

Masoneilan™ 35002 Series Camflex™ II Rotary Control Valves

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

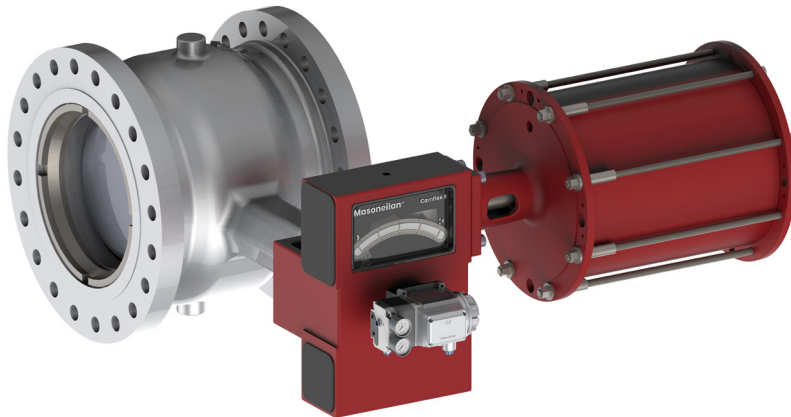


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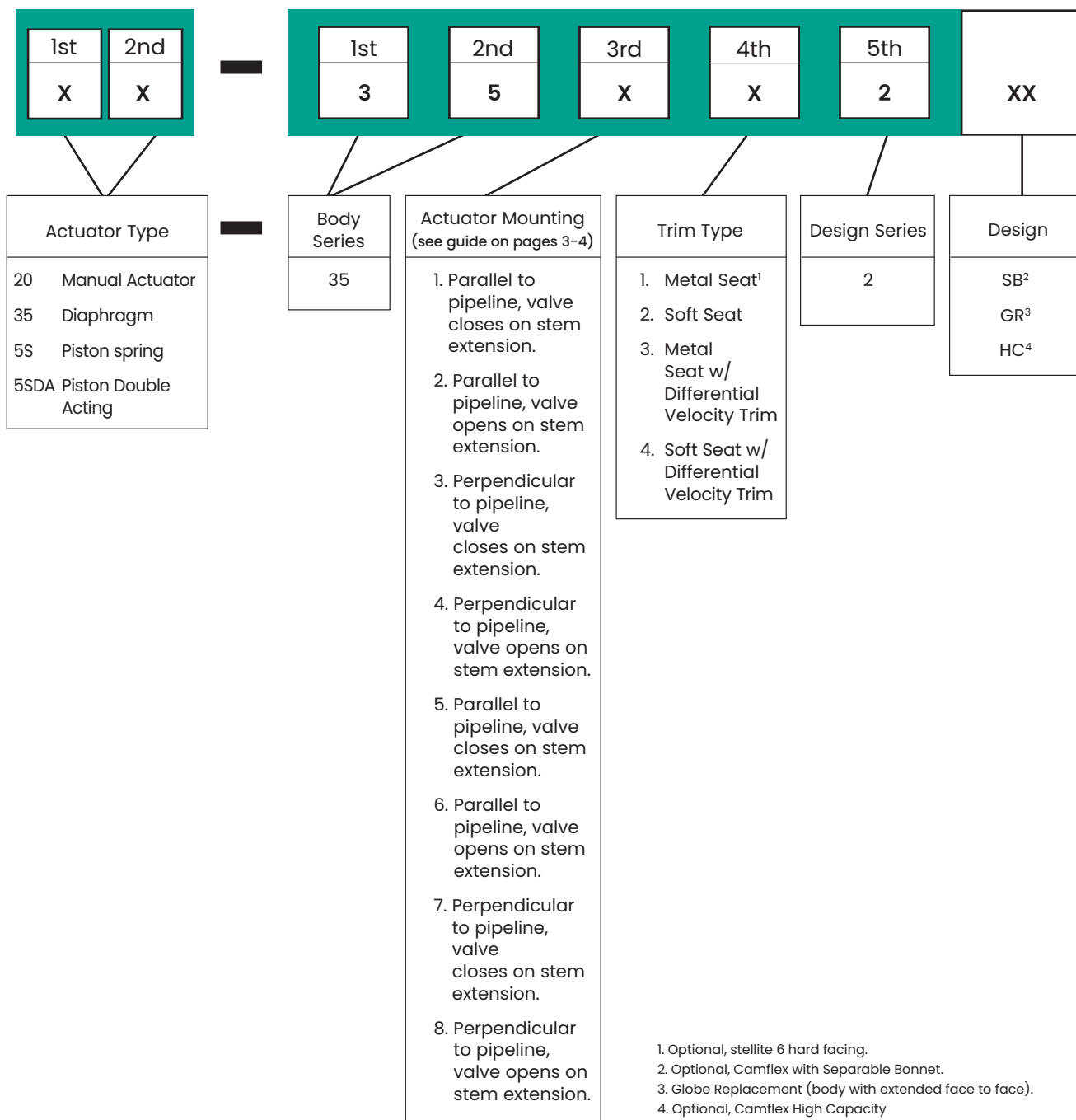
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Features

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

- The flangeless body rating is a rugged ASME Class 600.
- Heavy-duty guide lugs assure quick, positive alignment during installation.
- The flanged version is available in 1 in. through 16 in. (25 mm through 400 mm) sizes in 150 or 300 ASME, and 1 in. through 8 in. (25 mm through 200 mm) in 600 ASME.
- The optional Camflex High Capacity version is available in 6 in. through 16 in. sizes (150 mm through 400 mm) in ASME Class 150 and 300 ratings. This option utilizes a split shaft and 70 degree rotation for higher C_v values.
- The optional Camflex GR (Globe Replacement) version is available in 1 in. through 6 in. sizes (25 mm through 150 mm) in ASME Class 150, 300, and 600 ratings and allows direct replacement of conventional reciprocating globe valves.
- The optional Camflex EN 558 face to face GR (Globe Replacement) version is available in sizes 25 mm through 150 mm and PN 10/16 through PN 25/40. EN 558 is the European Standard Face to Face that was formerly know as DIN 3202-1 Series F1.
- 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.
- Options for geothermal and slurry services are available.
- 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 diaphragm and piston spring 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 is totally enclosed.

Numbering System

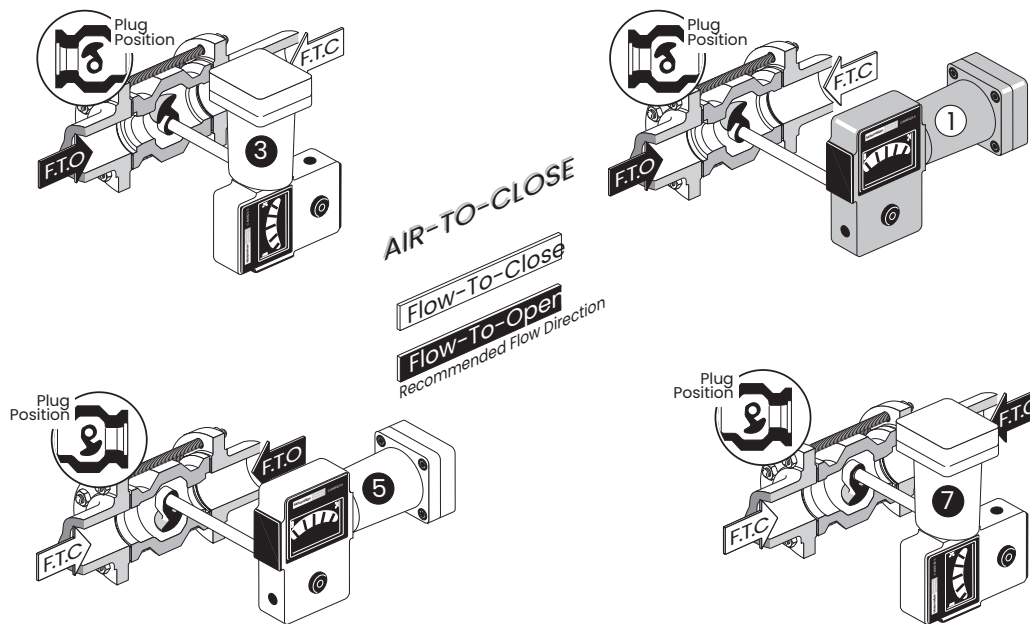
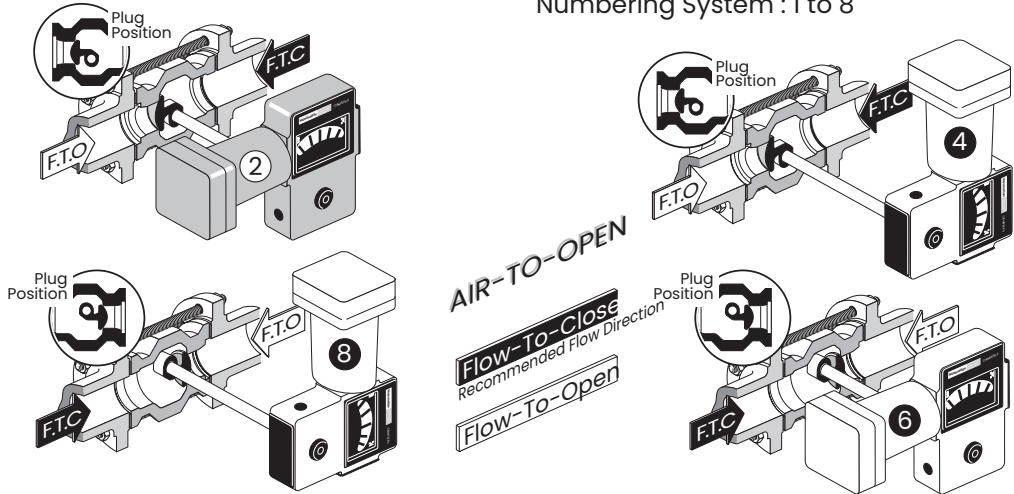


Actuator Mounting Guide

Camflex II Control Valves with Model 35 Diaphragm Actuators (mounted on horizontal pipeline)

3 5 - 3 5 . 0 2

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



Notes:

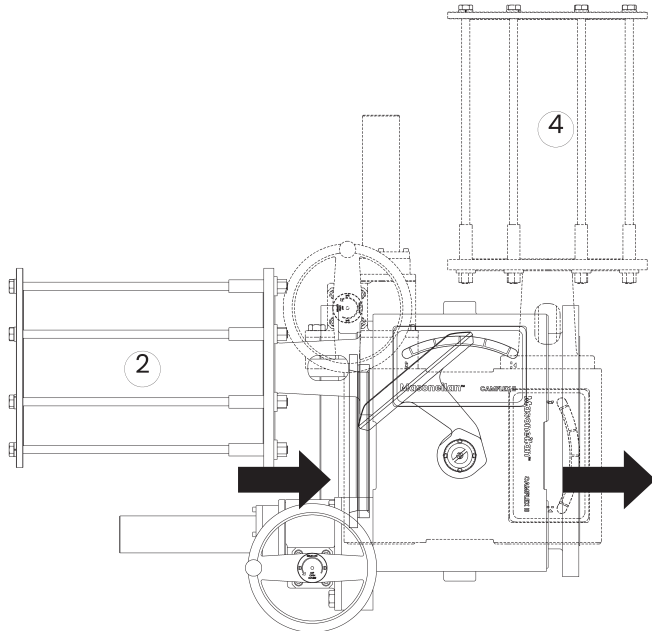
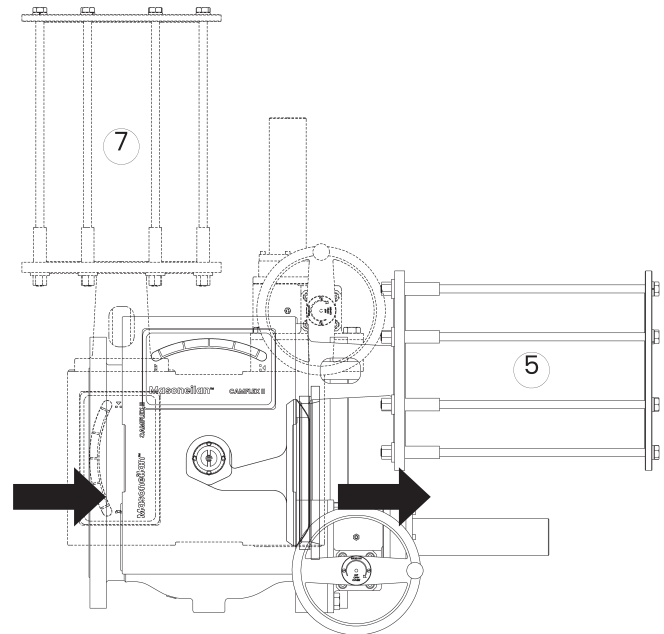
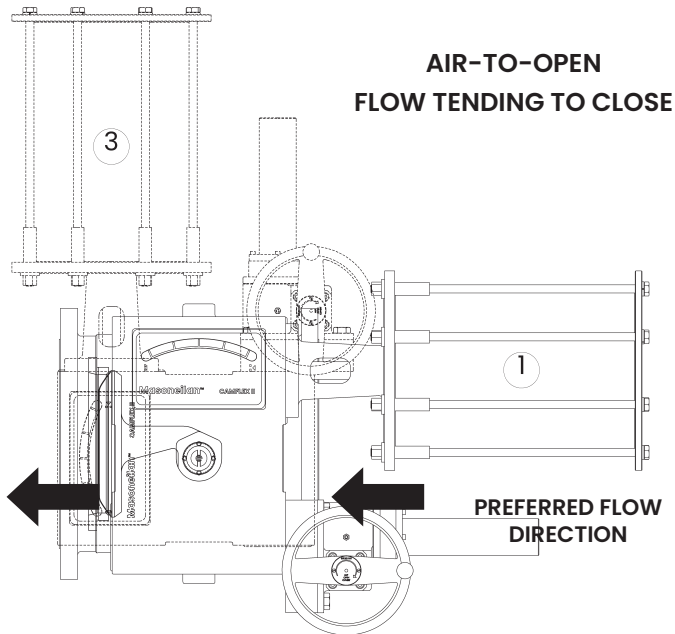
- Standard actuator mounting positions are shaded in grey.
- Plug positions are shown in the initial position without air on actuator.
- The actuator must always be mounted above the pipeline.
- It is recommended that the actuator always be mounted as shown above. For other positions, consult your local 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.

Actuator Mounting Guide

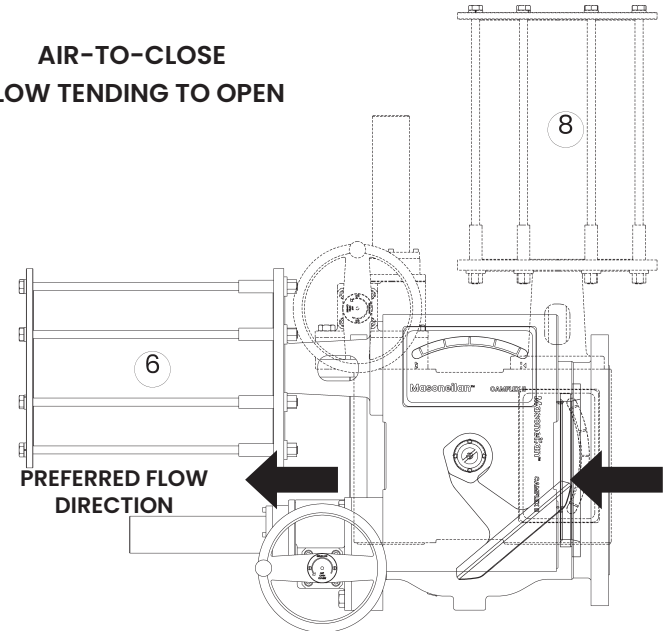
Camflex II Control Valves with Model 5S Piston Spring Actuators (mounted on horizontal pipeline)

5 S - 3 5 . 0 2

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



**AIR-TO-CLOSE
FLOW TENDING TO OPEN**



Notes:

- Actuator linkage is available in 2 travel options:
 1. 50 degrees for Camflex standard version
 2. 70 degrees for Camflex High Capacity version
- Plug positions are shown in the initial position without air on actuator.
- The actuator must always be mounted above the pipeline.
- 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 air set 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.-12 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:	ASME Class 600 (per B16.34) standard (1 in.-16 in.) (DN 25-400), except for flanged construction: valve rating is limited by flange rating
End Connections:	<ul style="list-style-type: none"> • Threaded – NPT for ASME Class 600 rated connections (1 in.) (DN 25) • Flangeless – clamps between ASME 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 ASME Class 150 or 300 rated flanges (1 in.-16 in.) (DN 25-400) ASME Class 600 rated flanges (1 in.-8 in.) (DN 25-150) • GR flanged – bolts to ASME Class 150, 300 or 600 rated flanges (1 in.-6 in.) (DN 25-150) and PN 10/16, PN 25/40 rated flange.

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 and 100): solid Stellite No. 6 optional • 3 in.-16 in. (DN 80-400): 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.-16 in. (DN 25-400): 316 stainless steel • 1 in.-4 in. (DN 25-100): Hastelloy C¹ • 1 in.-16 in. (DN 150-400): 316 stainless steel with hardfaced seat • 1 in.-4 in. (DN 25-100): solid Stellite No. 6 optional • 1 in.-16 in. (DN 25-400): 316 stainless steel with PTFE insert (to 450°F), (232°C)² • 1 in.-16 in. (DN 25-400): 316 stainless steel with PCTFE insert (-50 to -320°F), (-46 to -196°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

1. See materials of construction
 2. Not available in .2 factor or Low Flow Trim sizes
 3. Not applicable for Piston Double Acting.

Actuators

Diaphragm

Size:	<ul style="list-style-type: none"> • 4½ in. diameter (1 in.-2 in. valves), (DN 25-50) • 6 in. diameter (3 in.-4 in. valves), (DN 80-100) • 7 in. diameter (6 in.-12 in. valves), (DN 150-300) • 9 in. diameter (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:	¼ in. NPT
Yoke:	Cast iron
Bearing:	Sealed radial
Auxiliary Handwheel:	Solid disk with locking nut: <ul style="list-style-type: none"> • 6½ in. diameter (1 in.-4 in. valves), (DN 25-100) • 10 in. diameter (6 in.-12 in. valves), (DN 150-300)

Piston Spring and Piston Double Acting

Size:	<ul style="list-style-type: none"> • 12 in. diameter (10 in.-16 in. valves), (DN 250-400) • 16 in. diameter (12 in.-16 in. valves), (DN 300-400)
Range: ³	<ul style="list-style-type: none"> • 8-24 psi (10 in.-12 in. valves), (DN 250-300) (5S-12 size actuator ATO) • 7-23 psi (10 in.-12 in. valves), (DN 250-300) (5S-12 size actuator ATC) • 9-27 psi (12 in.-16 in. valves), (DN 300-400) (5S-16 size actuator ATO) • 8-26 psi (12 in.-16 in. valves), (DN 300-400) (5S-16 size actuator ATC)
Air Connection:	¼ in. NPT
Yoke:	Cast iron
Bearing:	Sealed radial
Auxiliary Handwheel: ³	Jackscrew with 10 in. diameter handwheel

Manual

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

General Data

Standard 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 Bichromate 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 Piston Spring Actuator Materials

Description	Material
Yoke	Cast Iron
Yoke covers	Polycarbonate
Piston cylinder	Carbon steel
Base Plate	Cast Iron
Top Plate	Carbon steel
Piston	Carbon steel
Piston Rod	17-4 PH (H1075) St. St.
Piston guide	Graphite + PTFE
Clevis	17-4 PH (H1075) St. St.
Clevis Pin	17-4 PH (H1075) St. St.
Lever	Carbon steel
Ball Joints	High strength alloy with anticorrosion plating with PTFE lined sleeve
Handwheel	Aluminum

Standard Actuator Characteristics and Travel Times

[Measured with direct positioner at 30 psi (2 bar) supply, 4700P positioner with tubing size ¼ in.]

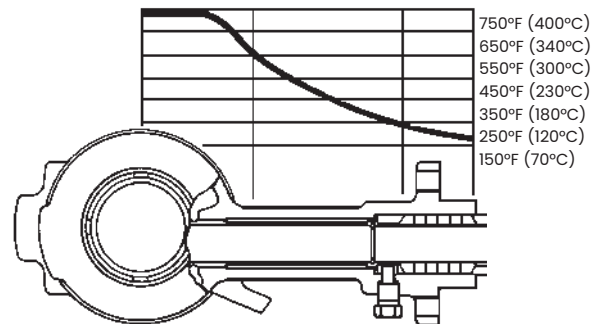
Actuator Diameter		Diaphragm Effective Area		Actuator Stroke		Travel Time (sec.)	
in.	cm	sq. in.	cm ²	in.	cm	Increasing Instrument Signal	Decreasing Instrument Signal
4½	11.4	14	90	3½	8.9	1.2	2.4
6	15.2	24	155	5%	14.6	3	6.3
7	17.8	36	232	7¼	18.4	7.6	9.8
9	22.9	75	483	7¼	18.4	17	24

Temperature/Seat Leakage

Valve Size		Seat Type	Temp. Range ¹		Max. Seat Leakage, ASME FCI/70.2 Class
in.	DN		Min.	Max.	
1-16	25-400	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 PTFE/PCTFE seal.



Temperature Gradient Across Standard Integral Bonnet

1. The Camflex II standard integral bonnet can be used for cryogenic applications -196°C (-320°F) in intermittent services or short running periods.
2. An extended bonnet should be used in continuous service from temperatures -130°C (-200°F) to -196°C (-320°F) or when requested in a customer specification.

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.

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

Valve Size		C_v Factor	Flow to Open		Flow to Close	
in.	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	0.7
		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	-	-	-
14	350	0.4	940	0.88	940	0.7
		0.6	1410	0.88	1410	0.7
		1	2350	0.85	2350	0.68
		DVD	-	-	-	-
16	400	0.4	1460	0.88	1460	0.7
		0.6	2190	0.88	2190	0.7
		1	3650	0.85	3650	0.68
		DVD	-	-	-	-

Note: Low flow trims (.036+.07 factor) require use of SVI II and SVI3 digital positioners.

Camflex High Capacity Maximum Rated Flow Coefficients (C_v) and Critical Flow Factors (F_L) at Maximum Opening (70°)

Valve Size		C_v Factor	Flow to Open		Flow to Close	
in.	DN		Rated C_v	F_L	Rated C_v	F_L
6	150	1	740	0.68	585	0.64
8	200	1	1290	0.68	1040	0.64
10	250	1	1980	0.68	1600	0.64
12	300	1	2570	0.68	2330	0.64
14	350	1	4010	0.68	3525	0.64
16	400	1	5980	0.68	5250	0.64

Ratings and Connections

Valve Size		ASME Class		
in.	DN	150	300	600
1-2	25-50	▲ ○ ● □	▲ ○ ● □	▲ ○ ● □
3-6	80-150	○ ● □	○ ● □	○ ● □
8	80-200	○ ●	○ ●	○ ●
10-12	250-300	○ ●	○ ●	○
14-16	350-400	●	●	-

▲ Threaded ○ Flangeless ● RF Flanged □ GR Flanged

Note:
For flangeless valve sizes 8 in.-12 in., (200 mm-300 mm), please specify ASME Class rating.
For High Capacity valve, only flanged CI 150 and CI 300 are available.

