Haynes shows you how

BMW 3-Series and Z4 (99-05) Includes 2006 325ci/330ci Coupe and Convertible models Haynes Online Manual.

1 General information, precautions and battery disconnection

The engine electrical systems include all ignition, charging and starting components. Because of their engine-related functions, these components are covered separately from body electrical devices such as the lights, the instruments, etc. (which you'll find in Chapter 12).

Precautions

Always observe the following precautions when working on the electrical system:

A. Be extremely careful when servicing engine electrical components. They are easily damaged if checked, connected or handled improperly.

B. Never leave the ignition switched on for long periods of time when the engine is not running.

C. Never disconnect the battery cables while the engine is running.

D. Maintain correct polarity when connecting battery cables from another vehicle during jump starting - see the "Booster battery (jump) starting" section at the front of this manual.

E. Always disconnect the cable from the negative battery terminal before working on the electrical system, but read the following battery disconnection procedure first.

It's also a good idea to review the safety-related information regarding the engine electrical systems located in the *"Safety first!"* section at the front of this manual, before beginning any operation included in this Chapter.

Battery disconnection

Some systems on the vehicle require battery power to be available at all times, either to maintain continuous operation (alarm system, power door locks, etc.), or to maintain control unit memory (radio station presets, Powertrain Control Module and other control units). When the battery is disconnected, the power that maintains these systems is cut. So, before you disconnect the battery, please note the following points to ensure that there are no unforeseen consequences of this action:

A. The radio is equipped with pre-set selections that will be erased once the battery is disconnected. Record all the programs and stations before disconnecting the battery.

B. When the battery is disconnected, the engine management system's Electronic Control Module (ECM) will lose some diagnostic trouble codes. Check for trouble codes after the proper drive cycle (see Chapter 6).

C. When the battery is disconnected, the on-board instrument panel module (computer) will lose programmed information and clock time. It will be necessary to re-set all the driver's information (refer to owner's manual). On Z4 models, reactivate the sliding sunroof and the AFS system (electric assisted steering), if equipped (see owner's manual).

D. On a vehicle with power door locks, it's a wise precaution to remove the key from the ignition and to keep it with you, so that it does not get locked inside if the power door locks should engage accidentally when the battery is reconnected!

Devices known as "memory-savers" can be used to avoid some of these problems. Precise details vary according to the device used. The typical memory saver is plugged into the cigarette lighter and is connected to a spare battery. Then the vehicle battery can be disconnected from the electrical system. The memory saver will provide sufficient current to maintain audio unit security codes, ECM memory, etc. and will provide power to "always hot" circuits such as the clock and radio memory circuits. **Warning:** *Some memory savers deliver a considerable amount of current in order to keep vehicle systems operational after the main battery is disconnected. If you're using a memory saver, make sure that the circuit concerned is actually open before servicing it.* **Warning:** *If you're going to work near any of the airbag system components, the battery MUST be disconnected and a memory saver must NOT be used. If a memory saver is used, power will be supplied to the airbag, which means that it could accidentally deploy and cause serious personal injury.* **Warning:** *Some Z4 models are equipped with a dual battery system. The negative battery terminal on both batteries must be disconnected to properly deactivate the vehicle's battery power.*

To disconnect the battery for service procedures requiring power to be cut from the vehicle, remove the battery cover (see Section 3), loosen the cable clamp nut and disconnect the cable from the ***negative*** battery post. Isolate the cable end to prevent it from coming into accidental contact with the battery post.

Reprogramming after component replacement

These vehicles are equipped with systems that require reprogramming after the battery has been disconnected and components in that system have been replaced or reinstalled. For example, independent systems such as the Integrated Heating Cooling Climate Control (IHKA) system require that the control module be programmed after installation. A BMW scan tool can access the software for the IHKA system to activate the module.

These models are equipped with the Central Body Electronic (ZKE-V) system. Each individual system is linked to a centralized control module that allows efficient and accurate troubleshooting. This control module governs the windshield wipers and washers, the central locking and anti-theft system, the power windows, the interior lights, the alarm system and the electronic consumer sleep mode. If any of the components in this system are replaced or re-installed, it will be necessary to reprogram the Controller Area Network (CAN) module.

All these systems will require a BMW scan tool to reactivate or reprogram. In the event the vehicle's electronic systems are repaired, have the vehicle checked and reprogrammed by a dealer service department or other qualified automotive repair facility.