



Need to replace or upgrade your reciprocating valves?

*Don't stay with the same-old, same-old...
There's a Better Choice!*

Best performing

When a major oil company recently completed a global study of control valves one valve stood out – Masoneilan's Camflex. Why? It was the best performing and easiest to maintain Control Valve on the market. So adamant were they in their study that they made the **Camflex the de facto standard for replacement of any valve** in any of their plants globally.

"best performing and easiest to maintain Control Valve on the market."

Drop in face-to-face

This is why BHGE Masoneilan is introducing the Camflex GR valve in the common Globe-Reciprocating valve configuration. With this new configuration, **most reciprocating valves can be replaced with a drop in, face-to-face Camflex GR valve that requires no piping changes or spool pieces**. Customers can now enjoy the many advantages of the Camflex GR and its eccentric plug design to meet all their needs. And **this new configuration will be available in Masoneilan's ever-popular ValvFAST program** so the valve you need can be provided in as short as 24 hours.

Valve Truth

We've made replacement easy, **Camflex GR!**



Simplify...

Go with Camflex GR : One-to-One Replacement!

Why a Camflex GR over a Reciprocating?

- Proven Reliability – **over 1.2 million installed globally**
- **Simpler spare part management:** one plug for each size no matter the Cv, plus the same actuator for multiple line sizes and air fail modes providing **lower cost of ownership and fewer spare part needs**
- No sliding stem means **no complex packing, less friction**, and less chance for contaminants to damage the packing
- 3-5 gasketed joints on a reciprocating valve vs. “0” on a Camflex GR = **less chance for environmental issues**
- **Easier to install/remove** as the Camflex GR is one-half the weight of a typical reciprocating valve
- Critical guiding for reciprocating valves is in direct flow stream, which can lead to higher frequency of replacement parts; Camflex GR is not, resulting in **lower maintenance, less downtime = cost savings**
- **Direct Positioner mounting** is simpler and eliminates the complex lineage associated with accuracy errors on a reciprocating valve
- **Double the turndown or Cv ratio** of conventional globe valve provides incredible control.
- Eccentric rotating, self-aligning plug for a **reliable tight shut-off** leads to less leaks and a more reliable valve

Camflex GR - out performs the competition!



Camflex GR effectively combines enhanced control performance, simplicity and long-term reliability for a wide range of applications.

What our customers are saying...

"...from a performance and ease of maintenance point of view, Camflex is still the referenced valve in the market!"

Size	Material	End Flange	Class
1"	CS, SS	ASME RF Flanged	150/300/600
1.5"	CS, SS	ASME RF Flanged	150/300/600
2"	CS, SS	ASME RF Flanged	150/300/600
3"	CS, SS	ASME RF Flanged	150/300/600
4"	CS, SS	ASME RF Flanged	150/300/600
6"	CS, SS	ASME RF Flanged	150/300/600

bhge.com

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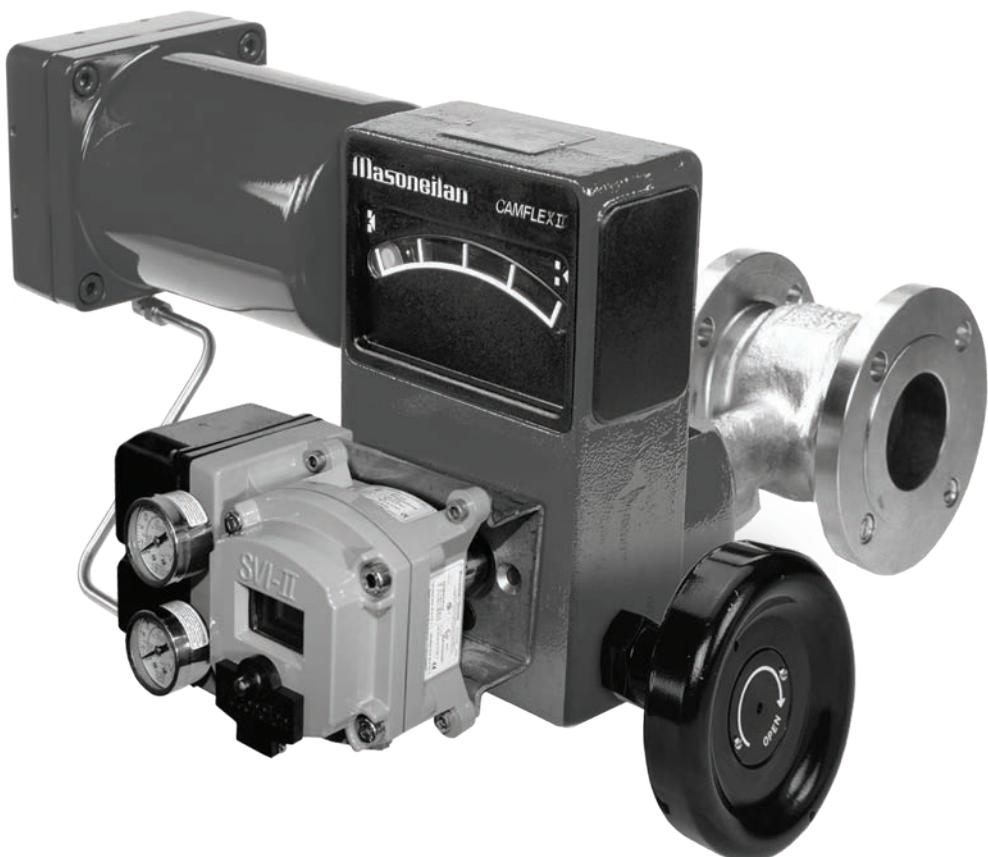
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Masoneilan^{*} 35002 Series Camflex^{*} II Rotary Control Valves

Complete line of eccentric plug control valves
effectively combining enhanced control
performance, simplicity and long-term
reliability for a broad range of applications.