C_v and F_L Versus Travel

Flow Direction: Flow to Open

Flow Characteristics: Linear

Sizes 1 in. through 12 in. (DN 25-300) ASME Class 150 through 600

Sizes 14 in. through 16 in. (DN 350-400) ASME Class 150 through 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, and .2)				0.96	0.93	0.91	0.89	0.88	0.88	0.88	0.88	0.88	0.88
Valve Size		Orifice Diameter		Rated C _v									
in.	DN	in.	mm										
1	25	.321	8.2	0.4	0.8	1.1	1.4	1.7	2.0	2.3	2.5	2.7	2.8
		.500	12.7	0.5	0.9	1.4	2.0	2.7	3.5	4.2	4.8	5.2	5.6
		.579	14.7	0.6	1.3	2.2	3.1	4.2	5.3	6.4	7.2	7.9	8.4
		.718	18.2	0.9	2.1	3.7	5.7	7.8	9.6	11.1	12.4	13.3	14
1 ½	40	.750	19.1	1.1	2.1	3.3	4.7	6.5	8.4	9.9	11.2	12.3	13.2
		.907	23.0	1.4	3.2	5.1	7.4	10.0	12.7	15.0	17.1	18.6	19.8
		1.125	28.6	2.0	5.0	8.6	13	19	22	26	29	32	33
2	50	1.000	25.4	1.6	3.2	5.0	7.2	9.8	12.6	15.0	17.0	18.7	20
		1.159	29.4	2.1	4.8	7.7	11.2	15.1	19.1	22.7	25.8	28.2	30
		1.437	36.5	3.1	7.5	13.3	20.5	28	34.2	39.8	44.2	47.5	50
3	80	1.500	38.1	4.9	9.4	14.1	20.0	26.5	33.5	39.8	45.4	50.2	54
		1.874	47.6	5.7	12.1	19.6	27.6	37.5	47.9	58.4	68.0	75.9	81
		2.324	59.0	8.8	17.7	29.8	44.5	60.7	78.3	96.2	113	127	135
4	100	2.000	50.8	8.4	16.1	24.0	34.1	45.1	57.1	67.8	77.4	85.6	92
		2.419	61.4	9.7	20.7	33.4	47.0	63.8	81.6	99.4	116	129	138
		3.000	76.2	15.0	30.2	50.8	75.8	104	133	164	193	216	230
6	150	3.000	76.2	18.2	34.9	52.2	74.1	98.0	124	147	168	186	200
		3.629	92.2	21.2	44.9	72.7	102	139	177	216	252	281	300
		4.500	114	32.7	65.7	110	165	225	290	356	419	470	500
8	200	3.797	96.4	22.0	44.2	71.9	107	150	196	241	283	317	340
		4.840	123	31.3	63.6	114	178	246	313	374	425	468	510
		6.000	152	42.8	111	201	316	434	542	639	725	798	850
10	250	4.746	121	33.7	67.6	110	164	230	300	369	432	485	520
		6.050	154	47.8	97.3	175	273	376	478	572	650	716	780
		7.500	191	65.5	170	307	483	663	828	977	1109	1221	1300
12	300	5.780	147	45.3	91.0	148	221	309	403	497	582	652	700
		7.460	189	64.4	131	235	367	506	644	769	875	964	1050
		9.250	235	88.1	228	414	650	893	1115	1315	1493	1644	1750
14	350	6.8	172.71	61	122	199	297	415	542	667	781	876	940
		8.7	220.18	86	176	316	493	679	865	1033	1175	1295	1410
		10.8	273.14	118	306	554	873	1199	1497	1766	2004	2206	2350
16	400	8.5	216.9	94	190	309	461	645	842	1035	1213	1361	1460
		10.9	276.5	133	273	490	765	1055	1343	1604	1825	2011	2190
		13.5	243.9	183	475	860	1356	1862	2326	2743	3113	3426	3650

C_v and F_L Versus Travel

Flow Direction: Flow to Close

Flow Characteristics: Linear

Sizes 1 in. through 12 in. (DN 25-300) ASME Class 150 through 600

Sizes 14 in. through 16 in. (DN 350-400) ASME Class 150 through 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, and .2)				0.94	0.91	0.88	0.83	0.80	0.77	0.74	0.72	0.70	0.70
Valve Size		Orifice Diameter		Rated C _v									
in.	DN	in.	mm										
1	25	.321	8.2	0.4	0.9	1.2	1.5	1.8	2.1	2.5	2.7	2.9	3
		.500	12.7	0.5	1.0	1.5	2.1	2.9	3.8	4.5	5.1	5.6	6
		.579	14.7	0.6	1.4	2.4	3.3	4.5	5.7	6.9	7.7	8.5	9
		.718	18.2	1.0	2.3	4.0	6.1	8.4	10.3	11.9	13.3	14.3	15
1 ½	40	.750	19.1	1.3	2.5	3.9	5.6	7.7	9.9	11.7	13.2	14.5	15.6
		.907	23.0	1.7	3.8	6.0	8.7	11.8	15.0	17.7	20.2	22.0	23.4
		1.125	28.6	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	1.7	3.4	5.3	7.6	10.4	13.4	15.9	18.0	19.8	21.2
		1.159	29.4	2.2	5.1	8.2	11.9	16.0	20.2	24.1	27.3	29.9	31.8
		1.437	36.5	3.3	8.0	14.1	21.7	29.7	36.3	42.2	46.9	50.4	53
3	80	1.500	38.1	5.3	10.1	15.1	21.5	28.5	36.0	42.7	48.8	53.9	58
		1.874	47.6	6.1	13.0	21.1	29.6	40.3	51.4	62.7	73.0	81.5	87
		2.324	59.0	9.5	19.0	32.0	47.8	65.2	84.1	103	121	136	145
4	100	2.000	50.8	8.4	16.1	24.0	34.1	45.1	57.1	67.8	77.4	85.6	92
		2.419	61.4	9.7	20.7	33.4	47.0	63.8	81.6	99.4	116	129	138
		3.000	76.2	15.0	30.2	50.8	75.8	104	133	164	193	216	230
6	150	3.000	76.2	18.2	34.9	52.2	74.1	98.0	124	147	168	186	200
		3.629	92.2	21.2	44.9	72.7	102	139	177	216	252	281	300
		4.500	114	32.7	65.7	110	165	225	290	356	419	470	500
8	200	3.797	96.4	22.0	44.2	71.9	107	150	196	241	283	317	340
		4.840	123	31.3	63.6	114	178	246	313	374	425	468	510
		6.000	152	42.8	111	201	316	434	542	639	725	798	850
10	250	4.746	121	33.7	67.6	110	164	230	300	369	432	485	520
		6.050	154	47.8	97.3	175	273	376	478	572	650	716	780
		7.500	191	65.5	170	307	483	663	828	977	1109	1221	1300
12	300	5.780	147	45.3	91.0	148	221	309	403	497	582	652	700
		7.460	189	64.4	131	235	367	506	644	769	875	964	1050
		9.250	235	88.1	228	414	650	893	1115	1315	1493	1644	1750
14	350	6.8	172.71	61	122	199	297	415	542	667	781	876	940
		8.7	220.2	86	176	316	493	679	865	1033	1175	1295	1410
		10.8	273.1	118	306	554	873	1199	1497	1766	2004	2206	2350
16	400	8.5	216.9	94	190	309	461	645	842	1035	1213	1361	1460
		10.9	276.5	133	273	490	765	1055	1343	1604	1825	2011	2190
		13.5	243.9	183	475	860	1356	1862	2326	2743	3113	3426	3650

C_v Versus Travel

Standard Camflex II with Differential Velocity Device (DVD)

Flow Direction: Flow to Open only

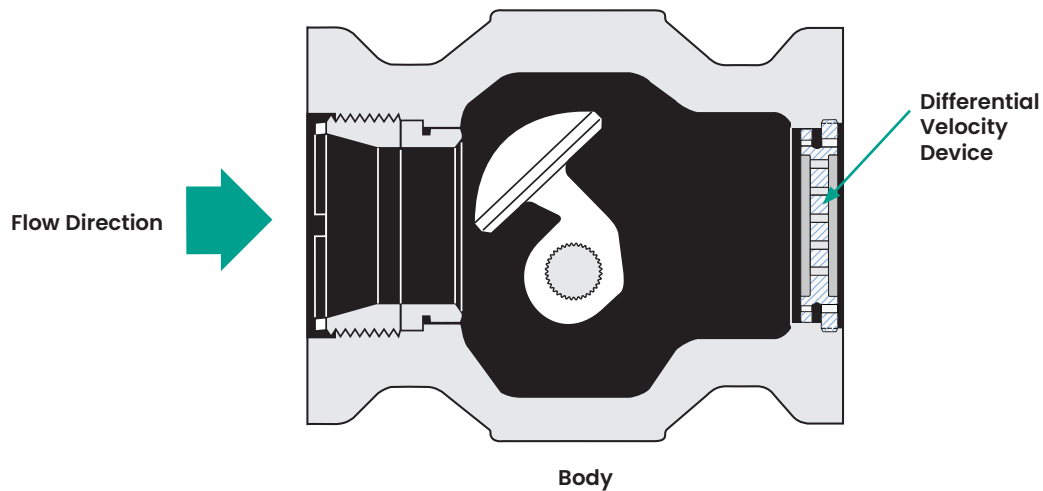
Flow Characteristics: Linear

ASME 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 Diameter		Rated C _v									
in.	DN	in.	mm										
1	25	0.579	14.7	0.52	1.04	1.88	2.62	3.23	3.76	4.22	4.58	4.84	5.00
1 ½	40	0.907	23.0	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	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	5.00	10.0	18.0	25.1	31.0	36.1	40.5	43.9	46.4	48.0
4	100	2.419	61.4	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	18.9	37.7	67.9	94.7	116	136	153	166	175	181
8	200	4.84	123	32.1	64.2	116	161	199	232	260	282	298	308
10	250	6.05	154	50.6	101	182	254	313	366	410	445	470	486
12	300	7.46	189	71.3	143	257	358	441	515	577	626	661	684

Note: The Differential Velocity Device (DVD) is used for aerodynamic noise reduction. It **must** be used with **.6 factor trim flow to open**.



