
Flash Electrically Erasable Programmable Read Only Memory (EEPROM)

Description

The flash EEPROM is contained in an integrated circuit internal to the PCM. The flash EEPROM contains the vehicle strategy including calibration information specific to the vehicle, and is capable of being programmed or flashed repeatedly.

As part of the calibration there is an area referred to as the vehicle identification (VID) block. The VID block is programmed when installing a new PCM as described under Programming the VID Block for a Replacement PCM. Failure to carry out this procedure may generate DTC P1635 or P1639. The VID block in an existing PCM can also be programmed to accommodate various hardware or parameter changes made to the vehicle since production. Failure to carry out this procedure correctly may generate DTC P1635, Tire or Axle Ratio out of Acceptable Range. An incorrect tire or axle ratio is one of the main causes for DTC P1635. This is described under Making Changes to the VID Block and also under Making Changes to the PCM Calibration. The VID block contains many items used by the strategy for a variety of functions. Some of these items include the vehicle identification number (VIN), octane adjust, fuel octane, fuel type, vehicle speed limit, tire size, axle ratio, the presence of speed control, and 4 wheel drive electronic shift on the fly (ESOF) versus manual shift on the fly (MSOF). Only items applicable to the vehicle hardware and supported by the VID block are displayed on the scan tool.

When changing items in the VID block, the strategy places range limits on certain items such as tire and axle ratio. The number of times the VID block may be reconfigured is limited. When this limit is reached, the scan tool displays a message indicating the need to flash the PCM again to reset the VID block.

Some vehicles must have the engine serial number programmed. The DTC P264F Engine Serial Number Not Programmed Or Incompatible may set if the procedure is not carried out.

On vehicles equipped with permanent DTC reporting capabilities, neutral profile correction should be learned after a PCM replacement in order to activate the misfire monitor. This is accomplished using the Misfire Monitor Neutral Profile Learn function on the scan tool. Refer to the scan tool manufacturer's instruction manual for details.

Neutral Profile Correction

In order for the misfire detection system to function correctly, any mechanical inaccuracies in the crankshaft position (CKP) sensor must be learned by the PCM. This information is stored in non-volatile memory (NVM) in the PCM. It is not cleared when the keep alive memory (KAM) is reset.

Neutral profile learning is accomplished using the scan tool any time a PCM is replaced. It should also be relearned any time the CKP sensor or the crankshaft pulse wheel is replaced or major engine repairs have been completed.

To determine if the neutral profile learning has been completed, check the MP_LRN parameter identification (PID) using the scan tool. The PID should read YES if the neutral profile learning has been completed. If the PID reads NO, complete the neutral profile learning prior to diagnosing any misfire DTCs.

Programming the VID Block For A Replacement PCM

The VID block on a replacement PCM is blank and requires programming. There are two procedures available. The first is an automatic data transfer from the old PCM to the new PCM, the second is manual data entry into the new PCM.

Automatic data transfer is carried out if the old PCM is capable of communicating. This is done by using a scan tool to retrieve data from the old PCM before removing it from the vehicle. The stored data can be downloaded to the new PCM after it has been installed.

On some vehicles, the VIN, tire size, axle ratio, and cruise control configuration are communicated to the PCM from the body control module (BCM) or the instrument panel cluster (IPC). If a new PCM is installed, the new PCM obtains this data the first time the ignition is turned to the ON position. If the data is not received DTCs U0140 and U0422 set and DTC P0630 may set. If the data is received but the values are invalid or not configured, DTC U0422 sets and DTC P0630 may set. If the data received is valid but the proper learning command has not been received from the diagnostic tool, DTC P160A sets. There are associated PIDs to indicate the status of each data item.

Carry out manual data entry if the old PCM is damaged or incapable of communicating. Remove and install a new PCM. Using a compatible scan tool, select and carry out the module/parameter programming, referring to the scan tool

manufacturer's instruction manual. Make certain that all parameters are included. Failure to correctly program tire size in revolutions per mile, (rev/mile equals 63,360 divided by the tire circumference in inches), axle ratio, 4x4 or 4x2, or MSOF and ESOF may result in DTCs P1635 and P1639. You may be instructed to contact the As-Built Data Center for the information needed to manually update the VID block with the scan tool. Contact the center only if the old PCM cannot be used or the data is corrupt. For Ford and Lincoln technicians, contact your National Hotline or the Professional Technician Society (PTS) web site for As-Built data listed under the Service Publications Index. Non-Ford technicians use the Motorcraft® web site at www.motorcraft.com. From the Motorcraft® home page, use the search function to find the Module Programming or As-Built Data.

For Ford and Lincoln technicians, check the Programmable Module Installation link on the PTS web site for quick Programmable Module data information by vehicle.

Programming The Engine Serial Number For A Replacement PCM

The engine serial number on a replacement PCM is blank and requires programming. Manual data entry is required. If the old PCM is capable of communicating, the engine serial number is available using a compatible scan tool. Refer to the scan tool manufacturers manual for instructions.

Making Changes To The VID Block

A programmed PCM may require changes to be made to certain VID information to accommodate the vehicle hardware. Refer to Module Reprogramming on the scan tool.

Making Changes To The PCM Calibration

At certain times, the EEPROM needs to be completely reprogrammed. This is due to changes made to the strategy or calibration after production or the need to reset the VID block because it has reached its limit. Refer to PCM or Module Reprogramming on the scan tool.
