



**INSTRUMENTATION LTD.,
PALAKKAD**

The conventional design of these control valves enable the usage in applications involving many fluids including hydro-carbons. The valve operation is quite steady throughout the stroke due to the relatively low unbalanced force and because of the guiding at top and bottom. The reversible body construction enables the choice of actuator more flexible to suit fail safe position.



**DOUBLE
PORTED
VALVES**

VDP





I. FEATURES

- Very high flow capacity.
- Reversible double seated control valve.
- High resistance to vibration and abrasion.
- Valve action reversible without change in actuator
- Wide range of Cv with different rangeability

SPECIFICATIONS *	VALVE ASSEMBLY	Top and Bottom Guided Double Port Double Seated Straight through type Globe valve.	
	PRESSURE RATING	ANSI 150, 300, 600	
	NOMINAL SIZE (Inches)	1" to 12" .	
	END CONNECTION	Flanged End (RF, FF & RJ).	
	SERVICE TEMP. RANGE	-20° C to 425° C	
STANDARD MATERIALS	VALVE BODY	Carbon Steel ASTM A 216 WCB Stainless Steel ASTM A 351 Gr. CF8, CF8M Alloy Steel A 217 WC6, WC9 Other Alloy materials against specific request.	
	TRIM	SS 316 Stellite seat.	
	PACKING	Teflon, Teflon Impregnated Asbestos, Graphited Asbestos, Graphoil etc. Other materials on request	
	GASKETS	Stainless Steel Serrated.	
	FLOW CHARACTERISTICS	Linear, Equal Percentage	
PERFORMANCE	RANGEABILITY	50:1 For V-Port Plug 30:1 For Contoured Plug	
	LEAKAGE AT FULL CLOSURE (% OF Cv)	0.5% or less (Class II as per ANSI B 16.104) (Class III can be provided as a special case)	
	BONNET	Plain, Finned & Extended	
	ACTION	With Positioner	Without positioner
	HYSTERESIS	1% FS or less	3% FS or less
	LINEARITY	± 1% FS or less	± 5% FS or less
	MAX. ALLOWABLE PRESSURE DROP	Diaphragm Type Actuator or Pneumatic piston cylinder type Actuator – Refer Table 2. Electrical Actuators on request	
Cv VALUE	Refer Table 1		
OPTIONS	TUBING	Copper Tubing (With/Without PVC Coating) size 6 or 8 mm. O.D. SS Tubing for Copper prohibition. Air Connection : ¼" NPT standard ½" NPT on request	
	ACCESSORIES	Manual Actuators. Slide Mounted Handwheel. Top Mounted Handwheel on request. Pneumatic & Electro-Pneumatic Positioner, I/P Converter, Solenoid valve, Air Filter Regulator, Air lock relay, Position Transmitter, Limit Switches, Volume Boosters etc.	

