

PORTABLE MAINS GENERATORS

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Portable generators are a means of providing an alternative when mains hook-ups are not available. However, before rushing out to buy one, make sure that the model you choose will be suitable for your requirements. They are available in a wide range of outputs, those suitable for caravanning generally fall in the 300 to 900 watt range. Not all generators are suitable for use with caravans and care must be taken to select a product which is both safe and effective.

1. Which Model To Choose

First calculate the combined power of the appliances you intend to use at any one time eg:

APPLIANCE	WATTS
Portable colour TV	60
Two 230V lamps (60W bulbs)	120
Fridge	125
Slow Cooker	200
TOTAL	505

NB: These are examples; check the maximum wattage of your own appliances. Remember that start-up current may be greater than the running current.

Therefore using this example, a generator is needed that will supply a rated output of at least 505 watts (if in doubt choose the next size up). Note that some sales leaflets quote maximum output and the rated output, ie what the generator can deliver constantly, which is generally 10% less than the maximum output. Some appliances are not suitable for use with most portable generators, for example microwave ovens, which generally require an input of at least 1000 watts, or approximately double the quoted output of the appliance (which refers only to the cooking power).

Some electronic equipment is particularly sensitive to variations in voltage and the shape of the wave form. Portable generators sometimes supply only an approximation to

domestic mains voltage supply, so check with your supplier before buying. Ask if the output is “50 hertz sine wave” (ie the same as the domestic supply).

2. Voltage

Some generators also have the capacity to provide an output of 110/115V. This must only be used when connected to 110/115V equipment, such as some lighting sets. The advantage is somewhat greater safety in use.

Some generators do not “settle down” on voltage output until warmed up. It is a wise precaution to allow the generator to warm up before connecting up. Also check the generator output voltage regularly to ensure it remains within specification.

3. Frequency

Most generators are quoted at 50Hz, which is a UK standard (and essential for equipment like TVs, videos etc). Some can be switched to operate to the US standard of 60Hz. However this frequency cannot be tolerated by sensitive equipment but can be used for items like filament lamps, or in the short term some power tools. If in doubt, refer to the appliance instructions or technical specifications. Appliance manufacturers are likely to refuse warranty claims if the wrong frequency is selected, unless their products are marked as suitable for both 50 and 60Hz. When comparing generators remember that maximum power quoted will be higher at 60Hz.

4. Fuel

○ Petrol

Unleaded petrol is the usual fuel used in ‘leisure type’ generators (but check the user instructions) and the chart gives the length of time in hours a full tank will last under maximum continuous load.

- Note that some makers quote the time a full tank will last under half power only.
- Like any engine, oil will be consumed over a period of time and requires frequent checking.
- Some generators have an oil warning light and may automatically cut the engine to prevent damage if oil pressure falls below a critical level.
- The fuel must be carried in approved containers carrying the British Standard mark. Do not use old oil cans or similar containers as garages will refuse to refill non-standard cans.

○ LPG

Some four stroke generators can be converted to run off propane or butane LPG - consult the dealer for further information. Cost comparisons are difficult as fuel consumption with LPG is usually higher, but lower emissions are produced.

5. Noise

EEC regulations implemented in 1989 require portable generators (under 2kVA) to have a maximum noise level of 100 LWA (a decibel-type unit to EC standards), which is measured at 4 metres.

- Decibel levels where given are usually taken at 7 metres and will therefore be much lower, but manufacturers differ.
- Compare like with like.
- On Club Sites, generators should not be used between 6 pm and 9 am and at other times with consideration to your neighbours.
- If medical needs dictate more frequent use of the generator, inform the warden before pitching or ideally use an electric hook-up instead if available.
- Remember that even relatively quiet generators can have a high annoyance level to others nearby.

It is strongly recommended that you ask to hear a generator running before you buy. If you think it sounds noisy, then so will your neighbours on a site.

The Club is not aware of any commercially available way of further silencing a portable generator that would not adversely affect its performance or cooling, but careful siting can reduce the nuisance.

6. Caravan distribution panels

Today's fairly sophisticated mains/12V units in your caravan are designed to run off a normal voltage-stabilised UK mains supply, ie 230V 50Hz with live, neutral and earth. If the generator supply differs from these requirements in any way, the function of the unit may be impaired, and any unit warranty may be invalidated.

Portable generators are not usually separately earthed, which can result in any earth fault detection equipment in the caravan functioning incorrectly. Some generator owners use an earth spike driven into the ground to provide an earth connection, but this practice cannot be generally recommended.

- It can be difficult to achieve a good earth using a spike. To ensure its effectiveness, electrical regulations in the UK require a test procedure for earth spikes which the average caravanner will not be able to carry out.
- The use of a long spike (>0.5m), could cause damage to underground services.
- Different makes and models of generator have different earthing requirements, so the manufacturer's advice should always be sought first.
- Never use an earth spike and generator when the caravan is also connected to a regular mains supply. This would breach the regulations controlling the site's earth supply.

There may also be a problem with compatibility between generator supply and the requirements of the caravan battery charger unit, so we suggest contacting the manufacturer of this unit in your caravan for clarification. Most caravans made since 1997 are now designed to allow portable power generation, but check with the charging system supplier.

7. 12V charging

Some generators have a 12V outlet. This is a 'nominal' 12V. It should actually be about 14V or it will not fully charge the battery.

