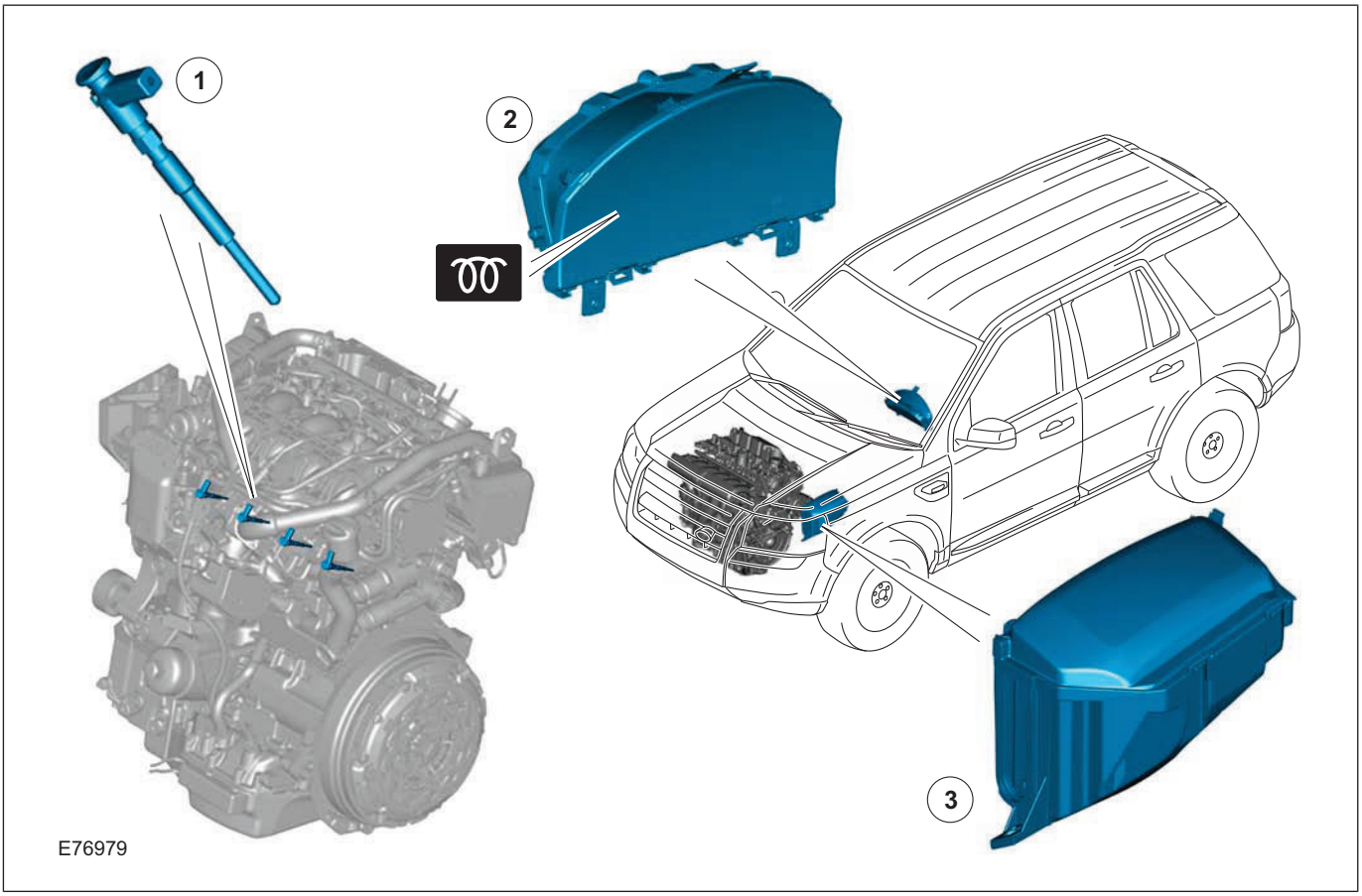
Glow plug system

Glow plug component location



1 Glow plugs

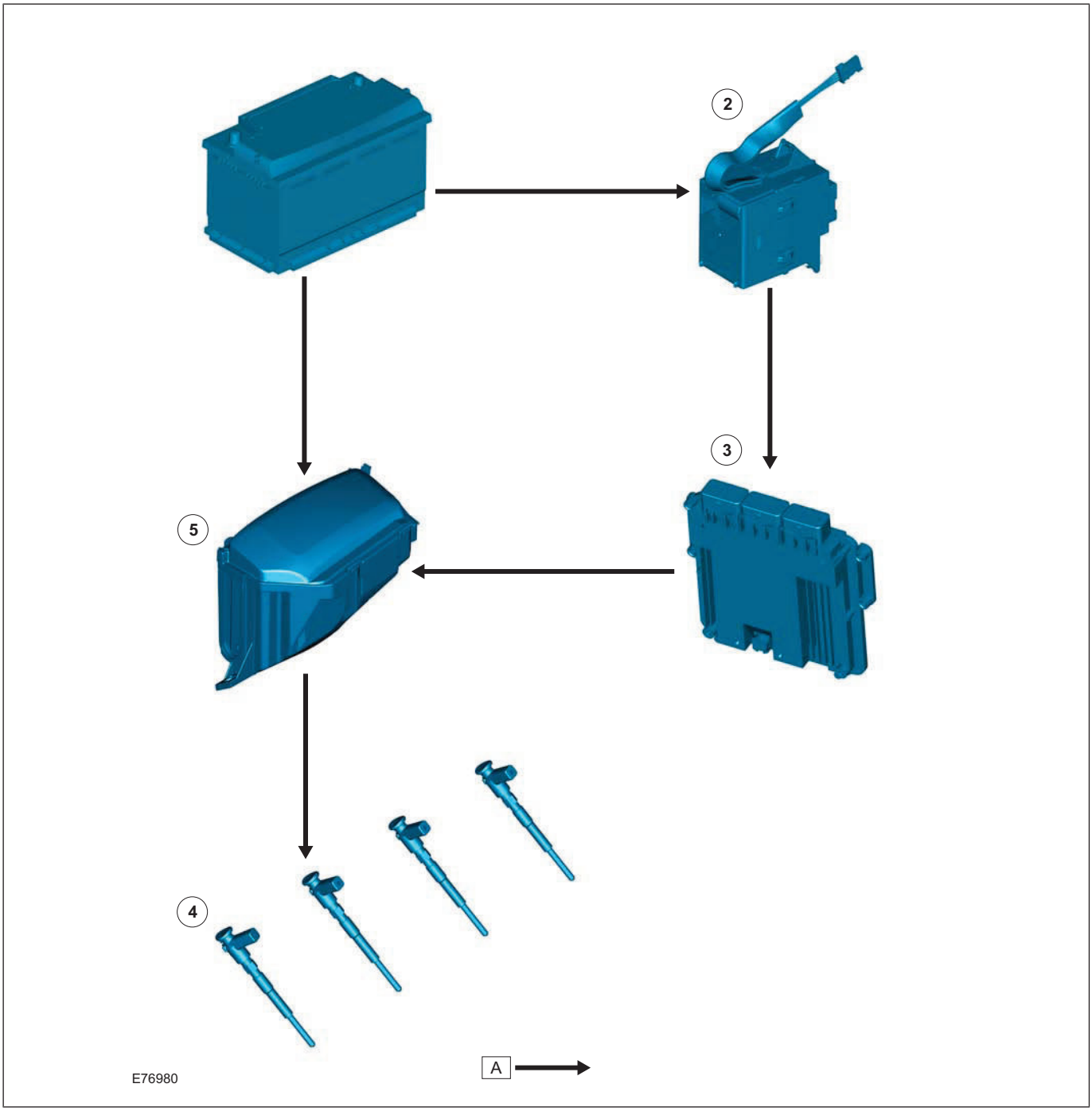
2 Glow plug warning indicator lamp

3 BJB (battery junction box)

A glow plug is installed in the inlet side of each cylinder, to heat the combustion chambers before and during cranking. This aids cold starting and engine noise when idling from a cold engine. A wiring harness on each bank of glow plugs is connected to a separate relay and fusible link in the BJB (battery junction box). Each glow plug is grounded through its fixing in the cylinder head. Operation of the glow plug relays is controlled by the ECM (engine control module), which also controls the illumination of the glow plug indicator in the instrument cluster.

Each glow plug is a tubular heating element which contains a spiral filament encased in magnesium oxide powder. At the tip of the tubular heating element is the heater coil. Behind the heater coil, and connected in series, is a control coil. The control coil regulates the current to the heater coil to safeguard against overheating.

Glow plug components



1 Battery
2 Start/stop switch and control module
3 ECM
4 Glow plugs
5 Battery Junction Box (BJB)

Glow plug testing

Example only:

On-vehicle resistance test

During the on-vehicle resistance test, the first -multimeter probe must be connected to the glow plug electrical connector and the second probe must be connected directly to the engine block or a good earth point.

