Advent Air
TROUBLE SHOOTING GUIDE

1. **Unit does not run: no fan or compressor**

    a. Is circuit breaker in RV tripped?
    b. Is circuit breaker at power source tripped?
    c. Is Main power cord plugged in
    d. Make sure wire harness to upper unit is plugged in and locked proper

2. **Fan operates, compressor won't come on**

    a. Check thermostat settings
    b. Check incoming voltage

3. **Fan operates; compressor tries to start cycles off, hums**

    a. Check incoming voltage while compressor is trying to run
    b. Check for loose connections

4. **Fan runs; compressor runs for a short period and cycles off**

    a. Check voltage
    b. Are there additional extension cords being used?
    c. If extension cord is used, is it proper gage wire

5. **Compressor runs; no fan; (cool or Heat mode)**

    a. Remove outer shroud and see if fan motor will spin freely

6. **Inside coil freezes up**

    a. Inspect return filter and clean if necessary
    b. Check for recirculation of discharge air

7. Poor heating or cooling with reduced air flow

a. Inspect return air filter, clean if necessary
b. Make sure air divider between return and supply has not came loose
c. On a ducted system, inspect duct runs with flashlight and mirror for collapsed or a blocked duct run

Troubleshooting Guide – Page 2

8. Poor cooling

a. Inspect return air filter and evaporator coil, clean if needed
b. Remove outer shroud and inspect condenser coil for debris on inside of coil

9. Excessive vibration with fan running

a. Remove outer shroud and inspect fan blades for mud dauber or missing blade

10. Water leaks into RV when unit is off

a. Inspect roof gasket thru return air vent for leak
b. Check torque on mounting bolts
c. Inspect roof for low spot at 14 X 14 opening

11. Water leaks into RV while unit is running

a. Remove outer shroud and inspect condensation drain pan for restriction
b. Remove return air filter and inspect evaporator for ice buildup
c. Inspect freeze control on ducted unit for proper location in coil

12 Thermostat has no display on ducted units

a. Check 12 volt fuses for blown fuse
b. Check 12 volt wiring for loose connection at relay kit and to thermostat

Trouble Shooting Guide

Theory of operation

An air conditioner is designed to remove heat from an area and recycle it back as cooler air. This cycle continues until your thermostat reaches the desired temperature.

All air conditioners contain the same basic components, consisting of a compressor, a condenser coil, an evaporator, refrigeration lines to connect the system together, the refrigerant, and a method of moving air through both coils.

Let's understand how the heat removal process works.

1. When the system starts to run, the compressor does just what the name implies; it compresses the refrigerant (in a vapor at this point) which adds heat (superheat) to the refrigerant on its way to the condenser coil (outside coil).

