



# AWWA Performance Butterfly Valves



## Max-Seal's AWWA Series Double Flanged Design

Series A: C504 CLASS150 & 250 & 300  
Series B: BS5155 PN10,PN16,PN25,PN40

Size Range: **Class 150 3" - 96"**  
**Class 300 4" - 60"**

# About Our VALVES

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 many applications.




Max-Seal 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 A 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, the self-sealing design makes the valves have very low torque and a high number of open-closes up to 100,000 cycles for the rubber seat.

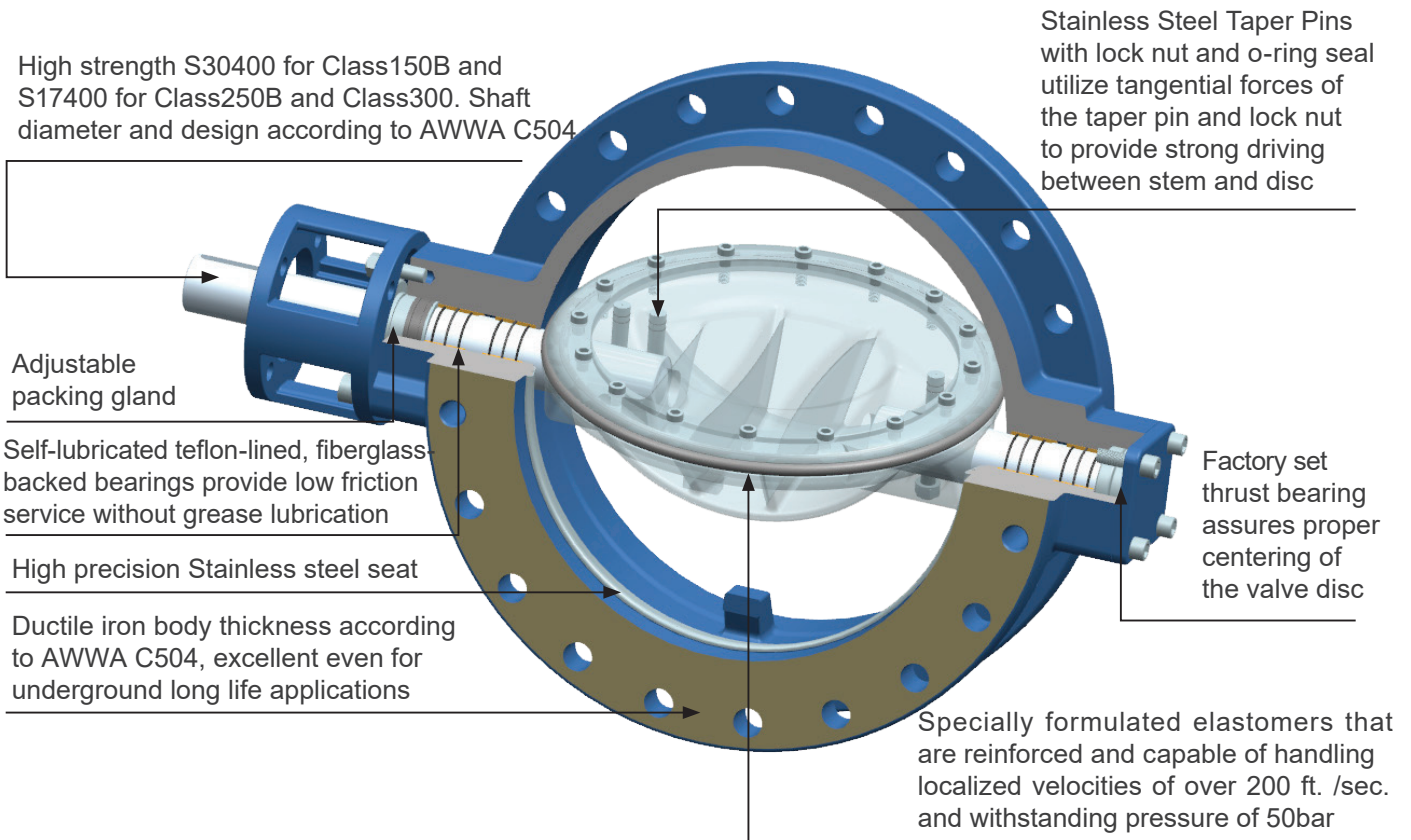
Series A butterfly valves are designed according to C504 for applications throughout water and wastewater treatment plants, water distribution systems, power plants, and industrial plants. The valves can be applied in applications demanding high quality and thoroughly tested valves, which offer many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