**BAKER
HUGHES**
a GE company



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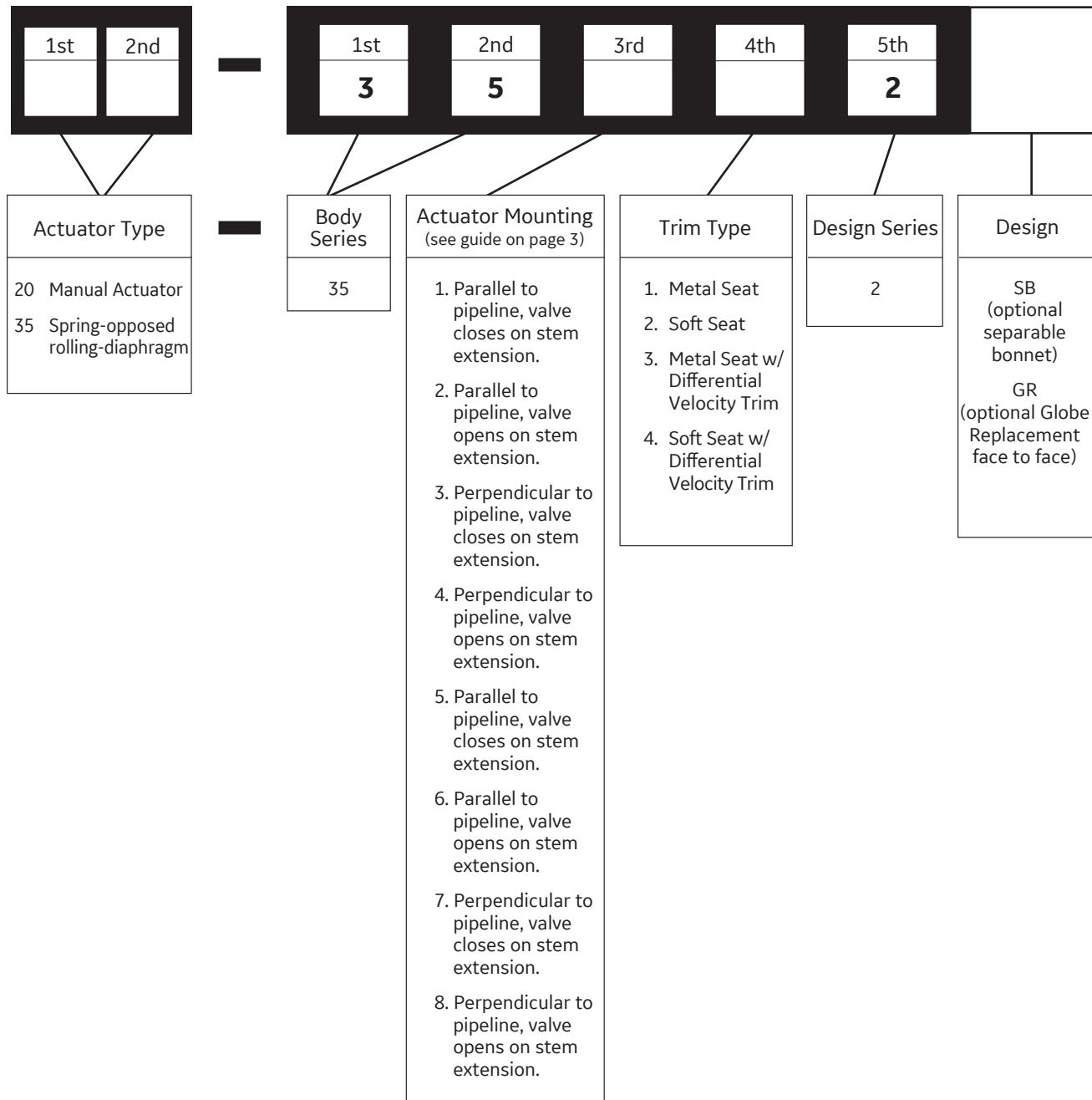
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Features

The Camflex II valve is a heavy-duty, automatic-throttling control valve that incorporates the following features:

- The flangeless body rating is a rugged ANSI Class 600.
- Heavy-duty guide lugs assure quick, positive alignment during installation.
- The flanged version is available in 1 in. through 12 in. (25 mm through 300 mm) sizes in 150 or 300 ANSI, and 1 in. through 8 in. (25 mm through 200 mm) in 600 ANSI.
- The optional Camflex GR (Globe Replacement) version is available in 1 in through 6 in. sizes (25mm through 150mm) in ANSI Class 150, 300, and 600 ratings and allows direct replacement of conventional reciprocating globe valves.
- Separable bonnet design is available.
- Straight through flow pattern provides greater flow capacities.
- Standard integral extension bonnet allows for a wide range of fluid temperature applications (-320°F to 750°F), (-196°C to 400°C).
- The unique self-aligning eccentric rotating plug provides tight shutoff and low dynamic forces.
- A large variety of reduced-trim options are available in all sizes.
- The triple, over-sized bearing system provides exceptional plug shaft guiding.
- The shouldered shaft design provides robust blowout prevention.
- An optional patented differential velocity device (DVD) separates compressible flowstreams into a high velocity core and a low velocity envelope flowstream. This provides up to 18 dBA noise attenuation.
- Optional alloy constructions are available.
- The powerful, low-profile, spring-diaphragm actuator guarantees positive fail-safe action.
- Splined shaft and actuator linkages, combined with low-friction techniques, contribute to reduced deadband and hysteresis.
- The valve position indicator is large and highly visible.
- The actuator linkage (purge option available) is totally enclosed).

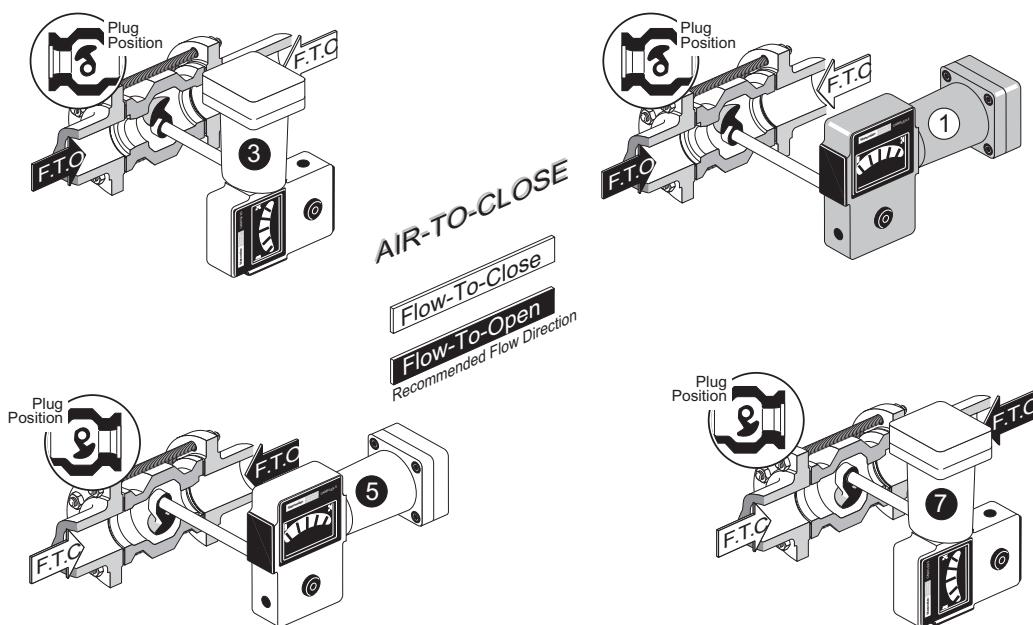
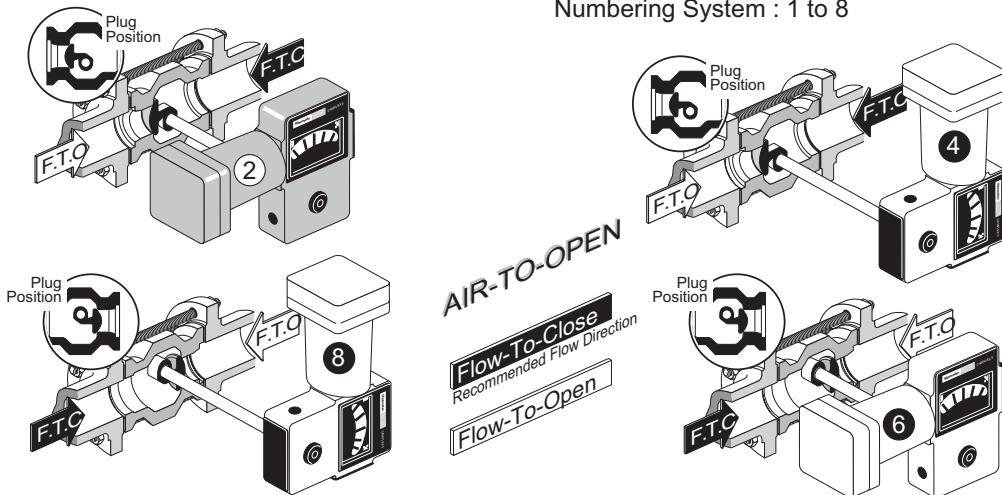
Numbering System



Actuator Mounting Guide

Camflex II Control Valves 3 5 - 3 5 . 0 2
(Mounted On Horizontal Pipeline)

Actuator Position in Relation to Valve Body
Numbering System : 1 to 8



NOTES:

2. Standard actuator mounting positions are shaded:
2. Plug positions are shown in the initial position without air on actuator.
3. The actuator must be always mounted above the pipeline.

