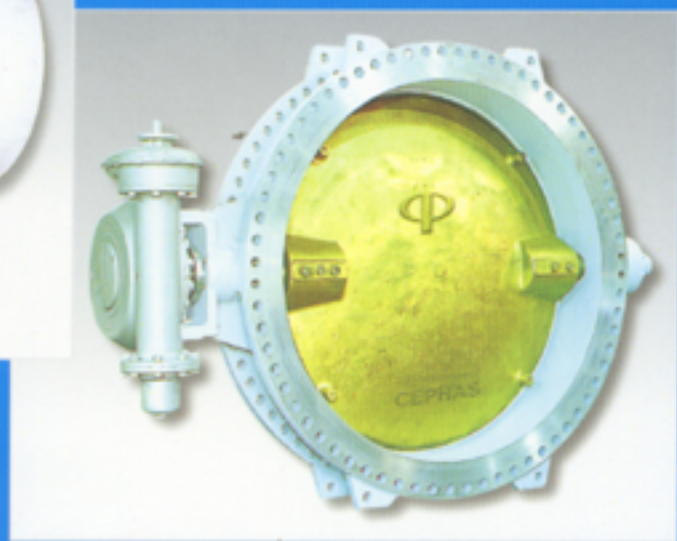


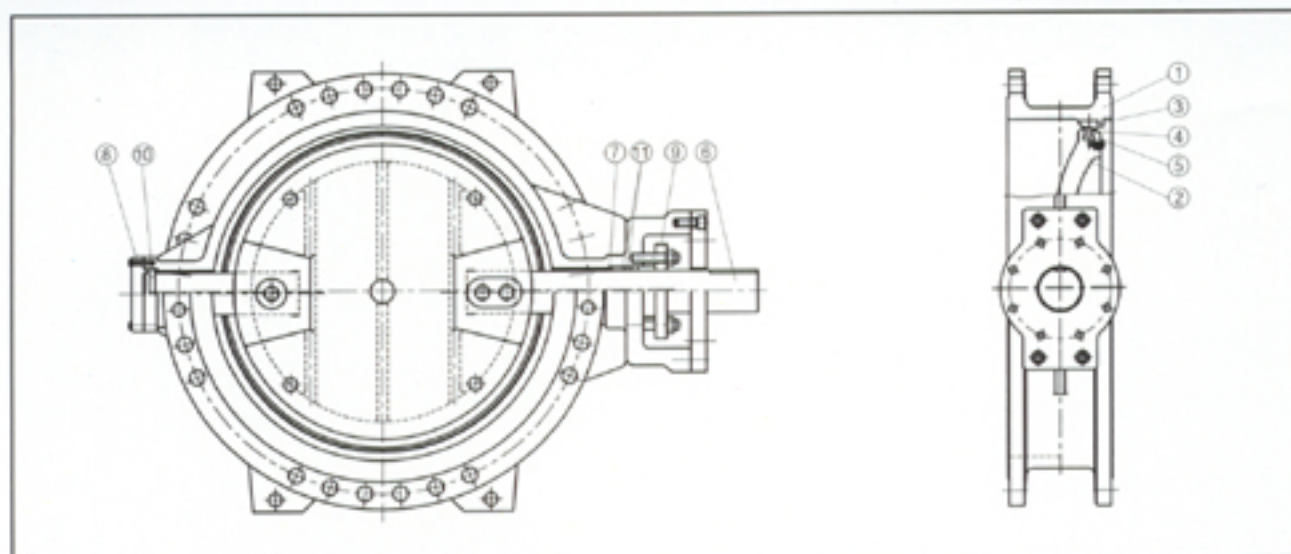
Water Works Valves

- BUTTERFLY VALVE
- NON-RETURN BUTTERFLY VALVE
- SWING CHECK VALVE



