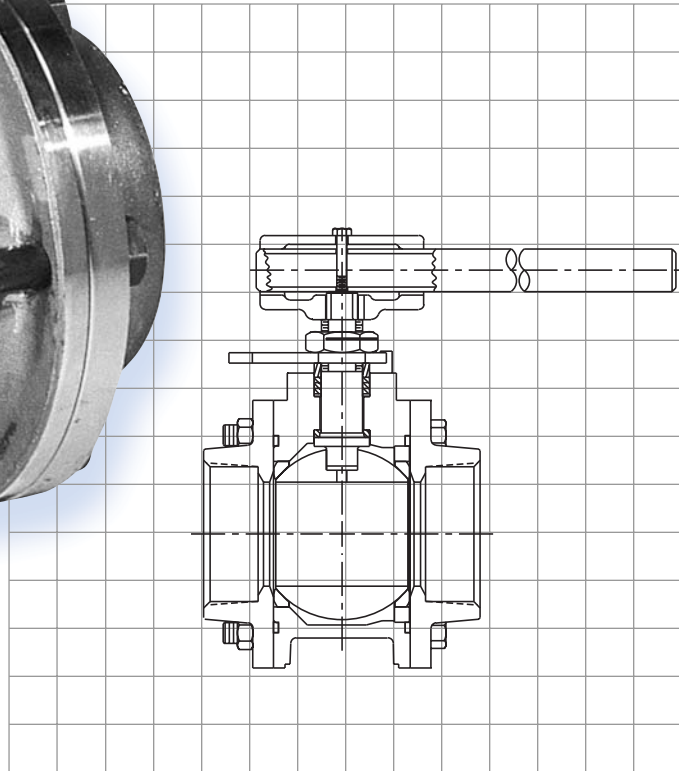


AN ISO 9001 REGISTERED COMPANY



Series 45 Ball Valve

*Large Diameter Three-piece Ball Valves for OEM
Equipment and Packaged Piping Systems*

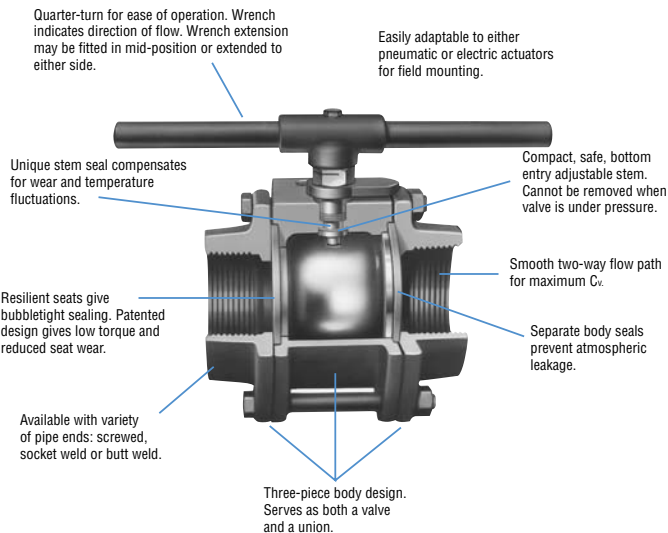
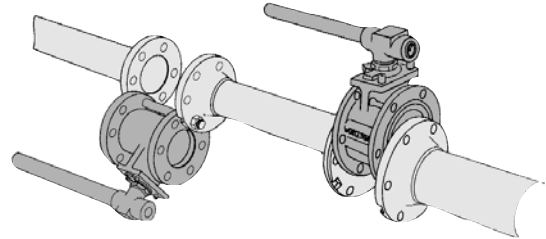
Compact, low weight, permanent end connections
and in-line maintenance capability

Compact, Large Diameter, Three-piece Ball Valves

Substantially Reduced Installation and Maintenance Costs!

