Honeywell Home

Modulating Automatic Round Damper (MARD)

PRODUCT DATA SHEET

APPLICATION

The Modulating Automatic Round Damper is a round damper with a 24-Vac, floating-control type modulating motor for bypass and zone damper control. It is constructed of 22-gauge galvanized steel and has male (crimped) and female (uncrimped) ends to connect to any rigid or flexible round duct. It is available in 6, 8, 10, 12, 14, 16, and 18-inch diameter sizes. MARD dampers are 2" longer than the diameter. The motor timing is approximately 90 – 95 seconds from open to closed.

The MARD is used for bypass control when connected to the Static Pressure Switch (SPC). Although it can be used on any bypass application, it is recommended for systems larger than 2000 cfm. The MARD can also be used as a zone control damper connected to a zone control panel.

INSTALLATION

Before Installing this Product...

1. Read all instructions before installing this product. Failure to follow the instructions can damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. Install the product in an area that is easily accessible for checkout and service.
5. After completing the installation, use these instructions to check out the product operation.

Selecting Damper Size

1. To size the bypass damper, subtract the smallest zone cfm from the total system cfm. The remainder is the amount of air that needs to be bypassed.
2. Calculate the bypass damper size using this cfm and a friction loss of .25 in. on a duct calculator or see Table 1.
3. If used as a zone damper, size it the same diameter as the duct.

Table 1. MARD Size.

MARD Diameter	Bypass cfm[a]
6	200
8	400
10	750
12	1200
14	1800
16	2400
18	3200

[a] Use this table only to size bypass dampers; for zone damper sizing, use a duct calculator.

Selecting Damper Location

The damper can be installed horizontally or vertically. Orient the damper so the motor is located on the side or top of the damper, not on the bottom of the damper.

Mounting the Damper

1. Install a duct collar into the duct or plenum upstream of any zone dampers. Placing it as far as practical from the air handler is preferable.
2. Slide the damper onto the duct collar.
3. Secure with sheet metal screws (not provided).
4. Run the duct from the other end of the damper to the return duct.

NOTE: MARD dampers include an LMB24-3-T FLU actuator. Prior to March 2023, the MARD dampers included an ML6161B2024 actuator. Additional information on these dampers can be found at https://customer.resideo.com.

MODULATING AUTOMATIC ROUND DAMPER (MARD)

WIRING

Multiple dampers can be connected in parallel. See Figure 1 - Figure 3. See the SPC literature for additional connection information.

