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**BMW 3-Series (92-98) & Z3 (96-98) Haynes Online Manual**

## 6 Cooling system electrical switches - testing, removal and installation

### Warning:

The engine must be completely cool before removing any of the following switches/sensors.

### Auxiliary electric cooling fan thermostatic switch - models with air conditioning

#### Testing

- 1 Testing of the air conditioning system should be entrusted to a BMW dealer or other qualified repair shop.

#### Removal

- 2 The switch is located in the right-hand side of the radiator. The engine and radiator should be cold before removing the switch.
- 3 Disconnect the battery negative lead. **Caution:** *If the radio in your vehicle is equipped with an anti-theft system, make sure you have the correct activation code before disconnecting the battery.*
- 4 Either drain the cooling system to below the level of the switch (see [Chapter 1](#) ), or have ready a suitable plug which can be used to plug the switch aperture in the radiator while the switch is removed. If a plug is used, take great care not to damage the radiator, and do not use anything which will allow foreign matter to enter the radiator.
- 5 Disconnect the wiring plug from the switch.
- 6 Carefully unscrew the switch from the radiator and recover the sealing washer.

#### Installation

- 7 Installation is a reversal of removal using a new sealing washer. On completion, refill the cooling system (see [Chapter 1](#) ).

8 Start the engine and run it until it reaches normal operating temperature, then continue to run the engine and check that the cooling fan cuts in and functions correctly.

## Coolant temperature gauge sensor

### Testing

9 The coolant temperature gauge, mounted in the instrument panel, is fed with a stabilized voltage supply from the instrument panel feed (through the ignition switch and a fuse), and its ground is controlled by the sensor.

10 The sensor unit is screwed into the left-hand side of the cylinder head. There are two sensors screwed into the head; the temperature gauge sensor is the rear sensor of the two, the front one being the fuel injection system temperature sensor. To improve access to the sensor, on four-cylinder models disconnect the coolant hose and free the cable channel from the manifold (see [Chapter 4A](#)), and on six-cylinder engines remove the alternator cooling duct (see [Chapter 4B](#)).

11 The sensor contains a thermistor, which consists of an electronic component whose electrical resistance decreases at a predetermined rate as its temperature rises. When the coolant is cold, the sensor resistance is high, current flow through the gauge is reduced, and the gauge needle points towards the “cold” end of the scale. If the sensor is faulty, it must be renewed.

12 If the gauge develops a fault, first check the other instruments; if they do not work at all, check the instrument panel electrical feed. If the readings are erratic, there may be a fault in the instrument panel assembly. If the fault lies in the temperature gauge alone, check it as follows.

13 If the gauge needle remains at the “cold” end of the scale, disconnect the wiring connector from the sensor unit, and ground the temperature gauge wire (see “Wiring diagrams” for details) to the cylinder head. If the needle then deflects when the ignition is switched on, the sensor unit is proved faulty, and should be renewed. If the needle still does not move, remove the instrument panel ( [Chapter 12](#) ) and check the continuity of the wiring between the sensor unit and the gauge, and the feed to the gauge unit. If continuity is shown, and the fault still exists, then the gauge is faulty and should be renewed.

14 If the gauge needle remains at the “hot” end of the scale, disconnect the sensor wire. If the needle then returns to the “cold” end of the scale when the ignition is switched on, the sensor unit is proved faulty and should be renewed. If the needle still does not move, check the remainder of the circuit as described previously.

### Removal

15 Either partially drain the cooling system to just below the level of the sensor (see [Chapter 1](#)), or have ready a suitable plug which can be used to plug the sensor aperture while it is removed. If a plug is used, take great care not to damage the sensor unit aperture, and do not use anything which will allow foreign matter to enter the cooling system.

16 Disconnect the battery negative lead. **Caution:** *If the radio in your vehicle is equipped with an anti-theft system, make sure you have the correct activation code before disconnecting the battery.*

17 Disconnect the wiring from the sensor (see paragraph 10).

18 Unscrew the sensor unit from the cylinder head and recover its sealing washer.

## Installation

19 Fit a new sealing washer to the sensor unit and fit the it to the head, tightening it securely.

20 Reconnect the wiring connector then refill the cooling system (see [Chapter 1](#) ).

## Fuel injection system coolant temperature sensor

### Testing

21 The sensor unit is screwed into the left-hand side of the cylinder head. There are two sensors screwed into the head; the fuel injection system temperature sensor is the front sensor of the two, the rear one being the temperature gauge sensor. Testing of these sensors should be entrusted to a BMW dealer or other qualified repair shop (see [Chapter 4](#) ).

### Removal and installation

22 Refer to paragraphs 15 to 20.