



DB9

OBD II Diagnostic Manual
Preliminary Issue



ASTON MARTIN LAGONDA LIMITED

Note: This version of the DB9 OBD II Diagnostic Manual is in the process of validation. The manual will shortly be reissued to include all validation corrections.

Meanwhile, should any errors be identified, please call:
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Introduction

The operation of the internal combustion engine depends on the ability to rapidly and accurately control several variables. The two main variables are; the quantity of fuel passed to the cylinder and the timing of ignition. Basic control of these variables is exercised by the Powertrain Control Modules (Primary and Secondary PCMs) which contain all the software to supervise and control the engine management system. The PCMs also contain the diagnostic software (the Diagnostic Executive) required to detect any system malfunctions which could increase harmful emissions.

The Diagnostic Executive is the computer programme which monitors aspects of emission related engine performance. This programme controls all the monitor sequences, records DTCs, lights the MIL lamp and memorises freeze frame data for later analysis

The freeze frame data may be accessed using the World Diagnostic System (WDS) or other scan tool. The stored data describes engine conditions at the time the malfunction was detected, such as the state of the engine, state of fuel control, spark, rpm, load and warm up status. Previously stored conditions will be replaced only if a fuel or misfire malfunction is detected.

In order to pass all diagnostic monitors, a new vehicle or one in which the PCM memory has been cleared must be driven sufficiently (a complete drive cycle) to clear all component checks. A P1000 code will be recorded until all sections of the OBD II drive cycle are completed. The presence of a P1000 code is not a cause for concern unless other codes are present. The drive cycles are described later in this section.

The following monitors are included in the diagnostic software:

- Heated Oxygen Sensor (HO2S) Monitor
- Catalyst Efficiency Monitor
- Misfire Detection Monitor
- Fuel System Monitor
- Comprehensive Component Monitor

NB: TRIP - In the following descriptions the term trip is defined as successful completion of all monitors without detecting any fault which would illuminate the MIL lamp.

Comprehensive Component Monitor

The comprehensive component monitor is a self test strategy that detects malfunctions of any electronic power-train component which may have an effect upon engine emission levels.

The inputs monitored include the PCM Identification, Inlet Air Temperature (IAT), Fuel Tank Pressure (FTPT), Cylinder Identification (CID), Fuel Level Indicator (FLI), Crankshaft Position (CKP), Vehicle Speed Sensor (VSS), Mass Air Flow Meter (MAF), Engine Coolant Temperature (ECT), Throttle Potentiometer (TP) sensors and Throttle Pedal Position (TPP) sensors.

Outputs monitored by the comprehensive component monitor include the Ignition System, Fuel Pump, Fan Control, Vapour Management Valves (VMV), Canister Vent Valve (CANVNT), all fuel injectors, the A/C cut-out relay (WAC) and the Throttle Controller.

An input component malfunction is declared if there is a lack of continuity, the signal is out of range, or if the signal is not in the correct relationship to another associated signal.

An output component malfunction is declared if there is a lack of continuity or if an expected output response to an PCM command does not occur.

In the comprehensive component monitor, when a malfunction has been present for two drive cycles, the relevant DTC is stored in the PCMs and the MIL is turned on.

The MIL is turned off after three consecutive trips without the same malfunction being detected provided that no other DTCs are stored which would independently turn on the MIL. The DTC will be erased from memory after 40 warm-up cycles without the malfunction being detected after the MIL is turned off. The code may also be cleared by performing an PCM reset using the Diagnostic System (WDS) or a generic Scan Tool.

During a drive cycle, the individual monitor checks will be completed and entered into the PCM memory. The OBDII Readiness Test screen on the WDS may be used to show which particular monitors have completed since the last PCM reset. All monitors must successfully complete to clear a P1000 code (P1000 = OBD II System Checkout Incomplete).

System and Component Monitors

Heated Oxygen Sensor Monitor

OBD II regulations require monitoring of the upstream heated oxygen sensors to detect when deterioration of the sensor has exceeded emission thresholds. Additional oxygen sensors are located downstream to determine the efficiency of the catalyst. The downstream sensors are of a different type to those used for fuel control. The front and rear sensors are not interchangeable. They are monitored to determine if a voltage is generated. That voltage is then compared to values in memory to determine if the catalyst efficiency is in range.

Operation

The fuel control system attempts to maintain an air/fuel ratio of approximately 14.7:1. The PCM uses the input from the upstream HO₂S sensors to fine tune the air fuel mixture.

The upstream heated oxygen sensors are mounted in the exhaust flow between the engine and the catalytic converters. The sensors operate between zero and one volt output depending on the oxygen content of the exhaust gasses. Lean air/fuel mixture will cause a sensor voltage of 0 - 0.4 volts. Rich air/fuel mixture will cause a voltage of 0.6 - 1.0 volts. The ideal air/fuel mixture would cause a sensor voltage of 0.4 - 0.6 volts to be generated. The actual sensor voltage will fluctuate as the system attempts to reach optimum air/fuel mixture under constantly changing conditions.

The following HO₂S system checks are performed:

Upstream sensors are checked by changing the air fuel ratio and monitoring the sensor response.

Downstream sensors are monitored by noting the voltage change for changes in downstream oxygen content.

All sensors are monitored for overvoltage conditions

Sensor heaters are checked by turning them on and off and looking for changes in the current they draw.

When a HO₂S malfunction is detected for two drive cycles, the DTC is stored in memory and the MIL is turned on. The MIL will be turned off after three consecutive trips without the same malfunction being detected, providing that no other malfunctions are present which would independently turn on the MIL. The DTC will be erased from memory after 40 warm-up cycles provided that the same DTC is not detected. The code may also be cleared by performing a PCM reset.

Catalyst Efficiency Monitor

The catalyst efficiency monitor determines when the catalyst efficiency has fallen below the minimum efficiency requirements.

Operation

Upstream and downstream oxygen sensor signals are compared during a range of speed/load conditions. The catalyst must be able to process the exhaust gases such that the rear oxygen sensors are prevented from switching in the same way as the front.

When a catalyst efficiency malfunction is detected for two drive cycles, the DTC is stored in memory and the MIL is turned on. The MIL will be turned off after three consecutive trips without the same malfunction being detected, providing that no other malfunctions are present which would independently turn on the MIL. The DTC will be erased from memory after 40 warm-up cycles provided that the same DTC is not detected. The code may also be cleared by performing an PCM reset or a DTC 'CLEAR' using WDS.

Fuel System Monitor

The fuel system monitor is a self test strategy within the PCM that monitors the adaptive fuel table. This table is used by the fuel control system to compensate for normal variability of the fuel system components due to age or wear. If the fuel system appears biased lean or rich, the adaptive fuel values will be shifted to remove the bias.

Operation

The adaptive fuel system uses the upstream oxygen sensor outputs as its primary input. The system also is capable of adapting fuelling requirements based on, Air Temperature, Coolant Temperature and Mass Air Flow.

As the fuel control and air metering components age or vary from nominal values, the adaptive fuel strategy learns corrections while in closed loop operation. These corrections are stored in a table called 'Long Term Fuel Trim'. The table resides in KAM (Keep Alive Memory) and is used to correct fuel delivery while in open or closed loop control.

As components continue to change, the table will reach its adaptive limit and can no longer cope with additional changes in fuelling components. Further changes in the fuel system components will cause deviation in the closed loop parameter called 'Short Term Fuel Trim'. As this deviation in short term fuel trim approaches 1.5 times the applicable standard, fuel/air control suffers and emissions may increase. At this point, a fuel system fault is declared and a DTC is stored.

The fuel system tests are only run when the following preconditions are satisfied, engine rpm within acceptable range, air mass within calibrated limits, engine coolant temperature indicates the engine fully warmed up, steady throttle opening at a road speed of 30 - 45 m.p.h. Idle and deceleration performances are excluded from fuel system testing.

In the fuel system monitor, when a malfunction has been present for two drive cycles, the DTC is stored and the MIL lamp is turned on. At the same time, freeze frame data will be stored as described in the system overview. In order to provide the maximum information for fault analysis, the range of freeze frame data stored when a fuel system monitor fault occurs exceeds that required by the Air Resources Board.

The MIL is turned off after three consecutive drive cycles without the same DTC being detected provided that no other DTCs are recorded which would independently turn on the MIL. The DTC will be erased from memory after 40 trips provided that the same DTC is not detected. The code may also be cleared by performing a PCM reset.

Purge System Monitor

Tests the integrity and operation of the evaporative loss purge system.

Operation

Primary PCM - After an overnight soak, during steady state driving, the canister vent valve is closed and the purge system pulls a light vacuum in the fuel tank. The time taken for the vacuum to decay is measured and compared to calibrated limits. The results indicate whether the fuel vapour system is leak proof.

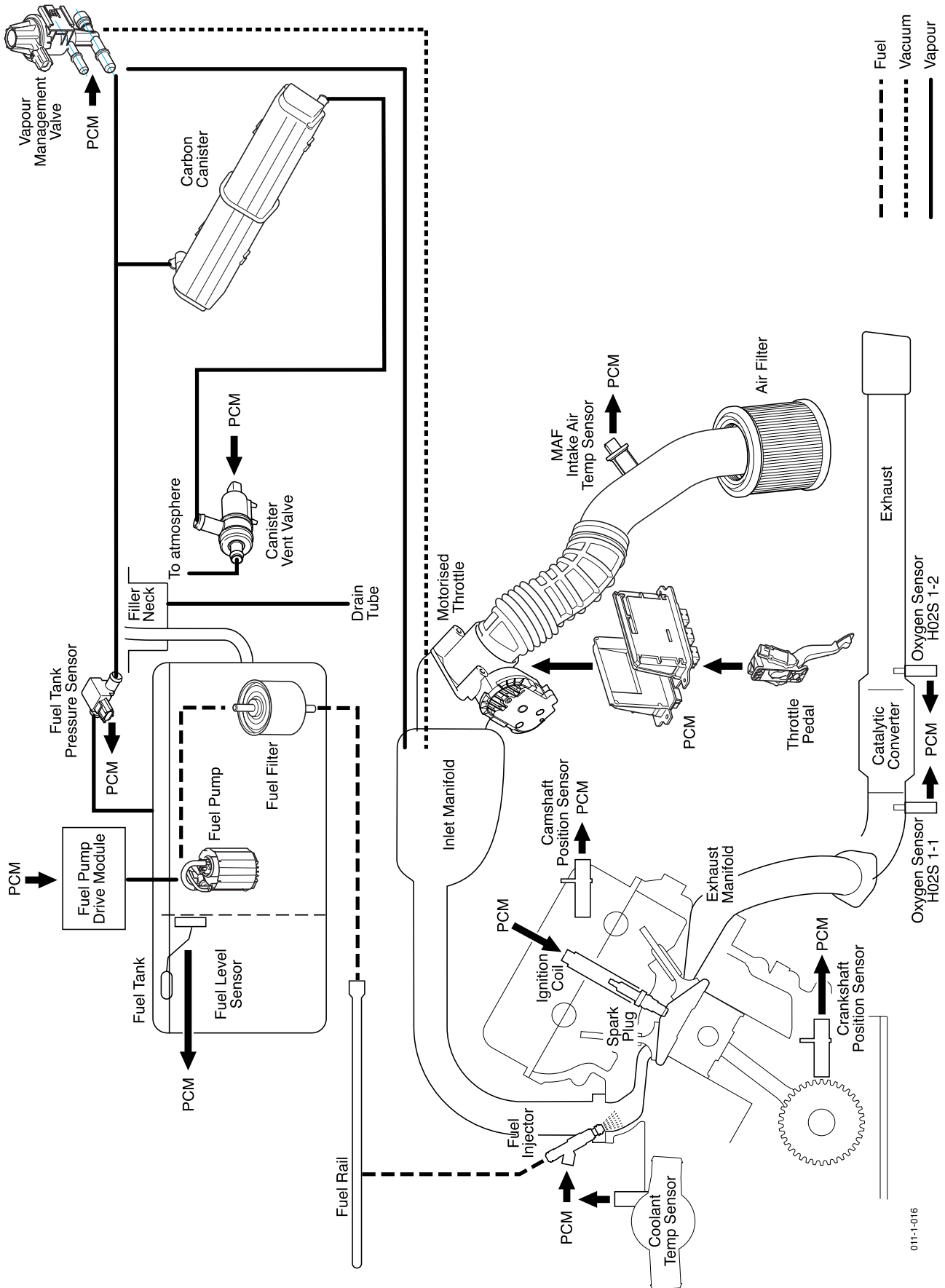
Secondary PCM - During vehicle acceleration, the engine fuelling requirements are stabilised and then the vapour management valve is opened. If the carbon canisters contain fuel vapour, it will be drawn into the inlet manifold. The fuelling correction required to rectify the fuel imbalance caused by the additional fuel vapour is noted. The adjustment required is used as an indicator of correct purge system flow.

Misfire Detection Monitor

Misfire is defined as the lack of proper combustion in the cylinder due to the absence of spark, poor fuel metering or poor compression. Any combustion occurring at an improper time is also defined as a misfire.

Misfires are detected by the Neural Net Misfire Monitor which checks various engine operating conditions (particularly crankshaft acceleration) and compares them to data held in PCM memory.

Engine Management - Schematic Diagram



011-1-016

Description of Components

Powertrain Control Modules (PCMs) - Primary and Secondary

The engine management system is controlled by the Powertrain Control Modules (PCMs), which receive signals from the sensors, compares them to the required standards and then modify the fuel and ignition settings to maintain an optimum, stoichiometric, fuel and air mixture under all conditions. Sensor information is supplied to the Control Module Inputs, and control commands are issued through the Control Module Outputs. The PCMs are located one under each front wing.

The Mass Air Flow Sensor (MAF)

The Mass Air Flow Sensor (MAF), measures the quantity of air drawn into the engine and reports to the PCM.

The Air Temperature Sensor (IAT)

An Inlet Air Temperature Sensor (IAT), is located inside each mass airflow meter and measures the temperature of the air entering either side of the engine. These sensors are fitted so that the engine management system can compensate for air density changes.

The Engine Coolant Temperature Sensors (ECT)

The Engine Coolant Temperature Sensor (ECT), monitors the coolant temperature and reports to the primary PCM. The secondary PCM receives the current temperature information from the primary PCM over the CAN bus.

The Fuel Pumps

The Fuel Pumps, situated in the fuel tank, supply fuel to the Fuel Rails. The fuel pressure at the fuel rails is regulated by changing the run speed of the fuel pumps.

Fuel Injectors

The twelve Injector solenoids are operated by the PCMs in sequence to inject fuel into the area behind each inlet valve. The volume of fuel injected is governed by the length of time each injector solenoid is actuated and the pressure in the fuel rail.

Ignition Coils

Ignition is by long life Spark Plugs supplied with HT voltage from the Ignition Coils mounted on each plug. The timing of ignition is varied by the PCM according to vehicle speed and engine load.

Catalytic Convertor / Heated Oxygen Sensors (H02S)

The combustion gases, after passing through the exhaust manifolds, enter the Catalytic Convertors, where the quality of the exhaust gas emission is modified. The quality of the exhaust gas emission is constantly checked by the four Upstream Heated Oxygen Sensors (H02S1 on either bank), which are situated at the entrance of the catalysts. The catalyst efficiency is checked using four Downstream Heated Oxygen Sensors (H02S2 on either bank). By comparing the signal outputs of pre and post catalyst heated oxygen sensors the PCM can make corrections to the fuel and ignition settings as necessary. The sensors contain integral heaters which accelerate the warming-up of the sensors to enable a rapid correction of initial settings which may be causing the emission of low quality exhaust gases.

Throttle Position Sensor (TP)

Throttle position is detected by the Throttle Position Sensors (TP) mounted on each throttle body. These sensors report to the PCMs.

Throttle Pedal Position Sensor (PPS)

Throttle pedal position is detected by two Throttle Pedal Position Sensors (PPS) mounted in the throttle pedal assembly. These sensors report the PPS signal to the PCMs. The pedal position is constantly verified by means of a rationality check between the three potentiometer readings. If any reading goes out of normal range, the in range readings are used and a fault is flagged on the out of range potentiometer.

Throttle Motors

Motor driven throttles are mounted on the left and right inlet manifolds. As the driver moves the throttle pedal, the throttle pedal signals change, the PCMs receive the revised position signals and send drive signals to the throttle motors to drive the throttles to the new position.

Crankshaft Position Sensor (CKP)

Engine speed is measured from the pulse timing of the two Crankshaft Position Sensors (CKP). CKP signals are input to the primary and secondary Powertrain Control Modules.

Camshaft Position Sensor - Cylinder Identification Sensor (CID)

Engine position is determined by using the two Camshaft Position Sensor (CID) signals. CMP signals are input to the primary and secondary Powertrain Control Modules.

Using the CKP and CID signals, the PCMs can accurately control the start time for ignition/fuel injection events.

Evaporative Emission Canister

The Fuel Tank, may be filled to 90% of the actual measured capacity; the 10% air volume above the fuel is vented to atmosphere through the Evaporative Emission Canister. The carbon element in this canister absorbs any displaced fuel vapour. As fuel is withdrawn from the tank, air is drawn in through the canisters to avoid creating a vacuum in the fuel tank.

When the fuel laden air in the tank expands at higher temperatures, pressure is relieved by allowing the displaced air to vent through the canister which retains any suspended fuel vapour.

During normal engine running, the vapour management valve allows air flow through the carbon canister and into the inlet manifolds, constantly purging any petrol vapour and burning it in the normal combustion process.

The Vapour Management Valve

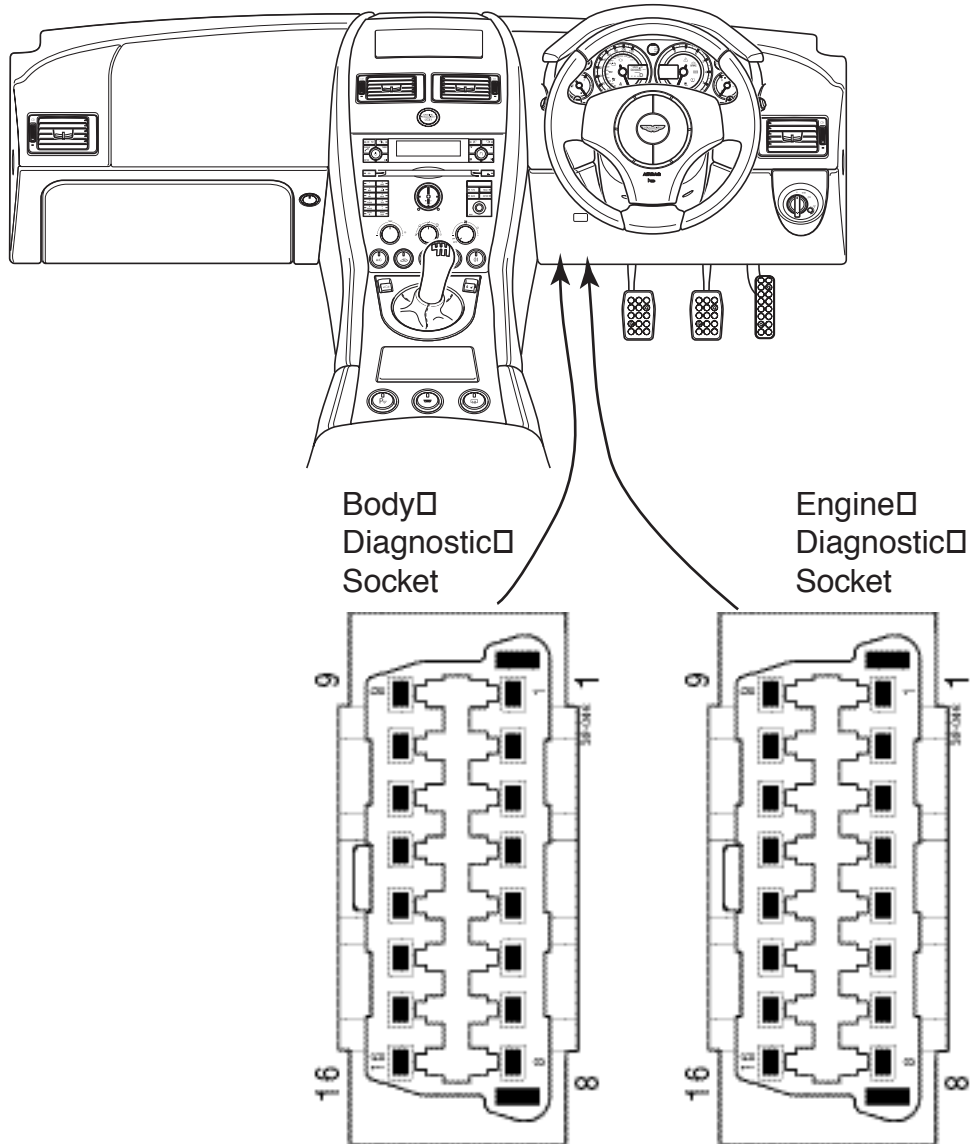
The Vapour Management Valve, is controlled by the Primary PCM and open the canister line to inlet manifold vacuum; when the inlet manifold vacuum is sufficient, the vapour management valve will open. Air can then flow through the carbon canister, carrying fuel vapour to the inlet manifold and into the engine.

Diagnostic Equipment

The Aston Martin Diagnostic System (WDS) is the principal diagnostic tool used by Aston Martin franchised dealers. Non-franchised dealers will require the AML WDS or a compatible scan tool. The WDS installation and use is described in a separate publication. The WDS connects to the diagnostic sockets.

Diagnostic Sockets Location and Use

The two diagnostic sockets are located on the drivers side of the centre console. Note that the sockets change sides between left and right hand drive vehicles. The following systems are accessed from each socket:



Body Socket - Closest to the Centre Stack

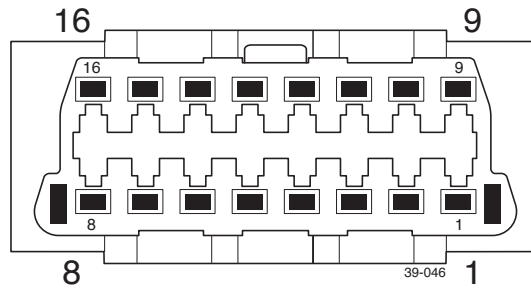
- Airbag and Seat Belt Pretensioner System
- Security System
- Body Module
- Transmission Control Unit (datalogging and DTC read)

Engine Socket - Furthest from the Centre Stack

- Powertrain Control Module (PCM)
- Transmission Control Module (TCM) (OBD II DTC read via the PCM)
- Passive Anti-Theft System
- Anti-Lock Braking System

The pin connections to each socket are shown on the following page:

Diagnostic Sockets - Pin Location and Function



Engine Socket (Drivers Side)

Pin	Function	Used by:
1		
2		
3		
4	Power Ground	All
5	Chassis Ground	All
6	CAN Link (+) High Speed	
7		
8		
9	+12V Ignition Supply	Input Power/Signal
10		
11	No Connection	
12	No Connection	
13	FEPS	Flash reprogramming
14	CAN Link (-) High Speed	
15	No Connection	
16	12V Battery	All

Body Socket (Passenger Side)

Pin	Function	Used by:
1		
2		
3	CAN Link (+) Low Speed	
4	Power Ground	All
5	Chassis Ground	
6	CAN Link (+) High Speed	
7	K line ISO 9141	
8	K line TCM	
9	+12V Ignition Supply	
10		
11	CAN Link (-) Low Speed	
12	No connection	
13	No connection	
14	CAN Link (-) High Speed	
15		
16	12V Battery (unswitched)	All

Drive Cycle Routine

The drive cycle may be run on a rolling road. Running the drive cycle during a road test may take significantly longer.

The maximum speeds during the rolling road cycle may be significantly greater than the legal limit in some areas. The monitor tests will complete at a maximum speed of 55 m.p.h. providing that the PCM has not been disconnected and KAM memory lost. If the KAM memory has been lost, the misfire monitor will require decelerations from at least 55 m.p.h. to complete. If your maximum speed limit is below 55 m.p.h., run the drive cycle on a rolling road.

WARNING: Do not exceed local speed limits.

If run during a road test, the cycle may not complete in the order listed although the Comprehensive Component Monitor is a prerequisite for all other tests, and the HO2S monitor is a prerequisite for the purge tests.

The vehicle must be fully warmed up and have run for a minimum of 200 seconds before this cycle will start.

A P1000 code will only be cleared when all the monitor tests have been satisfactorily completed.

Comprehensive Component Monitor

This test is run continuously but for the purposes of clearing down a P1000 code, this monitor will clear if all sensors and actuators have no out of range values. The engine needs to have warmed up from an ambient start, idled for a short time and then the car must be driven for a short time. If the engine has been warmed up using an extended idle period and the cycle is driven as shown in the diagram, the component monitor tests will complete during stage 1.

Heated Oxygen Sensor (HO2S) Monitor

The HO2S sensors and their heater circuits will be tested and cleared down during stages 1 and 2 of the drive cycle. Periods 1 and 2 from the diagram are each of 60 seconds duration where the engine speed is 1130 and then 1310 rpm (approximately 27 and then 37 m.p.h.). Constant throttle opening must be maintained during these periods.

Catalyst Monitor

Stages 1, 2, 3 and 4 of the cycle provide the optimum conditions to ensure completion of the Catalyst Monitor. The sequence is not important but the vehicle must spend at least 60 seconds at each speed. Stage 1 at 1130 rpm (27-31 m.p.h.), Stage 2 at 1310 rpm (37-42 m.p.h.), Stage 3 at 1700 rpm (48-54 m.p.h.) and Stage 4 at 1860 rpm (53-59 m.p.h.). If constant speed cannot be maintained, then accelerating and decelerating gently between each speed will have the same effect but may take longer to complete the catalyst monitor test.

Misfire Monitor

Powertrain Control Module Memory Intact

The Misfire Monitor is a continuous test and will clear quickly if the PCM keep alive memory power has not been interrupted.

Powertrain Control Module Memory Interrupted (e.g. PCM or battery disconnected)

If the power source to the keep alive memory has been interrupted, the system needs to re-learn ignition and other correction factors before it can complete the misfire monitor tests. These correction factors are learned during long deceleration periods. A closed throttle deceleration from 55+ m.p.h. down to 30 m.p.h. is appropriate. It may require two or three deceleration cycles for the system to acquire the necessary corrections, after which the misfire monitor tests will clear quickly.

Purge Monitor

The Purge Monitor tests the vapour flow from the fuel tank and carbon canisters through into the engine. This monitor has two methods of completion.

The first and most common method occurs during an acceleration cycle from 30 to 50 m.p.h. over a 20 second period. The system looks for a minimum fuelling correction for a minimum purge valve duty cycle. This method will usually be successful since there is nearly always sufficient fuel vapour available to cause a recognisable fuelling correction.

The second method is used in cold ambient conditions when the quantity of fuel vapour available will be at a minimum. The engine is run for a period of several minutes at idle during which the effect of purge vapour flow on engine idle speed control is assessed.

If the purge monitor does not clear during the first method, leave the engine idling for 5-10 minutes. During this time, the purge control monitor will then complete using the second method.

Fuel System Monitor

The capability of the engine management system to control fuelling under closed loop conditions is assessed continuously but will be tested during phases 1 - 4 of the test sequence as the HO2S and catalyst tests are completed.

PCM and TCM Reset Procedure

Both the Powertrain Control Modules (PCMs) may be reset using either of two following methods.

Note: It is not normally necessary to reset both PCMs during fault analysis. Only reset the affected control module when directed to 'Reset the PCM' in a fault analysis procedure. If a complete reset is required, the fault analysis procedure will direct you to 'Reset Both PCMs'.

Procedure

With the ignition switched off, disconnect the module harness connector at the affected PCM(s). The following elements will be cleared in the PCM keep alive memory.

- Logged DTC counter will reset.
- All logged DTCs will be cleared.
- Freeze frame data will be cleared.
- Oxygen sensor data will be cleared.
- OBD system monitor status will be reset.
- P1000 status code will be set.

The PCM may be reset by disconnecting the battery but the clock, radio and window controllers will require re-setting after reconnecting the battery.

Note: Since the oxygen sensor data has been cleared, the vehicle may exhibit some mild driveability concerns until this data has been relearned during initial driving after the PCM reset.

Note: The P1000 code will remain until all diagnostic monitors have cleared after completion of all parts of the drive cycle following the PCM reset.

Caution:

Clearing codes with a generic scan tool resets all modules.

Diagnostic Trouble Code Report Form

The DTC Report Form exists so that dealer technical staff may report occurrences of DTCs back to the manufacturer. When seeking advice, or when requested by Aston Martin Service Operations Department, please complete the Trouble Code Report Form and email the completed form from the 'my documents' folder on WDS.

Alternatively, the form may be faxed to:

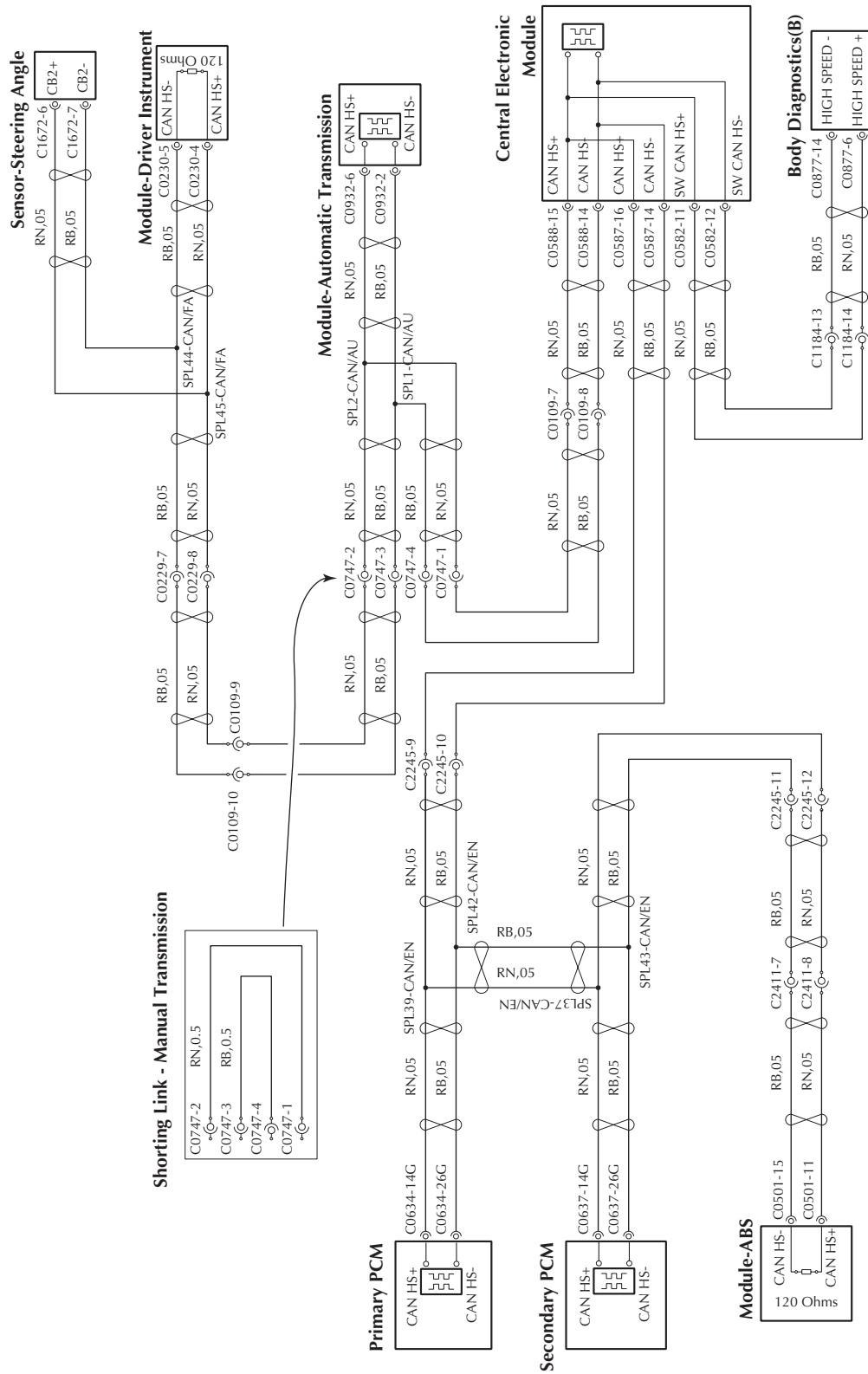
Aston Martin Service Operations Department - Fax No. (0044) (0)1926 644733

High Speed CAN Fault Analysis

1. Connect the WDS to the Body diagnostic connector. Ignition ON.
2. Read the CEM Diagnostic Codes and select those relevant to the high speed CAN bus.

Code	Definition
DE01	Brake Control Module not alive
DE11	Engine Control Module not alive
DE29	Centre Console Module not alive
DE42	Convertible Roof Module_not_alive
DE43	Driver Door Module not alive
DE45	Pass. Door Module not alive
DE49	Steering Angle Sensor not alive
DE51	Driver Information Module not alive
DE52	Convertible Roof Module not alive
DE54	Infotainment Control Module not alive
DE58	Safety Restraint System (Airbag Module) not alive
DE64	Phone Module not alive
DE6E	Transmission Control Module not alive
DF11	HS CAN Bus Open Load or Transmit / Recieve error
DF13	HS CAN + shorted to batt voltage_
DF14	HS CAN - shorted to ground
DF15	HS CAN + shorted to ground
DF16	HS CAN - shorted to battery voltage
DF17	HS CAN - shorted to HS CAN + or Open Load HS CAN - or HS CAN +
E000	HS CAN transmit recieve error(BUS_OFF)
E001	LS CAN transmit recieve error(BUS_OFF)
E010	CEM HS NWM Failed Control Initialisation
E011	CEM LS NWM Failed Control Initialisation
E020	CEM HS NWM Failed Volcano Initialisation

3. Check for relevant modules off-line. (Cross check against the following High Speed CAN Circuit).



DB9
CAN Bus 2
(High Speed Volcano)

4. Check the basic power and ground supplies to the suspect module and service as necessary. If a power fault was detected, clear the CEM DTC's and then go to step 5.

5. Switch the ignition off and then on again to repeat the power up tests. If any HS CAN module is still off line, service the defective link as necessary. If no relevant codes are displayed, go to step 6.
6. Check resistance from HS CAN + to HS CAN -.
Resistance should be 60Ω. (i.e. 2 x 120Ω terminator resistors in parallel)
Terminator resistors are in the ABS Module and the DIM Module.
If 60Ω is measured, the circuits to the terminator resistors are good. Go to step 7.
If 120Ω is measured, one of the terminator resistors is open circuit. The fault is in either the ABS or the DIM sections of the HS CAN bus. Isolate each section and analyse the fault using continuity checks. Service the open circuit as necessary.
7. With 60Ω measured between HS CAN + and - at the diagnostic socket, only the PCMs, TCM and Steering Angle Sensor spurs remain as suspects.
8. For steering angle sensor faults, go to step 9.
For Transmission Controller faults, go to step 11
For Powertrain Control Module faults, go to step 12.

Steering Angle Sensor

9. If DE49 (Steering Angle Sensor not alive) is logged, Disconnect the steering angle sensor and check continuity of the HS CAN + line from C1672-6 to C0877-6 and the HS CAN - line from C1672-7 and C0877-14.
10. Set WDS Datalogger to monitor the Steering Angle Sensor. Turn the steering wheel and check for a corresponding change in the sensor reading. If the response does not match steering wheel movement, the sensor is faulty. Replace the steering angle sensor. Reconnect all components and retest the sensor to ensure that the problem is resolved.

Transmission Control Unit

11. Set WDS Datalogger to monitor the current gear position. With the ignition on, select each gear in turn and check for a corresponding change in the 'current gear' signal.
If the current gear signal responds correctly to gearshifts, the TCM CAN spur is good. Go to step 11.
If the current gear signal does not respond correctly to gearshifts, service the CAN bus TCM spur as necessary. Reconnect all components and repeat the gearshift test to ensure that the problem is resolved.

Powertrain Control Module

12. If code DE11 (Engine Control Module not alive) is logged in the CEM, Install the breakout box to the PCM connector and check continuity from the HS CAN + and - pins on the body diagnostic connector to the corresponding pins on the PCMs. Service any circuit fault as necessary. Clear the DE11 code from the CEM. Reconnect all components and run a KOER test to ensure that the problem is resolved.
If the code is logged again, check for logged DTCs in the PCM and analyse the problem using the procedures for the PCM fault codes.

Low Speed CAN Procedures

1. Connect the WDS to the OBD II diagnostic connector. Ignition ON.
2. Read the CEM Diagnostic Codes. If CEM diagnostic codes can be read, the OBD II CAN spur and the CEM are good. Go to step 4. We can also assume that there are no shorts to ground, to supply or across the CAN bus in the remainder of the LS CAN Network. This does not eliminate intermittent faults in these areas

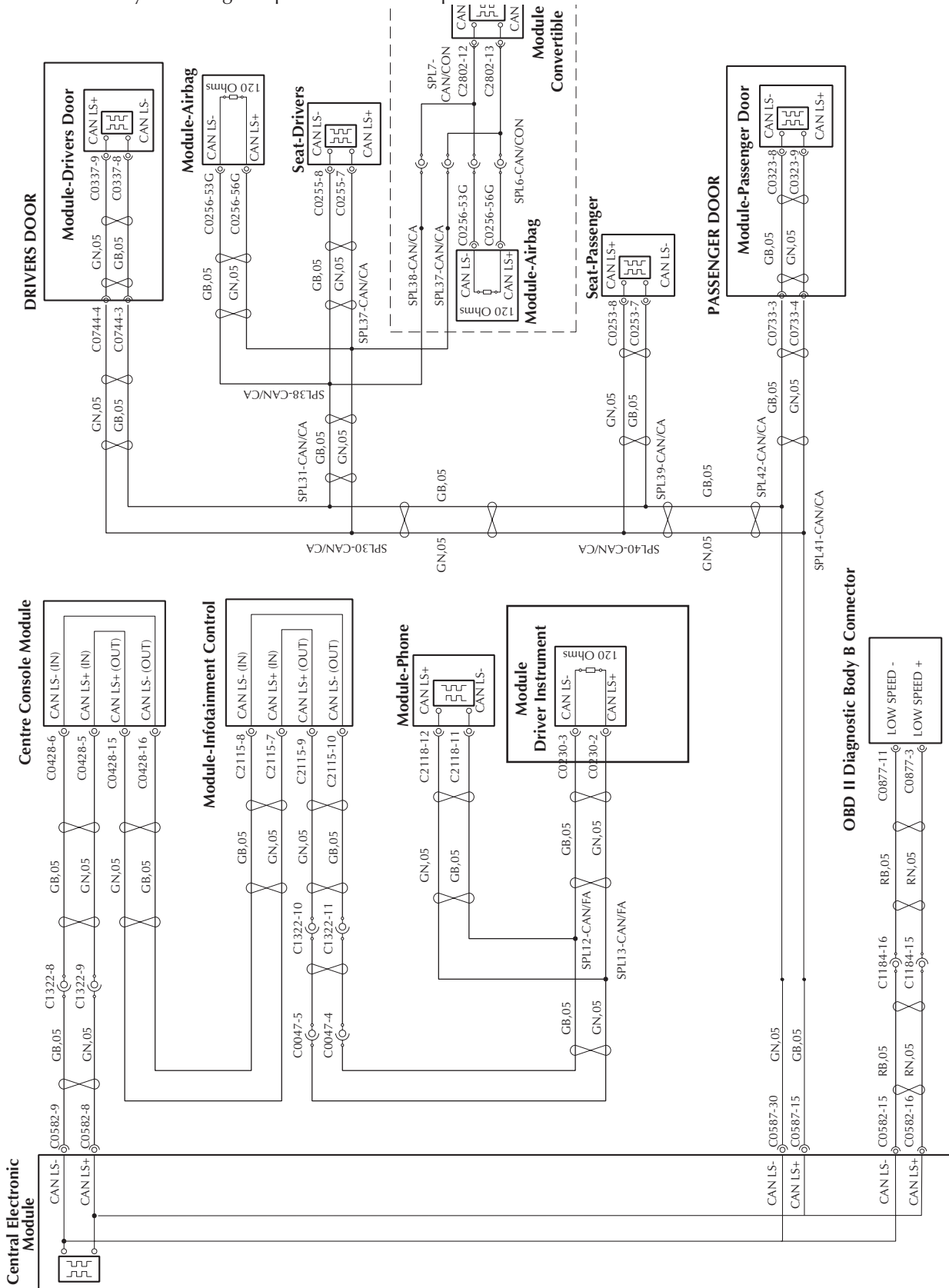
Code	Definition
DE01	Brake Control Module not alive
DE11	Engine Control Module not alive
DE29	Centre Console Module not alive
DE42	Convertible Roof Module_not_alive
DE43	Driver Door Module not alive
DE45	Pass. Door Module not alive
DE49	Steering Angle Sensor not alive
DE51	Driver Information Module not alive
DE52	Convertible Roof Module not alive
DE54	Infotainment Control Module not alive
DE58	Safety Restraint System (Airbag Module) not alive
DE64	Phone Module not alive
DE6E	Transmission Control Module not alive
DF11	HS CAN Bus Open Load or Transmit / Recieve error
DF13	HS CAN + shorted to batt voltage_
DF14	HS CAN - shorted to ground
DF15	HS CAN + shorted to ground
DF16	HS CAN - shorted to battery voltage
DF17	HS CAN - shorted to HS CAN + or Open Load HS CAN - or HS CAN +
E000	HS CAN transmit recieve error(BUS_OFF)
E001	LS CAN transmit recieve error(BUS_OFF)
E010	CEM HS Network Manager Failed Control Initialisation
E011	CEM LS Network Manager Failed Control Initialisation
E020	CEM HS Network Manager Failed Volcano Initialisation

3. If you cannot read the CEM codes, then one of the following failures exists:
 - CEM not functional. CEM failure or power failure.
 - LS CAN OBD II spur faulty
 - Short to ground, to supply or across the LS CAN Network

If any of the above faults are identified, service the circuits or components as necessary. Clear the CEM DTCs and turn the ignition off and on again. Check that no DTCs are logged in the CEM at power on.

- From the logged DTCs, check for relevant modules off-line. (Cross check against the following Low Speed CAN Circuit). If any module is Off-Line, check the power and ground supplies to that module and service as necessary.

If no fault is found in the power and ground supplies, note the CEM fault code(s) and service the defective CAN link as necessary following this procedure from step 5.



5. If any of codes DE29, DE51, DE54, or DE58 is present, there is a continuity fault in the CAN Bus between the terminator resistors. Go to step 6.

If none of the above codes is logged but any of codes DE42, DE 43, DE45, DE52 or DE64 is present, the continuity check in step 6 should pass. The fault lies in a LS CAN bus spur and not in the main CAN bus between the terminator resistors. Go to step 7.

6. Switch off the ignition. Disconnect the battery. (Check with Elec Eng.)

Check resistance from LS CAN + to LS CAN - at the OBD II diagnostic socket.

Resistance should be 60Ω. (i.e. 2 x 120Ω terminator resistors in parallel)

Terminator resistors are in the Airbag Module and the DIM Module.

If 60Ω is measured, the circuits to the terminator resistors are good. Suspect a module failure

If 120Ω is measured, one of the circuits to the terminator resistors is open circuit. The fault is in either the DIM or the Airbag sections of the LS CAN bus. Isolate each section and analyse the fault using continuity checks. Service the open circuit as necessary.

7. For each Logged DTC, access the module connector and complete continuity checks for the CAN + and CAN - links to the OBD II diagnostic socket pins C0877-11 CAN - and C0877-3 CAN +.

Service any open or short circuits as necessary. Clear the CEM DTCs. Turn the ignition off and then on again. Check that no CEM DTCs are logged at power on.

If no circuit faults are identified, the fault must lie in the relevant module. Replace the module. Clear the CEM DTCs. Turn the ignition off and then on again. Check that no CEM DTCs are logged at power on.

Special Tests

Soak and Road Test

The vacuum tests are only run during a drive cycle after the ignition has been switched off for more than 5 hours. If less than 5 hours have elapsed, the vacuum tests are not included in the drive cycle.

Leave the vehicle parked overnight (or more than 5 hours and then run a road test which must include steady running at over 40 m.p.h. for more than 5 minutes.

Quick Check - Battery and Battery Charging

Battery - Measure battery voltage from the jump start terminal to chassis ground. If less than 12.5 volts, suspect a defective battery. Service/replace the battery as necessary and retest for a P0562 condition. If above 12.5 volts, the battery is serviceable, go to the charging check.

Charging - Run the engine at 2000 rpm whilst the headlamps are switched on. Charge voltage measured from the jump start terminal to chassis ground should be about 13.8 volts. If significantly below 13.8 volts, service the charging system and retest for a P0562 condition. If at 13.8 volts, the charging system is serviceable.

Quick Check - Engine Fuelling

This procedure is intended as a quick check for correct engine running after major work on the fuel system. It uses the WDS datalogger to monitor the engine management oxygen sensor output signals.

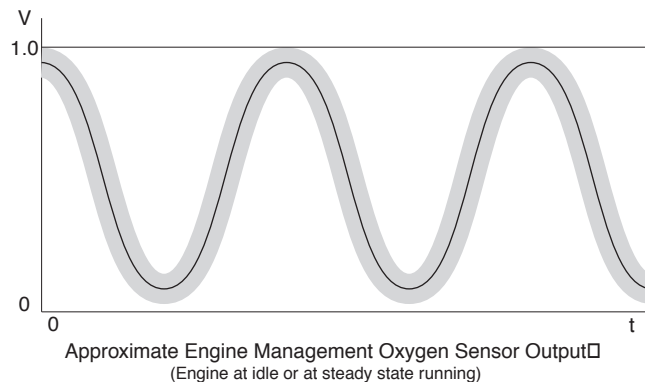
A regular fluctuating signal from all EGO sensors indicates normal fuelling and ignition performance on both sides of the engine. If this is accompanied by a clear DTC log, then there are no current engine management problems.

1. Connect the WDS and note all logged DTCs.
2. Set the datalogger to monitor VEGO11 and VEGO21 for both PCMs.

VEGO = Voltage - Exhaust Gas Oxygen sensors

Also monitor Δ FPRESS (fuel rail pressure) for both fuel rails

3. Start the engine and run at idle until the temperature gauge rises above minimum.
4. Start the datalogger to monitor the upstream engine management VEGO signals. Observe the signal trace and compare with the illustration below



5. Note also the fuel rail pressure for both fuel rails.
6. Raise the engine speed to a steady level of approximately 2000 rpm. Again monitor the upstream VEGO signals and Δ FPRESS readings.
7. If there are no engine management DTCs logged and if the signal patterns observed in steps 4 and 6 meet the following guidelines, then engine running is acceptable.

Look for:

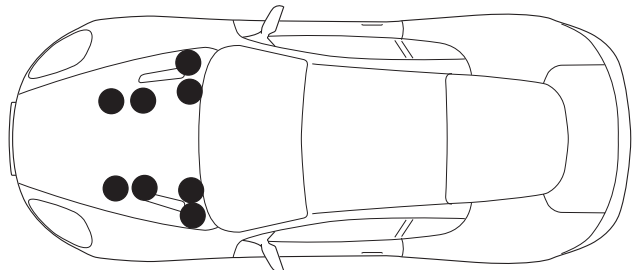
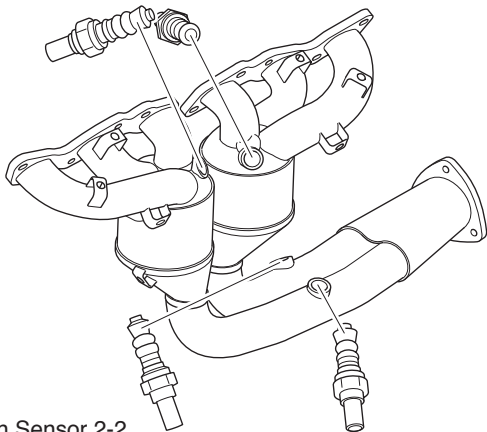
- a regular rise and fall in the EGO signal voltage
 - Increased frequency of EGO signals with increasing rpm.
 - similar signal patterns from all four EGO sensors
 - no major irregularities over time
 - Δ FPRESS above 40 psi for both engine banks
8. If the VEGO signal patterns are irregular or not closely matched, check for newly logged DTCs and investigate them using the procedures in this manual. Stop the datalogger and switch off the engine.

OBD II Acronyms

A/C	Air Conditioning	NC	Normally Closed
A/T	Auto Transmission	NO	Normally Open
ACC	Air Con Clutch	NOx	Oxides of Nitrogen
ACCR	Air Con Clutch Request	OBD	On Board Diagnostics
ACCS	Air Con Cycling Switch	OSS	Output Shaft Speed
ACPSW	Air Con Pressure Switch	PATS	Passive Anti Theft System
AP	Absolute Pressure	PCM	Powertrain Control Module
ATDC	After TDC	PCV	Positive Crankcase Ventilation
B+	Battery Positive Voltage	PNP	Park Neutral Switch
BARO	Barometric Pressure	PSP	Power Steering Pressure
BOO	Brake On/Off	PWR GND	Power Ground
CANP	Canister Purge	RPM	Engine Revolutions per Minute
CKP	Crankshaft Position	RTN	Return
CMP	Camshaft Position	SIG RTN	Signal Return
CO	Carbon Monoxide	TACH	Tachometer
CO2	Carbon Dioxide	TCC	Torque Convertor Clutch
CSE GND	Case Ground (PCM Ground)	TFT	Transmission Fluid Temperature
DTC	Diagnostic Trouble Code	TR	Transmission Range
DTM	Diagnostic Test Mode	TSS	Turbine Shaft Speed
DVOM	Digital Volt-Ohm Meter	VECI Label	Vehicle Emission Control Information
ECT	Engine Coolant Temperature	VPWR	V Power, Vbatt+ switched Supply
EEC	Electronic Engine Control	VREF	Reference Voltage
EVAP	Evaporative Emissions	VSS	Vehicle Speed Sensor
FC	Fan Control		
FP	Fuel Pump		
FPM	Fuel Pump Monitor		
GEN	Generator		
GND	Ground		
GVW	Gross Vehicle Weight		
HC	Hydrocarbon		
HFC	High Speed Fan Control		
HO2S	Heated Oxygen Sensor		
IAC	Idle Air Control		
IAT	Intake Air Temperature		
IDM	Ignition Diagnostic Monitor		
KAM	Keep Alive Memory		
KAPWR	Keep Alive Power		
KOEO	Key On Engine Off Test		
KOER	Key On Engine Running Test		
M/T	Manual Transmission		
MAF	Mass Air Flow		
MAF RTN	Mass Air Flow Signal Return		
MIL	Malfunction Indicator Lamp		

P0040-41 - Oxygen Sensor Signals Swapped

Heated Oxygen Sensor 1-1 Heated Oxygen Sensor 2-1



Heated Oxygen Sensor 2-2 Heated Oxygen Sensor 1-2

Figure 1. HO2S Location

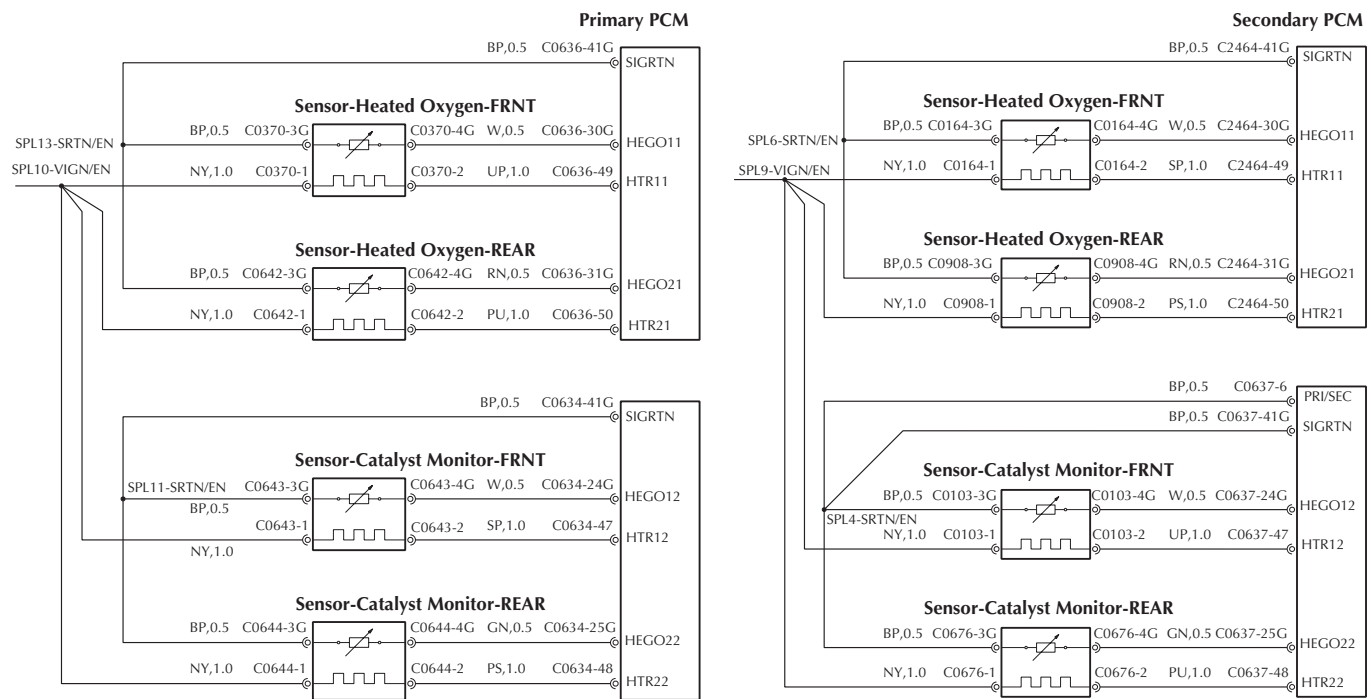


Figure 2. HO2S - PCM Interface Circuits

Fault Code Definition

P0040 - HO2S 1-1 signal swapped to 2-1

P0041 - HO2S 1-2 signal swapped to 2-2

MIL Status

These codes will not light the MIL lamp

P0040, P0041 Fault Analysis

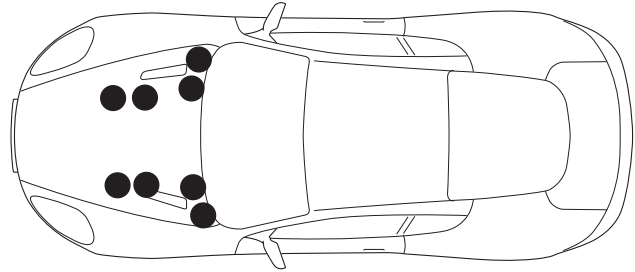
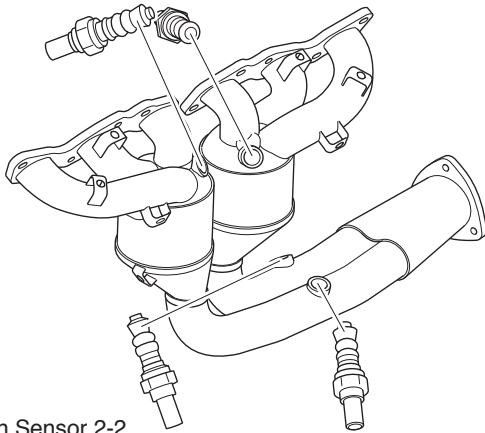
CAUTION: These codes may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

Note: This fault is most likely to occur after an error during service work on the sensor wiring. Check recent work first.

1. Access the oxygen sensor connections and correct the wiring in line with the accompanying HO2S - PCM interface circuit.
2. Reconnect all components. Clear the P0040 or P0041 code and run a KOER test to ensure that the problem is resolved.

P0053-54 / P0059-P0060 - Oxygen Sensor Heater Fault

Heated Oxygen Sensor 1-1 Heated Oxygen Sensor 2-1



Heated Oxygen Sensor 2-2 Heated Oxygen Sensor 1-2

Figure 1. HO2S Location

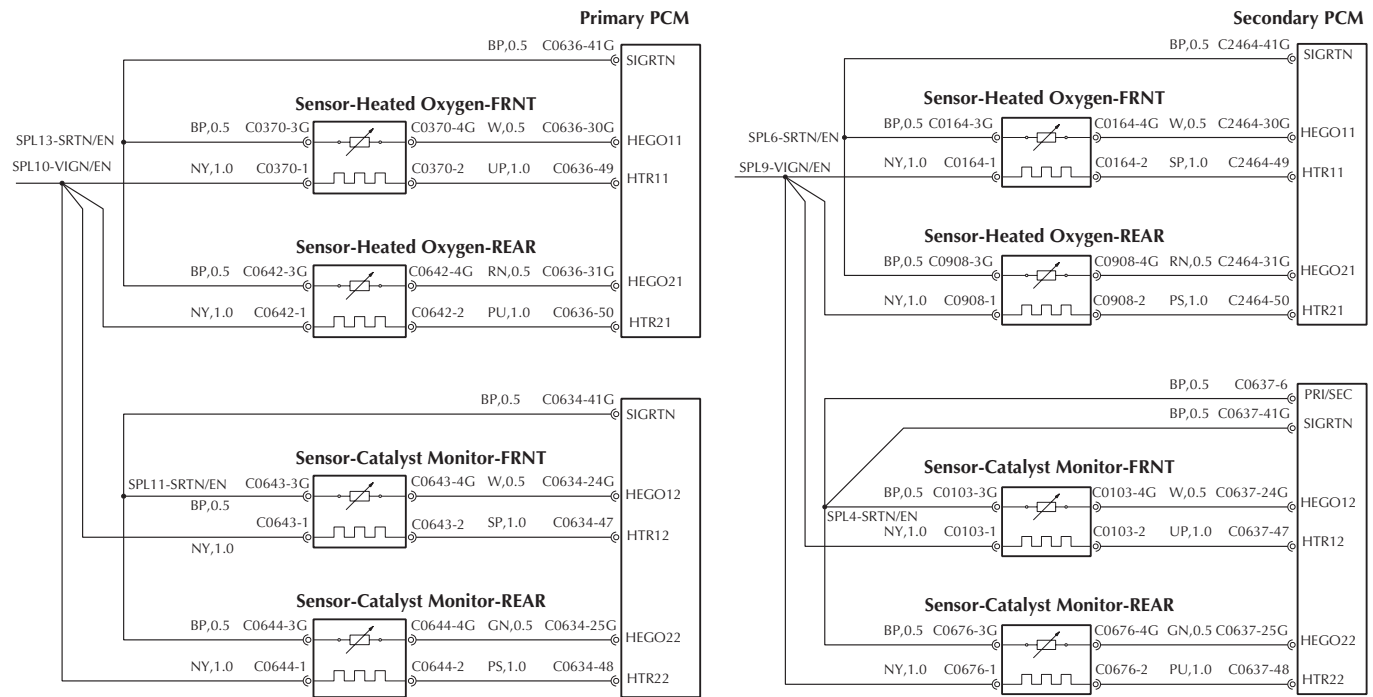


Figure 2. HO2S - PCM Interface Circuits

Fault Code Definition

P0053 - HO2S 1-1 heater circuit malfunction
P0054 - HO2S 1-2 heater circuit malfunction
P0059 - HO2S 2-1 heater circuit malfunction
P0060 - HO2S 2-2 heater circuit malfunction

MIL Status

These codes will light the MIL lamp

P0053, P0054, P0059, P0060 Fault Analysis

CAUTION: These codes may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Access the oxygen sensor connections and visually inspect for exposed wires, contamination, corrosion and proper assembly. Service or repair any obvious defects.
2. Connect the WDS or scan tool. Record all logged DTCs and then clear both PCMs. Start the engine and run at idle until fully warmed up. Run the KOER test sequence from the WDS. Check which of the codes P0053, P0054, P0059 or P0060 is present. Switch off the engine.
3. Disconnect the appropriate heated oxygen sensor and inspect both ends of the connectors for damaged or pushed out pins, moisture, corrosion, contamination, etc. Service as necessary.
4. Install the oxygen sensor break-out lead. Connect a voltmeter between +12 volt power (pin 1) and the heater return lines (pin 2) at the break-out lead. Switch on the ignition and immediately note the steady peak voltage. The voltage should be above 10.5 volts. Switch off the ignition.

Caution: The heater voltage will begin to switch as the heater warms up. Note only the initial steady state voltage before switching begins.
5. If a low voltage was detected in step 4, check for a partial or complete open circuit in the heater power or heater return lines to the sensor connector. Repair the wiring as necessary.
6. If the applied voltage measured in step 4 is above 10.5 volts, check the resistance of the HO2S heater which should be between 3 and 5Ω when cold. If the heater resistance is not within range, replace the oxygen sensor.
7. If the heater resistance is in specification, check for a short circuit to ground within the sensor. Measure from the sensor power connection to the sensor case. If the resistance is less than 10kΩ, replace the sensor.
8. If the resistance in step 7 is greater than 10kΩ, Check for shorts to other grounds and to Vpower in the heater ground harness circuits. If the resistance reading is less than 10kΩ repair or replace the affected wiring.
9. If continuity is good, consult Aston Martin Technical Support.

P0068 - MAF v Throttle Potentiometer Correlation Check

MAF/IAT Sensor

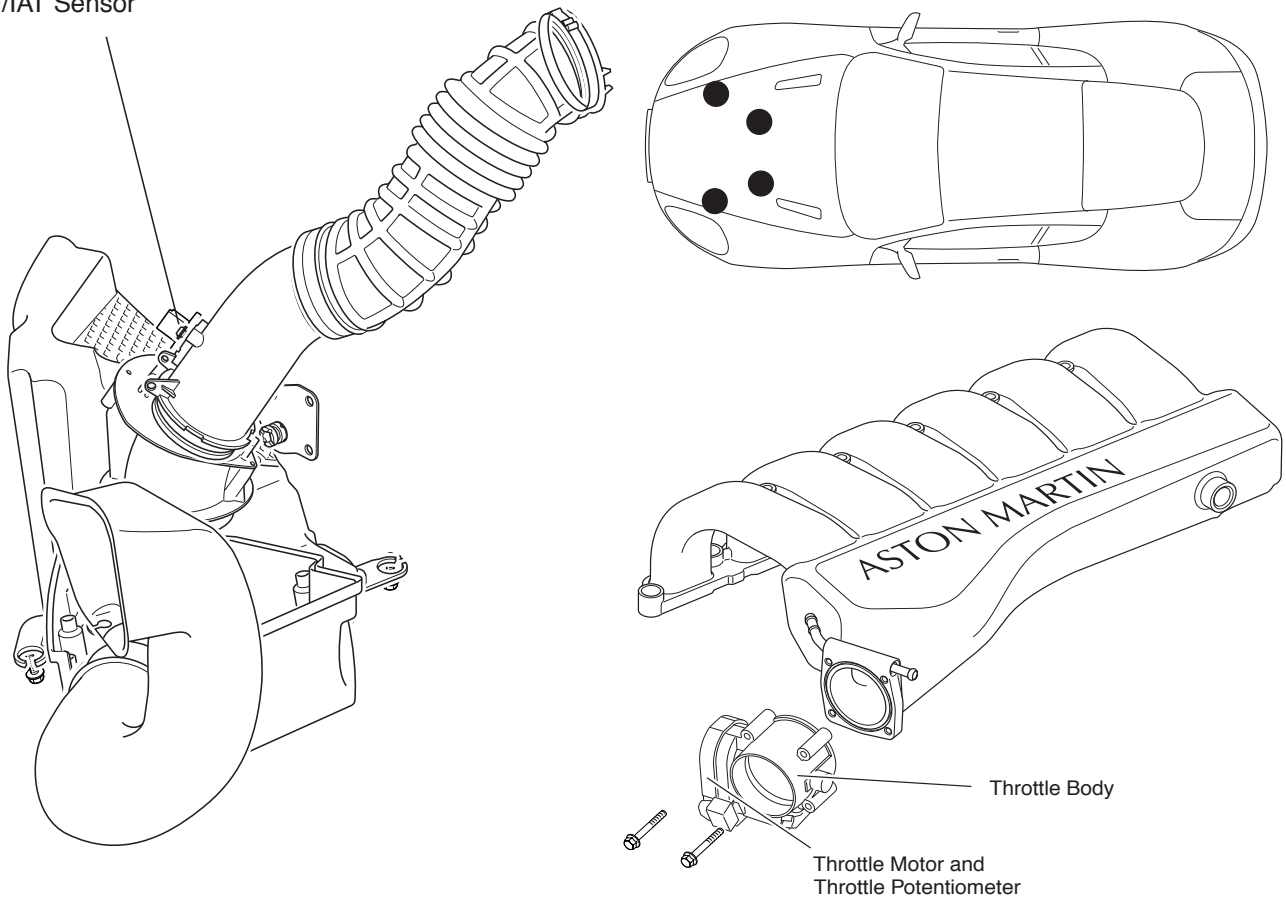


Figure 1. MAF and TP Locations

Motor-Electronic Throttle A

Primary PCM

TPRTN	C2465-2 G	OR,0,5	C0636-7G	TPRTN
TPBVREF	C2465-3 G	OW,0,5	C0636-18G	TPBVREF
TP1-NS	C2465-5 G	OU,0,5	C0636-19G	TP1-NS
TP2-PS	C2465-6 G	OG,0,5	C0636-29G	TP2-PS
TACM-	C2465-1 G	OY,05	C0636-48	TACM-
TACM+	C2465-4 G	OS,05	C0636-47	TACM+

Motor-Electronic Throttle B

Secondary PCM

TPRTN	C2466-2 G	OR,0,5	C2464-7G	TPRTN
TPBVREF	C2466-3 G	OW,0,5	C2464-18G	TPBVREF
TP1-NS	C2466-5 G	OU,0,5	C2464-19G	TP1-NS
TP2-PS	C2466-6 G	OG,0,5	C2464-29G	TP2-PS
TACM-	C2466-1 G	OY,05	C2464-48	TACM-
TACM+	C2466-4 G	OS,05	C2464-47	TACM+

Figure 2. Throttle Potentiometer Circuits

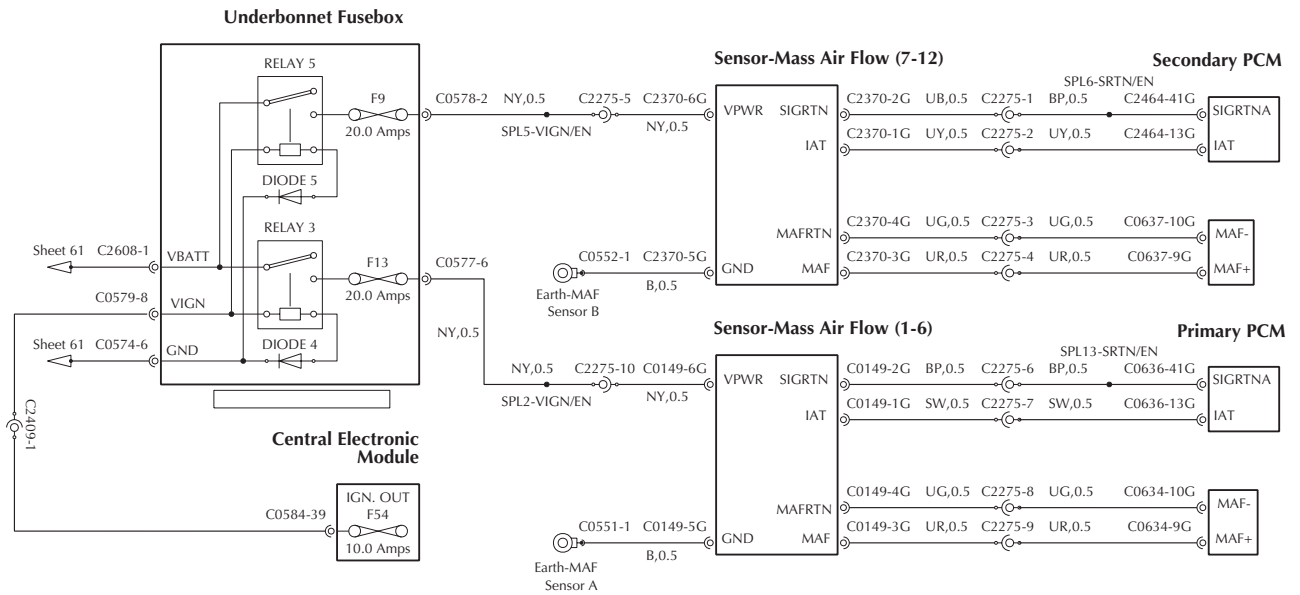


Figure 2. MAF Sensor Circuits

Fault Code Definition

P0068 - MAF v Throttle Correlation Check

MIL Status

This code will light the MIL lamp

P0068 Fault Analysis

CAUTION: This codes may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

Note: This code is monitored by comparing the LOAD (Throttle plate position) and TP (Throttle Potentiometer) parameters in the PCM. Any illogical set of comparison data (i.e. throttle closed but load high) will trigger a fault condition. The code will be logged under the following conditions:

If LOAD is greater than 60% and TP is less than 2.4 volts

or

If LOAD is less than 30% and TP is greater than 2.4 volts

1. Connect the WDS and confirm that a P0068 code is logged. Note which PCM is indicating the fault and record all other logged DTCs.
2. If any throttle potentiometer faults are logged, resolve these codes first and return to this procedure only if P0068 is logged again after clearing other throttle potentiometer codes.

3. Using WDS datalogger, record the TP, MAF and LOAD parameters for both engine banks during a KOER test. Open and close the throttle several times to simulate an increasing/decreasing engine load.

Note: LOAD is calculated using the MAF sensor signal as a primary control parameter.

If either the TP or LOAD signals show a discrepancy when compared bank to bank, consider the readings from the PCM logging the P0068 code as being suspect. Go to step 4.

4. Disconnect the air trunking from both throttle bodies. Switch on the ignition. Have a colleague press and release the throttle pedal several times, whilst monitoring the TP signal.

If the TP readings do not accurately follow the throttle movement, Replace the throttle assembly.

If TP readings do accurately follow the throttle movement, the MAF sensor is suspect. Go to step 5.

5. Note the MAF readings from step 3. Swap the MAF sensors bank to bank. Clear the P0068 code and run a fresh KOER test.

If the fault is logged on the other engine bank and the MAF trace is suspect, replace the faulty MAF sensor, clear the P0068 code and run a further KOER test to ensure that the problem is resolved.

If the fault is logged again on the original engine bank, service the MAF sensor wiring as necessary, clear the P0068 code and run a further KOER test to ensure that the problem is resolved.

P0087 - Fuel Starvation Fault

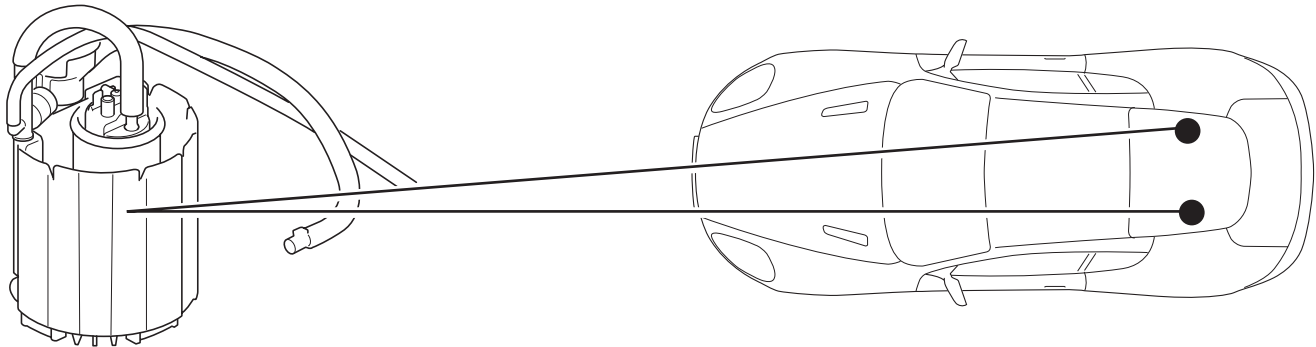


Figure 1. Fuel Pumps Location

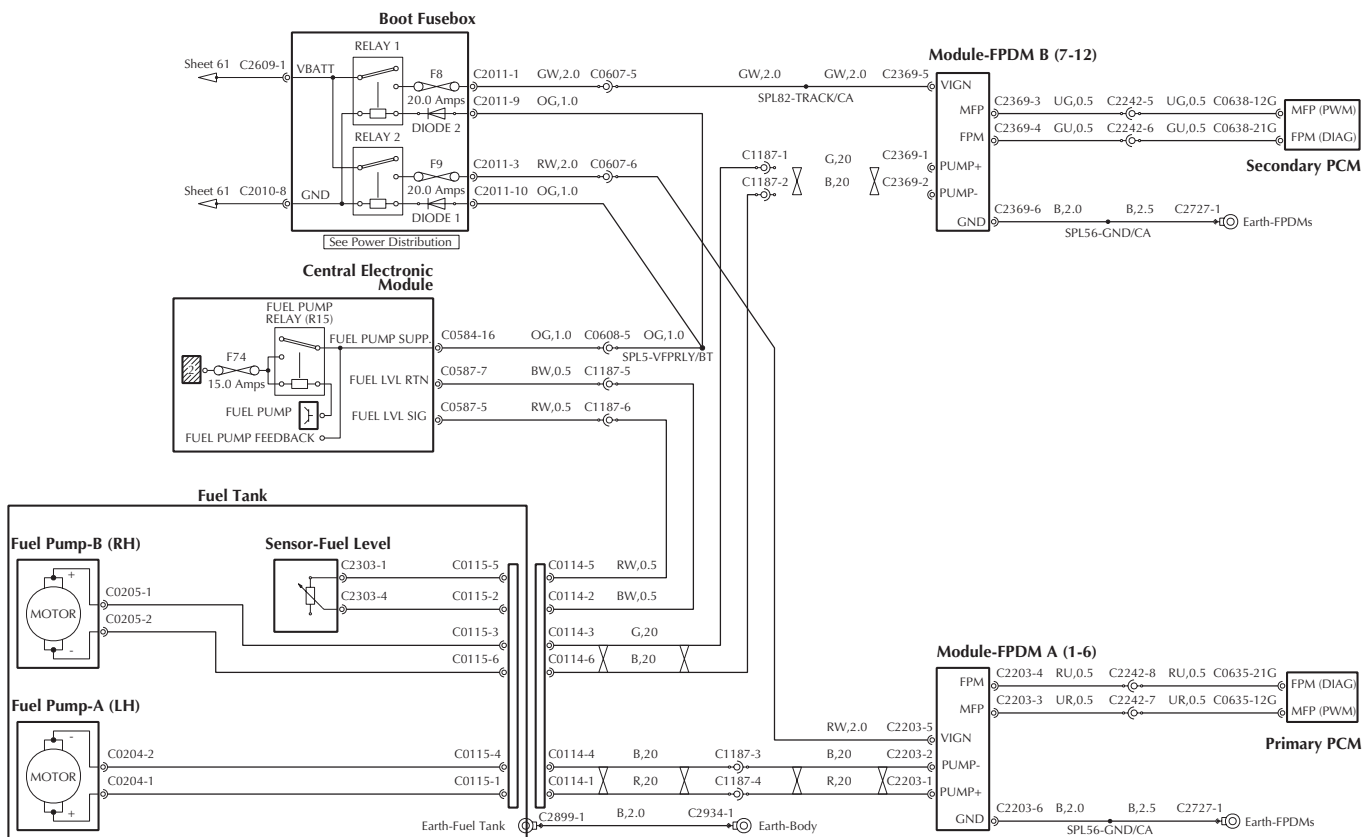


Figure 2. Fuel Pump Circuits

Fault Code Definition

P0087 - Fuel starvation, fuel supply pressure 20psi less than demand.

MIL Status

This codes will light the MIL lamp

P0087 Fault Analysis

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Connect the WDS and confirm that P0087 is logged.
2. Set WDS datalogger to monitor the fuel pressure demand and the actual fuel pressure on both engine banks.
3. Start the engine and start datalogger. Increase/decrease engine speed several times.
4. Stop the engine and stop the datalogger. Analyse the datalogger information.

If the requested fuel pressure is not being achieved on one engine bank, check that ignition voltage is supplied to each fuel pump drive module. +12v at boot fusebox F8 and F9 with ignition on.

If both voltages read 12v, go to step 5 (fuel pump not running) or step 6 (fuel pump running but pressure low).

If either voltage reads less than 12v, service the relevant fuel pump relay as necessary. Clear the P0087 code and retest as in steps 2-4 to ensure that the required fuel pressure is delivered.

5. If the affected fuel pump is not running (fuel rail pressure 0psi), compare the fuel pump drive signals at the drive modules.

Pump A C2203-1 + to C2203-2 -

Pump B C2369-1 + to C2369-2 -

If one output is lower than the other, service the fuel pump drive module and circuit as necessary. Reconnect all components. Clear the P0087 code and repeat the fuel pressure test to ensure that the problem is resolved.

6. If both pumps are running, (fuel pressure well above 0psi but one fuel pressure low), check all fuel lines for crushing or other obvious restriction.

If no obvious restriction is identified, go to step 7.

If an obvious restriction is identified, service the affected fuel line as necessary. Clear the P0087 code and run the fuel pressure test again to confirm that the problem is resolved.

7. Strip and service the fuel lines/fuel pump as necessary to rectify the cause of the pressure reduction. Clear the P0087 code and run the fuel pressure test again to confirm that the problem is resolved.

P0102 - Mass Airflow Sensor (MAF)

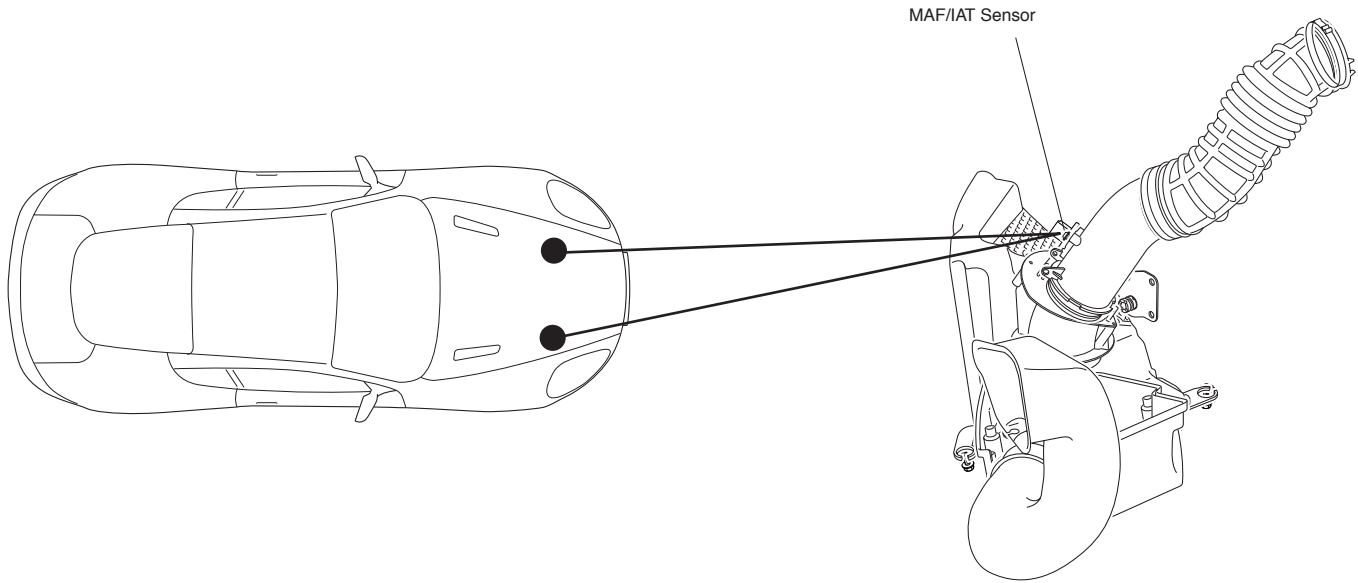


Figure 1. MAFS Location

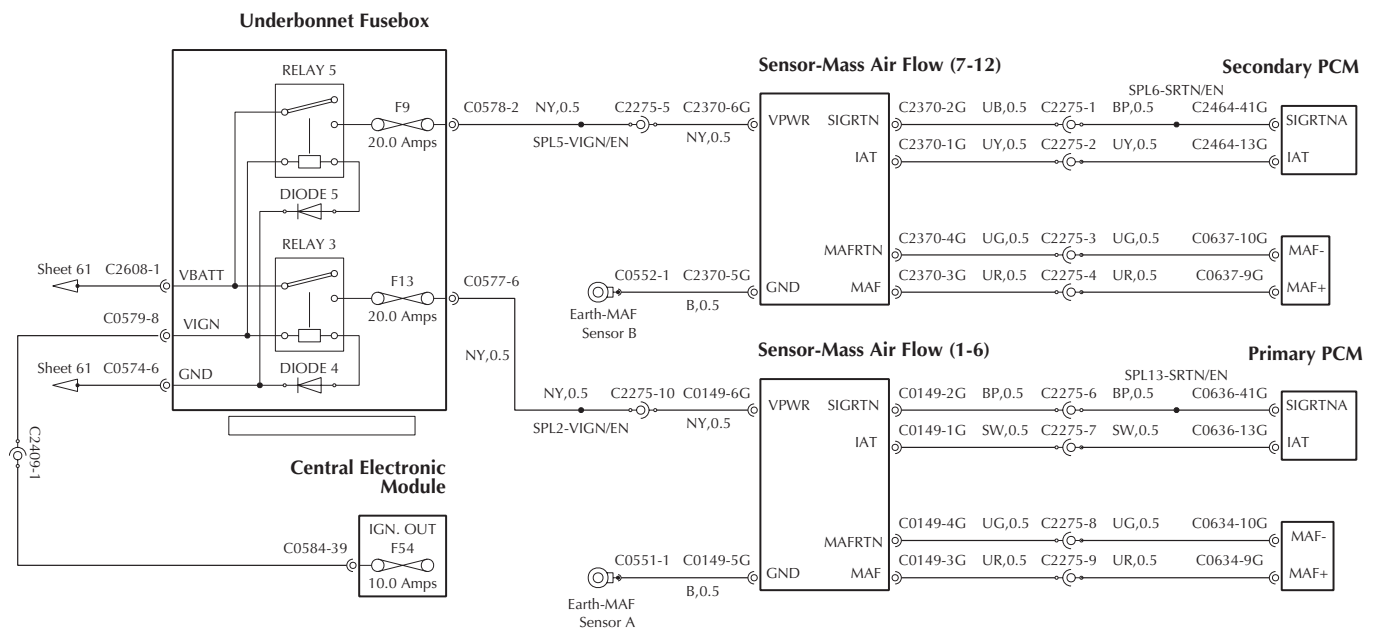


Figure 2. MAFS - PCM Interface Circuit

Fault Code Definition

P0102 - The MAF signal went below 0.24 volts during normal engine running.

MIL Status

This code will light the MIL lamp

Fault Analysis Procedure

CAUTION: This code may be generated in the Primary or Secondary PCM. Check that you are working on the correct half of the engine.

1. Connect the WDS or Scan Tool. Check that fault code P0102 is present. Set the datalogger to monitor both MAF signals.
2. Check the air filter and all ducting for blockage or leaks. Repair if necessary.
3. Run the engine up to 1500 rpm for 5 seconds. Read both Mass Air Flow signals and check if either MAF voltage is less than 0.24V (i.e. below minimum volts).

If both MAF signals are in range, the fault is not present at this time and testing is complete.

If either MAF voltage is below 0.24 volts, go to step 4.
4. Check the VPWR voltage on MAF sensor pin 6. If the supply voltage is below 10.5 volts, key off. Remove underbonnet fuses F18 (MAF 1-6) or F6 (MAF 7-12). Check the fuse continuity and replace if necessary.

Switch on the ignition. Check for correct 12V ignition supply at the fuse input terminal.

If the voltage is below 10.5V, troubleshoot the Battery + supply through underbonnet relays 5 and 3.

If the voltage is in the range 10.5-13.5V, troubleshoot and repair the open circuit in the 12V supply from F18 or F6 to MAF sensor connector pin C2370-6 or C0149-6. Replace F18 and F6. Switch on the ignition and clear the P0102 code. Repeat the KOER test to ensure that the P0102 problem is resolved.
5. Key off, disconnect the MAF Sensor, key on engine off. Measure the voltage across MAF harness connector pin 6 +12V EMS supply and pin 5

Power Ground. The supply voltage must be greater than 10.5 Volts and less than 13.5 volts.

If the voltage is in range, go to step 6, if not, go to step 5.

6. Key off, disconnect the PCM connector and install the break-out box. Check continuity from the following MAF harness connector pins to the PCM connector pins listed.

MAF pin 5 to chassis ground

MAF pin 3 to primary PCM pin C0634-9 (MAF+) or MAF pin 3 to secondary PCM pin C0637-9 (MAF+)

MAF pin 4 to primary PCM pin C0634-10 (MAF-) or MAF pin 4 to secondary PCM pin C0637-10 (MAF-)

If any open circuit is identified, repair the fault. Reconnect the MAF sensor and the PCM. Switch on the ignition and clear the P0102 code. Repeat the KOER test to ensure that the P0102 problem is resolved.

If no open circuit is detected, go to step 7.

7. Reconnect the MAF sensor. Key on and start the engine.

Check the MAF signal level between pins 3 and 4 of the sensor connector.

If the signal is below 0.27 volts, replace the MAF sensor.

If the signal level is above 0.27 volts and code P0102 persists, call Aston Martin technical support.

P0103 - Mass Airflow Sensor

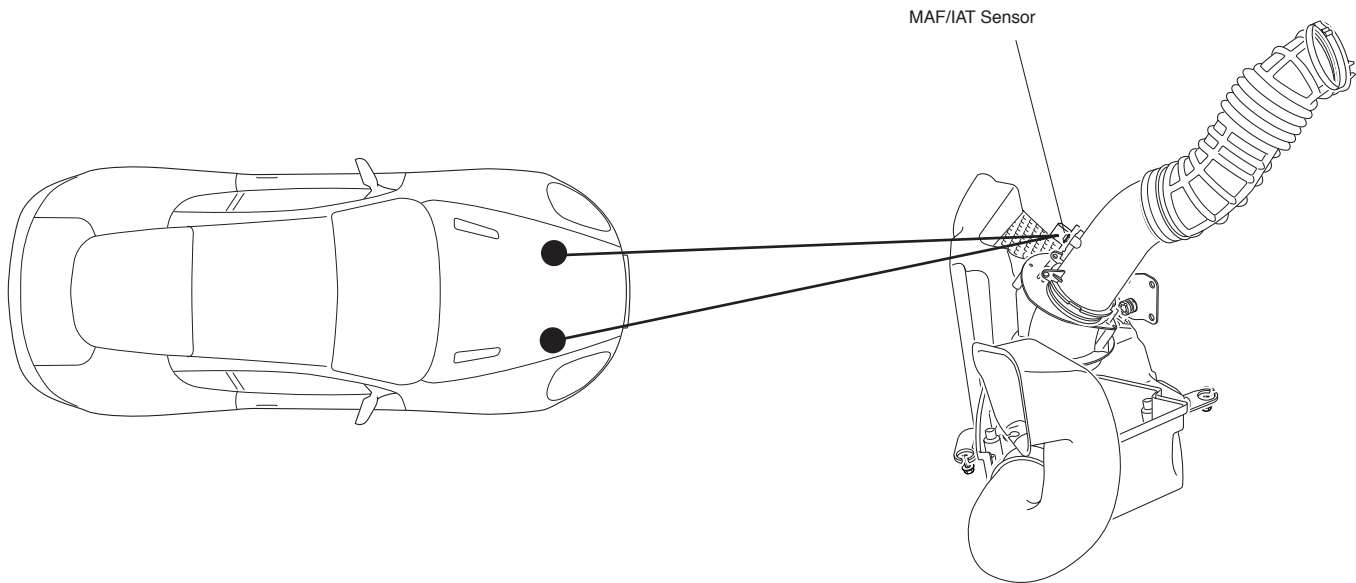


Figure 1. MAF Location

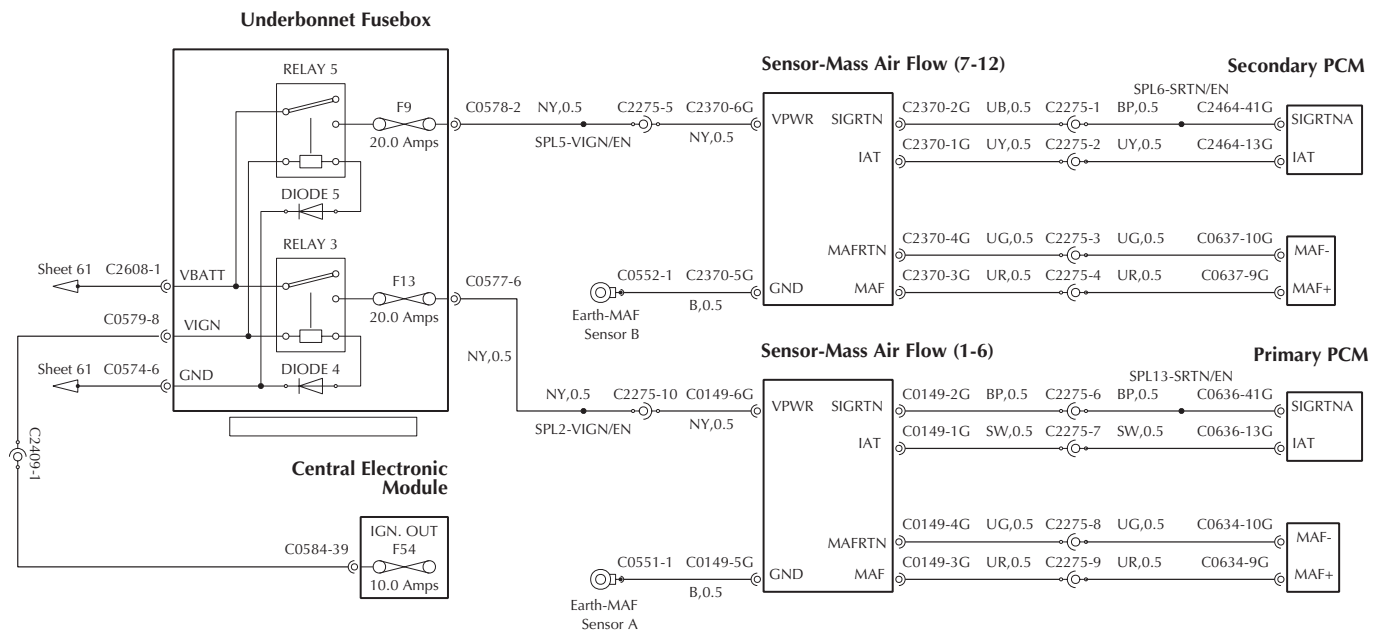


Figure 2. MAF - PCM Interface Circuit

Fault Code Definition

P0103 - The MAF signal went above 4.80 volts during normal engine running.

MIL Status

This code will light the MIL lamp

P0103 Fault Analysis

CAUTION: This code may be generated in the Primary or Secondary PCM. Check that you are working on the correct half of the engine.

1. Connect the WDS or Scan Tool. Check that fault code P0103 is present. Set the datalogger to monitor both MAF signals.
2. P0103 can be caused by a contaminated sensor. Remove the sensor and check for contamination on the sensor screen. If contamination is present, replace the MAF sensor and overhaul the air intake filter system to repair the contamination source. Retest after reassembly. If P0103 is still present, carry out the following analysis.
3. Run the engine up to 1500 rpm for 5 seconds. Read the MAF signal levels and check which MAF voltage is above 4.80V.
4. Key off, disconnect the suspect MAF sensor, key on. Check the MAF signal again.

If the voltage is still above 4.60V, there is a short between +12V Power and the MAF signal line to Primary PCM pin C0634-9 or Secondary PCM pin C0637-9. Repair the short circuit and go to step 5.

If the voltage has dropped to below 0.24 volts, there is an internal short from Vpower to the MAF signal line inside the sensor. Replace the MAF sensor.

5. Clear the P0103 code. Run the KOER test and check that P0103 does not recur.

P0104 - Mass Airflow Sensor

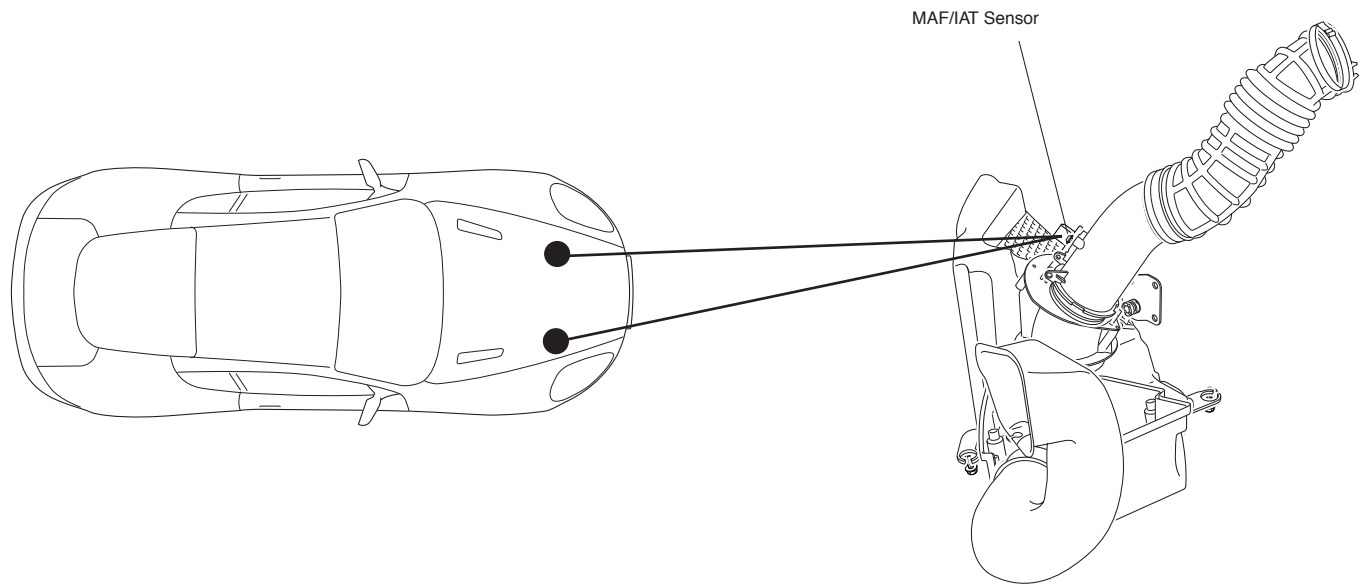


Figure 1. MAF Location

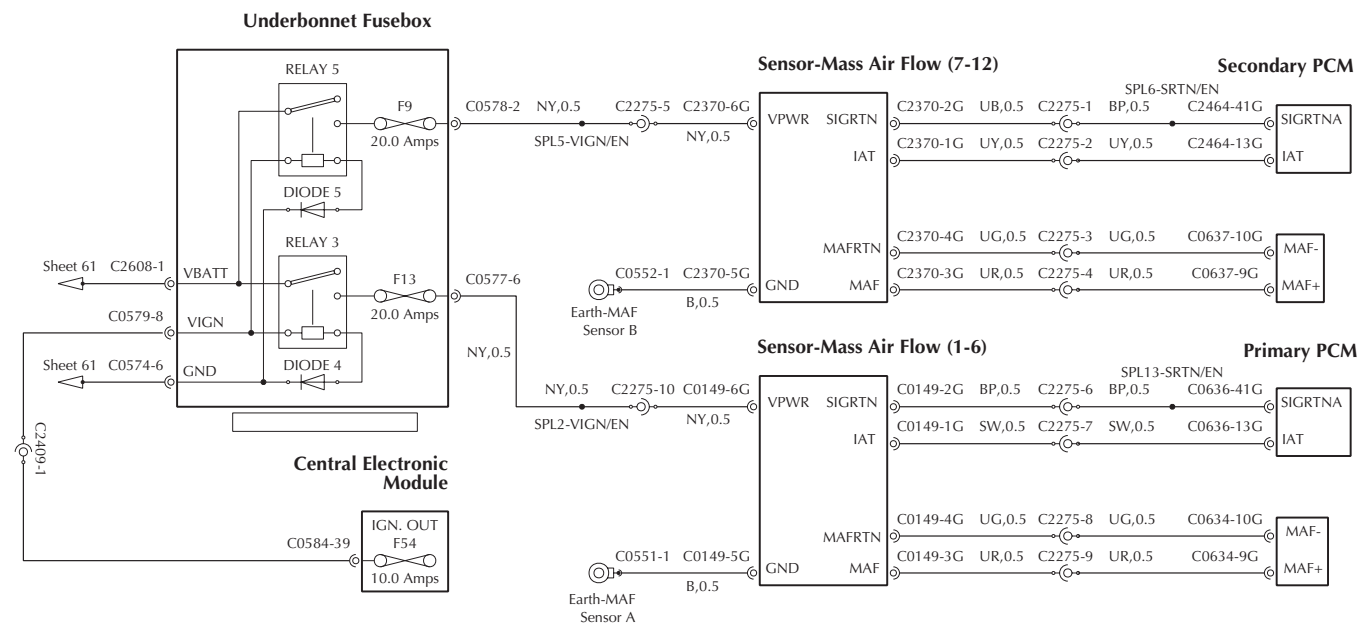


Figure 2. MAF - PCM Interface Circuit

Fault Code Definition

P0104 - The MAF signal was intermittent.

MIL Status

This code will not light the MIL lamp

P0104 Fault Analysis

CAUTION: This code may be generated in the Primary or Secondary PCM. Check that you are working on the correct half of the engine.

1. Connect the WDS or Scan Tool. Check that fault code P0104 is present. Set the datalogger to monitor both MAF signals.
2. During a brief road test, record both MAF signals and confirm which sensor is providing an intermittent signal.
3. P0104 can be caused by a contaminated sensor. Remove the sensor and check for contamination on the sensor screen. If contamination is present, replace the MAF sensor and overhaul the air intake filter system to repair the contamination source. Retest after reassembly. If P0104 is still present, carry out the following analysis.
4. For intermittent/erratic signal levels, monitor the MAF signal with the engine running whilst shaking/wiggling the engine harness between the MAF sensor and the PCM.

If any inconsistency is identified, service the affected part of the harness as necessary. Clear the P0104 code and run a KOER test to ensure that the problem is resolved.

P0107 - Barometric Pressure Sensor

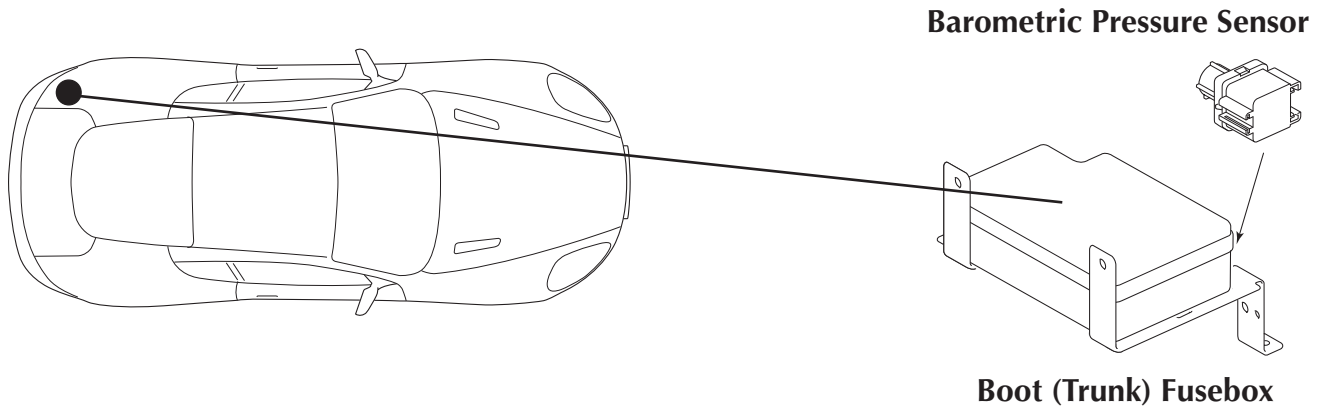


Figure 1. Barometric Pressure Sensor Location

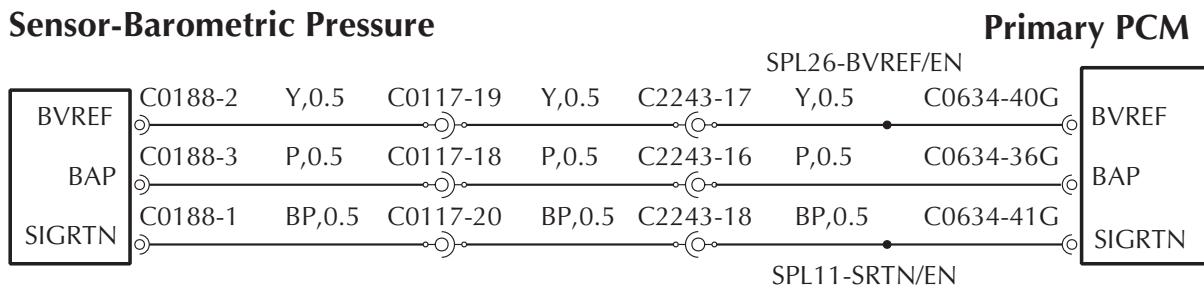


Figure 2. BFS - PCM Interface Circuit

Fault Code Definition

P0107 - The barometric pressure signal went below 2.4 volts during normal engine running.

MIL Status

This code will light the MIL lamp

P0107 Fault Analysis

CAUTION: The barometric pressure signal is input only into the Primary PCM. Check that you are working on the correct half of the engine.

1. Connect the WDS or Scan Tool. Check that fault code P0107 is present.
2. Using WDS, monitor the BAP signal. If the signal level is not within the range 2.45 - 4.8 volts, go to step 3. If the signal level is within the range 2.45 - 4.8 volts, the fault is not currently present. Treat this as a possible intermittent problem.

3. Switch off the ignition. Disconnect C0188 at the barometric pressure sensor. Connect a voltmeter across pins 1 and 2 of the harness connector. Switch on the ignition.

If +5 volts is measured, the BVREF and Signal return lines are good. go to step 4.

If 0 volts is measured, go to step 5.

4. Check continuity of the signal line from sensor connector pin 3 to Primary PCM connector C0634-36.

If continuity is good, Substitute a good sensor. Clear the P0107 code and run a KOER test to ensure that the problem is resolved. If the problem recurs, change both PCMs.

If continuity is poor, Service the signal line wiring as necessary. Clear the P0107 code and run a KOER test to ensure that the problem is resolved.

5. Connect the breakout box to the primary PCM. Switch on the ignition and measure for +5VDC from C0634-40 to chassis ground.

If +5 volts is measured, the BVREF signal is good. There is an open circuit in the BVREF or Signal return lines to the barometric pressure sensor. Service the wiring as necessary. Clear the P0107 code and run a KOER test to ensure that the problem is resolved.

