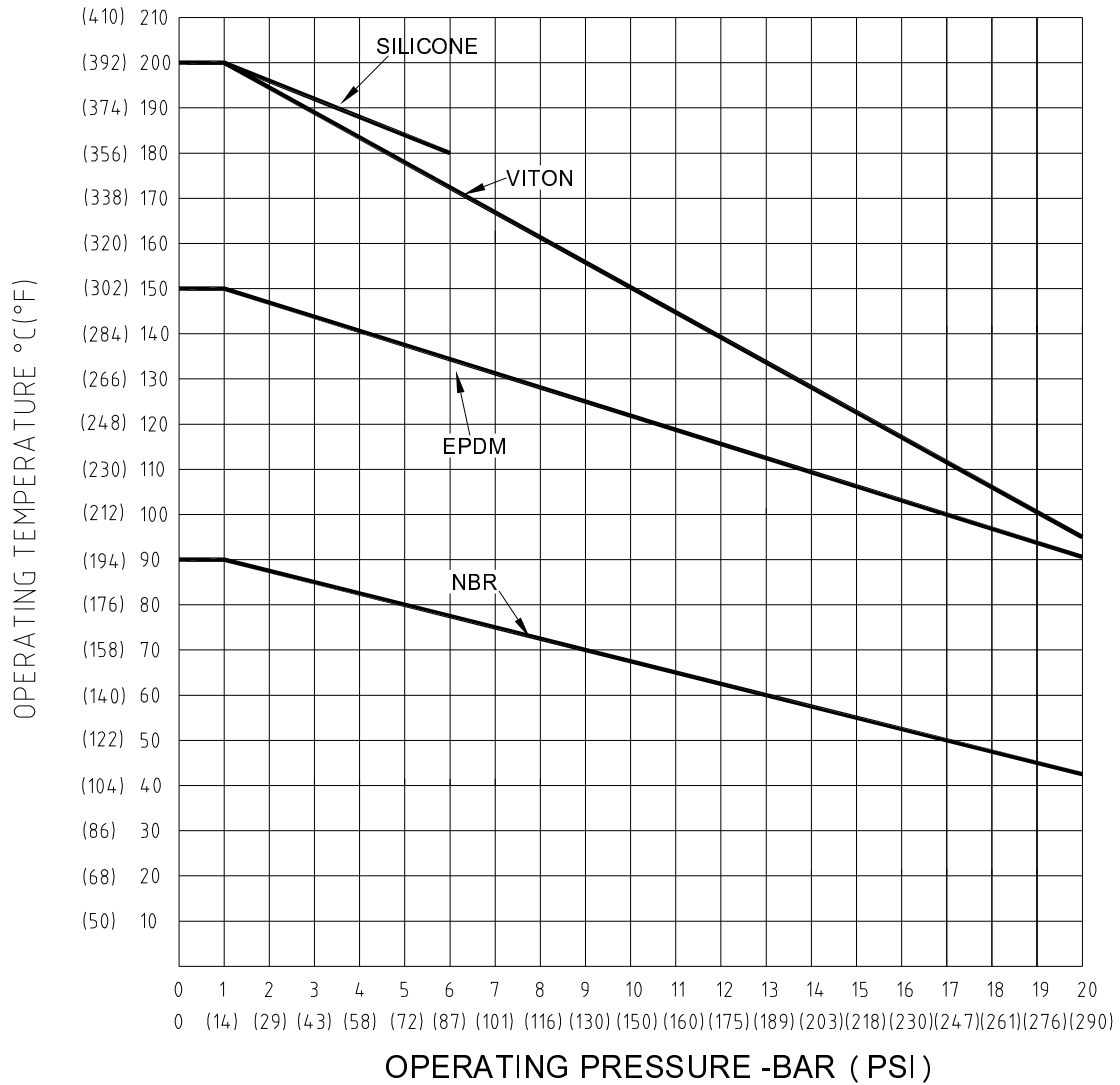


FIG. 16. PRESSURE - TEMPERATURE CHART FOR SEAT MATERIAL

FLOW HANDLING LIMITATION

- Rubber lined Butterfly valves are not recommended flow velocities exceeding 5 m/sec in case of fluids and 80 m/sec in case of gases. Please ensure that fluid velocities are well under the above limits.
- Butterfly valves employed for throttling duties shall be limited to a max pressure drop of 20% of the inlet pressure at max open position.
- Recommended control angles are between 20°-70°, preferred max opening for control valve sizing is 60°-65° open.

CAUTION



- DelVal does not assume responsibilities for any liabilities/damages arriving out of erroneous application of its valves or imprudent operations carried out by inexperienced operators that do not comply with this Manual or instructions provided by DelVal. The valves shall be appropriately used for the purpose they are built for and their intended applications. Use of standard valves for special applications is not recommended unless it has been communicated and agreed to by DelVal. Valves shall be operated and maintained strictly in accordance with the procedures. Operation or maintenance outside these procedures constitutes abuse of the product and voids all warranty and claims.

