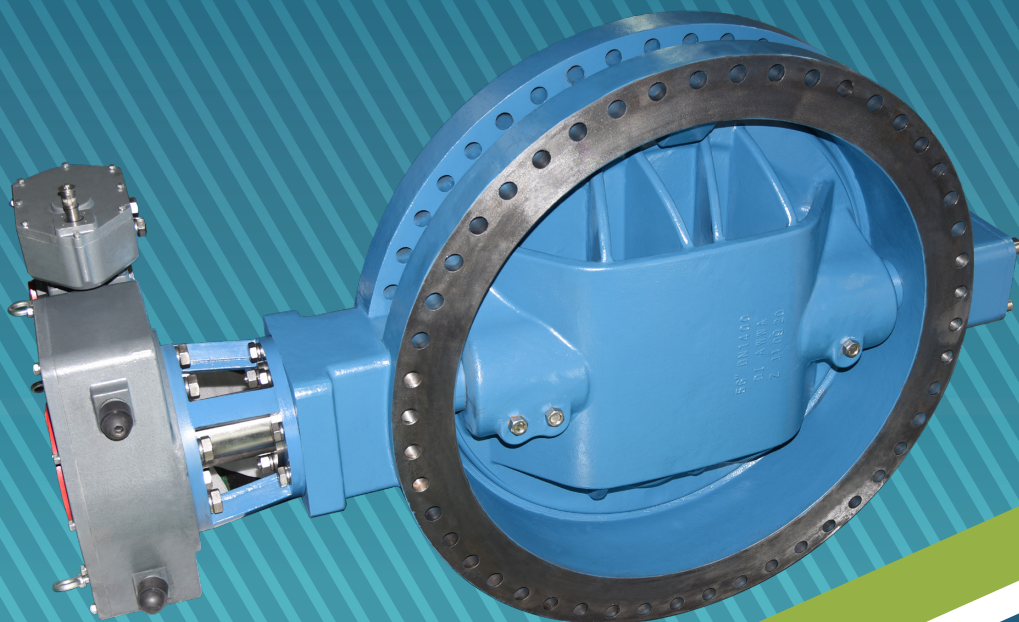


www.abcvalve.com

AWWA Butterfly Valves



AWWA High Performance Butterfly Valves Series A65 Double Flanged

Series A65A: AWWA C504 CLASS150B & 250B & 300

Series A65B: BS5155 PN10,PN16,PN25,PN40

About ABC VALVE

Butterfly valves are one of the fastest growing types of control valves today for a number of reasons. The control provided by today's butterfly valve is more than adequate for many low pressure-drop applications and other standard services. Size for size, larger flow coefficient, less frictional forces, smaller actuator, naturally high pressure-recovery factor, all these mean that butterfly valves are preferred in applications.

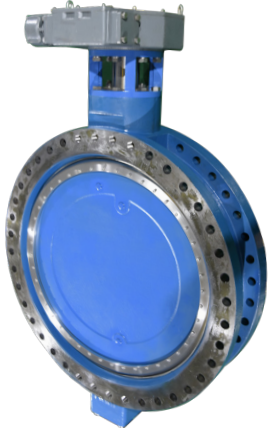


ABC VALVE (With the name from Automatic Butterfly valve Control) focuses on High performance butterfly valve development and production which offers High cycles and High precision control. Manufacturing systems and products are certified by ISO9001, BV Marine, PED CE, FDA, DVGW, WRAS, KTW, Fire Test Certification. We work together with customers worldwide to make fluid control easier.



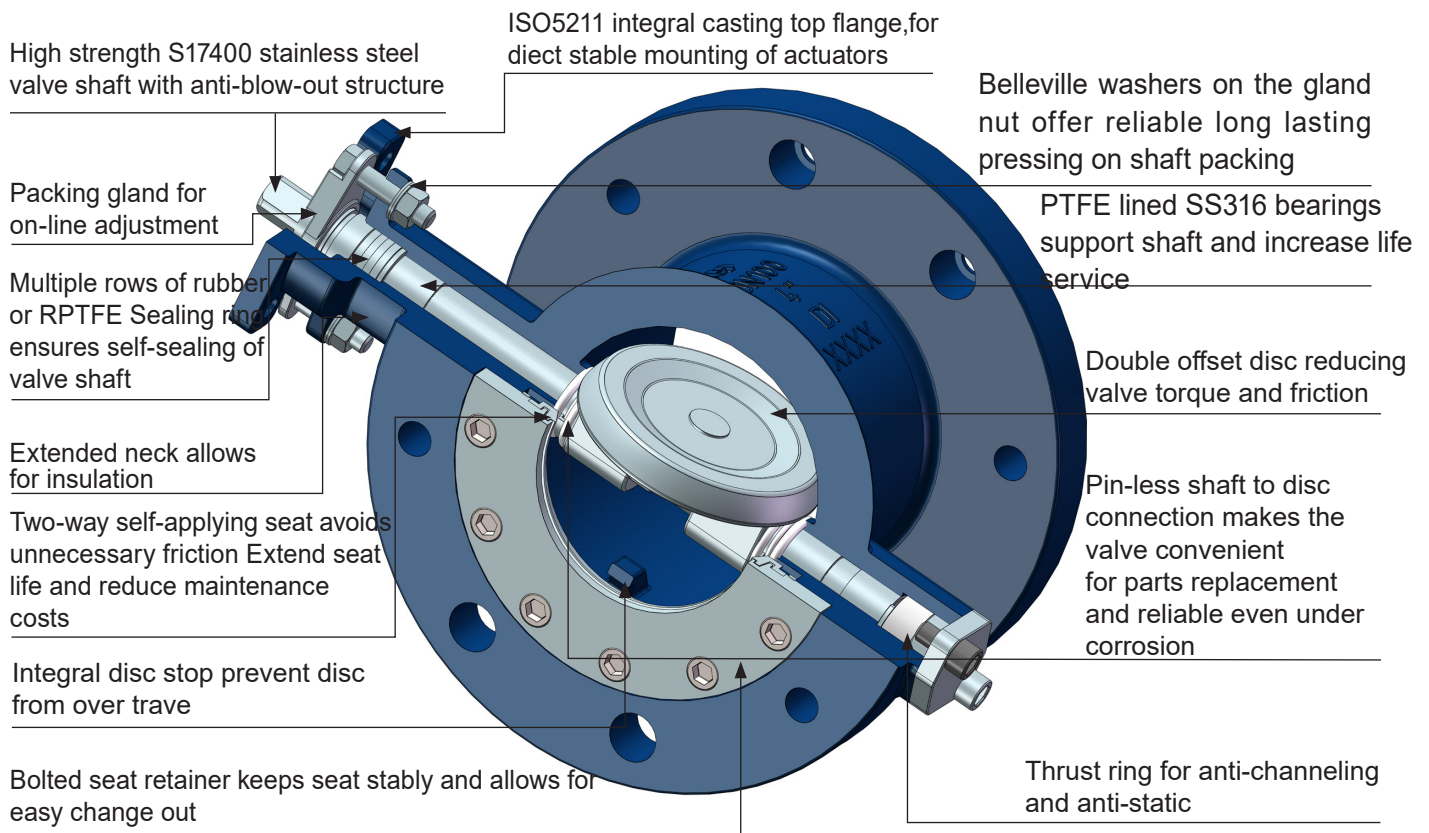
Series A65 AWWA High performance butterfly valve features a ductile iron flanged body, eccentric disc and self-sealing seat for pressure up to Class300 even for large size to 72". Besides pressure, self-sealing design make the valves have very low torque and high number of open-close up to 100,000 cycles for rubber seat.

