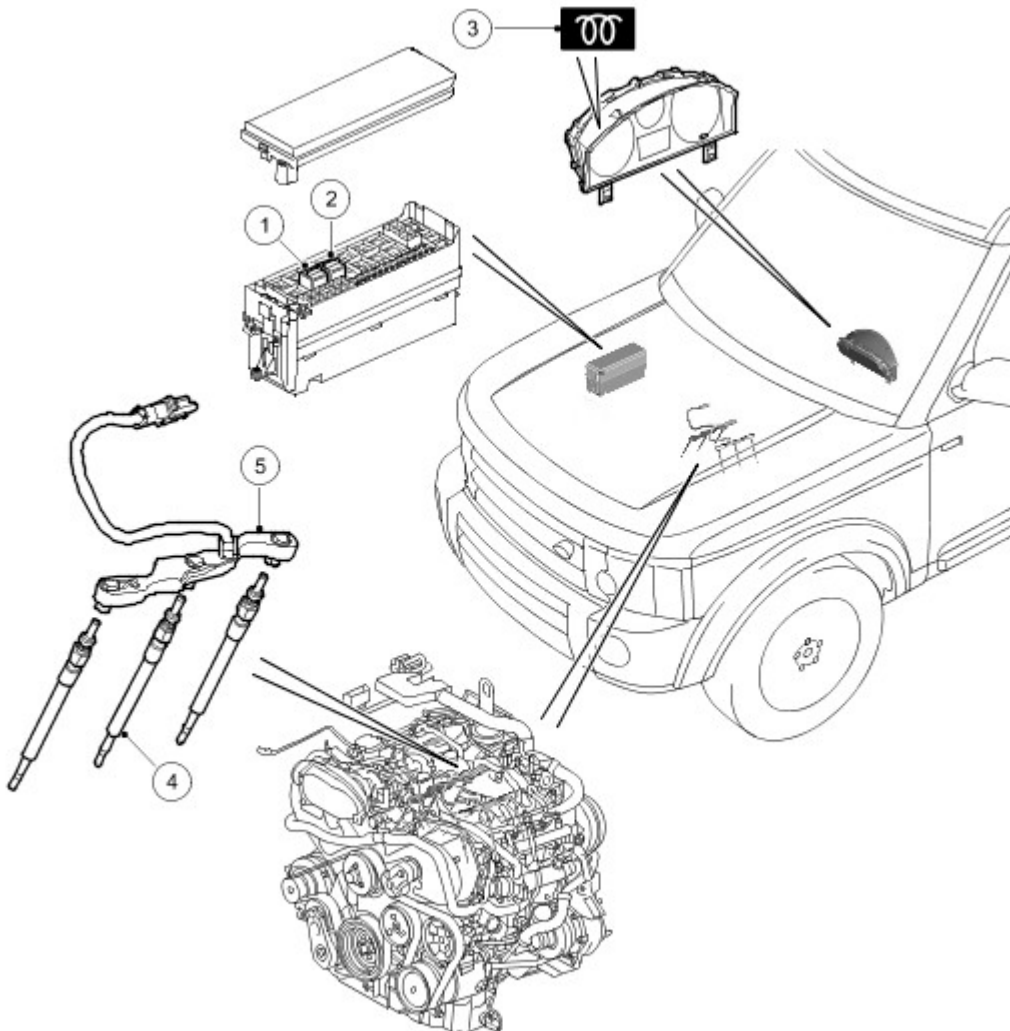




Glow Plug System

COMPONENT LOCATIONS



E47679

Item	Part Number	Description
1	-	B (LH) bank glow plug relay
2	-	A (RH) bank glow plug relay
3	-	Glow plug indicator
4	-	Glow plug (x 6)
5	-	Glow plug harness (x 2)

GENERAL

The glow plug system has a glow plug installed in the inlet side of each cylinder. The glow plugs heat the combustion chambers before and during cranking, to aid cold starting, and after the engine starts to reduce emissions and engine noise when idling with a cold engine.

A glow plug wiring harness on each bank of glow plugs is connected to a separate relay and fusible link in the Battery

Junction Box (BJB). The individual glow plugs are grounded through their fixing in the cylinder head. Operation of the glow plug relays is controlled by the Engine Control Module (ECM), 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 ensure that it does not overheat.

SYSTEM OPERATION

There are three phases of glow plug heating: Pre heating, crank heating and post heating. The ECM determines the heating times from the Engine Coolant Temperature (ECT). The lower the ECT, the longer the heating times.

