Installation & Maintenance Instructions

2–WAY DIRECT–ACTING SOLENOID VALVES

NORMALLY CLOSED OPERATION — 3/8, 1/2 OR 3/4 NPT

FUEL GAS SERVICE

SERIES

SV311

Form No.V8525

⚠ WARNING

To prevent the possibility of death, serious injury or property damage, the Series SV311 Gas Valve must be installed and serviced (tested) only by a qualified service technician avoiding the following hazards:

- **Electrical Hazard. Turn off electrical power to solenoid.**
- **Pressure Hazard. Depressurize valve and vent hazardous or combustible fluid to a safe area before inspecting or removing the valve from service.**
- **Explosion/Fire Hazard. Extinguish all open flames and avoid any type of sparking or ignition when leakage testing.**

Service Notices

Except for solenoid replacement, the Series SV311 valves are not repairable. When any performance problems are detected during routine inspection, replace valve immediately.

See separate solenoid installation and maintenance instructions for information on: Wiring, Solenoid Temperature, Causes of Improper Operation, and Solenoid Replacement.

DESCRIPTION

Series SV311 valves are 2–way normally closed direct–acting solenoid valves designed for fuel gas service. Valve bodies are made of rugged aluminum with trim and internal parts made of steel and stainless steel. Series SV311 valves are provided with a general purpose/watertight solenoid.

Provisions for Seat Leakage Testing

Series SV311 valves are provided with a 1/8″ NPT downstream side tap and pipe plug for checking seat leakage. Leakage testing frequency shall be at least annually in accordance with NFPA–86 or original equipment manufacturer recommendations.

OPERATION

Normally Closed: Valve is closed when solenoid is de–energized; open when energized.

NOTE: No minimum operating pressure differential required.

INSTALLATION

Check nameplate for correct catalog number, pressure, voltage, frequency, and service. Never apply incompatible fluids or exceed pressure rating of the valve.

Temperature Limitations

Ambient and fluid temperature range: –40°F (–40°C) to 175°F (79°C).

Positioning

This valve is designed to perform properly when mounted in any position. However, for optimum life and performance, the solenoid should be mounted vertically and upright to reduce the possibility of foreign matter accumulating in the plugnut/core tube sub–assembly area.

Piping

⚠ CAUTION: Piping must comply with applicable local and national codes and ordinances, including the National Fuel Gas Code ANSI Z223.1/NFPA No. 54.

Connect piping to valve according to markings on valve body. The use of a drip leg is recommended. Apply pipe compound sparingly to male pipe threads only. If applied to valve threads, the compound may enter the valve and cause operational difficulty. Avoid pipe strain by properly supporting and aligning piping. When tightening the pipe, do not use valve or solenoid as a lever. Locate wrenches applied to valve body or piping as close as possible to connection point. Valves should be checked for external leakage at piping connections after installation, see ***Testing for External Leakage*** section.

⚠ CAUTION: To avoid damage to the valve body, DO NOT OVERTIGHTEN PIPE CONNECTIONS. If TEFLON* tape, paste, spray or similar lubricant is used, use extra care when tightening due to reduced friction.

⚠ CAUTION: To protect the solenoid valve, install a strainer or filter, suitable for the service involved, in the inlet side as close to the valve as possible. Clean periodically depending on service conditions. See ASCO Series 8600, 8601 and 8602 for strainers.

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Printed in U.S.A.

Testing for External Leakage

1. Block gas flow on downstream side of valve.
2. Apply pressure to valve within nameplate rating and energize solenoid.
3. Apply a rich soap and water solution or a commercially available leak detecting solution to the pipe connections and check for bubbles. If the valve has been tested for seat leakage apply the solution around the base of the pipe plug.
4. If leakage exists, depressurize valve and turn off electrical power supply. Tighten pipe connections, or plug and retest following the above steps.

