



INSTALLATION INSTRUCTIONS

FOR

7330C740 FLUSH MOUNT

CEILING ASSEMBLY

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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.

PACKAGE CONTENTS

- | | |
|----------------------|---|
| 1) Ceiling Assembly | 1) Small Parts Package |
| 1) Return Air Grille | 4) #10 x 1" Return Air Grille Mounting Screws |
| 1) Return Air Filter | 1) Basepan Foam Gasket |

GENERAL INFORMATION

The flush mount ceiling assembly is designed for application in systems that utilize field fabricated (OEM supplied) cold air supply ducting and registers. The ceiling assembly mounts through a 14" x 14" opening through the ceiling and roof to the bottom of the roof top unit. The supply duct connection and the return air path are located in this ceiling cavity opening.

All air conditioning functions are controlled by a low voltage wall mounted thermostat. The thermostat controls a 24 VAC electrical circuit which is used to energize control relays in the ceiling assembly. The thermostat is supplied with 24 VAC by a 115/24 VAC transformer mounted above the electrical box in the ceiling assembly. The thermostats most commonly used are combination (Heat/Cool) thermostats. These thermostats are capable of operating both the roof top air conditioner and any furnace with a 24 VAC control circuit with or without its own transformer.

A low temperature sensor also connects to the ceiling assembly compressor control circuit. The sensor inserts into the evaporator coil of the roof top unit and shuts the compressor off in the event of a freeze-up condition.

This flush mount ceiling assembly will mount to and operate all current production roof top air conditioners. Regardless which roof top unit is used, this system will operate with only one fan speed. This system is not designed for and will not accept electric strip heating.

A divider for separating the supply and return air areas in the ceiling cavity, and the hardware for mounting the ceiling assembly, is to be supplied by the OEM (See Ceiling Assembly Installation Section).

SUPPLY DUCTING AND REGISTERS

A. Ducting

1. The supply ducting routed in the cavity between the interior ceiling and roof must attach to both sides of the ceiling assembly. A minimum of two ducts are

required, with one duct attached to each side of the assembly.

See Figures 1 and 2 for both an overhead view of the system with ducts and a ceiling assembly installation.

- Each duct must have a minimum height of 1 1/2".
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. 2" x 6" has proven to be highly effective.**

- Where ducting secures to the ceiling assembly, maximum width is 8 inches.
- All field fabricated cold air supply ducting must be insulated and must have a vapor barrier.

