

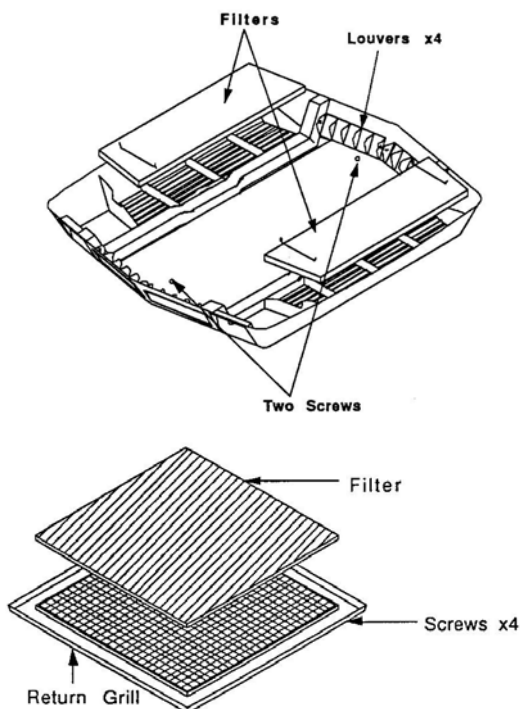
AIR CONDITIONING

When discussing air conditioning systems in motor homes, we must distinguish between the automotive, or dash air conditioning, and the coach air conditioning. We will not get into a technical description of how an a/c system works.

The dash A/C is just like the one used in your car. Newer vehicles utilize a refrigerant called R134A, while older vehicles use a refrigerant called R12. The compressor is driven by the vehicle's engine. The condenser is located in front of the vehicle's radiator and the evaporator is located in the dash blower assembly. The dash air is designed to cool the cab area of the vehicle and is not intended to cool the entire coach.

The coach a/c compressor is powered by 110 volt A/C. It uses a refrigerant called R22. The entire assembly, including the condenser and evaporator, is located in one compact unit. Coach a/c systems can be further separated into two distinct categories: roof and package/central.

The roof a/c mounts on the roof of the vehicle. Cool air may be distributed directly into the coach from a diffuser assembly mounted on the ceiling. This assembly is connected directly to the unit via a short connecting stack which passes through a hole in the roof. Air distribution may also be routed from the roof unit through ducts in the roof and disbursed through vents in the ceiling on some models. This method of delivery is called ducted roof air. Roof mounted systems may be controlled by rotary knobs located on the ceiling mounted diffuser assembly, or by a wall mounted thermostat depending on the application.



A package or central a/c unit contains two refrigeration circuits each with its own compressor. The two systems share a common condenser and evaporator. The reasons for this setup are discussed later in this article. The unit is located below the floorline and the cooled air passes through a plenum which feeds it to a distribution system ducted in the vehicle's roof. The system is controlled by a wall-mounted thermostat.

Maintenance on any of these a/c systems is minimal. The key to proper operation is keeping the system clean. All coach a/c systems will have air filters. The filters keep foreign material from entering the cooling unit and restricting the airflow across the evaporator. A clogged filter will restrict airflow and at best will reduce the efficiency of the unit. A dirty filter could also lead to a freeze up condition in which the evaporator becomes coated with ice. When this happens, cooling is drastically reduced. Avoid operation of your coach a/c system without the system filters in place.

Filter location varies from system to system. Consult your vehicle owner's manual for specific filter locations for your coach. It is recommended that the filters be changed or cleaned a minimum of every two weeks or anytime cleanliness is in doubt.

To check, clean or replace the filters on a roof unit, refer to the following procedures.

Models with a ceiling mounted diffuser assembly:

1. Remove the thermostat knob and selector switch knob from the ceiling assembly.
2. Remove the diffuser assembly shroud retaining screws (two).
3. Lower the shroud while carefully sliding it off on the control knob shafts.
4. Remove filters, clean or replace as necessary.

