FRONT FOG LAMPS

DESCRIPTION

General

The front fog lamps are controlled by a non-latching switch located on the left hand side of the instrument pack. Two front fog lamps are located below the front bumper. Front fog lamp operation is monitored by the Body Control Unit (BCU) which only allows the front fog lamps to operate when the side lamps or headlamps are on.

When the side lamps, headlamps or ignition is turned off, the front fog lamps are extinguished. When the side or headlamps are switched on again, the front fog lamps will not operate until reselected using the switch. If the rear fog guard lamps are switched on, switching off the front fog lamps will also switch off the rear fog guard lamps.

The front fog lamp switch is illuminated when the side lights are switched on. Each front fog lamp bulb is rated at 21 Watts.

OPERATION

Front Fog Lamps Supply

Circuit supply

A feed from the battery positive terminal is connected by an R wire to the engine compartment fusebox, where it passes through fusible links 1, 7, 8 and 13 and fuses 3 and 13. Fusible links 1 and 7 and fusible link 1 and fuse 3 are connected in series.

A feed from fusible link 13 is connected by an NG wire to the lighting switch.

A feed from fuse 3 is connected to the front fog lamp relay in the engine compartment fusebox. A feed from fusible link 7 is connected to the auxiliary circuits relay in the engine compartment fusebox.

A feed from fuse 13 is connected by a PN wire to the passenger compartment fusebox. This feed is connected to the Intelligent Driver Module (IDM) which is integral with the passenger compartment fusebox.

A feed from fusible link 8 is connected on an NW wire to the passenger compartment fusebox and from the fusebox to the ignition switch on an N wire.

Ignition switch supply

With the ignition switch in position I, the feed from fusible link 8 flows through the ignition switch to the passenger compartment fusebox on a LGW wire. The feed continues through fuse 26 in the passenger compartment fusebox and is connected by an LG wire to the engine compartment fusebox and the coil of the auxiliary circuits relay. The auxiliary circuits relay coil is connected to earth header C0018, via header C0286 LHD/C0288 RHD on a B wire.

In this condition, the auxiliary circuits relay is energised and the contacts close, allowing the feed from fusible link 7 to pass through the closed contacts to the coil of the front fog lamp relay.

With the ignition switch in position II, a second feed from fusible link 8 flows from the ignition switch to the passenger compartment fusebox on a Y wire. The feed continues through fuse 29 in the passenger compartment fusebox and is connected to the IDM.

In this condition, one of two electronic switches in the IDM closes. The earth path from the IDM is connected from the passenger compartment fusebox to earth header C0551 on a B wire.

Lighting Switch Operation

When the lighting switch is moved to the side lamp or headlamp position, the feed from fusible link 13 passes through the switch contacts, and is connected from the lighting switch to the passenger compartment fusebox on an R wire. The feed is connected to the IDM, causing the second of the two electronic switches to close.

Body Control Unit Operation

The feed from fuse 13 passes through the two closed IDM switches and is connected by an SK wire to BCU pin C0661-1, via header C0293 LHD/ C0292 RHD. This connection is the serial data bus between the BCU and the IDM.

The BCU is connected to earth header C0551 from pin C0660-11 on a B wire and from pin C0664-5 on a B wire to earth header C0018 LHD/C0017 RHD.

Front Fog Lamps Operation

When the front fog lamp switch is operated, an earth path is completed from the BCU pin C0660-7 to the switch on a KB wire. The earth path continues through the switch contacts and is connected to earth header C0017 LHD/C0018 RHD on a B wire, via header C0760.

The completion of the earth path signals the BCU to provide an earth path from the coil of the front fog lamp relay in the engine compartment fusebox to the BCU pin C0663-4 on a UY wire.

The energised coil closes the contacts in the front fog lamp relay. This allows the feed from fuse 3 to pass through the relay contacts and from the engine compartment fusebox to header C0293 on a UP wire.

From the header C0293, the feed is connected on a UP wire to the RH front fog lamp, which connected to earth header C0018 by a B wire.

A second feed from the header C0293 is connected on a UP wire to the LH front fog lamp, which is connected to earth point C0564 by a B wire.

Switch indicator lamp operation

A third feed from header C0293 is connected to the front fog lamp switch on a UP wire. The feed passes through the front fog lamp switch indicator lamp which illuminates. The indicator lamp is earthed from the front fog lamp switch to earth header C0017 LHD/C0018 RHD, via header C0760 on a B wire.

