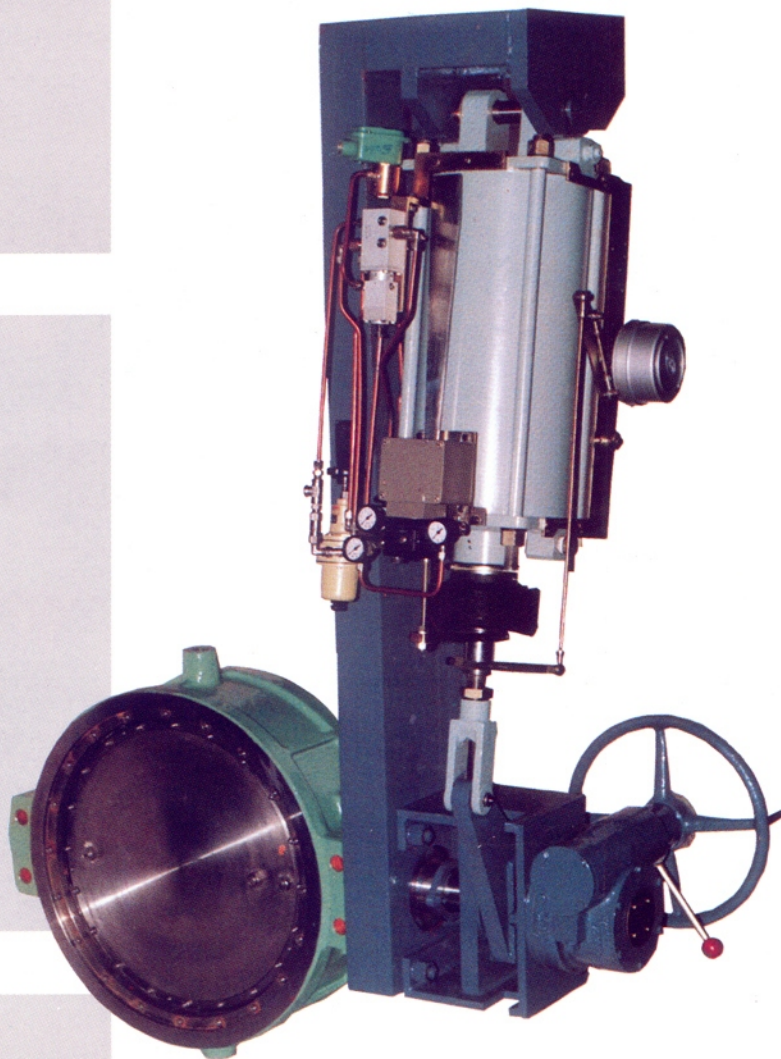
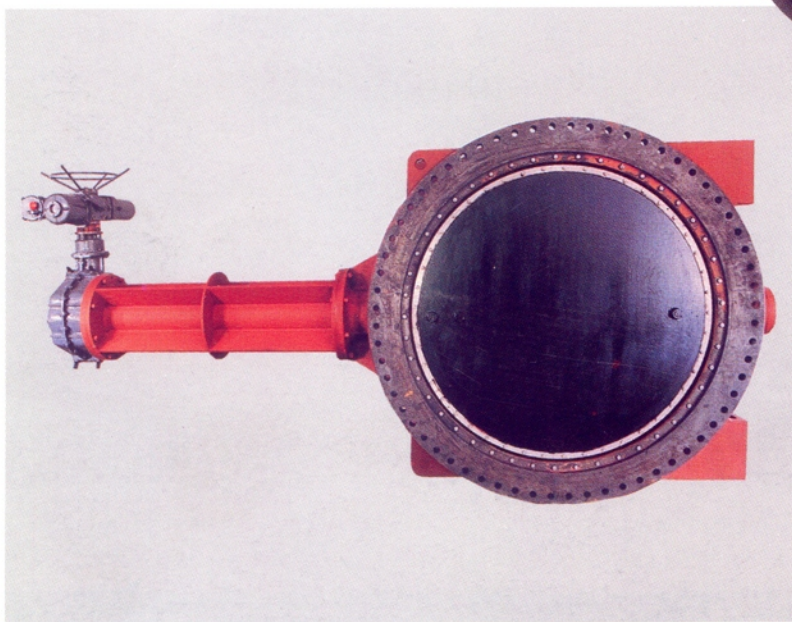
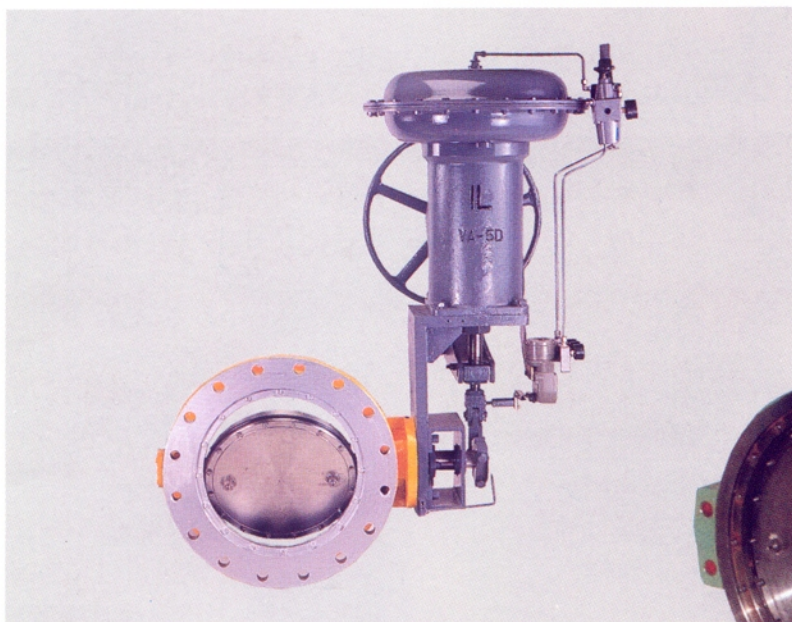
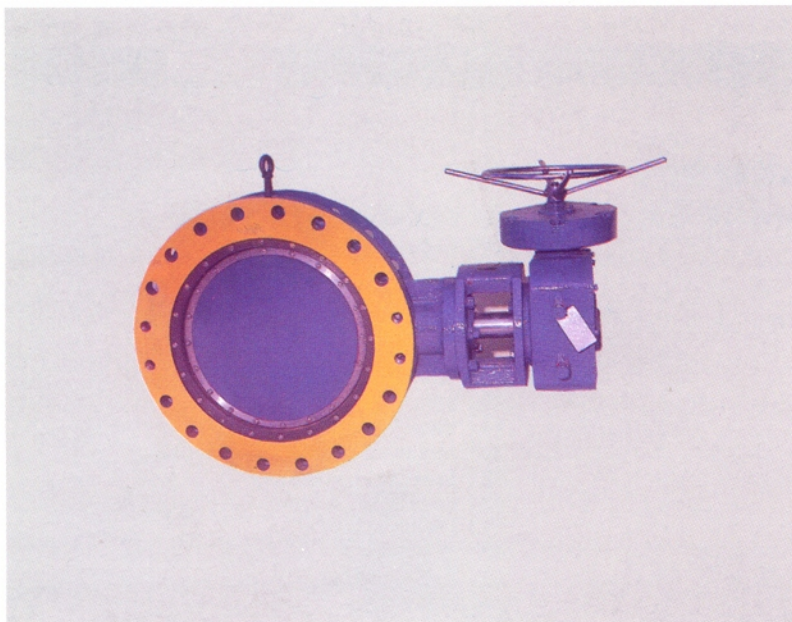




