

Series 10 Globe Control Valves

Pressure class up to 600#, Sizes up to 24" and beyond

Bespoke & Severe Service Solutions

FCC

Proactive | Collaborative | Result oriented

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Meet the Series 10

Series 10 Globe Control Valves are versatile go-to product for flow control applications and it offers precise flow regulation, apart from offering solutions for High pressure drop, High Temperature, Cavitation, Flashing Noise and dirty services.

Crafted to exceed customer expectations with a compact, lightweight design with tailor-made solutions offered for specialized applications.

Configured with minimized component exhibit superior ruggedness and enhanced assembly integrity. Reduction in part count decreases the number of mechanical joints and tolerance stack-ups, thereby lowering susceptibility to misalignment, cyclic fatigue, and wear-induced failures.

This design philosophy is particularly advantageous in severe-service and high-duty-cycle applications where mechanical robustness and operational continuity are critical.

High Flow, Precise control & Low Ownership Cost

Precision and performance for the future of industrial automation

As the "final control element" in a process loop, control valves are critical for maintaining the stability, safety, and efficiency. Our range of advanced control valves provide the precise & reliable regulation you need, to optimize performance and reduce operational costs.

Engineered to excel in the most demanding environments, our valves are the cornerstone of modern automation. With superior quality, flexible design, and seamless integration with the cutting edge technology, our solutions help you move beyond basic flow control to unlock higher productivity, reduce waste, and achieve robust process optimization.

FCC control valves – Why choose them?

Made to last over 30 years. State-of-the-art technology is taken into consideration while designing the products. Stream lined flow channels offer increased flow capacity. Longer plug travels, control concerns are taken into consideration while designing the hole patterns and port configurations.

Valves 12 inches and up have a special hanging cage design that works well in a variety of temperatures and optimizes body-bonnet studs. Maintenance friendly features include spiral wound gaskets, a clamped seat, and guiding that is isolated from the packing box.

Engineering Data

Globe, Angle & Double Seated Valve designed as per ASME B16.34

Sizes, Pressure rating	1” to 24”, ASME Class 150-600, consult factory for sizes >24”
End Connections	Standard Flanged RF as per ASME B16.5 Optional Flanged RTJ as per ASME B16.5, Socket Welding as per ASME B16.11 (1” to 2”), Butt welding ends as per ASME B 16.25
Face To Face	Globe : ISA 75.08.01 (Up to 16”) & FCC standard (above 16”) Angle: ISA 75.08.08 (Up to 8”) Double Seated: ISA 75.08.01 (Up to 16”) Add “X” value from B16.10 for RTJ ends
Bonnet Design	Standard (-29° to 232°C), Extension (-46° to 427°C), Finned Bonnet (> 427°C), Cryogenic (-196°C to -46°C)

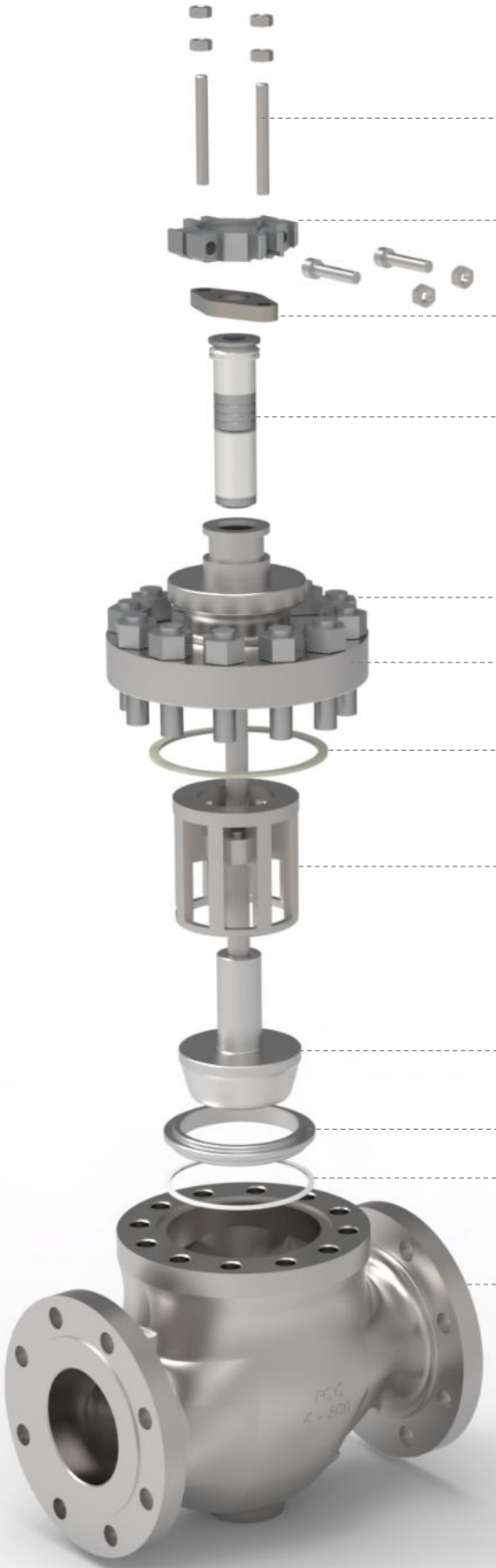
Table 1: Trim details

Trim Design	Trim Char		Flow Direction		Balancing		Guiding	
	Lin	EP	Over	Under	Unbal	Balanced	Post	Cage
Micro Spline							(3)	
Contour								
Ported Cage								
Multi Hole Cage (MHC)			(2)	(2)				
MHC - 2, 3, 4			(2)	(2)				
Anti-Cavitation Trim (ACT)	(1)							
Low dB Trim								
Stack Trim (MAZe-1 & 2)			(2)	(2)				

Notes:
1. Custom characteristics is available on request
2. Flow direction is Flow Over for Liquids & Flow Under for Gases
3. For Microspline trim, the plug head tip is guided through the seat
4. For more details on trim types refer Table-3.

Flow Co-efficient	Refer Flow coefficients Table, Consult factory for customized Cv /Trim Characteristics.
Seat Leakage	As per ANSI/FCI 70.2 and IEC 60534-4 Standard : Class IV Optional : Class V & VI
NACE Conformance	NACE conformance shall be offered when requested
Mode of Actuation	Pneumatic, Electrical, Hydraulic & Electro-Hydraulic

