



Technical Catalogue Control Valves

Globe Two Way

SERIES 1100

Globe Angle

SERIES 5000

Aiming at Perfection

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FOREWORD

- Series 1100 valves are Globe two-way single seated body design valves, which satisfy majority of control applications for process and power industries.
- Body with top entry trim and bolted bonnet facilitates easy access to all internal parts for online inspection, maintenance & trim replacement.
- Bottom flange is provided optionally for fluids carrying sediments to facilitate cleaning of debris from body.
- Stream lined flow path provide large flow capacity.
- Variety of Trim options available to satisfy vast applications range including reduced port trims enabling nearest accurate selection for precise control requirements.
- Trims with top bush guided plugs are available with simple construction for stable operation. Assures high rangeability & turndown ratios. Best suited for seat leakages requiring bubble tight shutoff.
- Micro trims available for control of minute flow rates.
- Trims with large guide plugs are available for full pressure balancing effect providing economical choice for high pressure applications.
- Cascaded trims, Multi hole cage trims with single, double & triple stage provide effective noise control system and anti cavitation effect in the control valves.
- Valves are available in variety of material combinations including conformance to NACE MR-01-75.

SPECIFICATIONS

Valve Sizes & Ratings	:	15 mm Thru 500 mm NB. 1/2" Thru 20" NB. ANSI 150, 300 and 600. Equivalent in BS and DIN. 15 mm thru 100 mm NB / 1/2" thru 4" NB ANSI 900 & 1500.
End Connections	:	Flanged End (RF, RJ & TG) all sizes. Butt Weld End all sizes. Socket Weld End upto size 2". Screwed End upto size 2".
Valve Body MOC	:	Carbon Steel ASTM A216 WCB, ASTM A217 WC6, WC9. Stainless Steel ASTM A351-CF8, CF8M, CF3, CF3M. Alloy Steel Hast 'C' & Alloy 20, Nickel, Titanium, Monel etc. Other materials against specific requirements.
Trim MOC	:	Refer Table 2A & 2B.
Gland Pakings	:	V-Teflon - 150 to +200 ⁰ C. Graphite - 150 to +600 ⁰ C.
Body Gaskets	:	CAF with inconel wire impregnated. PTFE. S. S. Spiral wound with PTFE / Asbestos / Graphite Fillers.
Flow Characteristics	:	Standard Trim- Linear, Equal percentage, on-off. Other characteristics on request. Cascade Trim - Modified Linear.
Rangeability	:	30:1 standard (50:1 or higher on request.)
Cv Values	:	Refer Tables 3A, 3B, 3C & 3D.
Valve Stem Travels	:	Refer Table 4.
Leakage Rates	:	As per ANSI/FCI 70-2 (L.E) Metallic Seat Class III & IV, (Class V on request with metal to metal stellite faced trims) Soft Seat Class VI tight shut off.
Bonnets	:	Standard. Extended Plain. Extended Finned. Bellows Bonnet. Cryogenic.
Max. Allowable Pressure Drops	:	Refer table 4A, 4B, 4C, 4D & 4E.
Manual Overrides	:	Top mounted version. Side mounted version.
Accessories	:	Pneumatic & Electro Pneumatic Valve Positioner, Air Filter Regulator, I/P Converter, Volume Booster, Air Lock Relay, Solenoid Valve, Limit Switch, Position Transmitter, Quick Exhaust Valve etc.

BODY PRESSURE TEMPERATURE RATINGS

TABLE 1A - MATERIAL ASTM A216 WCB

Temperature		Working Pressures by Classes, PSIG / Kg/cm²											
°F	°C	150		300		400		600		900		1500	
		PSIG	Kg/cm²	PSIG	Kg/cm²	PSIG	Kg/cm²	PSIG	Kg/cm²	PSIG	Kg/cm²	PSIG	Kg/cm²
-20 to 100	-28.88 to 37.77	285	20.04	740	52.03	990	69.62	1480	104.0	2220	156.1	3705	260.54
200	93.33	260	18.28	675	47.46	900	63.29	1350	94.93	2025	142.4	3375	237.34
300	148.88	230	16.17	655	46.06	875	61.58	1315	92.47	1970	138.5	3280	230.6
400	204.44	200	14.17	635	44.65	845	59.22	1270	89.31	1900	133.6	3170	222.9
500	260.00	170	11.95	600	42.19	800	56.25	1200	84.38	1795	126.2	2995	210.6
600	315.55	140	9.84	550	38.67	730	51.33	1095	77.00	1640	115.3	2735	192.3
650	343.33	125	8.79	535	37.62	715	50.28	1075	75.59	1610	113.22	2685	188.81
700	371.11	110	7.73	535	37.62	710	49.92	1065	74.89	1600	112.51	2665	187.41
750	398.88	95	6.68	505	35.51	670	47.11	1010	71.02	1510	106.18	2520	177.21

TABLE 1B - MATERIAL ASTM A217 WC6

Temperature		Working Pressures by Classes, PSIG / Kg/cm²											
°F	°C	150		300		400		600		900		1500	
		PSIG	Kg/cm²	PSIG	Kg/cm²	PSIG	Kg/cm²	PSIG	Kg/cm²	PSIG	Kg/cm²	PSIG	Kg/cm²
-20 to 100	-28.88 to 37.77	290	20.39	750	52.74	1000	70.32	1500	105.48	2250	158.22	3750	263.7
200	93.33	260	18.28	750	52.74	1000	70.32	1500	105.48	2250	158.22	3750	263.7
300	148.88	230	16.17	720	50.63	965	67.86	1445	101.60	2165	152.25	3610	253.8
400	204.44	200	14.06	695	48.87	925	65.04	1385	97.39	2080	146.29	3465	243.6
500	260.00	170	11.95	665	46.76	885	62.23	1330	93.53	1995	140.29	3325	233.8
600	315.55	140	9.84	605	42.54	805	56.61	1210	85.09	1815	127.63	3025	212.7
650	343.33	125	8.79	590	41.49	785	55.20	1175	82.63	1765	124.12	2940	206.7
700	371.11	110	7.73	570	40.08	755	53.09	1135	79.81	1705	119.90	2840	199.7
750	398.88	95	6.68	530	37.27	710	49.92	1065	74.89	1595	112.16	2660	187.0
800	426.66	80	5.62	510	35.36	675	47.46	1015	71.37	1525	107.24	2540	178.6
850	454.44	65	4.57	485	34.10	650	45.70	975	68.56	1460	102.67	2435	171.2
900	482.22	50	3.51	450	31.64	600	42.19	900	63.29	1350	94.93	2245	157.8
950	510.00	35	2.46	320	22.50	425	29.80	640	45.00	955	67.15	1595	112.1
1000	537.77	20	1.40	215	15.11	290	20.39	430	30.23	650	45.71	1080	75.9

TABLE 1C - MATERIAL ASTM A217 WC9

Temperature		Working Pressures by Classes, PSIG / Kg/cm²											
°F	°C	150		300		400		600		900		1500	
		PSIG	Kg/cm²	PSIG	Kg/cm²	PSIG	Kg/cm²	PSIG	Kg/cm²	PSIG	Kg/cm²	PSIG	Kg/cm²
-20 to 100	-28.88 to 37.77	290	20.39	750	52.74	1000	70.32	1500	105.48	2250	158.22	3750	263.7
200	93.33	260	18.28	750	52.74	1000	70.32	1500	105.48	2250	158.22	3750	263.7
300	148.88	230	16.70	730	51.38	970	68.21	1445	101.60	2185	153.65	3640	255.9
400	204.44	200	14.06	705	49.57	940	66.10	1410	99.50	2115	148.70	3530	248.2
500	260.00	170	11.95	665	46.76	885	62.23	1330	93.63	1995	140.20	3325	233.8
600	315.55	140	9.84	605	42.54	805	56.61	1210	85.09	1815	127.63	3025	212.7
650	343.33	125	8.79	590	41.49	785	55.20	1175	82.03	1765	124.12	2940	206.7
700	371.11	110	7.73	570	40.03	755	53.09	1135	79.81	1705	119.90	2840	199.7
750	398.88	95	6.68	530	37.27	710	49.92	1065	74.89	1595	112.16	2660	187.0
800	426.66	80	5.62	510	35.86	675	47.46	1015	71.37	1525	107.24	2540	178.6
850	454.44	65	4.57	485	34.10	650	45.70	975	68.56	1460	102.67	2435	171.2
900	482.22	50	3.51	450	31.64	600	42.19	900	63.29	1350	94.93	2245	157.8
950	510.00	35	2.46	375	26.37	505	35.50	755	53.09	1130	79.46	1885	132.5
1000	537.77	20	1.40	260	18.78	345	24.26	520	36.56	780	54.85	1305	91.7

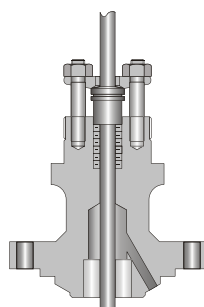
TABLE 1D - MATERIAL ASTM A351 CF8M, CF3M

Temperature		Working Pressures by Classes, PSIG / Kg/cm²											
°F	°C	150		300		400		600		900		1500	
		PSIG	Kg/cm²	PSIG	Kg/cm²	PSIG	Kg/cm²	PSIG	Kg/cm²	PSIG	Kg/cm²	PSIG	Kg/cm²
-20 to 100	-28.88 to 37.77	275	19.33	720	50.63	960	67.5	1440	101.2	2160	151.8	3600	253.16
200	93.33	235	16.52	620	43.60	825	58.00	1240	87.20	1860	130.80	3095	217.6
300	148.88	215	15.11	560	39.33	745	52.39	1120	78.76	1680	118.14	2795	196.5
400	204.44	195	13.71	515	36.12	685	48.17	1025	72.06	1540	108.20	2570	180.7
500	260.00	170	11.95	480	33.75	635	44.65	955	67.50	1435	100.90	2390	168.0
600	315.55	140	9.84	450	31.64	600	42.19	900	63.29	1355	95.28	2255	158.5
650	343.33	125	8.79	445	31.29	590	41.49	890	62.58	1330	93.53	2220	156.1
700	371.11	110	7.73	430	30.23	580	40.78	870	61.18	1305	91.77	2170	152.6
750	398.88	95	6.68	425	29.83	570	40.08	855	60.12	1280	90.01	2135	150.0
800	426.66	80	5.62	420	29.53	565	39.72	845	59.42	1265	88.75	2110	148.3
850	454.44	65	4.57	420	29.53	555	39.02	835	58.72	1255	88.20	2090	146.9
900	482.22	50	3.51	415	29.18	555	39.02	830	58.36	1245	87.50	2075	145.9
950	510.00	35	2.46	385	27.07	515	36.21	775	54.50	1160	81.57	1930	135.7
1000	537.77	20	1.40	350	24.61	465	32.70	700	49.22	1050	73.80	1750	123.0

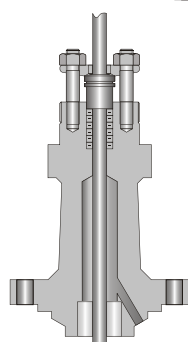
SELECTION OF BONNETS

Bonnet Materials

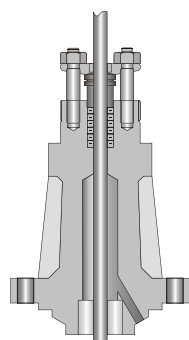
Bonnets are manufactured from the same material as the Body. Dembla bonnets utilize a bolted flange type packing box construction. The packing box design is such that all types of packing are interchangeable. Figures shows various types of Bonnet available.



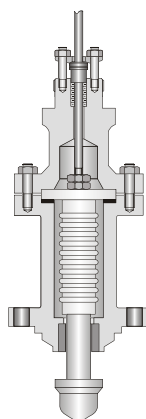
Standard Bonnet



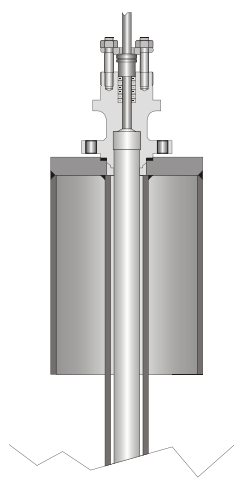
Extended Plain Bonnet



Extended Finned Bonnet



Bellows Sealed Bonnet



Cryogenic Bonnet

Bonnet Types

1. Standard Bonnet :

Standard bonnets are suitable for applications for temperatures ranging from 0°C to +230°C depending on the gland packing selection.

2. Extended finned Bonnets :

Extended finned Bonnets are used for high temperature service applications ranging from +230°C to +1000°C. These bonnets are provided with 'Graphite gland packings'.

3. Extended Plain :

Extended plain bonnets are used for service temperature -100°C to 0°C. Depending upon the gland packing & bonnet material used, These bonnets protect the gland packing from excessive cold, which may affect the performance of the gland packings.

4. Cryogenic Bonnets : The Construction of the bonnet Permits minimum heat transfer. The bonnet material used generally is SS 304 or SS 316. The design protects the packing from extremely low service temperature (-100°C to -198°C).

5. Bellows Seal Bonnets : This type of bonnet utilizes a bellows assembly for sealing against leakage around the valve plug stem. Bellows sealed bonnets are used on those applications where no leakage along the valve stem is allowed. Usual applications include those installations where process fluid is flammable, toxic, explosive or highly expensive. Bellows material is SS 321 and is suitable for pressure up to 45 Kg/cm² at maximum temperature of 450°C

SELECTION OF GLAND PACKINGS

Material	Working Pressure Limit (Kg/cm ²)	Working Temperature Range °C
PTFE Impregnated asbestos	150	-250 to +200
PTFE Chevron (V-Rings)	100	-250 to +200
Graphite Asbestos-Inconel wire braided	150	-100 to +200
Graphite Moulded Rings	150	+200 to +600

NOTE : To further improve valve stem action and to reduce friction a silicone base moly-disulphide grease lubricant is recommended. It is suitable for use upto 260° C.

