166 analogue control panel 5560B

VIEW OF ASSEMBLY

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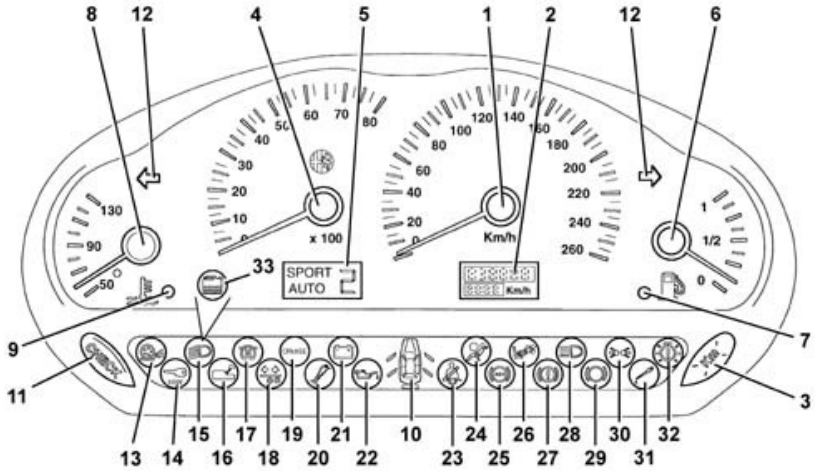


1, Speedometer
2, Twin milometer (total milometer and trip meter)
3, Trip meter zeroing button
4, Rev counter
5, Gear selector and programme activated indicator (only for versions with automatic transmission)
6, Fuel gauge
7, Fuel reserve warning light
8, Engine coolant temperature gauge
9, Engine coolant overheating warning light
10, Doors and lids open check
11, Check request button
12, Direction indicators warning light
13, TCS (Traction Control System)/A.S.R. (Anti-Slip Regulation) failure warning light
14, CODE failure warning light
15, Dipped headlamps warning light
16, Automatic transmission failure warning light
17, Heater plugs warning light (specific for turbodiesel version)
18, Trailer direction indicators warning light
19, Cruise Control warning light
20, Injection system failure warning light
21, Battery recharging warning light
22, Mininum engine oil pressure warning light
23, Seat belts fastened warning light
24, Air Bag failure warning light
25, A.B.S. failure warning light
26, Passenger Air Bag disabled warning light
27, Insufficient brake fluid/handbrake/EBD warning light
28, Main beam headlamps warning light
29, Brake pad wear warning light
30, Side lights warning light
31, Insufficient engine oil level warning light
32, Light failure/gas discharge headlamp system failure warning light
33, Water-in-fuel-filter warning light (specific for EURO 3 turbodiesel version)

WARNING LIGHTS

The warning lights on the instrument panel may be:

- directly connected to the input functions/signals in which case the instrument panel does not need to process the signal
- connected to the input functions/signals through an electronic logic in the instrument panel.

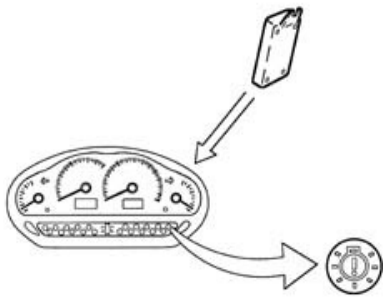
The 'A.B.S.' and 'Air Bag' warning lights are the 'intelligent' type, in other words, they also signal a connection failure with the control unit to which they are connected.

Lights failure summary

The failure signal comes from the integrated services control unit which recognizes:

- a blown bulb or fuse
- a break in the electrical wiring or short circuit of a bulb with active control

and sends information on the status of the bulbs to the control panel.
The detection of a failure by the control panel is activated with the ignition switch in the ON position and is only recgonized if it persists for longer than 700 ms.
The anomaly is stored by the control panel. Once the bulb has been replaced, the anomaly is reset only when the engine is subsequently started.



CONTROL PANEL FUNCTIONS

All control panel functions are handled by a microprocessor and activated when the key is turned to the ON position.
The main logical controls carried out by the control panel are as follows.

Control panel check functions

It allows the efficiency of the control panel warning lights to be checked.

The check stage can be activated:

- automatically, with the ignition in the ON position
- by means of the appropriate button with the ignition in the ON position and the engine off/started up.

