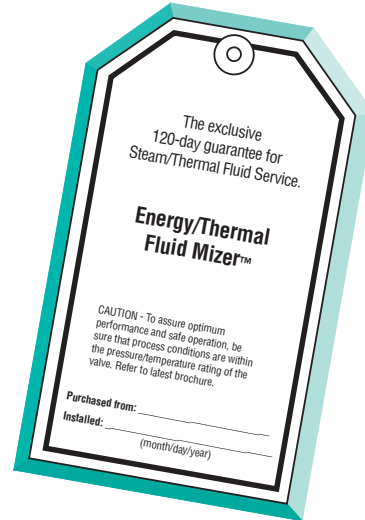
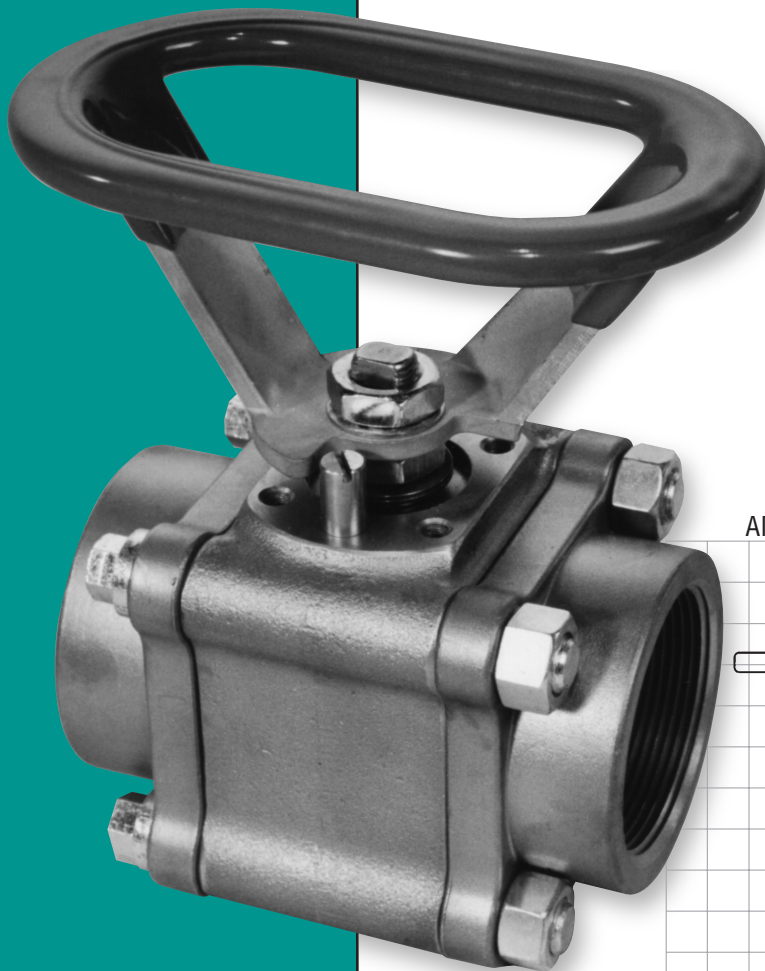
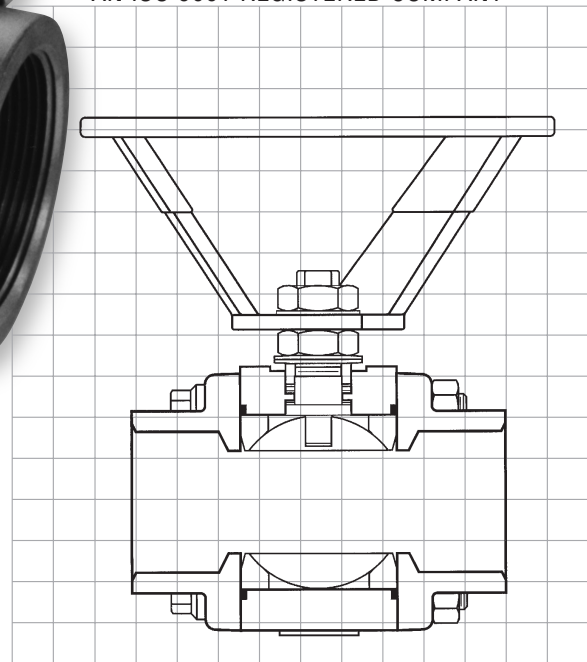




FCD WCABR1043-01
(Part SV 601)



AN ISO 9001 REGISTERED COMPANY



Worcester Controls Energy/Thermal Fluid Mizer

Rugged ball valve for steam and thermal fluid service

Features and Benefits



**1/4" - 2" W44
Three-Piece Valves**
**1/4" - 1 1/2" W59
Full Port
Three-Piece Valves**



**1/2" - 6" W52
Flanged Valves**



**Optional V-48
Extended
Lever Handle**



**Series 32
Gear Operator**



**Series W44 V1/V2
Diverter
Ball Valves**

Note: Standard Flowserve Worcestor valves are assembled with silicone-based break-in lubricant. For other options, consult your distributor or Flowserve.