Valve Components



Gland Flange Fasteners

Coupling & Fasteners

Gland Flange

Packing Box Components

Refer Page-12 for more details

Body-Bonnet Bolting

Bonnet

Body-Bonnet Gasket

Clamp

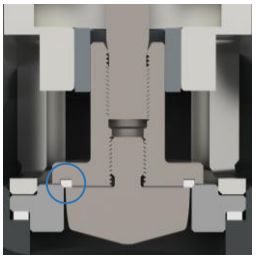
Plug

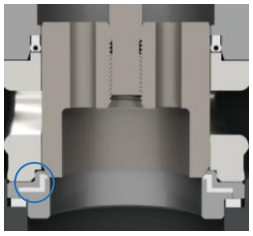
Seat

Seat Gasket

Body

Soft Seat for ANSI Class VI





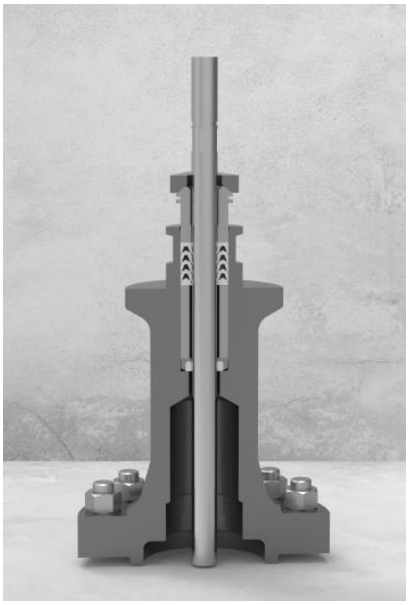
Body types…

- Globe
- Angle
- Double Seated
- 3-way

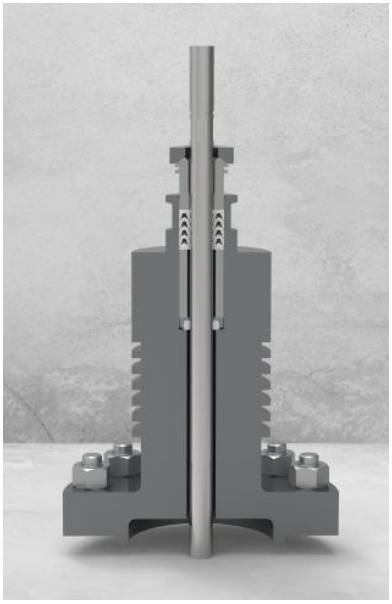
Bonnet Types



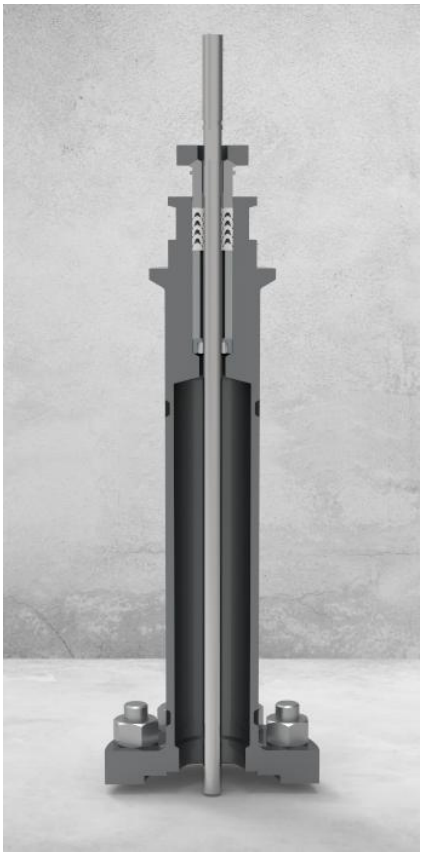
Standard Bonnet
Standard bonnet is used for standard temperature services (see Table-2) and its packing box is suitable for both single, double packing and with or without tapping for leak-off connection



Extension Bonnet
Its construction protects the packing from high temperature. It accommodates all types of packing boxes that is required to meet stringent emission levels.



Finned Bonnet
The fins in the bonnet provide the sufficient surface area for the heat transfer, to keep the stem packing within the acceptable temperature limits



Cryogenic Bonnet
The length of the extension is sufficient to maintain the stem packing at temperature that is within normal operating conditions of the packing.

Table 2: Bonnet types Vs Temperature

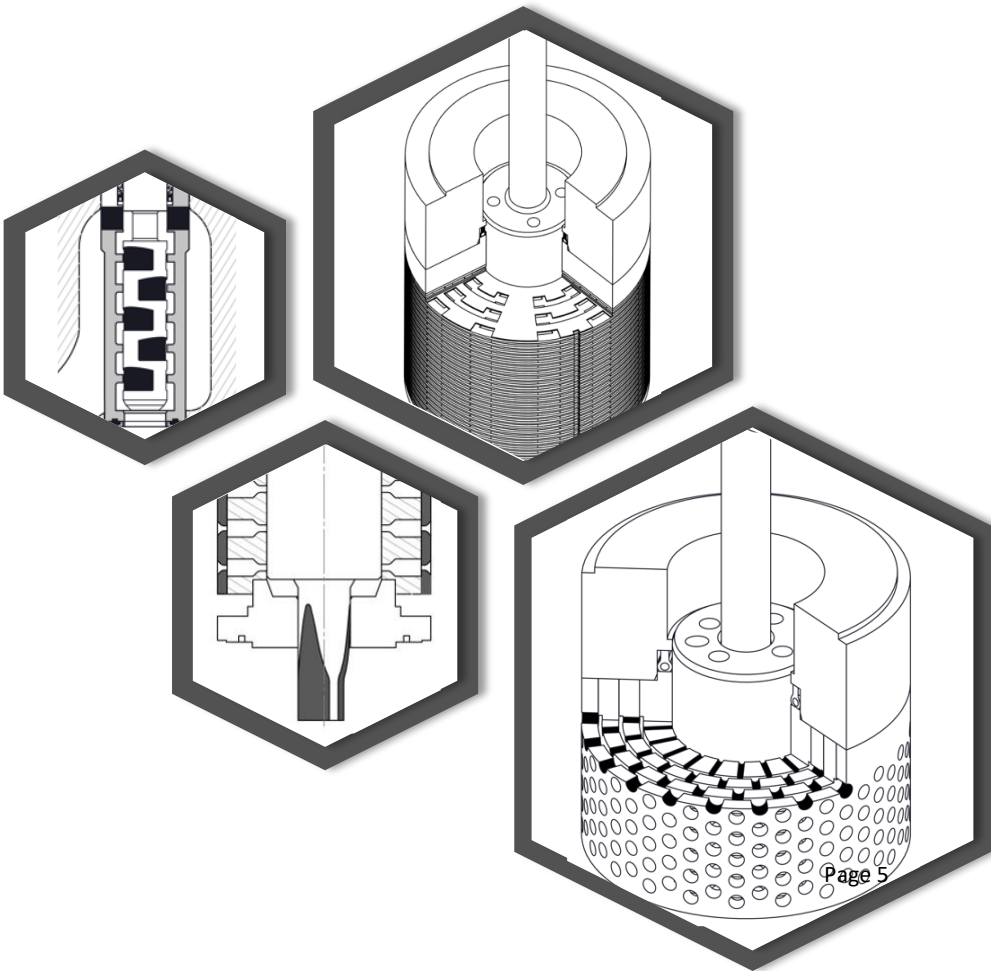
Bonnet Type	Temperature Range (°C)	Approximate Extension length
Standard	-29 to 232	Not Applicable
Extension	-46 to 427	6”
Finned	>427	6”
Cryogenic	-196 to -46	12” or 24”

