

**CATALOGUE 2012 - PART 6
CONTROL GLOBE VALVE**

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Valves and Flow Control Specialist
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**SELECTION OF DIFFERENT KIND OF CONTROL VALVES
METAL SEATED**

SPECIFICATIONS AND MATERIALS

VARIOUS TRIM OPTIONS

**SELECTION OF BONNET ,GLAND PACKINGS
AND GASKETS**

**PTFE GLOBE CONTROL VALVES
METAL HOUSED**

MULTISPRING DIAPHRAGM ACTUATORS

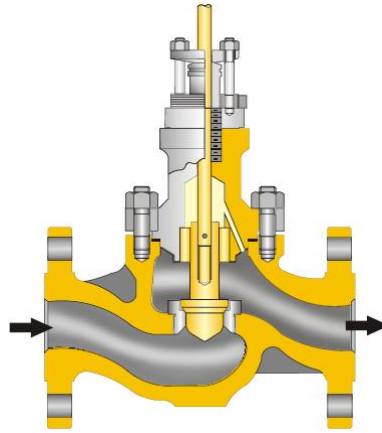
**NECESSARY DATA TO THE SELECTION OF A
CONTROL VALVE**



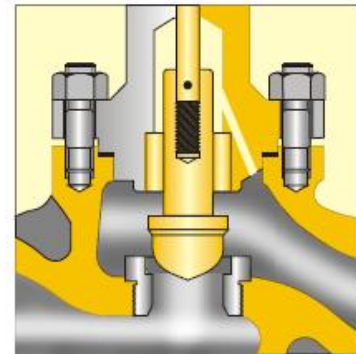
SELECTION OF DIFFERENT KIND OF CONTROL VALVES

Valves sizes and ratings	15mm thru 750mm / 1/2" thru 30" (ANSI 150#, 300# and 600# equivalent in BS and DIN) 15mm thru 100mm / 1/2" thru 4" (ANSI 900#, 1500#)
End connections	Flanged end (RF,RJ and TG) - all size Butt weld end – all size Socket weld end – up to size 2" Screwed end – up to size 2"
Valves body material	Carbon steel ASTM A216 Gr.WCB, Alloy carbon steel ASTM A217 Gr.WC1,WC6,WC9, C5, C12, ASTM A352 LCB, LCC, LC3 Stainless steel ASTM A351 Gr.CF8, CF8M,CF3,CF3M Alloy steel Hast. "C", alloy 20, Nickel, Titanium etc. All other materials available on request
Trim material	Stainless steel A479 type SS316, SS304, SS316L, SS304L,SS904L Alloy steel Hast. "C", alloy 20, Nickel, Titanium etc. All other materials available on request
Gland packings	V-Teflon -150°C + 200°C Graphite -150°C +600°C
Flow characteristics	Standard trim – linear, equal percentage, on-off Modified equal percentage available on request
Leakage rates	As per ANSI FCI 70-2 Class VI (soft facing) tight shutoff Class III and IV (metal to metal seat) Class V (metal to metal satellite faced trim)
Accessories	Pneumatic positioner 3-15 PSI Electro-pneumatic positioner 4-20Ma Air filter regulator Air lock relay Air volume booster Limit switch Proximity switch Solenoid valve Position Transmitter Quick exhaust valve atc.

Top Bush Guided Trims (Unbalanced)



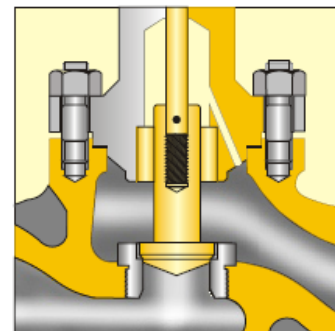
1. CONTOUR : The Contour Top Guided trims are the most preferred choice for variety of control applications due to their simple construction. Heavy top guide bush provides maximum support to impart complete stability. The plug shank is guided at the lowest portion of the bonnet minimizing the effect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



METAL TO METAL SEATING
LEAKAGE CLASS IV and V

1. Contour

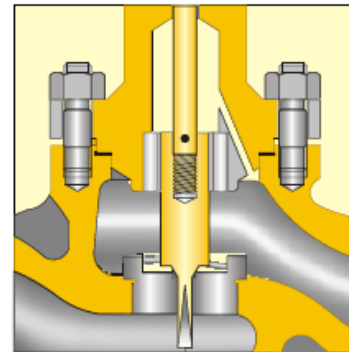
2. DISC (ON-OFF): For Quick Opening applications the disc trims are used. These trims are similar to contoured trims except they are flat instead of contour parabolic shape.



