

S-C CLASS

SOFT SEATED BALL VALVES



gOSCO
VALVES
designs that outperform

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information@itm.com

S-CLASS CORE TECHNOLOGY

At the heart of every Gosco Valve lies S-Class Core Technology. Each configuration starts life as an S-Class On/Off Valve, and by adding optional components, treatments/coatings, and accessories many applications can be achieved. This provides you with dramatically shorter lead times, quicker setup and an outstanding product that will outperform in some of the most demanding applications.



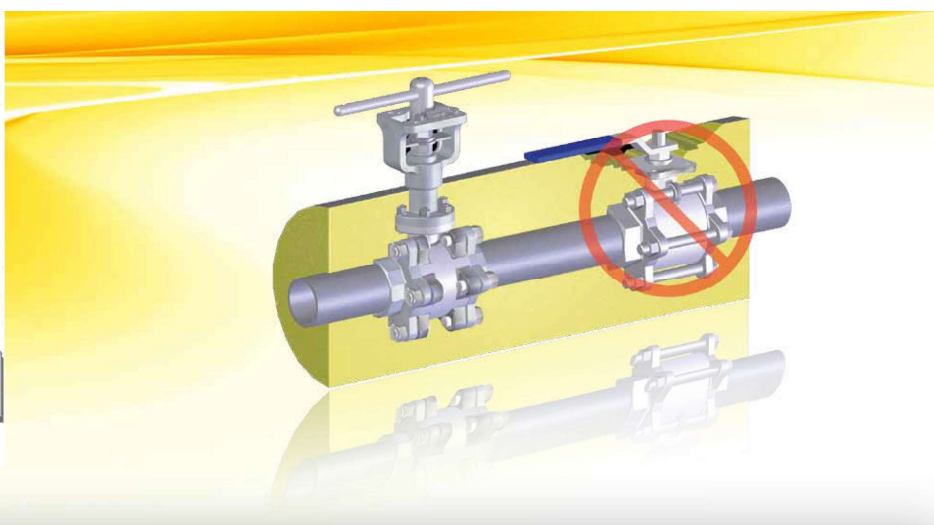
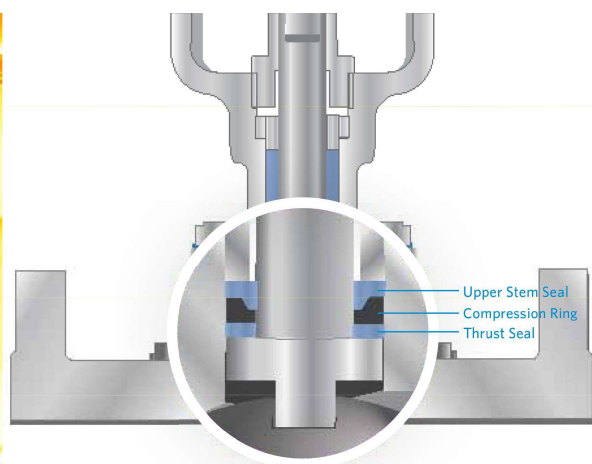


THE VISIONARY

The Clearview Mounting Pad is a patented design that combines a cast bracket with an ISO 5211 mounting pad. The pad is raised and open, keeping the stem flats visible. Packing adjustments are accessible without removing the actuator or insulation.

KILLER INSTINCT

The fugitive emissions port is located between the Sealmaster and the upper packing. If leakage occurs past the Sealmaster, the upper packing is designed to contain the leak. For lethal applications, the fugitive emissions port can be purged with an inert gas, and a pressure switch can monitor leakage. It is very important that the purge pressure is higher than the process pressure because this will prevent the process media from escaping.



SEAL THE DEAL

The Sealmaster is a patented stem seal that is comprised of three parts - an upper stem seal, compression ring and a thrust seal. When the Sealmaster is tightened, the compression ring squeezes the upper stem seal against the valve's body. The Sealmaster stem seal can be re-tightened to recommended torques.

