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PORSCHE

Technical Manual

Boxster

Technical Information

Repair

Contents:

Group 0
Diagnosis
Part 2 (as of Repair Group 69)

WKD 483 521

TITEL.CHP

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## Foreword

The workshop documentation for the Boxster model has the designation **"Boxster" Technical Manual** and contains **Technical Information** as well as instructions on **Repairs**.

The integration of the technical information published in the "Boxster" Technical Manual with the descriptive matter on repairs provides the user with a complex reference work that combines into one book associated or cross-referenced material of relevance to workshops and originating from various information media.

The "Boxster" Technical Manual consists of 15 folders, subdivided into the following Groups

| | |
|---|---|
| 0 | Entire vehicle – General |
| 0 | Diagnosis, part 1 (up to Repair Group 45) *1 |
| 0 | Diagnosis, part 2 (as of Repair Group 69) *2 |
| 1 | Engine, part 1 (up to Repair Group 13) *3 |
| 1 | Engine, part 2 (as of Repair Group 15) *4 |
| 2 | Fuel, exhaust, engine electronics |
| 3 | Transmission, manual transmission |
| 3 | Transmission, automatic transmission |
| 4 | Running gear |
| 5 | Body |
| 6 | Body equipment, exterior |
| 7 | Body equipment, interior |
| 8 / 9 | Air conditioning / Electrics |
| 9 | Circuit diagrams, part 1 (up to and including the '99 model) *5 |
| 9 | Circuit diagrams, part 2 (as of the '00 model) *6 |

*1 The two folders with Group 0 are to be regarded as one folder; i.e. file the "Technical Information" notices only in front of the repair descriptions in the folder "Group 0 – Diagnosis, part 1" **(up to Repair Group 45)**.

*2 The **second folder** "Group 0 – Diagnosis, part 2" **(as of Repair Group 69)** includes the further Repair Groups belonging to Group 0.

*3 The two folders with Group 1 are to be regarded as one folder; i.e. file the "Technical Information" notices only in front of the repair descriptions in the folder "Group 1 – Engine, part 1" **(up to Repair Group 13)**.

*4 The **second folder** "Group 1 – Engine, part 2" **(as of Repair Group 15)** includes the further Repair Groups belonging to Group 1.



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*5 The two folders with Group 9 are to be regarded as one folder; i.e. file the "Technical Information" notices only in front of the repair descriptions in the folder "Group 9 – Circuit diagrams, part 1" **(up to the '99 model)**.

*6 The **second folder** "Group 9 – Circuit diagrams, part 2" **(as of the '00 model)** includes the further circuit diagrams belonging to Group 9.

The "Boxster" Technical Manual has the same structure in each folder, with the following breakdown for all Groups:

**Title page, "Boxster" Technical Manual**
> Foreword

**Title page: "Technical Information"**
> Table of Contents, Technical information
> Technical information

**Title page: "Repair"**
> Repair Groups: overview
> Table of Contents, repairs
> General / technical data
> Instructions on repairs

As can be seen from the breakdown, the published Technical Information is in the front part of each folder – numbered according to the Groups. The Table of Contents assigned to each Group will be periodically updated.

Following the Technical Information, separated by a title page, the instructions on repairs – assigned according to the Groups or broken down into Repair Groups – are included in the folder.

The instructions on repairs will be extended and updated by means of supplements.

Note

Sheets that already exist in the "Boxster" Technical Manual and are updated or revised and thereby exchanged by a supplement are designated "Replacement sheet". Revisions or technical modifications on pages of these replacement sheets are identified for the user with a vertical bar at the margin.



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| | | |
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# 0 Diagnosis, part 2 (as of Repair Group 69)


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**96 Alarm system diagnosis**

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69 01

# Diagnosis/troubleshooting

## Airbag

## System B 04



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## General information

The airbag system is constantly monitored by a diagnosis unit in the triggering unit. Any fault is signalled by a warning light.

The warning light for the airbag system lights up in the event of a fault.

The airbag warning light lights for approx. 3 seconds after the ignition is switched on and goes out if no fault has been entered in the fault memory.

If it lights up again, this indicates a fault in the system. The fault can be read out with the Porsche System Tester 2.

### Note

A period of 10 seconds is required to enable the triggering unit to identify all faults in the system. In order to guarantee that every possible fault source is checked during the vehicle test, the ignition must be switched on for at least 10 seconds.

**The fault memory must be cleared** following a fault in the airbag system and after it has been remedied.

The replacement of a component must be noted in the Guarantee and Maintenance booklet. To do this, attach the documentation number in a free panel intended for that purpose. The documentation number is attached to the replacement part as a tear-off sticker.

The following components must be removed and replaced following an accident in which the airbag system was triggered:

Contact unit

Airbag unit, driver's side

Airbag unit, passenger's side, if fitted and if triggered.

The triggering unit must be replaced after the airbag is triggered for the third time.



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## Menu

### Overview of the possible menus

Fault memory

Events

Lock

Extract coding

Modify coding

Fault memory: see Page 69 - D 10

Events: see Page 69 - D 17

Lock: see Page 69 - D 18

Extract coding: see Page 69 - D 19

Modify coding: see Page 69 - D 20

### Note

Observe safety instructions (see Service No. 69)
when working on the airbag system.



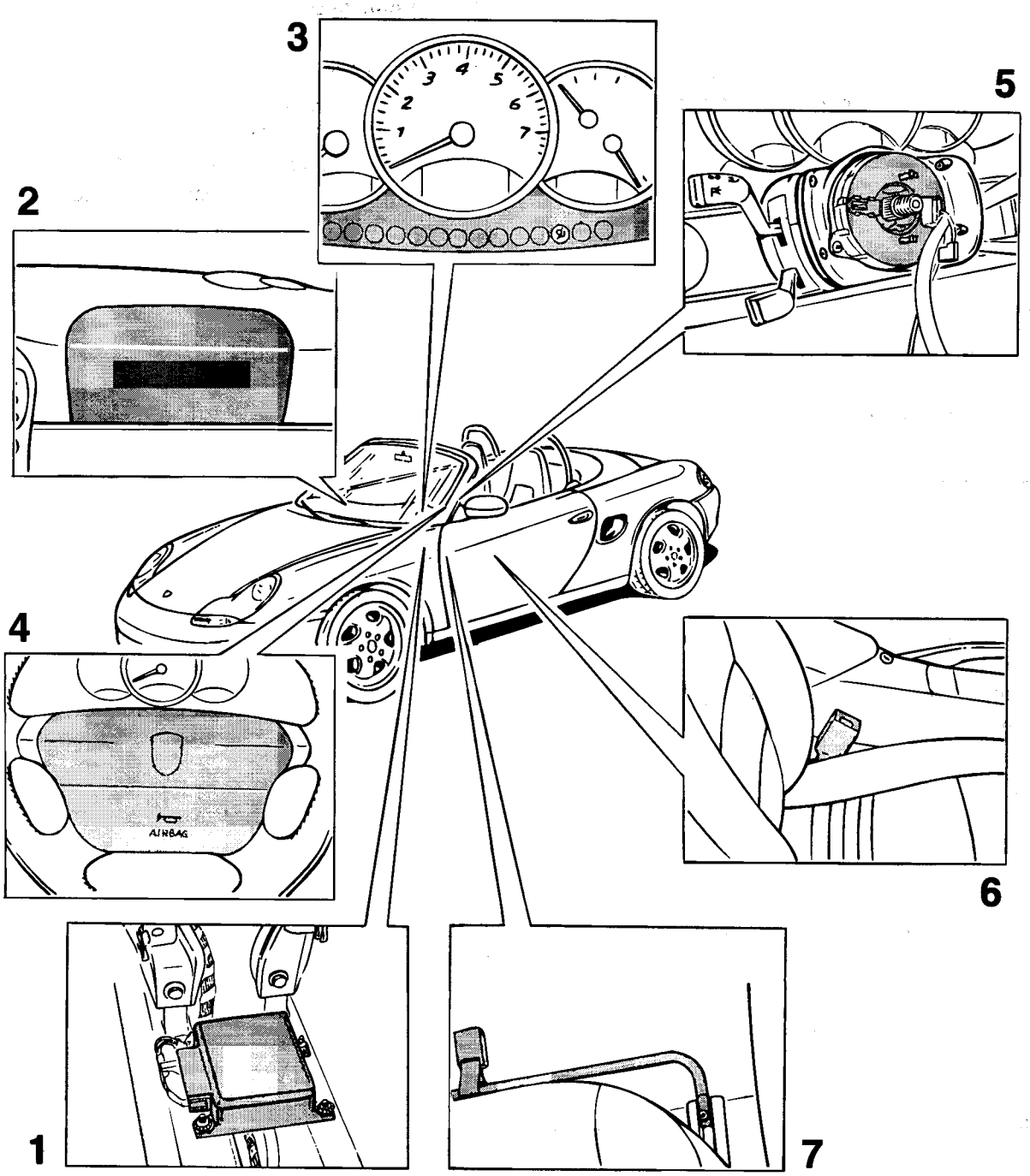
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## Component arrangement




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## Function, individual components

### 1. Triggering unit

Processes the incoming signals and triggers the airbag system when an accident is identified.

### 2. Passenger's airbag unit (if fitted)

Contains the airbag and the gas generator for the passenger.

### 3. Warning light

1. System readiness indicator.

2. Fault indication.

### 4. Driver's airbag unit

Contains the airbag and the gas generator for the driver.

### 5. Contact unit

Connection between the triggering unit and driver's airbag unit.

### 6. Belt buckle, driver/passenger

A switch is installed in each belt buckle in order to detect whether the seat belt is fastened or not.

### 7. Plug connection, child restraint system

If a child restraint system is used, the passenger's airbag unit must be deactivated. A plug connection (buckle) is installed under the passenger's seat for this purpose. The tongue of the child restraint system must be inserted into this plug connection.



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## System description

The airbag system consists of the components: triggering unit, contact unit, driver's airbag unit, passenger's airbag unit, child restraint system plug connection, belt buckle for driver, belt buckle for passenger and the warning light. A system self-test is performed after the ignition is switched on. The warning light is switched on during the self-test. If no faults are stored in the fault memory, the warning light goes out after approx. 3 seconds.

Up to max. 10 faults can be stored. A start and stop fault clock is kept for each fault.

The triggering unit has the following functions:

- Crash recognition and triggering time calculation
- Triggering the airbag system
- Recording the crash data
- Self-test and permanent monitoring of the airbag system
- Fault storage
- Fault display
- Fault output
- System readiness display

The triggering unit need not be replaced until after the third time the airbag is triggered or if the fault memory can no longer be cleared.

If the triggering unit is replaced, the data record for the appropriate vehicle must be loaded with the Porsche System Tester 2 and the triggering unit must be locked.
The warning light flashes before locking. The warning light goes out after locking was performed successfully (if no fault is present).


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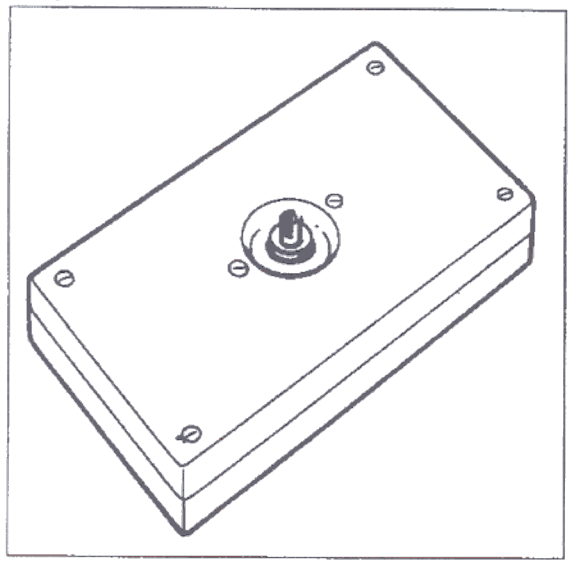


## Tools

The following equipment is required for troubleshooting:

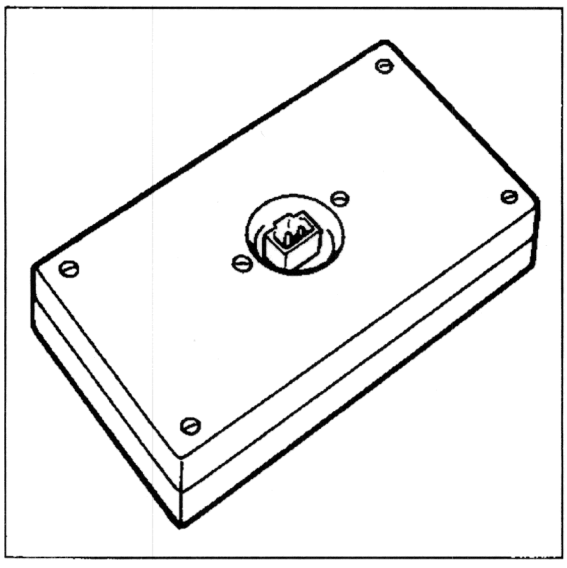
1. Porsche System Tester 2

2. Special tool 9516



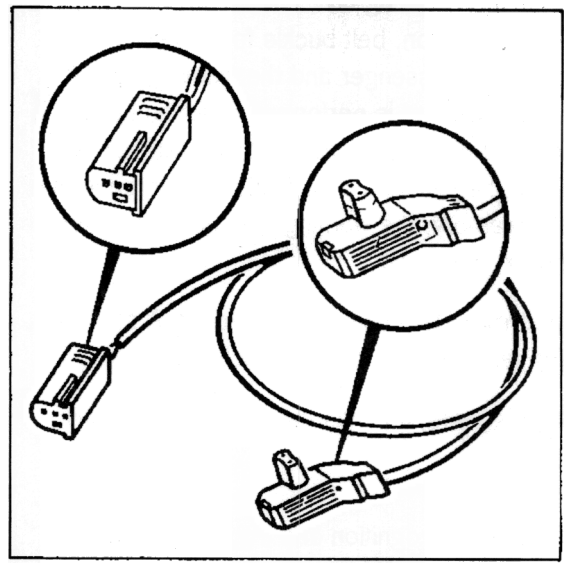
560-68

3. Special tool 9516/1



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4. Special tool 9566



179868

5. Commercially available digital multimeter

**Note**

The special tools are used to check the ignition pill circuits.

**For safety reasons, it is not permissible to drive with special tools attached instead of the airbag units.**

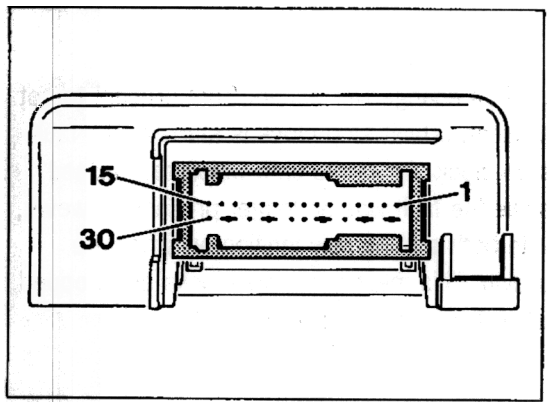


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## Connector assignment, triggering unit




1838-68

1 - Free

2 - Free

3 - Free

4 - Free

5 - Terminal 15

6 - Terminal 31

7 - Warning light

8 - Buckle, passenger

9 - K-lead

10 - Driver's ignition pill, positive

11 - Driver's ignition pill, negative

12 - Buckle, driver

13 - Passenger's ignition pill, positive

14 - Passenger's ignition pill, negative

15 - Free

16/17 - Lug for opening the short circuit bridge

18/19 - Lug for opening the short circuit bridge

20 - Free

21/22 - Lug for opening the short circuit bridge

23 - Child seat detection

24 - Crash output

25/26 - Lug for opening the short circuit bridge

27 - Free

28/29 - Lug for opening the short circuit bridge

30 - Free



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## Fault memory

### Overview of possible faults

Airbag warning light

Supply voltage

Ignition circuit, driver

Ignition circuit, passenger

Belt buckle, driver

Belt buckle, passenger

Child seat detection

Control unit faulty

### Note

If the fault memory cannot be erased, it is necessary to check whether the coding corresponds to the vehicle equipment.

A plus sign (+) present in the line or not present indicates a loose contact. A counter is started when the symbol changes from not present to present. This counter indicates how often the change took place from present to not present.

When a fault is identified, a fault start clock is started. The fault start clock shows the time in hours, minutes and seconds that has passed since the fault first occurred.

When a changeover occurs from present to not present, a fault stop clock is started. The fault stop clock shows the time which has passed since the fault was no longer present. However, with both clocks, only ignition on times are shown. This means that the clocks are stopped when the ignition is switched off.



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## Fault overview

| Test point | Fault code | Fault effect | Page |
|---|---|---|---|
| 1 | 04, 05, 20, 21, 36 | Fault memory | 69 - D 12 |
| 2 | 10, 11, 26, 27, 39 | Fault memory | 69 - D 13 |
| 3 | 03 | Fault memory | 69 - D 14 |
| 4 | 01, 02 | Fault memory ** | 69 - D 14 |
| 5 | 44, 45, 46, 50 | Fault memory | 69 - D 15 |
| 6 | 47, 48, 49, 51 | Fault memory | 69 - D 15 |
| 7 | 70, 71, 72, 73 | Fault memory | 69 - D 16 |
| 8 | ≥ 100 | Fault memory **** | 69 - D 16 |
| 9 | XXX | Fault memory | 69 - D 16 |

The warning light is on as long as the limit value is exceeded or not reached.

The warning light is not on.

In the case of fault codes 50, 51 and 65, the warning light is on as long as the limit value is exceeded or not reached.

**** The fault memory cannot be cleared. The triggering unit must be replaced.



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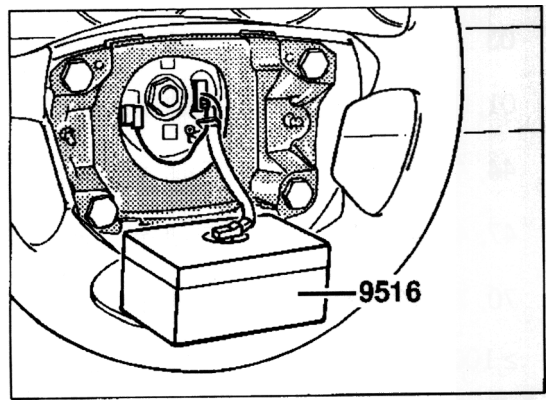


| Fault, fault code | Possible causes, elimination, notes |
|---|---|

**Test point 1**

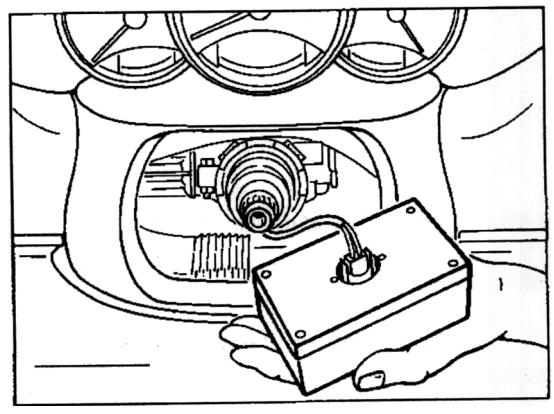
Ignition circuit, driver
**Fault codes 04, 05, 20, 21, 36**

1. Remove driver's airbag unit.
2. Attach the special tool 9516 instead of the airbag unit.




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3. Clear the fault memory.
4. Check whether the fault appears again.
   a) If the fault does not appear again, replace the airbag unit.
   b) If the fault appears again, disconnect plug connection to the contact unit and attach special tool 9516/1.



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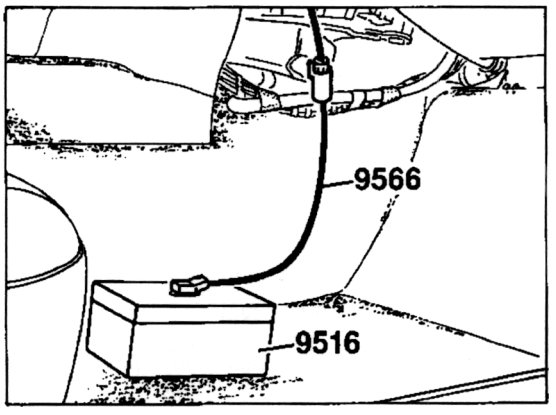


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| Fault, fault code | Possible causes, elimination, notes |
|---|---|
| | 5. Clear the fault memory.<br>6. Check whether the fault appears again.<br>a) If the fault does not appear again, replace the contact unit.<br>b) If the fault appears again, check the wiring harness for pinches and chafing damage.<br>c) If no fault is found on the wiring harness, replace the triggering unit.<br>**Note**<br>Fault code 36<br>This fault path is checked only once after the ignition is switched on.<br>Proceed as described below to determine whether the fault was eliminated:<br>1. Clear the fault memory.<br>2. Switch off ignition.<br>3. Remove ignition key.<br>4. Switch on ignition. |
| **Test point 2**<br>Ignition circuit, passenger<br>**Fault codes 10, 11, 26, 27, 39** | 1. Disconnect the plug connection to the passenger's airbag unit.<br>2. Attach the special tool 9516 in conjunction with special tool 9566. |




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| Fault, fault code | Possible causes, elimination, notes |
|---|---|
| | 3. Clear the fault memory.<br>4. Check whether the fault appears again.<br>a) If the fault does not appear again, replace the passenger's airbag unit.<br>b) If the fault appears again, check the wiring harness for pinches and chafing damage.<br>c) If no fault is found on the wiring harness, replace the triggering unit.<br>**Note**<br>Fault code 39<br>This fault path is checked only once after the ignition is switched on.<br>Proceed as described below to determine whether the fault was eliminated:<br>1. Clear the fault memory.<br>2. Switch off ignition.<br>3. Remove ignition key.<br>4. Switch on ignition. |
| **Test point 3**<br>Supply voltage<br>**Fault code 03** | 1. Inspect the battery and generator.<br>2. Inspect the plug connection on the triggering unit for corrosion. |
| **Test point 4**<br>Airbag warning light<br>**Fault codes 01, 02** | 1. Inspect the fuse for the supply voltage (terminal 15) for the instrument cluster.<br>2. Inspect the bulb and replace it if necessary.<br>3. Inspect the lead from the triggering unit pin 7 to the warning light for continuity and short circuit to positive. |



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|

## Test point 5

Belt buckle, driver
**Fault codes 44, 45, 46, 50**

1. Disconnect the plug connection X16.
2. Connect ohmmeter on the pin side on pins B7 and B8.
   Display: approx. 400 Ω

   **Note**

   The belt tongue must not be inserted in the buckle.
3. Connect ohmmeter on the pin side on pin B7 and ground.
   Display: ∞ Ω
4. Connect ohmmeter on the pin side on pins B7 and B8.
   Insert the belt tongue in the buckle.
   Display: approx. 100 Ω
5. Inspect the wiring harness to the triggering unit for pinches and chafing damage.

## Test point 6

Belt buckle, passenger
**Fault codes 47, 48, 49, 51**

1. Disconnect the plug connection X17.
2. Connect ohmmeter on the pin side on pins B7 and B8.
   Display: approx. 400 Ω

   **Note**

   The belt tongue must not be inserted in the buckle.
3. Connect ohmmeter on the pin side on pin B7 and ground.
   Display: ∞ Ω
4. Connect ohmmeter on the pin side on pins B7 and B8.
   Insert the belt tongue in the buckle.
   Display: approx. 100 Ω
5. Inspect the wiring harness to the triggering unit for pinches and chafing damage.



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|
| **Test point 7**<br>Child seat detection<br>**Fault codes 70, 71, 72, 73** | 1. Disconnect the plug on the triggering unit.<br>2. Connect ohmmeter to plug, pin 23 and ground.<br>Plug of child seat not inserted.<br>Display: approx. 2 kΩ<br>Plug of child seat inserted.<br>Display: approx. 260 Ω<br>3. Inspect the wiring harness to the triggering unit for pinches and chafing damage. |
| **Test point 8**<br>Control module<br>**Fault code ≥ 100** | Replace the triggering unit. |
| **Test point 9**<br>Unknown fault code<br>**Fault code XXX** | 1. Inspect the ground points for corrosion.<br>2. Inspect the ignition on the secondary side.<br>3. Clear the fault memory. |



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## Events

Crash data can be read out under the menu item `Events`. Up to max. three events can be stored. Each event covers 16 bytes. The triggering unit must be replaced after the third event, since the airbag warning light lights up continuously and the events cannot be deleted.


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## Lock

An unlocked triggering unit can be locked under the menu item Lock.

A locked triggering unit **cannot be unlocked again.**

If a triggering unit is unlocked, the airbag warning light flashes. The triggering unit must then be locked.

Replacement triggering units are supplied unlocked.

1. Select Driver's/Passenger's airbag or Driver's airbag according to the vehicle equipment.

2. Select vehicle type.

### Note

The vehicle type cannot be changed again.

3. Select Lock.

If there is no fault, the following message is displayed after a short waiting period:

`Airbag was locked`

This ends locking.

The following messages can be displayed in a fault state:

`Airbag was already locked`

`No Porsche control unit`

`Incorrect vehicle type`

`Incorrect database version`

`Incorrect equipment`

In the event of a fault, the triggering unit cannot be locked.

In the case of the "wrong equipment" message, select the correct equipment.

Replace the triggering unit in the case of the other messages.



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## Extract coding

Under the menu item `Extract coding`, you can read out which equipment features are activated and which are not. Also, it is possible to read out the vehicle type and the data record version, and where the airbag triggering unit was locked.

The following equipment features can be read out:

Driver's/passenger's airbag

Driver's airbag only

Buckle (detects whether seat belt is fastened)

Child seat occupancy (detects whether a child seat is being used on the passenger's side)

USA (vehicles)


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## Modify coding

Under the menu item `Modify coding`, you can adapt the airbag triggering unit to the vehicle equipment.

After the airbag triggering unit is replaced, the coding must be adapted to the vehicle equipment.

The following equipment features can be changed:

Driver's/passenger's airbag

Buckle

Seat occupancy (passenger)

Child seat occupancy (passenger)

### Note

If the coding does not agree with the vehicle equipment, faults will be displayed that do not really exist.

The ignition must be switched off and the ignition key removed after the coding is changed.



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69 01 Diagnosis/troubleshooting, airbag

# Diagnosis/Troubleshooting

# Airbag

# System B 05



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## General information

The airbag system is constantly monitored by a diagnosis unit in the triggering unit. Any fault is signalled by a warning light.

The warning light for the airbag system lights up in the event of a fault.

The airbag warning light lights for approx. 3 seconds after the ignition is switched on and goes out if no fault has been entered in the fault memory.

If it lights up again, this indicates a fault in the system. The fault can be read out with the Porsche System Tester 2.

**Note**

A period of 10 seconds is required to enable the triggering unit to identify all faults in the system. In order to guarantee that every possible fault source is checked during the vehicle test, the ignition must be switched on for at least 10 seconds.

**The fault memory must be cleared** following a fault in the airbag system and after it has been remedied.

The replacement of a component must be noted in the Guarantee and Maintenance booklet. To do this, attach the documentation number in a free panel intended for that purpose. The documentation number is attached to the replacement part as a tear-off sticker.

The following components must be removed and replaced following an accident in which the airbag system was triggered:

Contact unit

Triggered airbag unit(s)

The triggering unit must be replaced after the airbag is triggered for the third time.



**Warning:**
**Danger of injury**

> Observe safety instructions when working on the airbag system (see Serv. No. 69).



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## Menu

### Overview of the possible menus


Fault memory: see Page 69 - D 31

see Page 69 - D 40

see Page 69 - D 41

Extract coding: see Page 69 - D 42

Modify coding: see Page 69 - D 43



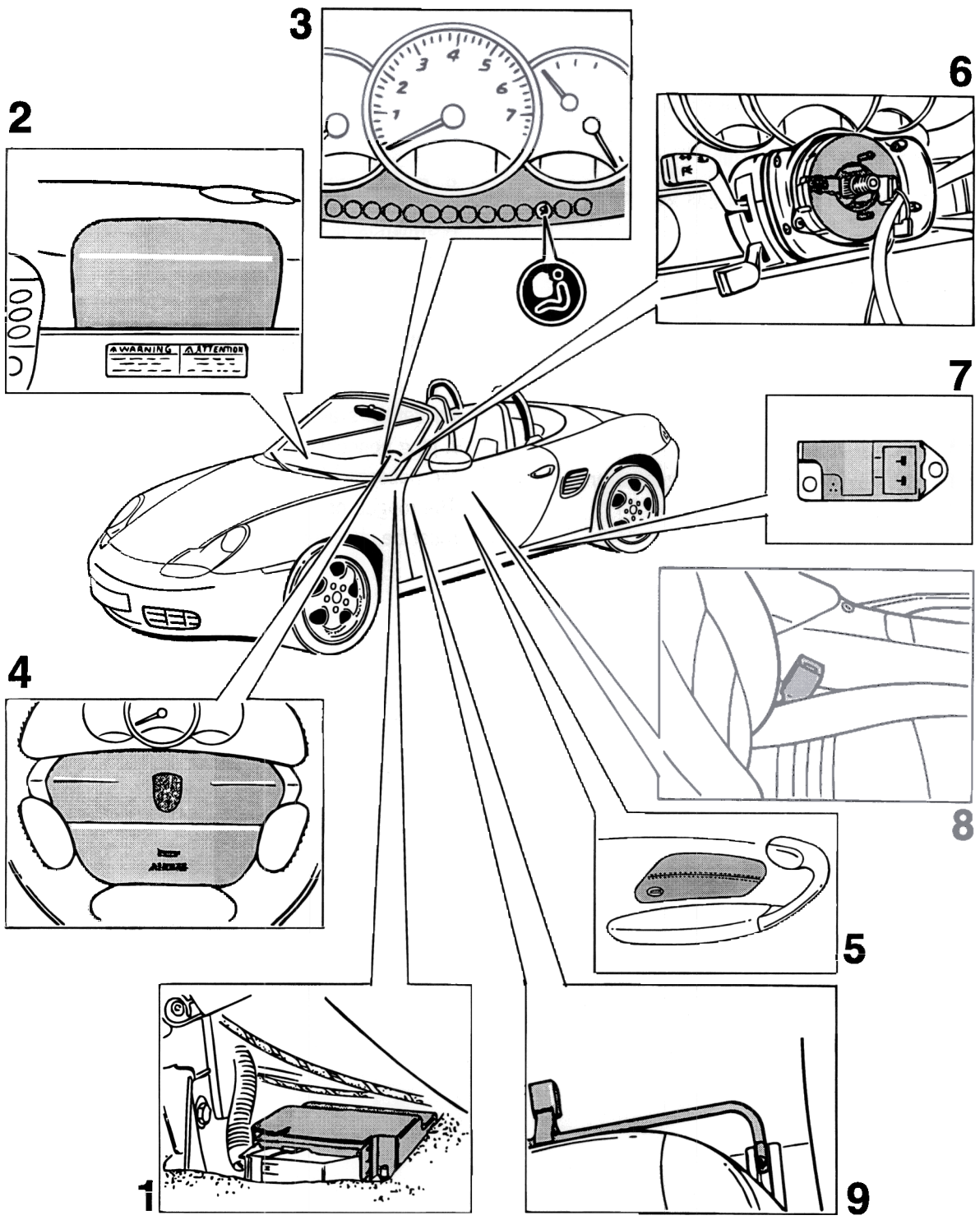

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## Component arrangement




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## Function, individual components

### 1. Triggering unit

Processes the incoming signals and triggers the airbag system when an accident is identified.

### 2. Passenger's airbag unit

Contains the airbag and the gas generator for the passenger.

### 3. Warning light

1. System readiness indicator.

2. Fault indication.

### 4. Driver's airbag unit

Contains the airbag and the gas generator for the driver.

### 5. Side airbags

The side airbags are located in the doors. The side airbags include the airbag and the gas generator.

### 6. Contact unit

Connection between the triggering unit and driver's airbag unit.

### 7. Sensors for airbag

The two sensors are located at the right and left sides and measure the lateral acceleration in a side impact.

### 8. Belt buckle, driver/passenger

A switch is installed in each belt buckle in order to detect whether the seat belt is fastened or not.

### 9. Plug connection, child restraint system

If a child restraint system is used, the passenger's airbag unit must be deactivated. A plug connection (buckle) is installed under the passenger's seat for this purpose. The tongue of the child restraint system must be inserted into this plug connection.



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## System description

The airbag system consists of the following components:

- Triggering unit
- Contact unit
- Driver's airbag unit
- Passenger's airbag unit
- Side airbags
- Sensors for airbag (side-airbag sensors)
- Plug connection, child restraint system
- Belt buckle for driver
- Belt buckle for passenger
- Warning light

A system self-test is performed after the ignition is switched on. The warning light is switched on during the self-test. If no faults are stored in the fault memory, the warning light goes out after approx. 3 seconds.

Up to max. 10 faults can be stored. A start and stop fault clock is kept for each fault.

The triggering unit has the following functions:

- Crash recognition and triggering time calculation
- Triggering the airbag system
- Recording the crash data
- Self-test and permanent monitoring of the airbag system
- Fault storage
- Fault display
- Fault output
- System readiness display

The triggering unit need not be replaced until after the third time the airbag is triggered or if the fault memory can no longer be cleared.

If the triggering unit is replaced, the data record for the appropriate vehicle must be loaded with the Porsche System Tester 2 and the triggering unit must be locked.
The warning light flashes before locking.
The warning light goes out after locking was performed successfully (if no fault is present).

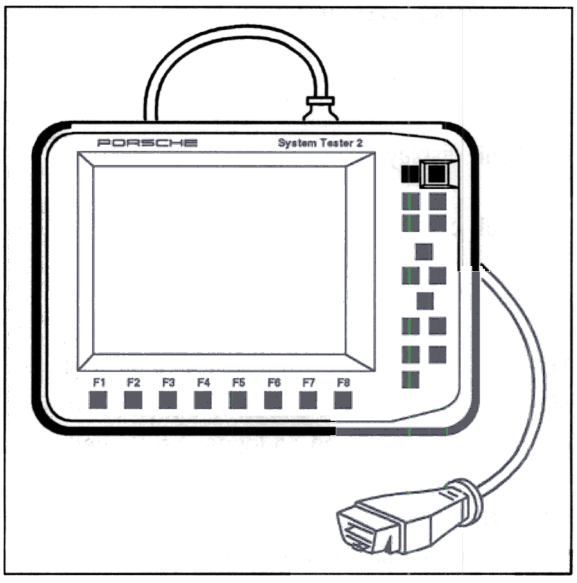

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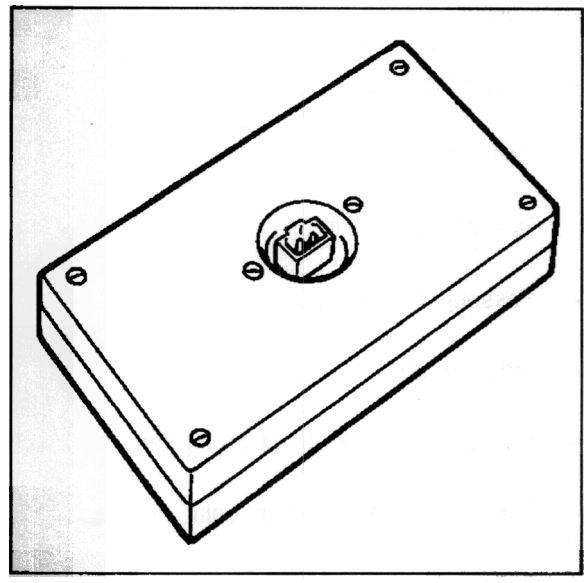


## Tools

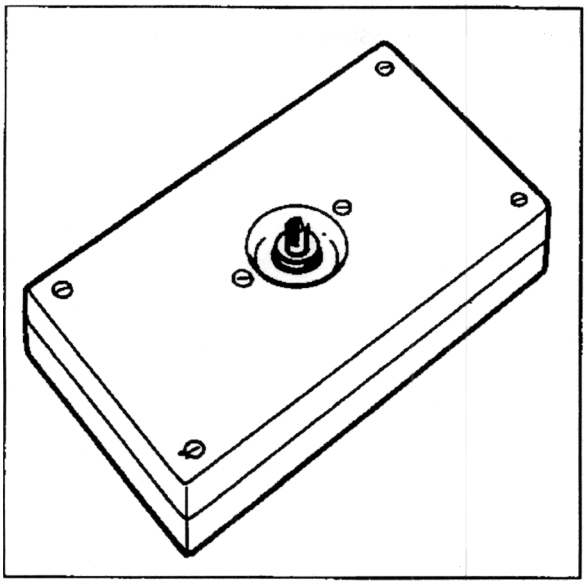
The following equipment is required for troubleshooting:



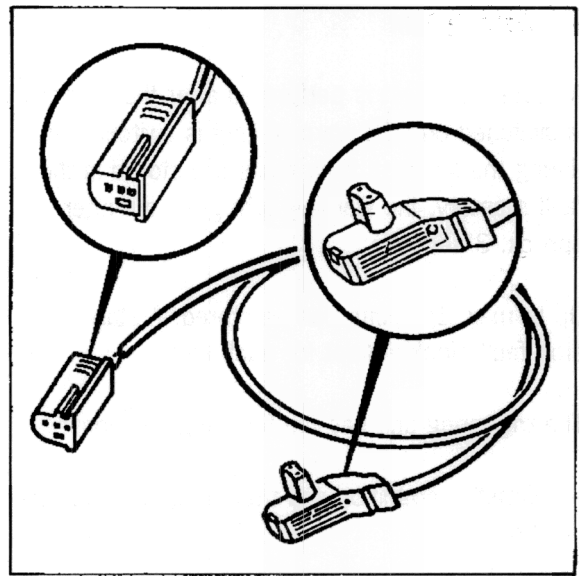

*Porsche System Tester 2* 547_96



*Special tool 9516/1* 561_68



*Special tool 9516* 560_68



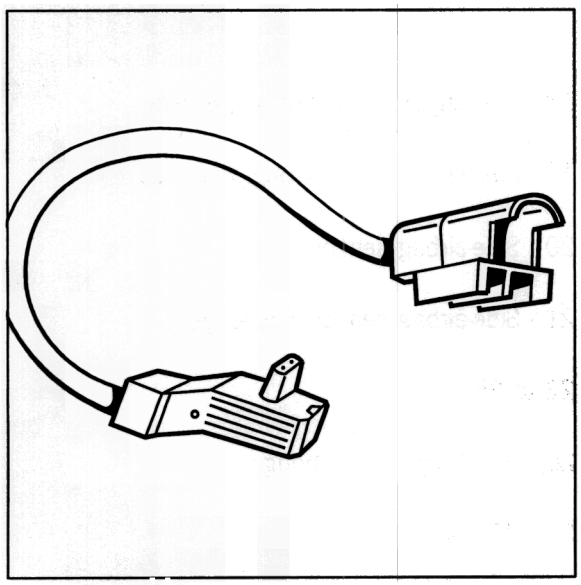
*Special tool 9566* 1798_68



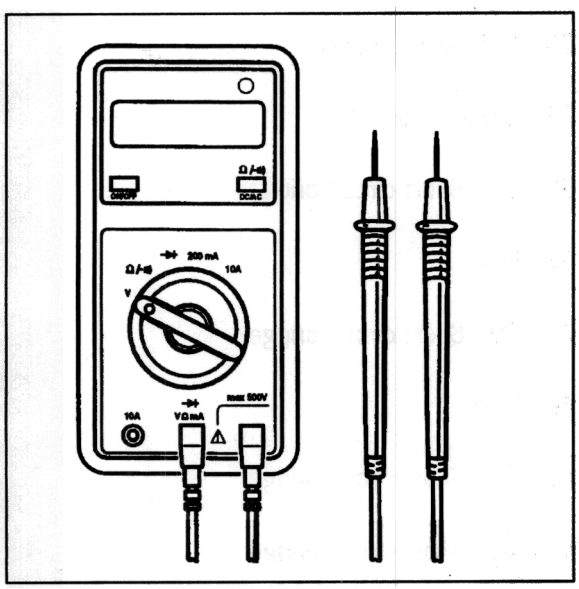
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*Special tool 9516/2* 311_98



*Commercially available digital multimeter* 2178_28

**Caution!**

**Danger of injury if vehicle is driven with the special tools in place!**

> Never drive with special tools attached instead of the airbag units.



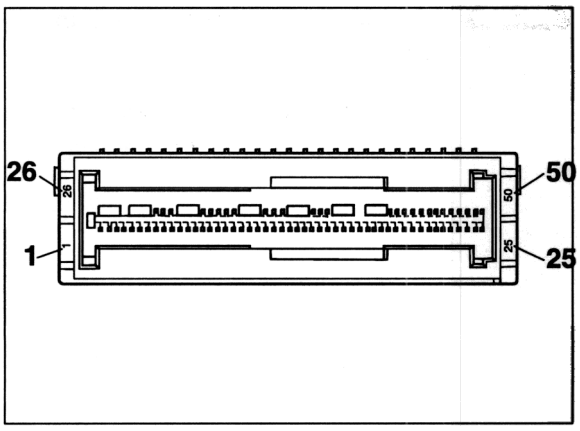
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## Connector assignment, triggering unit




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1 to 4 - Free

5 - Terminal 86

6 - Terminal 31

7 - Warning light

8 - Buckle, passenger

9 - K-lead

10 - Driver's ignition pill, positive

11 - Driver's ignition pill, negative

12 - Buckle, driver

13 - Passenger's ignition pill, positive

14 - Passenger's ignition pill, negative

15 - Free

16 - Driver's side airbag, positive

17 - Driver's side airbag, negative

18 - Passenger's side airbag, positive

19 - Passenger's side airbag, negative

20 - Side-airbag sensor, driver

21 - Side-airbag sensor, passenger

22 to 25 - Free

26 \ 27 - Short circuit bridge

28 \ 29 - Short circuit bridge

30 - Free

31 \ 32 - Short circuit bridge

33 - Child seat detection

34 - Crash output

35 \ 36 - Short circuit bridge

37 - Free

38 \ 39 - Short circuit bridge

40 - Free

41 \ 42 - Short circuit bridge

43 \ 44 - Short circuit bridge

45 to 50 - Free



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## Fault memory

### Overview of possible faults

Airbag warning light

Supply voltage

Ignition circuit, driver

Ignition circuit, passenger

Ignition circuit, side airbag

Side-airbag sensor

Belt buckle, driver

Belt buckle, passenger

Child seat detection

**Note**

If the fault memory cannot be erased, it is necessary to check whether the coding corresponds to the vehicle equipment.

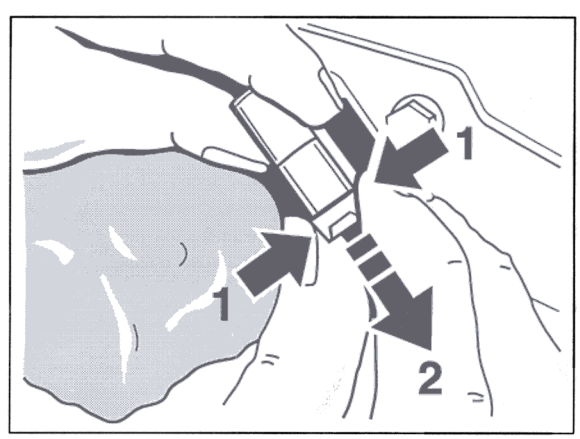
When a fault is stored, the Porsche System Tester 2 can provide more information about the fault if the F8 key is pressed. A counter is started when the symbol changes from *not present* to *present*. This counter indicates how often the change took place from *present* to *not present*. At this changeover, the display simultaneously changes from *static* to *sporadic*, which indicates a **loose contact**.

When a fault is identified, a fault start clock is started. The fault start clock shows the time in hours, minutes and seconds that has passed since the fault first occurred.

When a changeover occurs from *present* to *not present*, a fault stop clock is started. The fault stop clock shows the time which has passed since the fault was no longer present. However, with both clocks, only ignition-on times are shown. This means that the clocks are stopped when the ignition is switched off.

### Unplugging the side-airbag plug

Press the locking tabs on both sides on the plug together and simultaneously pull out the plug.




*Unplugging the side-airbag plug* 310_98


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## Fault overview

| Test point | Fault code | Fault effect | Page |
|---|---|---|---|
| | 04, 05, 20, 21, 36 | Fault memory | 69 - D 33 |
| 2 | 10, 11, 26, 27, 39 | Fault memory | 69 - D 34 |
| 3 | 03 | Fault memory | 69 - D 35 |
| 4 | 01, 02 | Fault memory | 69 - D 35 |
| 5 | 44, 45, 46, 50 | Fault memory | 69 - D 36 |
| 6 | 47, 48, 49, 51 | Fault memory | 69 - D 36 |
| 7 | 70, 71, 72, 73 | Fault memory | 69 - D 37 |
| 8 | 12, 13, 14, 15<br>28, 29, 30, 31<br>40, 41 | Fault memory | 69 - D 37 |
| 9 | 85, 87 | Fault memory | 69 - D 38 |
| 10 | 86, 88 | Fault memory | 69 - D 38 |
| 11 | 53, 56 | Fault memory | 69 - D 38 |
| 12 | XXX | Fault memory | 69 - D 39 |

**Note**

Fault codes 100 and higher are internal control module faults. The fault memory cannot be cleared. The control module must be replaced.



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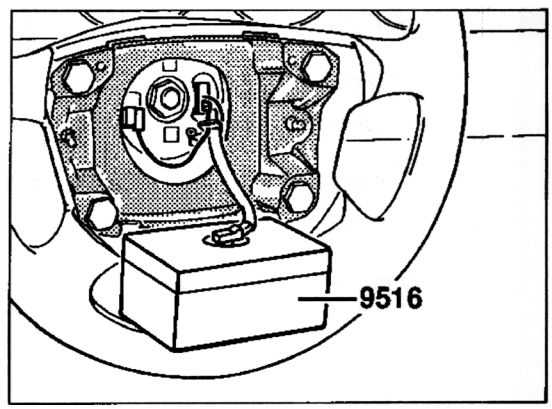
www.WorkshopManuals.co.uk


| Fault, fault code | Possible causes, elimination, notes |
|---|---|

## Test point 1

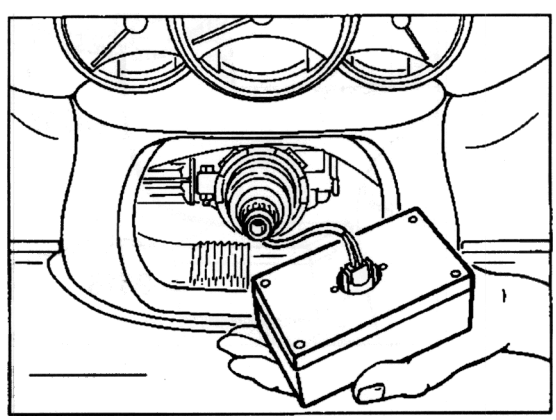
Ignition circuit, driver
**Fault codes 04, 05, 20, 21, 36**

1. Remove driver's airbag unit.
2. Attach the special tool 9516 instead of the airbag unit.




135_96

3. Clear the fault memory.
4. Check whether the fault appears again.
   a) If the fault does not appear again, replace the airbag unit.
   b) If the fault appears again, disconnect plug connection to the contact unit and attach special tool 9516/1.



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|

5. Clear the fault memory.
6. Check whether the fault appears again.

a) If the fault does not appear again, replace the contact unit.

b) If the fault appears again, check the wiring harness for pinches and chafing damage.

c) If no fault is found on the wiring harness, replace the triggering unit.

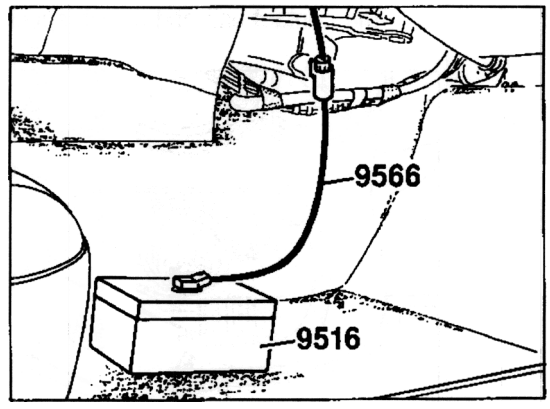
Proceed as described below to determine whether the fault was eliminated:

1. Clear the fault memory.
2. Switch off ignition.
3. Remove ignition key.
4. Switch on ignition.

## Test point 2

Ignition circuit, passenger
**Fault codes 10, 11, 26, 27, 39**

1. Disconnect the plug connection to the passenger's airbag unit.
2. Attach the special tool 9516 in conjunction with special tool 9566.




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| Fault, fault code | Possible causes, elimination, notes |
|---|---|

3. Clear the fault memory.
4. Check whether the fault appears again.
   a) If the fault does not appear again, replace the passenger's airbag unit.
   b) If the fault appears again, check the wiring harness for pinches and chafing damage.
   c) If no fault is found on the wiring harness, replace the triggering unit.

Proceed as described below to determine whether the fault was eliminated:
1. Clear the fault memory.
2. Switch off ignition.
3. Remove ignition key.
4. Switch on ignition.

## Test point 3

Supply voltage
**Fault code 03**

1. Inspect the battery and generator.
2. Inspect the plug connection on the triggering unit for corrosion.

**Note**
The warning light is on as long as the limit value is exceeded or not reached.

## Test point 4

Airbag warning light
**Fault codes 01, 02**

1. Inspect the fuse for the supply voltage (terminal 15) for the instrument cluster.
2. Inspect the bulb and replace it if necessary.
3. Inspect the lead from the triggering unit pin 7 to the warning light for continuity and short circuit to positive.


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| Fault, fault code | Possible causes, elimination, notes |
|---|---|

## Test point 5

Belt buckle, driver
**Fault codes 44, 45, 46, 50**

1. Disconnect the plug connection X16.
2. Connect ohmmeter on the pin side on pins B7 and B8.
   Display: approx. 400 Ω

   **Note**

   The belt tongue must not be inserted in the buckle.
3. Connect ohmmeter on the pin side on pin B7 and ground.
   Display: ∞ Ω
4. Connect ohmmeter on the pin side on pins B7 and B8.
   Insert the belt tongue in the buckle.
   Display: approx. 100 Ω
5. Inspect the wiring harness to the triggering unit for pinches and chafing damage.

**Note**
The warning light is on as long as the limit value is exceeded or not reached.

## Test point 6

Belt buckle, passenger
**Fault codes 47, 48, 49, 51**

1. Disconnect the plug connection X17.
2. Connect ohmmeter on the pin side on pins B7 and B8.
   Display: approx. 400 Ω

   **Note**

   The belt tongue must not be inserted in the buckle.
3. Connect ohmmeter on the pin side on pin B7 and ground.
   Display: ∞ Ω
4. Connect ohmmeter on the pin side on pins B7 and B8.
   Insert the belt tongue in the buckle.
   Display: approx. 100 Ω
5. Inspect the wiring harness to the triggering unit for pinches and chafing damage.


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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 7

Child seat detection
**Fault codes 70, 71, 72, 73**

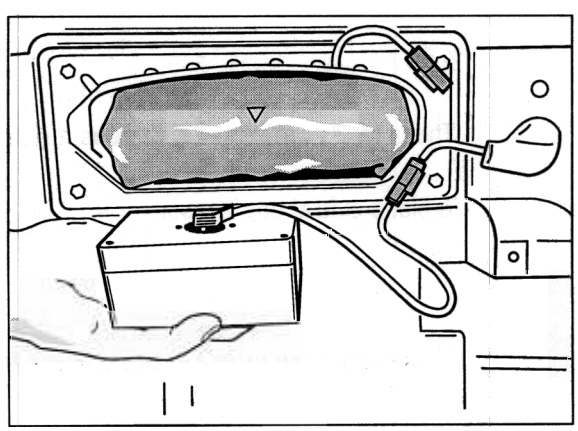
1. Disconnect the plug on the triggering unit.
2. Connect ohmmeter to plug, pin 23 and ground.
   Plug of child seat not inserted.
   Display: approx. 2 kΩ

   Plug of child seat inserted.
   Display: approx. 260 Ω
3. Inspect the wiring harness to the triggering unit for pinches and chafing damage.

## Test point 8

Ignition circuit, side airbag
**Fault codes 12, 13, 14, 15, 28, 29, 30, 31, 40, 41**

1. Pull off plug on the side airbag unit.
2. Connect special tools 9516 and 9516/2.
3. Clear fault memory.



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4. Check whether the fault appears again.

a) If the fault does not appear again, replace the side airbag.

b) If the fault appears again with the special tool, check the wiring harness for pinches and chafing damage.

c) If no faults are found on the wiring harness, replace the control unit.

## Test point 9

Side-airbag sensor (sensor for airbag)
**Fault codes 85, 87**

These faults are stored in the following cases:

1. There is an open circuit in the wire to the sensor.
2. There is a short to ground / voltage between pin 3 *(sensor for airbag)* and control module pin 20 or pin 21.
3. The sensor or control module is faulty.

Check wire to the sensor for open circuit / leakage resistance.
If no fault is detected in the wire, replace sensor.

## Test point 10

Side-airbag sensor (sensor for airbag)

**Fault codes 86, 88**

These faults are stored if there is a defect in the sensor.

Replace side-airbag sensor.

## Test point 11

Side-airbag sensor (sensor for airbag)
**Fault codes 53, 56**

These faults are stored if an incorrect side-airbag sensor is installed.

Replace the side-airbag sensor.



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## Test point 12

Unknown fault code
**Fault code XXX**

1. Inspect the ground points for corrosion.
2. Inspect the ignition on the secondary side.
3. Clear the fault memory.



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## Events

Crash data can be read out under the menu item `Events`. Up to max. three events can be stored. Each event covers 16 bytes. The triggering unit must be replaced after the third event, since the airbag warning light lights up continuously and the events cannot be deleted.



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## Lock

An unlocked triggering unit can be locked under the menu item Lock.

A locked triggering unit **cannot be unlocked again**.

If a triggering unit is unlocked, the airbag warning light flashes. The triggering unit must then be locked.

Replacement triggering units are supplied unlocked.

1. Select Driver's/Passenger's airbag or Driver's airbag according to the vehicle equipment.

2. Select vehicle type.

**Note**

The vehicle type cannot be changed again.

3. Select Lock.

If there is no fault, the following message is displayed after a short waiting period:

```
Airbag was locked
```

This ends locking.

The following messages can be displayed in a fault state:

```
Airbag was already locked
```

```
No Porsche control unit
```

```
Incorrect vehicle type
```

```
Incorrect database version
```

```
Incorrect equipment
```

In the event of a fault, the triggering unit cannot be locked.

In the case of the "wrong equipment" message, select the correct equipment.

Replace the triggering unit in the case of the other messages.



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## Extract coding

Under the menu item `Extract coding`, you can read out which equipment features are activated and which are not. Also, it is possible to read out the vehicle type and the data record version, and where the airbag triggering unit was locked.

The following equipment features can be read out:

Driver's/passenger's airbag

Driver's airbag only

Buckle (detects whether seat belt is fastened)

Child seat occupancy (detects whether a child seat is being used on the passenger's side)

USA (vehicles)



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## Modify coding

Under the menu item `Modify coding`, you can adapt the airbag triggering unit to the vehicle equipment.

After the airbag triggering unit is replaced, the coding must be adapted to the vehicle equipment.

The following equipment features can be changed:

Driver's/passenger's airbag

Buckle

Seat occupancy (passenger)

Child seat occupancy (passenger)

USA vehicles

**Note**

If the coding does not agree with the vehicle equipment, faults will be displayed that do not really exist.

The ignition must be switched off and the ignition key removed after the coding is changed.


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72 98 Diagnosis/troubleshooting, seat memory (System S 01)

# Diagnosis/Troubleshooting

## Seat memory

## System S 01


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## Menu

### Overview of possible menus


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## System description

The seat memory is installed in the vehicle as optional equipment in connection with electrically adjustable seats and rearview mirrors.
The advantage in comparison with the base version is that there are three memory locations to store the set positions. The stored positions can then be called up at the push of a button.
If the vehicle is used by several persons, the seat and mirror positions must only be set once and stored in the system.

### System readiness

The system allows the position to be changed if at least one of the following requirements is fulfilled:

Term. 15 is switched on or

The driver's door is opened

Operational readiness is maintained for an after-running time of 60 s after the key has been removed or the door has been closed.
If the position is changed during the after-running time, then the after-running time is started again. If the position is not changed during the after-running time, then the system switches to inactive state, thus reducing power consumption.

**Information:**

Term. 15 must be switched on for communication with the PST 2.

### System components

The system consists of the following components:

Lumbar support

Motor for lumbar support (lumbar pump)

Switch for seat adjustment

Electric motor for seat adjustment

Electric motor for front height adjustment

Electric motor for rear height adjustment

Electric motor for backrest adjustment

Control module for memory seat adjustment

Switch for memory seat adjustment

Switch for rearview mirrors (door mirrors)

Changeover switch for rearview mirrors (door mirrors)

Right and left rearview mirrors (door mirrors)



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The system enables the following system components to be adjusted individually:

Front seat height

Rear seat height

Backrest angle

Left rearview mirror

Right rearview mirror

Lumbar support

Fore-and-aft adjustment

**Storing the positions**

1. Adjust the rearview mirrors, seat height, backrest angle and lumbar support to the desired positions.

2. Hold down switch **M** and push one of the switches for memory seat adjustment (1, 2 or 3) at the same time.

The positions are now stored under the number selected.

**Diagnosis**

The following components are monitored by the system:

Lumbar pressure sensor (regulating switch)

Potentiometer voltage of both rearview mirrors

Hall-effect sensor for backrest adjustment

Hall-effect sensor for fore-and-aft adjustment

Hall-effect sensor for height adjustment

Functioning of the control module (EPROM, A/D converter, main relay)

Switch for memory seat adjustment and switch for seat adjustment

When the switch for memory seat adjustment or the switch for seat adjustment are actuated, the faulty component is stored in the fault memory. In this case the word **present** also appears on the screen, e.g.:

"Open circuit **present** in Hall-effect sensor for fore-and-aft adjustment"

If the cause of the fault is eliminated, then the switch for memory seat adjustment or the switch for seat adjustment must be actuated again. If the cause of the fault has really been eliminated, the text in the fault memory changes from **present** to **not present**.

**Note**

The fault memory must always be read out and any faults which may have been stored must always be deleted after diagnosis.



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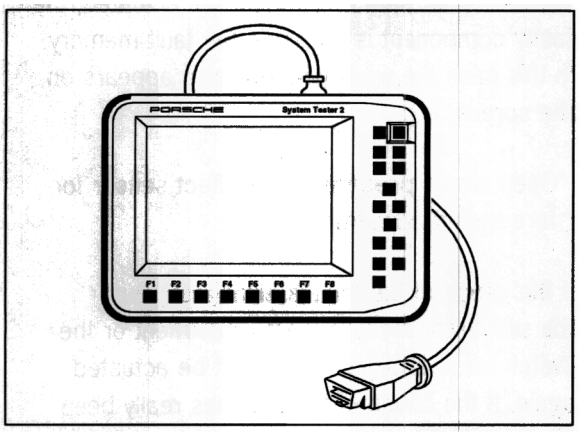
www.WorkshopManuals.co.uk



## Tools

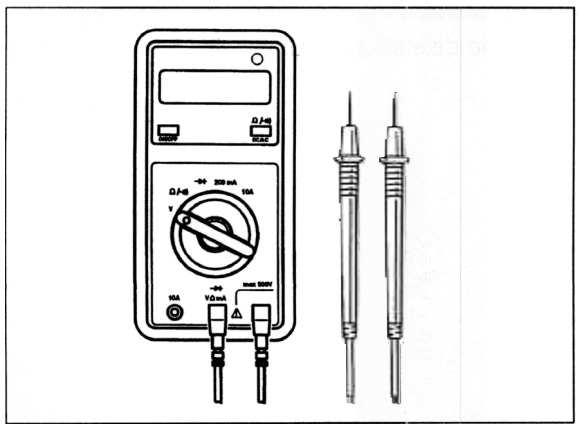
The following equipment is required for troubleshooting:

### 1. Porsche System Tester 2




547_96

### 2. Commercially available digital multimeter



2178_28

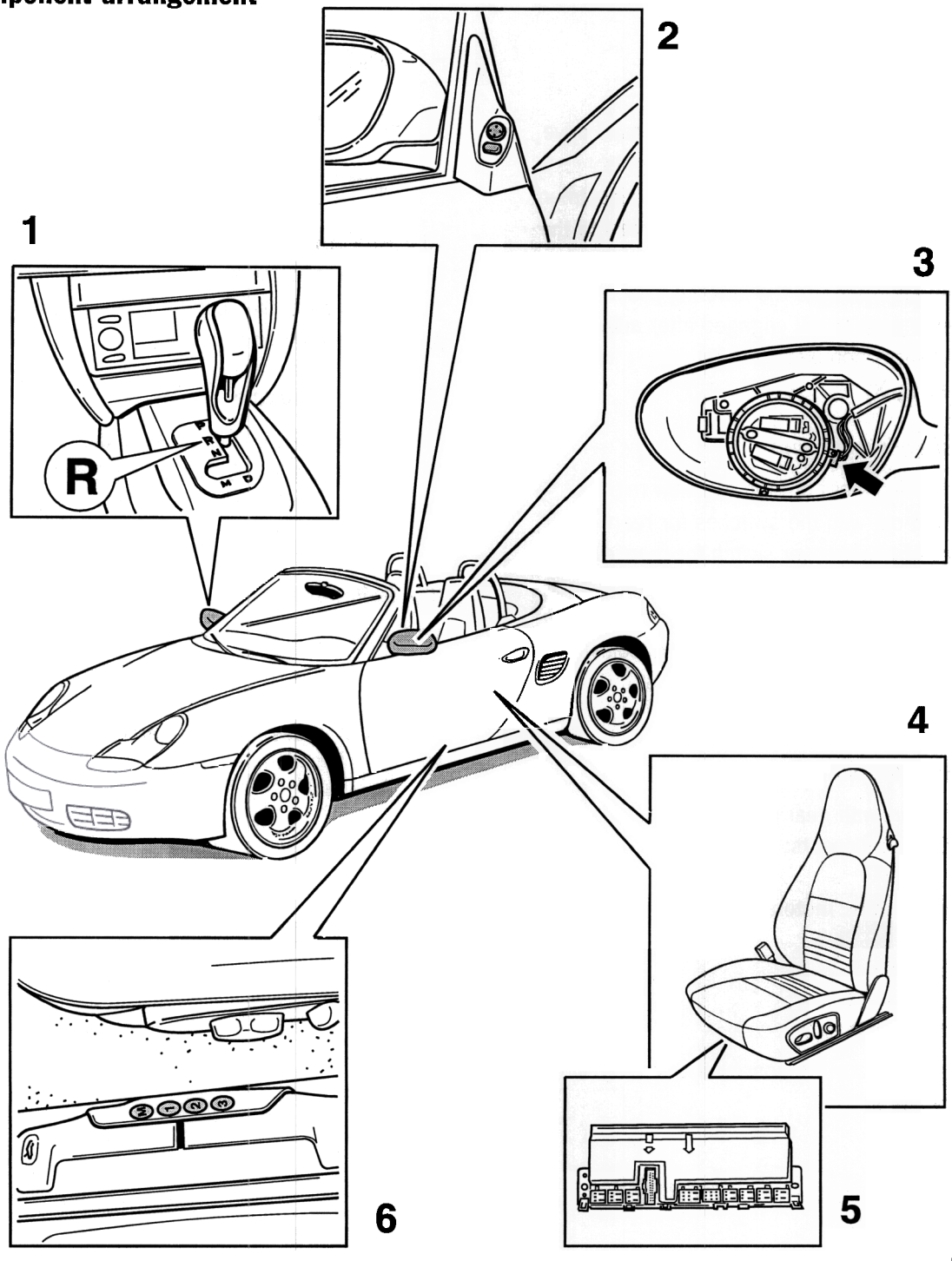


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## Component arrangement






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## Function of individual components

### [1]- Parking aid

When reverse gear is engaged, the corresponding rearview mirror (right-hand drive or left-hand drive according to coding) is lowered by the angle stored. Manual adjustment of the seat motors is carried out parallel to the lowering of the rearview mirror. Automatic adjustment interrupts the lowering procedure. If reverse gear is still engaged after automatic adjustment is complete, the rearview mirror is lowered again.

### [2]- Rearview mirrors

Manual adjustment of both rearview mirrors is carried out with the *switches for rearview mirrors* or *changeover switch for rearview mirrors*. When the desired positions have been set and stored by means of the *switches for memory seat adjustment*, automatic adjustment of the rearview mirrors is carried out by actuating the corresponding switch (1, 2 or 3).

### [3]- Support with gear unit

The support with gear unit consists of the following components:

Two electric motors with a potentiometer

Gear unit

### [4]- Front seat

The following are the possibilities for adjusting the front seat:

Backrest

Front height

Rear height

Longitudinal direction

Upper lumbar

Lower lumbar

When the desired positions have been found and stored by means of the *switches for memory seat adjustment*, they can be called up at the push of a button when required.

### [5]- Control module

The control module is fastened under the front seat (driver's side) with two screws. There is a total of 10 connection points on the control module.

### [6]- Switches for memory seat adjustment

These switches **[M, 1, 2, 3]** can be used to store or call up the optimum positions once they have been found. The systems enables adjustment values for three persons to be stored.



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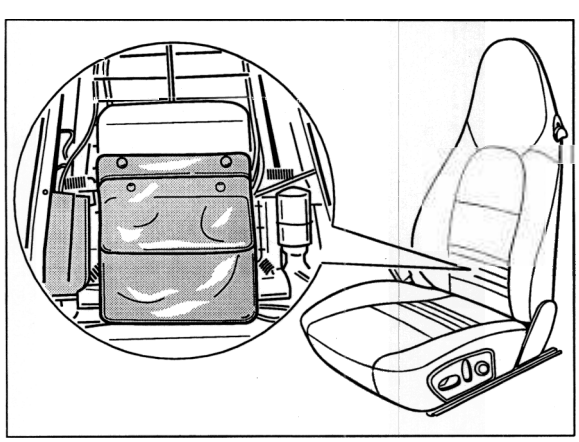
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### Lumbar support

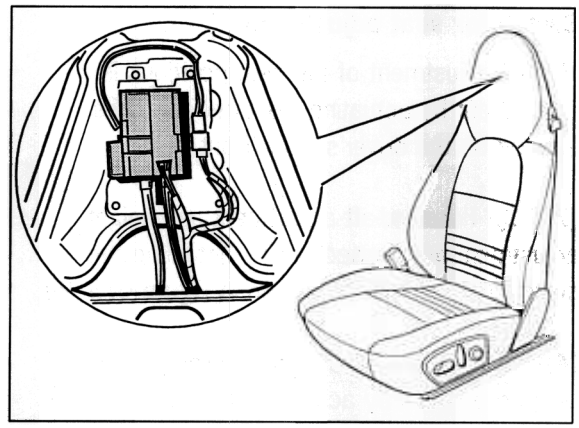
The lumbar support consists of two cushions which are inflated by means of a *motor for lumbar support*. The cushions are inflated or deflated to the required pressure one after the other beginning with the upper cushion. The pressure in the cushions is measured using a pressure sensor (regulating switch). The pressure sensor is located at the same height as the headrest and is integrated into the *lumbar adjustment*. Automatic adjustment of the lumbar support is carried out by actuating the switch for memory seat adjustment. The motor for lumbar adjustment is shown in Figure 611_98 together with both lumbar cushions. Automatic adjustment of the lumbar support is divided into two phases.

1. If the seat motors have not yet reached their required position, adjustment of the lumbar support is interrupted by releasing the *switch for memory seat adjustment*.

2. If the seat motors have reached their required position, adjustment of the lumbar support is completed after the *switch for memory seat adjustment* is released.



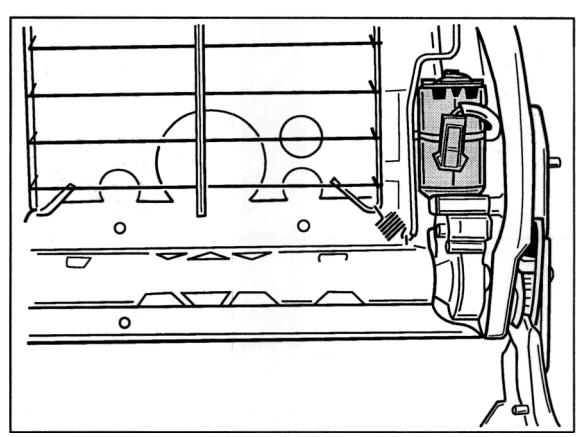
*Arrangement of the lumbar support* 611_98



*Arrangement of the lumbar adjustment* 612_98

### Electric motor for backrest adjustment

The backrest is adjusted by an electric motor with gear unit. A Hall-effect sensor is integrated into the electric motor which measures the actual position.



*Electric motor for backrest adjustment* 610_98



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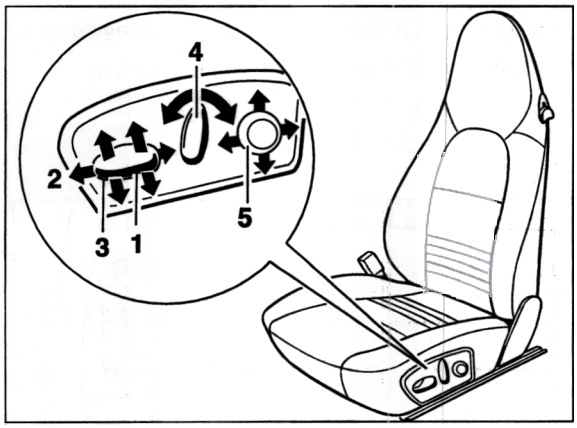
### Switch for seat adjustment

Manual adjustment of the seat positions is carried out by actuating the three switches located on the driver's seat (front seat).

**[1,2,3]-** Fore-and-aft adjustment and height adjustment are carried out by actuating the switch in the positions shown in Figure 615_98.

**[4]-** The seat backrest can be brought into desired position by actuating the switch.

**[5]-** The lumbar support is inflated or deflated by actuating the switch.




615_98

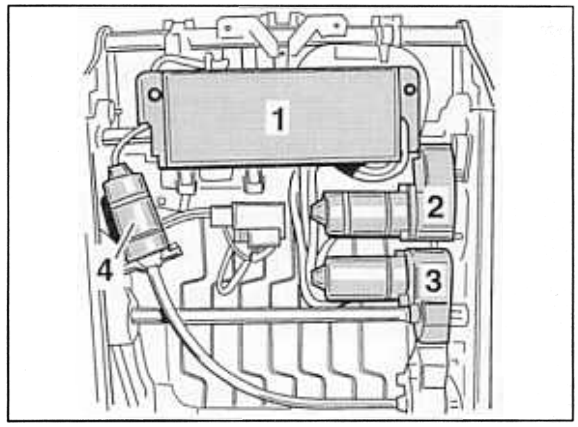
Figure 613_98 shows how the following system components are arranged under the front seat.

**[1]-** Control module

**[2]-** Electric motor for front height adjustment

**[3]-** Electric motor for seat adjustment

**[4]-** Electric motor for rear height adjustment




613_98

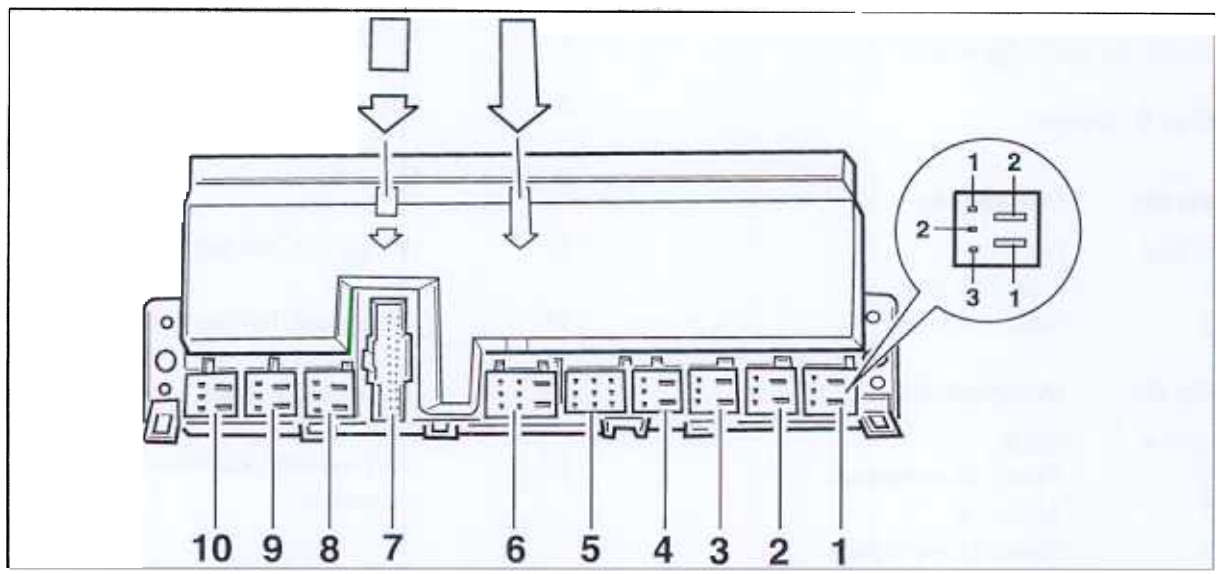


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## Connector assignment




614_98

### Plug 1, 5-pole

| Pin No. | Designation |
|---|---|
| 1,2 | Electric motor for backrest adjustment<br>Load circuit |
| 2,3 | Backrest Hall-effect sensor<br>Signal circuit |

### Plug 2, 5-pole

| Pin No. | Designation |
|---|---|
| 1,2 | Electric motor for rear height adjustment<br>Load circuit |
| 2,3 | Hall-effect sensor for rear height adjustment<br>Signal circuit |

### Plug 3, 5-pole

| Pin No. | Designation |
|---|---|
| 1,2 | Electric motor for front height adjustment<br>Load circuit |
| 2,3 | Hall-effect sensor for front height adjustment<br>Signal circuit |

### Plug 4, 5-pole

| Pin No. | Designation |
|---|---|
| 1,2 | Electric motor for seat adjustment (longitudinal)<br>Load circuit |
| 2,3 | Hall-effect sensor for seat adjustment<br>Signal circuit |



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**Plug 5, 9-pole**

| Pin No. | Designation |
|---|---|
| Switch for seat adjustment | |

**Plug 6, 8-pole**

| Pin No. | Designation |
|---|---|
| Colour | black |
| 1 | Term. 31 load |
| 2 | Term. 30 load |

| Pin No. | Designation |
|---|---|
| Colour | black |
| 1 | Term. 30 electronics |
| 2 | Term. 15 |
| 3 | Term. 31 electronics |

| Pin No. | Designation |
|---|---|
| Colour | blue |
| | Diagnosis |
| 2 | Door contact |
| | Not used |

**Plug 7, 26-pole**

| Pin No. | Designation |
|---|---|
| | Switch for memory seat adjustment (P3) |
| 2 | Switch for memory seat adjustment (MEM) |
| 3 | GFM connection |
| 4 | System ground pot. rearview mirror |
| 5 | +5V pot. rearview mirror |
| 6 | Voltage pot. right (left/right) |

| Pin No. | Designation |
|---|---|
| 7 | Voltage pot. right (up/down) |
| 8 | Not used |
| 9 | Not used |
| 10 | Voltage pot. left (left/right) |
| 11 | Voltage pot. left (up/down) |
| 12 | Reverse-gear signal |
| 13 | Common rearview mirror motor connection |
| 14 | Switch for memory seat adjustment (P2) |
| 15 | Switch for memory seat adjustment (P1) |
| 16 | Not used |
| 17 | Not used |
| 18 | Not used |
| 19 | Not used |
| 20 | Not used |
| 21 | Left motor (left/right) |
| 22 | Left motor (up/down) |
| 23 | Not used |
| 24 | Not used |
| 25 | Right motor (left/right) |
| 26 | Right motor (up/down) |



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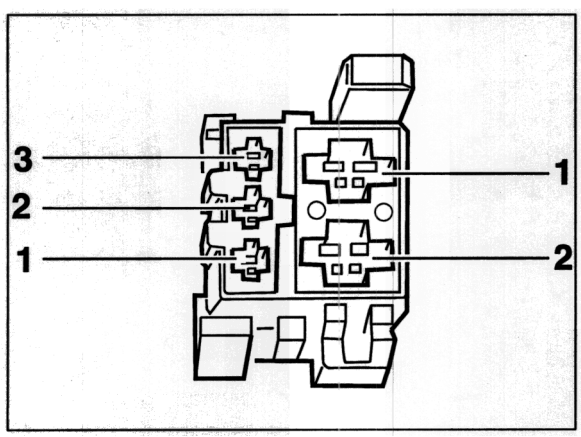
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## Connector overview

### Plugs on control module

#### Plug Nos. 1 to 4

The plugs each consist of two individual plugs which are clipped together (Figure 134_99). The 2-pole plug is intended for the load circuit (motor). The 3-pole plug is the signal circuit connection (Hall-effect sensor). When they are clipped together, plug nos. 1 to 4 each have **5 poles**.




