

# TrueZONE ARD, EARD, and ZD Series Dampers

## INSTALLATION INSTRUCTIONS

### APPLICATION

#### ARD Series Damper

The ARD is a round damper with a 24 Vac, spring-Open return damper motor used to control circulating air in heating, cooling, and ventilating systems.

#### EARD Series Damper

The EARD is a round damper with a 24 Vac powered-open/spring-closed motor. It is used for fresh air intake for Ventilation or for combustion makeup air.

#### ZD Series Damper

The ZD is a power close and spring open damper. It has a 24-volt motor used to control circulating air in HVAC systems and used when a normally-open damper is required. The ZD is typically used with the TrueZONE and other electronic zoning systems.

### FEATURES

- **Taping Flange and non-interfering set screw**
- **High Temperature outer plastic for hot environments**
- **Redesigned all Metal Drive Train Gears**
- **Front facing display with LED Indication light for Open and Close.**
- **Adjustable damper position range stops**
- **Quiet operation.**

### ARD Features

- Adjustable close position range stops
- Shipped as power closed/spring return open damper.
- Available in 5 to 10" inch, 12, 14, 16, 18, and 20 inch diameter sizes.
- Male (crimped) and female (uncrimped) ends to connect to any rigid or flexible round duct.
- Rated to operate up to 1 in. wc
- Blade closes off tightly against gasket for minimal leakage.
- Fail-safe, normally open operation
- Simple, easy-to-wire, two-wire installation with a third wire option M4 for LED open only light

### EARD Features

- Adjustable open position range stops
- Shipped as power open/spring return closed damper.
- Blade closes off tightly against gasket for minimal leakage.
- Galvanized steel
- Rated to operate up to 1 in. wc
- Simple, easy-to-wire, two-wire installation
- Male (crimped) and female (uncrimped) ends to connect to any rigid or flexible round duct.

### ZD Features

- Adjustable closed position range stops
- Rated to operate up to 1 in. wc
- Solid construction using extruded aluminum frame and blades
- Parallel blade design for low leakage performance
- Simple, easy-to-wire, two-wire installation with a third wire option M4 for LED open light
- Fail-safe, normally open operation
- Ordering Instructions: Order ZD (dimension 1) x (dimension 2). (Motor is always mounted on dimension 2 side.) For example, ZD10x8TZ is a 10 in. x 8 in. damper with the motor on the 8 in. side; but a ZD8x10TZ is a 8 in. x 10 in. damper that has the motor on the 10 in. side.
- Damper can be installed in any orientation (mounting side can be on either the bottom or the side of the duct).



## SPECIFICATIONS

### IMPORTANT

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

**Motor Electrical Rating:** 24 Vac, 60 Hz, 8VA.

**Motor Electrical Connection:** Push terminals. Solid (not stranded) wire is recommend.

**Motor Nominal Angular Rotation:** 90°.

**Motor Torque:** Minimum 71 in.-oz. (500 millinewton meters) output torque available when motor is energized and device is at the spring return initial start position.

**Nominal Motor Timing at 77°F (25°C) Ambient:**

Energized at rated load: 30 seconds.  
De-energized (spring return): 10 seconds.

**Motor Ambient Temperature Rating:** 40° to 140°F (5° to 60°C).

**Leakage:** Less than 1% at 1/2 in. wc.

**Pressure Drop:** Maximum at full open: 0.0329 in. wc at 800 ft/min.

**Maximum Static Pressure:** 1 in. wc for all models except 0.3 in. wc for ARD20.

**Motor Shaft Rotation Direction:** Clockwise, when energized and viewed from the base or shaft end.

**Motor Mounting Means:** Direct connection to damper shaft.

**Motor Mounting Position:** Multi-poise.

**Motor Dimensions:** See Fig. 1.

## Construction

### ARD Dampers

Frame: Galvanized steel spiral duct, crimped on downstream side.

ARD Sizes: 5 in., 6 in., 7 in., 8 in., 9 in., 10 in., 12 in., 14 in., 16 in., 18 in., and 20 in. diameters.

Gauge: ARD5-ARD12: 24 Gauge frame, and 22 Gauge Blade  
Blade: ARD14-ARD20: 22 Gauge frame, and 20 Gauge Blade

### EARD Dampers

Frame: Galvanized steel spiral duct

EARD Sizes: 5-, 6-, 7-, and 8-, inch diameter sizes

### ZD Dampers

Frame: Solid construction using extruded aluminum frame and blades

ZD Sizes: Even sizes from 6in. x 6in. up to 36 in x 36 in.

