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## U.S. Solid USS-MSV00077

# U.S. Solid Motorized Ball Valve USS-MSV00077 Instruction Manual

Model: USS-MSV00077 | 1/4 Inch Stainless Steel, 9-24V AC/DC, 2-Wire Auto Return, Normally Open

## 1. INTRODUCTION

This manual provides essential information for the safe and effective installation, operation, and maintenance of your U.S. Solid Motorized Ball Valve, Model USS-MSV00077. This 1/4-inch stainless steel valve features a full port design, operates on 9-24V AC/DC power, and includes a 2-wire auto return mechanism, functioning as a normally open valve.

## 2. SAFETY INFORMATION

Please read and understand all safety instructions before installing or operating the valve. Failure to follow these instructions may result in property damage, injury, or death.

- **Electrical Safety:** Ensure power is disconnected before performing any wiring or maintenance. All electrical connections should be made by a qualified professional and comply with local electrical codes.
- **Pressure Safety:** Verify that the system pressure does not exceed the maximum operating pressure specified for this valve. Depressurize the system before installation or removal.
- **Temperature:** Do not operate the valve outside its specified temperature range.
- **Chemical Compatibility:** Ensure the valve material (304 stainless steel) is compatible with the fluid being controlled to prevent corrosion or failure.
- **Installation:** Install the valve in a location that allows for proper ventilation and access for maintenance.

## 3. PRODUCT OVERVIEW AND FEATURES

The U.S. Solid Motorized Ball Valve is designed for reliable fluid control in various applications. Key features include:

- **Durable Construction:** Manufactured from 304 stainless steel for enhanced safety and reliability, offering an estimated life expectancy of 80,000 to 100,000 cycles.
- **Full Port Design:** Features a 1/4-inch full port bore, minimizing pressure loss through the valve.
- **NPT Threading:** Equipped with 1/4-inch quality brass NPT threads, manufactured to National Pipe Thread standards.
- **Wide Voltage Range:** Operates effectively on 9-24V AC/DC power.
- **Fast Operation:** Opens or closes the valve within 3-5 seconds.
- **Limit Switch:** Incorporates a limit switch to minimize power consumption once the valve is fully open or closed.

- **2-Wire Auto Return:** Simple two-wire connection. The valve largely de-energizes after closing and automatically returns to the fully open position if power is removed.
- **IP65 Enclosure Rating:** Provides protection against dust ingress and low-pressure water jets from any direction.



Image 3.1: The U.S. Solid 1/4-inch motorized ball valve with its blue actuator and wiring.



Image 3.2: Dimensional drawing of the USS-MSV00077 motorized ball valve, showing its compact size.

## 4. SPECIFICATIONS

Attribute	Value
Model Number	USS-MSV00077
Material	304 Stainless Steel
Size	0.25 Inch (1/4")
Item Dimensions (L x W x H)	3.35 x 2.68 x 2.28 inches
Item Weight	9.1 ounces
Exterior Finish	Stainless Steel
Inlet Connection Type	Full Port
Outlet Connection Type	NPT
Maximum Operating Pressure	1E+6 Pascal (approx. 145 PSI)
Number of Ports	2
Specification Met	IP65 Enclosure Rating
Voltage	9-24V AC/DC

Attribute	Value
Operation Time	3-5 seconds (open/close)
UPC	888107098362

## 5. SETUP AND INSTALLATION

Proper installation is crucial for the valve's performance and longevity.

### 5.1 Mechanical Installation

1. **Prepare Pipe Ends:** Ensure pipe ends are clean and free of debris.
2. **Apply Sealant:** For NPT threads, apply appropriate thread sealant (e.g., PTFE tape) to the male pipe threads to ensure a watertight seal.
3. **Thread Valve:** Carefully thread the valve onto the pipe. Tighten firmly but do not overtighten, which can damage threads or the valve body.
4. **Orientation:** The valve can be installed in any orientation, but ensure the actuator is accessible for wiring and inspection.