ADDRESS OF AN AUTHORIZED REPRESENTATIVE

<p>Manufacturing & Sales International DelVal Flow Controls Pvt. Ltd.</p> <p>Gat No. 25, Kavathe Post-Javale, Tal. Khandala Dist. Satara, Pin-412801 India E-mail: salesindia@delvalflow.com</p>	<p>Manufacturing & Sales Americas DelVal Flow Controls USA</p> <p>6068 Highway 73 Geismar, LA 70734 USA Phone: +1 833-DELVAL1 E-mail: sales@delvalflow.com</p>	<p>DelVal Arizona DelVal Flow Controls USA</p> <p>1120 W Alameda Dr., Suite 3 Tempe, Arizona 85282 USA Phone: +1 623-215-7146 E-mail: sales@delvalflow.com</p>	<p>International Projects DelVal Flow Controls USA</p> <p>77 Sugar Creek Centre Blvd., Suite 600 Sugar Land, Texas 77478 USA Phone: +1 833-DELVAL1 E-mail: projects@delvalflow.com</p>
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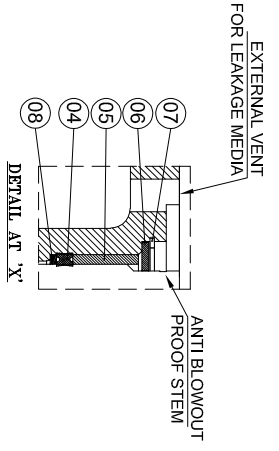
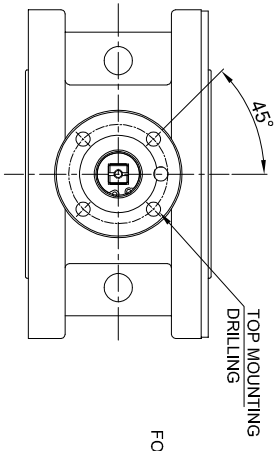
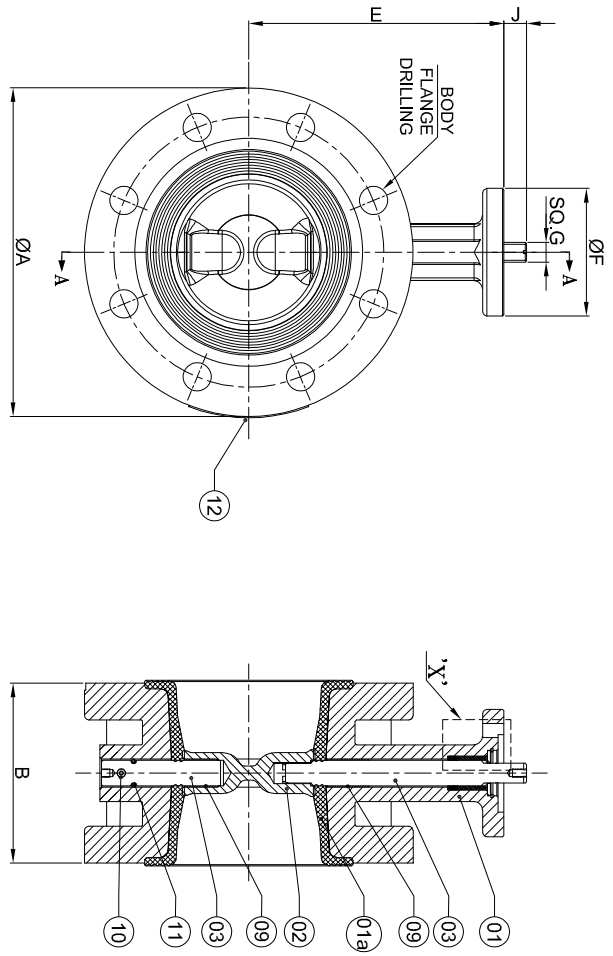
Note: If you have any technical questions that have not been taken into account in this manual, then please contact the authorized representative of DelVal Flow Controls for clarifications.

Document No: DFC/IOM-009	Rev No: 01	Date: 06-07-2022	Issue date: 26-06-2020
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1	2	3	4	5	6	7	8	9	10
CUSTOMER :-	ENQ. NO. :-	DATE :-	DRAWING FOR :- REFERENCE	ITEM No.	PART NAME	MATERIAL SPECIFICATION			
INSPECTION BY :-	LOI/P. O. NO. :-	DATE :-							

VALVE SIZE	ØA	B	E	J	SO.G	ØF	TOP MOUNTING DRILLING (ISO 5211)	WT. KG. (APPROX)
DN 50/2"	150	108	140	16	14	90	F07	11
DN 65/2.5"	178	112	152	16	14	90	F07	13.5
DN 80/3"	190	114	160	16	14	90	F07	15
DN 100/4"	220	127	180	16	14	90	F07	22
DN 125/5"	254	140	192	19	17	90	F07	27
DN 150/6"	280	140	205	19	17	90	F07	30

ITEM No.	PART NAME	MATERIAL SPECIFICATION
01	BODY	C.I. ASTM A126 CLASS B / D.I. ASTM A395 GR. 60-40-18 / ASTM A216 GR. WCB / ASTM A351 GR. CF8M / CF3M
01a	BODY LINING	EPDM / NBR (BUVA-N) / VITON / SILICONE
02	DISC	D.I. ASTM A536 GR. 65-45-12 + NYLON COATED / AROXY COATED ASTM A216 GR. WCB + NYLON COATED / AROXY COATED ASTM A351 GR. CF8M / CF3M / ASTM A995 GR. 4A/5A/6A / ASTM B148 GR. C955800
03	UPPER / LOWER STEM	ASTM A479 GR. SS410-L2 / ASTM A182 GR. F51 / F55 ASTM A564 TYPE 630 (17-4PH) / ASTM A479 GR. SS316
04	'U' CUP SEAL	NBR (BUVA-N)
05	STEM BEARING	RPTEE
06	STEM RETAINER	ASTM A240 GR. SS304
07	RETAINER CIRCLIP	ASTM A684 GR. 1070 / ASTM 240 GR. SS302
08	PACKING SUPPORT	RPTEE
09	SLEEVE BEARING	BEAR-G (GLIDURE 'G' - IGSU MAKE)
10	SPRING DOWEL PIN	ASTM A684 GR. 1074 / ASTM 240 GR. SS302
11	O RING	NBR (BUVA-N)
12	NAME PLATE	ASTM A240 GR. SS304