Options to Suit Various Applications

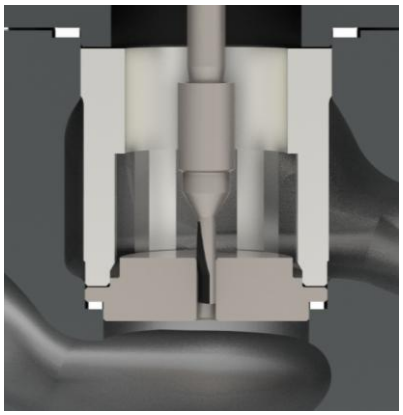
Table 3: Trim type selection table

Trim Types	Delta P	Solution for				
		General Service	Cavitation	Noise	Flashing	Dirty Service + Cavitation
Microspline	Moderate	■				
Contour	Low	■				
Ported Cage	Low	■				
ACT 1-Stage	Moderate		■			
ACT 2-Stage	High		■			
Low dB	High			■		
MHC-1	Moderate		■	■	■	
MHC-2(1)	Moderate		■	■		
MHC-3(1)	High		■	■		
MHC-4(1)	High		■	■		
Multi-Stage Trim Z1(1)	Very High					■
Multi-Stage Trim Z2(1)	Very High					■
MAZe-1(1)	Very High		■	■		
MAZe-2(1)	Very High		■	■		

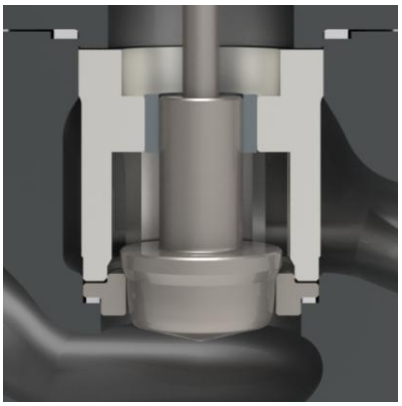
Note-1: For more details about these trims consult factory



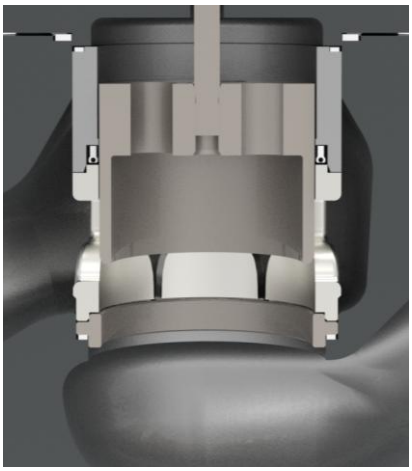
Standard Trim Design



Microspline
Micro splined trims are suitable for very low Cv applications that require precise control. The plug and seat are manufactured as a matched pair. Flow under is the preferred direction.



Contour
Contour plug with post guiding enables perfect alignment of the trim components. The trim offers wide range of Cv and characteristics. This design is suitable for viscous, dirty fluid and non-lubricating process.



Ported Cage
Ported Cage offers massive guiding and high flow capacity even with shorter travels. These Trims are suitable for low pressure drop general service applications. Ported cages are often investment cast and are manufactured from standard stock parts.

Solution for Cavitation

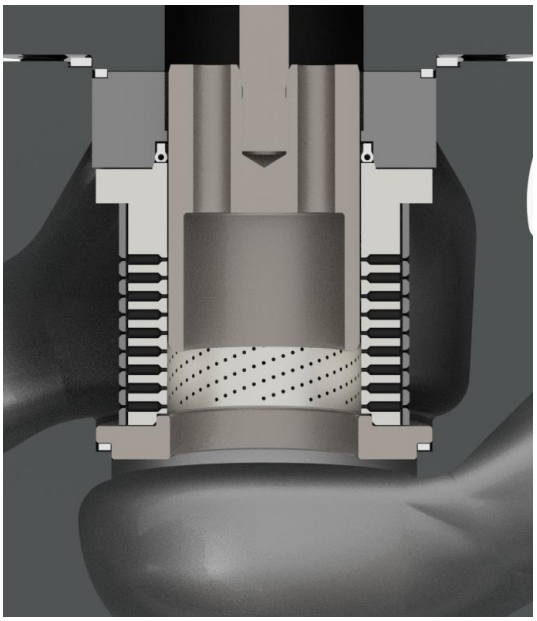


To eliminate cavitation the static pressure of the fluid shall be maintained above the vapour pressure. In high pressure drop applications, it is necessary to drop the pressure in multiple stages to keep the static pressure of the fluid above the vapour pressure of the fluid.

FCC's Anti-Cavitation Trim, Multi Hole Cage and MAZe-1 & 2 are designed to eliminate Cavitation and provide a longer and stable life to the control Valve.

Anti-Cavitation Trim

Anti-Cavitation Trim (ACT) uses either Single cage or Multiple-concentric cages with many small drilled holes to achieve staged pressure drop (Stage-1 & 2). Numerous small holes and colliding flow jets at the cage's core result in achieving a low recovery trim that will eliminate cavitation.



Follow the equation below & select suitable Trim

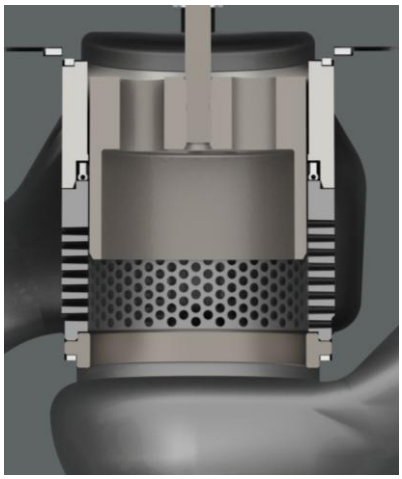
$\sigma_{mr} > (P1-Pv) / \text{Pressure drop}$

Table 4: Cavitation Index of ACT

No of Pressure reduction Stages	Valve Size (in)	Pressure Drop (psid)	Cavitation Index, σ_{mr}
1-stage	1- 2	< 600	1
	1- 2	600 to 1440	$1/Fl^2$
	3 - 6	< 500	1
	3 - 6	500 to 1440	$1/Fl^2$
	8 - 24	< 400	1
	8 - 24	400 to 1440	$1/Fl^2$
2-stage	1 - 2	< 2160	1
	3 - 6	< 1800	1
	8 - 24	< 1200	1
	8 - 24	1200 - 2160	$1/Fl^2$

Solution for Cavitation

Multi Hole Cage



Multi Hole Cage (MHC)

Single and multiple heavy section 'drilled hole' cage design offers low pressure recovery that reduce the potential for cavitation, vibration and erosion. The MHC trim is designed to operate on all fluid combinations, both clean and dirty service.

The MHC range of trims are preferred choice for medium to relatively high pressure drop applications.

