DEMBLA VALVES LTD.

Dembla

GLOBE CONTROL VALVE

SERIES 1100

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

Aiming at perfection

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Forward

- **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 and trim replacement.
- 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 and turn down 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 and 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 and Ratings	:	DN15 thru DN750 NB / 1/2" thru NB32" (ANSI 150#, 300# and 600#, Equivalent in BS and DIN) DN15 thru DN100 NB / 1/2" thru NB4" (ANSI 900# and 1500#)
End Connections	:	Flanged End (RF, RTJ and TG) - All sizes Butt Weld End - All sizes Socket Weld End up to size 2" Screwed End up to size 2”
Valve Body MOC	:	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.
Trim MOC	:	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.
Gland Packing	:	V-Teflon -150 ^{0}C to +200 ^{0}C Graphite -150 ^{0}C to +600 ^{0}C
Body Gaskets	:	Compressed Asbestos Fibre (CAF) with Inconel wire impregnated P.T.F.E. S. S. Spiral wound with P.T.F.E. / Asbestos / Graphite Fillers
Flow haracteristics	:	Standard Trim- Linear, Equal Percentage, On-off Modified Equal Percentage available on request
Rangeability	:	30:1 Standard (50:1 or higher available on request)
Cv Values	:	Refer Tables 2A, 2B, 2C and 2D
Leakage Rates	:	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)
Bonnets	:	Standard Extended Plain Extended Finned Bellows Bonnet Cryogenic
Manual Overrides	:	Top mounted version up to size 4” Side mounted version recommended above size 4”
Accessories	:	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/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	14.06	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 A216 Gr. 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- Cast Grade of Alloy Carbon Steel (ASTM A216 Gr. WC9)

Temperature		Working Pressures by Classes, PSIG / Kg/cm											
°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	148.20	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 A351CF8M, CF3M)

Temperature		Working Pressures by Classes, PSIG / Kg/cm											
°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	41.18	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	2250	158.5
650	343.33	125	8.79	445	31.29	590	41.49	890	62.68	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	51.57	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 Bonnet

Bonnets are manufactured from the same material as the Body. Dembla 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.

Bonnet Types

1. Standard Bonnet

Standard bonnets are suitable for temperatures ranging from 0 ^{0}C to +230 ^{0}C.

2. Extended Finned Bonnet

Extended finned Bonnets are used for high temperature service applications ranging from +230^{0}C to +1000^{0}C. These bonnets are provided with 'Graphite gland packings'.

3. Extended Plain Bonnet

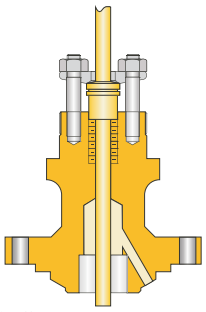
Extended plain bonnets are us paced for service temperature -100 ^{0}C. to 0 ^{0}C.

4.Cryogenic Bonnet

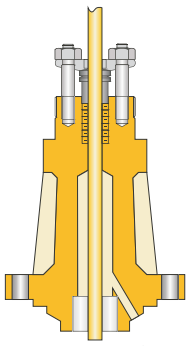
The Construction of the bonnet permits minimum heat transfer. The bonnet material used generally is SS 304 or SS 316. The design protects the packing from extremely low service temperature (-100 ^{0}C to -198 ^{0}C).

5. Bellow Sealed Bonnet

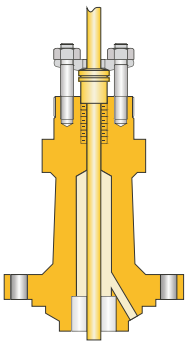
This type of bonnet utilizes a bellows assembly for sealing against leakage around the valve plug steam. Bellows sealed bonnets are used on those applications where no leakage along the valve stem is allowed. Usual applications include those installations were process fluid is flammable, toxic, explosive or highly expensive. Bellows material is SS 321 and is suitable for pressure up to 45 kg/cm^{2} at maximum temperature of 450 ^{0}C



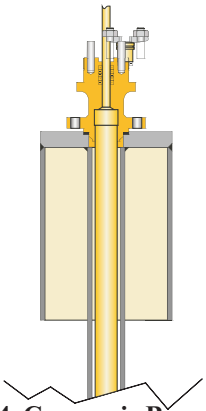
1. Standard Bonnet



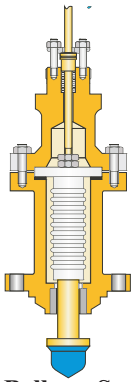
2. Extended Finned Bonnet



3. Extended Plain Bonnet



4. Cryogenic Bonnet



5. Bellows Sealed Bonnet

Selection of Gland Packing

Material	Working Pressure Limit (kg/cm)	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 up to 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^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	-100 to +200
		PTFE Filler	150	-250 to +200
		Graphite Filler	100	-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

