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> U.S. Solid Motorized Ball Valve - 1/2 Inch Stainless Steel, 9-24V AC/DC, 2-Wire Auto Return (Model: USS-MSV00071)

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Model: USS-MSV00071

1. INTRODUCTION

This manual provides essential information for the safe and efficient installation, operation, and maintenance of your U.S. Solid 1/2 Inch Stainless Steel Motorized Ball Valve. This valve features a full port design, 9-24V AC/DC power compatibility, and a 2-wire auto return setup, making it suitable for various fluid control applications. Please read this manual thoroughly before use and retain it for future reference.

2. SAFETY INFORMATION

- Ensure all power sources are disconnected before installation or maintenance to prevent electrical shock.
- Verify that the voltage and current of your power supply match the valve's specifications (9-24V AC/DC).
- Install the valve in an environment where the ambient temperature is within the specified range (less than 40°C).
- Ensure the medium temperature flowing through the valve does not exceed 100°C.
- Do not exceed the maximum operating pressure of 1.0 MPa (10 Bars).
- Use appropriate sealing materials, such as PTFE tape, on threaded connections to prevent leaks.
- Avoid applying excessive force during installation that could damage the valve body or motor.

3. PRODUCT OVERVIEW

3.1 Features

- **Safe and Reliable:** Constructed from 304 stainless steel, offering durability and an estimated life expectancy of 80,000 to 100,000 cycles.
- **NPT Threading:** Features 1/2" 304SS NPT threads, ensuring compatibility with standard pipe systems.
- **Full Port Design:** The bore in the ball is a full 1/2", minimizing pressure loss through the valve.
- **Wide Voltage Range:** Operates effectively with 9-24V AC/DC power supply.
- **Fast Operation:** Opens or closes the valve in 3-5 seconds.
- **2-Wire Auto Return Setup:** Simple two-wire connection. The valve largely de-energizes after closing and returns to

fully open if power is removed.

- **Alternative to Solenoid Valves:** Automatically cuts off power once fully open or fully closed, reducing the likelihood of overheating.

3.2 Components

The U.S. Solid Motorized Ball Valve consists of a stainless steel ball valve body and an integrated electric actuator. The actuator houses the motor, gearing, and control circuitry.



Figure 1: U.S. Solid 1/2 Inch Motorized Ball Valve (Model USS-MSV00071)

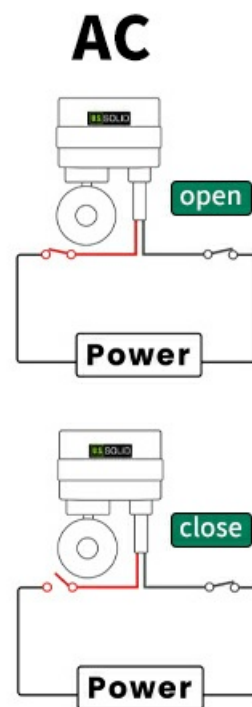
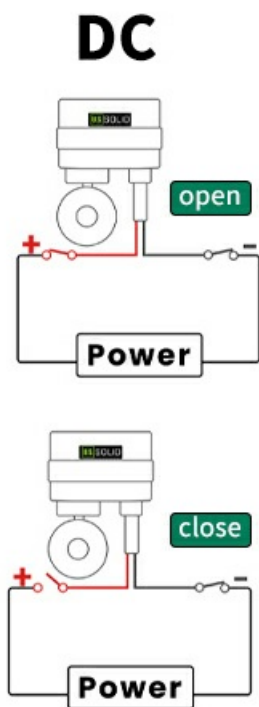
Model:USS-MSV00071

0.7 lb



Figure 2: Key dimensions of the motorized ball valve, showing its compact design with a length of 2.7 inches for the actuator and 2.5 inches for the valve body, and a total height of 3.6 inches.

