



Single Seated Globe Valves
Series 10



**R.K. CONTROL
INSTRUMENTS PVT. LTD.**

THE CONTROL VALVE SPECIALISTS

An ISO 9001 Certified Company



Control Valve Cross Sectional View
Series 10

Series 10 : Engineering Specifications

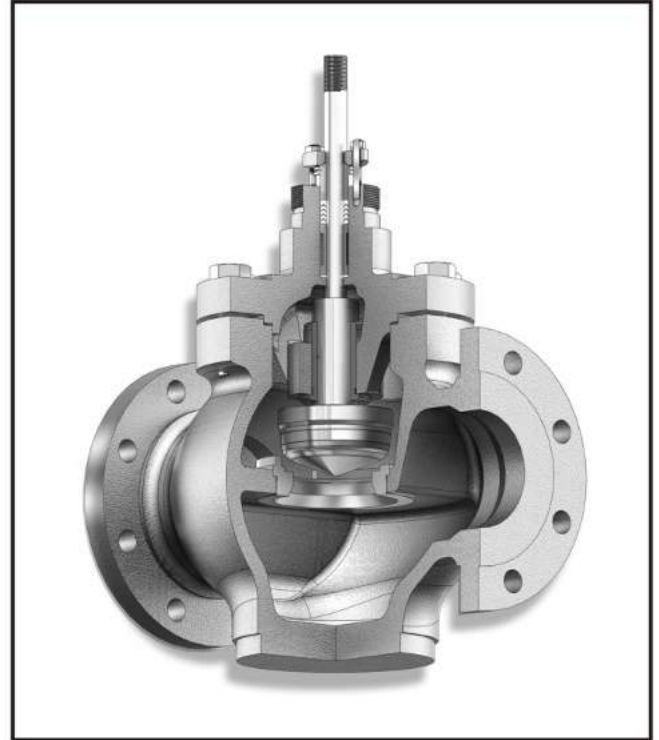
Valve Sizes	1/2" to 16" (15-400 mm). Higher sizes on request.
Body Ratings	ASME Class 150 to ASME Class 2500 DIN EN1092-1, PN2.5 to PN420 Other requirements available on request.
End Connection Styles	Raised Face (RF), Flat Face (FF), Ring type Joint (RTJ) , Tongue and Groove (T & G) Butt Weld (BW), Socket Weld (SW), Screwed. Other Requirements available on request.
Applicable Standards	Design standard ASME B 16.34 Screwed or Socket Weld as Per ASME B 16.11 Butt Weld as per ASME B 16.25 Face to face ISA S75.08 / ratings as per ASME B 16.34
Seat Leakage Classification	As Per FCI 70-2
Construction Materials Body and Bonnet	WCB, WCC, WC6, WC9, LCC, CF8, CF8M, Alloy 20, Hastelloy, Monel, Duplex SS and Other Specials on Request.
Bonnet Options	Standard, Normalising (Extended Bonnet/Finned), Bellow Seal and Cryogenic Bonnets.
Trim	SS 316/ SS 316 Stellite /17-4 PH / Duplex SS / SS 416 / SS 410 Alloy 20, Hastelloy, Monel Specials on Request
Inherent Characteristics	Equal Percentage / Linear / Quick Opening / Mod. Equal percentage
Standard Duty	The Contoured and Ported Cage Design are the Standard Trim Options used for Modulating or On / Off applications.
Severe Service Applications	Globe Control Valves find applications for the most Severe Applications that encounter Flashing and Cavitation. RK Control use the HF (High Friction) Family of Cage Guided Trims to prevent onset of Cavitation in liquid services and attenuate noise in Gas / Vapour Applications. HF: Single Cage Guided Trim HFD : Double Cage Guided Trim HFT: Triple Cage Guided Trim
Other Trim Design Options	Microspline Trims Used for low flow applications, Special Cv can be Engineered
Optional Noise Abating Devices	Baffle plates, Seat Exit Diffusers
Special Options	Jacketed Valves, Bellow Sealed Valves (Metallic/ PTFE) and RBH (Removable Blind Head)
Plug Options	
Unbalanced Plug	With Metal to Metal or Resilient Seating face for Class VI leakage
Balanced Plug	With Resilient / Graphite/ Metallic Piston Rings
Auxiliary Shut Off Pilot Plug Design	Used for Class V Shut Off & Elevated Temperatures
Actuation	Field reversible Spring and Diaphragm actuators, Piston Actuators, Multi spring (Compact actuators) and Electrical Actuators.
Accessories	Pneumatic Positioners, Electropneumatic Positioners, Smart Positioners with HART, Foundation Fieldbus and Profibus Protocols can be offered. Various other options of accessories can be supplied like Air Filter Pressure Regulators, Solenoid Valves, Limit Switches (Contact and Non Contact type), Volume Boosters, Air Lock Relays, Quick Exhaust Valve and Position Transmitters