Series	Series A	Series B
		
Connection	Double flanged	Double flanged
Nominal diameter	3" to 72" (DN80-DN1800)	14" to 72" (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	-84.2°F to 392°F(-29°C to+200°C) (Depending on pressure, medium and material)	-84.2°F to 392°F (-29°C to +200°C) (Depending on pressure, medium and material)
Operation	Gear box, pneumatic actuator, electric actuator	Gear box, pneumatic actuator, electric actuator



# Valve Design Features

## Series A Valve Design



## 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 prevents corrosion inside the stem hole and avoids shaft clogging, meanwhile provide a positive disc control with a minimum flow restriction

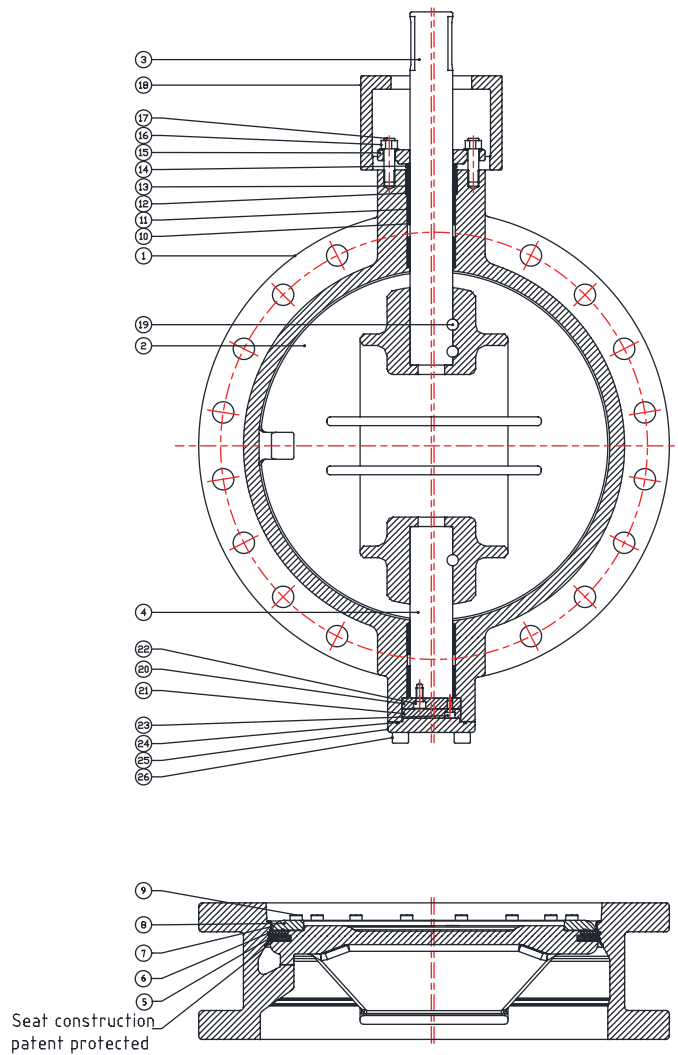
## Certified Zero Leakage

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





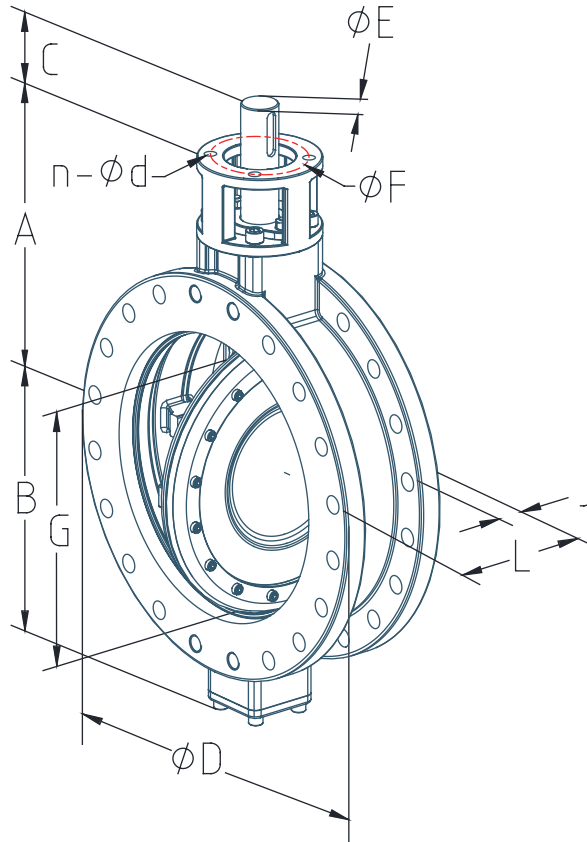
## Parts list and material specification

