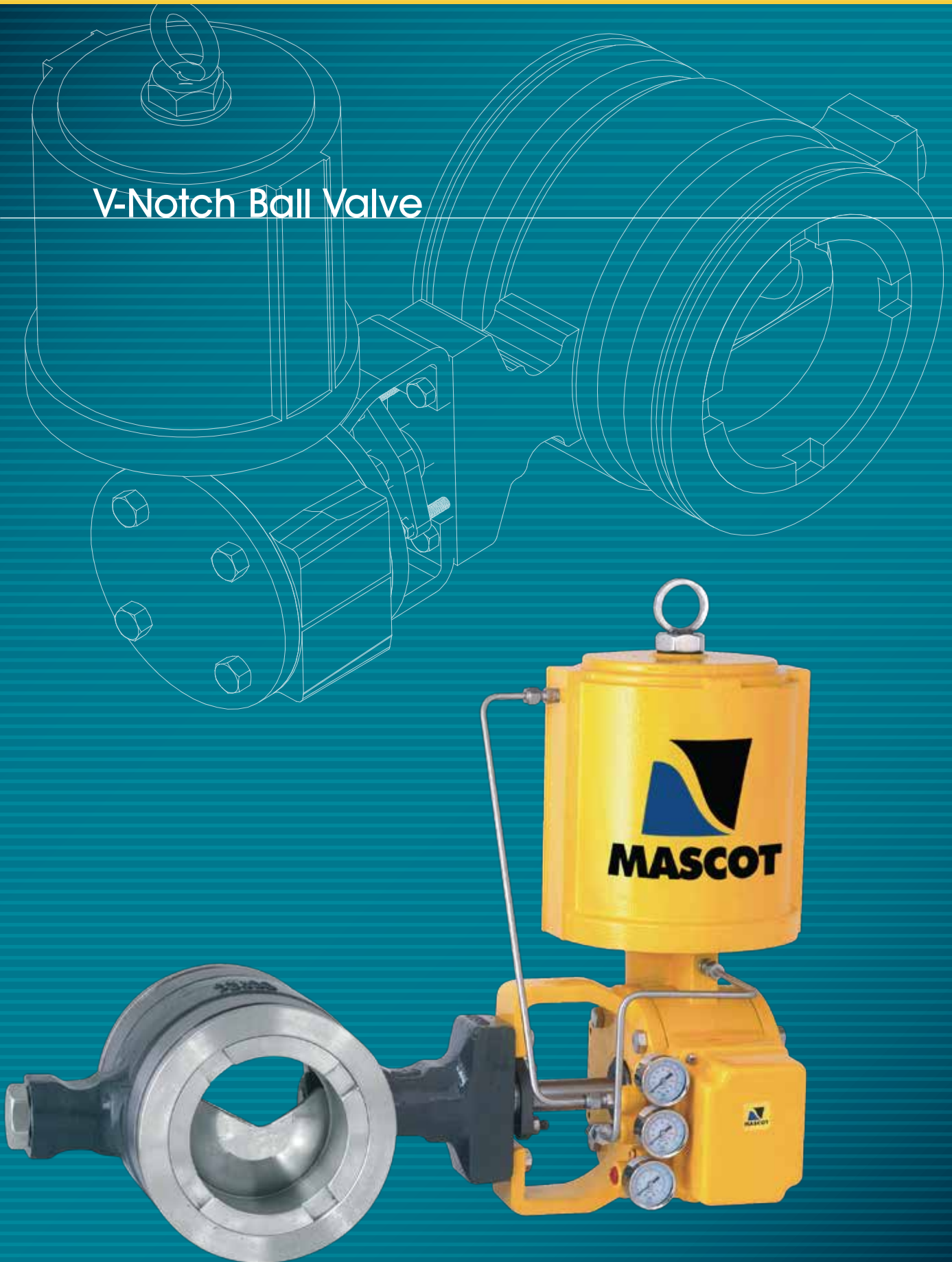