Camflex High Capacity Flow to Open (FTO)

Flow Characteristic: Linear trim

Sizes 6 in. through 16 in. ASME Class 150-300

Percent of Plug Rotation				10	20	30	40	50	60	70	80	90	100
F _L Full Area				0.95	0.91	0.89	0.87	0.84	0.82	0.8	0.77	0.74	0.68
Valve Size		Orifice Diameter		Rated C _v									
in.	DN	in.	mm										
6	150	4.5	114.3	46	105	177	264	355	440	510	580	660	740
8	200	6	152.4	76	174	308	461	629	782	912	1048	1166	1290
10	250	7.5	190.5	117	267	473	707	966	1200	1401	1608	1790	1980
12	300	9.3	235	159	342	596	915	1241	1525	1800	2068	2320	2570
14	350	10.8	273.1	236	542	957	1432	1957	2431	2836	3257	3625	4010
16	400	13.5	343	316	781	1467	2147	3000	3900	4400	5050	5500	5980

Camflex High Capacity Flow to Close (FTC)

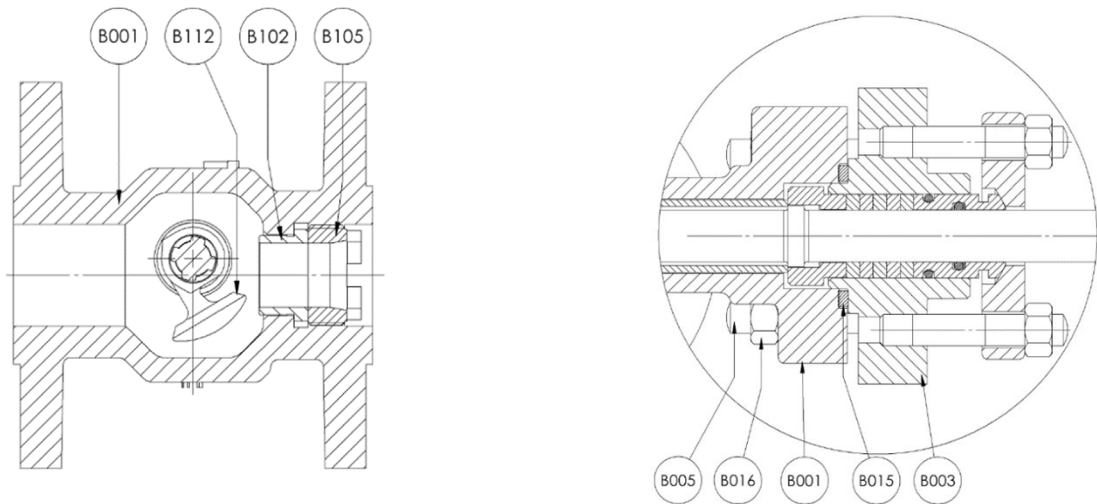
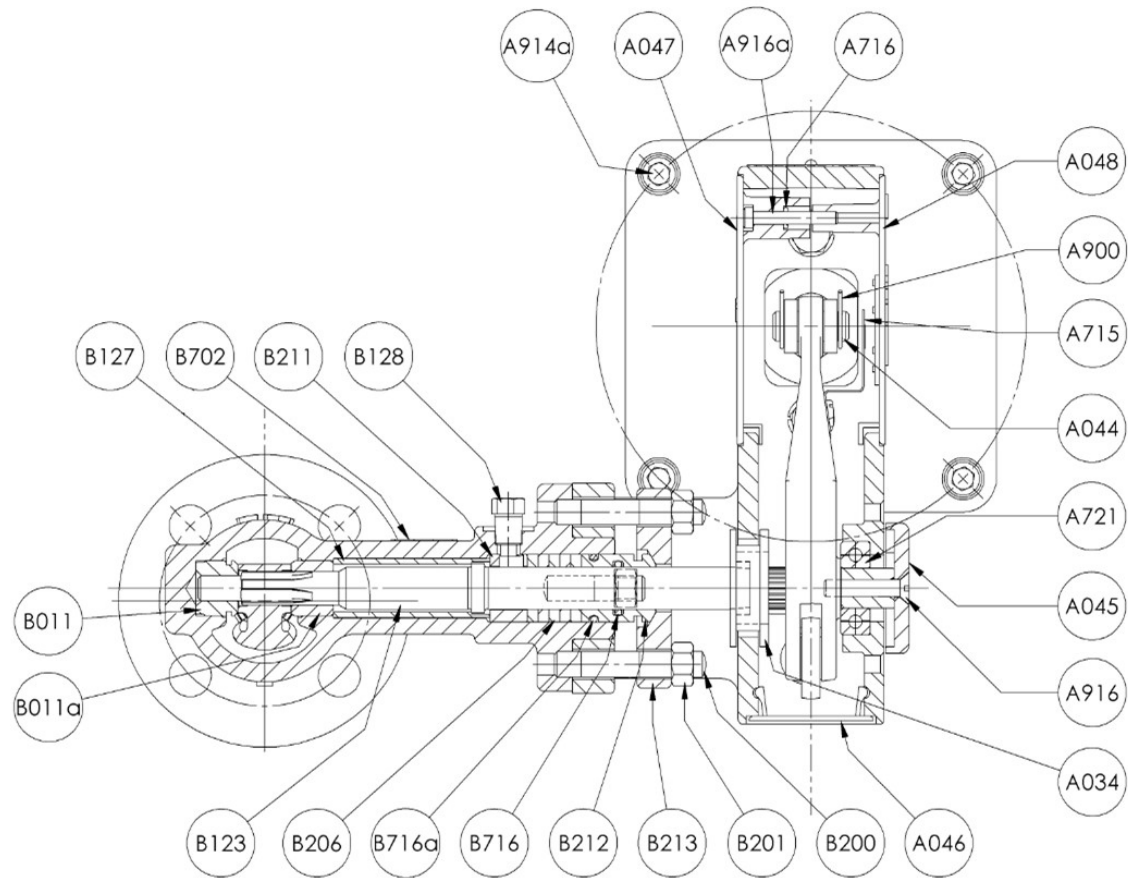
Flow Characteristic: Linear trim

Sizes 6 in. through 16 in. ASME Class 150-300

Percent of Plug Rotation				10	20	30	40	50	60	70	80	90	100
F _L Full Area				0.93	0.89	0.82	0.78	0.74	0.71	0.68	0.67	0.65	0.64
Valve Size		Orifice Diameter		Rated C _v									
in.	DN	in.	mm										
6	150	4.5	114.3	46	105	177	264	355	437	493	524	554	585
8	200	6	152.4	72	165	290	434	576	697	810	905	974	1040
10	250	7.5	190.5	110	253	447	668	886	1073	1246	1392	1499	1600
12	300	9.3	235	159	342	596	915	1170	1393	1650	1895	2100	2330
14	350	10.8	273.1	243	558	985	1472	1952	2363	2746	3066	3303	3525
16	400	13.5	343	316	781	1467	2147	2900	3500	4128	4730	5050	5250

Materials of Construction

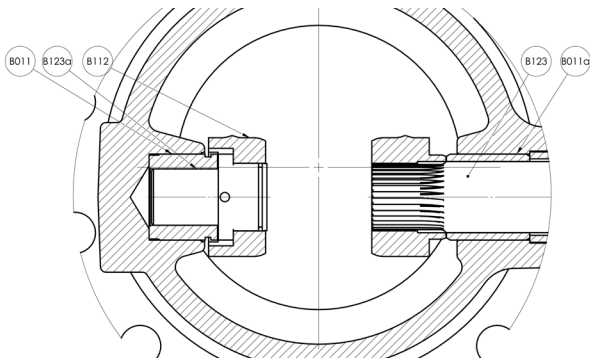
Refer to tables on pages 14 up to 20, as indicated in the diagram.



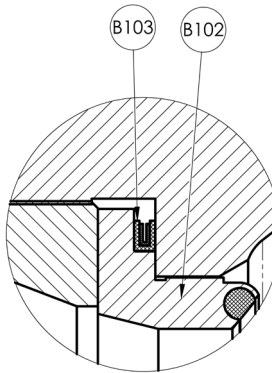
Detail view for Separable Bonnet (SB) design

Materials of Construction

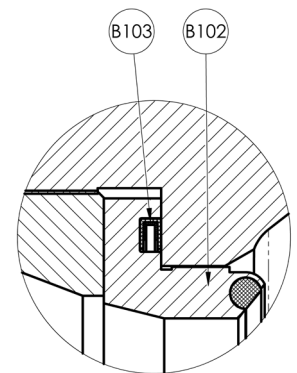
Refer to tables on pages 14 up to 20, as indicated in the diagram.



Detail view for High Capacity (HC) design

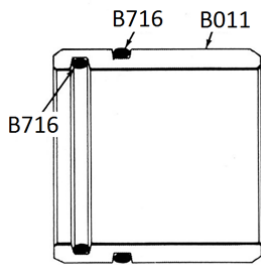


Flow to Close Soft Seat Detail

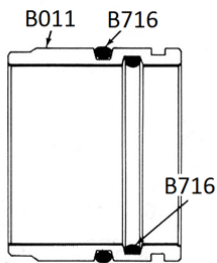


Flow to Open Soft Seat Detail

Seat Ring Soft Seat for size 14" and 16"

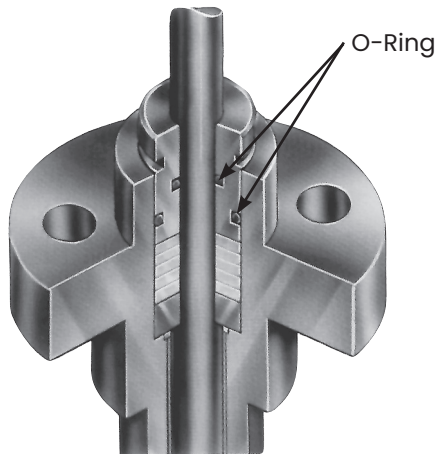


Upper Guide Bushing



Lower Guide Bushing

Optional Slurry Package Seal Bushings



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.

Standard Camflex Packing Arrangement
 EF Seal (Emission Free)
 Double O-Ring Seal Packing Follower
 ISO-15848-1 Certified Packing Available

Materials of Construction

Carbon Steel Construction⁽²⁾

Ref. No.	Temperature Range	-20°F	-4°F	+248°F	+356°F	+401°F	+450°F	+550°F	+650°F	+752°F
		(-29°C)	(-20°C)	(+120°C)	(+180°C)	(+205°C)	(+232°C)	(+288°C)	(+343°C)	(+400°C)
Description		Materials								
B001	Body	A 216 Gr WCC								
B102	Seat Ring	316 St. St. ASTM A351 Gr CF8M								
		316 St. St. ASTM A351 Gr CF8M + Stellite Hardfacing Optional								
B105	Seat Ring Retainer	ASTM A479 TY 316 St. St. + PTFE 1" to 6" (DN 25-150), 316 St. St. A351 Gr CF8M + PTFE 8" to 16" (DN 200-400)								
		316 St. St. ASTM A351 Gr CF8M								
B103	Seat Ring Gasket	Virgin PTFE Jacket with Steel Spring : only 14" and 16"								
B112	Plug	Solid Stellite 1" to 4" / ASTM A 351 Gr CF3M + Stellite No 6 3" to 16" / 6NM + Stellite No 6 3" to 16" ⁽¹⁾								
B200	Packing Flange Stud	ASTM A193 GRADE B8 CLASS 1								
B213	Packing Flange	LOW CARBON STEEL GRADES DICROMATE ZINC PLATED (standard valves)								
		SOLUTION ANNEALED 304 STAINLESS STEEL Hrc 22 MAXIMUM (Separable Bonnet valves)								
B212	Packing Follower	SOLUTION ANNEALED 316L STAINLESS STEEL Hrc 22 MAXIMUM								
B716/ B716a	O-Ring Packing Follower	VITON								
		Fluorosilicon Rubber								
		EPDM								
B128	Safety Pin	316 St. St.								
B207	Packing	CARBON CORE BRAIDED PTFE								
B123	Shaft	ASTM A 564 GR 630 (H1075)								
		316 St. St.								
		INCONEL 718 3" to 16" ⁽¹⁾								
		ASTM A638 Gr660								
B127	Spacer	ASTM A 312 TY 316L								
B011a	Upper Guide	ASTM A 276 TY 440C								
B011a + B716b/B716c	Upper Guide + O-Ring	Stellite No 6 + VITON								
		Stellite No 6 + FFKM								
B011 + B716d/B716e	Lower Guide + O-Ring	Stellite No 6 + EPDM - Optional								
		ASTM A 276 TY 440C								
B211	Packing Box Ring	316 St. St.								
B702	Warning Plate	POLYESTER TYPE MYLAR								
B704	Flow Arrow Plate	STAINLESS STEEL								
B902	Plate Screw	STAINLESS STEEL								
B014a	Yoke Nut	ASTM A 194 GR 8								
B002b	Yoke Stud	ASTM A193 GRADE B8 CLASS 1								
B903	Yoke Pin	ASTM S20910 XM-19 (10" to 16" with 5S actuator)								
B913	Yoke Screws	ASTM A193 B8 Class 1 (10" to 16" with 5S actuator)								
B201	Packing Flange Stud Nut	ASTM A 194 GR 8								
B205	Packing Box Ring	ASTM A269 TY 316L								
B015	Body Gasket	AISI 316L + GRAPHITE (Separable Bonnet valves)								
B003	Bonnet	ASTM A 105 (1" to 2") or ASTM A216 WCC/WCB/ EN1.0619/1.0625 (1" to 6") (Separable Bonnet valves)			ASTM A 105 (1" to 2") or ASTM A216 WCC/WCB/ EN1.0619/1.0625 (1" to 6") (Separable Bonnet valves)					
		ASTM A 105 (1" to 2") or ASTM 216 GR WCC/WCB/ EN 1.619/1.625 (Unpainted Bonnet) (1" to 6") (Separable Bonnet valves)								
B005	Bonnet Stud	ASTM A193 GR B7/EN 1.7225 -ZINC PLATING (standard valves)								
		ASTM A193 Grade B8 Class 2 Å (Separable Bonnet valves)								
B016	Bonnet Nut	ASTM A194 Grade 2H Zinc Plating (standard valves)								
		ASTM A 194 GR 8 (Separable Bonnet valves)								
B123a	Support Shaft	A479 UNS S20910 XM-19 (High Capacity 6" to 16")								
B708	DVD Low Noise Plate	316 St. St.								

