Val-Matic’s quality of design and meticulous workmanship has set the standards by which all others are measured. Quality design features such as the AWWA EnerG® Ball Valve with its energy efficient design, fusion bonded epoxy and adjustable resilient seating. Cam-Centric® Plug Valves have more requested features than any other eccentric plug valve. American-BFV® Butterfly Valves include a field replaceable seat without the need for special tools. Tilted Disc® Check Valves with high strength and wear resistant aluminum bronze trim as standard. Silent Check Valves featuring combined resilient/metal-to-metal seating and are NSF/ANSI 61 & 372 Certified. Sure Seal Foot Valves provided with a heavy duty stainless steel screened inlet. Swing-Flex® and Surgebuster® Check Valves designed with an unrestricted full flow area. Swing Check Valves with field adjustable closure versatility. Dual Disc® Check Valves utilizing stabilized components to provide extended life. Air Release, Air/Vacuum and Combination Air Valves provided standard with Type 316 stainless steel trim. VaultSafe® family of products includes the FloodSafe® Inflow Preventer, FrostSafe® two-way damper and the VentSafe® vent pipe security cage. The QuadroSphere® Trunnion Ball Valve features a unique ball design with recessed surfaces creating additional flow paths to provide a self-cleaning action and reduced wear and torque.

Val-Matic is totally committed to providing the highest quality valves and outstanding service to our customers. Complete customer satisfaction is our goal. Make the change to quality, specify Val-Matic!
Look to Val-Matic for Solutions

The wide range of air related concerns in pipeline and treatment plant design require a multitude of solutions. With the broadest line of air valves available coupled with Engineering expertise and Manufacturing experience, Val-Matic is the number one source for solutions to air related issues. The following are a few of the basic valve applications and the solutions Val-Matic can provide.

EFFICIENCY AND VACUUM PROTECTION

The primary purpose of air valves is to provide pipeline efficiency by continuous removal of air at pipeline highpoints and vacuum protection by admitting large quantities of air upon pump shut down or system failure.

SURGE CONTROL

Air valves play an important role in pipelines to control or reduce surges. Surges result from sudden changes in velocity of the pipeline fluid. These velocity changes occur regularly due to pipeline filling, pump operation, line breaks and power failure. The effects of surges can be devastating. Surges are typically 50 psi for every 1 ft/sec of rapid change in flow velocity. This is added to the pipeline static pressure. Through computer modeling and transient analysis, it has been shown that air valves can play a critical role in suppressing pipeline surges during column separation conditions.

PIPELINE SURGES

Power or system failures can often result in water column separation at high points in the line. If the water column is allowed to separate and form a vacuum pocket, a devastating surge can occur when the columns rejoin. To prevent a vacuum from forming, a Surge-Suppression Air Valve or Vacuum Breaker is used to admit large quantities of air into the pipeline.

A Surge-Suppression Air Valve consists of a Combination Air Valve equipped with a Regulated-Exhaust Device that allows full airflow into the pipeline, but restricts the airflow out of the pipeline. Similarly, a Vacuum Breaker allows rapid entry of air into the pipeline, but prevents flow out of the pipeline. When equipped with an Air Release Valve, the Vacuum Breaker will provide controlled release of air through the small Air Release Valve orifice. Both methods dampen or suppress surges in the pipeline by temporarily trapping a pocket of air and cushioning the impact of the returning columns of water by regulating the exhaust of the air pocket.

VERTICAL PUMP COLUMN SURGES

High velocity rapidly develops in a pump column when a vertical turbine or deep well pump starts against an air-filled column and closed check valve. A power-actuated check valve must absorb the full force of the impending impact. A mechanical check valve will open, relieving a portion of the force but still sees extreme surges. The best way to prevent surges in the pump column and connecting piping is to regulate the exhaust of the air in the pump column during pump start-up (AWWA M-51, p. 24). A Well Service Air Valve equipped with either a Dual Port Throttling Device or a Regulated-Exhaust Device vent air from the pump column at a controlled rate so that all or most of the air escapes just before the check valve opens. (See Val-Matic technical paper AEG-302.)
Val-Matic Air Valves fully comply with ANSI/AWWA C512 and are NSF/ANSI 61 Certified for Water Quality.