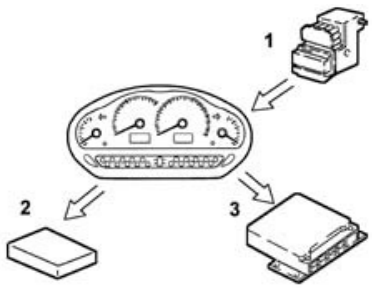
The warning lights come on for six seconds during the check stage.
Any irregularities are signalled by the warning lights staying on for a further fifteen seconds.

Electronic speedometer

It is the analogue type and receives a signal from the A.B.S. 5.3 control unit via the active sensors.
The processing of this signal (wheel rpm) depends on the circumference of a conventional tyre and allows the speed to be calculated.
is possible to vary the circumference memorized if different sized tyres are used (standard version) via the diagnostic line.

There are four 'repeat' outputs of the signal from the speedometer for other systems:

- two are used by the air conditioning control unit and he injection/ignition control unit
- one is for the self-levelling suspension (not available on this model)
- one is spare.



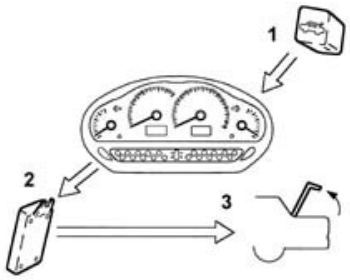
1, A.B.S. control unit
2, Climate control control unit
3, Injection/ignition control unit

Boot opening go ahead

The opening of the boot is enabled when:

- the appropriate button is pressed
- the vehicle speed is below 2 kph.

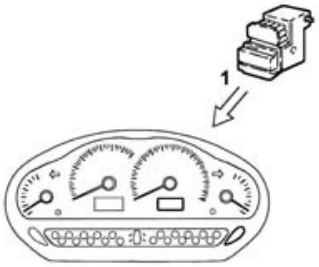
The control operates at all times, even with the ignition in the ON position.
The panel detects the moment the button is pressed. If the button continues to be pressed, the panel no longer recognizes this condition until the button is next released/pressed.



1, Boot opening button
2, Integrated services control unit
3, Boot lid opening actuator

Milometer

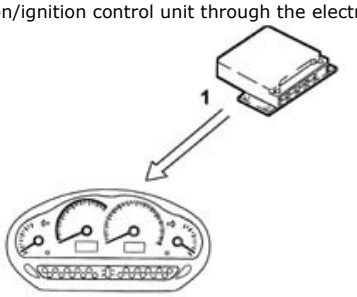
This consists of an LCD which simultaneously displays the total and trip mileage.
It processes the signal coming from the A.B.S. control unit and, depending on the tyre circumference, it calculates the mileage.
A button is used to zero the trip meter.
If the battery is disconnected, the trip meter is zeroed.



1, A.B.S. control unit

Electronic rev counter

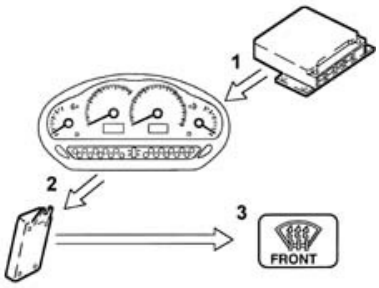
It processes the rpm signal coming from the injection/ignition control unit through the electronics in the instrument.



1, Injection/ignition control unit

Heated rear windscreen enablement

The control panel processes the rpm signal coming from the injection/ignition control unit.
If the speed exceeds 1000 rpm, it sends the integrated services electronic control unit a heated rear windscreen enablement signal.



1, Injection/ignition control unit
2, Integrated services control unit
3, Heated rear windscreen

Fuel gauge

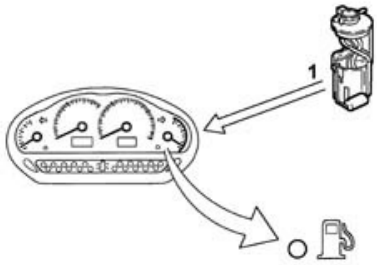
Fuel level is displayed via electronic circuitry inside the panel, which governs the gauge and the reserve warning light.
The internal logic 'dampens' the signal preventing fluctuations due to fuel slopping about in the tank.
If the fuel gauge sensor wiring is broken, the control panel indicator moves to the start of the scale without the reserve warning light coming on.

The reserve warning light is turned on by the control panel:

- for 6 seconds (check stage) after the ignition is turned to the ON position.

After the check stage, the warning light should:

- go out after 30 seconds if the fuel level is higher than the reserve level
- come on again after 45 seconds if the level is at the reserve level.