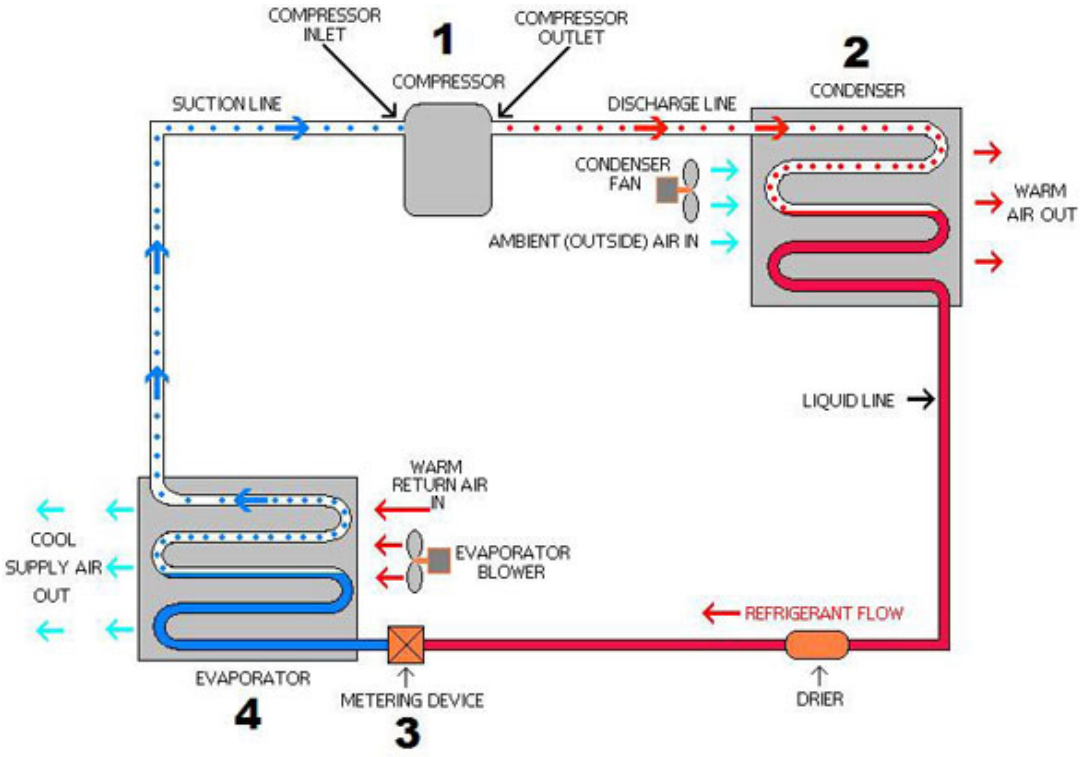
2. The condenser fan moves cooler air thru the condenser coil which removes the heat added to the refrigerant by the compressor.

3. As the heat is removed the vapor will condense into a liquid. The liquid now flows thru the capillary tube (metering device) to the evaporator coil (inside coil).

4. The capillary tube only allows a specific amount of liquid refrigerant to enter the evaporator coil, as the liquid refrigerant enters the evaporator it enters a low pressure environment which allows the refrigerant to expand and boil off into a vapor once again. As evaporation takes place heat is absorbed. The heat which is being absorbed is from the area to be cooled.

5. This is done by the evaporator blower assembly. It pulls air (return air) from living area removes heat and returns the air to the living area.

6. The vapor refrigerant is now being pulled back to the compressor where the cycle starts over.



The above illustration is a basic refrigeration cycle

From this illustration we see it has a drier, most small RV air conditioners do not currently have driers in the system.

Components - Upper unit

Motor:

To check the motor, turn off the 20amp circuit breaker. With an AC volt meter verify that the circuit has no voltage. Remove the 6pin connector from relay box or switch kit in ceiling assembly above air filter. The motor wires are white (common to capacitor), black (high fan), yellow (medium fan), red, (low fan) and brown (capacitor run). Set volt ohm meter to the ohms scale. Check continuity on wire harness to upper unit between the white wire and the black, the yellow, and the red, you should have continuity. If you do not, one or all the motor windings are open and the motor is defective. Next, check for continuity between yellow/green stripe and each of the motor windings, black, yellow, and red, if you get continuity, you have a grounded winding and motor needs to be replaced.

Capacitor: Run/Fan

Power to unit should be disconnected or turned off before proceeding.

Warning

There may be a charge on the capacitor until discharged.

The combination capacitor should be discharged prior to any testing. The combination capacitor has three sets of terminals. The terminals are labeled “F” (fan),”C” (common), and “Herm” (for compressor). Select the Side that pertains to your failure; however it doesn’t hurt to check both sides when testing a capacitor. To discharge both or just one side of the capacitor, set AC voltmeter to 500 volt scale or higher and connect meter leads to terminals of capacitor. After discharging capacitor, disconnect the wires to the capacitor. Set meter to highest ohm scale and connect the probes to the capacitor terminals. The reading should rapidly move toward continuity and return to infinity. Reverse the leads and repeat test. If no reading or a prolonged reading occurs the capacitor should be replaced. When replacing a capacitor be sure to replace with the correct microfarad (mf) and voltage rating.

