



WHITE-RODGERS

**2061 ZONE-AIR
Two-Wire DAMPER MOTOR
with Access-Mounting Plate
INSTALLATION INSTRUCTIONS**

Operator: Save these instructions for future use!

**FAILURE TO READ AND FOLLOW ALL INSTRUCTIONS CAREFULLY
BEFORE INSTALLING OR OPERATING THIS CONTROL COULD CAUSE
PERSONAL INJURY AND/OR PROPERTY DAMAGE.**

DESCRIPTION

The Type 2061 Damper Motor provides a low-cost system of zoned temperature control for warm air heating. It is of the two-wire type, and is specially designed for use with a two-wire thermostat with .2 Amp heat anticipator.

Each room or zone requires one damper motor and one thermostat. The thermostat automatically controls the passage of warm air through the duct by operating the

damper motor which is installed on the duct work to each room or zone.

This Damper Motor-Thermostat combination may be installed on present systems for economical conversion to zone heating. It is ideally suited for split-level and ranch-type homes having a warm air heating plant.

PRECAUTIONS

Do not exceed the specification ratings.

All wiring must conform to local and national electrical codes and ordinances.

This control is a precision instrument, and should be handled carefully. Rough handling or distorting components could cause the control to malfunction.

⚠ WARNING

Do not use on circuits exceeding 30 volts. Higher voltage will damage control and could cause shock or fire hazard.

⚠ CAUTION

To prevent electrical shock and/or equipment damage, disconnect electric power to system, at main fuse or circuit breaker box, until installation is complete.

Do not short out terminals on gas valve or primary control to test. Short or incorrect wiring will burn out heat anticipator and could cause personal injury and/or property damage.

SPECIFICATIONS

All guarantees are void if these specifications are exceeded.

Electrical Ratings: The Damper Motor draws .2 Amp Max. at 25 VAC when in the open position.
Auxiliary Contacts: Do not exceed 2.0 Amp at 25 VAC (terminals 2 and 3).

NOTE

The Damper Motor draws more than .2 Amp while it is opening. For this reason, do not use more than the recommended number of damper motors per transformer as shown on page 4.

Thermostat: Use two-wire thermostat with .2 Amp anticipator.

Timings: From full close to full open - Approximately 45 seconds
From full open to full close - Approximately 60 seconds.

Maximum Duct Size: 300 square inches

Maximum Duct Capacity: 1200 cubic feet per minute.



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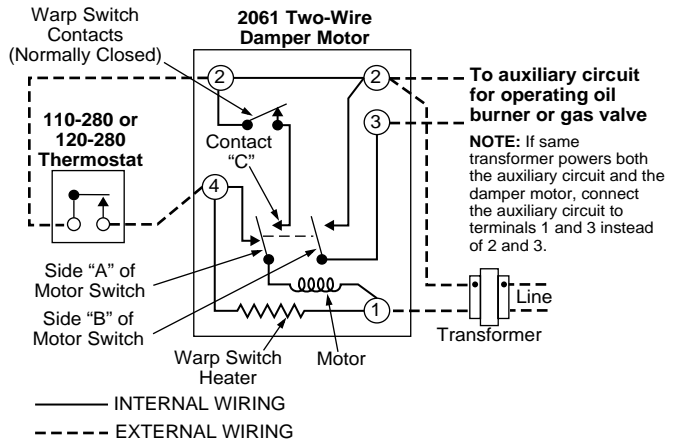
PRINCIPLE OF OPERATION

This schematic shows the damper motor in the closed position. As the thermostat calls for heat, the damper motor is energized as a circuit is made through side "A" of motor switch. (At the same time a circuit is made through the warp switch heater.) The damper motor begins to open.

Before the damper motor reaches the full open position, side "B" of motor switch closes (providing a **low voltage** auxiliary circuit for starting oil burner or opening gas valve), side "A" of motor switch makes with contact "C", and the warp switch heater opens the warp switch contacts. The warp switch heater remains energized and keeps the warp switch contacts open as long as the thermostat calls for heat.

