P0171/ P0174 - Fuel System

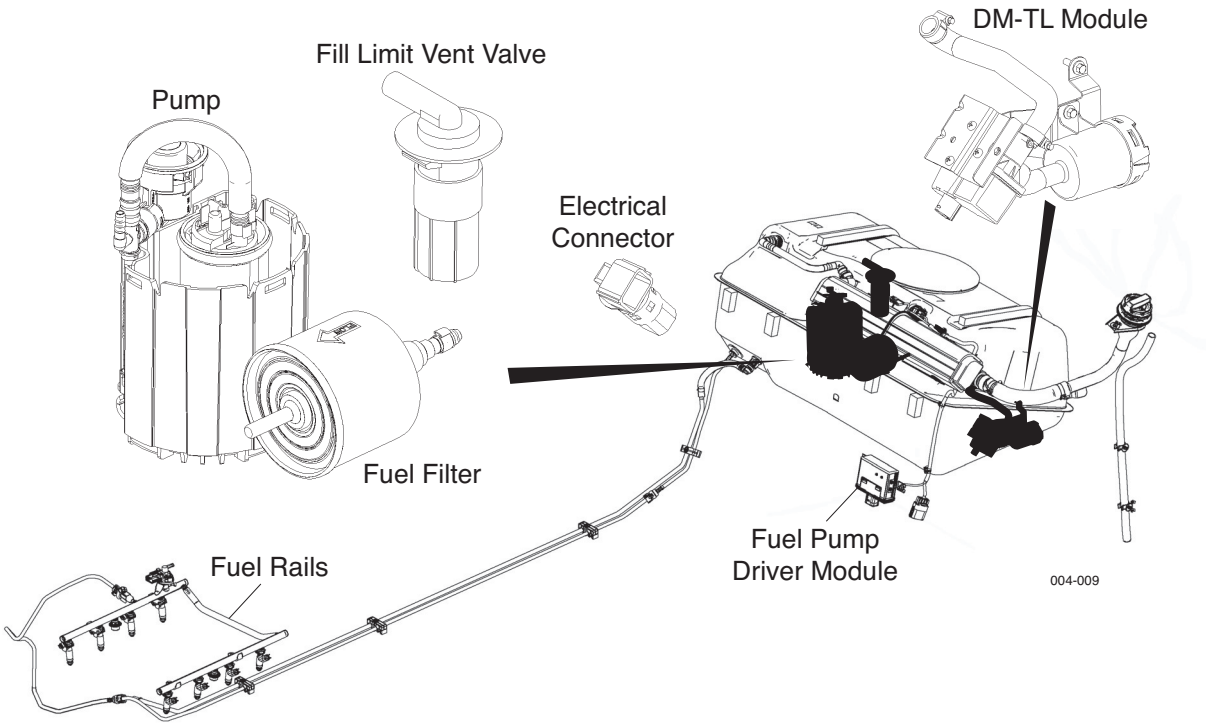

Figure 1. Fuel System Components

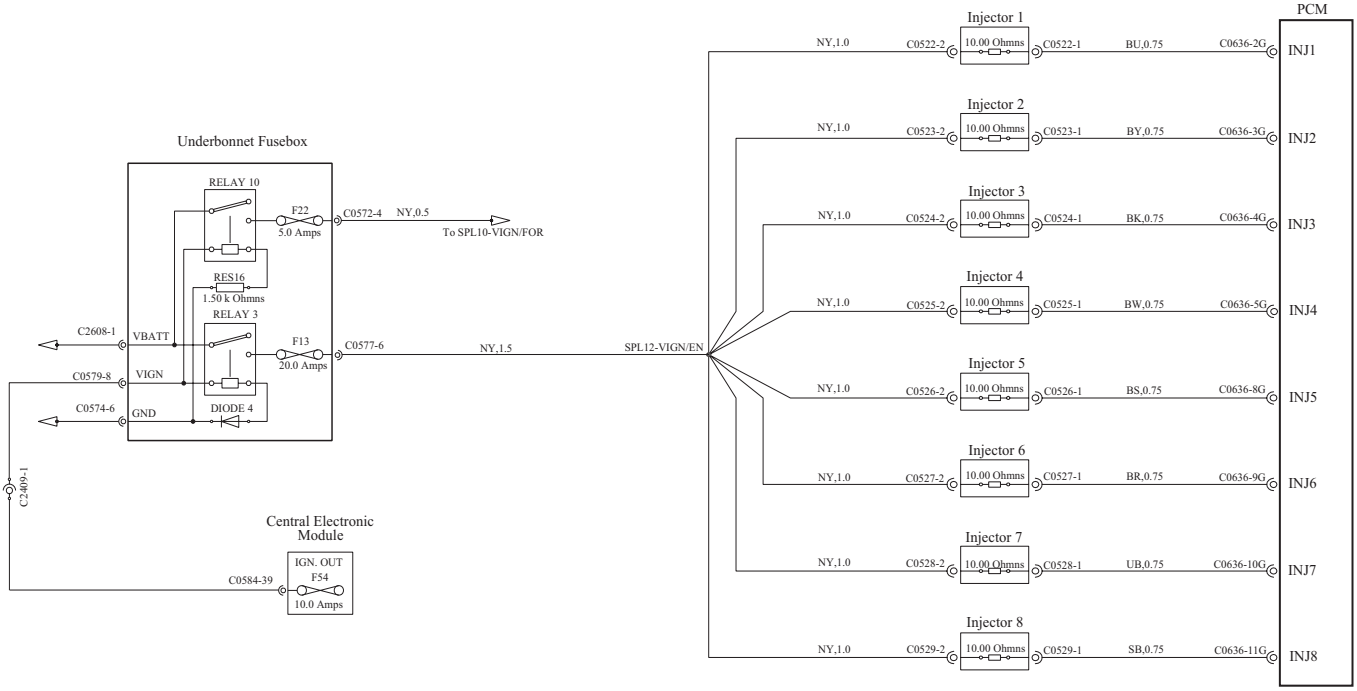

Figure 2. Fuel Injector - PCM Circuits

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

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

6. If a 'No Fuel' condition has been present, connect the WDS and confirm that P0171/P0174 is logged. Record all logged DTC's and list all fuel related codes.