Notes:

- It is recommended that the actuator always be mounted as shown above. For other positions, consult your local sales office.
- Installation is assumed to be in the horizontal pipeline for orientation of the airset and other accessories unless specified on the order.
- Action and orientation are field reversible without additional parts.
- Operating efficiencies may vary depending on valve configuration.
- The above schematic does not reflect every possible body/actuator orientation, but should serve as an effective guide.

General Data

• Body

Type:	<ul style="list-style-type: none"> cast with integral bonnet cast with separable bonnet - 1 in.-8 in.
Flow Direction:	flow to open or flow to close (Differential Velocity Device trim flow to open only)
Materials:	<ul style="list-style-type: none"> carbon steel 316 stainless steel (flangeless) 316L stainless steel (flanged) Hastelloy C (1 in.-4 in.) (DN 25-100)¹
Body Pressure Rating:	ANSI Class 600 (per B16.34) standard (1 in.-12 in.) (DN 25-300), except for flanged construction: valve rating is limited by flange rating
End Connections:	<ul style="list-style-type: none"> threaded - NPT for ANSI Class 600 rated connections (1 in.) (DN 25) flangeless - clamps between ANSI Class 150, 300 or 600 rated flanges (flange rating must be specified for 8 in.-12 in. (DN 200-300) valve for locator lug drilling and tapping) flanged - bolts to ANSI Class 150 or 300 rated flanges (1 in.-12 in.) (DN 25-300) ANSI Class 600 rated flanges (1 in.-8 in.) (DN 25-200) GR flanged - bolts to ANSI Class 150, 300 or 600 rated flanges (1 in. - 6 in.) (DN 25-150)

• Trim

Plug Type:	self-aligning eccentrically rotating
Materials:	<ul style="list-style-type: none"> 1 in.-2 in. (DN 25-100): solid Stellite No. 6 3 in.-4 in. (DN 80 & 100): solid Stellite No. 6 optional 3 in.-12 in. (DN 80-300): 316L stainless steel with hardfaced seating surface 1 in.-4 in. (DN 25-100): Hastelloy C¹
Seat Ring:	solid clamped
Materials:	<ul style="list-style-type: none"> 1 in.-12 in. (DN 25-300): 316 stainless steel 1 in.-4 in. (DN 25-100): Hastelloy C¹ 1 in.-12 in. (DN 150-300): 316 stainless steel with hardfaced seat 1 in.-4 in. (DN 25-100): solid Stellite No. 6 optional 1 in.-12 in. (DN 25-300): 316 stainless steel with PTFE insert (to 450°F, (232°C)²)
Retainer:	316 Stainless Steel
Capacity:	full area and reduced capacity in all sizes
Flow Characteristic:	<ul style="list-style-type: none"> standard trim: linear low flow trim (.036 + .07 factor): linear (requires SVI) differential velocity device: linear
C _v Ratio:	<ul style="list-style-type: none"> standard trim >100:1 low flow trim 15:1 differential velocity device >50:1

• Actuators

Spring-Opposed Rolling Diaphragm

Size:	<ul style="list-style-type: none"> 4½ in. diameter with 3½ in. (89mm) stroke (1 in.-2 in. valves), (DN 25-50) 6 in. diameter with 5¾ in. (146mm) stroke (3 in.-4 in. valves), (DN 80-100) 7 in. diameter with 7¼ in. (184mm) stroke (6 in.-12 in. valves), (DN 150-300) 9 in. diameter with 7¼ in. (184mm) stroke (6 in.-12 in. valves), (DN 150-300)
Range:	<ul style="list-style-type: none"> 7-15 psi (1 in.-4 in.), (DN 25-100) 7-24 psi (6 in.-12 in.), (DN 150-300)(7 in. diameter actuator) 7-24 psi (6 in.-12 in.), (DN 150-300) (9 in. diameter actuator, Air to Close) 8-25 psi (6 in.-12 in.), (DN 150-300) (9 in. diameter actuator, Air to Open)
Air Connection:	1/4 in. NPT
Yoke:	cast iron
Bearing:	sealed radial
Auxiliary Handwheel:	<ul style="list-style-type: none"> solid disk with locking nut: 6½ in. diameter (1 in.-4 in. valves), (DN 25-100) 10 in. diameter (6 in.-12 in. valves), (DN 150-300)

Manual Actuator

Type:	Solid disk with detent anti-rotation device. Continuously connected.
Sizes:	<ul style="list-style-type: none"> 7 in. (178mm) diameter (1 in.-2 in. valves), (DN 25-50) 8½ in. (225mm) diameter (3 in. & 4 in. valves), (DN 80-100) 16½ in. (410mm) diameter (6 in.-12 in. valves), (DN 150-300)
Material:	aluminum
Yoke:	cast iron
Bearing:	sealed radial ball

¹ See materials of construction

² Not available in .2 factor or Low Flow Trim sizes

General Data

Standard Spring Diaphragm Actuator Materials

Description		Material
Yoke		Cast Iron
Yoke Covers		Polycarbonate
Spring Barrel		Die Cast Aluminum
Diaphragm Case		Die Cast Aluminum
Piston		Die Cast Aluminum
Diaphragm		Buna-N with Dacron Insert
Piston Rod		303 St. St.
Clevis		Carbon Steel Zinc Dichromate Plated
Clevis Pin		17-4 PH (H1075) St. St.
Lever		Steel With Epoxy Surface
Lever Bearing		PTFE Filament Surface Bonded to Glass Reinforced Plastic Backing
Handwheel and Locknut		Aluminum

Standard Actuator Characteristics and Travel Times

[Measured with direct positioner at 30 psi (2 bar) supply, 4700P positioner with tubing size $\frac{1}{4}$ in.]

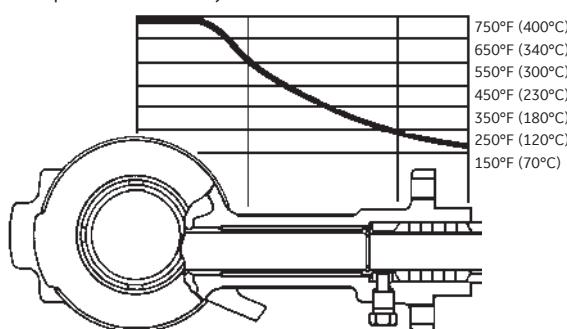
Actuator Diameter	Diaphragm Effective Area	Actuator Stroke	Travel Time (sec.)	
			Increasing Instrument Signal	Decreasing Instrument Signal
in.	cm	sq. in. cm ²	in. cm	
4½	11.4	14 90	3½ 8.9	1.2 2.4
6	15.2	24 155	5¾ 14.6	3 6.3
7	17.8	36 232	7¼ 18.4	7.6 9.8
9	22.9	75 483	7½ 18.4	17 24

Temperature/Seat Leakage

Valve Size		Seat Type	Temp. Range ¹		Max. Seat Leakage, ANSI FCI/70.2 Class
in.	DN		Min.	Max.	
1-12	25-300	Metal	-320°F ¹ (-196°C)	+750°F (400°C)	IV
		Soft Seat ²	-320°F ¹ (-196°C)	+450°F (232°C)	VI

¹ For Stainless Steel Bodies only.

² Temperature limited by Teflon® Seal.



