

# *Fit Your Own Refrigerator*

I expected the premises of Electrolux Ltd. of Luton, to be large—they were enormous. I certainly needed a guide to help me find my way around. So I was not then so surprised to find that the areas given over to caravan refrigerators were huge also. Very modern plant produced the many items which were assembled on a production line. Care was taken not to damage the excellent finish and all loose parts

—ice trays, bottle racks and the like— were taped in position. Before the final inspection, a rigorous gas leak test was carried out and certified.

The finished refrigerators coming off the line—RAM 24's at the time of my visit, were destined for Finland and had a distinctive door panel finish in wood grain. In reply to my remark it was pointed out that a customer can easily change the panel of this model, for himself, to any finish he chooses.

But the most valuable part of my visit was a very full lecture on refrigeration and in particular the installation of the RAM 10 and the RAM 24 in caravans by amateurs (or professionals too, for that matter). This information I will now pass on, for it is indeed a fairly simple job for a competent do-it-yourselfer, providing four rules are kept. Over the years I have often been asked to look at caravan refrigerators that were not working satisfactorily and in every case the installation was at fault. There was even one that had been fitted by the dealer under the sink with no protection above the flue. The result—a neat round hole burnt through the Perspex of the sink

The rules become clear if the theory of refrigeration is understood. Remember when you were a lad pumping up your bike tyres and the pump got hot? If you compress a gas its temperature rises. If you keep it compressed, reduce its temperature to that of the room and then allow it to expand, its temperature will drop below that of its surroundings. A compressor type refrigerator has a pump to do this compression. It will also have a condenser to remove much of the heat developed. A caravan fridge does not work on the compressor system but there is still the necessity to cool warmed up gas in the circulation complex, and you must arrange for this.

So Rule 1 is—a supply of energy and Rule 2, if this energy comes from butane or propane gas, is a supply of air for combustion and a flue pipe to exhaust the warm products of combustion. Rule 3 is most important. A large quantity of slowly moving air to cool down the equivalent of that bicycle pump barrel. The fourth rule is that the cabinet must be so secured that, when the caravan is level, the ice-tray shelf inside is also level in both directions.

Now to get on with the job. I will describe the fitting of the new and excellent Electrolux RAM 24 (2 cu. ft.) but the principles are the same for the 1 cu. ft. RAM 10. In fact your caravan most likely has a space designed to fit this model, but if you can get the larger one in, then I would recommend you to do this. The RAM 24 is available as a gas operated version or the triple input design which will operate on gas, or mains electricity or 12 volts. Note that the installation of mains voltage in a caravan is the job for an expert only—particularly as regards earthing. If incorrectly done there could be fatal results. The 12 volt position is for use only whilst on tow. The 7 amps consumed calls for very heavy wiring—at least 28/0.012 or 2 mm<sup>2</sup>—and would soon “flatten” a battery not on charge (more on this point next month). Included in the RAM 24 12-volt circuit is a red light which reminds you to change over to gas when you stop.

We start with Rule 1. Bring your gas to the fridge in copper pipe and include an isolating tap. Avoid flexible hoses. It is true that you have to be able to remove the outfit occasionally for servicing, but it is possible to arrange a Wade compression coupling where it can be reached. I have put mine behind the top air grille.

Rule 2. Drill a 1½ in. hole through the floor and fit external protection outside. This should not be too near the flame. It provides an exit for the heavier than air gas should a leak develop. For the top of the flue attach, via a “lazy T” connector, a pipe that slopes gently upwards and discharges through the caravan wall. A flue kit is supplied by Electrolux to enable you to carry this out. The outlet, shown in Photo 1, includes an anti-blowback flap. Where the pipe passes through the wall, interpose a fireproof lining. You will see in Photo 2 that I have applied a coating of asbestos to the terminal fitting.

Now that important Rule 3. The RAM 24 stands on legs and plenty of air can pass in underneath, though I have not sealed in the sides of my cabinet. Leave plenty of room behind so that air can pass over the “radiators” on the back. Now it must be able to

pass on freely and needs at least 37 sq. ins, free air space at its exit. It can escape into the ‘van as it will not be very warm, though if some can pass outside, so much the better. You will see in Photo 1 that in my case some will pass out through the louvres. But I still have that 37 sq. ins, achieved by fitting the Electrolux vent above the top of the cabinet. If you wish to do this another way remember that a hole of a bare 37 sq. ins, is not enough. You must take into your calculations the masked off area produced by the solid parts of a protection grille.