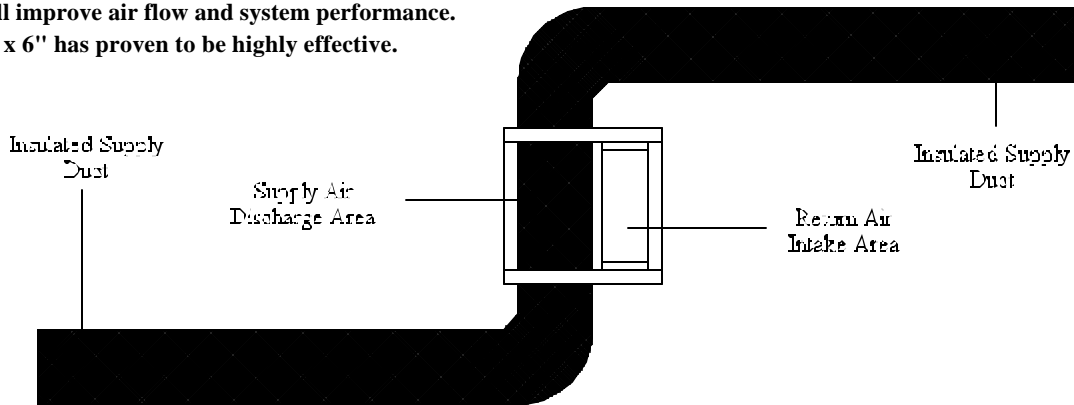


FIGURE 1

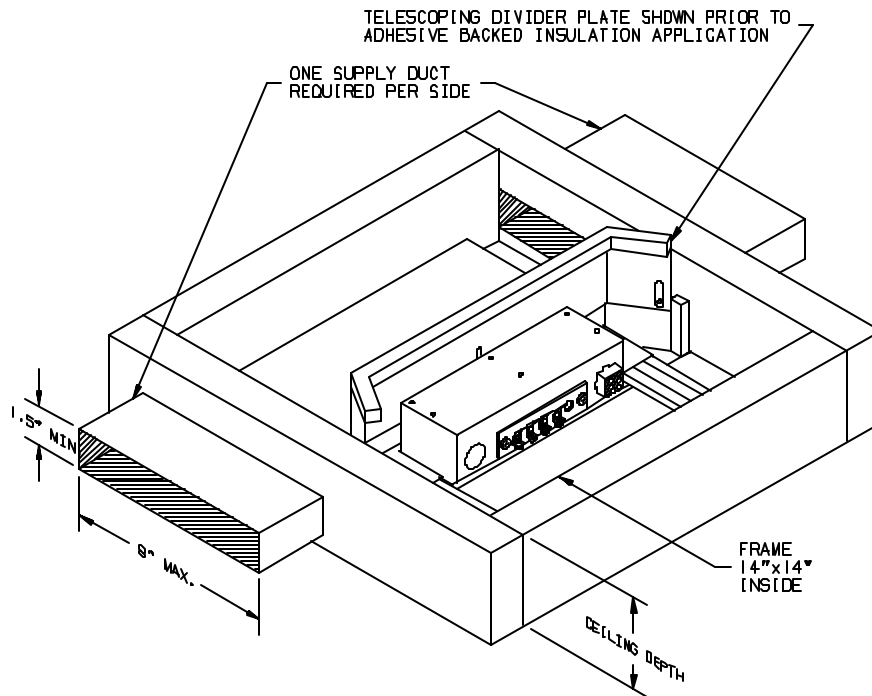


FIGURE 2

IMPORTANT

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

B. Registers

1. Supply (cold air) registers should have a minimum discharge area of 48 square inches per system, or 24 square inches per duct. Figure 3 shows how to determine the discharge area for a given register, and how to determine the number of registers required.

The register in Figure 3 provides 6 square inches of discharge area. Each duct would require 4 registers of this size to satisfy the 24" requirement.

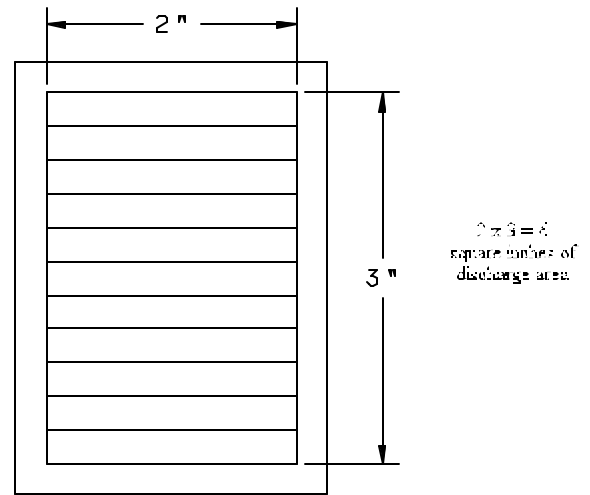


FIGURE 3

ROUTING 115 VAC WIRING

1. Following RV Products high voltage wiring specifications and all local and national electrical codes, route the roof top unit 115 VAC supply wiring from its power source and into the front of the roof top opening. To allow attachment to ceiling assembly high voltage connections, extend approximately 12" of the wiring into the opening.
2. To prevent voltage drops of 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.
3. Allowances must be made to prevent wire pinching and to promote ease of installation.

High Voltage Wiring Specifications

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

ROUTING 24 VAC THERMOSTAT WIRING

1. Following the instructions packed with the thermostat, determine a location for thermostat mounting.
2. Following RV Products low voltage wiring specifications and all local and national electrical codes:
 - A. Route the thermostat 24 VAC supply and control wiring from the front of the ceiling cavity opening to the thermostat mounting location.

Three wires are required:

(1) Red wire for +24 VAC
(1) Yellow wire for compressor circuit
(1) Green wire for fan circuit
 - B. To protect the wall mount thermostat from overcurrent damage, it is necessary to provide a 2 amp circuit protection device in the 24 VAC supply wire to the thermostat.

Using a circuit protection device in this manner will prevent thermostat circuitry burnouts.
3. RV Products low voltage wiring specifications:
 - A. All OEM supplied low voltage wiring should be minimum 18 gauge.
 - B. All low voltage wires should be solid conductors.

- C. Low voltage wiring must be routed into the front side of the ceiling assembly opening.

Allowances must be made to prevent wire pinching and promote ease of installation.

