

WILDSIDE BBC - caravan charger

Allows leisure battery charging & fridge operation whilst towing.

Allows fridge to operate from leisure battery when un-hooked and away from a camp site (**WILDSIDE**).

Plug + Play can be installed with existing cabling.

EURO 6

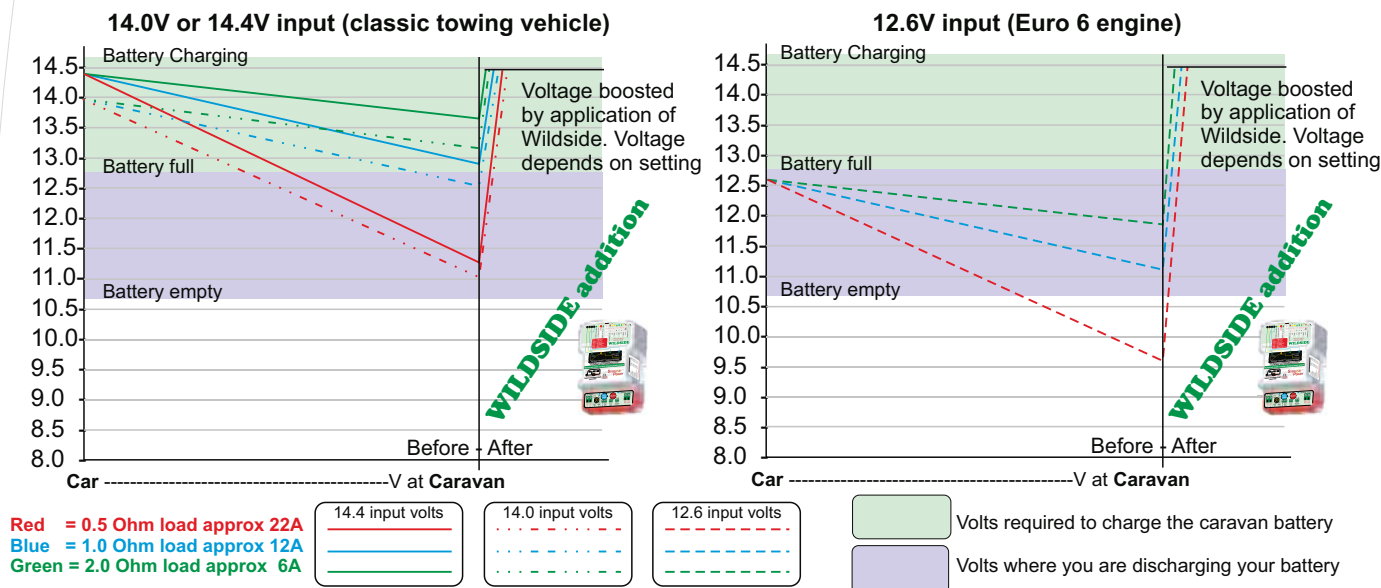
► The Existing Problem

Electrical requirements on board caravans are ever increasing. When at campsites this is no problem thanks to AC hook-up. However, if you tour and do not utilize these hook-ups and you find your fridge and mover not operating and your leisure battery not charging, this article is worth reading.

Still to this day, charging whilst towing is terrible. This is because the on board charging systems have not modernised by keeping up with on board electrical demands NOR by dealing with the contemporary peculiarities associated with Euro 6 engines on modern towing vehicles. Fridges do not run, leisure batteries do not charge, movers are ineffective etc. This is because the towing vehicle's alternator's voltage is dropping below the enabling threshold of the fridge and below that required to charge your batteries (read page 15). At current we have seen vast voltage drops down the cable.

Considering modern towing vehicles have large alternators it is shocking that their potential is not utilized.

Graph shows voltage drop across 2.5mm² copper cable. The cable is 8m of positive cable and 8m of negative.



► Graph analysis

The above is the best case you can expect. We have used good cables, no relays, no chassis negatives, no fuses and the connections were good. The green is the voltage where you need to be to have any chance of charging your caravan battery. The higher up the green area the better your battery charge will be. The purple is your battery depletion, the lower down you are on this the more power you have used and so the more "empty" your battery shall become.