CEPHAS PIPELINES CORP.
<http://www.cephasvalve.com>

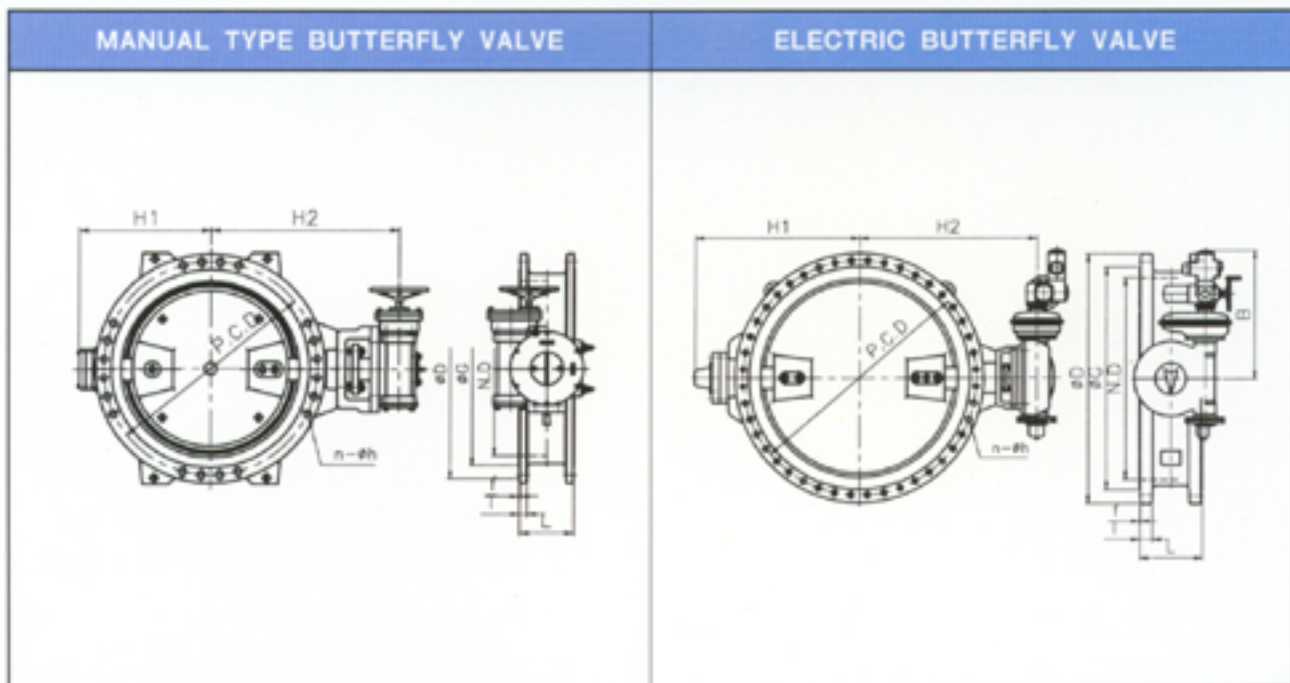
WATER WORKS TYPE BUTTERFLY VALVES



● MATERIAL LIST (BUTTERFLY VALVE WATER WORKS)

