

SOLVDA 5/2-Way Pilot Solenoid Valve

General:

Chemline SOLVDA is a CSA/UL-approved, inexpensive, simple and effective 3/2-way or 5/2-way pilot-operated solenoid valve rated for millions of cycles. It is designed to mount directly to any NAMUR-compliant actuator, thus reducing the cost of tubing, fittings, brackets and labour. Its complement of features includes a reinforced polyamide body; nitrile seals and o-rings; zinc plated ports and mounting hardware; epoxy encapsulated coil; threaded actuator and pilot vent ports; manual override and a choice of conduit, grommet or LED grommet DIN connectors. It is most effective on double-acting or fail-safe pneumatic actuators where a high-speed open/close and cost are factors. Explosion-proof, intrinsically safe and ATEX Ex versions are available.



Operating Specs:

Air Filtration: 40 to 50 micron recommended
Approvals: NEMA4X: CSA/UL;
NEMA7: CSA/FM/Ex m II T4/Aex m II
Class I, Group A, B, C and D
Class II, Group E, F and G
Class III
Cv: 0.7 (Kv = 105) average for all ports
Coil Insulation: Class F
Coil Orientation: 90-degree increments
Connector Orientation: 180-degree increments
Duty Cycle: 100% continuous
Electrical Connection: DIN industrial form 4400
Flow Rate: 5 SCFM @ 100 psi; 8.5 Nm³/h @ 7 bar
Installation: No limit on mounting orientation

Lubrication: General purpose ISO, ASTM viscosity.
grade 32 lubricating oil recommended
Media: Compressed air, instrument air and nitrogen.
Clean water on low voltage units.
Pilot Exhaust: 10-32 NPT, M8 x 0.75 FNPT
Ports, Cylinder: O-ring seal per NAMUR standard
Port, Inlet: 1/4" NPT
Ports, Exhaust: 1/8" NPT
Power Consumption: DC = 4.8W, 50Hz = 8.5VA,
60Hz = 6.9VA
Pressure Rating: 35-120 psi (2.5 - 8.2 bar)
Protection Class: NEMA4X / IP65
Response Time: open = 20 ms, close = 40ms
Temperature: -20⁰ - 50⁰C / -4⁰ - 125⁰ F (-40⁰ optional)
Weight: NEMA4X = 0.5 lbs, NEMA7 = 0.8 lbs.

Voltages:

The SOLVDAx solenoid is available in several different voltages, identified with a suffix number, per the chart below. VAC models can operate at 50 or 60 Hz.

120VAC = 1
220VAC = 2

12VDC = 3
24VDC = 4

12VAC = 5
24VAC = 6

i.e. 120VAC solenoid is part number SOLVDA1

Installation:

Solenoid may be mounted in any position, barring physical interference with nearby objects.

1. If required, install locating setscrew into the actuator NAMUR mount with a 2mm hex key wrench or Bondhus screwdriver. This insures correct orientation of the solenoid if removed in the future.
2. Choose the desired base position, depending on 3/2 or 5/2 operation. The base indication can be clearly seen on the side of the solenoid body. Verify that o-rings are installed over both solenoid bottom ports to interface with the NAMUR pad on the actuator.
3. Position the solenoid valve on the actuator. Install the two socket-head cap screws in offset center holes on either side of the solenoid by hand threading the screws a few turns into the actuator. Tighten the screws evenly using a 4mm hex key wrench or Bondhus screwdriver, until hand-tight.

DO NOT OVERTIGHTEN THE MOUNTING SCREWS.

Piping:

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

NOTE: To avoid damage to the solenoid body, do not overtighten pipe connections. If using Teflon tape, paste or spray, use extra care when tightening due to reduced friction. To protect the solenoid, installation of an air filter as close as possible to the inlet side of the solenoid is recommended.

Wiring:

Reference Wiring Diagrams below. Always check coil label for correct voltage and frequency. Never apply incompatible fluids or exceed pressure rating of the solenoid. To prevent possibility of electrical shock, connections to all open-frame solenoid coils should be made through the supplied DIN connector with sealing gasket installed.