1, Fuel gauge

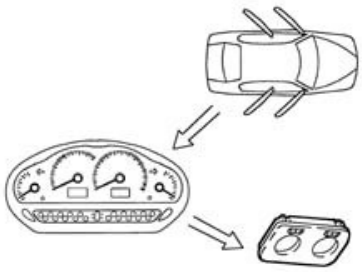
Courtesy light timer

This function is activated even with the ignition switched OFF.
The courtesy lights are activated when one or more doors are opened and the lights stay on as long as the doors are open, but for no longer than 3 minutes.
When the doors are no longer open, provided the 3 minutes have not elapsed, the courtesy light stays on for a further 8 seconds.

If, during these 8 seconds:

- the ignition key is turned to the ON position
- the door lock is recognized

the courtesy light is immediately switched off.



Detection of engine running.

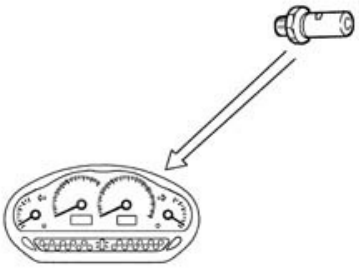
The engine is detected as running:

- when the ignition key is turned from the START to the ON position with the oil pressure sensor already open
- when the oil pressure sensor opens if the ignition key has already been turned from the START to the ON position

If the oil pressure sensor is faulty, the check system detects that the engine is running 60 seconds after the ignition key has been turned from the START to the ON position.
If the vehicle is push started, the check detects that the engine is running 60 seconds after the oil pressure sensor opens.

This is in order to:

- inhibit the measurement of the oil level with the engine started up
- time the engine oil pressure warning light.



Engine oil level

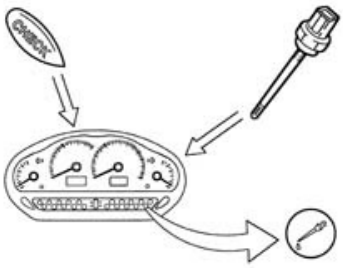
The insufficient engine oil level can only be detected once during each engine starting/switching off stage and only using the check button with the engine switched off. This is to avoid incorrect fault signals if the vehicle is not on a level surface or if the engine is switched on/off rapidly. Irregularities detected with the engine switched off are stored so that they can be displayed next time a check request is made in any engine conditions.

The oil level is checked when the engine is cold and with the vehicle level.

To turn off the warning light once the oil has been topped up, a check operation must be carried out.

To measure the oil level again after topping up, it is necessary to:

- turn the ignition key to the ON position
- press the check button.

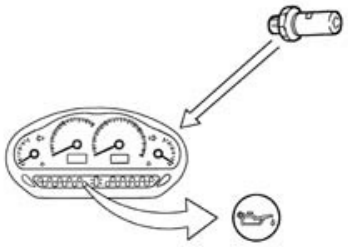


Minimum engine oil pressure

The control panel operating logic switches on the minimum engine oil pressure warning light through the signal coming from the minimum engine oil pressure sensor:

- key in ON position
- with the engine running status detected and a fault lasting longer than 10 ms.

The warning light is kept on for a length of time equal to the duration of the fault plus 4 seconds.
If the fault lasts less than 10 ms, the warning light only stays on for this time.



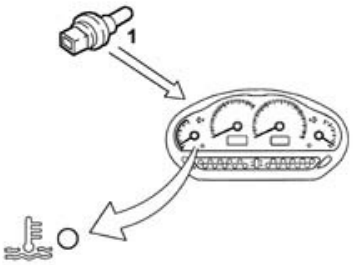
Engine coolant temperature gauge

The control panel processes the signal from the engine coolant temperature sensor and operates the gauge and the warning light.

To avoid false readings due to heat fluctuations:

- the warning light activation is inhibited for 2 minutes from the end of the check stage (6 seconds after the ignition key is turned to the ON position)
- when the temperature of the engine coolant is within a range from 80° C to 100° C, the gauge always indicates 90° C.

If the coolant temperature sensor is faulty, the coolant temperature gauge pointer is positioned at the beginning of the scale without the warning light coming on. This fault is stored in the control panel and can be identified using the diagnostic equipment.



1, Engine coolant temperature sensor

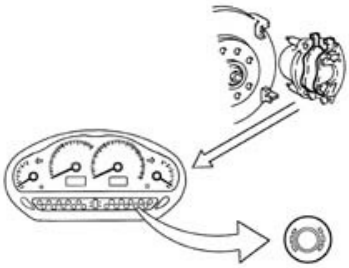
Brake pad wear

The brake pad wear sensor is always activated from the moment the ignition is switched ON.

