

Installing and Programming Engine ECMs

It has been 30 years since the first Holden and Ford vehicles were introduced to Australia with an electronic Engine Control Module (ECM).

Back in 1984, the Holden VK Commodore and the Ford XE Falcon were both fitted with a Bosch LE system ECM. This unit was an analogue control module, and as such did not have any ability to retain or provide engine fault codes, and there was certainly no need for programming upon installation or replacement of the module.

Fast forward 30 years and today's ECMs are completely digital, they are electronically linked to enable communication within the vehicle to various other modules in the vehicle, they have the ability to retain and provide multiple fault codes and may require one of many types of programming if installing a new, a remanufactured or a second hand module.

Listed below are some of the different types of programming a technician may need to perform when fitting an ECM, followed by the programming requirements on some of the more common vehicles found on Australian roads today.



Immobiliser Matching / Programming

By law, all passenger vehicles now have sophisticated engine immobiliser systems installed. When installing another ECM, most will require the engine ECM to be matched to the immobiliser.

Different manufacturers use different terminology to describe this process such as marrying/linking/aligning/parameter reset etc. The engine ECM may need to be linked to one or more of the following upon installation: the immobiliser module, the body control module (BCM), the powertrain interface module (PIM), the instrument cluster or the electronic ignition switch (EIS).

Alternatively, there are some vehicles that will automatically link the ECM after installation, just by turning on the ignition.

There are many types of modules in a vehicle which are interlinked and are locked to a specific vehicle once programmed. These particular modules cannot be used in another vehicle unless they are electronically unlocked, whilst some others cannot even be unlocked with a scan tool. When purchasing an Injectronics remanufactured exchange ECM, the unit is supplied in an unlocked state, and in most cases instructions will be supplied on what is required to link the ECM upon installation.



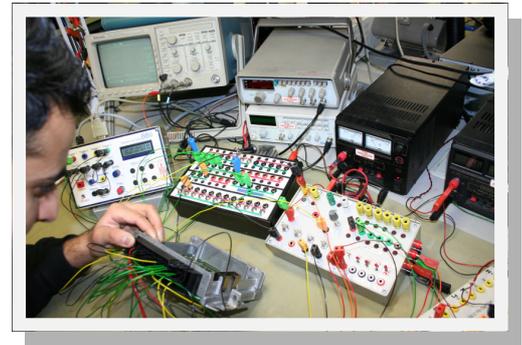
Flash Programming

Modern ECMs are now able to have their operating and calibration software reprogrammed, in order to fix or overcome any problems that may occur, during the operating life of the vehicle. Many ECMs are now manufactured and supplied without the correct operating and calibration software for the vehicle. The ECM will be a universal unit that suits many vehicles and is required to be flash programmed with the correct software, specific to a vehicles unique VIN, which can be done using the dedicated factory scan tool or a universal pass-through device. The installer will need to go online and download the correct software, then flash program the vehicles ECM. This can take from several minutes to sometimes much longer. If this is not done correctly, the vehicle may not even start, or may log a fault code to indicate that flash programming is required.

Injectronics often supplies pre-programmed (Flash Programmed) engine ECMs under similar part numbers which suit a variety of particular makes/VINs (see examples below).

Variant Programming

Variant programming of an engine ECM, also known as personalising, may require the above flash programming as well as personalising, and in other cases, just variant programming/personalising is required. Some of the variant coding that may need to be programmed into an ECM with a scan tool can include: Tyre Size, CAN-BUS type, ABS or ESC, Diff Ratio, Cruise Control etc.



If the variant coding is not programmed correctly, the ECM may run but only in limp mode. For example, if a Ford BA Falcon PCM has not been correctly programmed with the correct type of ABS system to suit the vehicle, the automatic transmission will remain in 3rd gear even if the exact replacement ECM part number is used.

Programming via a scan tool may require you to electronically select the correct application from some of the above listed variant options, or to enter in a specific alpha numeric code for the vehicle. When ordering these types of units from Injectronics, you may need to fill out a sheet listing the variant options of the vehicle. Injectronics will then program the ECM as requested so the installer does not need to worry about this upon installation.

Other specific coding for a vehicle can include individual injector coding to allow for the variations in injector flow rates. This is very common on later CRDI (common rail diesel) ECMs. The flow rate codes are marked on the injector and these codes are required to be programmed into the ECM.

Transfer of Personality or Cloning

In some cases, vehicle manufactures allow the ability whilst using a scan tool, to read the variant/personality coding from an ECM and then transfer this coding into a new or remanufactured ECM. This type of cloning can include all the variant coding, as well as the immobiliser coding, injector flow calibration codes etc. Where this is not available, Injectronics can program and clone various ECM's for customers which will allow the installer in many cases to just plug and play, without the need for any additional programming.

Some examples of required programming

Holden VZ Commodore 6 cylinder

New ECM – will require flash programming specific to VIN and an ECM to PIM link (security matching).

Injectronics remanufactured ECM – ECM is pre-programmed to a specific VIN#, installer is only required to do an ECM to PIM link (security matching).

Alternatively, if the PIM is sent to Injectronics, Injectronics can link the PIM to the ECM.



Ford BA Falcon / SX Territory

New ECM – Requires flash programming, variant programming, security parameter reset and an interior command centre reset (radio will not work when a new ECM is installed).

Injectronics remanufactured ECM - ECM will be programmed with correct flash programming and variant programming. Installer will need to perform security matching parameter reset along with an interior command centre reset.

Alternatively, if the original ECM is sent to Injectronics, all programming and variant coding can be transferred from the original ECM to the exchange, although a parameter reset and interior command centre reset will still need to be performed upon installation.

Ford BF-FG Falcon / SY Territory

New ECM - Requires flash programming, variant programming, security parameter reset and an interior command centre reset (radio will not work when a new ECM is installed). The security parameter reset will require the technician to extract an OUT code from the ECM, then enter a new IN code (this can be supplied by Ford or Injectronics when given the OUT code)



Injectronics remanufactured ECM - ECM will be programmed with correct flash programming & variant programming. Installer will need to perform security matching parameter reset (IN code supplied with all exchange ECM's) along with an interior command centre reset.

Ford/Mazda BT50 / Ranger 2006 To 2011 Diesel

New ECM – Requires flash programming and injector flow code programming. If the vehicle is fitted with an immobiliser, a key matching process is required.

Injectronics Remanufactured ECM - ECM is flash programmed for specific vehicle configuration (engine size, 2X2 / 4X4). If vehicle is fitted with an immobiliser, a key matching process is required. (Procedure notes provided with the ECM)

