



TGV BUTTERFLY VALVE

USER' S MANUAL

I WAFER TYPE

I SEMI-LUGGED TYPE

I LUGGED TYPE



I FEATURE

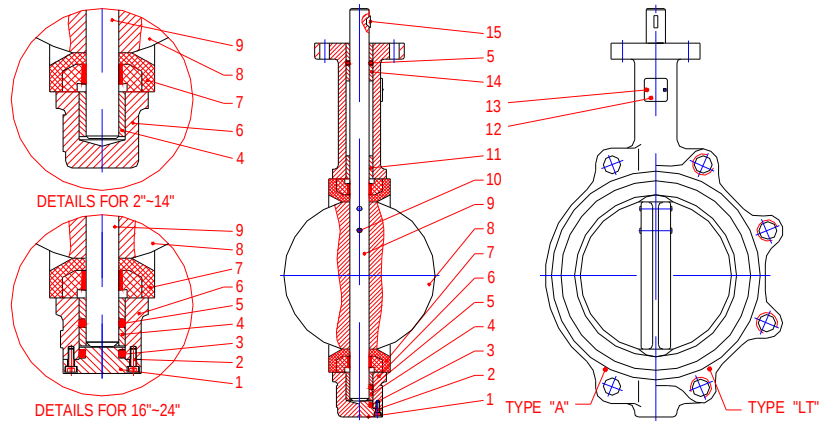
1. Small in size, light in weight, easy to install and maintain, can be install at any position of pipeline.
2. Simple and compact construction, minimized space occupied.
3. Quick quarter-turn action, minimized torque to operate.
4. Flow character trend to straight line, satisfied regulation.
5. Tens of thousands working cycle guarantee a long service life.
6. Zero leakage under bubble-tight test to perform tight shut-off.
7. Different material can be selected as different medium to meet up various fields.

I MAIN TYPE OF STRUCTURE

A. 2"~24" Wafer Type Butterfly Valve With Taper Pin

PART LIST

ITEM	DESCRIPTION
1*	BOTTOM COVER
2*	BOLT
3*	"O" RING
4	BUSHING
5	"O" RING
6	BODY
7	LINER
8	DISC
9	STEM
10	TAPER PIN
11	BUSHING
12	NAMEPLATE
13	RIVET
14	BUSHING
15	KEY



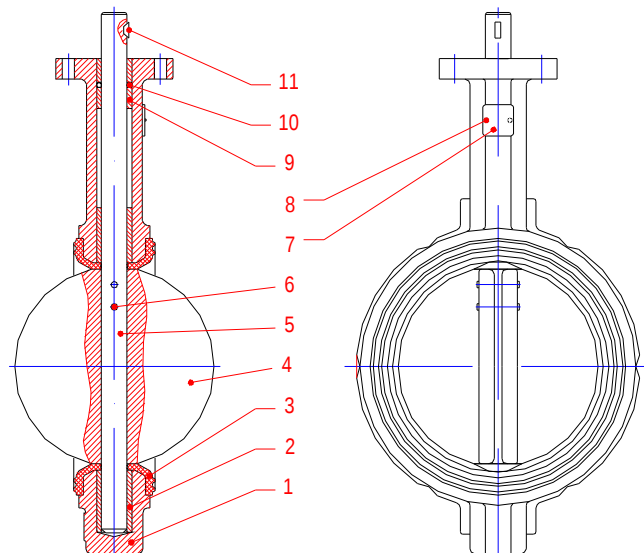
NOTE:

1. The parts with * are just for DN400(16")~DN600(24") valves
2. Material of main parts (See the attached tables)
3. The type of body can also be of no lug.