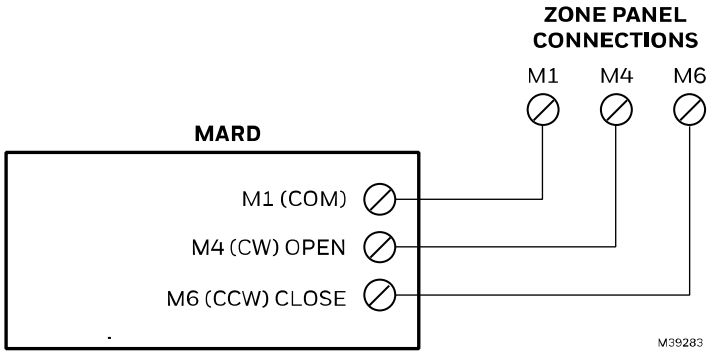

Figure 1. Wiring a MARD to a Conventional Zone Panel

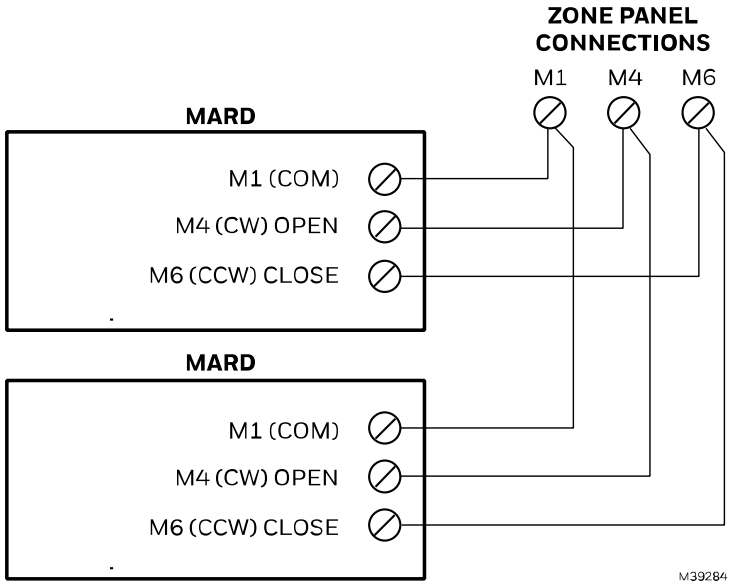

Figure 2. Wiring two MARDs in tandem to a zone panel.

SPC Wiring, Settings, & Adjustments

See the SPC literature for configuration instructions.

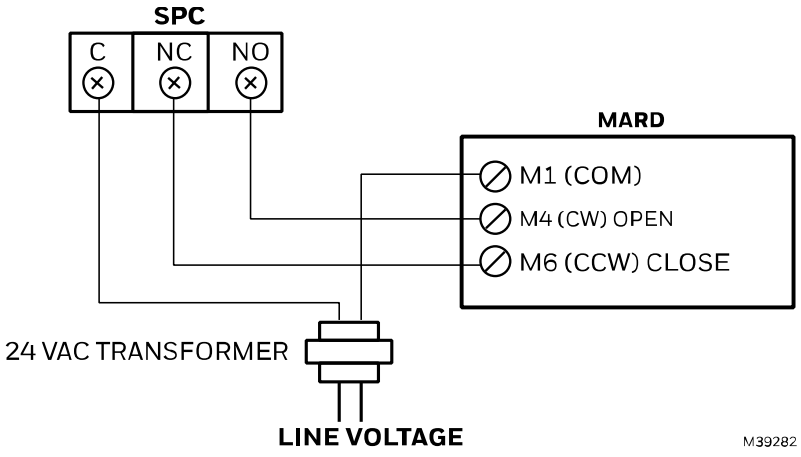

Figure 3. Wiring SPC to control MARD damper in bypass applications

CHECKOUT

CAUTION

Possible Equipment Damage

Do not manually open or close the damper unless the manual blade release button is depressed.

To check out the MARD damper wired to an HZ322 or HZ432 zone panel:

1. Press the mode button twice on the HZ322 or HZ432 zone panel, and the panel goes into checkout.
2. To select and display the damper to test (Zone 1 damper, Zone 2 damper, etc.), press and release the “next” button.
3. Use the right arrow button below the display to change the damper to open or close. Verify the damper opens and closes.

To check out the RRD damper when connected to a zone control panel other than an HZ322 or HZ432.

1. Set the zone one thermostat to "Fan On." Ensure no other thermostats are calling for heat, cool, or fan.
2. Verify the zone panel indicates zone one is open, and all other zones are closed.
3. Verify the dampers are in the correct position.
4. End the call for fan from zone one. Verify all the dampers return to the open position.
5. Set the zone two thermostat to "Fan On." Ensure no other thermostats are calling for heat, cool, or fan.
5. Verify the zone panel indicates that zone two is open and all other zones are closed.
6. Verify the dampers are in the correct position.

To check out the MARD damper using a 24VAC transformer:

1. Connect 24VAC common to the actuator's M1 (COM) terminal.
2. Connect 24VAC hot to M6 (CCW) terminal to close the damper.
3. Observe the blade moves counterclockwise and stops in the closed position.
4. Remove the 24VAC hot wire from the M6 (CCW) terminal.
5. Connect the 24VAC hot wire to the M4 (CW) terminal.
6. Observe the blade moves clockwise and stops in the open position to verify correct operation.

NOTE: When a zone panel indicates a damper should be open, there should be 24 volts from M1 to M4. When a zone panel indicates a damper should be closed, there should be 24 volts from M1 to M6. The actuator can back-feed voltage, so you may want to remove wires from M4 or M6 to test whether the zone panel output is correct.