A65 AWWA butterfly valves are designed according to AWWA C504 for applications throughout water and wastewater treatment plants, water distribution systems, power plants, and industrial plants. The valves can be applied in applications demanding high-quality and thoroughly tested valves which offer many years of trouble-free service even in the event of earthquakes.

Series	A65A	A65B
Picture		
Connection	Double flanged	Double flanged
Nominal diameter	3" to 72" (DN80-DN1800)	DN350-DN3000
Max. working pressure	Up to 750PSI (50bar Class300)	40bar
Standard working pressure	285PSI (20bar Class150), 750PSI (50bar Class300)	PN10,PN16,PN25,PN40
Design standard	AWWA C504	AWWA C504
Face to face	AWWA C504	BS5155
Top flange	ISO 5211	ISO5211
Tightness check	AWWA C504	BS5155
Temperature range	-29°C to +200°C (Depending on pressure, medium and material)	-29°C to +200°C (Depending on pressure, medium and material)
Operation	Gear box, pneumatic actuator, electric actuator	Gear box, pneumatic actuator, electric actuator

Features & Benefits

A65 Valve Design DN80 - DN350



Double Eccentric Design

The stem of disc rotation is horizontally and vertically offset from the body seat. This high performance design eliminates the friction and compression between disc and seat while the valve is in the open position. Compression on the seal is released after only a few degrees of opening.

High Working Pressure

Patent seat construction make the valve suitable for pressure from vacuum to 50bar.

Drinking Water Safe

WRAS approved rubber and NSF 61 approved coating for use in potable water systems.

Dry Shaft Design

The thrust gaskets on both sides of the valve disc prevent impurities from entering the shaft holes

Certified Zero Leakage

Each valve is tested in accordance with AWWA C504, test certificate for each valve leaves in factory. The certificate includes a leak test report, torque test record, and heat number trace of valve components.

Ease of Maintenance

The valve design requires zero to minimal maintenance. Seal ring replacement can be achieved without dismantling other parts of the valve except seal ring retainer.

Features & Benefits

A65 Valve Design DN400-DN2400

High strength S30400 for Class150B and S17400 for Class250B and Class300. Shaft diameter and design according to AWWA C504

Adjustable packing gland.

Self-lubricated teflon-lined, fiberglass-backed bearings provide low friction service without grease lubrication.

High precision Stainless steel seat.

Ductile iron body thickness according to AWWA C504, excellent even for underground long life using.

Stainless Steel Taper Pins with lock nut and o-ring seal utilize tangential forces of the taper pin and lock nut to provide strong driving between stem and disc.

Factory-set thrust bearing assures proper centering of valve disc.

Specially formulated elastomers that are reinforced and capable of handling localized velocities of over 200 ft. /sec. and withstanding pressure of 50bar.

Double Eccentric Design

The stem of disc rotation is horizontally and vertically offset from the body seat. This high performance design eliminates the friction and compression between disc and seat while the valve is in the open position. Compression on the seal is released after only a few degrees of opening.

High Working Pressure

ASTM A536 65-45-12 Ductile Iron body and patent seat construction make the valve suitable for pressure from vacuum to 50bar.

Drinking Water Safe

WRAS approved rubber and NSF 61 approved coating for use in potable water systems.

Dry Shaft Design

Full AWWA C504 diameter stub shafts remain dry through multiple O-ring seals on both the upper and lower shafts. This prevent corrosion inside stem hole and avoid shaft clogging, meanwhile provide a positive disc control with a minimum flow restriction.

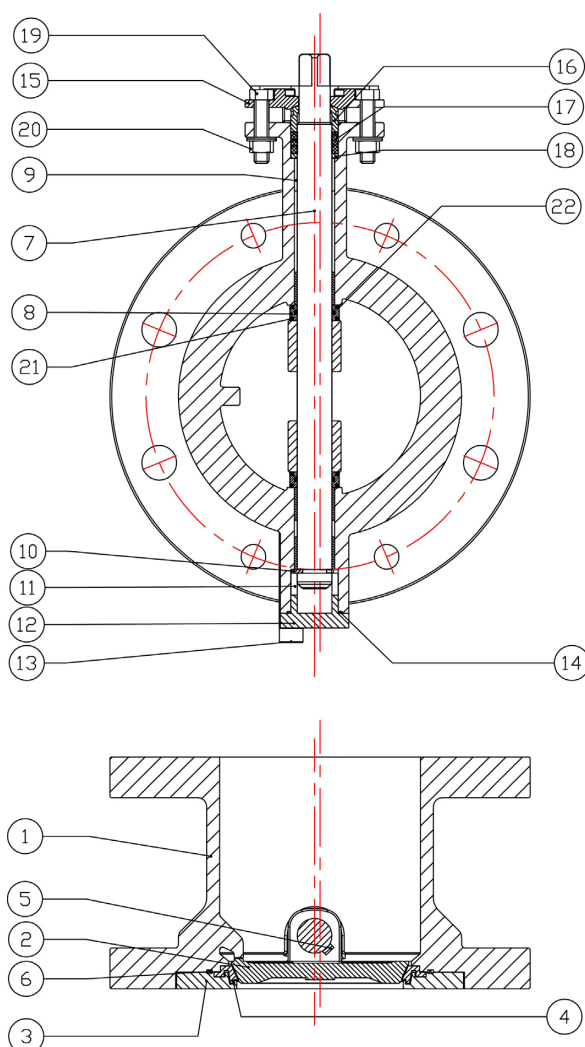
Certified Zero Leakage

Each valve is tested in accordance with AWWA C504, test certificate for each valve leaves in factory. The certificate includes a leak test report, torque test record, and heat number trace of valve components.

Ease of Maintenance

The valve design requires zero to minimal maintenance. Seal ring replacement can be achieved without dismantling other parts of the valve except seal ring retainer.