Compressor

Before checking the compressor, turn power off at circuit breaker or unplug upper unit from control section. Remove protective cover on top of compressor and note markings on top of cover, “C” (common, “R” (run), “S” (start). Remove all wires from compressor. If the resistance between any two terminals is 0 ohms, the motor windings are faulty. The next check is between each terminal and the compressor casing; if continuity exists the windings are shorted.

Overload Protector

The overload protector on top of the compressor is designed to interrupt power to the compressor should it become overheated due to high temperatures in compressor windings or excessive amp draw. If the switch is open at ambient temperature and the compressor is cool (ambient) then it is defective. If open, it should be replaced with an exact replacement only.

A weak overload will cause the compressor to start and stop rapidly or short cycle and should be replaced.

Components - Control Section
Manual Controls Non Ducted

Selector Switch

The selector switch has eight positions which can be tested with an ohm meter on highest ohm setting to verify proper operation. Always turn 20amp circuit breaker to air conditioner off before opening control box.
Remove wires from switch, with switch in off position verify no continuity between terminal L1 and any other terminals.
In LOW FAN mode, you should have continuity between L1 and terminal 4.
In MEDIUM FAN mode, you should have continuity between L1 and terminal 2.
In HIGH FAN mode, you should have continuity between L1 and terminal 1.
In HIGH COOL mode, you should have continuity between L1 and C and 1.
In MEDIUM COOL mode, you should have continuity between L1 and C and 2.
In LOW COOL mode, you should have continuity between L1 and C and 4.
In HEATING mode, you should have continuity between L1 and H and 4.

Be sure to check switch in all positions and that you have continuity only where you should.

Thermostat

Always turn 20amp curcuit breaker to air conditioner off before opening control box.

The manual thermostat has 2 terminals. It controls the cycle of the compressor. When the ambient temperature around sensor bulb is below 68 deg(+/-), the thermostat will not close, likewise when ambient temperature is above 90 deg (+/-), the thermostat will not open.

To test, remove leads from thermostat and test for continuity in coldest setting, you should have continuity. Turn thermostat to warmest setting and no continuity should be present.

Electric Heat Package

All units are pre wired for electric heat strips. The heater is an optional component.
To check, remove heater plug from control box or relay kit. Take an ohm reading across terminals, you should have a reading of 9.4 ohms +/- 10 percent. If no reading the limit switch needs to be checked, it might be open. If it's open, replace limit switch. If it's not open replace heat package.

Analog

Ducted Controls

Thermostat

Check for 12VDC into thermostat, Red w/white stripe to Black, if no voltage is present check 12 VDC coming out of relay kit, red w/white stripe to ground. If voltage is present, check continuity on thermostat wiring.
If no voltage is present, check incoming voltage from load center (Red+ and Black-) to relay kit. If no voltage is present, check load center for blown fuse, or wiring for broken wire.

With voltage present, check for voltage between green and yellow, green and white/w orange stripe, green and blue, green and tan, and green and grey. You should have the same voltage on these as the incoming voltage to the thermostat.

Relay Kit

The following test will prove relay kit controls and upper unit operation.
Note: Verify you have 115VAC to upper unit and upper unit harness is plugged into relay kit.

Low fan operation, disconnect grey wire coming out of relay kit and connect to ground (green) out of relay kit, the fan motor should be running on low.

Medium fan operation, disconnect tan wire coming out of relay kit and connect to ground wire (green) out of relay kit, fan should be running on medium.

High fan operation, disconnect blue wire coming out of relay kit and connect to ground wire (green)coming out of relay kit, fan should be running on high fan.

Low cool operation, disconnect grey and yellow wires coming out of relay kit and connect both to ground wire (green) coming out of relay kit, compressor and low fan should be operating.

Medium cool operation, disconnect tan and yellow wires coming out of relay kit and connect both to ground wire (green) coming out of relay kit, compressor and medium fan should be operating.

High cool operation, disconnect blue and yellow wires coming out of relay kit and connect to ground wire (green) coming out of relay kit, compressor and high fan should be operating.