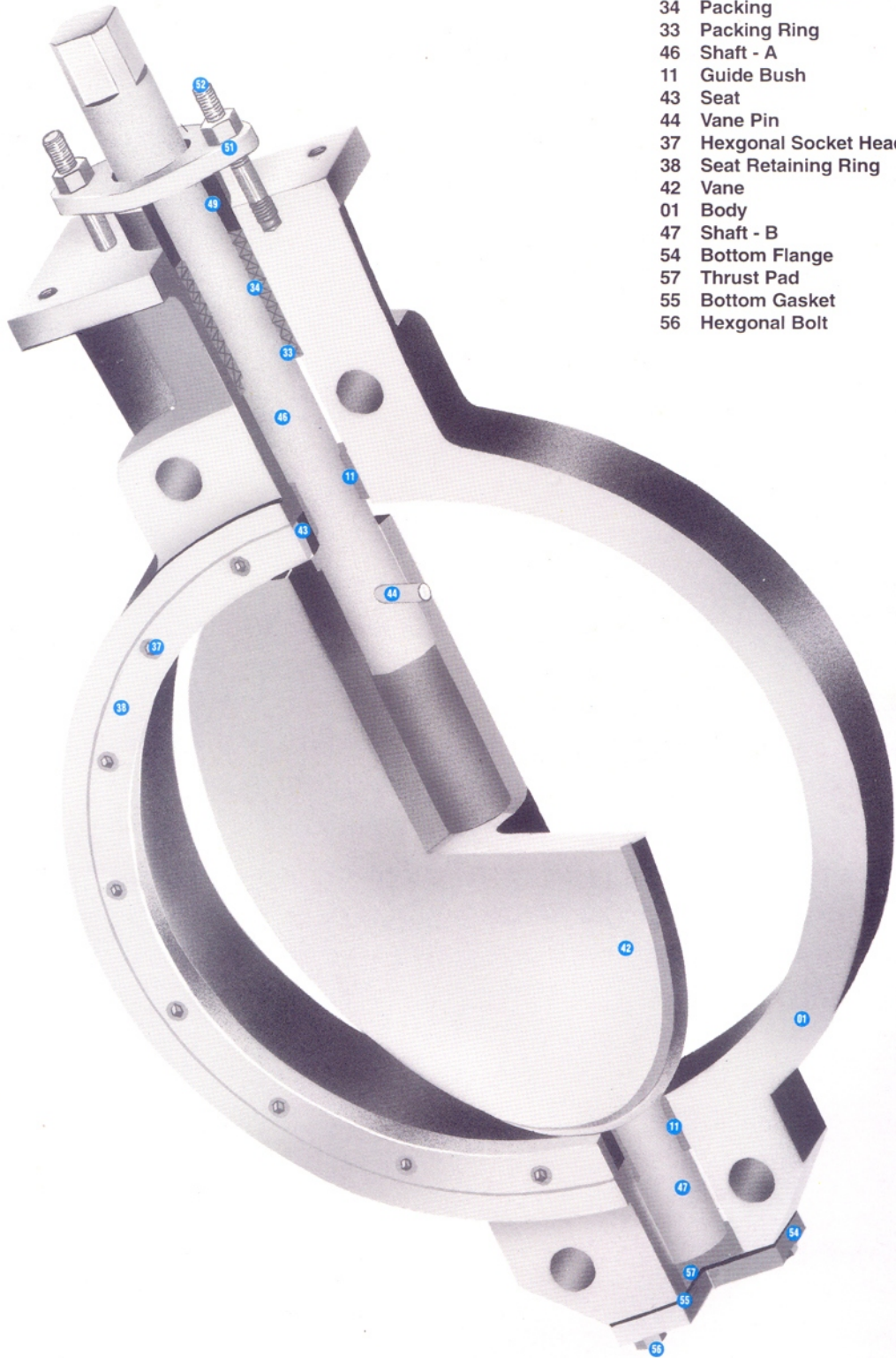
**INSTRUMENTATION LTD.,
PALAKKAD**



VBS

SOFT SEATED BUTTERFLY VALVES

VBS WAFER VALVE ASSEMBLY

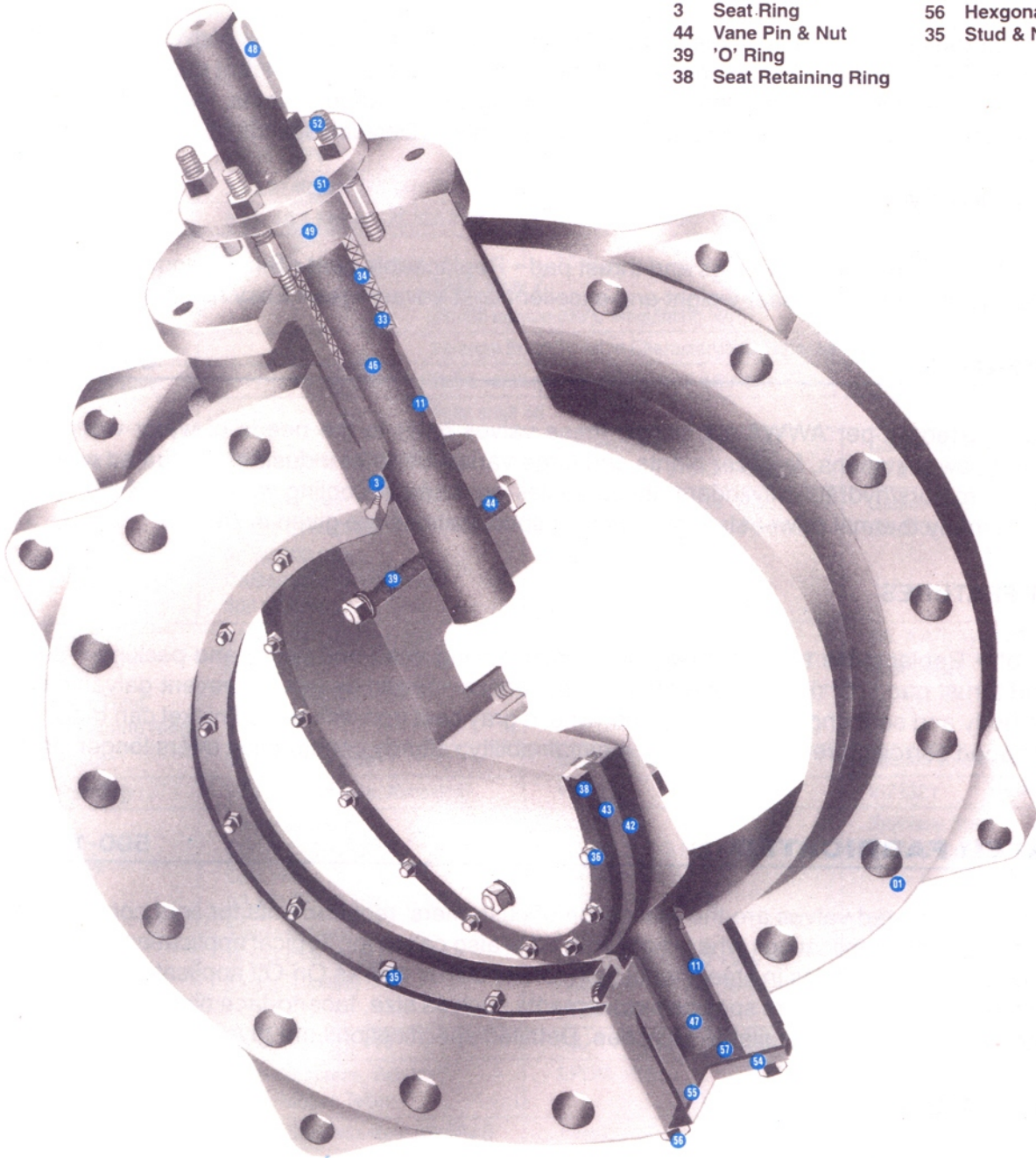


- 52 Packing Stud & Nut
- 51 Packing Flange
- 49 Packing Follower
- 34 Packing
- 33 Packing Ring
- 46 Shaft - A
- 11 Guide Bush
- 43 Seat
- 44 Vane Pin
- 37 Hexagonal Socket Head Screw
- 38 Seat Retaining Ring
- 42 Vane
- 01 Body
- 47 Shaft - B
- 54 Bottom Flange
- 57 Thrust Pad
- 55 Bottom Gasket
- 56 Hexagonal Bolt



VBS FLANGED VALVE ASSEMBLY

- | | |
|------------------------|-------------------|
| 48 Key | 43 Seat |
| 52 Packing Stud & Nut | 42 Vane |
| 51 Packing Flange | 01 Body |
| 49 Packing Follower | 36 Stud & Nut |
| 34 Packing | 47 Shaft - B |
| 33 Packing Ring | 54 Bottom Flange |
| 46 Shaft - A | 57 Thrust Pad |
| 11 Guide Bush | 55 Bottom Gasket |
| 3 Seat Ring | 56 Hexagonal Bolt |
| 44 Vane Pin & Nut | 35 Stud & Nut |
| 39 'O' Ring | |
| 38 Seat Retaining Ring | |





SOFT SEATED BUTTERFLY VALVES

Instrumentation Ltd. with its 20 years of experience and excellent manufacturing facilities, has already developed in-house its entire range of butterfly valves. Soft seated Butterfly valves with single eccentric vane offers bubble tight leakage when fully closed and are best suited for large flow with low differential pressure applications. VBS models are classified into three categories. VBS Wafer type, VBS Flanged type and VBS Wafer Fabricated.

VBS WAFER

80-700mm size

These general purpose valves are suitable for both On-Off and Regulating services. Valve body is wafer type with drilled/tapped holes for various international flange standards. Available with different material and actuator combinations, these valves are ideal for many industries handling a wide range of fluids. Rubber lined (bonded type) and FRE lined are also available for sizes 150-700 mm as option. Detailed specifications are given in Table I.

■ SALIENT FEATURES

- Tight shut off • Self lubricating bearings and thrust pad • Replaceable seat • Simple construction • Adaptability to different flange standards • Lesser weight and excellent cost advantages • Easy handling.

VBS FLANGED

600-1800mm size

Designed and tested as per AWWA standards, these valves cater to the needs of water works, desalination plants, thermal power stations, fertilizer plants and large variety of other industries. Actuated with manual gear boxes/electrical motors/hydraulic cylinders, these valves are used in cooling water lines, both pump and condenser lines in many thermal power stations. Detailed specifications are given in Table I.

■ SALIENT FEATURES

- Tight shut off • Replaceable type seat (without disassembling shaft and vane) and packing • Self lubricating bearings and thrust pad • 'O' ring packing for vacuum service • Liquid gasket to prevent galvanic corrosion between valve body and seat ring • Valve body and vane in gray cast iron with added nickel can meet wide ranging needs for its good corrosion resistance • Easy maintainability • Sturdy construction offers longer life and reliable performance.

VBS WAFER FABRICATED

500-1200mm size

VBS wafer type fabricated valves are the realization of customers' requirements for light constructed valves for low pressure/low temp. applications where tight shut off is also called for. Typical application of these valves is in high flow, low pressure gas lines in steel plants both for control as well as On-Off applications. These valves can be manufactured to suit customers specific requirements such as size, face-to-face dimensions and flange standards. Flanged version is also available as option. Detailed specifications are given in Table I.

■ SALIENT FEATURES

- Tight shut off • Light construction • Reduced weight • Low cost • Adaptability to various national/international flange standards • Reduced torque than conventional valve • Easy handling and maintainability. • Replaceable seat • Self lubricating bearings and thrust pad.



