CONVALVE

SPECIALIST IN VALVE AUTOMATION

SOLENOID VALVE
USER MANUAL

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INTRODUCTION

Thank you for purchasing Convalve products. Each product has been thoroughly inspected after its production to offer you the highest quality and reliable performance. Please read the product manual carefully prior to installing and commissioning the product.

- Installation, commissioning, and maintenance of the product may only be performed by trained specialist personnel who have been authorized by the plant operator accordingly.
- The manual should be provided to the end-user.
- The manual can be altered or revised without any prior notice. Any changes in product's specification, design, and/or any components may not be printed immediately but until the following revision of the manual.
- The manual should not be duplicated or reproduced for any purpose without prior approval from Convalve.
- In case of any other problems that are not stated in this manual, please make immediate contact with Convalve for assistance.

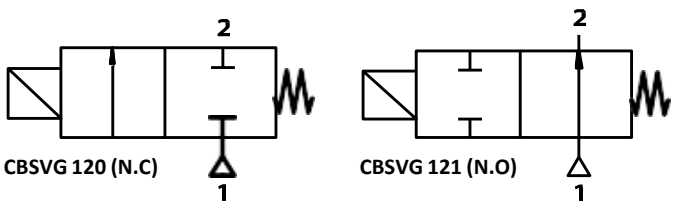
TRANSPORTATION AND STORAGE

- Convalve recommends storing Solenoid Valve in a clean and dry environment. For optimal storage conditions, it is recommended to store the Solenoid Valve indoors, safeguarding them against adverse weather conditions and other potentially harmful elements. At Convalve, we prioritize the longevity and performance of our products, and these storage guidelines are meant to preserve the Solenoid Valve's functionality and reliability throughout their lifecycle.
- Handling the Solenoid Valve with care is of utmost importance to prevent any scratches, damage, or harm to the environment during transportation. Adequate protection should be provided to ensure the solenoid valve remains intact throughout the transportation process.

PRODUCT DESCRIPTION

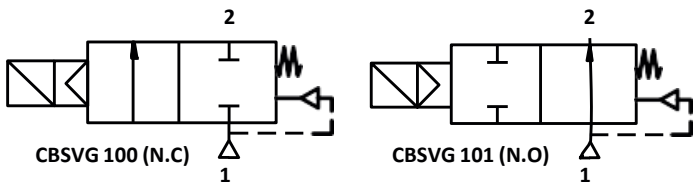
Direct Operated Solenoid Valve :

- Fluids: Valves are suitable for water, low viscosity oils, etc... non-aggressive liquids and Air, Inert Gas, etc... gaseous but is not suitable for hazardous fluids
- Switching Function: Normally Closed (N.C, Closed when de-energized) (CBSVG 100 Series) and Normally Open (N.O, Open when de-energized) (CBSVG 101 Series)
- Principle of Operation: Direct Operated
- Way Number: 2/2 (Ports / Positions)
- Connection and Port Sizes: G1/8" and G1/4"
- Connection Type: Thread (Female), G (BSPP / ISO 228-1)
- Pressure Range: 0 -16 Bar (CBSVG 100 Series) , 0-12 Bar (CBSVG 101 Series)
- Fluid Temperature: -10°C to max. 80°C , Ambient Temperature: -20°C to max. 70°C
- Opening Time: 25 ms, Closing Time: 25 ms
- Max Viscosity: 38 cSt or mm2/s
- Maximum Allowable Pressure or Design Pressure: 24 bar (CBSVG 100 Series), 18 Bar (CBSVG 101 Series)



Pilot Operated Solenoid Valve :

- Fluids: Valves are suitable for water, low viscosity oils, etc... non-aggressive liquids and Air, Inert Gas, etc... gaseous but are not suitable for hazardous fluids
- Switching Function: Normally Closed (N.C, Closed when de-energized) (CBSVG 100 Series) and Normally Open (N.O, Open when de-energized) (CBSVG 101 Series)
- Principle of Operation: Pilot Operated
- Way Number: 2/2 (Ports / Positions)
- Connection and Port Sizes: G1/8" up to G2"
- Connection Type: Thread (Female), G (BSPP / ISO 228-1)
- Pressure Range: ·0,35 -16 Bar (1/8" up to 1" CBSVG 100 Series) , 0,5 -12 Bar (11/4" up to 2" CBSVG 100 Series) , 0,35 -12 Bar (1/8" up to 1" CBSVG 101 Series) , 0,5 -10 Bar (11/4" up to 2" CBSVG 101 Series)
- Fluid Temperature: -10°C to max. 80°C , Ambient Temperature: -20°C to max. 70°C
- Opening Time: 200ms up to 1500ms, Closing Time: 500ms up to 2000ms
- Max Viscosity: 38 cSt or mm2/s



