

# MD-Series Damper

Supplemental Installation Manual for Accessories

EV Premium-Series

SL-Series

EV-Series



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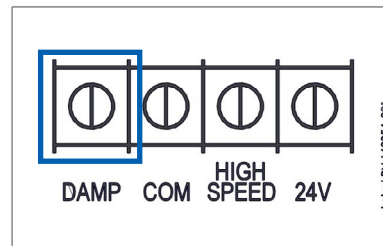
**NOTE:** This unit is an Energy Recovery Ventilator, or ERV. It is commonly referred to throughout this manual as an ERV.

**NOTE:** Some local codes may require a damper in the return/exhaust airstream or at the exhaust air outlet. RenewAire's BD-6 or BD-8 installed in a horizontal section of the return duct can satisfy this requirement.

### 1.0 OVERVIEW

The MD-Series 24V dampers can be used to prevent unwanted airflow through a RenewAire ERV. Even when the ERV is installed to provide continuous ventilation, a manual override may be desired to prevent supply flow through the unit during adverse outdoor air conditions, such as wildfire smoke, or to meet local codes. When the ERV is connected to a ducted return of the HVAC system, outdoor air may be pulled through the ERV via the HVAC fan. This can be prevented by installation of an MD-Series damper installed at the fresh air outlet of the ERV.

For the remainder of this document, instructions are broken up into units that have a damper terminal, and units that do not have a damper terminal. The only units that may have a damper terminal are the EV Premium and SL series. To check whether your unit has a damper terminal, locate the terminal block on the top of the unit. If there are four terminals, one will be labeled "DAMP."



RenewAire offers several damper kits to accommodate different ERVs and different installation applications. Use the table below to identify the correct kit for a particular installation. Wiring instructions in later sections will also be labeled for the kits they apply to.

DAMPER KITS				
Damper Kit P/N:	145000	145010	145020	145030
Diameter	6"			8"
ERV has a "DAMP" Terminal	No		Yes	
Furnace Interlock Required	Yes	No*		

\*Furnace interlock may still be used but must be purchased separately.

### 2.0 INSTALLATION

The recommended location for installation of the motorized damper is at the supply air duct collar on the ERV. However, it may be located at any location in the supply air duct. To install on the unit: slide the damper over the unit duct collar, and secure. Regardless of installation location, be sure to leave the damper wire leads accessible.

**NOTE:** EV Premium X and EV300 units use an 8" oval duct collar, so a transition will be needed to attach an MD-Series damper to the unit.

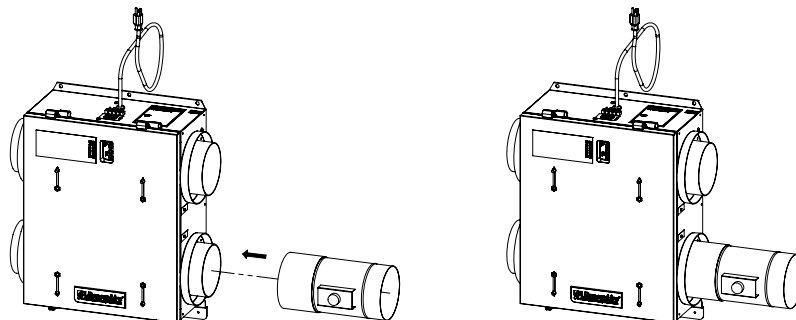


FIGURE 2.0.0 DAMPER INSTALLATION TO ERV

### 2.1 INSTALLATION WITH ERV RETURN DUCTED TO FURNACE RETURN

When the ERV system has both the return air and the supply air connected to the furnace return trunk (Figures 2.1.0 and 2.1.1, the furnace fan must operate whenever the ERV is running using the FM percent timer control accessory. However, the ERV 24VAC power supply and FM relay contacts are not rated to operate the motorized damper; therefore, the damper power must be supplied from the furnace 24VAC power supply.

