Vent-Tech Model WTR—363 psi (25 Bar)
Series C—Combination Air Valve for Potable Water

GENERAL SPECIFICATION

- The Original Flat Float Design—with over 30 improvements.
- Integral protection from water hammer and surge.
- Optimized for Low Pressure Sealing. Less than 3 psi.
- Full Port Vacuum Relief.
- Pressurized Air Release

Stainless Steel Body and Flanges
Made in the U.S.A.
ISO 9001: 2015 Certified QMS
UL Inspected Facility
10-Year Warranty
50-Year Targeted Design Life
Model WTR Standard Water Valve—Overview

The Vent-Tech Model WTR clean water valve combines thirteen years of manufacturing experience with advanced Patent Pending flow designs. The Model WTR was engineered to expand and improve the technological advances of the flat float air/vacuum valve. Further advancements are incorporated in the Vent-Tech Model WTW providing improved functional valve area in the same or smaller valve footprint. For valve sizes 3-inch and larger, we recommend using the Model WTW.

**APPLICATION**
- Municipal Water Systems
- Water Mains
- High Points
- Pump Stations
- Wells

**FUNCTION**

<table>
<thead>
<tr>
<th></th>
<th>Market Application</th>
<th>Large Air Release at Start-Up</th>
<th>Controlled Air Release at Start-Up</th>
<th>Air Release Under Pressure</th>
<th>Full Port Vacuum Relief</th>
<th>Surge Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series C</td>
<td>95%</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Series B</td>
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<tr>
<td>Series P</td>
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<td>X</td>
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</table>

**PURPOSE**
- Minimize pumping energy by removing air plugs
- Protect from pipeline collapse due to vacuum
- Control water hammer velocity
- Manage water column rejoining transients
- Internal anti-surge device

**FEATURES**
- Integral anti-shock/surge floats limit surge pressure.
- Recommended minimum sealing pressure at 3 psi.
- Rated for working pressures of 363 psi (25 bar). Optionally 232 or 580 psi.
- Inlets, outlets, and internal clearances have a cross-sectional area at least equal to that of the valve’s nominal size.
- Orifices fitted with inserts protect from heat softening and abrasive wear.
- Multi-orifice anti-shock/surge floats to increase durability.
- Floats respond directly to negative pressure by fully opening the large orifice of the valve.
- Valve flanges are designed to minimize air flow energy losses.
- 304 and 316 Stainless Steel models.
- Tubular design with direct acting floats and two side ports
- Self-flushing at pump shut-down and valve emptying.
- High efficiency screens prevent ingestion of airborne debris and bugs.
- Inter-changeability of valve inlet components allows for efficient conversion between valve and connection to ancillary pipework.
- Flow verification by independent testing facility.
**Model WTR: Series C—Materials of Construction**

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Standard</th>
<th>Upgraded</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Male NPT Nipple</td>
<td>304L SS</td>
<td>316 SS</td>
</tr>
<tr>
<td>2</td>
<td>ANSI B16.5 Stud Pattern</td>
<td>304L SS</td>
<td>316 SS</td>
</tr>
<tr>
<td>3</td>
<td>Toroidal Base Flange</td>
<td>304L SS</td>
<td>316 SS</td>
</tr>
<tr>
<td>4</td>
<td>Control Float Stand-Offs</td>
<td>304L SS</td>
<td>316 SS</td>
</tr>
<tr>
<td>5</td>
<td>Fiber Gasket</td>
<td>Klingersil 4430</td>
<td>Klingersil 4430</td>
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<tr>
<td>6</td>
<td>Tubular Valve Body</td>
<td>304L SS</td>
<td>316 SS</td>
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<tr>
<td>7</td>
<td>Baffle Plate</td>
<td>304L SS</td>
<td>316 SS</td>
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<tr>
<td>8</td>
<td>Bleed Port (Not Shown)</td>
<td>304L SS</td>
<td>316 SS</td>
</tr>
<tr>
<td>9</td>
<td>Tie Rods</td>
<td>304L SS</td>
<td>316 SS</td>
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<tr>
<td>10</td>
<td>Control Float (1-4 inch)</td>
<td>UHMW-PE</td>
<td>UHMW-PE</td>
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<tr>
<td>11</td>
<td>Nozzle Button</td>
<td>EPDM</td>
<td>EPDM</td>
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<tr>
<td>12</td>
<td>Air Release Nozzle</td>
<td>316 SS</td>
<td>316 SS</td>
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<tr>
<td>13</td>
<td>Dynamic O-Ring Seal</td>
<td>EPDM—Peroxide Cured</td>
<td>EPDM—Peroxide Cured</td>
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<tr>
<td>14</td>
<td>Nozzle Float</td>
<td>UHMW-PE</td>
<td>UHMW-PE</td>
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<tr>
<td>15</td>
<td>Toroidal Sealing Flange</td>
<td>304L SS</td>
<td>316 SS</td>
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<td>16</td>
<td>Protected Orifice Insert</td>
<td>316 SS</td>
<td>316 SS</td>
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<td>17</td>
<td>Guide Rail</td>
<td>304L SS</td>
<td>316 SS</td>
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<tr>
<td>18</td>
<td>Anti-Surge Float</td>
<td>UHMW-PE</td>
<td>UHMW-PE</td>
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<tr>
<td>19</td>
<td>Tie Rod Fasteners</td>
<td>304L SS</td>
<td>316 SS</td>
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<tr>
<td>20</td>
<td>Perforated Screen Guard</td>
<td>304L SS</td>
<td>316 SS</td>
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<tr>
<td>21</td>
<td>Screen Lid Standoff</td>
<td>Nylon</td>
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<tr>
<td>22</td>
<td>Screen Lid</td>
<td>UHMW-PE</td>
<td>UHMW-PE</td>
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</tbody>
</table>

**Valve Operation**

- High Volume air evacuation while pipeline fills
- High volume vacuum relief during pump shut down
- Discharge of air/gas from pressurized pipeline
- Surge abatement for high velocity start up conditions, column separation and fluid oscillation

**Body**

Compact single chamber tubular body consisting of a barrel and flanged ends secured by tie rods and fasteners sized to provide a passageway with a cross sectional area which exceeds that of the valve's inlet and outlet connections for the unobstructed flow of air. Certified to twice the valves rated pressure. Body constructed with 6x safety factor.