Temperature Gradient Across Standard Integral Bonnet

The ability of the Camflex valve to handle a wide range of process fluid temperatures is due to the long, integrally-cast bonnet. This affords ample radiation surface to normalize the packing temperatures.

Maximum Rated Flow Coefficients (C_v) and Critical Flow Factors (F_L) at Maximum Opening (50°)

Valve Size		Factor	Flow to Open		Flow to Close	
inches	DN		Rated C_v	F_L	Rated C_v	F_L
1	25	0.036	.5	0.98	.5	0.86
		0.07	1	0.98	1	0.86
		0.2	2.8	0.88	3	0.7
		0.4	5.6	0.88	6	0.7
		0.6	8.4	0.88	9	0.7
		1	14	0.85	15	0.68
		DVD	5			
1.5	40	0.4	13.2	0.88	15.6	0.7
		0.6	19.8	0.88	23.4	0.7
		1	33	0.85	39	0.68
		DVD	12.5			
2	50	0.4	20	0.88	21.2	0.7
		0.6	30	0.88	31.8	0.7
		1	50	0.85	53	0.68
		DVD	18			
3	80	0.4	54	0.88	58	0.7
		0.6	81	0.88	87	0.7
		1	135	0.85	145	0.68
		DVD	48			
4	100	0.4	92	0.88	92	0.7
		0.6	138	0.88	138	0.7
		1	230	0.85	230	0.68
		DVD	78			
6	150	0.4	200	0.88	200	.07
		0.6	300	0.88	300	0.7
		1	500	0.85	500	0.68
		DVD	181			
8	200	0.4	340	0.88	340	0.7
		0.6	510	0.88	510	0.7
		1	850	0.85	850	0.68
		DVD	308			
10	250	0.4	520	0.88	520	0.7
		0.6	780	0.88	780	0.7
		1	1300	0.85	1300	0.68
		DVD	486			
12	300	0.4	700	0.88	700	0.7
		0.6	1050	0.88	1050	0.7
		1	1750	0.85	1750	0.68
		DVD	684			

Note: Low flow trims (.036+.07 factor) require use of SVI II AP or SVI FF digital positioners.

Ratings and Connections

Valve Size		ANSI Class		
in.	DN	150	300	600
1-2	25-50	▲ ○ ● □	▲ ○ ● □	▲ ○ ● □
3-6	80-150	○ ● □	○ ● □	○ ● □
8	80-200	○ ●	○ ●	○ ●
10-12	250-300	○ ●	○ ●	○

Note: For flangeless valve sizes 8 in.-12 in., (200mm-300mm), please specify ANSI Class rating.
Face to Face: ISA S75.04

▲ Threaded ○ Flangeless ● RF Flanged □ GR Flanged

C_v and F_L Versus Travel

Flow Direction: Flow to Open

Flow Characteristics: Linear

ANSI Class: 150 through 600

Sizes: 1 in. through 12 in. (DN 25-300)

Percent of Plug Rotation				10	20	30	40	50	60	70	80	90	100		
F _L Full Area				0.96	0.93	0.91	0.89	0.88	0.87	0.87	0.86	0.86	0.85		
F _L Reduced Area (.6, .4, & .2)				0.96	0.93	0.91	0.89	0.88	0.88	0.88	0.88	0.88	0.88		
Valve Size		Orifice Dia.		Act. Stem Travel		Rated C _v									
in.	DN	in.	mm	in.	mm	Rated C _v									
1	25	.321	8.2	3.50	89	0.4	0.8	1.1	1.4	1.7	2.0	2.3	2.5	2.7	2.8
		.500	12.7	3.50	89	0.5	0.9	1.4	2.0	2.7	3.5	4.2	4.8	5.2	5.6
		.579	14.7	3.50	89	0.6	1.3	2.2	3.1	4.2	5.3	6.4	7.2	7.9	8.4
		.718	18.2	3.50	89	0.9	2.1	3.7	5.7	7.8	9.6	11.1	12.4	13.3	14
1½	40	.750	19.1	3.50	89	1.1	2.1	3.3	4.7	6.5	8.4	9.9	11.2	12.3	13.2
		.907	23.0	3.50	89	1.4	3.2	5.1	7.4	10.0	12.7	15.0	17.1	18.6	19.8
		1.125	28.6	3.50	89	2.0	5.0	8.6	13	19	22	26	29	32	33
2	50	1.000	25.4	3.50	89	1.6	3.2	5.0	7.2	9.8	12.6	15.0	17.0	18.7	20
		1.159	29.4	3.50	89	2.1	4.8	7.7	11.2	15.1	19.1	22.7	25.8	28.2	30
		1.437	36.5	3.50	89	3.1	7.5	13.3	20.5	28	34.2	39.8	44.2	47.5	50
3	80	1.500	38.1	5.75	146	4.9	9.4	14.1	20.0	26.5	33.5	39.8	45.4	50.2	54
		1.874	47.6	5.75	146	5.7	12.1	19.6	27.6	37.5	47.9	58.4	68.0	75.9	81
		2.324	59.0	5.75	146	8.8	17.7	29.8	44.5	60.7	78.3	96.2	113	127	135
4	100	2.000	50.8	5.75	146	8.4	16.1	24.0	34.1	45.1	57.1	67.8	77.4	85.6	92
		2.419	61.4	5.75	146	9.7	20.7	33.4	47.0	63.8	81.6	99.4	116	129	138
		3.000	76.2	5.75	146	15.0	30.2	50.8	75.8	104	133	164	193	216	230
6	150	3.000	76.2	7.25	184	18.2	34.9	52.2	74.1	98.0	124	147	168	186	200
		3.629	92.2	7.25	184	21.2	44.9	72.7	102	139	177	216	252	281	300
		4.500	114	7.25	184	32.7	65.7	110	165	225	290	356	419	470	500
8	200	3.797	96.4	7.25	184	22.0	44.2	71.9	107	150	196	241	283	317	340
		4.840	123	7.25	184	31.3	63.6	114	178	246	313	374	425	468	510
		6.000	152	7.25	184	42.8	111	201	316	434	542	639	725	798	850
10	250	4.746	121	7.25	184	33.7	67.6	110	164	230	300	369	432	485	520
		6.050	154	7.25	184	47.8	97.3	175	273	376	478	572	650	716	780
		7.500	191	7.25	184	65.5	170	307	483	663	828	977	1109	1221	1300
12	300	5.780	147	7.25	184	45.3	91.0	148	221	309	403	497	582	652	700
		7.460	189	7.25	184	64.4	131	235	367	506	644	769	875	964	1050
		9.250	235	7.25	184	88.1	228	414	650	893	1115	1315	1493	1644	1750

C_v and F_L Versus Travel

Flow Direction: Flow to Close

Flow Characteristics: Linear

ANSI Class: 150 through 600

Sizes: 1 in. through 12 in. (DN 25-300)

