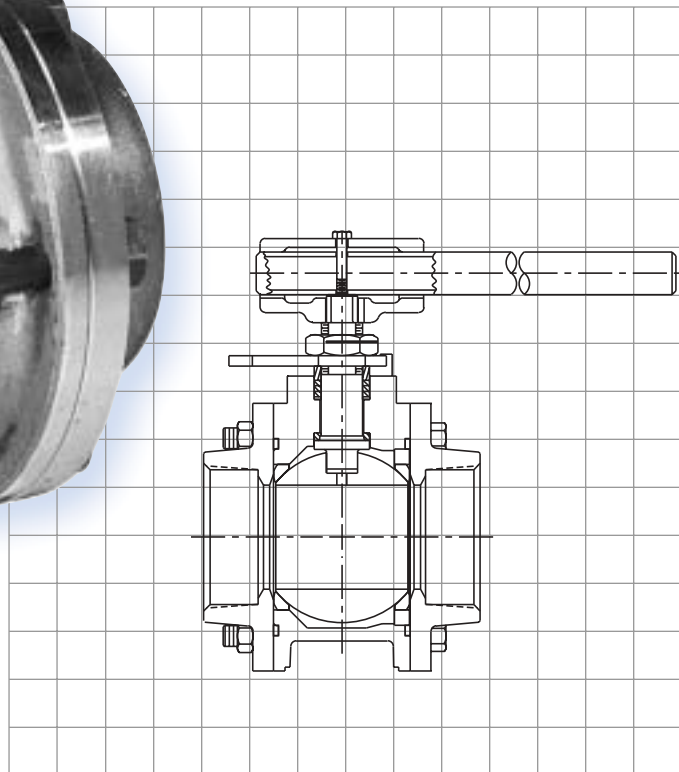


AN ISO 9001 REGISTERED COMPANY



Series 45 Ball Valve

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

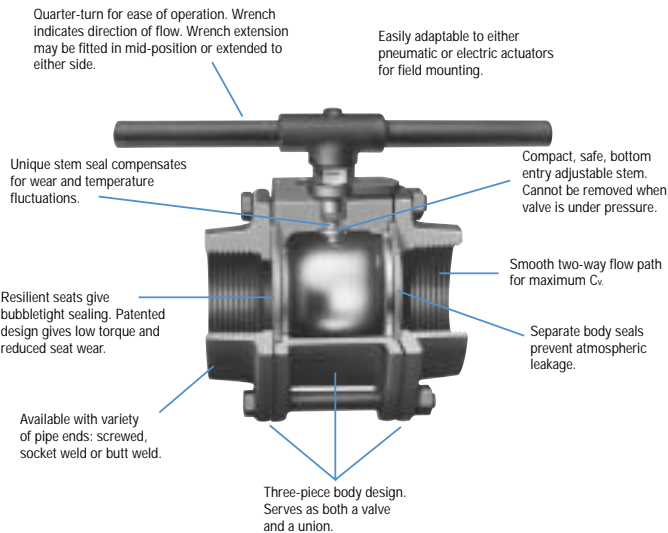
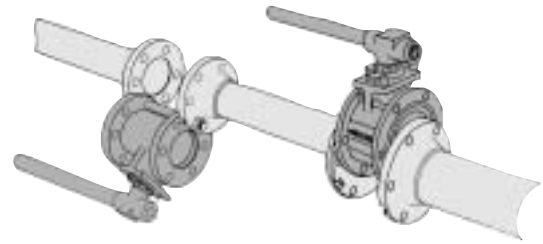
Compact, low weight, permanent end connections
and in-line maintenance capability.

Compact, Large Diameter, Three-piece Ball Valves

Substantially Reduced Installation and Maintenance Costs!

