

Aqua Tech

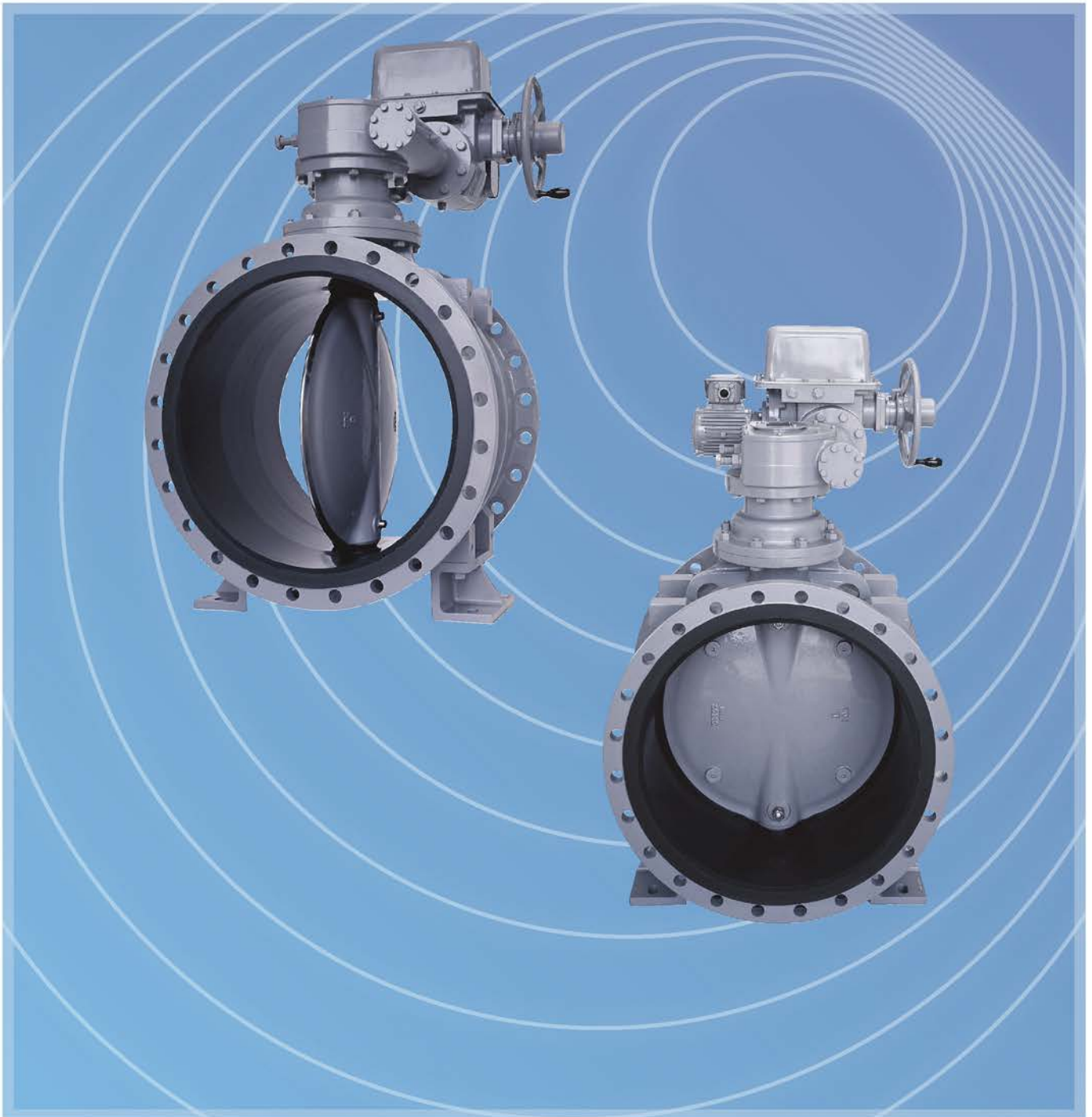


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NO. 11e

Butterfly Valves

Type MBV



Maezawa Industries, Inc.

Designed For Broader Range of Applications

MAEZAWA Industries has been a pioneer of valve products for a long period of time which leads the growth of waterworks and sewerage works market in Japan. MAEZAWA has been trusted by many users with its reliable products and technology. Namely, our butterfly valves are used for many applications in various regions for its easy manipulation, tight shut-off feature and robustness. The butterfly valves are available ranging from DIA 100mm to 3,000mm for both vertical and horizontal models with and without motor actuator. We will continue improving our technology to provide customers with more efficient and reliable butterfly valves.



Specification

Standard Specification

Nominal Size	100mm - 2200mm			
Fluid	Potable water, industrial water, Sewage and river water			
Operating Pressure	DN100 - DN1500	Type1(0.45MPa) / Type 2 (0.75MPa) /Type 3 (1.0MPa)		
	DN1600 - and over	Type1 / Type 2		
Flange dimension	DN100 - DN150	Conforming to JIS G 5527(0.75MPa / 1.0MPa)		
	DN200 - DN1500	Conforming to JWWA B 138 (0.45MPa / 0.75MPa / 1.0MPa)		
	DN1600 - and over	Conforming to JIS G 5527(0.75MPa) or JWWA B 121(0.45MPa /0.75MPa)		
Overall length	DN100 - DN150	Conforming to JIS B 2062		
	DN200 - DN1500	Conforming to JWWA B 138		
	DN1600 - and over	Conforming to JWWA B 121		
Type of Orientation	Vertical and Horizontal			
Installation Mount dimension	DN100 - DN200	No mount by default		
	DN600 - DN1500	Conforming to JWWA B 138		
	Other size	Conforming to Maezawa Standard		
Shell Test		Type1 (0.45MPa)	Type2 (0.75MPa)	Type3 (1.0MPa)
	DN100 - DN350	1.40	1.75	2.30
	DN400 - DN1500	1.05	1.40	2.10
Seat Leakage Test	DN100 - DN1500	0.45	0.75	1.00

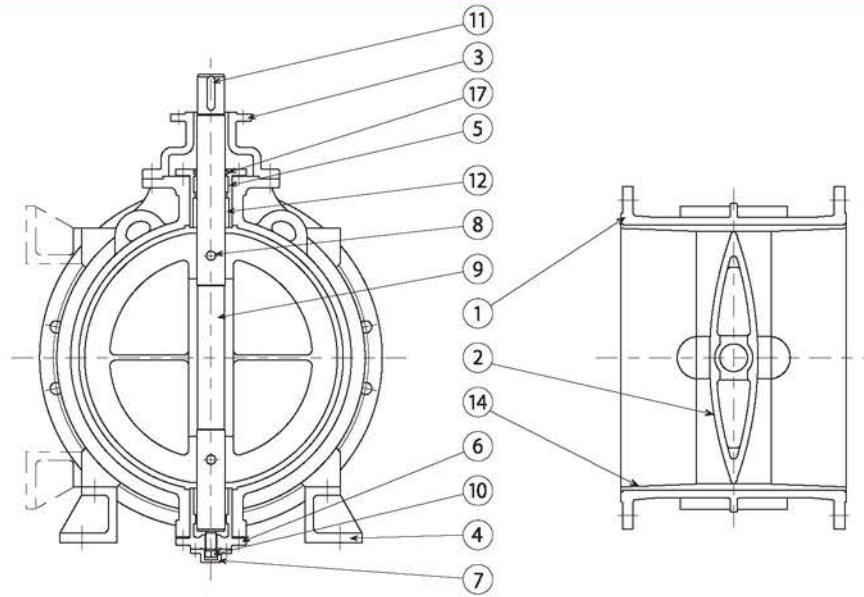
* Test pressure for DN1600mm and over will be decided upon request.