1. 6NM plug only in conjunction with Inconel 718 shaft and vice versa.

2. Applicable for version EN 558 Extended face to face GR (Globe Replacement). For other materials of construction, consult factory.

Materials of Construction

NACE⁽²⁾ Carbon Steel Construction⁽³⁾

Ref. No.	Temperature Range	-20°F	-4°F	+248°F	+356°F	+401°F	+450°F	+550°F	+650°F	+752°F
		(-29°C)	(-20°C)	(+120°C)	(+180°C)	(+205°C)	(+232°C)	(+288°C)	(+343°C)	(+400°C)
Description		Materials								
B001	Body	ASTM 216 GR WCC/WCB/ EN 1.619/1.625								
B102	Seat Ring	316 St. St. (163H) / 316 St. St. + Stellite No 6 / 316 St. St. + Stellite 6 Seat and Bore								
		MONEL 400 + PTFE								
B105	Seat Ring Retainer	316 St. St. (163H) / 316 St. St. + Stellite 6 Bore								
		Solid Stellite (1" to 4")								
B103	Seat Ring Gasket	Virgin PTFE Jacket with Steel Spring : only 14" and 16"								
B112	Plug	Solid Stellite 1" to 4" / ASTM A 351 Gr CF3M + Stellite No 6 3" to 16" / 6NM + Stellite No 6 3" to 16" ⁽¹⁾								
B200	Packing Flange Stud	ASTM A193 GRADE B8 CLASS 1								
B213	Packing Flange	LOW CARBON STEEL GRADES DICHROMATE ZINC PLATED (standard valves)								
		SOLUTION ANNEALED 304 STAINLESS STEEL Hrc 22 MAXIMUM (Separable Bonnet valves)								
B212	Packing Follower	SOLUTION ANNEALED 316L STAINLESS STEEL Hrc 22 MAXIMUM								
B716/ B716a	O-Ring Packing Follower	VITON								
		Fluorosilicon Rubber								
		EPDM								
B128	Safety Pin	316 St. St.								
B207	Packing	CARBON CORE BRAIDED PTFE								
B123	Shaft	316 St. St.								
		ASTM B637 GRADE NO7718 (UNS 07718) - 3" to 16" ⁽¹⁾								
		ASTM A638 Gr660								
B127	Spacer	ASTM A 312 TY 316L								
B011a	Upper Guide	Stellite No 6								
B011a + B716b/B716c	Upper Guide + O-Ring	Stellite No 6 + VITON								
		Stellite No 6 + EPDM - Optional								
B011	Lower Guide	Stellite No 6								
B011 + B716d/B716e	Lower Guide + O-Ring	Stellite No 6 + VITON								
		Stellite No 6 + EPDM - Optional								
B211	Packing Box Ring	316 St. St.								
B702	Warning Plate	POLYESTER TYPE MYLAR								
B704	Flow Arrow Plate	STAINLESS STEEL								
B902	Plate Screw	STAINLESS STEEL								
B014a	Yoke Nut	ASTM A 194 GR 8								
B002b	Yoke Stud	ASTM A193 GRADE B8 CLASS 1								
B903	Yoke Pin	ASTM S20910 XM-19 (10" to 16" with 5S actuator)								
B913	Yoke Screws	ASTM A193 B8 Class 1 (10" to 16" with 5S actuator)								
B201	Packing Flange Stud Nut	ASTM A 194 GR 8								
B123a	Support Shaft	A479 UNS S20910 XM-19 (High Capacity 6" to 16")								
B708	DVD Low Noise Plate	316 St. St.								

1. 6NM plug only in conjunction with Inconel 718 shaft and vice versa.

2. Applications requiring compliance to MR0175-2003 or ISO 15156 must be reviewed by Baker Hughes.

3. Applicable for version EN 558 Extended face to face GR (Globe Replacement). For other materials of construction, consult factory.

Materials of Construction

Chrome Moly Construction

Ref. No.	Temperature Range	-20°F (-29°C)	-4°F (-20°C)	+250°F (+121°C)	+356°F (+180°C)	+401°F (+205°C)	+450°F (+232°C)	+550°F (+288°C)	+752°F (+400°C)
		▽	▽	▽	▽	▽	▽	▽	▽
Description		Materials							
B001	Body	ASTM A217 GRADE WC6/EN 1.7357 EN 10213							
B102	Seat Ring	316 St. St. / 316 St. St. + Stellite No 6 / 316 St. St. + Stellite 6 Seat and Bore							
		316 St. St. + PTFE							
B105	Seat Ring Retainer	316 St. St. / 316 St. St. + Stellite 6 Bore							
		Solid Stellite (1" to 4")							
B103	Seat Ring Gasket	Virgin PTFE Jacket with Steel Spring : only 14" and 16" leakage Class VI							
B112	Plug	Solid Stellite 1" to 4" / ASTM A 351 Gr CF3M + Stellite No 6 3" to 16" / 6NM + Stellite No 6 3" to 16" ⁽¹⁾							
B200	Packing Flange Stud	ASTM A193 GRADE B8 CLASS 1							
B213	Packing Flange	LOW CARBON STEEL GRADES DICHROMATE ZINC PLATED (standard valves)							
		SOLUTION ANNEALED 304 STAINLESS STEEL Hrc 22 MAXIMUM (Separable Bonnet valves)							
B212	Packing Follower	SOLUTION ANNEALED 316L STAINLESS STEEL Hrc 22 MAXIMUM							
B716/ B716a	O-Ring Packing Follower	VITON							
		Fluorosilicon Rubber							
		EPDM							
B128	Safety Pin	316 St. St.							
B207	Packing	CARBON CORE BRAIDED PTFE							
B123	Shaft	ASTM A 564 GR 630 (H1075)							
		316 St. St.							
		INCONEL 718 3" to 16" ⁽¹⁾							
		ASTM A638 Gr660							
B127	Spacer	ASTM A 312 TY 316L							
B011a	Upper Guide	ASTM A 276 TY 440C							
B011a + B716b/B716c	Upper Guide + O-Ring	Stellite No 6+ VITON				Stellite No 6 + FFKM			
		Stellite No 6 + EPDM							
B011	Lower Guide	ASTM A 276 TY 440C							
B011 + B716d/B716e	Lower Guide + O-Ring	Stellite No 6 + VITON				Stellite No 6 + FFKM			
		Stellite No 6 + EPDM							
B211	Packing Box Ring	316 St. St.							
B702	Warning Plate	POLYESTER TYPE MYLAR							
B704	Flow Arrow Plate	STAINLESS STEEL							
B902	Plate Screw	STAINLESS STEEL							
B014a	Yoke Nut	ASTM A 194 GR 8							
B002b	Yoke Stud	ASTM A193 GRADE B8 CLASS 1							
B201	Packing Flange Stud Nut	ASTM A 194 GR 8							
B903	Yoke Pin	ASTM S20910 XM-19 (10" to 16" with 5S actuator)							
B913	Yoke Screws	ASTM A193 B8 Class 1 (10" to 16" with 5S actuator)							
B205	Packing Box Ring	ASTM A269 TY 316L							
B015	Body Gasket	AISI 316L + GRAPHITE (Separable Bonnet valves)							
B003	Bonnet	ASTM A182 GRADE F11 CLASS 2 NORMALIZED AND TEMPERED (1" to 2") or ASTM A217 GRADE WC6/EN 1.7357 EN10213 Hrc 22 MAXIMUM (1" to 6") (Separable Bonnet valves)							
B005	Bonnet Stud	ASTM A193 Grade B8 Class 2 (Separable Bonnet valves)							
B016	Bonnet Nut	ASTM A 194 GR 8 (Separable Bonnet valves)							
B123a	Support Shaft	A479 UNS S20910 XM-19 (High Capacity 6" to 16")							
B708	DVD Low Noise Plate	316 St. St.							

1. 6NM plug only in conjunction with Inconel 718 shaft and vice versa.