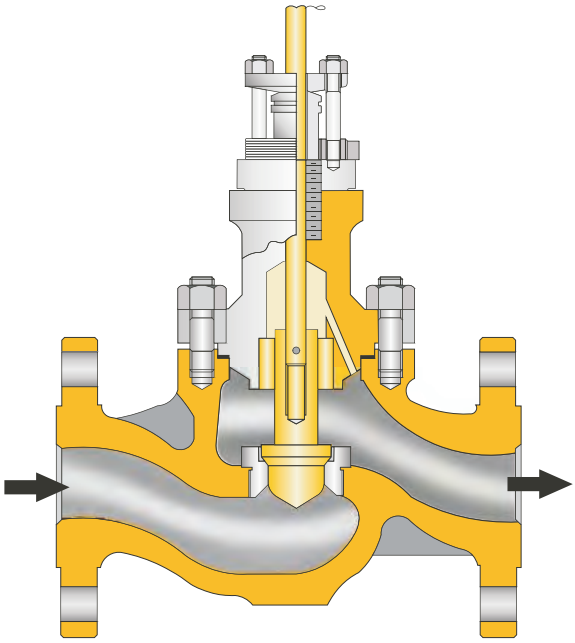
Body Material	Temperature		Stud Material as per ASTM	Nut Material as per ASTM
	°F	°C		
Carbon Steel (Grade WCB)	-20 to 800	-29 to 427	A193 Gr B7	A194 Gr 2H
Carbon Steel (Grade LCB)	-50 to 650	-46 to 344	A193 Gr B7	A194 Gr 2H
Carbon Moly (Grade Wc1)	-20 to 800 801 to 850	-29 to 427 428 to 455	A193 Gr B7 A193 Gr B7	A194 Gr 2H A194 Gr 7
1¼ Cr - ½ Mo (Grade WC6)	-20 to 800 801 to 1000	-29 to 427 428 to 538	A193 Gr B7 A193 Gr B7	A194 Gr 2H A194 Gr 7
2¼ Cr - 1Mo, (Grade WC9)	-20 to 800 801 to 1000 1001 to 1050	-29 to 427 428 to 538 539 to 566	A193 Gr B7 A193 Gr B7 A193 Gr B16	A194 Gr 2H A194 Gr 7 A194 Gr 7
5 Cr - ½ Mo (Grade C5)	-20 to 800 801 to 1000 1001 to 1100	-29 to 427 428 to 538 539 to 594	A193 Gr B7 A193 Gr B7 A193 Gr B16	A194 Gr 2H A194 Gr 7 A194 Gr 4
9 Cr - 1Mo (Grade C12)	-20 to 800 801 to 1000 1001 to 1100	-29 to 427 428 to 538 539 to 594	A193 Gr B7 A193 Gr B7 A193 Gr B16	A194 Gr 2H A194 Gr 7 A194 Gr 4
Type 304 (Grade Cf8)	-425 to 100 100 to 1500	-253 to 38 38 to 816	A320 Gr B8 A193 Gr B8	A194 Gr 8 A194 Gr 8
Type 347 (Grade CF8C)	-425 to 100 100 to 1500	-253 to 38 38 to 816	A320 Gr B8 A193 Gr B8	A194 Gr 8 A194 Gr 8
Type 316 (Grade CF8M)	-325 to 100 100 to 1500	-199 to 38 38 to 816	A320 Gr B8 A193 Gr B8M	A194 Gr 8 A194 Gr 8M
3½ Ni (Grade LC3)	-150 to -50 -50 to 650	-102 to -46 -46 to 344	A320 Gr L7 A193 Gr B7	A194 Gr 4 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 or cages 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 factor vis. 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

Top Guided Trims-[Unbalanced]

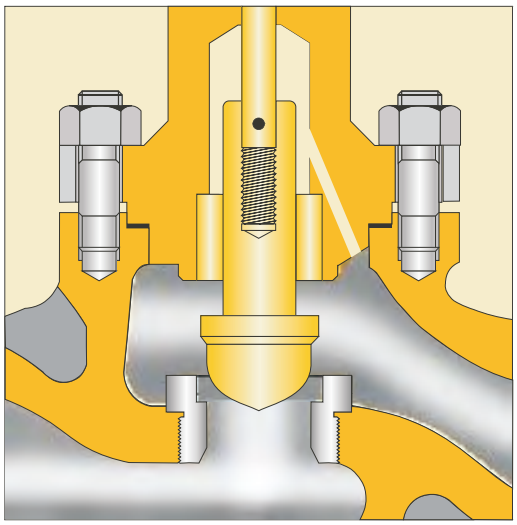


Contour

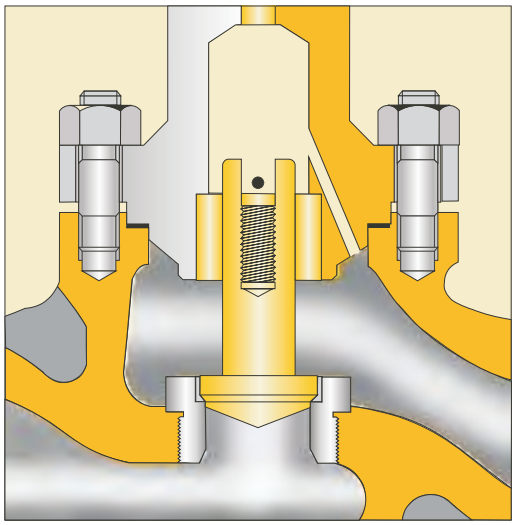
The Contour Top Guided trims are the most preferred choice for variety of control applications due to their simple construction. Heavy top guide bush provides maximum support to impart complete stability. The plug shank is guided the lowest portion of the bonnet minimizing the effect of side thrust on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