134_99

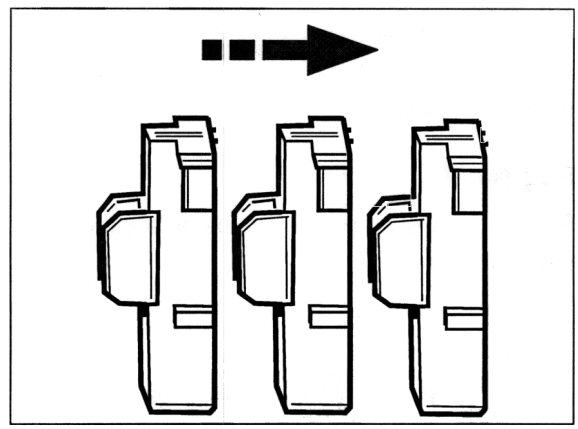
#### Plug No. 5

The plug consists of three individual plugs which are clipped together (Figure 132_99). Each individual plug has 3 poles. When it is clipped together, plug no. 5 has **9 poles**.

#### Sequence of the individual plugs

The sequence of the individual plugs from left to right is as follows:

natural blue black

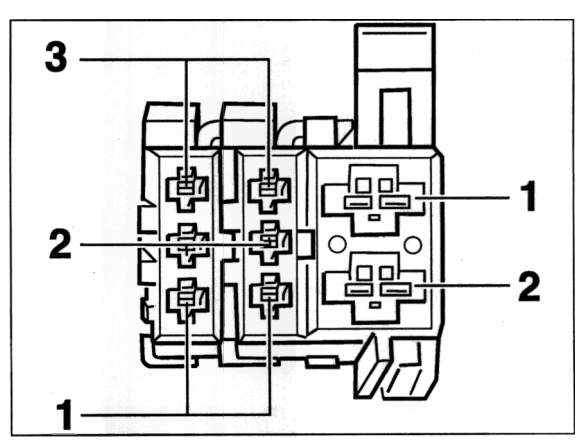


132_99

See the 3-pole plug in Figure 133_99 for pin assignment. The pin numbers are printed on the side of the plugs.

#### Plug No. 6

The plug consists of three individual plugs which are clipped together (Figure 133_99). Two individual plugs have 3 poles each, the third has 2 poles. When it is clipped together, plug no. 6 has 8 poles.




133_99



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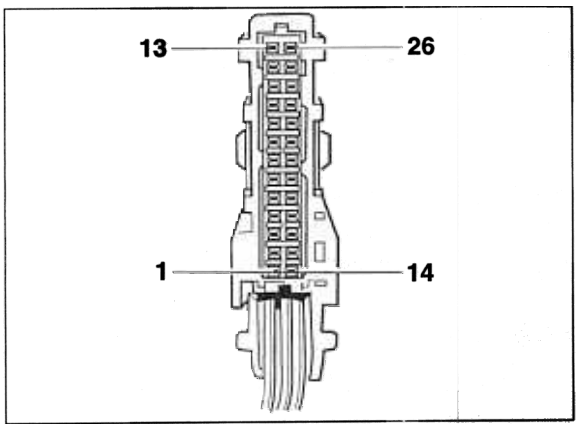
### Sequence of the individual plugs

The sequence of the individual plugs from left to right is as follows:

blue black black

### Plug No. 7

Plug No. 7 has 26 poles. The pin assignment is shown in Figure 131_99.




131_99

### Plug Nos. 8 to 10

See Plug Nos. 1 to 4



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## Fault overview

| Test point | Fault code | Fault effect | Page |
|---|---|---|---|
| 1 | 1 | No adjustment possible | 72 - D 17 |
| 2 | 2 | No adjustment possible | 72 - D 17 |
| 3 | 3 | No adjustment possible | 72 - D 18 |
| 4 | 4 | | 72 - D 18 |
| 5 | 5 | No automatic adjustment possible | 72 - D 19 |
| 6 | 6 | No automatic adjustment possible | 72 - D 19 |
| 7 | 7 | No automatic adjustment possible | 72 - D 19 |
| 8 | 8 | No automatic adjustment possible, manual only 500 ms | 72 - D 20 |
| 9 | 9 | No automatic adjustment possible, manual only 500 ms | 72 - D 21 |
| 10 | 10 | No automatic adjustment possible, manual only 500 ms | 72 - D 21 |
| 1 | 11 | No automatic adjustment possible, manual only 500 ms | 72 - D 22 |
| 12 | 12 | No automatic adjustment possible, manual only 500 ms | 72 - D 23 |
| 13 | 13 | No automatic adjustment possible, manual only 500 ms | 72 - D 23 |
| 14 | 14 | No automatic adjustment possible, manual only 500 ms | 72 - D 24 |
| 15 | 15 | No automatic adjustment possible, manual only 500 ms | 72 - D 25 |
| 16 | 18 | No automatic adjustment of the lumbar supports possible | 72 - D 25 |
| 17 | 19 | No automatic adjustment of the lumbar supports possible | 72 - D 26 |
| 18 | 20 | No automatic adjustment possible | 72 - D 27 |



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| Test point | Fault code | Fault effect | Page |
|---|---|---|---|
| 19 | 21 | No automatic adjustment possible | 72 - D 28 |
| 20 | 22 | No automatic adjustment possible | 72 - D 29 |
| 21 | 23 | No automatic adjustment possible | 72 - D 30 |
| 22 | 24 | No automatic adjustment possible | 72 - D 31 |
| 23 | 25 | No automatic adjustment possible | 72 - D 32 |
| 24 | 26 | No automatic adjustment possible | 72 - D 33 |
| 25 | 27 | No automatic adjustment possible | 72 - D 34 |
| 26 | 32 | Switch is ignored, all further adjustments are jerky | 72 - D 35 |



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 1

Control module faulty
Main relay does not drop out
**Fault code 1**

This fault is stored in the following cases:

1. The control module is faulty
2. Temporary system error

**Elimination**:

Clear fault memory.

Read out fault memory.

If the fault is no longer **present**, check that all system components such as seat adjustment, mirror adjustment, memory function, etc. are functioning correctly.

If the fault is still **present**, replace the control module.

## Test point 2

Control module faulty
Main relay does not pick up
**Fault code 2**

This fault is stored in the following cases:

1. The control module is faulty
2. Temporary system error

**Elimination**:

Clear fault memory.

Read out fault memory.

If the fault is no longer **present**, check that all system components such as seat adjustment, mirror adjustment, memory function, etc. are functioning correctly.

If the fault is still **present**, replace the control module.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

**Test point 3**

A/D converter faulty
**Fault code 3**

This fault is stored in the following cases:

1. The control module is faulty
2. Temporary system error.

**Elimination**:

Clear fault memory.

Read out fault memory.

If the fault is no longer **present**, check that all system components such as seat adjustment, mirror adjustment, memory function, etc. are functioning correctly.

If the fault is still **present**, replace the control module.

**Test point 4**

EEPROM fault
(Checksum)
**Fault code 4**

This fault is stored in the following case:

The control module is faulty

**Elimination**:

Replace the control module.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

### Test point 5

Required position 1 (Checksum)
**Fault code 5**

This fault is stored in the following case:

The control module is faulty

**Elimination:**

Replace the control module.

### Test point 6

Required position 2 (Checksum)
**Fault code 6**

This fault is stored in the following case:

The control module is faulty

**Elimination:**

Replace the control module.

### Test point 7

Required position 3 (Checksum)
**Fault code 7**

This fault is stored in the following case:

The control module is faulty

**Elimination:**

Replace the control module.


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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 8

Hall-effect sensor fore-and-aft adjustment, open circuit
**Fault code 8**

This fault is stored in the following cases:

1. There is an open circuit in the wire to the Hall-effect sensor fore-and-aft adjustment.
2. The Hall-effect sensor is faulty.
3. The control module is faulty.

**Elimination**:

Check plug on control module for contact and damage.

Check wire to sensor for damage.

Once the cause of the fault has been found and eliminated, actuate the fore-and-aft adjustment switch. The text in the fault memory changes from **present** to **not present** if the cause of the fault has really been eliminated.

If no fault is detected in the wire on the sensor, replace the electric motor for seat adjustment.

If the fault is still **present**, replace control module.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 9

Hall-effect sensor fore-and-aft adjustment, short circuit
**Fault code 9**

This fault is stored in the following cases:

1. There is a short circuit in the wires to the Hall-effect sensor
2. The Hall-effect sensor is faulty.
3. The control module is faulty.

**Elimination:**

Disconnect plug from control module, check for continuity with ohmmeter on Pin 2 and Pin 3.
If a short circuit is found, check the sensor wires first. If no fault is detected in the wire, replace the electric motor for seat adjustment. Once the cause of the fault has been found and eliminated, actuate the fore-and-aft adjustment switch. The text in the fault memory changes from **present** to **not present** if the cause of the fault has really been eliminated.

If the fault is still **present**, replace control module.

## Test point 10

Hall-effect sensor backrest adjustment, open circuit
**Fault code 10**

This fault is stored in the following cases:

1. There is an open circuit in the wire to the Hall-effect sensor for backrest adjustment.
2. The Hall-effect sensor is faulty.
3. The control module is faulty.

**Elimination**:

Check plug on control module for contact and damage.

Check wire to sensor for damage.


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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

Once the cause of the fault has been found and eliminated, actuate the fore-and-aft adjustment switch. The text in the fault memory changes from **present** to **not present** if the cause of the fault has really been eliminated.

If no fault is detected in the wire, replace the electric motor for seat adjustment.

If the fault is still **present**, replace control module.

**Test point 11**

Hall-effect sensor backrest adjustment, short circuit
**Fault code 11**

This fault is stored in the following cases:

1. There is a short circuit in the wires to the Hall-effect sensor.
2. The Hall-effect sensor is faulty.
3. The control module is faulty.

**Elimination:**

Disconnect plug from control module, check for continuity with ohmmeter on Pin 2 and Pin 3.
If a short circuit is found, check the sensor wires first.

If no fault is detected in the wire, replace the electric motor for backrest adjustment.

Once the cause of the fault has been found and eliminated, actuate the fore-and-aft adjustment switch. The text in the fault memory changes from **present** to **not present** if the cause of the fault has really been eliminated.

If the fault is still **present**, replace control module.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 12

Hall-effect sensor height adjustment, open circuit
**Fault code 12**

This fault is stored in the following cases:

1. There is an open circuit in the wire to the Hall-effect sensor fore-and-aft adjustment.
2. The Hall-effect sensor is faulty.
3. The control module is faulty.

**Elimination**:

Check plug on control module for contact and damage.

Check wire to sensor for damage.

Once the cause of the fault has been found and eliminated, actuate the height adjustment switch. The text in the fault memory changes from **present** to **not present** if the cause of the fault has really been eliminated.

If no fault is detected in the wire on the sensor, replace the electric motor for height adjustment.

If the fault is still **present**, replace control module.

## Test point 13

Hall-effect sensor front height adjustment, short circuit
**Fault code 13**

This fault is stored in the following cases:

1. There is a short circuit in the wires to the Hall-effect sensor.
2. The Hall-effect sensor is faulty.
3. The control module is faulty.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

**Elimination:**

Disconnect plug from control module, check for continuity with ohmmeter on Pin 2 and Pin 3.
If a short circuit is found, check the sensor wires first.

If no fault is detected in the wire, replace sensor. Once the cause of the fault has been found and eliminated, actuate the fore-and-aft adjustment switch. The text in the fault memory changes from **present** to **not present** if the cause of the fault has really been eliminated.

If the fault is still **present**, replace control module.

## Test point 14

Hall-effect sensor rear height adjustment, open circuit
**Fault code 14**

This fault is stored in the following cases:

1. There is an open circuit in the wire to the Hall-effect sensor fore-and-aft adjustment.
2. The Hall-effect sensor is faulty.
3. The control module is faulty.

**Elimination:**

Check plug on control module for contact and damage.

Check wire to sensor for damage.

Once the cause of the fault has been found and eliminated, actuate the height adjustment switch. The text in the fault memory changes from **present** to **not present** if the cause of the fault has really been eliminated.

If the fault is still **present**, replace control module.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 15

Hall-effect sensor rear height adjustment, short circuit
**Fault code 15**

This fault is stored in the following cases:

1. There is a short circuit in the wires to the Hall-effect sensor.
2. The Hall-effect sensor is faulty.
3. The control module is faulty.

**Elimination:**

Disconnect plug from control module, check for continuity with ohmmeter on Pin 2 and Pin 3.
If a short circuit is found, check the sensor wires first.

If no fault is detected in the wire, replace the *electric motor for height adjustment.*

Once the cause of the fault has been found and eliminated, actuate the height adjustment switch. The text in the fault memory changes from **present** to **not present** if the cause of the fault has really been eliminated.

If the fault is still **present**, replace control module.

## Test point 16

Lumbar pressure sensor open circuit
**Fault code 18**

This fault is stored in the following cases:

1. There is an open circuit in the wire to the *lumbar pressure sensor.*
2. The pressure sensor is faulty.
3. The control module is faulty.

**Elimination**:

Check plug on control module for contact and damage.

Check wire to sensor for damage.


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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

If no fault is detected in the wire, replace *lumbar adjustment.*

Once the cause of the fault has been found and eliminated, actuate the lumbar adjustment switch. The text in the fault memory changes from **present** to **not present** if the cause of the fault has really been eliminated.

If the fault is still **present**, replace control module.

**Test point 17**

Lumbar pressure sensor short circuit
**Fault code 19**

This fault is stored in the following cases:

1. There is a short circuit in the wires to the pressure sensor.
2. The pressure sensor is faulty.
3. The control module is faulty.

**Elimination:**

Disconnect plug from control module, check for continuity with ohmmeter on Pin 2 and Pin 3, and on Pin 1 and Pin 3. If a short circuit is found, check the sensor wires first.

If no fault is detected in the wire, replace *lumbar adjustment.*

Once the cause of the fault has been found and eliminated, actuate the lumbar adjustment switch. The text in the fault memory changes from **present** to **not present** if the cause of the fault has really been eliminated.

If the fault is still **present**, replace control module.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 18

Pot. mirror right horizontal open circuit
**Fault code 20**

This fault is stored in the following cases:

1. There is an open circuit in the wire to the *pot. right rearview mirror.*
2. The potentiometer is faulty.
3. The control module is faulty.

**Elimination**

Replace support with gear unit.

Actuate switch for memory seat adjustment.

The text in the fault memory changes from **present** to **not present** if the cause of the fault has really been eliminated.

If the fault is no longer **present**, erase the fault memory.

If the fault is still **present**, there is a fault in the wire.

For a fault in the wire, proceed as described below:

Disconnect *mirror* plug from the control module.

Disconnect plug at support with *gear unit.*

Use an ohmmeter to check for open circuit on the support plug Pin 5 and the mirror plug on the control module Pin 11.
Ohmmeter display <5Ω

Use an ohmmeter to check for open circuit on the support plug Pin 7 and the mirror plug on the control module Pin 4.
Ohmmeter display <5Ω

Use an ohmmeter to check for continuity on the *support plug* Pin 3 and Pin 5.

If no fault is detected in the wire, replace the control module.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 19

Pot. mirror right horizontal short circuit
**Fault code 21**

This fault is stored in the following cases:

1. There is a short circuit in the wire to the *pot. right rearview mirror.*
2. The potentiometer is faulty.
3. The control module is faulty.

**Elimination**:

Replace *support with gear unit.*

Actuate switch for memory seat adjustment.

The text in the fault memory changes from **present** to **not present** if the cause of the fault has really been eliminated.

If the fault is still **present**, there is a fault in the wire.
For a fault in the wire, proceed as described below:

Disconnect plug at support *with gear unit.*

Disconnect *mirror* plug from the control module.

Use an ohmmeter to check for short circuit on the *support plug* Pin 5, wire colour yellow, and Pin 7, wire colour pink.

If no short circuit is detected:

Use an ohmmeter to check for open circuit on the *support plug* Pin 3 and the *mirror plug* on the control module Pin 5
Ohmmeter display <5Ω

If the fault is still **present**, replace control module.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 20

Pot. mirror right vertical open circuit
**Fault code 22**

This fault is stored in the following cases:

1. There is an open circuit in the wire to the *pot. right rearview mirror.*
2. The potentiometer is faulty.
3. The control module is faulty.

**Elimination**:

Replace support with gear unit.

Actuate switch for memory seat adjustment.

The text in the fault memory changes from **present** to **not present** if the cause of the fault has really been eliminated.

If the fault is no longer **present**, erase the fault memory.

If the fault is still **present**, there is a fault in the wire.

For a fault in the wire, proceed as described below:

Disconnect *mirror* plug from the control module.

Disconnect plug at support *with gear unit.*

Use an ohmmeter to check for open circuit on the *support plug* Pin 5 and the *mirror plug* on the control module Pin 11
Ohmmeter display <5Ω

Use an ohmmeter to check for open circuit on the *support plug* Pin 7 and the *mirror plug* on the control module Pin 4.
Ohmmeter display <5Ω

Use an ohmmeter to check for continuity on the *support plug* Pin 1 and Pin 3.

If no fault is detected in the wire, replace the control module.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 21

Pot. mirror right vertical short circuit
**Fault code 23**

This fault is stored in the following cases:

1. There is a short circuit in the wire to the *pot. right rearview mirror.*
2. The potentiometer is faulty.
3. The control module is faulty.

**Elimination**:

Replace support with gear unit.

Actuate switch for memory seat adjustment.

The text in the fault memory changes from **present** to **not present** if the cause of the fault has really been eliminated.

If the fault is still **present**, there is a fault in the wire.

For a fault in the wire, proceed as described below:

Disconnect plug at support *with gear unit.*

Disconnect *mirror* plug from the control module.

Use an ohmmeter to check for short circuit on the *support plug* Pin 1, wire colour grey, and Pin 7, wire colour pink. No continuity must be measured! If no short circuit is detected:

Use an ohmmeter to check for open circuit on the *support plug* Pin 3 and the *mirror* plug on the control module Pin 5
Ohmmeter display <5Ω

Use an ohmmeter to check for continuity on the *support plug* Pin 1 and Pin 7.

If no fault is detected in the wire but the fault is still **present**, replace the control module.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 22

Pot. mirror left horizontal open circuit
**Fault code 24**

This fault is stored in the following cases:

1. There is an open circuit in the wire to the *pot. left rearview mirror.*
2. The potentiometer is faulty.
3. The control module is faulty.

**Elimination**:

Replace support with gear unit.

Actuate switch for memory seat adjustment.

The text in the fault memory changes from **present** to **not present** if the cause of the fault has really been eliminated.

If the fault is no longer **present**, erase the fault memory.

If the fault is still **present**, there is a fault in the wire.

For a fault in the wire, proceed as described below:

Disconnect *mirror* plug from the control module.

Disconnect plug at support *with gear unit.*

Use an ohmmeter to check for open circuit on the *support plug* Pin 1 and the *mirror plug* on the control module Pin 10
Ohmmeter display <5Ω

Use an ohmmeter to check for open circuit on the *support plug* Pin 7 and the *mirror plug* on the control module Pin 4.
Ohmmeter display <5Ω

Use an ohmmeter to check for continuity on the support plug Pin 1 and Pin 3.

If no fault is detected in the wire, replace the control module.


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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 23

Pot. mirror left horizontal short circuit
**Fault code 25**

This fault is stored in the following cases:

1. There is a short circuit in the wire to the *pot. left rearview mirror.*
2. The potentiometer is faulty.
3. The control module is faulty.

**Elimination:**

Replace support with gear unit.

Actuate switch for memory seat adjustment.

The text in the fault memory changes from **present** to **not present** if the cause of the fault has really been eliminated.

If the fault is no longer **present**, erase the fault memory.

If the fault is still **present**, there is a fault in the wire.

For a fault in the wire, proceed as described below:

Disconnect plug at support *with gear unit.*

Disconnect *mirror* plug from the control module.

Use an ohmmeter to check for continuity on the *support plug* Pin 1 and Pin 7.

Use an ohmmeter to check for open circuit on the *support plug* Pin 3 and the *mirror plug* on the control module Pin 5
Ohmmeter display <5Ω

If no fault is detected in the wire but the fault is still **present**, replace the control module.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 24

Pot. mirror left vertical open circuit
**Fault code 26**

This fault is stored in the following cases:

1. There is an open circuit in the wire to the *pot. left rearview mirror.*
2. The potentiometer is faulty.
3. The control module is faulty.

**Elimination**:

Replace support with gear unit.

Actuate switch for memory seat adjustment.

The text in the fault memory changes from **present** to **not present** if the cause of the fault has really been eliminated.

If the fault is no longer **present**, erase the fault memory.

If the fault is still **present**, there is a fault in the wire.

For a fault in the wire, proceed as described below:

Disconnect *mirror* plug from the control module.

Disconnect plug at support *with gear unit.*

Use an ohmmeter to check for open circuit on the *support plug* Pin 5 and the *mirror plug* on the control module Pin 11
Ohmmeter display <5Ω

Use an ohmmeter to check for open circuit on the *support plug* Pin 7 and the *mirror plug* on the control module Pin 4.
Ohmmeter display <5Ω

Use an ohmmeter to check for continuity on the *support plug* Pin 3 and Pin 5.

If no fault is detected in the wire, replace the control module.


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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 25

Pot. mirror left vertical short circuit
**Fault code 27**

This fault is stored in the following cases:

1. There is a short circuit in the wire to the *pot. left rearview mirror.*
2. The potentiometer is faulty.
3. The control module is faulty.

**Elimination**:

Replace support with gear unit.

Actuate switch for memory seat adjustment.

The text in the fault memory changes from **present** to **not present** if the cause of the fault has really been eliminated.

If the fault is no longer **present**, erase the fault memory.

If the fault is still **present**, there is a fault in the wire.

For a fault in the wire, proceed as described below:

Disconnect plug at support *with gear unit.*

Disconnect *mirror* plug from the control module.

Use an ohmmeter to check for continuity on the *support plug* Pin 5 and Pin 7.

Use an ohmmeter to check for open circuit on the *support plug* Pin 3 and the *mirror plug* on the control module Pin 5
Ohmmeter display <5Ω

If no fault is detected in the wire but the fault is still **present**, replace the control module.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 26

Button M, 1, 2, 3 or operating buttons actuated for longer than 60 s
**Fault code 32**

This fault is stored in the following case:

Switch for memory seat adjustment (1, 2, or 3), or switch for seat adjustment (e.g. *Fore-and-aft adjustment forward*) is continuously switched.

**Elimination**:

Erase fault memory and read it out again after a waiting time of 60 seconds.

Proceed as described below if the fault is still **present**:

Select menu item *Input signals*.

The following button positions can be read out in the menu item *Input signals*.

Button M

Button 1

Button 2

Button 3

Fore-and-aft adjustment forward

Fore-and-aft adjustment backward

Backrest forward

Backrest backward

Front height upward

Front height downward

Rear height upward

Rear height downward

Backrest forward

Backrest backward



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|
| | Button up |
| | Button down |
| | Button backward |
| | Button forward |
| | Select a maximum of 8 button positions. |
| | Search for the key on the screen that is continuously actuated. A comparison table can be found on Page 72 - D 38. |
| | If a key is detected as faulty, replace the switch for memory seat adjustment or the switch for seat adjustment as appropriate. |



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## Identification

The diagnosis software number and control module part number can be read out under the Identification menu item.

## Fault memory

Stored faults can be read out under the Fault memory menu item.

## Clear the fault memory

Faults stored in the control module can be erased under the Erase fault memory menu item. Here, all stored faults are erased.

## Actual values

In the Actual values menu item, the current values of the following parameters can be read out.

Voltage of terminal 30

Voltage of Hall-effect sensor for fore-and-aft adjustment

Voltage of Hall-effect sensor for backrest

Voltage of Hall-effect sensor for front height

Voltage of Hall-effect sensor for rear height

Voltage of pressure sensor

Voltage of right horizontal mirror potentiometer

Voltage of right vertical mirror potentiometer

Voltage of left horizontal mirror potentiometer

Voltage of left vertical mirror potentiometer


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## Input signals

This menu item enables input signals of the system to be read out by the Porsche System Tester 2. This allows the function of the individual components to be assessed very quickly.

### Comparison table of input signals

In the comparison table, the following applies for the tester display:

Boundary conditions

Terminal 15 switched on and reverse gear not engaged

Switch for memory seat adjustment not actuated

The system is in perfect condition

| Tester display | Status |
|---|---|
| M Button | M button not actuated |
| Button 1 | **Button 1 not actuated** |
| Button 2 | Button 2 not actuated |
| Button 3 | Button 3 not actuated |
| Reverse gear engaged | Reverse gear not engaged |
| Door contact closed (door open) | Depends on door position |
| Supply voltage (terminal 15) | Terminal 15 signal present |
| Cancel parking aid | Cancel parking aid |
| Fore-and-aft adjustment forward | Switch sign "open" |
| Fore-and-aft adjustment backward | Switch sign "open" |
| Front height upward | Switch sign "open" |
| Front height downward | Switch sign "open" |
| Rear height upward | Switch sign "open" |
| Rear height downward | Switch sign "open" |
| Backrest forward | Switch sign "open" |
| Backrest backward | Switch sign "open" |
| Lumbar pump | Lumbar pump not active |
| Fill upper valve | Fill upper valve not active |
| Bleed upper valve | Bleed upper valve not active |

| Tester display | Status |
|---|---|
| Fill lower valve | Fill lower valve not active |
| Bleed lower valve | Bleed lower valve not active |
| Button up | Button up open |
| Button down | Button down open |
| Button backward | Button backward open |
| Button forward | Button forward open |
| Left mirror to right | Left mirror to right not active |
| Left mirror to left | Left mirror to left not active |
| Left mirror upward | Left mirror upward not active |
| Left mirror downward | Left mirror downward not active |
| Right mirror to right | Right mirror to right not active |
| Right mirror to left | Right mirror to left not active |
| Right mirror upward | Right mirror upward not active |
| Right mirror downward | Right mirror downward not active |



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## Drive links

The menu item Drive links enables the following system functions to be checked.

Fore-and-aft adjustment forward

Fore-and-aft adjustment backward

Backrest forward

Backrest backward

Front height upward

Front height downward

Rear height downward

Rear height upward

Left mirror to right

Left mirror to left

.eft mirror upward

Left mirror downward

Right mirror to right

Right mirror to left

Right mirror upward

Right mirror downward

Fill upper valve

Bleed upper valve

Fill lower valve

Store position 1

Store position 2

Store position 3

Approach required position 1

Approach required position 2

Approach required position 3

**Information:**

The drive links are not activated until the **switch M** is depressed continuously.


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## Modify coding

The following settings can be selected from the menu and encoded under the menu item Modify coding.

| Coding | Setting |
|---|---|
| Parking aid | active/ not active |
| Upper lumbar | present/ not present |
| Lower lumbar | present/ not present |
| Parking aid on door mirror | right/ left |
| Lowering | 10 to 120 degrees |

**Procedure:**

1. Select vehicle type.
2. Select *Seat memory* control module.
3. Select menu item *Modify coding*.
4. Select desired coding as described above and press the double arrow key.
5. Select the desired setting with the arrow keys and press the **F8** key.

**Information:**

The procedure for activating the parking aid is described in detail on Page 72 - D 41



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## Activating the parking aid

### General

The automatic lowering of the rearview mirror aids the driver during parking manoeuvres. The rearview mirror is lowered by the set value as soon as reverse gear is engaged. If reverse gear is disengaged again or the rearview mirror switch touched with reverse gear still engaged, the rearview mirror returns to its stored position.

**Information:**

This function is only available in vehicles with seat memory.

The following settings can be selected from the menu and encoded using the Porsche System Tester 2.

Parking aid (active or not active)

Parking aid with rearview mirror (right or left)

Lowering

The system function can be activated or deactivated under menu item *Parking aid*.

Either the right-hand or left-hand rearview mirror is selected and activated under the menu item *Parking aid with rearview mirror*.

The degree to which the rearview mirror is lowered is set under the menu item *Lowering*.

### Activating the parking aid

1. Connect the PST 2 with the ignition off, then switch the ignition on.

2. Switch on the PST 2 and wait for the start-up screen.

3. Press the [>>] key to go to the next level.

4. Select the vehicle type Boxster in the left-hand window using the [v] key.

5. With the [v] key, select the Seat memory control module and press the [>>] key to go to the next level.

6. With the [v] key, select Modify coding and press the [>>] key to go to the next level.

7. The *Parking aid* menu item is already high-lighted on your screen. Press the [>>] key to alter the coding.

8. Select the menu item active using the [v] key.

9. Press key F8 (coding).

The parking aid is now activated.



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10. Press the [<<] key to switch between the right-hand or left-hand door mirror.

11. With the [v] key, select Parking aid with rearview mirror and press the [>>] key to alter the coding.

12. Select the desired side right or left using key [v] or [^].

13. Press key F8 (coding).

The selected rearview mirror is now activated.

14. Press the [<<] key to set the degree of lowering of the door mirror.

15. With the [v] key, select *Lowering* and press the [>>] key to alter the coding.

16. Select the desired degree of lowering using key [v] or [^].

17. Press key F8 (coding).

The selected degree of lowering has now been stored.

18. Press the [Esc] key 2x to quit this level

Setting of the system is now complete.



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80 01

# Diagnosis/troubleshooting

# Heating

# System H 01



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## System description

### Heating section

The heating system is controlled on the air side, i.e. coolant continuously flows through the heat exchanger. Regulation of heating is performed via the position of the temperature mixing valve.

Depending on the position of the temperature mixing valve, a certain portion of warmed air is mixed with the fresh air from the outside.

### Air-conditioning section

The preselected temperature is controlled automatically. The interior temperature and air flow can be adjusted manually via two pushbuttons. The changes are shown in the display. Information from the outside temperature sensors, interior temperature sensor and the sun sensor are processed to regulate the interior temperature. The system can respond to rapid changes in the outside temperature and also takes into account that the intensity of sunlight has a major influence on the subjective temperature perception by passengers.

The fully automatic control system influences the temperature distribution between the upper and lower areas of the passenger compartment to suit the desires of the passengers in most cases. It is nevertheless possible to control this distribution manually by means of the corresponding push buttons. As is familiar from other Porsche vehicles, the air conditioning of the Boxster is also equipped with a “Defrost” switch. This switch ensures maximum window-defrosting efficiency by suitable control of the heating and blower power and the air distribution. In the interest of simpler use, only one button has to be operated here to direct the full heating power to the windows in order to ensure rapid defrosting when the vehicle is operated under winter conditions.

A quantity-controlled compressor produces the cooling power of the air conditioning.

With this demand-dependent quantity control, the compressor makes a contribution towards energy savings. When the compressor is switched on, only approx. 6 % of the refrigerant quantity is pumped. The start-up jerk that occurs with uncontrolled compressors can be largely avoided in this way.


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## General information

### Function of auto recirculation

At outside temperatures > 26 °C the program, after an initial system ventilation time of 30 seconds, switches to recirculation mode in order to accelerate the cooling phase.

### Control of the air conditioning compressor

Activation of the air conditioning compressor depends on the outside temperature, intake air temperature and coolant temperature.

Activation:
- Outside temperature ≥ 5 °C
- Intake air temperature > 3 °C
- Coolant temperature < 115 °C
- Ignition on

The air conditioning compressor is switched on at the earliest 7 seconds after the engine is started.

### Switch-on conditions for coolant or condenser blower motors

Stage 1 is switched on when the coolant temperature is > 100 °C

or

there is an A/C demand, the intake air temperature is > 8 °C and terminal 15 is switched on.

Stage 2 is switched on if the coolant temperature > 105 °C

or

the refrigerant pressure is > 16 bar.

### Switch-on conditions for engine compartment blower

The engine compartment blower is switched on when the engine compartment temperature is > 80 °C

or

the coolant temperature is > 102 °C.

### After-running of engine compartment blower

If the ignition is switched off and the engine compartment temperature is more than 60 °C, the DME control module remains in readiness for another 20 minutes. During this time, the engine compartment temperature is interrogated every 10 seconds. If the engine compartment temperature is > 85 °C, the engine compartment blower is switched on for 20 seconds. If the engine temperature is still > 85 °C afterward, the time is extended by a further 30 seconds in each case.



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## Main menu

### Overview of possible menus


| | |
|---|---|
| Identification | See Page 80 - D 13 |
| Fault memory | See Page 80 - D 14 |
| Erase fault memory | See Page 80 - D 32 |
| Drive links | See Page 80 - D 33 |
| Input signals | See Page 80 - D 34 |
| Actual values | See Page 80 - D 35 |
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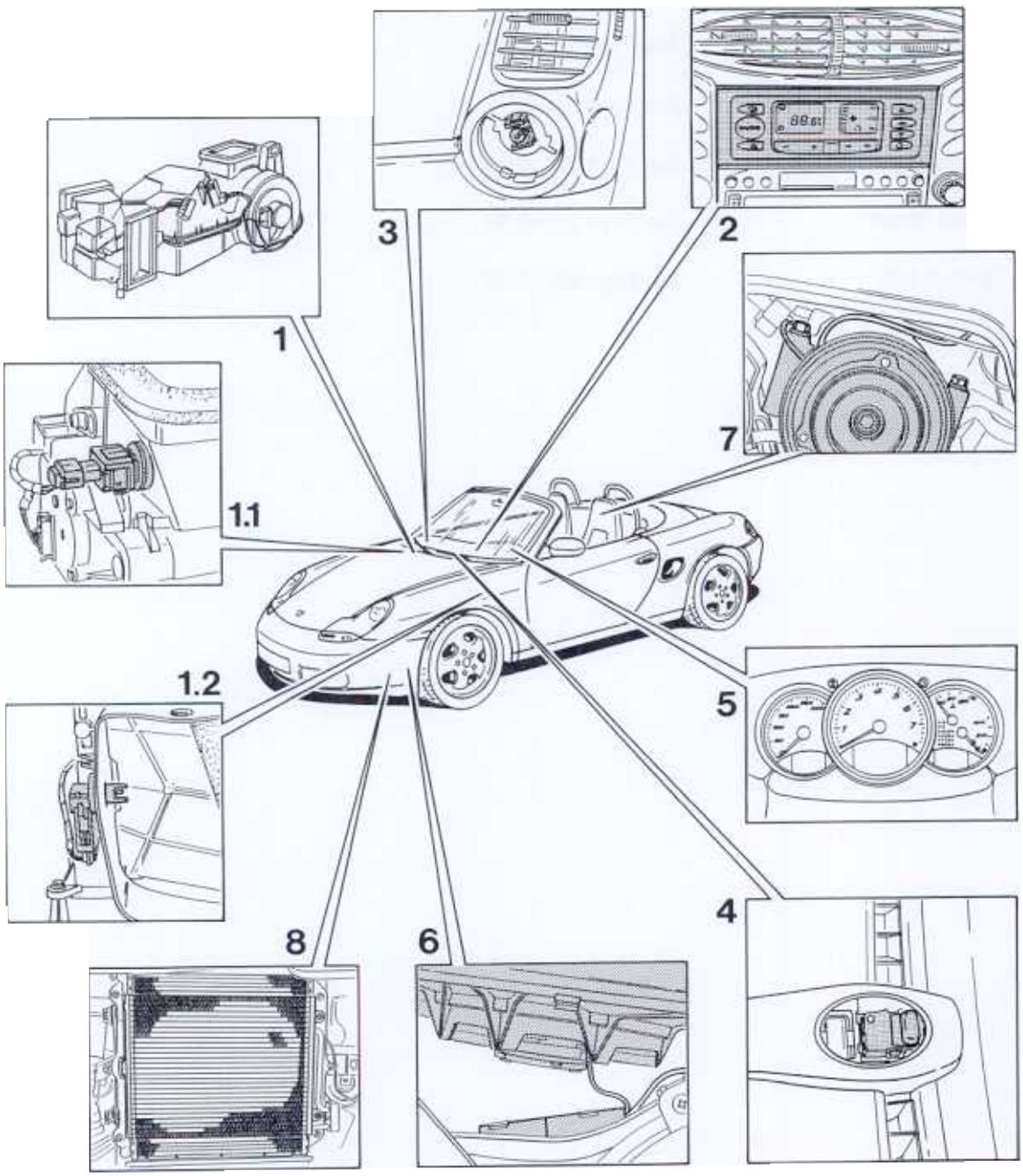


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## Component arrangement






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## Function of individual components

### 1. Heater/ A/C unit

The heater/ A/C unit includes:

Heat exchanger (to heat the air)

Temperature mixing valve (to control the interior temperature)

Central valve (to control the air flow)

Outside air / recirculation valve (to compensate for the dynamic pressure, or recirculation control)

Fresh-air blower

Outside sensor (to measure the intake air temperature)

Blower outlet sensor (to measure the footwell temperature)

Driver (to control the fresh-air blower speed)

Evaporator (to cool the air)

Expansion valve

The outside air is heated or cooled in the heater/ A/C unit and distributed to the air vents.

### 1.1 Outside sensor

The outside sensor measures the temperature of the incoming air.

### 1.2 Blower outlet sensor

The blower outlet sensor measures the temperature of air emerging into the footwell.

### 2. Heating/air conditioning control

The heating/air conditioning control includes the closed and open-loop control electronics, as well as switches for manual influence on automatic program control.

The heating/air conditioning control regulates the different valves according to the set temperature, the interior temperature, the outside temperature, the vehicle speed and the intensity of sunlight shining into the vehicle.

### 3. Interior sensor

The interior sensor measures the temperature in the passenger compartment.

### 4. Sun sensor

The sun sensor measures the intensity of sunlight shining into the vehicle.


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### 5. Instrument cluster

The instrument cluster provides the following system parameters for control of the heater/air conditioning system:

Outside temperature (measured below the bumper)

Coolant temperature

Speed

Engine speed

Time since the ignition was switched off

### 6. Electric fan with ballast resistor

Fan to cool the condenser.
The ballast resistor serves to reduce the fan speed in the first stage.

### 7. Air conditioning compressor

The air conditioning compressor sucks the gaseous refrigerant from the evaporator and compresses the refrigerant.

### 8. Condenser

The compressed refrigerant is cooled down in the condenser.



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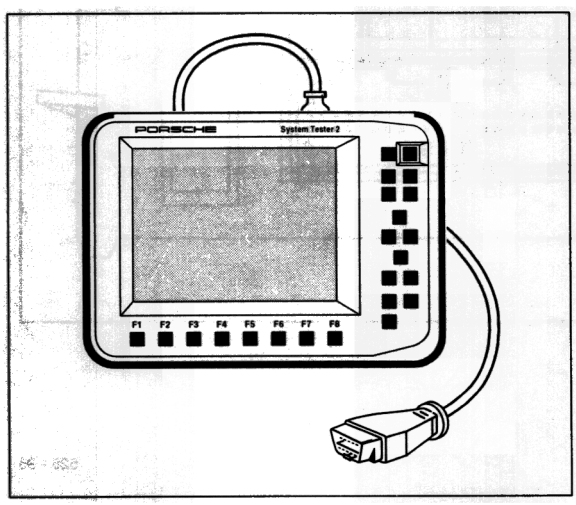
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## Tools

The following is required for troubleshooting:

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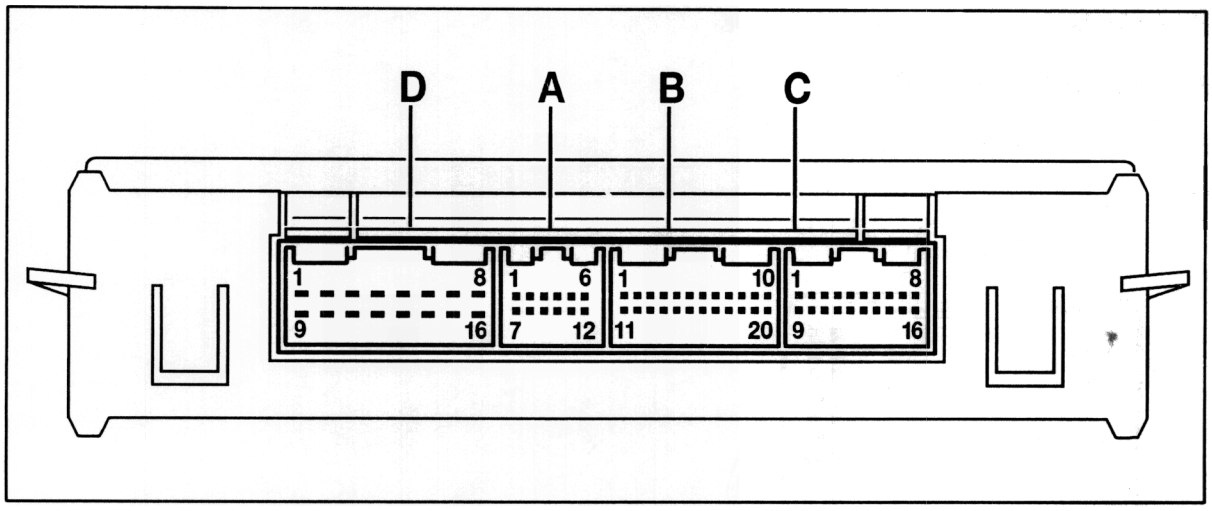


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## Connector assignment, heating/air conditioning control




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### Connector A (black)

1 – K-line

2 – Free

3 – Free

4 – Free

5 – Terminal 58 d

6 – Free

7 – Outside temperature sensor

8 – Free

9 – Free

10 – Interior temperature sensor

11 – Free

12 – Ground for sensors and potentiometers



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**Connector B (red)**

– Free

2 – Free

3 – Free

4 – Free

5 – Footwell blower outlet sensor

6 – Free

7 – Free

8 – Temperature mixing valve position

9 – Central valve position

10 – Footwell / defrost valve position

11 – Free

12 – Free

13 – Interface, instrument cluster

14 – Free

15 – Free

16 – Free

17 – Position of outside air / recirculation valve

18 – Sun sensor

19 – Free

20 – Free

**Connector C (beige)**

1 – Free

2 – Feedback signal, compressor

3 – Free

4 – Free

5 – Free

6 – Free

7 – Terminal 58

8 – Output + 5 Volt

9 – Free

10 – Free

11 – Feedback signal, fresh-air fan minus

12 – Free

13 – Free

14 – Feedback signal, fresh-air fan plus

15 – Free

16 – Activation of fresh-air fan (driver)


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**Connector D (black)**

1 – Free

2 – Temperature mixing valve motor

3 – Footwell / defrost valve motor

4 – Central valve motor

5 – Outside air / recirculation valve motor

6 – Air conditioning compressor On demand

7 – Free

8 – Free

9 – Terminal 15

10 – Temperature mixing valve motor

11 – Footwell / defrost valve motor

12 – Central valve motor

13 – Outside air / recirculation valve motor

14 – Free

15 – Terminal 31

16 – Free



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## Identification

Control module identification data can be read out with this menu item.

The following information is displayed:

Porsche part No.

Hardware version

Software version

Date of production

Serial number in week

Production data

Diagnosis software number



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## Fault memory

### Overview of possible faults

Interface to the instrument cluster

Outside temperature sensor

Interior temperature sensor

Blower outlet sensor

Supply voltage (terminal 15)

Supply voltage (5 Volt)

Motor, temperature mixing valve

Motor, central valve

Motor, footwell / defrost valve

Motor, outside air / recirculation valve

AC (air conditioning compressor demand)

Motor, fresh-air fan

Control module faulty

Sun sensor

### Note

The fault counter is set to 50 the first time a fault occurs.
The fault counter is reduced by 1 (decremented) if the fault is no longer present and the diagnosis conditions exist.

The fault is erased from the memory when the fault counter reaches 0.



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## Fault overview

| Test point | DTC | Fault effect | Page |
|---|---|---|---|
| 1 | 20 | Substitute values * | 80 – D 16 |
| 2 | 21 | Substitute value: 10 °C | 80 – D 17 |
| 3 | 22 | Substitute value: 22 °C | 80 – D 18 |
| 4 | 23 | Substitute value: 50 °C | 80 – D 19 |
| 5 | 24 | | 80 – D 20 |
| 6 | 25 | | 80 – D 21 |
| 7 | 26 | Valve cannot be adjusted | 80 – D 22 |
| 8 | 27 | Valve cannot be adjusted | 80 – D 23 |
| 9 | 28 | Valve cannot be adjusted | 80 – D 25 |
| 10 | 29 | Valve cannot be adjusted | 80 – D 26 |
| 11 | 30 | | 80 – D 27 |
| 12 | 31 | | 80 – D 28 |
| 13 | 32 | No control | 80 – D 30 |
| 14 | 33 | Substitute value: 150 W/m$^2$ | 80 – D 30 |

| | |
|---|---|
| Outside temperature: | 10 °C |
| Engine temperature: | 80 °C |
| Speed: | 70 km/h |
| Engine speed: | 1000 rpm |


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| Fault, DTC | Possible causes, elimination, notes |
|---|---|

## Test point 1

Interface to the instrument cluster

Open circuit
Short to ground
**DTC 20**

**Diagnosis conditions**

No control module fault stored.
No fault on the supply voltage (terminal 15).

**Open circuit**

1. Pull off connector B on the heating/air conditioning control.

2. Pull off connector III on the instrument cluster.

3. Connect ohmmeter to connector B 13 and to connector III pin 26.
   Display: < 5 Ω

**Note**

The wire is routed via the 12-pole plug connection on the heater/ A/C unit.

**Short to ground**

1. Pull off connector B on the heating/air conditioning control.

2. Pull off connector III on the instrument cluster.

3. Connect ohmmeter to connector B 13 and ground.
   Display: ∞ Ω

If 0 - 5 Ω is displayed, check the wiring for pinching and chafing.



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| Fault, DTC | Possible causes, elimination, notes |
|---|---|

## Test point 2

Outside temperature sensor

Open circuit
Short to ground
**DTC 21**

**Diagnosis conditions**

No control module fault stored.
No fault on the supply voltage (5 Volt).

**Open circuit**

1. Pull off connector A on the heating/air conditioning control.

2. Connect ohmmeter to connector A 7 and A 12.
   Display: Approx. 1.2 kΩ at 23 ° C

3. Pull off connector on the outside temperature sensor.

4. Connect ohmmeter to connector A 7 and pin 1 (connector, outside temperature sensor).
   Display: 0 - 5 Ω

5. Connect ohmmeter to connector A 12 and pin 2 (connector, outside temperature sensor).
   Display: 0 - 5 Ω

6. Connect voltmeter to connector A 7 and ground.
   Switch on ignition.
   Display: 0 Volt

If approx. 5 Volt is displayed, check the wiring for pinching and chafing.

**Short to ground**

1. Pull off connector A on the heating/air conditioning control.

2. Connect ohmmeter to connector A 7 and ground.
   Display: ∞ Ω

If 0 - 5 Ω is displayed, check the wiring for pinching and chafing.


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| Fault, DTC | Possible causes, elimination, notes |
|---|---|

## Test point 3

Interior temperature sensor

Open circuit
Short to ground
**DTC 22**

**Diagnosis conditions**

No control module fault stored.
No fault on the supply voltage (5 Volt).
Outside temperature higher than – 40 °C.

**Open circuit**

1. Pull off connector A on the heating/air conditioning control.

2. Connect ohmmeter to connector A 10 and A 12.
   Display: approx. 3 kΩ at 23 °C

**Note**

The wires to the interior temperature sensor are routed via two additional plug connections on the heating/air conditioning control.

3. Pull off connector on the interior temperature sensor.

4. Connect ohmmeter to connector A 10 and interior sensor connector pin 5.
   Display: < 5 Ω

5. Connect ohmmeter to connector A 12 and interior sensor connector pin 4.
   Display: < 5 Ω

6. Connect voltmeter to connector A 10 and ground.
   Switch on ignition.
   Display: 0 Volt

If approx. 5 Volt is displayed, check the wiring for pinching and chafing.



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| Fault, DTC | Possible causes, elimination, notes |
|---|---|

**Short to ground**

1. Pull off connector A on the heating/air conditioning control.

2. Connect ohmmeter to connector A 7 and ground.
   Display: ∞ Ω

If 0 - 5 Ω is displayed, check the wiring for pinching and chafing.

## Test point 4

Footwell blower outlet sensor

Open circuit
Short to ground
**DTC 23**

**Diagnosis conditions**

No control module fault stored.
No fault on the supply voltage (5 Volt).
Outside temperature higher than – 30 °C.

**Open circuit**

1. Pull off connectors A and B on the heating/air conditioning control.

2. Connect ohmmeter to connectors A 12 and B 5.
   Display: approx. 2.8 kΩ at 23 °C.

3. Pull off connector on the blower outlet sensor.

4. Connect ohmmeter to connector A 12 and blower outlet sensor connector pin 2.
   Display: < 5 Ω

5. Connect ohmmeter to connector B 5 and blower outlet sensor connector pin 1.
   Display: < 5 Ω

6. Connect voltmeter to connector B 5 and ground.
   Switch on ignition.
   Display: 0 Volt

If approx. 5 Volt is displayed, check the wiring for pinching and chafing.


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| Fault, DTC | Possible causes, elimination, notes |
|---|---|
| | **Short to ground**<br><br>1. Pull off connector B on the heating/air conditioning control.<br><br>2. Connect ohmmeter to connector B 5 and ground.<br>Display: ∞ Ω<br><br>If 0 - 5 Ω is displayed, check the wiring for pinching and chafing. |
| **Test point 5**<br>Supply voltage<br>(terminal 15)<br><br>Voltage too high<br>Voltage too low<br>**DTC 24** | **Diagnosis conditions**<br><br>No control module fault stored.<br><br>**Voltage too high**<br><br>Check the generator.<br><br>**Voltage too low**<br><br>1. Check the generator.<br><br>2. Check or charge the battery.<br><br>3. Check contact resistance of wire connections. |



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| Fault, DTC | Possible causes, elimination, notes |
|---|---|

## Test point 6

Supply voltage (5 Volt)

Voltage too high
Voltage too low
**DTC 25**

**Diagnosis conditions**

No control module fault stored.

**Voltage too high**

1. Pull off connector C on the heating/air conditioning control.

2. Connect voltmeter to C 8 and ground.
   Switch on ignition.
   Display: 0 Volt

If battery positive voltage is displayed, check wiring harness for pinching and chafing.

3. Push on connector C.

4. Connect voltmeter to C 8 and ground.
   Switch on ignition.
   Display: 5 ± 0.5 Volt

If more than 5.5 Volt is displayed, replace the heating/air cond. control.

**Voltage too low**

1. Pull off connector C on the heating/air conditioning control.

2. Pull off all connectors on the valve drive motors.

3. Connect ohmmeter to connector C 8 and ground.
   Display: ∞ Ω

If 0 - 5 Ω is displayed, check the wiring for pinching and chafing.



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| Fault, DTC | Possible causes, elimination, notes |
|---|---|

4. Check potentiometer in the drive motors.

Temperature mixing valve:
Connect ohmmeter to pins 1 and 3.
Display: 4 - 5 kΩ at 23 °C

Footwell / defrost valve:
Connect ohmmeter to pins 1 and 3.
Display: 4 - 5 kΩ at 23 °C

Central valve:
Connect ohmmeter to pins 1 and 3.
Display: 4 - 5 kΩ at 23 °C

Outside air / recirculation valve:
Connect ohmmeter to pins 4 and 5.
Display: 4 - 5 kΩ at 23 °C

## Test point 7

Motor, temperature mixing valve

Signal implausible **DTC 26**

**Diagnosis conditions**

No control module fault stored.
No fault on the supply voltage (5 Volt).

**Signal implausible**

1. Check temperature mixing valve for smooth operation.

2. Pull off connectors A, B, C and D on the heating/air cond. control

3. Pull off connector on the temperature mixing valve drive motor.

4. Connect ohmmeter to connector C 8 and drive motor connector pin 1.
Display: < 5 Ω

Connect ohmmeter to connector B 8 and drive motor connector pin 2.
Display: < 5 Ω



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| Fault, DTC | Possible causes, elimination, notes |
|---|---|

Connect ohmmeter to connector A 12 and drive motor connector pin 3.
Display: < 5 Ω

Connect ohmmeter to connector D 10 and drive motor connector pin 4.
Display: < 5 Ω

Connect ohmmeter to connector D 2 and drive motor connector pin 5.
Display: < 5 Ω

5. Check wire from connector C 8 to drive motor pin 1 for short to plus and short to ground.

6. Check wire from connector B 8 to drive motor pin 2 for short to plus and short to ground.

7. Check wire from connector A 12 to drive motor pin 3 for short to B+.

8. Check wire from connector D 10 to drive motor pin 4 for short to B+ and short to ground.

9. Check wire from connector D 2 to drive motor pin 5 for short to plus and short to ground.

## Test point 8

Motor, central valve

Signal implausible
**DTC 27**

**Diagnosis conditions**

No control module fault stored.
No fault on the supply voltage (5 Volt).

**Signal implausible**

1. Check central valve for smooth operation.

2. Pull off connectors A, B, C and D on the heating/air cond. control.


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| Fault, DTC | Possible causes, elimination, notes |
|---|---|

3. Pull off connector on the central valve drive motor.

4. Connect ohmmeter to connector A 12 and drive motor connector pin 1.
   Display: < 5 Ω

   Connect ohmmeter to connector B 9 and drive motor connector pin 2.
   Display: < 5 Ω

   Connect ohmmeter to connector C 8 and drive motor connector pin 3.
   Display: < 5 Ω

   Connect ohmmeter to connector D 4 and drive motor connector pin 4.
   Display: < 5 Ω

   Connect ohmmeter to connector D 12 and drive motor connector pin 5.
   Display: < 5 Ω

5. Check wire from connector A 12 to drive motor pin 1 for short to B+.

6. Check wire from connector B 9 to drive motor pin 2 for short to plus and short to ground.

7. Check wire from connector C 8 to drive motor pin 3 for short to plus and short to ground.

8. Check wire from connector D 4 to drive motor pin 4 for short to plus and short to ground.

9. Check wire from connector D 12 to drive motor pin 5 for short to B+ and short to ground.



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| Fault, DTC | Possible causes, elimination, notes |
|---|---|

## Test point 9

Motor, footwell/ defrost valve

Signal implausible
**DTC 28**

**Diagnosis conditions**

No control module fault stored.
No fault on the supply voltage (5 Volt).

**Signal implausible**

1. Check footwell / defrost valve for smooth operation.

2. Pull off connectors A, B, C and D on the heating/air cond. control.

3. Pull off connector on the footwell / defrost valve drive motor.

4. Connect ohmmeter to connector C 8 and drive motor connector pin 1.
   Display: < 5 Ω

   Connect ohmmeter to connector B 10 and drive motor connector pin 2.
   Display: < 5 Ω

   Connect ohmmeter to connector A 12 and drive motor connector pin 3.
   Display: < 5 Ω

   Connect ohmmeter to connector D 11 and drive motor connector pin 4.
   Display: < 5 Ω

   Connect ohmmeter to connector D 3 and drive motor connector pin 5.
   Display: < 5 Ω

5. Check wire from connector C 8 to drive motor pin 1 for short to plus and short to ground.

6. Check wire from connector B 10 to drive motor pin 2 for short to B+ and short to ground.

7. Check wire from connector A 12 to drive motor pin 3 for short to B+.

8. Check wire from connector D 11 to drive motor pin 4 for short to B+ and short to ground.


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| Fault, DTC | Possible causes, elimination, notes |
|---|---|
| | 9. Check wire from connector D 3 to drive motor pin 5 for short to plus and short to ground. |

**Test point 10**

Motor, outside air / recirculation valve

Signal implausible
**DTC 29**

**Diagnosis conditions**

No control module fault stored.
No fault on the supply voltage (5 Volt).

**Signal implausible**

1. Check outside air / recirculation valve for smooth operation.

2. Pull off connectors A, B, C and D on the heating/air cond. control.

3. Pull off connector on the outside air / recirculation valve drive motor.

4. Connect ohmmeter to connector D 13 and drive motor connector pin 1.
   Display: < 5 Ω

   Connect ohmmeter to connector D 5 and drive motor connector pin 2.
   Display: < 5 Ω

   Connect ohmmeter to connector B 17 and drive motor connector pin 3.
   Display: < 5 Ω

   Connect ohmmeter to connector C 8 and drive motor connector pin 4.
   Display: < 5 Ω

   Connect ohmmeter to connector A 12 and drive motor connector pin 5.
   Display: < 5 Ω

5. Check wire from connector D 13 to drive motor pin 1 for short to B+ and short to ground.

6. Check wire from connector D 5 to drive motor pin 2 for short to plus and short to ground.



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| Fault, DTC | Possible causes, elimination, notes |
|---|---|
| | 7. Check wire from connector B 17 to drive motor pin 3 for short to B+ and short to ground.<br><br>8. Check wire from connector C 8 to drive motor pin 4 for short to plus and short to ground.<br><br>9. Check wire from connector A 12 to drive motor pin 5 for short to B+ and short to ground. |
| **Test point 11**<br>AC<br><br>Signal implausible<br>**DTC 30** | **Note**<br><br>This fault can be determined only during the system test.<br><br>**Signal implausible**<br><br>1. Check refrigerant (see Page 87 - 13).<br><br>2. Check high/low pressure switch.<br><br>Battery positive voltage must be present at terminal 1 on the high/low pressure switch (with ignition on) if there is enough refrigerant in the system.<br><br>3. Check heating activation relay.<br>Battery positive voltage must be present at terminal 87 if the ignition is switched on.<br><br>4. Check the air conditioning compressor relay.<br>Battery positive voltage must be present at terminal 30 (with the ignition on) and high/low pressure switch actuated.<br>Ground must be connected to terminal 31.<br>Battery positive voltage must be connected to terminal 86 when the engine is started.<br>Ground must be connected to terminal 85 when the DME switches on the air conditioning compressor (7 seconds delay).<br><br>5. Pull off connector D on the heating/air conditioning control. |


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| Fault, DTC | Possible causes, elimination, notes |
|---|---|

6. Pull off the DME connector.

7. Connect ohmmeter to D 6 and DME connector pin 69.
   Display: < 5 Ω

**Note**

The wire is routed via two plug connections.

8. Pull off the air conditioning compressor relay.

9. Connect ohmmeter to terminal 85 and DME connector pin 62.
   Display: < 5 Ω

**Note**

The wire is routed via one plug connection.

## Test point 12

Motor, fresh-air fan

Voltage too low
Voltage too high
**DTC 31**

**Diagnosis conditions**

No control module fault stored.
Supply voltage OK.
Nominal fan voltage > 3 Volt.
Nominal fan voltage stabilised.

**Voltage too low**

**Note**

"Voltage too low" means that the measured fan voltage is less than the nominal fan voltage.

1. Check the heating activation relay.
   Battery positive voltage must be present at terminal 87 when the ignition is switched on.

2. Pull off connector C on the heating/air conditioning control.



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| Fault, DTC | Possible causes, elimination, notes |
|---|---|

3. Connect voltmeter to C 14 (plus) and ground.
   Switch on ignition.
   Display: Battery positive voltage

4. Push connector C on the heating/air conditioning control.

5. Connect voltmeter to C 14 (plus) and C 11 (minus).
   Maximum fan speed
   Display: approx. 12 V

   Minimum fan speed
   Display: approx. 0 V

6. Connect voltmeter to C 14 (plus) and C 16 (minus).
   Maximum fan speed
   Display: approx. 5 V

   Minimum fan speed
   Display: approx. 9 V

7. Check driver.
   Connect voltmeter to plus and pin 3 on the driver connector.
   Display: Battery positive voltage

   Connect voltmeter to plus and pin 1 on the driver connector.
   Maximum fan speed
   Display: approx. 5 V

   Minimum fan speed
   Display: approx. 9 V

   Connect voltmeter to plus and pin 2 on the driver connector.
   Maximum fan speed
   Display: approx. 12 V

   Minimum fan speed
   Display: approx. 0 V

8. Check wiring from the heating/air conditioning control to the driver for continuity.

9. Check fan motor.


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| Fault, DTC | Possible causes, elimination, notes |
|---|---|
| | **Voltage too high** |
| | **Note** |
| | A higher fan voltage can be caused only by a short to ground on the wires on pin 1 or pin 2 of the driver. |
| | 1. Pull off connector C on the heating/air conditioning control. |
| | 2. Pull off connector on the driver. |
| | 3. Connect ohmmeter to C 16 and ground.<br>Display: ∞ Ω |
| | 4. Pull off connector on the fan motor. |
| | 5. Connect ohmmeter to driver connector pin 2 and ground.<br>Display: ∞ Ω |
| **Test point 13**<br>Control module | Replace the heating/air conditioning control. |
| Control module faulty<br>**DTC 32** | |
| **Test point 14**<br>Sun sensor | **Diagnosis conditions** |
| | No control module fault stored.<br>No fault on the supply voltage (5 Volt). |
| Short to B+<br>Short to ground<br>**DTC 33** | **Short to B+/short to ground** |
| | 1. Remove sun sensor. |
| | 2. Disconnect plug connection on the sun sensor. |



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| Fault, DTC | Possible causes, elimination, notes |
|---|---|

3. Connect voltmeter to sleeve side of pin 2 (minus) and pin 3 (plus).
   Switch on ignition.
   Display: approx. 4.5 - 5 Volt

   If 0 Volt is displayed, check wiring to the heating/air conditioning control A 12 and B 18 for continuity.
   Check wiring to the heating/air conditioning control B 18 for short to ground.

**Note**

The wires are routed via two plug connections on the heater/ A/C unit.
Replace the heating/air conditioning control if the wires are OK.

4. Connect ohmmeter to sun sensor pins 2 and 3.
   Sun sensor not in darkness
   Display: approx. 1.3 MΩ

   Sun sensor in darkness
   Display: approx. 240 kΩ


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## Erase fault memory

### Note

The fault memory can be erased only if it was first read out at least once.

The entire fault memory is always erased.



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## Drive links

With this menu item, it is possible to activate drive links using the Porsche System Tester 2. This permits the function of drive links to be assessed very rapidly.

The following drive links can be activated:

Motor, temperature mixing valve

Motor, central valve

Motor, footwell / defrost valve

Motor, outside air / recirculation valve

AC switch

Fresh-air fan


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## Input signals

With this menu item, input signals of the heating/air conditioning system can be read in by the Porsche System Tester 2. This permits the functions of input signals to be assessed very rapidly.

The following input signals can be read in:

AC switch

Compressor voltage

Engine signal (indication of engine start)

Terminal 58 (lighting)



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## Actual values

Values currently under test can be read out via this menu item.

The following values can be called up:

Outside temperature (from the instrument cluster)

Outside temperature (from the heating/air conditioning)

Interior temperature

Blower outlet temperature

Engine temperature

Position, temperature mixing valve

Position, central valve

Position, footwell / defrost valve

Position, outside air / recirculation valve

Fresh-air blower voltage

Supply voltage (terminal 15)

Supply voltage (5 Volt)

Speed

Engine speed

Sun intensity

Dimming display

Idle period

Parameter code



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## System test

Special diagnosis routines can be run with this menu item.

The following conditions must be observed for the system test:

Vehicle speed < 10 km/h

Engine start detected and 10 seconds elapsed since engine start

Terminal 15 supply voltage OK

5 Volt supply voltage OK

Engine temperature < 110 °C

Outside temperature > 3 °C

The following tests are performed:

Display of all segments in the control module

The drive motors are traversed across the entire range once

The measured positioning travel is subjected to a plausibility test and stored as a fault if necessary

Two different voltage values are set on the fresh-air fan and tested

The A/C circuit is tested via the DME

All fault paths are tested, and any faults are stored

After the system test, the heating/air conditioning reverts to the state it was in before the test.



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90 01

# Diagnosis/Troubleshooting

## Alarm system

## System I 16



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## System description

### Control unit

The immobilizer, central locking system, convertible top comfort control, radio remote control and monitoring of the vehicle interior functions are integrated in the alarm system.

The alarm system monitors the vehicle's outer panels by way of contact switches on the lids and in the doors. Attempted break-ins should be recognized and indicated by audible and visual signals.

The alarm horn, direction indicator lights and interior lights are activated to issue the alarm.

The system can be extended by connecting additional sensors (glass breakage sensor, tilt sensor).

### Central locking

The central locking system provides for three different locking conditions:

1. If the lock is activated once, the so-called "Safe locking– door secured" function is activated.
   The doors can be opened only with the key, but not with the inside door handles.

2. If the door lock is activated twice within 1 second, the vehicle is not accessible from the outside, but can be unlocked via the inside door handles.

3. The possibility of activating the door lock three times represents an emergency function. If the functional capability of the overall system is impaired because, for example, one door cannot be closed, it is possible in this way to still activate the other security functions.
   Point 1 is activated when the system is operated via the radio remote control.
   The position of the doors is checked by limit switches in the lock.

### Controlling the interior lights

The interior lights are not controlled directly by the door contacts. The interior lights are switched on:

1. When the doors are unlocked.

2. When the doors are opened.

The lighting stays on for approx. 30 seconds.

The interior lights are switched off (doors closed):

1. When the ignition is switched on.

2. When the doors are locked.

The interior lights are switched on and off dimmed.


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### Opening and closing the convertible top

If the convertible top is opened or closed, the convertible top control unit output and then (with a 200 ms delay) the comfort opening or comfort closing output are activated.

### Load deactivation

If the vehicle is locked up, some loads are disconnected from the supply voltage in order to conserve the battery. The load disconnection output is switched off after approx. 10 minutes for this purpose.

The loads are switched on by switching on terminal 86 S (buzzer contact), terminal 15 or by recognition of a valid transponder key.

### Power-on behaviour

The function depends on programmed national variant.

Variant 1

The output is controlled when terminal 15 is switched on or if a door is open.

Variant 2

The output is controlled if terminal 15 is switched on and also remains switched on after terminal 15 is switched off, until a door is opened. The output is switched off no later than when the vehicle is locked.

### Power-on behavior

After the operating voltage is switched on, the system is set to the operating state which it was in before the supply voltage was switched off.

For this purpose, all necessary operating parameters are stored in a permanent memory. If the system was disconnected from the supply in the armed state, this is entered as a fault in the status memory. The same applies if the system is disconnected from the supply voltage during an alarm output.

### Activating and deactivating

The system is activated by a ground signal at the activation input or by an activation signal from the remote control.

The activation of the system is ignored if terminal 86 S, terminal 15 or a valid transponder key is recognized.

If for some reason it is not possible to lock the central locking system with a single locking command, the alarm system is not activated. Activation of the alarm system cannot be achieved until the central locking system is locked (if necessary manually) and a new activation command is issued or only locking is performed three times in quick succession. The interval between two locking operations must not be more than 1 second in this case. If the system is activated by this emergency function, the central locking system is locked without checking whether it can be completely locked.

The system saves the type of activation in a status memory. If an alarm is triggered, this information is written into the alarm memory together with the alarm coding.



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When the alarm system is activated, the inactive level of all inputs is checked for an inactive period of 10 seconds. Only inputs which are inactive for the entire inactive period can trigger the alarm after the end of the inactive period. All other inputs are blocked for alarm triggering for as long as they are in the active state. If the inactive state occurs at blocked inputs, the inactive period is started for them individually. All inputs which remain in the inactive state during the inactive period are then included in the alarm evaluation.

The inactive period commences immediately after activation:

if it is apparent that the central locking system is locked or if locking occurred three times in succession

and

if the signal "Activate" is no longer present. (A second activation command for cancelling the anti-theft protection restarts the inactive period.)

In the case of an active signal at the inputs terminal 86 S, terminal 15 or if a valid transponder key is recognized, no activation is possible. If one of these inputs is active at the time of locking, control of the central locking system does not take place. The central locking system is opened if one of these inputs becomes active during the inactive period, since in this case the alarm system is also deactivated.

If, when the vehicle is locked, a door is unlocked after expiry of the 10 second inactive period, this is immediately controlled in the direction "Closed". An alarm is triggered at the same time. If, when the vehicle is locked, a door is unlocked from the inside during the inactive period, the central locking system is unlocked and the alarm system is deactivated. (Protection against unintentional locking/activation).

If, within 15 seconds after switching-on of the output External Electronics, movements in the vehicle are detected by the passenger compartment monitor, the central locking system is moved to the locked position and the alarm system is deactivated.

After expiry of the inactive period, the output "External Electronics" is switched on if the alarm-triggering inputs for the doors, convertible top, convertible top compartment cover, front luggage compartment and rear luggage compartment were inactive for the entire inactive period. If one of these inputs is active, the output "External Electronics" is not switched on until this input becomes inactive and remains in this state for at least 10 seconds. The switched-on output "External Electronics" cannot be deactivated again by activating one of the above inputs. The output is switched off when deactivation takes place.

If, within a period of less than 1 second after the first activation pulse, a second activation command is issued, the output "External Electronics" is not switched on for one activation cycle. In this case, the central locking system is not secured, but only locked. This is acknowledged by signal 1 at the alarm horn and at the direction indicator light output, as well as during the deactivation period by the display type 3 at the alarm readiness display output and at the display output "Door locked". An opening command deletes the switch-off command.


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If activation occurs by way of the emergency function (locking 3 times quickly), the output "External Electronics" is not switched on for this activation cycle. This is acknowledged by signal 1 at the alarm horn and direction indicator light output, as well as by display type 2 at the alarm readiness display output. A deactivation command deletes this command.

If terminal 86 S, terminal 15 or a valid transponder key is recognized during the deactivation period, the alarm system is deactivated (protection against unintentional activation). The central locking system is opened in this case.

A system self-test is carried out upon activation. The result of this test is acknowledged via the alarm readiness light and the display "Door locked" and can be called up from the status memory via the diagnosis function. Equipment faults are written into the fault memory. Faults are indicated at the alarm horn and direction indicator light outputs by signal 2.

The alarm system is deactivated by a ground signal at the input "Deactivate" or by a deactivation signal from the remote control. If a valid transponder key is recognized, the alarm system is also deactivated.



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### Function display and audible checkback

The operating state of the central locking system is fed back via the output "Door locked" and by corresponding activation of the interior light (signals 1 to 3). The operating state of the alarm system is also indicated during the inactive period by the alarm readiness display (display types 1 to 6) and exclusively by the alarm readiness display following expiry of the inactive period. Displayed system faults are always current faults. Previous system faults entered in the status memory have no influence on the function display.

Display type 1 (normal flashing)

LED flashes with a frequency of 0.5 Hz
On time = 100 ms
Off time = 1900 ms

Display type 2 (double flashing)

LED flashes with a frequency of 0.5 Hz
On time 1,2 = 100 ms
Off time 1 = 200 ms
Off time 2 = 1700 ms

Display type 3 (rapid flashing)

LED flashes with a frequency of 2 Hz
On time = 100 ms
Off time = 100 ms

Display type 4 (rapid flashing)

LED flashes with a frequency of 10 Hz
On time = 50 ms
Off time = 50 ms

Display type 5 (on)

The LED is continuously on

Display type 6 (OFF)

The LED is not switched on

In addition, the checkback of faults and of statuses deviating from the standard status is performed with signal 3 at the interior light output. An audible checkback via the alarm horn output also takes place at the alarm center, together with a visual checkback via the outputs for the direction indicator lights.
The following signals are defined:

Signal 1

The outputs are triggered once
On time = 50 ms

Signal 2

The outputs are triggered twice
On time 1,2 = 50 ms
Off time = 200 ms

Signal 3

The outputs are triggered once
On time = 2500 ms

These functions can be switched on and off with the Porsche System Tester 2, depending on the national variants. The times are freely programmable.


