

## Battery Disconnect:

Batteries are a much talked about topic, there is still some confusion as to whether we disconnect the battery or leave it alone.

Disconnecting the battery has many benefits, the obvious one being that it reduces the risk of an ignition source, the second is that it will also start the drain time on vehicle SRS system capacitors, and the third is reducing the likelihood any accidental operation of any electrical features.

Capacitor drain times, without going into too much detail can vary from a few seconds to 45 minutes depending on the vehicle for which we, without a great deal of study or the use of on board tablets on appliances with vehicle data programs, will not be able to tell which we are dealing with. **These times must not delay casualty care and extrication!**

However we must assess the situation that we have in front of us, we may need to use the vehicles electrical systems before we disconnect the battery, systems such as electric sunroofs, electric seats, electric windows, door locks and even in rare situations we may need to use the power to fold back a convertibles roof, this is not the complete list of functions.



Other reasons to disconnect the battery: vehicles that have electric seats, there is a risk that we could accidentally operate the seat controls during rescue, causing the seat to move, this could cause a lot of discomfort to the casualty and potentially worsen their situation.

Some vehicles may also have the (easy get in and out system fitted). This is a comfort mechanism that moves the seat back and the steering wheel away from the driver when the engine is turned off to give them more comfort room to get out of the car, and the reverse for when they get in the vehicle, if we were to accidentally operate this feature, we could cause a lot of pain and discomfort for the casualty, especially where lower limb entrapment is the case.

Some vehicles also have vibrating seats, if the battery is still connected the seat may still be vibrating, **which might stop internal bleeds from clotting.**

Some vehicles have 2 batteries, we need to disconnect both. Do we know where they are and can we get to them, yet another problem to think about. If only one is disconnected power may still be running through SRS systems and electrical features.

A good rule of thumb is for the OIC to make the decision after formulating their extrication plan, the battery can then be disconnected at the right time. As a guide, it is best practise to make sure the battery is disconnected prior to commencing any cutting, spreading or ramming.

## Disconnecting the battery

Disconnect the Negative terminal first, if you disconnect the positive first there is a risk of causing a spark or short circuit if the tool used comes into contact with other metal components in the engine compartment. This could be enough to set off airbag systems or cause a fire. Removing the Negative lead first greatly reduces this risk, should the tool touch the bodywork..

Some organizations practice cutting a 2 inch section out of the cable, this poses the problem, that if you needed to reconnect the battery to use electrical systems you are then stuck and there is no going back.

After the terminals have been removed it is good practice to tape over the battery terminals so that during techniques such as a dash relocation there is no risk of the terminals coming into contact with the bodywork and re-energizing the system.



Batteries can be located in the engine compartment, under the drivers foot well, in the wheel arch and in the boot, these are the most common places to look however they may be in other locations.

A rule of thumb, is whether we disconnect the battery or not, always treat the SRS systems as being live and avoid the deployment paths where possible when any cutting, spreading or ramming is being carried out. *The below distances are still covered in some literature that has not been updated.*

