ABSA
the pressure equipment safety authority

9410 - 20 Ave N.W.
Edmonton, Alberta, Canada T6N 0A4
Tel: (780) 437-9100 / Fax: (780) 437-7787

May 19, 2023

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

The design submission, Tracking Number 2023-02745, Web Portal Number 2023-S1590, originally received on April 27, 2023 was surveyed and accepted for registration as follows:

CRN : 0C23204.2 **Accepted on:** May 19, 2023

Reg Type: NEW DESIGN **Expiry Date:** May 19, 2033

Drawing No. : PDBFV131280,-131290,-131300,-131310

Fitting type: Series 42/43 Lined Butterfly Valves

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.

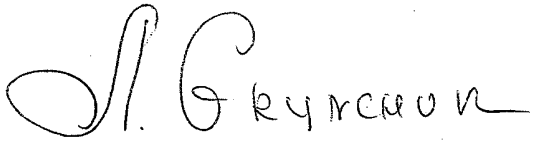
As indicated on AB-41 Statutory Declaration or AB-351 Declaration of Conformity form and submitted documentation, the code of construction is other engineering analysis.

- 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 (name of applicant), Managing Director (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 (Cat A) (title of recognized North American Standard) which specifies the dimensions, 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 _____ (title of code of construction or other applicable document) as supported by the 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.	PTFE/PFA Lined BFV Series 42-43	QMS to ISO9001	Design, manuafcture & 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 42-43

Product catalogue, Instruction, Opn & Maint Manual of PTFE/PFA Lined BFV Series 42-43

(Signature of the Declarer) 04-12-2023 (Date)

DECLARED before me at Baton Rouge (city) in the _____ of Louisiana (province, territory, or state)

this 12th day of April (Month), 2023 (Year)

(print) Erin B. Chisholm (a Commissioner of Oaths or Notary Public)

(sign) Erin B. Chisholm (a Commissioner of Oaths or Notary Public)

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

Commissioner of Oaths / Notary Public in and for: Louisiana (province, territory, or state)

For ABSA Office Use Only:

NOTES: _____

To the best of my knowledge and belief, the application meets the requirements of the Safety Codes Act and CSA Standard B51, Part 1, Clause 4.2, and is accepted for registration in Category _____.

CRN: _____

Registered Date: _____

Expiry Date: _____

Signature: _____
(Signature of the Administrator/SCO)

The information you provide is necessary only for the administration of the programs as required by the Alberta Safety Codes Act and Regulations in the Pressure Equipment Discipline

2023-02745
ABSA
SAFETY CODES ACT - PROVINCE OF ALBERTA
ACCEPTED: 0C23204.2
See acceptance letter for conditions of registration.
Date: 2023-05-19 By: M. Grynchuk
MILLA GRYNCHUK, P. Eng.
DOP: D00005217

This stamp and signature have been affixed electronically to this registered design as required by Section 20(1) of the Pressure Equipment Safety Regulation, in accordance with the Electronic Transactions Act.

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			
PTFE/PFA Lined BFV Series 42-43	Butterfly Valve body	CI/DI/CS	2" to 24" with wafer/ lugged ends	PN10 max.	PN10	Same as at Ambient temp	PN10	API 609 Cat A BS EN 593	PC.BFV. 007.00_R3

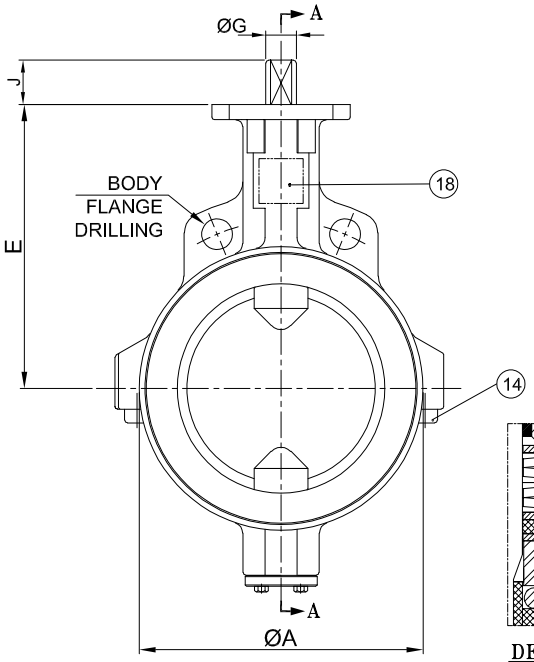
Table 2 Additional Scope Information

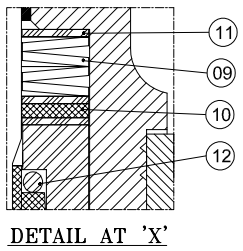
List/Attach Additional Detail and References (Product Configurations, Options, Illustrations, etc.)
Example: Series X Options
Series 42-43 in Press rating up to PN10 max. in wafer and lugged ends

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

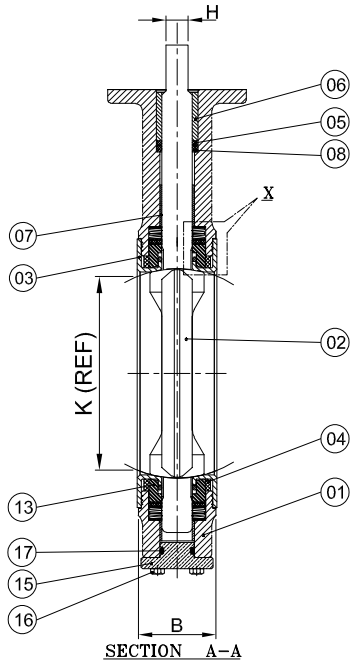
CUSTOMER :-	OFM NO. :-	DATE :-	DRAWING FOR :- REFERENCE
INSPECTION BY:-	LOI/P.O. No. :-	DATE :-	

VALVE SIZE	ØA	B	E	K	J	ØG	H	SQ F	TOP FLANGE DRILLING	Wt(Kg) (APPROX)
DN 50/2"	91	$43^{\pm1.5}$	140	33.5	32	14	10	80	F07	3.1
DN 65/2.5"	106	$46^{\pm1.5}$	152	52.1	32	14	10	80	F07	3.5
DN 80/3"	122	$46^{\pm1.5}$	160	68.5	32	14	10	80	F07	4.2
DN 100/4"	152	$52^{\pm1.5}$	180	91.7	32	19	13	80	F07	6.0
DN 125/5"	176	$56^{\pm1.5}$	192	117.3	32	22	16	100	F07/F10	8.2
DN 150/6"	205	$56^{\pm1.5}$	205	139.7	32	22	16	100	F07/F10	10.8
DN 200/8"	264	$60^{\pm3.3}$	241	187.6	32	24	19	120	F10/F12	17.6
DN 250/10"	315	$68^{\pm3.3}$	273	236.4	51	30	22	120	F10/F12	27.0
DN 300/12"	370	$78^{\pm3.3}$	311	282.4	51	35	24	120	F12	35.6

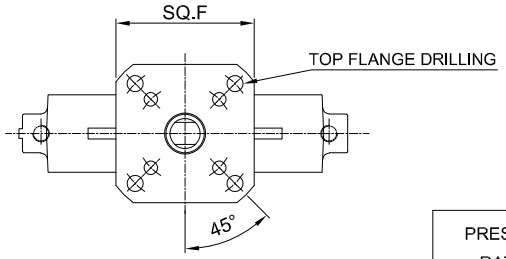




DETAIL AT 'X'



SECTION A–A



ITEM No.	PART NAME	MATERIAL SPECIFICATION
01	BODY	D.I, ASTM A395 GR. 60-40-18 / ASTM A216 GR. WCB ASTM A351 GR. CF8 / CF8M
02	DISC / STEM	PTFE / PFA / UHMWPE LINED ASTM A747 CB7CU-1 ASTM A351 GR. CF8/ CF8M , ASTM A995 GR. 4A/5A/6A
03	SEAT	PTFE / PFA / UHMWPE
04	ELASTOMER BACK-UP	VITON / SILICONE / EPDM
05	U CUP SEAL	NBR (BUNA-N)
06	STEM BUSHING	POLYACETAL (DELRIN)
07	SLEEVE BEARING	BEAR-G (IGLIDURE 'X' - IGUS MAKE)
08	PACK SUPPORT	POLYACETAL (DELRIN)
09	BELLEVILLE SPRING	ASTM A693 TYPE 631 17-7PH
10	RUBBER WASHER	VITON / SILICONE / EPDM
11	STEM GASKET	ARAMID FIBRES AF 159
12	O-RING	VITON / SILICONE / EPDM
13	PRESSURE RING	ASTM A479 GR. SS304
14	SOC. HD. SCREW	ISO 3506 A2-70 (SS304)
15	BOTTOM PLUG / PLATE	ASTM A479 GR. SS410, C.S, IS 2062 GR. B, ASTM A240 GR. SS304 / SS316
16	HEX HEAD BOLT	ISO 3506 A2-70 (SS304)
17	O-RING	NBR (BUNA-N)
18	NAME PLATE	ASTM A240 GR. SS304

NOTES:-

1) ALL DIMENSIONS ARE IN mm.
2) DESIGN STANDARD : BS EN 593
3) TESTING STANDARD : BS EN 12266-1
4) ACCEPTANCE CRITERIA : RATE 'A' , NO VISUALLY DETECTABLE LEAKAGE
5) BODY STYLE : WAFER
6) FLOW DIRECTION : BI-DIRECTIONAL
7) PRESSURE RATING : PN 10 (150 psi)
8) COLOR SHADE : DELVAL BLUE (RAL 5010) (FOR CS & DI VALVE ONLY)
9) FLANGE DRILLING : ASME B 16.5 CLASS 150 RAISED FACE FLANGES
10) TOP FLANGE DRILLING : ISO 5211
11) TOLERANCE FOR FACE TO FACE & FLANGE DRILLING DIMENSIONS AS PER APPLICABLE STANDARD.
12) 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
	bar (g)	bar (g)	bar (g)
PN 10 (150 psi)	15	11	5-7