### Applications, Functions, Purpose & Features

<table>
<thead>
<tr>
<th>Pipeline Applications</th>
<th>Functions, Purpose &amp; Features</th>
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<tbody>
<tr>
<td>Water distribution and transmission</td>
<td>Maintain pipeline efficiency</td>
</tr>
<tr>
<td>Municipal wastewater collection</td>
<td>Provide protection from pipeline collapse due to vacuum</td>
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<td>Force Main</td>
<td>Air related surge protection</td>
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<td>Lift station</td>
<td>Column separation vacuum protection</td>
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<td>Pump station high points</td>
<td>Air bound pump protection</td>
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<tr>
<td>Turbine well pump discharge</td>
<td>Extend air valve life</td>
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<td>Booster pump station</td>
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<tr>
<td>Fire pumps (FM Approved, UL Listed)</td>
<td>Reduce Air/Vacuum valve size requirement</td>
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<td>High Points</td>
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<tr>
<td>Filter backwash piping</td>
<td>Admitting large volumes of air during shut down and draining operations (Power failure)</td>
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<tr>
<td>Pressure filters</td>
<td>Vacuum protection (pipe joints, gaskets, packing, etc.)</td>
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<tr>
<td>Venturi meters</td>
<td>Regulated-Exhaust of large volumes of air during start-up and filling operations</td>
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<th>Tank Applications</th>
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<td>Hydropneumatic tanks</td>
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<table>
<thead>
<tr>
<th>Function</th>
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<tr>
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<td>Provide protection from pipeline collapse due to vacuum</td>
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<tr>
<td>Regulated-Exhaust of large volumes of air during start-up and filling operations</td>
<td>Air related head loss protection (efficiency)</td>
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<th>Purpose</th>
<th>Functions, Purpose &amp; Features</th>
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<tr>
<td>Conforms to AWWA standard</td>
<td>Maintain pipeline efficiency</td>
</tr>
<tr>
<td>Certified to NSF/ANSI 61</td>
<td>Provide protection from pipeline collapse due to vacuum</td>
</tr>
<tr>
<td>Adjustable seating</td>
<td>Air related surge protection</td>
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<td>Full flow area equal to nominal valve size</td>
<td>Air related head loss protection (efficiency)</td>
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<tr>
<td>Inlets and Outlets equal to or greater than the nominal valve size</td>
<td>Column separation vacuum protection</td>
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<td>Single and dual body designs</td>
<td>Air bound pump protection</td>
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<tr>
<td>Bell bottom body (anti-clog)</td>
<td>Extend air valve life</td>
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<tr>
<td>Regulated-Exhaust Device (Slow-Closing Device)</td>
<td>Maintain pump prime</td>
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</tbody>
</table>

### Additional Features
- Conforms to AWWA standard
- Certified to NSF/ANSI 61
- Adjustable seating
- Full flow area equal to nominal valve size
- Inlets and Outlets equal to or greater than the nominal valve size
- Single and dual body designs
- Bell bottom body (anti-clog)
- Regulated-Exhaust Device (Slow-Closing Device)
From the float material to the shape of the body, Val-Matic Air Valves are designed for optimum performance. All valves meet AWWA C512 requirements.

**EXPERIENCE**

Val-Matic offers over 40 years of experience in providing a full line of air valves up to 20 inch and vacuum breakers up to 42 inch in size. The Val-Matic Air Release, Air/Vacuum and Combination Air Valves are manufactured in accordance to the rigorous industry requirements given in American Waterworks Association (AWWA) Standard C512. The standard was developed and based on decades of successful application of air valves in our industry. Val-Matic’s AWWA Air Valves feature 316 stainless steel trim, full size ports, ANSI thread-ed or flanged connections and stringent testing. Val-Matic manufactures air valves in a wide range of materials and pressure ratings with many accessories including Regulated-Exhaust Devices, Dual Port Throttling Devices, Isolation Valves, Screened Hoods and Backwash Accessories. Val-Matic also provides Windows-Based software to locate, select and size air valves for pipelines and force mains.

**NSF/ANSI 61 CERTIFICATION**

Val-Matic Air Valves for water service are independently NSF/ANSI 61 certified and marked for use in drinking water applications.

**TYPE 316 STAINLESS STEEL TRIM**

Type 316 stainless steel is the standard for all internal components in Val-Matic Air Valves. Type 316 stainless steel provides the greatest protection from aggressive waters and hydrogen sulfide exposure in wastewater application.

**UNCONDITIONALLY GUARANTEED FLOATS**

Floats are unconditionally guaranteed for the life of the valve from corrosion, collapse or leakage. No other valve manufacturer has the confidence in their float construction to provide this guarantee.

**GUIDED FLOATS**

Providing a quality float is not enough to assure a good seal every time. When entering the seat, a damaged or off-center float will prevent a valve from sealing tight. The high air and water velocities in air valves can cause unguided floats to violently strike the sides of the valve body. Val-Matic floats are guided; four inch and larger valves feature double guides (top and bottom). Guiding assures that the float approaches the center of the seat every time to provide a positive drop tight seal.

**SELF CLEANING FLOAT GUIDES**

The Val-Matic floats are guided by hexagonal float stems. The float stems pass through round stainless steel bushings preventing the build up of debris or scale and provide self cleaning of the bushings.

**RESILIENT SEATS**

All Val-Matic valves incorporate a resilient seat or orifice button which mates with a 316 stainless steel float or seat for positive drip tight seating. Val-Matic elastomers are specially formulated for water and wastewater service and have been NSF/ANSI 61 certified. Air Release Valves have a synthetic sealing button mounted to the float linkage mechanism. On Air/Vacuum and Combination Air Valves, the stainless steel float closes against the resilient seat mechanically retained in a body register. The seats contain raised sealing beads and/or a unique flex edge that provide positive shutoff from the lowest system pressure to the valve’s rated working pressure.

**FULL SIZE FLOW AREA**

Val-Matic Air/Vacuum and Combination Air Valves are equipped with full and equal size inlets and outlets in accordance with AWWA C512. Some air valve manufacturers use common covers for different size air valves resulting in undersized outlets and reduced flow. Standard industry calculations assume a full port size so the air valve should provide the same. You can be assured that the inlets and outlets of Val-Matic’s Air Valves are equal to or larger than the area of the nominal valve size. Finally, all Combination Air Valves with float guides in the outlet have expanded flow areas around the guide spokes to provide full flow area through the valve.
Additional Features & Benefits for Wastewater Valves

STAINLESS STEEL BODY

Cast stainless steel bodies are available for extreme service where hydrogen sulfide or industrial chemicals produce accelerated corrosion in iron. There are no weld-seams to worry about with the cast stainless body and it is in full compliance with AWWA C512.