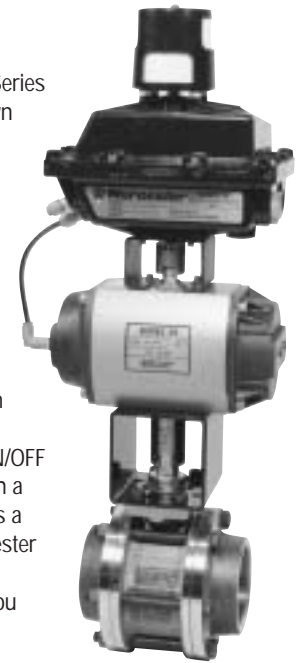
For OEM equipment and packaged piping systems, Worcestor's® Series 45 ball valves provide the best performance for the least installed cost in the 2 1/2" – 6" size range. Flanges are an integral part of the valve design, providing savings in flanges, nuts, bolts and labor. Three-piece construction also 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 Worcestor'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 Worcestor 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 Worcestor's own Series 39 pneumatic actuators creates a control package that's small yet efficient. Worcestor's actuators are engineered to match the performance of the valve for optimum power and safety. For detailed sizing instructions see Worcestor 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 Worcestor supplies all the elements of your control packages, we are your single source if you ever need replacement parts or service.



Specifications

Sizes:	2 1/2", 3", 4", 6"
Style:	3-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 Teflon, Polyfill®, Teflon®, UHMWPE
Body Seals:	TFE (TFE coated Stainless Steel "S" gasket with polyfill seats) or UHMWPE with UHMWPE seats optional on 2 1/2" 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:	Bi-Directional
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 Worcestor Steam Service Data Sheet (SSD) for ratings. This data sheet is found in the Engineering Section of the general catalog binder.

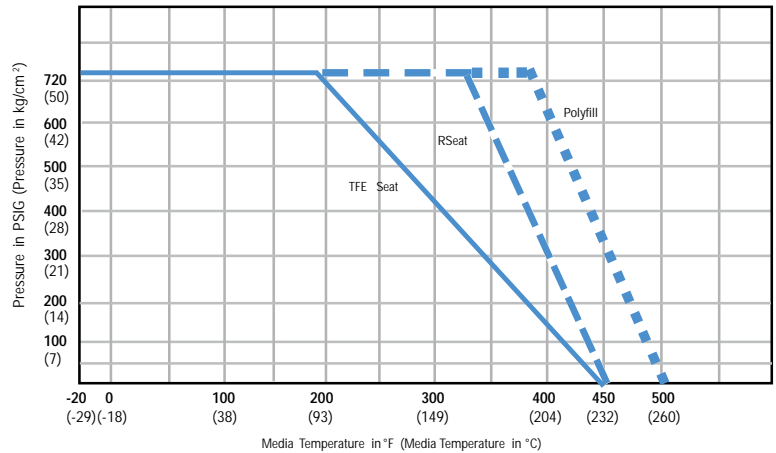
Flow Coefficient:

Cv values and equivalent lengths of pipe are as follows:

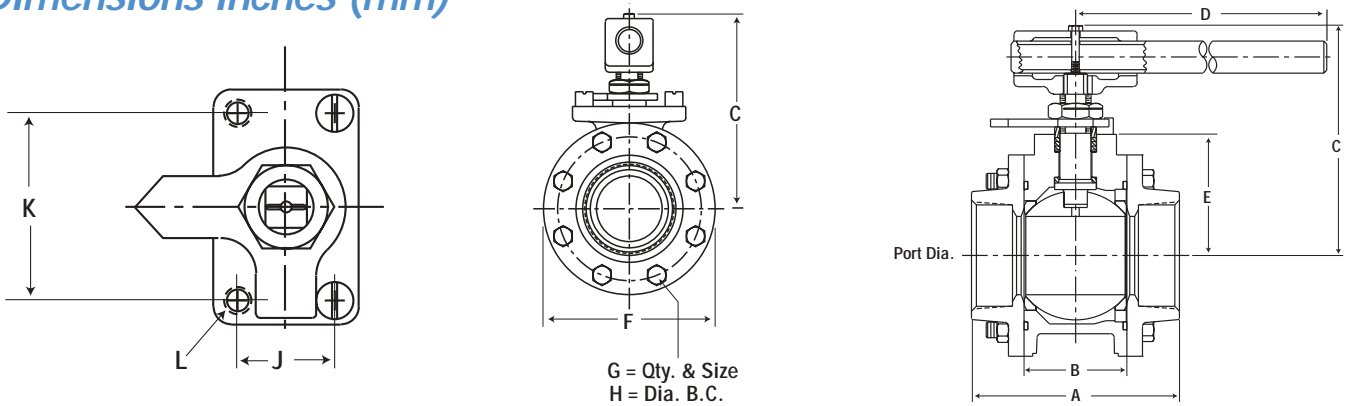
Valve Size	Max. Cv	Equiv. Length of Sched. 40 Pipe Feet
2 1/2"	240	5.0
3"	350	8.3
4"	720	10.4
6"	1020	20.4