Standard Materials

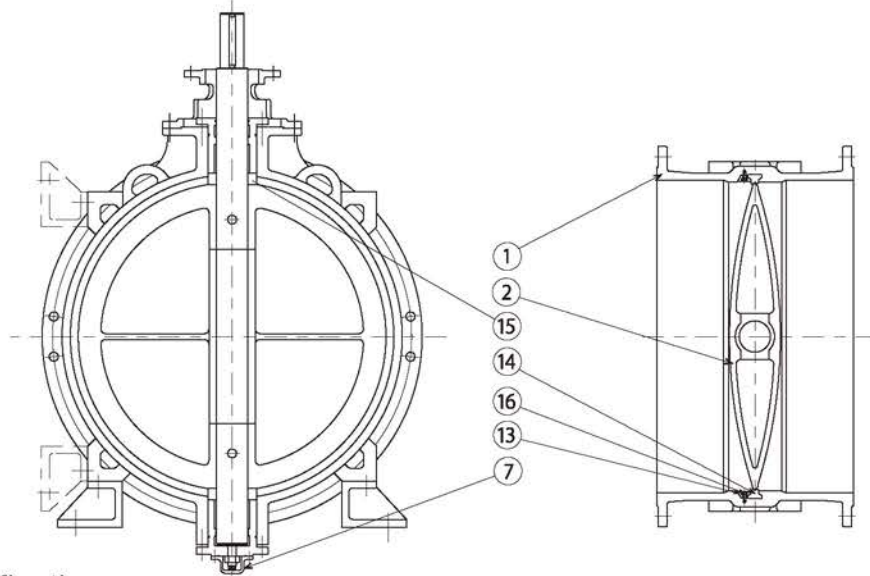
Material		DN100 - DN150	DN1600 - and over
	Body		FCD450-10(ASTM 65-45-12)
Disc		FCD450-10	FC250
Stem		SUS403(ASTM S 40300)	
Seat on Body		Synthetic rubber	

Component Drawing

DN 100mm - 1200mm



DN 1350mm - 2200mm



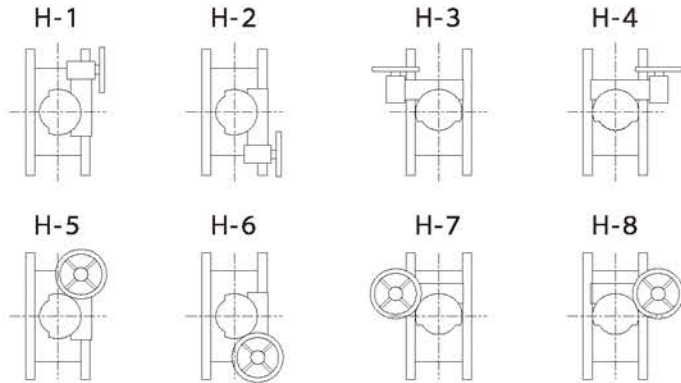
Material Specifications

Item NO.	Parts Name	Material	
		DN100mm-DN1200mm	DN1350mm-DN2200mm
1	Body	FCD450-10	FC250
2	Disc(Hard chrome plating at the edge)	FCD450-10	FC250
3	Actuator mount	FC250	
4	Installation mount	FC250	
5	Upper bearing holder	FC250	
6	Lower bearing holder	FC250	
7	Cover	FCD450-10	FC250
8	Reamer bolt / nut	SUS420J2 / SUS304	
9	Stem	SUS403	
10	Bearing	SUS403	
11	Key	S45C	
12	Bearing	Oilless	
13	Rubber gland	N / A	SCS13
14	Rubber seat	Synthetic rubber	
15	Seal ring	N / A	CAC406 / Rubber
16	Gland bolt	N / A	SUS304
17	O-ring	Synthetic rubber	

Control and Accessories

1. Manual Handwheel

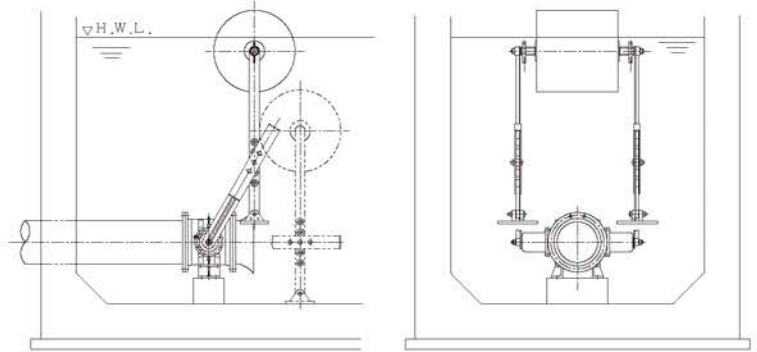
The handwheel is available for mounting positions shown down below.
(Only H-1, H-3, H-5 and H-7 are available for DN300mm and below)



3. Float Actuator System

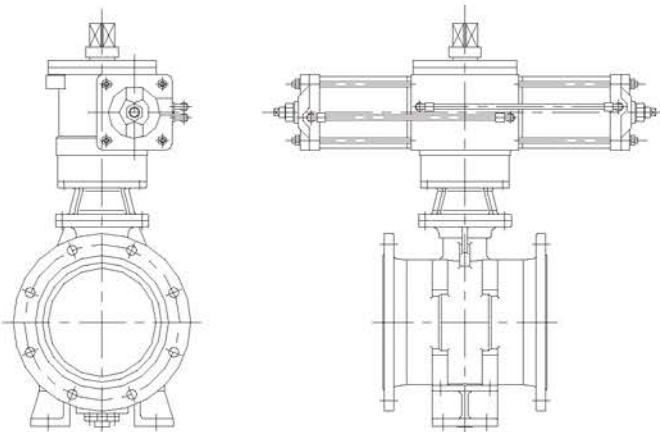
An optional drum float system can be connected directly with the butterfly valve and placed in a tank.