The FM percent timer accessory will enable the 24VAC relay coil which has 2 sets of dry contacts. One set of contacts will be used to enable the motorized damper and the other set of contacts will be used to enable the ERV. The MD damper kit comes supplied with a pre-mounted relay with wire harnesses to be connected to the FM controller, furnace terminal block and ERV terminal block as shown in Figures 2.1.2, 2.1.3, 2.1.4, and 2.1.5. Using this installation, the ERV will operate for a percentage of every hour as set by the FM control. The FM control can be adjusted from 10% to 100% in 10% increments.

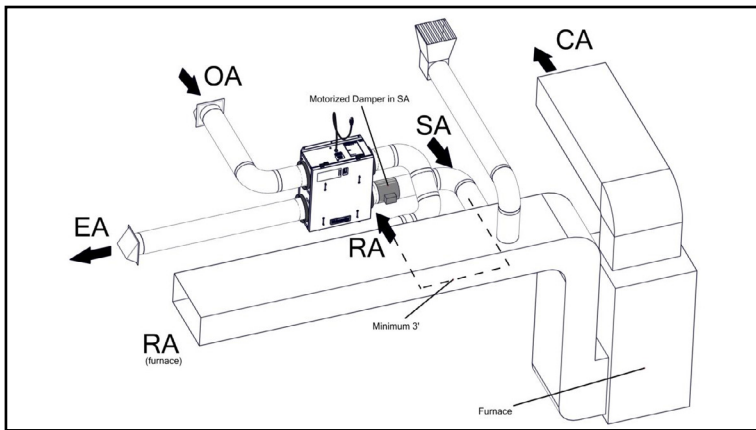


FIGURE 2.1.0 RETURN-RETURN INSTALLATION FOR EV PREMIUM, EV/GR90, EV90P

**NOTE:**

- ◆ Outside Air (OA)
- ◆ Supply Air (SA):
- ◆ Conditioned Air (CA)
- ◆ Return Air (RA)
- ◆ Exhaust Air (EA)

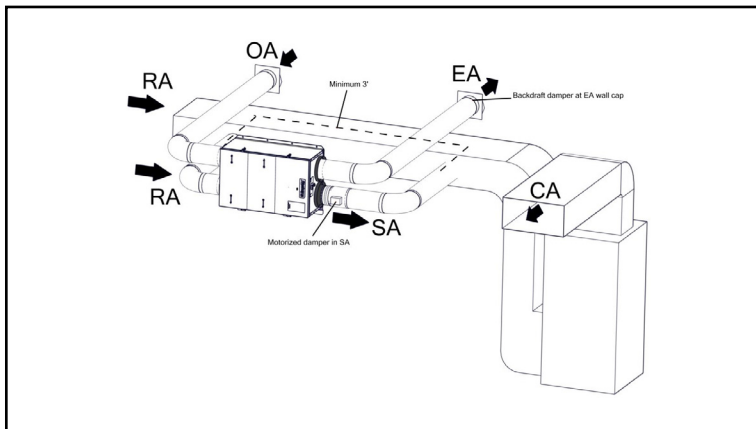


FIGURE 2.1.1 RETURN-RETURN INSTALLATION FOR EV130-300

2.1.1 Wiring for Units with a Damper Terminal—Kit P/N 145020 or 145030

To connect the Damper, ERV, FM, and furnace:

1. Connect the E1 and E2 terminals on the FM controller to the “HIGH” Speed and 24V terminals on the unit.
2. Connect the Gf terminal on the FM controller to the G terminal on the furnace.
3. Connect the Gt terminal on the FM controller to the G terminal on the thermostat.
4. Connect the R and C terminals on the FM controller to the R and C terminals on the furnace.
5. Connect the two wires on the damper to the DAMP and COM terminals on the unit.