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**Assignment of the display type of the alarm readiness light for the operating state**

| Operating conditions | Display type | Operating state |
|---|---|---|
| **during inactive period** | | |
| Self-test ok, central locking system locked and secured, all inputs in normal position, not locked 3 x | Rapid flashing (3) | Not primed |
| Self-test ok, central locking system locked, all inputs in normal position, not locked 3 x, subsystems switched off | On (5) | Not primed |
| Self-test not in order | Off (6) | Not primed |
| Self-test in order, central locking system cannot be locked, not locked 3 x | | Not primed |
| Self-test ok, central locking system locked, active inputs | Off (6) | Not primed |
| Self-test ok, locking/priming by locking 3 x | On (5) | Not primed |
| **Inactive period expired** | | |
| All inputs inactive, central locking system locked and secured, not locked 3 x, no alarm, subsystems active | Normal flashing (1) | Primed |
| All inputs inactive, central locking system locked, no alarm, not locked 3 x, subsystems passive | Normal flashing (1) | Primed |
| Inputs active | Double flashing (2) | Primed for all non-active inputs |
| During or after alarm output | Double flashing (2) | Primed |
| Priming/locking command by 3 x rapid locking of the system | Double flashing (2) | Primed |
| Self-test not in order | Off (6) | Not primed |

If a control command is issued via the remote control, this is confirmed with display type 4 for the duration of the operation. This display has priority.

**Alarm triggering and alarm output**



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The alarm functions can be triggered only in the primed state.
A non-blocked alarm input triggers an alarm in the primed state with an active signal. The alarm-triggering input then remains blocked for further alarm triggering until it returns to the inactive state. Then, following expiry of the inactive period of 10 seconds, it is again included in the alarm evaluation, provided that it was inactive for the entire inactive period.

In a priming cycle, the inputs Passenger compartment monitor, External 1 and External 2 trigger a maximum of three alarms.

The alarm output is via:

| | |
|---|---|
| Horn | depending on the country coding |
| Direction indicator lights | depending on the country coding |
| Interior lights | asynchronous with the direction indicator lights, depending on the country coding |

The alarm output with all associated actions is interrupted immediately in the event of deactivation.

**Radio remote control**

If a command is issued via the radio remote control, this is acknowledged with display type 4 at the alarm readiness display for the duration of the operation.

Commands triggered and correctly executed via the remote control are acknowledged as follows at the output for the direction indicator lights:

Secure with signal 2

Lock with signal 3

Unlock with signal 1

Depending on the country, the checkback signal can be programmed via the Porsche System Tester 2.

All other functions such as interior light control are controlled in the same way as with the vehicle key.

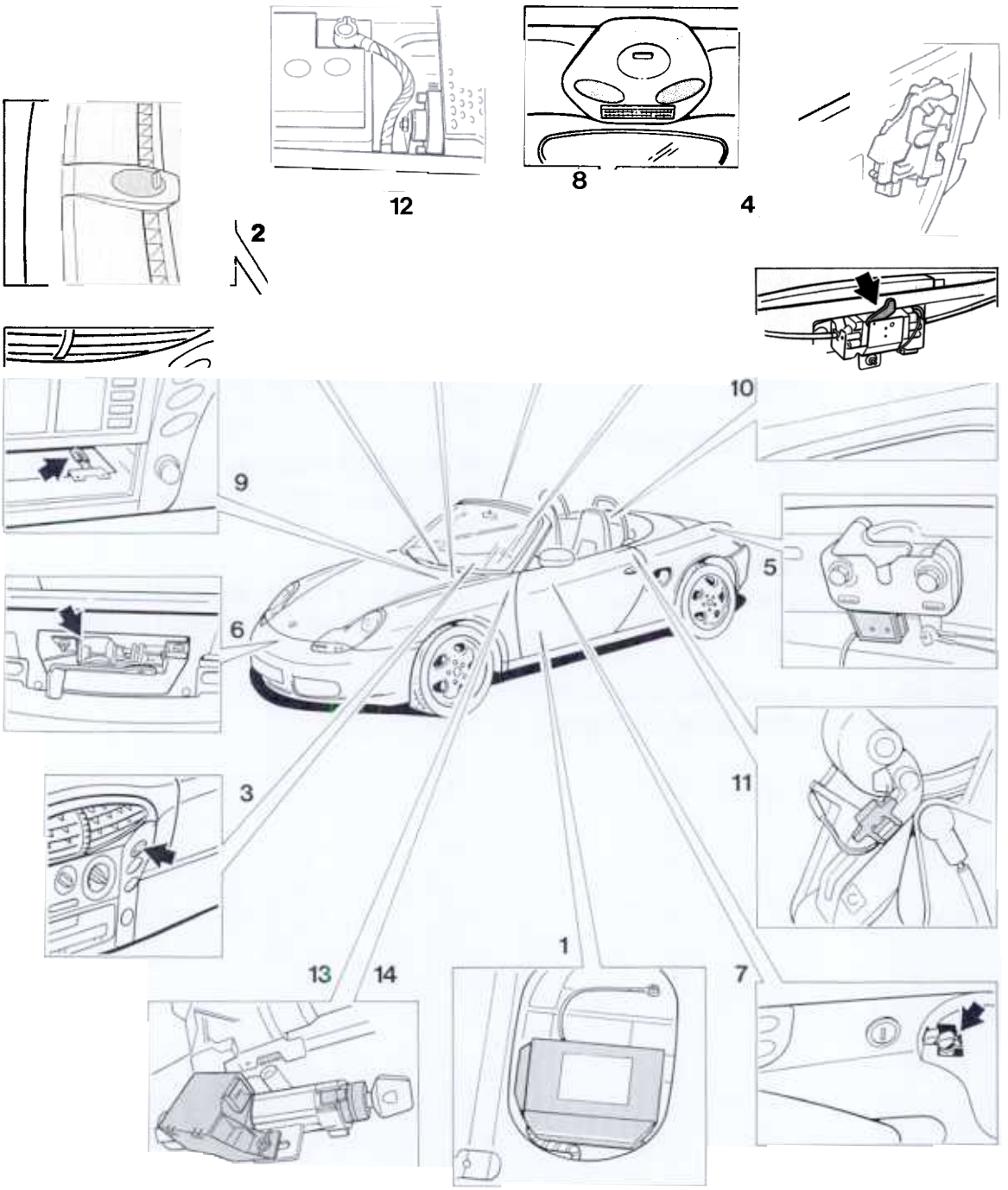
If operating commands are simultaneously present from the radio remote control and the door lock barrels, the signal recognized first has priority.


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## Component arrangement






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## Function, individual components

### 1. Control unit

Processes the incoming signals and, if necessary, triggers an alarm.

### 2. Alarm readiness light

Function 1
Display of the locking state.

Function 2
Display of the operating state of the alarm system.

Six display types are possible:

Normal flashing (0.5 Hz)

Double flashing (0.5 Hz)

Rapid flashing (2.0 Hz)

Rapid flashing (10.0 Hz)

On

Off

### 3. Central locking button

The doors can be locked and unlocked with the central locking button.

### 4. Door lock module

The door lock modules (driver's/passenger's door) each contain 5 microswitches:

1 switch for priming the system (ground pulse).

1 switch for deactivating the system (ground pulse).

1 switch for recognizing door closed.

1 switch for recognizing door locked.

1 switch for recognizing door secured.

### 5. Switch, luggage compartment lid, rear

The switch connects ground to the control unit.

### 6. Switch, luggage compartment lid, front

The switch connects ground to the control unit.

### 7. Switch, oddments tray

The switch connects ground to the control unit when the oddments tray is opened.


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### 8. Passenger compartment monitoring sensor

The passenger compartment monitoring sensor connects ground to the control unit when movement is detected in the vehicle.

### 9. Alarm contact, radio

The alarm contact on the radio mounting frame connects ground to the control unit when the radio is removed from the frame.

### 10. Switch, convertible top compartment cover

The switch connects ground to the control unit.

### 11. Switch, convertible top closed

The switch connects ground to the control unit.

### 12. Alarm horn

In the event of an alarm, the horn is supplied with positive potential by the control unit.

**Note**

If the positive supply for the alarm horn is interrupted, the visual alarm is triggered via the direction indicator lights and the interior lights.

### 13. Signal converter

The signal converter obtains the transponder code from the signals sent by the transponder, and then sends this code on to the alarm control unit.

### 14. Transponder coil

The transponder coil reads the transponder code out of the transponder.



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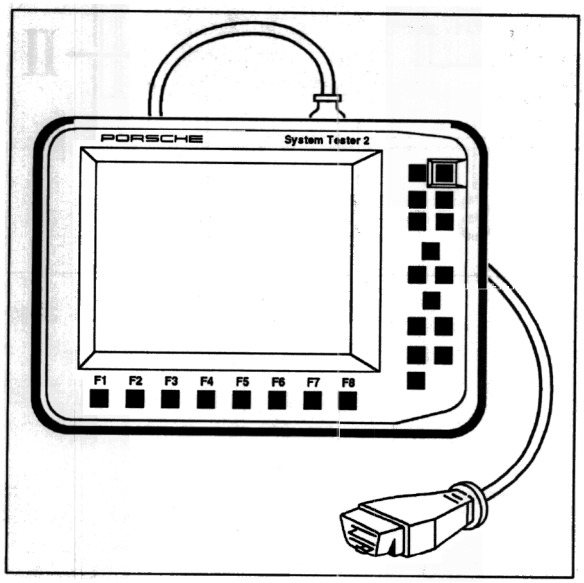
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## Tools

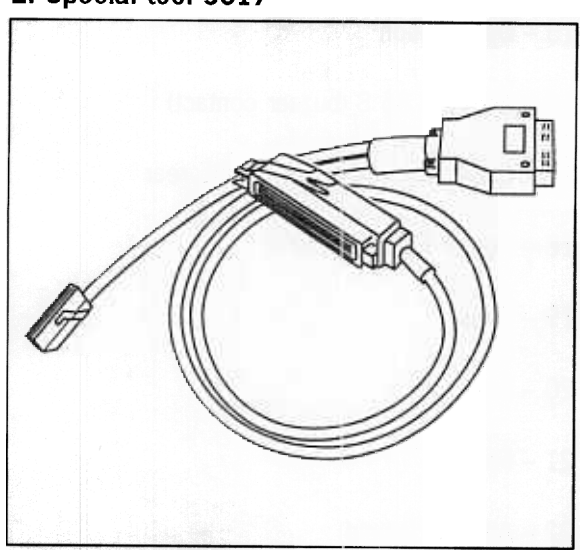
The following equipment is required for troubleshooting:

### 1. Porsche System Tester 2




547_96

### 2. Special tool 9617



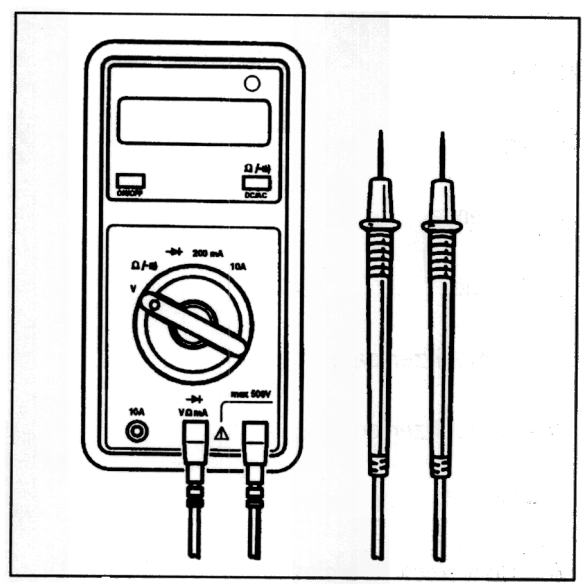
498_97

**Note**

Use special tool 9617 in combination with special tool 9616.

Special tool 9617 is required because miniature contacts are used on plug I. So as not to damage the contacts, the special tool must always be used in tests.
In continuity tests, attach the plug only on the wiring harness.

### 3. Commercially available digital multimeter



2178_28

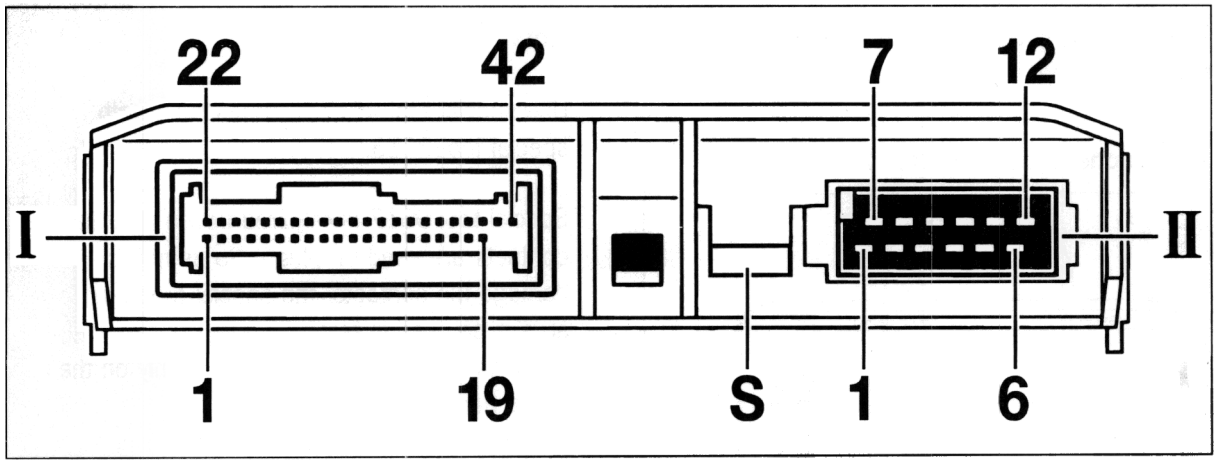


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## Connector assignment, control module




208-96

### Plug

Terminal:

– Antenna

2 – K-lead

3 – Immobilizer data

4 – Immobilizer control

5 – Driver's door secured

6 – Convertible top closed

7 – Driver's door closed

8 – Passenger compartment monitoring on

9 – Convertible top compartment lid

10 – Central locking button open

11 – External input 1

12 – Free

13 – Luggage compartment lid, rear

14 – External input 2

15 – Deactivation

16 – Terminal 86 S (buzzer contact)

17 – Luggage compartment light, rear

18 – Power window control

19 – Free

20 – Free

21 – Free

22 – Antenna (shield)

23 – W-lead



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24 – Passenger compartment monitoring, signal input

25 – Driver's door closed

26 – Oddments tray

27 – Radio contact

28 – Passenger's door secured

29 – Central locking button closed

30 – Driver's door locked

31 – Luggage compartment lid, front

32 – Passenger's door locked

33 – Input, crash sensor

34 – Release, luggage compartment lid, rear

35 – Priming

36 – Terminal 15

37 – Luggage compartment light, front

38 – Free

39 – Alarm readiness light

40 – Comfort, opening

41 – Indicator, door locked

42 – Comfort, closing

**Plug II**

Terminal:

1 – Terminal 31

2 – Positive, alarm horn

3 – Servo motor, central locking system

4 – Load disconnection

5 – Actuator, tank cap

6 – Direction indicator light, left

7 – Terminal 30 input

8 – Terminal 30 output

9 – Servo motor, central locking sytem

10 – Actuator, tank cap

11 – Interior light

12 – Direction indicator light, right


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## Fault memory

### Overview of the possible faults

Door(s) secured and terminal 15 on

Door lock barrel closed, activated longer than 60 s

Door lock barrel open, activated longer than 60 s

Door lock barrel closed
Ground short

Door lock barrel open
Ground short

Door locking cylinder open/closed
Ground short

Button, central locking sytem closed
Positive short

Button, central locking system open positive short

Button, central locking open/closed positive short

Power failure, terminal 30 with active alarm system

Power failure during alarm output

Wrong door lock module

Door on left secured but not locked

Door on right secured but not locked

Control unit faulty

Signal from airbag
Positive short

Signal from airbag
Ground short

Power window control
Ground short

Status line, signal converter
Positive short

Status line, signal converter
Ground short

W-line (DME immobilizer) interruption

Passenger compartment monitoring sensor, ground short

W-line (DME immobilizer) positive short

No terminal 86 S recognized

Variant fault
(new coding required)

Transponder
(re-teaching required)

Passenger compartment monitoring sensor
Positive short or faulty

Passenger compartment monitoring sensor faulty

Signal converter faulty

Signal converter, coil fault



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Transponder pill faulty or not present

Wrong key or wrong transponder pill

Switch, door secured on right

Switch, door secured on left

Servo motor, central locking system
Positive short


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## Fault overview

| Test point | Fault code | Fault effect | Page |
|---|---|---|---|
| | 01 | | 90 - 21 |
| 2 | 02 | | |
| 3 | 03 | | 90 - 22 |
| 4 | 04 | No central locking possible | 90 - 23 |
| 5 | 05 | No central locking possible | 90 - 24 |
| 6 | 06 | No central locking or unlocking possible | 90 - 24 |
| 7 | 07 | Same as test point 4 | 90 - 25 |
| 8 | 08 | Same as test point 5 | 90 - 26 |
| 9 | 09 | Same as test point 6 | 90 - 26 |
| 10 | 10 | Alarm system/central locking system without function | 90 - 27 |
| 11 | 11 | Interruption of alarm output | 90 - 28 |
| 12 | 12 | | 90 - 28 |
| 13 | 13 | | 90 - 28 |
| 14 | 14 | | 90 - 29 |
| 15 | 15 | No function | 90 - 29 |
| 16 | 16 | No unlocking of doors in the event of an accident | 90 - 29 |
| 17 | 17 | Same as test point 16 | 90 - 30 |
| 18 | 18 | Power window control without function | |



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| Test point | Fault code | Fault effect | Page |
|---|---|---|---|
| 19 | 19 | No engine start possible | 90 - 31 |
| 20 | 20 | Same as test point 19 | 90 - 31 |
| 21 | 21 | Same as test point 19 | 90 - 32 |
| 22 | 22 | No passenger compartment monitoring | 90 - 32 |
| 23 | 23 | | 90 - 33 |
| 24 | 24 | No engine start possible | 90 - 33 |
| 25 | 25 | | 90 - 33 |
| 26 | 26 | | 90 - 34 |
| 27 | 27 | | 90 - 34 |
| 28 | 28 | | 90 - 34 |
| 29 | 29 | | 90 - 34 |
| 30 | 30 | | 90 - 34 |
| 31 | 31 | No engine start possible | 90 - 35 |
| 32 | 32 | No passenger compartment monitoring | 90 - 35 |
| 33 | 33 | Same as test point 32 | 90 - 35 |
| 34 | 34 | Same as test point 32 | 90 - 36 |
| 35 | 35 | Same as test point 32 | 90 - 36 |
| 36 | 36 | Same as test point 32 | 90 - 36 |
| 37 | 37 | Same as test point 32 | 90 - 37 |
| 38 | 39 | No engine start possible | 90 - 37 |
| 39 | 40 | Same as test point 38 | 90 - 37 |


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| Test point | Fault code | Fault effect | Page |
|---|---|---|---|
| 40 | 41 | Same as test point 38 | 90 - 38 |
| 4 | 42 | Same as test point 38 | 90 - 38 |
| 42 | 43 | | 90 - 38 |
| 43 | 44 | | 90 - 39 |
| 44 | 45 | No central locking or unlocking possible | 90 - 39 |

**Note**

Frequency counter

When a fault occurs for the first time, the frequency counter is set to 1. At every changeover from not present to present, the counter is increased by 1.


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| Fault, fault code | Possible causes, elimination, notes |
|---|---|

**Note**

After a fault occurs at the alarm system and is remedied, the fault memory **must** be cleared.

## Test point 1

Door(s) secured and terminal 15 on
**Fault code 01**

1. Disconnect plug connection X 11 (driver's side).
2. Check the line from X 11 pin A3 (pin side) to the alarm control unit plug I, pin 5, for continuity.
3. Check the lines from X 11 pin A3 and pin 26 (sleeve side) for continuity.

**Note**

There is another plug connection in the door on the door lock module.

4. Disconnect plug connection X 12 (passenger's side).
5. Check the line from X 12 pin A3 (pin side) to the alarm control unit plug I, pin 28, for continuity.
6. Check the lines from X 12 pin A3 and pin 26 (sleeve side) for continuity.

## Test point 2

Door lock barrel closed, activated longer than 60 s
**Fault code 02**

**Note**

This fault can also be caused by incorrect operation (door lock actuated towards "Closed" direction for longer than 60 seconds).

1. Pull off plug I at the alarm control unit.
2. Disconnect plug connection X 11 (driver's side).
3. Disconnect plug connection X 12 (passenger's side).


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| Fault, fault code | Possible causes, elimination, notes |
|---|---|

4. Check the lines from the alarm control unit plug I, pin 35, to the door lock modules for ground shorts.

   – Ohmmeter at the alarm control unit plug I, pin 35, and ground
   Display: ∞ Ω

5. Check the driver's side door lock module switch contact.

   – Ohmmeter at plug X 11 pin A4 (sleeve side) and ground.
   Door lock not actuated.
   Display: ∞ Ω

   Door lock actuated towards "Closed".
   Display: < 5 Ω

6. Check the passenger's side door lock module switch contact.

   – Ohmmeter at plug X 12 pin A4 (sleeve side) and ground.
   Door lock not actuated.
   Display: ∞ Ω

   Door lock actuated towards "Closed".
   Display: < 5 Ω

**Test point 3**

Door lock barrel open, actuated for longer than 60 s
**Fault code 03**

**Note**

This fault can also be caused by incorrect operation (door lock actuated towards "Open" for longer than 60 seconds).

1. Pull off plug I at the alarm control unit.

2. Disconnect plug connection X 11 (driver's side).

3. Disconnect plug connection X 12 (passenger's side).

4. Check the lines from the alarm control unit plug I pin 15 to the door lock modules for ground shorts.



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|
| | Ohmmeter at alarm control unit plug I pin 15 and ground.<br>Display: ∞ Ω<br><br>5. Check the driver's side door lock module switch contact.<br><br>Ohmmeter at plug connection X 11 pin A6 (sleeve side) and ground.<br>Door lock not actuated.<br>Display: ∞ Ω<br><br>Door lock actuated towards "Open".<br>Display: < 5 Ω<br><br>6. Check passenger's side door lock module switch contact.<br><br>Ohmmeter at plug connection X 12 pin A6 (sleeve side) and ground.<br>Door lock not actuated.<br>Display: ∞ Ω<br><br>Door lock actuated towards "Open".<br>Display: < 5 Ω |
| **Test point 4**<br>Door lock barrel closed<br>Ground short<br>**Fault code 04** | Troubleshooting in accordance with test point 2. |


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| Fault, fault code | Possible causes, elimination, notes |
|---|---|

## Test point 5

Door lock barrel open
Ground short
**Fault code 05**

Troubleshooting in accordance with test point 3

## Test point 6

Door lock barrel open/closed
Ground short
**Fault code 06**

1. Pull off plug I at the alarm control unit.
2. Disconnect plug connection X 11 (driver's side).
3. Disconnect plug connection X 12 (passenger's side).
4. Check the lines from the alarm control unit plug I pin 35 to the door lock modules for ground shorts.

   – Ohmmeter at alarm control unit plug I pin 35 and ground
   Display: ∞ Ω
5. Check driver's side door lock module switch contact.

   – Ohmmeter at plug connection X 11 pin A4 (sleeve side) and ground.
   Door lock not actuated.
   Display: ∞ Ω

   Door lock actuated towards "Closed".
   Display: < 5 Ω
6. Check passenger's side door lock module switch contact.

   – Ohmmeter at plug connection X 12 pin A4 (sleeve side) and ground.
   Door lock not actuated.
   Display: ∞ Ω

   Door lock actuated towards "Closed".
   Display: < 5 Ω



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|

7. Check the lines from the alarm control unit plug I pin 15 to the door lock modules for ground shorts.

   – Ohmmeter on alarm control unit plug I pin 15 and ground.
   Display: ∞ Ω

8. Check driver's side door lock module switch contact.

   – Ohmmeter at plug connection X 11 pin A6 (sleeve side) and ground.
   Door lock not actuated.
   Display: ∞ Ω

   Door lock actuated towards "Open".
   Display: < 5 Ω

9. Check passenger's side door lock module switch contact.

   – Ohmmeter at plug connection X 12 pin A6 (sleeve side) and ground.
   Door lock not actuated.
   Display: ∞ Ω

   Door lock actuated towards "Open".
   Display: < 5 Ω

**Test point 7**

Button, central locking system closed
Positive short
**Fault code 07**

1. Pull off plug I at the alarm control unit.

2. Check the central locking button.

   – Voltmeter at plug I pin 29 and ground.
   Central locking button not actuated.
   Display: 0 V

   Central locking button actuated towards "Closed".
   Display: Battery voltage.


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| Fault, fault code | Possible causes, elimination, notes |
|---|---|
| | 3. Disconnect the plug connection at the central locking button.<br>4. Check the line from the alarm control unit to the central locking button for positive shorts.<br>– Voltmeter at plug I pin 29 and ground.<br>Display: 0 V |
| **Test point 8**<br>Button, central locking system open<br>Positive short<br>**Fault code 08** | 1. Pull off plug I at the alarm control unit.<br>2. Check central locking button.<br>– Voltmeter at plug I pin 10 and ground.<br>Central locking button not actuated.<br>Display: 0 V<br><br>Central locking button actuated towards "Open".<br>Display: Battery voltage<br>3. Disconnect plug connection at the central locking button.<br>4. Check the line from the alarm control unit to the central locking button for positive shorts.<br>– Voltmeter at plug I pin 10 and ground.<br>Display: 0 V |
| **Test point 9**<br>Button, central locking system open/closed<br>Positive short<br>**Fault code 09** | 1. Pull off plug I at the alarm control unit.<br>2. Check the central locking button. |



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|

Voltmeter at plug I pin 29 and ground.
Central locking button not actuated.
Display: 0 V

Central locking button actuated towards "Closed".
Display: Battery voltage

Voltmeter at plug I pin 10 and ground.
Central locking button not actuated.
Display: 0 V

Central locking button actuated towards "Open'
Display: Battery voltage

3. Disconnect the plug connection on the central locking button.
4. Check the lines from the alarm control unit to the central locking button for positive shorts.

Voltmeter at plug I pin 29 and ground.
Display: 0 V

Voltmeter at plug I pin 10 and ground.
Display: 0 V

## Test point 10

Power failure, terminal 30 with active alarm system
**Fault code 10**

1. Check battery.
2. Check the alarm control unit power supply.

– Voltmeter at alarm control unit plug II pin 1 (negative) and pin 7 (positive).
Display: Battery voltage.

**Note**

The positive line (terminal 30) is fused in the distribution board with an 80 A fuse.


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| Fault, fault code | Possible causes, elimination, notes |
|---|---|

**Test point 11**

Power failure during alarm output
**Fault code 11**

Troubleshooting in accordance with test point 10

**Test point 12**

Wrong door lock module
**Fault code 12**

**Note**

This fault concerns only USA vehicles. USA vehicles do not have the "Door secured" function.

1. Check the driver's side / passenger's side door lock module and, if necessary, replace it with a door lock module for USA vehicles.

**Test point 13**

Left door secured but not locked
**Fault code 13**

1. Pull off plug I on the alarm control unit.
2. Disconnect plug connection X 11 (driver's side).
3. Check the line from the alarm control unit plug I pin 30 to the door lock module for ground shorts.
   - Ohmmeter on alarm control unit plug I pin 30 and ground.
     Display: ∞ Ω
4. Check the driver's side door lock module switch contact.
   - Ohmmeter at plug connection X 11 pin A5 (sleeve side) and ground.
     Door locked
     Display: ∞ Ω

     Door not locked
     Display: < 5 Ω



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|
| **Test point 14**<br>Right door secured but not locked<br>**Fault code 14** | 1. Pull off the plug I at the alarm control unit.<br>2. Disconnect the plug connection X 12 (passenger's side).<br>3. Check the line from the alarm control unit plug I pin 32 to the door lock module for ground shorts.<br>Ohmmeter at alarm control unit plug I pin 32 and ground<br>Display: ∞ Ω<br>4. Check the passenger's side door lock module switch contact.<br>– Ohmmeter at plug connection X 12 pin A5 (sleeve side) and ground.<br>Door locked.<br>Display: ∞ Ω<br>Door not locked.<br>Display: < 5 Ω |
| **Test point 15**<br>Control unit faulty<br>**Fault code 15** | Replace alarm control unit. |
| **Test point 16**<br>Signal from the airbag<br>Positive short<br>**Fault code 16** | 1. Pull off the plug I at the alarm control unit.<br>2. Pull off the DME plug.<br>3. Pull off the airbag control unit plug.<br>4. Voltmeter at alarm control unit plug I pin 33 and ground<br>Display: 0 Volt |


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| Fault, fault code | Possible causes, elimination, notes |
|---|---|

5. If no fault can be found on the wiring harness, reattach the plug on the alarm control unit and on the airbag control unit.
6. Switch on the ignition and clear the fault memory of the alarm system.

   If the fault no longer occurs, the DME control unit is faulty.

   If the fault occurs again, disconnect the plug on the airbag control unit.
7. Clear the fault memory of the alarm system.
   - If the fault no longer occurs, the airbag control unit is faulty.
   - If the fault occurs again, the control unit alarm system is faulty.

**Test point 17**

Signal from airbag
Ground short
**Fault code 17**

1. Pull off plug I on the alarm control unit.
2. Pull off DME plug.
3. Pull off the airbag control unit plug.
4. Voltmeter at alarm control unit plug I pin 33 and positive.
   Display: 0 Volts.
5. If no fault can be detected on the wiring harness, reattach the plug to the alarm control unit and the airbag control unit.
6. Switch on the ignition and clear the fault memory of the alarm system.
   - If the fault no longer occurs, the DME control unit is faulty.
   - If the fault occurs again, detach the plug on the airbag control unit.
7. Clear the fault memory of the airbag system.
   - If the fault no longer occurs, the airbag control unit is faulty.
   - If the fault occurs again, the alarm system control unit is faulty.



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|

## Test point 18

Power window control
Ground short
**Fault code 18**

1. Pull off plug I on the alarm control unit.
2. Pull off plug I on the convertible top control unit.
3. Ohmmeter at plug I alarm control unit pin 18 and ground.
   Display: ∞ Ω

   If display < 5 Ω, check the wiring harness for pinches and chafing damage.

## Test point 19

Status line,
signal converter
Positive short
**Fault code 19**

1. Pull off plug I on the alarm control unit.
2. Pull off the plug on the signal converter for the transponder.
3. Voltmeter at plug I alarm control unit pin 12 and ground.
   Switch on the ignition.
   Display: 0 Volt

   If the battery voltage is displayed, check the wiring harness for pinches and chafing damage.

## Test point 20

Status line,
signal converter
Ground short
**Fault code 20**

1. Pull off plug I on the alarm control unit.
2. Pull off the plug on the signal converter for the transponder.
3. Ohmmeter at plug I alarm control unit pin 12 and ground.
   Display: ∞ Ω

   If display < 5 Ω, check the wiring harness for pinches and chafing damage.


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| Fault, fault code | Possible causes, elimination, notes |
|---|---|

## Test point 21

W-line (DME immobilizer) Interruption
**Fault code 21**

1. Pull off plug I on the alarm control unit.
2. Pull off the DME plug.
3. Ohmmeter at plug alarm control unit pin 23, and DME plug pin 88.
   Display: < 5 Ω

**Note**

The line runs via plug connection X 3/1 pin 14

4. Ohmmeter at plug I alarm control unit pin 23 and ground.
   Display: ∞ Ω
5. Voltmeter at plug I alarm control unit pin 23 and ground.
   Switch on the ignition.
   Display: 0 Volt

   If no fault can be detected, try replacing the alarm control unit. If the fault is still present, the DME control unit is faulty.

## Test point 22

Passenger compartment monitoring sensor Ground short
**Fault code 22**

1. Pull off plug I on the alarm control unit.
2. Pull off the plug on the passenger compartment monitoring sensor.
3. Ohmmeter at plug I, alarm control unit pin 24, and ground.
   Display: ∞ Ω
   If display < 5 Ω, check the wiring harness for pinches and chafing damage.



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|
| **Test point 23** | |
| W-line (DME immobilizer) Positive short **Fault code 23** | See test point 21, point 5. |
| **Test point 24** | |
| Control unit faulty **Fault code 24** | Replace the control unit. |
| **Test point 25** | |
| No terminal 86 S recognized **Fault code 25** | 1. Check the fuse F 5/1<br>2. Pull off plug I at the alarm control unit.<br>3. Voltmeter at plug I alarm control unit pin 16 and ground. Insert the ignition key into the ignition lock. Display: Battery voltage<br>4. Pull off the plug on the ignition lock.<br>5. Ohmmeter at ignition lock connector pin 86 S and plug alarm control unit pin 16. Display: < 5 Ω<br>6. If no fault is detected, replace the electrical contact part of the ignition lock. |



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|
| **Test point 26** | |
| Variant fault (new coding required)<br>**Fault code 26** | Recode equipment variant. |
| **Test point 27** | |
| Control unit faulty<br>**Fault code 27** | Replace control unit. |
| **Test point 28** | |
| Control unit faulty<br>**Fault code 28** | Replace control unit. |
| **Test point 29** | |
| Control unit faulty<br>**Fault code 29** | Replace control unit. |
| **Test point 30** | |
| Control unit faulty<br>**Fault code 30** | Replace control unit. |



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|
| **Test point 31**<br>Transponder (re-teaching necessary)<br>**Fault code 31** | Re-teach key. |
| **Test point 32**<br>Passenger compartment monitoring sensor Positive short or faulty<br>**Fault code 32** | 1. Check power supply for passenger compartment monitoring sensor.<br>– Disconnect plug connection to the passsenger compartment monitoring sensor.<br>– Voltmeter at plug connection, passenger compartment sensor monitoring pin 1 (positive) and pin 4 (negative).<br>Display: Battery voltage<br>2. Pull off plug I on the alarm control unit.<br>3. Voltmeter at plug I alarm control unit pin 24 and ground.<br>Display: 0 Volt<br>If the battery voltage is displayed, check the wiring harness for pinches and chafing damage.<br>4. If no fault is detected, replace the alarm control unit. |
| **Test point 33**<br>Passenger compartment monitoring sensor faulty<br>**Fault code 33** | Replace passenger compartment monitoring sensor. |



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|
| **Test point 34**<br>Passenger compartment monitoring sensor<br>Positive short or faulty<br>**Fault code 34** | 1. Pull off plug I on the alarm control unit.<br>2. Pull off the plug at the passenger compartment monitoring sensor.<br>3. Voltmeter at plug I, alarm control unit pin 24, and ground.<br>Switch on ignition.<br>Display: 0 Volt<br>If battery voltage is displayed, check the wiring harness for pinches and chafing damage.<br><br>If no fault is detected in the wiring, replace the passenger compartment monitoring sensor. |
| **Test point 35**<br>Passenger compartment monitoring sensor faulty<br>**Fault code 35** | See test point 34. |
| **Test point 36**<br>Passenger compartment monitoring sensor<br>Positive short or faulty<br>**Fault code 36** | Replace passenger compartment monitoring sensor. |



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|
| **Test point 37** | |
| Passenger compartment monitoring sensor faulty<br>**Fault code 37** | Replace passenger compartment monitoring sensor. |
| **Test point 38** | |
| Signal converter faulty<br>**Fault code 39** | 1. Check the power supply for the signal converter:<br>Disconnect the connector on the signal converter.<br>Voltmeter at plug housing pin 4 (negative) and pin 5 (positive).<br>Ignition key inserted.<br>Display: Battery voltage.<br>2. Check the control line for the signal converter (pin 6) to the alarm control unit plug I pin 4 for continuity, positive short and ground short.<br>3. Check the status line for the signal converter (pin 7) to the alarm control unit plug I pin 12 for continuity, positive short and ground short.<br>4. Check the data line for the signal converter (pin 8) to the alarm control unit plug I pin 3 for continuity, positive short and ground short. |
| **Test point 39** | |
| Signal converter, coil fault<br>**Fault code 40** | Check the transponder coil:<br>– Disconnect the plug on the signal converter.<br>– Ohmmeter at pins 1 and 2<br>Display: 20 - 25 Ω at 20 °C<br>– Ohmmeter at pin 1 and ground<br>Display: ∞ Ω |



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|
| **Test point 40** | |
| Transponder pill faulty or not present<br>**Fault code 41** | 1. Check transponder for presence in the key.<br>2. Replace the transponder. |
| **Test point 41** | |
| Wrong key or wrong transponder pill<br>**Fault code 42** | 1. Check transponder for presence in the key.<br>2. Wrong transponder – not adapted to the vehicle – teach the transponder. |
| **Test point 42** | |
| Switch, door secured on right<br>**Fault code 43** | 1. Disconnect plug connection X 12 (passenger's side).<br>2. Ohmmeter at pin 26 (sleeve side) and pin A3.<br>Display: < 5 Ω<br>Note<br>There is another plug connection in the door on the door lock module.<br>If no fault is found, test directly on the door lock module between pins 3 and 7. |



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|

## Test point 43

Switch, door secured on left
**Fault code 44**

1. Disconnect plug connection X 11 (driver's side).
2. Ohmmeter at pin 26 (sleeve side) and pin A3.
   Display: < 5 Ω

**Note**

There is another plug connection in the door on the door lock module.

If no fault is found, test directly on the door lock module between pins 3 and 7.

## Test point 44

Servo motor, central locking system
Positive short
**Fault code 45**

1. Pull off plug II at the alarm control unit.
2. Disconnect plug connection X 11 (driver's side).
3. Disconnect plug connection X 12 (passenger's side).
4. Switch on the ignition.
5. Voltmeter at plug II pin 9 and ground.
   Display: 0 Volt
6. Voltmeter at plug II pin 3 and ground.
   Display: 0 Volt
7. Switch off the ignition.
8. Ohmmeter at plug connection X 11 pin 19 and pin 20 (sleeve side).
   Display: 5 - 7 Ω at 20 °C
9. Ohmmeter at plug connection X 12 pin 19 and pin 20 (sleeve side).
   Display: 5 - 7 Ω at 20 °C


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## Event memory

The event memory stores the contact or triggering type that triggered the alarm. The priming type is also saved at the same time.

A maximum of 10 events can be saved. If another event is added, the oldest one is deleted. The event with the highest number is the most current one.

An alarm can be triggered by the following components:

- Door contact, driver
- Door contact, passenger
- Central locking contact "locked", driver
- Central locking contact "locked", passenger
- Luggage compartment lid, front
- Luggage compartment lid, rear
- Radio contact
- External switch contact 1
- External switch contact 2
- Oddments tray
- Switch, convertible top
- Switch, convertible top compartment cover
- Alarm horn
- Passenger compartment monitoring
- Terminal 15 on

**Note**

A maximum of 3 alarm triggering events are possible via the passenger compartment monitoring system and the external switch contacts.

With the priming type, a distinction is made between:

- Locked via lock
- Emergency-locked
- Locked via radio
- Self-primed
- System test
- Primed after battery connection
- Secured via lock
- Secured via radio



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## Status memory, alarm inputs

The alarm-triggering components that are in the non-active state during priming and that are therefore blocked for alarm triggering are stored in the status memory Alarm Inputs. The priming type is saved simultaneously.


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## Status memory, switch inputs

The states of the switch inputs during the last priming operation are saved in the Switch Inputs status memory.

The following switch inputs are displayed:

- Driver's side secured
- Passenger's side secured
- Driver's side locked
- Passenger's side locked
- Door contact, driver's side
- Door contact, passenger's side
- Door lock barrel (open)
- Door lock barrel (closed)
- Button, central locking system (open)
- Button, central locking system (closed)
- Terminal 86 S
- Terminal 15
- Immobilizer deactivated
- Crash input
- Luggage compartment, front
- Luggage compartment, rear
- Convertible top/sunroof
- Oddments tray
- Convertible top compartment cover
- External input 1
- External input 2
- Radio contact
- Alarm horn
- Radio transmitter: Button 1
- Radio transmitter: Button 2



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## Actuators

With this menu item, it is possible to control actuators of the alarm system with the Porsche System Tester 2. This enables the function of the actuators to be assessed very quickly.

The following drive links can be actuated:

Comfort closing

Comfort opening

Power window control

Indicator, door locked

Locking closed

Locking open

Tank cap closed

Tank cap open

Interior light

Load disconnection

Luggage compartment, rear

Function indicator

Control, external output

Alarm horn

Direction indicator lights, left/right


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## Switch inputs

This menu item enables switch inputs of the alarm system to be read in by the Porsche System Tester 2. This allows the function of the switch inputs to be assessed very quickly.

The following switch inputs can be read in:

Driver's side secured

Passenger's side secured

Driver's side locked

Passenger's side locked

Door contact, driver's side

Door contact, passenger's side

Door lock barrel (open)

Door lock barrel (closed)

Button, central locking system (open)

Button, central locking system (closed)

Terminal 86 S

Terminal 15

Immobilizer deactivated

Crash input

Luggage compartment, front

Luggage compartment, rear

Convertible top/sunroof

Oddments tray

Convertible top compartment cover

External input 1

External input 2

Radio contact

Alarm horn

Radio transmitter: Button 1

Radio transmitter: Button 2



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## Country coding

With the Porsche System Tester 2, it is possible to code four defined alarm variants.

1. Country group 1
2. Country group 2
3. Country group 3
4. Country group 4

### Alarm output

#### Country group 1

Alarm horn, maximum 30 seconds interval.

Direction indicator lights, maximum 5 minutes interval.

The interior lights flash asynchronously with the direction indicator lights (if in door contact position).

#### Country group 2

Alarm horn maximum 30 seconds continuous tone.

#### Country group 3

Alarm horn maximum 4 minutes interval.

Direction indicator lights maximum 4 minutes interval.

The interior lights flash asynchronously with the direction indicator lights (if in door contact position).

#### Country group 4

Alarm horn maximum 30 seconds interval.

Direction indicator lights maximum 5 minutes interval.

The interior lights flash asynchronously with the direction indicator lights (if in door contact position).

#### Note

If the alarm system is coded to country group 4, deactivation is possible only via the radio remote control **and** the transponder signal.

The entry delay after opening the door is 10 seconds.


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## System test

### Alarm inputs

All alarm-triggering components (except for terminal 15) can be checked under menu item System test/alarm inputs, whereby the alarm horn is actuated only briefly.

### Passenger compartment monitoring

The function of the passenger compartment monitoring sensor can be checked under menu item System test/passenger compartment monitoring. This involves brief actuation of the alarm horn.

### Note

The event memory must be cleared after the system test, since the test is saved in the event memory.



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## Learning functions

### Immobilizer

The immobilizer code can be entered under menu item Learning functions/immobilizer after the alarm control unit is replaced.

### Note

The immobilizer code cannot be deleted or changed again.

### Transponder key

A new transponder can be adapted to the vehicle under menu item Learning functions/transponder key.

### Remote control

A new remote control can be adapted for the vehicle under menu item Learning functions/remote control.


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90 25 Diagnosis/Troubleshooting, instrument cluster

# Diagnosis/Troubleshooting

# Instrument cluster

# System K 0X



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## Contents overview


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## Introduction

The manual contains the diagnosis for the following system:

Instrument cluster

## Electrical power supply – general

### Work instructions after disconnecting the battery

Effects of disconnection or total discharge of the battery on electrical systems in the vehicle, subsequent measures:

- Never disconnect battery with engine running.
- Never start engine without securely connected battery.
- Never use a boost charger to start the engine.
- Whenever possible, use jump leads with overvoltage protection.
- Plug connectors of control modules or other electronic components must never be connected or disconnected with the ignition switched on. Exception: vehicles with the additional equipment M 536 (alarm siren with tilt sensor).

### Note concerning M 536

In order to avoid triggering the alarm siren (installed on right next to the battery) of vehicles with M 536, terminal 86S of the battery must be disconnected with the ignition on (all loads must be switched off beforehand).

### Instrument cluster

The trip counter is set to 0 when the power supply is disconnected.

### Clock

Depending on the software version, the clock is set to 12:00 a.m. or 1:00 a.m. when the power supply is disconnected.

### Remedy

Enter the current time again.

### On-board computer

Disconnection of the vehicle battery deletes the memories for average speed and average consumption. As a result, the displayed range on remaining fuel can be markedly different or even 0. The outside temperature indicator loses its memory effect. In other words, the indicated outside temperature can be too high due to the heat radiated when the vehicle is hot.


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**Radio**

The radio reverts to the *Code* function when the battery is disconnected and is thus no longer ready for operation.

**Remedy**

Input the radio code. If the code card is unavailable, the radio code can be read from the DME control module (under "Vehicle data"). This code is also available from the Porsche IPAS.

**PCM**

- The PCM reverts to the *Code* function when the battery is disconnected and is thus no longer ready for operation.

  When the power supply is disconnected, the built-in GPS receiver loses the so-called *almanac* containing the satellite orbital paths.

  The date and time are no longer shown on the display after the power supply is disconnected.

  If the telephone card was inserted and the telephone was ready for operation, the telephone is subsequently disabled.

**Remedy**

Input the PCM code. If the code card is unavailable, the PCM code can also be read from the DME control module (under "Vehicle data"). This code is also available from the Porsche IPAS.

Switch on the PCM with a free panoramic view for approx. 20 minutes (to load GPS almanac).

The date and time are also adopted once the GPS almanac has been loaded; it may be necessary to change over to summer time (daylight-saving time). This time is transferred to the instrument cluster. If the time is then manually changed by means of the instrument cluster, this time is adopted by the PCM and synchronised with GPS time.

The stored stations are displayed again when station buttons 1 to 6 are pressed.

The telephone is enabled again when the telephone PIN code is entered with the SIM telephone card inserted.



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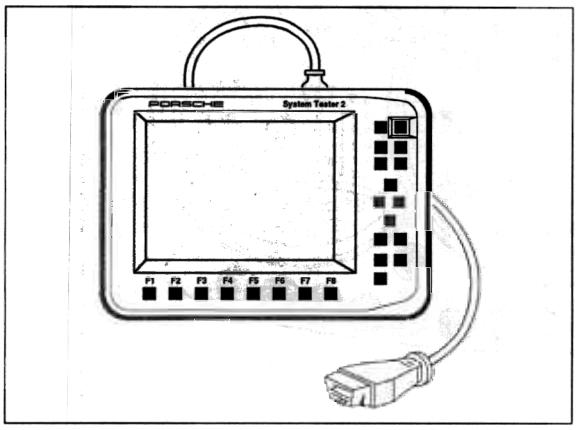
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## 2. Tools

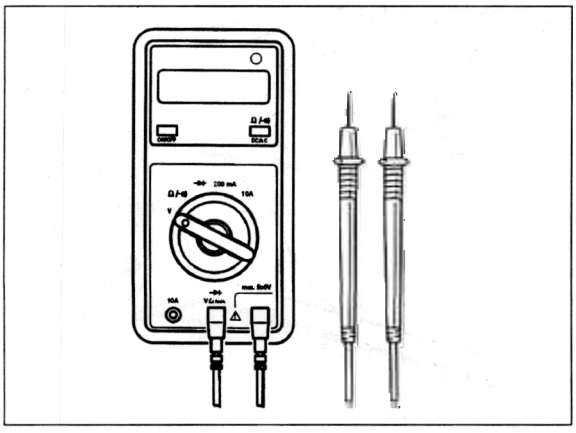
The following testers are required for vehicle diagnosis:

**Porsche System Tester 2 (PST 2)**



547_96

**Commercially available digital multimeter**



2178_28

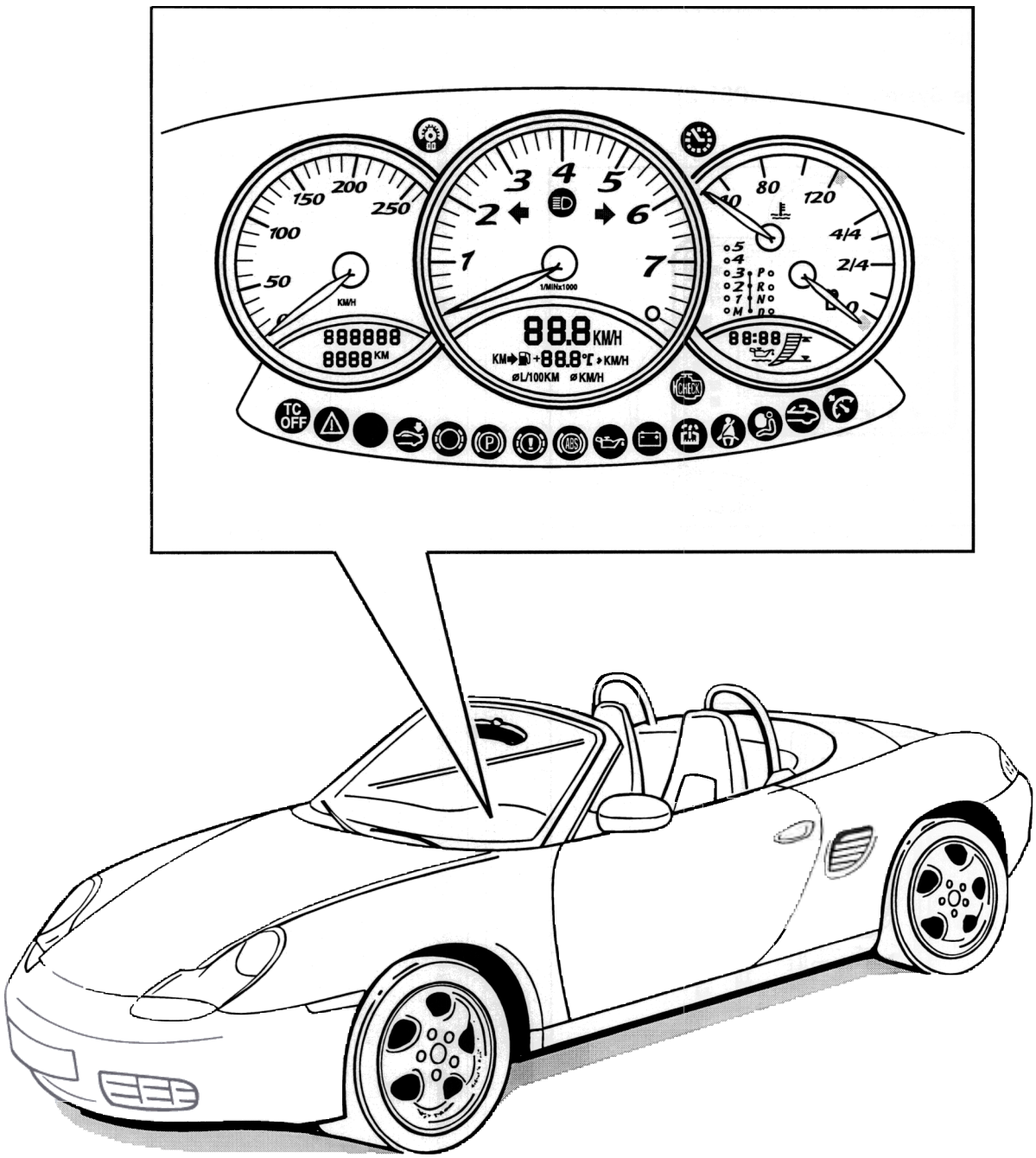


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## 3. Component arrangement



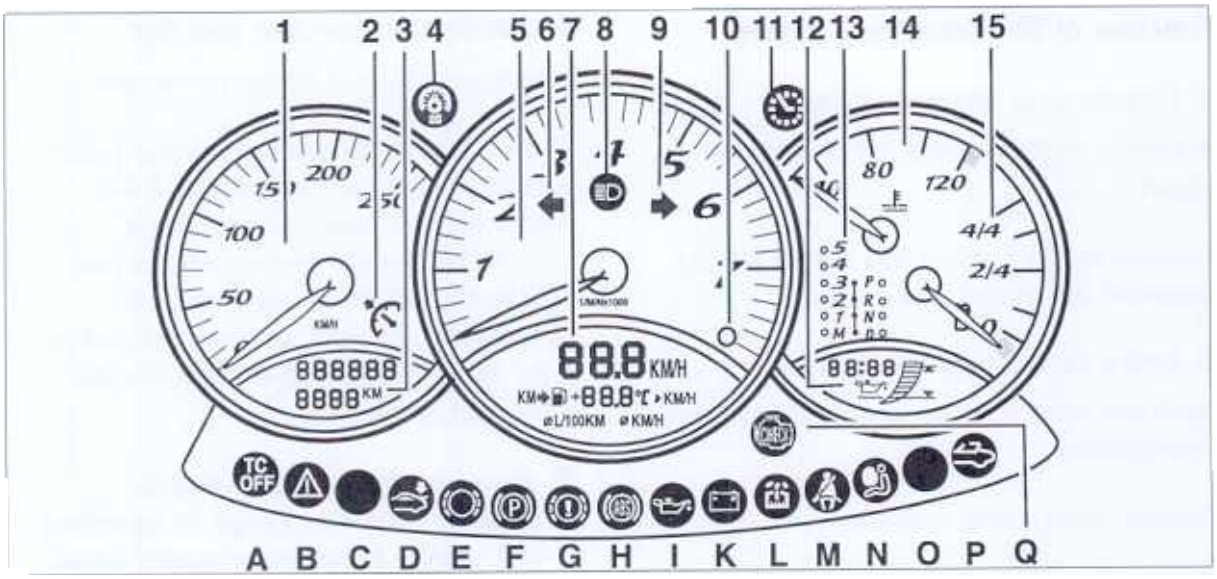

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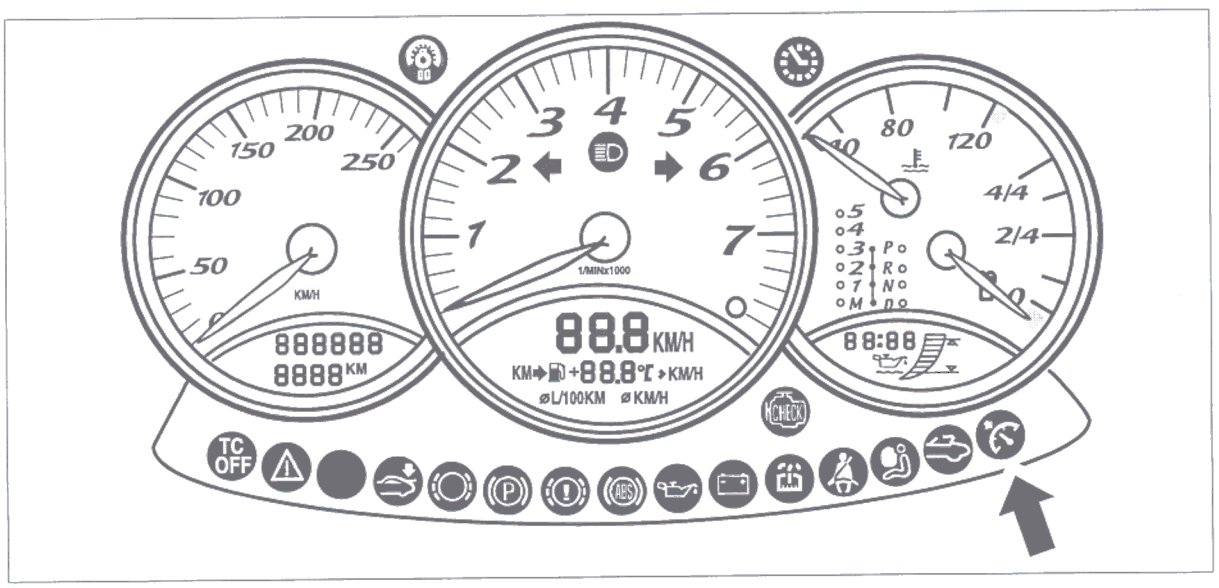
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90250006




*Arrangement of the cruise control indicator light, Boxster S*

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## Function of the instrument panels

### 1. Speedometer with analog display

Installation position: outside left of instrument cluster

Electrical signals from the ABS and the ASR are converted and emitted analogously.

### 2. Cruise control indicator light

Installation position: in the speedometer dial with analog display

Displays cruise control readiness.

### 3. Odometer/trip counter

Installation position: in the speedometer dial with analog display

Electrical signals from the ABS and the ASR are converted to speeds which are then converted to distances and are displayed as kilometres travelled on the odometer or trip counter.

### 4. Individual button for instrument illumination and trip counter

Installation position: Between analog speedometer and tachometer

The individual button can be used to dim the instrument and switch brightness by hand when the vehicle lighting is switched on, and to reset the trip counter to zero.

### 5. Tachometer

Installation position: in the centre of the instrument cluster

Electrical signals from the DME are converted and emitted analogously via the tachometer.

### 6. Left direction indicator pilot light

Installation position: in the tachometer dial

Flashes on when the direction indicator switch activates the left direction indicator. It also flashes when the hazard warning light is switched on. The left direction indicator pilot light flashes with the same rhythm as the direction indicator lights which are switched on. If the rhythm deviates, the direction indicator lights must be checked.

### 7. Speedometer with digital display; on-board computer (range on remaining fuel, outside temperature, speed signal (gong), average consumption, average speed)

Installation position: beneath the tachometer

Speedometer: electrical signals from the ABS and the ASR are converted and emitted digitally.

On-board computer: the on-board computer calculates the range on remaining fuel, average speed/consumption and outside temperature from the current fuel capacity levels, the current speed/acceleration and the outside temperature sensor. The individual functions can be checked by operating the lever on the steering column.



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### 8. High beam headlight indicator light

Installation position: upper half of the tachometer

The indicator light lights up if the high beam headlight is switched on or the headlight flasher is actuated.

### 9. Right direction indicator pilot light

Installation position: in the tachometer dial

Flashes on when the direction indicator switch activates the right direction indicator. It also flashes when the hazard warning light is switched on. The right direction indicator pilot light flashes with the same rhythm as the direction indicator lights which are switched on. If the rhythm deviates, the direction indicator lights must be checked.

### 10. Light sensor for instrument illumination

Installation position: on the right beneath the rpm band in the tachometer

Illumination of the instruments is adapted automatically according to the surrounding brightness via the light sensor.

### 11. Individual button for clock and display setting

Installation position: between tachometer and cooling system temperature display

The individual button is used to set the time in the display beneath the Tiptronic display. Additionally, the individual button can be used to switch between kilometres and miles for the speed and odometer.

### 12. Clock, engine oil level display

Installation position: beneath the fuel display

When the ignition is switched on, the time display temporarily changes into standby mode for the oil level measurement.

### 13. Tiptronic display

Installation position: beside the tachometer on the right

The engaged selector level positions are displayed. In the selector lever positions "M" and "D", the gears presently engaged are also displayed.

### 14. Cooling system temperature display, warning light

Installation position: beside the tachometer and above the Tiptronic display
Signals from the temperature sensor are converted and the temperature display shows the current "engine temperature". The warning light lights up if the coolant temperature is too high. The warning light also flashes if the coolant level is too low or the engine-compartment blower is not functioning.

### 15. Fuel level display, warning light

Installation position: on the right beside the Tiptronic display

Electrical signals from the fuel level sensor are converted and the display shows an almost correct value for the current fuel level in the tank. The warning light lights if the fuel level is too low.


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## Function of the warning lights/indicator lights

### A] Traction Control warning light

Lights up as a check when the ignition is switched on together with the rocker switch. During the journey, the warning light shows that the driving stability control is switched off. It also lights up if the Traction Control is faulty.

### B] Traction Control

Lights up as a check when the ignition is switched on. When driving, the information light displays a control process, even when driving stability control is switched off.

### C] Extending rear spoiler warning light

Lights up as a check when the ignition is switched on and goes out after the vehicle moves off. The warning light lights up when driving if the spoiler does not extend or reach its end position above 120 km/h.

### D] Brake pad wear warning light

Lights up as a check when the ignition is switched on. Lights up when driving if the wear limit of the brake pads is reached.

### E] Parking brake warning light

Lights when the parking brake is engaged and goes out when the parking brake is completely released.

### F] Brake fluid level warning light

Lights up if the brake fluid level is too low and – in connection with a longer pedal travel – if the break circuit fails.

### G] ABS warning light

Lights up as a check when the ignition is switched on. If the light lights up with the engine running, the ABS has switched off due to a fault.

### H] Engine oil pressure warning light

Lights up as a check when the ignition is switched on. If it lights up with the engine running, stop the vehicle immediately and switch off the engine. Either the oil level is too low or there is a danger of engine damage.

### I] Battery warning light

Lights up as a check when the ignition is switched on. If it lights up with the engine running, stop the vehicle immediately and switch off the engine. The cause can be a fault in the battery charging device and/or a torn drive belt.

### K] Washer fluid level warning light

Lights up as a check when the ignition is switched on. Lights up at a remaining quantity of 0.5 l.

### L] Seat belt warning light

Lights up when the ignition is switched on until the buckle of the seat belt is inserted into the belt buckle.

### M] Airbag warning light

Lights up as a check when the ignition is switched on. If it lights with the engine running, there is a fault in the airbag system. The warning light flashes for 10 seconds when the ignition is switched on if a child restraint system is detected on the passenger side or if the airbag has been switched off by a child restraint system.



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**N] Convertible top warning light**

Lights up as a check when the ignition is switched on. If the warning light lights up with the engine running, the convertible top is not correctly closed / opened. If the warning light does not go out in the end position, a fault could be present or it may be necessary to adjust the convertible top.

**O] Emission control warning light**

Lights up as a check when the ignition is switched on and goes out approx. 4 seconds after the engine is started. Displays faults by flashing or lighting up permanently and stores these faults in the fault memory of the control module.


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## System description

The instrument cluster has two basic functions. It provides the driver with information and it also reports faults and malfunctions in the vehicle system.

The information includes visual display of the speed via the analog and digital speedometer, analog display of the engine speed as well as information about the coolant temperature and tank status. The right digital display in the instrument cluster shows the time, and displays the engine oil level when the ignition is switched on. In addition, a visual display shows which gear or which transmission range the transmission is in, and also displays cruise control readiness.
In connection with an on-board computer (optional), the average speed, average consumption, range on remaining fuel, outside temperature and a speed signal can be output via the instrument cluster.

Messages regarding faults or malfunctions can be divided into acoustic and visual warning signals.
Visual warning signals include the warning and indicator lights. These show whether faults have occurred related to the brake system (ABS, brake pad wear, brake fluid level, parking brake), Traction Control, the safety of persons (airbag, seat belt), battery charging, emission control, the convertible top and roll-over protection system. They also give warnings for critical fluid circumstances (tank status, coolant temperature, washer fluid level, oil pressure).
The acoustic warning signals signalise that the key has been left in position or that the light is on although the engine is switched off. Additionally, a speed signal can be activated which emits a warning tone if a certain speed - determined by the user - is reached or exceeded. A warning signal is also emitted if the seat belt has not been put on yet. One other variable warning signal can also be programmed (e.g. warning tone for parking aid).

The warning lights go out after different intervals when the ignition is switched on.
The convertible top warning light goes out approx. 5 seconds after switching on the ignition. The warning lights for brake pad wear, brake fluid level, parking brake, washer fluid level, tank and temperature go out after a further 30 seconds approximately. The warning light for the gurney flap goes out after the vehicle moves off. The remaining warning lights go out after the engine is started.

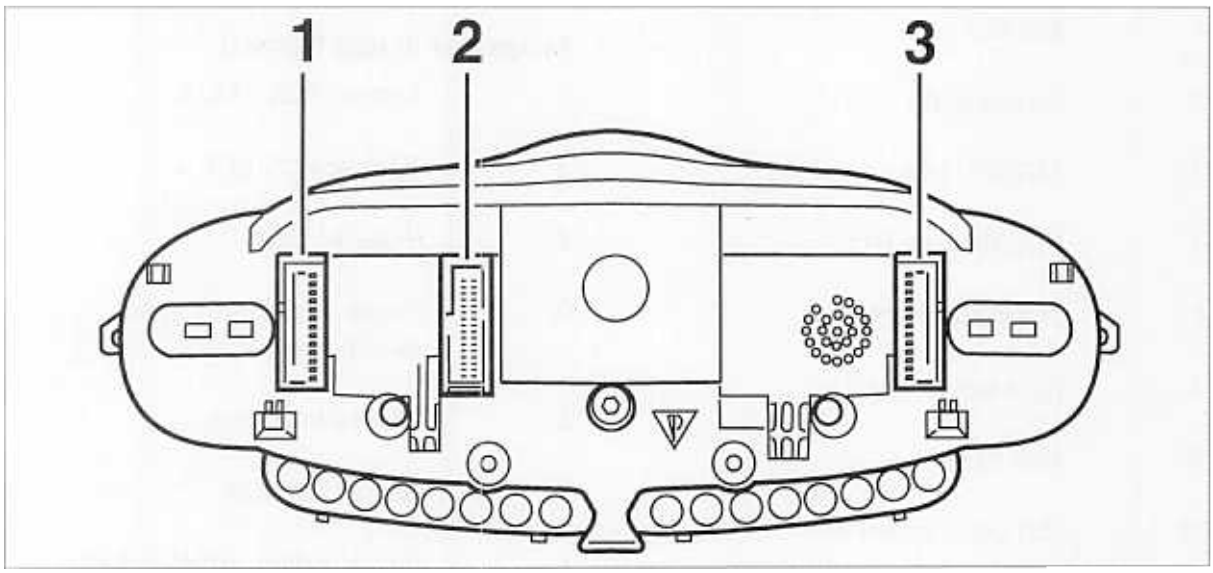


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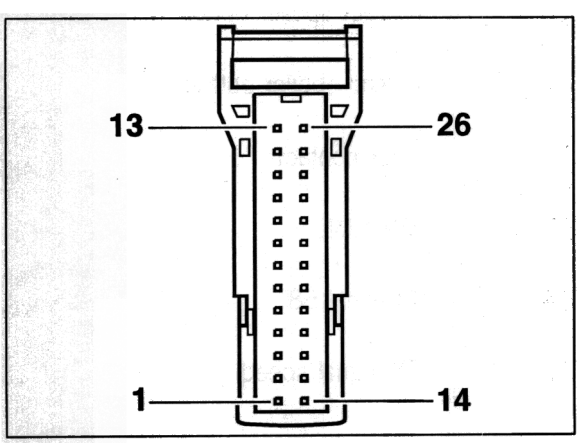
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## Connector assignment, control module




90250002




*Connectors on instrument cluster* 90250003

Three colour-coded 26-pole connectors are connected to the instrument cluster.



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**Assignment of plug I (blue)**

| Pin | Designation |
|---|---|
| | ABS-SILA |
| 2 | Parking brake |
| 3 | ASR/ABO Info |
| 4 | ASR/ABO-SILA (TC) |
| 6 | Left indicator light |
| 7 | Right indicator light |
| 8 | High beam |
| 10 | LED dim, terminal 58d |
| 11 | Bulb dim, terminal 58d |
| 12 | Extend spoiler relay |
| 13 | Speedometer A |
| 16 | Cruise control |
| 17 | Outside temperature |
| 18 | Coolant temperature |
| 19 | Oil level |
| 20 | Fuel level sensor |
| 21 | K diagnosis |
| 22 | Tank status |
| 23 | Brake pad wear |
| 24 | Analog ground |
| 25 | Retract spoiler relay |
| 26 | Engine run signal |

**Assignment of plug II (white)**

| | |
|---|---|
| 2 | Tiptronic POS. LTG. 4 |
| 3 | Tiptronic POS. LTG. 3 |
| 4 | Brake fluid level |
| 5 | Engine compartment blower coolant level switch |
| 6 | Oil pressure switch |
| 7 | Washer fluid level |
| 8 | Central locking system locked |
| 9 | Spoiler extended check |
| 10 | Retract spoiler button |
| 11 | Extend spoiler button |
| 12 | Door contact |
| 13 | KVA DME |
| 14 | Terminal 58 |
| 15 | TN signal speed |



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| | | | |
|---|---|---|---|
| 16 | HL speed | 16 | Cabrio convertible top |
| 17 | Tiptronic status | 17 | Cruise control |
| 18 | Tiptronic POS. LTG. 1 | 21 | Terminal 31 |
| 19 | Tiptronic POS. LTG. 2 | 23 | Terminal 30 |
| 20 | Top lever | 24 | LED dim, terminal 31d |
| 21 | Bottom lever | 25 | Terminal 15 |
| 22 | Front lever | 26 | Idle period |
| 23 | Battery charge | | |
| 24 | Belt warning | | |
| 25 | Rear lever | | |
| 26 | Spoiler retracted check | | |

**Assignment of plug III (black)**

| | |
|---|---|
| 1 | Key contact, terminal 86s |
| 2 | Check engine |
| 6 | Information system IN |
| 8 | Terminal 31 |
| 9 | ParkAssistent input |
| 10 | Terminal 30 |
| 11 | Information system OUT |
| 12 | Terminal 15 |
| 13 | Brake pad wear + |
| 14 | Airbag |


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## Checking the actual values

In the *Actual values* menu item, the current values of the following parameters can be read out and checked:

### Test point 1

Tiptronic

| | |
|---|---|
| Ignition on | |
| Brake pedal actuated | |
| Engine off | |
| PST2 display | 100% |
| Engine idling | |
| PST2 display | P,R,N: 70% |
| Depends on gear engaged | |
| PST2 display: | |
| D: | |
| 1st gear | 10% |
| 2nd gear | 20% |
| 3rd gear | 30% |
| 4th gear | 40% |
| 5th gear | 50% |
| M: | |
| 1st gear | 15% |
| 2nd gear | 25% |
| 3rd gear | 35% |
| 4th gear | 45% |
| 5th gear | 55% |

See also "Input signals" chapter, Test point 1 and Technical Manual, Diagnosis/troubleshooting, Tiptronic.



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## Test point 2

Vehicle speed

Engine off

PST2 display 0 km/h

Drive vehicle at a constant speed

PST2 display

Tester display approximately equal to actual driving speed in km/h.

**Troubleshooting:**

Switch off ignition

Pull off plug II on the instrument cluster

Switch ignition on

Lift the vehicle

Rotate the rear left wheel by hand

Measure the voltage between plug II pin 16 and ground (AC range)

Voltmeter display > 1 V

If the wheel speed signal is present at the instrument cluster, replace the instrument cluster. If the wheel speed signal is not present at the instrument cluster:

Switch off ignition

Pull plug off the ABS control module

Ohmmeter on instrument cluster plug II pin 16 and ground
Ohmmeter display: ∞ Ω


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Ohmmeter on instrument cluster plug II pin 16 and plug on ABS control module pin 21
Ohmmeter display: < 5 Ω

## Test point 3

Speed

Ignition on

Engine off

PST2 display 0 rpm

Engine idling

PST2 display:

Tester display approximately equal to engine speed in rpm

**Troubleshooting:**

Switch off ignition

Pull off plug II on the instrument cluster

Engine idling

Measure the voltage between instrument cluster plug II pin 15 and ground (AC range)
Voltmeter display: > 1 V

Disconnect plug on DME control module (ME 5.2) or

Disconnect plug IV on DME control module (ME 7.2)

Switch ignition on

Measure the voltage between instrument cluster plug II pin 15 and ground
Voltmeter display: 0 V

Ohmmeter on instrument cluster plug II pin 15 and plug on DME control module (ME 5.2) pin 80 or ME 7.2 plug IV pin 17
Ohmmeter display: < 5 Ω

See also Drive Links chapter, "Tachometer"



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## Test point 4

Supply voltage

Ignition on

Engine off

All loads switched off

PST2 display > 11 V

Examine battery and generator

## Test point 5

Brightness sensor

Engine off

Shine the pocket lamp on the sensor

PST2 display:

Tester display increases to a value of approx. 97% - 100%
Displays darken (dimming takes place slowly).

Brightening of the sensor

PST2 display:

Tester display drops to a value of 0 - 5%
Displays brighten (dimming takes place slowly).

If there is no change in the dimming, the instrument cluster is faulty.


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## Test point 6

Total mileage

Ignition on

Engine off

PST2 display:

Tester display equals the total mileage in km.

Check speed signal. See "Actual values" Test point 2

## Test point 7

Trip mileage

Ignition on

Engine off

Tester display equals the trip mileage in km.

See also Input signals chapter, Test point 18

## Test point 8

Tank content sensor value

Engine off

Tank content greater than 19

PST2 display:

Tester display approximately equal to the sensor value in l.

Check the wire on the instrument cluster plug I pin 22 to the DME control module for open circuit/short to ground.

## Test point 9

Tank content display

Engine off

PST2 display:

Tester display approximately equal to the display in l.

See also Drive links chapter "Fuel level display, warning light"



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## Test point 10

Coolant temperature

Engine off (with engine cold)

PST2 display:

Tester display corresponds to the ambient temperature.

Engine runs at idle speed at operating temperature

PST2 display:

Tester display corresponds to the coolant temperature of 80 °C...100 °C.

**Troubleshooting:**

Resistance values:

Switch off ignition

Disconnect plug connection X3/1

Ohmmeter on pin 29 and pin 30 on the sleeve side
Ohmmeter display at 20 °C: approx. 1 KΩ

Switch ignition on

Measure voltage at plug connection X3/1 pin 29 and pin 30 on pin side
Voltmeter display: approx. 5 V

Switch off ignition


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Reconnect plug connection X3/1

Remove connector of temperature sensor

Pull off plugs I and II on the instrument cluster

Switch ignition on

Measure the voltage between instrument cluster plug II pin 5 and ground
Voltmeter display: 0 V

Measure the voltage between instrument cluster plug I pin 24 and ground
Voltmeter display: 0 V

Switch off ignition

Ohmmeter on instrument cluster plug I pin 24 and plug on temperature sensor pin 2
Ohmmeter display: < 5 Ω

Ohmmeter on instrument cluster plug II pin 5 and plug on temperature sensor pin 3
Ohmmeter display: < 5 Ω

See also Input signals chapter, Test point 9, and Drive links chapter "Coolant warning light" and "Coolant temperature"



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## Test point 11

Average consumption

Engine off

Select average consumption with on-board computer selector lever

PST2 display:

Tester display approximately equal to actual average consumption

Switch off ignition

Pull off plug II on the instrument cluster

Disconnect plug on DME control module (ME 5.2) or

Disconnect plug IV on DME control module (ME 7.2)

Switch ignition on

Measure the voltage between instrument cluster plug II pin 13 and ground
Voltmeter display: 0 V

Switch off ignition

Ohmmeter on instrument cluster plug II pin 13 and ground
Ohmmeter display: ∞ Ω

Ohmmeter on instrument cluster plug II pin 13 and plug on DME control module (ME 5.2) pin 83 or

Ohmmeter on instrument cluster plug II pin 13 and on DME control module plug IV pin 33 (ME 7.2)
Ohmmeter display: < 5 Ω



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## Test point 12

Average speed

Engine off

Select average speed with on-board computer selector lever.

