

Building connections that last™



# Sharpe® Series M80/M89 & M70/M74 High Performance Ball Valve Datasheet



High Performance Ball Valve  
Sharpe® Series M80/89 & M70/M74

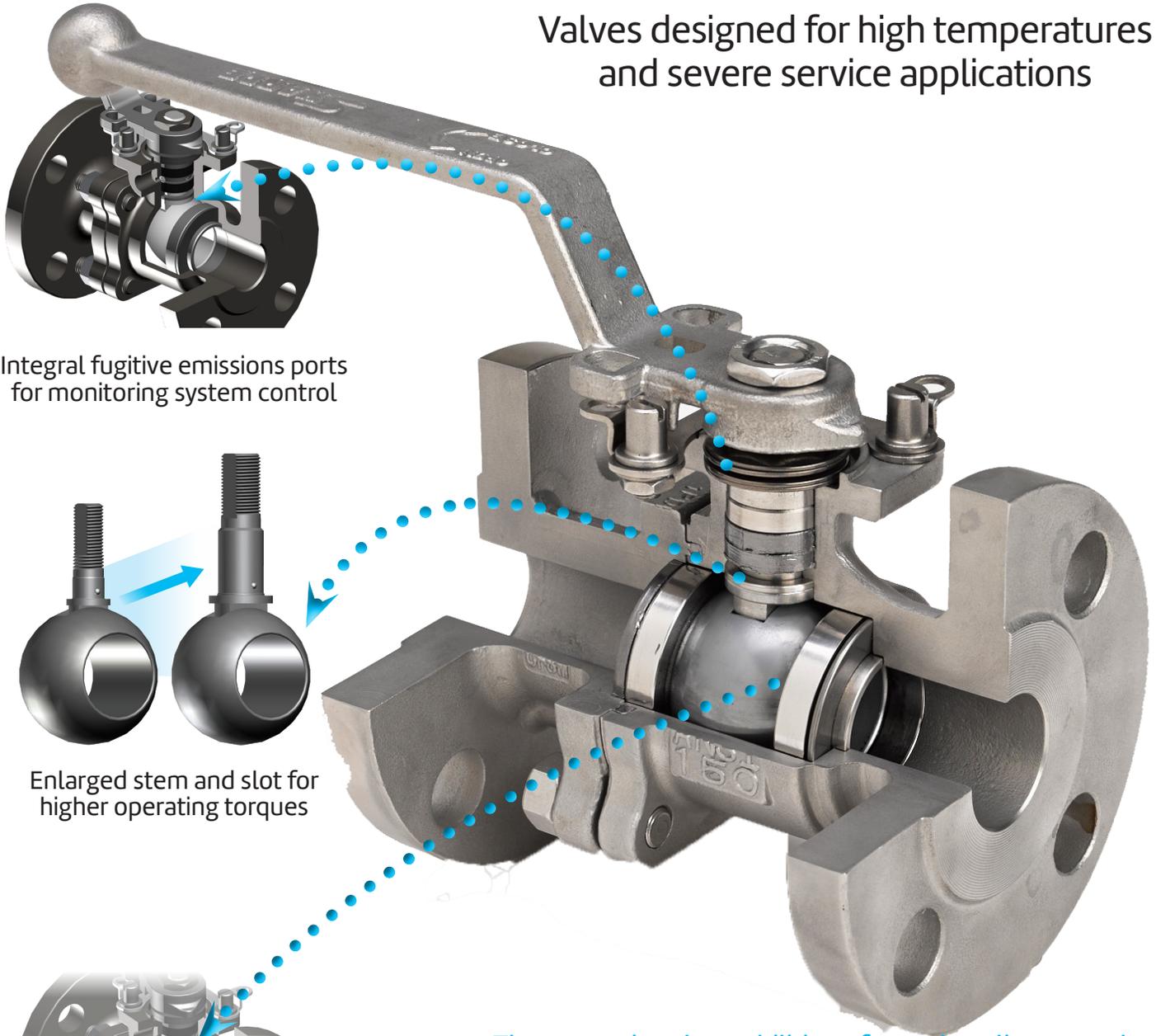


**Body Materials:**

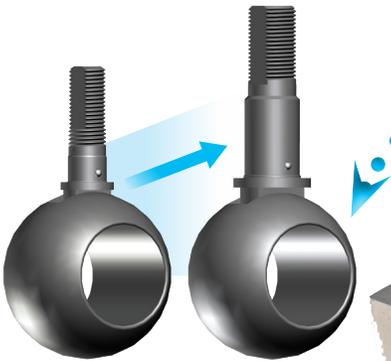
316 Stainless Steel, Carbon Steel, Alloy 20

**Overview:**

Valves designed for high temperatures and severe service applications



Integral fugitive emissions ports for monitoring system control



Enlarged stem and slot for higher operating torques



Tight toleranced stem and ball with characterized port for precise process control

The exceptional capabilities of metal sealing together with the advanced features of the new line of Sharpe API 608 valves, results in a superior valve that functions under the most demanding applications where soft seats are not an option.



## Design

### Mate-lapped ball and seat set

The design is based on a ball and two metal seats which are precision machined, and then mate-lapped together to provide an extremely tight fit.

Behind the seats are a spring or seal whose function is to enable sealing by applying a load to the sealing surfaces.

### Protected seat seal and springs

The seat design protects the seat seals and the springs from the media, which reduces problems associated with solidification of material in the valve.

The metal seated valves come in two configurations depending on the application.

### Bi-directional

Provides shut-off in both directions.

The valves have a symmetric build where both the upstream and downstream seats have a seat seal.

The seat seal material is polymeric or O-rings for low temperatures, and graphite or metal for high temperatures.

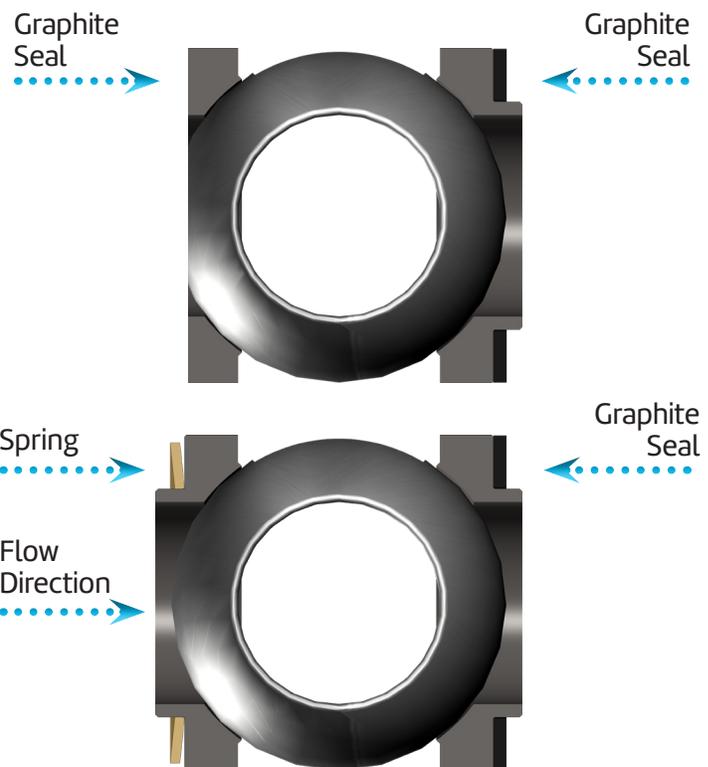
### Uni-directional

Provides shut-off in one direction.

