



**UNGGUL  
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PRISMA**

Komplek Ruko Intercon Plaza Blok D No. 9, Jl. Meruya Ilir raya , Srengeseng , Jakarta Barat 11630  
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# GLOBE 3 WAY VALVE



## SERIES - 3000

First issue Aug -2014 : Rev-0 Aug-2014



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## Control Valves Globe 3 Way

### Series 3000

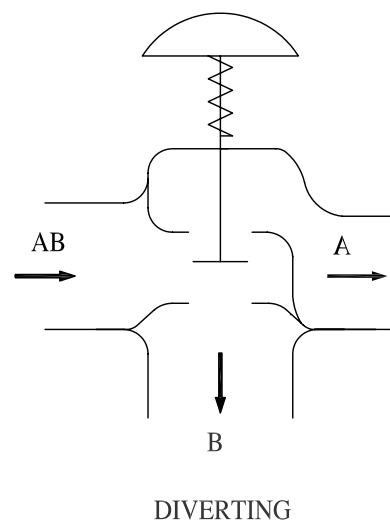
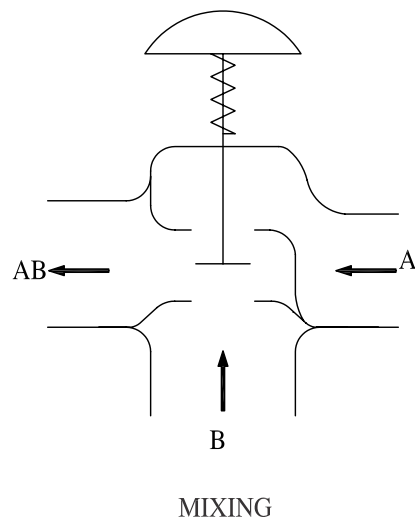
- Series 3000 Valves are designed for throttling and on-off services. Valves are made suitable.
  - 1) For flow mixing application
  - 2) For flow diverting applications.
- Body with bottom connection construction provides ease for maintenance.
- Stream lined flow path provides large flow capacity.
- Variety of Trim options available to satisfy vast application range including reduced port trims enabling nearest accurate selection for precise control requirements.
- Trims with large guide plugs are available for full pressure balancing effect providing economical choice for high pressure applications.
- Valves are available in variety of material combinations including conformance to NACE MR-01-75.
- Option of Hardend trim materials provide excellent wear resistance & longer trim life.

#### Flow Mixing

Two flows enters into ports A and B and emerges out from port AB as mixed fluid.

#### Diverting

Flow enters into pipe AB & emerges out from port A or B as required.



## Specifications

<b>Valve Sizes and Ratings :</b>	15 mm thru 750 mm NB / 1/2" thru 30" NB (ANSI 150#, 300# and 600#, Equivalent in BS and DIN) 15 mm thru 100 mm NB / 1/2" thru 4" NB (ANSI 900# and 1500#)
<b>End Connections :</b>	Flanged End Butt Weld End Socket Weld End Screwed End
<b>Valve Body MOC :</b>	Carbon Steel ASTM A216 Gr. WCB Alloy Carbon Steel ASTM A217 Gr. WC1, WC6, WC9, C5, C12, A352 LCB, LCC, LC3 Stainless Steel ASTM A351 Gr. CF8, CF8M, CF3, CF3M, CF8C Alloy Steel Hast 'C', Alloy 20, Nickel, Titanium, Monel, etc All other Materials available on request.
<b>Trim MOC :</b>	Stainless Steel ASTM A479 Type Ss316, SS304, SS316L, SS304L, SS904L Alloy Steel Hast 'C', Alloy 20, Nickel, Titanium, Monel, etc All other Materials available on request.
<b>Gland Packings :</b>	V-Teflon -150 <sup>o</sup> C to +200 <sup>o</sup> C Graphite -150 <sup>o</sup> C to +600 <sup>o</sup> C
<b>Body Gaskets :</b>	Compressed Asbestos Fibre (CAF) with Inconel wire impregnated P.T.F.E. S. S. Spiral wound with P.T.F.E. / Asbestos / Graphite Fillers
<b>Flow Characteristics :</b>	Standard Trim- Linear, On- off
<b>Cv Values :</b>	Refer Table1
<b>Leakage Rates :</b>	As per ANSI / FCI 70-2 Class VI (With Soft Facing) Tight Shutoff Class III and IV (With Metal to Metal Seating) (Class V - With Metal to Metal Stellite Faced Trims available on request)
<b>Bonnets :</b>	Standard Extended Plain Extended Finned Bellows Bonnet Cryogenic
<b>Manual Overrides :</b>	Top mounted version upto size 4" Side mounted version recommended above size 4"
<b>Accessories :</b>	Pneumatic Valve Positioner, Electro Pneumatic (E/P) Valve Positioner, Air Filter Regulator, Air Lock Relay, Air Volume Booster, Limit Switch, Proximity Switch, Solenoid Valve, Position Transmitter, Quick Exhaust Valve, etc.

