McSYS®

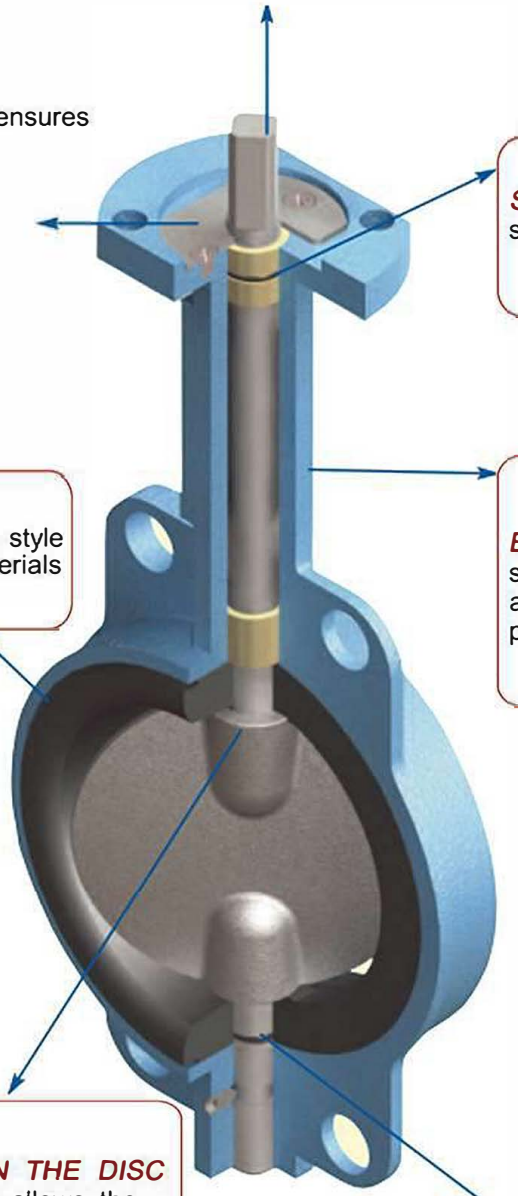
Butterfly Valves

- Concentric
- High Performance
- Triple Offset

McSYS® Mechanical and Fluid Control Systems

DRIVE STEM Automation excellence with ISO 5211 standard drive stem

STEM RETAINER PLATE ensures blowout protection



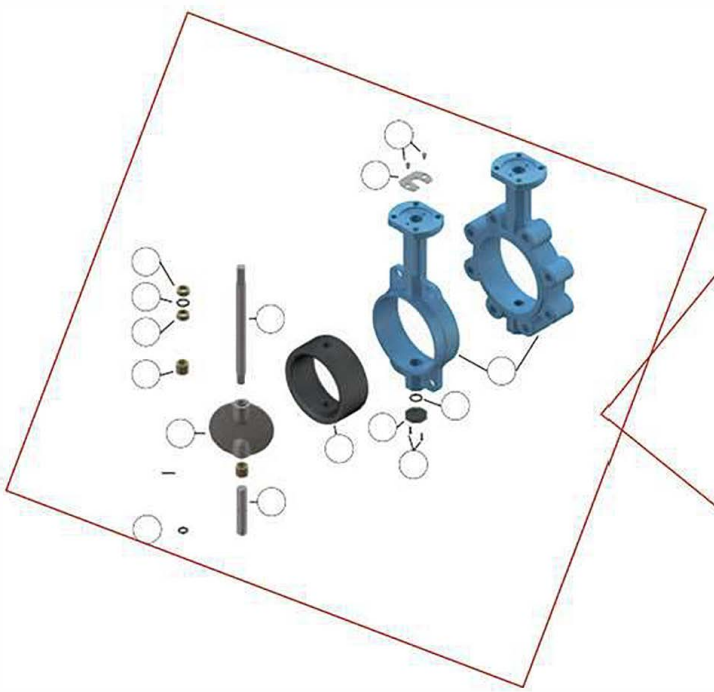
STEM OR ensures life lubrication and secondary seal protection

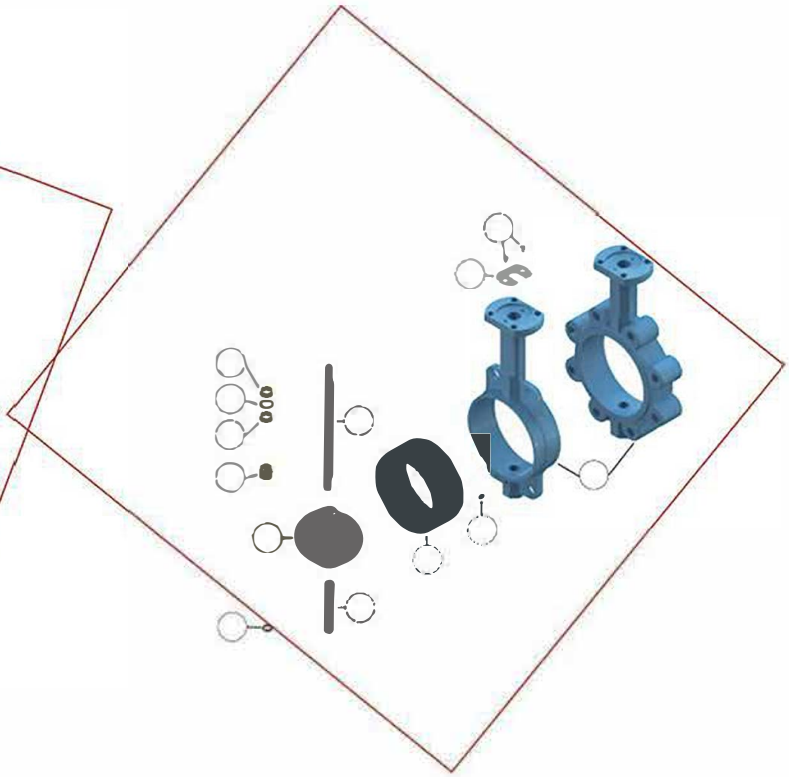
SEAT replaceable cartridge style seat available in different materials

BODY casted in 1 pc ensures high strength and minimum weight. Features an extended neck to allow use with insulated pipes

STEM FITS DIRECTLY IN THE DISC without any taper pin. This allows the disc to float on the stem and to self-center inside the seal guaranteeing a perfect seal

BACKING RING phenolic thermoset resin backing ring ensures blowout proof protection and geometrical stability





List of material

Items	Description	*MATERIALS*	ASTM	Note
1	*Body*	GG25 DIN1639 - *Cast Iron*	ASTM A126 CLASS B	
		GGG40 (DIN 1639) *Ductile Iron*	ASTM A536 GR.65-45-18	
		Carbonio GS-C25 (DIN 17245) - *Carbon Steel*	WCB ASTM A216	
		CF8M - *Stainless Steel*	ASTM A351	
2 & 4	*Shaft*	SS416 - *Stainless Steel* SS316/410/420	ASTM A476	
3	*Disc*	Stainless Steel		
		GGG40 (DIN1639) *Ductile Iron*	ASTM A536 GR.65-45-18	Nickel plated (Nylon 11 coated as opt.)
		Stainless Steel	ASTM A351 CF8M	Electropolished (mirror finished) as optional
		AL-Bronze	B148-954	
5 & 7	*Upper and Lower Bushing*	Teflon® w/ graphite		
6,8 & 13	O Ring	Buna - Viton®		
9	*Seat*	NBR (BUNA)		-10°C +80°C
		EPDM		-20°C +120°C
		EPT		-20°C +140°C
		PTFE over EPDM		-20°C +120°C
		SILICON		-30°C +150°C
		VITON®		-18°C +200°C
10	*Lower stem retainer Screw*	*Stainless steel*		
11	*Stem Retainer Plate*	*Stainless steel*		
12 & 15	Viti - *Screws*	Acciaio Inox - *Stainless steel*		
14	End Cover	GG25 Cast Iron *Stainless steel*		

Opening angle (cv Value)