TROUBLESHOOTING

Table 2. Troubleshooting

The damper operates backward	**1.** Verify correct damper wiring shown in figures 1 – 3. **2.** For the LMB24-3-T FLU Actuator, verify the rotation direct switch is on the 1 position (shown in figure 6).
The damper does not operate	**1.** Verify correct damper wiring using the checkout methods listed in this document. **2.** Verify that the duct is round and not making the blade stick. Depress the manual blade release button and manually turn the blade shaft to verify smooth opening and closing operation.

LMB24-3-T FLU Actuator

SPECIFICATIONS

IMPORTANT

The specifications given in this manual do not include normal manufacturing tolerances. Therefore, this unit may not exactly match the listed specifications. In addition, this product is tested and calibrated under closely controlled conditions, and some minor differences in performance can be expected if those conditions are changed.

Electrical Rating	24 VAC, 50 or 60 Hz
Power Consumption	1.7 watts running, .7 watts holding. Transformer Sizing VA: 2.5
Wiring Terminals	M1 (Common), M6 (clockwise, closed), M4 (Counterclockwise, open)
Nominal Angular Rotation	90°
Torque	35 in. lb, (4Nm)
Nominal Timing	95 Seconds Independent of Load
Ambient Ratings	41° F (5° C) to 122° F (50° C), 5-95% RH Non-Condensing
Mounting	Direct Coupled to 1/2" Shaft
Agency Listings	NEMA 1, UL Listed, Class Two
Noise Output	35 dBA at 3.2 ft (1m) Maximum

ADJUSTMENTS

Manual Blade Adjustment

To verify correct range of motion prior to installation, depress the manual blade adjustment button. While this is pressed, the gears are disengaged, allowing the blade to be manually opened or closed by turning the damper blade shaft (See Figure 4).

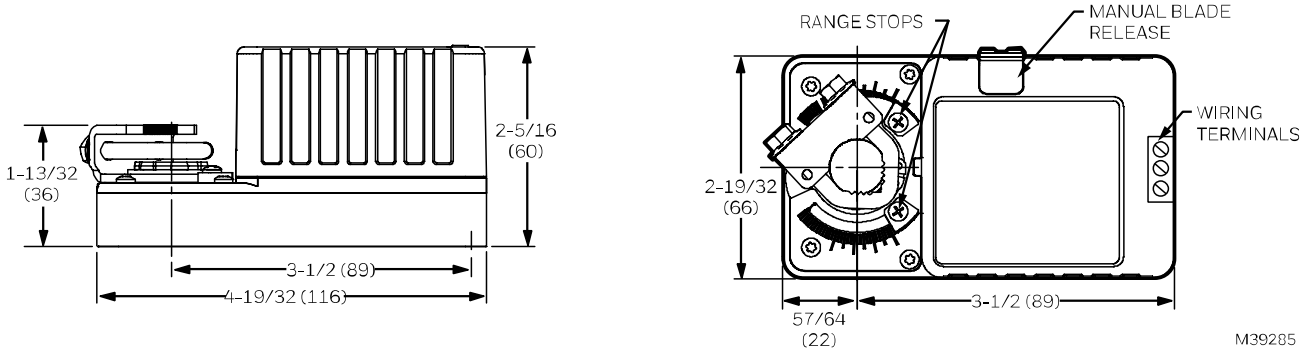

Figure 4. Motor Dimensions and Manual Blade Adjustment.

Position Indicator

The position indicator ring points toward the position of the damper blade to identify the blade is open, closed, or at an intermediate position.

NOTE: Prior to installation, verify this indicator is lined up with the damper blade.

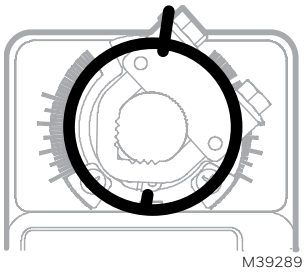

Figure 5. Position Indicator Ring

Rotation Direction Switch

Verify the rotation direction switch is set to one (1) position when wired as shown in the diagrams on page two. You can change this setting to the zero (0) position to reverse the motor for testing.

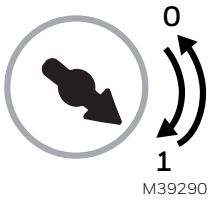

Figure 6. Rotation Direction Ring

Range Stops

The MARD damper motor can be adjusted to prevent complete closure of the blade. This is useful in zone systems where installing a bypass damper is not possible.