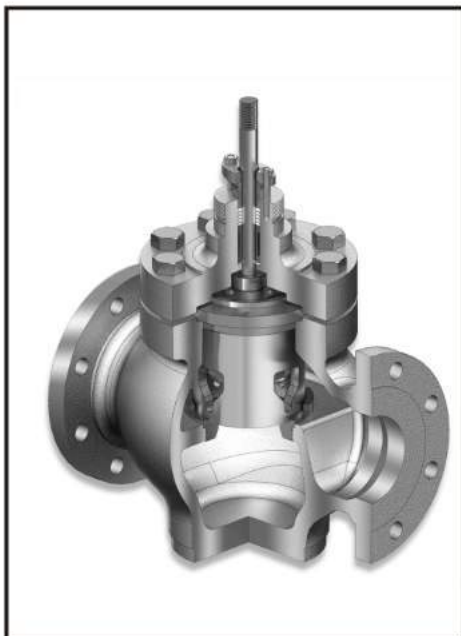
Trim Design Cross Sectional Views



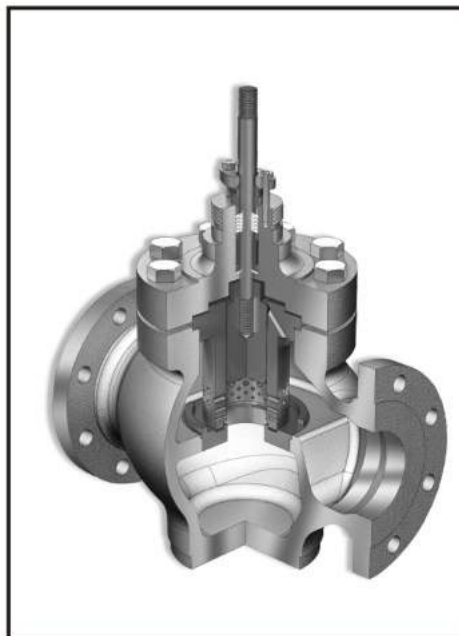
Microspline Trim



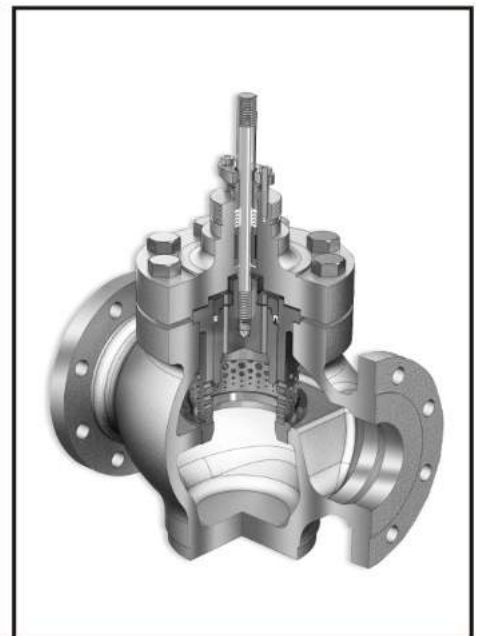
Contoured Trim



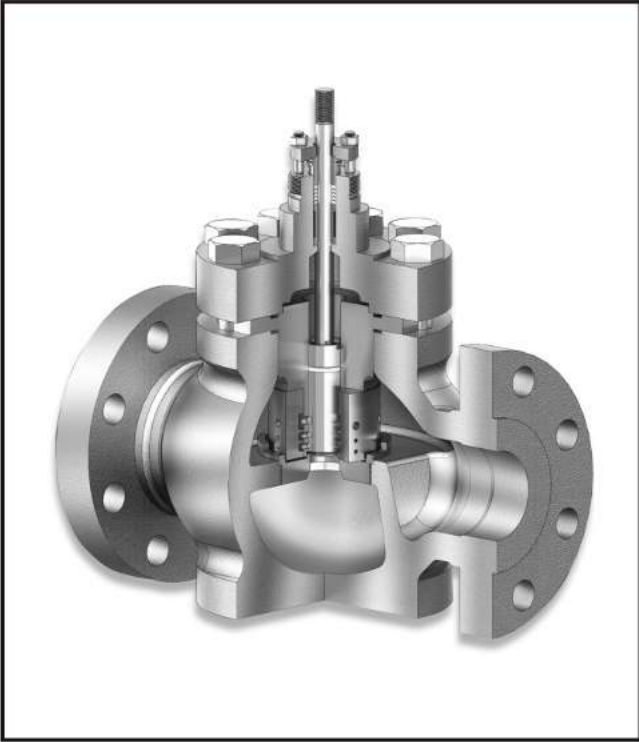
**HF Ported Cage Trim with
Balanced Plug**



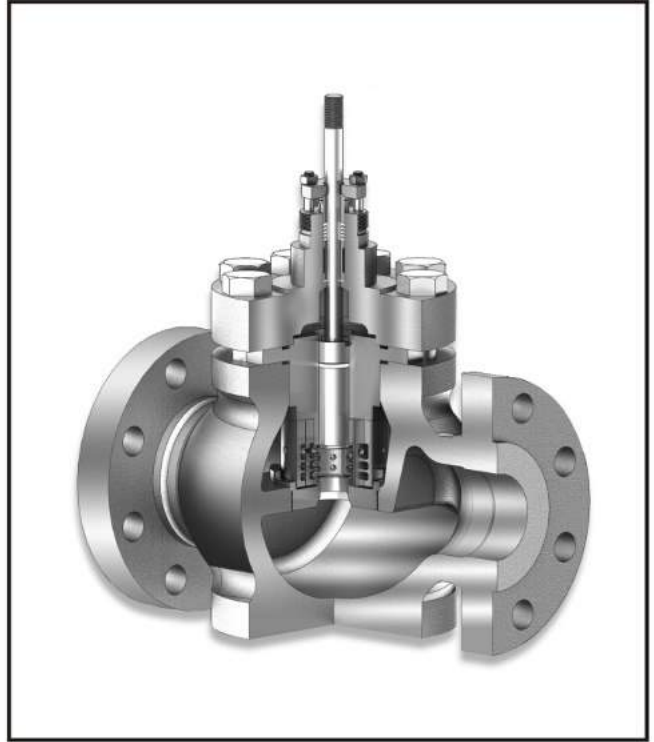
**HF Unbalanced Cage guided
Valves used for Anti Cavitation
and Low Noise Application**



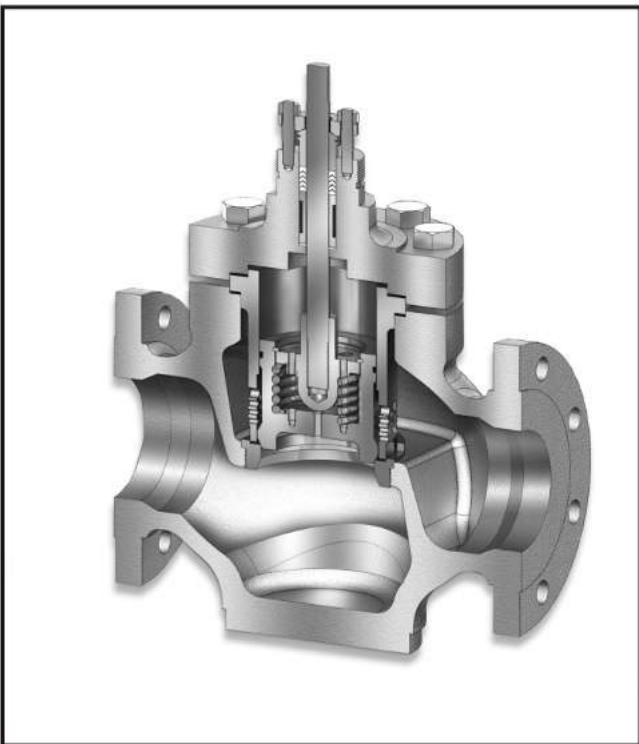
**HF Balanced Cage guided
Valves used for Anti Cavitation
and Low Noise Application**



