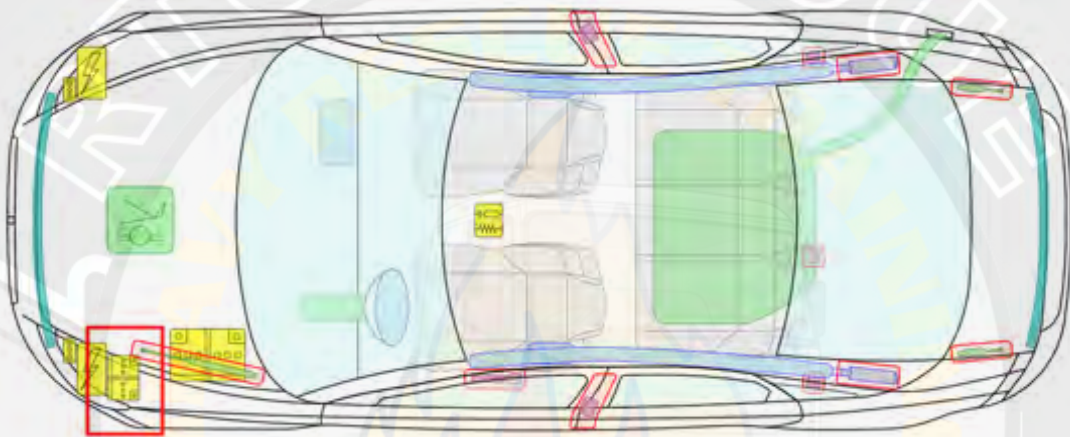


## ULTRA CAPACITORS

### **ADDITIONAL BATTERY**

Adding an additional battery can cover the increased energy demand. This battery will not necessarily be the same size as a conventional battery. Some manufacturers rely on a much smaller auxiliary battery that can be placed in areas of the vehicle that are more difficult to access (such as the foot well area). Vehicle manufacturers recommend that emergency responders should always disconnect all batteries in the vehicle to shut down the vehicle's electrical system. This is why the Crash Recovery System shows all possible battery locations for a specific model, and guides the user to these batteries and indicates which battery is the main battery.

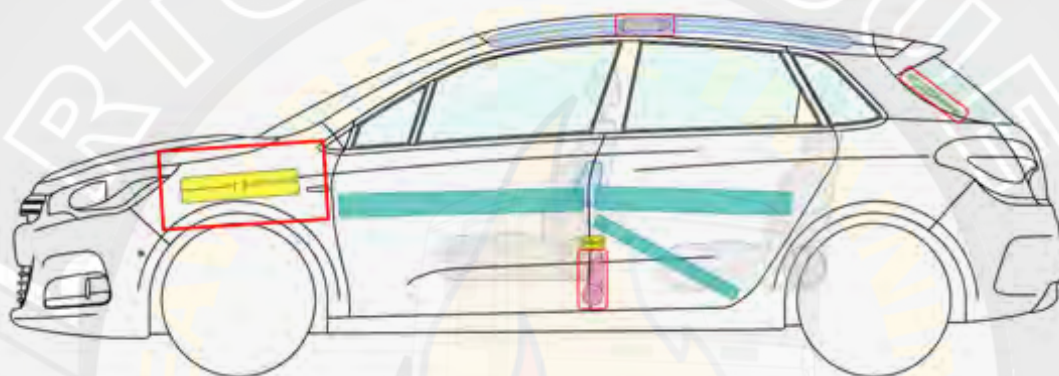


### **ULTRA-CAPACITORS**

As an alternative, some manufacturers use an ultra-capacitor as the energy storage device to restart the engine. This design, known as E-Booster, covers the high-energy demand needed when restarting a diesel engine. Ultra-capacitors are able to store a hundred times more energy than a conventional capacitor and at least ten times more than a 12-volt battery with a high service life of a million charge cycles.

The problem with such ultra-capacitors is not the electrical danger as they operate with only 5.2 volts but the potential damage to the capacitor in the event of a collision or during extrication activities as these capacitors contain the chemical acetonitrile as a solvent. Acetonitrile is highly flammable and harmful by inhalation, ingestion, and/or skin contact.

Emergency responders should need to exercise caution not to damage an ultra-capacitor while working on a vehicle with rescue tools. On vehicles currently available with this technology (Peugeot and Citroen vehicles with e-HDI engines) the ultra-capacitor is mounted in the left front fender area. The position of these capacitors, as well as some background information, has now been added to the Crash Recovery System. If an existing ultra-capacitor has been damaged in the accident, responders should take extra precautions when working in close proximity the device. The manufacturer of the capacitor and of the vehicles, advise responders to wear full personal protective equipment, including respiratory protection.



[Information courtesy of Moditech.com](http://www.moditech.com)

[www.heavyrescue.se](http://www.heavyrescue.se)

[www.rtc-rescue.com](http://www.rtc-rescue.com)