B. 2"~12" Vulcanized Wafer Type Butterfly Valve with Taper Pin

PART LIST

ITEM	DESCRIPTION
1	BODY
2	BUSHING
3	SEAT
4	DISC
5	SHAFT
6	TAPER PIN
7	NAMEPLATE
8	RIVET
9	BUSHING
10	"O" RING
11	KEY

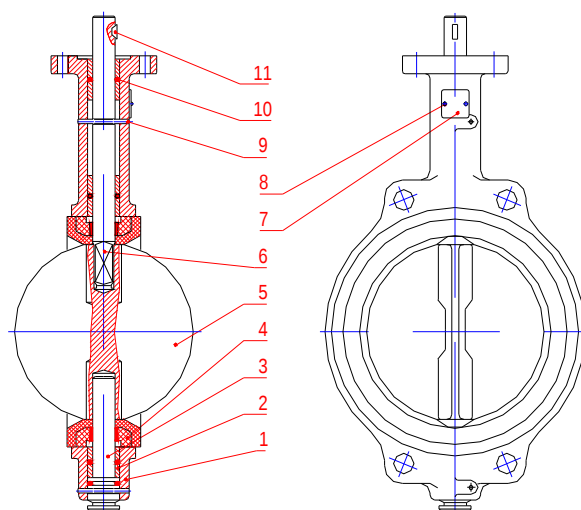


TEDAGULF VALVE CO., LTD

C. 2"~12" Pinless Wafer Type Butterfly Valve With Split Stem

PART LIST

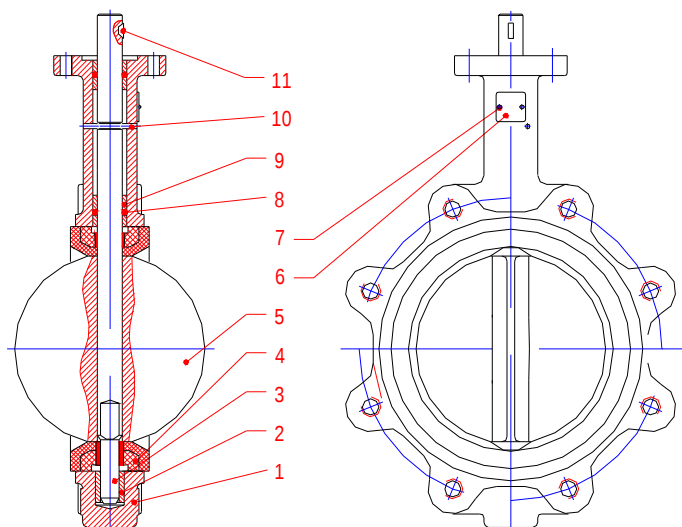
ITEM	DESCRIPTION
1	BODY
2	BUSHING
3	SEAT
4	DISC
5	SHAFT
6	TAPER PIN
7	NAMEPLATE
8	RIVET
9	BUSHING
10	“O” RING
11	KEY



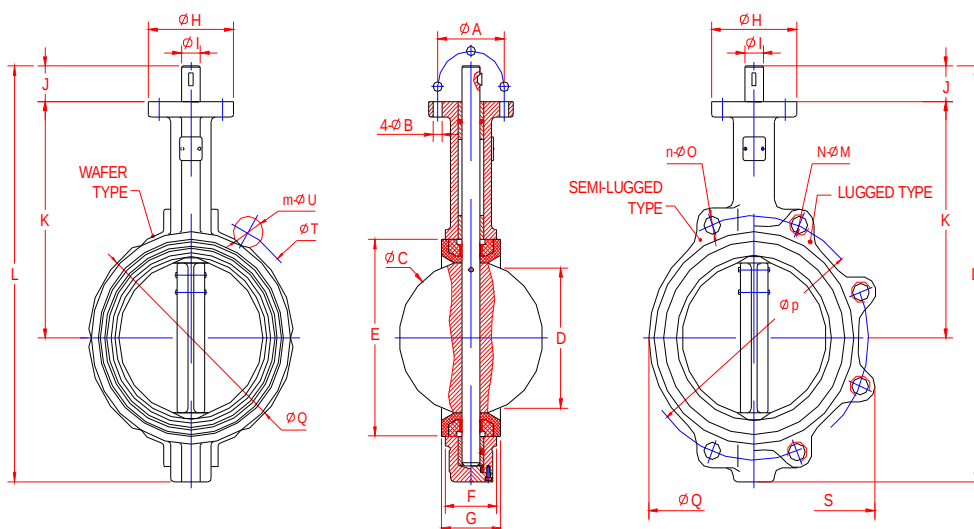
D. 2"~12" Pinless Wafer Type Butterfly Valve with Straight Through Stem