# Body Pressure Temperature ratings

**TABLE 1A - CAST GRADE OF CARBON STEEL (ASTM A216 Gr. WCB)**

Temperature		Working Pressures by Classes, PSIG / kg/cm											
°F	°C	150		300		400		600		900		1500	
		PSIG	Kg/cm <sup>2</sup>	PSIG	Kg/cm <sup>2</sup>	PSIG	Kg/cm <sup>2</sup>	PSIG	Kg/cm <sup>2</sup>	PSIG	Kg/cm <sup>2</sup>	PSIG	Kg/cm <sup>2</sup>
-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	14.06	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 - CAST GRADE OF ALLOY CARBON STEEL (ASTM A217 Gr. WC6)**

Temperature		Working Pressures by Classes, PSIG / Kg/cm											
°F	°C	150		300		400		600		900		1500	
		PSIG	Kg/cm <sup>2</sup>	PSIG	Kg/cm <sup>2</sup>	PSIG	Kg/cm <sup>2</sup>	PSIG	Kg/cm <sup>2</sup>	PSIG	Kg/cm <sup>2</sup>	PSIG	Kg/cm <sup>2</sup>
-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 - CAST GRADE OF ALLOY CARBON STEEL (ASTM A217 Gr. WC9)**

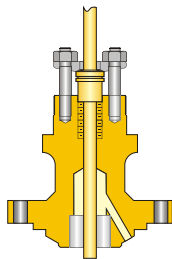
Temperature		Working Pressures by Classes, PSIG / Kg/cm											
°F	°C	150		300		400		600		900		1500	
		PSIG	Kg/cm <sup>2</sup>	PSIG	Kg/cm <sup>2</sup>	PSIG	Kg/cm <sup>2</sup>	PSIG	Kg/cm <sup>2</sup>	PSIG	Kg/cm <sup>2</sup>	PSIG	Kg/cm <sup>2</sup>
-20 to 100	-28.88 to 37.77	290	20.39	750	52.74	1000	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 - CAST GRADE OF STAINLESS STEEL SS 316, SS 316L (ASTM A351 Gr. CF8M, CF3M)**

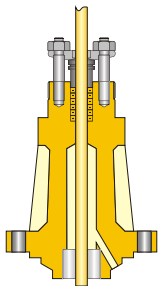
Temperature		Working Pressures by Classes, PSIG / Kg/cm											
°F	°C	150		300		400		600		900		1500	
		PSIG	Kg/cm <sup>2</sup>	PSIG	Kg/cm <sup>2</sup>	PSIG	Kg/cm <sup>2</sup>	PSIG	Kg/cm <sup>2</sup>	PSIG	Kg/cm <sup>2</sup>	PSIG	Kg/cm <sup>2</sup>
-20 to 100	-28.88 to 37.77	275	19.33	720	50.63	960	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

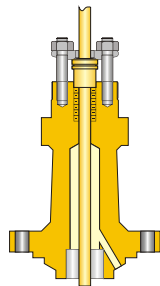
Bonnets are manufactured from the same material as the BodyDembla bonnets utilize a bolted flange type stuffing box construction. The packing box design is such that all types of packing are interchangeable. Figures shows various types of Bonnet available.



