Data Sheet
30

Data Sheet

Electricity for campers and caravanners

The Camping and Caravanning Club
The Friendly Club

Using electricity on a campsite

When you connect to a campsite electric hook-up point you are able to receive an electricity supply as you would at home. This will be a nominal 230V, single phase, 50Hz supply, which is compatible with UK and modern European caravans, motorhomes, trailer tents, folding campers and tent hook-up connections.

This electrical supply can be used either directly to power 230V equipment or indirectly via a power supply unit that converts the mains power at 230V AC to a nominal 12V DC, usually in conjunction with a leisure battery. This Data Sheet looks at how to use this electricity supply safely and discusses its limitations.

A site's electrical supply system should be checked regularly by the site operator

Safety is paramount

Remember that camping on site using a 230V electricity supply within caravans, motorhomes and tents requires even more care than in the home. Because your unit is mobile there is a greater likelihood of things going wrong with an electrical installation than with the fixed installation within your house. It is therefore important you make sure your cables and equipment are maintained in good condition by simple checks every time you use it, by regular inspections by a qualified technician and also by using it in a sensible way.

Campsite owners and management team (in the case of the Club, the Club and its Holiday Site Managers) are responsible for the safety of the electrical supply equipment up to the socket outlet on the site bollard where you connect your hook-up cable. You are then responsible for the safety of the hook-up cable and your unit's electrical installation. However, the Holiday Site Managers have an overall responsibility for the safety of all campers while on their site, so if a Holiday Site Manager notes any electrical equipment not conforming to the Club's recommendations or connected to the electrical supply in an unsafe manner he or she is empowered to disconnect that camping unit.

Supply bollard

A pitch with electrical hook-up will have an electrical supply bollard within about 20 metres. Each Club hook-up bollard is individually protected against overload by a miniature circuit breaker (MCB) and a residual current device (RCD).

The MCB is a device to protect the site cabling from overloading and limits the amount of current you can draw from the supply. Hook-ups on Club sites have maximum ratings of 10A or 16A and this will limit the number of appliances you can use at one time (see How much power, page 3). The RCD is designed to cut off the supply if a fault occurs in your connecting lead, caravan or other camping unit. However, to maximise safety your unit should have its own RCD. Do not allow children to play around the hook-up installation or supply cable or allow them to connect or disconnect supplies.

At Club Sites the supply cable plug is simply a push fit into the bollard socket, but you will find some sites with hook-ups that require the plug to be pushed in and then twisted. With this type of hook-up a button has to be pressed to release the supply cable plug.

A typical supply bollard

Your supply cable

The socket outlet of the Club's site hook-up points complies with the British Standard BS EN 60309-2. Your connecting lead will need a plug to match this socket outlet and a connector to match the inlet to your unit, both complying with BS EN 60309-2. Such leads now come supplied with new caravans and motorhomes constructed under the National Caravan Council (NCC) approval scheme, but suitable leads fitted with the appropriate blue plug and socket are available from most camping or caravan dealers, these connecting leads must be PVC/PVC flexible cable, with three cores, each core being 2.5mm to be able to cope with a typical 16A connection demand. It is common however to find lesser cables where each core is only 1.5mm. This can be confirmed on the outer PVC covering of the cable where it should be marked.

The maximum cable length of 25 metres should ensure it can reach the supply bollard at most sites in the UK. Always uncoil the supply cable fully to avoid it overheating on a cable reel. The use of a second cable is not recommended, but if it is used it must be fitted with the same BS EN 60309-2 standard plug and connector. The connection between the two cables should be raised off the ground by the use of a propriety joining cover. Taped cable joints and ordinary 13A household plugs and sockets must not be used under any circumstances. The cable is normally coloured orange so that it is visible and avoids being damaged by grass cutting and other activities on site.

