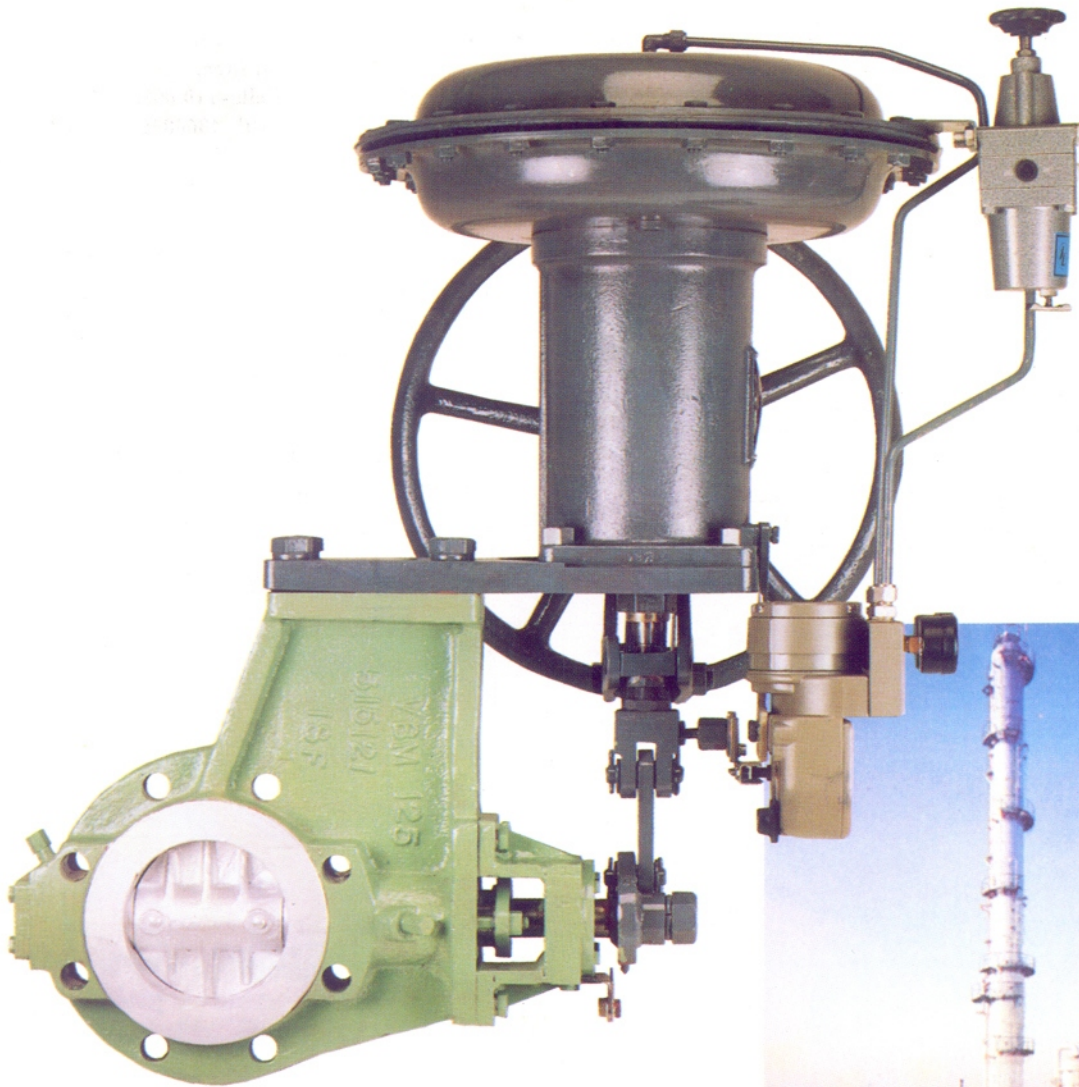




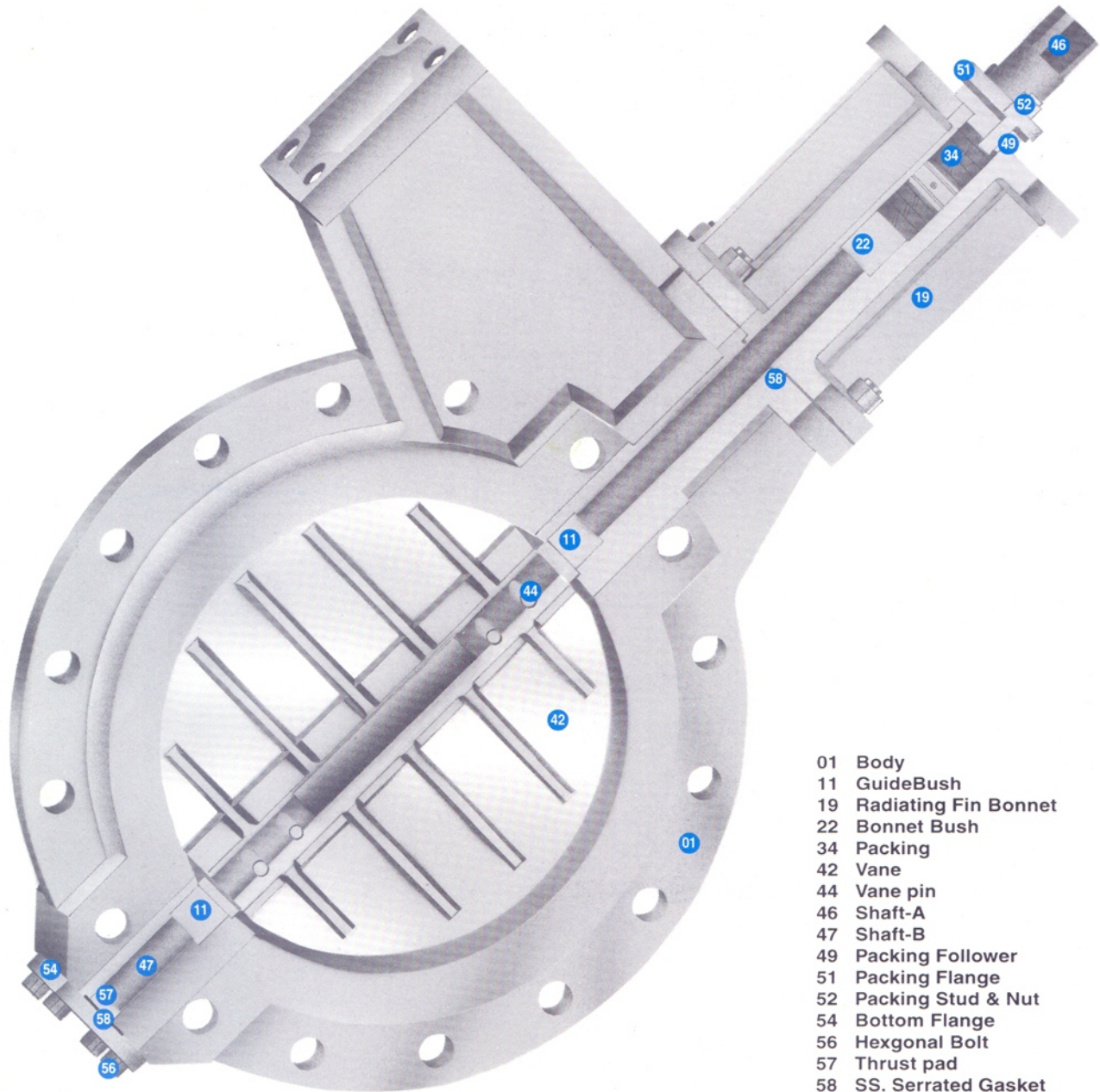
**INSTRUMENTATION LTD.,
PALAKKAD**



V B W

**CLEARANCE TYPE
BUTTERFLY VALVES**

CLEARANCE TYPE BUTTERFLY VALVE ASSEMBLY (VBW)





CLEARANCE TYPE BUTTERFLY VALVES (VBW)

These valves are used for control applications where low leakage is permitted and are suitable for use in high temperature low pressure services. The vanes are of concentric design with definite clearance between body and vane to accommodate thermal expansions in different temperature zones. These are best suited for large flow with low differential pressure applications. VBW models are categorised into two, VBW Cast Wafer type and VBW Wafer Fabricated type.

VBW CAST WAFER

80-900mm size

These general purpose valves are suitable for regulating services especially in high temp. gas lines upto 800°C. Valve body is wafer type with drilled/tapped holes for various international flange standards. Available with different material and actuator combinations, these valves are widely used in steel plants in furnace gas application etc. These wafer type valves with smaller face-to-face dimensions can be easily fitted into the pipe line at site. Radiating finned bonnets are used for above 200°C for the protection of gland packings. Available with foot mounted electrical actuators & linkages or directly mounted electrical/pneumatic actuators, these valves are extensively used for remote operation. Many a times these valves are used as coupled valves for proportionate control of furnace gas air mixture for blast furnaces using single actuator and linkages. Detailed specifications are given in Table I

■ SALIENT FEATURES

* Simple construction * Smaller installation space required * Self lubricating packing * Lesser weight with excellent cost advantages * Higher temperature usage upto 800°C * Easy handling

VBW WAFER FABRICATED

500-1500mm size

These light constructed valves are best suited for high temp. large flow applications with lesser pressure drop across. Actuated with manual gear boxes/electrical motors/pneumatic actuators, these valves are widely used in air and gas lines in many industries. Radiating finned bonnets are used for temperatures above 200°C for protection of gland packing. Fabricated construction is available in both carbon steel and stainless steel material. Being of light weight construction these valves are very cost effective and require only smaller size actuators. Detailed specifications are given in Table I

■ SALIENT FEATURES

* Simple construction * Available with all international flange standards * Can be manufactured with any face to face dimensions as per the customer's requirement * Self lubricating packing * Light weight and good economy * Easy handling * Higher temperature usage upto 800°C.