CAUTION : Packing should not be lubricated for control valve in oxygen service; since many lubricants, particularly petroleum base lubricants are hazardous because of their high heat of combustion and high rate of reaction.

SELECTION OF GASKETS

Type	Material		Working Pressure Limit (Kg/cm ²)	Working Temperature Range 0°C
Joint Sheet	Graphite asbestos Inconel wire braided		40	-100 to +400
	P.T.F.E.		70	-250 to +200
Spiral Wound	SS 304 Strips	Asbestos Filler	100	-100 to +200
		PTFE Filler	150	-250 to +200
		Graphite Filler	100	-100 to +600
Flat Ring Type Serrated on both sides	SS 316, Inconel, Monel, Titanium		150	-260 to +600

SELECTION OF BODY STUDS

Body Material	Temperature		Stud Material as per ASTM	Nut Material as per ASTM
	°F	°C		
Carbon Steel (Grade WCB)	-20 to 800	-29 to 427	A193 Gr B7	A194 Gr 2H
Carbon Steel (Grade LCB)	-50 to 650	-46 to 344	A193 Gr B7	A194 Gr 2H
Carbon Moly (Grade WC1)	-20 to 800	-29 to 427	A193 Gr B7	A194 Gr 2H
	801 to 850	428 to 455	A193 Gr B7	A194 Gr 7
1¼ Cr - ½ Mo (Grade WC6)	-20 to 800	-29 to 427	A193 Gr B7	A194 Gr 2H
	801 to 1000	428 to 538	A193 Gr B7	A194 Gr 7
2¼ Cr - 1Mo (Grade WC9)	-20 to 800	-29 to 427	A193 Gr B7	A194 Gr 2H
	801 to 1000	428 to 538	A193 Gr B7	A194 Gr 7
	1001 to 1050	539 to 566	A193 Gr B16	A194 Gr 7
5 Cr - ½ Mo (Grade C5)	-20 to 800	-29 to 427	A193 Gr B7	A194 Gr 2H
	801 to 1000	428 to 538	A193 Gr B7	A194 Gr 7
	1001 to 1100	539 to 594	A193 Gr B16	A194 Gr 4
9 Cr - 1Mo (Grade C12)	-20 to 800	-29 to 427	A193 Gr B7	A194 Gr 2H
	801 to 1000	428 to 538	A193 Gr B7	A194 Gr 7
	1001 to 1100	539 to 594	A193 Gr B16	A194 Gr 4
Type 304 (Grade CF8)	-425 to 100	-253 to 38	A320 Gr B8	A194 Gr 8
	100 to 1500	38 to 816	A193 Gr B8	A194 Gr 8
Type 347 (Grade CF8C)	-425 to 100	-253 to 38	A320 Gr B8	A194 Gr 8
	100 to 1500	38 to 816	A193 Gr B8	A194 Gr 8
Type 316 (Grade CF8M)	-325 to 100	-199 to 38	A320 Gr B8	A194 Gr 8
	100 to 1500	38 to 816	A193 Gr B8M	A194 Gr 8M
3½ Ni (Grade LC3)	-150 to -50	-102 to -46	A320 Gr L7	A194 Gr 4
	-50 to 650	-46 to 344	A193 Gr B7	W/Charpy Test or 8M A194 Gr 2H

SELECTION OF PRESSURE BALANCE SEAL RINGS

(For Pressure Balance Trims)

Pressure Balance Seal Ring	Material	Temperature Limit °C
'U' Seal Ring	Graphite Filled P.T.F.E.	-100 to +200
Carbon Ring	Pure Carbon	+200 to +600

TRIM MATERIAL SPECIFICATIONS

FOR TRIM FORM : 1. CONTOURED TOP BUSH GUIDED
2. MICRO TOP BUSH GUIDED

TABLE 2A

SR. NO.	TRIM COMBINATION	MATERIAL			APPLICABLE TEMP.°C
		PLUG	SEAT	GUIDE BUSH	
1	SS 304	SS 304	SS 304	SS 304 + CP	-195 to + 300
2	SS 304 + S.F.	SS 304 + S.F.	SS 304 + S.F.	SS 304 + CP	-195 to + 600
3	SS 316	SS 316	SS 316	SS 316 + CP	-195 to + 300
4	SS 316 + S.F.	SS 316 + S.F.	SS 316 + S.F.	SS 316 + CP	-195 to + 600
5	SS 304L	SS 304L	SS 304L	SS 304L + CP	-20 to + 300
6	SS 316L	SS 316L	SS 316L	SS 316L + CP	-195 to + 300
7	SS 410 + HT NT	SS 410 + HT NT	SS 410 + HT NT	SS 410 + CP	-30 to + 425
8	SS 316CR NT	SS 316CR NT	SS 316CR NT	SS 316 + CP	-195 to + 450
9	HAST 'C'	HAST 'C'	HAST 'C'	HAST 'C'	-195 to + 450
10	MONEL	MONEL	MONEL	MONEL	-195 to + 300
11	ALLOY 20	ALLOY 20	ALLOY 20	ALLOY 20	-40 to + 300
12	TITANIUM-2	TITANIUM-2	TITANIUM-2	TITANIUM-2	-195 to + 450
13	P.T.F.E. soft facing is supplied with any of the above materials. The P.T.F.E. facing is inserted into the plug. Seat remains of metal.				-250 to + 200

FOR TRIM FORM : 1. CONTOURED LARGE GUIDED
2. CONTOURED PORTED CAGE GUIDED
3. MULTI HOLE CAGE GUIDED

TABLE 2B

SR. NO.	TRIM COMBINATION	MATERIAL			APPLICABLE TEMP.°C
		PLUG	SEAT	LARGE GUIDE PORTED CAGE, MULTI HOLE CAGE	
1	SS 304	SS 304	SS 304	SS 304 + CP	-195 to + 300
2	SS 304 + S.F.	SS 304 + S.F.	SS 304 + S.F.	SS 304 + CP	-195 to + 600
3	SS 316	SS 316	SS 316	SS 316 + CP	-195 to + 300
4	SS 316 + S.F.	SS 316 + S.F.	SS 316 + S.F.	SS 316 + CP	-195 to + 600
5	SS 304L	SS 304L	SS 304L	SS 304L + CP	-20 to + 300
6	SS 316L	SS 316L	SS 316L	SS 316L + CP	-195 to + 300
7	SS 410 + HTNT	SS 410 + HTNT	SS 410 + HTNT	SS 410 + CP	-30 to + 425
8	SS 316 + CRNT	SS 316 + CRNT	SS 316 + CRNT	SS 316 + CP	-195 to + 450
9	HAST 'C'	HAST 'C'	HAST 'C'	HAST 'C'	-195 to + 450
10	MONEL	MONEL	MONEL	MONEL	-195 to + 300
11	ALLOY 20	ALLOY 20	ALLOY 20	ALLOY 20	-40 to + 300
12	TITANIUM-2	TITANIUM-2	TITANIUM-2	TITANIUM-2	-195 to + 450
13	P.T.F.E. soft facing is supplied with any of the above materials. The P.T.F.E. facing is inserted into the plug. Seat remains of metal.				-250 to + 200

NOTE : 1) Other material combinations available 2) For Micro Top Guide Trims Sr. No. 13 not applicable as Class VI Tight shut off is provided with metal seating trims. 3) Full stellite facing available on request

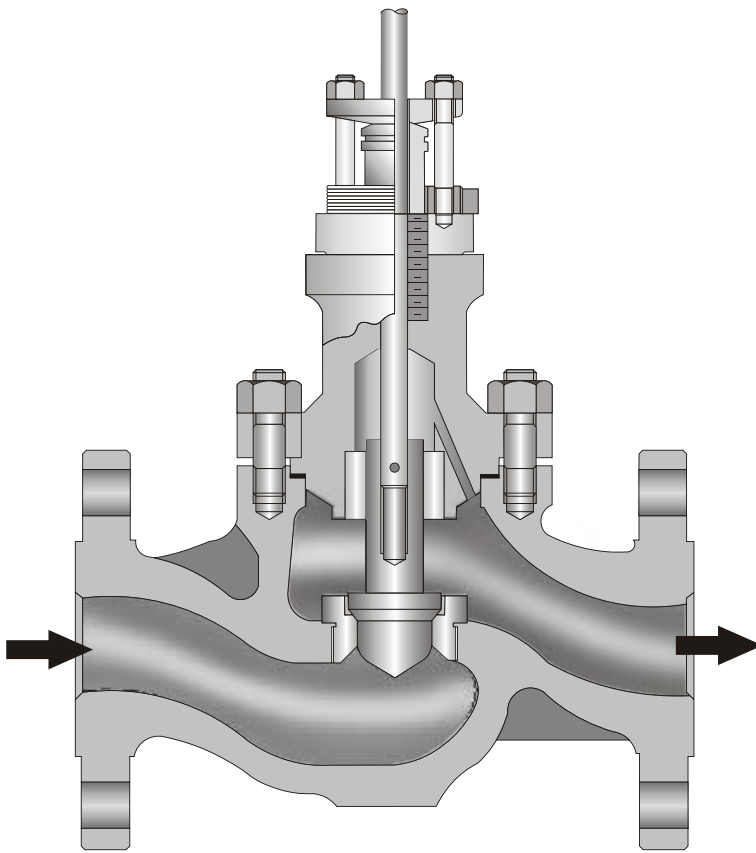
Abbreviations Used

CP	-	Chrome Plated	CRNT	-	Chrome Nitrided
NT	-	Nitrided	TEF	-	Teflon
HTNT	-	Heat Treated & Nitrided	SF	-	Stellited Face

The above trim abbreviation are used with carbon steel, stainless steel & alloy steel bodies as the case may be the M.O.C. for guide bush shall be SS 410 + CP for carbon steel bodies.

VARIOUS TRIM OPTIONS

TOP BUSH GUIDED TRIMS

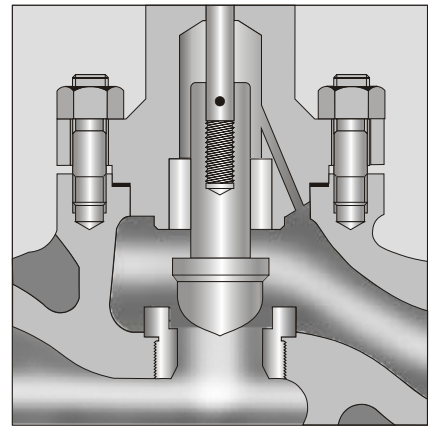


1. CONTOUR : The contour top guided trims are the most preferred choice for variety of control applications due to their simple construction. Heavy top guide bush provides maximum support to impart complete stability. The plug shank is guided at the lowest portion of the bonnet minimizing the effect of side thrust on the valve plug eliminating trim vibration.

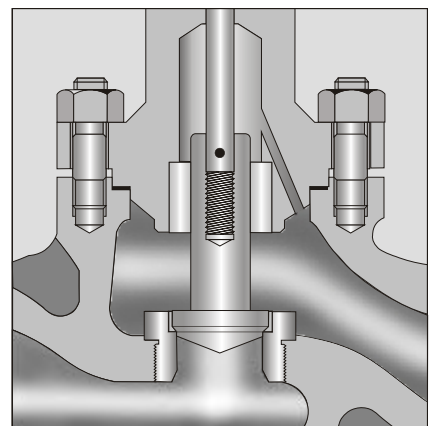
2. DISC : For quick opening (On-Off) applications the disc trims are used. These trims are similar to contoured trims except they are flat instead of contour parabolic shape.

3. MICRO : This trim has very high Rangeability, designed to precise control of minute flow rates. In addition to top guide the plug nose is precisely guided in the seat bore for through out valve travel to avoid breakage of the nose. The trims are designated in alphabets A to M depending on Cv values but the actual seat bore remains 4mm Ø

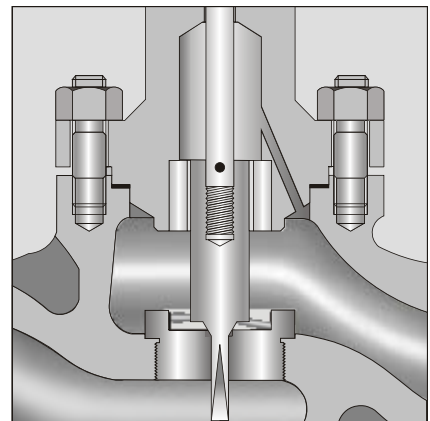
METAL TO METAL SEATING
LEAKAGE CLASS IV & V
Contoured



METAL TO METAL SEATING
LEAKAGE CLASS IV & V
Disc (On-Off)



METAL TO METAL SEATING
LEAKAGE CLASS IV, V & VI
Micro



4. CASCADE : Most suitable trim option where large pressure drop, cavitation during throttling is experienced which may cause erosion of trim, vibration & noise. As illustrated in the figure, the large pressure drop is divided in to many stages by means of the grooves made in the plug, which minimises the cavitation.

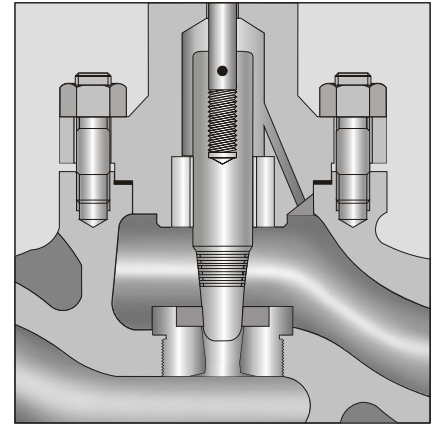
5. TRIM WITH SOFT FACING : The contour / disc type trims with P.T.F.E. or glass filled P.T.F.E. soft facing are utilized for tight shut off (class VI per FCI- 70.2) application where control valve has to perform equally as a controlling & a shut-off valve. The P.T.F.E. soft facing is sandwiched between the plug & shank, and easily replaceable .