SKY'S THE LIMIT

The extended bonnet is perfect for insulated lines. There is a minimum of 2" between the top of the flange and bottom of the Clearview Mounting Pad. Even with insulation in place, the stem flats are visible, packing adjustments are accessible, and the actuator is raised away from elevated process temperatures, preventing damage to the actuator seals.

CRYO VALVE

The S-Class **Cryogenic Valve** can handle temperatures as low as -200°C (-328°F). A bolt-on retrofit kit is also available.

Our cryogenic valves have a minimum 12" extension to protect the actuator/handle from ice ball build up. A retrofit assembly consisting of a replacement stem, bonnet and packing is pre-torqued and tested in the factory for hassle-free maintenance. We offer oxygen cleaning and trim options for temperatures as low as -200°C (-328°F).



BLOCK & BLEED

S-Class **Block & Bleed Valves** feature Single/
Double Block & Bleed with live loaded seats.

We offer three styles of Block+Bleed valves:

- Single Block & Bleed with live loaded seats (one valve, two seats, and a bleed valve)
- Double Block & Bleed (two valves with a spacer between them and a bleed valve)
- Double Block & Bleed in a single body (one valve, four seats, and a bleed valve)



3-WAY VALVE

S-Class **3-Way Diverter Valves** provide bottom entry with flow to the left or right ports. "Single-L" for 180°, "Double-L" for 90°.

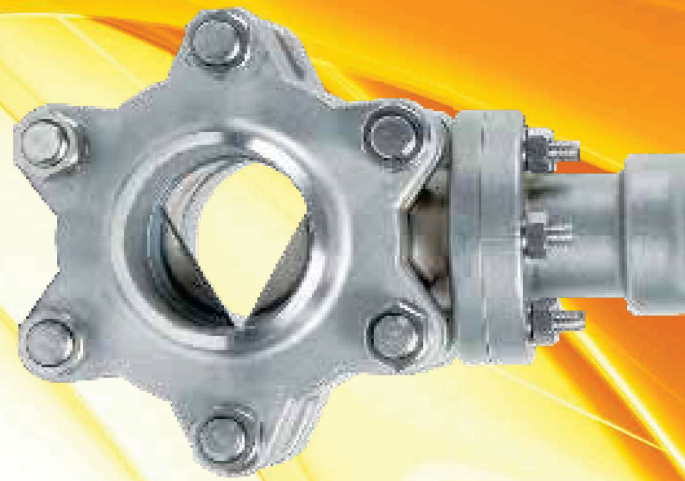
Our quarter turn 3-Way Diverter Valves are bottom entry with flow to the left or right ports. We offer a "Single-L Port" ball for 180° applications (there is no mixing of the media between the two ports), and a "Double-L Port" ball for 90° applications (there is mixing between the ports). The seats are live loaded so that they seal in both directions.