Connecting up

When you are ready to connect to your hook-up, make sure the RCD is in the off position and then connect your hook-up to your unit. Only then should you connect to the campsite hook-up outlet. It is good practice to check the operation of the safety RCD device before turning on your appliances by switching on the RCD and pressing the test button. If it fails to operate the system will need to be checked by a suitably qualified person. As an extra check – especially if you are camping abroad – you can plug a proprietary mains tester into a socket to check the polarity of the supply and the presence of an earth connection (see Camping on the continent on page 4).

A proprietary mains tester can be useful when camping abroad

Disconnecting

When you are ready to leave, switch off the RCD in your unit. Disconnect the cable from the hook-up outlet socket on the bollard and then remove the cable from your unit. Owners of motorhomes must not leave their hook-up cable connected to the site bollard as a marker for an occupied pitch when temporarily off site. If you want to mark your pitch with the cable, disconnect it first.

Loss of supply

On Club Sites, any loss of supply should be reported to the Holiday Site Manager as soon as possible. If the loss of supply is because you have overloaded the circuit or misused your equipment there may be a charge for restoring your electricity supply. Please do not ask site staff to attend to hook-ups before 9am or after 8pm unless it is an emergency.

On other sites

Not all campsites are run to the same high standards as those of the Club, but all should have their electrical supply checked each year and hold a certificate showing the supply has had its annual inspection. If in doubt about a hook-up, speak to the site owner before connecting up.

How much power?

Most Club sites are able to provide a 16A electrical supply, but some are limited to supplying 10A. Certificated Sites and other campsites' supplies maybe even more limiting, perhaps providing as little as 5A. In comparison, a modern domestic kitchen typically has a power supply of 20A, plus a separate electric cooker supply and a lighting supply. Hence, when camping, to keep within the limits of the campsite supply and prevent a loss of supply if a circuit breaker trips, you need to be careful about the appliances you use and how many you use at one time.

You need to ensure the total rated wattage (rated power) of equipment switched on at any one time is less than the power supplied to you. Power (in W) = voltage (in V) x current (in A), so for a 10A hook-up, 230W x 10A = 2300W, hence 2,300W (2.3kW) of power can be supplied to your unit. At a 16A site this rises to 3.68kW. Particularly beware of using ordinary domestic kettles that can draw 10A or more on their own. Special low wattage kettles and other equipment are available from camping and caravan dealers. Microwave ovens can also present problems – even though they may be advertised as (for example) 800W, the input operating power requirement, particularly on start up, may be up to twice this.

Even though you may have a 16A hook-up, the power sockets in your caravan or motorhome may be protected by a circuit breaker of just 10A. Usually there is another one or more circuits rated at perhaps 6A or 10A, which covers the lighting circuit and possibly some other built-in electrical equipment. If in doubt consult your handbook or contact your dealer.

The supply on Club Sites (and most other campsites) is designed on the basis of diversity so the main site supply is geared up to an average electrical usage, not all hook-ups taking 16A at one time. Just occasionally, if a cold spell occurs at times of high occupancy and all users switch on electrical heaters and kettles at the same time, you may suffer reduced power or even a power cut, so it is important to use electricity responsibly.

This chart shows how many watts (W) and amps (A) normal appliances may require. It is only a guide and the power ratings marked on your appliances should be used wherever possible.

Appliance	Power (W)	Current (A)
Domestic kettle	2,000	8.7
High-speed kettle	3,000	13.0
Iron	1,300	5.6
Camping kettle	750	3.3
Microwave oven (800W cooking power)	1,000	4.4
Domestic fan heater	1,000	4.4
1-2kW	2,000	8.7
Truma water heater	850	3.7
	or 1,300	5.6
Camping fan heater	750	3.3
LCD TV	45	0.2
Refrigerator	135	0.6
Battery charger	100	0.4
	300	1.3
Toaster	900	3.9
Hair dryer	600	2.6
	1,200	5.2