The float will control the valve opening with the water level movement. It is a simple reliable system without maintenance.



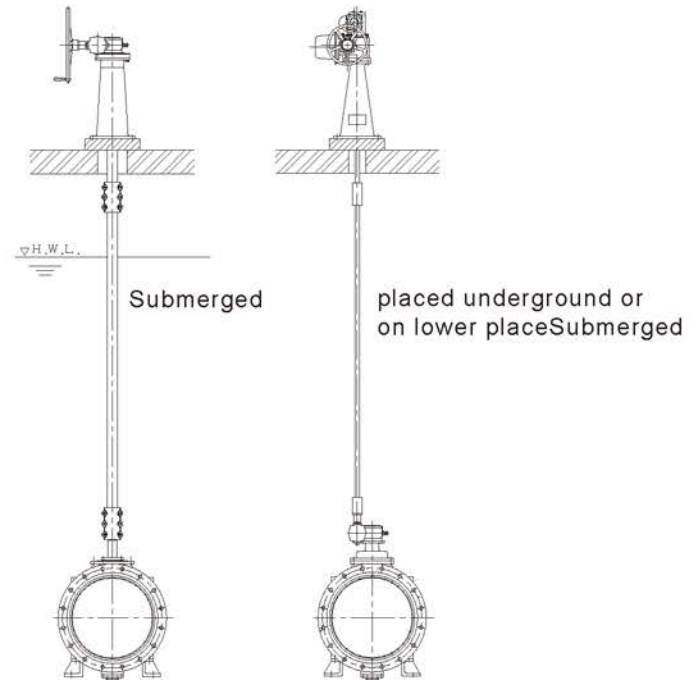
2. Cylinder Control

Pneumatic & Hydraulic cylinders are available for flow control, rapid shut & open sequence and emergency shut-off control.

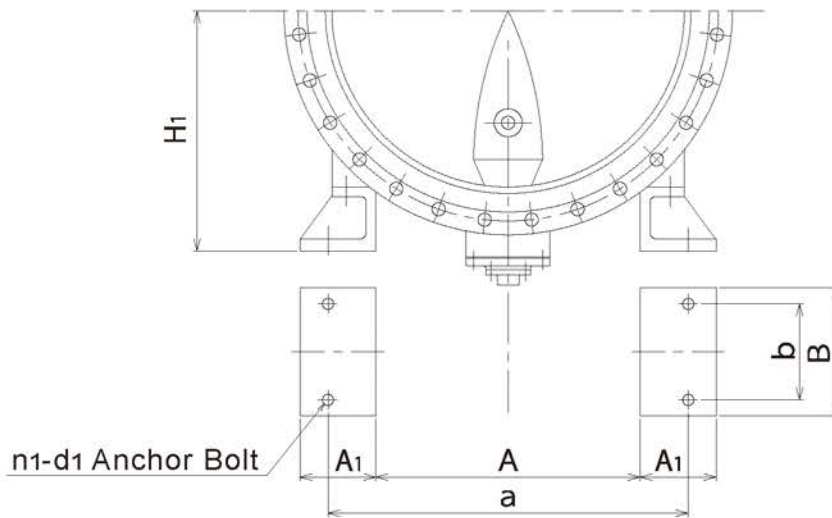


4. Extension stem and Headstock

Extension stem and headstock is available for controlling the butterfly valve installed underground or in a valve box from the ground surface or from the top of pipe gallery. It is also recommended for submerged butterfly valves.



Installation Mount



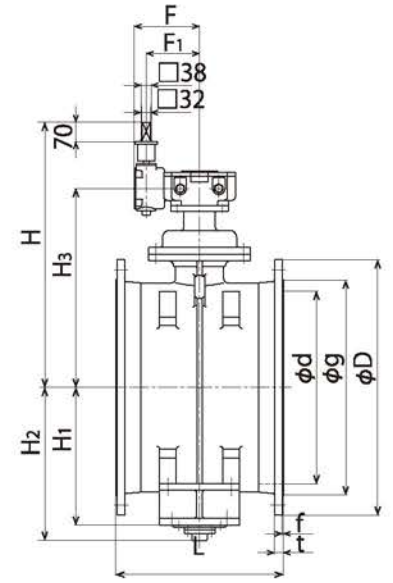
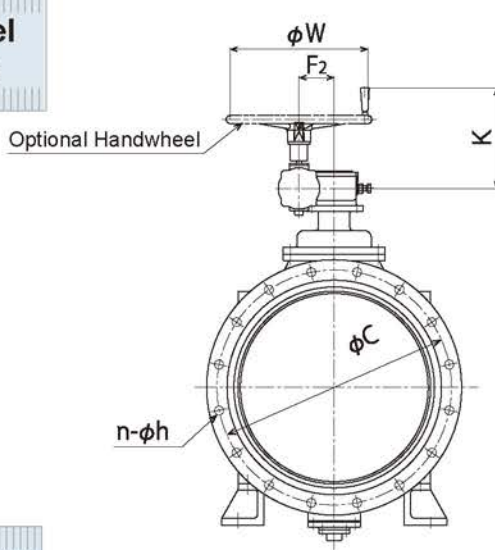
Dimension (for both Vertical and Horizontal models)

Unit:mm

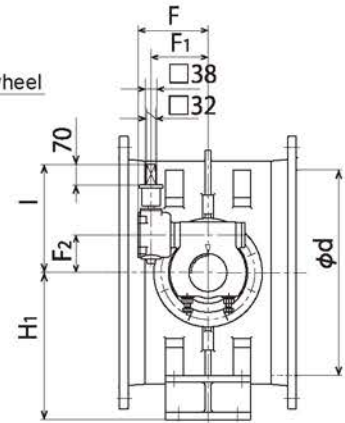
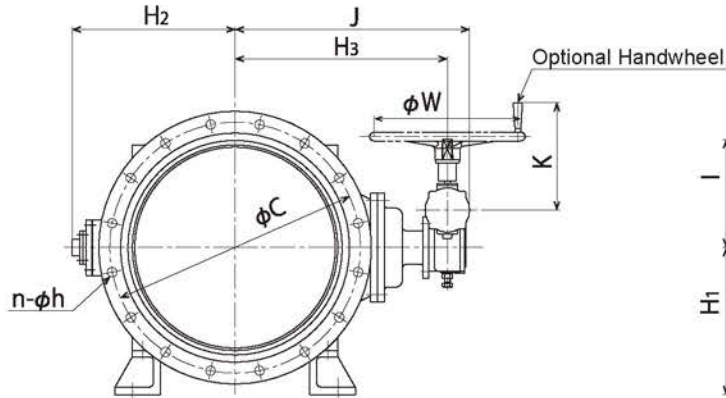
Symbol Size(d)	n1	d1	A	A1	a	B	b	H1
250	4	M16	150	90	250	150	100	240
300			210	100	300	180		270
350		M20	240	100	350	180	120	300
400			290	110	400		210	140
450			340	110	450	240	150	375
500			350	135	500		160	400
600			450	135	600	240	180	450
700			510	155	700	290	200	500
800			610	155	800		230	550
900			M24	660	190	900	320	240
1000		760		190	1000	250		650
1100		780		230	1100	340	260	700
1200		880		230	1200		270	750
1350		M30	950	280	1350	400	280	825
1500			1100		1500		300	900
1600			1170	330	1600	430	310	940
1650	1650				975			
1800	1320	400	1800	550	330	1050		
2000	1360		2000		400	1150		
2200	1560	400	2200	550	420	1250		