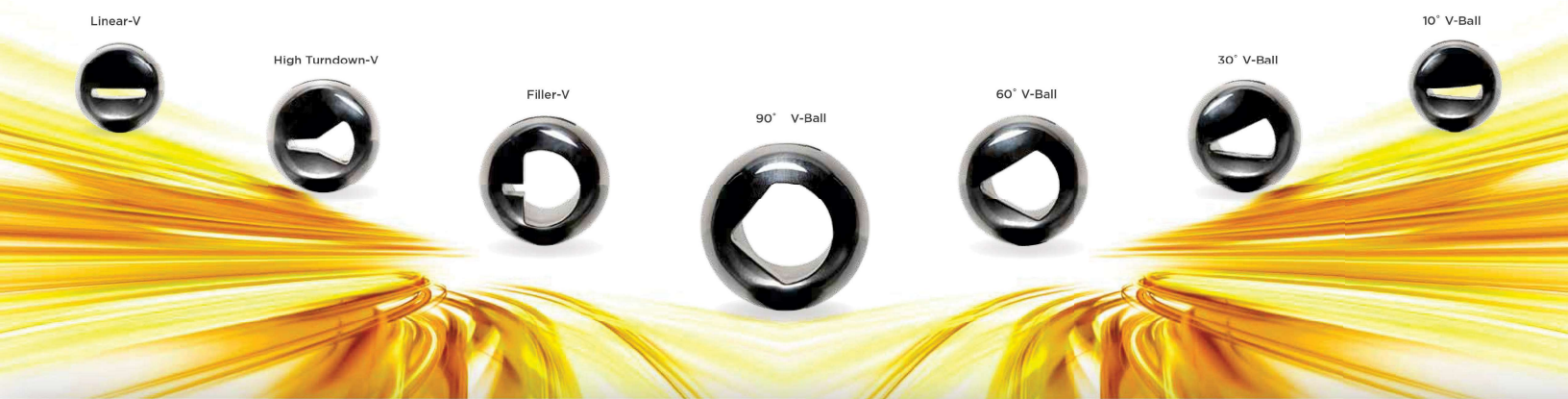


VARI-V VALVE

The S-Class **Vari-V Ball Valve** offers precise flow control through a specific profile that is machined into the ball.

When precise control of flow or pressure is required in a soft seated ball valve, the S-Class Vari-V Control Valve is perfect for your tough applications. Standard 10°, 30°, 60°, 90° V's are cut into the ball for diverse C, and control requirements. Custom profile Vs are used for unusual applications requiring special flow characteristics.

