

## What type of fridge for your caravan and motor-home?

A short article I wrote:

My energy-inefficient mobile house (caravan). Small absorption refrigeration (also known as 3-way fridges: 240V AC 12V DC and LPG) has a 175W heating element. A 12V DC compressor fridge uses about 4A making it 48W are designed to run from a deep cycle battery off the grid. A small 240V AC bar fridge is about 60W. These figures show how inefficient the absorption fridge is. Also, the absorption fridge struggles when the temperature gets over 30°C. The cost of the electricity is paid by the caravan park which is passed on to the caravan owner.

### Absorption Fridge (3 way)

The traditional caravan fridge can be run on LPG when free camping, 12V when travelling and 240v when in a park. They work by heating an ammonia solution which causes cooling. They are now 2 types, low tech's ones and new high tech's ones with electronic controls. These automatic select the energy source and are more efficient on LPG as it turns off the gas when cold enough and has electronic ignition to relight the gas when more cooling is required.

Advantage

- Makes no noise
- More reliable than a 12V Compressor fridge? I do not do warranty repairs on them to make an accurate judgement.

Disadvantage

- The fridge needs to be level.
- Not very energy efficient. Have trouble keeping cool when the temperature is above 30°C
- Electronic controls are very expensive to replace.
- Least reliable part: the 240V heating element.

Price: +\$1200

### 12V Compressor Fridge

They work the same as a kitchen fridge with an inverter compressor. The compressor auto-select the voltage from 12V (car) and 24V (truck). They are available as van fridges or camp fridges. Most motor-homes use them with a dual battery system

Advantage:

- They are more efficient than an absorption fridge and cope with hot weather better.
- Not need to be level.

Disadvantage:

- Are expensive.
- They make a little noise.
- However, a Deep cycle "house battery" is needed to power the fridge. Solar charging is needed for free camping.
- They are very hard on the deep cycle battery and need to be replaced more frequently.
- Least reliable part: The temperature controller/display.

Price: Van +\$1400, camp +\$500

### 240V AC Bar fridge

You can buy a new small bar fridge cheaper than re-gassing a gas-electric fridge. Prices are about \$150-\$400 and are a consideration if you are only in powered sites. Choice tested these in June 2003 and found they do not perform as good as a full-size fridge, including the freezer compartment. Most have only one(1) star rating while most domestic fridges have a 2.5-star rating They do not run successfully using a 12V battery and a 240AC inverter as they draw a large surge current on starting the compressor. The inverter needs to be 3 to 4 times the power rating of the fridge. The 12V compressor fridges have almost no surge current. 240V inverter fridges are now

starting to appear on the market and may solve this problem.

The advantage of a bar fridge

- Better performance.
- Cheaper.
- Less heat generated

A disadvantage of a bar fridge

- Only runs on 240V electricity. May need a generator for 240V+
- Do not fit in space as well.
- Make some noise, gas/electric fridges make no noise.
- Lower the value of the caravan?

Price: \$150-\$300

**Note:**

All fridges need a gentle ride. The vibration will cause leakage on the pipes of the refrigerant system with a loss of refrigerant gas. This will make the fridge unrepairable

**Definitions:** Inverter fridge/motor have electronics that convert the electricity into 3 phase electricity to power 3 phase motor. The electronic can change the frequency and the speed of the motor. Three phase motors are better than a single phase motor.