Manual Actuator Type DN100-1000

Vertical Model MBV Series



Horizontal Model MBH Series



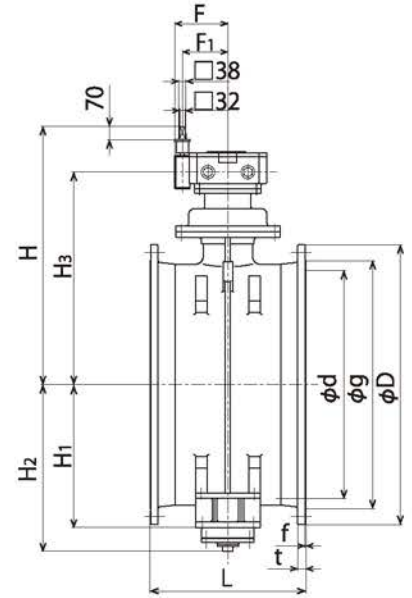
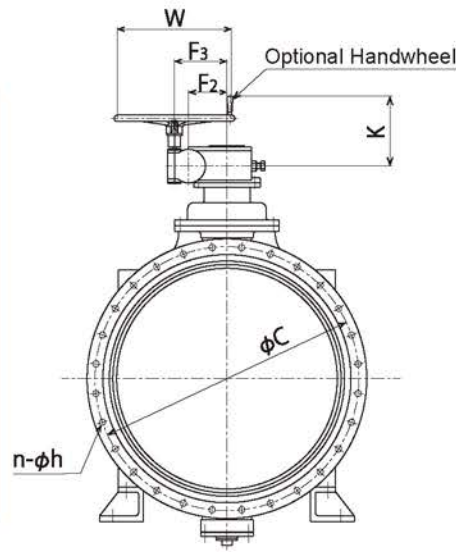
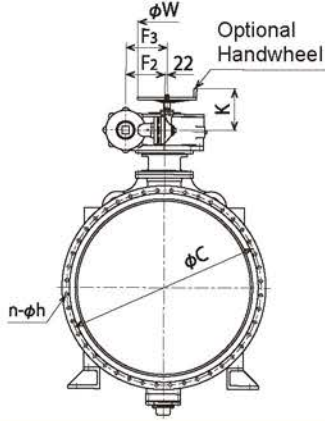
Unit:mm

Symbol	g	C	D	L	t	f	n	h	H	H1	H2	H3	F	F1	F2	I	J	K	W	
100	Type1,2	152	195	238	250	22	3	4	19	525	-	135	305	166	120	62	282	360	340	300
	Type3	151	175	210			2	8												
150	Type1,2	204	247	290	280	24	3	6	19	555	-	177	335	166	120	62	282	390	340	300
	Type3	212	240	280			2	8	23											
200	Type1,2	256	299	342	300	24	3	8	19	585	-	210	365	166	120	62	282	420	340	300
	Type3	262	290	330			2	12	23											
250	Type1,2	308	360	410	380	25	3	8	23	590		242	370	166	120	62	282	425	340	300
	Type3	324	355	400			2	12	25											
300	Type1,2	362	414	464	400	27	4	10	23	595	270	290	375	166	120	62	282	430	340	300
	Type3	368	400	445			3	16	25	611			391	182	142	93	313	446		
350	Type1,2	414	47	530	430	28	4	10	25	671	300	320	451	182	142	93	313	506	340	300
	Type3	413	445	490			3	16												
400	Type1,2	466	524	582	470	29	4	12	25	696	350	359	476	182	142	93	313	531	340	300
	Type3	475	510	560			3	16	27	706			486	208	164	109	329	544		
450	Type1	518	585	652	500	30	4	12	27	731	375	394	511	182	142	93	313	566	340	300
	Type2									741										
	Type3									521										
500	Type1,2	572	639	706	530	31	4	12	27	791	400	424	571	208	164	109	329	629	345	400
	Type3	585	620	675			3	20												
600	Type1,2	676	743	810	560	32	4	16	27	851	450	484	631	208	164	109	329	689	345	400
	Type3	690	730	795			3	24	33	883			643	238	194	128	368	719	365	
700	Type1,2	780	854	928	610	33	4	16	33	963	500	555	723	238	194	128	368	799	365	500
	Type3	800	840	905			3	24	33	1014			730	284	229	164	448	857	409	
800	Type1	886	960	1034	690	36	5	20	33	1028	550	620	780	238	194	128	368	864	365	500
	Type2									1079			795	284	29	164	448	92	409	
	Type3									905			950	1020	3	28				
900	Type1,2	990	1073	1156	740	38	5	20	33	1169	600	685	885	284	229	164	448	1012	411	600
1000	Type1	1096	1179	1262	770	39	5	4	33	1234	650	750	950	284	229	164	448	1077	411	600

Manual Actuator Type DN900-2200

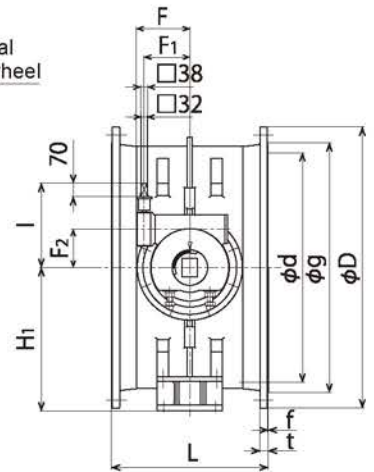
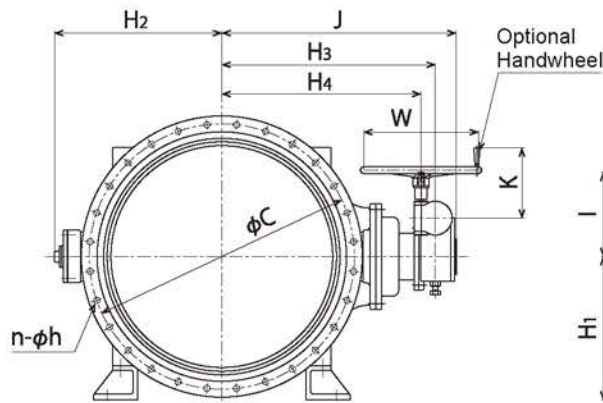
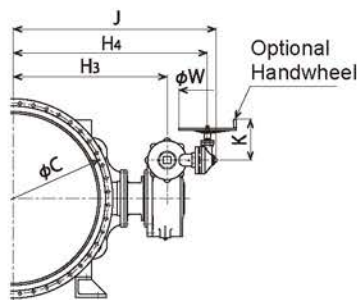
Vertical Model MBV Series