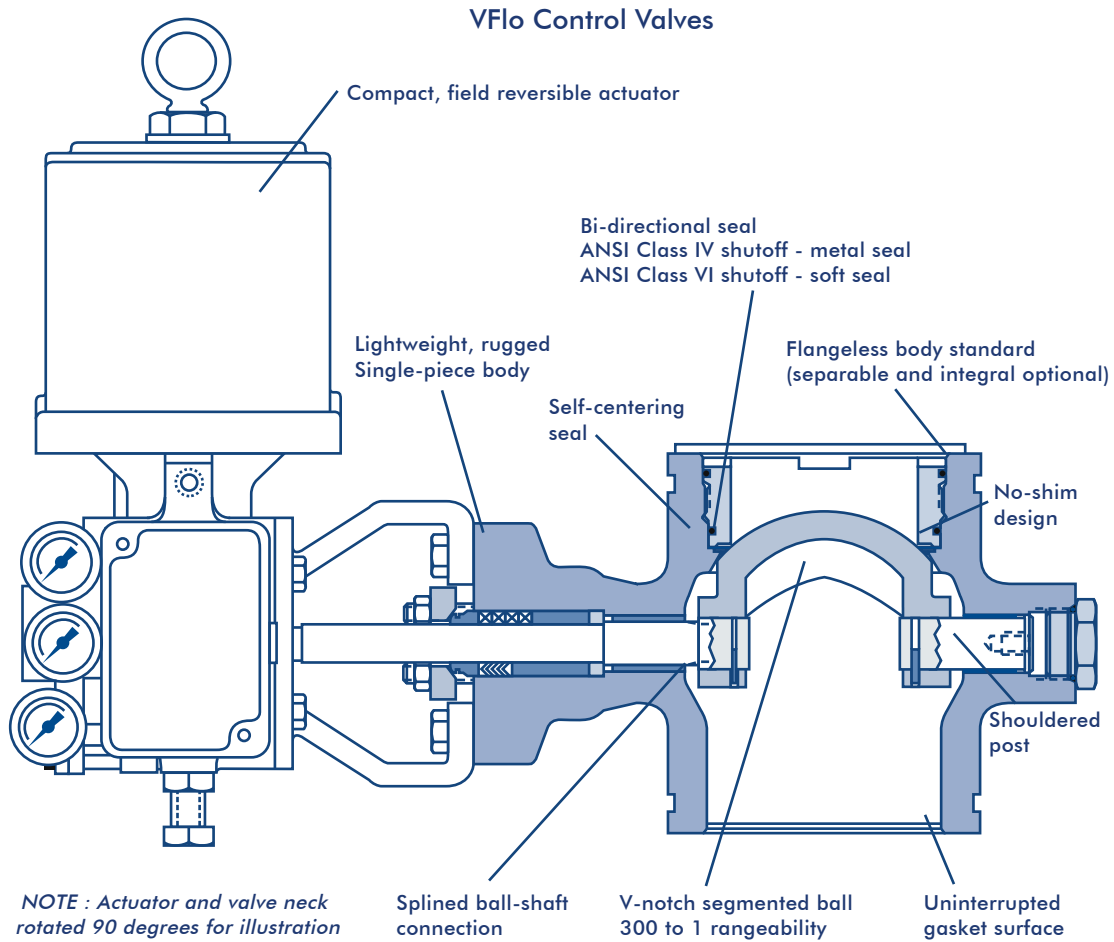


