

Building connections that last™



Sharpe® Series C70/FSC70 & C74/FSC74

Cryogenic, Flanged Ball Valves
Datasheet



Fire-Safe Valves
fully compliant to
API 607 7th Edition

ASME Class 150
and 300 Full &
Standard Port



Cryogenic, Flanged Ball Valves

Sharpe® Series C70/FSC70 & C74/FSC74

Overview:

Valves designed for extreme low temperatures incorporating extended bonnets to ensure stem sealing integrity.

Lockable handle (standard) for padlocking valves in the open or closed position.

Integral ISO 5211 mounting pad for mounting actuators and other accessories.

Extended bonnet, securely bolted to the valve's mounting pad, creates a gas column that maintains stem packing performance by separating stem seals from cryogenic fluid.

One-piece, cast bonnet (gas column)

- ✓ Not fabricated
- ✓ Not welded
- ✓ Not soldered

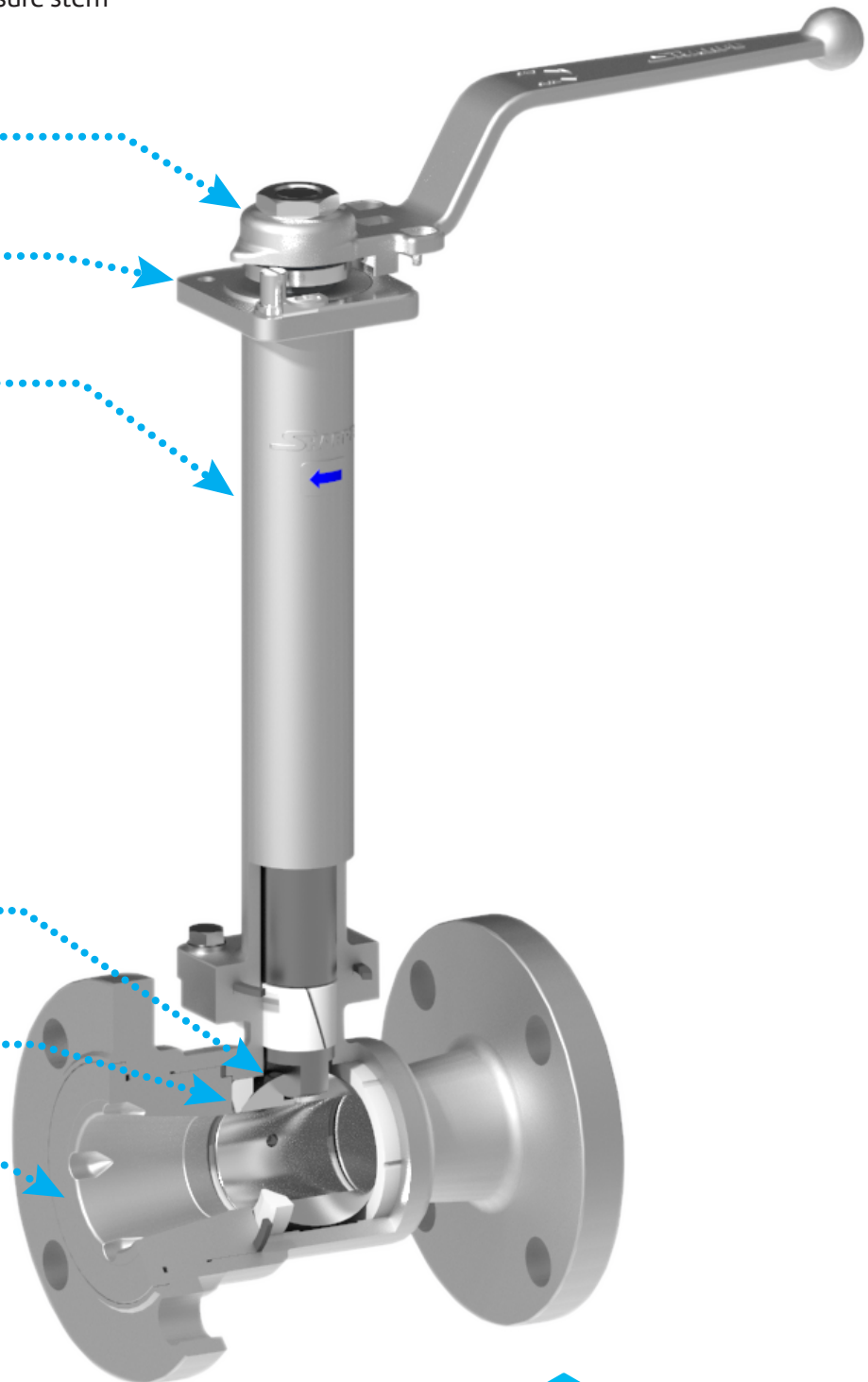
Extension length in accordance with BS 6364 and wall thickness complies with ASME B16.34.

Solid, one-piece, 316 SS stem.

Larger and wider stem-to-ball contact area, allows the valve to be used in higher torque applications.

Cryogenic seats for extreme low temperature fluids.

Flanged ASME Class 150 and 300, raised and flat faced.