Table 5: Cavitation Index of MHC

No of Pressure reduction Stages	Valve Size (in)	Pressure Drop (psid)	Cavitation Index, σ_{mr}
MHC-1	1- 2	< 300	1
		300 to 600	$1/Fl^2$
	3 - 6	< 250	1
		250 to 500	$1/Fl^2$
	8 - 24	< 200	1
		200 to 400	$1/Fl^2$
MHC-2	1- 2	< 600	1
		600 to 1200	$1/Fl^2$
	3 - 6	< 500	1
		500 to 1000	$1/Fl^2$
	8 - 24	< 400	1
		400 to 800	$1/Fl^2$
MHC-3	3 - 6	< 750	1
		750 to 1500	$1/Fl^2$
	8 - 24	< 600	1
		600 to 1200	$1/Fl^2$
MHC-4	3 - 6	< 1000	1
		1000 to 2000	$1/Fl^2$
	8 - 24	< 800	1
		800 to 1600	$1/Fl^2$

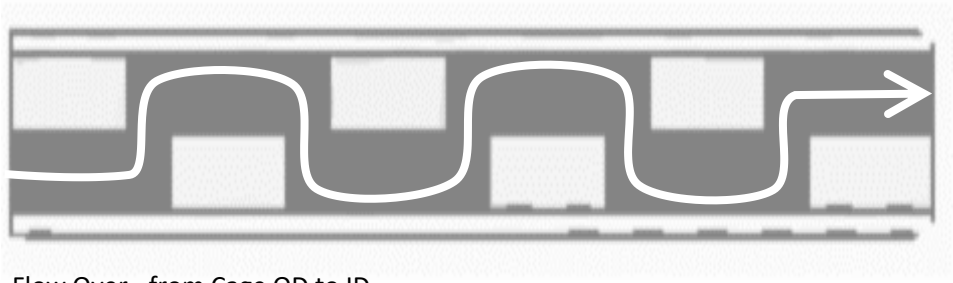
Solution for Cavitation

MAZe-1

Compact packaging of many pressure let-down stages in this design offers the possibility of velocity control throughout the flow passage. MAZe-1 is the go-to Trim for extremely high pressure drop applications and custom designs are available in terms of flow passage design, material options and manufacturing practice Required number of stages shall be calculated based on the following equation.

Liquid Trim Exit velocity = Sqrt ((2 x △P) /density) * K

Trim exit Velocity Limits for Liquids
30 m/s for non-cavitating, non-flashing liquids
12 m/s for flashing service



Flow Over - from Cage OD to ID

Liquid TE velocity factor, K

No of turns	k1, Factor	k2, Factor
All	0.57	Consult factory

Where,
K = k1+k2
k1 is the friction head loss co-efficient factor.
k2 is the constant value based on no of turns.

Solution for Noise



Aerodynamic noise issue in control valves is a common problem in fluid systems, especially in high-pressure drop or high-velocity applications. When gas expands rapidly downstream of the valve, turbulence and shock waves create broadband noise.

FCC's Low dB, Multi Hole Cage and MAZe-1 & 2 are designed to eliminate Noise related problem in control valves

Low dB trim

Low dB trim combines the fact that the noise generated in standard trim designs fall in audible range with the fact that flow through small holes shifts the frequency beyond audible frequencies. Selection of suitable hole configuration (hole size, hole profile and the distance between the holes) based on dP/P1 is vital for efficient performance.

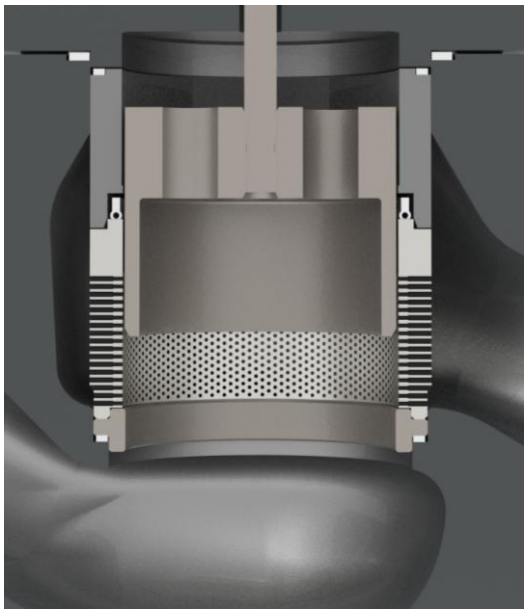


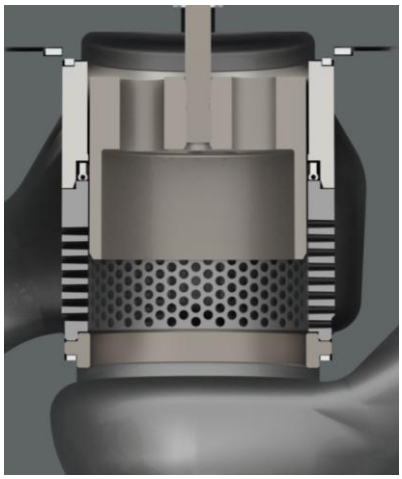
Table 6: Low dB hole Configuration

Pressure drop ratio ((P1-P2) / P1)	Cage Hole Configuration
0.6	A1, A3
0.75	B1, B3
0.85	C1, C3
0.99	D1, D3

The pipeline velocity and valve outlet velocity shall be limited to 0.6 Mach and 0.3 Mach maximum respectively. Use of baffles and diffusers shall be considered to decrease the valve outlet velocity to the desired level.

Solution for Noise

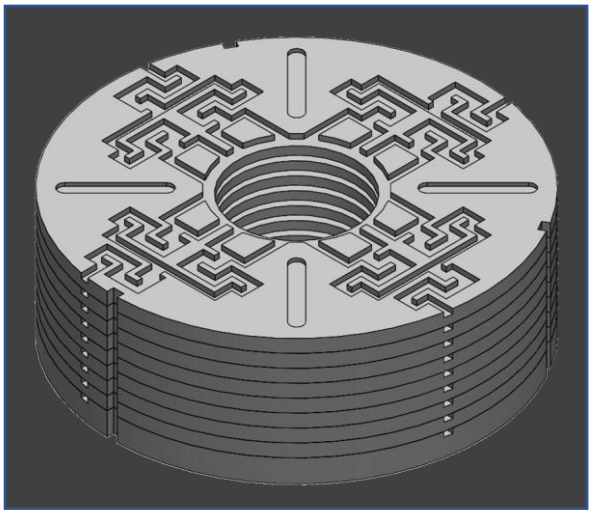
Multi Hole Cage



By dividing the flow into many small flow passages, the noise frequencies are shifted from the audible range to the ultrasonic range, reducing noise levels. Also, using multiple pressure letdown stages with increasing flow area helps manage high pressure drops more effectively. Together, these two features provide better noise control and improved performance in demanding applications