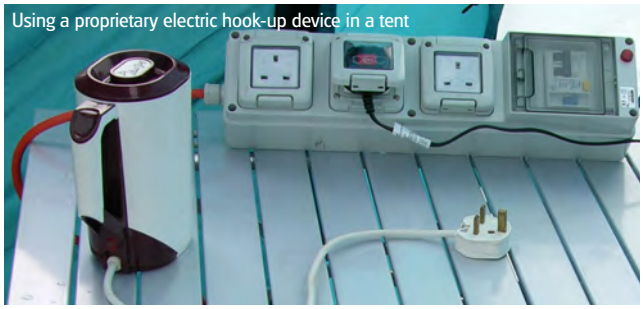
Electricity in tents and awnings

UK wiring regulations require special measures if electricity is to be used in outdoor locations and as conditions in tent and awnings can often be damp and affected by condensation, it is only sensible to take special measures in these situations.

Details of the hazards and ways of minimising the risks are outlined in the Club leaflet Using Electricity in Tents. The important thing to remember is that water and electricity do not mix. Even small amounts of water or condensation in conjunction with an electrical supply will result in a risk of nuisance tripping, fire or electrocution. Keep all electrical equipment off the ground and be prepared to stop using electricity when conditions are damp. Use electricity only when someone is present and unplug appliances and replace the covers over the socket outlets when you leave the tent.

Because of these special conditions it is essential to use a proprietary electric hook-up device, manufactured specifically for tent hook-ups. These devices have one, two or three domestic-style three-pin socket outlets and a control box with safety features incorporating miniature circuit breakers (MCBs) and a residual circuit breaker (RCD). Do not forget to test the RCD each time you connect up.

Remember also that most appliances you use will have been designed for the domestic environment and may therefore be vulnerable to condensation.



Using a proprietary electric hook-up device in a tent

Maintenance

Most new caravans and motorhomes will carry a three-year National Caravan Council approval certificate covering the electrical installation. However, some imported caravans and most trailer tents will not carry any kind of certification. The Club strongly recommends you have these units checked and all mains electricity installations should be inspected regularly by a qualified electrical technician.

The Electrical Safety Council recommend caravans should undergo testing with an Electrical Installation Condition Report (EICR) at least once every three years. Approved Workshops are qualified to undertake this check, but if your caravan or motorhome dealer does not have a suitably qualified person to provide a EICR then contact either the National Inspection Council for Electrical Installation Contracting or the Electrical Safety Council for a list of suitable personnel in your area.

The Club does not require the production of an EICR certificate with any kind of camping unit but recommends members obtain one.

Camping on the continent

Camping in Europe can offer a few additional challenges to UK campers. Fortunately, with the coming of standardisation within the European Union, voltage supply problems are fewer than before.

In general modern UK appliances will work in Europe even where a 220V supply is the norm.

A two-pin European adapter cable

The available power from continental hook-up points will often be less than the UK and a supply as little as 5A or 6A is common.

Even though the blue plug and hook-up sockets we use in the UK are to a European standard, many continental sites still have old style two-pin hook-ups or a mixture of modern and old types. In general there are two types of old-style sockets, both have the two-pin arrangement, but they differ in how the earth connection is made. Connecting to these old-style sockets is relatively easy with the use of a continental adapter lead, which is readily available in camping and caravan accessory shops. The adapter will normally come with two pins and socket for an earth pin, suitable for the old French-style sockets and also side earth strips, making it suitable for old German-style sockets.

Whether the site provides modern or a two-pin connection, there is always the possibility that the electrical supply will be wired differently (double-pole) where both live and neutral are disconnected with the switch, unlike most UK wiring where only the live wire is disconnected (single-pole). If the live wire is presented to your electrical connection on the neutral side, this is known as reversed polarity (see inset box). Most modern electrical supply units will have a built in tester otherwise a proprietary mains tester can be bought for a small cost that can be plugged into a socket and will show up reverse polarity and identify other problems with earth connections. Should you have indication of an earth problem – whether in Europe or in the UK – you should not use the hook-up supply.