Cryogenic, Flanged Ball Valves

Sharpe® Series C70/FSC70 & C74/FSC74

Design:

The exceptional capabilities and superiority of Sharpe® cryogenic valves are highlighted in the demanding requirements of cryogenic applications. Continuous operation and sealing at temperatures down to -400°F (-240°C) require special attention to design, manufacturing and assembly.

Series C70 & FSC70 (fire-safe)

Cryogenic, Flanged,
Floating Ball Valve
ASME Class 150 and 300
Full Port, Uni-Directional
Valve Sizes:
 $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1", $1\frac{1}{2}$ ",
2", $2\frac{1}{2}$ ", 3", 4"

Series C74 & FSC74 (fire-safe)

Cryogenic, Flanged,
Floating Ball Valve
ASME Class 150 and 300
Standard Port, Uni-Directional
Valve Sizes:
1", $1\frac{1}{2}$ ", 2", 3", 4"



Series C70/FSC70

Series C74/FSC74

Extended Bonnet

The cryogenic extension bonnet is securely bolted to the valve's mounting pad.

Visual Indication on Stem

Visual position indicator on the top of the stem provides easy identification of ball position and location of upstream vent in ball.

Stem Sealing

Increased stem sealing area assures tight sealing in the toughest applications.

Blow-Out Proof Stem (Safety)

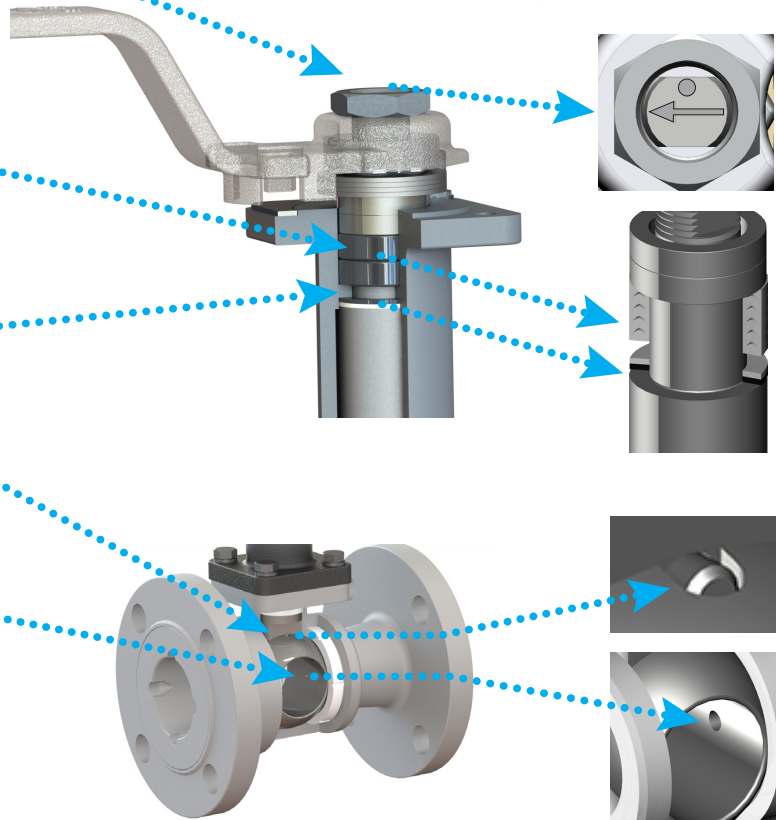
One-piece blow-out proof stem design.

Reliable Installation and Repair

Alignment pin between the ball and stem assures proper orientation of the ball.

Upstream Vented Ball (Safety)

Upstream vent hole in the ball prevents excessive body cavity pressure build-up in closed position due to thermal expansion.



Cryogenic, Flanged Ball Valves

Sharpe® Series C70/FSC70 & C74/FSC74



Features:

Heavy Duty Stem Design

Enlarged stem diameters to meet the higher torque requirement of the most demanding applications.

Larger and wider stem-to-ball contact area, allows the valve to be used in higher torque applications.

Designed for 316 stainless steel stem material, rather than 17-4PH, for superior corrosion resistance.

Stem Sealing

Live-Loaded Stem

Concave and opposing spring washers provide additional compensation for seal wear.

Wear Resistance

The thrust washers are PEEK and nova for use in lower temperature applications.

ISO 5211 Top-Works Compatibility

The top-works offer compatibility for mounting a wide range of accessories.

Sharpe® actuators and accessories may be retrofitted on existing valves without disruption of line integrity.

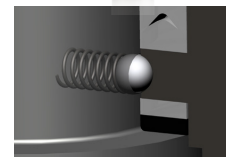
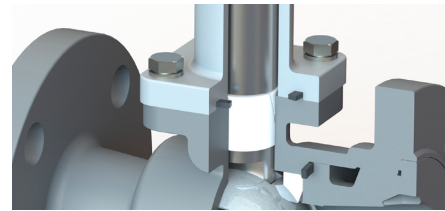
Available Options

Anti-Static (standard with FS, fire-safe valves)

Static build-up is dissipated with an optional anti-static device in the stem.

