



**INSTALLATION INSTRUCTIONS**

**FOR**

**8330-763\***

**FLUSH MOUNT MANUAL CONTROL**

**CEILING PLENUMS**

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## WARNINGS

### IMPORTANT NOTICE

These instructions are for the use of qualified individuals specially trained and experienced in installation of this type equipment and related system components.

Installation and service personnel are required by some states to be licensed. PERSONS NOT QUALIFIED SHALL NOT SERVICE THIS EQUIPMENT.

### WARNING

Improper installation may damage equipment, can create a hazard and will void the warranty.

The use of components not tested in combination with these units will void the warranty, may make the equipment in violation of state codes, may create a hazard and may ruin the equipment.

### WARNING – SHOCK HAZARD

To prevent the possibility of severe personal injury or equipment damage due to electrical shock, always be sure the electrical power to the appliance is disconnected.

**CAREFULLY FOLLOW ALL INSTRUCTIONS AND WARNINGS IN THIS BOOKLET TO AVOID DAMAGE TO THE EQUIPMENT, PERSONAL INJURY OR FIRE.**

### NOTE

**The words “Shall” or “Must” indicate a requirement which is essential to satisfactory and safe product performance.**

**The words “Should” or “May” indicate a recommendation which is not essential and not required but which may be useful or helpful.**

## PACKAGE CONTENTS

- 1) Mount Frame
- 1) Duct Divider
- 1) Foam Strip
- 1) Return Air Grille
- 1) Return Air Filter
- 1) Wirebox Plate Assembly

- 1) Small Parts Package, includes:
  - Mounting Bolt (x4)
  - Selector Knob (x1)
  - Thermostat Knob (x1)
  - Wirebox Strain Relief
  - Wire Nuts (x3)
  - Screws (x7)

Some packages may contain:

- Washer (x4)
- Spring (x4)

## GENERAL INFORMATION

The flush mount ceiling plenum is designed for application in systems that utilize field fabricated (OEM supplied) cold air ducting. The ducting must be routed through the ceiling cavity (between the interior ceiling and roof). Ducting specifications are given in the section labeled "Supply Ducting and Registers".

This system utilizes a single, non-ducted centrally located return air opening. The return air opening is contained within the ceiling plenum. The ceiling plenum must be located directly below the roof opening used for mounting the roof top unit.

Manual controls are mounted in the electrical box of the ceiling plenum.

This flush mount ceiling plenum will mount to and operate all 115 volt 47000, 48000 and 49000 series air conditioners. This system is designed for electric strip heating as an option. The heat kit number is 9233\*4551 for 48000 and 49000 series. The heat kit is 47233\*4551 for the 47000 series. The ceiling plenum comes equipped with the following:

- 1) all hardware required for mounting and securing the roof top unit
- 2) a means of attaching the field fabricated ducting
- 3) the return air grille and filter

## CEILING PLENUM INSTALLATION REQUIREMENTS (ROOF THICKNESS MUST BE AT LEAST 3")

1. The ceiling plenum must be installed under the roof opening.

The ceiling plenum bolts to below the roof unit. Compression of the framed ceiling cavity between the roof unit and the ceiling plenum is what holds both components in place.

2. Ceiling cavity depth (the measurement from the ceiling to the roof):  
6" – Maximum  
3" – Minimum
3. The 115 VAC service for the roof unit must be routed into the ceiling plenum. To prevent wire pinching

and to promote ease of installation, allowances must be made for routing the 115 VAC supply wiring into the front of the roof opening.

2. The ceiling plenum has a 9 pin socket extending from the front of the electrical box. This mates with the roof unit 115 volt electrical conduit. When making this connection, verify that the plugs are properly aligned and have snapped together securely.
5. Provided with the ceiling plenum is a divider plate which is used to separate the warm return air from the cold supply air.

## SUPPLY DUCTING AND REGISTERS

### A. Ducting

1. The field fabricated supply ducting must attach to both sides of the ceiling plenum. A minimum of two ducts are required, with one duct attached to each side of the plenum. See Figure 1.
2. Each duct must have a minimum height of 1 1/2", maximum height cannot exceed 4 inches. Total free area inside each duct must be no less than 10 square inches.