To check, clean or replace the filter on a ducted roof a/c unit:

1. Remove the flush mount grill retaining screws.
2. Remove the filter, clean or replace as necessary.

To check, clean or replace the filters on a central a/c unit refer to vehicle owner's manual.

The dash a/c does not utilize a system filter. The only maintenance required is to periodically inspect the condenser, located in front of the radiator, for dirt, bugs and other debris. The condenser may be cleaned by a gentle flow of water from a garden hose.

CAUTION:

Do not direct a stream of high-pressure water at the condenser assembly. Component damage could result.

The coach a/c system condenser should also be inspected periodically and cleaned as necessary.

CAUTION:

Because of safety concerns related to its location and the presence of 110 volt AC power at the a/c unit, inspection and cleaning of the condenser on a coach a/c system is not a "do it yourself" project.

Contact your dealer for periodic inspection of the coach a/c system. There are federal, state and local regulations concerning the service and repair of a/c systems and the hauling of refrigerants. Your dealer is best suited to perform these functions for you.

For optimum interior cooling, many motor homes are equipped with two roof mounted a/c units. However, because of the amperage draw of each unit, it is necessary to supply fifty amps of usable service if both units are to run at the same time. If the vehicle is hooked up to a 30-amp shoreline service only, one a/c unit may be run at any given time. Some models contain a dual a/c switch. This switch allows you to select which a/c unit to power up when only 30 amps of service are available.

Generators of 5,000 watts and higher, installed by Winnebago Industries, have both a 30-amp and a 20-amp circuit. The 30-amp circuit supplies power to the front roof a/c and the remainder of the coach 110-volt AC systems. The 20-amp circuit is dedicated to the second roof air. This allows both roof airs to be operational when generator power is available.

Motor homes equipped with 50-amp shoreline service can power both roof a/c units provided 50 amps are available from the campground circuit.

CAUTION:

Do not attempt to run both a/c units when a 50 amp capable vehicle is plugged into a 30-amp service. The amperage draw could exceed the rated capacity of the campground circuit.

As mentioned earlier, the central a/c unit actually contains two cooling circuits. In effect it has the combined capacity of two roof units in one package. Since two compressors are involved, the same rules or 30 and 50 available amps apply. In a nutshell, if the unit is run on a 30-amp service, only the first circuit will operate. When 50-amp service is available, both circuits can function. Please note however, the second circuit will only engage when the thermostat senses that the first circuit is not maintaining the selected temperature.

A feature offered on some 1998 and newer Winnebago Industries produced motor homes is the PowerLine Energy Management System™. This system will allow two roof air conditioning units to operate simultaneously from a 30-amp shore power source.

While many campgrounds are upgrading to 50-amp service, the majority provide the standard 30 amps. At times it is not practical (or popular) to run a generator to support both air conditioning units.

The PowerLine Management System automatically monitors the usage of 110-volt power in the coach. Used with the new "Coleman Power Saver" air conditioner units (which require 40 percent less

energy), it controls the operation of the rear roof air conditioner and refrigerator to minimize tripping of the breakers.

As stated earlier, the a/c units in your motor home are very reliable. If you suspect that an a/c system is not performing adequately, there is a simple rule of thumb that you can use to confirm proper operation. On a properly functioning system, the difference between ambient air temperature and the temperature of air exiting the a/c unit should be 15 degrees F, or greater.

Perform this check as follows:

1. Operate the system for 10 to 15 minutes.
2. Place a thermometer at the air inlet to the evaporator (at the filter). Leave in place for five minutes. Then note and record the temperature reading.
3. Place a thermometer directly into the stream of air coming from the a/c ductwork. Hold in place for five minutes. Note and record the temperature.
4. Compare the two temperatures. The reading from Step 2 should be 15 degrees F or more higher than the reading taken in Step 3. If it is not, contact your dealer for service.

NOTE: This is only a general "rule of thumb". There are many factors that can affect a/c performance including ambient temperature, humidity and airflow.

REMEMBER: Your dealer is in the best position to provide quality parts and service for your Winnebago Industries produced vehicle.