Size		10°	20°	30°	40°	50°	60°	70°	80°	90°
DN40	1 1/2"	0,1	1,8	7	16	32	41	59	76	99
DN50	2"	0,1	2	11	22	42	58	86	120	132
DN65	2 1/2"	0,2	4	20	37	65	98	142	202	256
DN80	3"	0,3	8	21	38	86	125	198	392	505
DN100	4"	0,4	14	35	77	140	232	401	702	936
DN125	5"	0,9	29	62	132	232	392	625	922	1109
DN150	6"	2,1	42	96	203	372	611	1105	2009	2521
DN200	8"	3,2	65	191	401	726	1211	1901	3555	4812
DN250	10"	3,9	151	321	695	1232	2065	3740	6183	7498
DN300	12"	5	234	495	1065	1909	3178	5905	8805	9928
DN350	14"	5,8	338	712	1554	2771	4560	7220	10854	12915
DN400	16"	8	460	980	2133	3780	6289	9909	14961	16626
DN450	18"	10	613	1301	2822	5029	8325	13178	19743	23705
DN500	20"	12	790	1678	3623	6468	10698	16938	25396	27915
DN600	24"	21	860	2521	5567	9807	16550	26128	39206	43212
DN700	28"	29	1.255	3645	6654	11001	18680	29709	44366	49500
DN800	32"	42	2.387	4761	8712	13709	20612	31401	48189	68251
DN900	36"	58	3.006	6069	11125	17412	26089	39742	60895	86355
DN1000	40"	88	3.409	8391	15317	24134	36133	55021	84425	119750

Technical Data

Nominal Size	DN40 to DN 1000
Design standard	EN593, BS5155, MSS SP67 and API609
Face to face according to	DIN EN 558-1 Basic Series 20 (DIN 3202 K1) API 609 ISO 5272
Connecting flanges to	BS4504 PN6/PN10/PN16 DIN2501 PN6/PN10/PN16 DIN 2641, DIN 2642 and DIN 2576 ANSI B16,1 CL,125 and B16.5 CL 150 ISO 2531 PN6, PN10 and PN16
Top flange to	ISO 5211
Operating Pressure	16 Bar ------ DN32 - DN300 10 Bar ------ DN350 - DN1000
Pressure Testing to	DIN3230, API598
della pressione massima *Body Test Pressure to 150%* *of full rating*	24 Bar ------ DN32 - DN300 15 Bar ------ DN350 - DN1000
della pressione massima *Sealing Test Pressure to 110%* *of full rating*	17 Bar ------ DN32 - DN300 11 Bar ------ DN350 - DN1000
Temperature Range	NBR: -10°C ÷ +80°C EPDM: -20°C ÷ +120°C EPT: -20°C ÷ +140°C *VITON: -18°C ÷ +200°C* *PTFE over EPDM: -20°C ÷ +120°C* *SILICON: -30°C ÷ +150°C*

Torque value in Nm

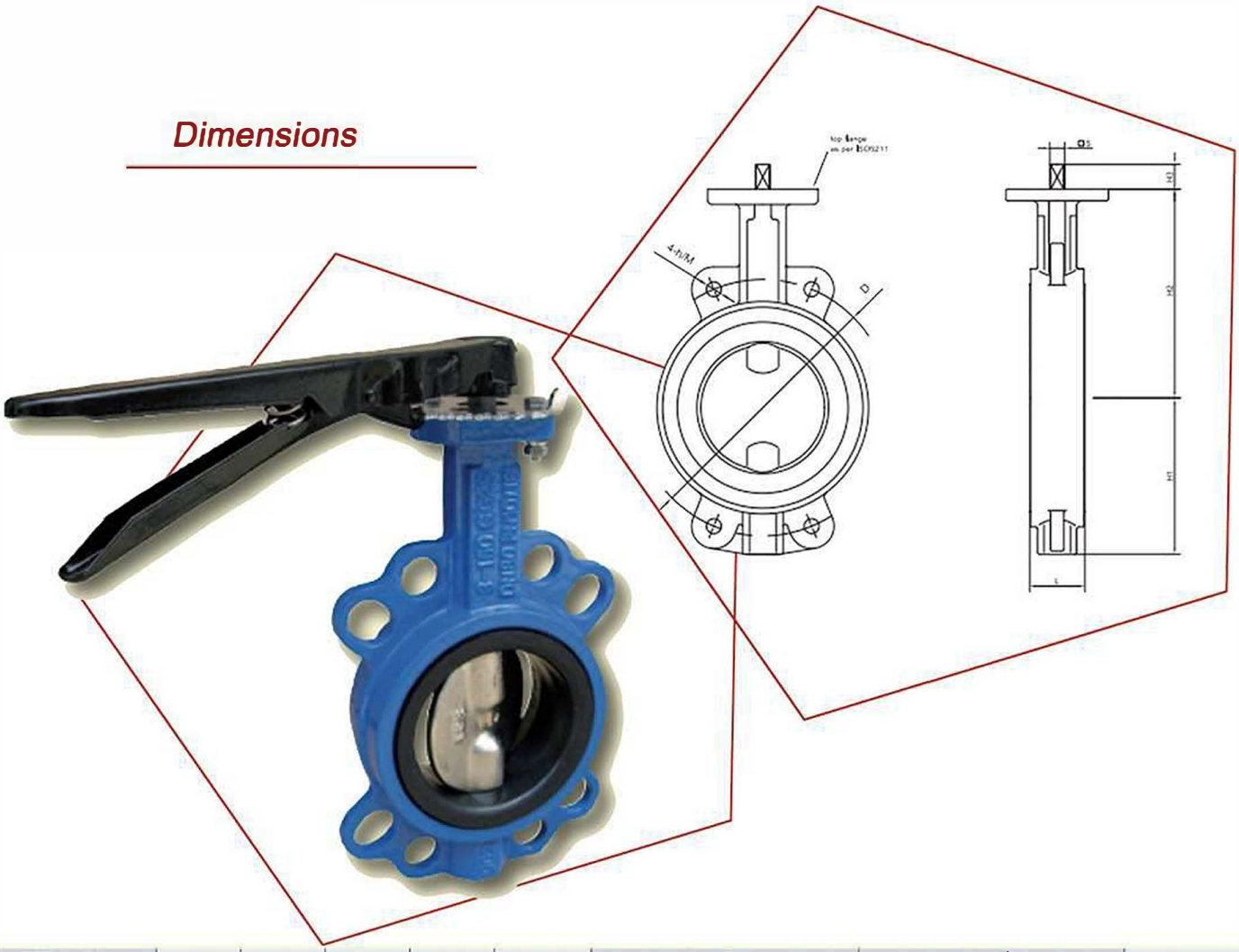
SIZE	PN10	PN16
DN40/1.5"	18	20
DN50/2"	18	20
DN65/2.5"	20	26
DN80/3"	29	40
DN100/4"	38	50
DN125/5"	75	85
DN150/6"	95	110
DN200/8"	160	180
DN250/10"	265	292
DN300/12"	452	496

SIZE	PN6	PN10
DN350/14"	608	695
DN400/16"	860	960
DN450/18"	1095	1290
DN500/20"	1370	1690
DN600/24"	1580	1800
DN700/28"	2650	2900
DN800/32"	3500	3835
DN900/36"	4450	4865
DN1000/40"	8200	10125

