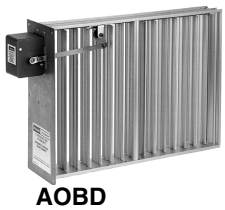
Honeywell

Automatic Opposed Blade Dampers (AOBD)

TROLATEMP®

PRODUCT DATA



AOBD

AOBD-BM

IOBD

APPLICATION

The opposed blade dampers are rectangular dampers with a 24-volt, two-position, power open and closed damper motor used to control the volume of circulating air in heating, cooling, and ventilating system.

FEATURES

- **Anodized extruded aluminum.**
- **Three models available:**
  - **— AOBD with side-mounted motor.**
  - **— AOBD-BM with bottom-mounted motor.**
  - **— IOBD with internally-mounted motor.**
- **Fully assembled and ready for installation.**
- **For odd-size dampers, contact Honeywell Customer Service or your local Honeywell Sales Representative for pricing.**
- **Order dampers by size and model:**
  - **— Order AOBD and IOBD using width by height. (AOBD motor and end plate are mounted on the height dimension.)**
  - **— Order AOBD-BM using height by width. (AOBD-BM motor is mounted on the width dimension.)**
  - **— AOBD-BM is available only up to 20 in. wide without a filler strip.**
- **When ordering AOBD-BM dampers up to 24 in. wide, a filler strip up to 4 in. is built-in.**
- **For odd-size dampers, order a one-inch filler strip for each odd dimension.**

68- 0246

SPECIFICATIONS

IMPORTANT

This 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.

Models:
AOBD has a side-mounted motor.
AOBD-BM has a bottom-mounted motor.
IOBD has an internally-mounted motor.

Available Sizes:

NOTE: For odd-size dampers, order a one-inch filler strip for each odd dimension.

AOBD and IOBD:
— Sized using width by height (AOBD motor and end plate are mounted on the height dimension).
— Even sizes are available for AOBD and IOBD from 6 x 4 in. to 30 x 14 in.

AOBD-BM:
— Sized using height by width (AOBD-BM motor is mounted on the width dimension).
— Even sizes are available for AOBD-BM only from 4 x 6 in. to 14 x 20 in. without a filler strip but up to 14 x 30 in. with a built-in filler strip. (When ordering AOBD-BM dampers up to 24 in. wide, a filler strip up to 4 in. is built-in.)

Dimensions:
All damper sizes are built slightly smaller than the listed dimensions to ensure correct fit. See Fig.1-3.

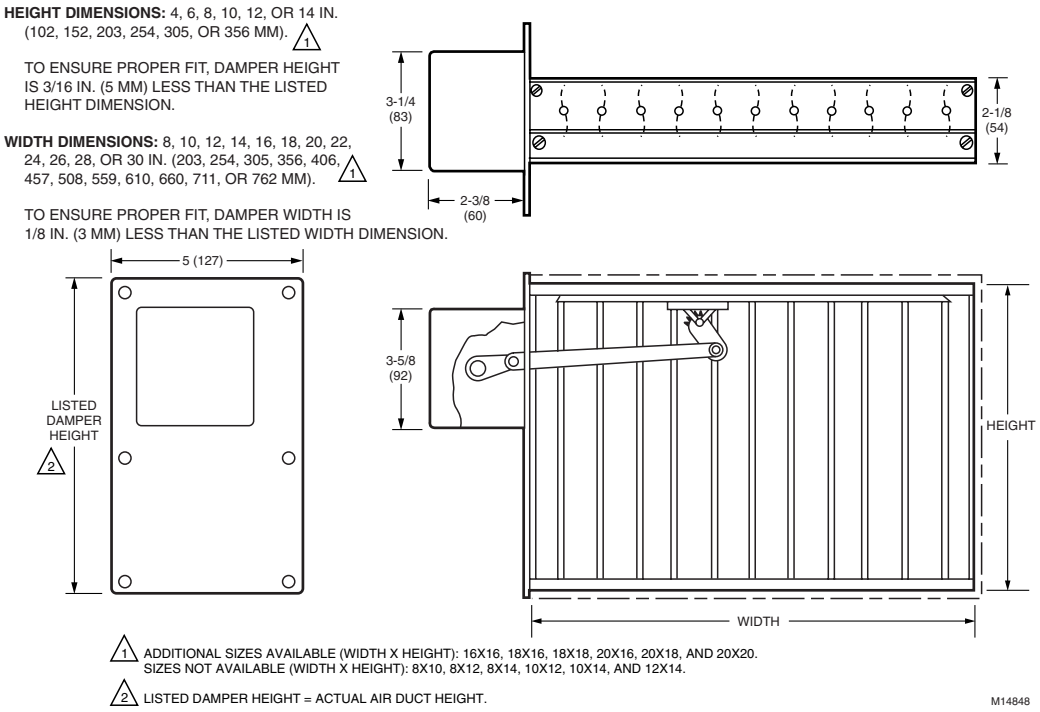


Fig. 1. AOBD dimensions in in. (mm).

ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Home and Building Control Sales Office (check white pages of your phone directory).
2. Home and Building Control Customer Relations
   Honeywell, 1885 Douglas Drive North
   Minneapolis, Minnesota 55422-4386

In Canada—Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Scarborough, Ontario M1V 4Z9.
International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.

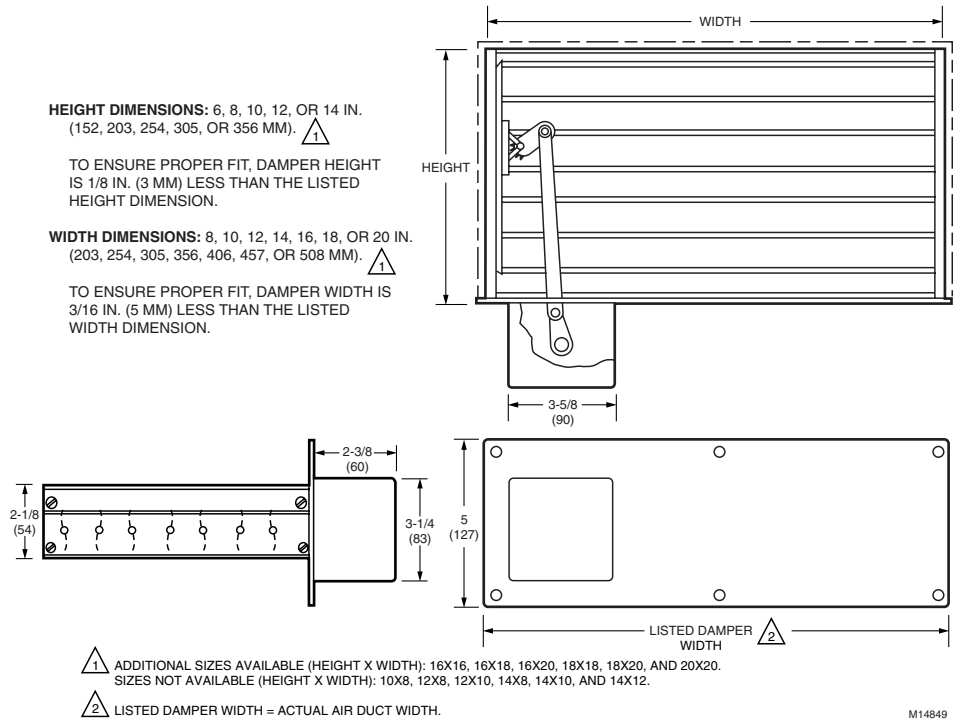


Fig. 2. AOBD-BM dimensions in in. (mm).