Tamper Proof Locking Device

Cryogenic flanged ball valves come standard with a lockable handle. The optional, Sharpe® exclusive, tamper proof locking device cannot be removed with a lock in place. When not being used with a lock its spring ensures the locking device snaps into place in the open or closed position to prevent unintended operation.

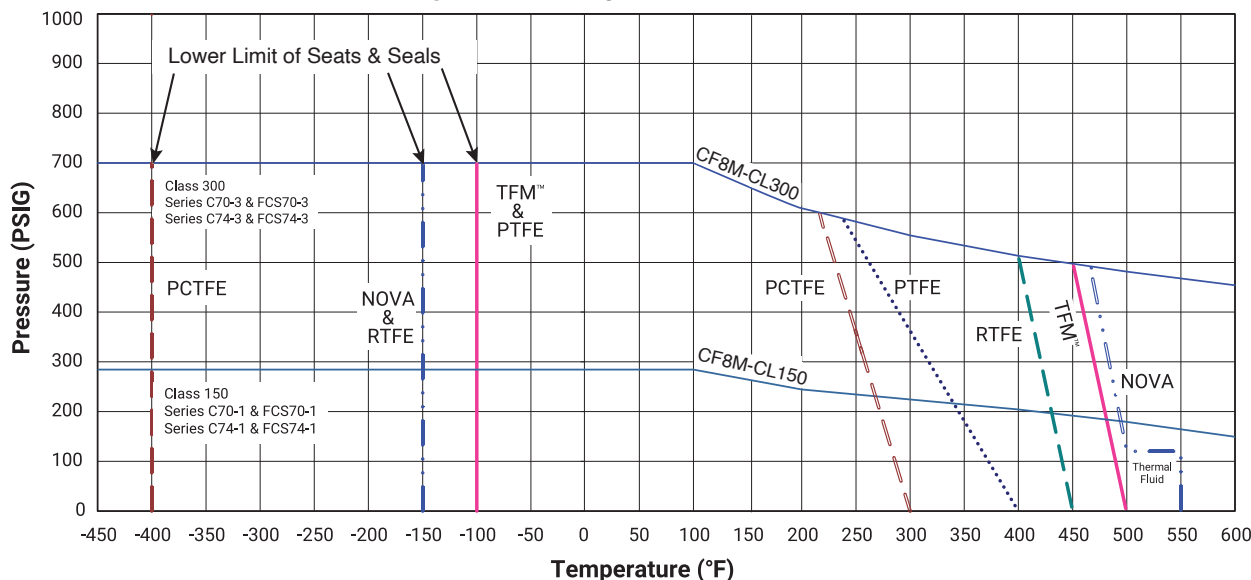


Cryogenic, Flanged Ball Valves

Sharpe® Series C70/FSC70 & C74/FSC74



Pressure-Temperature Ratings Series C70/FSC70 & C74/FSC74



Note:

The practical pressure-temperature rating of a valve is determined by the limitations of the body material and seat/seal material. The valve body ratings are based on ASME B16.34 rating for materials. The graphs are based on laboratory testing and our experience in the field. The seat ratings depend on the material, design, application, and function.

Sharpe® Seat Material

T - Virgin PTFE

Polytetrafluoroethylene is a Fluorocarbon-based polymer. This seating material has excellent chemical resistance and low coefficient of friction. Its temperature range is -100°F to 400°F (-73°C to 204°C). Color: white.

M - TFM™ PTFE

3M Dyneon TFM™ PTFE is a second generation PTFE with improved chemical and heat resistant properties over first generation PTFE and exhibits better stress recovery. Its temperature range is -100°F to 500°F (-73°C to 260°C) Color: white.

R - Reinforced Polytetrafluoroethylene (RTFE 15% Glass Filled)

PTFE's mechanical properties are enhanced by adding filler material to provide improved strength, stability and wear resistance. Its temperature range is from -320°F to 450°F (-196°C to 204°C). Color: off-white

N - Nova

This is a Teflon base filled with glass amorphous carbon powder and graphite. It has a lower thermal contraction-expansion than PTFE, and is ideal for steam or thermal fluid applications. Its temperature range is from -50°F to 550°F (-45°C to 288°C). Color: black.

K - PCTFE

PCTFE is a fluorocarbon based polymer. It offers a unique combination of physical and mechanical properties: non-flammability, chemical resistance, and near zero moisture absorption. It has a temperature range of -400°F to 300°F (-240°C to 177°C).

Note: PCTFE is frequently referred to as 3M's discontinued KEL-F® Brand.

Applications for cryogenic valves

Terminal Unloading Stations	High Purity Cryogenic / Gas Systems
LNG Storage and Distribution	CO ₂ and Nitrogen Injection
Air Separation Plants	Liquid & Gaseous Oxygen for Steel Production
Gas Liquefaction	Transfer Lines
Food processing	Cryogenic Transportation Trailers

Boiling Point of Cryogenic liquids

Gas	Formula	Boiling Point		Liquid Density (lb/ft ³)
		F°	C°	
Carbon Dioxide	CO ₂	-109	-78	50.6
Methane	CH ₄	-258	-161	26.2
Natural Gas	LNG	-270	-168	26
Oxygen	O ₂	-297	-183	71.2
Argon	Ar	-303	-186	87.4
Air		-318	-194	57.87
Nitrogen	N ₂	-320	-196	50.45
Hydrogen	H ₂	-423	-253	4.43
Helium	He	-452	-269	7.82
Absolute Zero		-460	-273	