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

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

DelVal Flow Controls Private Limited

GAT. NO. 25/1A, KAVATHE, TAL–KHANDALA, SATARA–412801, INDIA

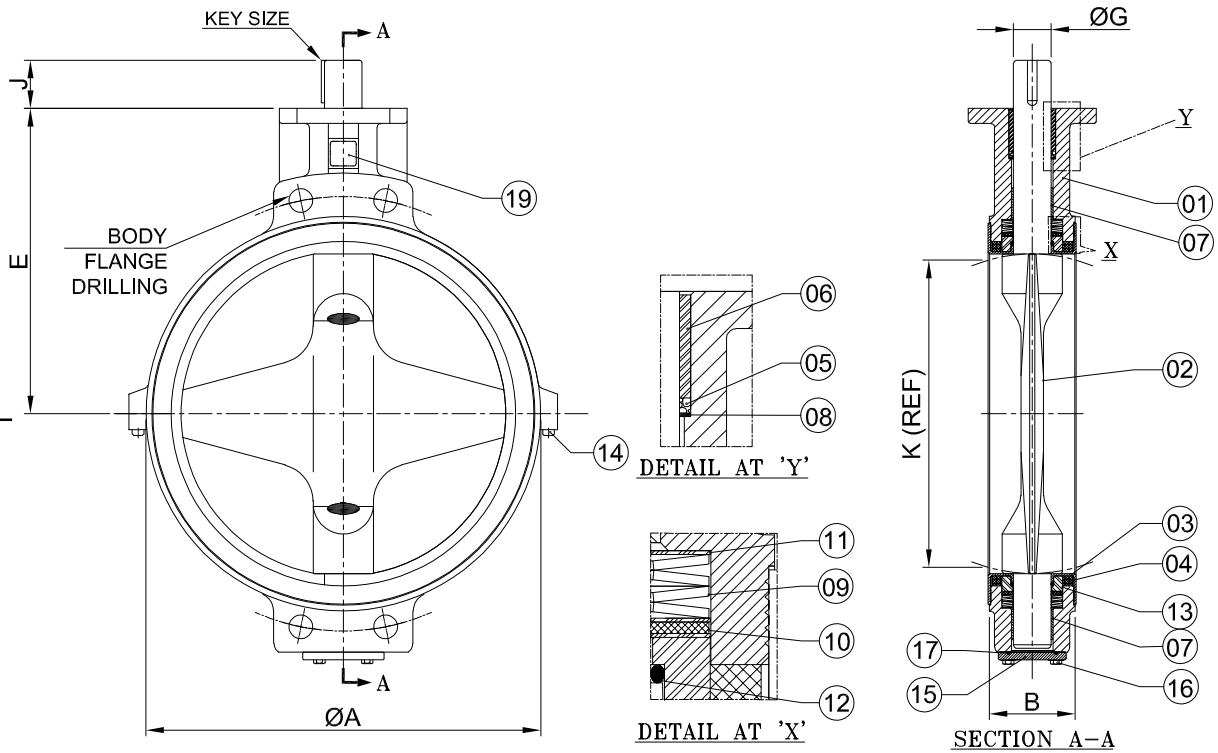
TITLE :– GENERAL ASSY (WAFER) BFV
2" TO 12" BARE STEM (SERIES 42)

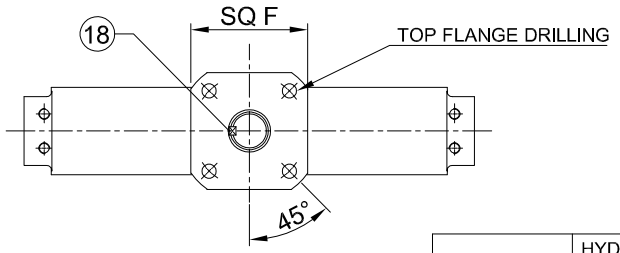
SIGN	K.A.S	V.R.M	K.D.S	DRG. NO. :	REV.
DATE	30.03.2023	30.03.2023	30.03.2023	PDBFV131280	0
	DRAWN BY	REVIEWED & CHECKED BY	APPROVED BY		

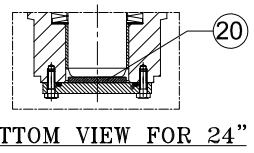
SHEET 1 OF 1
SCALE-: NTS
Wt. (Kg)

CUSTOMER :-	OFM. NO:-	DATE :-	DRAWING FOR :- REFERENCE
INSPECTION BY :-	LOI/P.O. NO.:-	DATE :-	

VALVE SIZE	ØA	B	E	K	J	ØG	KEY SIZE	SQ F	TOP FLANGE DRILLING	Wt(Kg) (APPROX)
DN 350/14"	415	78 $^{\pm 3.3}$	346	328.3	51	35	10x10	120	F12	54.00
DN 400/16"	472	102 $^{\pm 3.3}$	375	375.8	51	35	10x10	120	F12	59.20
DN 450/18"	525	114 $^{\pm 3.3}$	406	421.4	64	50	10x12	170	F16	88.20
DN 500/20"	580	127 $^{\pm 3.3}$	438	472.6	64	50	10x12	170	F16	107.40
DN 600/24"	692	154 $^{\pm 3.3}$	495	572.7	102	63.5	15.88x15.88	Ø210	F16	175.00







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

ITEM No.	PART NAME	MATERIAL SPECIFICATION
01	BODY	D.I, ASTM A 395 GR. 60-40-18 / ASTM A 216 GR. WCB ASTM A 351 GR. CF8 / CF8M
02	DISC / STEM	PTFE / PFA / UHMWPE LINED ASTM A240 GR.SS304 + ASTM A564 GR. 17-4PH TYPE 630 ASTM A 351 GR. CF8 / CF8M+ASTM A479 GR.SS410 / SS316 SH
03	SEAT	PTFE / PFA / UHMWPE
04	ELASTOMER BACK-UP	VITON / SILICONE / EPDM
05	U CUP SEAL	NBR (BUNA-N)
06	STEM BUSHING	POLYACETAL (DELRIN)
07	SLEEVE BEARING	BEAR-G (IGLIDURE 'X' - IGUS MAKE)
08	PACK SUPPORT	POLYACETAL (DELRIN)
09	BELLEVILLE SPRING	ASTM A693 TYPE 631 17-7-PH
10	RUBBER WASHER	VITON / SILICONE / EPDM
11	STEM GASKET	ARAMID FIBRES AF 159
12	O-RING	VITON / SILICONE / EPDM
13	PRESSURE RING	ASTM A479 GR. SS304
14	HEX. SOC. HD. SCREW	ISO 3506 A2-70 (SS304)
15	BOTTOM PLATE	ASTM A479 GR. SS410, C.S, IS 2062 GR. B, ASTM A240 GR. SS304 / SS316
16	HEX. HD. BOLT	ISO 3506 A2-70 (SS304)
17	O-RING	NBR (BUNA-N)
18	KEY	BS 970 EN8
19	NAME PLATE	ASTM A240 GR. SS304
20	THRUST BEARING	PHOSPHOR BRONZE BS 1400 PB4

NOTES:-

1) ALL DIMENSIONS ARE IN mm.
2) DESIGN STANDARD : BS EN 593
3) TESTING STANDARD : BS EN 12266-1
4) ACCEPTANCE CRITERIA : RATE 'A' , NO VISUALLY DETECTABLE LEAKAGE
5) BODY STYLE : WAFER
6) FLOW DIRECTION : BI-DIRECTIONAL
7) PRESSURE RATING : PN 10 (150 psi)
8) COLOR SHADE : DELVAL BLUE (RAL 5010) (FOR CS & DI VALVE ONLY)
9) FLANGE DRILLING : ASME B 16.5 CLASS 150 RAISED FACE FLANGES
10) TOP FLANGE DRILLING : ISO 5211
11) TOLERANCE FOR FACE TO FACE & FLANGE DRILLING DIMENSIONS AS PER APPLICABLE STANDARD.
12) 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
0	-	-	NEW RELEASE	-	-	-

UNSPECIFIED TOLERANCE FOR OVERALL DIMENSIONS

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

DelVal Flow Controls

DelVal Flow Controls Private Limited

GAT. NO. 25/1A, KAVATHE, TAL. KHANDALA, SATARA–412801 INDIA

TITLE :– GENERAL ASSY (WAFER) BFV
14" TO 24" BARE STEM (SERIES 42)

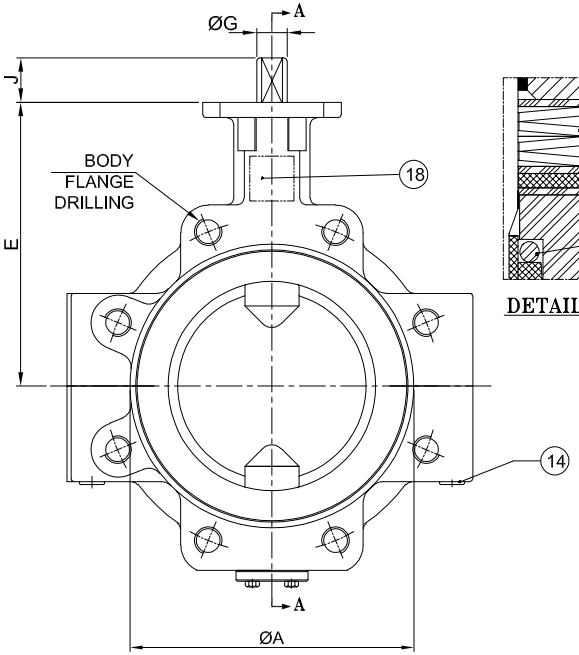
SIGN	K.A.S	V.R.M	K.D.S	DRG. NO. :	REV.
DATE	30.03.2023	30.03.2023	30.03.2023	PDBFV131290	0
	DRAWN BY	REVIEWED & CHECKED BY	APPROVED BY		

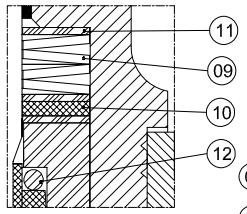
SHEET 1 OF 1
SCALE-: NTS
Wt. (Kg)

CUSTOMER :-	OFM NO. :-	DATE :-	DRAWING FOR :- REFERENCE
INSPECTION BY:-	LOI/P.O. No. :-	DATE :-	

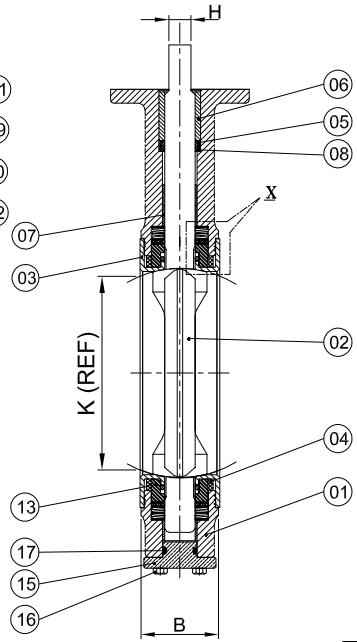
VALVE SIZE	ØA	B	E	K	J	ØG	H	SQ F	TOP FLANGE DRILLING	Wt(Kg) (APPROX)
DN 50/2"	91	$43^{\pm1.5}$	140	33.5	32	14	10	80	F07	4.1
DN 65/2.5"	106	$46^{\pm1.5}$	152	52.1	32	14	10	80	F07	4.7
DN 80/3"	122	$46^{\pm1.5}$	160	68.5	32	14	10	80	F07	5.0
DN 100/4"	152	$52^{\pm1.5}$	180	91.7	32	19	13	80	F07	9.0
DN 125/5"	176	$56^{\pm1.5}$	192	117.3	32	22	16	100	F07/F10	13.0
DN 150/6"	205	$56^{\pm1.5}$	205	139.7	32	22	16	100	F07/F10	16.3
DN 200/8"	264	$60^{\pm3.3}$	241	187.6	32	24	19	120	F10/F12	29.8
DN 250/10"	315	$68^{\pm3.3}$	273	236.4	51	30	22	120	F10/F12	38.4
DN 300/12"	370	$78^{\pm3.3}$	311	282.4	51	35	24	120	F12	58.0