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

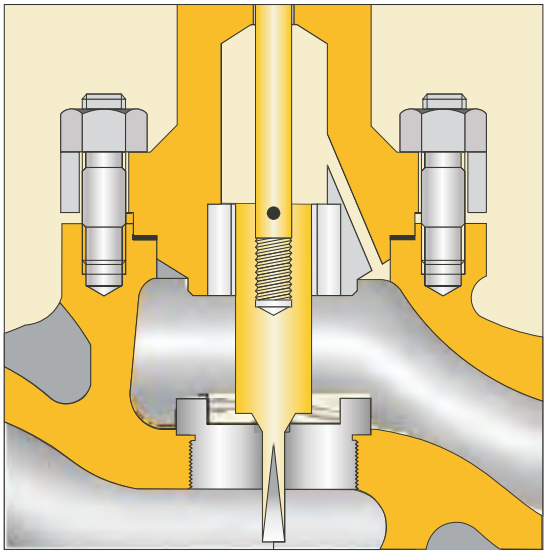


Metal to Metal Seating Leakage Class IV and V

Various Trim Options

Micro

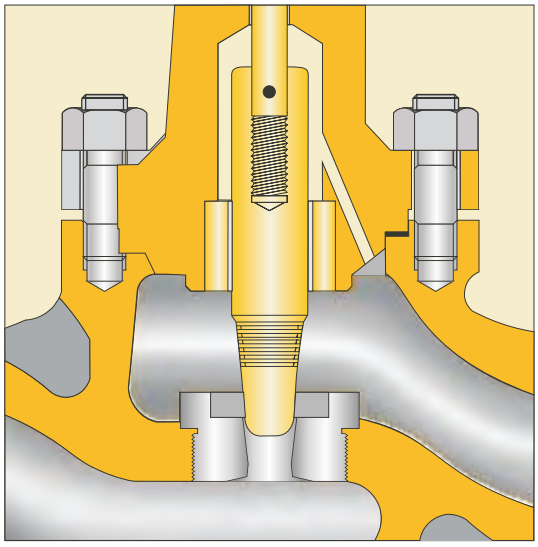
This trim has very high rangeability, designed to precise control of minute flow rates. In addition to top guide the plug nose is precisely guided in the seat bore for through out valve travel to avoid breakage of the nose. The trims are designated in alphabets A to M depending on Cv values but the actual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



Metal to Metal Seating Leakage Class IV, V and VI

Cascade

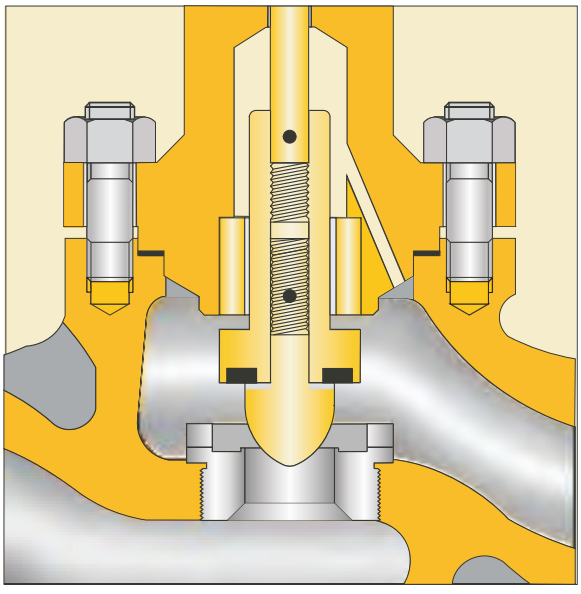
Most suitable trim option where large pressure drop, cavitation during throttling is experienced which may cause erosion of trim, vibration and noise. As illustrated in the figure, the large pressure drop is divided in to many stages by means of the grooves made in the plug, which minimises the cavitation.



Metal to Metal Seating Leakage Class IV and V

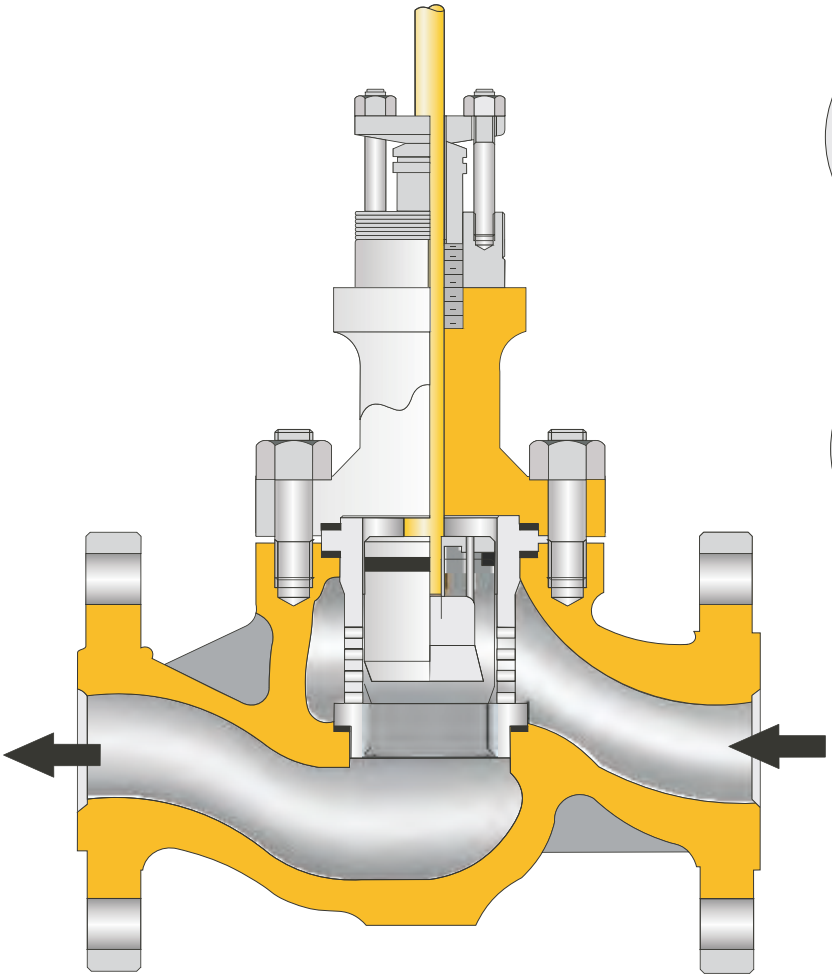
Trim With Soft Facing

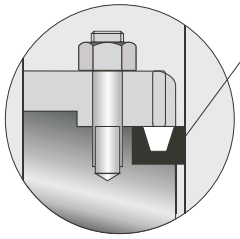
The contour / disc type trims with P.T.F.E. or glass filled P.T.F.E. soft facing are utilized for tight shut off (Class VI per FCI 70-2) application where control valve has to perform equally as a controlling and a shut-off valve. The P.T.F.E. soft facing is sandwiched between the plug and shank, and easily replaceable



