

Wastewater Surge Suppression Air Valves

Operation, Maintenance and Installation Manual

INTRODUCTION	2
RECEIVING AND STORAGE	2
DESCRIPTION OF OPERATION	2
INSTALLATION	2
VALVE CONSTRUCTION.....	4
MAINTENANCE	4
DISASSEMBLY.....	4
TROUBLESHOOTING	5
REASSEMBLY.....	5
PARTS AND SERVICE.....	5
WARRANTY.....	6



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WASTEWATER SURGE SUPPRESSION AIR VALVE OPERATION, MAINTENANCE AND INSTALLATION

INTRODUCTION

This manual covers Val-Matic's Wastewater Surge Suppression Air/Vacuum Valves and Wastewater Surge Suppression Combination Air Valves. It will provide you with the information to properly install and maintain the valve to ensure a long service life. The Wastewater Surge Suppression Air Valve has been designed with stainless steel trim to give years of trouble-free operation, but regular maintenance is recommended for valves subject to fluids containing suspended solids or greases/oils. The valve is typically mounted at the high points in a piping system to automatically remove pockets of air as they accumulate. Combination air valves can also be used to slowly release air in tanks and pump casings.

The valve is a float-operated, resilient-seated valve designed to handle waste fluids. The valve may be equipped with backwash accessories for severe service. The Size, Maximum Working Pressure and Model No. are stamped on the nameplate for reference.

See Figure 1 on page 2 for typical types and configurations of Wastewater Surge Suppression Air/Vacuum Valves and Wastewater Surge Suppression Combination Air Valves. Depending on the application and specific sizes and combination of air/vacuum valve and air release valve, not all configurations can be shown. Refer to a project specific dimensional drawing for a specific layout.

For more information on the specifics of the air/vacuum valve, single body combination air valve, or air release valve, see the specific manual for each individual valve listed in Table 1.

Note: Low Durometer seats are available for low pressure applications.

RECEIVING AND STORAGE

Inspect valves upon receipt for damage in shipment. Handle all valves carefully without dropping. Valves should remain boxed, clean and dry until installed to prevent weather related damage. For long-term storage greater than six months, the valve must remain in the box and stored indoors. Do not expose valve to sunlight or ozone for any extended period.

CAUTION

This valve is not intended for flammable liquids service.

DESCRIPTION OF OPERATION

A Wastewater Surge Suppression Air/Vacuum valve will exhaust large quantities of air in a controlled manner during system start-up and allow air to re-enter the line rapidly upon system shut down or after a power failure. A Surge Suppression Combination Air Valve will also expel entrained air while the pipeline is operating. During startup, air enters the bottom of the valve and is exhausted through the air/vacuum valve (AVV) and regulated exhaust device (RED) on the outlet. If the exhaust rate is high, the RED disc will close, and the airflow will be throttled through the adjustable ports in the disc.

After the air is exhausted, fluid enters the valve and causes the float to rise and seal the AVV outlet port. The air/vacuum port will remain closed until system pressure drops to near zero gauge pressure and there is no fluid in the valve body to lift the float. The AVV will open during shutdown to reduce the possibility of a vacuum forming and allow rapid drainage of the line when system maintenance is required.

For combination air valves, any air that accumulates in the piping system will be automatically vented through the small orifice inside the separate air release valve or as part of the single body combination mechanism.

Additional ports are provided for flushing, testing and draining purposes.

CAUTION

Remove packing from outlet and install valve with "INLET" port down or leakage will occur.

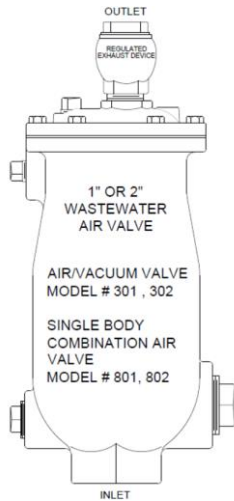
INSTALLATION

The installation of the valve is important for its proper operation. Valves should be installed at the system high points in the vertical position with the inlet down. For pipeline service, a vault with freeze protection, adequate screened venting, and drainage should be provided. During closure, some fluid discharge will occur so vent lines should extend to an open drain area in plant service. A shut-off valve should be installed below the valve in the event servicing is required.

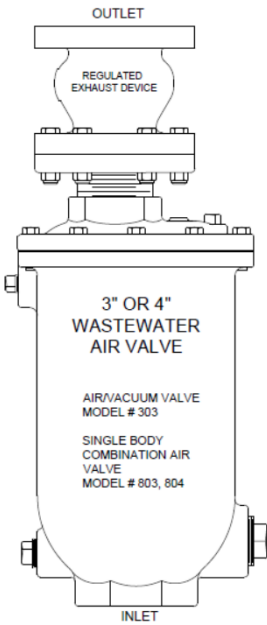
Dual body combination air valves may require the air release valve to be installed in the field. This is typical because the air release valve and associated piping can be easily damaged in shipping. Thread the air release valve in the appropriate port on the air/vacuum valve body. Check the appropriate assembly drawing for a layout. An example of a dual body combination air valve is shown in Figure 1, but they can be piped in many combinations depending on the size and valve configurations.