Damper dimensions: All ZD dampers are actually sized 5/32 in. smaller than the listed size to ensure correct fit.

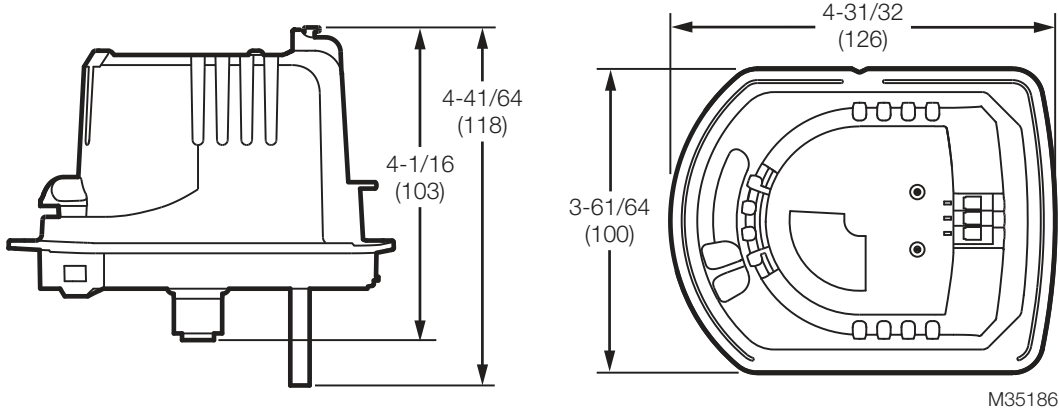


Fig. 1. Motor and damper dimensions in in. (mm).

## INSTALLATION OF ARD AND EARD DAMPERS

### 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 installation, use these instructions to check out the product operation.

## Installing the Round (ARD and EARD) Dampers

1. Insert the crimped end of the ARD or EARD into the uncrimped end of the rigid round duct and secure with sheet metal screws (not provided). When using flexible duct, slip the duct over the end of the ARD or EARD and secure it with duct straps (not provided).
2. When installing the damper in a horizontal application, make sure the motor actuator is located on the side or top of the damper. Do not locate the motor on the bottom of the damper. The damper can be mounted in a vertical duct.
3. Adjust Range stop position to desired closed positions. ARD and ZD Dampers are completely closed in position 0. EARD Dampers are completely open in position 0.

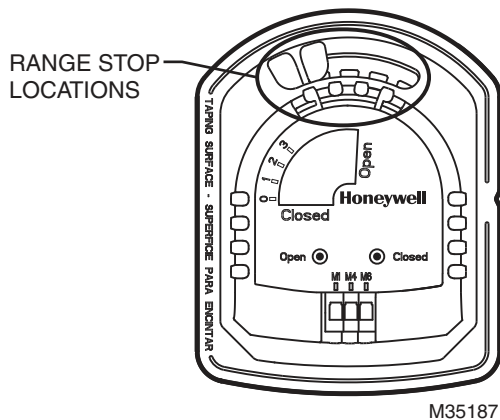


Fig. 2. TrueZONE Actuator range stop positions.

## Wiring Multiple Dampers

When the same zone controls two or more dampers, wire the dampers in parallel to terminals M1 and M6 on the zone control panel.

## INSTALLATION OF ZD DAMPER

### When Installing this Product...

1. Read these instructions carefully. Failure to follow these 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. All wiring must comply with local electrical codes, ordinances, and regulations.
5. After completing installation, use these instructions to check out the product operation.

## Planning the Installation

### Selecting a Location

Select a location for the zone dampers that is at least three feet from the HVAC unit plenum in the air duct takeoff to the respective zone and is easily accessible for checkout and maintenance.

The ZD comes complete and ready for installation. The motor and linkage are factory-assembled to the damper. The damper is assembled for installation and wiring to the control panel.

### Selecting Damper Size

To ensure correct operation, be sure to select the correct zone damper size for the air duct:

#### IMPORTANT

*Be aware that damper sizes are built 5/32 in. smaller than the listed dimensional sizes.*

- If the damper is forced into an undersized air duct, the excess pressure can jam the damper blades and cause improper operation.
- When a small percentage of continuous flow is desired in a zone, even when the damper blades are closed, adjust motor closed position to be slightly open to maintain desired air flow.

### Selecting Location with Humidifier Installed

#### IMPORTANT

*Excessive lime or mineral deposits can accumulate on damper blades and cause improper operation when spray or atomizing type humidifiers are installed in the furnace plenum or air supply duct with the zone dampers.*

- Spray or atomizer type humidifiers that are installed in the furnace plenum or air supply duct are not recommended.
- Evaporative type humidifiers are recommended.