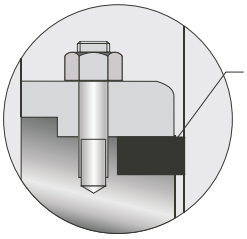
Metal to Soft Facing Leakage Class VI

Multi Hole Cage Guided Pressure Balance / Unbalanced Trims



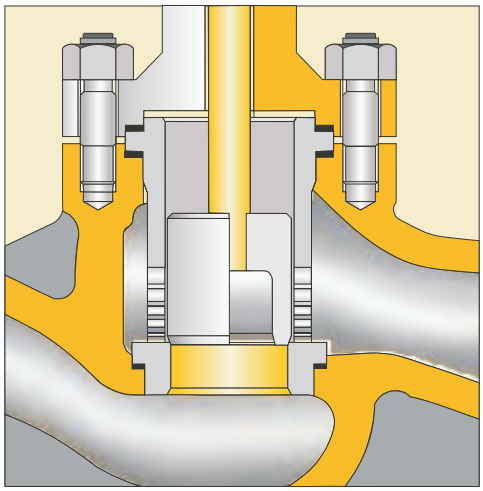


'U' Seal Ring
Max. Temp. +200^{0}C
Leakage
Class III and IV



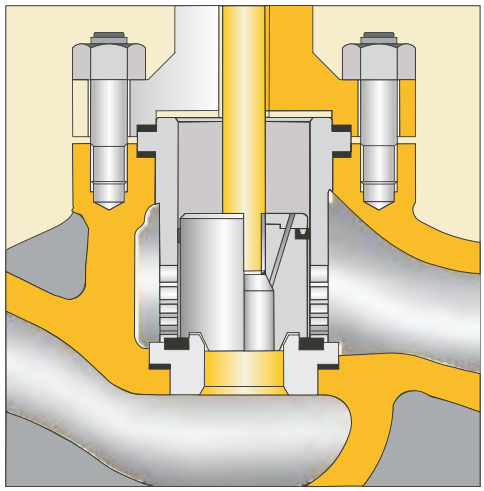
Carbon Ring
Max. Temp. +600^{0}C
Leakage
Class III and IV

Multi Hole Cage Guide Unbalance



Metal to Metal Seating Leakage
Class IV and V

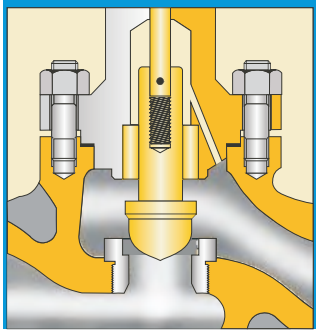
Multi Hole Cage Guide Pressure Balance



Metal to Metal Soft Facing Leakage
Class VI

Cv Values

Contoured Top Bush Guided



Micro Top Bush Guide

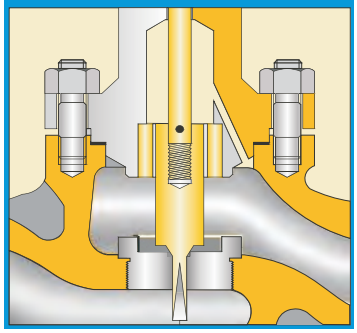


TABLE - 2A

Valve size		Trim Size		CV
Inch	mm	Inch	mm	US GPM
½,¾ and 1	15, 20 and 25	1/8	3	1
		3/16	5	1.5
		¼	6	2
		5/16	8	3
		3/8	10	4
		½	15	5
		¾	20	9
		1	25	13
1½	40	11/2	40	30
		11/4	32	20
		1	25	13
2	50	2	50	50
		11/2	40	30
		11/4	32	20
2½	65	21/2	65	80
		2	50	50
		11/2	40	30
3	80	3	80	110
		21/2	65	80
		2	50	50
4	100	4	100	200
		3	80	110
		21/2	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	2350
14	350	14	350	1800
		12	300	1350
		10	250	2950
16	400	16	400	2350
		14	350	1800
		12	300	1350
18	450	18	450	2950
		16	400	2350
20	500	20	500	3500
		18	450	2950

TABLE - 2B

Valve size		Trim Size	CV
Inch	mm		US GPM
½	15	M	0.003
¾	20	L	0.005
1	25	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" (0.72mm)	0.5
		1/16" (1.6mm)	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 and M Only Linear Flow Characteristics are available.

3) Reduced trim are also available in various combination.

NOTE :

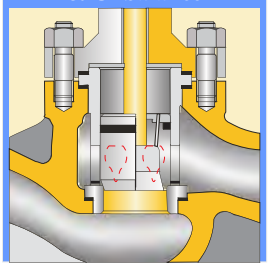
1) Cv Values for on-off flow characteristic will generally be 10 to 20% higher.

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.

