INSTALLATION, OPERATION AND MAINTENANCE MANUAL

1” to 4” Figure 950
Combination Air Valves for Water

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GA INDUSTRIES
a +GF+ brand

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Manual Number IOM-950.01-102524 Rev A

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

Section 1

INSTALLATION, OPERATION and MAINTENANCE

1” to 4” Figures 950, 950H, 950-D, 950H-D, 950H-U Dual Body Combination Air Valves for Water

INTRODUCTION
This manual provides information to install, operate and maintain GA Industries dual body combination air valves to ensure a long service life. The valve is ruggedly constructed to provide many decades of dependable service with minimal maintenance.

CAUTION
The valve is NOT recommended for use with toxic, corrosive, or flammable fluids.

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
These 1” to 4” dual body combination air valves consist of two individual valves assembled and piped together at the factory: a Figure 930 air & vacuum valve and a Figure 905 air release valve. Each valve is “normally open” and closes when water rises in the valve to lift the buoyant float and seal the orifice.

The Figure 930 air & vacuum valve has a large orifice that is the same size as the nominal size of the valve. During system filling, air is vented through the orifice at the same rate as water is entering the system. When water rises in the valve it lifts the float to seal off the orifice. The valve will remain closed if there is positive pressure within the valve but automatically opens to admit air to alleviate the vacuum when the pipeline is drained and/or a negative pressure occurs inside the valve.

The Figure 905 air release valve has a small orifice that closes when water fills the valve. The valve’s small orifice automatically opens to release air that accumulates in the valve while the system is pressurized and operational. The valve closes when the air is released. This cycle will occur as often as needed to prevent an excessive accumulation of air.

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

Valves should remain in a clean, dry, and weather protected area until installed. After completion of shop testing the valve is drained of the test water but a small residual amount could remain so the valve should be protected from freezing during storage.

INSTALLATION
The valve is typically installed at high points in the system where air naturally rises during filling and in operation and a vacuum first form during draining.

The combination air valve is installed on top of the pipeline in a vertical orientation with an isolating valve between the pipeline and the air valve. Depending on the operating conditions, brief spillage may occur as the valve closes so proper drainage should be provided.

Prior to installation ensure all debris, packing material or other foreign material has been removed from the valve.

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

The valve should be installed with sufficient clearance to permit maintenance and removal of internal components.

Sizes 1” to 3” Figure 950 and 950H are normally supplied with NPT threaded inlet and outlet connections while 4” is normally flanged inlet and NPT outlet. Figure Numbers suffixed with “D” indicate the valve has an ANSI Class 125 flanged pipeline connection, Figure Numbers suffixed with “U” indicate the valve has ANSI Class 250 flanged pipeline connection.

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.

Figures 950 and 950-D have a maximum working pressure of 150 PSI while Figures 950H, 950H-D and 950H-U have a maximum working pressure of 200 PSI.

Lower heavy valves using slings or chains around the valve body and/or the lifting eyes. DO NOT LIFT BY THE AIR RELEASE VALVE. Use appropriate sealant on threaded connections and screw valve onto pipe

using wrench flats. 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.

START-UP
The valve does not require any calibration or adjustment prior to start-up.

PREVENTATIVE MAINTENANCE
No routine lubrication or adjustments are needed.

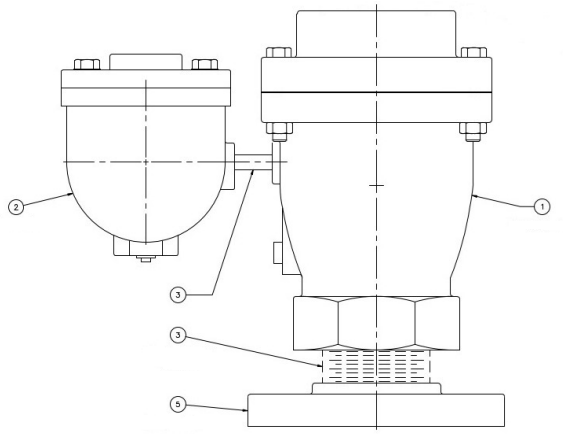
REPAIR INSTRUCTIONS
Instructions for the inspection, troubleshooting and repair of the two valves utilized in the GA Industries Figure 930 and 905 are provided in the sections for each valve.

