

INSTALLATION / OPERATING / MAINTENANCE INSTRUCTIONS

Uflow[®]
Automation
INDIA

DC CARTRIDGE COMPACT TYPE SOLENOID, 3/2,5/2,5/3 SINGLE DOUBLE SOLENOID AND EXTERNAL PILOT VALVE

Automation
Simplified...



Solenoid Valve

Angle Seat Valve

Rotary Coupling

Pneumatic Directional Control Valve

Actuator

Cylinder

One Touch Fitting

Ball Valve

Butterfly Valve



Country of Origin - INDIA

SPECIFICATION

Model Information

Type:	Solenoid Operated, Lever Operated, Pilot Air Operated, Push Pull (3X2-NC / NO, 5X2, 5X3)
Design:	Spool With Cartridge Type
Media:	Compressed Air (Filtered & Lubricated)
Working Pressure Range:	2 - 10 Bar for Solenoid Valve 0 - 10 Bar for Manual Valve & Air Pilot Valve
Ambient / Media Temperature:	5°C - 60°C
Materials of Construction:	Aluminium, Nitrile, Brass, Polymer

Coil Information

Coil Width :	26 mm
Coil Bore :	10 mm
Voltage (V) ± 10% :	AC (50Hz, 60Hz) - 24V, 110V, 230V DC 12V, 24V, 36V, 48V, 110V
Power Consumption :	AC-6W, DC-6W
Duty Cycle :	Continuous
Class of Insulation :	Class H
Type of Coil Protection :	IP65
Coil Housing :	Epoxy Square Coil

@ Inlet pressure 6 bar, and pressure drop 1 bar
* Working pressure 2-10 bar, Pilot pressure 2-4 bar

FEATURES

- Cartridge Type Design For Long Life
- Compact Design
- Standard NAMUR Mounting
- 1 Million Cycle Tested
- Low Power Consumption
- Manual Override
- Lubrication Not Essential
- Wide Range Of Coil Voltage

IMPORTANT

To prevent malfunctioning of the valve while operating the manual override (or) while operating the solenoid coil, ensure to have a minimum air supply of 1200 lpm to the valve through a tube of minimum Ø8 outer diameter (with minimum Ø5.5 internal diameter)

INSTALLATION INSTRUCTIONS

- 1) Install in clean / acid free atmosphere.
- 2) Before installation of the valve check whether the unit is as per the specifications.
- 3) Check for proper fittings to be used on to the valve. Use only (R) taper thread nipples with Teflon tape.
- 4) Fig.1 shows the holes for mounting with manifold.
- 5) Fig.2 shows the holes for mounting with any other surface.

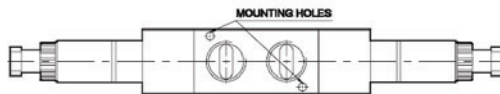
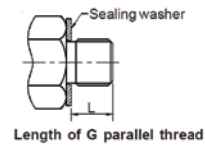


Fig 1

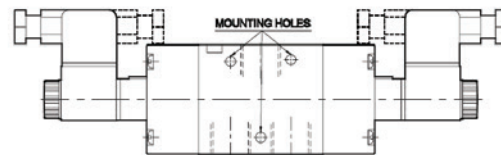


Fig 2

CHECKING THE VALVE PROPERTIES

Before starting the installation, it is essential to verify that the solenoid valve is suitable and safe for the desired application. For this, carefully read the user manual and safety instructions associated with the brand and type of the valve. Check the valve properties on the type label and verify if the specifications match the application's requirements. Figure 1 shows an example of type labels on the coil (Figure 1) and valve (Figure 2)

Coil



- A : Coil Code
- B : Voltage And Frequency
- C : CE- Mark
- D : Ingress Protection Grade. This Standard Defines The Sealing Effectiveness Levels Against Intrusion From Foreign Bodies Like Dirt, Tools, And Liquids.

Valve



- E : Valve code
- F : Position (Normally Open Or Normally Closed)
- G : Pipe Thread
- H : Seal Material
- I : Orifice Diameter
- J : Operating Pressure (Min-Max) For AC/DC Current

Always check to ensure that the operating voltage and frequency of the coil match the supply given; otherwise, the coil may burn out.