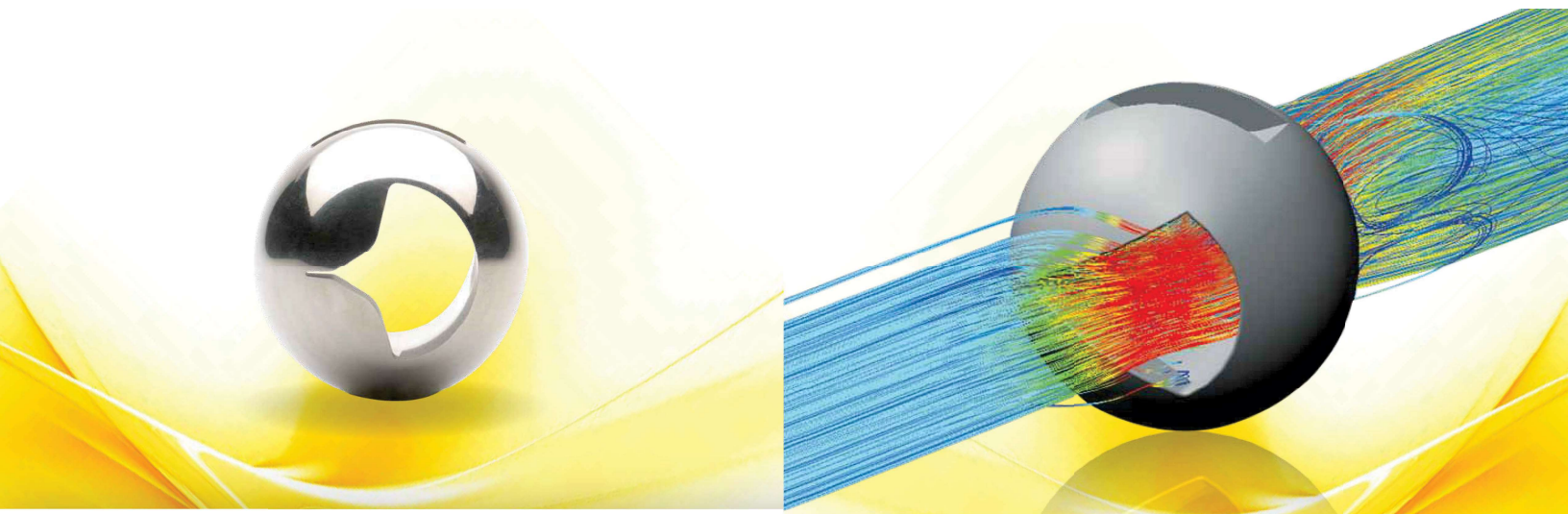




CONTROL FREAK

At the heart of every Gosco control valve is the Vari-V ball. The profile of the V-ball determines the flow characteristic of the valve and can be changed to suit the application. 10°, 30°, 60° and 90° V-balls are the most commonly used, but several other profiles are readily available. The Linear-V is a slot in the ball that can be machined for precise flow requirements. The Filler-V is used when you need maximum flow for filling followed by precise flow to accurately control the levels. The High Turndown-V maximizes flow in the open position, and provides fine flow control when the valve is partially closed. The transition between high flow and fine control with the Vari-V is extremely smooth.

- **Linear-V**
is a slot in the ball that can be machined for precise flow requirements
- **Filler-V**
is used when you need maximum flow for filling, followed by precise flow to accurately control the levels
- **High Turndown-V**
maximizes flow in the open position, and provides fine flow control when the valve is partially closed



FREE SPIRIT

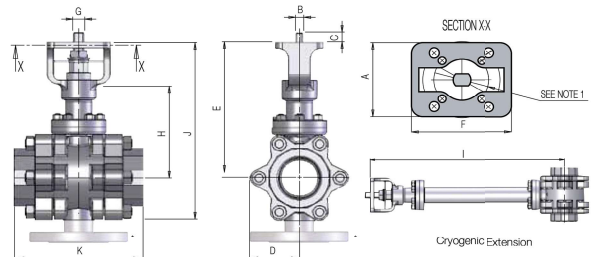
Custom V-balls are available for applications that possess specific flow requirements which can not be met with the standard V-balls. Using Computational Fluid Dynamics (CFD), we can create a V-ball with a specific profile to fit any application. Anti-cavitation trim is also available. For examples of custom V-ball applications, including videos and specifications, visit www.goscovalves.com

FLUID PERFORMER

Computational Fluid Dynamics (CFD) is used to calculate the flow through the trim of a valve. It determines locations of high velocity and high flow, and assists in trim engineering for specific applications where velocities need to be controlled. CFD is also used to determine the flow coefficient (C_v) of Gosco Vari-V balls and aids in designing them to custom specifications.