- NOTES:-
- 1) ALL DIMENSIONS ARE IN mm.
 - 2) DESIGN STANDARD : API 609 (CATEGORY-A)
 - 3) TESTING STANDARD : API 598
 - 4) ACCEPTANCE CRITERIA : NO VISUALLY DETECTABLE LEAKAGE
 - 5) FACE TO FACE STANDARD : API 609 - CATEGORY 'B' (SHORT PATTERN)
 - 6) BODY STYLE : FLANGE END (FLAT FACE / RAISED FACE)
 - 7) FLOW DIRECTION : BI-DIRECTIONAL
 - 8) PRESSURE RATING : PN 10 (150 psi) / PN 16 (230 psi) / PN 20 (285 psi)
 - 9) COLOR : DELVAL BLUE (RAL 5010) (FOR C.I.D.I & CS VALVE ONLY)
 - 10) FLANGE DRILLING : ASME B 16.5 CLASS 150
 - 11) TOP FLANGE DRILLING : ISO 5211
 - 12) TOLERANCE FOR FACE TO FACE & FLANGE DRILLING DIMENSIONS AS PER APPLICABLE STANDARD.
 - 13) WEIGHT VARIATION :- UPTO 300 Kg (+/-10%), FROM 301 TO 500 Kg (+/-12%), 501 Kg AND ABOVE (+/-15%)

PRESSURE RATING	HYDROSTATIC SHELL TEST	HYDROSTATIC SEAT TEST	PNEUMATIC SEAT TEST
PN 10 (150 psi)	15 bar (g)	11 bar (g)	5-7 bar (g)
PN 16 (230 psi)	24	17.6	5-7
PN 20 (285 psi)	30	22	5-7

REV. NO.	ECN. NO.	NO.	REV. ZONE	DESCRIPTION	DRAWN BY	REVIEWED & CHECKED BY	DATE
				NEW RELEASE			

UNSPECIFIED TOLERANCE FOR OVERALL DIMENSIONS	DEVIATION
FRONT UP TO AND OVERALL DIMENSIONS	± 3
	± 5
501-ABOVE	± 15

		Delval Flow Controls Private Limited	
GAT. NO. 25/1A, KAVATHE, TAL-KHANDALA, SATARA-412801, INDIA		TITLE :- GENERAL ASSY (FLANGED) B/FV 2" TO 6" BARE STEM (SERIES 58)	
DATE	30.03.2023	DRG. NO. :	PDBFV131590
DRAWN BY	K.A.S	REV.	0
CHECKED BY	V.R.M	SHEET 1 OF 1	
APPROVED BY	K.D.S	SCALE:- NTS	



MANAGEMENT SYSTEM CERTIFICATE

Certificate no.:
135070-2013-AQ-IND-RvA

Initial certification date:
29 July 2010

Valid:
29 July 2022 – 28 July 2025

This is to certify that the management system of

Delval Flow Controls Private Limited

Gat No. 25, 37 & 43/1A, Village: Kavathe, Taluk: Khandala, District: Satara - 412 801,
Maharashtra, India

and the sites as mentioned in the appendix accompanying this certificate

has been found to conform to the Quality Management System standard:
ISO 9001:2015

This certificate is valid for the following scope:

Design, manufacture and after sales service of butterfly valves, ball valves, actuators, limit switch box and valve automation systems

Place and date:
Chennai, 16 June 2022

For the issuing office:
DNV - Business Assurance
ROMA, No. 10, GST Road, Alandur, Chennai -
600 016, India



Sivadasan Madiyath
Management Representative

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.

ACCREDITED UNIT: DNV Business Assurance B.V., Zwolseweg 1, 2994 LB, Barendrecht, Netherlands - TEL: +31(0)102922689. www.dnv.com/assurance