I. SPECIFICATIONS

Table 1

Valve Type		CLEARANCE TYPE BUTTERFLY VALVES	
Valve Model	VBW WAFER	VBW WAFER FAB	
Valve Sizes	80-900 mm	500-1500 mm*	
End connection	Wafer	Wafer**	
Construction	Cast	Fabricated	
Flange Standard	ANSI 150,AWWA C 207 Cl.D	AWWA C 207 Cl.B (Std) Available with any flange standard	
Max. working Pressure	5.25 Kg/cm ² (75 PSI Rating) 10.5 Kg/cm ² (150 PSI Rating)	1 Kg/cm ²	
Working temp. range	0 to 800°C	0 to 800°C	
Hydro test pressure	10.5, 21 KG/cm ² (75,150 PSI)	2 KG/cm ²	
Inherent Rangeability	20:1	20:1	
Cv	Refer Table 2		
Control mode	Regulating 60°(90° Optional)		
Flow Characteristics	Inherent Butterfly valve Characteristics Refer Sec V		
Max. Differential Pressure	Refer Sec VI for selection of actuators		
Leakage Class	Refer table 3		
Standard materials	Body	Carbon steel (A 216 WCB)	Carbon steel IS 2062/IS 2002 Gr. 2A
	Vane	Carbon steel (A 216 WCB)	Carbon Steel IS 2062/IS 2002 Gr. 2A
	Shaft	SS, A 479 TYPE 304, 316	SS, A 479 TYPE 304, 316
	Bush	Leaded tin bronze (upto 200°C)	Leaded tin bronze (upto 200°C)
	Packing	V-7132Y (upto 200°C)	V-7132Y (upto 200°C)
Options	Body	Stainless steel A-351 CF8, CF8M	Stainless steel A 240 TYPE 304, 316
	Vane	Stainless steel A 351 CF8, CF8M	Stainless steel A 240 TYPE 304, 316
	Shaft	SS, A 479 Type 304, 316 Stellite (>200°C) SS, A 479 TYPE 410 (up to 400°C)	SS, A 479 304, 316 Stellite (>200°C) SS, A 479 TYPE 410 (up to 400°C)
	Bush	SS 304, 316 Stellite (>200°C)	SS 304, 316 Stellite (>200°C)
	RF Bonnet (>200°C only)	Carbon steel (up to 400°C) Stainless steel (up to 800°C)	Carbon steel (upto 400°C) Stainless steel (up to 800°C)
	Packing	Graphoil (>200°C)	Graphoil (>200°C)
Actuators	Standard	Manual lever Manual gear box Motorized gear box Spring diaphragm Pneumatic cylinder	Manual gear box Motorized gear box Pneumatic cylinder Spring diaphragm
	Options	Rotary pneumatic cyl	Rotary Pneumatic cyl.
Accessories	Pneumatic act	Pneumatic positioner, Electro pneumatic positioner, I/P converter, Air filter regulators, Air lock relay, Electronic position transmitter, Limit switches, Volume boosters, Back up system (for Double acting type actuator) side mounted hand wheel etc (top mounted optional for diaphragm actuators)	
	Electrical act	Positioner, Position Transmitters (4-20 mA/POT), Limit switches, Torque switches etc.	

* Higher sizes upto 2000 mm available on demand ** Flanged version is also available on demand, for Overall dimensions refer to IL Palakkad.



II. FLOW COEFFICIENT Cv

Table 2

VBW CAST WAFER TYPE VALVES															
Size (mm)	80	100	125	150	200	250	300	350	400	450	500	550	600	650	700
Cv (60° Opening)	153	272	425	612	1088	1700	2448	3332	4352	5508	6800	8228	9792	11492	13328
Cv (90° Opening)	243	432	675	972	1728	2700	3888	5292	6912	8748	10800	13068	15552	18252	21168
Size (mm)	750	800	900												
Cv (60° Opening)	15300	17408	22032												
Cv (90° Opening)	24300	27648	34992												
VBW FABRICATED WAFER TYPE VALVES															
Size (mm)	500	550	600	650	700	750	800	850	900	950	1000	1050	1100		
Cv (60° Opening)	12000	14520	17280	20280	23520	27000	30720	34680	38880	43320	48000	52920	58080		
Cv (90° Opening)	17600	21296	25344	29744	34496	39600	45056	50864	57024	63536	70400	77616	85184		
Size (mm)	1200	1300	1400	1500											
Cv (60° Opening)	69120	81120	94080	108000											
Cv (90° Opening)	101376	118976	137984	158400											

III. LEAKAGE CLASS

Table 3

VBW CAST WAFER TYPE VALVES														
Size (mm)	80	100	125	150	200	250	300	350	400	450	500	550	600	650
Leakage (% CV [60°])	4.80	3.80	3.10	2.70	2.10	1.80	1.70	1.60	1.50	1.40	1.35	1.30	1.30	1.28
Size (mm)	700	750	800	900										
Leakage (% CV [60°])	1.27	1.25	1.24	1.20										
VBW FABRICATED WAFER TYPE VALVES														
Size (mm)	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	
Leakage (% CV [60°])	1.35	1.30	1.30	1.28	1.27	1.25	1.24	1.22	1.20	1.50	1.95	1.92	1.92	
Size (mm)	1200	1300	1400	1500										
Leakage (% CV [60°])	1.83	1.83	1.83	1.83										

IV. OPERATING TIME OF VALVES WITH ELECTRICAL ACTUATOR

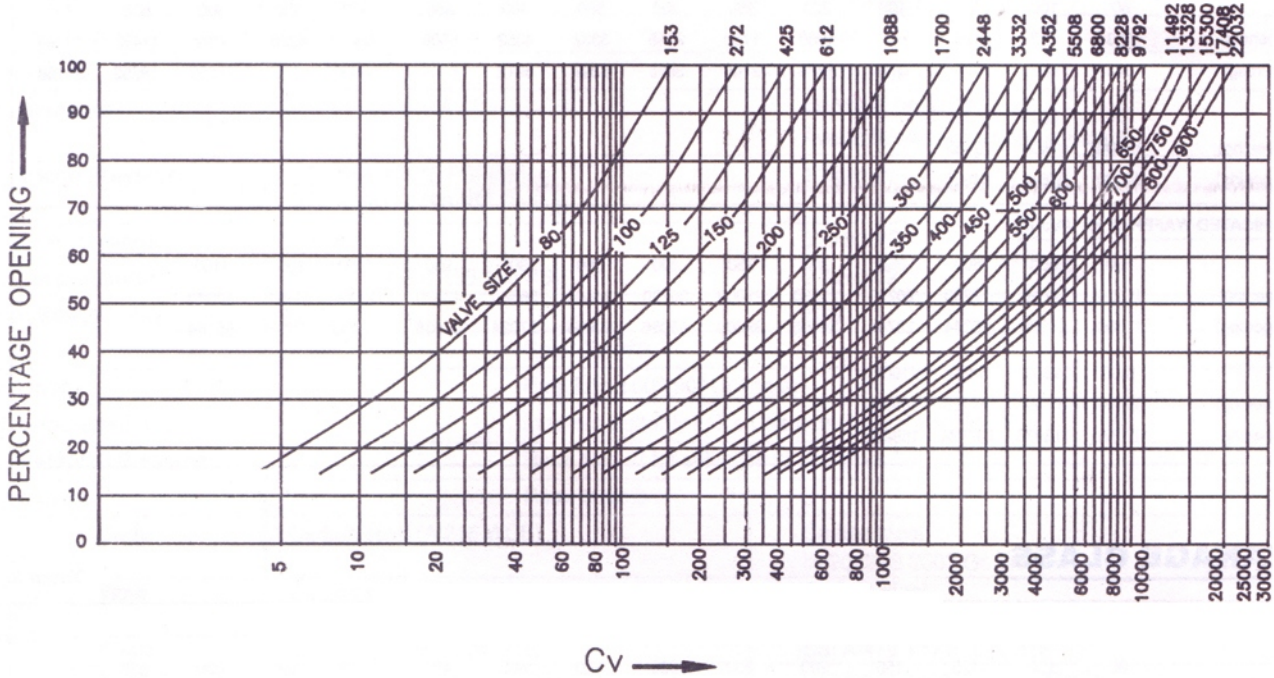
Table 4

ACTUATOR MODEL	TIME SECS (60° OPN)	TIME SECS (90° OPN)
AS 50 (0.5 RPM)	20	30
BS 100 (0.5, 0.25 RPM)	20, 40	30, 60
B (45, 22, 5, 13.5 RPM) + RS 200	13.3, 26.7, 44	20, 40, 66
B (45, 22.5, 13.5 RPM) + RS 400	18, 35.3, 59.3	27, 53, 89
B (45, 22.5, 13.5 RPM) + RS 1200 WG	63.3, 127, 211