Compatibility and application for elastometer seat

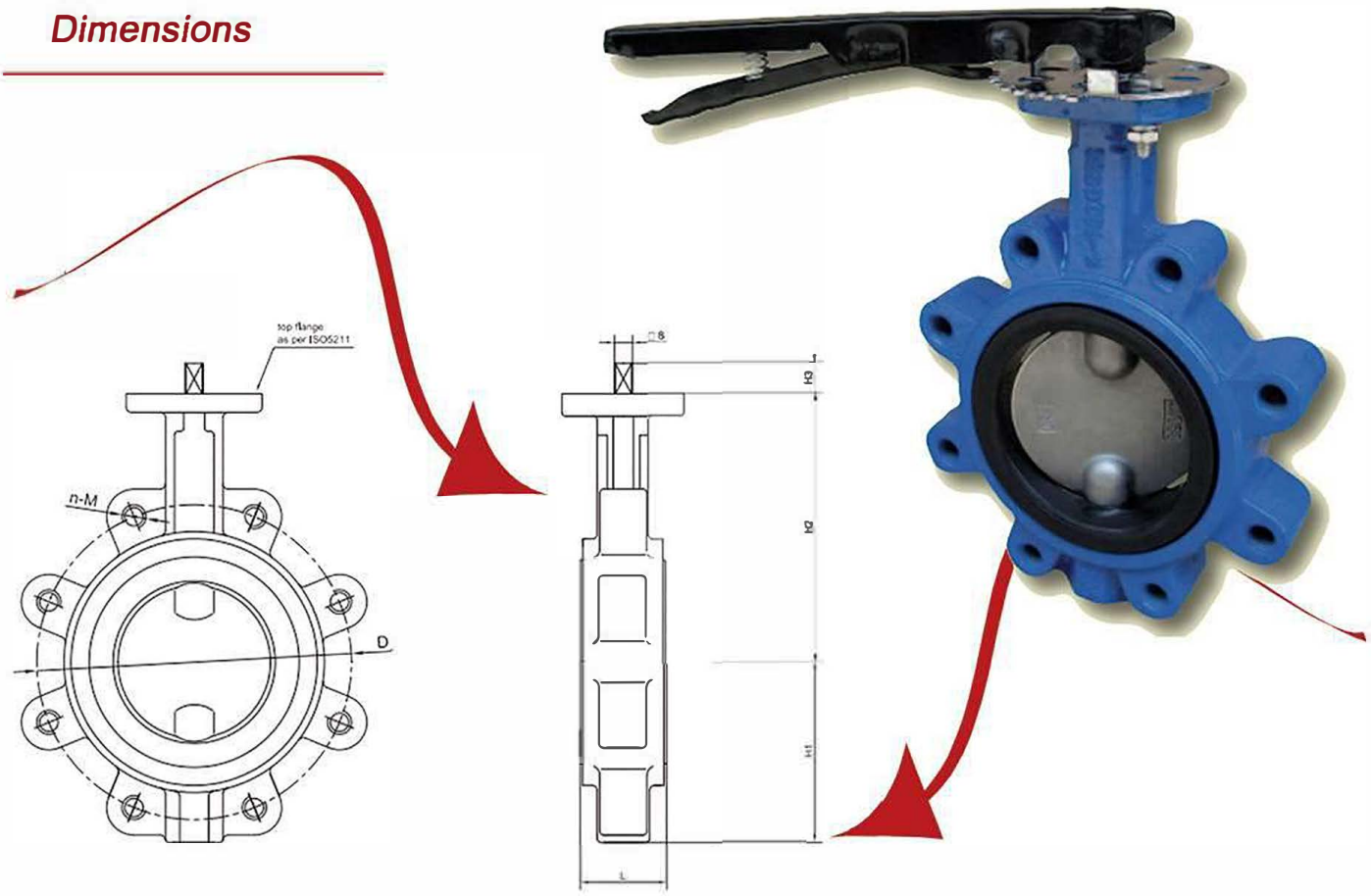
elastomer material	general application	temperature range	not recommended for:
 BUNA N.® (NBR)	Hydrocarbons with less than 40% of aromatics, natural gas, air, H2O sea water, brine, alcohols, glycols.	-10°C ÷ +80°C 14°F ÷ +176°F	- Solvents - Benzene - Xylene
EPDM EPDM H.T. (EPT)	H2O, steam, air, brine, abrasives phosphates, esters ketones, alkali, food compounds, liquids and solids, diluite inorganic acids, caustic soda	-20°C ÷ +120°C -4°F ÷ 248°F -20°C ÷ +140°C -4°F ÷ 284°F	- Hydrocarbons - Oils - Fats
 HYPALON	Oxidizing acids, chromic acid, hydrofluoric acid, sulpher based acids, sodium hypoclonte, ozone.	-18°C ÷ + 100°C 0°F ÷ + 212°F	- Steam - Ketones - Hot Air - Nitric Acid
 SILICONE		- 30° C ÷ +150°C - 22° F ÷ + 302° F	- Hydrocarbons - Solvents - Steam
 VITON®	Hydrocarbons with high concentration of aromatics, mineral and halogenated acids, phorforic acid, alphatic and aromatic ethers	-18°C ÷ + 200°C 0°F ÷ +392°F	- Steam - Ketones - Amines - Esters - Alkali
 NEOPRENE®	Oils, diluite mineral acids, alkali, fats	-20°C ÷ + 100°C -4°F ÷ + 212 °F	- Acidi concentrati / Concentrated Acids - Solvents for paint
 GOMMA NATURALE NATURAL RUBBER	Abrasive products	-40°C ÷ + 80°C -40°F ÷ + 176°F	- Steam - Hydrocarbons - Oils
 TEFLON su EPDM (P.T.F.E. over EPDM)	Corrosive products - Solvents	-20°C ÷ +120°C -4°F ÷ 248°F	- Abrasive Products - Fluorine gaseous - Alkaline metals

Dimensions



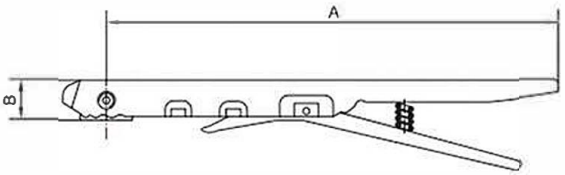
Valve Size		L	H1	H2	H3	□S	D			4-h/M			TOP FLANGE TO ISO5211
DN	inch						ANSI 125/150	PN10	PN16	ANSI 125/150	PN10	PN16	
40	1½"	33	63	125	32	9	98,4	110	110	16	18	18	F05
50	2	42	66	130	32	9 / 11	120,7	125	125	19	18	18	F05
65	2½	45	82	141	32	9 / 11	139,7	145	145	19	18	18	F05
80	3	45	90	148	32	9 / 11	152,4	160	160	19	18	18	F05
100	4	52	108	170	33	11	190,5	180	180	19	18	18	F07
125	5	54	123	187	33	14	215,9	210	210	22	18	18	F07
150	6	56	138	202	33	14	241,3	240	240	22	22	22	F07
200	8	60	170	238	39	17	298,5	295	295	22	22	22	F10
250	10	66	200	272	39	22	362	350	355	25	22	26	F10
300	12	77	236	305	39	22	431,8	400	410	25	22	26	F10
350	14	77	266	368	40	22	476,3	460	470	29	22	26	F10
400	16	86	301	400	42	33*	539,8	515	525	29	26	30	F14
450	18	105	317	422	42	37*	577,9	565	585	32	26	30	F14
500	20	130	361	480	55	39*	635	620	650	32	26	33	F16
600	24	152	459	562	60	48*	749,3	725	770	35	30	36	F16
700	28	165	520	624	75	55*	863,6	840	840	35	30	36	F25
800	32	190	591	672	75	55*	977,9	950	950	UNC 1½"	33	39	F25
900	36	207	656	720	96	70*	1085,9	1050	1050	UNC 1½"	M30	M36	F25
1000	40	216	721	800	102	78*	1200	1160	1170	UNC 1½"	M33	M39	F30

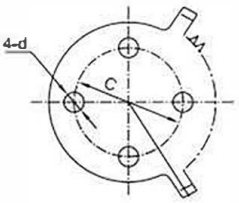
Dimensions

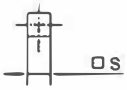


Valve Size		L	H1	H2	H3	□S	D			n-M			TOP FLANGE TO ISO5211
DN	inch						ANSI 125/150	PN10	PN16	ANSI 125/150	PN10	PN16	
50	2	42	66	130	32	9 / 11	120,7	125	125	4X 5/8-11UNC-2B	4-M16	4-M16	F05
65	2½	45	82	141	32	9 / 11	139,7	145	145	4X 5/8-11UNC-2B	4-M16	4-M16	F05
80	3	45	90	148	32	9 / 11	152,4	160	160	4X 5/8-11UNC-2B	4-M16	8-M16	F05
100	4	52	108	170	33	11	190,5	180	180	8X 5/8-11UNC-2B	8-M16	8-M16	F07
125	5	54	123	187	33	14	215,9	210	210	8X 3/4-10UNC-2B	8-M16	8-M16	F07
150	6	56	138	202	33	14	241,3	240	240	8X 3/4-10UNC-2B	8-M20	8-M20	F07
200	8	60	170	238	39	17	298,5	295	295	8X 3/4-10UNC-2B	8-M20	12-M20	F10
250	10	66	200	272	39	22	362	350	355	12X 7/8-9UNC-2B	12-M20	12-M24	F10
300	12	77	236	305	39	22	431,8	400	410	12X 7/8-9UNC-2B	12-M20	12-M24	F10
350	14	77	266	368	40	22	476,3	460	470	12X 1-8UNC-2B	16-M20	16-M24	F10
400	16	86	301	400	42	33*	539,8	515	525	16X 1-8UNC-2B	16-M24	16-M27	F14
450	18	105	317	422	42	37*	577,9	565	585	16X 1 1/8-7UNC-2B	20-M24	20-M27	F14
500	20	130	361	480	55	39*	635	620	650	16X 1 1/8-7UNC-2B	20-M24	20-M30	F16
600	24	152	459	562	60	48*	749,3	725	770	16X 1 1/4-7UNC-2B	20-M27	20-M33	F16