MAINTENANCE

Preventive Maintenance

- Prepare and follow a routine inspection schedule based on the media, environment, and frequency of use. This should include periodic internal and external leakage checks.
- Keep the medium flowing through the valve as free from dirt and foreign material as possible. Depending on medium and service conditions, clean valve strainer, filter or drip leg as required to keep the valve free of contamination. In the extreme case, contamination will cause faulty valve operation and the valve may fail to open or close, and an explosion or fire can occur.
- While in service, the valve should be operated at least once a month to ensure proper opening and closing.

Testing for Internal (Seat) Leakage

(Refer to Figure 2)

1. Shut off both the upstream and downstream manual gas cocks. The downstream manual gas cock should remain closed throughout the entire test procedure.
2. Program the control system to operate the valve through five cycles. Listen carefully for the solenoid coil to *click* indicating proper operation.
3. Open the upstream manual gas cock. Program the control system to energize and maintain the valve in the open (energized) position.
4. Shut off the upstream manual gas cock and de−energize valve. Remove the plug from the leak test tap or downstream pressure tap in the valve body. Connect leak test equipment with the test petcock in the closed position see Figure 2.
5. Open the upstream manual gas cock. Program the control system to energize the valve to the full open position, then immediately de−energize it to seat the valve operationally.
6. Immerse the 1/4″ leak test tubing vertically into a jar of water to a depth of about 1/2″. Slowly open the test petcock. Bubbles may appear in the water as the pressure equalizes.
7. After the rate of bubbles coming through the water stabilizes, count the number of bubbles appearing in a 10 second period. The allowable leakage in 10 seconds for an orifice diameter of 1 inch (25.4 mm) or less is 6 bubbles (3 cc/min). If leakage exceeds this rate, replace valve.

NOTE: The leakage rate above recognizes that some wear and contamination from use can result in a slight amount of leakage. The allowable leakage rate is well within the leakage limits as recognized by applicable approval agencies.

8. Close the upstream manual gas cock and the test petcock. Then remove the test equipment. Apply a small amount of Loctite Corporation's PST® Pipe Sealant 567 (or equivalent) to the pipe plug threads. Reinstall pipe plug and torque to 50 in−lbs [5, 72 Nn].
9. Turn on the gas supply at the upstream manual gas cock.
10. Open the upstream manual gas cock. Program the control system to energize and maintain the valve in the open (energized) position. Check the 1/8″ NPT pipe plug connection for external leaks with a rich soap and water solution or a commercially available leak detecting solution.
11. De−energize the valve. Open the downstream manual gas cock.
12. Restore the system to normal operation.

ORDERING INFORMATION

FOR ASCO GENERAL CONTROLS

SOLENOIDS OR REPLACEMENT VALVES

When Ordering ASCO General Controls Solenoids or Replacement Valves, specify catalog number, serial number, voltage and frequency.

Partial side view of valve body showing location of tapped and plugged holes for pressure and seat leakage testing

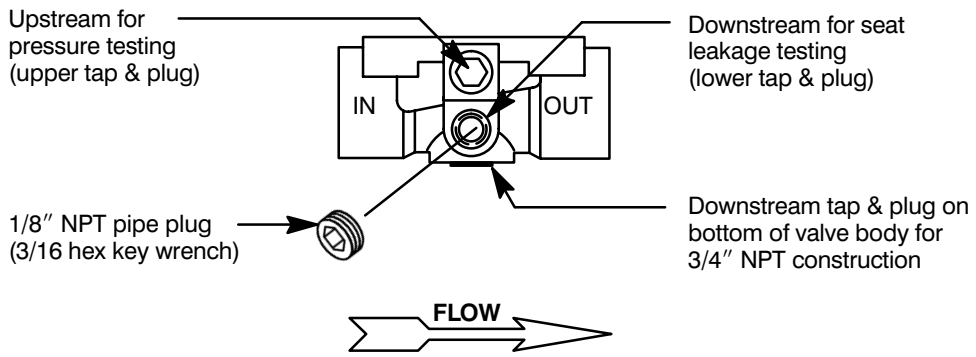

Figure 1. Provisions for pressure and seat leakage testing.