The valve is built with an upstream spring and downstream seat seal.

The spring is assembled behind the upstream seat and is protected from the media. The spring material is specified according to the application media and temperature. All uni-directional valves carry a flow direction arrow.

Sharpe metal seated valves are designed for applications requiring resistance to erosion, abrasion, corrosion, and high temperatures beyond the capabilities of the currently available polymeric seat materials. Typical applications include Pulp and Paper, Petrochemical, Petroleum, Chemical, and Power industries to name a few.



# High Performance Ball Valve

## Sharpe® Series M80/89 & M70/M74



## Features

### Important construction components

#### Tongue and Groove Design

Fully encapsulated body seals, allowing ends to be welded in-line, without time consuming and labor intensive disassembly.

Design compensates for bolt expansion and reduces the chance of external leakage.

Helps prevent seal ruptures in high pressure, cryogenic or steam applications.

#### Heavy Duty Stem Design

Stem diameters have been increased to meet the higher torque requirements of the most demanding applications.

Stem to ball contact area is wider and larger, allowing the valve to be used for higher torque applications.

Design allows for the use of 316 stainless steel stem material, rather than 17-4PH, for superior corrosion resistance.

#### ISO 5211 Top-Works Compatibility

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

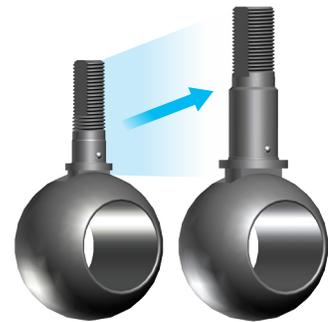
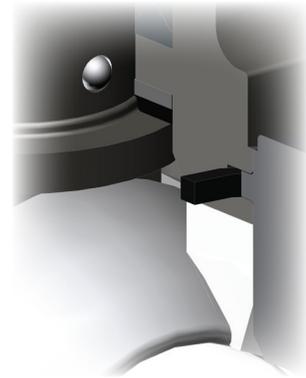
Sharpe® actuators and accessories may be retrofitted on existing valves without disruption of line integrity.

#### Lockable Stem Extension

An option to move the valve top interface away from the pipe line to accommodate insulation.

#### Tamper Proof Locking Device

All Sharpe® 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 springs ensure the locking device snaps into place in the open or closed position to prevent accidental operation.



# High Performance Ball Valve

## Sharpe® Series M80/89 & M70/M74



### Features

Process compatibility of stem assemblies provide operational flexibility

#### Stem assemblies

Various stem assemblies are available based on application requirements.

**Standard** – a multiple pack of chevron "V" shaped stem seals for better sealing in TFM™ or Nova materials.

**High Temperature** – double pack of flexible graphite seals for sealing under high temperature conditions.

**Fugitive Emission** – Two-pack stem seals in PTFE or graphite, with lantern ring to allow leak detection through the emission port(s).

**High Cycle** – unique design for demanding high cycle applications that consist of multi-system sealing devices in the stem bonnet.

#### Stem sealing

##### Increased Stem Sealing Area

Allows for a range of sealing combinations for severe applications and other stringent design demands.

##### Live-loaded stem

Two pairs of concave and opposing spring washers provide additional compensation for seal wear.

##### Safe Design

Blowout proof stem ensures the stem cannot be blown out by accidental medium pressure rise.

##### Wear Resistance

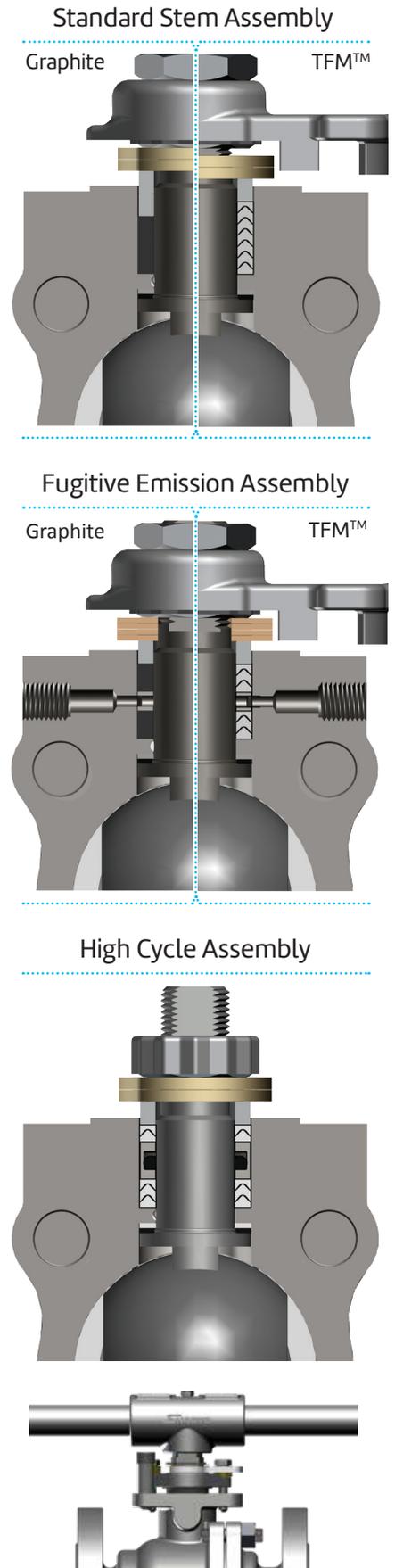
The thrust washer is either metallic for higher temperatures and wear resistance, or PEEK for lower temperatures.

##### Anti-Static

Static build-up discharges by anti-static device in stem or the metallic thrust washer.