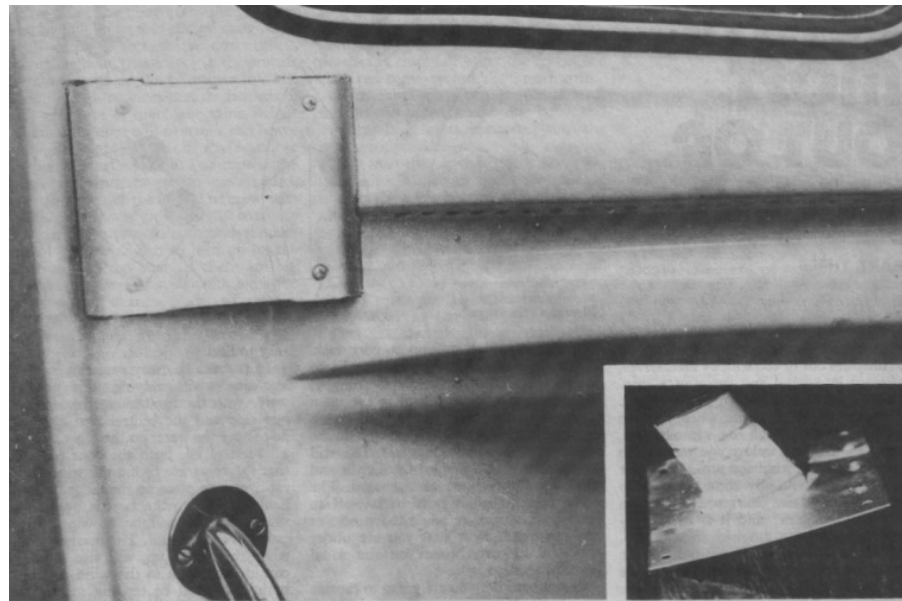
Rule 4 is self explanatory. This type of refrigeration depends partly on gravity and the unit must be reasonably level when stationary for more than about half an hour. It will be less critical when on tow because the movement of the ‘van helps to keep the liquids inside the cooling unit circulating.

The door of the RAM 24 has a pleasant harvest gold finish but Photo 3 shows how it can be sprung out. I changed mine to match up with the oak furniture as my Photo 4 shows, Now turn on the gas at the cylinder and you’re in-line tap, turn the thermostat control knob to 4 and press the Blue button. Hold this for a short while to let the gas push the air out of the pipes. Release it and allow time for any gas to escape through the hole you cut. Now with the gas still turned on, test for leaks. Not of course with a match, but by painting soap solution over every joint and watching for bubbles. If all is well, then you have finished.

Press both buttons and she lights immediately. No tapers needed for this model for the Piezzo crystal gives first time lighting at the press of the red button. Happy caravanning with fresh food and milk. Ice cream for the youngsters and the clink of ice in your glass!

**Top: Flue outlet and cooling louvres.**

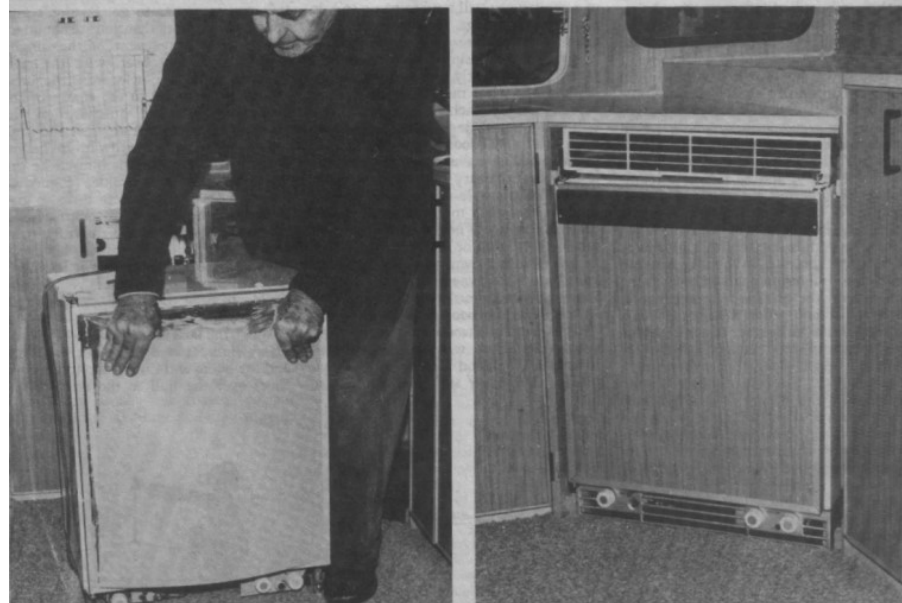
**Inset: Asbestos applied to the Flue Terminal.**



**Bottom left: Springing Out the decorative door panel.**

**Bottom right: The finished job.**

**Note changed door panel.**



**Reproduced from an article in the April 1973 edition of the CARAVAN.**