* For exact Product range refer Cv Table



VALVE ASSEMBLY

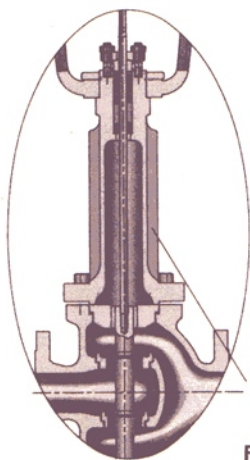
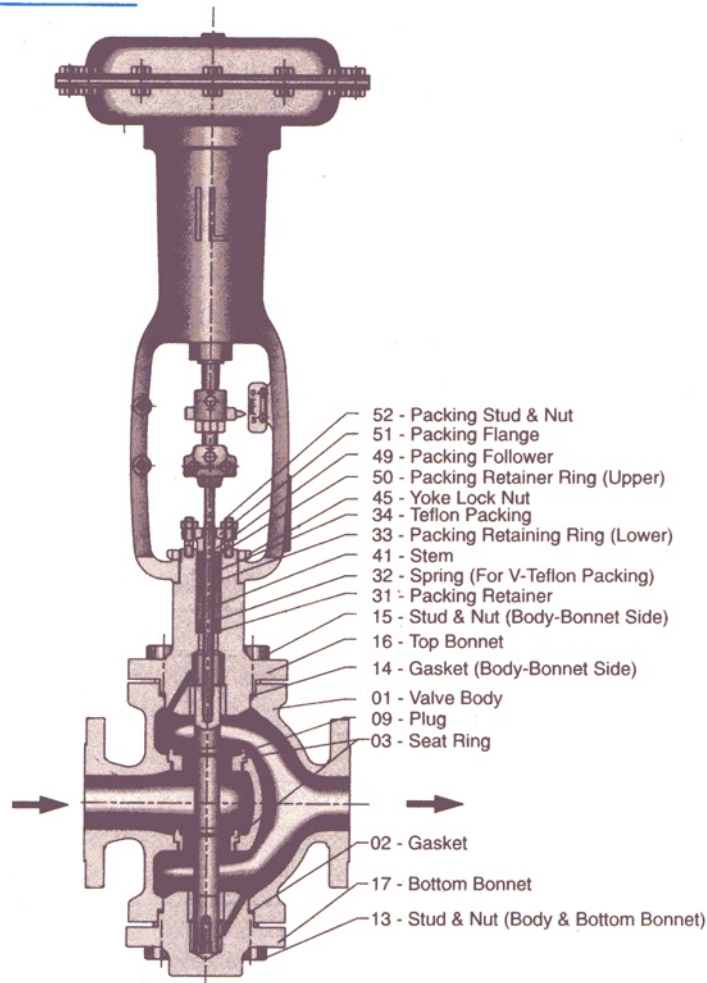


Fig. 2

Valve Assembly with Radiating Fin Bonnet
(For -30° to 425°C)

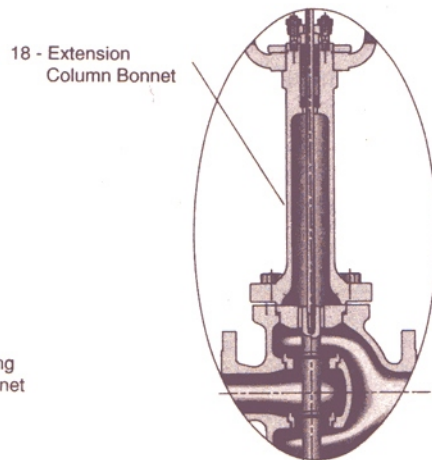


Fig. 3

Valve Assembly with Extension Column Bonnet
(For 0° to -195°C)

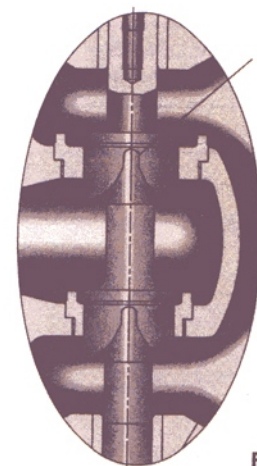
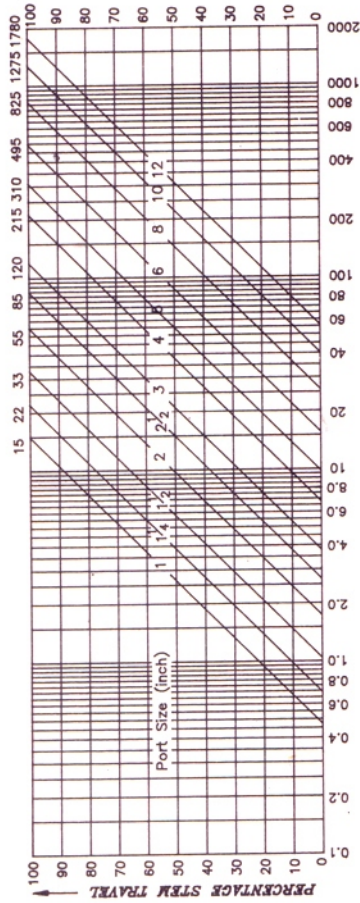