NON-STICK COATINGS

Special interior coatings are available to minimize the buildup of sewage on the inside of the valve. Val-Matic’s Fusion Bonded Epoxy is a baked-on, glass-like coating that reduces maintenance and prevents corrosion of the valve. Non-stick coatings are important when force mains contain grease that tends to collect in valves and pipes.

NON-CLOG DESIGN FOR REDUCED MAINTENANCE

Val-Matic Wastewater Air Valves are specially designed for grit and sewage service without the need for backwashing when combined with non-stick coatings. The bodies are extended in length to prevent solid material from reaching the operating mechanism. The bottom of the body is sloped toward the outlet to prevent clogging (See Figure 14). Val-Matic provides a minimum 2” inlet size and a 2” cleanout connection on all wastewater valves to facilitate the passage of solids.

WASTEWATER FLOATS

As with all Val-Matic Air Valves, the float and operating mechanism are 316 stainless steel for long life in the harshest wastewater applications. Additionally, the floats are equipped with a specially shaped bottom to accelerate the closure of the float to reduce leakage and clogging of the valve.

SEVERE SERVICE BACKWASHING

When systems are heavy in grease and solids, backwashing of Wastewater Air Valves may become a necessary maintenance process. The key is to reduce the frequency of backwashing by designing the valve to handle conditions such as wastewater containing solids and grease. As indicated in the above features, Val-Matic has done that with the extended body, the Bell Bottom, the sensitivity float and the availability of non-stick Fusion Bonded Epoxy. However, periodic maintenance may still be required on severe applications. Therefore, all Wastewater Air Valves can be furnished with an accessory kit which includes a shutoff valve to isolate the air valves from the line, flush and drain valves, and a hose for connecting to a clean water supply.

Backwashing is as simple as: 1) isolating the air valve, 2) opening the drain valve, and 3) opening the flush valves to send clean water through the valve body for 5 minutes.

For those installations where backwashing on site is not practical or desirable, a valve rotation program can be established. The valve to be serviced is exchanged with a spare valve and taken back to the shop for cleaning. It is then ready to replace the next valve scheduled for maintenance. The valve rotation program also provides the benefit of a back up valve in the unlikely event one should ever fail.
Air Release Valves

Operational Highlights:

• Maintains system flow efficiency
• Releases unwanted air pockets during system operation
• Protects system against air related surges

Product Features:

• Unconditionally guaranteed stainless steel floats
• Stainless steel 316 internal trim
• Resilient seating for positive shutoff
• Performance proven for over 40 years
• Non-clog design eliminates backwashing

Optional Accessories:

• Vacuum check (prevents inflow of air)
• Outlet hood with screen (prevents debris from entering valves)
• Ball and plug isolation valves (allows valve maintenance)
• Inflow Preventer on outlet (stops flood water and resulting contamination from entering pipeline)
• Backwash kit (for severe wastewater applications)

**MATERIALS OF CONSTRUCTION**

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>STANDARD</th>
<th>OPTIONAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body and Cover</td>
<td>Cast Iron ASTM A126 Class B</td>
<td>Ductile Iron ASTM A536 Grade 65-45-12</td>
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<td>&lt; 300 psig</td>
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<tr>
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<td>Coating</td>
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<td>Non-Stick Fusion Bonded Epoxy (internal &amp; external)</td>
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</table>

**VENTING CAPACITY FOR AIR RELEASE VALVE ORIFICE SIZES**

FLOW OF AIR IN STANDARD CUBIC METERS PER MINUTE

FLOW OF AIR THRU AN ORIFICE IN S.C.F.M.
(Standard Cubic Feet of Free Air Per Minute)
### WATER AIR RELEASE VALVES

<table>
<thead>
<tr>
<th>Inlet Size</th>
<th>Outlet Size</th>
<th>Model Number</th>
<th>CWP PSI</th>
<th>Orifice Size</th>
<th>Dimensions</th>
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<td>1/16&quot;</td>
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*NSF/ANSI 61 Certified • UL Listed/FM Approved

### WASTEWATER AIR RELEASE VALVES

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<td>1/2&quot;</td>
<td>9 1/2&quot; 17 9/16&quot;</td>
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Air/Vacuum Valves

Operational Highlights:

- Exhausts large quantities of air at system start-up
- Provides pipeline vacuum protection
- Responds to loss of pressure during power failures, line breaks and intentional drainage

Product Features:

- Unconditionally guaranteed stainless steel floats
- Stainless steel 316 internal trim
- Exclusive high/low pressure resilient seating
- Full pipe size inlets and outlets provide maximum protection
- Non-clog design eliminates backwashing

Optional Accessories:

- Outlet hood with screen (prevents debris from entering valves)
- Flanged outlets on sizes 8 inch & smaller
- Ball, plug, and butterfly isolation valves (allows valve maintenance)
- Inflow Preventer on outlet (stops flood water and resulting contamination from entering pipeline)
- Backwash kit (for severe wastewater applications)

### MATERIALS OF CONSTRUCTION

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<td>Stainless Steel ASTM A351 Grade CF8M</td>
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<td>Non-Stick Fusion Bonded Epoxy (internal &amp; external)</td>
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### FLOW CAPACITY OF AIR/VACUUM VALVES

FLOW OF AIR IN STANDARD CUBIC METERS PER SECOND

FLOW OF AIR THRU AN ORIFICE IN S.C.F.S. (STANDARD CUBIC FEET OF FREE AIR PER SECOND)
### Air/Vacuum Valves

#### Installation Dimensions

<table>
<thead>
<tr>
<th>Inlet Size</th>
<th>Outlet Size</th>
<th>Model Number</th>
<th>CWP PSI</th>
<th>Dimensions</th>
<th>A</th>
<th>B</th>
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<td>103S</td>
<td>300</td>
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<td>4” NPT</td>
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<td>125lb -150 250lb -300</td>
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<td>20 3/4”</td>
<td></td>
</tr>
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<td>5” NPT</td>
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<td></td>
</tr>
<tr>
<td>6” Flg</td>
<td>6” NPT</td>
<td>106S</td>
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#### Wastewater Air/Vacuum Valves