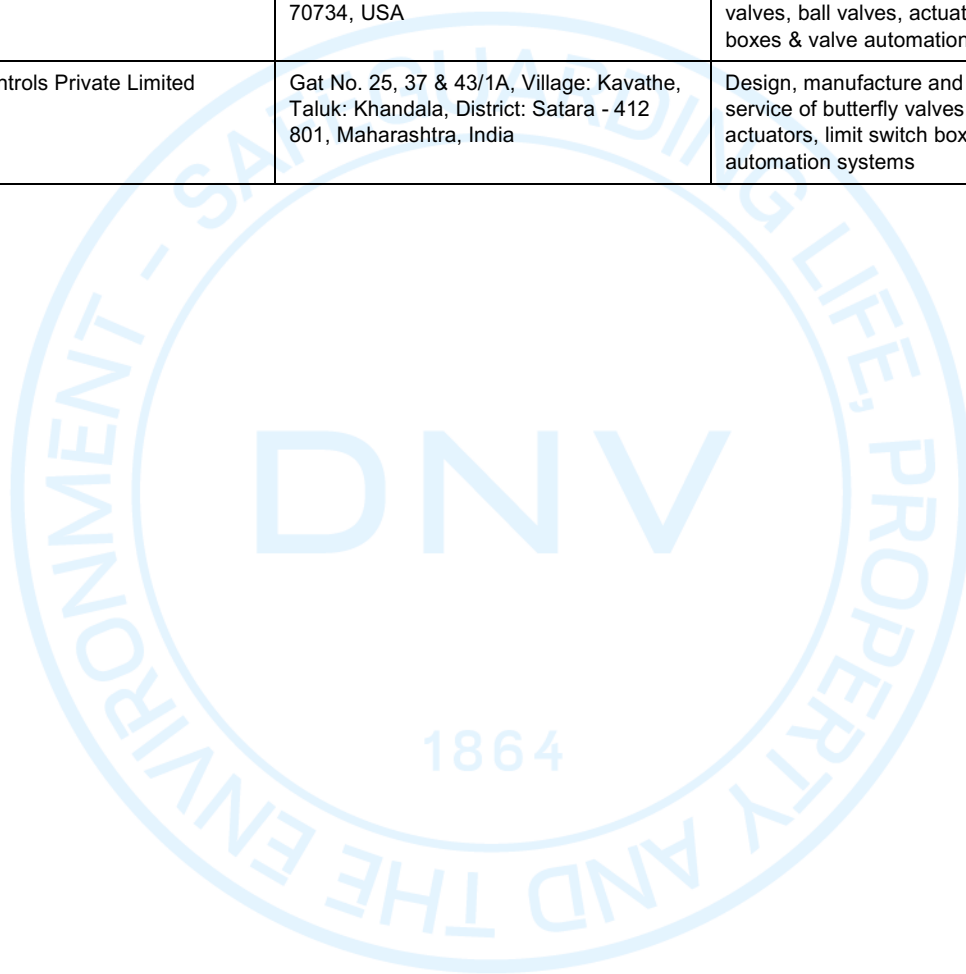
Certificate no.: 135070-2013-AQ-IND-RvA
Place and date: Chennai, 16 June 2022

Appendix to Certificate

Delval Flow Controls Private Limited

Locations included in the certification are as follows:

Site Name	Site Address	Site Scope
DelVal Flow Controls USA, LLC	6068 Highway 73, Geismar, Louisiana, 70734, USA	Assembly, sale & supply of butterfly valves, ball valves, actuators, limit switch boxes & valve automation systems
Delval Flow Controls Private Limited	Gat No. 25, 37 & 43/1A, Village: Kavathe, Taluk: Khandala, District: Satara - 412 801, Maharashtra, India	Design, manufacture and after sales service of butterfly valves, ball valves, actuators, limit switch box and valve automation systems





MANAGEMENT SYSTEM CERTIFICATE

Certificate no.:
79620-2010-AE-IND-RvA

Initial certification date:
29 July 2010

Valid:
29 July 2022 – 28 July 2025

This is to certify that the management system of

Delval Flow Controls Private Limited

Gat No. 25, 37 & 43/1A, Village: Kavathe, Taluk: Khandala, District: Satara - 412 801,
Maharashtra, India

has been found to conform to the Environmental Management System standard:
ISO 14001:2015

This certificate is valid for the following scope:

Design, manufacture and after sales service of butterfly valves, ball valves, actuators, limit switch box and valve automation systems

Place and date:
Chennai, 16 June 2022

For the issuing office:
DNV - Business Assurance
ROMA, No. 10, GST Road, Alandur, Chennai -
600 016, India



Sivadasan Madiyath
Management Representative



MANAGEMENT SYSTEM CERTIFICATE

Certificate no.:
10000365126-MS-C-RvA-IND

Initial certification date:
29 July 2010
(based on OHSAS 18001)

Valid:
29 July 2022 – 28 July 2025

This is to certify that the management system of

Delval Flow Controls Private Limited

Gat No. 25, 37 & 43/1A, Village: Kavathe, Taluk: Khandala, District: Satara - 412 801,
Maharashtra, India

has been found to conform to the Occupational Health and Safety Management System standard:
ISO 45001:2018

This certificate is valid for the following scope:

Design, manufacture and after sales service of butterfly valves, ball valves, actuators, limit switch box and valve automation systems

Place and date:
Barendrecht, 16 June 2022

For the issuing office:
**DNV - Business Assurance
Zwolsseweg 1, 2994 LB Barendrecht,
Netherlands**



Erie Koek
Management Representative

SERIES 58

Resilient Seated Butterfly Valves

Double Flanged

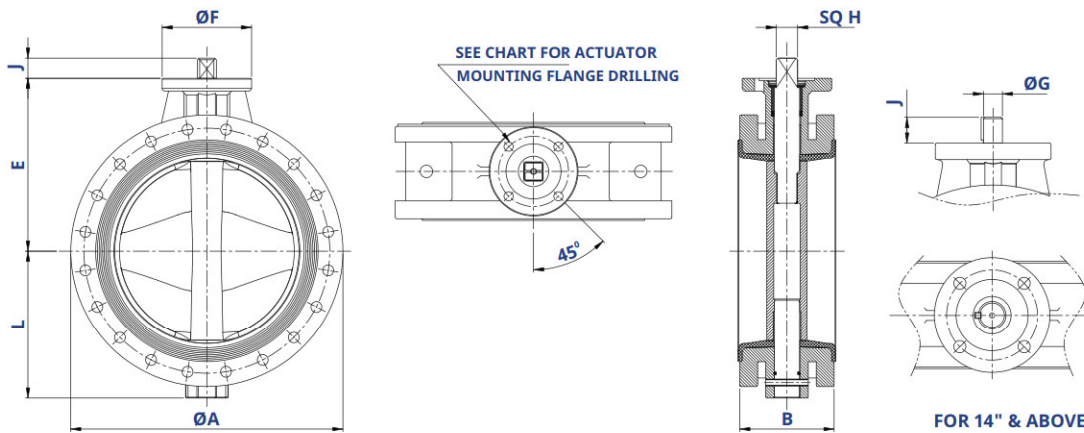


delvalflow.com

1-833-DELVAL1



DIMENSIONS AND WEIGHTS (DOUBLE FLANGED)