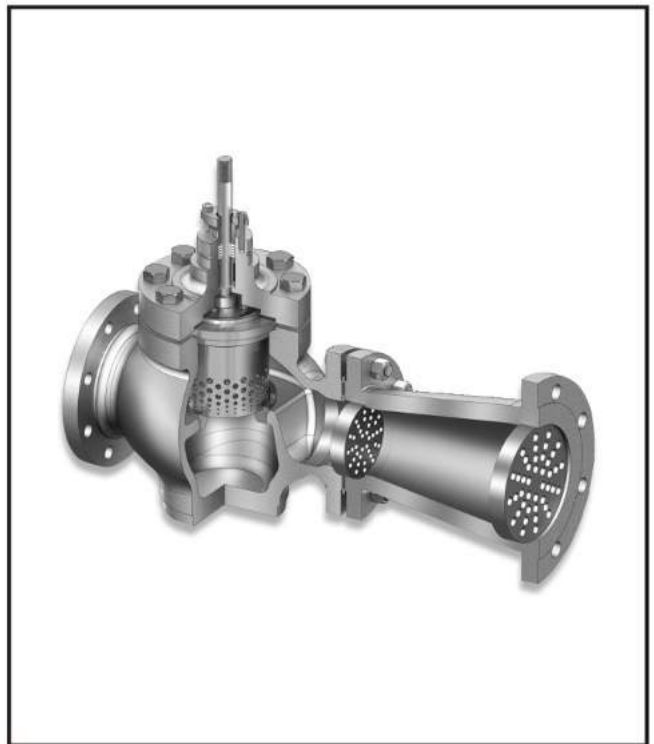
**HFD Cage Guided Valves Used for
Anti Cavitation and Low Noise Applications**



**HFT Cage Guided Valves Used for
Anti Cavitation and Low Noise Applications**



**Auxiliary Shut off Pilot Plug
used for Leakage Class V and Elevated Temperatures**



**Baffle plate Assembly
for Start up vent applications**



Inherent Rangeability

Table 1:

Trim Size	Standard Rangeability	
	Contoured	'HF' Range
1/2" - 3/4"	40:1	35:1
1" - 3"	55:1	50:1
4" - 16"	70:1	70:1
Microsplines	Up to 150:1	

Table 2: Achievable Leakage Classes and Temperature

Trim Design	Plug Design	Seats	Piston Ring	Leakage Class	Limiting Temperature
Contoured/HF/Ported Solid	Unbalanced (Std)	Metal / Metal	None	IV	550°C
Contoured/HF/Ported Solid	Unbalanced (Specially Lapped)	Metal / Metal	None	V	550°C
Contoured	Unbalanced	Metal / PTFE	None	VI	180°C
Cage Guided HF/Ported	Balanced (Std)	Metal / Metal	Graphite	IV	400°C
Cage Guided HF/Ported	Balanced (Std)	Metal / Metal	PTFE	IV	180°C
Cage Guided HF/Ported	Balanced (Std)	Metal / Metal	Metallic	III	550°C
HF Cage Guided	Auxiliary Pilot	Metal / Metal	Metallic	V	550°C

Note: Contoured Balance Trim Can be provided for Special Conditions

Guide to Bonnet Selection

Selection of Bonnet Design is determined on the basis of both the operating Temperature Range and Fluid media being handled.

Table 3 : Temperature Limits of Various Bonnets

Component	Temperature			
	^o C	^o F	^o C	^o F
	-240 to -20	-100 to -20	-20 to 250	250 to 550
	(-400 to -148)	(-148 to 4)	(4 to 482)	(482 to 1022)
Bonnet	Cryogenic	Normalising	Standard	Normalising
Packings	PTFE	PTFE	** PTFE / Graphite	Graphite*
Sealing Rings	PTFE	PTFE	PTFE	Graphite* / Metallic

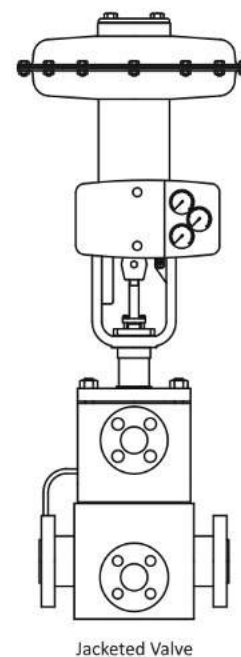
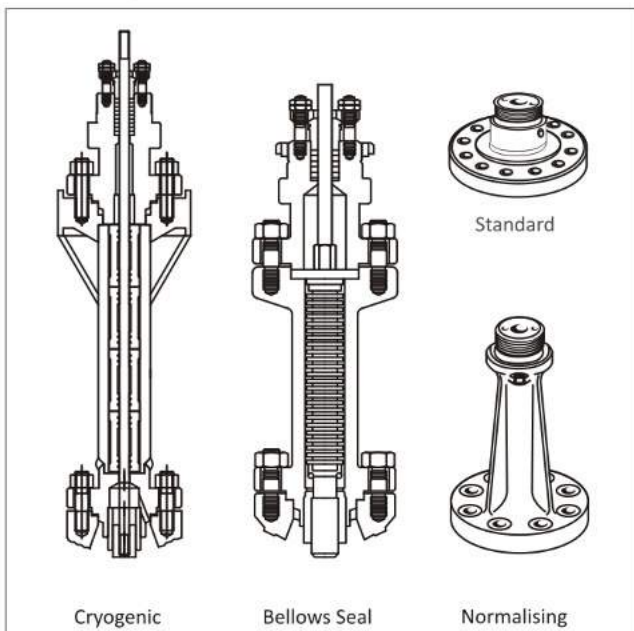
* Graphite upto 400^oC

** PTFE upto 180^oC

Table 4 : Metallic Bellows Seal Working Conditions

Valve Size		Travel		Maximum Working Pressure		Temperature Range
inch	mm	inch	mm	psig	Bar g	
1/2 - 2	15 - 50	1.1/8	28	740	51	- 65 ^o C (-85 ^o F) 427 ^o C (800 ^o F)
2 1/2 - 4	65 - 100	1.1/2	40	400	28	
6 - 8	150 - 200	2.1/4	57	345	24	
10 - 12	250 - 300	3.1/2	89	300	21	

Bonnet Options





Velocity Limitations

In selecting a valve for either a liquid or gas/vapour application one of the major considerations is the effect of fluid velocity. High velocity could lead to operational problems including erosion, excessive vibration and instability. The following tables indicate the maximum recommended velocity values for liquid and gas/vapour services.