Materials of Construction

Stainless Steel Construction⁽²⁾⁽³⁾

Ref. No.	Temperature Range	-321°F	-67°F	-51°F	-30°F	-20°F	-4°F	+250°F	+356°F	+401°F	+450°F	+550°F	+752°F
		(-196°C)	(-55°C)	(-46°C)	(-34°C)	(-29°C)	(-20°C)	(+121°C)	(+180°C)	(+205°C)	(+232°C)	(+288°C)	(+400°C)
Description		Materials											
B001	Body	FLANGELESS BODY ASTM A 351 Gr CF8M / FLANGED BODY ASTM A 351 GR CF3M											
B102	Seat Ring	316 St. St. / 316 St. St. + Stellite No 6 / 316 St. St. + Stellite 6 Seat and Bore											
		316 St. St. + PCTFE	316 St. St. + PTFE										
B105	Seat Ring Retainer	316 St. St. / 316 St. St. + Stellite 6 Bore											
		Solid Stellite (1" to 4")											
B103	Seat Ring Gasket	Virgin PTFE Jacket with Steel Spring : only 14" and 16"											
B112	Plug	Solid Stellite 1" to 4" / ASTM A 351 Gr CF3M + Stellite No 6 3" to 16"											
		6NM + Stellite No 6 3" to 16" ⁽¹⁾											
B200	Packing Flange Stud	ASTM A193 GRADE B8 CLASS 1											
B213	Packing Flange	SOLUTION ANNEALED 304 STAINLESS STEEL HRC 22 MAXIMUM											
B212	Packing Follower	SOLUTION ANNEALED 316L STAINLESS STEEL HRC 22 MAXIMUM											
B716/ B716a	O-Ring	VITON											
		Fluorosilicon Rubber											
		EPDM											
B128	Safety Pin	316 St. St.											
B207	Packing	CARBON CORE BRAIDED PTFE											
B123	Shaft	316 St. St.											
		INCONEL 718 3" to 16" ⁽¹⁾											
		ASTM A638 Gr660											
		ASTM A 564 GR 630 (HI075)											
B127	Spacer	ASTM A 312 TY 316L											
B011a	Upper Guide	Stellite No 6											
B011a + B716b/B716c	Upper Guide + O-Ring	Stellite No 6 + VITON										Stellite No 6 + FFKM	
		Stellite No 6 + EPDM – (Optional)											
B011	Lower Guide ⁽¹⁾	Stellite No 6											
B011 + B716d/B716e	Lower Guide + O-Ring	Stellite No 6 + VITON										Stellite No 6 + FFKM	
		Stellite No 6 + EPDM – (Optional)											
B211	Packing Box Ring	316 St. St.											
B702	Warning Plate	POLYESTER TYPE MYLAR											
B704	Flow Arrow Plate	STAINLESS STEEL											
B902	Plate Screw	STAINLESS STEEL											
B014a	Yoke Nut	ASTM A 194 GR 8											
B002b	Yoke Stud	ASTM A193 GRADE B8 CLASS 1											
B201	Packing Flange Stud Nut	ASTM A 194 GR 8											
B903	Yoke Pin	ASTM S20910 XM-19 (10" to 16" with 5S actuator)											
B913	Yoke Screws	ASTM A193 B8 Class 1 (10" to 16" with 5S actuator)											
B205	Packing Box Ring	ASTM A269 TY 316L											
B015	Body Gasket	AISI 316L + GRAPHITE (Separable Bonnet valves)											
B003	Bonnet	ASTM A479 TY 316 (1" to 2") or ASTM A 351 GR CF3M (1" to 6") (Separable Bonnet valves)											
B005	Bonnet Stud	ASTM A 193 GR B8 Cl 2 (Separable Bonnet valves)											
B016	Bonnet Nut	ASTM A 194 GR 8 (Separable Bonnet valves)											
B123a	Support Shaft	A479 UNS S20910 XM-19 (High Capacity 6" to 16")											
B708	DVD Low Noise Plate	316 St. St.											

1. 6NM plug only in conjunction with Inconel 718 shaft and vice versa.

2. This construction down from -200°F (-129°C) to -321°F (-196°C) can be used for intermittent condition only.

3. Applicable for version EN 558 Extended face to face GR (Globe Replacement). For other materials of construction, consult factory.

Materials of Construction

NACE⁽²⁾ Stainless Steel Construction⁽³⁾

Ref. No.	Temperature Range	-20°F	-4°F	+250°F	+356°F	+401°F	+450°F	+550°F	+752°F
		(-29°C)	(-20°C)	(+121°C)	(+180°C)	(+205°C)	(+232°C)	(+288°C)	(+400°C)
Description		Materials							
B001	Body	FLANGELESS BODY ASTM A 351 Gr CF8M / FLANGED BODY ASTM A 351 GR CF3M							
B102	Seat Ring	316 St. St. / 316 St. St. + Stellite No 6 / 316 St. St. + Stellite 6 Seat and Bore							
		MONEL 400 + PTFE							
B105	Seat Ring Retainer	316 St. St. / 316 St. St. + Stellite 6 Bore							
		Solid Stellite (1" to 4")							
B103	Seat Ring Gasket	Virgin PTFE Jacket with Steel Spring : only 14" and 16"							
B112	Plug	Solid Stellite 1" to 4" / ASTM A 351 Gr CF3M + Stellite No 6 3" to 16" / 6NM + Stellite No 6 3" to 16" ⁽¹⁾							
B200	Packing Flange Stud	ASTM A193 GRADE B8 CLASS 1							
B213	Packing Flange	SOLUTION ANNEALED 304 STAINLESS STEEL HRC 22 MAXIMUM							
B212	Packing Follower	SOLUTION ANNEALED 316L STAINLESS STEEL HRC 22 MAXIMUM							
B716/ B716a	O-Ring	VITON							
		Fluorosilicon Rubber							
		EPDM							
B128	Safety Pin	316 St. St.							
B207	Packing	CARBON CORE BRAIDED PTFE							
B123	Shaft	316 St. St.							
		ASTM B637 GRADE NO7718 (UNS 07718) - 3" to 16" ⁽¹⁾							
		ASTM A638 Gr660							
B127	Spacer	ASTM A 312 TY 316L							
B011a	Upper Guide	Stellite No 6							
B011a + B716b/B716c	Upper Guide + O-Ring	Stellite No 6+ VITON				Stellite No 6 + FFKM			
		Stellite No 6 + EPDM - (Optional)							
B011	Lower Guide	Stellite No 6							
B011 + B716d/B716e	Lower Guide + O-Ring	Stellite No 6 + VITON				Stellite No 6 + FFKM			
		Stellite No 6 + EPDM - (Optional)							
B211	Packing Box Ring	316 St. St.							
B702	Warning Plate	POLYESTER TYPE MYLAR							
B704	Flow Arrow Plate	STAINLESS STEEL							
B902	Plate Screw	STAINLESS STEEL							
B014a	Yoke Nut	ASTM A 194 GR 8							
B002b	Yoke Stud	ASTM A193 GRADE B8 CLASS 1							
B903	Yoke Pin	ASTM S20910 XM-19 (10" to 16" with 5S actuator)							
B913	Yoke Screws	ASTM A193 B8 Class 1 (10" to 16" with 5S actuator)							
B201	Packing Flange Stud Nut	ASTM A 194 GR 8							
B123a	Support Shaft	A479 UNS S20910 XM-19 (High Capacity 6" to 16")							
B708	DVD Low Noise Plate	316 St. St.							

1. 6NM plug only in conjunction with Inconel 718 shaft and vice versa

2. Applications requiring compliance to MR0175-2003 or ISO 15156 must be reviewed by Baker Hughes.

3. Applicable for version EN 558 Extended face to face GR (Globe Replacement). For other materials of construction, consult factory.

Materials of Construction

Hastelloy C22 Construction 1 in. to 6 in. Standard Capacity Only⁽¹⁾

Ref. No.	Temperature Range	-321°F	-67°F	-51°F	-30°F	-4°F	+250°F	+356°F	+401°F	+450°F	+500°F
		(-196°C)	(-55°C)	(-46°C)	(-34°C)	(-20°C)	(+121°C)	(+180°C)	(+205°C)	(+232°C)	(+260°C)
Description		Materials									
B001	Body	ASTM A 494 Gr CX-2MW									
B102	Seat Ring	HASTELLOY C22									
		HASTELLOY C22 + PCTFE		HASTELLOY C22 + PTFE							
B105	Seat Ring Retainer	HASTELLOY C22									
B112	Plug	HASTELLOY C22									
B200	Packing Flange Stud	ASTM A193 GRADE B8 CLASS 1									
B213	Packing Flange	SOLUTION ANNEALED 304 STAINLESS STEEL HRC 22 MAXIMUM									
B212	Packing Follower	HASTELLOY C22									
B716/ B716a	O-Ring	VITON									
		Fluorosilicon Rubber									
		EPDM									
B128	Safety Pin	HASTELLOY C22									
B207	Packing	CARBON CORE BRAIDED PTFE									
B123	Shaft	HASTELLOY C22									
B127	Spacer	HASTELLOY C22									
B011a	Upper Guide	Stellite No 6									
		HAYNES ALLOY 25									
B011a + B716b/B716c	Upper Guide + O-Ring	Stellite No 6 + VITON							Stellite No 6 + FFKM		
		Stellite No 6 + EPDM – (Optional)									
B011	Lower Guide	Stellite No 6									
		HAYNES ALLOY 25									
B011 + B716d/B716e	Lower Guide + O-Ring	Stellite No 6 + VITON							Stellite No 6 + FFKM		
		Stellite No 6 + EPDM – (Optional)									
B211	Packing Box Ring	HASTELLOY C22									
B702	Warning Plate	POLYESTER TYPE MYLAR									
B704	Flow Arrow Plate	STAINLESS STEEL									
B902	Plate Screw	STAINLESS STEEL									
B014a	Yoke Nut	ASTM A 194 GR 8									
B002b	Yoke Stud	ASTM A193 GRADE B8 CLASS 1									
B201	Packing Flange Stud Nut	ASTM A 194 GR 8									
B708	DVD Low Noise Plate	HASTELLOY C22									

1. This construction down from -129°C (-200°F) to -196°C (-321°F) can be used for intermittent condition only.

Materials of Construction

Slurry Service Construction

Ref. No.	Temperature Range	-321°F	-51°F	-30°F	-20°F	-4°F	+250°F	+356°F	+401°F	+550°F	+752°F
		(-196°C)	(-46°C)	(-34°C)	(-29°C)	(-20°C)	(+121°C)	(+180°C)	(+205°C)	(+288°C)	(+400°C)
Description		Materials									
B001	Body	FLANGELESS BODY ASTM A 351 Gr CF8M / FLANGED BODY ASTM A 351 GR CF3M									
		ASTM A 351 GR CF3M + internal surface Stellite 6 (6in and upper valve size only)									
							ASTM A216 WCC/WCB/ EN1.0619/1.0625 + ceramic internal surface coatings (2in and upper valve size only)				
B102	Seat Ring	316 St. St with Stellite Seat and Bore									
B105	Seat Ring Retainer	316 St St with Stellite Bore									
		Solid Stellite (1" to 4")									
B112	Plug	Solid Stellite 1" to 4" / ASTM A 351 Gr CF3M + Stellite No 63" to 16"									
		ASTM A 351 Gr CF3M + Stellite No 6 fully hardfaced 6" to 16"									
							6NM + STELLITE No 6 3" to 16" ⁽¹⁾				
B200	Packing Flange Stud	ASTM A193 GRADE B8 CLASS 1									
B213	Packing Flange	SOLUTION ANNEALED 304 STAINLESS STEEL HRC 22 MAXIMUM									
B212	Packing Follower	SOLUTION ANNEALED 316L STAINLESS STEEL HRC 22 MAXIMUM									
B716/ B716a	O-Ring	VITON									
		Fluorosilicon Rubber									
		EPDM									
B128	Safety Pin	316 St. St.									
B207	Packing	CARBON CORE BRAIDED PTFE									
B123	Shaft	ASTM A 564 GR 630 (H1075)									
		316 St. St.									
		INCONEL 718 3" to 16" ⁽¹⁾									
		ASTM A638 Gr660									
B127	Spacer	ASTM A 312 TY 316L									
B011a	Upper Guide	Stellite No 6									
B011a + B716b/B716c	Upper Guide + O-Ring	Stellite No 6 + VITON							Stellite No 6 + FFKM		
		Stellite No 6 + EPDM									
B011	Lower Guide	Stellite No 6									
B011 + B716d/B716e	Lower Guide + O-Ring	Stellite No 6 + VITON							Stellite No 6 + FFKM		
		Stellite No 6 + EPDM									
B211	Packing Box Ring	316 St. St.									
B014a	Yoke Nut	ASTM A 194 GR 8									
B002b	Yoke Stud	ASTM A193 GRADE B8 CLASS 1									
B903	Yoke Pin	ASTM S20910 XM-19 (10" to 16" with 5S actuator)									
B913	Yoke Screws	ASTM A193 B8 Class 1 (10" to 16" with 5S actuator)									
B201	Packing Flange Stud Nut	ASTM A 194 GR 8									
B015	Body Gasket	AISI 316L + GRAPHITE (Separable Bonnet valves)									
B003	Bonnet	ASTM A 351 GR CF3M (Separable Bonnet valves)									
B005	Bonnet Stud	ASTM A193 Grade B8 Class 2 (Separable Bonnet valves)									
B016	Bonnet Nut	ASTM A 194 GR 8 (Separable Bonnet valves)									
B123a	Support Shaft	A479 UNS S20910 XM-19 (High capacity 6" to 16")									
B708	DVD Low Noise Plate	316 St. St.									