METAL TO METAL SEATING
LEAKAGE CLASS IV and V

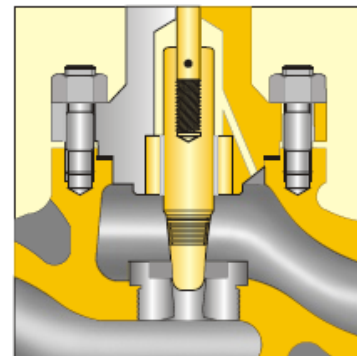
2. Disc (On-Off)

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 4mmØ.



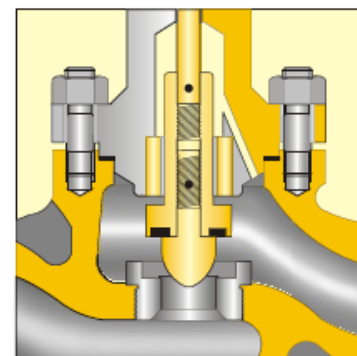
METAL TO METAL SEATING
LEAKAGE CLASS IV, V and VI
3. Micro

4. CASCADE : Most suitable trim option where large pressure drop, cavitation during throttling is experienced which may cause erosion of trim, vibration and 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.



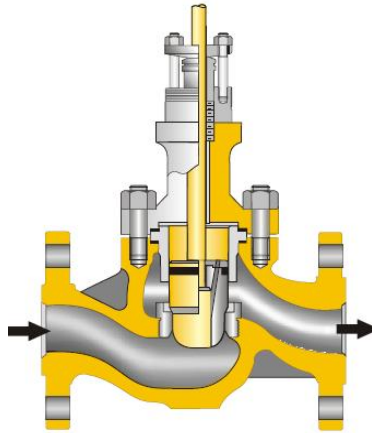
METAL TO METAL SEATING
LEAKAGE CLASS IV and V
4. Cascade

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 and a shut-off valve. The P.T.F.E. soft facing is sandwiched between the plug and shank, and easily replaceable .

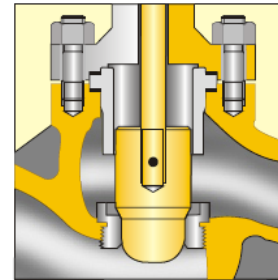


METAL TO SOFT FACING
LEAKAGE CLASS VI
5. Soft Facing

Large Guided Pressure Balanced/Unbalanced Trims



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.

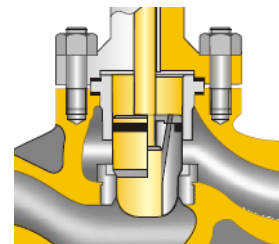


METAL TO METAL
LEAKAGE CLASS IV and V
Contoured Large Guided Unbalance

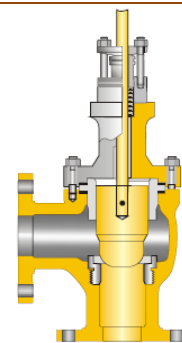
2. PRESSURE BALANCE VERSION : The large guide trims with pressure balancing effect enable the valve to handle higher D_p shut off without employing high power actuators.

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 and 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 and chrome plated surface.

