



Modulating 3-Way Valve

Types MTW-9 and MTW-17

Installation and Servicing Instructions
SD-407/52015



The Sporlan Modulating 3-Way Valves are stepper-motor driven three-way valves for modulation of the two outlet ports and used in such applications as heat reclaim and dehumidification. As port A opens, port B will close and vice versa. Features include:

- High resolution actuators
- High linear force output
- Tight seating
- Field proven reliability
- Excellent corrosion resistance
- Minimal full stroke pressure drop

INSTALLATION

1. Sporlan recommends piping outlet A to the normal condenser and outlet B to the reclaim condenser.

Note: Valve is shipped at approximately half stroke, allowing flow through both outlet fittings.

2. Braze or solder the inlet and outlet connections using standard practices and materials. It is recommended to purge with inert gas, and to wrap the valve body and motor assembly with a wet rag to prevent damage from overheating during installation.

Note: Valve is not serviceable and should not be disassembled at any time.

Note: Valve internal temperature must not reach 240°F (115°C) during installation.

Note: Care must be taken to prevent damaging the motor cable from excessive heat, either directly from the torch, or indirectly from contact with a hot surface.

3. Pressurize the system and check for leaks.
4. The valve will only operate when connected to a properly designed and configured controller.

Wire the valve cable to the controller according to the controller specifications. The required valve drive sequence is shown here for reference.

CABLE LEAD COLOR

	Black	White	Red	Green		
↓ Open A / Close B	1	HI	HI	0	0	
	2	0	HI	HI	0	
	3	0	0	HI	HI	
	4	HI	0	0	HI	
	1	HI	HI	0	0	↑ Close A / Open B

5. Apply power to the valve controller. The valve is shipped at approximately half stroke, so the controller will overdrive the valve, closing port B (and opening port A) to establish the zero position. A light clicking may be heard during this time. Upon completion of the initialization, the valve should be ready to begin controlling.

Note: This same light clicking sound may be heard as the valve piston approaches either port (i.e. the controller position will read 0% or 100% open/closed).

TROUBLESHOOTING INSTRUCTIONS

1. If the valve fails to operate properly, disconnect the line voltage from the valve controller. Reapply power to the controller. The valve will reinitialize (closing Port B). Monitor valve control.
2. If the valve control issue is not resolved, disconnect the valve leads from the controller.
3. Check the resistance of each motor phase. On the MTW-9 and -17, resistance between either the black and white or red and green leads should be approximately 75 Ω at 72°F (22°C). Differences of more than 10% between phases may indicate a defective motor, and the complete valve should be replaced.
Note: The valve is not serviceable. If a failure occurs, the complete valve should be removed and replaced with a new valve.
4. Check to ensure that resistance between any lead and the valve body is greater than 1 MΩ. Lower resistance readings may indicate a short, and the complete valve should be replaced.

5. If you have access to a Sporlan SMA-12 test instrument, functionality of the valve can be determined before removal from the system by monitoring changes in system conditions as valve position is changed. If normal function can be verified by manually positioning the valve, proper controller functionality should be investigated.

Note: Care should be taken to assure that damage to the system does not occur during the manual positioning test due to an improperly positioned valve.

VALVE REPLACEMENT INSTRUCTIONS

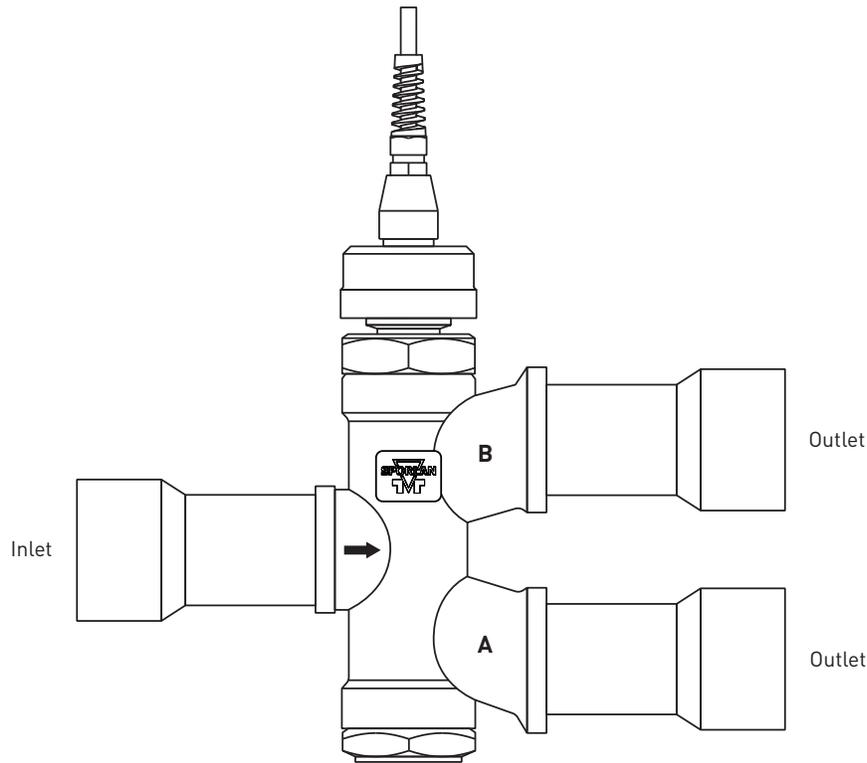
1. The valve must be replaced by unbrazing or cutting out the existing fittings. If cut out, a tubing or pipe cutter should be used to minimize copper contamination in the system.

2. Prior to removing the valve, make sure system refrigerant has been properly recovered and pressure has been reduced to a safe level (0 psig).
3. Install the replacement valve according to the preceding installation instructions. Ensure that the new valve is an exact replacement, or meets all requirements of the controller and system.

4. Connect the new MTW valve to the controller using the new cable or using waterproof butt splices to tie into the existing cable.

Note: Cable splices must be protected from moisture to ensure the quality of the signal from the controller to the valve.

5. Cycle power to the controller to overdrive and reinitialize the MTW valve closed.



Note: The valve is not serviceable. If a failure occurs, the complete valve should be removed and replaced with a new valve.

⚠ WARNING – USER RESPONSIBILITY

Failure or improper selection or improper use of the products described herein or related items can cause death, personal injury and property damage.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

