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2020.0 DEFENDER (LE), 414-03A

BATTERY CHARGING - INGENIUM I6 3.0L PETROL, [+] MHEV (G2430858)

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PRINCIPLES OF OPERATION

For a detailed description of the battery charging system, refer to the relevant Description and Operation section in the workshop manual. REFER to:

Belt Intergrated Starter Generator (414-03A, Description and Operation),
[Direct Current to Direct Current Converter](#) (414-03 Battery Charging - INGENIUM I6 3.0L Petrol, [+] MHEV, 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 failure is suspected 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 that has the resolution ability to view 3 decimal places. For example, on the 2 volts range can measure 1 mV or 2 kΩ range can measure 1 Ω. 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
■ Belt integrated starter generator drive belt	■ Fuses ■ Wiring harnesses and connectors ■ Belt integrated starter generator ■ Direct current to direct current converter

MECHANICAL	ELECTRICAL
	■ MHEV battery ■ MHEV battery junction box

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

SYMPTOM CHART

SYMPTOM	POSSIBLE CAUSES	ACTION
Charging system inoperative	■ Belt integrated starter generator drive belt loose or damaged ■ Belt integrated starter generator system fault ■ Direct current to direct current converter system fault	■ Check the integrity of the belt integrated starter generator drive belt. Rectify as necessary ■ Using the Jaguar Land Rover approved diagnostic equipment, check the starter generator control module for related DTCs and refer to the relevant DTC index ■ Using the Jaguar Land Rover approved diagnostic equipment, check the direct current to direct current converter for related DTCs and refer to the relevant DTC index

DTC INDEX

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 - Vehicles With: MHEV, DTC: Direct Current to Direct Current Converter (DC/DC) (100-00, Description and Operation),

[Diagnostic Trouble Code Index - Vehicles With: MHEV, DTC: Starter Generator Control Module \(SGCM\) \(100-00 General Information, Description and Operation\).](#)