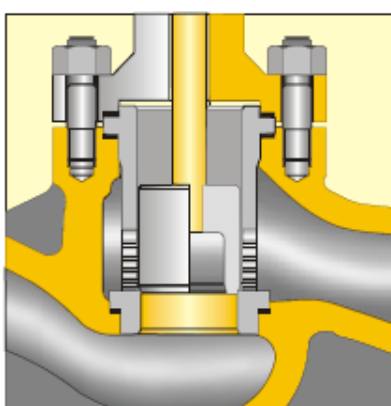
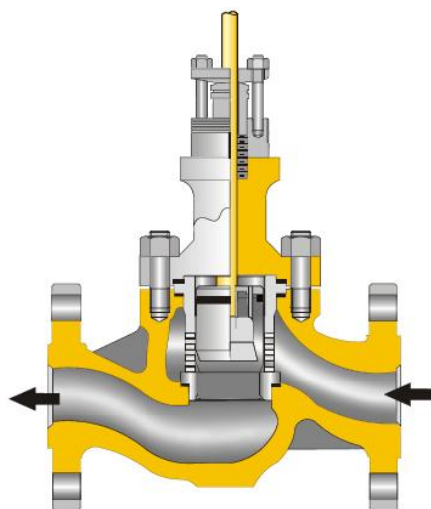


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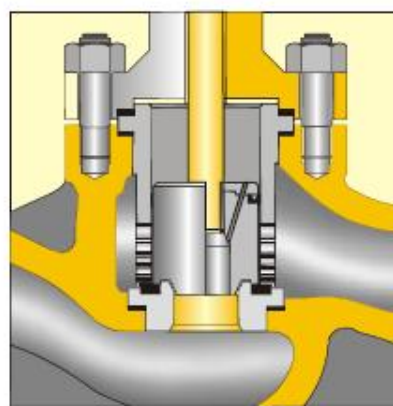


GLOBE ANGLE VALVE

Multi Hole Cage Guided Pressure Balanced/Unbalanced Trims



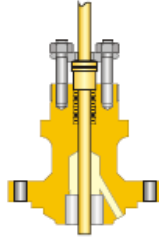
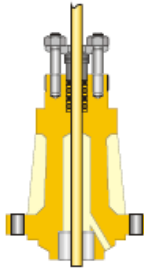
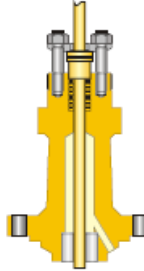
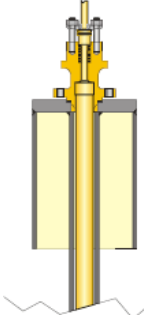
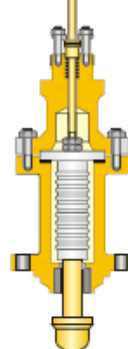
METAL TO METAL SEATING
LEAKAGE CLASS IV and V
Multi Hole Cage Guide Unbalance



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

SELECTION OF GASKETS

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

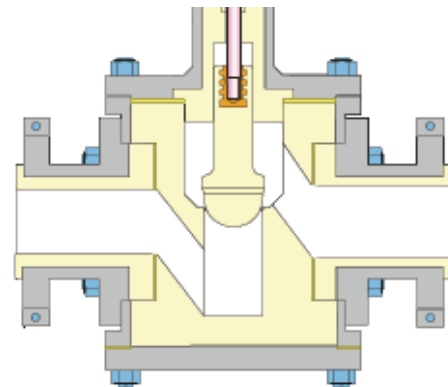
<p>1. Standard Bonnet Standard bonnets are suitable for temperatures ranging from 0°C to + 230 °C.</p>	 <p>1. Standard Bonnet</p>
<p>2. Extended Finned Bonnet Extended finned Bonnets are used for high temperature service applications ranging from + 230 °C to + 1000 °C. These bonnets are provided with 'Graphite gland packings'.</p>	 <p>2. Extended Finned Bonnet</p>
<p>3. Extended Plain Bonnet Extended plain bonnets are used for service temperature -100 °C to 0°C.</p>	 <p>3. Extended Plain Bonnet</p>
<p>4. Cryogenic Bonnet 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).</p>	 <p>4. Cryogenic Bonnet</p>
<p>5. Bellows Sealed Bonnet 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.</p>	 <p>5. Bellows Sealed Bonnet</p>