INSTALLING THE CONNECTOR

The connector is used for connecting the solenoid valve to the power supply. For example, the Uflow cable plug is designed according to DIN EN 175301-803 Form A. These connectors are designed to meet various over voltage protection requirements and function within certain voltage limits. Form A refers to the distance between the pins, as seen in Figure 6. The majority of solenoid valves are compatible with this standard. Before ordering a connector, check if the valve connection has the same form size.



Figure 5: Din Connector with LED

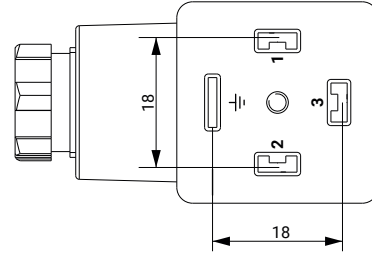


Figure 6: DIN EN 175301-803 Form A standard sizing

- 1) Note the colors on the cable leads. Mostly yellow or green shaded cable is the earth (Labeled 3 in Figure 7A), and the other leads can be connected to the phase and neutral supply (Labeled 1 and 2 in Figure 7A). Check the valve manual for the exact color coding for the cables.
- 2) Use a round cable. Connect terminals (1) and (2) to the power supply. The polarity does not matter (Figure 7 labeled A) for a DC coil. However, it is important to consider the polarity of these wires when connecting to external components like a timer or an LED connector.
- 3) Always connect the ground. Never use the piping as earthing.
- 4) Connect the connector to the coil (Figure 7 labeled B). Make sure that no moisture can come between the coil and the connector. Use a torque of 0.5Nm for the mounting screw.
- 5) Position the cable in a way that condensation drops can not slide along the cable into the connector (Figure 7 labeled C).

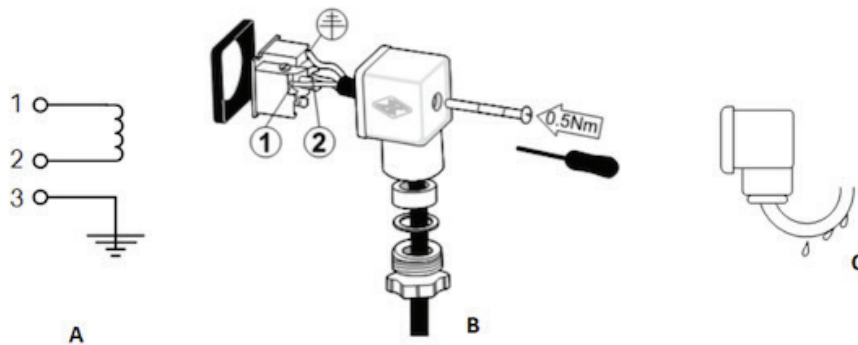


Figure 7: Connecting wires (A), attaching the connector to the coil (B), preventing condensation drops on the cable (C) of a solenoid valve

COMMISSIONING

Turn the power supply on only when the valve is correctly installed and can be started safely. In case the solenoid valve does not function properly after installation, check for the following causes:

- ☑ Blocked valve: The valve may be blocked because of dirt. Small dirt particles can block the small channels and openings in the valve. Although the pipes seem clean during installation, they may contain dirt like rust particles, sand, cutting chips, etc. If this happens, open the valve carefully and clean the parts. Always follow the instructions in the user manual. Ensure that the valve is properly reassembled.
- ☑ Wrong flow direction: The valve may be connected in the wrong flow direction. Check the flow direction indicated on the valve body with an arrow or reverse the valve if necessary.
- ☑ Don't use or energize solenoid coil without valve, otherwise coil burn out.