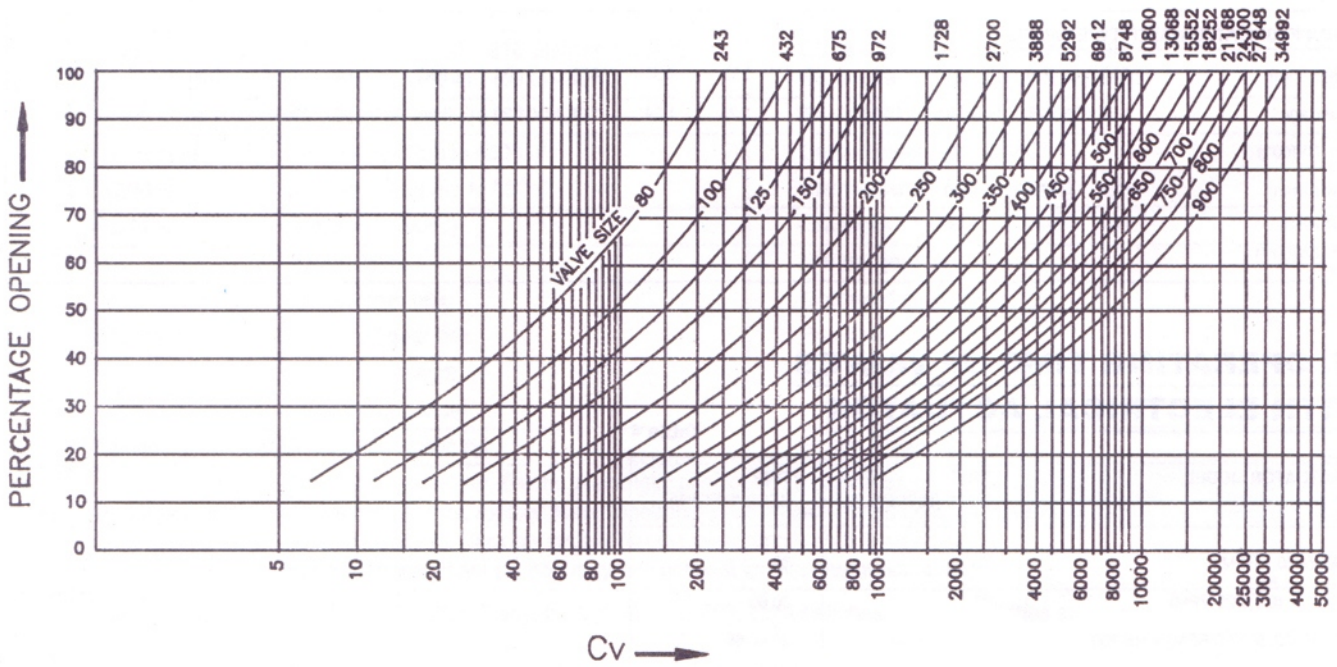


V. FLOW CHARACTERISTICS

V.1. For 60° Operation (Regulating Service) VBW Wafer



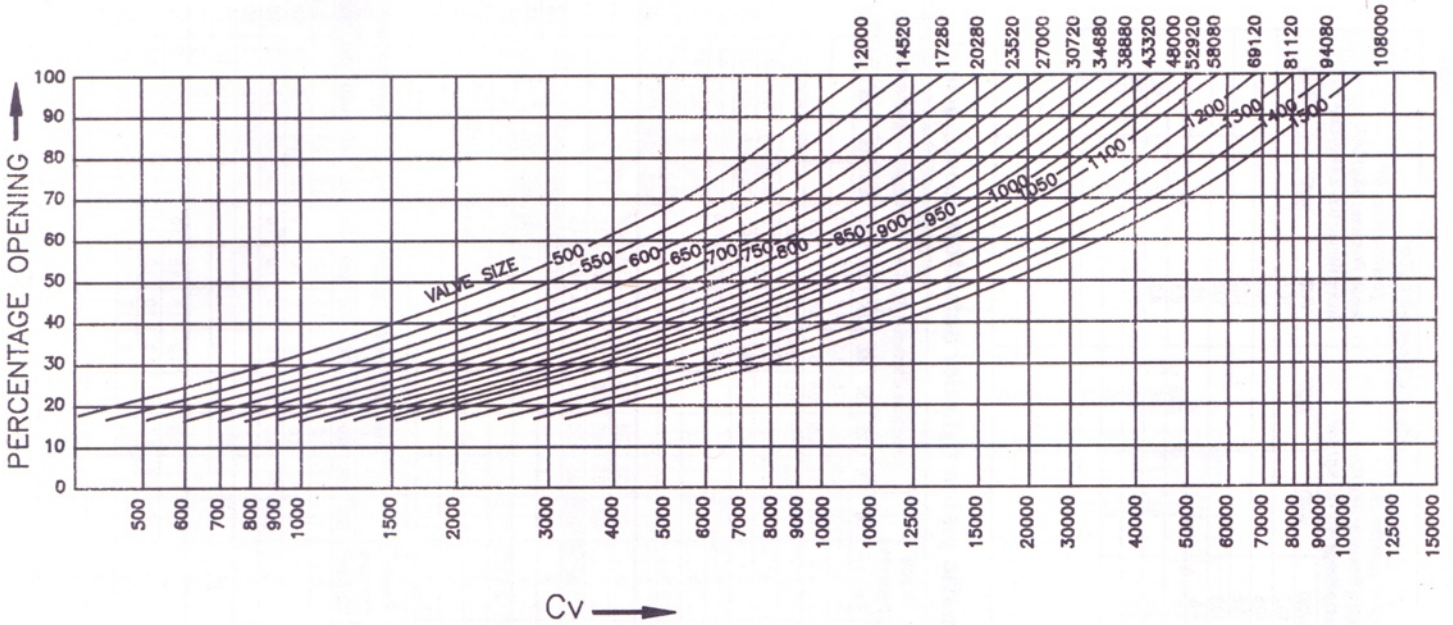
V.2. For 90° Operation VBW Wafer



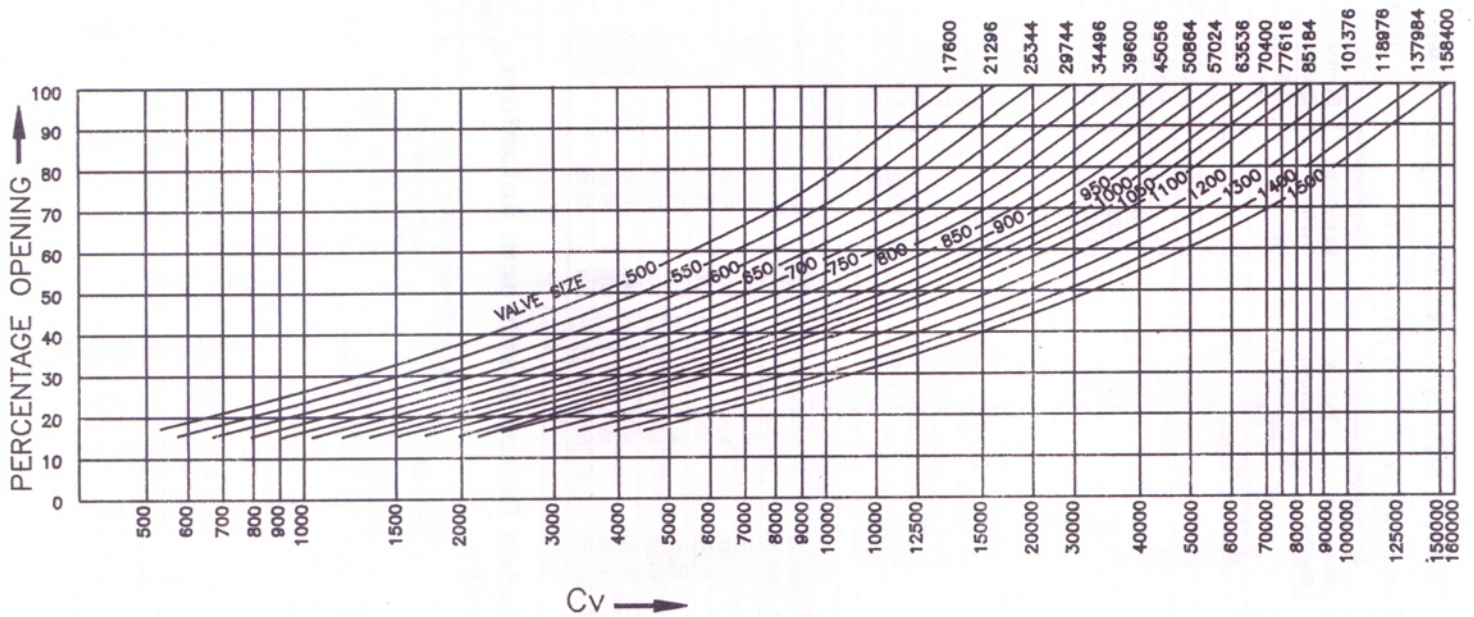


V. FLOW CHARACTERISTICS

V.3. For 60° Operation (Regulating Service) VBW Wafer Fabricated



V.4. For 90° Operation VBW Wafer Fabricated



VI. MAXIMUM PRESSURE DIFFERENTIAL

VI. 1. Manual/Electrical Actuator

Table 5

Size (mm)	Shut off pressure 5.25 Kg / Cm ²		Shut off pressure 10.5 Kg / Cm ²	
	Manual Lever / Gear Box	Electrical Operated	Manual Lever / Gear Box	Electrical Operated
80	ML	AS 50	ML	AS 50
100	ML	AS 50	ML	AS 50
125	ML	AS 50	ML	AS 50
150	ML	AS 50	ML	AS 50
200	ML	AS 50	ML	AS 50
250	ML	AS 50	ML	AS 50
300	RS 200	AS 50	RS 200	BS 100
350	RS 200	AS 50	RS 200	BS 100
400	RS 200	AS 50	RS 200	BS 100
450	RS 200	BS 100	RS 200	B+RS 200
500	RS 200	BS 100	RS 200	B+RS 200
550	RS 200	BS 100	RS 200	B+RS 400
600	RS 200	B+RS 200	RS 200	B+RS 400
650	RS 200	B+RS 200	RS 200	B+RS 400
700	RS 200	B+RS 200	RS 400	B+RS 400
750	RS 200	B+RS 200	RS 400	B+RS 400
800	RS 400	B+RS 400	RS 1200 WG	B+RS 1200 WG
900	RS 400*	B+RS 400	RS 1200 WG	B+RS 1200 WG

WAFER TYPE

Size (mm)	Shut off pressure 1 Kg / Cm ²		Shut off pressure 1 Kg / Cm ²	
	Manual Gear Box	Electrical Act. + Gear Box	Manual Gear Box	Electrical Act. + Gear Box
500	RS 200	AS 50	RS 200	AS 50
550	RS 200	AS 50	RS 200	AS 50
600	RS 200	AS 50	RS 200	BS 100
650	RS 200	AS 50	RS 200	BS 100
700	RS 200	AS 50	RS 200	BS 100
750	RS 200	AS 50	RS 200	BS 100
800	RS 200	AS 50	RS 200	BS 100
850	RS 200	AS 50	RS 200	BS 100
900	RS 200	AS 50	RS 200	BS 100

FAB, WAFER TYPE

VI. 2. Spring Return Diaphragm Actuators (Single Acting)

Table 6

Size (mm)	Differential Pressure in Kg/Cm ²			
	Angle of operation : 90° Supply Pressure : 3 Kg / Cm ² Spring Range : 0.8 - 2.4 Kg / Cm ²		Angle of operation : 60° Supply Pressure : 3 Kg / Cm ² Spring Range : 0.8 - 2.4 Kg / Cm ²	
	VA3D	VA4D	VA5D	VA5D
500	1.0	1.0	1.0	1.0
550	1.0	1.0	1.0	1.0
600	1.0	1.0	1.0	1.0
650	0.8	1.0	1.0	1.0
700	0.7	1.0	1.0	1.0
750	0.6	1.0	1.0	1.0
800	0.5	0.9	0.9	1.0
850	0.8	0.8	0.8	1.0
900	0.7	0.7	0.7	1.0
950	0.6	0.6	0.6	1.0
1000	0.5	0.5	0.5	1.0
1050	0.4	0.4	0.4	0.8
1100	0.4	0.4	0.4	0.8
1200	0.3	0.3	0.3	0.5

FAB WAFER TYPE

*MANUAL LEVER

Table 7

Size (mm)	Differential Pressure in Kg/Cm ²				
	Angle of operation : 90° Supply Pressure : 3 Kg / Cm ² Spring Range : 0.8 - 2.4 Kg / Cm ²		Angle of operation : 60° Supply Pressure : 3 Kg / Cm ² Spring Range : 0.8 - 2.4 Kg / Cm ²		
	VA3D	VA4D	VA5D	VA3D	VA4D
80	10.5	10.5	10.5	10.5	10.5
100	10.5	10.5	10.5	10.5	10.5
125	10.5	10.5	10.5	10.5	10.5
150	10.5	10.5	10.5	10.5	10.5
200	5.6	10.5	9.8	9.8	9.8
250	3.6	7.9	10.5	6.3	10.5
300	2.5	5.5	9.6	4.3	9.5
350	1.3	3.0	5.3	2.4	5.2
400		2.3	4.0	4.0	7.3
450		1.8	3.2	3.1	5.8
500		1.3	2.3	2.2	4.2