PART LIST

ITEM	DESCRIPTION
1	BODY
2	BUSHING
3	SHAFT
4	SEAT
5	DISC
6	NAMEPLATE
7	RIVET
8	“O” RING
9	BUSHING
10	
11	KEY



I Dimensions For Outline and Connecting and Weight



Size		A	B	C	D	E	F	G	H	I	J	K	L	N
inch	mm	DIA.	DIA.	DIA.	PIPE I.D.	DIA.	BODY	SEAT	DIA.	DIA.				
2	50	57.15	6.7	52.9	32.3	76.3	42.0	45.0	77	12.6	161	273	32	4
2.5"	65	57.15	6.7	64.5	46.1	89.0	44.7	47.6	77	12.6	175	296	32	4
3	80	57.15	6.7	78.8	64.4	103.9	45.2	49.0	77	12.6	181	308	32	8
4	100	69.85	10.3	104	86.3	135.0	52.1	54.7	92	15.8	200	346	32	8
5	125	69.85	10.3	123.3	110.6	159.0	54.4	58.0	92	18.9	213	372	32	8
6	150	69.85	10.3	155.6	134.8	188.4	55.8	58.6	92	18.9	226	397	32	8
8	200	88.9	14.3	202.5	192.4	238.1	60.6	63.4	115	22.1	260	480	45	12
10	250	88.9	14.3	250.5	241.7	292.3	65.6	70.0	115	28.5	292	540	45	12
12	300	108	14.3	301.6	291.8	344.1	76.9	80.1	140	31.6	337	624	45	12
14	350	108	14.3	333.3	322.0	375.1	75.2	79.5	140	31.6	368	680	45	16
16	400	158.8	20.6	389.6	380.0	439.5	85.7	90.0	197	33.2	400	760	51	16
18	450	158.8	20.6	440.5	428.0	490.5	104.6	109.0	197	38.0	422	801	51	20
20	500	158.8	20.6	491.6	480.0	535.4	130.3	135.0	197	41.1	480	905	64	20
24	600	215.9	22.2	592.5	562.0	654.0	151.4	156.0	276	50.6	562	1091	70	20

Size		M	n	O	P	Q	S	m	U	T	KEY	WEIGHT(kg)		
inch	mm	DIA.		DIA.	DIA.						SIZE	"W"	"A"	"LT"
2	50	M16	4	19	125	100	118	12	108.5	4	3X ϕ 16	2.3	2.5	3.8
2.5"	65	M16	4	19	145	120	137	17.5	127	4	3X ϕ 16	3.0	3.2	4.2
3	80	M16	4	19	160	127	178	/	/	/	3X ϕ 16	3.3	3.6	4.7
4	100	M16	4	19	180	156	206	/	/	/	5X ϕ 19	4.5	4.9	9.0
5	125	M16	4	19	210	190	238	/	/	/	5X ϕ 19	6.4	7.0	10.9
6	150	M20	4	23	240	212	266	/	/	/	5X ϕ 19	7.1	7.8	14.2
8	200	M20	4	23	295	268	329	/	/	/	5X ϕ 19	12.6	13.2	18.2
10	250	M24	4	28	355	325	393	/	/	/	8X ϕ 28	18.1	19.2	26.8
12	300	M24	4	28	410	403	462	27	403.5	12	8X ϕ 28	31.8	32.5	40.0
14	350	M24	4	28	470	436	515	\	\	\	8X ϕ 28	\	41.3	56.0
16	400	M27	4	31	525	488	579	\	\	\	10X50	\	61	96.0
18	450	M27	4	31	585	539	627	\	\	\	10X50	\	79	122.0
20	500	M30	4	34	650	593	696	\	\	\	10X50	\	128	202.0
24	600	M33	20	37	770	816	821	\	\	\	16X63	\	188	270.0

NOTE:

1. Connected Dimensions for Actuator can also meet the standard of ISO5211, EN12116
2. The Connected Dimensions for Valve in table conform BS4504 PN16. It can also meet the standards of ISO7005 PN10/16,ISO2804 PN10/16,DIN2501 PN10/16,ANSI B16.1 125LB and standards from other countries.
3. Valves of Type "W" in size 2"~12" can be universally mounted Between the flanges based on standards of BS10D, BS10E, BS4504 PN10/16, ANSI B16.1 125LB and etc.
4. Lug type valves can be used in dead end service.