Cryogenic, Flanged Ball Valves

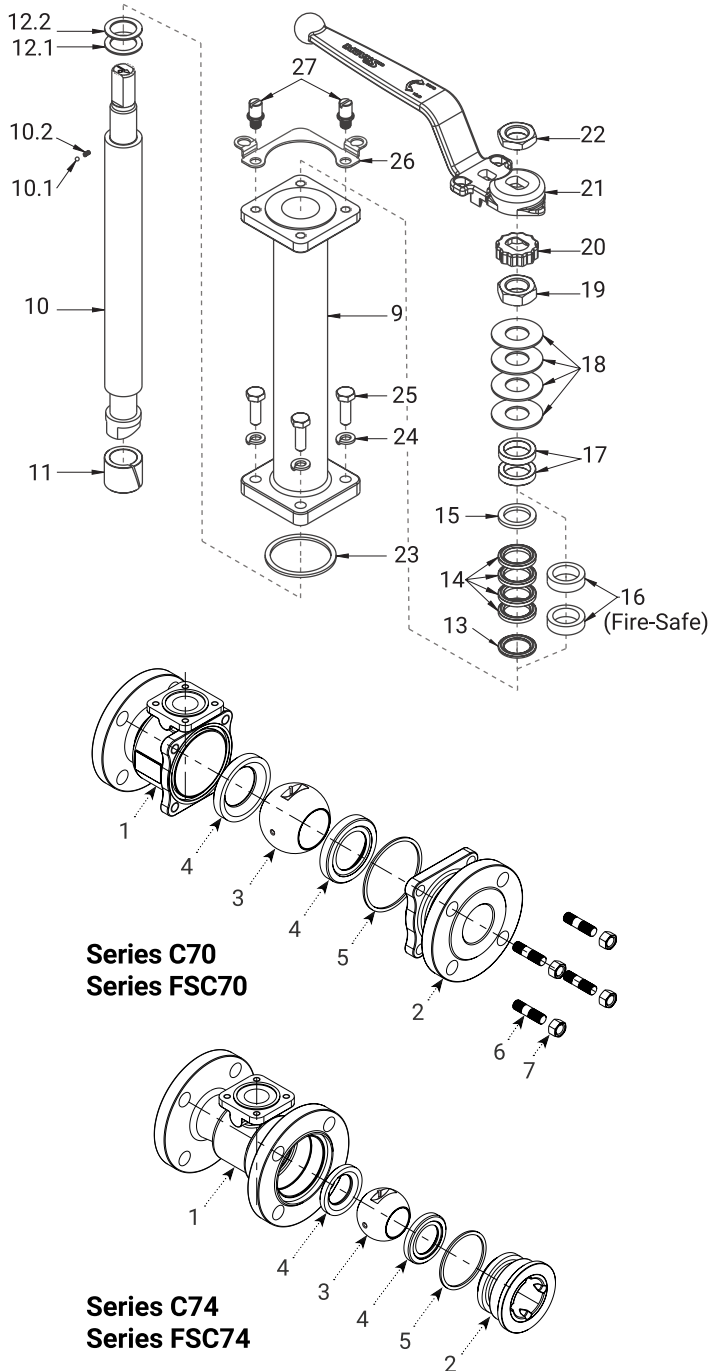
Sharpe® Series C70/FSC70 & C74/FSC74



Parts & Materials

Series C70 Sizes 1/2" to 2"; Series FSC70 Sizes 1/2" to 2"

Series C74 Sizes 1" to 2"; Series FSC74 Sizes 1" to 2"



Item	Description	Material	Qty.
1	Body	ASTM A351 CF8M (~ 316 SS)	1
2	End Piece	ASTM A351 CF8M (~ 316 SS)	1
3	Ball (vented)	316 Stainless Steel	1
4*	Seat	PCTFE, TFM™, NOVA, RTFE or PTFE FSC70/FSC74 (fire-safe): PCTFE	2
5*	Body Seal	Graphite	1
6	Body Bolt/Stud (C70/FSC70)	A193 Gr. B8	4
7	Nut (C70/FSC70)	300 Series Stainless Steel	4
Tags	Flow Direction & ID Nameplate	300 Series Stainless Steel	1 Each

Cryogenic Extension

Item	Description	Material	Qty.
9	Bonnet Extension	ASTM A351 CF8M (~ 316 SS)	1
10	Stem	316 Stainless Steel	1
10.1**	Anti-Static mini-Ball	300 Series Stainless	0 - 1
10.2**	Anti-Static Spring	Hard Drawn Stainless	0 - 1
11*	Bearing	PTFE	1
12.1*	Thrust Bearing Bottom	PEEK FSC70/FSC74 (fire-safe): Nova	1
12.2*	Thrust Bearing Top	Nova	1
13*	Bottom Packing	PCTFE, TFM™, NOVA	1
14*	Middle Packing	PCTFE, TFM™, NOVA	3 - 4
15*	Top Packing	PCTFE, TFM™, NOVA	1
16*	Stem Packing	FSC70/FSC74 (fire-safe): Graphite	2
17	Gland	300 Series Stainless	1 - 2
18*	Belleville Washer	300 Series Stainless Steel	4
19	Packing Nut	300 Series Stainless Steel	1
20	Nut Lock	300 Series Stainless Steel	1
21	Handle	ASTM A351 CF8 (~304 SS)	1
22	Handle Nut	300 Series Stainless	1
23*	Bonnet Seal	Graphite	1
24	Lock Washer	300 Series Stainless	4
25	Bonnet Bolt	304 Stainless Steel A2-70	4
26	Lock Plate	300 Series Stainless	1
27	Stop Pin	300 Series Stainless	2

Note:

* Parts used in repair kits.