6. HARDENED / HARD FACED TRIMS : The trims are hardened / hard faced to protect the parts like seat ring, plug, guide bush or cages against the effect of erosion abrasion & cavitation and to minimise galling between mating parts at high temperatures. Erosion of valve trim is caused by various factor viz. the fluid is gas or liquid, entrained solid particles in it, high flowing velocity and its temperature. The degree of erosion of metal parts caused by flowing media is a function of pressure differential

Dembla provides hardened/hard faced trims through various methods like Heat treatment of metals, Stellite deposition on metals and Hard coating on metals.

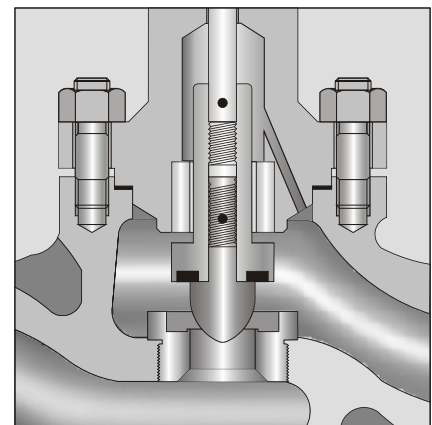
METAL TO METAL SEATING LEAKAGE CLASS IV & V

Contoured Cascade

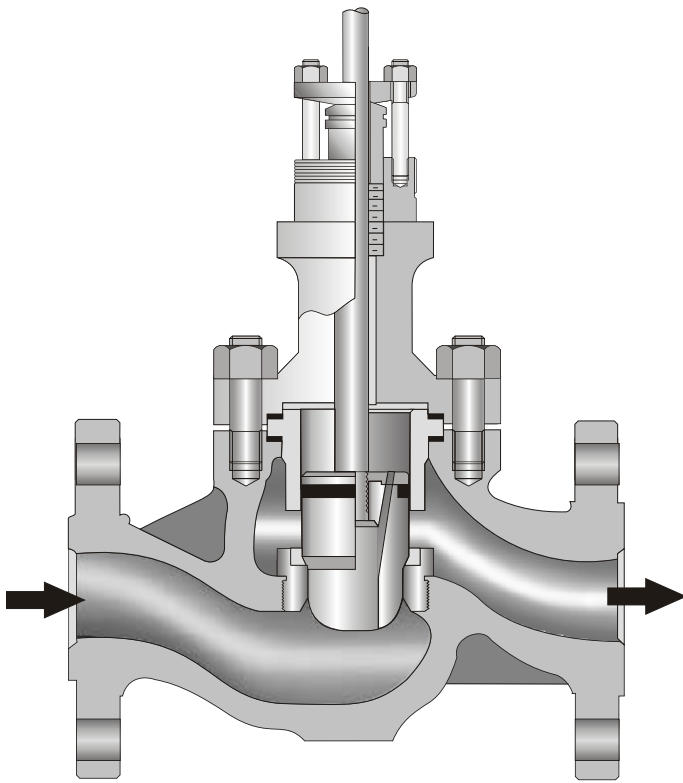


METAL TO SOFT FACING LEAKAGE CLASS VI

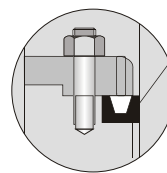
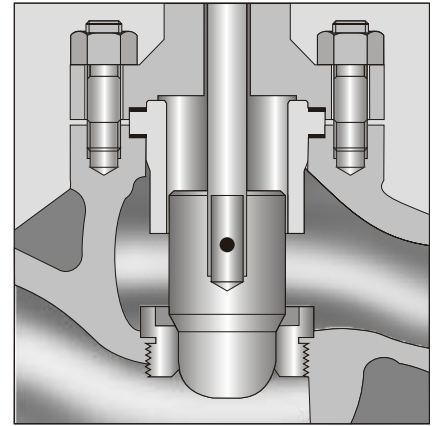
Contoured



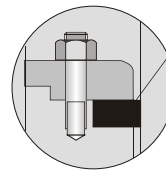
LARGE GUIDED PRESSURE BALANCED / UNBALANCED TRIMS



**METAL TO METAL
LEAKAGE CLASS IV & V**
Contoured Large Guided Unbalance



'U' Seal Ring
Max. Temp. 200°C
Leakage
Class III & IV



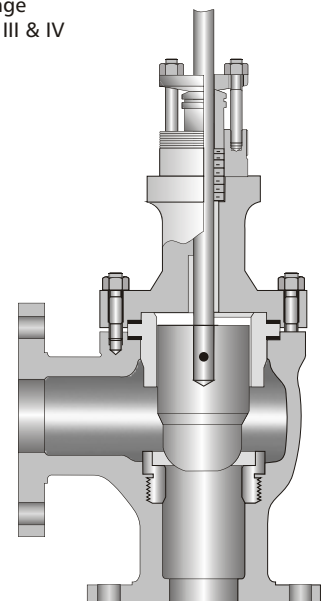
Carbon Ring
Max. Temp. 600°C
Leakage
Class III & IV

1. UNBALANCE VERSION : The large guide trim construction provides a heavy duty guide to plug enabling it to take higher side thrust load. These trims are generally used on Globe Angle Valves (series 5000) where flow direction is side to bottom.

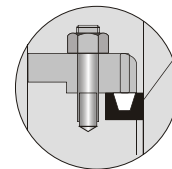
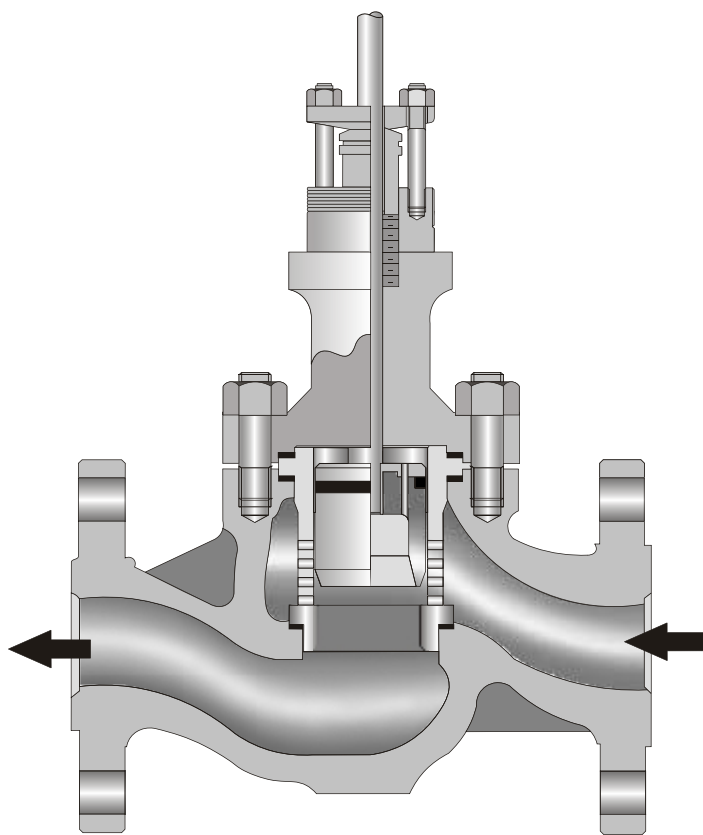
2. PRESSURE BALANCE VERSION : The large guide trims with pressure balancing effect enable the valve to handle higher Δp shut off without employing high power actuators.

The flow characteristic is achieved through plug contour. Equalizing holes are opened in the plug which effectively cancel out the unbalance force impressed on top & bottom of valve plug.

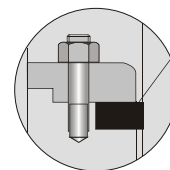
Pressure balance sealing is attained 1) At seating surface and 2) Through pressure balance seal rings which are fitted on the plug seal pressure along with the inner wall of the large guide having a ground, honed & chrome plated surface.



MULTI HOLE CAGE GUIDED PRESSURE BALANCED / UNBALANCED TRIMS

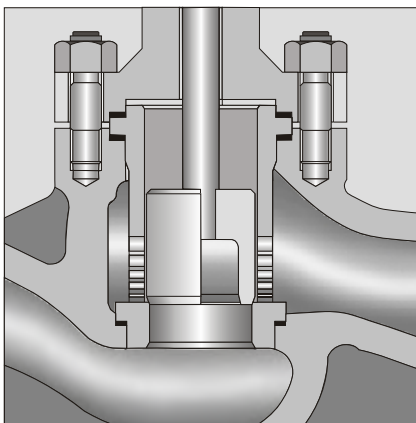


'U' Seal Ring
Max. Temp. 200°C
Leakage
Class III & IV

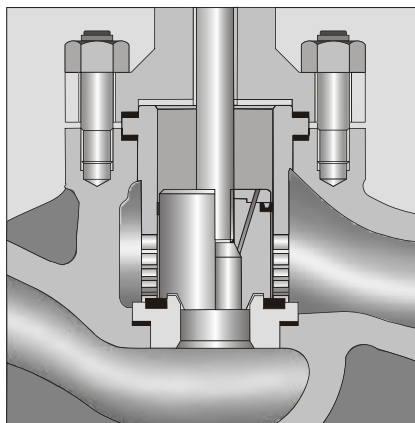


Carbon Ring
Max. Temp. 600°C
Leakage
Class III & IV

METAL TO METAL SEATING
LEAKAGE CLASS IV & V
Multi Hole Cage Guide Unbalance

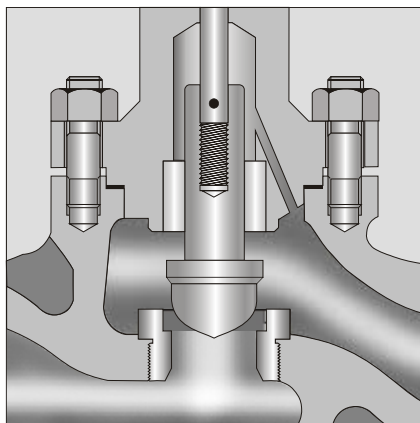


METAL TO SOFT FACING
LEAKAGE CLASS VI
Multi Hole Cage Guide Pressure Balance



Cv VALUES

TRIM FROM : CONTOURED
TOP BUSH GUIDED



TRIM FROM : MICRO
TOP BUSH GUIDED

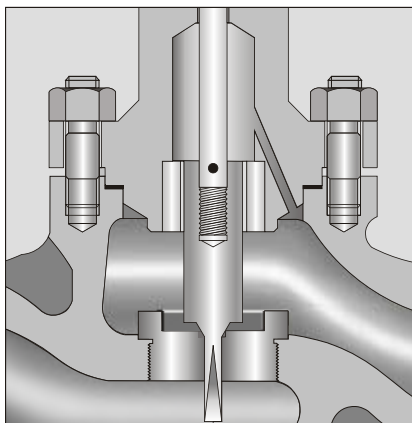


Table 3A

VALVE SIZE		TRIM SIZE		Cv
INCH	MM	INCH	MM	US GPM
1/2, 3/4 & 1	15, 20&25	1/8	3	1
		3/16	5	1.5
		1/4	6	2
		5/16	8	3
		3/8	10	4
		1/2	15	5
		3/4	20	9
		1	25	13
1 1/2	40	1 1/2	40	30
		1 1/4	32	20
		1	25	13
2	50	2	50	50
		1 1/2	40	30
		1 1/4	32	20
2 1/2	65	2 1/2	65	80
		2	50	50
		1 1/2	40	30
3	80	3	80	110
		2 1/2	65	80
		2	50	50
4	100	4	100	200
		3	80	110
		2 1/2	65	80
6	150	6	150	400
		5	125	300
		4	100	200
8	200	8	200	640
		6	150	400
		5	125	300
10	250	10	250	1000
		8	200	640
		6	150	400
12	300	12	300	1350
		10	250	1000
		8	200	640
14	350	14	350	1800
		12	300	1350
		10	250	1000
16	400	16	400	2350
		14	350	1800
		12	300	1350

Table 3B

VALVE SIZE		TRIM SIZE	Cv
INCH	MM		US GPM
1/2 3/4 1	15 20 25	M	0.003
		L	0.005
		K	0.0075
		J	0.01
		I	0.02
		H	0.03
		G	0.05
		F	0.075
		E	0.1
		D	0.15
		C	0.2
		B	0.3
		A	0.4
		1/32 0.75 mm	0.5
		1/16 1.5 mm	0.75

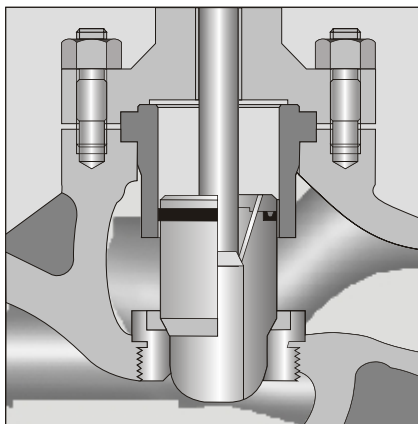
NOTE :

- 1) The above mentioned trim sizes are designated sizes only. Actual seat bore for all above sizes is 4mm.
- 2) For Trim size F,G,H,I,J,K,L & M Only Linear Flow Characteristics are available.
- 3) Reduced trim are also available in various combination.

NOTE :

- 1) Cv Values for on-off flow characteristic will generally be 10 to 20% higher.
- 2) For Linear flow characteristic, if essential, above-mentioned Cv values can be given higher by 10%.
- 3) Reduced trims are available in various combinations.

TRIM FROM : CONTOURED LARGE GUIDED.



TRIM FROM : 1. M. H CAGE GUIDED.
2. CONTOURED PORTED CAGE GUIDED.