Low fan Heat W/electric heat strip, remove three terminal connector from relay kit, disconnect orange wire out of relay kit and connect to ground wire (green) coming out of relay kit, the three pin terminal should have 115VAC at top and bottom terminal.

Furnace operation, disconnect orange wire w/black strip coming out of relay kit, and connect to ground wire (green) coming out of relay kit. The furnace fan should start.

NOTE: If any of the above tests fail, check to insure all wires in upper unit harness are locked into connector before replacing relay kit.

Electric Heat Package

All units are pre wired for electric heat strips. The heater is an optional component.

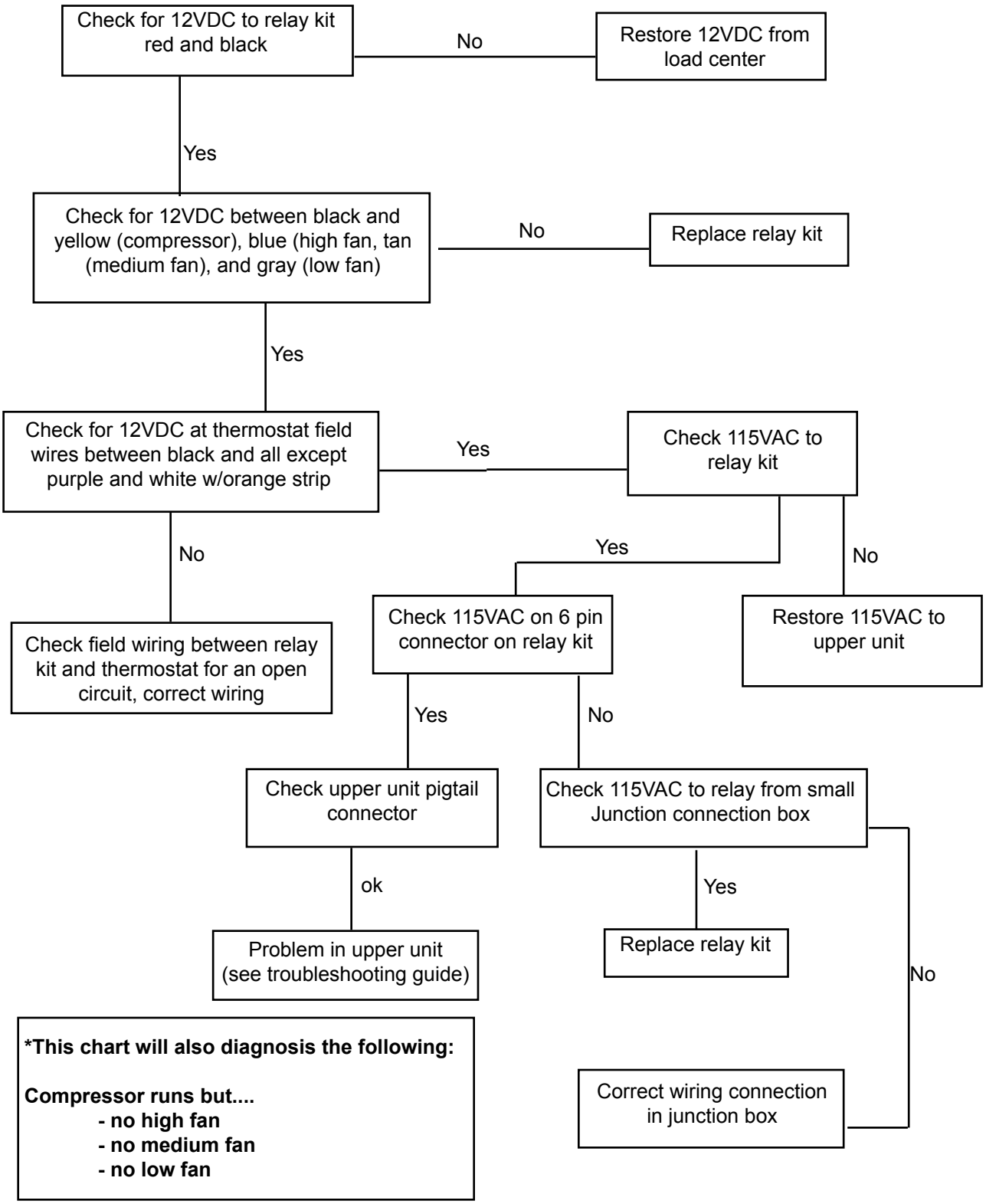
To check, remove heater plug from control box or relay kit. Take an ohm reading across terminals, you should have a reading of 9.4 ohms +/- 10 percent. If no reading the, limit switch needs to be checked, it might be open. If it's open, replace limit switch. If it's not open replace heat package.