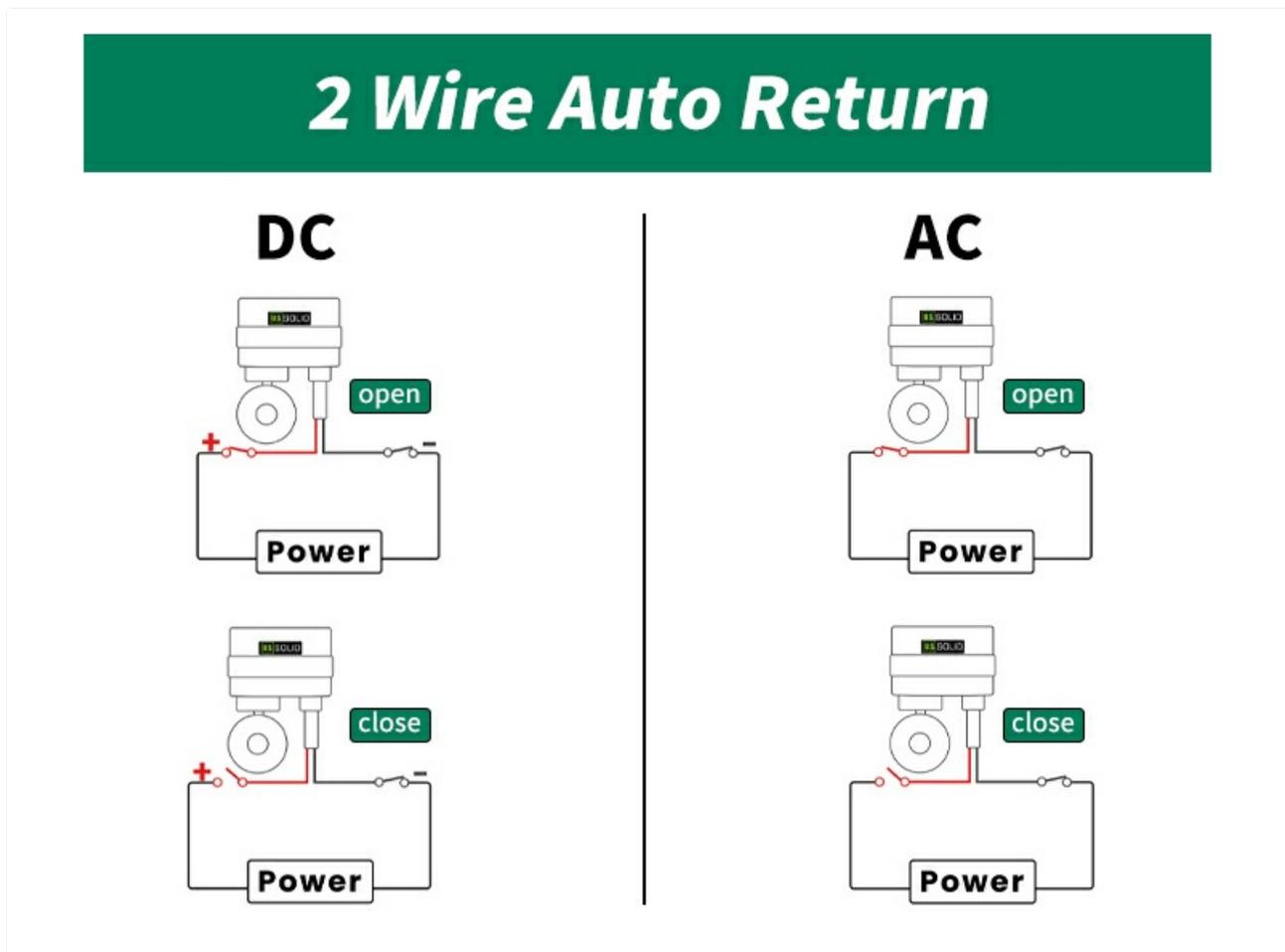


Image 5.1: Illustration of applying PTFE (Teflon) tape to male pipe threads before connecting to the valve for a secure, leak-free seal.

### 5.2 Electrical Wiring (2-Wire Auto Return)

This valve features a 2-wire auto return setup. It is a normally open valve, meaning it is open when no power is applied. Applying power will close the valve, and removing power will cause it to return to the open position.

- **Power Source:** Connect the valve to a 9-24V AC or DC power source.

- **Wiring:** Connect the two wires from the valve to your power source. The valve will operate regardless of polarity for DC connections.
- **Operation:** When power is applied, the valve will move to the closed position. When power is removed, the valve will automatically return to the open position.



Simply wrap the male pipe end in teflon tape to ensure a water tight seal. Screw in firmly and your valve is ready to go.



Threading National Pipe Thread Both Sides Female

Image 5.2: Wiring diagram illustrating the 2-wire auto return setup for both DC and AC power sources. The valve closes when power is applied and opens when power is removed.

## 6. OPERATING INSTRUCTIONS

The U.S. Solid Motorized Ball Valve is designed for straightforward operation based on its 2-wire auto return, normally open configuration.

- **Normally Open State:** When no electrical power is supplied to the valve, it remains in the fully open position, allowing fluid to flow through.
- **Closing the Valve:** To close the valve, apply 9-24V AC/DC power to the two wires. The internal motor will actuate the ball, moving it to the closed position within 3-5 seconds. Once fully closed, the internal limit switch will cut power to the motor, preventing overheating.
- **Opening the Valve (Auto Return):** To open the valve, simply remove the electrical power supply. The valve's auto return mechanism will automatically move the ball back to the fully open position.



Image 6.1: Visual representation of a normally open valve's state with and without power, and a comparison of full port versus standard port designs.