2 Wire Auto Return



4. SETUP AND INSTALLATION

4.1 Mechanical Installation

1. Ensure the piping system is clean and free of debris before installing the valve.
2. Apply appropriate thread sealant (e.g., PTFE tape) to the male pipe threads.
3. Screw the valve firmly into the piping system. Do not overtighten.
4. Ensure the valve is installed in a position that allows for easy access for wiring and future maintenance.



Figure 4: Wiring diagram for the 2-wire auto return function, illustrating DC and AC connections for opening and closing the valve.

4.2 Electrical Wiring (2-Wire Auto Return)

This valve operates with a simple 2-wire auto return mechanism. When power is applied, the valve opens. When power is removed, the valve automatically closes.

- Connect the two wires from the valve to your 9-24V AC/DC power source. The valve will open when energized.
- When the power is disconnected, the valve will automatically return to its fully closed position.
- A limit switch minimizes power consumption once the valve is fully open or closed.

Your browser does not support the video tag.

Video 1: This video demonstrates how to wire the U.S. Solid 2-wire auto return motorized ball valve, showing connections for both DC and AC power sources and the valve's response to power application and removal.

5. OPERATING INSTRUCTIONS

The U.S. Solid Motorized Ball Valve is designed for straightforward operation based on power supply.

- **To Open the Valve:** Apply 9-24V AC/DC power to the valve's two wires. The motor will actuate, rotating the ball to the open position within 3-5 seconds. Once fully open, the internal limit switch will reduce power consumption.
- **To Close the Valve:** Disconnect the power supply from the valve. The auto-return mechanism will engage, rotating the ball to the closed position.



Figure 5: Illustration of normally open and normally closed valve states, showing how the valve position changes with power ON/OFF.

6. MAINTENANCE

Regular maintenance ensures the longevity and optimal performance of your motorized ball valve.

- **Periodic Inspection:** Regularly check for any signs of leakage, corrosion, or physical damage to the valve body and actuator.
- **Electrical Connections:** Ensure all electrical connections are secure and free from corrosion.
- **Cleaning:** Keep the exterior of the actuator clean and free from dust or debris. Do not use harsh chemicals that could damage the housing.
- **Operational Check:** Periodically cycle the valve (open and close) to ensure smooth operation.

7. TROUBLESHOOTING

If you encounter issues with your U.S. Solid Motorized Ball Valve, consider the following common checks:

- **Valve Not Opening/Closing:**
 - Check power supply: Ensure the correct voltage (9-24V AC/DC) is being supplied and that connections are secure.

- Inspect wiring: Verify that the wires are correctly connected according to the 2-wire auto return diagram.
- Check for obstructions: Ensure there are no physical obstructions preventing the ball from rotating.

- **Leakage:**

- Check threaded connections: Ensure NPT threads are properly sealed with PTFE tape and tightened sufficiently.
- Inspect valve body: Look for any cracks or damage to the stainless steel body.

- **Unusual Noise During Operation:**

- This could indicate internal wear or debris. If persistent, contact customer support.

For issues not resolved by these steps, please contact U.S. Solid customer support.

8. SPECIFICATIONS

Specification	Value
Model Number	USS-MSV00071
Material	304 Stainless Steel
Size	0.5 Inch
Voltage	9-24V AC/DC
Thread Type	NPT
Inlet Connection Size	0.5 Inches
Outlet Connection Size	0.5 Inches
Inlet Connection Type	Full Port
Outlet Connection Type	FNPT
Maximum Operating Pressure	10 Bars (1.0 MPa)
Open/Close Time	3-5 seconds
Ambient Temperature	<40°C
Medium Temperature	<100°C
IP Rating	IP65
Max Power	5W
Item Dimensions (L x W x H)	3.62 x 2.68 x 2.4 inches
Item Weight	0.73 Pounds

9. WARRANTY AND SUPPORT

U.S. Solid stands behind the quality of its products. This motorized ball valve comes with **1-year warranty or money-back promise**, ensuring customer satisfaction.

For technical support, warranty claims, or any inquiries, please visit the official U.S. Solid website or contact their customer service department. You can find more information at www.ussolid.com.

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