P0108 - Barometric Pressure Sensor

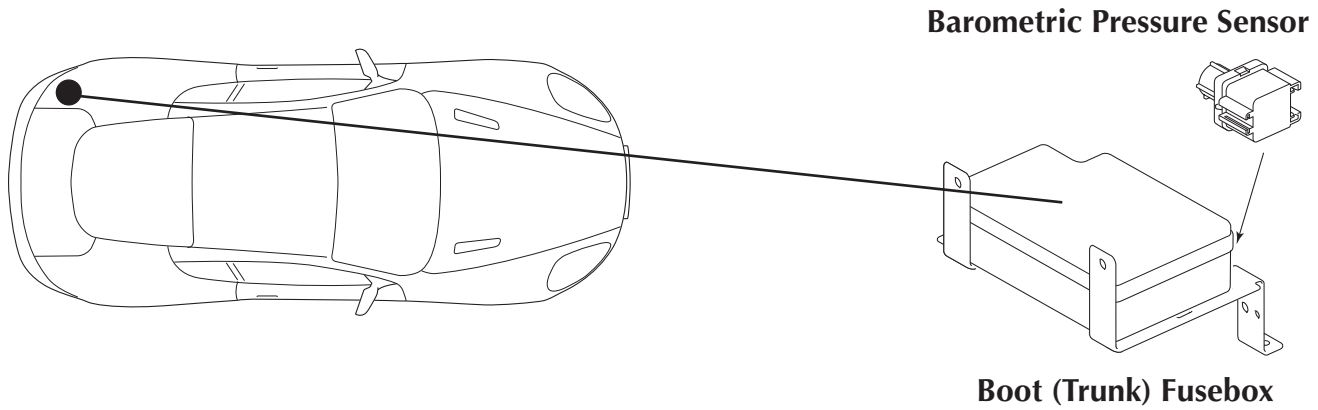


Figure 1. Barometric Pressure Sensor Location

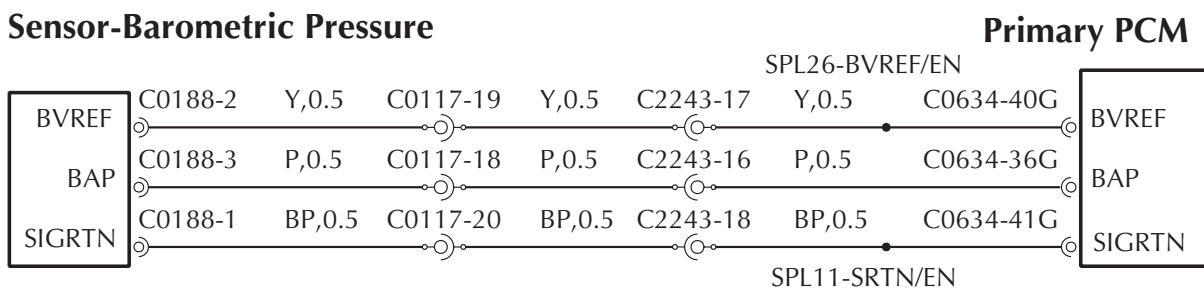


Figure 2. BFS - PCM Interface Circuit

Fault Code Definition

P0108 - The barometric pressure signal went high during normal engine running.

MIL Status

This code will light the MIL lamp

P0108 Fault Analysis

CAUTION: The barometric pressure signal is input only into the Primary PCM.

1. Connect the WDS or Scan Tool. Check that fault code P0108 is present.
2. Using WDS, monitor the BAP signal. If the signal level is not within the range 2.45 - 4.8 volts, go to step 3. If the signal level is within the range 2.4 - 4.8 volts, the fault is not currently present. Treat this as a possible intermittent problem.
3. Switch off the ignition. Disconnect C0188 at the barometric pressure sensor. Connect a voltmeter across pins 1 and 2 of the harness connector. Switch on the ignition.

If +5 volts is measured, the BVREF and Signal return lines are good. go to step 4.

If +5 volts is not present, troubleshoot the +5 volt supply and signal return lines from the primary PCM.

4. With the meter connected to pins 1 and 2 of the barometric pressure sensor and the ignition switched on, shake/wiggle the harnesses between the sensor and the PCM to detect any short circuit from +12 volts to the BAP signal or return lines. If the meter reads more than +4.8 volts at any time, go to step 5.

If the signal remains in the range 0-4.8 volts, the problem cause is not present at this time and testing is complete.

5. Check and service the short circuit from +12 volts to the BAP signal line. Clear the P0108 code. Run a KOER test to ensure that the problem is resolved.

P0109 - Barometric Pressure Sensor

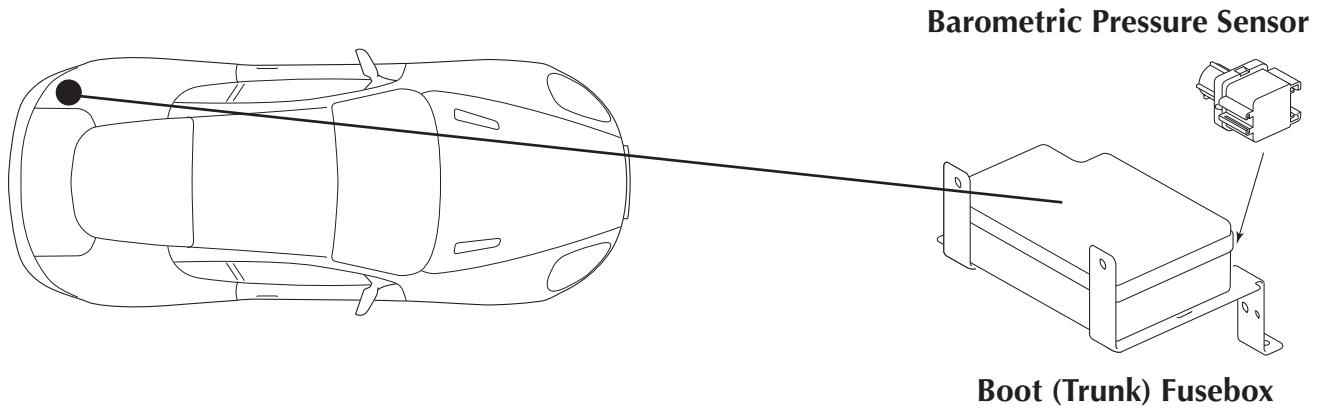


Figure 1. Barometric Pressure Sensor Location

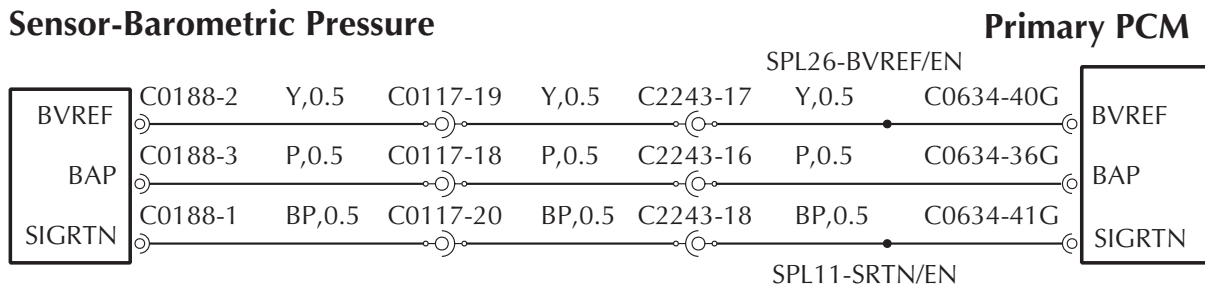


Figure 2. BFS - PCM Interface Circuit

Fault Code Definition

P0109 - The barometric pressure signal was intermittent.

MIL Status

This code will not light the MIL lamp

P0109 Fault Analysis

CAUTION: The barometric pressure signal is input only into the Primary PCM. Check that you are working on the correct half of the engine.

1. Connect the WDS or Scan Tool. Check that fault code P0109 is present.
2. Using WDS, monitor the BAP signal. If the signal level is not within the range 2.45 - 4.8 volts, go to step 3. If the signal level is within the range 2.4 - 4.8 volts, the fault is not currently present.
3. Switch off the ignition. Disconnect C0188 at the barometric pressure sensor. Connect a voltmeter across pins 1 and 2 of the harness connector. Switch on the ignition.

If +5 volts is measured, the BVREF and Signal return lines are good. go to step 4.

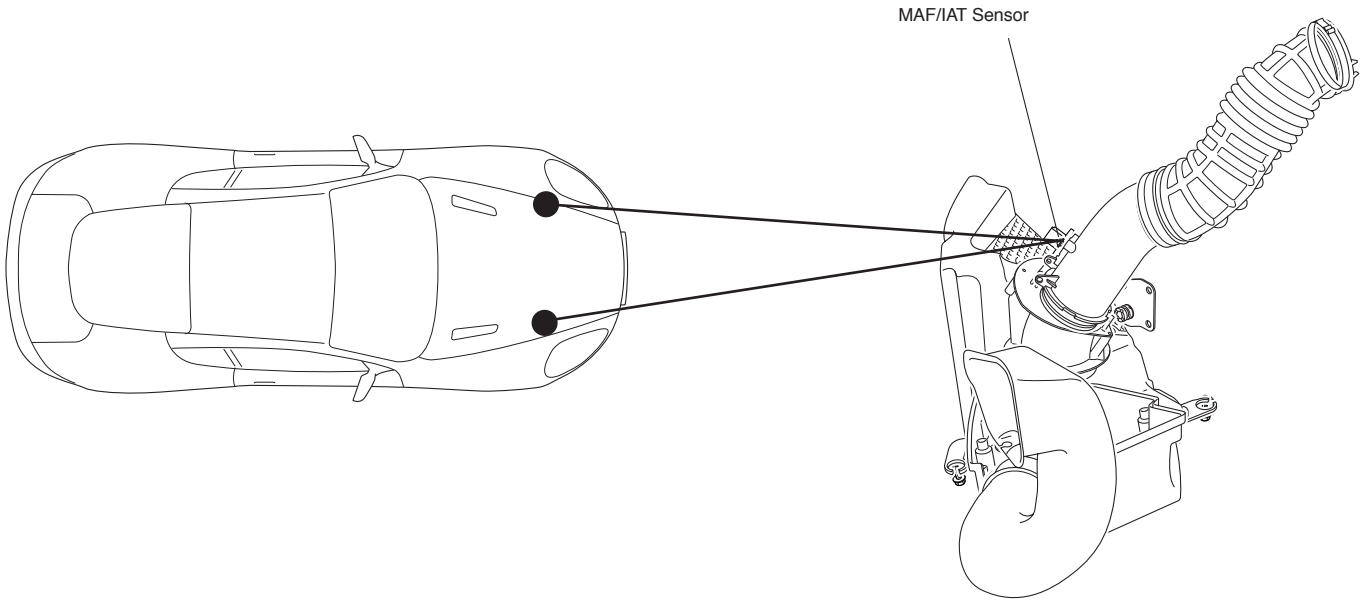
If +5 volts is not present, troubleshoot the +5 volt supply and signal return lines from the primary PCM.

4. With the meter connected to pins 1 and 2 of the barometric pressure sensor and the ignition switched on, shake/wiggle the harnesses between the sensor and the PCM to detect any short circuit from +12 volts to the BAP signal or return lines. If the meter reads more than +4.8 volts at any time, go to step 5.

If the signal remains in the range 0-4.8 volts, the problem cause is not present at this time and testing is complete.

5. Check and service the short circuit from +12 volts to the BAP signal line. Clear the P0109 code. Run a KOER test to ensure that the problem is resolved.

P0112/0113/0114 - Intake Air Temperature Sensor



Note: The intake air temperature sensors are located in the MAF sensor assemblies

Figure 1. IAT Location

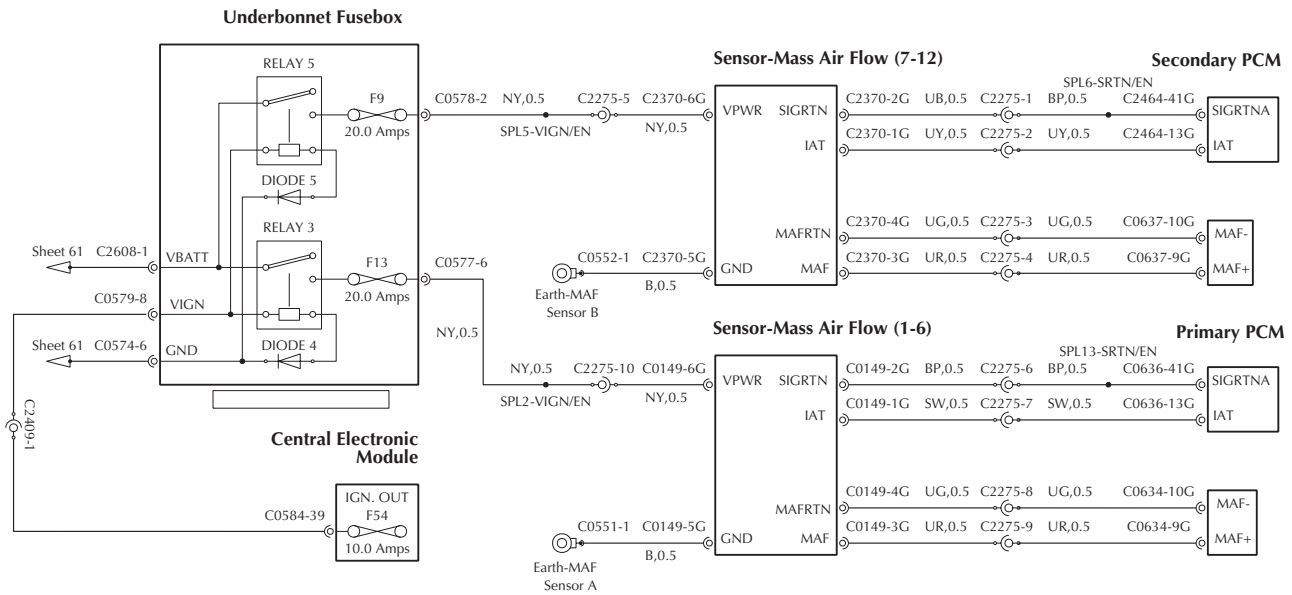


Figure 2. IAT - PCM Interface Circuit

Fault Code Definition

P0112 - The IAT signal went below 0.2 volts during continuous testing. (Temperature reading excessively high)

P0113 - The IAT signal went above 4.60 volts during continuous testing. (Temperature reading excessively low)

P0114 - The IAT signal was intermittent or erratic

MIL Status

P0112 and P0113 will light the MIL lamp. P0114 will not light the MIL lamp

P0112/P0113/P0114 Fault Analysis

CAUTION: These codes may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Connect the WDS or scan tool and confirm that P0112, P0113 or P0114 is present.
2. Run the engine and read the Intake Air Temperature signal. The voltage should be in the range 0.27 - 3.51 volts (see the table of IAT Sensor Values).
3. P0112 - For low voltage readings, suspect a short circuit of the signal (Primary PCM pin C0636-13 or secondary PCM pin C2464-13) to ground or to signal return.

Key off, connect the PCM break-out box and check for short circuit between the lines from following PCM pins:

Primary PCM pin C0636-13 to the MAF/IAT sensor and from the MAF/IAT sensor to PCM pin C0636-41 (i.e. between the IAT signal and IAT signal return lines).

or

Secondary PCM pin C2464-13 to the MAF/IAT sensor and from the MAF/IAT sensor to PCM pin C2464-41 (i.e. between the IAT signal and IAT signal return lines).

Also check for short circuit to ground on the line from Primary PCM pin C0636-13 or Secondary PCM pin C2464-13 to the chassis ground.

If a short circuit is identified, service the wiring as necessary. Reconnect the components and go to step 6.

4. P0113 - For high voltage readings (above 4.60 volts) suspect an open circuit in the sensor wiring or internally within the sensor.

Key off, disconnect the MAF/IAT sensor, key on. Measure the voltage across the MAF/IAT sensor harness connector pin 6 and pin 5, key on. Approximately 12.0 volts should be present.

If 12V is not present, there is an open circuit in the 12V supply line or in the PWRGND line. Service the wiring as necessary and go to step 5.

If approximately 12.0 volts is present, check the resistance of the IAT sensor. Consult the table below, the resistance should be within 15% of the values in the table. If the resistance is very high or infinite, change the IAT sensor.

Go to step 6

5. P0114 - For intermittent/erratic signal levels, monitor the Intake Air Temperature signal whilst shaking/wiggling the engine harness between the affected MAF sensor and the PCM.

If any inconsistency is identified, service the affected part of the harness as necessary. Clear the P0114 code and run a KOER test to ensure that the problem is resolved.

6. Clear the P0112/P0113/P0114 code, run the drive cycle to ensure that the problem is resolved.

Table of IAT Sensor Values

Temperature		Voltage	Resistance
°F	°C	Volts	K Ohms
248	120	0.27	1.18
230	110	0.35	1.55
212	100	0.46	2.07
194	90	0.60	2.80
176	80	0.78	3.84
158	70	1.02	5.37
140	60	1.33	7.70
122	50	1.70	10.97
104	40	2.13	16.15
86	30	2.60	24.27
68	20	3.07	37.30
50	10	3.51	58.75

P0116 - Engine Coolant Temperature Sensor Rationality Check

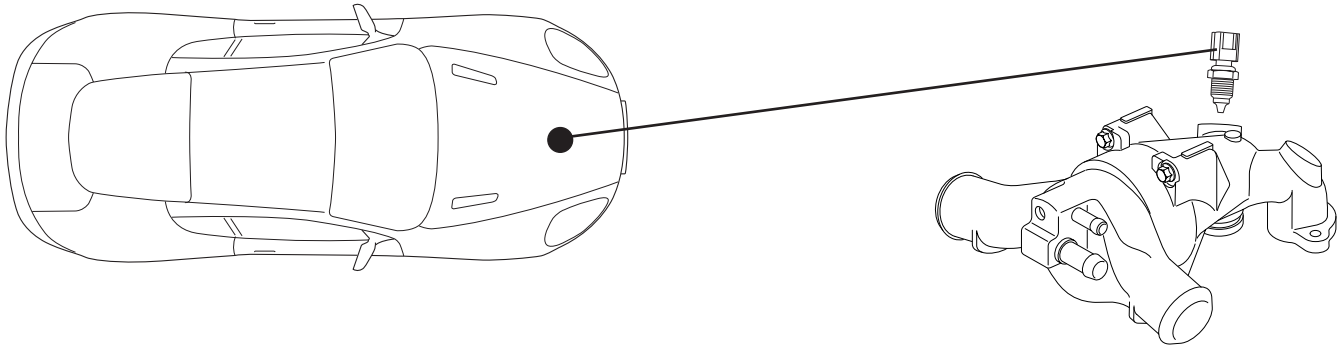


Figure 1. ECT Location

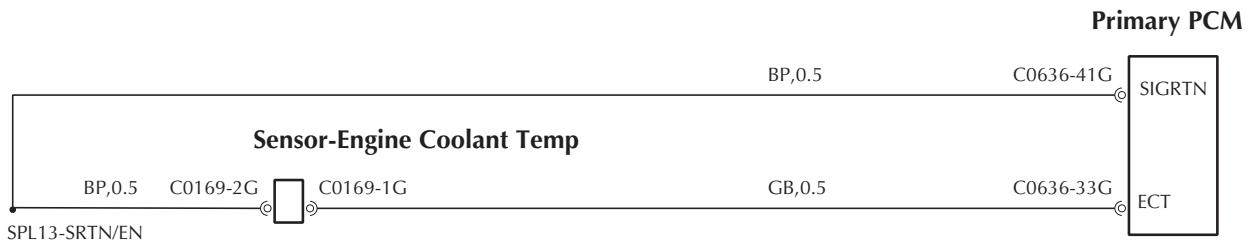


Figure 2. ECT - PCM Interface Circuit

Fault Code Definition

P0116 - The ECT signal fails the rationality check at key on.

MIL Status

This code will light the MIL lamp

P0116 Fault Analysis

Note: If the engine is started after being off for more than six hours and the ECT signal indicates more than 50°F above ambient temperature, a P0116 code will be logged.

1. Connect the WDS or scan tool and confirm that P0116 is present. If either P0117 or P0118 are also logged, analyse the problem using the P0117/0118 procedure.

If only P0116 is logged, go to step 2.

2. Allow the vehicle to cool down for more than six hours.
3. Switch on the ignition and note the Engine Coolant Temperature and Intake Air Temperature readings.

If coolant temperature is more than 50°F above Intake Air Temperature, go to step 4.

If Coolant Temperature is less than 50°F above Intake Air Temperature, the cause is not present at this time. Analyse the problem as for an intermittent fault.

4. For low voltage readings (high ECT values), suspect a short circuit of the signal (C0636-33) to ground or to signal return.

Key off, check for short circuit between the lines from PCM pin C0636-33 to the ECT sensor body and from pin C0636-33 to power grounds PCM pins C0635-10, 47, 48 and 49.

If a short circuit is detected, service the wiring as necessary, clear the P0116 code and run the engine. Monitor the ECT signal level and check that it rises normally within the range 'ambient temperature to fully warmed up (approx. 95-98°C)

Table of ECT Sensor Values

Temperature		Voltage	Resistance
°F	°C	Volts	K Ohms
248	120	0.27	1.18
230	110	0.35	1.55
212	100	0.46	2.07
194	90	0.60	2.80
176	80	0.78	3.84
158	70	1.02	5.37
140	60	1.33	7.70
122	50	1.70	10.97
104	40	2.13	16.15
86	30	2.60	24.27
68	20	3.07	37.30
50	10	3.51	58.75

P0117 / P0118 / P0119 - Engine Coolant Temperature Sensor

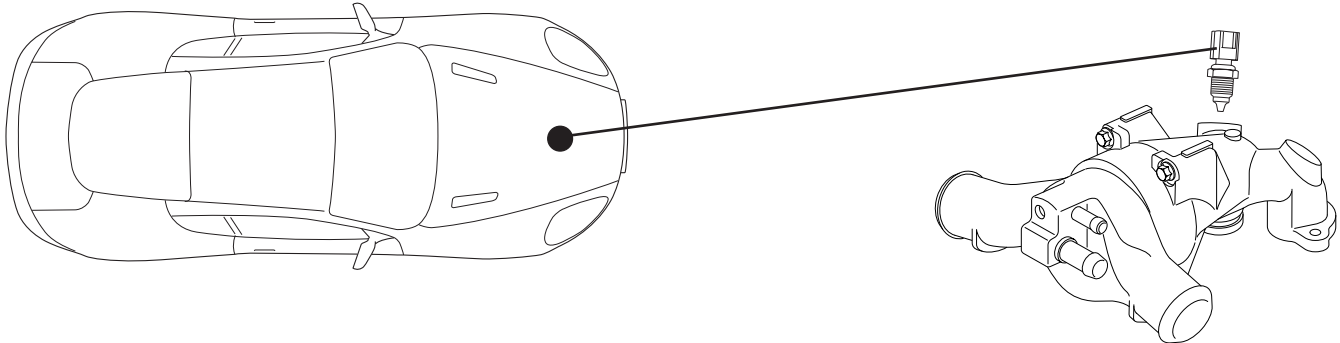


Figure 1. ECT Location

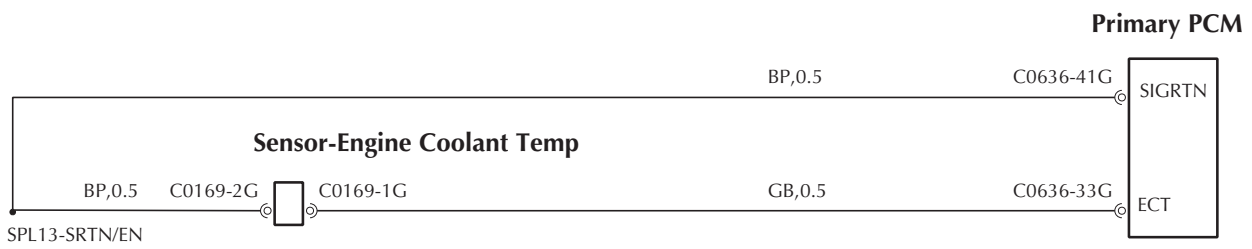


Figure 2. ECT - PCM Interface Circuit

Fault Code Definition

P0117 - The ECT signal went below 0.2 volts during continuous testing. (i.e. Excessively high temperature)

P0118 - The ECT signal went above 4.60 volts during continuous testing. (i.e. Excessively low temperature)

P0119 - The ECT signal was intermittent or erratic.

MIL Status

P0117 and P0118 will light the MIL lamp. P0119 will not light the MIL lamp

P0117/P0118/P0119 Fault Analysis

CAUTION: These codes should be generated only in the Primary PCM. Check that you are working on the correct half of the engine.

1. Connect the WDS or scan tool and confirm that P0117, P0118 or P0119 is present.
2. Run the engine and use the datalogger to read the voltage of the engine coolant temperature signal. The voltage should be in the range 0.25 - 3.50 volts (see the table of ECT Sensor Values).

For low readings (P0117) go to step 3

For high readings (P0118) go to step 4

3. P0117 - For low voltage readings, suspect a short circuit of the signal (Primary PCM pin C0636-33) to chassis ground or to signal return pin C0636-41.

Key off, check for short circuit between the lines from PCM pin C0636-33 to the ECT sensor body and from pin C0636-33 to signal return pin C0636-41 and to power grounds PCM pins C0635-10, 47, 48 and 49.

4. P0118 - For high voltage readings (above 3.50 volts) suspect an open circuit in the sensor wiring or internally within the sensor.

Key off, disconnect the ECT sensor, measure the voltage across the ECT sensor connector. Approximately 5.0 volts should be present. If not, there is an open circuit in the line from PCM pin C0636-33 or in the return line to PCM pin C063-41.

If approximately 5.0 volts is present, check the resistance of the ECT sensor. Consult the table below, the resistance should be within 15% of the values in the table. If the resistance is very high or infinite, change the IAT sensor.

If the results of the above checks are satisfactory and a P0118 code continues to be logged, consult Aston Martin Technical Support.

5. P0119 - For intermittent/erratic signal levels, monitor the ECT signal whilst shaking/wiggling the engine harness between the ECT sensor and the PCM.

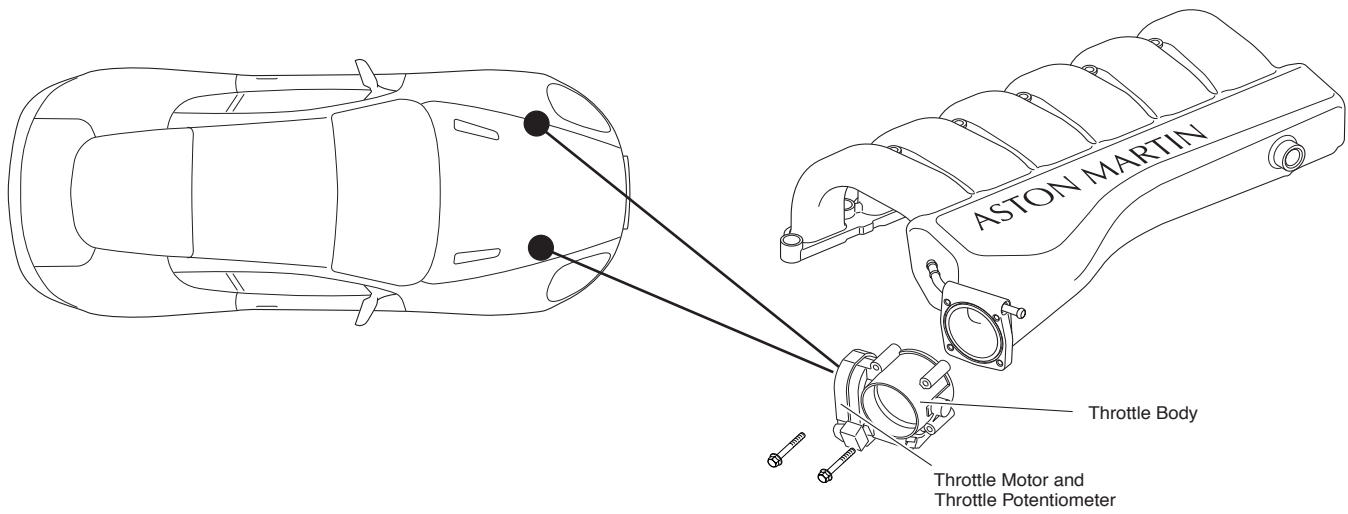
If any inconsistency is identified, service the affected part of the harness as necessary. Clear the P0119 code and run a KOER test to ensure that the problem is resolved.

6. Clear the P0117/P0118 code, run the drive cycle to ensure that the problem is resolved.

Table of ECT Sensor Values

Temperature		Voltage	Resistance
°F	°C	Volts	K Ohms
248	120	0.27	1.18
230	110	0.35	1.55
212	100	0.46	2.07
194	90	0.60	2.80
176	80	0.78	3.84
158	70	1.02	5.37
140	60	1.33	7.70
122	50	1.70	10.97
104	40	2.13	16.15
86	30	2.60	24.27
68	20	3.07	37.30
50	10	3.51	58.75

P0121/0122/0123 and P0221/0222/0223 - Throttle Position Sensor (Throttle Potentiometer)

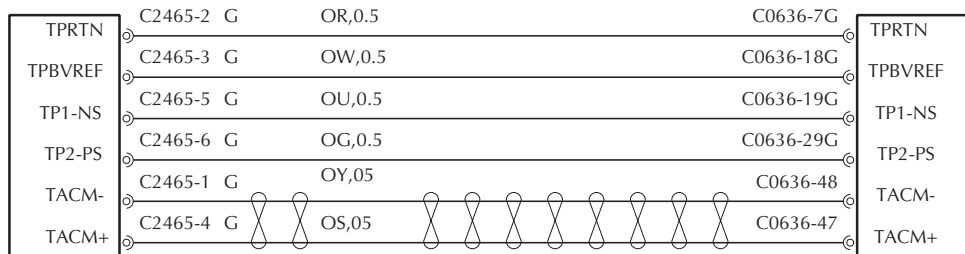


Note: The throttle position sensors are located on the inner side of each throttle body assembly.

Figure 1. TP Location

Electronic Throttle A Bank

Primary PCM



Electronic Throttle B Bank

Secondary PCM

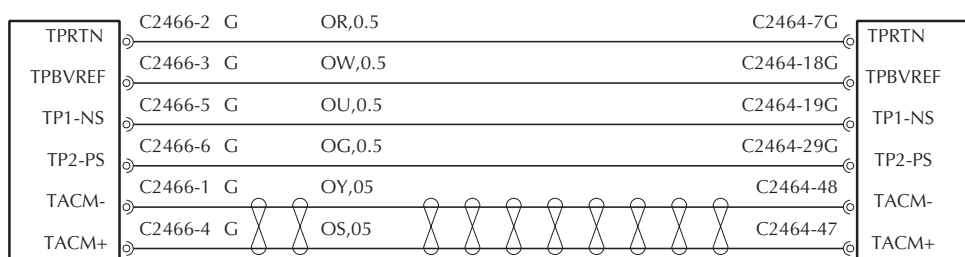


Figure 2. TP - PCM Interface Circuit

Fault Code Definition

P0121/P0221 - TP sensor signal range or performance.

P0122/P0222 - The TP signal went below 0.17 volts during continuous testing.

P0123/P0223 - The TP signal went above 4.60 volts during continuous testing.

MIL Status

These codes will light the MIL lamp

**P0121/0122/0123 and P0221/0222/0223
Fault Analysis**

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Connect the WDS or scan tool and confirm that one of the above codes is present.
2. Set the datalogger to monitor all throttle potentiometer signals. Run the engine and note the voltage of the throttle potentiometer signal. The voltage should be in the range 0.6 - 4.50 volts. Identify the potentiometer which is generating the out of range signal. Also look for any irregularities in the signal traces.
3. For low voltage readings, suspect a short circuit of the sensor reference supply (nominal 5.0V supply from primary PCM pin C0636-18 or secondary PCM pin C2464-18) to ground or to TPRTN (primary PCM pin C0636-7 or secondary PCM pin C2464-7).

Key off, check for short circuit between the lines from Primary PCM pin C0636-18 to PCM pin C0636-7. Also check from Secondary PCM pin C2464-18 to PCM pin C2464-7. Also check for short circuit to ground on the signal lines C0636-18 and C2464-18. If any circuit fault is identified, service the wiring as necessary and then go to step 5

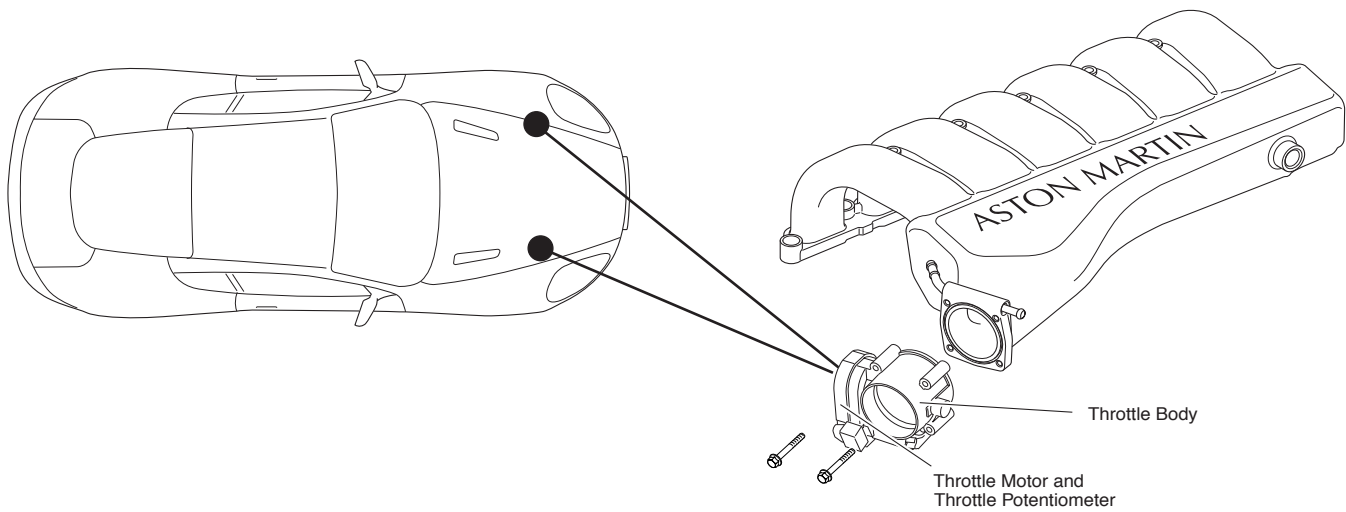
4. For high voltage readings (above 3.50 volts) suspect a short circuit in the sensor wiring from sensor reference supply (primary PCM pin C0636-18 or secondary PCM pin C2464-18) to the signal line pins (Primary PCM pins C0636-19 and C0636-29 or secondary PCM pins C2464-19 and C2464-29), or internally within the potentiometer.

Key off, disconnect the TP sensor, key on. Measure the voltage between the sensor reference supply and TP signal lines, approximately 5.0 volts should be present. If not, investigate and rectify the problem in the reference supply or in the signal lines.

If approximately 5.0 volts is present, replace the TP sensor.

5. Clear the fault code, run the drive cycle to ensure that the problem is resolved.

P0124 - Throttle Position Sensor



Note: The throttle position sensors are located on the inner side of each throttle body assembly.

Figure 1. TP Location

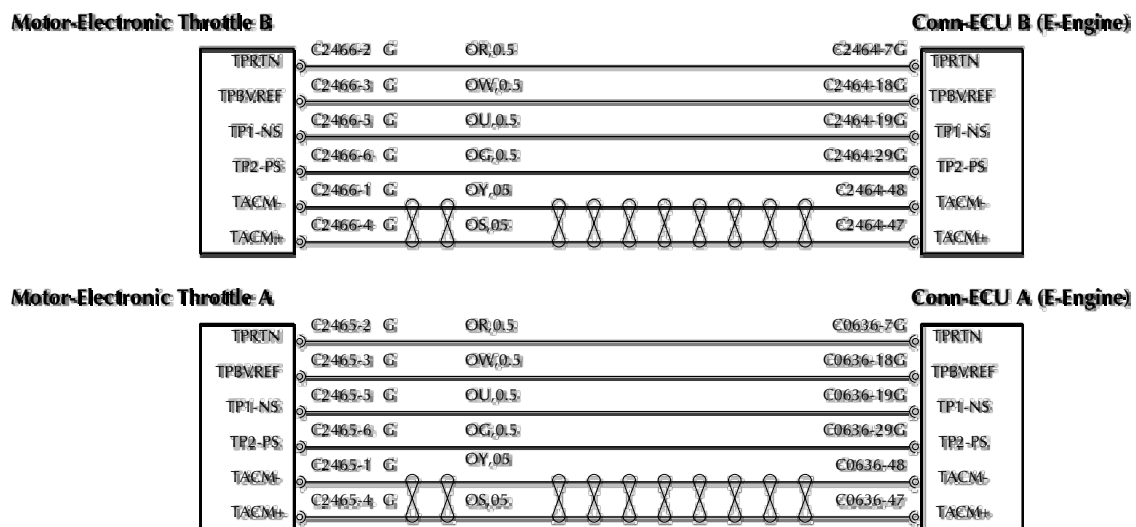


Figure 2. TP - PCM Interface Circuit

Fault Code Definition

P0124 - The TP signal intermittent.

MIL Status

This code will not light the MIL lamp

P0124 Fault Analysis

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Connect the WDS or scan tool and confirm that P0124 is present.
2. Set the datalogger to monitor all throttle potentiometer signals. Run the engine and note the voltage of the throttle potentiometer signal. The voltage should be in the range 0.6 - 4.50 volts. Identify the potentiometer which is generating the out of range signal. Also look for any irregularities in the signal traces.

The signals should vary progressively with throttle opening and closing.

If the voltage is not in range, go to step 3.

If the voltage is in range, shake/wiggle the engine harness whilst monitoring the TP signals to detect any intermittent connection. Service any identified poor connections and retest to ensure that the problem is resolved.

3. Key off, disconnect the TP sensor, key on. Measure the voltage between the sensor reference supply - Bank A pin C2465-3 or Bank B pin C2466-3 and chassis ground. Repeat the measurement from Bank A pin C2465-3 or Bank B pin C2466-3 to TPRTN Bank A pin C2465-2 or Bank B pin C2466-2, approximately 5.0 volts should be present on both measurements.

If +5 volts is measured, go to step 5.

If +5 volts is not present, go to step 4.

4. Fit the PCM breakout box and check continuity of the +5 volt supply and TP return lines from the throttle body connector to the PCM connector. Service the wiring as necessary. Clear the P0124 code and run a KOER test to ensure that the problem is resolved.

5. Install the breakout box to the affected PCM.

Check the continuity of the TP signal lines between the following points:

Primary Throttle Assembly

C2465-5 to C0636-19

C2465-6 to C0636-29

Secondary Throttle Assembly

C2466-5 to C2464-19

C2466-6 to C2464-29

If necessary, shake/wiggle the throttle section of the harness to locate the circuit fault.

Service the harness as necessary and reconnect all components.

6. Clear the P0124 code, run the drive cycle to ensure that the problem is resolved.

P0128 - Coolant Thermostat

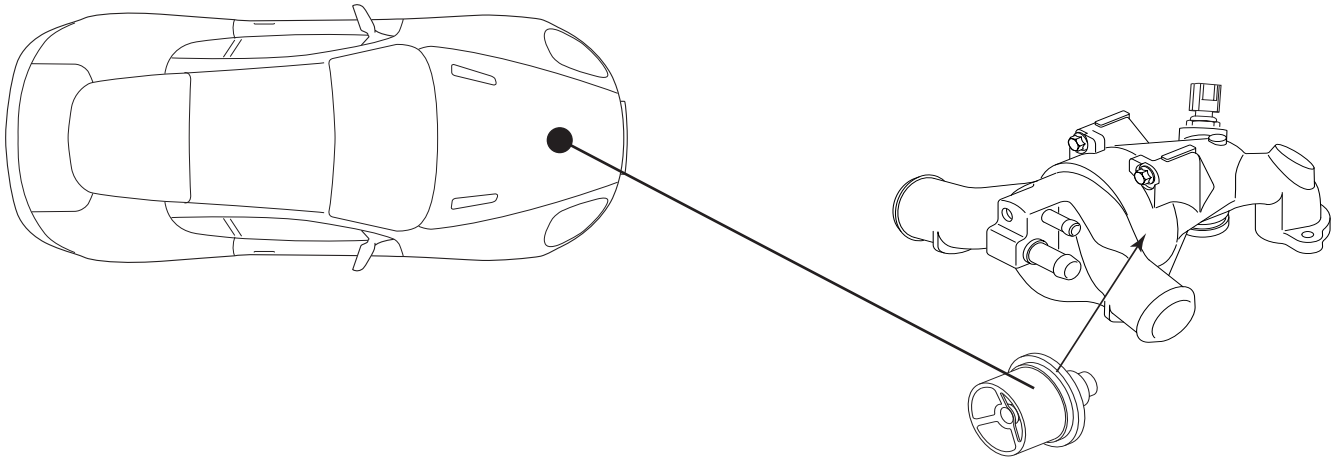


Figure 1. Coolant Thermostat Location

Fault Code Definition

P0128 - The coolant temperature is below the thermostat regulating temperature.

MIL Status

This code will light the MIL lamp

P0128 Fault Analysis

CAUTION: This code should be generated only in the primary PCM.

This code is generated if the engine coolant does not reach operating temperature level within x minutes of engine start.

1. Connect the WDS or scan tool and confirm that P0128 is present.
2. Clear the P0128 code and run a KOER test to check that P0128 is not logged again.
3. If P0128 is logged again, check for other coolant temperature sensor codes (P0116, 0117 or 0118). If present, resolve these codes first and return to step 4 of this procedure if P0128 is logged again after clearing the P0116, 0117 or 0118 code.
4. If P0128 is logged again, fit a new coolant thermostat. Clear the P0128 code and run a KOER test until the engine is fully warmed up to check that the problem is resolved.

P0132 / P0152 - Heated Oxygen Sensors

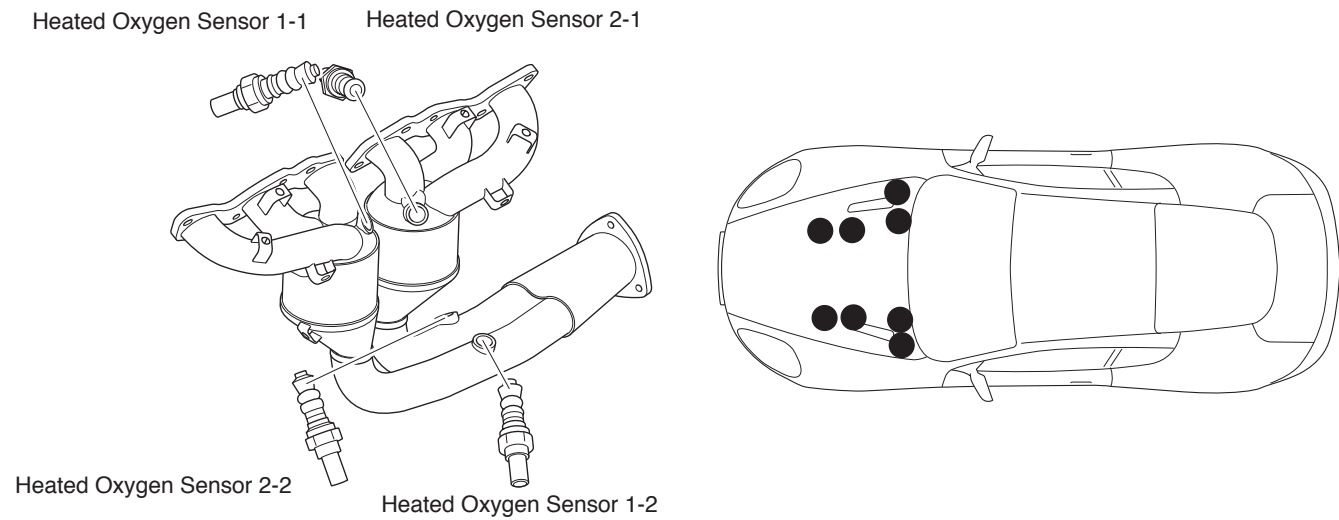


Figure 1. HO2S Location

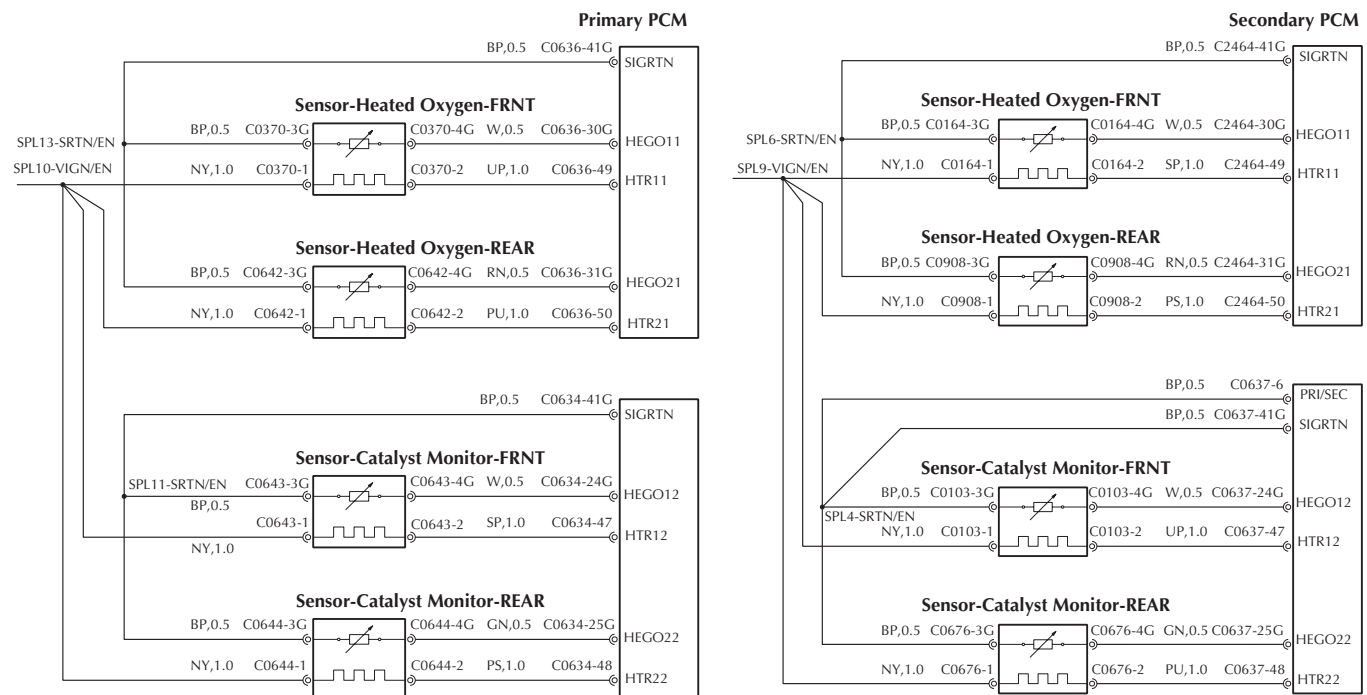


Figure 2. Oxygen Sensor Circuits

Fault Code Definition

P0132 - HO2S1-1 high voltage

P0152 - HO2S2-1 high voltage

MIL Status

This code will light the MIL lamp

P0132 / P0152 Fault Analysis

CAUTION: These codes may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Connect the WDS and confirm that P0132 or P0152 is logged
2. If a P0132 or P0152 code is present, clear the logged code. Set datalogger to monitor all upstream oxygen sensor readings on the affected engine bank.
3. Start the engine and datalogger. Run until the engine is fully warmed up and log the oxygen sensor readings. Stop the engine and datalogger. Analyse the recorded sensor readings.

If any HO2S signal indicates an abnormally high voltage, service the circuit looking for shorts to VBATT or VIGN in the harness.

If no circuit fault is identified, swap the upstream sensors on the suspect bank. Repeat the datalogger test.

If the fault has changed front to rear or vice versa, replace the suspect sensor. Run the datalogger test again to confirm that the problem is resolved.

P0133 / P0153 - Heated Oxygen Sensors

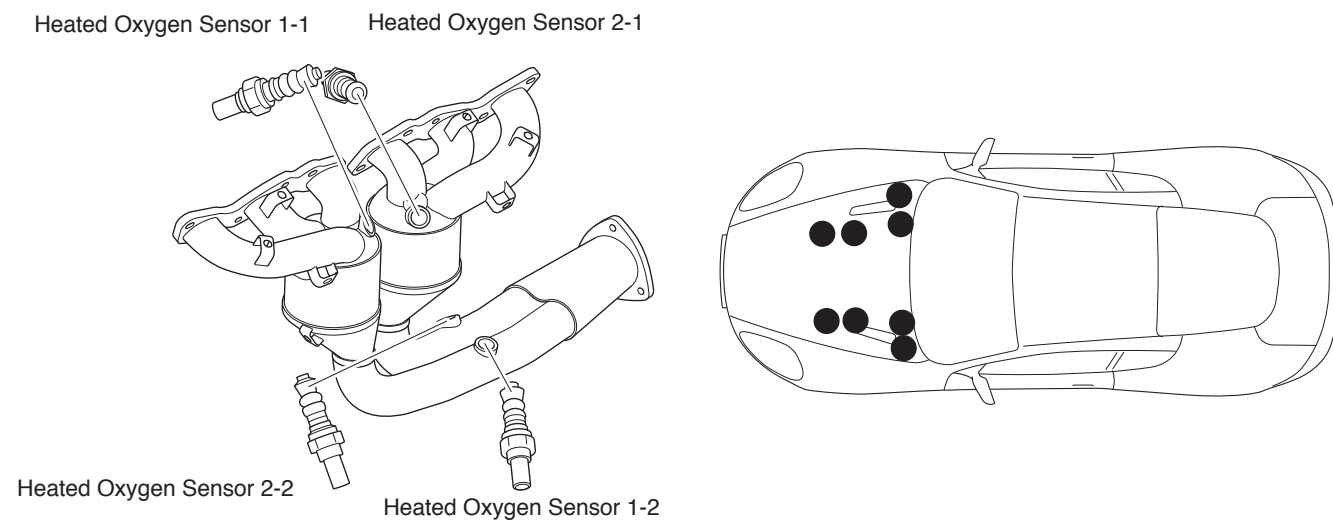


Figure 1. HO2S Location

Fault Code Definition

P0133 - HO2S1-1 slow response

P0153 - HO2S2-1 slow response

MIL Status

This code will light the MIL lamp

P0133 / P0153 Fault Analysis

CAUTION: These codes may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

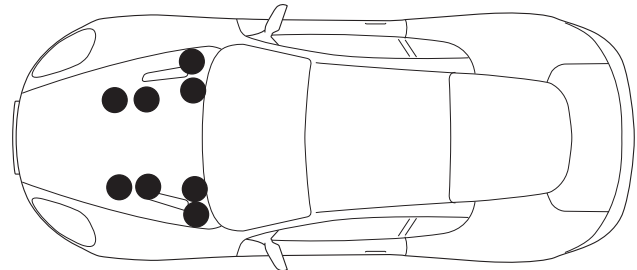
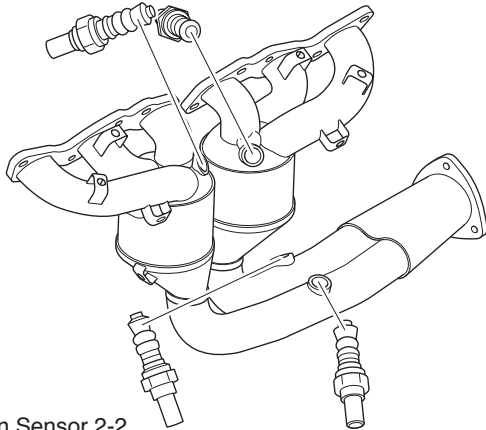
These codes will only occur if the oxygen sensor performance is seriously degraded.

If a P0133 or P0153 code is present and possible circuit faults have been eliminated, replace the relevant sensor. Run a KOER test to ensure that the problem is resolved.

P0135/0141/P0155/P0161 - Heated Oxygen Sensors

Heated Oxygen Sensor 1-1

Heated Oxygen Sensor 2-1



Heated Oxygen Sensor 2-2

Heated Oxygen Sensor 1-2

Figure 1. HO2S Location

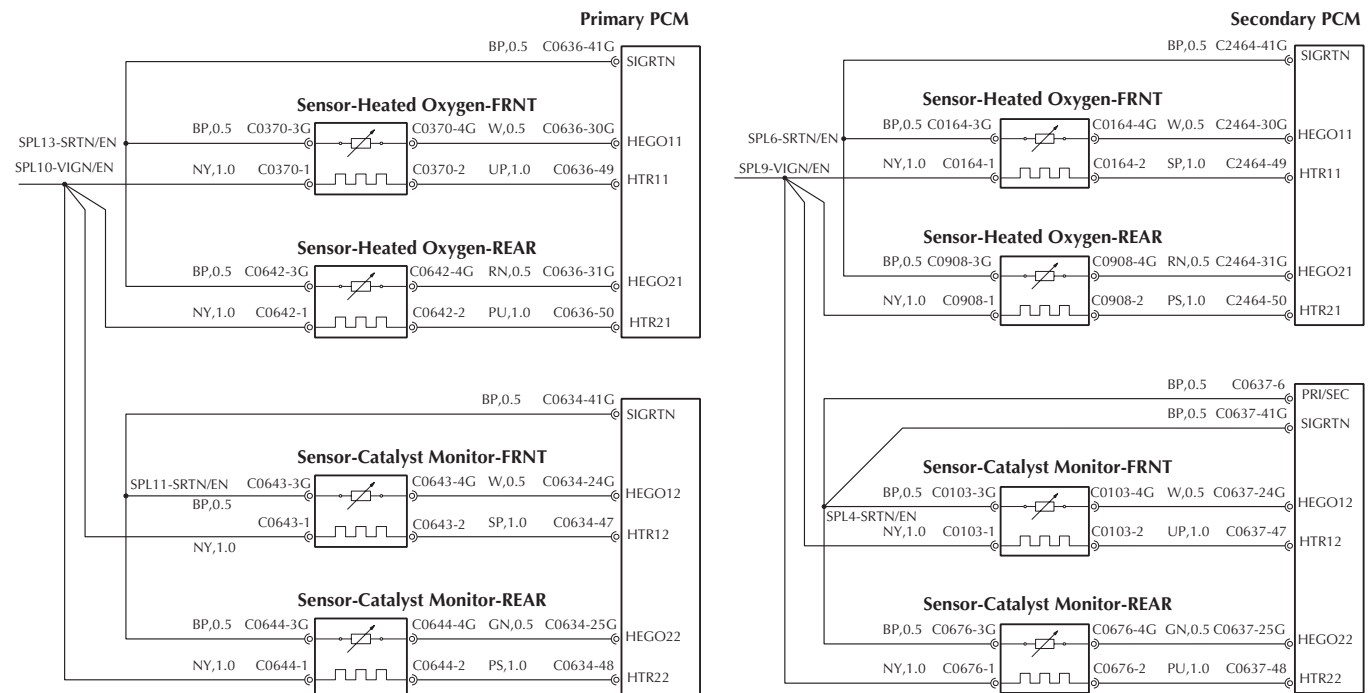


Figure 2. HO2S - PCM Interface Circuit

Fault Code Definition

P0135 - HO2S 1-1 heater circuit malfunction
P0141 - HO2S 1-2 heater circuit malfunction
P0155 - HO2S 2-1 heater circuit malfunction
P0161 - HO2S 2-2 heater circuit malfunction

MIL Status

These codes will light the MIL lamp

P0135, P0141, P0155, P0161 Fault Analysis

CAUTION: These codes may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Access the oxygen sensor connections and visually inspect for exposed wires, contamination, corrosion and proper assembly. Service or repair any obvious defects.
2. Connect the WDS or scan tool. Record all logged DTCs and then clear both PCMs. Start the engine and run at idle until fully warmed up. Run the KOER test sequence from the WDS. Check that code P0135, P0141, P0155 or P0161 is present. Switch off the engine.
3. Disconnect the appropriate heated oxygen sensor and inspect both ends of the connectors for damaged or pushed out pins, moisture, corrosion, contamination, etc. Service as necessary.
4. Install the oxygen sensor break-out lead. Connect a voltmeter between +12 volt power (pin 1) and the heater return lines (pin 2) at the break-out lead. Switch on the ignition and immediately note the steady peak voltage. The voltage should be above 10.5 volts. Switch off the ignition.

Caution: The heater voltage will begin to switch as the heater warms up. Note only the initial steady state voltage before switching begins.
5. If a low voltage was detected in step 4, check for a partial or complete open circuit in the heater power or heater return lines to the sensor connector. Repair the wiring as necessary.
6. If the applied voltage measured in step 4 is above 10.5 volts, check the resistance of the HO2S heater which should be between 3 and 5 Ω when cold. If the heater resistance is not within range, replace the oxygen sensor.
7. If the heater resistance is in specification, check for a short circuit to ground within the sensor. Measure from the sensor power connection to the sensor case. If the resistance is less than 10k Ω , replace the sensor.
8. If the resistance in step 7 is greater than 10k Ω , Check for shorts to other grounds and to Vpower in the heater ground harness circuits. If the resistance reading is less than 10k Ω repair or replace the affected wiring.
9. If continuity is good, consult Aston Martin Technical Support.

P0138 / P0158 - Heated Oxygen Sensors

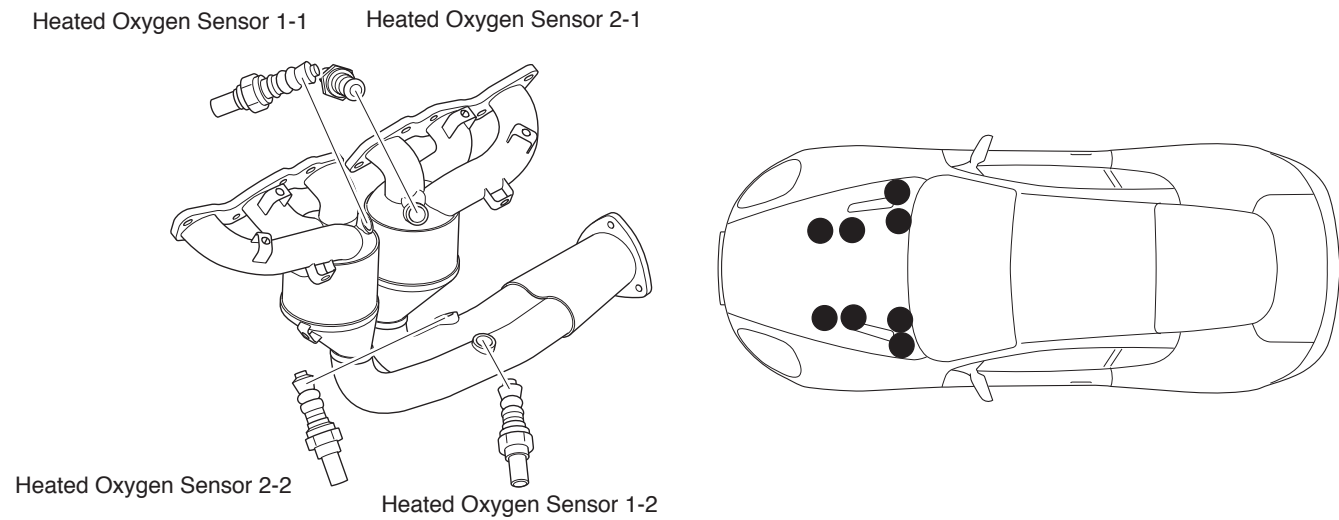


Figure 1. HO2S Location

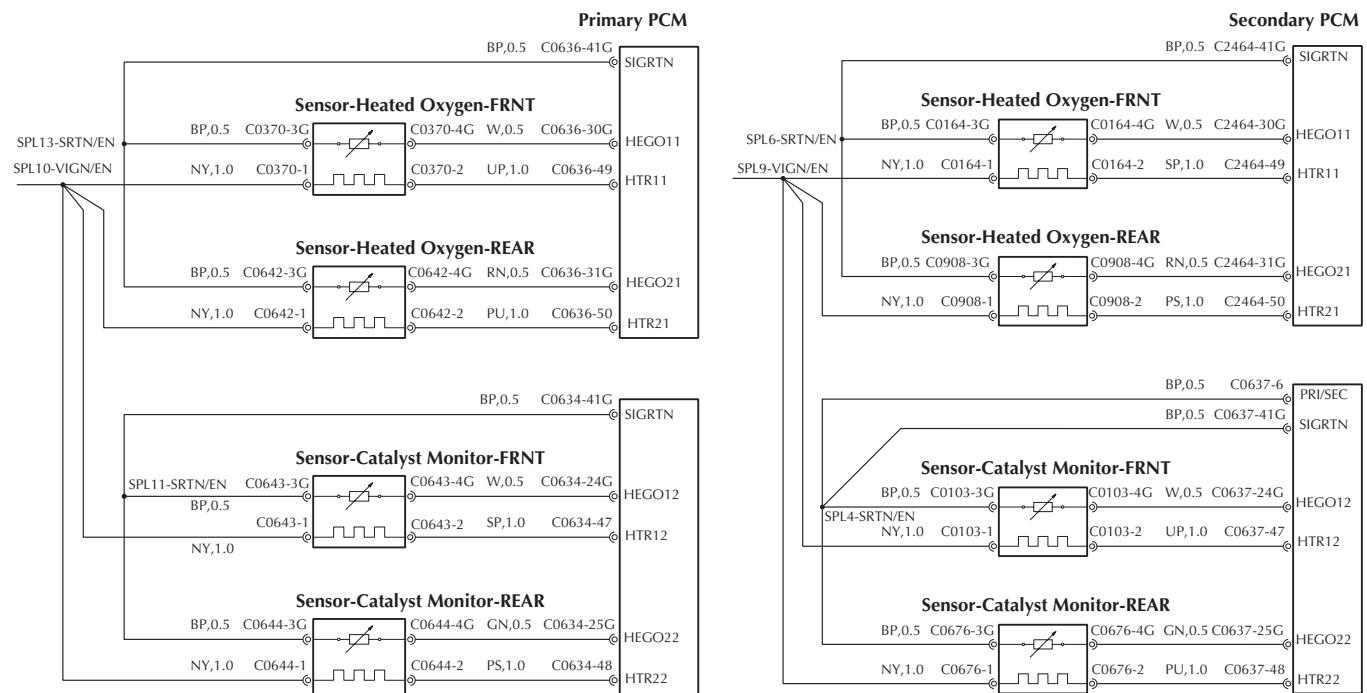


Figure 2. Oxygen Sensor Circuits

Fault Code Definition

P0138 - HO2S1-2 high voltage

P0158 - HO2S2-2 high voltage

MIL Status

This code will light the MIL lamp

P0138 / P0152 Fault Analysis

CAUTION: These codes may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Connect the WDS and confirm that P0138 or P0158 is logged
2. If a P0138 or P0158 code is present, clear the logged code. Set datalogger to monitor all downstream oxygen sensor readings on the affected engine bank.
3. Start the engine and datalogger. Run until the engine is fully warmed up and log the oxygen sensor readings. Stop the engine and datalogger. Analyse the recorded sensor readings.

If any HO2S signal indicates an abnormally high voltage, service the circuit looking for shorts to VBATT or VIGN in the harness.

If no circuit fault is identified, swap the downstream sensors on the suspect bank. Repeat the datalogger test.

4. If the fault has changed front to rear or vice versa, replace the suspect sensor. Run the datalogger test again to confirm that the problem is resolved.

P0148 - Fuel Delivery Error

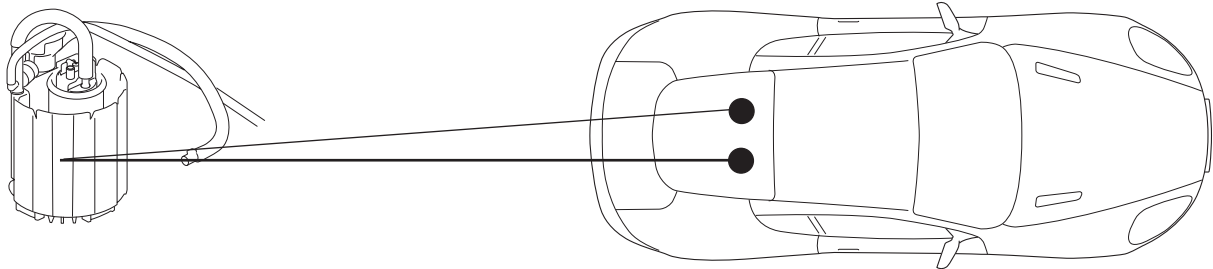


Figure 1. Fuel Pump Location

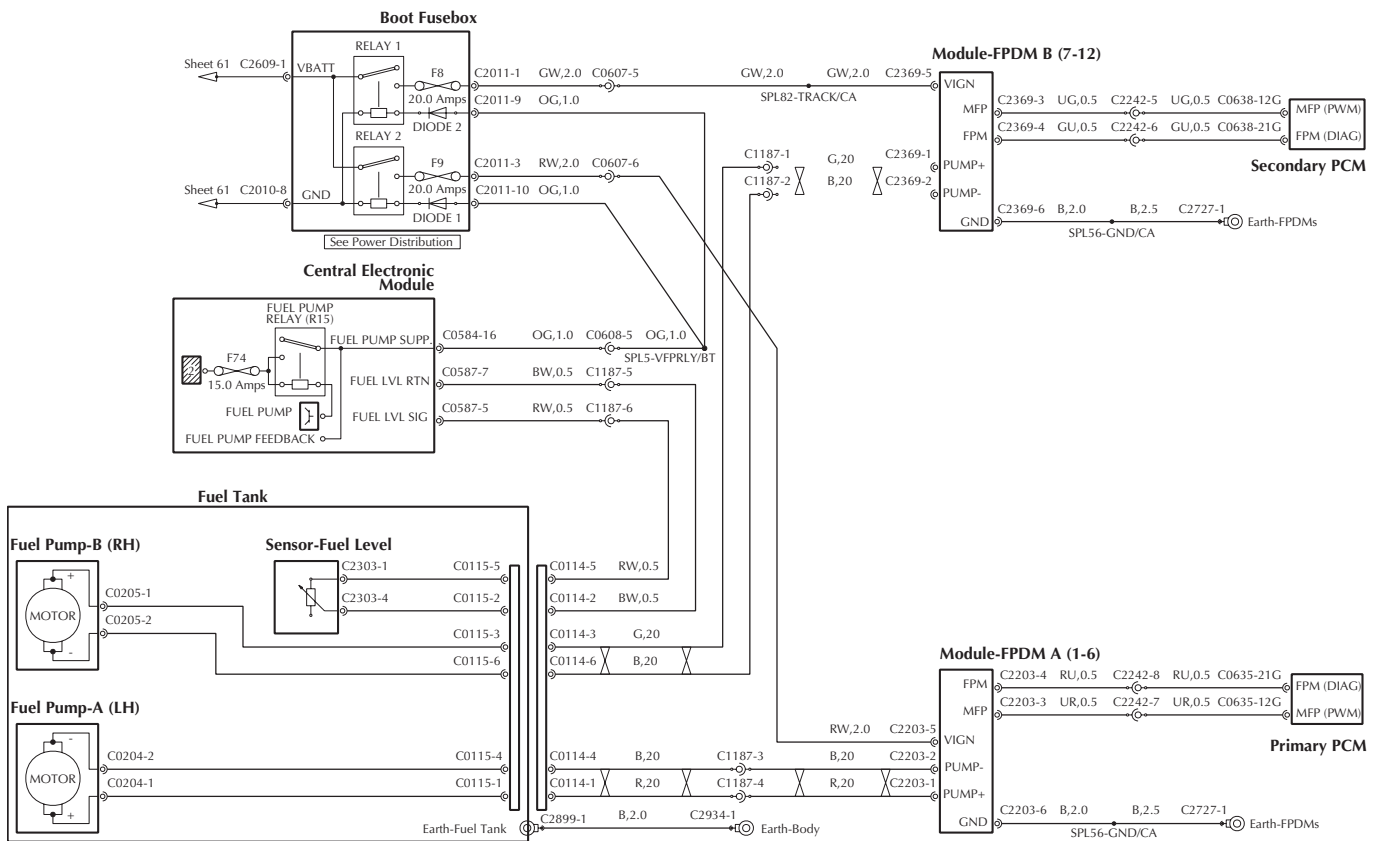


Figure 2. Fuel Pump Circuits

Fault Code Definition

P0148 - Fuel Delivery Error

MIL Status

This code will not light the MIL lamp

P0148 Fault Analysis

CAUTION: This codes may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

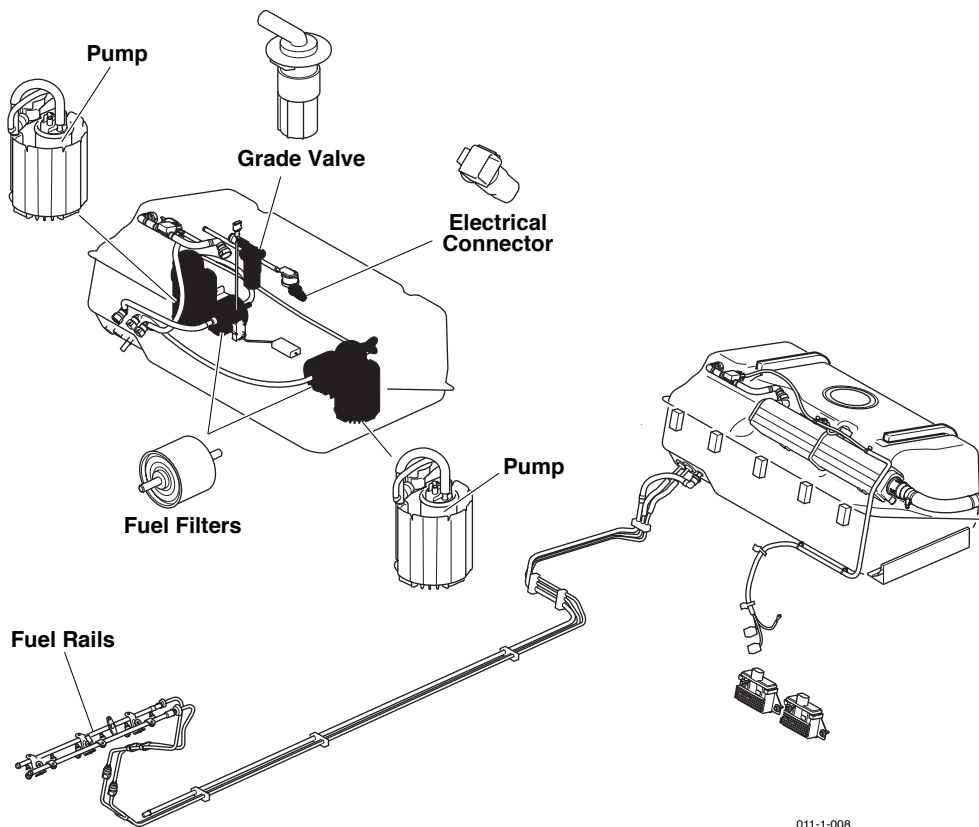
1. Connect the WDS and confirm that P0148 is logged. Note which engine bank is affected. Also note all other logged DTCs and list any fuel related codes.
2. Using WDS, monitor the fuel rail pressure in both rails during a KOER test.

If both fuel rail pressures are equal and approximately 40 psi above manifold pressure, the fuel delivery system is serviceable. go to step 3.

If the fuel rail pressure for the affected bank is out of specification, service the fuel system as necessary. Clear the P0148 code and run a KOER test to ensure that the problem is resolved.

Clear all DTCs. Conduct a road test including town and country driving over a variety of road surfaces. Using WDS, monitor the fuel pressure. Note the fuel pressure and driving conditions when the 'Check Engine' light comes on. Check for other fuel pump DTCs logged at the same time. Using this information, service the fuel system as necessary and run a further road test to ensure that the problem is resolved.

P0171 / P0174 - Fuel System



011-1-008

Figure 1. Fuel System Components

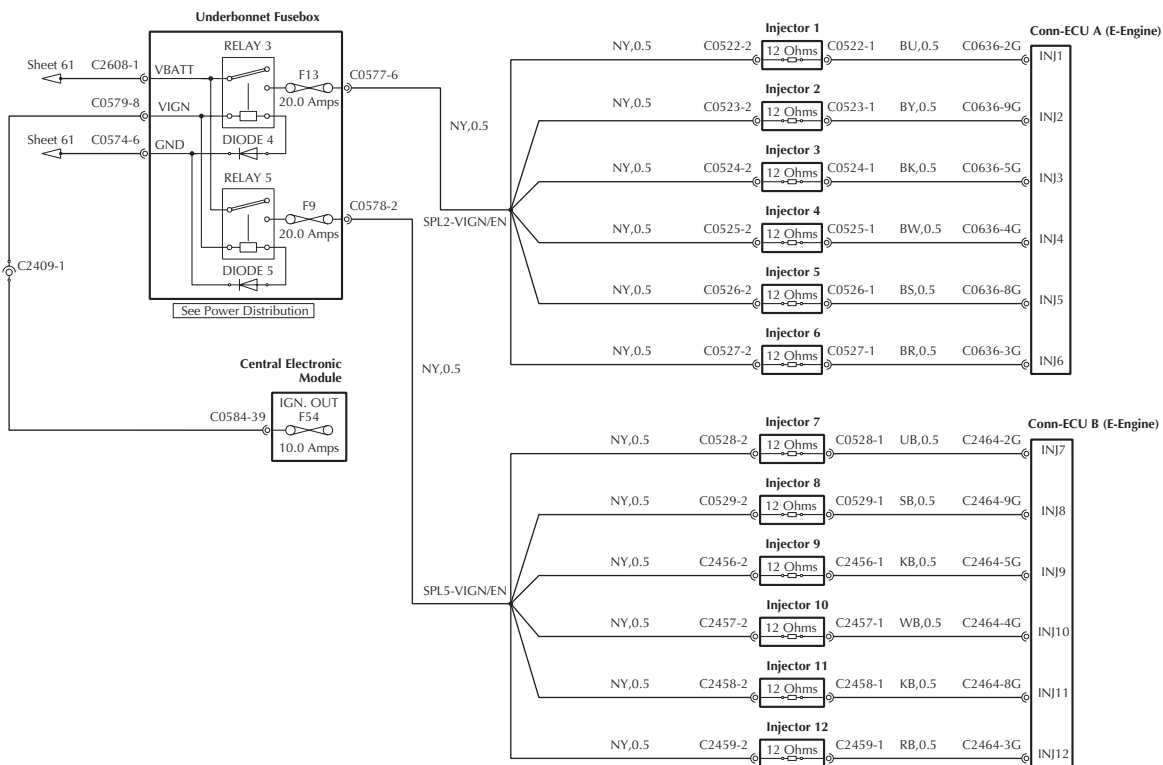


Figure 2. Fuel Injector Circuits

Fault Code Definition

P0171 - HO2S1-1 Fuel/air ratio too lean

P0174 - HO2S2-1 Fuel/air ratio too lean

Adaptive fuel correction at the limit.

MIL Status

These codes will light the MIL lamp

P0171/P0174 Fault Analysis

CAUTION: These code may be generated in the Primary or Secondary Powertrain Control Module (PCM) Check that you are working on the correct half of the engine.

1. Verify that the vehicle did not run out of fuel before the Check Engine light came on.

If a 'No Fuel' condition has been present, connect the WDS or scan tool and clear the P0171/P0174 code. Perform the KOER test sequence to check that the fuel adaption is now functioning correctly.

If the vehicle has not recently run out of fuel, analyse the problem using the following procedure.

2. Carry out a thorough visual inspection of the vehicle, concentrating on the following possible causes of the lean mixture:

Fuel System

- Leaking fuel injectors
- Low fuel pressure
- Blocked fuel injectors

Damaged/disconnected HO2S circuits

Induction System

- Air leaks after the air flow meter
- Vacuum leaks
- Restricted air inlet

Fuel Vapour Purge System

Positive Crankcase Ventilation system

Base Engine

Oil overfill

Cam timing

Compression pressure

Ignition System

- Ignition coil windings
- Ignition coil connection
- Spark plugs

Repair any problems identified in the visual inspection, clear the P0171/P0174 fault code and

repeat the KOER Test. If the code is detected again, proceed as follows.

3. If any adaptive fuel codes are detected in step 2, go to step 4. For other codes, go to the appropriate procedure in this section of the fault analysis manual.
4. Check the fuel pressure as follows:

Connect the WDS and set datalogger to monitor the fuel pressure sensor output from both fuel rails.

Start the engine and run at idle speed.

Increase the engine speed to 2500 rpm and maintain for 1 minute.

Note the recorded fuel pressure at idle and at 2500 rpm. The fuel system must be capable of maintaining at least 40 psi above manifold pressure.

If the fuel pressure is low, repair or service the fuel system to meet fuel pressure specification.

5. Check the fuel system ability to hold fuel pressure.

Cycle the ignition key on and off several times. Verify that there are no external fuel leaks (repair as necessary)

6. Key off. Disconnect the fuel injector electrical connectors. Check the resistance of the fuel injectors.

Each resistance should be in the range 11 - 18Ω

If all injector resistance values are in range, consult Aston Martin technical Support.

If any injector resistance is out of range, replace the injector.

Reconnect all injectors. Clear the P0171/P0174 codes and run a KOER test to ensure that the problem is resolved.

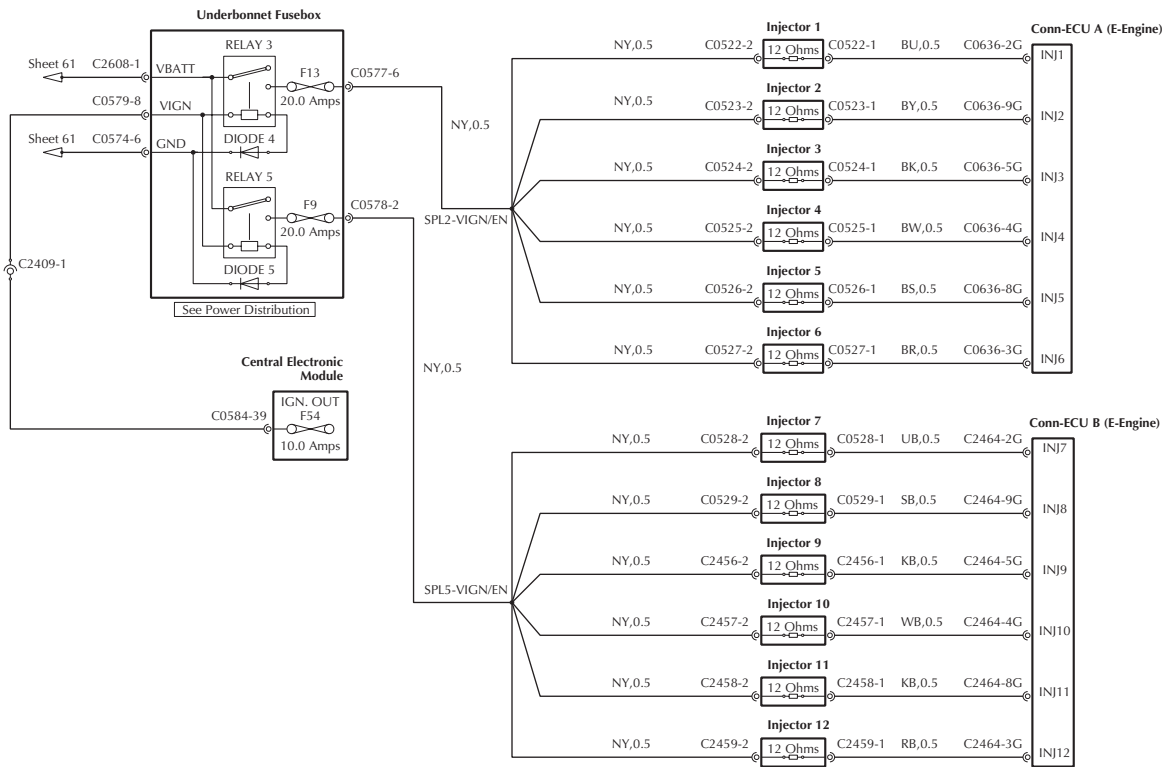


Figure 3. Fuel Injector Circuits

7. Check for codes P0201 - P0206 (injector faults) and analyse these codes if present. Return to step 9 of this procedure if either P0171 or P0174 are logged again after clearing the P0201 - P0206 codes.

8. Flow test the injectors:

Use a Rotunda Injector Tester or equivalent to flow test the injectors according to the manufacturers instructions.

If any injector flow rate is not within specification, replace the defective injector. Refit the injectors and rerun the KOER Test.

If the injector flow rates are all within specification, the problem is not fuel related.

9. Check the cylinder compression pressures using the service manual procedure.

If any compression pressure is low, repair the engine as necessary.

If the compression pressures are in specification, carry out further analysis as for DTC P1131 to check the heated oxygen sensors and circuits.

P0172 / P0175 - Fuel / Air Ratio

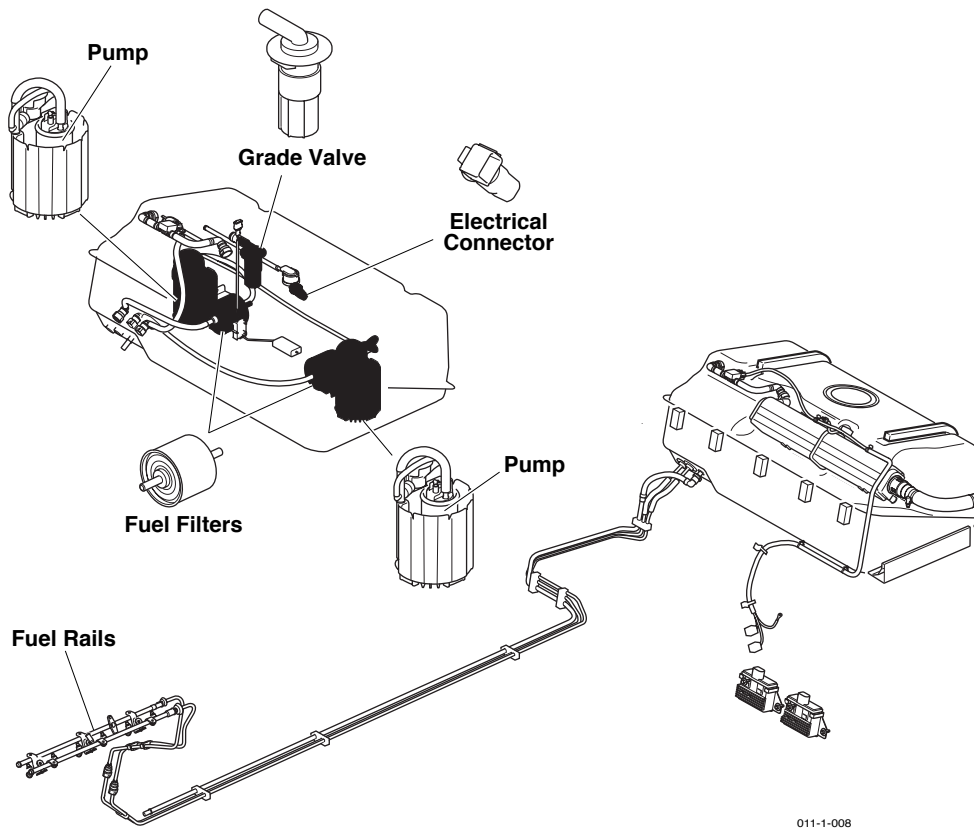


Figure 1. Fuel System Components

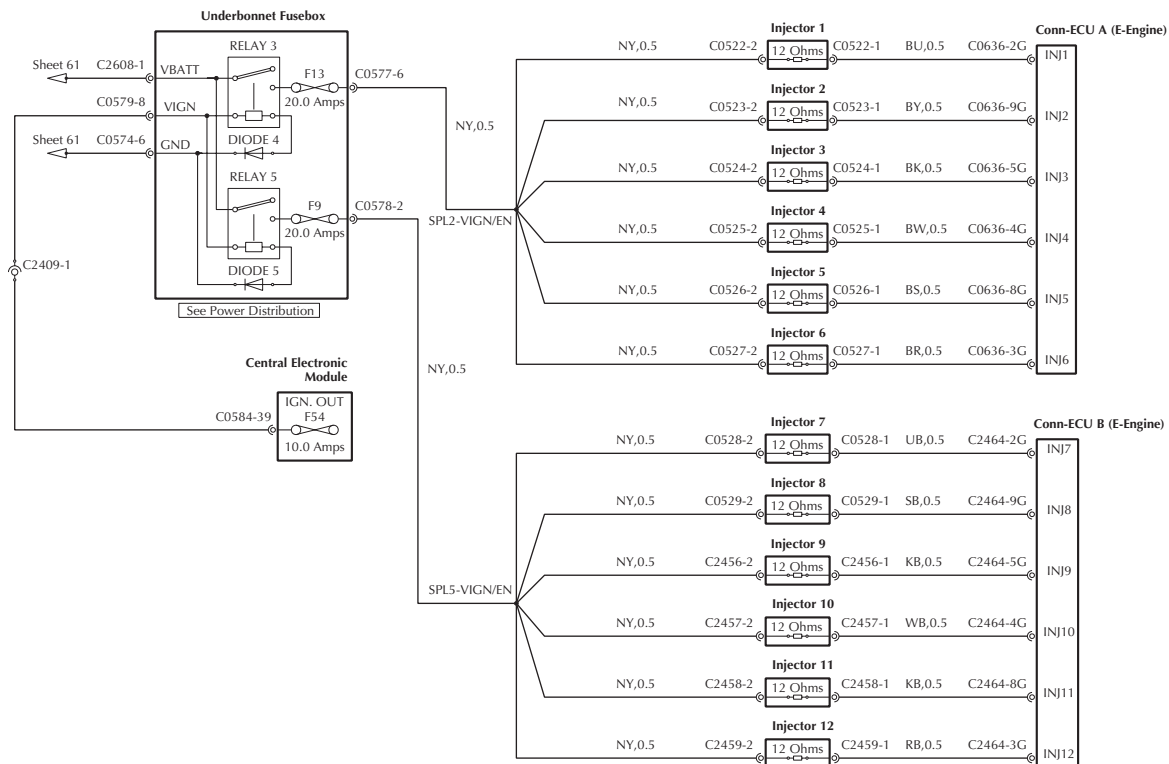


Figure 2. Fuel Injector Circuits

Fault Code Definition

P0172 - HO2S1-1 Fuel/air ratio too rich. Adaptive fuel correction at the limit.

P0175 - HO2S2-1 Fuel/air ratio too rich. Adaptive fuel correction at the limit.

MIL Status

These codes will light the MIL lamp

P0172/P0175 Fault Analysis

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM) Check that you are working on the correct half of the engine.

1. Verify that the vehicle did not run out of fuel before the Check Engine light came on.

If a No Fuel condition has been present, connect the WDS or scan tool and clear the P0172/P0175 code. Perform the KOER test sequence to check that the fuel adaption is now functioning correctly.

If the vehicle has not recently run out of fuel, analyse the problem using the following procedure.

2. Carry out a thorough visual inspection of the vehicle, concentrating on the following possible causes of the rich mixture:

Fuel System

- Leaking fuel injectors
- Leaking fuel pressure regulator
- High fuel pressure

Fuel Vapour Purge System

Damaged/disconnected HO2S circuits

Induction System

- Air leaks after the air flow meter
- Vacuum leaks
- Restricted air inlet

Positive Crankcase Ventilation system**Base Engine**

- Oil overfill
- Cam timing
- Compression pressure

Ignition System

- Coil secondary windings
- Ignition HT leads
- Spark plugs

Repair any problems identified in the visual inspection, clear the P0172/P0175 fault codes and repeat the KOER Test.

If the P0172/P0175 code is detected proceed as follows.

3. Connect the WDS or scan tool. Perform the KOER test sequence.

If any adaptive fuel codes are detected, go to step 4. For other codes, go to the appropriate procedure in this section of the fault analysis manual.

4. Check the fuel pressure as follows:

Connect the WDS and set to monitor the fuel pressure sensor output from both fuel rails.

Start the engine and run at idle speed. Record the fuel pressure. Increase the engine speed to 2500 rpm and maintain for 1 minute. Record the fuel pressure.

The fuel system must be capable of maintaining at least 40 psi above manifold pressure.

5. Check the fuel system ability to hold fuel pressure.

Cycle the ignition key on and off several times. Check for external fuel leaks (repair as necessary)

Verify that with the ignition off, fuel pressure stays within 5 psi of the highest reading for 1 minute. If excessive pressure loss is detected, service or repair the fuel system to correct the problem.

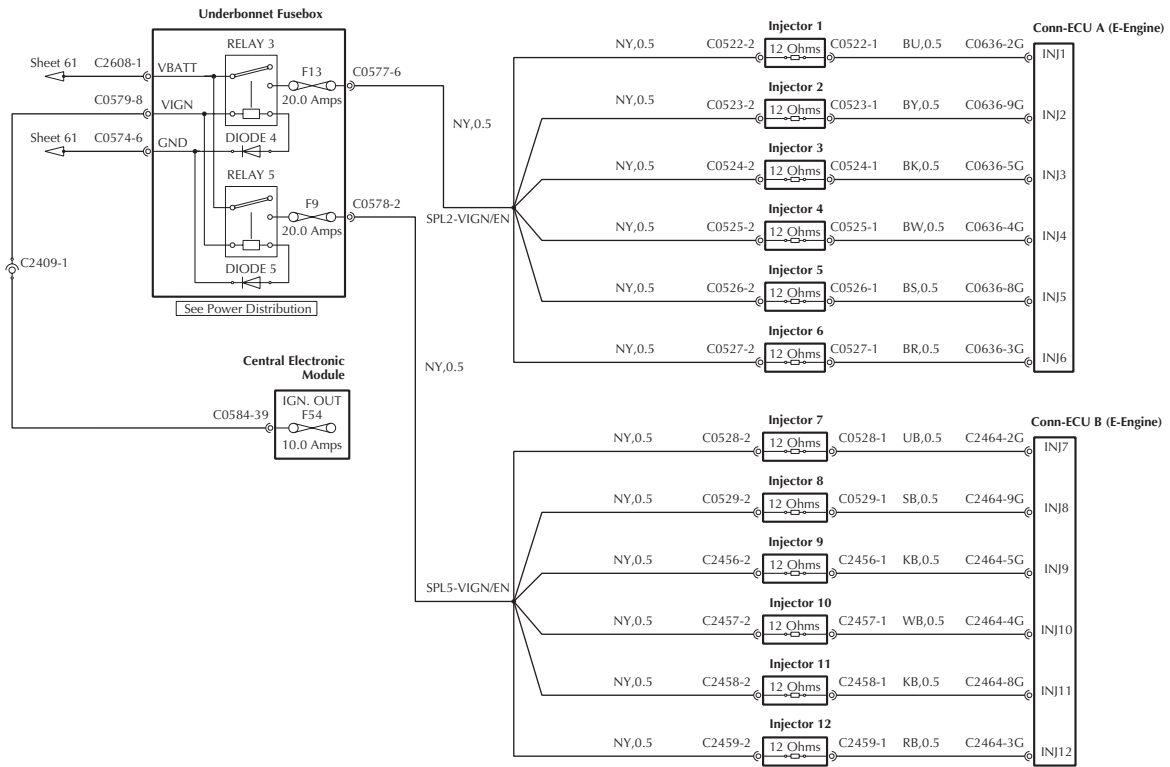


Figure 3. Fuel Injector Circuits

6. Key off. Disconnect the fuel injector connectors. Check the resistance of the fuel injectors.

Each resistance should be in the range 11 - 18Ω

If all injector resistance values are in range, go to step 7.

If any injector resistance is out of range, replace the injector.

Reconnect all injectors. Clear the P0172/P0175 codes and run a KOER test to ensure that the problem is resolved.

7. Check for codes P0201 to P0206 (injector faults) and analyse these codes if present. Return to step 9 of this procedure if P0171 is logged again after clearing the P0201 - P0206 codes.

8. Flow test the injectors:

Use a Rotunda Injector Tester or equivalent to flow test the injectors according to the manufacturers instructions.

If any injector flow rate is not within specification, replace the defective injector. Rerun the KOER Test.

If the injector flow rates are all within specification, the problem is not fuel related.

9. Check the cylinder compression pressures using the service manual procedure.

If any compression pressure is low, repair the engine as necessary.

If the compression pressures are in specification, carry out further analysis as for DTC P1131 to check the heated oxygen sensors and circuits.

P0180/0182/0183 Fuel Temperature Sensor

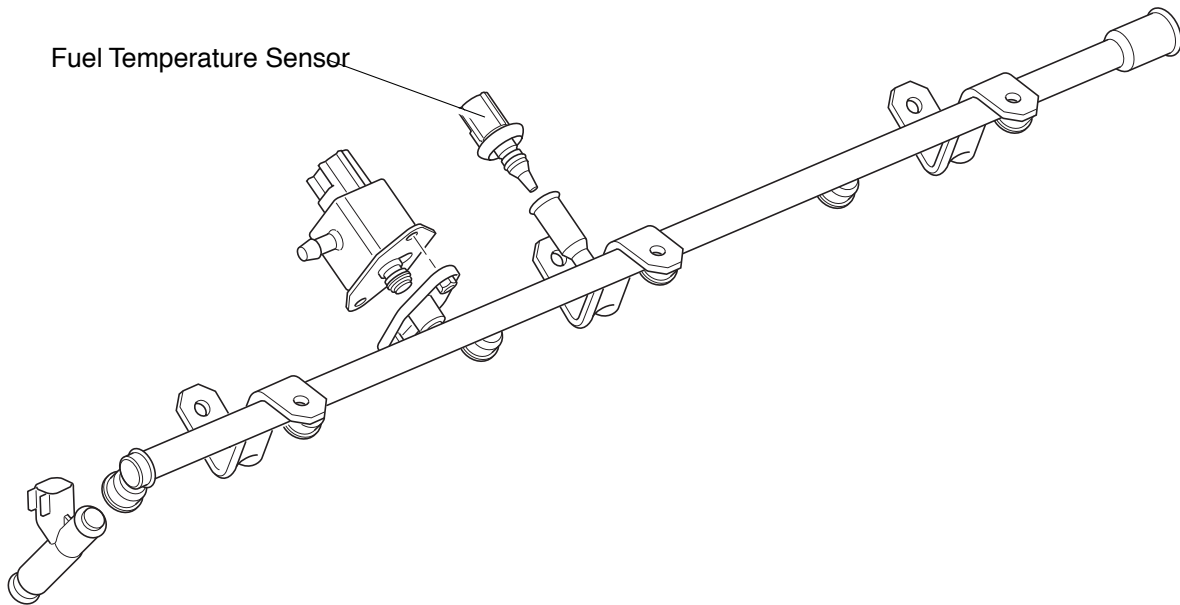


Figure 1. Fuel Temperature Sensor Location

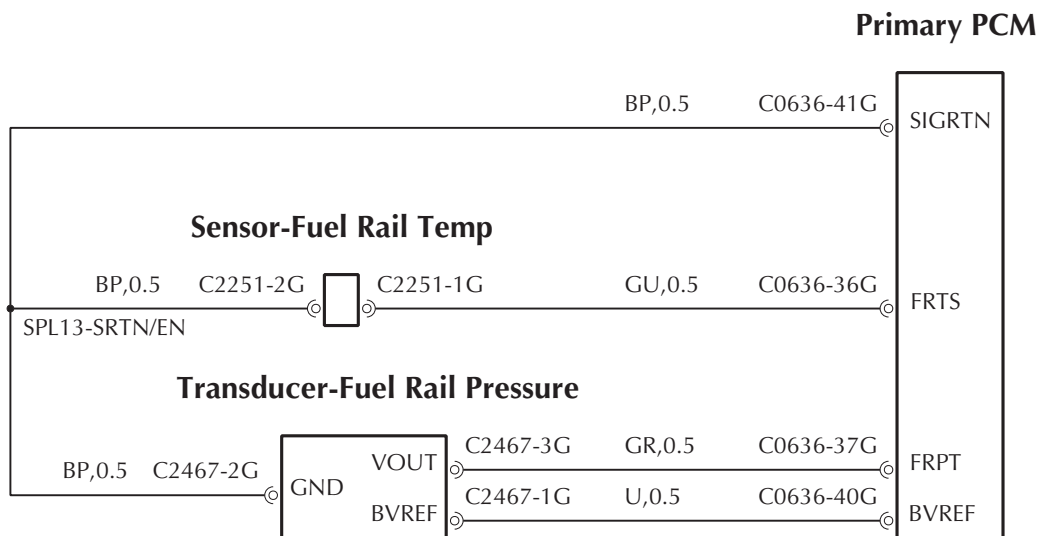


Figure 2. Fuel Temperature Sensor Circuit

Fault Code Definition

P0180 - Fuel temperature sensor open circuit fault

P0182 - Fuel Rail Temperature Sensor - Low Input

P0183 - Fuel Rail Temperature Sensor - High Input

MIL Status

These codes will light the MIL lamp

P0180/P0182/P0183 Fault Analysis

CAUTION: These codes may be generated in the Primary or Secondary Powertrain Control Module (PCM) Check that you are working on the correct half of the engine.

Note: The normal operation fuel temperature range is between -39°F (-39°C) and 253°F (123°C). A fault is declared if the fuel rail temperature indicates outside these limits.

1. Connect the WDS or scan tool and confirm that P0180, P0182 or P0183 is present.
2. Set the datalogger to monitor both fuel rail temperatures. Run the engine and read both Fuel Rail Temperatures.

Compare the fuel rail temperatures. If the temperature of the suspect rail is reasonable, shake /wobble the engine harness between the fuel temperature sensor and the PCM.

If no open circuit is detected, note the fault code and go to the relevant step 3 or 4.

If an open circuit is identified, service the harness as necessary. Clear the fault code and run a KOER test to ensure that the problem is resolved.

3. P0182 - Disconnect the fuel rail temperature sensor and the primary PCM. Check for a short to ground from primary sensor connector C2251-1.

If a short to ground is detected, service the harness as necessary. Reconnect the sensor and the PCM. Clear the P0182 code and run a KOER test to ensure that the problem is resolved.

4. P0183 - Disconnect the fuel rail temperature sensor and the primary PCM. Turn on the ignition and check for a short circuit to +5 or +12 volt on the signal line at C2251-1.

If a short circuit to +5 or +12 volts is detected, service the harness as necessary. Clear the P0183 code and reconnect the sensor and the PCM. Run a KOER test to ensure that the problem is resolved.

P0190 Fuel Rail Pressure

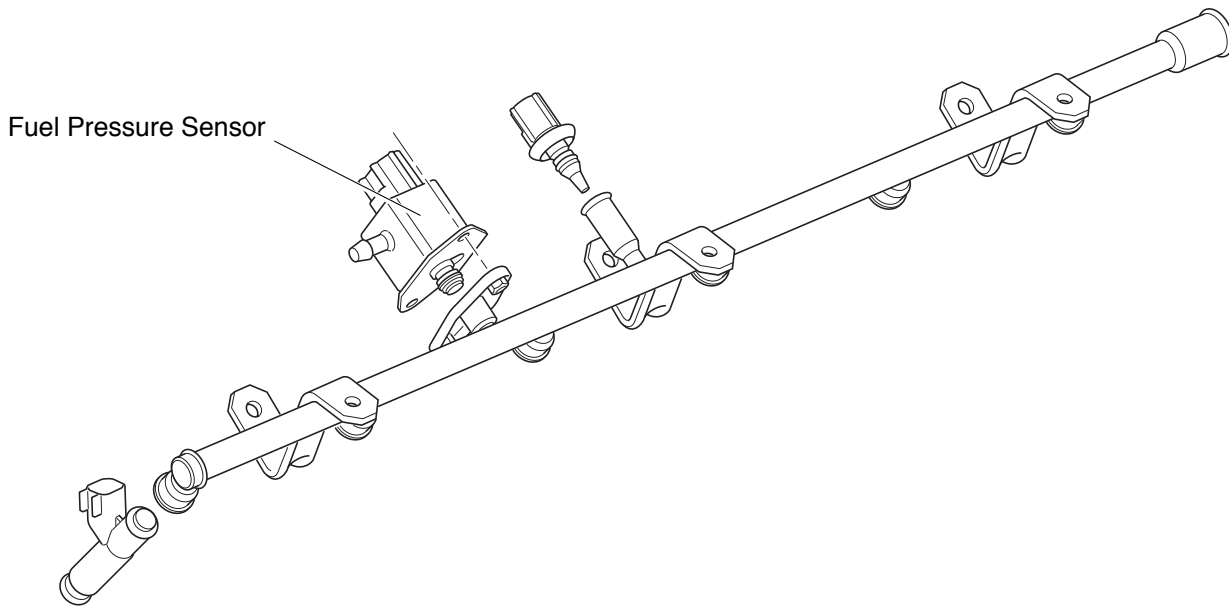


Figure 1. Fuel Pressure Sensor Location

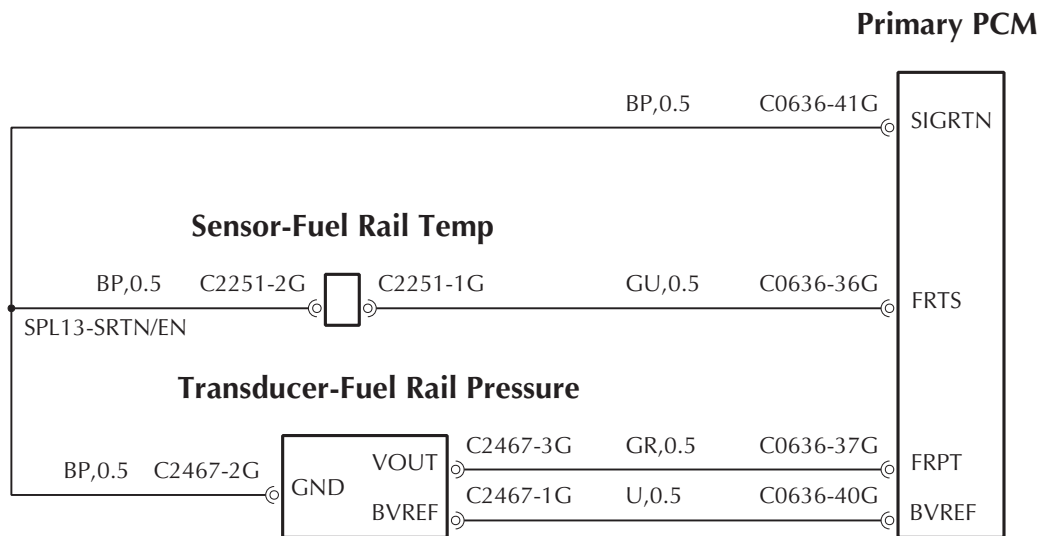


Figure 1. Fuel Pressure Sensor Circuit

Fault Code Definition

P0190 - Fuel rail pressure - mid range fault

MIL Status

This code will light the MIL lamp

P0190 Fault Analysis

CAUTION: These codes may be generated in the Primary or Secondary Powertrain Control Module (PCM) Check that you are working on the correct half of the engine.

1. Connect the WDS or scan tool. Confirm that a code P0190 is logged.

If any of P1233, P1235 or P1237 (fuel pump drive module faults) are logged, resolve these codes first and return to this procedure only if a P0190 is logged again after clearing any P1233 - 1237 faults

2. Set datalogger to monitor fuel pressure on both fuel rails. Start the engine. Monitor the fuel pressure readings from both sensors whilst varying the engine speed within the range 1000 - 2500 rpm.

The fuel system must be capable of maintaining 39-41 psi above manifold pressure in both fuel rails (*Note: Target pressure is increased in hot conditions*).

3. If either fuel pressure reading is significantly out of specification, substitute a good sensor and repeat the pressure test.
4. If the pressure readings are still significantly different, service the sensor wiring to eliminate poor connections. Clear the fault code.
5. Run another KOER test. If the fault returns, install the break-out box.