**NOTE:** To meet Energy Star new home requirements, the ERV must be plugged into a switched outlet.

**NOTE:** For 145020 and 145030 kits, the FM accessory must be purchased separately.

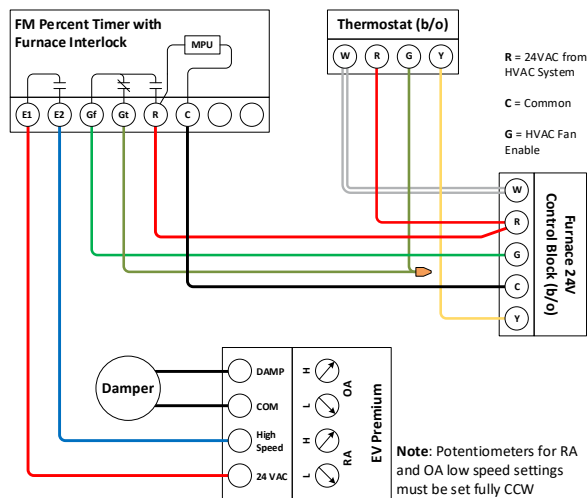


FIGURE 2.1.2 SCHEMATIC FOR FURNACE INTERLOCK WITH EV PREMIUM AND MOTORIZED DAMPER WITH DAMPER TERMINAL

2.1.2 Wiring for Units without a Damper Terminal—Kit P/N 145000

To connect the Damper, ERV, FM, and furnace:

1. Connect the blue harness to E1 on the FM controller
2. Connect the black harness to C on the FM controller and C on the furnace control block
3. Connect the red harness to E2 on the FM controller, R on the FM controller and R on the furnace control block
4. Connect the yellow harness to the ERV terminal block. Use the High speed and 24VAC terminals for an EV Premium or SL75 unit.