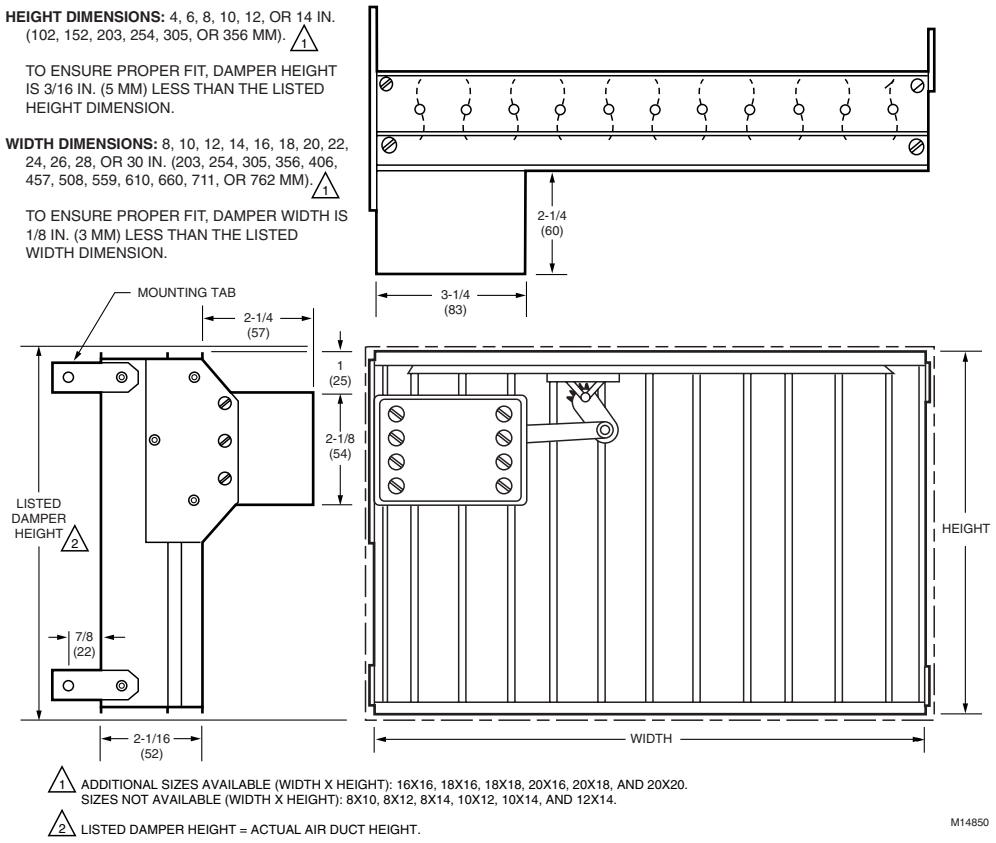


Fig. 3. IOBD dimensions in in. (mm).

INSTALLATION

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

Planning the Installation

Selecting a Location

Select a location for the zone damper that is at least three feet from the HVAC unit plenum in the air duct takeoff to the respective zone. IODB dampers can be installed near air registers.

The AOBD is a complete factory-assembled motorized damper. It comes complete and ready for installation.

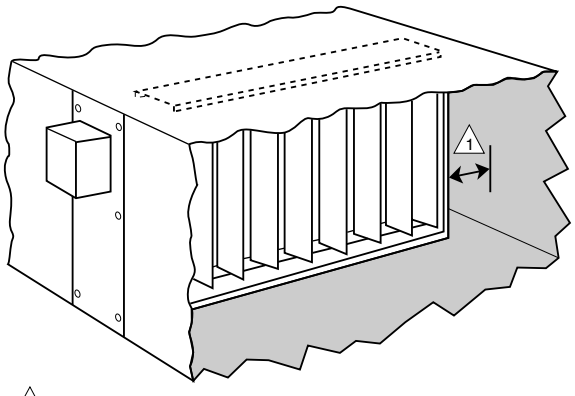
Selecting Damper Size

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

IMPORTANT

Be aware that damper sizes are built slightly 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, install a damper that is shorter than the air duct width. Refer to Fig. 4.*



1 DAMPER IS SLIGHTLY SMALLER THAN THE AIR DUCT SIZE. THIS GAP ALLOWS A CONSTANT FLOW OF CONDITIONED AIR INTO A ZONE WHEN DAMPER BLADES ARE CLOSED. M513

Fig. 4. Installing shorter dampers.

Selecting Location with Humidifier Installed

- Recommended humidifiers are the evaporative type.

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.

- *Non-recommended humidifiers are the spray or atomizer type that is installed in the furnace plenum or air supply duct.*

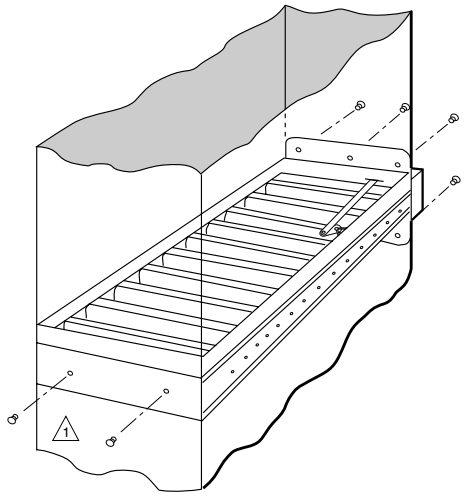
Installing the Dampers

IMPORTANT

- *— Install AOBD, AOBD-BM and IOBD dampers into a squared air duct.*
- *— Use multiple dampers and damper mounting tracks. to install applications wider than 30 in. See Fig. 5.*
- *— Do not force dampers into undersized air ducts. Excess pressure can damage damper blades.*
- *— Do not weld dampers to the air ducts or damper mounting tracks.*
- *— In multiple damper applications, do not weld dampers together.*
- *— When securing dampers with sheet metal screws, refer to Installation Instructions. Incorrect use of sheet metal screws can damage the damper blades and the electric actuator.*
- *— Be sure high limit setting is 200° F (93°C) or lower. Higher settings can damage the electric actuator.*

IMPORTANT

When installing dampers in vertical air ducts, always secure the front and back of the damper to the air duct. See Fig. 5.