ITEM No.	PART NAME	MATERIAL SPECIFICATION
01	BODY	D.I, ASTM A395 GR. 60-40-18 / ASTM A216 GR. WCB ASTM A351 GR. CF8 / CF8M
02	DISC / STEM	PTFE / PFA / UHMWPE LINED ASTM A747 CB7CU-1 ASTM A351 GR. CF8/ CF8M , ASTM A995 GR. 4A/5A/6A
03	SEAT	PTFE / PFA / UHMWPE
04	ELASTOMER BACK-UP	VITON / SILICONE / EPDM
05	U CUP SEAL	NBR (BUNA-N)
06	STEM BUSHING	POLYACETAL (DELRIN)
07	SLEEVE BEARING	BEAR-G (IGLIDURE 'X' - IGUS MAKE)
08	PACK SUPPORT	POLYACETAL (DELRIN)
09	BELLEVILLE SPRING	ASTM A693 TYPE 631 17-7PH
10	RUBBER WASHER	VITON / SILICONE / EPDM
11	STEM GASKET	ARAMID FIBRES AF 159
12	O-RING	VITON / SILICONE / EPDM
13	PRESSURE RING	ASTM A479 GR. SS304
14	SOC. HD. SCREW	ISO 3506 A2-70 (SS304)
15	BOTTOM PLUG / PLATE	ASTM A479 GR. SS410, C.S, IS 2062 GR. B, ASTM A240 GR. SS304 / SS316
16	HEX HEAD BOLT	ISO 3506 A2-70 (SS304)
17	O-RING	NBR (BUNA-N)
18	NAME PLATE	ASTM A240 GR. SS304

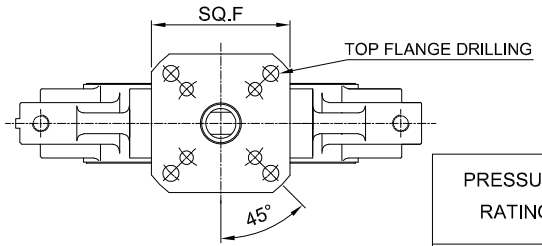




DETAIL AT 'X'



SECTION A–A



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

NOTES:-

1) ALL DIMENSIONS ARE IN mm.
2) DESIGN STANDARD : BS EN 593
3) TESTING STANDARD : BS EN 12266-1
4) ACCEPTANCE CRITERIA : RATE 'A' , NO VISUALLY DETECTABLE LEAKAGE
5) BODY STYLE : LUG
6) FLOW DIRECTION : BI-DIRECTIONAL
7) PRESSURE RATING : PN 10 (150 psi)
8) COLOR SHADE : DELVAL BLUE (RAL 5010) (FOR CS & DI VALVE ONLY)
9) FLANGE DRILLING : ASME B 16.5 CLASS 150 RAISED FACE FLANGES
10) TOP FLANGE DRILLING : ISO 5211
11) TOLERANCE FOR FACE TO FACE & FLANGE DRILLING DIMENSIONS AS PER APPLICABLE STANDARD.
12) WEIGHT VARIATION:-UPTO 300 KG(+/-10%),FROM 301 TO 500 KG (+/-12%), 501 KG AND ABOVE (+/-15%)

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

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

DelVal Flow Controls Private Limited

GAT. NO. 25/1A, KAVATHE, TAL–KHANDALA, SATARA–412801, INDIA

TITLE :– GENERAL ASSY (LUG) BFV
2" TO 12" BARE STEM (SERIES 43)

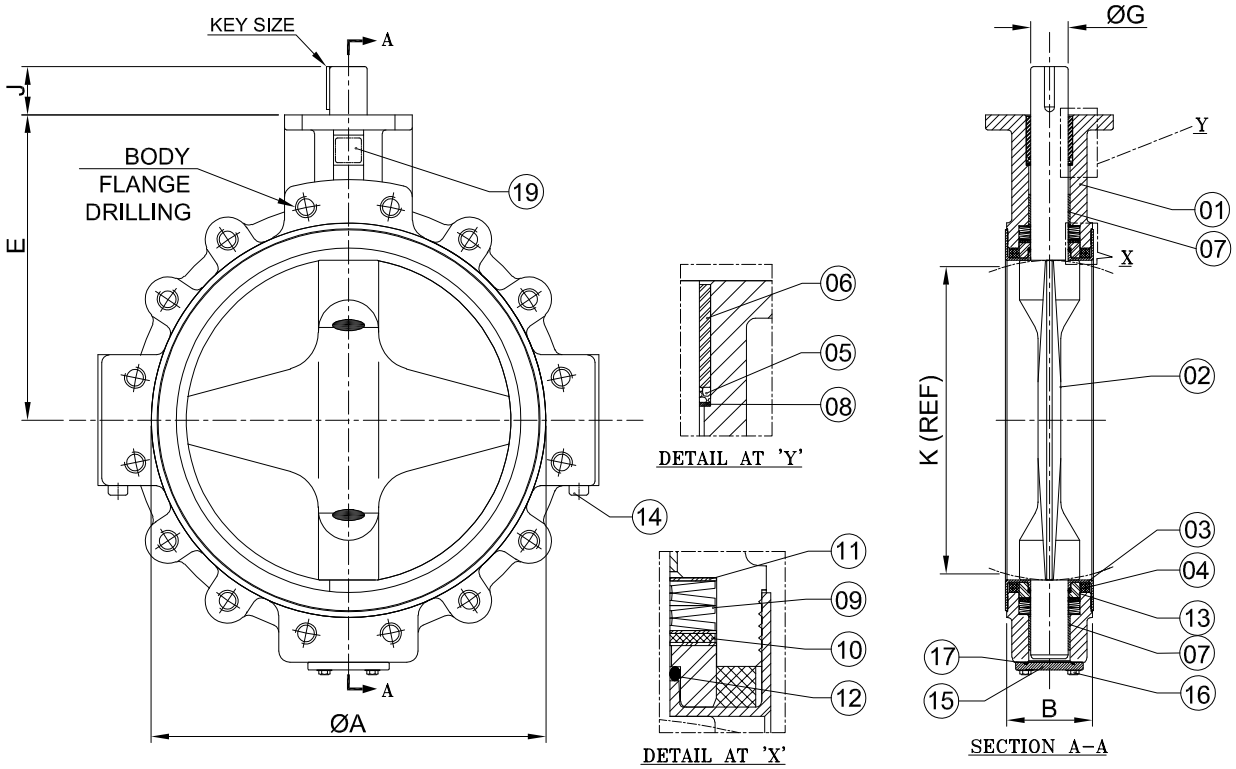
SIGN	K.A.S	V.R.M	K.D.S
DATE	30.03.2023	30.03.2023	30.03.2023
	DRAWN BY	REVIEWED & CHECKED BY	APPROVED BY

DRG. NO. : PDBFV131300 | REV. 0

SHEET 1 OF 1
SCALE-: NTS
Wt. (Kg)

CUSTOMER :-	OFM. NO:-	DATE :-	DRAWING FOR :- REFERENCE
INSPECTION BY :-	LOI/P.O. NO.:-	DATE :-	

VALVE SIZE	ØA	B	E	K	J	ØG	KEY SIZE	SQ F	TOP FLANGE DRILLING	Wt(Kg) (APPROX)
DN 350/14"	415	78 $^{\pm 3.3}$	346	328.3	51	35	10x10	120	F12	55.7
DN 400/16"	472	102 $^{\pm 3.3}$	375	375.8	51	35	10x10	120	F12	83.6
DN 450/18"	525	114 $^{\pm 3.3}$	406	421.4	64	50	10x12	170	F16	108.6
DN 500/20"	580	127 $^{\pm 3.3}$	438	472.6	64	50	10x12	170	F16	139.2
DN 600/24"	692	154 $^{\pm 3.3}$	495	572.7	102	63.5	15.88x15.88	Ø210	F16	216.4



DETAIL AT 'Y'

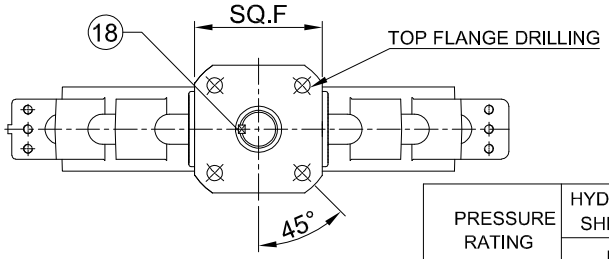
DETAIL AT 'X'

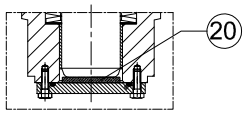
SECTION A–A

ITEM No.	PART NAME	MATERIAL SPECIFICATION
01	BODY	D.I, ASTM A 395 GR. 60-40-18 / ASTM A 216 GR. WCB ASTM A 351 GR. CF8 / CF8M
02	DISC / STEM	PTFE / PFA / UHMWPE LINED ASTM A240 GR.SS304 + ASTM A564 GR. 17-4PH TYPE 630 ASTM A 351 GR. CF8 / CF8M+ASTM A479 GR.SS410 / SS316 SH
03	SEAT	PTFE / PFA / UHMWPE
04	ELASTOMER BACK-UP	VITON / SILICONE / EPDM
05	U CUP SEAL	NBR (BUNA-N)
06	STEM BUSHING	POLYACETAL (DELRIN)
07	SLEEVE BEARING	BEAR-G (IGLIDURE 'X' - IGUS MAKE)
08	PACK SUPPORT	POLYACETAL (DELRIN)
09	BELLEVILLE SPRING	ASTM A693 TYPE 631 17-7-PH
10	RUBBER WASHER	VITON / SILICONE / EPDM
11	STEM GASKET	ARAMID FIBRES AF 159
12	O-RING	VITON / SILICONE / EPDM
13	PRESSURE RING	ASTM A479 GR. SS304
14	HEX. SOC. HD. SCREW	ISO 3506 A2-70 (SS304)
15	BOTTOM PLATE	ASTM A479 GR. SS410, C.S, IS 2062 GR. B, ASTM A240 GR. SS304 / SS316
16	HEX. HD. BOLT	ISO 3506 A2-70 (SS304)
17	O-RING	NBR (BUNA-N)
18	KEY	BS 970 EN8
19	NAME PLATE	ASTM A240 GR. SS304
20	THRUST BEARING	PHOSPHOR BRONZE BS 1400 PB4