# V-Notch Ball Valve



# VFlo

## Spring Cylinder Actuators



**Figure 1: 'VFlo' Design**

The VFlo ball valve comes in varied sizes from 1/2" through 20 inches and in ANSI classes 150, 300 and 600 in options of either carbon steel or any costable material . The unique and superiorly designed valve overcomes the problems of the traditional ball valve like :

- Limited orifice characteristics leading to low range.

- Shutoff capabilities not up to the mark
  - Uneven loading of the seal by piping forces
- Another advantage of VFlo valve is the reduction in torque load thus preventing an adverse effect on sealing. The range exceeds 300 to 1 range with strong shearing capacity. Class IV shutoff is achieved by 'VFlo' with metal seal and the fleet-loc soft seal gives



The versatile VFlo can be comfortably equipped with separable or integral flanges. Flanges (Separable) gives ease of alignment of the line bolting. This can reduce the costs when made in carbon steel alongwith an alloy body.

## Features and Advantages

The features that make VFlo a benchmark in Sturdiness and Performance :

Features	Advantages
Single piece body	Assured performance irrespective of flange torque load. The tightness of the seal remains in unaltered by piping forces similar to two-piece bodies. One leak path is eliminated
V-notch ball	Unique 'V' shape of orifice gives 300 to 1 rangeability. Reduction in clogging. Excellent shearing action in fibrous fluid mediums.
Bi-directional, Pressure assisted bi-directional fleet Loc seal	Metal provides ANSI Class IV shutoff. Class VI shutoff is achieved by Soft seal.
Self-centering seal	Improved and simplified seal installation Improved shutoff
No-Shim seal	Minimises problems while in servicing and installation
Thick-walled retainer	Service life of valve is extended in the worst erosive environments
Flangeless design	Economical
Option of seperable flange.	Smaller bolt avoids bolt stretch and leakage in case of fire Easy alignment of flange bolting
Integrated flange option	Smaller bolt helps avoid bolt stretch and leakage in case of fire.
Single-piece, large thread, hex head idler post.	Easy removal from corrosive service.

### Additional features

Flexible - Dynamic Retrofitting	Standard Face-to-face dimensions allow easy field retrofitting of various product lines.
Replaceable seal	No need for removal of ball and shaft Fast and easy to maintain
Convenience - Shaft is serviceable from outboard end of ball	No need to remove actuator for replacing ball and shaft as it is protected from blowout
Uniform gasket surface	Reduction in problems of Gasket alignment. Multiple variety of gasketing possible, including spiral-wound.

### VFlo - in tune with established features of quality:

Cylinder actuator	Light weight, compact and High-thrust Fully interchangeable actuator with DiskFlo rotary valve actuator Allowable air pressure of actuator is upto 150 psi
Four-way positioner, Spool type	Calibration simplified
Splined shaft	No lost motion or dead band with extra strength
Availability in variety of materials	Carbon steel, 316 stainless steel and other alloys

The following pages illustrate the features of VFlo valves which is definitely superior to ball valves