Check the fuel pressure signals with the WDS scope, if the signal is noisy resolve the source of electrical noise.

6. Clear the P0190 code. Run another KOER test. If the P0190 code returns, replace the PCMs and run a further test to ensure that the problem is resolved.

P0191 Fuel Rail Pressure Sensor

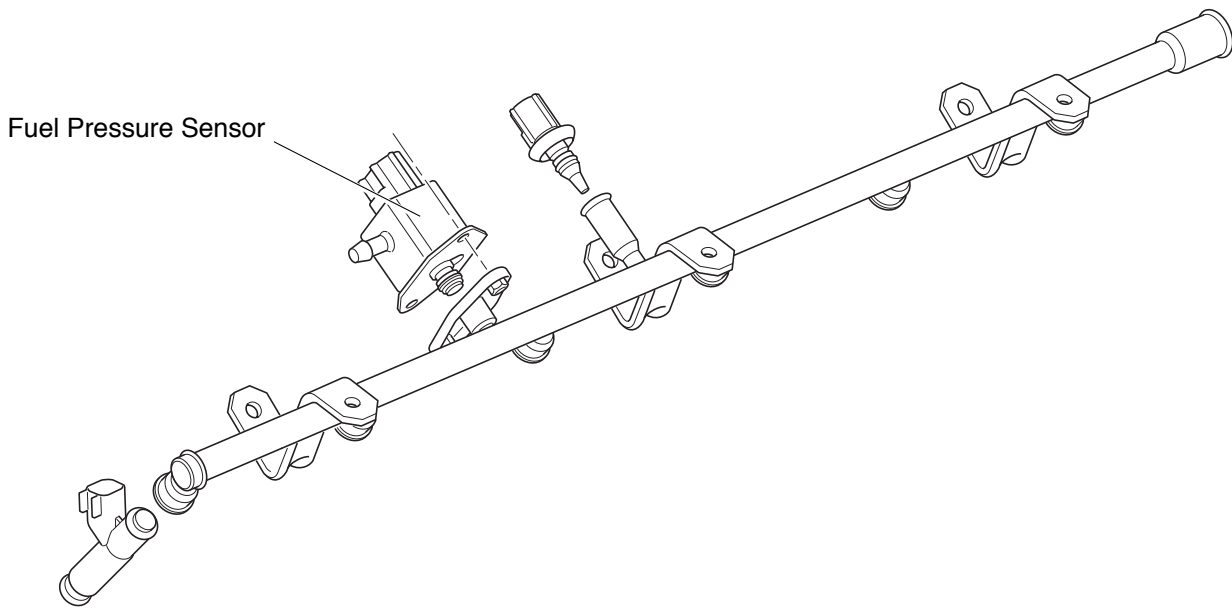


Figure 1. Fuel Pressure Sensor Location

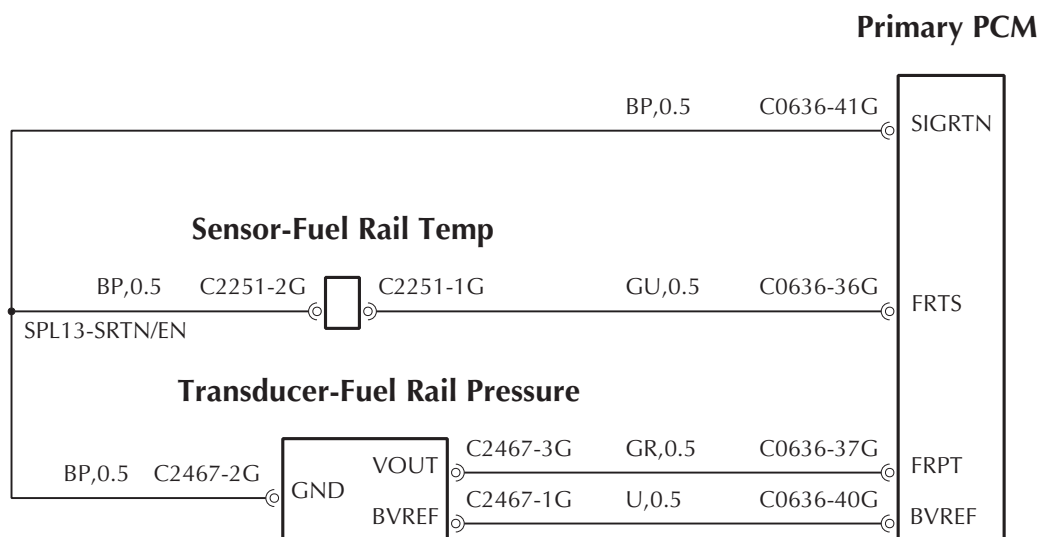


Figure 1. Fuel Pressure Sensor Circuit

Fault Code Definition

P0191 - Fuel rail pressure sensor range or performance

MIL Status

This code will light the MIL lamp

P0191 Fault Analysis

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM) Check that you are working on the correct half of the engine.

1. Connect the WDS or scan tool. Confirm that a code P0191 is logged.
2. Using the datalogger, monitor both fuel rail pressure signals during a KOER test.

Note: Fuel rail pressure is normally about 40 psi above manifold pressure.

If both fuel rail pressures are approximately 40 psi above manifold pressure, go to step 4.

If either sensor is indicating other than approximately 40 psi, switch off the engine. Allow the residual fuel pressure to dissipate. Disconnect both sensors. Remove the sensors and swap them to the opposite fuel rail. Reconnect the sensors.

3. Rerun the KOER test and fuel rail pressure comparison.

If the erroneous pressure reading has swapped to the other fuel rail, replace the faulty pressure sensor. Clear the P0191 code and rerun the KOER test to ensure that the problem is resolved.

If the erroneous reading remains on the original fuel rail, the fault is not caused by the pressure sensor, check for fuel pump DTCs and analyse the fault for a fuel pump problem.

4. Check the fuel rail pressure sensor connections and harness.

If no electrical fault is detected, the problem is not present at this time. Treat this as an intermittent problem.

If any electrical fault is detected, service the wiring as necessary. Clear the P0191 code and run a KOER test to ensure that the problem is resolved.

P0192 Fuel Rail Pressure

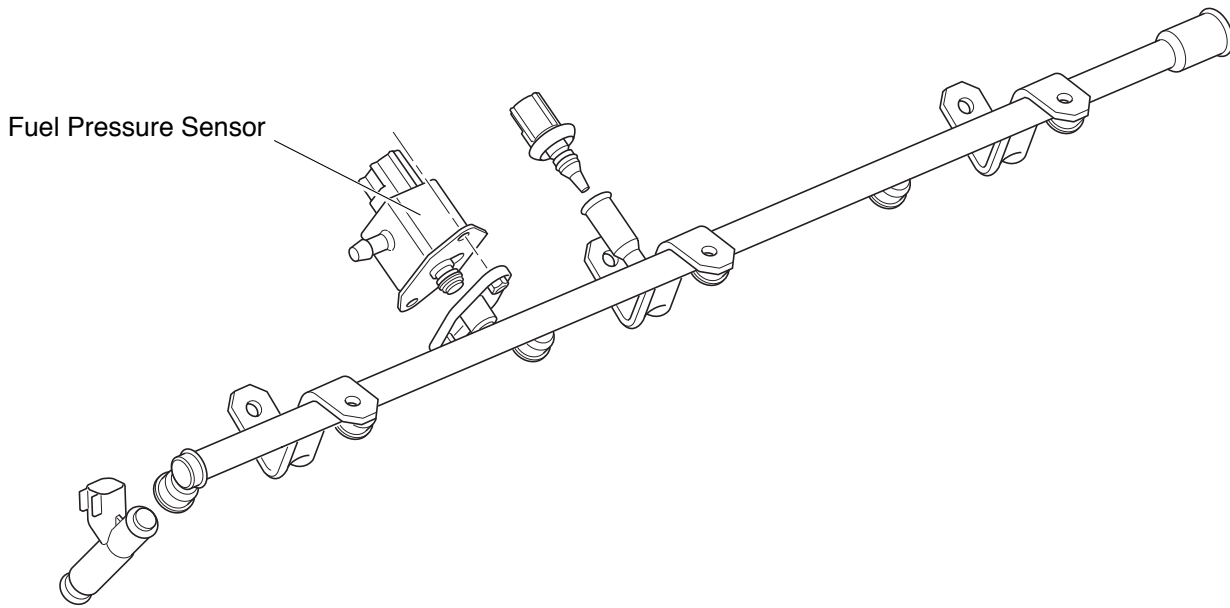


Figure 1. Fuel Pressure Sensor Location

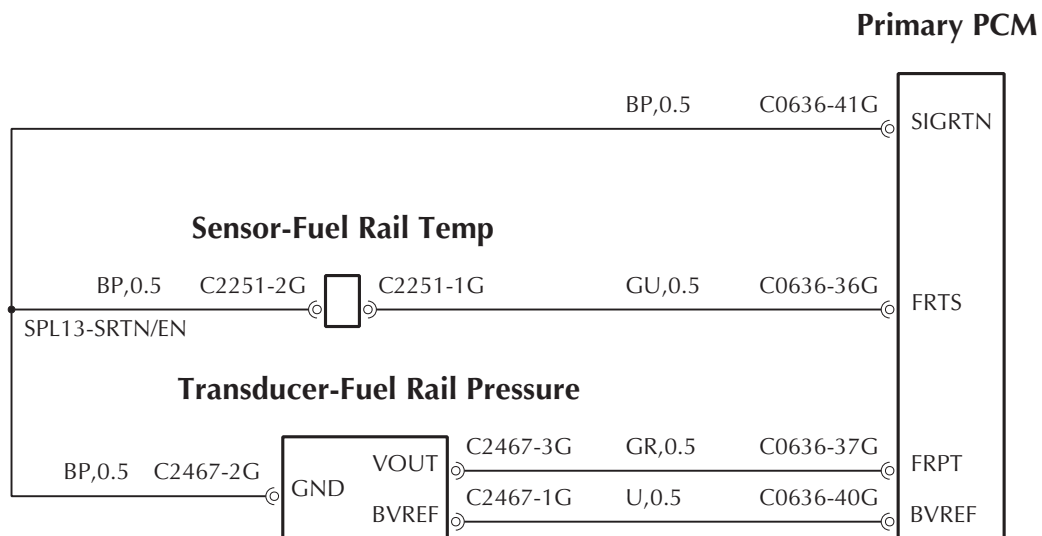


Figure 1. Fuel Pressure Sensor Circuit

Fault Code Definition

P0192 - Fuel rail pressure - below minimum volts.

MIL Status

This code will light the MIL lamp

P0192 Fault Analysis

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM) Check that you are working on the correct half of the engine.

1. Connect the WDS or scan tool. Confirm that a code P0192 is logged.

If any of P1233, P1235 or P1237 (fuel pump drive module faults) are logged, resolve these codes first and return to this procedure only if a P0190 is logged again after clearing any P1233 - 1237 faults.

2. Monitor the fuel pressure signals on both fuel rails using the datalogger.

The fuel system must be capable of maintaining 39-41 psi above manifold pressure in both fuel rails (*Note: Target pressure is increased in hot conditions*).

3. If either fuel pressure reading is significantly out of specification, substitute a good sensor and repeat the pressure test.
4. If the pressure readings are still significantly different, key off, disconnect the affected sensor.

Key on. Measure the voltage from sensor harness connector pins 1 and 2.

If +5 volts is available, go to step 5.

If +5 volts is not available. service the sensor wiring to eliminate poor connections. Clear the fault code.

5. Run another KOER test. If the P0190 code returns, replace the PCMs and run a further test to ensure that the problem is resolved.

P0193 Fuel Rail Pressure

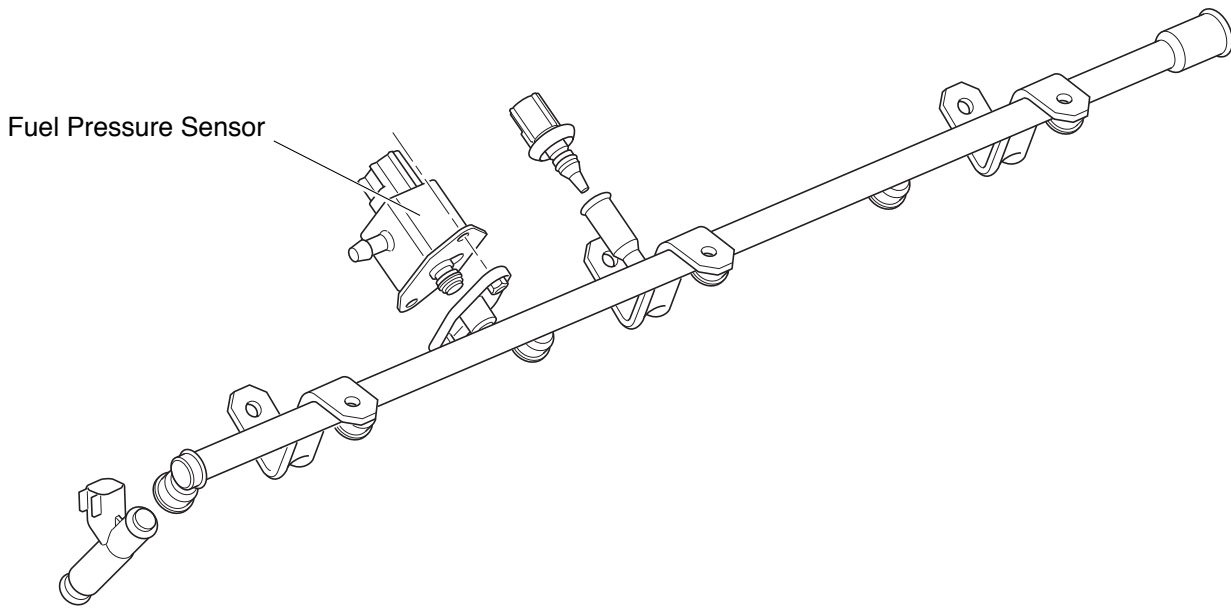


Figure 1. Fuel Pressure Sensor Location

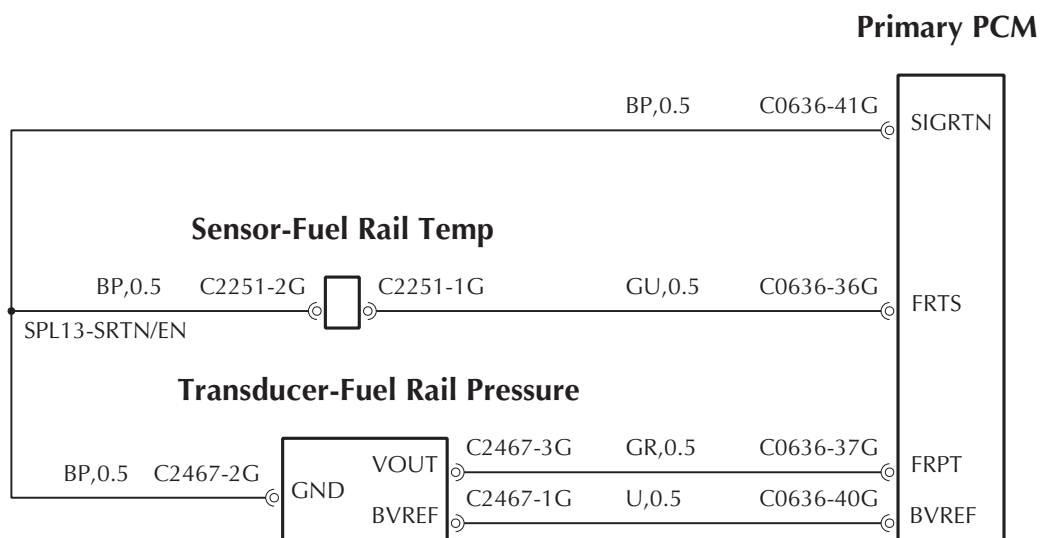


Figure 1. Fuel Pressure Sensor Circuit

Fault Code Definition

P0193 - Fuel rail pressure - more than maximum volts.

MIL Status

This code will light the MIL lamp

P0193 Fault Analysis

CAUTION: These codes may be generated in the Primary or Secondary Powertrain Control Module (PCM) Check that you are working on the correct half of the engine.

1. Connect the WDS or scan tool. Confirm that a code P0193 is logged.

If any of P1233, P1235 or P1237 (fuel pump drive module faults) are logged, resolve these codes first and return to this procedure only if a P0193 is logged again after clearing any P1233 - 1237 faults

2. Monitor the fuel pressure signals on both fuel rails using the datalogger.

The fuel system must be capable of maintaining 39-41 psi above manifold pressure in both fuel rails (*Note: Target pressure is increased in hot conditions*).

3. If either fuel pressure reading is significantly out of specification, substitute a good sensor and repeat the pressure test.

4. If the pressure readings are still significantly different, key off, disconnect the affected sensor.

Key on. Measure the voltage from sensor harness connector pins 1 and 2.

If +5 volts is available, go to step 5.

If +5 volts is not available. service the sensor wiring to eliminate poor connections. Clear the fault code.

5. Check for short circuits between sensor harness connector pin 1 BVREF and pin 3 sensor signal.

If a short circuit is detected, service the wiring as necessary. Clear the P0193 code and run a KOER test to ensure that the problem is resolved.

If no short circuit is detected, go to step 6.

6. Run another KOER test. If the P0193 code returns, replace the PCMs and run a further test to ensure that the problem is resolved.

P0201 - P0206 Injector Circuit Fault

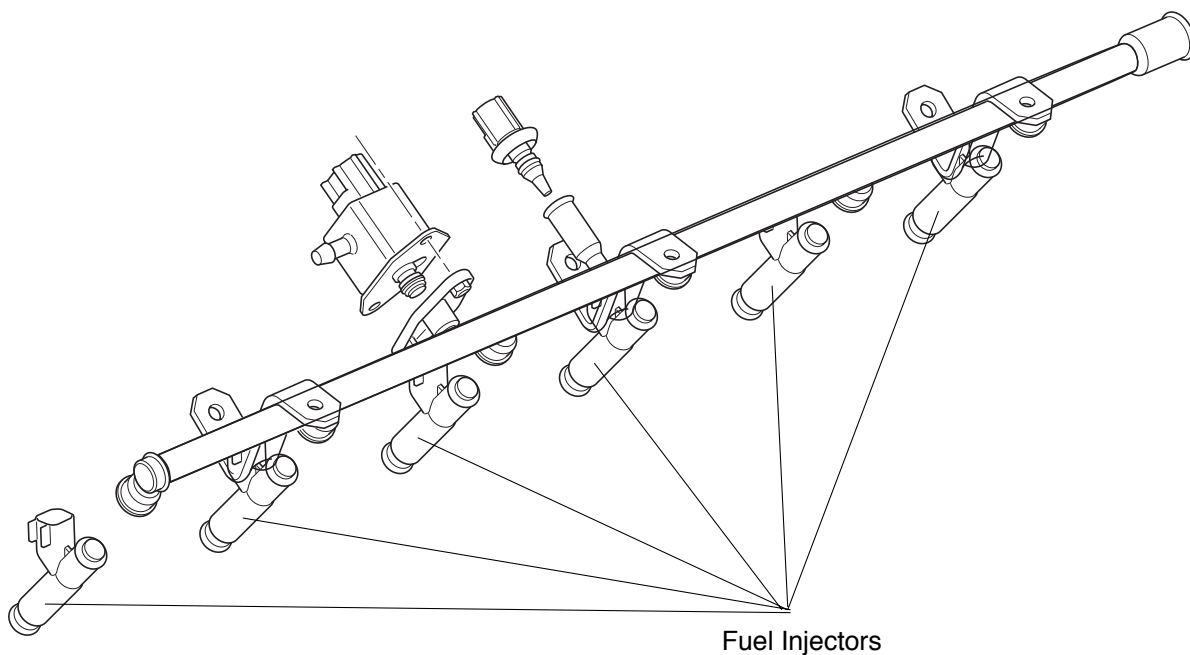


Figure 1. Fuel Injector Location

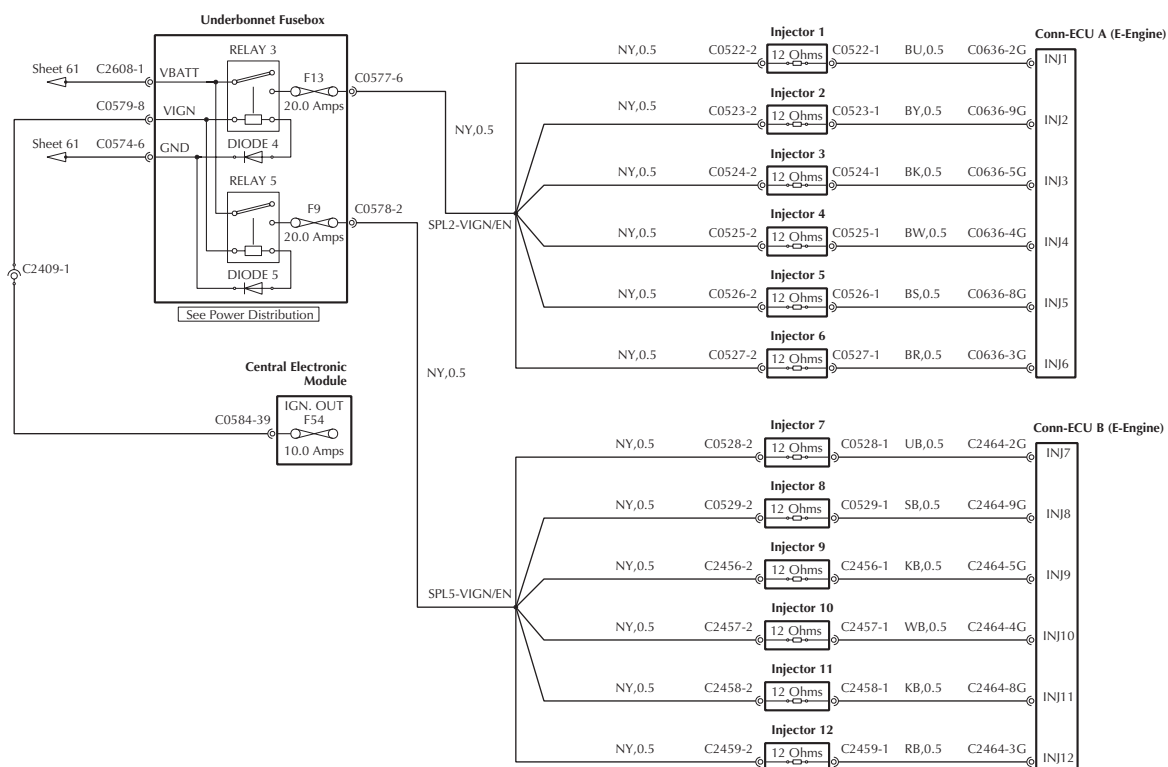


Figure 2 Fuel Injector Circuits

Fault Code Definition

P0201 - P0206 - Injector circuit fault.

MIL Status

These codes will light the MIL lamp

P0201 - P0206 Fault Analysis

CAUTION: These codes may be generated in the Primary or Secondary Powertrain Control Module (PCM) Check that you are working on the correct half of the engine.

1. Connect the WDS or scan tool. Confirm that a code in the range P0201 - P0206 is logged.

Primary PCM

P0201 - Injector 1 fault - PCM pin C0636-2

P0202 - Injector 2 fault - PCM pin C0636-9

P0203 - Injector 3 fault - PCM pin C0636-5

P0204 - Injector 4 fault - PCM pin C0636-4

P0205 - Injector 5 fault - PCM pin C0636-8

P0206 - Injector 6 fault - PCM pin C0636-3

Secondary PCM

P0201 - Injector 7 fault - PCM pin C2464-2

P0202 - Injector 8 fault - PCM pin C2464-9

P0203 - Injector 9 fault - PCM pin C2464-5

P0204 - Injector 10 fault - PCM pin C2464-4

P0205 - Injector 11 fault - PCM pin C2464-8

P0206 - Injector 12 fault - PCM pin C2464-3

2. Disconnect the suspect injector and switch on the ignition. Check for +12 volts from injector harness connector pin 2 to chassis ground.

Note: If the fault is intermittent, use datalogger to monitor all suspect injector signals during a road test.

If +12v is present, go to step 3.

If +12v is not present, Service the 12 volt supply as necessary, reconnect the injector circuits. Clear the fault code. Run a KOER test to ensure that the problem is resolved.

3. Switch off the ignition and install the break-out box to the harness of the affected PCM.

P0218 Transmission Fluid Temperature

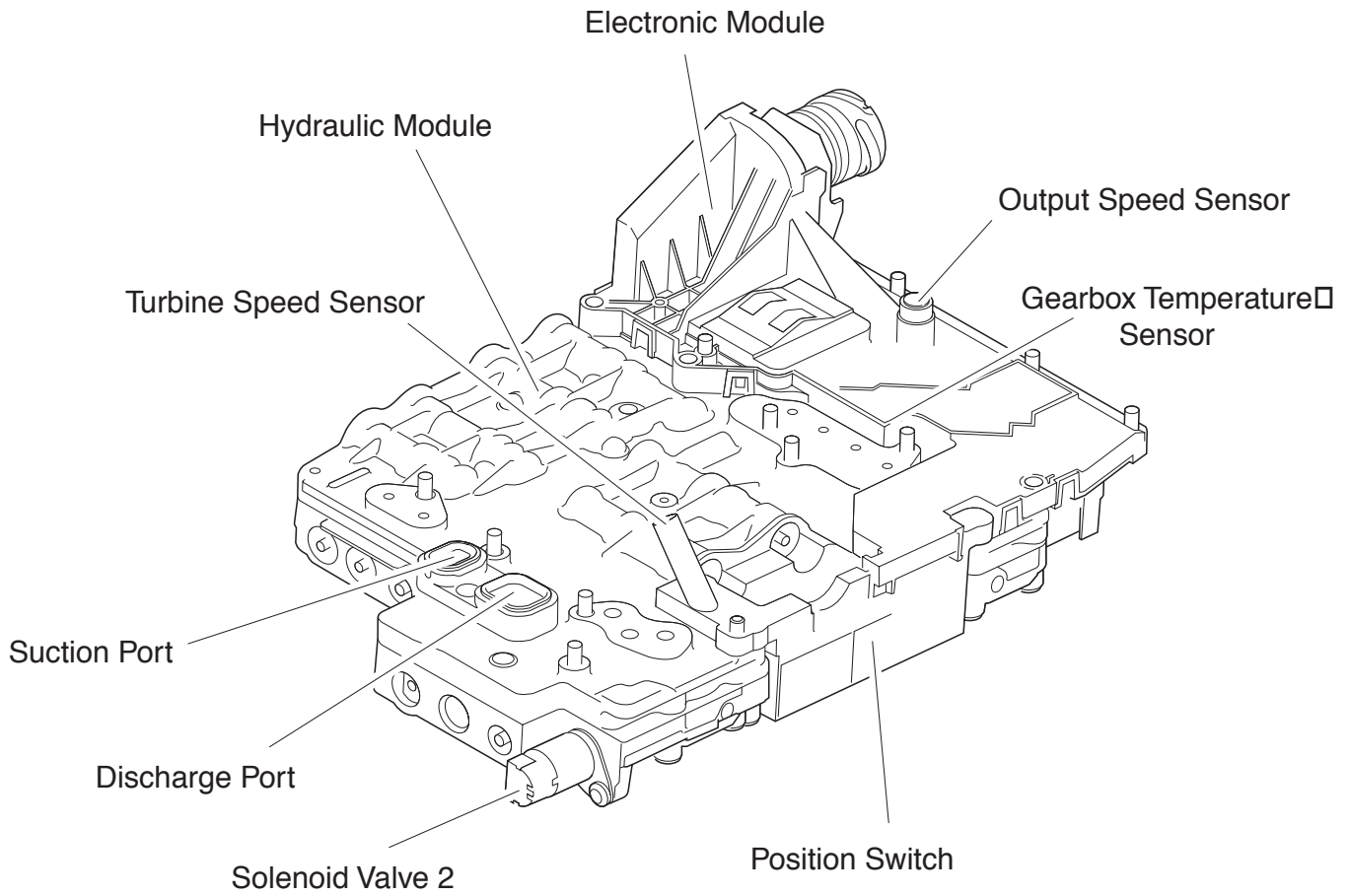


Figure 1. Transmission Fluid Temperature Sensor

Fault Code Definition

P0218 - Transmission fluid temperature sensor.

MIL Status

This code will not light the MIL lamp

P0218 Fault Analysis

1. Connect the WDS or scan tool. Confirm that a code P0218 is logged. Note any other gearbox DTCs.

Monitor the Engine Coolant Temperature and the Transmission Fluid Temperature during a road test.

The transmission oil is normally not as hot as the engine coolant after a good run in normal ambient conditions. If transmission oil is hotter than engine coolant, suspect a problem in the gearbox cooling circuit.

2. Raise the car on a ramp and check the condition of the gearbox cooling circuit. Trace the route of all cooling pipes and verify that there are no kinks, crushes or other obvious restrictions.

If all pipes are serviceable, go to step 3.

If any pipe is damaged or restricted, service as necessary. Top up the gearbox oil level. Run an extended road test to ensure that the problem is resolved.

3. If either B1318, P0641 or P1794 is logged, resolve these battery power codes first and return to step 5 of this procedure only if P0218 is logged again after clearing the battery power codes.

If no additional gearbox codes are logged, go to step 5.

4. Check the gearbox for leaks and check the gearbox oil level (Service Manual Procedure). Top up if necessary. Clear the P0218 code and run a brief road test to ensure that the problem is resolved.

5. Clear the P0218 code and run an extended road test.

If P0218 is logged again, change the mechatronic unit and run a road test to ensure that the problem is resolved

If P0218 is not logged again, the cause of the fault is not present at this time and testing is complete.

P0224 Throttle Position Sensor (Throttle Potentiometer)

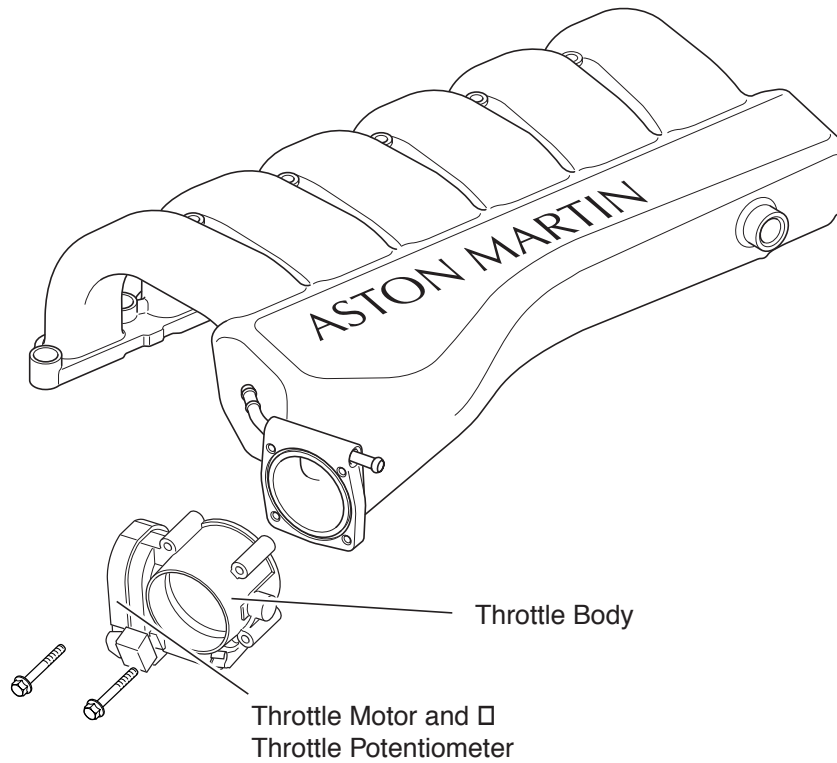
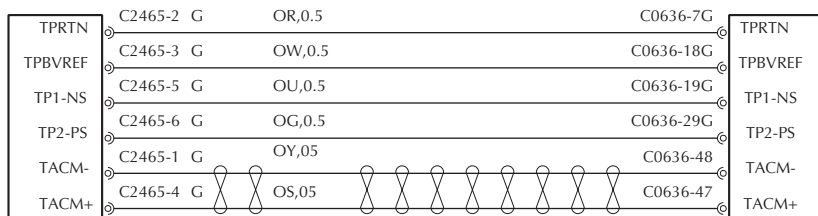


Figure 1. Throttle Position Sensor Location

Motor-Electronic Throttle A

Primary PCM



Motor-Electronic Throttle B

Secondary PCM

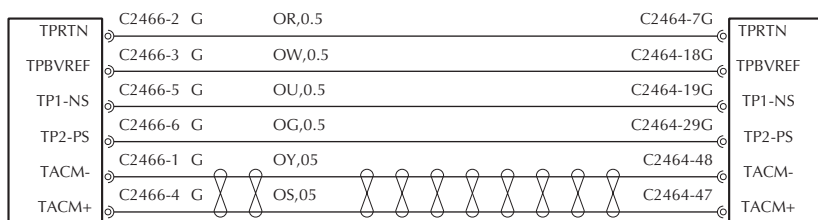


Figure 2. Throttle Position Sensor Circuits

Fault Code Definition

P0224 - Throttle position sensor (TP2) intermittent.

MIL Status

This code will not light the MIL lamp

P0224 Fault Analysis

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM) Check that you are working on the correct half of the engine.

1. Connect the WDS or scan tool. Confirm that a code P0224 is logged.
2. Access the following Throttle Potentiometer signals:

Throttle Potentiometer Track 1

Throttle Potentiometer Track 2

Key on, monitor the potentiometer readings whilst moving the throttle pedal gently through its full range of movement.

The TP signals should change smoothly within the range 0.66 volts at closed throttle to 4.78 volts at full throttle.

If any TP signal is erratic, go to step 3.

If any TP signal is constantly low, go to step 4.

3. For erratic TP readings, suspect a defective throttle potentiometer, Fit a replacement throttle body.

Reset the PCMs and run a KOER test to ensure that the problem is resolved.

4. For low TP readings, disconnect the throttle unit connector. Key on. Check the +5 volts reference supply from the PCM at throttle unit harness connector pin 3 reference chassis ground and reference TPRTN at connector pin 2.

If +5 volts is not available, Install the PCM breakout box. Check the PCM +5 volt output at pin C0636-18 (primary) or pin C2464-18 (secondary).

If +5 volts is not available, change the PCMs and run a KOER test to ensure that the problem is resolved.

If +5 volts is available, there is an open circuit in the +5 volt line from the PCM to throttle unit pin 3. Service the wiring as necessary.

Reset the PCMs and run a KOER test to ensure that the problem is resolved.

P0300 - Misfiring

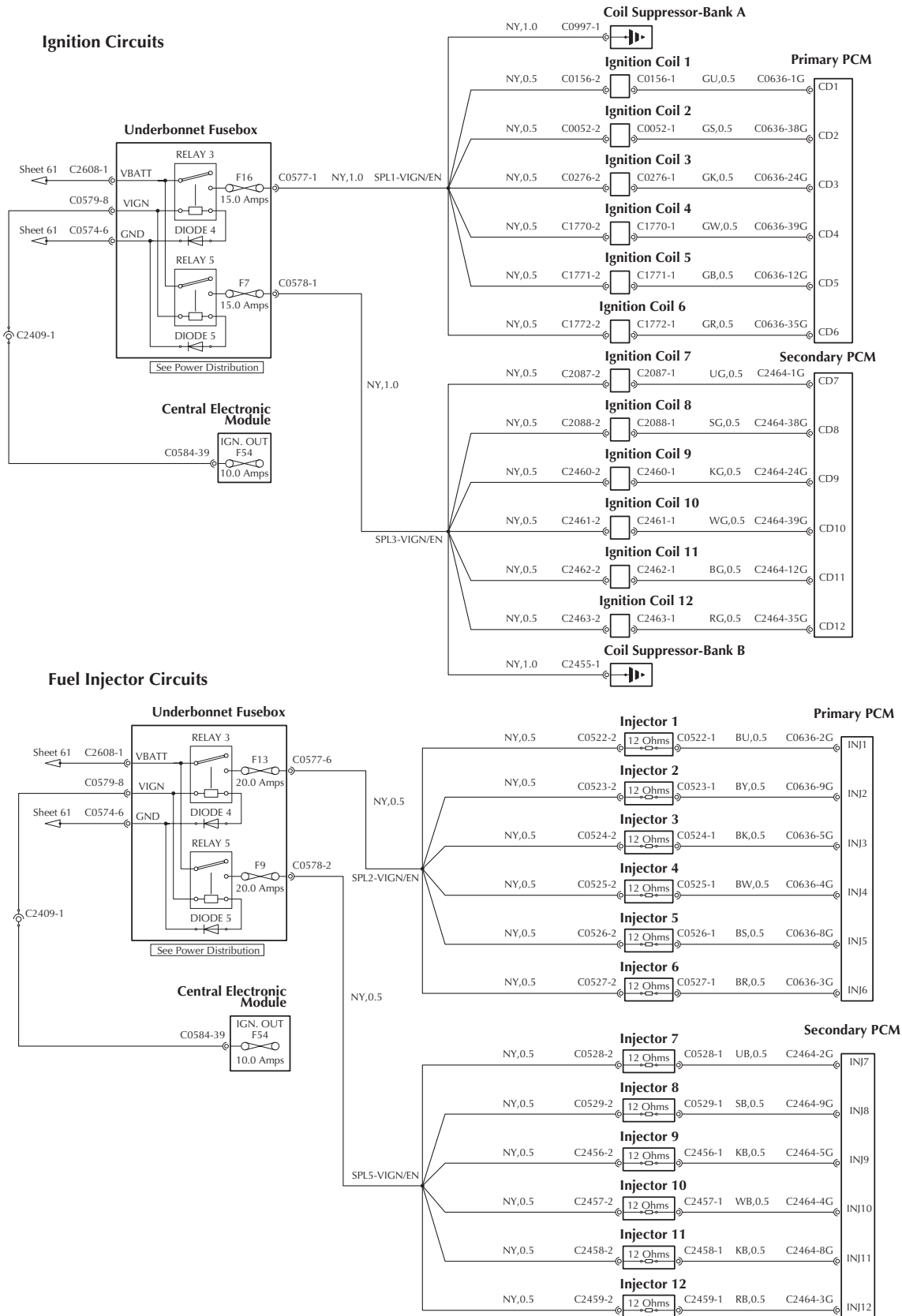


Figure 1. Ignition and Fuel Injector Wiring

Fault Code Definition

P0300 - Multiple cylinder misfiring, or cannot identify the misfiring cylinder. P0300 will often be logged if misfires are logged on the other engine bank.

Note: All misfire codes are logged in the secondary PCM only.

MIL Status

This code will light the MIL lamp

P0300 Fault Analysis

Preliminary Checks

1. Check if the vehicle has recently run out of fuel. If so, reset the PCM to clear the DTCs and retest.
2. If code P0300 is detected again, check for other relevant DTCs:

P0301-12 individual cylinder misfire codes
PIP (Crankshaft sensor) circuit failure P0320
CMP (Camshaft sensor) circuit failure P0340/45
Injector failure P0201 - 0206
Ignition coil primary circuit P0351-P0356

Rectify the problem and clear the above codes plus any other fuel or ignition related codes before analysing the P0300 code as follows:

3. Check the fuel pressure as follows:

Using the WDS datalogger, monitor the fuel pressure sensor signals.

Start the engine and run at idle speed. Record the fuel pressure. Increase the engine speed to 2500 rpm and maintain for 1 minute. Record the fuel pressure.

Nominal fuel pressure should be 40 psi above inlet manifold pressure. The fuel system must be capable of maintaining approximately 40 psi at idle and at wider throttle openings.

If the fuel pressure is within specification, go to the air induction system checks.

If the fuel pressure is outside the above specification, service the fuel system as necessary. Reset the PCM and run a KOER test to ensure that the problem is resolved.

1 Air Induction System Checks

1. Visually check the air induction system for leaks, damage or other defects and service as necessary.
2. Using the datalogger, check and compare the two MAF sensor signals with the engine running at idle.

If the signals are clean and balanced, go to the vacuum system checks.

If the signals are clean but not balanced, check the air filter, filter mounting or for restrictions in the air induction ducting. Service as necessary.

If the MAF signals show any electrical noise (voltage spikes above 0.05 volts) and the filter and ducting are serviceable, change the affected MAF sensor.

2 Vacuum System Checks

1. Visually inspect all vacuum lines for damage, such as pinched lines, cracks, proper routing and assembly. Service or repair the vacuum system as necessary.

If no fault is identified, go to the evaporative emissions system checks.

If a fault is identified, service the system as necessary, reset the PCM and run a KOER test to ensure that the problem is resolved.

3 Check the Evaporative Emission System

1. Visually check the evaporative loss system for obvious defects which could cause a vacuum leak:- e.g.

Loose or defective fuel filler cap or seal

Loose connections at the inlet manifold.

Loose connections in the vapour recovery lines in the engine bay.

Loose connections at the vapour management valves.

If no defects are identified, go to step 2.

If any obvious defects are identified, service as necessary and run the KOER test to ensure that the problem is resolved.

2. Run the WDS Evaporative Emission System Leak Test.
3. If no leak is detected, the misfire fault is not caused by the evap loss system, go to the fuel system checks.
4. If any leak is detected, service the evaporative emission system as necessary. Clear the P0300 code and run a brief road test to ensure that the problem is resolved.

4 Fuel System Checks

1. Disconnect the affected PCM and install the break-out box to the harness connector only. Check the resistance of the fuel injectors and harness at the following test points:

Injector	Pins	Injector	Pins
1	C0636-2 to Fuse F18	7	C2464-2 to Fuse F6
2	C0636-9 to Fuse F18	8	C2464-9 to Fuse F6
3	C0636-5 to Fuse F18	9	C2464-5 to Fuse F63
4	C0636-4 to Fuse F18	10	C2464-4 to Fuse F6
5	C0636-8 to Fuse F18	11	C2464-8 to Fuse F6
6	C0636-3 to Fuse F18	12	C2464-3 to Fuse F63

Each resistance should be in the range 11 - 18Ω

Low resistance - check the affected circuits for shorts to power or ground.

High resistance - check the affected circuits for high resistance connections or open circuits.

2. Remove the break-out box and reconnect the PCM. Connect the WDS or scan tool. Run the engine. Check the injector drive signal pulse widths.

The injectors must show a stable pattern of injector pulses, short pulses (approx. 2ms) at idle and steadily increasing pulse length as power demand is increased.

If the injector driver signal goes continually low or continually high, or is erratic, replace the PCMs.

If all signals are consistent, with pulse lengths increasing with engine speed (from approx. 2 ms at idle), the electrical control circuits are good.

3. Flow test the injectors:

Use a Rotunda Injector Tester or equivalent to flow test the injectors according to the manufacturers instructions.

If any injector flow rate is not within specification, replace the defective injector. Rerun the KOER Test.

If the injector flow rates are all within specification, the problem is not fuel related. Go to the vacuum system checks.

5 Check Base Engine

1. Remove the inlet manifold on the affected side of the engine. Remove the spark plug cover. Remove each ignition coil in turn and check for evidence of high voltage discharge, burned connector, etc.

If any fault is detected, replace the coil. Continue with the following physical checks to identify any additional contributory causes for the misfire.

If no fault is detected, go to step 2.

2. Remove the spark plugs and check for fouling, cracked insulators, incorrect gap, etc.

If any fault is detected, replace all spark plugs.

Continue with the following physical checks to identify any additional contributory causes for the misfire.

If no fault is detected, go to step 3.

3. Check the cylinder compression pressures using the Workshop Manual procedure.

If any compression pressure is low, repair the engine as necessary.

4. Remove the camshaft cover. Rotate the engine to TDC No. 1 cylinder. Check for correct valve timing (workshop manual procedure)

If any fault is detected, perform the valve timing adjustment. Continue with the following physical checks to identify any additional contributory causes for the misfire.

If no fault is detected, go to step 5.

5. Reassemble the engine using new gaskets, seals and sealants.

Reset the PCM and run a KOER test to ensure that the problem has been resolved.

P0301-P0312 / P0316 - Misfiring

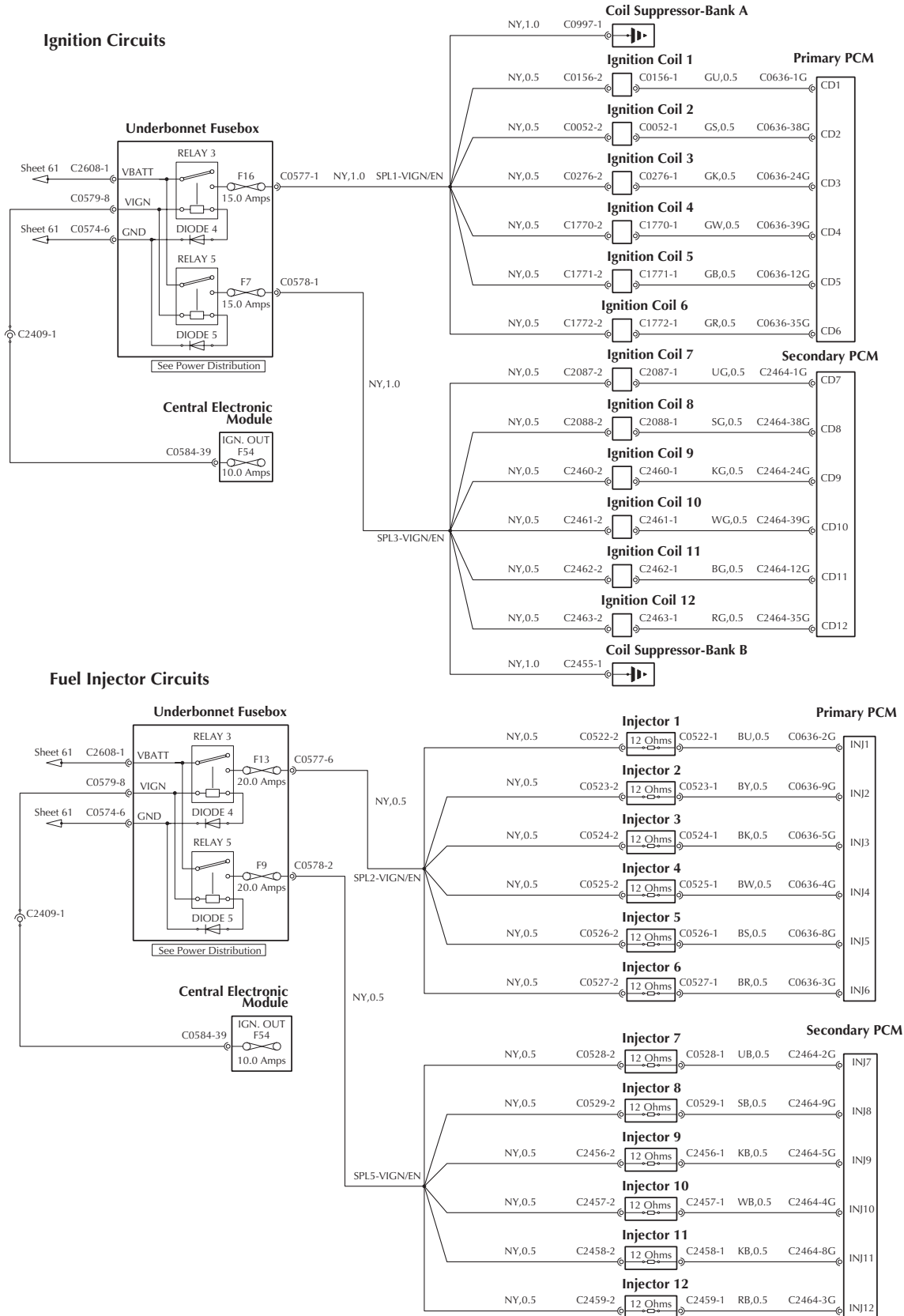


Figure 1. Ignition and Fuel Injector Wiring

Fault Code Definition

P0301 - P0312 - Single cylinder misfiring.

P0316 - Misfire - First 1000 engine revolutions.

Note: All misfire codes are logged in the secondary PCM only.

MIL Status

Codes P0301 to P0312 will not light the MIL lamp. P0316 will light the MIL lamp.

P0301-P0306 Fault Analysis

Preliminary Checks

Note: For P0316 a 1000 counter is started as the engine starts and resets to zero every 1000 engine revs provided that no misfires have occurred. This code will be set if the engine misfires during the 1000 count cycle.

1. Check if the vehicle has recently run out of fuel. If so, reset the PCM to clear the DTCs and retest.
2. If code P0301-12 is detected again, check for other relevant DTCs:

PIP (Crankshaft sensor) circuit failure P0320
CMP (Camshaft sensor) circuit failure P0340/45
Injector failure P0200 - 0206
Ignition coil primary circuit P0351-P0356

Rectify the problem and clear the above codes plus any other fuel or ignition related codes before analysing the P0300 code as follows:

3. Check the fuel pressure as follows:

Using the WDS datalogger, monitor the fuel pressure sensor signals.

Start the engine and run at idle speed. Record the fuel pressure. Increase the engine speed to 2500 rpm and maintain for 1 minute. Record the fuel pressure.

Nominal fuel pressure should be 40 psi above inlet manifold pressure. The fuel system must be capable of maintaining approximately 40 psi at idle and at wider throttle openings.

If the fuel pressure is within specification, go to the air induction system checks.

If the fuel pressure is outside the above specification, service the fuel system as necessary. Reset

the PCM and run a KOER test to ensure that the problem is resolved.

1 Air Induction System Checks

1. Visually check the air induction system for leaks, damage or other defects and service as necessary.
2. Using the datalogger, check and compare the two MAF sensor signals with the engine running at idle.

If the signals are clean and balanced, go to the vacuum system checks.

If the signals are clean but not balanced, check the air filter, filter mounting or for restrictions in the air induction ducting. Service as necessary.

If the MAF signals show any electrical noise (voltage spikes above 0.05 volts) and the filter and ducting are serviceable, change the affected MAF sensor.

2 Vacuum System Checks

1. Visually inspect all vacuum lines for damage, such as pinched lines, cracks, proper routing and assembly. Service or repair the vacuum system as necessary.

If no fault is identified, go to the evaporative emissions system checks.

If a fault is identified, service the system as necessary, reset the PCM and run a KOER test to ensure that the problem is resolved.

3 Check the Evaporative Emission System

1. Visually check the evaporative loss system for obvious defects which could cause a vacuum leak:- e.g.

Loose or defective fuel filler cap or seal
Loose connections at the inlet manifold.
Loose connections in the vapour recovery lines in the engine bay.
Loose connections at the vapour management valves.
If no defects are identified, go to step 2.

If any obvious defects are identified, service as necessary and run the KOER test to ensure that the problem is resolved.
2. Run the WDS Evaporative Emission System Leak Test.
3. If no leak is detected, the misfire fault is not caused by the evap loss system, go to the fuel system checks.
4. If any leak is detected, service the evaporative emission system as necessary. Clear the P0301-P0306 code and run a brief road test to ensure that the problem is resolved.

4 Fuel System Checks

1. Disconnect the affected PCM and install the break-out box to the harness connector only. Check the resistance of the fuel injectors and harness at the following test points:

Injector	Pins	Injector	Pins
1	C0636-2 to Fuse F18	7	C2464-2 to Fuse F6
2	C0636-9 to Fuse F18	8	C2464-9 to Fuse F6
3	C0636-5 to Fuse F18	9	C2464-5 to Fuse F63
4	C0636-4 to Fuse F18	10	C2464-4 to Fuse F6
5	C0636-8 to Fuse F18	11	C2464-8 to Fuse F6
6	C0636-3 to Fuse F18	12	C2464-3 to Fuse F63

Each resistance should be in the range 11 - 18Ω

Low resistance - check the affected circuits for shorts to power or ground.

High resistance - check the affected circuits for high resistance connections or open circuits.

2. Remove the break-out box and reconnect the PCM. Connect the WDS or scan tool. Run the engine. Check the injector drive signal pulse widths.

The injectors must show a stable pattern of injector pulses, short pulses (approx. 2ms) at idle and steadily increasing pulse length as power demand is increased.

If the injector driver signal goes continually low or continually high, or is erratic, replace the PCMs.

If all signals are consistent, with pulse lengths increasing with engine speed (from approx. 2 ms at idle), the electrical control circuits are good.

3. Flow test the injectors:

Use a Rotunda Injector Tester or equivalent to flow test the injectors according to the manufacturers instructions.

If any injector flow rate is not within specification, replace the defective injector. Rerun the KOER Test.

If the injector flow rates are all within specification, the problem is not fuel related. Go to the vacuum system checks.

5 Check Base Engine

1. Remove the inlet manifold on the affected side of the engine. Remove the spark plug cover. Remove each ignition coil in turn and check for evidence of high voltage discharge, burned connector, etc.

If any fault is detected, replace the coil. Continue with the following physical checks to identify any additional contributory causes for the misfire.

If no fault is detected, go to step 2.

2. Remove the spark plugs and check for fouling, cracked insulators, incorrect gap, etc.

If any fault is detected, replace all spark plugs.

Continue with the following physical checks to identify any additional contributory causes for the misfire.

If no fault is detected, go to step 3.

3. Check the cylinder compression pressures using the Workshop Manual procedure.

If any compression pressure is low, repair the engine as necessary.

4. Remove the camshaft cover. Rotate the engine to TDC No. 1 cylinder. Check for correct valve timing (workshop manual procedure)

If any fault is detected, perform the valve timing adjustment. Continue with the following physical checks to identify any additional contributory causes for the misfire.

If no fault is detected, go to step 5.

5. Reassemble the engine using new gaskets, seals and sealants.

Reset the PCM and run a KOER test to ensure that the problem has been resolved.

P0315 - Crankshaft Position Sensor

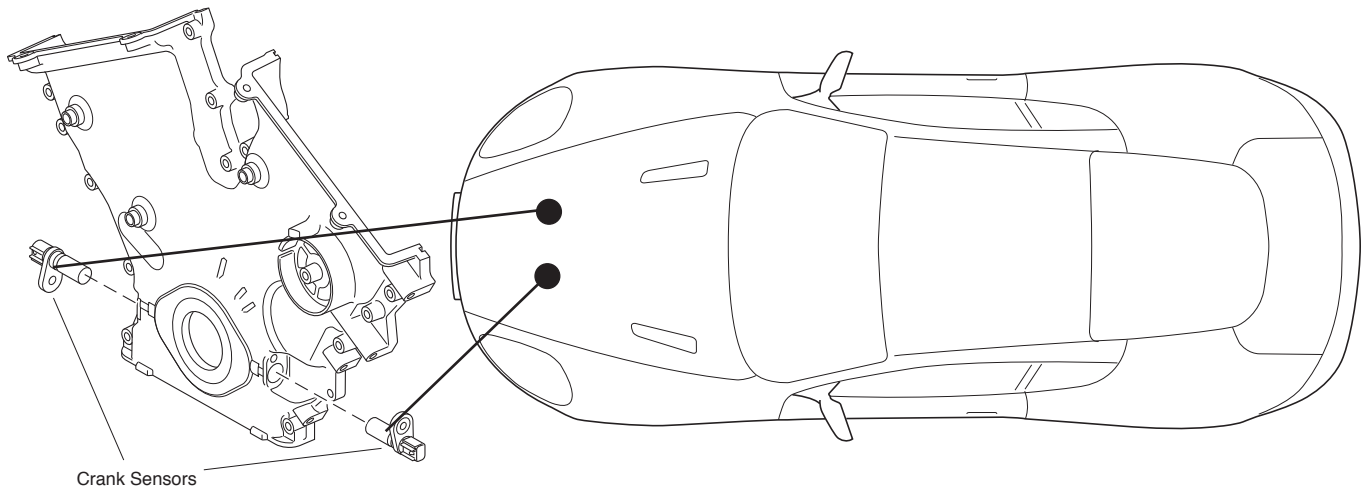
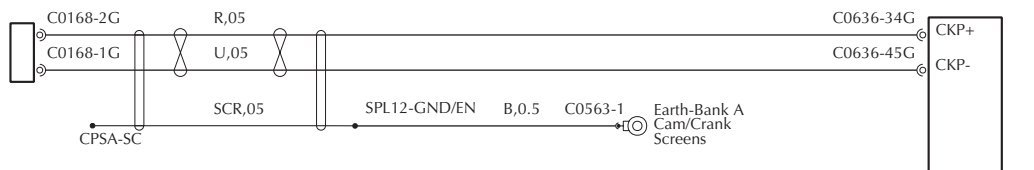


Figure 1. Crankshaft Position Sensor Location

Sensor-Crank Position



Sensor-Crank Position

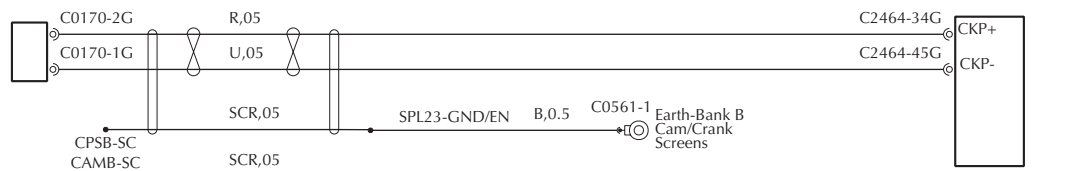


Figure 2. Crankshaft Position Sensor Circuit

Fault Code Definition

P0315 - Crankshaft position sensor - System variation not learned.

MIL Status

This code will light the MIL lamp

P0315 Fault Analysis

Note: The crankshaft position is detected by monitoring the crankshaft position sensor signals. The signals should follow a regular pattern of 35 pulses and then a one pulse gap (36 tooth wheel on the crankshaft nose with one tooth missing) for each engine revolution.

Variations in the crank position sensor pulses are monitored using a fast electronic counter in the Engine Control Module (PCM), the number of counts between successive crankshaft sensor pulses are noted. Any variation in counts due to minor machining tolerances in the crankshaft toothed wheel are noted for the first engine revolutions and remembered as a standard against which all future crank position signals are monitored.

1. Connect the WDS and check that P0315 is logged.
2. Using the WDS oscilloscope, monitor the crank sensor signals with the engine running. The signals should follow a regular pattern of 35 pulses and then a one pulse gap. This sequence must repeat every engine revolution for both sensors.



3. If either sensor shows an erratic pulse pattern, replace the sensor and recheck the pulse pattern.
4. Access the crank sensors and check for physical security.

If any problem is identified with sensor security, service the engine as necessary. Clear the P0315 code and run a KOER test to ensure that the problem is resolved.

If no problems are identified, go to step 5.

5. If the problem persists, check for wiring problems in the sensor circuit between PCM pins C0636-34 and C0636-45 (primary) or between C2464-34 and C2464-45 (secondary). Service the wiring as necessary and run a KOER test to ensure that the problem is resolved.

6. If no wiring problems are identified, contact Aston Martin Technical Support.

P0320 - Ignition Engine Speed Input Circuit Fault

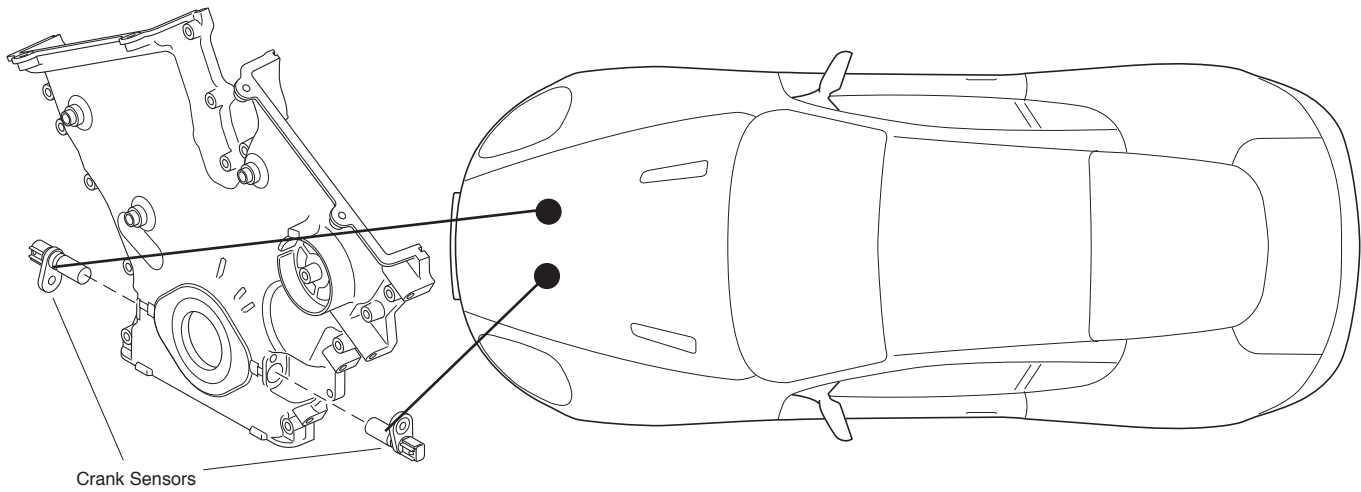


Figure 1. Crankshaft Position Sensor Location

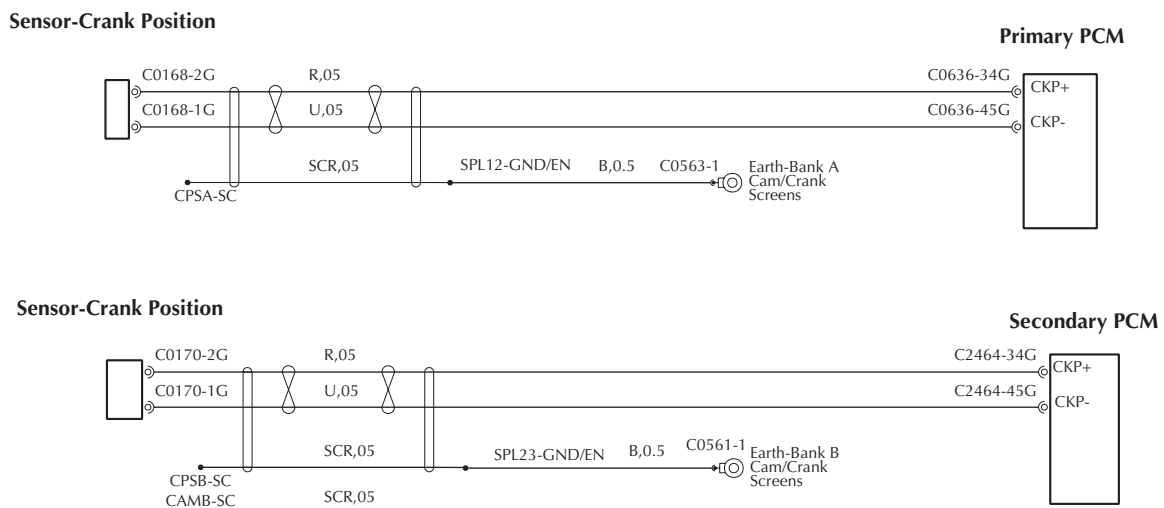


Figure 2. Crankshaft Position Sensor - Wiring

Fault Code Definition

P0320 - Ignition engine speed input circuit

MIL Status

This code will light the MIL lamp

P0320 Fault Analysis

Note: The basic ignition timing is derived from the crankshaft position sensor signal (CKP). This signal is processed in the ignition control circuits to provide the PIP (Profile Ignition Pickup) signal. The PIP signal pulses at half engine speed with pulse lead edges rising at 10° before top dead centre. Final ignition timing will be advanced or retarded from this 10°BTDC position as necessary. If the PIP signal is erratic, a P0320 code will be logged.

1. Connect the WDS and check that P0320 is logged. Note which PCM is recording the fault.
2. Start the engine and allow the KOER test to complete. On completion of the KOER test, use data-logger to record both crank position signals whilst the engine is running.

Check the recorded data, comparing the two CKP signals.

If at any constant engine speed, the signal pulse widths differ by more than 25%, the crank sensor providing the unstable signal is suspect.

3. Access the crankshaft position sensors. Check both sensors for correct mounting and security.

If both sensors are correctly mounted, go to step 4.

If either sensor mounting is loose, secure the sensor. Clear the P0320 code. Repeat the KOER test and the CKP signal comparison to ensure that the problem is resolved.

4. Check the security and condition of the CKP sensor connector.

If any electrical fault is detected, service the wiring as necessary. Clear the P0320 code and rerun the KOER test to ensure that the problem is resolved.

If no electrical fault is detected, contact Aston Martin Technical Support.

P0322 - Crankshaft POsition Signal Lost

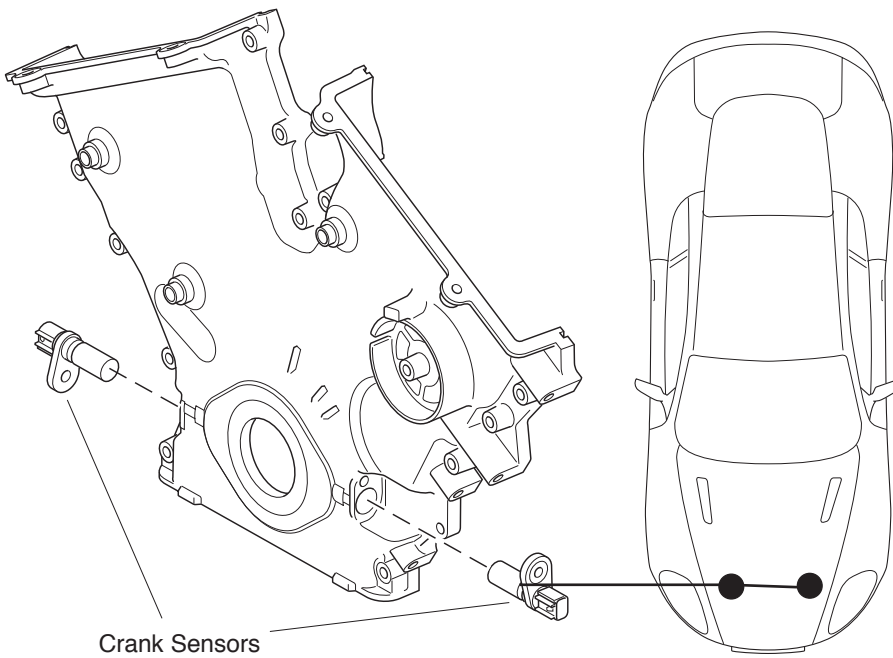


Figure 1. Crankshaft and Camshaft Sensor Locations

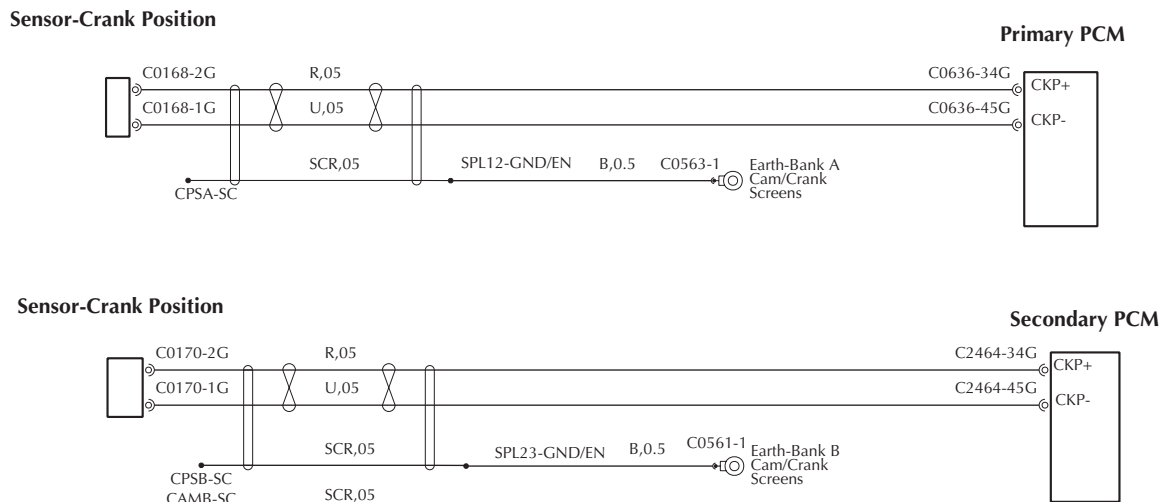


Figure 2. Crankshaft Sensor Circuit

Fault Code Definition

P0322 - Crankshaft sensor signal lost

MIL Status

This code will light the MIL lamp.

P0322 Fault Analysis

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Connect the WDS and confirm that P0322 is logged. Note any other logged DTCs.
2. Check the relevant crank sensor for disconnection, damaged wiring or other wiring defect.

If no obvious wiring defect is present, go to step 3

If any wiring defect is identified, service the wiring as necessary. Set WDS to monitor both crank signals. Run the engine and ensure that both signals are satisfactory.

3. Using the WDS oscilloscope, monitor the crank sensor signals with the engine running. The signals should follow a regular pattern of 35 pulses and then a one pulse gap. This sequence must repeat every engine revolution for both sensors.



4. If any crank signal pulse is missing or malformed, swap the crankshaft sensors bank to bank and repeat the datalogger check.

If the fault swaps to the opposite bank, replace the faulty crankshaft sensor. Clear the P0322 code and run a KOER test to ensure that the problem is resolved.

If the fault remains on the original engine bank, service the crankshaft sensor wiring as necessary. Clear the P03226 code and run an engine test to ensure that the problem is resolved.

P0340 / P0345 - Cylinder Identification Sensor (CID)

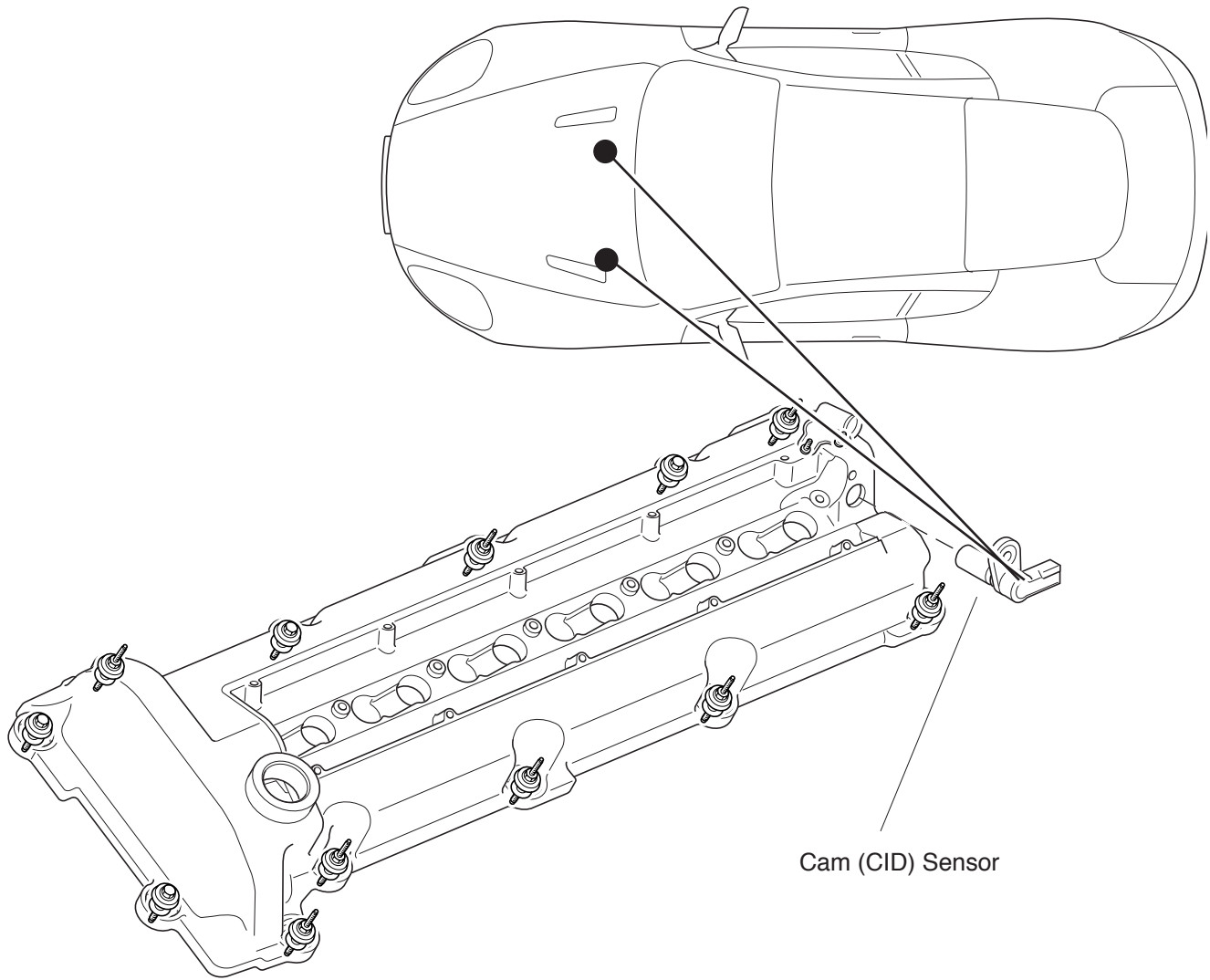


Figure 1. Camshaft (Cylinder Identification - CID) Sensor Location

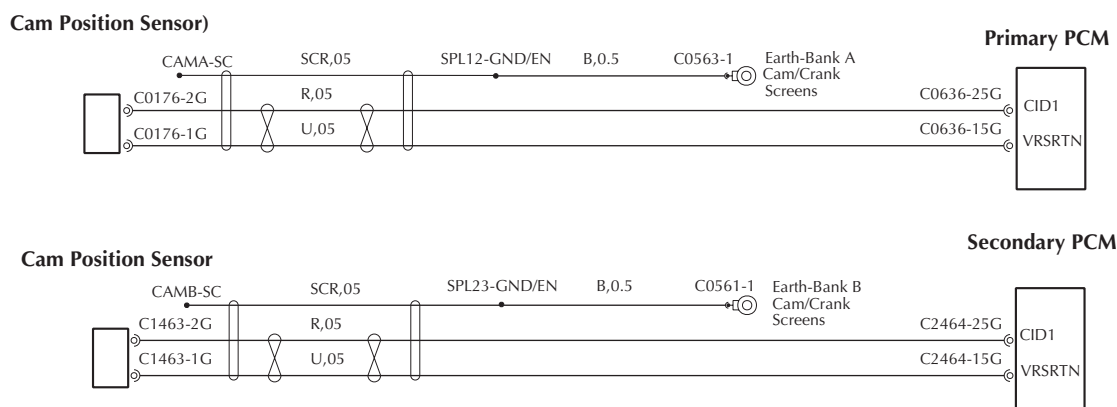


Figure 2. Cylinder Identification Sensor Wiring

Fault Code Definition

P0340 - During self-test, a cylinder identification (CID) sensor circuit failure was detected. Bank 1

P0345 - During self-test, a cylinder identification (CID) sensor circuit failure was detected. Bank 2

MIL Status

This code will light the MIL lamp

P0340 / P0345 Fault Analysis

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM) Check that you are working on the correct half of the engine.

1. Connect the WDS or scan tool. Record all logged DTCs. Complete the PCM reset procedure to clear all logged DTCs.

2. Check the continuity from the cylinder identification sensor cable screen to chassis ground.

If any defect is identified in the screen continuity, service as necessary, reset the PCM and retest.

If no defects are identified in the screen continuity, go to step 3.

3. Set the datalogger to monitor the cylinder identification signals (CID).

Start the engine. Whilst monitoring the sensor signals, increase engine revs to greater than 1500 for 10 seconds and allow it to return to idle speed. Repeat this sequence twice more.

The sensor signal must show a regular pattern of pulses, one pulse per two engine revolutions.

If the pulse pattern is irregular or has missing pulses, go on to step 4.

If the pulse pattern is regular, the P0340 fault is intermittent, go to the Intermittent Signal Procedure.

4. Install the PCM breakout box. Disconnect the cylinder identification sensor. Check continuity of the signal line to PCM pin C0636-25 primary or C2464-25 secondary. The line should measure less than 5.0Ω. If a resistance higher than 5.0Ω is measured, repair or replace the wiring as necessary. If continuity meets specification, continue to step 5.

5. Check the security of the cylinder identification sensor physical mounting. If loose, secure and retest. If the sensor is already secure, replace the sensor and retest. If the fault continues, contact Aston Martin Technical Support.

P0351 - 0356 - Ignition Coil Primary Circuits

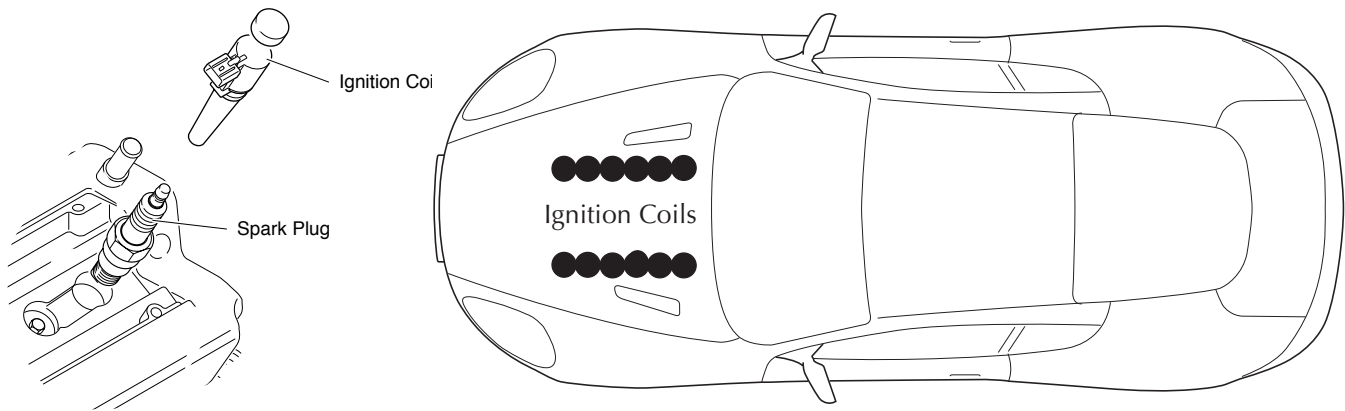


Figure 1. Ignition Coil location

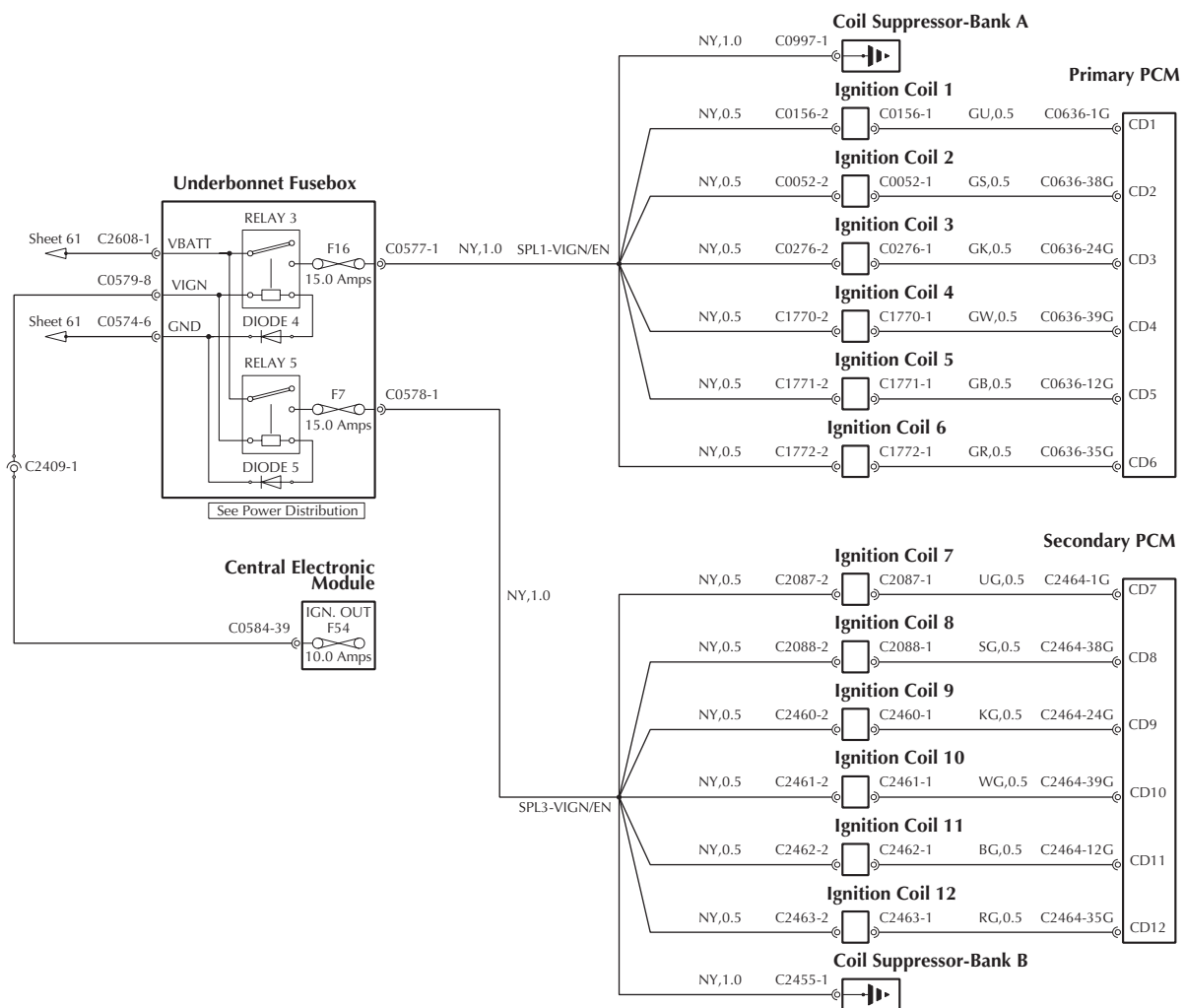


Figure 2. Ignition Coil Wiring (Primary PCM)

Fault Code Definition

P0351 - Ignition coil 1 primary malfunction
P0352 - Ignition coil 2 primary malfunction
P0353 - Ignition coil 3 primary malfunction
P0354 - Ignition coil 4 primary malfunction
P0355 - Ignition coil 5 primary malfunction
P0356 - Ignition coil 6 primary malfunction

MIL Status

These codes will light the MIL lamp

P0350 - P0356 Fault Analysis

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

Note: If P0340 is logged, analyse the P0340 problem first.

1. Switch off the ignition and disconnect the relevant PCM.

Install the break-out box to the PCM harness connector only.

Switch on the ignition and check for +12V ignition at the following pins on the break-out box.

Primary PCM (Right Hand)

Ignition coil 1 - Primary PCM Pin C0636-1
Ignition coil 2 - Primary PCM Pin C0636-38
Ignition coil 3 - Primary PCM Pin C0636-24
Ignition coil 4 - Primary PCM Pin C0636-39
Ignition coil 5 - Primary PCM Pin C0636-12
Ignition coil 6 - Primary PCM Pin C0636-35

Secondary PCM (Left Hand)

Ignition coil 7 - Secondary PCM Pin C2464-1
Ignition coil 8 - Secondary PCM Pin C2464-38
Ignition coil 9 - Secondary PCM Pin C2464-24
Ignition coil 10 - Secondary PCM Pin C2464-39
Ignition coil 11 - Secondary PCM Pin C2464-12
Ignition coil 12 - Secondary PCM Pin C2464-35

If +12 volts is available at all pins, go to step 2.

If +12 volts is not available at any pin, check the +12V ignition supply through the underbonnet fusebox F7 to the ignition coil connectors pin 2.

If +12 volts is not available at only one pin, go to step 3.

2. Disconnect the break-out box and connect a substitute pair of PCMs. Run a KOER test to ensure that the problem is resolved.

If the substitute PCMs resolves the problem, fit a permanent replacement.

If the substitute PCMs do not resolve the problem, the fault is intermittent breakdown in the ignition coil. Replace the suspect ignition coil.

Remove the substitute PCMs and reconnect the original. Run a KOER test to ensure that the problem is resolved.

3. Remove the inlet manifold and spark plug cover from the affected side of the engine.

Refer to the circuit on the previous page and check continuity of the wiring from underbonnet fusebox F7 to pin 2 of the ignition coil connector.

Also check continuity from pin 2 of the ignition coil connector to the relevant PCM connector pin (see list in step 1).

If a wiring fault is identified, service the wiring as necessary. Reconnect all components and run a KOER test to ensure that the problem is resolved.

If no wiring fault is identified, swap the misfire detection modules between engine banks. Run the engine to see if the fault swaps to the other bank. If so, change the defective misfire module.

If swapping the misfire modules has no effect, replace the relevant ignition coil. Refit and reconnect all components and run a KOER test to ensure that the problem is resolved.

P0420 - Cylinder 1-3 Catalyst Failure

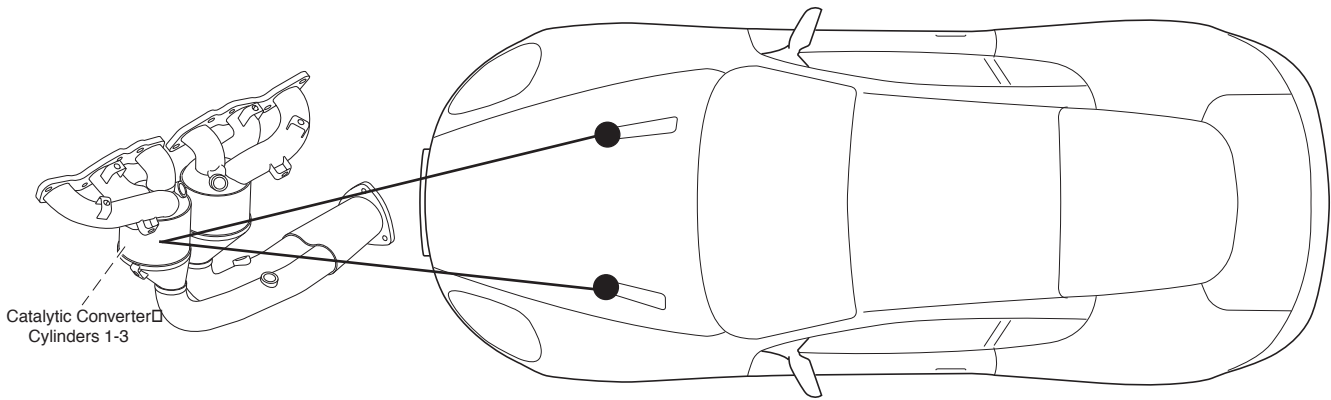
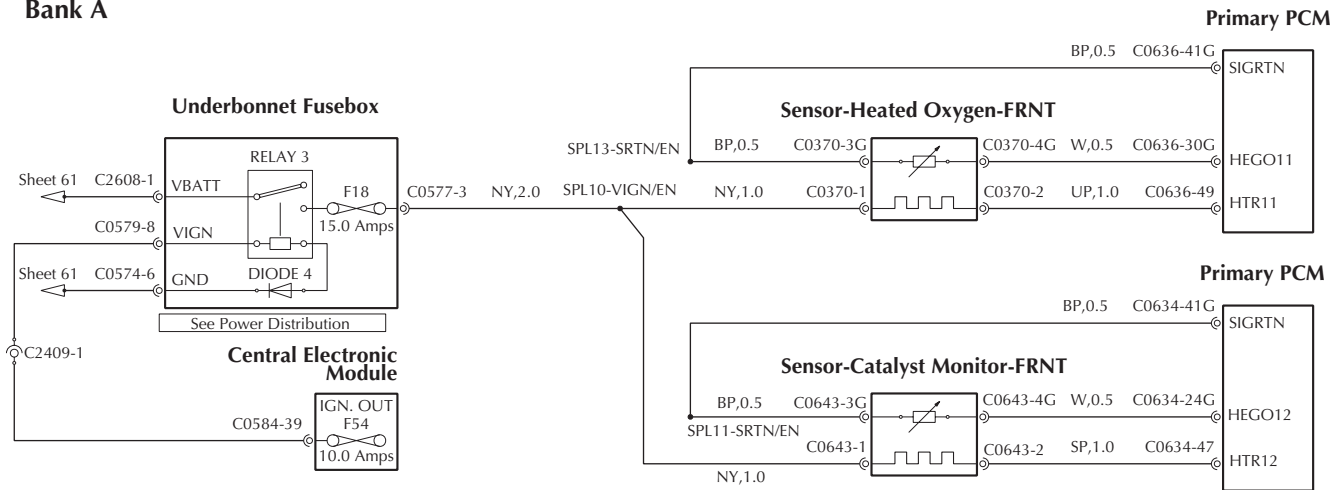


Figure 1. Catalyst Efficiency System Components

Bank A



Bank B

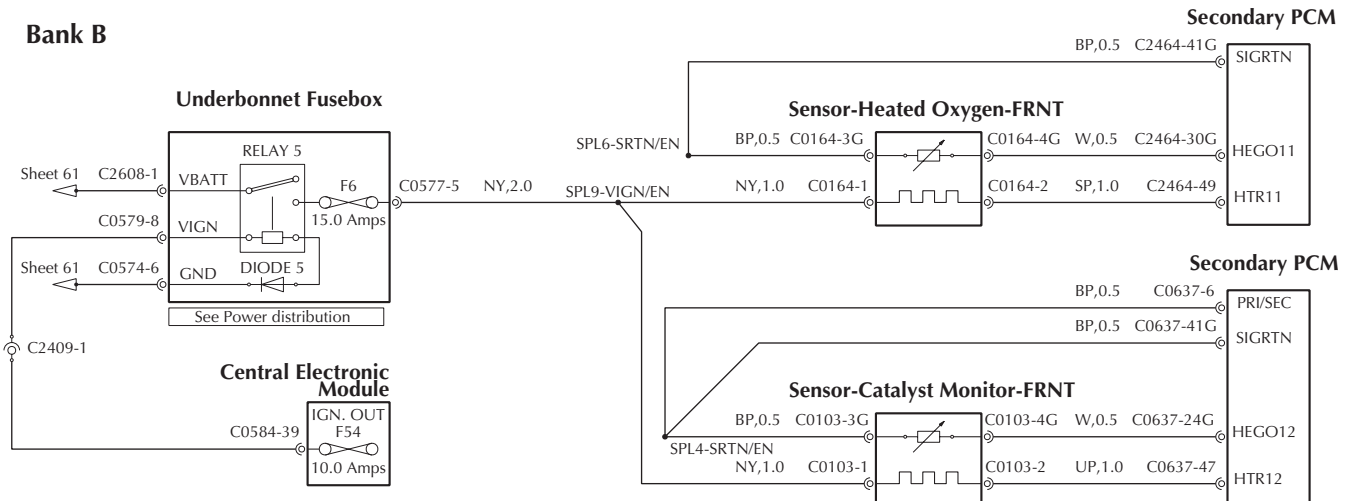


Figure 2. Heated Oxygen Sensor HO2S-2 Wiring

Fault Code Definition

P0420 - Indicates that cylinder 1-3 catalyst system efficiency is below the acceptable threshold.

MIL Status

This code will light the MIL lamp

P0420 Fault Analysis

Notes

1. Ensure that the customer has not used leaded fuel

2. Ensure that the customer has not experienced high oil consumption.

3. Internal deterioration of a catalytic convertor is usually caused by abnormal engine operation upstream of the catalyst. Events which may produce higher than normal temperatures, e.g. misfiring, are particularly suspect.

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Connect the WDS and note all logged DTCs. If any HO2S DTCs are recorded, analyse these problems, then return to this procedure.
2. If any ECT sensor DTCs are recorded P0116, P0117, P0118, P0119, or P1116, analyse these problems, then return to this procedure.
3. If any other DTCs are recorded (not including the initial P0420) analyse these codes, then return to this procedure.
4. Check the wiring of each catalyst monitor oxygen sensor. If any wiring error is found, correct it, then reset the PCM memory and rerun the KOER Test to check that the problem is resolved. If no wiring errors are found, go to step 6.
5. Whilst running the engine, use datalogger to compare the upstream and downstream oxygen sensor signals for each engine bank.

If the signals are significantly different, indicating a correctly working catalyst, go to step 6.

If the upstream and downstream signals on either bank are identical, the catalyst on that bank is defective and must be replaced. Investigate for possible causes before running the engine on the new catalyst.
6. Using datalogger, monitor the fuel pressure in both fuel rails.

Note: Fuel pressure outside specification can cause incorrect fuel air mixture leading to higher than normal catalyst temperatures.

Run the engine at idle. Record the fuel pressure.

Increase engine speed to 2500 rpm and maintain for one minute. Record the fuel pressure.

The nominal fuel pressure specification is 40 psi above manifold pressure.

If fuel pressure is in specification, go on to step 7.

If fuel pressure is out of specification, service as necessary. Reset the PCM and run a KOER test to ensure that the problem is resolved.
7. Check for leaks/damage in the exhaust system. Examine all flanges for security and leaks. Examine all components for splits or corrosion. Examine supports for security to avoid any flexing under road shock. Check the complete system for damage which could cause restrictions.

If any defects are identified, repair or replace components as necessary and retest the vehicle to check for complete resolution of the problem. If no defects are found, go to step 8.
8. Check the inlet manifold vacuum:

Attach a vacuum gauge to the inlet manifold. Start the engine and allow it to run at idle speed whilst observing the vacuum gauge.

Note: The vacuum gauge reading may be normal when the engine is first started and idled. However, excessive restriction in the exhaust system will cause the vacuum to diminish even when the engine is idling.

Note the initial gauge reading and any change in the reading during the initial period at idle speed.

Steadily increase engine speed to 2000 rpm, then allow it to slowly decrease back to idle speed.

The manifold vacuum must rise to at least 16 inches Hg with the engine at 2000 rpm.

If a vacuum of less than 16 inches Hg at 2000 rpm is observed, remove the exhaust system and check for restrictions or blockage.

If the manifold vacuum met the basic specification, the P0420/P0430 codes are caused by poor catalyst performance, change the catalytic converters and run the drive cycle to ensure that the problem is resolved.

P0430 - Cylinder 4-6 Catalyst Failure

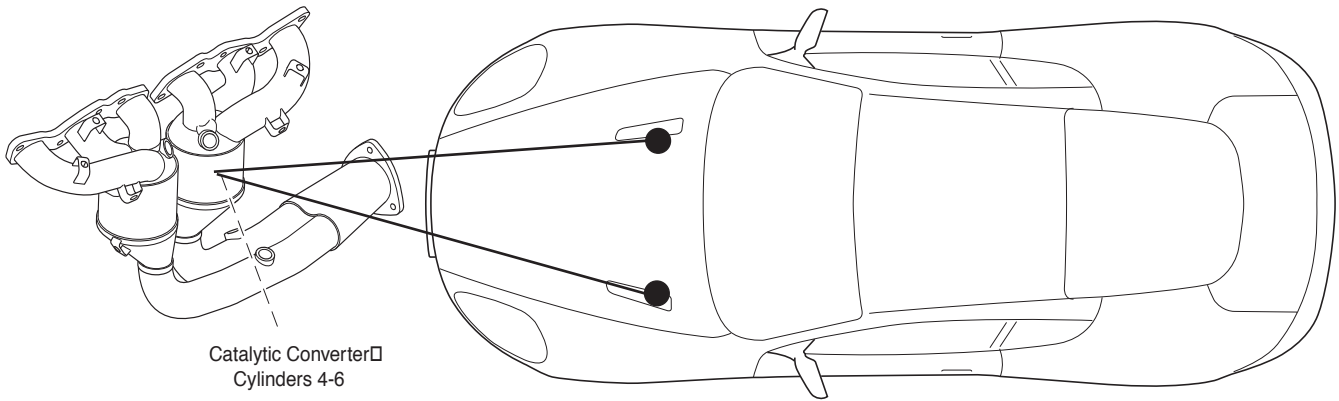


Figure 1. Catalyst Efficiency System Components

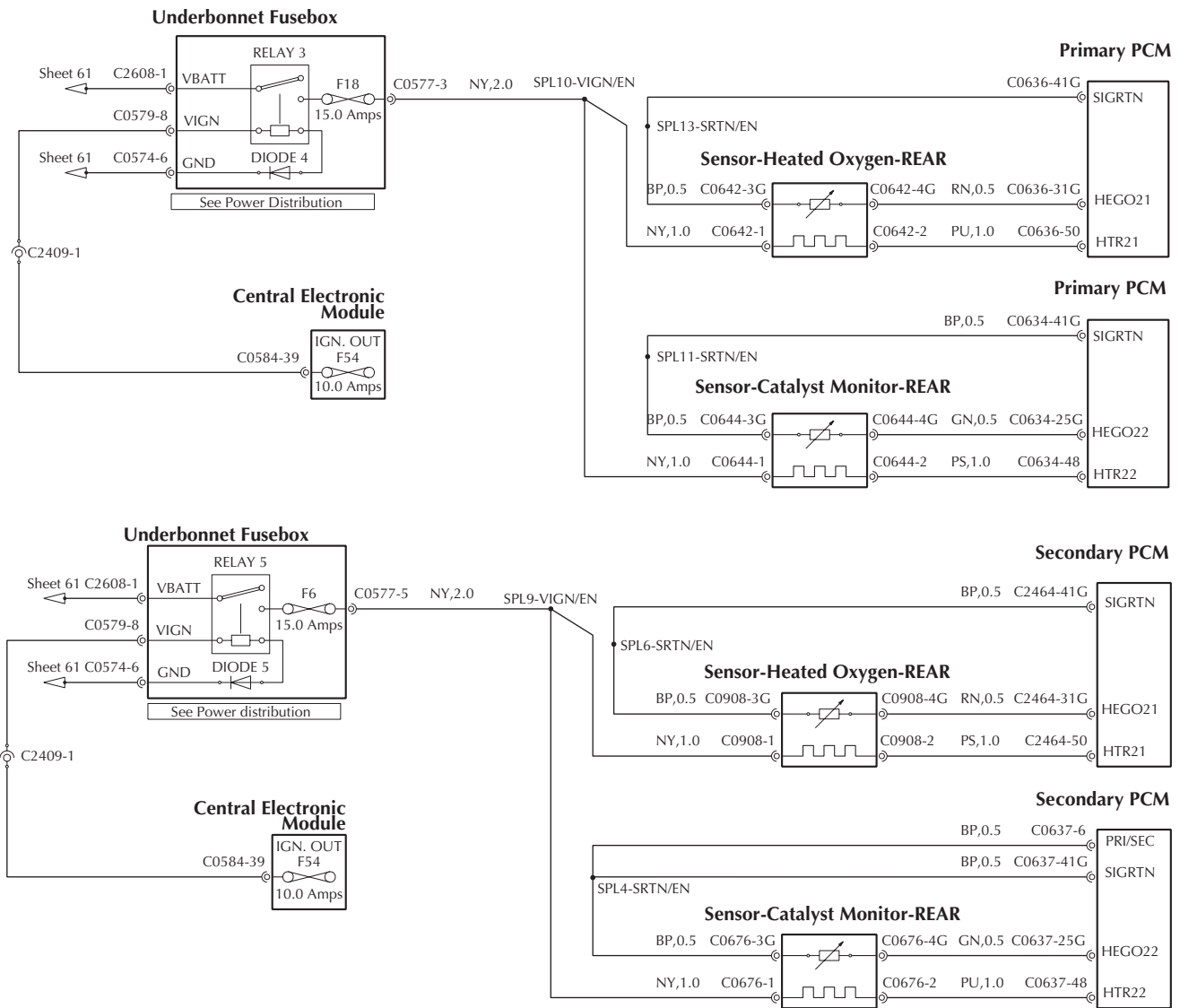


Figure 2. Heated Oxygen Sensor HO2S-2 Wiring

Fault Code Definition

P0430 - Indicates that cylinder 4-6 catalyst system efficiency is below the acceptable threshold.

MIL Status

This code will light the MIL lamp

P0430 Fault Analysis

Notes

1. Ensure that the customer has not refuelled the vehicle with leaded fuel
2. Ensure that the customer has not experienced high oil consumption.
3. Internal deterioration of a catalytic convertor is usually caused by abnormal engine operation upstream of the catalyst. Events which may produce higher than normal temperatures, e.g. misfiring, are particularly suspect.

1. Connect the WDS and note all logged DTCs. If any misfire DTCs P0300 - P0306 are recorded, analyse the misfire problem first.
2. If any HO2S DTCs P0133, P0135, P0141, P0155 or P0161 are recorded, analyse these problems, then return to this procedure.
3. If any ECT sensor DTCs are recorded P0116, P0117, P0118, P0119 or P1116, analyse these problems, then return to this procedure.
4. If any other DTCs are recorded, analyse these codes, then return to this procedure.
5. Check the wiring of each rear heated oxygen sensor. If any wiring error is found, correct it, then reset the PCM memory and rerun the KOER Test to check that the problem is resolved. If no wiring errors are found, go to step 6.
6. Whilst running the engine, use datalogger to compare the upstream and downstream oxygen sensor signals.

If the signals are significantly different, indicating a correctly working catalyst, go to step 6.

If the upstream and downstream signals on either bank are identical, the catalyst on that bank is defective and must be replaced. Investigate for possible causes before running the engine on the new catalyst.
7. Use datalogger to monitor the fuel pressure in both fuel rails.

Note: Fuel pressure outside specification can cause incorrect fuel air mixture leading to higher than normal catalyst temperatures.

Run the engine at idle. Record the fuel pressure.

Increase engine speed to 2500 rpm and maintain for one minute. Record the fuel pressure.

The nominal fuel pressure specification is 40 psi above manifold pressure.

If fuel pressure is in specification, go on to step 7.

If fuel pressure is out of specification, service the fuel system as necessary. Reset the PCM and run a KOER test to ensure that the problem is resolved.

8. Check for leaks or damage in the exhaust system. Examine all flanges for security and leaks. Examine all components for splits or serious corrosion. Examine all supports for security to avoid any flexing of the system under road shock. Check for damage which could cause restrictions.

If any defects are identified, repair or replace components as necessary and retest the vehicle to check for complete resolution of the problem. If no defects are found, go to step 8.

9. Check the inlet manifold vacuum:

Attach a vacuum gauge to the inlet manifold. Start the engine and allow it to run at idle speed whilst observing the vacuum gauge.

Note: The vacuum gauge reading may be normal when the engine is first started and idled. However, excessive restriction in the exhaust system will cause the vacuum to diminish even when the engine is idling.

Note the initial gauge reading and any change in the reading during the initial period at idle speed.