PST2 display:

Tester display approximately equals the average speed

See also Actual values chapter, "Speed", Test point 2

## Test point 13

Outside temperature sensor value

Engine off

PST2 display:

Tester display approximately equals the ambient temperature

**Troubleshooting:**

Warm sensor with fingers and observe the increase in temperature on PST2. If no change in temperature is determined or displayed:

Disconnect outside temperature sensor

Switch ignition on

Measure the voltage at the outside temperature plug pin 1 and pin 2
Voltmeter display: approx. 4.5 - 5 V

Ohmmeter on pin 1 and pin 2 on the outside temperature sensor
Ohmmeter display at 20 °C: 2.5 - 3 KΩ

Switch off ignition

Pull off plug I on the instrument cluster

Switch ignition on



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Measure the voltage between plug I on outside temperature sensor, pin 1 and ground
Voltmeter display: 0 V

Switch off ignition

Ohmmeter on outside temperature sensor plug pin 2 and ground
Ohmmeter display: < 5 Ω

Ohmmeter on instrument cluster plug I pin 17 and plug on outside temperature sensor pin 1
Ohmmeter display: < 5 Ω

If no fault is established in the wires or on the outside temperature sensor, replace the instrument cluster.

## Test point 14

Outside temperature display

Engine off

PST2 display:

Tester display approximately equals the ambient temperature

See Test point 13

There is a time delay in the PST2 for the temperature increase between sensor value and display.


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## Test point 15

Range on remaining fuel

Engine off

Select range on remaining fuel with on-board computer selector lever

PST2 display:

Tester display equals the remaining value displayed in km.

See also Actual values chapter, "Speed", Test point 2 and "Average consumption", Test point 11



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## Drive links

The following drive links are actuated in the menu item *Drive links*. Their functioning must be checked when doing this.

**Lamp dimming**

Ignition on

Actuate drive link with F5 (On), F6 (Off) and F8 (Stop) keys

Test:

Visual inspection: display dims

If the display does not dim, replace the instrument cluster

**Gear display dimming**

Ignition on

Actuate drive link with F5 (On), F6 (Off) and F8 (Stop) keys

Test:

Visual inspection: display dims

If the display does not dim, replace the instrument cluster

**Display dimming (background)**

Ignition on

Actuate drive link with F5 (On), F6 (Off) and F8 (Stop) keys

Test:

Visual inspection: display dims

If the display does not dim, replace the instrument cluster



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**External dimming**

Ignition on

Actuate drive link with F5 (On), F6 (Off) and F8 (Stop) keys

Test:

Visual inspection: display dims

If the display does not dim, replace the instrument cluster

**Spoiler**

Ignition on

Actuate drive link with F5 (On), F6 (Off) and F8 (Stop) keys

Test:

Visual inspection: spoiler extended / retracted?

If not:

Check fuse D 8

Check "extend spoiler" and "retract spoiler" relays

Pull off relays

Connect ohmmeter to terminals 85 and 86
Ohmmeter display: approx. 75 Ω

Measure voltage between relay carrier pin 5 and ground
Voltmeter display: Battery voltage

Ohmmeter on relay carrier pin 4 and ground
Ohmmeter display: < 5 Ω

Pull plug off the spoiler

Ohmmeter on spoiler plug pin 1 and relay carrier (extend spoiler) pin 3
Ohmmeter display: < 5 Ω



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Ohmmeter on spoiler plug pin 1 and relay carrier (retract spoiler) pin 3
Ohmmeter display: < 5 Ω

Ohmmeter on spoiler plug pin 5 and ground
Ohmmeter display: < 5 Ω

**Tank level warning light**

Ignition on

Actuate drive link with F8 key (Off/On)

Test:

Visual inspection: indicator light flashes

**Brake pad warning light**

Ignition on

Actuate drive link with F8 key (Off/On)

Test:

Visual inspection: indicator light flashes

**Brake fluid warning light**

Ignition on

Actuate drive link with F8 key (Off/On)

Test:

Visual inspection: indicator light flashes

**Coolant warning light**

Ignition on

Actuate drive link with F8 key (Off/On)

Test:

Visual inspection: indicator light flashes


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**Spoiler warning light**

Ignition on

Actuate drive link with F8 key (Off/On)

Test:

Visual inspection: indicator light flashes

**Washer fluid warning light**

Ignition on

Actuate drive link with F8 key (Off/On)

Test:

Visual inspection: indicator light flashes

**Tachometer**

Ignition on

Actuate drive link with F5 (On), F6 (Off) and F8 (Stop) keys

Test:

Visual inspection: the tachometer deflects from zero position to end position (stepper motor check)

**Analog speedometer**

Ignition on

Actuate drive link with F5 (On), F6 (Off) and F8 (Stop) keys

Test:

Visual inspection: the analog speedometer deflects from 0 to 250 km/h (stepper motor check)

**Coolant temperature**

Ignition on

Actuate drive link with F5 (On), F6 (Off) and F8 (Stop) keys

Test:

Visual inspection: the display rises from 40 °C to 120 °C



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**Tank display**

Ignition on

Actuate drive link with F5 (On), F6 (Off) and F8 (Stop) keys

Test:

Visual inspection: the display moves from 1/4 to 4/4

**Display segments**

Ignition on

Actuate drive link with F8 key (Off/On)

Test:

Visual inspection: all display segments are switched on

**Gear display**

Ignition on

Actuate drive link with F8 key (Off/On)

Test:

Visual inspection: gear display illuminated

**Key buzzer**

Ignition on

Actuate drive link with F8 key (Off/On)

Test:

Noise inspection: warning signal emitted

**Light buzzer**

Ignition on

Actuate drive link with F8 key (Off/On)

Test:

Noise inspection: warning signal emitted


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**Variable buzzer (v)**

Ignition on

Actuate drive link with F8 key (Off/On)

Test:

Noise inspection: warning signal emitted

**Speed buzzer**

Ignition on

Actuate drive link with F8 key (Off/On)

Test:

Noise inspection: warning signal emitted

**Belt buzzer (USA)**

Ignition on

Actuate drive link with F8 key (Off/On)

Test:

Noise inspection: warning signal emitted



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## Checking the input signals

### Test point 1

Tiptronic

Ignition on

PST2 display:

Depends on the selector lever position: P, R, N, D

Engine idling

Brake pedal actuated

Selector lever position P, R, N, D, M

PST2 display:

Depends on the selector lever position: P, R, N, D 1, D 2/ M 1, M 2

Drive vehicle

PST2 display:

Depends on the selector lever position: P, R, N, D 1 - 5/ M 1 - 5

See "Actual values" chapter, Test point 1 and Technical Manual, Diagnosis/troubleshooting, Tiptronic.

### Test point 2

Signal, terminal 61

Ignition on

Engine off

PST2 display: not present

Engine idling

PST2 display: present


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Engine idling

Measure voltage between both poles on the battery
Voltmeter display: > 13 V
Check generator in the case of deviations

Switch off ignition

Pull off plug II on the instrument cluster

Switch ignition on

Measure the voltage on the instrument cluster plug II pin 23 and ground
Voltmeter display: 0 V

Engine idling

Measure the voltage on the instrument cluster plug II pin 23 and ground
Voltmeter display: > 13 V

Switch off ignition

Disconnect plug on generator (terminal 61)

Switch ignition on

Measure the voltage on the instrument cluster plug II pin 23 and ground
Voltmeter display: 0 V

Switch off ignition

Ohmmeter on instrument cluster plug II pin 23 and ground
Ohmmeter display: ∞ Ω

Ohmmeter on instrument cluster plug II pin 23 and plug on generator (terminal 61)
Ohmmeter display: < 5 Ω



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## Test point 3

Signal, terminal 15

Ignition on

Engine off

PST2 display: present

Communication with the control module is not possible without terminal 15.

Check fuse B 10

See also "Actual values" chapter, Test point 4

## Test point 4

Terminal 86 S signal

Ignition on

Engine off

PST2 display: present

If not:

Check fuse E1

Switch off ignition

Pull off plug III on the instrument cluster

Switch on terminal 86 S

Measure the voltage between instrument cluster plug III pin 1 and ground
Voltmeter display: battery voltage

If battery voltage is present at plug III pin 1, replace the instrument cluster.


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## Test point 5

Terminal 58 signal (lighting)

Ignition on

Terminal 58 switched off

PST2 display: off

Terminal 58 switched on

PST2 display: on

If "Off" is displayed when terminal 58 is switched on:

Switch off ignition

Pull off plug II on the instrument cluster

Terminal 58 switched on

Measure the voltage between instrument cluster plug II pin 14 and ground

Voltmeter display: battery voltage

## Test point 6

Clock

Ignition on

Clock button not actuated

PST2 display: not actuated

Clock button pressed

PST2 display: actuated

Clock button turned to left

PST2 display: -actuated

Clock button turned to right

PST2 display: +actuated

If the tester displays no signal, the instrument cluster is faulty.



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## Test point 7

Brake pad

Ignition on

Engine off

PST2 display: OK

If not:

Check brake pads on all four brake discs for wear

Switch off ignition

Pull off plug I on the instrument cluster

Pull off plug III on the instrument cluster

Ohmmeter on instrument cluster plug III pin 13 and ground
Ohmmeter display: ∞ Ω

Ohmmeter on instrument cluster plug I pin 23 and plug III pin 13
Ohmmeter display: < 5 Ω

## Test point 8

Brake fluid level

Ignition on

Engine off

PST2 display: OK

If not:

Check brake fluid level in brake fluid reservoir

Switch off ignition

Pull off plug II on the instrument cluster

Pull off plug on brake fluid reservoir


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Ohmmeter on instrument cluster plug II pin 4 and plug on brake fluid reservoir
Ohmmeter display: < 5 Ω

Ohmmeter on brake fluid reservoir plug pin 2 and ground
Ohmmeter display: < 5 Ω

Ohmmeter on instrument cluster plug II pin 4 and ground, level switch not actuated
Ohmmeter display: ∞ Ω

Ohmmeter on instrument cluster plug II pin 4 and ground, level switch actuated
Ohmmeter display: < 5 Ω

**Test point 9**

Coolant level

Ignition on

Engine off

PST2 display: OK

If not:

Check coolant level in reservoir

Switch off ignition

Pull off plug II on the instrument cluster

Pull off plug on sensor for coolant level display

Ohmmeter on instrument cluster plug II pin 5 and ground
Ohmmeter display: ∞ Ω

Ohmmeter on instrument cluster plug II pin 5 and plug on reservoir pin 1
Ohmmeter display: < 5 Ω



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Ohmmeter on reservoir plug pin 2 and ground
Ohmmeter display: < 5 Ω

See also Drive links chapter "Coolant warning light "and "Coolant temperature"

## Test point 10

Oil pressure

Ignition on

Engine off

PST2 display: not present

Engine idling

PST2 display: present

If oil pressure "not present" is displayed when the engine is running:

Check oil level

Switch off ignition

Pull off plug II on the instrument cluster

Ohmmeter on instrument cluster plug II pin 6 and ground
Ohmmeter display: < 5 Ω

Disconnect plug on oil pressure switch

Ohmmeter on instrument cluster plug II pin 6 and plug on oil pressure switch, pin 1
Ohmmeter display: < 5 Ω

Push plug onto oil pressure switch

Engine idling

Ohmmeter on instrument cluster plug II pin 6 and ground
Ohmmeter display: ∞ Ω

Check oil pump


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## Test point 11

Seat belt

Ignition on

Seat belt on driver's side not fastened

PST2 display: not fastened

Seat belt on driver's side fastened

PST2 display: fastened

Switch off ignition

Pull off plug II on the instrument cluster

Switch ignition on

Measure the voltage between instrument cluster plug II and pin 24 and ground
Voltmeter display: 0 V

Switch off ignition

Seat belt on driver's side not fastened

Ohmmeter on instrument cluster plug II pin 24 and ground
Ohmmeter display: < 5 Ω

Seat belt on driver's side fastened

Ohmmeter on instrument cluster plug II pin 24 and ground
Ohmmeter display: ∞ Ω

Disconnect plug connection X16 for LHD vehicles and X17 for RHD vehicles

Ohmmeter on instrument cluster plug II pin 24 and plug connection X16 or X17 on sleeve side pin B5
Ohmmeter display: < 5 Ω



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## Test point 12

Spoiler button

Ignition on

Spoiler button (switch for rear spoiler) not actuated

PST2 display: not actuated

Spoiler button (switch for rear spoiler) "extend" actuated

PST2 display: extend actuated

Spoiler button (switch for rear spoiler) "retract" actuated

PST2 display: retract actuated

Switch off ignition

Pull off plug II on the instrument cluster

Pull plug off the spoiler button

Switch ignition on

Measure the voltage between instrument cluster plug II pin 11 and ground
Voltmeter display: 0 V

Measure the voltage between instrument cluster plug II pin 10 and ground
Voltmeter display: 0 V

Switch off ignition

Spoiler button "extend" actuated

Ohmmeter on instrument cluster plug II pin 11 and ground
Ohmmeter display: < 5 Ω

Spoiler button "retract" actuated

Ohmmeter on instrument cluster plug II pin 10 and ground
Ohmmeter display: < 5 Ω

See also Drive links chapter "Spoiler" and "Spoiler warning light"



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## Test point 13

Spoiler status

Ignition on

Spoiler retracted

PST2 display: retracted

Spoiler extended

PST2 display: extended

Spoiler in intermediate position

PST2 display: is unknown

See also Drive links chapter "Spoiler" and "Spoiler warning light"

Switch off ignition

Pull off plug II on the instrument cluster

Spoiler extended

Ohmmeter on instrument cluster plug II pin 9 and ground
Ohmmeter display: < 5 Ω

Spoiler retracted

Ohmmeter on instrument cluster plug II pin 26 and ground
Ohmmeter display: < 5 Ω

Pull plug off the spoiler drive

Ohmmeter on instrument cluster plug II pin 9 and plug on spoiler drive pin 2
Ohmmeter display: < 5 Ω

Ohmmeter on instrument cluster plug II pin 26 and plug on spoiler drive pin 4
Ohmmeter display: < 5 Ω

Ohmmeter on spoiler drive plug pin 5 and ground
Ohmmeter display: < 5 Ω



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If no faults are detected in the wire, replace the motor for the rear spoiler

## Test point 14

Washer fluid level

Ignition on

Engine off

PST2 display: OK

Check washer fluid level

Switch off ignition

Washer fluid level full

Pull off plug on sensor for fluid level display

Ohmmeter directly on sensor for fluid level display, pin 1 and pin 2
Ohmmeter display: < 5 Ω

If not, replace sensor for fluid level display.

Ohmmeter on plug of sensor for fluid level display
pin 2 and ground

Ohmmeter display: < 5 Ω

Pull off plug II on the instrument cluster

Ohmmeter on instrument cluster plug II pin 26 and plug on sensor for fluid level display pin 1
Ohmmeter display: < 5 Ω

See also Drive Links chapter, "Washer fluid warning light"


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## Test point 15

Central locking signal

Ignition on

Vehicle not locked

PST2 display: not present

Central locking button actuated

Vehicle locked

PST2 display: present

Read out fault memory in alarm system control module and eliminate faults present

If the central locking function is OK

Switch off ignition

Pull off plug II on the instrument cluster

Lock vehicle

Ohmmeter on plug II of instrument cluster pin 8 and ground
Ohmmeter display: < 5 Ω

Unlock vehicle

Pull plug I off the alarm system control module

Ohmmeter on instrument cluster plug II pin 8 and plug I on alarm system control module pin 30
Ohmmeter display: < 5 Ω



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## Test point 16

On-board computer

Ignition on

Operating lever not actuated

PST2 display: not actuated

Move operating lever upwards

PST2 display: actuated upwards

Move operating lever downwards

PST2 display: actuated downwards

Push operating lever forwards

PST2 display: actuated forwards

Pull operating lever towards steering wheel

PST2 display: actuated backwards

Switch off ignition

Pull off plug on operating lever for on-board computer

Ohmmeter on operating lever plug pin 1 and ground
Ohmmeter display: < 5 Ω

Pull off plug II on the instrument cluster

Ohmmeter on instrument cluster plug II pin 25 and plug on operating lever for on-board computer pin 5
Ohmmeter display: < 5 Ω

Ohmmeter on instrument cluster plug II pin 22 and plug on operating lever for on-board computer pin 4
Ohmmeter display: < 5 Ω


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Ohmmeter on instrument cluster plug II pin 20 and plug on operating lever for on-board computer pin 2
Ohmmeter display: < 5 Ω

Ohmmeter on instrument cluster plug II pin 21 and plug on operating lever for on-board computer pin 3
Ohmmeter display: < 5 Ω

## Test point 17

Dimming

Ignition on

Dimming button not actuated

PST2 display: not actuated

Dimming button actuated towards left

PST2 display: -actuated

Dimming button actuated towards right

PST2 display: +actuated

See also "Actual values" chapter, Test point 5 and Drive links chapter "Lamp dimming", "Gear display dimming", "Display dimming' "External dimming"



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## Test point 18

Trip mileage

| | |
|---|---|
| Ignition on | |
| Kilometre button not actuated | |
| PST2 display: | not actuated |
| Kilometre button actuated | |
| PST2 display: | actuated |


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## Actual values

In the *Actual values* menu item, the current values of the following parameters can be read out:

Tiptronic

Vehicle speed

Speed

Supply voltage

Brightness sensor

Total mileage

Trip mileage

Tank content sensor value

Tank content display

Coolant temperature

Average consumption

Average speed

Outside temperature sensor value

Outside temperature display

Range on remaining fuel



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## Extract coding

In the menu item *Extract coding*, the following coding is displayed:

1. Mileage: miles (kilometres)

2. Clock mode: 12 h (24 h)

3. On-board computer: present (not present)

**Procedure:**

1. Connect PST2 and switch on the ignition

2. Select vehicle type *Boxster (986)* and start the automatic control module search.

3. Select *Instrument cluster* control module

4. Select menu item *Extract coding*

5. Extract individual coding



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## Modify coding

In the menu item *Modify coding*, the following coding can be changed:

| | |
|---|---|
| 1. Mileage: | miles (kilometres) |
| 2. Clock mode | 12 h (24 h) |
| 3. On-board computer | present (not present) |

**Procedure:**

1. Connect PST2 and switch on the ignition
2. Select vehicle type *Boxster (986)* and start the automatic control module search.
3. Select *Instrument cluster* control module
4. Select menu item *Modify coding*
5. Select Coding from the function selection
6. Follow the instructions of the diagnostic tester
7. Confirm with the Coding (F8) key
8. Ignition off
9. Ignition on (coding is adopted)

**Note:**

Information on the workshop which carried out the coding is recorded.



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## Extract coding

In the menu item *Extract coding*, the following coding is displayed:

1. Mileage: miles (kilometres)

2. Clock mode: 12 h (24 h)

3. On-board computer: present (not present)

**Procedure:**

1. Connect PST2 and switch on the ignition

2. Select vehicle type *Boxster (986)* and start the automatic control module search.

3. Select *Instrument cluster* control module

4. Select menu item *Extract coding*

5. Extract individual coding



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## Modify coding

In the menu item *Modify coding*, the following coding can be changed:

| | |
|---|---|
| 1. Mileage: | miles (kilometres) |
| 2. Clock mode | 12 h (24 h) |
| 3. On-board computer | present (not present) |

**Procedure:**

1. Connect PST2 and switch on the ignition

2. Select vehicle type *Boxster (986)* and start the automatic control module search.

3. Select *Instrument cluster* control module

4. Select menu item *Modify coding*

5. Select Coding from the function selection

6. Follow the instructions of the diagnostic tester

7. Confirm with the Coding (F8) key

8. Ignition off

9. Ignition on (coding is adopted)

**Note:**

Information on the workshop which carried out the coding is recorded.



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## Total mileage

In the menu item *Total mileage*, the total mileage can be transferred to a new instrument cluster after a faulty instrument cluster is replaced.

**Work preparation:**

1. Read out and record Vehicle Identification Number

2. Read off and note the total mileage in the old instrument cluster

**Procedure:**

1. Connect PST2 and switch on the ignition

2. Select vehicle type Boxster (986)

3. Select *Instrument cluster* control module

4. Select menu item *Total mileage*

5. Enter Vehicle Identification Number and confirm again

6. Enter total mileage and check

7. Press the F8 button (Coding)


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## Tank calibration

See Calibrating fuel level sensor system.
Serv. No. 20 15 01

## Speedometer A

The menu item *Speedometer A* is used to test the speed-dependent volume control and the speed warning signal.

**Procedure:**

1. Connect PST2 and switch on the ignition

2. Select vehicle type *Boxster (986)* and start the automatic control module search.

3. Select *Instrument cluster* control module

4. Select menu item *Speedometer A*

5. Simulate speed with Increase (F5) and Decrease (F6) buttons



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## Control module replacement

In the menu item *Control module replacement*, the control module of the instrument cluster is replaced. When doing this, the tank calibration is transferred from the old instrument cluster to the new one.

**Procedure:**

1. Connect PST2 and switch on the ignition

2. Select vehicle type *Boxster (986)* and start the automatic control module search

3. Select *Instrument cluster* control module

4. Select menu item *Control module replacement*

5. Read out values with PST2

6. Remove instrument cluster

7. Install new instrument cluster

9. Store values in the new instrument cluster with PST2



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91 01

# Diagnosis/troubleshooting

# PCM

# System N 01


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## General information

The PCM is protected against theft by a device code. Furthermore, the integrated navigation system is also protected by a code against unauthorized users.

Both codes must be input when the system is commissioned at the factory or after replacement of the display and operator control unit **and** the navigation unit. In both cases, the code for the PCM must be input first.

Only the NAVI code has to be input again after the navigation system has been exchanged.

Only the PCM code has to be input again after an interruption in the continuous power supply (e.g. when the battery is changed) if both codes were input correctly before the interruption.

### Code input

1. Switch on PCM.

2. The prompt to input the PCM code appears.

3. The max. 4-digit device code number is input and confirmed using the right-hand knob. Rotate knob to position the selection pointer to the option PCM and press. Select the digits by turning and confirm by pressing the knob. After entering the PCM code, select the option Confirm.

4. After input of the PCM code, the NAVI code can be input analogously in order to activate the navigation system. If the NAVI code is not input, the remaining system functions (telephone, on-board computer, audio system, main display and A/C display) are nevertheless available.

5. Correction of incorrect inputs:
   If an incorrect digit is input, position the selection pointer to Correction and press the knob:
   < 1 sec.: Last digit input is deleted.
   > 1 sec.: Entire content of the input field is deleted.
   Then continue with correct input.

### If the wrong code was input

The system is locked up for around 10 minutes if an incorrect code was entered three times. Another three incorrect inputs lock up the system for an additional 10 minutes. After another three incorrect inputs (i.e. after a total of nine unsuccessful attempts), the lock-up time increases to 60 minutes (this also applies to all further groups of three incorrect inputs). However, the emergency-call function of the PCM system always remains available.


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### Activating the PCM

Vehicles leaving the factory are delivered with deactivated PCM in order to protect the battery. The PCM must be activated before delivery to the customer.

1. Connect Porsche System Tester 2.
2. Select vehicle type `Boxster` and start control module search.
3. Select `PCM`.
4. Select `Modify coding`.
5. Select `PCM active`.
6. Code PCM active with the F8 key.



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## Menu

### Overview of the possible menus

Identification

Fault memory

Erase fault memory

Actual values

Input signals

Interface status

Drive links

Position

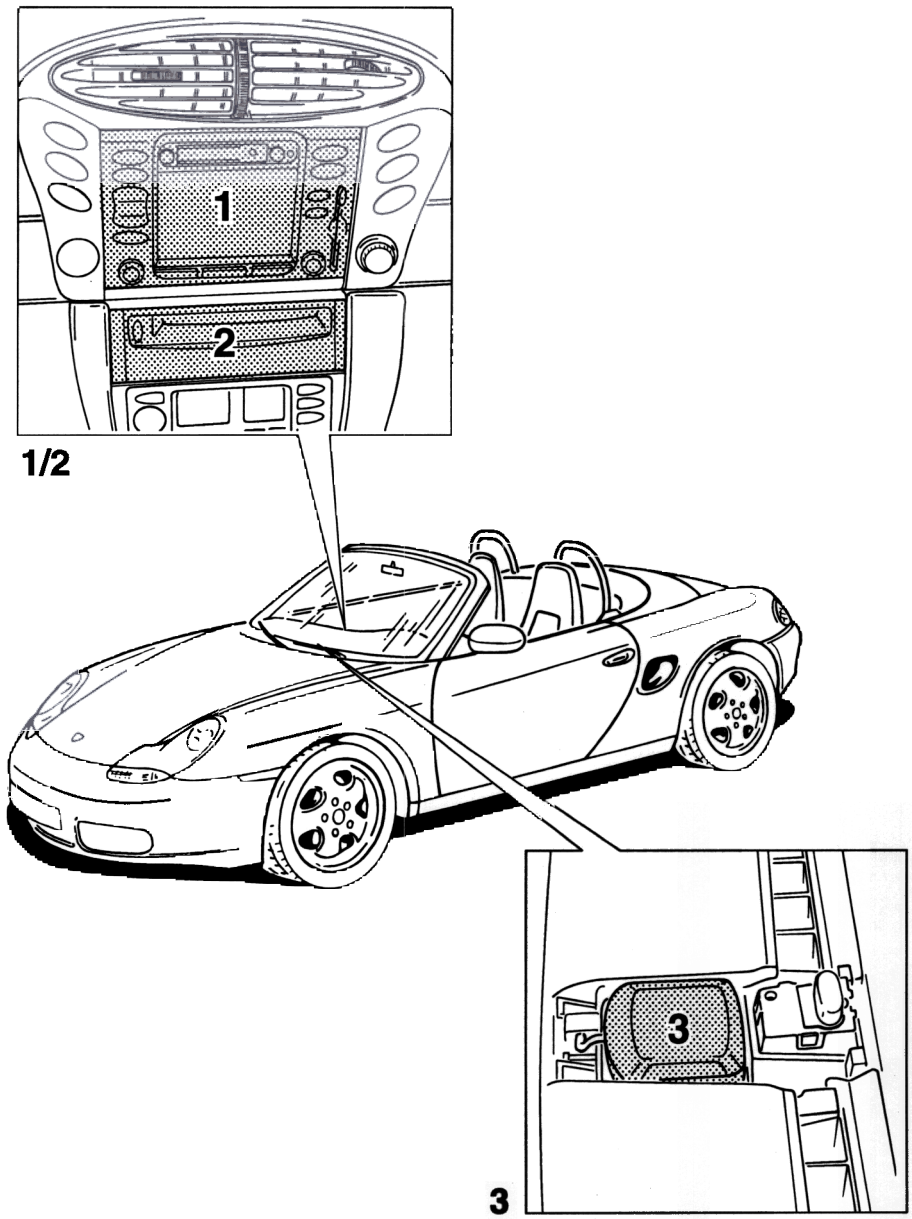
Modify coding


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## Component arrangement




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## Function of individual components

### 1. Display and operator control unit

The display and operator control unit is the main part of the PCM system.
It is operated with a so-called dial. A function shown on the display can be selected by turning this dial and activated by pressing it.

### 2. Navigation unit

The navigation unit is located below the operator control unit. It contains a CD-ROM with special map data, which allow the navigation system to orient itself in the road network.

### 3. GPS antenna

Signals of the "Global Positioning System (GPS)" are received to determine the position of the vehicle.
The GPS antenna is located in the centre of the dashboard and in front of the sun sensor. The GPS antenna is covered by a cover.


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## System description

### Basic functions of the PCM

Audio (tuner with cassette drive)

GSM telephone with SIM card reader

Navigation

On-board computer

A/C display

### Navigation

The highly accurate satellite-based navigation system permits rapid and sure guidance to an input destination in areas for which a digitized road map on CD-ROM is available. Route guidance is realised by means of driving instructions with voice output in various selectable national languages, supported by arrow or map displays on the screen.

### Audio

Buttons for selecting the various audio sources (AM/FM tuner, cassette, CD) are located on the left side of the front panel.

The RDS names of the stations of the current memory level stored at the station buttons are shown on the function display offered during FM radio operation. The desired station can thus be selected quickly.

In addition to the station-search function, the system also has an autostore function in FM operation. This function assigns the station buttons and automatically adds the station names described above so that they are permanently visible.

The main pages for all audio sources include the item `Set`. If this item is selected, the system offers adjustment possibilities for treble, bass, balance, fader, speed-dependent volume control (GAL) and loudness.

If the Digital Sound Processor (DSP) option has been installed, further functions fur optimum sound adjustment are available.

In this case, it is possible to select conventional treble/bass adjustment or a 7-band equalizer. Furthermore, high-fidelity audio patterns can be selected. Finally, the user can also define individual audio patterns according to his or her own taste.

### Telephone

The GSM telephone offered for the European region fulfills all demands with regard to practical operation, voice transmission and reception sensitivity.

Individual functions:

GSM telephone with 2 W transmission power

Digital handsfree use (echo compensation) via the audio loudspeakers and an external handsfree microphone



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Audio mute function during a conversation in handsfree mode

Integrated SIM card reader

Emergency call possible even without SIM card

Separate passive handset can be connected

SMS (Short Message Service) reception with the possibility of directly selecting telephone numbers present in the message section

Manual dialling

Telephone directory:
External telephone number memory on SIM card (with/without name)

Memory for frequently used numbers:
for seven numbers of the telephone directory (the data of up to five different SIM cards are stored)

The five numbers most recently called can be stored on the SIM card

Redial function (at the push of a button)

Volume adjustment during a conversation via volume control

Visual and audible call signal

Telephone numbers of incoming calls are displayed (if available in the network); the associated name is also displayed if an entry exists in the directory.

Telephone number of the outgoing call is displayed

Duration of the conversation is displayed

Network operator and field strength are displayed

Existing network operators are displayed; manual or automatic selection is possible

PIN query can be switched on/off (if supported by service provider), PIN can be input/changed

Copying and rental of phone cards.

**On-board computer**

Some functions of the on-board computer display are linked with the data of the navigation unit:
The time is set automatically according to the data determined by the GPS receiver; thus, the only work required involves setting the time zone once.

The route to the destination is known if the route guidance function is activated in the navigation unit. The length of this route is displayed as the distance to the destination. The range display allows an estimate about whether the fuel supply is adequate for the remaining distance.
The estimated time of arrival is calculated on an individual basis according to the driving style and the planned route: The navigation unit informs the on-board computer about the different road categories along the route and the length of these road sections.
The on-board computer calculates a different individual average driving speed for each road category. This information is used to calculated the planned time of arrival – if no traffic-related delays occur – on an individual basis.
The on-board computer also supplies standard information, for instance the average consumption, average speed, distance travelled,


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and elapsed driving time. The outside temperature is adopted from the instrument cluster. It is possible to set a limit that triggers a visual and audible speed warning.

It is also possible to switch to different units of measure and languages and adjust the display contrast.

The A/C function is limited to the display of data transferred from the air-conditioning regulator.

- Fan setpoint
- Passenger compartment temperature setpoint
- Air distribution
- Status display (automatic system, defroster, A/C compressor, air circulation)

The display is activated automatically whenever a manual adjustment is made on the air conditioning regulator or the A/C function is specifically selected.



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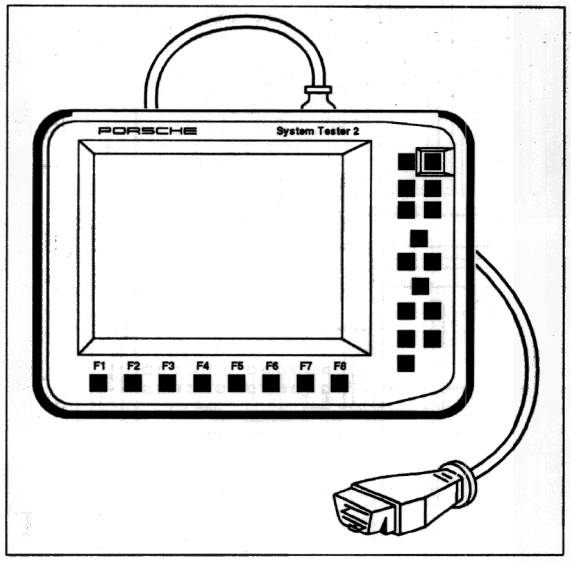
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## Tools

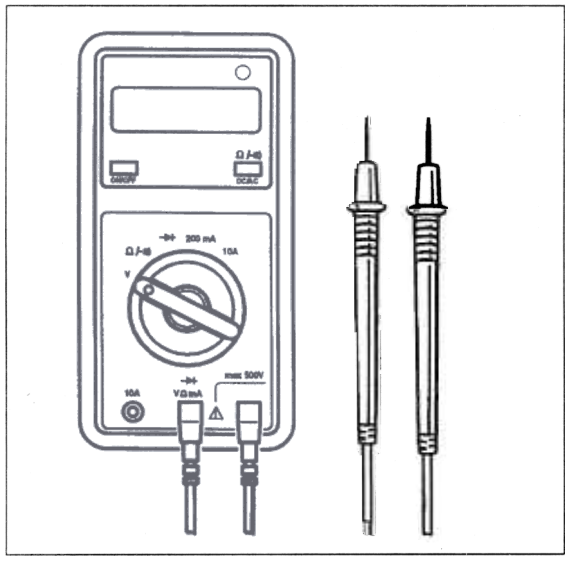
The following equipment is required for troubleshooting:

### 1. Porsche System Tester 2




547-96

### 2. Commercially available digital multimeter



2178-28

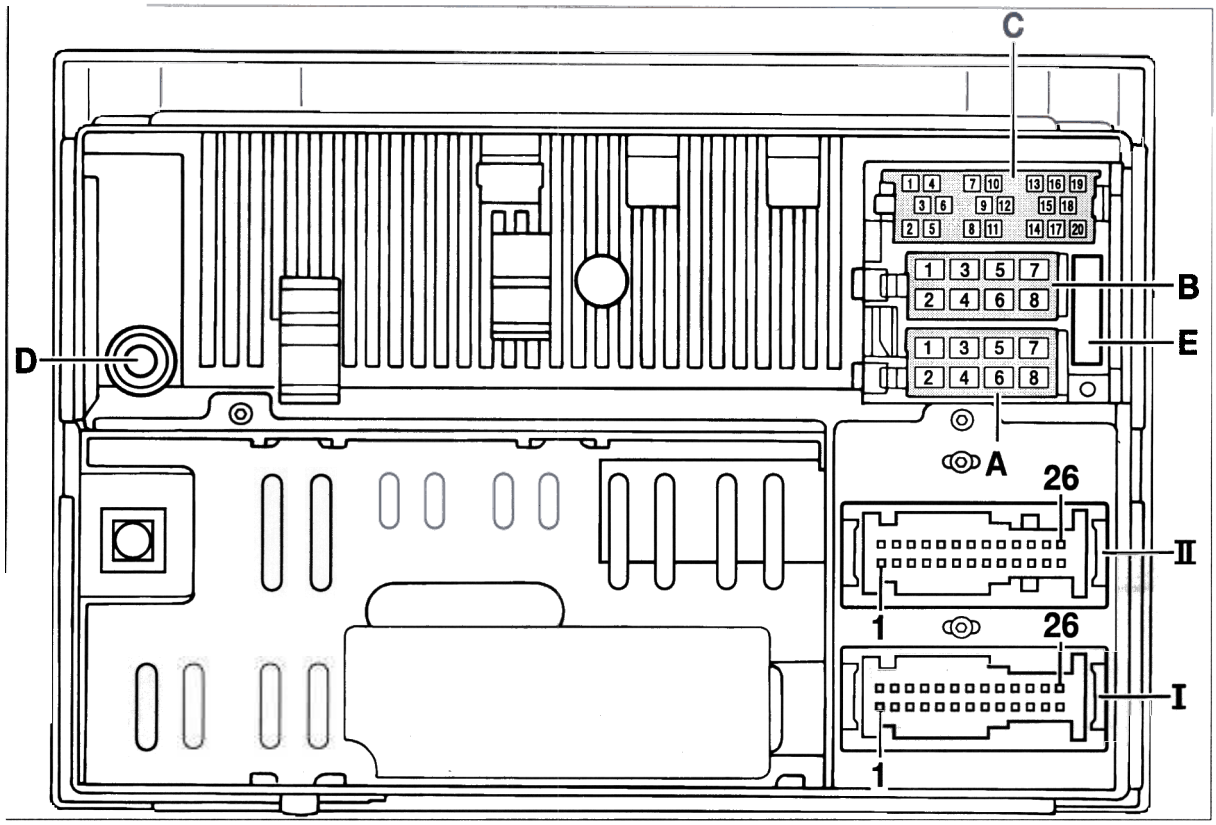


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## Connector pin assignment, display and operator control unit




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**Plug A**

1 – Speed signal

2 – Free

3 – Free

4 – Terminal 30

5 – Terminal 30 for windscreen antenna

6 – Free

7 – Free

8 – Terminal 31



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**Plug B**

1 – Loudspeaker, rear right +

2 – Loudspeaker, rear right –

3 – Loudspeaker, front right +

4 – Loudspeaker, front right –

5 – Loudspeaker, front left +

6 – Loudspeaker, front left –

7 – Loudspeaker, rear left +

8 – Loudspeaker, rear left –

**Note**

Plug B is assigned only if no amplifier is installed.

**Plug C**

1 – Line out, rear left

2 – Line out, rear right

3 – AF ground

4 – Line out, front left

5 – Line out, front right

6 – Terminal 30 for amplifier

7 – Control lead for CD changer

8 – Terminal 30 for CD changer

9 – Free

10 – Data lead

11 – Clock lead

12 – Reset lead

13 – Free

14 – Free

15 – Free

16 – Free

17 – Free

18 – CD AF ground

19 – CD AF, left

20 – CD AF, right

**Note**

Plug C consists of 3 parts.

Pins 1 to 6: yellow housing.
Pins 7 to 12: green housing.
Pins 13 to 20: blue housing.

Pins 1 to 6 are the loudspeaker outputs to the amplifier. They are assigned only if an amplifier is installed.

Pins 7 to 12 are the control leads for the CD changer.

Pins 18 to 20 are the loudspeaker outputs of the CD changer.

Pins 7 to 20 are assigned only if a CD changer is installed.

**D-Antenna lead**

**E-Fuse**



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**Plug I**

1 – Video signal, red
2 – Video signal, green
3 – Free
4 – Free
5 – Free
6 – Terminal 31
7 – Free
8 – Free
9 – Free
10 – Terminal 30 for navigation
11 – Terminal 58 d
12 – Free
13 – Terminal 30
4 – Video signal, blue
15 – Video signal synchronisation
16 – Video signal ground
17 – Free
18 – Free
19 – Terminal 31
20 – To combination plug III pin 6
21 – From combination plug III pin 11
22 – Free
23 – Fuel consumption signal
24 – Speed signal
25 – Free
26 – Terminal 30

**Plug II**

1 – Diagnosis lead
2 – Terminal 15
3 – Terminal 86 s
4 – Data lead to navigation unit
5 – Free
6 – DSP (amplifier) ground
7 – Handsfree microphone ground
8 – Handset microphone
9 – Handset speaker
10 – Terminal 30, handset
11 – Free
12 – Voice output ground
13 – Voice output
14 – DSP (amplifier)
15 – Data lead from the heater / A/C unit
16 – Free
17 – Data lead from the navigation unit
18 – Free
19 – Free
20 – Handsfree microphone
21 – Handset ground
22 – Handset on-hook contact
23 – Free
24 – Free
25 – Free
26 – Free

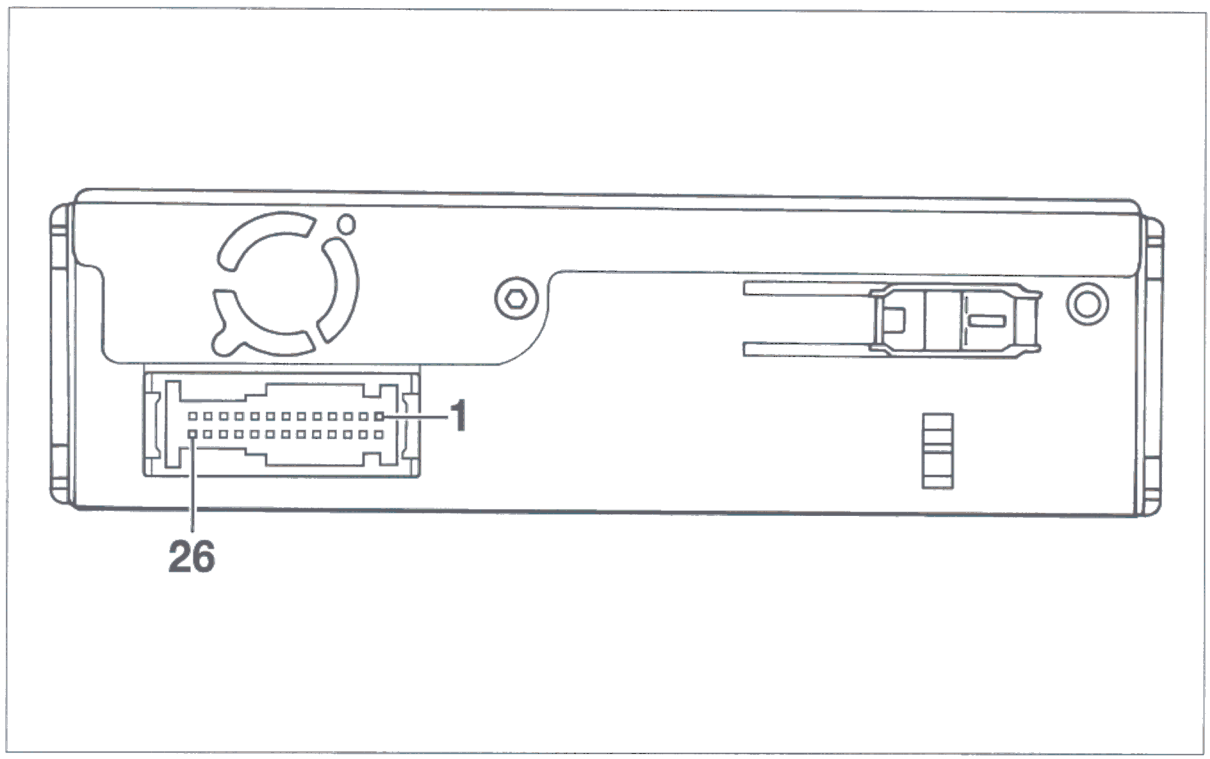


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## Connector pin assignment, navigation unit




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Terminal 31

2 – Terminal 30

3 – Speed signal

4 – Reverse-gear signal

5 – Data lead from the display and operator control unit

6 – Free

7 – Data lead to the display and operator control unit

8 – Video signal, red

9 – Video signal, green

10 – Video signal, blue

11 – Free

12 – Free

13 – Voice output ground

14 – Terminal 30

15 – Free

16 – Free

17 – Free

18 – Free

19 – Terminal 58 d



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20 – Free

21 – Free

22 – Video signal ground

23 – Video signal synchronisation

24 – Free

25 – Free

26 – Voice output



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## Identification

The part numbers for the display and operator control unit and for the navigation unit can be read out with menu item `Identification`.



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## Fault memory

### Overview of possible faults

Data lead, air conditioner-PCM

Data lead, navigation unit-PCM

Data lead, PCM-navigation unit

Data lead, DSP-PCM

Speedometer A, navigation unit

Signal, reverse gear-navigation unit

Antenna, navigation unit

Data lead, PCM-instrument cluster

Data lead, instrument cluster-PCM

Vehicle data record

Program memory

Signal, terminal 15 PCM

Signal, terminal 86 s PCM

Navigation, CD fault
Control module faulty/navigation unit

Navigation fault, gyro
Control module faulty/navigation unit

Connection to audio module

Telephone, internal fault

Connection to telephone

Write error, Flash

Video interface

Fault, memory interface

Fault, photo sensor
Control module faulty

**Note**

Faults can be stored during initialisation of the PCM if all plugs are not connected.
If a fault appears under Environmental Condition in combination with an unrealistic date, e.g. 7 Feb. 36, the fault was stored at a time at which there was not yet any satellite reception.

The faults are stored only during the phase after terminal 86 s has been disconnected.



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## Fault overview

| Test point | Fault code | Fault effect | Page |
|---|---|---|---|
| | 20 | Climatic data not displayed | 91 - D 21 |
| | 21 | No route guidance | 91 - D 22 |
| 3 | 22 | No route guidance | 91 - D 23 |
| 4 | 23 | No DSP functions | 91 - D 23 |
| 5 | 24 | Inaccurate position determination | 91 - D 24 |
| 6 | 25 | Reversing is not recognised | 91 - D 24 |
| 7 | 26 | No satellite reception | 91 - D 25 |
| 8 | 27 | | 91 - D 25 |
| 9 | 28 | No outside-temperature display | 91 - D 26 |
| 10 | 29 | | 91 - D 26 |
| 11 | 30 | | 91 - D 27 |
| 12 | 31 | No function | 91 - D 27 |
| 13 | 32 | | 91 - D 28 |
| 14 | 33 | No route guidance | 91 - D 28 |
| 15 | 34 | No route guidance | 91 - D 28 |
| 16 | 35 | No audio functions | 91 - D 29 |
| 17 | 36 | No telephone function | 91 - D 29 |
| 18 | 37 | No telephone function | 91 - D 29 |
| 19 | 38 | | 91 - D 29 |



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| Test point | Fault code | Fault effect | Page |
|---|---|---|---|
| 20 | 39 | No screen display | 91 - D 30 |
| 21 | 40 | | 91 - D 30 |
| 22 | 41 | | 91 - D 30 |



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|

## Test point 1

Data lead, air conditioner -PCM
Open circuit/short to ground
Short to B+
Signal disturbance
**Fault code 20**

**Open circuit/short to ground**

1. Pull off plug II on the display and operator control unit.
2. Pull off plug C on the heater / A/C control unit.
3. Check lead from plug II pin 15 to plug C 12 for continuity and short to ground.

**Note**

The lead is routed via the 10-pole plug connection on the heater/ A/C unit.

**Short to B+**

1. Pull off plug II on the display and operator control unit.
2. Pull off plug C on the heater / A/C control unit.
3. Check lead from plug II pin 15 to plug C 12 for short to B+.

**Signal disturbance**

Check wiring harness for short with other leads.



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|

## Test point 2

Data lead, navigation unit-PCM
Open circuit/short to ground
Short to B+
Signal disturbance
**Fault code 21**

### Open circuit/short to ground

1. Pull off plug II on the display and operator control unit.
2. Pull off plug on the navigation unit.
3. Check lead from navigation unit plug pin 7 to plug II pin 17 for continuity and short to ground.

### Short to B+

1. Pull off plug II on the display and operator control unit.
2. Pull off plug on the navigation unit.
3. Check lead from navigation unit plug pin 7 to plug II pin 17 for short to B+.

### Signal disturbance

Check lead from navigation unit plug pin 7 to plug II pin 17 for short with other leads.



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|
| **Test point 3**<br>Data lead,<br>PCM-navigation unit<br>Short to ground<br>Short to B+<br>**Fault code 22** | **Short to ground**<br>1. Pull off plug II on the display and operator control unit.<br>2. Pull off plug on the navigation unit.<br>3. Check lead from navigation unit plug pin 5 to plug II pin 4 for short to ground.<br><br>**Short to B+**<br>1. Pull off plug II on the display and operator control unit.<br>2. Pull off plug on the navigation unit.<br>3. Check lead from navigation unit plug pin 5 to plug II pin 4 for short to B+. |
| **Test point 4**<br>Data lead, DSP-PCM<br>Open circuit/short to ground<br>Short to B+<br>Signal disturbance<br>**Fault code 23** | **Open circuit/short to ground**<br>1. Pull off plug II on the display and operator control unit.<br>2. Pull off plug I (18-pole) on the amplifier.<br>3. Check lead from plug II pin 14 to plug I pin 17 for continuity and short to ground.<br><br>**Short to B+**<br>1. Pull off plug II on the display and operator control unit.<br>2. Pull off plug I (18-pole) on the amplifier.<br>3. Check lead from plug II pin 14 to plug I pin 17 for short to B+. |



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|
| | **Signal disturbance**<br><br>Check lead from plug II pin 14 to plug I pin 17 for short with other leads. |
| **Test point 5**<br>Speedometer A, navigation unit<br>Open circuit/short to ground/short to B+<br>**Fault code 24** | **Open circuit/short to ground/short to B+**<br><br>1. Pull off plug on the navigation unit.<br><br>2. Pull off plug I on the instrument cluster.<br><br>3. Check lead from navigation unit plug pin 3 to plug I pin 13 for continuity and short to ground or short to B+.<br><br>**Note**<br><br>The lead is routed via jumper plug 1 on relay carrier 1 |
| **Test point 6**<br>Signal, reverse gear-navigation unit<br>Signal implausible<br>**Fault code 25** | **Signal implausible**<br><br>1. Check reversing light switch or, on Tiptronic vehicles, position switch.<br><br>2. Check lead from navigation unit plug pin 4 to the reversing light switch or position switch for short circuit to B+.<br><br>**Note**<br><br>The lead is routed via plug connection X 2/1 and via the jumper plug 20/1 on relay carrier 2. |



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|
| **Test point 7** | |
| Antenna, navigation unit<br>Open circuit<br>**Fault code 26** | **Open circuit**<br>1. Check whether plug connection of the antenna lead is securely locked.<br>2. Check whether plug connection of the antenna lead on the navigation unit is securely locked.<br>3. Check continuity of the antenna lead. |
| **Test point 8** | |
| Data lead,<br>PCM-instrument cluster<br>Short to ground<br>Short to B+<br>**Fault code 27** | **Short to ground**<br>1. Pull off plug I on the display and operator control unit.<br>2. Pull off plug III on the instrument cluster.<br>3. Check lead from plug I pin 20 to plug III pin 6 for short to ground.<br>**Short to B+**<br>1. Pull off plug I on the display and operator control unit.<br>2. Pull off plug III on the instrument cluster.<br>3. Check lead from plug I pin 20 to plug III pin 6 for short B+. |



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|

## Test point 9

Data lead, instrument cluster-PCM
Open circuit/short to B+
Short to ground
Signal disturbance
**Fault code 28**

**Open circuit/short to B+**

1. Pull off plug I on the display and operator control unit.
2. Pull off plug III on the instrument cluster
3. Check lead from plug I pin 21 to plug III pin 11 for continuity and short to B+.

**Short to ground**

1. Pull off plug I on the display and operator control unit.
2. Pull off plug III on the instrument cluster
3. Check lead from plug I pin 21 to plug III pin 11 for short to ground.

**Signal disturbance**

Check lead from plug I pin 21 to plug III pin 11 for short with other leads.

## Test point 10

Vehicle data record
Programming error
**Fault code 29**

1. Select menu item `Modify coding`.
2. Select `Vehicle model`.
3. Modify coding from LHD vehicle (RHD vehicle) to RHD vehicle (LHD vehicle).
4. Modify coding from RHD vehicle (LHD vehicle) to LHD vehicle (RHD vehicle).

If the fault appears again, replace the display and operator control unit.



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|

## Test point 11

Program memory
Programming error
**Fault code 30**

1. Remove CD from navigation unit.
2. Switch off PCM.
3. Switch on PCM and insert CD.
4. Clear fault memory.
5. Read out fault memory

If the fault appears again, insert a different CD (older version).

6. Switch off PCM.
7. Switch on PCM.
8. Clear fault memory.
9. Read out fault memory

If the fault appears again, replace the display and operator control unit.

## Test point 12

Signal, terminal 15 PCM
Open circuit
**Fault code 31**

**Note**

This fault is stored only if the vehicle is driven faster than 50 km/h for more than 10 seconds.

1. Check fuse E 8.
2. Pull off plug II on the display and operator control unit.
3. Connect voltmeter to plug II pin 2 (positive) and ground. Switch on ignition. Display: Battery voltage.


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| Fault, fault code | Possible causes, elimination, notes |
|---|---|
| **Test point 13**<br>Signal, terminal 86 s PCM<br>Open circuit<br>**Fault code 32** | **Note**<br>This fault is stored only if the ignition is switched on for at least 1 minute.<br>1. Check fuse E 1<br>2. Pull off plug II on the display and operator control unit.<br>3. Connect voltmeter to plug II pin 3 (positive) and ground.<br>Switch on ignition.<br>Display: Battery voltage.<br>**Note**<br>The lead is routed via jumper plug 13/1 on relay carrier 1 |
| **Test point 14**<br>Navigation, CD fault<br>CM faulty/navigation unit<br>Value range<br>**Fault code 33** | Replace navigation unit. |
| **Test point 15**<br>Navigation fault, gyro<br>CM faulty/navigation unit<br>Value range<br>**Fault code 34** | Replace navigation unit. |



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| Fault, fault code | Possible causes, elimination, notes |
|---|---|
| **Test point 16** | |
| Connection to audio module<br>Value range<br>**Fault code 35** | Replace display and operator control unit. |
| **Test point 17** | |
| Telephone, internal fault<br>Value range<br>**Fault code 36** | Replace display and operator control unit. |
| **Test point 18** | |
| Connection to telephone<br>Value range<br>**Fault code 37** | Replace display and operator control unit. |
| **Test point 19** | |
| Write error, Flash<br>Value range<br>**Fault code 38** | Replace display and operator control unit. |


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| Fault, fault code | Possible causes, elimination, notes |
|---|---|
| **Test point 20** | |
| Video interface<br>Value range<br>**Fault code 39** | Replace display and operator control unit. |
| **Test point 21** | |
| Fault, memory interface<br>Value range<br>**Fault code 40** | Replace display and operator control unit. |
| **Test point 22** | |
| Fault, photo sensor<br>Control module faulty<br>Value range<br>**Fault code 41** | Replace display and operator control unit. |



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## Erase fault memory

**Note**

The fault memory can be erased only if it was first read out at least once.

The entire fault memory is always erased.


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## Actual values

Values currently under test can be read out via this menu item.

The following values (setpoints in brackets) can be called up:

Speed

Current fuel consumption

Phototransistor PCM (0-255)
0 : Maximum brightness
255 : Minimum brightness

Date

Time

Dial, left [volume control] (up/down-counter)

Dial, right [selection knob] (up/down-counter)

* The counter is set to zero after the start of diagnosis. The counter is incremented by one when the dial is turned clockwise and decremented by one when the dial is turned counter-clockwise.



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## Input signals

Input signals of the PCM can be read in with this menu item. This allows the function of the input signals to be assessed very quickly.

The following input signals can be read in:

- Signal, terminal 86 s
- Signal, terminal 15
- Signal, terminal 58 d
- Signal, DSP on
- Signal, terminal 15 Navi
- Signal, terminal 15 Tel
- Signal, TV on
- Signal, hook-on/off*
- CC button
- CD button
- FM button
- AM button
- Station button 1
- Station button 2
- Station button 3
- Station button 4
- Station button 5
- Station button 6
- Search left button
- Search right button
- Pressure contact, left dial
- Main button
- Audio button
- Tel button**
- Navi button**
- BC button
- AC button
- Pressure contact, right dial
- Map button
- Dark button
- Repeat button
- Handset/Info button
- Eject button
- 1-2 direction change

* Telephone handset contact

**Only Navi button on USA vehicles



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## Interface status

Connections to other systems can be checked with this menu item.

The following connecting leads can be checked:

Data lead, air conditioner-PCM

Data lead, navigation system-PCM

Data lead, PCM-navigation system

Data lead, DSP-PCM

Data lead, PCM-instrument cluster

Data lead, instrument cluster-PCM

Speedometer A, navigation unit

Signal, reverse gear-navigation unit



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## Drive links

Drive links of the PCM can be activated with this menu item. This allows the function of the drive links to be assessed very quickly.

The following drive links can be controlled:

Display colour black

Display colour red

Display colour green

Display colour blue

Display colour white

### Note

The activated drive link is automatically switched off after approximately 20 seconds.



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## Position

The current location (latitude, longitude) can be read out with this menu item.



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## Modify coding

The PCM can be coded on a country-specific basis with this menu item.

The following items can be set on an individual basis:

Vehicle model (LHD vehicle, RHD vehicle)

Language (driving instructions in German, English (GB/USA), French, Italian, Spanish)

Temperature (°C, °F)

Fuel consumption (l/100 km, mls/gal, mpg, km/l)

Distance (kilometres, miles)

Clock (12 hours, 24 hours)

Time zone (CET), GMT, Atlantic, Eastern, Central, Mountain, Pacific, Tokyo)

PCM active (active, not active)

**Note**

The state (active or inactive) is not indicated. Whether or not the PCM is active can be determined only by switching on the PCM.



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91 01 Diagnosis/troubleshooting ParkAssistent (System P 01)

# Diagnosis/Troubleshooting

# ParkAssistent

# System P 01



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## Contents overview

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## Menu

### Overview of possible menus


| | Page |
|---|---|
| Identification | 91 - D 56 |
| Fault memory | 91 - D 56 |
| Erase fault memory | 91 - D 56 |
| Actual values | 91 - D 56 |
| Drive links | 91 - D 57 |
| Modify coding | 91 - D 57 |




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## System description

The ParkAssistent supports the driver when reversing. The system detects obstacles and indicates these to the driver in good time. If an obstacle is detected by the system, a signal tone with a tone break sounds at a distance of 1.5 m from the inside sensors and 0.6 m from outside sensors. The tone break of the signal tone shortens as the vehicle approaches the obstacle. At a distance of 0.3 m, a continuous tone is emitted.

### System readiness

The ParkAssistent signals readiness with a short signal tone provided that:

the ignition is switched on

reverse gear is engaged

### System error

System errors are indicated by the sounding of a continuous tone after reverse gear has been engaged. This continuous tone differs from the continuous tone emitted when an obstacle is detected.

### System components

The ParkAssistent consists of

a control module which is located under the driver's seat together with a cover plate.

four ultra-sound sensors which are installed in the rear spoiler.

an audible signal transmitter which is integrated into the instrument cluster.



**Warning**

**Danger of injury and damage to vehicle when the vehicle is rolling backwards!**

> Reverse gear must be engaged and the ignition must be switched on; otherwise the ParkAssistent System is deactivated.



**Warning**

**Danger of injury and damage to vehicle when the system limits are reached. The system does not free the driver from his/her responsibility to be careful.**

> Short obstacles such as a person lying down cannot be detected.

> The reflecting behaviour of the system can be impaired by sound absorbent obstacles such as powder snow or sound-reflecting obstacles such as glass surfaces.

> Very thin obstacles and obstacles with no reflecting surfaces cannot be detected.

### Sensor signals

Every sensor emits an ultrasound beam with the following geometric specification.

horizontal beam width = 120°

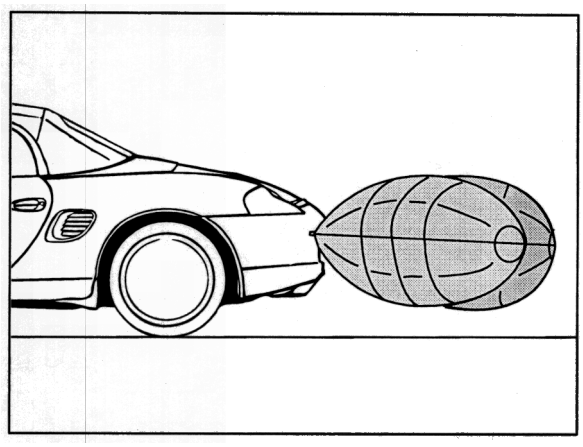
vertical beam width = 60°



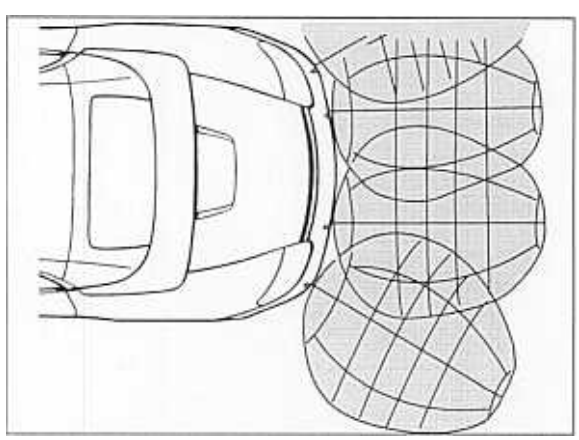
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The control module measures the distance between the sensor and the obstacle at cyclical intervals. The measurement is based on the echo depth sounding principle.
The sensors are activated in regular intervals for a short period of time and emit ultrasound waves. Then the sensors are switched to reception and collect the reflected soundwaves. The control module then calculates the distance between the sensor and the obstacle from the running time of the soundwaves.



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**Diagnosis**

The following components are monitored at cyclical intervals with the ignition switched on and reverse gear engaged.

Control module supply voltage

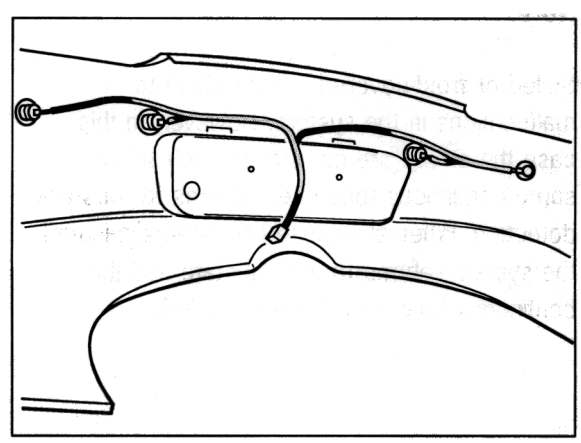
Sensor supply voltage

Functioning of all sensors

Functioning of control module (transmission and reception pulses, EEPROM)

**Note:**

External weather conditions such as ice, snow or dirt can impair the functioning of the sensors and result in an error.
The four sensors are connected to the control module by a wiring harness installed in the rear spoiler. The rear spoiler must be removed to replace the sensors or take measurements.



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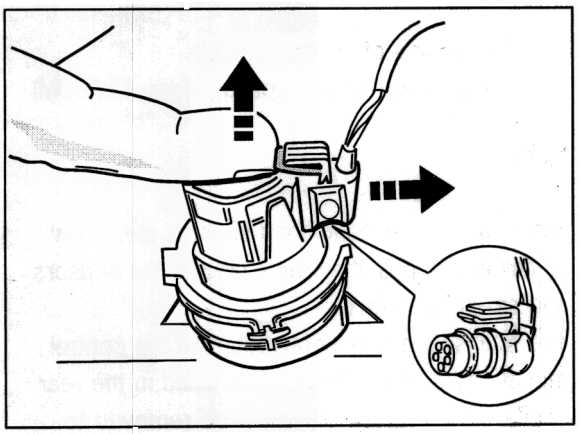
### Disconnecting the plug from the sensor

If a sensor must be replaced, the electrical plug connection must first be disconnected.

### Procedure

1. Raise the lower tab gently with one finger.

2. Pull out the plug.



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### Note:

Soiled or frost-covered sensors lead to malfunctions in the system. However, in this case the errors are not stored. Instead, the same continuous tone is emitted as for obstacle detection. When the cause has been eliminated, the system returns to normal state and the continuous tone is no longer emitted.



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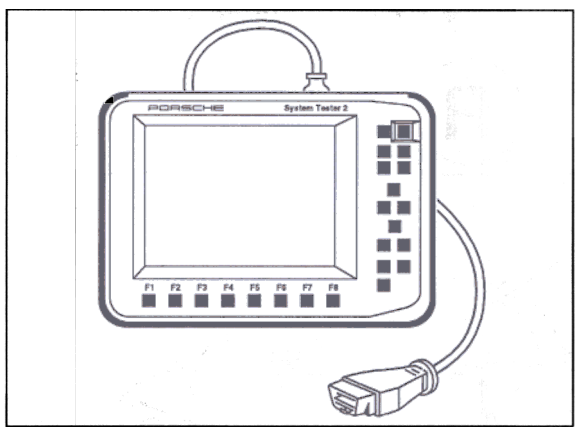
www.WorkshopManuals.co.uk



## Tools

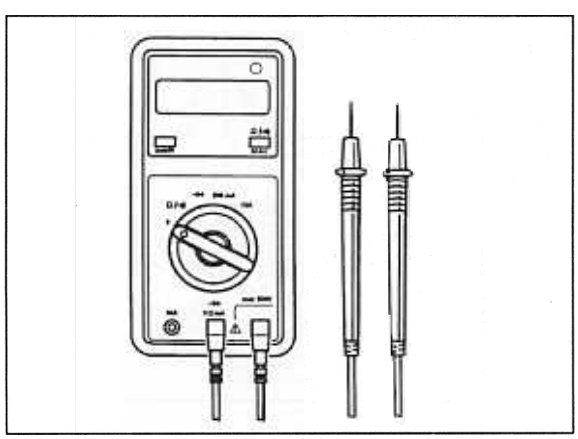
The following equipment is required for troubleshooting:

### 1. Porsche System Tester 2




547_96

### 2. Commercially available digital multimeter



2178_28

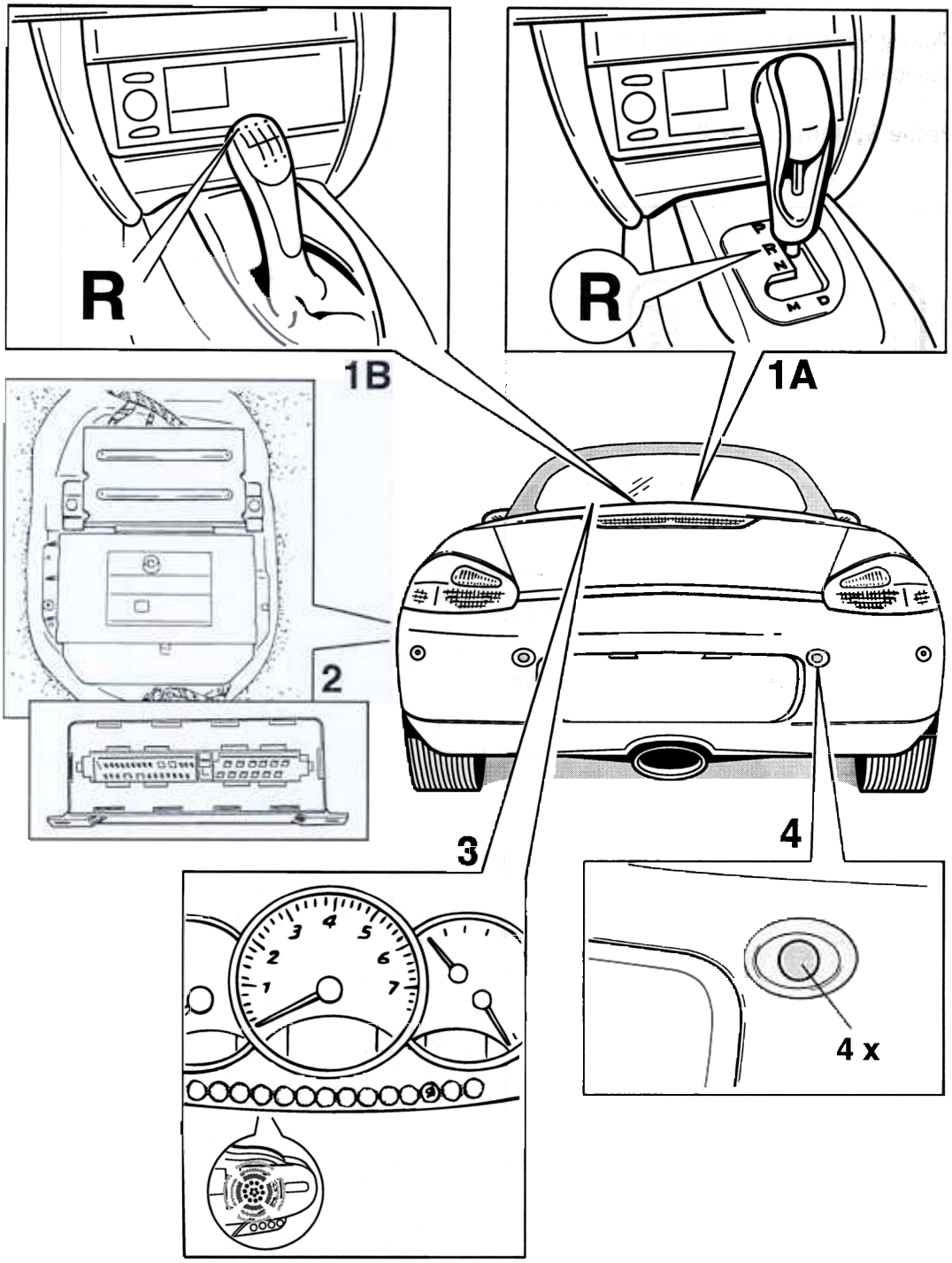


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## Component arrangement






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## Function of individual components

### [1A,1B]- Shift lever

The ParkAssistent is activated by engaging reverse gear with the ignition switched on (shift lever position R). During diagnosis the reverse gear must be engaged for this system. Otherwise the PST 2 cannot read out the control module.

### [2]-Control module

The control module is installed under the driver's seat and is protected by a cover plate.

### [3]- Loudspeaker in the instrument cluster

The loudspeaker is integrated into the instrument cluster and is actuated by the ParkAssistent control module. The loudspeaker emits the following signals:

| Signal type | Tone type |
|---|---|
| System readiness | 0.5 sec. continuous tone, 1200 Hz. |
| Error message | Continuous tone after switching on each time, 600 Hz. |
| Obstacle detection | Signal tone with tone break.<br>Tone break is distance sensitive.<br>Continuous tone from a distance of 30 cm, 1200 Hz. |

### [4]- Sensors for ParkAssistent

Four ultrasound sensors are installed in the rear spoiler.

The sensor for ParkAssistent consists of the following components together with the support:

[1]- Rosette

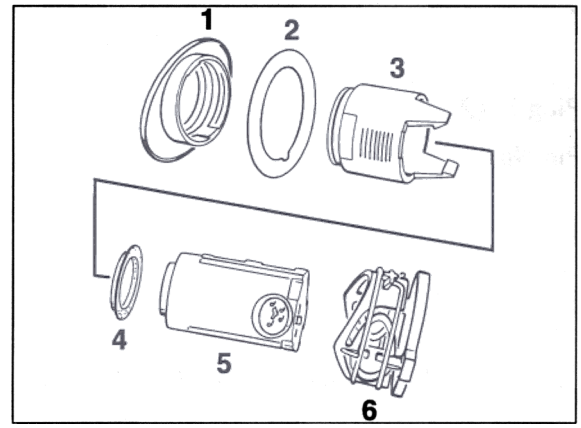
[2]- Washer

[3]- Sensor housing

[4]- Isolating ring

[5]- Sensor

[6]- Retaining spring




410_97

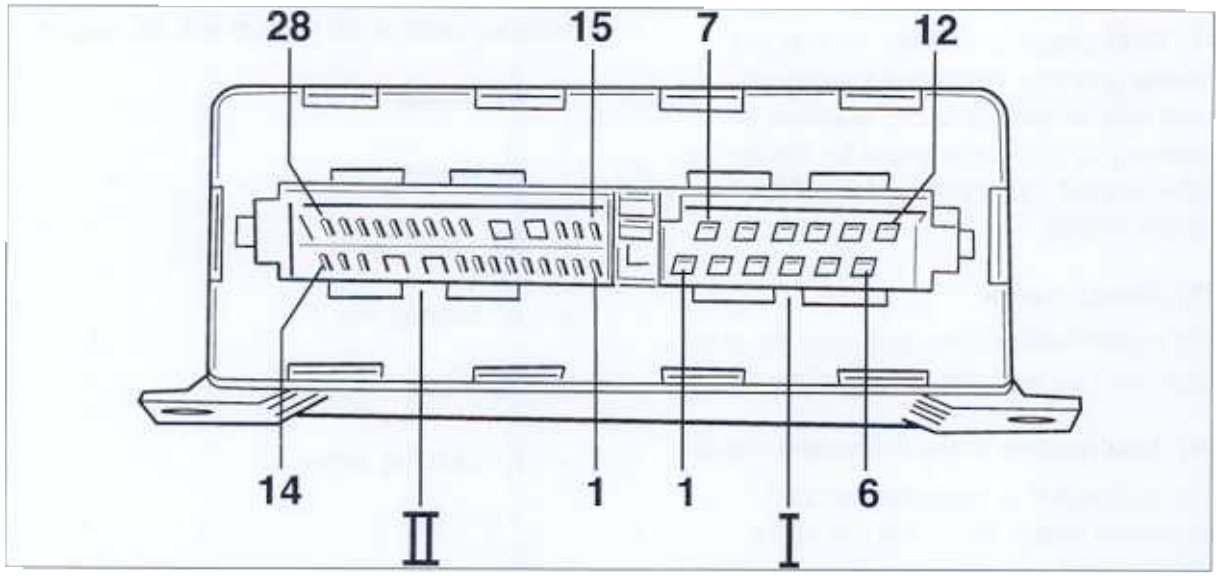


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## Connector assignment




488_98

**Plug I, 12 pole**

| Pin No. | Designation |
|---|---|
| 1 | Outside signal sensor on left |
| 2 | Inside signal sensor on left |
| 3 | Inside signal sensor on right |
| 4 | Outside signal sensor on right |
| 5 | Positive sensors |
| 6 | Not used |
| 7 | Ground sensors |

**Plug II, 28 pole**

| Pin No. | Designation |
|---|---|
| 1 | Loudspeaker in the instrument cluster |
| 2 | Not used |
| 3 | Diagnosis K-line |
| 4 to 9 | Not used |
| 10 | Terminal 31 |
| 11 to 17 | Not used |
| 18 | Reverse gear signal |
| 19 to 28 | Not used |



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## Fault overview

| Test point | Fault code | Fault effect | Page |
|---|---|---|---|
| | | System error | 91 - D 45 |
| 2 | 2 | System error | 91 - D 45 |
| 3 | 3 | System error | 91 - D 46 |
| 4 | 4 | System error | 91 - D 46 |
| 5 | 5 | System error | 91 - D 47 |
| 6 | 6 | System error | 91 - D 48 |
| 7 | 7 | System error | 91 - D 48 |
| 8 | 8 | Fault memory | 91 - D 49 |
| 9 | 9 | Fault memory | 91 - D 49 |
| 10 | 0 | Fault memory | 91 - D 50 |



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 1

Outside sensor on right does not function
**Fault code 1**

This fault is stored in the following cases:

1. Open circuit in the supply lead to the outside sensor on right.
2. Short to B+ in the supply lead to the outside sensor on right.
3. Short to ground in the supply lead to the outside sensor on right.