VARI-V CONTROL VALVE Cv VALUES

Valve Size	Vari-V	100%	90%	80%	70%	60%	50%	40%	30%	20%	10%	Non Vari-V Part C, 3
1/2"	10	2.96	2.36	1.94	1.63	1.19	0.84	0.61	0.36	0.00	0.00	23
	30	5.16	3.15	2.22	1.46	0.99	0.51	0.32	0.02	0.00		
	60	10.13	6.03	4.36	3.18	2.02	1.22	0.73	0.33	0.03	0.00	
3/4"	10	4.96	3.67	2.89	2.10	1.47	1.01	0.71	0.12	0.00	0.00	15
	30	8.43	4.88	3.51	2.78	1.89	1.28	0.83	0.13	0.00	0.00	
	60	16.84	11.09	7.59	5.12	3.17	2.09	0.95	0.41	0.03	0.00	
1"	10	7.73	5.67	4.37	3.37	2.39	1.61	1.10	0.16	0.04	0.00	30
	30	13.37	9.17	6.28	4.07	2.47	1.44	0.60	0.02	0.00	0.00	
	60	26.73	18.34	12.56	8.14	5.00	2.88	1.56	0.31	0.01	0.00	
1 1/4"	10	12.94	9.36	7.09	5.36	3.89	2.41	1.63	0.96	0.24	0.00	77
	30	23.91	17.27	12.59	9.49	6.49	3.99	2.61	1.59	0.66	0.00	
	60	40.62	28.78	17.95	11.74	7.48	4.49	2.55	1.09	0.28	0.00	
1 1/2"	10	17.74	13.00	9.74	7.33	5.29	3.59	2.50	1.66	0.21	0.00	46
	30	30.76	21.40	15.03	11.04	7.55	4.30	2.54	0.68	0.23	0.00	
	60	61.52	42.80	30.06	22.08	15.10	8.60	4.96	1.36	0.24	0.00	
1 3/4"	10	20.34	14.97	11.26	8.56	6.20	4.22	2.55	1.67	0.46	0.00	126
	30	36.26	27.25	19.36	13.11	9.65	5.60	3.25	1.75	0.56	0.00	
	60	70.06	44.52	30.44	18.70	11.83	7.44	4.51	2.32	0.75	0.00	
1 1/2" S.P.	10	9.00	6.72	5.03	4.42	3.22	1.90	1.39	0.58	0.00	0.00	82
	30	20.13	15.89	12.12	8.98	6.28	4.50	2.38	1.00	0.28	0.00	
	60	37.00	27.58	19.01	13.06	9.17	6.10	3.45	1.54	0.28	0.00	
1 1/2"	10	66.22	43.48	28.48	18.44	12.28	8.08	4.61	1.88	0.56	0.00	192
	30	12.76	11.06	7.85	5.94	4.21	3.60	2.41	0.88	0.00	0.00	
	60	25.52	22.12	15.73	11.38	8.30	5.48	2.46	1.57	0.46	0.00	
2"	10	13.41	10.22	8.13	5.98	4.74	3.88	2.43	1.29	0.60	0.00	120
	30	27.15	20.52	15.38	11.54	7.25	4.90	3.43	1.37	0.41	0.00	
	60	43.66	33.81	24.77	17.90	10.88	7.21	4.10	1.92	0.52	0.00	
2"	10	80.14	52.63	35.00	23.75	14.43	9.03	5.42	2.07	0.00	0.00	358
	30	21.53	16.88	10.61	12.47	10.07	5.28	4.43	2.37	0.79	0.00	