I MAIN PARTS AND MATERIAL

NO.	DESCRIPTION	OPTIONAL MATERIALS
1	Button Cover	Same as body
2	Bolt	Steel / ASTM A307 GR.B
3	“O” Ring	BUNA
4	Bushing	Lubricated Bronze ASTM B584 C83600/PTFE/316SS
5	“O” Ring	BUNA
6	Body	ASTM A126 CL.B/A536/A395/A216 WCB/ A351 CF8M/C95400
7	Liner	Rubber NR/HYPALON/EPDM/BUNA/WR-RUBBER/VITON/PTFE
8	Disc	ASTM A536/C95400/CF8M/WCB/NILON/PTFE
9	Stem	Stainless Steel ASTM A582 416SS/ASTM A276 316SS
10	Taper Pin	Stainless Steel ASTM A582 416SS/ASTM A276 316SS
11	Bushing	Lubricated Bronze ASTM B584 C83600/PTFE/316SS
12	Nameplate	Aluminum/Copper
13	Rivet	Aluminum
14	Bushing	Lubricated Bronze ASTM B584 C83600/PTFE/316SS
15	Key	Steel ASTM A108 1045

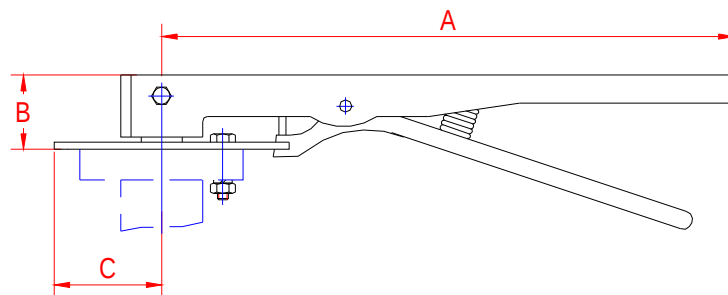
NOTE:

Some other materials can also be selected except the materials listed in the table when needed.

I TECHNICAL PERFORMANCE

Nominal Pressure		1.0MPa	1.6MPa
Testing Pressure	Shell	1.5MPa	2.4MPa
	Seat	1.1MPa	1.76MPa
Service Temperature		NR	-20℃~+85℃
		HYPALON	-18℃~+135℃
		EPDM	-35℃~+110℃
		BUNA	-12℃~+82℃
		NEOPRENE	-7℃~+93℃
		WEAR-RESISTANT RUBBER	-10℃~+50℃
		VITON	-23℃~+150℃
		HEAT-RESISTANT RUBBER	-20℃~+150℃
		PTFE	+10℃~+150℃
Service Medium		Fresh Water, Sea Water, Sewage, Air, Oil, Acid &Alkali, salt and etc.	

I OUTLINE DIMENSION AND WEIGHT OF LEVER HANDLE

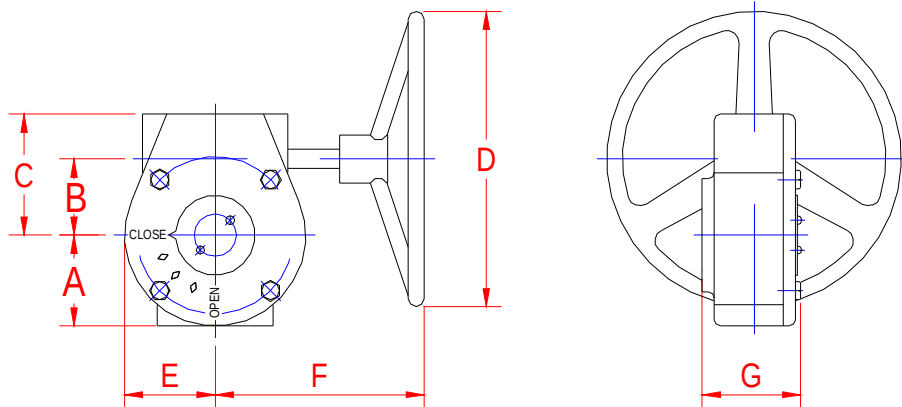


VALVE SIZE	A	B	C	WEIGHT(kg)
DN50~DN150	267	32	52	0.65
DN200	323	45	75.2	1.45
DN300、DN350	499	45	75.2	2.30

I OUTLINE DIMENSION AND WEIGHT ONE-STAGE WORMGEAR ACTUATOR

Feature:

- 2 Small in size, light in weight, heavy output torque.
- 2 Light operating, accurate and obvious indication.

