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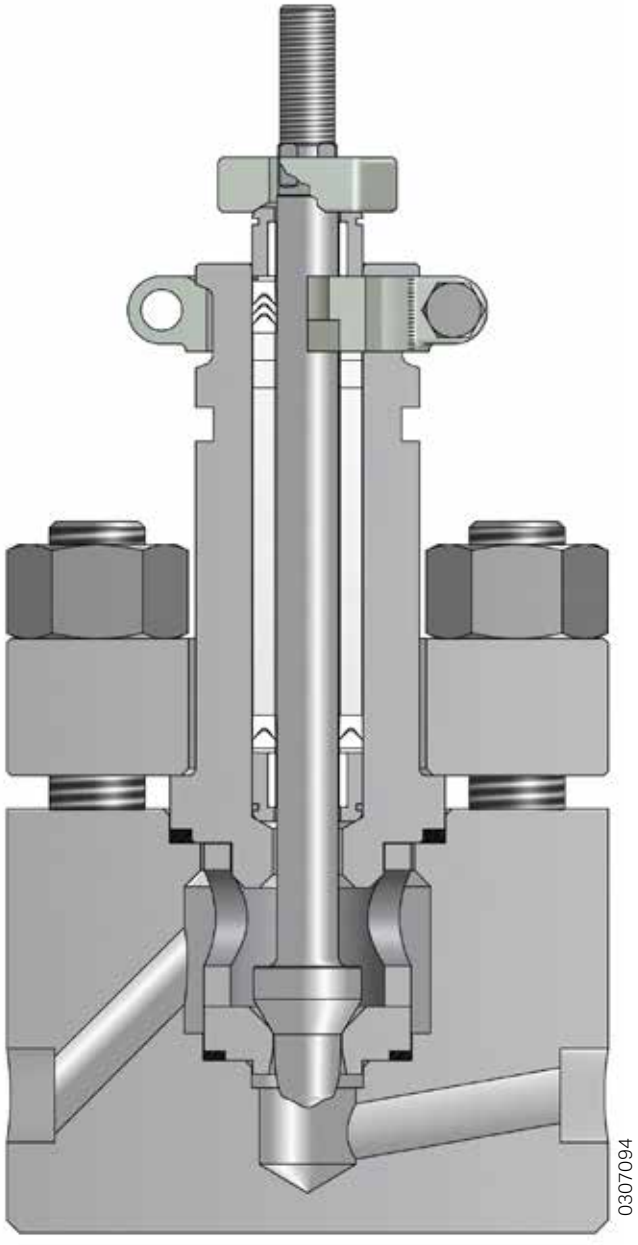
BAR-STOCK GLOBE CONTROL VALVE
BODY SUBASSEMBLY

Bar-Stock Globe Control Valve



Body Subassembly

The globe control valve, presents an efficient solution to the manufacturing and supply of low and high pressure control valves made of metal alloys that result in delivery difficulties inherent to the casting process.
Made of forged materials, it is generally supplied with 1/2 to 2 inches diameter, although can be configured with diameters of up to 6 inches.

It preserves the advanced manufacturing characte-ristics of the globe valves, such as the plug´s double guided system, no contact between the plug and seat retainer, "top-entry" assembly, the high performance and long lifespan piston-cylinder actuator, together with the new generation of Chronos digital positioners.

Body Subassembly Characteristics and Advantages

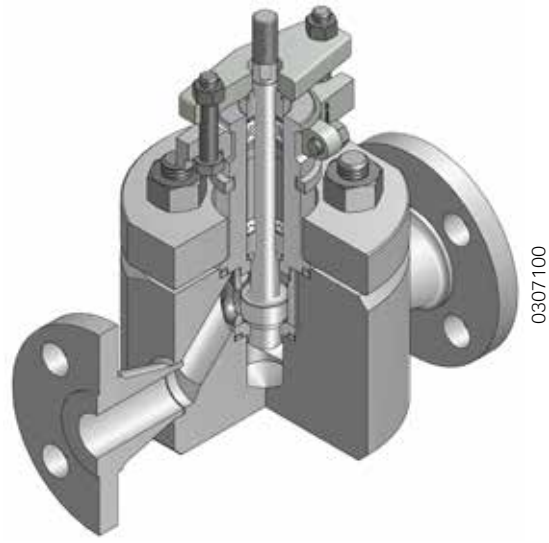
- Forged steel bodies:
  - Eliminates the inconveniences of casting cycles.
  - Facilitates fast deliveries in exotic alloys.
- Versatile:
  - Globe, three-ways, angle-style, steam-jacketed bodies.
  - Multiple setting bodies.
  - Manufactured in a wide range of forged metal alloys.
  - Bodies with connections, screwed, flange and/or socketweld.
- Easy to adapt face-to-face dimensions of body in multiple settings.
- Manufacturing with corrosion resistant materials available.
- High pressures.
- Anti-cavitation trims.
- Noise reduction trims.
- Oversized plug stems:
  - Provide great operational stability.
- Bonnet settings: standard, extended, extended for cryogenics or metal bellows.
- Top-entry trims assembly:
  - Easy maintenance.
- All sets of trims, seat rings and plugs are interchangeable with the globe valves.
- Great depth of the packing box:
  - Permits the installation of all packing box.
- Piston-cylinder actuators, with spring return.
  - High thrust and pneumatic stiffness.
  - Precise positioning with high response levels.
- Chronos digital positioners.