1 SECURE BACK OF DAMPER TO AIR DUCT USING TWO 1/4 IN. (6 MM) SHEET METAL SCREWS. M514

Fig. 5. Securing back of damper to air duct.

IMPORTANT

When installing damper in horizontal air duct, be sure to mount the electric actuator and drive linkage toward the top of the air duct. See Fig. 6.

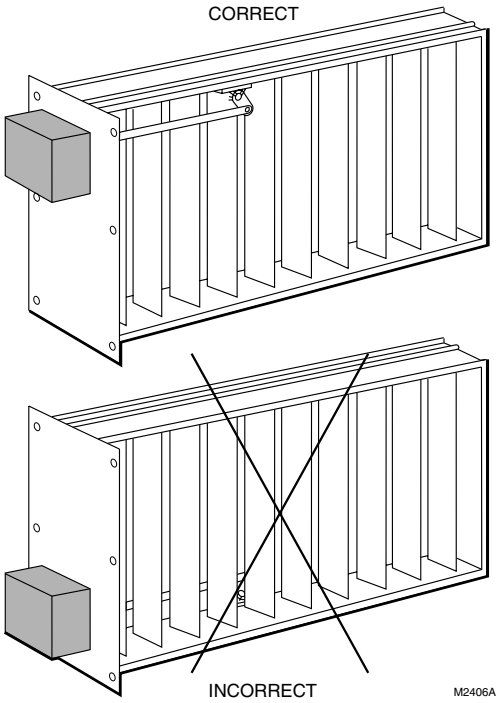


Fig. 6. Correct damper mounting position.

INSTALLING AUTOMATIC OPPOSED BLADE DAMPERS (AOBD), SEE FIG. 7)

1. Be sure the AOBD is correctly sized to the air duct.
2. Select an AOBD location that is at least three feet from the furnace plenum.
3. Cut a three-in. (76 mm) opening in one side of the air duct at the location selected. Be sure the opening is cut fully to the top and bottom air duct seams.
4. Slide the AOBD into the air duct. Be sure the electric actuator is mounted toward the top of the air duct.
5. For small air duct sizes (20 x 8 in. 18 x 10 in, 16 x 12 in. and smaller), secure the AOBD mounting plate to the air duct with sheet metal screws provided.
6. For large air duct sizes (20 x 8 in, 18 x 10 in., and 16 x 12 in. and larger), secure the mounting plate to the air duct with the sheet metal screws provided. Then secure the back of the AOBD to the air duct. If the back of the AOBD cannot be reached, install two mounting tracks. See Fig. 8.

INSTALLING MULTIPLE DAMPERS AND DAMPER MOUNTING TRACKS

For air duct sizes longer than 30 in., use multiple dampers and install mounting tracks inside the air ducts. See Fig. 8.

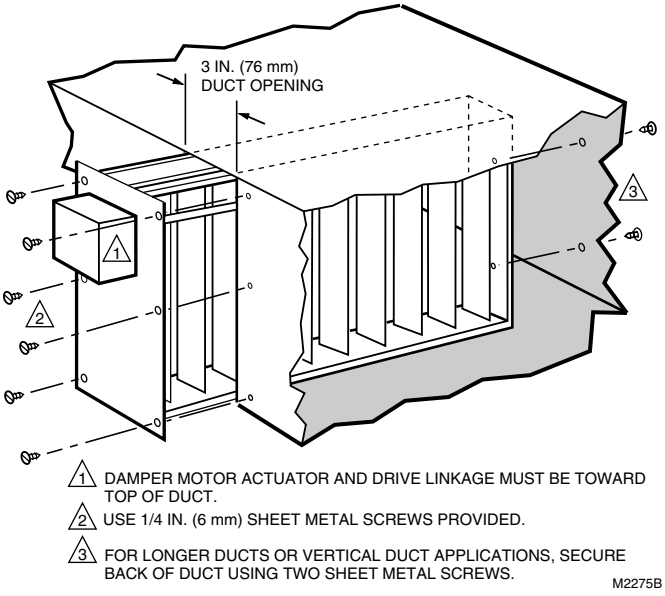


Fig. 7. Installing AOBD.

