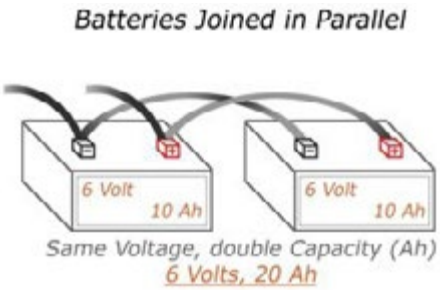
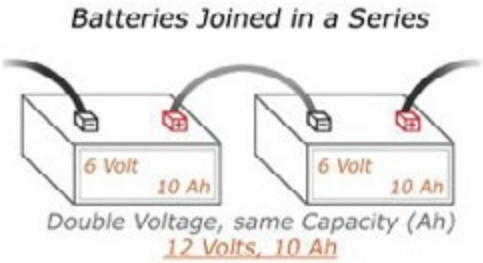
Dual Battery Charging Part 1

Dual Battery charging is necessary for a multitude of reasons, running a fridge or other accessories or charging a battery in a campervan/trailer that in turn supplies the accessories or lighting in that.
The Basic concept is to join 2 Batteries together in Parallel creating double the capacity and then having some way to separate them allowing the second battery to be used as the supply for the extra accessories/fridge/Van/ or even an Emergency Reserve Starting Supply keeping the original battery for the main vehicle and/or starter supply.

• Parallel gives double the capacity



• Series gives double the voltage



Ah is Amp Hours which is a measurement of capacity – 1 amp hour is the ability to supply 1 amp for 1 hour or half an amp for 2 hours or a third of an amp for 3 hours etc.
In very early simple systems a switch like an E52-0500 was commonly used to parallel 2 batteries together creating higher output and allowing them to be Manually separated – and there is the problem – you have to remember to disconnect or you risk 2 Flat Batteries! The advantage is the switch is heavy enough to carry average size vehicle Starter load and if wired up with battery cable starting with assistance from the second battery is possible.

E52-0500 Battery Master Switch

Dual Battery Charging Part 2

The next type of dual battery changing systems commonly fitted was with a constant duty solenoid enabling the system to begin to become automatic and connected in a number of ways

- Straight ignition supplied - found to be possibly the most effective as the contacts on this type of solenoid can oxidise if insufficient current flow is constantly across the terminals, ignition suppling them causes high current flow when starting the vehicle “burning off” oxidization. A disadvantage here is the possible disguising of a failing battery when the vehicle starts constantly on both, when the second battery fails there is no back up!
- Alternator supplied switching – when the Alternator starts charging after start up the Solenoid is switched on from an Alternator Output joining the batteries.
- Oil Pressure supplied – an oil pressure switch is fitted and supplies the solenoid when engine is running or has some oil pressure – as above for the alternator type.
- Manually switched on – can be done from the cabin but only a slight step up from a battery master switch.

E52-0000 Continuous Duty 12V 80A Solenoid

A major advancement came with the first Voltage controlled Dual Battery Solenoids.
Now they became truly Automatic, turning on when the Alternator Voltage reached a set point indicating that the main battery was nearing full charge – (Typically somewhere above 13.6Volts) and then off, isolating the batteries before significant flattening of the original battery (typically around 12.4-12.6 Volts)

The Current JAS Versions are either LV1009HD or LV1010HD Both Dual Voltage 140 or 160Amp Rated, still perfectly suited to non ECU controlled charging systems.

LV1009HD

LV1010HD

Dual Battery Charging Part 3
- New Technology

A change in Alternator and vehicle design to better monitor battery condition and Alternator output based on battery and vehicle requirements and therefore minimising fuel use, means that Battery voltage can change making it not possible to use a normal voltage dependant relay like the LV1009HD. A new way of charging second batteries was needed.

The new style of Dual Battery Supply is the In Vehicle DC-DC Battery Charger and is basically just that, a Battery Charger that takes DC power from the original vehicle battery and either boosts or drops the vehicle battery voltage to charge the second battery at a specified ideal voltage and amperage up to 25amps. This leaves the vehicle charging system to maintain the OE battery based on that load that it will monitor and make allowances for by changing the charge rate to suit while the DC-DC unit maintains the Second or even third battery in some situations with a second DCC. The Main part numbers that JAS supply are the DCC1255ACK-RP and LV1725.

The DCC1255ACK-RP is supplied with a remote display that is also used to program the DCC for different Battery types, Standard Lead Acid, Absorbed Glass Mat, Gelified Electrolyte, Lead Calcium which all have differing charging requirements. It can be used without the display but a display is required for initial programming. This can be mounted in Engine bay, in the Cabin or in the Caravan or Motorhome. Depending on how far away in the Vehicle there are longer Data cables available. They can also be Voltage or Ignition controlled. The DCC1255ACK-RP also has Solar panel input that does not require a Voltage regulator as this function is controlled by the DCC.