I. SPECIFICATIONS

Table 1

Valve Type		Soft Seated Butterfly Valves		
Valve Model	VBS Wafer	VBS Flanged	VBS Wafer FAB	
Valve Sizes	80-700 mm	600-1800 mm *	500-1200 mm	
End connection	Wafer	Flanged	Wafer*	
Construction	Cast	Cast	Fabricated	
Design Standards	AWWA C 504 Cl. 150	AWWA C 504 Cl. 75,150	-	
Flange Standard	ANSI 150, AWWA C 207 Cl.D (Std) JIS 10K, DIN 10K BS 10K (Options) **	AWWA C 207 Cl. D (Std) BS PN 10, IS 6392 PN 10 (Option) **	AWWA C 207 Cl.B (Std) Available with any flange standard on demand. **	
Max. working Pressure	5.25 Kg/cm ² (75 PSI Rating) 10.5 Kg/cm ² (150 PSI Rating)	5.25Kg/cm ² (75 PSI Rating) 10.5 Kg/cm ² (150 PSI Rating)	1 Kg/cm ²	
Working temp. range	-20 to 200°C	-20 to 200°C	-20 to 200°C	
Hydro test pressure	10.5,21 Kg/cm ² (75,150 PSI)	10.5, 21 Kg/cm ² (75,150 PSI)	2 Kg/cm ²	
Seat leakage test pressure	5.25, 10.5 Kg/cm ² (75,150 PSI)	5.25, 10.5 Kg/cm ² (75,150 PSI)	1 Kg/cm ²	
Inherent Rangeability	20:1	20:1	20:1	
Cv	Refer Table 2			
Control mode	On-Off service (90°), Regulating (60°)			
Flow Characteristics	Inherent Butterfly valve Characteristics, Refer section V			
Max. Differential Pressure	Refer section VI for selection of actuators			
Leakage Class	Tight shuff off			
Standard materials	Body	Carbon Steel (A216 WCB)	Carbon Steel (A 216 WCB) Cast iron (IS 210 Gr FG 260)	Carbon Steel (IS 2062 / IS 2002 . Gr.2A)
	Vane	Stainless steel (A 351 CF8, CF8M - for 80-300 mm) Carbon steel (A 216 WCB - 300 - 700 mm)	Carbon steel (A 216 WCB) Cast iron (IS 210 Gr . FG 260)	Carbon steel (IS 2062 / IS 2002 . Gr.2A)
	Shaft	SS, A 479 Type 304, 316	SS, A 479 Type 410	SS, A 479 Type 304, 316
	Seat ***	NBR, EPDM	NBR	Viton, NBR
	Seat Ring, Retaining Ring	SS 304, 316	SS 304, 316	SS 304, 316
	Bush	Leaded tin bronze	Leaded tin bronze	Leaded tin bronze
	Packing	V-7132Y (Tef. Imp. Asbestos)	V-7132Y	V-7132Y
Options	Body	Stainless Steel (A 351 CF8, CF8M) Cast Iron (IS 210 Gr FG 260+2% Ni)	Cast Iron (IS 210 Gr FG 260 + 2% Ni) Stainless Steel (A 351 CF8, CF8M)	Stainless Steel (A240 Type 304, 316)
	Vane	Stainless Steel (A 351 CF8, CF8M - for 300-700mm)	Cast Iron (IS 210 Gr FG 260 + 2% Ni) Stainless steel (on demand) (A 351CF8, CF8M)	Stainless Steel (A 240 Type 304, 316)
	Shaft	SS, A 479 Type 410	SS, A 479 Type 304, 316	SS, A 479 Type 410
	Seat	Viton, Neoprene, Silicone, Butyl Rubber, Teflon **	EPDM, Viton	EPDM, Neoprene, Silicone, Butyl Rubber
	Bush	Teflon, Stainless steel (Stellited)	Teflon	Teflon
	Packing	'O' rings	'O' rings	'O' rings

* Flanged version is also available on demand. ** Teflon seat is available for 80-300 sizes only, with Class IV leakage. *** Refer table III for general selection.
 • Higher sizes upto 2300mm available on demand. •• For Over all dimensions refer to Design Dept.



Actuators	Standard	Manual lever Manual gear box Motorised gear box Spring diaphragm Pneumatic cylinder	Manual gear box Motorised gear box	Manual gear box Motorised gear box Pneumatic cylinder
	Options	Rotary pneumatic cylinder	Hydraulic cylinder	Rotary pneumatic cylinder
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/top mounted handwheel etc.		
	Electrical act.	Position transmitters, Limit switches, Potentiometers (for feed back), Positioners (for AS50, BS100, B type only) etc.		

II. FLOW COEFFICIENT Cv

Table 2

WAFER / FLANGED 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	1000	1050	1100	1200	1300	1400	1500	1600	1650	1800		
Cv (60° Opening)	15300	17408	22032	27200											
Cv (90° Opening)	24300	27648	34992	43200	47628	52272	62208	73008	84672	97200	110592	117612	139968		
FABRICATED WAFER TYPE VALVES															
Size (mm)	500	550	600	650	700	750	800	850	900	950	1000	1100	1200		
Cv (60° Opening)	12000	14520	17280	20280	23520	27000	30720	34680	38880	43320	48000	58080	69120		
Cv (90° Opening)	17600	21296	25344	29744	34496	39600	45056	50864	57024	63536	70400	85184	101376		

III. SELECTION CHART FOR SEAT MATERIAL

Table 3

Seat matl.	Temp. range °C	Service
Nitrile Butadiene Rubber (NBR)	-12 to 80	Air, water, Freons 11, 12, 13, Alcohol, Hydrocarbons
Neoprene Rubber	-17 to 75	Air, water, Freon 22
Silicone Rubber	-59 to 90	Hot air
Hypalon Rubber	-12 to 80	Acids, Alkalies
EPDM	-34 to 120	Steam, Acids, Alkalies
Butyl Rubber	-23 to 145	Steam, Acids, Alkalies, Alcohols
Viton	-6 to 200	Aromatic Hydro carbons, Hot air & Gases, Steam
Teflon	-70 to 200	Almost all fluids except flurides

IV. OPERATING TIME OF VALVES WITH ELECTRICAL ACTUATOR

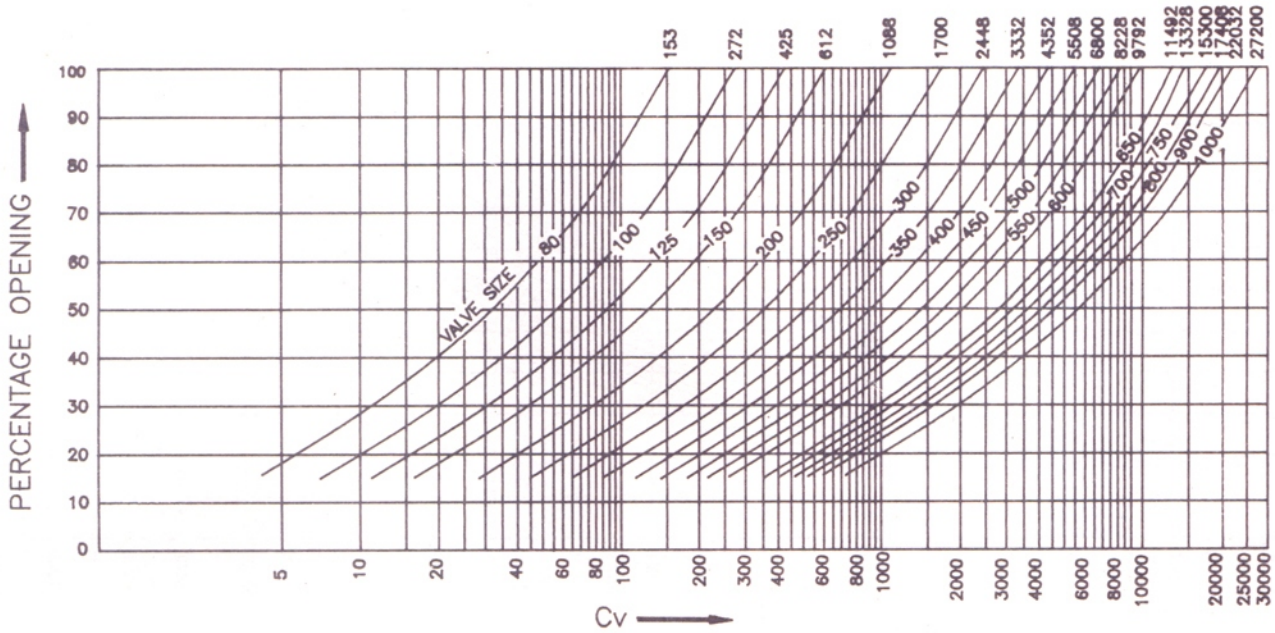
Table 4

ACTUATOR MODEL	Secs. (60° OPN.)	Secs. (90° OPN.)
AS50 (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	42, 85, 141	63, 127, 211
K 300 (144 rpm) + RS 400	—	8.3
K 150 (96 rpm) + RS 1200 WG	—	30
K 300 (144 rpm) + RS 1200 WG	—	20
K 300 (144 rpm) + RS 1800 WG	—	26
K 300 (144 rpm) + RS 2500 WG	—	42
K 300 (192 rpm) + RS 2500 WG	—	32
K 300 (144 rpm) + RS 3000 WG	—	50
K 300 (192 rpm) + RS 3000 WG	—	66.7
K 300 (144 rpm) + RS 4000 WG	—	75
K 300 (192 rpm) + RS 4000 WG	—	56.3
K 300 (144 rpm) + RS 6300 WG	—	100
K 300 (192 rpm) + RS 6300 WG	—	75
K 300 (144 rpm) + RS 10000 WG	—	150
K 300 (192 rpm) + RS 10000 WG	—	112.5