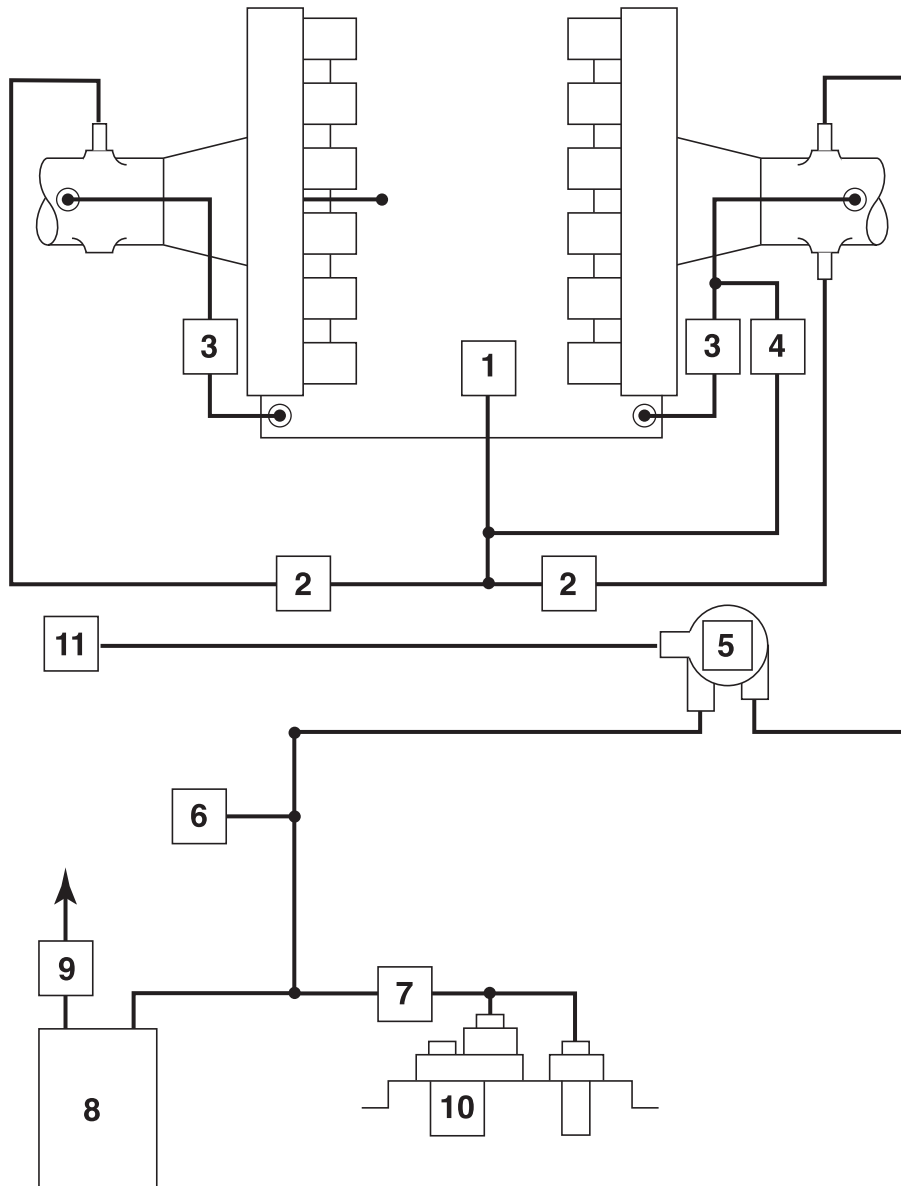
Steadily increase engine speed to 2000 rpm, then allow it to slowly decrease back to idle speed.

The manifold vacuum must rise to at least 16 inches Hg with the engine at 2000 rpm.

If a vacuum of less than 16 inches Hg at 2000 rpm is observed, remove the exhaust system and check for restrictions or blockage.

If the manifold vacuum met the basic specification, the P0420/P0430 codes are caused by poor catalyst performance, change the catalytic convertors and run the drive cycle to ensure that the problem is resolved.

P0442 - Evaporative Loss - Vapour Recovery System



- | | |
|-------------------------------|----------------------------------|
| 1. Oil Separator | 6. Service Port |
| 2. PCV Valve | 7. Fuel Tank Pressure Transducer |
| 3. Check Valve | 8. Carbon Canister |
| 4. Relief Valve | 9. Canister Vent Valve |
| 5. Vapour Management Valve-RH | 10. Fill Limit Vent Valve |
| | 11. Test Port |

Figure 1. Evaporative Loss System Components

Fault Code Definition

P0442 - Unable to hold tank vacuum (small leak)

MIL Status

This code will light the MIL lamp

P0442 Fault Analysis

Note: The integrity of the vapour recovery system is checked by closing the canister vent valve, opening the vapour management valve and applying a vacuum from the inlet manifold. When the fuel tank vacuum is at an appropriate level, the VMV is closed.

The vacuum in the closed vapour recovery system may then be monitored using the fuel tank pressure transducer.

The system checks for small leaks (P0442) or for gross leaks (P0455).

CAUTION: This code is generated only in the Primary Powertrain Control Module (PCM). Check that you are working on the primary half of the engine.

1. Connect the WDS and read the logged DTCs.
If P0443, P0446 - P0457 are logged, rectify these problems first. Return to this procedure only if P0442 is logged again after clearing these codes.
2. Check the evaporative loss system for obvious defects which could cause a vacuum leak:- e.g.

Loose or defective fuel filler cap or seal

Loose vapour connections at the canisters

Loose connections in the vapour recovery lines in the engine bay.

If no defects are identified, go to step 3.

If any defects are identified, service as necessary and run the KOER test to ensure that the problem is resolved.
3. Run the WDS Evaporative Emission Leak Test.

If a leak is detected, go to step 4.

If no leak is detected, clear the P0442 code and run a road test to confirm that the problem is no longer present.

4. **WARNING:** Do not exceed the maximum pressure specified in this step. Excessive pressure can cause damage in the fuel system.

With the fuel filler cap securely in place, connect an evaporative loss system tester to the schrader valve near the primary carbon canister.

Temporarily plug the vent pipe from the canister vent valve to atmosphere.

Pump a pressure of 14.0 ± 1 in H_2O (34.8 kPa) into the fuel system. Hold the pressure and monitor the gauge reading.

If the system cannot hold the pressure for at least one minute, go to step 5.

If the system does hold the pressure for one minute, the problem is forward of the vapour management valves. Go to step 5.

5. Use the ultrasonic leak detector to locate the leak by sound. Service the system as necessary.

If the leak cannot be detected, go to step 6.

Run a Soak and Road Test as detailed below to ensure that the problem is resolved.

6. Remove the vapour recovery tubes from the inlet manifolds. Connect the evap loss system tester to one tube.

Pressurise the tube to 14.0 ± 1 in H_2O (34.8 kPa) and monitor the gauge reading for one minute. If the pressure drops, use the ultrasonic leak detector to locate the leak by sound. Service the system as necessary.

Reassemble the system and run a Soak and Road Test to ensure that the problem is resolved.

If no leak is detected, the fault is not present at this time and testing is complete. Clear logged DTCs.

Soak and Road Test

The vacuum tests are only run during a drive cycle after the ignition has been switched off for more than 5 hours. If less than 5 hours have elapsed, the vacuum tests are omitted from the drive cycle.

Leave the vehicle parked overnight (or more than 5 hours) and then run a road test which must include steady running at over 40 m.p.h. for more than 5 minutes.

P0443 - Vapour Management Valve

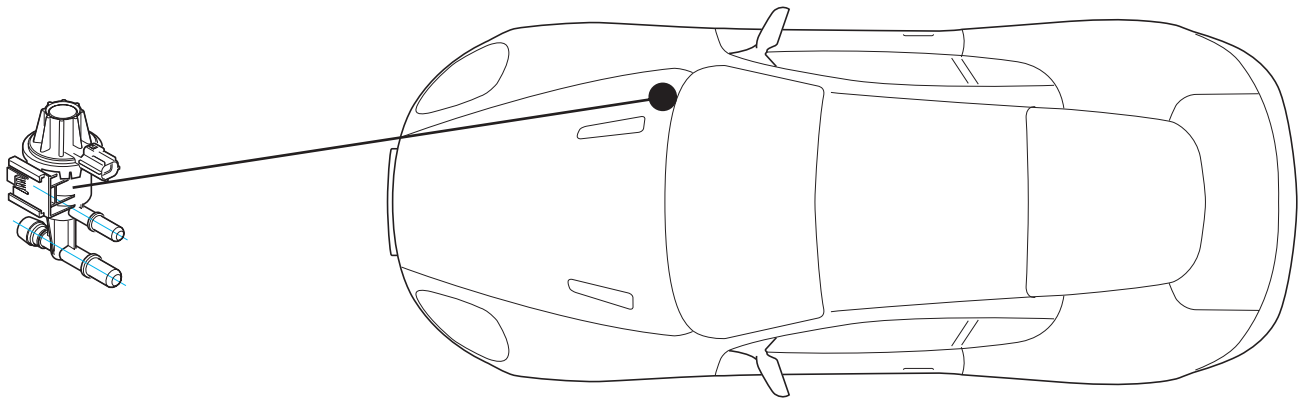


Figure 1. Vapour Management Valve Location

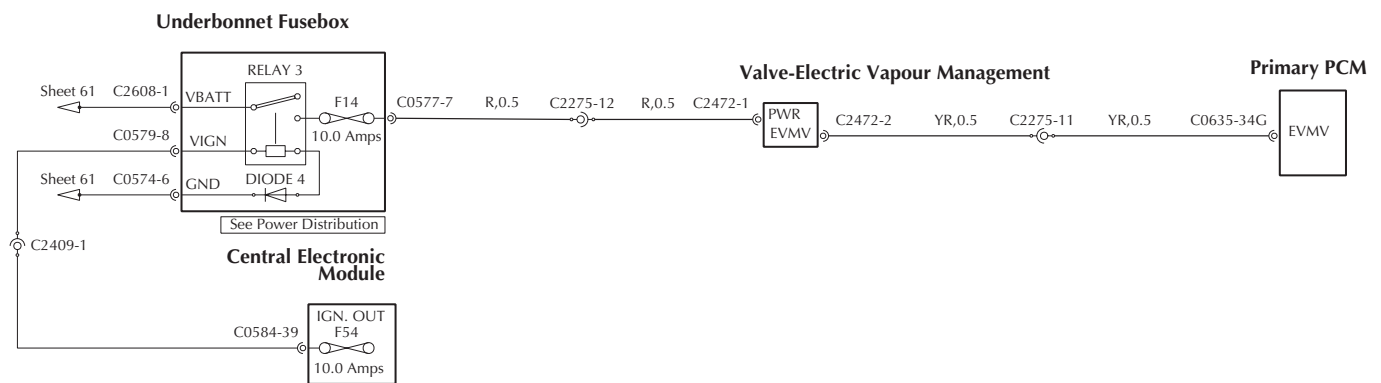


Figure 2. Vapour Management Valve Circuit

Fault Code Definition

P0443 - This code indicates a failure in the VMV solenoid circuit.

MIL Status

This code will light the MIL lamp

P0443 Fault Analysis

CAUTION: This code will be generated only in the Primary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Key off. Disconnect the VMV. Key on, engine off. Measure the voltage between VBatt at the VMV connector pin 1 and battery ground.

The voltage must be greater than 10.5 volts.

If the voltage is above 10.5 volts, go to step 2.

If the voltage is below 10.5 volts, repair the VBatt circuit, complete a PCM reset and rerun the KOER Test to verify that the problem is cleared.

2. Key off. Measure the resistance of the VMV.

If the resistance is in range, 30-90 Ω , go to step 3.

If the resistance is outside the range 30-90 Ω , replace the vapour management valve. Reset the PCM and rerun the KOER Test to verify that the problem is cleared.

3. Check for open circuits in the VMV signal line:

Key off. Disconnect the PCM and VMV solenoid. Install the break-out box to the PCM harness connector. Check continuity between primary PCM connector pin C0635-34 and the VMV signal line at the solenoid connector pin 2.

If an open circuit is detected, repair it. Reset the PCM and rerun the KOER to verify that the problem is cleared.

If no open circuit is found, go to step 4.

4. Check for short circuits in the VMV signal lines:

Measure the resistance between PCM connector pins C0635-34 primary or C0638-34 secondary and chassis ground.

The resistance must be greater than 10k Ω .

If a resistance lower than 10k Ω is measured, repair the short circuit between the VMV signal line and GND. Reset the PCM and rerun the KOER Test to verify that the problem is cleared.

If the resistance is greater than 10k Ω , the fault lies in the PCM. Contact Aston Martin Technical Support.

P0446 - Evaporative Loss - Canister Vent Valve

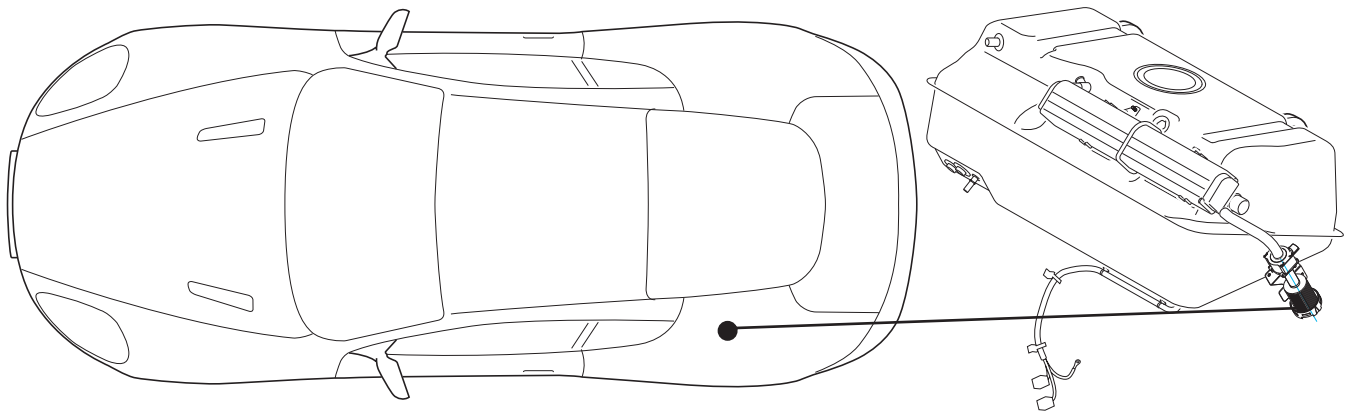


Figure 1. Evaporative Loss - Canister Vent Valve

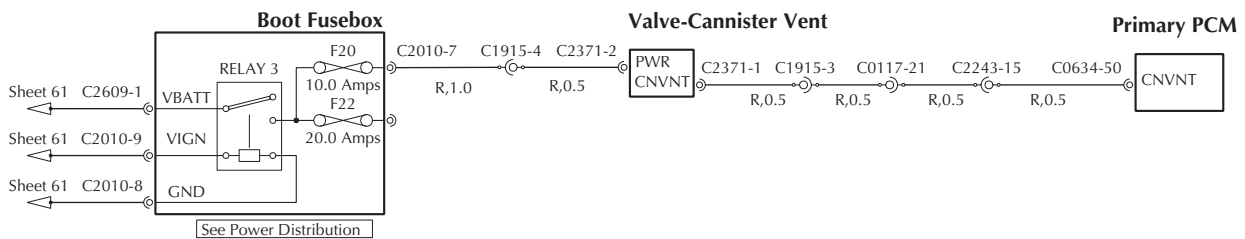


Figure 1. Canister Vent Valve Circuit

Fault Code Definition

P0446 - Canister Vent Valve circuit

MIL Status

This code will light the MIL lamp

P0446 Fault Analysis

Note: The integrity of the vapour recovery system is checked by closing the canister vent valve, opening the vapour management valves and applying a vacuum from the inlet manifold. When the fuel tank vacuum is at an appropriate level, the VMVs are closed.

The vacuum in the closed vapour recovery system may then be monitored using the fuel tank pressure transducer.

The system checks for small leaks (P0442) or for gross leaks (P0455).

CAUTION: This code is generated only in the Primary Powertrain Control Module (PCM). Check that you are working on the primary half of the engine.

1. Connect the WDS and read the logged DTCs.
2. Use the WDS component control function to trigger the canister vent valve on/off (listen for a 'click' as the valves actuate).

If the valve can be heard actuating, the problem is not present at this time. Check for possible intermittent circuit faults. If no fault is found, consult Aston Martin Technical Support.

If the valve does not actuate, service the valve or circuit as necessary. Clear the P0446 code and run a KOER test to ensure that the problem is resolved.

P0451 - Fuel Tank Pressure Transducer

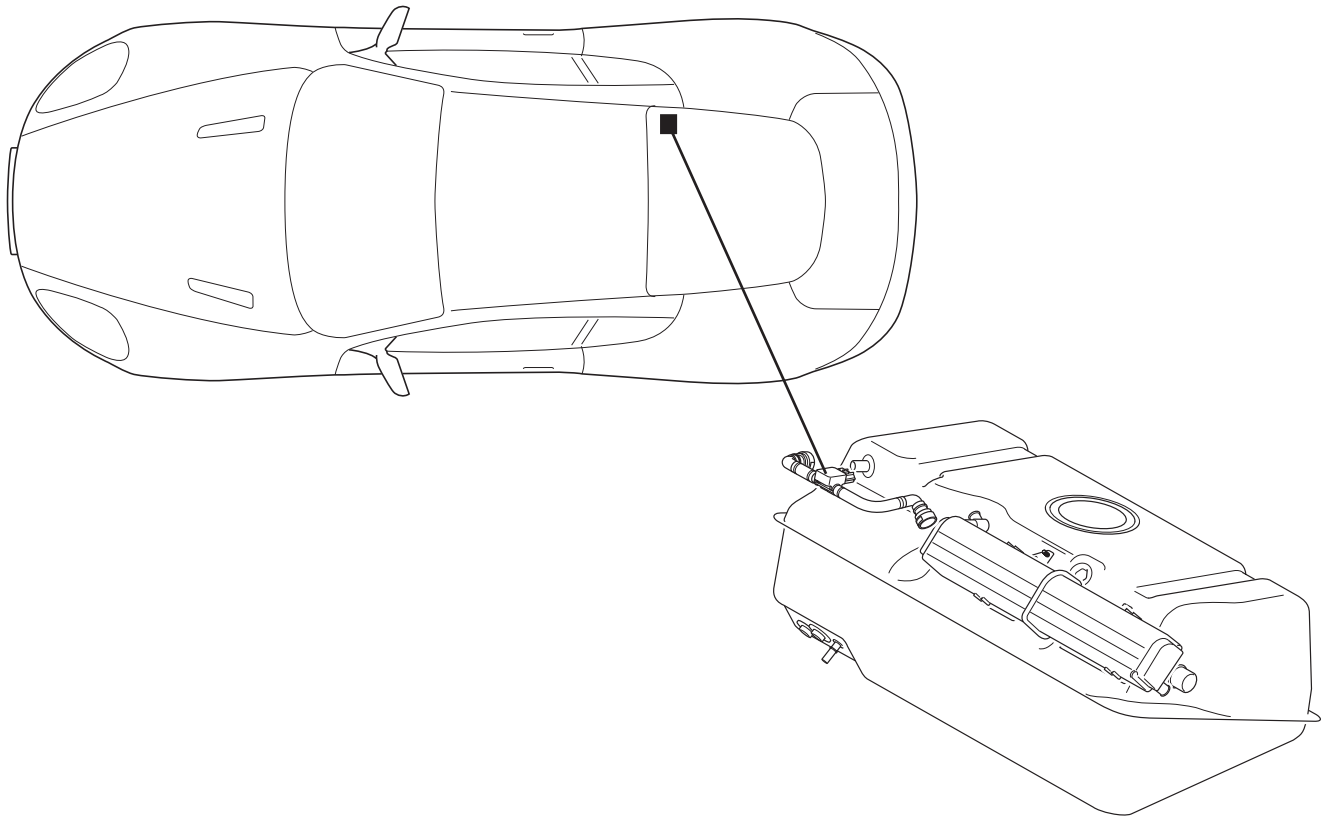


Figure 1. Fuel Tank Pressure Transducer Location

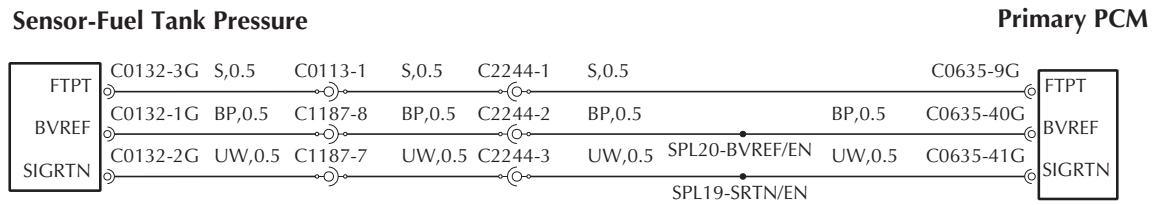


Figure 2. Fuel Tank Pressure Transducer Circuit

Fault Code Definition

P0451 - This code indicates a fuel tank pressure sensor malfunction.

MIL Status

This code will light the MIL lamp

P0451 Fault Analysis

Note: The fuel tank pressure transducer emits a voltage signal in the range 2.4-2.8 volts at atmospheric pressure.

1. Remove the fuel filler cap (fuel tank pressure at atmospheric). Connect the WDS and turn on the ignition. Monitor the fuel tank pressure transducer signal. The voltage should read 2.4 - 2.8 volts.

If the fuel tank pressure signal does read 2.4 - 2.8 volts at atmospheric pressure, the sensor reading is in specification, go to the P0446 procedure and analyse the problem for a blocked fuel tank vent line or closed canister vent valve.

If the fuel tank pressure signal reads below the range 2.4 - 2.8 volts at atmospheric pressure, go to step 2.

2. Key off. Check for the following:

Sensor drenched in liquid fuel?

Damaged sensor or connector?

If any defect is identified, service as necessary and run the KOEO test to ensure that the problem is resolved.

If no defect is identified, go to step 3.

3. Disconnect the sensor. Check for short circuit to ground from sensor harness connector pin 3 (FTP signal) and from sensor harness connector pin 1 (+5 volt reference supply).

If a short circuit is detected, repair the wiring as necessary, reconnect the sensor and run the KOEO test again to ensure that the problem is resolved.

If no short circuit is detected, go to step 4.

4. Check the +5V reference supply at the sensor harness connector. Measure from harness connector pin 1 to chassis ground and from harness connector pin 1 to harness connector pin 2 (signal return).

If both readings indicate +5 volts, the supplies are good. Replace the sensor.

If the readings indicate +5V to chassis ground but 0V to signal return, repair the signal return line.

If both readings indicate 0V, repair the fault in the +5V reference line.

If the reference circuit is good, consult Aston Martin Technical Support.

Reconnect all components and run the KOEO test to ensure that the problem is resolved.

P0452 - Fuel Tank Pressure Transducer

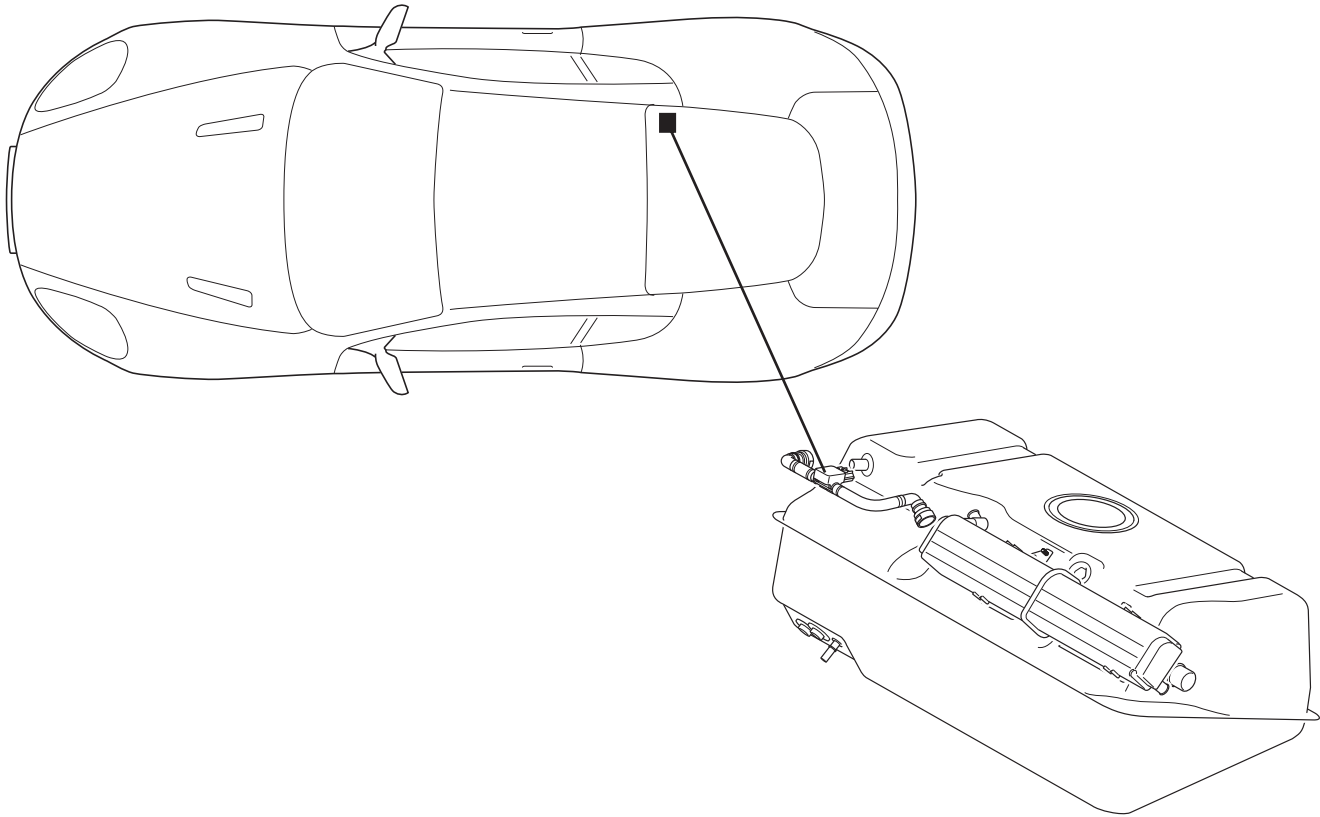


Figure 1. Fuel Tank Pressure Transducer Location

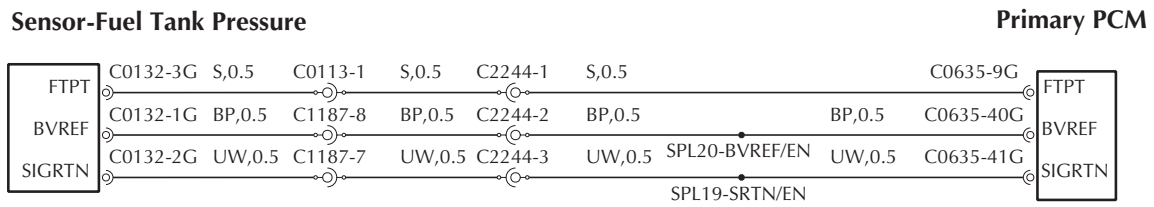


Figure 2. Fuel Tank Pressure Transducer Circuit

Fault Code Definition

P0452 - This code indicates fuel tank pressure signal out of range low.

MIL Status

This code will light the MIL lamp

P0452 Fault Analysis

Note: The fuel tank pressure transducer emits a voltage signal in the range 2.4-2.8 volts at atmospheric pressure.

1. Remove the fuel filler cap (fuel tank pressure at atmospheric). Connect the WDS and turn on the ignition. Monitor the fuel tank pressure transducer signal. The voltage should read 2.4 - 2.8 volts.

If the fuel tank pressure signal does read 2.4 - 2.8 volts at atmospheric pressure, the sensor reading is in specification, go to the P0446 procedure and analyse the problem for a blocked fuel tank vent line or closed canister vent valve.

If the fuel tank pressure signal reads below the range 2.4 - 2.8 volts at atmospheric pressure, go to step 2.

2. Key off. Check for the following:

Sensor drenched in liquid fuel

Damaged sensor or connector

If any defect is identified, service as necessary and run the KOEO test to ensure that the problem is resolved.

If no defect is identified, go to step 3.

3. Disconnect the sensor. Check for short circuit to ground from sensor harness connector pin 3 (FTP signal) and from sensor harness connector pin 1 (+5 volt reference supply).

If a short circuit is detected, repair the wiring as necessary, reconnect the sensor and run the KOEO test again to ensure that the problem is resolved.

If no short circuit is detected, go to step 4.

4. Check the +5V reference supply at the sensor harness connector. Measure from harness connector pin 1 to chassis ground and from harness connector pin 1 to harness connector pin 2 (signal return).

If both readings indicate +5 volts, the supplies are good. Replace the sensor.

If the readings indicate +5V to chassis ground but 0V to signal return, repair the signal return line.

If both readings indicate 0V, repair the fault in the +5V reference line.

If the reference circuit is good, Contact Aston Martin Technical Support.

Reconnect all components and run the KOEO test to ensure that the problem is resolved.

P0453 - Fuel Tank Pressure Transducer

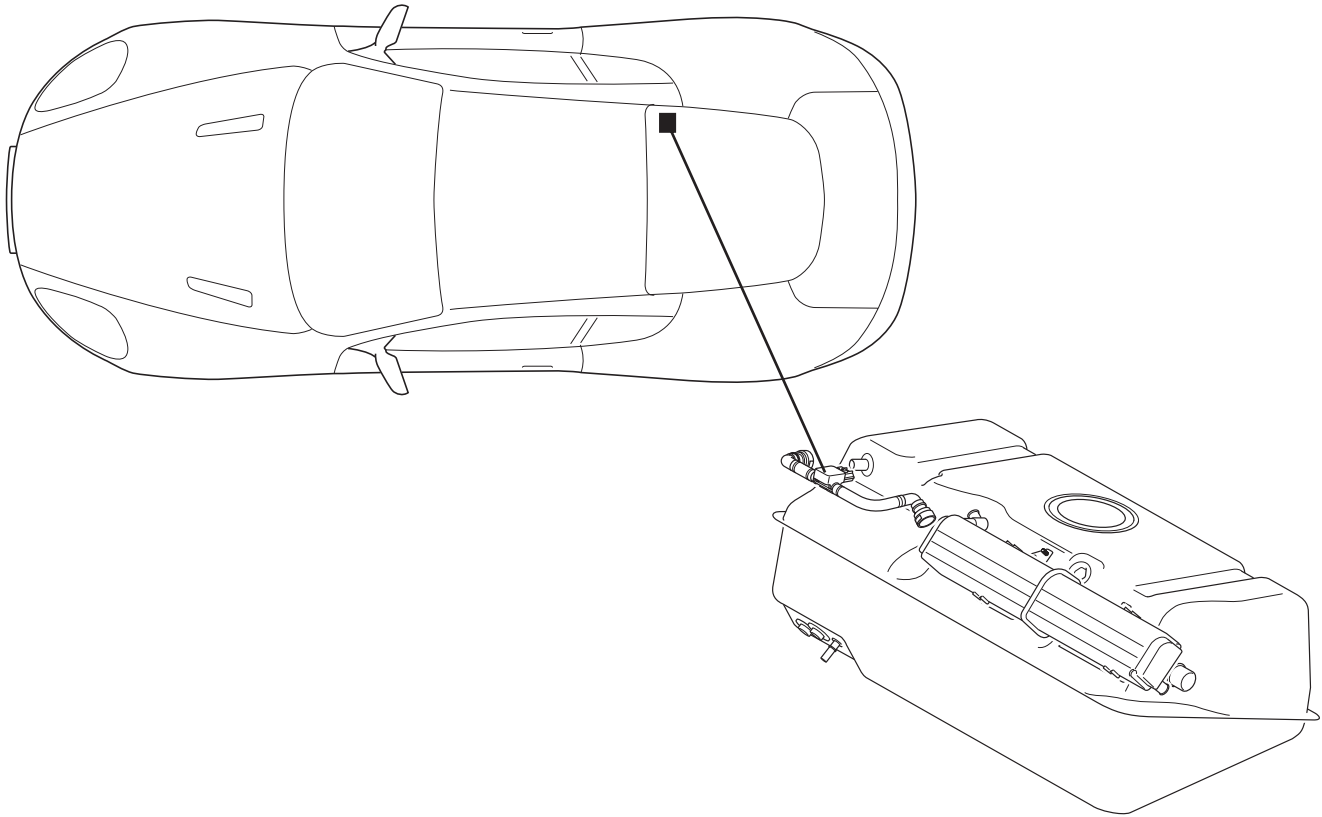


Figure 1. Fuel Tank Pressure Transducer Location

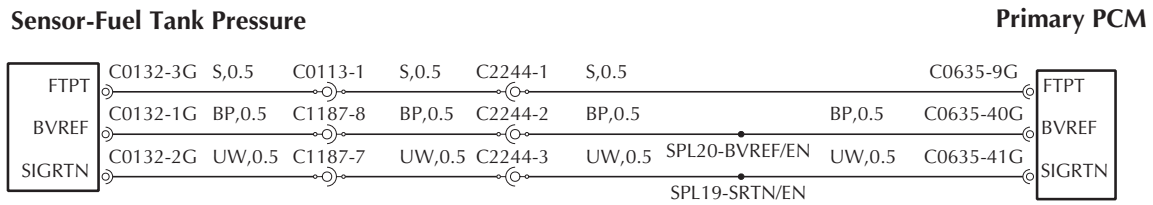


Figure 2. Fuel Tank Pressure Transducer Circuit

Fault Code Definition

P0453 - This code indicates fuel tank pressure signal out of range high.

MIL Status

This code will not light the MIL lamp

P0453 Fault Analysis

Note: The fuel tank pressure transducer emits a voltage signal in the range 2.4-2.8 volts at atmospheric pressure.

1. Remove the fuel filler cap (fuel tank pressure at atmospheric). Connect the WDS and turn on the ignition. Monitor the fuel tank pressure signal (Primary PCM). The voltage should read 2.4 - 2.8 volts.

If the fuel tank pressure signal does read 2.4 - 2.8 volts at atmospheric pressure, the sensor reading is in specification, go to step 5.

If the fuel tank pressure reads above the range 2.4 - 2.8 volts at atmospheric pressure, go to step 2.

2. Key off. Check for the following:

Damaged sensor or connector or wiring

If any defect is identified, service as necessary and run the KOEO test to ensure that the problem is resolved.

If no defect is identified, go to step 3.

3. Disconnect the sensor. Key on. Check for short circuit to VPWR at the sensor connector. Measure from sensor harness connector pin 3 (fuel tank pressure signal) to chassis ground and from sensor harness connector pin 1 (+5 volt reference supply) to chassis ground.

If either reading indicates approximately +12V, there is a short circuit to VBatt. Go to step 4.

4. Key off. Disconnect the PCM and check for short circuit from the sensor wiring to +12 volts VBatt at PCM harness connector.

If a short circuit is identified, repair the wiring as necessary, reconnect the sensor and PCM. Run the KOEO test again to ensure that the problem is resolved.

If no short circuit in the wiring is detected, contact Aston Martin Technical Support.

5. **WARNING: Do not exceed the maximum pressure specified in this step. Excessive pressure will cause damage in the fuel system.**

Disconnect the hose from the canister vent valve to atmosphere. Connect a pressure pump to the hose.

Pump a pressure of no more than 14 inches of water (34.8 kPa) into the fuel system whilst monitoring the fuel tank pressure signal.

If the fuel tank pressure signal changes in response to the applied pressure, the sensor is serviceable. Analyse the problem for a jammed canister vent valve using the P0446 procedure. Run the KOEO test to ensure that the problem is resolved.

P0454 - Fuel Tank Pressure Transducer

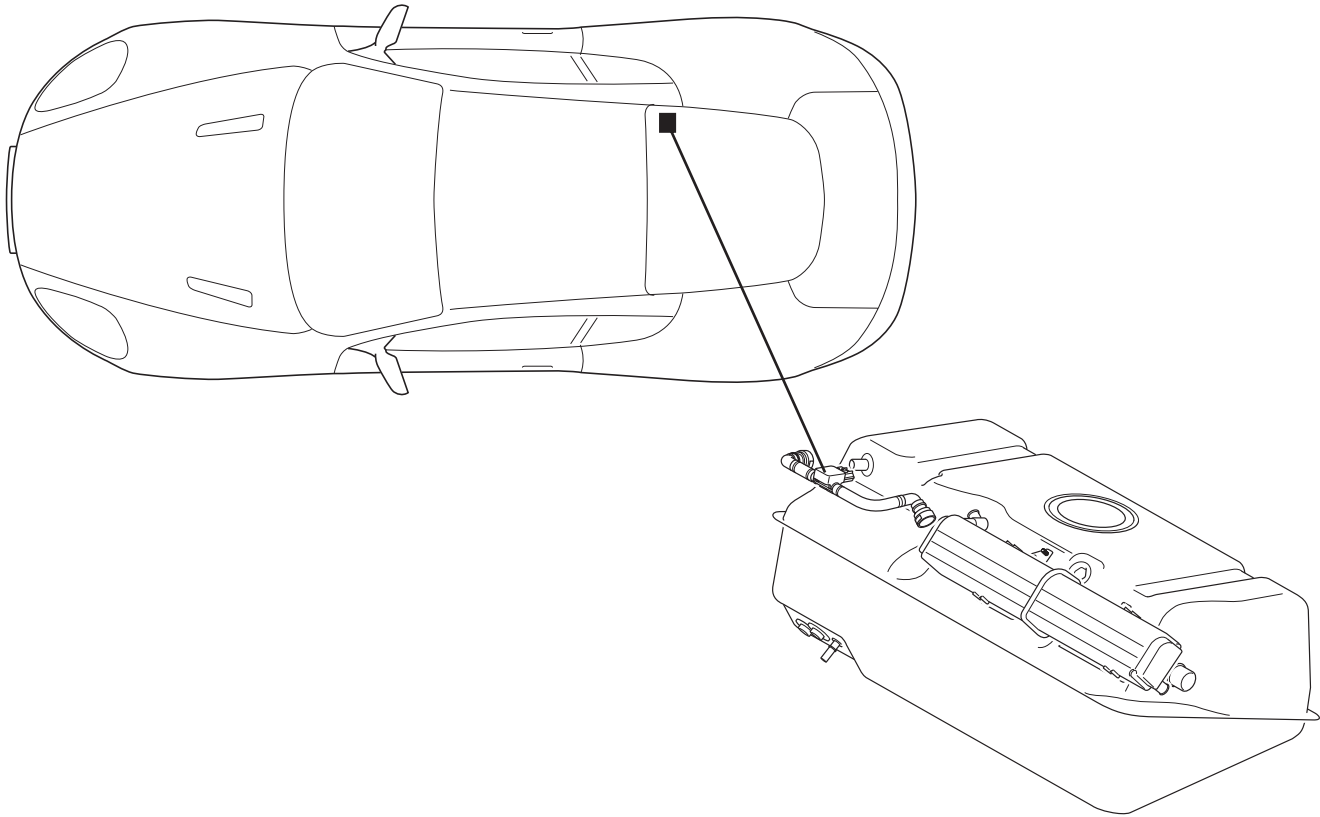


Figure 1. Fuel Tank Pressure Transducer Location

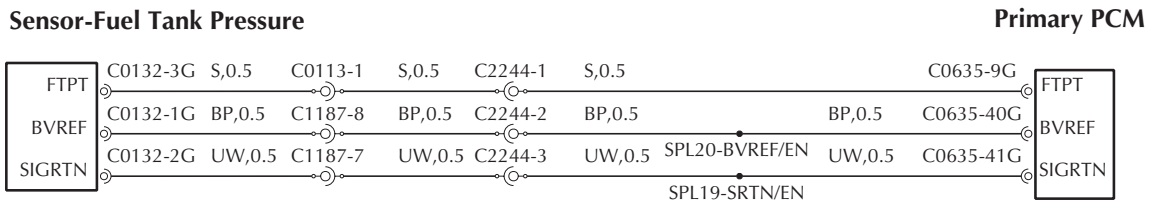


Figure 2. Fuel Tank Pressure Transducer Circuit

Fault Code Definition

P0454 - This code indicates fuel tank pressure signal intermittent.

MIL Status

This code will light the MIL lamp

P0454 Fault Analysis

Note: The fuel tank pressure transducer emits a voltage signal in the range 2.4-2.8 volts at atmospheric pressure.

1. Remove the fuel filler cap (fuel tank pressure at atmospheric). Connect the WDS and turn on the ignition. Monitor the fuel tank pressure signal (Primary PCM) using the datalogger. The voltage should read 2.4 - 2.8 volts.

If the fuel tank pressure signal does read 2.4 - 2.8 volts at atmospheric pressure, the sensor reading is in specification, go to step 5.

If the fuel tank pressure reads above the range 2.4 - 2.8 volts at atmospheric pressure, go to step 2.

2. Key off. Check for the following:

Damaged sensor or connector or wiring

If any defect is identified, service as necessary and run the KOEO test to ensure that the problem is resolved.

If no defect is identified, go to step 3.

3. Disconnect the sensor. Key on. Check for short circuit to VPWR at the sensor connector. Measure from sensor harness connector pin 3 (fuel tank pressure signal) to chassis ground and from sensor harness connector pin 1 (+5 volt reference supply) to chassis ground.

If either reading indicates approximately +12V, there is a short circuit to VBatt. Go to step 4.

4. Key off. Disconnect the PCM and check for short circuit from the sensor wiring to +12 volts VBatt at PCM harness connector.

If a short circuit is identified, repair the wiring as necessary, reconnect the sensor and PCM. Run the KOEO test again to ensure that the problem is resolved.

If no short circuit in the wiring is detected, contact Aston Martin Technical Support.

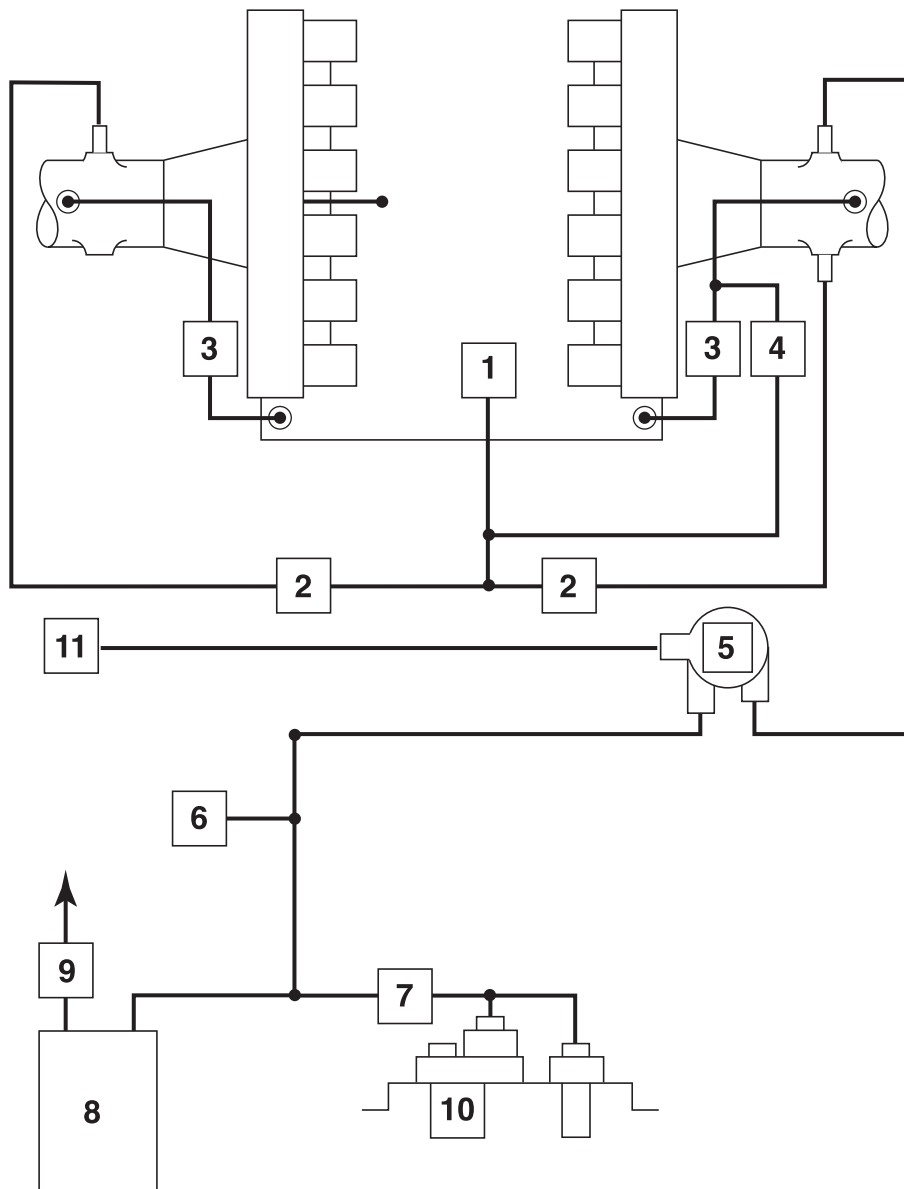
5. **WARNING: Do not exceed the maximum pressure specified in this step. Excessive pressure will cause damage in the fuel system.**

Disconnect the hose from the canister vent valve to atmosphere. Connect a pressure pump to the hose.

Pump a pressure of no more than 14 inches of water (34.8 kPa) into the fuel system whilst monitoring the fuel tank pressure signal.

If the fuel tank pressure signal changes in response to the applied pressure, the sensor is serviceable. Analyse the problem for a jammed canister vent valve using the P0446 procedure. Run the KOEO test to ensure that the problem is resolved.

P0455 - Evaporative Loss - Vapour Recovery System



- | | |
|-------------------------------|----------------------------------|
| 1. Oil Separator | 6. Service Port |
| 2. PCV Valve | 7. Fuel Tank Pressure Transducer |
| 3. Check Valve | 8. Carbon Canister |
| 4. Relief Valve | 9. Canister Vent Valve |
| 5. Vapour Management Valve-RH | 10. Fill Limit Vent Valve |
| | 11. Test Port |

Figure 1. Evaporative Loss System Components

Fault Code Definition

P0455 - Unable to hold tank vacuum (gross leak)

MIL Status

This code will light the MIL lamp.

P0455 Fault Analysis

Note: The integrity of the vapour recovery system is checked by closing the canister vent valve, opening the vapour management valves and applying a vacuum from the inlet manifold. When the fuel tank vacuum is at an appropriate level, the VMVs are closed.

The vacuum in the closed vapour recovery system may then be monitored using the fuel tank pressure transducer.

1. The system checks for small leaks (P0442), very small leaks (P0456) or for gross leaks (P0455, P0457, P1450) Run the evaporative loss system leak test to confirm the severity of the leak.

2. Check the security and sealing of the fuel filler cap.

If any defect is identified, service/replace the cap as necessary. Run the leak test again to ensure that the problem is resolved.

If no defect is identified, go to step 3.

3. Visually examine the evaporative loss pipes for disconnected/split hoses and connectors.

If any defect is identified, service/replace as necessary. Run the leak test again to ensure that the problem is resolved.

If no defect is identified, go to step 4.

4. **WARNING: Do not apply a pressure or vacuum greater than 14.0 inches H₂O (34.8 kPa) to the fuel system. Excessive pressure may blow a connection. Excessive vacuum can collapse the fuel tank.**

Connect an Evaporative Emissions Tester to the schrader valve near the vapour management valves.

Plug the canister vent outlet in the fuel filler well.

Apply a pressure of 14 in H₂O (34.8 kPa) and monitor the pressure reading.

If no leak is detected, go to step 5.

If the pressure drops rapidly, locate the leak using the ultrasonic leak detector.

If any leak is identified, service the system as necessary. Remove the plug from the canister vent outlet in the filler well. Run the leak test again to ensure that the problem is resolved.

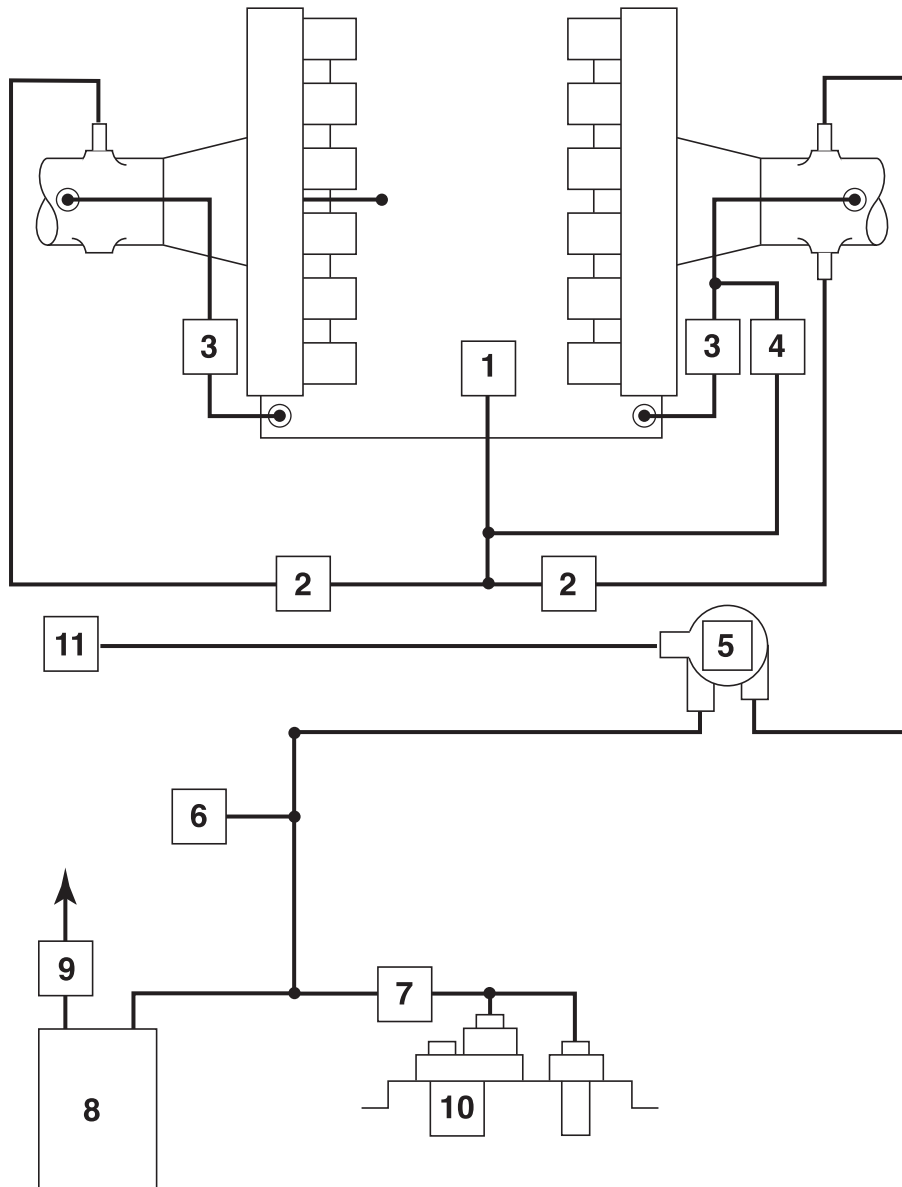
5. Assemble the break-out box to the primary PCM. Key on. Energise the canister vent valve using the Output State Control function. Have a colleague hold the valve whilst toggling the valve on and off

If the valve does not energise/deenergise, disconnect the valve and check the 12volts VPWR and the ground circuits for continuity.

If continuity is good, replace the canister vent valve.

If a continuity defect is identified, service the circuits as necessary and run the leak test again to ensure that the problem is resolved.

P0456 - Evaporative Loss - Vapour Recovery System



- | | |
|-------------------------------|----------------------------------|
| 1. Oil Separator | 6. Service Port |
| 2. PCV Valve | 7. Fuel Tank Pressure Transducer |
| 3. Check Valve | 8. Carbon Canister |
| 4. Relief Valve | 9. Canister Vent Valve |
| 5. Vapour Management Valve-RH | 10. Fill Limit Vent Valve |
| | 11. Test Port |

Figure 1. Evaporative Loss System Components

Fault Code Definition

P0456 - Unable to hold tank vacuum (very small leak)

MIL Status

This code will not light the MIL lamp.

P0456 Fault Analysis

Note: The integrity of the vapour recovery system is checked by closing the canister vent valve, opening the vapour management valves and applying a vacuum from the inlet manifold. When the fuel tank vacuum is at an appropriate level, the VMVs are closed.

The vacuum in the closed vapour recovery system may then be monitored using the fuel tank pressure transducer.

1. Connect the WDS and read the logged DTCs.

If P0442, PP0455 or P0457 are logged, rectify these problems first. Return to this procedure after clearing these codes.
2. Check the evaporative loss system for obvious defects which could cause a vacuum leak:- e.g.

Loose or defective fuel filler cap or seal

Loose vapour connections at the canisters

Loose connections in the vapour recovery lines in the engine bay.

If no defects are identified, go to step 3.

If any defects are identified, service as necessary and run the KOER test to ensure that the problem is resolved.
3. Run the WDS Evaporative Emission Leak Test.

If a leak is detected, go to step 4.

If no leak is detected, clear the P0456 code and run a road test to confirm that the problem is no longer present.
4. **WARNING: Do not exceed the maximum pressure specified in this step. Excessive pressure can cause damage in the fuel system.**

With the fuel filler cap securely in place, connect an evaporative loss system tester to the schrader valve near the primary carbon canister.

Temporarily plug the vent pipe from the canister vent valve to atmosphere.

Pump a pressure of 14.0±1 in H₂O (34.8 kPa) into the fuel system. Hold the pressure and monitor the gauge reading.

If the system cannot hold the pressure for at least one minute, go to step 4.

If the system does hold the pressure for one minute, the problem is forward of the vapour management valves. Go to step 5.

5. Use the ultrasonic leak detector to locate the leak by sound. Service the system as necessary.

Run a Soak and Road Test as detailed below to ensure that the problem is resolved.

6. Remove the vapour recovery tubes from the inlet manifolds. Connect the evap loss system tester to one tube.

Pressurise the tube to 14.0±1 in H₂O (34.8 kPa) and monitor the gauge reading for one minute. If the pressure drops, use the ultrasonic leak detector to locate the leak by sound. Service the system as necessary. If no leak is detected, repeat the test on the other side of the engine.

Reassemble the system and run a Soak and Road Test to ensure that the problem is resolved.

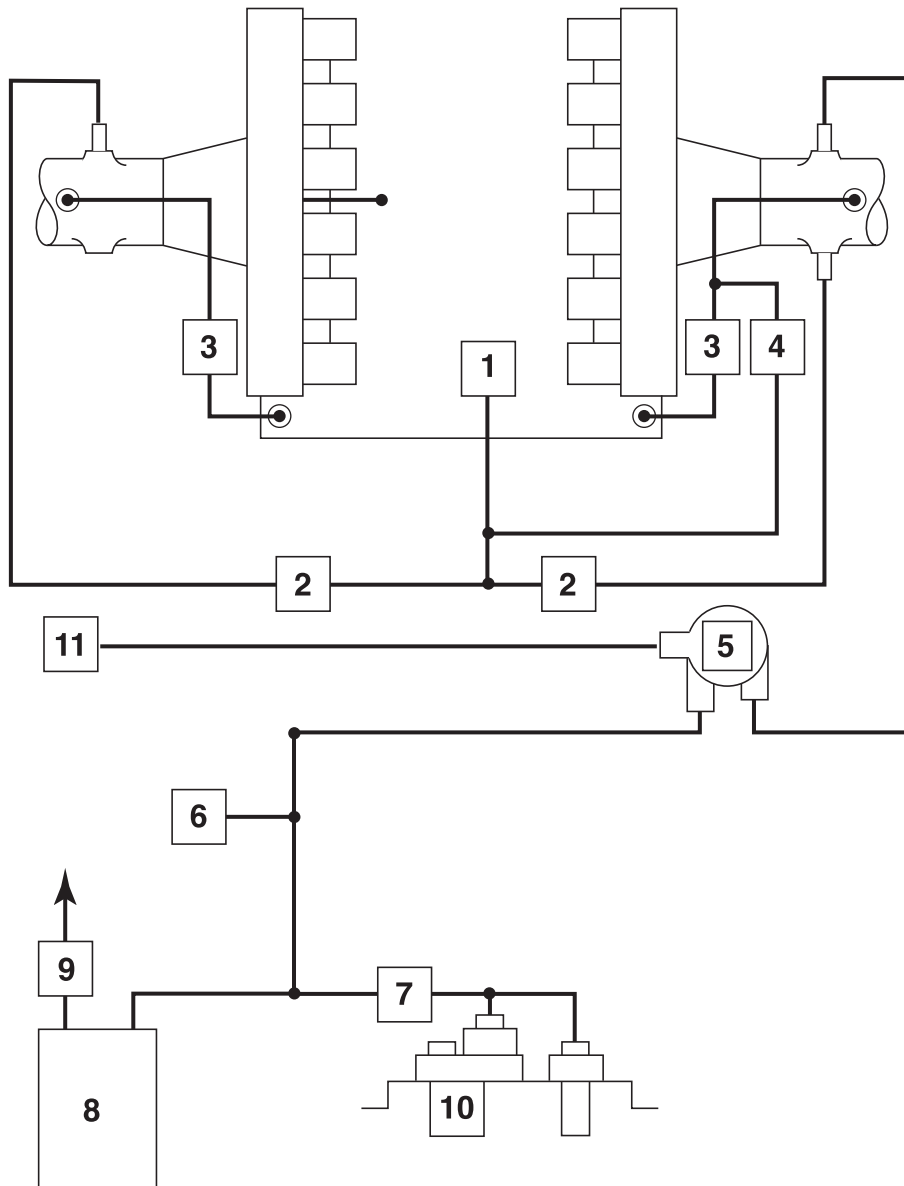
If no leak is detected, the fault is not present at this time and testing is complete. Clear logged DTCs.

Soak and Road Test

The vacuum tests are only run during a drive cycle after the ignition has been switched off for more than 5 hours. If less than 5 hours have elapsed, the vacuum tests are omitted from the drive cycle.

Leave the vehicle parked overnight (or more than 5 hours) and then run a road test which must include steady running at over 40 m.p.h. for more than 5 minutes.

P0457 - Evaporative Loss - Vapour Recovery System



- | | |
|-------------------------------|----------------------------------|
| 1. Oil Separator | 6. Service Port |
| 2. PCV Valve | 7. Fuel Tank Pressure Transducer |
| 3. Check Valve | 8. Carbon Canister |
| 4. Relief Valve | 9. Canister Vent Valve |
| 5. Vapour Management Valve-RH | 10. Fill Limit Vent Valve |
| | 11. Test Port |

Figure 1. Evaporative Loss System Components

Fault Code Definition

P0457 - Unable to hold tank vacuum (gross leak) fuel filler cap off or loose.

MIL Status

This code will light the MIL lamp.

P0457 Fault Analysis

Note: The integrity of the vapour recovery system is checked by closing the canister vent valve, opening the vapour management valves and applying a vacuum from the inlet manifold. When the fuel tank vacuum is at an appropriate level, the VMVs are closed.

The vacuum in the closed vapour recovery system may then be monitored using the fuel tank pressure transducer.

1. Check the security and sealing of the fuel filler cap.

If any defect is identified, service/replace the cap as necessary. Run the leak test again to ensure that the problem is resolved.

If no obvious defect is identified, go to step 2.

2. Run the evaporative loss system leak test to confirm the severity of the leak.
3. Visually examine the filler neck pipes for disconnected/split hoses and connectors.

If any defect is identified, service/replace as necessary. Run the leak test again to ensure that the problem is resolved.

If no defect is identified, go to step 4.

4. **WARNING: Do not apply a pressure or vacuum greater than 14.0 inches H₂O (34.8 kPa) to the fuel system. Excessive pressure may blow a connection. Excessive vacuum can collapse the fuel tank.**

Connect an Evaporative Emissions Tester to the schrader valve near the vapour management valves.

Plug the canister vent outlet in the fuel filler well.

Apply a pressure of 14 in H₂O (34.8 kPa) and monitor the pressure reading.

If no leak is detected, go to step 4.

If the pressure drops rapidly, locate the leak using the ultrasonic leak detector.

If any leak is identified, service the system as necessary. Remove the plug from the canister vent outlet in the filler well. Run the leak test again to ensure that the problem is resolved.

5. Assemble the break-out box to the primary PCM. Key on. Energise the canister vent valve using the WDS Output State Control function. Have a colleague hold the valve whilst toggling the valve on and off

If the valve does not energise/deenergise, disconnect the valve and check the 12volts VPWR and the ground circuits for continuity.

If continuity is good, replace the canister vent valve.

If a continuity defect is identified, service the circuits as necessary and run the leak test again to ensure that the problem is resolved.

P0460 - Fuel Level Sensor

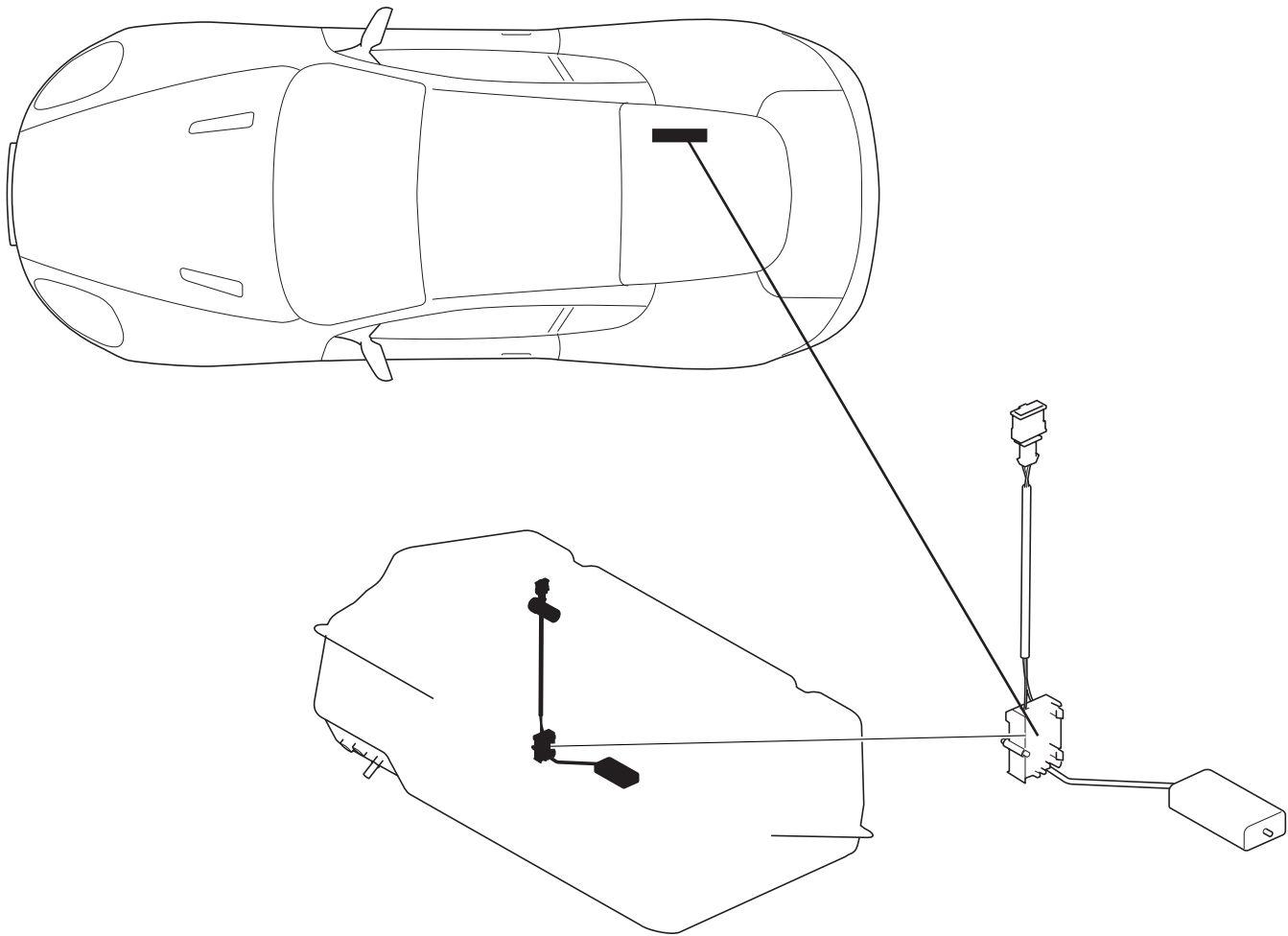


Figure 1. Fuel Level Sensor Location

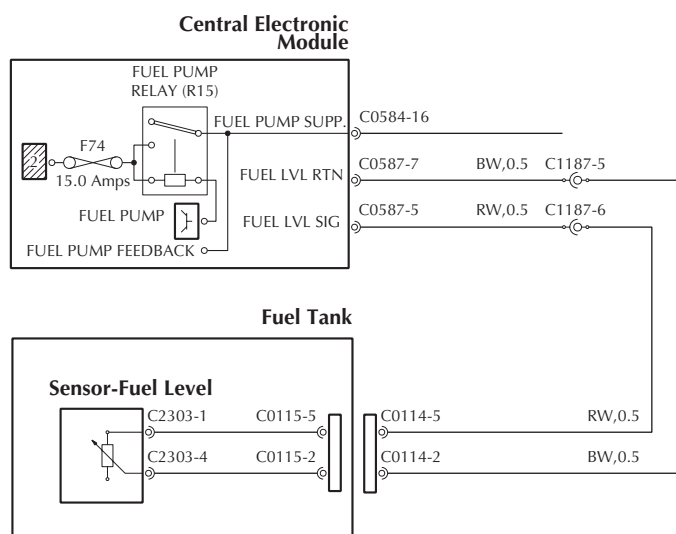


Figure 2. Fuel Level Sensor Circuit

Fault Code Definition

P0460 - Fuel level input circuit out of range low.

MIL Status

This code will not light the MIL lamp.

P0460 Fault Analysis

1. Check the actual fuel level in the tank and the recent sequence of tank fills. This code can be logged if the tank has been run to empty or if it has been overfilled.

If the tank has recently been emptied or over-filled, connect the WDS. Record logged DTCs and then clear the primary PCM.

2. Ignition off. Access the Central Electronic Module connectors. Disconnect C0587 and measure the resistance of the fuel level sender unit across pins C0587-7 and C0587-5.

The resistance should be in the range - 10Ω with the tank full, rising to 204Ω with the tank empty

If the resistance is consistent with the actual fuel level, reassemble all components and go to step 4.

If the resistance is out of range, access the fuel tank connector C0115. Repeat the sensor resistance check between C0115-2 and C0115-5. If the resistance reading is now in range, service the sensor circuit as necessary. Reconnect all components and run a KOER test to ensure that the problem is resolved.

If the resistance reading is still out of range, go to step 3.

3. Drain the fuel tank (Workshop Manual procedure) and replace the fuel level sender unit. Reassemble all components and run a brief road test to ensure that the problem is resolved.
4. The fuel level sensor appears to be serviceable. Check the logged DTCs for any CAN related codes and resolve them. Clear the logged DTCs and run a KOER test to ensure that the problem is resolved.

P0461 - Fuel Level Sensor

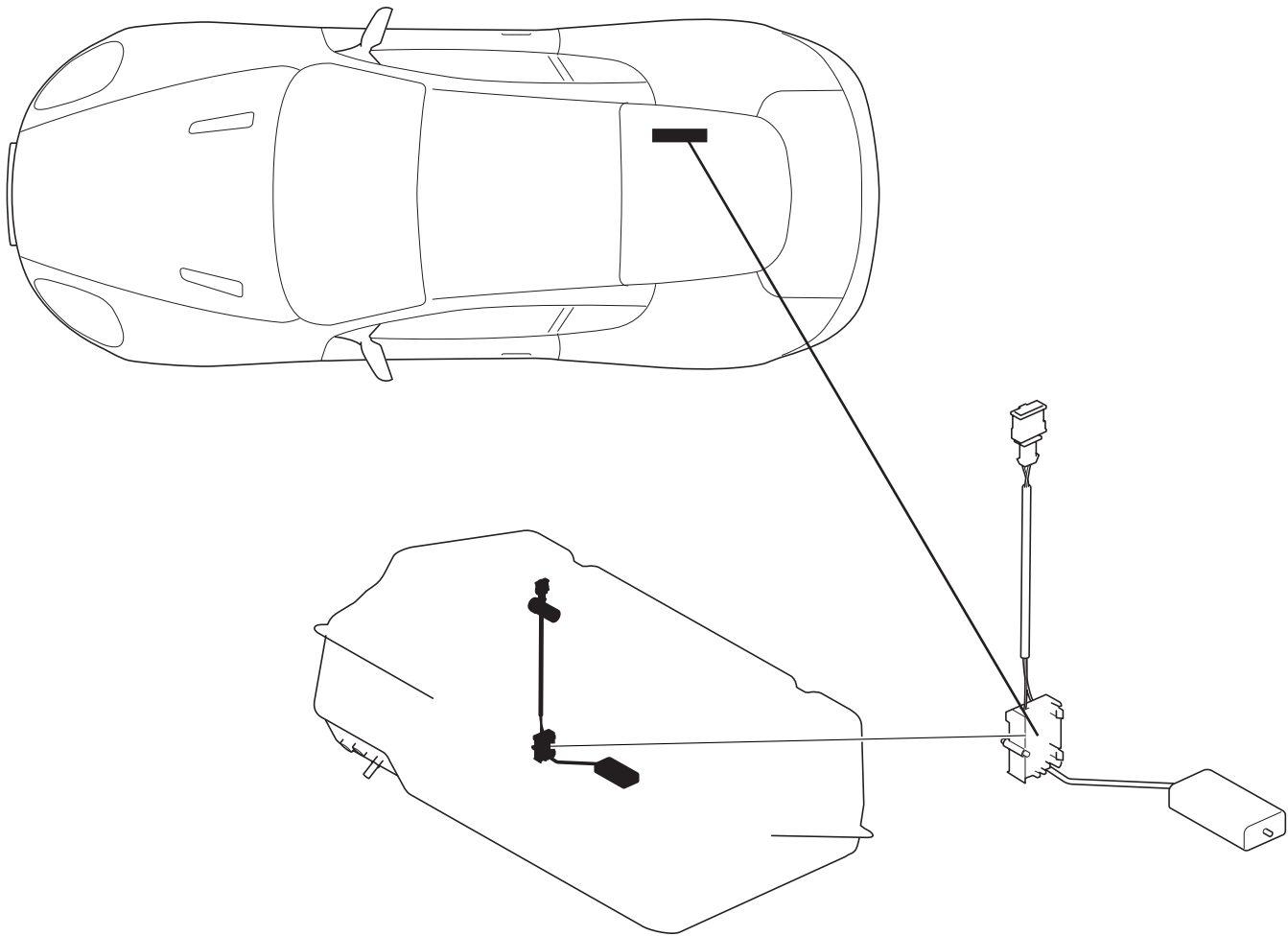


Figure 1. Fuel Level Sensor Location

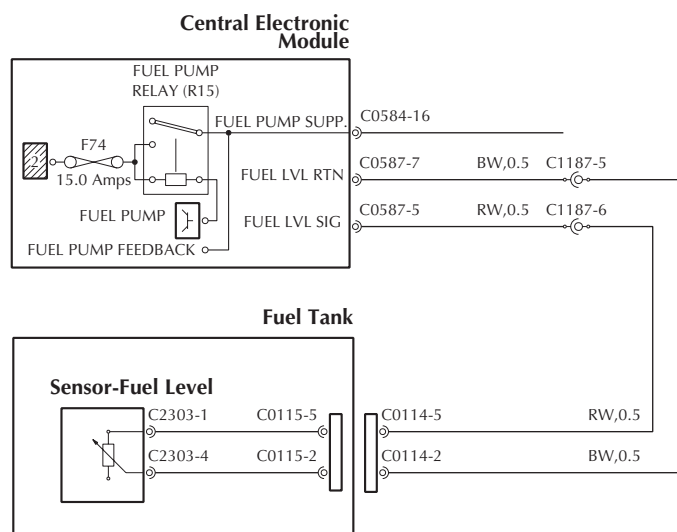


Figure 2. Fuel Level Sensor Circuit

Fault Code Definition

P0461 - Fuel level sensor circuit range or performance.

MIL Status

This code will not light the MIL lamp.

P0461 Fault Analysis

1. Check the resistance of the fuel level sensor at the Central Electronic Module. Check between pins C0587-7 and C0587-5.

The resistance should be in the range 10 Ω tank full to 204 Ω tank empty.

If the resistance is in range and stable, go to step 2.

If the resistance is out of range, check continuity of the sensor wiring between the central electronic module and fuel tank connector pins C0114-2 and C0114-5. If continuity is good, replace the fuel level sensor. Clear the P0461 code and run a KOER test to ensure that the problem is resolved.

2. Arrange a break-out lead from connector C0587 pins 7 and 8. Use an analogue meter to monitor the fuel level signal on the break-out lead during a road test. Include some driving over 'bumpy' surfaces and around tight turns.
3. If the signal is stable and in-range, the cause of the P0461 is not present at this time and testing is complete.

If the signal is unstable, recheck continuity of the sensor wiring and service as necessary. Clear the P0461 code and run a road test to ensure that the problem is resolved.

P0462 - Fuel Level Sensor

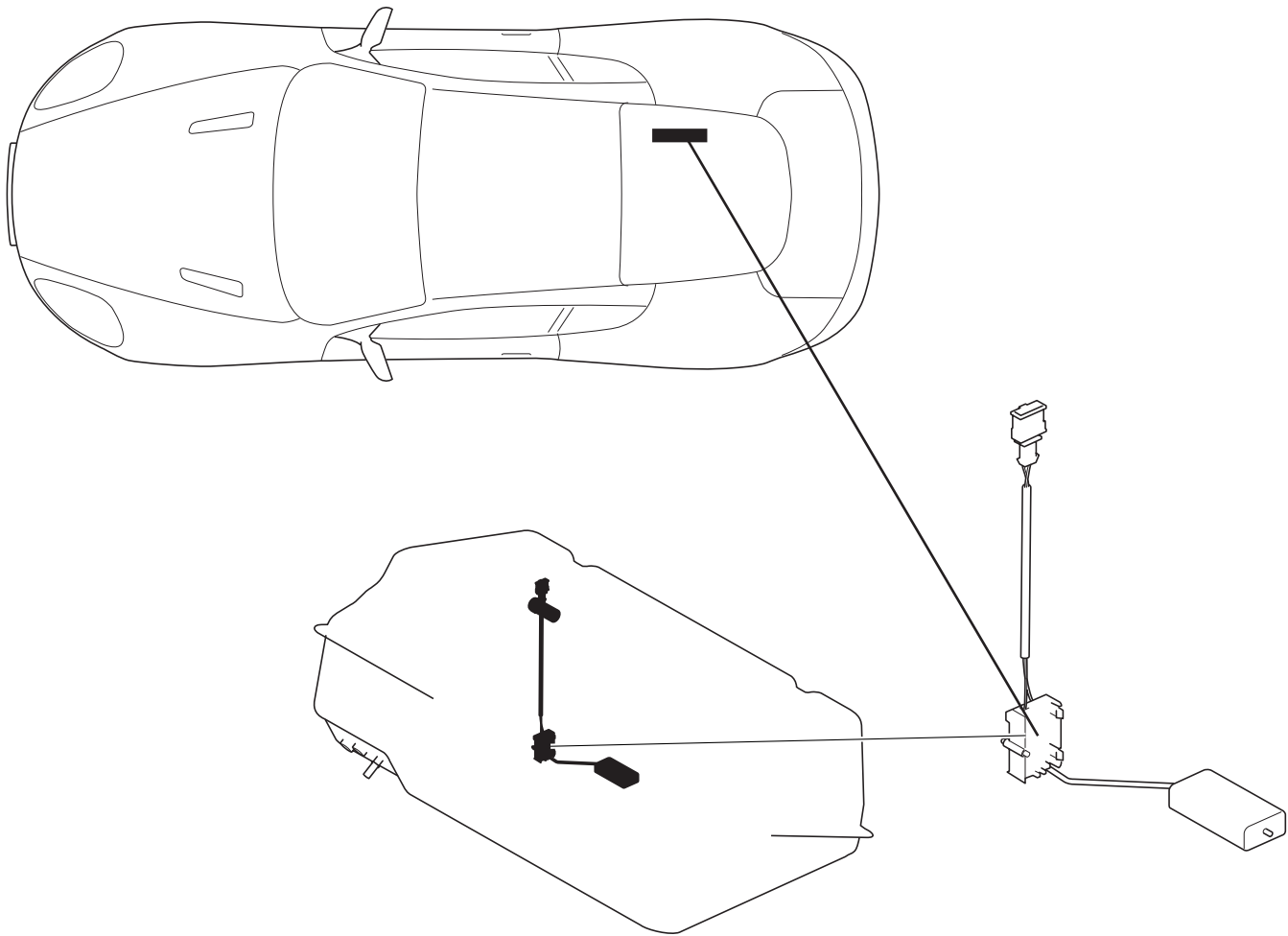


Figure 1. Fuel Level Sensor Location

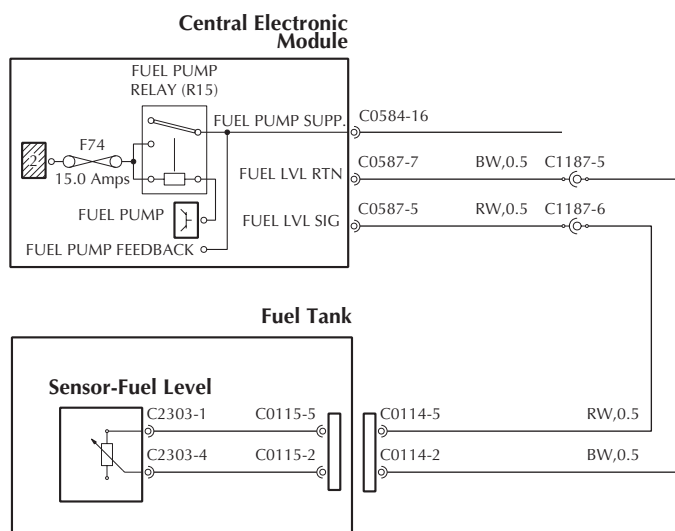


Figure 2. Fuel Level Sensor Circuit

Fault Code Definition

P0462 - Fuel level sensor circuit low input.

MIL Status

This code will not light the MIL lamp.

P0462 Fault Analysis

1. Check the resistance of the fuel level sensor at the Central Electronic Module. Check between pins C0587-7 and C0587-5.

The resistance should be in the range 10 Ω tank full to 204 Ω tank empty.

If the resistance is in range and stable, go to step 2.

If the resistance is out of range, check continuity of the sensor wiring between the central electronic module and fuel tank connector pins C0114-2 and C0114-5. If continuity is good, replace the fuel level sensor. Clear the P0461 code and run a KOER test to ensure that the problem is resolved.

2. Arrange a break-out lead from connector C0587 pins 7 and 8. Use an analogue meter to monitor the fuel level signal on the break-out lead during a road test. Observe the signal for indications of an intermittent short circuit to ground. Include some driving over 'bumpy' surfaces and around tight turns.
3. If the signal is stable and in-range, the cause of the P0462 is not present at this time and testing is complete.

If the signal is unstable, recheck continuity of the sensor wiring and service as necessary. Clear the P0461 code and run a road test to ensure that the problem is resolved.

P0463 - Fuel Level Sensor

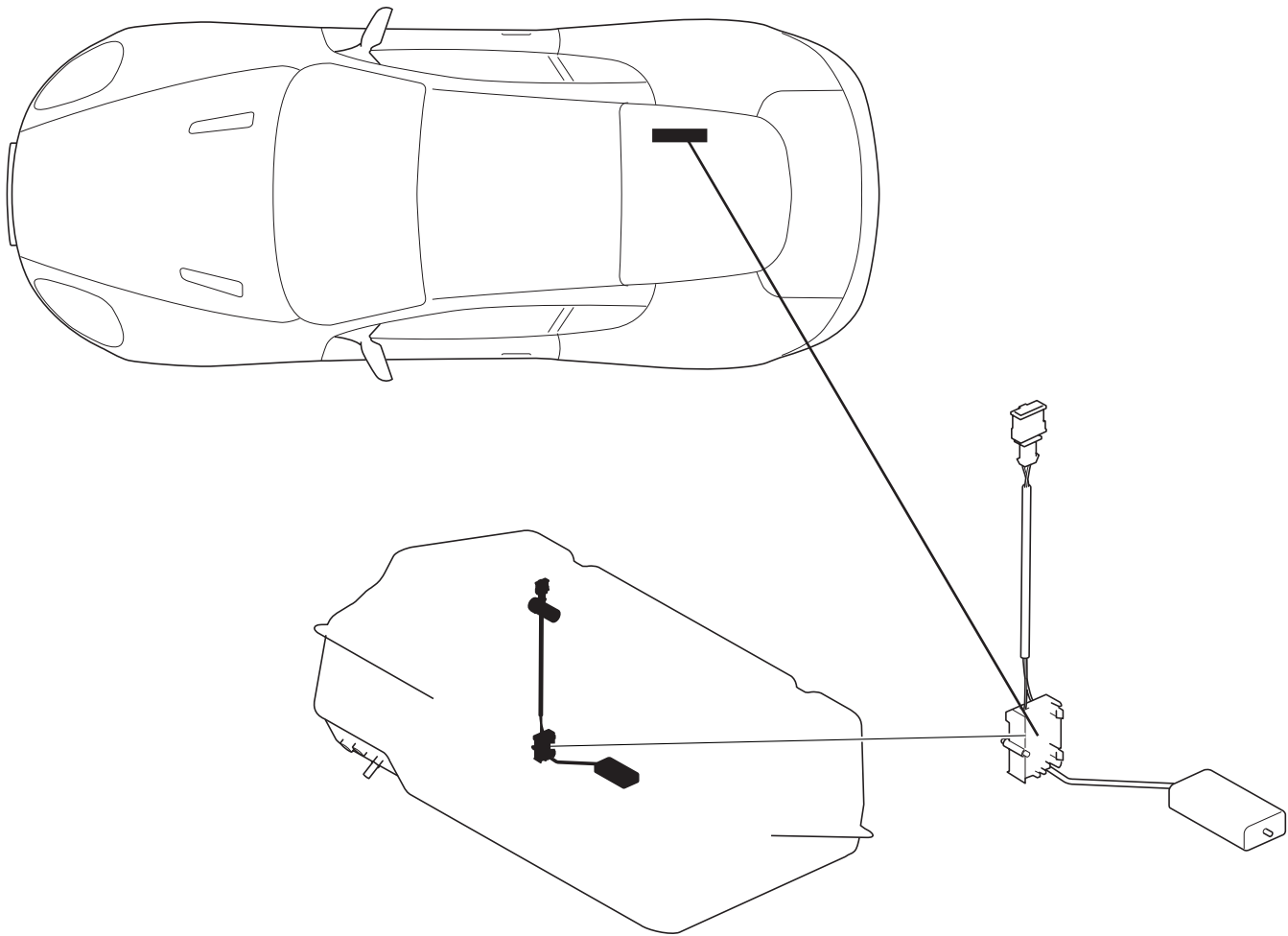


Figure 1. Fuel Level Sensor Location

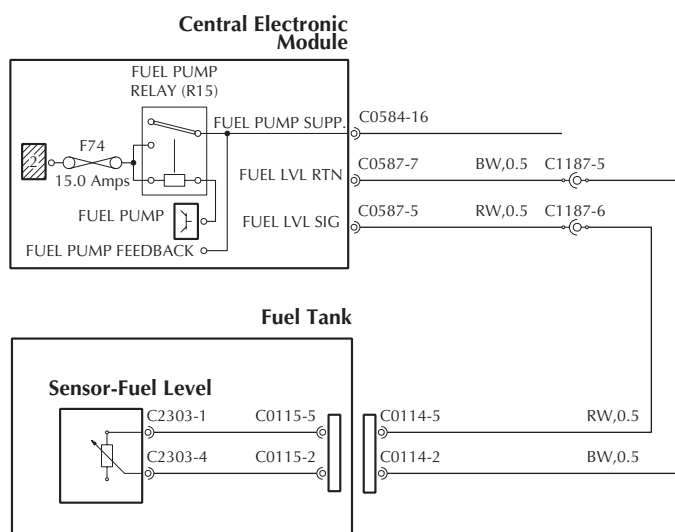


Figure 2. Fuel Level Sensor Circuit

Fault Code Definition

P0463 - Fuel level sensor circuit high input.

MIL Status

This code will not light the MIL lamp.

P0463 Fault Analysis

1. Check the resistance of the fuel level sensor at the Central Electronic Module. Check between pins C0587-7 and C0587-5.

The resistance should be in the range 10 Ω tank full to 204 Ω tank empty.

If the resistance is in range and stable, go to step 2.

If the resistance is out of range, check continuity of the sensor wiring between the central electronic module and fuel tank connector pins C0114-2 and C0114-5. If continuity is good, replace the fuel level sensor. Clear the P0461 code and run a KOER test to ensure that the problem is resolved.

2. Arrange a break-out lead from connector C0587 pins 7 and 8. Use an analogue meter to monitor the fuel level signal on the break-out lead during a road test. Observe the signal for indications of an intermittent short circuit to +5 or +12 volt supply lines. Include some driving over 'bumpy' surfaces and around tight turns.
3. If the signal is stable and in-range, the cause of the P0463 is not present at this time and testing is complete.

If the signal is unstable, recheck continuity of the sensor wiring and service as necessary. Clear the P0461 code and run a road test to ensure that the problem is resolved.

P0480, P0483 - Fan Control Circuit

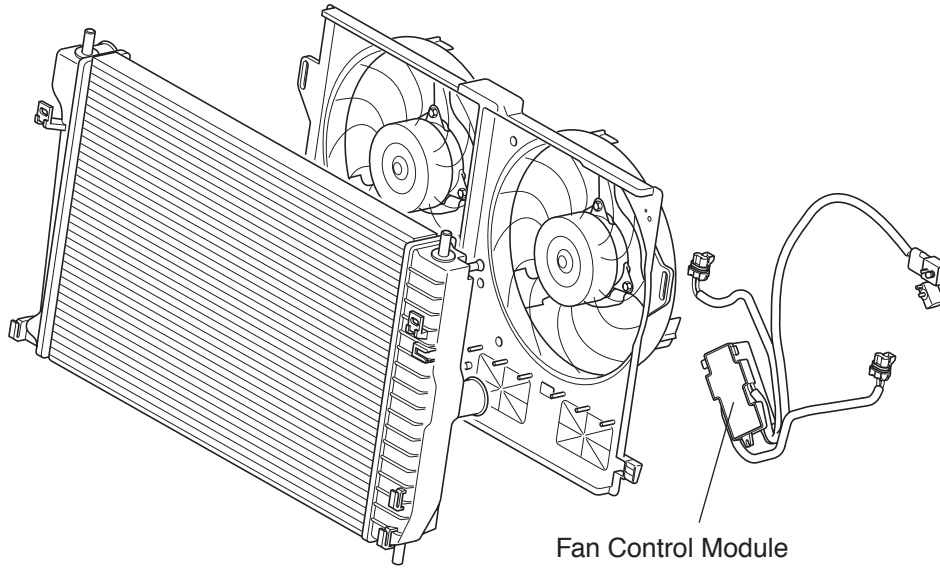


Figure 1. Fan Control Module Location

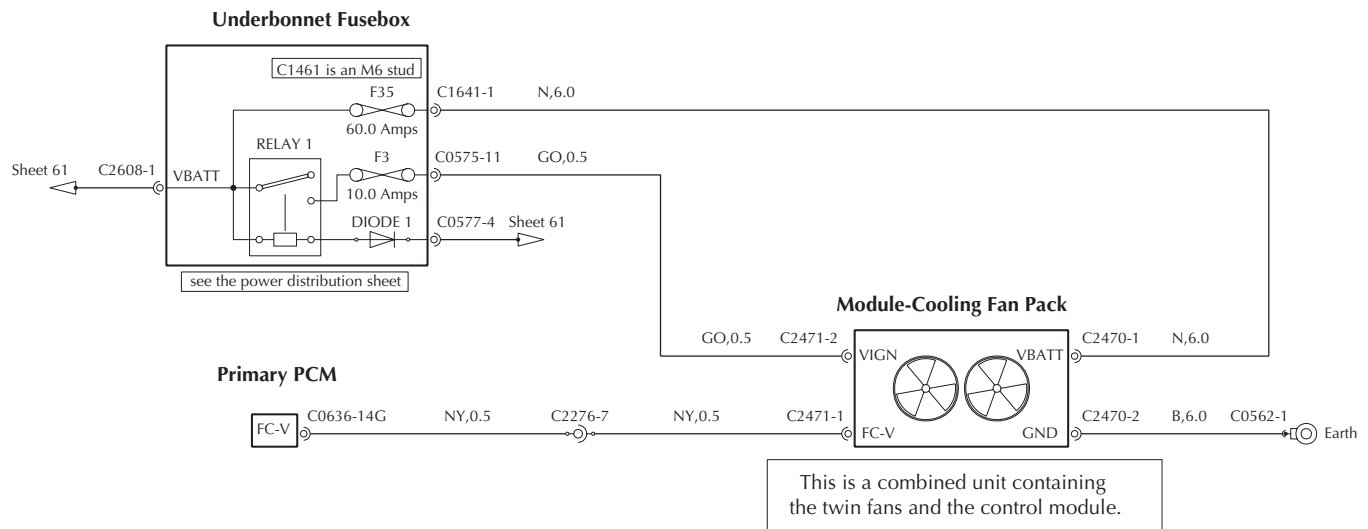


Figure 2. Fan Control Module Circuit

Fault Code Definition

P0480 - Engine cooling fan control circuit.

P0483 - Fan Performance

MIL Status

This code will not light the MIL lamp.

P0480, P0483 Fault Analysis

1. Connect the WDS and confirm that P0480 or P0483 is logged.

2. Disconnect C2470 and C2471 at the engine cooling fan module.

3. Switch on the ignition and check for +12 volts (VBatt) at C2470-1 and for +12 volts (VIgn) at C2471-2.

If the +12 volt supplies are good, go to step 4

If either supply is suspect, rectify the +12 volt supply problem. Clear the P0480 code and run a KOER test to ensure that the problem is resolved.

4. Reconnect the fan module. Set the datalogger to monitor the Variable Speed Fan Level signal. The signal should conform to the following specification:

Cold Engine - 0 bits, fans off

Engine warming up - 0-31 bits, fan speed increasing as the coolant temperature rises

Engine hot - 31 bits, fans at full speed, maximum engine cooling

If the fan drive signal and the fan speeds are in specification, the fault is not currently present. Clear the fault code and run a road test to confirm that the fan control system is serviceable.

If the fan drive signal is out of specification, go to step 5.

5. With the ignition on, check for +5 volts between pins C2471-1 (+ve) and chassis ground.

If +5 volts is available, go to step 5.

If +5 volts is not available, check continuity of the control line from primary PCM pin C0636-14 to cooling fan connector C2471-1. Service the circuit as necessary. Clear the P0480 code and run a KOER test to ensure that the problem is resolved.

6. Check continuity of the control signal ground from cooling fan module connector C2470-2 to ground at C0562-1.

If a good ground is available, the wiring appears serviceable. Replace the fan control module.

Clear the P0480 code and run a KOER test until the engine is fully warmed up and the cooling fans are running. If the fans run correctly and no fan fault codes are logged, the problem is resolved.

7. Check the continuity of the VSS signal screening from both the VSS and PCM terminations to chassis ground.

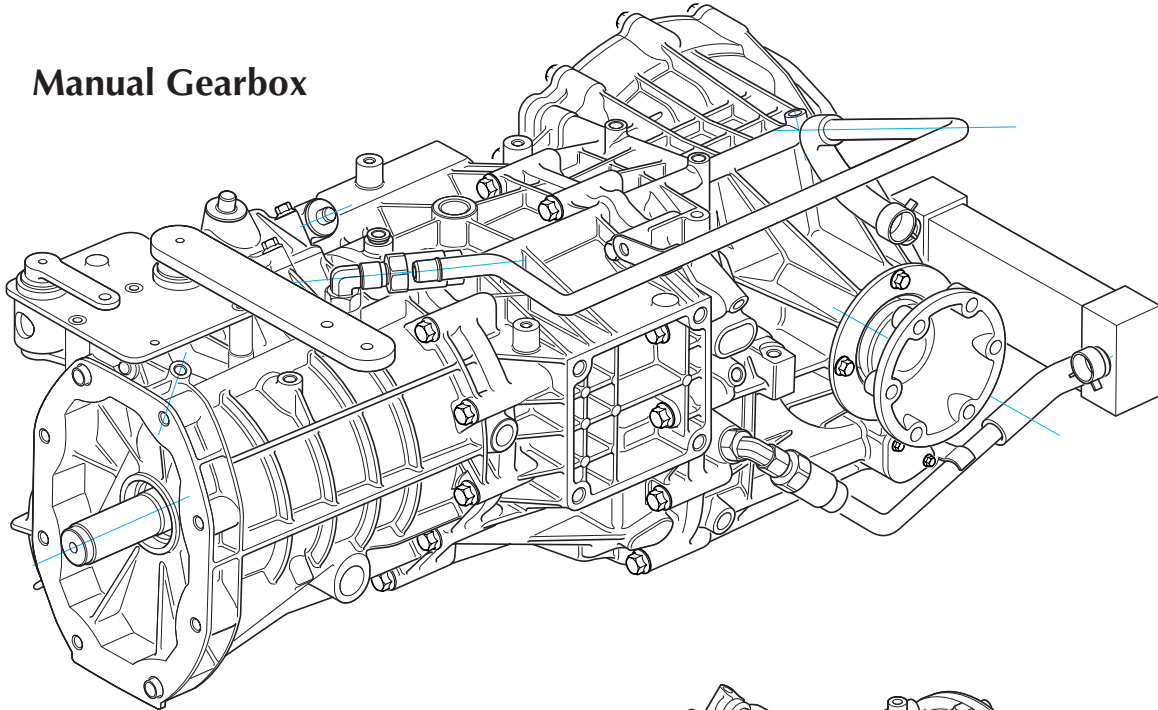
Also check for the proximity of any sources of interference close to the sensor leads. Reroute any suspect sources of radio interference.

If any circuit faults are identified, service as necessary. Clear the VSS codes and run a brief road test to ensure that the problem is resolved.

8. If all the previous checks are satisfactory, consult Aston Martin Technical Support.

P0500, P0501, P0502, P0503 - Vehicle Speed Sensor Fault

Manual Gearbox



Automatic Gearbox

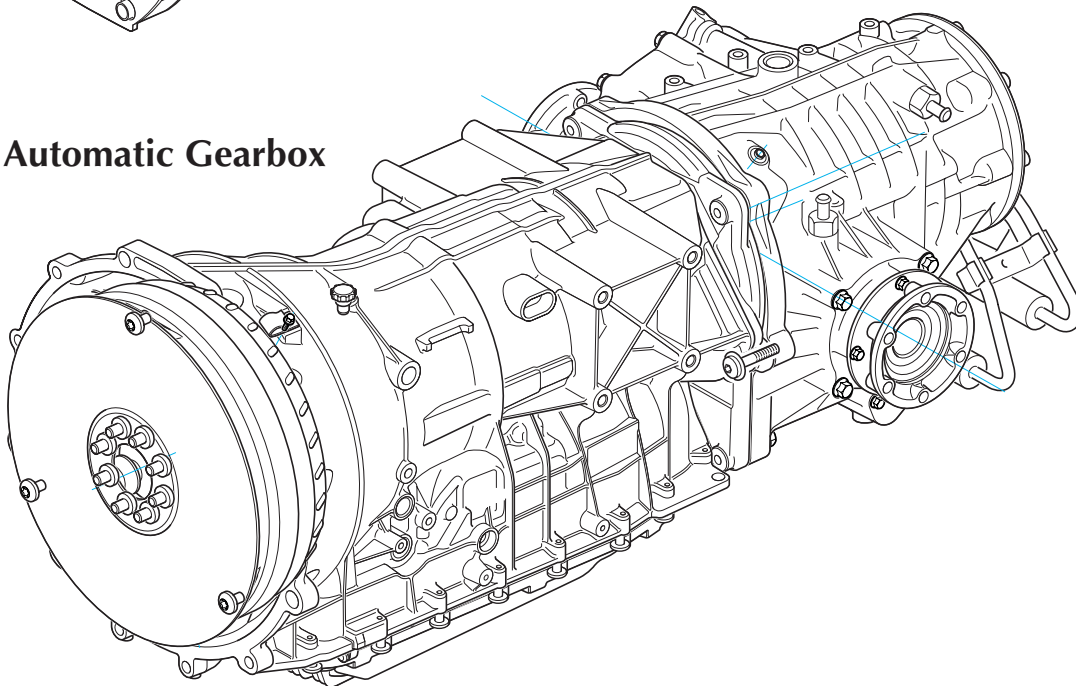


Figure 1. Speed Sensor Locations

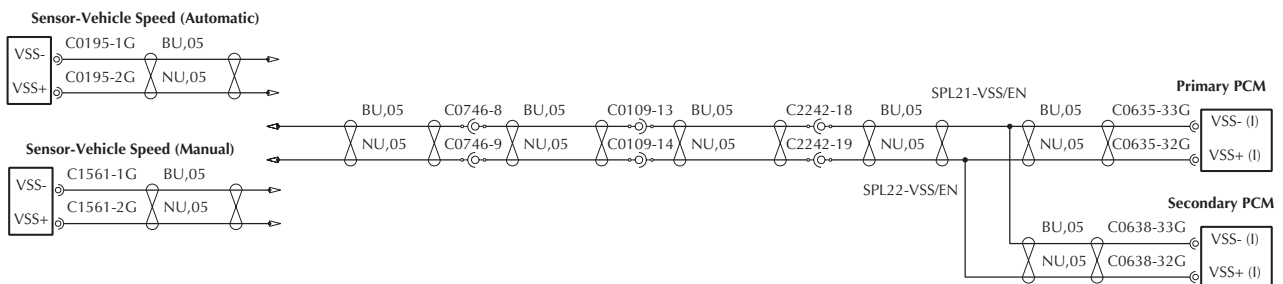


Figure 2 Vehicle Speed Sensor Circuit

Fault Code Definition

P0500 Output shaft speed sensor short to supply.

P0501 Output shaft speed sensor too high when compared to wheel speed.

P0502 Output shaft speed sensor short to supply/open circuit.

P0503 Vehicle Speed Sensor intermittent or erratic

This is a MIL code.

P0500, P0501, P0502, P0503 Fault Analysis

Note: Vehicle speed is sensed from the diff speed sensor on auto cars and from the gearbox output speed sensor on manual cars.

1. Connect the WDS and confirm that P0500, P0501, P0502 or P0503 is logged. Clear the logged fault code.
2. Set datalogger to monitor the VSS (output shaft speed sensor) signal. run a brief road test (or rolling road test) with varying speeds.

Check if the recorded vehicle speed matches the actual speed.

If the recorded speed does not match actual speed, go to step 3 for manual cars or step 4 for automatic cars.

If the VSS readings are accurate and no relevant fault codes are logged, treat this as an intermittent problem and service the VSS circuit for poor connections and shorts to power or ground

Run an extended road test to ensure that the problem is resolved.

3. For Manual Cars:

Perform continuity checks between the following connections:

VSS+ C1561-2 to primary PCM C0635-32 and secondary PCM C0638-32.

VSS- C1561-1 to primary PCM C0635-33 and secondary PCM C0638-33.

If any circuit fault is detected, service the circuit as necessary. Clear the fault code and run a brief road or rolling road test to ensure that the problem is resolved.

4. For Auto Cars:

Perform continuity checks between the following connections:

VSS+ C0195-2 to primary PCM C0635-32 and secondary PCM C0638-32.

VSS- C0195-1 to primary PCM C0635-33 and secondary PCM C0638-33.

5. If no continuity fault is detected, go to step 6.

If any continuity fault is detected, service the circuit as necessary. Clear the fault code and run a brief road or rolling road test to ensure that the problem is resolved.

6. Check for short circuits to supply or ground by performing voltage and continuity checks from VSS+ and VSS- to ground at the sensor.

If any short circuit fault is detected, service the circuit as necessary. Clear the fault code and run a brief road or rolling road test to ensure that the problem is resolved.

P0505/P0506/P0507 - Idle Speed Control

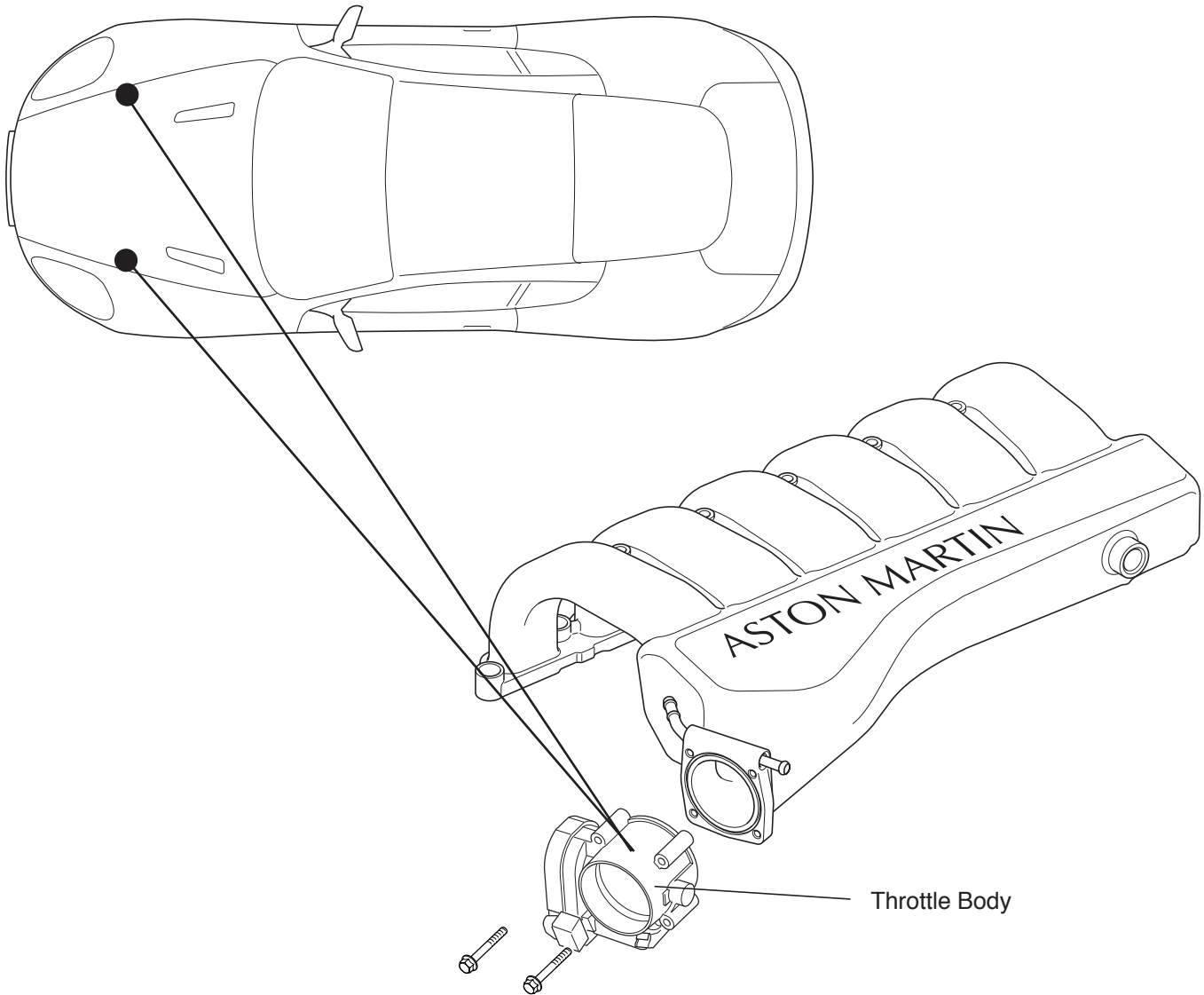


Figure 1. Throttle Assembly Location

Fault Code Definition

P0505 - Idle speed control system malfunction.

P0506 - Inlet air control duty cycle lower than expected

P0507 - Inlet air control duty cycle higher than expected

MIL Status

A P0505 code will not light the MIL lamp. Codes P0506 and P0507 will light the MIL lamp.