Standard Manufacturing Materials

Component	Material
Body & Bonnet	Stainless Steel AISI 304; 304L; 316; 316L; Duplex; Super-Duplex Chromium-molybdenum Steel; Monel; Alloy 20 Nickel; Inconel; Hastelloy "B" or "C" Titanium
Bonnet Flange	Carbon Steel; Stainless Steel
Plug & Seat Ring	Stainless Steel AISI 316 (UNS S 31600) or same material as body
Retainer	Stainless Steel AISI 316 (UNS S 31600) or same material as body
Packing	PTFE "V" Rings; PTFE (1); Grafoil Fugitive Emissions Packing
Bonnet and Seat Ring Gaskets	Stainless Steel and Grafoil Spiral-wound, Teflon

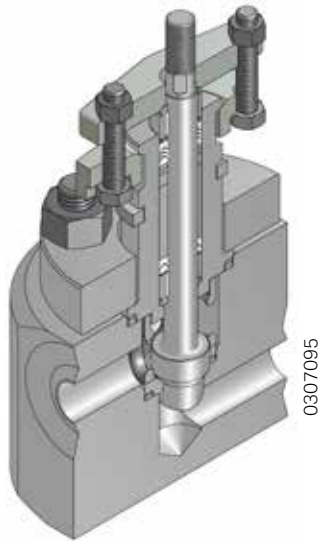
(1) AFG: Asbestos free

Body Subassembly
Body Styles



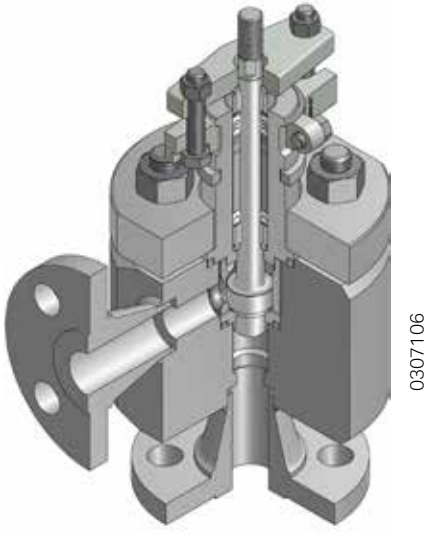
In-line Globe Body

Body settings aligned with pipe design. All trims sets (plug, seat ring, retainer) are interchangeable with the other body configurations (angle-style, off-set, etc). Many components are interchangeable at their respective pressure classes.



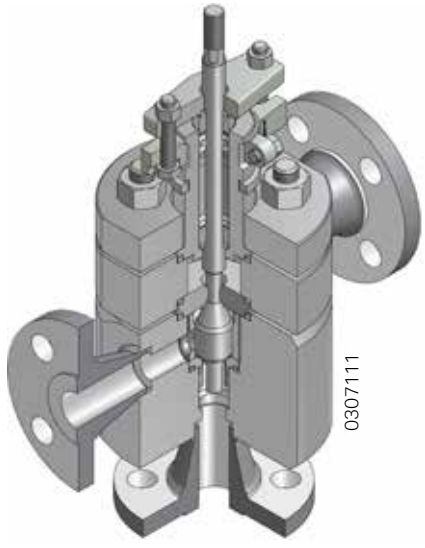
Off-Set Globe Body

When input/output connections with different alignment is required, this setting provides significant costs reduction. All trim sets are interchangeable with the GLS and GLH models.



Angle-style Globe Body

With this setting, only the body is not interchangeable with the inline globe valve. All the other components are identical. The output connection can be bigger than the input on high-pressure drops through the valve. It can be manufactured with Venturi seat rings as an element of body protection.



Three-ways Globe Body

This body setting permits its application for fluids controls in either diverging (one input and two outputs) or converging (two inputs and one output) operations. Excepting for the plug, upper seat ring, three-ways adaptor and upper seat ring gaskets, all other components are interchangeable.

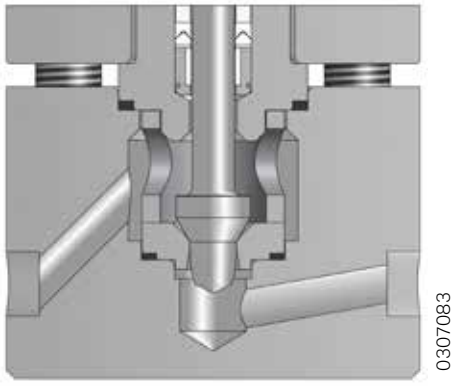
Body Subassembly
Gaskets, Clamps

Gaskets

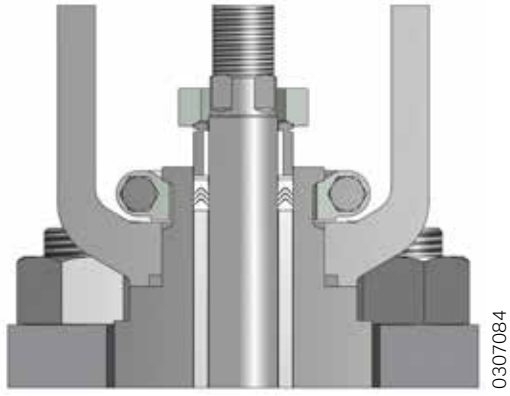
The Series was designed with the bonnet and the seat ring gaskets fully retained. The valve bonnet has a step that acts as mechanic stop and limits gasket compression. In this way, the bonnet gasket remains completely sealed and its compression is determined by the gasket step on the bonnet. The body, seat retainer and seat ring are all machined with close tolerances to provide proper gasket compression.
Unlike the bonnet, the seat ring does not directly touch the body (metal-to-metal), allowing this small clearance to compensate for manufacturing tolerances and thermal expansion.

Clamps

The Series actuator is usually attached to the valve with two investment casting stainless steel yoke clamps. Each clamp has an inclined plain surface which, when bolted together, securely fastens the actuator yoke to the bonnet. Unlike conventional threaded clamps, the clamp design of the valve permits easy removal, even under extremely corrosive conditions.



Body Gaskets



Yoke Clamps

Gasket Specifications

	Body Material	Gasket Type	Gasket Material	Max. Operational Temperature		Min. Operational Temperature	
				°F	°C	°F	°C
Standard Gaskets	Carbon Steel	Spiral-wound	304 SS/AFG [3]	750	400	-20	-29
	Chrome-Moly Steel	Spiral-wound	316L SS/AFG [3]	1000	538	-320	-196
	316 Stainless Steel (UNS S 31600)	Flat	PTFE	350	177	-200	-130
		Spiral-wound	316L SS/AFG [3]	1000	538	-320	-196
	Other Metal Alloys	Flat	PTFE	350	177	-200	-130
Alternate Gaskets	As requested	Flat	KEL-F [2]	350	177	-320	-196
		Flat	PTFEG	450	232	-200	-130
		Flat	AFG [3]	600	315	-20	-29
		Spiral-wound	316L SS/Grafoil [1]	1500	815	-320	-196
		Hollow O-Ring	Inconel X-750	1500	815	-20	-29

[1] Limited to 800°F (426°C) for oxidizing service.
[2] Lower temperatures available upon request.
[3] Asbestos-free.