- Provides positive shutoff and leaktight integrity for steam service to 500# WSP or thermal fluid services to 650°F.
- Low torque, quarter turn operation for ease of automation.
- Live loaded stem seals minimize maintenance and assure years of trouble-free service.
- Optional extended handles and OSHA lockout capabilities provide maximum personnel safety.
- ASME B16.34 pressure vessel design for maximum structural integrity.
- Multiple body style option for all piping requirements: three-piece, flanged, wafer, full port or diverter.
- Optional vented (V3) ball to reduce damage caused by trapped cavity pressure.
- Optional "clean room" and silicon free assembly available for high purity steam applications.

Flow Coefficient - W44 & W59

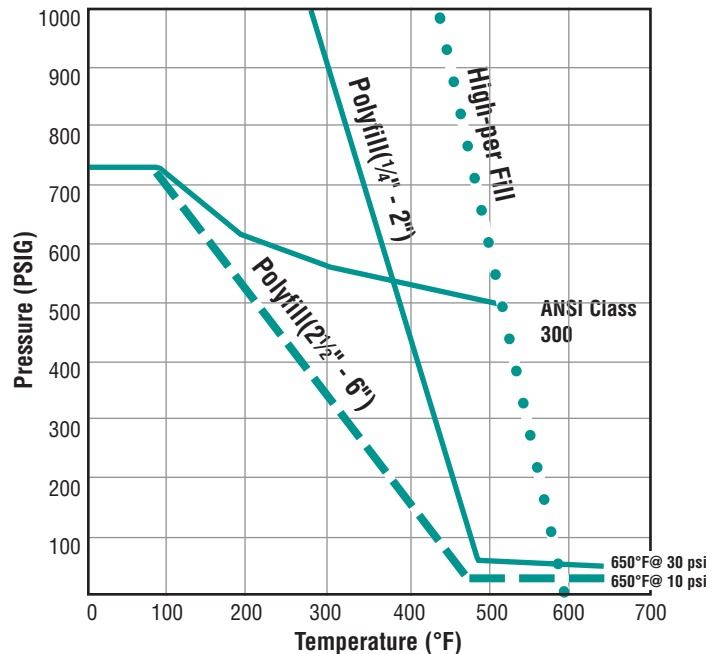
Valve Size	W44 Cv	Equiv. Length of Schedule 40 pipe (ft.)	W59 Cv	Equiv. Length of Schedule 40 pipe (ft.)
1/4" - 3/8"	8	0.9	8	0.9
1/2"	8	3.1	38	1.4
3/4"	12	6.3	71	1.0
1"	32	3.1	110	1.2
1 1/4"	46	6.3	230	2.1
1 1/2"	82	4.3	350	2.1
2"	120	7.5	600	2.1

Note: For Flow Coefficients, dimensions and further technical information on other Energy/Thermal Fluid Mizer styles and sizes, refer to the following Worcestor brochures: Large 3-piece, SB 45; Large full port 3-piece, WCABR1011; Flanged, SB 51; Wafer, WCABR1041; Diverter, WCABR1017.

Steam Ratings

Valve Size	Polyfill®		High-per Fill®	
	Working Steam Pressure	Corresponding Temperature	Working Steam Pressure	Corresponding Temperature
1/4", 3/8", 1/2" (1/4"-3/8" W59)	450	459°F	500	470°F
3/4" (1/2" W59)	425	455°F	500	470°F
1" (3/4" W59)	400	447°F	500	470°F
1 1/4" (1" W59)	350	435°F	500	470°F
1 1/2" (1 1/4" W59)	325	428°F	500	470°F
2" (1 1/2" W59)	300	424°F	500	470°F
2 1/2" - 6" (2" - 4" W59)	250	406°F	300	424°F

Thermal Fluid Ratings



Specifications

- Sizes:** 1/4"-6"
Styles: 3-Piece, 3-Piece Full Port, Flanged, Wafer, Diverter
Connections: Screwed, Socket Weld, Butt Weld, Class 300 ANSI Flanged, Class 300 ANSI Wafer
Standards: SE valves meet ANSI B2.1
 BW valves meet ANSI B16.25
 Flanged valves meet ANSI B16.5, B16.10 and B16.34*
 SW valves socket dimensions meet ANSI B16.11
Leakage Rate: Bubbletight
 *Hydro test by customer request - V5 option

PRESSURE RATINGS - Steam

The steam rating table shows maximum valve pressure ratings. Energy/Thermal Fluid Mizer Valves may be used on superheated steam provided the service temperature does not exceed the temperatures shown.