CEILING ASSEMBLY INSTALLATION

A. Preparation and Positioning the Roof Top Unit

1. Consult Sections I through IV of the roof top unit installation instructions for the installation and mounting requirements of the roof top unit.
2. Prepare the roof top unit for installation with the ceiling assembly.

The freeze circuit thermistor probe (See Figure 4) installs by inserting it straight in between the two lower evaporator tubes until contacting a tube, then raising the back of the probe and continuing at a 45 degree angle until the probe is fully inserted.

Position the roof top unit over the roof opening, lowering the low temperature sensor leads down through the opening.

3. Attach the basepan foam gasket to the bottom of the basepan in the area shown in Figure 5.

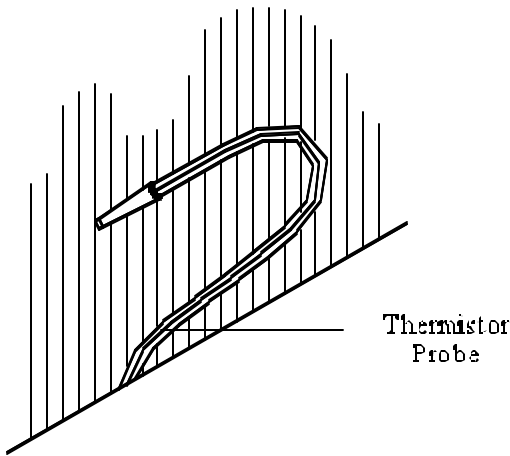


FIGURE 4

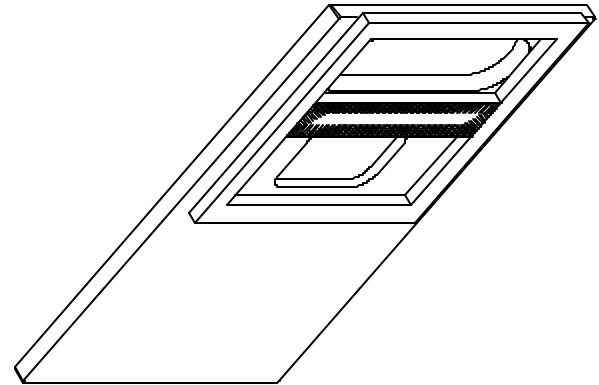


FIGURE 5

B. Preparation Of The Ceiling Assembly

1. Remove ceiling assembly electrical box cover. Retain screws for reattachment. See Figure 6.

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 electrical box and secured to the high voltage terminals inside.

C. Mounting The Ceiling Assembly

1. Install a divider to separate the supply and return air areas in the ceiling cavity. Duct board or equivalent is the suggested material. If metal is used, the return (warm) air side should be insulated and a vapor barrier provided to prevent condensation build-up.

NOTE

The low temperature sensor leads should remain on the return air side of the divider to allow connection to the ceiling assembly low voltage terminal board.

The divider must be sealed into the foam at the bottom of the roof top unit and the sides of the roof opening.

2. Position ceiling assembly into the ceiling opening. For proper orientation of the ceiling assembly, reference Figure 2.

NOTE

When inserting the ceiling assembly into the roof opening, be careful not to pull the foam insulation away from the sides of the ceiling assembly. The insulation is required to create a positive air seal within the ceiling cavity.

3. Four bolts are needed for fastening the ceiling assembly and roof top unit together. The bolts may be made from 5/16 - 18 all thread rod. The required length = ceiling cavity depth (from ceiling to roof) plus 2 inches. Nuts and washers are also required. It is suggested to put washers and double nuts on one end of the all thread. The four all thread bolts are to be installed through the ceiling assembly and into the bottom of the roof top unit.

NOTE

The double nutted end of the all thread must not extend far enough to cause interference when the return air grille is installed.

NOTE

Mounting bolts should be tightened evenly. A rotating tightening procedure (similar to car tire rim mounting) is essential for proper gasket compression. The bolt tightening procedure is complete when the gasket under the roof top unit has been evenly compressed 1/4".

4. Cut the plastic wire tie securing the roof top unit 115V electrical harness.

The ceiling assembly has a 9 pin socket end harness extending from the front of the electrical box. This mates with the roof top unit 115V electrical harness.

