

In allegato trasmettiamo certificati di collaudo secondo EN 10204 come segue:
Enclosed find certificates according to EN 10204 as follows:

Spettabile/Messrs.
DESMET BALLESTRA SPA
VIA PORTALUPPI, 17
20138 MILANO



Spettabile/Messrs.
 DESMET BALLESTRA SPA
 VIA PORTALUPPI, 17
 20138 MILANO

In allegato trasmettiamo certificati di collaudo secondo EN 10204 come segue:
Enclosed find certificates according to EN 10204 as follows:

Vs. ordine e data / Your P.O. and date	Ns. Conferma e data - Our Job and date	Ns. bolla e data / Our despatch note and date	Data / Date
101469 07/09/2010	OC 346	BO 213	21/10/2010

Document No.
R080309-1

INSPECTION - CUM - TESTING CERTIFICATE
HIGH PERFORMANCE BUTTERFLY VALVE
DOCUMENT CODE : CO & CT
CERTIFICATE AS PER EN 10204 3.1



TC. NO: E-00916/VX-14678 TO 14697/10-11

CUSTOMER : M/S. TRUST VALVES S.R.L.

P.O. NO : 680/10 REV0

P.O. DATE : 02.08.2010

W.O. NO : E-00916

VALVE SR. NO : VX-14678 TO VX-14697 (20 NOS)

VALVE SPECIFICATION :

VALVE TYPE : HIGH PERFORMANCE BUTTERFLY VALVE

VALVE SERIES : 7400

VALVE SIZE : 3" (DN 80)

RATING : 150#

END CONN : WAFER

CV : 165 @ 90°

BODY MATERIAL : ASTM A 351 GR. CF8M

BODY HEAT NO : AS PER ATTACHED CHECK LIST

DISC MATERIAL : ASTM A 351 GR. CF8M

FLOW DIRECTION : BI DIRECTION

SEAT MATERIAL : RPTFE

FLOW CHARACTER : ON - OFF

SHAFT MATERIAL : A 182 GR. F316

GLAND PACKING : PTFE

INSPECTION :

FUNCTIONAL TEST : VALVE OPERATED FROM FULLY CLOSE POSITION TO FULLY OPEN POSITION AND REVERED BACK AND FOUND SATISFACTORY.

VISUAL INSPECTION : VALVE VISUALLY INSPECTED IN ACCORDANCE WITH MSS SP 55 & FOUND SATISFACTORY

TOTAL STEM TRAVEL : 0-90°

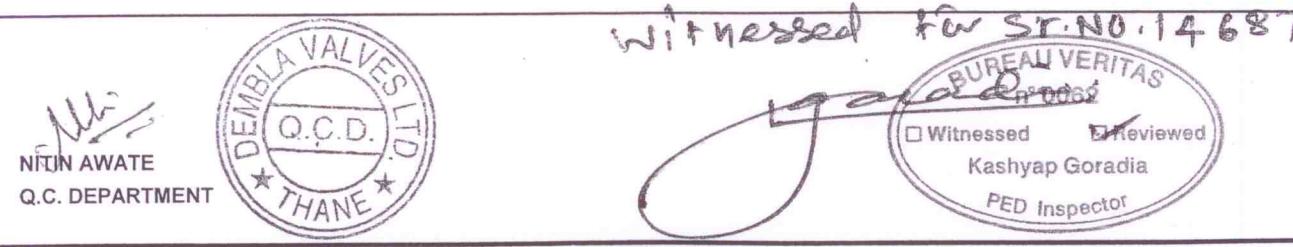
ACTUATOR TYPE : GEAR OPERATED MODE (AT-20)

DIMENSION CHECK : OK

HYDRO & SEAT LEAKAGE

TEST	TESTING STD	TEST PRESSURE	TEST DURATION	TEST MEDIA	PERMISSIBLE LEAKAGE	OBSERVED LEAKAGE	TEST RESULT
SHELL TEST	ASME 16.34	31 BAR	60 SEC.	WATER	NO LEAKAGE	NO LEAKAGE	ACCEPTED
HYDROSTATIC SEAT TEST (BOTH SIDE)	FCI 70.2	16 BAR	60 SEC.	WATER	NO LEAKAGE	NO LEAKAGE	ACCEPTED
PNEUMATIC SEAT TEST (BOTH SIDE)	FCI 70.2	06 BAR	60 SEC.	AIR	NO LEAKAGE	NO LEAKAGE	ACCEPTED

REMARK : VALVE DESIGN AS PER API 609



C-30 JAI MATADI COMPOUND KALHER THANE - BHIWANDI AGRA ROAD
TAL. BHIWANDI DIST. THANE, PIN - 421302, MAHARASHTRA

MATERIAL TRACEABILITY CHECK LIST



CUSTOMER : TRUST VALVE S.R.L.
 W.O. NO : E-00916
 P.O. NO : 680/10 REV0 DATE : 02.08.2010
 VALVE SR. NO : VX-14678 TO VX-14697
 QTY : 20 NOS

SR. NO.	VALVE SR. NO.	VALVE SIZE & TYPE.	BODY HEAT NO	DISC HEAT NO.	SHAFT ID NO.	END COVER HEAT NO.
		MATERIAL	A 351 GR, CF8M	A 351 GR, CF8M	A 182 F 316	A 351 GR, CF8M
1	VX-14678	DN 80 X 150# BUTTERFLY VALVE	9YDP	9XTA	SF173	9TRE
		TC. NO. & DATE	2086/10/1 19.12.2009	1914/10/1 15.12.2009	1547/10C 08.04.2010	0927/10/1 06.08.2009
2	VX-14679	DN 80 X 150# BUTTERFLY VALVE	9YDP	9X8K	SF173	9TRE
		TC. NO. & DATE	2086/10/1 19.12.2009	1971/10/1 11.12.2010	1547/10C 08.04.2010	0927/10/1 06.08.2009
3	VX-14680	DN 80 X 150# BUTTERFLY VALVE	9YDP	9X8K	SF173	9TRE
		TC. NO. & DATE	2086/10/1 19.12.2009	1971/10/1 11.12.2010	1547/10C 08.04.2010	0927/10/1 06.08.2009
4	VX-14681	DN 80 X 150# BUTTERFLY VALVE	9YDP	9X8K	SF173	9TRE
		TC. NO. & DATE	2086/10/1 19.12.2009	1971/10/1 11.12.2010	1547/10C 08.04.2010	0927/10/1 06.08.2009
5	VX-14682	DN 80 X 150# BUTTERFLY VALVE	9YDP	9XTA	SF173	9TRE
		TC. NO. & DATE	2086/10/1 19.12.2009	1914/10/1 15.12.2009	1547/10C 08.04.2010	0927/10/1 06.08.2009
6	VX-14683	DN 80 X 150# BUTTERFLY VALVE	9YDO	9XTA	SF173	9TRE
		TC. NO. & DATE	2042/10/1 15.12.2010	1914/10/1 15.12.2009	1547/10C 08.04.2010	0927/10/1 06.08.2009
7	VX-14684	DN 80 X 150# BUTTERFLY VALVE	9YDO	9XTA	SF173	9TRE
		TC. NO. & DATE	2042/10/1 15.12.2010	1914/10/1 15.12.2009	1547/10C 08.04.2010	0927/10/1 06.08.2009
8	VX-14685	DN 80 X 150# BUTTERFLY VALVE	9YDO	9XTA	SF173	9TRE
		TC. NO. & DATE	2042/10/1 15.12.2010	1914/10/1 15.12.2009	1547/10C 08.04.2010	0927/10/1 06.08.2009
9	VX-14686	DN 80 X 150# BUTTERFLY VALVE	9YDP	9X8K	SF173	9TRE
		TC. NO. & DATE	2086/10/1 19.12.2009	1971/10/1 11.12.2010	1547/10C 08.04.2010	0927/10/1 06.08.2009
10	VX-14687	DN 80 X 150# BUTTERFLY VALVE	9YDO	9X8K	SF173	9TRE
		TC. NO. & DATE	2042/10/1 15.12.2010	1971/10/1 11.12.2010	1547/10C 08.04.2010	0927/10/1 06.08.2009
11	VX-14688	DN 80 X 150# BUTTERFLY VALVE	9YDP	9X8K	SF173	9TRE
		TC. NO. & DATE	2086/10/1 19.12.2009	1971/10/1 11.12.2010	1547/10C 08.04.2010	0927/10/1 06.08.2009
12	VX-14689	DN 80 X 150# BUTTERFLY VALVE	9YDP	9X8K	SF173	9TRE



INTOLCAST PVT. LTD.

15,17&19 ANKUR INDUSTRIAL COMPLEX,15 KM. RAJKOT-GONDAL ROAD,SHAPAR.,RAJKOT,Pin:360002,INDIA
Tel:+912827-252051/252052/252053 ,Fax:+912827-252054,e-mail:info@intricastindia.com,url:www.intricastindia.com



44 100 05150502-E3

Page 1 of 1 F08/12

TEST CERTIFICATE

EN 10204:2004 - 3.1

M/s. DEMBLA VALVES LTD. - UNIT-II
C-30, JAI MATADI COMPOUND,
AT POST KALHER, BHIWANDI,
DIST: THANE (MAHARASHTRA)
KALHER, Pin :421302

T.C No :1971/10/1

Date: 11/12/2009

D.C No :1971/10

Date: 11/12/2009

O.A No :B3218

Date: 15/10/2009

P.O No :09-10/GN/003479

Date: 01/10/2009

SPECIFICATION : ASTM A351-06 Gr. CF8M

CONDITION OF SUPPLY : HEATED TO 1080° C, SOAKED FOR ONE HOUR PER INCH AND THEN WATER QUENCHED,

CHEMICAL ANALYSIS

HEAT #	C.%	Mn.%	Si.%	S.%	P.%	Cr.%	Ni.%	Mo.%				
MIN	-	-	-	-	-	18.000	9.000	2.000				
MAX	0.080	1.500	1.500	0.040	0.040	21.000	12.000	3.000				
9X8K	0.054	0.950	0.950	0.008	0.028	18.758	10.305	2.200				
9YAD	0.056	0.890	1.050	0.007	0.024	18.805	10.498	2.280				
9YAE	0.045	0.920	0.990	0.008	0.026	18.689	10.233	2.240				

MECHANICAL PROPERTIES

HEAT #	YS 0.2%		YS 1%	T.S	Elgn	Redn	Hardness	Impact Test AT °C					LATERAL EXP.		
	Mpa	Mpa	Mpa		%			in Area	HRB	CHARPY V MIN. J	1	2	3	Avg	(mm) MIN.
MIN	205	-	485	30	-	-	-	Size: 10 X10 X 55 MM							
MAX	-	-	-	-	-	-	-	99	1	2	3	Avg	1	2	3
9X8K	308.18	-	552.16	52.00	-	-	-	81-84	-	-	-	-	-	-	-
9YAD	309.17	-	560.38	48.80	-	-	-	81-84	-	-	-	-	-	-	-
9YAE	319.39	-	563.05	47.20	-	-	-	80-83	-	-	-	-	-	-	-

DESPATCH DETAILS

HEAT #	MOULD #	ITEM DESCRIPTION	PART #	DRAWING #	DESP. QTY
9X8K	F64274A	80 MM#150 BFV DISC		735201002403/R5	78
9YAD	F64289B	10"(250 MM)#150 BFV DISC		735201502403/R3	18
9YAE	F64289B	10"(250 MM)#150 BFV DISC		735201502403/R3	4

We hereby certify that items mentioned above conforms to :ASTM A351-06 Gr. CF8M.
We hereby certify that items mentioned above are manufactured & tested as per the requirements of material specification and found Satisfactory.

VISUAL INSPECTION : ALL CASTINGS AS PER MSS SP 55 AND FOUND SATISFACTORY.

NO RADIOACTIVE CONTAMINATION., NACE MR0175-2003

Amnt No.: 02
Date : 22.06.2004

Tested By:
NILESH JOSHI

For INTOLCAST PVT. LTD.

NILESH JOSHI
CHIEF CHEMIST



QA SYSTEM AS PER ANNEX 1, CLAUSE 4.3 OF PED 97/23/EC CERTIFIED BY TUV NORD VIDE CERTIFICATE NO.04 202 2 440 05 30750.

Document No.
R080309-1

INSPECTION-CUM-TESTING CERTIFICATE
HIGH PERFORMANCE BUTTERFLY VALVE
CERTIFICATE AS PER EN 10204-3.1



CUSTOMER : M/S. TRUST VALVE .

T.C.NO. E-00284/04925/08

P.O.NO.: 0219 / 08

P.O.DATE: 15.10.2008

W.O.NO.: E-00284

VALVE SR. NO.: VX-04925

VALVE SPECIFICATION

VALVE TYPE: HIGH PERFORMANCE BUTTERFLY VALVE

VALVE SERIES : 7400

FIRE SAFE DESIGN

RATING: ANSI 150#

VALVE SIZE: 8 " (DN 200)

CV: 2200 @ 90 USGPM

END CONN.: WAFER

BODY HEAT NO : 7751

BODY MATERIAL : ASTM A351 GR. CF8M

SHAFT MATERIAL : AISI 316

DISC MATERIAL : ASTM A351 GR. CF8M

FLOW CHARACT.: BIDIRECTINAL

SEAT METERIAL : PTFE + AISI 316



INSPECTION

VISUAL INSPECTION : VALVES VISUALLY INSPECT & FOUND SATISFACTORY

TOTAL STEM TRAVEL : 0-90° ACTUATOR TYPE: GEAR OPERATOR (AT-25)

DIMENSION CHECK : OK

HYDRO & SEAT LEAKAGE:

TEST	TEST PRESSURE	TEST DURATION	TEST MEDIA	TEST STD	TEST RESULT
SHELL TEST	30 BAR	180 SECOND	WATER	ASME 16.34	NO LEAKEGE (ACCEPTED)
SEAT LEAKAGE	20 BAR	60 SECOND	WATER	FCI 70.2	NO LEAKEGE (ACCEPTED)

REMARK : VALVE DESIGN AS PER API 609

NITIN AWATE
Q.C. DEPARTMENT
INSPECTION DATE : 20.12.2008



DEMBLA VALVES LIMITED
C-30, JAI MATADI COMPOUND, KALHER
THANE - BHIWANDI AGRA RD, TAL BHIWANDI,
DIST, THANE , PIN - 421302, MAHARASHTRA

**Plot No: G - 522, G.I.D.C. Lodhika, Kishan Gate,
Metoda, Dist : RAJKOT - 360 003. (GUJARAT)
Phone: 02827 287043, Fax : 02827 287073**



ALPHA

TECHNO CAST PVT. LTD.

TEST CERTIFICATE

AS PER EN 10204 3.1 -

To. M/s. DEMBLA VALVES Pvt. Ltd. C-30, JAI MATADI COMPOUND Thane - Bhiwandi Agra Road.	Test Certi. No. 142 Invoice No. : 362 Pur. Order No. 3501	Date : 20/11/2008 Date : 20/11/2008
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Specification : ASTM A-351, GR CF8M

Condition of Supply: Heated up to 1080°C soaking for 1HR. & water quenched

CHEMICAL ANALYSIS

MECHANICAL PROPERTIES

DESPATCH DETAILS

*We hereby certify that the items mentioned above are manufactured & tested as per the requirement of ASTM A-351 GR-CF8M & Found satisfactory

* Visual Inspection carried out as per MSS SP55 & Found satisfactory.

FOR. ALPHA TECHNO CAST PVT. LTD

FOR ALPHA TECHNOCAST PVT LTD

W CHEMIST (M MEHTA)

Q. C. DEPARTMENT (N PATEL)

~~REVIEWED~~





Vamein de España, S.A.

C/ Temple Nº 1.

28760 Tres Cantos

(MADRID)

e-mail: comercial@vamein.es

Telf. 34/ 91 803 45 17 / Fax. 34/ 91 803 57 69

CERTIFICADO DE PRUEBAS
TESTS CERTIFICATE

Nº / No.: CPE10/0695

Página / Page 1

Fecha / Date 05-oct-10

REFERENCIAS / REFERENCES

Cliente / Customer	FLOLINE, S.L.	Pedido nº / Order N°	1763
N / Ref. / Our Ref. :	CPE10/0695	Albarán / Delivery note	CAL10/0823

VALVULAS PROBADAS / TESTED VALVES

Posicion Item	Cantidad Quantity	D.N mm	D.N inches	Código válvula Valve code	Presión nominal Nominal pressure	Norma de Bridas Flange standard
I	4	100	4	117PE0100	150 psi	ANSI-150LBS

PRUEBAS HIDROSTATICAS / HYDROSTATIC TESTS

Tipo de fluido / Fluid type: AGUA / WATER

Procedimiento aplicable / Applicable procedure: INS.DAC100.01 (De acuerdo a ISO 5208 / According to ISO 5208)

DESCRIPCION DE LA PRUEBA TEST DESCRIPTION	PRESION DE PRUEBA TEST PRESSURE	TIEMPO DE PRUEBA TEST TIME PERIOD	RESULTADO RESULT
Prueba de resistencia del cuerpo Body resistance test	16 Bar	DN ≤ 200 --- 60 Seg	Satisfactorio Satisfactory
Prueba de estanquidad al cierre Closed valve watertightness test	12 Bar	DN ≥ 250 --- 180 Seg	Satisfactorio Satisfactory

PRUEBA DE FUNCIONAMIENTO / OPERATION TEST

Procedimiento aplicable Applicable Procedure	Número de maniobras N. Of operations	Tipo de operación Way of gearing	RESULTADO RESULT
INS.DAC100.01	3	Manual	Satisfactorio Satisfactory

OBSERVACIONES / REMARKS

Vamein de España, certifica que las válvulas anteriormente descritas, cumplen con los requisitos del pedido.

Vamein de España, certify that the above mentioned valves meet the requirements of the order.

Este documento ha sido elaborado mediante proceso informático, por lo que no necesita firma

PEDRO NUÑEZ ZAFRA
Resp.Dpto. Calidad / Quality Dept. Manager



Vamein de España, S.A.