### NOTE

To decrease restriction and increase air flow, the ducting should make as few bends and turns as possible. When corners or turns are required, we recommend that you radius the corners to keep air flow at a maximum.

Ten (10) square inches of free area per duct is the minimum requirement, larger ducting will improve air flow and system performance.

3. Where ducting secures to the ceiling plenum, maximum width is 8 inches.

4. All field fabricated cold air supply ducting must be insulated and must have a vapor barrier.

### **IMPORTANT**

**Insulating reduces cooling loss and helps prevent water staining of the vehicle ceiling due to moisture condensation.**

### **Registers**

Supply (cold air) registers should have a minimum discharge area of 48 square inches per system, or 24 square inches per duct.

## **ROUTING 115 VAC WIRING**

1. Following Airxcel, Inc. high voltage wiring specifications and all local and national electrical codes, route the roof unit 115 VAC supply wiring from its power source and into the front of the roof opening. To allow attachment to ceiling plenum high voltage connections, extend approximately 12" of the wiring into the opening.
2. To prevent voltage drops greater than 10% during starting loads, adhere to the following guideline:  
  
For lengths greater than 50', use #10 AWG.  
  
Circuit Protection – Refer to upper unit nameplate.

### **High Voltage Wiring Specifications**

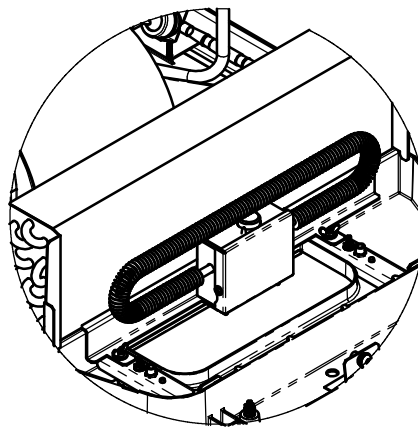
U.L. approval requires the power supply to be copper conductors with minimum #12 AWG.

## **OPTIONAL ELECTRIC HEATER INSTALLATION**

For 47000 series units, see Figure 1.  
For 48000 or 49000 series units, see Figure 2.