Cv Values

Ported Cage Guided Pressure Balance & Unbalance



Multi Hole Cage Guided Pressure Balance & Unbalance

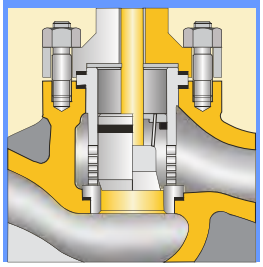


TABLE - 2C

Valve size		Trim Size		CV
Inch	mm	Inch	mm	US GPM
1	25	1	25	12
		3/4	20	9
		½	15	5
11/2	40	11/2	40	27
		11/4	32	20
		1	25	13
2	50	2	50	45
		11/2	40	30
		11/4	32	20
21/2	65	21/2	65	72
		2	50	50
		11/2	40	30
3	80	3	80	100
		21/2	65	80
		50	50	50
4	100	4	100	180
		3	80	100
		21/2	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
18	450	18	450	2750
		16	400	2350
20	500	20	500	3100
		18	450	2950

TABLE - 2D

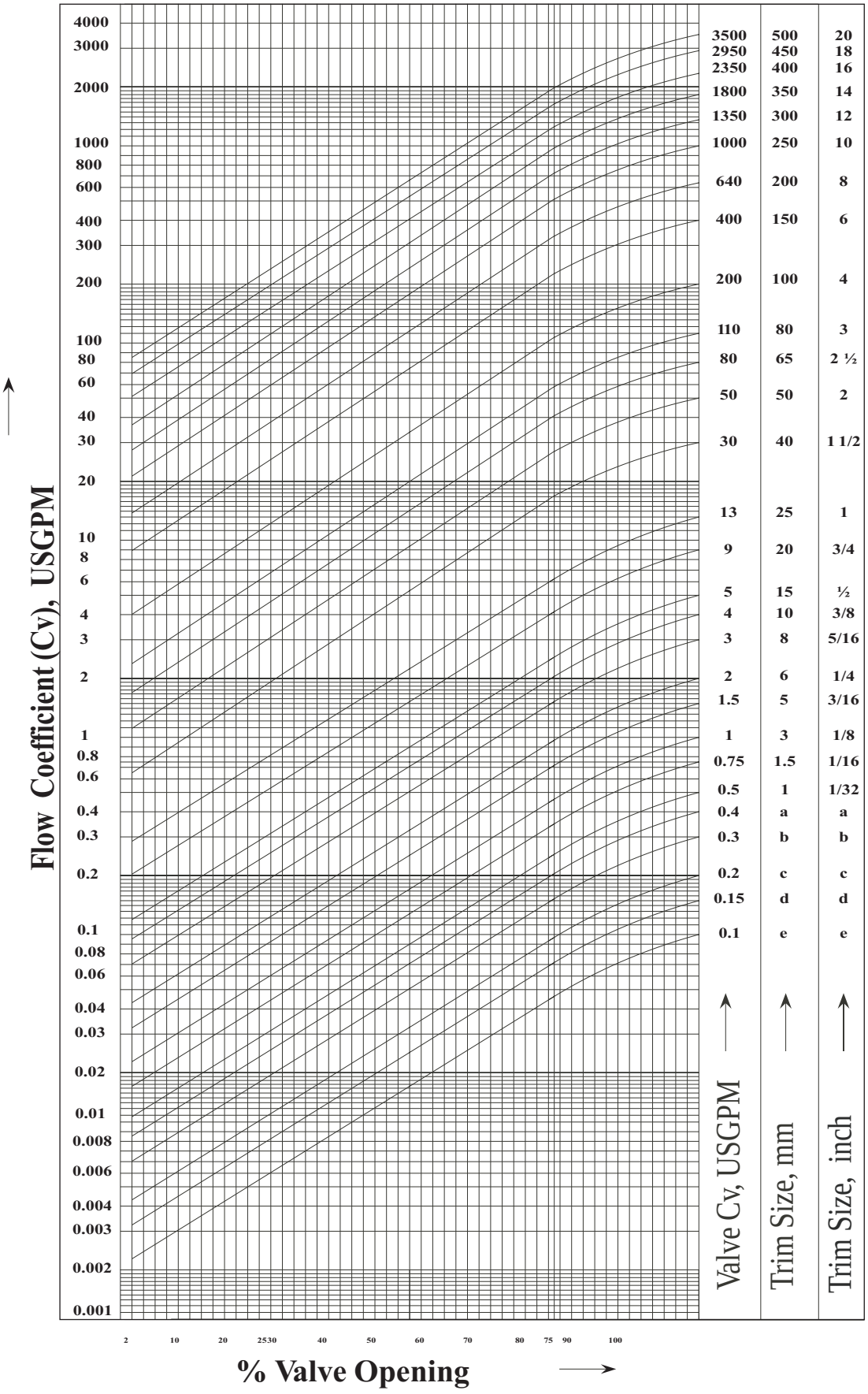
Valve size		Trim Size		CV
Inch	mm	Inch	mm	US GPM
1	25	1	25	10
		3/4	20	7
		½	15	4
11/2	40	11/2	40	24
		11/4	32	16
		1	25	10
2	50	2	50	40
		11/2	40	24
		11/4	32	16
21/2	65	21/2	65	64
		2	50	40
		11/2	40	24
3	80	3	80	90
		21/2	65	64
		50	50	40
4	100	4	100	160
		3	80	90
		21/2	65	64
6	150	6	150	320
		5	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
18	450	18	450	2360
		16	400	1950
20	500	20	500	2800
		18	450	2360
32	800	32	800	7200

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 trims size 1 1/4 and below are always unbalance.