C/ Temple Nº 1.
28760 Tres Cantos
(MADRID)
e-mail: comercial@vamein.es
Telf. 34/ 91 803 45 17 / Fax. 34/ 91 803 57 69

**CERTIFICADO DE CALIDAD
DE MATERIALES
MATERIAL QUALITY CERTIFICATE**

Nº / No.: CPE10/0695

Página / Page 2

Fecha / Date 05-oct-10

REFERENCIAS / REFERENCES

Cliente / Customer	FOLINE, S.L.	Order Nº	1763
N / Ref. / Our Ref. :	CPE10/0695	Albarán / Delivery note	CAL10/0823

ESPECIFICACION DE MATERIALES / MATERIAL ESPECIFICATION

Cuerpo / Body	Fundición Nodular / Ductile Iron ASTM A395M:88	Coladada / Heat
Disco / Disc	Fundición Nodular / Ductile Iron ASTM A395M:88	Coladada / Heat
Asiento / Seat	E.P.D.M.	
Eje / Shaft	Acero Inoxidable / Stainless Steel EN 10088-3 1.4021	
Cojinete / Bushing	D.N. ≤ 500 NYLON-6, D.N. ≥ 600 Bronze ASTM B-62 UNS C 83600	

CARACTERISTICAS MECANICAS / MECHANICAL FEATURES

Propiedades / Features	Cuerpo Body	Disco Disc	Asiento Seat	Eje Shaft	Cojinete Bushing
Carga de rotura / Tensile strength (N/mm ²)	≥ 415	≥ 415	----	800 – 950	----
Límite elástico / Yield strength (N/mm ²)	≥ 275	≥ 275	----	≥ 600	----
Alargamiento / Elongation (%)	≥ 18	≥ 18	----	≥ 12	----
Reducción de área / Area reduction (%)	----	----	----	----	----
Resiliencia / Energy value (J)	----	----	----	----	----
Dureza Brinell / Brinell hardness (HB)	143 – 187	143 – 187	----	----	----

COMPOSICION QUIMICA / CHEMICAL COMPOSITION

Elemento / Element	Cuerpo / Body	Disco / Disc	Asiento Seat	Eje Shaft	Cojinete Bushing
C (Carbono)	≥ 3,00	≥ 3,00	----	0,16 – 0,25	----
Mn (Manganoso)	----	----	----	≤ 1,50	----
Si (Silicio)	≤ 2,75	≤ 2,75	----	≤ 1,00	----
P (Fosforo)	≤ 0,08	≤ 0,08	----	≤ 0,040	----
S (Azufre)	----	----	----	≤ 0,030	----
Cr (Cromo)	----	----	----	12,0 – 14,0	----
Ni (Niquel)	----	----	----	----	----
Mo (Molibdeno)	----	----	----	----	----
Cu (Cobre)	----	----	----	----	----
Sn (Estaño)	----	----	----	----	----
Fe (Hierro)	----	----	----	----	----
Al (Aluminio)	---	----	----	----	----
Mg (Magnesio)	----	----	----	----	----
Zn (Zinc)	----	----	----	----	----
Sb (Antimonio)	----	----	----	----	----
Pb (Plomo)	----	----	----	----	----
Grafito/ Graphite	----	----	----	----	----

OBSERVACIONES / REMARKS

Vamein de España, certifica que los materiales que ampara este documento, cumplen con lo requerido en cada una de las normas y/o especificaciones que se describen, según manifiestan los fabricantes de los mismos en sus certificados de calidad.

Vamein de España, certify that the materials shown in this document comply with all standards and/or specifications described above, as per the quality certificates issued by the manufacturers

Este documento ha sido realizado mediante proceso informático, no necesita firma.

PEDRO NUÑEZ ZAFRA
Resp.Dpto. Calidad / Quality Dept. Manager

certificato dei materiali e di collaudo / materials and test certificateEN10204 3.1 EN10204 2.2

n°cert. / cert.n° 074

Savignone li 06/10/2010

Cliente Customer	TRUST VALVES	ordine order	682	data date	02/08/10	comm. job
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pos	q.tà q.ty	oggetto di prova test object	specifiche specification	lotto lot	colata heat	Marcatura tag.n°
1	3	TF WXP DN100	EN 1563	02110	10501	B85
2	4	TF WXP DN150	EN 1563	02609	80415	B85
3	1	TF WXP DN150	EN 1563	02609	70922	B85
4	2	TF WXP DN150	EN 1563	02110	10501	B85
5	1	TF WXP DN200	EN 1563	05708	5598	B85
6	1	TF WXP DN200	EN 1563	05708	4405	B85
7	1	TF WXP DN200	EN 1563	05708	80318	B85
8	1	TF WXP DN200	EN 1563	05708	80618	B85

Analisi chimica/chemical analysys

pos item	materiale material	C %	Si %	Mn %	Ni %	Cr %	Mo %	P %	S %	Cu %	Zn %	Al %
1	JS 1030	3,87	2,83	0,14				0,028	0,012			
2	JS 1030	3,71	2,63	0,34				0,052	0,021			
3	JS 1030	3,72	2,64	0,34				0,054	0,021			
4	JS 1030	3,87	2,83	0,14				0,028	0,012			
5	JS 1030	3,65	2,72	0,38				0,058	0,032			
6	JS 1030	3,71	2,69	0,28				0,053	0,022			
7	JS 1030	3,73	2,58	0,36				0,055	0,020			
8	JS 1030	3,69	2,68	0,39				0,052	0,018			

caratteristiche meccaniche /mechanical properties

pos item	snerv./yield N/mm ²	rott./tens N/mm ²	all. / el. %	rid. / red (L=5d)%	res/not.imp J	dur. / hard. HB
1	268,7	438	15,9			179
2	322	480	15,7			167
3	338	469	15,4			163
4	268,7	438	15,9			179
5	338	463	15,8			168
6	340	472	15,3			171
7	335	472	15,6			167
8	260	466	15,3			168

I valori indicati sono certificati dai fornitori / The above values have been certified by subsuppliers

certificato di prova / test certificate

oggetto di prova test object	specifiche di prova test specifications	fluido di prova test medium	pressioni pressure
corpo/body	EN12266 P11	X	1.5 x PN
sede/ seat	Interne costruttore/manufaturer std	X	-0.8 bar
sede/ seat	EN12266 P12	X	1.1 x PN
sede/ seat	EN12266 P12		6 bar

Si certifica che non sono state riscontrate perdite o deformazioni.
We certify that no leakage or deformation have been found.

UNITECH srl

INSTRUCTIONS FOR USE
AND MAINTENANCE

REVISION-0
DATE : 20-02-2002

CE MARKING TECHNICAL DOCUMENTATION TO PED 97/23/CE

"VAMEIN" BUTTERFLY VALVES





CE MARKING TO

PED 97/23/CE

PAGE 1 OF 28

REVISION : 0

**INSTRUCTIONS FOR USE AND
MAINTENANCE**

DATE : 20-02-2002

18.1. ASEMBLY.

Based on many years of experience in the manufacturing of butterfly valves, we are able to say that many of the problems arisen are due to the incorrect installation. This is why we believe it is very important that all the Distributors of our valves train their Clients on how to install the **VAMEIN** butterfly valve correctly, which makes the job easier and safer.

The **VAMEIN** butterfly valve has been specially designed to be installed between two flanges without the need of any joints between the valve and the piping, as this function is done by the seat.

The **VAMEIN** butterfly valve can be installed in any flow direction thanks to its special design, which converts it in a bi-directional valve.

The body design makes it's installing easier due to its low weight and its guidance holes to correctly guide the bolts.

The valve-actuator unit does not need any kind of brackets for its installation. excepting large diameter valves with special or oversized actuators.



CE MARKING TO

PED 97/23/CE

PAGE 2 OF 28

REVISION : 0

INSTRUCTIONS FOR USE AND
MAINTENANCE

DATE : 20-02-2002

18.1.1. FLANGE DIMENSIONS.

On installing a valve, it is very important to have the flange dimensions in mind, as their inner diameter must be between the maximum and minimum values shown in the table indicated below and document drawings.

The inner diameter of the flanges must be bigger than "Q" shown in our dimensional drawings, and it can be defined as the chord diameter to valve's face and serving to make the calculation of disc movement inside the pipe easier. If the inner diameter of the flanges is smaller than "Q", the disc will interfere with the flange or the pipe when opening. This may cause damage or may not allow the valve to open or close. The maximum of the inner diameter must not be exceeded, as if the seat liner is not compressed enough, the watertightness with the face of the flanges would not be achieved and it could also come out from its body housing when opening or closing the valve.

D.N. VÁLVE mm	D.N. VÁLVE Pulg.	OUTER DIÁMETER OF SEAT LINER	INNER DIÁMETER OF SEAT LINER	Dim. "Q"
50	2"	83	52	32
65	2½	103	67	51
80	3"	119	83	69
100	4"	138	102	89
125	5"	166	127	115
150	6"	191	153	143
200	8"	244	203	194
250	10"	301	253	243
300	12"	351	303	293
350	14"	400	343	332
400	16"	454	398	382
450	18"	510	448	432
500	20"	564	497	478
600	24"	676	607	585
700	28"	776	716	683
750	30"	859	788	733
800	32"	870	804	755
900	36"	970	911	852
1.000	40"	1.100	1.016	958
1.050	42"	1.150	1.066	1.013
1.100	44"	1.200	1.116	1.050
1.200	48"	1.290	1.156	1.098



CE MARKING TO

PED 97/23/CE

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18.1.2. ASSEMBLY INSTRUCTIONS.

The **VAMEIN** valve is installed through the compression between the valve body and the pipe flanges and no joints are required.

BEFORE ASSEMBLING

- Verify that there are no welding slags or metallic particles on the face of the flanges.
- Verify that the flanges are separated enough to allow the valve to be slotted without damaging the seat.
- Verify that the inner diameter both of the flanges and pipe allows the movement of the disc, and check that the inner diameter of pipe is within the values of the following table.

D.N. VALVE mm	D.N. VALVE Inch.	MAXIMUM INNER DIAMETER OF FLANGE / PIPE	MINIMUM INNER DIAMETER OF FLANGE / PIPE	Dim. "Q"
50	2"	62	42	32
65	2½	77	59	51
80	3"	91	76	69
100	4"	116	95	89
125	5"	144	121	115
150	6"	171	146	143
200	8"	223	197	194
250	10"	277	249	243
300	12"	328	297	293
350	14"	372	347	332
400	16"	423	396	382
450	18"	474	446	432
500	20"	524	495	478
600	24"	624	586	585
700	28"	715	692	683
750	30"	787	745	733
800	32"	817	793	755
900	36"	919	890	852
1.000	40"	1.020	994	958
1.050	42"	1.070	1.044	1.013
1.100	44"	1.110	1.090	1.050
1.200	48"	1.200	1.130	1.098

N.B.: To obtain the best working conditions, flanges with the biggest surface contacting the seat must be selected; this way, accidental getting out of the seat from its housing will be avoided and the maximum permissible design pressure can be achieved.

For this reason, the following rule must be taken into consideration:

"THE SMALLER CONTACT SURFACE WITH THE SEAT THE FLANGE HAS, THE LOWER WORKING PRESSURE THE VALVE HAS".



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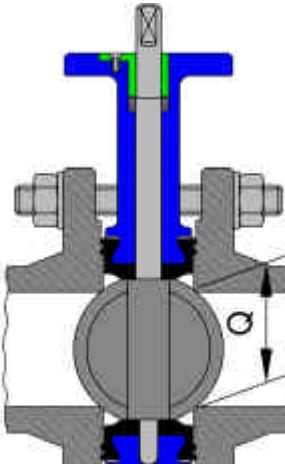
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EXAMPLES.

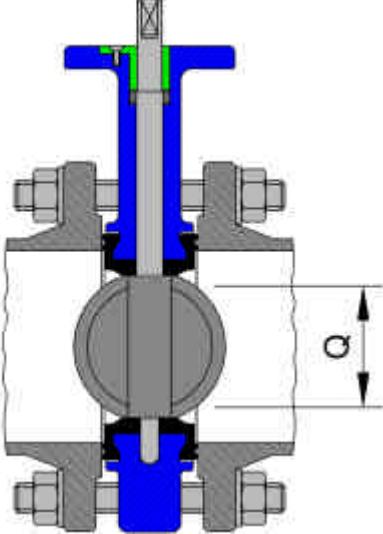
- Too small flanges:

If the inner diameter of flanges is smaller than the dimension "Q", the disc will touch these flanges or the pipe during opening. This will cause damages and will not allow the valve to open or close properly.



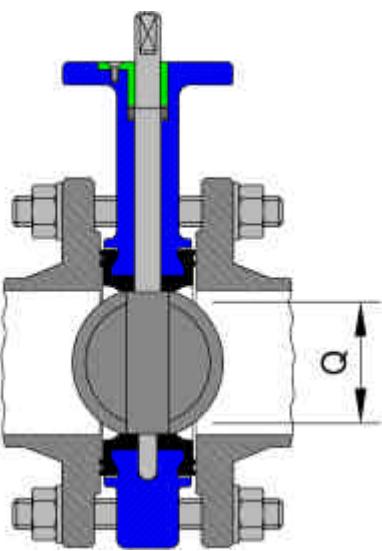
- Too big flanges:

If the inner diameter of flanges is bigger than the one indicated as maximum in chart of the previous page, the liner will not be compressed enough and will not reach the correct water tightness with the flange surfaces. Furthermore, there is the risk that the liner will come off from its housing during an open / close operation of the valve.



- Right flanges:

In order to achieve the maximum contact surface of the flange with the liner and thus reaching the maximum working pressure of the valve it is necessary to select flanges where the inner diameter is as close as possible to the minimum diameter indicated in CHART of previous page, in order to get the maximum contact surface of the flange with the liner and thus to be able to reach the maximum admissible working pressure of the valve.





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DURING THE ASSEMBLY:

- Place the valve half closed to avoid the butterfly to project out of the valve's body.
- Place the valve between the two flanges and center it by means of some braces.
- Open the valve to its full extent to ensure that the disc has no contact with the inner flange or pipe diameter.
- Tighten all the studs and/or bolts in an opposed sequence.
- Operate the valve several times to ensure the free rotation of the disc.
- With DN-500 mm (20") valves and above it is advisable to use a telescopic disassembling spool to make the assembly easier.
- From DN-600 mm (24") onwards, the valve must be installed with its shaft parallel to the ground to ease and secure the support on the bearings, gaining better movement of the disc, avoiding it from resting its weight on the seat or the cover plates, this way you also gain the advantage of the seat selfcleaning, removing any dirt from the rotation area, preventing it from any damage.

18.1.3. BUTTERFLY VALVE POSITIONING.

The **VAMEIN** butterfly valves up to 500 mm (20") Nominal Diameter can be installed in a vertical or horizontal position. Nevertheless, from a mechanical point of view the optimum position for the shaft is to be in a horizontal position as it allows the weight of the butterfly to rest on the valve bearings. From a hydraulic point of view, the horizontal position allows the fluid to have a cleaning effect on the interior pivot point of the valve.

The circuit configuration, in the case of Tees or elbows, especially when the fluid is flowing fast, imposes some conditions on the positioning of the valves:

- a) Avoid close proximity to an elbow, especially when installed downstream.
- b) If the valve is close to an elbow, the shaft of the disc must be placed in the elbows plan to avoid the fluid's vein coming loose and its acceleration effects.



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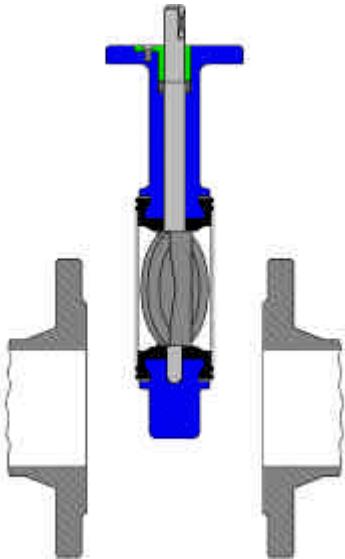
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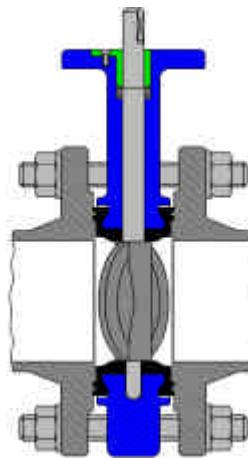
INSTRUCTIONS FOR USE AND
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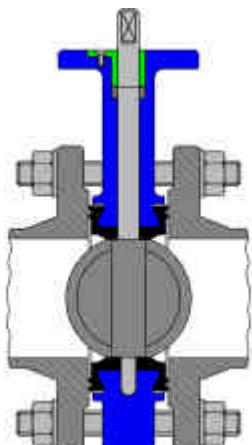
18.1.4. MOUNTING INSTRUCTIONS (CORRECT INSTALLATION).



A. Pipe displaced to enable free access to the valve.



B. Valve in semi-closed position to protect the edge of the disc, reduce the friction of the liner during the installation and help to reduce the initial torque.



C. Disc should be turned to the full open position after the alignment with flanges and before tightening the bolts, which should be done crosswise.



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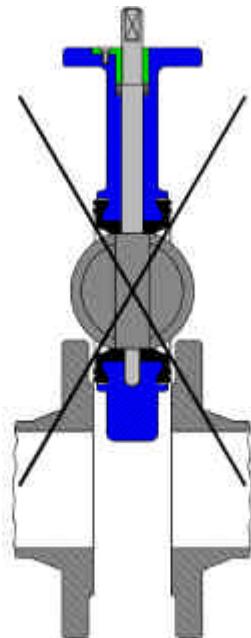
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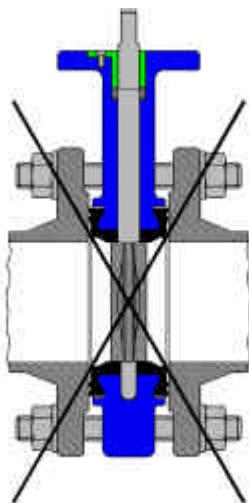
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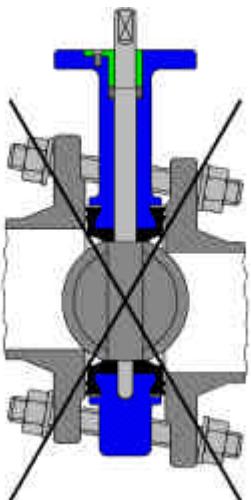
DATE : 20-02-2002

18.1.5. MOUNTING INSTRUCTIONS (INCORRECT INSTALLATION).

- A. Pipe insufficiently displaced; the liner can be damaged and squeezed out from its housing. Disc in the open position will touch the flange and will be damaged.



- B. The disc in the fully closed position will cause liner distortion. When the flanges are compressed, the rubber distorts creating an excessive initial torque for the operation.



- C. Incorrect pipe alignment may cause interferences between disc edge and flange inner faces, leading to excessive torque and damages to the disc and its coating, and therefore failures in the valve tightness.



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MAINTENANCE**

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18.2. MAINTENANCE.

The VAMEIN butterfly valves have been designed and manufactured to obtain the maximum life and efficiency at minimum wear.