No Compressor / No Fan Operation*

Thermostat in cool and temperature set below room temperature

Note: There may be a 3 minute delay before starting

Note: PCB is protected with a poly fuse, if blown it will reset within one minute



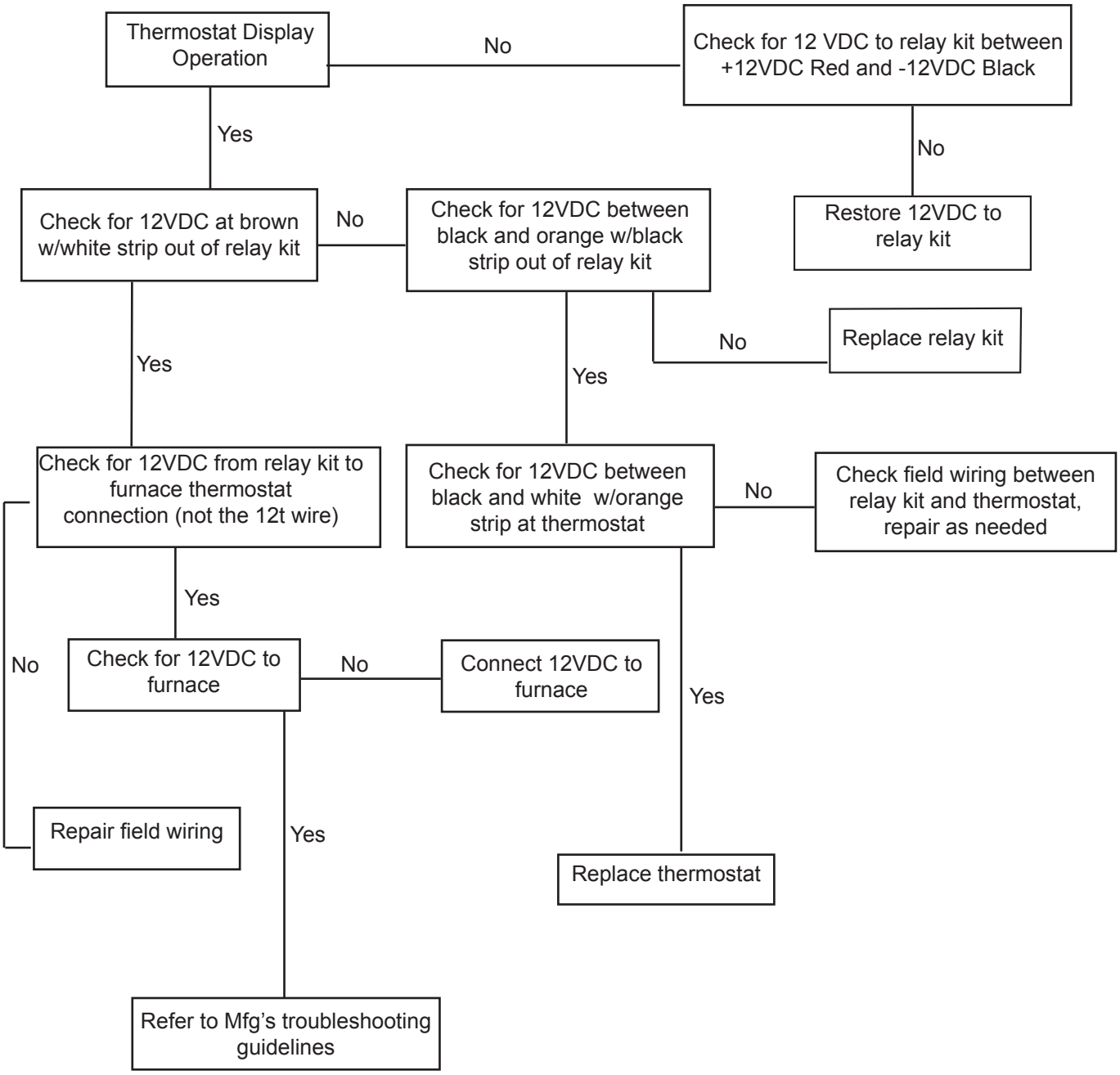
***This chart will also diagnosis the following:**