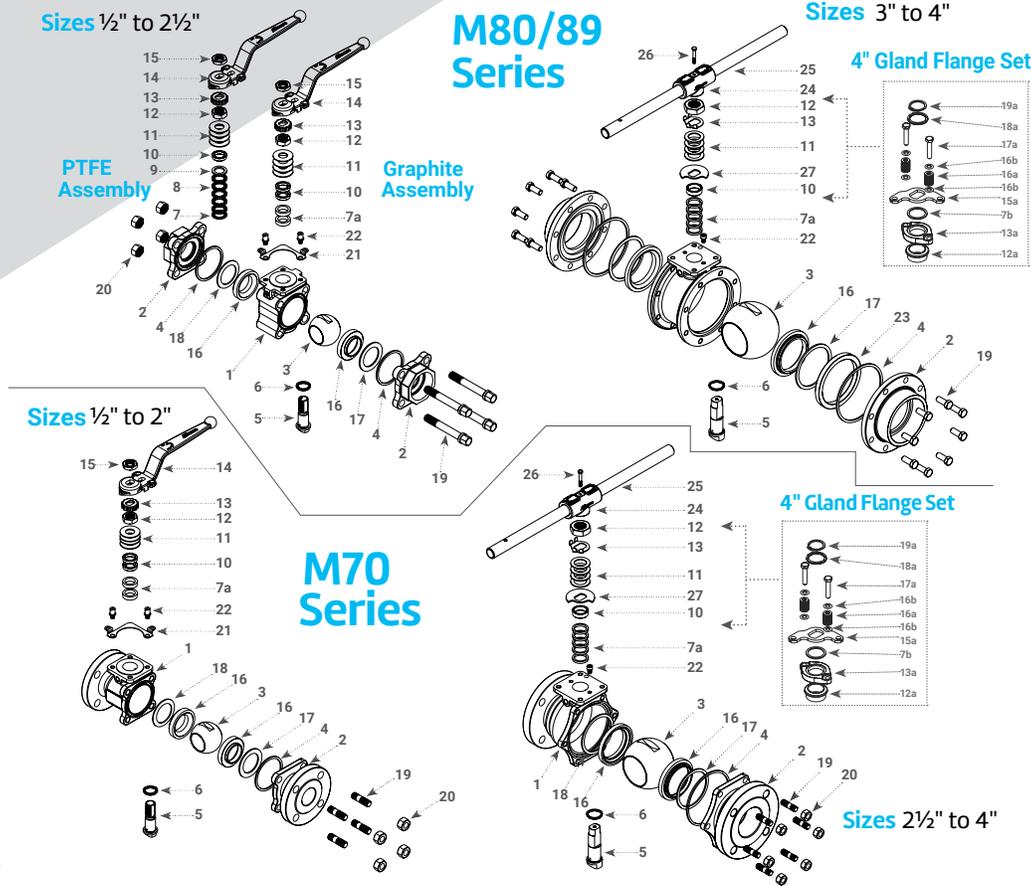
#### Stem Trim for Sizes Greater than 3"

According to API 608 all valve sizes greater than 3" have an adjustable packing gland with thru bolt holes. Gland bolts pass through the holes and thread to the valve body. The position stops are bolted to the body and are not integral to the packing gland, gland flange or gland bolting.



# High Performance Ball Valve

## Sharpe® Series M80/89 & M70/M74



### Parts & Materials

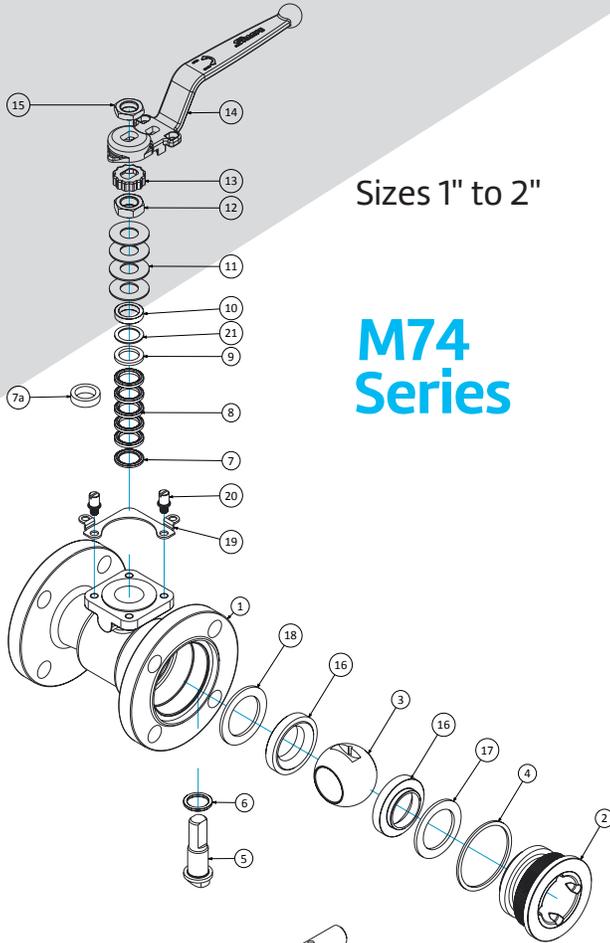
Item	Description	Material	Qty.
1	Body	STAINLESS STEEL ASTM A351 CF8M CARBON STEEL ASTM A216 WCB ALLOY 20 ASTM A351 CN7M	1
2	End	STAINLESS STEEL ASTM A351 CF8M CARBON STEEL ASTM A216 WCB ALLOY 20 ASTM A351 CN7M	1/2
3	Ball	316 Stainless Steel Hard Chrome Plated (HCP)	1
4*	Body Seal	PTFE, RTFE, Graphite, Viton®	1/2
5	Stem	316 Stainless Steel, 17-4PH Stainless Steel, Inconel	1
6*	Thrust Washer	Nitronic 60, Inconel 718, PEEK (x2)	1
7*	Stem Seal - Bottom	PTFE, TFM™, Nova	1
7a*	Stem Seal	GRAPHITE (high temperature)	2 or 5
7b	Thrust Bearing	PEEK	1
8*	Stem Seal - Middle	PTFE, TFM™, Nova	5
9*	Stem Seal - Top	PTFE, TFM™, Nova	1
10	Gland	300 Series Stainless Steel	1 or 2
11	Belleville Spring	17-7PH Stainless Steel	4
12	Stem Nut	300 Series Stainless Steel	1
12a	Gland Position Ring	300 Series Stainless Steel	1
13	Lock Tab	300 Series Stainless Steel	1
13a	Gland (Size 4" only)	316 Stainless Steel A351 CF8M	1
14	Handle	300 Series Stainless Steel	1