PRESSURE RATINGS - Thermal Fluids

W44 & W44 Diverter	1/4"-2"	1000 psi
W59	1/4"-2"	1000 psi
	3"-4"	720 psi
W52	1/2"-6"	720 psi
W45	2 1/2"-6"	720 psi
W4 301	3"-6"	720 psi

Refer also to Pressure/Temperature limit curves.

Automation

Flowserve Worcester Controls offers a complete line of pneumatic and electric automation packages for Series Energy/Thermal Fluid Mizer valves. Both electric and pneumatic packages are offered for on/off operation. Available options include:

FOR ELECTRIC CONTROL

- Type 4x, 7 & 9 enclosures
- Remote position indication
- Computer interface
- Digital compatible
- Ask for Brochure WCABR1014



- Type 4, 4x, 7, 9 and 12 enclosures
- Failsafe operation
- Maintenance free hydraulic system
- Ask for Brochure WCABR1022

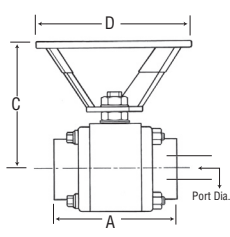


FOR PNEUMATIC CONTROL

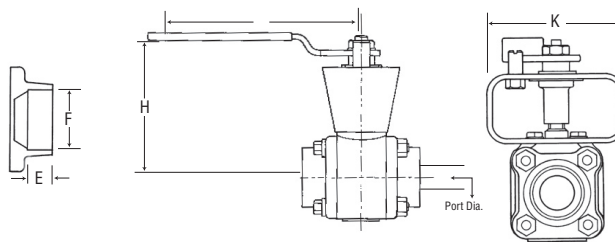
- Failsafe operation
- End & top mounted limit switches
- Proximity switches
- Digital compatible
- Ask for Brochure WCABR1003



Dimensions inches (mm)



Standard Stainless Steel Oval Handle



Optional V48 Extended Lever Handle

Valve Size		A	B	C	D	E	F	G	H	J	K	Port	Approx. Weight lbs.(kg.)
W44	W59												
1/4"	—	2.54 (64.5)	1.75 (44.5)	3.76 (95.5)	4.56 (116)	3.06 (77.7)	.555 (14.1)	.440 (11.2)	4.09 (104)	6.53 (166)	4.00 (102)	0.44 (11.2)	1.20 (.55)
3/8"	—	2.54 (64.5)	1.75 (44.5)	3.76 (95.5)	4.56 (116)	3.06 (77.7)	.690 (17.5)	.440 (11.2)	4.09 (104)	6.53 (166)	4.00 (102)	0.44 (11.2)	1.20 (.55)
1/2"	1/4"-3/8"	2.54 (64.5)	1.75 (44.5)	3.76 (95.5)	4.56 (116)	3.06 (77.7)	.855 (21.7)	.440 (11.2)	4.09 (104)	6.53 (166)	4.00 (102)	0.44 (11.2)	1.20 (.55)
3/4"	1/2"	2.76 (70.1)	2.00 (50.8)	3.86 (98.0)	4.56 (116)	3.06 (77.7)	1.07 (27.1)	.560 (14.2)	4.20 (107)	6.53 (166)	4.00 (102)	0.56 (14.2)	1.9 (.86)
1"	3/4"	3.66 (93.0)	2.38 (60.5)	4.29 (109)	4.56 (116)	3.06 (77.7)	1.33 (33.8)	.720 (18.3)	4.32 (110)	6.53 (166)	4.00 (102)	0.81 (20.6)	3.2 (1.45)
1 1/4"	1"	4.16 (106)	2.70 (68.6)	4.50 (114)	6.06 (154)	3.56 (90.4)	1.68 (42.5)	.720 (18.3)	4.51 (115)	6.53 (166)	4.00 (102)	1.00 (25.4)	4.6 (2.08)
1 1/2"	1 1/4"	4.50 (114)	3.16 (80.3)	4.83 (123)	6.06 (154)	3.56 (90.4)	1.92 (48.6)	.720 (18.3)	5.37 (136)	8.03 (204)	5.00 (127)	1.25 (31.8)	6.3 (2.87)
2"	1 1/2"	4.94 (126)	3.56 (90.4)	5.03 (128)	6.06 (154)	3.56 (90.4)	2.41 (61.1)	.840 (21.3)	5.55 (141)	8.03 (204)	5.00 (127)	1.50 (38.1)	9.6 (4.36)