Compressor runs but....

- **no high fan**
- **no medium fan**
- **no low fan**

No Furnace Operation

Thermostat set to heat position and temperature set above room temperature



Advent A/C Frequently Asked Questions

Related Models & Key Words	Question	Answer	Supporting Documents
ACRG ACRG11 Electric Heat	I have an electric heat strip. Which do I need, ACRG or ACRG11?	You need the **ACRG**.	TBACRG11-001
ACRG ACRG11 Furnace	I have a LP furnace. Which do I need, ACRG or ACRG11?	You need the **ACRG11**.	TBACRG11-001
AC135 AC150 Wires	I only have 4-5 wires between thermostat & A/C, how can I get your (Advent) to work?	+12V DC & GND to the upper unit plus 8 wires between thermostat and upper unit are required. One additional wire is needed if using a LP furnace.	
AC135 AC150 Wires	I have 6 wires between A/C & thermostat; can I eliminate medium fan and one other to get it to work?	No. This will not work.	
AC135 AC150 Generator	My portable generator will not start the Advent AC. Can I install a quick start kit?	In most cases, quick start kits are not required for Advent Air systems. This would indicate your generator is not powerful enough for the AC system. The optional Advent Quick Start Kit, ACSCKIT, is recommended.	
ACTH ACTH11 E-2 Code	The thermostat is flashing **E-2** on the display and nothing is working.	The freeze control is either open or not connected properly. If the purple wire is not connected, this will cause this as well.	TBACE2-001
ACRG ACRG11	How do I identify the ACRG from ACRG11?	Remove air filter cover to expose product label.	
AC135 AC150 Coleman	I am replacing a Coleman upper unit with an Advent upper unit and I don't want to run more wires. What can I do?	You will need to use the Advent to Coleman interface kit, **ACCOLKIT**. This only applies if the rest of the Coleman system is functional.	TBADVCOL-002
AC135 AC150 Carrier	I am replacing a Carrier upper unit with an Advent upper unit and I don't want to run more wires. What can I do?	You will need to use the Advent to Carrier interface kit, **ACCARKIT**. This only applies if the rest of the Carrier system is functional.	TBADVCAR-001