When the thermostat is satisfied, the circuit through the warp switch is broken. After this heater cools for a short time, the warp switch contacts close, energizing the damper motor through side "A" of motor switch. Just after the damper motor begins closing, side "B" of motor switch opens (breaking the auxiliary circuit), while side "A" of motor switch makes with contact 4 just before the damper motor fully closes.

The damper motor draws no current while in the closed position.



The system is so wired so that if any one zone still calls for heat, the burner stays on. When all thermostats are satisfied, all dampers will have closed, and the circuit broken to the gas valve or oil burner control.

The blower in the furnace operates as in any conventional, unzoned hot air system. When the air in the plenum is warmed to a set temperature, the fan control turns the blower on. When the air temperature drops, the fan control turns the blower off. The addition of zoning has not affected normal fan operation.

INSTALLATION

DUCT LAYOUT

This illustration shows a typical layout for a zoned warm air system using Zone-Air Controls.

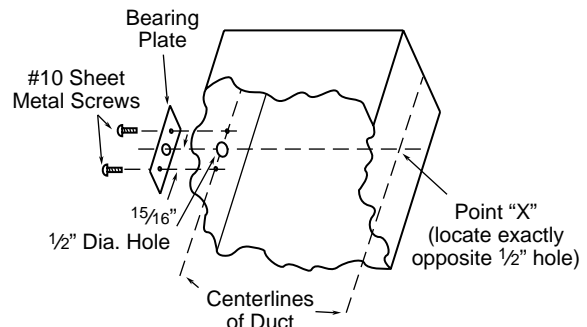
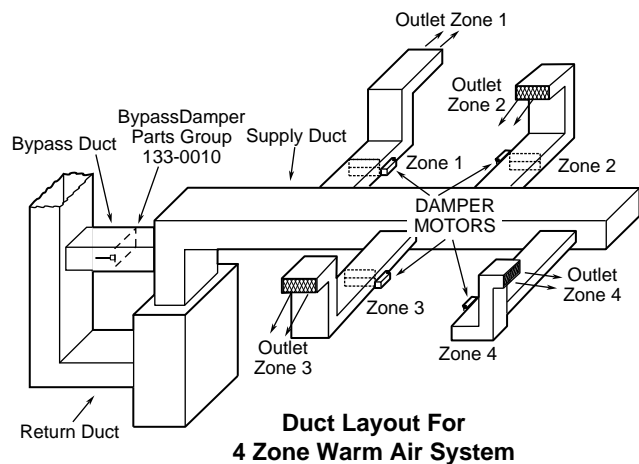
NOTE

The use of a bypass damper is recommended. See page 6 for details.

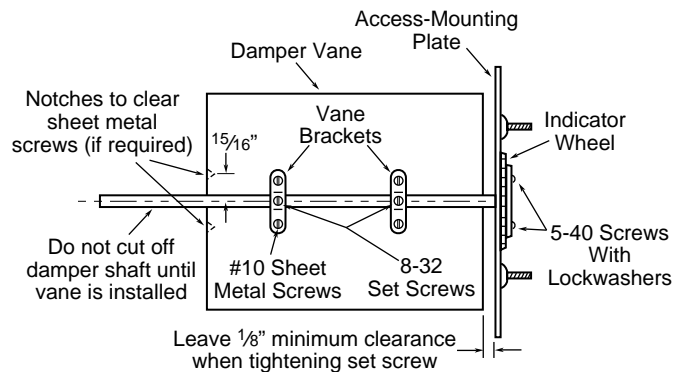
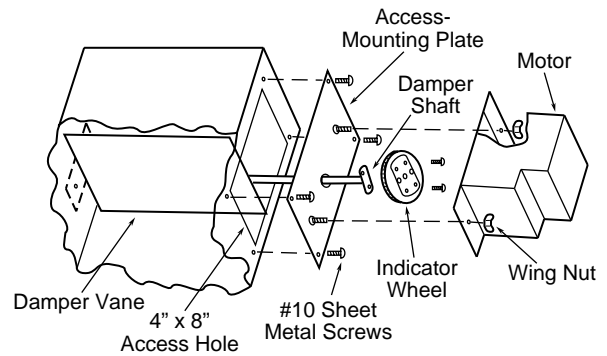
INSTALLING DAMPER MOTOR