P.NO	PART NAME	MATERIALS	SPECIFICATION		Q'TY	REMARK
			K.S	ASTM		
1	BODY	STEEL PLATE	SS400	A36	1	RUBBER LINING (NR, NRB, EPDM)
		CAST IRON	GC200	A126 CLB	1	
		DUCTILE IRON	GCD450	A536	1	
		CAST STEEL	SC480	A216 WCB	1	
2	DISC	STEEL PLATE	SS400	A36	1	RUBBER LINING (NR, NRB, EPDM)
		CAST IRON	GC200	A126 CLB	1	
		DUCTILE IRON	GCD450	A536	1	
		CAST STEEL	SC480	A216 WCB	1	
		BRONZE CASTING	ALBC2	B148 C95400	1	
3	BODY SEAT	STAINLESS STEEL	STS304	A240 T304	1	
		BRONZE CASTING	ALBC2	B148 C95400	1	
		RUBBER	NBR	BUNA-N	1	
4	DISC SEAT	STAINLESS STEEL	STS304	A240 T304	1	
		BRONZE CASTING	ALBC2	B148 C95400	1	
		RUBBER	NBR	BUNA-N	1	
5	SEAT GLAND	STAINLESS STEEL	STS304	A240 T304	1	
		BRONZE CASTING	ALBC2	B148 C95400	1	
		DUCTILE IRON	GCD450	A536	1	
6	SHAFT	STAINLESS STEEL	STS304	A479 T304	2	
7	SHAFT BEARING	BRONZE CASTING	ALBC2	B148 C95400	2	
		OILLESS BEARING	STS304	A497 T304	2	
8	BOTTOM COVER	STEEL PLATE	SS400	A36	1	RUBBER LINING (NR, NRB, EPDM)
		CAST IRON	GC200	A126 CLB	1	
		DUCTILE IRON	GCD450	A536	1	
		CAST STEEL	SC480	A216 WCB	1	
9	PACKING GLAND	STEEL PLATE	SS400	A36	1	
		CAST IRON	GC200	A126 CLB	1	
		DUCTILE IRON	GCD450	A536	1	
		CAST STEEL	SC480	A216 WCB	1	
10	BOTTOM COLLER	BRONZE CASTING	ALBC2	B148 C95400	1	
		STAINLESS STEEL	STS304	A240 T304	1	
11	PACKING	O-RING	NBR	BUNA-N	1set	
		SPLIT V-PACKING	TEFLON	TEFLON	1set	

*NOTE : Upon receipt of clients request, we could supply our valves with special materials which are not described on the above.



● BUTTERFLY VALVE MANUAL / ELECTRIC TYPE (200mm~3000mm)

N.D	L				FLANGE					H1 (ABOUT)	H2 (ABOUT)	B (ABOUT)	WEIGHT (kg)
	AWWA		BS & KS		ø D	P.C.D	ø G	n-ø h	T x l				
	SHORT	LONG	SHORT	LONG									
200	152	219	152	300	340	295	264	8-23	27 x 3	210	360	200	90
250	203	381	165	380	395	350	319	12-23	29 x 3	240	400	200	115
300	203	381	178	400	445	400	367	12-23	31 x 4 _s	270	450	305	140
350	203	406	190	430	505	460	427	16-23	32 x 4	290	500	305	185
400	203	406	216	470	565	515	477	16-28	34 x 4	340	540	360	240
450	203	406	222	500	615	565	527	20-28	35 x 4	390	600	360	275
500	203	457	229	530	670	620	582	20-28	36 x 4	430	650	360	330
600	203	457	267	560	780	725	682	20-31	40 x 4	500	730	410	440
700	203	457	292	610	895	840	797	24-31	46 x 4	535	770	410	555
800	305	559	318	690	1015	950	904	24-34	49 x 5	600	830	410	670
900	305	559	330	740	1115	1050	1004	28-34	51 x 5	670	870	410	980
1000	305	610	410	770	1230	1160	1111	28-37	55 x 5	740	970	410	1260
1100	343	610	450	800	1360	1270	1200	32-37	61 x 5	810	1060	600	1820
1200	381	660	470	820	1470	1387	1304	32-37	63 x 5	860	1190	600	2420
1350	381	711	530	850	1642	1552	1462	36-38	68 x 6	940	1260	600	2600
1500	381	762	530	900	1800	1710	1620	36-38	74 x 5	1010	1380	800	3200
1650	457	864	530	920	1950	1860	1770	40-48	74 x 5	1290	1450	800	4170
1800	457	914	550	950	2115	2020	1960	44-48	76 x 5	1400	1700	800	5200
2000	500	-	550	980	2325	2230	2170	48-48	78 x 5	1500	1960	800	5820
2200	520	-	550	-	2550	2440	2370	52-56	81 x 4	2030	2350	950	7060
2400	550	-	580	-	2760	2650	2570	56-56	64 x 4	2120	2500	950	8020
2500	580	-	580	-	2880	2750	2670	58-58	68 x 5	2170	2660	950	9130
2600	580	-	580	-	2960	2850	2780	60-56	68 x 5	2290	2950	940	10070
2800	600	-	600	-	3180	3070	3000	64-56	72 x 5	2380	3120	950	11020
3000	600	-	600	-	3405	3290	3210	68-62	76 x 5	2430	3230	950	11650