Table 5 : Recommended Maximum Velocities For Liquid Services

Valve Size		Trim	Maximum Velocity			
			Carbon Steel		Alloy Steel	
Inch	mm		ft / s	m / s	ft / s	m / s
1/2 - 2	15 - 50	Contoured / Microspline	41	12.5	46	14
2 1/2 - 6	65 - 150		34	10.4	34	10.4
8 - 12	200 - 300		29	8.9	29	8.9
All Size		HF Range	43	13.1	52	15.8

Table 6 : Recommended Maximum Velocities For Gas / Vapour Services in Carbon and Alloy Steel Valves

Valve Size		Trim	Maximum Velocity				Maximum Outlet Mach No.*
			ft / s	m / s	ft / s	m / s	m / s
Inch	mm		ft / s	m / s	ft / s	m / s	m / s
1/2 - 2	15 - 50	Contoured / Microspline	340	104	830	253	0.65
2 1/2 - 6	65 - 150		295	90			
8 - 12	200 - 300		265	81			
All Size		HF Range	475	144			

* For Saturated Steam allowable Mach No. is 0.33

Table 7 : Cv Values of Series 10 Valves upto ASME 600 Class

a) Microspline

Cv Values					
Valve Size		Trim Size	Mod Equal %		
inch	mm				
1/2 3/4 1	15	No. 00	5.0/3.2		
		No. 0	1.5		
		No. 1	0.75		
		No. 2	0.45		
		No. 3	0.30		
	25	No. 4	0.20		
		No. 5	0.13		
		No. 6	0.075		
		No. 7	0.045		
		No. 8	0.030		
		No. 9	0.020		
		No. 10	0.013		
		No. 11	0.0075		
		No. 12	0.0045		
		No. 13	0.0030		
No. 14	0.0020				
No. 15	0.0013				

b) Contoured

Cv Values					
Valve Size		Trim Size inch	Equal %	Linear	Quick ** Opening
inch	mm				
1/2	15	1/2	5.0	5.0	5.0
		3/8	3.2	3.2	-
		1/4	2.0	2.0	-
		3/16	1.2	1.2	-
		1/8	0.63	0.63	-
		1/16	0.40	0.40	-
3/4	20	3/4	8.0	8.0	8.0
		1/2	5.0	5.0	5.0
		3/8	3.2	3.2	-
		1/4	2.0	2.0	-
		3/16	1.2	1.2	-
		1/8	0.63	0.63	-
1	25	1	13.5*	13.5*	13.5*
		3/4	8.0	8.0	8.0
		1/2	5.0	5.0	5.0
		3/8	3.2	3.2	-
		1/4	2.0	2.0	-
		3/16	1.2	1.2	-
		1/8	0.63	0.63	-
		1/16	0.40	0.40	-

* 1 inch Trim with Soft Face plug Cv = 11.0

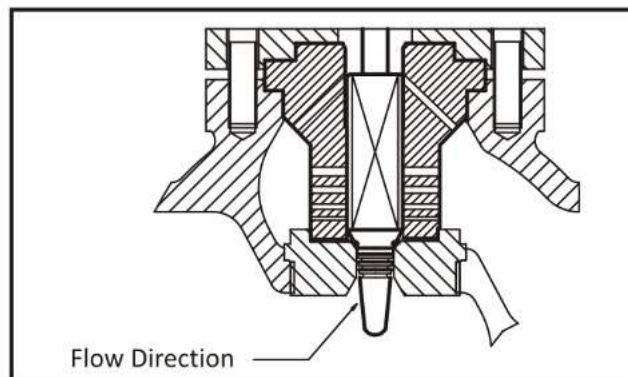
**Reduced Cv can be given for Quick Opening

c) High Friction (Solid only)

Cv Values					
Valve Size		Trim Size inch	Equal %	Linear	Quick ** Opening
inch	mm				
1	25	3/4	8.0	8.0	8.0
		1/2	5.0	5.0	5.0
		3/8	3.2	3.2	-
		1/4	2.0	2.0	-

** Reduced Cv can be give for Quick Opening

High Friction Trim For 1" (25 mm) Valves



Where trim sizes are designated in inches, it is a nominal size reference and does not signify actual dimensions of the trim. In some cases it may have a very approximate relationship to the seat bore, this should never be assumed for calculation purposes.



Globe Valve Numbering System (Codification)

1, 2		3	4		5		6		7		8			
← Body →														
Series	Body Size		Body Material		Suffix		Rating & Drilling		Flange Face		Bonnet Type			
10	10	1/2"	A	Cast Iron	A	None	N	150#	A	FF	A	Standard	1	
		3/4"	B	PTFE Solid	B	IBR	I	300#	B	RF	B	Normalising (Finned)	2	
		1"	C	Carbon Steel A216 WCB	C	Jacketed	J	600#	C	RTJ	C	Bellows	3	
		1.1/4"	D	Carbon Steel WCC	D	Special	S	900#	D	Screwed	D	Extended	4	
		1.1/2"	E	Carbon Steel LC1	E			1500#	E	Socket Weld	E	Cryogenic	5	
	10 A	1 A	2"	F	Carbon Steel A352 LCB	F			2500#	F	Butt Weld	F		
			2.1/2"	G	Carbon Steel A352 LCC	G			150# Table 'D'	G	T&G	G		
			3"	H	1.1/4 Chr Moly, A217 WC6	H			150# Table 'E'	H	Large Male	H		
			4"	I	2.1/4 Chr Moly, A217 WC9	I			300# Table 'F'	I	Large Female	I		
			5"	J	Stainless Steel A351 CF8	J			300# Table 'H'	J	Small Female	J		
		6"	K	Stainless Steel A351 CF8M	K			300# Table 'J'	K					
		8"	L	Stainless Steel CF8C (SS 321)	L			600# Table 'K'	L					
		10"	M	Stainless Steel 304 L CF3	M			600# Table 'R'	M					
		12"	N	Stainless Steel 316 L CF3M	N			150# PN10	N					
		14"	O	A351 CN7M Alloy 20	O			150# PN16	O					
		16"	P	Hastelloy 'B'	P			300# PN25	P					
		18"	Q	Hastelloy 'C'	Q			300# PN40	Q					
			R	Monel 400	R			600# PN100	R					
			S	Duplex SS A995 Gr. 4A	T			Special	S					
			T	Duplex SS A995 Gr. 5A	U									
			U	Duplex SS A995 Gr. 6A	V									
				Duplex SS A890 CD4MCu	W									
				Monel 500	X									
				Stainless Steel 410 CA15	Y									
				Al. Bronze	Z									
				Nickel	9									
				Special	S									