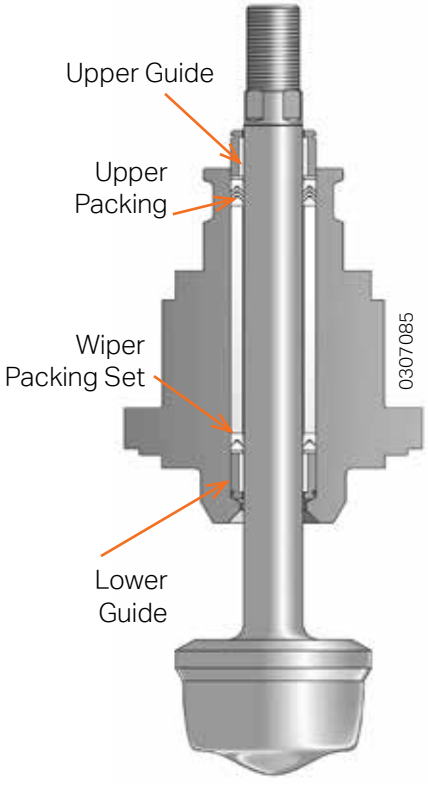
Body Subassembly
Packing and Guides

Packing Box

The valve packing box is deep and presents perfect superficial finishing, allowing the assembly of all standard packing options, with the following additional advantages:

1. The spacing between the wiper set and the main upper packing set, responsible for the sealing, prevents contact between the wet parts of the plug stem and upper packing set.
2. Two widely spaced guides, placed out of the flow stream, combined to the strong plug stem, form the advanced guiding system of the Series. The upper packing also acts as gland packing, and the lower guide is situated close to the plug head, ensuring accura-te alignment of plug and seat ring.

Guides and Packing Box Typical Arrangement



Packing Set Temperature Limitation

Bonnet Type	Packing Material	Temperature Limits[2]	
		°F	°C
Standard [1]	PTFE "V" Ring	-20 to 400	-29 to 204
	PT and PTG	-20 to 450	-29 to 232
	Braided PTFE	-20 to 500	-29 to 260
	PTFE w/ fiber glass (PTFEG)	-20 to 500	-29 to 260
	PTG XT	-20 to 550	-29 to 288
	Graphite/AFP [3]	-20 to 800	-29 to 427
	Graphite/AFP [3] with Inconel wire	-20 to 800	-29 to 427
	Graphite [3]	-20 to 1000	-29 to 537
Extended [1]	PTFE "V" Ring	-200 to 600	-129 to 316
	PT and PTG	-150 to 650	-101 to 343
	Braided PTFE	-200 to 700	-129 to 371
	PTG-XT	-100 to 750	-73 to 399
	Graphite/AFP [3]	-20 to 1200	-29 to 650
	Graphite/AFP [3] with Inconel wire	-20 to 1200	-29 to 650
	Graphite [3]	-20 to 1500	-29 to 816
Cryogenic [1]	PTFE, with 15 or 18 in. extension	-320	-196
	PTFE, with 24 or 27 in. extension	-425	-253

[1] The ANSI B16.34 standard specifies acceptable pressure and temperature limits for pressure retaining materials. Contact for additional information on presure/temperature limits of the packing materials.

[2] Acceptable limits once the pressure/temperature limits of the valve body, bonnet and components are respected. [3] Do not use graphite above 800ºF (427ºC) in oxidizing service such as air or oxygen. The use of graphite packing may require oversize actuators or heavier springs due to added friction.

Temperature and Pressure Guides Limitation

Guide Materials	Temperature Limits		Pressure Limits
	ºF	ºC	
Stainless Steel Graphite Lined [3]	-320 to 1500 [3]	-196 to 816 [3]	Up to 1000 psi (69 bar) up to 2 in.
			Up to 600 psi (41.4 bar) to 3 and 4 in.
Stainless Steel PTFEG Lined	-423 to 350	-253 to 177	850 psi @ 100ºF (58.6 Bar @ 38ºC); 100 psi @ 300ºF (6.9 Bar @ 150ºC)
Bronze (Solid Guide) [4]	-423 to 500 [5]	- 253 to 260[5]	Same as Body
Alloy #6 (Solid Guide)[6]	-423 to 1500	- 253 to 816	Same as Body

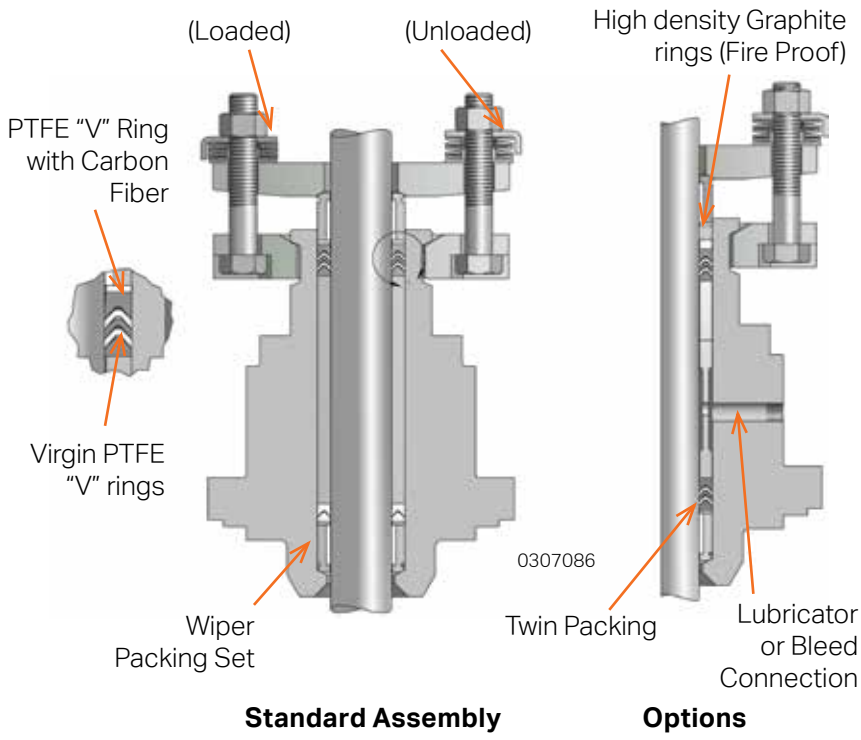
[3] For oxidizing service such as air or oxygen, the maximum operation temperature is 800ºF (426ºC) [4] Solid bronze guides should not be used in corrosive applications or where the NACE certification is required. [5] For the upper guide, the temperature limit is 900ºF (482ºC). [6] Valves assembled with stainless steel trims of 300 series and lower guide in Alloy #6, the plug stem must be hardened with Alloy #6 application at the area in contact with the guide.