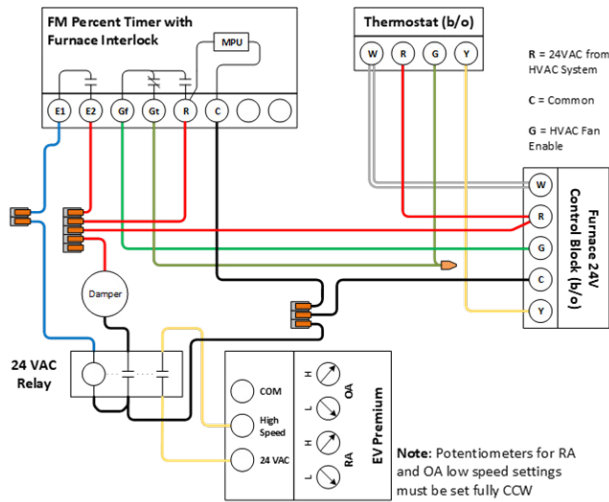


FIGURE 2.1.3 SCHEMATIC FOR FURNACE INTERLOCK WITH EV PREMIUM/SL75 AND MOTORIZED DAMPER WITHOUT DAMPER TERMINAL

**NOTE:** To meet Energy Star new home requirements, the ERV must be plugged into a switched outlet.

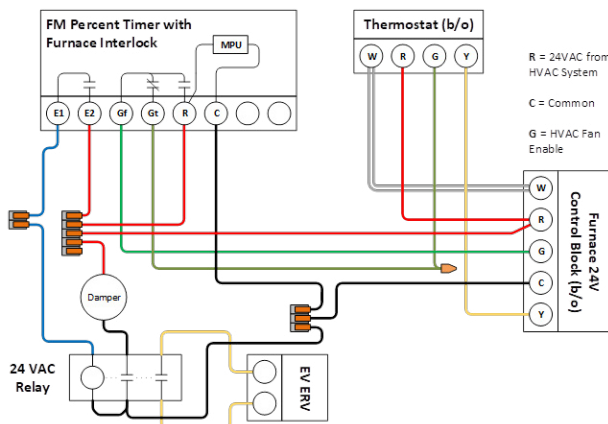


FIGURE 2.1.4 SCHEMATIC FOR FURNACE INTERLOCK WITH EV130-300, EV90, GR90, OR EV90P AND MOTORIZED DAMPER

**NOTE:** To meet Energy Star new home requirements, the ERV must be plugged into a switched outlet.

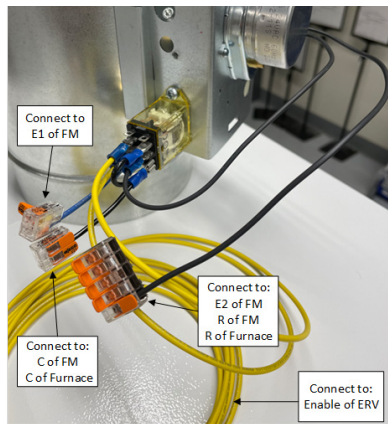



FIGURE 2.1.5 CONNECTION POINTS FOR MD-SERIES DAMPER WITH FURNACE INTERLOCK

## 2.2 INSTALLATION WITH ERV RETURN DUCTED TO RETURN BRANCH OR WITH A DEDICATED RETURN

When the ERV return is not ducted to the furnace return trunk, there is no need to interlock the ERV with the furnace. The ERV can be operated with continuous or intermittent airflow. If the ERV is connected to a return branch, a backdraft damper must be installed between the ERV's RA connection, and the furnace return trunk. See Figures 2.2.0 and 2.2.1 for installation drawings.

 **NOTE:** The ERV may also be installed with a dedicated return duct. With a dedicated return, a backdraft damper is not needed in the RA.

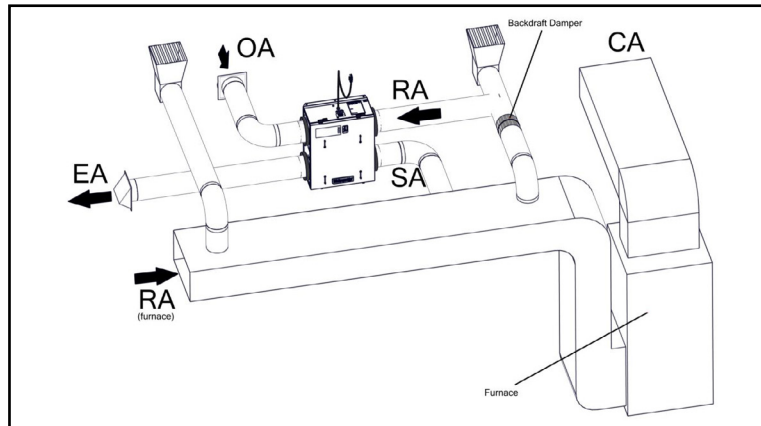



FIGURE 2.2.0 ERV RETURN FROM RETURN BRANCH INSTALLATION FOR EV PREMIUM, EV/GR90, EV90P

 **NOTE:** The ERV may also be installed with a dedicated return duct. With a dedicated return, a backdraft damper is not needed in the RA.