A brake pad wear fault is detected:

- with a wear signal lasting longer than 5 seconds and the brake pedal depressed for the same period
- with a wear signal lasting longer than 2 seconds, ten consecutive times for the period the ignition is switched ON.

The anomaly is not stored by the control panel but zeroed whenever the car is started up.



Automatic transmission (where fitted)

The automatic transmission control unit notifies the control panel of:

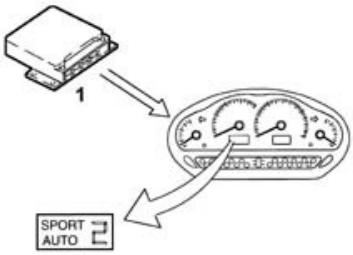
- the gear lever position
- the programme setting (SPORT or AUTO)
- the state of the automatic transmission failure warning light

The following appears on the LCD:

- the speed engaged, by means of an alternative alphanumerical character (P, R, N, D with the AUTO programme and 1, 2, 3, 4 with the SPORT programme)
- the programme setting with the two words 'Sport' or 'Auto'.

A warning light in the instrument panel signals:

- gearbox oil overheating with the warning light on constantly.
- automatic transmission failure with the warning light flashing.



1, Automatic transmission control unit (CAE)

Control panel pin out

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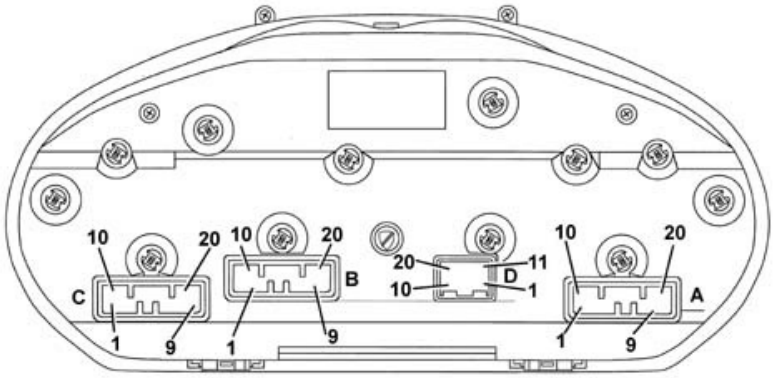

Connector A:
A1, Left direction indicator
A2, Right direction indicator
A3, Heater plugs warning light
A4, Dipped headlamps
A5, A.S.R. failure
A6, Seat belts
A7, Generator
A8, N.C.
A9, N.C.
A10, N.C.
A11, Injection failure
A12, Cruise control
A13, + 50 starting
A14, + 30 battery
A15, + 15 key
A16, Earth
A17, Panel light positive
A18, Panel light negative
A19, Fuel level
A20, Fuel level return
Connector B:
B1, N.C.
B2, Speedometer signal
B3, N.C.
B4, Engine rpm signal
B5, Speedometer repetition 1
B6, Speedometer repetition 2
B7, Speedometer repetition 3
B8, Speedometer repetition 4
B9, Rear boot lid opening enablement
B10, Engine coolant overheating
B11, Courtesy light activation
B12, Courtesy light delay timer zeroing
B13, Rear boot lid open
B14, Door check 1
B15, Door check 2
B16, Door check 3
B17, Door check 4
B18, Engine oil level
B19, Engine oil level return
B20, Heated rear windscreen enablement
Connector C:
C1, Line K
C2, Line K earth
C3, N.C.
C4, Alfa Romeo CODE
C5, Side lights warning light
C6, Main beam headlamps
C7, Lights fault summary
C8, ABS failure
C9, Air Bag failure
C10, Handbrake/insufficient brake fluid level
C11, Trailer direction indicators warning light
C12, Left/right brake pad wear
C13, Mininimum engine oil pressure
C14, N.C.
C15, Engine coolant temperature
C16, Passenger Air Bag excluded
C17, Fuel gauge repetition
C18, N.C.
C19, EBD failure

C20, N.C.
Connector D (only for versions with automatic transmission):
D1, N.C.
D2, N.C.
D3, Tunnel LED D
D4, Tunnel LED N
D5, Tunnel LED R
D6, Tunnel LED P
D7, Tunnel LED +/-
D8, Tunnel earth
from D9 to D19, N.C.
D20, ZF automatic transmission

General view

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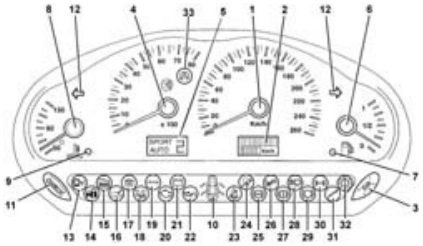