Percent of Plug Rotation						10	20	30	40	50	60	70	80	90	100
F _L Full Area						0.94	0.91	0.88	0.83	0.80	0.77	0.74	0.72	0.70	0.68
F _L Reduced Area (.6, .4, & .2)						0.94	0.91	0.88	0.83	0.80	0.77	0.74	0.72	0.70	0.7
Valve Size		Orifice Dia.		Act. Stem Travel		Rated C _v									
in.	DN	in.	mm	in.	mm										
1	25	.321	8.2	3.50	89	0.4	0.9	1.2	1.5	1.8	2.1	2.5	2.7	2.9	3
		.500	12.7	3.50	89	0.5	1.0	1.5	2.1	2.9	3.8	4.5	5.1	5.6	6
		.579	14.7	3.50	89	0.6	1.4	2.4	3.3	4.5	5.7	6.9	7.7	8.5	9
		.718	18.2	3.50	89	1.0	2.3	4.0	6.1	8.4	10.3	11.9	13.3	14.3	15
1½	40	.750	19.1	3.50	89	1.3	2.5	3.9	5.6	7.7	9.9	11.7	13.2	14.5	15.6
		.907	23.0	3.50	89	1.7	3.8	6.0	8.7	11.8	15.0	17.7	20.2	22.0	23.4
		1.125	28.6	3.50	89	2.4	5.9	10.2	15.4	22.5	26.0	30.7	34.3	37.8	39
2	50	1.000	25.4	3.50	89	1.7	3.4	5.3	7.6	10.4	13.4	15.9	18.0	19.8	21.2
		1.159	29.4	3.50	89	2.2	5.1	8.2	11.9	16.0	20.2	24.1	27.3	29.9	31.8
		1.437	36.5	3.50	89	3.3	8.0	14.1	21.7	29.7	36.3	42.2	46.9	50.4	53
3	80	1.500	38.1	5.75	146	5.3	10.1	15.1	21.5	28.5	36.0	42.7	48.8	53.9	58
		1.874	47.6	5.75	146	6.1	13.0	21.1	29.6	40.3	51.4	62.7	73.0	81.5	87
		2.324	59.0	5.75	146	9.5	19.0	32.0	47.8	65.2	84.1	103	121	136	145
4	100	2.000	50.8	5.75	146	8.4	16.1	24.0	34.1	45.1	57.1	67.8	77.4	85.6	92
		2.419	61.4	5.75	146	9.7	20.7	33.4	47.0	63.8	81.6	99.4	116	129	138
		3.000	76.2	5.75	146	15.0	30.2	50.8	75.8	104	133	164	193	216	230
6	150	3.000	76.2	7.25	184	18.2	34.9	52.2	74.1	98.0	124	147	168	186	200
		3.629	92.2	7.25	184	21.2	44.9	72.7	102	139	177	216	252	281	300
		4.500	114	7.25	184	32.7	65.7	110	165	225	290	356	419	470	500
8	200	3.797	96.4	7.25	184	22.0	44.2	71.9	107	150	196	241	283	317	340
		4.840	123	7.25	184	31.3	63.6	114	178	246	313	374	425	468	510
		6.000	152	7.25	184	42.8	111	201	316	434	542	639	725	798	850
10	250	4.746	121	7.25	184	33.7	67.6	110	164	230	300	369	432	485	520
		6.050	154	7.25	184	47.8	97.3	175	273	376	478	572	650	716	780
		7.500	191	7.25	184	65.5	170	307	483	663	828	977	1109	1221	1300
12	300	5.780	147	7.25	184	45.3	91.0	148	221	309	403	497	582	652	700
		7.460	189	7.25	184	64.4	131	235	367	506	644	769	875	964	1050
		9.250	235	7.25	184	88.1	228	414	650	893	1115	1315	1493	1644	1750

C_v Versus Travel

Differential Velocity Device (DVD)

Flow Direction: Flow to Open only

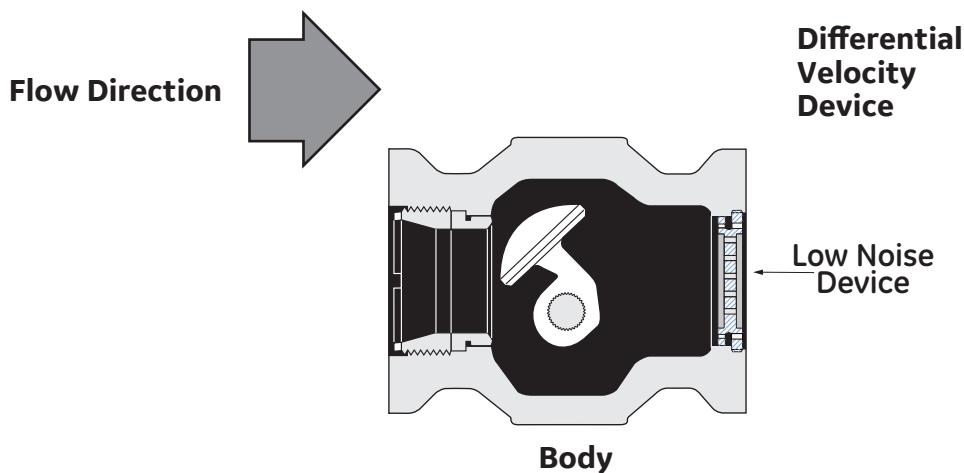
Flow Characteristics: Linear

ANSI Class: 150 through 600

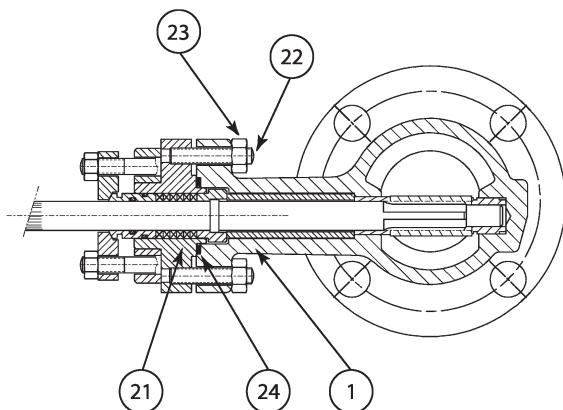
Sizes: 1 in. through 12 in. (DN 25-300)

Percent of Plug Rotation					10	20	30	40	50	60	70	80	90	100	
Valve Size		Orifice Dia.		Act. Stem Travel											
in.	DN	in.	mm	in.	mm										
1	25	0.579	14.7	3.5	89	0.52	1.04	1.88	2.62	3.23	3.76	4.22	4.58	4.84	5.00
1.5	40	0.907	23.0	3.5	89	1.30	2.60	4.69	6.54	8.06	9.41	10.5	11.4	12.1	12.5
2	50	1.159	29.4	3.5	89	1.88	3.75	6.75	9.42	11.6	13.6	15.2	16.5	17.4	18.0
3	80	1.874	47.6	5.75	146	5.00	10.0	18.0	25.1	31.0	36.1	40.5	43.9	46.4	48.0
4	100	2.419	61.4	5.75	146	8.13	16.3	29.3	40.8	50.3	58.7	65.8	71.4	75.4	77.0
6	150	3.629	92.2	7.25	184	18.9	37.7	67.9	94.7	116	136	153	166	175	181
8	200	4.84	123	7.25	184	32.1	64.2	116	161	199	232	260	282	298	308
10	250	6.05	154	7.25	184	50.6	101	182	254	313	366	410	445	470	486
12	300	7.46	189	7.25	184	71.3	143	257	358	441	515	577	626	661	684

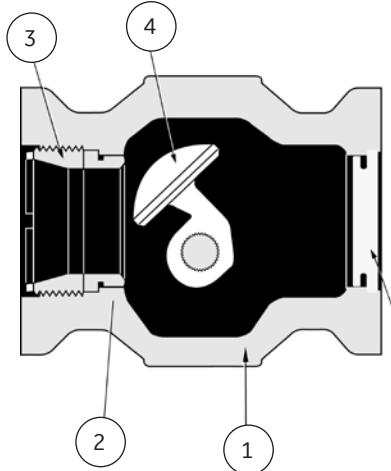
Note: The differential velocity device is used for aerodynamic noise reduction. It **must** be used with **.6 factor trim flow to open**.