** Parts used with NS, Anti-Static option.
NS suffix required with FS (fire-safe) valves.

Cryogenic, Flanged Ball Valves

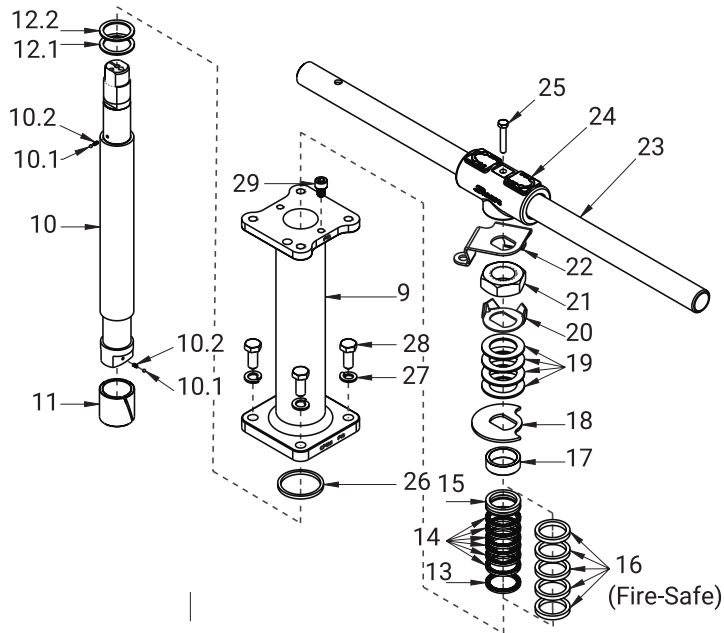
Sharpe® Series C70/FSC70 & C74/FSC74



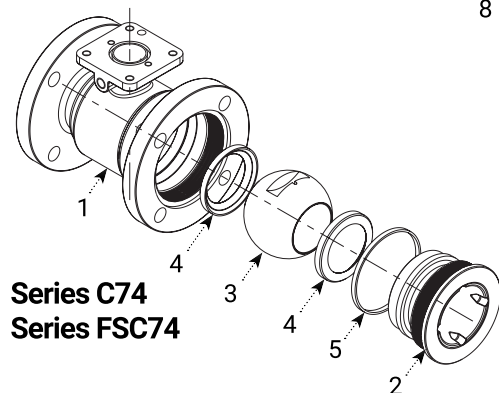
Parts & Materials

Series C70 Sizes 2½" to 4", Series FSC70 Sizes 2½" to 4"

Series C74 Sizes 3" to 4", Series FSC74 Sizes 3" to 4"



**Series C70
Series FSC70**



**Series C74
Series FSC74**

Note:

* Parts used in repair kits.

** Parts used with NS, Anti-Static option.
NS suffix required with FS (fire-safe) valves.

Item	Description	Material	Qty.
1	Body	ASTM A351 CF8M (~ 316 SS)	1
2	End Piece	ASTM A351 CF8M (~ 316 SS)	1
3	Ball (vented)	316 Stainless Steel	1
4*	Seat	PCTFE, TFM™, NOVA, RTFE or PTFE FSC70/FSC74 (fire-safe): PCTFE	2
5*	Body Seal	Graphite	1
7	Body Bolt/Stud (C70/FSC70)	A193 Gr. B8	6 or 8
8	Nut (C70/FSC70)	300 Series Stainless Steel	6 or 8
Tags	Flow Direction & ID Nameplate	300 Series Stainless Steel	1 Each

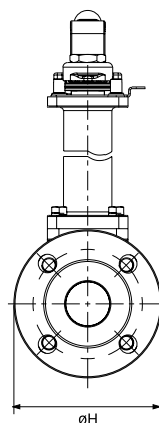
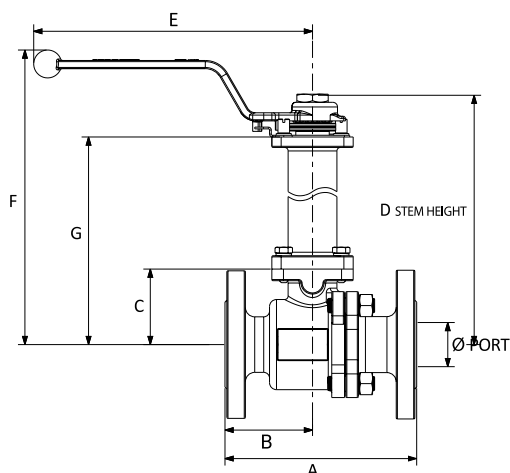
Cryogenic Extension