Item	Description	Material	Qty.
15	Handle Nut	300 Series Stainless Steel	1
15a	Stop Plate	300 Series Stainless Steel	1
16	Metal Seat	Stainless Steel Stellite™ 6 coated	2
16a	Belleville Washer	17-7PH	16
16b	Washer	300 Series Stainless Steel	4
17*	Seat Seal	Graphite, PTFE, Viton®	1
17a	Gland Bolt	300 Series Stainless Steel	2
18	Seat Disk Spring	17-4PH Stainless Steel, ½ Hard 301, Inconel 718	1
18a	Retainer Spring	300 Series Stainless Steel	1
19	Body Bolt/Stud	A193 8/8M	4/16
19a	Retainer Lock	300 Series Stainless Steel	1
20	Body Nut	300 Series Stainless Steel	4/8
21	Stop Pin	300 Series Stainless Steel	1
22	Stop Plate	300 Series Stainless Steel	1 or 2
23	Seat Ring	300 Series Stainless Steel	1
24	Wrench Block	300 Series Stainless Steel	1
25	Handle Pipe	300 Series Stainless Steel	1
26	Wrench Bolt	300 Series Stainless Steel	1
27	Stop Plate	300 Series Stainless Steel	1

**Note:** The quantities listed in the stem arrangement are for standard stem assemblies. The fugitive emission stem assemblies carry a lantern ring and less number of seals. \*These parts are used in repair kits.

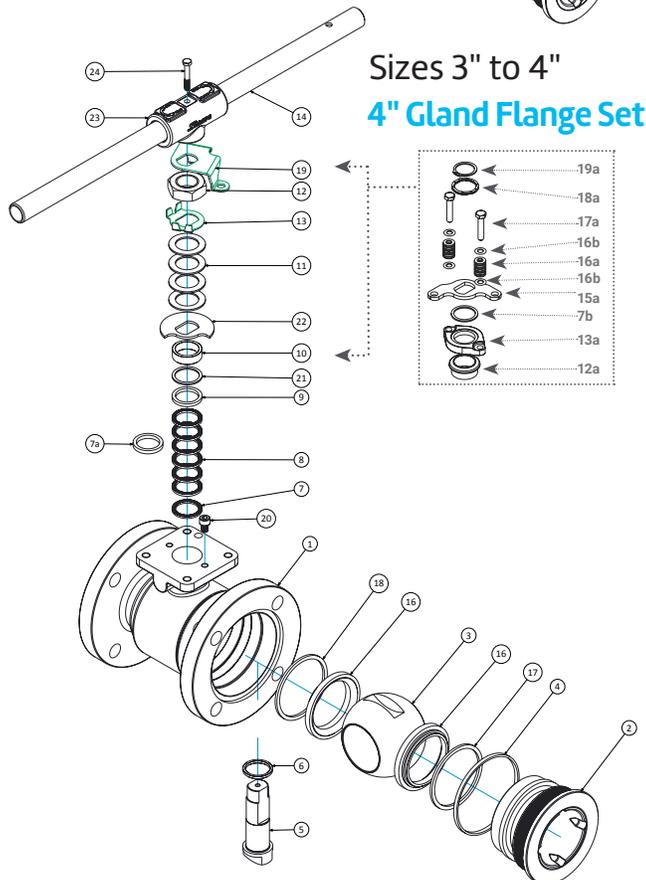
# High Performance Ball Valve

## Sharpe® Series M80/89 & M70/M74



Sizes 1" to 2"

### M74 Series



Sizes 3" to 4"

### 4" Gland Flange Set

## Parts & Materials

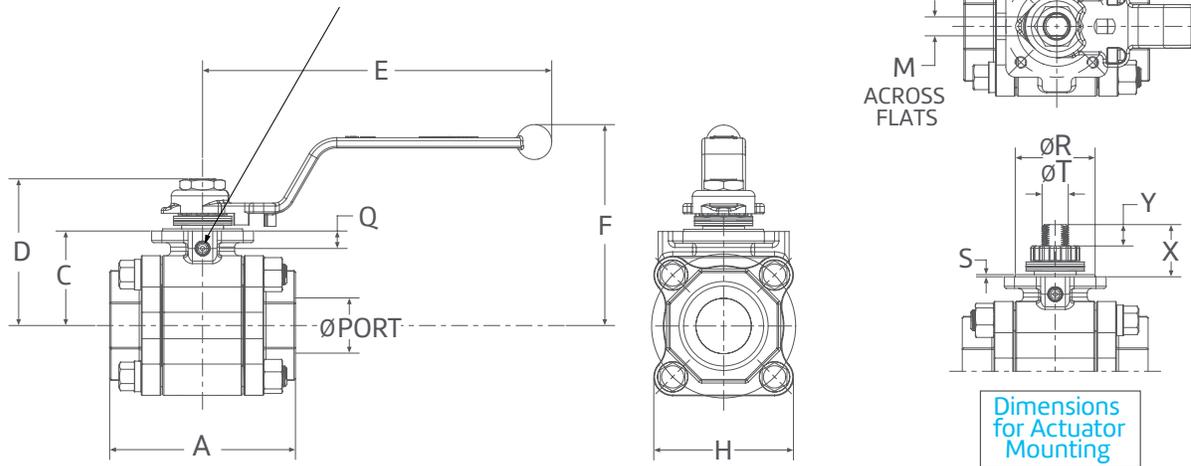
Item	Description	Material	Qty.
1	Body	316 STAINLESS STEEL ASTM A351 CF8M CARBON STEEL ASTM A216 WCB ALLOY 20 ASTM A351 CN7M	1
2	End Cap	316 STAINLESS STEEL ASTM A351 CF8M CARBON STEEL ASTM A216 WCB ALLOY 20 ASTM A351 CN7M	1
3	Ball	316 Stainless Steel Hard, Chrome Plated (HCP)	1
4*	Body Seal	PTFE, RTFE, Graphite, Viton®	1
5	Stem	316 Stainless Steel, 17-4PH Stainless Steel, Inconel	1
6*	Thrust Washer	Nitronic 60, Inconel 718, PEEK (x2)	1
7*	Stem Seal - Bottom	PTFE, TFM™, Nova	1
7a*	Stem Seal	Graphite (High Temperature)	2 or 5
7b	Thrust Bearing	PEEK	1
8*	Stem Seal - Middle	PTFE, TFM™, Nova	5
9*	Stem Seal - Top	PTFE, TFM™, Nova	1
10	Gland	300 Series Stainless Steel	1 or 2
11	Belleville Spring	17-7PH Stainless Steel	4
12	Stem Nut	300 Series Stainless Steel	1
12a	Gland Position Ring	300 Series Stainless Steel	1
13	Lock Tab	300 Series Stainless Steel	1
13a	Gland (Size 4" only)	316 Stainless Steel A351 CF8M	1
14	Handle	300 Series Stainless Steel	1
15	Handle Nut	300 Series Stainless Steel (1"-2")	1
15a	Stop Plate	300 Series Stainless Steel	1
16	Metal Seat	Stainless Steel Stellite™ 6 Coated	1
16a	Belleville Washer	17-7PH	16
16b	Washer	300 Series Stainless Steel	4
17	Seat Seal	Graphite, PTFE, Viton®	1
17a	Gland Bolt	300 Series Stainless Steel	2
18	Seat Disk Spring	17-7PH Stainless Steel, ½ Hard 301, Inconel 718	1
18a	Retainer Spring	300 Series Stainless Steel	1
19	Lock Plate	300 Series Stainless Steel	1
19a	Retainer Lock	300 Series Stainless Steel	1
20	Stop Pin	300 Series Stainless Steel	1 or 2
21	Thrust Seal	300 Series Stainless Steel	1
22	Stop Plate	300 Series Stainless Steel (3"- 4")	1
23	Wrench Book	300 Series Stainless Steel (3"- 4")	1
24	Wrench Bolt	300 Series Stainless Steel (3"- 4")	1