550		1.1	1.9	1.5	3.4
600			1.6	1.0	2.9
650			0.9		1.7

WAFER TYPE

VI. 3. Pneumatic piston cylinder actuators (Double acting)

Table 8

Actuator Model	Supply Pressure Kg / cm ²	Pressure differential (Kg / Cm ²) at Corresponding valve size (mm)																	
		80	100	125	150	200	250	300	350	400	450	500	550	600	650	700	750	800	900
PC44LT	3	10.5	10.5	10.5	10.5	6.5	4.2	2.9	1.6										
	4	10.5	10.5	10.5	10.5	8.7	5.6	3.9	2.1										
PC68LT	5	10.5	10.5	10.5	10.5	10.5	7.0	4.8	2.8										
	3					10.5	10.5	10.5	7.3	5.5	4.4	3.1	2.6	2.2					
PC816LT	4					10.5	10.5	10.5	9.7	7.4	5.9	4.2	3.5	2.9					
	5					10.5	10.5	10.5	10.5	9.3	7.3	5.3	4.4	3.7	2.1	1.8			
PC44LT	3									10.5	10.5	10.5	9.3	7.5	4.6	3.9	3.4	3.0	
	4									10.5	10.5	10.5	10.5	6.1	5.3	4.3	4.0	2.4	
PC68LT	5									10.5	10.5	10.5	10.5	7.6	6.6	5.9	5.5	3.0	
	3																		
PC816LT	4																		
	5																		

FOR 90° OPERATION

WAFER TYPE

FOR 60° OPERATION

FAB WAFER TYPE

Actuator Model	Supply Pressure Kg / cm ²	Pressure differential (Kg / Cm ²) at Corresponding valve size (mm)																	
		500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1200	1300	1400	1500	
PC68LT	3	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9								
	4	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.8	0.8					
PC816LT	5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	3																		
PC68LT	4	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.8		
	5																		
PC816LT	3																		
	4																		





VII. OVERALL DIMENSIONS

VII.1. Wafer Type Butterfly Valves VII. 1.1 Wafer Type Valve Assembly.

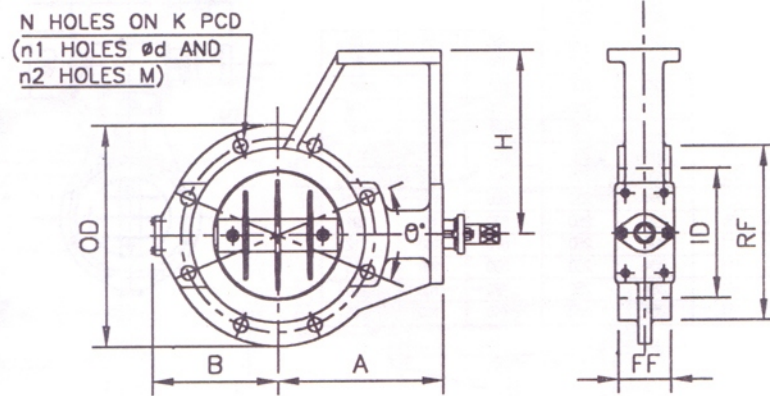


Table 9

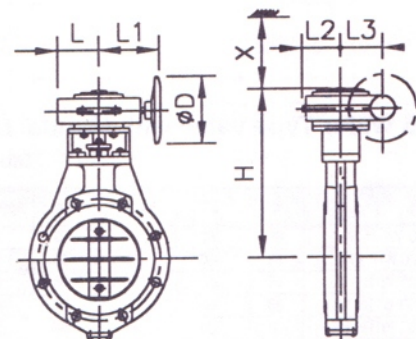
Size (mm)	B	A	FF	H	ID	OD	RF	K	N	n 1	φ d	n 2	M	Appx. Wt.
VBW 80	125	170	48	225	80	192.5	127	152.5	4	4	19	--	--	30
VBW 100	150	190	80	250	100	229	157	190.5	8	8	19	--	--	45
VBW 125	155	205	80	250	125	254	186	216	8	8	22	--	--	50
VBW 150	170	200	80	250	150	279	216	241.5	8	8	22	--	--	55
VBW 200	200	255	80	285	200	343	270	298.5	8	8	22	--	--	74
VBW 250	240	250	90	285	250	406	324	362	12	12	26	--	--	88
VBW 300	270	315	90	285	300	483	381	432	12	12	29	--	--	110
VBW 350	305	350	100	350	335	533	403	476	12	12	29	--	--	130
VBW 400	345	420	100	380	385	597	470	540	16	16	29	--	--	171
VBW 450	365	380	100	350	430	635	533	578	16	16	32	--	--	175
VBW 500	400	470	110	350	480	699	584	635	20	20	32	--	--	219
VBW 550	430	490	110	350	525	750	640	692	20	20	36	--	--	244
VBW 600	475	570	150	380	580	813	685	750	20	16	36	4	M33X3	420
VBW 650	510	627	150	435	625	870	711	807	24	20	36	4	M33X3	491
VBW 700	525	638	170	435	680	927	805	864	28	24	36	4	M33X3	557
VBW 750	530	640	170	435	730	985	870	914	28	24	36	4	M33X3	630
VBW 800	570	665	170	--	775	--	905	978	4	--	--	4	M39X3	676
VBW 900	650	725	180	600	875	1170	1005	1086	32	28	42	4	M39X3	740