NOTES:-

1) ALL DIMENSIONS ARE IN mm.
2) DESIGN STANDARD : BS EN 593
3) TESTING STANDARD : BS EN 12266-1
4) ACCEPTANCE CRITERIA : RATE 'A' , NO VISUALLY DETECTABLE LEAKAGE
5) BODY STYLE : LUG
6) FLOW DIRECTION : BI-DIRECTIONAL
7) PRESSURE RATING : PN 10 (150 psi)
8) COLOR SHADE : DELVAL BLUE (RAL 5010) (FOR CS & DI VALVE ONLY)
9) FLANGE DRILLING : ASME B 16.5 CLASS 150 RAISED FACE FLANGES
10) TOP FLANGE DRILLING : ISO 5211
11) TOLERANCE FOR FACE TO FACE & FLANGE DRILLING DIMENSIONS AS PER APPLICABLE STANDARD.
12) WEIGHT VARIATION:-UPTO 300 KG(+/-10%),FROM 301 TO 500 KG (+/-12%), 501 KG AND ABOVE (+/-15%)





BOTTOM VIEW FOR 24"

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

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

UNSPECIFIED TOLERANCE FOR OVERALL DIMENSIONS

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

DelVal Flow Controls Private Limited

GAT. NO. 25/1A, KAVATHE, TAL. KHANDALA, SATARA–412801 INDIA

TITLE :– GENERAL ASSY (LUG) BFV
14" TO 24" BARE STEM (SERIES 43)

SIGN	K.A.S	V.R.M	K.D.S
DATE	30.03.2023	30.03.2023	30.03.2023
	DRAWN BY	REVIEWED & CHECKED BY	APPROVED BY

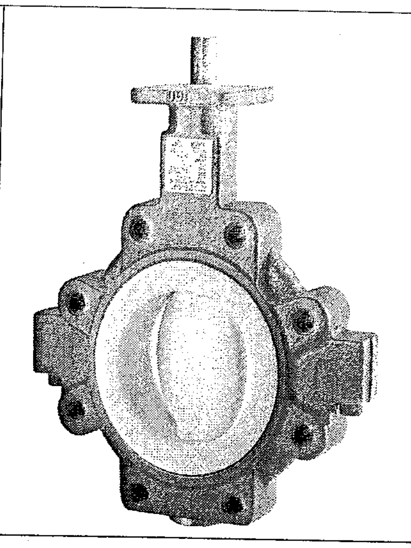
DRG. NO. : PDBFV131310 | REV. 0 | SHEET 1 OF 1 | SCALE-: NTS | Wt. (Kg)

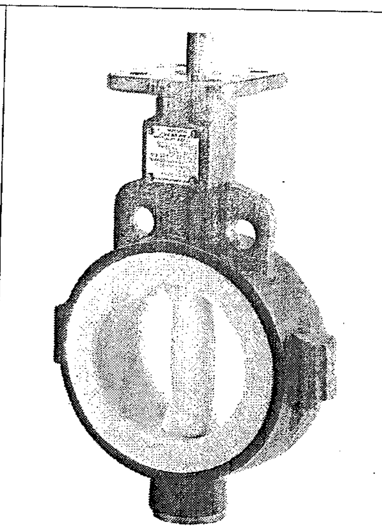
DelVal Flow Controls	DelVal Flow Controls Private Limited	DelVal Flow Controls USA, LLC

DelVal Series – 42/43 Butterfly Valves

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

ENGINEERING DATA SHEET
E.D.S. NO – EDS 703
ISSUE DATE : April 2010
REVISION No:- 03
REVISION DATE :- 23/11/2017





(Please read the entire instructions carefully before installation or servicing)

Guarantee :

"Our liability, with respect to any defect or failure of the goods supplied or for any loss, injury or damage attributable onward, is limited to replacement or repair of the defects which under proper use appear therein and arise solely from faulty materials and workmanship. This guarantee is for a period of 18 calendar months after the original goods were first shipped or within 12 calendar months from the date of installation, whichever is earlier, provided that such defective parts are returned without charge to our factory for examination. No other warranty is either expressed or implied."

TABLE OF CONTENTS

1 Introduction:

1.1 Scope of the Manual.

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

This manual covers DelVal 2pc piece body butterfly valves from 2" to 24" in both wafer and lug designs.

1.2 General Design.

The DelVal/DelTech Butterfly valves are tight shut off, with wafer or lugged body construction. The valves are design & manufacture generally conforms to the requirements of API 609 / EN 593 / MSS SP-67 standards. The valves are bi-directional. The valve seat enveloping the entire wetted surface and the flange contact face of the body.

1.3 Flange and Pipe compatibility :-

Butterfly valves are designed to fit between schedule 40 (all sizes) & schedule 80 (2"-12") pipe, and the following pipe flanges.

ASME : #125 / 150
DIN : PN 10/PN16
BS : EN1902 -1/2 PN10/PN16
BS : 10 TABLE D/E

1.4 Marking.

Specifications of the valve are marked on the body or on name plate or both, prior to shipment. The identification marking generally consists of size of valve, pressure rating, body material, trim material, serial number and the manufacturing date.

(Ref to fig 1.1)

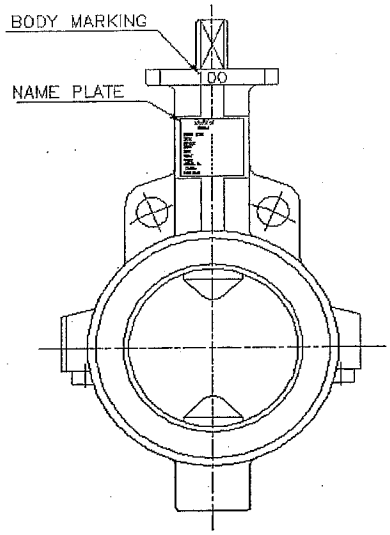


Fig 1.1 Valve Marking

2 Technical data:

2.1 Size Range / Body Construction / Pressure Rating & general Applications :

Valve Series	Size Range	Body Construction	Pressure Rating	Seat Type	Application
42/43	2"- 24"/ DN 50-DN600	Wafer / Lug	150 PSI / 10 BAR	Replaceable	• Light and medium corrosive, pure and slightly solids-laden liquids, vapors and gases. • Powdered and granulated non or low abrasive Solids. • Materials in contact with the medium witch are FDA- compliant can be used for food and pharmaceutical feed stock, also in biochemistry

2. 2 Seat Temperature Range.

Seat Material	Max Operating Temp	Temperature range	
		Min.	Max.
PTFE	Silicone	-58°F (-50°C)	392°F (200°C)
	Viton® / FKM	0°F (-18°C)	392°F (200°C)
	EPDM	-20°F (-29°C)	302°F (150°C)
PFA	Silicone	-58°F (-50°C)	392°F (200°C)
	Viton® / FKM	0°F (-18°C)	392°F (200°C)
	EPDM	-20°F (-29°C)	302°F (150°C)

2.3 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 insure 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 angle for control valve sizing is 60°-65° open.

3 Safety Precautions:

3.1 Do not exceed the valve pressure / temperature rating limitations!

- Exceeding the pressure/temperature rating limitations marked on the valve may result in major damage or Personal injury. Users of these valves should ensure that the valve pressure / temperature is less than or equal to the rated pressure/temperatures. If required, end user should incorporate appropriate limiting/monitoring devices in the system for the safe operation of the valve.

3.2 Use the valve for specified application 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 of the valve must be aware of all the safety rules and regulations related to a particular 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, dirt can enter the pipeline during the valve maintenance.

3.5 When handling the valve or the valve package, bear in mind its weight!

- Never lift the valve or valve package by the handle, gear operator, actuator or hand wheel. Place the rope securely around the valve body while handling the valve. Refer to Fig No. 1.2

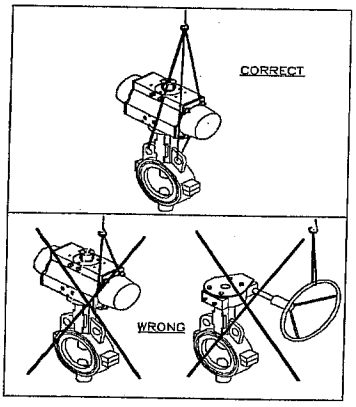


Fig 1.2 Lifting of the Valve

3.6 Only use properly qualified personnel for Installation & maintenance.

4 Transportation, Receiving and Storage:

4.1 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. We recommend storing the valves indoors in a dry and dust free atmosphere (Refer to figure 2.1). 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. Rubber lined valve must not be stored for more than 2 years without installation, unless specified otherwise.

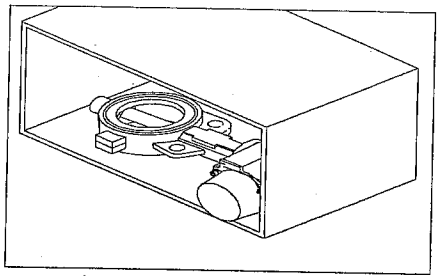


Fig 2.1 Storing the Valve.

Caution:

1. *Placing the valves directly on the ground or on a Concrete floor should be avoided!*
2. *If damaged, valve must not be installed in the plant*

4.2 All wrapping and protection on the valves should not be removed until the valve is ready for installation. All valves are delivered with disc in 10^0 open position (Refer to figure 2.2).

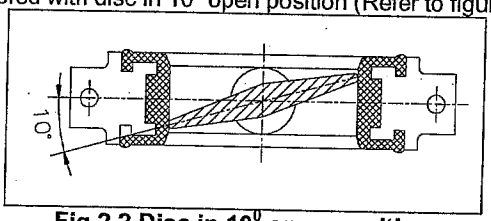


Fig 2.2 Disc in 10^0 open position

4.3 If the valves are stored for a long time, then all the valves should be cleaned and hydro / pneumatic tested before installation. Refer to General Arrangement drawing, which lists the appropriate testing standards, or consult the nearest branch office / factory for more information.

4.4 Valves are bi-directional and can be installed in either direction.

4.5 Lever or hand wheel of gear operator for respective valves are packed loosely and kept in the same box, in which the valve is packed (wherever applicable). When handling the valve either by hand or by mechanical means, special care should be taken not to damage the lever or gear operator. Lift the valve only as shown in fig 1.2. Lifting the valve from any other location may damage the valve components.

Note: The figure section(view) may vary from Illustration shown.

5.0 Installation

5.1 When removing the valve from storage a careful check should be made to ensure that the valve has not been damaged during the storage period.

5.2 Valve open or close position is indicated on the notch plate for lever operated valves or on the top of the gear operator for gear operator operated valves.

5.3 Center valve, span body with bolts, but do not tighten. Slowly open disc to ensure that it clears adjacent pipe ID and leave at full open position. Tighten bolts in cress cross pattern refer fig 3.5.

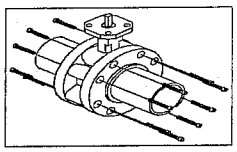


Fig 3.1 Lug Valve Installation

5.4 For flange welding center valve with disc 10^0 open between flanges, span bolts, align this assembly in pipe and tack weld flanges to pipe. After tack welding, remove valve and finish welding.