DN80 - DN350 Structure and Material

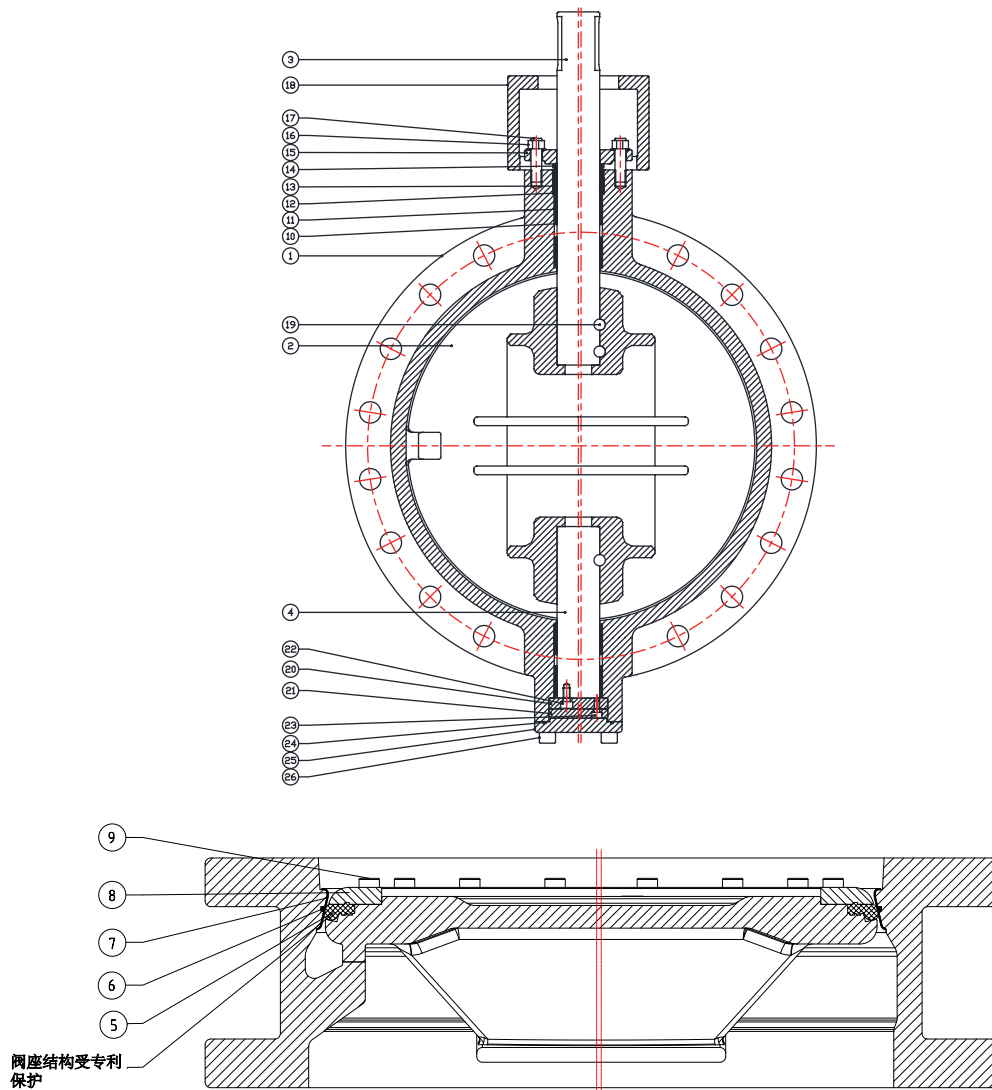


Parts list and material specification

No.	Part name	Material	Standard
1	Body	Steel	ASTM A216 WCB
		Stainless steel	ASTM A351 CF8
			ASTM A351 CF8M
2	Valve plate	Stainless steel	ASTM A351 CF8 ASTM A351 CF8M
3	Seat pressure plate	Identical valve plate	
4	Valve seat	EPDM	EPDM
		Butyronitrile	NBR
		Fluororubber	FPM
5	Flat key	Stainless steel	17-4PHSS
6	Pressure disc gasket	Graphite, rubber	
7	Valve shaft	Stainless steel	17-4PHSS
8	Thrust bearing	Stainless steel	SS304
9	Bushing	Stainless steel	SS304
10	Clamp	Stainless steel	SS304

No.	Part name	Material	Standard
11	bushing	Stainless steel	SS304
12	Bottom plug	Stainless steel	SS304
13	Hexagon socket bolt	Stainless steel	SS304
14	Bottom plug gasket	Graphite, rubber	
15	Packing plate	Stainless steel	SS304
16	Packing ring	Stainless steel	SS304
17	filler	Graphite, rubber, RPTFE	
18	Packing bottom ring	Stainless steel	SS304
19	Hexagon bolt	Stainless steel	SS304
20	Hexagon nut	Stainless steel	SS304
21	Sealing ring	fluororubber	FPM
22	Sealing ring	fluororubber	FPM

DN400 - DN2400 Structure and Material



Parts list and material specification

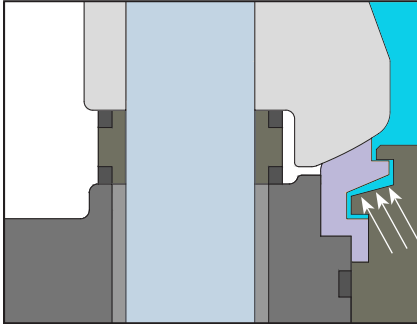
No.	Part name	Material
1	Body	ASTM A536 65-45-12
2	Disc	ASTM A395 60-40-18
3	Upper stem	S30400 S17400
4	Lower stem	S30400 S17400
5	Disc Seal	EPDM
6	O-ring	EPDM
7	Body seat	SS304
8	Retainer	SS304
9	Bolts	SS304
10	Bearing	SS316L+PTFE
11	O-ring	EPDM
12	Packing support	SS304
13	Packing	PTFE

No.	Part name	Material
14	Packing pressing ring	SS304
15	Packing gland	ASTM A516
16	Nuts	SS304
17	Bolts	SS304
18	Bracket	ASTM A216 WCB
19	Taper pin	S17400
20	Stem retainer	SS304
21	Washer	SS304
22	Screws	SS304
23	Screws	SS304
24	O-ring	EPDM
25	Bottom cover	Same as body
26	Bolts	SS304

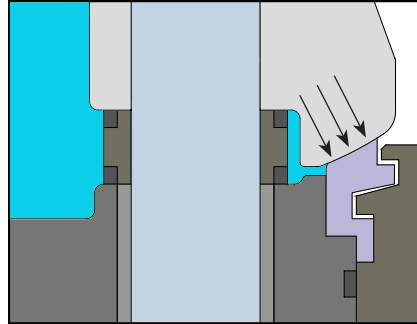
Bidirectional Self-Sealing Design

DN80-DN350 Bidirectional Self-Sealing

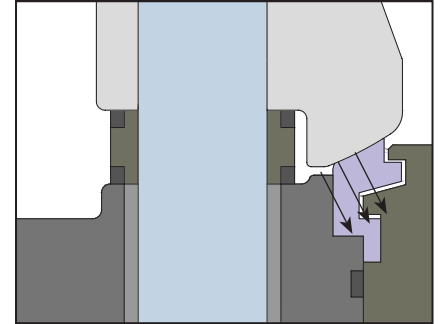
The eccentric seating motion limits sliding contact between the disc and seat, reducing wear and torque. The self-energizing seat is pressure assisted to ensure bubble tight sealing in both directions and does not rely on secondary components such as O-rings or springs. This simplifies maintenance and extends life.



Pressure on the retainer side forces the seat harder onto the disc, further improving the sealing. The higher the pressure, the tighter the sealing.

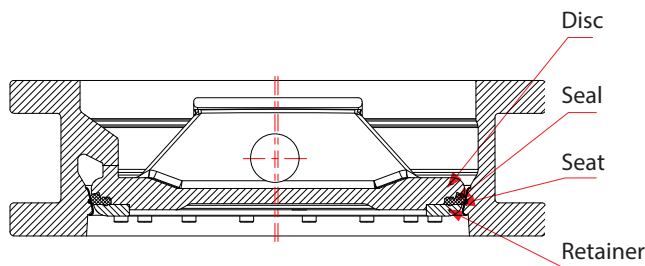


Pressure on the body side forces the disc further onto the self-energized seat, causing tighter shutoff. The seat is contained securely by the seat retainer to prevent excessive deflection.



In the closed position, the self-energized seat is deflected by the disc, maintaining a positive sealing by pushing back against the disc.