- NOTE : 1. Valve flange rating is KS D 4309 standard, but other standard are available on request.
 2. Valve lay-length of valve is the dimensions of AWWA C 504 standard, but other standard are available on request.

NON-RETURN BUTTERFLY VALVES(EMERGENCY SELF-CLOSING TYPE)

◆ DEFINITION

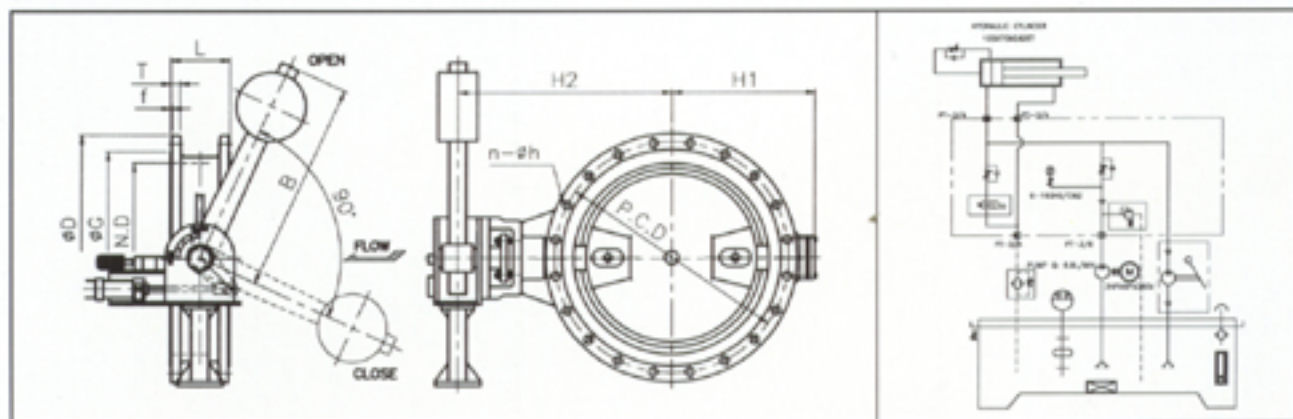
Emergency valve can control the flow direction in order to prevent the breakage of pipes by the reverse flow due to the sudden rising of the flow speed. When ordered by a control device, the closing speed of the valve disc can be adjusted.

◆ OPERATION

- Opening valve
- Closing valve
- Keeping the valve open at the medium degree
- Emergency self-closing(adjustable disc closing time by two steps-site adjustment available)

◆ FEATURES

- Emergency valve can be substituted for butterfly valve & check valve.
- Control the flow by keeping the valve open at the medium degree.
- Adjustable the disc closing speed by two steps. When the valve close by position to prevent(Can be closed slowly at the 65 degree closing position to prevent water hammering)
Can be closed quickly by emergency situation to prevent the reverse flow as general check valve usage.
- The cost of the installation and maintenance can be reduced
- Free from shaking and noise



● BUTTERFLY VALVE NON-RETURN TYPE (450mm-3000mm)