Related Models & Key Words	Question	Answer	Supporting Documents
ACDB Knobs	My knobs on the ceiling assembly won't stay ON; it looks like the shafts are too short. Why?	This would indicate that the ceiling assembly is not properly installed. Make sure to install using all screws to keep it flat. If the inside ceiling has a radius, this can cause the assembly to bow as well.	
ACTH ACTH11 Digital	Is the Advent thermostat (ACTH/ACTH11) analog or digital?	The **ACTH** & **ACTH11** are both analog thermostats that have a digital display.	
ACTH ACTH11	After I shut my thermostat to OFF, why won't it come back when I switch it to ON again right away?	There is a 3 minute delay period before the compressor will be allowed to run again.	ADVENTQRG
ACTH ACTH11 Cooling Temperature	It's currently 98º outside. I have my thermostat set to 70º, but it will only get down to 77º. Is my AC unit defective?	No. A properly sized AC unit will cool 18-22º below the ambient temperature. 77º is within that range and indicates your AC unit is operating normally for the current temperature conditions.	
ACTH ACTH11	How do I identify the ACTH from ACTH11?	The **ACTH** says "Advent" on cover. Has **Heat Trigger** wire (White w/Orange stripe). The **ACTH11** says "Advent Air" on cover. Has **FURNACE** wire (Orange w/Black stripe).	
AC135 AC150 Heat Pump	I currently have a heat pump. If I replace my upper with an Advent, will I still have heat pump capability?	Yes, provided you replace with an Advent AC135HP or AC150HP.	
ACTH ACTH11 Celsius	My set point and room temp are both extremely low numbers. Why?	The thermostat may not be set to the default Fahrenheit mode. Please adjust DIP switch #2 to the ON position. The DIP switches are located under the cover of the thermostat.	TBACTH-002
AC135 AC150	I just replaced my upper unit with an Advent Air and the upper unit won't run. What should I do?	Verify that your existing control box and thermostat are both fully functional. Then contact ASA Tech Support for further troubleshooting.	

Related Models & Key Words	Question	Answer	Supporting Documents
AC135 AC150 Heat Pump	Will the Advent HP plug & play with other brands' controls?	No.	
AC135/HP AC150/HP ACRG12	Can I upgrade my Advent AC135/AC150 to an Advent heat pump?	Yes, with the AC135HP or AC150HP and ACRG12 control only.	
ACRG12 ACTH12	Will the ACRG12/ACTH12 support more than one (zone) AC or Heat Pump?	No.	
AC135HP AC150HP Dometic	I have a Dometic Quick Cool ceiling assembly. Can I use it with Advent Heat Pump?	Yes, if relay kit ACRG12 is mounted to evaporator cover and the ACTH12 thermostat is installed. The Dometic ceiling assembly can be used if mounting bolts align between ceiling assembly and Advent upper unit.	
Heat Pump	Will there be a conversion kit for Heat Pumps?	No.	
ACTH12	Is the Advent thermostat (ACTH12) analog or digital?	The ACTH12 is a digital system.	Owner's Manual
AC135/HP AC150/HP Operation	The Advent AC/Heat Pump operates properly during the day, but at night the thermostat does not respond properly, why?	If a heat source, such as a lamp is below or too close to the thermostat, it may confuse the temperature sensor. Move lamp or heat source away from thermostat.	
ACTH12 "df"	Why does my thermostat (ACTH12) display "df"?	Indoor or outdoor coil is frozen; system is defrosting and will not operate for 35 minutes. Unit will restart automatically.	Owner's Manual
ACTH12 "Lo"	Why does my thermostat (ACTH12) display "Lo"	DC voltage is below 10 VDC (+/- 0.5V). Check wire connection or correct low voltage condition.	Owner's Manual
ACTH12 "E5"	Why does my thermostat (ACTH12) display "E5"?	Communication defect between thermostat and relay kit. Check wire connection at both locations, or correct broken thermostat wire.	Owner's Manual
ACTH12 "E4"	Why does my thermostat (ACTH12) display "E4"?	Outdoor temperature sensor defect or loose connector.	Owner's Manual
ACTH12 "E3"	Why does my thermostat (ACTH12) display "E3"?	Outdoor coil temperature sensor defect or loose connector.	Owner's Manual

