

Description and Operation

Introduction

The 2.5L diesel engine fitted in the Scorpio is a proprietary product manufactured by VM Motori of Cento, Italy.

The engine is equipped with indirect fuel injection, a turbocharger, a charge air cooler (intercooler) and an exhaust gas recirculation system. Partial electronic control of the fuel injection pump is achieved by the powertrain control module on vehicles up to 97¼ MY, whilst full electronic control is achieved on vehicles from 97¼ MY onwards with driver acceleration demand being determined by an accelerator pedal position sensor mounted on the accelerator pedal mounting bracket.

The distributor type fuel injection pump is manufactured by Bosch and is driven by the crankshaft through a drive gear.

The fuel injectors are of conventional design, with the exception of the fuel injector in number 1 cylinder. The fuel injectors are screwed into the individual cylinder heads. The fuel injector fitted to number 1 cylinder is fitted with a needle lift sensor which signals the start of injection to the powertrain control module. The tips of the fuel injectors are insulated from direct contact with the cylinder head by copper sealing washers.

Glow plugs are used to pre-heat the combustion chamber and aid engine starting, particularly at low ambient temperatures. The glow plugs operate when the ignition is switched on for a pre-determined time dependent on engine coolant temperature.

The turbocharger comprises of two elements, a turbine and a compressor. These elements are installed on a single shaft and are contained in a housing. The turbine element of the turbocharger is mounted on the exhaust manifold and uses the energy of the exhaust gas to drive the compressor. The compressor draws in air through the air cleaner outlet tube which it supplies to the intake manifold, through the charge air cooler, in compressed form. The turbocharger is governed by means of a waste gate. The waste gate directs a portion of the exhaust gas past the turbine and therefore acts as a governing mechanism. The waste gate is controlled by a waste gate control solenoid.

The charge air cooler is located below the engine cooling radiator. It cools the charge air from the turbocharger compressor thus increasing its density. The charge air cooler is of the air/air type and features a light weight aluminium matrix.