P0505, P0506, P0507 Fault Analysis

Note: During the KOER test, the idle speed is briefly increased to over 1300 rpm to ensure that the PCMs have full control.

1. Run the engine and observe the idle speed.

The idle speed should be stable within the range 1200 rpm cold, falling to 850 rpm when fully warmed up.
2. Connect the WDS and note all logged DTCs.
3. If any of codes P0122, 0123, 0124, 0222, 0223, or 0224 (throttle position sensor codes) are logged, analyse these problems first and return to this procedure if any of P0505/0506/0507 are logged again without other TP codes.
4. Set the datalogger to monitor all throttle position signals on both engine banks.

Run the engine and record the throttle positions whilst increasing and decreasing engine speed. Stop the engine and review the throttle position record.

If there is any significant difference between the throttle position signals, suspect the throttle assembly with the widest throttle signal variation or with the most unstable signal level.
5. Remove the affected throttle assembly and check for contamination or mechanical defects.

If contamination is detected, clean the assembly as necessary and refit. Clear all DTCs and run a KOER test to ensure that the problem is resolved.

If no contamination is detected, go to step 5
6. Refit the throttle assembly but do not refit the air trunking.

Key on. Observe the suspect throttle butterfly whilst a colleague operates the throttle pedal.

If the throttle does not faithfully follow the pedal movement, replace the throttle assembly. Clear the P0505/0506/0507 codes Run a KOER test to ensure that the problem is resolved.

If the throttle pedal does faithfully follow the pedal movement, the cause of the fault is not present at this time and testing is complete.

P0532/P0533 - A/C Refrigerant Pressure Sensor

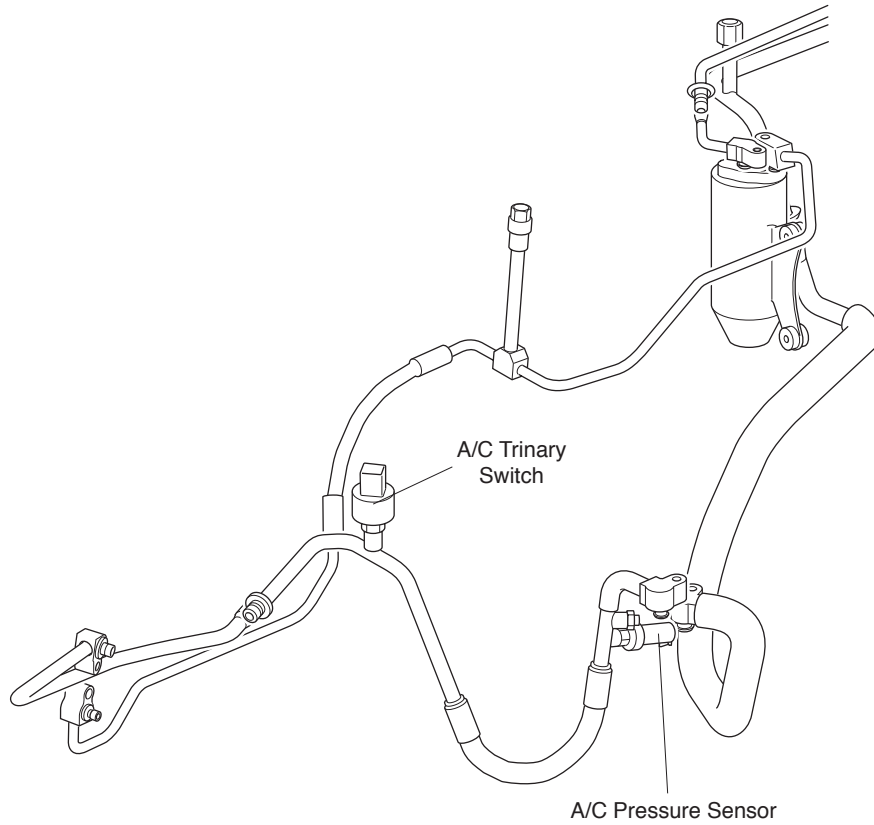


Figure 1. A/C Refrigerant Pressure Sensor Location

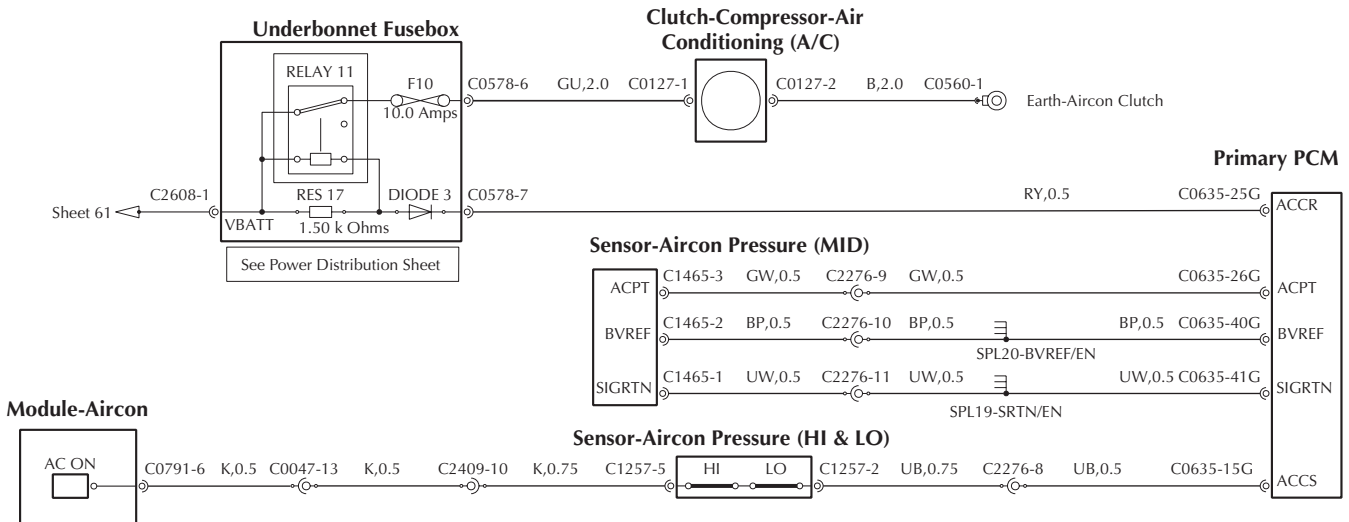


Figure 2. A/C Refrigerant Pressure Sensor Circuit

Fault Code Definition

P0532 - A/C pressure sensor - low input.

P0533 - A/C pressure sensor - high input.

MIL Status

These codes will not light the MIL lamp.

P0532/P0533 Fault Analysis

1. Connect the WDS and confirm that either P0532 or P0533 is logged.
2. Disconnect the pressure sensor connector. Key on. Select A/C on. Check the voltage between VRef and Signal Return (pins C1257-5 and C1257-2) at the A/C pressure sensor connector. If +5 volts is measured, go to step 3.

If less than 5 volts is measured, service the Vref or signal lines as necessary. Reconnect C1257, clear the logged DTC and run a brief road test with A/C on to ensure that the problem is resolved.

3. Using WDS datalogger, monitor the A/C pressure sensor signal. Maximum value of 1000 or above will set a P0533. The minimum value below 30 counts will set P0532.
4. If above 1000 counts or below 30 counts, disconnect the sensor connector, install the break-out box to the relevant PCM.

P0532 - Check for short circuit to chassis ground or to signal return. Service the circuit as necessary. Clear the P0532 code. Run a brief road test with A/C on to ensure that the problem is resolved.

P0533 - Check for short circuit to +5 or +12 volt lines. Service the circuit as necessary. Clear the P0532 code. Run a brief road test with A/C on to ensure that the problem is resolved.

P0552 - Power Steering Pressure Sensor

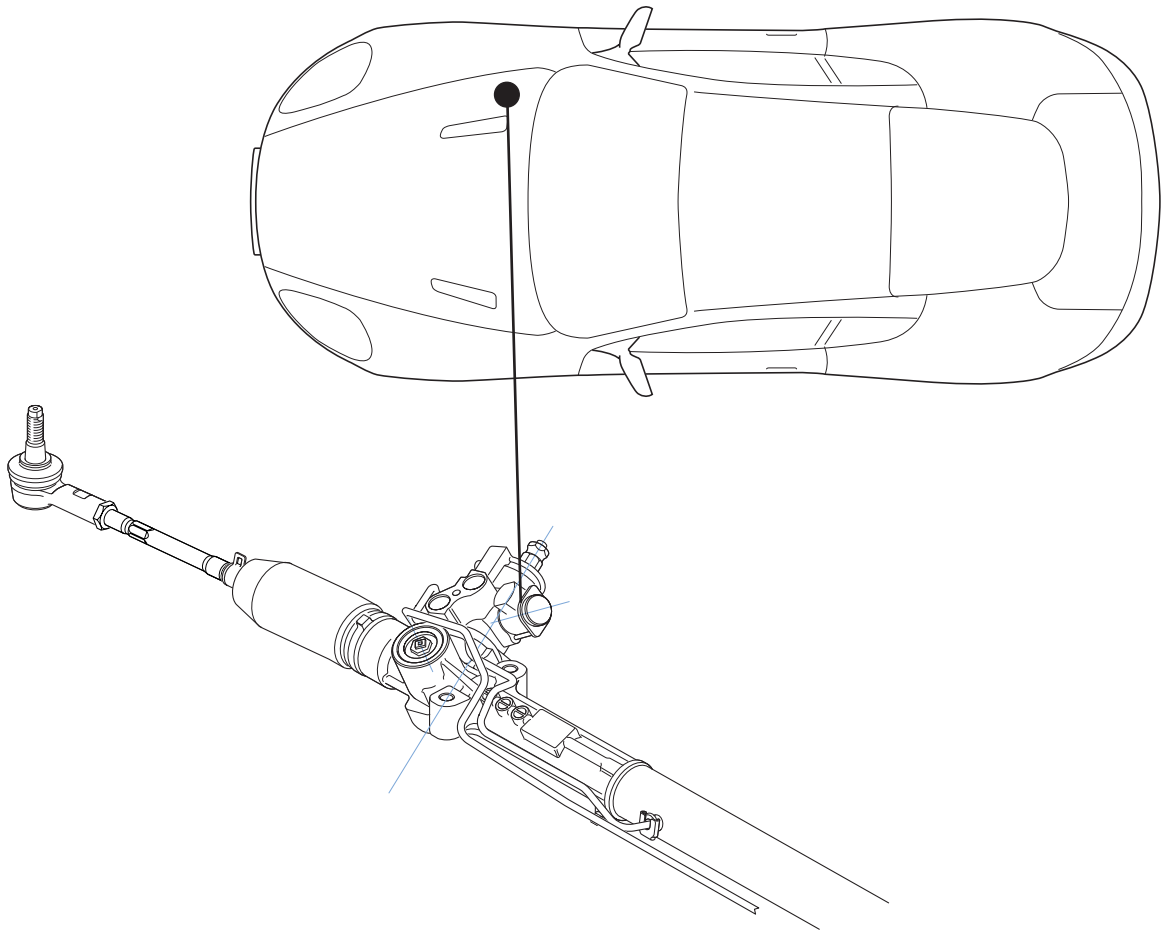


Figure 1. Power Steering Pressure Sensor Location

Transducer-Power Steering Pressure

Primary PCM

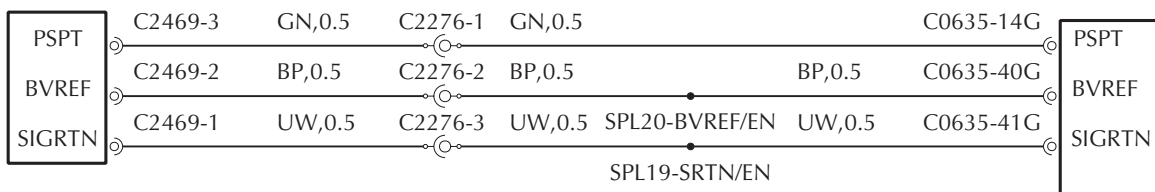


Figure 2. Power Steering Pressure Sensor Circuit

Fault Code Definition

P0552 - Power steering pressure sensor - low input.

MIL Status

This code will not light the MIL lamp.

P0552 Fault Analysis

1. Connect the WDS and check that P0552 is logged.
2. Set the datalogger to monitor the power steering pressure signal. The signal should vary within the range x - y when the steering is moved with the vehicle stationary and the engine running.
3. Disconnect the power steering pressure switch connector (C2469). Switch on the ignition and check for +5volts between harness connector pins C2469 - 2 (+5 V) and C2469 - 1 (Signal Return).

If +5v is present, shake/wiggle the harness from the primary PCM to the pressure switch. Look for any drop in the supply level due to an intermittent short to ground.

Also check the other branches of the signal and return lines from splices 19 and 20 to the cabin and forward harnesses.

If no defect is identified, go to step 3

If any defect is identified, service the harness as necessary. Reconnect all components and clear the P0552 code. Run a KOER test and include some lock to lock steering movements. If the test is satisfactory with no repetition of the P0552 code, the problem is resolved.

4. Check the continuity of the PSPT signal line from C2469 - 3 at the pressure switch connector to PCM pin C0635-14.

Shake/wiggle the harness whilst checking continuity to check for possible short circuit to ground.

If no short circuit is detected, replace the sensor and run a KOER test to ensure that the problem is resolved.

If a short circuit is detected, service the harness as necessary. Reconnect all components and clear the P0552 code. Run a KOER test and include some lock to lock steering movements. If the test

is satisfactory with no repetition of the P0552 code, the problem is resolved.

P0553 - Power Steering Pressure Sensor

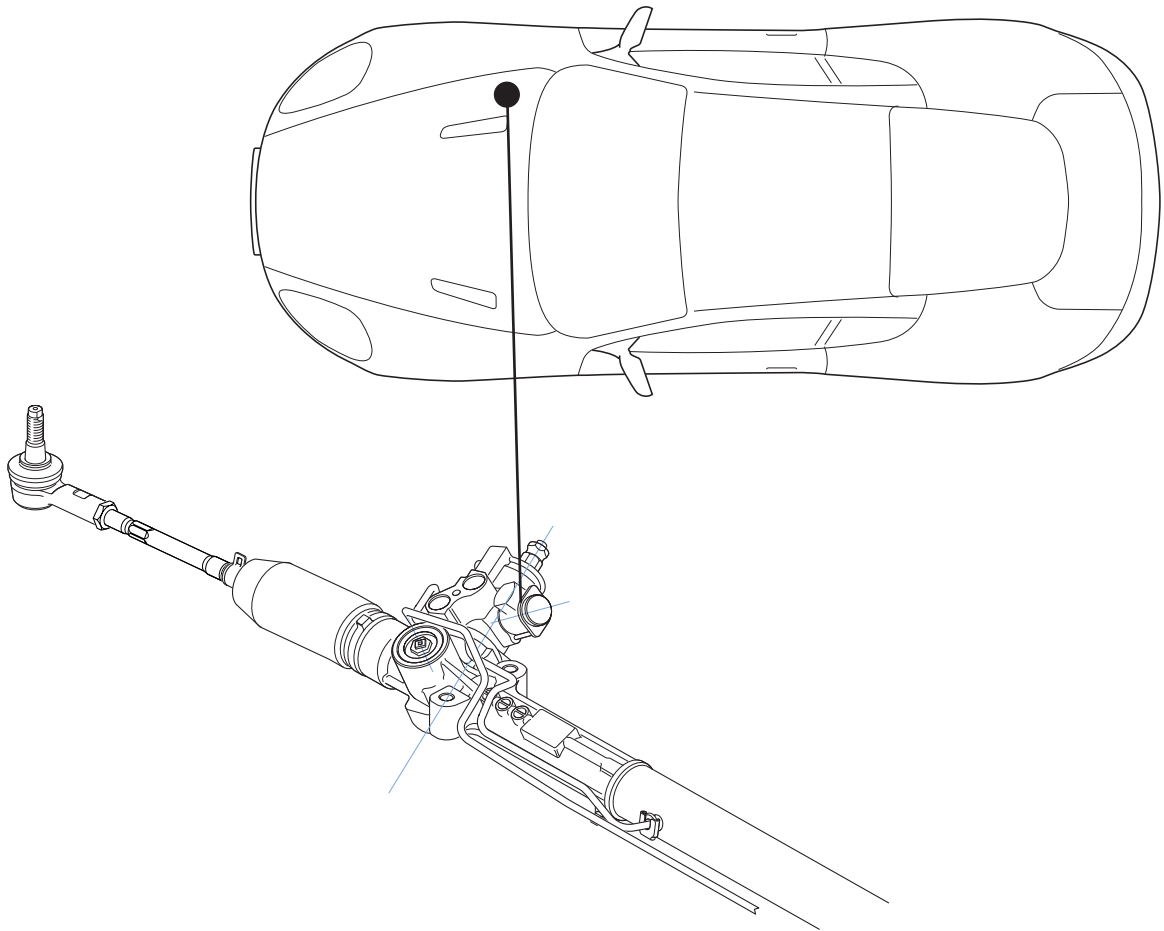


Figure 1. Power Steering Pressure Sensor Location

Transducer-Power Steering Pressure

Primary PCM

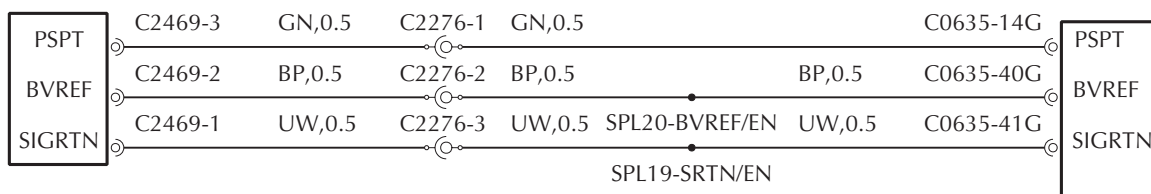


Figure 2. Power Steering Pressure Sensor Circuit

Fault Code Definition

P0553 - Power steering pressure sensor - high input.

MIL Status

This code will not light the MIL lamp.

P0553 Fault Analysis

1. Connect the WDS and check that P0552 is logged.
2. Disconnect the power steering pressure switch connector (C2469). Switch on the ignition and check for +5volts between harness connector pins C2469 - 2 (+5 V) and C2469 - 1 (Signal Return).

If +5v is present, shake/wiggle the harness from the primary PCM to the pressure switch. Look for any rise in the supply level due to an intermittent short to the +12 volt lines.

Also check the other branches of the signal line from splice 20 to the cabin and forward harnesses.

If no defect is identified, go to step 3

If any defect is identified, service the harness as necessary. Reconnect all components and clear the P0553 code. Run a KOER test and include some lock to lock steering movements. If the test is satisfactory with no repetition of the P0553 code, the problem is resolved.

3. Check the voltage level of the PSPT signal line from C2469 - 3 at the pressure switch connector to chassis ground.

Shake/wiggle the harness whilst checking for possible short circuit to a +12 volt supply.

If no short circuit is detected, replace the sensor. Run a KOER test to ensure that the problem is resolved

If a short circuit is detected, service the harness as necessary. Reconnect all components and clear the P0553 code. Run a KOER test and include some lock to lock steering movements. If the test is satisfactory with no repetition of the P0553 code, the problem is resolved.

P0562 / P0563 - System Voltage

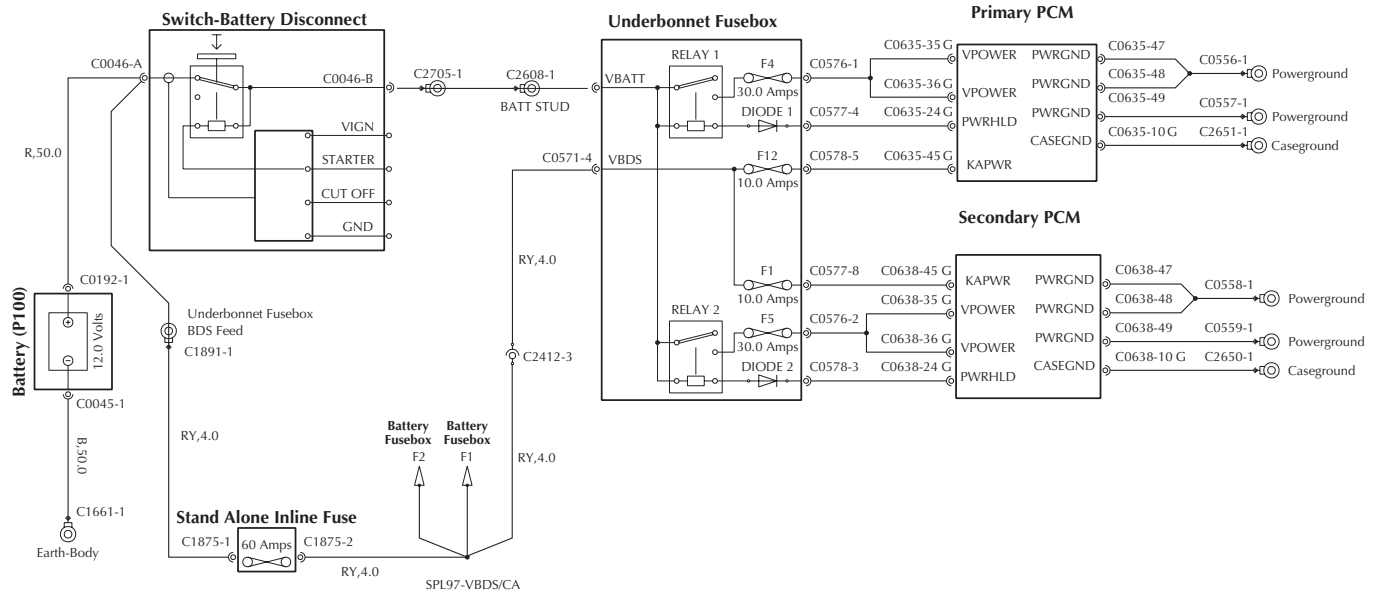


Figure 1. System Voltage Supply Circuit

Fault Code Definition

P0562 - System voltage low (below 5V).

P0563 - System voltage high (above 18V).

MIL Status

This code will not light the MIL lamp.

P0562, P0563 Fault Analysis

System voltage (VBATT) should be in the range 12.5 - 13.5 volts.

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Connect the WDS and check that P0562 or P0563 is logged.
2. Monitor the VBATT signal at the underbonnet fusebox (most easily checked at relay 1 base with the relay removed). The voltage would normally be in the range 12.5 - 13.5 volts.

If VBATT is in the normal range, go to step 3.

If the VBATT signal is below 12.5 volts, carry out the quick charge and battery condition check. Clear the P0562 code and run a KOER test to ensure that the problem is resolved.

3. Install the breakout box to the suspect PCM and monitor the VBATT signal. If the signal is outside the range 12.5 - 13.5 volts, service the VBATT circuit between the underbonnet fusebox and the PCM. Clear the P0562 code and run a KOER test to ensure that the problem is resolved.

Quick Check - Battery and Battery Charging

Battery - Measure battery voltage from the jump start terminal to chassis ground. If less than 12.5 volts, suspect a defective battery. Service/replace the battery as necessary and retest for a P0562 condition. If above 12.5 volts, the battery is serviceable, go to the charging check.

Charging - Run the engine at 2000 rpm with the headlamps switched on. Charge voltage measured from the jump start terminal to chassis ground should be about 13.8 volts. If significantly below 13.8 volts, service the charging system and then retest for a P0562 condition. If at 13.8 volts, the charging system is serviceable.

P0579, P0581 - Cruise Control

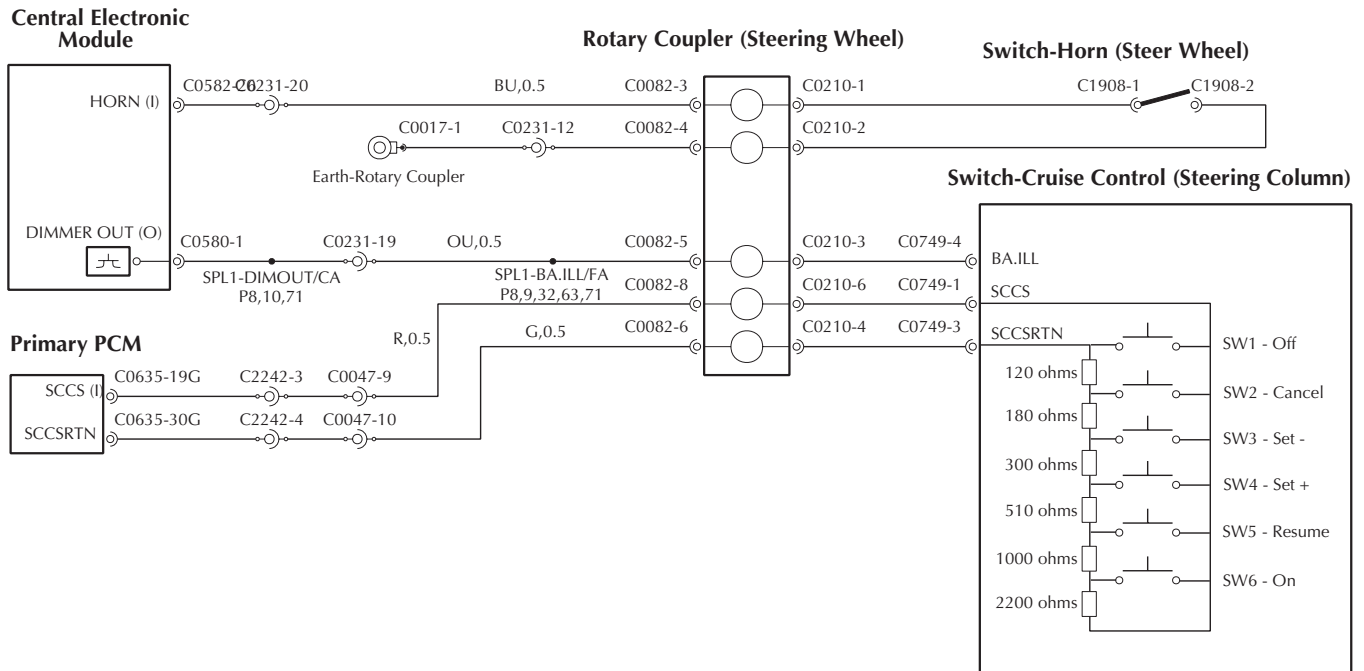


Figure 1. Cruise Control Circuit

Fault Code Definition

P0579 - Cruise Control - multi-function input A circuit range or performance.

P0581 - Cruise control - multi-function input A circuit high

MIL Status

This code will not light the MIL lamp.

P0579, P0581 Fault Analysis

1. Connect the WDS and confirm that P0579 or P0581 is logged.
2. Check continuity of the SCCS and SCCSRTN signal lines from cruise control switch C0749-1 and C0749-3 to primary PCM C0635 19 and C0635-30.

If any circuit defect is identified, service the circuit as necessary. Clear the fault code and test the cruise control system for correct operation.

If no circuit defect is identified, test each segment of the cruise control switch for correct resistance as show on the circuit diagram opposite.

If any resistance defect is identified, replace the switch. Clear the fault code and test the cruise control system for correct operation.

P060D - Throttle Pedal Imbalance Primary to Secondary PCM

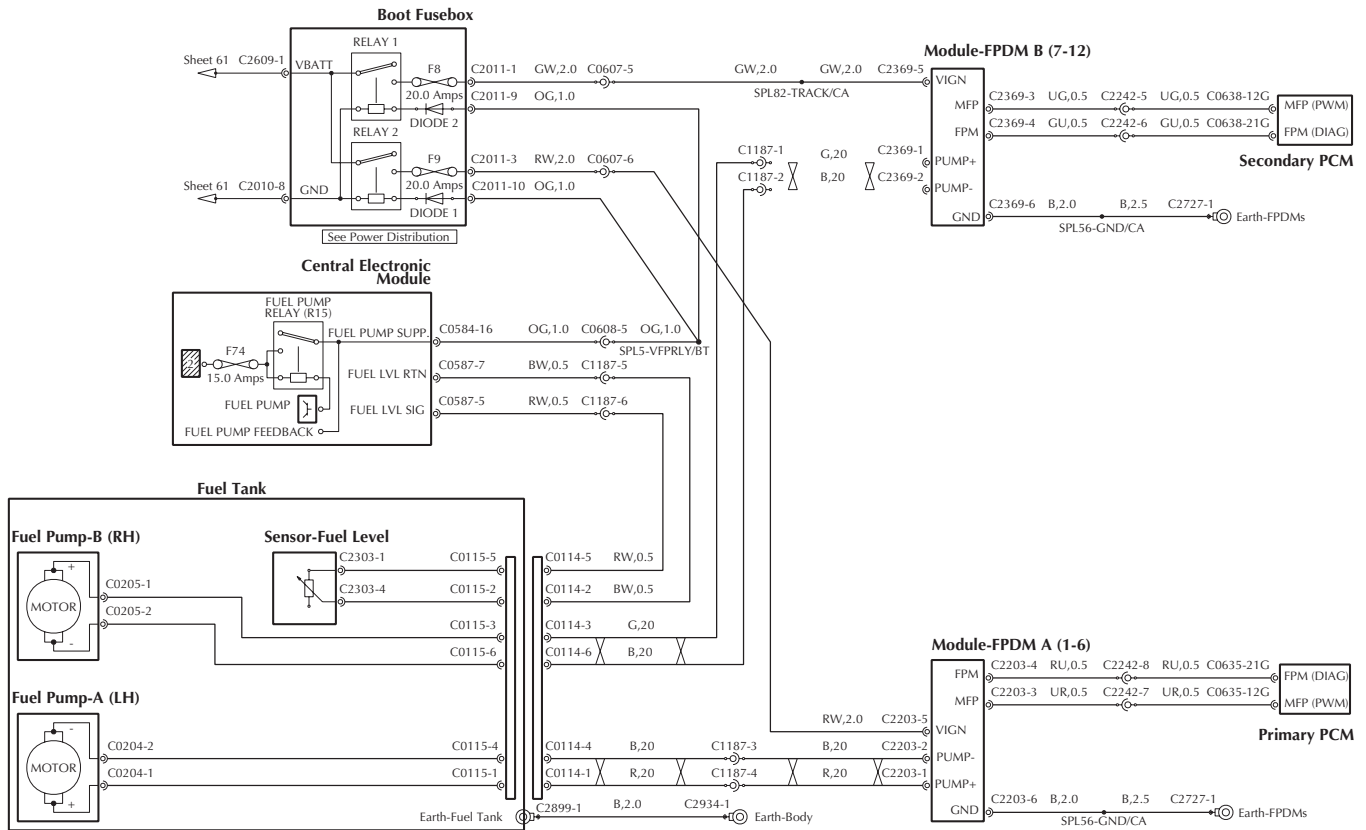


Figure 1. Fuel Pump Circuits

Fault Code Definition

P060D - Throttle pedal imbalance - primary to secondary PCM

MIL Status

This codes will not light the MIL lamp

P060D Fault Analysis

CAUTION: This codes may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Connect the WDS and confirm that P060D is logged.
2. Set WDS to monitor both throttle pedal signals.
3. Ignition on. Move the throttle pedal over its full range several times whilst observing the throttle pedal position signals.

If the signals remain in balance over the full range of pedal movement, go to step 4.

If the signals are out of balance, service the throttle pedal position sensors or circuit. Clear the P060D code and run a further check of throttle pedal position sensor readings to confirm that the problem is resolved.

4. Set the throttle pedal to a mid range position. Shake/wiggle the harness and look for any change in the TPP signals.

If a harness fault is detected, service the harness as necessary. Clear the P060D code and run a further check of throttle pedal position sensor readings to confirm that the problem is resolved.

If no harness fault is detected, go to step 5.

5. Clear the P060D code and run an extended road test to see if the code is logged again.

If the code is logged again, repeat steps 3 and 4 of this procedure to identify the cause of the intermittent problem. Service the sensor or wiring as necessary and repeat the sensor signal check to ensure that the problem is resolved.

If the code is not logged again, the cause of the problem is not present at this time and testing is complete.

P0602 - Vehicle Identification

Fault Code Definition

P0602 - The vehicle identification (VID) block checksum test failed.

MIL Status

This code will not light the MIL lamp.

P0602 Fault Analysis

1. Connect WDS
2. Using the latest WDS disc, re 'flash' programme the PCMs.
3. If this does not cure the problem contact AML Tech Support.

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P0603 - Keep Alive Power

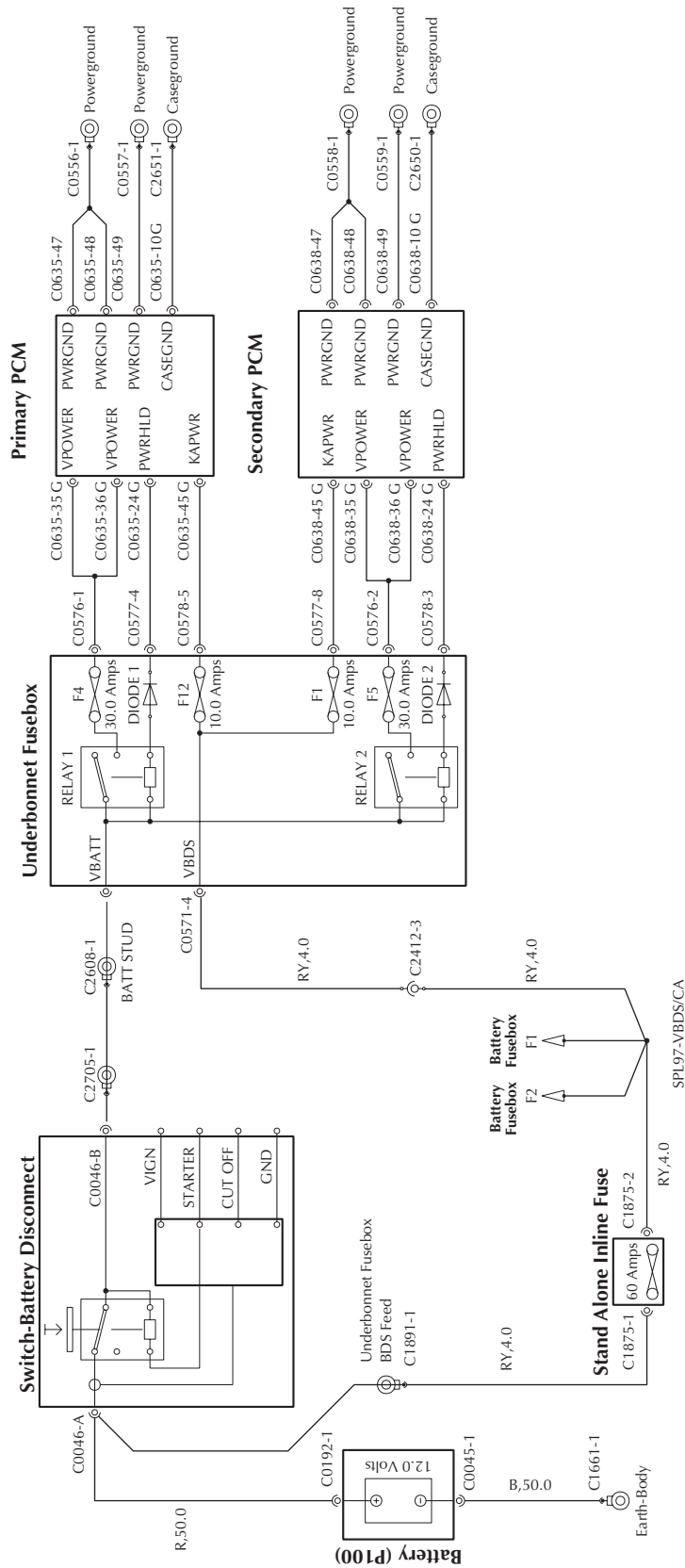


Figure 1. Keep Alive Power Circuit

Fault Code Definition

P0603 - The PCM has detected a power interrupt in the KAM (Keep Alive Memory) supply to the PCM.

MIL Status

These codes will not light the MIL lamp.

P0603 Fault Analysis

Note: If KAPWR is interrupted to the PCM by disconnecting the battery or any connection in the VBATT supply circuit to primary PCM pin C0635-45 or secondary PCM pin C0638-45, P0603/P0605 may be generated on the first power up after reconnection or after re-flashing the PCMs.

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Key off. Inspect the battery cables and VBAT supply circuit through the battery disconnect switch for loose connections, corrosion, etc. Repair as necessary.
2. Check the security of the keep alive power lines from the underbonnet fuses F1 and F12 to the PCMs.
3. Disconnect the PCMs, inspect the connectors for pushed out pins, damage, corrosion, etc. Repair if necessary.
4. Fit the PCM break-out box. Measure voltage between primary PCM harness connector C0635-45 and chassis ground (KAPWR). Repeat the check at secondary PCM connector C0638-45. Whilst measuring the voltage, grasp the PCM harness and wiggle, shake or bend small sections while working from the PCM to the underbonnet fusebox.

If the voltage drops below 10.5 volts, service the open circuit in the KAPWR circuit. Reconnect all components and rerun the KOER Test to verify that the problem is resolved.

If the voltage remains above 10.5 volts, rerun the KOEO self test. If P0603/P0605 is detected again, consult Aston Martin Technical Support.

If P0603 is not detected, the code was due to some service action as described in the note following the code description. Testing is then complete.

P0605 - PCM / PCM Processor

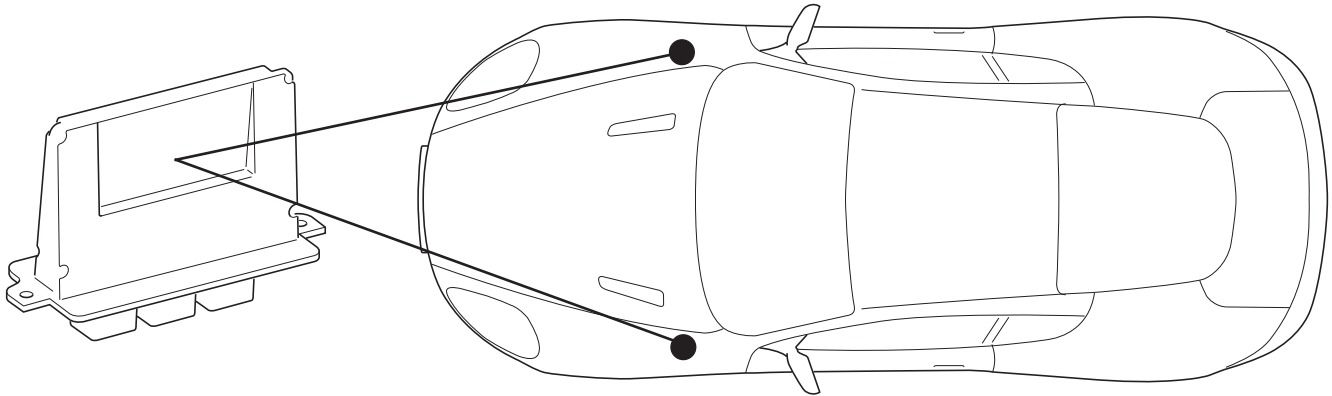


Figure 1. PCM Locations

Fault Code Definition

P0605 - The PCM has detected an EPROM error.

MIL Status

This code will not light the MIL lamp.

P0605 Fault Analysis

CAUTION: This code may be generated in the Primary or Secondary Engine Control Module (PCM). Check that you are working on the correct half of the engine.

Note: This code indicates a serial communication fault within the PCM.

1. Connect the WDS and confirm that P0605 is logged.
2. Run a KOER test. Recheck the logged fault codes
3. If P0605 is logged again, use WDS to reprogram (reflash) the PCM.
4. Repeat the KOER test and recheck for logged fault codes.
5. If P0605 is logged again, replace the PCM

P0606 - PCM / PCM Processor

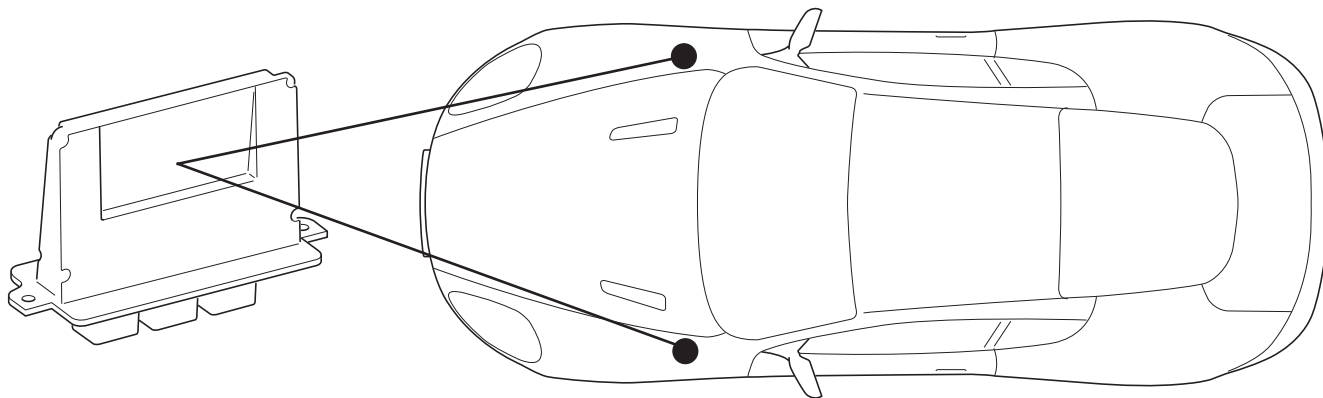


Figure 1. PCM Locations

Fault Code Definition

P0606 - The PCM /PCM Processor.

MIL Status

This code will not light the MIL lamp.

P0606 Fault Analysis

CAUTION: This code may be generated in the Primary or Secondary Engine Control Module (PCM). Check that you are working on the correct half of the engine.

Note: This code indicates a serial communication fault within the PCM.

1. Connect the WDS and confirm that P0606 is logged.
2. Run a KOER test. Recheck the logged fault codes
3. If P0606 is logged again, use WDS to reprogram (reflash) the PCM.
4. Repeat the KOER test and recheck for logged fault codes.
5. If P0606 is logged again, replace the PCM

P0613 - TCM Watchdog Error

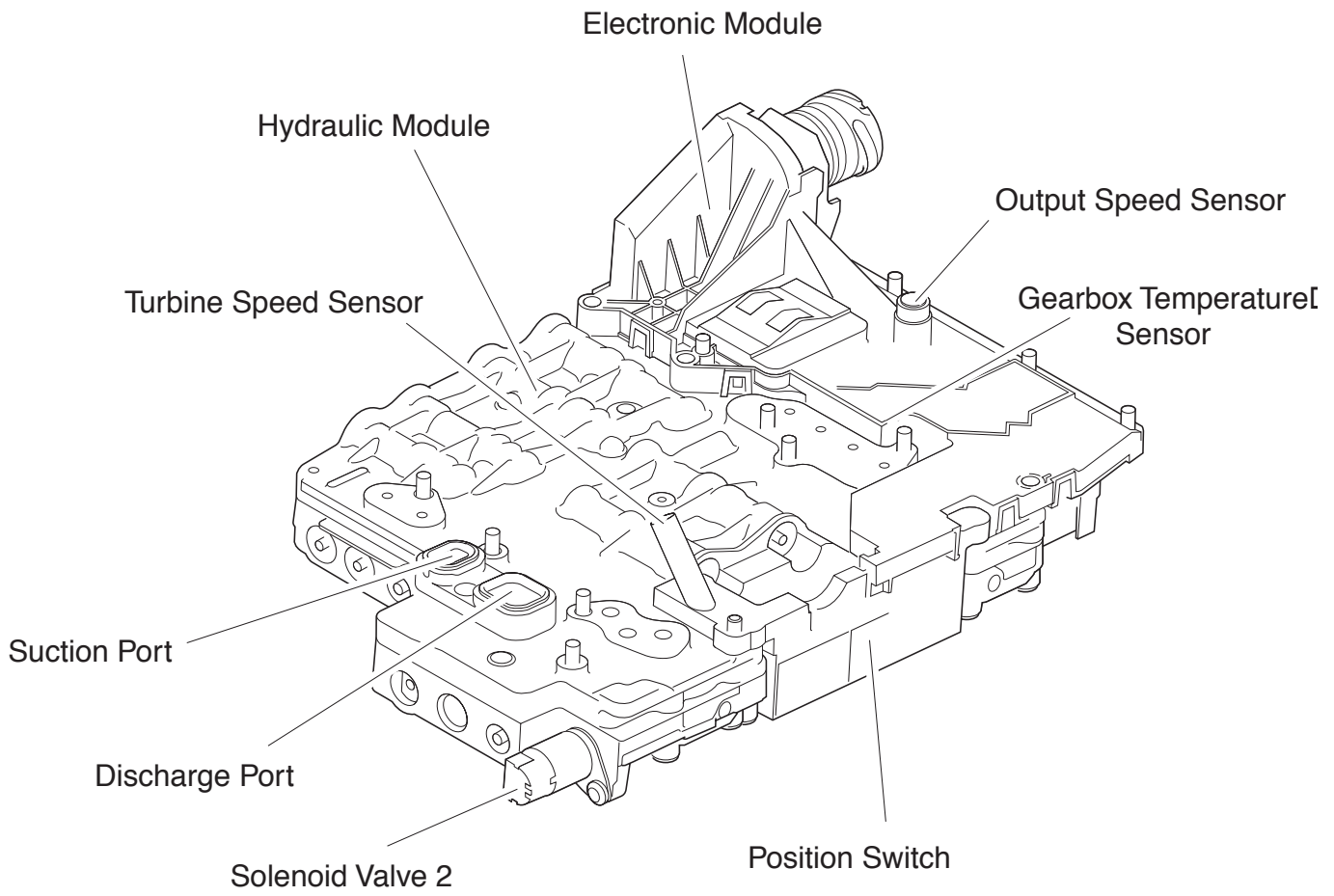


Figure 1. Mechatronic Unit

Fault Code Definition

P0613 - TCM Watchdog Error

MIL Status

This code will not light the MIL lamp.

P0613 Fault Analysis

CAUTION: This code should be generated only in the Primary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Connect the WDS and confirm that P0613 is logged. Clear the P0613 code
2. Run a KOER test. Recheck the logged fault codes
3. If P0613 is logged again, reflash the TCM. Run a further KOER test to check if the problem is resolved.
4. If p0613 is logged again, replace the mechatronic unit.

P0614 - CAN Level

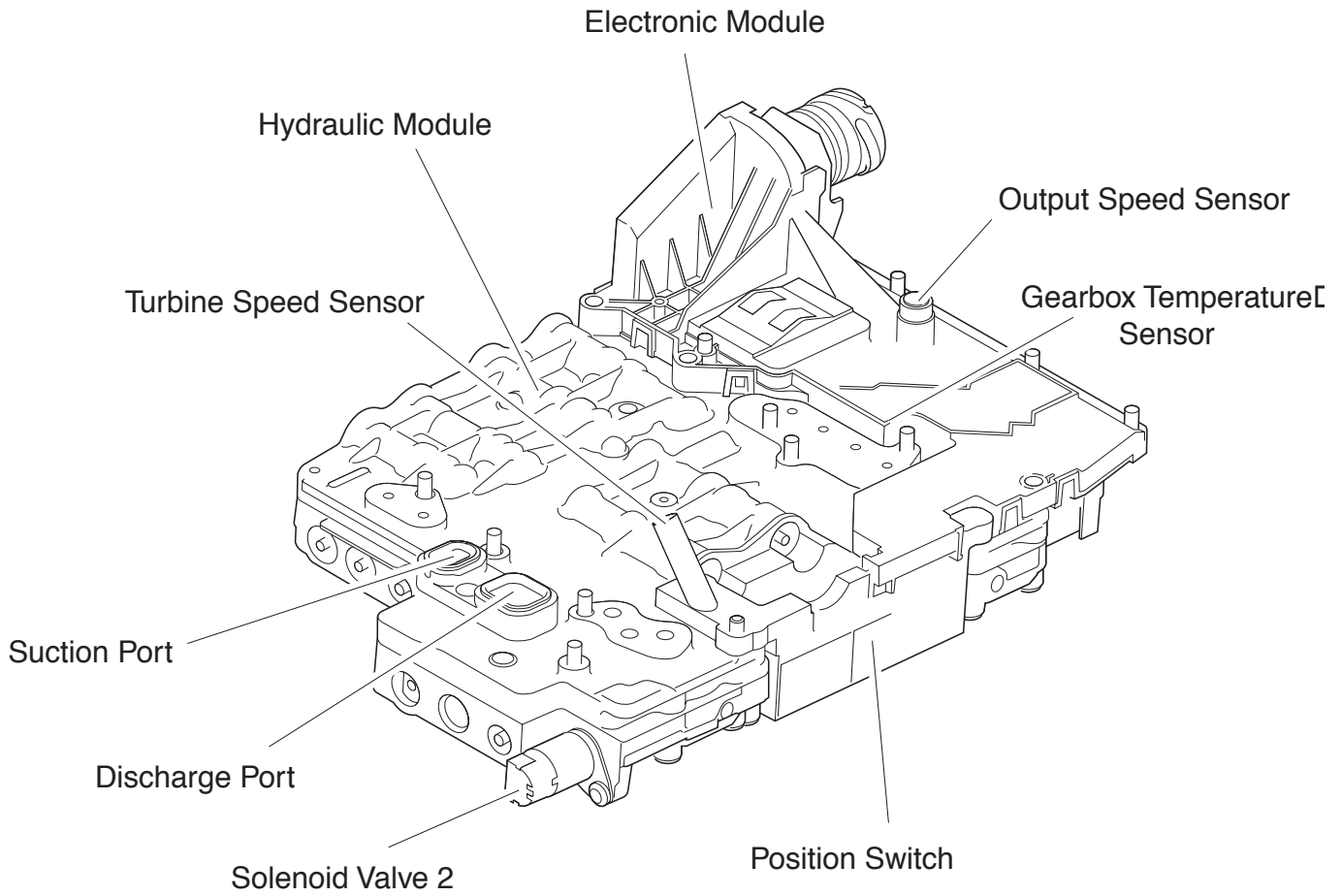


Figure 1. Mechatronic Unit Location

Fault Code Definition

P0614 - CAN ID does not match that stored in TCM.

MIL Status

This code will light the MIL lamp.

P0614 Fault Analysis

Note: This fault is most likely to occur if a control module has been replaced or swapped between vehicles.

1. Connect the WDS and confirm that P0614 is logged. Clear the P0614 code
2. Run a KOER test. Recheck the logged fault codes
3. If P0614 is logged again, check if the mechatronic unit has been replaced. If so the software level may be different to that logged for the vehicle.
4. Consult Aston Martin Technical Support.

P0620, P0622 - Generator Control Circuit

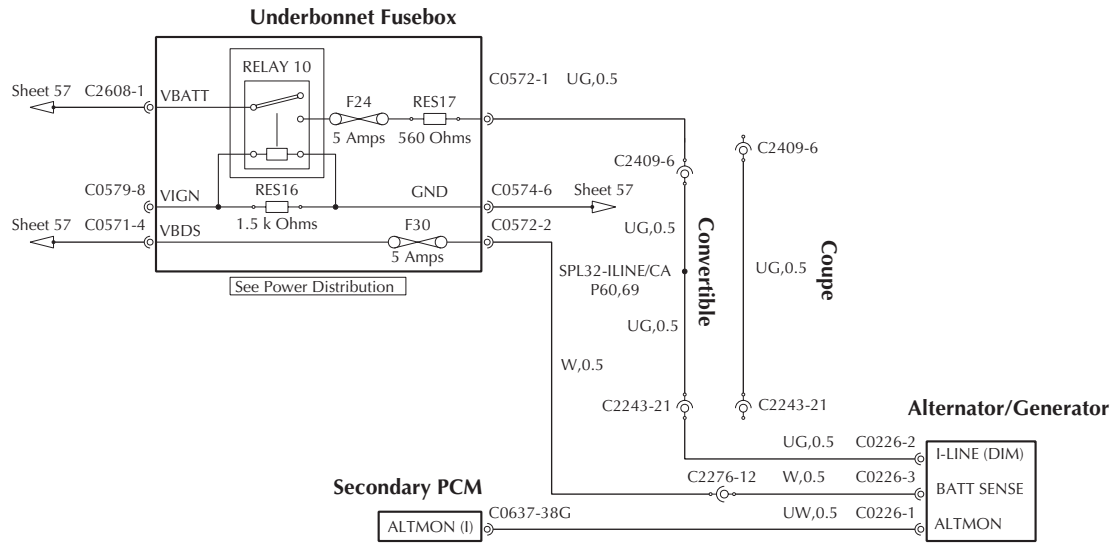


Figure 1. Generator Control Circuit

Fault Code Definition

P0620 - Generator Control Circuit

P0622 - Alternator field terminal circuit

MIL Status

This code will not light the MIL lamp.

P0620, P0622 Fault Analysis

CAUTION: This code should be generated only in the Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Connect the WDS and confirm that P0620 or P0622 is logged.
2. For P0620, check continuity of the ALTMON signal line from secondary PCM connector C0637-38 to C0226-1 on the alternator.

Also check for any short circuit to power or ground on this line.

Service the circuit as necessary. Clear the P0620 code. Run the engine and check that the problem is resolved.

3. For P0622, check that +12volts is present on alternator connector C0226-3 (BATT SENSE). If +12 volts is not present, service the battery sense circuit from underbonnet fusebox F30 to the alternator. Clear the P0622 code. Run the engine and check that the problem is resolved.

P062F - TCM EEPROM Emulation Lifetime Exceeded

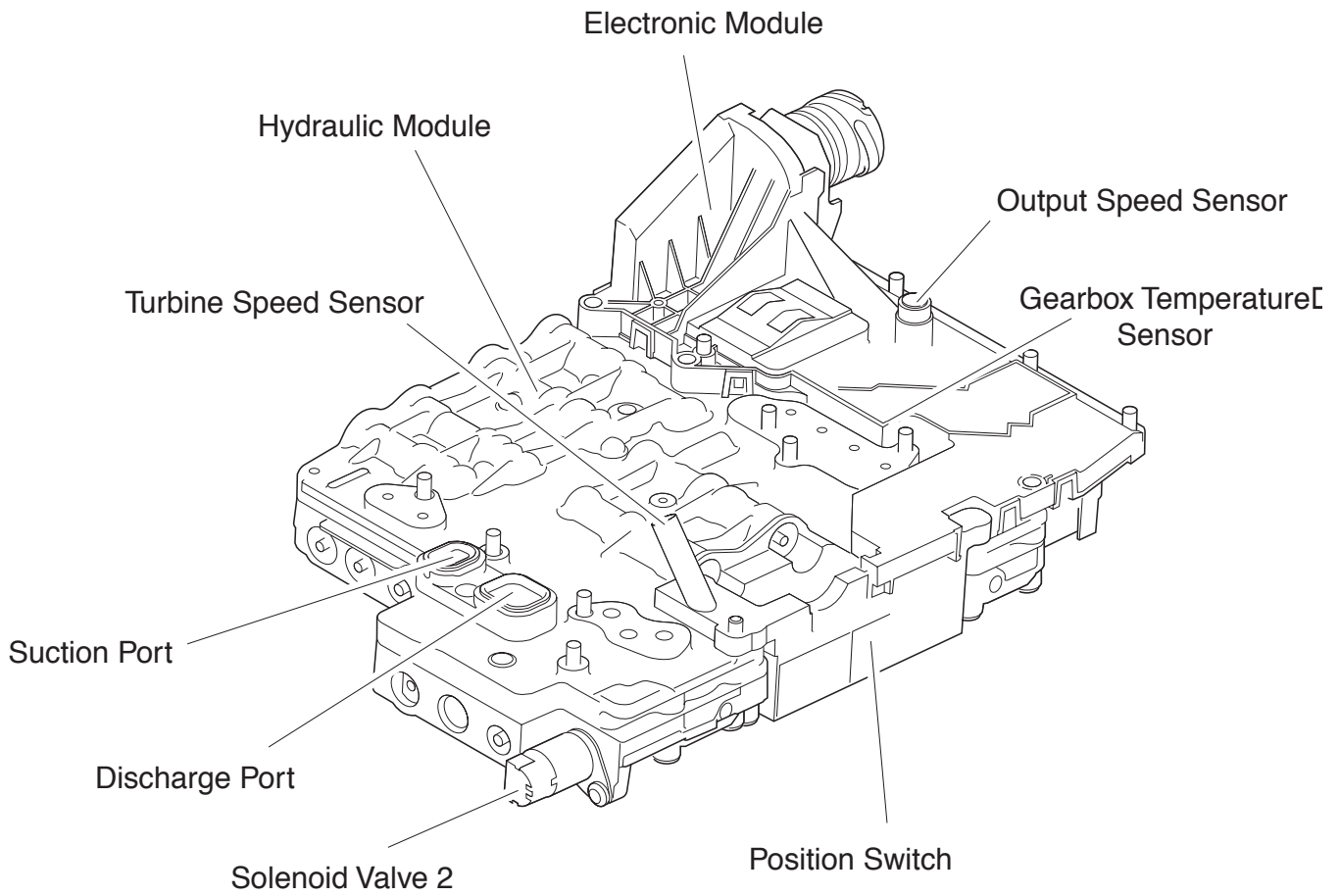


Figure 1. Mechatronic Unit

Fault Code Definition

P062F - EEPROM emulation lifetime exceeded

MIL Status

This code will light the MIL lamp.

P062F Fault Analysis

CAUTION: This code should be generated only in the Primary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Connect the WDS and confirm that P062F is logged.
2. Clear the P062F code. Switch the ignition off and then on again.
3. If P062F is not logged again, repeat the ignition off/on test several times to ensure that the problem is resolved.

If P062F is logged again, consult Aston Martin Technical Support.

P0634 - Gearbox Overheat

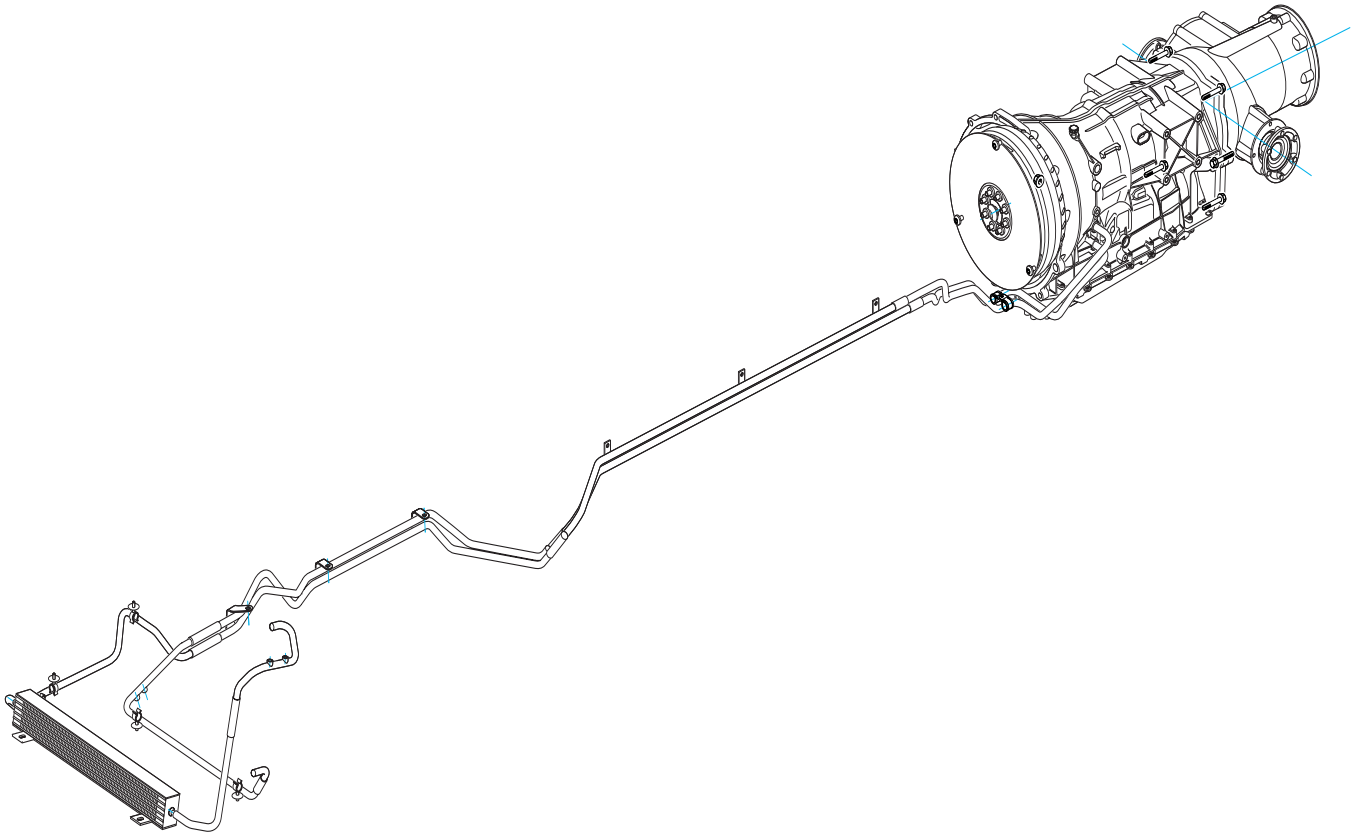


Figure 1. Automatic Gearbox Cooling Circuit

Fault Code Definition

P0634 - TCM internal temperature too high.

Note: As transmission temperature rises, the control system will enter 'Hot Mode' at 120°C. If high speed driving continues and the temperature rises to 125°C the control system will enter 'Limp Home Mode'

HOT MODE - Touchtronic is disabled. Higher gears are selected earlier to limit the temperature rise. "Transmission Overtemperature" is shown on the message display.

LIMP HOME MODE - The gearbox control system shuts down, locking the gearbox in either third or fifth gear dependant on vehicle speed. All gearbox functions are inhibited. "Limp Home Mode" is shown on the message display.

P0634 Fault Analysis

1. Connect the WDS or scan tool. Confirm that P0634 is logged.
2. Using the Service Manual procedure, check and if necessary top up the automatic gearbox fluid.

If the transmission fluid level is correct, go to step 3.

If it was necessary to add a significant amount of transmission fluid, there is a strong possibility that low transmission fluid was the cause of the overheat condition. Clear the P0634 code and run a brief road test to ensure that the fault condition is cleared.

3. Check for any reports of poor shift quality.

If shift is poor, check the cleanliness of the transmission fluid etc. Check filler plug for dirt?

4. Examine the transmission fluid cooling circuit for damage or restrictions which could inhibit the fluid cooling function.

If no fault symptom is found, go to step 4.

If any fault is identified, service the cooling circuit as necessary. Top up the transmission fluid. Clear the P0634 code and run a brief road test to ensure that the problem is resolved.

5. Check that the owner has not been driving the car in a particularly fast or competitive style or in very hot weather which could have caused the overheat.

If the car has been driven conservatively and weather conditions are not the cause of the overheat, go to step 6.

If the car has been driven hard, advise the owner to avoid "Transmission Overtemperature" conditions.

6. Set the datalogger to monitor engine coolant temperature and transmission temperature. Road test the car for about 15-20 miles including as many gearshifts as can be safely included.

Stop the test and note the engine coolant temperature and transmission fluid temperature.

The transmission should always be significantly cooler than the engine.

If possible, check the transmission temperature with an external thermometer to cross check the temperature sensor indication.****

7. Key off. Disconnect the transmission harness at the gearbox.
8. With the ignition switched off, check for +12 volts from transmission harness connector pin C 0932-14 (VBatt) to pin C0932-13 and 16 (Ground)

If +12 volts is available, go to step 7.

If +12 volts is not available, service the +12 volt or ground circuit as necessary. Clear the fault code and run a KOER test to ensure that the problem is resolved.

9. Key on. Check for +12 volts from C0932-9 (+12 Ign) to C0932-13.

If +12v is available, go to step 5.

If +12v is not available, service the +12V Ignition line to C0932-9. Clear the fault code and run a KOER test to ensure that the problem is resolved.

10. The temperature sensor is integrated into the 'Mechatronic Unit' in the gearbox and is not serviceable. Change the mechatronic unit. Clear the fault code and run a KOER test to ensure that the problem is resolved.
11. Check for muck in the transmission fluid. i.e. blockages in the cooling system

P0641 - Transmission Sensor Supply Voltage

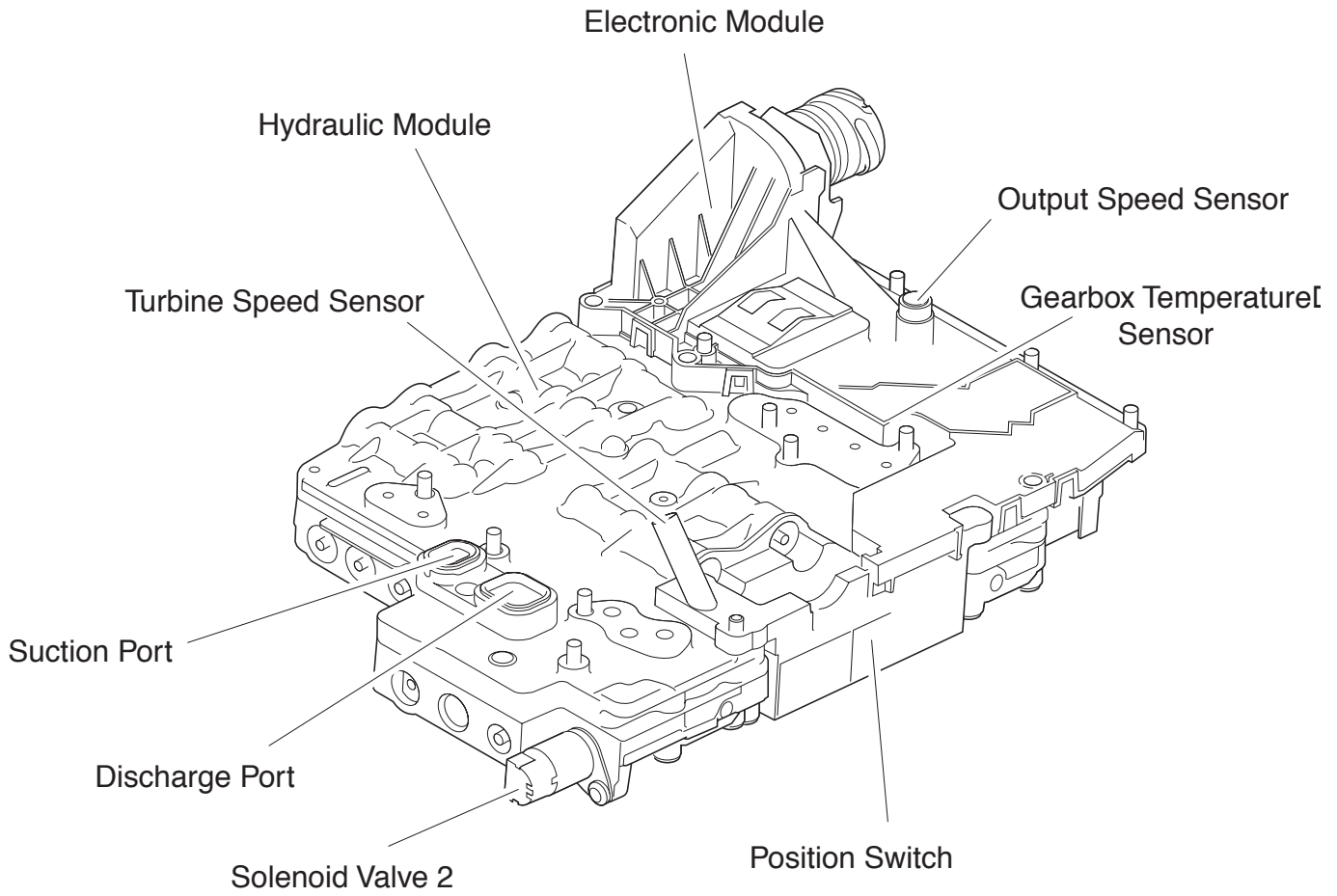


Figure 1. The Mechatronic Unit

Fault Code Definition

P0641 - Transmission Sensor Supply Voltage too High or too Low.

P0641 Fault Analysis

1. Connect the WDS or scan tool. Check that P0641 is logged.

Note: This sensor supply is internal to the TCM. If the 12 volt VBATT signal is within specification and P0641 is logged, the TCM is faulty.

2. Key off. Disconnect the transmission harness at the gearbox.
3. With the ignition switched off, check for +12 volts from transmission harness connector pin C 0932-14 (VBatt) to pin C0932-13 and 16 (Ground).

If +12 volts is available, go to step 4.

If +12 volts is not available, service the +12 volt or ground circuit as necessary. Clear the fault code and run a KOER test to ensure that the problem is resolved.

4. Check the condition of the pins and sockets in both halves of C0932.

If any fault is identified, service the connector as necessary. Clear the P0641 code and run a KOER test to ensure that the problem is resolved.

If no fault is identified, replace the mechatronic unit. Clear the P0641 code and run a KOER test to ensure that the problem is resolved.

P0645 - A/C Clutch Relay

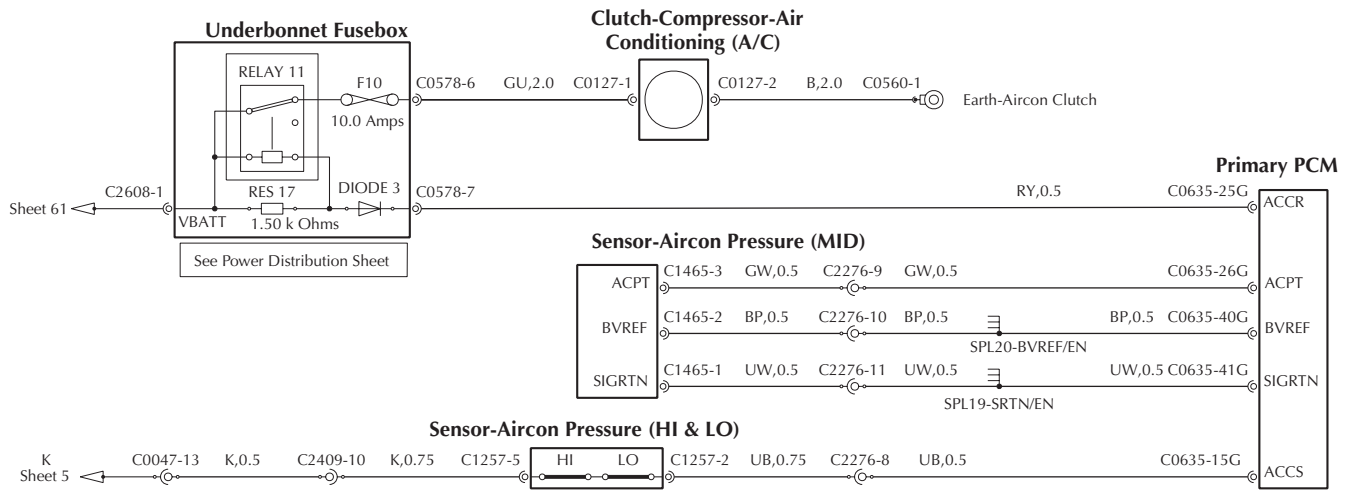


Figure 1. A/C Clutch Control Circuit

Fault Code Definition

P0645 - A/C Clutch Relay control circuit

MIL Status

This code will not light the MIL lamp.

P0645 Fault Analysis

CAUTION: This code should be generated only in the Primary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Connect the WDS or scan tool. With the engine warm, select A/C on. Monitor the level of the AC Clutch Request signal at primary PCM pin C0635-25.

If the AC Clutch Request signal remains at 12V, go to step 2.

If the AC Clutch Request signal switches to 0V, go to step 3.

2. Check the level of the A/C Request (ACCS) signal:

Monitor the A/C Request signal at primary PCM pin C0635-15 whilst switching the A/C system on and off.

The Clutch Request signal should be at 0 volts with the A/C system On.

If the A/C Clutch Request signal remains at 12 volts, check for a short from this line to VPWR.

If no short circuit exists, consult Aston Martin Technical Support.

If a short circuit is detected, repair the defect. Reset the PCM and rerun the KOER Test.

3. Check the Air Con clutch relay:

Remove the A/C clutch relay and check the coil resistance. Measure between relay pins 85 and 86. The coil resistance should be between 40 and 85Ω. If the coil resistance is incorrect, replace the relay. Reset the PTEC and rerun the KOER Test.

Check for internal shorts in the relay:

Measure resistance from relay pin 85 to pins 30, 87 and 87A. The resistance should be greater than 10kΩ. If the resistance is less than 10kΩ, replace the relay.

If the relay resistance checks are good, refit the relay and go to step 4.

If the relay is defective and is replaced, reset the PCM and rerun the KOER Test.

4. Check the A/C clutch relay circuit:

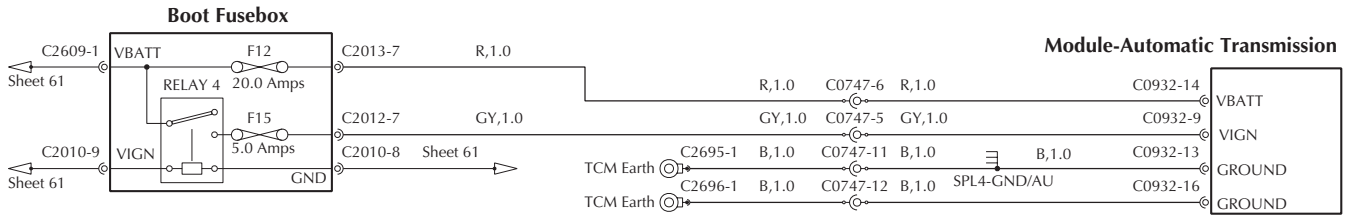
Disconnect the PCM. Key on, check for greater than 10.5 volts at PCM connector pin C0635-25. If greater than 10.5 volts is not present, service the open circuit in the VPWR or the A/C clutch signal lines.

Key off. Reconnect the PCM. Key on. Switch on the A/C (Mode switch from ECO to A/C for immediate response). Check for greater than 10.5 volts at A/C clutch relay pin 30. If the voltage is less than 10.5 volts, go to step 5.

If the voltage is greater than 10.5 volts, the supply from the A/C clutch relay is good.

Measure the voltage at A/C clutch relay pin 87. If less than 10.5 volts with the A/C selected on, the clutch relay is defective. Replace the relay, reset the PCM and rerun the KOER Test.

P0657/P0658/P0659 - Pressure Regulator Voltage Supply Fault



Add C0932-7 wiring.

Figure 1. TCM Power Circuit

Fault Code Definition

P0657 Transmission pressure regulator voltage supply open circuit

P0658 Transmission pressure regulator voltage supply short to ground

P0659 Transmission pressure regulator voltage supply short to supply

This is a MIL code.

If either pin shows a short circuit to ground, service the harness as necessary. Reconnect and run a KOER test to ensure that the problem is resolved.

6. Replace the mechatronic unit and run a KOER test to ensure that the problem is resolved.

P0657/P0658/P0659 Fault Analysis

1. Connect the WDS and note all logged DTCs. Confirm that P0657, P0658 or P0659 is logged.

Note: This sensor supply is internal to the TCM. If the 12 volt VBATT signal is within specification and P0657, 58 or 59 is logged, the TCM is faulty.

Note: If P0657 is logged and the +12V supply is good, this may be an indication of an internal mechatronic unit fault. Replace the mechatronic unit and retest.

2. Key off. Access the transmission harness and disconnect the transmission connector.
3. Key on. Check the voltage from harness connector C0932-14 to C0932-13 and 16.

If +12 volts is measured, go to step 4.

If the +12 volt supply is below specification, check the battery charging and +12 volt circuit integrity to C0932-14. Service the charging system or wiring as necessary. Reconnect all components and run a brief road test to ensure that the problem is resolved.

4. Ignition on. Measure the voltage from C0932-7 and C0932-11 to ground.

If both voltage show 0V, go to step 5

If either voltage is above 0V there is a short circuit from a voltage source to the transmission harness.

Service the harness as necessary. Reconnect and retest (KOER).

5. Ignition off. Disconnect C0932. Measure the resistance from C0932-7 to ground. Also measure the resistance from C0932-11 to ground. Both lines should show high resistance ($M\Omega$) to ground.

If no short to ground is detected, go to step 6.

P0667 - Gearbox Temperature Sensor Chip

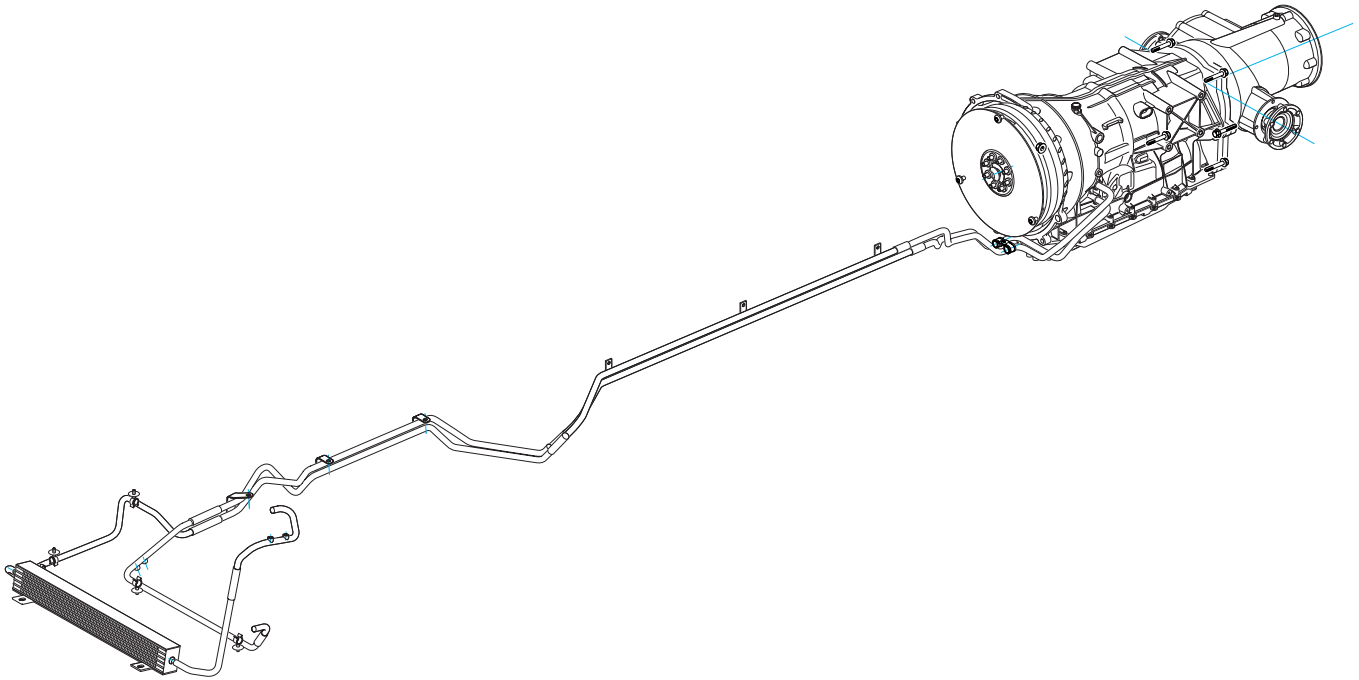


Figure 1. Automatic Gearbox Cooling Circuit

Fault Code Definition

P0667 - Damaged control chip, gearbox temperature sensor.

Note: As transmission temperature rises, the control system will enter 'Hot Mode' at 120°C. If high speed driving continues and the temperature rises to 125°C the control system will enter 'Limp Home Mode'

HOT MODE - Touchtronic is disabled. Higher gears are selected earlier to limit the temperature rise. "Transmission Overtemperature" is shown on the message display.

LIMP HOME MODE - The gearbox control system shuts down, locking the gearbox in either third or fifth gear dependant on vehicle speed. All gearbox functions are inhibited. "Limp Home Mode" is shown on the message display.

P0667 Fault Analysis

1. Connect the WDS or scan tool. Confirm that P0667 is logged.
2. Clear the P00667 code. Run a KOER test. Check the logged fault codes.
3. If P0667 is logged again, change the mechatronic unit.
4. Run a further KOER test to ensure that the problem is resolved.

P0701 - Sensor Fault

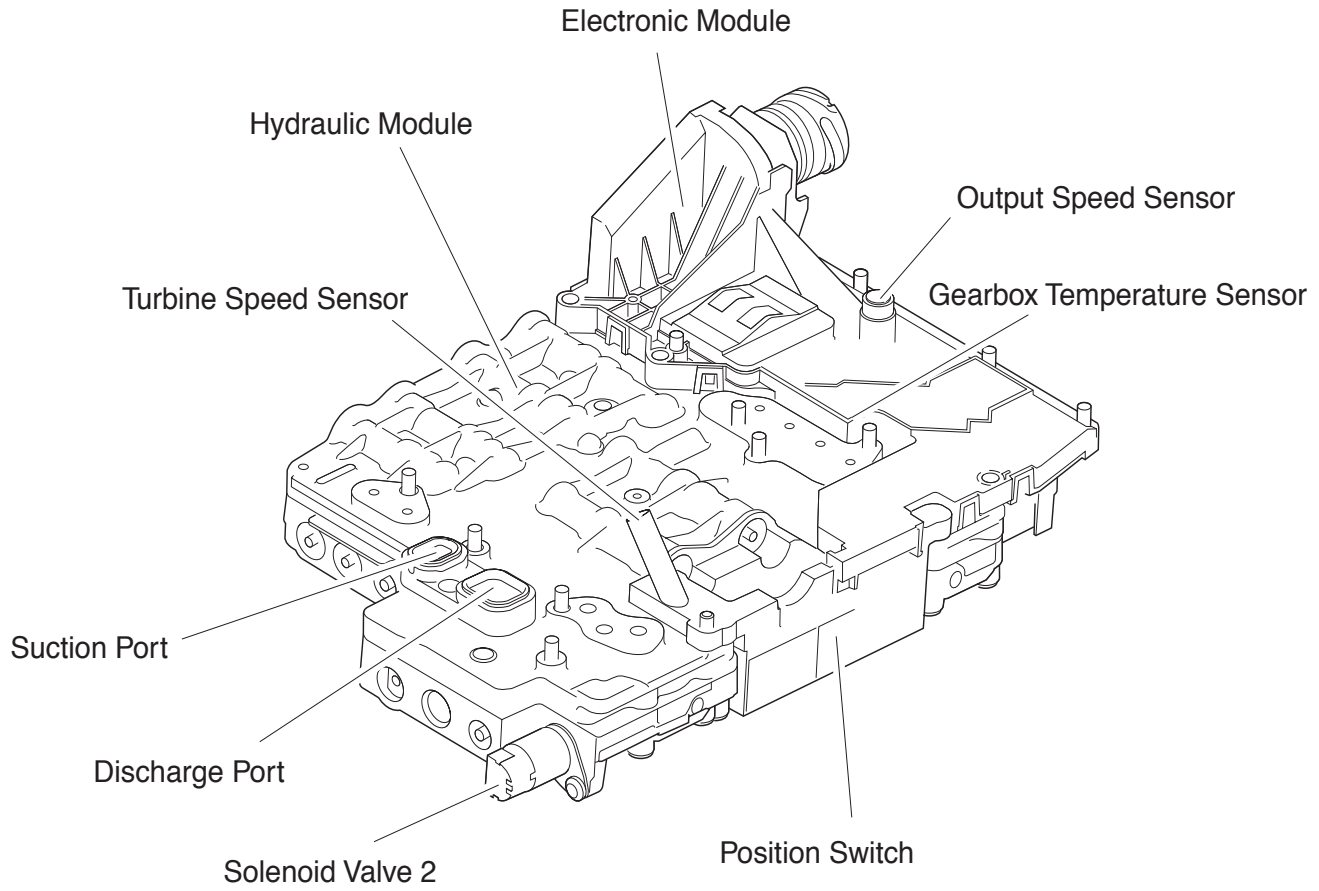


Figure 1. Transmission Fluid Temperature Sensor Location

Fault Code Definition

P0701 - Sensor Fault and Backup Strategy has also failed.

or

Pressure regulator fault and current too high

Note: This fault will be logged if a control sensor within the transmission fails and the backup strategy also fails.

or

The current through a faulty pressure regulator is too high

This is a MIL code.

P0701 Fault Analysis

1. Connect the WDS and confirm that P0701 is logged.
2. Note any other transmission DTCs and resolve the other DTCs before returning to step 3 of this procedure if P0701 is logged again after clearing all DTCs.
3. Run a brief road test. Check if P0701 is logged again.

If no DTCs are logged, the transmission problem is resolved. Conduct an extended road test to ensure system reliability before returning the vehicle to its owner.

If P0701 is logged again, replace the mechatronic unit and run a brief road test to ensure that the problem is resolved.

P0705 - Gear Position Signal Error

Interface-Auto Switches

REV SIG RTN	C2737-8	B,0,5
REV SW2	C2737-6	OW,0,5
REV SW1	C2737-5	OB,0,5
REV TT/X	C2737-7	WP,0,5

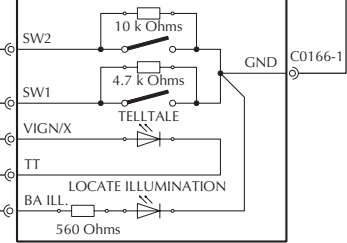
Primary PCM

REV TT	C0634-28G	OY,0,5	C2244-21	OY,0,5	C0467-21	OY,0,5	C0166-3
	SPL1-DIMOUT/CA			OU,0,5	C0231-19	OU,0,5	C0166-2
PARK TT	C0634-45G	UG,0,5	C2244-22	UG,0,5	C0467-22	UG,0,5	C0166-6
PRND1	C0634-4G	UR,0,5	C2244-15	UR,0,5			C0166-5
PRND2	C0634-29G	GB,0,5	C2245-17	UG,0,5			C0166-4

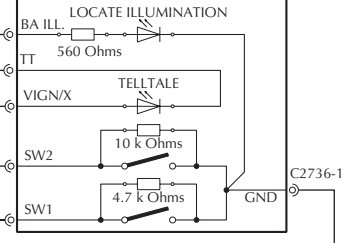
Interface-Auto Switches

PRND2	C2737-22	UG,0,5	C1184-19	UG,0,5
PRND1	C2737-21	UR,0,5	C0223-12	UR,0,5
VIGN.	C2737-17	WP,0,5		SPL35-VIGN/FA
2 STAGE ILL.	C2737-18	Y,0,5		SPL28-2ILL/FA
BVREF	C2737-19	YR,0,75		SPL32-BVREF/FA
GND	C2737-20	B,0,75		SPL9-GND/FA
PARK TT/X	C2737-11	WP,0,5		
PARK SW2	C2737-10	RW,0,5		
PARK SW1	C2737-9	RB,0,5		
PARK SIG RTN	C2737-12	B,0,5		

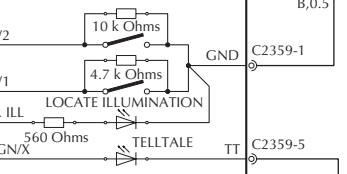
Switch-Reverse



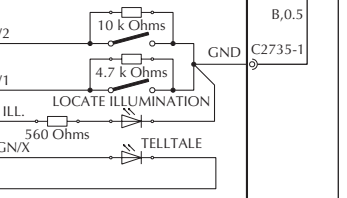
Switch-Park



Switch-Neutral



Switch-Drive



Interface-Auto Switches

NEUT SIG RTN	C2737-1	B,0,5
NEUT SW2	C2737-3	YW,0,5
NEUT SW1	C2737-2	YB,0,5
NEUT TT/X	C2737-4	WP,0,5
DRIVE SIG RTN	C2737-16	B,0,5
DRIVE SW2	C2737-14	UW,0,5
DRIVE SW1	C2737-13	UB,0,5
DRIVE TT/X	C2737-15	WP,0,5

Primary PCM

DRIVE TT	C0634-17G	YW,0,5	C2244-16	YW,0,5	C1167-1	YW,0,5	C2735-3
NEUTRAL TT	C0634-32G	UY,0,5			C2244-14	RW,0,5	C0047-14
							C2735-2
							C2735-4
							C2735-6

Figure 1. Reverse, Park, Neutral and Drive Switch Circuits.

Fault Code Definition

P0705 - Gear position signal error. CAN and Serial line. Invalid signal or timeout.

This is a MIL code.

P0705 Fault Analysis

1. Connect the WDS and confirm that P0705 is logged.
2. With the ignition on, press and release the 'P, R, N and D' buttons in turn.

If the lamp in each button illuminates, the circuit to the Auto Switch Interface Unit, the PCM and the TCM is serviceable. Go to step 3.

If any one lamp does not illuminate when its button is pressed and released, perform continuity checks on the wiring between the switch and interface box. Also check continuity of the wiring to the telltale lamp in the suspect switch. Service the switch or circuits as necessary. Clear the fault code and run a brief road test to ensure that the problem is resolved.

3. Using the WDS datalogger, monitor the PRND1 and PRND2 signals.

Key on. Press and release each switch in turn and look for a corresponding change in the PRND signals.

Button Pressed	PRND 1-GND	PRND 2-GND
PARK	0.45	2.26
NEUTRAL	1.08	2.26
DRIVE	1.74	2.26
REVERSE	2.16	2.26
NONE	2.62	3.71

If the PRND signal voltages are correct, the problem is not present at this time and testing is complete.

If the PRND signal voltages are not correct, if either voltage does not change when any button is pressed, check BVREF and SIG RTN at the interface box. Service the BVREF and SIGRTN circuits as necessary. Repeat the voltage checks to ensure that the problem is resolved.

If no fault is found with the BVREF and SIGRTN lines, then check the continuity of the PRND1 and PRND2 signal lines. Service the wiring as necessary. Clear the fault code and run a KOER test including changes of gear to all modes to ensure that the problem is resolved.

4. If PRND 1 or PRND 2 change when any single button is pressed, but the voltages do not match the PRND table, substitute each button in turn with a new button and retest to ensure that the PRND voltages are now correct.
5. IF the voltages are still not correct, check for continuity/short circuit to power or ground from each button to the interface box. Service any identified faults and retest to ensure that the problem is resolved.

P0711/P0712/P0713/P0714 - Transmission Fluid Temperature

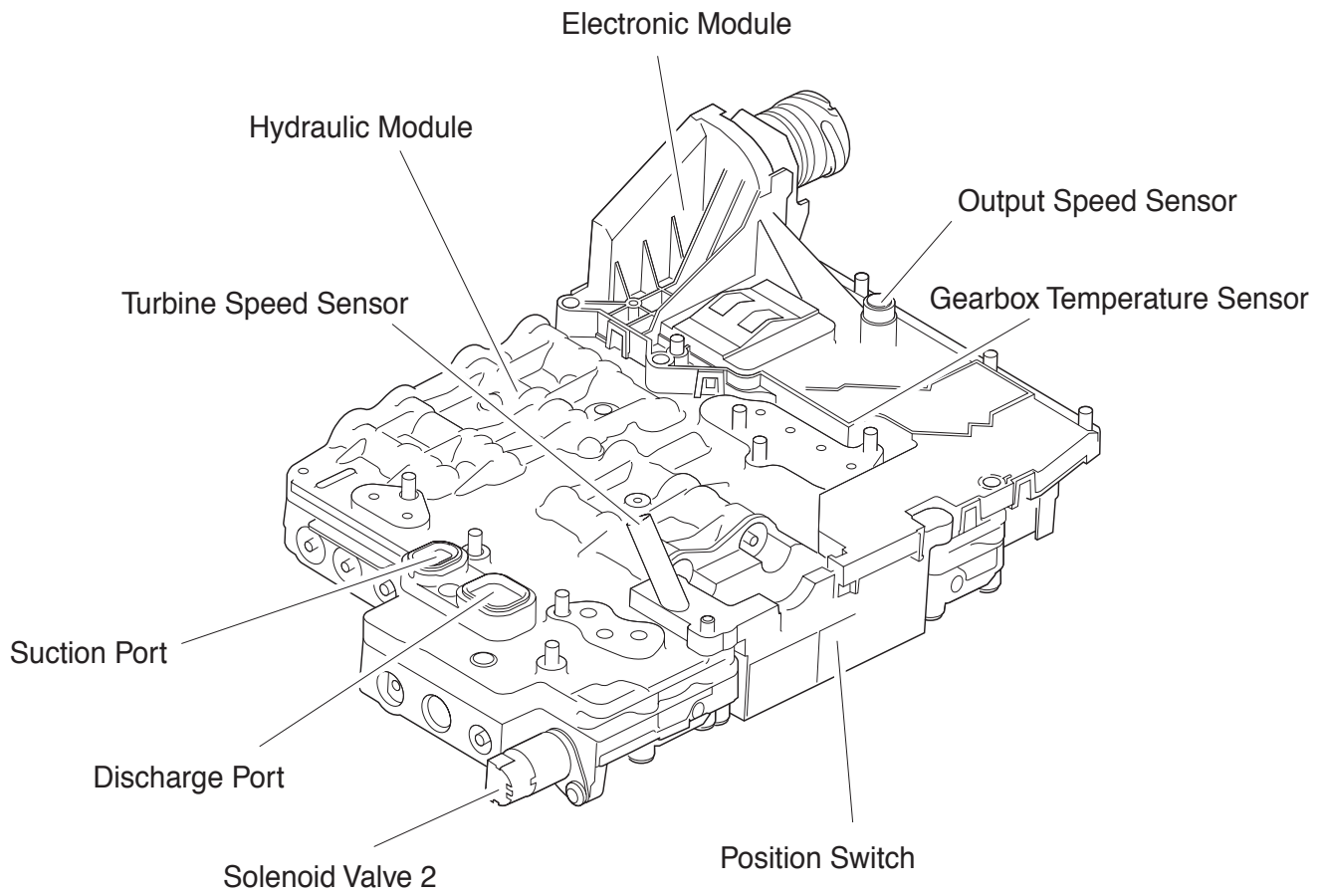


Figure 1. Transmission Mechatronic Unit

Fault Code Definition

P0711 - TFT sensor range or performance

P0712 - TFT sensor circuit low input

P0713 - TFT sensor circuit high input

P0714 - TFT sensor open circuit

These are MIL codes.

P0711, P0712, P0713, P0714 Fault Analysis

1. Connect the WDS and confirm that P0711, P0712, P0713 or P0714 is logged.
2. Key off. Disconnect the transmission harness at the gearbox.
3. With the ignition switched off, check for +12 volts from transmission harness connector pin C 0932-14 (VBatt) to pin C0932-13 and 16 (Ground)

If +12 volts is available, go to step 4.

If +12 volts is not available, service the +12 volt or ground circuit as necessary. Clear the fault code and run a KOER test to ensure that the problem is resolved.

4. Key on. Check for +12 volts from C0932-9 (+12 Ign) to C0932-13.

If +12v is available, go to step 5.

If +12v is not available, service the +12V Ignition line to C0932-9. Clear the fault code and run a KOER test to ensure that the problem is resolved.

5. The temperature sensor is integrated into the 'Mechatronic Unit' in the gearbox and is not serviceable. Change the mechatronic unit. Clear the fault code.

Run a test drive to confirm the replacement Mechatronic unit and to ensure that the problem is resolved.

P0715, P0716, P0717 - Transmission Turbine Speed Sensor Fault

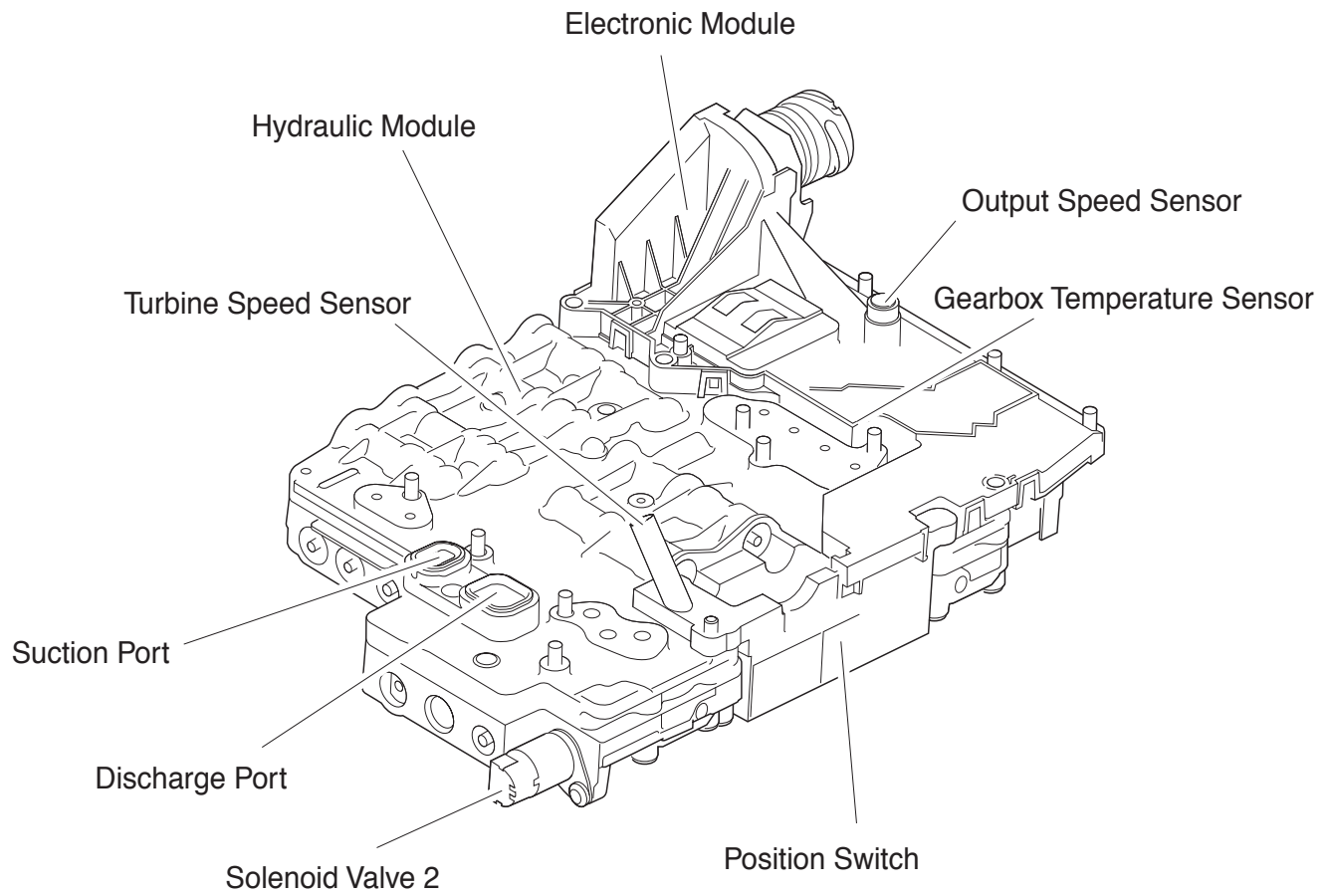


Figure 1. Output Speed Sensor Location

Fault Code Definition

P0715 Transmission turbine speed sensor short to supply

P0716 Transmission turbine speed sensor too high or too low.

P0717 Transmission turbine speed sensor short to ground or open circuit.

This is a MIL code.

P0715, P0716, P0717 Fault Analysis

1. Connect the WDS and note all logged DTCs. Confirm that P0715, P0716 or P0717 is logged.
2. Clear the fault code and run a brief road test. If P0715, P0716 or P0717 is logged again, change the mechatronic unit.

Run a brief road test to ensure that the problem is resolved.

P0720, P0721, P0722 - Vehicle Speed Sensor Fault

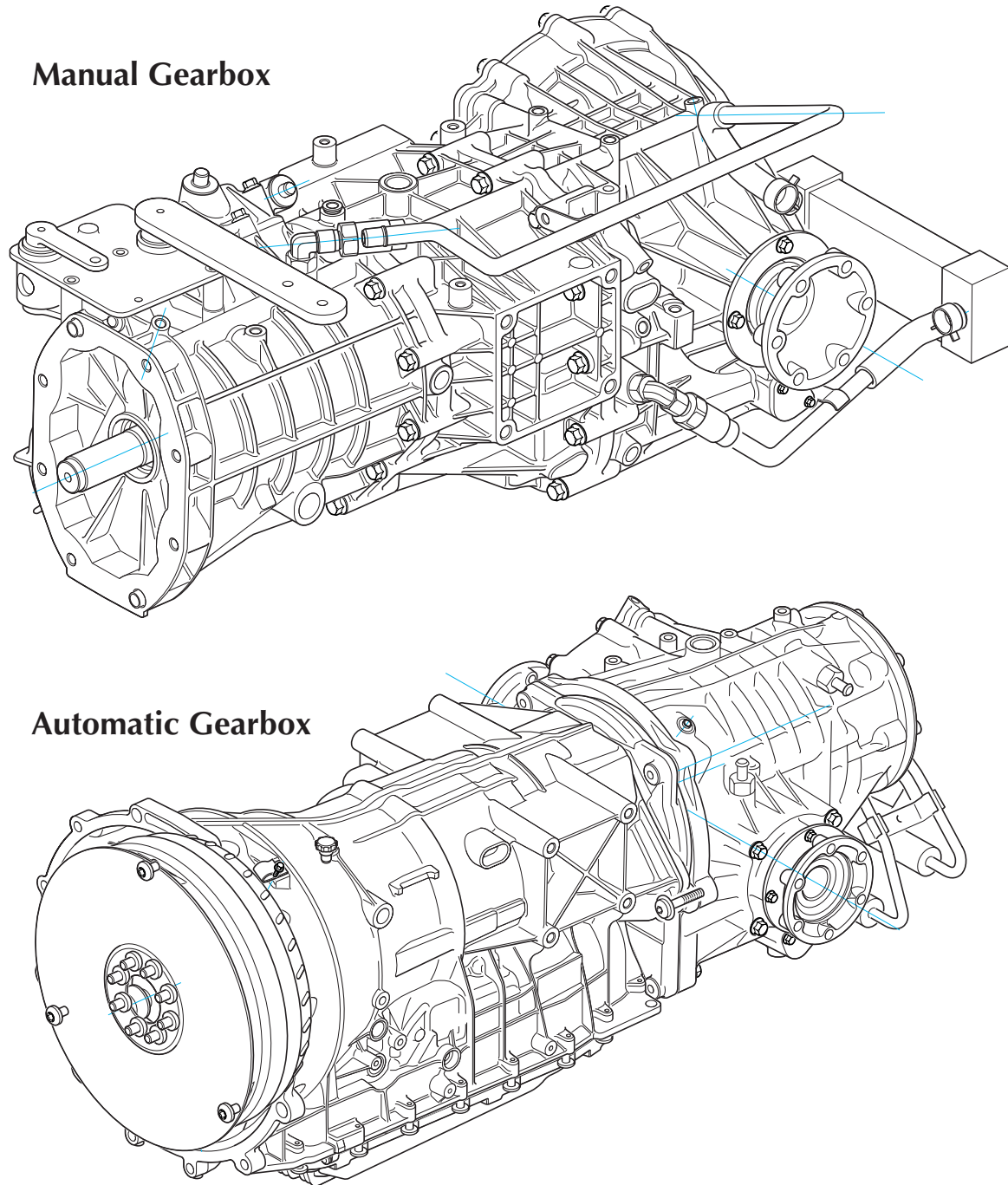


Figure 1. Speed Sensor Locations

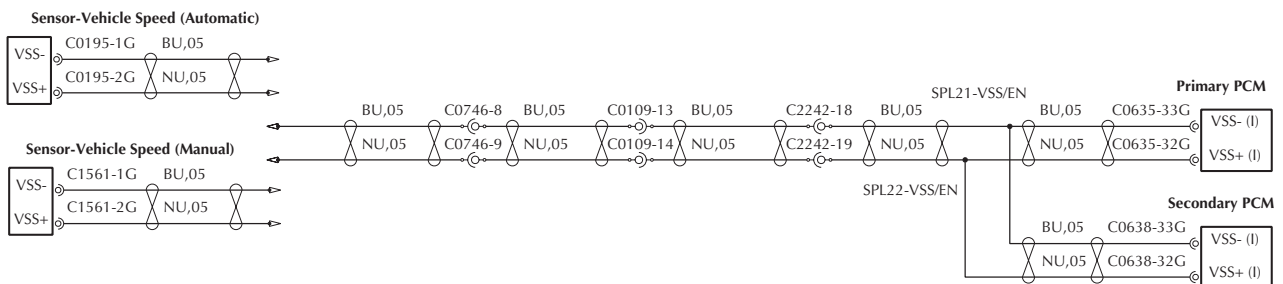


Figure 2 Vehicle Speed Sensor Circuit

Fault Code Definition

P0720 VSS MIL fault detected

P0721 VSS signal noisy.