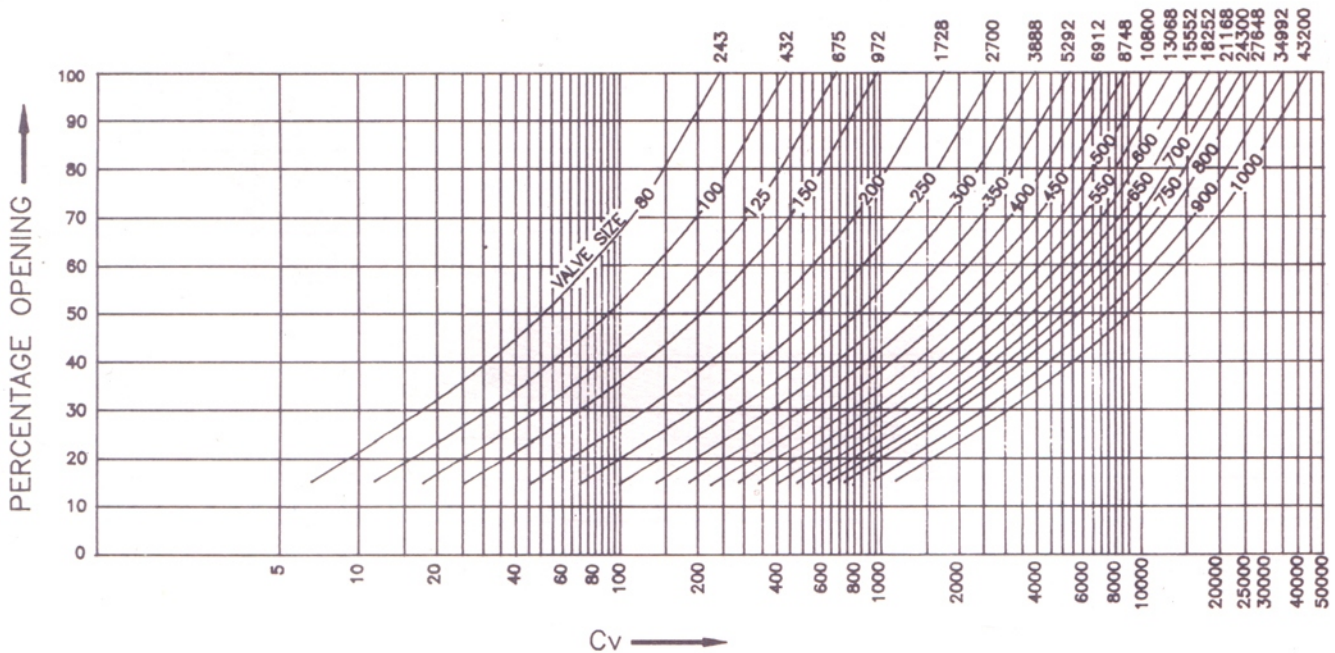
V. FLOW CHARACTERISTICS

V. 1. For 60° Opening (Regulating Service) VBS Wafer/Flanged



Graph 1

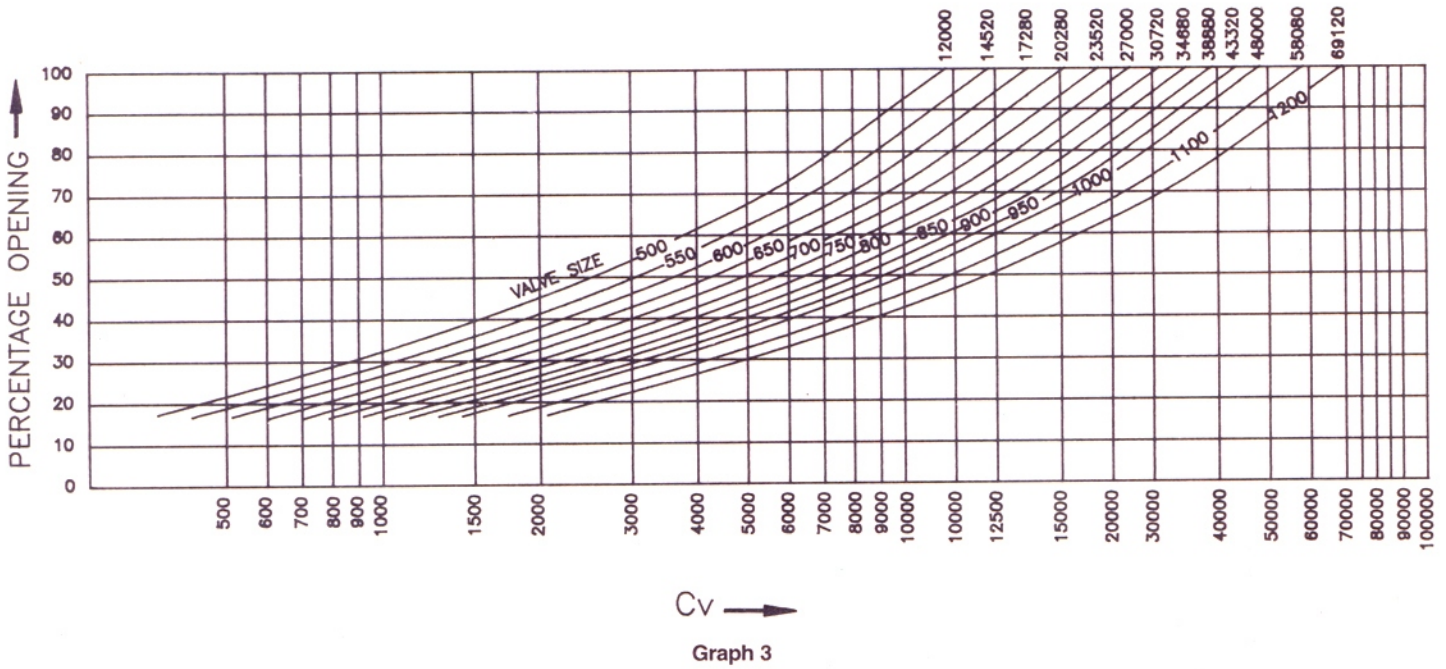
V. 2. For 90° Opening (On-Off Service) VBS Wafer/Flanged



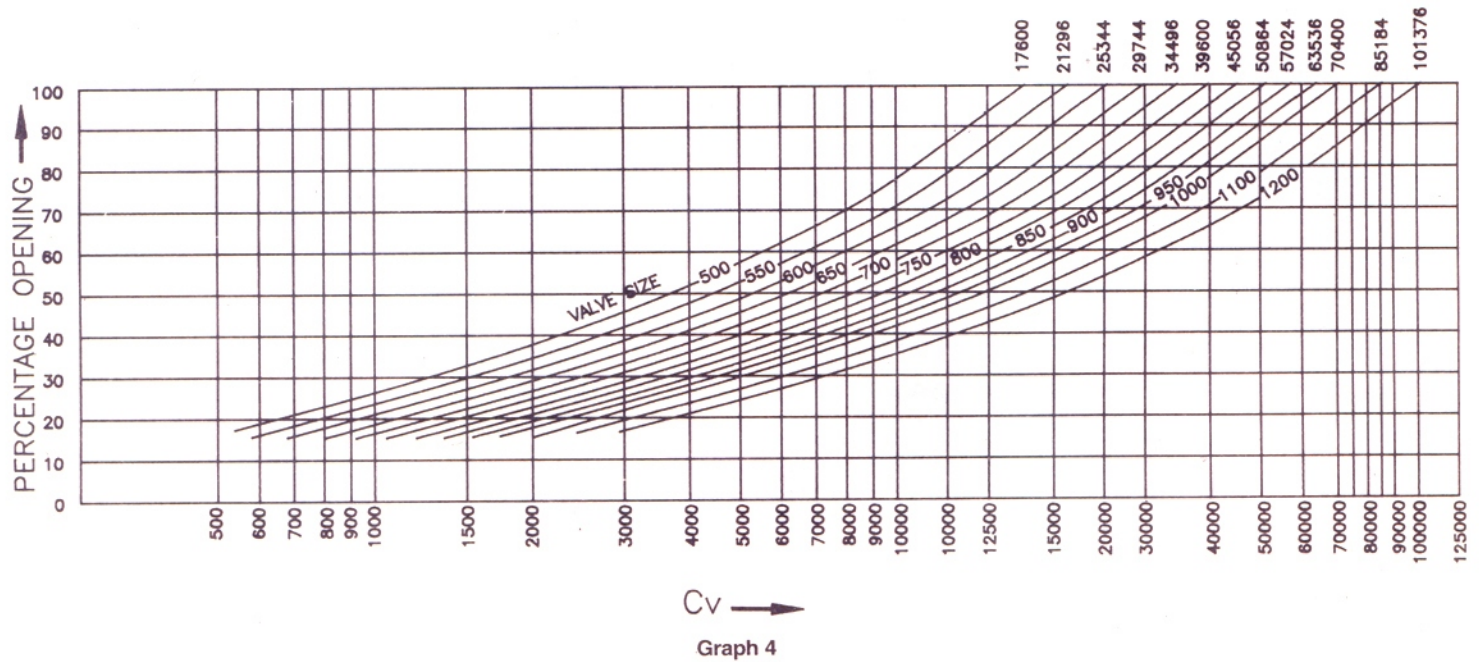
Graph 2



V. 3. For 60° Opening (Regulating Service) VBS Wafer/Fabricated



V. 4. For 90° Opening (On-Off Service) VBS 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	M.L	AS 50	M.L *	AS 50
100	M.L	AS 50	M.L	AS 50
125	M.L	AS 50	M.L	AS 50
150	M.L	AS 50	M.L	AS 50
200	M.L/RS 200	AS 50	M.L/RS 200	BS 100
250	M.L/RS 200	AS 50	M.L/RS 200	BS 100
300	RS 200	BS 100	RS 200	BS 100
350	RS 200	B+RS 200	RS 200	B+RS 200
400	RS 200	B+RS 200	RS 200	B+RS 200
450	RS 200	B+RS 200	RS 400	B+RS 200
500	RS 200	B+RS 200	RS 400	B+RS 200
550	RS 400	B+RS 400	RS 400	B+RS 400
600	RS 1200 WG	B+RS 400	RS 1200 WG	B+RS 1200 WG
650	RS 1200 WG	B+RS 400	RS 1200 WG	B+RS 1200 WG
700	RS 1200 WG	B+RS 1200 WG	RS 1200 WG	B+RS 1200 WG

WAFER TYPE

Size (mm)	Shut off pressure 5.25 Kg/Cm ²		Shut off pressure 10.5 Kg/Cm ²	
	Manual Gear Box	Electrical Actuator + Gear Box	Manual Gear Box	Electrical Actuator + Gear Box
600	RS 400	B+RS 400	RS 1200 WG	B+RS 1200 WG
650	RS 400	B+RS 400	RS 1200 WG	K 300 (144 RPM)+RS 400
700	RS 1200 WG	BK 150 (96 RPM)+RS 1200 WG	RS 1200 WG	BK 150 (96 RPM)+RS 1200 WG
750	RS 1200 WG	BK 150 (96 RPM)+RS 1200 WG	RS 1800 WG	K 300 (192 RPM)+RS 1200 WG
800	RS 1200 WG	BK 150 (96 RPM)+RS 1200 WG	RS 2500 WG	K 300 (192 RPM)+RS 1200 WG
850	RS 1200 WG	K 300 (144 RPM)+RS 1200 WG	RS 2500 WG	K 300 (144 RPM)+RS 1800 WG
1000	RS 1800 WG	K 300 (144 RPM)+RS 1200 WG	RS 3000 WG	K 300 (192 RPM)+RS 2500 WG
1050	RS 1800 WG	K 300 (144 RPM)+RS 1200 WG	RS 4000 WG	K 300 (144 RPM)+RS 2500 WG
1100	RS 2500 WG	K 300 (144 RPM)+RS 1800 WG	RS 4000 WG	K 300 (144 RPM)+RS 2500 WG
1200	RS 2500 WG	K 300 (144 RPM)+RS 1800 WG	RS 4000 WG	K 300 (144 RPM)+RS 3000 WG
1300	RS 3000 WG	K 300 (192 RPM)+RS 2500 WG	RS 6300 WG	K 300 (192 RPM)+RS 4000 WG
1400	RS 4000 WG	K 300 (144 RPM)+RS 3000 WG	RS 6300 WG	K 300 (192 RPM)+RS 6300 WG
1500	RS 4000 WG	K 300 (144 RPM)+RS 3000 WG	RS 10000 WG	K 300 (144 RPM)+RS 6300 WG
1600	RS 6300 WG	K 300 (192 RPM)+RS 4000 WG	RS 10000 WG	K 300 (192 RPM)+RS 10000 WG
1650	RS 6300 WG	K 300 (192 RPM)+RS 4000 WG	RS 10000 WG	K 300 (144 RPM)+RS 10000 WG
1800	RS 6300 WG	K 300 (192 RPM)+RS 6300 WG	RS 10000 WG	K 300 (144 RPM)+RS 10000 WG