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

Pressure/Temperature Ratings Seat & Seal Materials



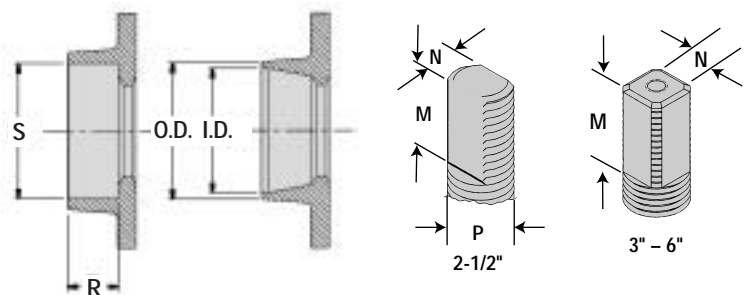
Dimensions Inches (mm)



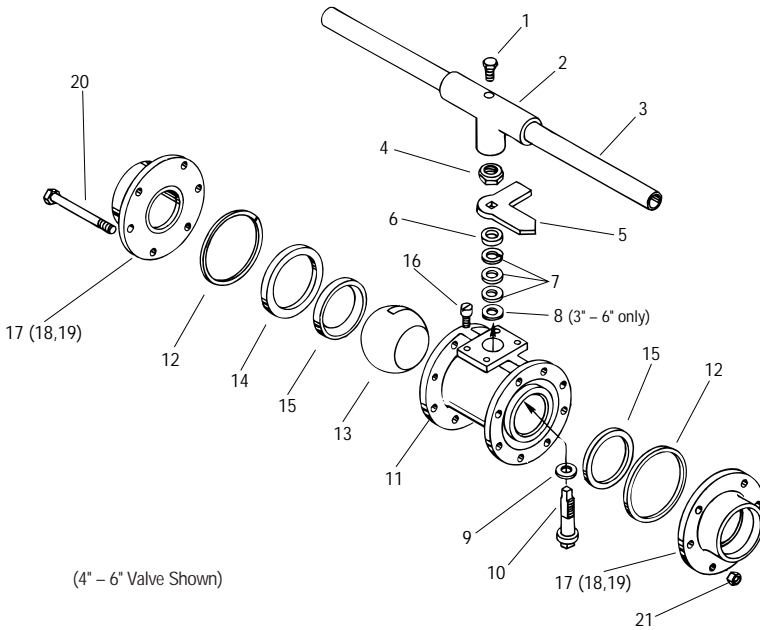
Valve Size	Port	A	B	C	D	E	F	G	H	J	K	L	M	N	P
2 1/2"	2.00 (50.8)	5.86 (148.8)	2.86 (72.6)	5.58 (141.7)	8.82 (224.0)	2.92 (74.2)	5.84 (148.3)	6 x 7/16 - 20	4.92 (124.9)	1.25 (31.8)	2.75 (69.9)	M8	.73 (18.5)	.55 (13.9)	.79 (20.0)
3"	2.50 (63.5)	6.66 (169.2)	3.28 (83.3)	7.22 (183.4)	22.00 (558.8)	3.88 (98.6)	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	Weld S	Butt Weld				Weight lbs. (kg)
			BW1 O.D.	I.D.	BW4 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" Body Bolt 4" & 6"	6 8	Carbon Steel/Black Oxide Coated
21	Body Nut 2-1/2" & 3" Body Nut 4" Body Nut 6"	6 8 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)	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	

Use only one letter if body seal is to be same material as seat.

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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*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

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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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