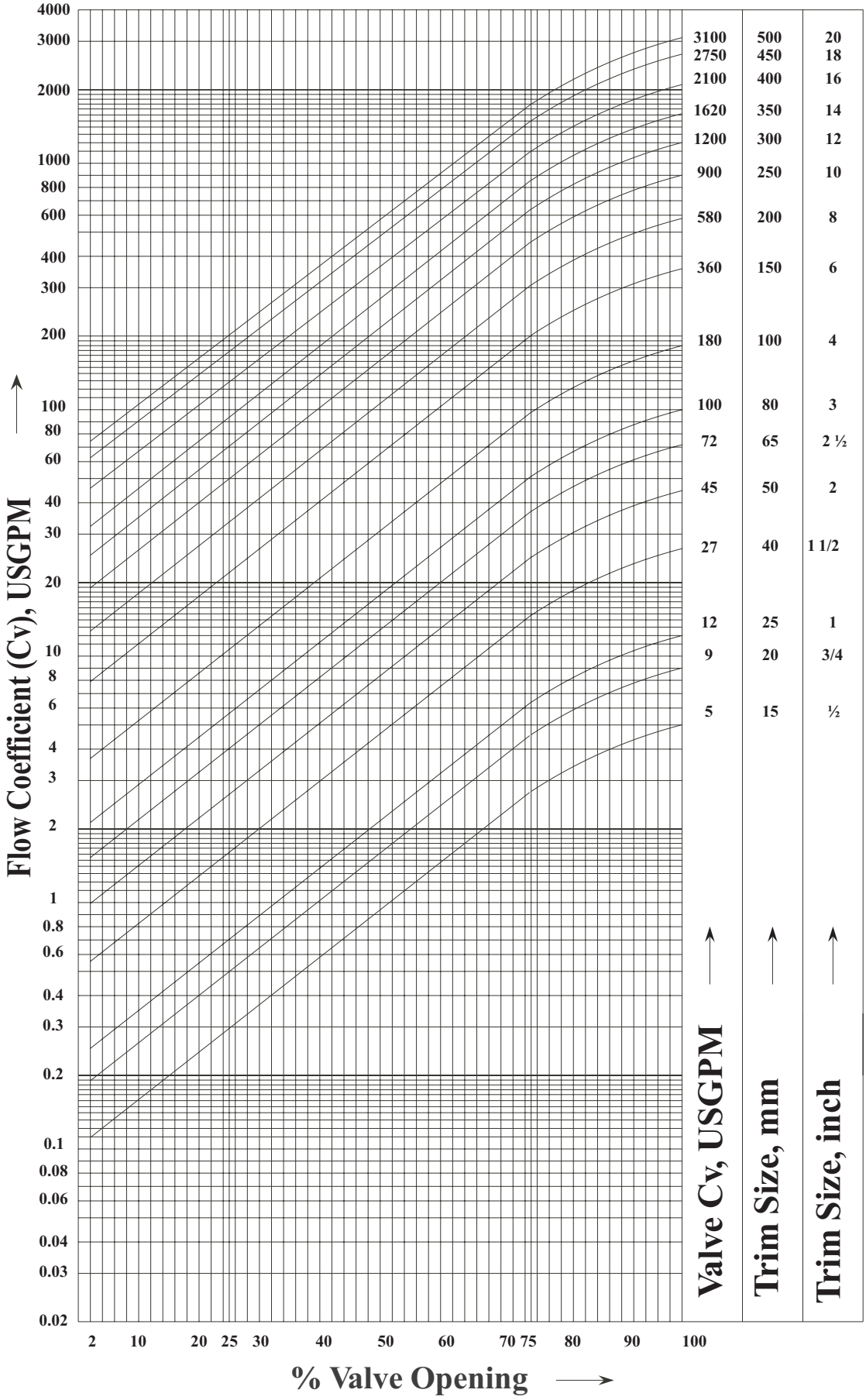
Flow Characteristics Curves (Equal Percentage)

Contoured Top Bush Guided



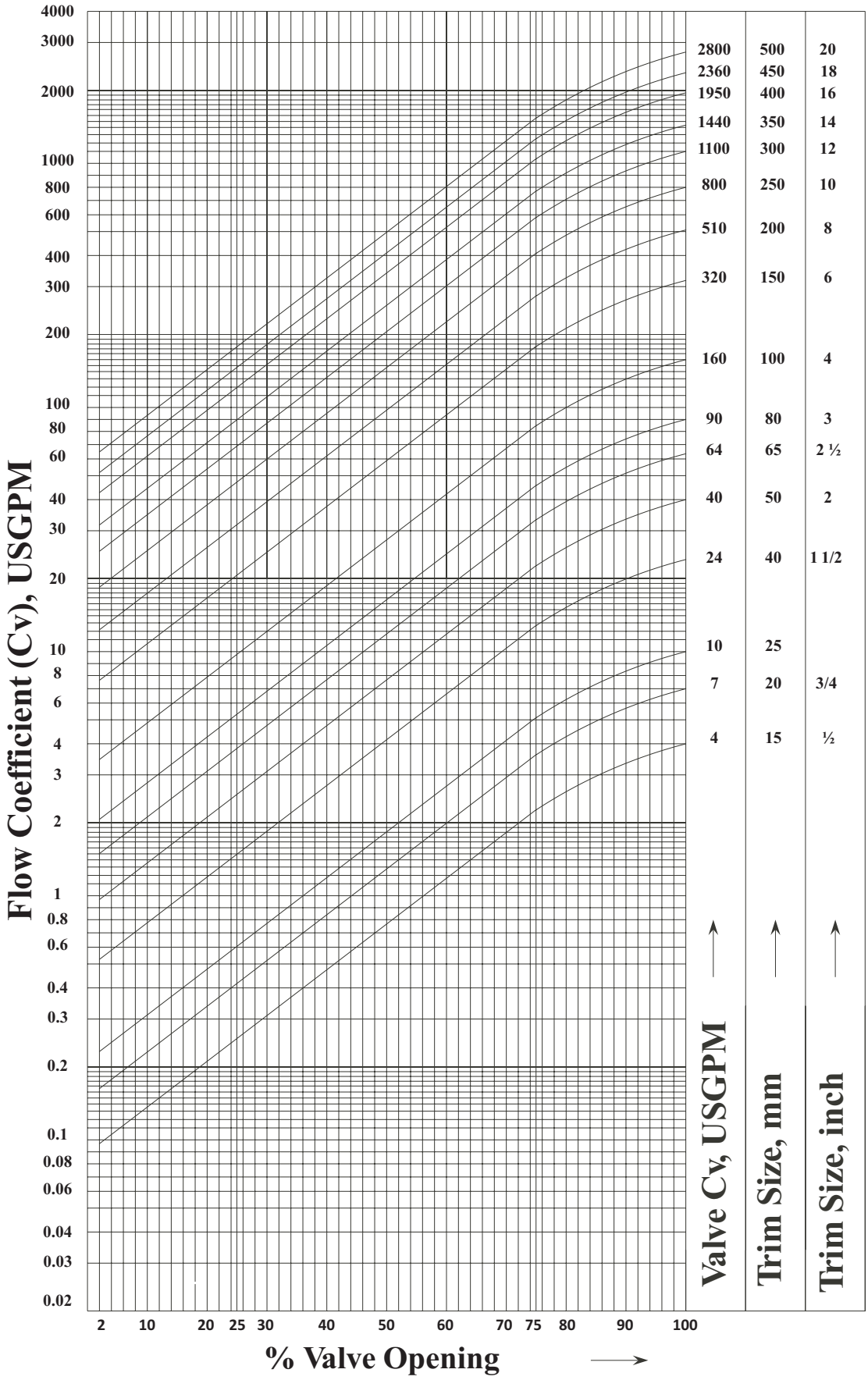
Flow Characteristics Curves (Equal Percentage)