Item	Description	Material	Qty.
9	Bonnet Extension	ASTM A351 CF8M (~ 316 SS)	1
10	Stem	316 Stainless Steel	1
10.1**	Anti-Static mini-Ball	300 Series Stainless	0 - 2
10.2**	Anti-Static Spring	Hard Drawn Stainless	0 - 2
11*	Bearing	PTFE	1
12.1*	Thrust Bearing Bottom	PEEK FSC70/FSC74 (fire-safe): Nova	1
12.2*	Thrust Bearing Top	Nova	1
13*	Bottom Packing	PCTFE, TFM™, NOVA	1
14*	Middle Packing	PCTFE, TFM™, NOVA	4 - 6
15*	Top Packing	PCTFE, TFM™, NOVA	1
16*	Stem Packing	FSC70/FSC74 (fire-safe): Graphite	4 - 5
17	Gland	300 Series Stainless	1
18	Stop Plate	300 Series Stainless	1
19*	Belleville Washer	300 Series Stainless Steel	4
20	Lock Tab	300 Series Stainless	1
21	Packing Nut	300 Series Stainless	1
22	Lock Plate	300 Series Stainless	1
23	Handle Pipe	300 Series Stainless	1
24	Wrench Block	ASTM A351 CF8 (~ 304 SS)	1
25	Wrench Bolt	300 Series Stainless	1
26*	Bonnet Seal	Graphite	1
27	Lock Washer	300 Series Stainless	4
28	Bonnet Bolt	304 Stainless Steel A2-70	4
29	Stop Pin	300 Series Stainless	1

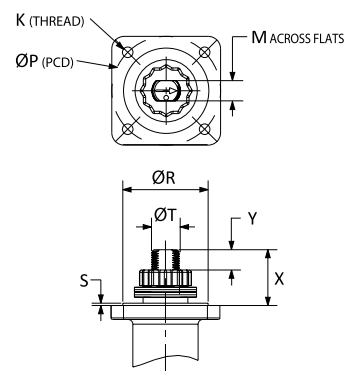
Cryogenic, Flanged Ball Valves

Sharpe® Series C70/FSC70 & C74/FSC74

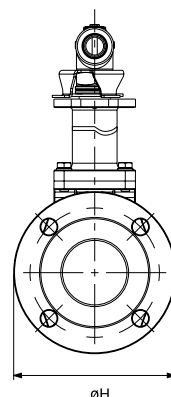
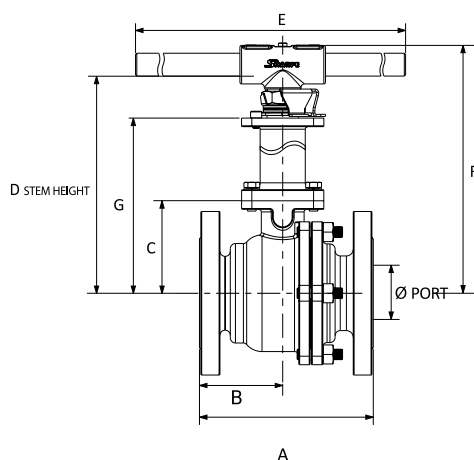
Series C70/FSC70 Sizes 1/2" – 2"



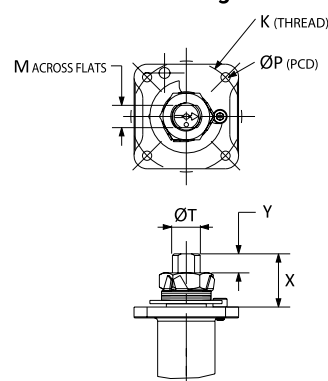
Dimensions for Actuator Mounting



Series C70/FSC70 Sizes 2 1/2" – 4"



Dimensions for Actuator Mounting



Dimensions (Inches)

Series C70 FSC70	ØPORT	A Class 150	A Class 300	B Class 150	B Class 300	C	D	E	F	G	ØH Class 150	ØH Class 300	K (Thread)	M	ØP (PCD)	ØR	S	ØT	X	Y
1/2"	0.56	4.25	5.50	1.96	2.36	1.41	12.44	6.42	14.11	11.71	3.50	3.75	M5-P0.8	0.264	F04 (1.65)	1.18	0.051	0.394	0.74	0.33
3/4"	0.81	4.62	6.00	2.13	2.52	1.53	12.56	6.42	14.23	11.81	3.88	4.61	M5-P0.9	0.264	F04 (1.65)	1.18	0.051	0.394	0.74	0.33
1"	1.00	5.00	6.50	2.13	2.72	1.93	13.07	7.28	14.72	12.24	4.25	4.88	M6-P1.0	0.343	F05 (1.97)	1.38	0.059	0.472	0.83	0.33
1 1/2"	1.50	6.50	7.50	2.97	3.21	2.56	14.53	9.45	16.46	13.11	5.04	6.12	M8-P1.25	0.512	F07 (2.07)	2.17	0.059	0.709	1.41	0.33
2"	2.00	7.00	8.50	3.25	3.37	2.94	14.90	9.45	16.82	13.49	6.00	6.50	M8-P1.26	0.512	F07 (2.07)	2.17	0.059	0.709	1.41	0.50
2 1/2"	2.50	7.50	9.50	3.58	4.00	3.98	16.65	15.75	18.17	14.72	7.01	7.52	M10-P1.5	0.807	F10 (4.02)	-	-	1.024	1.93	0.59
3"	2.99	8.00	11.12	3.83	4.20	4.25	16.93	23.62	18.45	15.00	7.52	8.27	M10-P1.5	0.807	F10 (4.02)	-	-	1.024	1.93	0.68
4"	3.94	9.00	12.00	4.61	5.06	4.90	17.56	23.62	19.10	15.65	9.02	10.00	M10-P1.5	0.807	F10 (4.02)	-	-	1.024	1.93	0.68