If faced with a reverse polarity situation it is possible to make up a short adapter lead to deal with reverse polarity, where the wiring within one end of the lead is reversed. You should only prepare such an adapter if you are sufficiently competent. Make sure that the adapter is clearly marked to indicate that the wiring is reversed.

Reverse polarity explained

This is a situation where the live cable is connected to the neutral side of the circuit. In a single-pole circuit found in the UK in older installations only the live is disconnected when the user switches the socket off. The neutral can still allow current to flow. So when the connections are reversed the supply can flow even when the socket switch is off. On a modern double-pole installation this is not a problem, however it is always worthwhile unplugging items that have exposed elements such as toasters and electric fires.

12V supply

Most caravans and motorhomes have a 12V supply from a leisure battery or a supply unit that converts a supply to a nominal 12V. While 12V provides a voltage that should not cause a fatality from an electric shock it still has the potential to cause harm. The main hazard is from overloading supply cables. This causes heat to be generated and could lead to a fire. Always check the power rating of any equipment to be connected to a 12V socket for compatibility and consult your dealer before altering 12V wiring circuits unless you are competent to do so.

Invertors

When you do not have access to a 230V mains hook-up you can use an invertor to provide a 230V supply from your 12V battery. However, a 230V mains appliance taking a 1A supply from an invertor will require 20A from the battery, which can cause the battery to discharge rapidly and overload the 12V wiring system. It is also important to remember to take the same safety precautions with a 230V supply from an invertor as with a normal 230V mains supply.

An inverter

Generators

A generator can be used to provide a 230V supply where a hook-up is not available, but this route is not without its drawbacks and safety issues.

Generally the least expensive generators will be the noisiest units, but even the quietest generators used on a quiet tranquil site or at night can cause disturbance to your neighbours. Club policy is that generators may only be used at the discretion of the Holiday Site Manager or the Steward on a meet or rally field.

Cheaper generators may cause electrical spikes or surges in voltage that can result in damage to the caravan's sensitive electronic control systems. Allowing generators to run for a while to warm up before connecting can sometimes alleviate this problem, but it is better to buy a generator with the technology to provide a smooth surge-free electrical supply.

A generator must always be used outside because of the danger from exhaust and carbon monoxide. Always place it downwind and make sure the fumes do not go directly into other camping units. You will probably need to have a ventilated housing to shield it from rain and help keep the noise disturbance low. Do npt forget the exhaust end of the generator will get very hot and can be a hazard to children and animals and give risk of fire if it is near long grass or other flammable material.

Normal electrical safety precautions are still vital as 230V is being generated, but there is the additional complication that a generator may not be compatible with a caravan supply system as the generator may not have an earthed supply as provided by a conventional hook-up. Before proceeding with a generator purchase, speak to your generator supplier and caravan dealer.

A generator providing power to a caravan

Finally

If you need further general information about using electricity on site you can contact the Club's Technical Helpline. For detailed information about the suitability or safety of your unit's electrical installation or appliances get advice from a technician at an Approved Workshop or a qualified electrician before going to your next campsite.

Contact

The Camping and Caravanning Club,
Greenfields House,
Westwood Way,
Coventry CV4 8JH
024 7647 5442
www.campingandcaravanningclub.co.uk

Glossary

V Volts, the standard measurement of electrical voltage

A Amps, the standard measurement of electrical current

W Watts, the standard measurement of electrical power

MCB Miniature Circuit Breaker, designed to limit the current you can draw from the campsite supply, protecting the campsite cabling

RCD Residual Current Device, designed to cut off the electricity supply if a fault occurs

For more information

- **Club Technical Helpline: 024 7647 5282 email: techtalk@campingandcaravanningclub.co.uk**
- **Approved Workshop scheme: 01252 796055 www.approvedworkshops.co.uk**
- **The National Caravan Council: www.nationalcaravan.co.uk**
- **National Inspection Council for Electrical Installation Contracting (NICEIC): 0870 013 0382 www.niceic.com**
- **Electrical Safety Council: 020 3463 5100 www.esc.org.uk**