U.S. Solid USS-MSV00052

U.S. Solid Motorized Ball Valve Instruction Manual

Model: USS-MSV00052 | 1/4 Inch, 85-265V AC, 2-Wire Automatic Return, Stainless Steel

1. Introduction

This manual provides essential information for the safe and efficient installation, operation, and maintenance of your U.S. Solid Motorized Ball Valve, Model USS-MSV00052. This 1/4 inch, 85-265V AC, 2-wire automatic return valve is designed for various applications requiring reliable fluid control. Please read this manual thoroughly before use and retain it for future reference.

2. Safety Information

Warning: Improper installation or operation can result in property damage, injury, or death. Always follow local codes and regulations.

- Ensure power is disconnected before performing any installation, wiring, or maintenance.
- Installation should be performed by qualified personnel familiar with electrical and plumbing systems.
- Verify the valve's voltage rating (85-265V AC) matches your power supply.
- Do not exceed the maximum operating pressure of 1000 Pascal.
- Protect the valve from extreme temperatures and corrosive environments unless specifically rated for such conditions.

3. Product Overview

The U.S. Solid Motorized Ball Valve is a robust solution for automated fluid control. Key features include:

- **NPT Threading:** Features 1/4 inch Stainless Steel NPT threading, ensuring compatibility with standard pipe systems. This is a full port valve.
- **Wide Voltage Range:** Operates effectively on 85-265V AC power.
- **Fast Operation:** Opens or closes the valve within 3-5 seconds.
- **Energy Efficient:** Once fully open or closed, the valve consumes minimal to no power, reducing the likelihood of overheating.
- **2-Wire Automatic Return:** Simple wiring for automatic return to a closed position upon power loss.
- **Durability:** Designed for a long lifespan of 80,000-100,000 cycles.
- **IP65 Rated:** Provides protection against dust ingress and low-pressure water jets from any direction.

Image 3.1: Front view of the U.S. Solid 1/4 inch motorized ball valve, showing the blue actuator and stainless steel body.

Image 3.2: Side view of the motorized ball valve, illustrating the blue actuator, stainless steel valve body, and the two-wire connection.

4. Specifications

Specification	Value
Brand	U.S. Solid
Model Number	USS-MSV00052
Material	Stainless Steel
Size	1/4 Inch
Voltage	85-265V AC

Specification	Value
Connection Type	NPT Threading, Full Port
Wiring Configuration	2 Wire, Automatic Return
Operating Time (Open/Close)	3-5 seconds
Maximum Operating Pressure	1000 Pascal
Number of Ports	2
Ingress Protection (IP) Rating	IP65
Item Dimensions (L x W x H)	3.35 x 2.68 x 2.28 inches
Item Weight	9.2 ounces
UPC	888107088790

Image 4.1: Technical drawing showing the dimensions of the motorized ball valve in millimeters, including length, height, and thread size.

Image 4.2: Diagram illustrating the IP65 ingress protection rating for solids and liquids, and visual representations of normally closed, full port, normally open, and standard port valve configurations.

5. Installation

Before installation, ensure the power supply is off and the system is depressurized. This valve is designed for NPT threaded connections.

1. **Prepare Threads:** Apply appropriate thread sealant (e.g., PTFE tape) to the male pipe threads. Wrap the tape clockwise around the threads, ensuring full coverage.
2. **Connect Valve:** Carefully screw the valve onto the pipe ends. Tighten securely to prevent leaks, but do not overtighten.
3. **Positioning:** Ensure the valve actuator is positioned to allow for easy access for wiring and future maintenance.
4. **Inspect:** After installation, visually inspect all connections for proper alignment and tightness.

Image 5.1: Close-up view of the 1/4 inch NPT threading on the valve, highlighting the full port design.

Image 5.2: Visual guide demonstrating the application of Teflon tape to male pipe threads for a watertight seal, and the resulting threaded connection to the valve.

6. Wiring Diagram

This valve features a 2-wire automatic return configuration. This means the valve will open when power is applied and automatically return to its closed position when power is removed.