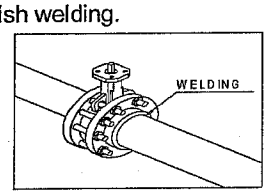


Fig 3.2

5.5 Valve should be checked for identification purpose and ensure that characteristics of valve matches to those specified for piping specifications, for the line where that is to be mounted. Nameplate instructions will give the necessary information.

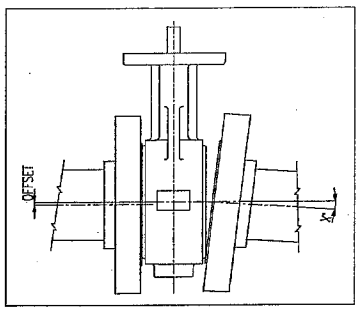


Fig 3.3 Valve Alignment

5.6 Do not use flange gasket & Install valve between flanges with disc 10° open condition.

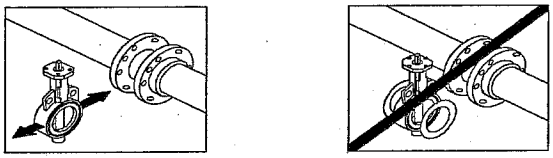


Fig 3.4 : Installation of valve into pipe line

Note: *a) Do not attempt to correct the line misalignment by means of flange bolting Ref to fig 3.3.*
b) Do not use flange gaskets Ref to fig 3.4.
c) Valves shall never be mounted with the operator vertically downwards.

5.7 Recommended Bolt Tightening Sequence:

Place the valve between the flanges, center 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.3.5 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 in fig. Finally, repeat a full close to full open rotation of the disc to ensure proper clearance.

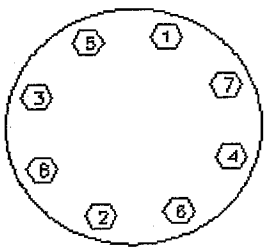


Fig 3.5: Initial Centering & Flanging of Valve

5.8 Insulation / lagging of the valve and pipeline outside diameter is recommended, where fluid temperature are going to be higher than 150°C.

Note: *It is recommended to use ASTM A193 Gr.B7 fasteners for flange bolting.*

6. Operation of the Valve:

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

6.2 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. (Looking from hand wheel end) The details of gear operator are shown in the fig. 4.1. The internal details/construction of gear operator may vary as per manufacturers standard.

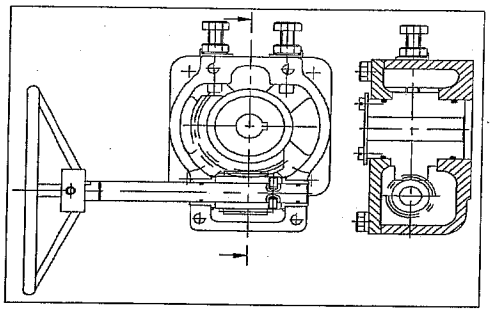


Fig 4.1: Details of gear operator.

6.3 Butterfly valve always closes in a clockwise direction. Valve should always be rotated through 90° to the fully opened or fully closed position.

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

6.5 Once the flushing is complete, valve should be operated 3-4 times and then kept in the fully open position.

6.6 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.

6.7 The hand wheels provided on the gear boxes are capable of generating the required output torque with a pull of 36Kg (356N) on hand wheel. No extra lever / crowbars shall be used with the hand wheel.

6.8 The breakaway torque of the actuator must be at least as high as the breakaway torque of the butterfly valve, about 20% higher being better however.

Caution:

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

7 Maintenance:

Note:
Observe the safety precautions as outlined in section 3 before performing maintenance.

7.1 Preventive Maintenance.

7.1.1 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.

7.1.2 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 which in fact will be made at the time of partial or total shutdown of the plant. Preventive maintenance is absolutely essential as the failure due to lack of the same may cause an emergency shut down of the plant.

7.1.3 Section 8 describes the procedure for disassembly, repair and assembly of the valve. The procedure will be the same for a valve failing during operation due to lack of preventive maintenance.

7.1.4 Once a valve is repaired, it should undergo a complete set of tests to make sure that the valve is adequate for the original working conditions. Hydro/Pneumatic tests should be carried out as per the specifications relevant to the valve (Refer General Arrangement Drawing).

7.2 Lubrication of Worm Gear operator.

7.2.1 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 branch office / factory.

7.2.2 Grease should be changed as following. If operated frequently, after approx. 3 years. If operated rarely, after approx. 5 years.

7.2.3 Recommended Greases-

Servogem EP2 (Extreme Pressure),
Mobilux EP2,
Valvoline EP2,
Chevron EP2.

⚠	**WARNING** **Pipeline pressure can propel the loose flange bolts & flanges, and can cause personal injury or equipment damage. Relieve pipeline pressure before removing flange bolts and flanges.**
⚠	**WARNING** **Moving Parts from accidental operation of powered (Pneumatically / Electrically) actuator can cause personal injury or equipment damage. Disconnect and lock power to actuator before servicing.**

8. Disassembly and Assembly Instructions:

Disassembly Instructions:

Before disassembling, please ensure that all spare parts as detailed in Table of Section 10, are available. For below mentioned procedure, the numbers in the bracket refer to the part numbers of the components as indicated in G.A. drawing of section 9.

- In case the valve is in operation, release the pressure from the line.
- Rotate the valve disc/stem (04) manually to keep the Valve in the half-open position. This will remove pressure in the pipeline.
- Always fully close valve before removing from line to avoid damage to disc
- Valve can be repaired by removing the entire valve from pipeline
- Loosen all flange bolts and remove the bolts, which prevent removing of valve
- Spread the flanges with adequate tooling, and remove the valve.

8.1.1 Turn the disc (03) to almost open position.

8.1.2 Remove the actuator ie. Lever, Gear, Pneumatic /electrical actuator.

8.1.3 Remove the body-screws (06)

8.1.4 Remove the lower part of the body. This is more or less held by the seat lip and groove. Use two screwdrivers in the body-splits to separate the body halves and pull the bottom parts off with a rotating motion

8.1.5 Pull the disc-stem and seat out of the body top part.

8.1.6 To remove the disc-stem from the seat, deform the seat into a long "oval" sufficient to clear the end of the short stem, move the short stem-end out off the seat bore, and pull the long end of the stem hole, using a rotating motion.

8.1.7 Remove the top bushing, U seal, from the body.

Note: *After the complete disassembly of the valve, all the components should be stored in a clean place to avoid damage.*

8.2 Repair of Components.

8.2.1 The metallic parts should be cleaned.

8.2.2 To clean the seats and seals use a dry clean cloth.

8.2.3 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.

8.2.4 Replace the damaged parts. The parts such as seal, bushings are recommended to be replaced with new ones whenever the valve is dis-assembled: refer to Table of Section – 10 for further details.

Note: *When the gear operator or hand lever or actuator is re-assembled on the valve, it may be necessary to adjust gear operator or hand lever or actuator travel stops to ensure proper setting of the butterfly in the open and closed position*

8.3 Assembly Instructions.

(Refer G.A. drawing / Exploded view of sect 9)

8.3.1.1 The assembly should be done in a clean room environment. When assembling a Teflon/PFA product you have to wear white gloves.

8.3.1.2 Apply rust preventative oil wherever applicable. (i.e. Body stem bore in case of DI & CS material).

8.3.1.3 Special attention must be taken to the sealing surface of the disc circumference, Small scratches in case of PTFE / PFA / stainless steel disc can be removed easily by sanding the circumference with sandpaper 120-400grit. And sanding direction should never be same as flow directions.

8.3.1.4 Thoroughly clean disc and seat with thinner or degreasing agent. In order to avoid damage to the Seat during assembly. Double 'D' of stem should be free from burrs.

8.3.1.5 The seat should be heated in an oven at 300° C for 20 minutes.

8.3.1.6 Take out seats from oven, Apply grease (OK's PKS 1110) in to the stem bore& disc area gently Insert the longer end of stem into the seat. Squeeze seat to an oval shape until short end of the shaft can be inserted into the seat. Bring disc to closed position, refer fig 5.1.

8.3.1.7 Make 2 groups of "pressure ring assembly" consist of spring washer (4Nos.), rubber washer (1Nos.), gasket (3Nos.), pressure ring (1No.) and 'O'-ring (1No.) as shown in the figure 5.2

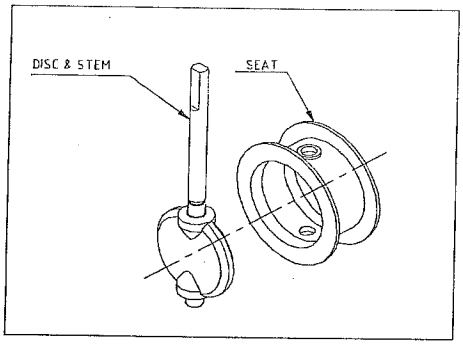


Fig 5.1

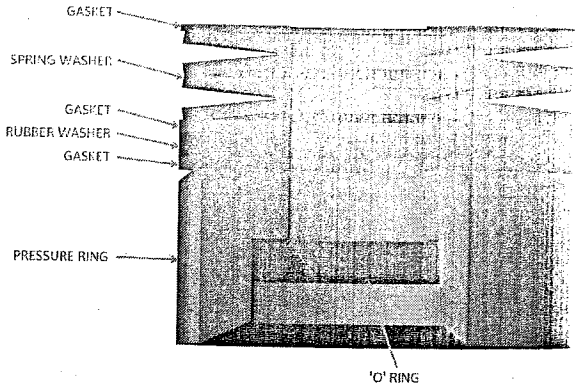


Fig 5.2

8.3.1.8 Insert "Pressure ring assembly" in to longer stem of disc & seat assembly as shown in the figure 5.3

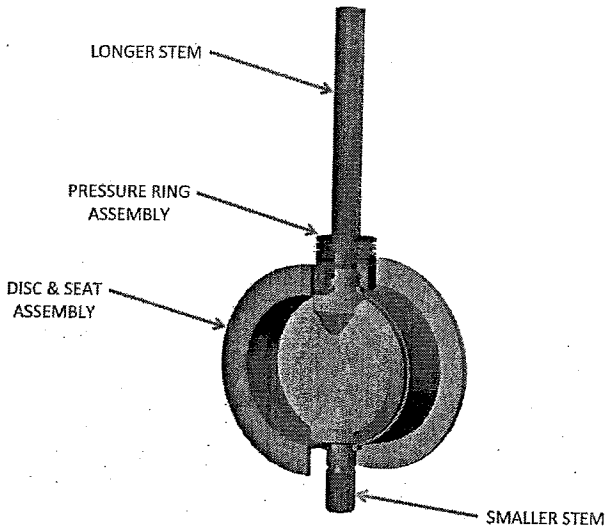


Fig 5.3

8.3.1.9 Place upper body halve on the table resting on ISO pad, & Insert larger end of stem with pressure ring assembly in to the stem bore.