Fig. 4

Sectional View of
V - Port Plug Assembly

II. FLOW CHARACTERISTICS

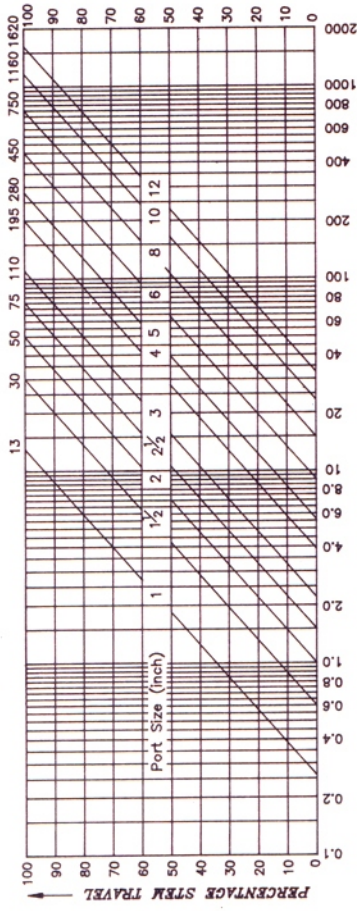
Equal percentage contoured (Rangeability 30:1)



Cv Value →

Graph 1

Equal percentage V - port (Rangeability 50:1)



Cv Value →

Graph 2

III. FLOW COEFFICIENT Cv WITH STEM TRAVEL

Table 1

VALVE SIZE (inch)	1				2				3				4									
	¾	1	1¼	1½	1¾	2	2½	3	3½	4	4½	5	5½	6	6½	7						
Port Size (inch)	9	13	15	15	22	30	33	33	50	55	55	75	85	85	110	120	120	120	155	165	175	
Equal Percentage V-Port	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equal Percentage Contoured	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Linear Contoured	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stem Travel (mm)	14.3																					

VALVE SIZE (inch)	6				8				10				12															
	4	5	6	8	5	6	8	10	6	8	10	12	8	10	12													
Port Size (inch)	215	310	450	495	280	310	495	750	825	450	495	825	1160	1275	750	825	1275	1620	1750									
Equal Percentage V-Port	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
Equal Percentage Contoured	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
Linear Contoured	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
Stem Travel (mm)	50																75				100				100			

- Available
- Not available

IV. MAXIMUM PRESSURE DIFFERENTIAL

Table 2

ACTUATOR MODEL	AIR TO DIAPHRAGM Kg/Cm ²	SPRING RANGE Kg/Cm ²	POSITIONER	PRESSURE DIFFERENTIAL (Kg/Cm ²) at PORT SIZE (inch)																		
				¾	1	1¼	1½	2	2½	3	4	5	6	8	10	12						
Direct Action	VA 1D	1.4	0.2-1.0	X	40	40	40	40	35	17												
	VA 2D	2.6	0.4-2.0	O	40	40	40	40	37													
Reverse Action	VA 1R	1.4	0.2-1.0	X					39	39	38	21	12	6.5								
	VA 2R	2.6	0.4-2.0	O					40	40	40	40	35	18								
Direct Action	VA 3D	1.4	0.2-1.0	X																		
	VA 4D	2.6	0.4-2.0	O																		
Reverse Action	*VA 3D	1.4	0.2-1.0	X																		
	VA 1R	1.4	0.4-1.2	O					31	31	25	20	16									
Reverse Action	VA 2R	1.4	0.2-1.0	X																		
	VA 3R	2.6	0.4-2.0	O																		
Direct Action	VA 4R	1.4	0.4-1.2	O																		
	VA 5R	1.4	0.2-1.0	X																		
Reverse Action	VA 5R	2.6	0.4-2.0	O																		
	VA 5R	1.4	0.4-1.2	O																		

- Note : X... Without Positioner O - With Positioner
 * Values given are for P1 = 20 Kg/Cm².