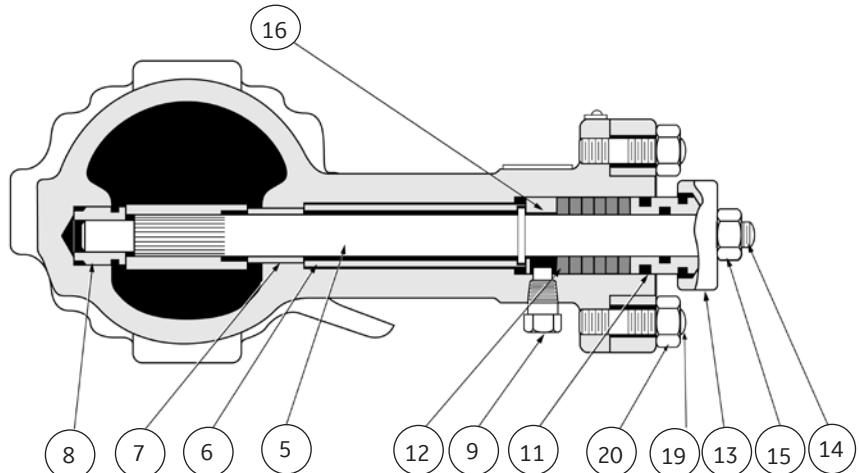
Materials of Construction



Body with Separable Bonnet

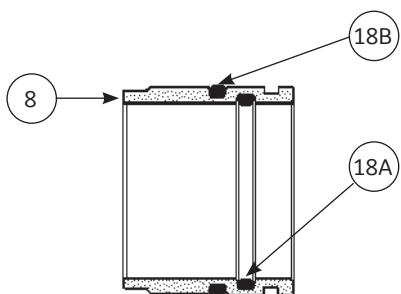


Body

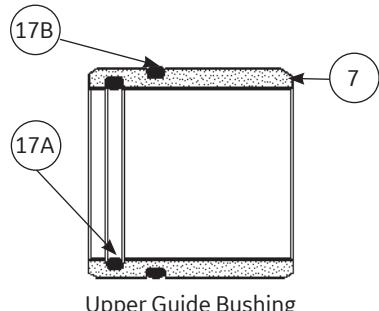


Body with Integral Bonnet

Optional Slurry Package Seal Bushings



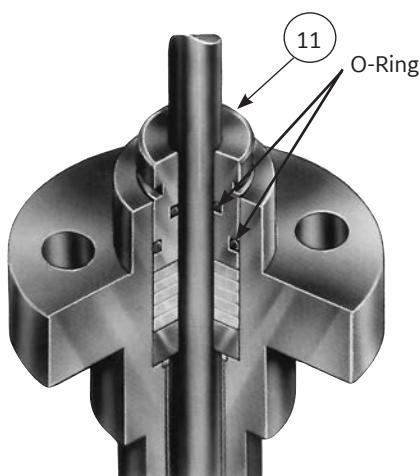
Lower Guide Bushing



Upper Guide Bushing

Standard Camflex Packing Arrangement

EF Seal
(Emission Free)
Double O-Ring Seal Packing Follower
Fugitive Emission Containment Package for Zero Leakage¹



Provides long term reliable extremely low emission shaft seal performance. This economical solution to fugitive emissions will not compromise control performance, and is suitable for use in environmentally sensitive applications.

¹ Factory Mutual Certified Report

Materials of Construction

Carbon Steel Construction

Ref. No.	Temperature Range Description	-20°F -29°C	+400°F +205°C	+450°F +232°C	+750°F +400°C
		Materials			
1	Body		A216 Gr WCC		
			316 St. St. ASTM A351 Gr CF8M		
2	Seat Ring		316 St. St. ASTM A351 Gr CF8M + Stellite Hardfacing Optional		
			ASTM A479 TY 316 St. St. + PTFE 1 in. to 6 in. (DN 25-150)		
			316 St. St. A351 Gr CF8M + PTFE 8 in. to 12 in. (DN 200-300)		
3	Seat Ring Retainer		316 St. St. ASTM A351 Gr CF8M		
4	Plug		Solid Stellite 1 in. to 2 in. (DN 25-50)		
			316L St. St. ASTM A351 Gr CF3M + Stellite Hardfacing 3 in. to 12 in. (DN 80-300)		
5	Shaft		17-4 PH ASTM A564 Gr 630 (H1075)		
6	Spacer		ASTM A312 TY 316		
7	Upper Guide		ASTM A276 TY 440C		
	Upper Guide + O-Ring	STELLITE No. 6 + VITON			
8	Lower Guide		ASTM A276 TY 440C		
	Lower Guide + O-Ring	STELLITE No. 6 + VITON			
9	Safety Pin		ASTM A479 TY 316		
11	Packing Follower		ASTM A582 TY 303		
	O-Ring Packing Follower		VITON		
12	Packing		CARBON CORE BRAIDED PTFE		
13	Packing Flange		Carbon Steel ASTM A105 Zinc Plated		
14	Packing Flange Stud		304 St. St. ASTM A193 Gr B8		
15	Packing Flange Stud Nut		304 St. St. ASTM A194 GR 8		
16	Packing Box Ring		ASTM A479 TY 316		
19	Body Stud		304 St. St. ASTM A193 Gr B8		
20	Body Stud Nuts		304 St. St. ASTM A194 Gr 8		
21 ¹	Bonnet		Carbon Steel A216 GR WCC		
22 ¹	Body / Bonnet Stud		ASTM A 193 Gr B8 Class 2		
23 ¹	Body / Bonnet Nut		ASTM A 194 Gr 8		
24 ¹	Body Gasket		AISI 316L + GRAPHITE		
25	DVD Low Noise Plate		ASTM A479 TY 316		

¹Separable Bonnet version only.

NACE Carbon Steel Construction

Ref. No.	Temperature Range Description	-20°F -29°C	+400°F +205°C	+450°F +232°C	+750°F +400°C
		Materials			
1	Body		Carbon Steel A216 Gr WCC		
2	Seat Ring		316 St. St. ASTM A351 Gr CF8M		
			316 St. St. ASTM A351 Gr CF8M + Stellite Hardfacing Optional		
3	Seat Ring Retainer		316 St. St. ASTM A351 Gr CF8M		
4	Plug		Solid Stellite 1 in. to 2 in. (DN 25-50)		
			316L St. St. ASTM A351 Gr CF3M + Stellite Hardfacing 3 in. to 12 in. (DN 80-300)		
5	Shaft		ASTM A479 TY 316 St. St		
6	Spacer		ASTM A312 TY 316		
7	Upper Guide		STELLITE No. 6		
	Upper Guide + O-Ring	STELLITE No. 6 + VITON			
8	Lower Guide		STELLITE No. 6		
	Lower Guide + O-Ring	STELLITE No. 6 + VITON			
9	Safety Pin		ASTM A479 TY 316		
11	Packing Follower		ASTM A479 TY 316		
	O-Ring Packing Follower		VITON		
12	Packing		CARBON CORE BRAIDED PTFE		
13	Packing Flange		Carbon Steel ASTM A105 Zinc Plated		
14	Packing Flange Stud		304 St. St. ASTM A 193 GR B8		
15	Packing Flange Stud Nut		304 St. St. ASTM A194 GR 8		
16	Packing Box Ring		ASTM A479 TY 316		
19	Body Stud		304 St. St. ASTM A193 Gr B8		
20	Body Stud Nuts		304 St. St. ASTM A194 Gr 8		
25	DVD Low Noise Plate		ASTM A479 TY 316		

Note: Standard materials and processes are in accordance with the requirements of NACE specification MR0103. Applications requiring compliance to MR0175-2003 or ISO 15156 must be reviewed by BHGE.