DN400-DN2400 Bidirectional Self-Sealing

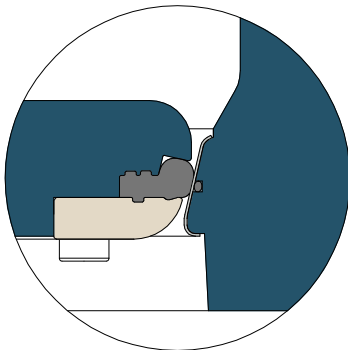


High strength and streamlined disc design for up to Class 300

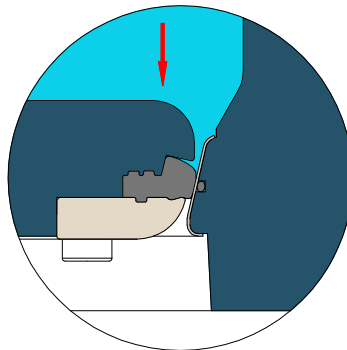
Patent disc seal for bidirectional pressure assisted sealing

Stainless steel body seat rolled on body for lifetime and corrosion resistance

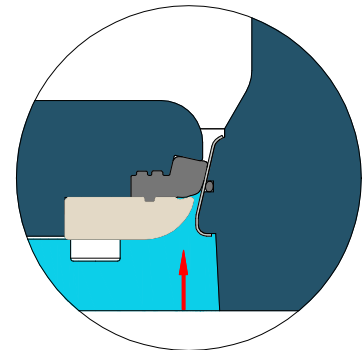
Stainless steel retainer with the teeth grasping rubber together with the teeth on the disc for strongly keeping of the disc seal of bi-direction up to Class 300 and even for frequent open and close avoiding the disc seal rolling out



When disc close, the disc seal has a slight contact with the body seat and the rubber is energized without squeezing

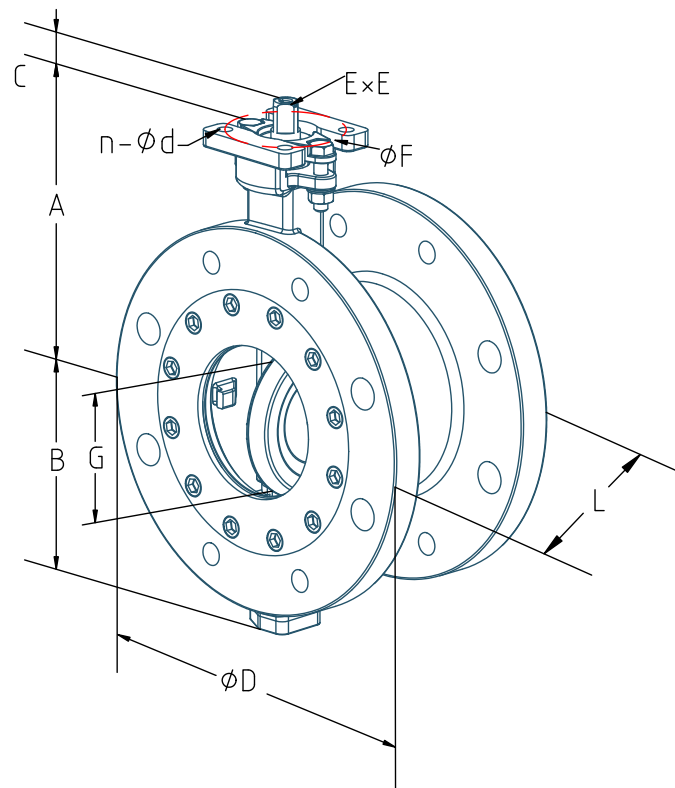


Pressure on the disc side pushes the disc against the seat, meanwhile, it bends the seal rubber tighter against the seat



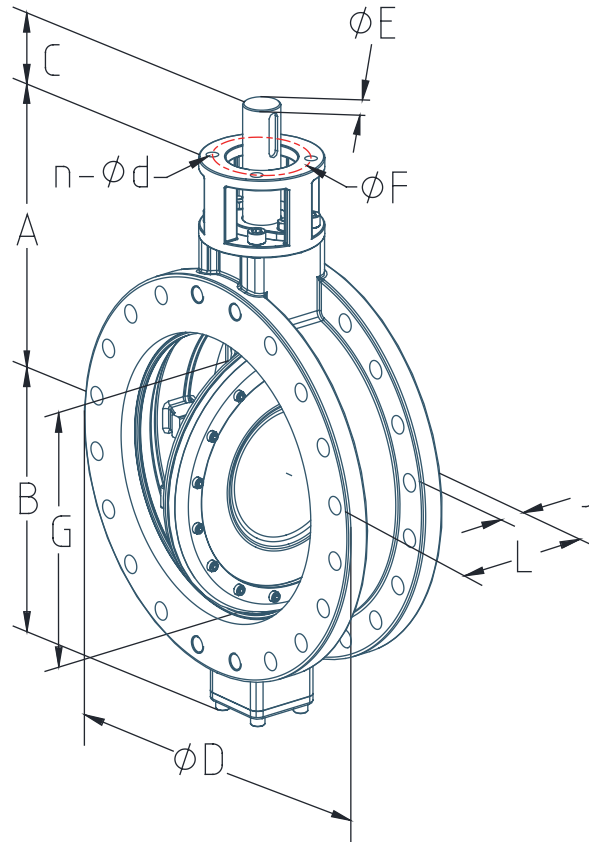
Pressure on the retainer side pushes the seal rubber tighter against the disc and the seat without damage on the seal

A65A Class150 Dimensions DN80-DN350 (mm)



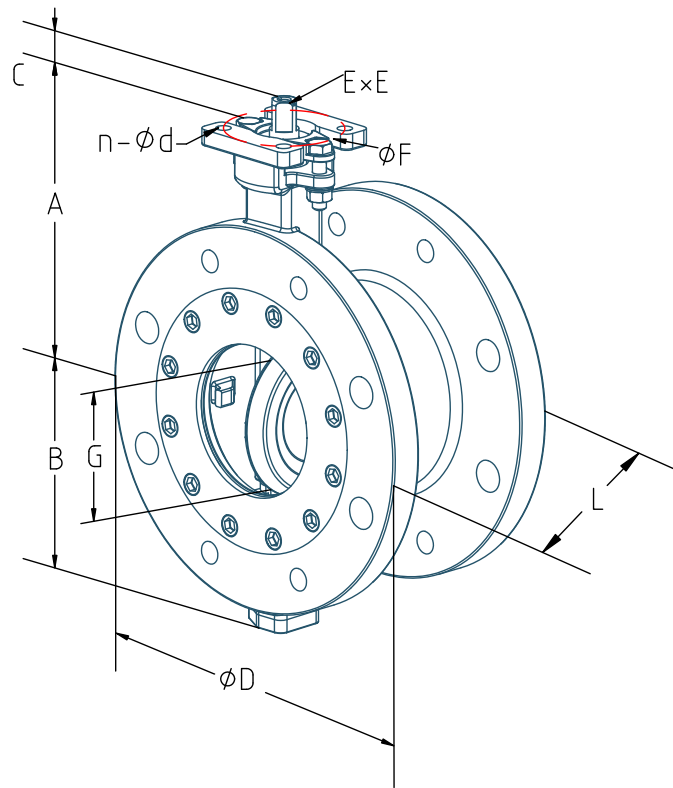
SIZE		A	B	C	D	E	F	G	L	WT (kg)
DN	INCH	CLASS150								
80	3"	145	100	17.5	190	11*11	F07	72	127	11
100	4"	170	124	17.5	230	14*14	F07	91	127	16
125	5"	185	144	17.5	255	14*14	F07	114	127	25
150	6"	203	10	18.5	280	17*17	F10	145	127	35
200	8"	239	186	24.5	345	22*22	F10	192	152	40
250	10"	275	226	24.5	405	22*22	F10	240	203	55
300	12"	307	251	30	485	27*27	F12	285	203	90
350	14"	337	294	30	535	27*27	F12+F14	320	203	120

A65A Class150 Dimensions DN400-DN2400 (mm)