V. FACE TO FACE DIMENSIONS

Table 3

VALVE SIZE (Inch)	A (mm)					
	ANSI 150		ANSI 300		ANSI 600	
	RF	RJ	RF	RJ	RF	RJ
1	184	197	210	210	210	210
1½	222	235	248	248	251	251
2	254	267	283	283	286	289
2½	278	289	292	308	311	314
3	298	311	318	333	337	340
4	352	365	368	384	394	397
6	451	464	473	489	508	511
8	543	556	568	584	610	613
10	673	686	708	724	752	756
12	737	749	775	791	819	822

RF... Raised Face End RJ... Ring Joint

VI. EXTERNAL DIMENSIONS

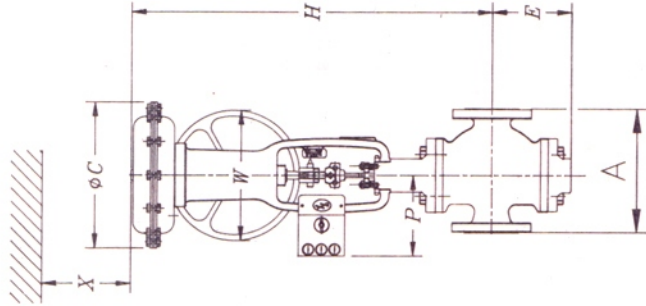


Table 4

VALVE SIZE (Inch)	ACTUATOR MODEL	H+10 (mm)				E (mm)	φ C (mm)
		DIRECT		REVERSE			
		P	RF	P	RF		
1	VA1 DR	705	855	705	855	130	300
	VA2 DR	840	990	840	990	130	350
	VA1 DR	745	895	745	895	165	300
1½	VA2 DR	875	1025	875	1025	165	350
	VA1 DR	745	895	745	895	170	300
	VA2 DR	875	1025	875	1025	170	350
2	VA2 DR	825	1075	825	1075	220	350
	VA3 DR	1090	1240	1090	1240	220	450
	VA2 DR	825	1075	825	1075	220	350
2½	VA3 DR	1090	1240	1090	1240	220	450
	VA2 DR	895	1085	895	1085	230	350
	VA3 DR	1100	1250	1100	1250	230	450
6	VA3 DR	1170	1320	1170	1320	290	450
	VA4 DR	1335	1485	1460	1635	290	520
	VA3 DR	1430	1580	1430	1580	385	520
8	VA4 DR	1485	1635	1635	1785	620	620
	VA5 DR	1780	1930	1910	2040	485	620
	VA5 DR	1795	1945	1925	2075	500	620

P... Plain Bonnet RF... Finned Bonnet

Table 5

Actuator Model	W	P		X
		HTP	HEP	
VA1 DR	280	216	300	230
VA2 DR	355	220	310	245
VA3 DR	450	240	335	245
VA4 DR	570	262	360	360
VA5 DR	570	270	375	420

VII. APPROXIMATE WEIGHTS

Table 6

VALVE SIZE (Inch)	ACTUATOR MODEL	Approximate Weights (Kg)					
		ANSI 150		ANSI 300		ANSI 600	
		P	RF	P	RF	P	RF
1	VA1 D	42	35	35	38	41	38
	VA2 D	45	48	48	51	51	54
1½	VA1 D	40	43	52	55	55	60
	VA2 D	43	56	65	70	70	75
2	VA1 D	50	53	57	60	60	65
	VA2 D	63	66	70	75	75	80
2½	VA2 D	80	83	90	95	100	105
	VA3 D	110	113	120	125	130	135
3	VA2 D	94	97	105	110	120	125
	VA3 D	125	128	135	140	150	155
4	VA2 D	110	115	120	125	140	145
	VA3 D	140	145	150	155	170	175
6	VA3 D	195	205	225	235	275	285
	VA4 D	275	285	305	315	355	365
8	VA3 D	395	405	500	510	700	710
	VA4 D	425	435	530	540	730	740
10	VA5 D	655	665	780	790	1010	1020
	VA5 D	760	770	890	900	1200	1210

P... Plain Bonnet RF... Finned Bonnet

Note : Approximate weights of valves mounted with VA1R, VA2R & VA3R are the same for that of VA1D, VA2D & VA3D respectively. Weights of VA4R & VA5R actuators are 115Kg. and 130Kg. more than that of VA4D & VA5D respectively.

Add the following weights for manual type actuator

VA1	VA2	VA3	VA4D	VA4R	VA5D	VA5R
8	13	23	41	41	81	81