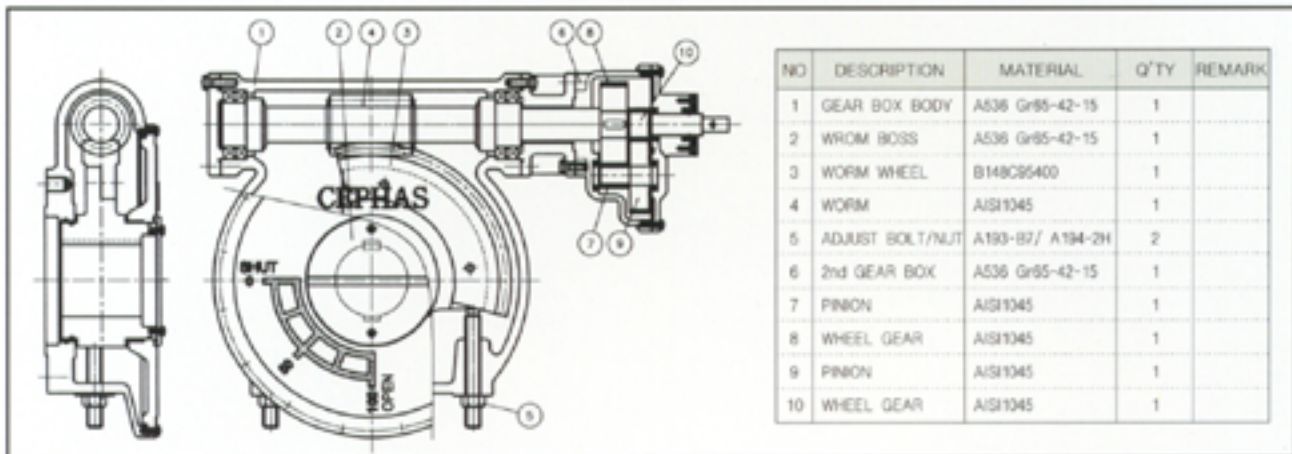
N.D	L	FLANGE					H1 (ABOUT)	H2 (ABOUT)	B (ABOUT)	WEIGHT (kg)
		φD	P.C.D	φG	n-φh	T×f				
450	222	615	565	527	20-26	35×4	390	600	800	475
500	229	670	620	582	20-26	36×4	430	630	850	540
600	267	780	725	682	20-31	40×4	500	670	900	660
700	292	895	840	797	24-31	46×4	535	760	1000	785
800	318	1015	950	904	24-34	49×5	600	800	1150	900
900	330	1115	1050	1004	28-34	51×5	670	760	1250	1200
1000	410	1230	1160	1111	28-37	55×5	740	950	1450	1500
1100	450	1360	1270	1200	32-37	61×5	810	1050	1550	2100
1200	470	1470	1387	1304	32-37	63×5	860	1150	1650	2700
1350	530	1642	1552	1462	36-36	68×5	940	1230	1750	3000
1500	530	1800	1710	1620	36-38	74×5	1010	1340	1900	3600
1650	530	1950	1860	1770	40-48	74×5	1290	1400	2200	4570
1800	550	2115	2020	1960	44-48	76×5	1400	1650	2400	5800
2000	550	2325	2230	2170	48-48	78×5	1500	1900	2500	6620

• NOTE : 1. Valve flange rating is KS D 4309 standard, but other standard are available on request.

2. Valve lay-length of valve is the dimensions of AWWA C 504 standard, but other standard are available on request.

ACTUATOR DATA (GEAR BOX)