To set the range stop to prevent complete closure:

1. Locate the range stop adjustment screw on the top of the motor to the right of the blade shaft. This is at the extreme counterclockwise end of travel.
2. Using a small Phillips head screwdriver, loosen the set screw (Figure 7).
3. Move the end-stop block to the new position.
4. Secure the set screw.
5. Verify the new range of motion while depressing the manual blade release button (see Figure 4).

Replacing the Actuator

If the MARD damper has an LMB24-3-T FLU actuator on it, you can replace that actuator.

1. Loosen the nuts on the U-Bolt (Figure 7).
2. Slide the actuator off the shaft.
3. Line up the new actuator so the slot on the bottom lines up with the anti-rotation tab on the damper mounting bracket.
4. Slide the new actuator on the shaft up against the mounting bracket.
5. Tighten the nuts on the U-Bolt.

NOTE: If the MARD had used an ML6161B2024 actuator, the LMB24-3-T FLU will *not* work as a replacement.

On the old MARD design, the anti-rotation shaft will not line up with the slot on the LMB24-3-T FLU actuator. The updated MARD design has a mounting bracket with a tab for the ant-rotation slot on the LMB24-3-T FLU actuator (shown below).

NOTE: The ML6161B2024 actuator information is presented on page 6.

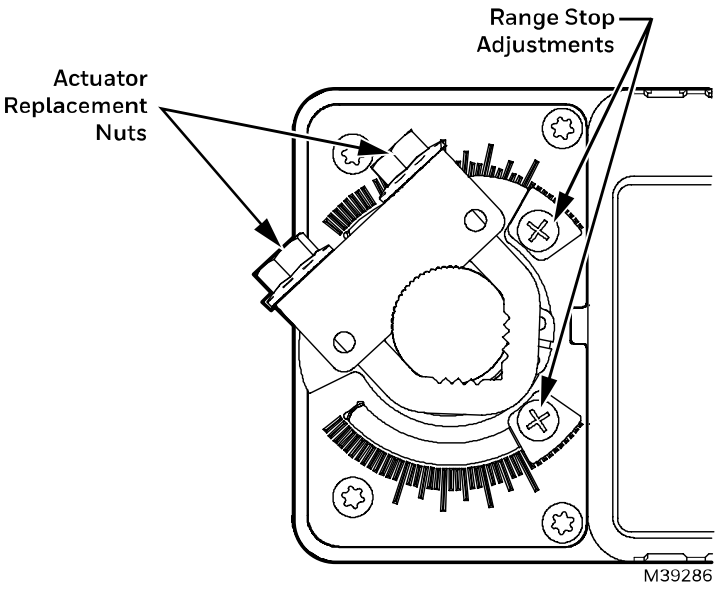

Figure 7. Adjusting the Range Stop and Replacing the Acuator

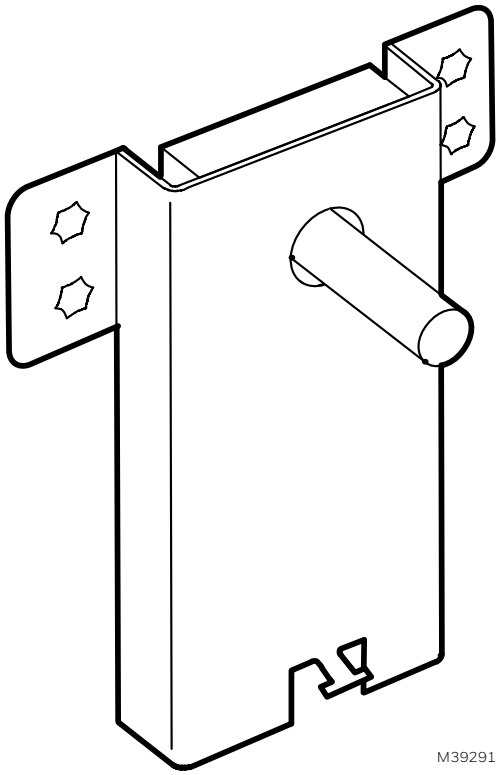

Figure 8. Anti-Rotation Slot Designation

ML6161B2024 Actuator

FEATURES

- 45°, 60°, and 90° selectable stroke in either clockwise (cw) or counterclockwise (ccw) directions.
- Magnetic coupling eliminates the need for mechanical stops.
- 0° to 30° minimum position adjustment (cw or ccw direction).
- Manual declutch.