Related Models & Key Words	Question	Answer	Supporting Documents
ACTH12 “E2”	Why does my thermostat (ACTH12) display "E2"?	Indoor coil temperature sensor defect or loose connection.	Owner’s Manual
ACTH12 “E1”	Why does my thermostat (ACTH12) display "E1"?	Room temperature sensor defect. Replace thermostat.	Owner’s Manual
ACTH12 “Er”	Why does my thermostat (ACTH12) display "Er"?	Incorrect dip-switch settings. See manual.	Owner’s Manual
ACTH12 No display	I have no display on thermostat ACTH12.	Check 12V incoming supply and thermostat wire connections.	Owner’s Manual
AC135 AC150 Heat Pump	Thermostat operates but AC/HP does not operate.	Check incoming AC voltage to electrical box, and verify the 6 and 3 pin connectors are plugged in.	
Furnace Heat Pump	The heat pump was running, then it stopped and the furnace came on the display and started heating.	If the ambient temperatures drops below 38°F the heat pump will stop and furnace will run until the ambient temperature rises above 45° F, at that time, unit will revert to heat pump.	Owner’s Manual
ACTH12 Coleman	Can I replace a Coleman AC system to Advent AC Digital System?	Yes, however there are specific wiring requirements, please refer to installation instructions.	Owner’s Manual
Celsius ACTH12 Display	Will my thermostat display in Celsius?	Yes, depress up/down arrows and hold for 3 seconds to select Celsius, repeat process to return to Fahrenheit.	Owner’s Manual
Heat Pump Thermostat	My thermostat will not show heat pump/heat strip.	Any change from factory default (fan/cool/furnace) requires the thermostat to be reset, see manual.	ACTH12 Manual
AC135HP AC150HP Weight	How much does the ACHP135/150 weigh?	AC135HP = 92 lbs., AC150HP = 95lbs.	ACTH12 Manual
ACRG/ACRG11 ACTH12 Thermostat	My old thermostat (ACRG/ACRG11) failed, can I use the ACTH12?	Yes, however the thermostat and relay kit must be changed.	
Amp draw Heat Pump	What is the amp draw of a heat pump?	Rated amp draw of AC135HP is 12.9 and 14 for the AC150HP	Owner’s Manual

Related Models & Key Words	Question	Answer	Supporting Documents
Amp draw Compressor Heat Pump	Why is the amp draw lower on heat pump mode than on cooling mode?	The compressor not does work as hard during the heating mode. The temperature of the refrigerant entering the compressor is much cooler during the heating cycle due to ambient temperature.	Owner's Manual
Furnace Heat Pump	Why does my heat pump and furnace run at the same time?	If the heat pump runs for more than 20 minutes continuously and the room temperature are below 64°F, the thermostat will activate the furnace and run both heat sources to quickly heat the RV.	
AC135 AC150 Heat Pump	I can't get the thermostat to turn on/off (ACTH12).	Hold On/Off button for 3 seconds to turn On, to turn off, wake up control by pressing any function button, then press and hold On/Off button for 3 seconds.	ACTH12 Manual
ACRG12 ACTH12 Wiring	How many wires need to be run between my thermostat (ACTH12) and upper relay control box for the ACRG12?	Four wires are required; we recommend a minimum wire size of 24 Ga.	ACTH12 Manual
ACRG12 ACTH12 Wiring	What are the other three wires on the Advent HP ACRG12 relay box used for after my thermostat is connected?	12vdc, ground, and furnace trigger.	Owner's Manual
Heat Pump Shroud	Does the Advent AC shroud fit the Advent HP for replacement?	Yes.	Owner's Manual
Heat Pump Warranty	Can Advent Heat Pumps be installed on Tractor Trailers or Semi-Trucks with full warranty coverage?	This application would void the Advent warranty.	Owner's Manual
Heat Pump Warranty	What is the warranty on Advent Heat Pumps?	Same as Advent AC - 2 years from date of purchase.	Owner's Manual
Hard Start Kit Heat Pump	Does the Advent Heat Pump come with a hard start kit? If not can I add one and does it have to be an Advent only Hard start kit?	No, a hard start kit is not included. The Advent ACSCKIT is available as a separate accessory.	Owner's Manual
Freeze Control Heat Pump	What do I do if my coil freezes up with no freeze control installed?	Defrost system and install freeze control into proper location. Freeze sensors must be plugged into the relay kit or the thermostat would display "E-2", "E-4" or "df".	
Compressor Warranty	Can I replace my compressor if it fails on my Advent AC/Heat Pump?	We do not supply replacement compressors. Our warranty will supply a replacement upper unit for two years from original date of purchase.	