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

# Max-Seal Dimensional Data & Weights(in)

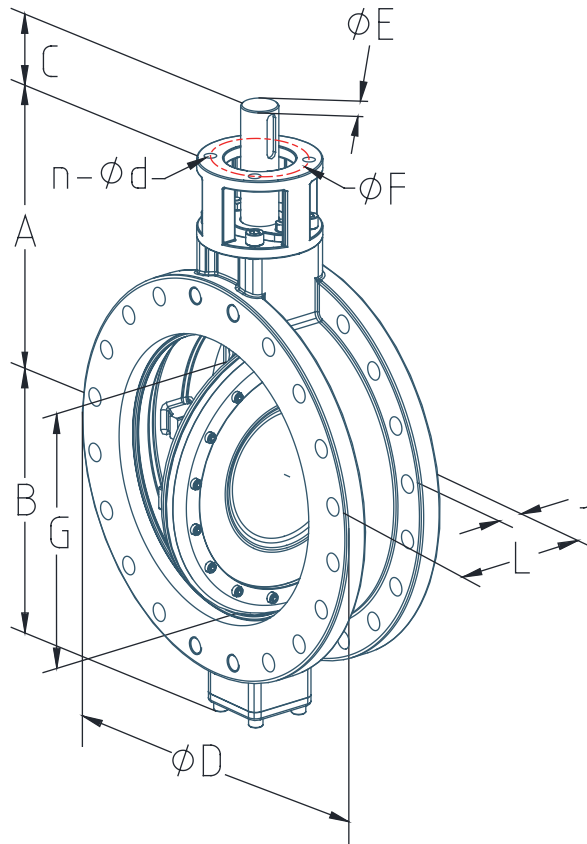
## Class 150



CLASS150 SIZE		A	B	C	D	E	F	n	d	G	J	L	WT (lb)	WT (kg)
DN	INCH													
80	3"	5.71	3.94	0.69	7.48	0.44x0.44	2.76	4	0.39	/	0.75	5	66	30
100	4"	6.69	4.88	0.69	9.06	0.56x0.56	2.76	4	0.39	/	0.88	5	88	40
125	5"	7.28	5.67	0.69	10.04	0.56x0.56	2.76	4	0.39	/	0.88	5	99	45
150	6"	7.99	5.91	0.73	11.02	0.67x0.67	4.02	4	0.47	1.97	0.94	5	110	50
200	8"	9.41	7.32	0.96	13.58	0.87x0.87	4.02	4	0.47	2.76	1.06	5.98	187	85
250	10"	10.83	8.9	0.96	15.94	0.87x0.87	4.02	4	0.47	3.15	1.13	7.99	264	120
300	12"	12.09	9.88	1.18	19.09	1.07x1.07	4.92	4	0.55	4.72	1.19	7.99	352	160
350	14"	16.3	10.87	1.77	21.06	1.75	4.92	4	0.55	6.3	1.28	7.99	506	230
400	16"	20.47	15.59	3	23.43	2	6.5	4	0.87	7.48	1.38	7.99	638	390
450	18"	21.65	16.93	3	25	2.25	6.5	4	0.87	8.66	1.5	7.99	682	310
500	20"	21.65	17.48	3.74	27.56	2.5	6.5	4	0.87	9.84	1.69	7.99	858	390
600	24"	25.87	20.24	3.15	32.09	3	10	8	0.71	11.81	1.81	7.99	1243	565
700	28"	28.35	20.67	3.15	36.42	3	10	8	0.71	12.99	2.13	12.01	1782	810
750	30"	29.53	21.65	4.53	38.78	3.63	10	8	0.71	14.57	2.13	12.01	2420	1100
800	32"	29.92	23.62	4.53	41.73	3.63	11.73	8	0.87	15.75	2.37	12.01	2970	1350
900	36"	35.43	27.64	5.91	46.06	4.37	11.73	8	0.87	17.72	3.5	12.01	3300	1500
1000	40"	41.57	30.39	7.48	50.79	5	15.98	8	1.5	19.69	3.5	12.01	4906	2230
1050	42"	44.09	33.46	7.48	52.95	5	15.98	8	1.5	20.47	2.63	12.01	5390	2450
1200	48"	45.91	37.13	8.43	59.45	5.63	15.98	8	1.5	23.62	2.75	15	5720	2600
1400	56"	54.17	42.52	8.82	68.7	6.75	15.98	8	1.5	27.56	4.81	15	7920	3600
1600	64"	56.69	47.64	8.86	75.98	7.24	15.98	8	1.5	31.5	4.02	17.99	9592	4360
1800	72"	61.02	51.97	10.24	86.42	8.5	19.02	12	1.5	35.43	3.5	17.99	11220	5100
2100	84"	66.93	57.87	11.81	99.8	8.5	23.74	20	1.5	35.43	3.87	24.02	13002	5910
2400	96"	84.65	63.78	11.81	113.1	8.50	23.74	20	1.5	37.4	4.25	27.99	13420	6100