# High Performance Ball Valve

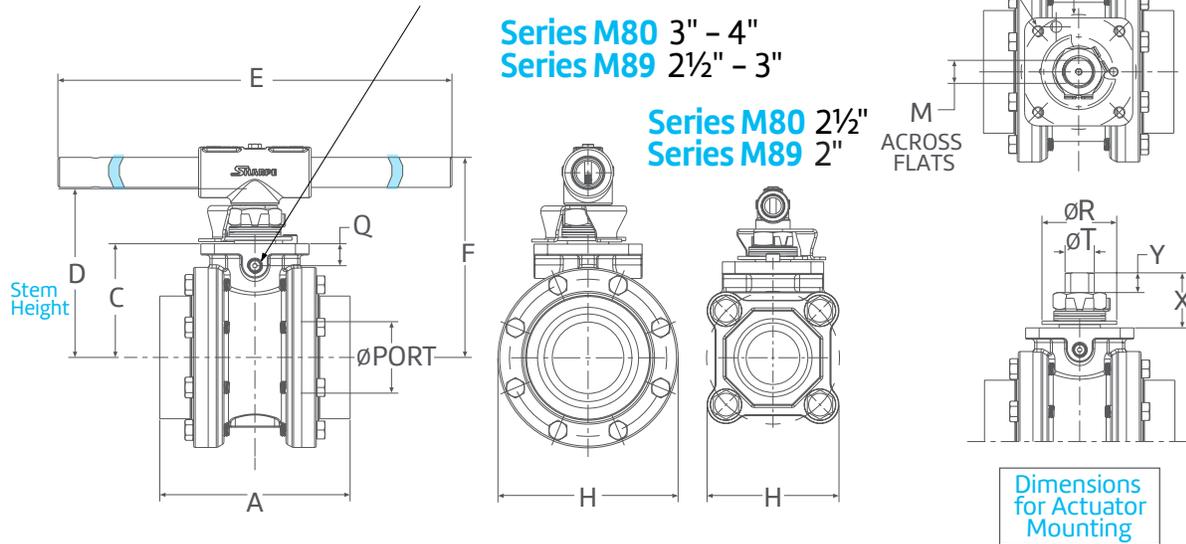
## Sharpe® Series M80/89 & M70/M74



**Series M80** ½" - 2"  
**Series M89** ¼" - 1½"  
**Optional EMISSION PORT THREAD**  
 ⅛" NPT (Sizes ¾" to 2")



**Series M80** 2½" - 4"  
**Series M89** 2" - 3"  
**Optional EMISSION PORT THREAD**  
 ¼" NPT (Sizes 2½" to 4")



### Dimensions (Inches)

Standard Port	Full Port	TE/SW BW	Ext BW Full Port	A	C	D	E	F	H	K (Thread)	M	ØP (PCD)	Q	ØR	S	ØT	X	Y
M80	M89	ØPORT	A	A														
½"	¼", ⅜"	0.44	2.91	-	1.27	2.01	6.42	3.39	1.81	M5-P0.8	0.264	F04 (1.65)	NA	1.18	0.051	0.394	0.74	0.33
¾"	½"	0.56	3.07	13.10	1.42	2.17	6.42	3.54	1.95	M5-P0.8	0.264	F04 (1.65)	0.27	1.18	0.051	0.394	0.74	0.33
1"	¾"	0.81	3.72	13.25	1.74	2.57	7.28	3.83	2.39	M6-P1.0	0.343	F05 (1.97)	0.39	1.38	0.059	0.472	0.81	0.30
1¼"	1"	1.00	4.25	13.61	1.91	2.74	7.28	4.00	2.85	M6-P1.0	0.343	F05 (1.97)	0.37	1.38	0.059	0.472	0.81	0.30
1½"	1¼"	1.24	4.57	13.90	2.40	3.82	9.45	5.28	3.15	M8-P1.25	0.512	F07 (2.76)	0.47	2.17	0.059	0.709	1.41	0.48
2"	1½"	1.50	5.04	14.21	2.56	3.98	9.45	5.43	3.78	M8-P1.25	0.512	F07 (2.76)	0.47	2.17	0.059	0.709	1.41	0.48
2½"	2"	2.00	6.34	14.87	3.58	5.28	15.75	6.34	4.92	M10-P1.5	0.630	F10 (4.02)	0.76	-	-	0.886	1.92	0.65
3"	2½"	2.50	6.65	-	3.98	5.87	23.62	7.48	6.30	M10-P1.5	0.807	F10 (4.02)	0.77	-	-	1.024	1.93	0.65
4"	3"	3.25	8.43	-	4.59	6.50	23.62	8.07	7.99	M10-P1.5	0.807	F10 (4.02)	0.77	-	-	1.024	1.93	0.65

