

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

Figures 933-T, 933-DT, 933-UT

**1/2" to 4" Air & Vacuum Valves
with Double Acting Throttle Device**



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WARNING: Cancer and Reproductive Harm – www.Prop65Warnings.ca.gov

INSTALLATION, OPERATION and MAINTENANCE

Figure 933 Air & Vacuum Valves

INTRODUCTION

This manual will provide the information to properly install, operate and maintain the valve to ensure a long service life. The Figure 933 Air & Vacuum Valve is ruggedly constructed to provide years of trouble-free operation with minimal maintenance.

These Air & Vacuum Valves are not intended for use with fluids containing suspended solids such as wastewater and sewage. GA Industries offers a range of Sewage Service Air & Vacuum Valves that are recommended for such applications.

CAUTION

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

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 933 is typically used to purge air from a vertical turbine pump's column at pump start and admit air into the column upon pump shutdown. The valve closes tight when the air has been vented and the system pressurized. It does not open until the pump shuts down to allow the water to fall back to the suction well. The Figure 933 incorporates a factory installed "double acting throttle device" that is used to regulate the rate and pressure at which air is discharged at pump start yet freely admit air at pump shutdown.

The Figure 933 employs the Kinetic aerodynamic operating principle designed to ensure the valve is not prematurely blown shut by the high velocity exiting air.

RECEIVING AND STORAGE

Inspect the valve upon receipt for damage during shipment. Carefully unload all valves to the ground without dropping. Do not pick up the valve by the "throttle device."

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 933 is standard with NPT inlet and outlet connections in sizes ½" to 3" while the 4" is standard with ANSI Class 125 or 250 flanged inlet and NPT outlet. The inlet and outlet connections are the same size. Consult the drawings of record to verify the configuration supplied and installed.

The valve must be installed in an upright vertical orientation, normally between a vertical turbine pump and its discharge check or pump control valve.

If installed outdoors, below ground in a vault or in an unheated area, adequate freeze protection must be provided. Some discharge of water may occur just prior to valve closure so it is recommended the valve outlet be piped to direct the water to an adequate drain.

An isolating valve should be installed between the valve and the pipeline or system to facilitate maintenance.

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 using slings or chains around the valve body and/or the lifting eye. 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 933 consists of a Figure 930 Air & Vacuum Valve and a “double acting throttle device” factory installed in the outlet. The Figure 930 has a cast iron body and cover, a 316 stainless steel float ball and Buna-N rubber seat. The double acting throttle device has an iron body and stainless steel internals. Refer to the List of Materials submitted for the order if non-standard materials were provided.

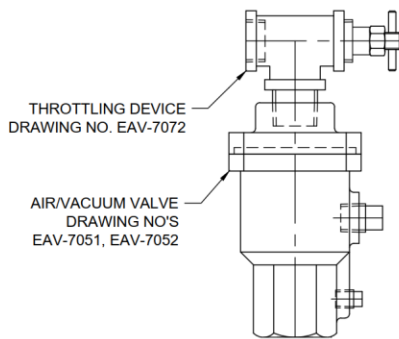


Figure 1.
1/2" – 3" NPT Inlet Valve

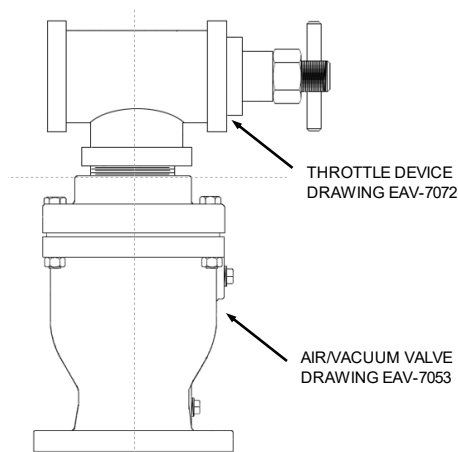


Figure 2.
4" Flanged Inlet Valve

Refer to Figures 3, 4 and 5 on Pages 4 and 5 for details of construction and parts location.

Maximum working pressure for NPT inlet valves is 300 PSI. Valves with Class 125 flanged inlet valves have a 150 PSI and Class 250 flanged inlet valves have a 300 PSI maximum working pressure. All Figure 933 Air & Vacuum Valves have a 10 PSI minimum working pressure.

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 leaves 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 933 Air & Vacuum Valves require no scheduled lubrication, adjustment, or preventive maintenance.

The float ball with attached float guide is the only moving parts and require no lubrication.

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

ADJUSTMENT

The double acting throttle device controls the rate at which air is discharged. Turning the handle clockwise decreases the discharge rate, counterclockwise increases the rate. It should be adjusted so that air is discharged slowly enough to prevent the air valve from slamming shut.

TESTING

Valve operation can be easily tested. With the valve pressurized and full of water, 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 ball or gate valve can be installed in place of the pipe plug to facilitate testing.

Replace or tighten the pipe plug and slowly open the inlet isolating valve. The valve should float closed and seat tightly.

