

Installation and Maintenance Manual

IM 1151-3

Group: **WSHP**

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Installing A Motorized Valve For Use With MicroTech® III and MT2300 Smart Source Unit Controllers

Introduction

The motorized valve kit is available as a factory-installed and wired option for some sizes, or may be ordered as a field-installed accessory for units with a MicroTech III or MT2300 Controller.

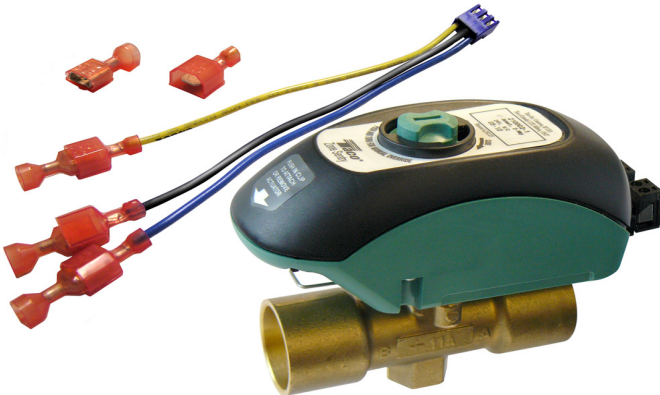
The motorized valve kits for MicroTech III unit controllers are supplied with a wire harness that connects to the unit controller terminal H-8 as detailed in Figure 8.

The motorized valve kits for MT2300 unit controllers are supplied with a wire harness that connects to the unit controller terminal H-6 as detailed in Figure 10.

Wired as shown in Figure 8 or Figure 10, the motorized valve will open on a call for compressor operation.

The motorized isolation valve actuator (ISO) includes both a 24V power connection and a 24V end switch connection.

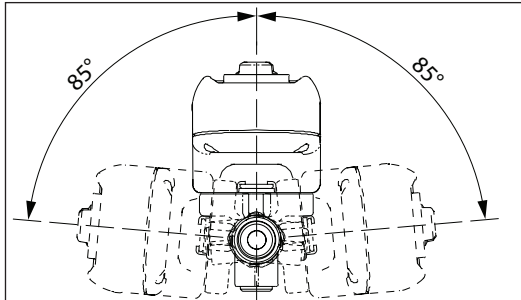
Figure 1: Two-way motorized valve kit with supplied wire harness for the MicroTech III Controller



Installation Considerations

The valve can be installed in any direction, in any orientation except for chilled water installations (see Figure 2).

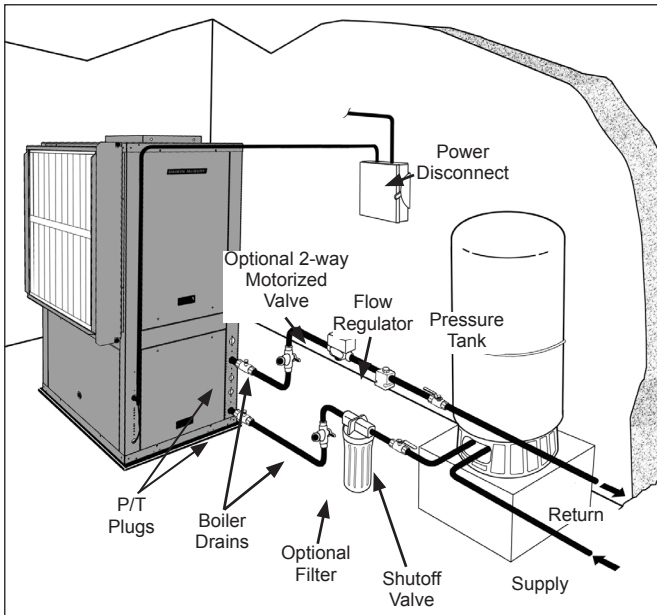
Figure 2: Permitted angle of installation on chilled water applications



A green LED light shows full functionality of the valve's operation and status. Under a no power situation the manual override button located on the top of the valve allows the ball to be rotated up to 90° and is also marked with a slot to indicate the position of the valve.

Note the placement of the motorized valve in Figure 3.