Body Subassembly
Fugitive Emissions Control

PT Packing Set

The PT packing set meets EPA* regulations in reference to fugitive emissions. Composed of virgin PTFE "V" rings combined with carbon fiber PTFE "V" rings, the PT packing set is compressed by a set of spring washers that causes a "live-loaded effect" and it is available for most of control valves, ensuring emissions levels lower than 500 ppm.

With a simple and easy to replace setting, the PT packing reduces the need for packing retighten caused by temperature and pressure variations. A fireproof version of the PT packing set is available as option, which ensures stem tightness even facing the damages that the excess heat can cause to the "V" rings.



PT Packing Set

PTG and PTG-XT Packing Set

When the service temperature exceeds the required limits for PT packing or when it is expected greater reliability, the PTG packing is the ideal choice.

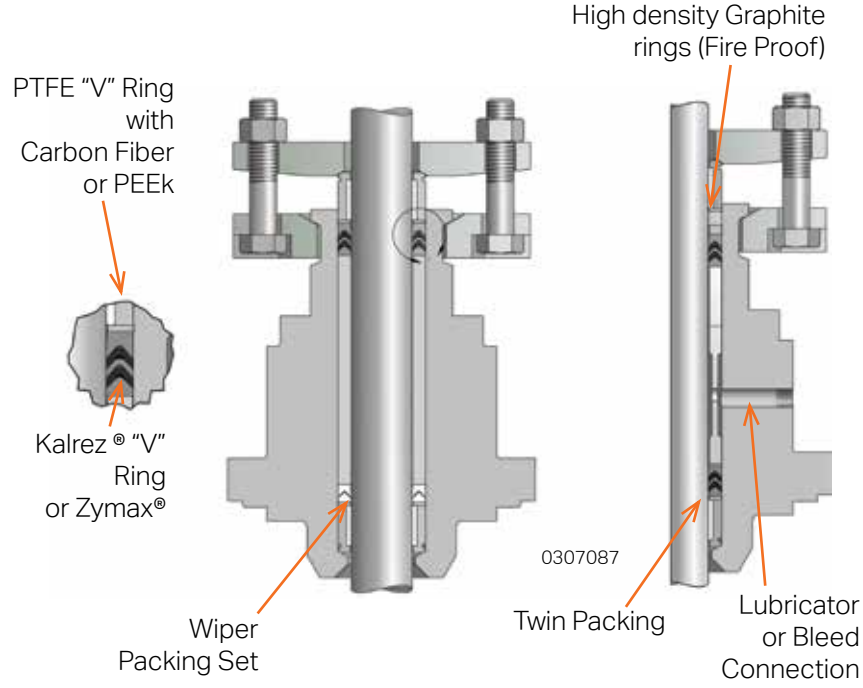
In response to EPA´s regulations, the PTG packing ensures emissions even lower than 500 ppm (usually 10 ppm), making it a highly reliable and economic option to the use of metal sealed bellows.

The PTG packing set can be assembled in all valves, providing longer service life with reduced need for packing retighten.

Optionally, the PTG packing can be supplied in a fireproof version, according to the API 607 standards.

For higher service temperatures, the PTG XT version is indicated, the application limits are recorded in table on page 6.

* EPA = Environmental Protection Agency



PTG & PTG-XT Packing

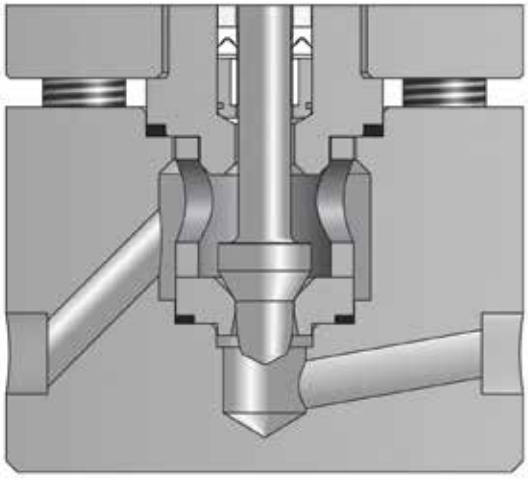
Body Subassembly
Seat Rings, Trim

Trim

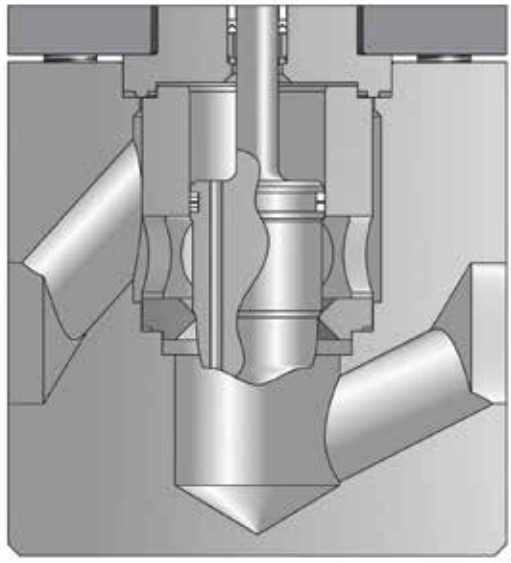
The trims are designed to avoid the difficulties associated with screwed-in seats or guided plugs in seat retainers. The seat ring is not screwed-in but clamped into the body by the bonnet and seat retainer, thus its removal is easy, even when the valve is under extremely corrosive conditions.
In the Series, the flow characteristic is determined by the plug contour, rather than by the openings in the retainer.

For services with high-pressure drops, pressure-balanced trims are used to reduce the thrust necessary to stroke the plug by reducing the trim off-balance area.
As an option, the Series can be supplied with special trims for noise reductions and for cavitation regime services.