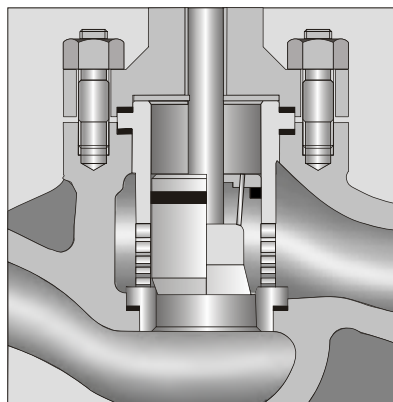


Table 3C

VALVE SIZE		TRIM SIZE		Cv
INCH	MM	INCH	MM	US GPM
1	25	1	25	12
		¾	20	9
		½	15	5
1½	40	1½	40	27
		1¼	32	20
		1	25	13
2	50	2	50	45
		1½	40	30
		1¼	32	20
2½	65	2½	65	72
		2	50	50
		1½	40	30
3	80	3	80	100
		2½	65	80
		2	50	50
4	100	4	100	180
		3	80	100
		2½	65	80
6	150	6	150	360
		5	125	300
		4	100	200
8	200	8	200	580
		6	150	400
		5	125	300
10	250	10	250	900
		8	200	640
		6	150	400
12	300	12	300	1200
		10	250	1000
		8	200	640
14	350	14	350	1620
		12	300	1350
		10	250	1000
16	400	16	400	2100
		14	350	1800
		12	300	1350

Table 3D

VALVE SIZE		TRIM SIZE		Cv
INCH	MM	INCH	MM	US GPM
1	25	1	25	10
		¾	20	7
		½	15	4
1½	40	1½	40	24
		1¼	32	16
		1	25	10
2	50	2	50	40
		1½	40	24
		1¼	32	16
2½	65	2½	65	64
		2	50	40
		1½	40	24
3	80	3	80	90
		2½	65	64
		2	50	40
4	100	4	100	160
		3	80	90
		2½	65	64
6	150	6	150	320
		5	125	240
		4	100	160
8	200	8	200	510
		6	150	320
		5	125	240
10	250	10	250	800
		8	200	510
		6	150	320
12	300	12	300	1100
		10	250	800
		8	200	510
14	350	14	350	1440
		12	300	1100
		10	250	800
16	400	16	400	1950
		14	350	1440
		12	300	1100

NOTE :

- 1) Cv Values for on-off flow characteristic will generally be 10 to 20% higher.
- 2) For Linear flow characteristic, if essential, above-mentioned Cv values can be given higher by 10%.
- 3) Marked trim sizes 1¼ and below are always unbalance.

FLOW CHARACTERISTICS CURVES (EQUAL%)

FIG. 6 - TRIM : CONTOURED TOP BUSH GUIDED

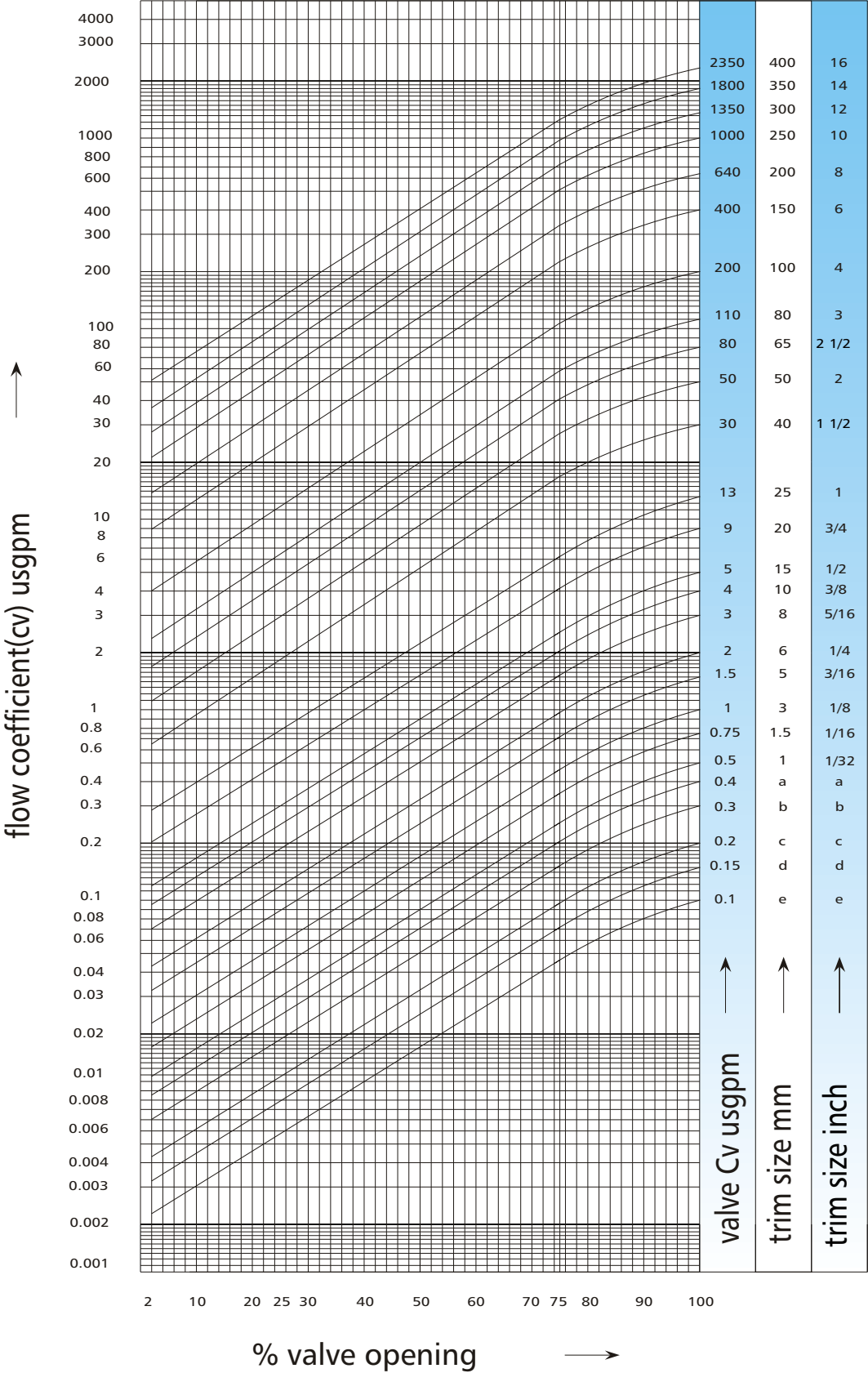


FIG. 7 - TRIM : CONTOURED LARGE GUIDED

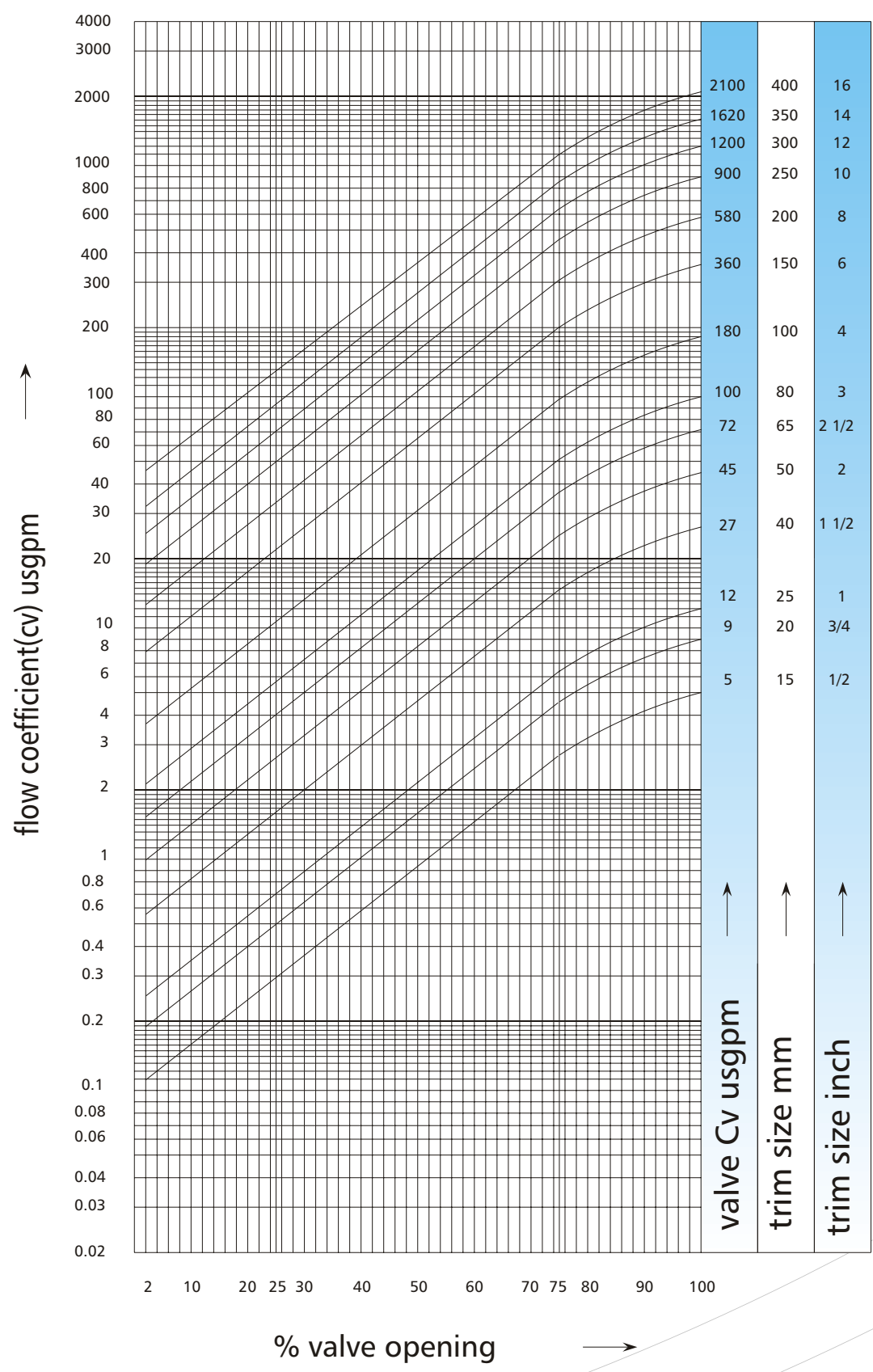
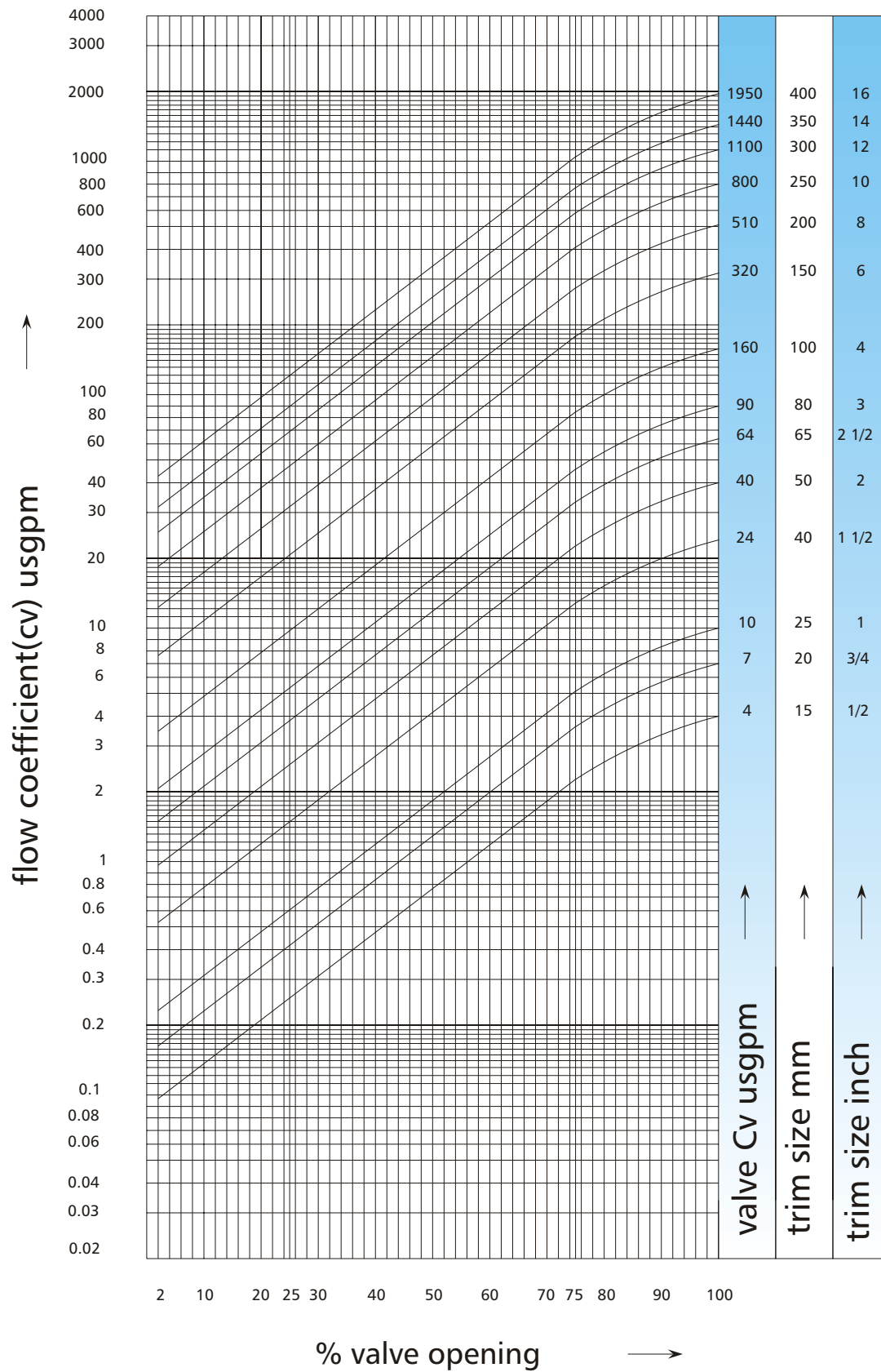
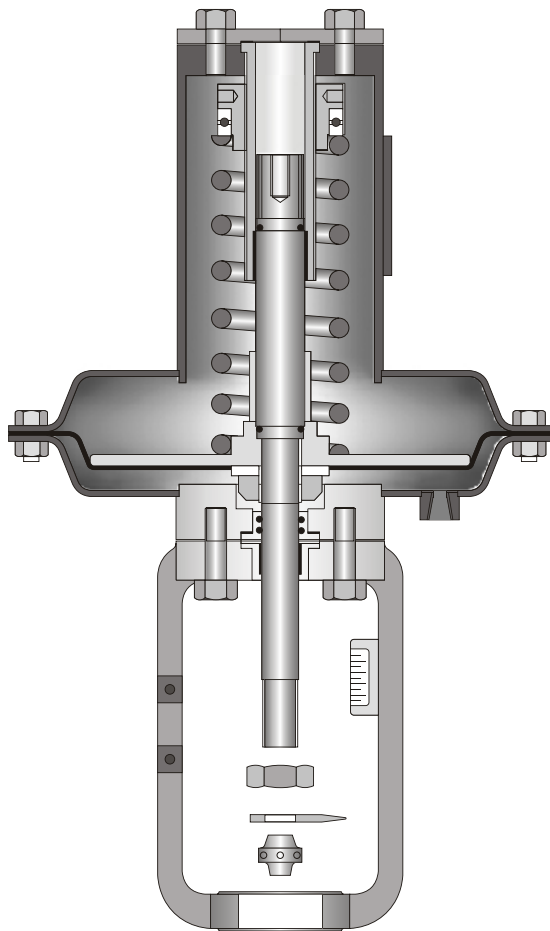