# VFlo

## Seals

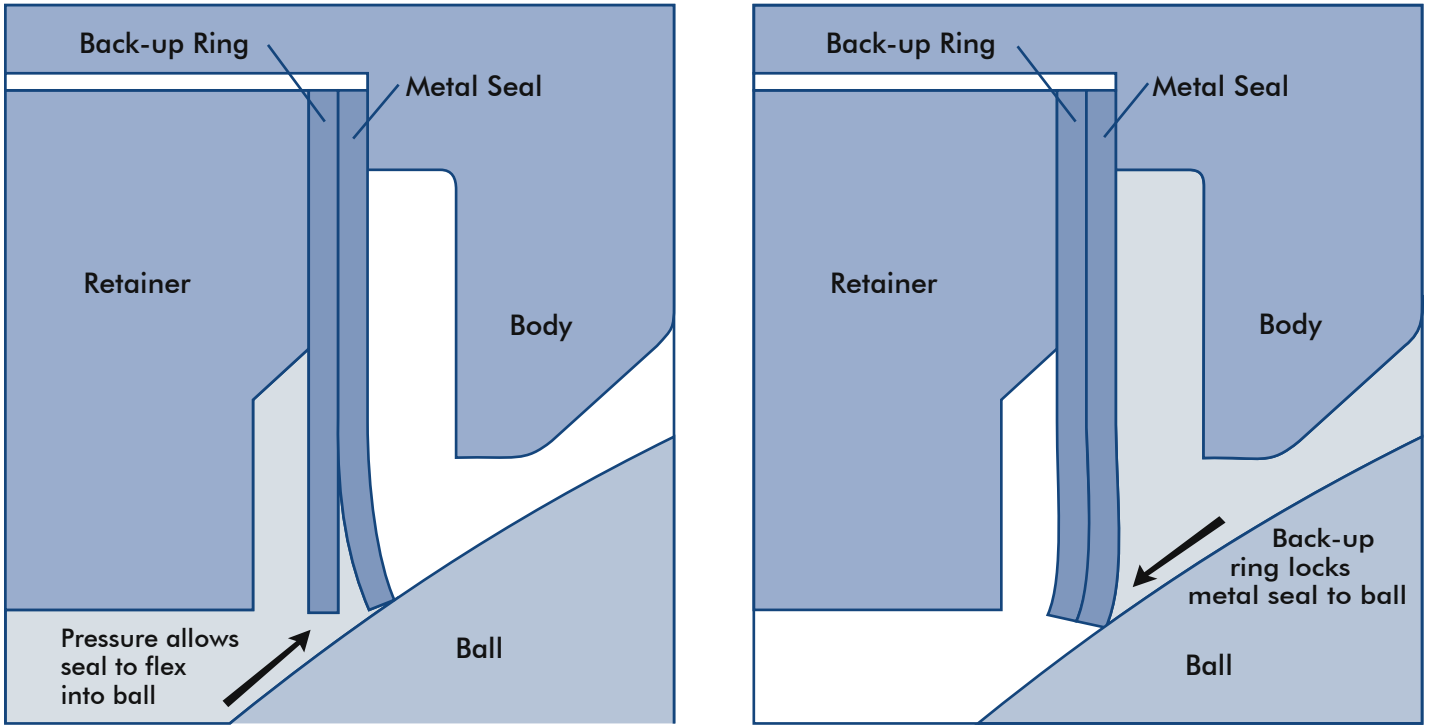


Figure 2: Bi-directional Flex-loc Seal

### Flex-loc Sealing:

Using the pressure drop across the valve, flex-loc sealing energises the seal to bubble tight shutoff in either flow direction. ANSI class IV is achieved with a metal seal and ANSI VI with a soft seal.

With an increased differential pressure, the sealing capacity is increased with flex-loc. With the pressure entering the cavity with the shaft downstream, the flexible seal deflects into the ball, and causes it to seal tighter against the ball. With pressure entering the cavity with the shaft upstream, the back-up ring locks the seal against the ball and causes it to seal tighter against the ball.

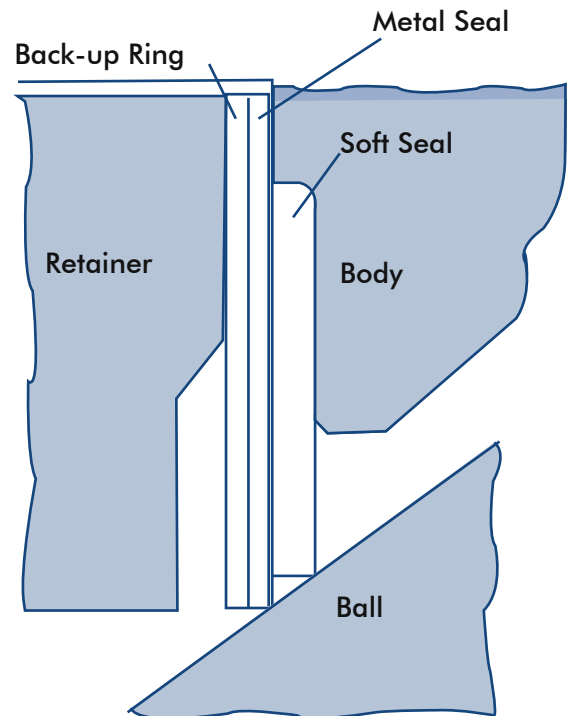


Figure 3 : VFlo Soft Seal

## Rotary Actuator

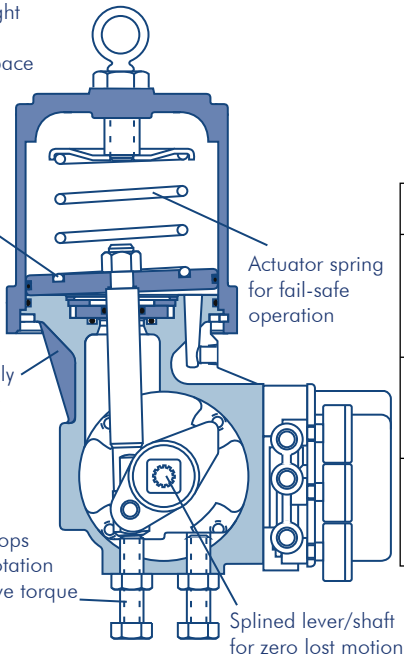
### Features and advantages of spring cylinder rotary actuator:

Compact, Lightweight design for easy handling, limited space

Rocking piston provides direct connection to shaft

Sliding seal assembly for reliable long life operation

Adjustable stroke stops prevent excessive rotation and reduce excessive torque on shaft



Features	Advantages
Flexible and interchangeable	Stocking of spares is minimized Reduced inventory costs Utilises identical parts in varied rotary actuator sizes Uses many MASCOT liner actuator parts
Four-way positioner, Spool-type	Offers high-performances modulating positioner control. Eases calibration and maintenance as fewer parts are involved.
MASCOT- A high-performance rotary actuator that excels in maintenance-free throttling and on-off control applications. It offers high torques, positioning	

### Features: - Spring Cylinder Rotary Actuator Features

Features	Advantages
Handles	Upto 150 psi air supply Higher torque. Obtains stiff piston positioning. Permits higher $\Delta P$ limits on valve.
Rocking piston	Directly connects to shaft. Zero lost motion between actuator and valve. Fewer parts involved.
Splined shaft and lever	Zero lost motion.
Rugged, Lightweight and compact	Ease of maintenance. Installs in limited space applications. Seismic requirements met with ease.
Minimal friction bearing	Minimal wear even after millions of cycles. In consortium with direct linkage, provides minimal hysteresis.
Field reversible	Eliminates need of extra parts. Fast and easy field reversing. No change of spring action needed.
Fail-safe spring	The actuator gets to failure position without any external assistance.
Air-purged, fully enclosed transfer case	Safe operation ensured. Corrosion of linkage is prevented. Provision of external position indicator. Four mounting positions are possible without retubing, changing or adding parts.
Stroke stops	Permits adjustment of both ends of the stroke.

# VFlo

## Specifications

**Table I: Flow Coefficients (Ball rotated 90°)**

Size (inches)	Upstream	Downstream
1	28	25
1½	59	57
2	118	114
3	270	280
4	529	462
6	988	945
8	1800	1675
10	3320	3180
12	4150	4150

**Table II: Maximum Allowable Inlet permissible for Various Body Ratings <sup>(1)</sup> and Temperatures(psi)**

Temp.(°F)	Carbon Steel Pressure Class 150, 300, 600	316 Stainless Steel Pressure Class 150, 300, 600
-50 to 100	1480	1440
200	1350	1240
300	1315	1120
400	1270	1030
500	1200	955
600	1095	905
700	1065	865
800	825	830
900		790
1000		725
1100		645
1200		410

(1) Body ratings are ANSI B16.34.

**Table III: Seal Leakage**

Type	Material	ANSI Class
Bidirectional Flex-loc Metal Seal	316 SS	IV
	Monel	IV
	Inconel	IV
Bidirectional Flex-loc Soft Seal	Teflon/Filled-Teflon	VI
Alloy Body Soft Seal	Teflon/Filled-Teflon	VI