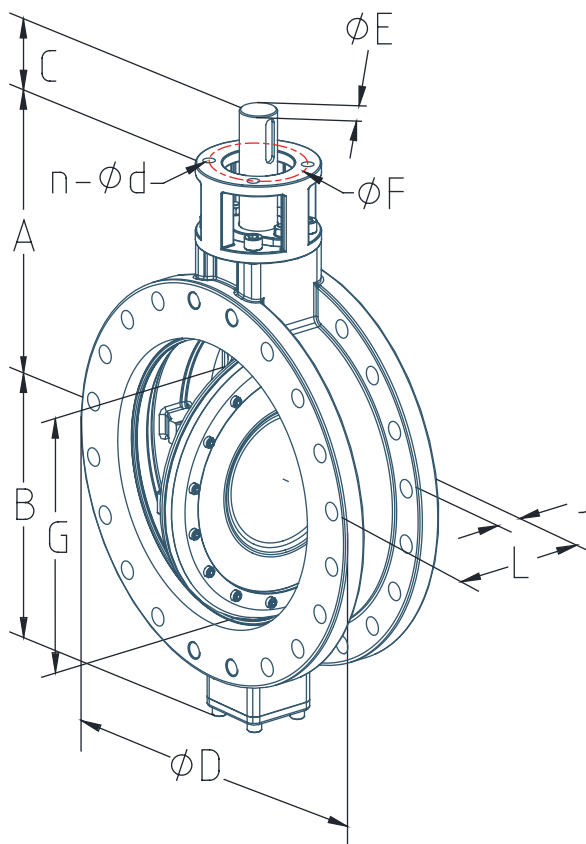
SIZE		A	B	C	D	E	F	G	L	WT (kg)
DN	INCH									
400	16"	520	396	76.2	595	50.8	165	190	203	290
450	18"	550	430	76.2	635	57.2	165	220	203	310
500	20"	550	444	95	700	63.5	165	250	203	390
600	24"	657	514	80	815	76.2	254	300	203	565
700	28"	720	525	80	925	76.2	254	330	305	810
750	30"	750	550	115	985	92.1	254	370	305	1100
800	32"	760	600	115	1060	92.1	298	400	305	1350
900	36"	900	702	150	1170	111	298	450	305	1500
1000	40"	1056	772	190	1290	127	406	500	305	2230
1050	42"	1120	850	190	1345	127	406	520	305	2450
1200	48"	1166	943	214	1510	143	406	600	381	2600
1400	56"	1376	1080	224	1745	171.5	406	700	381	3600
1600	64"	1440	1210	225	1930	184	406	800	457	4360
1800	72"	1550	1320	260	2195	216	483	900	457	5100
2100	84"	1700	1470	300	2535	216	603	900	610	5910
2400	96"	2150	1620	300	2875	216	603	950	711	6100

A65A Class300 Dimensions DN80-DN350 (mm)



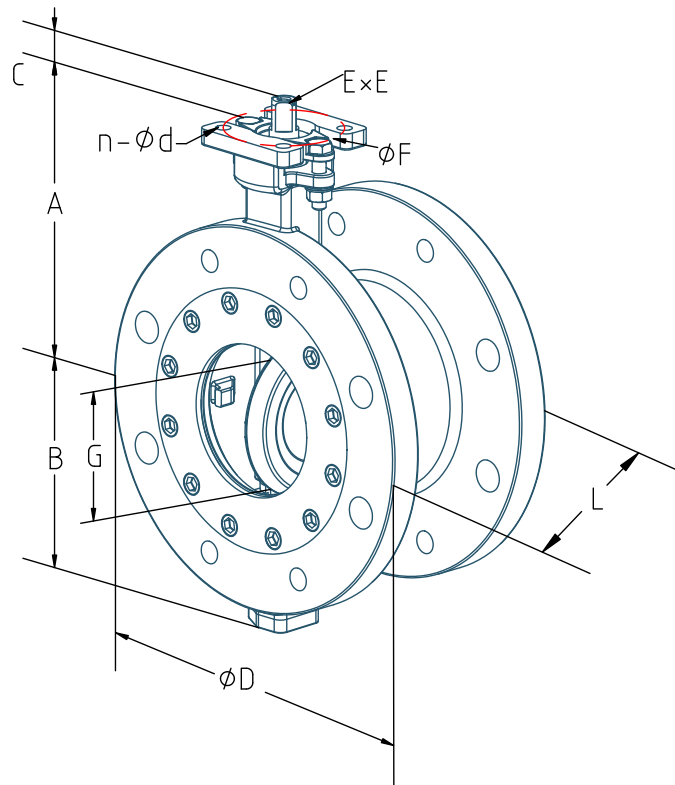
SIZE		A	B	C	D	E	F	G	L	WT (kg)
DN	INCH	CLASS300								
80	3"	145	100	17.5	210	11*11	F07	72	127	15
100	4"	170	124	17.5	255	14*14	F07	91	127	20
125	5"	185	144	17.5	280	14*14	F07	114	127	30
150	6"	203	150	18.5	320	17*17	F10	145	127	40
200	8"	239	204	24.5	380	22*22	F10	192	152	45
250	10"	275	238	30	445	27*27	F12	240	203	60
300	12"	307	268	30	520	27*27	F12	285	203	95
350	14"	337	294	30	585	27*27	F12+F14	320	203	130

A65A Class300 Dimensions DN400-DN2400(mm)



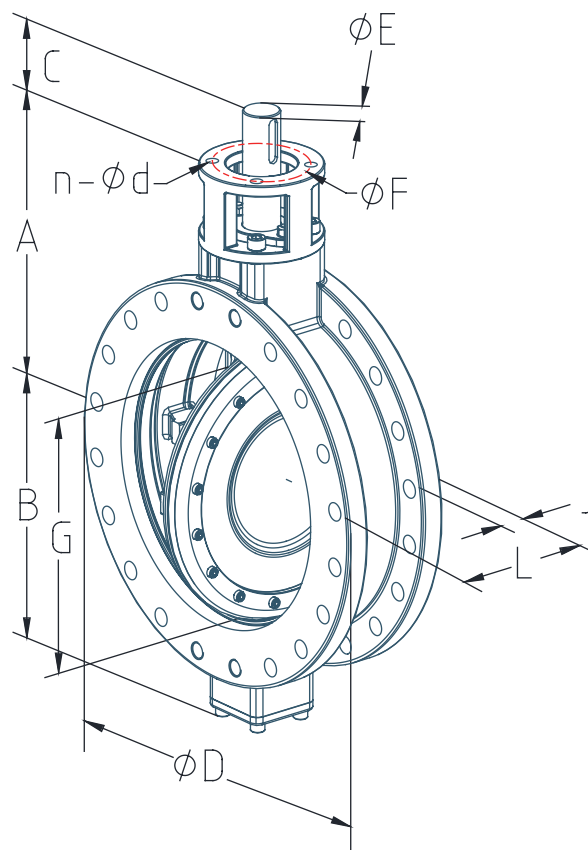
SIZE		A	B	C	D	E	F	G	L	WT (kg)
DN	INCH	CLASS300								
450	18"	550	430	76.2	635	57.2	165	220	203	310
500	20"	550	444	95	700	63.5	165	250	203	390
600	24"	657	514	80	815	76.2	254	300	203	565
700	28"	720	525	80	925	76.2	254	330	305	810
750	30"	750	550	115	985	92.1	254	370	305	1100
800	32"	760	600	115	1060	92.1	298	400	305	1350
900	36"	900	702	150	1170	111	298	450	305	1500
1000	40"	1056	772	190	1290	127	406	500	305	2230
1050	42"	1120	850	190	1345	127	406	520	305	2450
1200	48"	1166	943	214	1510	143	406	600	381	2600
1400	56"	1376	1080	224	1745	171.5	406	700	381	3600
1600	64"	1440	1210	225	1930	184	406	800	457	4360
1800	72"	1550	1320	260	2195	216	483	900	457	5100
2100	84"	1700	1470	300	2535	216	603	900	610	5910
2400	96"	2150	1620	300	2875	216	603	950	711	6100

