Battery Charging

General Equipment

Midtronics GR-590 Battery Management Center
Battery Charger

WARNING: Always observe the battery charger equipment manufacturer's instructions.

WARNING: Do not jump/slave start using a battery charging system from another vehicle.

WARNING: Do not overfill a battery as this can cause acid leakage that will result in damage to vehicle and possible personal injury.

NOTICE: Do not rely on the generator to recharge a discharged battery. It would take in excess of eight hours of continuous driving with no additional loads placed on the charging system.

NOTICE: Make sure that the battery electrolyte reaches the indicated maximum mark.

NOTICE: Connect the battery charger cables to the battery before switching the battery charger on.

NOTICE: Switch the battery charger off before disconnecting the battery charger cables from the battery.

NOTE: *Ford batteries generally require no maintenance however, in certain conditions, it is possible for the electrolyte in a battery to fall below the minimum level.*

NOTE: *The use of the Midtronics GR-590 Battery Management Center, which has been specifically designed for use on silver calcium type batteries is recommended. Once connected to the battery, the battery charger detects the state of battery charge and then applies the appropriate charge rate and duration. When the battery is fully charged, the battery charger switches to stand-by, keeping the battery in a fully charged state preventing excessive gassing and overcharging. The Midtronics GR-590 Battery Management Center also incorporates a software program that has the capability to assist in the recovery of deeply discharged (sulphated) batteries.*

NOTE: *Charging methods and types of battery chargers vary widely. Whichever method is utilized it must be carried out carefully to avoid damage to the battery and possible personal injury. Specific instructions accompanying each battery charger and must be followed exactly. Safeguards provided by the equipment manufacturer should not be disregarded by the operator.*

NOTE: *A battery which has been stored in a highly discharged state may be slow to accept a charge at first. In such cases the initial charging rate may be so low that the ammeter on some battery testers will not show any indication of charge for 5 to 10 minutes.*

NOTE: *Automatic battery chargers are also protected against reverse polarity connection and require no adjustment or monitoring.*

NOTE: *Slow-charging will readily restore a battery to a full state of charge and, since the charging current is relatively low, the possibility of overcharging a battery are minimized. The charge rate used should be approximately equal to 5% of the reserve capacity of the battery being charged (approximately three to six Amps depending on battery size). The charging current should be adjusted 10 minutes after initial setting and again after 1 hour before being left to charge the battery for between 8 and 12 hours.*

NOTE: *A constant voltage battery charger will charge a battery at a set maximum voltage. The voltage used depends upon the design and condition of the battery charger and the age and temperature of the battery. This type of battery charger initially charges at a high rate of current that reduces as battery voltage is restored. When using a constant voltage battery charger, the charging current should be recorded after five minutes and the battery charger switched off when the charging current falls to one–third of the recorded value, or after eight hours whichever occurs first.*

NOTE: *Multiple battery chargers are designed to charge a number of batteries, simultaneously. Of the two different types of multiple battery chargers available, only those that charge batteries in series should be used and it is important that batteries are of the same or very similar ratings and voltages. Multiple battery chargers that charge batteries in parallel are not recommended.*

NOTE: *The use of a fast (boost) battery charger is not recommended as it can cause damage to a battery. Fast charging will only restore a battery to a state of charge that will enable it to carry out it's critical function of cranking the engine. Fast charging will not restore a battery to a full state of charge and must therefore be followed by a period of slow charging. Excessively fast charging can cause damage to a battery. For this reason, charging times must be carefully controlled. Fast battery chargers vary widely in design so it is very important to strictly adhere to the equipment manufacturer's instructions. A charge of 30 amps for up to 30 minutes is the most common fast charging application. If the battery is very discharged and requires additional restoration, an additional charge of 20 amps for a period up to one and a half hours should be applied. Fast charging for a period in excess of two hours significantly increases the risk of causing damage to the battery.*

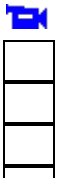
NOTE: *When connecting and disconnecting the battery from the vehicle, make sure that the battery ground cable is disconnected first and connected last and that all electrical items are switched off. Record the audio unit keycode and preset radio frequencies before disconnecting the battery.*

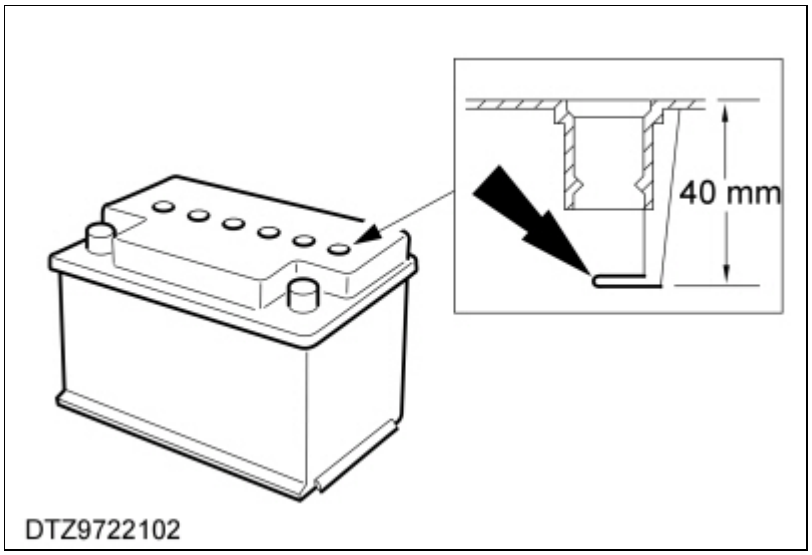
1. Remove the battery (Focus C-MAX 2003.75, Focus 2004.75, S-MAX/Galaxy 2006.50, Mondeo 2007.50 only).

2. Disconnect the battery ground cable (All, except the vehicles mentioned in the previous step).

3. **NOTE:** *The maximum battery electrolyte level is approximately 40 mm below the very top of the battery casing. This corresponds to a point just below the lower rim of the battery casing.*

   Check that the battery electrolyte reaches the indicated maximum level. Top up with distilled/de-ionized water, as necessary.





4. Connect the positive red clamp from the battery charger to the positive battery terminal.
5. Connect the negative black clamp from the battery charger to the negative battery terminal.
6. Connect the AC power cable to the mains outlet and switch on.
7. Follow the instructions supplied with the battery charger to charge the battery.
8. To disconnect the battery charger, reverse the connection procedure.