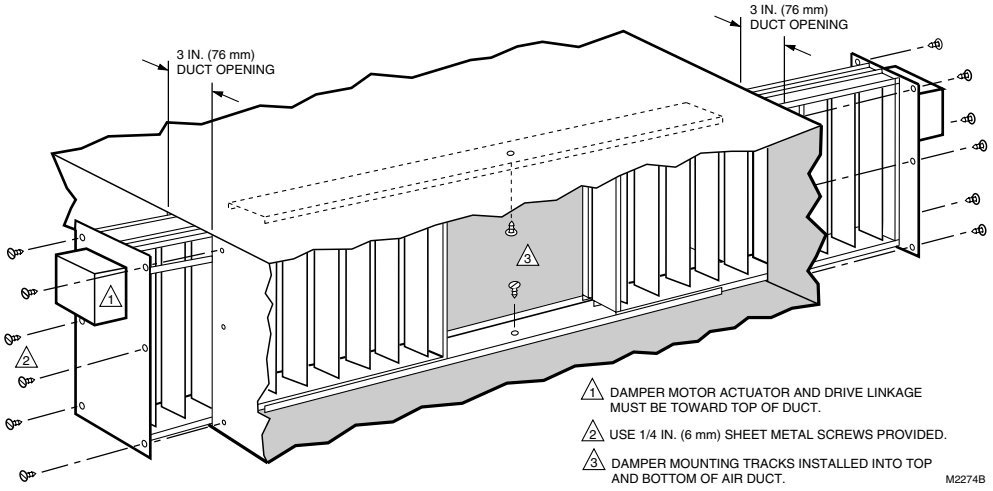


Fig. 8. Installing multiple dampers and damper mounting tracks.

INSTALLING AOBD-BM (SEE FIG. 9)

IMPORTANT

Secure the AOBD-BM by inserting screws in the top and bottom of the damper, not the sides of the damper.

1. Be sure the AOBD-BM is correctly sized to the air duct.
2. Select an AOBD-BM location that is at least three feet from the furnace plenum.
3. Cut a 3 in. (76 mm) opening in the bottom or top of the air duct at the location selected. Be sure the opening is cut fully to the air duct seams on each side.
4. Slide the AOBD-BM into the air duct.
5. Secure the AOBD-BM mounting plate to the air duct using the sheet metal screws provided.

INSTALLING INTERNAL OPPOSED BLADE DAMPERS (IOBD), SEE FIG. 10

IMPORTANT

Secure the IOBD by inserting the mounting screws through the front and back mounting tabs.

1. Be sure the IOBD is correctly sized to the air duct.
2. Select an IOBD location that is at least three feet from the furnace plenum or near an air register.
3. Slide the IOBD into the air duct. Be sure the electric actuator is mounted toward the top of the air duct.
4. Secure the IOBD to the air duct using the front and back mounting tabs.

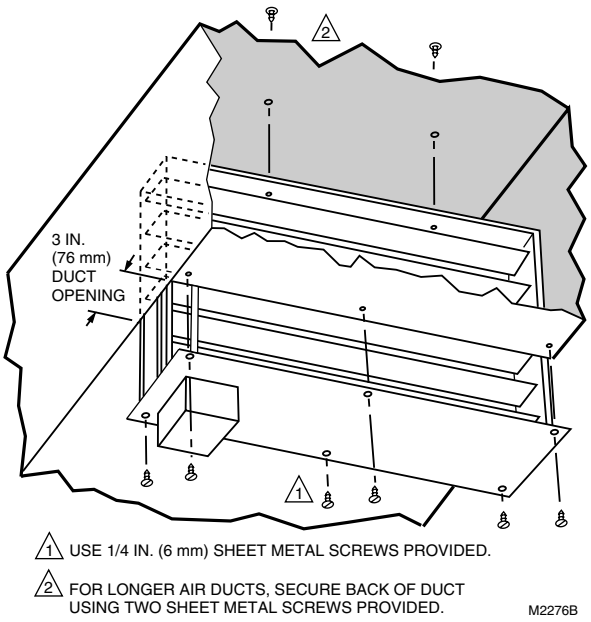


Fig. 9. Installing AOBD-BM (bottom mount).