A65B PN10、PN16 Dimensions DN80–DN350 (mm)



SIZE		A	B	C	PN10	PN16	E	F	G	L	WT (kg)
DN	INCH				D						
80	3"	145	100	17.5	200	200	11*11	F07	72	114	11
100	4"	170	124	17.5	220	220	14*14	F07	91	127	16
125	5"	185	144	17.5	250	250	14*14	F07	114	140	25
150	6"	203	10	18.5	285	285	17*17	F10	145	140	35
200	8"	239	186	24.5	340	340	22*22	F10	192	152	40
250	10"	275	226	24.5	395	405	22*22	F10	240	165	55
300	12"	307	251	30	445	460	27*27	F12	285	178	90
350	14"	337	294	30	505	520	27*27	F12+F14	320	190	120

A65B PN10、PN16 Dimensions DN400-DN2200 (mm)



PN10,PN16 SIZE		A	B	C	PN10	PN16	E	F	N	D	G	PN10	PN16	L	WT (kg)
DN	INCH				D							J			
400	16"	520	396	76.2	565	580	50.8	165	4	22	170	32	32	216	280
450	18"	550	430	76.2	615	640	57.2	165	4	22	200	36	36	222	300
500	20"	550	444	95	670	715	63.5	165	4	22	210	38	38	229	350
600	24"	657	514	80	780	840	76.2	254	8	18	250	42	42	267	550
700	28"	720	525	80	895	910	76.2	254	8	18	350	50	54	292	810
800	32"	760	600	115	1015	1025	92.1	298	8	22	370	56	56	318	1350
900	36"	900	702	150	1115	1125	111	298	8	22	450	62	62	330	1500
1000	40"	1056	772	190	1230	1255	127	406	8	38	450	70	70	410	2100
1200	48"	1166	943	214	1455	1485	143	406	8	38	550	83	83	470	2500
1400	56"	1376	1080	224	1675	1685	171.5	406	8	38	650	84	84	530	3800
1600	64"	1440	1210	225	1915	1930	184	406	8	38	750	75	102	600	4360
1800	72"	1550	1320	260	2115	2130	216	483	12	38	850	85	110	670	6300
2000	80"	1700	1470	300	2325	2345	216	603	20	38	1100	90	124	760	7000
2200	88"	2150	1620	300	2550		216	603	20	38	1250	100		760	8500

SIZE		Torques (N*M) under operating Pressure					Maximum deformation torque of valve shaftN*M(S30400)	Maximum deformation torque of valve shaftN*M(S17400)
DN	INCH	10bar	16bar	20bar	25bar	50bar		
80	3"	31	40	44	48	58	110	145
100	4"	45	57	63	69	83	157	207
125	5"	117	150	165	182	218	413	545
150	6"	156	200	220	242	290	550	726
200	8"	234	300	330	363	436	825	1089
250	10"	297	380	418	460	552	1045	1379
300	12"	400	550	605	666	799	1513	1997
350	14"	670	850	935	1029	1234	2338	3086
400	16"	900	1000	1100	1210	1452	2750	3630
450	18"	1200	1500	1650	2000	2500	4125	6250
500	20"	1800	2000	2500	2800	3600	6250	9000
600	24"	2500	2800	3100	3600	4695	7750	11738
700	28"	4600	5000	5500	6050	7260	13750	18150
750	30"	5800	6000	6600	7260	8712	16500	21780
800	32"	6700	7300	8030	8833	10600	20075	26499
900	36"	9975	10790	12000	14000	18200	30000	45500
1000	40"	13000	15000	16500	18150	21780	41250	54450
1100	44"	18000	20000	22000	24200	29040	55000	72600
1200	48"	32000	33000	35600	40300	52390	89000	130975
1400	56"	40000	43000	55000	70000	90000	137500	225000
1600	64"	50000	58000	63800	80000	100000	159500	250000
1800	72"	65000	70000	81000	90000	120000	202500	300000
2000	80"	80000	90000	99000	108900	130680	202500	300000
2200	88"	93750	120000	132000	145200	174240	202500	300000

Note:

1. The charted values are based for water, Temp: 0°C to 40°C .
2. The charted values are based on the initial breakaway torque under operating pressure.
3. The torque values listed above do not include a safety factor.
4. The effect of dynamic torque is not considered in tabulation.

Kv Values

SIZE		Kv (m³/h at 1bar ΔP)								
DN	INCH	10°	20°	30°	40°	50°	60°	70°	80°	90°
80	3"	3	6	28	54	89	133	197	271	341
100	4"	9	20	38	79	137	221	381	530	592
125	5"	14	28	85	156	243	366	577	850	980
150	6"	28	52	130	224	356	544	903	1340	1573
200	8"	66	117	231	401	626	969	1623	2410	2713
250	10"	88	176	337	634	951	1456	2450	3691	4550
300	12"	132	257	495	925	1388	2123	3573	5710	6431
350	14"	154	310	637	1131	1880	2931	4588	7224	8744
400	16"	209	404	832	1477	2456	3829	5993	9875	11021
450	18"	264	512	1053	1870	3107	4846	7590	12313	14744
500	20"	330	633	1300	2308	3835	5982	9364	15509	16893
600	24"	440	911	1870	2957	5522	8614	13483	22459	24783
700	28"	495	977	2276	3825	6959	10777	18113	30349	35446
750	30"	550	1218	2472	4437	7890	12524	20000	33716	40491
800	32"	682	1397	2730	5131	8890	13932	22406	36606	44223
900	36"	869	1764	3451	6599	11890	18951	29906	48394	55357
1000	40"	1155	2321	4429	8262	15130	23029	37783	61468	72321
1100	44"	1540	3171	6159	10251	17580	28126	46179	76606	94464
1200	48"	2090	4253	7880	12852	20100	33495	53538	91349	108036
1400	56"	2640	5439	10403	18513	32000	49874	83868	130367	143750
1600	64"	3850	7560	14966	27061	45400	69417	111981	181651	204464
1800	72"	4290	8505	19313	34915	52130	87718	135642	223165	250000
2000	80"	4730	9450	21960	41157	57980	106990	160255	255945	285714
2200	88"	5600	11350	26350	49380	69570	128388	192306	307135	342570

Kv=The number of m3 per hour of 20°C water at 1bar pressure drop.

$C_v = 1.167 K_v$

Cv=The nuber of US gallons per minute of 60°F water at 1psi pressure drop.

Series M gearbox is quarter turn, heavy duty, used for manual operating valves serving both aboveground and underground applications.

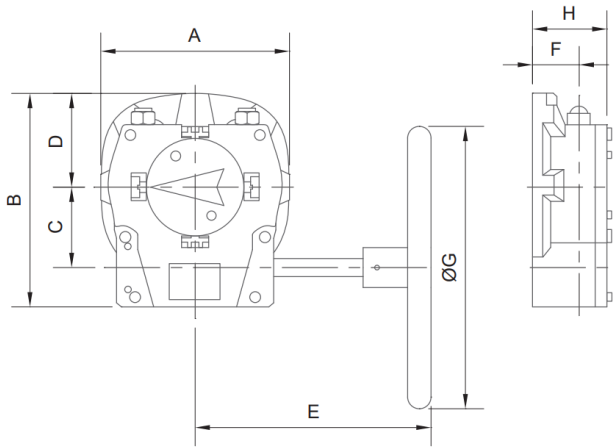
- Worm gear design according to AWWA C504.
- Handwheel for aboveground and spindle nut for underground.
- Suitable for high and low temperature.