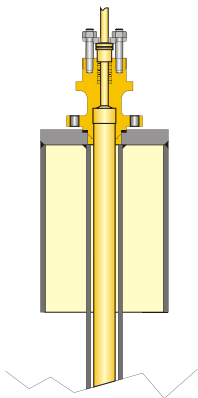
1. Standard Bonnet



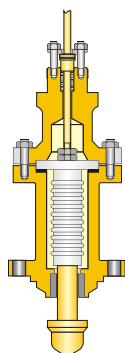
2. Extended Finned Bonnet



3. Extended Plain Bonnet



4. Cryogenic Bonnet



5. Bellows Sealed Bonnet

### Bonnet Types

**1. Standard Bonnet**

Standard bonnets are suitable for temperatures ranging from 0°C to +230°C.

**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'.

**3. Extended Plain Bonnet**

Extended plain bonnets are uspaced for service temperature -100°C to 0°C.

**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).

**5. Bellows Sealed Bonnet**

This type of bonnet utilizes a bellows assembly for sealing against leakage around the valve plug steam. Bellows sealed bonnets are used on those applications where no leakage along the valve stem is allowed. Usual applications include those installations were process fluid is flammable, toxic, explosive or highly expensive. Bellows material is SS 321 and is suitable for pressure up to 45 kg/cm<sup>2</sup> at maximum temperature of 450°C.

## SELECTION OF GLAND PACKINGS

Material	Working Pressure Limit (kg/cm <sup>2</sup> )	Working Temperature Range (°C)
PTFE Impregnated asbestos	150	-250 to +200
PTFE Chevron (V-Rings)	100	-250 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 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

## SELECTION OF GASKETS

Type	Material	Working Pressure Limit (kg/cm <sup>2</sup> )	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

## 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

## HARDENED / HARD FACED TRIMS

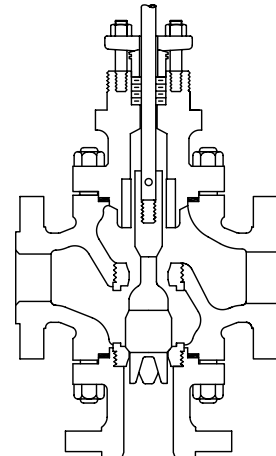
The trims are hardened / hard faced to protect the parts like seat ring, plug, guide bush against the effect of erosion, abrasion and cavitation and to minimise galling between mating parts at high temperatures. Erosion of valve trim is caused by various factors viz. the fluid is gas or liquid, entrained 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.

## Various Trim Options

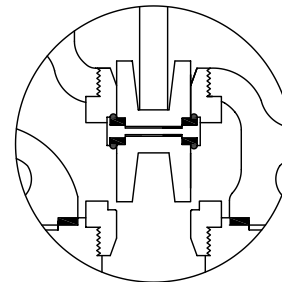
- 1. SKIRT GUIDE TRIMS :** Skirt Guided trims are the most preferred choice for variety of control applications due to their simple construction. Heavy top guide bush provides maximum support to impart complete stability. The plug is guided on top bush & seats also.
- 2. TRIM WITH SOFT FACING :** Trims 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.
- 3. PRESSURE BALANCE LARGE GUIDE TRIMS :** 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 / skirt Equalizing holes are opened in the plug which effectively cancel out the unbalancing force impressed on top and bottom of valve plug.

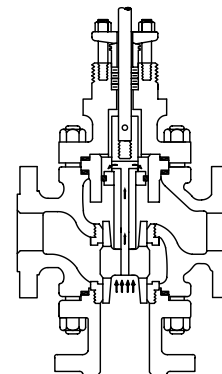
- 4. MULTI HOLE PLUG TRIMS :** For low noise requirements, typically in steam applications, these trims are employed. Spirally arranged holes are drilled over the cylindrical portion of the plug. These holes get opened through seats as plug moves up or down to give way for the flow.