REAR FOG GUARD LAMPS

DESCRIPTION

General

The rear fog guard lamps are controlled by a non-latching switch located on the left side of the instrument pack. The lamps are located in the rear bumper, adjacent to the indicator lamps. Rear fog guard lamp operation is monitored by the Body Control Unit (BCU) which only allows the lamps to operate when the side lamps or headlamps are on and the front fog lamps are switched on.

When the side lamps, headlamps or ignition is turned off, the rear fog guard lamps are extinguished. When the side or headlamps are switched on again, the rear fog guard lamps will not operate until reselected using the switch. If the front fog lamps are switched off, the rear fog guard lamps will also switch off.

The rear fog guard lamp switch is illuminated when the side lights are switched on. Each rear fog guard lamp bulb is rated at 21 Watts.

OPERATION

Rear Fog Guard Lamps Supply

Circuit supply

A feed from the battery positive terminal is connected by an R wire to the engine compartment fusebox, where it passes through fusible links 8, 10 and 13 and fuse 13.

A feed from fusible link 13 is connected by an NG wire to the lighting switch.

A feed from fusible link 10 is connected by an U wire to the passenger compartment fusebox. The feed passes through fuse 4 in the passenger compartment fusebox and connects to the contacts of the rear fog guard lamp relay.

A feed from fusible link 8 is connected on an NW wire to the passenger compartment fusebox and from the fusebox to the ignition switch on an N wire.

A feed from fuse 13 is connected by a PN wire to the passenger compartment fusebox. The feed connects to the coil of the rear fog guard lamp relay. The relay coil is connected inside the passenger compartment fusebox to two electronic switches in the Intelligent Driver Module (IDM) which is integral with the fusebox.

Ignition switch supply

With the ignition switch in position II, the feed from fusible link 8 flows through the ignition switch to the passenger compartment fusebox on a Y wire. The feed continues through fuse 29 in the passenger compartment fusebox and is connected to one of the two electronic switch in the IDM.

In this condition, one of two switches in the IDM closes. The earth path from the IDM is connected from the passenger compartment fusebox to earth header C0551 on a B wire.

Lighting Switch Operation

When the lighting switch is moved to the side lamp or headlamp position, the feed from fusible link 13 passes through the switch contacts and is connected from the lighting switch to the passenger compartment fusebox on an R wire. The feed is connected to the IDM, causing the second of the two electronic switches to close.

Body Control Unit

With the lighting switch in the side lamp or headlamp position an earth path from the coil of the rear fog guard lamp relay is completed through the two electronic switches in the IDM. The earth is connected by an SK wire to BCU pin C0661-1, via header C0293 LHD/C0292 RHD. This connection is the serial data bus between the BCU and the IDM.

The BCU is connected to earth header C0551 from pin C0660-11 on a B wire and from pin C0664-5 on a B wire to earth header C0018 LHD/C0017 RHD.

Rear Fog Guard Lamp Switch Operation

When the rear fog guard lamp switch is operated, an earth path is completed from the BCU pin 662-8 to the switch on a UP wire. The earth path continues through the switch contacts and is connected to earth header C0017 LHD/C0018 RHD on a B wire, via header C0760.

The completion of the earth path signals the BCU to provide an earth path from the coil of the rear fog guard lamp relay, through the two IDM electronic switches to the BCU on the SK wire.

The energised coil closes the contacts of the rear fog guard lamp relay. This allows the feed from fuse 4 in the passenger compartment fusebox to flow through the relay contacts.

From the fusebox the feed is connected on a RY wire, to connector interface C0020-1/ C0905-1. From this interface the feed continues on a R wire to connector interface C0905-2/C0020-2. From this interface the feed continues on a RY wire to the trailer pick-up socket.

From the connector interface C0905-2/C0020-2, the feed is connected on a Y wire to connector interface C0905-3/C0020-3. From this interface the feed is connected on an RY wire to header C0295.

A feed from header C0295 is connected on an RY wire to the RH rear fog guard lamp which in turn is connected to earth header C0706 on a B wire.

A second feed from header C0295 is connected on a RY wire to the LH rear fog guard lamp which in turn is connected to earth header C0707 on a B wire.

Switch Indicator Lamp Operation

A second feed from the rear fog guard relay is connected from the passenger compartment fusebox to the rear fog guard lamp switch on an RY wire. The feed passes through the rear fog guard lamp switch indicator lamp which illuminates. The indicator lamp is earthed from the rear fog guard lamp switch to earth header C0017 LHD/C0018 RHD, via header C0760 on a B wire.