REPLACEMENT PARTS
Genuine replacement parts are available from your local GA Industries representative or from the factory:

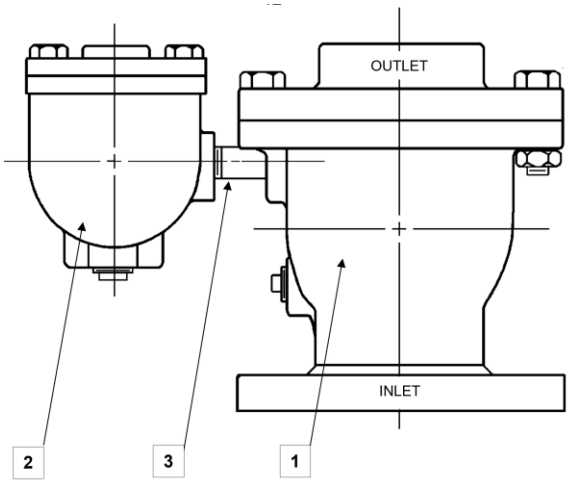
VAG USA, LLC
234 Clay Avenue
Mars, PA 16046 USA
Telephone: 724-776-1020
Fax: 724-776-1254
E-mail: quotes-ga@vag-group.com

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



1” to 3” NPT and 2” or 3” Flanged



4” Flanged

Item	Component
1	Figure 930 Air & Vacuum Valve
2	Figure 905 Air Release Valve
3	Pipe Nipple
5	Companion Flange

Notes:
1. Items 3 and 5 used only on 2” and 3” valves with optional flanged pipeline connection.

Section 2

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

Figure 905

½”, ¾” & 1” Air Release Valves

Drawing EAV-7010

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905-IOM 022620 Rev B

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

INSTALLATION, OPERATION and MAINTENANCE
Figure 905 Air Release Valves

INTRODUCTION
This manual will provide the information to properly install, operate and maintain the valve to ensure a long service life. The Figure 905 Air Release Valve is ruggedly constructed to provide years of trouble-free operation with minimal maintenance.

These Air Release Valves are not intended for use with fluids containing suspended solids such as wastewater and sewage. The GA Industries Figure 925, 927 or 929 Air Release Valves are recommended for such applications.

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 905 Air Release Valve is designed to automatically vent air that has accumulated within the valve. These valves are usually installed at high points in the system where air tends to collect. The valve is “normally open” as shipped and will vent air through its orifice at the top of the valve. The float rises when water enters the valve and closes the orifice. Air from the system accumulates in the valve forcing the water level down until the float drops and opens the venting orifice. As air is released the water level rises lifting the float and re-closing the valve.

This sequence occurs as often as necessary to release air that has collected in the valve.

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 905 is standard with NPT screwed connections. 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. Some discharge of water may occur during operation so the valve outlet should be piped 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 OVER-TIGHTEN.

VALVE CONSTRUCTION
The standard Figure 905 Air Release Valve has a cast iron body, stainless steel float and linkage mechanism and a rubber seat and is suitable for use at working pressures from 10 to 150 PSI (69 to 1,034 kPa). If there is an “H” suffixed to the figure number (e.g., 905H) the valve is suitable for use at up to 200 PSI (1,379 kPa) working pressure. Refer to the List of Materials

submitted for the order if non-standard materials were provided.

Refer to Page 4 for details of construction and parts location.

The body (1) has an inlet connection at the bottom where the valve attaches to the system and a smaller outlet connection at the top through which air leaves 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 905 Air Release Valves require no scheduled lubrication, adjustment or preventive maintenance.