Unbalanced Trim



Pressure Balanced Trim



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Pressure Balanced Plugs Seal Rings Materials Specification

Plugs Seal Rings Materials (1)	Temperature Limits (2)		Sealing	
	°F	°C	Metal Seat	Soft Seat
PTFE Rings	0 to 350	-18 to 176	Up to 10% of Class IV	Up to 1% of Class IV
Reinforced PTFE Rings	0 to 400	-18 to 204	Up to 10% of Class IV	Up to 1% of Class IV
Buna N, O-Ring	-40 to 200	-40 to 93	Class IV or V	Class VI
Viton A, O-Ring	-40 to 437	-40 to 225	Class IV or V	Class VI
VMG from 2 to 4 inches	300 to 1600	149 to 871	Class III	N/A
	300 to 1600	149 to 871	Class IV	N/A

(1) When using VMG seal rings, the balanced retainer should be manufactured in hardened material. (2) Temperatures above are for guidance only. Contact to confirm the higher admitted temperature in relation to the service pressure.

Metal Seat Rings

The standard valve setting, with unbalanced trims and metal seat ring, handles Class IV shutoff (ANSI B16.104/FCI 70.2), which calls for maximum permissible seat leakage of 0.01% of rated valve capacity.

Soft Seat Rings

Soft seats are used in applications that require extra tightness, according to ANSI Class VI (B16.104/FCI 70.2). Series soft seat set consists of a polymer placed between two metal pieces, and it is interchangeable with the metal seat.

Body Subassembly

Seat Rings, Trim

Trim

Unbalanced Trim and Standard Actuator Data

Valve Nominal Diameter (in.)	ANSI Class	Stem Diameter	Stem Area	Stroke	Standard Actuator
		in.	in.²	in.	
0.50	150-2500	.57	.255	.75	25
0.75	150-2500	.57	.255	.75	25
1.0	150-2500	.57	.255	.75	25
1.5	150-2500	.89	.622	1.00	50
2.0	150-2500	.89	.622	1.00	50
3.0	150-600	1.14	1.02	2.00	50
	900-1500	1.52	1.814	2.00	100
	2500	1.14	1.02	1.50	100
4.0	150-600	1.14	1.02	2.50	50
	900-1500	1.52	1.814	2.50	100
	2500	1.52	1.814	2.00	100

Balanced Trim and Standard Actuator

Valve Nominal Diameter (in.)	ANSI Class	Stem Diameter	Stem Area	Stroke	Standard Actuator
		in.	in.²	in.	
2.0	150-600	.57	.255	1.00	25
	900-1500	.57	.255	1.00	50
	2500	.57	.255	1.00	50
3.0	150-600	.89	.622	1.50	50
	900-1500	.89	.622	2.00	100
	2500	.89	.622	1.50	100
4.0	150-600	.89	.622	2.00	50
	900-1500	1.14	1.02	2.00	100
	2500	1.14	1.02	2.00	100

Seat Rings

Soft Seat Assembly

Seat Surface Hardening

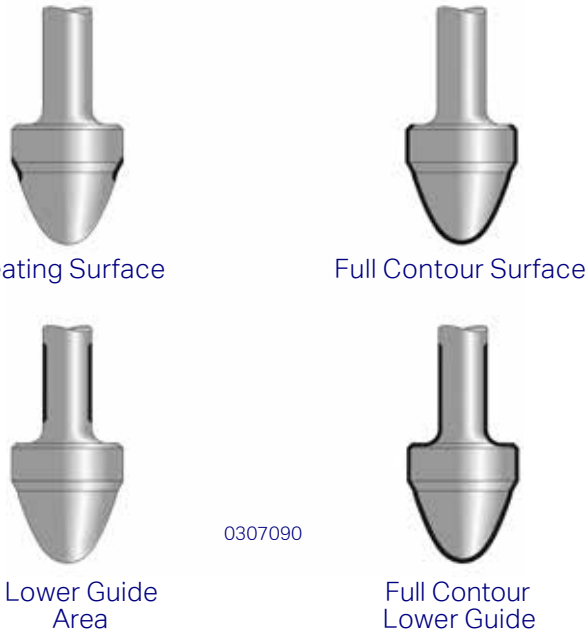
Full Surface Hardening

GLB Series - Seat Rings Options

Body Subassembly
Trim Materials

Standard material for plug, seat ring and seat retainer is 316 stainless steel, except for special alloy valves where trims are manufactured with the same material as the body. A wide variety of fluid is suitable to 316 stainless steel trims. Still, the general rule is that hardened trims should be employed for all conditions of critical flow or for temperatures above 600ºF (316ºC). For this cases keeps a large stock of Alloy #6 trims, a material that offers a good combination of hardness and corrosion resistance.
Special alloys, such as Alloy #20, Monel, Hastelloy C, Hastelloy B, titanium and others are also available under request.

Plug Hard-facing Options



Differential Pressure Values that Require the Use of Hardened Trim

Valve Nominal Diameter (in.)	Water				Saturated Steam				Superheated Steam				General Process Fluids				Clean Gases			
	Control		On-Off		Control		On-Off		Control		On-Off		Control		On-Off		Control		On-Off	
	psi	Bar	psi	Bar	psi	Bar	psi	Bar	psi	Bar	psi	Bar	psi	Bar	psi	Bar	psi	Bar	psi	Bar
0.5 to 1.5	175	12.1	250	17.2	100	6.9	200	13.8	300	20.7	600	41.4	175	12.1	250	17.2	600	41.4	900	62.1
2 & 3	150	10.3	200	13.8	25	1.7	50	3.4	200	13.8	300	20.7	150	10.3	200	13.8	350	24.1	600	41.4
4	100	6.9	125	8.6	All		25	1.7	100	6.9	150	10.3	75	5.2	125	8.6	200	13.8	300	20.7