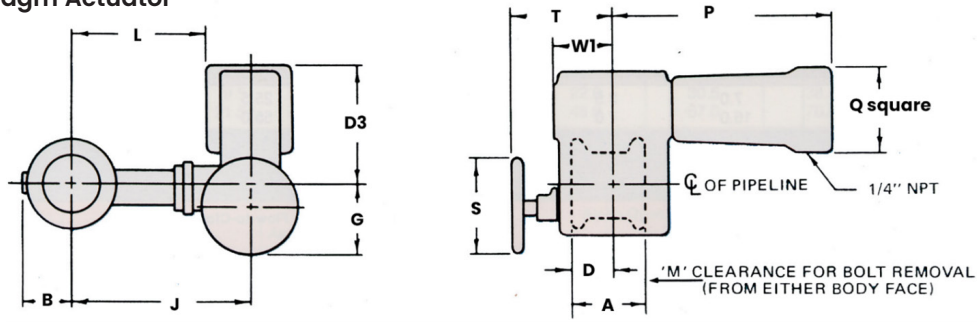
1. 6NM plug only in conjunction with Inconel 718 shaft and vice versa.

2. This construction down from -129°C (-200°F) to -196°C (321°F) can be used for intermittent conditions only.

Dimensions

Actuators Dimensions

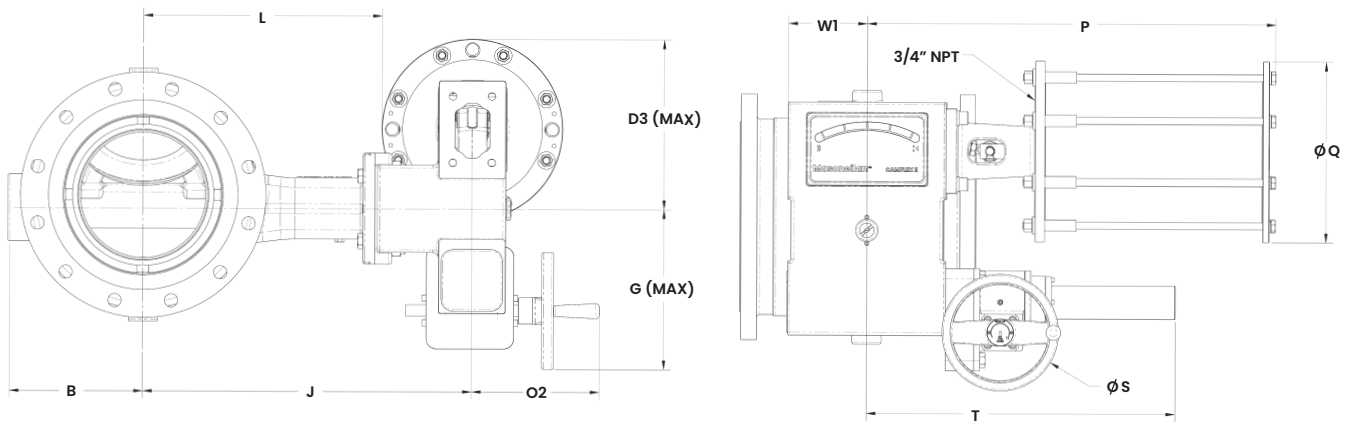
Model 35 Diaphragm Actuator



CL = Center Line

For dimensions D and A : refer to pages 23 and 24

Model 5S Piston Spring Actuator



Actuator Dimensions for 50 Degree Rotation

Valve Size		Actuator Model - Size	D3		P		T		S		Q		G		W1		O2	
in.	DN		mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
1	25	35 - 4.5"	168	6.61	302	11.89	256	10.08	161	6.34	140	5.51	109	4.29	73.2	2.88	-	-
1.5	40																-	-
2	50																-	-
3	80																-	-
4	100	35 - 6"	249	9.80	436	17.17	269	10.59	161	6.34	175	6.89	122	4.80	106.5	4.19	-	-
6	150	35 - 7"	313	12.32	527	20.75	307	12.09	254	10	219	8.62	200	7.87	136.7	5.38	-	-
8	200																-	-
10	250																-	-
12	300																-	-
6	150	35 - No. 9	373	14.69	674	26.54	306	12.05	400	15.75	304	11.97	213	8.39	136.7	5.38	-	-
8	200		376	14.80									216	8.50				
10	250		379	14.92									219	8.62				
12	300		382	15.04									222	8.74				
10	250	5S - 12"	370	14.57	890	35.04	672	26.46	254	10	394	15.51	349	13.74	174	6.85	278	10.94
12	300																-	-
14	350																-	-
16	400																-	-
12	300	5S - 16"	414	16.30	908	35.75	672	26.46	254	10	483	19.02	349	13.74	174	6.85	278	10.94
14	350																-	-
16	400																-	-

Dimensions

Actuators Dimensions for 50 Degree Rotation (Cont'd)

Valve Size		Actuator Model - Size	J ⁽²⁾		B ⁽¹⁾		L		M					
in.	DN		mm	in.	mm	in.	mm	in.	ASME 150		ASME 300		ASME 600	
1	25	35 - 4.5"	204	8.03	37.5	1.48	134	5.28	205	8.07	229	9.02	229	9.02
1.5	40		232	9.13	51	2.01	162	6.38	205	8.07	254	10	254	10
2	50		237	9.33	65	2.56	167	6.57	267	10.51	267	10.51	267	10.51
3	80	35 - 6"	327	12.87	84	3.31	239	9.41	300	11.81	343	13.50	343	13.50
4	100		349	13.74	108	4.25	262	10.31	330	12.99	343	13.50	406	15.98
6	150	35 - 7"	429	16.89	146	5.75	320	12.60	394	15.51	470	18.50	470	18.50
8	200		467	18.39	203	7.99	358	14.09	394	15.51	470	18.50	533	20.98
10	250		569	22.40	250	9.84	460	18.11	460	18.11	530	20.87	595	23.43
12	300		604	23.78	275	10.83	495	19.49	505	19.88	575	22.64	648	25.51
6	150	35 - No. 9	429	16.89	146	5.75	280	11.02	394	15.51	470	18.50	470	18.50
8	200		467	18.39	203	7.99	318	12.52	394	15.51	470	18.50	533	20.98
10	250		569	22.40	250	9.84	422	16.61	460	18.11	530	20.87	595	23.43
12	300		604	23.78	275	10.83	457	17.99	505	19.88	575	22.64	648	25.51
10	250	5S - 12"	569	22.40	250	9.84	372	14.65	460	18.11	530	20.87	595	23.43
12	300		604	23.78	275	10.83	407	16.02	505	19.88	575	22.64	648	25.51
14	250		717	28.23	294.5	11.59	520	20.47	-	-	-	-	-	-
16	300		822	32.36	326.5	12.85	625	24.61	-	-	-	-	-	-
12	300	5S - 16"	604	23.78	275	10.83	363	14.29	505	19.88	575	22.64	648	25.51
14	250		717	28.23	294.5	11.59	476	18.74	-	-	-	-	-	-
16	300		822	32.36	326.5	12.85	581	22.87	-	-	-	-	-	-

1. Only for flangeless valves and flanged valves 14 in. and 16 in. For the others flanged valves, see the external flange diameter according to the end standard.
2. Center line of the actuator.

Actuator Dimensions for 70 Degree Rotation

Valve Size		Actuator Model - Size	D3		P		T		S		Q		G		W1		O2	
in.	DN		mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
6	150	35 - 7"	330	12,99	517	20.35	440.5	17.34	305	12.01	219	8.62	200	7.87	136.7	5.38	-	-
8	200		333	13,11														
10	250		335	13,19														
12	300		338	13,31														
6	150	35 - No. 9	373	14,69	674	26.54	440.5	17.34	400	15.75	304	11.97	213	8.39	136.7	5.38	-	-
8	200		376	14,80									216	8.50				
10	250		379	14,92									219	8.62				
12	300		382	15,04									222	8.74				
10	250	5S - 12"	370	14.57	890	35.04	672	26.46	254	10	394	15.51	349	13.74	174	6.85	278	10.94
12	300																	
14	350																	
16	400	5S - 16"	414	16.30	908	35.75	672	26.46	254	10	483	19.02	349	13.74	174	6.85	278	10.94
12	300																	
14	350																	
16	400																	

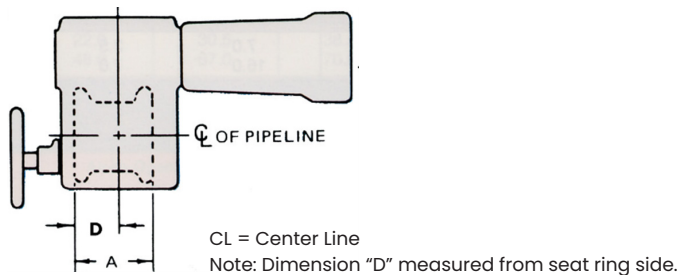
Dimensions

Actuators Dimensions for 70 Degree Rotation (Cont'd)

Valve Size		Actuator Model - Size	J ⁽²⁾		B ⁽¹⁾		L		M					
			mm	in.	mm	in.	mm	in.	ASME 150		ASME 300		ASME 600	
in.	DN													
6	150	7"	429	16.89	146	5.75	320	12.60	394	15.51	470	18.50	470	18.50
8	200		467	18.39	203	7.99	358	14.09	394	15.51	470	18.50	533	20.98
10	250		569	22.40	250	9.84	460	18.11	460	18.11	530	20.87	595	23.43
12	300		604	23.78	275	10.83	495	19.49	505	19.88	575	22.64	648	25.51
6	150	35 - No. 9	429	16.89	146	5.75	280	11.02	394	15.51	470	18.50	470	18.50
8	200		467	18.39	203	7.99	318	12.52	394	15.51	470	18.50	533	20.98
10	250		569	22.40	250	9.84	422	16.61	460	18.11	530	20.87	595	23.43
12	300		604	23.78	275	10.83	457	17.99	505	19.88	575	22.64	648	25.51
10	250	5S - 12"	569	22.40	250	9.84	372	14.65	460	18.11	530	20.87	595	23.43
12	300		604	23.78	275	10.83	407	16.02	505	19.88	575	22.64	648	25.51
14	250		717	28.23	294.5	11.59	520	20.47	-	-	-	-	-	-
16	300		822	32.36	326.5	12.85	625	24.61	-	-	-	-	-	-
12	300	5S - 16"	604	23.78	275	10.83	363	14.29	505	19.88	575	22.64	648	25.51
14	250		717	28.23	294.5	11.59	476	18.74	-	-	-	-	-	-
16	300		822	32.36	326.5	12.85	581	22.87	-	-	-	-	-	-

1. Only for flangeless valves and flanged valves 14 in. and 16 in. For the others flanged valves, see the external flange diameter according to the end standard.
2. Center line of the actuator.