Housing: Cast iron, Ductile iron

Worm: Harden Steel

Worm gear: Ductile iron

Input shaft: Steel electrophoresis



SIZE		Class150B valve Gear Code	Ratio	Gear Torque (N*M)	Input Torque (N*M)	A	B	C	D	E	F	G	H	WT(kg)
DN	INCH													
80	3"	M07	40:1	200	19	92	111	39	46	151	31	100	55	3
100	4"	M07	40:1	200	19	92	111	39	46	151	31	100	55	3
125	5"	M07	40:1	200	19	92	111	39	46	151	31	100	55	3
150	6"	M10	42:1	500	45	118	145	53	61	214	35	260	61	6
200	8"	M10	42:1	500	45	118	145	53	61	214	35	260	61	6
250	10"	M10	42:1	500	45	118	145	53	61	214	35	260	61	6
300	12"	M12	42:1	1000	90	165	182	66	76	210	42	300	72	11
350	14"	M12	42:1	1000	90	165	182	66	76	210	42	300	72	11
400	16"	M14	60:1	1800	110	200	231	89	100	277	50	400	81	14
450	18"	M14	60:1	1800	110	200	231	89	100	277	50	400	81	14
500	20"	M15	68:1	3400	165	252	296	123	118	357	50	400	91	32
600	24"	M16	88:1	4400	169	315	354	153	145	382	50	500	93	44
700	28"	M36/S5	210:1	8000	180	310	380	138	155	448	65	500	122	65
750	30"	M50/S5	250:1	11000	180	355	446	181	178	480	80	600	160	110
800	32"	M50/S5	250:1	11000	180	355	446	181	178	480	80	600	160	110
900	36"	M50/D12	612:1	16000	190	355	440	181	178	555	80	600	160	122
1000	40"	M60/D12	720:1	24000	220	415	528	237	208	575	82	700	165	185
1100	44"	M65/D12	882:1	35000	230	415	572	282	208	648	84	700	172	255
1200	48"	M70/D18	1242:1	50000	200	475	657	309	240	686	107	700	225	310
1400	56"	M75/D18	1430:1	70000	240	475	697	349	240	706	110	700	231	440
1600	64"	M75/D18	1430:1	70000	240	475	697	349	240	706	110	700	231	440
1800	72"	M80/D21	1418:1	100000	350	560	826	391	280	821	130	800	270	700
2000	80"	M90/D28	2430:1	160000	320	686	1003	491	343	909	138	800	300	1100
2200	88"	M90/D28	2430:1	160000	320	686	1003	491	343	909	138	800	300	1100

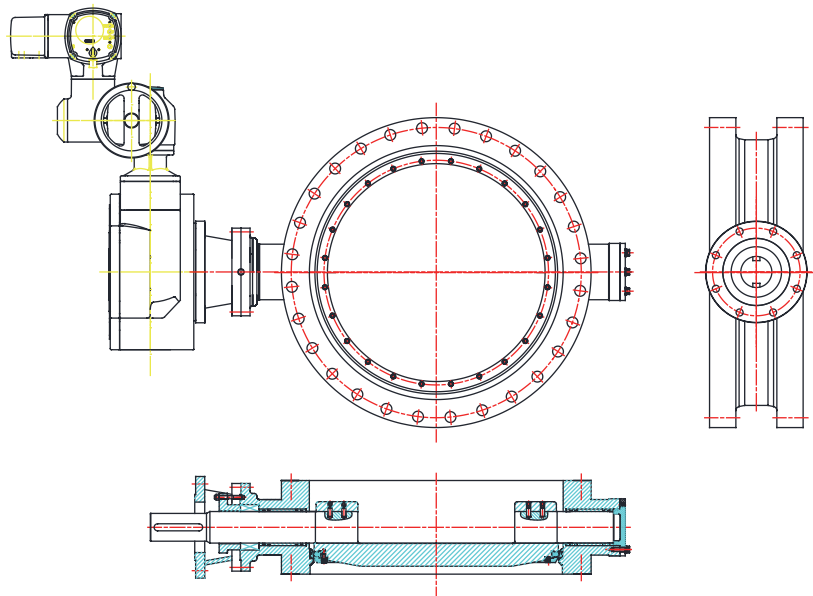
Installation, Operation & Maintenance Manual

Series A65 Butterfly valve has been designed to give years of trouble-free operation. This manual will provide you with the information to properly install and maintain the valve to ensure a long service life. The valve is a resilient seated, quarter-turn valve capable of handling air, water, or other clean fluids.

1. Receiving and storage

1.1 Inspect valves upon receipt for damage in shipment. Unload all valves carefully to the ground without dropping. Do not lift valves with slings or chains around the actuator or through the seat area. Extra care must be taken when handling electric motor and cylinder actuated valves. Valves should remain crated, clean and dry until installed to prevent weather related damage. For long term storage greater than six months, indoor storage is recommended. The valve flange covers must remain in place, the valve must remain slightly open (3-5 degrees). Do not expose the resilient seat to sunlight or ozone for any extended period. Electric actuators must be powered if stored outdoors or in cool areas so that the internal heaters will prevent condensation in the control unit.

2. Description of operation

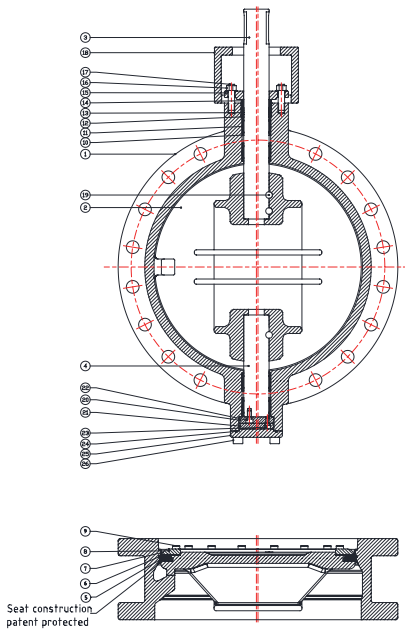


2.1 As shown in Figure 1, the valve consists of a body, a disc, and a shaft that rotates in body bearings. The resilient seat provides drop-tight shutoff.

2.2 The disc is rigidly attached to the shaft with taper pins. The actuator rotates the valve shaft and disc through 90 degrees of operation. The disc can rotate through the seat, but is factory set to stop in the center of the seat to provide tight shut off. Additional torque on the actuator when against the closed stop of the actuator will not provide tighter shut off. The valve seat is easily adjustable or replaceable should wear or damage occur over time.

3. Valve construction

3.1 A65 AWWA Butterfly Valve is constructed of heavy ductile iron body with a stainless steel shaft and resilient disc edge. The body is equipped with a stainless steel seat. The 1/4 turn disc is guided by a stainless steel shaft which rotates in bearings fixed in the body. Leak-tight closure is made when the resilient seat is rotated into the stainless steel seat on the "SEAT END" of the body.