1 - Speedometer
2 - Dual milometer (total mileage and trip mileage)
3 - Trip mileage zeroing button
4 - Rev counter
5 - Gear selector and programme activated indicator (only for versions with automatic transmission)
6 - Fuel gauge
7 - Fuel reserve warning light
8 - Engine coolant temperature gauge
9 - Engine coolant overheating warning light
10 - Doors and lids open check
11- Check request button
12 - Direction indicators warning light
13 - A.S.R. failure warning light
14 - CODE failure warning light
15 - Water in diesel filter warning light
16 - Automatic transmission failure warning light
17 - Heater plugs warning light (specific for JTD version)
18 - Trailer direction indicators warning light
19 - Cruise Control warning light
20 - EOBD warning light
21 - Battery recharging warning light
22 - Minimum engine oil pressure warning light
23 - Seat belts fastened warning light
24 - Air Bag failure warning light
25 - A.B.S. failure warning light
26 - Passenger Air Bag disabled warning light
27 - Insufficient brake fluid level/handbrake/EBD warning light
28 - Main beam headlamps warning light
29 - Brake pad wear warning light
30 - Side lights warning light
31 - Insufficient engine oil level warning light
32 - Light failure/gas discharge headlamps system failure warning light
33 - VDC warning light

Warning lights

The warning lights on the instrument panel may be:

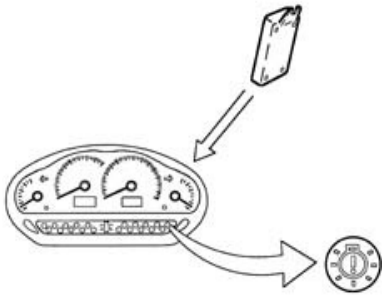
- directly connected to the input functions/signals in which case the instrument panel does not need to process the signal

Lights failure summary

The failure signal comes from the integrated services control unit which recognizes:

- a blown bulb or fuse
- a break in the electrical wiring or short circuit of a bulb with active control and sends the control panel information on the state of the bulbs

The detection of a failure by the control panel is activated with the ignition switch in the ON position and is only recgonized if it persists for longer than 700 ms.
The anomaly is stored by the control panel. Once the bulb has been replaced, the anomaly is reset only when the engine is subsequently started.



Control panel functions

All control panel functions are handled by a microprocessor and activated when the key is turned to the ON position.
The main logical controls carried out by the control panel are as follows.

Control panel check functions

It allows the efficiency of the control panel warning lights to be checked.

The check stage can be activated:

- automatically with the ignition in the ON position
- by means of the appropriate button with the ignition in the ON position and the engine off/started up.

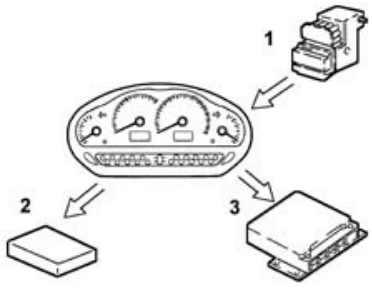
The warning lights come on for six seconds during the check stage.
Any irregularities are signalled by the warning lights staying on for a further fifteen seconds.

Electronic speedometer

It is the analogue type and receives a signal from the A.B.S. control unit via the active sensors.
The processing of this signal (wheel rpm) depends on the circumference of a conventional tyre and allows the speed to be calculated.
is possible to vary the circumference memorized if different sized tyres are used (standard version) via the diagnostic line.

There are four 'repeat' outputs of the signal from the speedometer for other systems:

- climate control system,
- parking sensor,
- radio,
- navigator,
- boot opening.



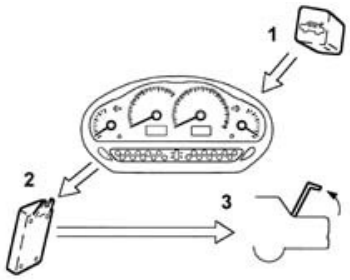
1 - A.B.S. control unit
2 - Climate control system control unit
3 - Injection/ignition control unit

Boot opening go ahead

The opening of the boot is enabled when:

- the appropriate button is pressed
- the vehicle speed is below 2 km/h.

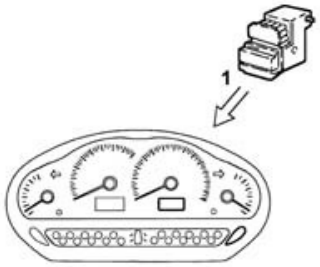
The control operates at all times, even with the ignition in the ON position.
The panel detects the moment the button is pressed. If the button continues to be pressed, the panel no longer recognizes this condition until the button is next released/pressed.