FIG. 8 - TRIM : MULTI HOLE CAGE GUIDED

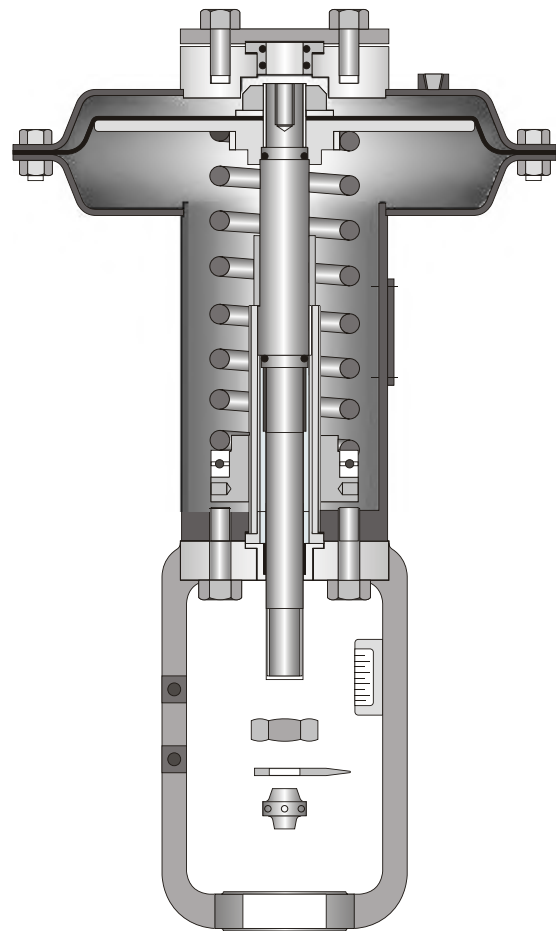


PNEUMATIC DIAPHRAGM ACTUATORS SERIES 'C'

The 'C' series control valve actuators are diaphragm actuators with adjustable single spring construction. The actuators are suitable for regulating & On-Off applications. Various models are available coverings small to larger thrust requirements.



Reverse Acting Actuator



Direct Acting Actuator

ACTUATOR FUNCTION :

The increasing air pressure supply moves the diaphragm and actuator stem opposing the spring force. While with decreasing air pressure supply the spring force moves the diaphragm in the opposite direction & thus retracts the actuator stem.

To get various loading capacities the initial compression can be obtained by means of spring adjuster.

The actuator can be mounted on the shoulder of control valve bonnet with the help of locking ring. The connection between valve stem & actuator stem can be achieved with the help of stem connector made out of two halves. The travel indicator is coupled with the stem connector which matches with travel scale indicating the position of inner valve stem.

DIRECT ACTING ACTUATORS :

The actuator stem moves downward with increasing diaphragm pressure. When this pressure is reduced the opposing spring force moves the actuator stem upward.

On air failure the actuator stem is pushed to extreme upward position by spring force.

This actuator is suitable for action :

Air Fail to Open	-	For valves with plugs push down to close
Air Fail to Close	-	For valves with plugs push down to open.
Air Fail to Close		
Upper Port	-	For three-way globe valves.

REVERSE ACTING ACTUATORS :

The actuator stem moves upward with increasing diaphragm pressure. When this pressure is reduced the opposing spring force moves the actuator stem downward.

On air failure the actuator stem is pushed to extreme downward position by spring force.

This actuator is suitable for action :

Air Fail to Close	-	For valves with plugs push down to close.
Air Fail to Open	-	For valves with plugs push down to open.
Air Fail to Close		
Bottom Port	-	For three-way globe valves.

FEATURES

- **Utility** : Applicable for control regulating & On-Off functions.
- **High power** : Variety of models provide choice for low & high thrust requirements.
- **Reversible** : The actuators are field reversible without demanding addition or deletion of components.
- **Long service life** : Rigid construction & durable components provide a long lasting service life.
- **Minimum maintenance** : The actuators are virtually maintenance free.
- **Flexibility** : The same actuator can be adjusted for various thrust requirements without addition of spring by just adjusting the spring compression.
- **Manual Operators** : The actuators are also available incorporated with hand wheel arrangements as side mounted or top mounted configurations.
- **Accessories Mounting** : Variety of accessories like valve positioner, I/P converters, air filter, regulator, air lock relays, volume booster, solenoid valves, position transmitter etc. can be mounted easily.

SPECIFICATIONS

Max. diaphragm pressure	:	3.5kg/cm ²
Actuator Travels (mm)	:	18, 28, 38, 58 and 78
Diaphragm	:	Nitrile / Viton with fabric insert
Operating Temp. Range	:	-40 to 80°C Nitrile Elastomers -50 to 180°C Viton Elastomers
Connections	:	1/4" NPT (F) for sizes 01, 11, 12, 22 & 23 3/8" NPT (F) for sizes 33, 34 & 44
Spring	:	Chrome Vanadium Spring Steel EN-47
Actuator Stem	:	AISI 410 Chrome Plated
Stem Seals	:	Nitrile / VITON
Stem Guide	:	PTFE coated bearings
Yoke	:	S.G. Iron as STD. / Malleable iron on request
Casing	:	Steel Pressings
Permissible Linearity & Hysteresis	:	±5% of signal pressure range

STANDARD OPERATING PRESSURE RANGES

VERSION	MODEL NOS.	SPRING RANGE kg/cm ²		
Normal	RC, DC	0.2-1.0		
	RC	0.4-1.2		
High Power	RCP, DCP	0.4-2.0		
	RCP	0.6-2.2	0.8-2.4	1.0-2.8

TOP MOUNTED HANDWHEEL (TMH)

Dembla Top Mounted Handwheel (TMH) is capable of providing operating force in both the upward and downward directions and is a continuously connected handwheel. In this arrangement there is nothing to engage or disengage. It can be used to operate the control valve through out its stroke, or as a travel stop, limiting the amount of closing or opening of the valve. The actuator is operatable with pneumatic air when the handwheel is set in 'NEUTRAL' position. A lock nut is provided to lock the position of the handwheel. The handwheel yoke is provided with an stroke indicator which shows the position of the handwheel mechanism in addition to it an usual stroke indicator is fixed to the actuator yoke showing valve stem position.

SIDE MOUNTED HANDWHEEL (SMH)

Dembla Side Mounted Handwheel arrangement is conveniently located on the actuator yoke. The mechanical advantage of worm gear arrangement reduces the operating torque, i.e. the valve can be operated with much less effort. The arrangement is of the continuously connected type operating through worm gear box. The side mounted handwheel assembly may be fitted on actuator as original equipment or can be added to the actuator later on at site if need arises without modification or alteration of existing components.

SPRING BENCH SETTING V/s. ACTUATOR THRUST (KGF)

NORMAL VERSION

SPRING RANGE kg/cm ² .	ACTUATOR MODELS	C-01	C-11	C-12	C-22	C-23	C-33	C-34	C-44
	Travels / Lift	18	28	28	38	38	58	58	78
	Air Supply Pressure kg / cm ²	Actuator Thrust-KGF							
0.2-1.0	1.4	75	75	129	129	190	190	340	340
0.4-1.2	1.6	150	150	258	258	380	380	680	680

HIGH POWER VERSION

SPRING RANGE kg/cm ² .	ACTUATOR MODELS	CP-01	CP-11	CP-12	CP-22	CP-23	CP-33	CP-34	CP-44
	Travels / Lift	18	28	28	38	38	58	58	78
	Air Supply Pressure kg / cm ²	Actuator Thrust-KGF							
0.4-2.0	2.4	150	150	258	258	380	380	680	680
0.6-2.2	2.6	225	225	387	387	570	570	1020	1020
0.8-2.4	2.8	300	300	516	516	760	760	1360	1360
1.0-2.6	3.0	375	375	645	645	950	950	1700	1700

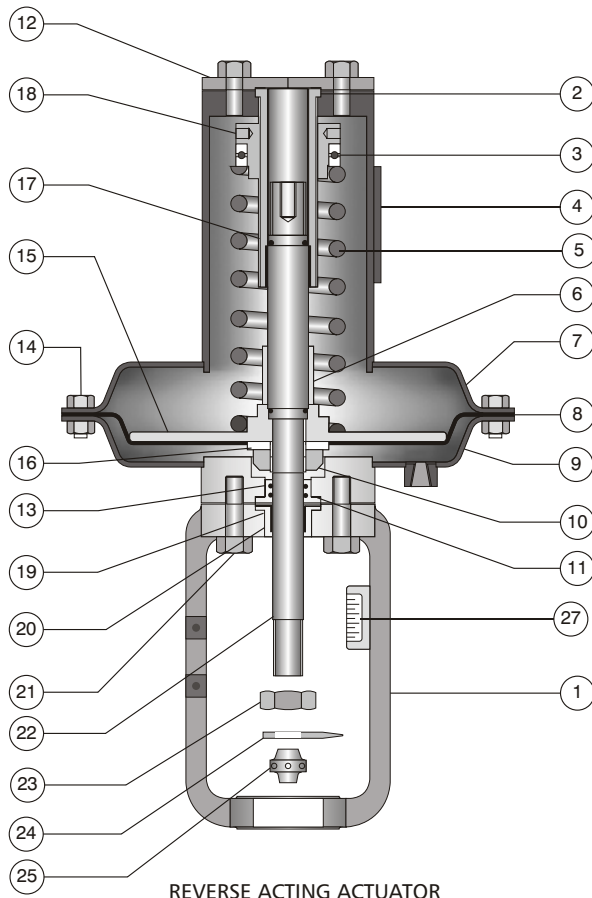
ACTUATOR WEIGHTS KG

MODEL NOS.	BASIC ACTUATOR	WITH TOP MOUNTED HANDWHEEL	WITH SIDE MOUNTED HANDWHEEL
C-01	18	24	31
CP-01	18	N/A	31
C-11	19	25	32
CP-11	21	N/A	34
C-12	33	41	56
CP-12	38	N/A	62
C-22	37	45	60
CP-22	44	N/A	67
C-23	54	62	87
CP-23	59	N/A	92
C-33	66	74	99
CP-33	69	N/A	102
C-34	98	N/A	148
CP-34	113	N/A	163
C-44	105	N/A	120
CP-44	120	N/A	170

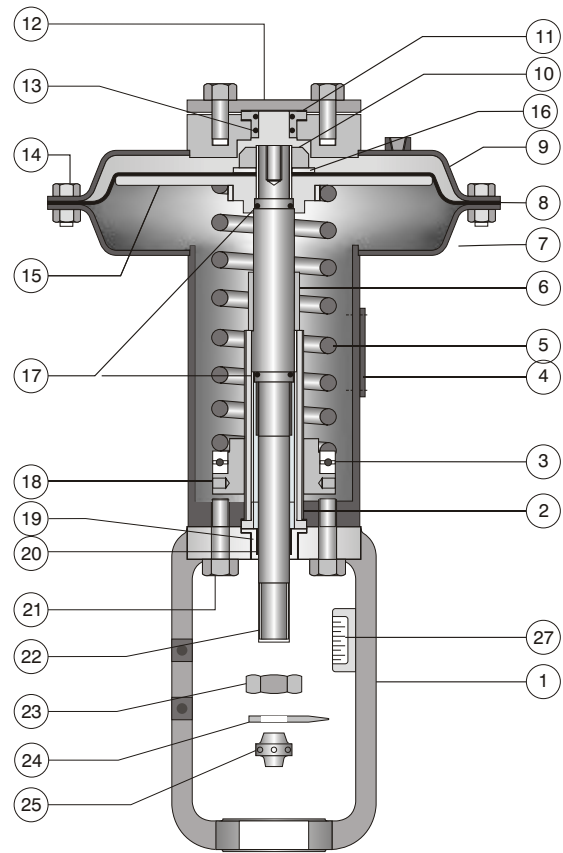
AIR VOLUME REQUIRED PER STROKE :

MODEL NOS.	CUBIC FT/ STROKE.
C-01, CP-01	0.02
C-11, CP-11	0.034
C-12, CP-12	0.06
C-22, CP-22	0.08
C-23, CP-23	0.012
C-33, CP-33	0.018
C-34, CP-34	0.033
C-44, CP-44	0.044

