**Series 59 Full-Port Ball Valve**

*Full-port valves offer maximum capacity, minimum restriction, optional fire-rated design*
Series 59 Full-Port Ball Valves
Manual and automated valves for processes requiring maximum flow area

Full-port ball valves are recommended for processes requiring minimum restriction through piping, shutoff valves, and other equipment. For example, pump inlet valves are often full-port valves. Full-port valves are also useful in systems handling slurries, viscous fluids and fluids with residues, and where the capacity to pig lines is desired.

1/4” - 2” Series 59 valves are rated to ANSI Class 600. 3” and 4” valves are rated to ANSI Class 300.

Worcester offers a complete line of pneumatic and electric automation packages for on/off or throttling control, including the Series 39 twin piston pneumatic actuator and the Series 75 electric actuator.

Series 59 full-port valves are available in a fire-rated configuration AF59 in sizes 1/2”, 3/4”, 1”, 1 1/2”, and 2”. Flanged ANSI Class 150 and 300 full-port valves are available in sizes 1/2” - 10”.

Specifications

Sizes: 1/4”, 3/8”, 1/2”, 3/4”, 1”, 1 1/2”, 2”, 3”, 4”

Style: Three-piece, four-bolt (1/4” - 2”)

Three-piece, eight-bolt (3” - 4”)

Valve Pressure Rating*: 3/4” - 2” Carbon Steel and Stainless Steel Valves, ANSI Class 600

3/4” - 4” Carbon Steel and Stainless Steel Valves, ANSI Class 300

3/4” - 1” Brass Valves, 1500 psi

1/2” - 1 1/2” Brass Valves, 1000 psi

Body: Carbon Steel, 316 Stainless Steel, Brass (valve sizes 1/2” - 1 1/2”)

Pipe Ends: Screw End, Socket Weld, Butt Weld, Tube End

Ball: Chrome Plated Brass

316 Stainless Steel

Temp. Range: Depends on seat and seal choice; will operate from -20°F to +600°F

Seat/Seal Leakage: Standard valves, less than 1 x 10^-6 cc He/sec

inboard and through (bubbletight is 1 x 10^-4 cc He/sec). With preparation, leakage will be less than 2 x 10^-8 cc He/sec. All valves 100% tested to bubbletight standards.

Flow: Bidirectional

* These are valve body pressure ratings. Seat selection may derate the valve.

Example: a 1” carbon steel Series 59 valve has a rating of 1480 psi at 70°F.

Selection of reinforced TFE seats operating at fluid temperature of 200°F limits allowable pressure in the valve to 1000 psi.

Flow Coefficient

Flow coefficient and pressure loss through full-port ball valves are the same as the pipe they are attached to.

<table>
<thead>
<tr>
<th>Valve Size</th>
<th>Cv</th>
<th>Equivalent Length of Sched. 40 Pipe (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4”</td>
<td>8</td>
<td>0.9</td>
</tr>
<tr>
<td>3/8”</td>
<td>38</td>
<td>1.4</td>
</tr>
<tr>
<td>1/2”</td>
<td>71</td>
<td>1.0</td>
</tr>
<tr>
<td>1”</td>
<td>110</td>
<td>1.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Valve Size</th>
<th>Cv</th>
<th>Equivalent Length of Sched. 40 Pipe (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&quot;</td>
<td>230</td>
<td>2.1</td>
</tr>
<tr>
<td>1 1/2&quot;</td>
<td>350</td>
<td>2.1</td>
</tr>
<tr>
<td>2”</td>
<td>600</td>
<td>2.1</td>
</tr>
<tr>
<td>3”</td>
<td>1330</td>
<td>3.0</td>
</tr>
<tr>
<td>4”</td>
<td>2420</td>
<td>2.7</td>
</tr>
</tbody>
</table>

Variations (V#)

V 3 Upstream Relief Hole
V 5 Hydrostatic Testing
V 6 Source Inspection
V14 Handleless Valve (2” - 4”)
V17 Grounding Thrust Bearing
V20 Oxygen Service
V32 Oval Handle (1/4” - 1 1/2”)
V33 Oxygen Service without Source Inspect.
V36 Certificate of Compliance
V37 Certificate of Compliance & Hydro Testing
V38 Assemble without Lubricant
V46 Silicon Free Lubricant
V48 Extended Lever Handle (1/4” - 1 1/2”)