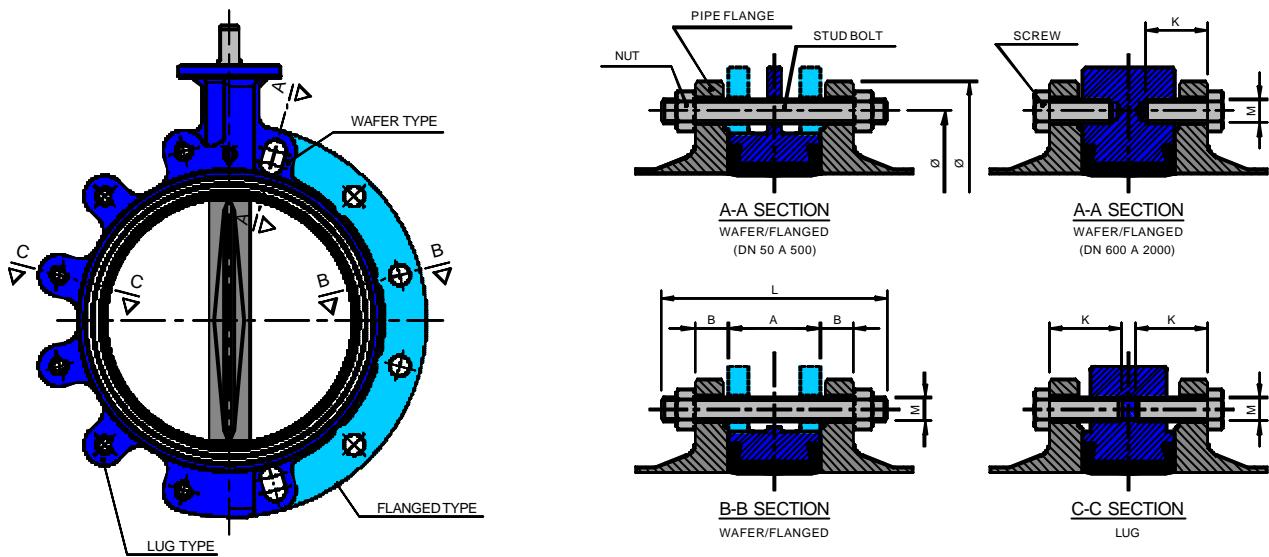
No periodic lubrication or maintenance is required.

All the VAMEIN butterfly valve components are replaceable. In order to replace any component the valve must be removed from the pipeline following steps listed below:

- a) Move the disc near the closed position. As the valve is installed and we do not know the disc position, we must take into account the indication of the torsion parallel flats or the keyway which are in the same position as the shaft and the disc. In case of valves with square end shaft, a notch on the upper part of the shaft indicates the disc position.
- b) Hold the valve and remove the flange bolts.
- c) Replace the damaged component.
- d) Place the valve into installation again.

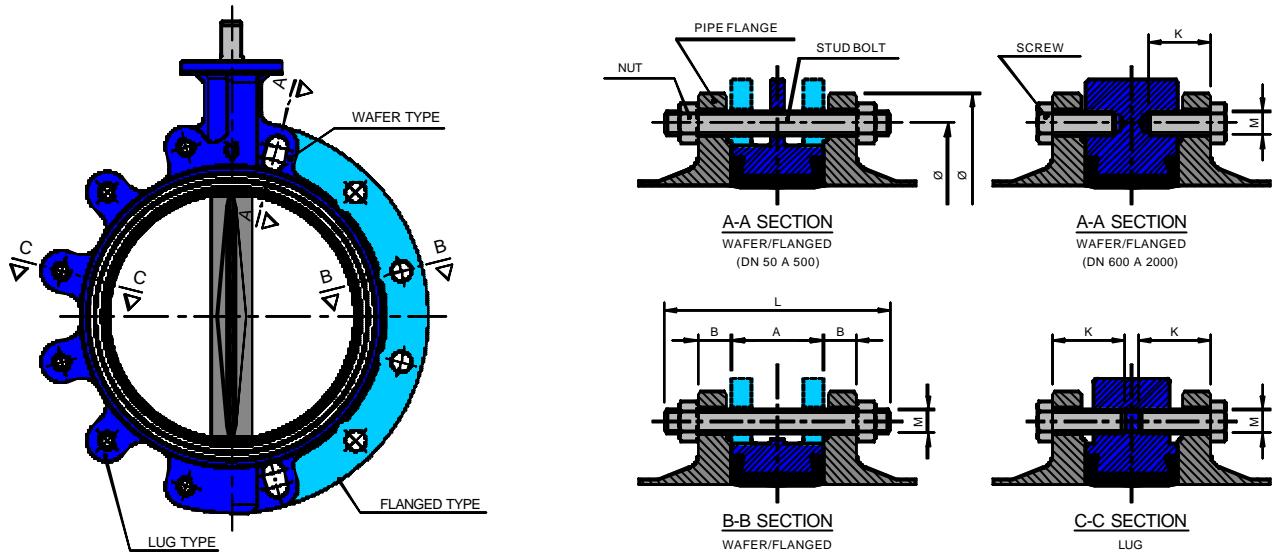
As VAMEIN actuators are replaceable, and thanks to the security system avoiding the shaft to be blown out accidentally, they can be replaced on site without removing the valve from pipeline.

18.3. BOLTS FOR THE INSTALLATION OF THE "VAMEIN" BUTTERFLY VALVES.



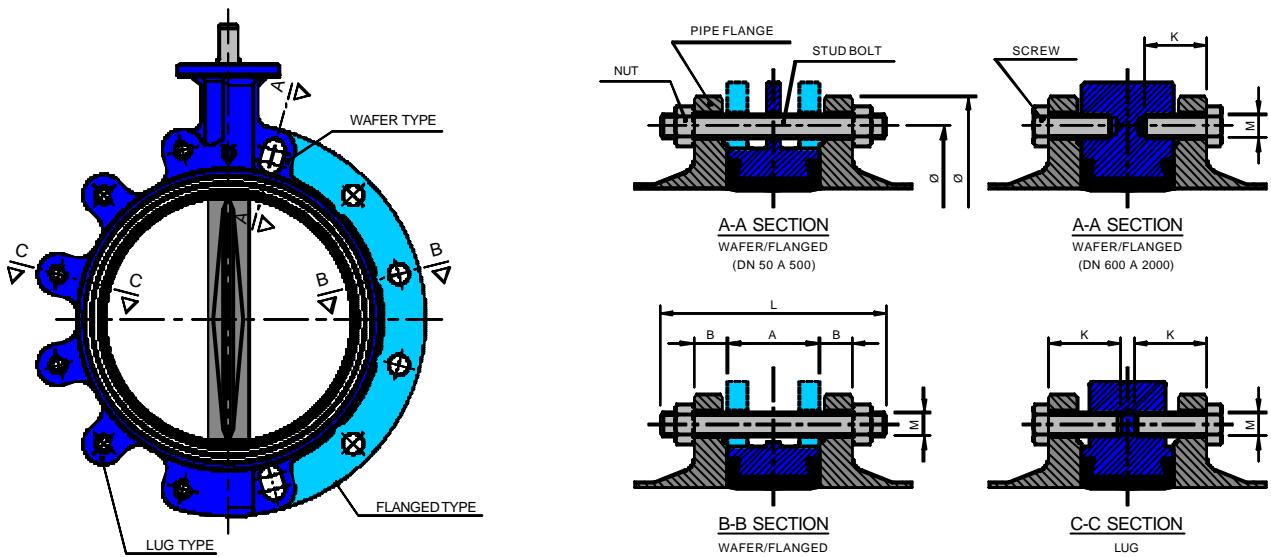
DIN PN-10 STANDARD																			
VALVE			FLANGES (DIN-2632)					NECESSARY BOLTS FOR WAFER AND FLANGED TYPE							BOLTS FOR LUG TYPE				
D.N.		FACE TO FACE	THICKNESS	BOLT CENTRE	QUANTITY	EXTERNAL DIAMETER	LENGTH	THREAD	QUANTITY	NUTS	THREAD	QUANTITY	LENGTH	THREAD	QUANTITY	SCREWS	LENGTH	THREAD	QUANTITY
mm	Inch.	A	B	\varnothing C	Nº	\varnothing D	L	M	Nº	M	Nº	L	M	Nº	L	M	Nº		
50	2"	43	18	125	4	165	120	M-16	4	M-16	8				35	M-16	8		
65	2½"	46	18	145	4	185	125	M-16	4	M-16	8				35	M-16	8		
80	3"	46	20	160	8	200	130	M-16	8	M-16	16				40	M-16	16		
100	4"	52	20	180	8	220	135	M-16	8	M-16	16				40	M-16	16		
125	5"	56	22	210	8	250	140	M-16	8	M-16	16				45	M-16	16		
150	6"	56	22	240	8	285	150	M-20	8	M-20	16				45	M-20	16		
200	8"	60	24	295	8	340	160	M-20	8	M-20	16				50	M-20	16		
250	10"	68	26	350	12	395	170	M-20	12	M-20	24				55	M-20	24		
300	12"	78	26	400	12	445	180	M-20	12	M-20	24				60	M-20	24		
350	14"	78	26	460	16	505	180	M-20	16	M-20	32				60	M-20	32		
400	16"	102	26	515	16	565	215	M-24	16	M-24	32				70	M-24	32		
(*)450	18"	113	28	565	20	615	230	M-24	20	M-24	40				80	M-24	40		
500	20"	126	28	620	20	670	240	M-24	20	M-24	40				85	M-24	40		
600	24"	146	28	725	20	780	270	M-27	16	M-27	32	75	M-27	8	75	M-27	8		
												95	M-27	32					
700	28"	175	30	840	24	895	305	M-27	20	M-27	40	80	M-27	8					
750	30"	176	-	-	-	-	-	-	-	-	-	-	-	-					
800	32"	215	32	950	24	1015	355	M-30	20	M-30	40	90	M-30	8					
900	36"	246	34	1050	28	1115	390	M-30	24	M-30	48	90	M-30	8					
1000	40"	280	34	1160	28	1230	430	M-33	24	M-33	48	90	M-33	8					
1050	42"	280	-	-	-	-	-	-	-	-	-	-	-	-					
1100	44"	280	-	-	-	-	-	-	-	-	-	-	-	-					
1200	48"	360	38	1380	32	1455	525	M-36	28	M-36	56	95	M-36	8					

(*): As per B.S. 4504 PN-10.



DIN PN-16 STANDARD																		
VALVE			FLANGES (DIN-2633)					NECESSARY BOLTS FOR WAFER AND FLANGED TYPE							BOLTS FOR LUG TYPE			
D.N.		FACE TO FACE	THICKNESS	BOLT CENTRE	QUANTITY	EXTERNAL DIAMETER	STUD BOLTS			NUTS			SCREWS			SCREWS		
mm	Inch.	A	B	\varnothing C	Nº	\varnothing D	L	M	Nº	M	Nº	THREAD	LENGTH	THREAD	LENGTH	M	Nº	THREAD
50	2"	43	18	125	4	165	120	M-16	4	M-16	8	M-16	35	M-16	8			
65	2½"	46	18	145	4	185	125	M-16	4	M-16	8	M-16	35	M-16	8			
80	3"	46	20	160	8	200	130	M-16	8	M-16	16	M-16	40	M-16	16			
100	4"	52	20	180	8	220	135	M-16	8	M-16	16	M-16	40	M-16	16			
125	5"	56	22	210	8	250	140	M-16	8	M-16	16	M-16	45	M-16	16			
150	6"	56	22	240	8	285	150	M-20	8	M-20	16	M-20	45	M-20	16			
200	8"	60	24	295	12	340	160	M-20	12	M-20	24	M-20	50	M-20	24			
250	10"	68	26	355	12	405	180	M-24	12	M-24	24	M-24	55	M-24	24			
300	12"	78	28	410	12	460	195	M-24	12	M-24	24	M-24	65	M-24	24			
350	14"	78	30	470	16	520	195	M-24	16	M-24	32	M-24	65	M-24	32			
400	16"	102	32	525	16	580	235	M-27	16	M-27	32	M-27	80	M-27	32			
(-)450	18"	113	34	585	20	640	250	M-27	20	M-27	40	M-27	85	M-27	40			
500	20"	126	34	650	20	715	270	M-30	20	M-30	40	M-30	95	M-30	40			
600	24"	146	36	770	20	840	300	M-33	16	M-33	32	M-33	75	M-33	8	85	M-33	
													100	M-33	8	32		
700	28"	175	36	840	24	910	325	M-33	20	M-33	40	M-33	80	M-33	8			
750	30"	176	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
800	32"	215	38	950	24	1025	380	M-36	20	M-36	40	M-36	90	M-36	8			
900	36"	246	40	1050	28	1125	415	M-36	24	M-36	48	M-36	90	M-36	8			
1000	40"	280	42	1170	28	1255	460	M-39	24	M-39	48	M-39	90	M-39	8			
1050	42"	280	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1100	44"	280	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1200	48"	360	48	1390	32	1485	565	M-45	28	M-45	56	M-45	105	M-45	8			

(*) As per B.S. 4504 PN-16.

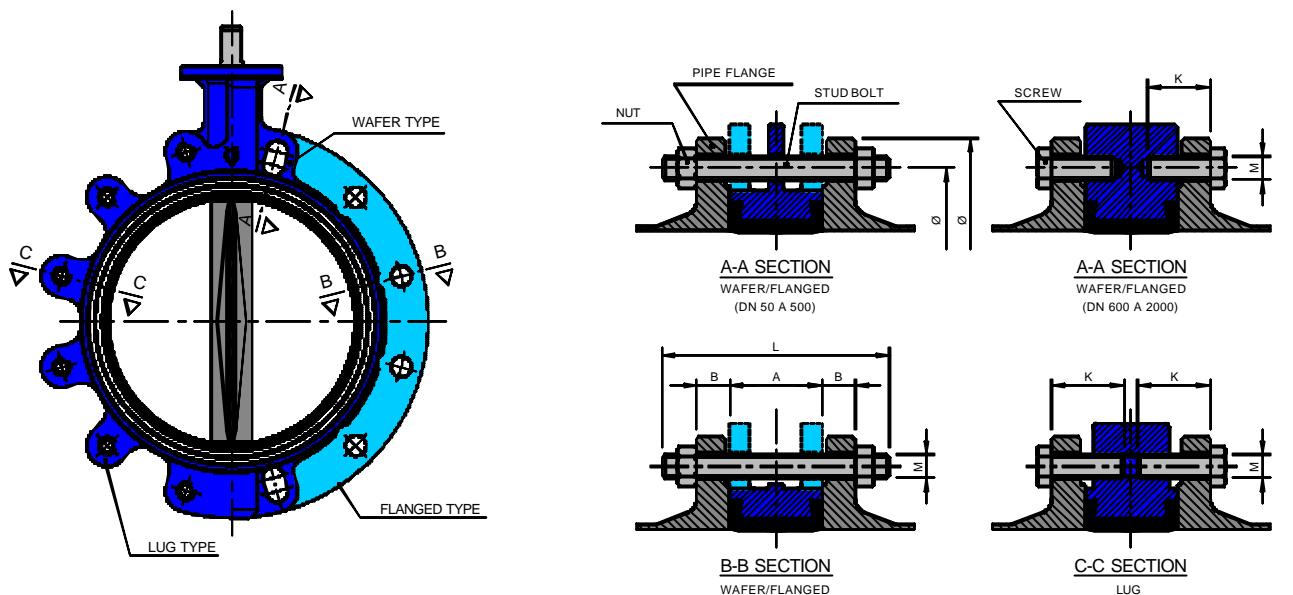


ANSI B.16.5. 150 Lbs. STANDARD

VALVE		FLANGES						NECESSARY BOLTS FOR WAFER AND FLANGED TYPE						BOLTS FOR LUG TYPE			
D.N.	FACE TO FACE	THICKNESS	BOLT CENTRE	QUANTITY	EXTERNAL DIAMETER	LENGTH	THREAD.	QUANTITY	THREAD	QUANTITY	LENGTH	THREAD	QUANTITY	LENGTH	THREAD	QUANTITY	
mm	Inch.	A	B	\varnothing C	Nº	\varnothing D	L	M	Nº	M	L	M	Nº	L	M	Nº	
50	2"	43	19.1	120.6	4	152.4	120	5/8"UNC	4	5/8"UNC	8			35	5/8"UNC	8	
65	2½"	46	22.2	139.7	4	177.8	130	5/8"UNC	4	5/8"UNC	8			40	5/8"UNC	8	
80	3"	46	23.8	152.4	4	190.5	135	5/8"UNC	4	5/8"UNC	8			40	5/8"UNC	8	
100	4"	52	23.8	190.5	8	228.6	140	5/8"UNC	8	5/8"UNC	16			45	5/8"UNC	16	
125	5"	56	23.8	215.9	8	254	155	3/4"UNC	8	3/4"UNC	16			45	3/4"UNC	16	
150	6"	56	25.4	241.3	8	279.4	155	3/4"UNC	8	3/4"UNC	16			45	3/4"UNC	16	
200	8"	60	28.6	298.4	8	342.9	165	3/4"UNC	8	3/4"UNC	16			50	3/4"UNC	16	
250	10"	68	30.2	361.9	12	406.4	185	7/8"UNC	12	7/8"UNC	24			60	7/8"UNC	24	
300	12"	78	31.7	431.8	12	482.6	200	7/8"UNC	12	7/8"UNC	24			65	7/8"UNC	24	
350	14"	78	34.9	476.2	12	533.4	215	1"UNC	12	1"UNC	24			70	1"UNC	24	
400	16"	102	36.5	539.7	16	596.9	245	1"UNC	16	1"UNC	32			85	1"UNC	32	
450	18"	113	39.7	577.8	16	635	265	1 1/8"UN	16	1 1/8"UN	32			90	1 1/8"UN	32	
500	20"	126	42.9	635	20	698.5	285	1 1/8"UN	20	1 1/8"UN	40			100	1 1/8"UN	40	
600	24"	146	47.6	749.3	20	812.8	305	1 1/4"UN	16	1 1/4"	32	90	1 1/4"	8	90	1 1/4"UN	8
												110	1 1/4"UN	32			