### Installing the Damper

#### IMPORTANT

- Install dampers into a squared air duct.
- Do not weld dampers to the air ducts.
- Do not force dampers into undersized air ducts. Excess pressure can damage damper blades.
- Be sure high limit setting is less than 200° F (93°C).
- Higher settings can damage the electric actuator.

1. Be sure the ZD is correctly sized to the air duct (see Selecting Damper Size section).
2. Select a ZD location that is three feet from the furnace plenum.
3. Cut a 4-in. (102 mm) opening in the accessible side of the air duct at the location selected; ensure the opening of the air duct is cut fully from seam to seam.
4. Secure the ZD mounting plate to the air duct with the self-tapping sheet metal screws provided.

## WIRING

### CAUTION

**Personal Electrical Shock Hazard. Can cause electrical shock or equipment damage.**  
Disconnect power before beginning installation.

The damper motor has a 24 Vac, 50/60 cycle, 8 VA rating. The spring-return ARD and ZD damper requires 24 Vac to the two motor leads to power the damper closed. The damper then returns to its normal open position once power is removed. EARD damper requires 24 Vac to the two motor leads to power the damper open. The damper then returns to its normal closed position once power is removed.

**NOTE:** Multiple dampers can be wired in parallel.

### Wiring a Motor

See Fig. 3 and 7 for motor wiring hookups for ARD and ZD Dampers

### Changing Motor on ARD, EARD and ZD Dampers

1. Disconnect the motor wiring.
2. Loosen the socket head cap set screw located between the faceplate and the motor coupling.
3. Remove the motor.
4. Ensure damper blade is in the open position with the set screw pointing toward the open position on the label.
5. Attach new motor to the coupling; be sure the standoff on motor is positioned in the grommet on the faceplate and the set screw is aligned with the motor shaft hole.
6. Tighten the set screw.

### Wiring a Single ARD (Power Closed) to a Control Panel

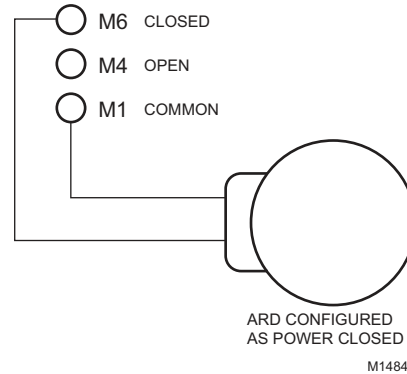


Fig. 3. ARD configured as power closed.

### Checkout

### CAUTION

#### Possible Equipment Damage

Do not manually open or close the damper as this can damage the actuator.

To check out the ARD:

1. With 24 Vac applied to the motor leads, observe the motor powering the damper to the closed position.
2. When energized, verify that the actuator connection coupling rotates in a clockwise direction (as viewed from the operator base end) and that the damper shaft turns with the coupling.
3. With power removed, observe the damper returning to the normally-open position.

**NOTE:** To remove power, disconnect one wire from the motor.

4. If the motor does not operate smoothly and without hesitation throughout the complete opening and closing stroke, examine the damper and the shaft for free rotation within the duct.

### Wiring an EARD to a W8150

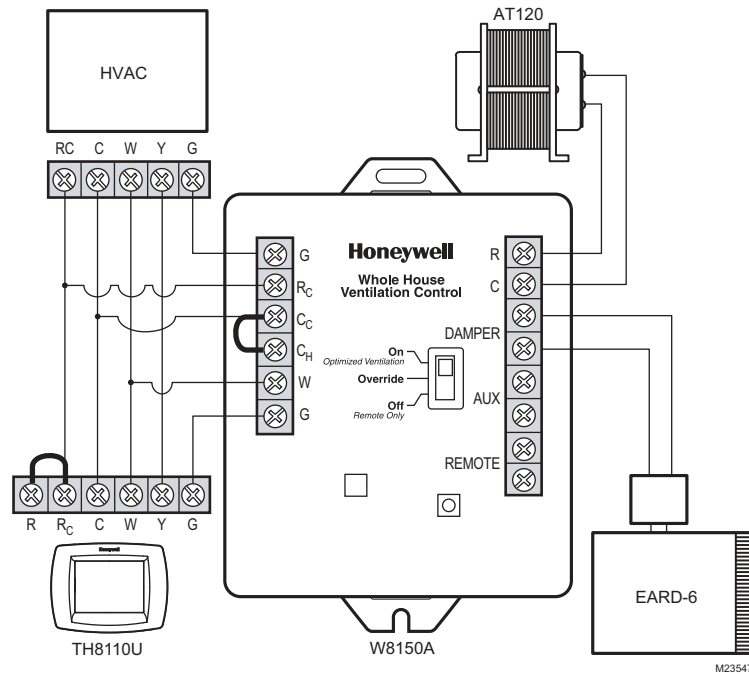


Fig. 4. EARD and W8150 wiring.