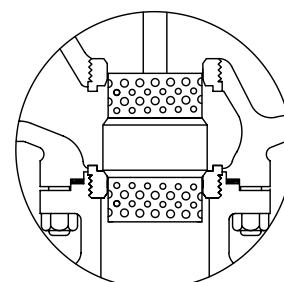
SKIRT GUIDE TRIM



SOFT SEATED TRIM



LARGE GUIDE PRESSURE BALANCE TRIM

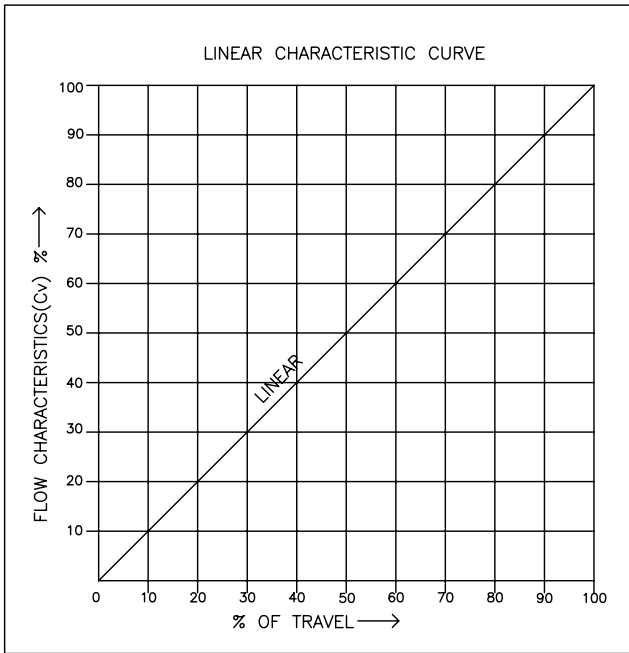


MULTIHOLE PLUG TRIM

### CV Values (usgpm)

VALVE SIZE		PORT SIZE		TRIM CONSTRUCTION		
INCH	MM	INCH	MM	CONTURED SKIRT GUIDE	LARGE GUIDE PR. BALANCE	MULTIHOLE PLUG
1/2" 3/4" 1"	15	1/4"	6	2		
		5/16"	8	3		
	20	3/8"	10	4		
		25	1/2"	15		
40	3/4"		20	8		
	50	1"	25	12		
1.1/2" 2"		40	1.1/4"	32	18	14
	1.1/2"		40	28	22	16
	2"		50	48	38	27
2.1/2" 3" 4"	65	2.1/2"	65	75	60	50
		3"	80	90	72	60
		4"	100	190	152	110
6" 8" 10"	150	6"	150	360	288	240
		8"	200	600	480	400
		10"	250	950	760	660
12" 14" 16"	300	12"	300	1175	940	800
		14"	350	1300	1040	900
		16"	400	1800	1440	1200
18" 20" 24"	450	18"	450	2655	2124	1950
		20"	500	3150	2520	2350
		24"	600	4950	3960	3500
30" 36"	750	30"	750	7380	5904	5400
		36"	900	9900	7920	7200

### Flow Characteristics (linear)





## Multispring Diaphragm Actuators :

### Series- M and its Function



The ‘M’ Series control valve actuators are diaphragm actuators with pre-compressed multispring construction. They are compact, comparatively with less number of parts, easy to maintain, quickly reversible. The actuators are suitable for regulating and on-off applications. Various models are available covering small to larger thrust requirements.

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 and back to normal position. To get various loading capacities the number of springs are altered.

The actuator can be mounted on the shoulder of control valve bonnet with the help of locking ring. The connection between valve stem and 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.

### SPECIFICATIONS

**Max. Diaphragm Pressure:** 3.5 bar (For Model M and Mp)

Actuator Travel : 18, 28, 38, 58, 78 and 108 mm  
 Diaphragm : Nitrile with Nylon insert / EPDM with Nylon insert (On Request)  
 Operating Temp. Range : - 40 to +80°C Nitrile Elastomers  
 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.  
 Permissible Linearity and Hysteresis : ±5% of Signal Pressure Range

### AIR VOLUME REQUIRED PER STROKE

MODEL Nos.	CUBIC FT / STROKE
M-00, Mp-00	0.012
M-01, Mp-01	0.023
M-11, Mp-11	0.035
M-12, Mp-12	0.061
M-22, Mp-22	0.082
M-23, Mp-23	0.121
M-33, Mp-33	0.185
M-34, Mp-34	0.330
M-44-78, Mp-44-78	0.444
M-44-108, Mp-44-108	0.615

### FEATURES

**Utility**

Applicable for regulating and on-off functions.

**High Power**

Variety of models provide choice for low and high thrust requirements

**Construction**

Due to multispring arrangement the actuators are lightweight and compact.

**Reversible**

The actuators are field reversible without demanding addition or deletion of parts.

**Long service life**

Rigid construction and durable components provide a long lasting service life.