INSTALLATION AND MAINTENANCE

1. SAFETY INSTRUCTIONS BEFORE STARTING

- The product should be installed in a dry environment. If the environment is moist, make sure that the coil, actuator or connector are not exposed to moisture. Install the solenoid valve in a way that prevents electric shock, burning or other injuries. Make sure that the solenoid valve has enough ventilation to dissipate heat. Make sure that the solenoid valve does not touch or come close to flammable materials. Make sure that the product is protected from frost. Frost can damage the product and/or block the moving parts, causing the product to malfunction.
- The system must be depressurized, electrically disconnected and cooled down before any operations.
- Turn off the power supply before working on the solenoid valve to avoid electric shock and activation of the solenoid valve.
- The product is safe only when it is properly installed and operated by qualified persons. Please read the safety instructions and technical documentation carefully before installation, use or maintenance.
- Always make sure to start the system safely after installation or maintenance.
- Water hammer is a common problem in pipes with high flow rate and pressure and small diameters. There are several solutions to this problem:
- Use a pressure reducing valve before the solenoid valve to lower the pressure.
- Increase the pipe diameter if possible.
- Use a flexible hose or buffer before the solenoid valve to reduce the water hammer effect.

2. INSTALLATION

1. Clean Fluids and Gases :

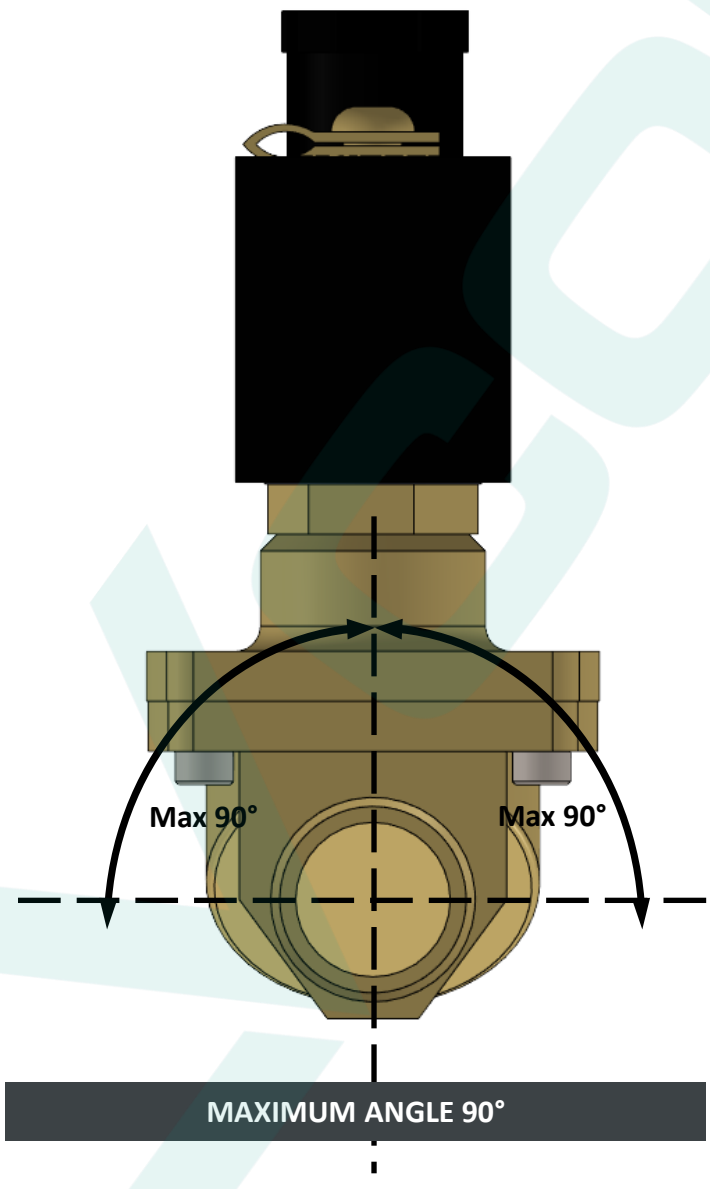
This solenoid valve is designed to be compatible with clean liquids or gases. Prior to installation, it is crucial to inspect the pipes and valve for any contaminants. We recommend installing a filter (500 µm) in front of the solenoid valve to ensure optimal performance.