φ1800mm Type2,Type3



Horizontal Model MBH Series

φ1800mm Type2,Type3

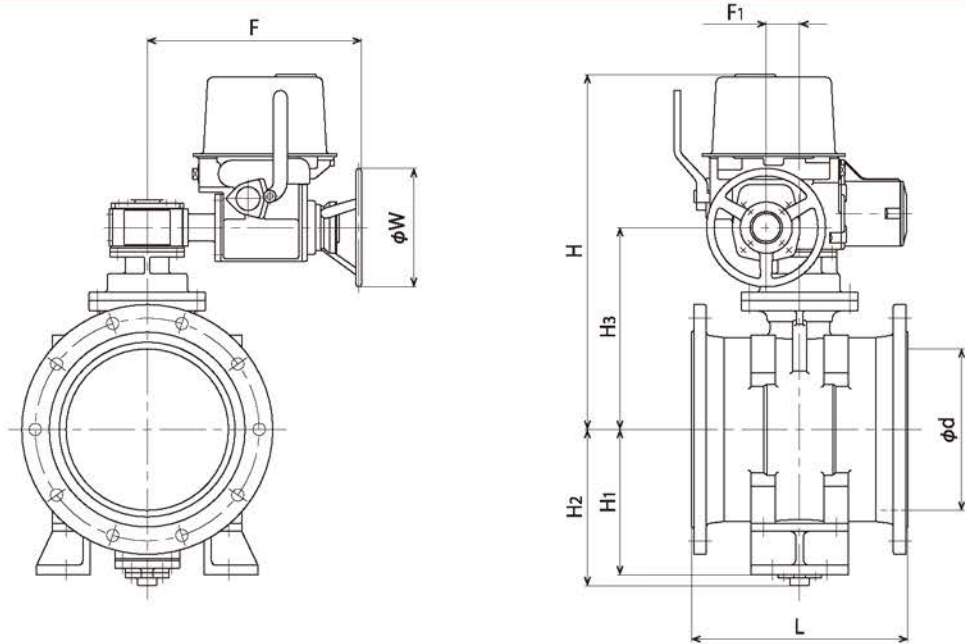


Unit:mm

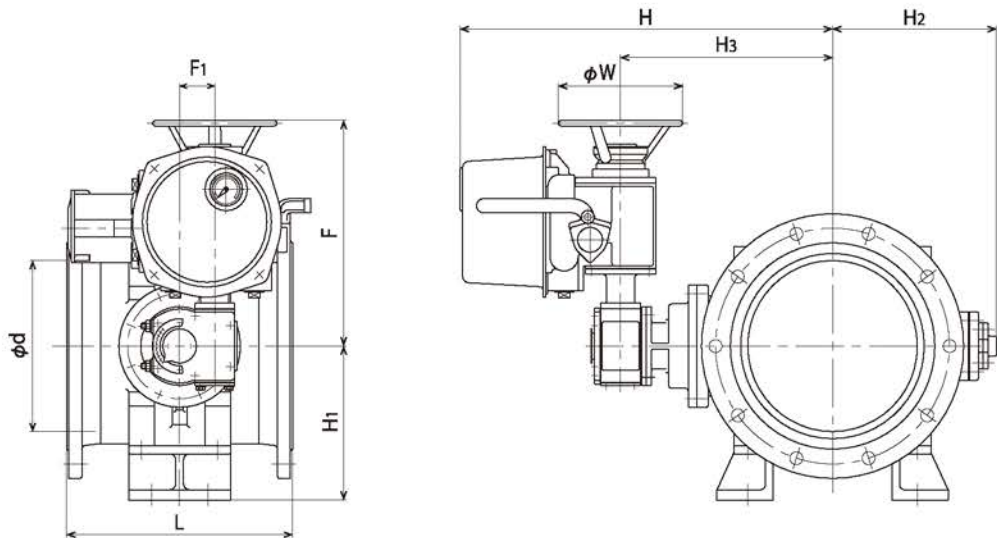
Size(d)	Symbol	g	C	D	L	t	f	n	h	H	H1	H2	H3	H4	F	F1	F2	F3	I	J	K	W			
900	Type3	1005	1050	1120	740	38	3	28	33	1142	600	685	902	827	280	239	201	276	441	1011	367	600			
1000	Type2	1096	1179	1262	770	39	5	24	33	1207	650	750	967	892	280	239	201	276	441	1076	367	600			
	Type3	1110	1160	1235		40	3	28	39																
1100	Type1,2	1200	1283	1366	800	41	5	24	33	1292	700	810	1052	977	280	239	201	276	441	1161	367	367			
	Type3	1220	1270	1345		42	3	28	39	1425			1120	1010	457	365	260	370	565	1281					
1200	Type1,2	1304	1387	1470	820	43	5	28	33	1357	750	875	1117	1042	280	39	201	276	441	1226	367	600			
	Type3	1325	1380	1465		44	3	32	39	1739			1245	-	692	554	330	-	1480	1480	561	610			
1350	Type1	1462	1552	1642	850	46	6	28	39	1811	825	1023	1317	-	629	491	248	-	742	1552	561	610			
	Type2									1859			1365						692	554			330	824	1600
	Type3									1480			1540						1630	48			3	36	46
1500	Type1	1620	1710	1800	900	48	6	32	39	1896	900	1130	1402	-	629	491	248	-	742	1637	561	610			
	Type2									1944			1450						692	554			330	824	1685
	Type3									1635			1700						1795	50			3	40	46
1600	Type1,2	1760	1820	1915	900	52	5	36	39	1999	940	1187	1505	-	692	554	330	-	824	1740	561	610			
1650	Type1,2	1810	1870	1965	900	53	5	40	39	2054	975	1242	1560	-	692	554	330	-	824	1795	561	610			
1800	Type1	1960	2020	2115	900	55	5	44	39	2134	1050	1322	1640	-	692	554	330	-	824	1875	561	610			
	Type2									2002			1634						2062	791			646	406	428
2000	Type1,2	2170	2230	2325	900	59	5	48	46	2152	1150	1472	1784	2212	791	646	406	428	774	2304	435	610			
2200	Type1,2	2370	2240	2550	900	64	6	52	46	2267	1250	1587	1899	2327	791	646	406	428	774	2419	435	610			