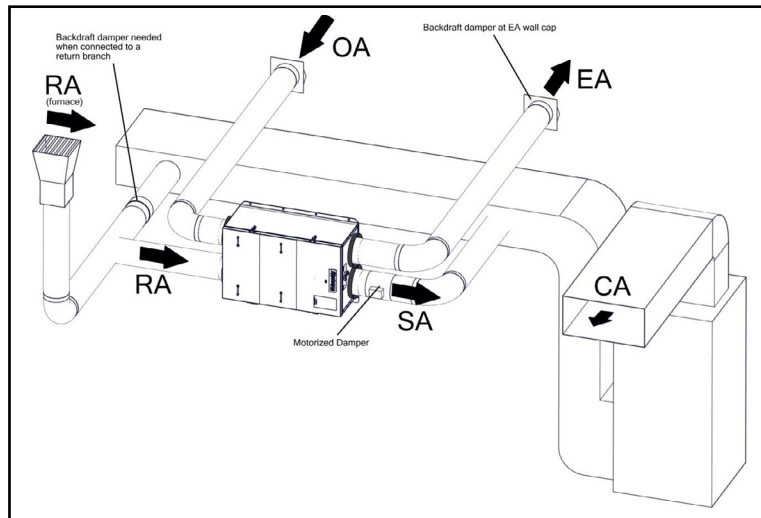


FIGURE 2.2.1 ERV RETURN FROM RETURN BRANCH INSTALLATION FOR EV 130-300

### 2.2.1 Continuous ERV Operation for Units with a Damper Terminal—Kit P/N 145020 or 145030

This method applies to EV Premium and SL75 units only. To achieve continuous operation, plug the ERV line cord into the switched outlet. Then, wire the damper to 24V and COM terminals on the unit. When the switch is turned on, the ERV will be powered, and the damper will be powered via the ERV control board. An accessory can be connected to the 24V and High Speed terminals to provide boost mode operation. The damper will remain open as long as the switch remains on and the ERV is powered.



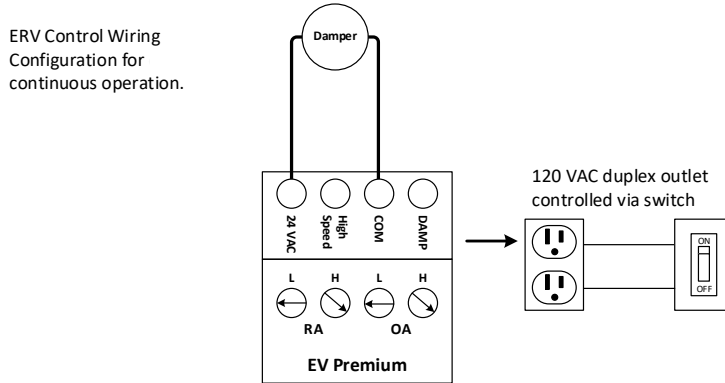


FIGURE 2.2.2 SCHEMATIC FOR CONTINUOUS OPERATION WITH EV PREMIUM/SL75 AND MOTORIZED DAMPER WITH DAMPER TERMINAL

2.2.2 Continuous ERV Operation for Units without a Damper Terminal—Kit P/N 145010

To achieve continuous operation, plug the ERV line cord and damper’s power supply into the switched outlet. When the switch is turned on, both the ERV and the damper will be powered on. The plug-in power supply has screw terminals that will allow for easy connection to the 24VAC output power. For an EV Premium or SL75, the unit will operate continuously at low speed, and an accessory, such as a PBT, can be used to switch into High Speed. For an EV90-300 or GR90 unit, install a jumper cable at the unit terminal block to achieve continuous operation. See Figure 2.2.3 for wiring of continuous ERV operation.