# Max-Seal Dimensional Data & Weights (in)

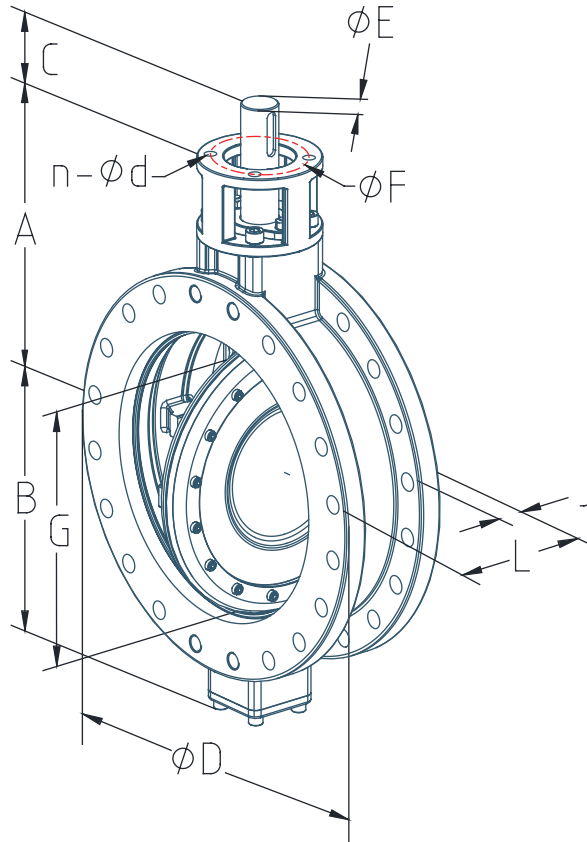
## Class 300



CLASS300 SIZE		A	B	C	D	E	F	n	d	G	J	L	WT (lb)	WT (kg)
DN	INCH													
80	3"	5.71	3.94	0.69	8.27	0.44x0.44	2.76	4	0.39	/	1.06	5.63	66	30
100	4"	6.69	4.88	0.69	10.04	0.56x0.56	2.76	4	0.39	/	1.19	5.63	88	40
125	5"	7.28	5.67	0.69	11.02	0.56x0.56	2.76	4	0.39	/	1.31	5.63	132	60
150	6"	7.99	5.91	0.73	12.6	0.67x0.67	4.02	4	0.47	/	1.38	5.91	165	75
200	8"	9.41	8.03	0.96	14.96	0.87x0.87	4.02	4	0.47	2.36	1.56	7.01	253	115
250	10"	10.83	9.37	1.18	17.52	1.07x1.07	4.92	4	0.55	2.17	1.81	9.37	374	170
300	12"	12.09	10.55	1.18	20.47	1.07x1.07	4.92	4	0.55	3.94	1.94	9.49	506	230
350	14"	16.3	11.57	1.77	23.03	1.75	4.92	4	0.55	5.91	2.06	9.49	693	315
400	16"	20.47	15.59	3	25.59	2	6.5	4	0.87	6.69	2.19	9.61	803	365
450	18"	21.65	16.93	3	27.95	2.25	6.5	4	0.87	7.87	2.31	9.61	1078	490
500	20"	25.47	18.66	3.74	30.51	2.5	10	8	0.71	9.06	2.44	9.61	1201.2	546
600	24"	25.87	20.24	3.15	36.02	3	10	8	0.71	11.81	2.69	9.76	1980	900
700	28"	28.35	20.67	3.15	40.75	3	10	8	0.71	12.99	3.31	13.78	1782	810
750	30"	29.53	21.65	4.53	42.91	3.63	10	8	0.71	14.17	3.56	13.78	2420	1100
800	32"	29.92	23.62	4.53	45.28	3.63	11.73	8	0.87	14.96	3.81	13.78	2970	1350
900	36"	35.43	27.64	5.91	50	4.37	11.73	8	0.87	17.72	4.06	12.99	3300	1500
1000	40"	41.57	30.39	7.48	48.82	5	15.98	8	1.5	18.11	4.44	17.48	4928	2240
1050	42"	44.09	33.46	7.48	50.79	5	15.98	8	1.5	19.29	4.63	17.48	5390	2450
1200	48"	45.91	37.13	8.43	57.68	5.63	15.98	8	1.5	22.83	5.19	17.48	6998.2	3181
1400	56"	54.17	42.52	8.82	69.49	6.75	15.98	8	1.5	26.77	6	20.87	11783.2	5356
1450	58"	54.17	42.52	8.82	69.49	6.75	15.98	8	1.5	26.77	6	20.87	11783.2	5356
1500	60"	54.17	42.52	8.82	71.26	6.75	15.98	8	1.5	26.77	6	20.87	13640	6200



