

4	-	central junction box (CJB)
5	-	Clutch switch

## OVERVIEW

The engine management system is controlled by an ECM and is able to monitor, adapt and precisely control the fuel injection. The ECM uses multiple sensor inputs and precision control of actuators to achieve optimum performance during all driving conditions.

The ECM controls fuel delivery to all 4 cylinders via a Common Rail (CR) injection system. The CR system uses a fuel rail to accumulate highly pressurized fuel and feed the 4, electronically controlled injectors. The fuel rail is located in close proximity to the injectors, which assists in maintaining full system pressure at each injector at all times.

The ECM uses the drive by wire principle for acceleration control. There are no control cables or physical connections between the accelerator pedal and the engine. Accelerator pedal demand is communicated to the ECM by two potentiometers located in an APP sensor. The ECM uses the two signals to determine the position, rate of movement and direction of movement of the pedal. The ECM then uses this data, along with other engine information from other sensors, to achieve the optimum engine response.

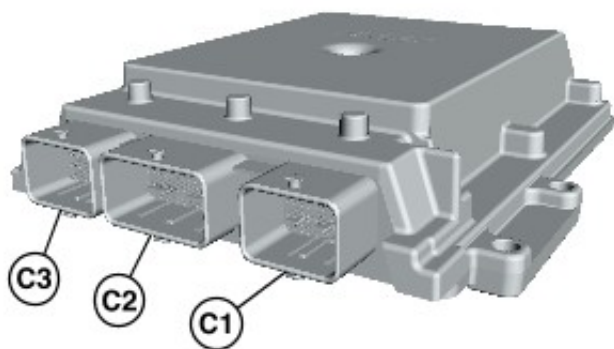
The ECM processes information from the following input sources:

- CKP sensor
- CMP sensor
- Manifold air temperature and pressure
- Cylinder head temperature
- Oil pressure
- Inlet air flow and temperature
- Fuel temperature

The ECM outputs controlling signals to the following sensors and actuators:

- Fuel injectors
- Cooling fan solenoid
- Electric vane controlled turbo
- Fuel pressure control valve
- Fuel volume control valve
- Electronic EGR
- Glow plugs

## ECM



E70318

Item	Part Number	Description
C1	-	Connector 1
C2	-	Connector 2
C3	-	Connector 3

The ECM connected to the vehicle harnesses via three connectors. The ECM contains data processors and memory microchips. The output signals to the actuators are in the form of ground paths provided by driver circuits within the ECM. The ECM driver circuits produce heat during normal operation and dissipate this heat via the casing. Some sensors receive a regulated voltage supplied by the ECM. This avoids incorrect signals caused by voltage drop during cranking.

The ECM performs self diagnostic routines and stores fault codes in its memory. These fault codes and diagnostics can be accessed using the Land Rover recommended diagnostic tool. If the ECM is to be replaced, the new ECM is supplied 'blank' and must be configured to the vehicle using the Land Rover recommended diagnostic tool. A 'flash' electrically erasable programmable read only memory (EEPROM) allows the ECM to be externally configured, using the Land Rover recommended diagnostic tool, with market specific or new tune information up to 14 times. If a fifteenth update is required the ECM must be replaced. The current engine tune data can be accessed and read using the Land Rover recommended diagnostic tool.

When a new ECM is fitted, it must also be synchronized to the immobilization control module using the Land Rover recommended diagnostic tool. ECM's cannot be 'swapped' between vehicles.