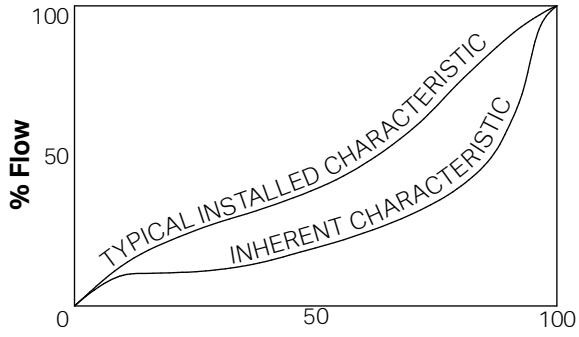
Trim Materials Characteristics

Trim Materials	Hard-ness (R_c)	Temperature Limitation		Impact Resistance	Corrosion Resistance	Erosion Resistance	Abrasion Resistance
		ºF	ºC				
316 Stainless Steel	8	600	316	Excellent	Excellent	Reasonable	Reasonable
Alloy #6	44	1500	815	Excellent	Excellent	Good	Good
416 Stainless Steel	40	800	426	Good	Reasonable	Good	Good
17-4 PH (H900)	44	800	426	Good	Good to Excellent	Good	Good
440C Stainless Steel	55-60	800	426	Reasonable	Reasonable	Excellent	Excellent
Monel K-500	32	600	316	Good	Good to Excellent	Reasonable to Good	Good
Tungsten	72	1200	650	Reasonable	Good with Bases, Poor with Acids	Excellent	Excellent
Colmonoy #5	45-50	1200	650	Good	Reasonable	Good	Good

Body Subassembly
Flow Characteristics

Equal Percentage

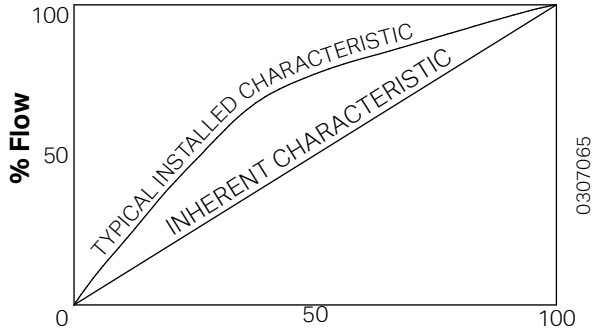
Equal Percentage is the characteristic most commonly used in process control. The change in flow per unit of valve stroke is directly proportional to the flow occurring just before the change is made. When installed, a valve with Equal Percentage characteristic will produce in most control loops a characteristic that approaches Linear when the overall system pressure drop is large in relation to that of the valve.



% Valve Stroke (Equal Percentage)

Linear

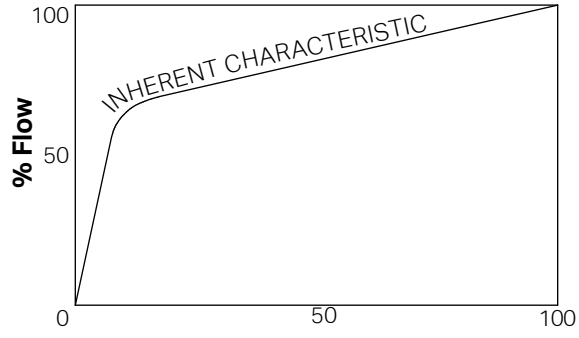
The Linear characteristic produces equal changes in flow per unit of valve stroke, despite of the plug position. Linear plugs are used on those systems where the valve pressure drop is a major portion of the total system pressure drop.



% Valve Stroke (Linear)

Quick-open

Quick-open plugs are used for on-off services and are designed to produce maximum flow increase, as earlier as the small opening percentage.

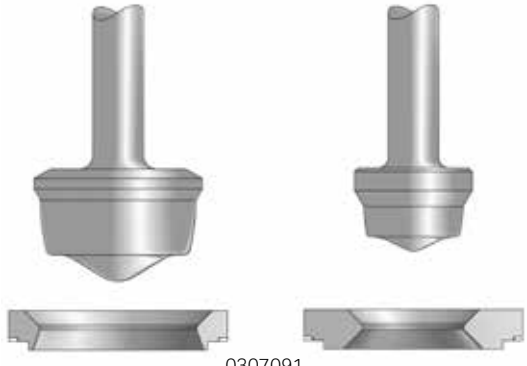


% Valve Stroke (Quick-Open)

Trims size

Two trim options are normally available: the standard, with full passage area, and another with reduced passage, available in a variety of sizes, and requested when C_V values are relatively lower for a specific body size that will be used.

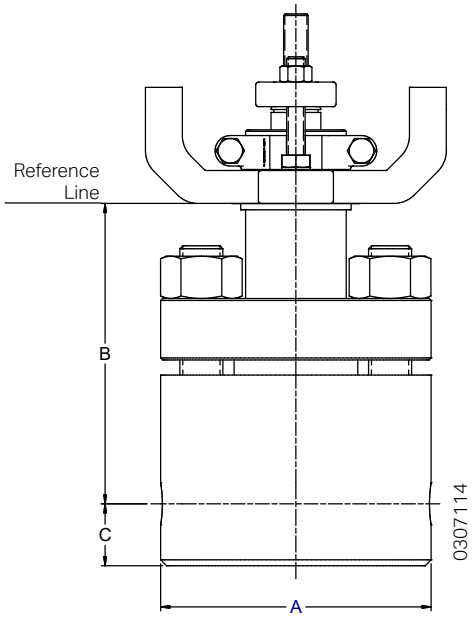
As the trims are completely interchangeable for a determined body diameter and pressure class, trim size and nominal C_V alteration is a simple operation.



