

# Battery and Charging System - General Information - Charging System

Diagnosis and Testing

## Principles of Operation

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

[Battery Care](#) (414-00 Battery and Charging System - General Information, Description and Operation),  
[Battery and Cables](#) (414-01, Description and Operation),  
[Generator - ID4 2.4L Diesel](#) (414-02, 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.

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.

**NOTE:** Check the vehicle battery condition and state of charge before condemning any of the charging system components. For additional information, refer to the battery care manual.

For a complete list of all diagnostic trouble codes that could be logged on this vehicle, please refer to section 100-00. REFER to: (100-00)

Diagnostic Trouble Code (DTC) Index - DTC: Engine Control Module (PCM) (Description and Operation),  
 Diagnostic Trouble Code (DTC) Index - DTC: Instrument Cluster (IPC) (Description and Operation).

### Visual Inspection

Mechanical	Electrical
<ul style="list-style-type: none"> <li>● Generator</li> <li>● Drive belt</li> <li>● Drive belt tensioner</li> <li>● Generator pulley</li> <li>● Check the security of the generator fixings</li> </ul>	<ul style="list-style-type: none"> <li>● Generator</li> <li>● Battery</li> <li>● Mega-fuse</li> <li>● Engine/generator ground connection</li> <li>● Harness(s)</li> <li>● Electrical connector(s)</li> <li>● Engine Control Module (ECM)</li> <li>● Central junction box (Freelander 2 only)</li> </ul>

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, check for Diagnostic Trouble Codes (DTCs) and refer to the DTC Index.

## DTC Index

**NOTE:** If the control module or a component is suspect and the vehicle remains under manufacturer warranty, refer to the Warranty Policy and Procedures manual (section B1.2), or determine if any prior approval programme is in operation, prior to the installation of a new module/component.

**NOTE:** Generic scan tools may not read the codes listed, or may read only five digit codes. Match the five digits from the scan tool to the first five digits of the seven digit code listed to identify the fault (the last two digits give extra information read by the manufacturer-approved diagnostic system).

**NOTE:** When performing electrical voltage or resistance tests, always use a digital multimeter (DMM) accurate to three decimal places, and with an up-to-date calibration certificate. When testing resistance, always take the resistance of the DMM leads into account.

**NOTE:** Check and rectify basic faults before beginning diagnostic routines involving pinpoint tests.

**NOTE:** If DTCs are recorded and, after performing the pinpoint tests, a fault is not present, an intermittent concern may be the cause. Always check for loose connections and corroded terminals.

Symptom	Possible Cause	Action
Charge warning lamp does not illuminate	<ul style="list-style-type: none"> <li>● Warning lamp/circuit - fault</li> <li>● Generator - internal fault</li> <li>● CAN Bus - circuit fault</li> </ul>	<ul style="list-style-type: none"> <li>● Check the warning lamp function with the ignition on and the engine off</li> <li>● Repair the circuit as necessary</li> <li>● Check for DTCs indicating a generator, CAN or engine control module fault</li> </ul>