**Elimination:**

Delete fault memory, disengage reverse gear and switch off ignition. Then switch on ignition, engage reverse gear again and read out fault memory.

If the fault reappears, check plug on sensor for open circuit.

If there is no open circuit, check for continuity with an ohmmeter from sensor connector pin 1 to pin 4 and pin 1 to pin 2. Continuity should not be measured.

If no short circuit can be detected, replace sensor.

## Test point 2

Inside sensor on right does not function
**Fault code 2**

This fault is stored in the following cases:

1. Open circuit in the supply lead to the inside sensor on right.
2. Short to B+ in the supply lead to the inside sensor on right.
3. Short to ground in the supply lead to the inside sensor on right.

**Elimination:**

Delete fault memory, disengage reverse gear and switch off ignition. Then switch on ignition, engage reverse gear again and read out fault memory.

If the fault reappears, check plug on sensor for open circuit.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|
| | If there is no open circuit, check for continuity with an ohmmeter from sensor connector pin 1 to pin 4 and pin 1 to pin 2. Continuity should not be measured.<br><br>If no short circuit can be detected, replace sensor. |
| **Test point 3**<br>Inside sensor on left does not function<br>**Fault code 3** | This fault is stored in the following cases:<br>1. Open circuit in the supply lead to the inside sensor on left.<br>2. Short to B+ in the supply lead to the inside sensor on left.<br>3. Short to ground in the supply lead to the inside sensor on left.<br><br>**Elimination:**<br><br>Delete fault memory, disengage reverse gear and switch off ignition. Then switch on ignition, engage reverse gear again and read out fault memory.<br><br>If the fault reappears, check plug on sensor for open circuit.<br><br>If there is no open circuit, check for continuity with an ohmmeter from sensor connector pin 1 to pin 4 and pin 1 to pin 2. Continuity should not be measured.<br><br>If no short circuit can be detected, replace sensor. |
| **Test point 4**<br>Outside sensor on left does not function<br>**Fault code 4** | This fault is stored in the following cases:<br>1. Open circuit in the supply lead to the outside sensor on left.<br>2. Short to B+ in the supply lead to the outside sensor on left.<br>3. Short to ground in the supply lead to the outside sensor on left. |


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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

**Elimination:**

Delete fault memory, disengage reverse gear and switch off ignition. Then switch on ignition, engage reverse gear again and read out fault memory.

If the fault reappears, check plug on sensor for open circuit.

If there is no open circuit, check for continuity with an ohmmeter from sensor connector pin 1 to pin 4 and pin 1 to pin 2. Continuity should not be measured.

If no short circuit can be detected, replace sensor.

**Test point 5**

Control module supply voltage >16.5 V or <9 V

**Fault code 5**

This fault is stored in the following cases:

1. Low vehicle voltage
2. If there is a fault in the generator

**Elimination:**

Examine battery and generator voltages.

Select **Control module supply voltage** and **Sensor supply voltage** under the menu item *Actual values*, and check the values with reverse gear engaged and the engine running.

| | |
|---|---|
| Control module supply voltage display | approx. 12 V |
| Sensor supply voltage display | approx. 8 V |

Delete fault memory, disengage reverse gear and switch off ignition. Then switch on ignition, engage reverse gear again and read out fault memory.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 6

Control module supply voltage <6.5 V
**Fault code 6**

This fault is stored in the following cases:

1. Low vehicle voltage
2. If there is a short circuit in the supply leads

**Elimination:**

Examine battery and generator voltages.

Select **Control module supply voltage** and **Sensor supply voltage** under the menu item *Actual values*, and check the values with reverse gear engaged and the ignition switched on.

| | |
|---|---|
| Control module supply voltage display | approx. 12 V |
| Sensor supply voltage display | approx. 8 V |

Pull out number plate light and check for continuity with an ohmmeter on the pin and sleeve side of the plug connection pin 4 towards pin 3.

## Test point 7

Transmission / Reception pulse
**Fault code 7**

This fault is stored in the following cases:

1. Low vehicle voltage
2. If there is a short circuit in the supply leads
3. Faulty sensors or a faulty control module

**Elimination:**

Examine battery and generator voltages.

Select **Control module supply voltage** and **Sensor supply voltage** under the menu item *Actual values*, and check the values with reverse gear engaged and the ignition switched on.

| | |
|---|---|
| Control module supply voltage display | approx. 12 V |
| Sensor supply voltage display | approx. 8 V |



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|
| | Delete fault memory, disengage reverse gear and switch off ignition. Then switch on ignition, engage reverse gear again and read out fault memory.<br><br>If the fault reappears and one or several sensors are detected as being faulty as well, replace sensor(s). |
| **Test point 8**<br>EPROM data faulty or parameter set not programmed<br>**Fault code 8** | This fault is stored in the following cases:<br><br>1. The control module is faulty.<br><br>2. The control module is not correctly programmed.<br><br>**Elimination:**<br><br>Delete fault memory, disengage reverse gear and switch off ignition Then switch on ignition, engage reverse gear again and read out fault memory.<br><br>If the fault reappears, check that the vehicle type is correctly coded. If the coding is correct, replace control module. |
| **Test point 9**<br>EPROM data faulty or parameter set incorrectly programmed<br>**Fault code 9** | This fault is stored in the following cases:<br><br>1. The control module is faulty.<br><br>2. The control module is not correctly programmed.<br><br>**Elimination:**<br><br>Delete fault memory, disengage reverse gear and switch off ignition. Then switch on ignition, engage reverse gear again and read out fault memory.<br><br>If the fault reappears, select menu item *Coding* and check if the vehicle type is correctly coded.<br><br>If the coding is correct, replace control module. |



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 10

Unknown fault code
**Fault code 0**

This fault is stored in the following case:

Corrosion of ground points

**Elimination:**

Inspect the ground points for corrosion.

Clear fault memory.


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## Identification

The diagnosis software number and control module part number can be read out under the *Identification* menu item.

## Fault memory

Stored faults can be read out under the *Fault memory* menu item.

## Clear the fault memory

Faults stored in the control module can be erased under the *Erase fault memory* menu item. Here, all stored faults are erased.

## Actual values

In the *Actual values* menu item, the current values of the following parameters can be read out.

Control module supply voltage

Sensor supply voltage

Distance from outside sensor on right

Distance from inside sensor on right

Distance from inside signal sensor on left

Distance from outside signal sensor on left

Distance from sensor pair on right

Distance from sensor pair on left

The distance from the obstacle to the sensor or sensor pair is measured and displayed in the *Actual values* menu item. This allows the sensors to be checked for correct functioning.



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## Drive links

The loudspeaker in the instrument cluster can be checked for operation under the *Drive links* menu item. A continuous tone is emitted when this happens.

## Modify coding

Under the menu item *Modify coding*, the vehicle type *Boxster* or *911 Carrera (996)* can be coded.

**Procedure:**

1. Start automatic control module search.
2. Select control module *ParkAssistent*.
3. Select menu item *Modify coding*.
4. Select vehicle type and press the *F 8* key.


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94 92 Diagnosis/troubleshooting HBA

# Diagnosis/Troubleshooting

# HBA

# System HBA 01



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## Contents overview


| | |
|---|---|
| Menu (overview of the possible menus) | 94 - D 3 |
| Introduction | 94 - D 4 |
| General information on the fault memory | 94 - D 5 |
| Tools | 94 - D 6 |
| Component arrangement | 94 - D 7 |
| Function of individual components | 94 - D 8 |
| System description | 94 - D 10 |
| Connector assignment | 94 - D 11 |
| Ground points | 94 - D 13 |
| Fault overview | 94 - D 14 |
| Checking the actual values | 94 - D 22 |




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## Menu

### Overview of possible menus


| | |
|---|---|
| Identification | 94 - D 26 |
| Fault memory | 94 - D 26 |
| Erase fault memory | 94 - D 26 |
| Actual values | 94 - D 26 |
| Drive links | 94 - D 26 |
| Coding | 94 - D 27 |
| Calibration | 94 - D 28 |




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## Introduction

The manual contains the diagnosis for the following system:

HBA (headlight beam adjustment).

### General instructions / safety instructions

The following points must be observed during vehicle diagnosis:

After the battery is connected, volatile memories must be reprogrammed. In the case of radio coding and tuning, the customer must be informed of decoding and the deleted tuner memory.

The coding, calibration and headlight adjustment must be observed after an HBA control module or an angle sensor for HBA has been replaced or the running gear has been modified.

– After troubleshooting or repairs, erase the fault memory with the Porsche System Tester 2 and carry out a test drive.

– After the test drive, read out the fault memory with Porsche System Tester 2 again.



**Caution!**

**Danger of damage due to improper handling of the battery and the control module connectors.**

> Never disconnect battery with engine running.

> Never start engine without securely connected battery.

> Never pull off or push on plug connections of the control modules or other electronic components when the ignition is switched on.



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## General information on the fault memory

### Fault code setting conditions

Fault codes can be set in several circumstances,

e.g.

- Power failure
- Plug connections disconnected

In these circumstances, no fault is present in the system and the fault memory must be erased.

### Fault memory Info key F8

In order to be able to assess the fault exactly, the fault memory Info key F8 must be pressed. This information should be saved using the Save key F4 and printed out. If a fault code is stored with "not present" status and no other problems are present, then the fault memory must be erased.

### 1. Open circuit/short to ground/short to B+:

Open circuit / short to ground:

There is (present) or was (not present) a short circuit to ground or an open circuit in the circuit to the control module terminal.

Short to B+:

There is (present) or was (not present) a short circuit to voltage.

### 2. Version / vehicle parameters

Incorrect vehicle coding or coding not carried out.

### 3. Counter

When a fault first occurs, a fault entry is made in the fault memory and the memory is simultaneously set to 50. If a fault is present, the counter is incremented by 1 each time the ignition is switched on. The maximum count is 100. The counter is decremented if the fault is no longer present. The fault memory is erased automatically when the counter reaches 0.



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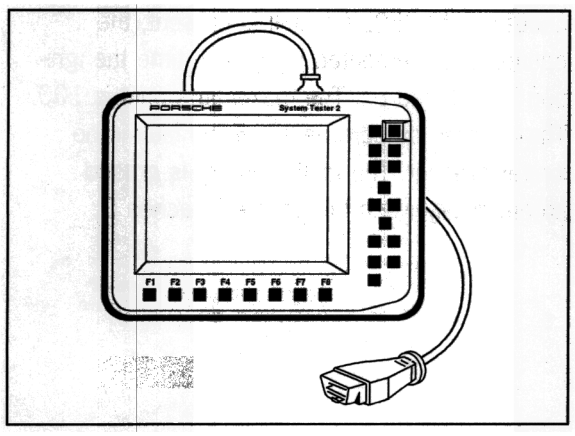
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## Tools

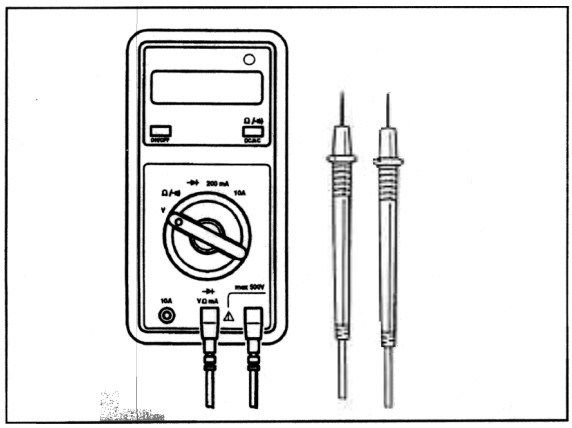
The following testers are required for vehicle diagnosis:

### Porsche System Tester 2 (PST 2)




547_96

### Commercially available digital multimeter



2178_28

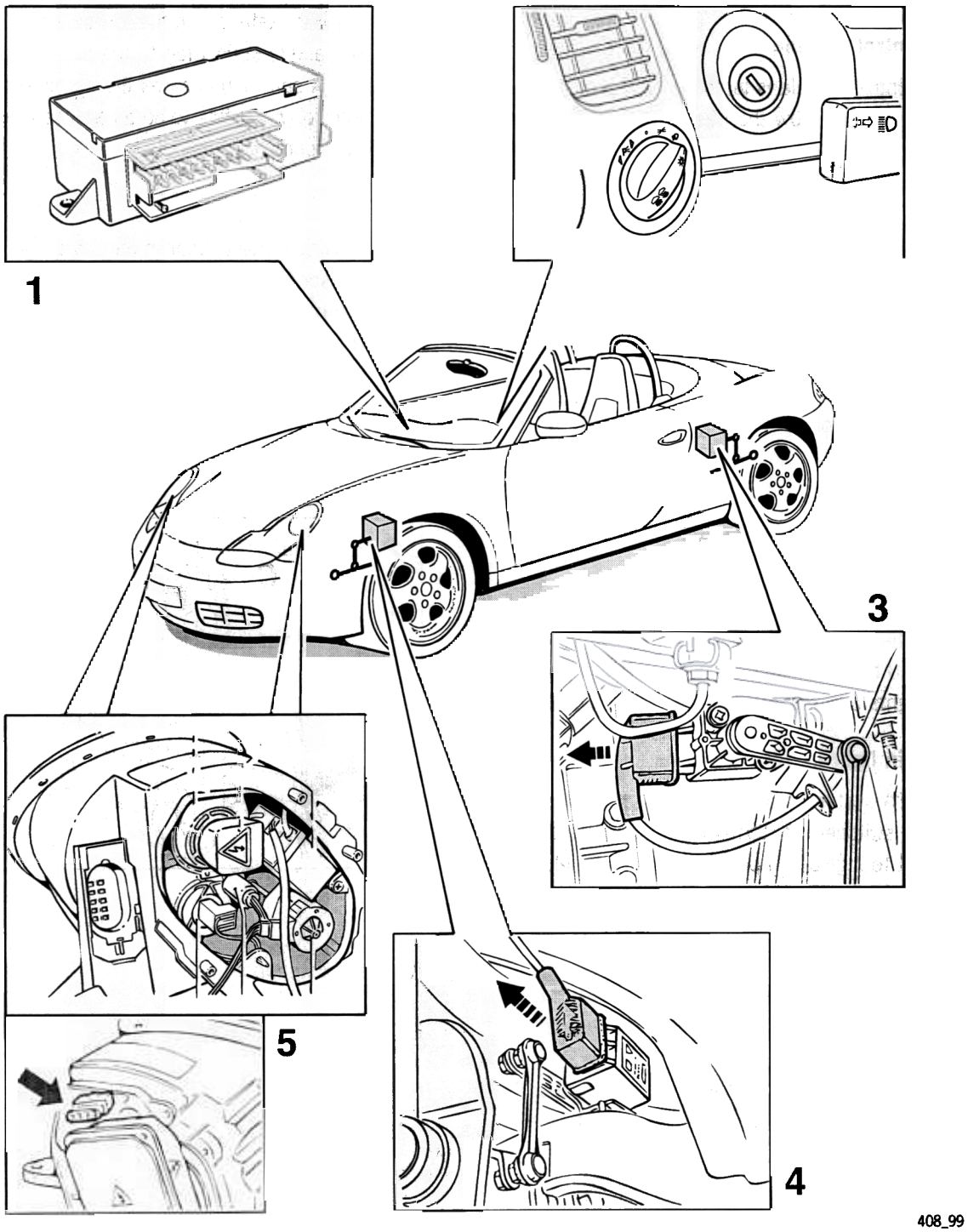


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## Component arrangement






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## Function of individual components

### 1. Control module

The control module is installed on the passenger's side below the passenger's airbag unit. If the control module is replaced, the following points must be observed:

1. Coding of the vehicle type

   Calibration of the control module

3. Adjustment of the headlights

If a new control module is installed, fault codes "6 Control unit coding error" and "7 Calibration not performed yet" are stored.

**Remedy:**

Start the automatic control module search and code the vehicle type. Then perform a calibration and then erase the fault memory. Adjust the headlights after calibration.

### 2. Main light switch

The HBA system is activated when the parking light is switched on (terminal 58). The headlights are set to high-beam position when the high-beam switch is operated.

### 3. Angle sensor for HBA, rear

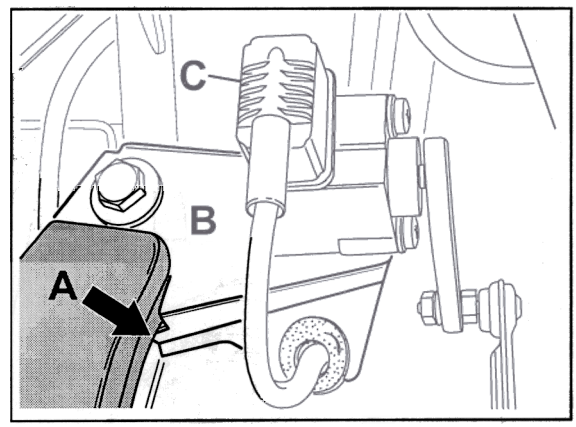
The sensor is fastened on the left side of the rear axle and is connected to the lower axle strut by a linkage.
A sensor measures the compression travel and forwards this value as a sensor voltage to the control module.

### 4. Angle sensor for HBA, front

The sensor is fastened on the left side of the front axle and is connected to the axle strut by a linkage. A sensor measures the compression travel and forwards this value as a sensor voltage to the control module.

**Note**

When making repairs, bear in mind that the angle sensor bracket (B) must be in contact **at the bottom** when the bolts on the rear-axle support (A) are tightened (arrow). Once installed, the control module must be calibrated with the Porsche System Tester 2. Adjust the headlights after calibration.




94790001

A - Rear-axle support

B - Angle sensor bracket

C - Angle sensor



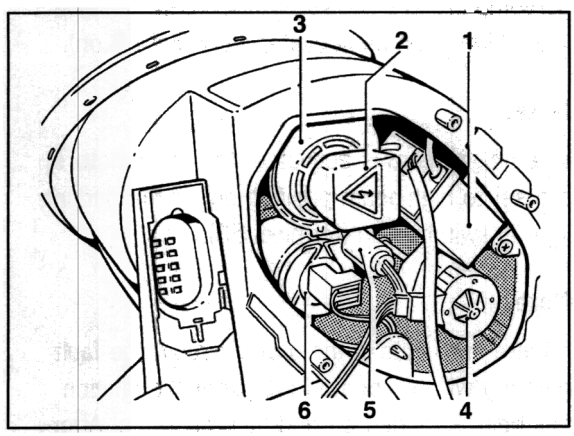
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## 5. Headlights

Each headlight includes a stepper (servomotor for HBA) which is activated by the control module. Figure 407_99 (arrow) shows the connections for the respective servomotor.

### Headlight without lens




9_69_99

1. Ignition unit
2. Lamp plug
3. Lamp fastener
4. Servomotor for HBA (stepper motor)
5. Parking light
6. High beam


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## System description

The HBA system is installed in vehicles with Litronic headlights.

The HBA system consists of the following components:

- Angle sensor for HBA, rear, with linkage
- Angle sensor for HBA, front, with linkage
- One stepper motor in each headlight (servomotor for HBA)
- Control module

Braking or acceleration, as well as loading, changes the inclination of the vehicle and therefore the headlight range. The HBA system already reacts to the above driving conditions when the dipped beam is switched on, preventing oncoming traffic from being dazzled. Furthermore, the system ensures an ideal headlight range for the driver in all driving situations.

The sensors at the front and rear axles measure the vehicle inclination and forwards this value as sensor signals to the control module, which carries out the further processing of the signals. If it should be necessary to change the headlight range, the stepper motors in the headlights are adjusted to the appropriate position. The HBA system also functions with the high-beam setting.

### Diagnosis

When the ignition is switched on, the *servomotors for HBA* are set to the minimal position and subsequently returned to the initial position. There is a fault in one or both motor circuits if the servomotors are not set to minimum position when the ignition is switched on. The angle sensor (axle position sensors) are faulty if the servomotors are not set to high-beam position when high beam is activated (terminal 58 on).

**Note:**

When high beam is activated, the servomotors are set to high-beam position only if the parking light is switched on (terminal 58).

**Note**

If there are faults in the motor circuit, the fault memory will be updated only after the ignition has been switched off and then on again. After remedying the fault cause, switch the ignition off and then on again and subsequently erase the fault memory.

If the fault cause has been remedied, faults in the sensor circuit will be automatically deleted when the ignition is switched off and then on again.

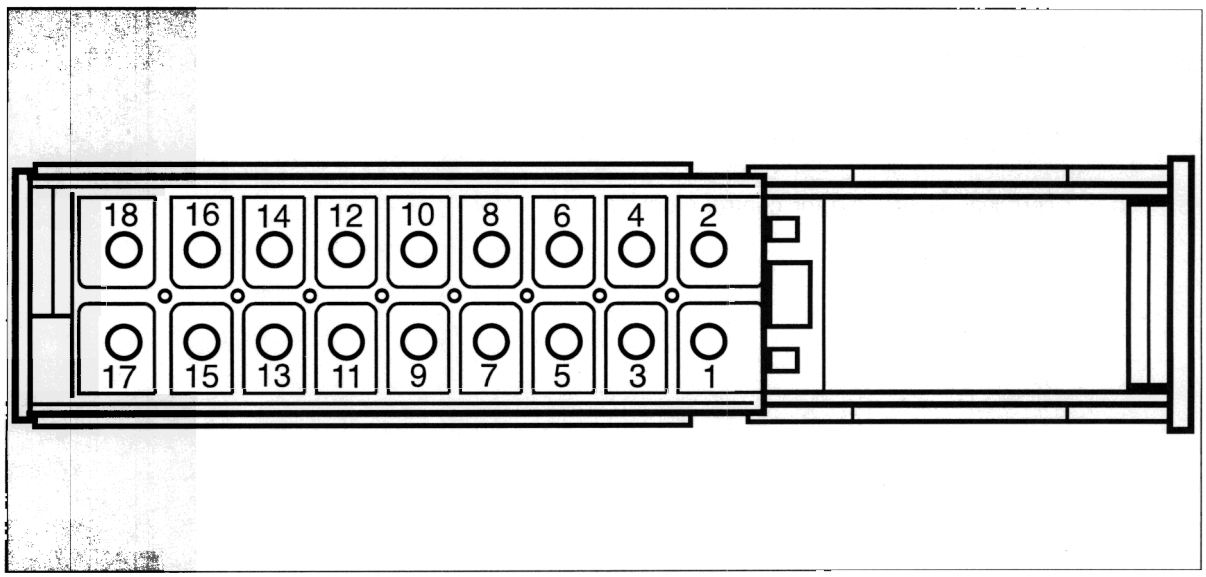


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## Connector assignment




94980001

| Pin | Designation | Pin | Designation |
|---|---|---|---|
| 1 | Stepper motor, left | 8 | Stepper motor, right |
| | Stepper motor, left | 9 | Diagnosis |
| 3 | Stepper motor, left | 10 | Terminal 58 (parking light) |
| 4 | Stepper motor, left | 11 | Wheel speed signal |
| 5 | Stepper motor, right | 12 | Angle sensor for HBA (signal wire), front |
| 6 | Stepper motor, right | 13 | Angle sensor for HBA (signal wire), rear |
| | Stepper motor, right | 14 | +5V supply for angle sensors |



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| Pin | Designation |
|---|---|
| 15 | Terminal 56A (high beam) |
| 16 | Terminal 15 (ignition) |
| 17 | Ground for angle sensors |
| 18 | Terminal 31 (ground for control module) |



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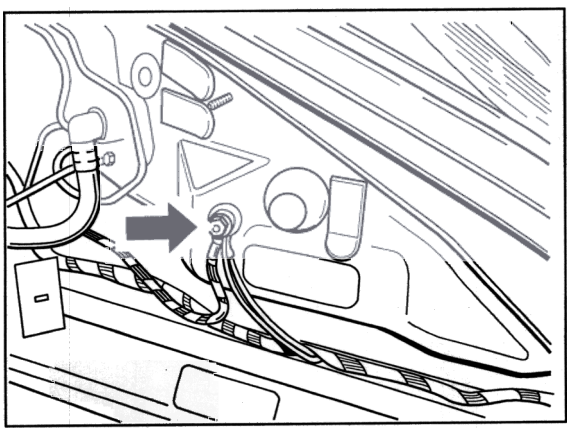

## Ground points

### Ground point 1

The ground point is located on the right in the front of the luggage compartment (KS front right)

### Ground point 2

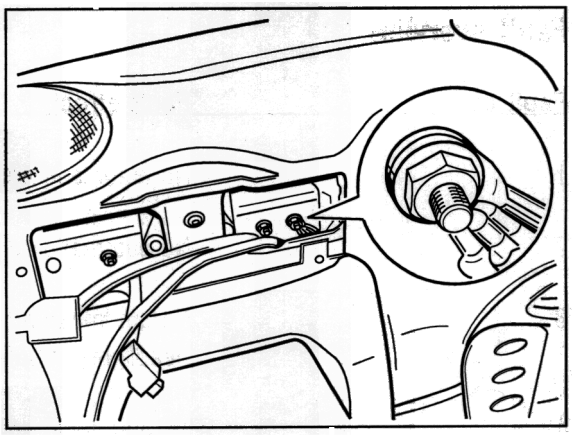
Ground point 2 is located on the left at the front of the luggage compartment (KS front left) Figure 225_99 shows the position of ground point 2.



225_99

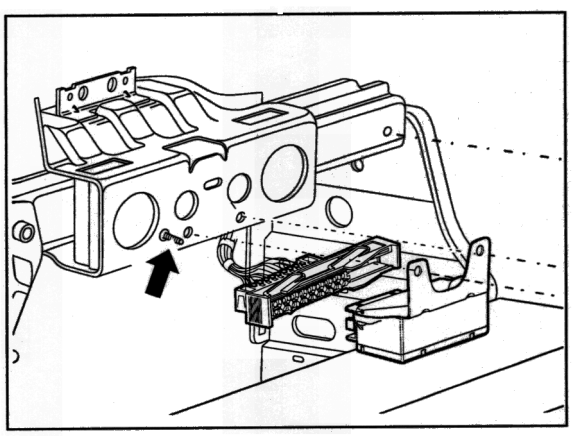
### HBA ground point (ground point 4)

This ground point is located behind the instrument cluster in the passenger compartment and is shown in Figure 70180003.



70180003

A new ground point was defined for the HBA during production (introduced in September 1998). Figure 70180001 shows the position of the ground point (on the passenger's airbag unit) after the modification (arrow).



70180001



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## Fault overview

| Fault code | Fault effect | Page |
|---|---|---|
| 1 | No automatic adjustment possible | 94 - D 15 |
| 2 | No automatic adjustment possible | 94 - D 16 |
| 3 | No automatic adjustment possible<br>Headlights in safety position | 94 - D 17 |
| 4 | No automatic adjustment possible<br>Headlights in safety position | 94 - D 18 |
| 5 | No automatic adjustment possible<br>Headlights in safety position | 94 - D 19 |
| 6 | No automatic adjustment possible | 94 - D 20 |
| 7 | No automatic adjustment possible | 94 - D 20 |



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Fault code 1

Motor circuit, left

This fault is stored in the following cases:

1. Short circuit to ground or open circuit in the circuit between control module and *servomotor for HBA, left,* terminals 1, 2, 3, 4

2. *Servomotor for HBA, left,* is faulty

3. The control module is faulty

**Elimination**:

– Switch off ignition

Pull plug off the *control module*

Pull plug off the *servomotor for HBA*

Check for open circuit in the supply leads to the *servomotor for HBA*, terminals 1, 2, 3, 4

Ohmmeter display < 5 Ohm

Check for short to B+ in the supply leads to the *servomotor for HBA*

Ohmmeter connected to terminals 1, 2, 3, and 4; measure resistance to ground

Ohmmeter display ∞ Ohm

Check for short circuits between the supply leads.

If no fault is detected in the wires, replace the *servomotor for HBA.* Also check the plug on the wiring harness side and replace if necessary.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Fault code 2

Motor circuit, right

This fault is stored in the following cases:

1. Short circuit to ground or open circuit in the circuit between control module and *servomotor for HBA, right*, terminals 5, 6, 7, 8

2. *Servomotor for HBA, right*, is faulty

3. The control module is faulty

**Elimination**:

– Switch off ignition

Pull plug off the *control module*

Pull plug off the *servomotor for HBA*

Check for open circuit in the supply leads to the *servomotor for HBA, right*, terminals 5, 6, 7, 8

Ohmmeter display < 5 Ohm

Check for short to B+ in the supply leads to the *servomotor for HBA*

Ohmmeter connected to terminals 5, 6, 7, and 8; measure resistance to ground

Ohmmeter display ∞ Ohm

Check for short circuits between the leads.

If no fault is detected in the wires, replace the *servomotor for HBA*.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Fault code 3

Axle position sensor, front (angle sensor for HBA)

This fault is stored in the following cases:

1. Short circuit to voltage/ground or open circuit in the supply leads between the control module and *angle sensor for HBA, front*

2. The sensor linkage is disengaged or faulty

3. *Angle sensor for HBA, front*, is faulty

4. The control module is faulty

**Elimination**:

– Visually inspect the sensor linkage and check the plastic holder of the sensor.

Switch off ignition

Pull plug off the *angle sensor for HBA, front*

Switch ignition on

Measure voltage between terminal 5 of the sensor plug and ground
Voltmeter display approx. 5 V

Measure voltage between terminal 5 and terminal 1 of the sensor plug

Voltmeter display approx. 5 V

In the PST2 menu item *Actual values*, select *Sensor voltage, spring travel 1 (front)*

Connect a jumper to terminals 4 and 5 of the sensor plug

PST2 display approx. 5 V

If no fault is detected in the wires, replace the angle sensor for HBA.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Fault code 4

Axle position sensor, rear (angle sensor for HBA)

This fault is stored in the following cases:

1. Short circuit to voltage/ground or open circuit in the supply leads between the *control module* and *angle sensor for HBA, rear*

2. The sensor linkage is disengaged or faulty

3. *Angle sensor for HBA* is faulty

4. The control module is faulty

**Elimination**:

Visually inspect the sensor linkage and check the plastic holder of the sensor.

Switch off ignition

Pull plug off the *angle sensor for HBA, rear*

Switch ignition on

Measure voltage between terminal 5 of the sensor plug and ground
Voltmeter display approx. 5 V

Measure voltage between terminal 5 and terminal 1 of the sensor plug

Voltmeter display approx. 5 V

In the PST2 menu item *Actual values*, select *Sensor voltage, spring travel 2 (rear)*

Connect a wiring harness jumper to terminals 4 and 5 of the sensor plug

PST2 display approx. 5 V

If no fault is detected in the wires, replace the angle sensor for HBA.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Fault code 5

5V supply for axle position sensors
(angle sensors for HBA)

This fault is stored in the following cases:

1. Short circuit to voltage/ground in the supply leads between the *control module* and *angle sensor for HBA*

2. *Angle sensor for HBA* is faulty

3. The control module is faulty

**Note:**

The 5V supply voltage for the sensors is ensured via terminal 14 on the HBA control module. A fault in this supply lead affects both angle sensors.

**Elimination:**

Switch off ignition

Pull plug off the *angle sensor for HBA, front*

Switch ignition on

Read the fault memory and observe whether fault code 5 reappears.

If fault code 5 does not reappear, the supply lead to the *angle sensor for HBA, front,* is faulty. Proceed as follows in this case:

Measure voltage between terminal 5 of the sensor plug and ground
Voltmeter display approx. 5 V

Measure voltage between terminal 5 and terminal 1 of the sensor plug

Voltmeter display approx. 5 V



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

In the PST2 menu item *Actual values*, select Sensor voltage, spring travel 1

Connect a jumper to terminals 4 and 5 of the sensor plug

PST2 display approx. 5 V

If no fault is detected in the wires or control module, replace the *angle sensor for HBA, front*.

If fault code 5 reappears after the plug has been removed from the *angle sensor for HBA, front*, there is a fault in the supply lead to the *angle sensor for HBA, rear*. Proceed as follows in this case:

Pull plug off the *angle sensor for HBA, rear*

Measure voltage between terminal 5 of the sensor plug and ground
Voltmeter display approx. 5 V

Measure voltage between terminal 5 and terminal of the sensor plug

Voltmeter display approx. 5 V

In the PST2 menu item *Actual values*, select Sensor voltage, spring travel 2

Connect a jumper to terminals 4 and 5 of the sensor plug

PST2 display approx. 5 V

If no fault is detected in the wires or control module, replace the *angle sensor for HBA, rear*.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Fault code 6

Control module coding error

This fault is stored in the following case:

1. Control module has not been coded yet

**Elimination:**

Code the control module

## Fault code 7

Calibration not carried out yet

This fault is stored in the following case:

1. A newly installed control module has not be calibrated yet

**Elimination:**

– Select menu item *Calibration*.

Follow instructions on the screen and carry out the calibration

**Note:**

Calibration is not possible if the sensor voltage lies outside the plausible range (sensor voltage less than 2 V or greater than 3 V).

Check the sensor voltages in menu item *Actual values*, with the vehicle parked on a level surface (vehicle not raised)

Check sensor holder and linkage


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## Checking the actual values

The specified voltage values are reference values

### Test point 1

Sensor voltage,
spring travel 1 (front)

Engine off

Vehicle on level surface

PST2 display $2\ V < U_s < 3\ V$

$U_s$ = sensor voltage

The system is faulty if voltage values such as 0.4 V in the lower range or 4.5 V in the upper range are displayed. See the description for fault code **3**

### Test point 2

Sensor voltage,
spring travel 2 (rear)

Engine off

Vehicle on level surface

PST2 display $2\ V < U_s < 3\ V$

$U_s$ = sensor voltage

The system is faulty if voltage values such as 0.4 V in the lower range or 4.5 V in the upper range are displayed. See the description for fault code **4**



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## Test point 3

Terminal 15

Engine off

All loads switched off

PST2 display greater than 10 V

**Note:**

Communication with the control module is not possible without terminal 15

## Test point 4

Terminal 58

Engine off

Parking light off

PST2 display 0

Engine off

Parking light on

PST2 display 1

If 0 is displayed with the parking light on:

1. Check fuse A5
2. Pull plug off the control module

Switch parking light on

Measure voltage between terminal 10 and ground

Voltmeter display greater than 10 V

If the signal (terminal 58) is present at the control module, replace the control module. Check the wire if the signal (terminal 58) is not present at the control module.

**Note:**

The headlights are not raised when high beam is activated if there is an open circuit at terminal 58 or if the control module is faulty.


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## Test point 5

ABS speed

Engine off

Vehicle raised

Ignition on

Slowly rotate the rear left wheel by hand

PST2 display — greater than 1 km/h

If 0 km/h is displayed when the wheel is rotated:

1. Check fuse B9

2. Switch ignition off and pull off plug on the control module

Switch ignition on

Rotate the rear left wheel by hand and measure the voltage (AC range) between terminal 11 and ground

Voltmeter display — greater than 1 V

If the wheel speed signal is present at the control module, replace the control module. If the wheel speed signal is not present at the control module, check the wire for open circuit or short to ground and check the ABS or PSM control module.



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## Test point 6

High beam

Engine off

Parking light off

High beam off

PST2 display 0

Engine off

Parking light on

High beam on

PST2 display

If 0 is displayed with the high beam on:

1. Check fuse A 1

2. Switch ignition off and pull off plug on the control module

Switch ignition on

Switch the high beam on and measure the voltage between plug pin 15 (high beam on signal) and ground.

Voltmeter display greater than 10 V

If the high beam signal is present at the control module, replace the control module. If the high beam signal is not present at the control module, check for an open circuit in the wire.



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## Identification

The diagnosis software number and control module part number can be read out under the *Identification* menu item.

## Fault memory

Faults stored in the control module can be read out under the *Fault memory* menu item

## Erase fault memory

Faults stored in the control module can be erased under the Erase fault memory menu item. Here, all stored faults are erased.

## Actual values

In the Actual values menu item, the current values of the following parameters can be read out:

Sensor voltage, spring travel 1 (front)

Sensor voltage, spring travel 2 (rear)

Terminal 15

Terminal 58

ABS speed

High beam

## Drive links

In the Drive links menu item, the servomotors for HBA can be moved to three different positions

Servomotor in max. position

Servomotor in centre position

Servomotor in min. position

**Note:**

The servomotors cannot be activated if there are any open circuits in the servomotor circuit.



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## Coding

A new control module can be coded in menu item *Coding*.

**Procedure:**

Connect PST2 and switch on the ignition

2. Select vehicle type *Boxster* and start the automatic control module search.

3. Select control module *HBA*.

4. Select menu item *Coding*.

5. Vehicle type *Boxster* has already been selected; carry out coding with the F8 key


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## Calibration

The control module can be calibrated under menu item *Calibration*. Calibration is necessary in the following cases:

When replacing the *servomotors for HBA*

When replacing the entire headlights

When replacing the control module

When replacing angle sensors for HBA

When modifying the running gear

**Note:**

Adjust the headlights after calibration.

**Procedure:**

1. Connect PST2 and switch on the ignition
2. Select vehicle type *Boxster* and start the automatic control module search.
3. Select control module *HBA*.
4. Select menu item *Calibration* and follow the instructions displayed by the PST2

**Note:**

The servomotors will be activated in the three possible positions – max. position, centre position and min. position – during calibration. Observe this process with the dipped beam switched on. Read out the fault memory after calibration.



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96 01 Diagnosis/Troubleshooting, Alarm system I32

# Diagnosis/Troubleshooting

# Alarm system

# System I 32


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## System description

### Control module

The immobilizer, central locking system, convertible top comfort control, radio remote control and monitoring of the vehicle interior functions are integrated in the alarm system. The control unit is fitted under the driver's seat. There are 5 versions of the control unit:

| Versions | Integrated functions |
|---|---|
| 1. Basic system | - immobilizer (with signal converter)<br>- central locking system<br>- interior lighting<br>- power window enabling<br>- power window comfort function<br>load disconnection |
| 2. Comfort system 433 MHz | Extras:<br>- alarm system and IR sensor<br>hand-held transmitter |
| 3. Comfort system 315 MHz | same as comfort system 433 MHz, but with 315 MHz hand-held transmitter |
| 4. Comfort system 433 MHz with tilt sensor | same as comfort system 433 MHz, but with integrated tilt sensor |
| 5. Comfort system 315 MHz with tilt sensor | same as comfort system 315 MHz, but with integrated tilt sensor |

The alarm system monitors the vehicle's outer panels by way of contact switches on the lids and in the doors. Attempted break-ins should be recognised and indicated by audible and visual signals.

The alarm horn, hazard warning lights and interior lights are activated for alarm output.

The system can be extended by connecting additional sensors (glass breakage sensor, tilt sensor).

### Central locking

Unlike the previous systems, a two-motor lock is used here.

locked motor

safe motor

The locked motor switches the central locking system from unlocked to locked or vice versa.

The safe motor switches the central locking system from locked to safe or vice versa.

The central locking system provides for three different locking conditions:

**Action 1:** If the lock is activated once, the so-called "Safe locking – door secured" function is activated.
The doors can be opened only with the key, but not with the inside door handles.



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**Action 2:** If the door lock is activated twice within 1 second, the vehicle is not accessible from the outside, but can be unlocked via the inside door handles.

**Emergency locking** The possibility of activating the door lock three times represents an emergency function. If the functional capability of the overall system is impaired because, for example, one door cannot be closed, it is possible in this way still to activate the other security functions.
Point 1 is activated when the system is operated via the hand-held transmitter.
The position of the doors is checked by limit switches in the lock.

The conditions for a locking process from unlocked to locked are listed in the following table.

**unlocked → locked**

| Triggering condition | Requirement |
|---|---|
| Door lock barrel:<br>Central locking system<br>Action 2 | - driver's door closed<br>- Term. S off<br>- Term. 15 off<br>- no valid transponder |
| Radio transmitter:<br>Central locking system<br>Action 2 | - driver's door closed<br>- Term. S off<br>- Term. 15 off<br>- no valid transponder |
| Door lock barrel:<br>Emergency locking | - possible at any time |
| Switch for central locking:<br>Operation actuated towards closed | - driver and passenger doors closed<br>- Terminals S and 15 were deactivated for at least 2 seconds after crash unlocking |
| Speed >$v_{gr}$<br>(variant coding) | - driver and passenger doors closed<br>- Term. 15<br>- Term. S<br>- Terminals S and 15 were deactivated for at least 2 seconds after crash unlocking |
| Term. 15 on<br>(variant coding) | - driver and passenger doors closed<br>- Terminals S and 15 were deactivated for at least 2 seconds after crash unlocking |


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| Triggering condition | Requirement |
|---|---|
| For all triggering conditions from **unlocked →safe** for central locking elements without safe position (national variants) | see **unlocked→safe** |
| $t_{wv1}$ after central locking system radio unlocking | after radio actuation<br>- no door was opened<br>- no Term. S was recognised<br>- no Term. 15 was recognised<br>- no further central locking system actions were carried out<br>Central locking system was in safe position or locked before radio actuation |

$t_{wv1}$ = Re-locking time, codable

The conditions for a locking process from unlocked to safe are listed in the following table.

**unlocked → safe**

| Triggering condition | Requirement |
|---|---|
| Door lock barrel:<br>Central locking system<br>Action 1 | - driver's door closed<br>- Term. S off<br>- Term. 15 off<br>- no valid transponder<br>- not possible for central locking element coding without safe position |
| Radio transmitter:<br>Central locking system<br>Action 1 | - driver's door closed<br>- no valid transponder<br>- Term. S off (at least 2 s)<br>- Term. 15 off<br>Not possible for central locking element coding without safe position |

The conditions for a locking process from locked to safe are listed in the following table.

**locked → safe**

| Triggering condition | Requirement |
|---|---|
| Door lock barrel:<br>Central locking system<br>Action 1 | - driver's door closed<br>- Term. S off<br>- Term. 15 off<br>- no valid transponder<br>Not possible for central locking element coding without safe position |



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The conditions for a locking process from safe to locked are listed in the following table.

**safe → locked**

| Triggering condition | Requirement |
|---|---|
| Central locking system was unlocked, door lock barrel or radio transmitter are actuated twice in 1 second, the central locking system lock is already in safe position after the first actuation, before the second actuation is detected | same as **unlocked →safe** |
| Central locking system already in safe position and door lock barrel is actuated towards closed twice in 1 second | same as **unlocked →safe** |
| During Term. 15 the safe position of a door is recognised | - Term. 15<br>- at least one door in safe position<br>- alarm system is not activated |
| Term. S on | within 10 seconds or in the inactive period after the locking command is given once |
| Term. 15 on or | |
| valid transponder | |
| Recognition of a valid transponder | alarm system is activated<br>- one door was mechanically unlocked<br>- other door is in safe position |
| IR sensor detects movement | system is in the time window for movement detection |

**locked → unlocked**

| Triggering condition | Requirement |
|---|---|
| Door lock barrel: Actuation towards open | not for coding variant "deactivate only via radio", if alarm system is activated |
| Radio transmitter: actuated once | - Term. S off (at least 2 seconds)<br>- Term. 15 off<br>- no valid transponder |
| Switch for central locking actuated towards open | - both doors closed and<br>- locking performed either with switch for central locking or<br>- after recognising a valid transponder or<br>- after locking with Term. 15 on or<br>- after locking via speed signal |
| Unlocking a door via inner actuating mechanism | - locking performed either with switch for central locking or<br>- after recognising a valid transponder or<br>- after locking with Term. 15 on or<br>- after locking via speed signal |
| Crash signal | - Term. S or<br>- Term. 15 |
| Desired locked position is not achieved | not for emergency function or actuation of the switch for central locking |



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**safe → unlocked**

| Triggering condition | Requirement |
|---|---|
| Door lock barrel: Actuation towards open | not for coding variant "deactivate only via radio", if alarm system is activated |
| Radio transmitter: actuated once | Term. S off (at least 2 seconds)<br>- Term. 15 off<br>- no valid transponder |

### Controlling the interior lights

The interior lights are not controlled directly by the door contacts. The interior lights are switched on:

When the central locking system is unlocked with a key or via radio transmitter.

When the doors are opened.

When Term. S is switched off.

The lighting stays on for approx. 30 seconds.

The interior lights are switched off (doors closed):

30 seconds after the central locking system is unlocked with a key or via radio transmitter.

30 seconds after the last open door has been closed with Term. 15 and Term. S switched off.

If both doors are closed with Term. 15 and Term. S switched on.

When the last open door has been closed with Term. 15 and Term. S switched on.

When the central locking system is actuated toward position *locked* or *safe* via hand-held transmitter or door lock barrel and with both doors closed.

When the last door has been closed, if one door was still open when the central locking system was actuated toward position *locked* or *safe* via hand-held transmitter or door lock barrel.

The interior lights are switched on and off dimmed.



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### Load disconnection

If the vehicle is locked up, some loads are disconnected from the supply voltage in order to conserve the battery. Load deactivation is activated if at least one of the following requirements is fulfilled:

10 minutes after locking up the vehicle via hand-held transmitter or door lock as well as after re-locking

2 hours after term. S is switched off

2 hours after the central locking system is unlocked via door lock or hand-held transmitter

2 hours after alarm output

### Play prevention

If the central locking system is actuated 11 times in less than 5 seconds, further operation is blocked for 30 seconds. If the last command before play prevention activation was a command to open the central locking system, then it is possible to give a further command which is independent from play prevention to close the system. For every further time that play prevention is activated the blocking time is doubled, up to a maximum of 240 seconds. The blocking time is cleared when a door is opened, and if play prevention is activated again, blocking time starts at 30 seconds.

### Crash signal

The airbag control module emits a signal to the alarm system control module no later than 35 seconds after Term. S is switched on and until Term. S is switched off again. This signal has a frequency of 10 Hz and indicates two states – normal state (live signal) and crash state. The two states differ in the pulse/duty ratio of the signal:

| | | |
|---|---|---|
| Live signal | 20% high | 80% low |
| Crash signal | 80% high | 20% low |

Signal evaluation begins 45 seconds after term. S is switched on. If no signal is detected from the airbag control module, a corresponding fault is entered into the fault memory.

### Undervoltage

If the battery voltage falls below 8.5 V, undervoltage occurs. If the battery voltage exceeds 9 V, the undervoltage is no longer present. If undervoltage occurs, the inputs *Door lock barrel open* and *Door lock barrel closed* are evaluated as inactive irrespective of their state. It is not possible to activate the central locking system via the door lock barrel when undervoltage occurs. The alarm system cannot be activated in the case of undervoltage.

### Lid release locking

Electric locking is carried out by the alarm system control module and is valid for the following country codings:

USA, England and Belgium

Functioning can be checked in the menu item *Drive links* under "Tank locking". This locks not only the tank cap but also the front and rear lid release.



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Load disconnection is deactivated if at least one of the following requirements is fulfilled:

Term. S is switched on

Term. 15 is switched on

A valid transponder is recognised

The vehicle is unlocked or locked via hand-held transmitter or door lock

A door is opened

Alarm output

**Power window control**

The alarm system control module controls not only enables power-window control, but also controls the comfort functions. If the central locking button on the hand-held transmitter is still pressed after an unlocking command has been given, the windows are controlled in the direction *open*. For a locking command with the central locking button on the hand-held transmitter (if the button is still pressed), the windows are controlled in the direction *closed* (national variant).

**Power-on behaviour**

After the operating voltage is switched on, the system is set to the operating state which it was in before the supply voltage was switched off.

For this purpose, all necessary operating parameters are stored in a permanent memory. If the system was disconnected from the supply in the armed state, this is entered as a fault in the status memory. The same applies if the system is disconnected from the supply voltage during an alarm output. The alarm output is continued as soon as the necessary supply voltage is available.

**Activating and deactivating alarm system**

The alarm system is activated by a ground signal at the activation input or by an activation signal from the hand-held transmitter.

The activation of the system is ignored if terminal 86 S, terminal 15 or a valid transponder key is recognised.

If for some reason it is not possible to lock the central locking system with a single locking command, the alarm system is not activated. Activation of the alarm system cannot be achieved until the central locking system is locked (if necessary manually) and a new activation command is issued or only locking is performed three times in quick succession. The interval between two locking operations must not be more than 1 second in this case. If the system is activated by this emergency function, the central locking system is locked without checking whether it can be completely locked.



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The system saves the type of activation in a status memory. If an alarm is triggered, this information is written into the alarm memory together with the alarm coding.

When the alarm system is activated, the inactive level of all inputs is checked for an inactive period of 10 seconds. Only inputs which are inactive for the entire inactive period can trigger the alarm after the end of the inactive period. All other inputs are blocked for alarm triggering for as long as they are in the active state. If the inactive state occurs at blocked inputs, the inactive period is started for them individually. All inputs which remain in the inactive state during the inactive period are then included in the alarm evaluation.

The inactive period commences immediately after activation if:

- it is apparent that the central locking system is locked or if locking occurred three times in succession

  and

- the signal "activate" is no longer present. (A second activation command for cancelling the anti-theft protection restarts the inactive period.)

In the case of an active signal at the inputs terminal 86 S, terminal 15 or if a valid transponder key is recognised, no activation is possible. If one of these inputs is active at the time of locking, control of the central locking system does not take place. The central locking system is opened if one of these inputs becomes active during the inactive period, since in this case the alarm system is also deactivated

If, when the vehicle is locked, a door is unlocked after expiry of the 10-second inactive period, this is immediately controlled in the direction "closed". An alarm is triggered at the same time. If, when the vehicle is locked, a door is unlocked from the inside during the inactive period, the central locking system is unlocked and the alarm system is deactivated. (Protection against unintentional locking/activation).

If, within 15 seconds after switching-on of the output "External Electronics", movements in the vehicle are detected by the passenger compartment monitor, the central locking system is moved to the locked position and the alarm system is deactivated.

After expiry of the inactive period, the output "External Electronics" is switched on if the alarm-triggering inputs for the doors, convertible top, convertible top compartment cover, front luggage compartment and rear engine compartment were inactive for the entire inactive period. If one of these inputs is active, the output "External electronics" is not switched on until this input becomes inactive and remains in this state for at least 10 seconds. The switched-on output "External Electronics" cannot be deactivated again by activating one of the above inputs. The output is switched off when deactivation takes place.

If, within a period of less than 1 second after the first activation pulse, a second activation command is issued, the output "External Electronics" is not switched on for one activation cycle. In this case, the central locking system is not secured, but only locked. This is acknowledged by signal 1 at the alarm horn and at the direction indicator light output, as well as during the deactivation period by the display type 3 at the alarm readiness display output and at the display output "Door locked". An opening command deletes the switch-off command.



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If activation occurs by way of the emergency function (locking 3 times quickly), the output "External Electronics" is not switched on for this activation cycle. This is acknowledged by signal 1 at the alarm horn and direction indicator light output, as well as by display type 2 at the alarm readiness display output. A deactivation command deletes this command.

If terminal 86 S, terminal 15 or a valid transponder key is recognised during the deactivation period, the alarm system is deactivated (protection against unintentional activation). The central locking system is opened in this case.

A system self-test is carried out upon activation. The result of this test is acknowledged via the alarm readiness light and the display "Door locked" and can be called up from the status memory via the diagnosis function. Equipment faults are written into the fault memory. Faults are indicated at the alarm horn and direction indicator light outputs by signal 2.

The alarm system is deactivated by a ground signal at the input "Deactivate" or by a deactivation signal from the hand-held transmitter. If a valid transponder key is recognised, the alarm system is also deactivated.

**Tilt sensor**

The integrated tilt sensor is active analogously to the output *Control of External Electronics*. During this time, a change in the vehicle tilt triggers an alarm. The current tilt of the vehicle is stored as a reference value during a calibration phase defined for the tilt sensor. The system has an alarm siren with a rechargeable battery supply which can emit an alarm if the vehicle battery is removed.

**Behaviour in the case of servicing**

When removing

the vehicle battery

the alarm siren

the alarm control centre

an activated tilt sensor will trigger an alarm. In order to carry out servicing work the alarm siren must be switched off before the work is commenced. To switch it off, insert the vehicle key with valid transponder into the ignition lock and rotate to actuate the buzzer contact. Components can be removed with triggering the alarm as long as the vehicle key remains inserted.



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## Function display and audible checkback

The operating state of the central locking system is fed back via the output "Door locked" and by corresponding activation of the interior light (signals 1 to 3). The operating state of the alarm system is also indicated during the inactive period by the alarm readiness display (display types 1 to 6). It is indicated exclusively by the alarm readiness display following expiry of the inactive period. Displayed system faults are always current faults. Previous system faults entered in the status memory have no influence on the function display.

Display type 1 (normal flashing)

Requirement: alarm system primed
no alarm output or
no active alarm input
after re-locking if
no alarm input is active

Duration: until deactivation, then
Display type 6

LED flashes with a frequency of 0.5 Hz
On time = 100 ms
Off time = 1900 ms

Display type 2 (double flashing)

Requirement: after alarm output or
active alarm input after activation
or re-locking

Duration: until deactivation, then
Display type 6

LED flashes with a frequency of 0.5 Hz
On time 1,2 = 100 ms
Off time 1 = 200 ms
Off time 2 = 1700 ms

Display type 3 (rapid flashing)

Requirement: alarm system primed
no active alarm inputs

Duration: inactive period, then Display type 1

LED flashes with a frequency of 2 Hz
On time = 100 ms
Off time = 400 ms

Display type 4 (rapid flashing)

Requirement: reception of an adapted
hand-held transmitter

Duration: push of the button

LED flashes with a frequency of 10 Hz
On time = 50 ms
Off time = 50 ms

Display type 5 (on)

Requirement: after central locking system
emergency locking or
after locking command
is given twice via
hand-held transmitter or door lock

Duration: for central locking system
emergency locking inactive period
then Display type 2
for locking command given twice
inactive period then Display type 1

The LED is continuously on


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Display type 6 (OFF)

The LED is not switched on

In addition, the checkback of faults and of the standard status is performed with signal 3 at the interior light output. An audible checkback via the alarm horn output also takes place at the alarm control module, together with a visual checkback via the outputs for the direction indicator lights.
The following signals are defined:

Signal 1

The outputs are triggered once
On time = 50 ms

Signal 2

The outputs are triggered twice
On time 1,2 = 50 ms
Off time = 200 ms

Signal 3

The outputs are triggered once
On time = 2500 ms

These functions can be switched on and off with the Porsche System Tester 2, depending on the national variants. The times are freely programmable.



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Assignment of the display type of the alarm readiness light for the operating state

| Operating conditions | Type of display | Operating state |
|---|---|---|
| **during inactive period** | | |
| Self-test OK, central locking system locked and secured, all inputs in normal position, not locked 3 x | Rapid flashing (3) | Not primed |
| Self-test OK, central locking system locked, all inputs in normal position, not locked 3 x | On (5) | Not primed |
| Self-test not in order | | Not primed |
| Self-test in order, central locking system cannot be locked, not locked 3 x | | Not primed |
| Self-test OK, central locking system locked, active inputs | Off (6) | Not primed |
| Self-test OK, locking/priming by locking 3 x | | Not primed |
| **Inactive period expired** | | |
| All inputs inactive, central locking system locked and secured, not locked 3 x, no alarm | Normal flashing (1) | Primed |
| All inputs inactive, central locking system locked, no alarm, not locked 3 x | Normal flashing (1) | Primed |
| Inputs active | Double flashing (2) | Primed for all non-active inputs |
| During or after alarm output | | Primed |
| Priming/locking command by 3 x rapid locking of the system | | Primed |
| Self-test not in order | | Not primed |



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If a control command is issued via the hand-held transmitter, this is confirmed with Display type 4 for the duration of the operation. This display has priority.

### Alarm triggering and alarm output

The alarm functions can be triggered only in the primed state.
A non-blocked alarm input triggers an alarm in the primed state with an active signal. The alarm-triggering input then remains blocked for further alarm triggering until it returns to the inactive state. Then, following expiry of the inactive period of 10 seconds, it is again included in the alarm evaluation, provided that it was inactive for the entire inactive period.

In a priming cycle, the inputs Passenger compartment monitor, External 1 trigger a maximum of three alarms.

The alarm output is via:

| | |
|---|---|
| Horn | depending on the country coding |
| Direction indicators | depending on the country coding |
| Interior lights | asynchronous with the direction indicator lights, depending on the country coding |

The alarm output with all associated actions is interrupted immediately in the event of deactivation.

### Radio remote control

If a command is issued via the hand-held transmitter, this is acknowledged with Display type 4 at the alarm readiness display for the duration of the operation.

Commands triggered and correctly executed via the hand-held transmitter are acknowledged as follows at the output for the direction indicator lights:

Secure with signal 2

Lock with signal 3

Unlock with signal 1

Depending on the country, the checkback signal can be programmed via the Porsche System Tester 2.

All other functions such as interior light control are controlled in the same way as with the vehicle key.

If operating commands are simultaneously present from the hand-held transmitter and the door lock barrels, the signal recognised first has priority.

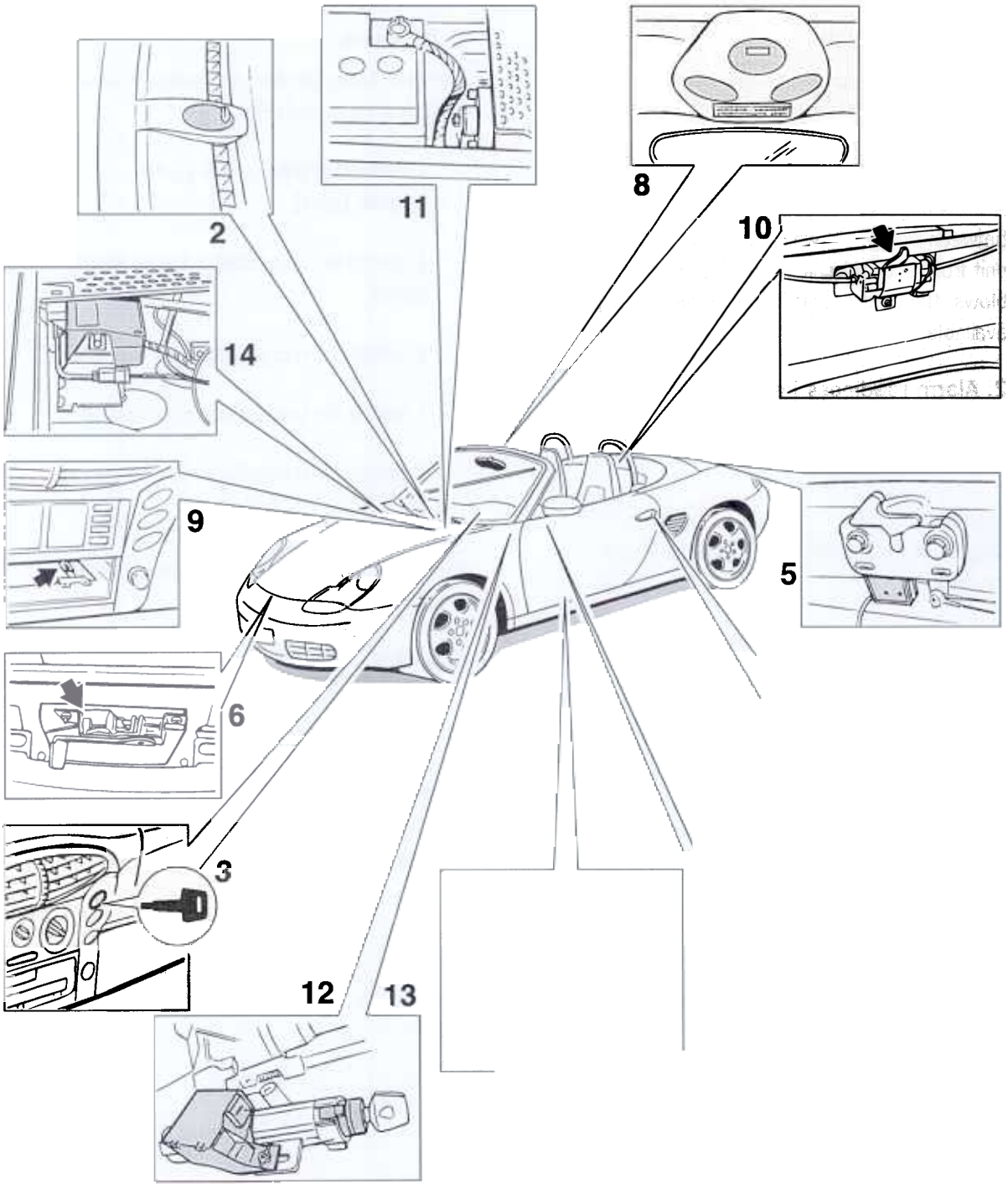


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## Component arrangement






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## Function of individual components

### 1. Control module

Processes the incoming signals and, if necessary, triggers an alarm.

### 1 a. Control unit fuse

A 15 A fuse is located in the control unit between both slots which protects the control unit from short circuit at the output. If this fuse blows, the control unit functions are no longer available.

### 2. Alarm readiness light

Function 1
Display of the locking state.

Function 2
Display of the operating state of the alarm system.

Six display types are possible:

Normal flashing (0.5 Hz)

Double flashing (0.5 Hz)

Rapid flashing (2.0 Hz)

Rapid flashing (10.0 Hz)

On

Off

### 3. Switch for central locking

The doors can be locked and unlocked with the switch for central locking.

### 4. Door lock

The door locks (driver's/passenger's door) each contain 5 microswitches:

1 switch for priming the system (ground pulse).

1 switch for deactivating the system (ground pulse).

1 switch for recognising door closed.

1 switch for recognising door locked.

1 switch for recognising door secured.

### 5. Switch, rear lid

The switch connects ground to the control module.

### 6. Switch, front lid

The switch connects ground to the control module.

### 7. Switch, oddments tray

The switch connects ground to the control module when the oddments tray is opened.



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### 8. Passenger compartment monitoring sensor and convertible top closed switch

The passenger compartment monitoring sensor connects ground to the control module when movement is detected in the vehicle. The convertible top closed switch is shown in Figure 8 behind the passenger compartment monitoring sensor. The switch connects ground to the control module. The function of the switch can be examined in the menu item *Input signals* under "Convertible top / sliding roof".

### 9. Radio alarm contact

The alarm contact on the radio mounting frame connects ground to the control module when the radio is removed from the frame.

### 10. Switch, convertible top compartment cover

The switch connects ground to the control module. The switch has been omitted in vehicles as from the Y-range.

### 11. Alarm horn

In the event of an alarm, the horn is supplied with positive potential by the control module.

**Note**

If the positive supply for the alarm horn is interrupted, the visual alarm is triggered via the direction indicator lights and the interior lights.

### 12. Signal converter

The signal converter obtains the transponder code from the signals sent by the transponder, and then sends this code on to the alarm system control module. With the help of Porsche System Tester 2 the transponder of a key which is inserted in the ignition can be adapted to one of the 4 memory locations for transponders. The first time the transponder is adapted, its *Secret Key* is programmed.

The *Secret Key* of the transponder can no longer be overwritten, i.e. a programmed and adapted transponder is permanently assigned to one vehicle.

### 13. Transponder coil

The transponder coil reads the transponder code out of the transponder.

### 14. Tilt sensor

The tilt sensor is located under the hood together with the alarm siren. The integrated sensor measures the tilt of the vehicle. If the change in the tilt exceeds a programmed limit value, an alarm is triggered. When the battery is removed, a valid transponder must first of all be recognised by the system. Removing the battery without a valid transponder triggers the alarm.



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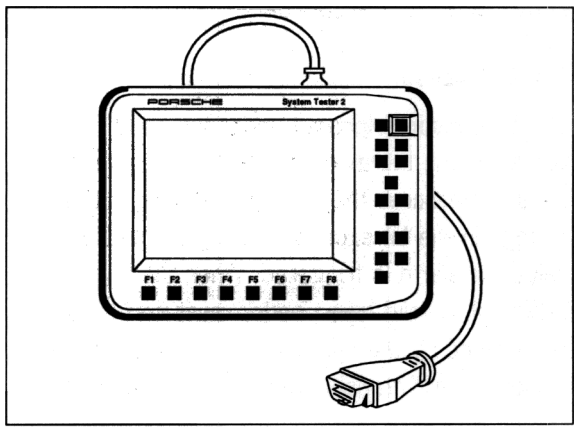
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## Tools

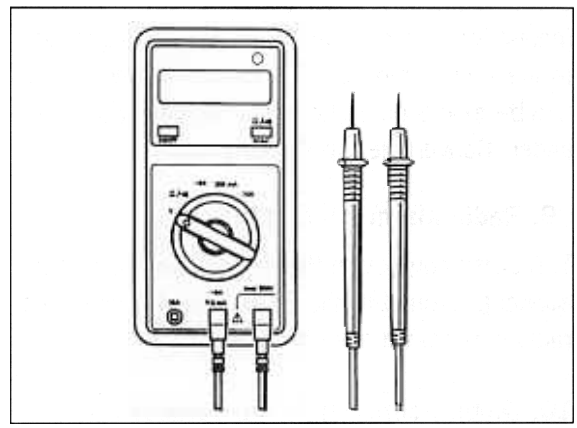
The following equipment is required for troubleshooting:

### 1. Porsche System Tester 2



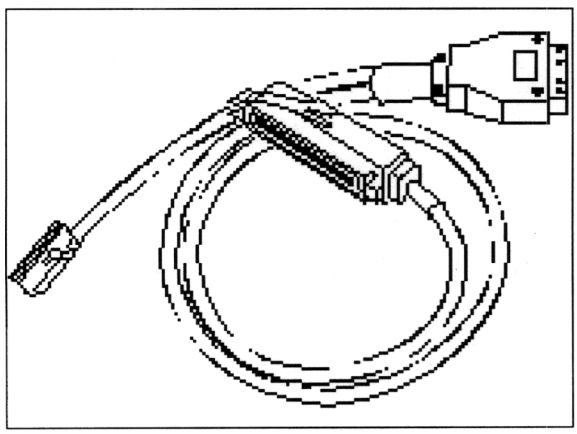
547_96

### 3. Commercially available digital multimeter



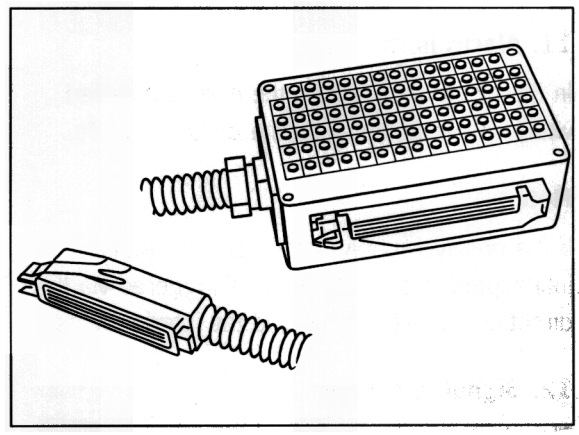
2178_28

### 2. Special tool 9617



9617_97

### 4. Special tool 9616



569_97

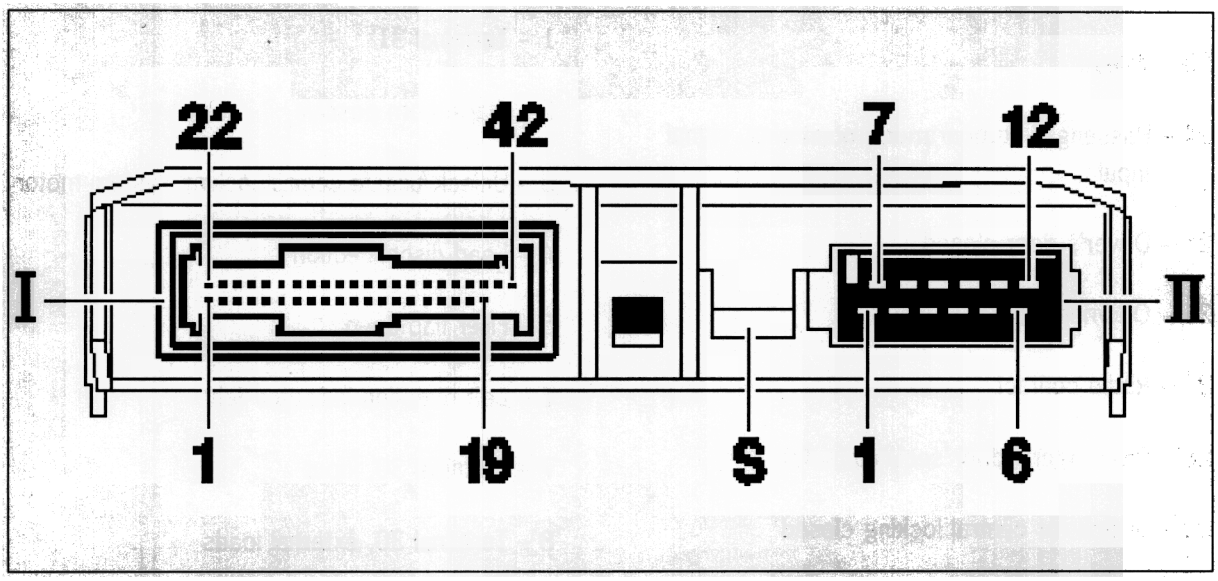


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## Connector assignment, control module




208_96

**Plug I (42 pole)**

Terminal:

1 – Antenna

2 – Diagnosis K-line

3 – Immobilizer data

4 – Immobilizer control

5 – Driver's door secured (safe)

6 – Convertible roof

7 – Passenger's door closed

8 – Passenger compartment monitoring on

9 – Convertible top compartment lid (omitted as from Y-range)

10 – Switch for central locking open

11 – External input 1

12 – Free

13 – Rear lid

14 – Speed signal

15 – Door lock barrel open

16 – Terminal 86 S (buzzer contact)

17 – Luggage compartment light, rear

18 – Power window control

19 –Safe central locking system motor

20 – Free



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21 – Free

22 – Antenna shield

23 – W-lead

24 – Passenger compartment monitoring, signal input

25 – Driver's door closed

26 – Oddments tray

27 – Radio contact

28 – Passenger's door secured (safe)

29 – Switch for central locking closed

30 – Driver's door locked

31 – Front lid

32 – Passenger's door locked

33 – Input, crash sensor

34 – Release, rear lid

35 – Door lock barrel closed

36 – Terminal 15

37 – Luggage compartment light, front

38 – Control, external electronics

39 – Alarm readiness light

40 – Comfort opening

41 – Indicator, door locked

42 – Comfort closing

**Plug II (12 pole)**

Terminal:

1 – Terminal 31

2 – Alarm horn positive

3 – Unlock/unsafe central locking system motor

4 – Load disconnection

5 – Filler flap open

6 – Left direction indicator light

7 – Terminal 30, input

8 – Terminal 30, external loads

9 – Lock central locking system motor

10 – Filler flap closed

11 – Interior light

12 – Direction indicator light, right



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## Fault memory

### Overview of possible faults

Door(s) secured and terminal 15 on

Door lock barrel closed, activated longer than 60 s

Door lock barrel open, activated longer than 60 s

Door lock barrel closed
Short to ground

Door lock barrel open
Short to ground

Door lock barrel open/closed
Short to ground

Central lock button, closed
Short to B+

Central lock button, open
Short to B+

Central lock button, open/closed
Short to B+

Voltage failure at terminal 30 with alarm system active

Voltage failure during alarm output

Wrong door lock

Left door secured, but not locked

Right door secured, but not locked

Control unit faulty

Signal from airbag
Short to B+

Signal from airbag
Short to ground

Power window control
Short to ground

Status lead, signal converter
Short to B+

Status lead, signal converter
Short to ground

W lead (DME - immobilizer) open circuit

Interior monitoring sensor
Short to ground

W lead (DME - immobilizer) short to B+

No terminal 86 S recognised

Version error
(recoding required)

Transponder
(relearning required)

Interior monitoring sensor
Short to B+ or faulty

Interior monitoring sensor faulty

Signal converter faulty

Signal converter coil fault

Transponder pill faulty or not present

Wrong key or wrong transponder pill

Passenger-side release stuck


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Driver-side release stuck

Short to B+ at a drive motor

Central locking synchronization

Airbag signal acknowledged

K lead

Radio transmitter code

Alarm siren

Door lock barrel open, activated longer than 60 s

EPROM fault (Checksum)

Tilt sensor not in normal position

No current in tank servo motor despite relay actuation

Central locking limit position safe not reached

Central locking limit position locked not reached

Central locking limit position unlocked not reached

Unknown DTC



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## Fault overview

| Test point | Fault code | Fault effect | Page |
|---|---|---|---|
| 1 | 01 | | 96 - D 28 |
| 2 | 02 | | 96 - D 28 |
| 3 | 03 | | 96 - D 29 |
| 4 | 04 | No central locking possible | 96 - D 30 |
| 5 | 05 | No central unlocking possible | 96 - D 31 |
| 6 | 06 | Central locking or unlocking not possible | 96 - D 31 |
| 7 | 07 | Same as Test point 4 | 96 - D 32 |
| 8 | 08 | Same as Test point 5 | 96 - D 33 |
| 9 | 09 | Same as Test point 6 | 96 - D 33 |
| 10 | 10 | Alarm system/central locking system without function | 96 - D 34 |
| 11 | 11 | Interruption of alarm output | 96 - D 34 |
| 12 | 12 | | 96 - D 34 |
| 13 | 13 | | 96 - D 35 |
| 14 | 14 | | 96 - D 35 |
| 15 | 15 | No function | 96 - D 36 |
| 16 | 16 | No unlocking of doors in the event of an accident | 96 - D 36 |
| 17 | 17 | Same as Test point 16 | 96 - D 36 |
| 18 | 18 | Power window control without function | 96 - D 37 |
| 19 | 19 | No engine start possible | 96 - D 37 |
| 20 | 20 | Same as Test point 19 | 96 - D 38 |
| 21 | 21 | Same as Test point 19 | 96 - D 38 |
| 22 | 22 | No passenger compartment monitoring | 96 - D 39 |
| 23 | 23 | | 96 - D 39 |


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| Test point | Fault code | Fault effect | Page |
|---|---|---|---|
| 24 | 24 | No engine start possible | 96 - D 39 |
| 25 | 25 | | 96 - D 39 |
| 26 | 26 | | 96 - D 40 |
| 27 | 27 | | 96 - D 40 |
| 28 | 28 | | 96 - D 40 |
| 29 | 29 | | 96 - D 40 |
| 30 | 30 | | 96 - D 40 |
| 31 | 31 | No engine start possible | 96 - D 41 |
| 32 | 32 | No passenger compartment monitoring | 96 - D 41 |
| 33 | 33 | Same as Test point 32 | 96 - D 41 |
| 34 | 34 | Same as Test point 32 | 96 - D 42 |
| 35 | 35 | Same as Test point 32 | 96 - D 42 |
| 36 | 36 | Same as Test point 32 | 96 - D 42 |
| 37 | 37 | Same as Test point 32 | 96 - D 43 |
| 38 | 39 | No engine start possible | 96 - D 43 |
| 39 | 40 | Same as Test point 38 | 96 - D 43 |
| 40 | 41 | Same as Test point 38 | 96 - D 44 |
| 41 | 42 | Same as Test point 38 | 96 - D 44 |
| 42 | 43 | No central locking possible | 96 - D 45 |
| 43 | 44 | No central locking possible | 96 - D 47 |
| 44 | 45 | Central locking or unlocking not possible | 96 - D 48 |

**Note**

Frequency counter
The frequency counter is set to 1 the first time a fault occurs. At every changeover from not present to present, the counter is increased by 1.