MSS-SP-44. 150 Lbs. STANDARD

700	28"	175	71.4	863.6	28	927.1	390	1 1/4"UN	24	1 1/4"UN	48	115	1 1/4"UN	8
750	30"	176	74.6	914.4	28	984.2	400	1 1/4"UN	24	1 1/4"UN	48	120	1 1/4"UN	8
800	32"	215	81	977.9	28	1060.4	460	1 1/2"UN	24	1 1/2"UN	48	135	1 1/2"UN	8
900	36"	246	90.5	1085.8	32	1168.4	510	1 1/2"UN	28	1 1/2"UN	56	140	1 1/2"UN	8
1000	40"	280	90.5	1200.1	36	1289	545	1 1/2"UN	32	1 1/2"UN	64	145	1 1/2"UN	8
1050	42"	280	96.8	1257.3	36	1346.2	570	1 1/2"UN	32	1 1/2"UN	64	155	1 1/2"UN	8
1100	44"	280	101.6	1314.5	40	1403.4	580	1 1/2"UN	36	1 1/2"UN	72	160	1 1/2"UN	8
1200	48"	360	108	1422.4	44	1511.3	670	1 1/2"UN	40	1 1/2"UN	80	165	1 1/2"UN	8



B.S 10 TABLE-E. STANDARD

VALVE		FLANGES (AS-2129)					NECESSARY BOLTS FOR WAFER AND FLANGED TYPE						BOLTS FOR TYPE			
D.N.	FACE TO FACE	THICKNESS	BOLT CENTRE	QUANTITY	EXTERNAL DIAMETER	Ø D	L	M	Nº	M	Nº	STUD BOLTS	NUTS	SCREWS	SCREWS	
mm	Inch.	A	B	Ø C	Nº	Ø D	L	M	Nº	M	Nº	LENGTH	THREAD	LENGTH	THREAD	
50	2"	43	19	114.3	4	152.4	120	5/8"UNC	4	5/8"UNC	8			35	5/8"UNC 5/8"	8
65	2½"	46	19	127	4	165.1	125	5/8"UNC	4	5/8"UNC	8			(1)	(1)	(1)
80	3"	46	19	146.1	4	184.2	125	5/8"UNC	4	5/8"UNC	8			(1)	(1)	(1)
100	4"	52	22	177.8	8	215.9	135	5/8"UNC	8	5/8"UNC	16			45	5/8"UNC	16
125	5"	56	22	209.6	8	254	150	3/4"UNC	8	3/4"UNC	16			45	3/4"UNC	16
150	6"	56	22	235	8	279.4	150	3/4"UNC	8	3/4"UNC	16			45	3/4"UNC	16
200	8"	60	25	292.1	8	336.6	160	3/4"UNC	8	3/4"UNC	16			50	3/4"UNC	16
250	10"	68	25	355.6	12	406.4	175	7/8"UNC	12	7/8"UNC	24			55	7/8"UNC	24
300	12"	78	29	406.4	12	457.2	190	7/8"UNC	12	7/8"UNC	24			65	7/8"UNC	24
350	14"	78	32	469.9	12	527.1	210	1"UNC	12	1"UNC	24			65	1"UNC	24
400	16"	102	32	520.7	12	577.9	235	1"UNC	12	1"UNC	24			(1)	(1)	(1)
450	18"	113	35	584.2	16	641.4	255	1 1/8"UN	16	1 1/8"UN	32			85	1 1/8"UN	32
500	20"	126	38	641.4	16	704.9	275	1 1/8"UN	16	1 1/8"UN	32			(1)	(1)	(1)
600	24"	146	48	755.7	16	825.5	320	1 1/4"UN	12	1 1/4"UN	24	95	(1)	(1)	(1)	(1)
700	28"	175	51	845	20	910	355	1 1/4"UN	16	1 1/4"UN	32	100	1 1/4"	8		
750	30"	176	54	927.1	20	997	365	1 1/4"UN	16	1 1/4"UN	32	100	1 1/4"	8		
800	32"	215	54	984	20	1060	420	1 1/2"UN	16	1 1/2"UN	32	110	1 1/2"	8		
900	36"	246	64	1092.2	24	1174.8	470	1 1/2"UN	20	1 1/2"UN	40	120	1 1/2"	8		
1000	40"	280	67	1175	24	1255	510	1 1/2"UN	20	1 1/2"UN	40	125	1 1/2"	8		
1050	42"	280	70	1251	28	1335	515	1 1/2"UN	24	1 1/2"UN	48	130	1 1/2"	8		
1100	44"	280	-	-	-	-	-	1 1/2"UN	-	1 1/2"UN	-	-	-	-	-	-
1200	48"	360	79	1410	32	1490	615	1 1/2"UN	28	1 1/2"UN	56	140	1 1/2"	8		

(1): This standard is not possible in LUG TYPE valves..

18.4. FLANGE DRILLING STANDARD SUITABLE TO VAMEIN BUTTERFLY VALVES.

DN		DIN												ANSI B 16.5 Class 150				MSS SP-44 Class 150			
		PN-6				PN-10				PN-16											
mm	Inches	W	WL	B	L	W	WL	B	L	W	WL	B	L	W	WL	B	L	W	WL	B	L
50	2"	Green	Yellow			Green	Green			Green	Green			Green	Green			Blue	Blue		
65	2½"	Green	Yellow			Green	Green			Green	Green			Green	Green			Green	Green		
80	3"	Green	Yellow			Green	Green			Green	Green			Green	Green			Green	Green		
100	4"	Green	Yellow	Green	Yellow	Green	Green	Green	Green	Blue	Blue										
125	5"	Green	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Blue	Blue		
150	6"	Green	Red	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Blue	Blue		
200	8"	Green	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Blue	Blue		
250	10"	Green	Red	Red	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Blue	Blue		
300	12"	Green	Red	Red	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Blue	Blue		
350	14"	Red	Red	Red	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Blue	Blue		
400	16"	Red	Red	Red	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Blue	Blue		
450	18"	Blue	Blue	Blue	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Blue	Blue		
500	20"	Red	Red	Red	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Blue	Blue		
600	24"	Red	Red	Red	Red	Green	Green	Green	Green	Blue	Blue										
700	28"	Red	Red	Red	Red	Green	Green	Green	Blue	Blue	Green										
750	30"	Blue	Blue	Blue	Red	Green	Green	Green	Green	Blue	Blue	Green									
800	32"	Red	Red	Red	Red	Green	Green	Green	Green	Blue	Blue	Green									
900	36"	Red	Red	Red	Red	Green	Green	Green	Green	Blue	Blue	Green									
1.000	40"	Red	Red	Red	Red	Green	Green	Green	Green	Blue	Blue	Green									
1.050	42"	Blue	Blue	Blue	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Blue	Blue	Green	
1.100	44"	Blue	Blue	Blue	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Blue	Blue	Green	
1.200	48"	Red	Red	Red	Red	Green	Green	Green	Green	Blue	Blue	Green									
1.300	52"	Blue	Blue	Blue	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Blue	Blue	Green	
1.400	56"	Red	Red	Red	Red	Green	Green	Green	Green	Blue	Blue	Green									
1.500	60"	Blue	Blue	Blue	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Blue	Blue	Green	
1.600	64"	Red	Red	Red	Red	Green	Green	Green	Green	Blue	Blue	Green									
1.800	72"	Red	Red	Red	Red	Green	Green	Green	Green	Blue	Blue	Green									
2.000	80"	Red	Red	Red	Red	Green	Green	Green	Green	Blue	Blue	Green									

W : Wafer.

 Standard mounting.

WL: Wafer Light.

 Special mounting (consult).

B : Flanged.

 Mounting not possible.

L : Lug.

 Not covered by this standard.

FLANGE DRILLING STANDARD SUITABLE TO VAMEIN BUTTERFLY VALVES.

DN		BS 10 / AS 2129						AWWA C-207 (B, D y E)				JIS B 2210													
		Tabla D			Tabla E							5 K				10 K				15 K					
mm	Inches	W	WL	B	L	W	WL	B	L	W	WL	B	L	W	WL	B	L	W	WL	B	L	W	WL	B	L
50	2"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
65	2½	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
80	3"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
100	4"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
125	5"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
150	6"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
200	8"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
250	10"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
300	12"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
350	14"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
400	16"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
450	18"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
500	20"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
600	24"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
700	28"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
750	30"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
800	32"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
900	36"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
1.000	40"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
1.050	42"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
1.100	44"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
1.200	48"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
1.300	52"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
1.400	56"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
1.500	60"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
1.600	64"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
1.800	72"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		
2.000	80"	W	WL			W	WL			W	WL			W	WL			W	WL			W	WL		

W : Wafer.

 Standard mounting.

WL: Wafer Light.

 Special mounting (consult).

B : Flanged.

 Mounting not possible.

L : Lug.

 Not covered by this standard.

18.5. TIGHTENING TORQUE FIGURES.

On placing a butterfly valve in a line it is very important to take the tightening torque figure of bolts and screws into account. As resistance of materials is limited, the screws cannot be tightened too much as they may lose their thread and this could cause watertightness problems in the pipe flanges with the valve.

A list with the tightening torque figures of the most usual screws in the mounting of "VAMEIN" butterfly valves is shown herebelow.

TIGHTENING TORQUE FIGURES OF SCREWS (N·m)			
THREADIND		QUALITY	
METRIC	U.N.C. / U.N	5.6	8.8
M-12		41	87
M-16		109	232
	5/8"	120	255
	3/4"	190	407
M-20		212	452
	7/8"	316	675
M-24		366	781
	1"	403	860
M-27		503	1073
	1-1/8"	597	1275
	1-1/4"	630	1346
M-30		664	1417
M-33		821	1753
	1-1/2"	1045	2229
M-36		1105	2358
M-39		1320	2817
	1-3/4"	1420	3030
M-45		1978	4221
M-52		2976	6349
M-56		3776	8056

N.B.: Torque figures valid for slightly greased screws.
Quality of material to DIN 267.

18.6. MATERIAL SELECTION TABLE.

18.6.1. INTRODUCTION TO THE MATERIAL SELECTION TABLE.

This part deals with the physical state of the fluid to flow, taking into account that the table's columns 18.6.4 where the fluids condition is not stated, it will be assumed that the concentration level is between 0 - 100 % and the maximum work temperature will be related to the chosen seat, as well as to the disc coating, as per indicated in the following charts:

18.6.2. TEMPERATURE CHART FOR LINERS.

TEMPERATURE CHART FOR LINERS.

MATERIALS	VAMEIN CODE	COMMERCIAL CODE	MINIMUM TEMPERATURE ° C	MAXIMUM TEMPERATURE ° C
EPDM	E	E.P.D.M	-15	100 (110)
HIGH TEMPERATURE EPDM	EC	E.P.D.M	-15	120 (135)
NON TOXIC EPDM	EA	E.P.D.M	-15	90 (100)
NBR	N	NBR	-15	100 (115)
WHITE NBR	NB	NBR	-15	100 (110)
NATURAL RUBBER	NA	NR	-25	90 (100)
NON TOXIC RUBBER	CB	NR	-25	90 (100)
ANTIABRASIVE NATURAL RUBBER	CA	NR	-25	90 (100)
BUTYL	B	IIR	-20	110 (125)
HYPALÓN	H	CSM	-15	105 (115)
VITON	V	FKM	-20	180 (200)
SILICON	S	VMQ	-40	180 (200)
NEOPRENE	Ne	Cr	-15	100 (115)

NOTES:

-This chart shows two maximum temperatures, depending on constant or intermittent (peak) temperature service.
Those in brackets correspond to intermittent service temperature.

18.6.3. CHART OF COATING TEMPERATURES.

CHART OF COATING TEMPERATURES.

TYPE OF COATING	SERVICE TEMPERATURE	
	MINIMUM	MAXIMUM
PAINTING	0° C	90° C
RILSAN	-60° C	80° C (110° C)

NOTE: This chart shows two maximum temperatures, depending on constant or intermittent (peak) temperature service. Those in brackets correspond to the service temperature.

18.6.4. MATERIAL SELECTION TABLES.

The following material selection list has been made up based on our experience and customer's comments.

You must take into account that there is a wide range of factors that come with each type of fluid and installation in the specific field, as well as other factors such as: Temperature- Concentration - Velocity – Pressure - Suspended particles - Fluid conditions - Other hydraulic effects, etc.

Each of these factors can have serious effects on the material as many different combinations of the fluid components and concentration, status and chemical composition of fluids, can also exist.

Because of these many different combinations it is impossible to make up a table for the materials.

For these reasons, VAMEIN DE ESPAÑA, S.A. cannot guarantee the accuracy of the material selection tables, nor assuming any responsibilities for the use of these tables.

RECOMMENDATIONS

The life of materials will depend, at least, on the following factors: ambient conditions, service conditions, type of fluid, hydraulic factors, number of operations, time of service or fitted, etc.

This is why it is recommended to check the effectiveness of the valve periodically to verify that it meets the service required

EXPLANATIONS AND MEANING OF THE ABBREVIATIONS IN THE MATERIAL SELECTION TABLES:

Physical status of fluid is shown with the initial letter of the word, such as it is shown below:

PHYSICAL STATUS OF FLUID		
GAS	=	G
LIQUIDS	=	L
SOLID	=	S

You must take into account that most solids flow in form of solutions and only a few, such as cement, plaster, caustic soda, sugar, flour, sand, etc, are driven as solids.

For Ductile Iron discs with a RILSAN coating, you must not exceed 80° C. If driving at temperatures higher than 80° C, it is advisable to use Stainless Steel, Bronze and Aluminum Bronze discs, among others.

The selections marked on the tables, have been made taking into account the most economic materials tough enough to resist the fluid to be used, and they are identified according to the following abbreviations depending on their behaviour.

E.- RECOMMENDED. Based on our own experience and the recommendations made by suppliers, this material gathers all the necessary conditions regarding quality and price.

A.- GOOD. Based on our own experience with the featured materials and our suppliers recommendations.

B.- AVERAGE. It can be used depending on the application, such as concentration and temperature. It is advisable to undertake some tests, before using it on a large scale.

N.- NOT USABLE. We do not recommend its use.

The **VAMEIN** valve system, with the seat rapped around the body and a centered shaft, ensures that only the seat and the disc are in contact with the fluid. This is why the table for the selection of materials only deals with these two components of the valve.

FLUID	PHYSICAL STATE	DISC MATERIALS				SEAT MATERIALS							
		CONDITION		DUCTILE IRON. (EN 1563)	ALUMINUM BRONZE. (EN 1982)	CONDITION		E.P.D.M.	BUNA-N	HYPALON	NEOPRENE	VITON	SILICONE
		ACETALDEHYDE	L	<25°C	N	A	A						
ACETIC ACID	L	<50%	N	N	E	<30% <95°C	E	N	A	A	N	N	B
ACETIC ACID-GLACIAL	L		N	B	B		N	N	A	N	N		
ACETIC ANHYDRIDE	L		N	N	E	<28°C	B	N	A	A	N		
ACETONE	L	<25°C	E	A	A		A	N	B	B	N	N	
ACETYLENE	G	<25°C	E	N	A	<70°C	E		B	B	A		
ACETYLENE (DRY)	G		B	N	A		B				A		
AIR	G		E	A	A		E	A		A	A		
ALUMINUM CHLORIDE	S		N	N	N	<25% <70°C	E	A	A	A	A		
ALUMINUM FLUORIDE	S					<25°C	E	A			A		
ALUMINUM HYDROXIDE	S		N	A	A		E	A	A	A	A		
ALUMINUM SULFATE	S	<25% <65°C	N	N	A	<40°C	A	A	A	A	A		
AMMONIA, ANHYDROUS	G		B	N	E		N	B	B	A	N		
AMMONIA, LIQUID	L			N	E		E	B				A	
AMMONIUM BICARBONATE	S		E	N	A		A	A			A		
AMMONIUM CHLORIDE	S		N	N	N	<25% <65°C	A	A	A	A	A		
AMMONIUM HYDROXIDE	L		N	N	A	<40°C	A	N	A	A	A	A	
AMMONIUM NITRATE	S	<25% <65°C	N	N	A	<70°C	A	B		A	A		
AMMONIUM PHOSPHATE	S	<25% <65°C	N	N	E	<80°C	A	B		A	A		
AMMONIUM SULFATE	S	<25% <65°C	N	N	A	<40°C	A	A	A	A	A		
AMYL ACETATE	L		N	B	A		E	N	N	N	N		
AMYL ALCOHOL	L		N	A	A		E	B	A	A	A		

FLUID	PHYSICAL STATE	DISC MATERIALS			SEAT MATERIALS						
		CONDITION		DUCTILE IRON. (EN 1563)	ALUMINUM BRONZE. (EN 1982)	CONDITION		E.P.D.M.	BUNA-N	HYPALON	NEOPRENE
		ANTIMONY TRICHLORIDE	L	N	N	N	N	<70°C	N	A	B
ARSENIC ACID	S			N	N	E		E	A	B	
ASPHALT	L	<25°C	E	A	A	<70°C	N	A	B	B	A
BARIUM CARBONATE	S			B	A			E	B		A
BARIUM HYDROXIDE	S	<50% <25°C	B	N	A	<70°C	E	A	A	A	A
BARIUM SULFATE	S		B	A	A		E	A			A
BARIUM SULFIDE	S	<25% <65°C	N	N	A		E	A			A
BEER-BREWERIES	L		N	N	A		E	A	A	A	A
BEET SUGAR LIQUORS	L		N	A	A		A	A			A
BENZALDEHYDE	L	<25°C	E	A	A	<28°C	E	N	N	N	N
BENZENE	L		A	A	A		N	N	N	N	B
BENZENE SULFONIC ACID	S	<50%		E	B	<100%	A	N			
BENZOIC ACID	L		N	A	A		N	N			B
BORIC ACID	S	<40°C	N	A	A	<70°C	E	A	A	A	A
BROMINE ANHYDROUS	S		N	N	N		N	N	B	N	B
BUTANE	G		B	A	A	<25°C	N	E	A	A	A
BUTTER	L		N	N	A		B	A			A
BUTYL ALCOHOL	L	<25°C		A	A	<28°C	B	E		B	A
BUTYRALDEHYDE	L		N	N	E		B	N	N	N	N
BUTYRIC ACID	L	<5% <65°C	N		E	<30% <40°C	N	B	N	N	
CALCIUM BISULFITE	L		N	N	A	<70°C	N	E	A	A	A
CALCIUM CHLORIDE	S	<25% <65°C	N	A	B	<70°C	A	A	A	A	A
CALCIUM HYDROXIDE (LIME)	S	<25°C	N	A	A		A	A	A	A	B