Electric Actuator Type DN100-800

Vertical Model MBV-E Series



Horizontal Model MBH-E Series



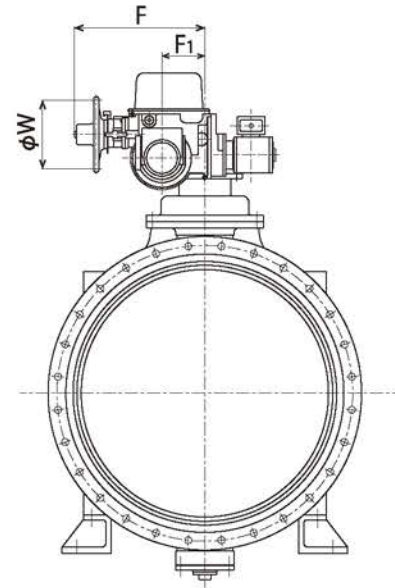
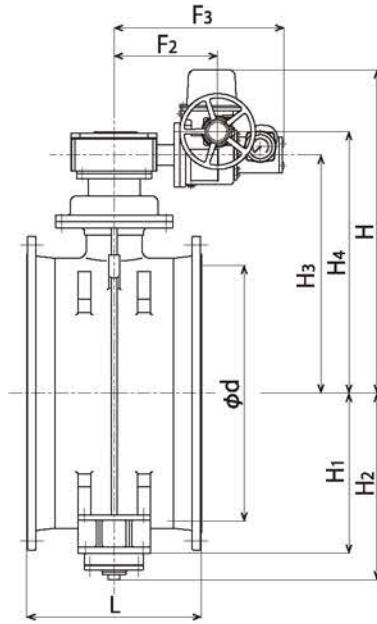
Unit:mm

Size(d)	Symbol	L	H1	H2	H3	F1	Electric Controller(LTRH-KD)			Electric Controller(JMB)		
							H	F	W	H	F	W
100	Type1,2,3	250	-	135	305	62	589	396	220	588	383	200
150	Type1,2,3	280	-	177	335	62	619	396	220	618	383	200
200	Type1,2,3	300	-	210	365	62	649	396	220	648	383	200
250	Type1,2,3	380	240	242	370	62	654	396	220	653	383	200
300	Type1,2	400	270	290	375	62	659	396	220	658	383	200
	Type3				391	93	675	403		674	390	
350	Type1,2,3	430	300	320	451	93	735	403	220	734	390	200
400	Type1,2	470	350	359	476	93	760	403	220	759	390	200
	Type3				486	109	770	430		769	417	
450	Type1	500	375	394	511	93	795	403	220	794	390	200
	Type2				805	430	824	474		508		
	Type3				814	512	460					
500	Type1	530	400	424	571	109	855	430	220	874	474	508
	Type2,3						864	512	460			
600	Type1,2	560	450	484	631	109	924	512	460	934	474	508
	Type3				643	128	971	588		-	-	-
700	Type1	610	500	555	723	128	1051	588	460	1026	514	508
	Type2									-	-	-
800	Type1	690	550	620	788	128	1116	588	460	-	-	-

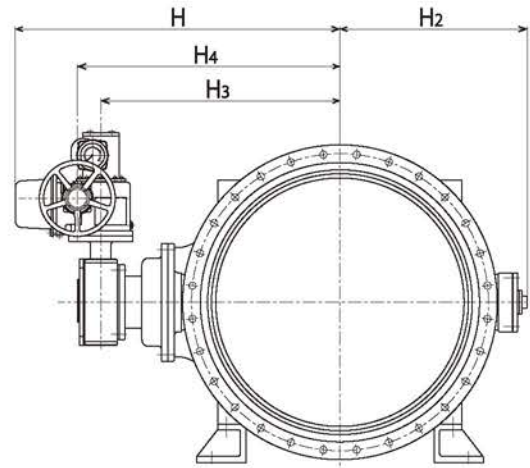
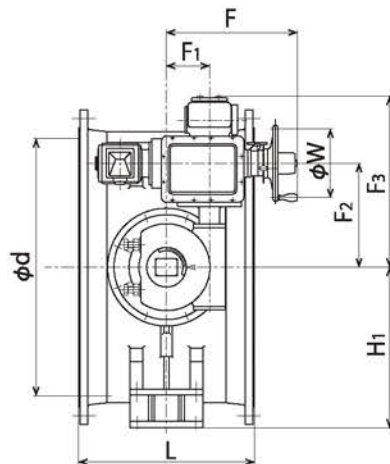
Note: Refer to manual actuator table for flange dimensions

Electric Actuator Type DN600-1200

Vertical Model MBV-E Series



Horizontal Model MBH-E Series



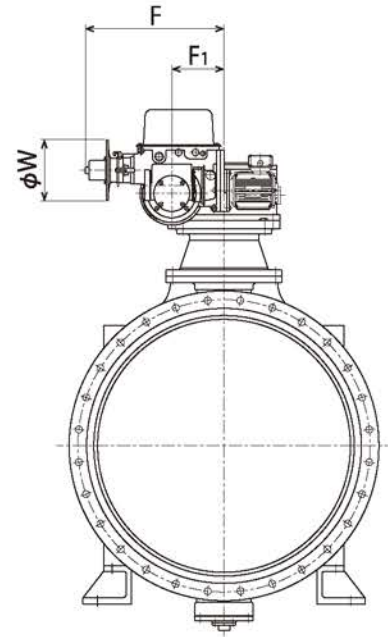
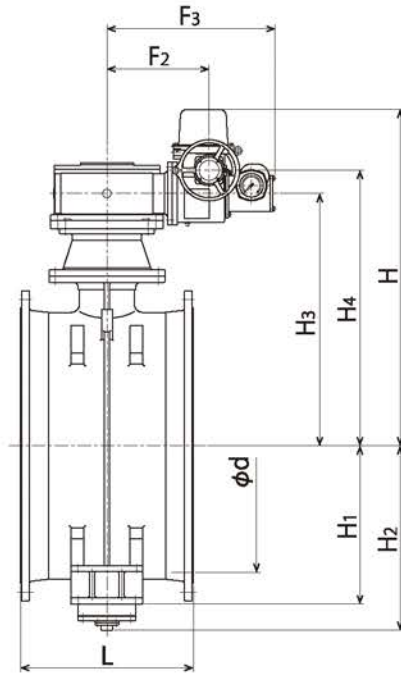
Unit:mm