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<th>Model Number</th>
<th>CWP PSI</th>
<th>Dimensions</th>
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<th>B</th>
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<td>3” NPT</td>
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<td>150</td>
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<tr>
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<td>4” NPT</td>
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<td>150</td>
<td></td>
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<td>306</td>
<td>150</td>
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<tr>
<td>8” Flg</td>
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<td>150</td>
<td></td>
<td>17 1/4”</td>
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</table>
Combination Air Valves

Operational Highlights:

- Provides the functions of both Air Release and Air/Vacuum Valves
- Exhaupts large quantities of air at system start-up
- Releases air pockets during system operation
- Provides pipeline vacuum protection

Product Features:

- Single body incorporates both features within one valve
  - More compact and economical
- Dual body consists of two independent valves
  - Allows individual maintenance while still protecting the pipeline
  - Wider range of sizing options
- Inlets and outlets are equal to full nominal size
- Unconditionally guaranteed stainless steel floats
- Stainless steel 316 internal trim
- Non-clog design eliminates backwashing
- Exclusive high/low pressure resilient seating

Optional Accessories:

- Outlet hood with screen (prevents debris from entering valves)
- Ball, plug and butterfly isolation valves (allows valve maintenance)
- Inflow Preventer on outlet (stops flood water and resulting contamination from entering pipeline)
- Backwash kit (for severe wastewater applications)

### MATERIALS OF CONSTRUCTION

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<thead>
<tr>
<th>COMPONENT</th>
<th>STANDARD</th>
<th>OPTIONAL</th>
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<tbody>
<tr>
<td>Body and Cover</td>
<td>Cast Iron ASTM A126 Class B</td>
<td>Ductile Iron ASTM A536 Grade 65-45-12</td>
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<td>Class 125 and 250</td>
<td>Stainless Steel ASTM A351 Grade CF8M</td>
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<td>Trim</td>
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<td>Coating</td>
<td>Universal Alkyd Primer (external)</td>
<td>Non-Stick Fusion Bonded Epoxy (internal &amp; external)</td>
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### FLOW CAPACITY OF COMBINATION AIR VALVES
## Combination Air Valves
### Installation Dimensions

<table>
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<tr>
<th>Inlet Size</th>
<th>Outlet Size</th>
<th>Model Number</th>
<th>CWP PSI</th>
<th>Orifice Size</th>
<th>Dimensions A</th>
<th>Dimensions B</th>
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<td>1&quot; NPT</td>
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### Wastewater Combination Air Valves

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<th>Outlet Size</th>
<th>Model Number</th>
<th>CWP PSI</th>
<th>Orifice Size</th>
<th>Dimensions A</th>
<th>Dimensions B</th>
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<td>3&quot; NPT</td>
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Surge-Suppression Air Valves and Isolation Valves in a pump discharge application.
## Water Combination Air Valves (Dual Body)

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<th>Inlet Size</th>
<th>Outlet Size</th>
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<th>Dimensions</th>
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### Dual Body Combination Air Valves

> 101S/22.9 - 103S/22.9

### Water Combination Air Valves (Dual Body)

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### Dual Body Combination Air Valves

> 104S/38 - 166F/45.5
### WASTEWATER COMBINATION AIR VALVES (DUAL BODY)

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<tr>
<th>Inlet Size</th>
<th>Outlet Size</th>
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<th>Dimensions</th>
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<td>2&quot; NPT</td>
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<td>49A/303A</td>
<td>150</td>
<td>7/16&quot;</td>
<td>21 1/2&quot;</td>
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</tbody>
</table>

Air Valves are commonly found in plant service as well as pipelines for efficiency and protection. The model shown above is a 48A/308 with flanged outlet and optional Cam-Centric® Plug Valve for isolation and maintenance.
Surge-Suppression Air Valves

Operational Highlights:

- Provides full vacuum protection for the pipeline
- Provides slow closure suppressing surge in the pipeline
- Minimizes water blow-by during Air Valve closure
- Allows the use of smaller valve size by utilizing a maximum sizing differential pressure of 5 psig
- Releases entrained air while pipeline is operating to maintain pumping efficiency
- Fully complies with AWWA C512 and NSF 61

Surge-Suppression Air Valve Features:

- Restrictor disc provides regulated exhaust to limit secondary surges during column separation
- Ability to adjust air exhaust for greater surge suppression
- Provides full vacuum flow port

Optional Accessories:

- Outlet hood with screen (prevents debris from entering valves)
- Ball and butterfly isolation valves (allows valve maintenance)
- Inflow Preventer on outlet (stops flood water and resulting contamination from entering pipeline)
- Backwash kit (for severe wastewater applications)

---

### MATERIALS OF CONSTRUCTION

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>STANDARD</th>
<th>OPTIONAL</th>
</tr>
</thead>
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<td></td>
<td>Bronze ASTM B584 C83600 (Reg. Exh. Dev.)*</td>
<td>(Reg. Exh. Dev.)*</td>
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<tr>
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*(Reg. Exh. Dev.) = Regulated-Exhaust Device