FLUID	PHYSICAL STATE	DISC MATERIALS						SEAT MATERIALS									
		CONDITION			DUCTILE IRON. (EN 1563)			ALUMINUM BRONZE. (EN 1982)			CONDITION						
														E.P.D.M.	BUNA-N	HYPALON	NEOPRENE
CALCIUM HYPOCHLORITE	S	<25% <66°C	N	N	N	N	<25% <21°C	A	N	A	B	B					
CALCIUM SULFATE	S	<10% <25°C	N	B	A			A	A				A				
CARBON BISULFIDE	L		N	N	E			N	N	N	N	A					
CARBON DIOXIDE- (GAS, DRY)	G		E	A	A			E	A		A	A					
CARBON DIOXIDE- (LIQUID, WET)	L		N	N	A			E	A	A	A	A					
CARBON MONOXIDE	G	<40°C	E	A	A	<40°C		E	A	A	A						
CARBON TETRACHLORIDE	L	<25°C	N	A	E			N	N	N	N	A	N				
CARBONIC ACID	L		N	N	A			A	E		A	A					
CHLORINATED SOLVENTS	L		N	N	B			N	N	B	N	B					
CHLORINE (WET or DRY)	L		N	N	N			A	N	B	B	B	A				
CHLOROACETIC ACID	S		N	N	N	<25% <70°C		E	N	A	A	A	N				
CHLOROBENZENE	L		N	A	A			N	N	N	N	N	A				
CHLOROBROMOMETHANE	L							B	N				N				
CHLOROFORM	L		N	A	E			N	N	N	N	A	N				
CHLORSULFONIC ACID (WET or DRY)	L		N	N	N			N	N	N	N	N	N				
CHROMIC ACID	L	<50% <20°C	N	N	B			N	N	A	N	A					
CITRIC ACID	S	<40°C	N	B	A			E	A	A	A	A	A				
COFFEE (DRY or WET)	S		N	A	A			E	A								A
COLA SYRUP	L		N	N	E			E	B								A
COPPER CHLORIDE (DRY)	S		N	N	N	<80°C		E	A	A	A	A	A				
COPPER NITRATE	S	<5% <25°C	N	N	E			E	A								A

FLUID	PHYSICAL STATE	DISC MATERIALS			SEAT MATERIALS								
		CONDITION			DUCTILE IRON. (EN 1563)			ALUMINUM BRONZE. (EN 1982)					
COPPER SULFATE	S	<10% <99°C	N	N	B			E	A	A	A	A	N
CYCLOHEXANE	L	<25°C	A	A	A			N	B	N	N	A	N
DIACETONE ALCOHOL	L	<40°C	A	A	A			E	N				B
DIBUTYL PHTHALATE	L				E	<60°C		E	N	N	N	B	A
DIBUTYL SEBACATE	L				E			B	N				A
DIETHYL ETHER	L				E			N	N				N
DIETHYL SEBACATE	L				E			B	N	B	N	B	B
DIOCTYL PHTHALATE	L				A			B	N	N	N	B	B
ETHYL ACETATE	L		N	A	A			N	N	N	N		
ETHYL ALCOHOL	L		N	A	A	<80°C		E	A	A	A	A	A
ETHYL CHLORIDE (DRY)	G		B	B	A			E	B	N	N	A	
ETHYL ETHER	L		N	A	E			N	N	N	N	N	N
ETHYLENE DICHLORIDE	L		N	N	B			N	N	N	N	A	N
ETHYLENE GLICOL	L	<40°C	E	A	A			E	A	A	A	A	A
ETHYLENE OXIDE	G	<12°C	B	N	A			A	N	N	N	N	N
FERRIC CHLORIDE	S	<25% <65°C	N	N	N	<25% <95°C		A	B	A	A	A	A
FORMALDEHYDE	G	<40% <99°C	N	B	A	<40%		E	N	A	A	A	
FORMIC ACID	L	<90% <99°C	N	A	E	<60%		N	N	A	A	B	
FREON 11	G		N	E	A	<20°C		N	E	A	A	A	N
FREON 11	G							N	B		B		N
FREON 12	G		N	E	A			B	E	A	A	A	N
FREON 13	G		N	E	A			B	E				N
FREON 13B1	G		N	E	A			B	E				N

FLUID	PHYSICAL STATE	DISC MATERIALS						SEAT MATERIALS											
		CONDITION			DUCTILE IRON. (EN 1563)			ALUMINUM BRONZE. (EN 1982)			CONDITION			E.P.D.M	BUNA-N	HYPALON	NEOPRENE	VITON	SILICONE
		L	<40°C	N	A	E													
FURFURAL	L	<40°C	N	A	E														
GASOLINE REGULAR	L		B	A	A	<30°C	N	E	B	B	A								
GELATINE	S		N	A	A			E	A	A		A	A						
GLUCOSE	L			A	A			E	A	A		A	A						
GLUE	L			E	A			E	A	A	A	A	A						
GLYCERINE	L	<40°C	B	A	A			E	A	A	A	A	A						
GLYCOLS	L		E	A	A			E	A	A		A	A						
HEPTANE	L		A	A	A	<20°C	N	E	B	B	A	B	B						
HEXANE	L	<99% <25°C	A	A	A			N	A	A	A	A	A						
HYDROCHLORIC ACID	L			N	N	<20% <110°C	E	B	A	A	A	A	A	B					
HYDROCHLORIC ACID	L					<37% <70°C					A	A	A						
HYDROCYANIC ACID	L		N	N	A	<25°C	A	N	A	A	A	A	A						
HYDROFLUORIC ACID	L	<15%	N	N	N	<48% <70°C	B	N	A	A	A	A	A						
HYDROFLUORIC ACID	L					<75% <70°C	N	N	A	B	B								
HYDROGEN GAS	G		E	A	A			E	A	A	A	A	A						
HYDROGEN PEROXIDE	L	<25°C	N	N	E	<90*%	E	N	A	B	A	B	A	B					
HYDROGEN SULFIDE	G	<25°C	N	N	E			E	N	A	A	A	B						
ISOBUTYL ALCOHOL	L			A		<70°C	E	A	A		A	A	A	A					
ISOPROPYL ALCOHOL	L		E	A	A			E	B	A	A	A	A						
ISOPROPYL ETHER	L		A	A	E			N	B	B	N	N	N						
KEROSENE	L	<25°C	E	A	A			N	E	B	N	A	B						
KEROSENE	L		N	A	A			N	N	N	N	B							
LACQUER SOLVENTS	L		A	A	E			N	N	N	N	N	N						

FLUID	PHYSICAL STATE	DISC MATERIALS			SEAT MATERIALS					
		DUCTILE IRON. (EN 1563)	ALUMINUM BRONZE. (EN 1982)	STAINLESS STEEL. (EN 10213-4)	E.P.D.M	BUNA-N	HYPALON	NEOPRENE	VITON	SILICONE
LACTIC ACID	L	N	N	A	E	N	A	A	A	A
LARD	L	N	A	A	N	E		A	B	
MAGNESIUM CHLORIDE	S	N	N	B	<80°C	E	A	A	A	
MAGNESIUM HYDROXIDE	S	N	A	A	E	B	A	A	A	
MAGNESIUM SULFATE	S	<25% <65°C	N	A	A	<80°C	E	A		A
MALEIC ACID	S	N	N	A		A	N		A	
MERCURIC CHLORIDE	L	N	N	N	<10% <40°C	E	A	A	A	
MERCURIC CYANIDE	S	N	N	B			B		A	
MERCURY	L	N	N	A		A	E	A	A	
METHANE	G		A	A		N	E	A	A	A
METHYL ALCOHOL	L	<25%	B	A	A	E	B	A	A	B
METHYL CHLORIDE	G	N	A	E		N	N			N
METHYL ETHYL KETONE	L	100% <25°C	E	A	A	E	N	N	N	
METHYL METHACRYLATE	L			E		N	N			N
MILK	L	N	A	A		B	B			A
MOLASSES	L	N	B	A		E	A		A	
MONOCHLOROBENZENE (DRY)	L	A	A	E		N	N			N
MURIATIC ACID	L	<50%	N	N	N	N	N		B	
NAPHTHA	L	A	A	A		N	N	N	A	
NAPHTHALENE	S	N	A	A		N	N	N	A	
NATURAL ALCOHOL	L		A	A		N	N		A	
NICKEL CHLORIDE	S	N	N	B		E	A		A	
NICKEL NITRATE	S	N	N	A		B			A	

FLUID	PHYSICAL STATE	DISC MATERIALS					SEAT MATERIALS					
		CONDITION			DUCTILE IRON. (EN 1563)		ALUMINUM BRONZE. (EN 1982)			CONDITION		
		N	B	<80°C	E.P.D.M.	BUNA-N	HYPALON	NEOPRENE	VITON	SILICONE		
NICKEL SULFATE	S	<25% <65°C	N	B	<80°C	A	A			A		
NITRIC ACID	L	<5%	N	N	E	<10%	E	B	A	B	A	
NITRIC ACID	L	<40% <95°C	N	N	E	<30%	N	N	A	N	A	
NITRIC ACID	L	<80% <40°C	N	N	E	<60%	N		B	N	A	
NITRIC ACID	L	<95% <25°C	N	N	E	<70%	N		N	N	A	
NITROBENZENE	S		B	N	A		A	N	N	N	B	
OIL - ANILINE	L		N	N	E		N	N			B	
OIL - ANIMAL	L		E	B	A		N	E			A	
OIL - CASTOR	L		A	A			B	E			A	
OIL - CHINA WOOD	L			A	A		B	E			A	
OIL - COCONUT	L		N	N	A		B	E			A	
OIL - CREOSOTE	L		E	A	A		N	N			A	
OIL - CRUDE (SWEET)	L		A	A	A		N	E			A	
OIL - CRUDE (SOUR)	L		B	E	A		N	A			A	
OIL - FISH	L			N	A		N	E			A	
OIL - FUEL	L		B	A	A		N	E			A	
OIL - LINSEED	L		E	A	A		N	E	A	A	A	
OIL - LUBRICATING (PETROLEUM)	L		E	A	A		N	E			A	
OIL - HYDRAULIC (PETROLEUM BASE)	L		E	A	A		N	E			A	
OIL - HYDRAULIC (WATER BASE)	L		E	A	A		E				A	
OIL - MINERAL	L		B	A	A		N	E			A	
OIL - MOTOR	L		E	A	A		N	E			A	

FLUID	PHYSICAL STATE	DISC MATERIALS			SEAT MATERIALS					
		CONDITION			DUCTILE IRON. (EN 1563)			ALUMINUM BRONZE. (EN 1982)		
OIL - OLIVE	L	N	B	A				B	E	N A B
OIL - PALM	L		B	A				N E		A
OIL - SILICONE	L	E	A	A				A E		A
OIL - SOYBEAN	L		B	A				N E		A
OIL - TALL	L		E	A				N E		A
OIL - TRANSFORMER	L	E	A	A				N E		A
OIL - TURBINE	L	E	A	A				N E		A
OIL - VEGETABLE	L	N	B	A				N E		A B
OLEIC ACID	L	N	A	A				B B B B		B B
OLEUM	L	N	N	E	<25%			N N B N		A
OXYGEN - GAS	G	E	A	A				E B		A
OZONE (DRY-WET)	G	N		E				A N A		A
PALMITIC ACID	S	B	N	E				N E B B		A
PARAFFIN	S		A	A				E		A B
PENTANE	G	E	A	A				E		A
PERCHLORETHYLENE	L	<40°C	A	A	A			N N N N		A
PHOSPHORIC ACID	L	<40% <95°C	N	N	E	<20%		E B A A A		N
PHOSPHORIC ACID	L	<50°C	N	N	E	<60%		B N A A A		A
PHOSPHORIC ACID	L		N	N	B	<70%- 85%		A A A A A		N
PICRIC ACID-AQUEOUS	L	<65°C	N	N	E	<20°C		E N A A A		A
POTASSIUM BICARBONATE	S		A	A				E B		A
POTASSIUM BROMIDE	S	N	N	N				A N		A
POTASSIUM HYDROXIDE	L	<50% <40°C	N	A	<80°C			E B A A A		B
POTASSIUM SULFATE	S		N	A	A			E A		A

FLUID	PHYSICAL STATE	DISC MATERIALS			SEAT MATERIALS					
		CONDITION			DUCTILE IRON. (EN 1563)			ALUMINUM BRONZE. (EN 1982)		
POTASSIUM SULFIDE	S	N	N	A	B	N				A
PROPANE	G	<25°C	E	A	A	N	E			A
RESINS	L		A	A	A	N	N			A
SALICYLIC ACID	S		N	A	A	E	A			A
SALINA SOLUTIONS	L		N	B	A					A
SILVER NITRATE	S	<60% <25°C	N	N	E	<75% <70°C	E	B		A
SOAP SOLUTIONS	L		B	A	A		E	A	A	A
SODIUM ACETATE	S		N	E	A		E	B		A
SODIUM ALUMINATE	S		B	A	A		N	E		A
SODIUM BICHROMATE SOLUTION	L			E			E	A		A
SODIUM BORATE (BORAX)	S		N	A	A		E	B		A
SODIUM BROMIDE	S		N	N	N		N	N		A
SODIUM CARBONATE	S		N	N	A		E	A		A A
SODIUM CHLORATE	S		N	N	E		A	B		A
SODIUM CHLORIDE	S		N	N	N	<55°C	E	A	A	A
SODIUM CYANIDE	S		N	N	A		E	A		A
SODIUM DICHROMATE	S			N	E	<20%	E	B	A	B A
SODIUM FLUORIDE	S		N	B	E		A	B		A
SODIUM HYDROXIDE (LYE, CAUSTIC SODA)	L	<50% <40°C	N	N	A		E	B		A
SODIUM HYPOCHLORITE	S	<3%	N	N	N	<5%	E	B	A	A
SODIUM PERBORATE	S	<10% <20°C	N	N	A	<10% <99°C	E	A		A
SODIUM PEROXIDE	S	<99°C	N	N	E	<10% <50°C	E	N	A	A A
SODIUM SULFATE	S		N	A	A					A

FLUID	PHYSICAL STATE	DISC MATERIALS			SEAT MATERIALS								
		CONDITION			DUCTILE IRON. (EN 1563)			ALUMINUM BRONZE. (EN 1982)			STAINLESS STEEL. (EN 10213-4)		
		E.P.D.M.	BUNA-N	HYPALON	NEOPRENE	VITON	SILICONE						
SODIUM SULFIDE	S	<25°C	N	N	A			E	A		A		
SODIUM THIOSULFATE	S		N	N	E			E	A		A		
STANNIC CHLORIDE	L		N	N	N			B	E	B	B		
STEAM AND HOT WATER	L	<120C	N	N	A	<120C		A	N	A	B		
STEARIC ACID	S		N	N	A	<70°C		N	A	B	B		
STYRENE	L		A	A	A			N	N	N	A		
SULFUR DIOXIDE (DRY)	G		E	A	A			E	A	A	B		
SULFUR DIOXIDE (WET)	G		N	N	E			A	N	A	B		
SULFUR TRIOXIDE (DRY)	S		E	A	A	<50°C		E	N	N	B		
SULFURIC ACID	L	<20% <20°C	N	N	A	<10% <20°C		E	N	A	A		
SULFURIC ACID	L	<80% <20°C	N	N	B	80% <20°C		N	N	A	B		
SULFURIC ACID	L	<95% <20°C	N	N	B	<90% <20°C		N	N	A	N		
SULFURIC ACID COLLYRIC	L		N	N	A			N	N	N	A		
SULFUROUS ACID	L		N	N	B			N	N	A	N		
TANNIC ACID (TANNIN)	S		B	E	A	<10%		E	B	A	A		
TAR	S		A	A	A			N	B		A		
TARTARIC ACID	S	<15%	N	B	A	<10% <100C		B	E	A	A		
TETRAHYDROFURAN	L	<40°C		A	A			N		N	N		
TOLUENE	L		A	A	A			N	N	N	B		
TRIBUTYL PHOSPHATE	L				E			E	N	N	N		
TRICHLOROACETIC ACID	S			N	N	<10% <40°C		B	B		A		
TRICHLOROETHANE	L		N					N	N		A		
TRICHLOROETHYLENE	L	<25°C	N	N	A			N	N	N	A		

FLUID	PHYSICAL STATE	DISC MATERIALS				SEAT MATERIALS				
		CONDITION		DUCTILE IRON. (EN 1563)	ALUMINUM BRONZE. (EN 1982)	CONDITION		E.P.D.M.	BUNA-N	HYPALON
		STAINLESS STEEL. (EN 10213-4)				STAINLESS STEEL. (EN 10213-4)				
TRICRESYL PHOSPHATE	L	B	N			E	N	N	N	A
TRIETHANOL AMINE	L	B	E			A	E	A	A	N
TRISODIUM PHOSPHATE	L			A		A	B	A	A	A
TURPENTINE	L	N	E	A	<25°C	N	E	N	N	A
UREA	S	<40°C	N	N	A	E	A			N
VINEGAR	L	N	N	A		E	B			A
WATER, ACIDIC MINE	L	N	N	B		E	A			B
WATER, FRESH	L	N	A	A		E	A		A	A
WHISKEY	L	N	N	A		E	B			A
XYLENE	L	B	A	A		N	N	N	N	B
ZINC CHLORIDE	S	N	N	N		E	A	A	A	A
ZINC SULFATE	S	N	N	A		E	A			A

INSTRUCTION MANUAL

H I G H P E R F O R M A N C E
M A N U A L B U T T E R F L Y V A L V E S
S E R I E S 7400 (D O U B L E O F F S E T)
W A F E R & L U G T Y P E

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1.0 FOREWORD



1.1 SCOPE OF INSTRUCTION MANUAL

This Instruction Manual covers information regarding Installation and Maintenance of Dembla's Double offset High Performance Butterfly Valves, Series 7400, Valve sizes 2"(DN50) to 72"(DN1800)

No person may install, operate or maintain Dembla valve without 1) being fully trained and qualified in Valve, Actuator and Accessory installation, operation and maintenance 2) Carefully reading and understanding the contents of this manual.

If you have any questions about these instructions contact your Dembla sales office before proceeding.

1.2 COPYRIGHTS AND MODIFICATION RIGHTS RESERVATION

Dembla Valves Ltd. retains the copyright on the contents of this Instruction Manual.

The Total content of this instruction manual described here corresponds to the information during preparation of the instruction manual. It is user's responsibility to refer the latest version.

All data, specifications and illustrations here are subjected to technical modifications and improvements and hence modification can be done by us at any time without any prior notice. No claim to modification or repair of these valves, which have already been supplied by us, can be made.

2.0 STORAGE & PRESERVATION

All valves are dispatched in the closed/open position as ordered and it is recommended that they are left in this position during storage. All protective packaging should remain in position until the valve is to be installed.