8.3.1.10 Insert pressure ring assembly in to the smaller end of stem.

8.3.1.11 Apply Rustojel VCI601 in between lower halves and upper halves of the body.

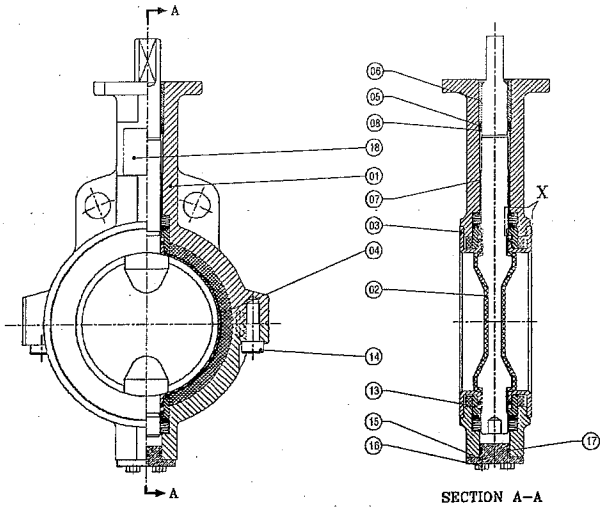
8.3.1.12 Assemble lower halves body with upper halves body (Ensure the matching of the alignment mark on the body) Apply anti seize grease on the screw threads. Fasten & tight the screws. Keep tightening the screws evenly. Open the disc several times before tightening bolts completely.

8.3.1.13 Close the bottom bore of lower halves of the body by using bottom plug having 'o' ring for sealing and tight by bolts.

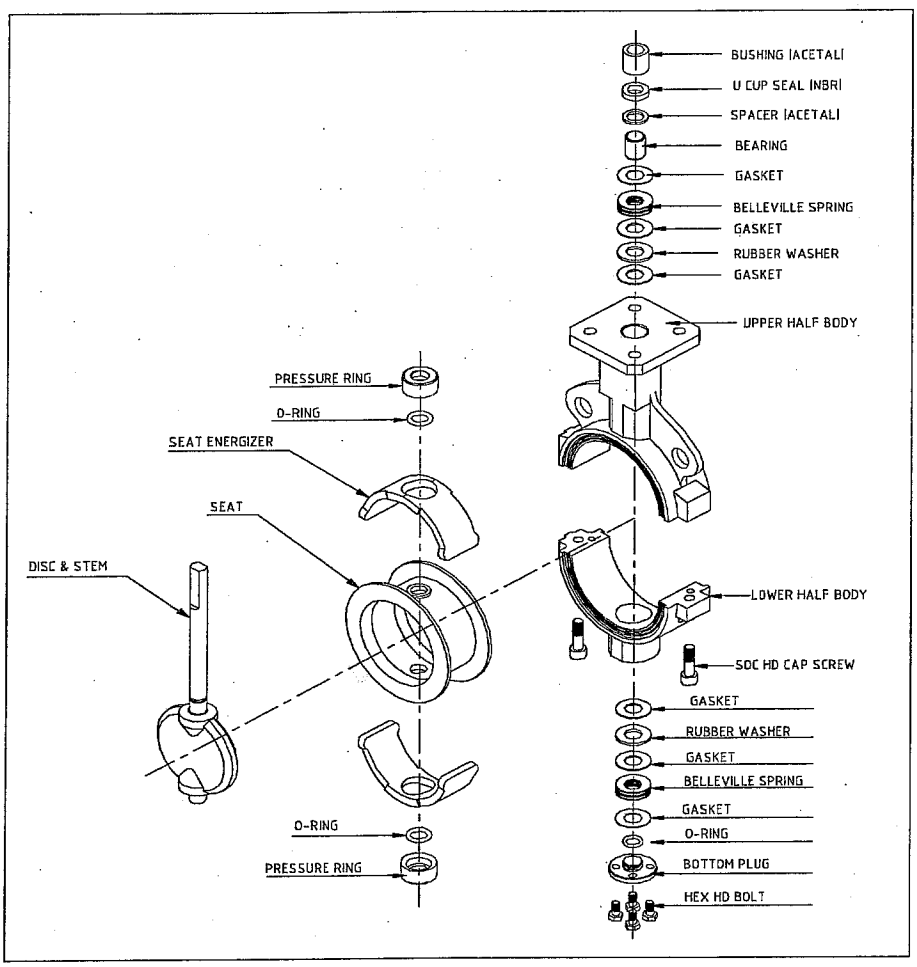
8.3.1.14 Insert the stem seal and bushing in to the upper halves of the body.

8.3.1.15 The valve has to be checked for functions and further pressure tested.

9. General Assembly / Exploded view:



ITEM No.	PART NAME
01	2 PIECE BODY
02	DISC / STEM
03	SEAT
04	ELASTOMER BACK-UP
05	U CUP SEAL
06	BUSHING
07	BEARING
08	SPACER
09	BELLEVILLE WASHER
10	RUBBER WASHER
11	STEM GASKET
12	O-RING
13	PRESSURE RING
14	HEX. SOC. HD. SCREW
15	BOTTOM PLUG
16	HEX. SOC. HD. SCREW
17	O-RING
18	NAME PLATE



Note:- *All equipment must only be fitted with manufacturer's original spare parts. When ordering for spare parts always convey the information i.e. size of valve, Sr.No, Mfg date which is available in the name plate tag.*

10. Recommended Spares Kit:

Before the start of the repair operations, we recommend that one set of spares as given in the table below Should be available. For normal operation (2 years), we recommend one set of spares be available at site.

List of Recommended Spare Parts		
Part Name	Part No	Qty
Seat	03	1 No
Bushing	06	1 No
'U' cup seal	05	1 No
Spacer	08	1 No
Pressure Ring	13	2 No
'O' Ring	12	2 No
Stem Gasket	11	6 No
Rubber Washer	10	2 No
Belleville Washer	09	8 No

11. Troubleshooting:

Symptom	Cause	Corrective Action
Valve would not rotate	Actuator has failed. Valve packed with debris	Replace or repair Flush or clean valve to remove debris.
Valve Leakage at closed position	Valve not fully closed Debris trapped in valve. Seat is damaged	Close valve Cycle and flush (with valve open) to remove debris. Replace seat.
Jerky operation	Extreme dry application Air supply to actuator inadequate	Put some silicone oil on seat or increase size of actuator. Increase air supply pressure and/or volume

12. Atex Instructions for use in potentially explosive environment.

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

CE Name Plate

DelVal Flow Controls Pvt. Ltd DelVal
CE 0496 SATARA,(INDIA)

SIZE / RATING :			
MOP	TEMP. :		
	PR. :		
IMPACT TEST TEMP (°C) :			
BODY / DISC :			
SEAT / STEM :			
CATEGORY :		MFG.DT.:	
SR.NO.:			
TAG NO. :			

www.delvalflow.com

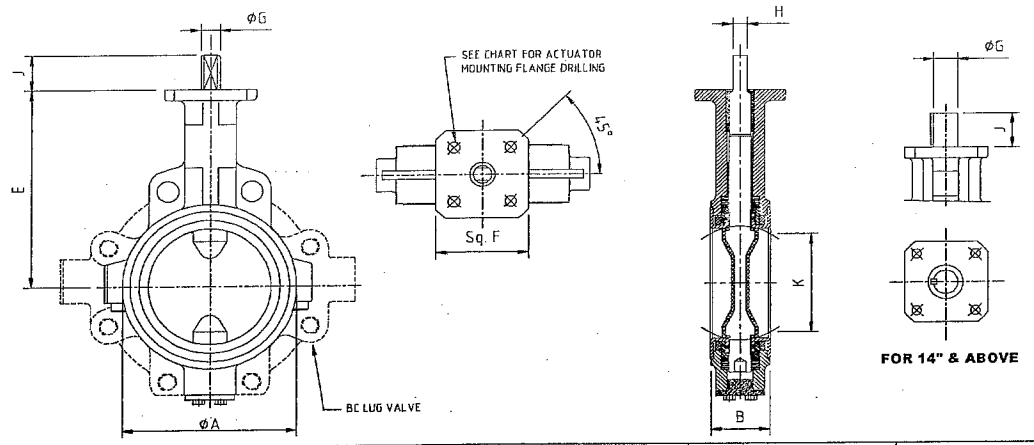
Atex Name Plate

DelVal Flow Controls Pvt. Ltd Satara (INDIA)
DelVal CE Ex II 2 GD cTx

SERIAL NO:-
MODEL:-
TCF NO.:-DELVAL /ATEX /08

CONTROLLED COPY
Issued To. QA/PRODN
Sign. 24/11/17
By Design & Development Dept.

13. Engineering Data



DIMENSIONS (Inch).

Valve Size		ØA	* B	E	Sq'F'	TOP FLANGE DRILLING			ØG	H	J	Key Size	K	LUG BOLTING DATA			Weights In Lbs	
Inches	DN					BC	NO. OF HOLES	HOLE DIA.						BC	NO. OF HOLES	THRADES UNC-2B	Wafer (Series 40)	Lug (Series 41)
2	50	3.58	1.69	5.51	3.15	2.76	4	0.39	0.55	0.43	1.25	-	1.32	4.75	4	5/8-11	7.72	9.04
2 1/2	65	4.17	1.81	5.98	3.15	2.76	4	0.39	0.55	0.39	1.25	-	2.05	5.50	4	5/8-11	7.72	10.36
3	80	4.80	1.81	6.30	3.15	2.76	4	0.39	0.55	0.39	1.25	-	2.70	6.00	4	5/8-11	8.38	11.00
4	100	5.98	2.06	7.09	3.15	2.76	4	0.39	0.75	0.51	1.25	-	3.61	7.50	8	5/8-11	12.34	19.80
5	125	6.93	2.19	7.56	4.93	2.76/4.01	4	0.39/0.47	0.87	0.63	1.25	-	4.62	8.50	8	3/4-10	18.08	28.66
6	150	8.07	2.19	8.07	4.93	2.76/4.01	4	0.39/0.47	0.87	0.63	1.25	-	5.50	9.50	8	3/4-10	21.16	35.86
8	200	10.39	2.38	9.49	4.72	4.01/4.92	4	0.47/0.55	0.94	0.75	1.25	-	7.39	11.75	8	3/4-10	46.73	65.69
10	250	12.40	2.69	10.75	4.72	4.01/4.92	4	0.47/0.55	1.18	0.87	2.00	-	9.31	14.25	12	7/8-9	54.67	84.48
12	300	14.57	3.06	12.24	4.72	4.92	4	0.55	1.38	0.94	2.00	-	11.12	17.00	12	7/8-9	78.47	127.60
14	350	16.34	3.06	13.62	4.72	4.92	4	0.55	1.38	-	2.00	0.39x0.39	12.92	18.75	12	1-8	87.96	122.80
16	400	18.58	4.00	14.76	4.72	4.92	4	0.55	1.38	-	2.00	0.39x0.39	14.80	21.25	16	1-8	130.51	184.31
18	450	20.67	4.48	15.98	6.70	6.50	4	0.83	1.97	-	2.50	0.39x0.47	16.59	22.75	16	1 1/8-7	194.45	239.42
20	500	22.83	5.00	17.24	6.70	6.50	4	0.83	1.97	-	2.50	0.39x0.47	18.61	25.00	20	1 1/8-7	236.78	306.88
24	600	27.24	6.06	19.49	ø8.27	6.50	4	0.83	2.50	-	4.00	0.62x0.62	22.55	29.50	20	1 1/4-7	385.81	477.08