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| Test point | Fault code | Fault effect | Page |
|---|---|---|---|
| 45 | 46,47 | No central locking possible | 96 - D 49 |
| 46 | 48 | | 96 - D 51 |
| 47 | 49 | No communication with PST 2 | 96 - D 51 |
| 48 | 50 | | 96 - D 52 |
| 49 | 51 | | 96 - D 52 |
| 50 | 52 | | 96 - D 52 |
| 51 | 53 | | 96 - D 53 |
| 52 | 54 | | 96 - D 53 |
| 53 | 58 | | 96 - D 53 |
| 54 | 59 | | 96 - D 54 |
| 55 | 60 | | 96 - D 56 |
| 56 | 61 | | 96 - D 58 |
| 57 | XX | | 96 - D 61 |

**Note**

After a fault occurs in the alarm system and is remedied, the fault memory **must** be cleared.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

**Test point 1**

Door(s) secured and terminal 15 on
**Fault code 01**

Check coding (country coding)

Disconnect plug connection X 11 (driver's side).

Pull plug I off the alarm system control module
Disconnect plug connection X 12 (passenger's side).

Switch ignition on

Voltmeter at alarm system control module plug I pin 5 and ground
Voltmeter display: 0 V

Ohmmeter at alarm system control module plug I pin 5 and ground
Ohmmeter display: ∞ Ω

Ohmmeter at alarm system control module plug I pin 5 X 11 pin A 1 (pin side)
Ohmmeter display: < 5 Ω

**Note**

There is another plug connection in the door on the door lock.

Switch ignition on

Voltmeter at alarm system control module plug I pin 28 and ground
Voltmeter display: 0 V

Switch off ignition

Ohmmeter at alarm system control module plug I pin 28 and ground
Ohmmeter display: ∞ Ω

Ohmmeter at alarm system control module plug I pin 28 and the plug connection X 11 pin A 1 (pin side)
Ohmmeter display: < 5 Ω



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 2

Door lock barrel closed, activated longer than 60 s
**Fault code 02**

**Note**

This fault can also be caused by incorrect operation (door lock actuated toward "closed" direction for longer than 60 seconds).

1. Pull plug I off the alarm system control module.
2. Disconnect plug connection X 11 (driver's side).
3. Disconnect plug connection X 12 (passenger's side).
4. Check the wires from the alarm system control module plug I pin 35 to the door locks for short to ground.

Ohmmeter at alarm system control module plug I pin 35 and ground
Display: ∞ Ω

5. Check driver's side door lock switch contact.

Ohmmeter at plug connection X 11 pin A2 (sleeve side) and ground.
Door lock not actuated.
Display: ∞ Ω
Door lock actuated towards "Closed".
Display: < 5 Ω

6. Check passenger's side door lock switch contact.

Ohmmeter at plug connection X 12 pin A2 (sleeve side) and ground.
Door lock not actuated.
Display: ∞ Ω

Door lock actuated towards "Closed".
Display: < 5 Ω


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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

**Test point 3**

Door lock barrel open, actuated longer than 60 s

**Fault code 03**

**Note**

This fault can also be caused by incorrect operation (door lock actuated toward "Open" direction for longer than 60 seconds).

1. Pull plug I off the alarm system control module.
2. Disconnect plug connection X 11 (driver's side).
3. Disconnect plug connection X 12 (passenger's side).
4. Check the wires from the alarm system control module plug I pin 15 to the door lock for short to ground.

Ohmmeter at alarm system control module plug I pin 15 and ground
Display: ∞ Ω

5. Check driver's side door lock switch contact.

Ohmmeter at plug connection X 11 pin A6 (sleeve side) and ground
Door lock not actuated.
Display: ∞ Ω
Door lock actuated towards "Open".
Display: < 5 Ω

6. Check passenger's side door lock switch contact.

Ohmmeter at plug connection X 12 pin A6 (sleeve side) and ground
Door lock not actuated.
Display: ∞ Ω

Door lock actuated towards "Open".
Display: < 5 Ω



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|
| **Test point 4** | |
| Door lock barrel closed<br>Short to ground<br>**Fault code 04** | Troubleshooting in accordance with Test point 2. |
| **Test point 5** | |
| Door lock barrel open<br>Short to ground<br>**Fault code 05** | Troubleshooting in accordance with Test point 3. |
| **Test point 6** | |
| Door lock barrel open/closed<br>Short to ground<br>**Fault code 06** | 1. Pull plug I off the alarm system control module.<br>2. Disconnect plug connection X 11 (driver's side).<br>3. Disconnect plug connection X 12 (passenger's side).<br>4. Check the wires from the alarm system control module plug I pin 35 to the door locks for short to ground.<br>Ohmmeter at alarm system control module plug I pin 35 and ground<br>Display: ∞ Ω<br>5. Check driver's side door lock switch contact.<br>Ohmmeter at plug connection X 11 pin A2 (sleeve side) and ground.<br>Door lock not actuated.<br>Display: ∞ Ω<br>Door lock actuated towards "Closed".<br>Display: < 5 Ω<br>6. Check passenger's side door lock switch contact.<br>Ohmmeter at plug connection X 12 pin A2 (sleeve side) and ground.<br>Door lock not actuated.<br>Display: ∞ Ω<br>Door lock actuated towards "Closed".<br>Display: < 5 Ω |



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

7. Check the wires from the alarm system control module plug I pin 15 to the door locks for short to ground.

Ohmmeter at alarm system control module plug I pin 15 and ground.
Display: ∞ Ω

8. Check driver's side door lock switch contact.

Ohmmeter at plug connection X 11 pin A6 (sleeve side) and ground.
Door lock not actuated.
Display: ∞ Ω

Door lock actuated towards "Open"
Display: < 5 Ω

9. Check passenger's side door lock switch contact.

Ohmmeter at plug connection X 12 pin A6 (sleeve side) and ground.
Door lock not actuated.
Display: ∞ Ω

Door lock actuated towards "Open"
Display: < 5 Ω

## Test point 7

Central lock button closed
Short to B+
**Fault code 07**

1. Pull plug I off the alarm system control module.
2. Check switch for central locking.

Voltmeter at plug I pin 29 and ground.
Switch for central locking not actuated.
Display: 0 V

Switch for central locking actuated towards "Closed".
Display: Battery voltage.

3. Disconnect plug connection on the switch for central locking.
4. Check the wire from the alarm system control module to the switch for central locking for short to B+.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|
| | Voltmeter at plug I pin 29 and ground.<br>Display: 0 V |
| **Test point 8**<br>Central lock button open<br>Short to B+<br>**Fault code 08** | 1. Pull plug I off the alarm system control module.<br>2. Check the central locking button.<br>Voltmeter at plug I pin 10 and ground.<br>Switch for central locking not actuated.<br>Display: 0 V<br>Switch for central locking actuated towards "Open'<br>Display: Battery voltage<br>3. Disconnect plug connection on the switch for central locking.<br>4. Check the wire from the alarm system control module to the switch for central locking for short to B+.<br>Voltmeter at plug I pin 10 and ground.<br>Display: 0 V |
| **Test point 9**<br>Central lock button open/closed<br>Short to B+<br>**Fault code 09** | 1. Pull plug I off the alarm system control module.<br>2. Check the switch for central locking.<br>Voltmeter at plug I pin 29 and ground.<br>Switch for central locking not actuated.<br>Display: 0 V<br>Switch for central locking actuated towards "Closed".<br>Display: Battery voltage.<br>Voltmeter at plug I pin 10 and ground.<br>Switch for central locking not actuated.<br>Display: 0 V<br>Switch for central locking actuated towards "Open".<br>Display: Battery voltage |


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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|
| | 3. Disconnect the plug connection at the central locking button.<br><br>4. Check the leads from the alarm system control module to the central locking button for short to B+.<br><br>Voltmeter at plug I pin 29 and ground.<br>Display: 0 V<br><br>Voltmeter at plug I pin 10 and ground.<br>Display: 0 V |
| **Test point 10**<br>Voltage failure at terminal 30 with alarm system active<br>**Fault code 10** | 1. Check battery.<br><br>2. Check the power supply of the alarm system control module.<br><br>Voltmeter at alarm system control module plug II pin 1 (negative) and pin 7 (positive).<br>Display: Battery voltage.<br><br>**Note**<br><br>The positive lead (terminal 30) is fused in the distribution board with an 80 A fuse. |
| **Test point 11**<br>Voltage failure during alarm output<br>**Fault code 11** | Troubleshooting in accordance with test point 10. |
| **Test point 12**<br>Wrong door lock module<br>**Fault code 12** | **Note**<br><br>This fault concerns only USA vehicles. USA vehicles do not have the "Door secured" function.<br><br>Check country coding<br><br>2. Check the driver's side / passenger's side door lock and, if necessary, replace it with a door lock for USA vehicles. |



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 13

Left door secured but not locked
**Fault code 13**

1. Pull plug I off the alarm system control module.
2. Disconnect plug connection X 11 (driver's side).
3. Check the wire from the alarm system control module plug I pin 30 to the door lock for short to ground.

Ohmmeter at alarm system control module plug I pin 30 and ground
Display: ∞ Ω

4. Check driver's side door lock switch contact.

Ohmmeter at plug connection X 11 pin A3 (sleeve side) and ground
Door locked
Display: ∞ Ω

Door not locked
Display: < 5 Ω

## Test point 14

Right door secured but not locked
**Fault code 14**

1. Pull plug I off the alarm system control module.
2. Disconnect plug connection X 12 (passenger's side).
3. Check the wire from the alarm system control module plug I pin 32 to the door lock for short to ground.

Ohmmeter at alarm system control module plug I pin 32 and ground
Display: ∞ Ω

4. Check passenger's side door lock switch contact.

Ohmmeter at plug connection X 12 pin A3 (sleeve side) and ground
Door locked.
Display: ∞ Ω

Door not locked.
Display: < 5 Ω


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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|
| **Test point 15** | |
| Control unit faulty<br>**Fault code 15** | Replace alarm system control module. |
| **Test point 16** | |
| Signal from airbag<br>Short to B+<br>**Fault code 16** | 1. Pull plug I off the alarm system control module.<br>2. Unplug the DME (ECM) connector.<br>3. Pull off the airbag control module plug.<br>4. Voltmeter at alarm system control module plug I pin 33 and ground.<br>Display: 0 V<br>5. If no fault can be detected on the wiring harness, reattach the plug to the alarm system control module and the airbag control module.<br>6. Switch on the ignition and clear the fault memory of the alarm system.<br>If the fault no longer occurs, the DME control module is faulty.<br>If the fault occurs again, detach the plug on the airbag control module.<br>7. Clear the fault memory of the airbag system.<br>If the fault no longer occurs, the airbag control module is faulty.<br>If the fault occurs again, the alarm system control module is faulty. |
| **Test point 17** | |
| Signal from airbag<br>Short to ground<br>**Fault code 17** | 1. Pull plug I off the alarm system control module.<br>2. Unplug the DME (ECM) connector.<br>3. Pull off the airbag control module plug.<br>4. Voltmeter at alarm system control module plug I pin 33 and positive.<br>Display: 0 V |



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

5. If no fault can be detected on the wiring harness, reattach the plug to the alarm system control module and the airbag control module.
6. Switch on the ignition and clear the fault memory of the alarm system.

If the fault no longer occurs, the DME control module is faulty.

If the fault occurs again, detach the plug on the airbag control module.

7. Clear the fault memory of the alarm system.

If the fault no longer occurs, the airbag control module is faulty.

If the fault occurs again, the alarm system control module is faulty.

## Test point 18

Power window control
Short to ground
**Fault code 18**

1. Pull plug I off the alarm system control module.
2. Pull off plug I on the convertible top control module.
3. Ohmmeter at alarm system control module plug I pin 18 and ground
   Display: ∞ Ω

   If display < 5 Ω, check wiring harness for chafing and pinching damage.

## Test point 19

Status lead,
signal converter
Short to B+
**Fault code 19**

1. Pull plug I off the alarm system control module.
2. Pull off the plug on the signal converter for the transponder.
3. Voltmeter at alarm system control module plug I pin 4 and ground
   Switch ignition on.
   Display: 0 Volt

   If battery voltage is displayed, check the wiring harness for pinches and chafing damage.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 20

Status lead, signal converter Short to ground
**Fault code 20**

1. Pull plug I off the alarm system control module.
2. Pull off the plug on the signal converter for the transponder.
3. Ohmmeter at alarm system control module plug I pin 12 and ground.
   Display: ∞ Ω

   If display < 5 Ω, check wiring harness for chafing and pinching damage.

## Test point 21

W lead (DME - immobilizer) Open circuit
**Fault code 21**

1. Pull plug I off the alarm system control module.
2. Unplug the DME (ECM) connector.
3. Ohmmeter at alarm system control module plug I pin 23 and ECM connector pin 88 or, as from model year '00, plug I pin 3
   Display: < 5 Ω

Note:

The wire is routed via the plug connection X 3/1 pin 14 (up to and including model year '99, direct wire as from model year '00).

4. Ohmmeter at alarm system control module plug I pin 23 and ground
   Display: ∞ Ω
5. Voltmeter at alarm system control module plug I pin 23 and ground
   Switch ignition on.
   Display: 0 volts

If no fault can be detected, either the DME control module or the alarm system control module is faulty.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|
| **Test point 22**<br>Interior monitoring sensor<br>Short to ground<br>**Fault code 22** | 1. Pull plug I off the alarm system control module.<br>2. Pull off the plug at the interior monitoring sensor.<br>3. Ohmmeter at alarm system control module plug I pin 24 and ground.<br>Display: ∞ Ω<br>If display < 5 Ω, check wiring harness for chafing and pinching damage. |
| **Test point 23**<br>W lead (DME - immobilizer)<br>Short to B+<br>**Fault code 23** | See Test point 21, point 5. |
| **Test point 24**<br>Control unit faulty<br>**Fault code 24** | Replace control unit. |
| **Test point 25**<br>No terminal 86 S recognized<br>**Fault code 25** | 1. Check the fuses F 5/1<br>2. Pull plug I off the alarm system control module.<br>3. Voltmeter at alarm system control module plug I pin 16 and ground.<br>Insert the ignition key into the ignition lock.<br>Display: Battery voltage<br>4. Pull off the plug on the ignition lock.<br>5. Ohmmeter at ignition lock plug pin 86 S and alarm system control module plug I pin 16.<br>Display: < 5 Ω<br>6. If no fault is detected, replace the electrical contact part of the ignition lock. |


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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|
| **Test point 26** | |
| Version error (recoding required)<br>**Fault code 26** | Recode equipment version. |
| **Test point 27** | |
| Control unit faulty<br>**Fault code 27** | Replace control unit. |
| **Test point 28** | |
| Control unit faulty<br>**Fault code 28** | Replace control unit. |
| **Test point 29** | |
| Control unit faulty<br>**Fault code 29** | Replace control unit. |
| **Test point 30** | |
| Control unit faulty<br>**Fault code 30** | Replace control unit. |



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|
| **Test point 31** | |
| Transponder (relearning necessary)<br>**Fault code 31** | Relearn key. |
| **Test point 32** | |
| Interior monitoring sensor Short to B+ or faulty<br>**Fault code 32** | 1. Check power supply for passenger compartment monitoring sensor.<br>Disconnect plug connection to the passenger compartment monitoring sensor.<br>Voltmeter at plug connection, passenger compartment sensor monitoring pin 1 (positive) and pin 4 (negative).<br>Display: Battery voltage<br>2. Pull plug I off the alarm system control module.<br>3. Voltmeter at alarm system control module plug I pin 24 and ground<br>Display: 0 Volt<br>If battery voltage is displayed, check the wiring harness for pinches and chafing damage.<br>4. If no fault is detected, replace the alarm system control module. |
| **Test point 33** | |
| Interior monitoring sensor faulty<br>**Fault code 33** | Pull plug I off the alarm system control module.<br>Pull plug off the signal converter.<br>Voltmeter at alarm system control module plug I pin 3 and ground<br>Voltmeter display: 0 V<br>Ohmmeter at alarm system control module plug I pin 3 and ground<br>Ohmmeter display: ∞ Ω |


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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|
| | Ohmmeter at alarm system control module plug I pin 3 and signal converter plug pin 8 or<br>Ohmmeter display: < 5 Ω<br><br>If no faults are detected in the wire, replace the interior monitoring sensor. |
| **Test point 34**<br>Interior monitoring sensor Short to B+ or faulty<br>**Fault code 34** | 1. Pull plug I off the alarm system control module.<br>2. Pull off the plug at the interior monitoring sensor.<br>3. Voltmeter at alarm system control module plug I pin 24 and ground<br>Switch ignition on.<br><br>Voltmeter display: 0 V<br>If battery voltage is displayed, check the wiring harness for pinches and chafing damage.<br><br>4. Ohmmeter at alarm system control module plug I pin 8 and interior monitoring sensor pin 2<br><br>Ohmmeter display: < 5 Ω<br><br>If no fault is detected in the wiring, replace the interior monitoring sensor. |
| **Test point 35**<br>Interior monitoring sensor faulty<br>**Fault code 35** | See Test point 34. |
| **Test point 36**<br>Interior monitoring sensor Short to B+ or faulty<br>**Fault code 36** | Replace interior monitoring sensor. |



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 37

Interior monitoring sensor faulty
**Fault code 37**

Replace interior monitoring sensor.

## Test point 38

Signal converter faulty
**Fault code 39**

1. Check the power supply for the signal converter:

   Disconnect the plug on the signal converter.

   Voltmeter at plug housing pin 4 (negative) and pin 5 (positive).
   Ignition key inserted.
   Display: Battery voltage.

2. Check the control lead for the signal converter (pin 6) to the alarm system control module plug I pin 4 for open circuit, short to B+ and short to ground.

3. Check the control lead for the signal converter (pin 8) to the alarm system control module plug I pin 3 for open circuit, short to B+ and short to ground.

## Test point 39

Signal converter, coil fault
**Fault code 40**

Check the transponder coil:

Disconnect the plug on the signal converter.

Connect ohmmeter to pins 1 and 2
Display: 20 - 25 Ω at 20 °C

Connect ohmmeter to pin 1 and ground
Display: ∞ Ω


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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|
| **Test point 40**<br>Transponder pill faulty or not present<br>**Fault code 41** | 1. Check transponder for presence in the key.<br>2. Replace the transponder. |
| **Test point 41**<br>Wrong key or wrong transponder pill<br>**Fault code 42** | 1. Check transponder for presence in the key.<br>2. Wrong transponder – not adapted to the vehicle – teach the transponder.<br>3. Check the control lead for the signal converter (pin 6) to the alarm system control module plug I pin 4 for open circuit, short to ground and short to B+.<br>Pull plug I off the alarm system control module<br>Pull plug off the signal converter<br>Voltmeter at alarm system control module plug I pin 4 and ground<br>Voltmeter display: 0 V<br>Ohmmeter at alarm system control module plug I pin 4 and ground<br>Ohmmeter display: ∞ Ω<br>Ohmmeter at alarm system control module plug I pin 4 and signal converter plug pin 6<br>Ohmmeter display: < 5 Ω<br>4. Check the control lead for the signal converter (pin 8) to the alarm system control module plug I pin 3 for open circuit, short to ground and short to B+.<br>Pull plug I off the alarm system control module<br>Pull plug off the signal converter<br>Voltmeter at alarm system control module plug I pin 3 and ground<br>Voltmeter display: 0 V |



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

Ohmmeter at alarm system control module plug I pin 3 and ground
Ohmmeter display: ∞ Ω

Ohmmeter at alarm system control module plug I pin 3 and signal converter plug pin 8
Ohmmeter display: < 5 Ω

If no faults are detected in the wire, replace the signal converter.

## Test point 42

Passenger-side release stuck
**Fault code 43**

This fault is stored if the safe servo motor cannot be actuated, the safe contact (microswitch) is not connected to ground after release, or the alarm system control module is coded incorrectly (country coding).

1. Check the country coding in the menu item *Coding*

2. Select (Drive links) "Secure doors" with PST 2, and check whether the servo motors react.
   If the servo motors react, select "Driver's side secured" and "Passenger's side secured" in the menu item *Input signals*, and close the doors.

**Vehicle not secured**
PST2 display — Driver's side not secured
Passenger's side not secured

If the display of the PST2 deviates from this information or if the servo motor does not react, a fault is present in the supply lead or in the door lock (microswitch, servo motor).

Pull plugs I and II off the control module
Pull plug off door lock on passenger's side

Voltmeter at alarm system control module plug II pin 3 and ground
Voltmeter display: 0 V


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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

Ohmmeter at alarm system control module plug II pin 3 and ground
Ohmmeter display: ∞ Ω

Ohmmeter on alarm system control module plug II pin 3 and plug on passenger side door lock pin 1
Ohmmeter display: < 5 Ω

Voltmeter at alarm system control module plug I pin 28 and ground
Voltmeter display: 0 V

Ohmmeter at alarm system control module plug I pin 28 and ground
Ohmmeter display: ∞ Ω

Ohmmeter at alarm system control module plug I pin 28 and plug on passenger side door lock pin 7
Ohmmeter display: < 5 Ω

Pull plug off switch for central locking

Voltmeter at alarm system control module plug I pin 29 and ground
Voltmeter display: 0 V

Ohmmeter at alarm system control module plug I pin 29 and ground
Ohmmeter display: ∞ Ω

Ohmmeter at alarm system control module plug I pin 29 and plug on switch for central locking pin 1
Ohmmeter display: < 5 Ω

If no faults are detected in the wire, replace the door lock on the passenger's side.



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 43

Driver-side release stuck
**Fault code 44**

This fault is stored if the safe servo motor cannot be actuated, the safe contact (microswitch) is not connected to ground after release, or the alarm system control module is coded incorrectly (country coding).

1. Check the country coding in the menu item *Coding*

2. Select (Drive links) "Secure doors" with PST 2, and check whether the servo motors react.
   If the servo motors react, select "Driver's side secured" and "Passenger's side secured" in the menu item *Input signals*, and close the doors

**Vehicle not secured**
PST2 display: Driver's side not secured
Passenger's side not secured

If the display of the PST2 deviates from this information or if the servo motor does not react, a fault is present in the supply lead or in the door lock (microswitch, servo motor)

Pull plugs I and II off the control module
Pull plug off door lock on driver's side

Voltmeter at alarm system control module plug II pin 3 and ground
Voltmeter display: 0 V

Ohmmeter at alarm system control module plug II pin 3 and ground
Ohmmeter display: ∞ Ω

Ohmmeter at alarm system control module plug II pin 3 and plug on driver side door lock pin 1
Ohmmeter display: < 5 Ω

Voltmeter at alarm system control module plug I pin 5 and ground
Voltmeter display: 0 V


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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|
| | Ohmmeter at alarm system control module plug I pin 5 and ground<br>Ohmmeter display: ∞ Ω<br><br>Ohmmeter at alarm system control module plug I pin 5 and plug on driver side door lock pin 7<br>Ohmmeter display: < 5 Ω<br><br>Ohmmeter at alarm system control module plug I pin 28 and plug on door lock pin 7<br>Ohmmeter display: < 5 Ω<br><br>If no faults are detected in the wire, replace the door lock on the driver's side. |
| **Test point 44**<br>Servo motor, central locking system<br>Short to B+<br>**Fault code 45** | 1. Pull plug II off the alarm system control module.<br>2. Disconnect plug connection X 11 (driver's side).<br>3. Disconnect plug connection X 12 (passenger's side).<br>4. Switch ignition on.<br>5. Connect voltmeter to plug II pin 9 and ground.<br>Display: 0 volts<br>6. Connect voltmeter to plug II pin 3 and ground.<br>Display: 0 volts<br>7. Switch off ignition.<br>8. Ohmmeter at plug X 11 pin S 11 and pin S24 (sleeve side).<br>Display: 5 - 7 Ω at 20 °C<br>9. Ohmmeter at plug X 11 pin S 11 and pin S17 (sleeve side).<br>Display: 5 - 7 Ω at 20 °C<br>9. Ohmmeter at plug connection X 12 pin 11 and pin 24 (sleeve side).<br>Display: 5 - 7 Ω at 20 °C<br>10. Ohmmeter at plug connection X 12 pin 11 and pin 24 (sleeve side).<br>Display: 5 - 7 Ω at 20 °C |



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 45

Central locking synchronization
**Fault code 46, 47**

These faults are stored in the memory if at least one safe contact does not reach the safe position after two synchronisation actuations towards safe.

1. With PST 2 (drive links), check whether the servo motor reacts with the door closed.

If the servo motors react, select "Driver's side locked" and "Passenger's side locked" in the menu item *Input signals*, and close the doors

**Vehicle not locked**

| | |
|---|---|
| PST2 display | Driver's side not locked<br>Passenger's side not locked |

If the display of the PST2 deviates from this information or if the servo motors do not react, a fault is present in the supply lead or in the door lock module (microswitch, servo motor)

Pull plug I off the alarm system control module
Pull plug off door lock (driver's side / passenger's side)

Voltmeter at alarm system control module plug I pin 5 and ground

| | |
|---|---|
| Voltmeter display: | 0 V |

Ohmmeter at alarm system control module plug I pin 5 and ground

| | |
|---|---|
| Ohmmeter display: | ∞ Ω |

Ohmmeter on alarm system control module plug I pin 5 and plug on driver side door lock pin 7

| | |
|---|---|
| Ohmmeter display: | < 5 Ω |


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|---|---|

Voltmeter at alarm system control module plug I pin 28 and ground
Voltmeter display: 0 V

Ohmmeter at alarm system control module plug I pin 28 and ground
Ohmmeter display: ∞ Ω

Ohmmeter at alarm system control module plug I pin 28 and plug on passenger side door lock pin 7
Ohmmeter display: < 5 Ω

Pull plug off switch for central locking

Voltmeter at alarm system control module plug I pin 29 and ground
Voltmeter display: 0 V

Ohmmeter at alarm system control module plug I pin 29 and ground
Ohmmeter display: ∞ Ω

Ohmmeter at alarm system control module plug I pin 29 and plug on switch for central locking pin 1
Ohmmeter display: < 5 Ω

Voltmeter at alarm system control module plug I pin 30 and ground
Voltmeter display: 0 V

Ohmmeter at alarm system control module plug I pin 30 and ground
Ohmmeter display: ∞ Ω

Ohmmeter at alarm system control module plug I pin 30 and plug on driver side door lock pin 3
Ohmmeter display: < 5 Ω



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|
| | Voltmeter at alarm system control module plug I pin 32 and ground<br>Voltmeter display: 0 V<br><br>Ohmmeter at alarm system control module plug I pin 32 and ground<br>Ohmmeter display: ∞ Ω<br><br>Ohmmeter at alarm system control module plug I pin 32 and plug on driver/passenger side door lock pin 3<br>Ohmmeter display: < 5 Ω<br><br>If no faults are detected in the wire, replace the door lock. |
| **Test point 46**<br>Airbag signal acknowledged<br>**Fault code 48** | This fault is stored in the memory if the airbag control module transmits a signal to the alarm system control module after the airbag has been triggered. This is a triggering log.<br><br>1. Clear fault memory.<br>Switch ignition off and then on again.<br>Check whether the fault appears again.<br>If the fault reappears, pull off plug II on alarm system control module<br>Ohmmeter on alarm system control module plug II pin 1 and ground<br>Ohmmeter display: < 5 Ω<br><br>Check the entire system for operation. |
| **Test point 47**<br>K lead<br>**Fault code 49** | This fault is stored in the memory if the K lead has a short to ground for at least 2 s when the ignition is switched on.<br><br>Connect special tools 9616 and 9617 and switch on ignition.<br>Connect ohmmeter to special tool 9616, pin 2 and to ground to check for open circuit. |


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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

## Test point 48

Radio transmitter code
**Fault code 50**

This fault is stored in the memory if the radio transmitter is detected as unknown after the button is pressed.

1. Check if the hand-held transmitter is adapted correctly.
2. Check if the second hand-held transmitter is detected by the control module.
3. If the second hand-held transmitter does not perform the function either, replace the control module.

## Test point 49

Alarm siren
**Fault code 51**

This fault is stored in the memory if an internal control module fault is present.

1. Delete fault memory and check whether the fault appears again. If the fault reappears, replace the control module.
2. If the fault does not reappear, switch off the ignition, switch it on again and check the function of the system.

## Test point 50

Door lock barrel open, actuated for longer than 60 s
**Fault code 52**

This fault is stored in the following case:

Short circuit to ground in the supply lead between plug I pin 15 on the control module and door lock pin 6.

The control module is faulty

1. Pull plug I off the control module
2. Pull plug off the door lock
3. Measure the resistance between plug I pin 15 and ground

Ohmmeter display: ∞ Ω



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|
| **Test point 51**<br>EPROM fault<br>Checksum<br>**Fault code 53** | This fault is stored in the following case:<br>The control module is faulty<br>Replace control module. |
| **Test point 52**<br>Tilt sensor not in normal position<br>**Fault code 54** | This fault is stored in the following cases:<br>Additional alarm system (alarm siren with tilt sensor) is not installed correctly<br>Additional alarm system (tilt sensor) is faulty<br>Check installation position and position of the tilt sensor. |
| **Test point 53**<br>No current in tank servo motor despite relay actuation<br>**Fault code 58** | This fault is stored in the following cases:<br>Short circuit to ground or open circuit between plug II on control module pin 5 or 10, and tank cap actuator<br>Pin 1 or 2 or faulty shift elements for tank cap.<br>In the menu item *Drive links*, select "Tank locking" and carry out the drive link test. If the shift element for the tank cap does not react:<br>Pull plugs I and II off the alarm system control module<br>Ohmmeter at alarm system control module plug II pin 1 and ground<br>Ohmmeter display: < 5 Ω<br>Pull plug off shift element for tank cap. |


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|---|---|
| | Voltmeter at alarm system control module plug II pin 10 and ground<br>Voltmeter display: 0 V<br><br>Voltmeter at alarm system control module plug II pin 5 and ground<br>Voltmeter display: 0 V<br><br>Ohmmeter on alarm system control module plug I pin 10 and plug on shift element for tank cap pin 1<br>Ohmmeter display: < 5 Ω<br><br>Ohmmeter at alarm system control module plug I pin 10 and ground<br>Ohmmeter display: ∞ Ω<br><br>Ohmmeter on alarm system control module plug I pin 5 and plug on shift element for tank cap pin 2<br>Ohmmeter display: < 5 Ω<br><br>Ohmmeter at alarm system control module plug I pin 5 and ground<br>Ohmmeter display: ∞ Ω<br><br>If no faults are detected in the wire, replace the shift element for the tank cap. |
| **Test point 54**<br>Central locking limit position safe not reached<br>**Fault code 59** | This fault is stored in the following cases:<br>– Open circuit in the supply lead to plug II pin 1 (terminal 31)<br><br>Short to ground or open circuit in the supply lead to plug II pin 8<br><br>Short circuit to voltage/ground or open circuit in the supply lead to plug II pin 9<br><br>Short circuit to voltage/ground or open circuit in plug II pin 19 |



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

Door lock (driver/passenger) is faulty

**Elimination:**

In the menu item *Drive links*, select "Secure doors" and carry out the function test

In the menu item *Input signals*, select "Driver's side secured" and "Passenger's side secured" and compare the switch positions with the input signals table.

Pull plugs I and II off the alarm system control module

Ohmmeter on plug II pin 1 and ground
Ohmmeter display: < 5 Ω

Voltmeter at plug II pin 8 and ground
Voltmeter display: Battery voltage
If 0 V is displayed, check fuse C3

Voltmeter at plug II pin 9 and ground
Voltmeter display: 0 V

Ohmmeter on plug II pin 9 ground
Ohmmeter display: ∞ Ω

Ohmmeter on plug II pin 9 and plug on door lock (driver's side / passenger's side) pin 2
Ohmmeter display: < 5 Ω

Voltmeter at plug I pin 19 and ground
Voltmeter display: 0 V

Ohmmeter at plug I pin 19 and ground
Ohmmeter display: ∞ Ω


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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|
| | Ohmmeter on plug I pin 19 and door lock (driver's side / passenger's side) pin 9<br>Ohmmeter display < 5 Ω |
| **Test point 55**<br>Central locking limit position locked not reached<br>**Fault code 60** | This fault is stored in the following cases: |
| | Switch for central locking is faulty |
| | Open circuit in the supply lead to plug II pin 8 (terminal 30) |
| | Short circuit to voltage/ground or open circuit in the supply lead to plug II pin 9 |
| | Short circuit to voltage/ground or open circuit in plug I pin 5 |
| | Short circuit to voltage/ground or open circuit in plug I pin 28 |
| | Short circuit to voltage/ground or open circuit in plug I pin 29 |
| | Door lock (driver's side / passenger's side) is faulty |
| | In the menu item *Input signals*, select "Central locking button", close doors, actuate the switch for central locking and check whether the switch operates. |
| | In the menu item *Drive links*, select "Lock doors" and carry out the function test |



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

In the menu item *Input signals*, select "Driver's side locked" and "Passenger's side locked" and compare the switch positions with the input signals table.

Pull plugs I and II off the alarm system control module

Pull plug off door lock (driver's side / passenger's side)

Pull plug off *Switch for central locking*

Voltmeter at plug I pin 29 and ground
Voltmeter display: 0 V

Ohmmeter at alarm system control module plug I pin 29 and ground
Ohmmeter display: ∞ Ω

Ohmmeter on alarm system control module plug I pin 29 and plug on switch for central locking pin 1
Ohmmeter display: < 5 Ω

Voltmeter at plug II pin 8 and ground
Voltmeter display: Battery voltage
If 0 V is displayed, check fuse C3

Voltmeter at plug II pin 9 and ground
Voltmeter display: 0 V

Ohmmeter on alarm system control module plug II pin 9 and ground
Ohmmeter display: ∞ Ω

Ohmmeter on alarm system control module plug II pin 9,and pin 2 of both plugs on door lock (driver's side / passenger's side)
Ohmmeter display: < 5 Ω

Voltmeter at plug I pin 5 and ground
Voltmeter display: 0 V


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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|
| | Ohmmeter at alarm system control module plug I pin 5 and ground<br>Ohmmeter display: ∞ Ω<br><br>Ohmmeter on alarm system control module plug I pin 5 and pin 7 of both plugs on door lock (driver's side / passenger's side)<br>Ohmmeter display: < 5 Ω<br><br>Voltmeter at plug I pin 19 and ground<br>Voltmeter display: 0 V<br><br>Ohmmeter at plug I pin 19 and ground<br>Ohmmeter display: ∞ Ω<br><br>Ohmmeter on plug I pin 19 and door lock (driver's side / passenger's side) pin 9<br>Ohmmeter display: < 5 Ω |
| **Test point 56**<br>Central locking limit position unlocked not reached<br>**Fault code 61** | This fault is stored in the following cases:<br><br>Short circuit to voltage/ground or open circuit in the supply lead to plug II pin 3<br><br>Short circuit to voltage/ground or open circuit in the supply lead to plug I pin 5<br><br>Short circuit to voltage/ground or open circuit in the supply lead to plug I pin 28<br><br>Short circuit to voltage/ground or open circuit in plug I pin 29<br><br>Short circuit to voltage/ground or open circuit in plug I pin 30 |



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

Short circuit to voltage/ground or open circuit in plug I pin 32

Door lock (driver/passenger) is faulty

Wrong country coding: Check coding

Pull plug I off the alarm system control module

Pull plug off *Switch for central locking* and switch on ignition

Voltmeter at plug I pin 29 and ground
Voltmeter display: 0 V

Ohmmeter at alarm system control module plug I pin 29 and ground
Ohmmeter display: ∞ Ω

Ohmmeter at alarm system control module plug I pin 29 and plug on switch for central locking pin 1
Ohmmeter display: < 5 Ω

Pull plug off door lock (driver's side / passenger's side)

Voltmeter at plug I pin 5 and ground, ignition on
Voltmeter display: 0 V

Ohmmeter at alarm system control module plug I pin 5 and ground
Ignition off, ohmmeter display: ∞ Ω

Ohmmeter at alarm system control module plug I pin 5, and pin 7 of both plugs on driver/passenger side door lock
Ohmmeter display: < 5 Ω

Voltmeter at plug I pin 28 and ground, ignition on
Voltmeter display: 0 V

Ohmmeter at alarm system control module plug I pin 28 and ground
Ohmmeter display: ∞ Ω


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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|

Ohmmeter on alarm system control module plug I pin 28, and pin 7 of both plugs on door lock (driver's side / passenger's side)
Ignition off, ohmmeter display: < 5 Ω

Voltmeter at plug I pin 28 and ground, ignition on
Voltmeter display: 0 V

Ohmmeter at alarm system control module plug I pin 28 and ground
Ohmmeter display: ∞ Ω

Ohmmeter on alarm system control module plug I pin 28, and pin 7 of both plugs on door lock (driver's side / passenger's side)
Ohmmeter display: < 5 Ω

Voltmeter at plug I pin 30 and ground
Voltmeter display: 0 V

Ohmmeter at alarm system control module plug I pin 30 and ground
Ohmmeter display: ∞ Ω

Ohmmeter at alarm system control module plug I pin 30, and pin 3 of both plugs on driver/passenger side door lock
Ohmmeter display: < 5 Ω

Voltmeter at plug I pin 32 and ground
Voltmeter display: 0 V

Ohmmeter at alarm system control module plug I pin 32 and ground
Ohmmeter display: ∞ Ω

Ohmmeter at alarm system control module plug I pin 32, and pin 3 of both plugs on driver/passenger side door lock
Ohmmeter display: < 5 Ω

Pull plug II off the alarm system control module



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| Fault, Fault code | Possible causes, elimination, notes |
|---|---|
| | Voltmeter at plug II pin 3 and ground<br>Voltmeter display: 0 V<br><br>Ohmmeter at alarm system control module plug II pin 3 and ground<br>Ohmmeter display: ∞ Ω<br><br>Ohmmeter on alarm system control module plug II pin 3, and pin 1 of both plugs on door lock (driver's side / passenger's side)<br>Ohmmeter display: < 5 Ω |
| **Test point 57**<br>Unknown DTC<br>**Fault code XX** | 1. Inspect the ground points for corrosion.<br><br>2. Clear fault memory. |


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## Event memory

The event memory stores the contact or triggering type that triggered the alarm. The priming type also is saved.

A maximum of 10 events can be saved. If another event is added, the oldest one is deleted. The event with the highest number is the most current one.

An alarm can be triggered by the following components:

- Door contact, driver
- Door contact, passenger
- Central locking contact "locked", driver
- Central locking contact "locked", passenger
- Front lid
- Rear lid
- Radio contact
- External switch contact 1
- External switch contact 2
- Oddments tray
- Switch, convertible top/sliding roof
- Switch, convertible top compartment cover
- Alarm horn
- Passenger compartment monitoring
- Terminal 15 on

**Note**

Up to three alarm triggering possibilities exist via the passenger compartment monitoring system and the external switching contacts.

With the priming type, a distinction is made between:

- Locked via lock
- Emergency-locked
- Locked via radio
- Self-primed
- System test
- Primed after battery connection
- Secured via lock
- Secured via radio



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## Priming status memory

The alarm-triggering components that are in the "non-active" state during priming and that are therefore blocked for alarm triggering are stored in the priming status memory. The priming type also is saved.

## Drive links

With this menu item, it is possible to activate drive links of the alarm system using the Porsche System Tester 2. This allows the function of the drive links to be assessed very quickly.

The following drive links can be actuated:

Comfort closing/opening

Indicator light (button)

Lock doors

Secure doors

Tank locking

Interior light

Load disconnection

Luggage compartment, rear

Function indicator

External output

Alarm horn

Direction indicator lights

**Note**

The radio unit or the PCM operator control unit are connected to an auxiliary frame by the *Radio contact*. The radio contact area on the radio unit or PCM operator control unit has an insulating strip. If this insulating strip wears through the contact tab, ground contact can occur. In the case of maintained contact no alarm is triggered. This is because all active inputs (ground connection) are blocked when activated to trigger an alarm. In the case of a loose contact, an alarm may be triggered. Under the menu item *Events*, the PST 2 can be used to read out the cause of the alarm being triggered. Under the menu item *Input signals*, the status of the radio contact can be read out.



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## Input signals

This menu item enables input signals of the alarm system to be read out by the Porsche System Tester 2. This allows the function of the input signals to be assessed very quickly.

The following input signals can be read out:

Radio contact

Input 1

Signal, terminal 15

Alarm horn

Driver's side secured

Passenger's side secured

Driver's side locked

Passenger's side locked

Doors, driver's side

Doors, passenger's side

Door lock barrel

Central locking button

Signal, terminal 86 S

Immobilizer

Signal from airbag

Luggage compartment, front

Luggage compartment, rear

Convertible top/sunroof

Oddments tray

Convertible top compartment lid (microswitch omitted as from Y-range)

Radio transmitter: Button 1

Radio transmitter: Button 2



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## Coding

Under the menu item *Coding* there is a choice of four functions:

Country coding

Version coding

Version coding, rear lid

Rear lid re-locking

Vehicle re-locking

Alarm siren/tilt sensor

### Country coding

The country in which the vehicle is used can be coded using the Porsche System Tester 2. The type of alarm output and its duration depend on the country codes.

| | Activation | Duration | Country |
|---|---|---|---|
| **Alarm horn** | pulsed with 2.5 Hz, pulse/duty ratio 1:1 | 3 min ±5 s | USA, AUS, BRA |
| | | 30 s | FRG, UK, B |
| | continuous tone | 30 s | CH |
| **Direction indicator lights** | pulsed with 2.5 Hz, pulse/duty ratio 1:1 | 5 min ±5 s | FRG, UK, B |
| | | 4 min ±5 s | USA, AUS, BRA |
| | no activation | – | CH |
| **Interior light** | in opposite cycle to direction indicator lights | 5 min ±5 s | FRG, UK, B |
| | | 4 min ±5 s | USA, AUS, BRA |
| | no activation | – | CH |
| **Alarm siren** | triggered at the beginning of the alarm output | | UK, B |


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### Version coding

Under the menu item *Version coding* there is a choice of four functions.

### Version 1

The doors are automatically locked as soon as the ignition is switched on.

### Version 2

The doors are automatically locked if the vehicle exceeds a limit speed of 5 km/h.

### Version 3

The doors are automatically locked as soon as the ignition is switched on. If the doors are opened while the engine is running, automatic re-locking takes place if the vehicle exceeds a limit speed of 5 km/h.

### Version 4

The doors are not locked automatically.

### Note

By actuating the switch for central locking or by pulling the (inner) door handle twice, doors which were locked automatically can be opened.

### Version coding, rear lid

Under the menu item *Version coding Rear lid*, there is a choice of two functions:

With doors

Without doors

The *With doors* version means that the doors are also unlocked when unlocking the rear lid via hand-held transmitter.

The *Without doors* version means that the doors remain locked when unlocking the rear lid via hand-held transmitter. Only the rear lid is unlocked.

### Rear lid re-locking

It is possible to set the desired re-locking time after which the doors are relocked. This function is available only in connection with the rear lid version coding "With doors". If the rear lid is unlocked via hand-held transmitter, the version coding "With doors" unlocks the doors too. If no door is opened within the re-locking time specified, the doors are locked automatically.

### Vehicle re-locking

It is possible to set the desired re-locking time after which the doors are relocked. This function is available only in connection with the rear lid version coding "Without doors". If the vehicle is unlocked via hand-held transmitter or key, the doors are automatically locked after re-locking time has elapsed if the vehicle doors are not opened.

### Alarm sirens/tilt sensor

The alarm siren with tilt sensor installed can be activated or deactivated in this menu item.



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## System test

All components of the alarm system (except for terminal 15) can be checked for operation under menu item *System test*. During the system test a bar runs across the screen, and if, for example, the oddments tray is opened, an alarm is triggered. This alarm output differs from the usual alarm output in that the alarm horn is activated only for a short time. The alarm output is accompanied by interior lighting and direction indicator lights.

**Note**

The event memory must be cleared after the system test, since the test is saved in the event memory.

## Interior monitor

The function of the interior monitoring sensor can be checked under menu item *Interior monitor*. When movement is detected in the passenger compartment, the alarm horn is activated briefly while the interior lighting and direction indicator lights go on continuously.


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## Learning functions

### Immobilizer

The immobilizer code can be entered under menu item *Learning functions/immobilizer* after the alarm control module is replaced.



Caution!

**The immobilizer code cannot be deleted or changed again. An incorrect input will render the control module useless.**

> Input and check immobilizer code carefully.

### Transponder key

A new remote control can be adapted for the vehicle under menu item *Learning functions/transponder key*. After the alarm system control module is replaced and the immobilizer code is entered, the old transponders can be adapted to the new control module. Refer to *Teaching hand-held transmitter* on Page 96 - D 69 and *Reading out and transferring remote control* on Page 96 - D 72.

### Remote control

Up to four remote controls can be adapted to the control module under menu item *Learning functions/remote control*. After the alarm system control module is replaced and the immobilizer code is entered, the old remote controls can be adapted to the new control module (refer to *Reading out and transferring remote control* on Page 96 - D 72 and *Teaching hand-held transmitter* on Page 96 - D 69).

### Reading out remote controls

Under the menu item *Reading out remote controls*, the data of the remote controls can be read out after the alarm system control module is replaced. If it is not possible to read out and transfer the remote controls (e.g. no communication with the control module), the old remote controls can be adapted to the new control module (teaching hand-held transmitter).

### Transferring remote controls

Under the menu item *Transferring remote controls*, the data read out from the remote controls can be transferred to the new control module.



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## Teaching hand-held transmitter

### General

Up to four hand-held transmitters can be adapted to the control module. The hand-held transmitter is used for operating the central locking system. Another function is the immobilizer by means of the integrated transponder coil.

### Work preparation

The following information is required to teach the hand-held transmitter:

Key learning code from IPAS

24-digit Code No. (see barcode label on key grip)

If the key is stolen or the hand-held transmitter is faulty, all keys still in the customer's possession will be required.

**Note:**

During maintenance work, please bear in mind that the transmission frequency of the hand-held transmitter is different according to the country of use. The corresponding reception frequency is printed on the alarm system control module. This reception frequency is either:

| | | |
|---|---|---|
| 433 MHz | with M-number | M534 |
| or | | |
| 315 MHz | with M-number | M535 |

### Procedure

1. Connect the vehicle keys and the new hand-held transmitter and insert in the ignition.

2. Connect PST 2 and switch on ignition.

3. Select *Alarm system* in the menu and press the double arrow key [>>].

4. Select *Learning function* in the menu and press the double arrow key [>>].

5. Select menu item *Transponder key* and press the double arrow key [>>].

6. The following message appears on the screen: "Input key learning code". With the arrow keys [^] or [v], input the key learning code and press the double arrow key [>>].

7. The following message appears on the screen: "Please confirm input". Check the input and press the [F7] key to confirm the input.

8. Distinguish between loss and fault and additional hand-held transmitter for the transponder.

a) Teaching an additional hand-held transmitter

With the arrow key [v] select a free position (1, 2, 3 or 4) and press the [F8] key.
Now the transponder code is saved in the selected position. Note the position of the new transponder code.


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b) Teaching in the case of a lost or faulty hand-held transmitter:



**Caution!**
**Risk of theft due to the lost hand-held transmitter !**

> It is essential to identify and delete the transponder code of the lost hand-held transmitter as described in step 8 b).

> It is essential to identify and delete the radio code of the lost hand-held transmitter as described in step 12 b).

In this case, it is first necessary to identify and delete the stored transponder code of the lost hand-held transmitter. The remaining vehicle keys are required for this purpose. One after the other, insert the keys into the ignition lock, switch the ignition on and establish communication with the control module. **Current transponder** shows the transponder code of the vehicle key that is presently inserted in the ignition lock. Compare this transponder code with the transponder codes at positions 1 to 4. This comparison allows the position of the lost hand-held transmitter (transponder code) to be identified, as one transponder code is ultimately left over at positions 1 to 4. Insert the vehicle key equipped with the new hand-held transmitter into the ignition lock and switch on the ignition. Establish communication between the PST2 and the control module. Select the identified position using the arrow keys [∧] and [∨], then delete the transponder code with key [F3]. Then press the [F8] key.

9. Press the double arrow key [<<], select the menu item *Remote control* and press the double arrow key [>>].

10. "Input key learning code" appears on the screen. With the arrow keys [∧] or [∨], input the key learning code and press the double arrow key [>>].

11. The following message appears on the screen: "Please confirm input". Check the input and press the [F7] key to confirm the input.

12. Distinguish between loss and fault and additional hand-held transmitter for the radio code.

a) Teaching an additional hand-held transmitter:

Select the same position (1 to 4) as for the transponder key and press the [F8] key.

b) Teaching in the case of a lost or faulty hand-held transmitter:

In this case, it is first necessary to identify and delete the stored "radio code" of the lost hand-held transmitter. The remaining hand-held transmitters are required for this purpose. Press the locking button on the hand-held transmitter and then insert the vehicle key into the ignition lock, switch on the ignition and re-establish communication with the control module. **Current radio key** shows the "radio code" of the vehicle key that is presently inserted in the ignition lock.



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Compare this radio code with the radio codes at positions 1 to 4. This comparison allows the position of the lost hand-held transmitter (radio code) to be identified, as one "radio code" is ultimately left over at positions 1 to 4.

Insert the vehicle key equipped with the new hand-held transmitter into the ignition lock and switch on the ignition. Establish communication with the control module. Select the identified position using the arrow keys [∧] and [∨], then delete the radio code with key [F3]. Then press the [F8] key.

13. Carefully input the 24-digit code number with the arrow keys [∧] or [∨] and press the double arrow key [>>].

14. The following message appears on the screen: "Please confirm input". Check the input and press the [F7] key.

15. Now the hand-held transmitter is taught. Go back to the menu item *Learning function*, remove the key and switch on the ignition again. Once the key has been removed again, the hand-held transmitter is ready for use. Check hand-held transmitter for operation.


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## Reading out and transferring remote control

### General

When replacing the alarm system control module, it is possible to read out remote controls from the old control module and transfer them to the new control module. In this way, the hand-held transmitters (remote controls and transponders) can be retained. In other words, it is not necessary to change the hand-held transmitter when replacing the alarm system control module.

### Requirement:

– Communication can be set up between the PST2 and alarm system control module.

  The remote controls and transponder coils are correct and functional.

### Note:

When the remote control is read out and transferred, only the **remote control data** are read out and transferred.
The transponder coil of the individual keys must be adapted to the control module. Four positions are available for this purpose in menu item *Transponder key*. This function is described from step 19 onward.

### Work preparation:

The following information is required from the IPAS for reading out and transferring remote controls:

  Key learning code

  Immobilizer code

### Procedure:

1. Connect PST2 to the data link connector, and switch on the ignition.

2. Switch on the PST2, select vehicle type *Boxster* and start the automatic control module search with the double arrow key [>>].

3. After a brief search, the PST2 reports: "Fault memory reading completed".

4. Select *Alarm system* in the menu and press the double arrow key [>>].

5. Select *Learning functions* from the selection list and press the double arrow key [>>].

6. Select menu item *Read out remote control* and press the double arrow key [>>].

7. The following message appears on the screen:
   "Input key learning code".
   Input the key learning code with the arrow keys [v] or [^] and press the double arrow key [>>].

8. The following message appears on the screen:
   "Please confirm input".
   Check the input key learning code and press the key [F7].

9. The following message appears on the screen:
   "Remote controls were read out"
   Press the double arrow key [<<] twice to change to the control module overview.
   Switch the ignition off, remove the old control module, install the new control module and switch the ignition on again.



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10. Press the double arrow key [>>] to set up communication with the new control module.

11. Select menu item *Learning functions* with the arrow key [v] and press the double arrow key [>>].

12. The menu item *Immobilizer* is already selected. Press the double arrow key [>>].



**Caution!**

**The immobilizer code can be input only once. An incorrect input will render the control module useless!**

> Input and check immobilizer code carefully

13. The following message appears on the screen:
"Input immobilizer code".
Input the immobilizer code with the arrow keys [v] or [^] and press the double arrow key [>>].

14. The following message appears on the screen:
"Please confirm input".
Check the input immobilizer code and press the key [F7].

15. Select menu item *Remote control transfer* with the arrow key [v] and press the double arrow key [>>].

16. The following message appears on the screen:
"Input key learning code".
Input the key learning code with the arrow keys [v] or [^] and press the double arrow key [>>].

17. The following message appears on the screen:
"Please confirm input"
Check the input key learning code and press the key [F7].

18. The following message appears on the screen:
"Remote controls were transferred"

19. Select menu item *Transponder key* with the arrow key [^] and press the double arrow key [>>].

20. The following message appears on the screen:
"Input key learning code"
Input the key learning code with the arrow keys [v] or [^] and press the double arrow key [>>].

21. The following message appears on the screen:
"Please confirm input"
Check the input key learning code and press the key [F7].


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**Note:**

As the transponder coils must be taught individually, make sure that the allocation of the locations is the same as described under *Transponder code* on the IPAS printout (see Step 22).

22. Four unoccupied locations are displayed, and location 1 is marked in black. Additionally, the transponder code is displayed under **current key**. This code must be stored in the same location as specified in the IPAS printout.
    Select the position and press the [F8] key. The position is occupied with the corresponding transponder code.

23. Withdraw the key and repeat Steps 19 to 22 for the remaining keys.

All remote controls have now been transferred from the old control module to the new control module, and the transponders adapted to the new control module.

Check hand-held transmitter for operation (lock and unlock the vehicle)

Check functioning of all transponder coils (engine start)

Read out fault memory and delete any stored faults.



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## Comparison table of input signals

The following table shows a comparison point to the data read out from PST 2 on the vehicle, and should simplify diagnosis and troubleshooting.

### Boundary conditions

– Both doors closed

  Ignition switched on

  Central locking system version code in version 4

  Doors not locked

| Switch position | Text |
|---|---|
| open | radio contact open |
| open | input 1 open |
| closed | terminal 15 signal available |
| closed | alarm horn connected |
| closed | driver's side not secured |
| closed | passenger's side not secured |
| closed | driver's side not locked |
| closed | passenger's side not locked |
| open | doors on driver's side closed |
| open | doors on passenger's side closed |
| open | door lock barrel not actuated |
| open | central locking system not actuated |
| closed | terminal 86 S signal available |
| closed | immobilizer active |
| open | signal from airbag not available |
| open | front luggage compartment closed (front lid) |
| open | rear luggage compartment closed (rear lid) |
| open | convertible top/sliding roof closed |
| open | oddments tray open |
| open | convertible top compartment lid open |
| open | button 1 on the radio transmitter not actuated |
| open | button 2 on the radio transmitter not actuated |

### Note

The information in the comparison table applies for vehicles with the safe function. The safe function is not provided for all countries (e.g. USA). In this case *Driver's side secured and Passenger's side secured* will be displayed in the PST 2. In vehicles with the safe function, this display would indicate an error in the door lock or its wiring.



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**Dear Owner,**

we would like to thank you for your purchase of a Porsche Sports car.

Judging by the car you have chosen, you are a motorist of a special breed, and you are probably no novice when it comes to automobiles.

Remember however, as with any vehicle, you should take time to familiarize yourself with your Porsche and its performance characteristics. Always drive within your own unique capabilities as a driver and your level of experience with your Porsche. Ensure that anyone else driving your Porsche does the same. To prevent or minimize injury, always use your safety belts. Never consume alcohol or drugs before or during the operation of your vehicle.

This Owner's Manual contains a host of useful information. Please take the time to read this manual before you drive your new Porsche. Become familiar with the operation of your Porsche car for maximum safety and operating pleasure. The better you know your Porsche, the more pleasure you will experience driving your new car.
Always keep your Owner's Manual in the car, and give it to the new owner if you ever sell your Porsche.

**A separate Maintenance Booklet** explains how you can keep your Porsche in top driving condition by having it serviced regularly.
**A separate Warranty and Customer Information Booklet** contains detailed information about the warranties covering your Porsche.

**For U.S. only:**
If you believe that your vehicle has a fault which could cause a crash, injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Porsche Cars North America, Inc. (Porsche Cars N.A.).

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety problem exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you and your dealer, or Porsche Cars N.A..

To contact NHTSA, you may either call the Auto Safety Hotline toll-free at 1 (800) 424-9393 (or 366-0123 in Washington, D.C. area) or write to: NHTSA, U.S. Department of Transportation, Washington, D.C. 20590. You can also obtain other information about motor vehicle safety from the Hotline.

Your car has thousands of parts and components which have been designed and manufactured in accordance with Porsche's high standards of engineering quality and safety.

**Any alteration of the vehicle may negate or interfere with those safety features built into the vehicle. Modifications may be carried out on your vehicle only if approved by Porsche.**

Your Porsche is intended to be used in a safe manner obeying the local laws and in the light of driving conditions faced by you, and in accordance with the instructions provided in this Owner's Manual.

**Do not misuse your Porsche by ignoring those laws and driving conditions, or by ignoring the instructions in this manual.**
**Any alteration or misuse of the vehicle can lead to accidents and severe or fatal personal injuries.**

The fitting of racing tires (e.g. slicks) for sporting events is not approved by Porsche. Very high cornering speeds can be achieved with racing tires. However, the resulting transverse acceleration values would jeopardize the adequate supply of oil to the engine.
Porsche therefore will not accept any warranty or accept any liability for damage occurring as a result of non-compliance with this provision.



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**Regularly check your vehicle for signs of damage.**
**Damaged or missing aerodynamic components such as spoilers or underside panels affect the driving behavior and therefore must be replaced immediately.**

Your car may have all or some of the components described in this manual.
Should you have difficulty understanding any of the explanations of features or equipment installed in your vehicle, contact your authorized Porsche dealer. He/She will be glad to assist you. Also check with your dealer on other available options or equipment.

Throughout this booklet, left is designated as the driver's side of the vehicle, and right as the passenger's side of the vehicle.

Text, illustrations and specifications in this manual are based on the information available at the time of printing.

It has always been Porsche's policy to continuously improve its products. Porsche, therefore, reserves the right to make changes in design and specification, and to make additions or improvements in its product without incurring any obligation to install them on products previously manufactured.

We wish you many miles of safe and pleasurable driving in your Porsche.

**Important**
For your own protection and longer service life of your car, please heed all operating instructions and special warnings. These special warnings use the safety alert symbol, followed by the words **Danger**, **Warning and Caution**. These special warnings contain important messages regarding your safety and/or the potential for damage to your Porsche. Ignoring them could result in serious mechanical failure or even physical injury.

Do not alter your Porsche. Any alteration could create dangerous conditions or defeat safety engineering features built into your car.

Do not misuse your Porsche. Use it safely, and consistently with the law, according to the driving conditions, and the instructions in this manual.

**Alteration or misuse of your Porsche could cause accidents and severe or fatal personal injuries.**

## Note to owners

In Canada, this manual is also available in French. To obtain a copy contact your dealer or write to:

## Note aux proprietaires

Au Canada on peut se procurer un exemplaire de ce Manuel en français auprès du concessionaire ou du:

Porsche Cars Canada, Ltd.
Automobiles Porsche Canada, LTEE

5045 Orbitor Drive
Building #11, Suite 302
Mississauga, Ontario
Canada L4W 4Y4

Telephone number for customer assistance:
1-800-PORSCHE / Option 3



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## Fuel Quality

Your engine is designed to provide optimum performance and fuel economy using
**unleaded premium fuel with an octane rating of 98 RON (93 CLC or AKI).**
Porsche therefore recommends the use of these fuels in your vehicle.

Porsche also recognizes that these fuels may not always be available. Be assured that your vehicle will operate properly on unleaded premium fuels with octane numbers of at least **95 RON (90 CLC or AKI)**, since the engine's "Electronic Oktane™ knock control" will adapt the ignition timing, if necessary.

### Fuels containing alcohol and ether

Some areas of the U.S. require oxygenated fuels during certain portions of the year.
Oxygenated fuels are fuels which contain alcohols (such as methanol or ethanol) or ether (such as MTBE).

Under normal conditions, the amount of these compounds in the fuel will not affect driveability.

You may use oxygenated fuels in your Porsche, provided the octane requirements for your vehicle are met.
We recommend, however, to change to a different fuel or station if any of the following problems occur with your vehicle:

– Deterioration of driveability and performance.

– Substantially reduced fuel economy.

– Vapor lock and non-start problems, especially at high altitude or at high temperature.

– Engine malfunction or stalling.

### Fuels containing MMT

Some North American fuels contain an octane enhancing additive called methylcyclopentadienyl manganese tricarbonyl (MMT).
If such fuels are used, your emission control system performance may be negatively affected.
The check engine warning lights on your instrument panel may turn on.
If this occurs, Porsche recommends you stop using fuels containing MMT.



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## Tire Pressures for Cold Tires

### Summer tires and snow tires

| | |
|---|---|
| **Front** | 29 psi (2.0 bar) overpressure |
| **Rear** | 36 psi (2.5 bar) overpressure |

### Spare wheel

| | |
|---|---|
| **Front and rear** | 60 psi (4.2 bar) overpressure |

**These tire pressures are valid only for Porsche approved tires.**
**For replacement tires it is imperative that you consult the Technical Data and Tires, Wheels sections of this manual and follow the recommendations contained therein.**

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# Porsche and the Environment

## Environmental guidelines

We develop and produce exclusive sports cars with advanced environmental and safety technology and a great ability to fascinate.

**Our environmental policy is based on the following principles:**

- The maximum possible use of environmental and safety technology that is economically justifiable.
- Economical usage of energy and resources.
- Involvement of our business partners and contractors in our efforts to protect the environment.
- Open dialogue with all social groups.

## California Proposition 65 Warning

**Warning!**

Engine exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.
In addition, certain fluids contained in vehicles and certain products of component wear contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

## Production

The manufacture of Porsche vehicles in a factory adjacent to a residential area requires more than mere compliance with all laws and regulations.

Whether in production or repair, Porsche always relies on environmentally friendly technology.
An example of this is the water-based paint used in our painting installation.
Water-base paints and new painting methods reduce solvent emissions by 70 per cent.
And the water used in the painting installation is re-circulated. Waste water leaves the Porsche factory only after being appropriately treated.

A waste-management system has been introduced to reduce the amount of waste while simultaneously increasing the recycling rate.



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## Environmentally friendly vehicles

Modern environmental technology ensures compliance with all emission laws applicable worldwide.

**It has the following advantages:**

- Rapid operational readiness of the catalytic converters ensures low emissions, even in short-trip operation.
- Reliable operation and good emission control over a long useful life.

**Please note the chapter "Fuel economy".**

## Recycling – for a Porsche, this is virtually an academic question

More than two-thirds of all Porsches ever built are still running.

**Just in case recycling is ever necessary, we take the following precautionary measures:**

- Identification of all materials.
- Use of recyclable materials.
- Reusable components designed for simple removal.
- These reasons result in a further increase in the recycling rate which is currently 80 per cent.

## Emission control is built in

Innovative engine technology combines high engine performance and environmental compatibility.

The engine diagnosis system electronically monitors the components and systems that affect exhaust gases.

This continuous monitoring and fault storage enables swift, reliable diagnosis and fault detection.

Any fault messages are indicated to the driver by the "Check Engine" warning light and the onboard computer.



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## Operation of communication systems and equipment while driving

**Warning!**

**There is a danger of an accident if you operate or set the on-board computer, radio, navigation system, telephone or other equipment when driving.**
**This could distract you from the traffic and cause you to lose control of the vehicle.**

- ▷ Operate the equipment while driving only if the traffic situation allows you to do so safely.
- ▷ Carry out any complicated operating or setting procedures only with the vehicle stationary.

## Portable Fuel Containers

**Danger!**

**Portable fuel containers, full or partially empty, may leak, causing an explosion, or result in fire in case of an accident.**

- ▷ Never carry additional fuel in portable containers in your vehicle.

## Engine Exhaust

**Danger!**

**Engine exhaust is dangerous if inhaled.**
**Engine exhaust fumes have many components which you can smell. They also contain carbon monoxide (CO), which is a colorless and odorless gas.**
**Carbon monoxide can cause unconsciousness and even death if inhaled.**

- ▷ Never start or let the engine run in an enclosed, unventilated area.
  It is not recommended to sit in your car for prolonged periods with the engine on and the car not moving.



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## Dear Porsche Owner

A lot has gone into the manufacture of your Porsche, including advanced engineering, rigid quality control and demanding inspections.
These engineering and safety features will be enhanced by you...

### the safe driver...

who knows his car and all controls,

who maintains the vehicle properly,

who uses driving skills wisely, and always drives within her/his own capabilities and the level of familiarity with the vehicle.

You will find helpful hints in this manual on how to perform most of the checks listed on the following pages.
If in doubt, have these checks performed by your authorized Porsche dealer.

## Before driving off...

### Check the following items first

- Turn the engine off before you attempt any checks or repairs on the vehicle.
- Be sure the tires are inflated correctly.
  Check tires for damage and tire wear.
- See that wheel bolts are properly tightened and not loose or missing.
- Check engine oil level, add if necessary.
  Make it a habit to have engine oil checked with every fuel filling.
- Check all fluid levels such as windshield washer and brake fluid levels.
- Be sure the vehicle battery is well charged and cranks the engine properly.
- Check all doors and lids for proper operation and latch them properly.
- Check and if necessary replace worn or cracked wiper blades.
- See that all windows are clear and unobstructed.
- Check air intake slots and area between front lid and windshield are free of snow and ice, so the heater and the windshield wipers work properly.
- If a child will be riding in the vehicle, check child seat/child seat restraint system to ensure that restraints are properly adjusted.
- Check all exterior and interior lights for operation and that the lenses are clean.
- Check the headlights for proper aim, and if necessary, have them adjusted.
- Check under the vehicle for leaks.
- Be sure all luggage is stowed securely.

### Emergency equipment

It is good practice to carry emergency equipment in your vehicle.
Some of the items you should have are:
window scraper, snow brush, container or bag of sand or salt, emergency light, small shovel, first-aid kit, etc.


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## In the driver's seat...

- Check operation of the horn.
- Position seat for easy reach of foot pedals and controls.
  To reduce the possibility of injury from the air-bag deployment, you should always sit back as far from the steering wheel as is practical, while still maintaining full vehicle control.
- Adjust the inside and outside rear view mirrors.
- Buckle your safety belts.
- Check operation of the foot and parking brake.
- Check all warning and indicator lights with ignition on and engine not running.
- Start engine and check all warning displays for warning symbols.
- Never leave an idling car unattended.
- Lock doors from inside, especially with children in the car to prevent inadvertent opening of doors from inside or outside.
  Drive with doors locked.

## On the road...

- Never drive after you have consumed alcohol or drugs.
- Always have your safety belt fastened.
- Always drive defensively.
  Expect the unexpected.
- Use signals to indicate turns and lane changes.
- Turn on headlights at dusk or when the driving conditions warrant it.
- Always keep a safe distance from the vehicle in front of you, depending on traffic, road and weather conditions.
- Reduce speed at night and during inclement weather.
  Driving in wet weather requires caution and reduced speeds, particularly on roads with standing water, as the handling characteristics of the vehicle may be impaired due to hydroplaning of the tires.
- Always observe speed limits and obey road signs and traffic laws.
- When tired, get well off the road, stop and take a rest. Turn the engine off. Do not sit in the vehicle with engine idling.
  See warnings on "Engine Exhaust".
- When parked, always set the parking brake. Move the Tiptronic selector lever to "P" or the gearshift lever to reverse or first gear.
  On hills also turn the front wheels toward the curb.
- When emergency repairs become necessary, move the vehicle well off the road. Turn on the emergency flasher and use other warning devices to alert other motorists. Do not park or operate the vehicle in areas where the hot exhaust system may come in contact with dry grass, brush, fuel spill or other flammable material.
- Make it a habit to have the engine oil checked with every fuel filling.

**⚠ Danger!**

**Danger of fire in engine compartment due to burning cigars or cigarettes.**

- Do not throw any lit cigars or cigarettes out of the vehicle.
  They can be blown into the air inlets by the air flow and cause a fire in the engine compartment.
  Please note chapter "Ashtray".

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## Break in hints for the first 2,000 miles/3,000 kilometers

The following tips will be helpful in obtaining optimum performance from your new Porsche.

Despite the most modern, high-precision manufacturing methods, it cannot be completely avoided that the moving parts have to wear in with each other. This wearing-in occurs mainly in the first 2,000 miles/3,000 km.

### Therefore:

- ▷ Preferably take longer trips.
- ▷ Avoid frequent cold starts with short-distance driving whenever possible.
- ▷ Avoid full throttle starts and abrupt stops.
- ▷ Do not exceed maximum engine speed of 4,200 rpm (revolutions per minute).
- ▷ Do not run a cold engine at high rpm either in Neutral or in gear.
- ▷ Do not let the engine labor, especially when driving uphill. Shift to the next lower gear in time (use the most favorable rpm range).
- ▷ Never lug the engine in high gear at low speeds. This rule applies at all times, not just during the break-in period.
- ▷ Do not participate in motor racing events, sports driving schools, etc. during the first 2,000 miles/3,000 kilometers.

There may be a slight stiffness in the steering, gear-shifting or other controls during the break-in period which will gradually disappear.

### Break in brake pads

New brake pads and discs have to be “broken in”, and therefore only attain optimal friction when the car has covered several hundred miles or km.
The slightly reduced braking ability must be compensated for by pressing the brake pedal harder. This also applies whenever the brake pads and brake discs are replaced.

### New tires

New tires do not have maximum traction. They tend to be slippery.

- ▷ Break in new tires by driving at moderate speeds during the first 60 to 120 miles/100 to 200 km. Longer braking distances must be anticipated.

### Engine oil consumption

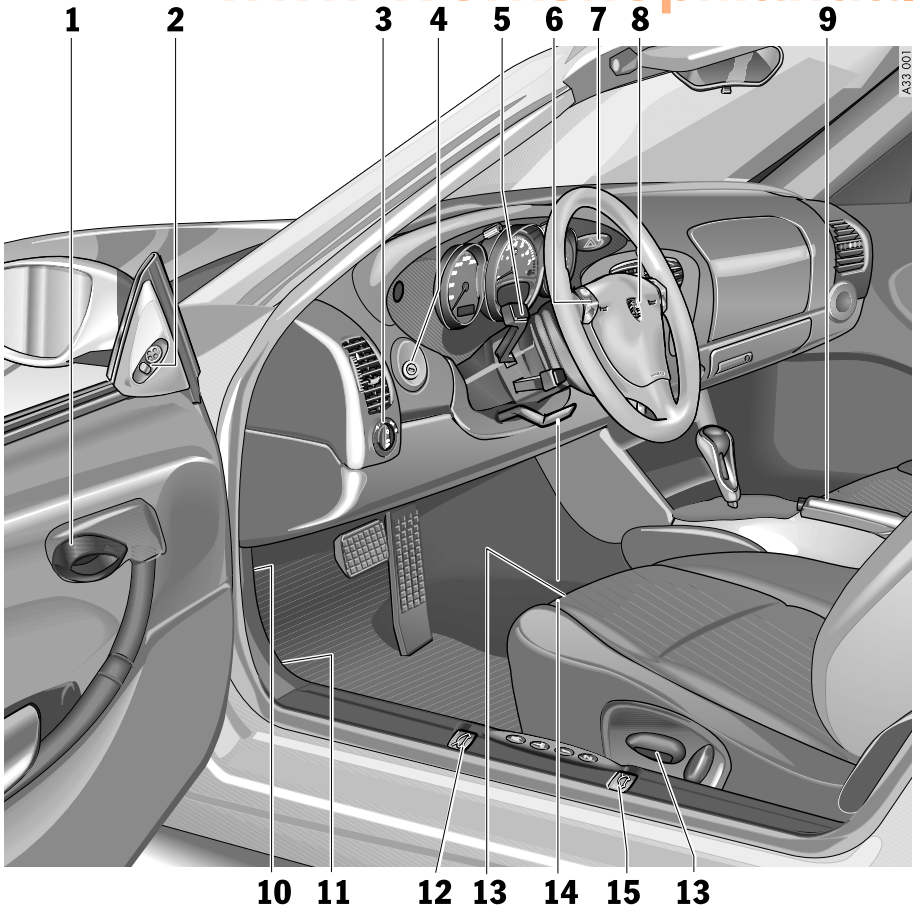
During the break-in period oil consumption may be higher than normal.

As always, the rate of oil consumption depends on the quality and viscosity of oil, the speed at which the engine is operated, the climate and road conditions, as well as the amount of dilution and oxidation of the lubricant.

- ▷ Make a habit of checking engine oil with every fuel filling, add if necessary.