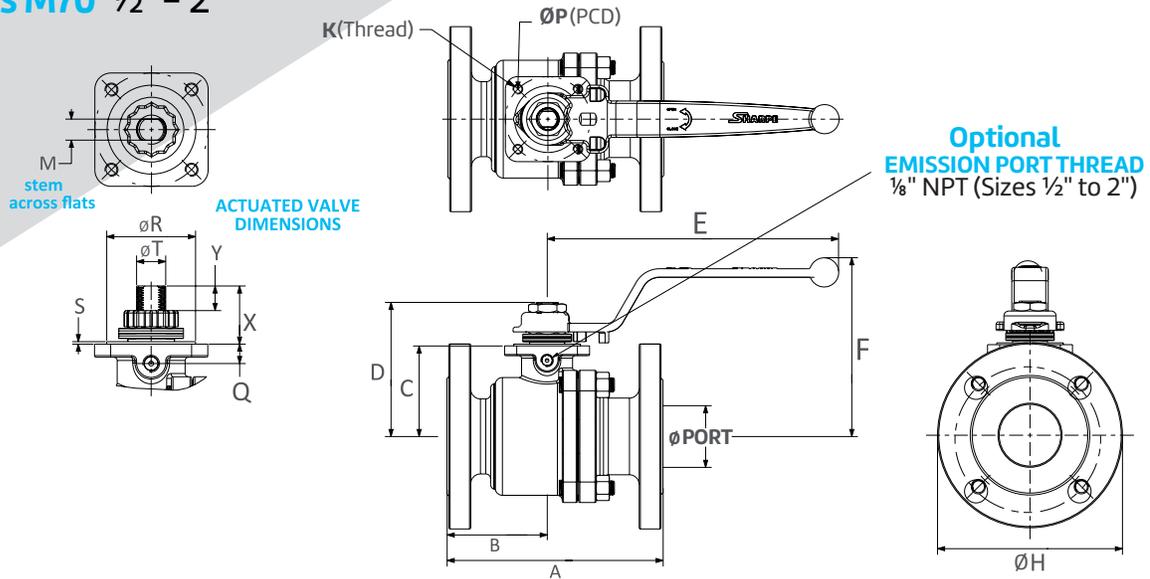
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# High Performance Ball Valve

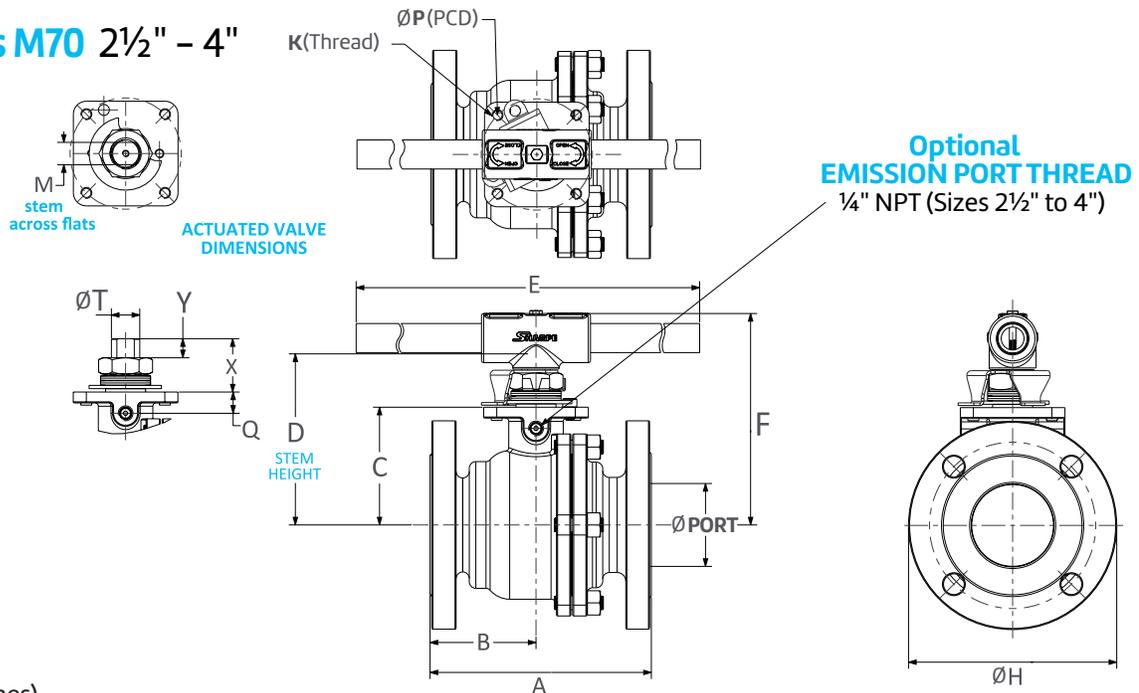
## Sharpe® Series M80/89 & M70/M74



### Series M70 1/2" - 2"



### Series M70 2 1/2" - 4"



#### Dimensions (Inches)

Size	ØPORT	Class				C	D	E	F	Class		K (Thread)	M	ØP (PCD)	Q	ØR	S	ØT	X	Y
		150	300	150	300					150	300									
1/2"	0.56	4.25	5.50	1.96	2.36	1.41	2.15	6.42	3.54	3.50	3.75	M5-P0.8	0.264	F04 (1.65)	0.27	1.18	0.051	0.394	0.74	0.33
3/4"	0.82	4.62	6.00	2.13	2.52	1.53	2.27	6.42	3.66	3.88	4.61	M5-P0.8	0.264	F04 (1.65)	0.37	1.18	0.051	0.394	0.74	0.33
1"	1.00	5.00	6.50	2.13	2.72	1.93	2.74	7.28	3.73	4.25	4.88	M6-P1.0	0.343	F05 (1.97)	0.39	1.38	0.059	0.472	0.81	0.30
1 1/2"	1.50	6.50	7.50	2.97	3.21	2.56	3.97	9.45	5.28	5.00	6.12	M8-P1.25	0.512	F07 (2.76)	0.47	2.17	0.059	0.709	1.41	0.48
2"	2.00	7.00	8.50	3.25	3.37	2.94	4.35	9.45	5.87	6.00	6.50	M8-P1.25	0.512	F07 (2.76)	0.47	2.17	0.059	0.709	1.41	0.48
2 1/2"	2.50	7.50	9.50	3.58	4.00	3.98	5.91	23.62	7.48	7.01	7.52	M10-P1.5	0.807	F10 (4.02)	0.77	-	-	1.024	1.92	0.65
3"	3.00	8.00	11.12	3.83	4.20	4.25	6.18	23.62	7.64	7.52	8.27	M10-P1.5	0.807	F10 (4.02)	0.77	-	-	1.024	1.93	0.65
4"	3.94	9.00	12.00	4.61	5.06	4.90	6.83	23.62	8.28	9.02	10.00	M10-P1.5	0.807	F10 (4.02)	0.77	-	-	1.024	1.93	0.65