Design

ANSI B16.34 (1/4” - 2”, if ordered with Hydro Test)

Specifications:

ANSI B16.25 – Butt Weld Ends

(Weld End Preparation)

ANSI B16.11

ANSI B1.20.1 – NPT Pipe Threads

MSS SP25 – Valve Marking

MSS SP72 – Socket Weld Ball Valves

NACE – MR0 1-75 Category 3

UL Listed:

Flammable liquid shutoff (YRBX)

Anhydrous ammonia shutoff (YQAR)

Compressed gas shutoff, including oxygen (YQNZ)

Trim and drain valves (VQGU)

Weld-in-Place

1/4” - 1 1/2” Series 59 valves with “G” body seals and seats of reinforced TFE (R), Polyfill® (P), or High-per Fill® (X) may be welded to the pipeline in the assembled condition. (Must have V67 suffix in ordering code).

Optional S-7:

(1/4” - 1 1/2”) Complete stainless steel trim: handle, nut, lock washer, retaining nut, Belleville washers, body bolts, nuts, stop pin.

External Valve Trim:

External components are available as an option on brass and carbon steel valves. They are standard on 1/4” - 1 1/2” stainless steel valves. For 2” - 4”, they are available through custom products. Certified Material Testing Reports (CMTRs) are available with B16.34.

Stainless steel nameplate to meet MSS SP-25

High cycle life stem seals

Standardized center body mounting pad for actuators

New, stronger handle design

Heavy-duty bolting and valve construction
Parts Identification and Material Specifications

**NOTE:** Standard Worcester valves are assembled with silicon-based break-in lubricant. For other options consult your distributor or Flowserve.

**Seat Pressure/Temperature Ratings**

Body seals have a pressure/temperature rating that equals or exceeds the seat.

* Oxygen Service Valves use Polyfill in place of PEEK.

Worcester®, Polyfill®, and High-per Fill® are registered trademarks of Flowserve Corporation. Viton® and Delrin® are registered trademarks of The DuPont Company.
### Dimensions

Dimensions are given for layout purposes only. For tolerances, consult your Worcester distributor. Metric equivalents are converted from Standard English.

### How To Order

<table>
<thead>
<tr>
<th>Size</th>
<th>Options</th>
<th>Series</th>
<th>59</th>
<th>66</th>
<th>66</th>
<th>R</th>
<th>T</th>
<th>SW</th>
</tr>
</thead>
<tbody>
<tr>
<td>1½&quot;</td>
<td>Blank - Built with lever handle</td>
<td>1 brass (1½&quot;- 1½&quot; only)</td>
<td>4 carbon steel</td>
<td>6 - 316 s.s.</td>
<td>1 tfe</td>
<td>1 reinforced tfe</td>
<td>1 umhmwe (1½&quot;- 1½&quot; only)</td>
<td>1 polyfit</td>
</tr>
<tr>
<td>1½&quot;</td>
<td>E - No handle valve built for automation</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
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<tr>
<td>1½&quot;</td>
<td>A - No handle†</td>
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<td>4</td>
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<tr>
<td>1½&quot;</td>
<td>V - Vacuum Service Prep</td>
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<td>4</td>
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</tr>
<tr>
<td>2&quot;</td>
<td>E - No handle valve built for automation</td>
<td>6 carbon steel</td>
<td>6 - 316 s.s.</td>
<td>1 tfe</td>
<td>1 reinforced tfe</td>
<td>1 umhmwe</td>
<td>1 graphite coated</td>
<td>1 pipe weld</td>
</tr>
<tr>
<td>3&quot;</td>
<td>E - No handle valve built for automation</td>
<td>6 carbon steel</td>
<td>6 - 316 s.s.</td>
<td>1 tfe</td>
<td>1 reinforced tfe</td>
<td>1 umhmwe</td>
<td>1 graphite coated</td>
<td>1 pipe weld</td>
</tr>
</tbody>
</table>

** Variations (V-numbered options) Leave blank if no variations. See page 2 for listing.

* Ordering example depicts 1½" Series 59 with 316 stainless steel body, pipe ends, ball and stem, reinforced TFE seats, TFE body seals, and socket weld ends.

†† To order a Series 59 Valve for use with 34 or 36 actuators, use prefix ordering code "A": Example: 1' A 9346 PMSE. 39 or 75 actuators, use prefix ordering code "B".

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 brochure as required.

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