	60	42.47	31.46	21.22	20.75	14.12	8.66	6.63	3.05	1.15	0.00	
2 1/2" S.P.	10	13.41	10.22	8.13	5.98	4.74	3.88	2.43	1.29	0.60	0.00	240
	30	27.15	20.52	15.38	11.54	7.25	4.90	3.43	1.37	0.41	0.00	
	60	43.66	33.81	24.77	17.90	10.88	7.21	4.10	1.92	0.52	0.00	
2 1/2"	10	35.16	25.35	24.00	19.00	14.70	10.03	7.63	3.86	1.52	0.00	611
	30	70.31	50.70	48.00	38.00	29.40	19.66	14.66	4.98	2.15	0.00	
	60	105.46	76.05	72.00	57.00	44.10	29.49	21.99	7.47	3.22	0.00	
3" S.P.	10	34.90	24.88	19.83	16.36	11.66	10.52	7.00	3.90	2.18	0.00	350
	30	73.74	50.60	43.07	35.82	25.87	16.24	10.22	6.65	2.54	0.00	
	60	108.23	101.69	74.53	51.94	34.94	21.52	13.08	8.65	2.54	0.00	
3"	10	105.15	83.57	68.10	45.90	29.86	19.58	12.14	5.04	1.98	0.00	858
	30	190.26	138.08	112.14	82.22	64.10	27.60	15.80	13.54	1.43	0.00	
	60	280.98	203.63	157.68	105.80	69.76	38.40	22.90	19.64	2.10	0.00	
4" S.P.	10	44.07	33.64	27.16	21.86	16.37	11.61	8.46	4.82	1.66	0.00	607
	30	95.45	67.54	57.24	42.34	29.55	19.77	13.05	8.04	2.05	0.00	
	60	171.46	129.82	103.63	66.86	47.12	27.80	16.79	7.85	2.07	0.00	
4"	10	283.27	211.71	167.88	117.81	69.66	41.66	26.34	19.56	3.15	0.00	1512
	30	569.97	427.74	333.58	235.93	151.16	11.12	11.12	7.42	3.68	0.00	
	60	854.95	641.57	500.37	352.91	227.71	35.10	19.40	13.73	3.93	0.00	
6" S.P.	10	270.0	213.0	163.0	115.0	70.0	51.0	31.0	19.0	4.1	0.00	1055
	30	540.0	426.0	326.0	230.0	140.0	92.0	55.0	31.0	4.1	0.00	
	60	810.0	639.0	489.0	345.0	210.0	135.0	87.0	47.0	7.4	0.00	
6"	10	148.0	112.0	91.0	70.0	50.0	40.0	30.0	19.0	7.4	0.00	3664
	30	297.0	224.0	205.0	145.0	100.0	70.0	47.0	25.0	9.0	0.00	
	60	445.0	336.0	307.0	217.0	140.0	97.0	60.0	34.0	10.0	0.00	
8" S.P.	10	225.0	180.0	140.0	105.0	70.0	50.0	40.0	30.0	19.0	0.00	2000
	30	450.0	360.0	280.0	210.0	140.0	97.0	60.0	34.0	19.0	0.00	
	60	675.0	540.0	420.0	315.0	210.0	145.0	97.0	45.0	25.0	0.00	