SPECIFICATIONS

Electrical Ratings:

- Power Input: 24 VAC ±20%, 50/60 Hz, 1.8 VA.

Mounting:

- Mounts directly on a 3/8 in. to 1/2 in. (10 to 13 mm) round or square shaft.
- Minimum Shaft Length Required: 1-3/4 in. (45 mm).
- Actuator can be mounted with shaft in any position.
- Secured Using: two 1/4 in. (6 mm) 28 NF Allen screws.

Temperature Ratings:

- Ambient: 20° to 125° F (-18° to 50° C)
- Derated Timing to: -20° F (-29° C)
- Shipping and Storage: -20° to 135° F (-29° to 54° C)

Humidity Ratings:

- 5% to 95% RH noncondensing.

Noise Output:

- 45 dBA at 3.2 ft (1 m) maximum.

Replacing the Actuator

If the MARD damper has an ML616B2024 actuator, you can replace it with the same model. However, that actuator is made by Honeywell and not offered by Resideo.

1. Loosen the allen bolts holding the actuator to the shaft (see Figure 11).
2. Loosen the bolt on the anti-rotation shaft at the bottom of the actuator.
3. Slide the old actuator off the shaft.
4. Slide the new actuator on the main shaft and anti-rotation shaft.
5. Tighten the allen bolts to secure the actuator shaft.
6. Tighten the bolt for the anti-rotation shaft.

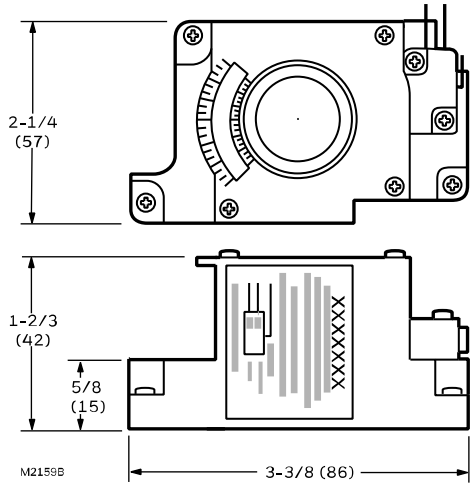

Figure 9. Dimension Drawing

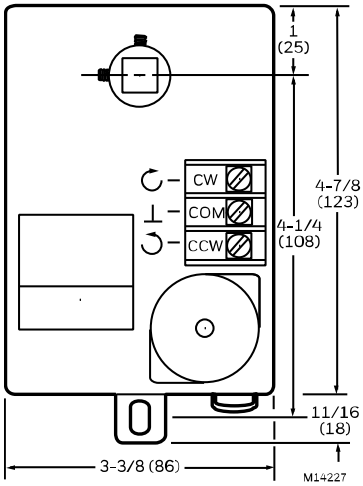

Figure 10. Summary of Connections

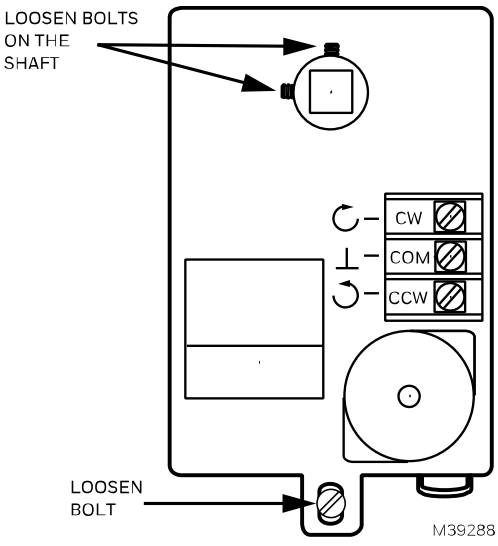

Figure 11. Replacing the Actuator

resideo

www.resideo.com

Resideo Technologies, Inc.
1985 Douglas Drive North, Golden Valley, MN 55422
1-800-468-1502
33-00647-01 M.S. Rev. 03-23 | Printed in the United States