DIMENSIONS (mm)

Valve Size		ø A	* B	E	Sq 'F'	TOP FLANGE DRILLING			ø G	H	J	Key Size	K	LUG BOLTING DATA			Weights In Kg.	
Inches	DN					BC	NO. OF HOLES	HOLE DIA.						BC	NO. OF HOLES	THRADES UNC-2B	Wafer (Series 50)	Lug (Series 52)
2	50	91	43	140	80	70	4	10	14	10	32	-	33.5	120.7	4	5/8-11	3.5	4.1
2.5	65	106	46	152	80	70	4	10	14	10	32	-	52.1	139.7	4	5/8-11	3.5	4.7
3	80	122	46	160	80	70	4	10	14	10	32	-	68.5	152.4	4	5/8-11	3.8	5.0
4	100	152	52	180	80	70	4	10	19	13	32	-	91.7	190.5	8	5/8-11	5.6	9.0
5	125	176	56	192	100	70/102	4	10/12	22	16	32	-	117.3	215.9	8	3/4-10	8.2	13
6	150	205	56	205	100	70/102	4	10/12	22	16	32	-	139.7	241.3	8	3/4-10	9.6	16.3
8	200	264	60	241	120	102/125	4	12/14	24	19	32	-	187.6	298.5	8	3/4-10	21.2	29.8
10	250	315	68	273	120	102/125	4	12/14	30	22	51	-	236.4	362.0	12	7/8-9	24.8	38.4
12	300	370	78	311	120	125	4	14	35	24	51	-	282.4	431.8	12	7/8-9	35.6	58.0
14	350	415	78	346	120	125	4	14	35	-	51	10x10	328.3	476.2	12	1-8	39.90	55.70
16	400	472	102	375	120	125	4	14	35	-	51	10x10	375.8	539.7	16	1-8	59.20	83.60
18	450	525	114	406	170	165	4	21	50	-	64	10x12	421.4	577.8	16	1 1/8-7	88.20	108.60
20	500	580	127	438	170	165	4	21	50	-	64	10x12	472.6	635.0	20	1 1/8-7	107.40	139.20
24	600	692	154	495	ø210	165	4	21	63.5	-	102	15.88 x 15.88	572.7	749.3	20	1 1/4-7	175.00	216.40

DelVal Flow Controls

DelVal Flow Controls Private Limited
Gat No. 25/1A,Kavathe,Tal.khandala,
Satara-412801,INDIA
Phone: +91-02169-241285/86/87
Fax : +91-02169-241288
Email: sales@delvalflow.com
Website: www.delvalflow.com

Address of Authorized Representative

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.

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

MGMT. SYS.
RvA C 024

Sivadasan Madiyath
Management Representative

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

MGMT. SYS. RvA C 024

Sivadasan Madiyath
Management Representative

MANAGEMENT SYSTEM CERTIFICATE

Certificate no.:
10000365126-MSC-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
Zwolseweg 1, 2994 LB Barendrecht, Netherlands

Erie Koek
Management Representative

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

SERIES 42 / 43

PTFE/PFA Lined Butterfly Valves

Wafer, Lug Body

DelVal®
Flow Controls

3-YEAR WARRANTY
3
ON DELVAL PRODUCTS

delvalflow.com

1-833-DELVAL1

STANDARD FEATURES

Quality & Performance

DelVal Flow Controls provides a wide range of quality products with the reliability you can count on. All Series 42/43 valves are manufactured in ISO 9001 certified facilities with a robust quality management system and according to BS EN 593 standard.

Design Construction and Features

1. Stem Connection
Stem connection available in standard DelVal sizes.

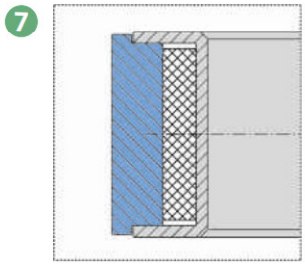
2. Top Plate Drilling
Top plate drilled to fit DIN EN ISO 5211 dimensions. All handles, gear operators and pneumatic DelTorq actuators are designed to mount directly to DelVal valves.

3. Heavy Duty Body
Heavy duty two-piece body has extended neck for 2" piping insulation. Standard coating is two layers of hard, zinc phosphate epoxy coating with semi-gloss finish for excellent corrosion resistance.

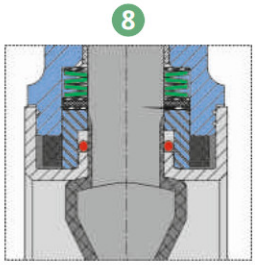
4. Locating Lug
Two flange locating holes for sizes up to 12" and four flange locating holes from 14" to 24" ensure easy alignment of valve during installation. They meet ASME CL 125/150 or other international drilling standards.

5. Disc-Stem
One-piece disc-stem in high strength design, available in options such as stainless steel (thin profile, with polished edge and hubs) and PTFE / PFA / UHMWPE (minimum 3mm thick) encapsulated one piece disc-stem with the covering extending to the stem sealing area.

6. Seat
Precision machined PTFE / PFA / UHMWPE (minimum 3mm thick) seat provides maximum resistance to the permeation of the application media. The wide sealing surface guarantees a leak free sealing and serves as flange gaskets.



7. Seat Energizer
A resilient seat energizer extends completely around the seat, including the disc hub area. This provides uniform pressure onto the circumference of the disc ensuring a bubble tight shut-off in all operating conditions. The energizer material can be Silicone, Viton (FKM) or EPDM.

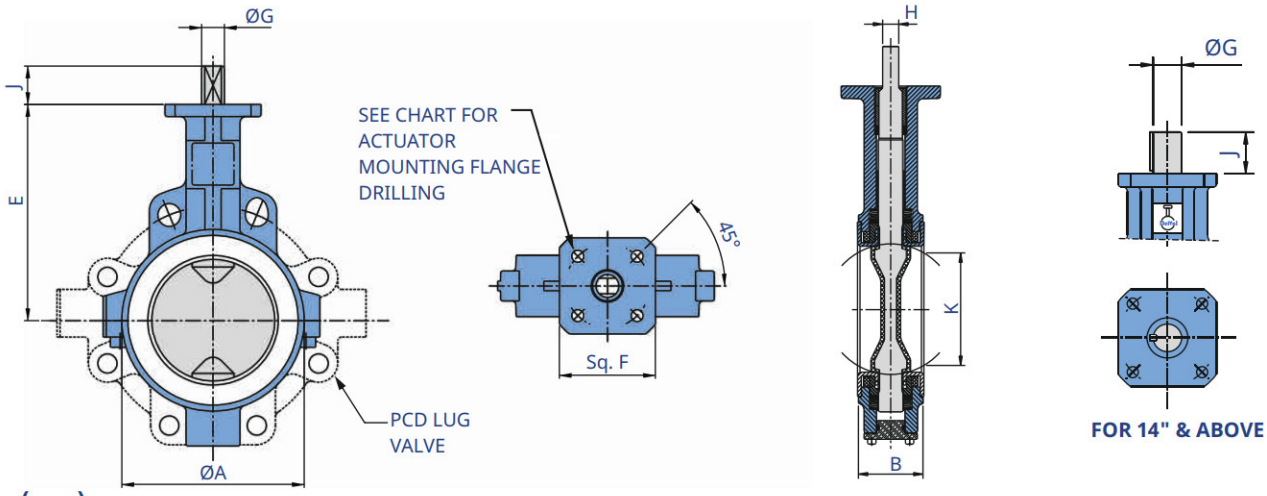


8. Live Loaded Stem Seal System
The live loaded stem seal system is uniformly loaded by a set of Belleville springs on the upper and lower stem. This system maintains an active sealing force on the disc hub which remains tight under the most extreme cyclic conditions.

9. Bushing
Heavy duty acetal bushing absorbs the forces acting on the disc-stem assembly due to line pressure.

10. Upper Stem Seal
Bi-directional 'U' cup stem seal.

DIMENSIONS AND WEIGHTS (WAFER / LUG)



Dimensions (mm)

Valve Size		ØA	*B	E	Sq. F	Top Flange Drilling			ØG	H	J	Key Size	K	Lug Bolting Data			App. Weight (kg)	
Inch	DN					PCD	No. of Holes	Hole Dia.						PCD	No. of Holes	Threads UNC- 2B	Wafer (Series 42)	Lug (Series 43)
2	**50**	91	43	140	80	70	4	10	14.0	10	32	-	33.5	120.7	4	⅝ - 11	3.1	4.1
2½	**65**	106	46	152	80	70	4	10	14.0	10	32	-	52.1	139.7	4	⅝ - 11	3.5	4.7
3	**80**	122	46	160	80	70	4	10	14.0	10	32	-	68.5	152.4	4	⅝ - 11	4.2	5.0
4	**100**	152	52	180	80	70	4	10	19.0	13	32	-	91.7	190.5	8	⅝ - 11	6.0	9.0
5	**125**	176	56	192	100	70 / 102	4	10 / 12	22.0	16	32	-	117.3	215.9	8	¾ - 10	8.2	13.0
6	**150**	205	56	205	100	70 / 102	4	10 / 12	22.0	16	32	-	139.7	241.3	8	¾ - 10	10.8	16.3
8	**200**	264	60	241	120	102 / 125	4	12 / 14	24.0	19	32	-	187.6	298.5	8	¾ - 10	17.6	29.8
10	**250**	315	68	273	120	102 / 125	4	12 / 14	30.0	22	51	-	236.4	362.0	12	⅞ - 9	27.0	38.4
12	**300**	370	78	311	120	125	4	14	35.0	24	51	-	282.4	431.8	12	⅞ - 9	35.6	58.0
14	**350**	415	78	346	120	125	4	14	35.0	-	51	10.00 x10.00	328.3	476.2	12	1 - 8	54.00	55.7
16	**400**	472	102	375	120	125	4	14	35.0	-	51	10.00 x10.00	375.8	539.7	16	1 - 8	59.20	83.6
18	**450**	525	114	406	170	165	4	21	50.0	-	64	10.00 x 12.00	421.4	577.8	16	1⅛ - 7	88.20	108.6
20	**500**	580	127	438	170	165	4	21	50.0	-	64	10.00 x 12.00	472.6	635.0	20	1⅛ - 7	107.40	139.2
24	**600**	692	154	495	ϕ210	165	4	21	63.5	-	102	15.88 x 15.88	572.7	749.3	20	1¼ - 7	175.00	216.4

Dimensions (Inch)

