

MAINTENANCE

WARNING: To prevent the possibility of serious injury or property damage, turn off electrical power, depressurize valve, and vent fluid to a safe area before inspecting or servicing the valve.

Preventive Maintenance

- Prepare and follow a routine inspection schedule based on the media, environment, and frequency of use.
- 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 or filter 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 shift.
- While in service, the valve should be operated at least once a month to ensure proper operation.

Causes of Improper Operation

- Incorrect Pressure: Check valve pressure. Pressure to valve must be within range shown in valve specifications
- Faulty Control Circuits: Check the electrical system by energizing the solenoid. A metallic click signifies that the solenoid is operating. Absence of the click indicates loss of power supply. Check for loose or blown fuses, open circuited or grounded coil, broken lead wires or splice connections.
- Burned-Out Coil: Check for open-circuited coil. Replace coil as necessary. Check supply voltage; it must be the same as printed on coil.
- Low Voltage: Check voltage across the coil terminals. Voltage must be at least 85% of specified rating.

Coil Replacement:

1. Verify power is OFF.
2. Disconnect grounding and supply wires from coil.
3. Remove coil nut and slip coil off the armature tube assembly.
4. Install new coil and replace nut.
5. Make electrical hookup to coil.

WARRANTY

The Seller warrants its products against all defects in material and workmanship, when used on those service approved by Seller for a period of one (1) year from date of original shipment with product registration. The Seller's liability under warranty shall be limited to repair or replacement at the Seller's option of such defective products, F.O.B factory, upon proof of defect satisfactory to the Seller. To receive full warranty benefits, please register product Serial Number (s) on-line at www.v-solenoid.com.

Important!

The Seller specifically declines responsibility for (1) any and all consequential or incidental damages or expenses caused by any of its products and (2) any damages caused by negligence, misuse, improper application, service or operation or lack of service of Sellers products.

v-solenoid II™

INSTALLATION & MAINTENANCE INSTRUCTIONS

5/2 (4-WAY) OR 3/2 (3-WAY), 2 POSITION SINGLE SOLENOID VALVES FOR NAMUR ACTUATORS.
CORROSION RESISTANT COMPOSITE CONSTRUCTION FOR AIR OR INERT GAS SERVICE

SERVICE NOTICE

Except for coil replacement, all v-solenoid II™ series valves are not repairable. When any performance problems are detected during routine inspection, replace valve immediately.

DESCRIPTION

v-solenoid II™ valves are 3-way or 4-way, 5 ported 2 position piloted poppet type single solenoid valves designed for air or inert gas service. Valves are made of rugged corrosion resistant composite material. A built-in manual operator allows manual operation when desired or during an electrical power outage. Only one valve is required for 3/2 (3-way, spring return) or 5/2 (4-way, double acting) function. The valve function is selectable by repositioning the supplied plate 180°. The valves are supplied with all necessary hardware for a NAMUR direct mount installation i.e. o-rings, mounting screws and a locating set screw.

APPLICATIONS

Typically, the 3-way (3/2) normally closed valve is used for a single acting (spring return) actuator; 4-way (5/2) valve for a double acting actuator.

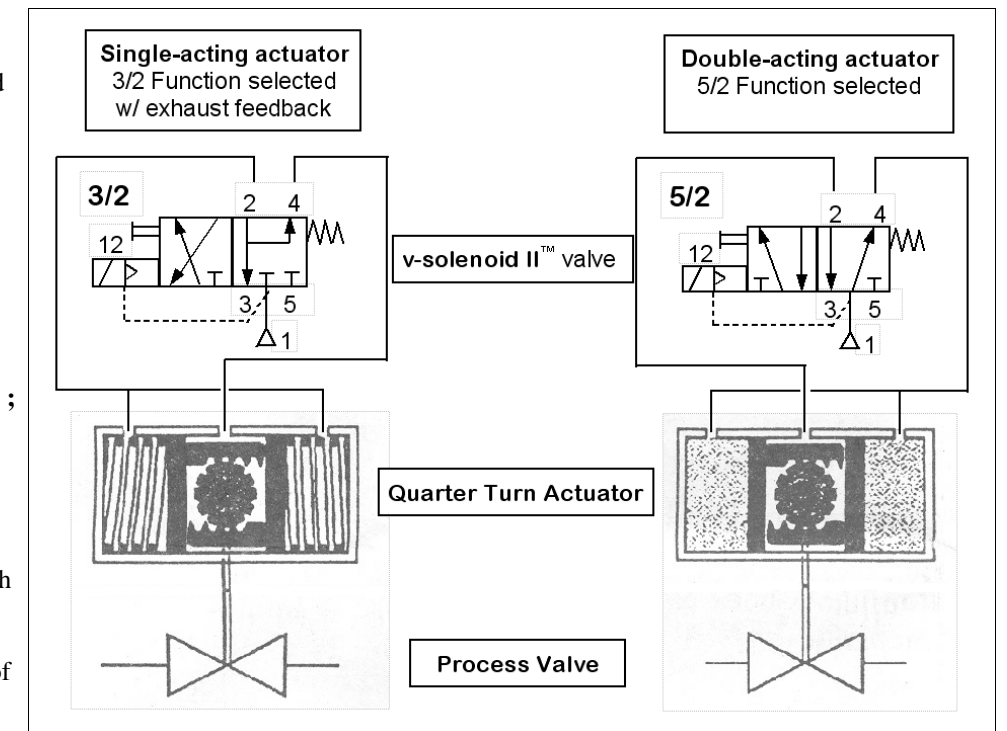
OPERATION

IMPORTANT: Minimum operating pressure differential 35 psi (2.5 Bar) ; maximum 120 psi (8 Bar).