# PN10,PN16 Dimensional Data & Weights (in)



PN10,PN16 SIZE		A	B	C	PN10	PN16	E	F	n	d	G	PN10	PN16	L	WT (lb)	WT (kg)
DN	INCH				D							J				
80	3"	5.71	3.94	0.69	7.87	7.87	0.44x0.44	2.76	4	0.39	/	0.75	0.75	4.49	66	30
100	4"	6.69	4.88	0.69	8.66	8.66	0.56x0.56	2.76	4	0.39	/	0.87	0.87	5	88	40
125	5"	7.28	5.67	0.69	9.84	9.84	0.56x0.56	2.76	4	0.39	/	0.87	0.87	5.51	99	45
150	6"	7.99	5.91	0.73	11.22	11.22	0.67x0.67	4.02	4	0.47	1.57	0.94	0.94	5.51	110	50
200	8"	9.41	7.32	0.96	13.39	13.39	0.87x0.87	4.02	4	0.47	2.76	1.06	1.06	5.98	187	85
250	10"	10.83	8.9	0.96	15.55	15.94	0.87x0.87	4.02	4	0.47	4.72	1.02	1.02	6.5	264	120
300	12"	12.09	9.88	1.18	17.52	18.11	1.07x1.07	4.92	4	0.55	5.91	1.02	1.1	7.01	341	155
350	14"	16.3	10.87	1.77	19.88	20.47	1.75	4.92	4	0.55	7.09	1.18	1.18	7.48	484	220
400	16"	20.47	15.59	3	22.24	22.83	2	6.5	4	0.87	6.69	1.26	1.26	8.5	616	280
450	18"	21.65	16.93	3	24.21	25.2	2.25	6.5	4	0.87	7.87	1.42	1.42	8.74	660	300
500	20"	21.65	17.48	3.74	26.38	28.15	2.5	6.5	4	0.87	8.27	1.5	1.5	9.02	770	350
600	24"	25.87	20.24	3.15	30.71	33.07	3	10	8	0.71	9.84	1.65	1.65	10.51	1210	550
700	28"	28.35	20.67	3.15	35.24	35.83	3	10	8	0.71	13.78	1.97	2.13	11.5	1782	810
800	32"	29.92	23.62	4.53	39.96	40.35	3.63	11.7	8	0.87	14.57	2.2	2.2	12.52	2970	1350
900	36"	35.43	27.64	5.91	43.9	44.29	4.37	11.7	8	0.87	17.72	2.44	2.44	12.99	3300	1500
1000	40"	41.57	30.39	7.48	48.43	49.41	5	15.9	8	1.5	17.72	2.76	2.76	16.14	4620	2100
1200	48"	45.91	37.13	8.43	57.28	58.46	5.63	15.9	8	1.5	21.65	3.27	3.27	18.5	5500	2500
1400	56"	54.17	42.52	8.82	65.94	66.34	6.75	15.9	8	1.5	25.59	3.31	3.31	20.87	8360	3800
1600	64"	56.69	47.64	8.86	75.39	75.98	7.24	15.9	8	1.5	29.53	2.95	4.02	23.62	9592	4360
1800	72"	61.02	51.97	10.24	83.27	83.86	8.5	19	12	1.5	33.46	3.35	4.33	26.38	13860	6300
2000	80"	66.93	57.87	11.81	91.54	92.32	8.5	23.7	20	1.5	43.31	3.54	4.88	29.92	15400	7000
2200	88"	84.65	63.78	11.81	100.39		8.5	23.7	20	1.5	49.21	3.94		29.92	18700	8500