MAZe-2

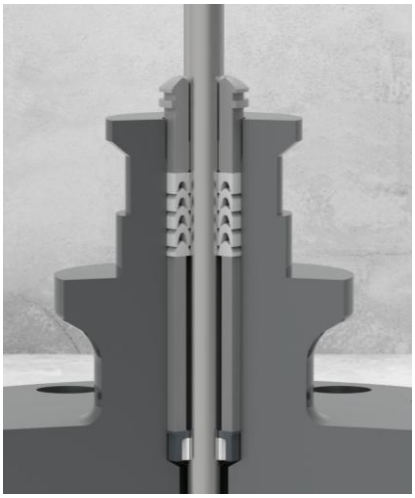
The MAZe-2 stack trim technology is derived from the MHC design concept but allows the trim to be manufactured with a much larger number of pressure-letdown stages. Its capability to be produced in hard, wear-resistant materials such as tungsten carbide makes it a highly suitable and reliable option for severe-service applications



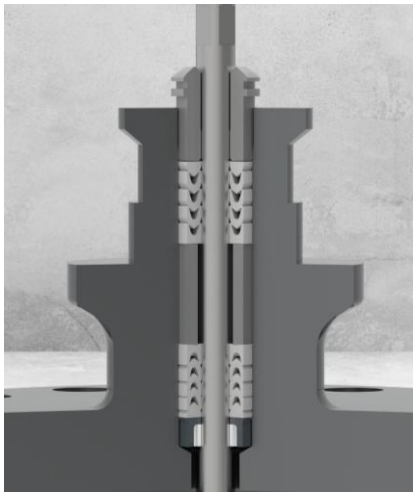
Packing Box Options

Series 10 valves are designed with multiple packing box configurations, both standardized and application-specific, to accommodate a broad spectrum of service requirements. The packing box design is selected based on process conditions and the leak-tightness class specified by the customer. Enhanced sealing solutions are available to meet stringent containment requirements.

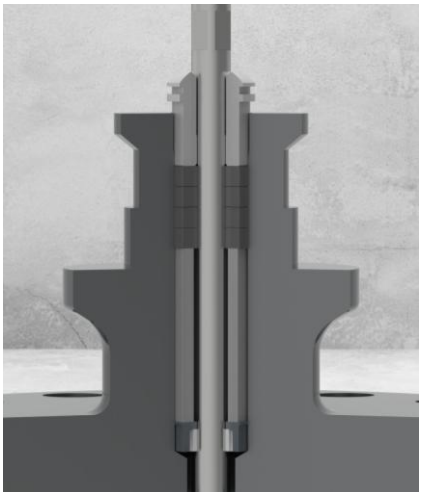
For toxic, lethal, or environmentally critical media, low fugitive emission packing systems in accordance with ISO 15848-1, as well as bellows seal assemblies, can be incorporated to ensure maximum stem sealing integrity and compliance with customer requirement.



PTFE Chevrons



Double PTFE

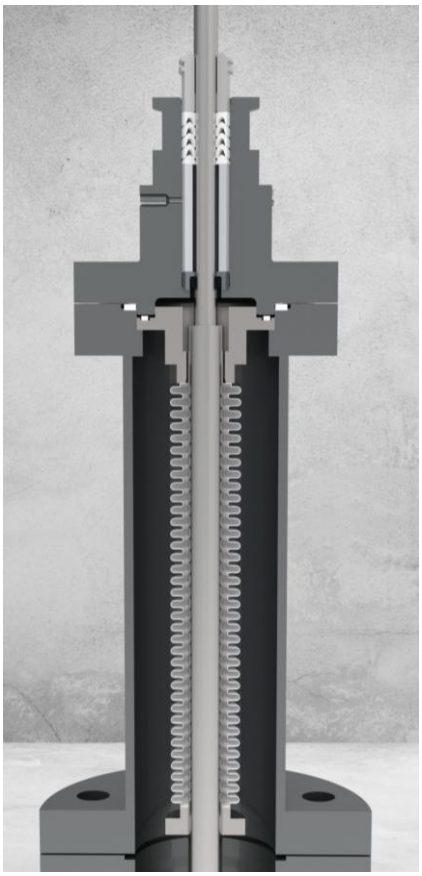


Graphite Packing

Table 7: Packing box options

Packing Types	Material	Temperature Range [1] °C	Application Type	Leakage Class
PTFE Chevrons - Single	Virgin PTFE	-196 to 232	Standard for wide range of applications	Std
PTFE Chevrons - Double	Virgin PTFE	-196 to 232	Vacuum service	Std
High Integrity Packing (HIP)	RPTFE w/PEEK	-46 to 232	Low emission	Class BH
Compression Graphite -A	Exfoliated high purity graphite	-196 to 450	High temperature & Fire-safe services	Class AH
Compression Graphite -B	Exfoliated graphite	-196 to 350	High temperature & Fire-safe services	Class BH
Bellow Seal	(2)	(2)	Lethal service	Class AH

Notes
1. For temperatures more than the above range, consult factory
2. For material and temperature of Bellow Seal consult factory
3. BAM certified packings are available on request



Bellow Seal

Material Specifications

Table 8: Material Combination : Body/Bonnet Vs Bolting Vs Trims

Body/Bonnet Material (1)	Body/Bonnet Bolting (2,3)	Trim Type	Stem Material(4)	Trim No (5)							NACE Compliance
				PTFE Seal						C-Seal	
				Graphite Seal							
			°C	-196	-46	-29	232	343	427	538	
			°F	-320	-50	-20	450	650	800	1000	
WCB/WCC	B7/2H	Microspline	17-4PH			101					No
		Contour				201					No
		Cage				301, 401					No
	B7M/2HM	Microspline	S20910,17-4PH			102, 103					Yes
		Contour				202, 203					Yes
		Cage				302, 303, 402, 403					Yes
LCB/LCC	B7/2H, L7/7L	Microspline	S20910			101					No
		Contour				201					No
		Cage				301, 401					No
	B7M/2HM, L7M/7ML	Microspline			102, 103						Yes
		Contour			202, 203						Yes
		Cage			302, 303, 402, 403						Yes
CF8M	B8M/8M	Microspline		102, 103							No
		Contour		202, 203							No
		Cage		304, 305, 404, 405							No
	B8MA/8MA, S20910 Cr Coat	Microspline		102, 103							Yes
		Contour		202, 203							Yes
		Cage		304, 305, 404, 405							Yes
4A	B7/2H	Microspline	S32760		104, 105						No
		Contour			204, 205						No
		Cage			306, 307, 406, 407						No
	32760, B8MA/8MA	Microspline			104, 105						Yes
		Contour			204, 205						Yes
		Cage			306, 307, 406, 407						Yes
6A	B7/2H	Microspline			106, 107						No
		Contour			206, 207						No
		Cage			308, 309, 408, 409						No
	32760, B8MA/8MA	Microspline			106, 107						Yes
		Contour			206, 207						Yes
		Cage			308, 309, 408, 409						Yes
Inconel 625	B8MA/8MA	Microspline	N07718	108, 109							Yes
		Contour		208, 209							Yes
		Cage		310, 311, 410, 411							Yes

Notes

1. For forged construction and other material options consult factory
2. All alloy steel bolting (B7, L7, B16) are supplied with phosphating as standard.
3. Zinc plating option available on request and its temperature is limited to 200°C.
4. For other material options consult factory
5. For temperature more than 538°C consult factory

Material Specifications

Table 9: Trim Number Table (Contd….)