Valve Size		ØA	*B	E	Sq. F	Top Flange Drilling			ØG	H	J	Key Size	K	Lug Bolting Data			App. Weight (lbs)	
Inch	DN					PCD	No. of Holes	Hole Dia.						PCD	No. of Holes	Threads UNC- 2B	Wafer (Series 42)	Lug (Series 43)
2	**50**	3.58	1.69	5.51	3.15	2.76	4	0.39	0.55	0.39	1.25	-	1.32	4.75	4	⅝ - 11	6.83	9.04
2½	**65**	4.17	1.81	5.98	3.15	2.76	4	0.39	0.55	0.39	1.25	-	2.05	5.50	4	⅝ - 11	7.72	10.36
3	**80**	4.80	1.81	6.30	3.15	2.76	4	0.39	0.55	0.39	1.25	-	2.70	6.00	4	⅝ - 11	9.25	11.00
4	**100**	5.98	2.06	7.09	3.15	2.76	4	0.39	0.75	0.51	1.25	-	3.61	7.50	8	⅝ - 11	13.22	19.80
5	**125**	6.93	2.19	7.56	4.93	2.76 / 4.01	4	0.39 / 0.47	0.87	0.63	1.25	-	4.62	8.50	8	¾ - 10	18.08	28.66
6	**150**	8.07	2.19	8.07	4.93	2.76 / 4.01	4	0.39 / 0.47	0.87	0.63	1.25	-	5.50	9.50	8	¾ - 10	23.80	35.86
8	**200**	10.39	2.38	9.49	4.72	4.01 / 4.92	4	0.47 / 0.55	0.94	0.75	1.25	-	7.39	11.75	8	¾ - 10	38.90	65.69
10	**250**	12.40	2.69	10.75	4.72	4.01 / 4.92	4	0.47 / 0.55	1.18	0.87	2.00	-	9.31	14.25	12	⅞ - 9	59.52	84.48
12	**300**	14.57	3.06	12.24	4.72	4.92	4	0.55	1.38	0.94	2.00	-	11.12	17.00	12	⅞ - 9	78.47	127.60
14	**350**	16.34	3.06	13.62	4.72	4.92	4	0.55	1.38	-	2.00	0.39 x 0.39	12.92	18.75	12	1 - 8	119.04	122.80
16	**400**	18.58	4.00	14.76	4.72	4.92	4	0.55	1.38	-	2.00	0.39 x 0.39	14.80	21.25	16	1 - 8	130.51	184.31
18	**450**	20.67	4.50	15.98	6.70	6.50	4	0.83	1.97	-	2.50	0.39 x 0.47	16.59	22.75	16	1⅛ - 7	194.45	239.42
20	**500**	22.83	5.00	17.24	6.70	6.50	4	0.83	1.97	-	2.50	0.39 x 0.47	18.61	25.00	20	1⅛ - 7	236.78	306.88
24	**600**	27.24	6.06	19.49	ϕ8.27	6.50	4	0.83	2.50	-	4.00	0.62 x 0.62	22.55	29.50	20	1¼ - 7	385.81	477.08

*Face to face dimension ''B'' conforms to API 609 Category A/BS EN 558-1 Series 20/ISO 5752 Series 20/MSS SP67/ ASME B 16.10.

Torque Data (Nm)

Valve Size		2"	2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
Pressure ΔP, Bar	10	24	29	47	61	80	109	201	322	485	635	873	1230	1535	2446

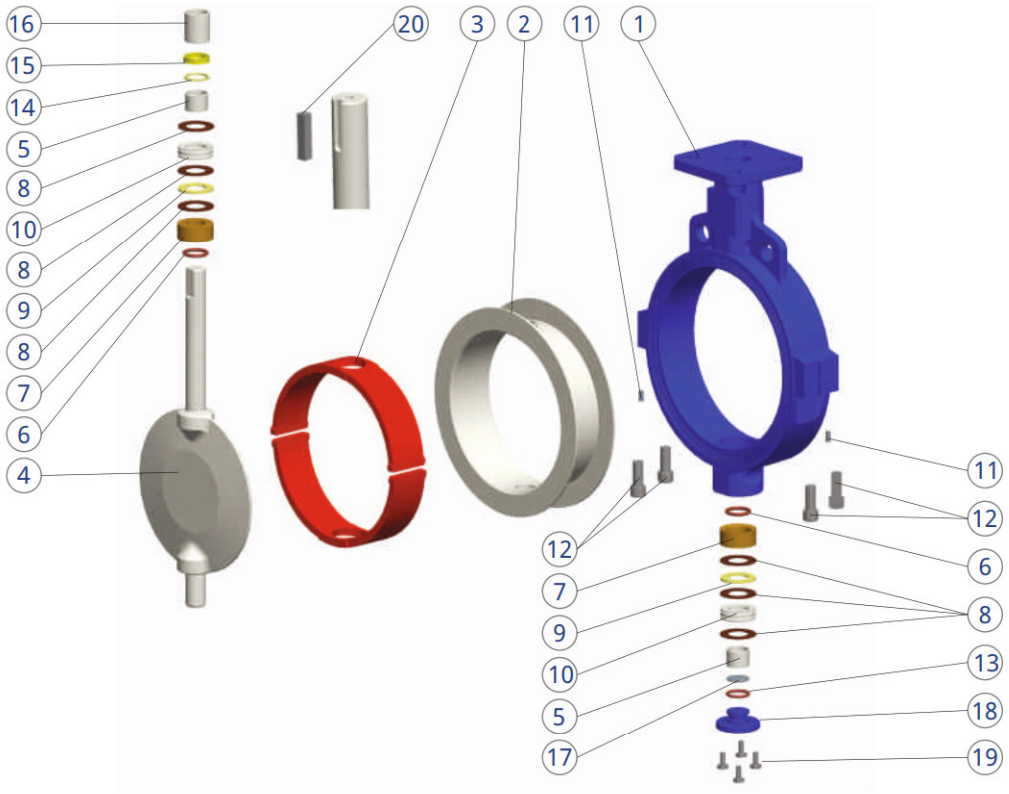
Torque Data (Lbf-Inch)

Valve Size		2"	2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
Pressure ΔP, PSI	150	212	257	416	540	708	965	1779	2850	4292	5620	7726	10886	13585	21647

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

STANDARD MATERIALS OF CONSTRUCTION

Wafer and Lug



Part List

Item	Description	*Standard Material	
		DI/CS	SS
1	Body	ASTM A395 60-40-18 ASTM A216 WCB	ASTM A351 CF8M/CF8
**2	Seat	PTFE PFA UHMWPE	
**3	Seat Energizer	Viton (FKM) Silicone EPDM	
4	Disc + Stem	ASTM A351 CF8M/CF8 (One-piece investment cast disc-stem 2" to 12") ASTM A995 4A/5A/6A (One-piece investment cast disc-stem 2" to 12") ASTM A351 CF8M/CF8 + ASTM A479 SS410/SS316 SH (one-piece disc-stem 14'' to 24'') **PTFE/PFA/UHMWPE moulded over CB7CU-1 (17-4 PH) (one-piece investment cast disc-stem 2" to 12") **PTFE/PFA/UHMWPE moulded over SS304 +17-4 PH (one-piece disc-stem 14'' to 24'')	
**5	Sleeve Bearing	Bear-G	
**6	'O' Ring	Viton (FKM)/Silicone/EPDM	

Item	Description	*Standard Material	
		DI/CS	SS
7	Pressure Ring	ASTM A479 SS304	
**8	Stem Gasket	Aramid Fibres AF159	
**9	Rubber Washer	Viton-A (FKM)/Silicone/EPDM	
**10	Belleville Spring	ASTM A693 Type 631 17-7 PH	
11	Dowel Pin	BS 970 EN8	
12	Socket Head Cap Screw	ISO 3506 A2-70	
**13	'O' Ring	NBR (BUNA-N)	
**14	Pack Support	Polyacetal (Delrin)	
**15	U-Cup Seal	NBR (BUNA-N)	
**16	Stem Bushing	Polyacetal (Delrin)	
**17	Thrust Bearing (24")	Phosphor Bronze BS 1400 PB4	
18	Bottom Plug/Plate	ASTM A479 SS410 Carbon steel IS 2062 Gr. B	ASTM A240 SS304/SS316
19	Hex Head Bolt	ISO 3506 A2-70	
20	Key (14" to 24")	BS 970 EN8	

**Recommended spares.

*Other materials may be available on request.

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

Standards and Specifications

DelVal Series 42/43 Butterfly Valves are designed and manufactured to meet the requirements of the following general industry standards:

Design: Full compliance to BS EN 593, general compliance to API 609, MSS SP 67

Face to Face: BS EN 558 Series 20, API 609 Category-A, ISO 5752 Series 20, MSS SP 67

Testing: BS EN 12266-1, API 598, MSS SP 67

Flange Standard: ASME B16.5 Class 150, Other International Standards

Body Style: Split Body

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

Size Range: 2" to 24"

Seat Temperature Limits

Seat Type	Energizer	*Temperature Limits	
		Lower Limit	Upper Limit
PTFE	Silicone	-58°F (-50°C)	392°F (200°C)
	Viton®/FKM	0°F (-18°C)	392°F (200°C)
	EPDM	-20°F (-29°C)	302°F (150°C)
PFA	Silicone	-58°F (-50°C)	392°F (200°C)
	Viton®/FKM	0°F (-18°C)	392°F (200°C)
	EPDM	-20°F (-29°C)	302°F (150°C)
UHMWPE	Silicone	-58°F (-50°C)	185°F (85°C)
	Viton®/FKM	0°F (-18°C)	185°F (85°C)
	EPDM	-20°F (-29°C)	185°F (85°C)

Pressure Rating

Inch	DN	PSIG	BARG
2" to 24"	**50 to 600**	150	10

PTFE Advantages and Applications:
PTFE is a superior material for use in highly corrosive applications. It is inert to most chemicals at high temperatures and pressures. It also has a low coefficient of friction. PTFE is ideal for use in the chemical industry, in processes with hazardous fluids, in the food and beverage industry, pharmaceutical facilities, electronics production plants and other industries where the media must not come in contact with any organic or metallic materials.

Viton® is registered trademark of E.I. DuPont.
*Temperature range shall be the lesser of the seat temperature or disc coating temperature.

End-of-Line Service
Lug body valves may be used in end-of-line service with downstream piping removed.

2" to 24" (DN 50 to DN 600) lug type butterfly valves are suitable for operation without a downstream flange installed, the dead-end pressure ratings are equal to the values stated above.

Operator Information

Valves up to size 6" can be supplied with lever handles for manual operation. Optional accessories for hand-lever operation can be provided for various flow control requirements. Pad-lock can also be provided to prevent 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 to open or close 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

3-YEAR WARRANTY ON DELVAL PRODUCTS

CERTIFICATES

QUALITY ASSURANCE MANAGEMENT ISO 9001
ENVIROMENTAL MANAGEMENT ISO 14001
OCCUPATIONAL HEALTH & SAFETY ISO 45001
DIRECTIVE 2014/68/EU ANNEX III MODULE B PED CERTIFIED
DRINKING WATER SYSTEM UL NSF/ANSI 61

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