

# INSTALLATION, OPERATION AND MAINTENANCE MANUAL

## FIGURE 942

### 2"x1", 2" and 3" x 2" Drawing ECAV-7104 COMBINATION AIR VALVES FOR SEWAGE & WASTEWATER

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234 Clay Avenue • Mars, PA 16046 USA  
Telephone (724) 776-1020 • Fax (724) 776-1254  
E-mail: [info-ga@vag-group.com](mailto:info-ga@vag-group.com)



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# INSTALLATION, OPERATION and MAINTENANCE

## Figure 942 Sewage Combination Air Valves

### INTRODUCTION

This manual will provide the information to properly install, operate and maintain the valve to ensure a long service life. The GA Industries Figure 942 Combination Air Valve is ruggedly constructed to provide years of trouble-free operation with minimal maintenance.

#### CAUTION

The valve is NOT recommended for use with toxic fluids, fuels or fluids containing hazardous gases

#### CAUTION

The valve will not function if used at a pressure higher than the maximum working pressure indicated on the nameplate.

The Shop Order (SO) Number, Figure Number, size and pressure rating are stamped on a nameplate attached to the valve. Please refer to the SO number when ordering parts.

### DESCRIPTION OF OPERATION

The Figure 942 Combination Air Valve is designed to vent air through its large orifice as the system is being filled with liquid and close tight when the system is full and pressurized. The valve automatically opens to admit air through the large orifice during draining or when the internal pressure falls below atmospheric. The valve also releases air and sewage gas that has accumulated within the valve while the system is pressurized and operational.

These valves are usually installed at high points in the system where air tends to collect and vacuum conditions initially form during draining. When empty of liquid, both the large and small orifices are open allowing air to be vented ahead of incoming liquid. The float rises when water enters the valve and closes the orifices. As air and sewage gas accumulate in the valve it forces the water level down until the float drops and opens the small air release orifice while the large orifice remains closed. As air is released

the water level rises lifting the float and re-closing the small orifice. This sequence occurs as often as necessary to release air and gas that has collected in the valve.

Should the pressure inside the valve fall below atmospheric both the large and small orifices open to allow air to be drawn into the system to alleviate vacuum conditions.

### RECEIVING AND STORAGE

Inspect the valve upon receipt for damage during shipment. Carefully unload all valves to the ground without dropping.

The valves should remain in a clean, dry and weather protected area until installed. For long term storage (greater than 6 months) the rubber surfaces of the seat should be coated with a non-toxic lubricant such as "SuperLube" made by Synco Chemical. Do not expose the rubber parts to sunlight or ozone.

### INSTALLATION

The Figure 942 is standard with NPT screwed pipeline connections up to 3" pipeline connection size.

Consult the drawings of record to verify the configuration supplied and installed.

The valve must be installed in an upright vertical orientation, normally at a high point in the system.

If installed outdoors, below ground in a vault or in an unheated area, adequate freeze protection must be provided.

An isolating valve should be installed between the valve and the pipeline or system to facilitate maintenance (included with backflushing attachments).

Carefully screw threaded end valves onto pipe nipple using compatible thread sealant. Tighten

valve using wrench flats. DO NOT OVERTIGHTEN.

Flat-faced flanged valves should be mated with flat-faced flanges and full-face gaskets. If ring gaskets are used the bolt material shall be ASTM A307 Grade B (or equivalent). Higher strength bolting should only be used with full-face gaskets.

Lower heavy valves over the mating flange using slings or chains around the valve body. Lubricate the bolts or studs and insert around flange. Lightly tighten bolts until gaps are eliminated. Torque bolts in an alternating pattern in graduated steps. If leakage occurs wait 24 hours and re-torque the bolts but do not compress the gasket more than 50% or exceed bolt maximum torque rating.

### VALVE CONSTRUCTION

The standard Figure 942 Sewage Combination Air Valve has a cast iron body, 316 stainless steel float and linkage mechanism and a Buna-N rubber seat. It has a working pressure range of 10 to 150 PSI. Optional materials can be provided for higher working pressures. Refer to the List of Materials submitted for the order if non-standard materials were provided.

Refer to Page 5 for details of construction and parts location.

The valve has an inlet connection at the bottom where the valve attaches to the system and an outlet connection at the top through which air exits and enters the valve.

#### WARNING

Removing the valve from the line or disassembling the valve while there is pressure in the valve body may result in injury or damage to the valve

### PREVENTIVE MAINTENANCE

Figure 942 Sewage Combination Air Valves require no scheduled lubrication or adjustment.

A periodic visual inspection should be performed to ensure the outlet piping is not obstructed and to verify there is no fluid leakage.