Trim Type	Trim No.	Plug	Seat	Clamp/Cage	Guide/Trim Spacer
Microspline	101	S41000 HT	S41000 HT	S41000	None
	102	S31600 w/CoCr-A seat, R30006 tip	S31600	S31600	None
	103	S31600 w/CoCr-A seat, R30006 tip	S31600 w/CoCr-A seat & bore	S31600	None
	104	S31803 w/CoCr-A seat, R30006 tip	S31803	S31803	None
	105	S31803 w/CoCr-A seat, R30006 tip	S31803 w/CoCr-A seat & bore	S31803	None
	106	S32760 w/CoCr-A seat, R30006 tip	S32760	S32760	None
	107	S32760 w/CoCr-A seat, R30006 tip	S32760 w/CoCr-A seat & bore	S32760	None
	108	N06625 w/CoCr-A seat, R30006 tip	N06625	N06625	None
	109	N06625 w/CoCr-A seat, R30006 tip	N06625 w/CoCr-A seat & bore	N06625	None
Contour	201	S41000 HT	S41000 HT	S41000	S17400
	202	S31600	S31600	S31600	316 w/CoCr-A
	203	S31600 w/CoCr-A seat	S31600 w/CoCr-A seat	S31600	316 w/CoCr-A
	204	S31803	S31803	S31803	32760 w/CoCr-A
	205	S31803 w/CoCr-A seat	S31803 w/CoCr-A seat	S31803	32760 w/CoCr-A
	206	S32760	S32760	S32760	32760 w/CoCr-A
	207	S32760 w/CoCr-A seat	S32760 w/CoCr-A seat	S32760	32760 w/CoCr-A
	208	N06625	N06625	N06625	N06625 w/CoCr-A
	209	N06625 w/CoCr-A seat	N06625 w/CoCr-A seat	N06625	N06625 w/CoCr-A
Cage (Unbalanced)	301	S41000 HT	S41600 or CA15 HT	17-4PH HT	None
	302	S31600	S31600	17-4PH HT	None
	303	S31600 w/CoCr-A seat	S31600 w/CoCr-A seat	17-4PH HT	None
	304	S31600 w/CoCr-A seat & guide	S31600	S31600	None
	305	S31600 w/CoCr-A seat& guide	S31600 w/CoCr-A seat	S31600	None
	306	S31803 w/CoCr-A seat & guide	S31803	S31803	None
	307	S31803 w/CoCr-A seat & guide	S31803 w/CoCr-A seat	S31803	None
	308	S32760 w/CoCr-A seat & guide	S32760	S32760	None
	309	S32760 w/CoCr-A seat & guide	S32760 w/CoCr-A seat	S32760	None
	310	N06625 w/CoCr-A seat & guide	N06625	N06625	None
	311	N06625 w/CoCr-A seat & guide	N06625 w/CoCr-A seat	N06625	None

Material Specification

Table 9: Trim Number Table

Trim Type	Trim No.	Plug	Seat	Clamp/Cage	Guide/Trim Spacer
Cage - Balanced (seal on cage)	401	S41000 HT	S41600 or CA15 HT	17-4PH HT	17-4PH HT
	402	S31600	S31600	17-4PH HT	17-4PH HT
	403	S31600 w/CoCr-A seat	S31600 w/CoCr-A seat	17-4PH HT	17-4PH HT
	404	S31600 w/CoCr-A seat & guide	S31600	S31600	S31600
	405	S31600 w/CoCr-A seat& guide	S31600 w/CoCr-A seat	S31600	S31600
	406	S31803 w/CoCr-A seat & guide	S31803	S31803	S31803
	407	S31803 w/CoCr-A seat & guide	S31803 w/CoCr-A seat	S31803	S31803
	408	S32760 w/CoCr-A seat & guide	S32760	S32760	S32760
	409	S32760 w/CoCr-A seat & guide	S32760 w/CoCr-A seat	S32760	S32760
	410	N06625 w/CoCr-A seat & guide	N06625	N06625	N06625
	411	N06625 w/CoCr-A seat & guide	N06625 w/CoCr-A seat	N06625	N06625
Cage - Balanced (seal on plug)	501	S41000 HT	S41600 or CA15 HT	17-4PH HT	None
	502	S31600	S31600	17-4PH HT	None
	503	S31600 w/CoCr-A seat	S31600 w/CoCr-A seat	17-4PH HT	None
	504	S31600 w/CoCr-A seat & guide	S31600	S31600	None
	505	S31600 w/CoCr-A seat& guide	S31600 w/CoCr-A seat	S31600	None
	506	S31803 w/CoCr-A seat & guide	S31803	S31803	None
	507	S31803 w/CoCr-A seat & guide	S31803 w/CoCr-A seat	S31803	None
	508	S32760 w/CoCr-A seat & guide	S32760	S32760	None
	509	S32760 w/CoCr-A seat & guide	S32760 w/CoCr-A seat	S32760	None
	510	N06625 w/CoCr-A seat & guide	N06625	N06625	None
	511	N06625 w/CoCr-A seat & guide	N06625 w/CoCr-A seat	N06625	None

Notes
1. HT refers to Heat Treatment. For 410SS it is 38HRC and 17-4PH it is 40HRC

Table 10: Soft Parts Materials (Except packing rings)

Item	Standard	Optional
Seat	Metal	PTFE, Kel-F
Balance seals	Spring energized PTFE lip seal (-196°C to 232°C)	Graphite Piston rings (232°C to 427°C)
Gaskets	316L spiral wound with graphite filler	32760 spiral wound with graphite filler Inconel spiral wound with graphite filler

Flow Coefficient Cv

Table 11: Microspline, EP, Flow Under

Valve Size (in)	Seat Bore (in)	Travel (in)	Cv
1 to 2	0.25	0.75	1.08
1 to 2	0.25	0.75	0.68
1 to 2	0.25	0.75	0.292
1 to 2	0.1875	0.75	0.177
1 to 2	0.1875	0.75	0.073

Table 12: Contour, Flow Under

Valve Size (in)	Seat Bore (in)	Travel (in)	Cv	
			EP	Lin
1	1	0.75	13.1	13.2
1	0.75	0.75	8.79	-
1	0.5	0.75	4.96	-
1	0.375	0.75	3.05	-
1	0.25	0.75	1.53	-
1.5	1.5	0.75	26.9	30.8
1.5	1	0.75	16.4	16.4
1.5	0.75	0.75	9.98	-
1.5	0.5	0.75	5.21	-
1.5	0.375	0.75	3.15	-
2	2	1.125	51.5	51.8
2	1	0.75	16.1	16.2
2	0.75	0.75	9.98	-
2	0.5	0.75	5.21	-
2	0.375	0.75	3.15	-
3	3	1.5	109	111
3	2	1.125	71.8	81.2
4	4	2	186	209
4	2	1.125	71.9	85.2