2. Valve Installation :

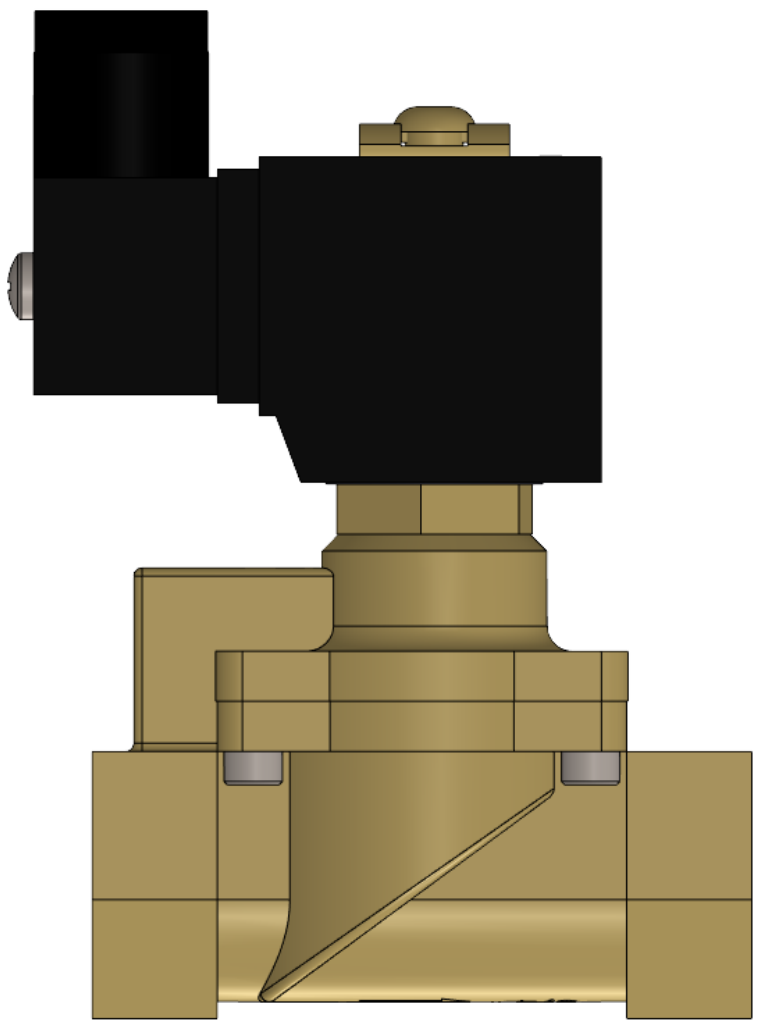
When installing the valve, pay close attention to the direction of the medium's flow. Solenoid valves with an arrow marked on the body should be connected in the indicated direction. Both sides of the valve should be securely fastened using a wrench to tighten the valve and pipe, thus avoiding unnecessary stress in the system. The solenoid valve should be fixed using the provided connection points. Apply force only to the designated areas on the body, such as the hexagon, and never exert pressure on the coil or armature. It is important to minimize pipe vibration. Utilize an appropriate sealant for threaded connections of the solenoid valve, taking care to prevent any sealant material from entering the valve, as this can lead to valve malfunction.

3. Orientation :

For optimal performance and to reduce the risk of debris accumulation, it is recommended to install the solenoid valve in a vertical position with the coil facing upwards. If mounting the solenoid valve at an angle, it is advisable to deviate a maximum of 90° from the vertical position.