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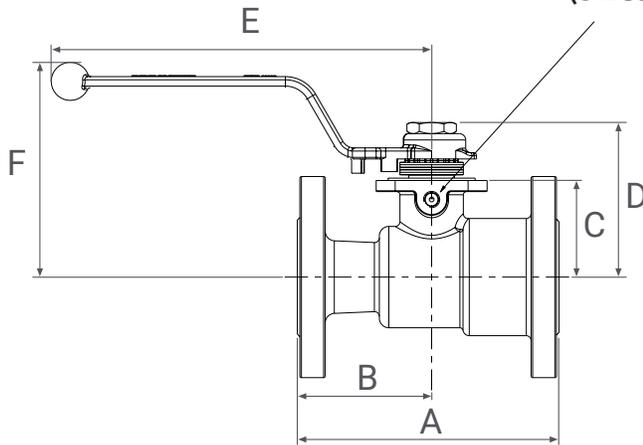
# High Performance Ball Valve

## Sharpe® Series M80/89 & M70/M74

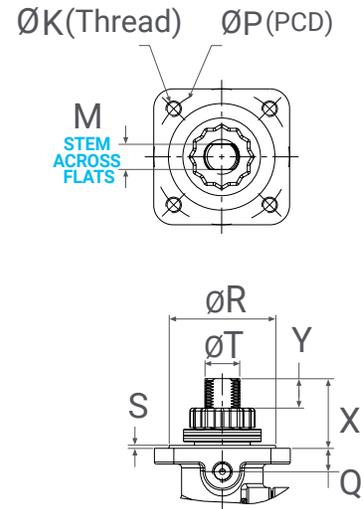


### Series M74 1" - 2"

**Optional EMISSION PORT THREAD**  
1/8" NPT (Sizes 1" to 2")

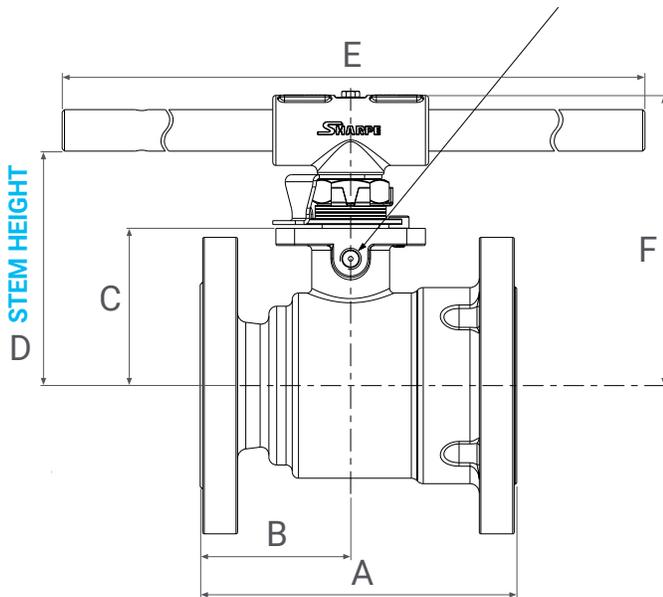


### Dimensions for Actuator Mounting

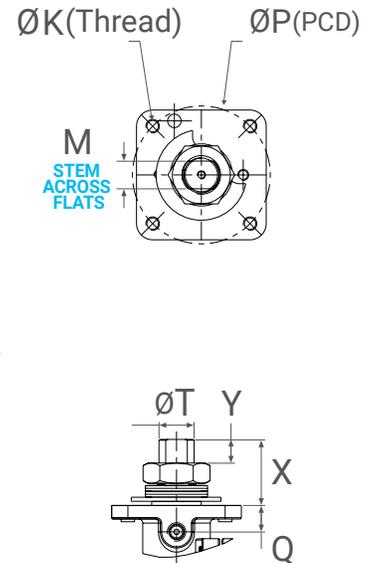


### Series M74 3" - 4"

**Optional EMISSION PORT THREAD**  
1/4" NPT (Sizes 3" to 4")



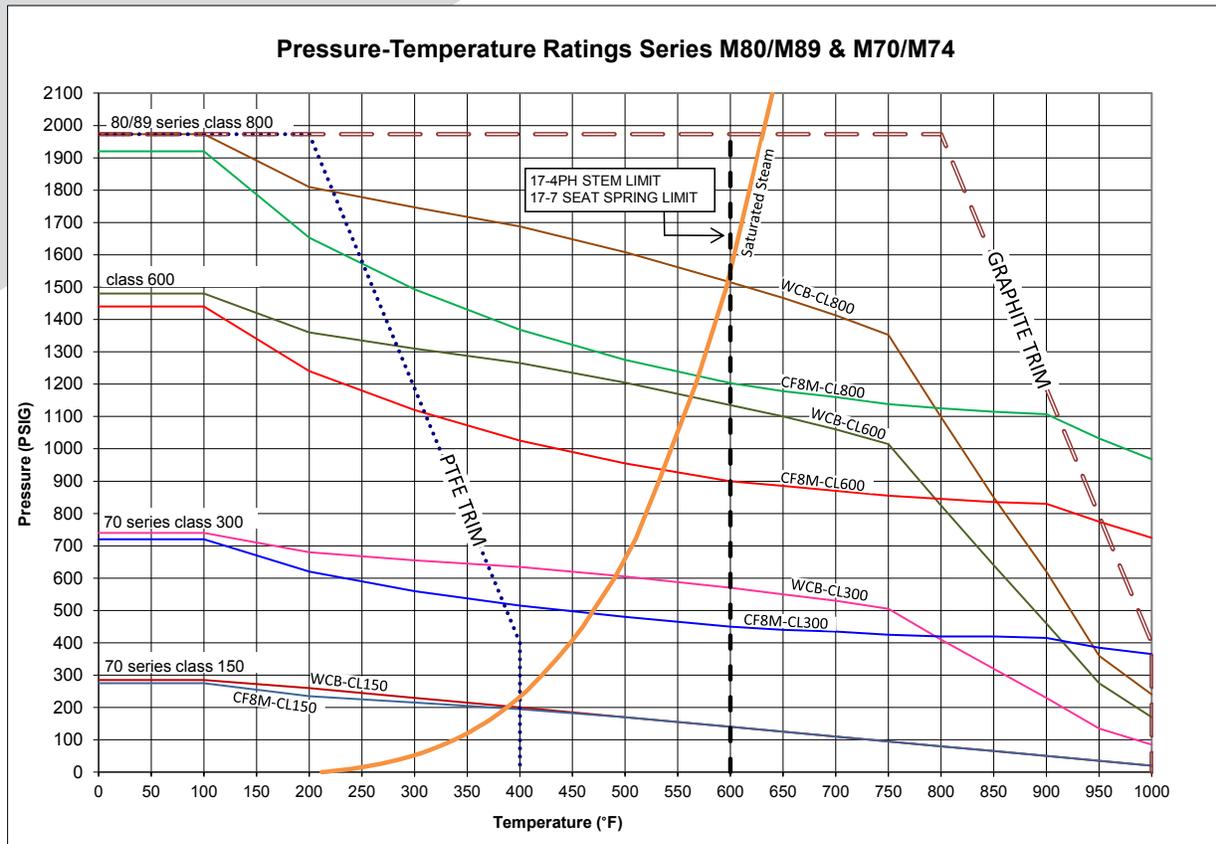
### Dimensions for Actuator Mounting



### Dimensions (Inches)

Size	Ø Port	Class 150		Class 300		C	D	E	F	Class 150		Class 300		K (Thread)	M	ØP(PCD)	Q	ØR	S	ØT	X	Y
		A	A	B	B					ØH	ØH											
1"	0.81	5.00	6.50	2.70	2.72	1.53	2.28	6.40	3.68	4.25	4.88	M5-P0.8	0.264	F04 (1.65)	0.57	1.181	0.394	0.394	0.74	0.37		
1½"	1.24	6.50	7.50	3.35	3.21	2.40	3.82	9.45	5.35	6.10	6.12	M5-P1.25	0.512	F07 (2.76)	0.47	2.165	0.059	0.709	1.41	0.54		
2"	1.50	7.00	8.50	3.86	5.35	2.56	3.98	9.45	5.51	6.50	6.50	M8-P1.26	0.512	F07 (2.76)	0.47	2.165	0.059	0.709	1.41	0.54		
3"	2.50	8.00	11.12	3.82	6.93	3.98	5.90	23.6	7.36	7.52	8.27	M10-P1.5	0.807	F10 (4.02)	0.77	NA	NA	1.024	1.93	0.68		
4"	3.25	9.00	12.00	4.80	7.79	4.59	6.50	23.6	7.95	9.02	10.0	M10-P1.5	0.807	F10 (4.02)	0.77	NA	NA	1.024	1.93	0.68		

**Note:** The dimensions above are for informational purposes only. Please contact Sharpe® Valves if you need dimensions for construction.



**Note:**  
 The maximum pressure/temperature ratings of the valve assemblies are limited to lowest of the body or seat material fitted.  
 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.

**Standard Port (84)**  
**Class 600** ½" – 2½"  
**Class 300** 3" – 4"

**Full Port (99)**  
**Class 600** ¼" – 2"  
**Class 300** 2½" – 3"

### Coating Options

The standard combination is a hard chrome plated (HCP) stainless steel ball and stainless steel seats with Stellite™ 6 hard facing. Other optional coatings are available, please refer to Sharpe® for more information.

### Shut Off Class

All the valves are tested to ANSI/FCI 70-2.  
 The seat standard leakage rates are Class V.

### Size Range

Three-piece	
Standard Port ( <b>M80</b> )	Class 800 ½" – 2½" Class 300 3" – 4"
Full Port ( <b>M89</b> )	Class 800 ½" – 2" Class 300 2½" – 3"
Flanged	
Standard Port ( <b>M74</b> )	Class 150 1" – 4" Class 300 1" – 4"
Full Port ( <b>M70</b> )	Class 150 ½" – 4" Class 300 ½" – 4"