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1 Inner door handle
2 Door mirror control
3 Light switch
4 Ignition / starter switch with steering lock
5 Turn signal / headlight dimmer, flasher lever
6 Toggle switches for Tiptronic
7 Emergency flasher switch
8 Horn
9 Parking brake
10 Diagnostic socket
11 Switch for retractable spoiler
12 Front lid release
13 Seat adjustment
14 Steering-wheel adjustment
15 Rear lid release

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## Never invite car theft!

An unlocked car with the key in the ignition lock invites car theft.

A steering wheel lock and a **gong alarm** are standard equipment in your Porsche.
The gong alarm will sound if you open the driver's door while the key is still in the ignition lock. It is your reminder to pull the key out of the ignition lock and to lock the doors.

**Warning!**

**Any uncontrolled movement of the vehicle may result in serious personal injury and property damage.**
**Never leave your vehicle unattended with the key in the ignition lock, especially if children and/or pets are left unattended in the vehicle. They can operate power windows and other controls. If the engine is left running, they may accidentally engage the shift lever.**

- ▷ Always remove the ignition key.
- ▷ Always set the parking brake.
- ▷ Lock the doors with the key or with the remote control.

**Warning!**

**Risk of a serious accident.**
**The steering column will lock when you remove the key while you are driving or as the car is rolling to a stop. You will not be able to steer the car.**

- ▷ Never remove the key from the steering lock while you are driving.

**To protect your vehicle and your possessions from theft, you should always proceed as follows when leaving your vehicle:**

- ▷ Close windows.
- ▷ Close convertible top
  (with the convertible top open, the infrared passenger compartment monitoring system is always switched off).
- ▷ Remove ignition key.
- ▷ Engage steering lock.
- ▷ Lock storage tray between the seats.
- ▷ Remove valuables (e.g. car documents, radio control module, telephone, house keys) from the car.
- ▷ Lock doors.


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## Keys

Please note chapters "Central Locking and Alarm System".

Two main keys and one spare key are supplied with your Porsche.
These keys operate all the locks on your vehicle.

▷ Be careful with your car keys: do not part with them except under exceptional circumstances.

▷ To avoid battery run-down, always remove the ignition key from the ignition lock.

### Replacement keys

Replacement car keys can be obtained only from your authorized Porsche dealer, and this can sometimes be very time-consuming.
You should therefore always keep the spare key on your person.
Keep it in a safe place (e.g. wallet), but under no circumstances in or on the vehicle.

The key codes of new keys have to be "reported" to the car control unit by your authorized Porsche dealer.

The key grip of the spare key can be exchanged for a main-key grip.

#### Disabling key codes

If a key is lost, the key codes can be disabled by an authorized Porsche dealer.
All the remaining car keys are required for this purpose.
Disabling the code ensures that the car can be **started** only using authorized keys.

#### Note

Please note that the other locks can still be opened with the disabled key.

### Immobilizer

There is a transponder (an electronic component) in the key grip, containing a stored code.
When the ignition is switched on, the ignition lock checks the code.
The immobilizer can be deactivated and the engine started only using an authorized ignition key.

#### Note

If the ignition is left on for more than two minutes without starting the engine, the immobilizer is reactivated.

▷ If this happens, the ignition key must be turned back to the "0" position before the engine can be started.

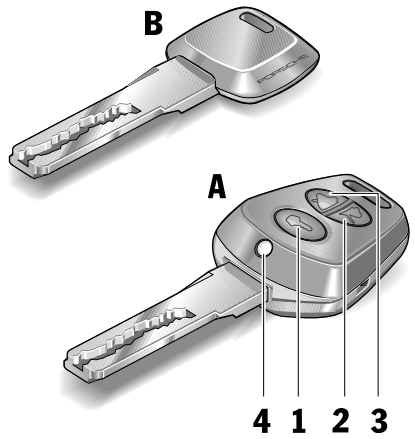
The immobilizer is automatically activated when the ignition key is withdrawn.

## Security Wheel Bolts

If wheels have to be removed during a workshop visit, do not forget to hand over the socket for the security wheel bolts along with the car key.

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**A** - *Main key*
**1** - *Central locking button*
**2** - *Button for front luggage compartment lid*
**3** - *Button for rear luggage compartment lid*
**4** - *Light-emitting diode*
**B** - *Spare key*

## Key with remote-control function

### Operating central locking, alarm system and seat memory

▷ Press button **1**.
Please observe the appropriate chapters of this Manual.

### Unlocking front luggage compartment

▷ Press button **2** for approx. two seconds.

### Unlocking rear luggage compartment

▷ Press button **3** for approx. two seconds.

### Note

If the vehicle was locked before the luggage compartment is opened, it is unlocked simultaneously with the luggage compartment.
In vehicles with seat memory the stored seat and door mirror positions are automatically set.
The vehicle will be locked again approx. 15 seconds after the luggage compartment is closed if none of the doors was opened.

### Note

Your authorized Porsche dealer can program further types of luggage compartment unlocking in the control unit of the central locking system:

### Type 1

The relocking time of the doors can be adjusted to suit your individual requirements (4 - 120 seconds).

### Type 2

The doors stay locked when the luggage compartment is unlocked.

### The remote-control standby function switches off after five days

If the vehicle is not started or unlocked with the remote control within five days, the remote control standby function is switched off (to prevent discharging of the car battery).

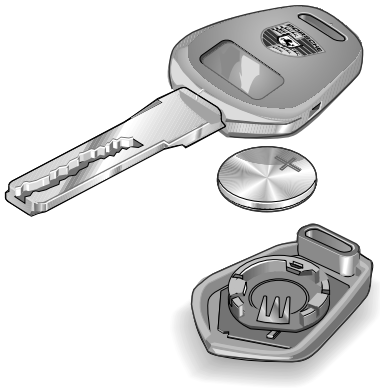
1. In this case, unlock the driver's door with the key at the door lock.
   Leave the door closed in order to prevent the alarm system from being triggered.

2. Press button **1** on the remote control.

The remote control is now activated again.


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1. Using your finger nail or a small screwdriver, carefully lift off the cover of the key grip.

2. Replace battery (observe polarity).
   A spare batterie (Lithium CR 2032, 3 volts) is available at your authorized Porsche dealer.

3. Replace cover and press together firmly.

**Any disposal regulations for batteries must be observed!**

## Replacing the remote-control battery

A weak battery may be recognized by the clearly reduced action range of the remote control or when the **light-emitting diode 4** in the key grip no longer flashes when the remote control is operated.

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## Central Locking in Cars without Alarm System

See the chapters on "Load switch-off", "Seat Memory" and "Power Windows".

Both car doors and the filler flap can be centrally unlocked or locked with the remote control.

**Any person remaining in the locked car can open the door with the inner door handle:**

1. Pull inner door handle once to unlock door lock.

2. Pull inner door handle again to open door.

### Automatic relocking

If the car is unlocked by remote control and none of the car doors is opened within approx. 60 seconds, automatic relocking takes place.
This relocking time can be adapted to your individual requirements (4 - 120 seconds) by an authorized Porsche dealer.

### Emergency operation – opening

▷ Unlock the driver's door with the key at the door lock.

### Emergency operation – closing

▷ Quickly turn the key in the driver's door lock to the lock position **three times** in succession.

If there is a defect in the central locking system, all functioning elements of the central locking system will be locked.

The fault should be remedied immediately at an authorized Porsche dealer.

### Indication by emergency flasher

If the **remote control** is used for unlocking or locking, a response is provided by the emergency flasher:

- Unlocking – single flash.
- Locking – double flash.

### Overload protection

If the central locking system is operated more than ten times within a minute, further operation is blocked for 30 seconds.


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## Central locking switch

The central locking switch on the dashboard lets you lock and unlock both doors electrically.

### Note

If the doors are locked with the key, they can not be opened by pressing the central locking switch.

### Locking

▷ Press the rocker-switch symbol.
Indicator light lights up if ignition is on.

If the doors were locked with the central locking switch, they can be opened by pulling the inner door handle **twice**.

### Unlocking

▷ Press the rocker-switch indicator light.
Indicator light goes off.

## Automatic door locking

Your authorized Porsche dealer can program diverse types of automatic door locking in the control unit of the central locking system.

### Type 1

Doors lock automatically when the ignition is switched on.

### Type 2

Doors lock automatically when a speed of 5 - 10 km/h (3 - 6 mph) is exceeded.

### Type 3

Doors lock automatically when the ignition is switched on. If doors are opened with the engine running, they lock again automatically when a speed of 5 - 10 km/h (3 - 6 mph) is exceeded.

### Type 4

The doors do not lock automatically.

### Note

Automatically locked doors can be unlocked with the central locking button or opened by pulling on the inside door handle twice.

**Warning!**

**In an emergency situation where you need to exit the car through an automatically locked door, remember the following procedure to open the door.**

▷ Unlock the doors by pressing the central locking button **or**

▷ pull the inside door handle **twice** to open the door.

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## Central Locking in Cars with Alarm System

USA: FCC ID LXPRKY 116;
FCC ID LXPVIM 145

Canada: TxF 315P 2255 102 275;
RxF 315P 2255 102 276 A

This device complies with:
Part 15 of the FCC Rules
RSS-210 of Industry Canada.

Operation of this device is subject to the following two conditions:

- It may not cause harmful interference, and
- it must accept any interference received including interference that may cause undesired operation.

**Note**

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment.
Such modification could void the user's authority to operate the equipment.

See the chapters on "Load switch-off", "Seat Memory" and "Power Windows".

Both car doors and the filler flap can be centrally unlocked or locked with the remote control.

If the driver's door is not completely closed, the vehicle cannot be locked.

If the passenger's door, lids, convertible-top compartment cover or the storage tray are not completely closed, a short **signal from the alarm horn** will draw your attention to this fact when you try to lock the vehicle.

**Note**

Unlocking the vehicle by using the key in the door lock and opening the door may activate the alarm system within 10 seconds.

### Automatic relocking

If the car is unlocked by remote control and none of the car doors is opened within approx. 60 seconds, automatic relocking takes place.
This relocking time can be adapted to your individual requirements (4 - 120 seconds) by an authorized Porsche dealer.

### Locking conditions

▷ Lock car **once**.
The doors cannot be opened from the outside.
Alarm system and infrared passenger compartment monitoring are switched on.

**If a person or animal remains in the vehicle:**

▷ Quickly lock car **twice**:
The doors cannot be opened from the outside.
The infrared passenger compartment monitoring is switched off.

**Unlocking the door with the inner door handle**

Any person remaining in the locked car can open the door with the inner door handle:

1. Pull inner door handle once to unlock door lock.

2. Pull inner door handle again to open door.

**Note**

Inform any person remaining in the car that the alarm system will be triggered if the door is opened.


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### Emergency operation – opening

▷ Unlock the driver's door with the key at the door lock.
Open the door and switch the ignition on within 10 seconds in order to prevent the alarm system from being triggered.

### Emergency operation – closing

▷ Quickly turn the key in the driver's door lock to the lock position **three times** in succession.
If there is a defect in the central locking system, all functioning elements of the central locking system will be locked.
The alarm system is switched on.
The infrared passenger compartment monitoring system is switched off.

The fault should be remedied immediately at an authorized Porsche dealer.

### Indication by emergency flasher and alarm horn

If the **remote control** is used for unlocking or locking, a response is provided by the emergency flasher:

- Unlocking – single flash.
- Locking – double flash.
- Locking twice – continuous illumination for approx. 2 seconds and short alarm-horn signal.




## Central locking switch

The central locking switch on the dashboard lets you lock and unlock both doors electrically.

### Note

If the doors are locked with the key or remote control, they can not be opened by pressing the central locking switch.

### Locking

▷ Press the rocker-switch symbol.
Indicator light lights up if ignition is on.

### Unlocking

▷ Press the rocker-switch indicator light.
Indicator light goes out.

If the doors were locked with the central locking switch, they can be opened by pulling the inner door handle:

1. Pull inner door handle once to unlock door lock.

2. Pull inner door handle again to open door.

▷ ▷ ▷

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## Automatic door locking

Your authorized Porsche dealer can program diverse types of automatic door locking in the control unit of the central locking system.

### Type 1

Doors lock automatically when the ignition is switched on.

### Type 2

Doors lock automatically when a speed of 5 - 10 km/h (3 - 6 mph) is exceeded.

### Type 3

Doors lock automatically when the ignition is switched on. If doors are opened with the engine running, they lock again automatically when a speed of 5 - 10 km/h (3 - 6 mph) is exceeded.

### Type 4

The doors do not lock automatically.

### Note

Automatically locked doors can be unlocked with the central locking button or opened by pulling on the inside door handle twice.

**Warning!**

**In an emergency situation where you need to exit the car through an automatically locked door, remember the following procedure to open the door.**

- ▷ Unlock the doors by pressing the central locking button **or**
- ▷ pull the inside door handle **twice** to open the door.

## Fault indication

A double **horn signal** during locking indicates a defect in the central locking or alarm system.
Have the defect remedied at an authorized Porsche dealer.

## Overload protection

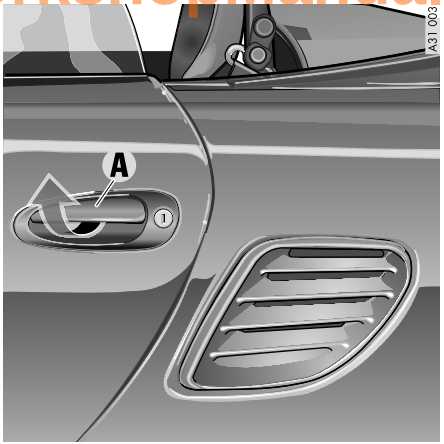
If the central locking system is operated more than ten times within a minute, further operation is blocked for 30 seconds.

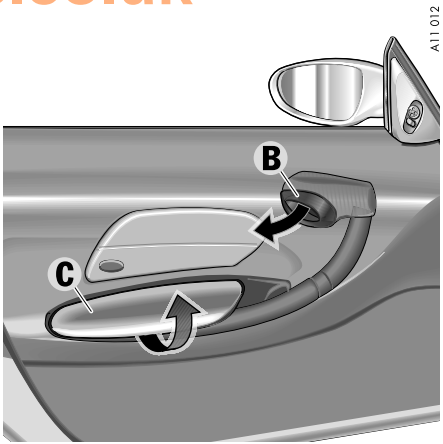

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## Doors

If the door windows are closed, they will be automatically opened by a few millimeters when the doors are opened and, when the doors are closed, they will be closed again.
This makes it easier to open and close the doors and protects the seals.
Therefore, you should pull the door handle slowly so that the door window can be lowered before the door is opened.




### Opening unlocked doors from outside

▷ Slowly pull door handle **A**.

### Opening unlocked doors from inside

▷ Slowly pull door handle **B**.

### Opening locked doors from inside

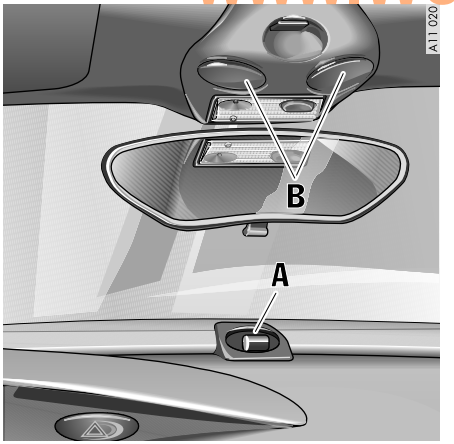
▷ Slowly pull door handle **B** twice.
Also refer to the chapter “Locking conditions”.

### Door storage tray

Always keep the door storage tray **C** closed, so that the side airbag is not obstructed in the event of an accident.

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**A** - *Light-emitting diode for alarm system*
**B** - *Sensor module for infrared passenger compartment monitoring system*

## Alarm System, Infrared Passenger Compartment Monitoring

The alarm system and infrared passenger compartment monitoring system are switched on when the doors are locked with the key or remote control.
See the chapter on "Central locking".

**Unlocking the vehicle by using the key in the door lock and opening the door may activate the alarm system within 10 seconds.**

### Note

The infrared passenger compartment monitoring system is always switched off when the convertible top is open.

### Function indication

If the alarm system is activated, light-emitting diode **A** on the dashboard flashes.

If, after locking, the light-emitting diode does not flash or, after ten seconds, it emits double flashes, then **not** all alarm contacts are closed. Additionally, a brief horn signal sounds.

When the doors are unlocked, the alarm system and infrared passenger compartment monitoring system are switched off and the light-emitting diode goes off.

### When the alarm is armed, the following areas are monitored

- Doors
- Front and rear lids
- Convertible-top lock
- Radio
- Glove compartment
- Storage tray between the seats
- Passenger compartment

If one of these alarm contacts is interrupted, the alarm horn sounds for approximately 3 minutes. Additionally, the emergency flasher and the passenger compartment light flash for approximately four minutes.
When the alarm is triggered, the light-emitting diode changes over to double flashes.

In order not to limit the action range of the infrared passenger compartment monitoring system:

▷ Move sun visors to one of the final positions.

▷ Do not fold the backrests forward.


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### Deactivating the infrared passenger compartment monitoring system for one locking process

If a person or animal remains in the car while it is locked, the infrared passenger compartment monitoring system must be switched off.

▷ Quickly lock car **twice**.
The doors are locked but can be opened from the inside:

1. Pull inner door handle once to unlock door lock.

2. Pull inner door handle again to open door.

**Note**

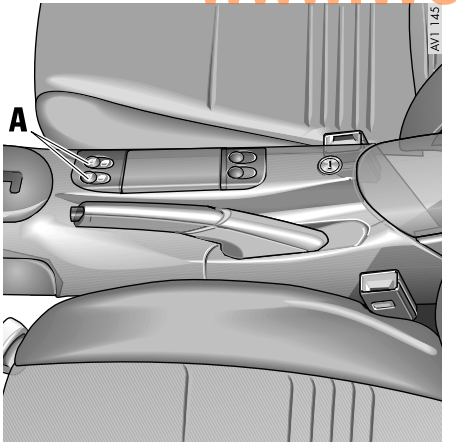
Inform any person remaining in the car that the alarm system will be triggered if the door is opened.

### Fault indication

A double **horn signal** during locking indicates a defect in the central locking or alarm system.
Have the defect remedied at an authorized Porsche dealer.

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## Power Windows

**Warning!**

**Risk of an accident.**

▷ Do not put anything on or near the windows that may interfere with the driver's vision.

**Risk of injury when the door windows close. This applies especially if the windows are closed with the comfort function, because with this function the window goes up automatically.**

▷ Make sure nobody can be injured when the windows close.

▷ Remove the ignition key to shut off power to the window switches when the vehicle is not attended by a responsible person.

### Readiness for operation of power windows

- With engine running **or**
- in ignition key position **1 or**
- with door closed and ignition key withdrawn: only until first opening of the door.

### Opening door windows

▷ Press rocker switch **A** until the door window has reached the desired position.

**One-touch operation**

▷ Press rocker switch **A** briefly.
Window moves to its final position.
Press again to stop the window in the desired position.

**Comfort function when unlocking the vehicle at the door lock**

▷ Unlock car with the remote control.
Hold car key in door lock in the unlocking direction until the windows have reached the desired position.



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## Closing door windows

▷ Press rocker switch **A** until the door window has reached the desired position.

**One-touch operation (with ignition on)**

▷ Press rocker switch **A** briefly.
Window moves to its final position.
Press again to stop the window in the desired position.

**Comfort function when locking vehicle**

▷ Hold car key in door lock in the locking direction until the windows have reached the desired position.

## Anti-crushing protection

If the door window is blocked during closing, it will stop and open again by about an inch.

**Warning!**

**Risk of severe personal injuries.**
**If the rocker switch "A" is pressed again within 10 seconds of the window being blocked, the window will close with its full closing force. Anti-crushing protection is disabled.**

▷ Once the anti-crushing protection acts to stop the window and opens it slightly, do not press the rocker switch again within 10 seconds without checking to make sure that nothing is blocking the path of the window.
The window will close with full closing force.

One-touch operation is disabled for 10 seconds after blockage of a side window.

## Automatic window lowering

See the chapters on "Doors" and "Convertible top".

## The standby function of the power windows switches off after two hours

When the car is unlocked, the power windows can no longer be operated after two hours (to save the car battery).

▷ Switch on the ignition or start the engine to reactivate the power windows.

## Storing end position of the windows

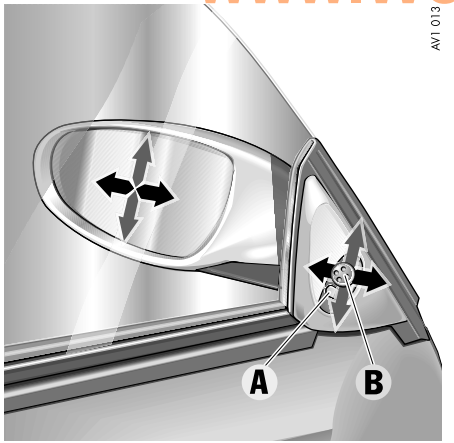
If the battery is disconnected and reconnected, the windows will not be raised automatically when the door is closed.

1. Close the windows with the rocker switch **once**.

2. Press front half of rocker switch again to store the end position of the windows in the control unit.

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**A** - *Selector switch, driver's / passenger's side*
**B** - *Mirror adjustment*

## Rear View Mirrors

Before driving the vehicle, adjust the outside and inside mirrors.
It is important for safe driving that you have good vision to the rear.

**Warning!**

**Risk of an accident.**

▷ Do not put anything on or near the windows or the mirrors that may interfere with the driver's vision.

### Door mirrors

The mirror housing is hinged and can be folded flat against the car to prevent damage in the tight parking areas.

#### Adjusting

1. Select driver's side or passenger's side with rocker switch **A**.

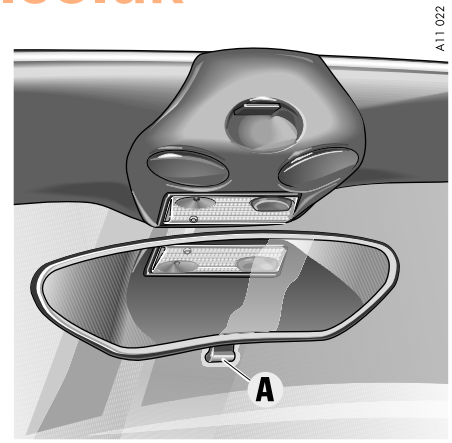
2. Move the door mirror glasses in the appropriate direction using the control switch **B**.

#### If the electrical adjustment facility fails

▷ Adjust mirror by pressing on the mirror face.

#### Automatically swivelling down mirror glass on the passenger's side

See the chapter on "Parking aid" and "Seat memory".



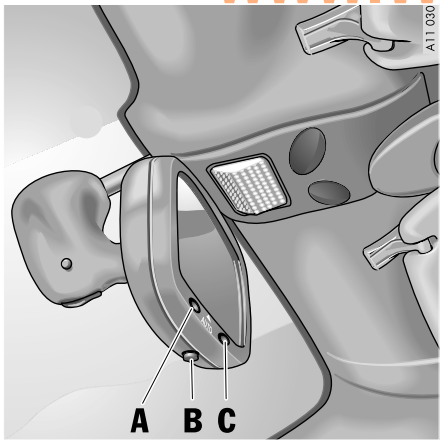

### Inside mirror

When the mirror is being adjusted, the anti-glare lever **A** must point forward.

Basic position: lever forward
Anti-glare position: lever back


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**A** - *Sensor*
**B** - *Switch for automatic anti-glare operation*
**C** - *Light-emitting diode*

## Automatic Anti-Glare Interior Mirror and Driver's Door Mirror

Sensors on the front and rear sides of the interior mirror measure the incident light.
The mirrors automatically change to anti-glare position or revert to their normal state, depending on the light intensity.
When reverse gear is selected, automatic anti-glare operation is switched off.

**Note**

The incident light in the area of the sensors must not be restricted, e.g. by stickers on the windscreen.

**Switching off the automatic anti-glare operation**

▷ Press switch **B**.
Light-emitting diode **C** goes out.

**Switching on the automatic anti-glare operation**

▷ Press switch **B**.
Light-emitting diode **C** lights up.

**Warning!**

**Risk of injury. Electrolyte fluid can emerge from a broken mirror glass.**
**This fluid irritates the skin and eyes.**

▷ If the electrolyte fluid should come into contact with the eyes or skin, immediately rinse it off with clean water.
See a doctor if necessary.

**Risk of damage to the paintwork and plastic parts. Electrolyte fluid can be removed only while it is still wet.**

▷ Clean the affected parts with water.

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## Heated rear window/ Door mirror heating

The heated rear window/door mirror heater is ready for operation when the ignition is on.

**Switching on**

▷ Press the rocker-switch symbol.
Indicator light is lit.
The mirror heater switches off automatically after approx. 12 minutes.
The mirror heater can be switched back on by pressing the switch again.

**Switching off**

▷ Press the indicator light in the rocker switch.


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## Vanity mirror

The vanity mirror on the rear of the sun visor is covered by a lid.

**Warning!**

**Risk of injury or risk of damage to mirror lid and convertible top.**

▷ Keep the lid closed while driving and when closing the convertible top.

In the case of an illuminated vanity mirror, the light is switched on when the lid is opened.

## Sun Visors

▷ Swing the sun visors down to prevent glare from the front.

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## Seat Adjustment

**Warning!**

**The seat may move unexpectedly if you attempt to adjust while driving. This could cause sudden loss of control or personal injury.**

▷ Do not adjust seats while the vehicle is in motion.
The backrest locks must be engaged at all times while the vehicle is in motion.

**Safety belts only offer protection when the backrest is upright and the belts are properly positioned on the body.**
**Improperly positioned safety belts can cause serious personal injury in an accident.**

▷ Do not operate the car with the driver or passenger backrests excessively reclined (see "Seat position").

### Seat position

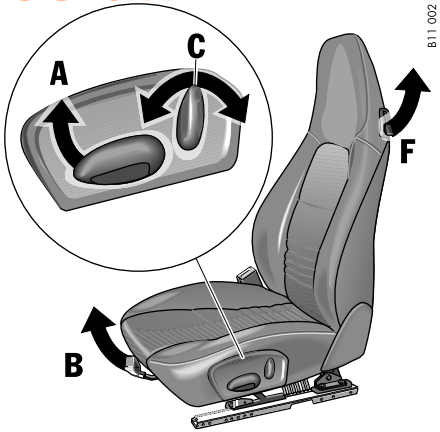
A correct sitting position is important for safe and fatigue-free driving.
We recommend the following procedure for adjusting the driver's seat to suit individual requirements:

1. Adjust the seat height to give yourself enough headroom and a good overview of the vehicle.

2. Adjust the seat until, with the accelerator pedal fully depressed, your leg is straight but your entire foot still rests on the accelerator pedal.

3. Grip the top half of the steering wheel.
Set the backrest angle and steering-wheel position so that your arms are almost outstretched. However, your shoulders must still rest on the backrest.

4. If necessary, correct the seat fore-and-aft adjustment.




### Adjusting basic seat

**A - Seat height adjustment**

▷ Raise locking lever.

▷ Set the desired seat height by shifting your body weight.

▷ Release the lever.


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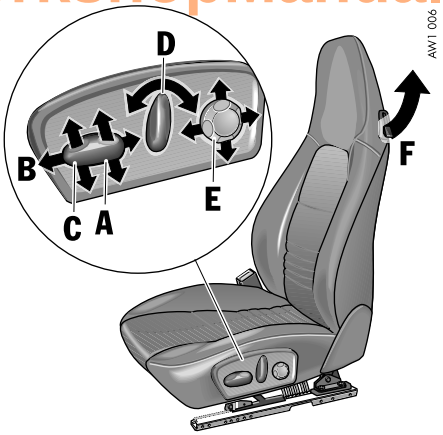
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**B - Fore and aft**

▷ Raise locking lever.
Move seat to desired position and release lever.
Ensure that the seat engages correctly.

**C - Backrest angle**

▷ Operate switch until the desired backrest angle is reached.




**Electrically adjustable seat**

▷ Press the switch in the direction indicated by the arrows until the desired seat position is reached.

**A - Seat height adjustment**

**B - Fore and aft adjustment**

**C - Seat angle adjustment**

**D - Backrest angle adjustment**

**E - Lumbar support (pelvis and spinal column support)***

To permit a relaxed sitting posture, the backrest curvature is steplessly adjustable in vertical and horizontal directions for individual pelvis and spinal column support.

▷ Press the switch in the direction indicated by the arrows until the desired backrest curvature is reached.

## Seat backrest

### Folding forward

▷ Pull up lever **F** in the side part of the backrest and fold the backrest forward.

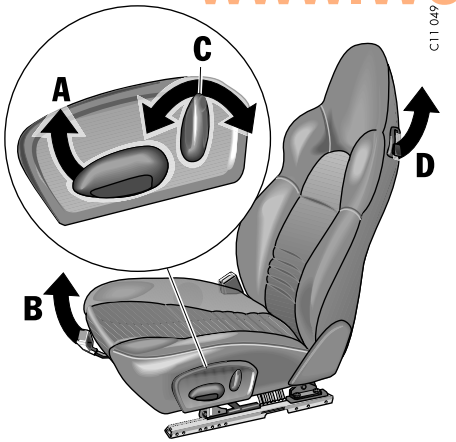
### Folding back

▷ Tilt back and engage the backrest so that it cannot tip forward when the car is braked.

▷ ▷ ▷

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## Sports Seat

### A - Seat height adjustment

▷ Raise locking lever.

▷ Set the desired seat height by shifting your body weight.

▷ Release the lever.

### B - Fore and aft

▷ Raise locking lever.
Move seat to desired position and release lever.
Ensure that the seat engages correctly.

### C - Backrest angle

▷ Operate switch until the desired backrest angle is reached.

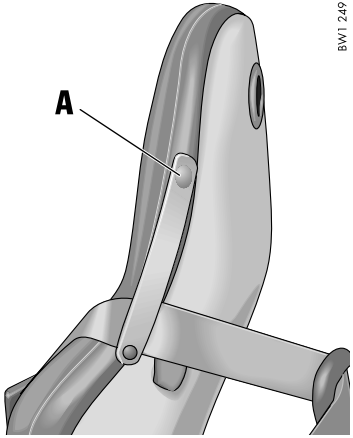
## Seat backrest

### Folding forward

▷ Pull up lever **D** in the side part of the backrest and fold the backrest forward.

### Folding back

▷ Tilt back and engage the backrest so that it cannot tip forward when the car is braked.




The seat belt can be fixed to the seat backrest with the retaining strap, so that it can be reached more easily for buckling up.

▷ Release button **A** at the top of the retaining strap, insert the seat belt and fasten the strap once more.

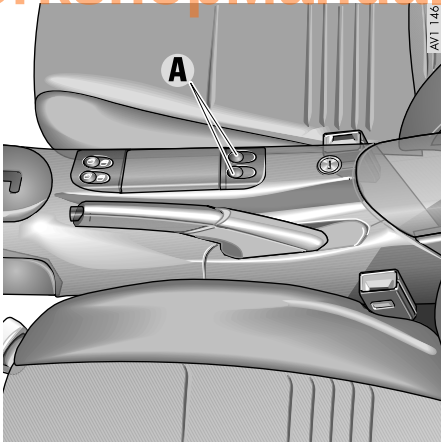
## Bucket seats

Bucket seats have fore and aft adjustment only. Adjust as for sports seat.



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## Heated seats

The seat heating with two heating stages is ready for operation when the ignition is on.

### Switching on

#### High heating power

▷ Press the rocker-switch **A** symbol. Indicator light glows red.

#### Low heating power

▷ Press the rocker-switch **A** symbol again. Indicator light glows orange.

The heating power changes whenever the rocker switch is operated.

### Switching off

▷ Press the indicator light in the rocker switch **A**.

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## Seat Memory

Individual seat and door mirror settings can be stored and recalled for the driver's position.

**⚠ Warning!**

**Risk of crushing.**

▷ Due to risk of crushing from uncontrolled recalling the memory of a seat setting, do not leave children in the car unattended.

### Operation with person buttons 1, 2

#### Storing seat position

1. Switch ignition on.

2. Set the desired seat and door-mirror positions.
   If you wish for the passenger's mirror to swivel down as a parking aid when reversing, reverse gear must be engaged when the seat position is stored.

3. Keep memory button **M** depressed and additionally press one of the person buttons **1 or 2**.
   The individual setting is now stored under the desired person button.

#### Recalling seat position

1. Switch the ignition on **or** open the driver's door.

2. Press person button until the seat has reached its final position.
   The mirror setting will be completed even if the person button is not kept depressed.

#### Note

Automatic seat adjustment can be interrupted immediately by releasing the button.



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## Operating with the remote control of the vehicle key

Each remote control (up to four) can be assigned an individual seat and door mirror position.
The stored seat and door mirror position is set automatically when the vehicle is unlocked using the corresponding remote control.
Each key is identified with a different colour.

### Storing seat position

1. Switch the ignition on with the desired vehicle key.

2. Set the desired seat and door-mirror positions.
   If you wish for the passenger's mirror to swivel down as a parking aid when reversing, reverse gear must be engaged when the seat position is stored.

3. Keep memory button **M** depressed and additionally press the button (beside the memory button).
   The individual setting is now assigned to this remote control and to the button.

### Recalling seat position

▷ Unlock the locked vehicle or luggage compartment with the remote control.
The stored seat position is set automatically.

The seat position assigned to a remote control can also be recalled with the button if the corresponding key was used to unlock the vehicle or to switch on the ignition.

If no seat position was assigned to a remote control, the button will not work.

### Note

Automatic seat adjustment can be interrupted immediately by pressing the central locking button or any memory or seat adjustment button.

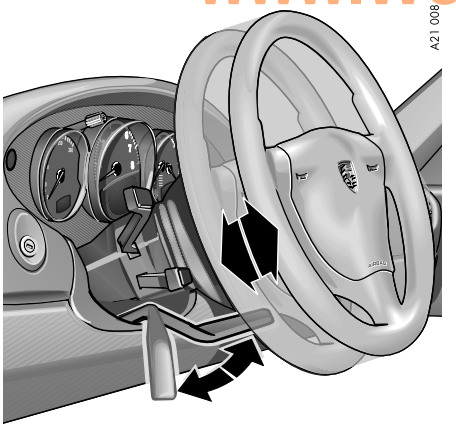
### Clearing the stored seat position

1. Switch the ignition on with the desired vehicle key.

2. Simultaneously press and hold the button and person button **2** for at least 5 seconds.

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### Longitudinal adjustment

1. Push locking lever downwards.

2. Adjust steering wheel to fit the chosen backrest angle and seat position by moving the steering wheel longitudinally.

3. **Swivel locking lever back until you feel it engage.**
   If necessary, move steering wheel slightly longitudinally, to ensure engagement.

## Steering Wheel Adjustment

**⚠ Warning!**

**Risk of accident.**
**The steering wheel may move further than desired if you attempt to adjust it while driving.**
**You may lose control of the vehicle.**

▷ Do not adjust the steering wheel while driving.


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## Safety Belts

**Warning!**

**Always make sure your and your passenger's safety belts are properly fastened while the vehicle is in motion.**
**Failure to follow safety belt warnings may result in serious personal injury.**

- For your and your passenger's protection, use safety belts at all times while the vehicle is in motion.
- Use appropriate child restraint systems for all small children.

### Proper wearing of safety belts

- Safety belts must be positioned on the body as to restrain the upper body and lap from sliding forward. Improperly positioned safety belts can cause serious personal injury in case of an accident.
- The shoulder belt should always rest on your upper body. The shoulder belt should never be worn behind your back or under your arm.
- For maximum effectiveness, the lap belt should be worn low across the hips.
- Pregnant women should position the belt as low as possible across the pelvis. Make sure it is not pressing against the abdomen.
- Belts should not be worn twisted.
- Do not wear belts over rigid or breakable objects in or on your clothing, such as eye glasses, pens, keys, etc. as these may cause injury.
- Several layers of heavy clothing may interfere with proper positioning of belts.
- Belts must not rub against sharp objects or damage may occur to the belt.
- Two occupants should never share the same belt at the same time.

### Care and maintenance

- Keep belt buckles free of any obstruction that may prevent a secure locking.
- Belts that have been subjected to excesssiv stretch forces in an accident must be inspected or replaced to ensure their continued effectiveness in restraining you.
  The same applies to belt tensioner systems which have been triggered.
  In addition, the anchor points of the belts should be checked.
- If safety belts do not work properly, see your authorized Porsche dealer immediately.
- If the belts show damage to webbing, bindinngs, buckles or retractors, they should be replaced to ensure safe operation.
- Do not modify or disassemble the safety belts in your vehicle.
- The belts must be kept clean or the retractors may not work properly (see also "Car care instructions").
- Never bleach or dye safety belts.
- Do not allow safety belts to retract until they are completely dry after cleaning or this may cause damage to the belt.

### Belt tensioner

Depending on the force of a collision, fastened seat belts are tightened in an accident.

**The belt tensioners are triggered in:**

- Front and rear impacts

**The belt tensioners are not triggered in:**

- Side impacts
- Vehicle overturning

**Note**

The belt tensioner system can be triggered only once; the system must be replaced afterward.
Work may be performed on the belt-tensioner system only by an authorized Porsche dealer.
Smoke is released when the belt tensioners are triggered. This does not indicate a fire in the vehicle.

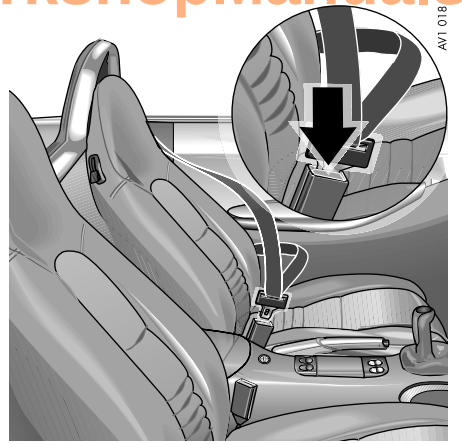
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## Safety Belt Warning System

**An audio-visual warning** system is interconnected with the driver's safety belt.

Every time the ignition is turned on, the gong will sound for about 6 seconds to remind driver and passenger to buckle up.
The safety belt warning light in the instrument panel will go off as soon as the driver has buckled up.




### Inertia reel retractor

The combination lap/shoulder belt with inertia reel locking mechanism adjusts automatically to your size and movements as long as the pull on the belt is slow.

Rapid deceleration during hard braking or a collision locks the belt. The belt will also lock when you drive up or down a steep hill or in a sharp curve, otherwise, the shoulder belt will not inhibit your upper body movement.

- ▷ Assume a comfortable sitting position.
  The shoulder belt should always rest on your upper body. The shoulder belt should never be worn behind your back or under your arm.
- ▷ To fasten, grasp belt and pull the belt in a continuous slow motion across your chest and lap.
- ▷ Insert belt tongue into buckle on inboard side of seat. Push down until it securely locks with an audible click. Pull the belt to check.
- ▷ Pull shoulder section to make sure belt fits snugly across the pelvis.
- ▷ Belts should fit snugly across the pelvis and chest. Make sure there is no slack in the belt.
- ▷ To unfasten belt, push in release button (arrow) on buckle. Belt tongue will spring out of buckle.
- ▷ To release a latched belt, lean back to take the body pressure off the belt.
- ▷ To store lap/shoulder belt, allow the belt to retract as you guide the latch to its stowed position.

Please note chapter "Automatic locking retractor".


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## Automatic locking retractor

The safety belt for the passengers seat is equipped with an automatic locking retractor for securing the child restraint system.
When activated, this retractor allows you to securely fasten the child restraint system in place so that inadvertent movements will not occur.

### Activating the automatic locking retractor

1. Pull the safety belt retractor **completely** out. At this point the locking mechanism is activated.

2. Insert the safety belt tongue into the buckle and make certain that it is properly latched.

3. Allow the safety belt to retract until it is tight on the child restraint system. You may further tighten the belt by pulling on it to allow more of it to retract.

### Releasing the safety belt

1. Unbuckle the safety belt latch.

2. Then make certain that the belt has fully retracted.
   At this point the automatic locking feature will be disengaged.

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## Child Restraint Systems

Porsche recommends that all infants and children be restrained in child restraint systems at all times while the vehicle is in motion in accordance with applicable laws.

The use of infant or child restraints is required by law in all 50 states and the Canadian provinces.
The child restraint system should be one that complies with U.S. Federal/Canadian Motor Vehicle Safety Standards 213 and should be secured by a lap belt or lap belt portion of a lap-shoulder belt.
A statement by the seat manufacturer of compliance with this standard can be found on the instruction label on the restraint and in the instruction manual provided with the restraint.

**⚠ Danger!**

**Risk of serious personal injury or death to the child.**

▷ Follow all child restraint instructions and warnings in this manual.

- When using an infant or child restraint system, be sure to follow all manufacturer's instructions on installation and use.
- Infants and small children should never be held on the lap, nor should they share a safety belt with another occupant while the vehicle is in motion.
- Children too big for child restraint systems should use regular safety belts. A shoulder belt can be used providing it does not cross the face or the neck of the child.

**The airbag deactivation device installation requires special programming available only from your authorized Porsche dealer.**

**Your authorized Porsche dealer will be glad to advise you about the installation possibility for a Porsche child restraint system which allows deactivation of the passenger's airbags.**

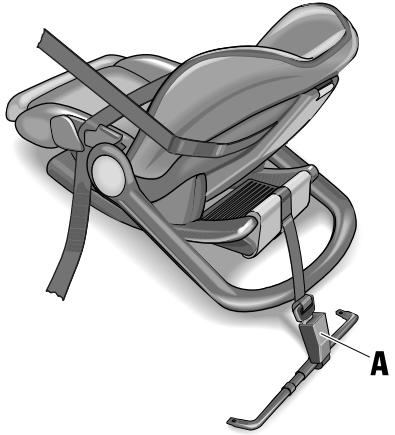
**⚠ Danger!**

**The use of a child restraint system in the passenger seat without airbag deactivation can result in serious personal injury or death to the child from an airbag deployment.**
**To reduce risk of injury from an inflating airbag in an accident, Porsche strongly recommends:**

▷ Do not use a child restraint system in the passenger seat unless the passenger airbags are deactivated.


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*Example: Rearward facing child restraint system*

**In order to deactivate the passenger's airbags, the belt tongue of the child's seat must always be inserted in the buckle "A" in front of the passenger seat.**

When the ignition is switched on, deactivation of the airbags is indicated by the airbag warning light flashing for 60 seconds.

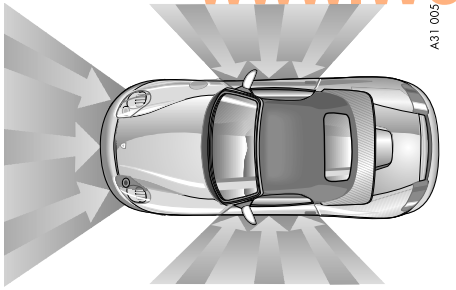
**⚠ Danger!**

**If the light does not flash, the airbags are not deactivated and a child restraint system must not be installed.**

▷ Have the fault remedied immediately by an authorized Porsche dealer.

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## Airbag Systems

The "Airbags" in combination with the safety belts makes up a safety system which offers the driver and the passenger the greatest known protection from injuries in case of accident.

Even if your vehicle is equipped with airbags, **the safety belts must be worn at all times**, because the front airbag system is only actuated by frontal collisions with an impact of sufficient severity.
See figure for ranges of effectiveness.

Below the actuation threshold of the airbag system, and during types of collisions which do not cause the actuation of the system, the safety belts provide the primary protection to the occupants when correctly worn.
**Therefore, all persons within the vehicle must always wear safety belts** (in many states, state law requires the use of safety belts). See also the chapter "Safety Belts".

The front airbags are located behind the padded steering wheel panel on the driver's side and on the passenger's side in the dashboard.
The side airbags (POSIP - **Po**rsche **S**ide **I**mpact **P**rotection System) are installed in the doors under the door trim panel.

### Function

The front airbags are triggered during a frontal collision of sufficient force.
In the event of a side impact of corresponding force, the side airbag on the impact side is triggered.

The inflation process generates the amount of gas required to fill the airbags at the necessary pressure in fractions of a second.

Airbags protect the face and upper body, whilst simultaneously damping the motion of the driver and passenger in the impact direction in the event of a frontal impact or side impact.

**⚠ Danger!**

**To provide optimal occupant protection, airbags must inflate at very high speed.**
**If you are not wearing your safety belt or are too close to the airbag when its deployed, inflating airbags can result in serious injury or death.**

- ▷ Make sure there are no people, animals or objects between the driver or passenger and the area into which the airbag inflates.
- ▷ Sit back as far from the dashboard or steering wheel as is practical, while still maintaining full vehicle control.
- ▷ Do not lean against the inside of the doors.
- ▷ Always hold the steering wheel by the outer rim.
  Never rest your hands on the airbag panel.
- ▷ Never transport heavy objects on or in front of the passenger seat.
- ▷ Always keep the lid of the door storage compartment closed. Objects must not protrude out of the door storage compartment.
- ▷ Give your passenger all of the information in this chapter.
- ▷ No changes must be made to the wiring or components of the airbag system.


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▷ Do not add any additional coverings or stickers to the steering wheel or in the area of the passenger airbag and side airbags. Doing so may adversely affect the functioning of the airbag system or cause harm to the occupants if the airbag system should deploy.

▷ Do not undertake any wiring for electrical accessory equipment in the vicinity of the airbag wiring harnesses. Doing so may disable the airbag system or cause inflation.

▷ If the warning light comes on, the airbag system should be repaired immediately by your authorized Porsche dealer.

**Note**

Airbag components (e.g. steering wheel, door trim) may be disassembled only by an authorized Porsche dealer.

When disposing of a used airbag unit, our safety instructions must be followed. These instructions can be obtained at any authorized Porsche dealer.



## Warning light

The central triggering unit monitors the operational readiness of the airbag system and the warning light.

Any malfunctions that may occur will be indicated by the warning lights in the instrument panel and on-board computer.

▷ **In the following cases you should immediately consult an authorized Porsche dealer in order to assure the airbag system is functioning properly:**

- Illumination of the airbag warning light during travel or repeated illumination longer than 5 seconds after the ignition circuit is turned on.
- Illumination fails to light up during ignition circuit activation.

If the airbags on the passenger's side are switched off by the **child restraint system**, or if an installed child restraint system is detected when the ignition is switched on, the warning light **flashes** for 60 seconds when the ignition is on.

**⚠ Danger!**

**If the light does not flash, the airbags are not deactivated and a child restraint system must not be installed.**

▷ Have the fault remedied immediately by an authorized Porsche dealer.

## Airbag maintenance

In order to ensure long-term functioning, the airbag system must be inspected by an authorized Porsche dealer after 4, 8 and 10 years from the date of manufacture shown on the safety compliance sticker, and every 2 years thereafter.

**Important information**

If you sell your Porsche, notify the purchaser that the vehicle is equipped with airbags, and refer them to the chapter, "Airbag Systems", in the owner's manual (safety and disposal rules).

Further information on the airbag system can be found on stickers at the sun visors, as well as on all airbag components.

For special recommendations on the use of child restraints, please refer to the chapter on "Child Restraint Systems".

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## Clutch Pedal

**The clutch pedal must be depressed fully before the starter will engage.**

**Warning!**

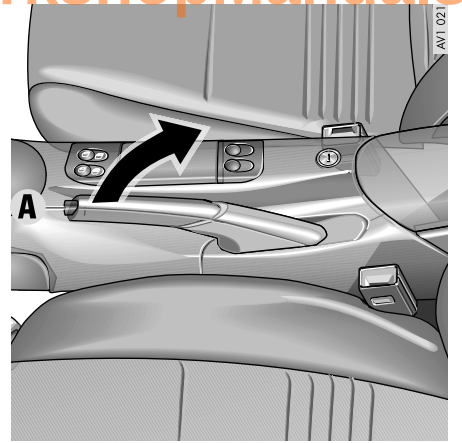
**Risk of an accident.**

- ▷ Always check the movement of the clutch pedal before driving and make sure that it is not obstructed by a floor mat or any other object.
- ▷ Secure the floor mat to prevent it from sliding into positions that could interfere with the safe operation of your vehicle.
  Your Porsche dealer will be glad to offer you floor mats of the correct size including a securing possibility.

**To avoid damage to the clutch and transmission:**

- ▷ Always depress the clutch pedal fully when changing gears.
- ▷ Do not hold the car on a steep grade with the clutch pedal partially depressed.

Should the free travel of the clutch pedal suddenly become bigger, it could mean a malfunction of the clutch. See your Porsche dealer for correction.




## Parking Brake

Parking brake force is mechanically transferred to the rear wheels by means of cables.

- ▷ Use the parking brake only after the vehicle has come to a full stop.

### Setting the parking brake

- ▷ Pull the lever **all the way up** (see arrow).
  With the ignition on, the parking brake warning lights in the instrument panel and on-board computer will come on if the lever is even slightly raised. A firm pull upward is required to properly engage the parking brake.
  If the brake is not fully set, the vehicle may roll without control.
- ▷ Move the selector lever to "P" (Tiptronic) or move the gearshift lever to reverse or first gear (Manual transmission).
- ▷ Before exiting the vehicle, make sure that the parking brake is fully set and the vehicle is not moving at all.

### Releasing the parking brake

- ▷ Pull the lever slightly up as you depress the release button **A**, and then push the lever all the way down.


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### Parking brake warning light USA

### Parking brake warning light Canada

The parking brake warning lights will go out after the parking brake is fully released.
The warning lights are not an indicator that the parking brake is fully set; it is only intended to be a warning to release the parking brake before driving the car.

**Caution!**

**A partially engaged brake will overheat the rear brakes, reduce their effectiveness and cause excessive wear.**

- ▷ Release the parking brake fully.

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- ▷ When parking your car, always set the parking brake by pulling all the way up on the lever.
- ▷ Move the selector lever to "P" (Tiptronic) or move the gearshift lever to reverse or first gear (Manual transmission).
- ▷ On hills also turn the front wheels towards the curb.

## Brakes

- ▷ Make it a habit to check the operation of your brakes before driving.

Keep in mind that the braking distance increases very rapidly as the speed increases. At 60 mph or 100 km/h, for example, it is not twice but four times longer than 30 mph or 50 km/h. Tire traction is also less effective when the roads are wet or slippery.

- ▷ Therefore, always maintain a safe distance from the car in front of you.

### Note

Even though the brake discs consist of alloyed grey cast iron, they will unavoidably start to corrode if your car is parked for an extended period. The brakes will tend to "rub" as the result.
The nature, extent and effects of corrosion depend on the amount of time the vehicle was parked, whether granular or liquid road salt was spread and whether grease-dissolving agents were used in car washes.
If the braking comfort is noticeably impaired, we recommend having the brake system checked by experts at an authorized Porsche dealer.

### Brake system function

Your Porsche is equipped with a power assisted hydraulic dual circuit brake system with disc brakes at the front and rear.
Both circuits function independently. One brake circuit operates the front and the other operates the rear.

If one brake circuit has failed, the other will still operate. However, you will notice an increased pedal travel when you apply the brakes.
Failure of one brake circuit will cause the stopping distance to increase.

**Warning!**

**Risk of an accident.**
**In the unlikely event of hydraulic failure of one brake circuit:**

- ▷ Push the brake pedal down firmly and hold it in that position.
  A mechanical linkage activates the second circuit, and you will be able to bring the vehicle to a stop.
- ▷ After bringing your vehicle to a complete stop, avoid driving the vehicle and instead have it towed to the nearest authorized Porsche dealer for repair.

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▷ ▷ ▷



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## Brake warning light USA

## Brake warning light Canada

If the warning lights in the instrument panel and on-board computer go on while driving, the brake fluid level may be too low, or (if the brake pedal travel has increased) one of the two brake circuits may have failed.

A greater braking pressure will be required, stopping distances will be longer and the braking behavior will change, particularly in curves.

With correctly adjusted brakes, and a correctly working brake system, the pedal travel to the point of brake actuation should be 1-3/16" to 1-9/16" or 30 to 40 mm.
Whenever the brake pedal travel exceeds this distance, have the brake system checked.

## Brake pedal

**Warning!**

**Risk of an accident.**
**Any obstruction of the pedal could increase the stopping distance.**

- ▷ Always check the movement of the brake pedal before driving and make sure that it is not obstructed by a floor mat or any other object.
- ▷ Secure the floor mat to prevent it from sliding into positions that could interfere with the safe operation of your vehicle.
  Your Porsche dealer will be glad to offer you floor mats of the correct size including a securing possibility.

**Note**

In case one of the two brake circuits fails, increased pedal travel is required to bring your vehicle to a full stop.

**Warning!**

**To avoid overheating and premature wear of the brakes:**

- ▷ Before descending a steep grade, reduce speed and shift the transmission into a lower gear or driving position to control speed.
- ▷ Do not "ride the brakes" by resting your foot on the pedal when not intending to apply brake pressure.
- ▷ Do not hold the pedal down too long or too often.
  This could cause the brakes to get hot and not function properly.


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## Brake booster

**The brake booster assists braking only when the engine is running.**

When the car is moving while the engine is not running, or if the brake booster is defective, more pressure on the brake pedal is required to bring the car to a stop.

Moisture or road salt on brakes affects braking.
When the vehicle is driven on salted roads for extended periods, the brakes should be washed down thoroughly about every 2 weeks. An automatic carwash facility cannot do this job properly.
Brakes will dry after a few cautious brake applications.

**Warning!**

**Driving through water may reduce traction. Moisture on brakes from road water, car wash, or coating of road salt may affect braking efficiency.**

▷ Cautiously apply brakes to test brakes after being exposed.

## Brake wear

Your car has excellent brakes, but they are still subject to wear. The rate at which they wear depends on how the brakes are used.

▷ Have the brake system inspected at the intervals recommended in your Maintenance Booklet.




### Warning light USA



### Warning light Canada

If the lights in the instrument panel and on-board computer stay on when the engine is running or come on while driving, the brake pads are worn, excessively.

▷ Do not continue to operate the vehicle.
Have your authorized Porsche dealer inspect or replace the brake pads.

## Brake pads

Wear on the brake pads and brake discs depends to a great extent on the driving style and the conditions of use and therefore cannot be expressed in actual miles on the road.

The high-performance brake system is designed for optimal braking effect at all speeds and temperatures.
Certain speeds, braking forces and ambient conditions (such as temperature and humidity) therefore might cause the brakes to squeal.

### New brake pads or linings

New brake pads have to be “broken in”, and therefore only attain optimal friction when the car has covered several hundred miles or km.
The slightly reduced braking ability must be compensated for by pressing the brake pedal harder. This also applies whenever the brake pads and brake discs are replaced.

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## ABS Brake System (Antilock Brake System)

The ABS system represents a major contribution to the enhancement of active safety in your vehicle. This system prevents the wheels from locking in a panic stop on almost all road surfaces.

**With the ABS system in your vehicle, the following areas are enhanced:**

**Steering**, vehicle remains steerable under all braking forces when ABS is engaged.

**Good directional control**, no swerving caused by locking of wheels under braking conditions.

**Shorter stopping distance**, stopping distances are usually reduced because controlled braking is maximized.

**Prevention of wheel lock up**, no brake–induced sliding and thus no localized tire wear from emergency braking.

The crucial advantage of the ABS system over a conventional brake system is in the area of maintaining directional control and maneuverability of the car in emergency situations during normal driving, including panic braking in turns.

**⚠ Warning!**

**The increased control that is provided should not induce you to take greater risks with your safety. The limits dictated by the laws of physics cannot be overcome, even with ABS.**
**The risk of accidents due to inappropriate speed cannot be reduced, even by the ABS. The driver bears the responsibility for all driving maneuvers.**

- ▷ Adapt your driving style to the prevailing road and weather conditions.
- ▷ Obey all traffic laws.

**Other vehicles not equipped with the ABS system may not be able to maintain control, especially on wet or poor road surfaces and thus may be more likely to impact you from behind.**

- ▷ To minimize that risk, use your ABS system to increase your ability to maneuver to avoid dangerous situations and not merely to try to stop in the shortest distance possible.


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## Operation of the ABS system

A wheel speed sensor is mounted to each of the four wheels. If wheel lock-up of either of the front wheels or the rear wheels is sensed during braking, the brake pressure is adjusted automatically until the wheel no longer slips. The brake pressure is regulated for each front wheel individually and for both of the rear wheels together.

On a road surface which is slippery on only one side, the rear wheel which is braking on the slippery surface determines the brake pressure which will be applied equally to both rear wheels. This ensures that directional stability is maintained. However, if braking forces approach the wheel lock-up point for all wheels (panic braking) the ABS system will intervene to provide a rapid rythmic braking.
The proper operation of ABS is perceived by the driver as a pulsating brake pedal in conjunction with audible noise and perhaps some vibration.

▷ If you experience these sensations while driving or a road surface with questionable traction, reduce vehicle speed appropriate for the prevailing road conditions.

The functional readiness of all the main electrical components of the ABS is checked by an electronic monitoring system both before and while you drive.

## Warning light USA

## Warning light Canada

When the ignition is switched on the ABS warning light will light up while the system is electronically interrogated and goes out when the engine is started if the check is not yet complete.
If the ABS warning lamp fails to go out, this indicates that ABS has been deactivated due to a fault. If the warning lights in the instrument panel and on-board computer light up while you are driving, this indicates that a fault has occurred. In both cases, normal braking, as in vehicles without ABS, is still retained.

The ABS system should, however, be examined at an authorized Porsche dealer immediately to prevent the occurrence of further faults.

▷ If the ABS system becomes inoperative, take your vehicle to your authorized Porsche dealer immediately.

**Warning!**

**The control unit of the ABS brake system is set for standard tire size. If non-standard tires are installed, the control unit may misinterpret the speed of the vehicle, because of the variant data it receives from the sensors on the axles.**

▷ Use only tire makes and types tested by Porsche.



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## Porsche Stability Management (PSM)

PSM is an active control system for stabilizing the vehicle during extreme driving maneuvers.

**Warning!**

**The increased control that is provided should not induce you to take greater risks with your safety. The limits dictated by the laws of physics cannot be overcome, even with PSM.**
**The risk of accidents due to inappropriate speed cannot be reduced, even by PSM.**
**The driver bears the responsibility for all driving maneuvers.**

▷ Adapt your driving style to the prevailing road and weather conditions.

▷ Obey all traffic laws.

### Advantages of PSM

- Superior traction and lane-holding ability in all driving situations – even on road surfaces with varying friction.
- PSM actively stabilizes the vehicle during dynamic driving manoeuvres (e.g. rapid steering movements, during lane changes or on alternating curves).
- Improved braking stability in curves and on different or varying road surfaces.

### Readiness for operation

The PSM is engaged automatically every time you start the engine.

### Function

Sensors at the wheels, brakes, steering system and engine continuously measure:

- Driving speed
- Direction of travel
- Lateral acceleration
- Rate of turn about the vehicle's vertical axis

The PSM uses these values to determine the direction of travel desired by the driver.
PSM intervenes and corrects the course if the vehicle's actual direction deviates from the desired course (steering-wheel position). It brakes individual wheels as needed. If necessary, the PSM additionally influences the engine power or the gear-changing characteristic of the Tiptronic in order to stabilize the vehicle.

The events below inform the driver of PSM control operations and warn him to adapt his driving style to the road conditions:

- The information light in the instrument panel lights up.
- Hydraulic noises can be heard.
- The vehicle decelerates and steering-wheel forces are altered as the PSM controls the brakes.
- Reduced engine power.
- The brake pedal pulsates and its position is changed during braking.
  However, it is possible at any time to achieve full vehicle deceleration by increasing the foot pressure slightly on the brake pedal.


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## Switching off PSM

▷ Press the “PSM OFF” logo of the rocker switch.
PSM is switched off after a brief delay.
With PSM switched off, the PSM OFF warning light in the instrument panel **and** the rocker switch indicator light are lit.

**During braking,** the vehicle is stabilized even when PSM is switched off.

**One-sided spinning** of the wheels is prevented, even with PSM switched off.

**PSM should always be switched on during “normal” driving.**
However, it can be of advantage to switch off PSM temporarily in exceptional situations:

- On a loose surface or in deep snow
- When “rocking the vehicle free”
- When using snow chains.

**Tiptronic vehicles:** When PSM is switched off the slip monitoring function of the Tiptronic is also deactivated.

## Switching PSM back on

▷ Press the indicator light in the rocker switch.
PSM is switched on after a brief delay.

## Information light

- The PSM information light in the instrument panel lights up for a lamp check when the ignition is switched on.
- The light indicates PSM intervention even when PSM is switched off (brake regulation in the event of one-sided wheel spin).

## Warning light

- The warning light in the instrument panel lights up in combination with the indicator light in the rocker switch for a lamp check when the ignition is switched on.
- In combination with the indicator light in the rocker switch, the light indicates that PSM is switched off.
- The lights in the instrument panel and in the on-board computer indicate a defect.
  PSM is out of order.
  The fault should be remedied immediately at an authorized Porsche dealer.

## Towing

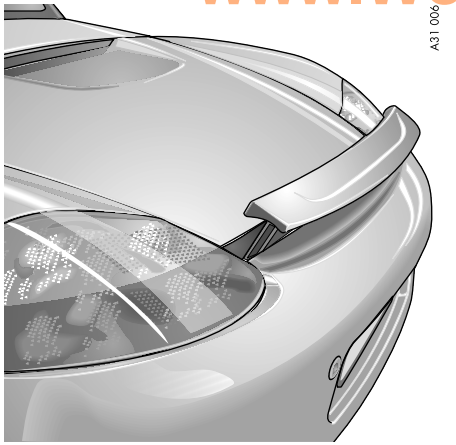
Refer to the chapter “Towing”.

## Handbrake tests

**Handbrake tests** on the roller test stand must be performed only with the ignition switched off.

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## Retractable Spoiler

The spoiler reduces air resistance and, particularly at high speeds, reduces rear axle lift.

### Automatic control

The spoiler automatically extends at approximately 75mph/120 km/h and retracts at approximately 50 mph/80 km/h.

### Warning light

The warning light in the instrument panel lights for a lamp check when ignition is switched on.

The warning lights in the instrument panel and on-board computer go on if the spoiler does not extend at more than 75 mph/120 km/h or if the end position is not reached.

**If the automatic control fails:**

▷ Stop the car at a safe place and extend the spoiler manually by pressing the spoiler rocker switch **A**.

**⚠ Danger!**

**Risk of an accident.**
**The spoiler affects movement of air around the vehicle and is used to maintain aerodynamic stability as vehicle speeds increase.**
**If the spoiler does not extend automatically due to mechanical malfunction, driving stability will be adversely affected by increased rear axle lift, which could lead to loss of control.**

▷ Adapt your driving style and reduce speed to the changed aerodynamic conditions.

▷ Have the fault remedied at an authorized Porsche dealer.

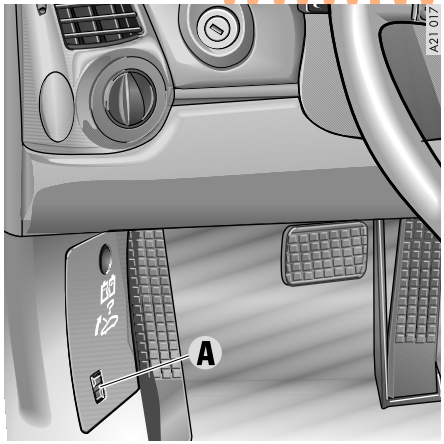
▷ Do not exceed the posted legal speed limit.

**Risk of an accident and loss of control.**

▷ Do not operate the spoiler rocker switch manually while driving.


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## Manual control

When the ignition is on, the spoiler can be extended and retracted manually using the rocker switch **A** in the area of the driver's footwell.

**⚠ Warning!**

**Serious injuries may occur from crushing and pinching at all moving parts in the area of the retractable spoiler.**

▷ Ensure that no one can be injured and no objects can be jammed by the extension or retraction of the spoiler.

### Extension

▷ Press upper half of rocker switch **A** briefly.

### Retraction

▷ Press and hold lower half of rocker switch **A** until the spoiler has reached its final position.

## Fixed rear spoiler

**⚠ Caution!**

**Risk of damage to rear spoiler.**

▷ Please consult the operator before using automatic car washes.

▷ Do not push the vehicle by the spoiler.

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# Parking Aids

## Parking Assistant (ParkAssistent)

When the driver backs up, the parking assistant system indicates the distance between the car and an obstacle behind it, by means of signal tones.

**Warning!**

**Risk of accident.**
**Despite use of the parking assistant system, the driver is still responsible for taking due care and assessing obstacles when backing up.**

▷ Make sure that no persons, animals or obstacles are within the manoeuvring area.

The parking assistant system is activated automatically when reverse gear is selected and the ignition is on.

### Note

Be aware that the parking assistant system is **not** switched on if the car rolls backward without reverse gear being engaged.

A33 008



*Ultrasound sensors*

### Sensors

Four ultrasound sensors in the rear bumper measure the distance to the closest obstacle.

- Range middle sensors around 60 in./150 cm
- Range outer sensors around 24 in./60 cm

Obstacles cannot be detected in the “blind” sensor area (e.g. near the ground).

### Note

The sensors must always be kept free of dust, ice and snow in order to ensure that they are fully functional.

**Caution!**

**To avoid damaging the sensors:**

▷ Maintain sufficient distance when cleaning with steam-jet units.

### Signal tones/function

When reverse gear is selected, the parking assistant confirms that it is switched on by issuing a **short signal tone**.
A detected obstacle is signalled by an **intermittent tone**. The intervals decrease as the obstacle is approached.
A **continuous tone** sounds when the distance becomes less than one foot. This continuous tone can stop if the obstacle is approached closer than one foot.
**The radio volume should not be so loud as to drown out the signal tones.**



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### Limits of ultrasonic measurement

The parking assistant system cannot detect:

- sound-absorbing obstacles (e.g. powder snow),
- sound-reflecting obstacles (e.g. glass surfaces, flat painted surfaces)
- and very thin obstacles.

Other ultrasound sources (e.g. pneumatic brakes of other vehicles, jackhammers) can interfere with detection of obstacles.

### Fault indication

The parking assistant system indicates a fault in two ways:

- After reverse gear has been selected, the short signal tone is followed by a continuous tone of the **same** pitch:
  This indicates that sensors are soiled or covered with ice.
- After reverse gear has been selected, the short signal tone is followed by a continuous tone with a much **lower** pitch:
  This indicates a general system fault. Please have the fault remedied at an authorized Porsche dealer.



AW1 028

**A** - *Control switch for door mirror adjustment*

## Swivelling down mirror glass on the passenger's side

On vehicles with seat memory you can activate an additional parking aid.
Activating see "Seat memory".

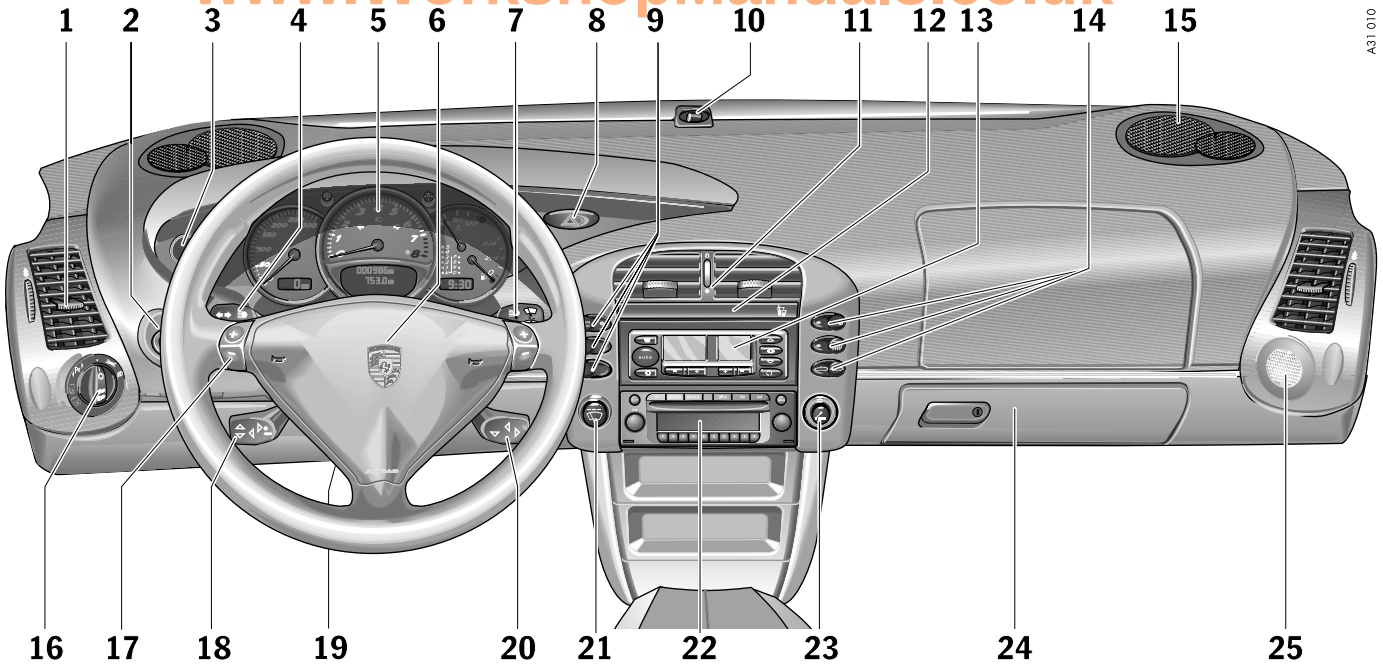
- When reverse gear is engaged, the mirror glass on the passenger's side swivels down slightly to show the curb area.
- The mirror glass returns to its initial position when the car is shifted out of reverse gear.

### Moving mirror glass to its initial position with reverse gear engaged

▷ Briefly move control switch **A** in any direction.

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## Operation, Instruments

1 Side vent

2 Ignition/starter switch with steering lock

3 Space for hands-free microphone for telephone

4 Turn signals/ headlight dimmer/flasher lever

5 Instrument panel

6 Horn

7 Windshield wiper/washer lever

8 Emergency flasher switch

9 Rocker switch for Porsche Stability Management, sports exhaust system, footwell light

10 Readiness display for alarm system

11 Central vent

12 Cupholder

13 Control panel for heating, ventilation, air conditioning

14 Rocker switch for central locking, heated rear window/door mirror heating, convertible top operation

15 Speaker

16 Light switch

17 Toggle switches for Tiptronic

18 Operating lever for on-board computer

19 Locking lever for steering-wheel adjustment

20 Operating lever for automatic speed control

21 Control for wipe interval/rain sensor sensivity

22 Radio

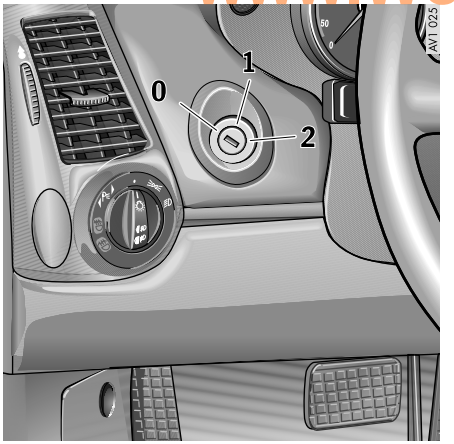
23 Cigarette lighter

24 Glove compartment

25 Interior temperature sensor

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## Ignition/Starter Switch with anti-theft Steering Lock

**For your safety, fasten safety belts.**

See also the chapter on "Immobilizer".

### Before starting the engine

▷ Apply the handbrake.

▷ **Manual transmission:**
Move the gearshift lever into neutral.
**The clutch pedal must be depressed fully before the starter will engage.**

▷ **Tiptronic:**
Move the selector lever to "P" or "N".

### Switch position 0

The ignition key can be withdrawn in this position only.
**Tiptronic models**
The ignition key can be withdrawn only when the selector lever is in the "P" position.

The steering is locked when the key is withdrawn.

▷ Engage the steering lock by moving the steering wheel to the left or right.
Turn the steering wheel to the locking position before you switch off the engine so that you don't have to exert yourself when locking or unlocking the steering.


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## Switch position 1

Ignition is on.
All electrical equipment can be switched on.
The warning lights light up for a lamp check.
Please note the description of the individual warning lights.

▷ When turning the key to position **1**, relieve the steering lock with a slight steering movement.

### Note

To conserve battery power at low rpm (traffic jams, town driving etc.), switch off all electrical consumers which are not needed at that moment.

## Switch position 2

### Starting the engine

▷ Turn the key from position **1** to position **2**.

**The clutch pedal must be depressed fully before the starter will engage.**
The first operation of the starter is ended automatically when the engine starts.
If the engine does not start, subsequent starter operations will not be ended automatically.

If the engine does not start at the first time or stalls at any time, the key must be returned to position **0**.
When the engine is running, the warning lights should go off. If a light does not go off, take appropriate action as indicated in this manual.

## Switching engine off

▷ Turn the ignition key from position **1** to position **0**.

**⚠ Warning!**

**Risk of an accident.**
**The steering wheel will lock and will cause loss of steering.**

▷ Never remove key from the ignition lock or turn the key off while the vehicle is moving.

▷ To avoid battery run-down, always remove the ignition key from the ignition lock.
See also the chapter on "Battery".

▷ Turn the steering wheel until the steering lock is engaged.

### Note

On vehicles with Tiptronic it is only possible to remove the ignition key if the selector lever is in position **P**.

### Gong

If you leave the key in the ignition/steering lock, a gong will sound when the driver's door is opened. This is a reminder to remove the key.

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## Starting Procedures

See also the chapter on "Immobilizer".

**Warning!**

**Serious injury may result if you are involved in a collision without having fastened the safety belts.**

▷ Fasten safety belts before driving away.

### Before starting the engine

▷ Apply the handbrake.

▷ **Manual transmission:**
Move the gearshift lever into neutral.
**The clutch pedal must be depressed fully before the starter will engage.**

▷ **Tiptronic:**
Move the selector lever to "P" or "N".

Temperature sensors on the engine automatically provide the correct fuel/air mixture required for starting.
Therefore, it is **not necessary to depress the accelerator pedal** while starting a cold or a warm engine.

▷ As soon as the engine starts, release the ignition key.

The first operation of the starter is ended automatically when the engine starts.
If the engine does not start, subsequent starter operations will not be ended automatically.

If the engine fails to start after 10 or 15 seconds of cranking:

▷ Wait about 10 seconds before engaging the starter again.