For OEM equipment and packaged piping systems, Worcester's® Series 45 ball valves provide the best performance for the least installed cost in the 2½" – 6" size range. Flanges are an integral part of the valve design, providing savings in flanges, nuts, bolts and labor. Three-piece construction also means that the valve functions as both valve and union. This is a valuable feature in welded piping systems where line breaks are required.

Series 45 valves offer all the advantages of Worcester's Series 44 three-piece and Series 51/52 flanged valves: downstream seat sealing, low operational torque, and bottom entry, blowout-proof stem. Multiple stem seal rings in a deep packing box assure zero leakage and Worcester Controls' patented seat design assures positive shutoff.



Easily Automated for On/Off or Modulating Control

The lightweight, compact design of the Series 45 valves combined with Worcester's own Series 39 pneumatic actuators creates a control package that's small yet efficient. Worcester's actuators are engineered to match the performance of the valve for optimum power and safety. For detailed sizing instructions see Worcester Controls' Actuator Sizing Manual, bulletin ASM. A wide range of options is available to complement your pneumatic or electric package, from computer compatible controls to limit switches to Cycle Length Control. For on/off or throttling applications, when used with a positioner, the actuated 45 Series valve is a dependable, precise unit. Because Worcester supplies all the elements of your control packages, we are your single source if you ever need replacement parts or service.



Specifications

Sizes:	2½", 3", 4", 6"
Style:	Three-piece
Rating:	ANSI Class 300
Ends:	Screwed, Socket Weld, Butt Weld Schedule 40 (CS), Butt Weld Schedule 10 (SS)
Body:	Carbon Steel, Type 316 Stainless Steel
Ball & Stem:	Type 316 Stainless Steel
Seats:	Reinforced fluoropolymer, Polyfill®, fluoropolymer, UHMWPE
Body Seals:	TFE (TFE coated Stainless Steel "S" gasket with polyfill seats) or UHMWPE with UHMWPE seats optional on 2½" valve.
Max. Pressure:	720 psi
Max. Temp:	450°F – TFE and Reinforced TFE seats 500°F – Polyfill seats

Leakage Rate:	Bubble-tight
Service*:	Manual on/off, Automated on/off (electric or pneumatic actuation), Throttling Control (electric or pneumatic actuation)
Flow:	Bidirectional
Standards:	SE valves meet ANSI B2.1 SW valves meet ANSI B16.11 BW valves meet ANSI B16.25 All styles: Meet Coast Guard requirements Meet NACE MR01-75

* For steam service ratings, refer to Worcester Steam Service Data Sheet (SSD) for ratings. This data sheet is found in the Engineering Section of the general catalog binder.

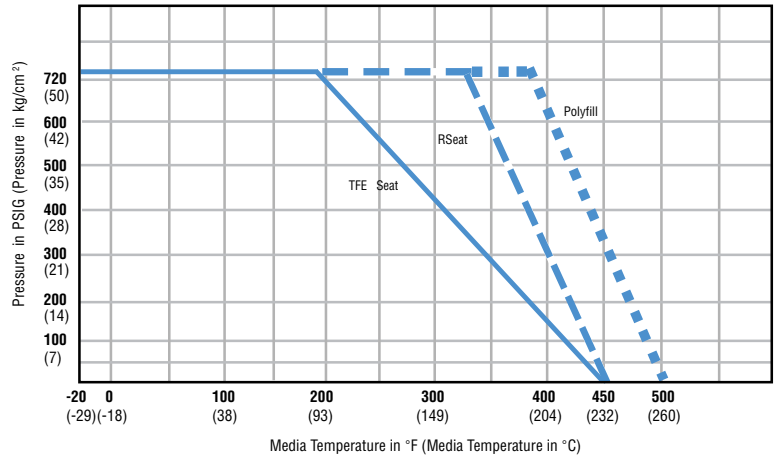
Flow Coefficient

Cv values and equivalent lengths of pipe are as follows:

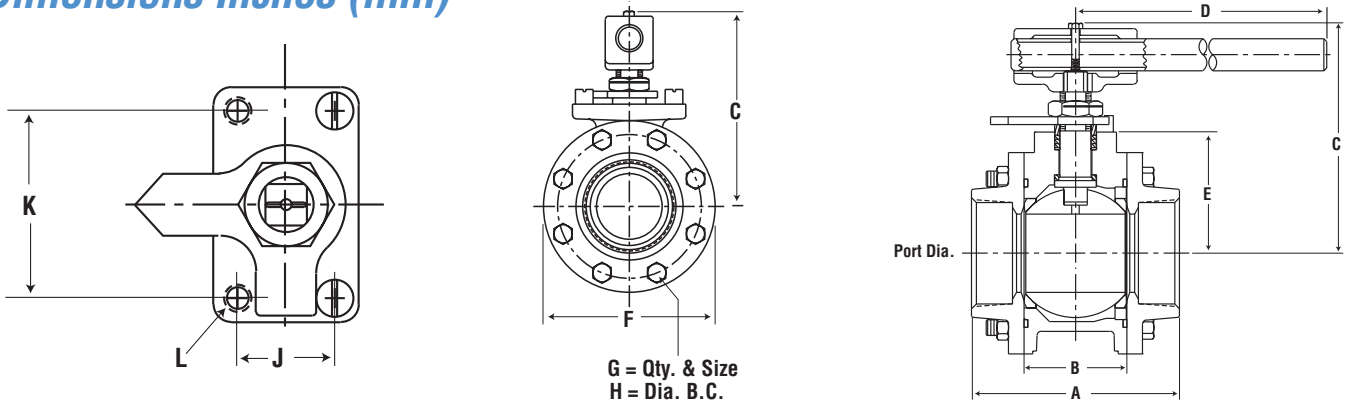
Valve Size	Max. Cv	Equiv. Length of Sched. 40 Pipe Feet
2 1/2"	240	5.0
3"	350	8.3
4"	720	10.4
6"	1020	20.4

Body seals have pressure/temperature ratings that equal or exceed the rating of the seat.

Pressure/Temperature Ratings Seat & Seal Materials



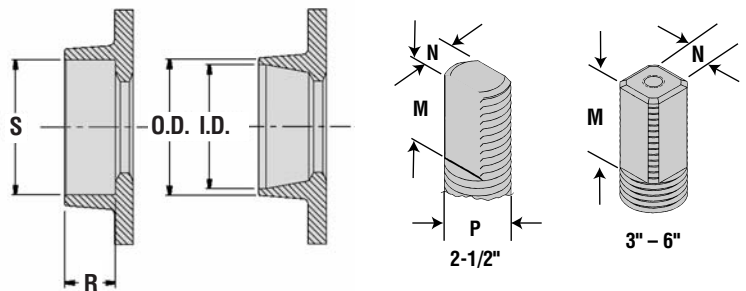
Dimensions Inches (mm)