Figure 3: Typical open loop application

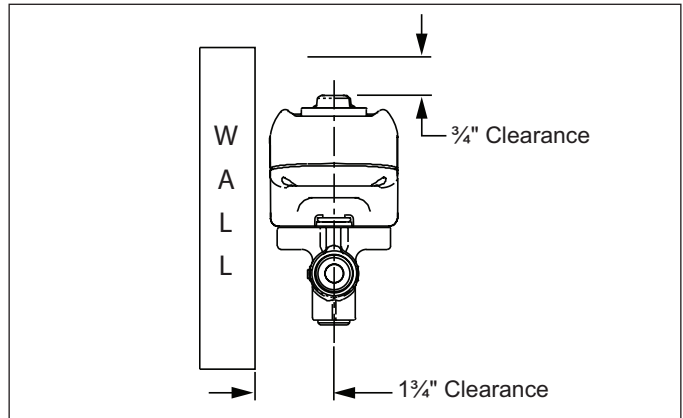


Always maintain water pressure in the heat exchanger by placing the motorized valve(s) on the return line to prevent mineral precipitation during the off-cycle. Pilot operated slow closing valves are recommended to reduce water hammer. If water hammer persists, a mini-expansion tank can be mounted on the piping to help absorb the excess hammer shock. If a field provided motorized valve and actuator is utilized, ensure that the total 'VA' draw of the valve can be supplied by the unit transformer. Units are furnished with a factory-installed 50 VA transformer. An optional 75VA transformer is also available.

Pre-Installation

1. On hot water applications, the valve body may be installed in any orientation. On chilled water installations, do not install with the actuator beyond 85° from the top-most installation (see Figure 2).
2. Before mounting the body, refer to Figure 4 for clearance requirements.

Figure 4: Valve clearances



CAUTION

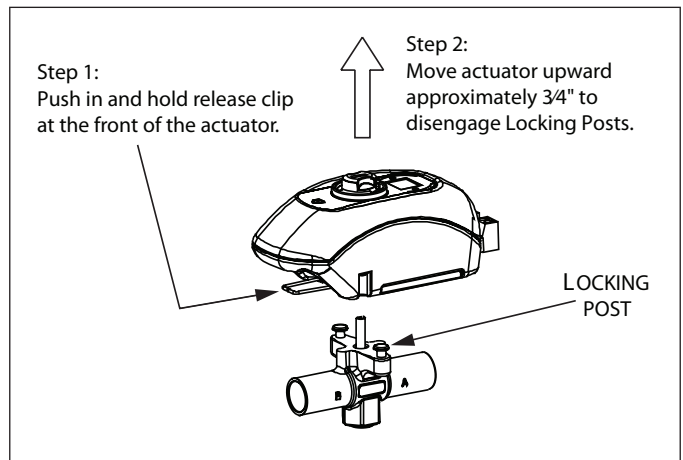
Actuator must be removed from the valve body before soldering (see Figure 5). Ball valve must be in the full open position before soldering. Valve shipped in the closed position.

Actuator Removal

To remove the valve actuator:

1. Push in and hold the release clip at the front of the actuator.
2. Lift actuator upward approximately 3/4" (Figure 5).

Figure 5: Removing the actuator from the valve body



About Soldering

1. Use of a solder with a melting point below 600°F is recommended. Do not overheat! Make sure the ball valve is in the FULL OPEN position during soldering. Direct flame tip away from the center of the valve. Cool valve quickly with a wet cloth.
2. Solder build-up on the ball valve may prevent proper opening and closing of the valve. Actuate the actuator once or twice and make sure the valve rotates fully.
3. Valve body can be submerged for leak testing before the actuator is attached.

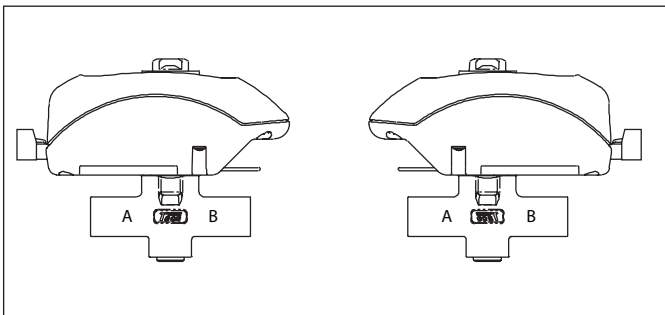
To Re-Assemble The Actuator To The Valve Body:

1. Position actuator such that the “D” shaped valve stem aligns properly with the “D” shaped actuator drive cavity.
2. **Note:** *The “D” shaped stem design allows for correct insertion every time.*
3. Slide the valve stem into the actuator cavity, push in and hold the release clip until the actuator slips over the valve locking posts (see [Figure 5](#)).
4. Once the actuator is flush to the valve body, let go of the release clip. Using very little force, try to lift the actuator off of the valve body without using the release clip. Both locking posts should be firmly attached to the actuator. If the actuator slides up the stem, repeat the assembly process.