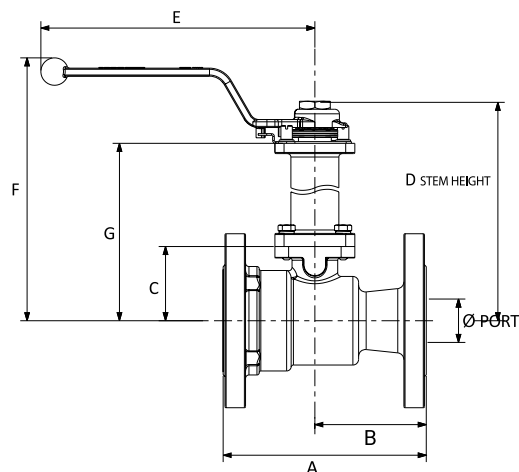
Note:

The dimensions above are for informational purposes only. Please refer to Sharpe® Valves if you need dimensions for construction.

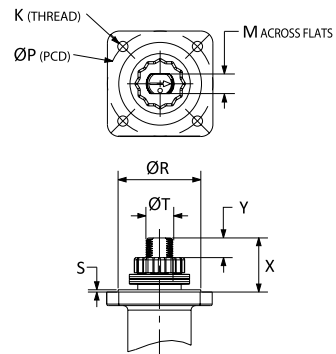
Cryogenic, Flanged Ball Valves

Sharpe® Series C70/FSC70 & C74/FSC74

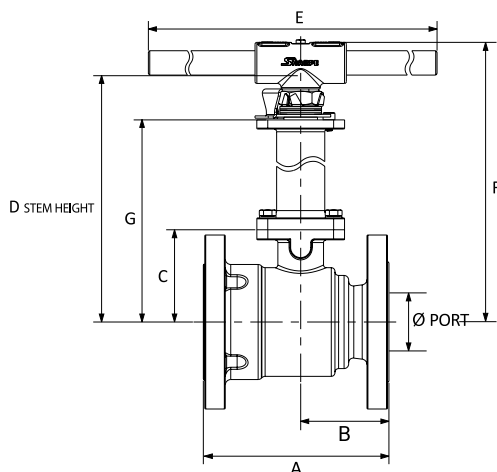
Series C74/FSC74 Sizes 1" – 2"



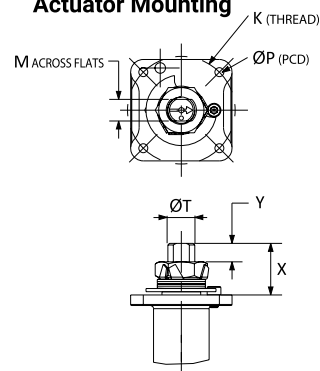
Dimensions for Actuator Mounting



Series C74/FSC74 Sizes 3 – 4"



Dimensions for Actuator Mounting



Dimensions (Inches)

Series C74 FSC74	ØPORT	A Class 150	A Class 300	B Class 150	B Class 300	C	D	E	F	G	ØH Class 150	ØH Class 300	K (Thread)	M	ØP (PCD)	ØR	S	ØT	X	Y
1"	0.81	5.00	6.50	2.70	4.20	1.53	12.56	6.40	14.22	11.81	4.25	4.88	M5-P0.8	0.264	F04 (1.65)	1.18	0.051	0.394	0.74	0.37
1½"	1.24	6.50	7.50	3.35	4.34	2.40	14.37	9.45	16.23	12.99	5.04	6.12	M8-P1.25	0.512	F07 (2.07)	2.17	0.059	0.709	1.41	0.33
2"	1.50	7.00	8.50	3.86	5.35	2.56	14.53	9.45	16.44	12.87	6.00	6.50	M8-P1.25	0.512	F07 (2.07)	2.17	0.059	0.709	1.41	0.54
3"	2.50	8.00	11.12	3.82	6.93	3.98	16.65	23.62	18.17	14.72	7.52	8.27	M10-P1.5	0.807	F10 (4.02)	-	-	1.024	1.93	0.68
4"	3.25	9.00	12.00	4.80	7.80	4.59	17.24	23.62	18.78	15.31	9.02	10.00	M10-P1.5	0.807	F10 (4.02)	-	-	1.024	1.93	0.68

Note:

The dimensions above are for informational purposes only. Please refer to Sharpe® Valves if you need dimensions for construction.