Materials of Construction

Stainless Steel Construction

Ref. No.	Temperature Range Description	-320°F -196°C	-58°F -50°C	Materials			+750°F +400°C
		Flangeless Body 316 St. St. ASTM A351 Gr CF8M	Flanged Body 316L St. St. ASTM A351 GR CF3M	+400°F +205°C	+450°F +232°C	+750°F +400°C	
1	Body						
2	Seat Ring		316 St. St. ASTM A351 Gr CF8M				
			316 St. St. ASTM A351 Gr CF8M + Stellite Hardfacing Optional				
			ASTM A479 TY 316 St. St. + PTFE 1 in. to 6 in. (DN 25-150)				
			316 St. St. A351 Gr CF8M + PTFE 8 in. to 12 in. (DN 200-300)				
3	Seat Ring Retainer		316 St. St. ASTM A351 Gr CF8M				
4	Plug		Solid Stellite 1 in. to 2 in. (DN 25-50)				
		316L St. St. ASTM A351 Gr CF3M + Stellite Hardfacing N°6	3 in. to 12 in. (DN 80-300)				
5	Shaft		316 St. St. ASTM A479 TY 316				
			ASTM A564 Gr 630 (H1075) Optional				
6	Spacer		ASTM A 312 TY 316				
7	Upper Guide		STELLITE No. 6				
	Upper Guide + O-Ring		STELLITE No. 6 + VITON				
8	Lower Guide		STELLITE No. 6				
	Lower Guide + O-Ring		STELLITE No. 6 + VITON				
9	Safety Pin		ASTM A479 TY 316				
11	Packing Follower		ASTM A582 TY 303				
	O-Ring		VITON				
12	Packing		CARBON CORE BRAIDED PTFE				
13	Packing Flange		ASTM A182 GR F304				
14	Packing Flange Stud		304 St. St. ASTM A193 Gr B8				
15	Packing Flange Stud Nut		304 St. St. ASTM A194 Gr 8				
16	Packing Box Ring		ASTM A479 TY 316				
19	Body Stud		304 St. St. ASTM A 193 Gr B8				
20	Body Stud Nuts		304 St. St. ASTM A194 Gr 8				
21 ¹	Bonnet		316L St. St. ASTM A351 Gr CF3M				
22 ¹	Body / Bonnet Stud		304 St. St. ASTM A193 GR B8 CL 2				
23 ¹	Body / Bonnet Nut		304 St. St. ASTM A194 GR 8				
24 ¹	Body Gasket		AISI 316L + GRAPHITE				
25	DVD Low Noise Plate		ASTM A479 TY 316				

¹ Separable Bonnet version only.

Materials of Construction

NACE Stainless Steel Construction

Ref. No.	Temperature Range	-20°F -29°C	+400°F +205°C	+750°F +400°C
		Description	Materials	
1	Body		Flangeless Body 316 St. St. ASTM A351 Gr CF8M Flanged Body 316L St. St. ASTM A351 Gr CF3M	
2	Seat Ring		316 St. St. ASTM A351 Gr CF8M 316 St. St. ASTM A351 Gr CF8M + Stellite Hardfacing	
3	Seat Ring Retainer		316 St. St. ASTM A351 Gr CF8M	
4	Plug		Solid Stellite 1 in. to 2 in. (DN 25-50) 316L St. St. ASTM A351 Gr CF3M + Stellite Hardfacing 3 in. to 12 in. (DN 80-300)	
5	Shaft		ASTM A479 TY 316 St. St.	
6	Spacer		ASTM A312 TY 316	
7	Upper Guide		STELLITE No. 6	
	Upper Guide + O-Ring		STELLITE No. 6 + VITON	
8	Lower Guide		STELLITE No. 6	
	Lower Guide + O-Ring		STELLITE No. 6 + VITON	
9	Safety Pin		ASTM A479 TY 316	
11	Packing Follower		ASTM A479 TY 316	
	O-Ring		VITON	
12	Packing		CARBON CORE BRAIDED PTFE	
13	Packing Flange		ASTM A182 GR F304	
14	Packing Flange Stud		304 St. St. ASTM A193 Gr B8	
15	Packing Flange Stud Nut		304 St. St. ASTM A194 Gr 8	
16	Packing Box Ring		ASTM A479 TY 316	
19	Body Stud		304 St. St. ASTM A 193 Gr B8	
20	Body Stud Nuts		304 St. St. ASTM A194 Gr 8	
25	DVD Low Noise Plate		ASTM A479 TY 316	

Note: Standard materials and processes are in accordance with the requirements of NACE specification MR0103.
Applications requiring compliance to MR0175-2003 or ISO 15156 must be reviewed by BHGE.

Materials of Construction

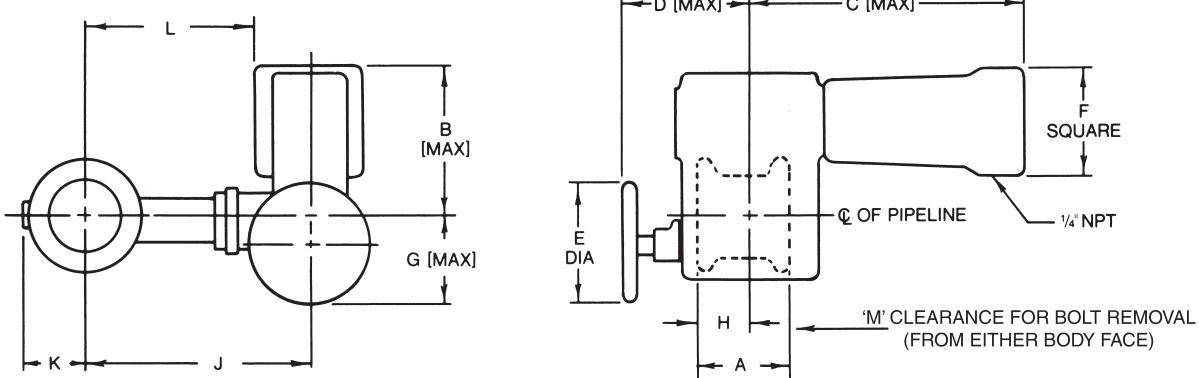
Hastelloy C Construction 1 in. to 4 in.

Ref. No.	Temperature Range	-320°F -196°C	-58°F -50°C	Materials	+400°F +205°C	+500°F +260°C
		▽	▽		▽	▽
1	Body			ASTM A494 Gr CX-2 MW		
2	Seat Ring			HASTELLOY C22		
3	Seat Ring Retainer			HASTELLOY C22		
4	Plug			HASTELLOY C22		
5	Shaft			HASTELLOY C22		
6	Spacer			HASTELLOY C22		
7	Upper Guide ¹			STELLITE No. 6		
	Upper Guide ¹			ALLOY 25		
	Upper Guide ¹			ULTIMET		
	Upper Guide + O-Ring ¹			STELLITE No. 6 + VITON		
8	Lower Guide ¹			STELLITE No. 6		
	Lower Guide ¹			ALLOY 25		
	Upper Guide ¹			ULTIMET		
	Lower Guide + O-Ring ¹			STELLITE No. 6 + VITON		
9	Safety Pin			HASTELLOY C22		
11	Packing Follower			HASTELLOY C22		
	O-Ring			VITON		
12	Packing			CARBON CORE BRAIDED PTFE		
13	Packing Flange			ASTM A182 Gr F304		
14	Packing Flange Stud			304 St. St. ASTM A193 Gr B8		
15	Packing Flange Stud Nut			304 St. St. ASTM A194 Gr 8		
16	Packing Box Ring			HASTELLOY C22		
19	Body Stud			304 St. St. ASTM A193 Gr B8		
20	Body Stud Nuts			304 St. St. ASTM A194 Gr 8		
25	DVD Low Noise Plate			HASTELLOY C22		

Note: Standard materials and processes are in accordance with the requirements of NACE specification MR0103. Applications requiring compliance to MR0175-2003 or ISO 15156 must be reviewed by BHGE.