● GEAR BOX DATA



GEAR BOX MODEL	OUTPUT TORQUE (kg.cm)	GEAR BOX RATIO				
		WORM - 1 st .	WORM - 1 st .	SPUR - 2 nd .	WORM - 2 nd .	TOTAL
CPGM - 30	2,700	30 : 1	-	-	-	30 : 1
CPGM - 45	5,400	45 : 1	-	-	-	45 : 1
CPGM - 52	14,400	52 : 1	-	-	-	52 : 1
CPGM - 63	21,200	63 : 1	-	-	-	63 : 1
CPGM - 208	48,500	52 : 1	4 : 1	-	-	208 : 1
CPGM - 210	56,700	60 : 1	3.5 : 1	-	-	210 : 1
CPGM - 252	59,500	63 : 1	4 : 1	-	-	252 : 1
CPGM - 440	134,000	44 : 1	10 : 1	-	-	440 : 1
CPGM - 600	162,000	60 : 1	10 : 1	-	-	600 : 1
CPGM - 1760	950,000	44 : 1	10 : 1	4 : 1	-	1760 : 1
CPGM - 2288	1,483,000	44 : 1	-	-	52 : 1	2288 : 1
CPGM - 2400	2,000,000	60 : 1	10 : 1	4 : 1	-	2400 : 1
CPGM - 3120	2,800,000	60 : 1	-	-	52 : 1	3120 : 1

● BUTTERFLY VALVE ORIENTATION POS. (GEAR BOX & MOTOR ACTUATOR)

GEAR OPERATED BUTTERFLY VALVE POS.				MOTOR OPERATED BUTTERFLY VALVE POS.			
POS. G1	POS. G2	POS. G3	POS. G4	POS. M1	POS. M2	POS. M3	POS. M4
POS. G5	POS. G6	POS. G7	POS. G8	POS. M5	POS. M6	POS. M7	POS. M8
* "CEPHAS" STANDARD POSITION : G1				* "CEPHAS" STANDARD POSITION : M1			

◆ Water Works Valve Installation Procedure

- 1) Install the valve at the designed place, position and method.
- 2) Prepare sufficient room for valve operation after checking working condition and any obstacles in work place.
- 3) Check if the flow indicating arrow(→) of valve body is conforming to the pipe required direction and check the valve according to the pipe installation specification.
- 4) Detatch the protection cover of the valve flange and remove any foreign particles.
- 5) Clearing any dust and deposited outside debris of connection parts of the pipe.
- 6) Prepare more sufficient room when use the new pipeline.
- 7) Don't disassemble any parts of the valve like actuator or gear box. If the disassemble work of the valve parts is needed, please contact with our technical department.
- 8) - Preparing enough room for installation,
 - Leave a space between pipe flange,
 - Attaching the flange gasket,
 - Lifting the valve by the center of the valve,
 - Keeping the valve vertical,
 - Tightening the flange bolt as vertical and horizontal to flange.
- 9) Tightening the flange bolt regarding the below Fig.1.
 Tightening the bolt with adequate torque to prevent leakage.
- 10) After installation, check the leakage in the connection parts of flange and packing seal at the full open position and then check the same parts at the full close position.
- 11) If there is any leakage at the connection parts, please tighten the flange bolt with adequate torque. If there is leakage in the packing seal, tighten the gland bolt.
- 12) Should you have any kind of further questions, please kindly contact with our company.

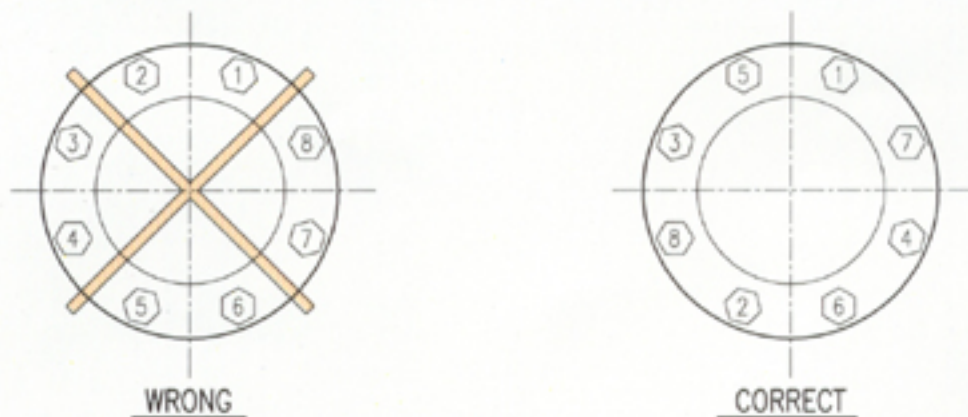


FIG.1

VALVE TECHNICAL DATA

◆ Data for calculation off low and or pressure drop.