FLANGED TYPE

Size (mm)	Shut off pressure 1 Kg /Cm ²	
	Manual Gear Box	Electrical Actuator + Gear Box
500	RS 200	B+RS 200
550	RS 200	B+RS 200
600	RS 200	B+RS 200
650	RS 200	B+RS 200
700	RS 200	B+RS 200
750	RS 200	B+RS 200
800	RS 400	B+RS 400
900	RS 400	B+RS 400
1000	RS 400	B+RS 400
1100	RS 400	B+RS 400
1200	RS 400	B+RS 400

FAB. WAFER TYPE

* Manual Lever

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

Table 6

Size (mm)	Differential Pressure in Kg/Cm ²				
	VA3D	VA4D	VA5D	VA4D	VA5D
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	3.4	10.5	8.4	10.5	10.5
250	0.9	10.5	6.2	10.5	10.5
300	3.2	8.8	1.8	8.2	10.5
350	1.1	4.1	3.8	3.8	9.1
400	0.2	2.3	2.0	5.6	5.6
450		1.2	1.0	3.6	3.6
500		0.5	0.4	2.1	2.1

WAFER TYPE

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

Table 7

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
PC44	3	10.5	10.5	10.5	10.5	4.4	1.6									
	4	10.5	10.5	10.5	7.4	3.3	1.2									
	5	10.5	10.5	10.5	10.5	9.8	5.0	2.4								
	3					10.5	10.5	10.5	6.2	3.7	2.2	1.1				
	4					10.5	10.5	10.5	9.1	5.7	3.6	2.1				
PC68	3															
	5															
PC816	3															
	4															
PC44	3	10.5	10.5	10.5	10.5	10.5	5.3	2.7								
	4	10.5	10.5	10.5	10.5	10.5	8.3	4.7								
PC68	3	10.5	10.5	10.5	10.5	10.5	10.5	6.8								
	4															
PC816	3															
	4															

FOR 90° OPERATION

WAFER TYPE

FOR 60° OPERATION

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	1100	1200		
PC68	3	1.0	1.0													
	4	1.0	1.0	1.0												
	5	1.0	1.0	1.0												
PC816	3				1.0	1.0	1.0									
	4				1.0	1.0	1.0	1.0	0.8							
PC68	3	1.0	1.0	1.0												
	4	1.0	1.0	1.0												
	5	1.0	1.0	1.0	0.8											
PC816	3															
	4															

FOR 90° OPERATION

FAB. WAFER TYPE

FOR 60° OPERATION





VII. OVERALL DIMENSIONS

VII. 1. Wafer type butterfly valves

VII. 1. 1. Wafer type valve assembly

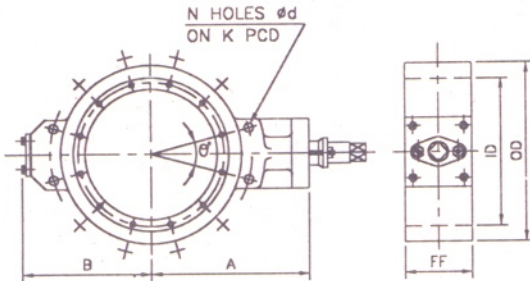


Table 8

Size (mm)	B	A	FF	ID	OD	K	N	φ d	θ°	Wt. Appx
VBS 80	116	161	80	88	127	152.5	4	19	90°	26
VBS 100	146	190	80	105	157	190.5	4	19	45°	29
VBS 125	151	205	80	130	186	216	4	22	45°	36
VBS 150	178	180	86	150	215	241.3	4	22	45°	43
VBS 200	188	255	80	201	270	298.5	4	22	45°	59
VBS 250	236	250	90	250	324	362	4	26	30°	71
VBS 300	270	315	90	300	381	432	4	26	30°	94
VBS 350	305	350	100	351	410	476	4	29	30°	107
VBS 400	330	384	105	400	470	540	4	29	22°30'	133
VBS 450	365	380	117.5	450	533	578	4	32	22°30'	200
VBS 500	400	420	120	500	584	635	4	M30x3	18°	228
VBS 550	405	445	203	543	640	692	4	M33x3	18°	345
VBS 600	465	490	250	615	692	750	4	M33x3	18°	462
VBS 650	500	525	254	645	711	807	4	M33x3	15°	503
VBS 700	520	543	250	720	800	864	4	M33x3	12°51'	547

FLANGE DRILLING AS PER ANSI B16.5 CLASS 150, UPTO 600 mm size and as per AWWA C 207 CLASS D FOR 100 TO 700 mm SIZE,

VII. 1. 3. Wafer type valve with electrical actuator

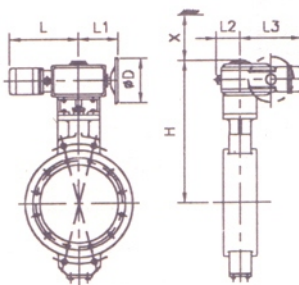


Table 10

MODEL	L	L1	L2	L3	φ D	H±20	X	Wt. Appx
VBS 80 WITH AS 50	280	180	75	220	250	411	65	44
VBS 100 WITH AS 50	280	180	75	220	250	440	65	48
VBS 125 WITH AS 50	280	180	75	220	250	455	65	58
VBS 150 WITH AS 50	280	180	75	220	250	430	65	68
VBS 200 WITH AS 50	280	180	75	220	250	505	65	88
VBS 200 WITH BS 100	341	190	111	264	250	505	100	100
VBS 250 WITH AS 50	280	180	75	220	250	500	65	104
VBS 250 WITH BS 100	341	190	111	264	250	500	100	116
VBS 300 WITH BS 100	341	190	111	264	250	565	100	142

VII. 1. 2. Wafer type valve with manual gear box

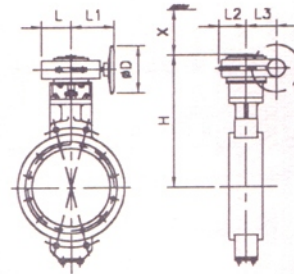


Table 9

MODEL	L	L1	L2	L3	φ D	H±20	X	Wt. Appx
VBS 200 WITH RS 200	143	290	126	117	400	501	100	105
VBS 250 WITH RS 200	143	290	126	117	400	496	100	121
VBS 300 WITH RS 200	143	290	126	117	400	561	100	147
VBS 350 WITH RS 200	143	290	126	117	400	596	100	142
VBS 400 WITH RS 200	143	290	126	117	400	630	100	168
VBS 450 WITH RS 200	143	290	126	117	400	626	100	235
VBS 450 WITH RS 400	165	367	120	151	500	646	110	283
VBS 500 WITH RS 200	143	290	126	117	400	666	100	263
VBS 500 WITH RS 400	165	367	120	151	500	686	110	284
VBS 550 WITH RS 400	165	367	120	151	500	711	110	401
VBS 600 WITH RS 1200 WG	252	425	116	115	500	830	170	606
VBS 650 WITH RS 1200 WG	252	425	116	115	500	865	170	647
VBS 700 WITH RS 1200 WG	252	425	116	115	500	883	170	691

VII. 1. 4. Wafer type valve with gear box & electrical actuator

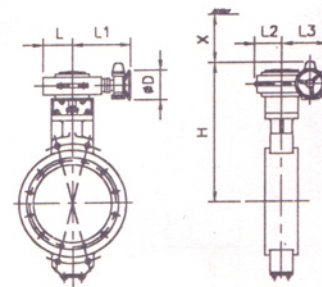


Table 11

MODEL	L	L1	L2	L3	φ D	H±20	X	Wt. Appx
VBS 400 WITH B+RS 200	143	402	203	232	300	813	100	193
VBS 450 WITH B+RS 200	143	402	203	232	300	809	100	260
VBS 500 WITH B+RS 200	143	402	203	232	300	849	100	288
VBS 550 WITH B+RS 400	175	441	179	266	300	945	110	428
VBS 600 WITH B+RS 400	175	441	179	266	300	945	110	545
VBS 600 WITH B+RS 1200 WG	240	725	225	518	300	990	170	632
VBS 650 WITH B+RS 400	175	441	179	266	300	1025	110	586
VBS 650 WITH B+RS 1200 WG	240	725	225	518	300	1025	170	673
VBS 700 WITH B+RS 1200 WG	240	725	225	518	300	1043	170	717

ALL DIMENSIONS ARE IN mm AND WEIGHTS IN Kg.