- Ask the dealer to quote the actual value.
- The 12V supply cannot always be used at the same time as the 230V output. It is useful for an alternative supply but is not always fully suitable for continuous controlled battery charging as there is sometimes insufficient regulation of the applied voltage or current as the battery charges up.
- To use this output for charging you would need to check the charge regularly with a voltmeter as overcharging could result.
- A small ammeter in circuit is also advisable.
- Note that the 12V output may not be suitable for direct connection to appliances (eg TV sets) depending on the actual voltage requirement of the appliance.

8. Socket outlets

Smaller leisure generators usually have one or two outlets which accept normal domestic 3 pin 13 Amp plugs. These are obviously intended for normal household use and are not water or corrosion resistant, so the generator should not be left out or used in the rain or damp conditions. It is better to use generators which use socket outlets and plugs conforming to BS EN 60309-2 the same as the blue mains hook-up ones on Club Sites - which have some measure of weather resistance, but this does not mean the generator can necessarily be used safely in wet conditions.

It is not recommended to place the generator in the awning for wet weather use because, as with any engine, exhaust fumes are produced and adequate ventilation is vital. Likewise if under the caravan, fumes could be drawn into the caravan via an air vent. The engines are usually air cooled so air circulation is also necessary to avoid the risk of overheating.

Specially designed covers are available (e.g. those made by Bags4Everything 01924 265367 or www.bags4everything.co.uk) which provide a degree of weather protection for the generator, and which can be used while the generator is running.

9. Safety

Mains-type voltage electricity (ie 230V) in any form is potentially dangerous so always read the manufacturer's instructions carefully and follow them. Remember water and electricity are a potentially lethal combination so wet hands/wet generators/wet appliances **must be avoided**. Follow the manufacturer's instructions faithfully.

- Make sure the caravan's mains isolator is in the "off" position before starting the generator.
- It is the user's responsibility to ensure that any connection of a portable generator to the caravan's installation does not invalidate the caravan's electrical Test Certificate, and to check with the manufacturers that the caravan distribution panel is compatible with the generator output.
- Remember that, electrical safety apart, generators are potentially hazardous items, which use a highly flammable fuel and have parts which can cause serious burns if touched.
- Never leave a generator unattended where young children are at play, and take care when siting it so as not to cause danger to other site users.
- Long dry grass is a hazard as some parts of the generator become very hot under load.

10. Secondhand Units

If you buy a secondhand generator you must establish whether it has any modification from the original specification. Some users might have made changes to the wiring so that using it without an earth would be very dangerous. Make sure you are given the original handbook and ask the seller to confirm whether or not any changes have been made. If there is any doubt, **do not buy**. In all cases of buying secondhand, have the whole unit checked over by a qualified electrical contractor **before** using it.

11. Weight

Remember that these generators weigh a lot for their size. A 1000W model can be about 15 kg, whereas a 2000W version is likely to be over 20 kg. Take care where you place this weight when travelling and remember to include it in your payload calculations for car and caravan.

12. Security

Remember that portable generators are, by their nature, easy to steal and attractive to thieves. Do not leave the generator on view when unattended. If you wish to store it out of sight, say in the awning when away from the caravan, wait for it to cool down first and shut off the fuel tap but be aware that a tank of fuel is a serious fire hazard. It is not advisable to chain the unit to the caravan chassis when in use unless you can be sure it will be electrically isolated from the chassis at all times. Where possible, chaining the generator to something like a tree is a good idea.

13. Covers

Bags4Everything produce a cover for many types of generator. It comes with an easy to assemble frame in a heavy duty material with 2 zipped flaps, either of which can be rolled up and secured to expose the exhaust outlet, it has rubbers on each corner which can be used to peg it down and comes with its own bag when not in use. The cost is £36.00 plus p&p. For details tel: 01924 265367 www.bags4everything.co.uk

14. Other Options

Having read this leaflet, you will see that generators have their limitations, but for power independent of mains electricity they are one solution. If you only need power for a few days away from mains hook-up, consider the alternative of a second large (eg 110 Ah) leisure battery instead. A couple of batteries, perhaps with a degree of recharging from a solar panel, will supply modest power demands for several days for no more than a small generator costs, and with much greater ease of use.

15. Contacts

MANUFACTURER	TEL NO
Honda	01753 590500
Yamaha	01932 358000
Bags4Everything	01924 265367

WARNING

BOTH ELECTRICITY AND EXHAUST FUMES CAN BE LETHAL. ALWAYS READ THE USER INSTRUCTIONS CAREFULLY AND MAKE SURE THEY ARE UNDERSTOOD BY ANYONE OPERATING THE GENERATOR

PORTABLE GENERATORS

MAKE	MODEL	RATED POWER WATTS	FREQ. HZ	AC OUTPUT VOLTS	DC OUTPUT VOLTS	DC OUTPUT AMPS	OPERATING HRS	LWA at 4 m	dB(A) at 7m	L x W x H mm	WEIGHT kg	PRICE (incl vat) £
Honda	EU 10i	900 (1000 max)	50	230	12	8.0	3.6-8.3 (¼ load)	N/A	52 (¼ load)	450 x 240 x 380	13.0	780
	EU 20i	1600 (2000 max)	50	230	12	8.0	4-10 (¼ load)	N/A	52 (¼ load)	510 x 290 x 425	21.0	1255
Yamaha	EF 1000is	900 (1000 max)	50	230	12	8.0	4 -12	88	47 – 57 (¼ load)	450 x 235 x 380	13.0	799
	EF 2000is	2300 (max)	50	230	N/A	12.8	4.2-10.5	N/A	51.5	490 x 280 x 455	21.0	1299