Dimensions are given for layout purposes only. For tolerances, consult your Worcester Controls distributor. Metric equivalents are converted from Standard English. For 2" and larger full port valve dimensions, consult Flowserve.

How to Order

Size	Operations	Series	Body Mtl.	Ball & Stem	Seat	Seal	End Connection	Variations
3"								
W52								
4								
6								
P								
Z								
300								
**								
1/4" - 2"	Blank - Built with handle oval	W44 - 3-piece	4 - Carbon Steel 6 - Stainless Steel	6 - Stainless Steel	P - Polyfill X - High-per Fill	M - TFE coated 316 S.S.	SE - Screw End SW - Socket Weld	V-Numbered options - See listing below.
1/2" - 2"		W44 - diverter*				M - TFE coated 316 S.S.	SE - Screw End SW - Socket Weld	Leave blank if no variations.
2 1/2" - 6"	E - No handle valve built for automation	W45 - large* three-piece				G - Graphite Coated 316 S.S. (2 1/2"-4" only) T - TFE (6" only)	SE - Screw End SW - Socket Weld BW4 - Butt Weld sch. 40 carbon steel	
1/4" - 1 1/2"	B - No handle for automation using 39 or 75 actuators.	W59 - Fullport three-piece				M - TFE coated 316 S.S.	SE - Screw End SW - Socket Weld	
2" - 4"	(1/4" - 2" W44, 1/4" - 1 1/2" W59, 1/2" - 2" W52)	W59 - large* Fullport three-piece				Z - (2" only) G - Graphite coated 316 S.S. (3" only) T - TFE (4" only)	SE - Screw End SW - Socket Weld BW4 - Butt Weld sch. 40 carbon steel	
1/2" - 2"		W52 - Flanged				M - TFE coated 316 S.S.	300 - ANSI 300	
3" - 6"		W52 - large Flanged				Z - Graphite	300 - ANSI 300	
3" - 6"		W4 - Wafer	1 - Brass 2 - Ductile Iron 4 - Carbon Steel 6 - Stainless Steel			Z - Graphite	301 - Wafer ANSI 300	

* W45, 2"-4" W59 and W44 diverter valves available in carbon steel only. For V1 or V2 port configuration, refer to Brochure WCABR1017.

ORDERING EXAMPLE: 3" Flanged Energy/Thermal Fluid Mizer Ball Valve with Carbon steel body, stainless steel ball and stem, Polyfill seats, Graphite Seals and ANSI 300 Flanges.

NOTE: Worcester Ball valves will give superior service in "ON/OFF" steam applications. For throttling service, consider the Worcester characterized seat control valve. Ask for Brochure WCABR1001. For some thermal cycling applications where condensate may become trapped in the ball, the V-3 Upstream Relief Hole is recommended. Consult Flowserve.

**Variations (V-numbers)

- | | |
|---|--|
| V1 - 90° Porting | V36 - Certificate of Compliance |
| V2 - 180° Porting (Diverter only) | V37 - Certificat of Compliance & Hydro Testing |
| V3 - Upstream Relief Hole | V46 - Silicon Free Lubricant |
| V6 - Source Inspection | V48 - Extended Lever Handle (1/4" - 2" W44 & Diverter, 1/4" - 1 1/2" W59, 1/2" - 2" W52) |
| V14 - Handleless Valve (3"-6" sizes only) | V51 - High Cycle Stem Build (3" - 6" sizes only) |
| V17 - Grounding Thrustbearing | V58 - B16.34 Compliance |
| V20 - Oxygen Service | V59 - Extended Oval Handle (1/4" - 2" W44 & Diverter, 1/4" - 1 1/2" W59, 1/2" - 2" W52) |
| V32 - Oval Handle (1/2" - 2" W52 only) | V60 - OSHA Lockout (1/4" - 2" W44 & Diverter, 1/4" - 1 1/2" W59, 1/2" - 2" W52) |
| V33 - Oxygen Service without Source Inspect | V66 - Certificate of Compliance, European Valve Orders |

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 product information and specifications contained in this brochure, as required.

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

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