PCONTROL VALVES METAL HOUSED PTFE GLOBE CONTROL VALVES

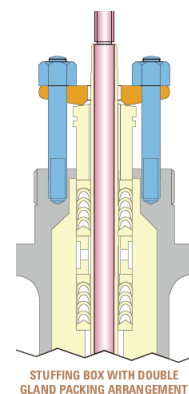
The PTFE control valves are globe two way
With all wetted parts in Teflon (PTFE) material.
Body internals are made out of PTFE bar stock
and armoured by "metal" housing.
These valves are highly recommended for
handling corrosive liquids and vapours. Plug
integral of PTFE provide tight shut off closure



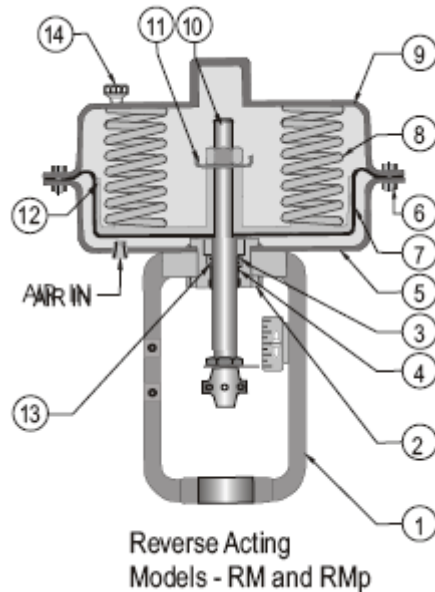
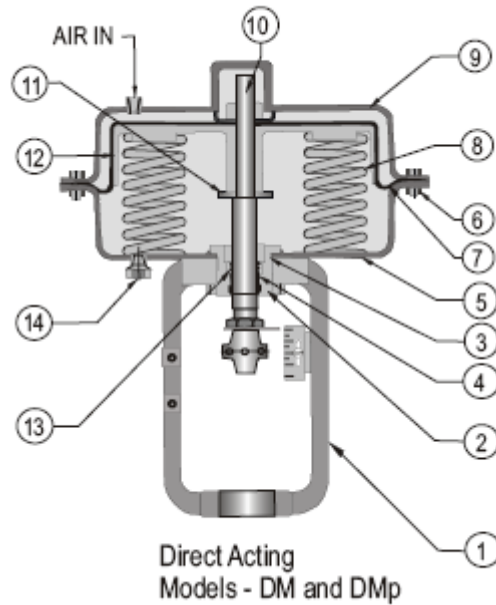
The plugs are made out of PTFE bar stock.
A Hastelloy C insert is moulded inside the plug
for the stem to plug thread connection.
The PTFE lined valve stem is connected to the
PTFE valve plug using a TAPER.
Connection and tightened to a press-fit
sealing avoiding any possibilities of fluid
leakage to the plug metal insert or threads of
valve stem. The plug forces are taken care by
metal stem thread to metal plug insert
moulded into the plug.
The seat is also PTFE and is integral to the
body.



The metal housed PTFE valves are offered with
double gland packing arrangement as an
alternate to bellow seal arrangements. The
arrangements consist of two individual sets of
V-Teflon rings separated by lantern ring. Thus
this Double packing arrangement is
wonderfully effective in stem sealing, reliable
and far less expensive than a Bellow seal
arrangement.



MULTISPRING DIAPHRAGM ACTUATORS



No.	Part.
1	Yoke
2	Locking ring
3	Seal box
4	Guide bush
5	Lower casing
6	Casing nuts bolts
7	Actuator diaphragm
8	Actuator springs
9	Upper casing
10	Actuator stem
11	Travelstopper
12	Diaphragm plate
13	O-seal ring
14	Exhaust nipple