CAUSES OF IMPROPER VALVE OPERATION

- ✔ Low voltage: Check the voltage across the coil terminals using a multimeter. The recorded voltage must be at least 85% of that printed on the nameplate.
- ✔ Incorrect pressure: Check the valve pressure using a pressure gauge or pressure meter. The pressure to the valve must be within the range specified on the nameplate.
- ✔ Faulty control circuits: Energize the solenoid and check the electrical system. A metallic click sound signifies that the solenoid is working. The absence of the click sound indicates a problem with the power supply. In this case, check for a blown or loose fuse, a grounded or open-circuited coil, or broken lead wires.
- ✔ Burned-out coil: Check for an open-circuited solenoid coil. Replace the coil if necessary.

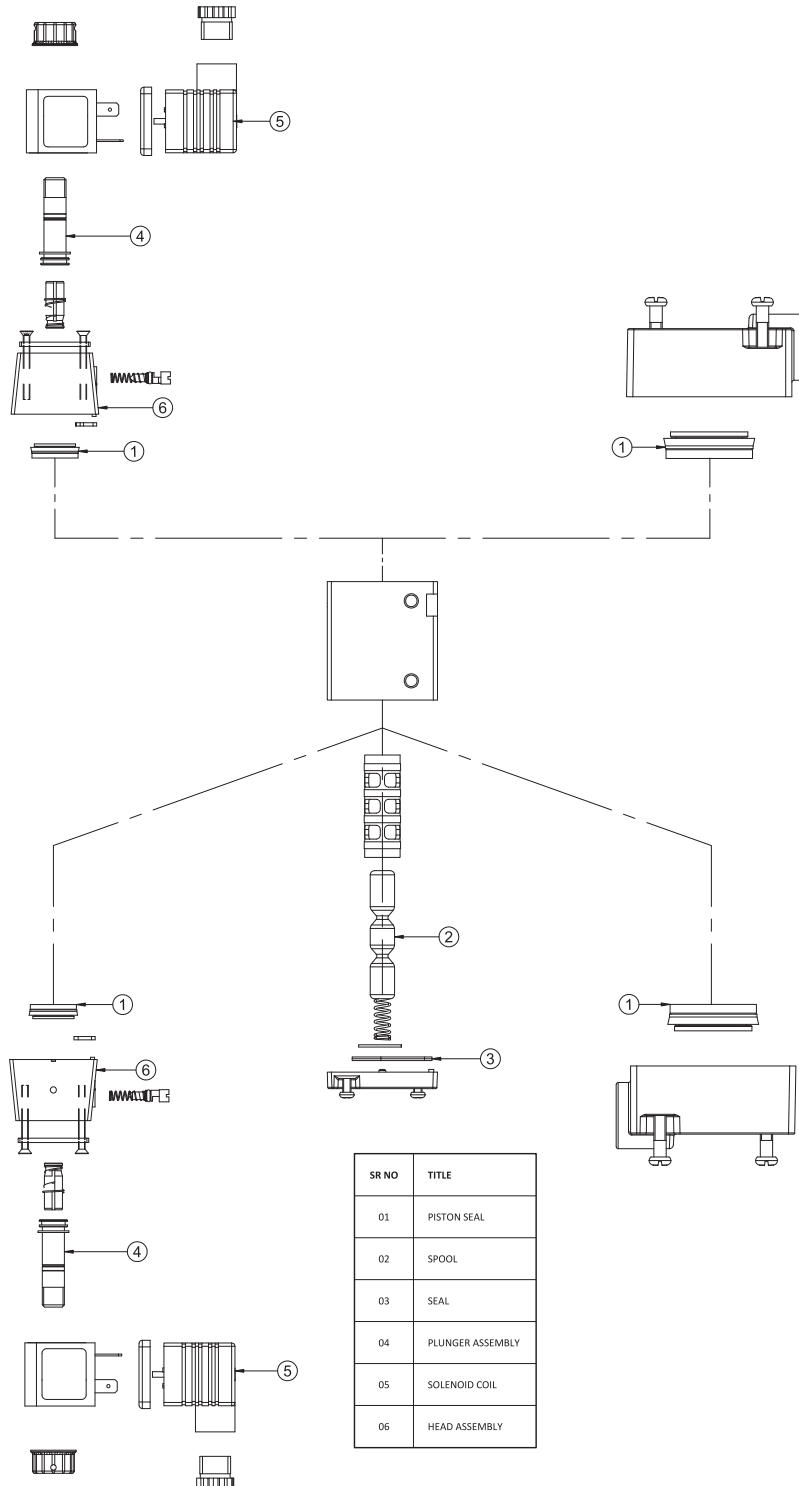


Diagram No. 1

DISMANTLING AND ASSEMBLING

- 1) Dismantle the pilot end cover from the housing.
- 2) Dismantle the spring return end cover from the housing in case of 3 ports 2 position Valves.
- 3) Remove the spool sub - assembly from the housing using small plastic or wood rod which does not damage the housing ID.
- 4) Check 'O' Ring, Seal for any damages or scratches.
- 5) Replace the required necessary spares.
- 6) Clean the elements thoroughly.
- 7) Apply general purpose grease on the spool sub - assembly and bore of the housing.
- 8) Reassemble the valve as per the fig.
- 9) Check the performance of the valve by operating the same.

VALVE TROUBLE SHOOTING FOR VALVE

TROUBLE	CAUSE	REMEDY
1. Leak observed at exhaust ports.	<p>May be due to non-lubrication and spool gets strucked.</p> <p>May be due to dust formation in the valve assembly.</p> <p>Defective seal.</p>	<p>Clean the Spool assembly, Housing and operate with proper lubrication. (Diagram No. 1 - SR.NO.: 02)</p> <p>Clean the valve and lubricate, ensure the air is filtered.</p> <p>Replace the Spool seal kit assembly. (Diagram No. 1 - SR.NO.: 02)</p>
2. Leak observed between housing and solenoid end cover.	<p>Defective Nutring (Alu. Piston seal)</p> <p>Defective End cover seal.</p>	<p>Replace the Piston assembly. (Diagram No. 1 - SR.NO.: 01)</p> <p>Replace the End cover seal. (Diagram No. 1 - SR.NO.: 06)</p>