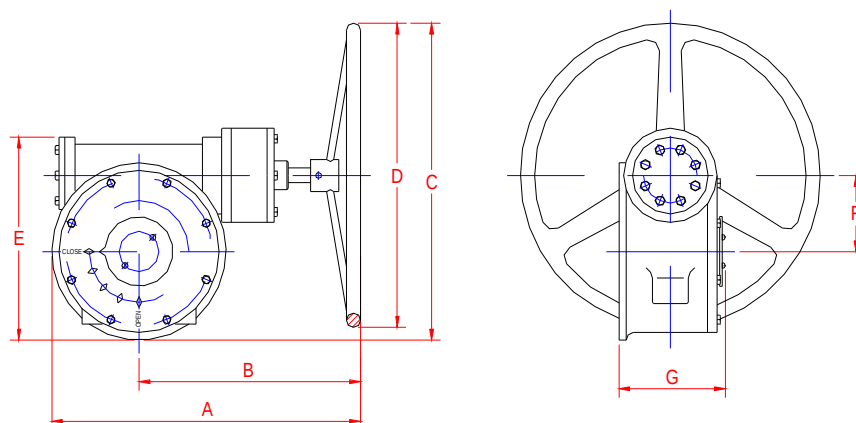


Model	Suitable Valve	B	C	D	E	F	G	Output Torque NM	Weight kg
XJ24	DN50~DN150	45	249	150	53	148	75	170	5.2
XJ30	DN200、DN250	63	300	300	77	238	85	700	12.3
XJ50	DN300、DN350	78	310	300	84	226	86	1200	14.4
J80	DN400	120	400	300	230	270	125	2000	32.0
	DN450		450	400	133	277			34.3

I OUTLINE DIMENSIONS AND WEIGHT OF DOUBLE-STAGE PLANET WORMGEAR ACTUATOR

Feature:

- 2 The planet structure is the same axis with the worm. A compact in structure and perfect appearance;
- 2 The total mechan-efficiency of the actuator get more improved by using the planet gear.
- 2 Light to operate, quick action.



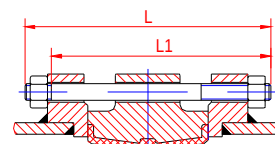
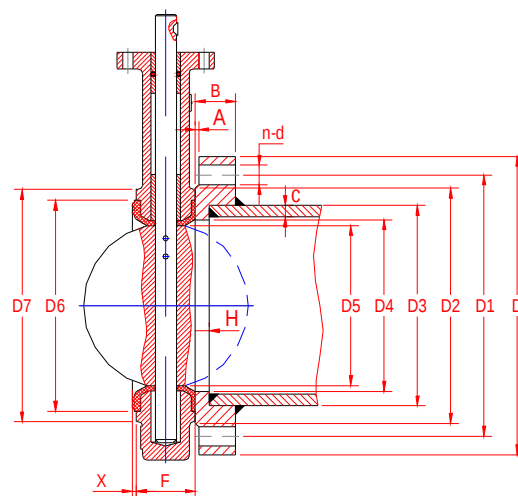
Model	Suitable Valve	A	B	C	D	E	F	G	Output Torque NM	Weight kg
KFJ260	DN500	432	316	376	300	297	111	132	2600	41.0
KFJ300	DN600	463	332	399	300	320	120	152	3000	48.0

I INSTALLATION

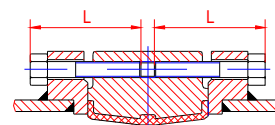
CAUTION :