Flange Drilling as per ANSI B 16.5 class 150 up to 600 mm size
and as per AWWA C 207 class D for 100 to 900 mm size

VII. 1.2 Wafer Type valve with Manual Gear Box

Table 10

MODEL	L	L1	L2	L3	φ D	H±20	X	Appx. Wt.
VBW 300 WITH RS 200	143	290	126	117	400	561	100	154
VBW 350 WITH RS 200	143	290	126	117	400	596	100	174
VBW 400 WITH RS 200	143	290	126	117	400	666	100	215
VBW 450 WITH RS 200	143	290	126	117	400	626	100	219
VBW 500 WITH RS 200	143	290	126	117	400	716	100	263
VBW 550 WITH RS 200	143	290	126	117	400	736	100	283
VBW 600 WITH RS 200	143	290	126	117	400	816	100	464
VBW 650 WITH RS 200	143	290	126	117	400	873	100	535
VBW 700 WITH RS 200	143	290	126	117	400	884	100	601
VBW 700 WITH RS 400	165	367	120	151	500	904	110	622
VBW 750 WITH RS 200	143	290	126	117	400	886	100	674
VBW 750 WITH RS 400	165	367	120	151	500	906	110	695
VBW 800 WITH RS 400	165	367	120	151	500	931	110	741
VBW 800 WITH RS 1200WG	252	425	116	115	500	1005	170	816
VBW 900 WITH RS 400	165	367	120	151	500	991	110	805
VBW 900 WITH RS 1200 WG	252	425	116	115	500	1065	170	880

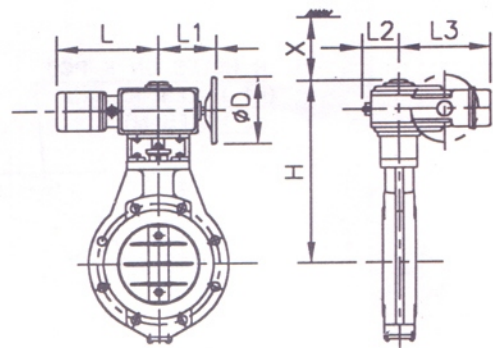




VII. 1.3 Wafer Type Valve with Electrical Actuator

Table 11

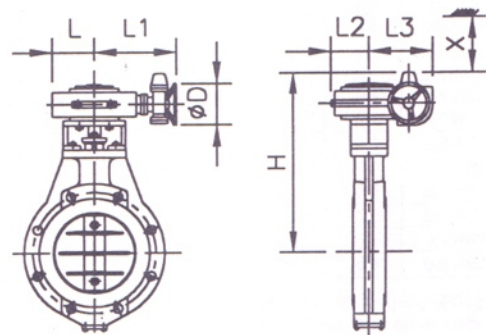
MODEL	L	L1	L2	L3	φ D	H±20	X	Appx. Wt.
VBW 80 WITH AS 50	280	180	75	220	250	420	65	50
VBW 100 WITH AS 50	280	180	75	220	250	440	65	65
VBW 125 WITH AS 50	280	180	75	220	250	455	65	70
VBW 150 WITH AS 50	280	180	75	220	250	450	65	75
VBW 200 WITH AS 50	280	180	75	220	250	505	65	94
VBW 250 WITH AS 50	280	180	75	220	250	500	65	108
VBW 300 WITH AS 50	280	180	75	220	250	565	65	130
VBW 300 WITH BS 100	341	190	111	264	250	565	100	151
VBW 350 WITH AS 50	280	180	75	220	250	600	65	150
VBW 350 WITH BS 100	341	190	111	264	250	600	100	171
VBW 400 WITH AS 50	280	180	75	220	250	670	65	191
VBW 400 WITH BS 100	341	190	111	264	250	670	100	212
VBW 450 WITH BS 100	341	190	111	264	250	630	100	216
VBW 500 WITH BS 100	341	190	111	264	250	720	100	260
VBW 550 WITH BS 100	341	190	111	264	250	740	100	285



VII. 1.4 Wafer Type valve with Gear Box & Electrical Actuator

Table 12

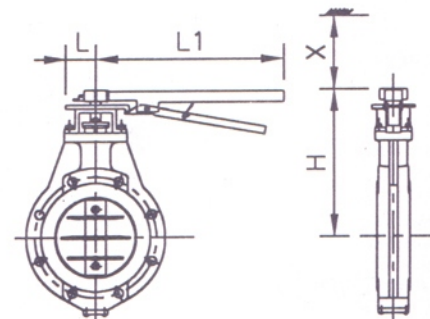
MODEL	L	L1	L2	L3	φ D	H±20	X	Appx. Wt.
VBW 450 WITH B+RS 200	143	402	203	232	300	810	100	244
VBW 500 WITH B+RS 200	143	402	203	232	300	900	100	288
VBW 550 WITH B+RS 400	175	441	179	266	300	990	110	336
VBW 600 WITH B+RS 200	143	402	203	232	300	1000	100	489
VBW 600 WITH B+RS 400	175	441	179	266	300	1070	110	512
VBW 650 WITH B+RS 200	143	402	203	232	300	1057	100	560
VBW 650 WITH B+RS 400	175	441	179	266	300	1127	110	583
VBW 700 WITH B+RS 200	143	402	203	232	300	1068	100	626
VBW 700 WITH B+RS 400	175	441	179	266	300	1138	110	649
VBW 750 WITH B+RS 200	143	402	203	232	300	1070	100	699
VBW 750 WITH B+RS 400	175	441	179	266	300	1140	110	722
VBW 800 WITH B+RS 400	175	441	179	266	300	1165	110	771
VBW 800 WITH B+RS 1200WG	240	725	225	518	300	1165	170	846
VBW 900 WITH B+RS 400	175	441	179	266	300	1325	110	832
VBW 900 WITH B+RS 1200WG	240	725	225	518	300	1325	170	907



VII. 1.5 Wafer Type valve with Manual Lever

Table 13

MODEL	L	L1	H±20	X	Appx. Wt.
VBW 80 WITH ML	65	350	252	50	35
VBW 100 WITH ML	65	350	272	50	50
VBW 125 WITH ML	65	350	287	50	59
VBW 150 WITH ML	65	350	282	50	67
VBW 200 WITH ML	65	350	337	50	90
VBW 250 WITH ML	65	350	332	50	108





VII. 1.7 Wafer Type Valve with Pneumatic Cylinder (Model PC 44 LT)

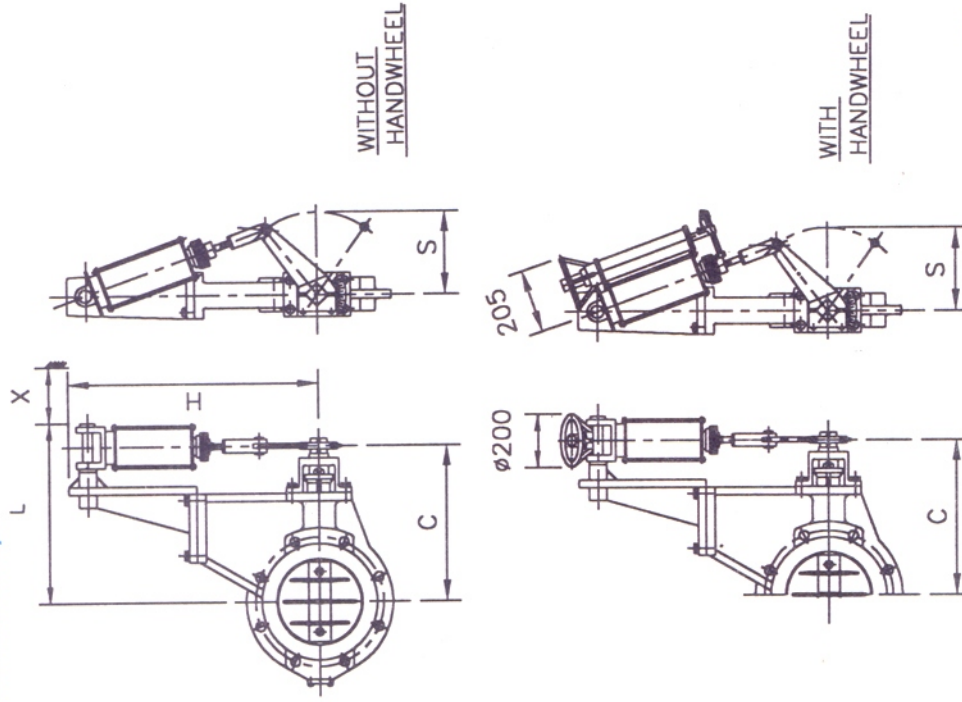


Table 15

MODEL	C	L	X	60° OPN.		90° OPN.		Appx. Wt.
				H _{1/2}	S	H _{1/2}	S	
VBW 80 WITH PC 44 LT	326	383	110	572	125	566	100	58
VBW 100 WITH PC 44 LT	346	413	110	572	125	566	100	73
VBW 125 WITH PC 44 LT	361	428	110	572	125	566	100	78
VBW 150 WITH PC 44 LT	353	423	110	572	125	566	100	83
VBW 200 WITH PC 44 LT	411	478	110	572	125	566	100	102
VBW 250 WITH PC 44 LT	406	473	110	572	125	566	100	116
VBW 300 WITH PC 44 LT	448	515	110	572	125	566	100	138
VBW 350 WITH PC 44 LT	530	570	110	572	125	566	100	158