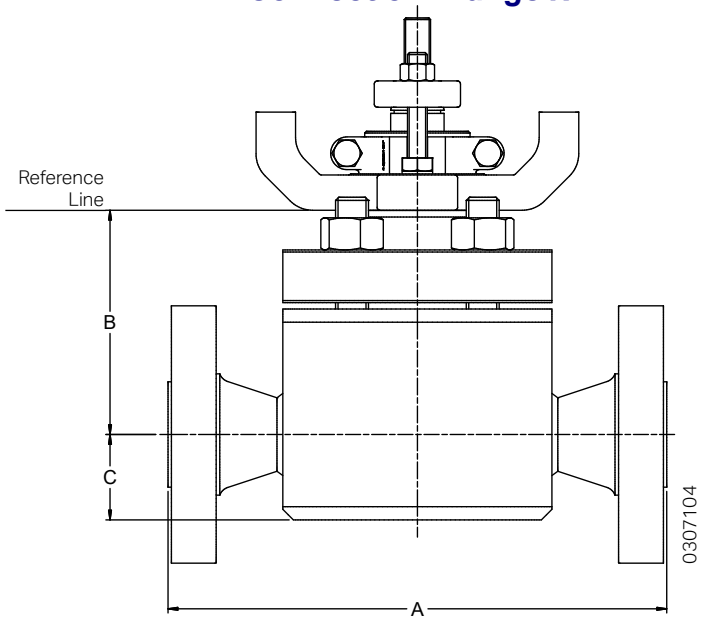
Trims Size

Body Subassembly Dimensions

Setting: In-line Body Connection: Socketweld



Setting: In-line Body Connection: Flange RF



Setting: In-line Body Connection: Socketweld

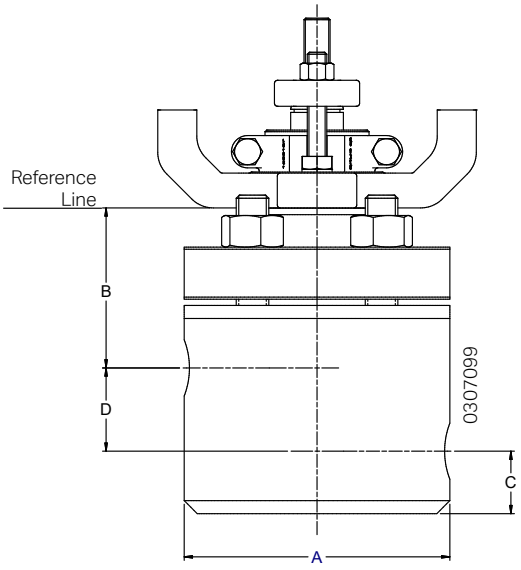
ANSI Class	Valve Nominal Diameter (in.)														
	1/2			3/4			1.0			1.5			2.0		
	Dimensions (in.)														
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
150	5.51	4.06	1.18	5.51	4.25	1.46	5.51	4.25	1.46	7.99	5.39	2.52	7.99	5.51	3.15
300	5.51	4.06	1.18	5.51	4.25	1.46	5.51	4.25	1.46	7.99	5.39	2.52	7.99	5.51	3.15
600	5.51	4.06	1.18	5.51	4.25	1.46	5.51	4.25	1.46	7.99	5.39	2.52	7.99	5.51	3.15
900 & 1500	5.51	6.10	1.26	5.51	6.10	1.46	5.51	6.06	1.57	7.99	5.39	2.52	7.99	5.51	3.15
2500	6.50	7.24	1.38	6.50	7.13	1.46	6.50	7.44	1.46	7.99	8.94	2.52	7.99	8.66	3.74

Setting: In-line Body Connection: Flange RF

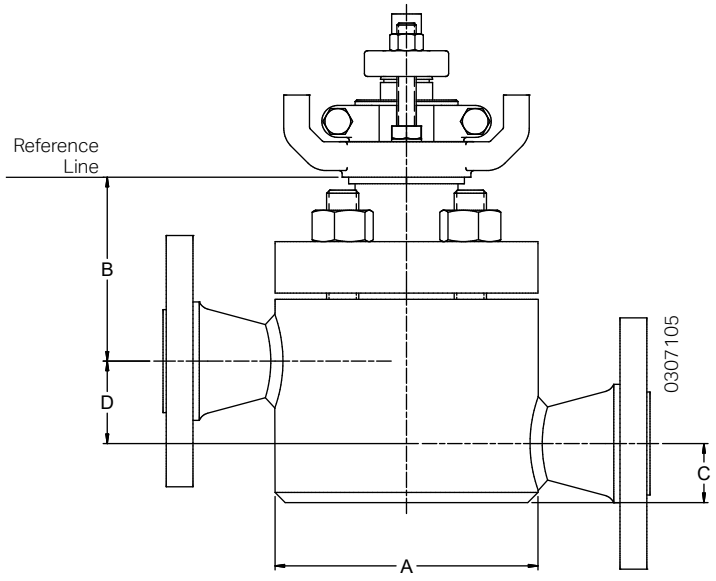
ANSI Class	Valve Nominal Diameter (in.)														
	1/2			3/4			1.0			1.5			2.0		
	Dimensions (in.)														
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
150	8.50	4.06	1.18	8.62	4.25	1.46	8.74	4.25	1.46	11.61	5.39	2.52	11.38	5.51	3.15
300	8.86	4.06	1.18	9.02	4.25	1.46	9.25	4.25	1.46	12.13	5.39	2.52	11.89	5.51	3.15
600	9.37	4.06	1.18	9.49	4.25	1.46	9.76	4.25	1.46	12.76	5.39	2.52	12.60	5.51	3.15
900 & 1500	10.00	6.10	1.26	10.39	6.10	1.38	10.63	6.06	1.57	12.76	5.39	2.52	12.60	5.51	3.15
2500	12.00	7.24	1.38	12.13	7.13	1.38	12.87	7.44	1.46	15.98	8.94	2.52	16.89	9.65	3.74

Body Subassembly Dimensions

Setting: Off-Set Body Connection: Socketweld



Setting: Off-Set Body Connection: Flange RF



Setting: Off-Set Body Connection: Socketweld

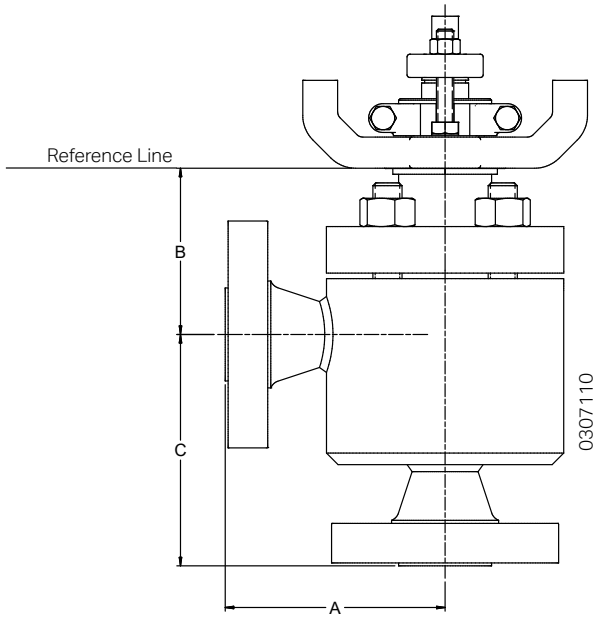
ANSI Class	Valve Nominal Diameter (in.)																			
	1/2				3/4				1				1.5				2			
	Dimensions (in.)																			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
150	4.37	2.95	1.18	1.69	4.37	2.95	1.18	1.69	4.37	2.95	1.18	1.69	5.63	3.50	1.61	2.87	5.63	3.50	2.00	2.87
300	4.37	2.95	1.18	1.69	4.37	2.95	1.18	1.69	4.37	2.95	1.18	1.69	5.63	3.50	1.61	2.87	5.63	3.50	2.00	2.87
600	4.37	2.95	1.18	1.69	4.37	2.95	1.18	1.69	4.37	2.95	1.18	1.69	5.63	3.50	1.61	2.87	5.63	3.50	2.00	2.87
900 & 1500	5.39	4.61	0.82	1.73	5.39	4.61	1.10	1.73	5.39	4.61	1.10	1.73	7.24	5.87	1.50	2.64	7.24	6.10	1.73	2.87
2500	6.38	5.51	1.00	2.00	6.38	5.51	1.00	2.00	6.38	5.51	1.00	2.00	7.76	6.93	1.57	2.80	7.76	7.20	1.93	2.76