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

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 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 rubber orifice button and/or orifice seating surfaces are not damaged

  Verify float has buoyancy

  Verify linkage mechanism operates freely without binding or sticking

  Verify pressure at valve inlet is at least 10 PSI

- 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 maximum working pressure

DISASSEMBLY
Although the Figure 905 air release valve 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.

First ensure there is no pressure within the valve. Remove the cover screws (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 gasket (3) unless it will be replaced.

Remove the spring pin (14) to free the float arm (5) with float ball (9) attached. Remove the rubber orifice button (7) by pulling it out of the float arm (5). No further disassembly is needed to replace the rubber orifice button (10)

Use a ½" hex socket to remove the orifice (4) and lift off the leverage bracket (6).

Remove the float screw (10) being careful not to lose the lock washer (11).

Inspect all parts for wear and damage. Minor scratches and dents in the float are normal. Some floats may contain sand for added weight but if water is detected replace the float. Carefully clean the orifice of scale. Replace damaged parts.

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

Clean with Loctite 649 (or equal) primer and apply Loctite© 271 (or equal) sealant to the threads of the orifice (4) before installation into cover. Torque to maximum 22 ft-lbs.

Lubricate orifice button (7) and pull the small end through the hole in the float arm (5) until it locks in place.

Apply Loctite 242 (or equal) to the threads of the float screw (10) before installation. Align float arm with the bracket and install spring pin.

Place cover gasket (3) and cover (2) with the float assembled on the body and install cover screws. Tighten cover screws in an alternating pattern.

Carefully introduce pressure and check for leaks

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.

REPAIR KITS
Soft Goods Kit A905 (Part Number 2-80-11000-002) includes items 3 and 7.

Linkage Kit AL905 (Part Number 2-80-11000-078) includes items 5, 6, 8 and 14.

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

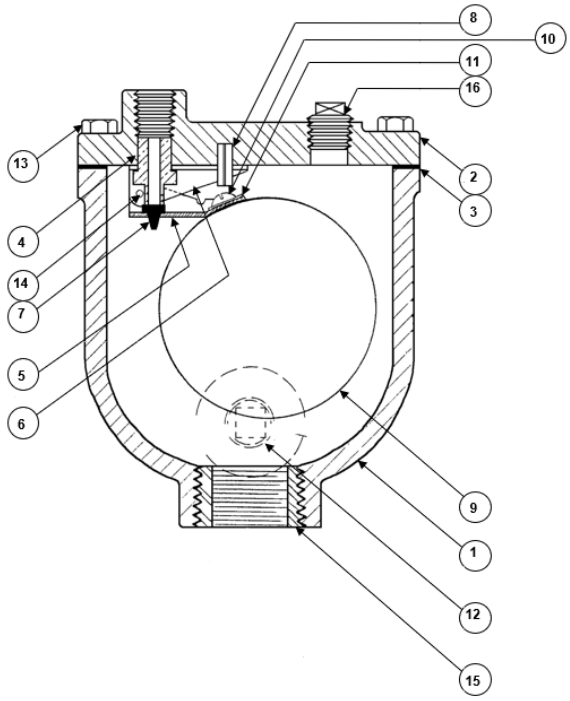

Figure 905 Air Release Valve

Item	Description	Standard Material
1	Body	Cast Iron
2	Cover	Cast Iron
3	Cover Gasket	Buna N Rubber
4	Orifice	316 SS
5	Float Arm	316 SS
6	Leverage Bracket	316 SS
7	Orifice Button	Buna N Rubber
8	Spirol Pin	302 SS
9	Float Ball	316 SS
10	Float Screw	304 SS
11	Lock Washer	302 SS
12	Pipe Plug	Steel
13	Cover Screw	Zinc Plated Steel
14	Spirol Pin	302 SS
15	Reducing Bushing*	Steel

* Used only for ½" or ¾" connection size

Section 3

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

Figures 930-T, 930-DT, 930-UT

½" to 4" Air & Vacuum Valves for Clean Water

Drawings EAV-7051, EAV-7052, EAV-7053

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Manual Number 930.1-IOM 120220 Rev A