1, 2	3	4		5		6		7		8	
Series	Body Size	Body Material		Suffix		Rating & Drilling		Flange Face		Bonnet Type	

9		10,11			12		13		14		
← Trim →											
Trim Type		Microspline	Trim Size		Trim Material		Surface Treatment		Characteristics		
Microspline	A	No.00	00	1/16"	17	304	A	None	A	Q.Open (ON-OFF)	0
Contoured	B	No.0	01	1/8"	18	304L	B	Face Stellite	B	Linear	1
Cont. Balanced	C	No.1	02	3/16"	19	316	C	Full Stellite	C	EQ%	2
Ported Solid	D	No.2	03	1/4"	20	316L	D	Nitriding	D	Mod. EQ%	3
Ported Balanced	E	No.3	04	3/8"	21	410	E	Hardening	E		
HF Solid	F	No.4	05	1/2"	22	420	F	Soft Seating	F		
HF Balanced	G	No.5	06	3/4"	23	440C	G	Seat Welding	G		
HFD Solid	H	No.6	07	1"	24	17-4PH	H	Cage Nitriding+Seat Weld+Face Stell.	H		
HFD Balanced	I	No.7	08	1.1/4"	25	ALLOY 20	I	Cage Nitriding+Seat Weld+Full Stell.	I		
HFT Solid	J	No.8	09	1.1/2"	26	Hastelloy 'B'	J	Cage Stellite+Seat Weld+Face Stell.	J		
HFT Balanced	K	No.9	10	1.3/4"	27	Hastelloy 'C'	K	Cage Stellite+Seat Weld+Full Stell.	K		
V 'Port'	L	No.10	11	2"	28	Monel	L				
Pilot Plug	M	No.11	12	2.1/2"	29	HVD-1	M				
		No.12	13	3"	30	Duplex SS Gr. 4A/2205	N				
		No.13	14	3.1/2"	31	Duplex SS Gr. 5A	O				
		No.14	15	4"	32	Duplex SS Gr. 6A	P				
		No.15	16	5"	33	Duplex SS A890 CD4MCu	Q				
				6"	34						
				7"	35						
				8"	36						
				9"	37						
				10"	38						
				11"	39						
				12"	40						
				13"	41						
				14"	42						
				16"	43						

9	10,11	12	13	14
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Trim Type Trim Number/ Trim Size Trim Material Surface Treatment Characteristics



Table 8 : Cv Values of Series 10 Valves upto ASME 600 Class

Valve Size inch (mm)	Trim Size inch	Contoured Equal % / Linear	Quick Open	Ported	HF		HFD		HFT	
					Equal %	Linear	Equal %	Linear	Equal %	Linear
1.1/2 (40)	1.1/2	28	32	28	-	-	-	-	-	-
	1.1/4	21	23	21	23	23	-	-	-	-
	1	13.5	13.5	13.5	15	15	10	10	8	8
	3/4	8	8	8	8	8	-	-	-	-
2 (50)	2	50	55	50	-	-	-	-	-	-
	1.3/4	-	-	-	44	44	-	-	-	-
	1.1/2	28	32	28	35	35	24	24	20	20
	1.1/4	21	23	21	23	23	16	16	-	-
3 * (80)	1	13.5	13.5	13.5	15	15	10	10	8	8
	3	120	130	105	-	-	-	-	-	-
	2.1/2	85	92	85	92	92	-	-	-	-
	2	50	55	50	55	55	38	38	32	32
4 (100)	1.3/4	-	-	-	44	44	-	-	-	-
	1.1/2	28	32	28	35	35	24	24	20	20
	4	185	215	170	170	170	-	-	-	-
	3.1/2	-	-	-	145	145	-	-	-	-
6 (150)	3	120	130	120	130	130	95	95	-	-
	2.1/2	85	92	85	92	92	65	65	-	-
	2	50	55	50	55	55	38	38	32	32
	6	440	470	375	380	380	-	-	-	-
8 (200)	5	325	335	300	320	320	-	-	-	-
	4	185	215	185	235	235	140	155	-	-
	3.1/2	-	-	-	170	170	-	-	-	-
	3	120	130	120	130	130	95	95	75	75
10 (250)	8	620	740	550	-	-	-	-	-	-
	6	440	470	420	460	460	-	-	-	-
	5	325	335	300	360	360	225	225	-	-
	4	185	215	185	235	235	140	155	136	136
12 (300)	10	930	1140	930	-	-	-	-	-	-
	9	-	-	-	790	890	-	-	-	-
	8	620	740	620	680	740	520	560	-	-
	6	440	470	420	480	480	320	330	-	-
14 (350)	5	325	335	300	360	360	225	225	208	208
	12	1340	1640	1300	-	-	-	-	-	-
	11	-	-	-	1070	1150	-	-	-	-
	10	930	1140	930	1020	1140	-	-	-	-
16 (400)	8	620	740	620	680	740	520	560	393	427
	6	440	470	420	490	490	320	330	270	280
	14	1830	2230	1550	-	-	-	-	-	-
	12	1340	1640	1340	1280	1375	1075	1160	-	-
16 (400)	11	-	-	-	1120	1200	-	-	-	-
	10	930	1140	930	1020	1140	820	890	590	658
	8	620	740	620	680	740	520	560	393	427
	16	2385	2920	2040	-	-	-	-	-	-
16 (400)	14	1830	2230	1830	1690	1800	1450	1520	-	-
	12	1340	1640	1340	1500	1600	1075	1160	877	947
	11	-	-	-	1150	1230	-	-	-	-
	10	930	1140	930	1020	1140	820	890	590	658