3. Leak observed between housing and end cover	Defective End cover seal	Replace the End cover seal. (Diagram No. 1 - SR.NO.: 03)
4. MOR (manually override Pin) gets damaged.	Improper usage of the manually override Pin (MOR knob).	Refer detail X (Replace with new end cover assembly) (Diagram No. 1 - SR.NO.: 06)

MAINTENANCE INSTRUCTIONS

- 1) Before dismantling the valve, cut the air source to the valve and exhaust the air by Operating the valve several times.
- 2) Remove the valve from the machine and dismantle the valve, thoroughly clean and Reassembly.
- 3) The valve can be tested by connecting the valve to the single acting cylinder and operating it.
- 4) Note the problems / troubles and ascertain the probable causes and its remedies from the Table.

SOLENOID VALVE COIL FAILURE SYMPTOMS

A solenoid valve types coil may exhibit one or more failure symptoms, indicating it's time to replace it.

- 1) **Failure to open or close:** If the valve fails to open or close, it could be due to a faulty solenoid coil.
- 2) **Overheating:** If the coil becomes too hot to touch, it's a clear sign that it's overheating and may need to be replaced.
- 3) **Irregular operation:** The coil may be at fault if the solenoid valve operates irregularly or inconsistently.
- 4) **Visible damage or burn marks:** If you can see physical damage or burn marks on the coil, it likely needs to be replaced.
- 5) **Electrical testing:** Using a multimeter to test the coil's rated resistance can help determine if it functions correctly. If the measured value is significantly different, the coil may need to be replaced. For example, if a coil rated at 50 ohms reads 75 ohms, it may be damaged.

PERFORM THE FOLLOWING STEPS TO REPLACE A SOLENOID COIL

- 1) Disconnect the supply wires and grounding from the coil.
- 2) Remove the training clip and slip the coil out of the core tube assembly.
- 3) Install the new coil and replace the retaining clip.
- 4) Make necessary electrical connections to the coil.