P0722 VSS signal no output

This is a MIL code.

P0720, P0721, P0722 Fault Analysis

Note: Vehicle speed is sensed from the diff speed sensor on auto cars and from the gearbox output speed sensor on manual cars.

1. Connect the WDS and confirm that P0720, P0721 or P0722 is logged. Clear the logged fault code.
2. Set datalogger to monitor the VSS signal. run a brief road test (or rolling road test) with varying speeds.

Check if the recorded vehicle speed matches the actual speed.

If the recorded speed does not match actual speed, go to step 3 for manual cars or step 4 for automatic cars.

If the VSS readings are accurate and no relevant fault codes are logged, retest at low speeds and check the lowest speed which can be monitored.

For low speed errors, check the following:

Sensor air gap

Sensor damage

If no errors are detected, treat this as an intermittent problem and service the VSS circuit for poor connections and shorts to power or ground

Run an extended road test to ensure that the problem is resolved.

3. For Manual Cars:

Perform continuity checks between the following connections:

VSS+ C1561-2 to primary PCM C0635-32 and secondary PCM C0638-32.

VSS- C1561-1 to primary PCM C0635-33 and secondary PCM C0638-33.

If any circuit fault is detected, service the circuit as necessary. Clear the fault code and run a brief road or rolling road test to ensure that the problem is resolved.

4. For Auto Cars:

Perform continuity checks between the following connections:

VSS+ C0195-2 to primary PCM C0635-32 and secondary PCM C0638-32.

VSS- C0195-1 to primary PCM C0635-33 and secondary PCM C0638-33.

If any circuit fault is detected, service the circuit as necessary. Clear the fault code and run a brief road or rolling road test to ensure that the problem is resolved.

P0725 - Engine Speed/Tachometer Fault

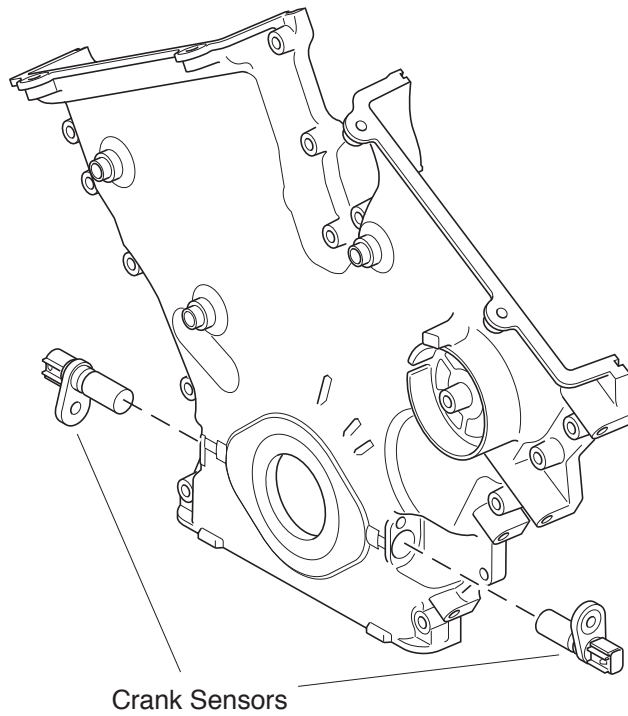


Figure 1. Crank Position (Engine Speed) Sensor Location

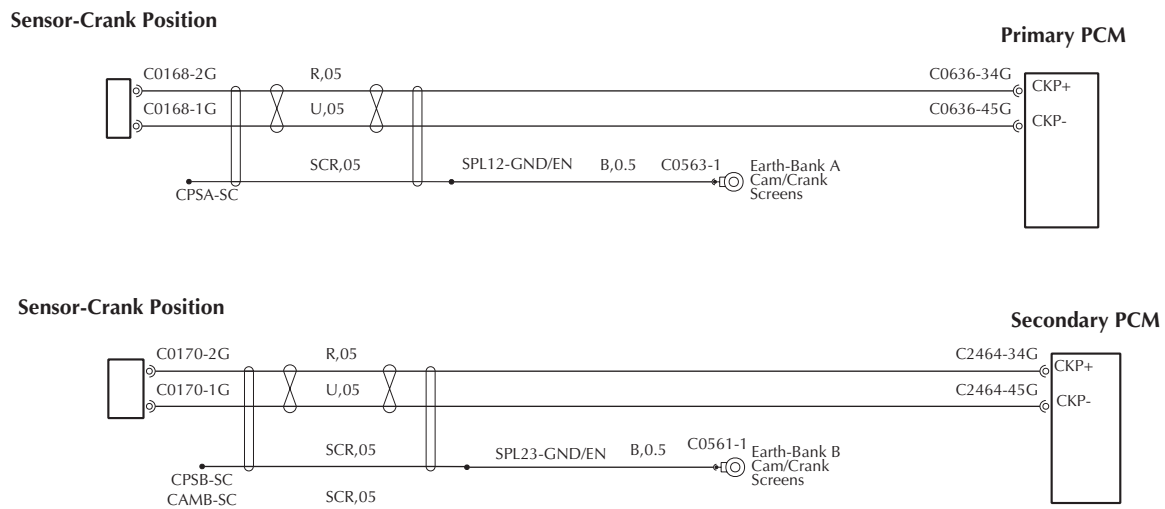


Figure 2. Engine Speed Sensor Circuit

Fault Code Definition

P0725 Engine Speed/Tachometer Fault in the PCM and TCM.

This is a MIL code.

If the P0725 code is logged again, consult Aston Martin Technical Support.

P0725 Analysis

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct PCM.

1. Connect the WDS and confirm that P0725 is logged.
2. Set the WDS datalogger to log engine speed ('N') for both engine banks. Start the engine and perform a brief road test whilst logging the engine speed signals.
3. Stop the road test and review the datalogger results.

If the engine speed is not correctly logged in the primary PCM, go to step 4.

If the engine speed is correctly logged in the primary PCM, check continuity of the CAN bus to the TCM in the gearbox.

If a CAN continuity fault is identified, service the wiring as necessary. Clear the P0725 code and run a brief road test to ensure that the problem is resolved.

If continuity is good, replace the TCM, clear the P0725 codes and run a brief road test to ensure that the problem is resolved.

4. With the engine running, compare the crank position sensor signals for both engine banks.

If the signals are mismatched, go to step 5.

If the signals are matched, consult Aston Martin Technical Support.

5. Swap the crank sensors bank to bank and repeat the test. If the fault changes sides, replace the suspect sensor. Clear the P0725 code and run a KOER test to ensure that the problem is resolved.

If the fault does not swap sides, service the wiring from C0168-2 at the sensor to C0636-34 at the PCM and from C0168-1 at the sensor to C0636-45 at the PCM. Run a brief road test to confirm that the problem is resolved.

P0729 to P0735 - Gear Ratio Error

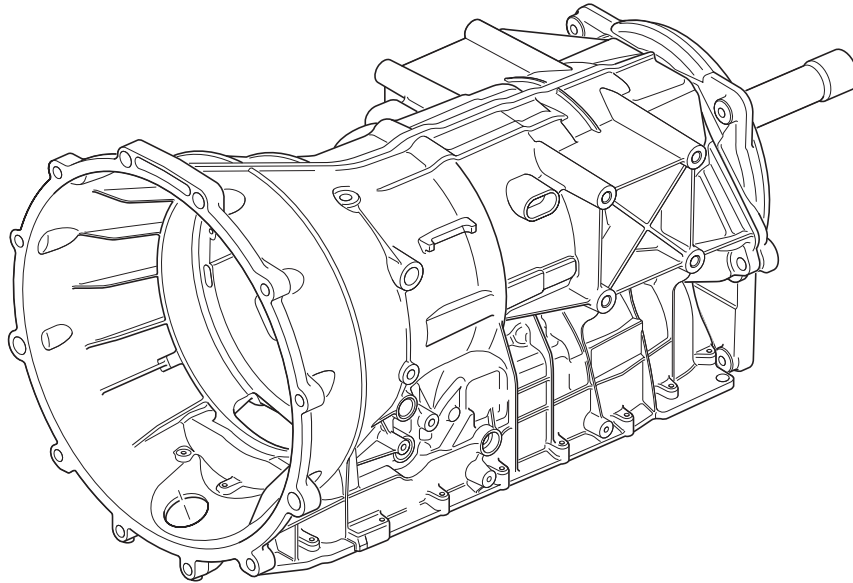


Figure 1. The Automatic Transmission

Fault Code Definition

P0729 to P0735 Gear Ratio Error - i.e. the gear ratio calculated from the input and output speed sensor signals does not align with the actual gear engaged.

Replace the gearbox and run a brief road test to ensure that the problem is resolved.

P0729 to P0735 Fault Analysis

Note: The gear ratio monitoring function and the input and output speed sensors are internal to the TCM. The main voltage supply to the TCM is delivered via C0932-14. The return lines are via ground pins C0932-13 and 16. Any open circuit fault on the power or return lines may trigger this group of codes.

1. Check the transmission fluid level. If the fluid level is low, top-up using the service manual procedure. Clear the fault code and run a road test using the full range of gears. Check for any logged fault codes.

If P0729 to P0735 is logged again, go to step 2.

If no gear ratio codes are logged, the cause of the fault was the low fluid level and the problem is resolved.

2. Using WDS, check the input and output speed indications recorded when the fault was logged. If either speed sensor indicated zero when the fault was logged, change the mechatronic unit and retest to ensure that the problem is resolved.

If the input and output speed sensor indications were normal when the fault was logged, go to step 3.

3. Key off. Access the transmission harness and disconnect the transmission connector.
4. Key on. Check the voltage from harness connector C0932-9 to C0932-13 and 16.

If +12 volts is measured, go to step 3.

If the +12 volt supply is below specification, check the battery charging and +12 volt circuit integrity to C0932-14. Service the charging system or wiring as necessary. Reconnect all components and run a brief road test to ensure that the problem is resolved.

5. Check the condition of the transmission connector socket pin C0932-14.

If the socket is serviceable, the cause of the gear ratio problem lies within the gearbox.

P0736 - Gear Ratio Error - Reverse

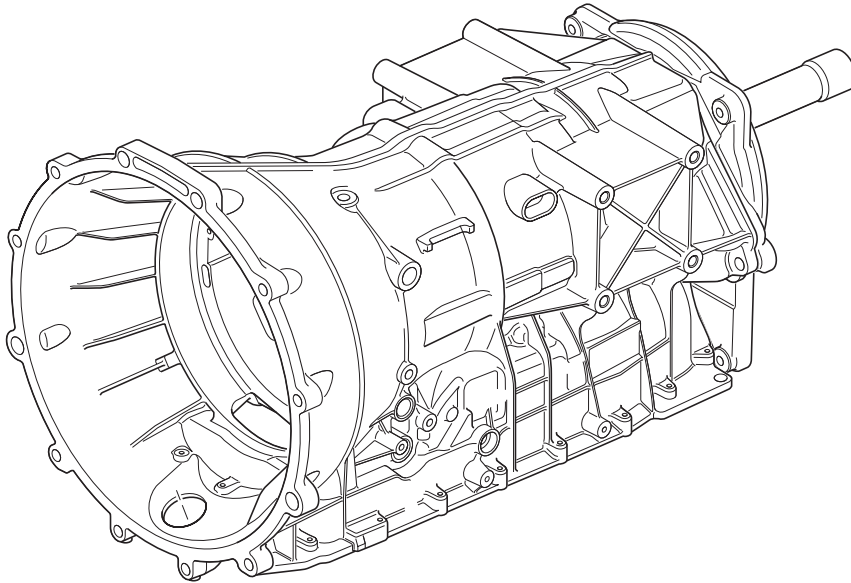


Figure 1. Gearbox Unit

Fault Code Definition

P0736 Gear ratio error - reverse.

P0736 Fault Analysis

Note: The gear ratio monitoring function and the input and output speed sensors are internal to the TCM. The main voltage supply to the TCM is delivered via C0932-14. The return lines are via ground pins C0932-13 and 16. Any open circuit fault on the power or return lines may trigger this group of codes.

1. Check the transmission fluid level. If the fluid level is low, top-up using the service manual procedure. Check that there are no leaks in the transmission cooling system. Clear the fault code and run a road test including use of reverse gear. Check for any logged fault codes.

If P0736 is logged again, go to step 2.

If no gear ratio codes are logged, the cause of the fault was the low fluid level and the problem is resolved.

2. Key off. Access the transmission harness and disconnect the transmission connector.
3. Key on. Check the voltage from harness connector C0932-9 to C0932-13 and 16.

If +12 volts is measured, go to step 3.

If the +12 volt supply is below specification, check the battery charging and +12 volt circuit integrity to C0932-14. Service the charging system or wiring as necessary. Reconnect all components and run a brief road test to ensure that the problem is resolved.

4. Check the condition of the transmission connector socket pin C0932-14.

If the socket is serviceable, the cause of the gear ratio problem lies within the gearbox.

Replace the gearbox and run a brief road test to ensure that the problem is resolved.

P0740 and P0960, 62, 73, 76, 79, 82 and P2764 - Transmission Pressure Regulator Faults

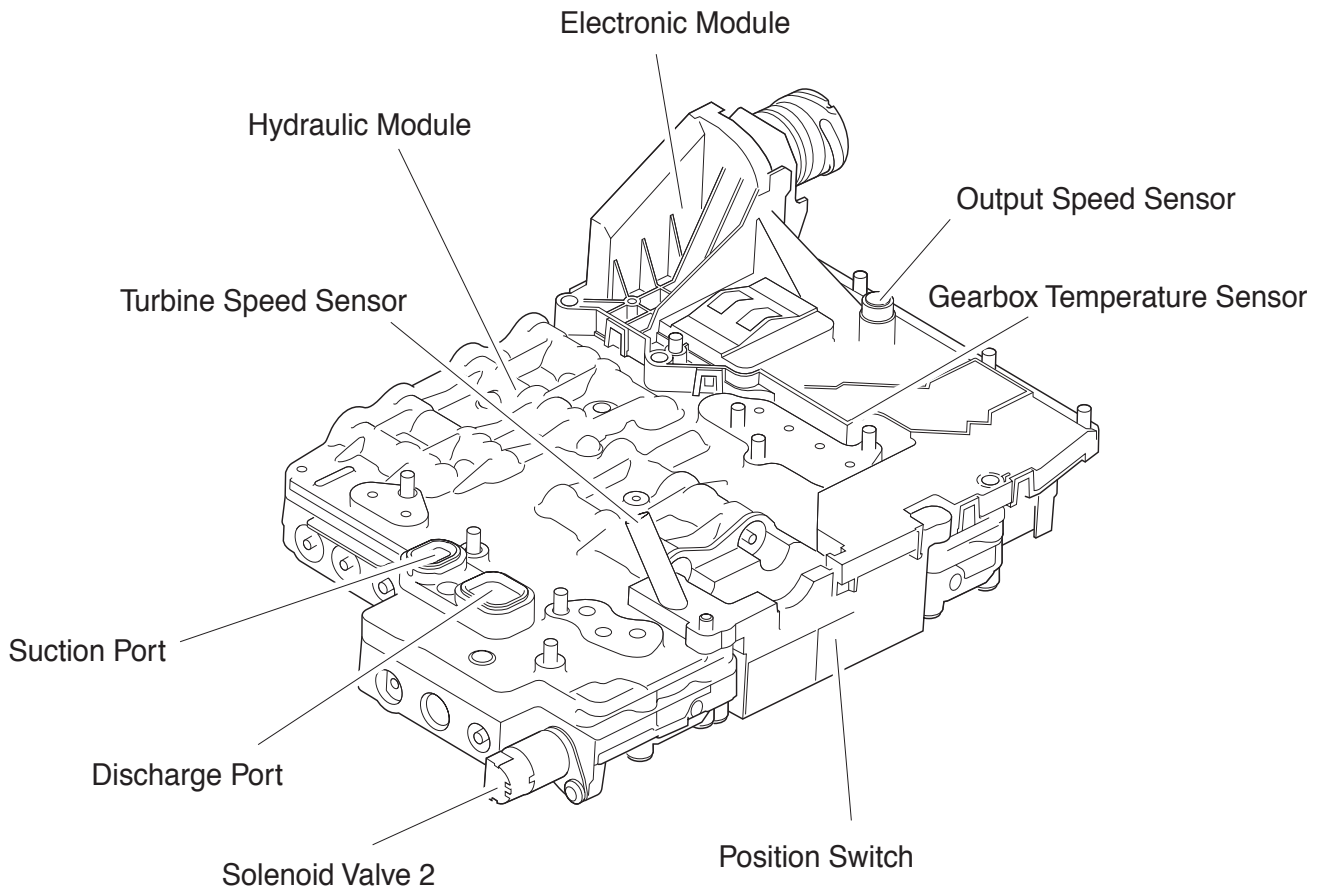


Figure 1. Mechatronic Unit

Fault Code Definition

P0740 - Transmission pressure regulator EDS6 (torque converter vent) open circuit or short to ground.

P0960 - Pressure control solenoid A circuit current too high or too low.

P0962 - Transmission pressure regulator EDS5 (main line pressure) open circuit or short to ground.

P0973 - Transmission pressure regulator EDS1 (shift solenoid A) open circuit or short to ground.

P0976 - Transmission pressure regulator EDS2 (shift solenoid B) open circuit or short to ground.

P0979 - Transmission pressure regulator EDS3 (shift solenoid C) open circuit or short to ground.

P0982 - Transmission pressure regulator EDS4 (shift solenoid D) open circuit or short to ground.

P2764 - Torque converter vent regulator short circuit to ground.

P0740 and P0960 to P0982 and P2764 Fault Analysis

Note: The main voltage supply to the pressure regulators is delivered via C0932-9. The return lines are via ground pins C0932-13 and 16. Any open circuit fault on these lines will trigger this group of codes.

1. Clear the fault code.
2. Run a road test to include use of all gears.
3. Stop the test and check for logged DTCs.
4. If any of the above DTCs are logged again, replace the mechatronic unit. Repeat the road test to ensure that the problem is resolved.

P0741 - Torque Converter Clutch Faults

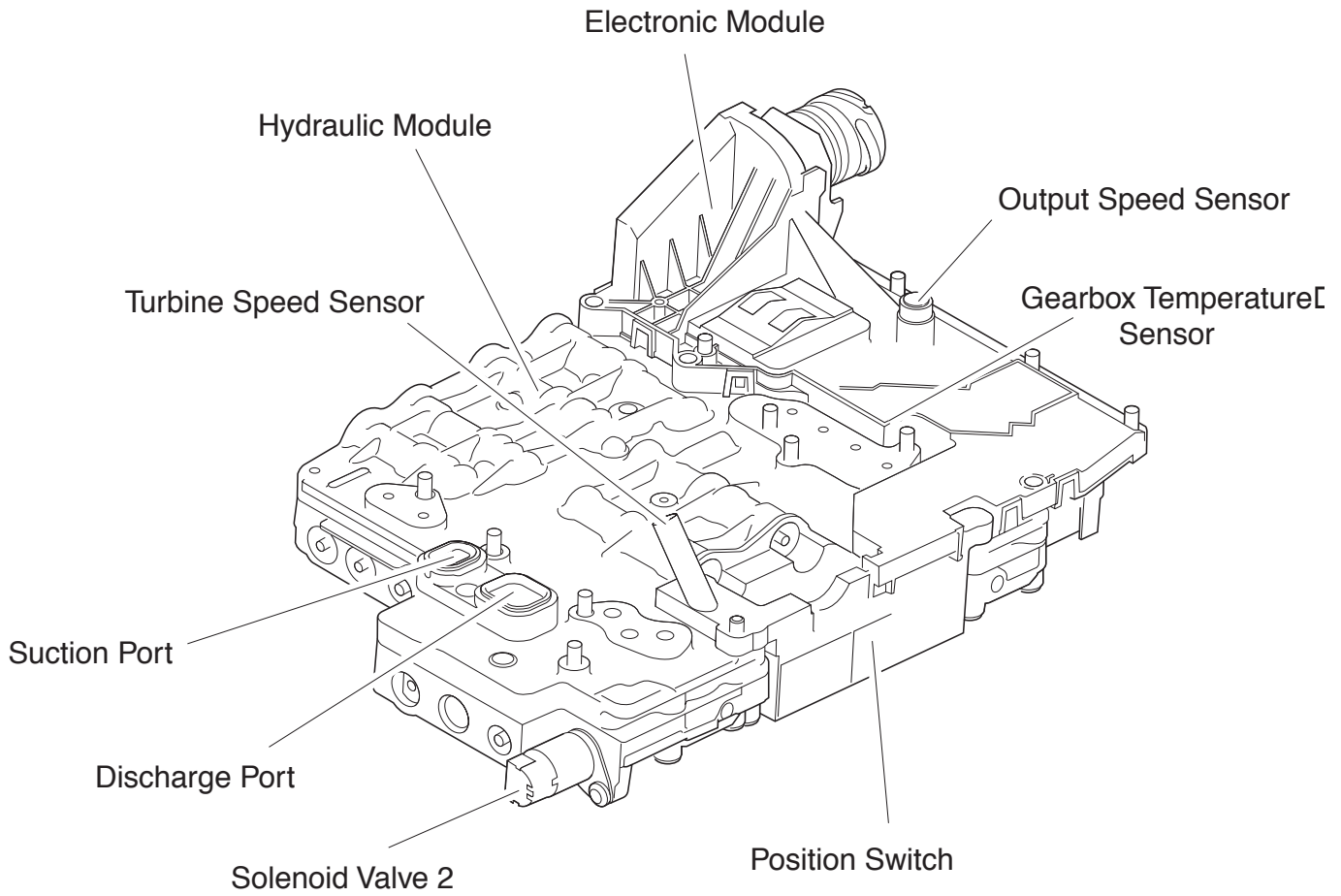


Figure 1. Mecchatronic Unit

Fault Code Definition

P0741 Torque convertor clutch permanently open.

P0741 Fault Analysis

1. Connect the WDS and confirm that P0741 is logged.
2. Check and if necessary top up the transmission fluid. Low fluid level will affect torque convertor operation.
3. Key off. Access the transmission harness and disconnect the transmission connector.
4. Key on. Check the voltage from harness connector C0932-9 to C0932-13 and 16.

If +12 volts is measured, go to step 3.

If the +12 volt supply is below specification, check the battery charging and +12 volt circuit integrity to C0932-14. Service the charging system or wiring as necessary. Reconnect all components and run a brief road test to ensure that the problem is resolved.

5. Check the condition of the transmission connector socket pin C0932-14.

If the socket is serviceable, the cause of the torque convertor problem lies within the gearbox unit.

Replace the mechatronic unit and run a brief road test to ensure that the problem is resolved.

6. If the problem is not resolved, contact Aston Martin Technical Support.

P0771 - Torque Converter Clutch Faults

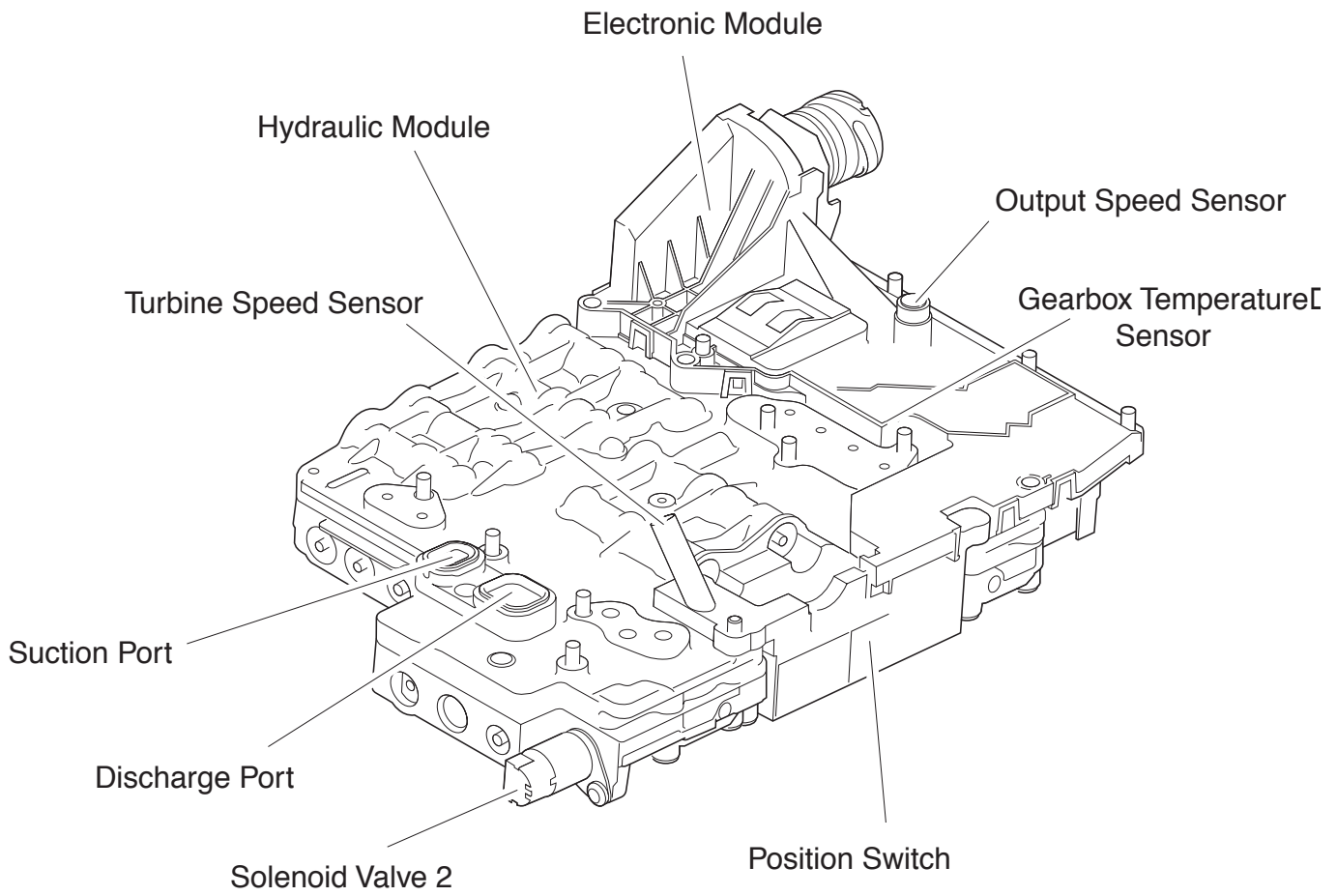


Figure 1. Mechatronic Unit

Fault Code Definition

P0771 Shift solenoid E and F plausibility check

P0771 Fault Analysis

1. Connect the WDS and confirm that P0771 is logged.
2. Clear the logged code.
3. With the engine running, select each gear mode by pressing the P, R, N and D buttons in turn.
4. Check that the telltale lamp in each switch illuminates to indicate that the mode has been successfully engaged.
5. Recheck for logged DTCs. if P0771 is logged again, replace the mechatronic unit.
6. Run a brief road test to include use of all gearshift modes to confirm that the problem is resolved.

P0780 to P0784 and P0829 - Transmission Gear Load Errors

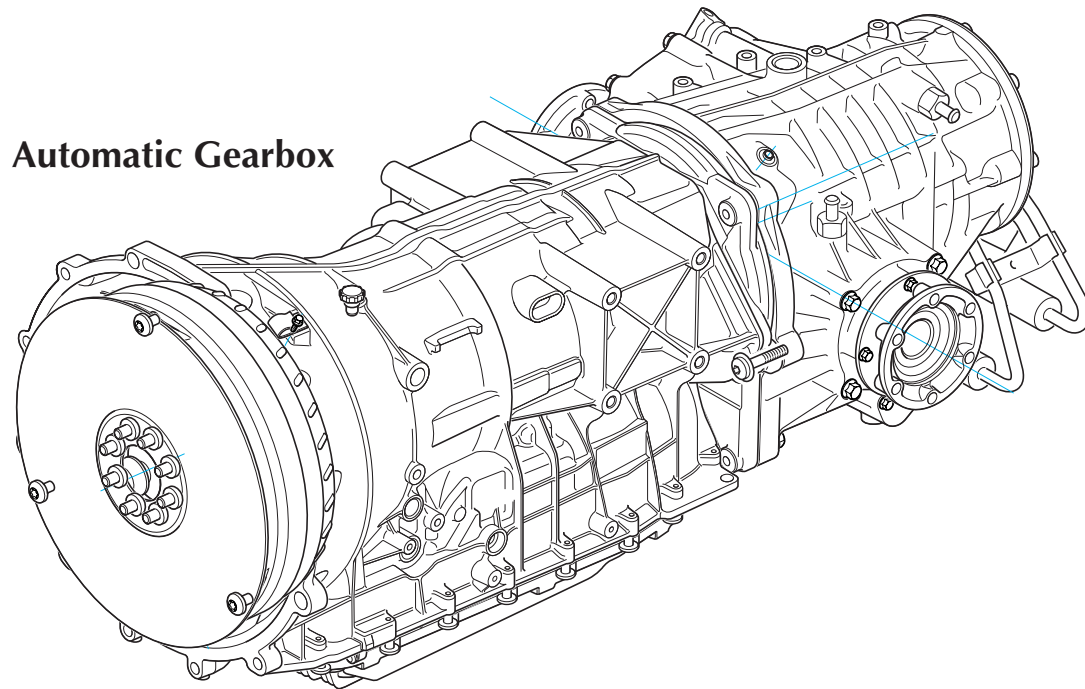


Figure 1. Automatic Gearbox Unit

Fault Code Definition

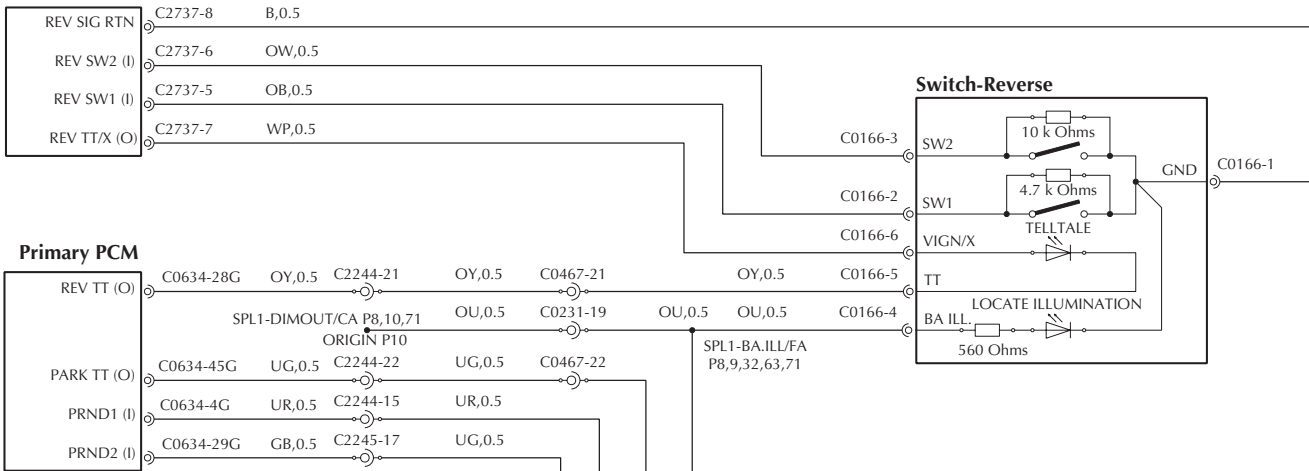
P0780 to P0784 and P0829 Transmission gear load errors.

P0780 to P0784 and P0829 Fault Analysis

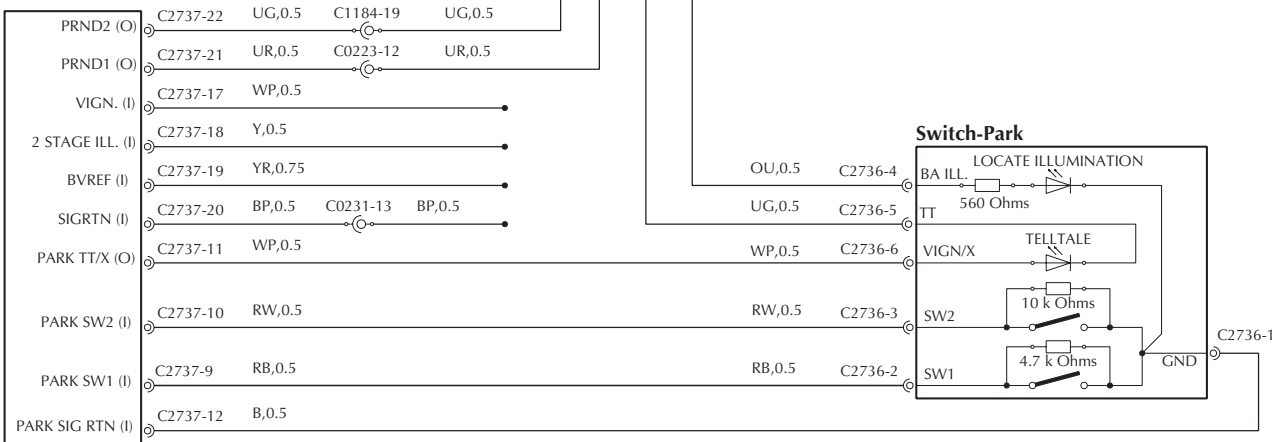
1. Check the transmission cooling system for leaks. If any leak is identified, service the system as necessary.
2. Check and if necessary top up the transmission fluid. Low fluid level will affect gear loading. Clear any logged fault codes. Run a brief road test including use of all gears. Check for any logged DTCs
3. If the fault code is logged again, contact Aston Martin Technical Service.

P0812, P081C, P081D, P0853 - Reverse, Neutral, Drive Switch Input Circuit

Interface-Auto Switches



Interface-Auto Switches



Interface-Auto Switches

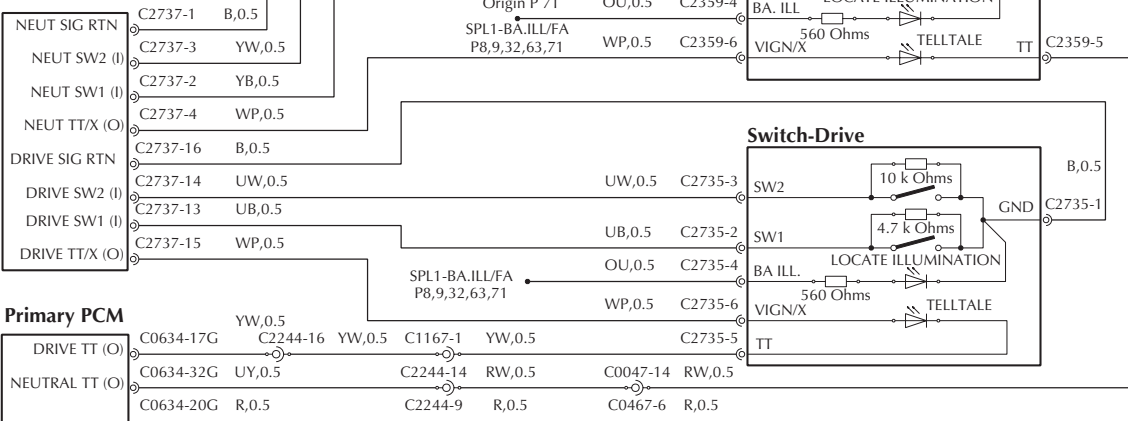


Figure 1. Park, Reverse, Neutral, Drive Switch Circuits

Fault Code Definition

P0812 Park Switch stuck

P081C Reverse Switch stuck.

P081D Neutral Switch stuck

P0853 Drive Switch stuck

P0812, P081C, P081D, P0853 Fault Analysis

Note: These fault codes will be logged if the relevant switch has been actuated continuously for more than 30 seconds.

1. Connect the WDS and confirm that either P0812, P081C, P081D or P0853 is logged.
2. Check the relevant button for jamming or for incorrect operation.

If there is evidence of incorrect operation, advise the driver on the cause of the problem. Clear the fault code and have the driver test the vehicle for correct operation.

If the button shows any sign of jamming, service the button as necessary. Clear the fault code and test the button for correct operation to ensure that the problem is resolved.

P0815, P0816 - Paddle Circuit Fault

Primary PCM

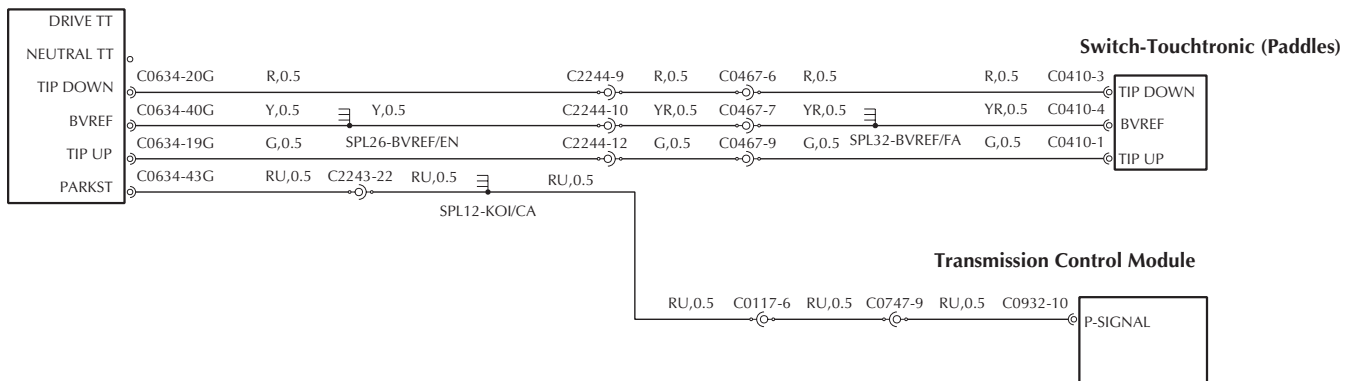


Figure 1. Up / Down Circuit

Fault Code Definition

P0815 Up switch circuit fault

P0816 Down switch circuit fault

Note: These faults are logged by the PCM when a P0826 fault is logged in the TCM. Treat P0815, P0816 and P0826 as a single problem

P0815, P0816 Fault Analysis

1. Connect the WDS and confirm that P0815 or P0816 is logged. Clear the logged fault code.
2. Clear the logged fault code.
3. Start the engine and, whilst stationary, engage each gear in turn using the shift paddles.

If all gears engage correctly, go to step 4.

If gears do not change correctly, go to step 5.

4. Run a road test in Touchtronic mode. Drive a route requiring many gearshifts over the complete gear range.

If all gearshifts are completed, the fault is not present at this time and testing is complete.

If any gearshift is delayed or if the requested gearshift does not occur, go to step 5.

5. Set WDS to monitor the TIP UP and TIP DOWN signals. Operate the shift paddles repeatedly and check that the signals respond to paddle movements.

If both signals respond to paddle actuations, the fault is not present at this time and testing is complete.

If either signal does not respond, troubleshoot the paddle switch to PCM circuit and service as necessary. On completion of the servicing, repeat the signal check to ensure that the problem is resolved.

Note:

The Tip Up and Tip Down switches may also be checked by connecting the breakout box to the primary PCM and measuring voltage from

P0826 - Up and Down Switch Input Circuit

Primary PCM

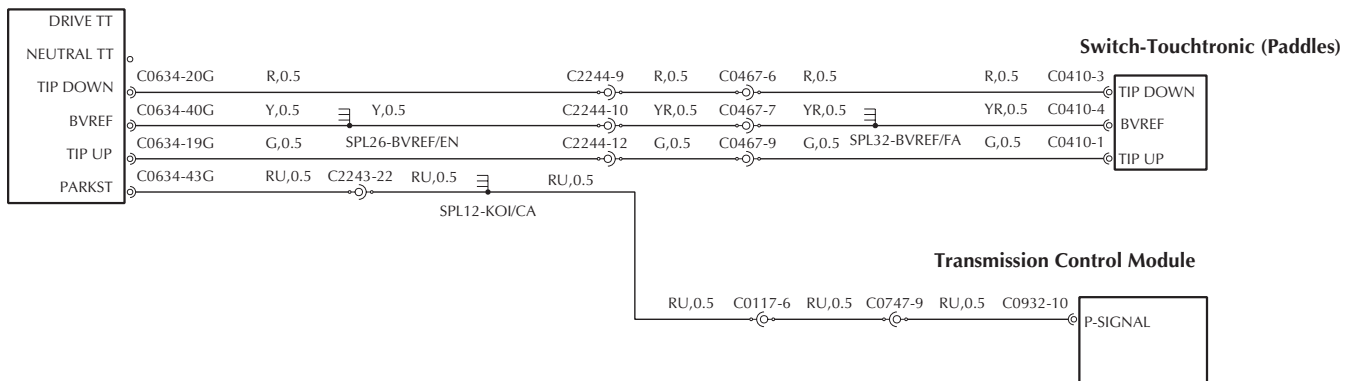


Figure 1. Up / Down Circuit

Fault Code Definition

P0826 Up and Down Switch input circuit

Note: This fault is logged by the TCM and passed to the PCM where P0815 and P0816 will also be logged. Treat P0815, P0816 and P0826 as a single problem

P0826 Fault Analysis

1. Connect the WDS and confirm that P0826 is logged.
2. Clear the logged fault code.
3. Start the engine and, whilst stationary, engage each gear in turn using the shift paddles.

If all gears engage correctly, go to step 4.

If gears do not change correctly, go to step 5.

4. Run a road test in Touchtronic mode. Drive a route requiring many gearshifts over the complete gear range.

If all gearshifts are completed, the fault is not present at this time and testing is complete.

If any gearshift is delayed or if the requested gearshift does not occur, go to step 5.

5. Set WDS to monitor the TIP UP and TIP DOWN signals. Operate the shift paddles repeatedly and check that the signals respond to paddle movements.

If both signals respond to paddle actuations, the fault is not present at this time and testing is complete.

If either signal does not respond, troubleshoot the paddle switch to PCM circuit and service as necessary. On completion of the servicing, repeat the signal check to ensure that the problem is resolved.

P0830, P0833 - Clutch Switch Malfunction

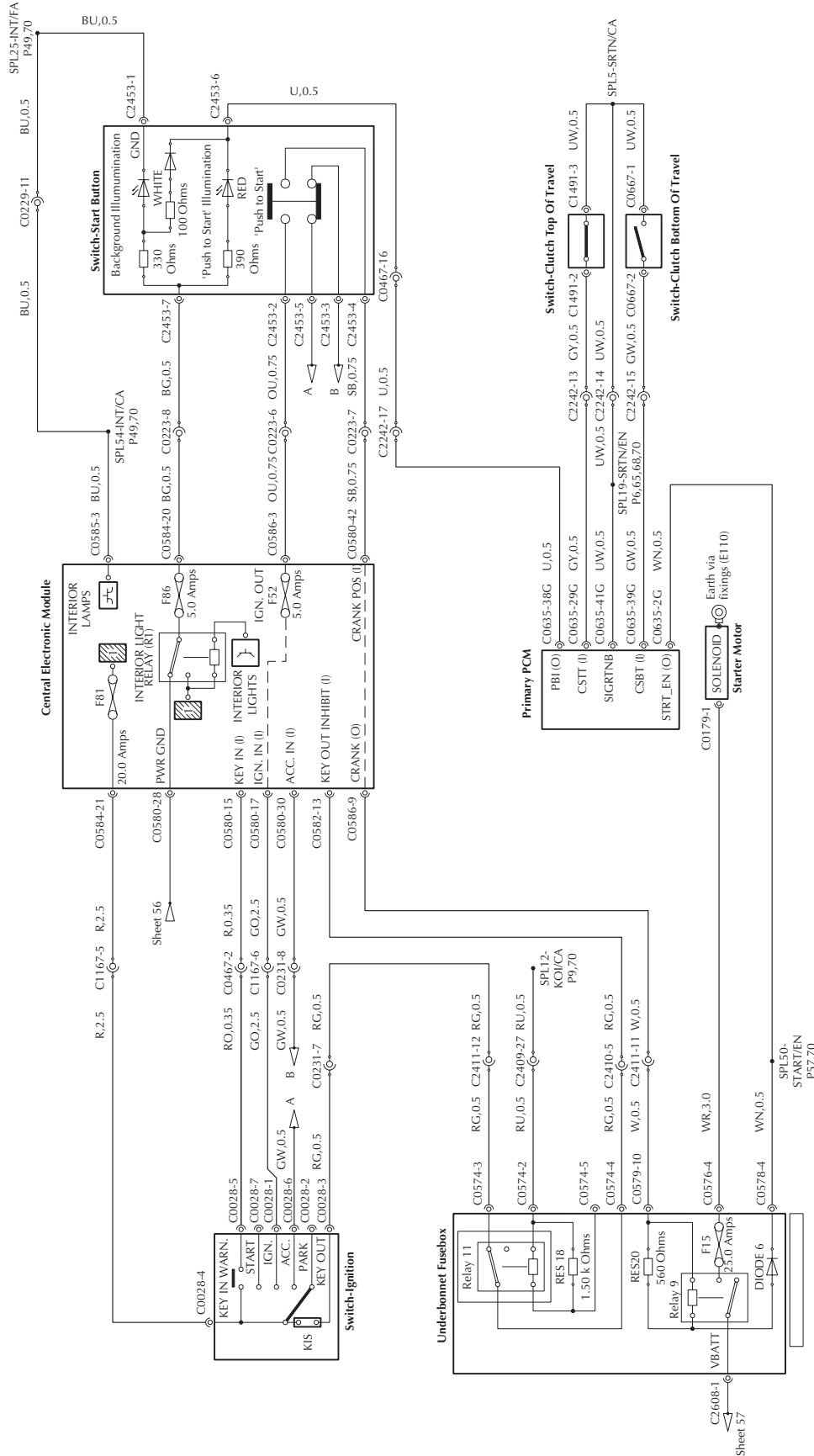


Figure 1. Start Enable Circuit (Manual Transmission)

Fault Code Definition

P0830 - Clutch Pedal switch A circuit (Top of clutch travel)

P0833 - Clutch Pedal switch B circuit (Bottom of clutch travel).

Note: These fault codes occur on manual transmission cars only.

P0830, P0833 Fault Analysis

1. Connect the WDS and confirm that P0830 or P0833 is logged. Clear the logged fault code.
2. Set datalogger to monitor the clutch signals CSTT and CSBT.
3. Press and release the clutch pedal several times (Move the pedal maximum up to maximum down) and monitor the changes in signal level.

If the clutch signal changes accurately follow clutch pedal movements, go to step 4.

If either signal does not follow pedal movement, service the relevant wiring as necessary. Repeat the clutch pedal movement test to ensure that the problem is resolved.

4. Set the gearshift to neutral. Attempt to start the engine without pressing the clutch pedal. Then press the clutch pedal and attempt to start the engine.

If the engine only starts with the clutch pedal pressed, the start enable function is operating correctly. Repeat the test several times to ensure that the vehicle is completely safe and that the problem is resolved.

If the engine starts without pressing the clutch, check for other relevant fault codes and analyse the problem to ensure that underbonnet relay 9 is only energised with the ignition on, the clutch pressed and the start button pressed.

P0850 - Parklock Sensor Fault

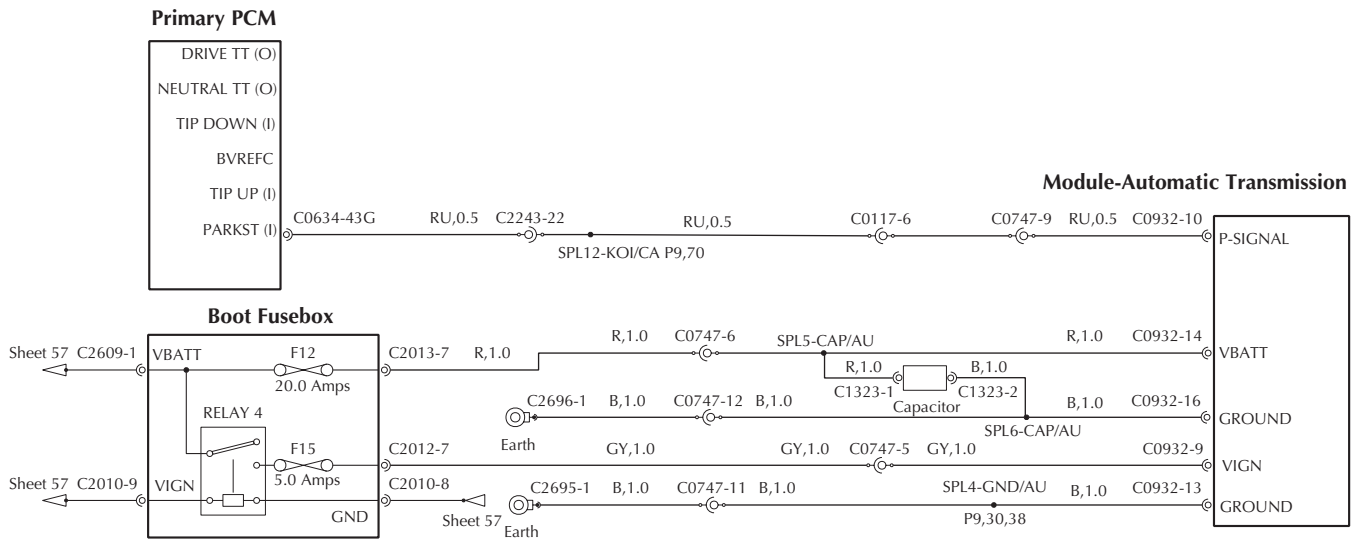


Figure 1. Parklock Status Circuit

Fault Code Definition

P0850 - Parklock sensor fault

P0850 Fault Analysis

1. Connect the WDS and confirm that P0850 is logged. Clear the logged fault code.
2. Set datalogger to monitor the parklock status signal. Switch on the ignition. Select and deselect Park several times. The PARKST signal should follow the changes in Park status.

If the signal does correctly follow changes in Park status, repeat the test again to ensure that the problem is no longer present.

If the signal does not change status, go to step 3.

3. Check the emergency park release lever is in the released position. Also check the emergency release cable for jamming, stiff operation, etc.

If the emergency park release system operation is suspect, Service the lever and cable as necessary. Clear the P0850 code and retest to ensure that the problem is resolved.

If the emergency park release system is operating correctly, change the mechatronic unit. Clear the P0850 code and retest to ensure that the problem is resolved.

If the P0850 code is logged again, contact Aston Martin Technical Support.

P0860, P0861, P0862 - Transmission Module to PCM Heartbeat Signal Fault

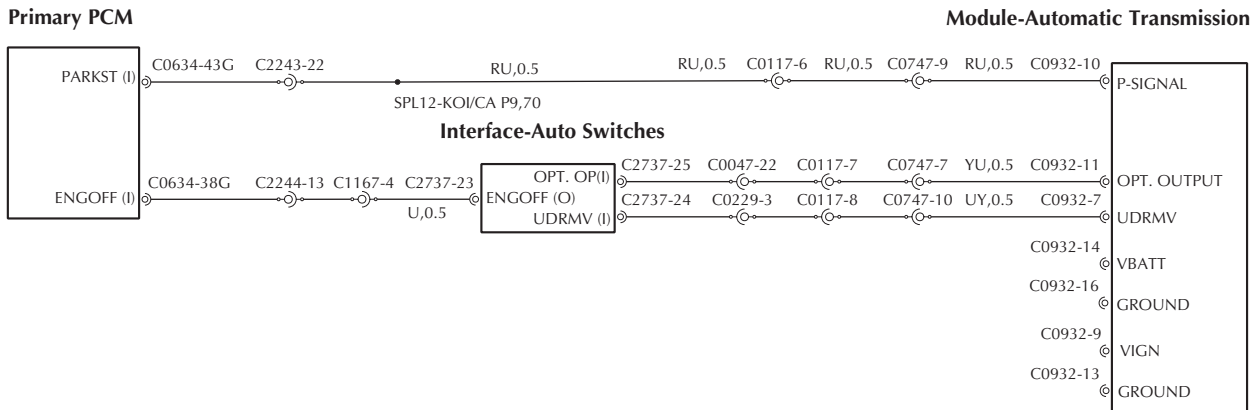


Figure 1. Heartbeat Signal Circuit

Fault Code Definition

P0860 - TCM to PCM heartbeat signal open circuit.

P0861 - TCM to PCM heartbeat signal short to ground.

P0862 - TCM to PCM heartbeat signal short to supply.

P0860, P0861. P0862 Fault Analysis

Note: The Heartbeat signal is a square wave signal switching between 0 and 5 VDC at 10Hz.

1. Connect the WDS and confirm that P0860, P0861 or P0862 is logged. Clear the logged fault code.
2. Access the transmission connector C0932. Measure the resistance from harness connector C0932-11 to C0932-7. The resistance should be 1.4 k Ω .

If 1.4 k Ω is measured, go to step 3.

If significantly more than 1.4 k Ω is measured, service the high resistance or open circuit from C0932 to the Interface-Auto Switches unit. Reconnect all components. Clear the fault code. Retest to ensure that the problem is resolved.

3. With the ignition on, measure the voltage from C0932-11 to ground.

If the voltage at pin C0932-11 is 0 volts, go to step 4.

If the voltage is significantly above 0volts, service the short circuit to supply. Retest by running a KOEO test to ensure that the problem is resolved.

4. Measure the resistance from pin C0932-11 to ground.

If the resistance is high, no short to ground is present and testing is complete.

If the resistance is low, service the short circuit to ground on this line. reconnect all components and retest to ensure that the problem is resolved.

P0863 - Serial Backup Line Timeout

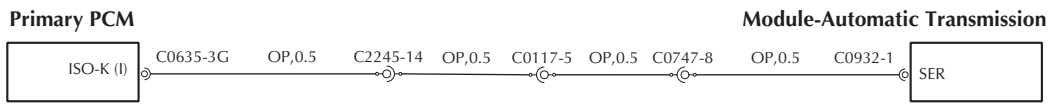


Figure 1. Serial Backup Line Circuit

Fault Code Definition

P0863 Serial backup line timeout (PRND)

P0863 Fault Analysis

1. Connect the WDS and confirm that P0863 is logged. Clear the logged fault code.
2. Check continuity from transmission connector C0932-1 to Primary PCM connector C0635-3.

If continuity is poor, service the circuit as necessary. Reconnect all components and run a KOEO test to ensure that the problem is resolved.

If continuity is good, Check for voltage and then resistance from C0635-3 to ground.

If any short to supply or to ground is detected, service the circuit as necessary and run a KOEO test to ensure that the problem is resolved.

If P0863 is logged again, consult Aston Martin Technical Support.

P0961, P0972, P0975, P0978, P0981, P2762 - Transmission Pressure Regulator Fault

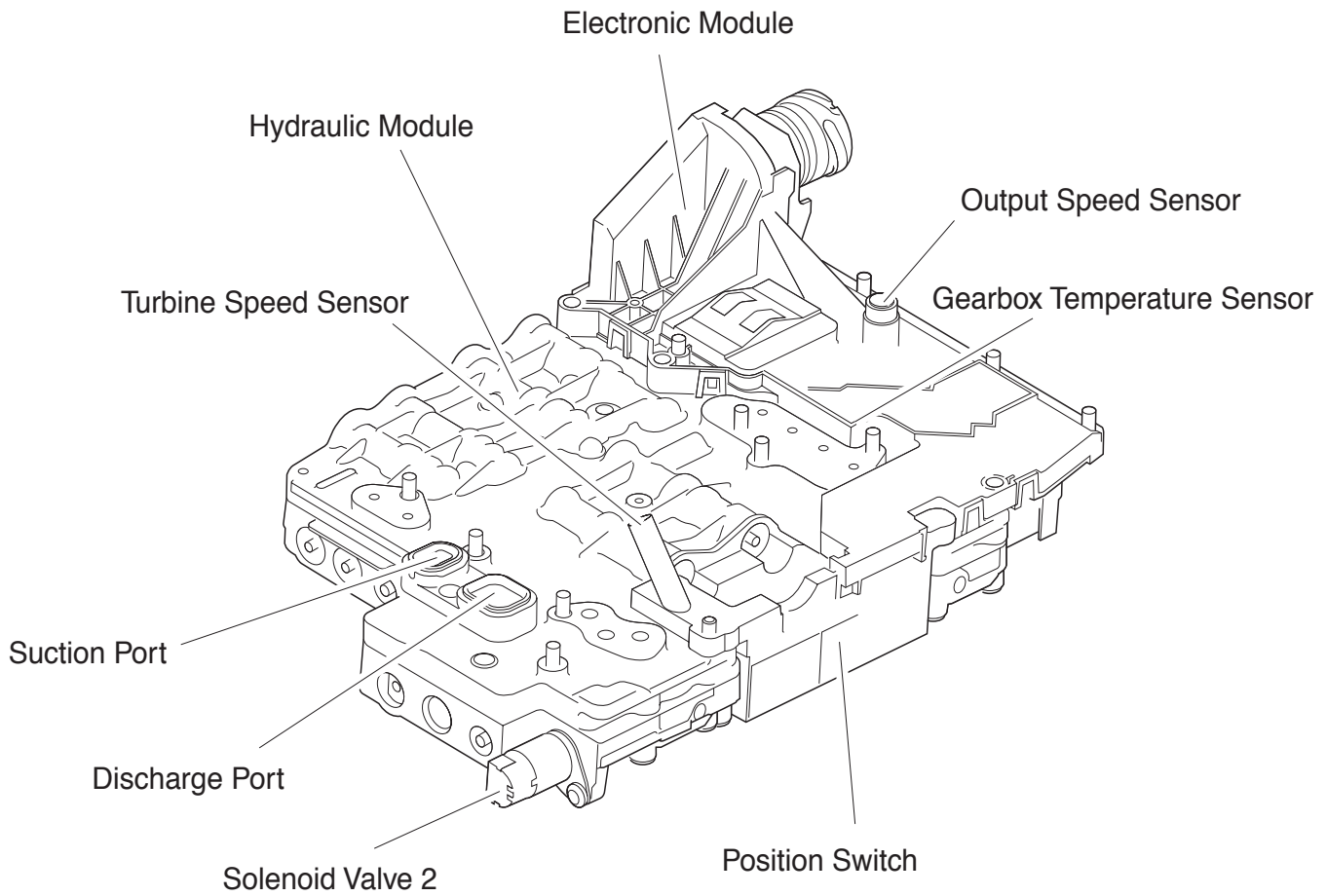


Figure 1. Mechatronic Unit

Fault Code Definition

P0961, P0972, P0975, P0978, P0981, P2762

Pressure Regulator current too high or too low.

**P0961, P0972, P0975, P0978, P0981 and P2762
Fault Analysis**

1. Connect the WDS and confirm that one of the above codes is logged.
2. Clear the logged DTCs.
3. Run a short road test and then check the logged DTCs again.
4. If any of the above DTCs are logged again, replace the mechatronic unit. and run a brief road test to ensure that the problem is resolved.

P0963, P0974, P0977, P0980, P0983, P2763 - Transmission Pressure Regulator Fault

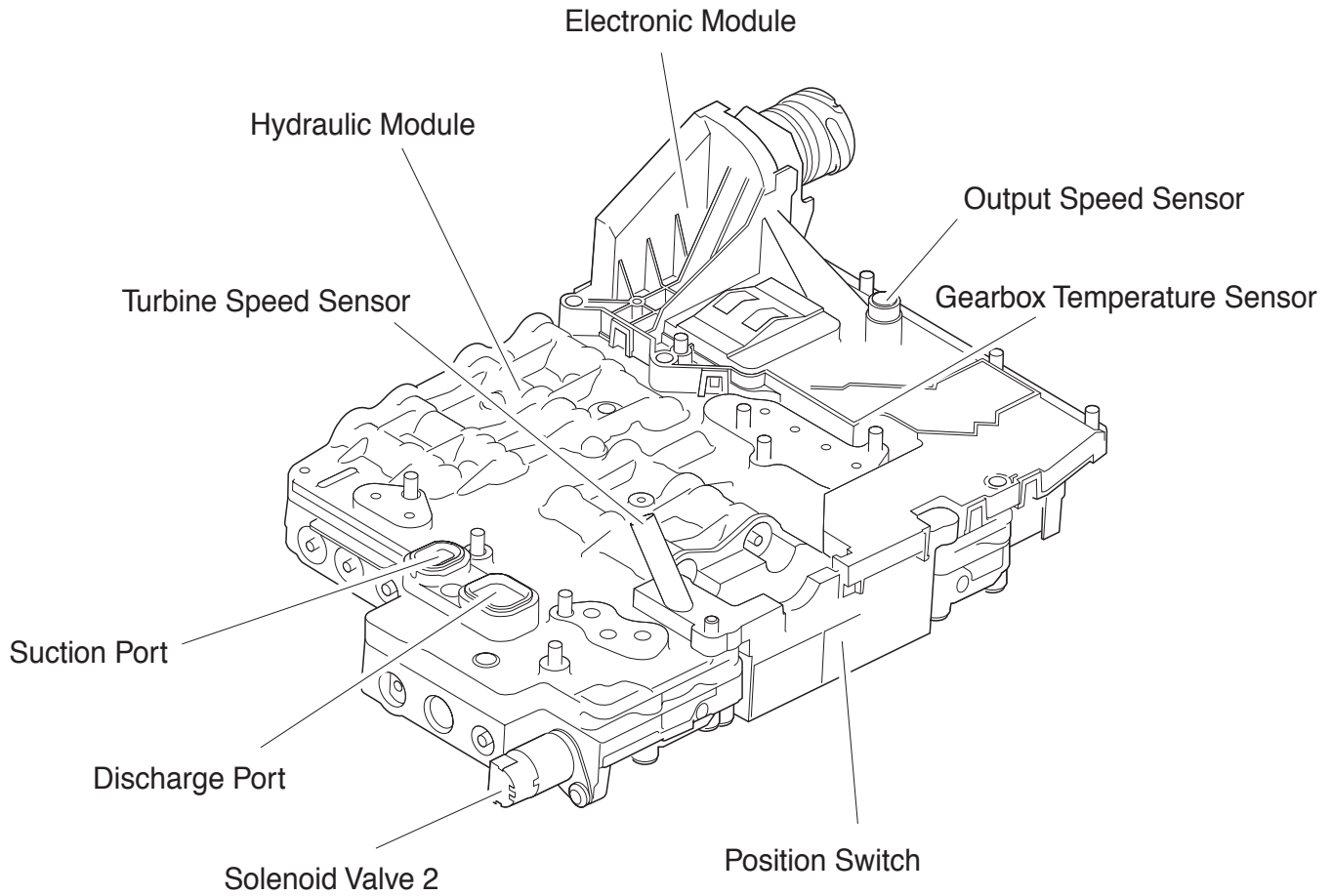


Figure 1. Transmission Pressure Regulators

Fault Code Definition

P0963, P0974, P0977, P0980, P0983, P2763.

Pressure Regulator short to supply.

P0963, P0974, P0977, P0980, P0983 and P2763**Fault Analysis**

1. Connect the WDS and confirm that one of the above codes is logged.
2. Clear the logged DTCs.
3. Run a short road test and then check the logged DTCs again.
4. If any of the above DTCs are logged again, replace the mechatronic unit. and run a brief road test to ensure that the problem is resolved.

P0985, P0998. - Transmission Solenoid Fault

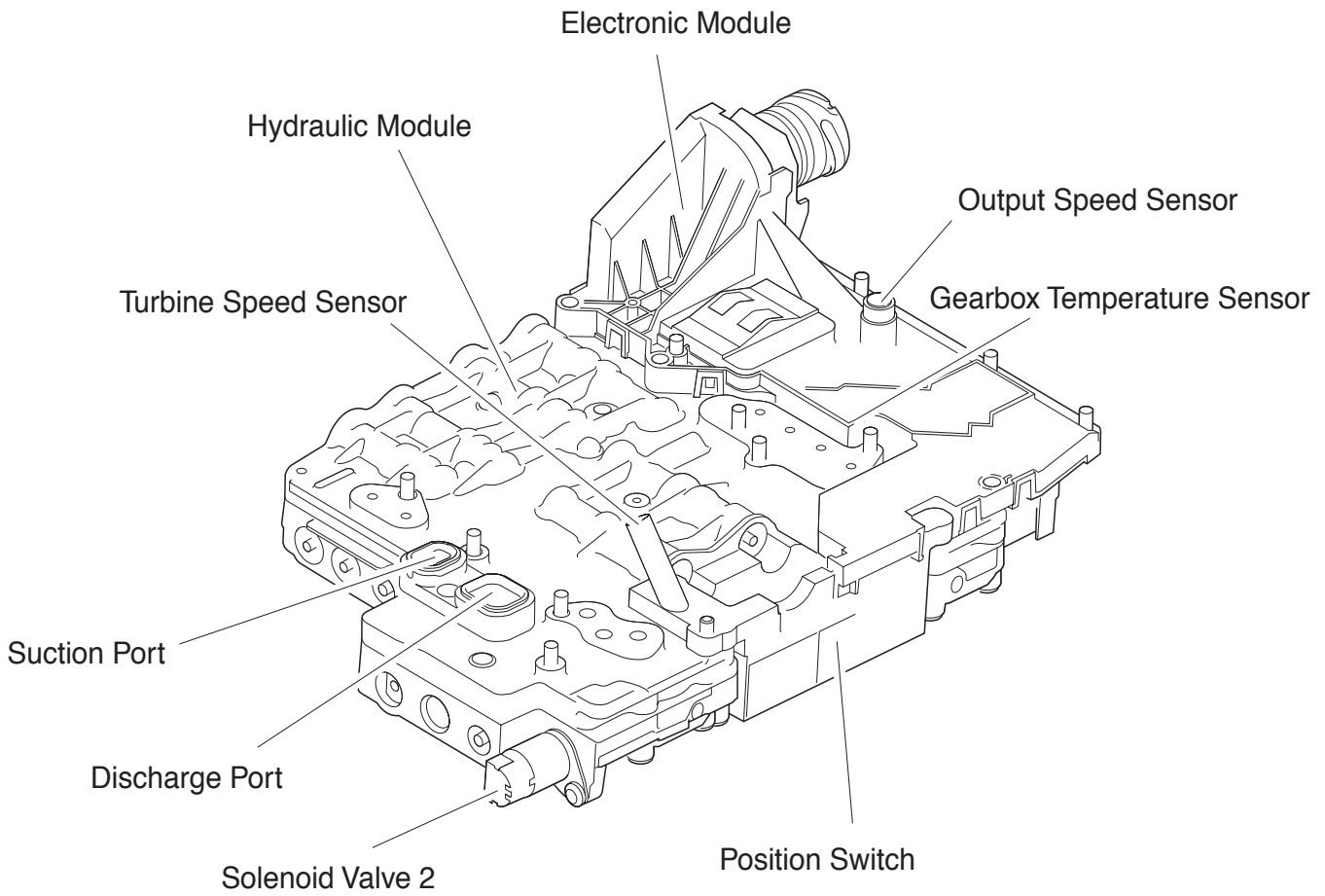


Figure 1. Mechatronic Unit

Fault Code Definition

P0985 - Shift solenoid MV1 short to ground.

P0998 - Shift solenoid MV2 short to ground.

P0985, P0998 Fault Analysis

1. Connect the WDS and confirm that one of the above codes is logged.
2. Key off. Access the transmission harness and disconnect the transmission connector.
3. Key on. Check the voltage from harness connector C0932-9 to C0932-13 and 16.

If +12 volts is measured, go to step 4.

If the +12 volt supply is below specification, service the wiring to C0932-9 as necessary. Reconnect all components and run a brief road test to ensure that the problem is resolved.

4. Check the condition of the transmission connector socket pin C0932-14.

If the socket is serviceable, the cause of the shift solenoid problem lies in the mechatronic unit.

Replace the mechatronic unit and run a brief road test to ensure that the problem is resolved.

P0986, P0999 - Transmission Solenoid Fault

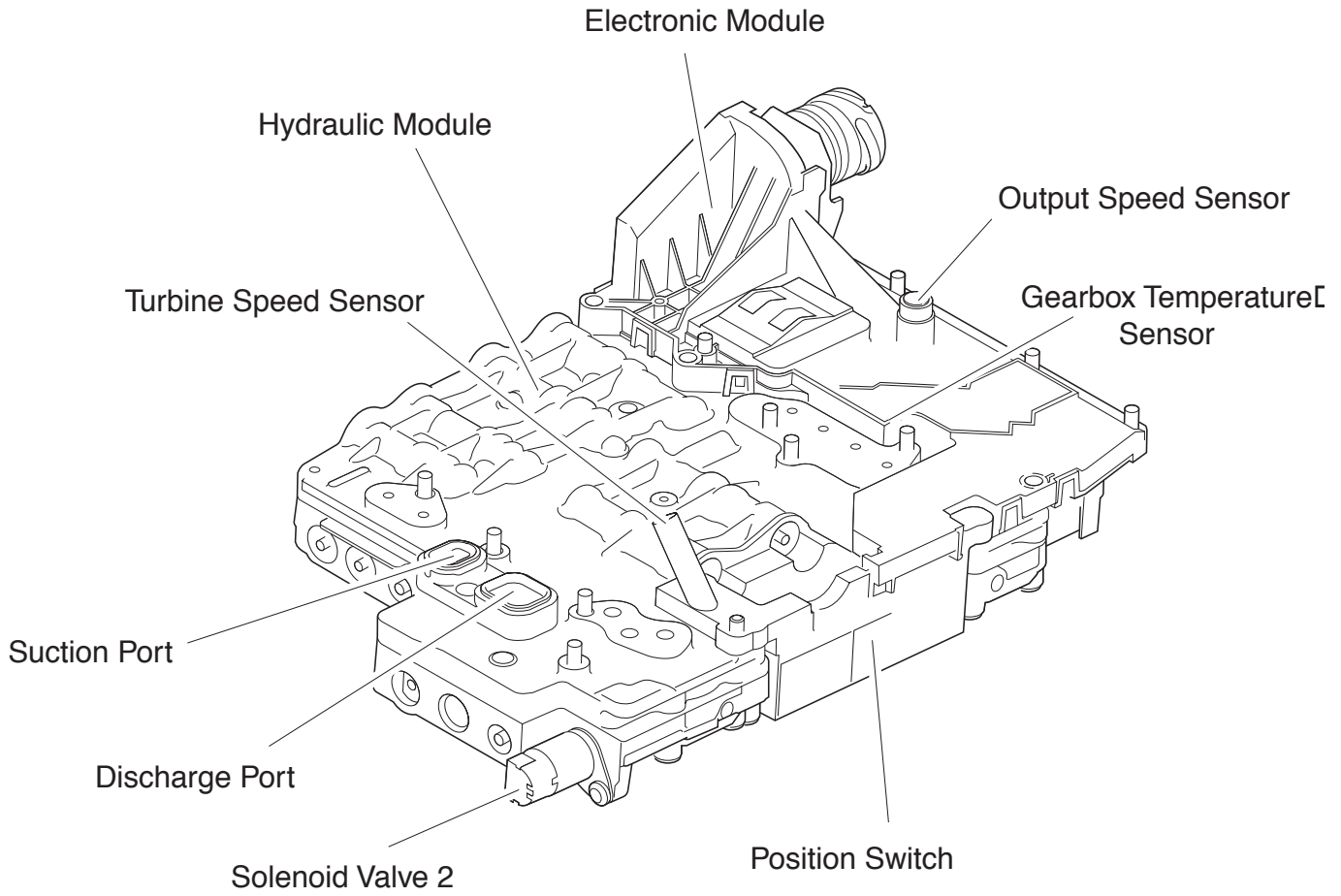


Figure 1. Transmission Pressure Regulators

Fault Code Definition

P0986 - Shift solenoid MV1 short to supply.

P0999 - Shift solenoid MV2 short to supply.

P0986, P0999 Fault Analysis

1. Connect the WDS and confirm that one of the above codes is logged.
2. Clear the logged DTCs.
3. Run a short road test and then check the logged DTCs again.
4. If any of the above DTCs are logged again, replace the mechatronic unit, and run a brief road test to ensure that the problem is resolved.

P1000 - Fault Code Definition

P1000 - All of the OBDII monitors have not yet been successfully tested.

MIL Status

This code will not light the MIL lamp.

P1000 Fault Analysis

A P1000 code will be set by the PCM with any of the following conditions:

- The vehicle is new from the factory and has not yet been through a complete OBDII drive cycle.
- The vehicle has not yet been through a complete OBDII drive cycle after the battery or the PCM has been disconnected.
- An OBDII monitor fault has occurred before completion of the drive cycle.
- The PCM DTCs have been erased with the WDS or scan tool as part of the normal repair process

P1000 may not be removed from the PCM memory by a normal PCM reset.

Note: The only way a DTC P1000 can be removed from memory is when all the OBDII monitors have successfully completed during normal vehicle operation.

1. Were any other DTCs detected with P1000?

If other codes are present, analyse and correct the other codes first. Complete an OBDII drive cycle and return to step 2 if the P1000 code is not cleared.

2. If the P1000 code is not cleared by an OBDII drive cycle, Check the VSS and ECT signals:

Connect the WDS for a road test and set up to monitor the VSS signal and the Engine Coolant Temperature signal at the PCM.

Drive the vehicle long enough to achieve the highest engine operating temperature. Monitor the VSS and ECT signals during this road test.

3. If the VSS signal indicated actual road speed, this was not the cause of the P1000. Go to step 4.

If the VSS signal does not indicate actual road speed, analyse the VSS problem using the procedure in P0720 analysis.

Run the OBDII drive cycle to clear the P1000 code.

4. Monitor the engine coolant temperature. If the ECT reading was greater than 180°F (82°C), this is not the cause of the uncleared P1000. Complete a full OBDII drive cycle to reset the code.

If the ECT reading does not indicate more than 180°F (82°C) for a fully warmed up engine, analyse the ECT problem using the procedure in P0117 analysis.

Run the OBDII drive cycle to clear the P1000 code.

P1001 - Fault Code Definition

P1001 - Key On Engine Running (KOER) self test not able to complete.

MIL Status

This code will not light the MIL lamp.

P1001 Fault Analysis

This code will be logged if any of the following conditions exist during a KOER test.

- The PCM is unable to access continuous memory DTCs.
- The PCM is unable to activate a KOEO test.
- The PCM is unable to initiate a KOER test.
- There is a WDS or scan tool communication problem.
- The DTC displayed on the WDS or scan tool is not listed.

Note: The only way a DTC P1001 can be removed from memory is when all the OBDII monitors have successfully completed during normal vehicle operation.

1. Check that BVREF is in range:

Key off. Disconnect the throttle body connector. Key on.

Measure BVREF at the throttle body harness connector C1589-7 reference chassis ground.

If BVREF is in the range 4.5 - 5.5 volts, go to step 2.

If BVREF is outside the range 4.5 - 5.5 volts, check if P0562 or P0563 is logged. Service the +5 volt supply as necessary. Run a KOER test to ensure that the problem is resolved.

2. Can continuous memory DTCs be accessed?

If continuous memory DTCs can be accessed, go to step 3.

If continuous memory DTCs cannot be accessed, go to step 6.

3. Can a KOEO self test be activated?

If a KOEO self test can be activated, go to step 4.

If a KOEO self test cannot be activated, go to step 5.

4. Can a KOER self test be activated?

If a KOER self test can be activated, the logged DTC is not listed for this vehicle. Check that the correct PCM is installed. Also check for any service bulletins indicating a PCM change. Service as necessary.

If a KOER self test cannot be activated, go to step 5.

5. Record all logged DTCs. If failures are present in any of the following systems, this could cause the P1001 code:

- Fuel control system
- Vehicle speed sensor circuits
- Mass air flow system

If no relevant DTCs are present, go to step 6.

If any DTCs relevant to the above systems are present, resolve all relevant problems using the fault analysis procedures in this manual. Run the KOER Test to ensure that the problem is resolved.

6. Check the 12 volt supply line at the diagnostic socket:

Check for B+ 12 volt supply on the diagnostic connector pin 16 measured to the battery negative terminal.

Check the 12 volt return line at the diagnostic socket:

Repeat the B+ 12 volt check from the diagnostic connector pin 16 measured to diagnostic connector pins 4 and 5 (Ground).

If the 12 volt supply and return lines are good, go to step 7.

If either the 12 volt supply or the 12 volt return lines are faulty, service as necessary. Run the KOER Test to ensure that the problem is resolved.

7. Check the communications line from the diagnostic socket to the PCM:

Check continuity from OBD II Powertrain socket pin 6 to pin 14. If any continuity problem is identified, service the CAN bus as necessary and retest to ensure that the problem is resolved.

If no continuity problem is identified, replace the PCM and run the KOER test to ensure that the problem is resolved.

P1101 - Mass Airflow Sensor

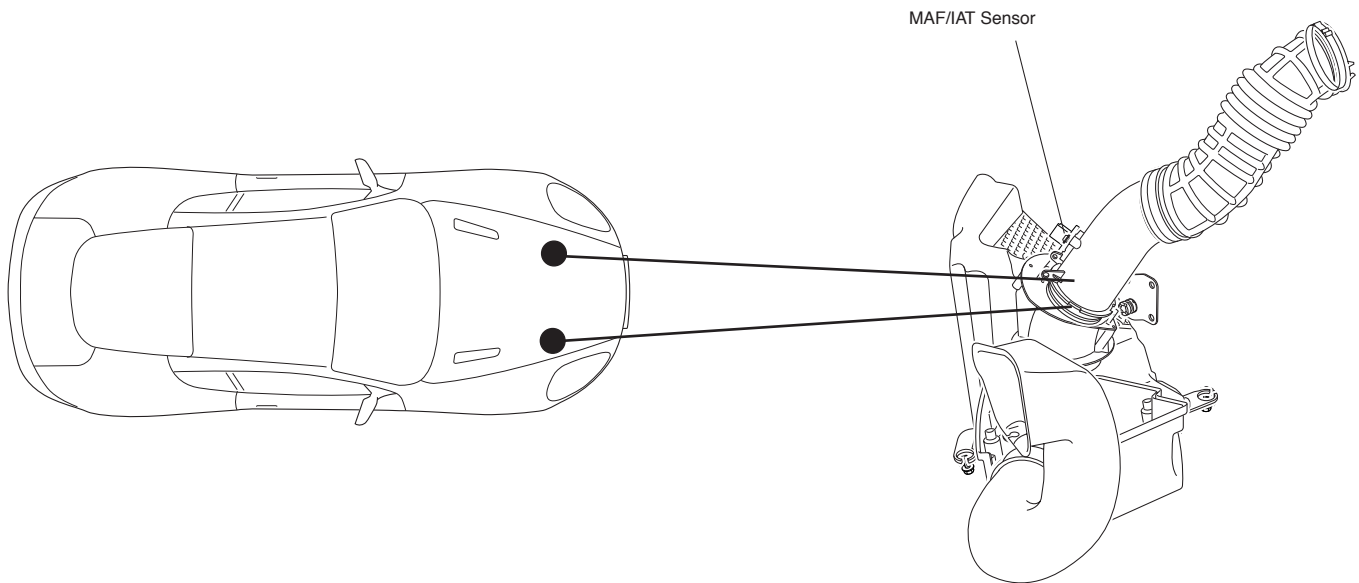


Figure 1. MAFS Location

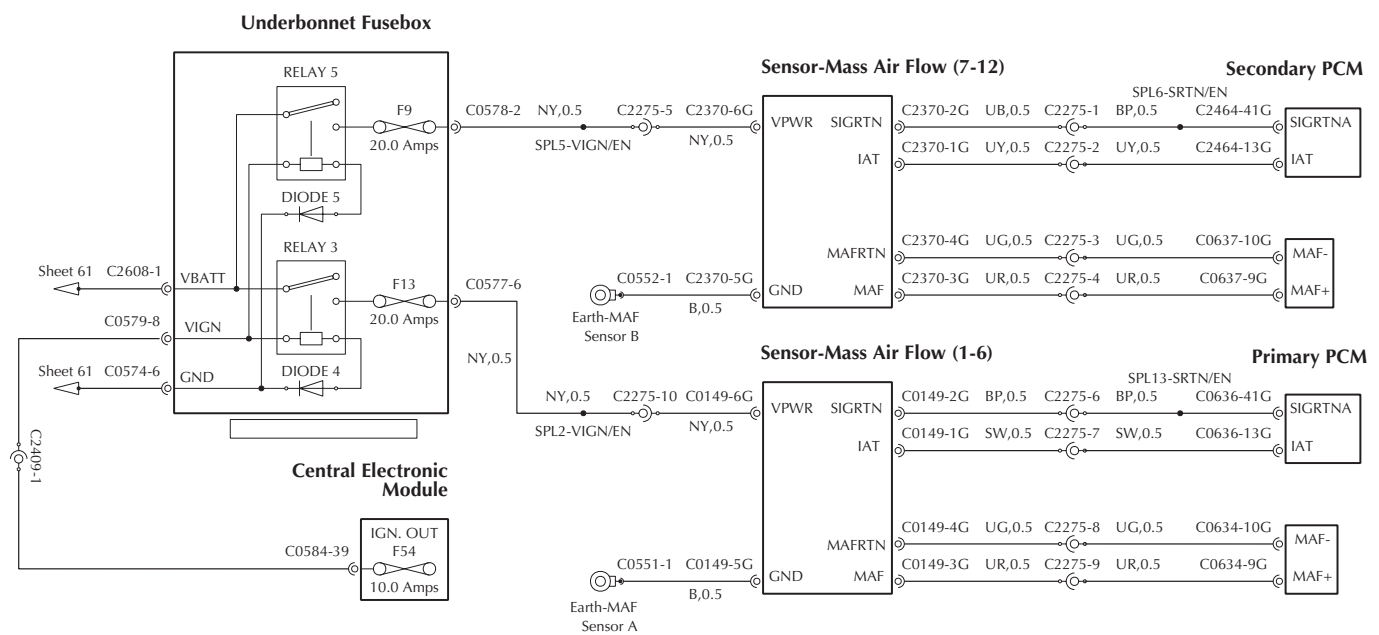


Figure 2. MAFS - PCM Interface Circuit

Fault Code Definition

P1101 - The MAF sensor signal went above 2.0 volts during a KOER test.

MIL Status

This code will not light the MIL lamp.

P1101 Fault Analysis

Note: DTC P1101 could be generated by a low charge battery. Check the battery condition and service if necessary.

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Connect the WDS or Scan Tool. Check that fault code P1101 is present
2. Check the air filter for correct fitting. Check all ducting for blockage or leaks (including the crankcase ventilation system). Service or repair as necessary.
3. Check the MAF sensor and PCM connectors for damaged pins, poor connection, etc.

If no fault is detected, go to step 4.

If any fault is detected, service as necessary. Reset the PCM and run a KOER test to ensure that the problem is resolved.

4. Key on engine running. Using the datalogger, read the MAF signal level with the engine at idle.

Increase engine speed to 1500-2000 and allow it to return to idle.

If the signal level remains inside the range 0.39 - 1.90 volts at idle, go to step 6.

If the signal level goes outside the range 0.39 - 1.90 volts at idle, go to step 5.

5. Ignition off. Check for short circuit from +12V power circuits KAPWR, VBatt, VIGN, BVREF to primary PCM pin C0634-9 or secondary PCM pin C0637-9.

If no circuit fault is identified, replace the MAF sensor, clear the P1101 code and retest to ensure that the problem is resolved.

If a circuit fault is identified, service the affected circuit as necessary. Clear the P1101 code and retest to ensure that the problem is resolved.

6. Key off. Disconnect the PCM and inspect the connector for loose, damaged pins. Service as necessary.

Connect the PCM break-out box. Reconnect the PCM. Connect a multimeter between the following pins:

PCM	MAF Signal	Signal Return
Primary	EM-A/31	EM-A/38
Secondary	EM-A/31	EM-A/38

Key on engine running. Shake, bend sections of the harness from the MAF sensor to the PCM whilst monitoring the MAF signal level.

If the MAF signal level goes outside the range 0.39 - 1.90 volts at idle, isolate and repair the harness fault. Reconnect all components. Reset the PCM and run the KOER test to ensure that the problem is resolved.

If the MAF signal level remains in the range 0.39 - 1.90 volts at idle, unable to reproduce the fault at this time.

P1116 - Engine Coolant Temperature

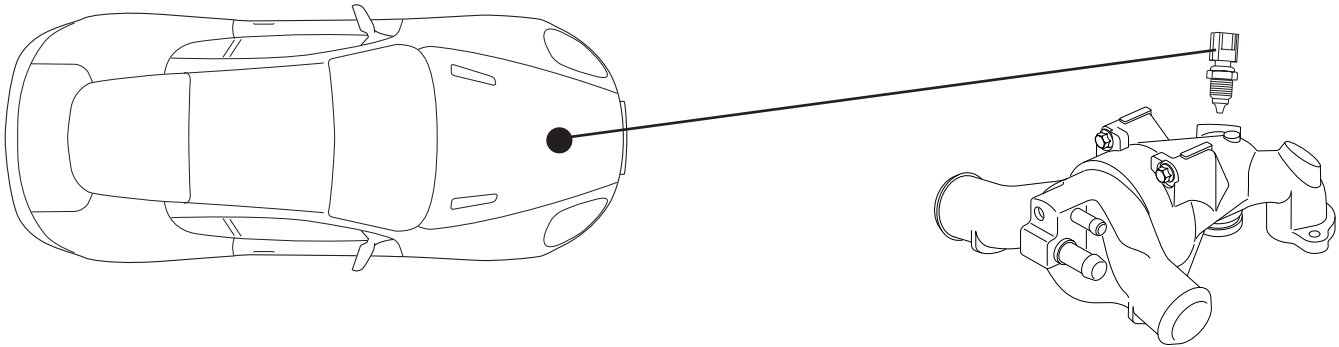


Figure 1. Engine Coolant Temperature Sensor Location

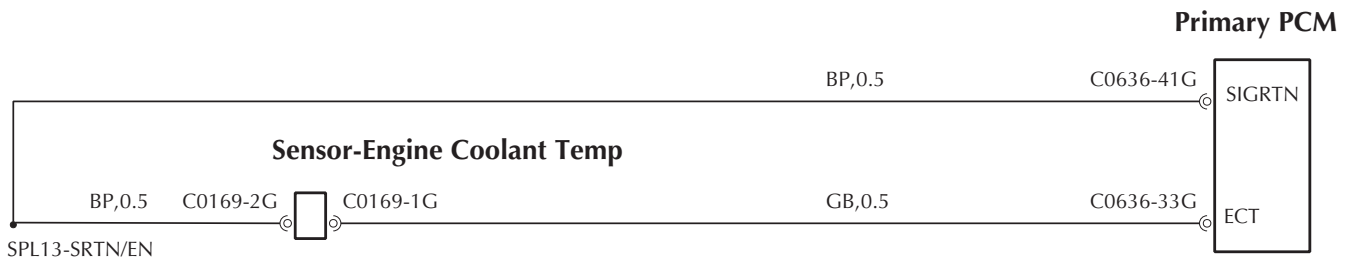


Figure 2. ECT - PCM Interface Circuit

Fault Code Definition

P1116 - The ECT sensor signal was out of self test range (0.3 - 3.7 volts) during KOEO or KOER tests.

MIL Status

This code will not light the MIL lamp.

P1116 Fault Analysis

The engine coolant temperature must be above 10°C to pass the KOEO test and above 82°C to pass the KOER test.

CAUTION: The single Engine Coolant Temperature Sensor inputs analogue data to the primary PCM. The primary sends raw ECT counts to the secondary PCM over the CAN bus. If P1116 is logged in both PCMs, diagnose the sensor and circuit. If P1116 is logged in the secondary PCM only, the fault is in the secondary PCM or CAN bus.

1. Connect the WDS or scan tool and check for P1116 code in both PCMs. If P1116 is present only in the secondary PCM, go to step 6.

If only P1116 is present, Check that the engine is fully warmed up (above 82°C). If below 82°C, warm up the engine and rerun the KOER test. If P1116 is not logged again, the fault was caused by low coolant temperature and is now cleared.

If P1116 is logged again, go to step 2.

2. Connect the break-out box to the primary PCM. Run the engine and read the voltage of the ECT signal. The voltage should be below 0.7 volts with the engine fully warmed up i.e. above 82°C (see ECT sensor table).

3. For intermittent low voltage readings, suspect a short circuit of the ECT sensor signal (nominal 5.0V supply from PCM pin C0636-33) to signal return (PCM pin C0636-41).

Key off. Shake, wiggle and tap the sensor and circuits during the following test to simulate road shock.

Check for short circuit between the lines from PCM pin C0636-33 to the ECT sensor and from the ECT sensor to PCM pin C0636-41. Also check for short circuit to ground on the line from PCM pin C0636-33 to the ECT sensor.

If any wiring problem is found, repair the wiring as necessary.

4. For intermittent high voltage readings, (above 3.50 volts) suspect an open circuit in the sensor wiring or internally within the sensor.

Key off, disconnect the ECT sensor, key on. Measure the voltage across the ECT sensor connector. Approximately 5.0 volts should be present. If not, there is an open circuit in the line from PCM pin C0636-33 or in the signal return line to PCM pin C0636-41.

If approximately 5.0 volts is present, check the resistance of the ECT sensor. Consult the table of ECT sensor values, the resistance should be within 5% of the values in the table. If resistance is very high or infinite, change the ECT sensor.

5. Clear the P1116 code, run the KOER test to ensure that the problem is solved.
6. Using the datalogger, check for CAN bus fault codes in both PCMs. Also note the ECT value in both PCMs.

If the secondary ECT value is suspect and there are CAN faults, rectify the CAN faults first. Reset the PCMs and then return to this procedure if P1116 recurs.

If the secondary ECT value is suspect and there are no other CAN related symptoms, replace the PCMs and run a KOER test to ensure that the problem is resolved.

Table of ECT Sensor Values

Temperature		Voltage Volts	Resistance K Ohms
°F	°C		
248	120	0.27	1.18
230	110	0.35	1.55
212	100	0.46	2.07
194	90	0.60	2.80
176	80	0.78	3.84
158	70	1.02	5.37
140	60	1.33	7.70
122	50	1.70	10.97
104	40	2.13	16.15
86	30	2.60	24.27
68	20	3.07	37.30
50	10	3.51	58.75

P1127 - Heated Oxygen Sensors

Heated Oxygen Sensor 1-1 Heated Oxygen Sensor 2-1

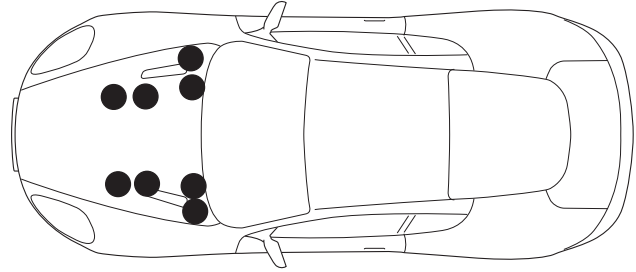
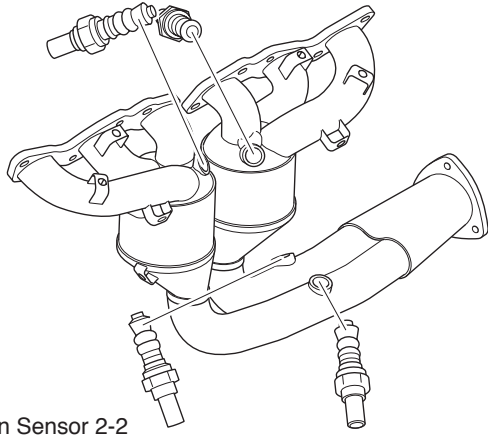


Figure 1. HO2S Location

Fault Code Definition

P1127 - Exhaust not warm enough, downstream oxygen sensors not tested.

MIL Status

This code will not light the MIL lamp.

P1127 Fault Analysis

Note: During engine warm-up at idle speed with the vehicle stationary, the rear oxygen sensors may not reach operating temperature. If this is suspected, run the vehicle on the road through a vigorous series of acceleration cycles to fully warm up the exhaust and then repeat the KOER test sequence.

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Connect the WDS or scan tool. Key on.
2. Run the engine and monitor the oxygen sensor heaters. The heaters will be commanded to come on and remain on when the engine is warm.

When the engine is fully warmed up and all HO2S heaters are commanded on, run the KOER test to ensure that there is not a problem.

If the HO2S heaters are commanded on and erroneous oxygen readings occur, analyse the problem using the P code procedure for the suspect sensor.

P115C - Disable Driver Interface

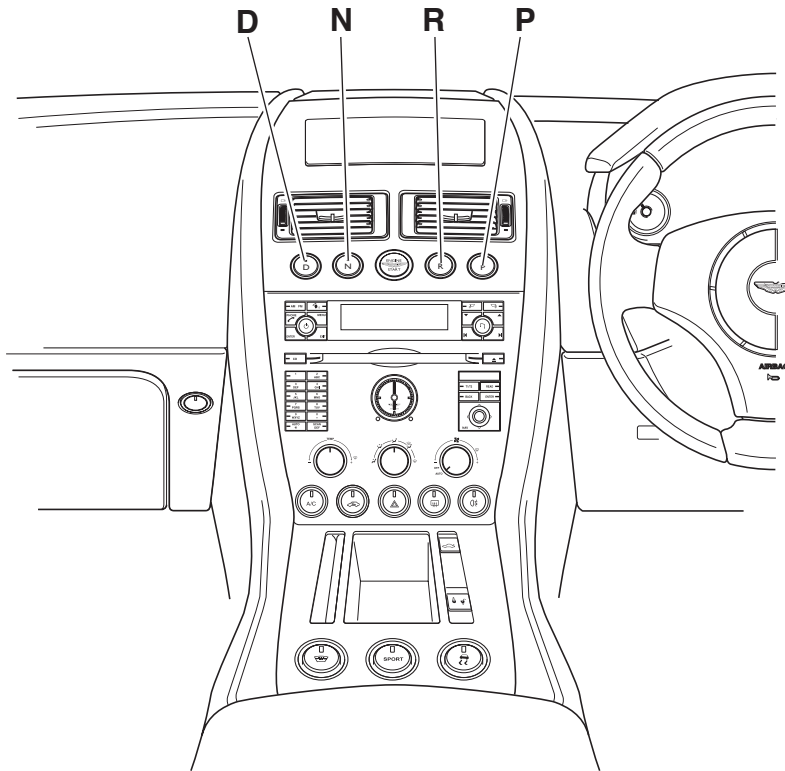


Figure 1. The Driver Interface

Fault Code Definition

P115C - Disable driver interface. triggered.

MIL Status

This code will light the MIL lamp.

P115C Fault Analysis

Note: This code indicates that the transmission has detected a fault and as a result has requested that the engine be shut down.

The driver may report that the engine has appeared to stall.

1. Connect the WDS. Read and note all logged PCM and TCM DTCs. Confirm that P115C is logged. Clear all fault codes.
2. Resolve all other faults and then retest the vehicle. If P115C is logged again, contact Aston Martin Technical Support.

P1233/35/37 Fuel Pump Drive Module

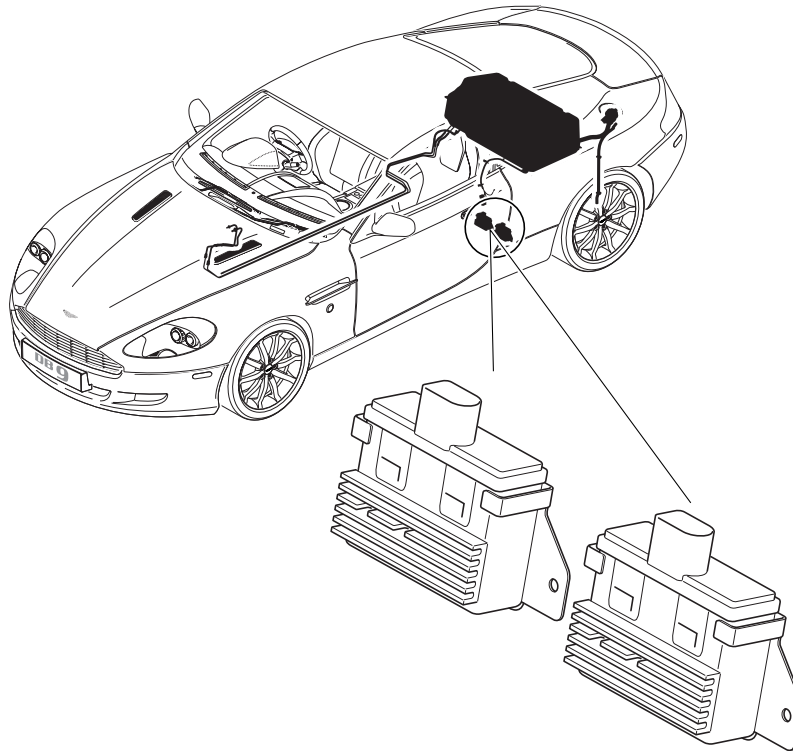


Figure 1. Fuel Pump Drive Module Location

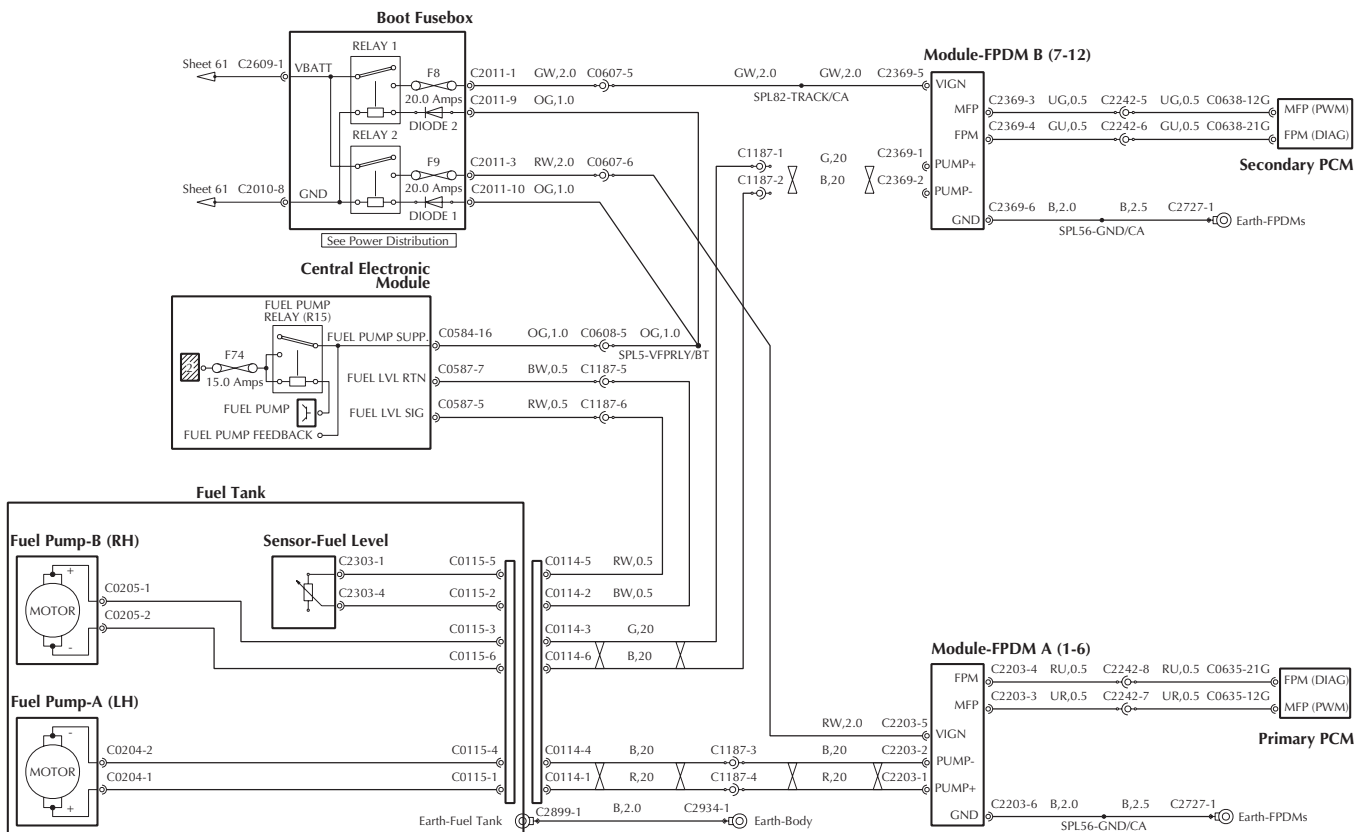


Figure 2. Fuel Pump Drive Module Circuit

Fault Code Description

P1233 - No FPM signal pump module to PCM

P1235 - No monitor signal FPM to PCM

P1237 - Pump or pump wiring fault

a KOER test to ensure that the problem is resolved.

If P1233/35 are still logged, call Aston Martin Technical Services.

MIL Status

Codes P1233 and P1235 will light the MIL lamp.
Code P1237 will not light the MIL lamp.

P1233/35/37 Fault Analysis

Note: On the circuit diagrams, MPF is the pulse width modulated signal which drives the fuel pumps. FPM is the Fuel Pump Monitor diagnostic signal.

1. Connect the WDS and confirm that either P1233/35 or 1237 is logged. Note and clear all logged codes.

2. Swap the FPDM connectors side to side. Run a KOER test. Check for DTC codes. If the P1233/35 or 1237 fault has swapped to the alternative PCM, replace the fuel pump drive module.

If the fault has not swapped sides, FPDM is OK go to step 3.

3. If P1237 is logged, go to step 4. For other FPDM codes, go to step 5.
4. If code P1237 is logged, disconnect the FPDM. Perform a continuity check across the fuel pump.

The pump motor resistance should be approximately 4Ω . If the resistance reading is significantly different, access the evap loss flange, disconnect the loom connector and repeat the pump motor resistance check.

If the resistance is now correct, service the harness wiring as necessary. Reconnect all components. Clear the fault code and run a KOER test to ensure that the problem is resolved.

If the resistance is still incorrect, replace the fuel pump. Reconnect all components. Clear the fault code and run a KOER test to ensure that the problem is resolved.

5. Install the break-out box to the PCMs. Perform continuity checks on the PCM to FPM lines.

If a circuit fault is detected, service the wiring as necessary. Reconnect all electrical plugs and run

P1270 - Engine Reached Maximum Rev Limit

Fault Code Definition

P1270 - This code indicates that the engine speed has exceeded the maximum limit.

MIL Status

This code will not light the MIL lamp.

P1270 Fault Analysis

Note: This code may be logged if the vehicle has been subject to any of the following conditions:

Excessive wheel slip on ice, snow, etc.

Excessive engine RPM in neutral

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

Note: This code is included to indicate that the driver has reached the engine rev limit. There may be a complaint of misfiring at high engine speed. This code gives the dealer an explanation for the customers perceived misfire when no misfire codes are logged.