Changing The Actuator Orientation

The actuator may be attached to the valve body in either direction, see [Figure 6](#).

Figure 6: Valve actuator can be attached in either direction



To reverse the actuator orientation on the valve body, see the "[Actuator Removal](#)" instructions and refer to [Figure 5](#), with the following exception.

5. Instead of lifting the actuator the full 3/4", move it just high enough to clear the locking posts, rotate the actuator 180° and reinstall it on the locking post by following the previous instructions. (See [Figure 4](#))

Wiring Instructions

⚠ WARNING

Wiring connections must be made in accordance with all applicable electrical codes.

⚠ CAUTION

To prevent electrical shock, disconnect electric power to system at main fuse or circuit breaker box until installation is complete. When a service switch is installed, more than one disconnect switch may be required to de energize this device for servicing

MicroTech III Wiring Procedure

1. Install the supplied wire harness 3-pin receptacle into the blue H8 header terminal on the MicroTech III SmartSource control board (Figure 7).
2. Run wires between the Actuator Motor ISO terminals and the supplied wire harness end connectors, (Figure 7).

- Notes:*
1. Connect the N.O or N.C. wire to actuator (W/Y) as shown on the schematic. The end switch should be wired in series with the 24V compressor signal wire, when applicable.
 2. Only wire end switch when M11 is in unit and is controlled with 24 volts AC.
 3. Use the wire end connectors provided with the kit for field wiring the actuator end switch (see Figure 7).
3. Connect the end switch wires as shown in the schematic in Figure 8. The end switch will close when the valve is fully open.

Figure 7: Terminal H8 on MicroTech III Board

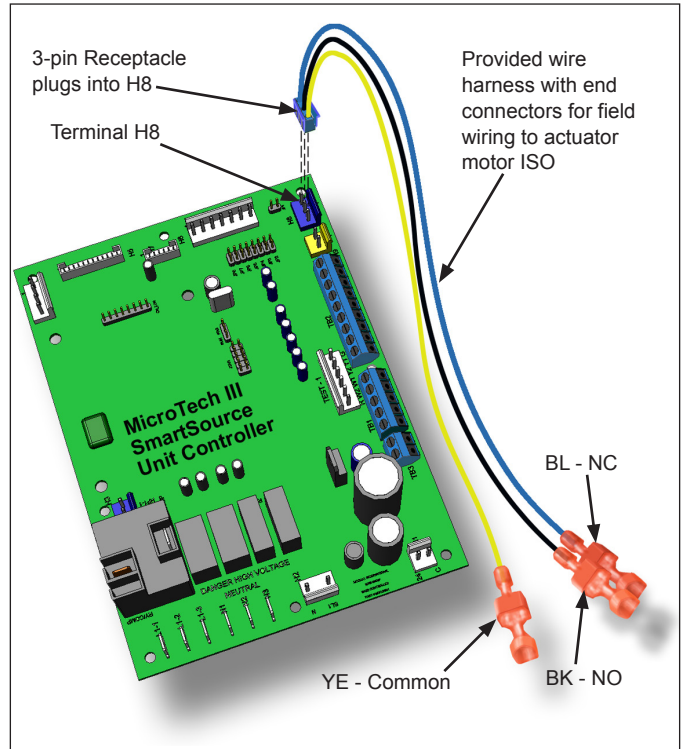
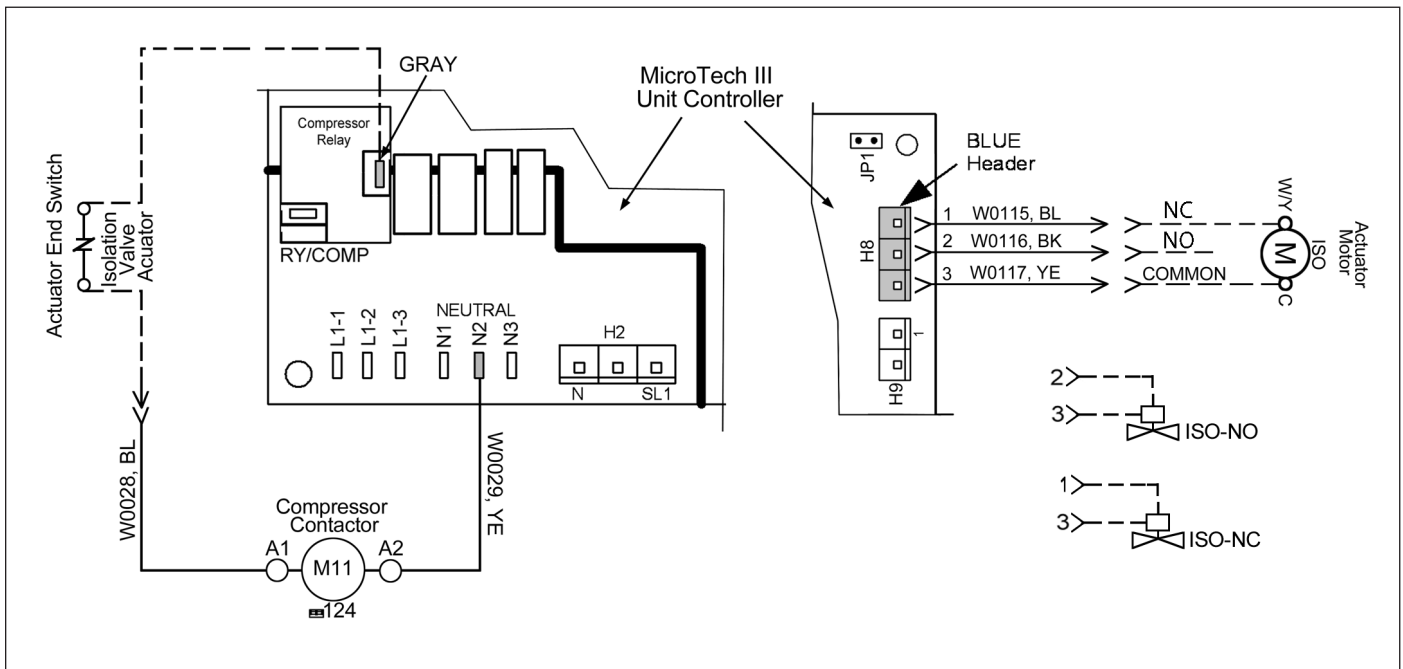