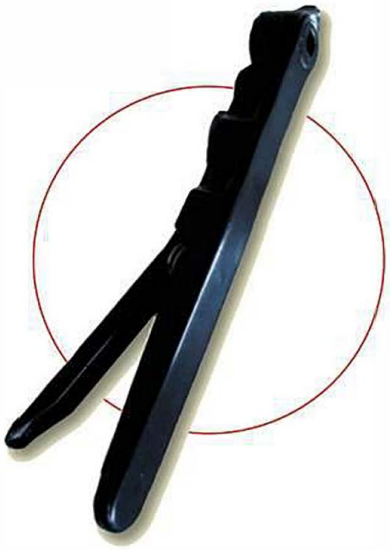
Note: All dimensions marked with "*" are referring the Max. diameter of shafts.





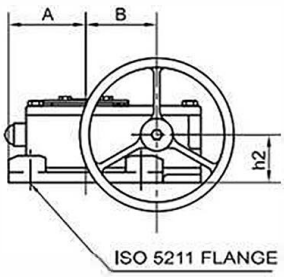


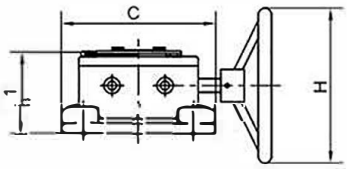
Hand lever

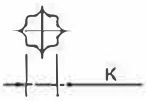


DN	SIZE	A	B	C	D	4-d
DN40-DN80	1 1/2" - 3"	220	24	50	74	7
DN100	4"	260	25	70	101	10
DN125-DN150	5"-6"	260	25	70	101	10
DN200	8"	360	31	102	150	12
DN250-300	10"-12"	360	31	102	150	12

Gear box



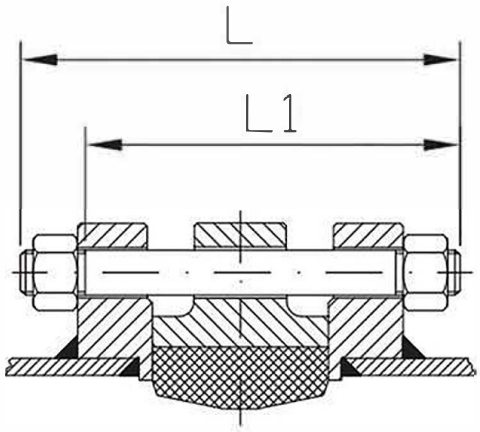


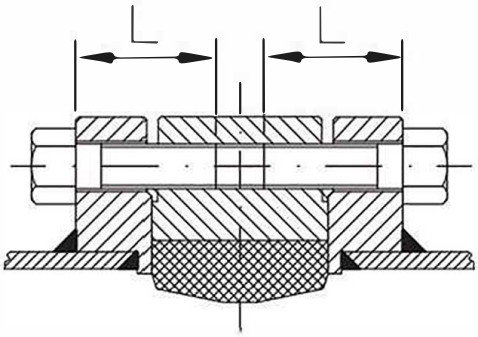


Valve Size	Output Torque Nm	Input Torque Nm	Gear Ratio	Number of Turn	A	B	C	K	h1	h2	H	Connecting Flange to ISO5211
1.5"-4"	150	18	40:1	10	45	42,5	80	11X11	48	22	100	F05/F07
5"-6"	250	22	37:1	9,25	65	50	100	17X17	55	28	120	F07
8"-12"	500	45	42:1	10,5	57	53	118	22X22	69	36	200	F07/F10
14"	1000	90	42:1	10,5	76	66	152	27X27	78	42	300	F10/F12/F14
16"-18"	1800	110	60:1	15	100	89	200	60*	87	50	300	F12/F14/F16
20"	3400	165	68:1	17	118	123	252	80*	91	50	400	F14/F16
24"	4500	165	88:1	22	145	153	315	80*	100	50	400	F16/F25
28"-32"	7900	150	184:1	46	155	50	310	86*	131	66	400	F16/F25
36"	10100	150	250:1	62,5	178	95	360	100*	166	80	400	F25/F30
40"	16500	150	720:1	180	210	240	470	128*	158	75	500	F25/F3

diametro massimo del foro dell'asta cilindrica/Dimensions with "" is referring the max dia of the shaft hole

Size &Quantity of Bolts for valve installation





Size		PN10					PN16				
		Stud Bolt (for WAFER type)			Hexagon Head Bolt (for LUG Type valve)		Stud Bolt (for WAFER type)			Hexagon Head Bolt (for LUG Type valve)	
(mm)	(inch)	Qty.	Dia.xL1	Length	Qty.	Dia.xL1	Qty.	Dia.xL1	Length	Qty.	Dia.xL1
40	1.5"	4	M6x100	120	-	-	4	M6x100	120	-	-
50	2"	4	M16x110	130	4x2	M16x40	4	M16x110	130	4x2	M16x40
65	2.5"	4	M16x120	140	4x2	M16x45	4	M16x120	140	4x2	M16x45
80	3"	8	M16x120	140	8x2	M16x45	8	M16x120	140	8x2	M16x45
100	4"	8	M16x130	150	8x2	M16x50	8	M16x130	150	8x2	M16x50
125	5"	8	M16x130	150	8x2	M16x50	8	M16x130	150	8x2	M16x50
150	6"	8	M20x140	165	8x2	M20x50	8	M20x140	165	8x2	M20x50
200	8"	8	M20x150	175	8x2	M20x55	12	M20x150	175	12x2	M20x55
250	10"	12	M20x160	185	12x2	M20x60	12	M24x160	185	12x2	M24x60
300	12"	12	M20x170	195	12x2	M20x65	12	M24x170	200	12x2	M24x65
350	14"	16	M20x170	195	16x2	M20x65	16	M24x170	200	16x2	M24x65
400	16"	16	M24x190	220	16x2	M24x75	16	M27x200	230	16x2	M27x75
450	18"	20	M24x220	250	20x2	M24x80	20	M27x220	254	20x2	M27x80
500	20"	20	M24x260	290	20x2	M24x90	20	M30x260	294	20x2	M30x90
600	24"	20	M27x290	324	20x2	M27x100	20	M33x290	334	20x2	M33x100
700	28"	24	M27x300	334	-	-	20	M33x300	341	4x2	M33x90
800	32"	24	M30x330	364	-	-	24	M36x330	375	-	-
900	36"	24	M30x350	388	4x2	M30x100	-	-	-	-	-
1000	40"	24	M33x370	411	4x2	M30x100	-	-	-	-	-

Note:
1. The stud bolts are in accordance with GB898-88 bm=1.25d.
2. The hexagon head bolts are in accordance with GB5780-86.
3. The hexagon head bolts are used at the twonecks of 900(36"). 1000(40") PN1.0 Mpa and 700(28")PN1.6MPa Type "A" Valve body,the quantity is 4x2 and listed in the column of hexagon-headed bolt.

HIGH PERFORMANCE BUTTERFLY VALVES

Series 930 & 931

Summary

The ultra high perfor mance butterfly valve has ultra unique product
structure, ultra reliable sealing performance, ultra wide working conditions, ultra low operating torque and ultra long service life. It is
safe and fireproof under special working conditions, staying at the
leading position among other similar products in the world.

