

PUBLISHED: 09-OCT-2019

2020.0 DEFENDER (LE), 309-00C

EXHAUST SYSTEM - INGENIUM I6 3.0L PETROL (G2417680)

mcx30.com

PRINCIPLES OF OPERATION

For a detailed description of the Exhaust System, refer to the relevant Description and Operation section in the workshop manual. REFER to:(309-00C Exhaust System - INGENIUM I6 3.0L Petrol)

[Exhaust System](#) (Description and Operation),

[Gasoline Particulate Filter](#) (Description and Operation).

INSPECTION AND VERIFICATION

 CAUTION:

Diagnosis by substitution from a donor vehicle is **NOT** acceptable. Substitution of control modules does not guarantee confirmation of a fault, and may also cause additional faults in the vehicle being tested and/or the donor vehicle.

 NOTES:

- If a control module or a component is at fault or may be at fault and the vehicle remains under manufacturer warranty, refer to the Warranty Policy and Procedures manual, or determine if any prior approval program is in operation, prior to the installation of a new module/component.
- When performing voltage or resistance tests, always use a digital multimeter accurate to three decimal places, and with an up-to-date calibration certificate. When testing resistance always take the resistance of the digital multimeter leads into account.
- Check and rectify basic faults before beginning diagnostic routines involving pinpoint tests.

1. Verify the customer concern
2. Visually inspect for obvious signs of damage and system integrity

Visual Inspection

MECHANICAL

ELECTRICAL

MECHANICAL	ELECTRICAL
■ Gasoline particulate filter ■ Differential pressure sensor hoses ■ Differential pressure sensor metal pipes and unions ■ Differential pressure sensor mounting position integrity ■ Damaged gasoline particulate filter ■ Gasket failure ■ Flexible coupling ■ Leaks ■ Metal fatigue ■ Pipes ■ Catalytic converter ■ Muffler(s) ■ Joints ■ Mountings ■ Clearance around components	■ Differential pressure sensor ■ Differential pressure sensor connector ■ Differential pressure sensor wiring harness ■ Fuses ■ Wiring harness ■ Electrical connector(s) ■ Sensor(s) ■ Powertrain Control Module (ECM)

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step

4. If the cause is not visually evident, verify the symptom and refer to the Symptom Chart, alternatively check for Diagnostic Trouble Codes (DTCs) and refer to the DTC Index

5. Check JLR claims submission system for open campaigns. Refer to the corresponding bulletins and SSMS which may be valid for the specific customer complaint and complete the recommendations as required

SYMPTOM CHART

SYMPTOM	POSSIBLE CAUSES	ACTION
Exhaust leaking	■ Exhaust system leaking	■ Inspect the integrity of the exhaust system. Rectify as necessary
Exhaust excessively noisy	■ Exhaust system leaking ■ Exhaust system fouling the body, transmission, etc	■ Inspect the integrity of the exhaust system. Rectify as necessary ■ Inspect the exhaust system for foul conditions

SYMPTOM	POSSIBLE CAUSES	ACTION
Engine performance reduced	■ Air intake system fault ■ Exhaust system restricted/blocked ■ Fuel system fault ■ Ignition system fault ■ Engine system fault	■ Inspect the intake system for correct installation and damage. Rectify as necessary ■ Inspect the exhaust system for restrictions and blockages. Rectify as necessary ■ Refer to the relevant section of the workshop manual and inspect the fuel system. Rectify as necessary ■ Refer to the relevant section of the workshop manual and inspect the ignition system. Rectify as necessary ■ Using the Jaguar Land Rover approved diagnostic equipment, check the powertrain control module for related DTCs
Excessive smoke from exhaust	■ Gasoline particulate filter substrate is missing or severely damaged ■ Gasoline particulate filter incorrect installation ■ Gasoline particulate filter failure	■ Remove the gasoline particulate filter and visually inspect for missing substrate, severe damage and correct installation ■ Inspect and install a new gasoline particulate filter, only when diagnosed as failed
Poor acceleration and lack of power	■ Gasoline particulate filter substrate is missing or severely damaged ■ Gasoline particulate filter incorrect installation ■ Gasoline particulate filter failure ■ Gasoline particulate filter is getting full of soot ■ Connector is disconnected, connector pin is backed out, connector pin corrosion ■ Differential pressure sensor hoses for crushed, blockage, split ■ Charge air system leakage ■ Blocked air filter ■ Gasoline particulate filter hose lines disconnected ■ Differential pressure sensor mechanical integrity ■ Exhaust system leakage upstream of gasoline particulate filter. Gasoline particulate filter is getting full of soot ■ Gasoline particulate filter partial blockage ■ Inhibited regeneration - Unable to reach good conditions to regenerate the gasoline particulate filter ■ Customer driving routine does not allow the system to clean the gasoline particulate filter	■ Remove the gasoline particulate filter and visually inspect for missing substrate, severe damage and correct installation ■ Inspect and install a new gasoline particulate filter, only when diagnosed as failed ■ Using the Jaguar Land Rover approved diagnostic equipment, complete the service regeneration procedure ■ Inspect connectors for signs of water ingress, and pins for damage and/or corrosion ■ Inspect gasoline particulate filter pressure sensor hoses for crushed, blockage, splits ■ Inspect charge air system for leakage ■ Inspect air filter serviceability ■ Inspect differential pressure sensor for mechanical integrity, split pipework, loose hose clips and damaged hoses ■ Inspect gasoline particulate filter system for mechanical integrity ■ Refer to the gasoline particulate filter regeneration procedure and complete a gasoline particulate filter regeneration ■ Advise customer of driving routine required to regenerate gasoline particulate filter as stated in the vehicle handbook