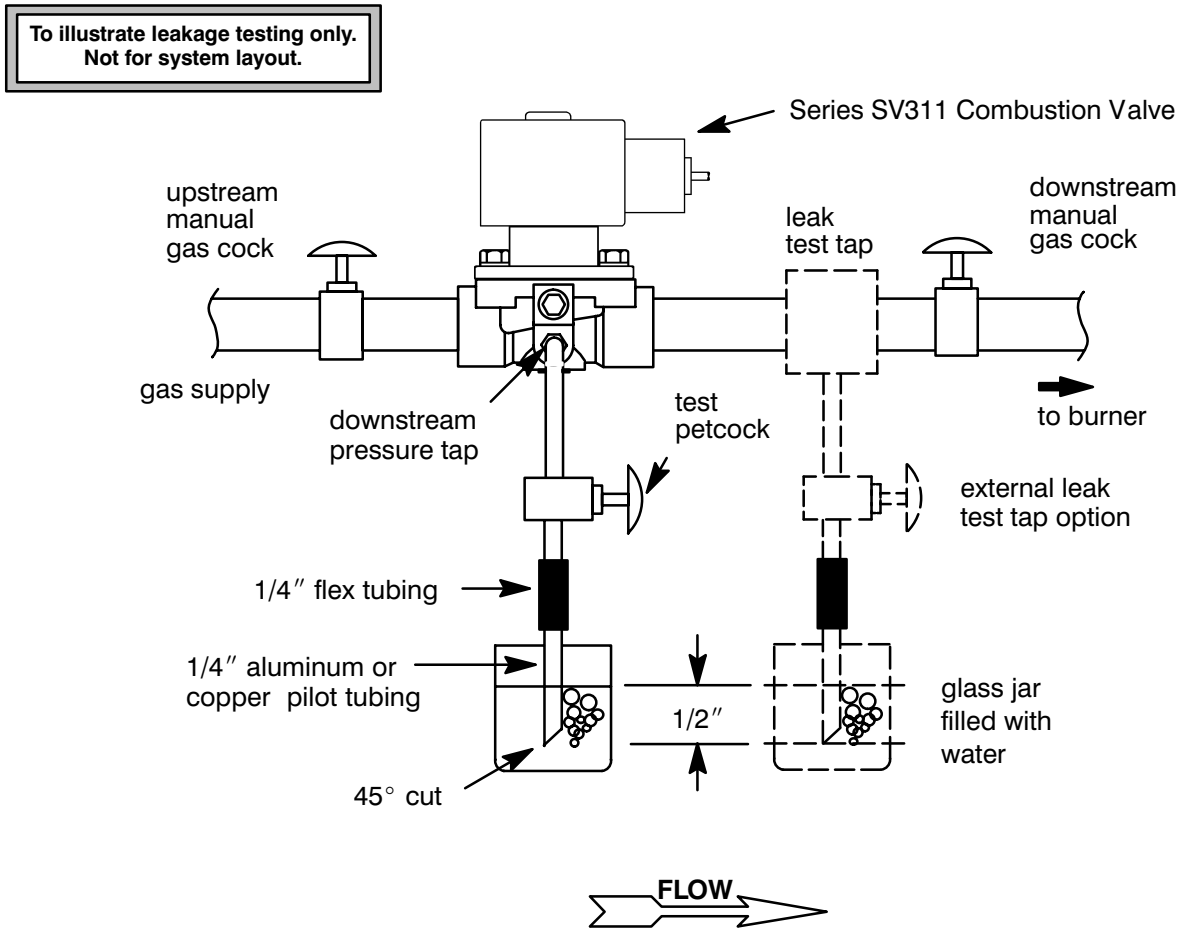

Figure 2. Testing for internal seat leakage.

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