1 - Boot opening button
2 - Integrated services control unit
3 - Boot lid opening actuator

Milometer

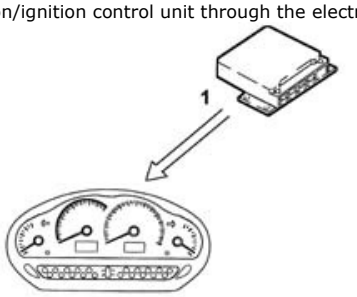
This consists of an LCD which simultaneously displays the total and trip mileage.
It processes the signal coming from the A.B.S. control unit and, depending on the tyre circumference, it calculates the mileage.
A button is used to zero the trip meter.
If the battery is disconnected, the trip meter is zeroed.



1 - A.B.S. control unit

Electronic rev counter

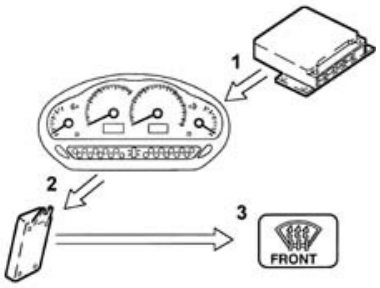
It processes the rpm signal coming from the injection/ignition control unit through the electronics in the instrument.



1 - Injection/ignition control unit

Heated rear windscreen enablement

The control panel processes the rpm signal coming from the injection/ignition control unit.
If the speed exceeds 1000 rpm, it sends the integrated services electronic control unit a heated rear windscreen enablement signal.



1 - Injection/ignition control unit
2 - Integrated services control unit
3 - Heated rear windscreen

Fuel gauge

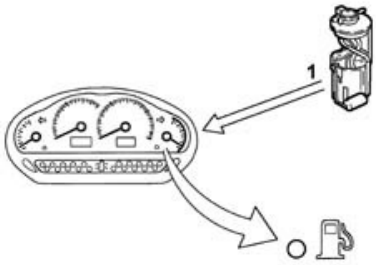
Fuel level is displayed via electronic circuitry inside the panel, which governs the gauge and the reserve warning light.
The internal logic 'dampens' the signal preventing fluctuations due to fuel slopping about in the tank.
If the fuel gauge sensor wiring is broken, the control panel indicator moves to the start of the scale without the reserve warning light coming on.

The reserve warning light is turned on by the control panel:

- for 6 seconds (check stage) after the ignition is turned to the ON position.

After the check stage, the warning light should:

- turn off after 30 seconds if the fuel level is higher than reserve level
- come on again after 45 seconds if the fuel has dropped to reserve level.



1 - Fuel gauge

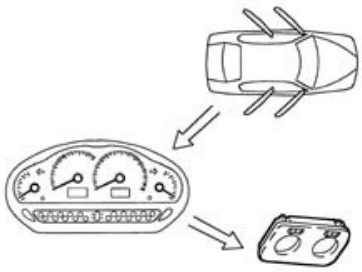
Courtesy light timer

This function is activated even with the ignition switched OFF.
The courtesy lights are activated when one or more doors are opened and the lights stay on as long as the doors are open, but for no longer than 3 minutes.
When the doors are no longer open, provided the 3 minutes have not elapsed, the courtesy light stays on for a further 8 seconds.

If, during these 8 seconds:

- the ignition key is turned to the ON position
- the door lock is recognized

the courtesy light is immediately switched off.



Detection of engine running.

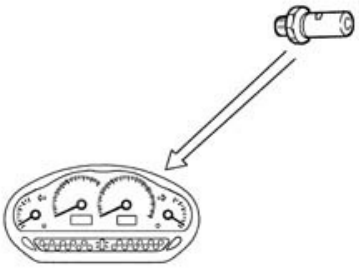
The engine is detected as running:

- when the ignition key is turned from the START to the ON position with the oil pressure sensor already open
- when the oil pressure sensor opens if the ignition key has already been turned from the START to the ON position

If the oil pressure sensor is faulty, the check system detects that the engine is running 60 seconds after the ignition key has been turned from the START to the ON position.
If the vehicle is push started, the check detects that the engine is running 60 seconds after the oil pressure sensor opens.

This is in order to:

- inhibit the measurement of the oil level with the engine started up
- time the engine oil pressure warning light.