---

### FLOW CAPACITY OF SURGE-SUPPRESSION AIR VALVES
### Surge-Suppression Air Valves

#### Installation Dimensions

**WATER SURGE-SUPPRESSION AIR VALVES (SINGLE BODY)**

<table>
<thead>
<tr>
<th>Inlet Size</th>
<th>Outlet Size</th>
<th>Model Number</th>
<th>CWP PSI</th>
<th>Orifice Size</th>
<th>Dimensions</th>
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<td>2&quot; NPT</td>
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<td>250</td>
<td>3/32&quot;</td>
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<td>3&quot; NPT</td>
<td>203CSS</td>
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<td>A: 16&quot;, B: 22 3/4&quot;</td>
</tr>
<tr>
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<td>3&quot; NPT</td>
<td>253CSS</td>
<td>300</td>
<td>3/32&quot;</td>
<td>A: 16&quot;, B: 22 3/4&quot;</td>
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<tr>
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<td>4&quot; NPT</td>
<td>204CSS</td>
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<td>3/32&quot;</td>
<td>A: 18 1/2&quot;, B: 27&quot;</td>
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<td>4&quot; NPT</td>
<td>254CSS</td>
<td>300</td>
<td>3/32&quot;</td>
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<td>6&quot; 125 lb Flg</td>
<td>6&quot; NPT</td>
<td>206CSS</td>
<td>150</td>
<td>3/8&quot;</td>
<td>A: 21&quot;, B: 30&quot;</td>
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<tr>
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<td>8&quot; NPT</td>
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<td>7/32&quot;</td>
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<td>300</td>
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<td>A: 25&quot;, B: 36&quot;</td>
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**WATER SURGE-SUPPRESSION AIR VALVES (DUAL BODY)**

<table>
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<tr>
<th>Inlet Size</th>
<th>Outlet Size</th>
<th>Model Number</th>
<th>CWP PSI</th>
<th>Orifice Size</th>
<th>Dimensions</th>
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<tbody>
<tr>
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<td>4&quot; NPT</td>
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<td>1/16&quot;</td>
<td>A: 21&quot;, B: 29&quot;</td>
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<td>4&quot; 250 lb Flg</td>
<td>4&quot; NPT</td>
<td>154SS/38.5</td>
<td>300</td>
<td>5/32&quot;</td>
<td>A: 21&quot;, B: 29&quot;</td>
</tr>
<tr>
<td>6&quot; 125 lb Flg</td>
<td>6&quot; NPT</td>
<td>106SS/38</td>
<td>150</td>
<td>3/16&quot;</td>
<td>A: 22 1/2&quot;, B: 33&quot;</td>
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<tr>
<td>6&quot; 250 lb Flg</td>
<td>6&quot; NPT</td>
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<td>5/32&quot;</td>
<td>A: 22 1/2&quot;, B: 33&quot;</td>
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<tr>
<td>8&quot; 125 lb Flg</td>
<td>8&quot; NPT</td>
<td>108SS/38</td>
<td>150</td>
<td>3/16&quot;</td>
<td>A: 27&quot;, B: 38&quot;</td>
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<tr>
<td>8&quot; 250 lb Flg</td>
<td>8&quot; NPT</td>
<td>158SS/38.5</td>
<td>300</td>
<td>5/32&quot;</td>
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<td>10&quot; Flg</td>
<td>110FSS/45</td>
<td>150</td>
<td>23/64&quot;</td>
<td>A: 33&quot;, B: 47&quot;</td>
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<tr>
<td>10&quot; 250 lb Flg</td>
<td>10&quot; Flg</td>
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<tr>
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<td>150</td>
<td>23/64&quot;</td>
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<td>162FSS/45.5</td>
<td>300</td>
<td>7/32&quot;</td>
<td>A: 37&quot;, B: 48 1/2&quot;</td>
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* For sizes 14" - 20" Consult Factory
** All outlet flanges are class 125 lb.

### WASTEWATER SURGE-SUPPRESSION AIR VALVES (SINGLE BODY)

<table>
<thead>
<tr>
<th>Inlet Size</th>
<th>Outlet Size</th>
<th>Model Number</th>
<th>CWP PSI</th>
<th>Orifice Size</th>
<th>Dimensions</th>
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<tbody>
<tr>
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<td>2&quot; NPT</td>
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<td>150</td>
<td>9/64&quot;</td>
<td>A: 9 1/2&quot;, B: 23&quot;</td>
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<tr>
<td>3&quot; NPT</td>
<td>3&quot; NPT</td>
<td>803SS</td>
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<td>11/64&quot;</td>
<td>A: 11&quot;, B: 33&quot;</td>
</tr>
<tr>
<td>4&quot; NPT</td>
<td>4&quot; NPT</td>
<td>804SS</td>
<td>150</td>
<td>11/64&quot;</td>
<td>A: 11&quot;, B: 34&quot;</td>
</tr>
</tbody>
</table>
Well Service Air Valves

Operational Highlights:

- Regulates the exhaust of air on pump start-up
- Admits air to protect pump and mechanical seals
- Protects against air-related surges on pump start-up
- Fully complies with AWWA C512 and NSF 61

Product Features:

- Unconditionally guaranteed 316 stainless steel floats
- Inlets and outlets are equal to full nominal pipe area
- 1/2" - 3" equipped with Dual Port Throttling Device
- 4” and larger equipped with Regulated-Exhaust Device mounted on the inlet

Dual Port Throttling Device:

- Adjustable discharge outlet provides regulated air exhaust
- Allows air to enter the system on pump shut down through an unrestricted independent vacuum port

Regulated-Exhaust Device:

- Retrictor disc provides regulated exhaust to limit pump column surges
- Ability to adjust air exhaust for greater surge suppression
- Provides full vacuum flow port

### MATERIALS OF CONSTRUCTION

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>STANDARD</th>
<th>OPTIONAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body and Cover</td>
<td>Cast Iron ASTM A126 Class B Class 125 and 250</td>
<td>Ductile Iron ASTM A536 Grade 65-45-12 Stainless Steel ASTM A351 Grade CF8M</td>
</tr>
<tr>
<td>Trim</td>
<td>Type 316 Stainless Steel (Air Valve) Bronze ASTM B584 C83600 (Reg. Exh. Dev.)*</td>
<td>-</td>
</tr>
<tr>
<td>Coating</td>
<td>Universal Alkyd Primer (external)</td>
<td>Non-Stick Fusion Bonded Epoxy (internal &amp; external)</td>
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</table>

*(Reg. Exh. Dev.) = Regulated-Exhaust Device

### WELL SERVICE AIR VALVE SIZING

<table>
<thead>
<tr>
<th>VALVE SIZE</th>
<th>NO HEAD PUMP CAPACITY, GPM</th>
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<td></td>
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</tr>
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</tr>
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<td>8&quot;</td>
<td>24,001 - 50,000</td>
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<td>10&quot;</td>
<td>50,001 - 70,000</td>
<td>110FSS</td>
</tr>
<tr>
<td>12&quot;</td>
<td>70,001 - 110,000</td>
<td>112FSS</td>
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</tbody>
</table>
**Well Service Air Valves**

**Installation Dimensions**

### Well Service Air Valve with Dual Port Throttling Device

<table>
<thead>
<tr>
<th>Inlet Size</th>
<th>Outlet Size</th>
<th>Model Number</th>
<th>CWP PSI</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot; NPT</td>
<td>1/2&quot; NPT</td>
<td>100ST</td>
<td>300</td>
<td>6 1/8&quot;</td>
</tr>
<tr>
<td>1&quot; NPT</td>
<td>1&quot; NPT</td>
<td>101ST*</td>
<td>300</td>
<td>7&quot;</td>
</tr>
<tr>
<td>2&quot; NPT</td>
<td>2&quot; NPT</td>
<td>102ST*</td>
<td>300</td>
<td>9 1/2&quot;</td>
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<tr>
<td>3&quot; NPT</td>
<td>3&quot; NPT</td>
<td>103ST*</td>
<td>300</td>
<td>9 1/2&quot;</td>
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</tbody>
</table>

*UL Listed for fire pump service

### Well Service Air Valve with Regulated-Exhaust Device

<table>
<thead>
<tr>
<th>Inlet Size</th>
<th>Outlet Size</th>
<th>Model Number</th>
<th>CWP PSI</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot; 125lb Flg</td>
<td>4&quot; NPT</td>
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<td>6&quot; NPT</td>
<td>106SS</td>
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<td>14&quot;</td>
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<tr>
<td>6&quot; 250lb Flg</td>
<td>6&quot; NPT</td>
<td>156SS</td>
<td>300</td>
<td>14&quot;</td>
</tr>
<tr>
<td>8&quot; 125lb Flg</td>
<td>8&quot; NPT</td>
<td>108SS</td>
<td>150</td>
<td>17 1/4&quot;</td>
</tr>
<tr>
<td>8&quot; 250lb Flg</td>
<td>8&quot; NPT</td>
<td>158SS</td>
<td>300</td>
<td>17 1/4&quot;</td>
</tr>
<tr>
<td>10&quot; 125lb Flg</td>
<td>10&quot; 125lb Flg</td>
<td>110FSS</td>
<td>150</td>
<td>20 1/4&quot;</td>
</tr>
<tr>
<td>10&quot; 250lb Flg</td>
<td>10&quot; 125lb Flg</td>
<td>160FSS</td>
<td>300</td>
<td>20 1/4&quot;</td>
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<tr>
<td>12&quot; 125lb Flg</td>
<td>12&quot; 125lb Flg</td>
<td>112FSS</td>
<td>150</td>
<td>24&quot;</td>
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<tr>
<td>12&quot; 250lb Flg</td>
<td>12&quot; 125lb Flg</td>
<td>162FSS</td>
<td>300</td>
<td>24&quot;</td>
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</tbody>
</table>

### Diagrams

- Well Service Air Valve with Dual Port Throttling Device
- Well Service Air Valve with Regulated-Exhaust Device

*3" Well Service Air Valve on Vertical Pump discharge.*
Vacuum Breaker Valves

Operational Highlights:
- Provides vacuum protection for pipelines and tanks
- Cushions surges related to column separation
- Opens in response to a 0.25 psi vacuum

Product Features:
- Resilient seals provide drop tight seating
- Full flow areas provide maximum vacuum protection

Optional Accessories:
- Hood with inlet screen (prevents debris from entering valves)
- Air Release Valve (slowly releases air to prevent violent rejoining of water columns)
- Inflow Preventer on outlet (stops flood water and resulting contamination from entering pipeline)

### MATERIALS OF CONSTRUCTION

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>STANDARD</th>
<th>OPTIONAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body and Cover</td>
<td>Cast Iron ASTM A126 Class B Class 125 and 250</td>
<td>Ductile Iron ASTM A536 Grade 65-45-12</td>
</tr>
<tr>
<td>Trim</td>
<td>Bronze, ASTM B584, C83600</td>
<td>Stainless Steel ASTM A351 Grade CF8M</td>
</tr>
<tr>
<td>Coating</td>
<td>Universal Alkyd Primer</td>
<td>Non-Stick Fusion Bonded Epoxy (internal &amp; external)</td>
</tr>
</tbody>
</table>