10" Front drivers airbag

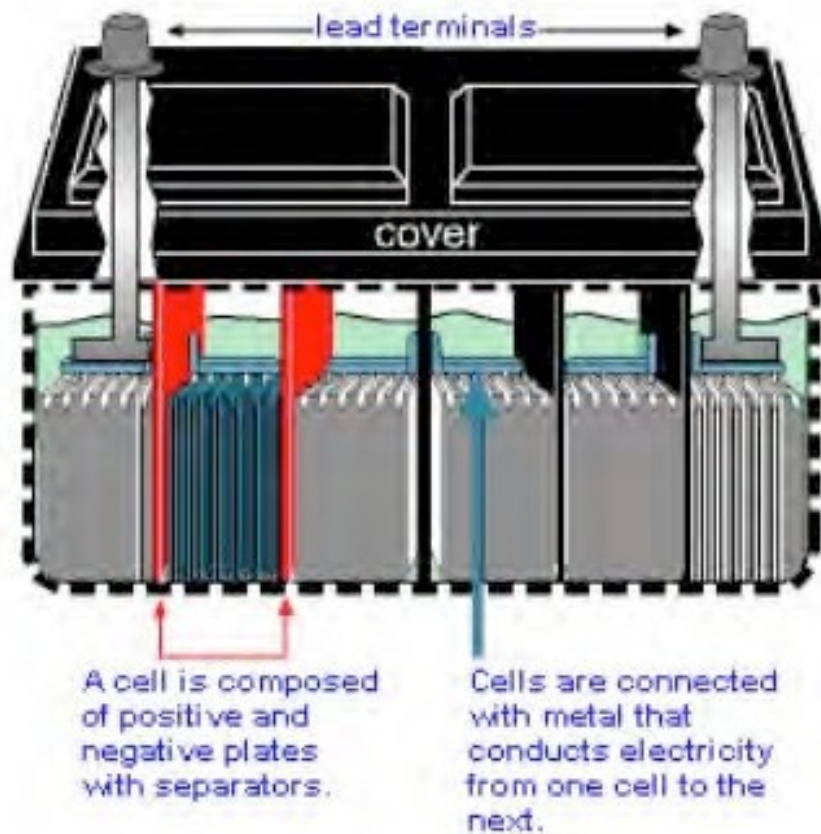
20" front passengers airbag

12"-18" for side impact airbags

6" for the cushioning depth of side airbags

**\*These distances are no longer used due to the development in Airbag size and shape**

**We must** put in control measures when working around these systems regardless of what we have done with the battery, accidental activation of the many systems is rare but still a real risk.



Remember even though the battery has been disconnected there is still a risk of setting of SRS systems from short circuits, static and impact caused from rescuers getting in and out of the vehicle and space creation techniques being carried out on the vehicle. so remember the 10" -20", 12-18" 6" rule at all times or avoid deployment paths. (always follow your services procedures and guidance on SRS)

As well as dealing with the battery, in the same way its good practice to remove any gadgets/devices using the docking ports in the vehicle such as ipods, mobile phones and GPS terminals, as these could pose a back charging risk and energise systems.

In a lot of situations it will not be possible to disconnect the battery, so during training it is better to train with simulated live systems so that we adopt a safe system of work and complacency does not set in, do not let rescue times be extended because we are using up to much time trying to find and disconnect the battery, this is where simultaneous activity will work, if we can get to and disconnect the battery then great, if we cant then maintain safety protocols and don't delay casualty rescue.

## Battery located in the footwell:



## Can we Touch the battery cables together?

**Question?** Once we have disconnected the battery, is it beneficial to touch the battery cables together to speed up drain times on SRS capacitors?

I have been asked this very question, and to my surprise it opened up a lot of gray areas.

I have always been under the impression that this does not actually speed up the drain times, however following some research I was lead to believe this works as most mechanics do this on a regular basis

So this caused some confusion:

Having spoken to some authorities on the subject and based on the field of vehicle crash rescue we have come up with this conclusion:

Touching the cables together appears to be a myth especially with modern vehicle electronics, with diodes being fitted and one way current systems.

The vehicle manufacturers do not mention this in their ERGs nor in the maintenance manuals, so this would show that it is not a recognised method. This poses the risk of causing a short circuit, especially if the vehicle has more than one battery. It also poses the risk of sparks with the potential fire hazard.

So as a rule of thumb disconnect the battery/batteries, tape the terminals up and leave alone.

Even if the capacitors have drained we are still left with the risk of accidental deployment of SRS systems from short circuit, impact and static etc

This is a paragraph from Thatcham (vehicle research company)

“This can aid with the discharge of capacitors in a circuit, however the more complex vehicles with integrated functions such as the engine start/stop operate with higher voltage capacitors than the SRS system, also the new generation of hybrid vehicles could be more sensitive have associated risks when discharge procedure is performed”.

*Accidental deployment of SRS systems is very rare, but is also an unknown quantity, due to that fact they have happened, we need to have an awareness and put in place your services control measures when carrying out rescue at vehicle related incidents. This should not delay the rescue phase or increase on scene times.*

If you have had any experiences with these problems or have any additional information you would like to add please send it to:

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