- ² The position that install valve should be convenient to operate, maintain and change valve.
 - ² When the valve mentioned in this manual installed, the medium direction in pipeline isn't in account.
 - ² The valve can work with its best function if installing a filter in front of the valve.
 - ² The valve is forbidden to install in a pipeline, the nominal pressure of which is higher than the valve to prevent accidents.
1. Select a suitable valve according to the size and pressure of the pipeline.
 2. Unpack the valve and check the valve as follow:
 - ² Confirm the valve meet the working condition according to the nameplate and other information.
 - ² Inspect the seat, inner chamber, connected surface and the disc sealing. There should be no damage or any other sundries inside.
- CAUTION:**
- Ø In case that there are sundries between the sealing surface of seat and disc, the sealing surface both disc and seat will be damaged when move the disc.
 - Ø Any damage on the surface of liner and disc sealing will make the sealing failure.
 - ² Check actuator. If it is tightly bolted with valve.
 - ² Operate the valve to check if it can be operated smoothly and in accurate position.
 - ² Confirm the mounting flange is matched with pipe flange.
3. According to the weight and intended position to install of the valve, choose the suitable tools to install the valve by referring to the following information of Assemble Drawing, Dimensions for Mounting Flange and Installation, Size & Numbers for Installation Bolts.

Assemble Drawing for Wafer and Lug Type Butterfly Valve



BOLT CONNECTION OF
S.I.-LUG TYPE
BUTTERFLY VALVE



BOLT CONNECTION OF
LUGGED TYPE
BUTTERFLY VALVE

2 Dimensions for Mounting Flange and Installation for Wafer and Lug Type Butterfly PN1.0Mpa

Size	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
	inch	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
Outer Dia. Of Pipe	do	57	73	89	108	133	159	219	273	325	377	426	478	529	630
Outer Dia. Of Flange	D	165	185	200	220	250	285	340	395	445	505	565	615	670	780
Dia. Of Center Circle	D1	125	145	160	180	210	240	295	350	400	460	515	565	620	725
Dia. Of Raised face	D2	102	122	133	158	184	212	268	320	370	430	482	532	585	685
Inner Dia. Of Flange	D3	59	75	91	110	135	161	221	275	327	379	429	481	532	633
Dia. Of Flange Hole	D4	50	65	80	100	125	150	208	255	308	340	405	455	505	605
Thickness of Raised Face	H	4	4	4	4	4	4	5	6	6	7	7	8	8	8
Height of Raised Face	f	3	3	3	3	3	3	3	3	4	4	4	4	4	5
Num.&Dia. Of Bolt Holes	n-d	4- ϕ 17.5	4- ϕ 17.5	8- ϕ 17.5	8- ϕ 17.5	8- ϕ 17.5	8- ϕ 22	8- ϕ 22	12- ϕ 22	12- ϕ 22	16- ϕ 22	16- ϕ 26	20- ϕ 26	20- ϕ 26	20- ϕ 30
Thickness of Flange	b	22	24	24	26	28	28	30	32	32	34	38	42	48	50
Dim. Of Disc Chord	D5	32	46	64	90	111	145	192	242	292	322	380	428	473	572
Out Dia. Of Seat	D6	76	89	104	135	159	188	238	292	344	375	439	489	534	655
Out Dia. Of Body	D7	89	108	120	150	181	208	260	320	375	405	470	521	565	693
End to End	B	42	44.7	45.2	52.1	54.4	55.8	60.6	65.6	76.9	76.5	86.5	105.6	131.8	152
Min. Thickness of Pipe wall	S0	3.5	4	4	4	4	4.5	6	8	8	9	9	9	9	9
Extension of seat	T	1.5	1.5	2.0	1.3	1.75	1.4	1.4	2.2	1.5	1.5	1.75	1.7	1.6	2.0

Note:

The dimensions of flange in the table conform Standard BS4504 PN10

2 Dimensions for Mounting Flange and Installation for Wafer and Lug Type Butterfly PN1.0Mpa

Size	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
	inch	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
Outer Dia. Of Pipe	do	57	73	89	108	133	159	219	273	325	377	426	478	529	630
Outer Dia. Of Flange	D	165	185	200	220	250	285	340	405	460	520	580	640	715	840
Dia. Of Center Circle	D1	125	145	160	180	210	240	295	355	410	470	525	585	650	770
Dia. Of Raised face	D2	102	122	133	158	184	212	268	320	370	430	482	532	585	685
Inner Dia. Of Flange	D3	59	75	91	110	135	161	221	275	327	379	429	481	532	633
Dia. Of Flange Hole	D4	50	65	80	100	125	150	208	255	308	340	405	455	505	605
Thickness of Raised Face	H	4	4	4	4	4	4	5	6	6	7	7	8	8	8
Height of Raised Face	f	3	3	3	3	3	3	3	3	4	4	4	4	4	5
Num.&Dia. Of Bolt Holes	n-d	4- ϕ 17.5	4- ϕ 17.5	4- ϕ 17.5	4- ϕ 17.5	4- ϕ 17.5	4- ϕ 17.5	12- ϕ 22	12- ϕ 26	12- ϕ 26	16- ϕ 26	16- ϕ 30	20- ϕ 30	20- ϕ 33	20- ϕ 36
Thickness of Flange	b	22	24	24	26	28	28	30	32	32	34	38	42	48	50
Dim. Of Disc Chord	D5	32	46	64	90	111	145	192	242	292	322	380	428	473	572
Out Dia. Of Seat	D6	76	89	104	135	159	188	238	292	344	375	439	489	534	655
Out Dia. Of Body	D7	89	108	120	150	181	208	260	320	375	405	470	521	565	693
End to End	B	42	44.7	45.2	52.1	54.4	55.8	60.6	65.6	76.9	76.5	86.5	105.6	131.8	152
Min. Thickness of Pipe wall	S0	3.5	4	4	4	4	4.5	6	8	8	9	9	9	9	9
Extension of seat	T	1.5	1.5	2.0	1.3	1.75	1.4	1.4	2.2	1.5	1.5	1.75	1.7	1.6	2.0

Note: The dimensions of flange in the table conform Standard BS4504 PN16

2 Size & Numbers for Installation Bolts

size		1.0MPa						1.6Mpa					
		Stud Bolt			Hexagon Bolt			Stud Bolt			Hexagon Bolt		
		(Suitable for Wafer Type)			(Suitable for Lug Type)			(Suitable for Wafer Type)			(Suitable for Lug Type)		
mm	inch												
50	2″	4	M16×110	130	4×2	M16×40	4	M16×110	130	4×2	M16×40		
65	2 1/2″	4	M16×120	140	4×2	M16×45	4	M16×120	140	4×2	M16×45		
80	3″	8	M16×120	140	8×2	M16×45	8	M16×120	140	8×2	M16×45		
100	4″	8	M16×130	150	8×2	M16×50	8	M16×130	150	8×2	M16×50		
125	5″	8	M16×130	150	8×2	M16×50	8	M16×130	150	8×2	M16×50		
150	6″	8	M20×140	165	8×2	M20×50	8	M20×140	165	8×2	M20×50		
200	8″	8	M20×150	175	8×2	M20×55	12	M20×150	175	12×2	M20×55		
250	10″	12	M20×160	185	12×2	M20×60	12	M24×160	185	12×2	M24×60		
300	12″	12	M20×170	195	12×2	M20×65	12	M24×170	200	12×2	M24×65		
350	14″	16	M20×170	195	16×2	M20×65	16	M24×170	200	16×2	M24×65		
400	16″	16	M24×190	220	16×2	M24×75	16	M27×200	230	16×2	M27×75		
450	18″	20	M24×220	250	20×2	M24×80	20	M27×220	254	20×2	M27×80		
500	20″	20	M24×260	290	20×2	M24×90	20	M30×260	294	20×2	M30×90		
600	24″	20	M27×290	324	20×2	M27×100	20	M33×290	334	20×2	M33×100		

Note:

The stud bolt in the table is according to GB989-88

The hexagon bolt in the table is according to GB5780-86.

Caution:

- ² Before installing, inspect the pipe, if any material, tool or other sundries are forgotten inside. These sundries will do serious damage to the valve.
 - ² The dimensions of connected flange should keep the liner a complete contact with the flange.
 - ² The connected bolts should be tightened in a sequence of diagonal with even force. Or else, leakage will occurred from the connected flange.
4. When finishing installed, clear worksite, operate the valve to confirm the valve can works well and keep the valve in required status.