*Please contact Geosco for up-to-date 3-Way Downer Valve and full body dimensions.

S-CLASS DIMENSIONS[†]

(A, B, C, D, E)

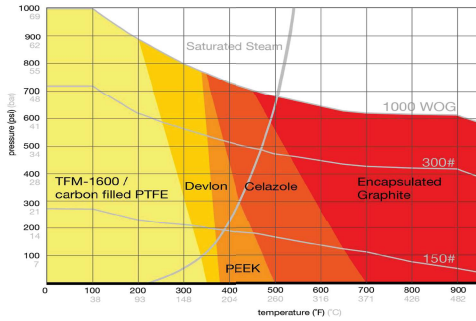
Valve Size	A	B	C	D	E	F	G	H	I	J	K	150#	300#	600#	800#	1000#	1500#	2000#	Weight [‡]										
1 1/2" FF	1.88	1.78	0.26	0.05	0.39	0.00	1.75	1.45	5.77	11.65	2.36	1.50	0.38	0.00	3.85	0.00	17.68	44.85	7.52	10.10	3.28	1.33	4.25	10.00	5.00	13.07	FO4	3.70	0.69
3/4" SP	1.88	1.78	0.26	0.05	0.39	0.00	1.94	1.63	5.77	11.65	2.36	1.50	0.38	0.00	3.85	0.00	17.68	44.85	7.71	10.10	3.36	1.33	4.61	11.21	6.00	15.24	FO4	4.30	1.16
1" SP	1.88	1.78	0.26	0.05	0.39	0.00	2.13	1.81	5.90	11.96	2.36	1.50	0.38	0.00	4.00	0.16	17.74	44.98	8.00	10.40	3.83	1.73	5.00	12.70	6.00	16.51	FO4	6.80	2.63
1" FF	2.20	2.08	0.33	0.06	0.45	0.14	2.13	1.81	6.26	13.36	3.22	1.18	0.60	0.27	4.17	0.00	18.07	46.95	8.57	11.27	4.30	1.92	5.00	12.70	6.00	16.51	FO5	10.74	4.85
1 1/4" SP	2.20	2.08	0.33	0.06	0.45	0.14	2.31	1.97	6.26	13.36	3.22	1.18	0.60	0.27	4.30	0.16	18.25	47.28	8.78	11.27	4.61	1.71	5.00	13.09	7.00	17.28	FO5	11.65	2.26
1 1/2" SP	2.20	2.08	0.33	0.06	0.45	0.14	2.50	2.25	6.44	14.26	3.22	1.18	0.60	0.27	4.30	0.16	18.25	47.28	8.94	12.21	4.61	1.71	5.00	13.09	7.00	17.28	FO5	14.45	4.40
1 1/2" FF	2.68	0.81	0.43	0.10	0.51	0.30	2.50	2.25	7.40	18.38	3.54	0.00	0.62	0.00	5.00	0.12	19.21	48.78	9.90	15.15	5.08	1.90	5.00	13.09	7.00	17.28	FO5	19.76	10.94
2" SP	2.68	0.81	0.43	0.10	0.51	0.30	3.00	2.62	7.40	18.38	3.54	0.00	0.62	0.00	5.00	0.12	19.21	48.78	10.40	15.40	5.08	1.90	5.00	13.09	7.00	17.28	FO5	23.10	11.9
2" FF	2.68	0.81	0.43	0.10	0.51	0.30	3.00	2.62	7.76	19.71	3.54	0.00	0.62	0.00	5.34	0.00	19.47	49.74	10.76	15.27	5.59	1.90	5.00	13.09	7.00	17.28	FO5	26.31	11.9
2 1/2" SP	3.65	0.80	0.61	0.10	0.60	0.40	3.50	3.00	8.56	21.74	4.92	0.00	0.88	0.34	6.94	0.16	20.85	50.74	12.36	16.00	5.59	1.90	5.00	13.09	7.00	17.28	FO7	30.14	15.0
2 1/2" FF	3.65	0.80	0.61	0.10	0.60	0.40	3.75	3.00	8.56	21.74	4.92	0.00	0.88	0.34	6.94	0.16	20.85	50.74	12.36	16.00	5.59	1.90	5.00	13.09	7.00	17.28	FO7	30.14	15.0
3" SP	3.65	0.80	0.61	0.10	0.60	0.40	4.00	3.50	9.52	23.18	5.00	0.00	0.88	0.34	7.29	0.16	21.16	51.74	12.36	16.00	5.59	1.90	5.00	13.09	7.00	17.28	FO7	34.00	16.0
3" FF	3.65	0.80	0.61	0.10	0.60	0.40	4.25	3.50	9.52	23.18	5.00	0.00	0.88	0.34	7.29	0.16	21.16	51.74	12.36	16.00	5.59	1.90	5.00	13.09	7.00	17.28	FO7	34.00	16.0
4" SP	4.72	1.18	0.70	0.10	0.60	0.50	5.00	3.97	10.87	27.18	5.63	1.30	1.00	0.54	7.29	0.16	22.48	55.12	13.13	16.27	6.65	1.90	5.00	13.09	7.00	17.28	FO9	40.12	18.0
4" FF	4.72	1.18	0.70	0.10	0.60																								