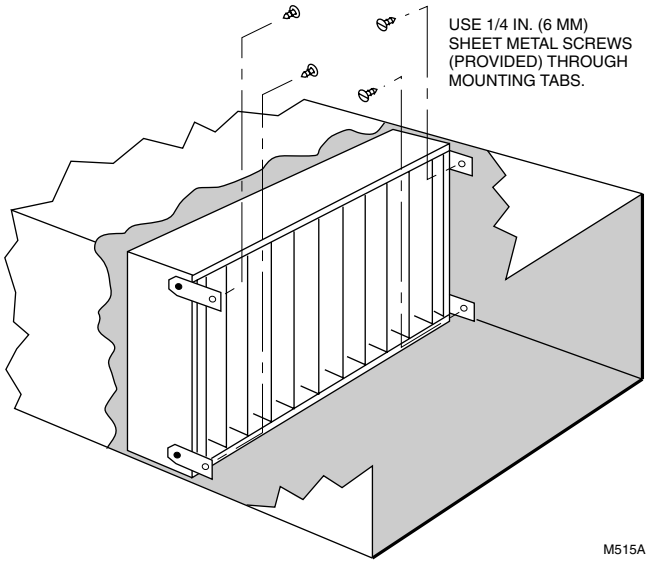


Fig. 10. Installing IOBD.

WIRING

Wiring Independent Zone Applications, See Fig. 11

For independent zone applications, follow the thermostat wiring instructions, if available, or see Fig. 11 for a typical wiring diagram.

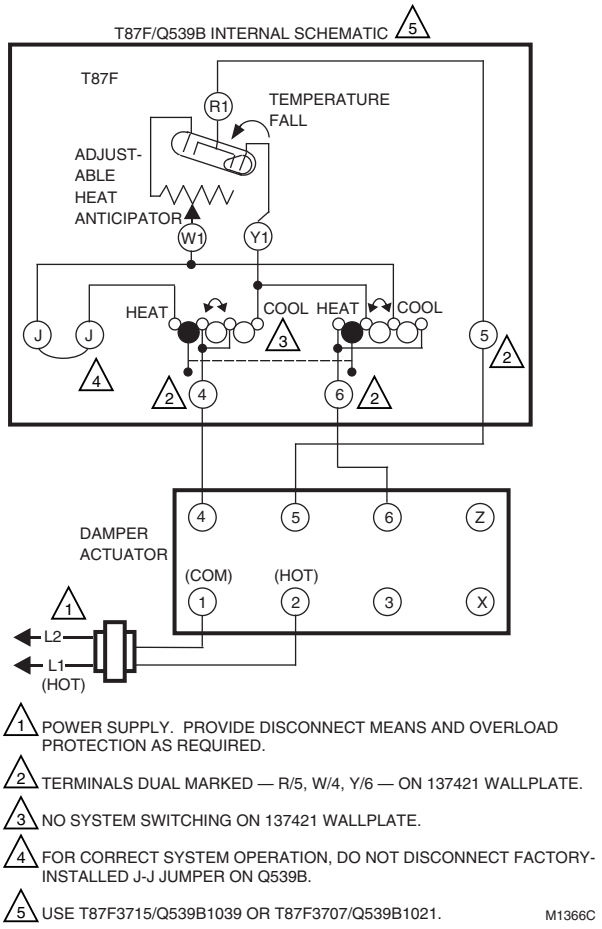


Fig. 11. Independent zone application wiring diagram.

Wiring Zone Systems

For zone systems, follow the thermostat and central logic panel wiring instructions, if available.

Wiring Tandem Dampers (See Fig. 12-14)

When two dampers are controlled by the same thermostat (or older panel with five-wire control circuit), such as occurs when two registers, diffusers, or dampers supply the same room or zone, the second unit is controlled by the switch action of the first unit (see Fig. 12).

A tandem wiring diagram for use with an electric panel is shown shown in Fig. 13.

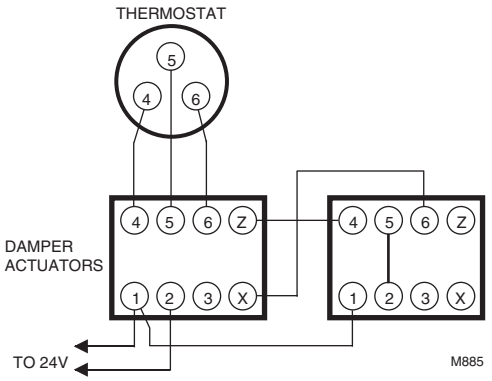


Fig. 12. Tandem wiring of dampers to the thermostat in an independent zone application.