Valve size includes		
DBA8150	2"~60"	(DN50~1500)
DBA5150	2 1/ 2"~60"	(DN65~1500)
DFA8150	3"~60"	(DN80~1500)
DBA8300	2"~60"	(DN80~1500)
DBA5300	3"~60"	(DN80~1500)
DFA8300	3"~60"	(DN80~1500)

The series of high performance wafer type butterfly valves uses various
structure materials, including those that meet NACE require-ments and
anticorrosive materials. Special valves that can be used in chlorine, oxygen,
high vacuum, corrosi ve media and cryogenic condition are also available

Features

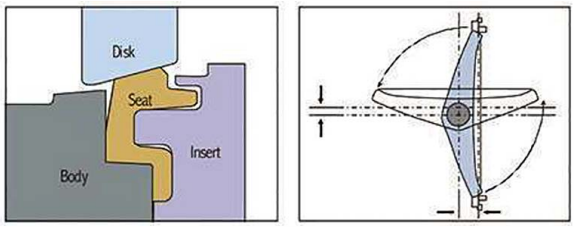
The unique dynamic load seal PTFE seat design is adopted with good
elasticity and high reliability.
Sealing can be maintained without the need of adding O ring or metal
part.
The lip type sealing structure can compensate for the changes of temperature and pressure.
Long service life and low maintenance.
In seal test, there is no bubble and leakage at both directions.

Provided with shut-off and control functions

Having excellent control characteristics
Proportional change of flow characteristic curve
Wide adjusting range
Tight sealing can be realized even when it is used for control.

Design of offset shaft and eccentric butterfly plate

The seat and butterfly plate do not contact each other when the valve is
opened or at the middle position.
There is no wear point at the upper and lower parts of the seat.
Low torque with low requirement for operating mechanism.



Fire resistant structure

The fire resistant type valve is subjected to fire test according to API 607.

Seat type

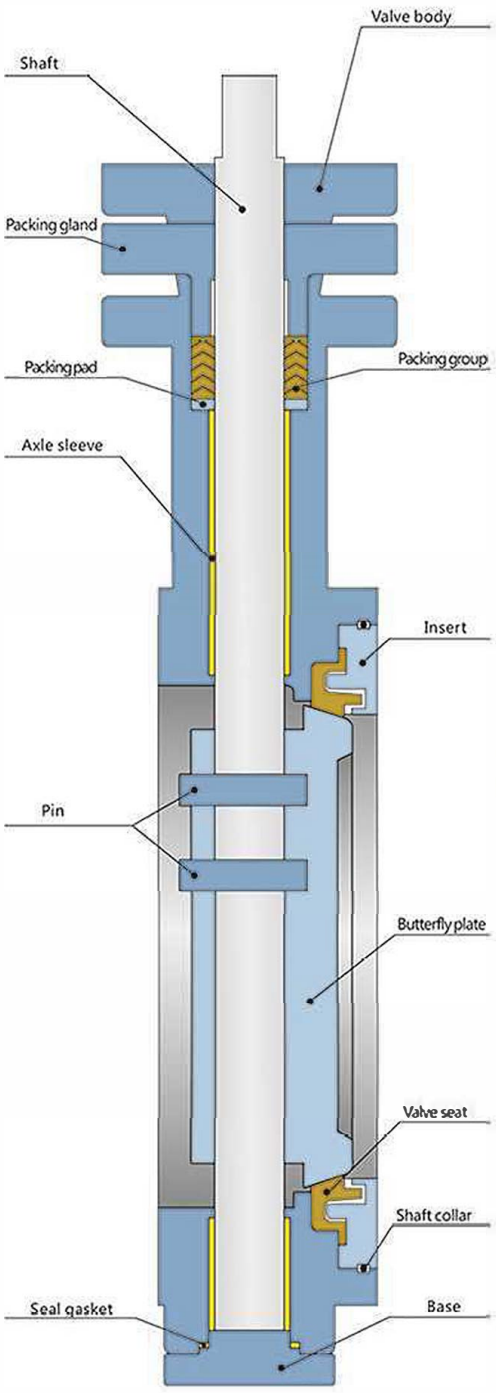
PTFE, R-PTFE, PEEK, Fireproof seat, etc.

Reliable fixing of shaft

The anti-blow-out structure is provided at the top of the shaft to prevent
the shaft from running out of the gland in case of accidental breaking of
the shaft.

Convenient seat maintenance and servicing

The seat can be replaced just through removing the inserts without the
need of disassembling the butterfly valve and shaft.



NO	Part name	JIS10K\GBPN16\ANSI150LB		
1	Valve body	ASTM A216WCB	ASTM A351CF8	ASTM A351CF8M
2	Shaft	17-4PH	17-4PH	17-4PH
3	Insert	Carbon steel	316	316
4	Valve seat		RPTFE或PPL	
5	Butterfly plate	ASTM A351CF8	ASTM A351CF8	ASTM A351 CF8M
6	Packing gland	ASTM A216WCB	ASTM A351CF8	ASTM A351CF8M
7	Packing group	RPTFE RPTFE or graphite		
8	Packing pad	316	316	316
9	Axle sleeve	316+RPTFE		
10	Shaft collar	316	316	316
11	Pin	17-4PH	17-4PH	17-4PH
12	base			

Standard and specification

API 609	Flange type and clamp type butterfly valve
MSS SP-25	Valve standard marking system
MSS SP-44	Steel pipe flange
MSS SP-55	Quality standard for steel castings
MSS SP-61	Pressure testing of steel valves
MSS SP-69	Terminology for valves and connectors
ANSI B 31.3	Chemical plant and refinery piping
ANSI B 31.8	Gas transpor tation and distribution pipe system
API 598	Valve inspection and testing
ANSI B 16.10	Face-to-face and end-to-end dimensions of ferite valves
ANSI B 16.S	Pipe flanges and flanged fittings
ANSI B 16.47	NPS26-NPS60 NPS26-NPS60 large diameter steel flange
ANSI B 16.34	Flange end and butt welding end steel valves
ANSI B 31.1	Power plant pipes
ANSI B 31.4	Anhydrous ammonia and alcohol,system hydrocarbon transportation
ANSI/FCI 70-2-1991	Control valve seat leakage

Unique seat sealing structure

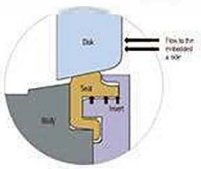
The traditional central line butterfly valve is lined with fluorine or rubber, but the
S type elastic seal seat structure independently researched and developed
by ourself through introducing technology from Germany MAYER adopts
the imported RPTFE material with good elasticity and long service life. It can
automatically compensate for the changes of temperature and pressure and
can realize compensation for the wor n seal due to long-time opening, c losing
and use. It can realize double-direction sealing without leakage. It adopts
flexible i nsert str ucture, and the maintenance is fast and convenient without the
need of removing the butterfly plate and stem. The seal seat can be replaced
and the sealing face can be repaired just through taking off the inserts at one
side

Seat sealing

ANSI/FCI 70-2 stipulated the control valve leakage level and test procedures.
Among them level minimum leakage level. High performance wafer butterfly
valve can achieve MSS-SP61 prescribed no bubble seal, than level.

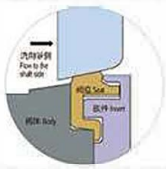
When the valve is closed, the butterfly plate makes the seat slightly deform. The deformation
excites the seat. The excitation of the seat sealing face enables permanent sealing to be
maintained between it and the edges of the butterfly plate

The series of high performance wafer type butterfly valves uses various
structure materials, including those that meet NACE requirements and
anticorrosive materials. Special valves that can be used in chlorine, oxygen,
high vacuum, corrosi ve media and cryogenic condition are also available



Provided with shut-off and control functions

When the inserts receive pressure, the pressure is exer ted at the bottom of the lip edges,
further enhancing the sealing force between the butterfly plate and seat.



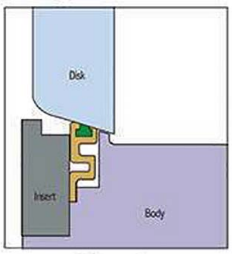
When the pressure is exer ted at the non-inser t side, the butterfly plate is pushed towards
the seat. As the butterfly plate is of the ball shape, the further the butterfly plate is pushed
towards the seat, the tighter the closing is. The lip edges contact the trough at the bottom
of inser ts, limiting excessive movement of the seat.