1. Connect the WDS. Record the logged DTCs and then reset the PCM.
2. Check the vehicle history for evidence of hard driving or similar operation of the engine to its limits.

If there is evidence of operating the vehicle to its limits, reset the PCM and run the engine. Briefly accelerate the engine to about 6000 rpm and let it return to idle. Accelerate the engine to about 6000 rpm again and let it return to idle.

Check for logged DTCs.

If P1270 is not logged again, there is no evident engine fault. Testing is complete.

P1336 - Crankshaft/Camshaft Range or Performance

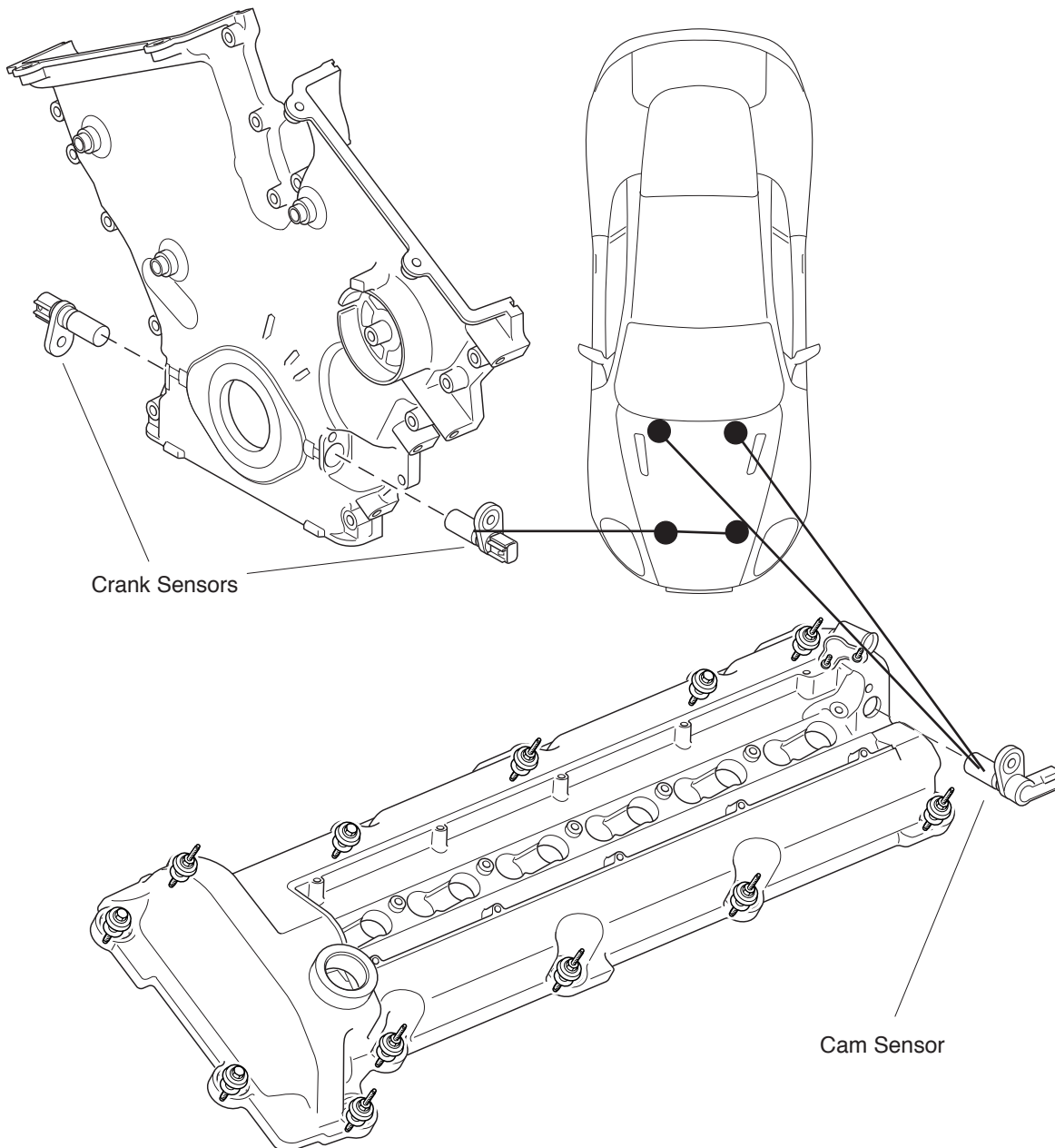


Figure 1. Crankshaft and Camshaft Sensor Locations

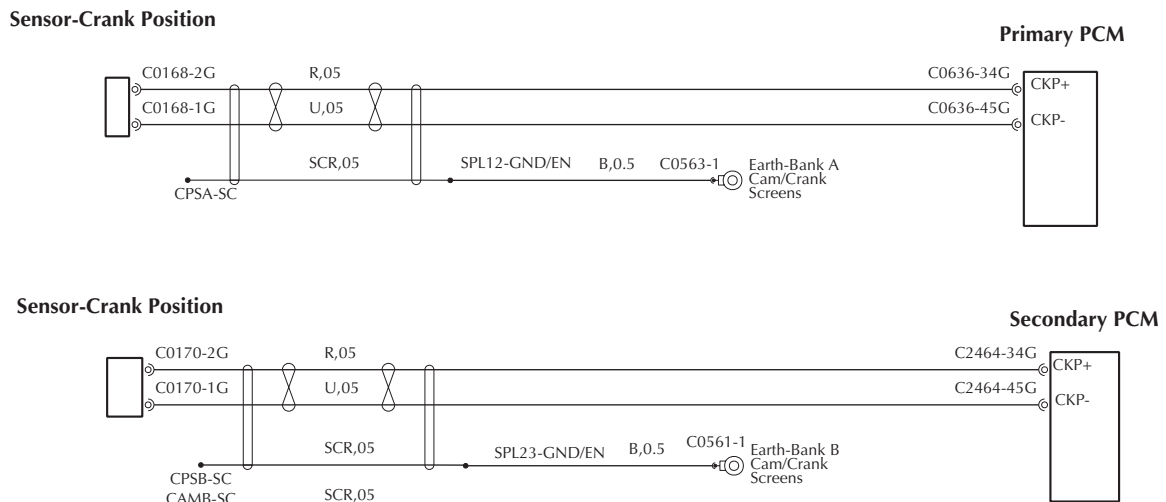


Figure 2. Crankshaft and Camshaft Sensor Circuits

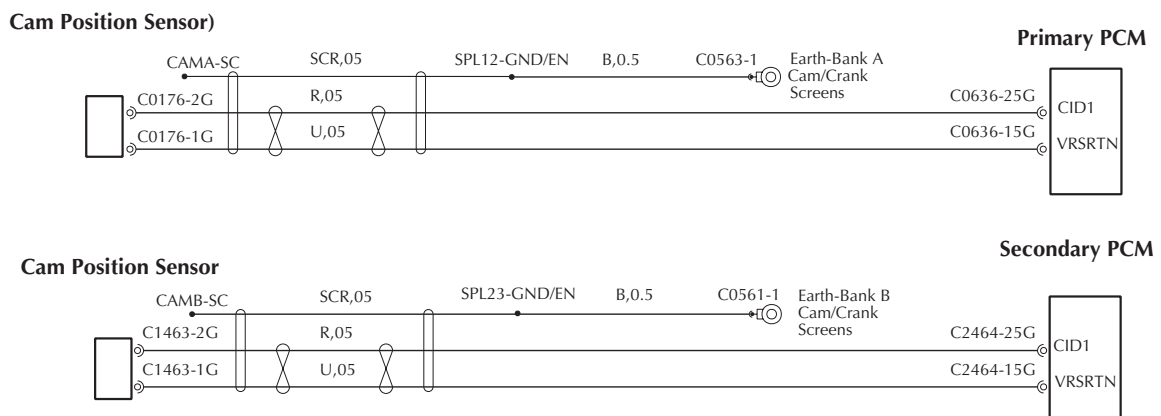


Figure 2. Camshaft Sensor (CID) Circuit

Fault Code Definition

P1336 - Crankshaft/Camshaft sensor range or performance

MIL Status

This code will light the MIL lamp.

P1336 Fault Analysis

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Connect the WDS and confirm that P1336 is logged. Note any other logged DTCs.
2. If any of P0315, P0340 or P0345 are logged, resolve these problems first and return to this pro-

cedure only if P1336 is logged again after clearing the P0315, P0340 or P0345 codes.

3. Using the datalogger, record the CKP and CID signals for both banks during a KOER test.

Stop the test and compare the recorded signal traces. Each CID (camshaft sensor) pulse should occur once every engine revolution. Go to step 4.

4. If any CID pulse is missing or malformed, swap the camshaft sensors bank to bank and repeat the datalogger check.

If the fault swaps to the opposite bank, replace the faulty camshaft sensor. Clear the P1336 code and run a KOER test to ensure that the problem is resolved.

If the fault remains on the original engine bank, service the camshaft sensor wiring as necessary. Clear the P1336 code and run a KOER test to ensure that the problem is resolved.

P1397 - System Voltage

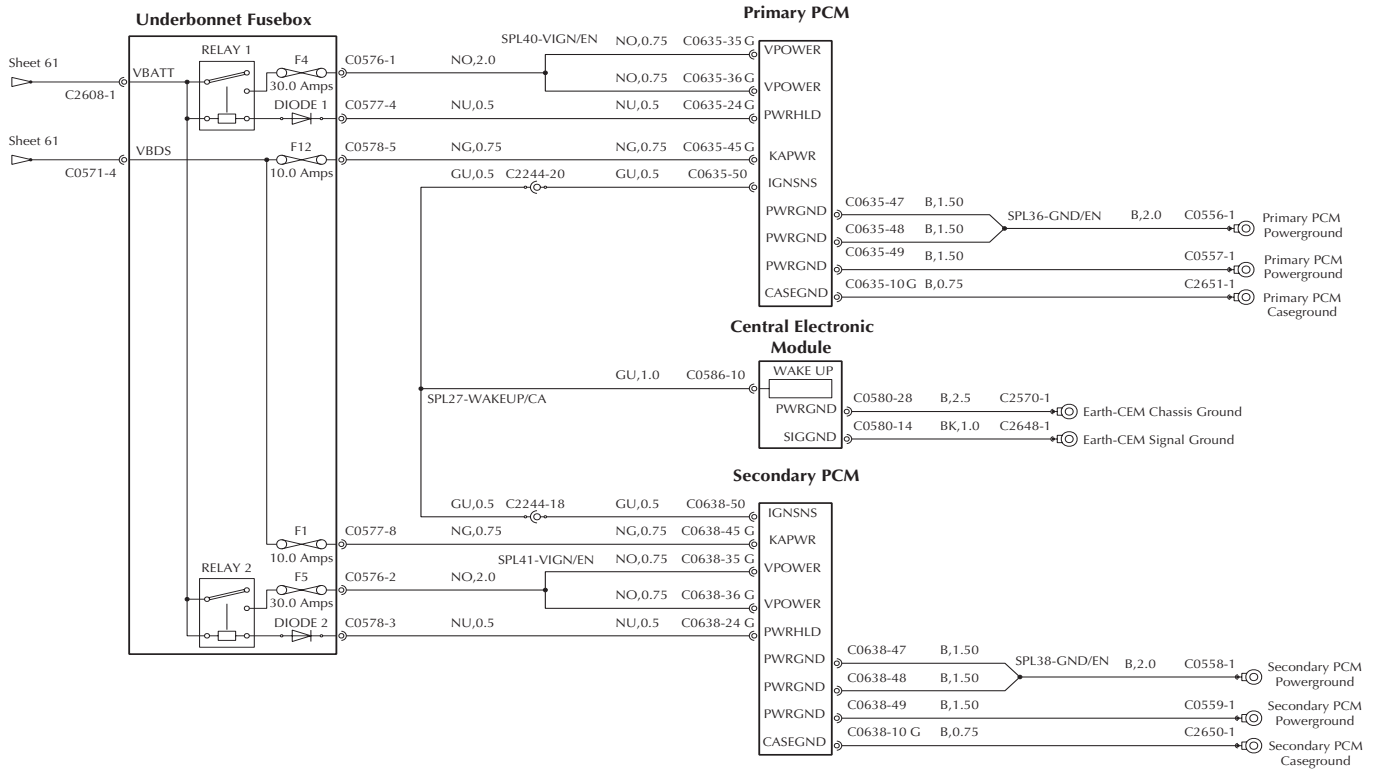


Figure 1. PCM System Power Circuits

Fault Code Definition

P1397 - This code indicates that the system voltage is outside its self-test range.

MIL Status

This code will not light the MIL lamp.

P1397 Fault Analysis

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Connect the WDS and confirm that P1397 is logged. Note which PCM has recorded the fault.
2. Access the underbonnet fusebox. Switch on the ignition and measure the VPower voltage level at fuse F4 (Primary PCM) or at F5 (Secondary PCM).
3. If Vpower at either fuse is below 12.5 volts, Complete the charging system check at the end of this procedure. Return to step 4 of this procedure only if P1397 is logged again after satisfactory completion of the battery charging check.

If VPower is above 12.5 volts at both fuses, go to step 4
4. Check the VPower voltage at the battery whilst cranking the engine. If the voltage drops below 9.6 volts, the battery is defective, replace the battery.

If the voltage at the battery remains above 9.6 volts, Connect the breakout box to the affected PCM.
5. Monitor the VPower voltage at primary PCM pins C0635-35 and 36 or at secondary PCM pins C0638-35 and 36 whilst cranking the engine. If the voltage drops below 9.6 volts, service the VBATT and VPower circuits as necessary. Clear the P1397 code and run a KOER test to ensure that the problem is resolved.

Battery Charging Check

1. Check the battery voltage at the battery terminals. If the voltage is above 12.5 volts, switch on the headlamps for 4 minutes to remove battery surface charge. Measure the battery voltage again, if above 12.5 volts, go to step 2.

If the voltage is below 12.5 volts, disconnect the battery and re-measure the open circuit voltage.

If the open circuit voltage is below 12.5 volts, replace the battery.

If the open circuit voltage is above 12.5 volts, go to step 2.

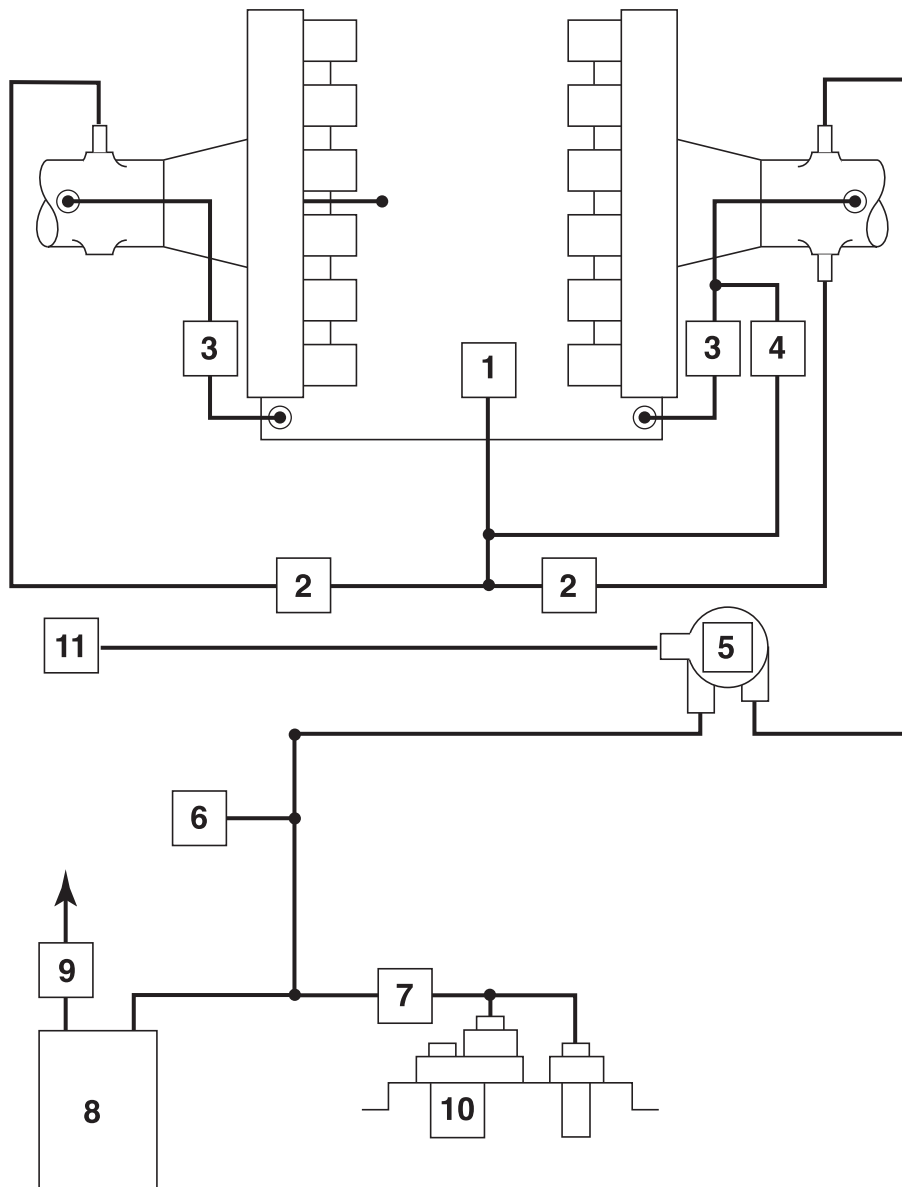
2. Reconnect the battery and start the engine. Switch on the headlamps.

Run the engine at 2000 rpm and measure the battery voltage at the battery terminals.

If the charging voltage reaches 13.8 volts, the charging system is serviceable.

If below 13.8 volts, the charging system is suspect. Service the charging system as necessary. Clear the P1397 code and run a KOER test to ensure that the problem is resolved.

P1450 - Evaporative Emission Control



- | | |
|-------------------------------|----------------------------------|
| 1. Oil Separator | 6. Service Port |
| 2. PCV Valve | 7. Fuel Tank Pressure Transducer |
| 3. Check Valve | 8. Carbon Canister |
| 4. Relief Valve | 9. Canister Vent Valve |
| 5. Vapour Management Valve-RH | 10. Fill Limit Vent Valve |
| | 11. Test Port |

Figure 1. Evaporative Loss System

Fault Code Definition

P1450 - Unable to hold tank vacuum (gross leak)

MIL Status

This code will light the MIL lamp.

P1450 Fault Analysis

Note: The evaporative emission control system is checked by closing the canister vent valve and pulling a small vacuum in the fuel system. The vapour management valves are then closed and the vacuum is monitored using the fuel tank pressure sensor.

1. Key off, connect the WDS or scan tool.
Key on, engine off. Check all logged DTCs.
2. Run the WDS Evaporative loss system leak test.
If no fault is detected, go to step 3.
If a leak is detected, check the security and sealing of the filler cap. If any fault is detected, service/replace the cap as necessary and run the leak test again to confirm that the problem is resolved.
3. Park the vehicle in a quiet place. Use the WDS component control function to trigger the vapour management valve on/off (listen for a 'click' as the valve actuates).
If the valve can be heard actuating, go to step 4.
If the valve does not actuate, service the valve or circuit as necessary. Clear the P1450 code and run a KOER test to ensure that the problem is resolved.
4. Use the WDS component control function to trigger the canister vent valve on/off (listen for a 'click' as the valve actuates).
If the valve can be heard actuating, go to step 5.
If the valve does not actuate, service the valve or the canister vent valve circuit as necessary. Clear the P1450 code and run a KOER test to ensure that the problem is resolved.

P1463 - Air Conditioning Control

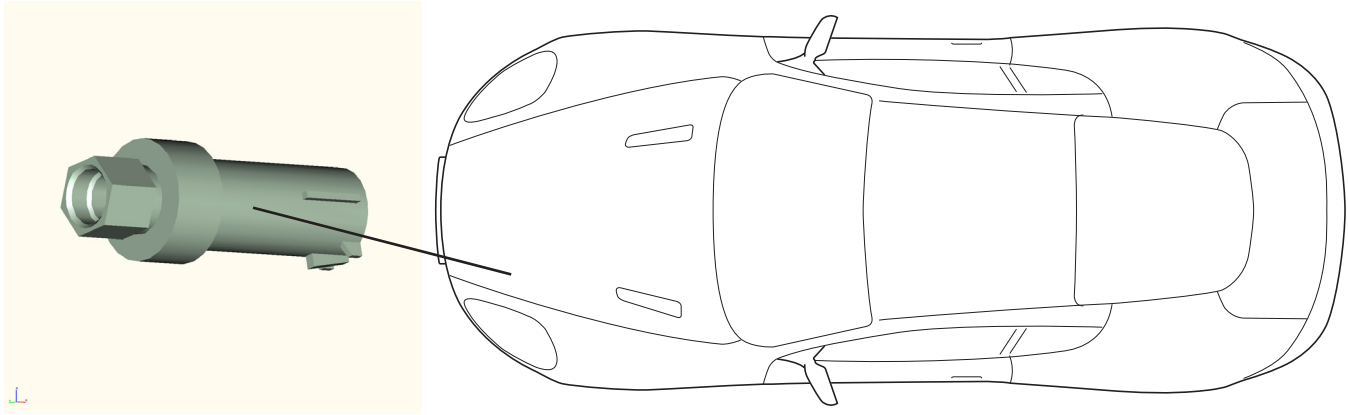


Figure 1. A/C Pressure Sensor Location

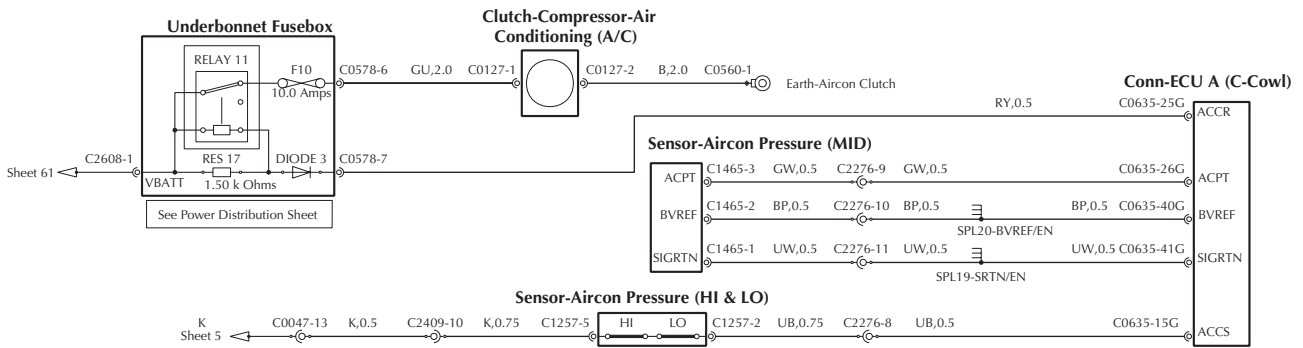


Figure 2. A/C Pressure Sensor Circuit

Fault Code Definition

P1463 - A/C pressure sensor, insufficient pressure change.

MIL Status

This code will not light the MIL lamp.

P1463 Fault Analysis

1. Connect the WDS and confirm that P1463 is logged.
2. Key on. Run the engine until fully warmed up and switch the A/C on. Disconnect the pressure sensor connector. Check the voltage between A/C pressure sensor connector C1257-5 and chassis ground.

If +12 volts is measured, go to step 4.

If less than 12 volts is measured, go to step 3.
3. Repeat the voltage check at aircon module connector C0791-6.

If +12 volts is measured, service the wiring from C0791-6 to C1257-5. Clear the P1463 code.

If less than +12 volts is measured, replace the A/C control module.

Reconnect the A/C pressure sensor and run brief road test with A/C on to ensure that the problem is resolved.
4. Repeat the voltage check at pressure sensor connector C1257-2.

If less than +12 volts is measured, recover the refrigerant. Replace the pressure sensor. Refill the refrigerant and clear the P1463 code. Run a brief road test with A/C on to check that the problem is resolved.

If +12 volts is measured, go to step 5.
5. Connect the breakout box to the primary PCM. Repeat the voltage check at C0635-15.

If less than +12 volts is measured, service the wiring from the pressure sensor to the PCM

If +12 volts is measured, contact Aston Martin Technical Support.

P1464 - Air Conditioning Control

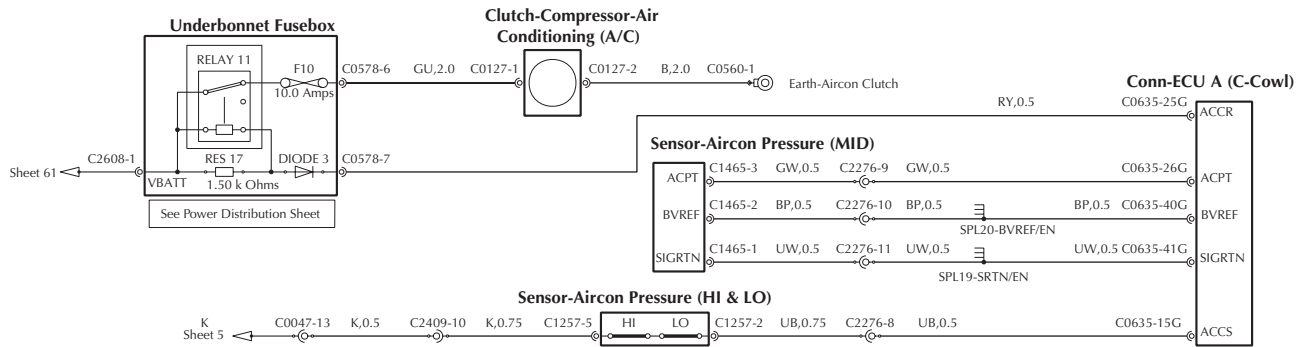


Figure 1. A/C Pressure Sensor Circuit

Fault Code Definition

P1464 - KOEO or KOER - DTC 1464 indicates that the A/C was on during self test.

MIL Status

This code will not light the MIL lamp.

P1464 Fault Analysis - TO DO

P1464 will be logged if the A/C is on or if Defrost is selected during KOEO or KOER self tests. If this is suspected, reset the PCM and rerun the KOEO self test with the A/C and Defrost off. If P1464 is logged again, proceed to step 1.

CAUTION: This code is generated only in the Primary Powertrain Control Module (PCM). Check that you are working on the correct PCM.

1. Key on, engine running and fully warmed up, switch on the A/C (Mode switch from ECO to A/C for immediate response). Monitor the A/C pressure sensor signal at pressure sensor connector C1257-5. The signal level should switch from about 12 volts to below 1.0 volts as the A/C compressor switches on.

Switch off the A/C (Mode switch from A/C to ECO). The A/C pressure sensor signal should drop from below 1.0 volts to about 12 volts as the A/C compressor switches off.

2. If the pressure sensor signal does not correctly follow the A/C switching, suspect a problem with BVREF (+12VDC) or signal return to the pressure sensor.

Fit the breakout box and check continuity between the following points:

BVREF C1465-2 to C0635-40

Signal Return C1465-1 to C0635-41

AC Pressure signal C1465-3 to C0635-26

If any continuity fault is identified, service the wiring as necessary. Clear the P1464 code and run a KOER / A/C on test to ensure that the problem is resolved.

If no continuity fault is identified, replace the A/C pressure sensor. Clear the P1464 code and run a KOER / A/C on test to ensure that the problem is resolved.

P1488 - Exhaust Muffler Bypass Control

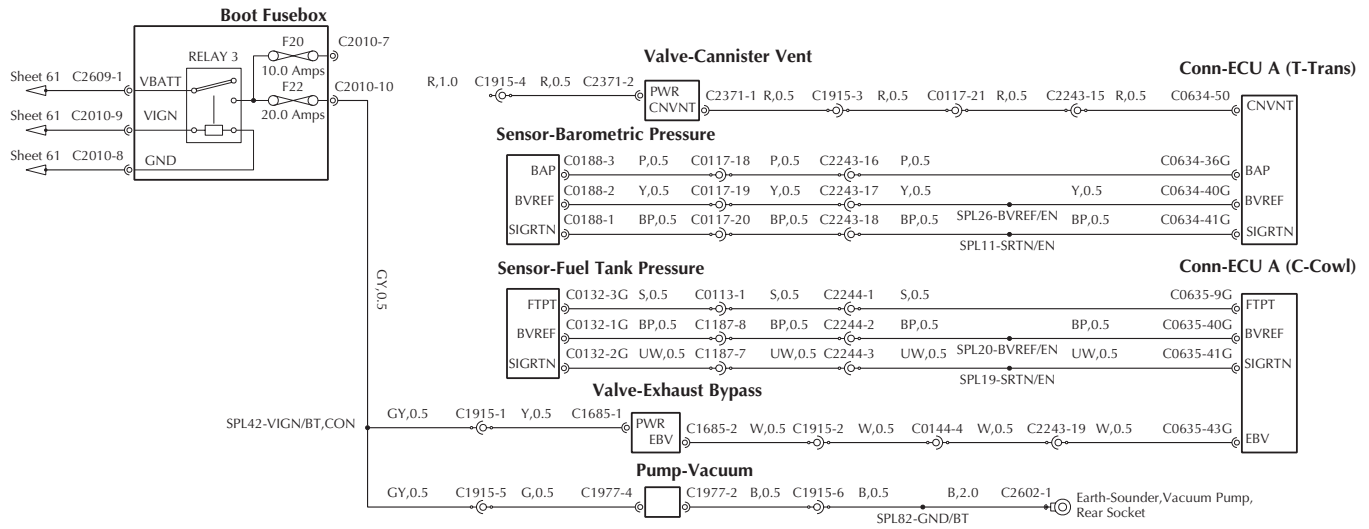


Figure 1. Bypass Control Circuit

Fault Code Definition

P1488 - Exhaust Muffler Bypass Control Circuit.

MIL Status

This code will not light the MIL lamp.

P1488 Fault Analysis

CAUTION: This code is generated only in the Primary Powertrain Control Module (PCM). Check that you are working on the correct PCM.

1. Connect the WDS and confirm that a P1488 code is logged in the primary PCM.
2. Raise the vehicle on a hoist. Ensure that the gearbox is in neutral.
3. Have a colleague observe the bypass valves. Start the engine and 'blip' the throttle. Check if the bypass valves actuate.

If either valve does not actuate, go to step 4.

If the valves actuate, the problem is not present at this time and testing is complete.

4. Check for +12 volts at boot fusebox Fuse 22 with the ignition switched on.

If +12 volts is present, go to step 5.

If +12 volts is not present, service the 12 volt supply circuit to the exhaust bypass system (Boot fusebox relay 3 and F22). Clear the P1488 code and run a KOER test to ensure that the problem is resolved.

5. Switch off the ignition and start the engine. Access the bypass valves. Have a colleague 'blip' the throttle and check if the valves actuate as the throttle is opened.

If either valve does not actuate, check continuity of the bypass valve circuit.

If continuity is good, replace the bypass valve. Clear the P1488 code and run a KOER test to ensure that the problem is resolved.

If there is a continuity fault, service the circuit as necessary. Clear the P1488 code and run a KOER test to ensure that the problem is resolved.

P1500 / P1501 - Vehicle Speed Sensor

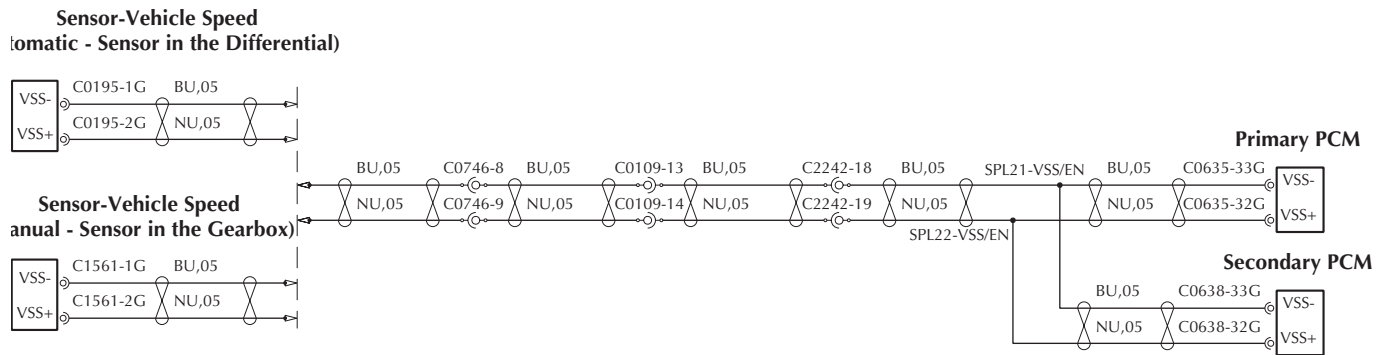


Figure 2. Vehicle Speed Sensor Circuit

Fault Code Definition

P1500 - Intermittent VSS signal

P1501 - VSS signal received during KOER test

MIL Status

These codes will not light the MIL lamp.

P1500, P1501 Fault Analysis

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

Note: This code may be generated by excessive wheel spin when driving on slippery surfaces with traction control switched off.

Note: The VSS sensor is used only in engine management. The speedometer reading is derived from the four ABS sensor signals.

1. Connect the WDS and set up to monitor the VSS and ABS sensor signals during a road test.

Drive the vehicle at normal road speeds and note the indications of the speedometer needle and the indicated speeds from the VSS and ABS sensors. There should be a close correlation between all three signals.

If there is any significant difference between the ABS sensor speed and the indication on the speedometer, check for any ABS codes and resolve these first. Return to this procedure only if P1500-1501 are logged again without any ABS codes.

If the ABS and speedometer readings agree but the VSS reading is different, complete the circuit checks in step 2.

2. a) **Circuit Check - VSS Sensor**

Disconnect the VSS sensor and measure the sensor resistance from pin 1 to pin 2. The sensor resistance should be approximately 780Ω. If in range, continue with this procedure. If out of range, replace the sensor, clear all DTCs and run a road test to ensure that the problem is resolved.

- b) **Circuit Check - VSS to PCM**

Fit the breakout box to each PCM in turn.

Measure continuity from VSS connector pin 1 to primary PCM connector pin C0635-33 or secondary PCM connector C0638-33.

Measure continuity from VSS connector pin 2 to primary PCM pin C0635-32 or secondary PCM connector C0638-32.

If either resistance is greater than 5.0Ω, repair the partial or complete open circuit in the faulty line.

If no circuit faults are identified, go to step 4.

If any circuit faults are identified, service as necessary. Clear the fault code and run the KOER Test to ensure that the problem is resolved.

3. Check the continuity of the VSS signal screening from both the VSS and PCM terminations to chassis ground.

Also check for the proximity of any sources of interference close to the sensor leads. Reroute any suspect sources of radio interference.

If any circuit faults are identified, service as necessary. Clear the fault code and run the KOER Test to ensure that the problem is resolved.

4. If all the previous checks are satisfactory, consult Aston Martin Technical Support.

P1550 Power Steering Pressure Switch

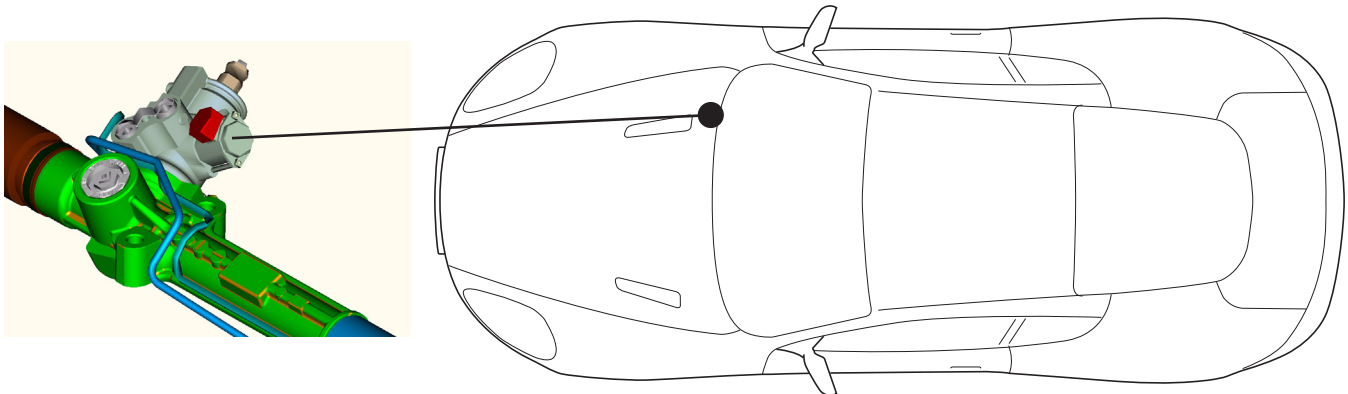


Figure 1. Power Steering Pressure Switch Location

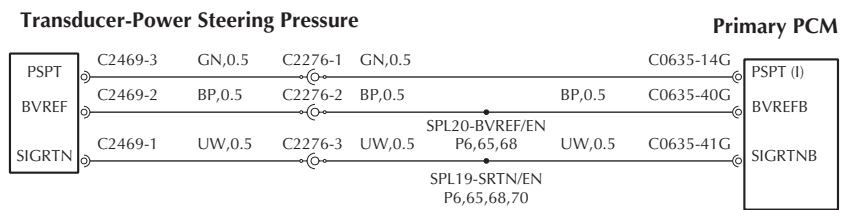


Figure 2. Power Steering Pressure Switch Circuit

Fault Code Definition

If the problem recurs, call Aston Martin Technical Support.

P1550 Power steering pressure sensor out of self test range. (i.e. Pressure sensor actuated during a KOEO or KOER test).

MIL Status

This code will not light the MIL lamp.

P1550 Fault Analysis

1. Connect the WDS and confirm that P1550 is logged. Clear the logged code.
2. Perform a KOEO test, do not move the steering wheel. Check if P1550 is logged again.

If not go to step 3.

If so, the power steering switch is permanently actuated or the signal line is short to ground. Check for short circuits to ground on the signal line.

If a wiring defect is identified, service the wiring as necessary and run a KOEO test to ensure that the problem is resolved.

If no defect is identified, replace the power steering pressure switch and run a KOEO test to ensure that the problem is resolved.

3. Perform a KOER test, move the steering wheel during the test., check that a P1550 code is logged. If a fault code is not logged, go to step 4.

If a fault code is logged, the system is correctly detecting changes in power steering pressure. No fault is present at this time. Testing is complete.

4. Monitor the Power steering switch input to the primary PCM.

Key on, engine running, turn the steering wheel in one direction then the other. Check for change in state of the power steering pressure switch signal (0.5 - 4.5 volts) during wheel movement.

If the signal correctly indicates wheel movement, the fault is not present at this time. Treat this as an intermittent problem.

If the signal does not change state during wheel movement, replace the power steering pressure switch and run a KOEO test to ensure that the problem is resolved.

P1572 - Brake Pedal Switch

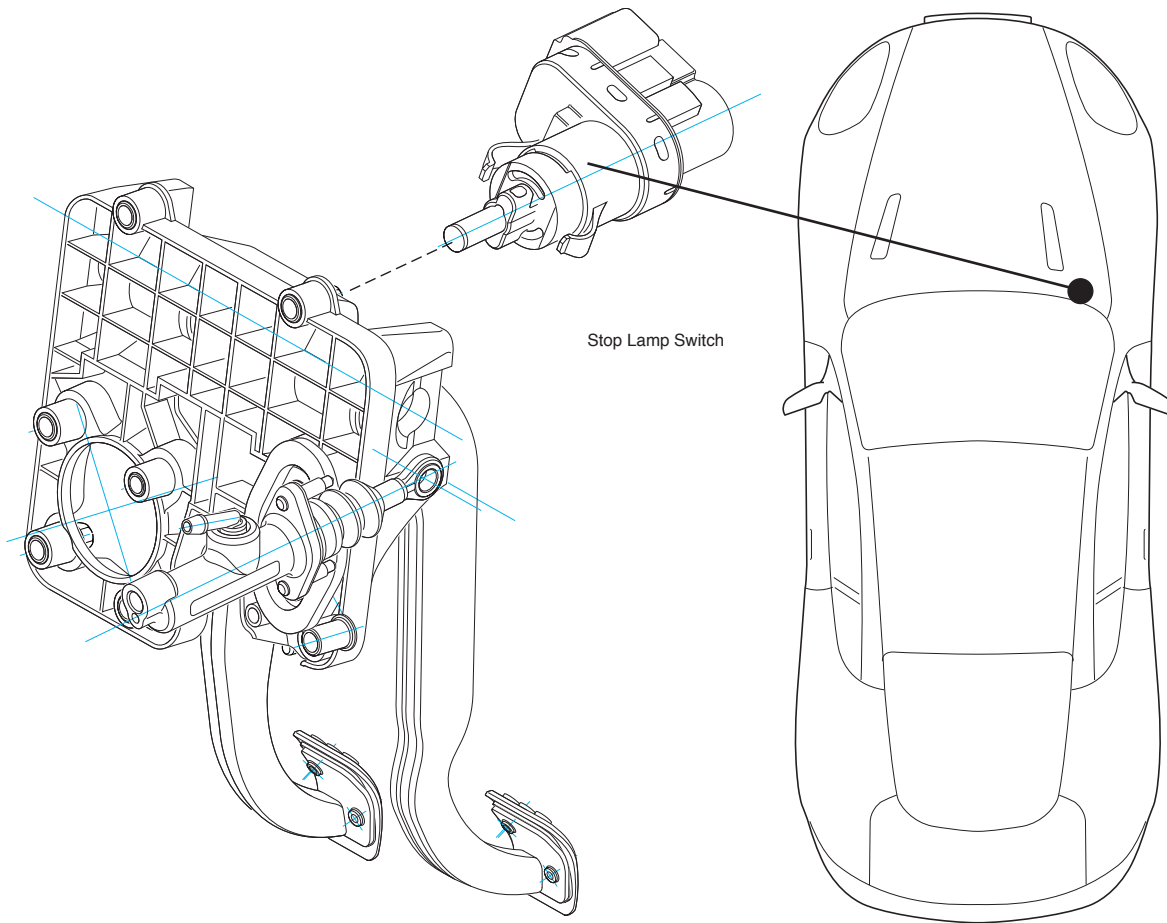


Figure 1. Brake Pedal Switch Circuit

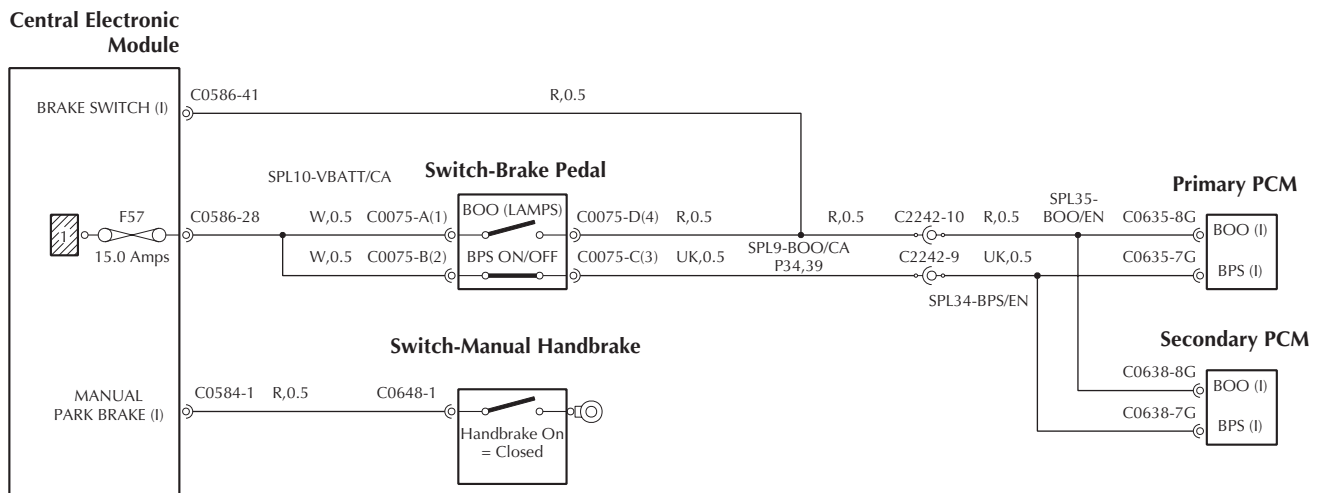


Figure 2. Brake Switch Circuit

Fault Code Definition

P1572 - Brake Pedal Switch Circuit.

MIL Status

This code will not light the MIL lamp.

P1572 Fault Analysis

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Connect the WDS and confirm that a P1572 code is logged and note which PCM has recorded the fault. Clear the P1572 code.
2. Install the breakout box to the PCM in which the P1572 was logged.
3. Brake Pedal Switch (BPS) - Monitor the Brake Pedal Switch signal at either C0635-7 (primary) or C0638-7 (secondary). Press the brake pedal. The BPS signal should switch from 12 to 0 volts when the pedal is pressed and return to 12 volts when the brake pedal is released.

If the signal switches correctly from 12 - 0 - 12 volts when the brake pedal is pressed and released, the fault is not present at this time. Check the connectors for intermittent connections, loose pins, etc. Service the circuit as necessary. Repeat the voltage check to ensure that the problem is resolved.

If the BPS signal does not switch to 0 volts when the brake pedal is pressed, go to step 4.

4. Ignition off. Complete a continuity check from PCM pin C0635-7 (or C0638-7), through the brake switch to Central Electronic Module pin C0586-28. Press and release the brake pedal. Continuity should be broken when the brake pedal is pressed.

If continuity is good but the signal does not go open circuit when the brake pedal is pressed, service/adjust the brake switch as necessary. Clear the p1572 code and retest the circuit to ensure that the problem is resolved.

P1573, P1574 - Throttle Position Not Available

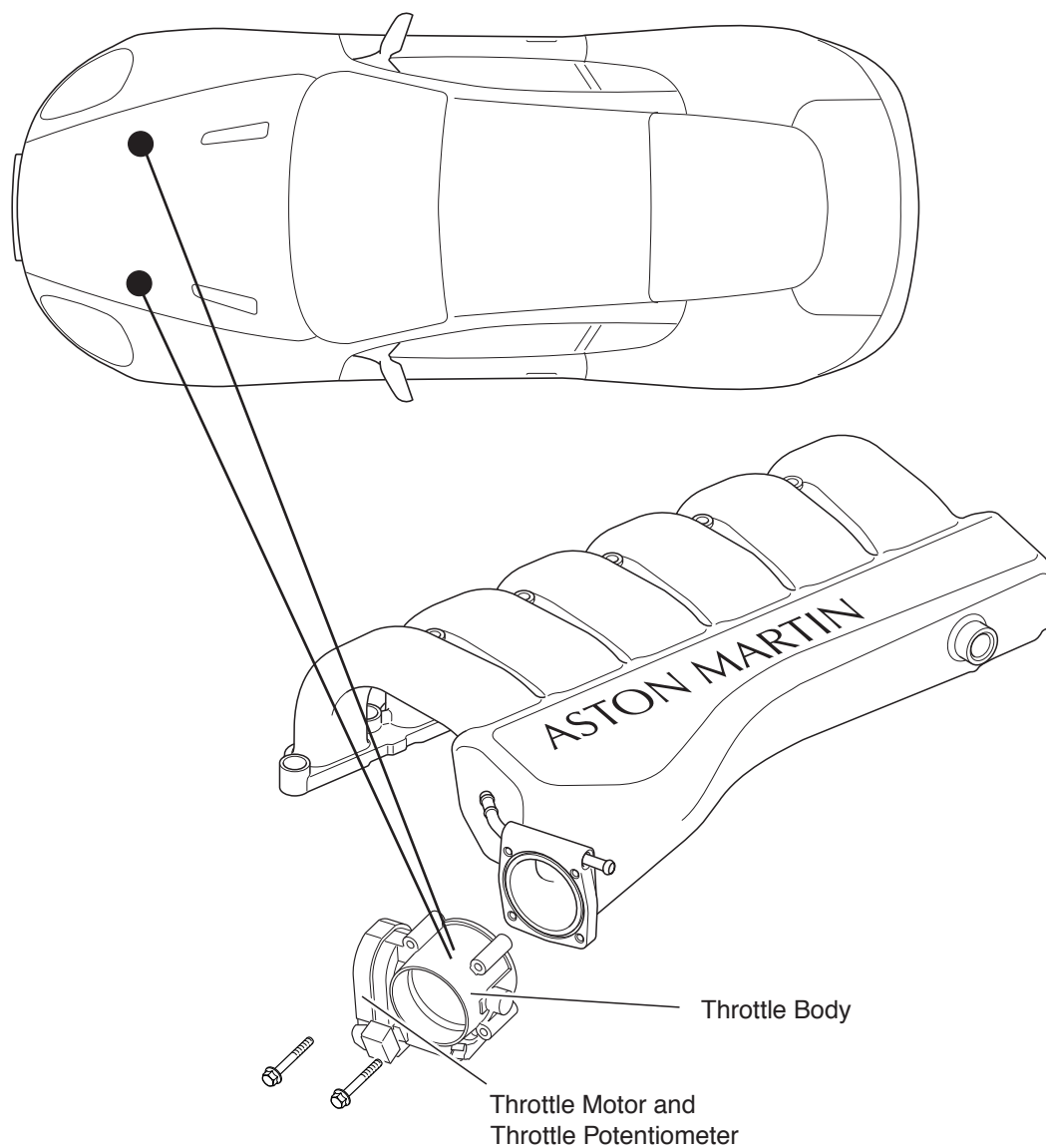


Figure 1. Throttle Potentiometer Location

Fault Code Definition

P1573 - Throttle position not available

P1574 - Throttle position sensor outputs disagree.

MIL Status

This code will not light the MIL lamp.

P1573, P1574 Fault Analysis

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM).

1. Connect the WDS and confirm that P1573 or P1574 is logged. Note all Logged DTCs and then clear the DTC memory.
2. Set the datalogger to monitor all Throttle Position signals on both engine banks.
3. Turn on the ignition and start the datalogger. Press and release the throttle pedal several times. Stop the datalogger and analyse the TP traces.
4. If the TP signal traces accurately follow throttle movements, go to step 5.

If any TP trace does not accurately follow throttle movement, swap the throttle bodies and repeat the test.

If the fault swaps to the other engine bank, the throttle potentiometer is defective. Replace the throttle body and repeat the throttle position test to ensure that the problem is resolved.

If the fault remains on the original engine bank, the throttle circuit is suspect. Service the engine harness as necessary. Repeat the throttle position test to ensure that the problem is resolved.

5. Perform an extended road test with a colleague monitoring all TP readings.

If no fault is identified, the cause of the DTC is not present at this time.

If any fault is identified, resolve it using the procedure in step 4.

P1578, P1579 - Throttle Control Malfunction

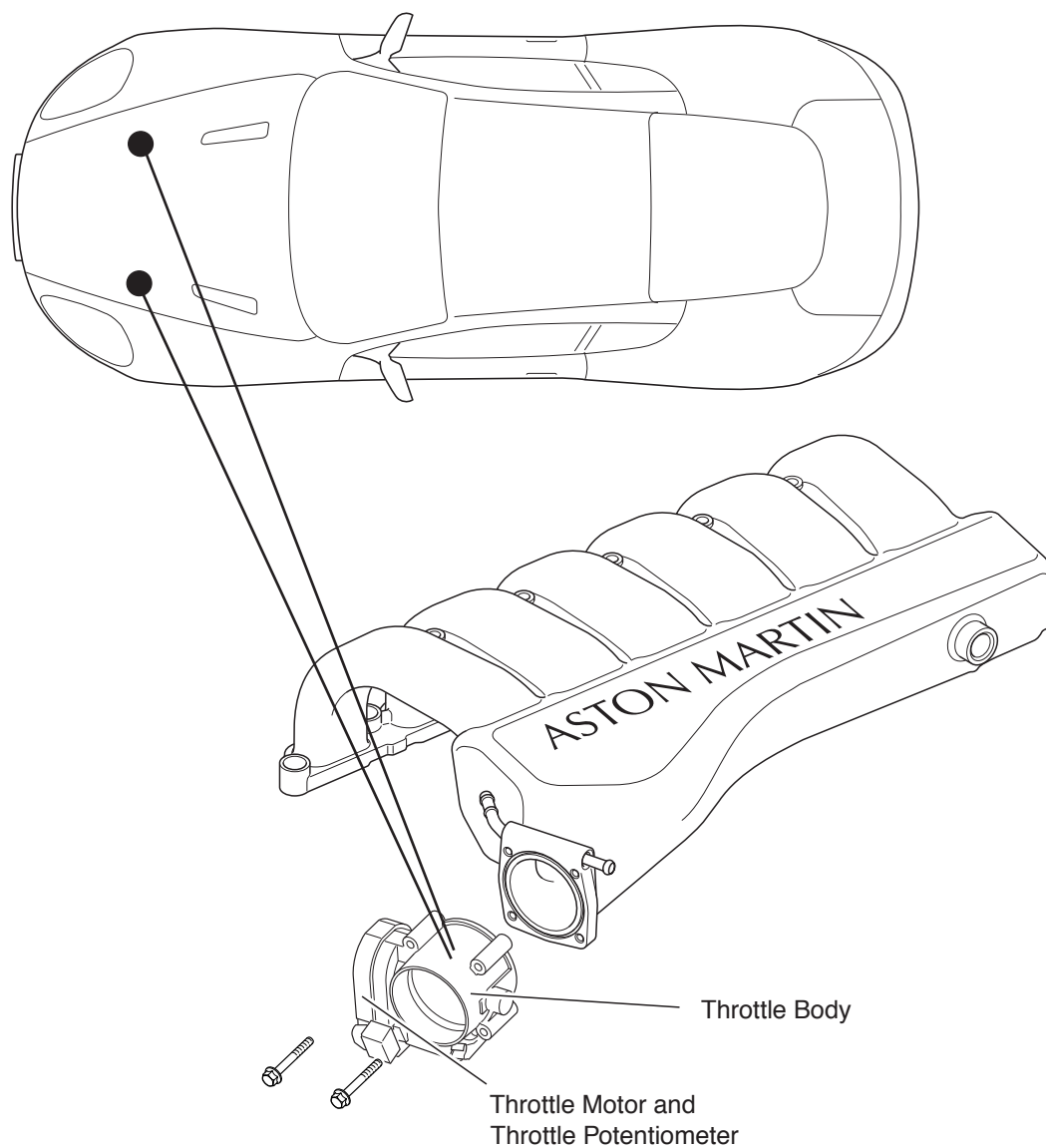


Figure 1. Throttle Potentiometer Location

Fault Code Definition

P1578 - Electronic Throttle Control - Power less than demand.

P1579 - Electronic Throttle Control in power limiting mode.

MIL Status

This code will not light the MIL lamp.

P1578, P1579 Fault Analysis

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM).

1. Connect the WDS and confirm that P1578 or P1579 is logged. Note all Logged DTCs and then clear the DTC memory.

Set the datalogger to monitor all Throttle Position signals on both engine banks.

Disconnect the air trunking to the throttle bodies.

2. Switch on the ignition and monitor throttle movement whilst a colleague presses and releases the throttle pedal several times.

If throttle movement does accurately follow pedal movement, extend the test to see if the cause of the P1578 or P1579 codes can be reproduced.

If either throttle movement does not accurately follow pedal movement, replace the affected throttle body.

Repeat the throttle movement test to ensure that the problem is resolved.

- 3.

P1585, P1587 - Throttle Control Malfunction

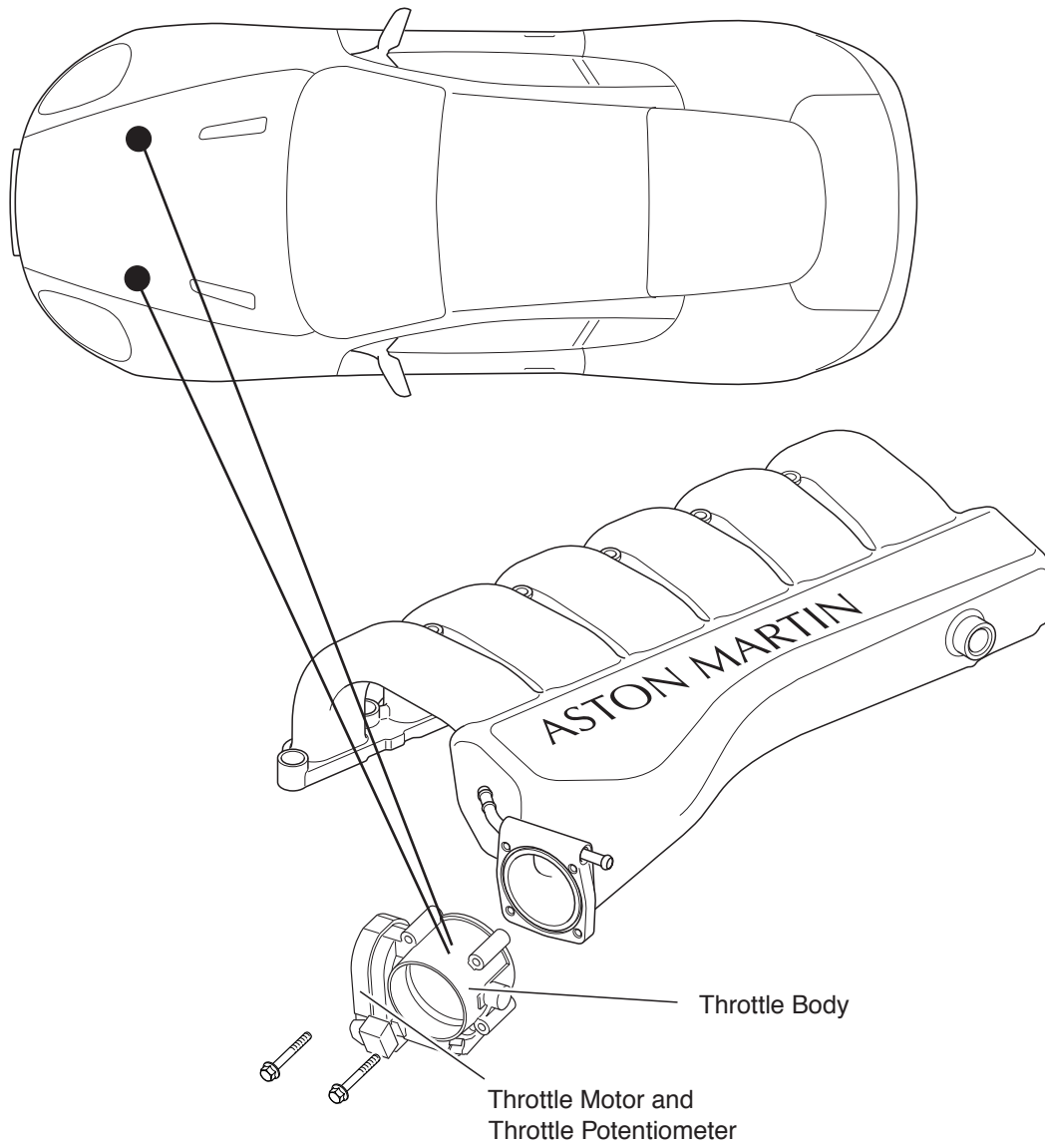


Figure 1. Throttle Potentiometer Location

Fault Code Definition

P1585 - Electronic Throttle Control malfunction.

P1587 - Electronic Throttle Control modulated command malfunction

MIL Status

This code will not light the MIL lamp.

P1585, P1587 Fault Analysis

CAUTION: This code may be generated in the Primary or Secondary Powertrain Control Module (PCM).

1. Connect the WDS and confirm that P1585 or P1587 is logged. Note all Logged DTCs and then clear the DTC memory.
2. Run the engine at a variety of throttle openings, then check if P1585 or P1587 is logged again.

If neither code is logged again, conduct an extended engine run test to ensure that the problem is not repeated.

If either code is logged again, consult Aston Martin Technical Support.

P1603 - TCM Checksum Incorrect

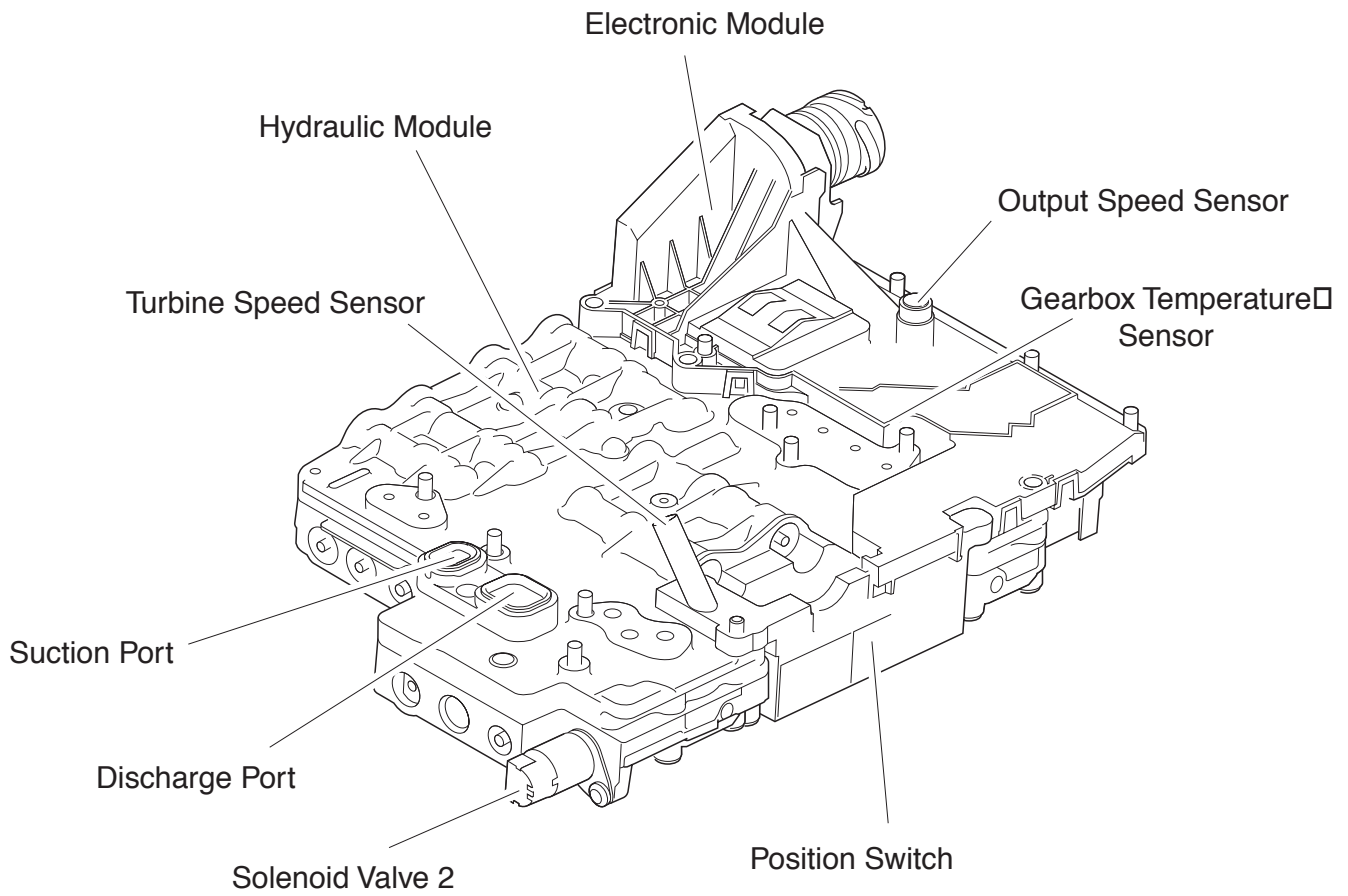


Figure 1. Mechatronic Unit

Fault Code Definition

P1603 - TCM checksum incorrect.

MIL Status

This code will light the MIL lamp.

P1603 Fault Analysis

1. Connect the WDS and confirm that P1603 is logged.
2. Clear the P1603 code. Switch the ignition off and then on again.
3. If P1603 is not logged again, repeat the ignition off/on test several times to ensure that the problem is resolved.

If P1603 is logged again, reflash the TCM and retest to ensure that the problem is resolved.

If P1603 is logged again, consult Aston Martin Technical Support.

P1605 - Battery Buffered RAM Fault (Keep Alive Memory)

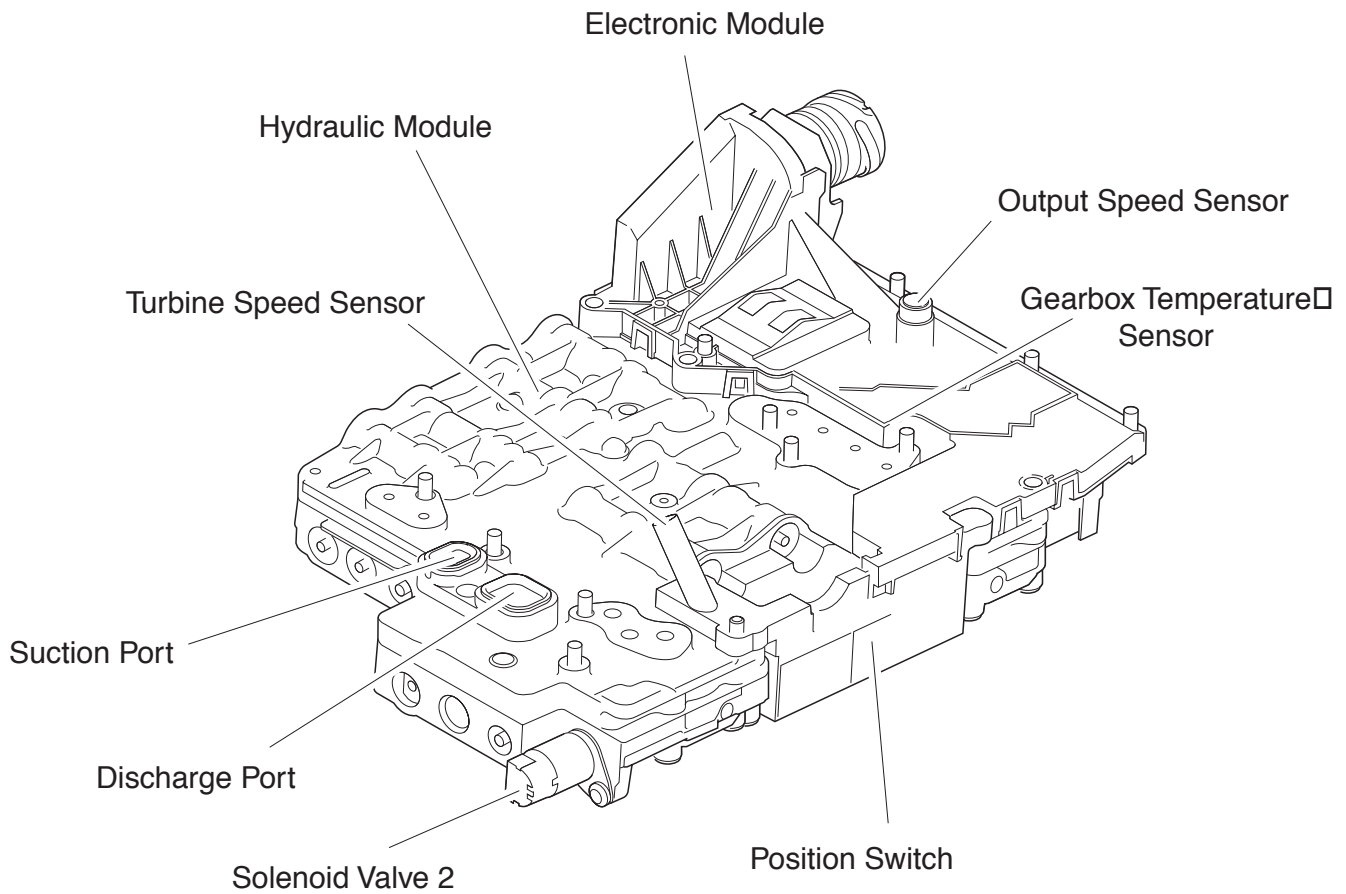


Figure 1. Mechatronic Unit

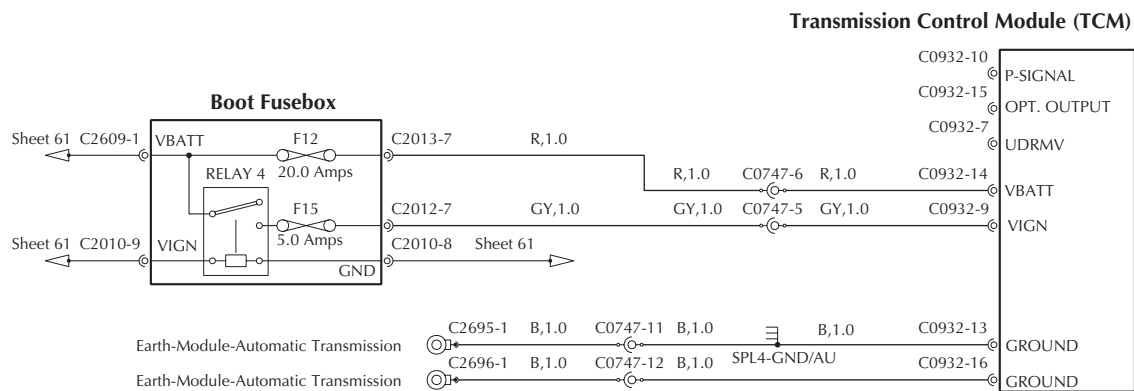


Figure 2. TCM Input Power Circuit.

Fault Code Definition

P1605 - TCM Battery Buffered RAM Fault.

MIL Status

This code will light the MIL lamp.

P1605 Fault Analysis

1. Connect the WDS and confirm that P1605 is logged. Clear the P1605 code.
2. Access the transmission connector C0932.
3. Switch on the ignition and check for 12 volts (VBATT) at C0932 pin 14 on the harness connector.

If 12 volts is measured, check for a damaged pin on C0932 gearbox connector and service if necessary. If the pin is good, go to step 4.

If less than 12 volts is measured, check boot fuse F12 and the VBATT circuit. Service as necessary.

Run a KOEO test to ensure that the problem is resolved.

4. Reflash the TCM and run a KOEO test to see if the problem is solved.

If P1605 is logged again, consult Aston Martin Technical Support.

P1608 - TCM Software Fault

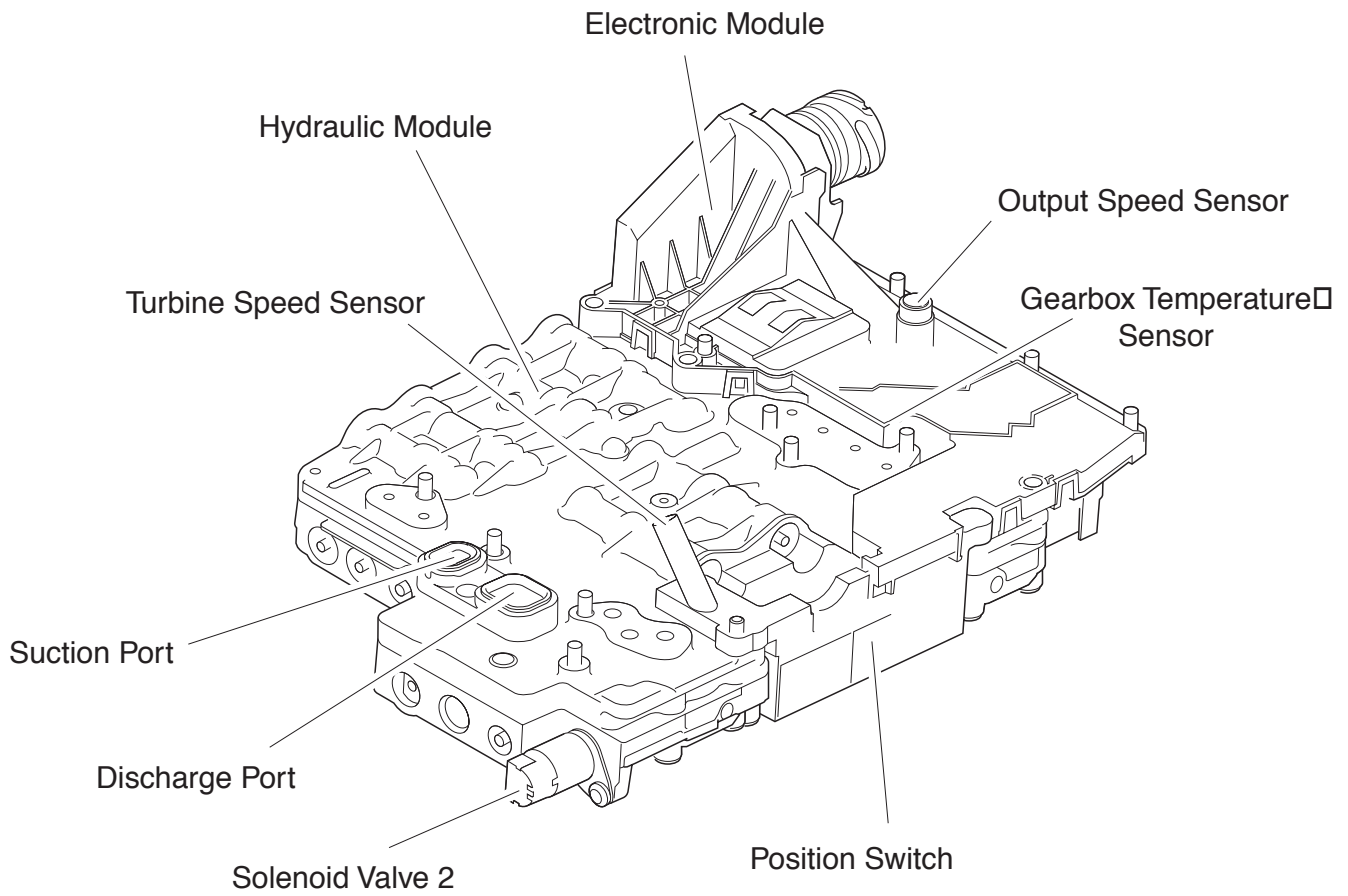


Figure 1. Mechatronic Unit

Fault Code Definition

P1608 - TCM software fault.

MIL Status

This code will light the MIL lamp.

P1608 Fault Analysis

1. Connect the WDS and confirm that P1608 is logged.
2. Clear the P1608 fault code. Switch of the ignition and then switch it on again.
3. Run a road test including a variety of driving styles. Include Touchtronic Mode with up and down shifts.

Also include Automatic Mode with shifts through the complete gear range.

Also include gentle and more aggressive throttle inputs. Stop the road test.

4. Check if P1608 is logged again.

If P1608 is logged again, contact Aston Martin Technical Support.

P1633 - Lack of Keep Alive Memory (KAM) Power

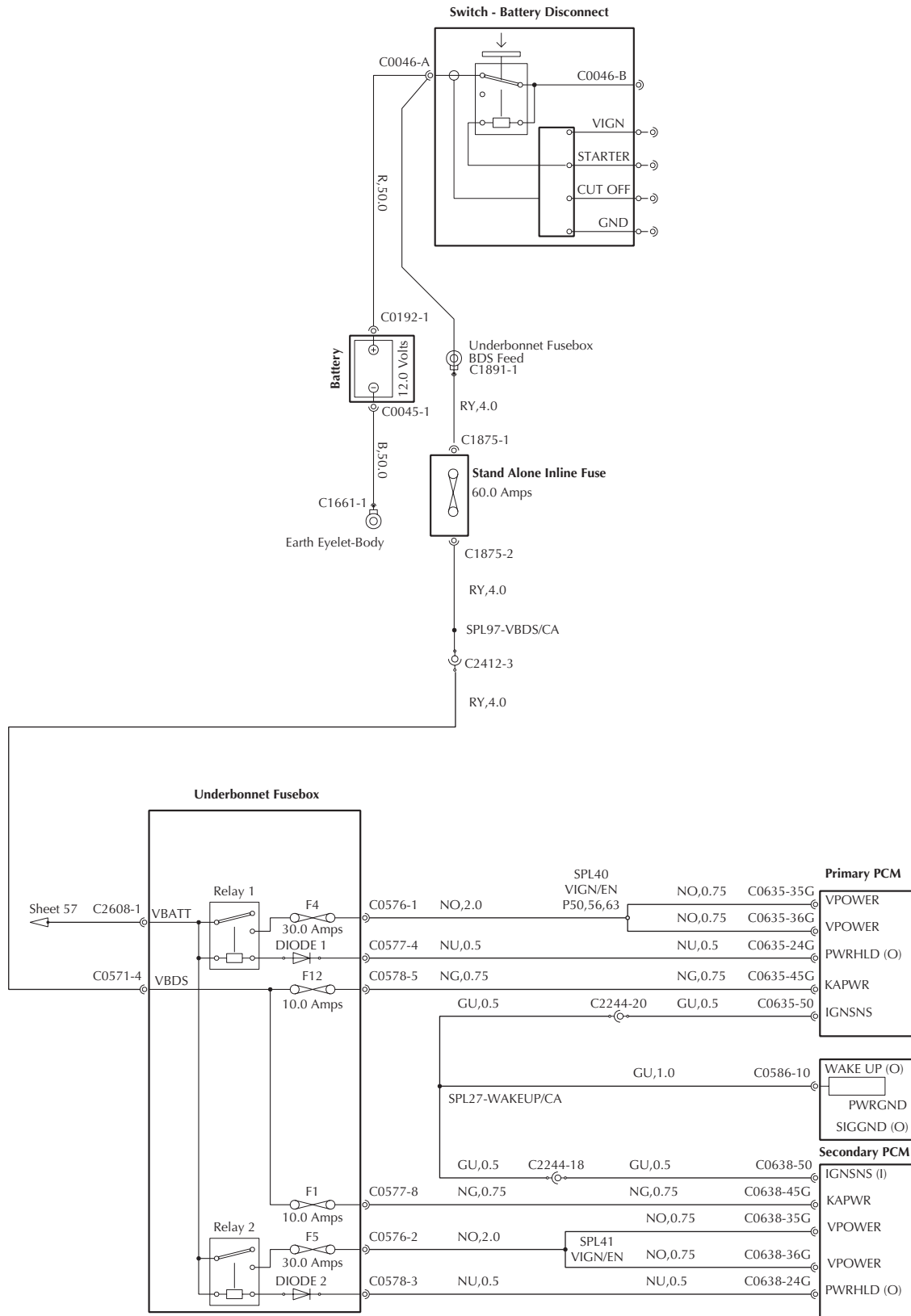


Figure 1. KAPWR Circuit

Fault Code Definition

P1633 - Low or missing KAPWR voltage. This is a MIL code.

P1633 code and run a KOER test to ensure that the problem is resolved.

6. Analyse this fault as an intermittent fault in the KAPWR circuit.

MIL Status

This code will light the MIL lamp.

P1633 Fault Analysis

1. Connect the WDS and record all logged DTCs. Ensure that P1633 is logged. Ensure that the Battery Disconnect Switch is ON.

2. Check the battery voltage. If battery voltage is less than 12.5 - 13.0 volts, service the battery as instructed in the battery care manual. Clear the P1633 code and run a KOER test to ensure that the problem is resolved.

If the P1633 is logged again, go to step 3.

3. Check the condition of the following fuses:

In-Line Fuse 60A

Underbonnet fuse F12 KAPWR to primary PCM

Underbonnet fuse F1 KAPWR to secondary PCM

If the fuses are good, go to step 4

If any fuse is blown, service the KAPWR circuit as necessary. Clear the P1633 code and run a KOER test to ensure that the problem is resolved.

4. Check the voltage from underbonnet fuses F12 and F1 to chassis ground.

If full battery voltage is measured at the fuses, go to step 5.

If less than battery voltage is measured at the fuses, service the battery to fusebox circuit as necessary. Clear the P1633 code and run a KOER test to ensure that the problem is resolved.

5. Connect the break-out box to the suspect PCM. Measure the voltage from primary PCM C0635-45 to chassis ground and from secondary PCM CC0638-45 to chassis ground.

If full battery voltage is measured at both PCMs, go to step 6.

If less than battery voltage is measured at either PCM, service the circuit as necessary. Clear the

P1635 - Tyre / Axle out of Acceptable Range

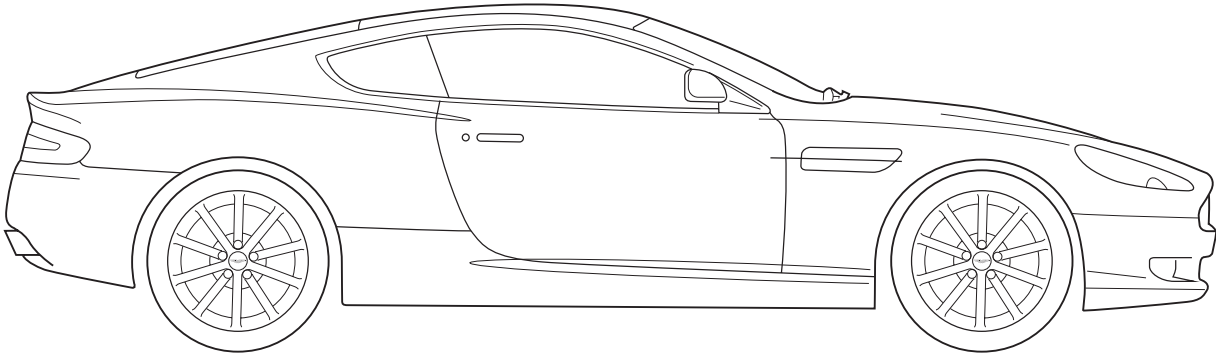


Figure 1. DB9 with correct wheels and tyres

Fault Code Definition

P1635 - Tyre / Axle out of acceptable range.

MIL Status

This code will not light the MIL lamp.

P1635 Fault Analysis

1. Connect the WDS and record all logged DTCs. Ensure that P1635 is logged.
2. Check that the specified wheels and tyres are fitted to the vehicle. Non-standard wheel and tyre combinations may give a rolling radius which is outside that specified for DB9.

If a non-standard wheel / tyre combination is fitted, revert to the recommended wheels and tyres.

If the wheels and tyres are as specified, use WDS to reflash the PCMs. Clear the P1635 code and run a road test to ensure that the problem is resolved.

P1639 - Vehicle Identification Data Block

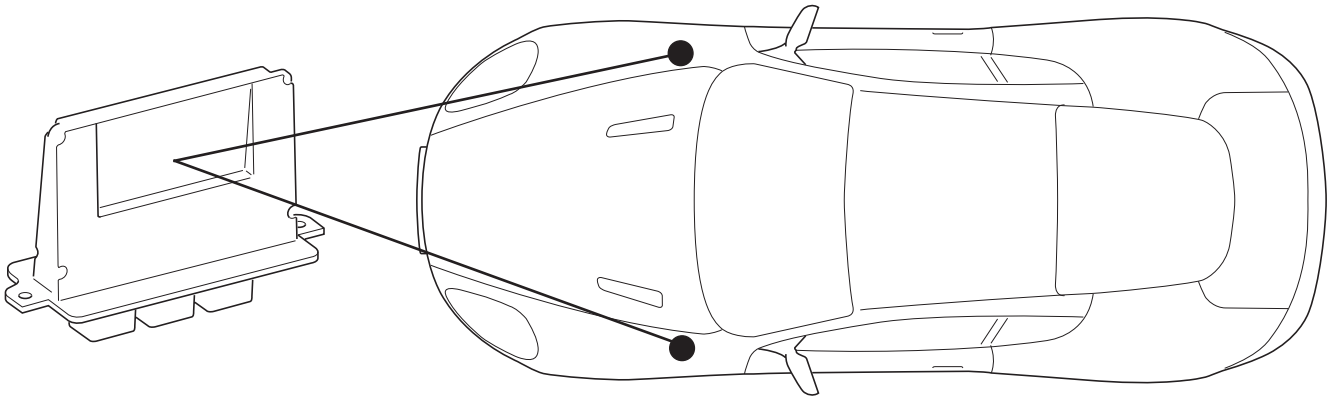


Figure 1. Instrument Pack Communications Circuit

Fault Code Definition

P1639 - Vehicle ID block corrupted or not programmed.

MIL Status

This code will light the MIL lamp.

P1639 Fault Analysis

Connect the WDS and record all logged DTCs. Ensure that P1639 is logged.

1. Reflash the PCM as a new engine control module and enter the Vehicle Identification Number (VIN). Run a KOER test and check if P1639 is logged again.
2. If P1639 is not logged again, the problem is resolved.
3. If P1639 is logged again, replace the PCM and run a KOER test to ensure that the problem is resolved.

P1674 - Network Manager Initialisation Failed

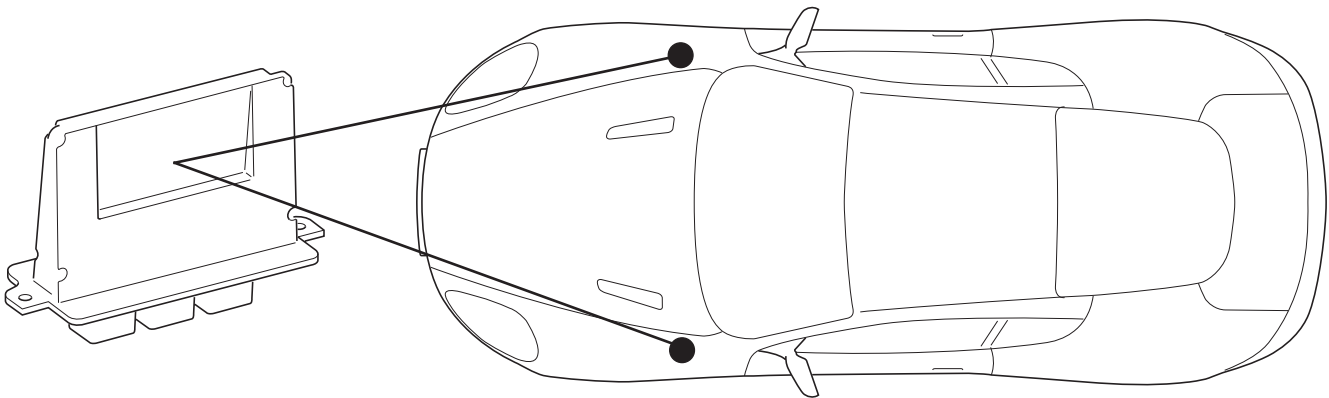


Figure 1. Powertrain Control Module (PCM) Location

Fault Code Definition

P1674 - Network Manager initialisation failed.

MIL Status

This code will not light the MIL lamp.

P1674 Fault Analysis

1. Connect the WDS and record all logged DTCs. Ensure that P1674 is logged. Note the affected PCM.
2. Using the latest WDS disc, reflash both PCMs.
3. Check that no DTCs (Other than P1000) are logged in the DTC memory. Switch off and on the ignition. (PCM power up self test)
4. Read any logged DTCs.

If P1674 is not logged, repeat the power up self test several times to ensure that the problem is resolved.

If P1674 is logged again, replace the PCM. Retest the new PCM to ensure that the problem is resolved.

P1700 - Transmission Indeterminate Failure (Failed to Neutral)

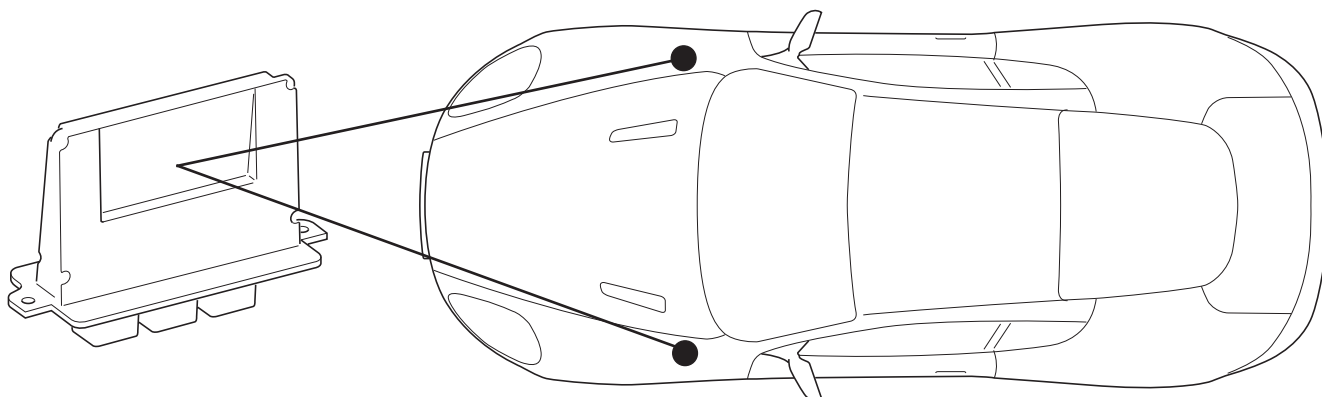


Figure 1. Powertrain Control Module (PCM) Location

Fault Code Definition

P1700 - Transmission Indeterminate Failure (Failed to Neutral).

MIL Status

This code will light the MIL lamp.

P1700 Fault Analysis

Note: This fault indicates a problem detected by the watchdog timer in the TCM. The TCM will automatically disengage any selected gear, i.e. the TCM will fail-safe to neutral to protect the vehicle occupants.

1. Connect the WDS and record all logged DTCs. Ensure that P1700 is logged.
2. Clear the P1700 code. Switch the ignition off and then on again.

Run a road test including driving in all gears. Stop the test and check any logged DTCs.

If P1700 is logged again, go to step 3.

If P1700 is not logged again, repeat the ignition off/on check several times to ensure that the problem is resolved.

3. Clear all logged DTCs.
4. Using the WDS and the latest disc, reflash the TCM. Repeat the ignition on self tests. Check if P1700 is logged.

If P1700 is not logged again, run a road test including driving in all gears. Stop the test and check any logged DTCs.

If P1700 is logged again, replace the Mechatronic Unit. Run a road test again, including driving in all gears to check the new mechatronic unit. Stop the test and check any logged DTCs to ensure that the problem is resolved.

P1703 - Brake Switch Out of Self Test Range

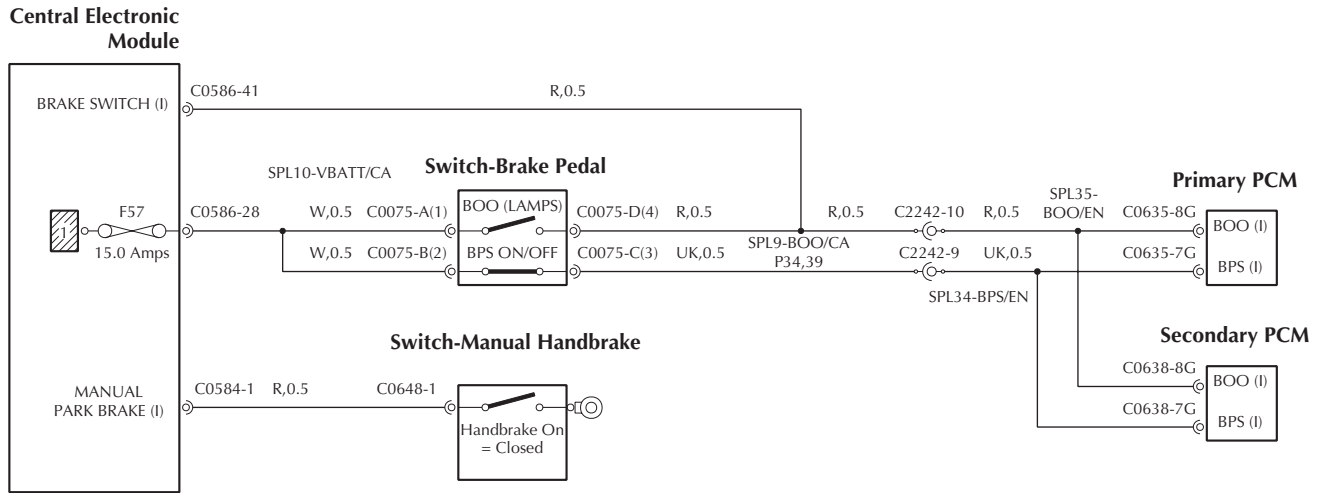


Figure 1. Brake Switch Circuit

Fault Code Definition

P1703 - Brake switch out of self test range.

MIL Status

This code will not light the MIL lamp.

P1703 Fault Analysis

Note: During a KOER Test, the brake pedal must be fully pressed and released at some time during the test. If this is not done, a P1703 will be logged.

1. Connect the WDS and record all logged DTCs. Ensure that P1703 is logged.
2. Note and then clear all logged DTCs.
3. Using WDS, run a KOER test. Ensure that the brake pedal is fully pressed and released at some time during the test.
4. Read any logged DTCs and check if P1703 is logged.

If P1703 is not logged, the cause of the problem was incorrect procedure during a KOER test.

If P1703 is logged, service the brake switch circuit as necessary.

If no circuit fault is identified, check and if necessary reset the brake switch adjustment.

Clear all logged DTCs and run the KOER test again, including correct brake switch actuation, to ensure that the problem is resolved.

P1707 - Parklock Engage Release Failure (Without driver request)

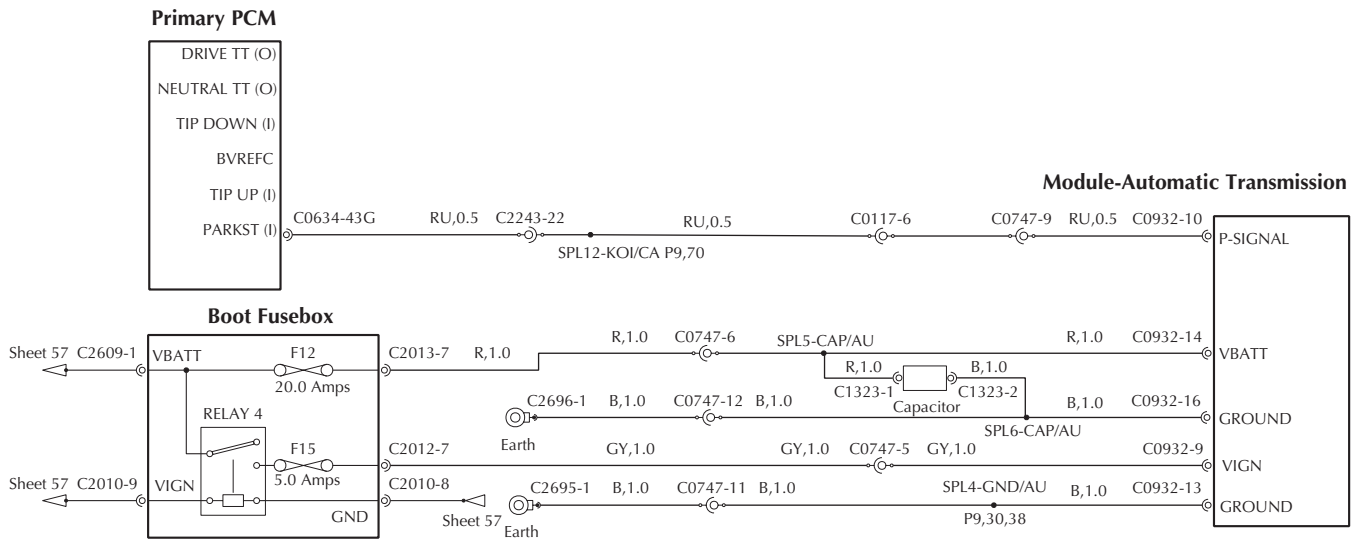


Figure 1. Park Status Circuit

Fault Code Definition

P1707 Park / Neutral signal fault.

MIL Status

This code will not light the MIL lamp.

P1707 Fault Analysis

1. Connect the WDS and confirm that P1707 is logged. Clear the P1707 code.
2. Set the datalogger to monitor the Park/Neutral Status signal (PARKST).
3. With the engine running, switch between Park and Neutral several times. Look for a change in state of the Park/Neutral signal.

If the signal changes state reliably, the fault is not present at this time. Repeat the test several times to ensure that the problem is resolved.

If there is no change in state, carry out the following checks:

Check the transmission fluid level, top up if necessary (Workshop Manual Procedure). Recheck the park/neutral switch operation.

If the switching operation between park and neutral is now reliable, testing is complete.

If the switching operation is not reliable, replace the mechatronic unit, repeat the park to neutral switching test to ensure that the problem is resolved.

If the fault recurs, replace the gearbox. Retest to ensure that the problem is resolved.

P1709 - Clutch Switch Fault During KOEO Test

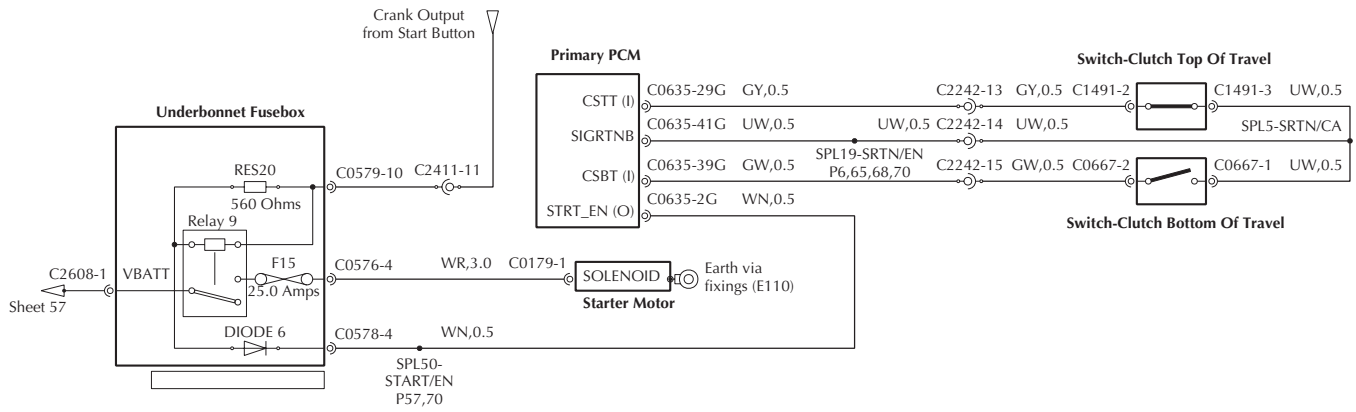


Figure 1. Clutch Switch Circuit

Fault Code Definition

P1709 Clutch switch fault during KOEO self-test.

Manual Cars Only

MIL Status

This code will not light the MIL lamp.

P1709 Fault Analysis

1. Connect the WDS and confirm that P1709 is logged. Clear the logged fault code.
2. Set datalogger to monitor the clutch switch signals. Switch on the ignition. Press and release the clutch several times. The CSTT and CSBT signals should follow the changes in clutch status.

If the signals do correctly follow changes in clutch status, repeat the test again to ensure that the problem is no longer present.

If the signals do not change status, go to step 3.

3. Check the physical adjustment of the clutch switches.

If the switches are maladjusted, service the switch assemblies as necessary. Repeat the clutch switch signals test to ensure that the problem is resolved.

If the clutch switches are physically serviceable and correctly adjusted, go to step 4.

4. Check continuity of the clutch switch signal lines from C1491-2 to Primary PCM connector C0635-29 for the top of travel signal and from C0667-2 to C0635-2 for the bottom of travel signal. Also check from C0667-1 and C1491-3 to primary PCM connector C0635-41 for the signal return line.

Service any defects and repeat the clutch switch signals test to ensure that the problem is resolved.

P1712 - Transmission Torque Reduction Request Signal)

Fault Code Definition

P1712 Transmission torque reduction request signal fault.

MIL Status

This code will light the MIL lamp.

P1712 Fault Analysis

1. Connect the WDS and confirm that P1712 is logged. Note all logged DTCs and clear the DTC memory.
2. Check the software levels in the PCMs and TCM against the latest WDS disc. Reflash the PCMs and the TCM.
3. Run a brief road (or rolling road) test including several upshifts and downshifts. Stop the test and recheck if P1712 is logged again.
4. If P1712 is logged, consult Aston Martin Technical Support.

P1719 - CAN Data Bus - Torque Signal

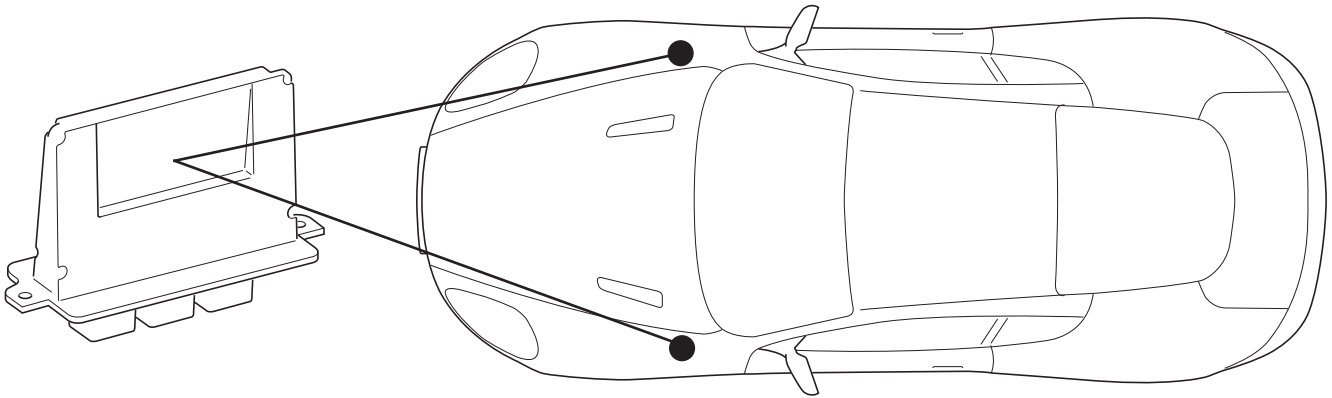


Figure 1.

Fault Code Definition

P1719 - CAN torque signal defective, Failure in alive counter or checksum.

