

ENGINE MANAGEMENT SYSTEM - V8

Conditions

The CAN system is used by the EAT ECU and the ECM for transmission of the following information:

- Gearshift torque control information.
- EAT OBD information.
- MIL request.
- Vehicle speed signal.
- Engine temperature.
- Engine torque and speed.
- Gear selected.
- Gear change information.
- Altitude adaptation factor
- Air intake temperature
- Throttle angle / pedal position

Function

The CAN system uses a twisted pair of wires to form the 'data bus' to minimise electrical interference. This method of serial interface is very reliable and very fast. The information messages are structured so that each of the receivers (ECM or EAT ECU) is able to interpret and react to the messages sent.

The CAN 'data bus' is directly connected between pin 36 of connector C0637 of the ECM and pin 16 of connector C0193 at the EAT ECU, and pin 37 of connector C0637 of the ECM and pin 44 of connector C0193 at the EAT ECU.

The CAN system can fail in the following ways:

- CAN data bus wiring open circuit.
- CAN data bus wiring short circuit.

In the event of a CAN data bus failure any of the following symptoms may be observed:

- MIL illuminated after 2 drive cycles (NAS only).
- EAT defaults to 3rd gear only.
- Harsh gearshifts.
- 'Sport' and 'manual' lights flash alternately.

Should a malfunction of the component occur the following fault codes may be evident and can be retrieved by TestBook.

P Code	J2012 Description	Land Rover Description
P0600	Serial communication link malfunction	CAN time out
P1776	Transmission control system torque interface malfunction	EAT torque interface error

Drive cycles

The following are the TestBook drive cycles:

⇒ Drive cycle A:

- 1 Switch on the ignition for 30 seconds.
- 2 Ensure engine coolant temperature is less than 60°C (140°F).
- 3 Start the engine and allow to idle for 2 minutes.
- 4 Connect TestBook and check for fault codes.

⇒ Drive cycle B:

- 1 Switch ignition on for 30 seconds.
- 2 Ensure engine coolant temperature is less than 60°C (140°F).
- 3 Start the engine and allow to idle for 2 minutes.
- 4 Perform 2 light accelerations (0 to 35 mph (0 to 60 km/h) with light pedal pressure).
- 5 Perform 2 medium accelerations (0 to 45 mph (0 to 70 km/h) with moderate pedal pressure).
- 6 Perform 2 hard accelerations (0 to 55 mph (0 to 90 km/h) with heavy pedal pressure).
- 7 Allow engine to idle for 2 minutes.
- 8 Connect TestBook and with the engine still running, check for fault codes.



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⇒ Drive cycle C:

- 1 Switch ignition on for 30 seconds.
- 2 Ensure engine coolant temperature is less than 60°C (140°F).
- 3 Start the engine and allow to idle for 2 minutes.
- 4 Perform 2 light accelerations (0 to 35 mph (0 to 60 km/h) with light pedal pressure).
- 5 Perform 2 medium accelerations (0 to 45 mph (0 to 70 km/h) with moderate pedal pressure).
- 6 Perform 2 hard accelerations (0 to 55 mph (0 to 90 km/h) with heavy pedal pressure).
- 7 Cruise at 60 mph (100 km/h) for 8 minutes.
- 8 Cruise at 50 mph (80 km/h) for 3 minutes.
- 9 Allow engine to idle for 3 minutes.
- 10 Connect TestBook and with the engine still running, check for fault codes.

NOTE: The following areas have an associated readiness test which must be flagged as complete, before a problem resolution can be verified:

- catalytic converter fault;
- Evaporative loss system fault;
- HO₂ sensor fault;
- HO₂ sensor heater fault.

When carrying out a drive cycle C to determine a fault in any of the above areas, select the readiness test icon to verify that the test has been flagged as complete.

⇒ Drive cycle D:

- 1 Switch ignition on for 30 seconds.
- 2 Ensure engine coolant temperature is less than 35°C (95°F).
- 3 Start the engine and allow to idle for 2 minutes.
- 4 Perform 2 light accelerations (0 to 35 mph (0 to 60 km/h) with light pedal pressure).
- 5 Perform 2 medium accelerations (0 to 45 mph (0 to 70 km/h) with moderate pedal pressure).
- 6 Perform 2 hard accelerations (0 to 55 mph (0 to 90 km/h) with heavy pedal pressure).
- 7 Cruise at 60 mph (100 km/h) for 5 minutes.
- 8 Cruise at 50 mph (80 km/h) for 5 minutes.
- 9 Cruise at 35 mph (60 km/h) for 5 minutes.
- 10 Allow engine to idle for 2 minutes.
- 11 Connect TestBook and check for fault codes.

⇒ Drive cycle E:

- 1 Ensure fuel tank is at least a quarter full.
- 2 Carry out Drive Cycle A.
- 3 Switch off ignition.
- 4 Leave vehicle undisturbed for 20 minutes.
- 5 Switch on ignition.
- 6 Connect TestBook and check for fault codes.