## 7. MAINTENANCE

The U.S. Solid Motorized Ball Valve is designed for minimal maintenance. However, periodic checks can help ensure optimal performance.

- **Visual Inspection:** Regularly inspect the valve for any signs of leaks, corrosion, or physical damage to the valve body or actuator housing.
- **Electrical Connections:** Ensure all electrical connections are secure and free from corrosion.
- **Actuator Function:** Periodically cycle the valve (open and close) to confirm smooth operation and proper response to power signals.
- **Cleaning:** Keep the exterior of the actuator clean and free of excessive dust or debris. The IP65 rating provides protection against dust and water jets, but harsh chemicals should be avoided.
- **No User-Serviceable Parts:** The actuator mechanism contains no user-serviceable parts. Do not attempt to disassemble the actuator, as this will void any warranty and may cause damage.

## 8. TROUBLESHOOTING

If you encounter issues with your motorized ball valve, refer to the following troubleshooting guide:

Problem	Possible Cause	Solution
Valve does not open/close	No power or incorrect voltage.	Verify power supply is connected and within the 9-24V AC/DC range. Check wiring for loose connections.
Valve does not open/close fully	Obstruction in the flow path or internal mechanism.	Ensure no debris is blocking the ball. If the issue persists, the valve may require replacement.
Valve leaks	Improperly sealed threads or damaged valve body/seals.	Check thread sealant application. If the leak is from the valve body or stem, the valve may be damaged and require replacement.
Actuator makes noise but valve doesn't move	Internal gear damage or motor issue.	This indicates an internal mechanical failure. The actuator is not user-serviceable; valve replacement is recommended.

Problem	Possible Cause	Solution
Valve overheats	Continuous power supply after reaching end position (limit switch failure).	Disconnect power immediately. This valve is designed to cut power via a limit switch. If overheating occurs, the limit switch may be faulty, and the valve should be replaced.

## 9. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the documentation provided at the time of purchase or contact U.S. Solid directly through their official website or customer service channels. Keep your purchase receipt as proof of purchase.

### U.S. Solid Contact Information:

Please visit the official U.S. Solid website for the most current support and contact details.

## Related Documents - USS-MSV00077

	<p><a href="#">U.S. Solid Motorized Ball Valve Installation and Maintenance Manual</a></p> <p>Comprehensive guide for U.S. Solid Motorized Ball Valves, covering installation, wiring schematics, DC/AC operation, manual override, FAQs, environmental protection, warranty, and detailed specifications for models USS-MSV00201-216.</p>
	<p><a href="#">U.S. Solid Electric Ball Valve (2-Ports) User Manual - USS-EBV Models</a></p> <p>Comprehensive user manual for U.S. Solid's Electric Ball Valve (2-Ports), USS-EBV models. Covers threading types, valve body materials, wiring diagrams, product specifications, manual control functions, product models, FAQs, environmental protection, and warranty information.</p>
	<p><a href="#">U.S. Solid Electric Ball Valve (Two-Way) - USS-EBV Models Instruction Manual</a></p> <p>Instruction manual for U.S. Solid USS-EBV series electric ball valves, covering product features, specifications, wiring diagrams, manual operation, and frequently asked questions.</p>
	<p><a href="#">U.S. Solid Motorized Ball Valves: Installation, Maintenance, and Specifications</a></p> <p>Comprehensive guide to the installation, maintenance, manual operation, and specifications of U.S. Solid Motorized Ball Valves, including wiring schematics and FAQs.</p>



**Instruction Manual**  
(Version 21.10)

U.S. Solid Smart Motorized Ball Valve



[U.S. Solid Smart Motorized Ball Valve Instruction Manual](#)

Comprehensive instruction manual for the U.S. Solid Smart Motorized Ball Valve, detailing its features, specifications, connection, and operation via the Smart Life app, including manual control, power failure protection, scheduling, and countdown functions.



Model No. 0117

**Ultrasonic Cleaner**  
Dual Frequency

USS-F100001/USS-F100031/USS-F100002  
USS-F100003/USS-F100033/USS-F100005



This manual should be made available to all users of ultrasonic cleaners. To ensure the safe use of the ultrasonic cleaner, please read this manual carefully. Failure to do so may result in personal injury, property damage, or equipment damage. The manufacturer is not responsible for any damage or injury caused by the use of the ultrasonic cleaner. For more information, please contact the manufacturer.

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For questions or concerns, email [sales@ussolid.com](mailto:sales@ussolid.com)

[U.S. Solid Ultrasonic Cleaner Dual Frequency - Model USS-FX30-FX35 User Manual](#)

Comprehensive user manual for the U.S. Solid Dual Frequency Ultrasonic Cleaner (models USS-FX30, USS-FX31, USS-FX32, USS-FX33, USS-FX34, USS-FX35). Learn about operating principles, safety instructions, applications, specifications, and operation.