**Table IV: Material Selection**

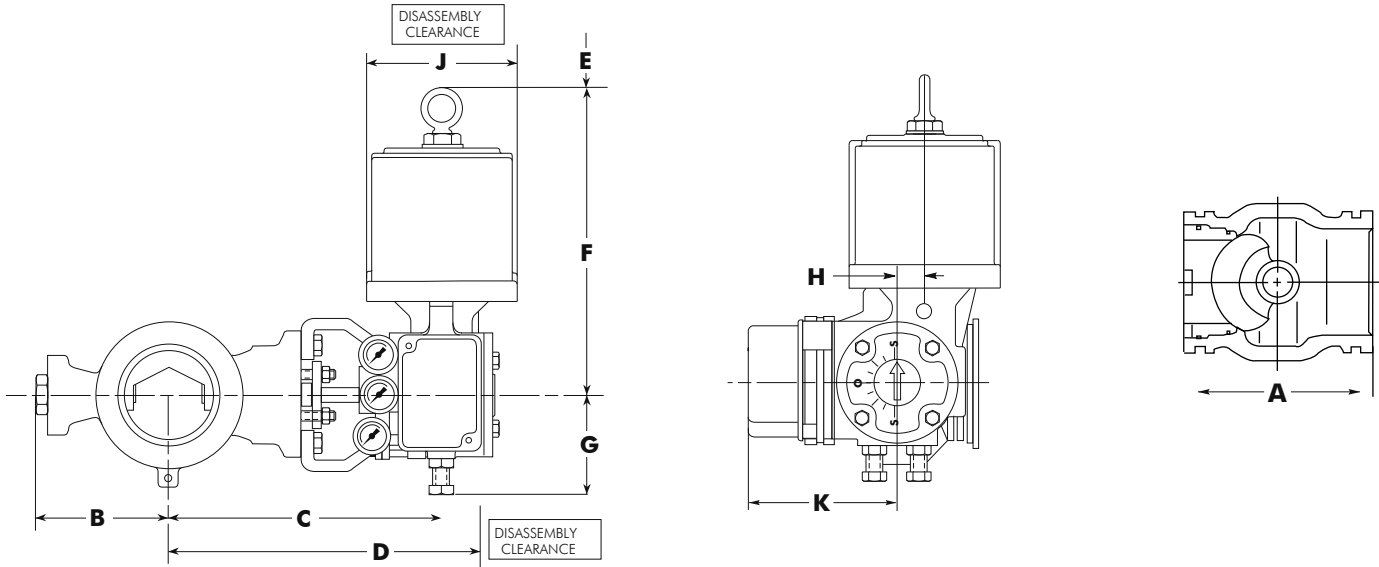
Part	Material	Temperature Range (°F)
Body	316 Stainless Steel	-20 to 1200
	Carbon Steel	-20 to 800
Ball	317 Stainless Steel w/hard chrome plating	-20 to 700
	Stellite	-20 to 1200
Shaft	17-4 PH; Nitronic 50	-20 to 550
	Nitronic 50 w/Stellite overlay	-20 to 1200
	Inconel w/Colmonoy overlay	-20 to 1200
Bearings	Filament Wound Glass w/Teflon lining	-20 to 325
	PEEK	-20 to 500
	Stellite No. 6	-20 to 1200
Metal Seal	316 Stainless Steel	-20 to 550
	Inconel 625	-20 to 1100
	Stellite flow ring	-20 to 1200
Soft Seal	Glass filled Teflon	-20 to 350
	PEEK	-20 to 500
Packing <sup>(1)</sup>	Teflon V-rings	-20 to 400
	Teflon/glass filled V-rings	-20 to 425
	Grafoil	-20 to 600
	Non-asbestos braided	-20 to 550
Packing with extension	Teflon V-rings	-20 to 600
	Teflon/glass filled V-rings	-20 to 600
	Grafoil	-20 to 1200
	Non-asbestos braided	-20 to 900
Retainer Seal	Viton O-ring	-20 to 450
Bearing Seal	Viton O-ring	-20 to 450
Body Plug Seal	Viton O-ring	-20 to 450
	Grafoil	-20 to 1200
Body Flange Seal	Teflon	-0 to 450
	Spiral Grafoil	-20 to 1200