### Wiring an EARD to a VisionPRO® IAQ Thermostat

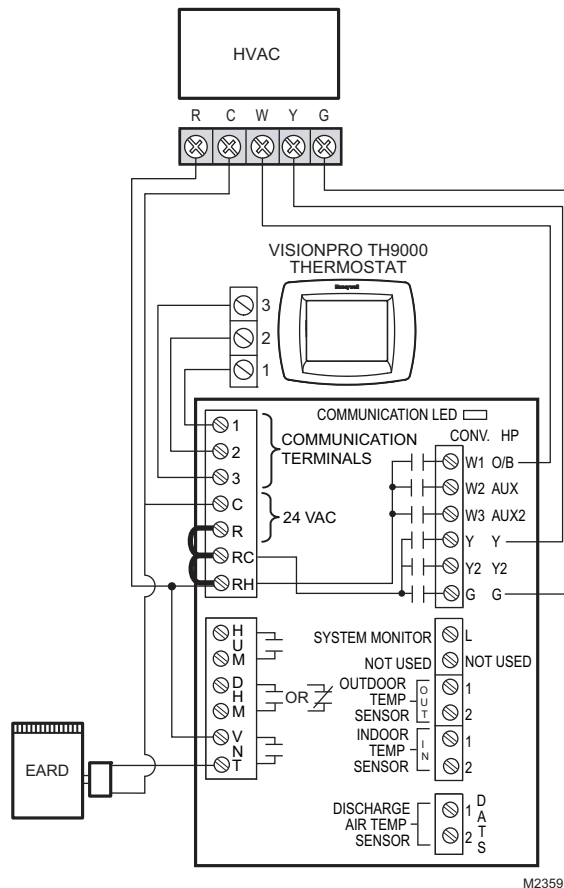


Fig. 5. EARD and VisionPRO® IAQ thermostat wiring.