Dimensions (mm)

Valve Size		#ØA	*B	E	L	ØF	Top Flange Drilling			Sq. H	ØG	J	Key Size	App. Weight (kg)
Inch	DN						PCD	No. of Holes	Hole Dia.					
2	50	150	108	140	78	90	70	4	10	14	----	16	----	8.5
2.5	65	180	112	152	80	90	70	4	10	14	----	16	----	10.0
3	80	190	114	160	85	90	70	4	10	14	----	16	----	11.0
4	100	230	127	180	105	90	70	4	10	14	----	16	----	21.0
5	125	255	140	192	129	90	70	4	10	17	----	19	----	23.5
6	150	280	140	205	140	90	70	4	10	17	----	19	----	26.0
8	200	345	152	241	175	150	102/125	4	12/14	19	----	21	----	41.0
10	250	405	165	273	216	150	102/125	4	12/14	22	----	24	----	61.0
12	300	485	178	311	240	150	125	4	14	27	----	29	----	93.0
14	350	535	190	346	280	210	165	4	22	----	40.0	51	12.00 x 8.00	140.0
16	400	595	216	375	310	210	165	4	22	----	40.0	51	12.00 x 8.00	175.0
18	450	635	222	406	347	210	165	4	22	----	50.0	64	12.00 x 10.00	205.0
20	500	700	229	438	390	210	165	4	22	----	50.0	64	12.00 x 10.00	280.0
24	600	815	267	495	461	210	165	4	22	----	63.5	102	15.88 x 15.88	390.0
26	650	870	292	555	465	300	254	8	18	----	63.5	102	15.88 x 15.88	510.0
28	700	925	292	580	495	300	254	8	18	----	76.2	102	19.05 x 19.05	585.0
30	750	985	318	595	530	350	298	8	22	----	76.2	102	19.05 x 19.05	690.0
32	800	1060	318	670	568	350	298	8	22	----	76.2	102	19.05 x 19.05	810.0
36	900	1170	330	705	645	350	298	8	22	----	88.9	134	22.23 x 15.88	1030.0
40	1000	1290	410	782	726	415	356	8	33	----	101.6	134	25.40 x 19.05	1345.0
42	1050	1345	410	815	726	415	356	8	33	----	101.6	134	25.40 x 19.05	1630.0
44	1100	1405	470	845	738	415	356	8	33	----	101.6	134	25.40 x 19.05	1760.0
48	1200	1510	470	915	830	415	356	8	33	----	110.0	150	28.00 x 16.00	2050.0

Dimensions (Inch)

Valve Size		#ØA	*B	E	L	ØF	Top Flange Drilling			Sq. H	ØG	J	Key Size	App. Weight (lbs)
Inch	DN						PCD	No. of Holes	Hole Dia.					
2	50	6.00	4.25	5.51	3.07	3.54	2.76	4	0.39	0.55	----	0.63	----	19
2.5	65	7.00	4.41	5.98	3.15	3.54	2.76	4	0.39	0.55	----	0.63	----	22
3	80	7.50	4.49	6.30	3.35	3.54	2.76	4	0.39	0.55	----	0.63	----	24
4	100	9.00	5.00	7.09	4.13	3.54	2.76	4	0.39	0.55	----	0.63	----	46
5	125	10.00	5.51	7.56	5.08	3.54	2.76	4	0.39	0.66	----	0.75	----	52
6	150	11.00	5.51	8.07	5.51	3.54	2.76	4	0.39	0.66	----	0.75	----	57
8	200	13.50	5.98	9.49	6.89	5.90	4.01/4.92	4	0.47/0.55	0.74	----	0.83	----	90
10	250	16.00	6.50	10.75	8.50	5.90	4.01/4.92	4	0.47/0.55	0.86	----	0.94	----	132
12	300	19.00	7.01	12.24	9.44	5.90	4.92	4	0.55	1.06	----	1.13	----	205
14	350	21.00	7.48	13.62	11.02	8.26	6.50	4	0.86	----	1.57	2.00	0.39 x 0.31	309
16	400	23.50	8.51	14.76	12.20	8.26	6.50	4	0.86	----	1.57	2.00	0.39 x 0.31	386
18	450	25.00	8.74	15.98	13.66	8.26	6.50	4	0.86	----	1.97	2.50	0.47 x 0.39	452
20	500	27.50	9.02	17.23	15.35	8.26	6.50	4	0.86	----	1.97	2.50	0.47 x 0.39	617
24	600	32.00	10.51	19.48	18.15	8.26	6.50	4	0.86	----	2.50	4.00	0.62 x 0.62	838
26	650	34.25	11.50	21.85	18.31	11.81	10.00	8	0.71	----	2.50	4.00	0.62 x 0.62	1125
28	700	36.50	11.50	22.83	19.49	11.81	10.00	8	0.71	----	3.00	4.00	0.75 x 0.75	1290
30	750	38.75	12.52	23.43	20.87	13.78	11.73	8	0.86	----	3.00	4.00	0.75 x 0.75	1521
32	800	41.75	12.52	26.38	22.36	13.78	11.73	8	0.86	----	3.00	4.00	0.75 x 0.75	1786
36	900	46.00	12.99	27.76	25.39	13.78	11.73	8	0.86	----	3.50	5.25	0.88 x 0.62	2271
40	1000	50.75	16.14	30.79	28.58	16.33	14.02	8	1.30	----	4.00	5.25	1.00 x 0.75	2966
42	1050	53.00	16.14	32.09	28.58	16.33	14.02	8	1.30	----	4.00	5.25	1.00 x 0.75	3594
44	1100	55.25	18.50	33.27	29.06	16.33	14.02	8	1.30	----	4.00	5.25	1.00 x 0.75	3881
48	1200	59.50	18.50	36.02	32.68	16.33	14.02	8	1.30	----	4.33	5.51	1.10 x 0.63	4520