VII. 1. 5. Wafer type valve with manual lever

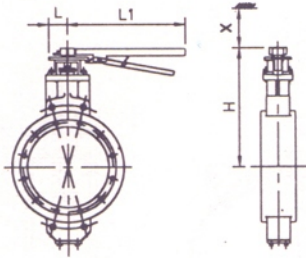


Table 12

MODEL	L	L1	H+20	X	Wt. Appx
VBS 80 WITH ML	65	350	243	50	31
VBS 100 WITH ML	65	350	272	50	35
VBS 125 WITH ML	65	350	287	50	45
VBS 150 WITH ML	65	350	262	50	55
VBS 200 WITH ML	65	350	337	50	75
VBS 250 WITH ML	65	350	332	50	91

VII. 1. 6. Wafer type valve with pneumatic cylinder (Model PC 44 LT)

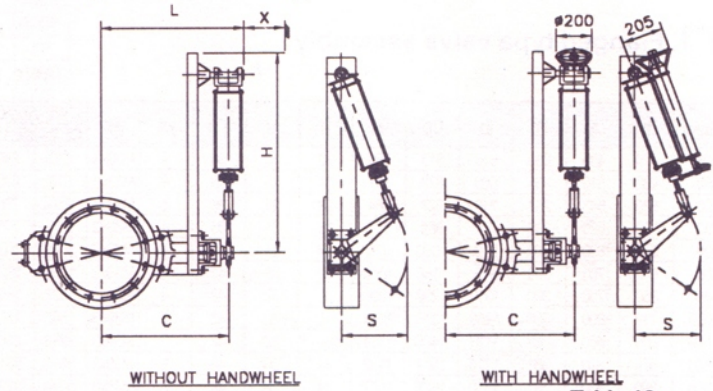


Table 13

MODEL	C	L	X	60° OPN.		90° OPN.		Wt. Appx.
				H+20	S	H+20	S	
VBS 80 WITH PC 44 LT	243	306	110	572	125	566	100	54
VBS 100 WITH PC 44 LT	272	335	110	572	125	566	100	57
VBS 125 WITH PC 44 LT	287	350	110	572	125	566	100	64
VBS 150 WITH PC 44 LT	262	325	110	572	125	566	100	71
VBS 200 WITH PC 44 LT	337	400	110	572	125	566	100	86
VBS 250 WITH PC 44 LT	332	395	110	572	125	566	100	99
VBS 300 WITH PC 44 LT	397	460	110	572	125	566	100	122

* FOR WEIGHT WITH HANDWHEEL ADD 10 Kg.

VII. 1. 7. Wafer type valve with diaphragm actuator

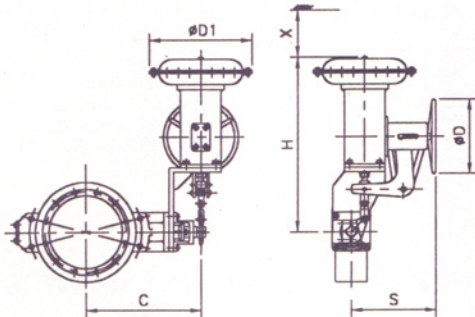


Table 14

MODEL	C	φ D	φ D1	X	60° OPN.		90° OPN.		Wt. Appx.
					H+20	S	H+20	S	
VBS 80 WITH VA3D	262	450	450	140	656	414	691	395	90
VBS 100 WITH VA3D	291	450	450	140	656	414	691	395	94
VBS 125 WITH VA3D	306	450	450	140	656	414	691	395	104
VBS 150 WITH VA3D	281	450	450	140	656	414	691	395	114
VBS 200 WITH VA3D	356	450	450	140	656	414	691	395	134
VBS 200 WITH VA4D	437	570	520	190	876	565	919	538	215
VBS 250 WITH VA3D	351	450	450	140	656	414	691	395	150
VBS 250 WITH VA4D	432	570	520	190	876	565	919	538	231
VBS 250 WITH VA5D	432	570	620	205	1094	697	1148	660	316
VBS 300 WITH VA3D	416	450	450	140	656	414	691	395	176
VBS 300 WITH VA4D	497	570	520	190	876	565	919	538	257
VBS 300 WITH VA5D	497	570	620	205	1094	697	1148	660	342
VBS 350 WITH VA4D	532	570	520	190	876	565	919	538	252
VBS 350 WITH VA5D	532	570	620	205	1094	697	1148	660	337
VBS 400 WITH VA4D	566	570	520	190	876	565	919	538	278
VBS 400 WITH VA5D	566	570	620	205	1094	697	1148	660	363
VBS 450 WITH VA4D	562	570	520	190	876	565	919	538	345
VBS 450 WITH VA5D	562	570	620	205	1094	697	1148	660	430
VBS 500 WITH VA4D	602	570	520	190	876	565	919	538	373
VBS 500 WITH VA5D	602	570	620	205	1094	697	1148	660	458

VII. 1. 8. Wafer type valve with pneumatic cylinder (Model PC 68 LT / PC 816 LT)

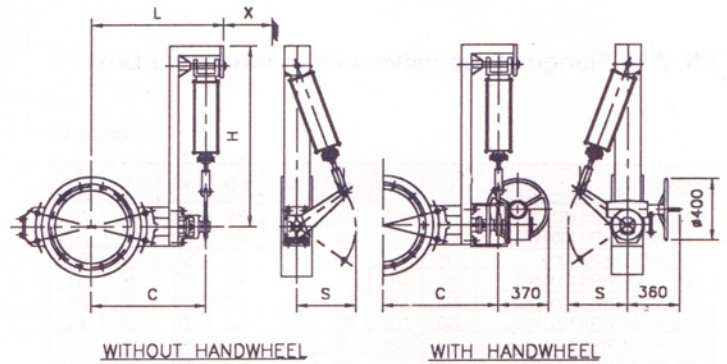


Table 15

MODEL	C	L	X	60° OPN.		90° OPN.		Wt. Appx.
				H+20	S	H+20	S	
VBS 200 WITH PC 68 LT	406	545	175	838	225	823	170	132
VBS 250 WITH PC 68 LT	401	540	175	838	225	823	170	144
VBS 300 WITH PC 68 LT	466	605	175	838	225	823	170	167
VBS 350 WITH PC 68 LT	501	640	175	838	225	823	170	180
VBS 350 WITH PC 816 LT	545	730	215	1371	430	1336	310	282
VBS 400 WITH PC 68 LT	535	674	175	838	225	823	170	206
VBS 400 WITH PC 816 LT	579	764	215	1371	430	1335	310	308
VBS 450 WITH PC 68 LT	531	670	175	838	225	823	170	273
VBS 450 WITH PC 816 LT	575	760	215	1371	430	1335	310	375
VBS 500 WITH PC 68 LT	571	710	175	838	225	823	170	301
VBS 500 WITH PC 816 LT	615	800	215	1371	430	1335	310	403
VBS 550 WITH PC 816 LT	640	825	215	1371	430	1335	310	520
VBS 600 WITH PC 816 LT	685	870	215	1371	430	1335	310	637
VBS 650 WITH PC 816 LT	720	905	215	1371	430	1335	310	678
VBS 700 WITH PC 816 LT	738	923	215	1371	430	1335	310	722

* FOR WEIGHT WITH HANDWHEEL ADD 60 KG.

ALL DIMENSIONS ARE IN mm AND WEIGHTS IN Kg.



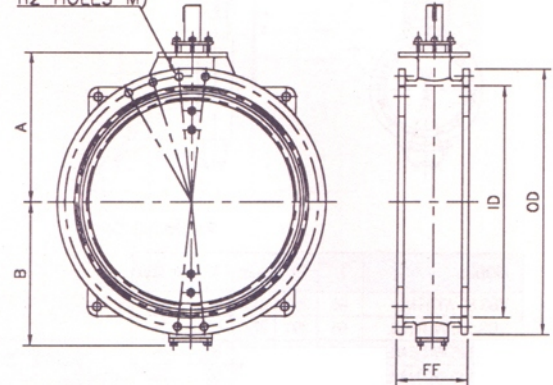
VII. 2. Flanged butterfly valves

VII. 2. 1. Flanged type valve assembly

Table 16

SIZE (mm)	B	A	FF	ID	OD	K	N	n1	φ d	n2	M	Wt. Appx.	
												CL.75	CL.150
VBS 600	470	490	250	610	813	750	20	16	36	4	M33x3	640	640
VBS 650	480	510	254	660	873	807	24	20	36	4	M33x3	670	670
VBS 700	530	543	254	710	927	864	28	24	36	4	M33x3	750	750
VBS 750	550	620	300	780	984	914	28	24	36	4	M33x3	775	775
VBS 800	570	630	300	810	1060	978	28	24	42	4	M39x3	1090	1167
VBS 900	645	705	300	910	1168	1068	32	28	42	4	M39x3	1235	1324
VBS 1000	660	750	300	1010	1290	1200	36	32	42	4	M39x3	1527	1655
VBS 1050	719	800	300	1060	1346	1257	36	32	42	4	M39x3	1603	1753
VBS 1100	800	860	305	1110	1400	1314	40	32	42	8	M39x3	2283	2463
VBS 1200	875	870	381	1210	1511	1422	44	36	42	8	M39x3	2616	2816
VBS 1300	880	930	381	1310	1626	1537	44	36	48	8	M45x3	3044	3294
VBS 1400	990	1090	381	1410	1740	1649	48	40	48	8	M45x3	3639	3939
VBS 1500	1080	1160	381	1510	1855	1759	52	44	48	8	M45x3	4361	4761
VBS 1600	1100	1195	457	1610	2032	1930	52	44	48	8	M45x3	5833	6333
VBS 1650	1120	1330	457	1650	2032	1930	52	44	48	8	M45x3	6321	6871
VBS 1800	1230	1330	457	1812	2197	2096	60	48	48	12	M45x3	7545	8294

N HOLES ON K PCD
(n1 HOLES φd AND
n2 HOLES M)

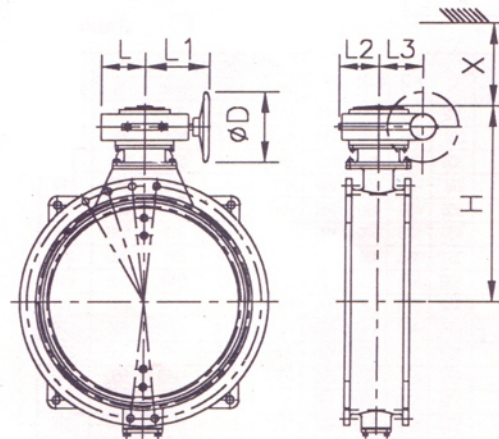


FLANGE DRILLING AS PER AWWA C-207 CLASS D.

