

Air Conditioning System

General

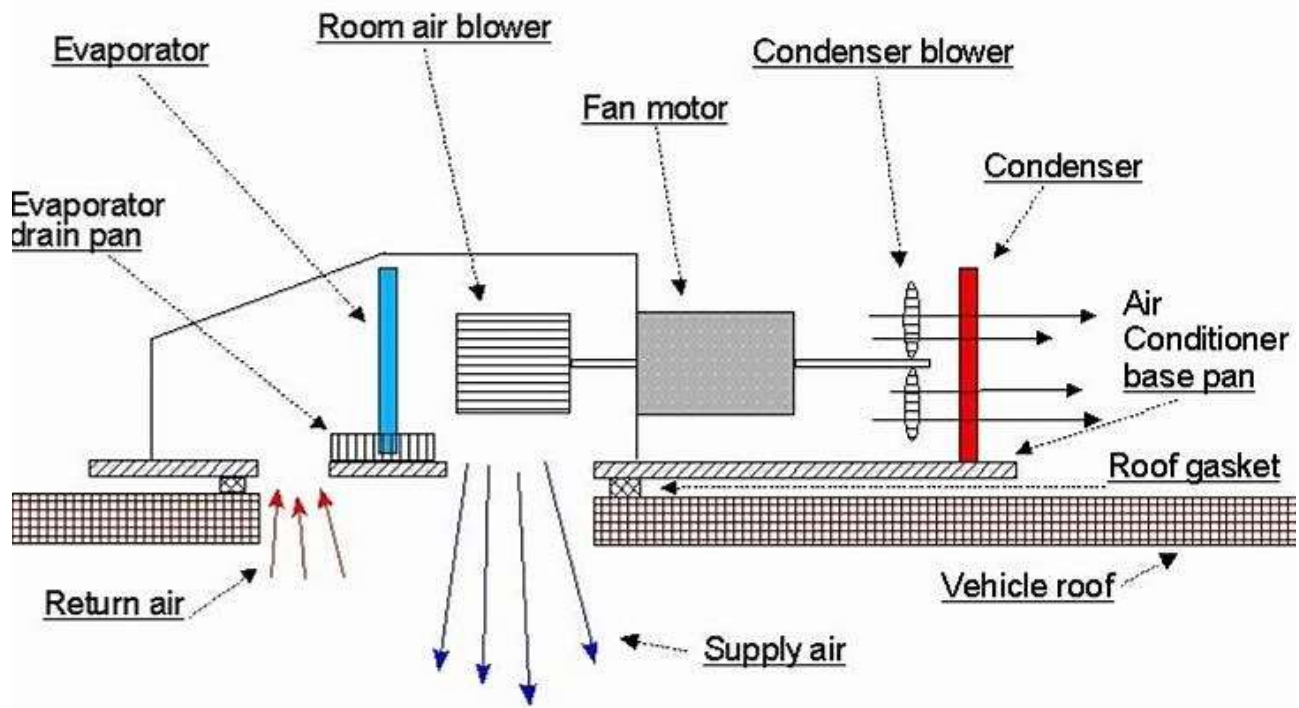


Figure (3) RV A-C Airflow

GENERAL

Roof top RV air conditioners can require, for run time operation, around 1600 to 2000 watts of power, depending on the Btu size. That is why manufacturers include both a 115 volt ac and a 12 volt dc supply. To power an RV A-C with 12 volts dc would require around 160 ampere. Not very practical even if we could install the 200 amp dc to ac converter and a suitable battery pack. Therefore, the obvious choice was to run the A-C from shore power or an appropriate sized generator.

What this means is: **Servicing a roof top A-C is dangerous.** You should never work on your A-C with the power on, unless you are experienced and completely comfortable working with live 115 VAC electrical equipment.

Even with the power off you could have high voltages present stored in the large capacitors used in this equipment. Whenever you remove the A-C covers, you should discharge the capacitors in order to avoid a nasty shock. This is particularly dangerous since you are standing on a huge metal ground plane on top of a slippery roof.

Never remove the A-C covers if it is raining and the roof is wet. Touching a hot 120 VAC source will usually just give you a mild shock. However, with a wet surface the mild shock can become lethal.

A 13,500 Btu A-C is equivalent to about a 1 ton home unit, while a 15,000 is about 1 1/4 tons. So a motorhome with two units has about 2 1/2 tons which is about what a small home would have. However, Your RV has very little insulation and rather poor windows compared to a typical house. (Btu is just a measure of energy that is useful to compare different energy sources.)

A properly running A-C should have a temperature difference of about 16 to 22 degrees between the input and output. What this means is that if you run your unit on high until the temperature in the rig stabilizes and then measure the temperature difference, directly on the unit at the return and outlet ducts, the difference should be in the above range. If you are not within the range then you may have a problem. The actual temperature in the rig is dependent on the wall and roof insulation, the quality of the windows, the temperature set on the thermostat and the windows/door/access port seals.

Thermostats started as just a knob setting on the A-C unit, a manually adjusted wall mounted setting, electronic digital and finally the 4, 5 or 12 button full-blown computer control. The multi-button units are actually computers that use two wires for inputting signals to the computer board installed in the A-C. The newest 12-button controls can provide 4-zone coverage and can control multiple A-C, Heat Pump, Furnace and Heat strip climate control devices. They are not easily serviced and are considered a total replacement part. The only way I know to test them is if 12 volts dc is being provided to the thermostat (through a fuse in the A-C board) then just plug in a new unit. If this does not work then the problem is in the computer board mounted in the rooftop A-C.