### VENTING CAPACITY FOR VACUUM BREAKERS

![Venting Capacity Graph](image)
# Vacuum Breaker Valves

## Installation Dimensions

### Throated Vacuum Breaker Air Valve

<table>
<thead>
<tr>
<th>INLET</th>
<th>OUTLET</th>
<th>MODEL NUMBER</th>
<th>CWP</th>
<th>Dimensions A</th>
<th>B</th>
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<tbody>
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<td>1/2&quot; NPT</td>
<td>1/2&quot; NPT</td>
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<tr>
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<td>1&quot; NPT</td>
<td>101VB</td>
<td>300</td>
<td>7&quot;</td>
<td>9 1/2&quot;</td>
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<tr>
<td>2&quot; NPT</td>
<td>2&quot; NPT</td>
<td>102VB</td>
<td>300</td>
<td>9 1/2&quot;</td>
<td>12&quot;</td>
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<tr>
<td>3&quot; NPT</td>
<td>3&quot; NPT</td>
<td>103VB</td>
<td>300</td>
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### Flanged Vacuum Breaker Air Valve

<table>
<thead>
<tr>
<th>INLET SIZE*</th>
<th>MODEL NUMBER</th>
<th>MODEL NUMBER</th>
<th>Dimensions A</th>
<th>B</th>
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<td>1853VB</td>
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<td>1804VB</td>
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<td>9&quot;</td>
<td>11 1/4&quot;</td>
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<tr>
<td>6</td>
<td>1806VB</td>
<td>1856VB</td>
<td>11&quot;</td>
<td>14 1/4&quot;</td>
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<tr>
<td>8</td>
<td>1808VB</td>
<td>1858VB</td>
<td>13 1/2&quot;</td>
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<tr>
<td>10</td>
<td>1810VB</td>
<td>1860VB</td>
<td>16&quot;</td>
<td>21 1/2&quot;</td>
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<td>1812VB</td>
<td>1862VB</td>
<td>19&quot;</td>
<td>21 3/8&quot;</td>
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### Flanged Vacuum Breaker with Air Release Valve

<table>
<thead>
<tr>
<th>INLET SIZE*</th>
<th>MODEL NUMBER</th>
<th>MODEL NUMBER</th>
<th>Dimensions A</th>
<th>B</th>
</tr>
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<tbody>
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<td>1853VB/38 3/8&quot;</td>
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<td>15&quot;</td>
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<tr>
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<td>1804VB/38</td>
<td>1854VB/38 3/8&quot;</td>
<td>17 3/8&quot;</td>
<td>15 7/8&quot;</td>
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<tr>
<td>5</td>
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<td>1855VB/38 3/8&quot;</td>
<td>18 3/4&quot;</td>
<td>16 3/4&quot;</td>
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<tr>
<td>6</td>
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<td>1856VB/38 3/8&quot;</td>
<td>20&quot;</td>
<td>17 1/4&quot;</td>
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<tr>
<td>8</td>
<td>1808VB/38</td>
<td>1858VB/38 3/8&quot;</td>
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<td>18 1/4&quot;</td>
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<td>1860VB/38 3/8&quot;</td>
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<td>19 3/4&quot;</td>
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<tr>
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<td>1812VB/38</td>
<td>1862VB/38 3/8&quot;</td>
<td>28 3/4&quot;</td>
<td>19 1/8&quot;</td>
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</tbody>
</table>

### Flanged Vacuum Breaker with Air Release Valve for Wastewater Service

<table>
<thead>
<tr>
<th>INLET SIZE*</th>
<th>MODEL NUMBER</th>
<th>MODEL NUMBER with Air Release Valve</th>
<th>Dimensions A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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<tr>
<td>4</td>
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<td>1804VBS/48A</td>
<td>17 3/8&quot;</td>
<td>21 5/16&quot;</td>
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<td>5</td>
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<td>1806VBS/48A</td>
<td>20&quot;</td>
<td>22 9/16&quot;</td>
<td>11&quot;</td>
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<tr>
<td>8</td>
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<td>1808VBS/48A</td>
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<td>24 7/16&quot;</td>
<td>19&quot;</td>
<td>21 3/8&quot;</td>
</tr>
</tbody>
</table>

*For sizes 14" - 42" consult factory
Vacuum Priming Valves

Operational Highlights:
- Allows the extraction of air from the pump housing and suction piping
- Float rises and closes the priming valve to prevent fluid from flowing into the vacuum priming system
- Continues to release air while the pump is running

Product Features:
- Specifically designed to prevent fluid leakage
- Flow sensitive float
- Stainless steel 316 internal trim and float

Optional Accessories:
- Water Level Control Switch (Mercury-Free)

<table>
<thead>
<tr>
<th>MATERIALS OF CONSTRUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPONENT</td>
</tr>
<tr>
<td>Body and Cover</td>
</tr>
<tr>
<td>Trim</td>
</tr>
<tr>
<td>Coating</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VACUUM PRIMING VALVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>INLET SIZE</td>
</tr>
<tr>
<td>2&quot; NPT</td>
</tr>
<tr>
<td>2&quot; NPT</td>
</tr>
<tr>
<td>2&quot; NPT</td>
</tr>
<tr>
<td>2&quot; NPT</td>
</tr>
</tbody>
</table>

Recommended Piping Arrangement
The Val-Matic airValve Sizing program is an easy to use Windows-based computer program for locating and sizing Air Valves in Water and Wastewater applications.