VII. 2. 2. Flanged type valve with manual gear box

Table 17

MODEL	L	L1	L2	L3	φ D	H _{±20}	X	Wt. Appx.
VBS 600 WITH RS 400	175	367	120	151	500	806	85	710
VBS 600 WITH RS 1200 WG	240	600	225	403	650	850	150	797
VBS 650 WITH RS 400	175	367	120	151	500	826	85	740
VBS 650 WITH RS 1200 WG	240	600	225	403	650	870	150	827
VBS 700 WITH RS 1200 WG	240	600	225	403	650	903	150	907
VBS 750 WITH RS 1200 WG	240	600	225	403	650	980	150	932
VBS 750 WITH RS 1800 WG	300	625	280	480	650	1007	175	957
VBS 800 WITH RS 1200 WG	240	600	225	403	650	990	150	1247
VBS 800 WITH RS 2500 WG	300	625	280	509	650	1017	175	1364
VBS 900 WITH RS 1200 WG	240	600	225	403	650	1065	150	1392
VBS 900 WITH RS 2500 WG	300	625	280	509	650	1092	175	1521
VBS 1000 WITH RS 1800 WG	300	625	280	480	650	1137	175	1709
VBS 1000 WITH RS 3000 WG	425	780	280	630	700	1230	210	2032
VBS 1000 WITH RS 1800 WG	300	625	280	480	650	1237	175	1785
VBS 1050 WITH RS 1800 WG	300	625	280	480	650	1237	175	1785
VBS 1050 WITH RS 4000 WG	425	800	260	603	700	1330	210	2150
VBS 1100 WITH RS 2500 WG	300	625	280	509	650	1297	175	2480
VBS 1100 WITH RS 4000 WG	425	800	260	603	700	1390	210	2860
VBS 1200 WITH RS 2500 WG	300	625	280	509	650	1357	175	2813
VBS 1200 WITH RS 4000 WG	425	800	260	603	700	1450	210	3213
VBS 1300 WITH RS 3000 WG	425	780	280	630	700	1510	210	3451
VBS 1300 WITH RS 6300 WG	425	815	260	603	800	1510	210	3731
VBS 1400 WITH RS 4000 WG	425	800	260	603	700	1670	210	4036
VBS 1400 WITH RS 6300 WG	425	815	260	603	800	1670	210	4346
VBS 1500 WITH RS 4000 WG	425	800	260	603	700	1740	210	4758
VBS 1500 WITH RS 10000 WG	425	835	260	664	800	1740	210	5238
VBS 1600 WITH RS 6300 WG	425	815	260	603	800	1775	210	6240
VBS 1600 WITH RS 10000 WG	425	835	260	664	800	1775	210	6810
VBS 1650 WITH RS 6300 WG	425	815	260	603	800	1910	210	6728
VBS 1650 WITH RS 10000 WG	425	835	260	664	800	1910	210	7348
VBS 1800 WITH RS 6300 WG	425	815	260	603	800	1910	210	7951
VBS 1800 WITH RS 10000 WG	425	835	260	664	800	1910	210	8771



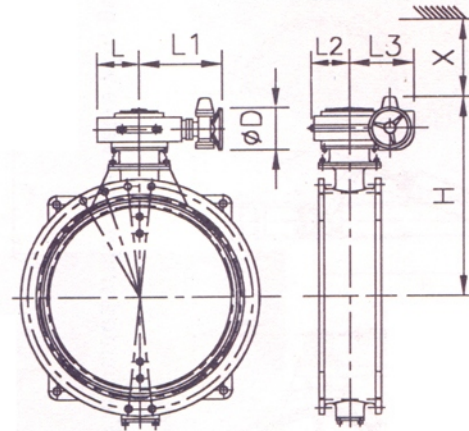
ALL DIMENSIONS ARE IN mm-AND WEIGHTS IN Kg.



VII. 2. 3. Flanged valve with gearbox & electrical actuator

Table 18

MODEL	L	L1	L2	L3	φ D	H±20	X	Wt. Appx.
VBS 600 WITH B+RS 400	175	441	179	266	300	990	150	737
VBS 600 WITH B+RS 1200 WG	240	725	225	518	300	994	150	824
VBS 600 WITH K300 (144)+RS 400	175	501	179	588	510	1130	285	777
VBS 650 WITH B+RS 400	175	441	179	266	300	1010	150	767
VBS 650 WITH B+RS 1200 WG	240	725	225	518	300	1014	150	854
VBS 650 WITH K150 (96)+RS 1200 WG	240	729	225	579	364	1130	285	876
VBS 700 WITH B+RS 1200 WG	240	725	225	518	300	1047	150	934
VBS 700 WITH K150 (96)+RS 1200 WG	240	729	225	579	364	1163	285	956
VBS 700 WITH K300 (192)+RS 1200 WG	240	785	225	618	510	1183	285	974
VBS 750 WITH B+RS 1200 WG	240	725	225	618	510	1124	150	959
VBS 750 WITH K150 (96)+RS 1200 WG	240	729	225	579	364	1240	285	981
VBS 750 WITH K300 (192)+RS 1200 WG	240	729	225	618	364	1260	285	999
VBS 800 WITH B+RS 1200 WG	240	725	225	518	300	1134	150	1274
VBS 800 WITH K150 (96)+RS 1200 WG	240	729	225	579	364	1250	285	1296
VBS 800 WITH K300 (144)+RS 1200 WG	240	785	225	618	510	1275	285	1391
VBS 900 WITH K300 (144)+RS 1200 WG	240	785	225	618	510	1345	285	1459
VBS 900 WITH K300 (144)+RS 1800 WG	300	810	230	694	510	1375	285	1573
VBS 1000 WITH K300 (144)+RS 1200 WG	240	785	225	618	510	1390	285	1751
VBS 1000 WITH K300 (192)+RS 2500 WG	300	810	230	724	510	1420	285	1919
VBS 1050 WITH K300 (144)+RS 1200 WG	240	785	225	618	510	1490	285	2051
VBS 1050 WITH K300 (144)+RS 2500 WG	300	810	230	724	510	1520	285	2245
VBS 1100 WITH K300 (144)+RS 1800 WG	300	810	230	695	510	1580	285	2528
VBS 1100 WITH K300 (144)+RS 2500 WG	300	810	230	724	510	1580	285	2708
VBS 1200 WITH K300 (144)+RS 1800 WG	300	810	230	694	510	1640	285	2862
VBS 1200 WITH K300 (144)+RS 3000 WG	425	960	300	845	510	1650	285	3257
VBS 1300 WITH K300 (192)+RS 2500 WG	300	810	230	724	510	1710	285	3334
VBS 1300 WITH K300 (144)+RS 4000 WG	425	975	300	818	510	1710	285	3784
VBS 1400 WITH K300 (144)+RS 3000 WG	425	960	300	845	510	1870	285	4000
VBS 1400 WITH K300 (144)+RS 6300 WG	425	975	300	818	510	1870	285	4330
VBS 1500 WITH K300 (144)+RS 6300 WG	425	960	300	845	510	1940	285	4805
VBS 1500 WITH K300 (144)+RS 6300 WG	425	975	300	818	510	1940	285	5235
VBS 1600 WITH K300 (192)+RS 4000 WG	425	975	300	818	510	1975	285	6295
VBS 1600 WITH K300 (192)+RS 10000 WG	425	995	300	879	510	1975	285	6875
VBS 1650 WITH K300 (192)+RS 4000 WG	425	975	300	818	510	2110	285	6559
VBS 1650 WITH K300 (144)+RS 10000 WG	425	995	300	879	510	2110	285	7189
VBS 1800 WITH K300 (192)+RS 6300 WG	425	975	300	818	510	2110	285	8022
VBS 1800 WITH K300 (144)+RS 10000 WG	425	995	300	879	510	2110	285	8842



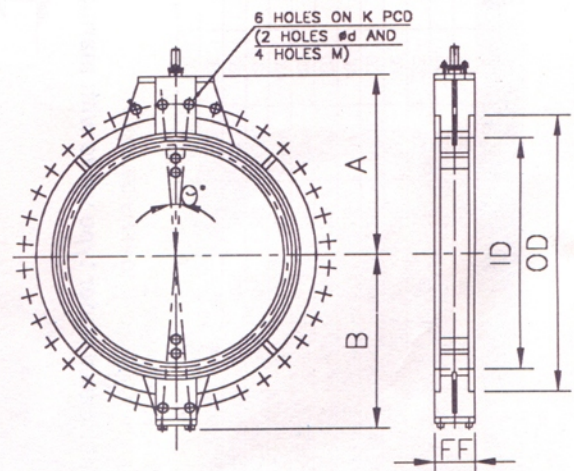
VII. 3. Wafer type Fabricated Butterfly Valves

VII. 3. 1. Wafer type fabricated valve assembly

Table 19

SIZE (mm)	B	A	FF	ID	OD	K	φ d	M	8°	Wt. Appx.
VBS 500	365	400	180	500	584	635 (635)	22 (33)	M20 (M30X3)	18°(18°)	124
VBS 550	410	460	180	650	630	692 (692)	22 (36)	M20 (M33X3)	18°(18°)	139
VBS 600	425	475	180	600	670	750(750)	22 (36)	M20 (M33X3)	18°(18°)	157
VBS 650	460	510	180	650	725	807	22	M20	15°	163
VBS 700	475	520	180	700	805	864	22	M20	12°15'	187
VBS 750	525	575	180	750	825	914	26	M24	12°15'	195
VBS 800	560	610	180	800	890	978	26	M24	12°15'	225
VBS 850	585	630	180	850	930	1029	26	M24	11°15'	250
VBS 900	635	705	180	900	990	1086	26	M24	11°15'	275
VBS 950	650	710	180	950	1030	1149	26	M24	11°15'	300
VBS 1000	680	725	220	1000	1090	1200	29	M27	10°	320
VBS 1100	735	785	220	1100	1182	1314	29	M27	9°	344
VBS 1200	790	840	220	1200	1280	1422	29	M27	8°10'	375