Parts list and material specification

No.	Part name	Material
1	Body	ASTM A536 65-45-12
2	Disc	ASTM A395 60-40-18
3	Upper stem	S30400 S17400
4	Lower stem	S30400 S17400
5	Disc Seal	EPDM
6	O-ring	EPDM
7	Body seat	SS304
8	Retainer	SS304
9	Bolts	SS304
10	Bearing	SS316L+PTFE
11	O-ring	EPDM
12	Packing support	SS304
13	Packing	PTFE

No.	Part name	Material
14	Packing pressing ring	SS304
15	Packing gland	ASTM A516
16	Nuts	SS304
17	Bolts	SS304
18	Bracket	ASTM A216 WCB
19	Taper pin	S17400
20	Stem retainer	SS304
21	Washer	SS304
22	Screws	SS304
23	Screws	SS304
24	O-ring	EPDM
25	Bottom cover	Same as body
26	Bolts	SS304

4. Installation

4.1 A65 AWWA Butterfly Valve is Bi-Directional, however, when deciding the valve's installation orientations, the engineer should consider the seat position in regards to flow and access. The following guidelines are intended to assist the engineer. The "SUGGESTED FLOW" are marked on the valve body cast or nameplate.

4.2 Valve above 30" are recommended to install with the position of valve stem parallel to horizontal plane.

4.3 Where valves are provided with flanged ends in buried applications, the purchaser is advised to consider providing means to accommodate issues such as differential settlement, capability to remove the valve or actuator for maintenance access to the valve interior for inspection, support of the valve, and controlling the shear loading on the adjacent pipe flanges.

4.4 Foreign material in a butterfly valve can damage the rubber seat when valves are operated. Be sure valve interiors and adjacent piping are clean and free of foreign material prior to mating the valve-to-pipe-joint connection.

4.5 FLANGED ENDS: AWWA Class 150B flanged valves should be mated to ANSI Class 125# or AWWA C207 flat-faced flanges equipped with resilient gaskets. When ring gaskets are used, the bolt material shall be ASTM A307 Grade B or SAE Grade 2 Carbon Steel. Higher strength bolts may only be used with full-face gaskets. Some of the flange holes are tapped near the shaft ends of the valve as shown on the Sales Drawing. Special bolt lengths may be needed. An engagement of at least one bolt diameter is typically used for the flange bolts used in the tapped flange holes. AWWA Class 250B flanged valves can be mated with either ANSI Class 125#, ANSI Class 250# or AWWA C207 flanges depending on the specified flange drilling. Class 250B valves can be mated with flat-faced or raised-face flanges with full face or ring gaskets and with no bolting restrictions.

4.6 In all installations, the valve and adjacent piping must be supported and aligned to prevent cantilevered stresses on the valve. Lower valve into line using slings or chains around the valve body. Lubricate the flange bolts or studs and insert them around the flange. Lightly turn bolts until gaps are eliminated. If leakage occurs, allow gaskets to absorb fluid and check torque and leakage after 24 hours. Do not exceed bolt rating or crush gasket more than 50 percent of its thickness.

Installation, Operation & Maintenance Manual

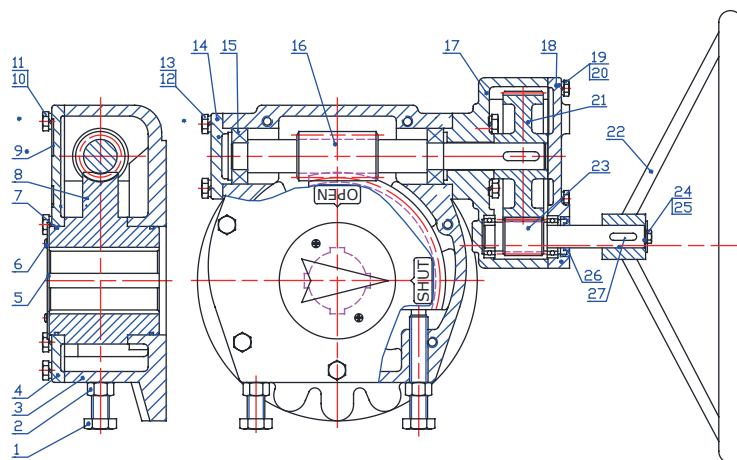
SIZE		150B Flange bolt torques			250B Flange bolt torques			Initial seat bolt torques (ft-lbs)	
DN	INCH	Bolt Dia (in)	Recom torque (ft-lbs)	Max torque (ft-lbs)	Bolt Dia (in)	Recom torque (ft-lbs)	Max torque (ft-lbs)	Class 150B	Class 250B
80	3"	5/8	25	100	5/8	30	150	5	7
100	4"	5/8	25	100	5/8	30	150	5	7
150	6"	3/4	30	150	5/8	30	150	5	7
200	8"	3/4	40	150	7/8	50	200	5	7
250	10"	7/8	45	200	1	75	300	10	12
300	12"	7/8	65	200	1 1/8	100	425	10	12
350	14"	1	80	300	1 1/8	100	425	10	12
400	16"	1	90	300	1 1/4	150	600	10	12
450	18"	1 1/8	100	425	1 1/4	150	600	10	12
500	20"	1 1/8	120	425	1 1/4	200	600	10	12
600	24"	1 1/8	150	600	1 1/4	300	1000	15	17
750	30"	1 1/4	175	600	1 3/4	400	1200	20	24
900	36"	1 1/2	175	1000	2	600	1800	26	30
1050	42"	1 1/2	200	1000	2	750	2250	26	30
1200	48"	1 1/2	250	1000	2	750	2250	26	30
1800	72"	1 3/4	400	1500	1 3/4	750	1500	30	50
2100	84"	2	600	2000	2	1000	2500	30	50
2400	96"	2 1/4	1000	3000	2 1/4	1500	3500	30	50

4.7 Seat leakage can occur from foreign material in the line. If this occurs, open the valve 5° to 10° to obtain high-velocity flushing action, then close. Repeat several times to clear the seats for tight shutoff. Seat leakage can result from a rotational shift in position of the disc with relation to the body seat. Readjust closing the stop in accordance with the manufacturer's instructions.

5. Gear operated valves

5.1 A worm-gear actuator has a multi-turn worm that drives a large sector gear through 90 degrees of rotation. Worm gears provide uniform motion and torque multiplication throughout the stroke. A spur gear mounted on the input side provides additional torque.

5.2 The standard gear actuator is provided with factory-set open and closed position stops to properly center the closed disc seal in the body seat. No field adjustment is necessary. If adjustment is needed over time, the external closed stop nut (1) can be turned to change the closed position of the valve.



6. Maintenance

6.1 For water service, the Series A65 requires no scheduled lubrication or maintenance other than regular exercising. The exercising is achieved by fully opening and closing the valve to verify smooth operation. If operation is difficult, it may be necessary to flush sediment from the valve by opening and closing the valve several times under flowing conditions or checking the lubricant in the gear actuator. For valves in air service, apply a thin film of FDA silicone grease such as Dow Corning #7 to the exposed rubber surface once per year. The recommended interval for exercising is every six months or annually if the valve is regularly operated. Over the life of the valve, inspection and some regular adjustments may be needed as given below.

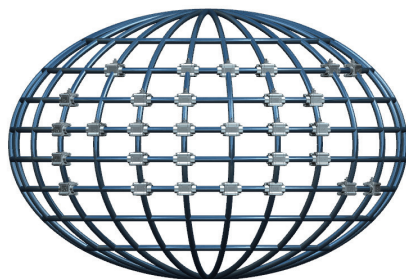
6.2 PACKING ADJUSTMENT: The shaft is equipped with a set of packing, which is factory-set for drop-tight service. The packing is pressure assisted and does not normally require adjustment. Should leakage occur, the packing can be replaced.

6.3 PACKING REPLACEMENT: To replace the packing, it is recommended that the line be drained. The valve can remain in the line and actuator removing not necessary.



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