**Minimum maintenance**

The actuators are virtually maintenance free.

**Accuracy**

Rolling diaphragm construction provides constant effective area throughout the stroke.

**Manual Operators**

The actuators are also available duly incorporated with Hand Wheel arrangements as Top Mounted or Side Mounted configurations.

**Accessories Mounting**

Variety of accessories like Valve Positioner, Air Filter Regulator, Air Lock Relay, Volume Booster, Limit / Proximity Switches, Solenoid Valves, Position Feedback Transmitter, Quick Exhaust Valves, I/P Converter, etc. can be mounted easily

## 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 pulled to extreme upward position by spring force.

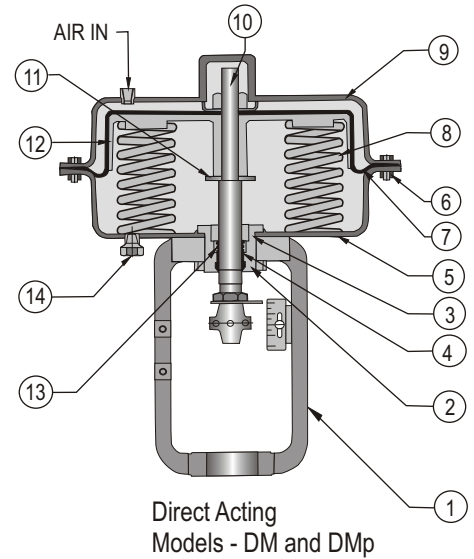
This actuator is suitable for action :

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 3 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.

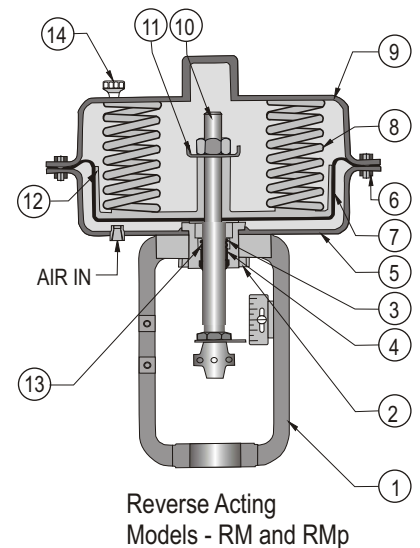
This actuator is suitable for action :

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 Part - For 3 Way Globe valves.

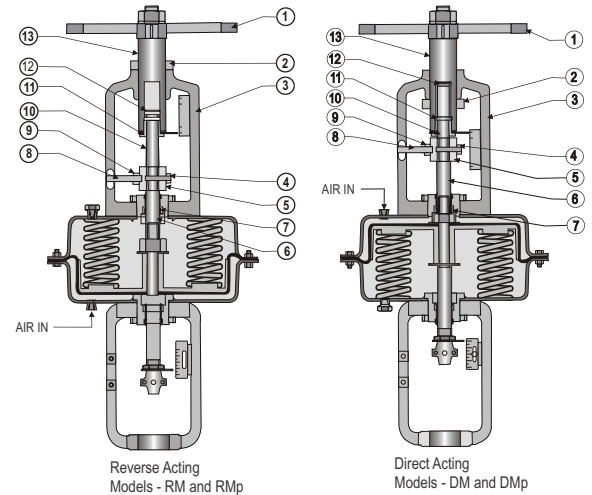


## MATERIAL OF CONSTRUCTION BASIC ACTUATOR

SR. NO.	PART NAME	M.O.C.
1	YOKE	CAST IRON
2	LOCKING RING	CARBON STEEL
3	SEAL BOX	ALUMINIUM
4	GUIDE BUSH	TEFLON COATED STEEL BUSH
5	LOWER CASING	STEEL (C.R.C. SHEET)
6	CASING NUTS BOLTS	CARBON STEEL + CADMIUM PLATED
7	ACTUATOR DIAPHRAGM	NITRILE WITH FABRIC INSERT
8	ACTUATOR SPRINGS	CHROME VANADIUM SPRING STEEL
9	UPPER CASING	STEEL (C.R.C. SHEET)
10	ACTUATOR STEM	SS 410 + CHROME PLATED
11	TRAVEL STOPPER	CARBON STEEL + CADMIUM PLATED
12	DIAPHRAGM PLATE	ALUMINIUM / S.G. IRON
13	'O' SEAL RING (STEM TO SEAL BOX)	NITRILE
14	EXHAUST NIPPLE	CARBON STEEL

### TOP MOUNTED HANDWHEEL (TMH)

Dembla Top Mounted Handwheel (TMH) is capable of providing operating force in both 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 throughout its stroke, or as a travel stop, limiting the amount of closing or opening of the valve. The actuator is operable 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 a 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.