The following instructions apply for 6, 8, and 10" ducts. (For round ducts and rectangular ducts under 6" a special bracket is available which replaces the access-mounting plate.)

1. Select a convenient position for damper motor installation on duct work to each zone. Carefully locate and mark center line on each side of duct.
2. Mark location for $\frac{1}{2}$ " hole. Also mark locations for holes to attach bearing plate by measuring $\frac{15}{16}$ " from center of $\frac{1}{2}$ " hole. Drill all three holes and attach bearing plate with two #10 sheet metal screws provided.
3. Locate point "X" on center line **exactly opposite** $\frac{1}{2}$ " hole.



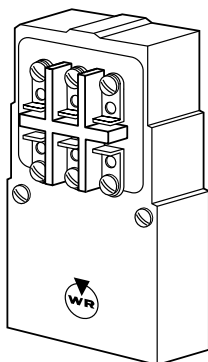
4. Use access-mounting plate as a template. Hold plate against duct and mark the four hole locations for attaching plate to duct. **Be sure slotted hole in center of plate is over point "X" (Fig. 1) and that edge of plate is parallel with edge of duct.** Then drill the four holes to take #10 sheet metal screws.
5. Cut out 4" x 8" access hole through which damper vane is to be installed. **Access hole should be centrally located between the four mounting holes.**
6. Attach indicator wheel to damper shaft with two 5-40 screws with lockwashers.
7. Cut damper vane to duct size, allowing 1/8" minimum clearance between duct and vane at all points. (If required, snip notches in vane to clear protruding sheet metal screws used to mount bearing plate.)
8. Attach vane brackets to locate damper shaft on **exact center line** of damper vane. (Dimension from center line of vane to center of holes for attaching vane brackets is 17/32".) Then start 8-32 set screws into vane brackets.
9. Insert damper shaft through access-mounting plate, then through vane brackets. Holding indicator wheel flush against access-mounting plate, lock damper shaft to vane by tightening set screws, **being sure to leave 1/8" minimum clearance between edge of vane and access-mounting plate as shown.**
10. Install vane through hole in duct by turning vane sideways and slipping damper shaft into slot in bearing plate on opposite side of duct. Push indicator wheel flush against access-mounting plate and spin indicator wheel to assure free turning of vane. Then attach access-mounting plate to duct and cut off damper shaft so it extends 1" past bearing plate.



11. **Motor is shipped in closed position.** Turn indicator wheel so that yoke on bottom of motor slips into **square holes** on indicator wheel when motor is placed into position. Tighten motor firmly with wing nuts. (The word "closed" should be visible on the indicator wheel.)

WIRING

All wiring must conform to local and national electrical codes.



If the furnace manufacturer recommends a wiring diagram, follow such instructions. If none are available, the following diagrams show suggested circuits for Type 2061 Damper motors in conjunction with two-wire thermostats (.2 Amp anticipator) and other related controls.