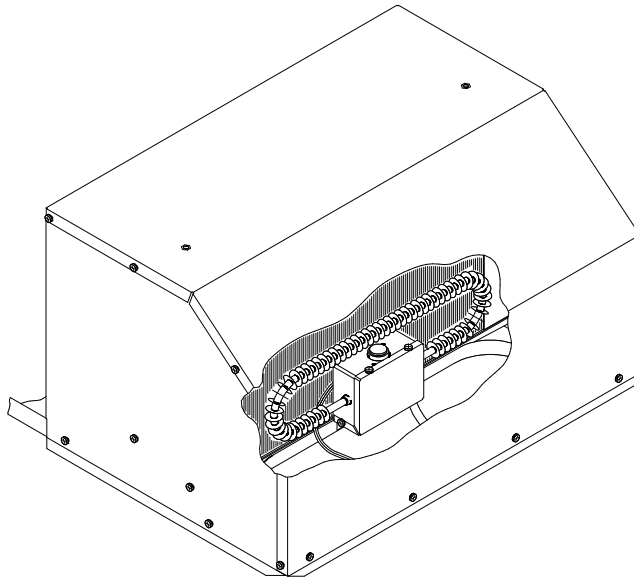
### **CAUTION: FIRE HAZARD**

**AFTER INSTALLING THE HEATER, INSURE THAT ALL SYSTEM WIRING IS SECURELY FASTENED TO PREVENT CONTACT WITH THE HEATER.**



**FIGURE 1**

**Wing nuts fasten heater assembly to mount studs as shown.**



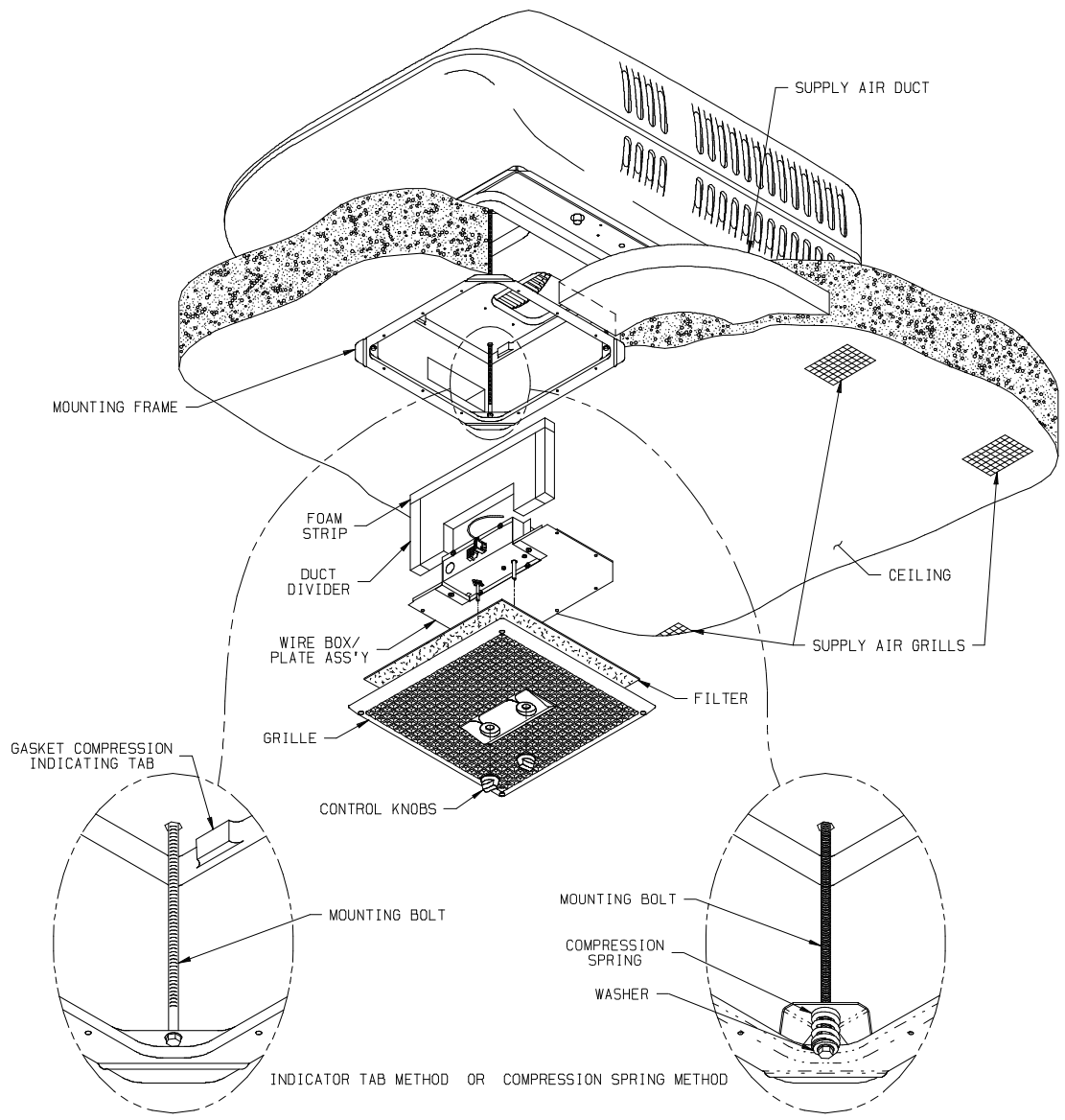
**FIGURE 2**

**Cap screw clamps heater assembly to flange as shown.**

## **CEILING PLENUM MOUNTING**

### **Mounting**

1. Place the roof top unit over the roof opening.
2. Position the mount frame into the ceiling opening. See Figure 3.
3. Using the four bolts provided, secure the mount frame to the roof unit. The four mounting bolts are to be applied up through the bottom of the mount frame and into the bottom of the roof unit. Some models include compression springs that should be tightened just until springs achieve closure. See Figure 3.
4. Route the conduit through the return opening.
5. Remove ceiling plenum electrical box. Retain box and two screws for reattachment. See Figure 3.  
  