SYMPTOM	POSSIBLE CAUSES	ACTION
Engine speed restricted	- Gasoline particulate filter substrate is missing or severely damaged - Gasoline particulate filter incorrect installation - Gasoline particulate filter failure - Connector is disconnected, connector pin is backed out, connector pin corrosion - Differential pressure sensor	- Remove the gasoline particulate filter and visually inspect for missing substrate, severe damage and correct installation - Inspect and install a new gasoline particulate filter, only when diagnosed as failed - Inspect connectors for signs of water ingress, and pins for damage and/or corrosion - Install a new differential pressure sensor, only when diagnosed as failed
Fuel consumption high	- Gasoline particulate filter is getting full of soot - Charge air system leakage - Blocked air filter - Gasoline particulate filter hose lines disconnected - Differential pressure sensor mechanical integrity - Exhaust system leakage upstream of gasoline particulate filter. Gasoline particulate filter is getting full of soot - Gasoline particulate filter partial blockage - Inhibited regeneration - Unable to reach good conditions to regenerate the gasoline particulate filter - Customer driving routine does not allow the system to clean the gasoline particulate filter	- Using the Jaguar Land Rover approved diagnostic equipment, complete the service regeneration procedure - Inspect charge air system for leakage - Inspect air filter serviceability - Inspect differential pressure sensor for mechanical integrity, split pipework, loose hose clips and damaged hoses - Inspect gasoline particulate filter system for mechanical integrity - Refer to the gasoline particulate filter regeneration procedure and complete a gasoline particulate filter regeneration - Advise customer of driving routine required to regenerate gasoline particulate filter as stated in the vehicle handbook

CONTROL MODULE CAVITY

CONTROL MODULE CAVITY	DESCRIPTION	DTC
Circuit reference - I_D_GPFP	Input from the Gasoline Particulate Filter Pressure sensor to the Powertrain Control Module	- P2452-41 - P2452-96 - P2453-28 - P2453-2A - P2453-4A - U0601-08

CONTROL MODULE CAVITY	DESCRIPTION	DTC
Circuit reference - G_R_GPFP	Sent ground to the Gasoline Particulate Filter Pressure sensor from the Powertrain Control Module	■ P2452-41 ■ P2452-96 ■ P2453-4A
Circuit reference - O_V_5VGFPF	Sent 5V supply to the Gasoline Particulate Filter Pressure sensor from the Powertrain Control Module	■ P2452-41 ■ P2452-96 ■ P2453-4A

DIAGNOSTIC ROUTINES

ROUTINE NUMBER	ROUTINE DESCRIPTION	ROUTINE ACTION
0x40A4	Install Particulate Filter Data From Donor ECU	This routine is used to install particulate filter data to new powertrain control module - Transfer existing data stored on service tool to new powertrain control module
0x40A5	Extract Particulate Filter Data to New ECU	This routine is used to extract particulate filter data to new powertrain control module - Transfer existing data stored on service tool to new powertrain control module
0x40A8	Initiate Particulate Filter Regeneration	This is used to force particulate filter regeneration. This process burns out carbon in the particulate filter
0x40BA	Clear Particulate Filter Stored Memory Values	This routine will clear the particulate filter stored values of the memory

DATALOGGER SIGNALS

DATALOGGER SIGNAL	DESCRIPTION	ACTION
0x0645	Bank 1 Particulate Filter - Exhaust Back Pressure	■ Feedback values for the gasoline particulate filter pressure sensor (exhaust back pressure) bank 1 ■ With the ignition on, engine not running, check the pressure sensor value, this should be close to 0 (no gas flow) ■ If the sensor is reading above this then the sensor is offset

For a list of Diagnostic Trouble Codes (DTCs) that could be set on this vehicle, please refer to Section 100-00.
REFER to: [Diagnostic Trouble Code Index - INGENIUM I6 3.0L Petrol, Vehicles With: MHEV, DTC: Powertrain Control Module \(PCM\) B1087-88 to P0634-00](#) (100-00 General Information, Description and Operation).

cmjjaGFyZG1vcnRvbjsyMDIwLTA5LTE3VDE4OjU5OjE4Ljg1Ni7OTAuMTk5LjEyMS4xMTc7

mcx30.com