IMPORTANT

When connecting the 115V electrical harness:

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.**

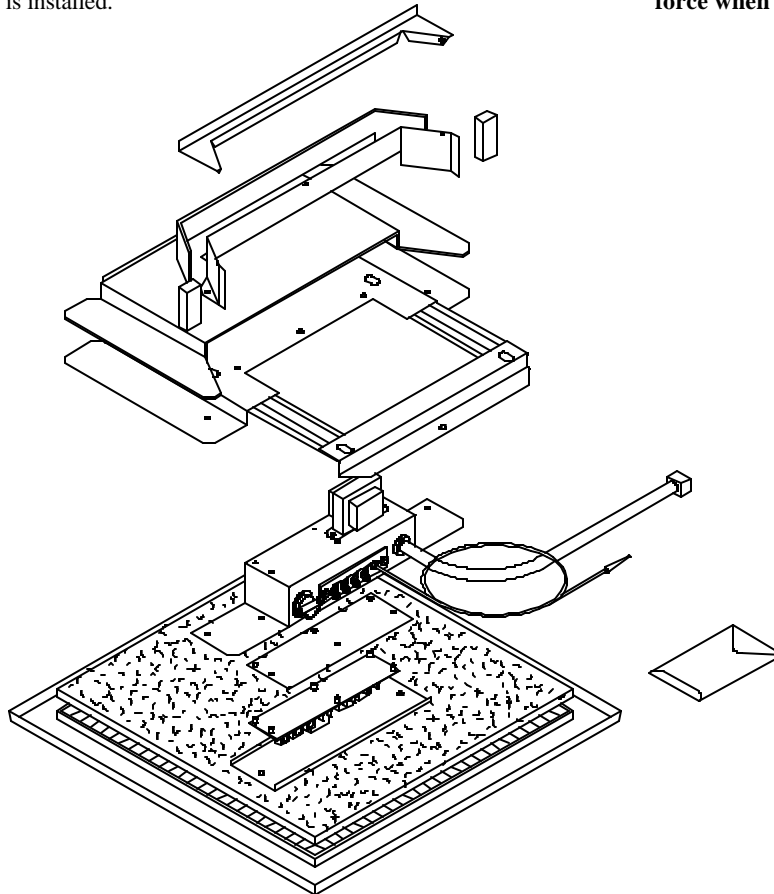


FIGURE 6

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 in 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. Secure the 115V supply wiring to the respective high voltage terminals on the p.c. board inside the electrical box.

DANGER

TO PREVENT ELECTRICAL SHOCK DUE TO MIS-WIRING, CONNECT BLACK WIRE TO TERMINAL MARKED BLACK, WHITE WIRE TO TERMINAL MARKED WHITE AND GROUND WIRE TO TERMINAL MARKED GROUND.

4. Gently fold all wiring into the electrical box while verifying that it is not either pinched or cut.

5. Complying with the warnings listed, 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.

CONNECT 24 VAC CONTROL WIRING

A. Ceiling Assembly Connections

1. Bring the thermostat wiring previously routed into the roof opening over to the low voltage terminal board extending from the front of the ceiling assembly electrical box. Also locate the wiring from the low temperature switch installed in the upper unit.

These low voltage ceiling assembly wires complete the following circuits:

Connect the red, yellow and green thermostat wires to terminals R, Y and G respectively. The wires connect by 1/4" quick connects. Connect the white low temperature switch leads with 1/4" quick connects to terminals marked "F".

There is no polarity with the low temperature leads. Connect either white wire to "F" and the remaining wire to the remaining "F".

Ceiling Assembly Low Voltage Terminal	Connect To	24VAC Control Wiring	Circuit
R Y G F F		Red Yellow Green White White	Control Wiring Supply Compressor Relay Coil Fan Relay Coil Low Temperature Switch Low Temperature Switch

B. Wall Thermostat 7330-324

1. Extend both the thermostat control and supply wiring through the thermostat wall opening.
2. Cut the wiring to length (approximately 4 to 5 inches of wiring should be left extended from the opening). Strip the wires removing 5/8" of insulation from each wires end.
3. Obtain the wall mount thermostat. These thermostats separate into 3 pieces. See Figure 7.
4. Separate thermostat into the three separate components.