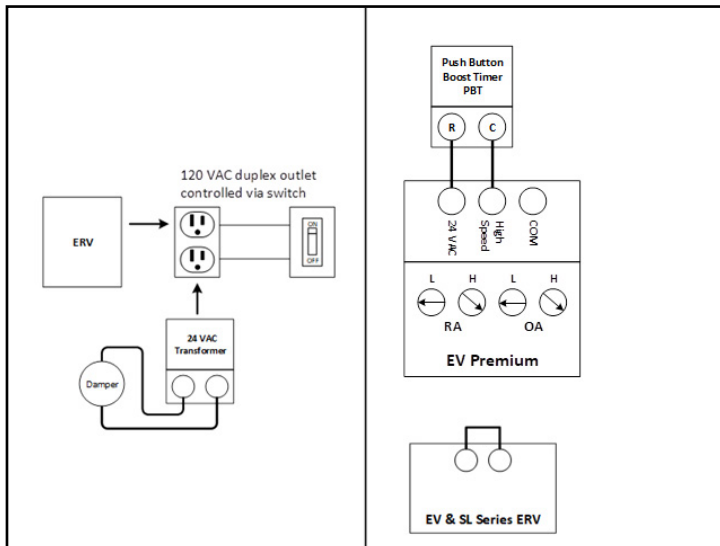


FIGURE 2.2.3 SCHEMATIC FOR CONTINUOUS ERV OPERATION WITH DAMPER WITHOUT DAMPER TERMINAL

2.2.3 Intermittent ERV Operation for Units with a Damper Terminal—Kit P/N 145020 or 145030

This method applies to EV Premium and SL75 units only. To achieve intermittent operation with an MD-Series damper, turn the low speed potentiometers all the way counterclockwise and set the high speed potentiometers to the desired intermittent flow. Plug the ERV into a switched outlet and wire the desired control accessory to the 24V and High Speed terminals on the unit. Wire the damper to the DAMP and COM terminals on the unit. When the control signals the unit to enter high speed mode, the fans will run and the DAMP terminal will be energized triggering the damper to open.

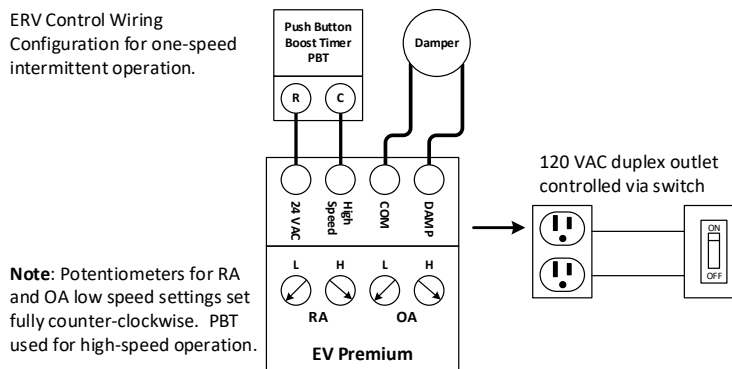


FIGURE 2.2.4 SCHEMATIC FOR INTERMITTENT OPERATION WITH EV PREMIUM AND MOTORIZED DAMPER WITH DAMPER TERMINAL

2.2.4 Intermittent ERV Operation for Units without a Damper Terminal—Kit P/N 145010

To achieve intermittent ERV operation with an MD-Series damper, the damper and an FM controller must be powered off a 24V plug-in transformer. Plug the ERV line cord and the power supply into the switched outlet. When the switch is turned on, both the ERV and the FM control will be powered on. The FM percent timer accessory will power the 24VAC relay coil on the damper which has 2 sets of dry contacts. One set of contacts will be used to power the motorized damper and the other set of contacts will be used to enable the ERV. The MD damper kit comes supplied with a pre-mounted relay with wire harnesses to be connected to the FM controller, 24V plug-in transformer and ERV terminal block as shown in Figures 2.2.5, 2.2.6, and 2.2.7. Using this installation, the ERV will operate for a percentage of every hour as set by the FM control. The FM control can be adjusted from 10% to 100% in 10% increments.

To connect the Damper, FM, ERV and power supply:

1. Connect the blue harness to E1 on the FM controller.
2. Connect the black harness to C on the FM controller and one screw terminal on the 24V transformer.
3. Connect the red harness to E2 on the FM controller, R on the FM controller and the other screw terminal on the 24V transformer.
4. Connect the yellow harness to the ERV terminal block. Use the High speed and 24VAC terminals for an EV Premium or SL75 unit.