MATERIAL OF CONSTRUCTION BASIC ACTUATOR



REVERSE ACTING ACTUATOR

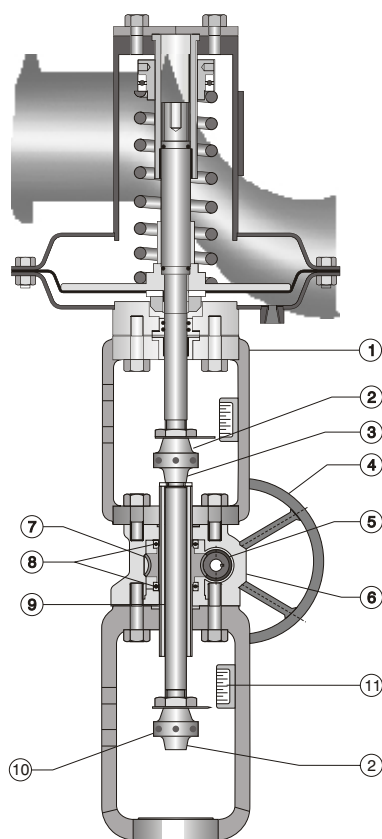


DIRECT ACTING ACTUATOR

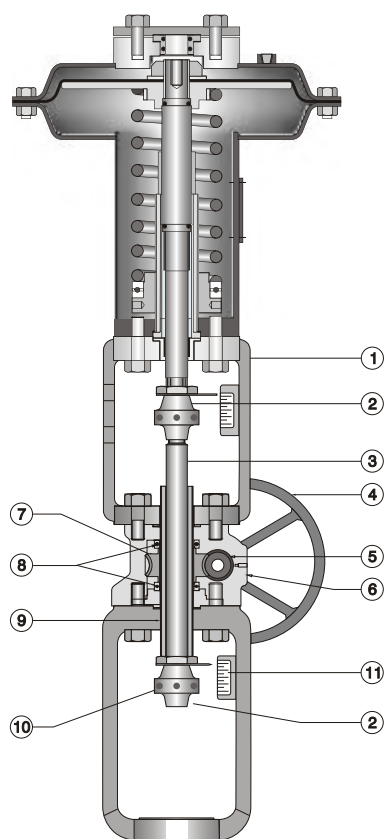
SR. NO.	PART REF.	PART NAME	M.O.C
1	446	YOKE	S. G. IRON / MALLEABLE IRON
2	415	SPRING ADJUSTING SCREW	CARBON STEEL + CAD. PLATED
3	437	BALL THRUST BEARING	BEARING STEEL USED ONLY ON SIZE 33, 34 & 44
4	426	WINDOW COVER	ALUMINIUM
5	406	ACTUATOR SPRING	CHROME VANADIUM EN 47
6	413.02	TRAVEL STOPPER	CARBON STEEL + CAD. PLATED
7	402.05	CASING WITH SPRING HOUSING	CARBON STEEL
8	411	ACTUATOR DIAPHRAGM	NITRILE WITH FABRIC
9	402.06	CASING WITH SEAL BOX UNIT	CARBON STEEL
10	410.02	LOCK NUT	CARBON STEEL
11	415.02	GASKET SEAL BOX TO SEAL BOX	NITRILE / VITON
12	460	TOP COVER PLATE	CARBON STEEL
13	415.01	'O' SEAL RING - STEM TO SEAL BOX	NITRILE / VITON
14	403.02	CASING BOLTS , NUTS	CARBON STEEL + CAD PLASTED
15	407.02	DIAPHRAGM PLATE	CARBON STEEL
16	417	DIAPHRAGM WASHER	CARBON STEEL
17	415.05	'O' SEAL RING - STEM TO SPRING ADJUSTING SCREW	NITRILE
18	404	SPRING ADJUSTER CUM RETAINER	CARBON STEEL + CAD. PLATED
19	414	SEAL BOX	ALLUMINIUM
20	467	GUIDE BUSH	TEFLON COATED BEARING BUSH
21	403.01	YOKE MOUNTING BLOTS	CARBON STEEL + CAD. PLATED
22	408.01	ACTUATOR STEM	S.S. 410 + HARD CHROME PLATED
23	410.09	TRAVEL INDICATOR LOCK NUT	S.S.
24	420	TRAVEL INDICATOR	S.S. 304
25	421	STEM CONNECTOR	STEEL
26	403.06	STEM CONNECTOR ALLEN BLOTS	S.S.
27	419	TRAVEL SCALE	S.S. 304

MATERIAL OF CONSTRUCTION

SIDE MOUNTED HANDWHEEL (SMH)



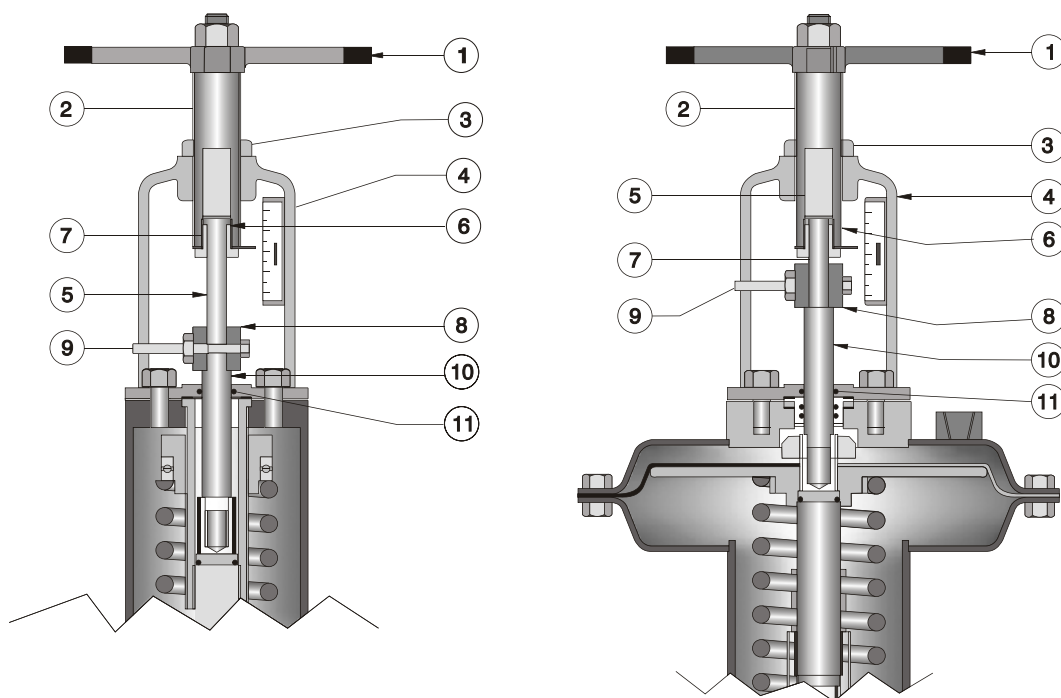
SIDE MOUNTED HANDWHEEL ON
REVERSE ACTING ACTUATOR



SIDE MOUNTED HANDWHEEL ON
DIRECT ACTING ACTUATOR

SR. NO.	PART REF.	PART NAME	M.O.C.
1	446	SMH YOKE	S.G. IRON / STEEL
2	421	STEM CONNECTOR	CARBON STEEL CAD. PLATED
3	408	SMH STEM	CARBON STEEL CAD. PLATED
4	440	HAND WHEEL	CAST IRON
5	450	WORM	CARBON STEEL
6	435	SMH HOUSING	S.G IRON
7	447	WORM GEAR	S. S. 410
8	437	BALL THRUST BEARING	BEARING STEEL
9	456	HOLLOW SCREW	CARBON STEEL CAD. PLATED
10	403.06	STEM CONNECTOR ALLEN BOLT	S. S. 304
11	419	TRAVEL SCALE	S. S. 304

MATERIAL OF CONSTRUCTION TOP MOUNTED HANDWHEEL (TMH)



MATERIAL OF CONSTRUCTION TOP MOUNTED HANDWHEEL

SR. NO.	PART REF.	PART NAME	M.O.C.
1	440	HAND WHEEL	CAST IRON
2	436	HANDWHEEL SCREW	S. S. 410
3	410.05	LOCK NUT	CARBON STEEL + CAD. PLATED
4	446.2	TMH YOKE	S.G. IRON / STEEL
5	408.2	HAND WHEEL STEM	S. S. 304
6	437	THRUST BEARING	GUN METAL
7	442.01	LOCK SCREW	S. S. 410
8	421.1	STEM CONNECTOR	CARBON STEEL + CAD. PLATED
9	527.1	STOP PEG	S. S. 304
10	408.4	ACTUATOR EXTENSION	S. S. 304
11	415.01	'O' SEAL RING	NITRILE / VITON

ACTUATOR SELECTION

TRIM : METAL TO METAL

TRIM FROM : 1) MICRO TOP BUSH GUIDED

2) CONTOURED TOP BUSH GUIDED

3) CONTOURED LARGE GUIDED (UNBALANCED)

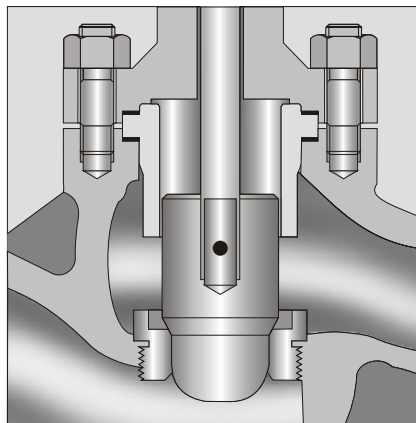
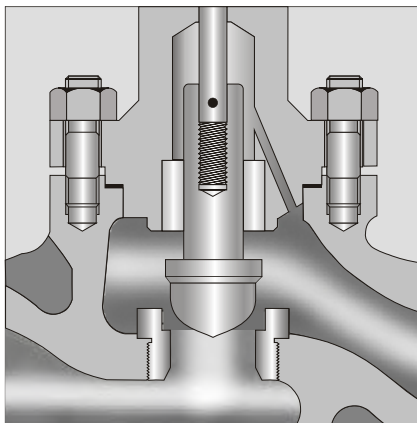
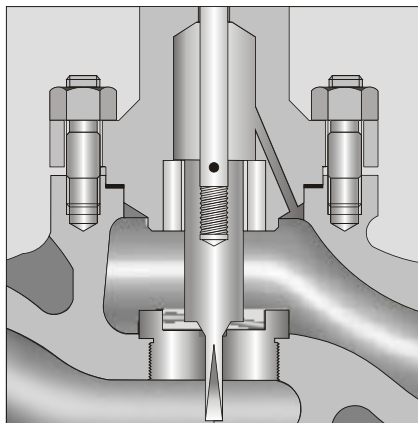


Table 4A

ACTUATOR MODEL	AIR PRESSURE TO DIAPHRAGM (kg/cm)	SPRING RANGE (kg/cm ²)		PRESSURE DIFFERENTIAL (kg/cm ²) AT CORRESPONDING TRIM SIZE										
		DIRECT ACTING ACTUATOR (DC)	REVERSE ACTING ACTUATOR (RC)	TRIM SIZE	1/16" 1/32" A to M	1/8" 3/16" ¼"	5/16"	3/8"	½"	¾"	1"	1¼"	1½"	2"
				ACTUATOR SELECTION PORT DIA	0.31"	0.31"	0.37"	0.5"	0.63"	0.75"	0.88"	1.10"	1.34"	1.73"
DC-01 RC-01	1.4	0.2-1.0	0.2-1.0		86	86	86	86	34	23	15			
	1.6		0.4-1.2		178	178	178	178	72	49	33			
	1.8		—						110	75	55			
	2.4	0.4-2.0	0.4-2.0		178	178	178	178	72	49	33			
	2.6		0.6-2.2						110	75	52			
	2.8		0.8-2.4						148	102	70			
	3.0		1.0-2.6						185	128	89			
DC-11 RC-11	1.4	0.2-1.0	0.2-1.0									10	7	4
	1.6		0.4-1.2									22	15	8
	1.8		—									34	23	13
	2.4	0.4-2.0	0.4-2.0									22	15	8
	2.6		0.6-2.2								34	23	13	
	2.8		0.8-2.4							46	31	18		
	3.0		1.0-2.6						59	39	23			
DC-02 RC-02	1.4	0.2-1.0	0.2-1.0		153	153	153	153	62	42	28			
	1.6		0.4-1.2						127	88	60			
	1.8		—						192	133	91			
	2.4	0.4-2.0	0.4-2.0						127	88	60			
	2.6		0.6-2.2						192	133	91			
	2.8		0.8-2.4						258	178	123			
	3.0		1.0-2.6						322	224	152			
DC-12 RC-12	1.4	0.2-1.0	0.2-1.0									19	12	7
	1.6		0.4-1.2									40	27	16
	1.8		—									61	41	23
	2.4	0.4-2.0	0.4-2.0									40	27	16
	2.6		0.6-2.2								61	41	23	
	2.8		0.8-2.4								82	55	32	
	3.0		1.0-2.6								103	69	41	

Table 4A (Continued)