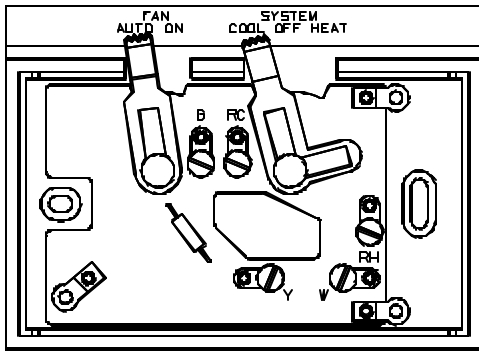
5. Obtain thermostat sub-base. Pull all the thermostat wiring through the center of the sub-base and place it against the wall opening. Level the sub-base and secure it to the vehicle wall with the screws provided in the thermostat package. See Figure 7.
6. Secure thermostat wiring to the sub-base.

NOTE

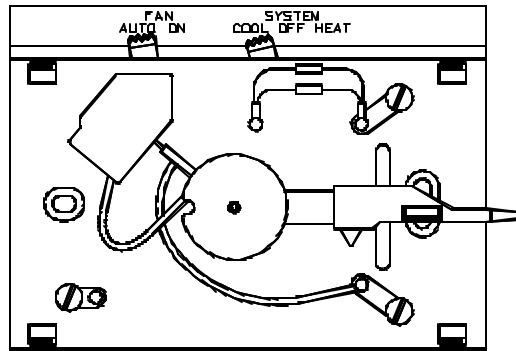
If a single transformer is used to supply both the air conditioner and furnace, install a jumper wire from terminals RC to 4 (or RC to RH).

IMPORTANT

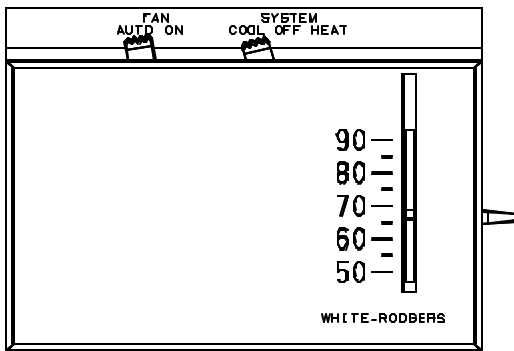
The three captive screws that secure the base to the sub-base must be present in order for the thermostat to operate. Do not misplace these screws. Retain for thermostat reassembly.



SUB-BASE



BI-METAL PLATE



COMPLETE ASSEMBLY
BI-METAL PLATE SCREWED
TO SUB-BASE AND WITH
SNAP-ON COVER

FIGURE 7

Thermostat Terminal	Mate With	W all Thermostat Supply And Control Wiring
RC		Red, +24VAC Supply Wire
Y		Yellow, Compressor Control Wire
G		Green, Fan Control Wire
W		White, RV Furnace Control Wire
4		RV Furnace Supply Wire (Jumper Wire From RC to 4 When One Transformer Is Used)

THERMOSTAT CHECKOUT

The following checkout procedure will eliminate burned-out thermostats and provide a quick and accurate evaluation of the system wiring.

Checkout will be performed at the thermostat sub-base with a standard volt-ohm meter. Note: Do not complete thermostat assembly until checkout is complete.

1. Energize both the 24V power source for the thermostat and the 115V power source for the air conditioner.
2. Using one of the test leads from the volt meter, jumper between terminals:

RC and Y for compressor operation
 RC and G for fan operation
 RC and W for furnace operation

3. Disconnect the 115 VAC which will disable the 24 VAC circuit.
4. Reassemble thermostat.

NOTE

This thermostat is equipped with automatic heat anticipation and requires no adjustment.

INSTALL RETURN AIR GRILLE AND FILTER

Four plated wood screws are provided specifically for the return air grille mounting. Obtain screws from small parts package.

Place filter on backside of return air grille. Lift grille into position, centered over the roof opening. Insert one screw into each corner of the grille and secure to ceiling.

THERMOSTAT OPERATION

<input checked="" type="checkbox"/> SHOWS POSITION OF SWITCH					7330-324 OPERATION
SYSTEM			FAN		
HEAT	OFF	COOL	AUTO	ON	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Operation of all components is stopped.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cooling fan runs continuously, no compressor operation.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Cooling blower and compressor cycle with thermostat.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cooling blower operates continuously. Compressor cycles with thermostat.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Heating system cycles from thermostat. Cooling fan remains off.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Heating system cycles from thermostat. Cooling fan operates continuously.

Adjusting Setpoint: To adjust the temperature control setpoint, move the temperature select lever located on the side of the thermostat to the temperature desired.



RV Products
A Division of Airxcel, Inc.
P.O. Box 4020
Wichita, KS 67204