

<b>Reference</b>	SSM72559
<b>Models</b>	Discovery Sport / L550 Range Rover Evoque / L538
<b>Title</b>	2.0L GTDi Check Engine Light Illuminated with DTC P2096 and or P2097 Stored in PCM
<b>Category</b>	Driveability
<b>Last modified</b>	18-Dec-2015 00:00:00
<b>Symptom</b>	698298 Malfunction Indicator Lamp
<b>Attachments</b>	High-Pressure Diagnostic Leak Detector Information.pdf (High-Pressure Diagnostic Leak Detector Information.pdf)

**Content****Issue:**

Customer has observed 'Check Engine Light' - also known as 'Engine Malfunction Indicator Lamp (MIL)' - illuminated in the instrument cluster & P2096-00 and or P2097-00 is evident in the PCM.

**Action:**

As per the 'Possible Cause' listed in TOPIx, there may be an air leak in the exhaust system. Carry out a leak check of the exhaust system and follow the actions as detailed below:

1. Perform a pressurized smoke test of the exhaust system using the JLR 'High-Pressure Diagnostic Leak Detector' test equipment. Note:
  - Maximum test pressure for ALL exhaust system gas joints is 0.5 bar (7.3 PSI).
  - Flow rate is visible on the test equipment on the front right hand side (see file 'High-Pressure Diagnostic Leak Detector Information.pdf' attached). The mid-point / widest point of the float, is the reference point to be used, when reading the value. Allow the value to settle while the system is filled with smoke. Please record this value for submission on either TA or EPQR.
  - The Turbocharger Wastegate pressure linkage arm has a clearance fit with the bush at the wastegate and therefore under these specific test conditions, a 'leak' is expected to be seen and will not be the cause of the CEL. (This may only be evident when the engine has been left not running for more than 6 hours)
2. When pressurizing the exhaust system with smoke pay particular attention to:
  - The welding around the bosses where the O2 sensors are fitted
  - The flange where the turbocharger and exhaust meet
  - The flexible coupling
  - The flange where the primary and secondary catalytic converters meet.

- Note: A hole as small as a pin-head may trigger the fault so the system must be examined very carefully. (Soapy water has been used to good effect to help find these small leaks). A leak downstream of the 3rd O2 sensor but before the rear exhaust section may also trigger the fault. If a leak is found please raise a TA for further assistance.
3. Check the 3 bolts which connect the turbocharger to the catalytic converter are tightened to 24Nm / 18Lb-ft – do not loosen bolts first only tighten them.
  4. Check each of the 3 heated O2 sensors are tightened to 47 Nm / 35 Lb-ft – do not loosen bolts first only tighten them.
  5. If a leak is detected when performing steps 1 to 4, please collect photographic evidence when possible, rectify the problem and proceed to step 6.
  6. Clear fault codes, road test the vehicle as follows:
    - Allow the engine coolant to reach NORMAL operating temperature by driving or allowing the engine to idle.
    - Drive the vehicle on a highway (preferred).
    - **Accelerate** the vehicle to simulate an overtaking maneuver to increase engine load for a short amount of time. Recommended 20~50 mph (30~80 km/h) with approximately 50 ~ 75% throttle pedal opening.
    - **Cruise at highway speed**, (higher vehicle speed allows better operation of the diagnostic) target 70 mph (110 km/h) (preferred) or > 50 mph (80km/h) for 5 minutes keeping the accelerator pedal as steady as possible or preferably using cruise control.
    - Repeat the '**Accelerate**' step followed by a '**Cruise at highway speed**' step 2 further times.
  7. On return to the Retailer check for fault codes stored within the PCM.
    - If no fault codes have returned submit an EPQR detailing the repair and return the vehicle to the customer.
    - If the fault codes return, please raise a TA for further assistance.
  8. Please retain any replaced component parts for potential PRR.

## High-Pressure Diagnostic Leak Detector



The high-pressure diagnostic leak detector has a variety of applications in detecting even very small leaks in different applications

Flow rate is visible on the test equipment on the front right hand side. The mid-point / widest point of the float, is the reference point to be used, when reading the value. Please record this value for submission on either TA or EPQR.

## Flow Meter l/min AIR