*Face to face dimension 'B' conforming to API 609 table 3C Short Pattern/BS EN 558 Series 13/ ISO 5752 Series 13.

Sizes 40" and above will have 2 keys 180 deg apart.

#Represents ASME B16.5 CL150/ASME B16.47 CL150 series A dimension.

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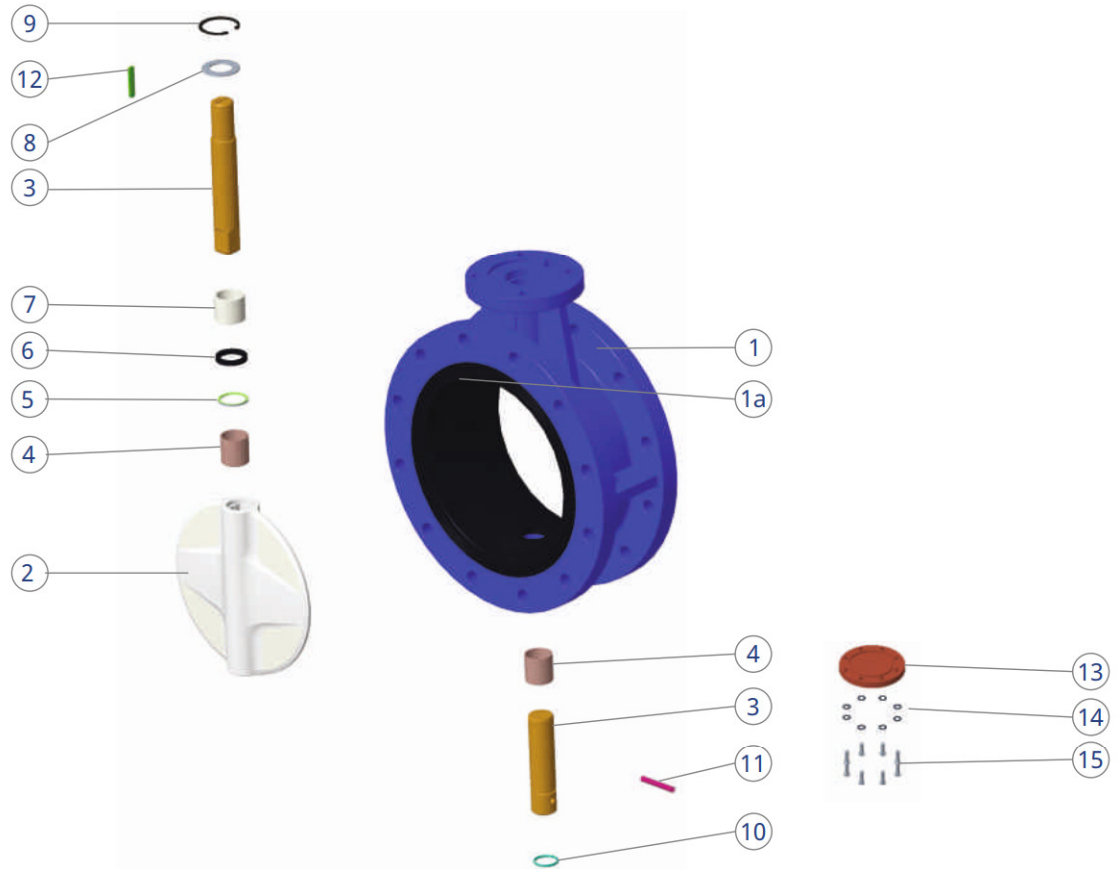
TORQUE DATA (Nm/Lbf-Inch)

Inch	DN	Differential Pressure (ΔP)											
		Undercut Disc		Standard Disc						Oversized Disc			
		PN 3.5/50 Psi		PN 6/87 Psi		PN 10/150 Psi		PN 12/175 Psi		PN 16/230 Psi		PN 20/285 Psi	
		Nm	Lbf-Inch	Nm	Lbf-Inch	Nm	Lbf-Inch	Nm	Lbf-Inch	Nm	Lbf-Inch	Nm	Lbf-Inch
2	50	---	---	8	72	9	80	10	91	17	150	31	275
2.5	65	---	---	14	124	16	142	17	150	22	195	40	355
3	80	---	---	16	142	20	177	22	197	32	283	58	514
4	100	15	133	29	256	31	271	32	279	45	398	81	738
5	125	21	187	44	393	48	426	50	443	65	575	117	1036
6	150	30	267	62	545	66	582	70	620	110	974	132	1168
8	200	70	623	110	977	122	1083	128	1133	210	1859	252	2231
10	250	87	771	179	1586	198	1756	208	1841	319	2823	383	3390
12	300	142	1259	302	2677	337	2987	355	3146	468	4142	562	4974
14	350	244	2159	398	3527	450	3980	-	-	690	6106	863	7639
16	400	297	2627	500	4428	585	5178	-	-	925	8187	1156	10231
18	450	412	3649	822	7273	989	8756	-	-	1192	10550	1490	13188
20	500	484	4285	954	8441	1144	10126	-	-	1506	13329	1883	16666
24	600	734	6500	1410	12482	1760	15576	-	-	3029	26809	3786	33509
26	650	1063	9408	2202	19488	2750	24338	-	-	4200	37173	-	-
28	700	1266	11204	2640	23364	3320	29382	-	-	6204	54910	-	-
30	750	1465	12965	3083	27285	3900	34515	-	-	7493	66318	-	-
32	800	1755	15532	3715	32878	4740	41949	-	-	8782	77728	-	-
36	900	2342	20727	4975	44029	6420	56817	-	-	12142	107465	-	-
40	1000	3085	27302	6175	54649	8165	72260	-	-	16122	142691	-	-
42	1050	4317	38208	8475	75010	11300	100013	-	-	18838	166730	-	-
44	1100	4995	44209	9797	86710	13368	118316	-	-	21553	190760	-	-
48	1200	6328	56007	12430	110014	16950	150020	-	-	26984	238828	-	-