Familiarize yourself with the high voltage wiring box, strain relief and wiring. The 115V supply wiring must be routed through the strain relief in the high voltage wiring box and secured to wiring inside. Wiring nuts are provided in the small parts package.
6. Measure the distance between the ceiling and the upper unit basepan. Subtract 1/2" from this measurement and, using this calculated value, cut the divider board to this height. Always cut off the top of the divider board. Attach the foam strip to the edge just trimmed.
7. Gently wedge the divider board with the aluminized side toward the front between the walls of the roof opening and up against the upper unit basepan. The upper unit mount gasket has a locator block on each side which locates the divider board.
8. Attach the wirebox plate assembly to the mount frame using the screws found in the small parts package. The divider board cutout will surround the wirebox at the top and sides. Insure that a snug, leak-proof seal is created between the supply air and return air. If not, use a quality duct tape to seal between the wirebox and the aluminized board.



**FIGURE 3**

## IMPORTANT

When connecting the 115V electrical conduit:

- 1) **Make any adjustments required to relieve pinched or stressed wiring.**

- 2) **Verify that the “ridged” side of both plugs are properly aligned. Verify that the connectors have snapped together on both sides. Do not use excessive force when joining the connectors.**

## CONNECT 115 VAC WIRING

### 1. WARNING - SHOCK HAZARD

**To prevent the possibility of severe personal injury or equipment damage due to electrical shock, always be sure the electrical power is disconnected or off before beginning installation.**

2. Complying with the “Danger” notice below, bring the 115 VAC supply wiring previously routed into the frame of the roof opening, through the strain relief atop the electrical box and into the high voltage wiring area.

### DANGER

**WHEN USING NON-METALLIC SHEATH SUPPLY CABLES (ROMEX, ETC.), STRIP SHEATH BACK TO EXPOSE 4-6 INCHES OF THE SUPPLY LEADS. STRIP THE INDIVIDUAL WIRE LEAD ENDS FOR WIRE CONNECTION (ABOUT 3/4" BARE WIRE). REMOVE NYLON STRAIN RELIEF FROM ELECTRICAL BOX. INSERT THE SUPPLY WIRES INTO THE STRAIN RELIEF. WIRE SHEATH MUST PROTRUDE PAST STRAIN RELIEF. MAKE SURE SHEATH CABLE IS CENTERED IN STRAIN RELIEF BEFORE SNAPPING IT BACK INTO BOX.**

**IF OTHER THAN NON-METALLIC CABLES ARE USED FOR SUPPLY CONDUCTORS, APPROPRIATE STRAIN RELIEF CONNECTORS OR CLAMPS SHOULD BE USED.**

**IN NO CASE SHOULD CLAMPING OR PINCHING ACTION BE APPLIED TO THE INDIVIDUAL SUPPLY LEADS (NEUTRAL AND “HOT” WIRES).**

3. Gently fold all wiring into the electrical box while verifying that it is not either pinched or cut.
4. Complying with the warnings listed below, connect the 115 VAC supply wiring to its power source. Be sure all power remains off until beginning checkout procedure.

### DANGER

**TO PREVENT THE POSSIBILITY OF SHOCK INJURY FROM APPLIANCE OPERATION:**

**THE WHITE WIRE MUST BE CONNECTED TO NEUTRAL IN THE SERVICE BOX ENTRANCE AND THE MECHANICAL GROUND MUST BE CONNECTED TO A GROUNDING LUG EITHER IN THE SERVICE BOX OR THE MOTOR GENERATOR COMPARTMENT.**

## ATTACH CEILING GRILLE

1. Gently position the thermostat capillary so as to be in the return air stream.
2. Position the grille assembly over the wirebox control stems and secure with screws. It may be necessary to make slight bends in the control box support arms to insure that the control stems are nearly perpendicular to the return grille.
3. Position the control knobs onto the stems — keep in mind that the thermostat knob mounts to the stem which rotates smoothly through 270 degrees of travel. The selector knob mounts to the selector switch, which indexes at intervals during its travel. Each knob has a retainer spring which secures to the shaft.