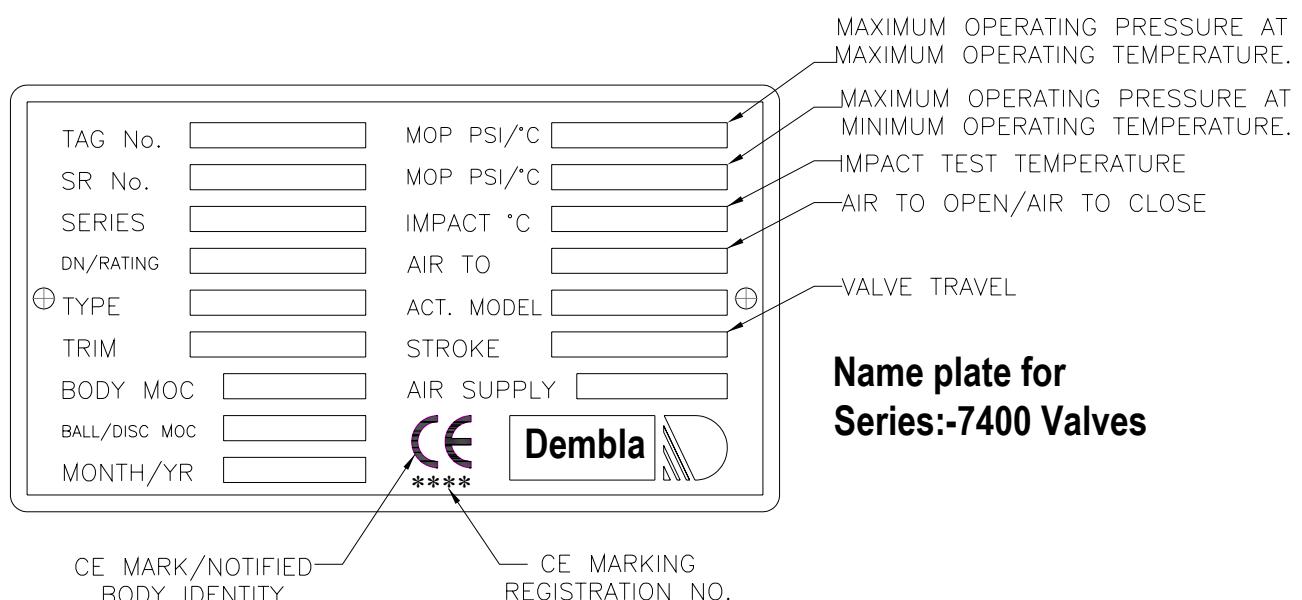
Valve should be stored in a clean and dry environment, without disturbing company setting. (e.g. gland, seat etc.) Protect it from shock & fitting damage.

CAUTION

If hoisting the valve, use a nylon sling to protect the surface. Carefully position the sling to prevent damage to Actuator tubing and any accessory. Also, take care to prevent people from being injured in case the hoist or rigging slips unexpectedly. For valve weight refer Valve packing slip.

3.0 VALVE MARKING

- 1) Valve name plate attached on valve by riveting carrying all valve identification information.
- 2) Markings like valve size, Rating, material etc. are as cast on valve Bodies.
- 3) Valve serial no. punched on valve body flange for valve traceability.
- 4) If the product is not CE marked, then name plate also without CE mark.



4.0 Health & Safety

- 1) Before attending to valve Installation / Maintenance, the instruction manual must be compulsorily read and understood properly.
- 2) Valve must be operated by qualified personnel.
- 3) Ensure that the operator handling these Valves must follow Safety and Accident Prevention Rules and Regulations.
- 4) Follow the safety instructions before installation, maintenance or removing the valve.
- 5) Always wear protective gloves, clothing and eyewear when performing any installation operations to avoid personal injury.
- 6) All Safety Messages such as Cautions, Warnings and Notes are highlighted in this Instruction Manual which must be strictly followed to avoid any possibility of arising danger / risk of damage to the equipment / person's life
- 7) No Liability on Manufacturer for any wrong handling, improper commissioning and wrong assembly.
- 8) Line must be fully drained and de-pressurized before installation or maintenance of valve.
- 9) Never handle valves that have been used on harmful substances unless they have been completely decontaminated and certified safe to handle.
- 10) Due to the large physical size and weight of some size of this product, always use correct lifting methods and equipment when installing , removing and maintaining the product:
Use lifting lugs on the body, wherever provided.
Valve without lifting lugs-use chains or slings wrapped around the body.
Do not attempt to lift the valve using the sealant fittings, gear unit, handwheel, actuator, or the valve stem.
- 11) If the processes or environments that the products are used in are likely to cause temperature (high or low) that may cause injury to person if touched, then adequate insulation / protection must be fitted.
It is recommended that the insulation allows easy access for maintenance , to the sealant fittings , and to the valve operator.
- 12) Valve must be protected from earthquake loading, traffic & wind.
- 13) No modification / conversions are allowed without written authorization from Dembla Valves Ltd.

PART - I HIGH PERFORMANCE BUTTERFLY VALVE BODY SET SECTION

5.0 INTRODUCTION

Dembla's High Performance Butterfly Valves are available in Wafer and Lug type designs conforming to API 609 standard. The Disc construction is Double Offset. Shafts are guided by bearings. Various seat options are available.

6.0 INSTALLATION OF BUTTERFLY VALVE

6.1 PRE-INSTALLATION CHECKS: (Before installing any Butterfly Valve)

- (1) Inspect it for any shipment damage and for foreign material that might have collected during packing and shipment.
- (2) Blow out all pipelines to remove pipe scale-chips, welding-slag, and other foreign materials.
- (3) Install the valve by using accepted piping practices.
- (4) Install the valve according to flow direction marked on the valve.
- (5) Use self centering gasket.
- (6) Install the control valve preferably in a straight run of pipe away from bends or sections of abnormal velocity.
- (7) Incorrect pipe alignment will cause interference between the disc edge and line flange face, excessive torque and damage to disc and seat, resulting into seat leakage.

- (8) Do not try to install valve between line flanges having inadequate gap. This may cause damage to some valve parts. If valve is in fully open position, it will impact the flanges and damage the disc edge.
- (9) Butterfly valve should not be attempted to install when disc in open condition. The butterfly valve can be inserted between line flanges in fully close position.
- (10) Glands are factory tightened and checked for leakage however if there is any gland leak in valves, the gland may be further tightened just enough to stop leakage. Excessive tightening should be avoided.
- (11) Before installing the valve, make sure that pipeline flow is in the same direction as the arrow on the side of the valve.

WARNING

- ***Always wear protective gloves, clothing, and eye ware when performing any installation operation to avoid personal injury.***
- ***Valve should be used by End-user with same pressure & temperature rating which was given in purchase order. If there is any change please contact Dembla sales office.***
- ***Avoid personal injury or property damage caused by components dropping .With the valve or actuator upside, components may drop during disassembly or assembly. Be careful not to position yourself below the valve in the path of falling parts.***

6.2 OPERATION

Valve closes with clockwise rotation of the valve shaft. Valve is fully closed when disc is parallel to seat ring. The limit positions are set in the operators for extreme conditions i.e. open and closed.

6.3 LUBRICATION

The Valve body set does not require any routine lubrication. However valve operator may require lubrication which is to be referred in the Part-II Manual Operator Section of this Instruction Manual.

7.0 MAINTENANCE

7.1 REPLACING GLAND PACKING

WARNING

Pipeline pressure must be released before the valve is to be opened for maintenance of gland packing, otherwise it may cause damage to the equipment / person's life.

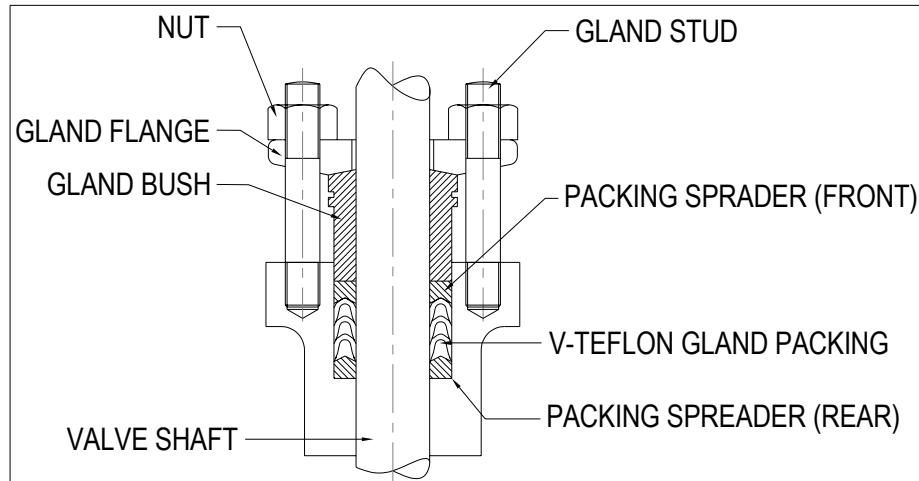
- (1) Separate out operator from the valve body.
- (2) Remove the operator bracket from the valve.
- (3) Unscrew and remove nuts on packing studs.
- (4) Remove gland flange, gland bush & packing spreader.
- (5) Take out gland packing from the stuffing box.

CAUTION

Be careful while taking out gland bush, gland packing & packing spreader to avoid making scratches on the stuffing box wall.

- (6) Clean the stuffing box.
- (7) Follow the below procedure for the applicable gland packing option.

7.1.1 V-TEFLON PACKING



This consists of 1 rear packing spreader, 1 set of V-Teflon gland packing and 1 front packing spreader.

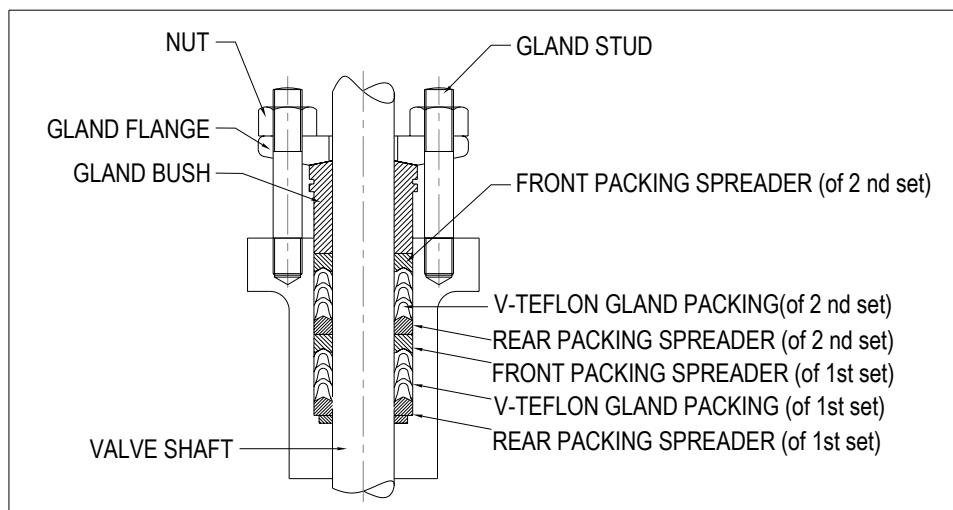
- (1) Place the V-Teflon gland packing set in the body after 1 rear packing spreader followed by front packing spreader as shown in Fig. Lubrication is not required.

CAUTION

Push each V-Teflon packing carefully inside to avoid the packing lip to bend towards the outer side.

- (2) Insert the Gland bush.
- (3) Insert the Gland flange on Gland Studs and tighten their Nuts to specified torque.

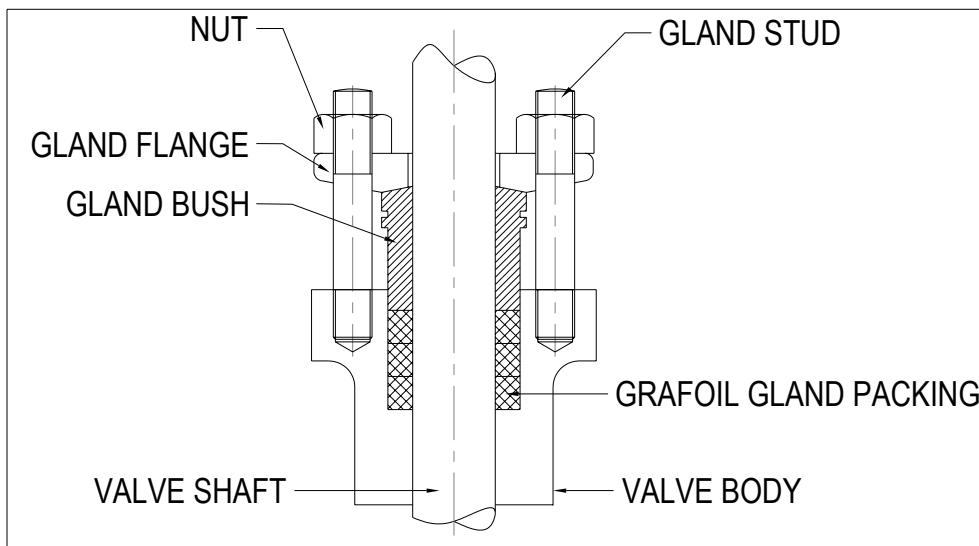
7.1.2 DOUBLE V-TEFLON PACKING



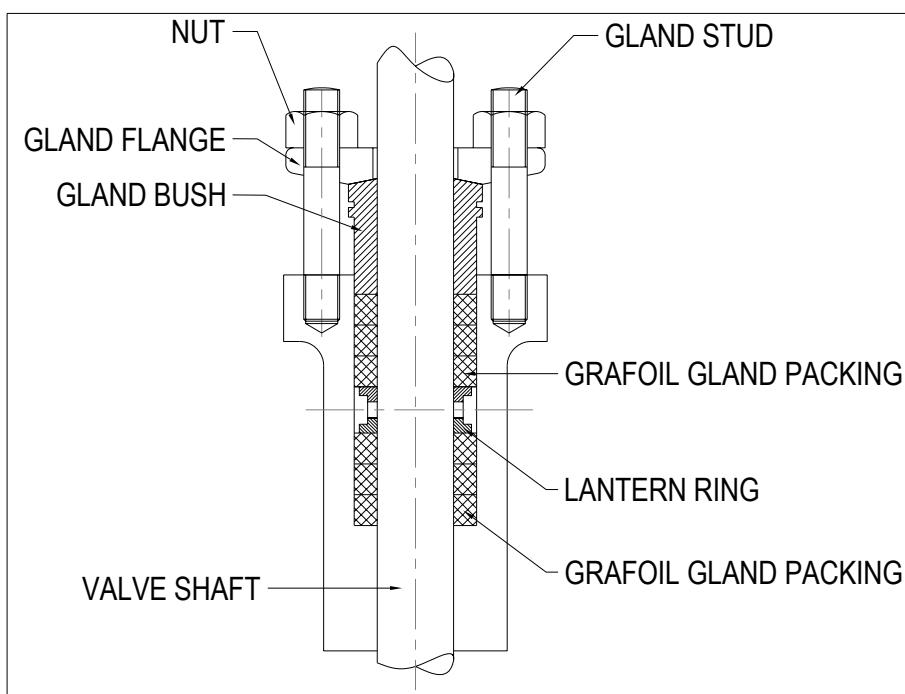
This Double V-Teflon packing consists of 1st set of front and Rear packing spreader, 1st set of V-Teflon gland packing, 2nd set of front and Rear packing spreader & 2nd set of V-Teflon gland packing.

- 1) Place the 1st set of V-Teflon gland packing after rear packing spreader of 1st set follows by the front packing spreader of 1st. set.
- 2) On the front packing spreader of 1st set Place the 2nd set of V-Teflon gland packing after rear packing spreader of 2nd set follows by the front packing spreader of 2nd set.
- 3) Insert the gland bush.
- 3) Insert the gland flange on gland stud and tighten their nuts to specified torque.

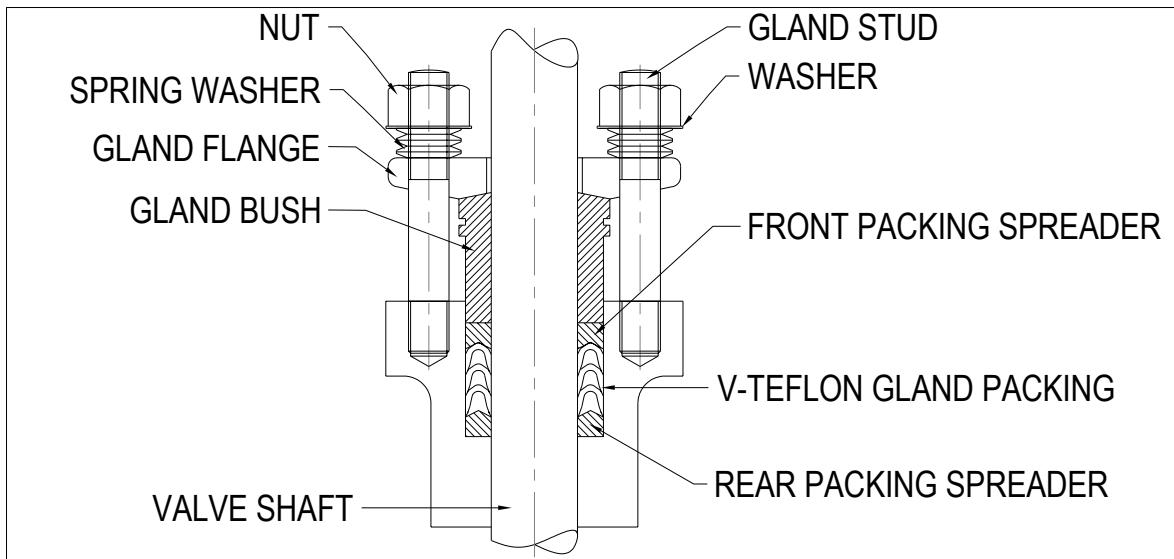
7.1.3 GRAFOIL PACKING



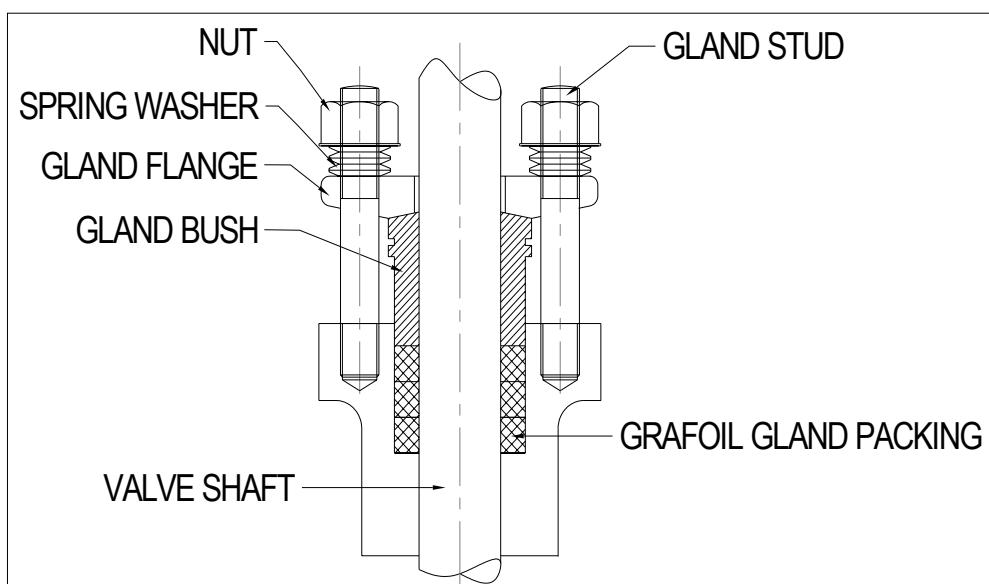
7.1.4 DOUBLE GRAFOIL PACKING



7.1.5 V-TEFLON LOW FUGITIVE EMISSION PACKING



7.1.6 GRAFOIL LOW FUGITIVE EMISSION PACKING



CAUTION

Valves are not to be used for dead end service.

