

Battery Voltage Issues

Battery voltage is the most common cause of why an engine will not start, it must be remembered that an ECU is actually a computer much like the one you use at home and if the voltage drops too low, the ECU has difficulty carrying out its instructions. The MBE ECU itself uses very little power, it is the coils and injectors that use the energy. As the voltage decreases, the ECU compensates to try to retain the efficiency in the injectors and coils. The problem is that all components have a voltage where they are most efficient and as the battery voltage drops, the charge time has to be increased to try and maintain a spark or give sufficient energy to the injector to open, but the efficiency of these parts does decrease so therefore spark will not be quite as good and the injector not quite as efficient. These extended charging times also increase the load on the battery and therefore flatten it faster.

Although you may have a fully charged battery, the wiring connection between the battery, starter motor and ECU are not always ideal and when you begin cranking the engine, the starter motor uses all the available current and momentarily the voltage the ECU is seeing, drops below the level that the ECU is able to carry out its starting instructions.

The other possible problem is the battery is actually too small, there is a tendency nowadays for people to use Lithium Ion batteries, we feel that at the moment that the battery technology is still too new and during the initial milliseconds of cranking that this type of battery is less efficient than a lead acid type battery, amplifying the starting problem. You will quite often find that if you were to check the voltage with an electronic voltmeter that the voltage would appear to be ok, this is because your meter is damped and only shows the average of the voltage and not the lowest value seen, which is what the ECU is seeing.

The more components you have on the car, the greater the load on the battery and therefore the quicker the battery becomes flat. Ideally, we wouldn't run a battery below 11v and even at this point, you are losing some efficiency.

When carrying out these tests or trying to start your engine for the first occasion quite often customers attempt to use a jump battery to boost the power or overcome battery voltage issues. This is not a suitable solution as quite often the jump battery attempts to charge the on-board battery and does not provide sufficient extra power to overcome the issues.

Total Loss Systems – Not recommended

If you are running a total loss system, which was normally the case on many Formula cars, you should fit a bigger battery as possible, carry fully charged spares that can be swapped out between races. Also use a slave battery whenever starting the car as this significantly drops the battery's usable time with every start.

If you do not feel comfortable with making these tests, you could take the vehicle to one of our recommended mapping agents. Alternatively, we can provide help and support remotely using Team Viewer, one of our engineers could log in remotely provided you have all the mapping hardware and run tests to try to assess your problem.

Please be aware that Technical Support involving our Technicians is chargeable