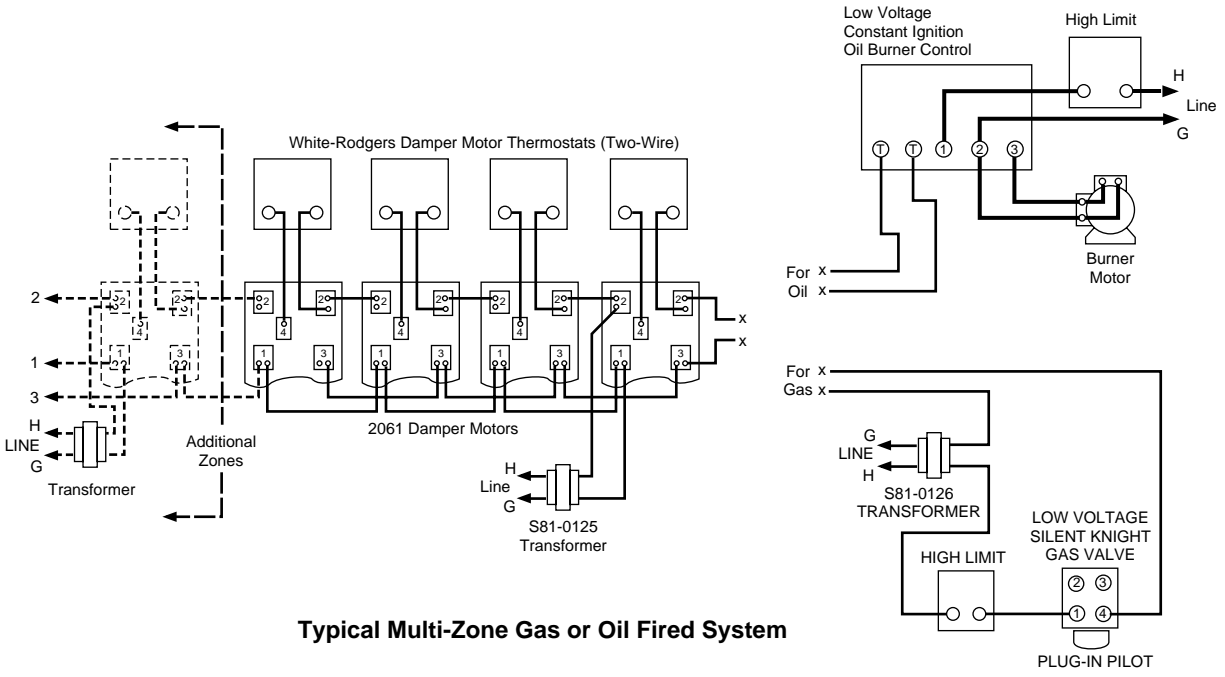
For best connections, use #18 Thermostat wire. #16 will also work satisfactorily.

Make connections to screw terminals according to wiring diagram.

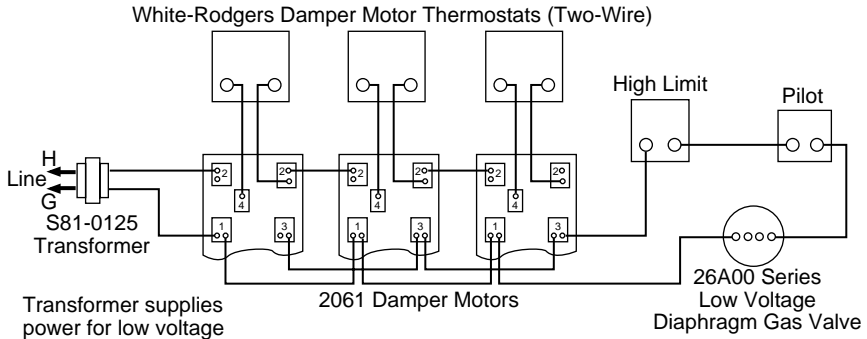
NOTE

To check motor operation without thermostat connected, jumper 2 to 4 to open motor. Remove jumper to close motor.

The WR S81-0125 Transformer (40 VA) will handle up to 4 damper motors. The WR S81-0126 (20VA) will handle up to 2 damper motors.