# Valve Torque Information

SIZE		Torques (N*M) under operating Pressure										Maximum Allowable Shaft Torque N*M(S30400)	Maximum Allowable Shaft Torque N*M(S17400)
DN	INCH	10bar	in lbs	16bar	in lbs	20bar	in lbs	25bar	in lbs	50bar	in lbs		
80	3"	31	274	40	354	44	389	48	425	58	513	110	145
100	4"	45	398	57	504	63	558	69	611	83	735	157	207
125	5"	117	1035	150	1328	165	1460	182	1611	218	1929	413	545
150	6"	156	1381	200	1770	220	1947	242	2142	290	2567	550	726
200	8"	234	2071	300	2655	330	2921	363	3213	436	3859	825	1089
250	10"	297	2628	380	3363	418	3699	460	4071	552	4885	1045	1379
300	12"	400	3540	550	4868	605	5354	666	5894	799	7071	1513	1997
350	14"	670	5930	850	7523	935	8275	1029	9107	1234	10921	2338	3086
400	16"	900	7965	1000	8850	1100	9735	1210	10709	1452	12850	2750	3630
450	18"	1200	10620	1500	13275	1650	14603	2000	17700	2500	22125	4125	6250
500	20"	1800	15930	2000	17700	2500	22125	2800	24780	3600	31860	6250	9000
600	24"	2500	22125	2800	24780	3100	27435	3600	31860	4695	41551	7750	11738
700	28"	4600	40710	5000	44250	5500	48675	6050	53543	7260	64251	13750	18150
750	30"	5800	51330	6000	53100	6600	58410	7260	64251	8712	77101	16500	21780
800	32"	6700	59295	7300	64605	8030	71066	8833	78172	10600	93810	20075	26499
900	36"	9975	88279	10790	95492	12000	106200	14000	123900	18200	161070	30000	45500
1000	40"	13000	115050	15000	132750	16500	146025	18150	160628	21780	192753	41250	54450
1100	44"	18000	159300	20000	177000	22000	194700	24200	214170	29040	257004	55000	72600
1200	48"	32000	283200	33000	292050	35600	315060	40300	356655	52390	463652	89000	130975
1400	56"	40000	354000	43000	380550	55000	486750	70000	619500	90000	796500	137500	225000
1600	64"	50000	442500	58000	513300	63800	564630	80000	708000	100000	885000	159500	250000
1800	72"	65000	575250	70000	619500	81000	716850	90000	796500	120000	1062000	202500	300000
2000	80"	80000	708000	90000	796500	99000	876150	108900	963765	130680	1156518	202500	300000
2200	88"	93750	829688	120000	1062000	132000	1168200	145200	1285020	174240	1542024	202500	300000

**Note:**

1. The charted values are based for water, Temp: 32°F to 104°F (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 this tabulation.

# Valve Flow Coefficients & Technical Data



SIZE		Kv (m <sup>3</sup> /h at 1bar ΔP) 1 bar =14.50psi								
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 m<sup>3</sup> per hour of 68°F (20°C) water at 1bar pressure drop.

$$Cv=1.167Kv$$

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

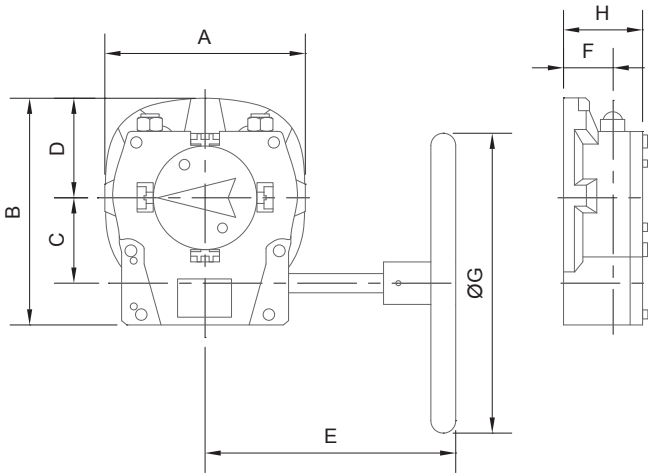


# Max-Seal's Manual Worm Gear Operator

Max-Gear operators are quarter turn, heavy duty, and used for manual operating valves serving both above ground and underground applications.

- Worm gear design according to AWWA C504
- Hand wheel for above ground and spindle nut for underground. Suitable for high and low temperatures