P1719 Fault Analysis

1. Connect the WDS and record all logged DTCs. Ensure that P1719 is logged. Note all other DTCs.
2. Resolve all other DTCs first and return to this procedure if P1719 is logged again.
3. Check that the latest software level is installed in the PCMs and TCM. If not, reflash the PCMs and TCM as necessary and retest to ensure that the problem is resolved.
4. If P1719 is logged again after reflashing the control modules, call AM Tech Support

P1745 - TCM Internal Fault

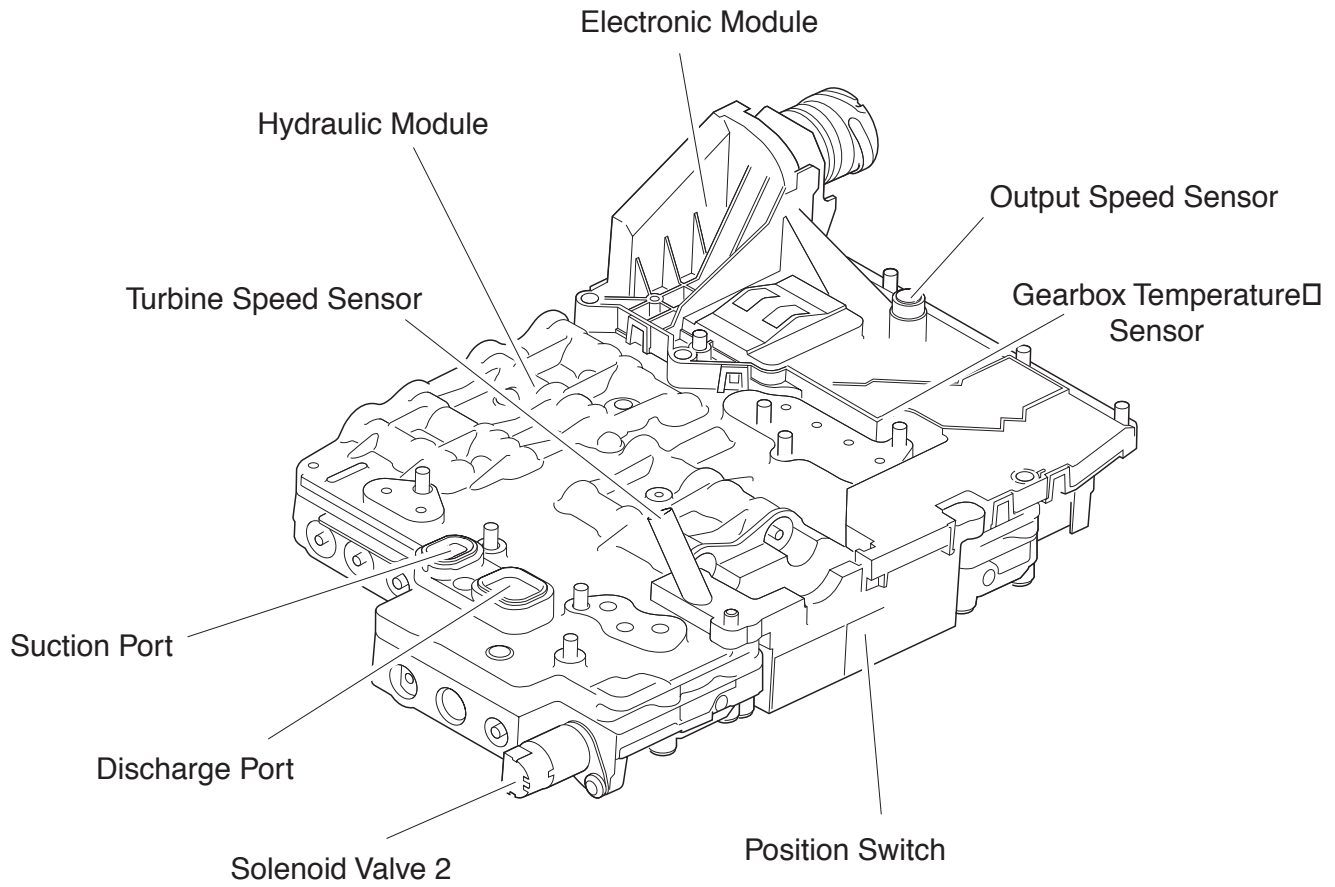


Figure 1. Mechatronic Unit

Fault Code Definition

P1745 - TCM internal short circuit.

P1745 Fault Analysis

1. Connect the WDS and record all logged DTCs. Ensure that P1745 is logged.
2. Clear the P1745 code. Switch the ignition off and then on again.
3. If P1745 is not logged again, start the engine and shift between P, R, N and D. Recheck that P1745 is not logged again.

If P1745 is not logged, the problem is resolved.

If P1745 is logged again, call AM Tech Support.

P1789 - Battery Voltage

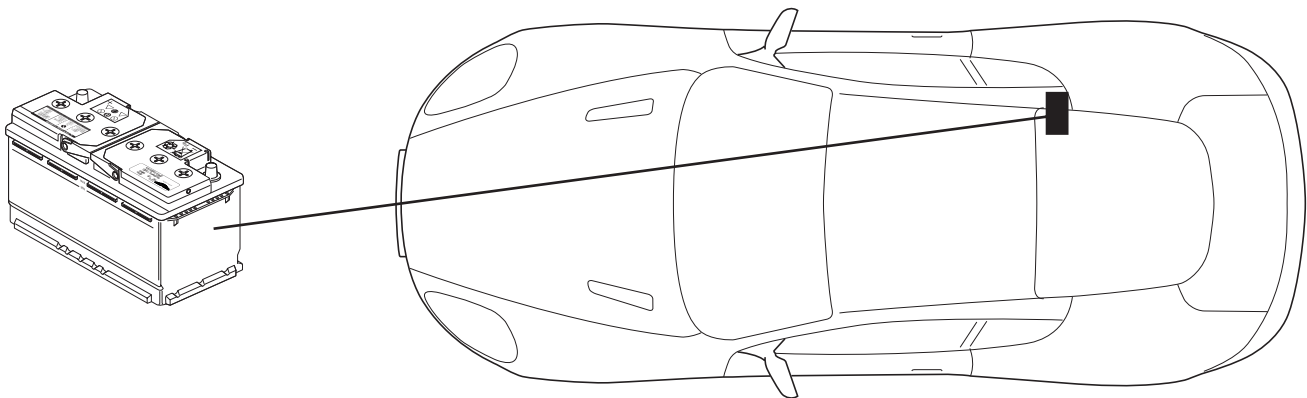


Figure 1. Battery Location

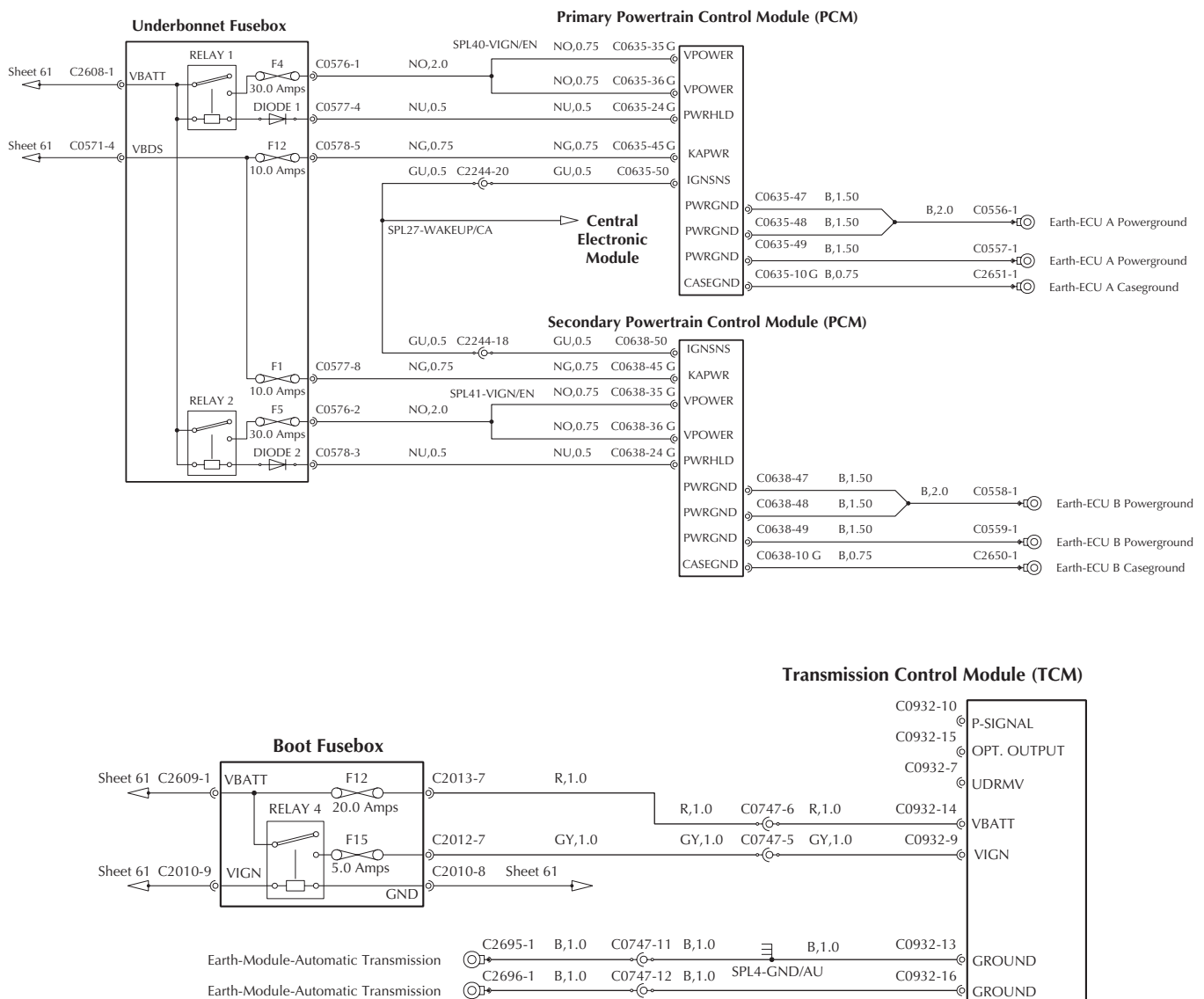


Figure 2. PCM and TCM Input Power Circuit.

Fault Code Definition

P1789 - Low Battery Voltage Input to the TCM

MIL Status

This code will not light the MIL lamp

P1789 Fault Analysis

1. Key off. Access the transmission harness and disconnect the transmission connector.
2. Check the voltage from harness connector C0932-14 to C0932-13 and 16.

If +12 volts is measured, go to step 3.

If the +12 volt supply is below specification, check the battery charging and +12 volt circuit integrity to C0932-14. Service the charging system or wiring as necessary. Reconnect all components and run a brief road test to ensure that the problem is resolved.

3. Check the condition of the transmission connector socket pin C0932-14.

If the socket is damaged, service the wiring as necessary. reconnect all components and run a brief road test to ensure that the problem is resolved.

If the socket is serviceable, go to step 4.

4. Reconnect the harness. Using WDS, monitor VBATT during a road test. Also connect a voltmeter between boot fusebox F12 and ground. Run a road test.

If VBATT is stable on the WDS and on the meter, the problem is not present at this time and testing is complete.

If VBATT is steady on the meter but unstable on WDS, perform a continuity check from F12 to C0932-14. If continuity is good, change the mechatronic unit and run a further road test to ensure that the problem is resolved.

5. If a continuity problem is identified, service the wiring as necessary. Run a further road test to ensure that the problem is resolved.

P1793 - Battery Voltage Too Low

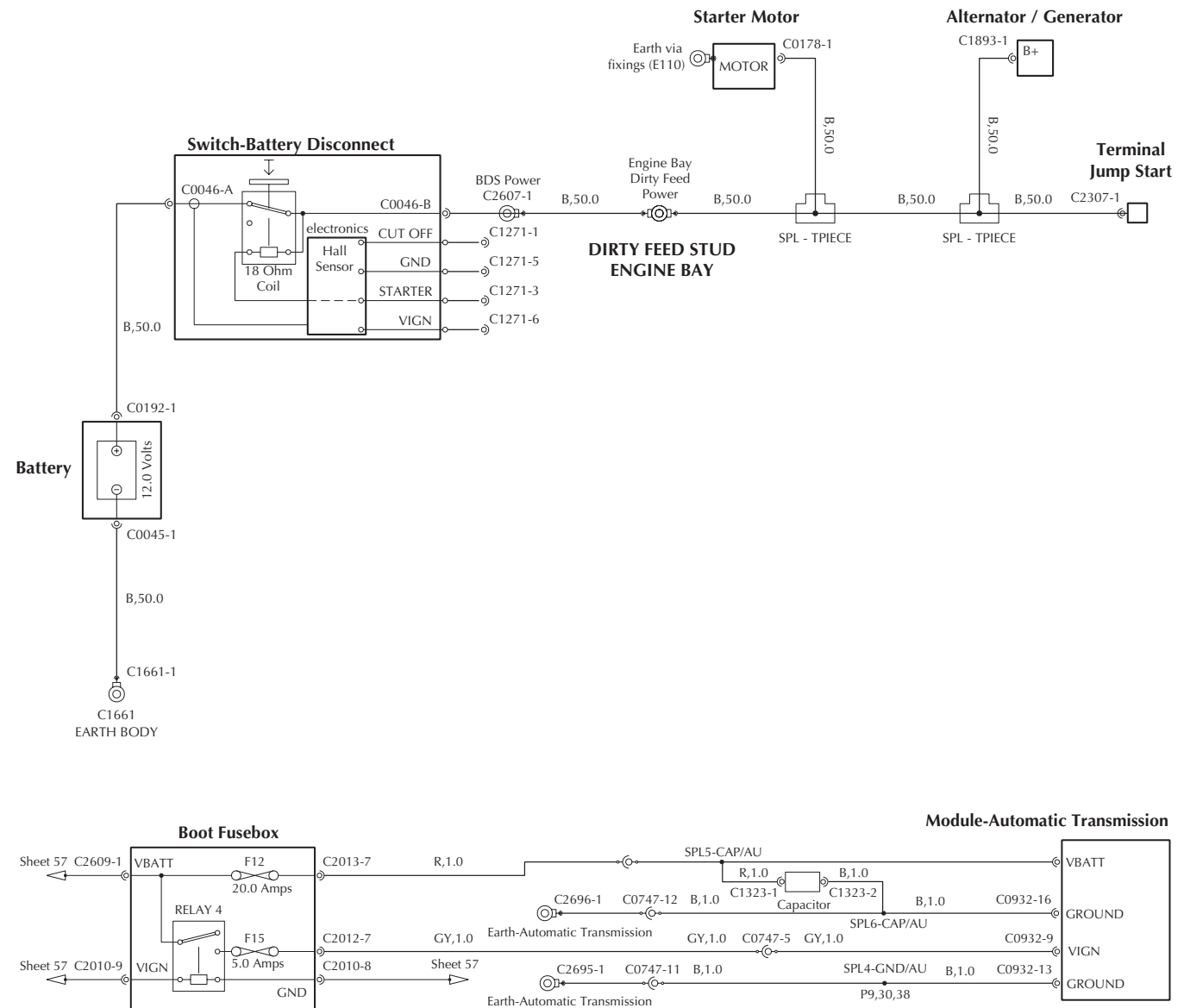


Figure 1. Battery Charging Circuit and Transmission Power Supply

Fault Code Definition

P1793 - Battery voltage too low - below 7 volts

Anti Transmission Only.

MIL Status

This code will light the MIL lamp

P1793 Fault Analysis

1. Connect the WDS and record all logged DTCs. Ensure that P1793 is logged.
2. Key on, start the engine. Run the engine at approximately 2000rpm and switch on the headlamps. Measure the battery voltage from the Jump Start terminal to chassis ground.

The battery charge voltage should be approximately 13.8 volts.

If the charge voltage is about 13.8 volts, go to step 3.

If the charge voltage is too low, service the charging system as necessary. Clear the P1793 code and repeat the charging voltage check. to ensure that the problem is resolved.

3. Check the vehicle history for other indications of undercharging (Undervoltage message on instrument panel and possible dim tungsten filament bulbs).

If there is no history of undervoltage effects, go to step 4.

If there is a history of undervoltage effects, rerun the checks in step 2 several times checking for intermittent open or short circuit problems. Service the wiring as necessary and run a KOER test to ensure that the problem is resolved.

4. Service the charging system as necessary. Clear the P1793 code and run a KOER test to ensure that the problem is resolved.
5. If the charging circuit is serviceable, access the transmission connector C0932 and check for +12 volts between C0932-14 and C0932-13 on the harness connector with the ignition on. Repeat the check from C0932-14 to C0932-16 to confirm that both ground connections are good.

If any defect is identified, service the circuit as necessary and retest to ensure that the problem is resolved.

P1794 - Battery Voltage tooHigh

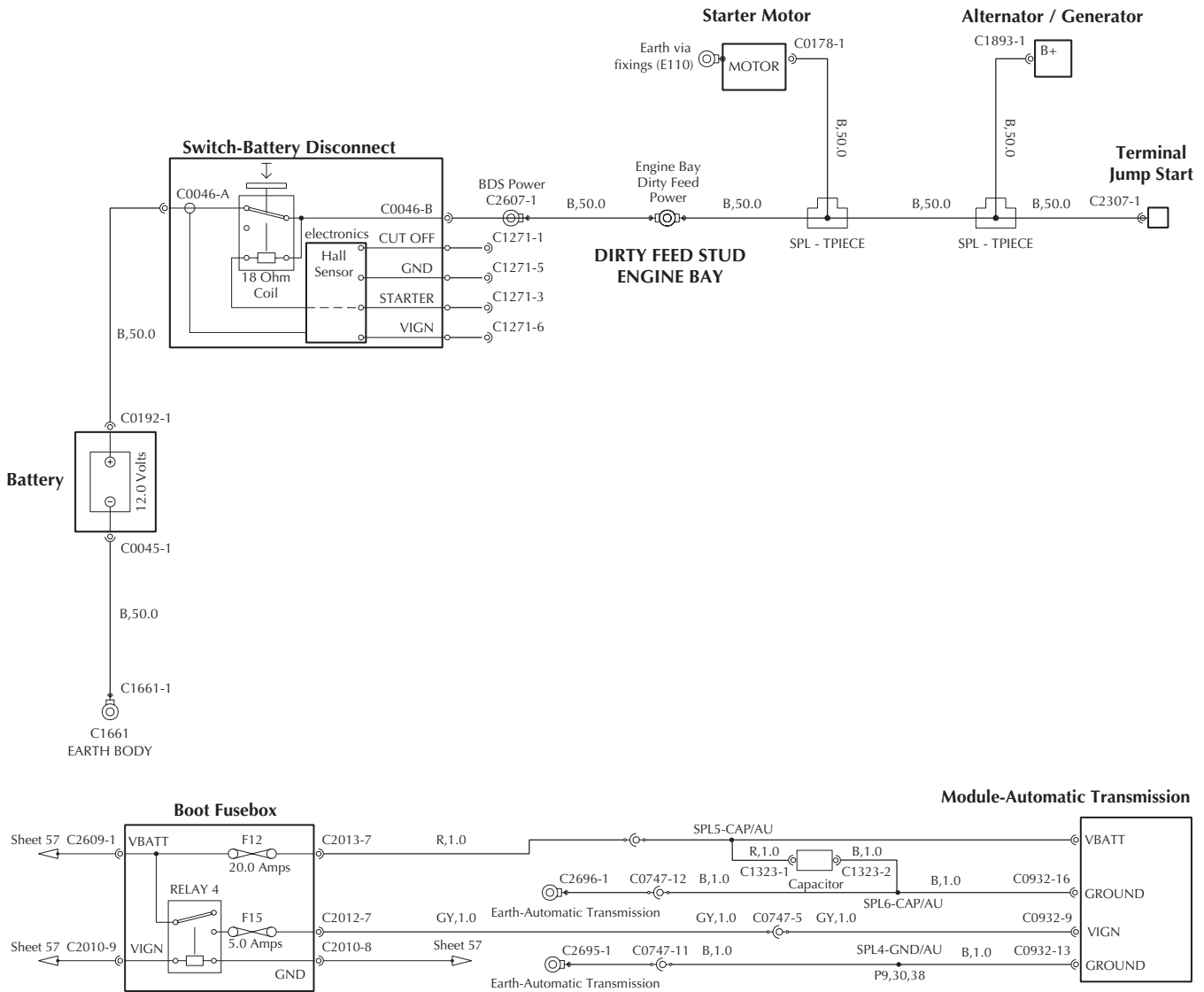


Figure 1. Battery Charging Circuit and Transmission Power Supply

Fault Code Definition

P1794 - Battery voltage too high - above 16 volts

Auto Transmission only.

MIL Status

This code will light the MIL lamp

P1794 Fault Analysis

1. Connect the WDS and record all logged DTCs. Ensure that P1794 is logged.
2. Key on, start the engine. Run the engine at approximately 2000rpm and switch on the headlamps. Measure the battery voltage from the Jump Start terminal to chassis ground.

The battery charge voltage should be approximately 13.8 volts.

If the charge voltage is about 13.8 volts, go to step 3.

If the charge voltage is too high, around 16 volts, service the charging system as necessary. Clear the P1794 code and repeat the charging voltage check. to ensure that the problem is resolved.

3. Check the vehicle history for other indications of overcharging (Overvoltage message on instrument panel and possible frequent failure of tungsten filament bulbs).

If there is no history of overvoltage effects, go to step 4.

If there is a history of overvoltage effects, rerun the checks in step 2 several times checking for intermittent open or short circuit problems. Service the wiring as necessary and run a KOER test to ensure that the problem is resolved.

4. Service the charging system as necessary. Clear the P1794 code and run a KOER test to ensure that the problem is resolved.
5. If the charging circuit is serviceable, access the transmission connector C0932 and check for +12 volts between C0932-14 and C0932-13 on the harness connector with the ignition on. Repeat the check from C0932-14 to C0932-16 to confirm that both ground connections are good.

If any defect is identified, service the circuit as necessary and retest to ensure that the problem is resolved.

P1796 - CAN Timeout TCM CAN Driver

Fault Code Definition

P1796 CAN Timeout, TCM CAN Driver.

MIL Status

This codes will light the MIL lamp.

Fault Analysis For P1796

1. Connect the WDS and confirm that P1796 is logged.
2. Analyse the problem using the High Speed CAN Bus fault analysis procedure in the introduction section of this manual.

P1797 - CAN Timeout Engine Management System

Fault Code Definition

P1797 CAN Timeout, lost contact with the Engine Management System

MIL Status

This code will light the MIL lamp.

Fault Analysis For P1797

1. Connect the WDS and confirm that P1797 is logged.
2. Analyse the problem using the High Speed CAN Bus fault analysis procedure in the introduction section of this manual.

P1798, P1799 - CAN-TCM-CEM-DIM-ABS Circuit malfunction

Fault Code Definition

P1798 CAN-TCM-CEM-DIM circuit malfunction.

P1799 CAN-TCM-ABS circuit malfunction.

MIL Status

This code will not light the MIL lamp.

P1798, P1799 Fault Analysis

1. Connect the WDS and confirm that P1798 or P1799 is logged.
2. Analyse the problem using the High Speed CAN Bus and Low Speed CAN BUS fault analysis procedures in the introduction section of this manual.

P1920 - Engine Overspeed

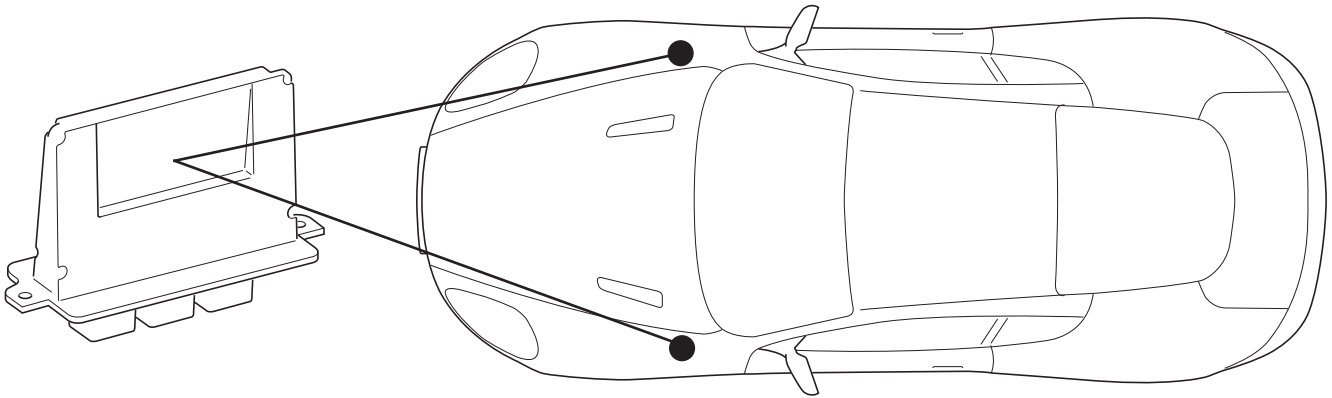


Figure 1. Instrument Pack Communications Circuit

Fault Code Definition

P1920 - This code indicates that the engine speed has exceeded the maximum limit.

Note: This code may be logged if the vehicle has been subject to any of the following conditions:

Excessive wheel slip on ice, snow, etc.

Excessive engine RPM in neutral

MIL Status

This code will light the MIL lamp

P1920 Fault Analysis

CAUTION: This code may be generated in the Primary Powertrain Control Module (PCM) only. Check that you are working on the correct half of the engine.

Note: This code is included to indicate that the driver has reached the engine rev limit. There may be a complaint of misfiring at high engine speed. This code gives the dealer an explanation for the customers perceived misfire when no misfire codes are logged.

1. Connect the WDS. Record the logged DTCs and then reset the PCM.
2. Check the vehicle history for evidence of hard driving or similar operation of the engine to its limits.

If there is evidence of operating the vehicle to its limits, reset the PCM and run the engine. Briefly accelerate the engine to about 6000 rpm and let it return to idle. Accelerate the engine to about 6000 rpm again and let it return to idle.

Check for logged DTCs.

If P1920 is not logged again, there is no evident engine fault. Testing is complete.

P1934 - Wheel Speed Signal Failure

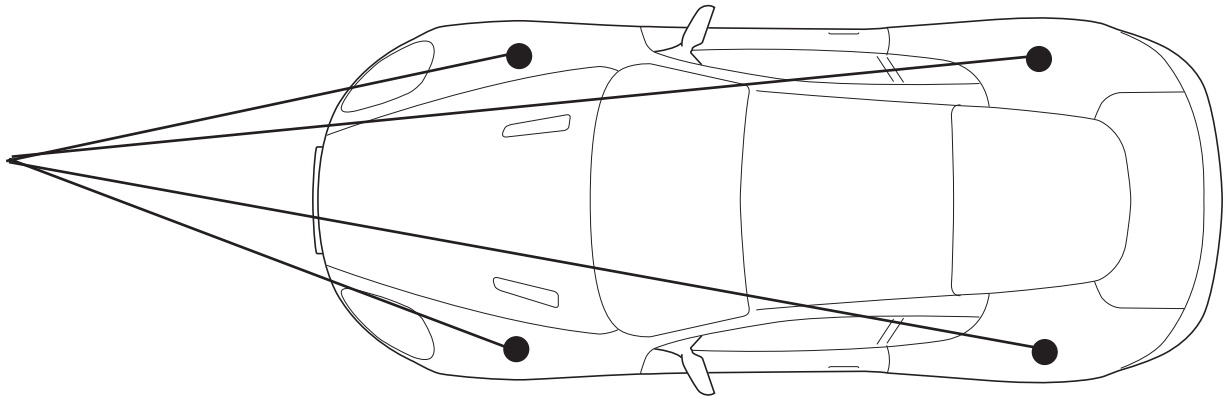


Figure 1. Wheel Speed Sensor Location

Fault Code Definition

P1934 - Wheel speed signal failure - Sensor short circuit or plausibility error.

If any of the above codes is logged, service the sensor or wiring as necessary. Clear the logged DTC in the primary PCM and run a brief road test to ensure that the problem is resolved.

MIL Status

This code will not light the MIL lamp

P1934 Fault Analysis

1. Connect the WDS and record all logged DTCs. Ensure that P1934 is logged.
2. Raise the vehicle on a 'wheels free' ramp. Set the datalogger to monitor all wheel speed sensor signals.
3. Ignition on. Spin each wheel and check for a corresponding wheel speed signal from each wheel in turn as it is rotated.

If all wheel speed signals are correct, go to step 4.

If any wheel speed signal is missing/defective, service the sensor and wiring as necessary. Clear the fault code and run the sensor check again to ensure that the problem is resolved.

4. Physically examine all wheel speed sensor wiring for signs of trapping, wear, chafing, etc.

If no defects are identified, go to step 5.

If any defect is identified, service the wiring as necessary. Clear the P1934 code and run a brief road test to ensure that the problem is resolved.

5. Using the WDS, access the ABS controller. Read all logged fault codes and check for the following:

Code	Sensor	Fault
0010	Front Left	Short Circuit
0020	Front Right	Short Circuit
0030	Rear Left	Short Circuit
0040	Rear Right	Short Circuit

If none of the above codes are logged, the cause of the P1934 is not present at this time. Clear the logged DTC from the primary PCM and run a road test to ensure that no faults remain in the ABS system.

P1935 - Invalid Brake Signal

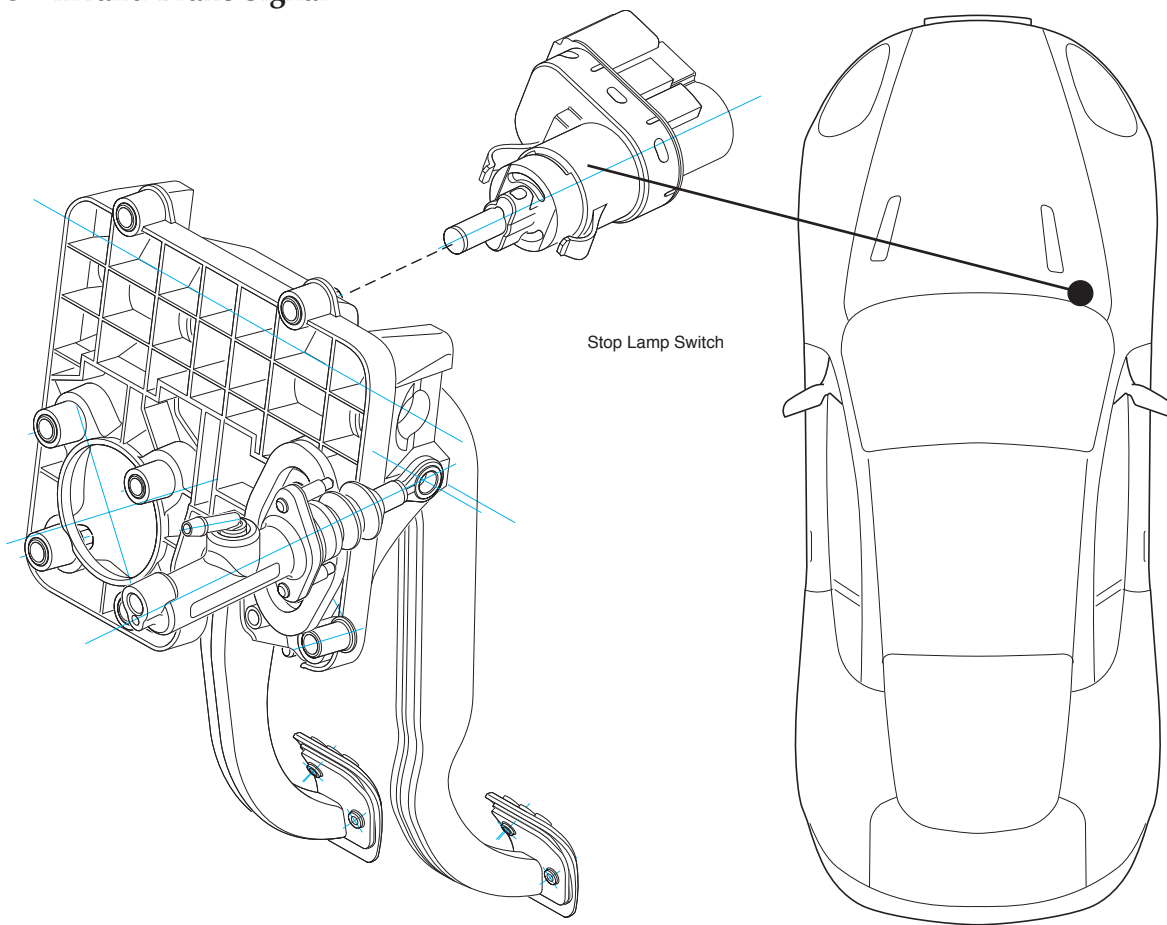


Figure 1. Brake Pedal Switch Location

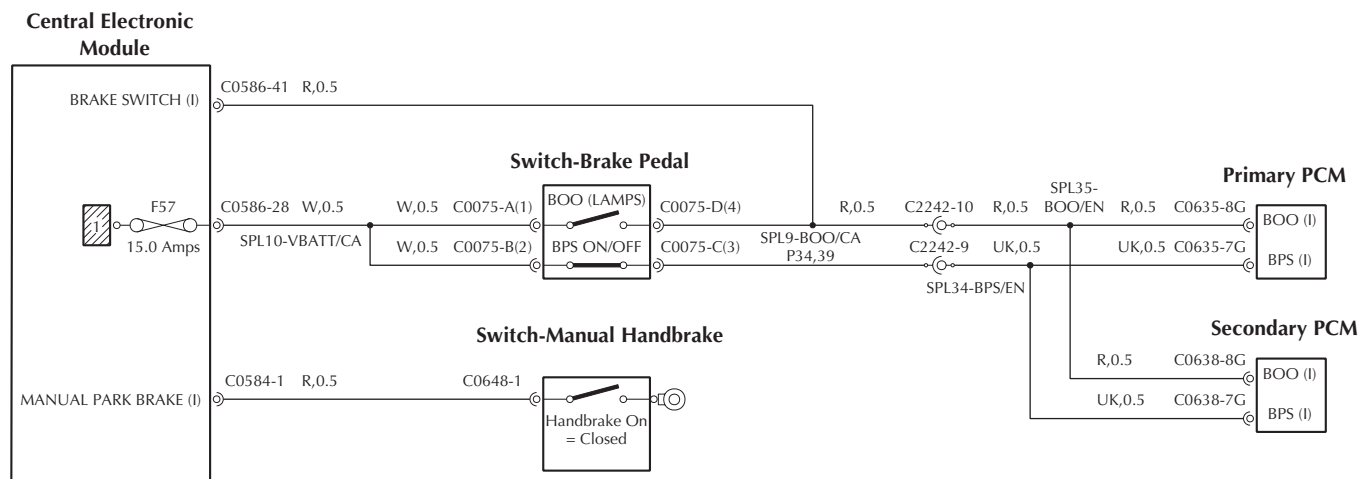


Figure 2. Brake Pedal Circuit

Fault Code Definition

P1935 - Invalid brake signal.

MIL Status

This code will not light the MIL lamp.

P1935 Fault Analysis

CAUTION: This code may be generated only in the Primary Powertrain Control Module (PCM). Check that you are working on the correct half of the engine.

1. Connect the WDS and confirm that a P1935 code is logged. Clear the P1935 code.
2. Install the breakout box to the PCM in which the P1935 was logged.
3. Brake Pedal Switch (BPS) - Monitor the Brake Pedal Switch signal at either C0635-7 (primary) or C0638-7 (secondary). Press the brake pedal. The BPS signal should switch from 12 to 0 volts when the pedal is pressed and return to 12 volts when the brake pedal is released.

If the signal switches correctly from 12 - 0 - 12 volts when the brake pedal is pressed and released, the fault is not present at this time. Check the connectors for intermittent connections, loose pins, etc. Service the circuit as necessary. Repeat the voltage check to ensure that the problem is resolved.

If the BPS signal does not switch to 0 volts when the brake pedal is pressed, go to step 4.

4. Ignition off. Complete a continuity check from PCM pin C0635-7 (or C0638-7), through the brake switch to Central Electronic Module pin C0586-28. Press and release the brake pedal. Continuity should be broken when the brake pedal is pressed.

If continuity is good but the signal does not go open circuit when the brake pedal is pressed, service/adjust the brake switch as necessary. Clear the P1935 code and retest the circuit to ensure that the problem is resolved.

P2105 - Throttle Actuator Control System

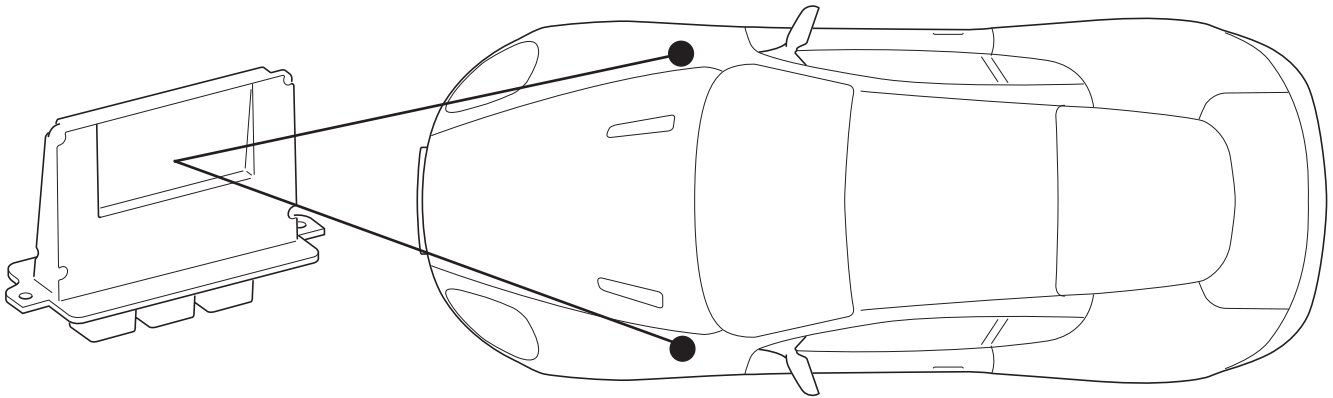


Figure 1. PCM Location

Fault Code Definition

P2105 - Throttle Actuator Control System - Forced shutdown.

MIL Status

This code will light the MIL lamp.

P2105 Fault Analysis

1. Connect the WDS and check that P2105 is logged. Note which PCM has recorded the fault.

Note all other fault codes and resolve all other problems first. Retest to check if P2105 is logged again.

This code indicates an internal PCM fault.

2. Check that the latest level of PCM hardware is fitted and that it is flashed with the latest level of software. Reflash the PCM if necessary.
3. Run a road test including a wide range of throttle actuations.
4. If the P2105 recurs, contact Aston Martin Technical Support.

P2106 - Throttle Actuator Control System

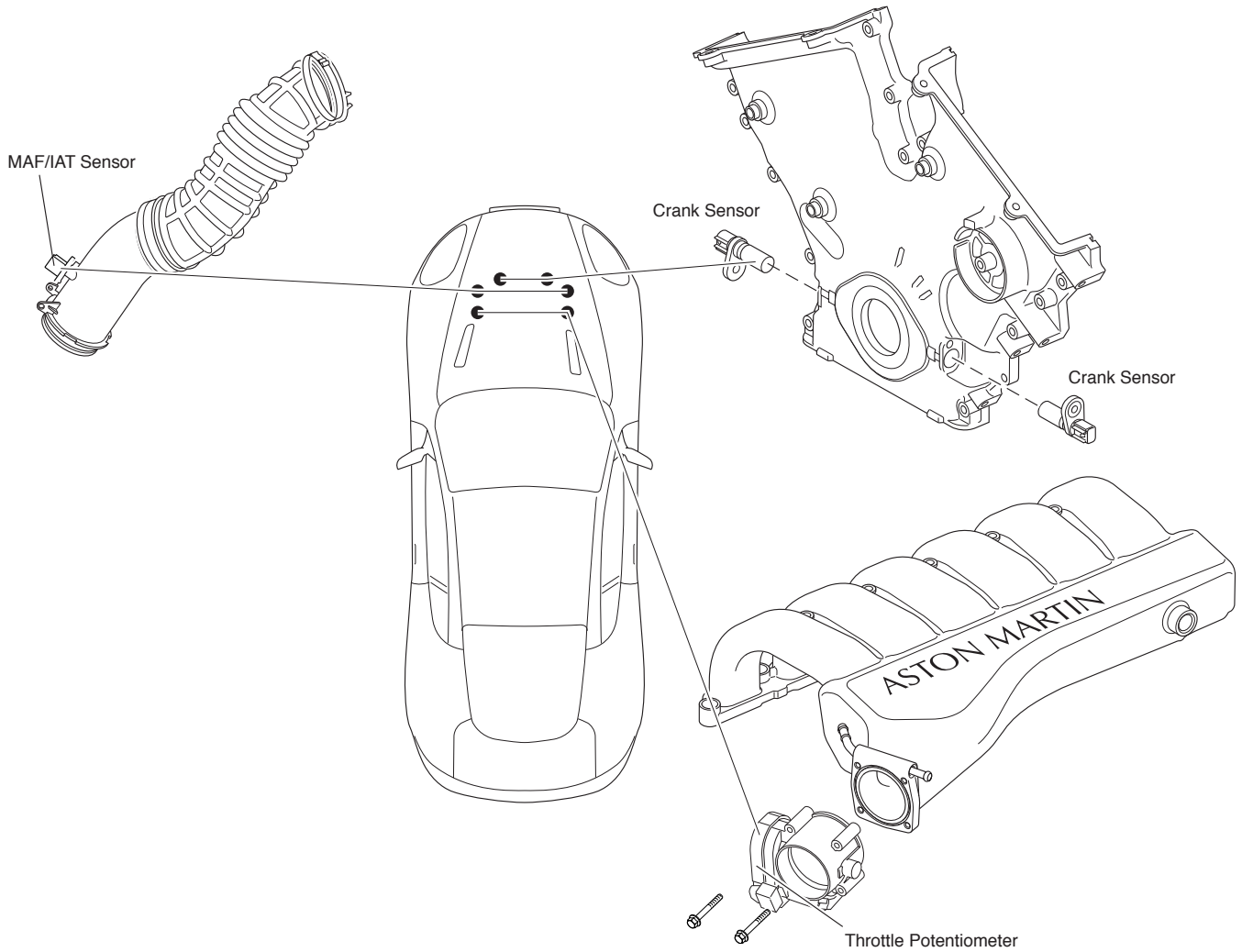


Figure 1. Throttle Pedal Position Sensor Circuit

Fault Code Definition

P2106 - Throttle Actuator Control System - Forced limited power. Sensor fault.

MIL Status

This code will light the MIL lamp.

P2106 Fault Analysis

Note: This code will be set if one or more of the PCM sensor inputs is faulty and prevents correct operation of the throttle actuation system.

1. Connect the WDS and check that P2106 is logged. Note which PCM has recorded the fault. Note all other fault codes and resolve all other problems first. Return to this procedure only if P2106 is logged again after clearing all other faults.

2. Install the breakout box to the PCM logging the P2106 code.

3. Using datalogger or direct measurement, check the following inputs to the affected PCM:

MAF - 0.5v at idle, rising with engine revs

TP - APP1 4.4v at idle, falling to 0.7v as throttle opens. APP2 0.7v, rising to 4.4v as throttle opens

CKP - regular pulses, 35 per engine rev then 1 missed pulse then repeat the sequence.

TSS - (Auto only) One pulse per engine rev.

OSS - (Auto only) One pulse per output shaft rev.

If no fault is detected, go to step 4.

If any fault is detected in these checks, service the sensor as necessary. Clear the P2106 code and run a KOER test to ensure that the problem is resolved.

4. On the suspect engine bank, disconnect the air trunking from the throttle body. Switch on the ignition and observe the throttle movement whilst a colleague presses and releases the throttle pedal several times.

If the throttle plate does not accurately follow the pedal movement, service the throttle body or throttle motor circuit as necessary. Clear the P2106 code and run a KOER test to ensure that the problem is resolved.

If the throttle plate movement does accurately follow the pedal movement, the cause of the P2106 code is not present at this time. Clear the logged DTCs and run an extended road test to find the cause of the problem. If the problem recurs, repeat this procedure from step 1 to resolve it.

P2107 - Throttle Actuator Control System

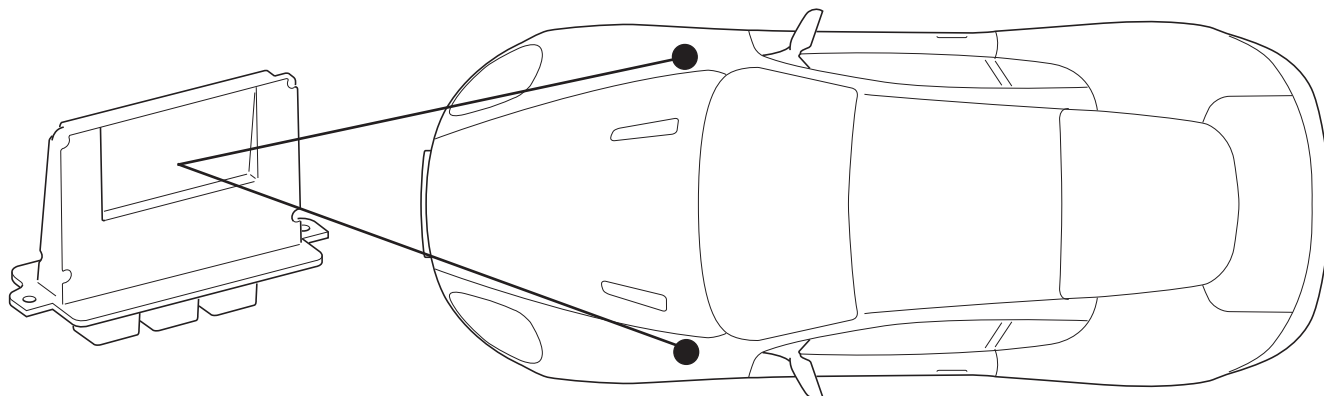


Figure 1. PCM Location

Fault Code Definition

P2107 - Throttle Actuator Control System - Self-test failed.

MIL Status

This code will light the MIL lamp.

P2107 Fault Analysis

1. Connect the WDS and check that P2107 is logged. Note which PCM has recorded the fault.
2. Check the basic power and ground supplies to the affected PCM: (See the circuit diagram on the facing page.

If the power and ground supplies are good, go to step 3.

If any power or ground supply is suspect, service the supply as necessary. Clear the P2107 code and run a KOER test to ensure that the problem is resolved.

3. Replace the PCM and run a KOER test to ensure that the problem is resolved.
4. Run a drive cycle to complete the adaptive learning in the new engine controller.

P2111/P2112 - Throttle Actuator Control System

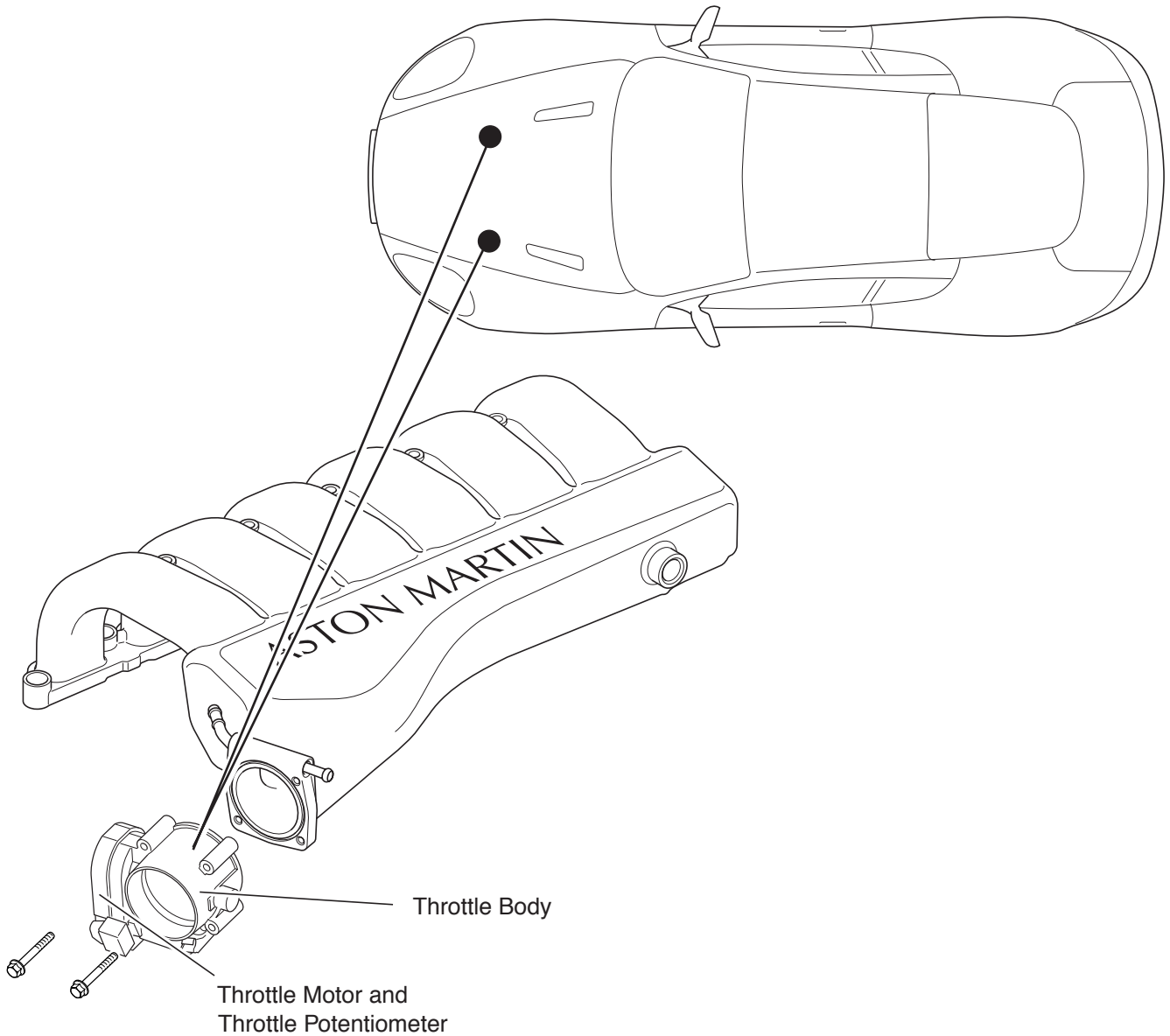


Figure 1. Throttle Body Location

Fault Code Definition

P2111 - Throttle Actuator Control System - Throttle stuck open

P2112 - Throttle Actuator Control System - Throttle stuck closed.

MIL Status

These codes will light the MIL lamp.

P2111/P2112 Fault Analysis

1. Connect the WDS and check that P2111 or P2112 is logged. Note all logged DTCs and also note which PCM has recorded the P2111/P2112 fault.

2. Disconnect the air trunking from both throttle bodies. Ignition on. Observe the throttle plates whilst a colleague presses and releases the throttle pedal several times.

If the throttle plates do accurately follow pedal movement, go to step 3.

If either throttle plate does not accurately follow pedal movement, go to step 4.

3. Check the security and connections of the throttle position sensor on the affected engine bank.

If the sensor is loose or poorly connected, service as necessary. Clear the fault code and run a KOER test to ensure that the problem is resolved.

If the sensor is correctly mounted and connected, go to step 5.

4. Swap the throttle bodies bank to bank and repeat the throttle movement test.

If the fault swaps to the other engine bank, replace the faulty throttle body. Clear the fault code and run a KOER test to ensure that the problem is resolved.

If the fault remains on the same engine bank, service the throttle harness as necessary. Clear the fault code and run a KOER test to ensure that the problem is resolved.

5. Using datalogger, monitor the TP and throttle motor drive signals for both engine banks during a KOER test.

If no fault is detected, go to step 6.

If a fault is detected, service the throttle system as necessary. Clear the fault code and run a KOER test to ensure that the problem is resolved.

6. Check the PCM hardware and software levels. Replace or reflash as necessary to ensure the latest levels. Run a KOER test to ensure that the problem is resolved.

If P2111 or P2112 is logged again, contact Aston Martin Technical Support.

P2121 - P2129 - Throttle Pedal Position Sensor

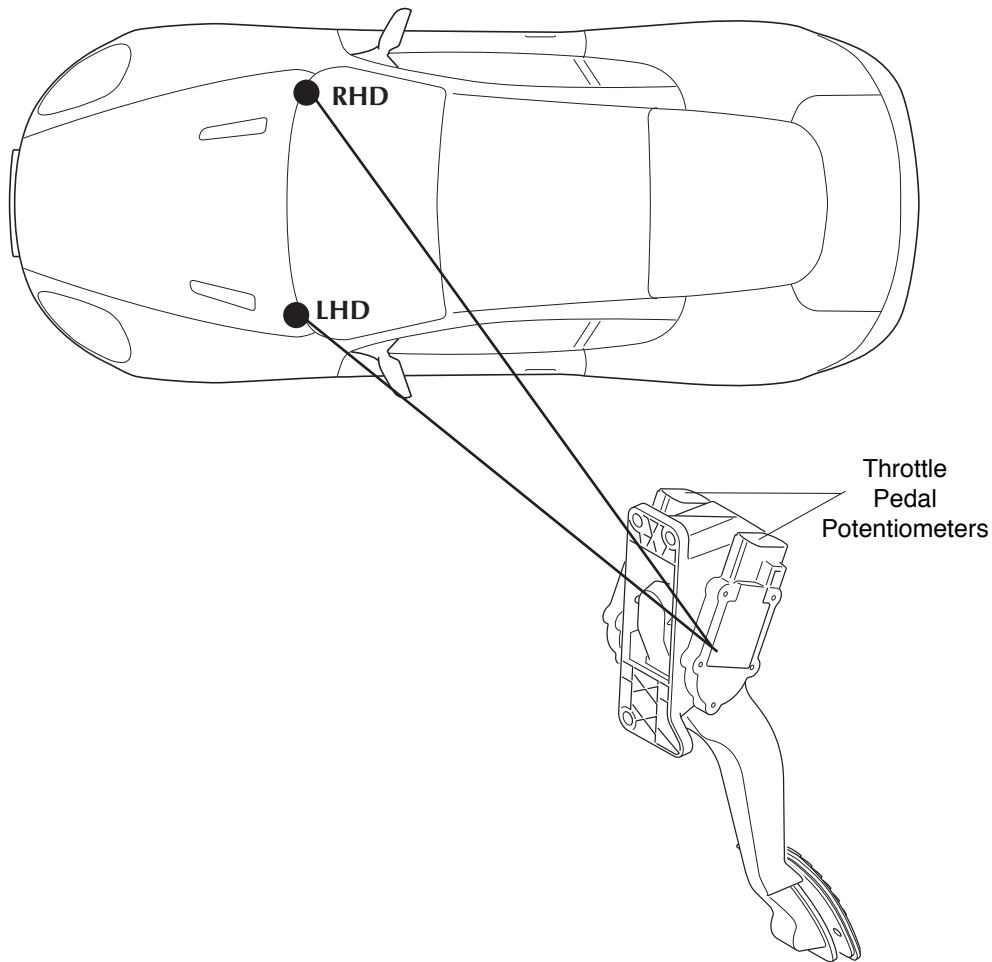


Figure 1. Throttle Pedal Position Sensor Location

Sensor-Pedal Position A (Primary)

Primary PCM

APP2 RTN	C1589-3	BG,0.5	C2243-9	BG,0.5	C0635-18G	APP2 RTN
APP2 BVREF	C1589-7	UW,0.5	C2243-10	UW,0.5	C0635-16G	APP2 BVREF
APP2	C1589-6	SW,0.5	C2243-11	SW,0.5	C0635-17G	APP2 (I)
APP1 RTN	C1589-5	B,0.5	C2243-12	B,0.5	C0635-6G	APP1 RTN
APP1 BVREF	C1589-1	OS,0.5	C2243-13	OS,0.5	C0635-4G	APP1 BVREF
APP1	C1589-2	SB,0.5	C2243-14	SB,0.5	C0635-5G	APP1 (I)

Sensor-Pedal Position B (Secondary)

Secondary PCM

APP2 RTN	C0787-3	BG,0.5	C2243-3	BG,0.5	C0638-18G	APP2 RTN
APP2 BVREF	C0787-7	UW,0.5	C2243-4	UW,0.5	C0638-16G	APP2 BVREF
APP2	C0787-6	SW,0.5	C2243-5	SW,0.5	C0638-17G	APP2 (I)
APP1 RTN	C0787-5	B,0.5	C2243-6	B,0.5	C0638-6G	APP1 RTN
APP1 BVREF	C0787-1	OS,0.5	C2243-7	OS,0.5	C0638-4G	APP1 BVREF
APP1	C0787-2	SB,0.5	C2243-8	SB,0.5	C0638-5G	APP1 (I)

Figure 2. Throttle Pedal Position Sensor Circuits

Fault Code Definition

P2121 - PPS1 Range/Performance
 P2122 - PPS1 circuit low input
 P2123 - PPS1 high input
 P2124 - PPS1 circuit intermittent
 P2126 - PPS2 Range/Performance
 P2127 - PPS2 circuit low input
 P2128 - PPS2 high input
 P2129 - PPS2 circuit intermittent

MIL Status

These codes will not light the MIL lamp.

P2121 - P2129 Fault Analysis

1. Connect the WDS and record all logged DTCs. Ensure that a code in the range P2121 - P2129 is logged and note which PCM has recorded the fault.

2. Set datalogger to monitor the pedal position sensor votages at the affected PCM.

3. Check the voltage level of the APP (accelerator pedal position) signals at the following points referenced to chassis ground.

Primary PCM - APP1 - C0635-5

Primary PCM - APP2 - C0635-17

Secondary PCM - APP1 - C0638-5

Secondary PCM - APP2 - C0638-17

APP1 should read 4v at idle and 0.5v at full throttle

APP2 should read 1.0v at idle and 3.5v at full throttle.

If the signals remain at 0v, go to step 5.

If the signals respond normally to throttle movement, go to step 4.

If any signal does not change or fails to change over the full range, service the circuit as necessary. Clear the fault code and run a brief road test to ensure that the problem is resolved

4. Repeat the voltage check from step 3 but use the signal return lines as a reference for each signal.

Primary PCM - APP1 - C0635-5 ref APP1 rtn C0635-6

Primary PCM - APP2 - C0635-17 ref APP2 rtn C0635-18

Secondary PCM - APP1 - C0638-5 ref APP1 rtn C0638-6

Secondary PCM - APP2 - C0638-17 ref APP2 rtn C0638-18

If any signal does not respond correctly to throttle pedal movements, service the signal return line as necessary. Clear the fault code and run a brief road test to ensure that the problem is resolved.

5. Check the BVREF supplies at the following pints:

Primary PCM

APP1 BVREF C0635-4 to C0635-6

APP2 BVREF C0635-16 to C0635-18

Secondary PCM

APP1 BVREF C0638-4 to C0638-6

APP2 BVREF C0638-16 to C0638-18

If any voltage is less than 5 volts, service the circuit as necessary, checking particularly for partial short circuits to ground. Clear the fault code and run a brief road test to ensure that the problem is resolved.

If no open circuit is detected, clear the P2101/2/3 code and conduct an extended road test to ensure that the throttle control circuit is totally serviceable.

P2135 - Throttle Pedal Position Sensor

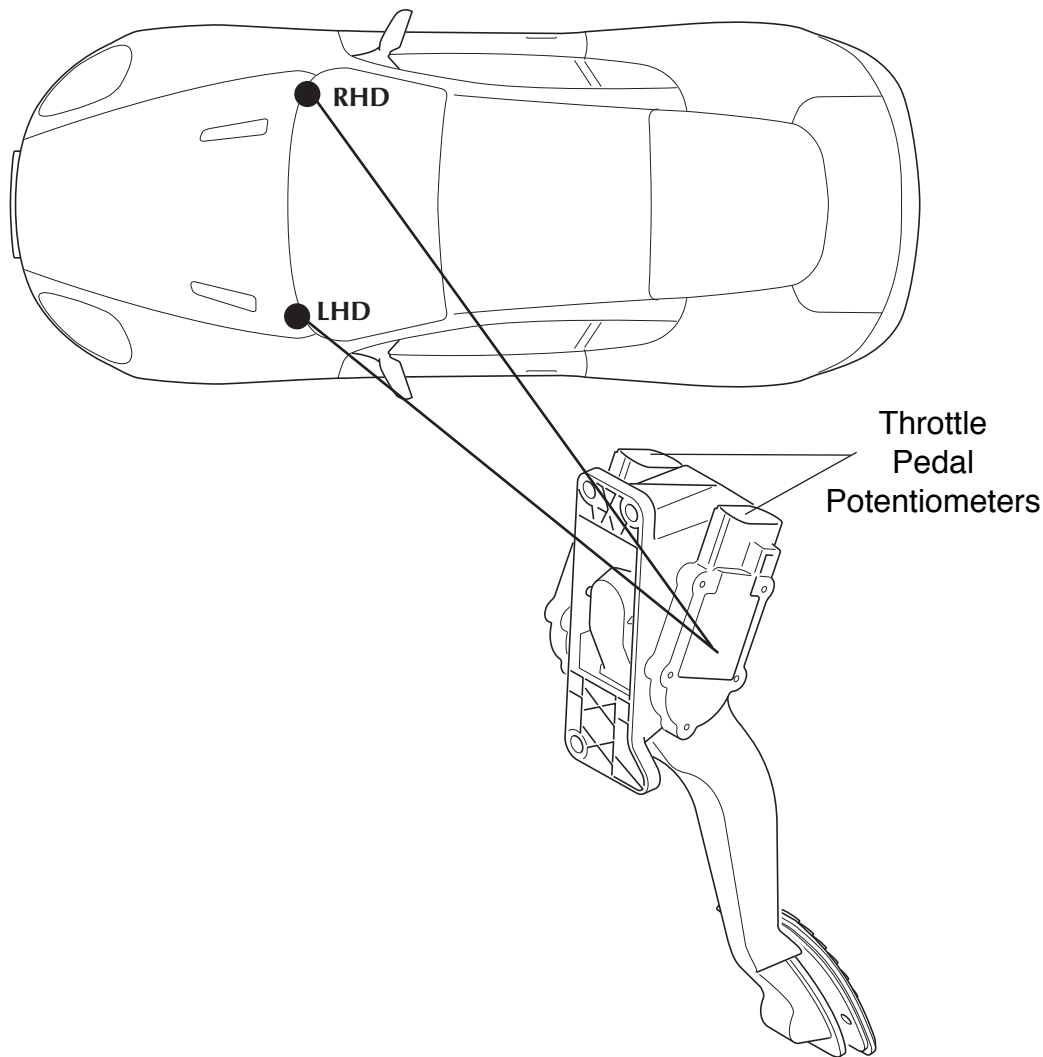


Figure 1. Throttle Position Sensor Location

Sensor-Pedal Position A (Primary)

Primary PCM

APP2 RTN	C1589-3	BG,0.5	C2243-9	BG,0.5	C0635-18G	APP2 RTN
APP2 BVREF	C1589-7	UW,0.5	C2243-10	UW,0.5	C0635-16G	APP2 BVREF
APP2	C1589-6	SW,0.5	C2243-11	SW,0.5	C0635-17G	APP2 (I)
APP1 RTN	C1589-5	B,0.5	C2243-12	B,0.5	C0635-6G	APP1 RTN
APP1 BVREF	C1589-1	OS,0.5	C2243-13	OS,0.5	C0635-4G	APP1 BVREF
APP1	C1589-2	SB,0.5	C2243-14	SB,0.5	C0635-5G	APP1 (I)

Sensor-Pedal Position B (Secondary)

Secondary PCM

APP2 RTN	C0787-3	BG,0.5	C2243-3	BG,0.5	C0638-18G	APP2 RTN
APP2 BVREF	C0787-7	UW,0.5	C2243-4	UW,0.5	C0638-16G	APP2 BVREF
APP2	C0787-6	SW,0.5	C2243-5	SW,0.5	C0638-17G	APP2 (I)
APP1 RTN	C0787-5	B,0.5	C2243-6	B,0.5	C0638-6G	APP1 RTN
APP1 BVREF	C0787-1	OS,0.5	C2243-7	OS,0.5	C0638-4G	APP1 BVREF
APP1	C0787-2	SB,0.5	C2243-8	SB,0.5	C0638-5G	APP1 (I)

Figure 2. Throttle Pedal Position Sensor Circuits

Fault Code Definition

P2135 Throttle Pedal Position Sensor Voltage Correlation.

MIL Status

This code will light the MIL lamp.

P2135 Fault Analysis

1. Connect the WDS and record all logged DTCs. Ensure that code P2135 is logged and note which PCM has recorded the fault.

2. Using datalogger, record the throttle potentiometer signals for the affected engine bank. During a KOEO test, open and close the throttles several times. Compare the recorded data with the following specification.

The TP signals should change within the range 0.25 - 4.75 volts.

The voltage rise in one TP signal should be synchronised with an equal voltage fall in the other TP signal.

Neither TP signal should exhibit transient spikes or other abnormalities.

If both signals meet the above specification, go to step 3.

If either signal fails to meet the above specification, Service the potentiometer or circuit as necessary, Clear the P2135 code and run a KOER test to ensure that the problem is resolved.

3. Set datalogger to record the throttle potentiometer signals for the affected engine bank. Take the vehicle on an extended road test. Use the 'Road Test Mode' to safely switch on and off the datalogger during the test. Compare the recorded data with the above specification looking for signs of intermittent faults.

If any fault is indicated, service the potentiometer or circuit as necessary. Clear the P2135 code and run a KOER test to ensure that the problem is resolved.

If no fault is indicated, the cause of the P2135 code is not present at this time and testing is complete.

P2138 - Throttle Position Sensor

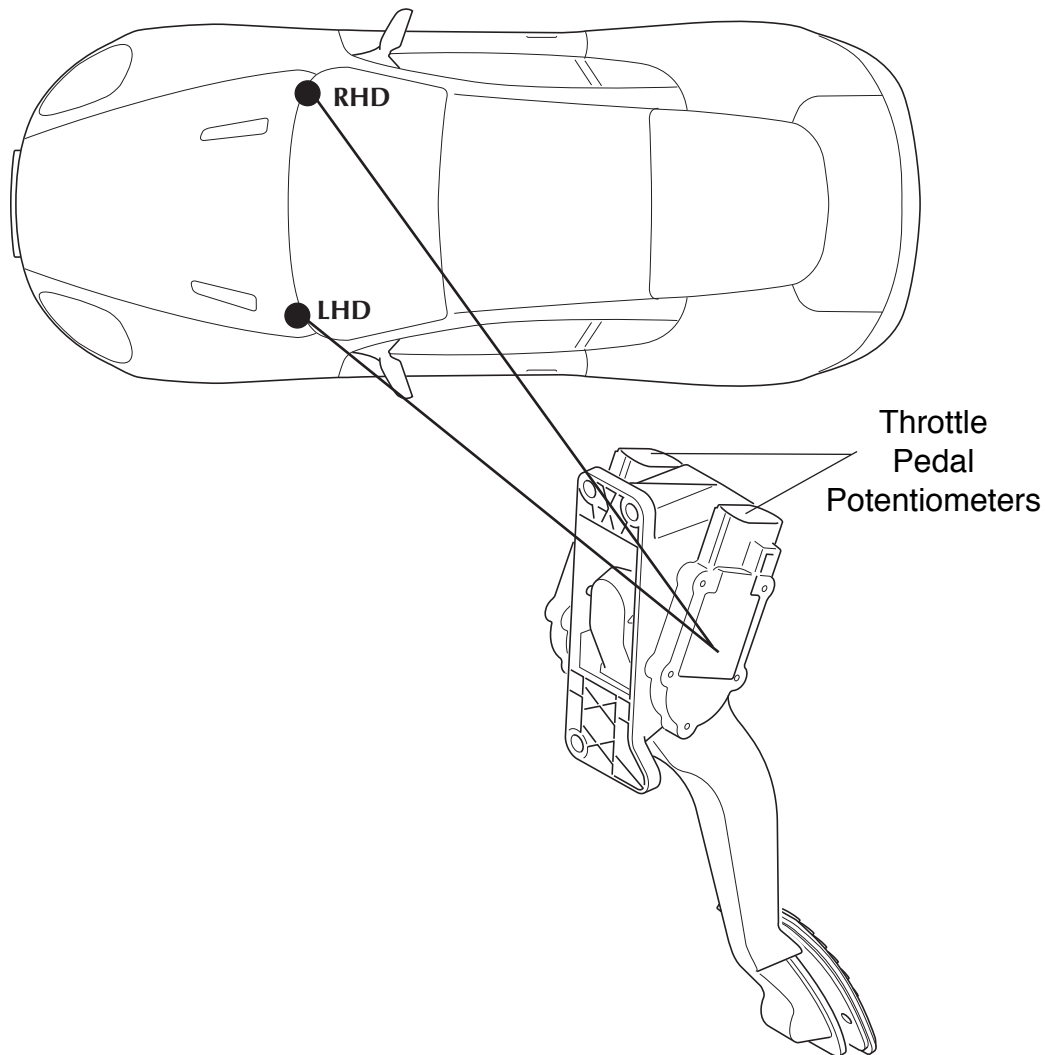


Figure 1. Throttle Pedal Position Sensor Location

Sensor-Pedal Position A (Primary)

Primary PCM

APP2 RTN	C1589-3	BG,0.5	C2243-9	BG,0.5	C0635-18G	APP2 RTN
APP2 BVREF	C1589-7	UW,0.5	C2243-10	UW,0.5	C0635-16G	APP2 BVREF
APP2	C1589-6	SW,0.5	C2243-11	SW,0.5	C0635-17G	APP2 (I)
APP1 RTN	C1589-5	B,0.5	C2243-12	B,0.5	C0635-6G	APP1 RTN
APP1 BVREF	C1589-1	OS,0.5	C2243-13	OS,0.5	C0635-4G	APP1 BVREF
APP1	C1589-2	SB,0.5	C2243-14	SB,0.5	C0635-5G	APP1 (I)

Sensor-Pedal Position B (Secondary)

Secondary PCM

APP2 RTN	C0787-3	BG,0.5	C2243-3	BG,0.5	C0638-18G	APP2 RTN
APP2 BVREF	C0787-7	UW,0.5	C2243-4	UW,0.5	C0638-16G	APP2 BVREF
APP2	C0787-6	SW,0.5	C2243-5	SW,0.5	C0638-17G	APP2 (I)
APP1 RTN	C0787-5	B,0.5	C2243-6	B,0.5	C0638-6G	APP1 RTN
APP1 BVREF	C0787-1	OS,0.5	C2243-7	OS,0.5	C0638-4G	APP1 BVREF
APP1	C0787-2	SB,0.5	C2243-8	SB,0.5	C0638-5G	APP1 (I)

Figure 2. Throttle Pedal Position Sensor Circuits

Fault Code Definition

P2138 Throttle Pedal Position Sensor PPS1 v PPS2 Voltage Correlation.

P2139 Throttle Pedal Position Sensor PPS1 v PPS2 Voltage Correlation.

If any signal is out of range, service the pedal sensors as necessary. Clear the fault code and retest to ensure that the problem is resolved.

MIL Status

This code will not light the MIL lamp.

P2138 Fault Analysis

1. Connect the WDS and record all logged DTCs. Ensure that code P2138 or P2139 is logged and note which PCM has recorded the fault.
2. Fit the breakout box to the affected PCM.
3. Ignition on. Check that the BVREF signal to each throttle potentiometer is within the range 4.5 - 5.5 volts measured at the following pins reference to chassis ground:

Primary PCM C0635-4 and C0635-16

Secondary PCM C0638-4 and C0638-16

If BVREF is in specification, go to step 4.

If any BVREF signal is out of range, troubleshoot the power supplies to the PCMs. Clear the P2138 or P2139 code and run a KOER test to ensure that the problem is resolved.

4. Using datalogger, measure each Pedal Position signal at the following points. The signals should be x volts throttle closed, rising to y volts throttle open:

Primary PCM

APP1 C0635-5 to C0635-6

APP2 C0635-17 to C0635-18

Secondary PCM

APP1 C0638-5 to C0638-6

APP2 C0638-17 to C0638-18

APP1 should read 4v at idle and 0.5v at full throttle

APP2 should read 1.0v at idle and 3.5v at full throttle.

P2162 - Vehicle Speed Sensors A-B Correlation

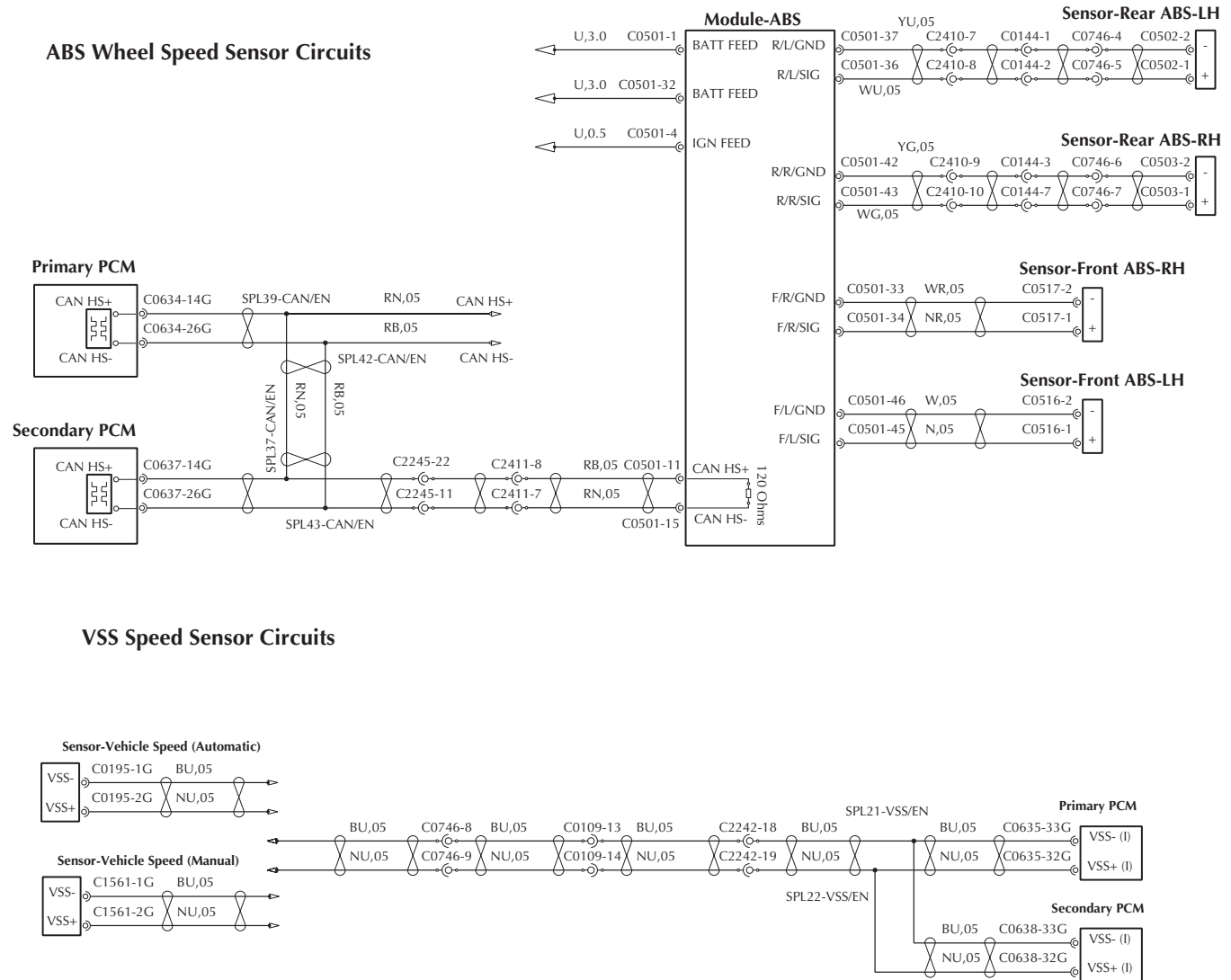


Figure 1. Throttle Position Sensor Circuit

Fault Code Definition

P2162 Vehicle speed sensor A-B correlation.

MIL Status

This code will not light the MIL lamp.

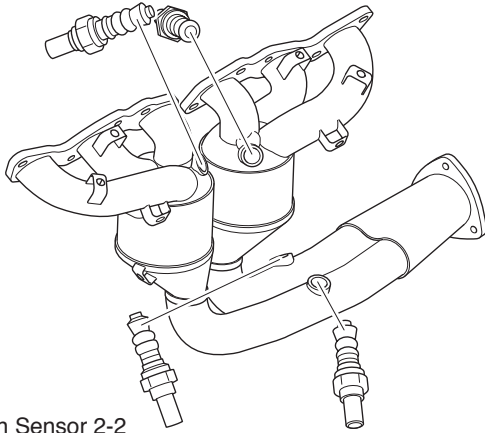
P2162 Fault Analysis

Note: The vehicle speed may be derived from the wheel speed sensors or from the vehicle speed sensors in the gearbox (manual cars) or in the differential unit (auto cars). P2162 detects that an unacceptable difference is found when comparing the two speed signals

1. Connect the WDS and record all logged DTCs. Ensure that code P2162 is logged.
2. Set datalogger to monitor and compare the vehicle speed signals from the wheel speed sensors and from the vehicle speed sensors.
3. Run a brief road test and log both vehicle speed signals. Stop the test and compare the results with the actual speeds achieved during the test. One speed signal source will be obviously incorrect.
4. Service the relevant circuit and repeat the comparison test to ensure that the problem is resolved.

P2195/96/97/98, P2270/71/72/73 - Oxygen Sensors

Heated Oxygen Sensor 1-1 Heated Oxygen Sensor 2-1



Heated Oxygen Sensor 2-2

Heated Oxygen Sensor 1-2

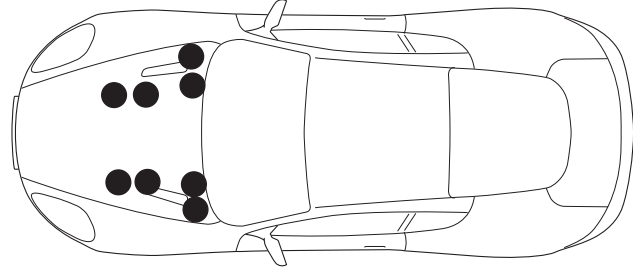


Figure 1. Oxygen Sensor Location

Fault Code Definition

P2195	O2 sensor 1-1 Signal stuck lean.
P2196	O2 sensor 1-1 Signal stuck rich.
P2197	O2 sensor 2-1 Signal stuck lean.
P2198	O2 sensor 2-1 Signal stuck rich.
P2270	O2 sensor 1-2 Signal stuck lean.
P2271	O2 sensor 1-2 Signal stuck rich.
P2272	O2 sensor 2-2 Signal stuck lean.
P2273	O2 sensor 2-2 Signal stuck rich.

MIL Status

These codes will light the MIL lamp.

P2195/96/97/98, P2270/71/72/73 Fault Analysis

1. Connect the WDS and record all logged DTCs. Note which code is logged. Also note which PCM has recorded the fault.
2. Check the exhaust system for leaks.

Check the HO2S wiring for crossed connections, damaged pins or damaged harness.

Remove each oxygen sensor and check for contamination or damage. Service any defects identified.

Run the KOER Test and check for any of the above DTCs.

If any of the above DTCs are present, go to step 3.

If the DTCs listed above are not present, the fault is not present at this time and testing is complete.
3. Ignition off. Check the HO2S harness circuits for shorts to power or to ground:

Disconnect the PCM

Disconnect all suspect oxygen connectors.

Check for short circuits in each sensor wiring by measuring resistance to ground and to +5 and +12 volt supplies.

If each resistance is above 10k Ω , go to step 4.

If any resistance is below 10k Ω , repair the short circuit. Clear the DTCs and run a KOER test to ensure that the problem is resolved.
4. Check the continuity of the HO2S circuits:

Measure the continuity from the PCM connector to the oxygen sensor connector for the signal and signal return line of the suspect sensor.

If continuity is less than 5 Ω , go to step 5.

If the continuity is more than 5 Ω , repair the open circuit and rerun the Quick Test (see Special Tests in the introduction to this manual) to ensure that the problem is resolved.

5. Check for overvoltage on the HO2S circuit:

PCM connected, Suspect oxygen sensor disconnected. Key on.

Measure the voltage from signal return to battery negative at the HO2S connector.

Measure the voltage between the HO2S signal and battery negative.

If any reading is above 1.5 volts, go to step 6.

If any voltage readings is below 1.5 volts, replace the affected sensor, reconnect all components. Clear the fault code and run a KOER test to ensure that the problem is resolved.

6. Check continuity of the HO2S ground circuit:

Key off. PCM disconnected. Measure the resistance between SIG RTN (Primary PCM pin C0634-41 or Secondary PCM pin C0636-41) and PWR GND (Primary PCM connector C0635 pins 10, 47, 48 and 49 or secondary PCM connector C0638 pins 10, 47, 48 and 49).

If the resistance is less than 5.0 Ω , go to step 7.

If the resistance is more than 5.0 Ω , replace the PCM. Reconnect all components and run the KOER Test to ensure that the problem is resolved.

7. Apply 12 volts to the suspect HO2S circuit:

Key off. Disconnect the suspect HO2S connector.

Install a jumper lead from the HO2S signal terminal to the VPWR terminal at the HO2S connector.

Key on. Monitor the HO2S signal using the WDS.

If the signal voltage is above 1.5 volts, replace the defective HO2S sensor. Reconnect all components. Complete a HO2S monitor drive cycle. Run the KOER Test to ensure that the problem is resolved.

8. If the signal voltage is less than 1.5 volts, consult Aston Martin Technical Support.

P260F - Neural Net Processor Reports ROM Checksum Error

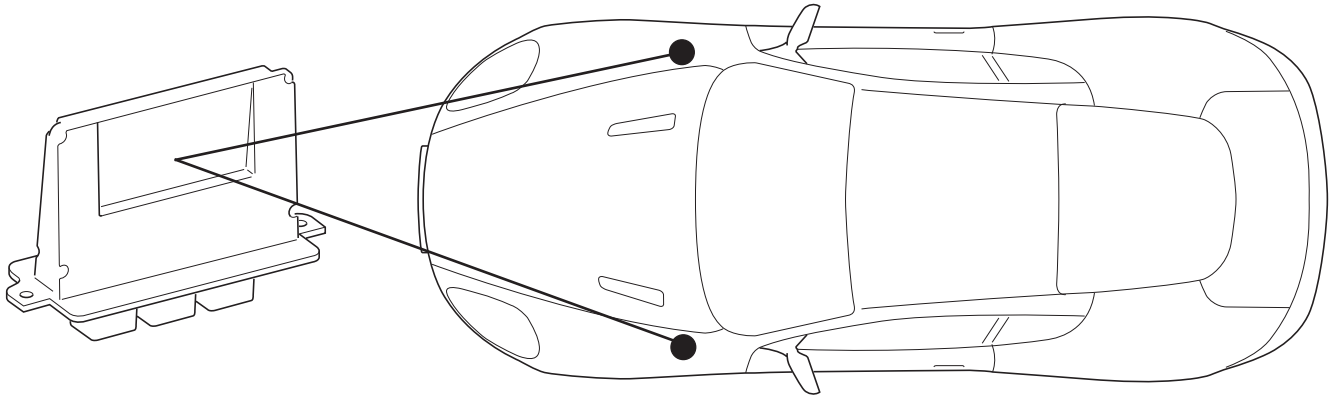


Figure 1. Powertrain Control Modules

Fault Code Definition

P260F Neural net processor reports ROM checksum error

MIL Status

This code will light the MIL lamp.

P260F Fault Analysis

1. Connect the WDS and confirm that P260F is logged.
2. Check that the latest PCM hardware and software is fitted.

If necessary, reflash the PCMs and then run a KOER test to ensure that the problem is resolved.

If the P260F code is logged again, contact Aston Martin Technical Support.

P2706, P0770 - Shift Solenoids Open Circuit

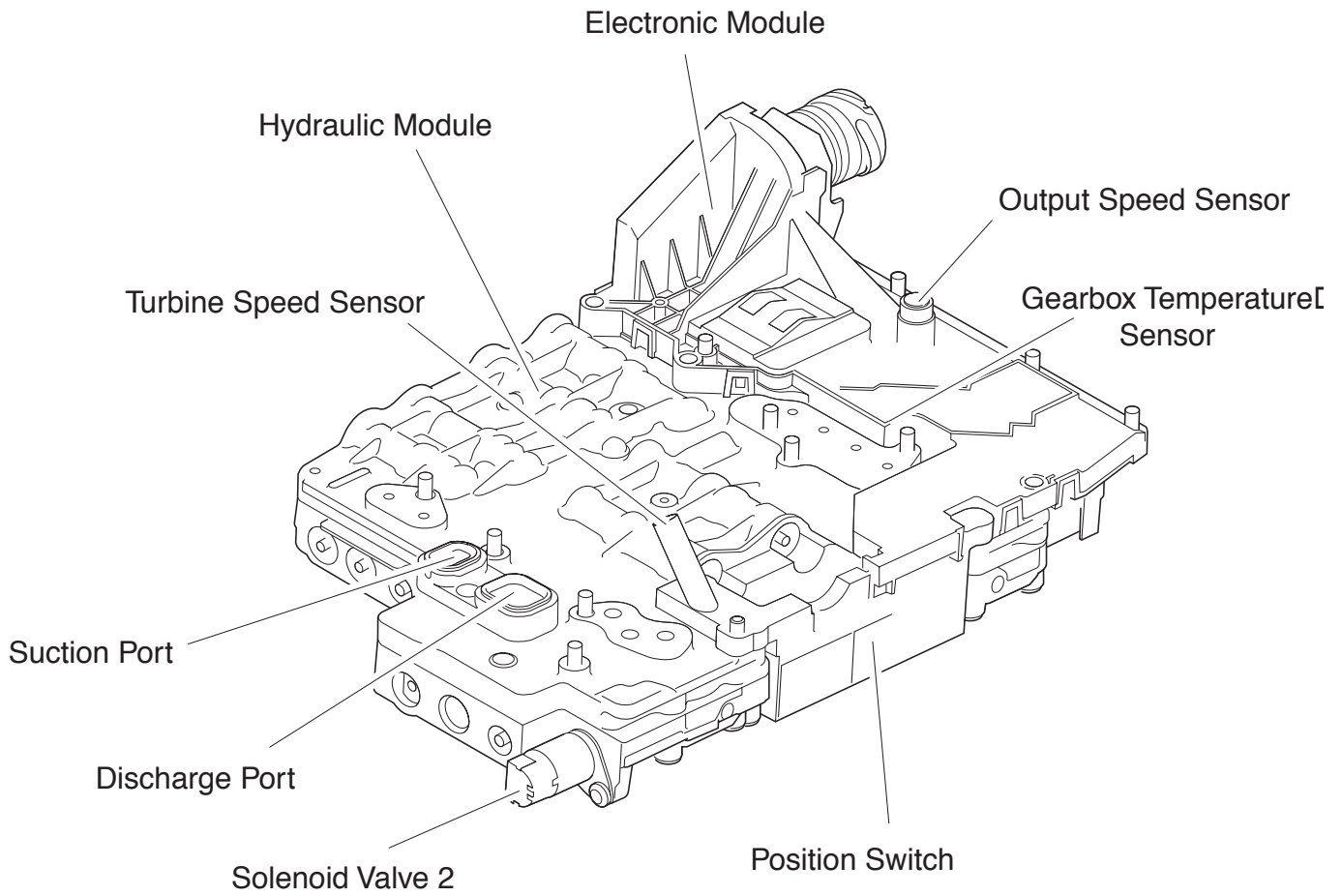


Figure 1. Mechatronic Unit

Fault Code Definition

P2706	Shift solenoid F (MV2) open circuit
P0770	Shift solenoid E (MV1) open circuit

MIL Status

These codes will light the MIL lamp.

P2706, P0770 Fault Analysis

1. Connect the WDS and confirm that P0770, or P2706 is logged.
2. Clear the logged codes. Start the engine.
3. Press each of the gear selection (P, R, N, D) buttons in turn. Check that each switch telltale lamp comes on, indicating that the selected gear mode has been successfully engaged.
4. Check for logged DTCs. If any of the above codes are logged again, replace the mechatronic unit.

P2763, P2764 - Torque Converter Clutch Circuit Faults

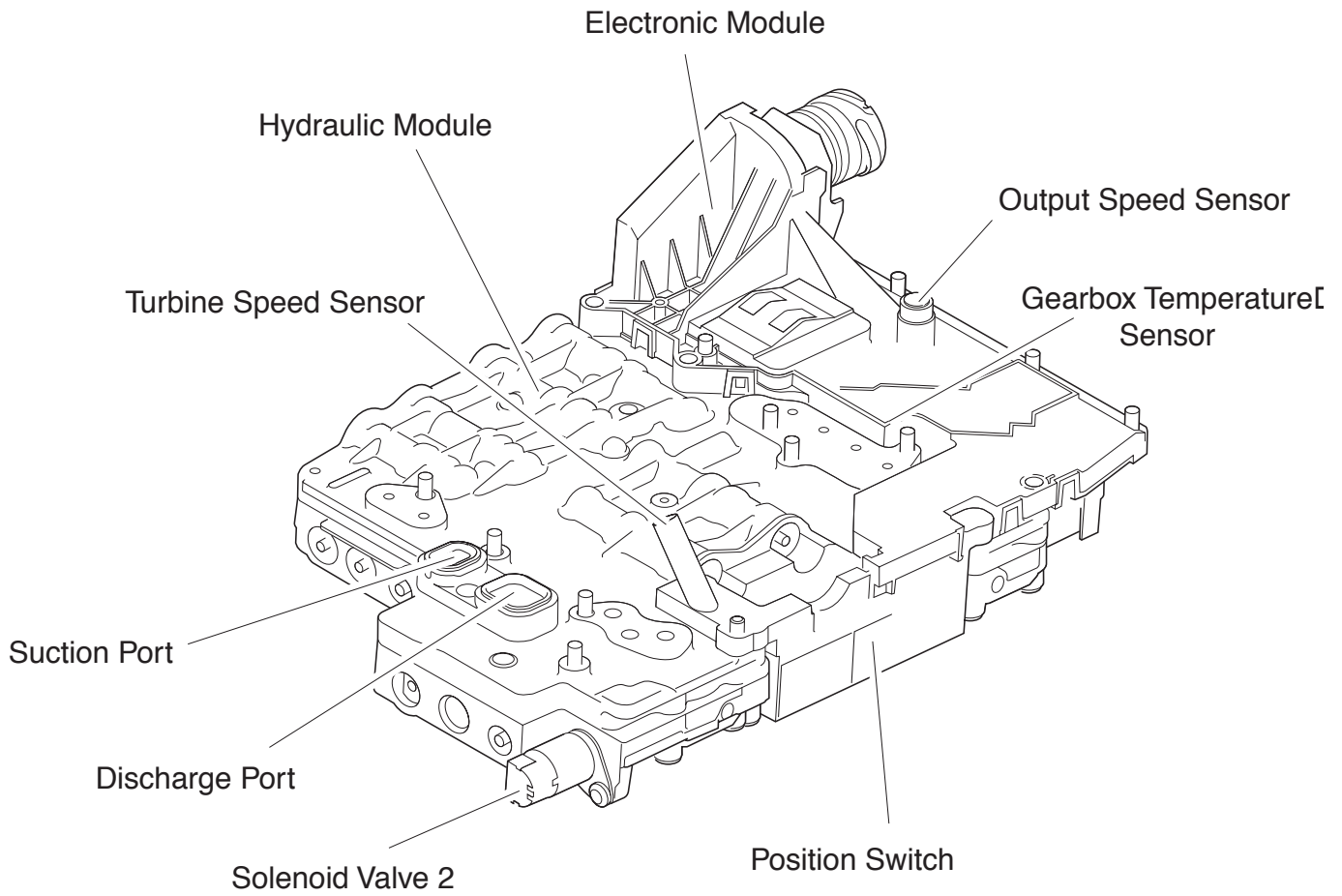


Figure 1. Mechatronic Unit

Fault Code Definition

P2763 Torque convertor clutch circuit short to supply

P2764 Torque convertor clutch solenoid short to ground / open circuit

MIL Status

These codes will light the MIL lamp.

P2763, P2764 Fault Analysis

1. Connect the WDS and confirm that P2763, or P2764 is logged.
2. Clear the fault code and run a brief road test. If P2763, or P2764 is logged again, change the mechatronic unit.

Run a brief road test to ensure that the problem is resolved.

P2779 -Downshift Circuit (Kickdown)

Sensor-Pedal Position A (Primary)

Primary PCM

APP2 RTN	C1589-3	BG,0.5	C2243-9	BG,0.5	C0635-18G	APP2 RTN
APP2 BVREF	C1589-7	UW,0.5	C2243-10	UW,0.5	C0635-16G	APP2 BVREF
APP2	C1589-6	SW,0.5	C2243-11	SW,0.5	C0635-17G	APP2 (I)
APP1 RTN	C1589-5	B,0.5	C2243-12	B,0.5	C0635-6G	APP1 RTN
APP1 BVREF	C1589-1	OS,0.5	C2243-13	OS,0.5	C0635-4G	APP1 BVREF
APP1	C1589-2	SB,0.5	C2243-14	SB,0.5	C0635-5G	APP1 (I)

Sensor-Pedal Position B (Secondary)

Secondary PCM

APP2 RTN	C0787-3	BG,0.5	C2243-3	BG,0.5	C0638-18G	APP2 RTN
APP2 BVREF	C0787-7	UW,0.5	C2243-4	UW,0.5	C0638-16G	APP2 BVREF
APP2	C0787-6	SW,0.5	C2243-5	SW,0.5	C0638-17G	APP2 (I)
APP1 RTN	C0787-5	B,0.5	C2243-6	B,0.5	C0638-6G	APP1 RTN
APP1 BVREF	C0787-1	OS,0.5	C2243-7	OS,0.5	C0638-4G	APP1 BVREF
APP1	C0787-2	SB,0.5	C2243-8	SB,0.5	C0638-5G	APP1 (I)

Figure 1. Throttle Pedal Position Sensor Circuits

Fault Code Definition

P2779 Downshift Circuit (Kickdown)

MIL Status

These codes will not light the MIL lamp.

P2779 Fault Analysis

1. Connect the WDS and confirm that P2779 is logged.
2. Set the datalogger to monitor all throttle pedal position sensors.

Switch on the ignition and datalogger. Fully open and close the throttle several times. (Ensure that the pedal reaches its fully open stop position).

Switch off datalogger and the ignition. Examine the TPPS signals.

If the signals accurately follow pedal movement, go to step 3.

If any signal is suspect, service the sensors or wiring as necessary and repeat the test to ensure that the problem is resolved.

3. Check the software level in the eTCM and PCMs against that on the latest WDS disc.

If the vehicle software is not up to date, Reflash the TCM and PCMs. Check that the DTC memory is clear (apart from P1000). Repeat the throttle position signal check to ensure that the problem is resolved.

If the vehicle software is up to date, call Aston Martin Technical Support.

P2800, P2801 - Gear Position Signal Error

Interface-Auto Switches

REV SIG RTN	C2737-8	B,0.5
REV SW2	C2737-6	OW,0.5
REV SW1	C2737-5	OB,0.5
REV TT/X	C2737-7	WP,0.5

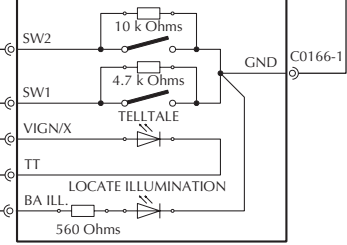
Primary PCM

REV TT	C0634-28G	OY,0.5	C2244-21	OY,0.5	C0467-21	OY,0.5	C0166-3
	SPL1-DIMOUT/CA			OU,0.5	C0231-19	OU,0.5	C0166-2
PARK TT	C0634-45G	UG,0.5	C2244-22	UG,0.5	C0467-22	UG,0.5	C0166-5
PRND1	C0634-4G	UR,0.5	C2244-15	UR,0.5			C0166-6
PRND2	C0634-29G	GB,0.5	C2245-17	UG,0.5			C0166-4

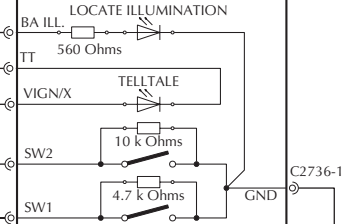
Interface-Auto Switches

PRND2	C2737-22	UG,0.5	C1184-19	UG,0.5
PRND1	C2737-21	UR,0.5	C0223-12	UR,0.5
VIGN.	C2737-17	WP,0.5		SPL35-VIGN/FA
2 STAGE ILL.	C2737-18	Y,0.5		SPL28-2ILL/FA
BVREF	C2737-19	YR,0.75		SPL32-BVREF/FA
GND	C2737-20	B,0.75		SPL9-GND/FA
PARK TT/X	C2737-11	WP,0.5		
PARK SW2	C2737-10	RW,0.5		
PARK SW1	C2737-9	RB,0.5		
PARK SIG RTN	C2737-12	B,0.5		

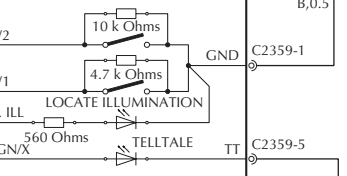
Switch-Reverse



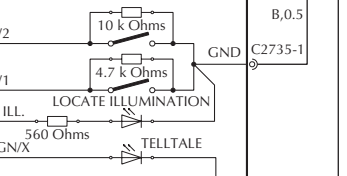
Switch-Park



Switch-Neutral



Switch-Drive



Interface-Auto Switches

NEUT SIG RTN	C2737-1	B,0.5
NEUT SW2	C2737-3	YW,0.5
NEUT SW1	C2737-2	YB,0.5
NEUT TT/X	C2737-4	WP,0.5
DRIVE SIG RTN	C2737-16	B,0.5
DRIVE SW2	C2737-14	UW,0.5
DRIVE SW1	C2737-13	UB,0.5
DRIVE TT/X	C2737-15	WP,0.5

Primary PCM

DRIVE TT	C0634-17G	YW,0.5	C2244-16	YW,0.5	C1167-1	YW,0.5	C2735-3
NEUTRAL TT	C0634-32G	UY,0.5			C2244-14	RW,0.5	C0047-14
							C2735-2
							C2735-4
							C2735-6
							C2735-5

Figure 1. Reverse, Park, Neutral and Drive Switch Circuits.

Fault Code Definition

P2800 - Shift by Wire Transmission PRND button circuit fault (logged in PCM)

P2801 - Shift by Wire Transmission PRND button circuit fault (logged in TCM)

This is a MIL code.

P2800, P2801 Fault Analysis

1. Connect the WDS and confirm that P2800 or P2801 is logged.
2. With the ignition on, press and release the 'P, R, N and D' buttons in turn.

If the lamp in each button illuminates, the circuit to the Auto Switch Interface Unit, the PCM and the TCM is serviceable. Go to step 3.

If any one lamp does not illuminate when its button is pressed and released, perform continuity checks on the wiring between the switch and interface box. Also check continuity of the wiring to the telltale lamp in the suspect switch. Service the switch or circuits as necessary. Clear the fault code and run a brief road test to ensure that the problem is resolved.

3. Using the WDS datalogger, monitor the PRND1 and PRND2 signals.

Key on. Press and release each switch in turn and look for a corresponding change in the PRND signals.

Button Pressed	PRND 1-GND	PRND 2-GND
PARK	0.45	2.26
NEUTRAL	1.08	2.26
DRIVE	1.74	2.26
REVERSE	2.16	2.26
NONE	2.62	3.71

If the PRND signal voltages are correct, the problem is not present at this time and testing is complete.

If the PRND signal voltages are not correct, if either voltage does not change when any button is pressed, check BVREF and SIG RTN at the

interface box. Service the BVREF and SIGRTN circuits as necessary. Repeat the voltage checks to ensure that the problem is resolved.

If no fault is found with the BVREF and SIGRTN lines, then check the continuity of the PRND1 and PRND2 signal lines. Service the wiring as necessary. Clear the fault code and run a KOER test including changes of gear to all modes to ensure that the problem is resolved.

4. If PRND 1 or PRND 2 change when any single button is pressed, but the voltages do not match the PRND table, substitute each button in turn with a new button and retest to ensure that the PRND voltages are now correct.

IF the voltages are still not correct, check for continuity/short circuit to power or ground from each button to the interface box. Service any identified faults and retest to ensure that the problem is resolved.

P2805 -Position Information Fault on Serial Backup Line

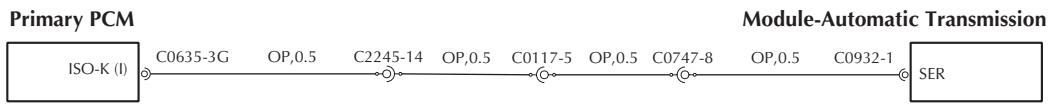


Figure 1. Serial Backup Line Circuit

Fault Code Definition

P2805 Position information fault on serial backup line

P2805 Fault Analysis

1. Connect the WDS and confirm that P2805 is logged. Clear the logged fault code.
2. Check continuity from transmission connector C0932-1 to Primary PCM connector C0635-3.

If continuity is poor, service the circuit as necessary. Reconnect all components and run a KOEO test to ensure that the problem is resolved.

If continuity is good, Check for voltage and then resistance from C0635-3 to ground.

If any short to supply or to ground is detected, service the circuit as necessary and run a KOEO test to ensure that the problem is resolved.

P2812, P2814, P2815 - Park Lock Solenoid Fault

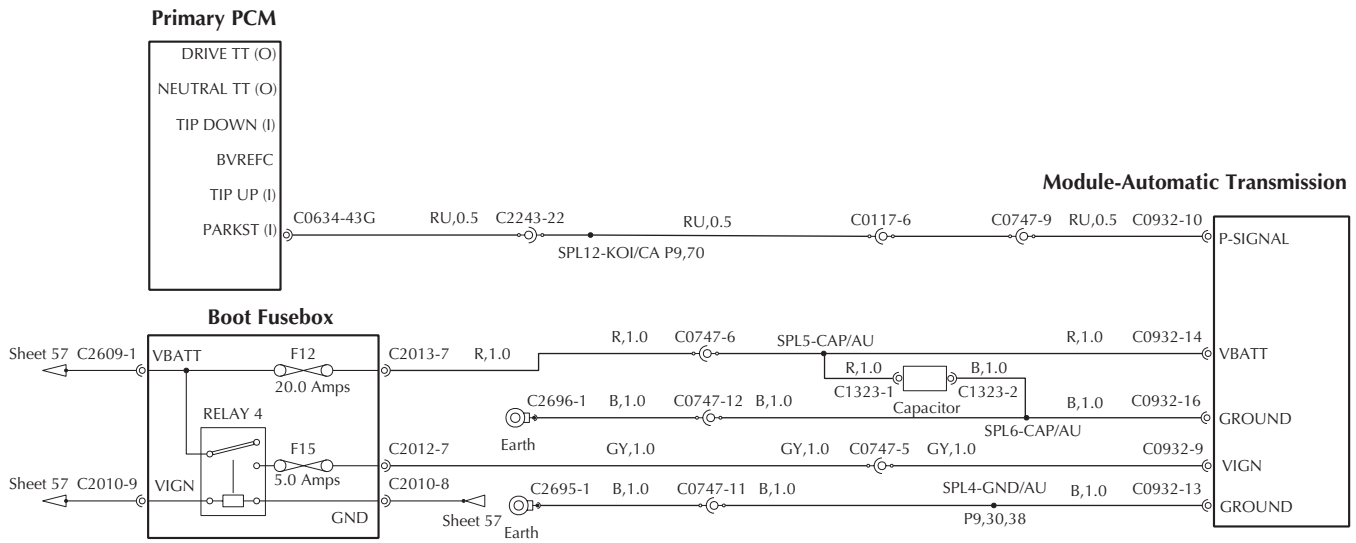


Figure 1. Park Status Circuit.

Fault Code Definition

P2812 Park Lock solenoid open circuit.

P2814 Park Lock solenoid short to ground/open circuit.

P2815 Park lock solenoid short to supply.

P2814 Fault Analysis

1. Connect the WDS and confirm that P2812, P2814 or P2815 is logged. Clear the logged fault code.
2. Set datalogger to monitor the parklock status signal. Switch on the ignition. Select and deselect Park several times. The PARKST signal should follow the changes in Park status.

If the signal does correctly follow changes in Park status, repeat the test again to ensure that the problem is no longer present.

If the signal does not change status, go to step 3.

3. Check the emergency park release lever is in the released position. Also check the emergency release cable for jamming, stiff operation, etc.

If the emergency park release system operation is suspect, Service the lever and cable as necessary. Clear the fault code and retest to ensure that the problem is resolved.

If the emergency park release system is operating correctly, change the mechatronic unit. Clear the fault code and retest to ensure that the problem is resolved.

4. If the fault code is logged again, contact Aston Martin Technical Support.