Engine oil level

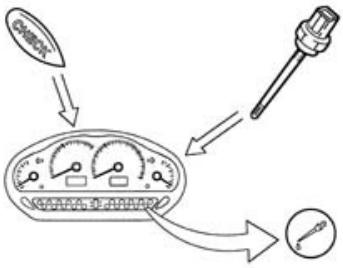
The insufficient engine oil level can only be detected once during each engine starting/switching off stage and only using the check button with the engine switched off. This is to avoid incorrect fault signals if the vehicle is not on a level surface or if the engine is switched on/off rapidly. Irregularities detected with the engine switched off are stored so that they can be displayed next time a check request is made in any engine conditions.

The oil level is checked when the engine is cold and with the vehicle level.

To turn off the warning light once the oil has been topped up, a check operation must be carried out.

To measure the oil level again after topping up, it is necessary to:

- turn the ignition key to the ON position
- press the check button.

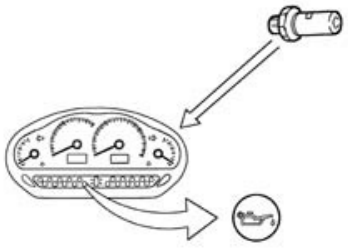


Minimum engine oil pressure

The control panel operating logic switches on the minimum engine oil pressure warning light through the signal coming from the minimum engine oil pressure sensor:

- with the ignition ON
- with the engine running status detected and a fault lasting longer than 10 ms.

The warning light is kept on for a length of time equal to the duration of the fault plus 4 seconds.
If the fault lasts less than 10 ms, the warning light only stays on for this time.



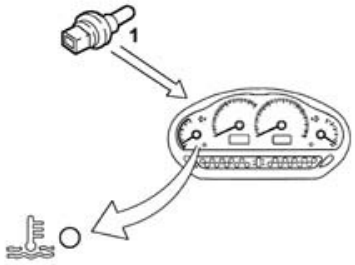
Engine coolant temperature gauge

The control panel processes the signal from the engine coolant temperature sensor and operates the gauge and the warning light.

To avoid false readings due to heat fluctuations:

- the warning light activation is inhibited for 2 minutes from the end of the check stage (6 seconds after the ignition key is turned to the ON position)
- when the temperature of the engine coolant is within a range from 80° C to 100° C, the gauge always indicates 90° C.

If the coolant temperature sensor is faulty, the coolant temperature gauge pointer is positioned at the beginning of the scale without the warning light coming on. This fault is stored in the control panel and can be identified using the diagnostic equipment.



1 - Engine coolant temperature sensor

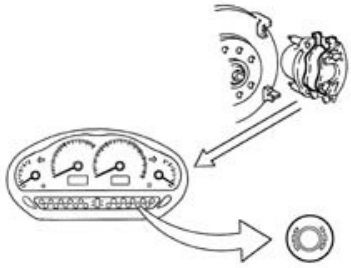
Brake pad wear

The brake pad wear sensor is always activated from the moment the ignition is switched ON.

A brake pad wear fault is detected:

- with a wear signal lasting longer than 5 seconds and the brake pedal depressed for the same period
- with a wear signal lasting longer than 2 seconds, ten consecutive times for the period the ignition is switched ON.

The anomaly is not stored by the control panel but zeroed whenever the car is started up.



Automatic transmission (where fitted)

The automatic transmission control unit notifies the control panel of:

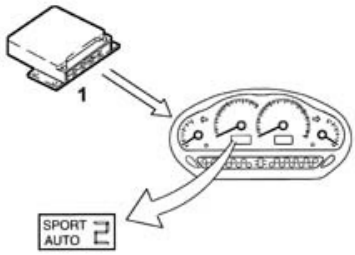
- the gear lever position
- the programme setting (SPORT or AUTO)
- the state of the automatic transmission failure warning light

The following appears on the LCD:

- the speed engaged, by means of an alternative alphanumerical character (P, R, N, D and 1, 2, 3, 4 and 5)
- the programme setting with the two words 'Sport' or 'Auto'.

A warning light in the instrument panel signas:

- gearbox oil overheating with the warning light on constantly.
- automatic transmission failure with the warning light flashing.



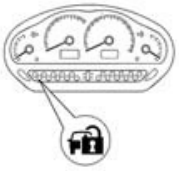
1 - Automatic transmission control unit (CAE)

Abs warning lights failure

If there is a fault with the LEDs for the warning lights for the ABS, EBD, VDC, a message will appear on the display.
The fault is memorized in the instrument and later on detected and recognized by means of the diagnostic equipment.

Code warning light

The Code warning light in the instrument panel is managed by the Code control unit.