* FOR WEIGHT WITH HANDWHEEL ADD 10 Kg

VII. 1.6 Wafer Type Valve with Diaphragm Actuator.

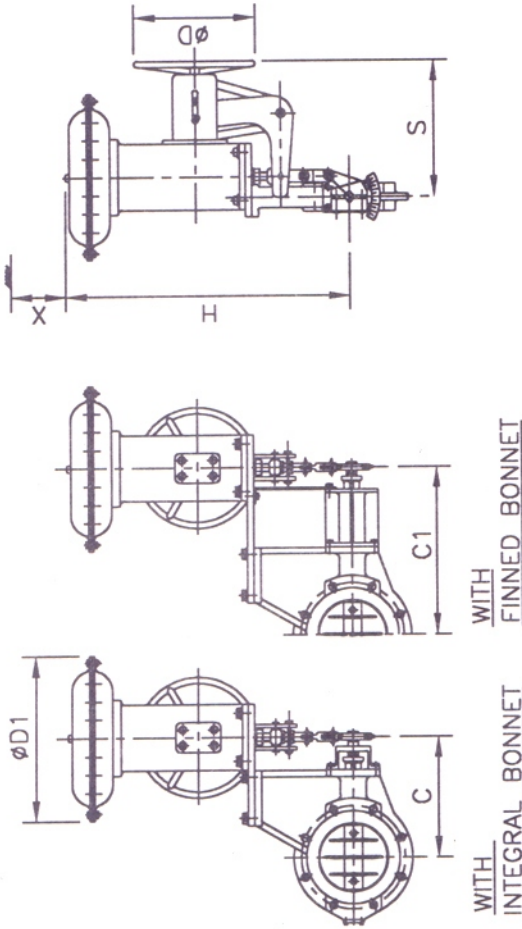


Table 14

MODEL	C	C1	D	D1	X	60° OPN.		90° OPN.		Appx. Wt.
						H _{1/2}	S	H _{1/2}	S	
VBW 80 WITH VA3	313	518	450	450	140	656	414	691	365	94
VBW 100 WITH VA3	333	538	450	450	140	656	414	691	365	109
VBW 125 WITH VA3	348	553	450	450	140	656	414	691	365	114
VBW 150 WITH VA3	343	548	450	450	140	656	414	691	365	119
VBW 200 WITH VA3	398	603	450	450	140	691	414	691	365	138
VBW 200 WITH VA4	423	603	570	520	190	---	---	763	538	230
VBW 250 WITH VA3	383	598	450	450	140	691	414	691	365	152
VBW 250 WITH VA4	418	598	570	520	190	855	555	855	538	244
VBW 250 WITH VA5	478	598	570	620	205	---	---	1089	660	333
VBW 300 WITH VA3	458	663	450	450	140	691	414	691	365	174
VBW 300 WITH VA4	483	663	570	520	190	855	565	855	538	266
VBW 300 WITH VA5	543	663	570	620	205	1089	697	1089	660	355
VBW 350 WITH VA3	490	695	450	450	140	756	414	756	365	194
VBW 350 WITH VA4	515	695	570	520	190	880	565	880	538	286
VBW 350 WITH VA5	575	695	570	620	205	1089	697	1089	660	375
VBW 400 WITH VA4	583	763	570	520	190	910	565	910	538	327
VBW 400 WITH VA5	643	763	570	620	205	1084	697	1084	660	416
VBW 450 WITH VA4*	547	727	570	520	190	880	565	880	538	331
VBW 450 WITH VA5	607	727	570	620	205	1084	697	1084	660	420
VBW 500 WITH VA4	633	813	570	520	190	880	565	880	538	375
VBW 500 WITH VA5	693	813	570	620	205	1084	697	1084	660	464
VBW 550 WITH VA4	653	833	570	520	190	880	565	880	538	400
VBW 550 WITH VA5	713	833	570	620	205	1084	697	1084	660	489
VBW 600 WITH VA4	725	905	570	520	190	952	565	---	---	576
VBW 600 WITH VA5	785	905	570	620	205	1084	697	1084	660	665
VBW 650 WITH VA5	842	982	570	620	205	1139	697	1139	660	736

VII. 2. Fabricated Wafer Type Butterfly Valves
VII. 2. 1. Fabricated wafer type valve assembly

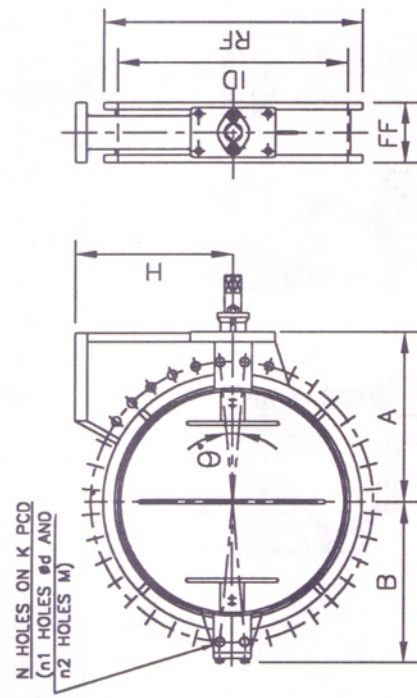


Table 17

SIZE (mm)	B	A	FF	H	ID	RF	K	N	n1	φ d	n2	M	φ	Apprx. Wt.
VBW 500	385	470	90	350	480	584	635	6	6	22(33)	--	--	18°	98
VBW 550	400	470	90	350	530	635	692	6	6	22(36)	--	--	18°	102
VBW 600	430	480	90	350	600	670	750	6	6	22(36)	--	--	18°	106
VBW 650	460	510	90	380	675	720	807	6	6	22	--	--	15°	115
VBW 700	490	540	90	380	725	805	864	6	6	22	--	--	12°51'25"	126
VBW 750	515	565	90	380	725	825	914	6	6	26	--	--	12°51'25"	140
VBW 800	560	600	90	380	775	890	978	6	6	26	--	--	12°51'25"	155
VBW 850	588	625	90	380	825	940	1029	6	6	26	--	--	11°15'	175
VBW 900	620	660	90	445	875	990	1065	6	6	26	--	--	11°15'	195
VBW 950	650	685	90	445	926	1030	1149	6	6	26	--	--	10°	225
VBW 1000	670	740	110	380	1000	1080	1200	7	7	26	--	--	10°	260
VBW 1050	685	765	110	445	1050	1130	1257	7	7	28	--	--	9°	280
VBW 1100	720	780	110	445	1100	1185	1314	6	6	29	--	--	8°10'55"	306
VBW 1200	780	820	110	445	1200	1280	1422	6	6	33	--	--	8°10'55"	350
VBW 1300	840	885	110	445	1260	1380	1537	6	6	33	--	--	8°10'55"	381
VBW 1400	900	970	110	570	1360	1480	1649	6	6	36	--	--	6°55'23"	430
VBW 1500	960	1050	110	570	1500	1630	1759	8	4	36	4	M30x3	6°55'23"	430

FLANGE DRILLING AS PER AWWA C207 CLASS B
 DIMENSIONS SHOWN IN () CORRESPONDS TO ANSI 150 DRILLING
 ALL DIMENSIONS ARE IN MM AND WEIGHTS IN KG

