

# Fuel Charging and Controls - Turbocharger - 2.4L Duratorq-TDCi HPCR (103kW/140PS) - Puma - Turbocharger

Diagnosis and Testing

## Overview

For information on description and operation:

REFER to: [Turbocharger](#) (303-04B Fuel Charging and Controls - Turbocharger - 2.4L Duratorq-TDCi HPCR (103kW/140PS) - Puma, Description and Operation).

## Inspection and Verification

### 1. • WARNINGS:



The following tests may involve working in close proximity to hot components. Make sure adequate protection is used. Failure to follow this instruction may result in personal injury.



The turbocharger can continue to rotate after the engine has stopped. Do not attempt to check the turbocharger until one minute has elapsed since the engine was switched off. Failure to follow this instruction may result in personal injury.

1. Verify the customer concern.
2. Visually inspect for obvious mechanical or electrical faults.

### Visual Inspection Chart

Mechanical	Electrical
<ul style="list-style-type: none"><li>• Intake air system</li><li>• Hose(s)/hose connections</li><li>• Turbocharger</li><li>• General engine condition.</li></ul>	<ul style="list-style-type: none"><li>• Circuit(s)</li><li>• Electrical connections and harnesses</li><li>• Turbocharger actuator</li><li>• Engine control module (ECM)</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. Use the approved diagnostic system or a scan tool to retrieve any diagnostic trouble codes (DTCs) before moving onto the symptom chart or DTC index.
  - Make sure that all DTCs are cleared following rectification.

## Symptom Chart

Symptom	Possible source	Action
Poor performance (off-boost)	<ul style="list-style-type: none"><li>• Low/contaminated fuel</li><li>• Restricted intake air system</li><li>• General engine condition</li><li>• Engine control module (ECM) failure</li></ul>	Check the fuel level and condition. Draw off approximately 1 ltr (2.11 pints) of fuel and allow to stand for 1 minute. Check to make sure there is no separation of the fuel indicating water or other liquid in the fuel. Check the intake air system for restriction. Check the engine condition, compressions, etc. if there are indications of a mechanical fault. Check for DTCs indicating a module fault. Refer to the warranty policy and procedures manual if an ECM is suspect.
No boost	<ul style="list-style-type: none"><li>• Electrical connections and harnesses</li><li>• Restricted intake air system</li><li>• Charge air cooler restricted/leaking</li><li>• Turbocharger actuator failure</li><li>• Turbocharger failure</li><li>• Engine control module (ECM) failure</li></ul>	Check the electrical connections and harnesses. Check the intake air system for restriction/leakage. Check the turbocharger actuator and circuits. Refer to the electrical guides. Check the turbocharger for wear. Disconnect the turbocharger intake and outlet pipework and turn the turbocharger by hand. Any roughness indicates a fault. Check any up and down movement in the turbocharger shaft. Excessive movement indicates a fault. If in doubt, compare the suspect unit with a new turbocharger. Check for DTCs indicating an actuator or module fault. Refer to the warranty policy and procedures manual if an ECM is suspect.
No boost/excessive noise	<ul style="list-style-type: none"><li>• Turbocharger failure</li></ul>	Disconnect the turbocharger intake and outlet pipework and turn the turbocharger by hand. Any roughness indicates a fault. Check any up and down movement in the turbocharger shaft. Excessive movement indicates a fault. If in doubt, compare the suspect unit with a new turbocharger.