CHALLENGE BATTERIES WA

Technical Update

Jump Starting a Vehicle

When a vehicle's battery becomes discharged to a point where it is unable to crank the engine, a popular solution is to connect a second battery to it to provide enough power to start the engine – this is known as *jump starting*. While jump starting is not a complex process, it can result in damage to a vehicle if it is not done correctly.

A vehicle can be jump started by using another vehicle with the engine running, or by using a jump pack. The process is very similar for both options.

CAUTION:

- **If any vehicle used in the jump start process is fitted with jump start points, these MUST be used.**
- **Under no circumstances should a jump start clamp be connected to a battery terminal which has a current sensor attached (see Fig.1).**

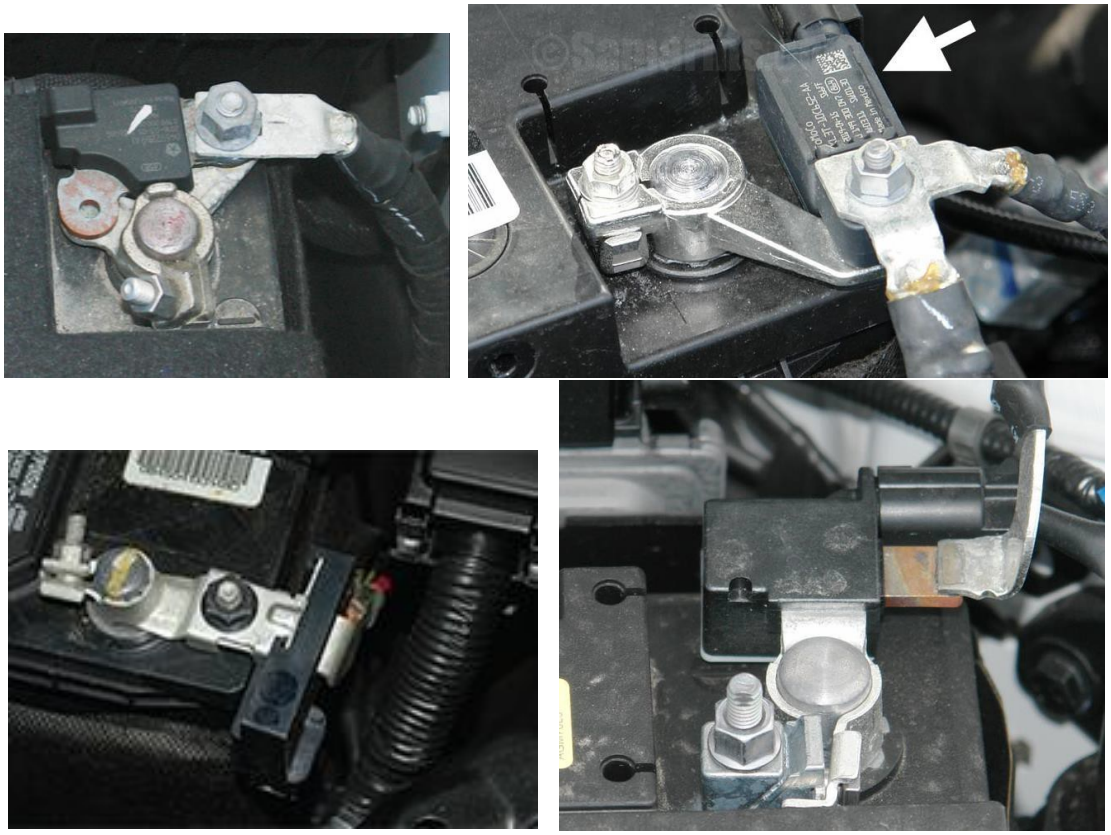

Fig.1 Various Current Sensors attached to the Negative Battery Terminal

Jump Start Procedure

1. Examine the discharged battery to confirm that it is not damaged, leaking or gassing. Check that both vehicles operate at the same voltage (e.g. 12V).
2. Remove the keys from the disabled vehicle's ignition (if applicable) and put the keys in your pocket. This ensures you have control of the vehicle during the process.