VII. 1.8 Wafer Type Valve with Pneumatic Cylinder
(Model PC 68LT / PC 816LT)

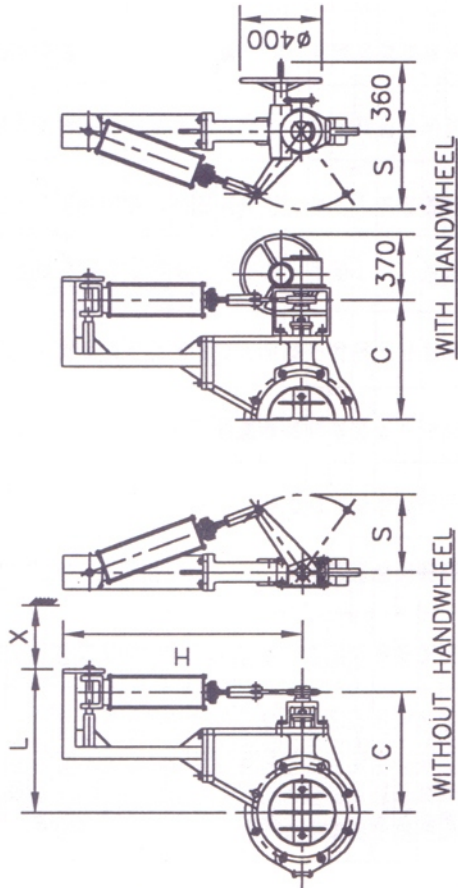


Table 16

MODEL	C	L	X	60° OPN.		90° OPN.		WT. Apprx.
				H _{1/2}	S	H _{1/2}	S	
VBW 200 WITH PC 68LT	438	583	175	836	225	823	170	147
VBW 250 WITH PC 68LT	433	578	175	836	225	823	170	161
VBW 300 WITH PC 68LT	498	643	175	836	225	823	170	183
VBW 350 WITH PC 68LT	530	675	175	836	225	823	170	230
VBW 400 WITH PC 68LT	598	743	175	836	225	823	170	244
VBW 400 WITH PC 816LT	630	661	215	1371	430	1335	310	346
VBW 450 WITH PC 68LT	562	707	175	836	225	823	170	248
VBW 450 WITH PC 816LT	594	825	215	1371	430	1335	310	350
VBW 500 WITH PC 68LT	648	793	175	836	225	823	170	282
VBW 500 WITH PC 816LT	680	911	215	1371	430	1335	310	394
VBW 550 WITH PC 68LT	668	813	215	836	225	823	170	317
VBW 550 WITH PC 816LT	700	931	215	1371	430	1335	310	419
VBW 600 WITH PC 68LT	740	885	215	836	225	823	170	483
VBW 600 WITH PC 816LT	772	1003	215	1371	430	1335	310	595
VBW 650 WITH PC 68LT	797	942	175	836	225	823	170	564
VBW 650 WITH PC 816LT	829	1060	215	1371	430	1335	310	665
VBW 700 WITH PC 68LT	810	955	175	836	225	823	170	630
VBW 700 WITH PC 816LT	842	1073	215	1371	430	1335	310	732
VBW 750 WITH PC 816LT	842	1073	215	1371	430	1335	310	805
VBW 800 WITH PC 816LT	860	1045	215	1371	430	1335	310	851
VBW 900 WITH PC 816LT	927	1158	215	1371	430	1335	310	915

* FOR WEIGHT WITH HANDWHEEL ADD 60 KG

VII. 2. 2. Fabricated wafer type valve with manual gear box

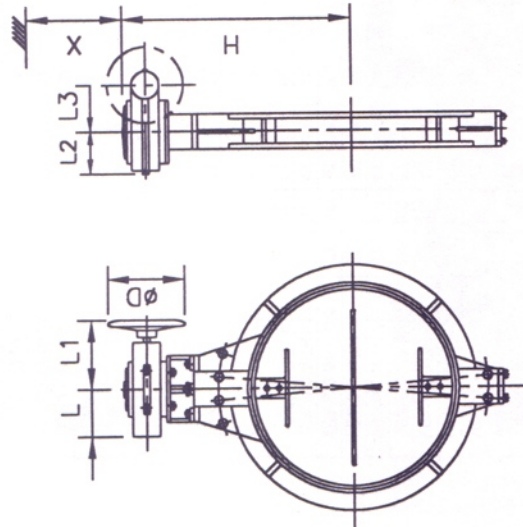


Table 18

MODEL	L	L1	L2	L3	φ D	H _{±20}	X	Appx. Wt.
VBW 500 WITH RS200	143	290	126	117	400	716	100	144
VBW 550 WITH RS200	143	290	126	117	400	716	100	148
VBW 600 WITH RS200	143	290	126	117	400	726	100	152
VBW 650 WITH RS200	143	290	126	117	400	756	100	161
VBW 700 WITH RS200	143	290	126	117	400	786	100	172
VBW 750 WITH RS200	143	290	126	117	400	811	100	186
VBW 800 WITH RS200	143	290	126	117	400	846	100	201
VBW 850 WITH RS200	143	290	126	117	400	871	100	221
VBW 900 WITH RS200	143	290	126	117	400	910	100	241
VBW 950 WITH RS200	143	290	126	117	400	931	100	271
VBW 1000 WITH RS200	143	290	126	117	400	986	100	306
VBW 1050 WITH RS200	143	290	126	117	400	1011	100	316
VBW 1100 WITH RS200	143	290	126	117	400	1026	100	326
VBW 1200 WITH RS200	143	290	126	117	400	1066	100	372
VBW 1300 WITH RS200	143	290	126	117	400	1131	100	396
VBW 1400 WITH RS200	143	290	126	117	400	1216	100	427
VBW 1500 WITH RS200	143	290	126	117	400	1296	100	476

VII. 2. 3. Fabricated wafer type valve with electrical actuator

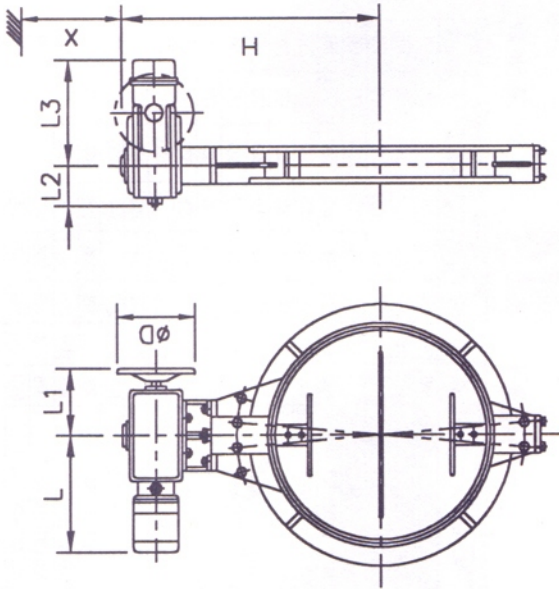


Table 19

MODEL	L	L1	L2	L3	φ D	H _{±20}	X	Appx. Wt.
VBW 500 WITH AS50	280	180	75	220	250	720	65	116
VBW 550 WITH AS50	280	180	75	220	250	720	65	120
VBW 600 WITH AS50	280	180	75	220	250	730	65	124
VBW 650 WITH AS50	280	180	75	220	250	760	65	133
VBW 700 WITH AS50	280	180	75	220	250	790	65	144
VBW 750 WITH AS50	280	180	75	220	250	815	65	158
VBW 800 WITH AS50	280	180	75	220	250	850	65	173
VBW 850 WITH AS50	280	180	75	220	250	875	65	189
VBW 900 WITH AS50	280	180	75	220	250	910	65	216
VBW 950 WITH AS50	280	180	75	220	250	935	65	243
VBW 1000 WITH AS50	280	180	75	220	250	960	65	278
VBW 1050 WITH BS100	341	190	111	264	250	1015	100	321
VBW 1100 WITH BS100	341	190	111	264	250	1030	100	331
VBW 1200 WITH BS100	341	190	111	264	250	1070	100	367
VBW 1300 WITH BS100	341	190	111	264	250	1135	100	391
VBW 1400 WITH BS100	341	190	111	264	250	1220	100	422
VBW 1500 WITH BS100	341	190	111	264	250	1300	100	471

VII. 2. 4. Fabricated wafer type valve with diaphragm actuator

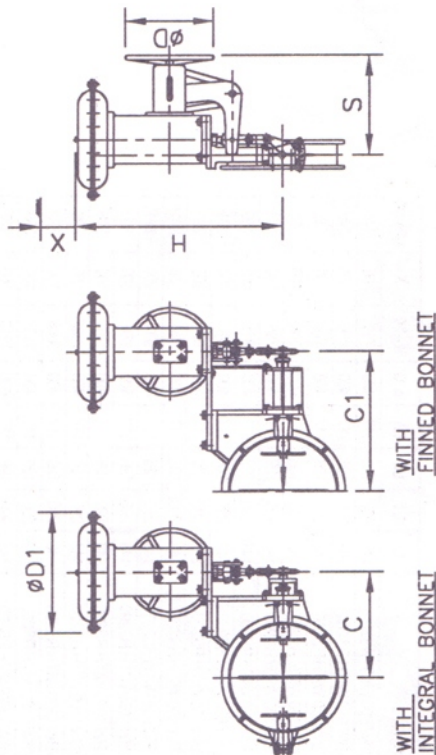


Table 20

MODEL	C	C1	phi D	phi D1	X	60° OPN.		90° OPN.		Appx. Wt.
						H ₂ O	S	H ₂ O	S	
VBW 500 WITH VA3	595	800	450	450	140	756	414	--	--	162
VBW 500 WITH VA4	620	800	570	520	190	--	--	756	538	254
VBW 550 WITH VA3	595	800	450	450	140	756	414	--	--	166
VBW 550 WITH VA4	620	800	570	520	190	--	--	880	538	258
VBW 600 WITH VA3	605	810	450	450	140	756	414	--	--	170
VBW 600 WITH VA4	630	810	570	520	190	--	--	880	538	262
VBW 650 WITH VA3	635	840	450	450	140	786	414	--	--	179
VBW 650 WITH VA4	660	840	570	520	190	910	565	--	--	271
VBW 700 WITH VA3	720	840	570	620	205	--	--	1084	660	360
VBW 700 WITH VA4	655	860	450	450	140	786	414	--	--	190
VBW 700 WITH VA5	680	860	570	520	190	910	565	--	--	282
VBW 750 WITH VA4	740	860	570	620	205	--	--	1084	660	371
VBW 750 WITH VA5	715	885	570	520	190	910	565	--	--	296
VBW 800 WITH VA4	740	920	570	520	190	910	565	--	--	311
VBW 800 WITH VA5	800	920	570	620	205	1084	697	1084	660	400
VBW 850 WITH VA4	765	945	570	520	190	910	565	--	--	331
VBW 850 WITH VA5	825	945	570	620	205	1084	697	1084	660	420
VBW 900 WITH VA4	800	980	570	520	190	975	585	--	--	351
VBW 900 WITH VA5	860	980	570	620	205	1084	697	1149	660	440
VBW 950 WITH VA4	825	1005	570	520	190	975	585	--	--	381
VBW 950 WITH VA5	885	1005	570	620	205	1149	697	1084	660	470
VBW 1000 WITH VA4	880	1080	570	520	190	910	565	--	--	416
VBW 1000 WITH VA5	940	1080	570	620	205	1084	697	1084	660	505
VBW 1050 WITH VA4	900	1080	570	620	205	1149	697	--	--	438
VBW 1050 WITH VA5	960	1100	570	620	205	1149	697	1149	660	525
VBW 1100 WITH VA5	980	1100	570	620	205	1149	697	1149	660	535
VBW 1200 WITH VA5	1020	1140	570	620	205	1149	697	1149	660	571

The contents of this catalogue may be altered for improvement without notice.