Most important tool:multimeter

- Commercially available DMM (digital multimeter) or multimeter function in IDS

Values:

- Infinite resistance: Glow-plug filament damaged (glow plug defective).
- Resistance less than 1.0 Ohms: Glow-plug filament not damaged (glow plug OK).

Fault Diagnosis and Rectification Glow plug relay control circuit - short to ground Refer to electrical circuit diagrams and check glow plug relay control circuit for short to ground

Fault Symptoms: No operation of glow plugs Poor starting when cold, rough running in extreme cold conditions. **Fault Diagnosis and Rectification:** Glow plug relay excess temperature Carry out pinpoint tests associated with DTC using the manufacturer approved diagnostic system

Glow plug operation

Temperature	Maximum cranking times
5+°C	0
0°C	1.5 seconds
-5°C	3.0 seconds
-10°C	5.0 seconds
-15°C	7.5 seconds
-20°C	7.5 seconds
-25°C	7.5 seconds
-30°C	7.5 seconds

These times are at sea level altitude, they increase slightly as altitude increases and the times are common between manual transmission and automatic transmission vehicles.

NOTE: If the auto-start strategy is used then the cranking will be delayed until the Glow plug phase has ended.

Electronic Diesel Control (EDC) EMS

The TD4 diesel engine has an Electronic Diesel Control (EDC) engine management system. The system is controlled by an ECM which is able to monitor, adapt and precisely control the fuel injection. The ECM uses