<p>Max. Diaphragm Pressure : 3.5 bar (For Model M and Mp) : 6.0 bar (For Model Mh)</p> <p>Actuator Travel : 18, 28, 38, 58, 78 and 108 mm</p> <p>Diaphragm : Nitrile with Nylon insert / EPDM with Nylon insert (On Request)</p> <p>Operating Temp. Range : - 40 to +80°C Nitrile Elastomers</p> <p>Connections : 1/4" NPT (F) for Models Nos. 00, 01, 11, : 3/8" NPT (F) for Models Nos. 12, 22, 23, 33, 34 and 44.</p> <p>Permissible Linearity and Hysterisis : $\pm 5\%$ of Signal Pressure Range</p>	
<p>DIRECT ACTING ACTUATORS</p> <p>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 pulled to extreme upward position by spring force.</p> <p>This actuator is suitable for action :</p> <p>Air Fail to Open - For valves with plugs push down to close.</p> <p>Air Fail to Close - For valves with plugs push down to open.</p> <p>Air Fail to Close</p> <p>Upper Port - For 3 Way Globe valves.</p>	
<p>REVERSE ACTING ACTUATORS</p> <p>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.</p> <p>This actuator is suitable for action :</p> <p>Air Fail to Close - For valves with plugs push down to close.</p> <p>Air Fail to Open - For valves with plugs push down to open.</p> <p>Air Fail to Close</p> <p>Bottom Part - For 3 Way Globe valves.</p>	

MULTISPRING DIAPHRAGM ACTUATORS

Service Condition	1	Fluid	(X)			I/P Converter	54	Model No.			
		Unit	Max	Nor	Min		55	Make			
	2	Flow	m3/Hr	(X)	(X)		(X)	56	Input Signal		
	3	Inlet Pressure	Bar	(X)	(X)		(X)	57	Output Signal		
	4	Outlet Pressure	Bar					58	Pnu. Conn.		
	5	DP Valve Sizing	Bar	(X)	(X)			59	Cable Entry		
	6	Inlet Temperature	deg. C	(X)	(X)			60	Supply		
	7	Sp. Gravity						61	Hsg. Material		
	8	MW						62	Enclosure		
	9	Vapour Pressure	BarA								
	10	Critical Pressure	Bar								
	11	Critical Temperature	deg. C					63	Model No.		
	12	Viscosity Cp	Centipoise					64	Quantity		
	13	Corrected Cv	Usgpm					65	Make		
	14	Selected Cv @	Usgpm					66	Pnu. Conn.		
	15	Flow Characteristics		(X)	Eq.% or linear		67	Gauge			
	16	Percentage Valve Opening						68	Body Moc.		
	17	Predicted Noise Level	dBA					69	Filter Size		
	18	Final Noise Level	dBA								
19	Max Shut Off Dp	Bar	(X)								
Body & Trim	20	Dembla Series				Solenoid Valve	70	Model No.			
	21	Model No.					71	Make			
	22	Body Form			(XX)		72	Type			
	23	Size Body / Size Trim					73	Pnu.Connection			
	24	End Connections / Rating			(X)		74	Cable Entry & Enclosure			
	25	Body Material					75	Body Moc.			
	26	IBR Certification					76	Voltage			
	27	Trim Form					77	Ins. Class			
		Trim Material	Plug/ Disc/ Ball Facing				Limit Switch	78	Man Override		
	28		Seat Ring Facing					79	Model No		
			Guide /Large Guide					80	Quantity		
			Cage /Seat Retainer					81	Make		
			Seal Ring					82	Type		
	29	Flow Direction					83	Contacts			
	30	Seat Leakage(FCI 70.2)			(X)		84	Current Rating			
	31	Bonnet Type					85	Housing Moc.			
	32	Gland Packing					86	Enclosure			
	Actuator	33	Actuator Type Action					C/F Flanges	87	Mounting Position	
		34	Valve Action Air Or Power To				(X)		88	Quantity	
35		Fail Safe Condition				89	Type				
36		Control Signal Range				90	Moc				
37		Spring Range				91	IBR				
38		Supply			(X)	92	Rating				
39		Actuator Model									
40		Valve Travel									
41		Size(inch)² Supply Connection									
42		Hand Wheel									
Positioner	43	Model No.									
	44	Positioner Type									
	45	Make									
	46	Action									
	47	By Pass. / No of Gauges									
	48	Input Signal									
	49	Output Signal									
	50	Supply Pressure									
	51	Pnu.Conn									
	52	Cable Entry									
	53	Enclosure						Tubing,Fittings			
			(X) Data from the customer								
			(XX) If possible								

NECESSARY DATA TO THE SELECTION OF A CONTROL VALVES