Figure 1 – Typical Surge Suppression Air Valves

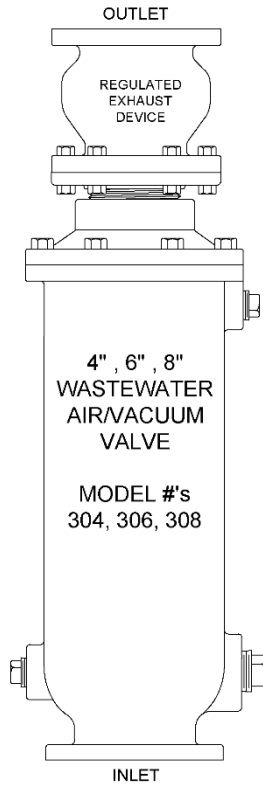
(Backwash accessories not shown)



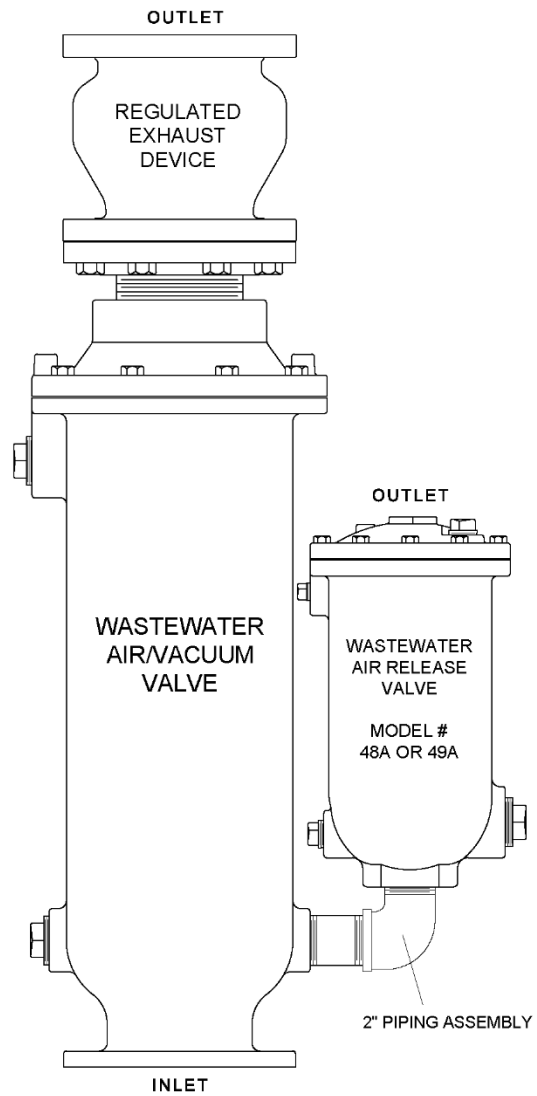
1" & 2" Surge Suppression Air/Vac Valve
1" & 2" Surge Suppression Single Body Combination



3" Surge Suppression Air/Vac Valve
3" & 4" Surge Suppression Single Body Combination Air Valve



4" & Larger Surge Suppression Air/Vacuum Valve



Surge Suppression Dual Body Combination Air Valve

VALVE CONSTRUCTION

Wastewater Surge Suppression Air Valves are an assembly of several different types of air valves. For maintenance and troubleshooting instructions see the individual manual for each type of valve within the assembly. The relevant manuals are listed in Table 1.

Table 1. Operations & Maintenance Manuals for Relevant Wastewater Air Valves	
Valve Type	Manual #
Wastewater Air/Vacuum Valves	WAVV-OM1
Wastewater Air Release Valves	WWAR-OM1
Single Body Combination Wastewater Air Valve	WCAV-OM1

REGULATED EXHAUST DEVICE

The general detail of construction for the regulated exhaust device (RED) is illustrated in Figures 3 and 4 and listed in Tables 2 and 3.

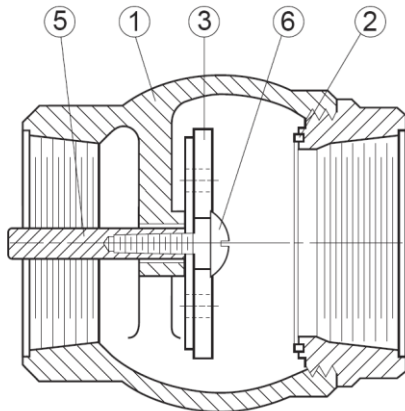


FIGURE 3. 1"-2" REG. EXH. DEVICE

Table 2. 1"-2" Reg. Exh. Device Parts List		
Item	Description	Material
1	Body	Cast Iron
2	Seat	Bronze
3	Disc	Bronze
5	Stem	Brass
6	Seat Ret. Screw	Brass
*Recommended Repair Part Kit (Entire Device)		

Table 3. 3" & Larger Reg. Exh. Device Parts List		
Item	Description	Material
1	Body	Cast Iron
2	Seat*	Bronze
3	Disc*	Bronze
5	Bushing*	Bronze
7	Retaining Nut*	Bronze
*Recommended Repair Part Kit		