MAXIMUM ANGLE 90°

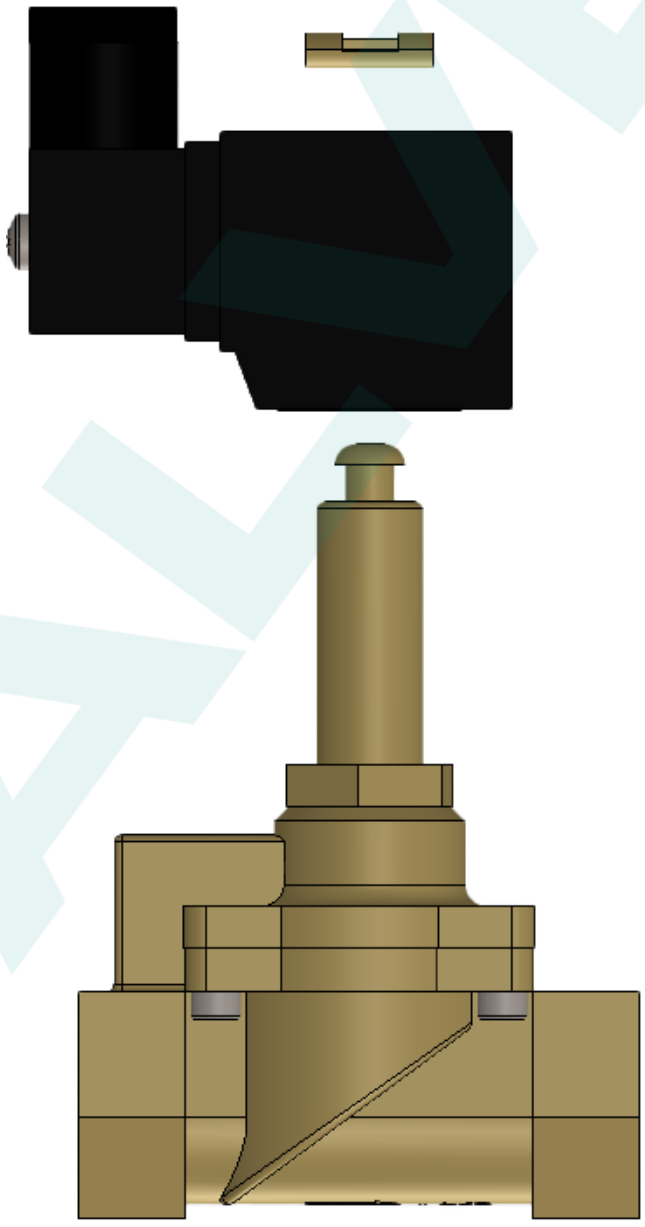


VERIFY THE DIRECTION OF FLUID FLOW BY CONSULTING THE DIRECTIONAL MARKINGS LOCATED ON THE LOWER SECTION OF THE VALVE BODY.

INSTALLATION AND MAINTENANCE

4. Installation Of The Coil :

- Ensure that the coil is appropriately marked with the corresponding valve characteristics. Using improper tools can lead to device damage.
- A rise in coil temperature during operation is standard. However, excessive heating can result in smoke and a burning odor. If this occurs, promptly disconnect the power supply.
- If necessary, the coils can be repositioned by loosening the coil clip. When the correct alignment has been achieved, retighten the clip.



5. Installation Of The Cable Plug :

- Always ensure that the ground (labeled as ③) is connected when dealing with voltages exceeding 50V; this connection should be made through a residual current device. It's crucial to avoid utilizing liquid or gas piping for grounding electrical devices.

- To power the equipment, establish a connection between the power supply and the terminals marked as ① and ②. The orientation of the polarity is not a factor.