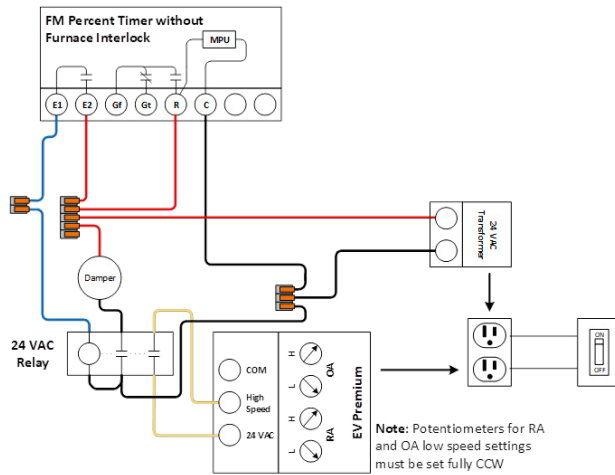


FIGURE 2.2.5 SCHEMATIC FOR INTERMITTENT OPERATION OF EV PREMIUM/SL75 AND MOTORIZED DAMPER WITH NO FURNACE INTERLOCK

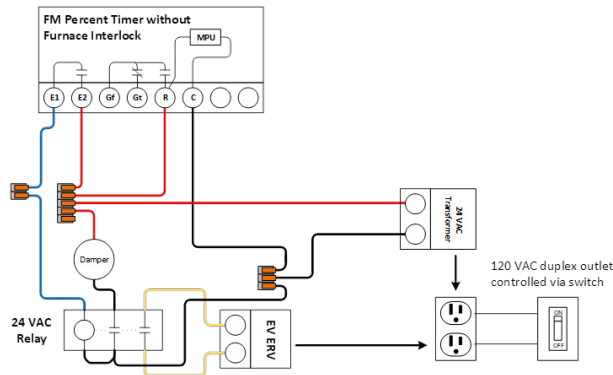


FIGURE 2.2.6 SCHEMATIC FOR INTERMITTENT OPERATION OF EV130-300, EV/GR90, OR EV90P AND MOTORIZED DAMPER WITH NO FURNACE INTERLOCK

**NOTE:** For 145010 kits, the FM accessory must be purchased separately.

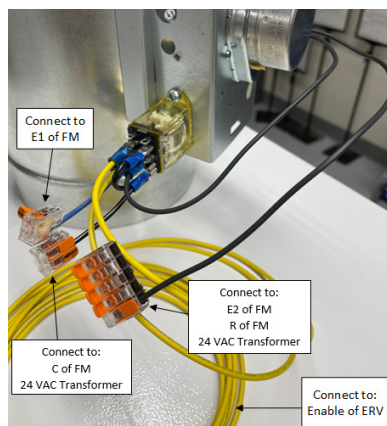


FIGURE 2.2.7 CONNECTION POINTS FOR MD-SERIES DAMPER WITH FM CONTROL AND NO FURNACE INTERLOCK



## About RenewAire

For over 40 years, **RenewAire** has been a pioneer in enhancing indoor air quality (IAQ) in commercial and residential buildings of every size. This is achieved while maximizing sustainability through our fifth-generation, static-plate, enthalpic-core **Energy Recovery Ventilators (ERVs)** that optimize energy efficiency, lower capital costs via load reduction and decrease operational expenses by minimizing equipment needs, resulting in significant energy savings. Our ERVs are competitively priced, simple to install, easy to use and maintain and have a quick payback. They also enjoy the industry's best warranty with the lowest claims due to long-term reliability derived from innovative design practices, expert workmanship and **Quick Response Manufacturing (QRM)**.

As the pioneer of static-plate core technology in North America, RenewAire is the largest ERV producer in the USA. We're **committed to sustainable manufacturing** and lessening our environmental footprint, and to that end our Waunakee, WI plant is 100% powered by wind turbines. The facility is also one of the few buildings worldwide to be LEED® Gold and Green Globes certified, as well as having achieved ENERGY STAR Building status. In 2010, RenewAire joined the Soler & Palau (S&P) Ventilation Group in order to provide direct access to the latest in energy-efficient air-moving technologies. For more information, visit: [renewaire.com](http://renewaire.com)

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