Ported Cage Guided [Pressure Balance & Unbalance]



Flow Characteristics Curves (Equal Percentage)

Multi Hole Pressure Balance & Unbalance



Multi Spring Diaphragm Actuators : Series M & 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) 6.0 bar (For Model Mh)
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 ℃ 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 Hysterisis	:	±5% of Signal Pressure Range

Air Valume 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 forcemoves 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 :

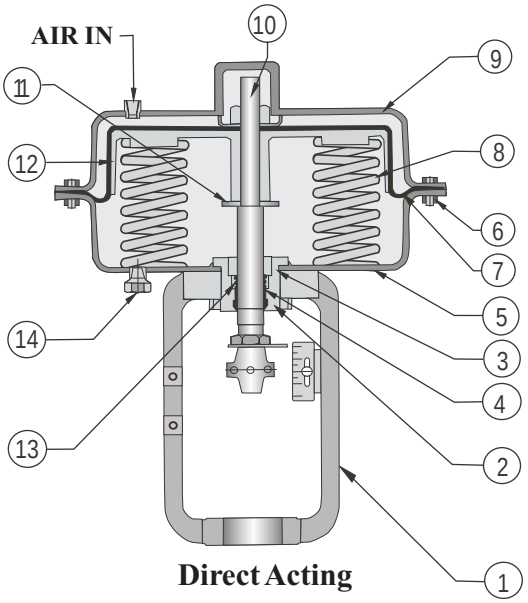
Air Fail to Open : Valve Plug push upto open the valve through spring.

Revers Acting Actuators

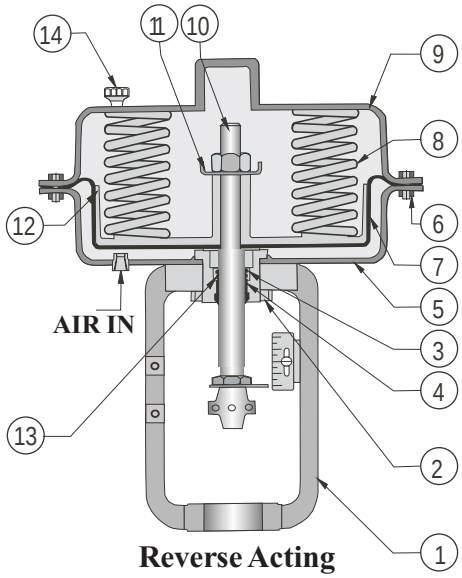
The actuator stem moves upward with increasing diaphragm pressure. When this pressure is reduced the opposing spring force moves the actuator stem downward. On air failure the actuator stem is pushed to extreme downward position by spring force.

This actuator is suitable for action :

Air Fail to Close: Valve Plug push down to close the valve through spring.



Direct Acting
Models - DM and DMp



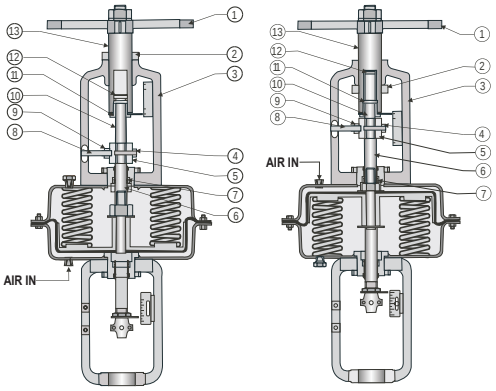
Reverse Acting
Models - RM and RMp

Material of Construction Basic Actuator

Sr. No.	Part Name	MOC
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.

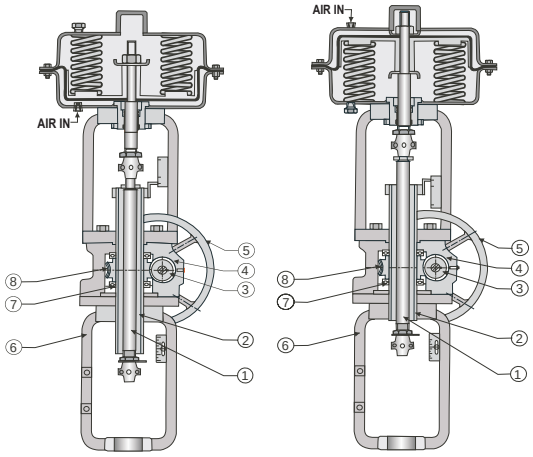


Reverse Acting
Models - RM and RMp

Direct Acting
Models - DM and DMp

Side Mounted Handwheel (SMH)

Dembla Side Mounted Handwheel (SMH) arrangement 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.