The **Euro 6** graph is the most telling - when the alternator is not doing anything (12.6V) the chart begins within the purple (discharge section). However, the voltage which ends up in the caravan under load is so far below this due to the voltage drops in the cables. This means your fridge is receiving a very low voltages and it simply cannot operate at this low voltage. The simple conclusion is that, under Euro 6 conditions, you shall not be able to run your fridge nor charge your batteries. Therefore, there is actually no point having this connection.

The classic towing graph (14V), displays a modicum of battery charging at very low current. However, at moderate or high load, absolutely no battery charging shall take place.

► WILDSIDE addition

Adding Sterling's **WILDSIDE** takes this low input voltage and current but transforms the power from useless low voltage to a higher battery charging voltage (4 stage). Even at 0.5 Ohm load (22A) at ~9V the **WILDSIDE** unit boosts the output to the 14.4V charging regime for your typical leisure battery. By providing this boost not only do the leisure batteries get charged at an infinitely improved rate but the fridge is also brought online. Therefore, categorically, you can conclude that if you have a Euro 6 towing vehicle you shall neither charge your leisure battery nor run your fridge and shall require a **WILDSIDE** to achieve this. No Sterling, No charge, No Fridge.

An absorption fridge, when at 12V would consume in excess of 10A. Down at 8V, this is more like a 16A consumption. The **WILDSIDE** enables the fridge to operate, even at these extreme conditions, with a surplus of several amps to charge your leisure battery. Note, we recommend against the use of absorption fridge, as they are extremely thirsty. Possibly go with a compressor fridge (~2A).

► The Solution - requirements:

- 1) Deal with the massive voltage drop down the cables / plugs between the car and the caravan by boosting the low voltage to the correct voltage expected to charge the batteries. Also, reducing the voltage during the voltage highs associated with the new Euro 6 engines to prevent damage to equipment.
- 2) Utilize as much of the standard plug and wiring system as possible to avoid changing the basic system - for the sake of ease of installation.
- 3) Enable the fridge to operate (12V aspect), in transit, or remain (optional setting) in operation if not connected to 230V.
- 4) Charge the on board batteries, fast, using a 4 stage charging profile + 9 battery type programmes available. This ensures the battery is fully charged. Plus, a custom set option allowing the unit to be set up to any customer's personal choice. This ensures your electric caravan mover works when you arrive at your destination.

9 pre-programmed charging profiles for AGM, Gel, sealed / flooded, calcium and lithium (LiFePO₄) batteries.

BBC1225 - 25A input DC rating.

Charging modes:

1) **Battery bias mode (default).** This mode prioritises the leisure battery charging over running the fridge constantly. The BBC intelligently determines the state of your leisure battery. When the leisure batteries require charge, the fridge is offline and current is directed solely to the leisure battery. When it sees the leisure battery as sufficiently charged it shall bring the fridge online + simultaneously charge the leisure battery with any surplus. The BBC shall continually monitor the leisure battery. If the leisure battery begins depleting, due to a load, the BBC reverts to charging the leisure battery as priority.

2) **Fridge bias mode.** This mode brings the fridge online instantly and continuously, irrespective of leisure battery state of charge. Bringing the fridge online, particularly if the fridge is an absorption fridge, shall consume the majority of current. Any surplus current shall be directed to the leisure bank. Therefore, you shall likely still get battery charging, albeit less than battery bias mode.

Other Specification:

- 80A fridge engage relay.
- Automatic operation.
- OEM lock, to prevent tampering.
- 16 LED information and alarm panel.
- Optional battery temperature compensation.
- Thermostatically controlled fan cooling.
- High grade fire retardant plastic case.

The BBC shall dramatically increase the charge rate (500%+) and shall compensate for poor connection and Euro 6 charging issues.

A clean and simple install in the main charging cable via the 20A conventional socket.