Product structure features (continued)

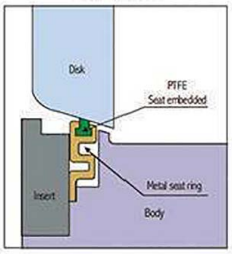
Fireproof structure

The fire resistant type butterfly valve is designed according to API607
standard and is subjected to fire test. In the event of fire at the using
location of the valve, when the seal ring made of non-metal materials such
as PTFE is decomposed or damaged under high temperature, the metal can
be used to help the internal pressure self-sealing structure and play t
he function of instant sealing, so as to effectively prevent media from large amounts of leakage and stop fire spreading.

During fire and after fire



Before fire



Design structure of eccentric valve shaft and eccentric butterfly plate

The stem is made of high strength stainless steel 174PH that conforms to
international standards. Each end of the shaft is provided with the stainless
steel+RPTFE permanent self-lubricating bearing. Each end of the butterfly
plate is provided with the thrust bush to effecti vely control the positioning of
butterfly valve, avoid metal engaging and reduce wear due to friction
between the seat and butterfly plate, so as to ensure reliability of frequent
opening and closing of butterfly valve and greatly reduce the opening and
closing torque of the valve.

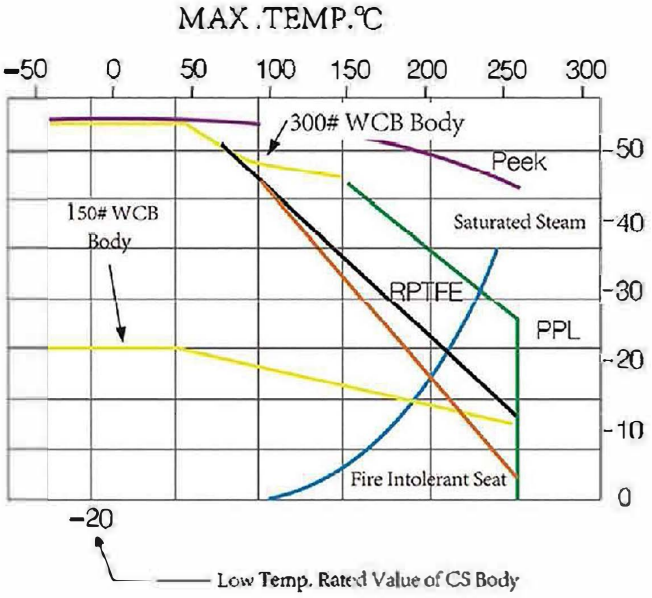
Unique opening, closing and control structure

For butterfly valves of 2"-6", the handle switch and approximate flow
percentage control structure is adopted. The handle assembly gear plate
approximate flow adjusting and locking function is provided and the switch
limit device is also provided. For butterfly valves of 8" and above, the wor m
gear, electric or pneumatic actuator can be reasonably equipped according
to the requirements of working conditions.

Rated value

Seat rated value

The seat rated values indicated on the curve are only for the seat. It is the differential pressure between the two ends of the butterfly valve when the valve is fully closed. These rated values can serve as use guide under general conditions. According to past experience, the rated values for improved and changed other seat materials may be higher. For special working conditions, please consult DESW.



Note: The maximum differential pressure of valve of 316 stainless steel or 20# alloy stem, 14"-60" (DN350-1500), 150lb is 150psi

The maximum differential pressure of valve of 316 stainless steel or 20# alloy stem, 3"-36" (DN80-900), 300lb is 300psi

Body rated value

The maximum working pressure of body and testing pressure of body of various materials are listed in the body pressure ratings table. The actual working pressure in the working conditions shall be decided according to the seat rated values.

Rated value of 150lb body (bar)

Temperature	Carbon steel	Ductile iron	Stainless steel	20#alloy	Monel
-20to38	19.7	17.2	19.0	15.8	15.8
93	19.7	16.2	16.5	13.8	13.8
149	15.8	14.8	14.8	12.4	13.1
204	13.8	13.8	13.4	11.0	12.8
260	11.7	11.7	11.7	10.3	11.7
test pressure	31	27.6	29.3	24.1	24.1

Rated value of 300lb body (bar)

Temperature	Carbon steel	Stainless steel	20#alloy	Monel
-20to38	51	49.6	41.4	41.1
93	46.5	42.7	35.9	36.5
149	45.2	38.6	32.1	34.1
204	43.8	35.5	29.0	33.1
260	41.4	33.1	26.9	32.8
test pressure	77.6	75.8	62	62

Valve torque		150#torqueT,M,U,X seat Closing differential pressure					
Inch	DN	lb-ft@ 100psi	N.m@ 6.9bar	lb-ft@ 200psi	N.m@ 13.8bar	lb-ft@ 285psi	lb-ft@ 19.7bar
2-1/2	65	21	29	23	31	24	33
3	80	25	34	27	37	29	39
4	100	35	47	39	35	43	58
5	125	48	65	56	76	63	86
6	150	72	97	83	113	93	126
8	200	121	164	142	193	160	217
10	250	163	222	202	274	234	318
12	300	241	290	287	390	350	475
14	350	362	491	505	684	626	849
16	400	463	628	646	876	802	1087
18	450	602	816	844	1144	1050	1423
20	500	810	1098	1140	1546	1421	1926
24	600	1234	1673	1758	2384	2200	2983
30	750	2170	2942	2940	3986	3595	4873
36	900	3530	4786	4860	6589	5990	8121
42	1050	5780	78 37	8060	10928	10000	13558
48	1200	9170	12433	12840	17409	15960	13558
54	1350	12950	17558	17900	24269	22110	29977
60	1500	19020	25790	26040	35310	32000	43397

Valve torque		150#torqueT,M,U,X seat Closing differential pressure					
Inch	DN	lb-ft@ 100psi	N.m@ 6.9bar	lb-ft@ 200psi	N.m@ 13.8bar	lb-ft@ 285psi	lb-ft@ 19.7bar
2-1/2	65	42	57	45	61	47	64
3	80	53	72	57	77	59	81
4	100	67	91	74	100	80	108
5	125	97	132	114	155	128	174
6	150	131	178	152	206	170	230
8	200	218	296	256	347	288	391
10	250	333	452	406	550	463	635
12	300	508	589	636	862	745	1010
14	350	604	819	758	1028	889	1205
16	400	710	963	920	1247	1099	1789
18	450	970	1315	1370	1857	1710	2318
20	500	1390	1885	1980	2680	2482	3364
24	600	2050	2779	2700	3361	2200	2983
30	750	2920	3959	3940	5342	4807	6517
36	900	3530	4786	4960	6725	5990	8121
42	1050	5620	1620	7440	10087	10000	13558
48	1200	8800	11931	12100	16405	14905	20208