¹ Material selection must be based on fluid properties and compatibility.

Dimensions and Weights



Dimensions (inches)

Valve Size	A						B	C	D	E	F	G	H						J	K	L	M		
	In.	DN	Threaded ends	Flanged and Flange-less	GR Flanged Class 150	GR Flanged Class 300	GR Flanged Class 600						Threaded ends	Flange-less	Flanged	GR Flanged Class 150	GR Flanged Class 300	GR Flanged Class 600				ANSI Class 150 PN 10	ANSI Class 300 PN 16	ANSI Class 600 PN 40
1 25	4.00	4.00	7.24	7.76	8.27	6.6	11.9	10.1	6.3	5.5	4.3	2.64	2.64	2.01	5.24	5.49	6.10	8.0	1.5	5.3	6.5	9.0	9.0	
1/2 40	5.39	4.50	8.74	9.25	9.88	6.6	11.9	10.1	6.3	5.5	4.3	3.31	2.44	2.31	6.71	6.99	7.62	9.1	2.0	6.4	6.5	10.0	10.0	
2 50	5.75	4.88	10.00	10.51	11.26	6.6	11.9	10.1	6.3	5.5	4.3	3.31	2.44	2.46	7.80	8.05	8.80	9.3	2.6	6.6	10.5	10.5	10.5	
3 80		6.50	11.73	12.52	13.27	9.8	17.2	10.6	6.3	6.9	5.8		3.82	3.39	8.97	9.36	10.11	12.9	3.3	9.4	11.8	13.5	14.0	
4 100		7.62	13.86	14.49	15.51	9.8	17.2	10.3	6.3	6.9	4.8		4.17	4.17	6.93	7.24	7.76	13.7	4.3	10.3	13.0	14.0	16.5	
6 150		9.00	17.76	18.62	20.00	12.3	20.8	12.1	10.0	8.6	7.9		5.00	5.00	8.88	9.31	10.00	16.9	5.8	12.6	15.5	16.0	18.5	
8 200		9.56				12.3	20.8	12.1	10.0	8.6	7.9		5.83	5.44					18.4	8.0	14.1	15.5	18.5	21.0
10 250		11.69				12.3	20.8	12.1	10.0	8.6	7.9		6.57	6.57					22.4	9.8	18.1	20.0	20.5	24.5
12 300		13.31				12.3	20.8	12.1	10.0	8.6	7.9		7.24	7.24					23.8	10.8	19.5	20.0	22.5	25.5

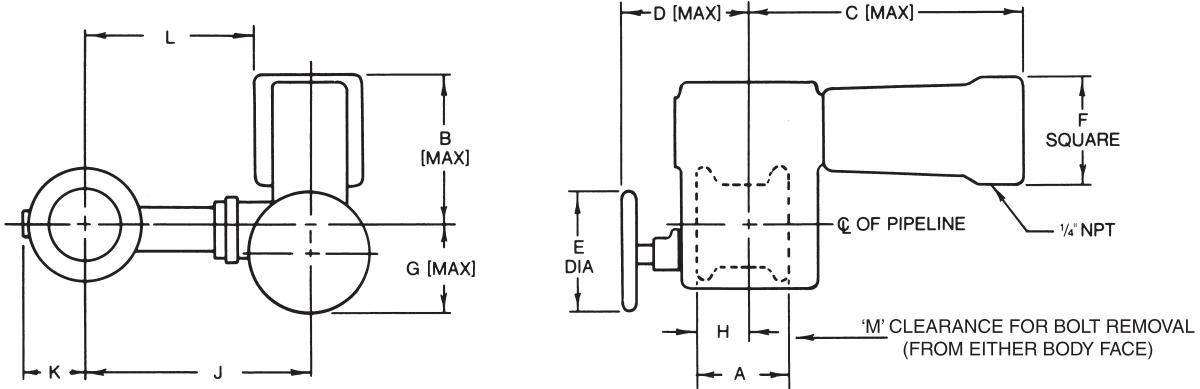
Weight (lbs. and Kg.)

Valve Size	Actuator size	Flangeless		Flanged Class 150		Flanged Class 300		Flanged Class 600		GR Flanged Class 150		GR Flanged Class 300		GR Flanged Class 600	
		in.	DN	Kg	lbs.	Kg	lbs.	Kg	lbs.	Kg	lbs.	Kg	lbs.	Kg	lbs.
1 25	4.5	17	38	18	40	20	44	20	44	19	42	21	46	22	49
1-1/2 40	4.5	19	42	22	48	24	53	25	55	23	51	26	57	28	62
2 50	4.5	20	44	24	53	27	60	28	62	27	60	30	66	34	75
3 8	6	46	101	52	115	57	126	59	130	58	128	63	139	69	152
4 100	6	54	119	65	143	73	161	83	183	74	163	83	183	99	218
6 150	7	103	227	115	254	131	289	156	344	133	293	151	333	184	406
	9	131	289	143	315	159	351	184	414	161	355	179	395	213	414
8 200	7	122	269	140	309	161	355	197	434						
	9	150	331	168	370	189	417	225	195						
10 250	7	178	392	203	448	236	520								
	9	206	454	231	509	264	582								
12 300	7	222	489	260	573	307	676								
	9	250	551	288	635	335	738								

Specific Dimensions (inches) for the No. 9 Actuator

Valve size	B	C	D	E	F	G	L
	in.	DN					
6	150	14.69	26.54	12.05	15.75	11.97	8.39
8	200	14.80	26.54	12.05	15.75	11.97	8.50
10	250	14.92	26.54	12.05	15.75	11.97	8.62
12	300	15.04	26.54	12.05	15.75	11.97	8.74

Dimensions and Weights



Dimensions (millimeters)

Valve Size	A						B	C	D	E	F	G	H						J	K	L	M		
	In.	DN	Threaded ends	Flanged and Flange-less	GR Flanged Class 150	GR Flanged Class 300	GR Flanged Class 600						Threaded ends	Flange-less	Flanged	GR Flanged Class 150	GR Flanged Class 300	GR Flanged Class 600				ANSI Class 150	ANSI Class 300	ANSI Class 600
1	25	102	102	184	197	210	168	302	256	140	140	109	67	67	51	133	140	155	204	38	134	205	229	229
1/2	40	137	114	222	235	251	168	302	256	140	140	109	84	62	59	171	178	194	232	51	162	205	254	254
2	50	146	124	254	267	286	168	302	256	140	140	109	84	62	63	198	205	224	237	65	167	267	267	267
3	80		165	298	318	337	249	436	269	175	175	122		97	86	228	238	257	327	84	239	300	343	343
4	100		194	352	368	394	249	436	269	175	175	122		106	106	176	184	197	349	108	262	330	343	406
6	150		229	451	473	508	313	527	307	219	219	200		127	127	226	237	254	429	146	320	394	470	470
8	200		243			313	527	307	219	219	200		148	138					467	203	358	394	470	533
10	250		297			313	527	307	219	219	200		167	167					569	250	460	460	530	595
12	300		338			313	527	307	219	219	200		184	184					604	275	495	505	575	648

Specific Dimensions (millimeters) for the No. 9 Actuator

Valve size		B	C	D	E	F	G	L
in.	DN							
6	150	373	674	306	400	304	213	280
8	200	376	674	306	400	304	216	318
10	250	379	674	306	400	304	219	422
12	300	382	674	306	400	304	222	457

Notes

Notes

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