Table 9 : Cv Values for Body Rating ASME 900 Class

Valve Size Inch (mm)	Trim Size Inch	Ported	HF		HFD		HFT	
			Equal %	Linear	Equal %	Linear	Equal %	Linear
1 (25)	3/4	8	8	8	-	-	-	-
	1/2	5	5	5	-	-	-	-
	3/8	3.2	3.2	3.2	-	-	-	-
	1/4	2	2	2	-	-	-	-
1.1/2 (40)	1.1/4	21	23	23	-	-	-	-
	1	13.5	15	15	10	10	8	8
	3/4	8	8	8	-	-	-	-
2 (50)	1.3/4	-	44	44	-	-	-	-
	1.1/2	28	35	35	24	24	20	20
	1.1/4	21	23	23	16	16	-	-
	1	13.5	15	15	10	10	8	8
3 * (80)	2.1/2	85	85	85	-	-	-	-
	2	50	55	55	38	38	32	32
	1.3/4	-	44	44	-	-	-	-
	1.1/2	28	35	35	24	24	20	20
4 (100)	3.1/2	-	145	145	-	-	-	-
	3	120	130	130	95	95	-	-
	2.1/2	85	92	92	65	65	-	-
	2	50	55	55	38	38	32	32
6 (150)	5	300	320	320	-	-	-	-
	4	185	235	235	140	155	-	-
	3.1/2	-	170	170	-	-	-	-
	3	120	130	130	95	95	75	75
8 (200)	6	420	460	460	-	-	-	-
	5	300	360	360	225	225	-	-
	4	185	235	235	140	155	136	136
10 (250)	9	-	790	890	-	-	-	-
	8	620	680	740	520	560	-	-
	6	420	480	480	320	330	-	-
	5	300	360	360	225	225	208	208
12 (300)	10	930	1020	1140	-	-	-	-
	8	620	680	740	520	560	393	427
	6	420	490	490	320	330	270	280
14 (350)	12	1340	1280	1375	1075	1160	-	-
	11	-	1120	1200	-	-	-	-
	10	930	1020	1140	820	890	590	600
	8	620	680	740	520	560	393	427
16 (400)	12	1340	1500	1600	1075	1160	877	947
	11	-	1150	1230	-	-	-	-
	10	930	1020	1140	820	890	590	600

* We also offer 2 1/2"(65mm) Valve size with requisite trims



Table 10 : Cv Values for Body Rating ASME 1500 Class

Valve Size Inch (mm)	Trim Size Inch	Ported	HF		HFD		HFT	
			Equal %	Linear	Equal %	Linear	Equal %	Linear
1 (25)	3/4	8	8	-	-	-	-	-
	1/2	5	5	-	-	-	-	-
	3/8	3.2	3.2	-	-	-	-	-
	1/4	2	2	-	-	-	-	-
1.1/2 (40)	1.1/4	21	23	23	-	-	-	-
	1	13.5	15	15	10	10	8	8
	3/4	8	8	8	-	-	-	-
2 (50)	1.3/4	-	44	44	-	-	-	-
	1.1/2	28	35	35	24	24	20	20
	1.1/4	21	23	23	16	16	-	-
	1	13.5	15	15	10	10	8	8
3 * (80)	2.1/2	85	85	85	-	-	-	-
	2	50	55	55	38	38	32	32
	1.3/4	-	44	44	-	-	-	-
	1.1/2	28	35	35	24	24	20	20
4 (100)	3.1/2	-	145	145	-	-	-	-
	3	120	130	130	95	95	-	-
	2.1/2	85	92	92	65	65	-	-
	2	50	55	55	38	38	32	32
6 (150)	5	300	320	320	-	-	-	-
	4	185	235	235	140	155	-	-
	3.1/2	-	170	170	-	-	-	-
	3	120	130	130	95	95	75	75
8 (200)	6	420	460	460	-	-	-	-
	5	300	360	360	225	225	-	-
	4	185	235	235	140	155	136	136
10 (250)	8	620	680	740	520	560	-	-
	6	420	480	480	320	330	-	-
	5	300	360	360	225	225	208	208
12 (300)	10	930	1020	1140	-	-	-	-
	8	620	680	740	520	560	393	427
	6	420	490	490	320	330	270	280

* We also offer 2 1/2"(65mm) Valve size with requisite trims

Table 11 : Cv Values For Body Rating ASME 2500 Class

Valve Size Inch (MM)	Trim Size Inch	Ported	HF		HFD		HFT	
			Equal %	Linear	Equal %	Linear	Equal %	Linear
1 (25)	1/2	5	5	-	-	-	-	-
	3/8	3.2	3.2	-	-	-	-	-
	1/4	2	2	-	-	-	-	-
1.1/2 (40)	1.1/4	21	23	23	-	-	-	-
	1	13.5	15	15	10	10	8	8
	3/4	8	8	8	-	-	-	-
2 (50)	1.1/4	21	23	23	16	16	-	-
	1	13.5	15	15	10	10	8	8
3 * (80)	2	50	55	55	38	38	32	32
	1.3/4	-	44	44	-	-	-	-
	1.1/2	28	35	35	24	24	20	20
4 (100)	2.1/2	85	92	92	65	65	-	-
	2	50	55	55	38	38	32	32
6 (150)	4	185	235	235	140	155	-	-
	3.1/2	-	170	170	-	-	-	-
	3	120	130	130	95	95	75	75
8 (200)	5	300	360	360	225	225	-	-
	4	185	235	235	140	155	136	136
10 (250)	6	420	480	480	320	330	-	-
	5	300	360	360	225	225	208	208

* We also offer 2 1/2"(65mm) Valve size with requisite trims

CONTROL VALVE SIZING AND SELECTION

Flow Coefficient:

RK control valves are sized using the valve coefficient Cv in accordance with ISA standard 75.01.01 Cv is defined as the rate of flow of water in US gallons per minute at 60° F through a control valve at full lift at pressure drop of 1 Psi across the valve.

Inherent Flow Characteristics:

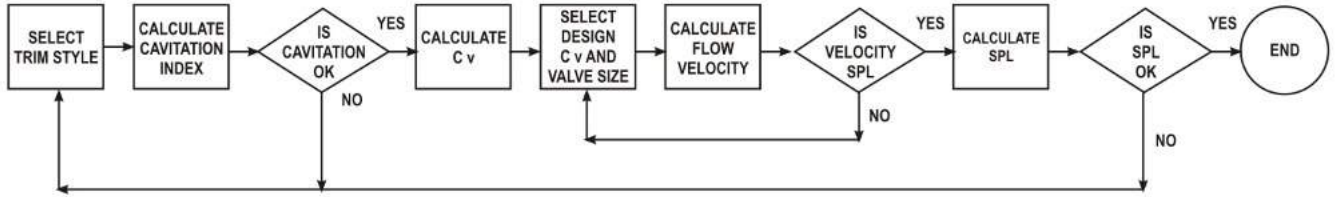
The inherent flow characteristic of a control valve is the relationship between the flow and the valve travel at constant pressure drop. As with all caged multihole trims the actual characteristic may vary slightly from the true curve. The procedure for selecting a valve for liquids and compressible fluids involves calculations for valve flow coefficient, fluid velocities and sound pressure level prediction.