1. Remove center screw from plug connector. Using a small screwdriver, pry the terminal block from the connector housing.
2. Use #12-18 AWG stranded copper wire rated at 90° C or greater for connections. Strip wire leads back approximately ¼” for installation in socket terminals. The use of wire-end sleeves is also recommended for these terminals. Maximum length of wire-end sleeves is to be approximately ¼”. Tinning of the lead wire ends is not recommended.
3. Thread wire through conduit housing if using a ½” NPT conduit connector, or gland nut, washer, gland gasket and housing if using a grommet connector. NOTE: Connector housing may be rotated 180° from position shown for alternate positioning of cable.

Wiring (cont'd):

4. Check DIN connector terminal block for electrical markings, then make electrical hookup to terminal block per wiring diagram on page 5. Snap terminal block into connector housing and replace center screw.
5. Position gasket/seal on coil and install plug connector onto solenoid. Torque center screw to 5 +/- 1 in-lb (0.6 +/- 0.1 Nm).
6. Carry out an electrical test before pressurizing the system, by energizing the solenoid coil a few times. A metal click should be heard, signifying that power to the solenoid has been applied or removed.

Manual Override:

Manual override provides manual operation when desired or during an electrical power outage. To engage the 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 the manual override, rotate the red screw counterclockwise as far as possible to “0”.

NOTE: To prevent malfunction, never operate the manual override when power is on the solenoid.

Speed Controls (optional):

Speed controls can be used to vary the operating speed of the actuator being piloted by the solenoid. They should be installed in the applicable solenoid exhaust ports. Since these devices are spring-loaded, simply rotate the knurled thumbscrew(s) clockwise to decrease flow / speed and turn counterclockwise to increase flow / speed.

Maintenance:

To prevent the possibility of serious injury, or property damage, turn off electrical power, depressurize solenoid / supply line and vent air / fluid to a safe area before inspecting or servicing the solenoid.