7.2 REPLACING SOFT SEAT.

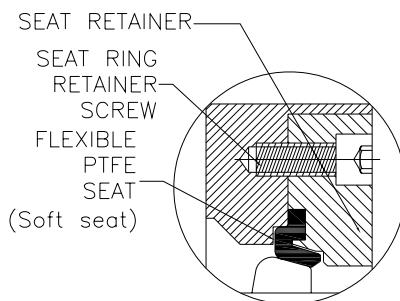
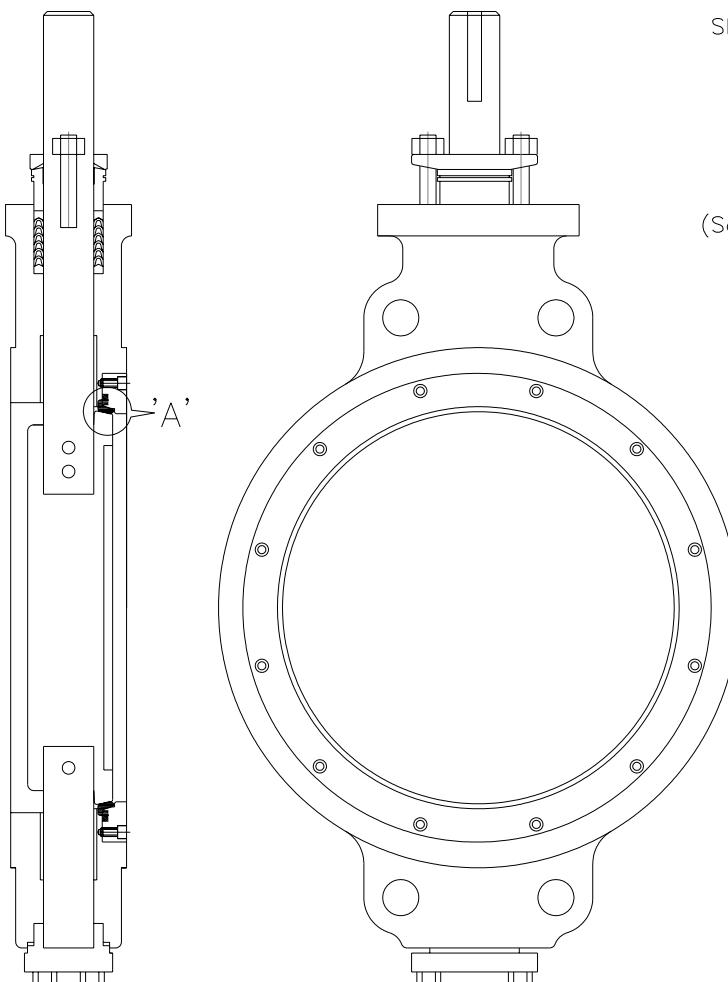
NOTE

For maintenance or replacement of soft seat, operator and bracket need not be dismantled.

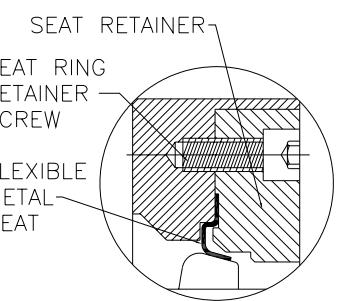
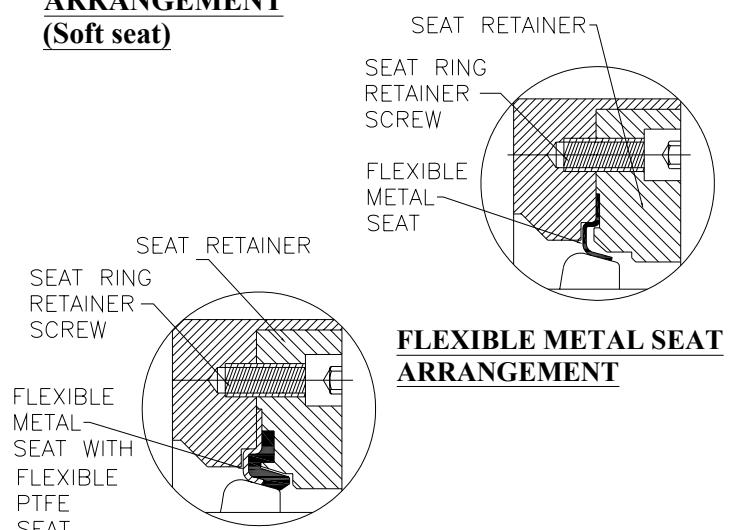
- (1) Isolate the control valve from line pressure and release the pressure.
- (2) Remove the complete valve from the pipe line.
- (3) Unscrew and remove the seat retainer screws.
- (4) Take out the seat retainer.
- (5) Take out soft seat.
- (6) Replace the soft seat with new one and reinstall the seat retainer.

NOTE

- Soft seat must be replaced once it is dismantled.
- Soft seat should be installed preferably with the valve in close position.
- With Soft seat, Flexible Metal seat & Fire safe seat are also available as per requirements.



**FLEXIBLE PTFE SEAT
ARRANGEMENT
(Soft seat)**

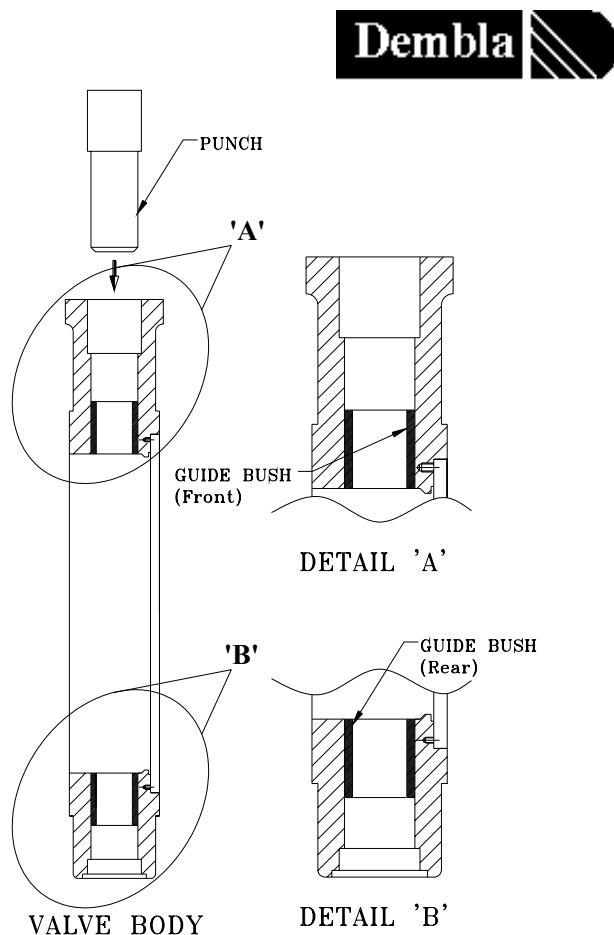


**FIRE SAFE SEAT
ARRANGEMENT**

DETAIL 'A'

7.3 REPLACING GUIDE BUSH (BEARINGS)

- (1) Isolate the control valve from line pressure
And release the pressure.
- (2) Remove the complete valve from the pipe line.
- (3) Unscrew and remove the seat retainer screws.
- (4) Take out seat retainer.
- (5) Take out soft seat.
- (6) Remove the Locking Pin from the Disc by slightly hammering.
- (7) Keep the disc in a safe place away from dust and scratches.
- (8) Remove the front and rear shaft.
- (9) Now slowly remove the Guide Bush by slightly hammering
by a pusher tool (punch) avoiding scratches in the valve body.
- (10) Replace the guide bush (front or rear) with new one.
- (11) Insert rear shaft.
- (12) Place the disc on the rear shaft and insert the locking pin
in its proper position by slight hammering.
- (13) Insert front shaft on the disc and insert the locking pin in its
proper position by slight hammering.
- (14) Place the soft seat followed by seat retainer along with
its clamping screws.
- (15) Tighten the seat retainer clamping screws.
- (16) The valve is ready to be placed in the pipeline.



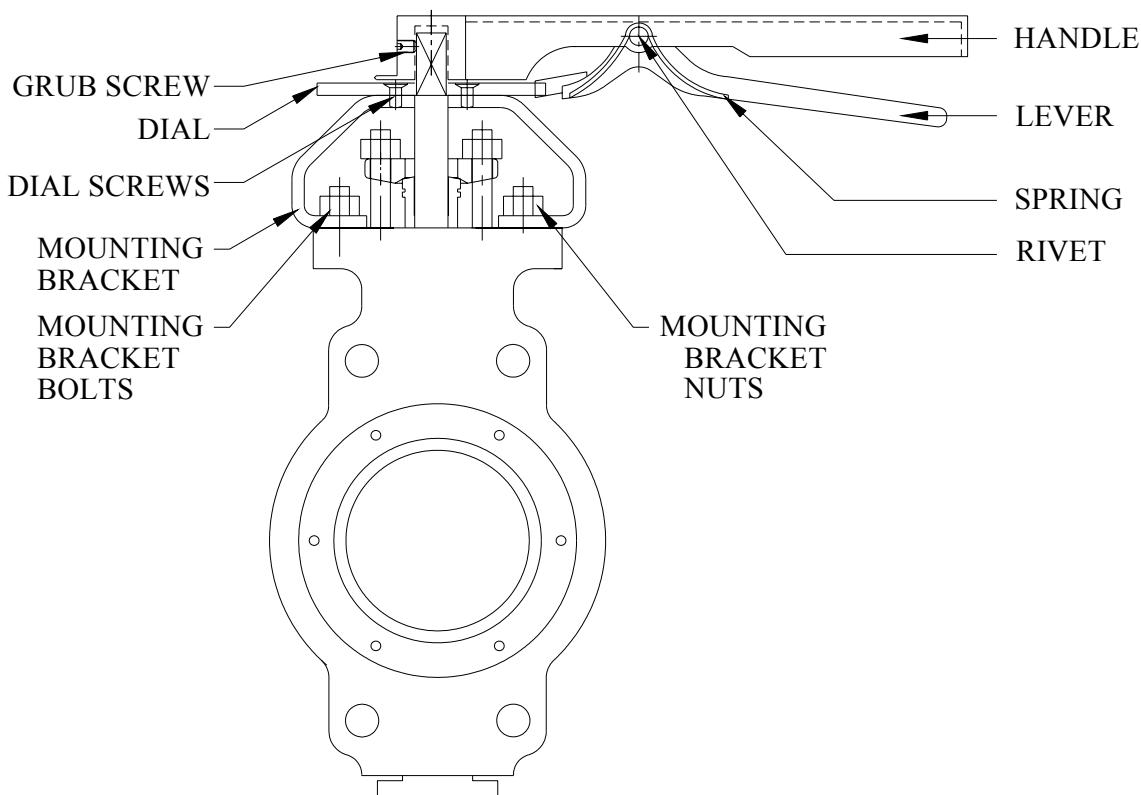
7.4 TROUBLE SHOOTING

No.	Condition	Possible Cause	Corrective Action
1	Gland Leakage	Gland Nut loose	Adjust Gland Nut
		Worn out Packing	Replace Gland Packing
2	Seat Leakage	Limit stop for Closed position stop got disturbed	Adjust limit stop of Gear operator
		Sealing edge of seat damaged	Replace soft seat
		Valve pressurized to high pressure	Reduce line pressure to rated pressure
		Fluid is abrasive and eroding away the components	Replace the worn out component of valve with material suitable for abrasive media
3	Valve does not open / close fully	Limit stop got disturbed	Adjust limit stop
		Foreign object got stuck up between disc and seat	Open the valve and clean the line / valve to remove foreign object
		Disc to shaft connection failed	Replace disc pins and/or shaft
4	Opening / Closing torque excessive	Excessive dirt accumulated at the components	Clean the components
		Shaft, bearings or seat worn out	Replace the worn out components

PART - II MANUAL OPERATOR SECTION

8.0 HAND LEVER TYPE MANUAL OPERATOR

Series 'H' Hand lever arrangement provides latching system in open, closed and other eight equally spaced intermediate positions. A pointer indicates the position of disc and an additional lock facility is provided to prevent unauthorized valve operation. Lever operators are provided on size 2" (50mm) to 6" (150mm) only. For size 8" (200mm) and above, Gear Box Type Operators are recommended.



8.1 OPERATION

To operate the Hand Lever, hold the handle and squeeze the lever to compress the lever spring. This is done to dis-engage the lever from previously held position. Now rotate the handle slowly with the compressed lever spring position to the required valve position and release the lever in the slot or notch provided in the Dial.

CAUTION

- ***Handle should be moved slowly to close the disc of the valve. Sudden closing may cause pipeline pressure to surge and may risk damage to the equipment / person's life.***
- ***Before releasing the lever, check that the lever is positioned and engaged in the slot / notch provided in the Dial. If the lever is not engaged then the pipeline pressure can cause the lever to rotate and hence valve will close suddenly and pipeline pressure may surge, risking damage to the equipment / person's life.***

8.2 REMOVING HAND LEVER OPERATOR FROM THE VALVE BODY

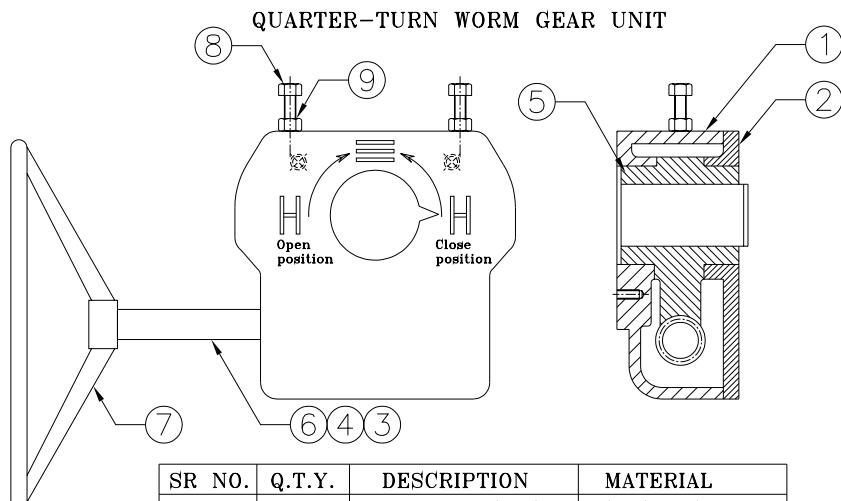
WARNING

While removing the operator Pipeline pressure may cause the valve to close suddenly and pipeline pressure may surge, risking damage to the equipment / person's life. To avoid this, drain the flow and release the pipeline pressure before removing the operator.

- (1) Drain the flow and release the pipeline pressure.
- (2) Close the valve.
- (3) Loosen the grub screw.
- (4) unscrew the Mounting bracket bolts which is connect to valve body.
- (5) Remove the hand lever operator from the valve body along with the mounting bracket.
- (6) To assembly follow the reverse sequence.

9.0 GEAR BOX TYPE MANUAL OPERATOR

Series 'MOR' quarter turn gear operators offer simple and reliable manual positioning of the butterfly valves for 0 to 90° operation. These operators consist of single stage worm and worm wheel arrangement housed in a robust weather-proof cast iron housing. Adjustable mechanical stoppers are provided to the operator within ± 5% of the extreme positions. A mechanical position indicator is provided on these units to show the valve position. Units are grease filled in the factory and does not require further lubrication. Thrust bearings provided takes axial thrust in operation. Sturdy design provides long life and maintenance free services. The high gear ratios enable the minimum input efforts for high torque conditions.



SR NO.	Q.T.Y.	DESCRIPTION	MATERIAL
1	1	MAIN HOUSING	CI GR.FG 260
2	1	COVER	CI GR.FG 260
3	1	INPUT SHAFT	En8
4	1	WORM	En8
5	1	WORM WHEEL	S.G.IRON
6	2	THRUST BEARING	STD
7	1	HAND WHEEL	M.S.
8	2	STOPPER	M.S.
9	2	LOCK NUT	M.S.

DRG No.1

9.1 OPERATION

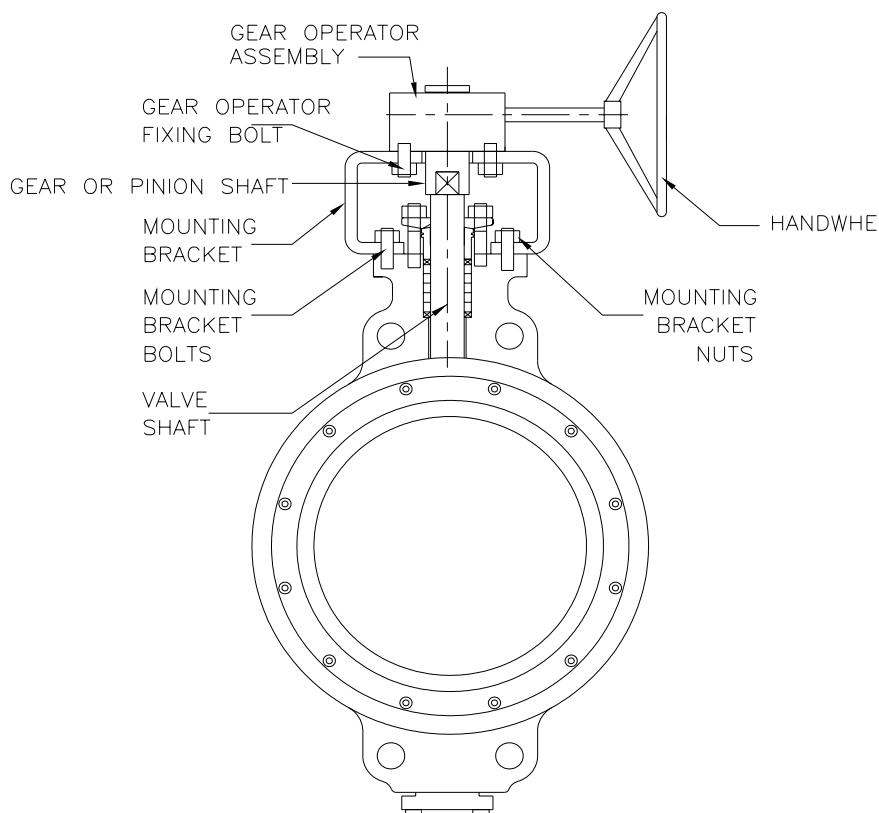
To close the valve, rotate gear operator handwheel clockwise.