**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)	in lbs	Input Torque (N*M)	in lbs	A	B	C	D	E	F	G	H	WT(lb)	WT(kg)
DN	INCH																
80	3"	M07	40:1	200	1770	19	168	3.62	4.37	1.54	1.81	5.94	1.22	3.94	2.17	6.6	3
100	4"	M07	40:1	200	1770	19	168	3.62	4.37	1.54	1.81	5.94	1.22	3.94	2.17	6.6	3
125	5"	M07	40:1	200	1770	19	168	3.62	4.37	1.54	1.81	5.94	1.22	3.94	2.17	6.6	3
150	6"	M10	42:1	500	4425	45	398	4.65	5.71	2.09	2.40	8.43	1.38	10.24	2.40	13.2	6
200	8"	M10	42:1	500	4425	45	398	4.65	5.71	2.09	2.40	8.43	1.38	10.24	2.40	13.2	6
250	10"	M10	42:1	500	4425	45	398	4.65	5.71	2.09	2.40	8.43	1.38	10.24	2.40	13.2	6
300	12"	M12	42:1	1000	8850	90	797	6.50	7.17	2.60	2.99	8.27	1.65	11.81	2.83	24.2	11
350	14"	M12	42:1	1000	8850	90	797	6.50	7.17	2.60	2.99	8.27	1.65	11.81	2.83	24.2	11
400	16"	M14	60:1	1800	15930	110	974	7.87	9.09	3.50	3.94	10.91	1.97	15.75	3.19	30.8	14
450	18"	M14	60:1	1800	15930	110	974	7.87	9.09	3.50	3.94	10.91	1.97	15.75	3.19	30.8	14
500	20"	M15	68:1	3400	30090	165	1460	9.92	11.65	4.84	4.65	14.06	1.97	15.75	3.58	70.4	32
600	24"	M16	88:1	4400	38940	169	1496	12.40	13.94	6.02	5.71	15.04	1.97	19.69	3.66	96.8	44
700	28"	M36/S5	210:1	8000	70800	180	1593	12.20	14.96	5.43	6.10	17.64	2.56	19.69	4.80	143	65
750	30"	M50/S5	250:1	11000	97350	180	1593	13.98	17.56	7.13	7.01	18.90	3.15	23.62	6.30	242	110
800	32"	M50/S5	250:1	11000	97350	180	1593	13.98	17.56	7.13	7.01	18.90	3.15	23.62	6.30	242	110
900	36"	M50/D12	612:1	16000	141600	190	1682	13.98	17.32	7.13	7.01	21.85	3.15	23.62	6.30	268	122
1000	40"	M60/D12	720:1	2400	212400	220	1947	16.34	20.79	9.33	8.19	22.64	3.23	27.56	6.50	407	185
1100	44"	M65/D12	882:1	35000	309750	230	2036	16.34	22.52	11.10	8.19	25.51	3.31	27.56	6.77	561	255
1200	48"	M70/D18	1242:1	50000	442500	200	1770	18.70	25.87	12.17	9.45	27.01	4.21	27.56	8.86	682	310
1400	56"	M75/D18	1430:1	70000	619500	240	2124	18.70	27.44	13.74	9.45	27.80	4.33	27.56	9.09	968	440
1600	64"	M75/D18	1430:1	70000	619500	240	2124	18.70	27.44	13.74	9.45	27.80	4.33	27.56	9.09	968	440
1800	72"	M80/D21	1418:1	100000	885000	350	3098	22.05	32.52	15.39	11.02	32.32	5.12	31.50	10.6	1540	700
200	80"	M90/D28	2430:1	160000	141600	320	2832	27.01	39.49	19.33	13.50	35.79	5.43	31.50	11.8	2420	1100
2200	88"	M90 D28	2430:1	160000	141600	320	2832	27.01	39.49	19.33	13.50	35.79	5.43	31.50	11.8	2420	1100

# Max-Seal's AWWA Series

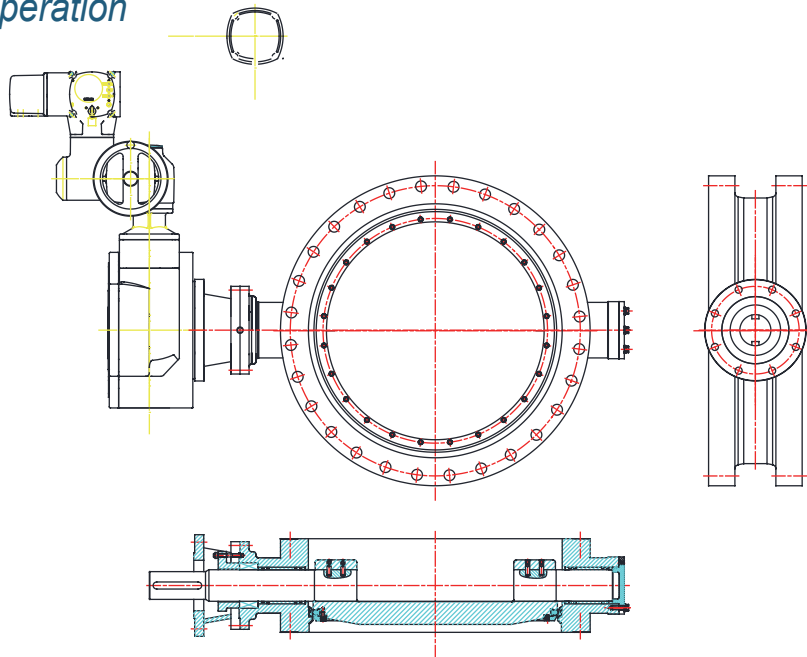
## Installation, Operation & Maintenance Manual

The AWWA 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 them. 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