GOSCO BALL VALVE TORQUES* (IN.LBS)

Valve Size	TFM-1600 / carbon-filled PTFE		Devlon		PEEK / Graphite	
	Standard Port	Full Port	Standard Port	Full Port	Standard Port	Full Port
1/2"	n/a	120	n/a	140	n/a	150
3/4"	120	150	140	170	150	200
1"	150	200	170	250	200	300
1 1/4"	200	250	250	320	300	400
1 1/2"	280	330	320	380	400	520
2"	330	450	380	550	520	650
2 1/2"	450	900	550	1050	650	1450
3"	900	1800	1050	2100	1450	2750
4"	1800	3300	2100	3750	2750	4500
6"	3300	4200	3750	5600	4500	5700
8"	4200	*	5600	*	6700	*

*Torque values are based on a shut-off pressure of 300psi, calculations are based on clean water @ 70°F. Values will increase linearly by 50% between 300psi and 1000psi shut-off. Please contact Gosco Valves for 3-Way Diverter and Gosco Cryogenic Valve torques.

PRESSURE/TEMPERATURE CHART



M-CLASS VALVES

For temperatures over 1100°F (538°C) and/or pressures over 1000psi (69bar), please refer to Gosco M-CLASS Valves
www.mclassvalve.com

PART NUMBER ORDERING SYSTEM¹

E.G. PART NUMBER 02F150-A2A2-TECHN-10VBFPE

Size	Port	Connection	Body	Trim	Seat	Packing	Ball	Handle	Special
01 = 1/2" valve	0 = standard port	NPT = national pipe thread	SS = 316/316L Stainless Steel	SS = 316 SS stem and ball	TTE = TFM 1600, 3rd generation PTFE	CFE = PTFE chevron	10V = 10" Ven-V	T = tee handle	FE = drilled fugitive emission port
02 = 3/4" valve	1 = full port	SWT = socket weld ends	CS = Carbon Steel	ST = 17-4PH stem, 316 SS ball	TCF = 20% carbon filled PTFE	GFA = standard graphite	30V = 30" Ven-V	B = ball shaft (for actuator)	DL = Double L Port SL = Single L Port
03 = 1" valve	1 = true port	BWE = butt weld ends	AL = Alloy 20	K2 = 17-4PH stem, Koroalloy ball	(LMP) = UHMWPE	CFY = Cryogenic grade	60V = 60" Ven-V	G = gear box	O2 = oxygen cleaned
04 = 1 1/4" valve	*	150 = 150# flanged	HC = Hastelloy® C	H = 17-4PH stem, borided 718 ball	FEK = 35% carbon filled PEEK	*	90V = 90" Ven-V	L = lever	FS = fire safe
05 = 1 1/2" valve	*	300 = 300# flanged	EP = Duplex	HC = Hastelloy® C276	VRK = FDA approved virgin PEEK	*	LNW = linear Ven-V	K = lock-out bracket	F1 = FS + FE
06 = 2" valve	*	600 = 600# flanged	ST = Super Duplex	AL = Alloy 20	ECV = Devlon	*	HVH = high velocity Ven-V	R = round handle	F2 = FS + O2
07 = 2 1/2" valve	*	150 = 150# flanged	M5 = Monel™ 400	HM = K Monel™	GLZ = Celazole	*	FIV = filter Ven-V	1 = T + K	SS = FE + O2
08 = 3" valve	*	300 = 300# flanged	M5 = Monel™ 500	ST = Super Duplex	EGH = encapsulated graphite	*	AVC = arcuate Ven-V	2 = G + K	VC = vacuum
09 = 4" valve	*	600 = 600# flanged	T2 = Titanium, Gr2	H8 = Hastelloy® B	CV4 = Cavly Fiber®	*	DBL = drilled ball	3 = L + K	NS = no special
10 = 6" valve	*	OTH = other	T3 = Titanium, Gr3	W = Inconel® 625	OTH = other	*	OTH = other	4 = R + K	OF = other
11 = 8" valve	*	200 = 200#	T5 = Titanium, Gr5	OT = other	KLF = KEL-F	*	NON = regular ball	O = other	*
OT = other	*	*	OT = other	*	*	*	*	*	*

1) Please visit goscovales.com to download up-to-date part ordering information.

2) Block and bleed valves have different part numbers. Please contact Gosco Valves for further information.

3) Example valve description: 3/4" valve, full port, 150# flanged, CFM body, Alloy 20 ball and stem, TFM-1600 seat, PTFE chevron packing, 10" Ven-V ball, drilled fugitive emission port

4) CVT = cavity filler TFM-300; CVU = cavity filler UHMWPE; CVD = cavity filler Devlon; CVC = cavity filler 25% carbon-filled PTFE

5) Only available on full port valves

DESIGN SPECIFICATIONS

ANSI/ASME B1.3M screw thread gauging system for dimensional acceptability

ANSI/ASME B16.10 face-to-face and end-to-end dimensions of valves

ANSI/ASME B16.34 valves-flanged, threaded and welding ends

ANSI/ASME B16.5 pipe flanges and pipe fittings

ASTM A192/A 194M-96B standard specifications for alloy steel and stainless steel bolting materials for high temperature service

ASTM A193/A 193M-96 standard specifications for carbon and alloy steel nuts and bolts for high-pressure and high temperature service

CSA B31-95 boiler, pressure vessel and pressure piping code

API 598 valve inspection and testing

CRN Canadian Registration Number (09118515)

ISO 9001:2000

API 607 3rd edition

TUV section 318.4

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