Figure 8: Motorized valve wiring for MicroTech III Controller



MT2300 Wiring Procedure

1. The motorized valve kits for MT2300 unit controllers are supplied with a different wire harness than the one supplied with the MicroTech III Controller. See diagram below (Figure 10) for proper wiring.
2. Connect the wire harness to the 3-pin, white H6 header on the MT2300 controller (Figure 9).

Note: The N/C terminal on the MT2300 controller should be connected to normally open motorized valves and the N/O terminal on the MT2300 controller should be connected to normally closed motorized valves.

3. Run wires between the Actuator Motor ISO terminals and the supplied wire harness end connectors
4. Connect the end switch wires as shown in the schematic in Figure 10. The end switch will close when the valve is fully open (unit sizes 015-072).

Figure 9: Header H6 on the MT2300 Controller

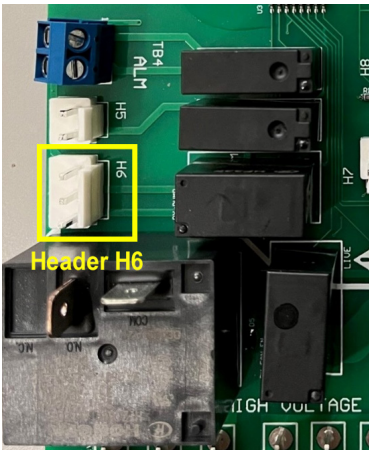
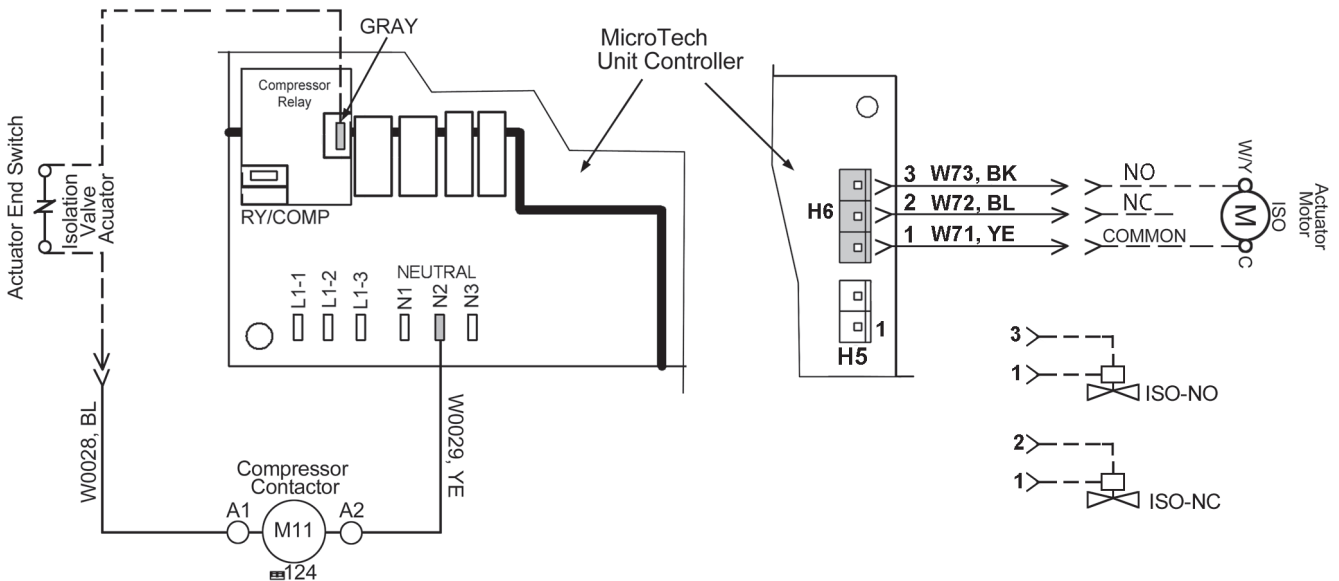


Figure 10: Motorized valve wiring for MT2300 Unit Controller



Motorized Valve Modes of Operation

1. Upon initial field installation the capacitor requires a full charge, up to 35 seconds, before the valve starts to turn. Charging time will vary (typically less) during normal operation.
2. When the capacitor is charging the green LED light will FLASH.
3. Once the capacitor is charged, the green LED will stop flashing but remain ON. At this point the valve's actuator will rotate the ball valve. The green LED will remain ON as long as the thermostat is calling (the unit is powered).
4. Once the thermostat is satisfied the green LED will turn OFF and the valve will rotate 90° into its normal position or non-powered position. For example: If the actuator is an NC (normally closed) version, the actuator would open the valve when the thermostat calls. Once the thermostat is satisfied the actuator would then rotate the valve 90° to its normally closed position.