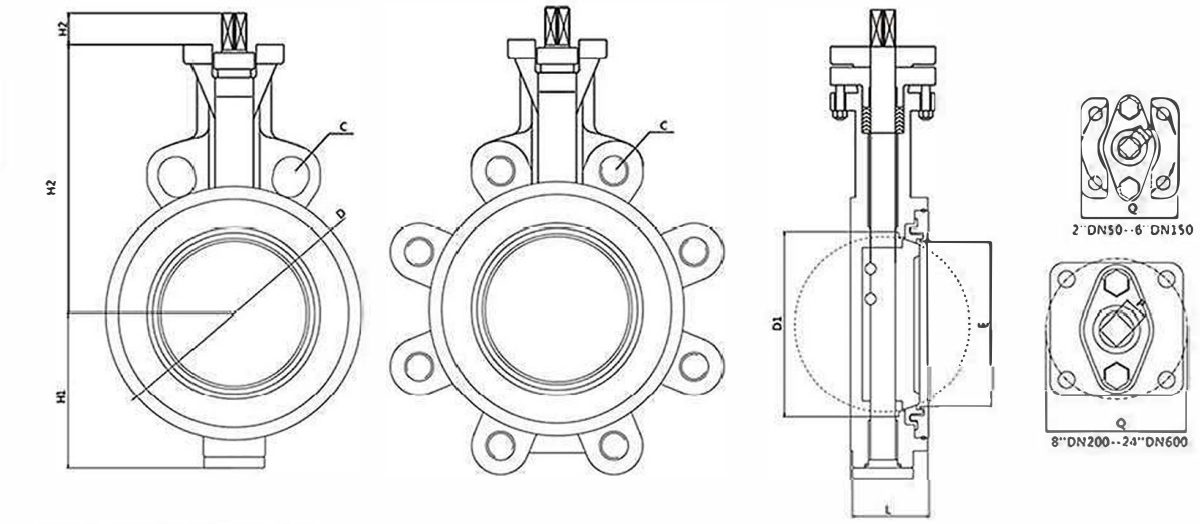
		300#torque T,M,U,X seat Closing differential pressure											
Inch	DN	lb-ft@ 300psi	N.m@ 20.7bar	lb-ft@ 400psi	N.m@ 27.6bar	lb-ft@ 500psi	N.m@ 34.5bar	lb-ft@ 600psi	N.m@ 41.4bar	lb-ft@ 700psi	N.m@ 48.3bar	lb-ft@ 740psi	N.m@ 51bar
3	80	31	42	34	46	38	51	41	55	44	60	45	62
4	100	52	70	58	79	65	88	72	97	78	106	81	110
6	150	119	161	138	188	158	214	178	241	197	267	205	278
8	200	231	313	271	368	312	422	352	477	392	532	408	554
10	250	354	480	422	572	490	664	557	756	625	848	652	885
12	300	492	667	582	790	673	913	764	1035	854	1158	890	1207
14	350	824	1117	1012	1372	1200	1627	1388	1882	1576	2137	1651	2239
16	400	989	1340	1212	1643	1435	1946	1658	2248	1881	2550	1970	2671
18	450	1279	1734	1562	2118	1845	2520	2128	2885	2411	3269	2524	3422
20	500	1707	2314	2096	2842	2485	3369	2874	3897	3263	4424	3419	4635
24	600	2309	3131	2832	3840	3355	4549	3878	5258	4401	5967	4610	6251
30	750	4210	5708	5080	6888	5950	8067	6820	9247	7690	10426	8038	10898
36	900	7220	9789	8760	11877	10300	13965	11840	16053	13380	18141	13996	18976

Valve size		300#torque T,M,U,X seat Closing differential pressure											
Inch	DN	lb-ft@ 300psi	N.m@ 20.7bar	lb-ft@ 400psi	N.m@ 27.6bar	lb-ft@ 500psi	N.m@ 34.5bar	lb-ft@ 600psi	N.m@ 41.4bar	lb-ft@ 700psi	N.m@ 48.3bar	lb-ft@ 740psi	N.m@ 51bar
3	80	57	77	58	79	60	81	61	83	63	85	63	86
4	100	86	117	94	127	102	138	110	149	118	160	121	164
6	150	189	256	212	287	235	319	258	350	281	381	290	394
8	200	313	424	354	480	395	536	436	591	477	647	493	669
10	250	464	629	522	708	580	786	638	865	696	944	719	975
12	300	825	1119	960	1302	1095	1485	1230	1668	1365	1851	1419	1924
14	350	922	1250	1076	1459	1230	1668	1384	1877	538	2085	1600	2169
16	400	1170	1586	1396	1885	1610	2183	1830	2481	2050	2779	2138	2899
18	450	1980	2685	2440	3308	2900	3932	3360	4556	3820	5179	4004	5429
20	500	2800	3796	3460	4691	4120	5586	4780	6481	5400	7379	5704	7734
24	600	4400	5966	5400	7321	6400	8677	7400	10033	8400	11389	8800	11931

930 Series

Wafer Type Butterfly Vales

valve2"~24"(DN50~600) Size & Weight



JIS10K\GBPN16\ANSI150LB

size	Approximatesize (mm)												
NPS	DN	H1	H2	H3	L	D	D1	E	F	M	G		
											10K	PN 6	150LB
2"	50	65	138	16	43	96	48	40	11	F07	120	125	120.5
2.5"	65	75	148	16	46	119	64	60	11	F07	140	145	139.5
3"	80	82	168	18	46	132	82	76	11	F07	150	160	152.5
4"	100	92	180	18	52	156	102	95	11	F07	175	180	190.5
5"	125	115	202	21	56	186	122	115	14	F07	210	210	216
6"	150	126	225	21	56	216	148	142	14	F10	240	240	241.5
8"	200	165	265	25	64	268	197	189	17	F10	290	295	298.5
10"	250	235	315	28	71	324	243	238	22	F12	355	355	362
12"	300	258	342	32	78	381	295	282	27	F12	432	410	400
14"	350	295	375	38	92	413	325	318	27	F14	455	470	476
16"	400	315	410	60	102	470	372	365	36	F17	510	525	540
18"	450	370	442	60	114	533	421	415	36	F16	565	585	578
20"	500	398	458	70	127	580	470	458	42	F16	620	650	635
24"	600	475	558	80	154	688	569	550	46	F16	730	770	749.5

Flow parameters

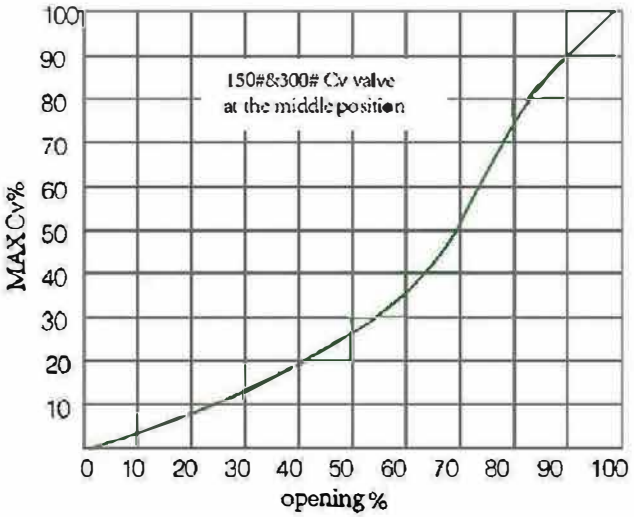
The flow coefficient of 150lb and 300lb butterfly valves is listed in the
following table. Cv value indicates water flow per minute that passes through
the fully opened valve when the differential pressure is 1psi (0.07bar) and
the temperature is 60 F (15.6), and its unit is USgal/min.

150# Class		
Valve size		Cv
Inch	DN	
2-1/2	65	78
3	80	165
4	100	400
5	125	650
6	150	1. 050
8	200	2. 200
10	250	3. 300
12	300	5. 100
14	350	5. 800
16	400	8. 000
18	450	10. 00
20	500	14. 000
24	600	21. 600
30	750	34. 000
36	900	55. 500
42	1050	82. 650
48	1200	108. 300
54	1350	133. 500
60	1500	159. 00

150# Class		
Valve size		Cv
Inch	DN	
3	80	165
4	100	400
6	150	1. 050
8	200	1. 800
10	250	3. 150
12	300	4. 750
14	350	5. 200
16	400	6. 900
18	450	9. 300
20	500	11. 300
24	600	18. 500
30	750	29. 100
36	900	47. 500

Body rated value

The maximum working pressure of body and testing pressure of body of various materials are listed in the body pressure ratings table. The actual working pressure in the working conditions shall be decided according to the seat rated values.