To open the valve, rotate gear operator handwheel anti-clockwise.

9.2 SETTING OF GEAR BOX TYPE OPERATOR

The Open and Closed position stops prevent the operator from rotating beyond the open and closed position of the valve respectively. Each stop is adjustable. If the operator is factory-mounted on the valve, the stops are preset, and do not require any further adjustment.

If the operator is not factory mounted on the valve, or if the operator has been removed, the stop will require adjustment as described below.



To adjust Closed position stop: (Refer Drg.No.1)

- (1) Loosen the lock nut of stopper by rotating anticlockwise direction then rotate stopper (bolt) anticlockwise direction.
- (2) Turn the handwheel so that the valve is in the closed position.
- (3) Rotate stopper clockwise until it touches the gear inside of the Gear operator.
- (4) Hold the stop screw (stopper) head from turning, and tighten the lock nut by rotating it clockwise.

To adjust the Open position stop: (Refer Drg.No.1)

- (1) Loosen the lock nut of stopper by rotating anticlockwise direction then rotate stopper (bolt) anticlockwise direction.
- (2) Turn the handwheel so that the valve is in the open position.
- (3) Rotate stopper clockwise until it touches the gear inside of the Gear operator.
- (4) Hold the stop screw (stopper) head from turning, and tighten the lock nut by rotating it clockwise.

10.0 INSTALLATION OF MANUAL OPERATOR

10.1 FIXING / MOUNTING HAND LEVER ON BODY SET

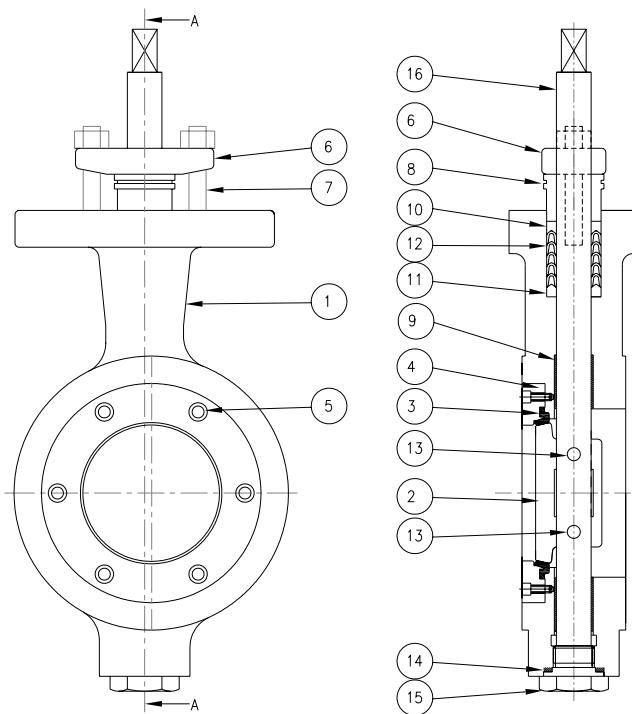
- (1) Insert the mounting bracket in the shaft.
- (2) Align the hand lever on the top of the valve shaft by using lever slot exactly sit in the valve shaft square provided.
- (3) Insert and then tighten the grub screw to fix up the hand lever with the valve shaft.
- (4) Bolt dial with the dial screw.
- (5) Place lever operator and valve in closed position.
- (6) Mount the mounting brackets on the valve body by the using mounting bracket bolts.
- (7) Check Open and closed positions of the hand lever without the flow and pressure.

10.2 FIXING / MOUNTING GEAR BOX TYPE OPERATOR ON BODY SET

- (1) Fix up the pinion shaft with gear operator by using key.
- (2) Place the gear operator along with the pinion shaft on the mounting bracket.
- (3) Align & fix the Valve Shaft with Pinion Shaft accurately.
- (4) Fix the gear operator with Bracket by using bolts.
- (5) Fix the gear operator along with mounting bracket by using bolts on valve body.

11.0 PARTS ILLUSTRATED

11.1 BUTTERFLY VALVE ASSEMBLY – WAFER : - SIZE 2"(50mm) TO 6"(150mm)

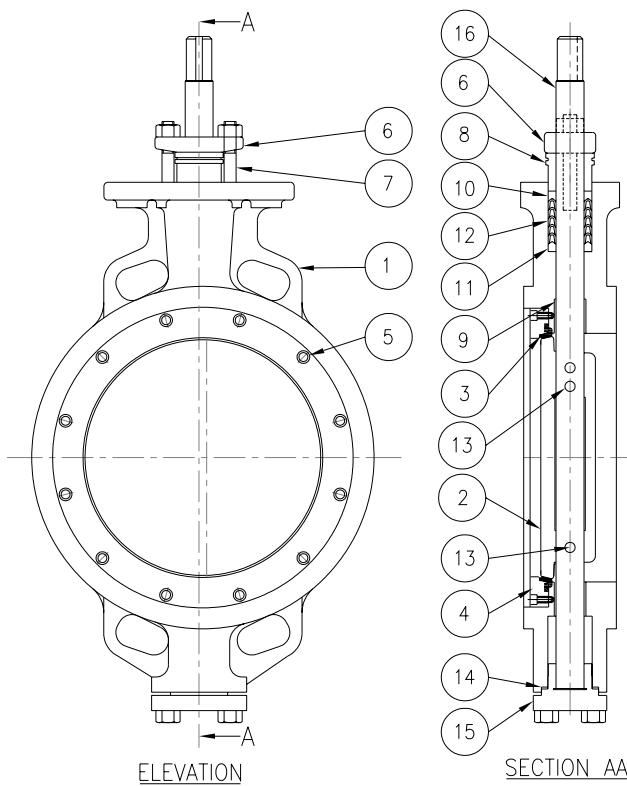


No.	PART	QTY.
1	BODY	1
2	DISC.	1
3	SOFT SEAT	1
4	SEAT RETAINER.	1
5	ALLEN BOLT.	1SET.
6	GLAND FLANGE.	1
7	GLAND STUD/NUT.	2
8	GLAND BUSH	1
9	GUIDE BUSH.(BEARING)	1SET.
10	PACKING SPREADOR-FRONT	1
11	PACKING SPREADOR-REAR	1
12	GLAND PACKING.	1SET.
13	DISC LOCKING PIN.	2
14	GASKET- BODY TO BOTTOM COVER.	1
15	END COVER.	1
16	VALVE SHAFT	1

ELEVATION

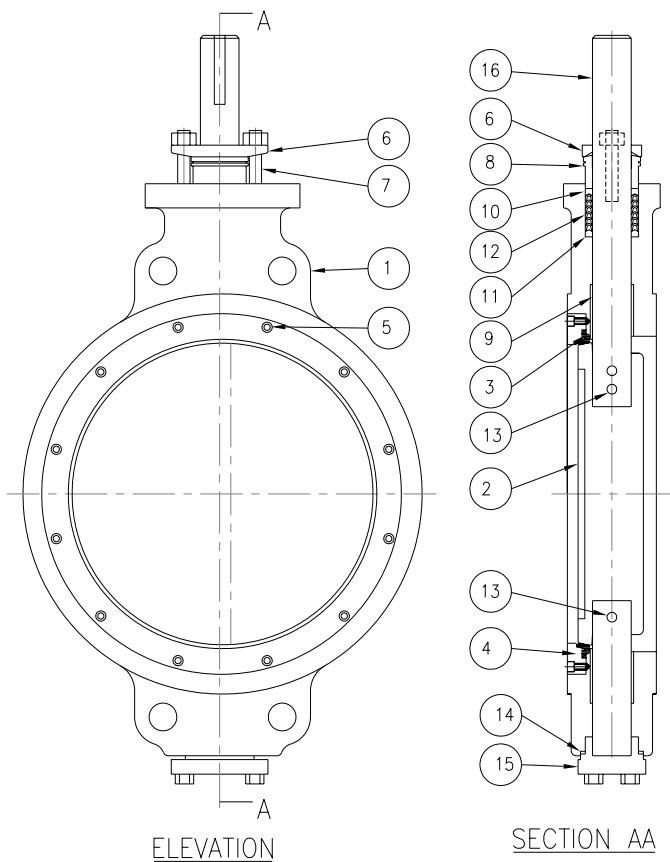
SECTION AA

11.2 BUTTERFLY VALVE ASSEMBLY – WAFER : - SIZE 8"(200mm) & 10"(250mm)

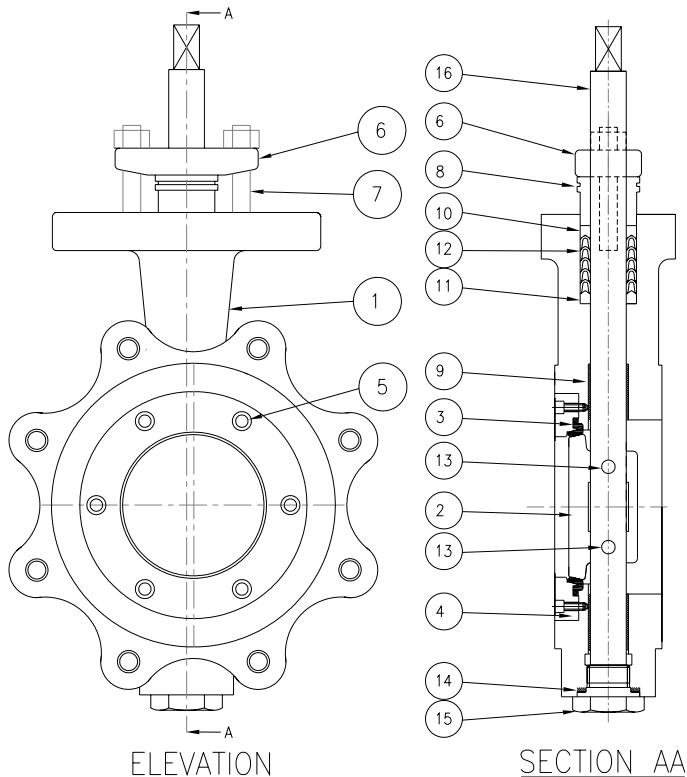


No.	PART	QTY.
1	BODY	1
2	DISC.	1
3	SOFT SEAT	1
4	SEAT RETAINER.	1
5	ALLEN BOLT.	1SET.
6	GLAND FLANGE.	1
7	GLAND STUD/NUT.	2
8	GLAND BUSH	1
9	GUIDE BUSH.(BEARING)	1SET.
10	PACKING SPREADOR-FRONT	1
11	PACKING SPREADOR-REAR	1
12	GLAND PACKING.	1SET.
13	DISC LOCKING PIN.	3
14	GASKET– BODY TO BOTTOM COVER.	1
15	END COVER.	1
16	VALVE SHAFT	1

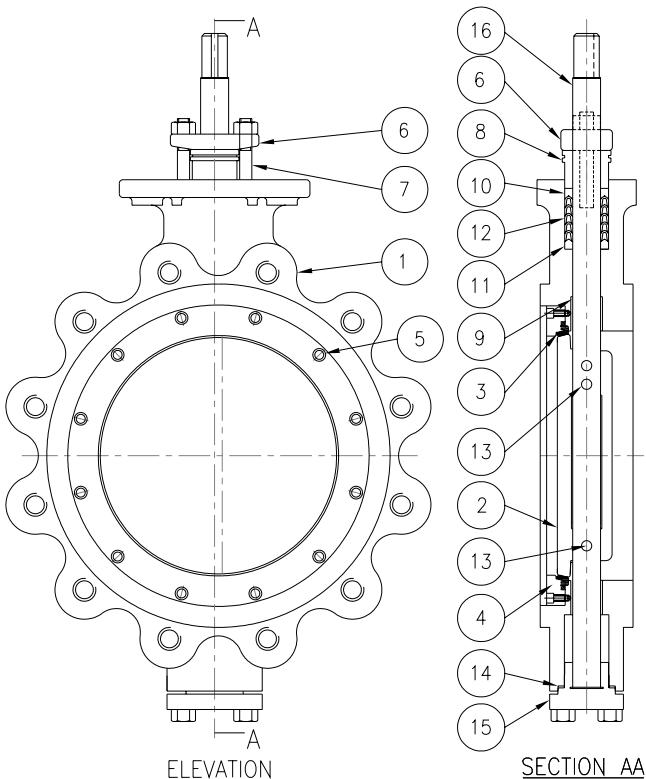
11.3 BUTTERFLY VALVE ASSEMBLY – WAFER : - SIZE 12"(300mm) TO 72"(1800mm)



No.	PART	QTY.
1	BODY	1
2	DISC.	1
3	SOFT SEAT	1
4	SEAT RETAINER.	1
5	ALLEN BOLT.	1SET
6	GLAND FLANGE.	1
7	GLAND STUD/NUT.	2
8	GLAND BUSH	1
9	GUIDE BUSH.	1SET
10	PACKING SPREADOR-FRONT	1
11	PACKING SPREADOR-REAR	1
12	GLAND PACKING.	1SET.
13	DISC LOCKING PIN.	3
14	GASKET– BODY TO BOTTOM COVER.	1
15	END COVER.	1
16	VALVE SHAFT	1

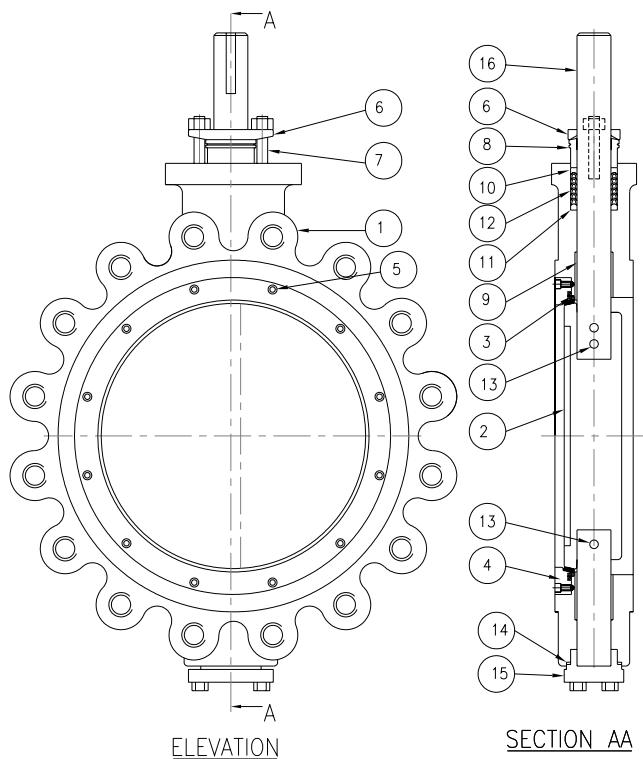
11.4 BUTTERFLY VALVE ASSEMBLY – LUG : - SIZE 2"(50mm) TO 6"(150mm)


No.	PART	QTY.
1	BODY	1
2	DISC.	1
3	SOFT SEAT	1
4	SEAT RETAINER.	1
5	ALLEN BOLT.	1SET.
6	GLAND FLANGE.	1
7	GLAND STUD/NUT.	2
8	GLAND BUSH	1
9	GUIDE BUSH.(BEARING)	1SET.
10	PACKING SPREADOR-FRONT	1
11	PACKING SPREADOR-REAR	1
12	GLAND PACKING.	1SET.
13	DISC LOCKING PIN.	2
14	GASKET– BODY TO BOTTOM COVER.	1
15	END COVER.	1
16	VALVE SHAFT	1

11.5 BUTTERFLY VALVE ASSEMBLY – LUG : - SIZE 8"(200mm) & 10"(250mm)


No.	PART	QTY.
1	BODY	1
2	DISC.	1
3	SOFT SEAT	1
4	SEAT RETAINER.	1
5	ALLEN BOLT.	1SET.
6	GLAND FLANGE.	1
7	GLAND STUD/NUT.	2
8	GLAND BUSH	1
9	GUIDE BUSH.(BEARING)	1SET.
10	PACKING SPREADOR-FRONT	1
11	PACKING SPREADOR-REAR	1
12	GLAND PACKING.	1SET.
13	DISC LOCKING PIN.	3
14	GASKET– BODY TO BOTTOM COVER.	1
15	END COVER.	1
16	VALVE SHAFT	1

11.6 BUTTERFLY VALVE ASSEMBLY – LUG : - SIZE 12"(300mm) TO 72"(1800mm)



No.	PART	QTY.
1	BODY	1
2	DISC.	1
3	SOFT SEAT	1
4	SEAT RETAINER.	1
5	ALLEN BOLT.	1SET
6	GLAND FLANGE.	1
7	GLAND STUD/NUT.	2
8	GLAND BUSH	1
9	GUIDE BUSH.	1SET
10	PACKING SPREADOR-FRONT	1
11	PACKING SPREADOR-REAR	1
12	GLAND PACKING.	1SET.
13	DISC LOCKING PIN.	3
14	GASKET- BODY TO BOTTOM COVER.	1
15	END COVER.	1
16	VALVE SHAFT	1

12.0 RECOMMENDED SPARE PARTS

It is recommended to stock following spare parts for commissioning and routine service:

No.	PART NAME	RECOMMENDED QUANTITY
3	Seat	One for every Five identical or One minimum.
12	Gland Packing	One Set for every Two identical or One Set minimum.

NOTE

While Ordering Spares, Please do not miss to indicate 'Valve Serial No.' appearing on Nameplate provided on the operator yoke or on valve body flange. The Valve Serial No. begins with alphabet 'V' followed by numbers , for e.g. V-12345....

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