TRUEZONE ARD, EARD, AND ZD SERIES DAMPERS

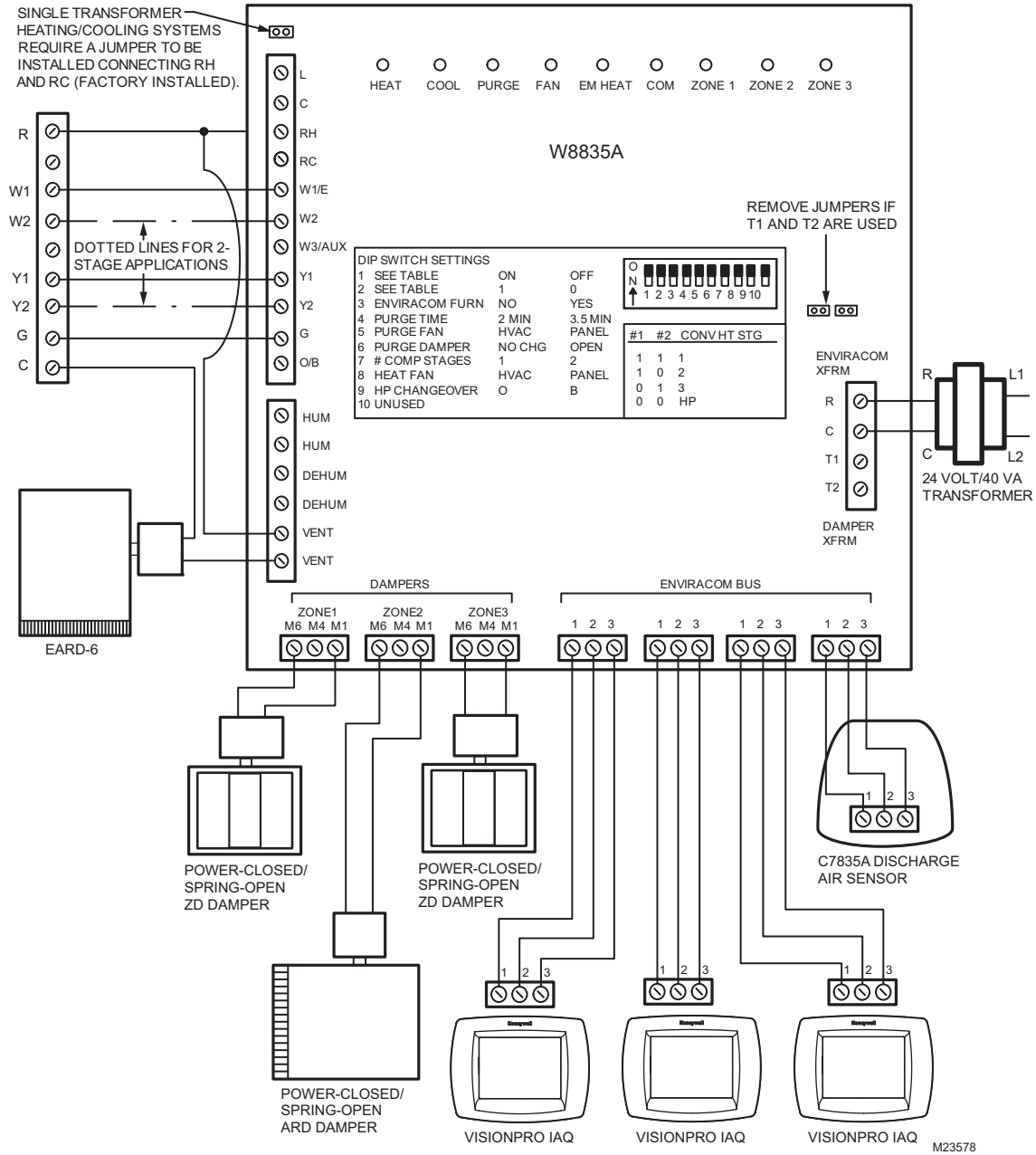


Fig. 6. EARD with W8835 EnviraZone panel.

## CHECKOUT

To check out the EARD:

1. With 24 Vac applied to the motor leads, observe the motor powering the damper to the open position.
2. When energized, verify that the actuator connection coupling rotates in a clockwise direction (as viewed from the operator base end) and that the damper shaft turns with the coupling.
3. With power removed, observe the damper returning to the normally-closed position.

**NOTE:** To remove power, disconnect one wire from the motor.

4. If the motor does not operate smoothly and without hesitation throughout the complete opening and closing stroke, examine the damper and the shaft for free rotation within the duct.

## ZD Damper WIRING

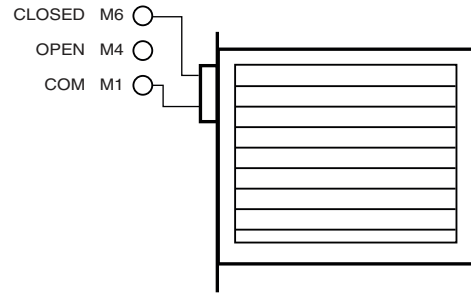


### CAUTION

**Personal Electrical Shock Hazard.**

Can cause electrical shock or equipment damage.  
Disconnect power before beginning installation.

The ZD has a 24 Vac, 50/60 cycle, .32A motor. The ZD is wired to terminals M1 and M6 for power closed/spring return open, with an option for M4 wire to power LED light only. The ZD is a spring return damper that requires 24V to the two motor leads to power the damper closed. When power is removed from the motor, the damper springs back to its normally-open position. When used with Honeywell Networked Zoning, use closed and com terminals.



**NOTE:**  
WHEN INSTALLING ON OLDER MASTERTROL™  
BOARDS SUCH AS THE MARK V, JUMPER  
M2-M5 ON THE PANEL.  
M14851A

**Fig. 7. Power closed spring return open ZD wiring.**

## Wiring Multiple Dampers

When the same zone controls two or more dampers, wire the dampers in parallel to terminals M1 and M6 on the zone control panel.

## Wiring a Motor

See Fig. 7 for typical motor wiring hookup.

## CHECKOUT

To check out the ZD:

1. With 24 Vac applied to the motor leads, observe the motor powering the damper to the closed position.
2. When energized, verify that the actuator connection coupling rotates in a clockwise direction (as viewed from the operator base end) and that the damper shaft turns with the coupling.
3. With power removed, observe the damper returning to the normally-open position.

**NOTE:** To remove power, disconnect one wire from the motor.

4. If the motor does not operate smoothly and without hesitation throughout the complete opening and closing stroke, examine the damper and the shaft for free rotation within the duct.

**Automation and Control Solutions**

Honeywell International Inc.  
1985 Douglas Drive North  
Golden Valley, MN 55422  
[customer.honeywell.com](http://customer.honeywell.com)

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