3. Connect the positive jump lead to the positive jump point of the disabled vehicle. If jump points are not fitted, connect the positive jump lead to the positive terminal of the discharged battery. Connect the other end of the jump lead to the donor vehicle's positive jump point (if fitted) or the positive terminal of the battery.

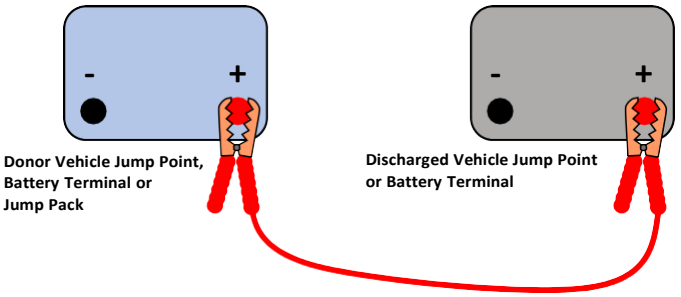

Fig.2 Connect Positive Clamps

4. Connect the negative jump lead to the negative jump point or an unpainted metal part of the disabled vehicle (e.g. engine block). Do not connect directly to the negative battery terminal. Connect the other end to the donor vehicle's jump point if available or an unpainted metal part.

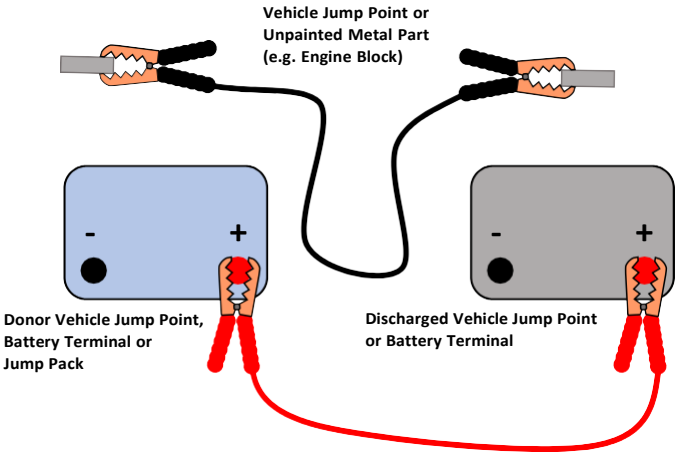

Fig.3 Connect Negative clamps

5. Start the engine of the donor vehicle or activate the jump pack. Wait for 2 minutes to allow the batteries to equalise.
6. Start the disabled vehicle. Do not remove any of the jump start cables yet.
7. Allow the disabled vehicle to run for at least 2 minutes.
8. Disconnect the negative jump lead from the disabled vehicle first and then the donor vehicle.
9. Disconnect the positive jump lead from both vehicles.
10. Switch off the donor vehicle's engine however do not switch off the disabled vehicle's engine immediately.

After a vehicle has been Jump Started

When a battery has become discharged and the vehicle has been jump started, driving it for 20 minutes **will not** charge the battery. Depending on a vehicle's Battery Management System, it may put some charge in the battery however it takes much longer than 20 minutes to charge a battery correctly, especially after it has been heavily discharged.

To ensure the battery is given the best chance to fully recover, the battery must be charged using a mains powered multi-stage battery charger. Failure to do this may result in repeated jump starts being required.

For a lead acid battery to be charged properly, the charge current should not exceed C/10, where C is the rated battery capacity in Ah. This means that a 75Ah battery should not be charged at more than 7.5A (75Ah ÷ 10).

A healthy battery will take at least 12 hours (e.g. overnight) to fully charge from a discharged state using a C/10 charge rate.

If a battery has been discharged for an extended period it is less likely to fully recover as lead acid batteries will sulphate when left in a discharged state. Sulphation effectively acellerates the ageing process of a battery by reducing its ability to store and deliver energy.