VII. 2. 5. Fabricated wafer type valve with pneumatic Cylinder (Model 68 LT/PC 816LT)

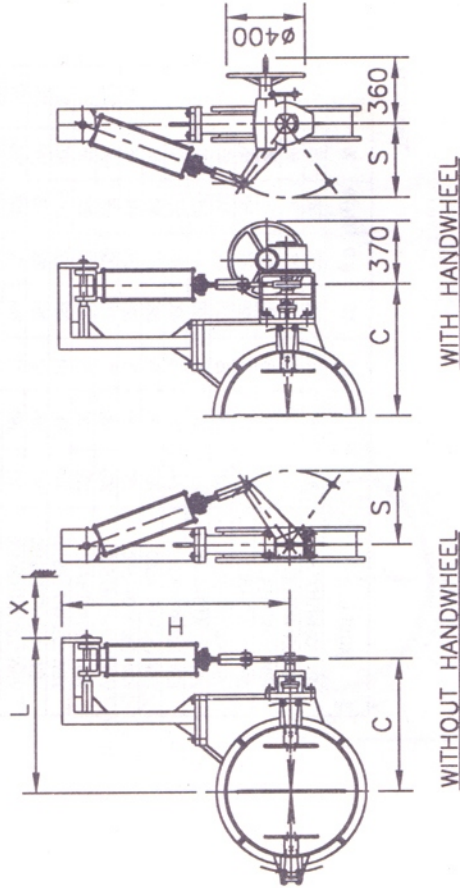
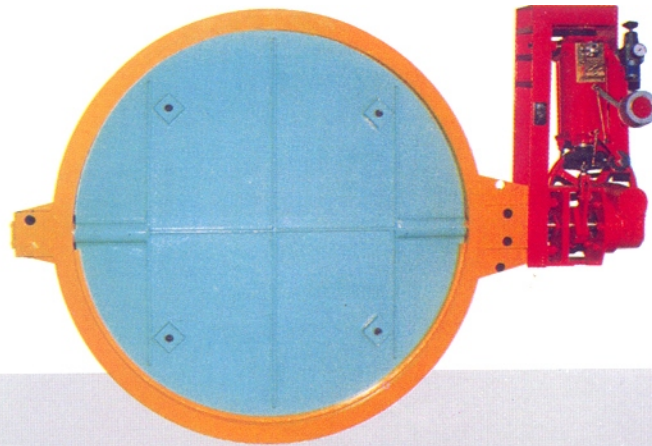


Table 21

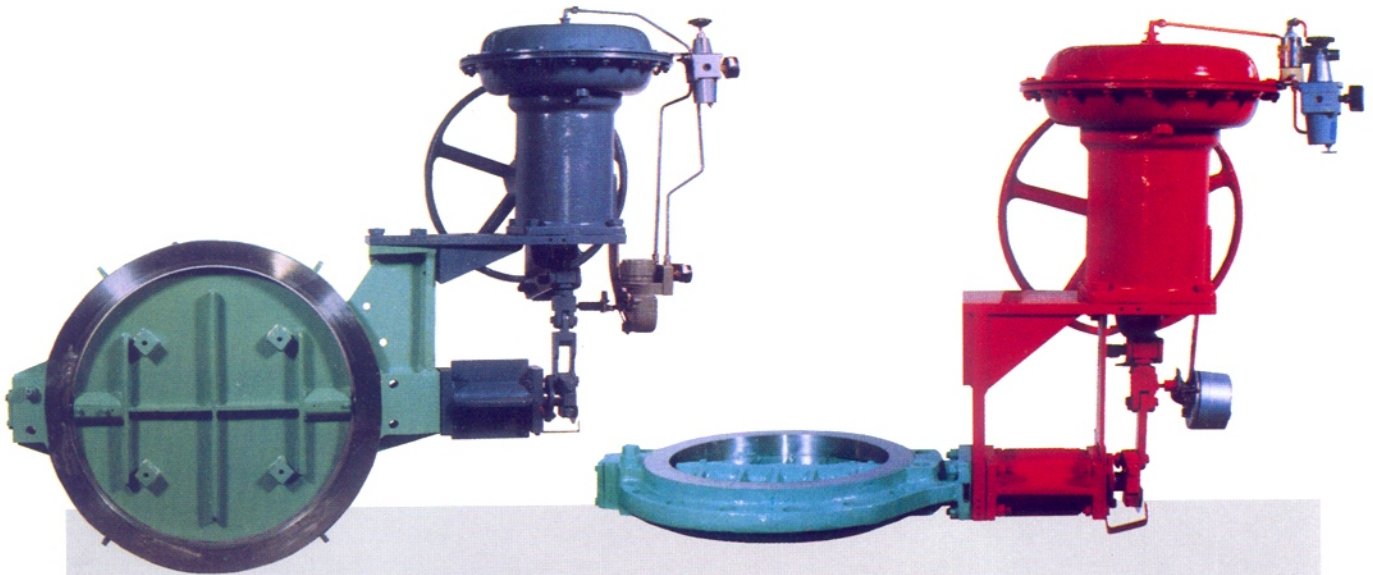
MODEL	C	L	X	60° OPN.		90° OPN.		Wt. Appx.
				H ₂ O	S	H ₂ O	S	
VBW 500 WITH PC 68LT	635	780	175	836	225	823	170	171
VBW 550 WITH PC 68LT	635	780	175	836	225	823	170	175
VBW 600 WITH PC 68LT	645	790	175	836	225	823	170	179
VBW 650 WITH PC 68LT	675	820	175	836	225	823	170	188
VBW 700 WITH PC 68LT	685	840	175	836	225	823	170	189
VBW 750 WITH PC 68LT	730	875	175	836	225	823	170	213
VBW 800 WITH PC 68LT	755	900	175	836	225	823	170	228
VBW 850 WITH PC 68LT	780	925	175	836	225	823	170	248
VBW 900 WITH PC 68LT	815	960	175	836	225	823	170	268
VBW 950 WITH PC 68LT	840	985	175	836	225	823	170	288
VBW 1000 WITH PC 68LT	885	1040	175	836	225	823	170	333
VBW 1000 WITH PC 816LT	927	1158	215	--	--	1335	310	435
VBW 1050 WITH PC 68LT	915	1060	175	836	225	823	170	363
VBW 1050 WITH PC 816LT	947	1178	215	--	--	1335	310	455
VBW 1100 WITH PC 68LT	935	1080	175	836	225	823	170	363
VBW 1100 WITH PC 816LT	967	1198	215	--	--	1335	310	465
VBW 1200 WITH PC 68LT	975	1120	175	836	225	--	--	389
VBW 1200 WITH PC 816LT	1007	1238	215	1371	430	1335	310	501
VBW 1300 WITH PC 68LT	1040	1185	175	836	225	--	--	423
VBW 1300 WITH PC 816LT	1072	1303	215	1371	430	1335	310	525
VBW 1400 WITH PC 68LT	1125	1270	175	836	225	--	--	454
VBW 1400 WITH PC 816LT	1157	1388	215	1371	430	1335	310	556
VBW 1500 WITH PC 68LT	1215	1360	175	836	225	--	--	503
VBW 1500 WITH PC 816LT	1247	1478	215	1371	430	1335	310	605

* FOR WEIGHT WITH HANDWHEEL ADD 60 KG.

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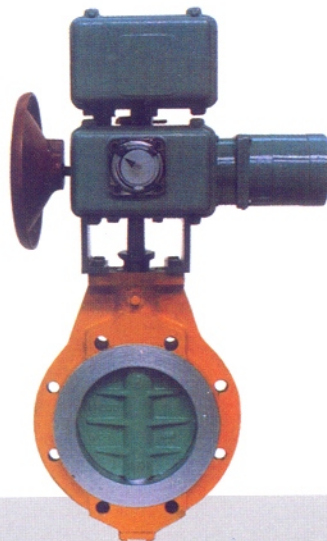


Fabricated valve with
Pneumatic Cylinder Actuator and Handwheel



Fabricated valve with
Finned Bonnet and Diaphragm Actuator

Valve on vertical line with
Finned Bonnet and Diaphragm Actuator



Valve with
Direct mounted Electrical Actuator