Table 1: Flow coefficients and maximum close-off pressure

Valve Size	C _v (K _v)/Ft. of Pipe Equivalent ¹	Close-Off PSI (kPa)
1/2"	4.9 (4.3)/9.5	0-125 psi (0-862 kPa)
3/4"	10.3 (8.9)/8.4	
1"	8.9 (7.7)/47.4	

Note: At 4' per second (maximum recommended residential flow rate).

Troubleshooting

Table 2: Multi-status LED and troubleshooting

LED Status	Indicates	Possible Cause	Possible Solution
Not Illuminated	Power off	<ul style="list-style-type: none"> • No call • No power 	<ul style="list-style-type: none"> • Verify there is a call. • Check for voltage at the actuator
Steady blink (once per second)	Charging		
Solid	Power on		
Slow blink (once every 5 seconds)	Excessive charging time	<ul style="list-style-type: none"> • Not enough VA • Too many valves per transformer 	<ul style="list-style-type: none"> • Reset the actuator (see note). • Use a larger VA transformer or add an additional transformer. • Reduce the number of valves. • Use a different thermostat.
Double blink (twice every 5 seconds)	Excessive opening time	<ul style="list-style-type: none"> • Obstruction in valve • Buildup of contamination in valve 	<ul style="list-style-type: none"> • Reset the actuator (see note). • Remove obstruction. • Clean the valve and/or system.

Note: Reset the actuator by removing power for 5 seconds and then restoring power.



Warranty

All Daikin Applied equipment is sold pursuant to its standard terms and conditions of sale, including Limited Product Warranty. Consult your local Daikin Applied representative for warranty details. Refer to Form 933-430285Y. To find your local Daikin Applied representative, go to www.DaikinApplied.com.

Aftermarket Services

To find your local parts office, visit www.DaikinApplied.com or call 800-37PARTS (800-377-2787). To find your local service office, visit www.DaikinApplied.com or call 800-432-1342.

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