NOTE: For temperatures less than -20° contact factory

(1) Fugitive emissions packing available, contact factory

## VFlo Mounting Dimensions

### VFlo Mounting Dimensions



VFlo Dimensions (inches / mm)  
Body Classes 150, 300, and 600

Size (in.)	Act. Size (in.)	Shaft Size	A		B		C		D		E		F		G		H		J		K*	
1	25	0.625	4.0	102	3.1	80	10.6	269	17.6	447	6.0	152	13.1	333	5.6	142	1.1	29	6.5	165	6.5	166
1 1/2	25	0.625	4.5	114	3.9	98	11.2	283	18.5	470	6.0	152	13.1	333	5.6	142	1.1	29	6.5	165	6.5	166
2	25	0.625	4.9	125	4.1	105	11.4	290	18.9	480	6.0	152	13.1	333	5.6	142	1.1	29	6.5	165	6.5	166
2	50	0.625	4.9	125	4.1	105	11.4	290	19.7	500	8.0	203	18.0	457	6.7	170	2.0	50	9.1	232	7.4	188
3	25	0.750	6.5	165	5.0	126	12.5	317	19.5	495	6.0	152	13.1	333	5.6	142	1.1	29	6.5	165	6.5	166
3	50	0.750	6.5	165	5.0	126	12.5	317	20.3	516	8.0	203	18.0	457	6.7	170	2.0	50	9.1	232	7.4	188
4	25	0.750	7.6	194	5.5	139	13.7	348	20.7	526	6.0	152	13.1	333	5.6	142	1.1	29	6.5	165	6.5	166
4	50	0.750	7.6	194	5.5	139	13.7	348	21.5	546	8.0	203	18.0	457	6.7	170	2.0	50	9.1	232	7.4	188
6	50	1.000	9.0	229	7.9	200	16.0	405	23.8	605	8.0	203	18.0	457	6.7	170	2.0	50	9.1	232	7.4	188
6	100	1.000	9.0	229	7.9	200	16.0	405	26.2	665	11.0	279	22.6	574	9.1	230	2.4	61	12.5	308	8.5	215
8	50	1.000	9.6	244	8.7	220	16.7	425	24.5	622	8.0	203	18.0	457	6.7	170	2.0	50	9.1	232	7.4	188
8	100	1.000	9.6	244	8.7	220	16.7	425	26.9	683	11.0	279	22.6	574	9.1	230	2.4	61	12.5	318	8.5	215
8	200	1.000	9.6	244	8.7	220	16.7	425	29.4	747	11.0	279	23.6	599	9.1	230	2.4	61	17.5	445	8.5	215
10	50	1.125	11.7	297	11.1	282	17.5	444	25.2	640	8.0	203	18.0	457	6.7	170	2.0	50	9.1	232	7.4	188
10	100	1.125	11.7	297	11.1	282	17.5	444	27.7	704	11.0	279	22.6	574	9.1	230	2.4	61	12.5	318	8.5	215
10	200	1.125	11.7	297	11.1	282	17.5	444	30.2	767	11.0	279	23.6	599	9.1	230	2.4	61	17.5	445	8.5	215
12	100	1.500	13.3	338	11.8	301	18.0	456	28.3	719	11.0	279	22.6	574	9.1	230	2.4	61	12.5	318	8.5	215
12	200	1.500	13.3	338	11.8	301	18.0	456	30.8	782	11.0	279	23.6	599	9.1	230	2.4	61	17.5	445	8.5	215
16	100	2.000	15.8	400	15.1	384	26.1	663	37.2	945	11.0	279	22.6	574	9.1	230	2.4	61	12.5	318	8.5	215
16	200	2.000	15.8	400	15.1	384	26.1	663	39.7	1008	11.0	279	23.6	599	9.1	230	2.4	61	17.5	445	8.5	215

#### Additional Specification

Characteristic : Equal Percent / Linear (characterizable with positioner)