Size(d)	Symbol	L	H1	H2	H3	F1	Electric Controller(LTRH-KD)						Electric Controller(JMB)					
							H	H4	F	F2	F3	W	H	H4	F	F2	F3	W
600	Type3	560	450	484	643	128	-	-	-	-	-	-	958	703	482	291	477	235
700	Type2	610	500	555	723	128	-	-	-	-	-	-	1038	783	482	291	477	235
	Type3				730	164	1089	814	524	395	677	320	1126	806	571	364	660	308
800	Type1	690	550	620	788	128	-	-	-	-	-	-	1103	848	482	291	477	235
	Type2,3				795	164	1154	879	524	395	677	320	1191	871	571	364	660	308
900	Type1	740	600	685	885	164	1244	969	524	395	677	320	1281	961	571	364	660	308
	Type2				1284	995	574	430	743	1298	978		608	419	715			
	Type3				902	201	1301	1012	611	485	798		1346	1026	571	364	660	
1000	Type1	770	650	750	950	164	1349	1060	574	430	743	320	1363	1043	608	419	715	308
	Type2				967	201	1366	1077	611	485	798		1389	1059	609	426	722	
	Type3				1448	1128	608	419	715									
1100	Type1	800	700	810	1052	201	1451	1162	611	485	798	320	1474	1144	609	426	722	308
	Type2												1474	1144	609	426	722	
	Type3												1474	1144	609	426	722	
1200	Type1,2	820	750	875	1117	201	1516	1227	611	485	798	320	1539	1209	609	426	722	308

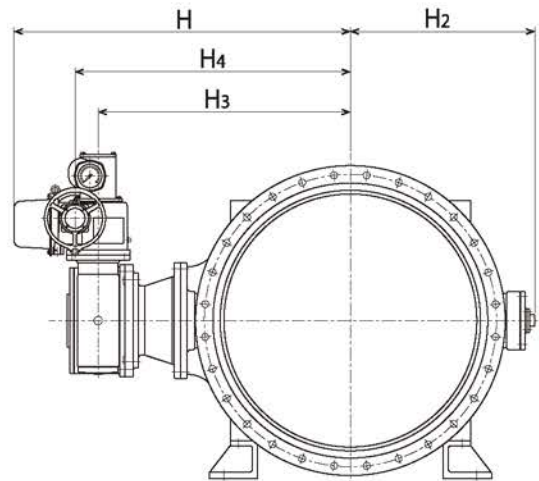
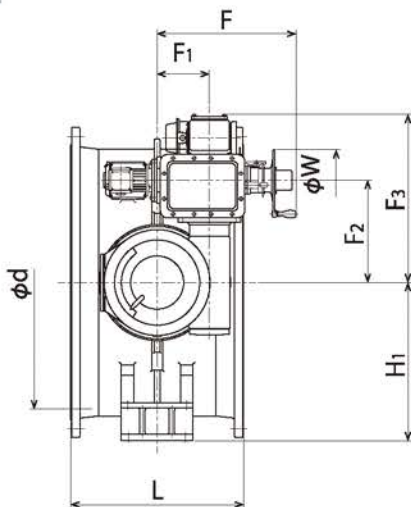
Note: Refer to manual actuator table for flange dimensions

Electric Actuator Type DN1200-2200

Vertical Model MBV-E Series



Horizontal Model MBH-E Series



Unit:mm

Size(d)	Symbol	L	H1	H2	H3	F1	Electric Controller(LTRH-KD)					Electric Controller(JMB)							
							H	H4	F	F2	F3	W	H	H4	F	F2	F3	W	
1200	Type3	820	750	875	1245	330	1693	1396	785	584	927	400	1694	1356	794	490	791	308	
1350	Type1	850	825	1023	1317	248	1716	1427	659	485	798	320	1766	1428	712	427	728	308	
	Type2				1365	330	1813	1516	785	584	927	400	1814	1476	794	490	791		
	Type3				1402	248	1801	1512	659	485	798	320	1851	1513	712	427	728		
1500	Type1	900	900	1130	1450	330	1898	1601	785	584	927	400	1899	1561	794	490	791	308	
	Type2				1444	406	1923	1702	1050	718	1139	400	1958	1596	949	608	935		460
	Type3				1444	406	1923	1702	1050	718	1139	400	1958	1596	949	608	935		460
1600	Type1,2	900	940	1187	1505	330	1953	1656	785	584	927	400	1954	1616	794	490	791	308	
1650	Type1	900	975	1242	1560	330	2008	1711	785	584	927	400	2009	1671	794	490	791	308	
	Type2												2074	1712	873	516	843	460	
1800	Type1	900	1050	1322	1640	330	2088	1791	785	584	927	400	2089	1751	794	490	791	308	
	Type2				1634	406	2113	1892	1050	718	1139	400	2148	1786	949	608	935	460	
2000	Type1,2	900	1150	1472	1784	406	2263	2042	1050	718	1139	400	2298	1936	949	608	935	460	
2200	Type1,2	900	1250	1587	1899	406	2378	2157	1050	718	1139	400	2413	2181	1138	608	935	460	

Note: Refer to manual actuator table for flange dimensions

Handwheel Lock-to-Lock Turns

Unit:Turns

Pressure Size(d)	Type1 0.45MP	Type2 0.75MP	Type3 1.0MPa
100	9	9	9
150	9	9	9
200	9	9	9
250	9	9	9
300	9	9	15
350	15	15	15
400	15	15	22.5
450	15	22.5	22.5
500	22.5	22.5	22.5
600	22.5	22.5	30
700	30	30	60
800	30	60	60

Unit:Turns

Pressure Size(d)	Type1 0.45MP	Type2 0.75MP	Type3 1.0MPa
900	60	60	230
1000	60	230	230
1100	230	230	230
1200	230	230	450
1350	450	450	450
1500	450	450	450
1600	225	225	262.5
1650	225	225	262.5
1800	225	262.5	262.5
2000	262.5	337	337
2200	337	337	337

Electric Controller

Standard Specification

Electric Motor

3-phase AC Induction Motor (Dust-proof Jet Type)
4P , Rating: 15min ,Class E insulation, No brake

Limit Switch

Counter type Cam Switch

Torque Switch

Micro Switch

Interlock Switch

Micro Switch

Heater

Internal heating device

Valve Position Indicator

270 degrees wide indicator

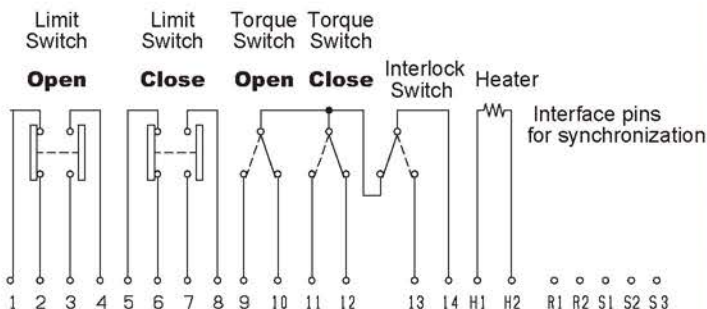
Switch lever

For switching manual / electric

Position Telemeter

Optional

Standard Pin Assignment for manual return (Reference)