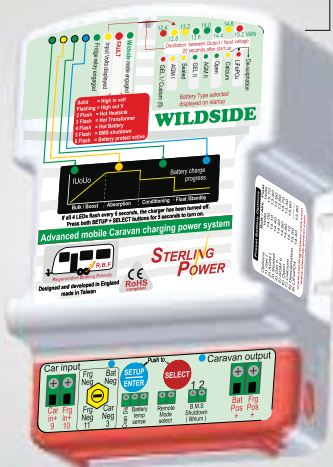
Shall easily double your useful battery storage capacity.

This constant current charger also enables the battery plates to stay much cleaner and last longer.

WILDSIDE mode. This mode allows the fridge to run directly from the 12V leisure battery irrespective of whether you are hooked up to a towing vehicle or not. We have implemented a low voltage cut off at 11V to prevent complete leisure battery discharge.

If you are to use the **WILDSIDE** mode we would recommend increasing the Ah capacity of your leisure battery.

WILDSIDE mode is not default. The default mode is campsite mode. Campsite mode isolates the fridge from the leisure battery when not towing but enables fridge operation when towing.



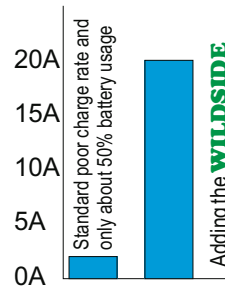
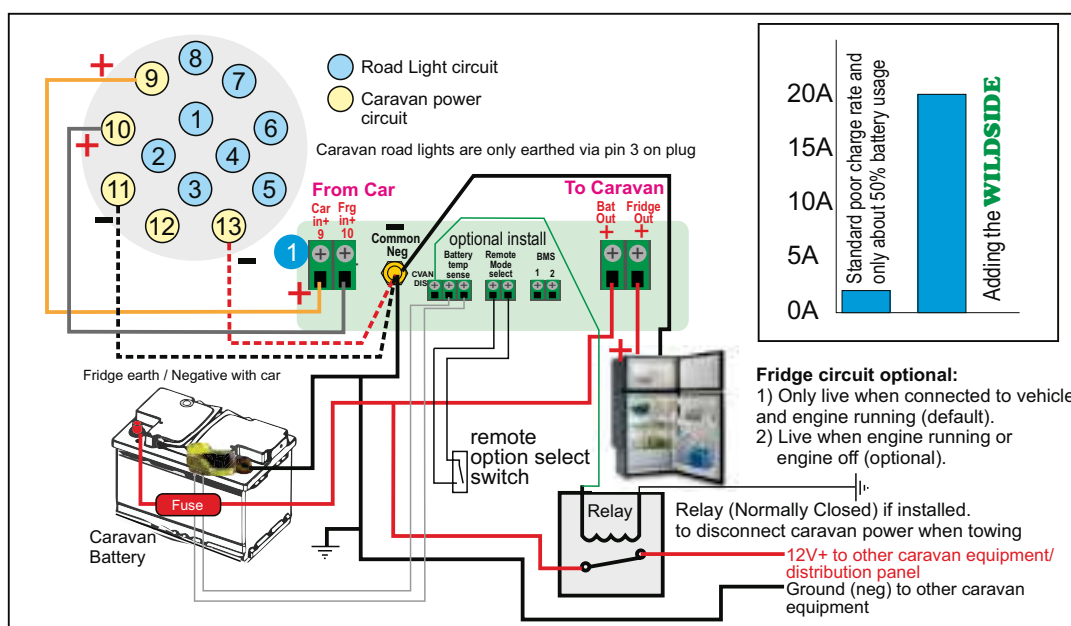
BBC1225 performance table

Input Current	Alternator Voltage	BBC input Voltage	BBC total output voltage current
25A	12.4V	10.7V	14.4V @ 15.5A
25A	14.0V	12.4V	* 14.4V @ 17.6A
25A	15.0V	13.4V	* 14.4V @ 19.0A

* Voltages under regen. braking system



Optional battery temperature sensor with compensation (TSAY)



DC V (in)	DC V (out)	Current (A)	Weight (Kg)	L x W x D mm	Code
12V	12V	25A input	0.9	160 x 96 x 55	BBC1225