

DESCRIPTION AND OPERATION

POSITIVE TEMPERATURE COEFFICIENT (PTC) HEATER

DESCRIPTION

General

The Positive Temperature Coefficient (PTC) heater replaces the Fuel Burning Heater (FBH) fitted to Td4 vehicles in markets of a moderate climate. The PTC heater, like the FBH, is an auxiliary heating system that compensates for the relatively low coolant temperature inherent in the diesel engine.

The PTC heater is an electrical heating element installed in the heater assembly on the downstream side of the heater matrix. For a more detailed description of PTC heater operation, refer to the **Heating and Ventilation** section of the System Description and Operation Workshop manual.

NOTE: Cold climate specification vehicles still maintain the FBH.

OPERATION

General

Feed from the positive battery terminal (C0192) is supplied to fusible link 1 and fuse 10 of the engine compartment (C0632) on an R wire. Fuse 10 (C0575) provides a constant battery feed to the inertia switch (C0123) on a G wire. The inertia switch is a normally closed switch. If the inertia switch hasn't been tripped, current flows across the switch to the fuel pump relay (C0575) on a GU wire.

Fusible link 1 is connected in series with fusible link 2, which is also located in the engine compartment fuse box. Fusible link 2 (C0571) is connected to the ignition switch (C0028) by an NR wire. When the ignition switch is turned to the 'ignition' position, current flows across the switch (C0028) to fuse 4 of the passenger compartment fuse box (C0588) on an SU wire. Fuse 4 (C0585) provides an ignition feed to the blower motor switch (C0058) on a G then LGS wire.

The battery (C0192) also provides a feed to fusible link 1 (C1875) located in the fuse holder on an R wire. Fusible link 1 (C1875) provides a constant battery feed to PTC relay 2 (C0157) on an N wire.

DESCRIPTION AND OPERATION

PTC Switch

If the rotary blower motor switch is turned to position 1 or higher, current from fuse 4 of the passenger compartment fuse box (C0585) flows across the switch (C0058) to the PTC switch (C0422) on an SW wire. The PTC switch is mounted on the rear of the rotary temperature control switch. When the temperature control switch is in the cold to warm position (i.e. less than approximately 1 o'clock), the PTC switch contacts are open. If the temperature control switch is turned to the warm to hot position (i.e. approximately 1 o'clock and above) the PTC switch contacts close. This allows current to flow from the PTC switch (C0422) to PTC relay 1 (C2624) on a GW wire.

PTC Relays

Operation of the PTC heater is controlled by two relays. PTC relay 1 is the control relay and is located in the passenger compartment fuse box. PTC relay 2 is the power relay and is mounted on the engine bulkhead, behind the engine compartment fuse box.

PTC Relay 1

The coil of PTC relay 1 (C2624) receives a feed from the PTC switch (C0422) on a GW wire. The relay coil (C0587) is earthed on a B wire. When energised, PTC relay 1 (C0154) provides an earth path for PTC relay 2 (C0157) on a G then GY wire.

PTC Relay 2

The coil of PTC relay 2 (C0157) receives a feed from the fuel pump relay (C0572) on a WP then GR wire. When PTC relay 1 is energised, it provides an earth path for the relay coil of PTC relay 2 on a GY wire. This allows a battery feed from fusible link 1 (C1875), located in the fuse holder, to flow across the closed relay switch contacts to fuse 1, fuse 2, and fuse 3 (C1876) on B wires. All are located in the fuse holder.

For more information on fuel pump relay operation, refer to the **Fuel Pump** section of this manual.

 **FUEL PUMP.**

PTC Heater

The PTC heater is powered via three fuses located in an additional fuse holder. The fuse holder is mounted on the side of the E-box. Fuses 1, 2, and 3 (C1876) are provided a feed by the energised PTC relay 2 (C0157) on B wires, and power the PTC heater elements as follows:

- Fuse 1 is connected to PTC heater element 3 (C1879) by a BP wire.
- Fuse 2 is connected to PTC heater element 2 (C1877) by a BN wire.
- Fuse 3 is connected to PTC heater element 3 (C1878) by a BG wire.