**Operating Pressure**

- **MINIMUM:** < 3 psi (< 0.2 Bar)
- **DESIGN:** 363 psi (25 Bar)
- **TEST:** 1.5 x Rated Design Pressure

**Maximum Temps**

- **OPERATING:** Exceeds 145°F (62°C)
- **INTERMITTENT:** 180°F (82°C)

**Connections**

**Upper**

- Streamlined toroidal sealing flange with WTR-CS Perforated Screen Guard
- 1-inch and 2-inch with female NPT threaded connection
- 1 thru 6-inch with connection points for ‘Top Hat’ adapter
- 8 thru 16-inch, see Model WTW

**Lower**

- Streamlined toroidal base flange transition
- 1-inch and 2-inch with Female NPT threaded connection
- 3 thru 6-inch with ANSI B16.5 Class 150 studded flange (Class 300 flange pattern available on request)
- 8 thru 16-inch, see Model WTW

**Orifices**

- Large
  - Streamlined toroidal transition to valve body
  - At minimum, equal to the nominal diameter of the valve
- Ant-Surge
  - Multiple tubular orifices to evenly distribute pressurized air across the face of the float
  - 316 SS wear-resistant inserts in tubular orifices to protect against heat softening and abrasive wear
- Nozzle
  - See Flow Data Table

**Side Port Connections**

- 1/2-inch Female NPT with Male NPT Hex Socket Plug

**Isolation Valve**

- Supplied by others (Full port ball valve recommended and available on request)

**Certifications / Registrations**


**AIS Compliance**

- When specified, raw material is controlled for USA Country of Origin Machining, fabrication, assembly, and coating always performed in USA

**Options**

- Port Ball Valve (s)—Code N (NN)
- Custom Orifices—Code X
- Full Port Isolation Valve—Code B
- AIS Compliant—Code A
- Class 300 Flange Pattern—Code K

- Pressure Gage Assembly
- All 316L SS—Code 6

**Valve Tests**

- Each Unit
  - Leak test to 1.5x rated pressure
  - Pressurized air release (Drop Test)
  - Low Pressure Seal

- Each Model
  - Free Air Release
  - Pressurized Air-Release
  - Vacuum Relief
  - Nozzle Orifice Flow
  - Anti-Surge Activation (Switch Point)

**Material Specs**

- AISI 304L SS, AISI 316L SS, UHMW-PE, EPDM (Peroxide Cured), PVC

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**Model WTR: Series C—Dimensions**

**Male NPT Threaded**

<table>
<thead>
<tr>
<th>Valve Part Number</th>
<th>Valve Size</th>
<th>Pressure Rating</th>
<th>Top Flange Dia.</th>
<th>Nipple or Stud Length</th>
<th>Valve Height</th>
<th>Base Flange Dia.</th>
<th>Stud Circle Dia.</th>
<th># of Studs</th>
<th>Stud Size</th>
<th>Weight</th>
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<tbody>
<tr>
<td></td>
<td>D</td>
<td>A</td>
<td>B1</td>
<td>B2</td>
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<td>T</td>
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<td>inch</td>
<td>inch</td>
<td>inch</td>
<td>inch</td>
<td>inch</td>
<td>inch</td>
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3 to 12-inch Model WTR have been superseded by 3 to 16-inch Model WTW. 3 to 6-inch WTR are available special order.

**ANSI B16.5 Class 150 Stud Pattern**

<table>
<thead>
<tr>
<th>Valve Part Number</th>
<th>Valve Size</th>
<th>Pressure Rating</th>
<th>Top Flange Dia.</th>
<th>Nipple or Stud Length</th>
<th>Valve Height</th>
<th>Base Flange Dia.</th>
<th>Stud Circle Dia.</th>
<th># of Studs</th>
<th>Stud Size</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>D</td>
<td>A</td>
<td>B1</td>
<td>B2</td>
<td>B3</td>
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<td>inch</td>
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</table>

8 to 12-inch Model WTR have been superseded by Model WTW.

See Model WTW

**Model WTR Series C—Flow Data**

<table>
<thead>
<tr>
<th>Valve Code</th>
<th>Pipe Connection*</th>
<th>Nom Valve Size</th>
<th>Operating Pressure Range</th>
<th>Nozzle Diameter</th>
<th>Anti-Surge Orifices†</th>
<th>Controlled Air Release Thru Anti-Surge Orifices ‡</th>
<th>Vacuum Relief Capacity §</th>
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<tbody>
<tr>
<td></td>
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<td>psi</td>
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<td>Single Hole Equivalent</td>
<td>max. scfm</td>
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<tr>
<td>01WTR-C</td>
<td>T</td>
<td>S</td>
<td>R</td>
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<tr>
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</table>

See Model WTW

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* T = Male NPT Thread, S = Studded Flange, R = Trophy Connection
† A minimum of 3 separate wear protected orifices. Quantity and sizes of orifices are customizable. Please contact factory for additional information.
‡ At pressure of 145 psig.
§ Cubic feet per minute (ft³/min) at 70° Fahrenheit, 14.7 psia absolute and 5.08 psi differential.

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