Cryogenic, Flanged Ball Valves

Sharpe® Series C70/FSC70 & C74/FSC74



Flow Data and Weight

C70 FSC70 Size	Cv	Approx. Weight Lbs	
		Class 150	Class 300
1/2"	26	5	6
3/4"	50	6	9
1"	94	9	12
1 1/2"	260	18	24
2"	480	26	32
2 1/2"	730	44	53
3"	1100	51	68
4"	2100	70	100

C_v values represent the flow of water at +60°F through the valve in U.S. gallons per minute at a pressure drop of 1 psi. The metric equivalent, K_v, is the flow of water at 16°C through the valve in cubic meters per hour at a pressure drop of 1 kg/cm². To convert C_v to K_v, multiply by 0.8569.

Traceability:

Heat numbers are provided on all valve bodies and ends. CMTR's (certified mill test reports) are available upon request.

Cryogenic Valve Preparation:

All cryogenic valves are shell tested, then completely disassembled. All parts are cleaned and degreased, per Sharpe Standard, in our clean room. The dry parts are then assembled. The assembled valve undergoes a seat and seal pressure test with nitrogen. The completed tested valve is packaged in polyethylene bags before leaving the clean room.

Automated Assemblies:

Valves, actuators, and accessories are designed to work together; delivering exceptional performance. Visit our website to select pneumatic actuators, electric actuators, positioners, limit switches, and other accessories.

C74 FSC74 Size	Cv	Approx. Weight Lbs	
		Class 150	Class 300
1"	30	10	13
1 1/2"	82	21	27
2"	120	24	28
3"	350	45	54
4"	720	71	91

Applicable Standards

Basic Design	ASME B16.34, BS 6364
Body Wall Thickness	ASME B16.34
Face to Face Dimensions	ASME B16.10
Flange Dimensions	ASME B16.5
Mounting Dimensions	ISO 5211
Marking	MSS-SP 25
Pressure Test	API 598, MSS-SP 72
Fire Safe - FS Series	API 607 7th Edition

Cryogenic, Flanged Ball Valves

Sharpe® Series C70/FSC70 & C74/FSC74



How to order Cryogenic Flanged Ball Valves

1½"	FSC70	1	-	6	6	6	-	K	I	G	-	1/1	-	NSTP
Size	Series	Class		Body/ Ends	Ball Material	Stem Ma- terial		Seat Material	Body Seal	Stem Packing		End Style		Suffixes & Options

Size		Valve Series		Body & Ends		Seat Material		Body Seal		End Style		Suffixes & Options	
C70 FSC70	C74 FSC74	C70	Full Port	6	316 Stainless Steel	C70, C74		I	Graphite	1	Class 150 Flanged, Raised Face	For C70, C74	
½"	-	FSC70	Full Port Fire Safe			K	PCTFE (Note 1)					HC	High Cycle Stem*
¾"	-			Ball Material				Stem Packing		1F	Class 150 Flanged, Flat Face	NS	Anti-Static*
1"	1"	C74	Standard Port	6	316 Stainless Steel	M	TFM™					TP	Tamper Proof Locking Device **
1½"	1½"	FSC74	Standard Port Fire Safe			N	NOVA	M	TFM™	3	Class 300 Flanged RF	Ball with upstream vent (standard)	
2"	2"			Stem Material		R	RTFE	N	NOVA	3F	Class 300 Flanged FF	For FSC70, FSC74 Fire-safe Valves	
2½"	-					T	PTFE	T	PTFE			NS	Required - add code Anti-Static
3"	3"					FSC70, FSC74		FSC70, FSC74				TP	Tamper Proof Locking Device **
4"	4"					K	PCTFE (Note 1)	G	Graphite			Ball with upstream vent (standard)	

Note 1:
PCTFE is frequently referred to as 3M's discontinued KEL-F® Brand.

Note:

Other materials & options available, please contact us with your requirement.
Responsibility for proper selection, use and maintenance of any product remains solely with the purchaser and end user.
We reserve the right to modify or improve the designs or specifications of any product at any time without notice.
3M™ Dyneon™ TFM™ are trademarks owned by 3M.

- * Price on Application
- ** Series C70/FSC70:
1½" and Smaller

Series C74/FSC74:
2" and Smaller

About ASC Engineered Solutions

ASC Engineered Solutions is defined by quality—in its products, services and support. With more than 1,400 employees, the company's portfolio of precision-engineered piping support, valves and connections provides products to more than 4,000 customers across industries, such as mechanical, industrial, fire protection, oil and gas, and commercial and residential construction. Its portfolio of leading brands includes ABZ Valve®, AFCON®, Anvil®, Anvil EPS, Anvil Services, Basic-PSA, Beck®, Catawissa, Cooplet®, FlexHead®, FPPI®, Gruvlok®, J.B. Smith, Merit®, North Alabama Pipe, Quadrant®, SCI®, Sharpe®, SlideLOK®, SPF® and SprinkFLEX®. With headquarters in Commerce, CA, and Exeter, NH, ASC also has ISO 9001:2015 certified production facilities in PA, TN, IL, TX, AL, LA, KS, and RI.



asc-es.com

Building connections that last™