To confim Cv value of the valve at the middle position

1. Confirm the percentage of the maximum Cv value from the curve
2. Multiply the percentage of the maximum Cv value from the curve by the Cv value from the flow datasheet

For example: The Cv value of the butterfly valve of 6"(DN150), 150lb under opening of 70% is:
(1) Confirm the percentage of the maximum Cv value of the butterfly valve of 6"(DN150), 150lb under opening of 70% is 53%.
(2) The maximum Cv v alue is: Cv value=0.53 1050=560

McSYS®

TRIPLE OFFSET

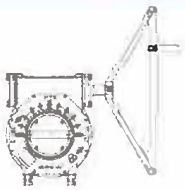
TRIPLE OFFSET BUTTERFLY VALVE

TRIPLE OFFSET BUTTERFLY VALVE SPECIFICATION

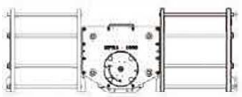
LAMIATED SEAT TYPE SPECIFICATION

950 Series

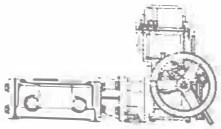
OPERATING METHOD



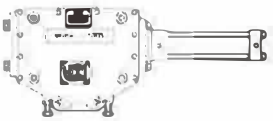
MANUAL



PNEUMATIC



ELECTRIC



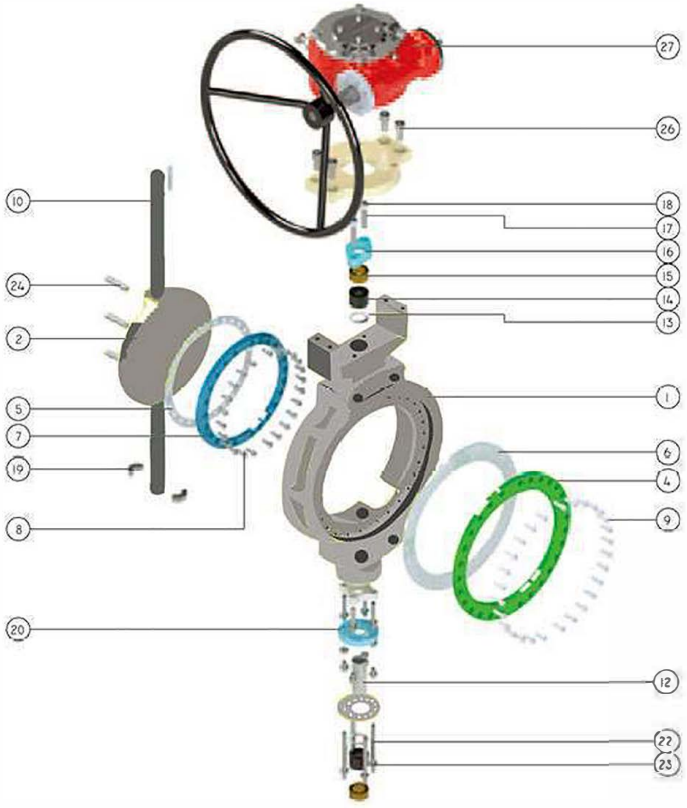
HYDRAULIC

DESCRIPTION

SIZE RANGE:	2"~120"
TEMP. RANGE:	-50~650℃
DESIGN:	API 609 / BS 5155 / ANSI B 16.34
TEST INSPECTION:	API598 / ISO 5208
PRESSURE TEMP'RATINGS:	ASME / ANSI B 16.34,16.24
LEAKAGE:	ZERO LEAKAGE
FLUID:	WATER/SEA WATER/O2/CO2/H2/ COG/LDG/BFG/FOG/MIXED GAS/ DUST/STEAM/AIR/ HYDROCHLORIC ACID/SULFURIC ACID NITRIC ACID
FLANGE RATING:	ASME B16.5/16.47 CLASS 150LB,300LB,600LB KS(JIS)10K,16K,20K,30K,40K BS 4504 DIN PN 10,PN 16,PN 25,PN 40 AWWA C207 CLASS B & D,E,F

TRIPLE OFFSET BUTTERFLY VALVE EXPLODED VIEW

LIMINATED SEAT

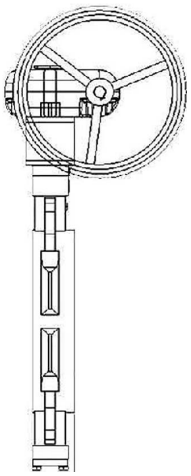


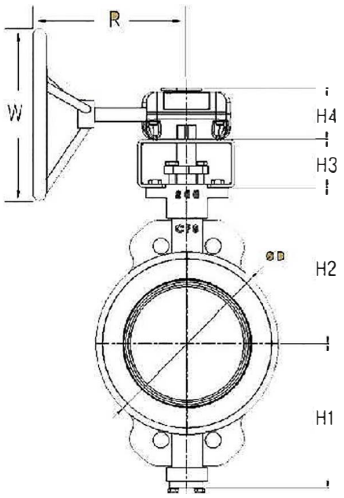
NO	PART NAME	NO	PART NAME	NO	PART NAME
1	BODY	10	SHAFT	19	SEGMENT RING
2	DISC	11	MAIN BUSH	20	RING HOLDER (TOP)
3	BODY SEAT	12	STUB BUSH	21	RING HOLDER(BOTTOM)
4	DISC SEAT	13	PACKING RING	22	ADJUSTABLE BOLT
5	BODY SEAT GASKET	14	PACKING	23	ADJUSTABLE NUT
6	DISC SEAT GASKET	15	GLAND RING	24	SHAFT PIN
7	INSERT RING	16	GLAND FLANGE	25	TOP FLANGE
8	INSERT RING BOLT	17	GLAND BOLT	26	TOP FLANGE BOLT
9	DISC SEAT BOLT	18	HEX. NUT	27	GEAR BOX

Be the Highest of Standards

SOLID SEAT TYPE

951 Series





Valve Dimension(mm)

SIZE		중량	DIMENSION(mm)							
Inch	mm		L	ϕD	H1	H2	H3	H4	R	ϕW
2	50	4.5	43	96	77	100	65	50	160	120
2.5	65	5.2	46	116	90	110				
3	80	6.5	46	126	95	120				
4	100	7.5	52	150	110	140				
5	125	14	57	180	145	170	70	70	200	200
6	150	18	62	212	150	175				
8	200	29	61	264	210	225				

SIZE		중량	DIMENSION(mm)							
Inch	mm		L	ϕD	H1	H2	H3	H4	R	ϕW
10	250	43	70	325	238	257	70	70	220	250
12	300	83	78	370	255	265	76	90	320	300
14	350	91	81	415	275	300				
16	400	118	102	475	355	375				
18	450	147	115	534	380	408		95	420	400
20	500	171	120	583	410	441				
22	550	190	154	642	435	475	115			
24	600	208	154	675	460	490				

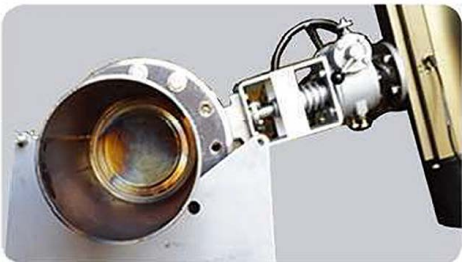
Ordering Guideline

Size	Series	Class	Body	Disc	Shaft	Packing	Seat Ring	Operator	Mode	Fail Action
x	xxx	xxx	xx	xx	xx	x	xxx	xx	xx	xx
3" 4"	950-Water	150	CS-Carbon Steel	D1-Carbon Steel	S1-410SS	G-Graphite	LR1-Laminated 304SS/Graphite	LV-Lever	DA-Double Acting	LP-Last Position
5" 6"	951-LUG	300	S4-304SS	D2-304SS	S2-316SS	T-PTFE	LR2-Laminated 316SS/Graphite	GO-Grar Operator	SR-Spring Acting	FC-Fail Closed
8" 10" 12"	952-Double Flange	600	S6-316SS	D3-316SS	S3-304SS	R-RTFE	SR1-Solid 304 SS	PN-Pneumatic Actuator		FO-Fail Open
14" 16"			BX-Special Alloy	DX-Special Alloy	S4-630 SS (17-4PH)	N-Nitronic	SR2-Solid 316 SS	EL-Electric Actuator		
18" 20" 24"					S5-402SS SX-Special Alloy		SRX-Special Alloy	HY-Hydraulicy Actuator		

Technical Data

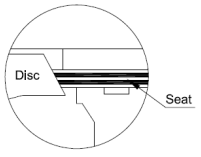
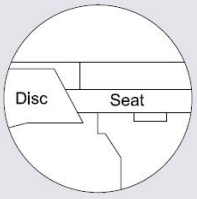
SOLID SEAT TYPE SPECIFICATION

High temperature test Seat structure



Operation test after high temperature heating

High temperature test
Triple offset seat structure Valve opening shape

Type	Seat Structute	Material	Temperature Range	Characteristic
Laminate Seat		316L	-20℃~400℃	금속재질과 그라파이프 적층구조 되어 있음
Solid Metal Seat		316L Inconel 625	-20℃~650℃	금속재질 단일재질 되어 있 고온고유속 안정적임

It is made of a single material of metal
Laminated structure of Metal & Graphite