Depending on the nature of the fluid, sewage air valves may become clogged with sediment or grease and require periodic cleaning. To facilitate such cleaning GA Industries air valves

with an "F" at the end of the Figure Number (e.g., 942F) were supplied with "backflushing attachments." Refer to the backflushing instructions on Page 4 of this manual for additional information.

### TESTING

Valve operation can be easily tested. Close the inlet isolation valve and remove or loosen the pipe plug nearest the inlet to drain the water from the valve. The float should drop as the water leaves the valve. NOTE: A manual valve can be installed in place of the pipe plug to facilitate testing (valves are included with backflushing attachments).

Replace or tighten the pipe plug and slowly open the inlet isolating valve. After expelling air, the valve should close and seal tightly.

### TROUBLESHOOTING

- Valve Does Not Close / Fluid Leakage  
Verify there is at least 10 PSI at the valve inlet for tight sealing

Verify debris has not collected on the seat preventing tight closure

Verify rubber small and/or large orifice seating surfaces are not damaged

Verify float has buoyancy

Verify linkage mechanism operates freely without binding or sticking

- Valve Does Not Open  
Verify debris in the valve is not preventing the float from freely falling when fluid is drained from valve

Verify linkage mechanism operates freely without binding or sticking

Verify pressure at valve inlet does not exceed 150 PSI

### DISASSEMBLY

While small valves may be more easily serviced by removing it from the line, all valves can be serviced while the body remains connected to the pipeline. A skilled technician with proper tools should perform all work. No special tools are required.

Disassemble the valve only as far as needed to replace damaged or worn parts.

First ensure there is no pressure within the valve. Refer to Page 5 for parts location and identification.

Remove the cover bolts (13) and lift off cover (2) with float and linkage attached. It may be necessary to pry the cover off. Be careful not to damage or lose the cover O-ring (14) unless being replaced.

Remove the spring pin (21) connecting the lever arm to the cage (3). Remove the seat (4) from the cage and remove the plug (5). Remove the cage O-ring (16) and renewable seat (15) from the seat. Remove bushing (6) from the cage. Note: bushing only used in older valves with ductile iron cage.

The float ball (12) is secured to the float rod (10) by Loctite 263 and the hex nut (20). Loosen the hex nut (20) and apply heat (approx. 550F) to the connection while unscrewing the float ball by hand. (If replacing the float ball, it may be more practical to replace both the float ball and the float rod.) Be careful not to lose the lock washer (24).

The float hood (11) is attached to the float ball (12) by a nylon cap screw (25) and lock washer (24). The cap screw is secured by Loctite 380.

Inspect all parts for wear and damage. Minor scratches and dents in the float are normal. Replace the float if water is detected inside of it. Replace damaged parts.

#### REASSEMBLY

Clean all parts especially seating and sealing surfaces before reassembling valve. Worn parts should be replaced during re-assembly.

Install bushing (6) and plug (5) in seat (4), lubricate and install cage O-ring (16) and renewable seat (15) in seat (4). Thread cage (3) (with bushing), plug and seat into cover (2) and tighten.

Thread orifice button (8) all the way into lever arm (7) and install hex nut (22) and lock washer (23) but do not tighten. Connect the lever arm (7) to the cage (3) using spring pin (21).

Adjust the orifice button (8) so that the lever arm (7) is parallel to the cover (2) when it is gently resting on the plug (5) in the closed position. Secure by tightening hex nut (8).

Install hex nut (20) and lock washer (24) onto end of float rod (10). Apply Loctite 263 to the threads on the float rod (10) and screw float ball (12) onto float rod (10). Tighten hex nut (20).

Install lock washer (24) onto cap screw (25). Apply Loctite 380 to cap screw (25) insert through center hole in float hood, screw onto float ball (12) and tighten.

Verify free movement of linkage mechanism and that the orifice button (8) presses against the plug (5) when it is closed and pulls away from the plug when it is in the fully open position.

Lubricate and place O-ring (14) in cover (2) and carefully place cover (2) on body (1) ensuring O-ring is retained. Install the cover bolts (13) and tighten in an alternating pattern.

Carefully introduce pressure and check for leaks.