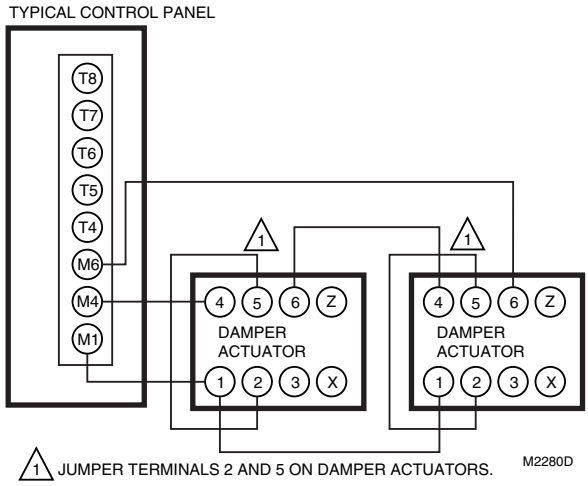


Fig. 13. Typical tandem wiring diagram with control panel.

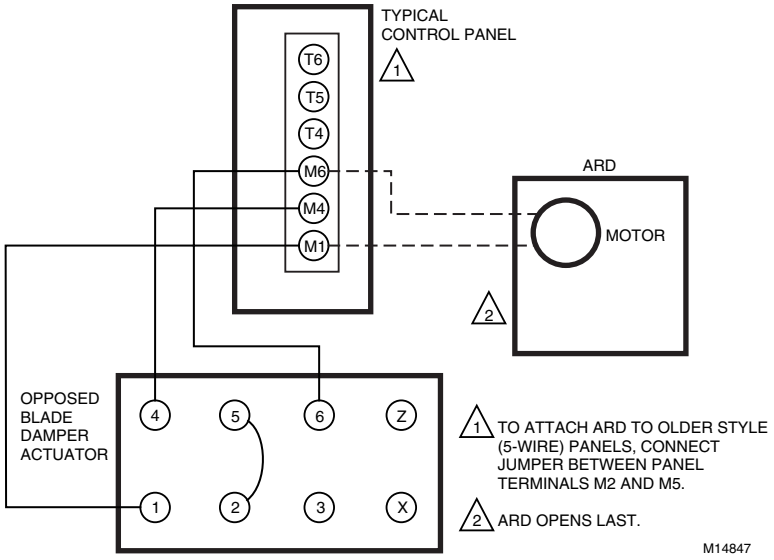


Fig. 14. Tandem wiring of automatic opposed blade damper (AOBD) and automatic round damper (ARD).

CHECKOUT

After installing and wiring the dampers, turn on the power supply and check out the system. To check out the forced air system, see the system specifications.

⚠ CAUTION

Equipment Damage Hazard.
Shorting can damage thermostat heat anticipator.
Avoid shorting across system control terminals when checking system operation.

IMPORTANT

To ensure accurate temperature control, do not touch or breathe on the thermostat bimetal or thermometer.

Determining Damper Position (See Fig. 15)

1. Observe that damper is open when the crank arm points toward the damper.
2. Observe that damper is closed when the crank arm points away from the damper.

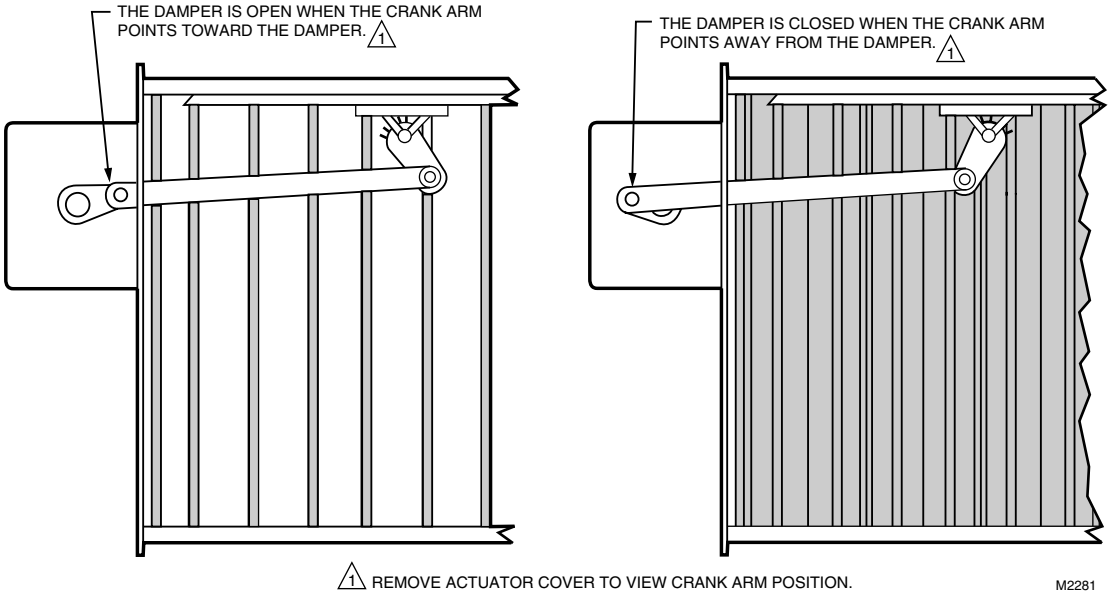


Fig. 15. Determining damper position.