Camflex Face to Face Dimensions



Standard Face to Face

Valve Size		A					D					
		Threaded Ends		Flanged and Flangeless		Tolerance	Threaded Ends		Flangeless		Flanged	
in.	DN	mm	in.	mm	in.		mm	in.	mm	in.	mm	in.
1	25	102	4.02	102	4.02	±1.5	67	2.64	67	2.64	51	2.01
1.5	40	137	5.39	114	4.49	±1.5	84	3.31	62	2.44	59	2.31
2	50	146	5.75	124	4.88	±1.5	84	3.31	62	2.44	63	2.46
3	80	-	-	165	6.50	±1.5	-	-	97	3.82	86	3.39
4	100	-	-	194	7.64	±1.5	-	-	106	4.17	106	4.17
6	150	-	-	229	9.02	±1.5	-	-	127	5.00	127	5.00
8	200	-	-	243	9.57	±1.5	-	-	148	5.83	138	5.44
10	250	-	-	297	11.69	±1.5	-	-	167	6.57	167	6.57
12	300	-	-	338	13.31	±1.5	-	-	184	7.24	184	7.24
14	350	-	-	513	20.20	±1.5	-	-	-	-	276	10.87
16	400	-	-	534	21.00	±1.5	-	-	-	-	272	10.69

Dimensions

Extended Face to Face (GR) – RF

Valve Size		A							D					
		150 RF		300 RF		600 RF		Tolerance (CL 150,300,600)	150 RF		300 RF		600 RF	
in.	DN	mm	in.	mm	in.	mm	in.		mm	in.	mm	in.	mm	in.
1	25	184	7.24	197	7.76	210	8.27	±1.5	133	5.24	139.5	5.49	155	6.10
1.5	40	222	8.74	235	9.25	251	9.88	±1.5	170.5	6.71	177.5	6.99	193.5	7.62
2	50	254	10	267	10.51	286	11.26	±1.5	198	7.80	204.5	8.05	223.5	8.80
3	80	298	11.73	318	12.52	337	13.27	±1.5	227.8	8.97	237.8	9.36	256.8	10.11
4	100	352	13.86	368	14.49	394	15.51	±1.5	176	6.93	184	7.24	197	7.76
6	150	451	17.76	473	18.62	508	20.00	±1.5	225.5	8.88	236.5	9.31	254	10
8	200	-	-	-	-	-	-	-	-	-	-	-	-	-
10	250	-	-	-	-	-	-	-	-	-	-	-	-	-
12	300	-	-	-	-	-	-	-	-	-	-	-	-	-
14	350	-	-	-	-	-	-	-	-	-	-	-	-	-
16	400	-	-	-	-	-	-	-	-	-	-	-	-	-

Extended Face to Face (GR) – RTJ

Valve Size		A							D					
		150 RTJ		300 RTJ		600 RTJ		Tolerance (CL 150,300,600)	150 RTJ		300 RTJ		600 RTJ	
in.	DN	mm	in.	mm	in.	mm	in.		mm	in.	mm	in.	mm	in.
1	25	197	7.76	210	8.27	210	8.27	±1.5	139.5	5.49	146	5.75	155	6.10
1.5	40	235	9.25	248	9.76	251	9.88	±1.5	177.5	6.99	184	7.24	193.5	7.62
2	50	267	10.51	283	11.14	289	11.38	±1.5	204.5	8.05	213	8.39	225	8.86
3	80	311	12.24	333	13.11	340	13.39	±1.5	234.8	9.24	245.3	9.66	258.3	10.17
4	100	364	14.33	384	15.12	397	15.63	±1.5	182	7.17	192	7.56	198.5	7.81
6	150	464	18.27	489	19.25	511	20.12	±1.5	232	9.13	244.5	9.63	255.5	10.06
8	200	-	-	-	-	-	-	-	-	-	-	-	-	-
10	250	-	-	-	-	-	-	-	-	-	-	-	-	-
12	300	-	-	-	-	-	-	-	-	-	-	-	-	-
14	350	-	-	-	-	-	-	-	-	-	-	-	-	-
16	400	-	-	-	-	-	-	-	-	-	-	-	-	-

Extended Face to Face (GR) – EN 558

EN 558 PN10 / PN16 – Type B1 flanges

Valve Size		PN10 / PN16				
		A		Tolerance	D	
in.	DN	mm	in.	mm	mm	in.
1	25	160	6.30	±1.5	109	4.29
1.5	40	200	7.87	±1.5	145	5.71
2	50	230	9.06	±1.5	169	6.65
3	80	310	12.20	±1.5	233.5	9.19
4	100	350	13.78	±1.5	175	6.89
6	150	480	18.90	±1.5	240	9.45

EN 558 PN25 / PN40 – Type B1 flanges

Valve Size		PN25 / PN40				
		A		Tolerance	D	
in.	DN	mm	in.	mm	mm	in.
1	25	160	6.30	±1.5	109	4.29
1.5	40	200	7.87	±1.5	145	5.71
2	50	230	9.06	±1.5	169	6.65
3	80	310	12.20	±1.5	233.5	9.19
4	100	350	13.78	±1.5	175	6.89
6	150	480	18.90	±1.5	240	9.45

Weights

Camflex Valve

Valve Size		Standard Face to Face Body Sub-Assembly								Extended Face to Face (GR) Body Sub-Assembly					
		Flangeless		Flanged 150 lb		Flanged 300 lb		Flanged 600 lb		Flanged 150 lb		Flanged 300 lb		Flanged 600 lb	
in.	DN	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
1	25	3.1	6.8	4.5	9.9	5.5	12.1	6.5	14.3	6	13.2	7	15.4	8	17.6
1.5	40	4.4	9.7	6.5	14.3	9.0	19.8	10	22	8	17.6	11	24.3	13	28.7
2	50	6.1	13.4	8.3	18.3	10.3	22.7	12.3	27.1	11	24.3	14	30.9	18	39.7
3	80	14.3	31.5	19.2	42.3	23.7	52.2	26.7	58.9	25	55.1	30	66.1	37	81.6
4	100	22.6	49.8	30.5	67.2	37.5	82.7	49.5	109.1	40	88.2	48	105.8	66	145.5
6	150	44.7	98.5	51.1	112.7	66.6	146.8	91.6	201.9	69	152.1	87	191.8	120	264.6
8	200	65	143.3	67	147.7	94	207.2	130	286.6	-	-	-	-	-	-
10	250	117.8	259.7	107.8	237.7	154.8	341.3	-	-	-	-	-	-	-	-
12	300	170.2	375.2	156.2	344.4	228.2	503.1	-	-	-	-	-	-	-	-
14	350	-	-	334.6	737.6	391.6	863.2	-	-	-	-	-	-	-	-
16	400	-	-	423.2	932.9	498.2	1098	-	-	-	-	-	-	-	-

Note: High Capacity and Standard Camflex are the same weight.

Camflex Valve Extended Face to Face (GR) as per EN 558 Body Sub-Assembly

Valve Size		Flangeless		Flanged PN10 / PN16		Flanged PN25 / PN40	
in.	DN	kg	lb	kg	lb	kg	lb
1	25	-	-	6.8	14.9	6.3	13.8
1.5	40	-	-	9.5	20.9	9.5	20.9
2	50	-	-	11.9	26.3	12.8	28.2
3	80	-	-	24.7	54.4	26.6	58.7
4	100	-	-	36.2	79.8	38.7	85.4
6	150	-	-	70.6	155.5	75.4	166.2

Actuator Sub-Assembly

Valve Size		Model 35 Diaphragm								Model 5S Piston Spring			
		4.5"		6"		7"		No. 9		12"		16"	
in.	DN	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
1	25	11	24	-	-	-	-	-	-	-	-	-	-
1.5	40	11	24	-	-	-	-	-	-	-	-	-	-
2	50	11	24	-	-	-	-	-	-	-	-	-	-
3	80	-	-	26	55	-	-	-	-	-	-	-	-
4	100	-	-	26	55	-	-	-	-	-	-	-	-
6	150	-	-	-	-	54	119	79	172	-	-	-	-
8	200	-	-	-	-	54	119	79	172	-	-	-	-
10	250	-	-	-	-	59	131	84	184	209	460.4	-	-
12	300	-	-	-	-	59	131	84	184	209	460.4	310	683.4
14	350	-	-	-	-	-	-	-	-	215	473.6	316	693.6
16	400	-	-	-	-	-	-	-	-	215	473.6	316	693.6

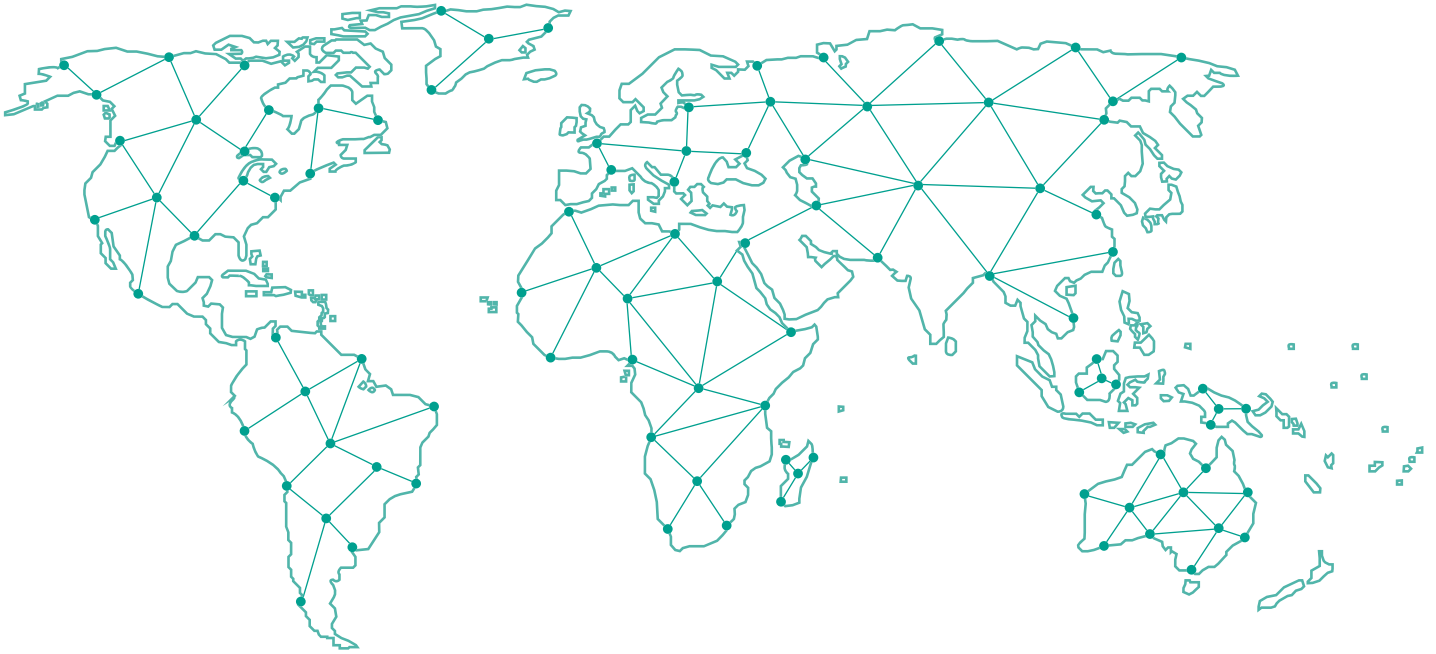
Weights

Handwheel Adder

Actuator Size	Model 35 Diaphragm		Model 5S Piston Spring	
	kg	lb	kg	lb
4.5"	1.1	2.4	-	-
6"	1.1	2.4	-	-
7"	1.8	3.9	-	-
No. 9	3	6.6	-	-
12"	-	-	50	110.2
16"	-	-	50	110.2

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