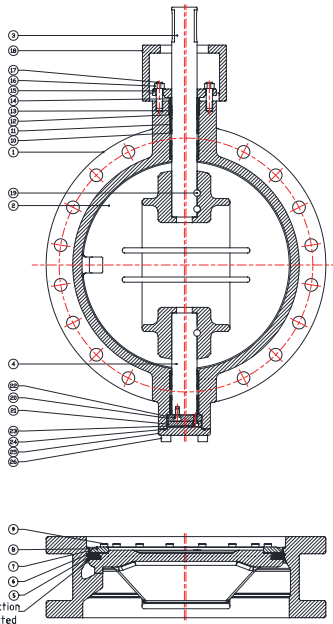


2.1 As shown in Figure 1, the valve consists of a body, a disc, and a shaft that rotates in body bearings. The resilient seat provides drop-tight shutoff.

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. There will be additional torque on the actuator when against the closed stop of the actuator and will not provide a tighter shut off. The valve seat is easily adjustable or replaceable should wear or damage occur over time.

### 3. Valve construction

3.1 The 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 The AWWA 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" is marked on the valve body cast or nameplate.

4.2 Valves above 30" are recommended to install with the position of the valve stem parallel to the 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 150 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 250 flanged valves can be mated with either ANSI Class 125#, ANSI Class 250# or AWWA C207 flanges depending on the specified flange drilling. Class 250 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.



# Max-Seal's AWWA Series

## Installation, Operation & Maintenance Manual

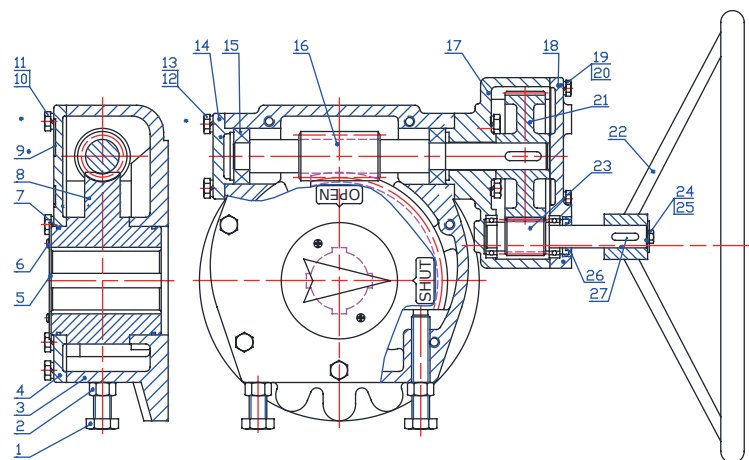
SIZE		150B Flange bolt torques			250B Flange bolt torques			Initial seat bolt torques (ft-lbs)	
DN	INCH	Bolt Dia (in)	Recom torque (ft-lbs)	Max torque (ft-lbs)	Bolt Dia (in)	Recom torque (ft-lbs)	Max torque (ft-lbs)	Class 150	Class 250
80	3"	5/8	25	100	5/8	30	150	5	7
100	4"	5/8	25	100	5/8	30	150	5	7
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.



# Installation, Operation & Maintenance Manual

## 6. Maintenance

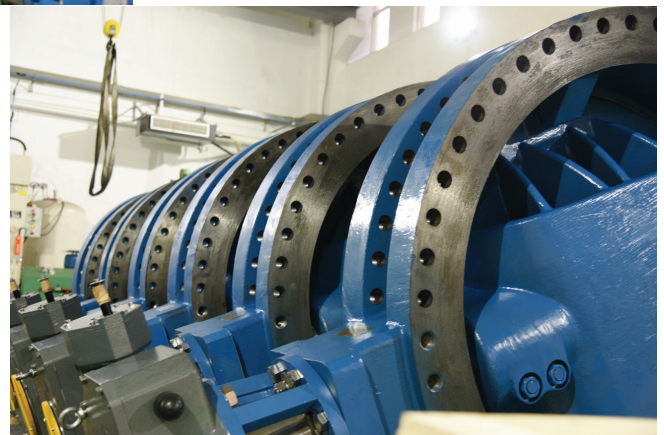
6.1 For water service, the AWWA butterfly valve requires no scheduled lubrication or maintenance other than exercising. The exercising is achieved by fully opening and closing the valve to verify smooth operation. If operation is difficult, it may be necessary to flush sediment from the valve by opening 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 removing the actuator is not necessary.



Torque Range: 2832 in-lb to 37173 in-lb



Due to improvement, all the recorded contents in the catalogue may change without notice. Please kindly understand that the products shown may vary slightly compared with actuals in terms of color, etc. due to printing and other factors.

Max-Seal reserves the final rights for interpretation of the catalogue.