A highly advanced computer software "OPTIMIZE" has been developed by RK Control for control valve sizing and selection. It also maintains a permanent database of computation and details of offers prepared for customers.

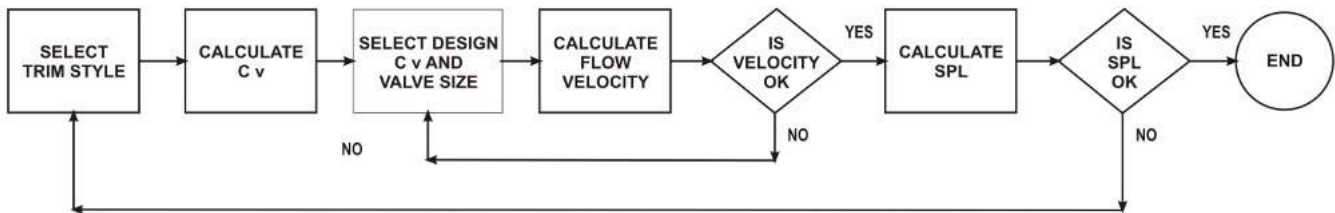
The software includes a programme for the actuator which is sized not only for shut-off service but also for maintaining stability of operation at varying load conditions. The selection of a control valve for liquid flow applications involves calculations for cavitation, Cv, velocity, and sound pressure level. For gas/vapour flow it is necessary to consider the inlet/outlet velocities and predicted sound pressure level in addition to evaluating the valve flow coefficient. These are illustrated in the form of flow charts on page 14



Liquid Flow Chart :

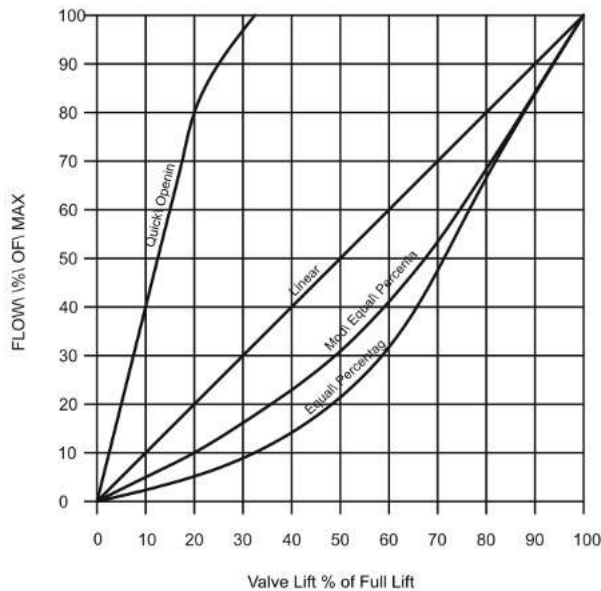


Gas / Vapour Flow Chart :



Inherent\ Flow\ Characteristic\ Cur

Inherent Flow Characteristic Curves



Definitions:

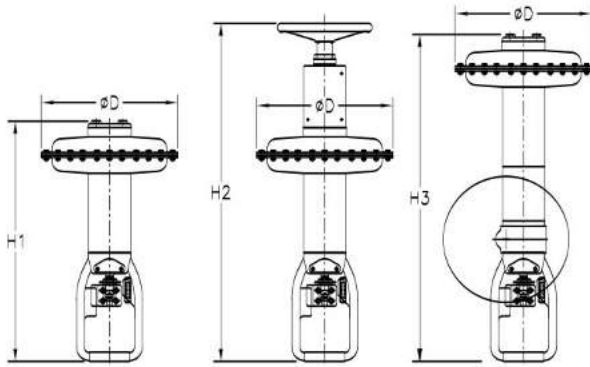
Linear: Flow is directly proportional to valve lift.

Equal% : Flow changes by constant percentage of its instantaneous value for each unit of valve lift.

Quick Opening: Flow increases rapidly reaching near to its maximum at a low lift.

Modified Equal%: Characteristic is in between Linear and Equal percentage characteristic. It provides fine throttling at low flow Capacity and approximately linear Characteristic at higher Capacity

Dimensions for Series A Single Spring of Diaphragm Actuators



Actuator		Ø D mm	No Handwheel H1 mm	TMH H2 mm	SMH H3 mm
Size	Travel (mm)				
038E	1.1/8" (28)	260	355	535	-
038	1.1/8" (28)	260	480	720	-
075	1.1/8" (28)	330	503	757	717
	1.1/2" (38)		585	920	875
150	1.1/8" (28)	457	660	977	879
	1.1/2" (38)		660	1078	940
	2.1/4" (57)		775	1220	1105
300	2.1/4" (57)	616	930	-	1245
	3.1/2" (89)		1016	-	1397
	4" (100)		1070	-	1470
300HP	2.1/4" (57)	616	1000	-	1360
	3.1/2" (89)		1064	-	1488
	4" (100)		1081	-	1527

Single Spring Series A Actuator Numbering System :

First two characters - Actuator action

- A1. Direct Actuator without Valve Positioner
- A2. Reverse Actuator without Valve Positioner
- A3. Direct Actuator with Valve Positioner
- A4. Reverse Actuator with Valve Positioner