# High Performance Ball Valve

## Sharpe® Series M80/89 & M70/M74



## How to order Series M80/M89 & M70/M74

**1" M80 - 4 4 Z G G Z - U 6GZ - TE/TE - L**

Size	Series	Body	Ends	Stem	Body Seal	Stem Packing	Thrust Bearing	Flow	Seat Set	Ends	Options
								(see coding below)		(80/89 only)	

Size	Series	Body & Ends	Stem Packing	End Style	Options
1/4"	M80 3-piece S/P	2 Alloy 20*	G Graphite	TE Threaded	F1 1 Emission Port
3/8"	M89 3-piece F/P	4 Carbon Steel	M TFM™	SW Socketweld	F2 2 Emission Port
1/2"	M701 Flanged #150 S/P	6 316 Stainless Steel	N NOVA	BW10 Buttweld SCH 10*	L Lockable Stem Extension
3/4"	M703 Flanged #300 F/P		R RTFE	BW40 Buttweld SCH 40	A NACE
1"	M741 Flanged #150 S/P*	<b>Stem</b>	T PTFE	BW80 Buttweld SCH 80	VB Vented Ball
1 1/4"	M743 Flanged #300 S/P*	Z Inconel 718		1 150# Flanged RF*	SJ Steam Jacket
1 1/2"		6 316 SS	<b>Thrust Bearing</b>	3 300# Flanged RF*	SJ3 Steam Jacket With 3 Outlets
2"		7 17-4PH	C Nitronic 60	6 600# Flanged RF*	TP Tamper Proof Locking Device
2 1/2"			P PEEK	EBW Extended BW (Series 89 Only)	
3"		<b>Body Seal</b>	Z Inconel 718	FB Flush Bottom Tank Pad	
4"		G Graphite			
		T PTFE			
		V Viton®			

**Note:**  
\*POA

Flow	Material (ball/seat)	Coating (ball/seat)	Seat Set		Spring	Applicable Standards	
			Seat Seal			Body Wall Thickness	
U Uni-Directional			G Graphite	Z* Inconel 178		ASME B16.34	
B Bi-Directional	*6 316/316	HCP/S6	T PTFE	3 300 Stainless Steel	SW & Threaded Ends	ASME B16.11	
			V Viton®	7 17-7PH Stainless Steel	Butt-Weld Ends	ASME B16.25	
					Flange Dimensions	ASME B16.5	
					Basic Design	ASME B16.34, API 608 5th Ed.	
					Pressure Test	ANSI/FCI 70-2, API 598	
					Mounting Dimensions	ISO 5211	
					NACE	MR0175/ISO 15156	
					Marking	MSS-SP 25	

Bi-Directional Set (B)		Uni-Directional Set (U)	
B6T	316/316, HCP/S6, PTFE seat seal for temperatures up to 400°F	U6T	316/316, HCP/S6, PTFE seat seal, 17-7 spring for temperatures up to 400°F
B6V	316/316, HCP/S6, Viton® seat seal for temperatures up to 400°F	U6V7	316/316, HCP/S6, Viton® seat seal, 17-7 spring for temperatures up to 400°F
B6G	316/316, HCP/S6, Graphite seat seal for temperatures up to 750°F	U6GZ	316/316, HCP/S6, Graphite seat seal, Inconel spring for temperatures up to 1000°F

### Definitions:

**HCP** Hard Chrome Plated

**S6** Stellite™ 6

\*\* These items used as standard



### Note:

Viton is a registered trademark of Dupont.

3M™, Dyneon™, TFM™ are trademarks owned by 3M.

STELLITE™ is a trademark of KENAMETAL.

### **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®, Gruklok®, 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.



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