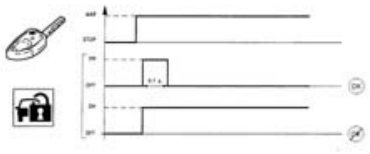
If the ignition key is turned to the ON position, the indicator can signal one of the following conditions:

- on briefly (0.7 s) and then off: key recognized, system operation correct;

on constantly: the control unit has detected one of the following faults:

- key not recognized by the Code control unit;
- serial line between Code control unit and engine control unit not connected or no communication between the control units
- key programming procedure not carried out (new control unit from PARTS DEPT.).

The operation of the warning light is summarized in the following diagram.



Eobd warning light

The AMBER warning light is activated by the engine control unit for about 4 seconds (check) when the ignition key is turned to 'MAR'

The EOBD (European On Board Diagnosis) system carries out continuous diagnosis of the car's petrol fuel system components relating to emissions and indicates any deterioration of these components by the warning light in the instrument panel coming on.

The aim of the system is:

- to monitor the efficiency of the system;
- signalling an increase in emissions due to a vehicle malfunction;
- to signal the need to replace deteriorated components.

Prompt repair of the problem which has caused the warning light to come on is vital in accordance with the legal requirements of the traffic regulations of the country in question.

Control panel pin out

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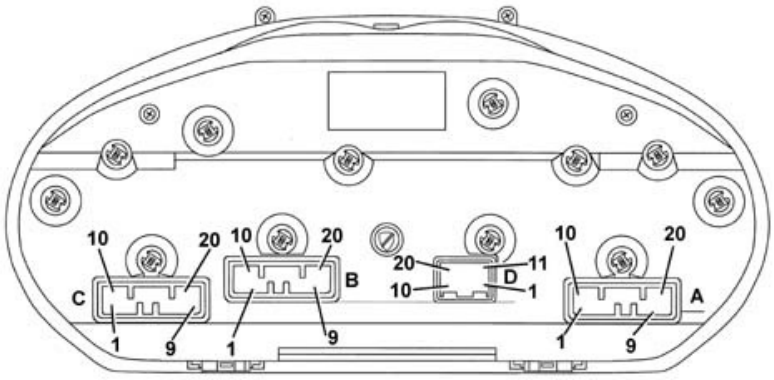

Connector A
1 - Left direction indicator warning light
2 - Right direction indicator warning light
3 - Heater plugs warning light (Diesel only)
4 - Water in diesel filter warning light (Diesel only)
5 - N.C.
6 - Seat belts warning light
7 - Recharging warning light
8 - N.C.
9 - N.C.
10 - N.C.
11 - Injection failure warning light, EOBD
12 - Cruise Control warning light
13 - + 50 starting
14 - + 15 battery
15 - + 15 key
16 - Earth
17 - Panel lighting positive
18 - Panel lighting negative
19 - Fuel level
20 - Fuel level return
Connector B
1 - N.C.
2 - Speedometer signal
3 - N.C.
4 - Engine rpm signal
5 - Speedometer 1 repeition
6 - Speedometer 2 repetition
7 - Speedometer 3 repetition
8 - Boot opening enablement
9 - N.C.
10 - Engine coolant overheating
11 - N.C.
12 - N.C.
13 - Boot open
14 - Doors check (left front door open)
15 - Doors check (right front door open)
16 - Doors check (left rear door open)
17 - Doors check (left rear door open)
18 - Engine oil level
19 - Engine oil level return
20 - N.C.
Connector C
1 - K line
2 - N.C.
3 - N.C.
4 - Alfa Romeo CODE warning light
5 - Side lights warning light
6 - Main beam headlamps warning light
7 - Lights summary failure warning light
8 - ABS failure warning light
9 - Air Bag failure warning light
10 - Handbrake/insufficient brake fluid level warning light
11 - Trailer direction indicators warning light
12 - Brake pad wear warning light
13 - Minimum engine oil pressure warning light
14 - N.C.
15 - Engine coolant temperature warning light
16 - Passenger Air Bag disabled warning light
17 - Fuel level repetition
18 - VDC warning light
19 - EBD failure warning light (non VDC version)

19 - Hanbrake warning light (VDC version)
20 - VDC earth
Connector D (versions with automatic transmission only)
1, N.C.
2, N.C.
3, Tunnel D LED
4, Tunnel N LED
5, Tunnel R LED
6, Tunnel P LED
7, Tunnel +/- LED
8, Tunnel earth
from 9 to 19, N.C.
20, Automatic transmission failure warning light