Note: Above torques are for clean media and do not contain any safety factor for the actuator sizing of other condition exist, a service factor should be applied. Please consult DelVal for specific service factor.

STANDARD MATERIALS OF CONSTRUCTION

2" to 24" Double Flanged



Part List

Item	Description	*Standard Material	
		CI/DI/CS	SS
1	Body	CI ASTM A126 Class B DI ASTM A395 60-40-18 ASTM A216 WCB	ASTM A351 CF8M/CF3M
1a	Seat (In-Situ Molded)	EPDM NBR (BUNA-N) Viton (FKM) *Silicone	
2	Disc	ASTM A536 65-45-12+ Nylon 12 Coated ASTM A536 65-45-12+ Aroxy Coated ASTM A216 WCB+Nylon 12 Coated ASTM A216 WCB+Aroxy Coated ASTM A351 CF8M/CF3M ASTM A995 4A/5A/6A NAB ASTM A148 C95800	ASTM A351 CF8M/CF3M ASTM A995 4A/5A/6A NAB ASTM A148 C95800
3	Stem (Upper/Lower)	ASTM A479 SS410-L2 ASTM A564 17-4 PH Type 630 ASTM A182 F51/F55 ASTM A479 SS316	

Item	Description	*Standard Material	
		CI/DI/CS	SS
4	Sleeve Bearing	Bear-G	
5	Packing Support	RPTFE	
6	Stem Seal (Double U-cup)	NBR (BUNA-N)	
7	Stem Bushing	RPTFE	
8	Stem Retainer	ASTM A240 SS304	
9	Retainer Circlip	ASTM A684 Gr.1070	ASTM A313 SS302
10	O-ring	NBR (BUNA-N)	
11	Spring Dowel Pin	ASTM A684 Gr. 1074	ASTM A313 SS302
12	Key (14 to 24")	BS 970 EN8	
13	Bottom Plate (24")	ASTM A516 Gr. 70	ASTM A240 SS304
14	Punch Washer (24")	ASTM A240 SS304	
15	Hex Hd. Screw (24")	ISO 3506 A2-70	

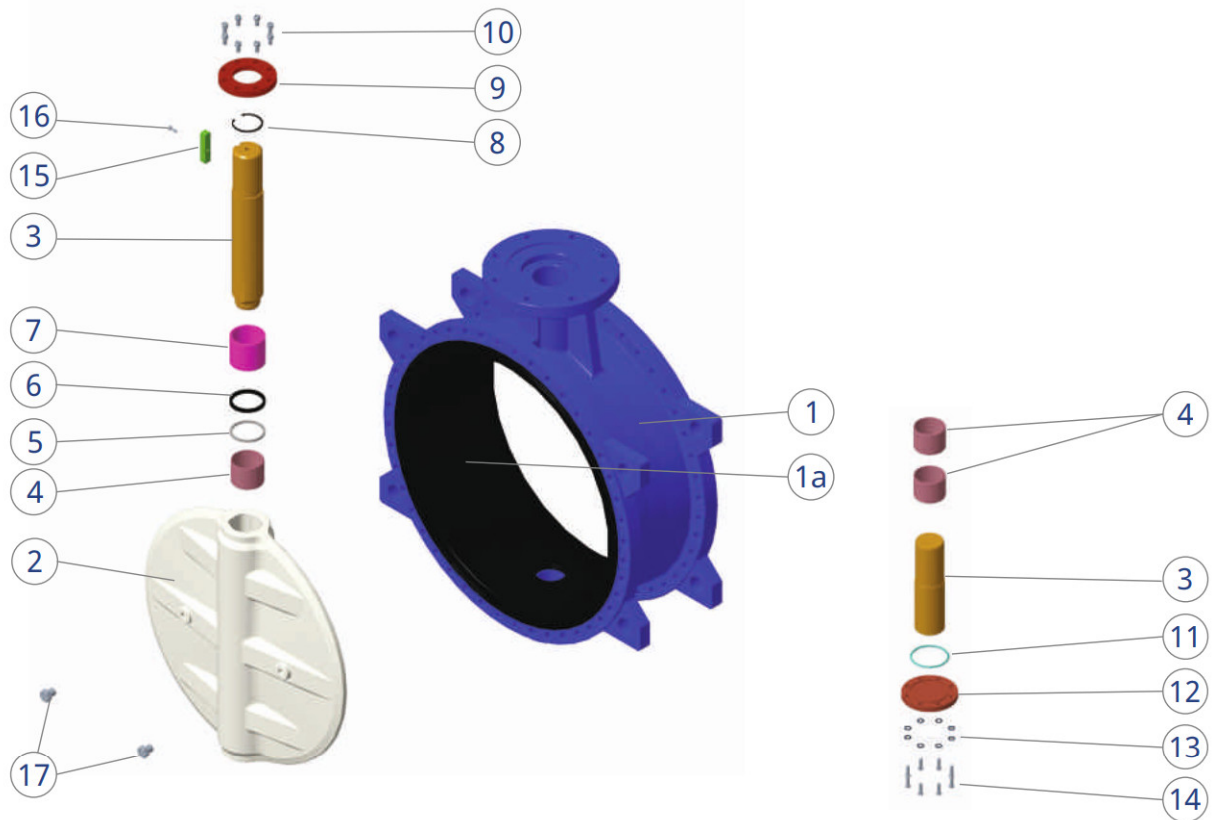
#Silicone seat configuration applicable up to PN6 rating only.