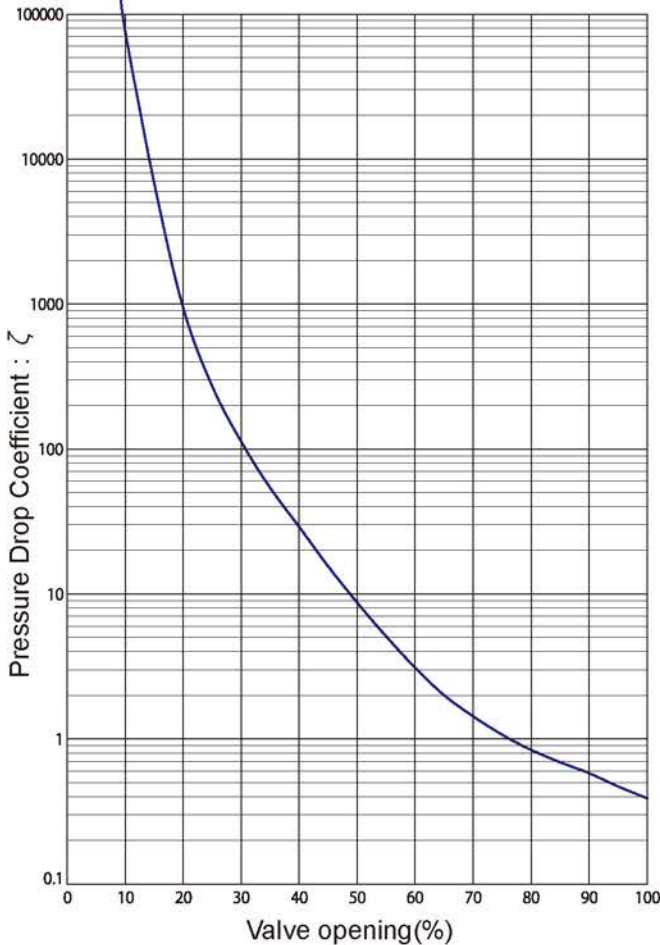


1 and 2	both off to OFF
4 and 3	both on to ON
5 and 6	both off to OFF
7 and 8	both on to ON
9 and 14	over torque to open direction : ON
10 and 14	over torque to open direction or by manual : ON
11 and 14	over torque to close direction : OFF
12 and 14	over torque to close direction or by manual : OFF
13 and 14	manual operation : OFF
H1,H2	heater pins
R1,R2,S1,S2,S3	interface for synchronization

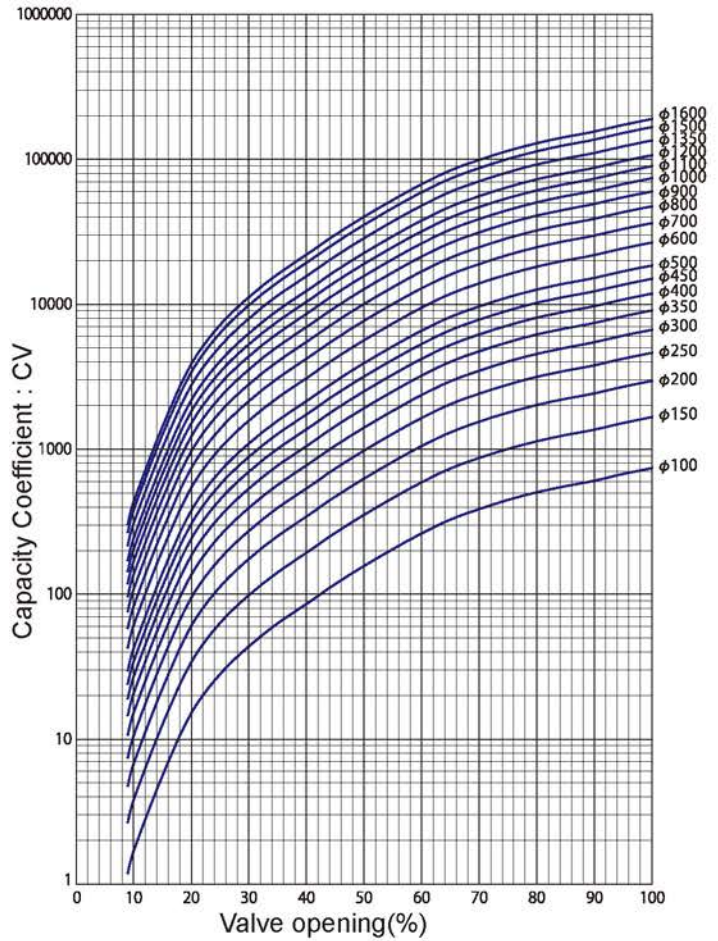
* make sure the interlock circuit should not keep the motor ON at manual operation

Control Characteristic Equation

Pressure Drop Coefficient of waterworks Butterfly valve



Capacity Coefficient of waterworks Butterfly valve



1. The water head loss of waterworks Butterfly valve

$$\Delta H = \zeta \frac{V^2}{2g}$$

where,

- ΔH : Head loss(m)
- ζ : Loss coefficient
- V : Average flow speed in valve(m/s)
- g : Gravity(m/s²)

2. The capacity coefficient of waterworks Butterfly valve

$$Cv = 0.365Q \sqrt{\frac{1}{\Delta P}} \quad Cv = 46200 \frac{D^2}{\sqrt{\zeta}}$$

where,

- Cv : Capacity coefficient
- Q : Flow volume(m³/h)
- ΔP : Pressure loss(m)
- D : Nominal diameter(m)

Cv is calculated by loss coefficient

Please prepare following instructions when ordering

- 1 Nominal Size
- 2 Quantity
- 3 Maximum operation pressure
nominal pressure, test pressure
- 4 Media
- 5 Operation temperature
- 6 Opening direction
- 7 Flange type
- 8 Actuator type*(Manual or Electric)
- 9 Paint color
- 10 Delivery date
- 11 Special instruction

*Detail instruction for Electric actuator

- 1) Special order for motor
- 2) Output power / Voltage / Number of poles
Frequency / Instlator type, Rating
- 3) Designated manufacturer of motor controller
- 4) Opening / Closing speed instruction
- 5) Special order for divided circle
- 6) Position telemeter / tele-control
- 7) Control console

Any information in this document is subject to change without notice.



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