Last three digits - Effective Area of Actuator

038 E - 38 Sq. inch (Non Reversible)

038 CD - 38 Sq. Inch Compact Design

075 - 75 Sq. Inch

150 - 150 Sq. Inch

300 - 300 Sq. Inch

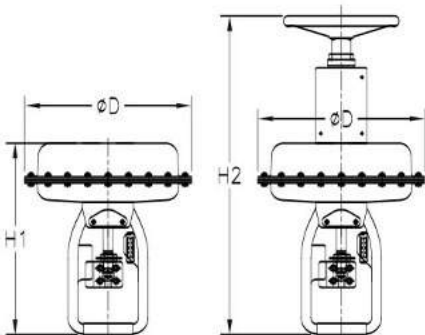
300 HP - Sq. Inch with heavy spring

Suffix H- Side Mounted Hand wheel

T- Top Mounted Handwheel

L- Limit stop

Dimensions for Series M Multispring Actuators



Actuator		Ø D mm	No Handwheel H1 mm	TMH H2 mm
Size	Travel (mm)			
038	1 1/8" (28)	260	332	588
075	1 1/8" (28)	330	341	594
075	1 1/2" (38)	330	378	630
0150	1 1/2" (38)	457	438	-
0150	2.1/4" (57)	457	490	-

Multi Spring Series M Actuator Numbering System :

First two characters - Actuator action

- M1. Direct Actuator without Valve Positioner
- M2. Reverse Actuator without Valve Positioner
- M3. Direct Actuator with Valve Positioner
- M4. Reverse Actuator with Valve Positioner

Last three digits - Effective Area of Actuator

038 - 38 Sq. Inch

075 - 75 Sq. Inch

150 - 150 Sq. Inch

Suffix T- Top Mounted Handwheel



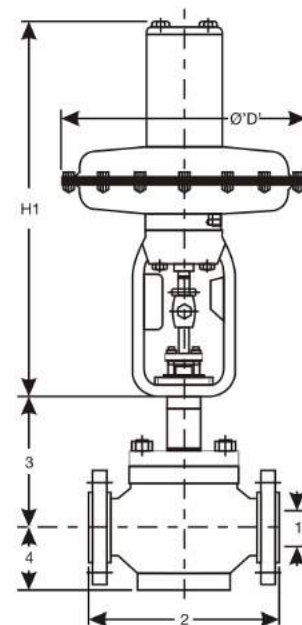
Table 12 : Face to Face Dimension For Flanged Globe Style Control Valves

Size Inch (mm)	FACE TO FACE mm						Height From Centre Line			Centre Line to Base 4 (MAX.)	Stem Travel 5
	Class 150 PN 20 BS10T-D,E	Class 300 PN 50 BS10T-F,H,J	Class 600 PN 110 BS10T-K,R	Class 900 PN 150	Class 1500 PN 250	Class 2500 PN 420	3				
	1	2						S	N	B	
1/2" (15)	184	190	203	273	273	308	140	222	324	67	28
3/4" (20)	184	194	206	273	273	308	140	222	324	67	28
1" (25)	184	197	210	273	273	308	140	222	324	67	28
1 1/2" (40)	222	235	251	311	311	359	159	292	353	83	28
2" (50)	254	267	286	340	340	400	168	298	362	86	28
2 1/2" (65)	276	292	311	410	410	441	203	327	467	111	38
3" (80)	298	318	337	387	406	498	206	327	467	111	38
4" (100)	352	368	394	464	483	575	206	357	467	146	38
6" (150)	451	473	508	600	692	819	276	391	676	171	57
8" (200)	543	568	610	781	838	1022	292	435	686	203	57
10" (250)	673	708	752	864	991	1270	390	632	921	238	89
12" (300)	737	775	819	1016	1130	1321	390	673	-	251	89
14" (350)	889	927	972	1257	1257	-	490	822	-	292	89
16" (400)	1016	1057	1108	1422	1422	-	622	927	-	352	100

S - STANDARD BONNET, N - NORMALISING BONNET, B - BELLOWS SEAL BONNET, The Company Reserve the right to confirm the dimensions on certified drawing. Face to Face dimension comply with ISA S75.08, All dimensions In mm

Table 13 : Face to Face Dimension For Butt-weld End Globe System Control Valves

Size Inch (mm)	FACE TO FACE mm		
	(Class 150, 300 & 600) PN 20, 50 & 110	(Class 900 & 1500) PN 150 & 250	(Class 2500) PN 420
1/2" (15)	203	279	318
3/4" (20)	206	279	318
1" (25)	210	279	318
1 1/2" (40)	251	330	359
2" (50)	286	375	400
2 1/2" (65)	311	375	400
3" (80)	337	460	498
4" (100)	394	530	575
6" (150)	508	768	819
8" (200)	610	832	1029
10" (250)	752	991	1270
12" (300)	819	1130	1422
14" (350)	1029	1257	1803
16" (400)	1108	1422	-



Special Valves

Series 10- PTFE Control Valves

R.K. Control Instruments offers Series 10 PTFE Control Valves which are specially designed to withstand highly Corrosive fluids in Chemical, Pharmaceutical and Fertilizer Industries

Sizes : 1/2", 3/4", 1", 1.5" and 2"

Rating as Per ASME Class 150

Maximum Pressure handled – 10kg/cm²g with standard bonnet
4 kg/cm²g with PTFE bellows

Maximum Temperature - 180°C

PTFE Valves are developed to cater to the process where very corrosive fluids are involved and cost of exotic metals becomes prohibitively expensive apart from scarce availability.

PTFE (Poly Tetra Fluoro Ethylene) being inert is corrosion resistant to most of the fluids.

However, PTFE Valves have limitations with regards to Pressure and Temperature.

The valve body being machined from Solid PTFE Bar, the flow passages are straight as compared to a cast body which lowers the Design Cv.

The below table gives Cv Tables for sizes ½" to 2" Valves

PTFE Valve Size (inches)(mm)	PTFE Trim Size (inches)(mm)	Cv
1/2"(15)	1/2"(15)	3.2
3/4"(20)	3/4"(20)	5
1"(25)	1"(25)	8
1.5"(40)	1.5"(40)	17
2"(50)	2"(50)	28

Lower Cv available on request



Plug and Stem are of SS316 Coated / Lined with PTFE or of suitable metal

Seat is Integral with Body. Body can be dismantled and reversed and reassembled to get the renewed seat.

Bellow Sealed Bonnets

These valves can be provided with PTFE Bellows for leak proof operations.

Valve Travel in case of Bellow Sealed Valve, would be limited to 9/16".

Important points for installation

Proper care should be taken to install the valve in line.

Line should be constructed using proper spool pieces so as to minimize the line flange misalignment.

Non Aligned flanges results in undue stresses on Valve Body while installing which results in the body getting cracked.

Under no circumstances over tightening of flange bolts / nuts should be done.

Special/Engineered Valves/Cvs can be offered on request

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