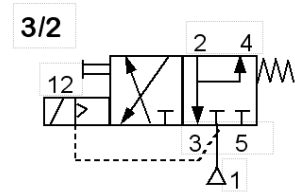
Exhaust feedback (re-breather) function on 3/2 (3-way) function only: Provides spring chamber with instrument air preventing corrosion.
Single Solenoid: This type of operation is used where automatic return of the valve on electrical power failure or loss of main line pressure is required.

FUNCTION SELECT

To change 5/2 or 3/2 function, remove rear plate by hand, rotate 180° and replace. Active function is visible in function window on opposite sides of body.



3/2 (3-Way) Operation

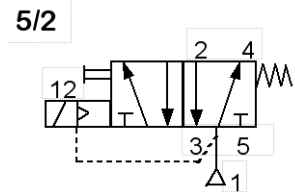


Solenoid De-energized: Supply port 1 is blocked and port 2 exhaust is fed back to port 4 with excess vented to atmosphere via port 3.

Solenoid Energized: With port 5 sealed, supply port 1 flows to port 2 and port 4 exhaust is vented to atmosphere via port 3.



5/2 (4-Way) Operation



Solenoid De-energized: With supply to port 1, flow is directed to port 4 and port 2 is vented to atmosphere via port 3.

Solenoid Energized: With port 3 sealed, supply port 1 flows to port 2 and port 4 exhaust is vented to atmosphere via port 5.



Manual Override



Manual override provides manual operation when desired or during an electrical power outage. To engage manual override, rotate the red screw clockwise as far as possible to "1". Valve will now be in the same position as when the solenoid is energized. To disengage manual override, rotate screw counterclockwise as far as possible to "0".

CAUTION: To prevent malfunction be sure to turn screw counterclockwise to "0" before operating valve electrically.

Speed Control (Optional)

These devices can be used to vary the operating speed of the actuator/cylinder this valve is piloting. For 5/2 (4-way) valves, install speed controls in either or both of the exhaust connections (port 3 and /or port 5) and tighten securely. Because of the exhaust feedback (re-breather) function, the use of a speed control is not recommended for 3-way (3/2) valves.

Adjustment:

Since these speed control devices are spring loaded, simply rotate the knurled screw clockwise to decrease flow (speed) and counter-clockwise to increase flow



INSTALLATION

Check coil label for correct voltage and frequency. Never apply incompatible fluids or exceed pressure rating of the valve. Installation and valve maintenance to be performed by qualified personnel.

WARNING: To prevent the possibility of electrical shock from the accessibility of live parts, connections to all open-frame solenoid coils must be made thru the supplied DIN style connector with sealing gasket installed.

Future Service Considerations

Provision should be made for performing seat leakage, external leakage, and operational tests on the valve with a non hazardous, noncombustible fluid.

Temperature Limitations

All **v-solenoid II**™ coils can operate in an ambient temperature range of -40 to +50°C [-40 to 125°F]. Consult factory for use in ambient temperatures outside this range. **NOTE: For temperatures below 0°C [32°F] moisture- free air must be used.**

Solenoid Temperature

All **v-solenoid II**™ valves are supplied with coils designed for continuous duty service. When the solenoid is energized for a long period, the solenoid coil becomes hot and can be touched with the hand only for an instant. This is a safe operating temperature. Any excessive heating will be indicated by the smoke and odor.

Mounting

Valve may be mounted in any position.

1. If required, install locating set screw onto the actuator NAMUR mount using a 2 mm hex key wrench. This insures correct orientation of the solenoid if removed in the future.
2. Verify o-rings are installed over Port 2 and Port 4 to interface with the NAMUR pad on the actuator.
3. Position the solenoid valve on actuator. Then install two socket head cap screws in offset center holes on either side. Hand thread screws a few turns into actuator. Then tighten screws evenly using a 4 mm hex key wrench. **DO NOT OVERTIGHTEN MOUNTING SCREWS.**

NOTE: M5 mounting screws are provided as standard. Other sizes i.e. #10-24 UNC-2A and #10-32 UNF-2A are available as an option.

Piping

There is pilot exhaust from the top of the solenoid when the solenoid is de-energized. The pilot exhaust maybe connected to the main exhaust if the air or inert gas cannot be exhausted directly to the atmosphere. Connect piping or tubing to valve according to markings on valve body. Refer to flow diagrams in OPERATION section. Apply pipe compound sparingly to male pipe threads only. If applied to female valve threads the compound may enter the valve and cause operational difficulty. We recommend the use of flexible pneumatic tube and push-type fittings rather than hard pipe. This avoids pipe strain on the valve and provides easier and faster installation and removal. When tightening the fittings, do not use pilot assembly and coil as a lever. Locate wrenches applied to valve body or fittings as close as possible to connection point.

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. * "DuPont's Registered Trademark

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.

Electrical Connection

In case of electrical connections, they are only to be made by trained personnel and have to be in accordance with the local regulations and standards.

Caution: Turn off electrical power supply and de-energize the electrical circuit and voltage carrying parts before starting work.

All electrical screw terminals must be properly tightened according to the standards before pulling into service.

Dependent upon the voltage electrical components must be provided with an earth connection and satisfy local regulations and standards.

The equipment can have one of the following electrical terminals:

- Spade plug connections according to ISD-4400 or 3 x DIN-46244 (when correctly installed this connection provides IP-65 protection).
- Embedded screw terminals in metal enclosure with "Pg" cable gland.
- Spade terminals (AMP type).
- Flying leads or cables.

Putting Into Service

Before pressurizing the system, first carry-out an electrical test. In case of solenoid valves, energize the coil a few times and notice a metal click signifying the solenoid operation.