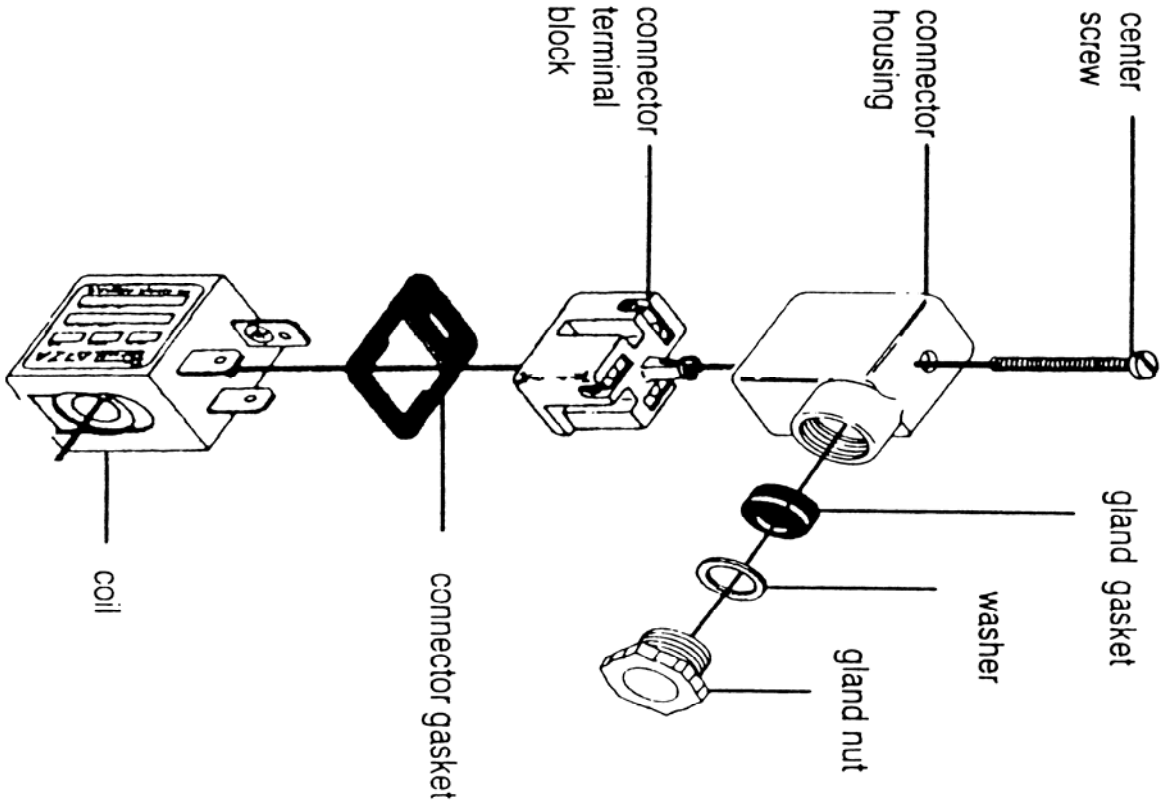
Preventive Maintenance

- Prepare and follow a routine inspection schedule based on 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 solenoid filter as required to keep the valve free of contamination. In extreme cases, contamination will cause faulty solenoid operation and the solenoid may fail to shift.
- While in service, the solenoid should be operated at least once a month to ensure proper operation.