Setting: Off-Set Body Connection: Flange RF

ANSI CLass	Valve Nominal Diameter (in.)																			
	1/2				3/4				1				1.5				2			
	Dimensions (in.)																			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
150	7.48	2.95	1.18	1.69	7.48	2.95	1.18	1.69	7.76	2.95	1.18	1.69	9.60	3.50	1.61	2.87	9.25	3.50	2.00	2.87
300	7.87	2.95	1.18	1.69	7.87	2.95	1.18	1.69	8.27	2.95	1.18	1.69	10.12	3.50	1.61	2.87	9.76	3.50	2.00	2.87
600	8.39	2.95	1.18	1.69	8.39	2.95	1.18	1.69	8.74	2.95	1.18	1.69	10.75	3.50	1.61	2.87	10.51	3.50	2.00	2.87
900 & 1500	10.00	4.61	0.82	1.73	10.00	4.61	0.82	1.73	10.63	4.61	1.18	2.00	13.27	5.87	1.61	2.87	14.37	6.10	1.77	2.87
2500	12.00	5.31	1.00	2.00	12.00	5.31	1.00	2.00	12.87	5.31	1.18	2.13	15.98	6.89	1.61	2.87	16.89	7.20	2.00	2.87

Body Subassembly Dimensions

Setting: Angle-style Body Connection: Flange RF

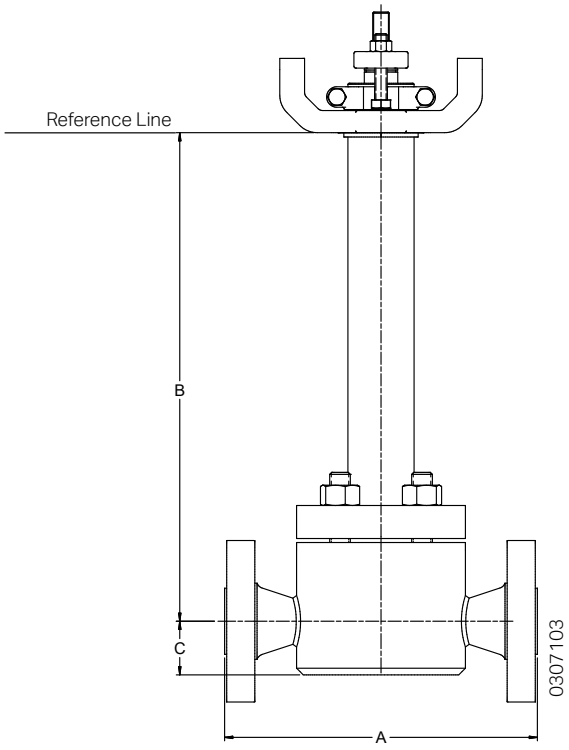


Setting: Angle-style Body Connection: Flange RF

ANSI Class	Valve Nominal Diameter (in.)														
	1/2			3/4			1			1.5			2		
	Dimensions (in.)														
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
150	3.74	2.95	3.93	3.74	2.95	3.93	3.90	2.95	4.05	4.80	3.50	5.55	4.80	3.50	5.71
300	3.94	2.95	4.13	3.94	2.95	4.13	4.13	2.95	4.29	5.08	3.50	5.83	5.08	3.50	5.95
600	4.17	2.95	4.37	4.17	2.95	4.37	4.37	2.95	4.57	5.35	3.50	6.10	5.35	3.50	6.30
900 & 1500	5.20	4.61	4.61	5.20	4.61	5.12	5.31	4.61	5.24	6.61	5.87	6.26	7.20	6.10	7.20
2500	6.06	5.51	5.24	6.06	5.51	5.39	6.46	5.51	5.75	7.99	6.93	7.36	8.43	7.17	8.27

Body Subassembly Dimensions

Setting: In-line Body
Use: Cryogenics



Valve Size (in.)	ANSI Class	Dimension B (mm)					
		Extension Nominal Size (in.)					
		8	12	16	22	28	34
1/2	150-600	11.93	13.90	19.80	25.71	31.61	37.52
	900-1500	13.98	15.94	21.85	27.76	33.66	39.57
	2500	15.12	17.09	23.00	28.90	34.80	40.71
3/4	150-600	12.13	14.09	20.00	25.90	31.81	37.72
	900-1500	13.98	15.95	21.85	27.76	33.66	39.57
	2500	15.00	16.97	23.00	28.90	34.68	40.59
1	150-600	12.13	14.09	20.00	25.90	31.81	37.72
	900-1500	13.98	15.95	21.85	27.76	33.66	39.56
	2500	15.31	17.28	23.19	29.10	35.00	40.90
1.5	150-600	13.27	15.24	21.14	27.04	32.95	38.85
	900-1500	13.27	15.24	21.14	27.04	32.95	38.85
	2500	16.81	18.78	24.68	30.59	36.50	42.40
2	150-600	13.39	15.35	21.26	27.16	30.07	38.98
	900-1500	13.39	15.35	21.26	27.16	30.07	38.98
	2500	17.52	19.49	25.39	31.30	37.20	43.10

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ISO 9001-2015

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