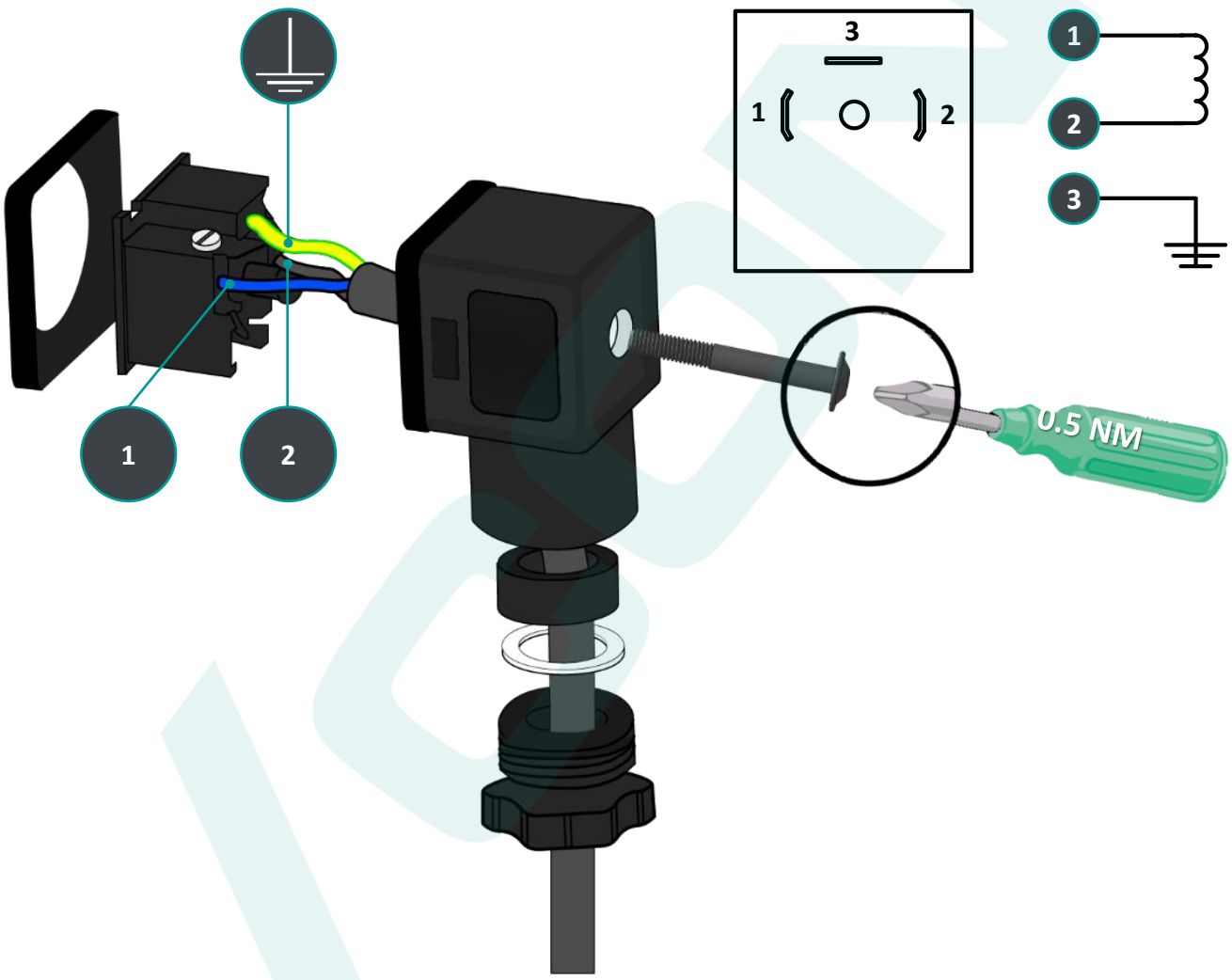
- Prior to attaching the coil, double-check the voltage and frequency to confirm compatibility.

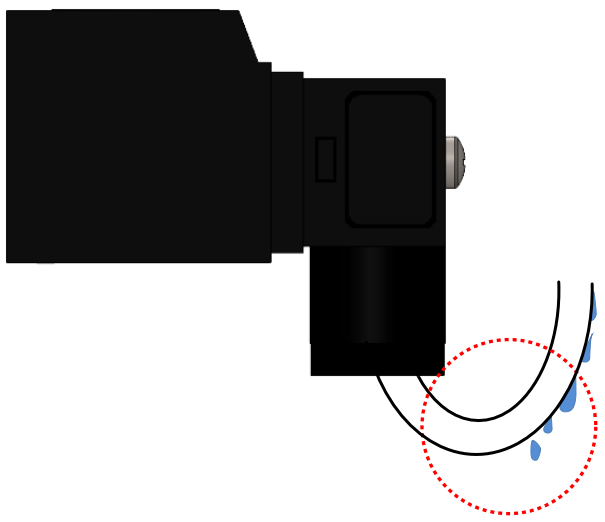
- During the installation of the connector, take precautions to prevent any moisture from entering the space between the coil and the connector. Fasten the connector screws using a torque of 0.5Nm to secure them properly.

6. Connecting The Power Supply :

- It is imperative to never apply power to the coil unless it is securely attached to the solenoid valve. Applying power in this state could result in the coil burning out.

- Proceed with power connection solely when you are confident that there is no pressure within the system and there are no potential hazardous circumstances that could arise.





SPARE PARTS / DISPOSAL

The components that experience wear within the solenoid valve are replaceable using a repair kit. This kit includes parts such as the plunger, plunger spring, membrane, membrane spring, and O-ring.

Disposal of the product must adhere to relevant legal regulations. Take into consideration the residual media that might still be present within the valve.