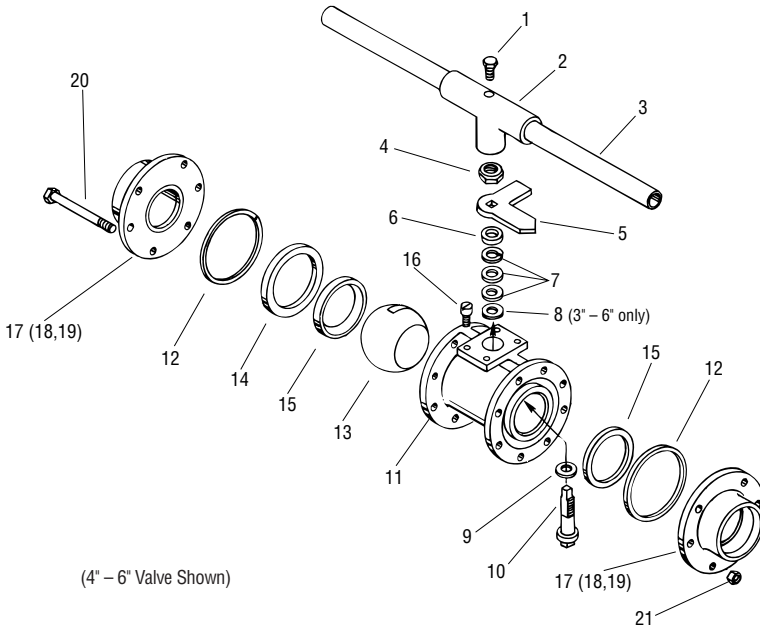
Valve Size	Port	A	B	C	D	E	F	G	H	J	K	L	M	N	P
2 1/2"	2.00 (50.8)	5.86 (148.8)	2.86 (72.6)	5.58 (141.7)	8.82 (224.0)	2.92 (74.2)	5.84 (148.3)	6 x 7/16 - 20	4.92 (124.9)	1.25 (31.8)	2.75 (69.9)	M8	.73 (18.5)	.55 (13.9)	.79 (20.0)
3"	2.50 (63.5)	6.66 (169.2)	3.28 (83.3)	7.22 (183.4)	22.00 (558.8)	3.88 (98.6)	6.44 (163.6)	6 x 1/2 - 20	5.50 (139.7)	1.75 (44.5)	3.38 (85.9)	M10	.65 (16.5)	.75 (19.1)	.88 (22.4)
4"	3.25 (82.6)	8.41 (213.6)	4.28 (108.8)	7.84 (199.1)	22.00 (558.8)	4.48 (113.8)	8.12 (206.2)	8 x 9/16 - 18	6.87 (174.5)	1.75 (44.5)	3.38 (85.9)	M10	.65 (16.5)	.75 (19.1)	.88 (22.4)
6"	4.38 (111.3)	11.75 (298.5)	5.75 (146.0)	11.21 (284.7)	26.00 (660.4)	6.19 (157.2)	11.12 (282.4)	8 x 3/4 - 10	9.37 (238.0)	3.00 (76.2)	4.00 (101.6)	M12	1.03 (26.2)	1.12 (28.4)	1.39 (35.3)

Dimensions are for layout purposes only. For tolerances, contact Worcester Controls. Metric dimensions are converted from standard English.

Valve Size	Socket Weld R S	Butt Weld				Weight lbs. (kg)
		BW1		BW4		
		O.D.	I.D.	O.D.	I.D.	
2 1/2"	1.17 (29.7) 2.90 (74.2)	2.87 (72.9)	2.64 (67.1)	2.87 (72.9)	2.47 (63.2)	21.0 (9.53)
3"	1.31 (33.3) 3.53 (89.6)	3.50 (89.9)	3.25 (82.5)	3.50 (88.9)	3.07 (77.9)	30.0 (13.56)
4"	1.56 (39.6) 4.53 (115.0)	4.50 (114.3)	4.26 (108.2)	4.50 (114.3)	4.03 (102.0)	50.2 (22.7)
6"	2.00 (50.8) 6.65 (168.9)	6.63 (168.3)	6.36 (161.5)	6.63 (168.3)	6.07 (154.3)	80.1 (36.33)