DC SOLENOID VALVE MODEL IDENTIFICATION CHART

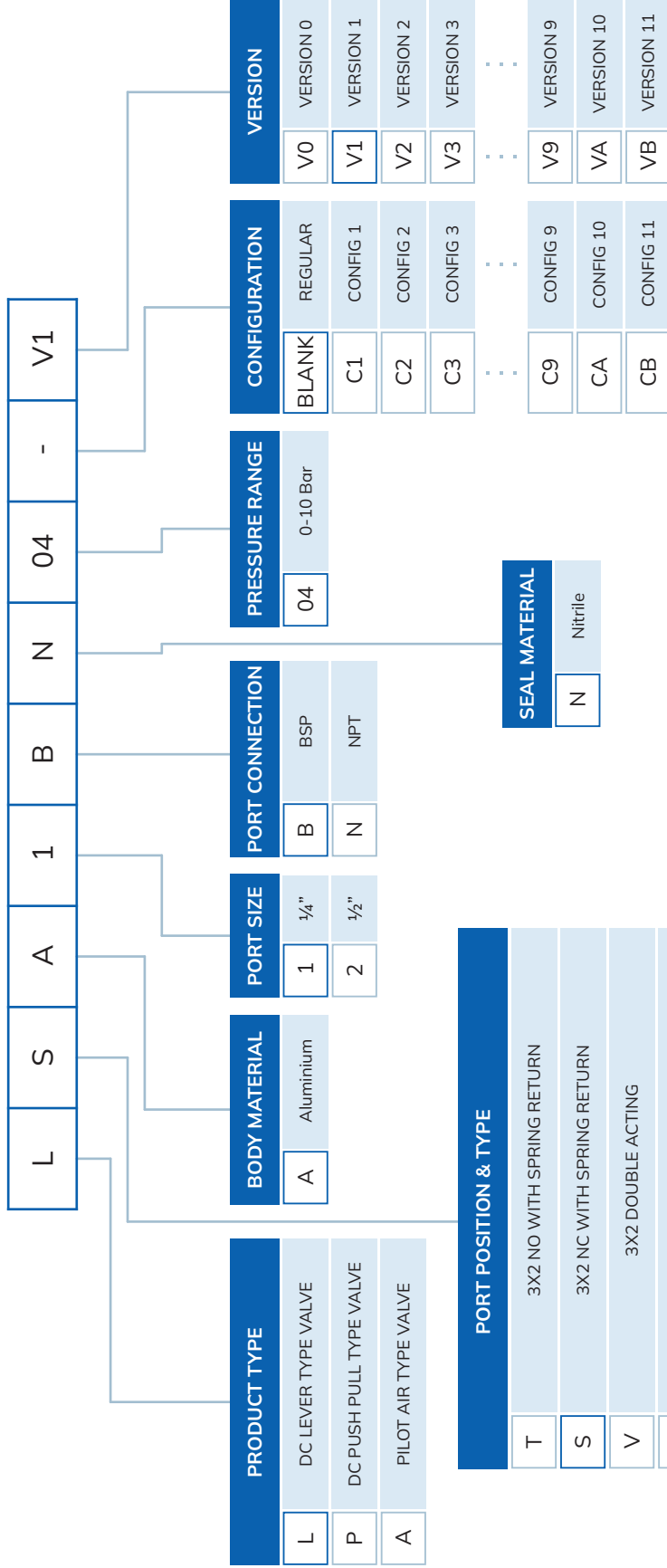


SBA1BN23CT060V1

1/4" 5X3 CENTER BLOCKED DC SPOOL TYPE VALVE ALUMINIUM-BSP-NITRILE-2 TO 10 Bar-10MM AC-PUSH & TURN MOR-6MM ORIFICE-VERSION 1

Note: The above chart is for identification purposes only, and it may not be possible to make all combinations for the above chart.

DC MANUAL MODEL IDENTIFICATION CHART



LSA1BN04V1
 1/4" 3X2 NC WITH SPRING RETURN DC LEVER TYPE VALVE ALUMINIUM-BSP-NITRILE-
 0 TO 10 Bar-VERSION 1

Note: The above chart is for identification purposes only, and it may not be possible to make all combinations for the above chart.