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

INSTALLATION, OPERATION and MAINTENANCE
Figure 930 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 930 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. The GA Industries Figure 935 or 939 Sewage Service Air & Vacuum Valves 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 930 allows air that is being pushed ahead of the incoming fluid to escape and ensure a complete filling of the pipeline or vessel. Once the air has been exhausted and the system is pressurized the valve closes tight. It does not re-open unless and until the system is drained and/or a negative pressure condition occurs within the pipe or vessel in order to admit air to minimize the vacuum condition.

The Figure 930 employs the Kinetic aero-dynamic 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 “cowl.”

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 930 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 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. Some discharge of water may occur just prior to valve closure. If installed indoors or in a vault, the valve outlet should be directed 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 OVER-TIGHTEN.

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 930 Air & Vacuum Valve has a cast iron body and cover, a 316 stainless steel float ball and Buna-N rubber seat. Refer to the List of Materials submitted for the order if non-standard materials were provided.

Refer to Figure 1 or 2 on Page 3 for details of construction and parts location.

All Figure 930 Air & Vacuum Valves have a 10 PSI minimum working pressure. Maximum working pressure for Figure 930-DT Class 125 flanged inlet valves is 150 PSI. Figure 930-T NPT inlet and Figure 930-UT Class 250 flanged inlet valves have a 300 PSI maximum working pressure.

The body (1) 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 the valve (during filling) and enters the valve (during draining). The outlet may be fitted with a "cowl" to deflect air during venting and minimize entry of foreign matter during air admission.

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

The float ball with attached float guide are 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.

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 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

DISASSEMBLY

Although small a size Figure 930 Air & Vacuum Valve 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.

First ensure there is no pressure within the valve. Remove the cover screws (7) and lift off cover (2), 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 damaged parts.

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.

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
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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	Steel
7.	Cover Nuts	Zinc Plated Steel or 316SS
8.	Float Guide	½" – 3" UHMW Polyethylene 4" – Stainless Steel
9.	Cushion	EPDM Rubber
10.	Bearing	Acetal Polymer

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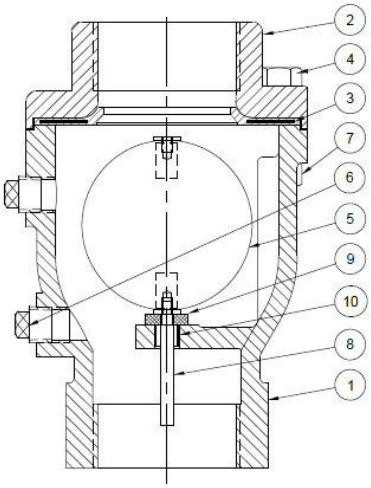

Figure 1
NPT Inlet

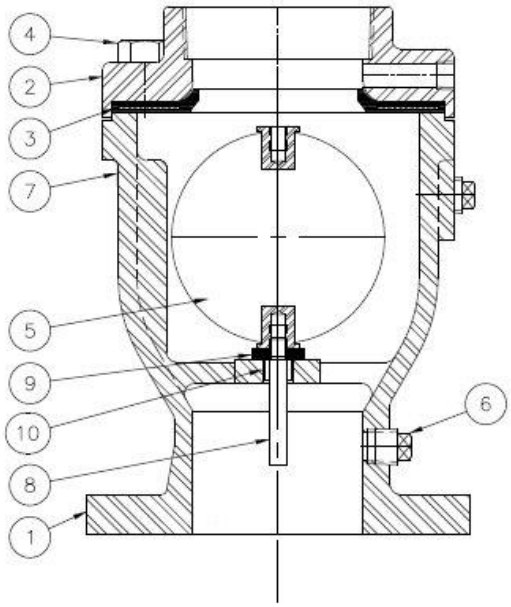

Figure 2
Flanged Inlet