- **Connection:** Connect the two wires from the valve to your 85-265V AC power source, typically through a switch.
- **Operation:** When the circuit is closed (switch is ON), the valve will open and remain open. Once open, power consumption is nominal.
- **Automatic Return:** When the circuit is open (switch is OFF or power is lost), the valve will close. In this state, the valve is fully de-energized, consuming zero power.

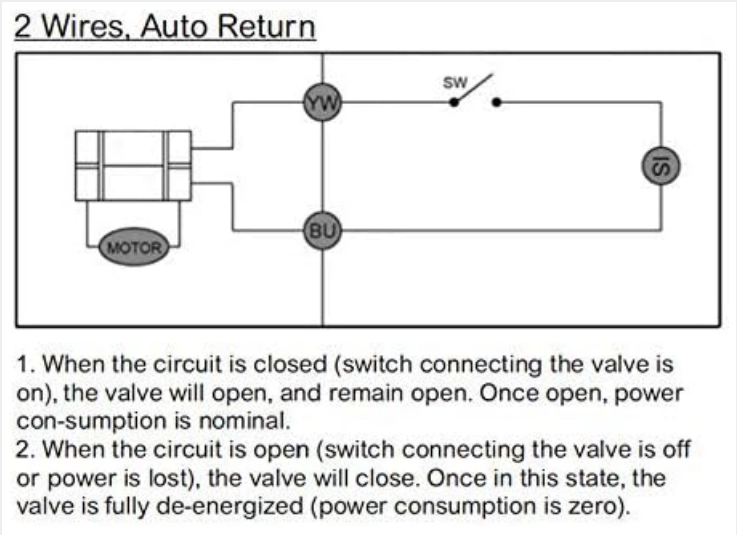

Image 6.1: Schematic diagram illustrating the 2-wire automatic return wiring for the motorized ball valve, showing how a switch controls the open and closed states.

Image 6.2: Detailed wiring diagrams for 2-wire auto return valves, applicable for both DC and AC power sources, showing the open and closed states.

7. Operation

The U.S. Solid Motorized Ball Valve operates based on the presence or absence of electrical power to its two-wire connection.

- **To Open the Valve:** Apply 85-265V AC power to the valve's two wires. The internal motor will rotate the ball to the open position within 3-5 seconds. Once fully open, the motor de-energizes, and the valve remains open with minimal power consumption.
- **To Close the Valve:** Remove the 85-265V AC power from the valve's two wires. The valve will

automatically return to its fully closed position within 3-5 seconds. Once fully closed, the valve is completely de-energized.

This automatic return feature makes it suitable for applications where a default closed state is desired, especially in case of power interruption.

8. Maintenance

The U.S. Solid Motorized Ball Valve is designed for long-term, reliable operation with minimal maintenance. However, periodic checks are recommended:

- **Visual Inspection:** Regularly inspect the valve and connections for any signs of leaks, corrosion, or physical damage.
- **Electrical Connections:** Ensure all electrical connections are secure and free from moisture or damage.
- **Actuator Function:** Periodically cycle the valve (open and close) to ensure the actuator operates smoothly and fully.
- **Cleaning:** Keep the exterior of the valve and actuator clean and free from debris.

For internal components, refer to qualified service personnel only.

9. Troubleshooting

If you encounter issues with your motorized ball valve, consider the following troubleshooting steps:

- **Valve Not Opening/Closing:**
  - Check if power is correctly supplied to the valve (for opening) or completely removed (for closing).
  - Verify the voltage matches the valve's rating (85-265V AC).
  - Inspect wiring for loose connections or damage.
- **Leaks at Connections:**
  - Ensure pipe threads were properly prepared with thread sealant (e.g., PTFE tape).
  - Check if connections are tightened sufficiently. Do not overtighten, as this can damage threads.
- **Unusual Noise During Operation:**
  - Ensure the valve is not obstructed internally or externally.
  - If the noise persists and affects performance, contact customer support.

If these steps do not resolve the issue, please contact U.S. Solid customer support.

10. Warranty and Support

U.S. Solid stands by the quality of its products. This motorized ball valve is backed by a**1-year warranty or money-back promise**, ensuring customer satisfaction. For technical assistance, warranty claims, or any product-related inquiries, please contact U.S. Solid customer support through the retailer where the product was purchased or visit the official U.S. Solid website.