CHALLENGE BATTERIES WA

Technical Update

Battery Replacement Best Practice

Memory Minders

In the 1990's, PIN security codes were a feature of car audio systems to discourage theft. As a result, memory minders were used to avoid having to key in the PIN code after battery replacement. By 2000, most manufacturers were linking the audio system to the vehicle's CANBUS, removing the need for PIN security. If unsure ask the owner or check the owner's booklet.

This means that it is no longer necessary to use a memory minder when replacing a battery for most of the vehicles we see - it can in fact cause problems as a large number of vehicles look for a zero voltage reading at the terminals before allowing battery registration or re-initialisation. *Unfortunately we have recently seen some late model Fords (European models) which have a PIN code for the audio system – check the Owner's Manual to make sure the code is available before disconnecting the battery.*

The best way to connect a memory minder is directly to the battery terminals or to the jump points (where fitted). You need to remember that the positive battery terminal is still live if you have a memory minder connected so you must ensure it is isolated from the vehicle body. A good way to do this is to put a mechanics glove over the terminal.

Another way to connect a memory minder is via the OBD diagnostic port – **THIS IS A BAD IDEA!** The wiring for the OBD port is not designed to support a significant electrical load – it is a diagnostic communication port. The damage resulting from a significant load through the OBD port (i.e. headlights or interior lights) could result in a large repair bill. If you do need to use a memory minder, **NEVER CONNECT IT VIA THE OBD PORT**.

Negative Terminal - First Off, Last On!

Always disconnect the negative terminal first, and make it the last one you connect.

We do this because almost all vehicles are negative earth. If you touch the vehicle body with the spanner while connected to the terminal, nothing happens (that is a good thing!).

Keys

When a battery is being replaced in a vehicle, it is important that you have control of the keys. Modern vehicles 'stay awake' when the vehicle is unlocked or in some cases if the ignition key is close to the vehicle.

Best practice is to lock the vehicle with the driver's window down. If the vehicle has keyless entry, or if you are unsure, the keys should be moved at least 5m away from the vehicle. Once you have done this, wait for 2 minutes to allow the vehicle's control modules to shut down before disconnecting the battery.

Clean Posts & Terminals

A common, and often overlooked factor in battery performance is having a clean, low resistance connection between the battery post and terminal.

It is surprising how often there is a measurable resistance between the battery terminal and post. Whenever a battery is replaced, ensure the terminals and battery posts are cleaned before installation.

Battery Hold Downs

Battery retention is another place where a heavy hand will create a problem.

Hold down clamps are designed to retain the battery and prevent it from moving or vibrating. When it comes to the top hold down clamp, you need to keep in mind that you are retaining a plastic case. Excess force will deform the case, potentially damaging the lid to case joint. This will result in battery acid leaking from the case and damaging the vehicle.

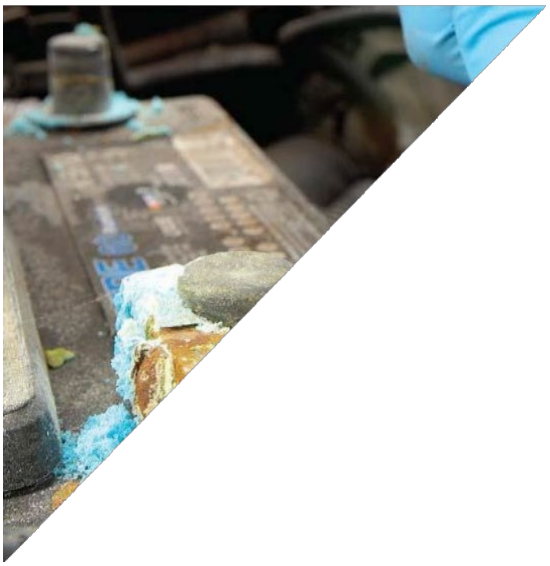
How tight do the Terminals need to be?

The short answer is less than you think. Way less than you think.

The shape of the battery posts are what is known as an SAE self locking taper. This means that you only need a small amount of clamping force for a clean terminal to lock on to a clean post. The torque specification for lead battery terminals is 50 to 70 inch lbs, which converts to 4.2 to 5.8 ft lbs – this is not very much. As a guide, using two fingers firmly on a small spanner is plenty.

A common shortcut is to use an cordless electric screwdriver or impact driver on the terminal bolts. **DON'T DO IT!** Even on their lowest setting, the torque is too high, and the clutch vibration can also cause problems. Best practice is to use the correct size spanner or socket.

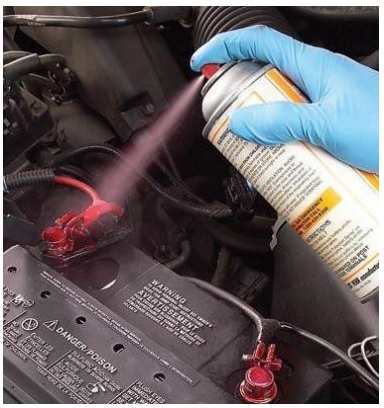
If a battery terminal is over-torqued, the post is damaged. The post is made from lead, and it is moulded into a plastic case. Both materials are relatively soft and can be deformed. Over tightening the battery terminal places a twisting load on the post and case, deforming one or both materials. The tiny gap which is created allows battery acid to seep up to the top of the case causing corrosion. Almost all weeping or leaking posts are as a result of over tightening. In more extreme cases, the post can be distorted or bent.



Terminal Protector Spray

It is not recommended that any spray coating be used on the freshly cleaned connection you have just created. These sprays can find their way into the interface between the post and terminal and reduce the contact area.

Any battery which shows sign of leakage from around the post should be replaced. As stated above, leakage normally occurs from the inside out, when the battery terminal is over-torqued. This means that as good as it may look, spraying the terminals with protector will not stop the posts leaking.



A good test for best practice is to look to what the vehicle manufacturer does. No OEM manufacturer sprays protector on their battery terminals.