Ball Rotation : Counterclockwise to open when viewed from actuator

#### VFlo Sizing:

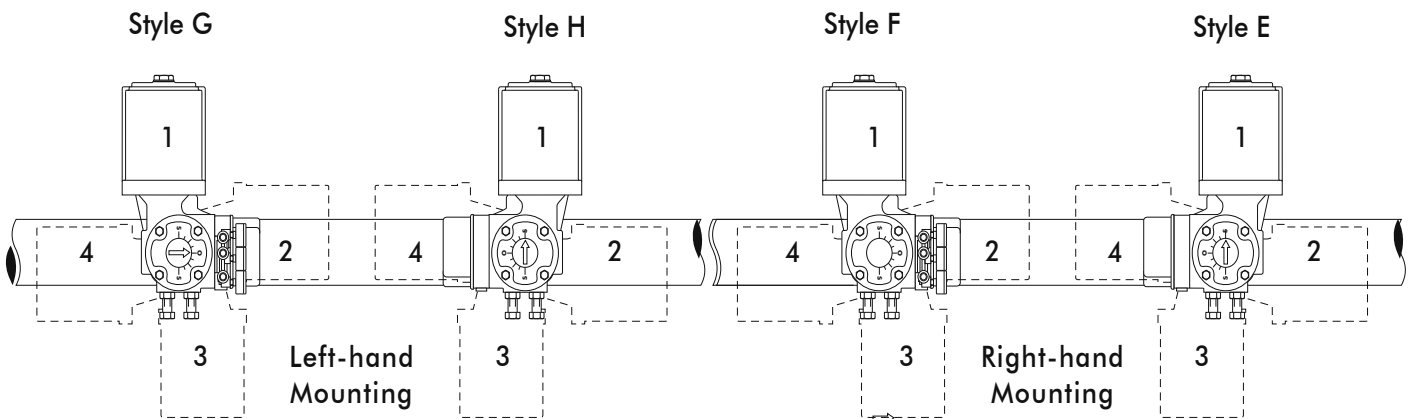
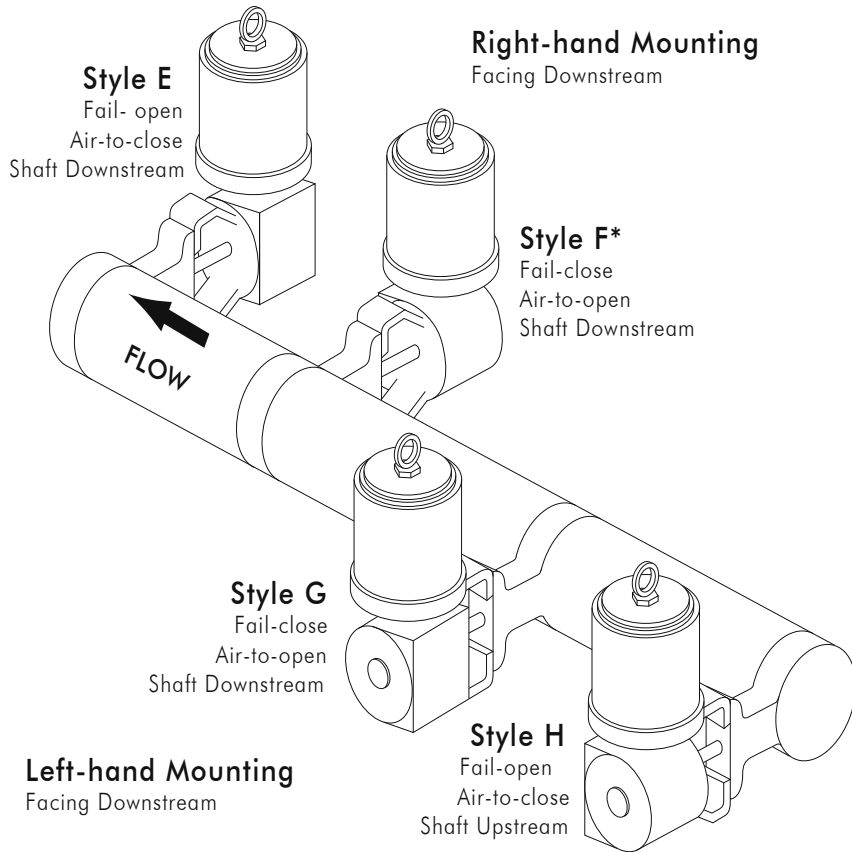
Please refer MASCOT's Sizing and Section manual, section 3 and 16 for procedures and data to size VFlo valves-including determining saeling/breakout torques and actuator sizing.

Table VI : Estimated Shipping Weights with Standard Actuator and Positioner

Valve Size (Inches)	Weight (Kilogram)
1, 1 1/2, 2	99
3	121
4	187
6	253
8	396
10	551
12	959

# VFlo

## Mounting Orientations



NOTE: Orientation 1 is standard. Orientation positions 2 and 4 are not available in some actuator sizes. Contact factory.

Figure 5 : Transfer Case Mounting