



Sun sensor

General

One of the sensors that is part of nearly every climate control unit nowadays is the sun sensor. Mostly located on top of the dashboard near the windscreen (picture 1). The sun sensor (picture 2) measures the sun's radiation and heat which causes the vehicle's interior and its occupants to heat up. The sensor (on some vehicles two sensors are used) sends the measured value to the control unit, which directs cooler air in the vehicle interior.



pic. 1

Function

The sun light falls through a filter and an optical element on to a photocell. Photocells are sensitive semiconductor elements. When minimum light falls on the sensor there is a low current flow. If the light intensity rises, the current flow also rises. The control unit recognises, through the current flow, how strong the light intensity is and manages the temperature flaps and the blower adjustment accordingly. On models with two sun sensors, the vehicle side where the stronger sunlight falls is cooled down more.



pic. 2

Effects of failure

In the most cases the control unit operates with an fixed value if the sensor is faulty. This can have the following effects:

- High interior temperature (unsatisfactory cooling) on very sunny days
- The air isn't directed to the correct vent



- Fan speed doesn't increase
- Storing of an error code

The failure can result from various causes:

- Circuit interruption
- Internal short circuit
- Faulty photo cell
- Fouling/Dirtying
- Mechanical damage

Fault diagnosis

- a) Read out the fault memory
- b) Read out the actual values and compare with given values (if possible)
- c) Check the electrical connection of the sensor line, plug and sensor for correct connection, break or corrosion

Alternative test procedure:

1. Put the vehicle into the direct sun. With a cloudy sky the sensor can be lit with a UV or infrared lamp.
2. Engage the a/c unit and wait until it has stabilised.
3. Note the strength of the air stream at the centre vents by using a air stream measuring device.
4. Cover the sun sensor or remove the light source.
5. Observe whether the speed decreases at the centre vents.
6. A reduction in air velocity can indicate that the sun sensor is o.k. No change in air velocity can indicate that the sun sensor is defect (Note point "c" before changing the sensor).