Typical Multi-Zone Gas or Oil Fired System



Typical 3-Zone Gas Fired System

CHECKING THE SYSTEM

Turn on the electricity. If gas fired, be sure pilot is lit. Then check **each zone separately** as follows:

1. Turn thermostat to highest setting. Damper vane for that zone will open and furnace burner will come on as auxiliary circuit is made on damper motor.

2. Turn thermostat to lowest setting. Damper vane for that zone will close and furnace burner will shut off as auxiliary circuit is broken on damper motor.

MANUAL OPERATION

The position of the damper vane can always be determined by looking at the indicator wheel. If the word “open” is visible, the vane is open. If the word “closed” is visible, the vane is closed.

Observe the following instructions in the event it is necessary to change the damper vanes from closed to open position. For example, if the cooling system is **not** zoned but **does** use the same duct work as the heating system, the damper vanes should be changed from the closed position to the open position at the start of the cooling season.

 **CAUTION**

Be sure to change the vanes back to the open position at the start of the heating season.

To change damper vane from closed to open position:

Loosen wing nuts and pull damper motor back from duct a short distance. Rotate indicator wheel 90° in either direction so that yoke on damper motor drops into the two **round** holes on indicator wheel. Then retighten wing nuts.

To change damper vane from open to closed position:

Loosen wing nuts and pull damper motor back from duct a short distance. Rotate indicator wheel 90° in either direction so that yoke on damper motor drops into the two **square** holes on indicator wheel. Then retighten wing nuts.

133-0010 ZONE-AIR BYPASS DAMPER

INSTALLATION INSTRUCTIONS

DESCRIPTION

This bypass damper was designed for use with zoned warm air heating and air conditioning systems. It is installed in a connecting duct between the furnace plenum or the supply duct and the cold air return duct.

Its purpose is to control and compensate for excess volume and velocity of the air due to the closing of the dampers leading to some of the zones.

The bypass damper, operating by means of air pressure, permits any excess volume of air to pass directly to the cold air return, avoiding an increased air velocity through the remaining open ducts which would result in discomfort to the occupants of that zone.

INSTALLATION

All parts needed for the bypass damper are provided except the damper vane. The vane should be cut from a piece of sheet metal to the proper size to fit the duct.

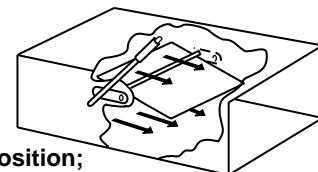
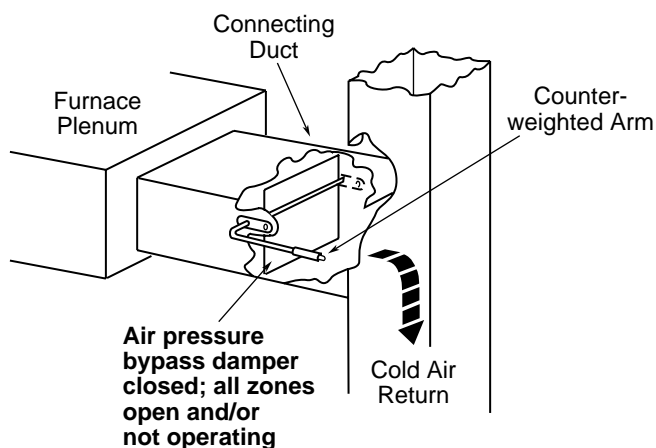
The bypass duct should be properly sized. It should be designed to handle at least the same amount of air as the supply duct, less that required by the smallest zone.

The damper located in the bypass duct has a counter-weighted arm. It operates through the pressure of the air as opposed to the torque of the weighted arm. Adjust the counterweight so that with all zones calling for heat, the fan in operation, and all ducts open, the bypass damper is in the closed position.

If several zones are not calling for heat, the bypass damper should be partially open; if only one zone is calling for heat, the bypass damper should be open.

NOTE

See the layout for zoned warm air system on page 2 for additional information.



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