#### BACKFLUSHING INSTRUCTIONS

Follow all local cross-connection and safety codes and regulations!
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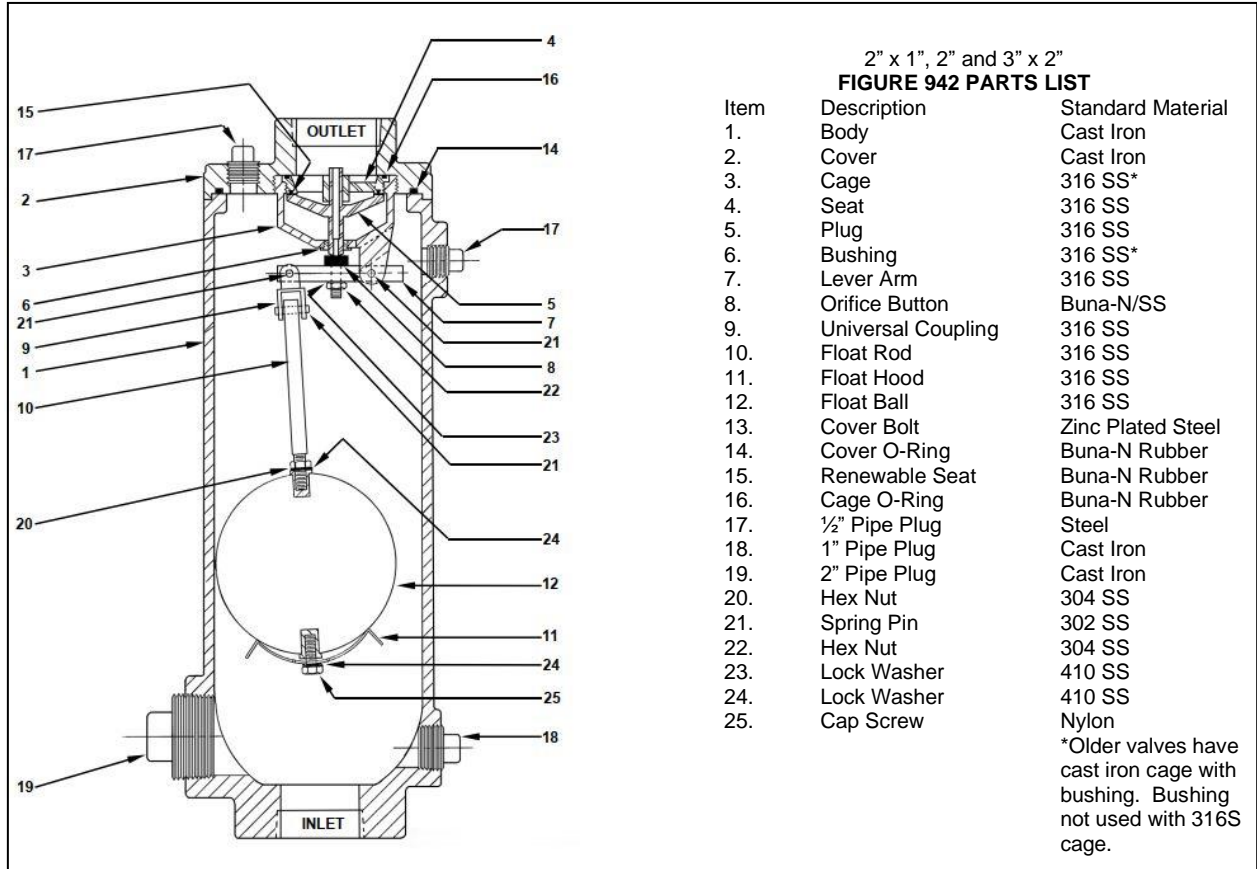
To determine if a GA Industries sewage air valve needs cleaning or backflushing:

- Close the inlet isolating valve then slowly open the ½" flushing ball valve (if installed) or slowly remove the pipe plug at the top of air valve to relieve internal pressure.
- Open the 1" blow off ball valve (if installed) or remove the pipe plug near the bottom. Liquid should freely drain from the valve body. If it does not, then the valve is likely in need of cleaning or backflushing.

To clean a GA Industries sewage air release valve equipped with backflushing attachments:

- Close the inlet isolating valve and then slowly open the ½" flushing valve to relieve internal pressure.
- Open the 1" blow off valve
- Connect the ½" flushing valve to a pressurized source of clean water using the rubber hose provided with the backflushing attachments.

- Introduce flushing water until liquid runs freely from the blow off valve.
- Shut off and disconnect the supply of clean water and close the blow off and flushing valves.
- Slowly open the inlet isolating valve. The air release valve should exhaust air and then close tightly



### REPLACEMENT PARTS

Genuine replacement parts are available from your local VAG/GA Industries representative or from the factory:

VAG USA, LLC  
 234 Clay Avenue  
 Mars, PA 16046 USA  
 Telephone: 724-776-1020  
 Fax: 724-776-1254  
 E-mail: [quotes-ga@vag-group.com](mailto:quotes-ga@vag-group.com)

Please have the nameplate data available when ordering parts

### REPAIR KITS

Soft Goods Kit A942-2 (Part Number 2-80-11000-024) includes Items 8, 14, 15, 16, 22 & 23

Linkage Kit AL942-2 (Part Number 2-80-11000-092) includes Items 7, 9, 10, 20, 21, 22, 24 and 25

All other parts ordered individually.

### WARRANTY

The Warranty for GA Industries valves is included in our Terms and Conditions which can be found here: <https://gaindustries.com/terms>