* FLANGE DRILLING AS PER AWWA C-207 CL.B
 * DIMENSION SHOWN IN () CORRESPONDS TO ANSI 150 DRILLING



* ALL DIMENSIONS ARE IN mm AND WEIGHGTS IN Kg

VII. 3. 2. Fabricated wafer type valve with pneumatic cylinder

Table 20

MODEL	C	L	X	60° OPN.		90° OPN.		Wt. Appx.
				H±20	S	H±20	S	
VBS 500 WITH PC 88 LT	551	680	175	838	225	823	170	197
VBS 550 WITH PC 88 LT	611	750	175	838	225	823	170	212
VBS 600 WITH PC 88 LT	628	765	175	838	225	823	170	230
VBS 650 WITH PC 816 LT	705	880	215	1371	430	1335	310	338
VBS 700 WITH PC 816 LT	715	900	215	1371	430	1335	310	362
VBS 750 WITH PC 816 LT	770	955	215	1371	430	1335	310	370
VBS 800 WITH PC 816 LT	805	990	215	1371	430	1335	310	400
VBS 850 WITH PC 816 LT	825	1010	215	1371	430	1335	310	425
VBS 900 WITH PC 816 LT	900	1085	215	1371	430	1335	310	450
VBS 950 WITH PC 816 LT	905	1090	215	1371	430	1335	310	475
VBS 1000 WITH PC 816 LT	920	1105	215	1371	430	1335	310	495
VBS 1100 WITH PC 816 LT	980	1165	215	1371	430	1335	310	519
VBS 1200 WITH PC 816 LT	1035	1220	215	1371	430	1335	310	550

* FLANGE DRILLING AS PER AWWA C-207 CL B
 * DIMENSION SHOWN IN () CORRESPONDS TO ANSI 150 DRILLING

VII. 3. 3. Fabricated wafer type valve with manual gear box

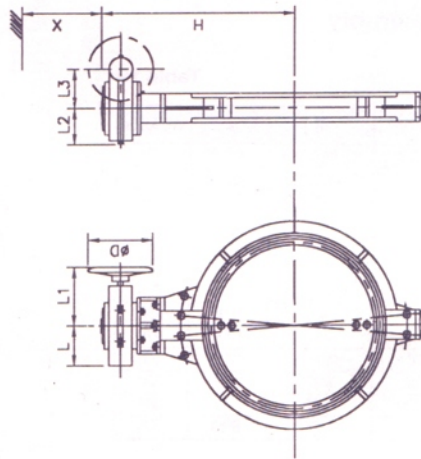
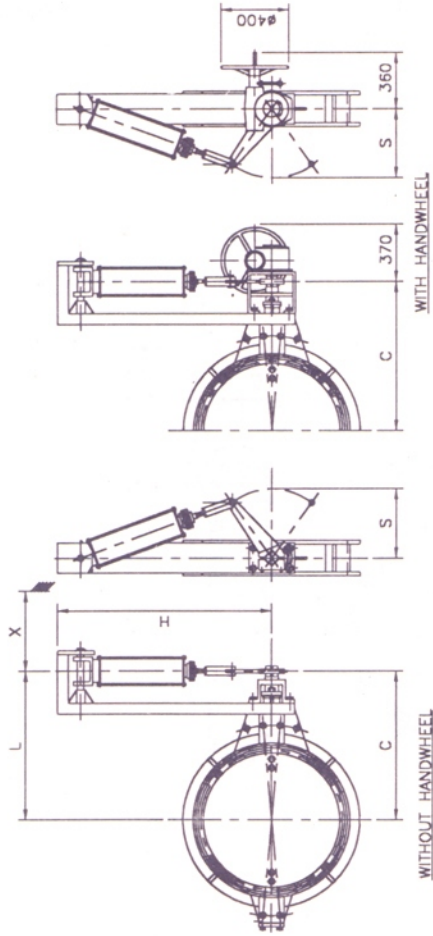


Table 21

MODEL	L	L1	L2	L3	φ D	H±20	X	Wt. Appx.
VBS 550 WITH RS 200	143	230	126	117	400	726	100	139
VBS 600 WITH RS 200	143	230	126	117	400	741	100	157
VBS 650 WITH RS 200	143	230	126	117	400	776	100	163
VBS 700 WITH RS 200	143	230	126	117	400	786	100	187
VBS 750 WITH RS 200	143	230	126	117	400	841	100	195
VBS 800 WITH RS 400	165	367	120	151	500	876	110	225
VBS 850 WITH RS 400	165	367	120	151	500	886	110	315
VBS 900 WITH RS 400	165	367	120	151	500	971	110	275
VBS 950 WITH RS 400	165	367	120	151	500	976	110	365
VBS 1000 WITH RS 400	165	367	120	151	500	991	110	320
VBS 1100 WITH RS 400	165	367	120	151	500	1051	110	344
VBS 1200 WITH RS 400	165	367	120	151	500	1106	110	375

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

Printed on 18-10-1997.



VII. 3. 4. Fabricated wafer type valve with gear box & electrical actuator

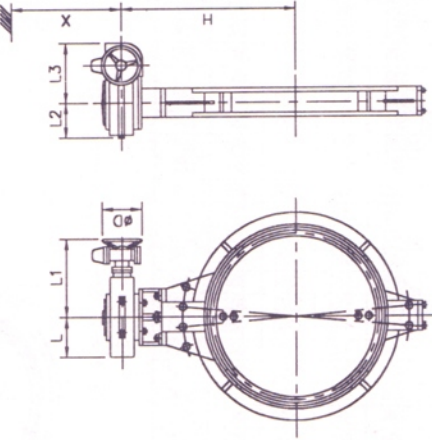


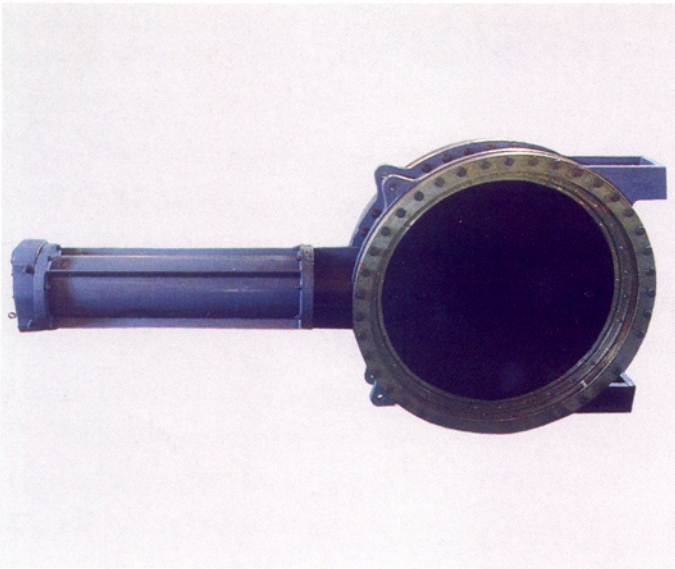
Table 22

MODEL	L	L1	L2	L3	φ D	H±20	X	Wt. Appx.
VBS 550 WITH B+ RS 200	143	402	203	232	300	909	100	208
VBS 600 WITH B+ RS 200	143	402	203	232	300	924	100	226
VBS 650 WITH B+ RS 200	143	402	203	232	300	969	100	232
VBS 700 WITH B+ RS 200	143	402	203	232	300	969	100	256
VBS 750 WITH B+ RS 200	143	402	203	232	300	1025	100	264
VBS 800 WITH B+ RS 400	175	441	179	266	300	1110	110	317
VBS 850 WITH B+ RS 400	175	441	179	266	300	1130	110	342
VBS 900 WITH B+ RS 400	175	441	179	266	300	1205	110	367
VBS 950 WITH B+ RS 400	175	441	179	266	300	1210	110	392
VBS 1000 WITH B+ RS 400	175	441	179	266	300	1225	110	412
VBS 1100 WITH B+ RS 400	175	441	179	266	300	1285	110	436
VBS 1200 WITH B+ RS 400	175	441	179	266	300	1340	110	467

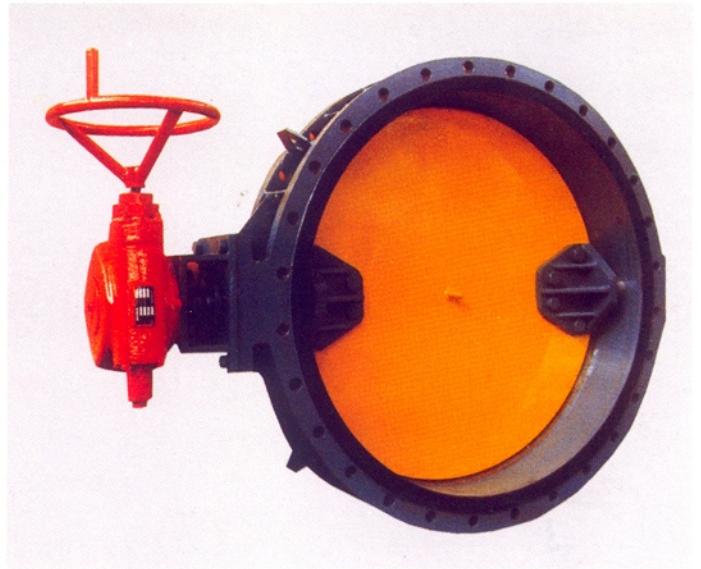
* ALL DIMENSIONS ARE IN mm AND WEIGHGTS IN Kg



VARIOUS TYPES OF VBS VALVES



Flanged valve with extension column.



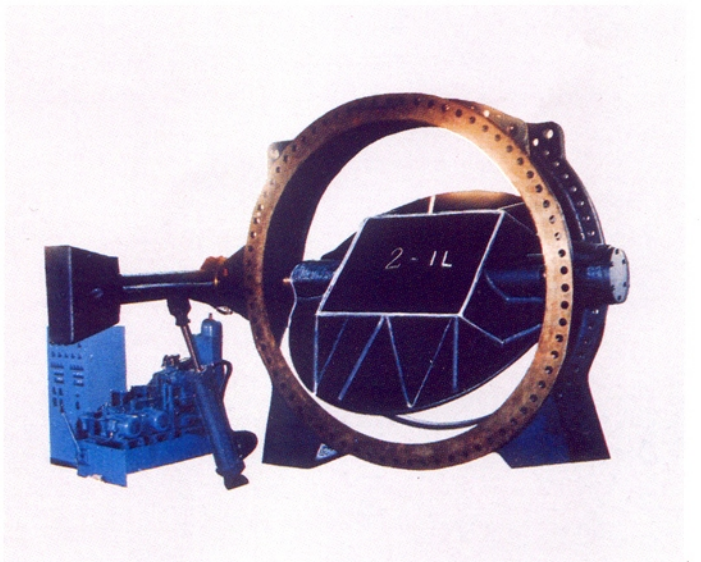
Fabricated valve with manual gear box.



A series of fabricated valves.



Fabricated valve with power cylinder and dead weight used as trip valve.



Biplane valve with hydraulic power pack.