$$K_v = C_v \times 0.85$$

$$\frac{m^3/n}{\sqrt{kg/cm^2}}$$

A valve coefficient C_v is used to calculate pressure drop through a particular valve for a given flow rate. The coefficient of flow C_v expresses the rate of flow in gallons per minute at 60°F water with a pressure drop of 1 psig. across the valve.

The C_v coefficients for the various types and sizes, shown in table, have been determined from calculations and actual flow tests.

FOR LIQUIDS

$$(1) Q = C_v \sqrt{\frac{\Delta P}{G_s}} \quad (2) \Delta P = G_s \left(\frac{Q}{C_v}\right)^2$$

WHERE: Q = Flow U.S. gallons per minute.
 $\Delta P = (P_1 - P_2)$ Pressure drop in psi
 G_s = Specific gravity of liquid/water = 1 at 60°F)

FOR GASES

$$(3) Q_s = 1360 C_v \sqrt{\frac{\Delta P}{G_s}} \cdot \sqrt{\frac{P_1 + P_2}{2}}$$

$$(4) \Delta P = P_1 - P_2 = \frac{2 G_s T}{1360 C_v} \left(\frac{Q_s}{\sqrt{P_1 + P_2}}\right)^2$$

WHERE: Q_s = Volumetric flow of gas(SCFH)
 G_s = Specific gravity of gas at standard conditions (air at atmosphere and 60°F = 1)
 T = Absolute temperature of gas (°F + 460)

FOR STEAM

$$(5) W = \frac{2.1}{1 + 0.0007T_s} C_v \sqrt{\Delta P (P_1 + P_2)}$$

$$(6) \Delta P = P_1 - P_2 = K^2$$

$$\text{WHERE: } K = \frac{1 + 0.0007T_s}{2.1 C_v} \cdot W$$

ANDW=Pounds Per hour of steam
 $\Delta P = (P_1 - P_2)$ Pressure drop in psi
 T_s = Degree of superheat(°F)

* NOTE : For saturated steam $T_s = 0$

* NOTE : For gas and steam max. $\Delta P = \frac{1}{2} P_1$ and min. $P_2 = \frac{1}{2} P_1$ and P_1, P_2 are absolute pressures(P.S.I.A)
 P_1 = Inlet pressure P_2 = Outlet pressure

◆ Operating Torque For Water - Works Butterfly Valve (unit : kg.m)

Press. Drop	Valve Size																												
	200	250	300	350	400	450	500	600	700	800	900	1000	1100	1200	1350	1500	1650	1800	2000	2200	2400	2500	2600	2800	3000				
3kg/cm ²	4.7	6.8	12.1	16.8	25.5	35.3	48.1	81	123	184	254	338	457	587	831	1198	1578	2025	2760	3622	4703	5311	5979	7455	9327				
5kg/cm ²	6.9	10.3	18.6	24.8	40.8	51.3	70.4	118	170	254	330	430	560	741	1010	1545	2029	2500	3670	4801	6291	7190	8187	1028	12660				
7kg/cm ²	9.8	14.9	26.7	35.8	59.1	74.5	102.1	171	247	358	475	616	830	1055	1426	2166	2852	3190	5098	6613	8604	9804	11900	13961	17274				
10kg/cm ²	12.7	19.4	34.8	46.9	77.4	97.8	130.8	225	323	480	620	807	1079	1370	1844	2827	3270	3675	6525	8425	10916	12425	14094	17094	21900				