### MATERIAL OF CONSTRUCTION

#### TOP MOUNTED HANDWHEEL (TMH)

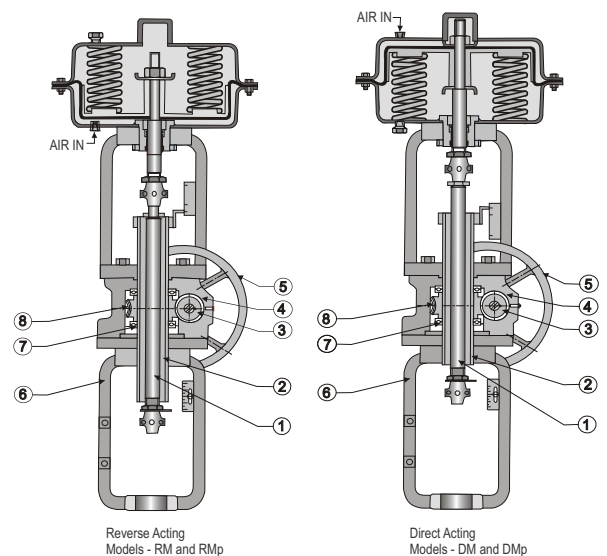
SR. NO.	PART NAME	M.O.C.
1	HANDWHEEL	CAST IRON
2	TMH YOKE LOCK NUT	CARBON STEEL
3	TMH YOKE	CAST IRON
4	TMH STEM CONNECTOR ALLEN BOLT	CARBON STEEL
5	TMH STEM CONNECTOR	CARBON STEEL
6	EXTENSION ROD FOR ACTUATOR STEM	SS 410 + HARD CHROME PLATED
7	'O' SEAL RING (STEM TO SEAL BOX)	NITRILE / VITON
8	STOP PEG	CARBON STEEL
9	STOP PEG HEX NUT	CARBON STEEL
10	TMH STEM	SS 410 + HARD CHROME PLATED
11	TMH SCREW NUT	CARBON STEEL
12	THRUST WASHER	GUN METAL
13	TMH SCREW	CARBON STEEL

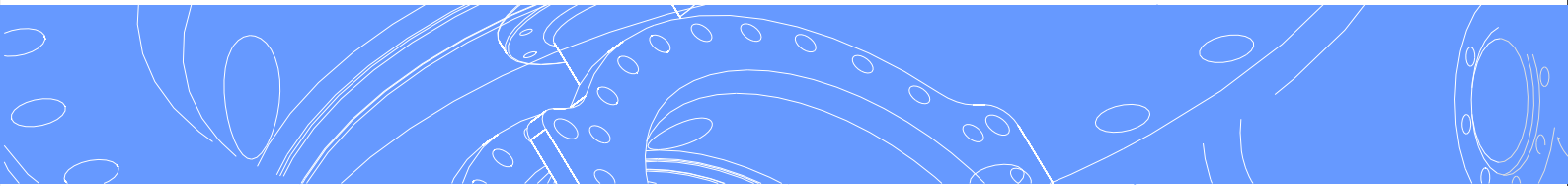
#### SIDE MOUNTED HANDWHEEL (SMH)

SR. NO.	PART NAME	M.O.C.
1	SMH STEM	CARBON STEEL + CADMIUM PLATED
2	HOLLOW SCREW	CARBON STEEL + CADMIUM PLATED
3	WORM	CARBON STEEL
4	SMH BODY CUM HOUSING	CAST IRON
5	HANDWHEEL	CAST IRON
6	SMH YOKE	CAST IRON
7	THRUST BEARING	BEARING STEEL
8	WORM GEAR	SS 410

### SIDE MOUNTED HANDWHEEL (SMH)

Dembla Side Mounted Handwheel (SMH) 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 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.





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