Table 13: Ported cage, Flow Over

Valve Size (in)	Seat Bore (in)	Travel (in)	Cv	
			EP	Lin
1	1.2	0.75	17.6	19.5
1.5	1.875	0.75	35.2	35.8
2	2.15	1.125	55.7	69.2
3	3.22	1.5	132	148
4	4.15	2	225	231
6	7	2	385	428
8	8	3	732	782
10	8	3	849	862
12	11	6	1432	1570
14	12.875	6	1841	2193
16	14.75	8	2278	2890
16	14.75	6	2022	2667
18	16.5	8	2958	3254
18	16.5	6	2592	3008
20	18.25	9	3896	4159
24	18.25	9	4214	4709

Flow Coefficient Cv

Table 14: Anti-Cavitation Trim, Linear, Flow Over

Valve Size (in)	1 Stage			2 Stage		
	Seat bore (in)	Travel (in)	Cv	Seat bore (in)	Travel (in)	Cv
1	1.2	1	9.7	1	0.75	6.3
1.5	1.875	0.875	19.3	1.3	0.75	4.7
2	2.16	1.25	31.4	1.875	1.125	11.8
3	3.22	1.625	70.2	2.875	1.5	24.5
4	4.15	2.125	119	2.875	2	34.5
6	7	2.25	230	5.375	2	72
8	8	3.375	494	7	4	176
10	8	3.375	494	7	4	176
12	11	6	870	-	-	-
14	12.87	6	1296	-	-	-
16	14.75	8	1790	-	-	-
18	16.25	8	2024	-	-	-
20	18.25	9	2391	-	-	-
24	18.25	9	2611	-	-	-

Flow Coefficient Cv

Table 15: Low dB, Linear, Flow Under

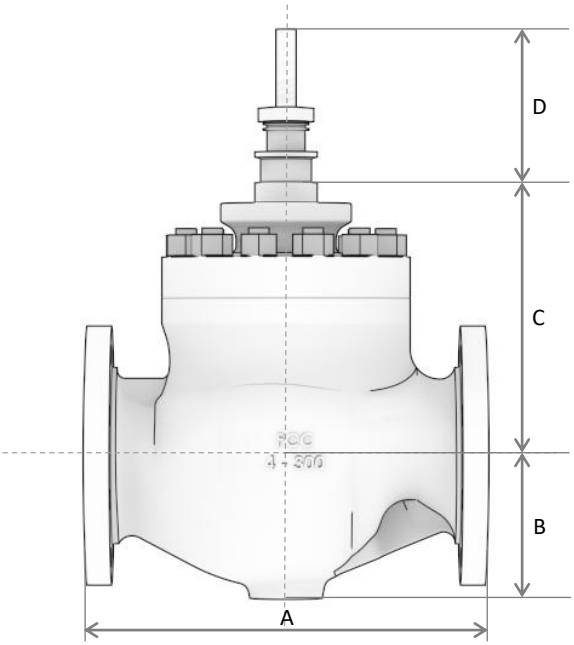
Valve Size (in)	Seat Bore (in)	Travel (in)	Cv					
			A1	A3	B1	B3	C1	C3
1	1.2	0.75	13.7	-	-	-	-	-
1.5	1.875	0.75	25.8	-	-	-	-	-
1.5	1.312	0.75	-	21.6	16.1	11.7	-	-
1.5	0.75	0.75	-	-	-	-	4.91	5.51
2	2.15	1.125	34.80	-	-	-	-	-
2	1.312	1.125	-	26.7	22.2	17.8	12.6	12.4
3	3.22	1.5	87.2	-	-	-	-	-
3	2.31	1.5	-	89.3	67.6	74.8	45.5	45
4	4.15	2	142	-	-	-	-	-
4	3.43	2	-	139	109	102	76.6	73.8
6	7	2	286	-	-	-	-	-
6	5.375	2	197	197	154	152	86	92
8	8	3	426	-	-	-	-	-
8	8	4	638	638	406	407	280	259
10	8	6	880	880	575	548	496	387
12	11	6	1240	1144	787	781	542	523
14	12.87	6	1968	1780	1122	1113	744	715
16	14.75	8	2095	2049	1603	1555	1132	1120
18	16.25	8	2582	2480	1892	1821	1260	1257
20	18.25	9	2317	2658	2178	2123	1563	1522
24	18.25	9	3100	2867	2056	1988	1388	1365

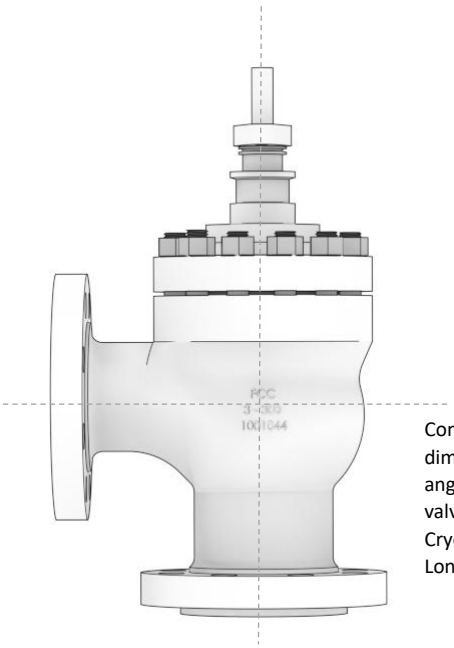
Flow Coefficient Cv

Table 16: MHC-1, Flow over for liquids & Flow under for gases

Valve Size (in)	Seat Bore (in)	Travel (inch)	Cv - Flow Over		Cv - Flow under	
			EP	Lin	EP	Lin
1	1.2	0.75	8.2	15.8	8.2	15.8
1	0.75	0.75	5.1	9.9	5.1	9.9
1.5	1.875	0.75	15	26.3	15	26.3
1.5	1	0.75	8	14	8	14
2	2.15	1.125	36.7	44.8	36.7	44.8
2	1.25	1.125	21.3	26	21.3	26
3	3.22	1.5	80	119	80	119
3	3.22	1.5	46.6	69.5	46.6	69.5
4	4.15	2	170	206	170	206
4	2.25	2	92	112	92	112
6	7	2	305	336	305	336
6	4	2	174	192	174	192
8	8	3	463	632	463	632
8	5	3	289	395	289	395
10	8	4	650	834	650	834
10	5	4	406	521	406	521
12	11	6	1041	1312	1041	1312
12	6	6	568	716	568	716
14	12.875	6	1380	1764	1380	1764
14	8	6	858	1096	858	1096
16	14.75	8	2280	2433	2280	2433
16	14.75	6	1712	2126	1712	2126
16	8	6	929	1153	929	1153
18	16.5	8	2350	2894	2350	2894
18	16.5	6	2001	2485	2001	2485
18	12.875	6	1561	1938	1561	1938
20	18.25	9	3038	3428	3038	3428
20	14.5	9	2455	2771	2455	2771
24	18.25	9	3213	3858	3213	3858
24	14.75	9	2597	3118	2597	3118