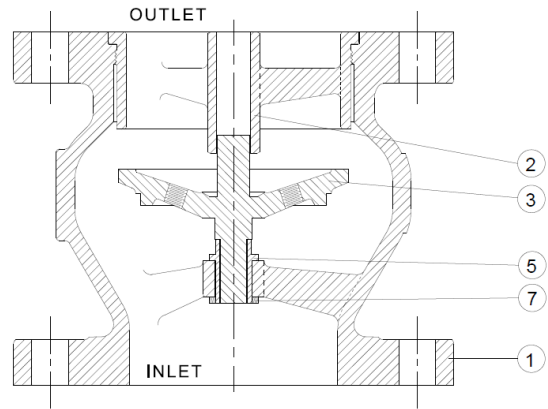


FIGURE 4. 3" & Larger REGULATED EXHAUST DEVICE

MAINTENANCE

For maintenance instructions on individual wastewater air valves, see the relevant manual listed in Table 1. This manual covers the regulated exhaust device.

The regulated exhaust device requires no scheduled lubrication or maintenance. The flow characteristics of the valve are adjustable. If the float in the air valve slams shut due to the flow of the air or water, close off some of the tapped holes of the disc with standard pipe plugs until the desired characteristic is achieved.

WARNING

Wear safety glasses to look into the valve outlet after installation. Released fluid can cause injury.

DISASSEMBLY

For disassembly and reassembly instructions on individual wastewater air valves, see the relevant manual listed in Table 1. However, the RED must be removed from the outlet of the wastewater air valve before work can be done on the wastewater air/vacuum valve or single body combination wastewater air valve.

REGULATED EXHAUST DEVICE

1" and 2" REDs cannot be disassembled and if the device is not functioning, replacement of the entire assembly is recommended.

3" and larger REDs can be disassembled without removing it from the pipeline. For convenience, the valve assembly can be removed from the line. All work on the valve should be performed by a skilled mechanic with proper tools

1. Close main isolation valve. Drain wastewater air/vacuum valve with drain port safely.
2. Unbolt RED from outlet of air valve if necessary. Replace gasket if damaged.
3. Unthread seat (2) from valve body (1).

4. Lift seat (2) and disc (3) from the valve body.
5. Clean and inspect parts for wear.

REGULATED EXHAUST DEVICE REASSEMBLY

1" and 2" REDs cannot be disassembled and if the device is not functioning, replacement of the entire assembly is recommended.

For 3" & Larger

1. Install bushing (5) into body (1) and tighten retaining nut (7).
2. Lower disc (3) into the valve body the proper orientation shown in Figure 3.
3. Thread seat (2) into the valve body and tighten to the following torque:

Threaded Seat Torque	
Valve Size	Torque
3"	25 ft-lbs
4"-12"	50 ft-lbs

TROUBLESHOOTING.

The regulated exhaust device has only one moving part, the disc (3), and is unlikely to have problems. The REDs function is to close when fast moving air is exhausting through the valve during pipeline filling. It is not designed to seal wastewater or pipeline fluid. It has holes in the disc to allow air to slowly vent from the pipeline.

WARNING

The valve must be drained before removing the cover or pressure may be released causing injury.

RED disc stuck or not moving smoothly.

Check for debris or foreign objects in the RED that would prevent operation. For 3" & larger, check that

bushing is not worn, and that the bushing area of the seat is not worn.

Valve Leakage

If wastewater / pipeline fluid is leaking from the outlet of the RED, then the base air/vacuum valve or single body combination air valve has a problem. See the individual manual for the problematic valve listed in Table 1.

PARTS AND SERVICE

Parts and service are available from your local representative or the factory. Make note of the valve Model No and Working Pressure located on the valve nameplate and contact:

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A sales representative will quote prices for parts or arrange for service as needed.

LIMITED WARRANTY

All products are warranted to be free of defects in material and workmanship for a period of one year from the date of shipment, subject to the limitations below.

If the purchaser believes a product is defective, the purchaser shall: (a) Notify the manufacturer, state the alleged defect and request permission to return the product; (b) if permission is given, return the product with transportation prepaid. If the product is accepted for return and found to be defective, the manufacturer will, at his discretion, either repair or replace the product, f.o.b. factory, within 60 days of receipt, or refund the purchase price. Other than to repair, replace or refund as described above, purchaser agrees that manufacturer shall not be liable for any loss, costs, expenses or damages of any kind arising out of the product, its use, installation or replacement, labeling, instructions, information or technical data of any kind, description of product use, sample or model, warnings or lack of any of the foregoing. NO OTHER WARRANTIES, WRITTEN OR ORAL, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY, ARE MADE OR AUTHORIZED. NO AFFIRMATION OF FACT, PROMISE, DESCRIPTION OF PRODUCT OF USE OR SAMPLE OR MODEL SHALL CREATE ANY WARRANTY FROM MANUFACTURER, UNLESS SIGNED BY THE PRESIDENT OF THE MANUFACTURER. These products are not manufactured, sold or intended for personal, family or household purposes.



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