SERVICE

Checking Damper Blades

Occasionally damper blades stick while opening or closing. The problem may be caused by a worn motor switch or binding damper blades. To locate the problem:

1. Remove the electric actuator enclosure, if necessary.
2. Separate the crank arm from the motor shaft using a 1-16 Allen wrench.
3. Using your hand, open and close the damper blades several times by pushing and pulling the crank shaft:
   a. If linkage and damper blades move freely, they are working correctly.
   b. If linkage and damper blades require effort to open or close, replace the damper and repeat step 2.
4. If the damper blades still require considerable effort to open or close, check that the damper is sized correctly and that there is no pressure on the damper blades. If the damper is not sized correctly, replace the old damper with a correctly-sized damper.
5. Attach the crank arm to the motor drive shaft.
6. If the damper blades continue to stick while opening or closing, refer to the Installation Instruction to ensure the mounting screws are installed correctly.
7. Be sure the damper blades close fully by shorting terminals 5 and 6. If there is a gap between damper blades:
   a. Loosen the crank arm from the motor drive shaft using a 1-16 Allen wrench.
   b. Manually close the gap between the damper blades.
   c. Tighten the crank arm to the motor drive shaft using a 1-16 Allen wrench.

Checking Electric Actuator (See Fig. 16)

1. Remove wires from the damper terminals.
2. Connect 24 Vac to electric actuator terminals 1 and 2.
3. Ensure the electric actuator operates correctly:
   a. Remove wires from terminals 4 and 6.
   b. Short terminals 4 and 5 to open the damper blades.
   c. Short terminals 5 and 6 to close the damper blades.
      (1) If the dampers open and close as indicated, the system is operational.
      (2) If the dampers do not operate, as indicated, replace the electric actuator and repeat steps 1 and 2.
4. Ensure the end-switch operates correctly:
   a. Connect a 24 Vac test light between terminals 1 and 3.
   b. Short terminals 4 and 5:
      (1) When the damper blades are fully open, the end-switch engages, the 24 Vac test light turns on, and the electric actuator turns off.
   c. Short terminals 5 and 6:
      (1) When the damper blades are fully closed, the end-switch engages, the 24 Vac light turns off, and the electric actuator turns off.
5. If the motor and end-switches do not operate, as indicated, replace the electric actuator and repeat steps 1 through 4.
6. Replace the electric actuator enclosure.

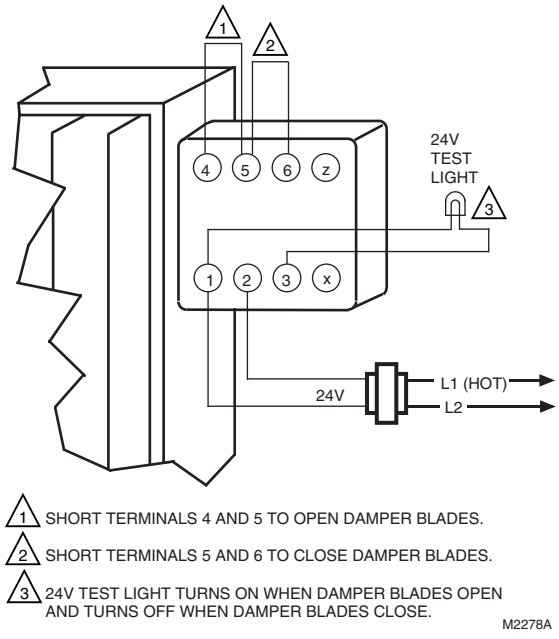


Fig. 16. Checking the electric actuator.

Replacing Electric Actuator

IMPORTANT

Electric actuator is shipped in the open damper position.

1. Using a 1-16 Allen wrench, loosen the crank arm setscrew that connects the crank arm to the motor drive shaft.
2. Remove the crank arm from the motor drive shaft.
3. Remove the two screws from the crank arm side of the actuator box.
4. Remove the electric actuator from the actuator box.
5. Install the new electric actuator into the actuator box.
6. Tighten the two screws into the crank arm side of the actuator box.
7. Attach the crank arm to the motor drive shaft.
8. Tighten the crank arm set screw.

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