Dimension & Weights



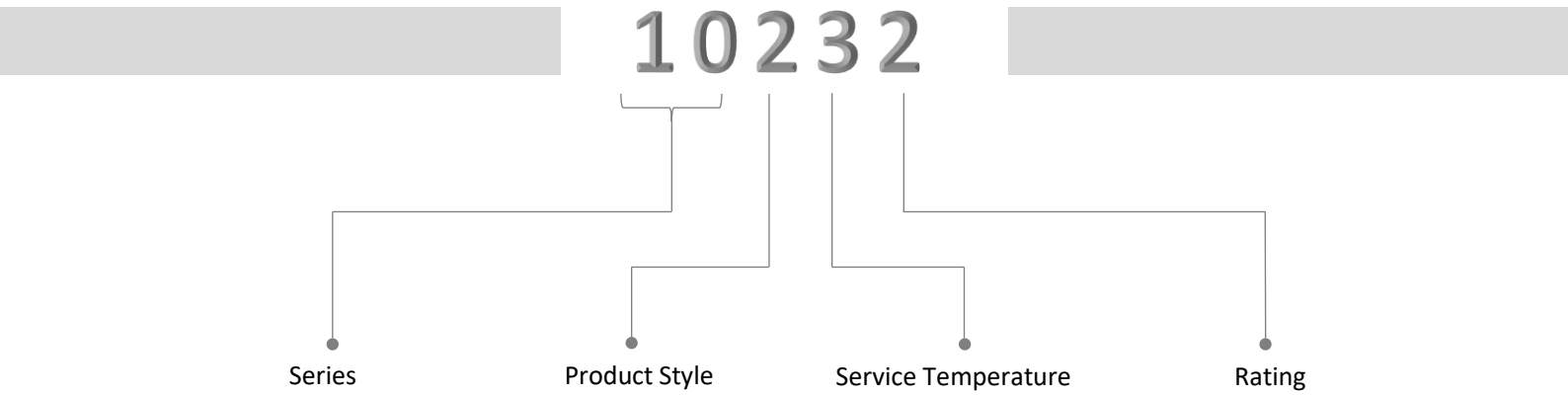


Consult factory for dimensions and weights of angle valves; double seated valve; Extension, Finned & Cryogenic bonnet; Longer travels valve

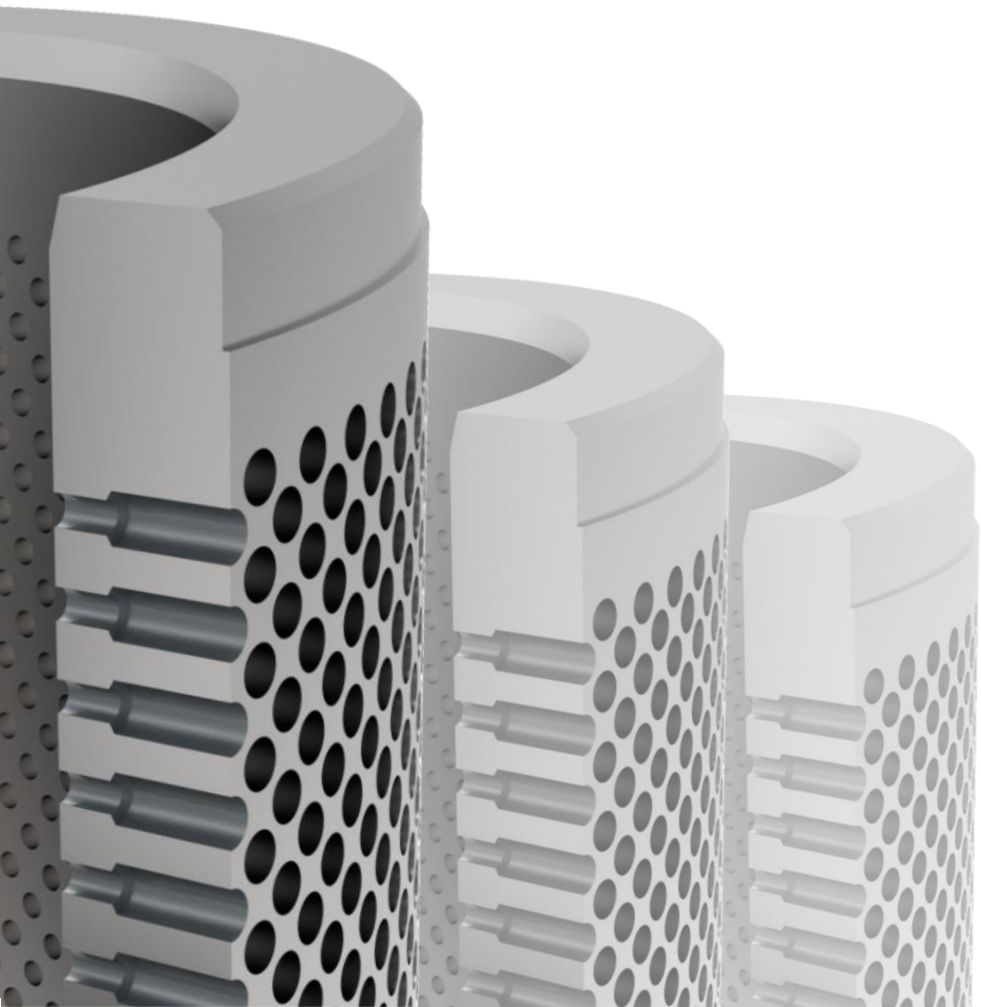
Table 17: Dimensions & Weight for Globe style body with Standard Bonnet

Valve size (in)	A (mm)			B (mm) Approx.	Stem dia	C	Stem position D (mm)		Approx. Weight (Kg)		
	150	300	600		(in)	(mm)	Down	Up	150	300	600
1	184	197	210	62	0.375	129	117	136	30	30	30
					0.5	152	141	160			
1.5	222	235	251	72	0.375	125	117	136	40	40	41
					0.5	167	141	160			
2	254	267	286	78	0.5	134	141	179	51	51	55
					0.75	168	154	218			
3	298	318	337	105	0.5	189	141	179	90	90	91
					0.75	194	154	218			
4	352	368	394	129	0.5	227	141	179	117	117	119
					0.75	222	154	218			
6	451	473	508	162	0.75	259	154	218	221	221	256
					1	268	190.5	343			
8	543	568	610	194	0.75	390	154	218	366	366	439
					1	390	190.5	343			
10	673	708	752	225	0.75	384	154	218	516	516	655
					1	384	190.5	343			
12	737	775	819	266	1.5	419	190.5	343	616	708	899
14	889	927	972	362	1.5	715	190.5	343	1171	1346	1710
16	1016	1057	1108	404	1.5	813	190.5	394	1271	1460	1855
18	1146	1184	1257	427	1.5	873	190.5	394	1989	2286	2903
20	1267	1308	1372	480	1.5	755	190.5	419	2326	2674	3395
24	1556	1600	1676	480	1.5	848	190.5	419	3099	3562	4523

Model Number



Series	Product Style	Service Temperature	Rating
10	1 - Globe	1 - Warm Service	1 - 150
	2 - Angle	2 - High Temperature	2 - 300
	3 - Three-way	3 - Ultra High Temperature	3 - 600
	4 - Double Seated	C - Cryogenic	







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