Reverse Acting
Models - RM and RMp

Direct Acting
Models - DM and DMp

Material of Construction Top Mounted Handwheel (TMH)

Sr. No.	Part Name	MOC
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

Material of Construction Side Mounted Handwheel (SMH)

Sr. No.	Part Name	MOC
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

Actuator Data

ID	MODEL Nos.	Diaphragm Area cm²	Diaphragm Area in²	Spring No	Spring Range kg/cm²	Closure Preload newton	Closure Preload lbs	Stroke mm	Stroke inch
Normal Version									
1	RM-00 / DM-00	194	30	A	0.2-1.0	380.24	85.48	18	0.709
	RM-00	194	30	B	0.4-1.2	760.48	170.96	18	0.709
2	RM-01 / DM-01	355	55	A	0.2-1.0	695.8	156.42	18	0.709
	RM-01	355	55	B	0.4-1.2	1391.6	312.84	18	0.709
3	RM-11 / DM-11	355	55	A	0.2-1.0	695.8	156.42	28	1.102
	RM-11	355	55	B	0.4-1.2	1391.6	312.84	28	1.102
4	RM-12 / DM-12	613	95	A	0.2-1.0	1201.48	270.10	28	1.102
	RM-12	613	95	B	0.4-1.2	2402.96	540.21	28	1.102
5	RM-22 / DM-22	613	95	A	0.2-1.0	1201.48	270.10	38	1.496
	RM-22	613	95	B	0.4-1.2	2402.96	540.21	38	1.496
6	RM-23 / DM-23	903	140	A	0.2-1.0	1769.88	397.88	38	1.496
	RM-23	903	140	B	0.4-1.2	3539.76	795.77	38	1.496
7	RM-33 / DM-33	903	140	A	0.2-1.0	1769.88	397.88	58	2.283
	RM-33	903	140	B	0.4-1.2	3539.76	795.77	58	2.283
8	RM-34 / DM-34	1613	250	A	0.2-1.0	3161.48	710.73	58	2.283
	RM-34	1613	250	B	0.4-1.2	6322.96	1421.46	58	2.283
9	RM-44-78 / DM-44-78	1613	250	A	0.2-1.0	3161.48	710.73	78	3.071
	RM-44-78	1613	250	B	0.4-1.2	6322.96	1421.46	78	3.071
10	RM-44-108 / DM-44-108	1613	250	A	0.2-1.0	3161.48	710.73	108	4.252
	RM-44-108	1613	250	B	0.4-1.2	6322.96	1421.46	108	4.252
Plus Version									
1	RMp-00 / DMp-00	194	30	A/A	0.4-2.0	760.48	170.96	18	0.709
	RMp-00	194	30	A/B	0.6-2.2	1140.72	256.45	18	0.709
	RMp-00	194	30	B/B	0.8-2.4	1520.96	341.93	18	0.709
2	RMp-01 / DMp-01	355	55	A/A	0.4-2.0	1391.6	312.84	18	0.709
	RMp-01	355	55	A/B	0.6-2.2	2087.4	469.27	18	0.709
	RMp-01	355	55	B/B	0.8-2.4	2783.2	625.69	18	0.709
3	RMp-11 / DMp-11	355	55	A/A	0.4-2.0	1391.6	312.84	28	1.102
	RMp-11	355	55	A/B	0.6-2.2	2087.4	469.27	28	1.102
	RMp-11	355	55	B/B	0.8-2.4	2783.2	625.69	28	1.102
4	RMp-12 / DMp-12	613	95	A/A	0.4-2.0	2402.96	540.21	28	1.102
	RMp-12	613	95	A/B	0.6-2.2	3604.44	810.31	28	1.102
	RMp-12	613	95	B/B	0.8-2.4	4805.92	1080.41	28	1.102
5	RMp-22 / DMp-22	613	95	A/A	0.4-2.0	2402.96	540.21	38	1.496
	RMp-22	613	95	A/B	0.6-2.2	3604.44	810.31	38	1.496
	RMp-22	613	95	B/B	0.8-2.4	4805.92	1080.41	38	1.496
6	RMp-23 / DMp-23	903	140	A/A	0.4-2.0	3539.76	795.77	38	1.496
	RMp-23	903	140	A/B	0.6-2.2	5309.64	1193.65	38	1.496
	RMp-23	903	140	B/B	0.8-2.4	7079.52	1591.54	38	1.496
7	RMp-33 / DMp-33	903	140	A/A	0.4-2.0	3539.76	795.77	58	2.283
	RMp-33	903	140	A/B	0.6-2.2	5309.64	1193.65	58	2.283
	RMp-33	903	140	B/B	0.8-2.4	7079.52	1591.54	58	2.283
8	RMp-34 / DMp-34	1613	250	A/A	0.4-2.0	6322.96	1421.46	58	2.283
	RMp-34	1613	250	A/B	0.6-2.2	9484.44	2132.19	58	2.283
	RMp-34	1613	250	B/B	0.8-2.4	12645.92	2842.92	58	2.283
9	RMp-44-78 / DMp-44-78	1613	250	A/A	0.4-2.0	6322.96	1421.46	78	3.071
	RMp-44-78	1613	250	A/B	0.6-2.2	9484.44	2132.19	78	3.071
	RMp-44-78	1613	250	B/B	0.8-2.4	12645.92	2842.92	78	3.071
10	RMp-44-108 / DMp-44-108	1613	250	A/A	0.4-2.0	6322.96	1421.46	108	4.252
	RMp-44-108	1613	250	A/B	0.6-2.2	9484.44	2132.19	108	4.252
	RMp-44-108	1613	250	B/B	0.8-2.4	12645.92	2842.92	108	4.252

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