TROUBLESHOOTING

- Valve Does Not Close / Fluid Leakage
Verify debris has not collected on the seat preventing tight closure

Verify there is at least 10 PSI pressure at the valve inlet

Verify rubber seat and/or float ball seating surfaces are not deformed or damaged

Verify float guide is undamaged and attached to float

Verify float has buoyancy

Verify float ball rises freely without binding or sticking

- Valve Does Not Open
Verify there is no debris in the valve that is preventing the float from freely falling when fluid is drained from valve
- Valve Slams Shut
Adjust throttle device – turn handle clockwise to reduce the rate at which air leaves to minimize slam

DISASSEMBLY

Figure 933 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.

First ensure there is no pressure within the valve. Remove the cover screws (7) and lift off cover (2) with the throttle device installed; it may be necessary to pry the cover off.

Remove the rubber seat (3) and lift out the float ball (5) with float guide (8) attached. Remove the rubber cushion (9) and flange bearing (10).

Inspect all parts for wear and damage. Minor scratches in the float are normal. Some floats may contain sand for added weight but if water is detected replace the float. Clean any scale build up from the float ball. Replace worn or damaged parts.

It is rare that the throttle device would need disassembled but to do so, first note/mark position of stem (3). Unscrew cap (2) and remove from body (1). Remove disc retainer (8), disc (6) and spring (7) from stem (3).

REASSEMBLY

Reassembly is performed in reverse order from disassembly. Clean all parts especially the threaded, seating and sealing surfaces before reassembling valve. Worn or damaged parts should be replaced.

Carefully introduce pressure and check for leaks

REPAIR KITS

Soft Goods Repair Kits are available and include Items 3 and 9. Order by kit number or part number:

½" to 1" Kit A930 Part Number 2-80-11000-011

2" Kit A930-2 Part Number 2-80-11000-014

3" Kit A930-3 Part Number 2-80-11000-015

4" Kit A930-4 Part Number 2-80-11000-016

Other parts are ordered individually.

PARTS LIST ½" to 4" Figure 930

Item	Name	Standard Material
1.	Body	Cast Iron
2.	Cover	Cast Iron
3.	Seat	Buna-N Rubber
4.	Cover Bolts	Zinc Plated Steel or 316 SS
5.	Float Ball	316 Stainless Steel
6.	Pipe Plug	Malleable Iron
7.	Cover Nuts	Zinc Plated Steel or 316 SS
8.	Float Guide	½" – 3" UHMW Polyethylene 4" – Stainless Steel
9.	Cushion	EPDM Rubber
10.	Bearing	Acetal Polymer

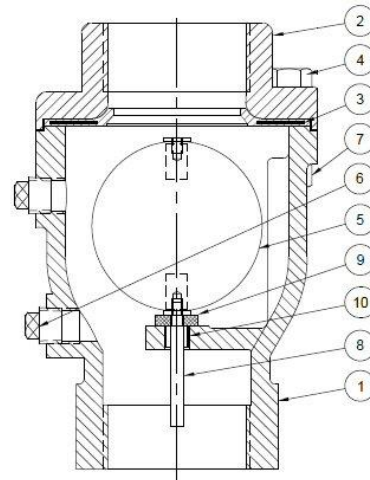


Figure 3
½" to 3" NPT Inlet Air/Vacuum Valve

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

Please have the nameplate data available when ordering parts.

WARRANTY

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

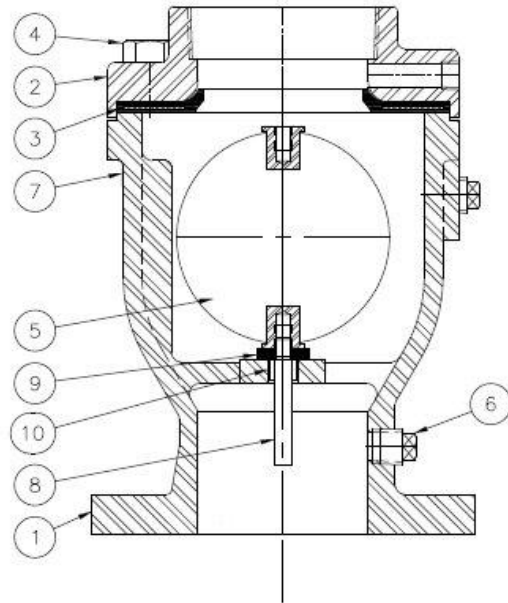


Figure 4
4" Flanged Inlet Air/Vacuum Valve

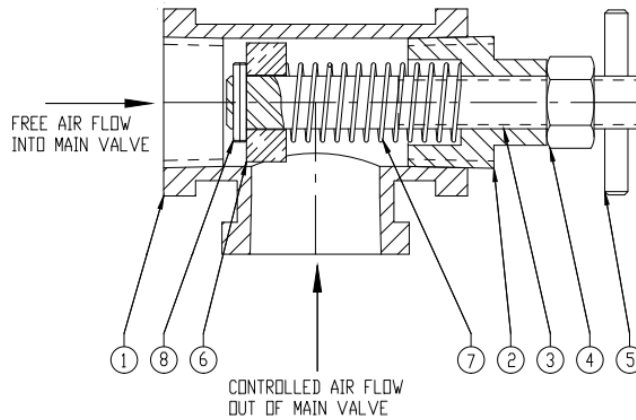


Figure 5
Double Acting Throttle Device