ACTUATOR MODEL	AIR PRESSURE TO DIAPHRAGM (kg/cm)	SPRING RANGE (kg/cm ²)		PRESSURE DIFFERENTIAL (kg/cm ²) AT CORRESPONDING TRIM SIZE									
		DIRECT ACTING ACTUATOR (DC)	REVERSE ACTING ACTUATOR (RC)	TRIM SIZE	2½"	3"	4"	5"	6"	8"	10"	12"	16"
				ACTUATOR SELECTION PORT DIA	2.20	2.60	3.62	4.33	5.31	7.09	8.66	9.84	13.78"
DC-22 RC-22	1.4	0.2-1.0	0.2-1.0		4	3	1						
	1.6		0.4-1.2		9	6	3						
	1.8		—		14	10	5						
	2.4	0.4-2.0	0.4-2.0		9	6	3						
	2.6		0.6-2.2		14	10	5						
	2.8		0.8-2.4		19	14	7						
DC-23 RC-23	1.4	0.2-1.0	0.2-1.0		6	4	2						
	1.6		0.4-1.2		13	10	5						
	1.8		—		21	16	8						
	2.4	0.4-2.0	0.4-2.0		13	10	5						
	2.6		0.6-2.2		21	16	8						
	2.8		0.8-2.4		29	21	11						
DC-33 RC-33	1.4	0.2-1.0	0.2-1.0					1	1	0.5			
	1.6		0.4-1.2					3	2	1			
	1.8		—					5	4	2			
	2.4	0.4-2.0	0.4-2.0					3	2	1			
	2.6		0.6-2.2					5	4	2			
	2.8		0.8-2.4					7	5	2			
DC-34 RC-34	1.4	0.2-1.0	0.2-1.0					3	2	1			
	1.6		0.4-1.2					6	4	2			
	1.8		—					10	7	4			
	2.4	0.4-2.0	0.4-2.0					6	4	2			
	2.6		0.6-2.2					10	7	4			
	2.8		0.8-2.4					13	9	5			
DC-44 RC-44	1.4	0.2-1.0	0.2-1.0								0.6	0.5	
	1.6		0.4-1.2								1.5	1	
	1.8		—								2	1.5	
	2.4	0.4-2.0	0.4-2.0								1.5	1	
	2.6		0.6-2.2								2	1.5	
	2.8		0.8-2.4								3	2.5	
DC-45 RC-45	1.4	0.2-1.0	0.2-1.0								4	3	
	1.6		0.4-1.2								1	0.5	
	1.8		—								2	1.5	
	2.4	0.4-2.0	0.4-2.0								4	3	
	2.6		0.6-2.2								5	4	
	2.8		0.8-2.4								6	5	
DC-55 RC-55	1.4	0.2-1.0	0.2-1.0										0.5
	1.6		0.4-1.2										1
	1.8		—										1.5
	2.4	0.4-2.0	0.4-2.0										1
	2.6		0.6-2.2										1.5
	2.8		0.8-2.4										2
DC-55 RC-55	3.0		1-2.6										2.5

TRIM : METAL TO SOFT FACING

TRIM FROM : CONTOURED TOP BUSH GUIDED

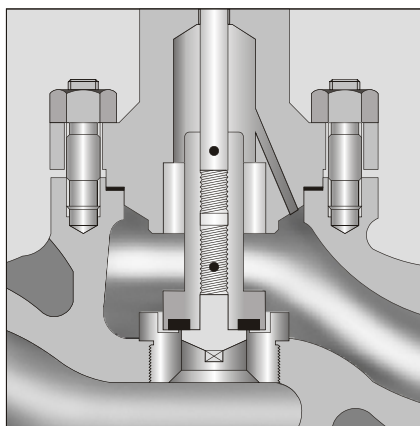


Table 4B

ACTUATOR MODEL	AIR PRESSURE TO DIAPHRAGM (kg/cm ²)	SPRING RANGE (kg/cm ²)		PRESSURE DIFFERENTIAL (kg/cm ²) AT CORRESPONDING TRIM SIZE									
		DIRECT ACTING ACTUATOR (DC)	REVERSE ACTING ACTUATOR (RC)	TRIM SIZE	1/4"	5/16"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
				ACTUATOR SELECTION PORT DIA	0.5"	0.5"	0.5"	0.625"	0.75"	0.88"	1.10"	1.34"	1.73"
DC-01 RC-01	1.4	0.2-1.0	0.2-1.0		45	45	45	27	17	12			
	1.6		0.4-1.2		105	105	105	65	44	31			
	1.8		—					103	70	50			
	2.4	0.4-2.0	0.4-2.0		105	105	105	65	44	31			
	2.6		0.6-2.2					103	70	50			
	2.8		0.8-2.4					140	96	70			
	3.0		1-2.6										
DC-11 RC-11	1.4	0.2-1.0	0.2-1.0								6	3	1
	1.6		0.4-1.2								17	12	6
	1.8		—								29	20	11
	2.4	0.4-2.0	0.4-2.0								17	12	6
	2.6		0.6-2.2								29	20	11
	2.8		0.8-2.4								41	28	16
	3.0		1-2.6										
DC-02 RC-02	1.4	0.2-1.0	0.2-1.0		89	89	89	55	36	26			
	1.6		0.4-1.2					120	82	59			
	1.8		—						127	92			
	2.4	0.4-2.0	0.4-2.0					120	82	59			
	2.6		0.6-2.2						127	92			
	2.8		0.8-2.4							126			
	3.0		1-2.6										
DC-12 RC-12	1.4	0.2-1.0	0.2-1.0								14	9	4
	1.6		0.4-1.2								34	23	13
	1.8		—								54	37	21
	2.4	0.4-2.0	0.4-2.0								34	23	13
	2.6		0.6-2.2								54	37	21
	2.8		0.8-2.4								74	52	30
	3.0		1-2.6										

Table 4B (Continued)

ACTUATOR MODEL	AIR PRESSURE TO DIAPHRAGM (kg/cm ²)	SPRING RANGE (kg/cm ²)		PRESSURE DIFFERENTIAL (kg/cm ²) AT CORRESPONDING TRIM SIZE									
		DIRECT ACTING ACTUATOR (DC)	REVERSE ACTING ACTUATOR (RC)	TRIM SIZE	2½"	3"	4"	5"	6"	8"	10"	12"	16"
				ACTUATOR SELECTION PORT DIA	2.20"	2.60"	3.62"	4.33"	5.31"	7.09"	8.66"	9.84"	13.78"
DC-22 RC-22	1.4	0.2-1.0	0.2-1.0		2	1							
	1.6		0.4-1.2		7	5	2						
	1.8		—		13	9	4						
	2.4	0.4-2.0	0.4-2.0		7	5	2						
	2.6		0.6-2.2		13	9	4						
	2.8		0.8-2.4		18	12	6						
	3.0		1-2.6										
DC-23 RC-23	1.4	0.2-1.0	0.2-1.0		5	3	1						
	1.6		0.4-1.2		12	8	4						
	1.8		—		20	14	7						
	2.4	0.4-2.0	0.4-2.0		12	8	4						
	2.6		0.6-2.2		20	14	7						
	2.8		0.8-2.4		21	20	10						
	3.0		1-2.6										
DC-33 RC-33	1.4	0.2-1.0	0.2-1.0					0.5					
	1.6		0.4-1.2					2.4	1	0.5			
	1.8		—					4	3	1			
	2.4	0.4-2.0	0.4-2.0					2.4	1	0.5			
	2.6		0.6-2.2					4	3	1			
	2.8		0.8-2.4					6	4	2			
	3.0		1-2.6										
DC-34 RC-34	1.4	0.2-1.0	0.2-1.0					2	1	0.3			
	1.6		0.4-1.2					5	3	2			
	1.8		—					9	6	3			
	2.4	0.4-2.0	0.4-2.0					5	3	2			
	2.6		0.6-2.2					9	6	3			
	2.8		0.8-2.4					12	8	4			
	3.0		1-2.6										
DC-44 RC-44	1.4	0.2-1.0	0.2-1.0								0.1		
	1.6		0.4-1.2								1	0.7	
	1.8		—								2	1.5	
	2.4	0.4-2.0	0.4-2.0								1	1	
	2.6		0.6-2.2								2	1.5	
	2.8		0.8-2.4								3	2	
	3.0		1-2.6										
DC-45 RC-45	1.4	0.2-1.0	0.2-1.0								0.6	0.4	
	1.6		0.4-1.2								2	1.5	
	1.8		—								3.5	3	
	2.4	0.4-2.0	0.4-2.0								2	1.5	
	2.6		0.6-2.2								3.5	3	
	2.8		0.8-2.4								5	4	
	3.0		1-2.6										
DC-55 RC-55	1.4	0.2-1.0	0.2-1.0										0.1
	1.6		0.4-1.2										0.5
	1.8		—										1.2
	2.4	0.4-2.0	0.4-2.0										0.5
	2.6		0.6-2.2										1.2
	2.8		0.8-2.4										2
	3.0		1-2.6										

TRIM : METAL TO METAL
TRIM FROM : CONTOURED LARGE GUIDED
(PRESSURE BALANCED)

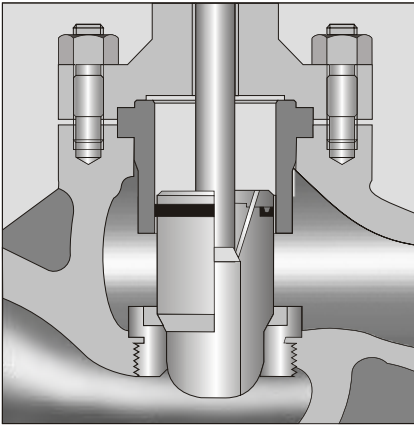


Table 4C

ACTUATOR MODEL	AIR PRESSURE TO DIAPHRAGM (kg/cm ²)	SPRING RANGE (kg/cm ²)		PRESSURE DIFFERENTIAL (kg/cm ²) AT CORRESPONDING TRIM SIZE					
		DIRECT ACTING ACTUATOR (DC)	REVERSE ACTING ACTUATOR (RC)	TRIM SIZE	1½"	2"	2½"	3"	4"
				ACTUATOR SELECTION PORT DIA	1.34"	1.73"	2.20"	2.60"	3.62"
DC-11 RC-11	1.4	0.2-1.0	0.2-1.0		22	15			
	1.6		0.4-1.2		63	50			
	1.8		—		104				
	2.4	0.4-2.0	0.4-2.0		63	50			
	2.6		0.6-2.2		104	85			
	2.8		0.8-2.4		145	119			
	3.0		1-2.6		195	154			
DC-12 RC-12	1.4	0.2-1.0	0.2-1.0		57	40			
	1.6		0.4-1.2		134	100			
	1.8		—						
	2.4	0.4-2.0	0.4-2.0		134	100			
	2.6		0.6-2.2		24	160			
	2.8		0.8-2.4		280	221			
	3.0		1-2.6		355	237			
DC-22 RC-22	1.4	0.2-1.0	0.2-1.0				28	20	9
	1.6		0.4-1.2				75	61	38
	1.8		—						
	2.4	0.4-2.0	0.4-2.0				75	61	38
	2.6		0.6-2.2				123	102	67
	2.8		0.8-2.4				171	142	97
	3.0		1-2.6				218	183	126
DC-23 RC-23	1.4	0.2-1.0	0.2-1.0				50	40	23
	1.6		0.4-1.2				120	100	66
	1.8		—						
	2.4	0.4-2.0	0.4-2.0				120	100	66
	2.6		0.6-2.2				191	160	110
	2.8		0.8-2.4				261	219	153
	3.0		1-2.6				331	279	196

Table 4C (Continued)

ACTUATOR MODEL	AIR PRESSURE TO DIAPHRAGM (kg/cm)	SPRING RANGE (kg/cm ²)		PRESSURE DIFFERENTIAL (kg/cm ²) AT CORRESPONDING TRIM SIZE						
		DIRECT ACTING ACTUATOR (DC)	REVERSE ACTING ACTUATOR (RC)	TRIM SIZE	5"	6"	8"	10"	12"	16"
				ACTUATOR SELECTION PORT DIA	4.33"	5.31"	7.09"	8.66"	9.84"	13.78"
DC-33 RC-33	1.4	0.2-1.0	0.2-1.0		12	9	2			
	1.6		0.4-1.2		39	39	18			
	1.8		—							
	2.4	0.4-2.0	0.4-2.0		39	39	18			
	2.6		0.6-2.2		66	69	35			
	2.8		0.8-2.4		93	98	52			
	3.0		1-2.6		120	128	68			
DC-34 RC-34	1.4	0.2-1.0	0.2-1.0		33	32	15			
	1.6		0.4-1.2		82	86	44			
	1.8		—							
	2.4	0.4-2.0	0.4-2.0		82	86	44			
	2.6		0.6-2.2		130	134	74			
	2.8		0.8-2.4		178	191	104			
	3.0		1-2.6		227	244	134			
DC-44 RC-44	1.4	0.2-1.0	0.2-1.0					7	2.5	
	1.6		0.4-1.2					27	22	
	1.8		—							
	2.4	0.4-2.0	0.4-2.0					27	22	
	2.6		0.6-2.2					46	39	
	2.8		0.8-2.4					66	56	
	3.0		1-2.6					123	74	
DC-45 RC-45	1.4	0.2-1.0	0.2-1.0					19	15	
	1.6		0.4-1.2					50	43	
	1.8		—							
	2.4	0.4-2.0	0.4-2.0					50	43	
	2.6		0.6-2.2					81	70	
	2.8		0.8-2.4					113	97	
	3.0		1-2.6					144	125	
DC-55 RC-55	1.4	0.2-1.0	0.2-1.0							8
	1.6		0.4-1.2							27
	1.8		—							
	2.4	0.4-2.0	0.4-2.0							27
	2.6		0.6-2.2							47
	2.8		0.8-2.4							67
	3.0		1-2.6							86

TRIM : METAL TO METAL
TRIM FROM : MULTI HOLE CAGE GUIDED
(PRESSURE BALANCED)

