INSTALLING & USING A BATTERY - BATTERY CHARGER

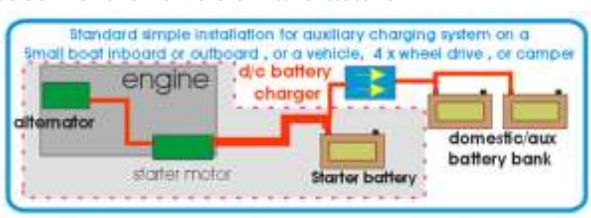
Why do I need a battery - battery charger?
The best way to charge a battery is by using a 4 step battery charging curve (which cannot be achieved from a standard alternator).This system enables one simply to attach the unit to a standard engine battery: it then fools the alternator into working at its maximum ability in order to ensure that all its surplus power is utilised to charge the auxiliary battery bank via the digitally controlled 4-step charger. This system uses only surplus power and, at all times, ensures that the power required to run the vehicle's or boat's primary system is not affected.

What does it do?
In a nutshell it charges your extra battery system about 5 times faster than it otherwise would and puts in about 50% extra useable power as well as increases the life of the batteries by de-sulphating them.
For best effect use open lead acid batteries and avoid gel, sealed and A.G.M. Batteries. Even though open lead acid batteries are by far and away the best for fast charging and longer life using advanced charging units, there is sometimes no choice but to use gel or A.G.M. The unit has the settings to enable these to be charged within their charging curves.

How does it work?
The unit monitors the engine starter battery. The unit will not start until the battery voltage exceeds 13 volts, then it waits for 2.5 mins to ensure that some charge is replaced after the engine has started. It then pulls the engine battery down to no less than 13 volts. This enables the engine battery to still receive a charge and ensures the alternator works at its full
To further ensure the engine battery is OK, every 15 minutes the unit stops for 2.5 minutes to check the engine battery.
The unit takes the 13 volts into the control box, then boosts this up to 14.8V (or what ever voltage the unit is set at) in order to fast charge the other set or sets of batteries. After a period of time, (calculated by the software) when the auxiliary batteries are full, the system will float charge the batteries at 14 volts but always ensuring the engine battery comes first. It seems a simple idea, but its simplicity masks its complexity.
Other features of this system include: remote control option, alternator temp. sensing, battery temp. sensing, ignition feed (if required), automatic start-up and shutdown.

Advantages of this unit:
1) Installation: Simply connect to your starter batteries and to your domestic battery.
2) No direct connections to the standard engine alternator. Therefore, on new installations, there is no extra wiring needed for a split charger system.
3) Ensures the engine battery is maintained correctly.
4) Multiple units can be used. For example: if you have a 60 amp alternator and 3 battery banks (engine, domestic, and bow thruster) then 2 battery - battery chargers can be used to run the bow thruster and the domestic system. Their internal programs will adjust their charging patterns to accept the other unit, ensuring that only the excess power is used and that the primary system is not placed in jeopardy.
5) Ensures there is no voltage rise on the engine management system, avoiding alarms and possible damage.
6) When installed correctly, the battery to battery charger is completely safe and, because it is not corrected to the vehicle, there are no warranty issues with the vehicle's manufacturer.

This diagram shows a standard installation which would be used on a boat or a vehicle such as a motorhome.



The area within the dotted line shows the existing layout.

This is the most common and simplest installation and the charger is simply connected to the starter battery. Installation involves connecting one wire from the auxiliary battery banks to the starter battery. The starter battery stays between 13-14 volts (within its limits) and the domestic battery goes up to 14.4V.-14.8V in order to put a good fast charge into it. This method works well even if the battery bank to be charged is not close to the starter battery; such as in a motorhome or other large vehicle.

INSTALLATION

Installing a battery to battery unit is not complicated but can be time consuming as a result of having to run the cables which connect the unit to the batteries.

It's absolutely essential to use the correct cable: if you don't, at best the unit won't work correctly and, at worst, the cables could catch fire. To be on the safe side and to ensure that the unit works as it should, we recommend the use of **high-temperature, thin-wall, 16mm cable rated at at least 100 Amps.** We also suggest that you fit a 60 Amp fuse on each side of the charger, one near the starter battery and one near the domestic battery/ies.

To avoid voltage drop, the charger should be mounted as near to the leisure / domestic battery/ies as possible. The unit has a voltage regulator on the input side so that even a long cable run from the starter battery shouldn't prevent it from operating normally. Using a high quality cable will enable the use of cable runs of up to 10M although the run should always be kept as short as possible.

The battery to battery charger is not waterproof and must be installed in a dry place with good ventilation. Like any electrical appliance, it will generate heat and unless this is dispersed, the unit will simply shut down. When installed correctly, the charger can be left to do its job: safely, quietly and efficiently. As long as your batteries are in good condition, you will notice the difference straight away and - if you have a power management panel **(C8422)** - you'll be able to see for yourself as the battery to battery charger treats the domestic battery bank to a charge of up to 50 Amps per hour.