Parts Identification and Materials of Construction



Number	Part	Qty	Material
1	Hex. Head Bolt	1	Carbon Steel
2	Wrench Block	1	Mal. Iron
3	Wrench Extension	1	Carbon Steel
4	Retaining Nut	1	Carbon Steel/Zinc Plated or Stainless Steel
5	Stop	1	Carbon Steel/Black Oxide Coated
6	Follower	1	Stainless Steel
7	Stem Seal	3	TFE Glass Filled
8	Centering Washer (3' - 6' only)	1	316 Stainless Steel or Carbon Steel
9	Thrust Bearing	1	TFE Glass Filled
10	Stem	1	316 Stainless Steel
11	Body	1	Carbon Steel*, 316 Stainless Steel
12	Body Seal	2	TFE, TFE coated 316 S.S., UHMWPE
13	Ball	1	316 Stainless Steel
14	Seat Retainer	1	Carbon Steel, 316 Stainless Steel
15	Seat	2	TFE, TFE Glass Filled, Polyfill, UHMWPE
16	Stop Screw	2	Carbon Steel/Black Oxide Coated
17	Pipe End B.W.	2	316L Stainless Steel, Carbon Steel*
18	Pipe End S.W.	2	316L Stainless Steel, Carbon Steel*
19	Pipe End S.E.	2	316 Stainless Steel, Carbon Steel*
20	Body Bolt 2 1/2" & 3"	6	Carbon Steel/Black Oxide Coated
	Body Bolt 4" & 6"	8	Carbon Steel/Black Oxide Coated
21	Body Nut 2 1/2" & 3"	6	Carbon Steel/Black Oxide Coated
	Body Nut 4"	8	Carbon Steel/Black Oxide Coated
	Body Nut 6"	16	Carbon Steel/Black Oxide Coated

* Black Coated, Oil Dipped

How to Order

Size	Series	Body, Pipe End	Ball, Stem	Seats	Seal	Ends	Variations
2 1/2" 3" 4" 6"	45	4—Carbon Steel 6—316 Stainless Steel	6—316 Stainless Steel	T—TFE R—Reinforced TFE P—Polyfill U—UHMWPE (2 1/2" only) <i>Use only one letter if body seal is to be same material as seat.</i>	T—TFE M—TFE coated 316 S.S. (2 1/2" only) U—UHMWPE (2 1/2" only)	SE —Screw End SW —Socket Weld BW4—Butt Weld, Schedule 40, Carbon Steel Only BW1—Butt Weld, Schedule 10, Stainless Steel Only NP—No Pipe Ends	

Ordering example left depicts: A 4" Series 45 Valve with a 316 Stainless Steel Body, Pipe Ends, Ball and Stem, Reinforced TFE and TFE Seals, with Screw Ends.

Caution: Ball Valves can retain pressurized media in the body cavity when closed. Use care when disassembling. Always open valve to relieve pressure prior to disassembly. Due to continuous development of our product range, we reserve the right to alter the dimensions and information contained in this leaflet as required.

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Polyfill® is a registered trademark of Flowserve Corporation.

*Variations (V-Numbered Options) Listing:

- Blank - No Variations
- V3 - Upstream Relief Hole
- V5 - Hydrostatic Testing
- V6 - Source Inspection
- V14 - Handleless Valve
- V17 - Grounding Thrust Bearing
- V20 - Oxygen Service Source Inspection
- V33 - Source Inspection
- V36 - Certificate of Compliance
- V37 - Certificate of Compliance & Hydro Testing

- V46 - Silicone Free Lubricant
- V51 - High Cycle Stem Build
- V66 - Certificate of Compliance, European Valve Orders

Flowserve Corporation has established industry leadership in the design and manufacture of its products. When properly selected, this Flowserve product is designed to perform its intended function safely during its useful life. However, the purchaser or user of Flowserve products should be aware that Flowserve products might be used in numerous applications under a wide variety of industrial service conditions. Although Flowserve can (and often does) provide general guidelines, it cannot provide specific data and warnings for all possible applications. The purchaser/user must therefore assume the ultimate responsibility for the proper sizing and selection, installation, operation, and maintenance of Flowserve products. The purchaser/user should read and understand the Installation Operation Maintenance (IOM) instructions included with the product, and train its employees and contractors in the safe use of Flowserve products in connection with the specific application.

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For more information about Flowserve Corporation, contact www.flowserve.com or call USA 1-800-225-6989.

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