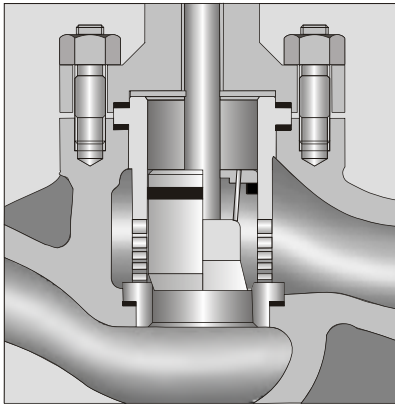


Table 4D

ACTUATOR MODEL	AIR PRESSURE TO DIAPHRAGM (kg/cm ²)	SPRING RANGE (kg/cm ²)		PRESSURE DIFFERENTIAL (kg/cm ²) AT CORRESPONDING TRIM SIZE					
		DIRECT ACTING ACTUATOR (DC)	REVERSE ACTING ACTUATOR (RC)	TRIM SIZE	1½"	2"	2½"	3"	4"
				ACTUATOR SELECTION PORT DIA	1.57"	1.96"	2.55"	3.14"	3.93"
DC-11 RC-11	1.4	0.2-1.0	0.2-1.0		17	10			
	1.6		0.4-1.2		52	38			
	1.8		—		88	67			
	2.4	0.4-2.0	0.4-2.0		52	38			
	2.6		0.6-2.2		88	67			
	2.8		0.8-2.4		123	96			
	3.0		1-2.6		160	128			
DC-12 RC-12	1.4	0.2-1.0	0.2-1.0		42	30			
	1.6		0.4-1.2		103	80			
	1.8		—		165	129			
	2.4	0.4-2.0	0.4-2.0		103	80			
	2.6		0.6-2.2		165	129			
	2.8		0.8-2.4		226	179			
	3.0		1-2.6		293	228			
DC-22 RC-22	1.4	0.2-1.0	0.2-1.0				19	13	6
	1.6		0.4-1.2				57	45	31
	1.8		—				95	77	56
	2.4	0.4-2.0	0.4-2.0				57	45	31
	2.6		0.6-2.2				95	77	56
	2.8		0.8-2.4				133	109	81
	3.0		1-2.6				175	143	109
DC-23 RC-23	1.4	0.2-1.0	0.2-1.0				37	28	18
	1.6		0.4-1.2				92	75	55
	1.8		—				149	123	92
	2.4	0.4-2.0	0.4-2.0				92	75	55
	2.6		0.6-2.2				149	123	92
	2.8		0.8-2.4				205	170	129
	3.0		1-2.6				263	219	169

Table 4D (Continued)

ACTUATOR MODEL	AIR PRESSURE TO DIAPHRAGM (kg/cm)	SPRING RANGE (kg/cm ²)		PRESSURE DIFFERENTIAL (kg/cm ²) AT CORRESPONDING TRIM SIZE						
		DIRECT ACTING ACTUATOR (DC)	REVERSE ACTING ACTUATOR (RC)	TRIM SIZE	5"	6"	8"	10"	12"	16"
				ACTUATOR SELECTION PORT DIA	4.92"	5.90"	7.87"	9.84"	11.80"	15.74"
DC-33 RC-33	1.4	0.2-1.0	0.2-1.0		11	6	-0.4			
	1.6		0.4-1.2		40	31	15			
	1.8		—		70	55	30			
	2.4	0.4-2.0	0.4-2.0		40	31	15			
	2.6		0.6-2.2		70	55	30			
	2.8		0.8-2.4		100	80	46			
	3.0		1-2.6		128	105	52			
DC-34 RC-34	1.4	0.2-1.0	0.2-1.0		34	25	12			
	1.6		0.4-1.2		87	70	40			
	1.8		—		140	114	67			
	2.4	0.4-2.0	0.4-2.0		87	70	40			
	2.6		0.6-2.2		140	114	67			
	2.8		0.8-2.4		193	158	95			
	3.0		1.0-2.6		250	201	111			
DC-44 RC-44	1.4	0.2-1.0	0.2-1.0					6	2	
	1.6		0.4-1.2					29	21	
	1.8		—					51	40	
	2.4	0.4-2.0	0.4-2.0					29	21	
	2.6		0.6-2.2					51	40	
	2.8		0.8-2.4					73	58	
	3.0		1-2.6					121	63	
DC-45 RC-45	1.4	0.2-1.0	0.2-1.0					19	13	
	1.6		0.4-1.2					55	43	
	1.8		—					90	78	
	2.4	0.4-2.0	0.4-2.0					55	43	
	2.6		0.6-2.2					90	73	
	2.8		0.8-2.4					126	103	
	3.0		1-2.6							
DC-55 RC-55	1.4	0.2-1.0	0.2-1.0							5
	1.6		0.4-1.2							21
	1.8		—							38
	2.4	0.4-2.0	0.4-2.0							21
	2.6		0.6-2.2							38
	2.8		0.8-2.4							55
	3.0		1-2.6							70

TRIM : METAL TO METAL

TRIM FROM : 1. MICRO CASCADE
2. CONTOURED CASCADE

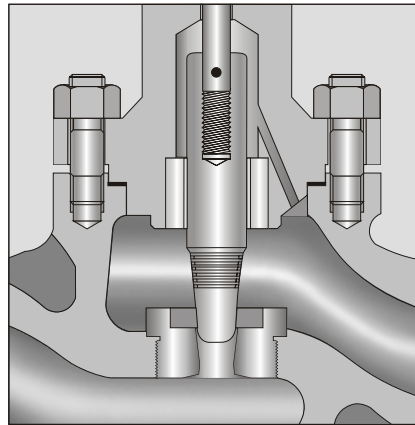
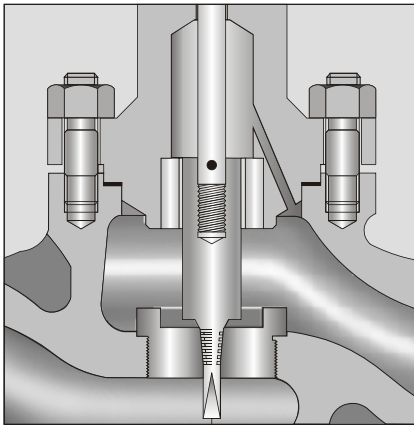
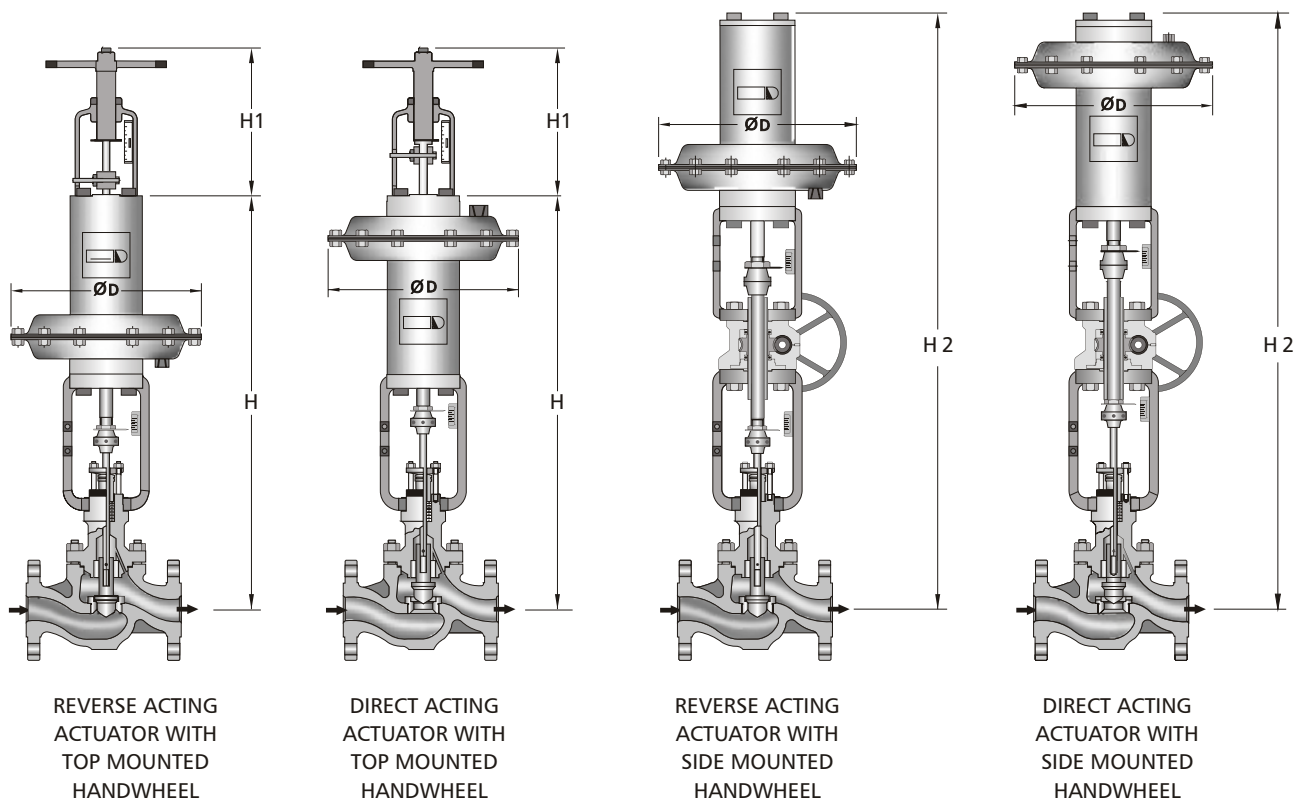


Table 4E

ACTUATOR MODEL	AIR PRESSURE TO DIAPHRAGM (kg/cm ²)	SPRING RANGE (kg/cm ²)		PRESSURE DIFFERENTIAL (kg/cm ²) AT CORRESPONDING TRIM SIZE											
		DIRECT ACTING ACTUATOR (DC)	REVERSE ACTING ACTUATOR (RC)	TRIM SIZE	1/16" 1/32" A to M	1/8" 3/16" 1/4"	5/16"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	
				ACTUATOR SELECTION PORT DIA	0.35"	0.35"	0.52"	0.7"	0.88"	1.05"	1.225"	1.54"	1.87"	2.42"	
DC-01 RC-01	1.4	0.2-1.0	0.2-1.0		114	114	37	37	17	11	8				
	1.6		0.4-1.2		235	235	78	78	36	25	18				
	1.8		—				119	160	74	51	38				
	2.4	0.4-2.0	0.4-2.0		235	235	78	78	36	25	18				
	2.6		0.6-2.2				119	119	55	38	28				
	2.8		0.8-2.4				160	160	74	51	38				
	3.0		1-2.6												
DC-11 RC-11	1.4	0.2-1.0	0.2-1.0									5	3	1	
	1.6		0.4-1.2									11	7	4	
	1.8		—									17	11	7	
	2.4	0.4-2.0	0.4-2.0									11	7	4	
	2.6		0.6-2.2								17	11	7		
	2.8		0.8-2.4								23	16	9		
	3.0		1-2.6												
DC-02 RC-02	1.4	0.2-1.0	0.2-1.0				67	67	31	21	15				
	1.6		0.4-1.2				138	138	64	44	32				
	1.8		—				209	209	97	67	49				
	2.4	0.4-2.0	0.4-2.0				138	138	64	44	32				
	2.6		0.6-2.2				209	209	97	67	49				
	2.8		0.8-2.4						131	90	66				
	3.0		1-2.6												
DC-12 RC-12	1.4	0.2-1.0	0.2-1.0									9	6	3	
	1.6		0.4-1.2									20	13	8	
	1.8		—									31	21	12	
	2.4	0.4-2.0	0.4-2.0									20	13	5	
	2.6		0.6-2.2								31	21	12		
	2.8		0.8-2.4								41	28	16		
	3.0		1-2.6												



OVERALL DIMENSIONS (mm)

Table 5A

VALVE SIZE		ACTUATOR MODEL	H			H1	H2			ØD
INCH	MM		STD. BONNET	EXT BONNET	BELLOW. BONNET		STD. BONNET	EXT BONNET	BELLOW. BONNET	
1/2, 3/4 & 1	15, 20 & 25	C-01	555	640	700	216	791	876	936	286
1 1/2"	40	C-11	617	712	827	231	852	947	1062	286
		C-12	656	751	866	280	940	1031	1146	371
2"	50	C-11	622	727	842	231	857	962	1077	286
		C-12	661	766	881	280	945	1046	1161	371
2 1/2"	65	C-22	797	882	962	325	1122	1207	1287	371
		C-23	835	920	1000	356	1161	1276	1356	443
3"	80	C-22	797	897	977	325	1122	1222	1302	371
		C-23	835	935	1015	356	1195	1291	1371	443
4"	100	C-22	797	917	997	325	1122	1242	1322	371
		C-23	835	955	1035	356	1195	1315	1390	443
6"	150	C-33	1042	1152	1292	365	1406	1520	1696	443
		C-34	1067	1177	1317	385	1452	1562	1702	599
8"	200	C-33	1077	1287	1327	365	1441	1551	1691	443
		C-34	1102	1212	1352	385	1487	1597	1737	599
10"	250	C-44	1627	1727	1877	385	2012	2112	2267	599
		C-45								810
12"	300	C-44	1627	1727	1877	385	2012	2112	2267	599
		C-45								810

APPROXIMATE WEIGHTS (kgs)

Table 5B

VALVE SIZE		ACTUATOR MODEL	WEIGHTS		
INCH	MM		WITHOUT HAND WHEEL	WITH TMH	WITH SMH
1/2, 3/4 & 1	15, 20 & 25	C-01	35	40	50
1 1/2"	40	C-11	45	50	58
		C-12	62	71	86
2"	50	C-11	50	55	62
		C-12	66	75	90
2 1/2"	65	C-22	73	82	98
		C-23	88	97	121
3"	80	C-22	92	101	126
		C-23	110	135	147
4"	100	C-22	115	125	141
		C-23	130	148	159
6"	150	C-33	220		252
		C-34	240		276
8"	200	C-33	361		394
		C-34	400		457
10"	250	C-44	520		571
		C-45			
12"	300	C-44	650		710
		C-45			

MODEL NUMBERING

1. Valve Type

No. Series

- 1 - 1100 (Globe Single Seated Valves)
- 5 - 5000 (Globe Angle Valves)

2. Trim From

No. Trim From

- 1 - Contoured Top Bush Guided
- 2 - Micro Top Bush Guided
- 3 - Contoured Large Guided (Unbalance)
- 4 - Contoured Large Guided (Pressure Unbalance)
- 5 - Multi hole Cage Guided (Unbalance)
- 6 - Multi hole Cage Guided (Pressure Balance)
- 7 - Contoured Ported Cage (Unbalance)
- 8 - Contoured Ported Cage (Pressure Unbalance)



DEMBLA VALVES PVT. LTD.

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MAHARASHTRA, INDIA.

REGISTERED OFFICE & WORKS

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THANE - BHIWANDI - AGRA ROAD,
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MAHARASHTRA, INDIA.

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