◆ Cv Valve For Water - Works Butterfly Valve

Press. Drop	Valve Size																												
	200	250	300	350	400	450	500	600	700	800	900	1000	1100	1200	1350	1500	1650	1800	2000	2200	2400	2500	2600	2800	3000				
10"	90	145	208	260	370	468	578	860	1100	1480	1870	2310	2790	3300	4215	5204	6297	7484	9252	11194	13322	14458	15336	18133	20816				
20"	186	290	418	539	742	940	1191	1672	2275	2972	3761	4640	5618	6880	8842	10947	13641	16044	18573	22473	25745	29020	31089	36420	41789				
30"	280	438	630	806	1121	1418	1751	2322	3032	3880	4774	5814	7000	8436	10320	12706	15601	19071	22592	28019	32803	40380	43780	47320	54918				
40"	437	682	960	1238	1747	2211	2730	3601	4689	5989	7490	9200	11120	13350	16000	19170	22970	27500	33800	40670	48200	56500	62640	73816	85611				
50"	713	1114	1604	2183	2852	3609	4666	6195	8030	10100	12400	15000	17900	22000	27400	34200	42500	51400	61900	74200	88200	103800	120400	137200	160300				
60"	1156	1805	2599	3520	4620	5940	7219	9395	12004	15008	18389	22100	27100	33400	41100	50400	61300	73800	88000	104200	122500	142800	164300	187100	219000				
70"	1863	2911	4192	5705	7452	9401	11644	15167	19221	23907	29225	35274	42154	50000	58900	69800	83800	100000	118200	139500	162900	188400	216100	246100	281900				
80"	2892	4432	6339	8564	11140	14088	17398	22100	28200	34700	42700	52200	63300	76000	90400	106600	125600	147400	172000	200500	232000	266500	304000	344500	389000				
90"	3426	5260	7708	10491	13700	17340	21411	26932	33900	42400	52500	64200	77600	92800	110000	129200	150600	175200	203000	234200	268900	307200	348100	391600	438900				

◆ Pressure Conversion.

kg/cm ²	PSI	bar	Pa	atm	mH ₂ O	mHg	Lbf/in ²
1	14.22313	9.80665 × 10 ⁻¹	9.80665 × 10 ⁴	9.778 × 10 ⁻¹	1.0000 × 10	7.3556 × 10 ⁻¹	1.442 × 10
0.070308	1	6.89486 × 10 ⁻²	6.89486 × 10 ³	0.0689 × 10 ⁻¹	7.0308 × 10 ⁻¹	5.1719 × 10 ⁻¹	1.01384
1.01972	14.5036	1	1.0 × 10 ⁵	9.869 × 10 ⁻²	1.0197 × 10	7.501 × 10 ⁻¹	1.450 × 10
1.0197 × 10 ⁻¹	1.49036 × 10 ⁻¹	1.0 × 10 ⁻¹	1	9.869 × 10 ⁻²	1.0197 × 10 ⁻¹	7.501 × 10 ⁻¹	1.450 × 10 ⁻¹
1.0332	1.49032 × 10	1.03325	1.03325 × 10 ⁵	1	1.033 × 10	7.60 × 10 ⁻¹	1.470 × 10
1.3595	1.93362 × 10	1.3332	1.3332 × 10 ⁵	1.3158	1.036 × 10	1	1.904 × 10
7.031 × 10 ²	1.00003 × 10 ⁷	6.895 × 10 ²	6.895 × 10 ⁷	6.895 × 10 ²	7.31 × 10 ²	5.171 × 10 ²	1

◆ Torque Conversion.

N.m	kg-cm	Lb-ft	Lb-in	OZ-in
1	10.20	0.738	8.851	141.5
0.086	1	0.072	0.868	13.89
1.356	13.86	1	12	192
0.113	1.152	0.083	1	16
0.007	0.072	0.005	0.0625	1