The pipeline profile data is entered into the program (Figure 1) which evaluates system data and develops sizing criteria such as slope for each pipeline segment and flow rate due to slope. Then it will recommend valve locations, sizes and models and print a valve schedule (Figure 2) and prepare a pipeline profile (Figure 3) for the user. Finally, the program will save your data for future reference.

The Val-Matic airValve Sizing Software is an indispensable, free resource that allows engineers to more effectively and efficiently design their water and wastewater piping systems. It is available for download at www.valmatic.com.

**PROJECT INFORMATION**

**PROJECT:** SAMPLE

**OWNER:** Valmatic

**ENGINEER:** Valmatic

**MEDIA:** Water-NSF/ANSI 61 Certified

**PIPE MATERIAL:** Steel or Stainless

**PIPE INSIDE DIAMETER:** 47.00

**STEEL PIPE THICKNESS:** 0.25 in

**MAX FLOW RATE:** 30,000 GPM

**FILL RATE:** 12,000 GPM

**SELECTED SAFETY FACTOR:** 4:1

**DIFF.PRES. FOR VAC. SIZING:** 2.45 Psi

**VALVE RATING:** 150 Psig (Class 125 Iron)

**REVERSE FLOW:** No

**VALVE SELECTION CRITERIA:**

- Surge-Suppression Air Valves

---

**FIGURE 1**

**PIPEDLINE AIR VALVE SAMPLE SCHEDULE**

<table>
<thead>
<tr>
<th>Station No</th>
<th>ELEV ft</th>
<th>Excav ft</th>
<th>Description</th>
<th>Recommended Valve Size/Model</th>
<th>Max Slope</th>
<th>Flow Rate CFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0.00</td>
<td>Beginning</td>
<td>No valve necessary</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>1,600</td>
<td>5</td>
<td>0.00</td>
<td>Long Ascent</td>
<td>8 IN #108SS Surge-Suppression AV</td>
<td>0.00</td>
<td>84.41</td>
</tr>
<tr>
<td>3,200</td>
<td>10</td>
<td>0.00</td>
<td>High Point</td>
<td>8 IN #108SS/38 Surge-Suppression AV</td>
<td>0.00</td>
<td>84.41</td>
</tr>
<tr>
<td>4,933</td>
<td>10</td>
<td>0.00</td>
<td>Long Horiz</td>
<td>2 IN #38.2 Air Release</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>6,667</td>
<td>10</td>
<td>0.00</td>
<td>Long Horiz</td>
<td>4 IN #104SS/38 Surge-Suppression AV</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>8,400</td>
<td>10</td>
<td>0.00</td>
<td>Low Point</td>
<td>No valve necessary</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>9,200</td>
<td>20</td>
<td>0.00</td>
<td>High Point</td>
<td>10 IN #110FSS/45 Surge-Suppression AV</td>
<td>0.01</td>
<td>134.66</td>
</tr>
<tr>
<td>11,200</td>
<td>16</td>
<td>0.00</td>
<td>Incr in Down-Slope</td>
<td>8 IN #108SS/38 Surge-Suppression AV</td>
<td>-0.02</td>
<td>95.37</td>
</tr>
<tr>
<td>12,000</td>
<td>2</td>
<td>0.00</td>
<td>Low Point</td>
<td>No valve necessary</td>
<td>0.02</td>
<td>0.00</td>
</tr>
<tr>
<td>12,800</td>
<td>16</td>
<td>0.00</td>
<td>Decr in Up-Slope</td>
<td>8 IN #108SS Surge-Suppression AV</td>
<td>0.02</td>
<td>74.17</td>
</tr>
<tr>
<td>13,600</td>
<td>20</td>
<td>0.00</td>
<td>High Point</td>
<td>8 IN #108SS/38 Surge-Suppression AV</td>
<td>0.01</td>
<td>85.17</td>
</tr>
<tr>
<td>14,400</td>
<td>20</td>
<td>0.00</td>
<td>End</td>
<td>No valve necessary</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

**FIGURE 2**

**SAMPLE PIPELINE PROFILE**

**FIGURE 3**
Val-Matic’s quality of design and meticulous workmanship has set the standards by which all others are measured. Quality design features such as the AWWA EnerG® Ball Valve with its energy efficient design, fusion bonded epoxy and adjustable resilient seating....Cam-Centric® Plug Valves have more requested features than any other eccentric plug valve....American-BFV® Butterfly Valves include a field replaceable seat without the need for special tools....Tilted Disc® Check Valves with high strength and wear resistant aluminum bronze trim as standard....Silent Check Valves featuring combined resilient/metal-to-metal seating and are NSF/ANSI 61 & 372 Certified....Sure Seal Foot Valves provided with a heavy duty stainless steel screened inlet....Swing-Flex® and Surgebuster® Check Valves designed with an unrestricted full flow area....Swing Check Valves with field adjustable closure versatility....Dual Disc® Check Valves utilizing stabilized components to provide extended life....Air Release, Air/Vacuum and Combination Air Valves provided standard with Type 316 stainless steel trim....VaultSafe® family of products includes the FloodSafe® Inflow Preventer, FrostSafe® two-way damper and the VentSafe® vent pipe security cage. The Quadrosphere® Trunnion Ball Valve features a unique ball design with recessed surfaces creating additional flow paths to provide a self-cleaning action and reduced wear and torque.

Val-Matic is totally committed to providing the highest quality valves and outstanding service to our customers. Complete customer satisfaction is our goal. Make the change to quality, specify Val-Matic!