Caution:

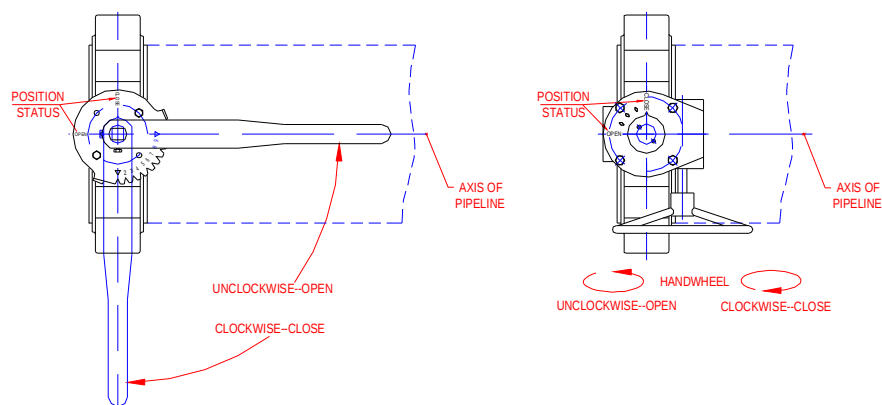
- Ø When a shell test for the pipeline is conducted, the valve should be full opened.
- Ø After finishing installed completely, a caution mark or any other method should be taken to prevent people not on business operating the valve.

I STORAGE AND OPERATION

1. Valves not in use should be stored in a dry and clean room. Disc should be at 5-10 degree open.
2. When operating valve in pipeline, check the status of the valve first, then operate.

Caution:

- Ø When a valve is stuck to operate, it should be checked and maintained timely. It is forbidden to operate the valve with heavy force, or else, the valve or actuator will be damaged.

u OPEN AND CLOSE INDICATOR AND OPERATING DIRECTION**CAUTIONS FOR ACTUATOR:**

- ² The handwheel of actuator is designed according to rated torque. It is forbidden to input a extra heavy torque to operate. The extra heavy torque will damage the actuator.
- ² In case that the disc moves normally but in incorrect open or close position, loose the adjusting screw first, operate the handwheel to move the disc at the correct close position, then tighten the adjusting screw. Conduct the same way to open position.
- ² In case that disc is in the correct open or close position but the indicator deviate the correct position, loose the screw for indicator, adjust the indicator to correct position, tighten the screw then.

I MAINTENANCE AND REPAIR

1. Bushings for the valves mentioned in this manual are all self-lubricated, no lubricant is needed
2. A periodic check of lubrication for worm gear should be conducted annually. When the grease in the gear box is dirty or black, dismount and clean the worm gear and box with gasoil or kerosene. Pour proper lithic-lubricant, turn the worm gear 2-3 full travels to make the lubricant adhered on the gear surface even. At last, cover the box, tighten bolts, re-install the actuator on the valve.
3. Check and clean the position indicator periodically to keep it in a obvious and correct position.
4. Often check the connected flange. In case of light leakage, inspect the connecting bolt. If it still leak after the bolts re-tightened, the valve should be dismounted and repaired.
5. Often check the end of stem. In case of leakage, the valve should to be dismounted and repaired.
6. When the valve is failure in sealing, it should be dismount and repaired.

u COMMON BREAKDOWNS AND SOLUTION

BREAKDOWN	REASON	SOLUTION
Valve is failure in sealing	1. Sealing surface of seat is scratched.	Change seat.
	2. Sundries are adhered on sealing surface of seat.	Clean sundries
	3. Sealing surface of disc is damaged.	Repair or change disc.
	4. Disc is not at the correct close position	Check and repair actuator.
	5. Seat is corroded out of shape.	Check the media. Choose a valve with suitable sealing material.
	6. Seat is ageing.	Change valve
Leak from end of stem	1. The sealing at stem hole of seat is failure.	Change seat
	2. The “O” sealing ring is damaged.	Change the “O” sealing ring
	3. The taper pin connecting disc and stem is loose	Check and repair the taper pin
	4. Seat or “O” sealing ring is ageing.	Change seat or “O” ring
Leak between liner and connected flange	1. The connecting bolts are loose or unevenly tightened.	Tighten the connecting bolts evenly.
	2. There are sundries between surface of liner and flange.	Clean sundries
	3. End surface of seats is scratched.	Change seat.
	4. Surface of flange is damaged.	Check and repair flange
	5. Seat is corroded out of shape.	Check the media. Choose a valve with suitable sealing material.
	6. Seat is ageing.	Change seat