   If any other fuel related faults are logged, resolve these codes first.

   Return to this procedure only if P0171/P0174 is logged again.

7. Do a KOER test and 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.

8. Carry out a thorough visual inspection of the vehicle, concentrate 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 code and do a KOER test to ensure that the problem is resolved.

   If the P0171/P0174 code is still present, go to step 5.

9. If any adaptive fuel codes are detected in step 3, go to step 6. For other codes, go to the appropriate procedure in this section of the fault analysis manual.

10. Check the fuel pressure as follows:

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

    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 55 psi.

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

11. 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)

12. Switch off the ignition and disconnect the fuel injector electrical connectors. Check the resistance of the fuel injectors.

    Each injector resistance should be in the range 11 - 18W.

    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 do a KOER test to ensure that the problem is resolved.

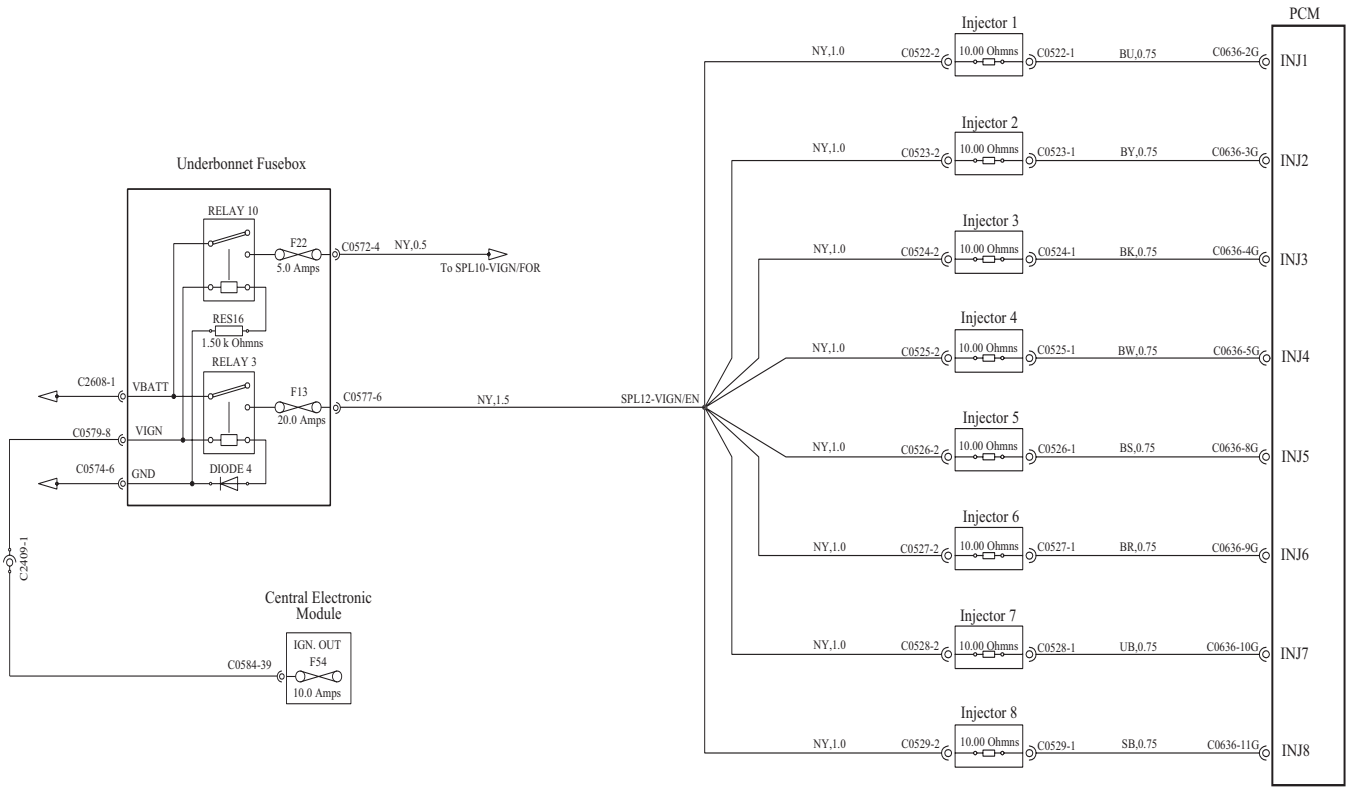

Figure 3. Fuel Injector - PCM Circuits

13. Check for injector codes P0201 - P0208 and analyse these codes if present. Return to step 7 of this procedure if P0171/P0174 are logged again after clearing the P0201 - P0208 codes.

14. 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, clear the P0171/ P0174 code and do a KOER test to ensure that the problem is resolved.

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

15. 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.

16. If a P0171/P0174 code is still present, contact Aston Martin Technical Support.