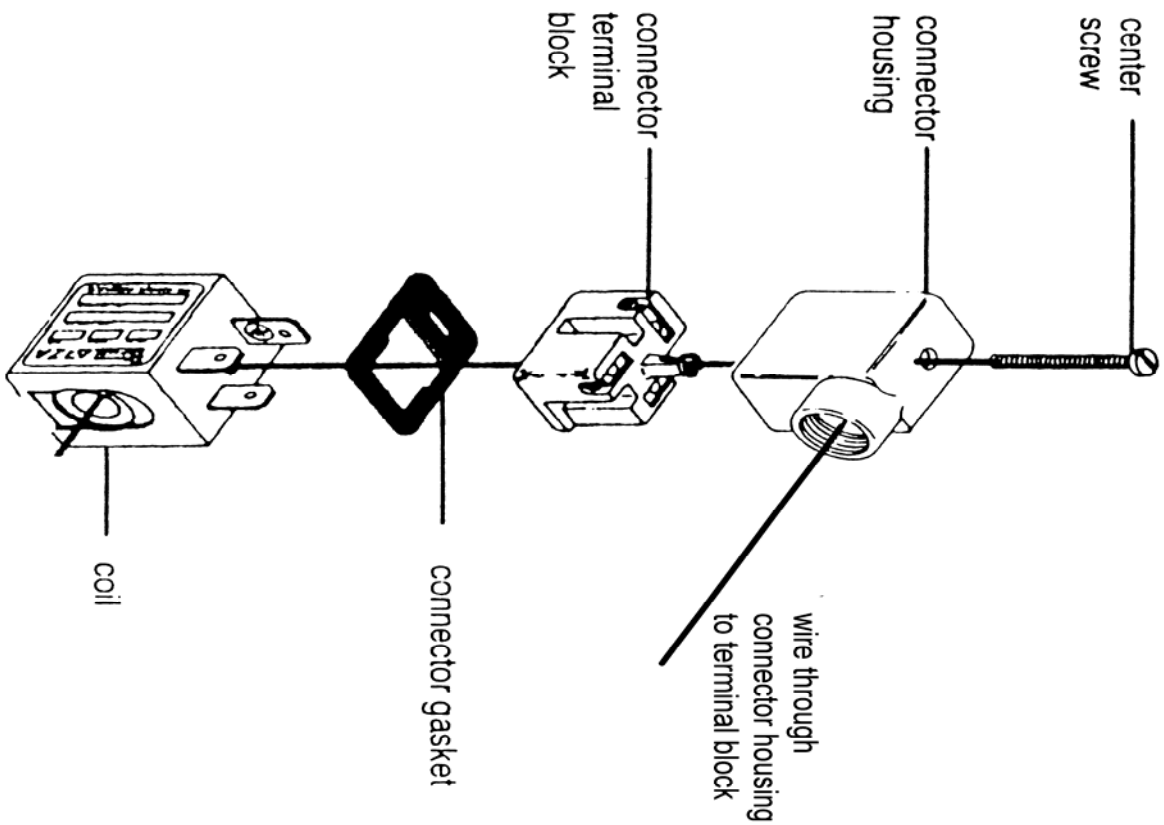
Causes of Improper Operation

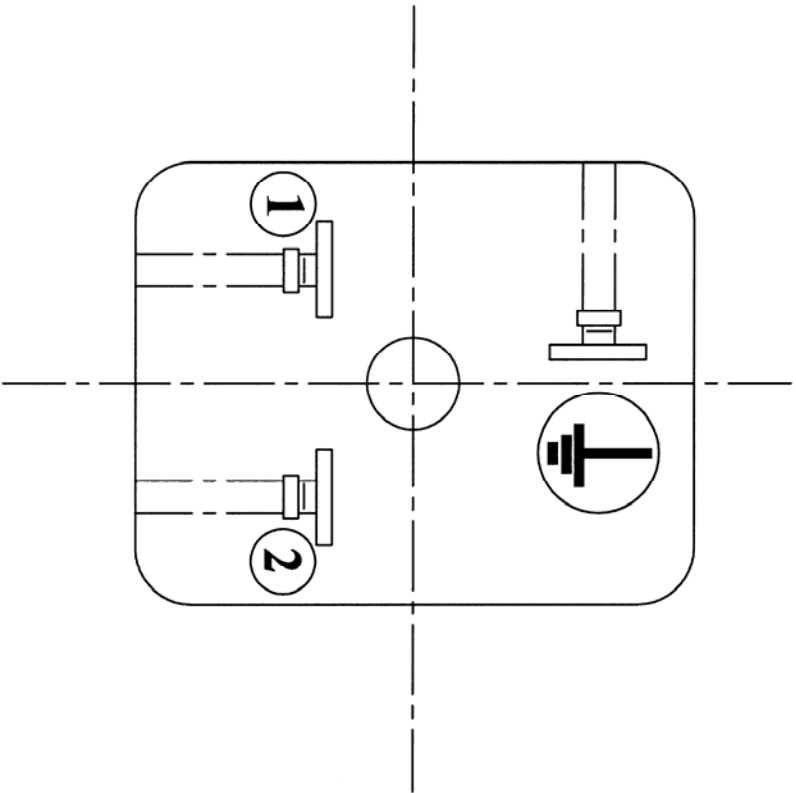
- Incorrect pressure: Check solenoid pressure, which must be within range shown in specifications above.
- Faulty control Circuit: Check the solenoid by energizing the coil. A metallic click signifies that the solenoid is operating. Check for loose or blown fuses, open circuits, grounded coil, broken lead wires or splice connections.
- Burned-out coil: Check for open-circuited coil. Replace as necessary. Check supply voltage to be same as on coil label.
- Low voltage: Check voltage across the coil terminals. Voltage must be at least 85% of specified rating.

Grommet connector



Conduit Connector





Connector Specs:
 ISD 4400
 Max. Current: 16A
 Max. Voltage: 220V
 Nominal Current: 10A
 Protection Class: IP65
 Insulation Class: VDE 0110
 Contact Resistance: 4mΩms
 Temp. Range: -40 to 125 degrees C
 Power is applied to contacts 1 and 2.

TITLE		Wiring diagram for SDL VNC1	
SCALE	NTS	DATE	7/02
DR. BY	LC		
CHKD BY			
APP. BY			
REFERENCE		CHEMLINE PLASTICS	
		DWG. NO	SDL VNC1
		REV.	