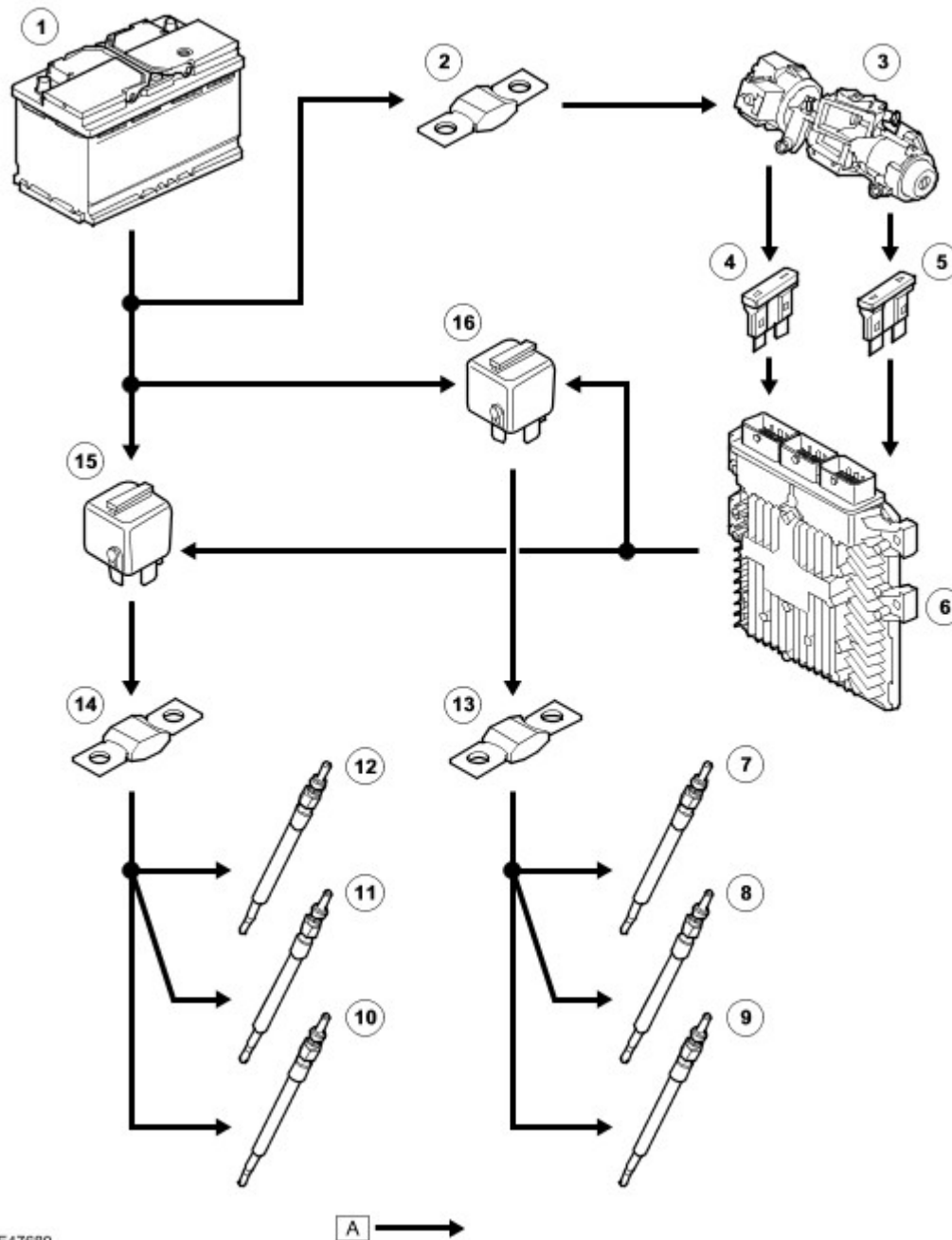
When the ignition switch is turned to position II, the ECM calculates any required heating times and, if heating is required, energizes the glow plug relays in the BJB. When pre heating is required, the ECM also sends a message to the instrument cluster, on the high speed CAN bus, to request illumination of the glow plug indicator. The glow plug indicator remains illuminated for the duration of the pre heating phase, or until the ignition switch is turned to the crank position, whichever occurs first. If required, the ECM keeps the glow plug relays energized during cranking and for the duration of any post heating phase.

The ECM monitors the drive circuit of the glow plug relays for plausibility of operation, continuity, and short and open circuits. If a fault is detected, the ECM stores a related fault code and permanently illuminates the glow plug indicator while the ignition switch is in position II.

GLOW PLUG SYSTEM CONTROL DIAGRAM

NOTE :

A = Hardwired Connections



E47680

A →

Item	Part Number	Description
1	-	Battery
2	-	Fusible link 11E, BJB
3	-	Ignition switch
4	-	Fuse 25P, Central Junction Box (CJB) (ignition)
5	-	Fuse 60P, CJB (crank)
6	-	ECM
7	-	Glow plug 6
8	-	Glow plug 5
9	-	Glow plug 4
10	-	Glow plug 1

11	-	Glow plug 2
12	-	Glow plug 3
13	-	Fusible link 4E, BJB
14	-	Fusible link 1E, BJB
15	-	A (RH) bank glow plug relay
16	-	B (LH) bank glow plug relay