*Other materials may be available on request.

CI = Cast Iron, DI = Ductile Iron, CS = Carbon Steel, SS = Stainless Steel

STANDARD MATERIALS OF CONSTRUCTION

26" to 48" Double Flanged



Part List

Item	Description	*Standard Material	
		CI/DI/CS	SS
1	Body	CI ASTM A126 CLASS B DI ASTM A395 60-40-18 ASTM A216 WCB	ASTM A351 CF8M/CF3M
1a	Seat (In-Situ Molded)	EPDM NBR (BUNA-N) Viton (FKM) #Silicone	
2	Disc	A ASTM A216 WCB+Nylon 12 Coated ASTM A216 WCB+Aroxy Coated ASTM A351 CF8M/CF3M ASTM A995 4A/5A/6A NAB ASTM A148 C95800	ASTM A351 CF8M/CF3M ASTM A995 4A/5A/6A NAB ASTM A148 C95800
3	Stem (Upper/Lower)	ASTM A479 SS410-L2 ASTM A564 17-4 PH Type 630 ASTM A182 F51/F55 ASTM A479 SS316	

Item	Description	*Standard Material	
		CI/DI/CS	SS
4	Sleeve Bearing	Bear-G	
5	Packing Support	RPTFE	
6	Stem Seal (Double U-cup)	NBR (BUNA-N)	
7	Stem Bushing	Phosphorous Bronze	
8	Retainer Circlip	ASTM A684 Gr. 1070	ASTM A313 SS302
9	Retaining Ring	ASTM A516 Gr. 70	ASTM A240 SS304
10	Soc. Hd. Screw	ISO 3506 A2-70	
11	O-ring Seal	NBR (BUNA-N)	
12	Bottom Cover	ASTM A516 Gr. 70	ASTM A240 SS304
13	Punch Washer	ASTM A240 SS304	
14	Hex Hd. Screw	ISO 3506 A2-70	
15	Key	BS 970 EN8	
16	Soc Hd. Cap Screw	ISO 3506 A2-70	
17	Plug	ISO 3506 A2-70	

#Silicone seat configuration applicable up to PN6 rating only.

*Other materials may be available on request.

CI = Cast Iron, DI = Ductile Iron, CS = Carbon Steel, SS = Stainless Steel

Standards and Specifications

DelVal Series 58 Butterfly Valves are designed and manufactured to meet the requirements of the following industry standards:

Design: API 609, BS EN 593

Face to Face: API 609 table 3C Short Pattern, BS EN 558 Series 13,
ISO 5752 Series 13

Testing: API 598, BS EN 12266-1

Flange Standard: ASME B16.5 Class 150, ASME B16.47 Class 150 Series A/B
other international standard upon request.

Body Style: One-Piece

***Temp Range:** -29°C to 200°C
-20°F to 390°F

Size Range: 2" to 48"

*Seat Temperature Range

Seat Type	*Temperature Range	
	Lower Limit	Upper Limit
EPDM	-20°F (-29°C)	302°F (150°C)
NBR (BUNA-N)	0°F (-18°C)	212°F (100°C)
Viton® (FKM)	0°F (-18°C)	390°F (200°C)
#Silicone	-58°F (-50°C)	390°F (200°C)

Viton® is registered trademark of E.I. DuPont.

*Temperature range shall be the lesser of the seat temperature or disc coating temperature.

#Silicone seat configuration applicable up to PN6 rating only.

Pressure Rating

Inch	DN	PSIG	BARG
2" to 12"	50 to 300	175	12.0
2" to 24"	50 to 600	285	20.0
2" to 48"	50 to 1200	230	16.0
2" to 48"	50 to 1200	150	10.0
2" to 48"	50 to 1200	87	6.0
2" to 48"	50 to 1200	50	3.5

End-of-Line Service

Valves may be used in end-of-line service with downstream piping removed equal to the values stated above.

Operator Information



Valves up to size 12" can be supplied with lever handles for manual operation. Optional accessories for hand-lever operation can be provided for various flow control requirements. Pad locking can also be provided for preventing unauthorized operation.



Valves of all sizes can be direct mounted with gear operators for manual operation. Gear operators can also be attached with chain-wheel operators for opening or closing valves located on pipelines at high elevations.



All valves can be direct mounted with pneumatic actuators or electric actuators and accessories for complete on-off automation or modulating control. Valves can be mounted with manual overrides.

100% TESTING 100% SERIALIZATION



CERTIFICATES



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