▷ Do not let the engine idle to warm up.

▷ When starting the engine, be ready to drive immediately.
Drive vehicle at moderate speeds and avoid engine speeds above 4,200 rpm during the first 5 minutes.

**Danger!**

**Engine exhaust fumes have many components which you can smell. They also contain carbon monoxide (CO), which is a colorless and odorless gas.**
**Carbon monoxide can cause unconsciousness and even death if inhaled.**

▷ Never start or let the engine run in an enclosed, unventilated area.
It is not recommended to sit in your car for prolonged periods with the engine on and the car not moving.

**An unattended vehicle with a running engine is potentially hazardous.**
**If warning lights should come on to indicate improper operation, they would go unnoticed.**

▷ Never leave the engine idling unattended.

**Danger of fire.**

▷ Do not park or operate the vehicle in areas where the hot exhaust system may come in contact with dry grass, brush, fuel spill or other flammable material.

▷ If your car catches on fire for any reason, call the fire department.
Do not endanger your life by attempting to put out the fire.


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## Stopping engine

▷ Turn key back to position **0**.

▷ Do not stop engine immediately after hard or extended driving.
Keep engine running at increased idle for about two minutes to prevent excessive heat build-up before turning off engine.

▷ To avoid battery run-down, always remove the ignition key from the ignition lock.

▷ Make sure that when you leave the car, even briefly, you have withdrawn the ignition key.

▷ Engage the steering lock by moving the steering wheel to the left or right.
Turn the steering wheel to the locking position before you switch off the engine so that you don't have to exert yourself when locking or unlocking the steering.

**⚠ Warning!**

**Hot engine compartment components can burn skin on contact.**

▷ Before working on any part in the engine compartment, turn the engine off and let it cool down sufficiently.

## Engine-compartment blower, radiator fan

The radiator and radiator fans are in the front of the car.
The engine-compartment blower is mounted in the engine compartment.

**⚠ Warning!**

**Risk of injury.**
**After the engine is switched off, the engine-compartment and coolant temperatures are monitored for approx. 20 minutes.**
**During this period, and depending on temperature, the engine-compartment blower and radiator fans may continue to run or start to run.**

▷ Carry out work in these areas only with the engine off and exercise extreme caution.

## Automatic garage door

The ignition system in your Porsche may interfere with your electronically operated garage door.

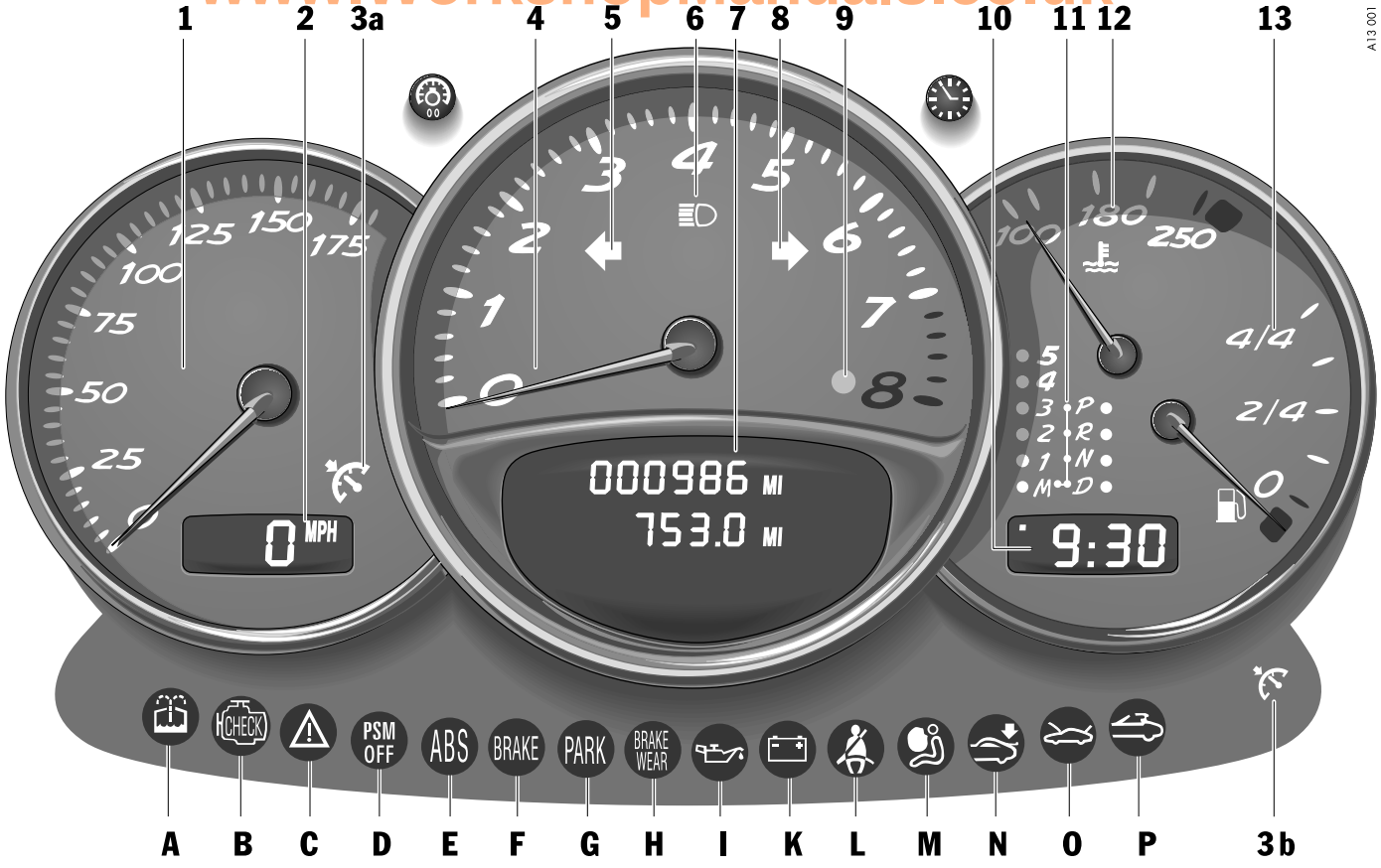
▷ To check this, drive your Porsche close to the garage door. Make sure not to interfere with the operating range of the door.

▷ Run the engine at different speeds.

If the garage door opens or closes without you operating the garage door unit in your car, contact the dealer who installed the automatic garage door to have the frequency and/or coding of the garage door signal changed or modified.

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# Instrument Panel
# USA Models
# without On-Board Computer

**Information about individual indicators is given on the specified pages**

1 Speedometer with analogue display, **70, 71**

2 Speedometer with digital display, **70, 71**

3 Automatic speed control indicator light
3a Boxster,
3b Boxster S, **72**

4 Tachometer, **71**

5 Turn signal indicator light, left, **71**

6 High beam indicator light, **71**

7 Odometer, **70**
Engine oil level gauge, **76, 77**

8 Turn signal indicator light, right, **71**

9 Light sensor for instrument illumination, **72**

10 Clock, **75**

11 Tiptronic indicator, **74**

12 Cooling system
Temperature gauge, warning light, **73**

13 Fuel
Level gauge, warning light, **74**

## Warning lights / indicator lights

A Washer fluid level warning light, **178**

B Check engine warning light, **78**

C Porsche Stability Management (PSM)
Information light, **55**

D Porsche Stability Management (PSM)
Warning light, **55**

E ABS warning light, **53**

F Brake fluid level,
Brake distribution warning light, **50, 170**

G Parking brake warning light, **49**

H Brake pad wear warning light, **51**

I Engine oil pressure warning light, **78**

K Battery warning light, **78**

L Safety belt warning light, **42**

M Airbag warning light, **47**

N Retractable spoiler warning light, **56**

O Luggage compartment lids
warning light, **128, 130**

P Convertible top indicator light, **147, 148**

**When the ignition is switched on, the warning lights light up for a lamp check.**

**Note**

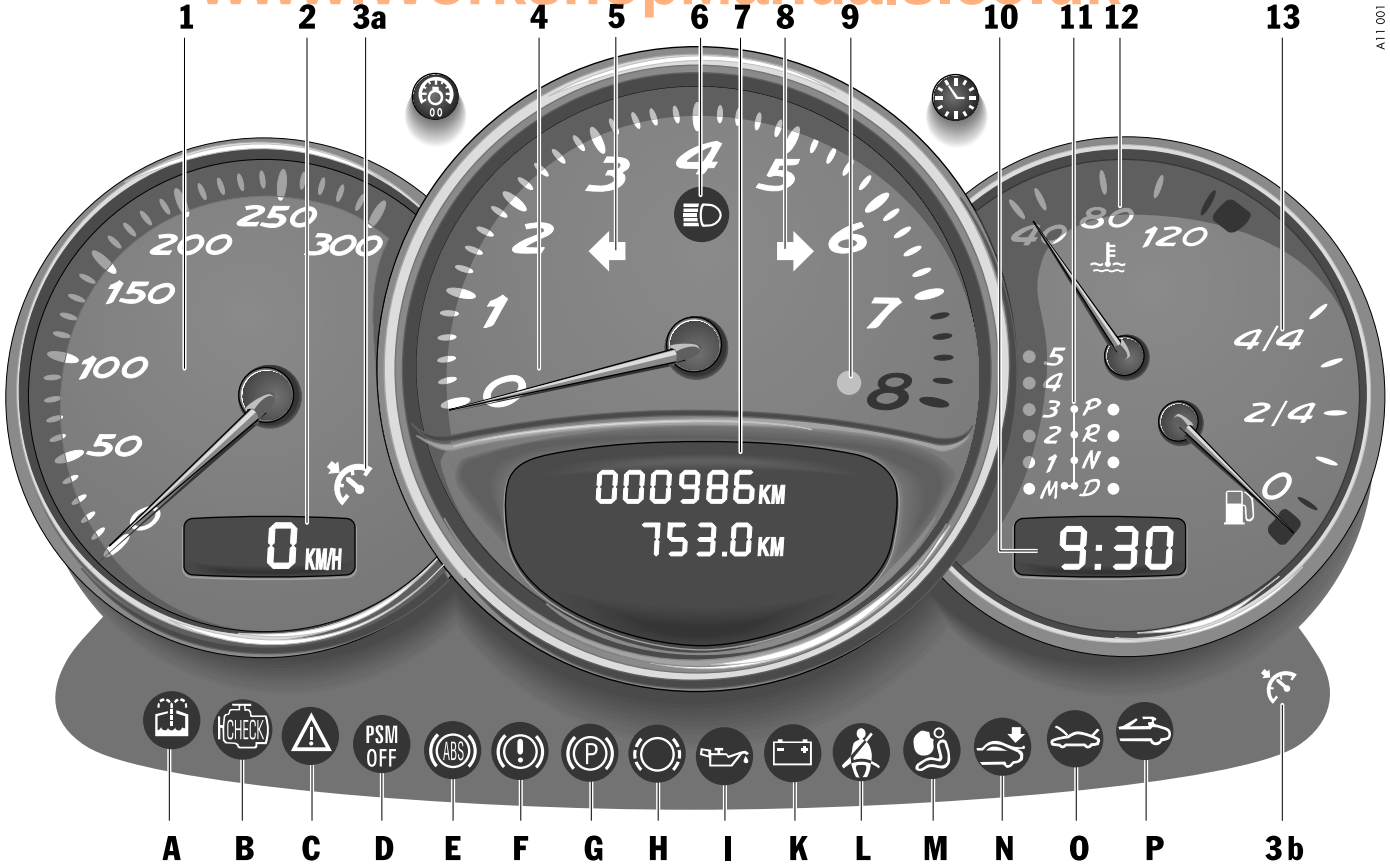
Warnings that have been given are stored in the appropriate control unit memory and can be read out at an authorized Porsche dealer.

This information can help to warn you about situations which may be hazardous to you or your car.



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# Instrument Panel
# Canada Models
# without On-Board Computer

**Information about individual indicators is given on the specified pages**

1 Speedometer with analogue display, **70, 71**

2 Speedometer with digital display, **70, 71**

3 Automatic speed control indicator light
3a Boxster,
3b Boxster S, **72**

4 Tachometer, **71**

5 Turn signal indicator light, left, **71**

6 High beam indicator light, **71**

7 Odometer, **70**
Engine oil level gauge, **76, 77**

8 Turn signal indicator light, right, **71**

9 Light sensor for instrument illumination, **72**

10 Clock, **75**

11 Tiptronic indicator, **74**

12 Cooling system
Temperature gauge, warning light, **73**

13 Fuel
Level gauge, warning light, **74**

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C Porsche Stability Management (PSM)
Information light, **55**

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Warning light, **55**

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Brake distribution warning light, **50, 170**

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P Convertible top indicator light, **147, 148**

**When the ignition is switched on, the warning lights light up for a lamp check.**

**Note**

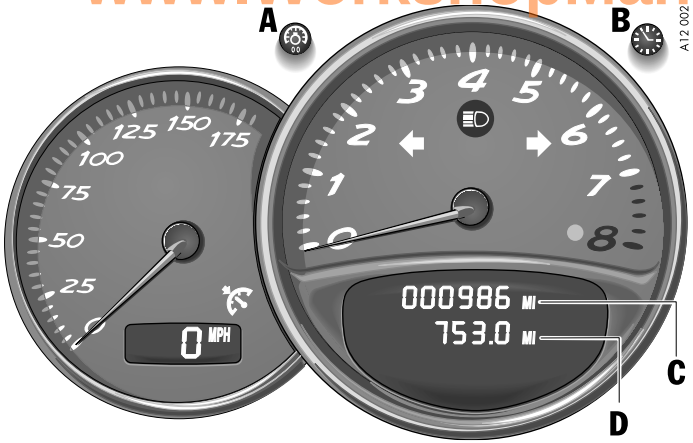
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**A** - *Adjustment button for trip odometer*
**B** - *Adjustment button for change-over between miles/kilometres*
**C** - *Odometer*
**D** - *Trip odometer*

## Speedometer

The digital speedometer is integrated in the pointer instrument.
The indication changes from mph to km/h when the units are changed from miles to kilometres.

## Trip odometer

The odometers are blanked out approx. 4 minutes after the ignition is switched off or when the car is locked.

**⚠ Warning!**

**Risk of an accident, personal injury and loss of control.**

▷ Do not reach through the steering-wheel spokes while driving.

**Resetting to zero**

▷ Press adjustment button **A** for approximately one second.
After exceeding 6214 miles or 9999 kilometers, the counter returns to "0".


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## Changing over between Miles / Kilometers

The units of the odometers **C, D** and the digital speedometer can be changed from miles to kilometers and vice versa.

**Warning!**

**Risk of an accident, personal injury and loss of control.**

▷ Do not reach through the steering-wheel spokes while driving.

### Switching between units

▷ With the ignition on, hold adjustment button **B** turned to the left for about five seconds.

## Tachometer

The tachometer shows the engine speed in revolutions per minute (rpm).
The beginning of the red marks at the right end of the scale indicates the maximum permissible engine rpm.
A speed limiter prevents the engine from being overrevved during acceleration. Before reaching this area, the next **higher** gear should be selected.
Shift to the next **lower** gear when the engine rpm drops below 1500 rpm.

**Caution!**

**To avoid severe engine damage.**

▷ Always observe the engine rpm before downshifting to a lower gear, so you do not exceed the maximum engine rpm.

## Turn Signal Indicator Light

Flashes in synchronism with the turn signals.

Left arrow – left turn signals
Right arrow – right turn signals

▷ If the frequency of the display becomes noticeably faster, check the operation of the turn signals.

## High Beam

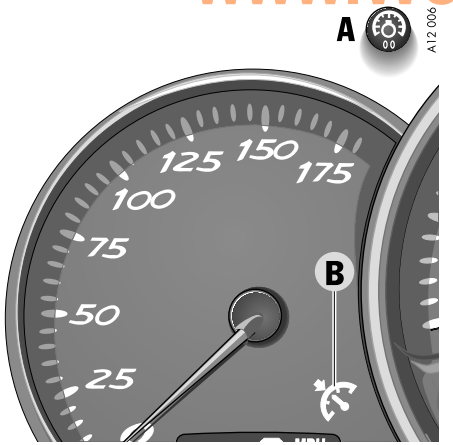
### Indicator light

Lights when high beam or headlight flasher is switched on.
The indicator light goes out when the high beams are switched off.



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**A** - *Adjustment button for instrument illumination*
**B** - *Automatic speed control indicator light, Boxster*

**C** - *Automatic speed control indicator light, Boxster S*

## Automatic Speed Control

### Indicator light

Indicates automatic speed control readiness.

## Instrument Illumination

The illumination is automatically adjusted to the ambient brightness by the light sensor in the tachometer.

In addition, when the car lights are switched on, the instrument and switch symbol brightness can be manually adjusted.

**Warning!**

**Risk of an accident, personal injury and loss of control.**

▷ Do not reach through the steering-wheel spokes while driving.

### Adjusting brightness manually

▷ Turn adjustment button **A** in the appropriate direction and hold it until the desired brightness has been reached.



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## Cooling System

**Temperature gauge** (ignition on)

USA: Display in °F
Canada: Display in °C

**Pointer to the left** – engine cold

▷ Avoid high engine speeds and heavy engine loading.

**Pointer in the middle** – normal operating temperature

The pointer may move up to the red area when engine is heavily loaded and outside temperature is high, but should return to "normal" when engine load is reduced.

### Warning light "A"

If the **coolant temperature** is too high, the warning light **comes on**.

▷ Pull off the road, turn off the engine and allow to cool.

▷ Check radiator and air passages in front end of car for obstructions.

▷ Check coolant level.
If necessary, add coolant and have fault remedied at an authorized Porsche dealer.
**Follow the warnings and instructions in the "Coolant level" chapter.**

**Note**

To prevent excessive temperatures, the cooling-air passages must not be restricted by coverings (e.g. films, "stone guards").

If the **coolant level** is too low, the warning light **flashes**.

▷ Switch engine off and allow to cool.

▷ Add coolant.

▷ Have the cause of the fault remedied at an authorized Porsche dealer.
**Follow the warnings and instructions in the "Coolant level" chapter.**

**⚠ Caution!**

**Risk of engine damage.**

▷ If the warning light comes on even though coolant level is correct, do not continue driving.

▷ Have the fault remedied at the nearest authorized Porsche dealer.

### Engine compartment blower fan

In addition, this warning light **flashes** to indicate a fault in the **engine compartment blower fan**.

▷ Have the cause of the fault remedied at an authorized Porsche dealer.



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## Fuel

### Level gauge

When the ignition is on the fuel level is displayed.
For tank capacity, see "Capacities" chapter.

If the vehicle's inclination changes (e.g. going up or downhill), minor deviations in the indication may occur.

**Note**

If the tank is near empty and you top up with only a small quantity of fuel, this cannot be registered by the level gauge and calculation of the range remaining is impossible.

### Warning light "A"

If there is too little fuel left, the warning light **lights** while the engine is running.

▷ Fill up at the next opportunity.

For fuel reserve, see "Capacities" chapter.

**Caution!**

**To prevent damage to the emission control system and engine.**

▷ Never drive the tank completely out of fuel.

▷ Avoid high cornering speeds after the warning light has come on.

▷ Follow the instructions in the "Emission Control System" chapter.

If the warning light **flashes**, there has been a system fault.
There will then be no reserve warning.

▷ To remedy the fault, go to an authorized Porsche dealer.

## Tiptronic S

### Indicator for selector lever position and selected gear

When the engine is running, the selector lever position and engaged gear are indicated.

**If the selector lever is between two positions:**

The selector lever position in the instrument cluster flashes.

▷ Engage the selector lever correctly.

**If there is a fault in the transmission:**

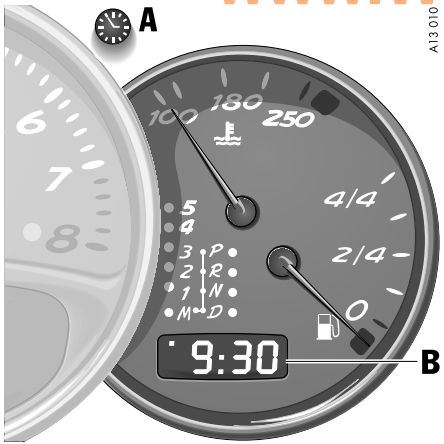
**4th-gear** flashes on the display.
Also refer to "Emergency program".

▷ To remedy the fault, immediately consult an authorized Porsche dealer.

Follow the instructions in the chapter "Tiptronic".


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**A** - *Adjustment button for clock*
**B** - *Clock*

# Clock

## Setting the time

**⚠ Warning!**

**Risk of an accident, personal injury and loss of control.**

▷ Do not reach through the steering-wheel spokes while driving.

### Setting hours

▷ Press adjustment button **A** for about one second.
Hour display flashes.

▷ Turn button in the appropriate direction:
to right – increase hours figure
to left – decrease hours figure.

Adjustment in hours – turn button briefly
Fast adjustment (display cycles) –
turn and hold button.

### Setting minutes

▷ Press adjustment button again.
Minutes display flashes.

▷ Set by rotating as in hours mode.

### Leaving adjustment mode

Automatically after one minute **or**:

▷ Press adjustment button again.

When adjustment mode is deliberately left by pressing the button, the time begins precisely to the second.



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**A** - *Waiting time display for oil level measurement*
**B** - *Engine oil level segment display*

## Engine Oil Level Gauge

When the ignition is switched on, the odometer display changes temporarily to the waiting time mode for oil level measurement.

The engine oil level is not displayed when the engine is running.
The segment display **B** serves to measure and display the oil level.

The oil level should lie between the minimum and maximum marks. The difference between the two marks is approximately 1.25 liters.
If the level falls below the minimum mark, the segment underneath flashes.

**Caution!**

**To prevent engine damage, the oil level should not fall below the minimum mark.**

▷ Check engine oil level with every fuel filling.

Before the oil level is measured, the engine oil has to have flowed back into the oil pan.
The time taken for the engine oil to flow back depends on the engine temperature and how long the engine has been stopped.

This waiting time **A** is displayed when the ignition is switched on, as a count-down in minutes and seconds. In addition, the segment display begins to "cycle".

**Short waiting times for a measurement are achieved**

- when the engine has been stationary for some hours, **before starting** a cold engine
- or when the engine is at operating temperature.

If a waiting time of more than 5 minutes is displayed, it makes sense not to make the oil level measurement until the engine is at operating temperature.


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### Initiate oil level measurement

1. Stop the vehicle in a level position.
   Switch ignition on (do not start the engine).

2. Allow waiting time to elapse.
   The waiting time and the cycling segments are displayed.

3. Then read off oil level from the segment display, top up engine oil if necessary.
   Before adding oil, switch ignition off.
   **Follow the warnings and instructions in the "Engine oil level" chapter.**

### Oil level measurement during refuelling

The oil level is automatically measured during refuelling. If the oil level is too low, the segment display appears. The segment below the min. mark flashes.

However, this measurement is performed only if the following preconditions are met:
Engine is at operating temperature, ignition is off, refuelling is completed within 15 minutes.

**The engine oil level must also be regularly checked between service intervals.**
**See your "Maintenance" manual.**

### Fault display

If the whole segment display flashes, there is a fault in the measuring device.

▷ In this event, use the dipstick to check the oil level.



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## Engine Oil Pressure Warning light

Comes on when ignition is switched on and must go off when engine is running.

**If the warning light comes on while the engine is running or while driving:**

▷ Immediately stop in a suitable place and switch engine off.

▷ Check oil level.
**Follow the warnings and instructions in the "Engine oil level" and "Engine oil level gauge" chapter.**

▷ If necessary, add engine oil.

**⚠ Caution!**

**Risk of engine damage.**
**If the warning light comes on even though oil level is correct:**

▷ Do not continue driving.

▷ Have the fault remedied at the nearest authorized Porsche dealer.

## Battery Warning light

Comes on when ignition is switched on and must go off when engine is running.

**If the warning light comes on while the engine is running or while driving:**

▷ Stop the car in a safe place and stop the engine.

**Possible causes:**

- Defect in the battery charging system.
- Broken drive belt.

**⚠ Warning!**

**Risk of an accident and risk of engine damage.**
**A broken drive belt means there is no power assistance to the steering (more effort is required to steer) and coolant pump function will stop.**

▷ Do not continue driving.

▷ Have the fault remedied at the nearest authorized Porsche dealer.

## Check Engine Warning light

Comes on when the ignition is first turned on and remains on briefly as a bulb check. If the light does not come on, have the bulb replaced promptly.

If this light comes on and remains on while driving, it suggests

- a potential engine control problem and the need for system service or
- an improperly fastened tank cap or
- refuelling with engine running.

Although the vehicle is usually driveable and will not require towing, see your dealer for service as soon as possible.


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**Caution!**

**If the Check engine light is flashing, severe catalytic converter damage and power loss will soon occur.**
**Prolonged driving with the Check engine light on could cause damage to the emission control system. It also could affect fuel economy and driveability.**

▷ Have the fault remedied at the nearest authorized Porsche dealer immediately.



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# Instrument Panel
# USA Models
# with On-Board Computer

**Information about individual indicators is given on the specified pages**

1 Speedometer with analogue display, **84, 85**

2 Speedometer with digital display, **84, 85**

3 Automatic speed control indicator light
3a Boxster,
3b Boxster S, **86**

4 Tachometer, **85**

5 Turn signal indicator light, left, **85**

6 High beam indicator light, **85**

7 On-board computer, **92 – 107**

8 Turn signal indicator light, right, **85**

9 Light sensor for instrument illumination, **86**

10 Clock, **89**

11 Tiptronic indicator, **90**

12 Cooling system
Temperature gauge, warning light, **87**

13 Fuel
Level gauge, warning light, **88**

## Warning lights / indicator lights

A Washer fluid level warning light, **178**

B Check engine warning light, **91**

C Porsche Stability Management (PSM)
Information light, **55**

D Porsche Stability Management (PSM)
Warning light, **55**

E ABS warning light, **53**

F Brake fluid level,
Brake distribution warning light, **50, 170**

G Parking brake warning light, **49**

H Brake pad wear warning light, **51**

I Engine oil pressure warning light, **90**

K Battery warning light, **91**

L Safety belt warning light, **42**

M Airbag warning light, **47**

N Retractable spoiler warning light, **56**

O Luggage compartment lids
warning light, **128, 130**

P Convertible top indicator light, **147, 148**

**When the ignition is switched on, the warning lights light up for a lamp check.**

**Note**

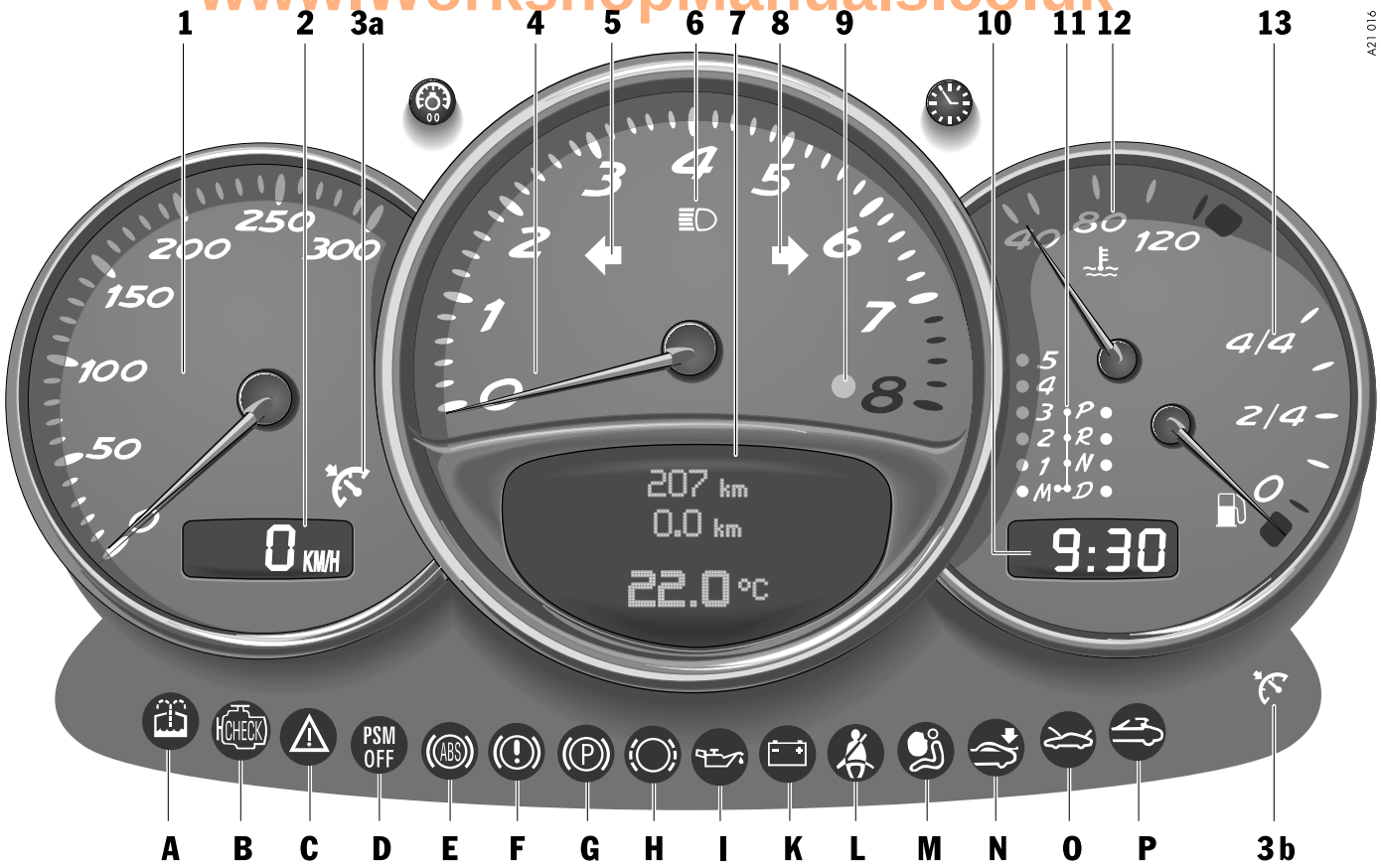
Warnings that have been given are stored in the appropriate control unit memory and can be read out at an authorized Porsche dealer.

This information can help to warn you about situations which may be hazardous to you or your car.



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## Instrument Panel Canada Models with On-Board Computer

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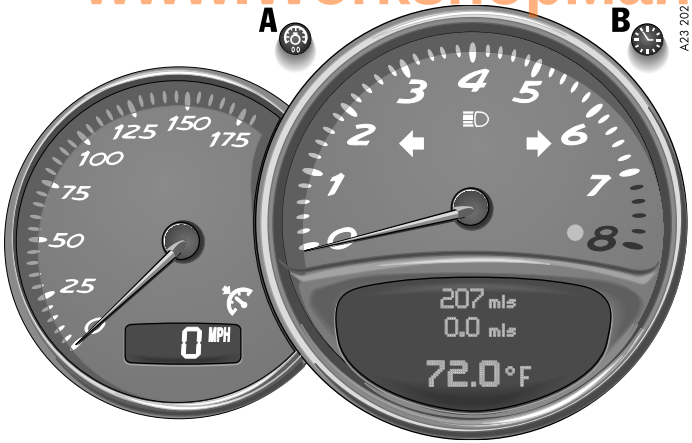
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**A** - *Adjustment button for trip odometer*
**B** - *Adjustment button for change-over between miles/kilometres*

## Speedometer

The digital speedometer is integrated in the pointer instrument.
The indication changes from mph to km/h when the units are changed from miles to kilometres.

## Changing over between Miles / Kilometers

You can use adjustment button **B** to change the units of the distance and speed displays in the on-board computer and digital tachometer.

**Warning!**

**Risk of an accident, personal injury and loss of control.**

▷ Do not reach through the steering-wheel spokes while driving.

### Switching between units

▷ With the ignition on, hold adjustment button **B** turned to the left for approx. 5 seconds.

### Note

The units of the distance and speed displays can also be changed in the "SET" menu of the on-board computer.


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## Trip Odometer

**Warning!**

**Risk of an accident, personal injury and loss of control.**

▷ Do not reach through the steering-wheel spokes while driving.

### Resetting to zero

▷ Press adjustment button **A** for approximately one second **or**

▷ Reset the distance in the "SET" menu of the on-board computer.
Refer to the chapter "On-board computer".

After exceeding 6213 miles or 9999 kilometers, the counter returns to "0".

## Tachometer

The tachometer shows the engine speed in revolutions per minute (rpm).
The beginning of the red marks at the right end of the scale indicates the maximum permissible engine rpm.
A speed limiter prevents the engine from being overrevved during acceleration. Before reaching this area, the next **higher** gear should be selected.
Shift to the next **lower** gear when the engine rpm drops below 1500 rpm.

**Caution!**

**To avoid severe engine damage.**

▷ Always observe the engine rpm before downshifting to a lower gear, so you do not exceed the maximum engine rpm.

## Turn Signal Indicator Light

Flashes in synchronism with the turn signals.

Left arrow – left turn signals
Right arrow – right turn signals

▷ If the frequency of the display becomes noticeably faster, check the operation of the turn signals.

## High Beam

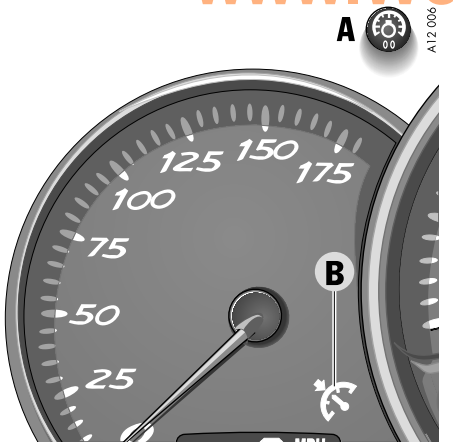
### Indicator light

Lights when high beam or headlight flasher is switched on.
The indicator light goes out when the high beams are switched off.



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**A** - *Adjustment button for instrument illumination*
**B** - *Automatic speed control indicator light, Boxster*

## Automatic Speed Control

### Indicator light

Indicates automatic speed control readiness.




**C** - *Automatic speed control indicator light, Boxster S*

## Instrument Illumination

The illumination is automatically adjusted to the ambient brightness by the light sensor in the tachometer.

In addition, when the car lights are switched on, the instrument and switch symbol brightness can be manually adjusted.

**Warning!**

**Risk of an accident, personal injury and loss of control.**

▷ Do not reach through the steering-wheel spokes while driving.




### Dimming instrument illumination

Turn adjustment button **A** in the appropriate direction and hold it until the desired brightness has been reached.
The chosen level of brightness is indicated by a bar display in the display field of the on-board computer.



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## Cooling System

**Temperature gauge** (ignition on)

USA: Display in °F
Canada: Display in °C

**Pointer to the left** – engine cold

▷ Avoid high engine speeds and heavy engine loading.

**Pointer in the middle** – normal operating temperature

The pointer may move up to the red area when engine is heavily loaded and outside temperature is high, but should return to "normal" when engine load is reduced.

### Warning light "A"

If the **coolant temperature** is too high, the warning light **comes on**.
Additionally, a warning is displayed in the on-board computer.

▷ Pull off the road, turn off the engine and allow to cool.

▷ Check radiator and air passages in front end of car for obstructions.

▷ Check coolant level.
If necessary, add coolant and have fault remedied at an authorized Porsche dealer.
**Follow the warnings and instructions in the "Coolant level" chapter.**

**Note**

To prevent excessive temperatures, the cooling-air passages must not be restricted by coverings (e.g. films, "stone guards").

If the **coolant level** is too low, the warning light **flashes**.
Additionally, a warning is displayed in the on-board computer.

▷ Switch engine off and allow to cool.

▷ Add coolant.

▷ Have the cause of the fault remedied at an authorized Porsche dealer.
**Follow the warnings and instructions in the "Coolant level" chapter.**

**⚠ Caution!**

**Risk of engine damage.**

▷ If the warning light comes on even though coolant level is correct, do not continue driving.

▷ Have the fault remedied at the nearest authorized Porsche dealer.

### Engine compartment blower fan

In addition, this warning light **flashes** to indicate a fault in the **engine compartment blower fan**.

▷ Have the cause of the fault remedied at an authorized Porsche dealer.



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## Fuel

### Level gauge

When the ignition is on the fuel level is displayed.
For tank capacity, see "Capacities" chapter.

If the vehicle's inclination changes (e.g. going up or downhill), minor deviations in the indication may occur.

**Note**

If the tank is near empty and you top up with only a small quantity of fuel, this cannot be registered by the level gauge and calculation of the range remaining is impossible.

### Warning light "A"

If there is too little fuel left or if the range on remaining fuel falls below approx. 30 miles (50 km), the **warning light lights while the engine is running**.
Additionally, a warning is displayed in the on-board computer.

▷ Fill up at the next opportunity.

For fuel reserve, see "Capacities" chapter.

**Caution!**

**To prevent damage to the emission control system and engine.**

▷ Never drive the tank completely out of fuel.

▷ Avoid high cornering speeds after the warning lights have come on.

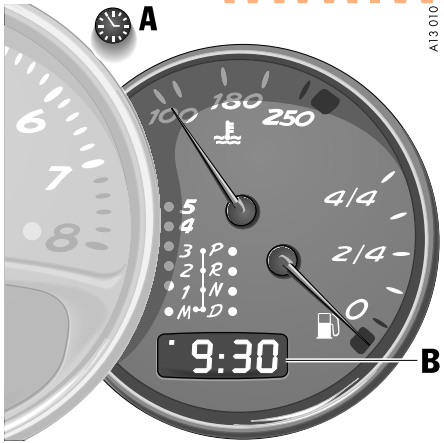
▷ Follow the instructions in the "Emission Control System" chapter.

If the warning light **flashes**, there has been a system fault.
Additionally, a warning is displayed in the on-board computer.
There will then be no reserve warning.

▷ To remedy the fault, go to an authorized Porsche dealer.


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**A** - *Adjustment button for clock*
**B** - *Clock*

## Clock

The **clock** is blanked out approximately four minutes after the ignition is switched off or when the car is locked.

### Setting the time

**Warning!**

**Risk of an accident and loss of control.**

▷ Do not reach through the steering-wheel spokes while driving.

### Setting hours

▷ Press adjustment button **A** for about one second.
Hour display flashes.

▷ Turn button in the appropriate direction:
to right – increase hours figure
to left – decrease hours figure.

Adjustment in hours – turn button briefly
Fast adjustment (display cycles) –
turn and hold button.

### Setting minutes

▷ Press adjustment button again.
Minutes display flashes.

▷ Set by rotating as in hours mode.

### Leaving adjustment mode

Automatically after one minute **or**:

▷ Press adjustment button again.

When adjustment mode is deliberately left by pressing the button, the time begins precisely to the second.

### Note

The time mode can be changed between 12h and 24h in the on-board computer.



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## Tiptronic S

### Indicator "A" for selector lever position and selected gear

When the engine is running, the selector lever position and engaged gear are indicated.

**If the selector lever is between two positions:**

- The selector lever position in the instrument cluster flashes, **and**
- the warning "selector lever not engaged" appears on the display of the on-board computer.

▷ Engage the selector lever correctly.

**If there is a fault in the transmission:**

- **4th gear** flashes on the display.
- The warning "Tiptronic emergency run" appears in the on-board computer.
  Also refer to "Emergency program".

▷ To remedy the fault, please consult an authorized Porsche dealer immediately.

Follow the instructions in the chapter "Tiptronic".

## Engine Oil Pressure Warning light

The warning light in the instrument panel lights up when ignition is switched on and must go out when engine is running.

**If the warning lights in the instrument panel and in the on-board computer come on with the engine running or while driving:**

▷ Immediately stop in a suitable place.

▷ Switch off the engine.

▷ Check oil level.
**Follow the warnings and instructions in the "Engine oil level" and "On-board computer" chapter.**

▷ If necessary, add engine oil.

**Caution!**

**Risk of engine damage.**
**If the warning light comes on even though oil level is correct:**

▷ Do not continue driving.

▷ Have the fault remedied at the nearest authorized Porsche dealer.


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## Battery Warning light

The warning light in the instrument panel comes on when ignition is switched on and must go off when engine is running.

**If the warning lights in the instrument panel and on-board computer comes on while the engine is running or while driving:**

▷ Stop the car in a safe place and stop the engine.

**Possible causes**

- Defect in the battery charging system.
- Broken drive belt.

**Warning!**

**Risk of an accident and risk of engine damage.**
**A broken drive belt means there is no power assistance to the steering (more effort is required to steer) and coolant pump function will stop.**

▷ Do not continue driving.

▷ Have the fault remedied at the nearest authorized Porsche dealer.

## Check Engine Warning Light

The warning light in the instrument panel comes on when the ignition is first turned on and remains on briefly as a bulb check. If the light does not come on, have the bulb replaced promptly.

If the warning lights in the instrument panel and on-board computer come on and remain on while driving, it suggests:

- a potential engine control problem and the need for system service **or**
- an improperly fastened tank cap **or**
- refuelling with engine running.

Although the vehicle is usually driveable and will not require towing, see your dealer for service as soon as possible.

**Caution!**

**If the Check engine light in the instrument panel is flashing, severe catalytic converter damage and power loss will soon occur.**
**Prolonged driving with the Check engine light on could cause damage to the emission control system. It also could affect fuel economy and driveability.**

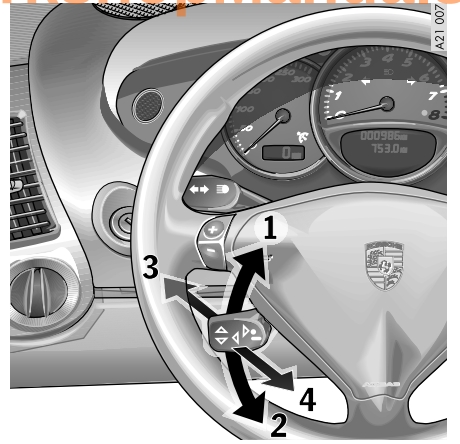
▷ Have the fault remedied at the nearest authorized Porsche dealer immediately.



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## On-Board Computer (BC)

### Display field

The display field is beneath the tachometer.

### Readiness for operation

- With ignition switched on,
- with engine running.

### Operation, controls

It is not possible to describe all details of the on-board computer functions in this Owner's Manual.
However, the examples will quickly familiarize you with the functional principle and help you to navigate through the menu structure.

You can restore the factory default settings at any time by using the "SET" menu.

### Operating lever

The on-board computer is operated with the lower left lever on the steering column.

#### Selecting functions of the on-board computer

▷ Push lever up **1** or down **2**.

#### Confirming selection (Enter)

▷ Push lever forward **3**.

#### Moving back one or several selection levels

▷ Pull the lever back **4** once or several times.

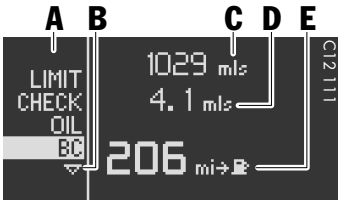
**Note:**
You can always return to the basic menu by pulling the operating lever several times.



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## Functions and display possibilities







**A** - *Selection field*
**B** - *Continuation arrow symbol*
**C** - *Top display*
**D** - *Central display*
**E** - *On-board computer display*

### Basic setting

- Top display: Odometer
- Central display: Trip odometer

You can change both displays to suit your requirements by using the “SET” menu.

### Calling on-board computer functions in display “E”

▷ Push operating lever up or down (selection field **A** must be switched off).

The following displays can be called step by step:
– Outside temperature (°F),
– Average speed (∅mph),
– Average consumption (∅mpg),
– Range on remaining fuel (mi→),
– Navigation information (if activated in the “SET” menu).

**Canada vehicles:**
The units in the on-board computer are displayed in kilometers, liters and °C.

The values “Trip odometer”, “Average speed” and “Average consumption” can be reset to zero using the “BC” menu.

### Note

Pulling the operating lever to the rear **4** takes you directly from a value which can be reset to the “BC” menu.

### Switching selection field “A” on or off

▷ Push operating lever forward or back.

### Arrow symbol “B” for continuation

Arrow symbol ▽:

▷ Push operating lever down in order to continue the menu.

Arrow symbol △:

▷ Push operating lever up in order to continue the menu.

▷ ▷ ▷



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## “LIMIT”
## Acoustic warning signal for speed limit

The acoustic warning signal can be activated for speeds above 6 mph (10 km/h).
The signal sounds if the preset speed is exceeded.
For the signal to sound again, the driving speed must fall below the preset speed by at least 3 mph (5 km/h).

### Switching on selection field “A”

▷ Push operating lever forward.

### Setting the speed

▷ Select “LIMIT” with the operating lever.




▷ Push operating lever forward.




### Option 1:
### Accept current speed

▷ Push operating lever forward.




The acoustic warning signal is activated for the current speed.
Display: ▣

### Option 2:
### Preset speed

▷ Select “LIMIT activated” with the operating lever.
☐ not activated
▣ activated

▷ Press the operating lever forward if the “not activated” display appears.




▷ Use the operating lever to select “mph +” or “mph –”.




▷ Push operating lever forward until the desired speed is reached.
The acoustic warning signal is activated for the desired speed.




### Switching the acoustic warning signal off

▷ Select “LIMIT activated” with the operating lever:

▷ Push operating lever forward.
Display: ☐


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## “CHECK”
## Warning messages

### Switching on selection field “A”

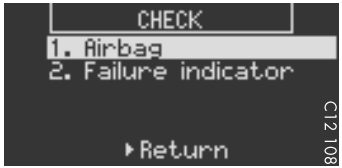
▷ Push operating lever forward.

### Calling warning messages

▷ Select “CHECK” with the operating lever.




▷ Push operating lever forward.




Any existing warning messages can be called using the operating lever.
You also can call warning messages which were acknowledged during the journey (only until the next time the ignition is switched on).

▷ Push operating lever forward.




▷ ▷ ▷



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## “OIL”
## Display and measurement of the engine oil level

**Caution!**

**Risk of engine damage.**

▷ Regularly check the oil level each time the car is refuelled.

▷ Do not allow the oil level to fall below the minimum mark.

### Conditions for measuring the oil level

1. Vehicle is level.
2. Engine is off.
3. Ignition on.

### Oil return time

Before the oil level is measured, the engine oil has to have flowed back into the oil pan.
The time taken for the engine oil to flow back depends on the engine temperature and how long the engine has been stopped.

This waiting time is counted down in the on-board computer display when the ignition is switched on. The oil level display segments start to “cycle”.

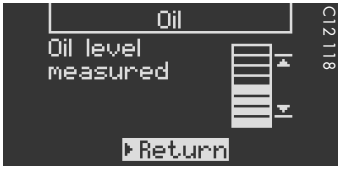
It is best to measure the engine oil level with the engine at operating temperature. Correct measurements and short waiting times are achieved in this way.

### Initiating oil level measurement

▷ Switch ignition on (do not start the engine).
The engine-oil level measurement display appears in the on-board computer.




▷ Allow waiting time to elapse.




Once the measurement has been completed, you can read off the engine oil level on the segment display.
If the oil level has fallen below the min. mark, the segment below the min. mark flashes.

The difference between the min. and max. marks on the segment display is approx. 1.25 litres.
One segment of the display corresponds to a quantity of approx. 0.2 litre.

▷ Add engine oil if necessary.
Refer to the chapter “Engine oil level”.
Before adding oil, switch ignition off.

Never add more engine oil than required to reach the max. mark.

### Oil level measurement during refuelling

The oil level is automatically measured during refuelling. If the oil level is too low, “Check oil level” appears in the on-board computer display.

However, this measurement is performed only if the following preconditions are met:
Engine is at operating temperature, ignition is off, refuelling is completed within 15 minutes.

### Failure

A failure of the oil level display is indicated by a warning message in the on-board computer.



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**Oil level measurement can also be initiated in the “OIL” menu:**

**Switching on selection field “A”**

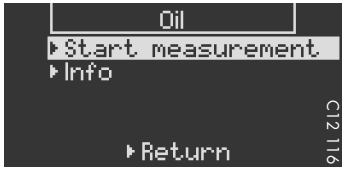
▷ Push operating lever forward.

**Initiating measurement**

▷ Select “OIL” with the operating lever.




▷ Push operating lever forward.




▷ Push operating lever forward.
Measurement is started.

**Info**

The “Info” function allows you to call the prerequisites for oil level measurement.

▷ ▷ ▷



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## “BC”
## Calling and resetting on-board computer functions

### Switching on selection field “A”

▷ Push operating lever forward.

### Example:
### Resetting average consumption

▷ Select “BC” with the operating lever.



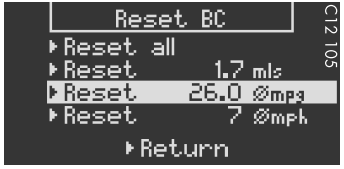

▷ Push operating lever forward.




▷ Select “Ømpg” with the operating lever.




▷ Push operating lever forward.




▷ Push operating lever forward.




The average consumption is reset to “– –.– Ømpg”.



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## “SET”
## Basic setting of on-board computer

### Switching on selection field “A”

▷ Push operating lever forward.

### Changing the basic setting of the on-board computer

▷ Select “SET” with the operating lever.




▷ Push operating lever forward.










▷ Select the desired function with the operating lever:

**Reset**

- Reset all,
  Reset trip counter,
  Reset average consumption,
  Reset average speed

**Speedometer km/mls**

- Change over between kilometres and miles

**Display**
**(Individual combination of upper and central lines of the on-board computer)**

- Changing top display
  - Total mileage
  - Trip counter
  - Audio information (set radio station)
  - Outside temperature
  - Range on remaining fuel
  - Average speed
  - Average consumption
- Changing central display
  - Total mileage
  - Trip counter
  - Outside temperature
  - Range on remaining fuel
  - Average speed
  - Average consumption

▷ ▷ ▷



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**Navigation**

- Integrated in the on-board computer
  (navigation instructions can be recalled in the on-board computer display)
- For all turns
  (navigation instructions are displayed only prior to direction changes)

**Basic setting**

- Restore the basic setting of the on-board computer

**Language**

- Select language version

**Consumption**

- Select unit for fuel consumption:
  l/100 km, mls/gal (USA), mpg (UK), km/l

**Temperature**

- Select unit for temperature:
  °C, °F

**12/24h mode**

- Select time mode:
  12h, (small squares on the left side of the time display for AM/PM),
  24h

**"OFF"**
**On-board computer display**

**Switching on selection field "A"**

▷ Push operating lever forward.

**Switching on-board computer display off**

▷ Select "OFF" with the operating lever.




▷ Push operating lever forward.
Display is switched off.

**Switching on-board computer display on again**

▷ Push operating lever in any direction.


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## General information regarding the on-board computer functions

### Range on remaining fuel

The range on remaining fuel is continuously recomputed while driving based on fuel level, current consumption and average consumption.
The more the fuel level falls, the more spontaneously the display reacts. For this reason, range on remaining fuel is not displayed if less than 15 kilometres (9 miles).

If the vehicle's inclination changes while driving or refuelling, incorrect range information may temporarily be given.

### Note

If the tank is nearly empty and you add only a small quantity of fuel, this cannot be used to calculate the range on remaining fuel.

### Average consumption and average speed

The displayed values are based on the distance travelled since the last reset to "zero".

You can set the starting time for a measurement before or during the trip.
Switching the ignition off does not reset the measurements. Values can thus be collected over long periods.
Disconnecting the car battery clears these memories.

### Outside temperature

The outside temperature display does not indicate, if ice is on the road.
Even if a temperature above 32°F (0°C) is displayed, ice may still form on the road, for instance on bridges or when the road passes through a heavily shaded area.



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## Warnings in the Instrument Panel and in the On-Board Computer

If a warning message appears, always refer to the corresponding chapters in the Owner's Manual.
Warning messages are issued only if all measurement preconditions are met. Therefore, check all fluid levels regularly – in particular, always check the engine oil level before refuelling.

| Instrument panel | On-board computer | Text display in on-board computer | Meaning/measure |
|---|---|---|---|
|  |  | Seat belt | Driver and passengers must fasten their safety belts. |
| **USA**<br><br>**Canada**<br> | <br> | Handbrake | Handbrake not released. |
| |  | Ignition key not removed | |
| |  | Lights on | |
|  |  | Front/rear lid not closed | Close luggage compartment lids. |
|  |  | Refill washer fluid | |
| | | Trip counter reset | Trip odometer is reset to 0. |


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| Instrument panel | On-board computer | Text display in on-board computer | Meaning/measure |
|---|---|---|---|
| | | Units are changed | The units kilometers/miles for speed and distance were changed. |
| | | LIMIT Cannot be accepted with vehicle stopped | Current speed can be accepted for the acoustic warning signal only if the vehicle is in motion. |
| | **USA**   **Canada**   | LIMIT exceeded | Selected speed limit for the acoustic warning signal has been exceeded. Adjust your speed if necessary. |
| Fuel level gauge warning light |  | Consider range on remaining fuel | Refuel at the next opportunity. |
|  |  | Engine oil pressure too low | Stop immediately at a suitable place, measure oil level with the on-board computer and, if necessary, add engine oil. |
| Temperature gauge warning light |  | Engine temperature too high | Switch engine off and let it cool. Check coolant level and, if necessary, add coolant. |
| Temperature gauge warning light flashes |  | Check coolant level | Switch engine off and let it cool. Check coolant level and, if necessary, add coolant. |

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| Instrument panel | On-board computer | Text display in on-board computer | Meaning/measure |
|---|---|---|---|
|  |  | Check Engine | Refer to chapter "Check engine warning light". Have the fault remedied at an authorized Porsche dealer. |
| Temperature gauge warning light flashes |  | Failure of engine-compartment blower | Have fault remedied at an authorized Porsche dealer. |
|  |  | Warning battery/ generator | Stop in a safe place and switch the engine off. Do not continue driving. Have the fault remedied at an authorized Porsche dealer. |
| |  | Failure indicator | Oil pressure indicator is faulty. Have the fault remedied at an authorized Porsche dealer. |
| |  | Failure oil level indicator | Have the fault remedied at an authorized Porsche dealer. |
| |  | Failure indicator | Coolant temperature gauge is faulty. Have the fault remedied at an authorized Porsche dealer. |
| |  | Failure indicator | The coolant temperature gauge, tacho-meter or cruise control, etc., could be faulty. Have the fault remedied at an authorized Porsche dealer. |


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| Instrument panel | On-board computer | Text display in on-board computer | Meaning/measure |
|---|---|---|---|
| **USA**<br><br>**Canada**<br> | <br> | Service<br>wear on<br>brake pads | Have the brake pads replaced at an authorized Porsche dealer without delay. |
| **USA**<br><br>**Canada**<br> | <br> | Warning<br>brake<br>fluid level | Stop immediately in a suitable place.<br>Do not continue driving. Have the fault remedied at an authorized Porsche dealer. |
| **USA**<br><br>**Canada**<br> | <br> | Warning<br>brake<br>distribution | Stop immediately in a suitable place.<br>Do not continue driving. Have the fault remedied at an authorized Porsche dealer. |
| **USA**<br><br>**Canada**<br> | <br> | ABS failure | Have the fault remedied at an authorized Porsche dealer. |

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| Instrument panel | On-board computer | Text display in on-board computer | Meaning/measure |
|---|---|---|---|
| |  | Failure indicator | The speedometer, ABS or PSM warning lights and systems, etc., could be faulty.<br>Have the fault remedied at an authorized Porsche dealer. |
|  |  | PSM failure | Have the fault remedied at an authorized Porsche dealer. |
| |  | Airbag failure | Have the fault remedied at an authorized Porsche dealer. |
|  |  | Failure spoiler control | Driving stability is impaired.<br>Adjust your driving style.<br>Have the fault remedied at an authorized Porsche dealer. |
| Selector lever position indicator flashes |  | Selector lever not engaged | Selector lever could be between two positions.<br>Engage the selector lever correctly. |
| Selector lever position indicator flashes |  | Tiptronic emergency run | Have the fault remedied at an authorized Porsche dealer. |
| |  | Failure indicator | The displays of several systems might have failed.<br>Have the fault remedied at an authorized Porsche dealer. |
| |  | Failure of fuel level indicator<br>Go to workshop | Have the fault remedied at an authorized Porsche dealer. |


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| Instrument panel | On-board computer | Text display in on-board computer | Meaning/measure |
|---|---|---|---|
| |  | Failure outside temperature indicator | Have the fault remedied at an authorized Porsche dealer. |
| |  | Convertible top not in final position | Fully open or close the convertible top |

## Acknowledging warning messages

Warning messages can be erased from the on-board computer display.

▷ Push operating lever of on-board computer forward.

You can recall erased warning messages in the “CHECK” menu.

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## Light Switch

● **Lights switched off**

**Parking lights**, side marker lights, license plate light, instrument illumination

**Low beam, high beam**
Only with ignition on

**Fog lights** in addition to parking lights or low beam:
Pull switch to first click.
Indicator light on.
The fog lights will go out automatically when the high beams are switched on.

**Rear fog light** in addition to the fog lights:
Pull switch to second click.
Indicator light on.

**Parking light right/left**
Only when ignition key is withdrawn:
Pull switch out slightly in position "0" and turn to
– parking-light position left
– parking-light position right.
Parking lights and side marker lights are lit on the selected side.

If the ignition key is withdrawn and the door is opened while the lights (not the parking light left/right) are on, a **gong** warns of possible battery discharge.

**In some countries, differences are possible due to provisions of law.**

## Automatic Headlight Beam Adjustment

Vehicles with **Litronic headlights** feature **automatic** headlight beam adjustment.

When the ignition is switched on, the level of the headlight beam automatically changes in accordance with the vehicle load.
The level of the headlight beam is automatically kept constant during acceleration and braking.

### Checking operation

1. Switch the low beam on.

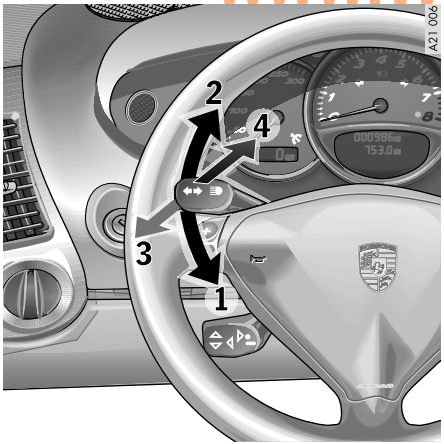
2. Switch ignition on.
   The light beam first dips all the way down and is then adapted to the vehicle load.
   The level of the low beam rises perceptibly when the high beam is switched on.

If these test items are not met, the headlight beam adjustment must be checked by an authorized Porsche dealer.



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## Turn Signal/ Headlight Dimmer/Flasher Lever

Turn signals, low beam and high beam are ready for operation when the ignition is on.

**1** – Turn signal left
**2** – Turn signal right
**3** – High beam
**4** – Headlight flasher
**Lever in center position** – Low beam

When high beam and headlight flasher are selected, the blue indicator light in the tachometer is lit.

The turn signal lever turns off automatically when the steering wheel is straightened out after completing a turn.

### Lane changer

▷ To indicate your intention when changing lanes on the freeway, slightly lift or depress the lever to the resistance point.
The lever will return to the OFF position when released.

▷ If the frequency of the display becomes noticeable faster, check the operation of the turn signal bulbs.

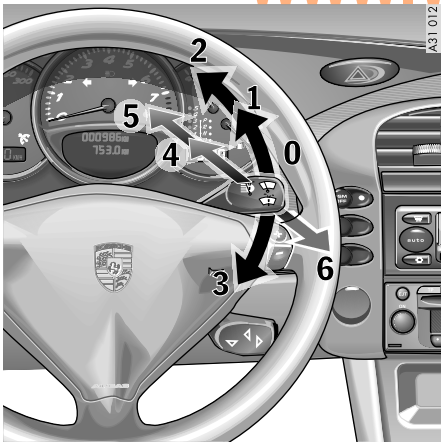
### Headlight flasher

(With ignition on or off)

▷ To flash the headlights to oncomming motorists, slightly pull the lever toward the steering wheel and then release it.
The blue indicator light in the tachometer will go on/off as you pull/release the lever.

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## Windshield Wiper / Washer Lever

**Warning!**

**Danger of injury when the windshield wipers operate unintentionally.**
**Risk of damage to the windshield and wiper system.**

- Avoid running the wiper blades over a dry windshield to prevent scratching the glass. Spray washer fluid on the windshield first. A scratched windshield will reduce visibility.
- Always loosen wiper blades from frozen glass before operating wipers to prevent damage to the wiper motor or blades.
- Always switch off windshield wipers in car wash to prevent them wiping unintentionally (intermittent or sensor operation).
- Always switch off windshield wipers before cleaning the windshield to avoid unintentional operation (intermittent or sensor operation).
- Do not operate the headlight washer in car washes.
- Do not operate headlight washer when it is frozen.

**0 – Windshield wipers off**
**1 – Windshield wipers slow**
**2 – Windshield wipers fast**

**3 – Intermittent operation**

**4 – Windshield washer system:**
Sprays while the lever is pulled towards the steering wheel in the **first** position.
When the lever is released, a few drying wipes are executed.

**5 – Windshield wipers and washer system:**
Sprays and wipes while the lever is pulled towards the steering wheel in the **second** position.

**6 – Headlight washer:**
Sprays only while low beam or high beam is switched on.
The spray duration is limited. If heavily soiled, repeat wash.
Persistent dirt (e.g. insect remains) should be regularly removed.
See the chapter on "Car Care Instructions".

**Note**

The **windshield washer nozzles** are heated when the ignition is on, as a precaution against freezing.



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## Boxster S
## Wipe interval control

In windshield wiper intermittent mode **3** the wipe intervals can be infinitely adjusted (not in vehicles with a rain sensor).

**Shortening wipe intervals**

▷ Turn thumb wheel **A** clockwise.

**Lengthening wipe intervals**

▷ Turn thumb wheel **A** counter-clockwise.

## Rain sensor

In vehicles with a rain sensor the amount of rain or snow which has settled on the windshield is measured. The wiper speed is controlled accordingly between intermittent and continuous operation (wiper speed 1 and 2).

**Switching rain sensor on**

▷ Move wiper lever in position **3**.

**Switching rain sensor off**

▷ Move wiper lever in position **0**.

**Note**

The rain sensor remains switched off if the wiper lever is already in position **3** when the ignition is switched on.

To switch the rain sensor on:

▷ Move wiper lever to position **0** and then back to position **3 or**

▷ Operate windshield washer system **or**

▷ Change the sensitivity of the rain sensor with the thumb wheel.

Switch-on is confirmed by one wipe of the windshield.

### Changing the sensitivity of the rain sensor

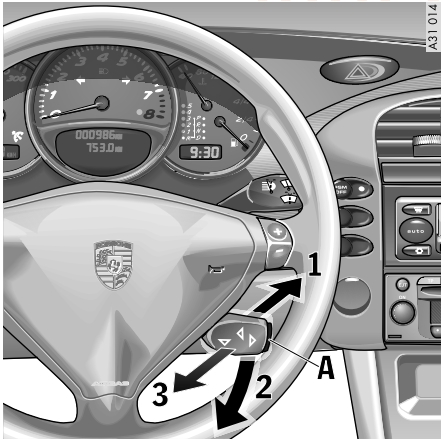
Sensitivity can be set with the thumb wheel **A** in 6 stages.

▷ Turn thumb wheel **A** counter-clockwise - low sensitivity.

▷ Turn thumb wheel **A** clockwise - high sensitivity.
The setting is confirmed by one wipe of the windshield.

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**A** - *Automatic speed control readiness off/on*
**1** - *Set/accelerate*
**2** - *Decelerate/resume*
**3** - *Interrupt*

## Automatic Speed Control

The automatic speed control maintains any selected speed between 25 mph and 120 mph/ 40 km/h and 200 km/h without you having to use the accelerator.
The automatic speed control is operated with the lever on the steering wheel.

**Warning!**

**A constant speed may not be safe in heavy traffic, or on winding or slippery roads.**
**With the speed control system engaged, the engine speed will not return to idle when removing the foot from the accelerator pedal.**

- ▷ Do not use the speed control when it may be unsafe to keep the car at a constant speed.
- ▷ Observe all local and national speed limits.

### Switch automatic speed control readiness on

- ▷ Press button **A** on the automatic speed control lever.

This green indicator light in the speedometer now indicates readiness.
Boxster: in speedometer
Boxster S: in warning light panel

### Hold and store speed

- ▷ Bring the car to the desired speed with the accelerator.
- ▷ Then push operating lever forward **1** briefly.

### Accelerating (e.g. to overtake)

- ▷ Increase speed as usual with the accelerator.

When the accelerator is released, the previously saved value is again set.
Automatic speed control operation is automatically interrupted, however, if the speed is increased by more than about 16 mph (25 km/h) for longer than 20 seconds, **or**:

- ▷ Press **operating lever** forward **1** until the desired speed is reached.
  The speed reached is maintained and stored when the lever is released.

Speed can be corrected in steps of 2 km/h (approx. 1 mph) by **briefly** pushing the lever forward or down (up to 10 times).



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### Decelerating

▷ Press operating lever down **2** until the desired speed is reached.
The speed reached is maintained and stored when the lever is released.

Speed can be corrected in steps of 2 km/h (approx. 1 mph) by **briefly** pushing the lever forward or down (up to 10 times).

### Interrupting automatic speed control operation

▷ Pull operating lever briefly towards the steering wheel **3 or**:

▷ Operate brake or clutch pedal or, with Tiptronic transmission, select position "N".
See also the chapter on "Tiptronic".
The speed driven before the interruption remains stored in the memory.

**Automatic speed control operation is interrupted automatically:**

- If the set speed is exceeded by more than 16 mph (25 km/h) for longer than 20 seconds,
- if the actual speed falls to 6 mph (10 km/h) below the set vehicle speed for longer than 5 seconds (upward slopes).

### Resuming the stored speed

▷ Press operating lever briefly down **2**.

The stored speed should only be called up when traffic conditions and the road surface so permit.

### Switching automatic speed control readiness off

▷ Press button **A** on the automatic speed control lever.
The green readiness light in the speedometer goes off.

When the vehicle is parked and the ignition switched off, the memory is cleared.

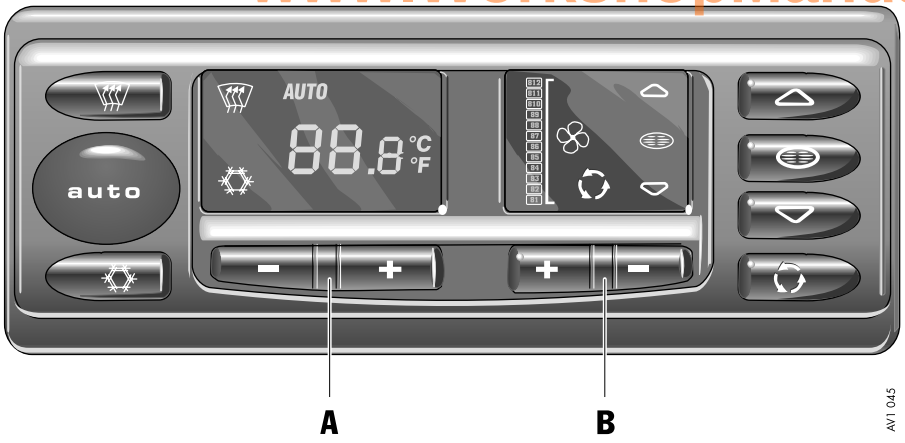
**Important Note**

On upward or downward slopes, the set speed cannot always be maintained by the automatic speed control.

To obtain sufficient engine braking or a better engine-speed range, therefore, you have to select a lower gear.

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## Automatic Air Conditioning

The air-conditioning system controls the preselected interior temperature completely automatically.
If necessary, the automatic system can be manually operated.

**Left display panel** –
Temperature and active functions

**Right display panel** –
Blower speed and active functions

### Automatic operation

▷ Press "auto" button.
Air quantity and distribution are automatically controlled, and variations are compensated.

All automatic setting functions can be individually changed.
This setting is retained until the appropriate function button is pressed again or the "auto"-button is pressed.

### A – Temperature setting

▷ Press the appropriate button.

To suit personal comfort, the interior temperature can be selected between 65°F and 84°F/ 18°C and 29°C.
**Recommendation: 72°F/22°C.**

If the display "LO" or "HI" appears, the system is operating at maximum cooling or heating power.

**Note**

If the preselected temperature is changed, the blower speed can increase automatically in automatic operation.
The desired temperature is reached more quickly this way.



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### Defrosting the windshield

▷ Press button.
Windshield is demisted or defrosted as quickly as possible.
Air flows to the windshield only.

### Compressor for air-conditioning system

Whenever outside temperatures exceed 37°F/3°C, the air-conditioning compressor is always switched on in automatic operation.
The compressor can be switched off to save fuel, but control comfort is then limited.

▷ Press button.
The compressor is switched off, the symbol in the left-hand display goes out.

If the interior temperature is too high, switch compressor back on or press "auto"-button.

To dry incoming air in damp weather, do not switch off the air-conditioning compressor.
This prevents misting of windows.

### B – Adjusting blower speed

▷ Press the appropriate button.
Preset blower speed is increased or decreased, and "Manual" appears in the right-hand display field.

The speed stages are indicated by a bar display.

If the minus button is pressed at the lowest blower stage, the blower and automatic control are **switched off**.
"OFF" is displayed in the left-hand display.

Pressing on the plus button or the "auto"-button switches the blower and automatic control **back on again**.

### Circulating-air button

**Warning!**

**Risk of accident due to hampered vision.**
**In circulating-air setting, the windows can mist up.**

▷ Only select circulating-air setting for short periods.

▷ If windows mist up, turn off the circulating-air setting by pressing the circulating-air button briefly and select the function "Defrost windshield".

### Switching circulating-air setting on or off

▷ Press button.
The outside-air supply is interrupted and only the inside air is circulated.

**Over approx. 37°F/3°C**

If the air-conditioning compressor was off, it switches on automatically. The duration of circulating-air mode is not limited.

**Below approx. 37°F/3°C**

The air-conditioning compressor is switched off. Circulating-air mode is automatically ended after approx. 3 minutes.

▷ ▷ ▷

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### Air distribution to footwell

▷ Press button.
The air flows to the footwell.

### Air distribution to the central and side vents

▷ Press button.
The air flows from the central and side vents.
Vents must be open.

### Air distribution to windshield

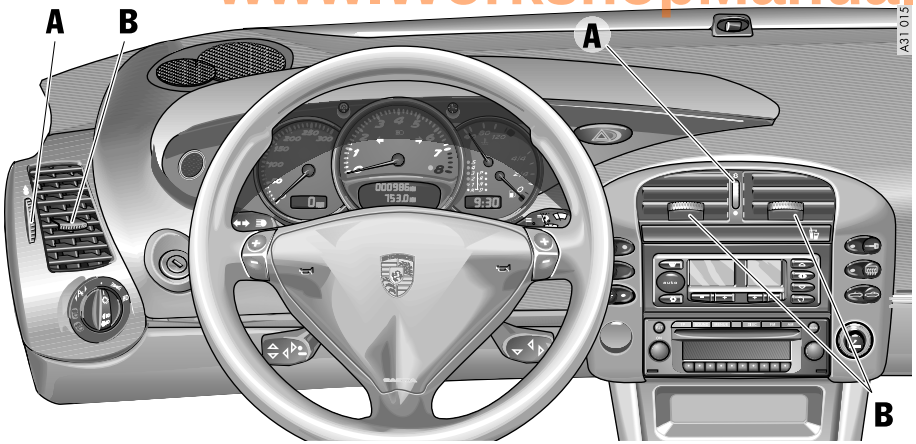
▷ Press button.
The air flows to the windshield.

### General instructions for air-conditioning compressor

- Can switch off briefly if engine is under an extreme load to ensure sufficient engine cooling.
- Switches off automatically at temperatures below 37°F/3°C and cannot be switched on, even manually.
- Operates most effectively with windows closed.
  If the car has been in the sun for a long time, however, it is a good idea to ventilate the interior briefly with side windows open.
- Depending on the outside temperature and humidity, condensation can drip from the evaporator and form a pool under the car.
  This is normal and not a sign of leakage.
- If uncooled air flows out when the lowest temperature has been set, switch off the air-conditioning compressor and consult with an authorized Porsche dealer.


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**A** - *Continuous opening and closing*
**B** - *Setting vent direction*

## Central and Side Vents

### Opening vents

▷ Rotate knurled wheel upward.

### Closing vents

▷ Rotate knurled wheel downward.

### Changing air flow direction

▷ Move the vanes to make the air flow in the desired direction.

Outside air or conditioned air can be delivered from all vents, depending on the air-distribution setting on the operating panel.

## Fresh-air intake

To ensure proper air intake:

▷ Keep the fresh-air inlet between the front lid and the windshield free from snow, ice and leaves.

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## Emergency Flasher Switch

Operational readiness of the emergency flasher does not depend on the ignition lock and turn signal lever position.

▷ If your car is disabled or parked under emergency conditions switch on the emergency flasher in the dashboard (arrow).
All turn signals and the indicator light in the switch flash with the same frequency.

**Warning!**

**Risk of an accident.**

▷ Whenever stalled or stopped for emergency repairs, move the car well off the road. Switch on the emergency flasher and mark the car with road flares or other warning devices.

▷ Do not remain in the car. Someone approaching from the rear may not realize your vehicle is stopped and cause a collision.

**Danger of fire.**

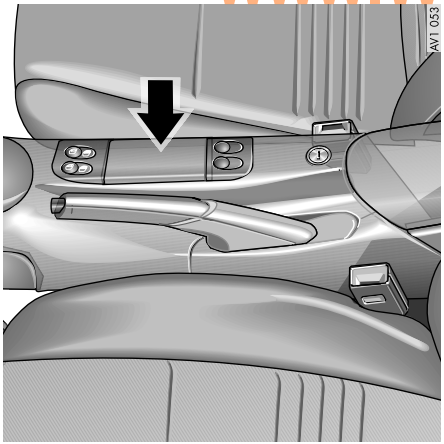
▷ Do not park or operate the vehicle in areas where the hot exhaust system may come in contact with dry grass, brush, fuel spill or other flammable material.

**Hot engine compartment components can burn skin on contact.**

▷ Before working on any part in the engine compartment, turn the engine off and let it cool down sufficiently.


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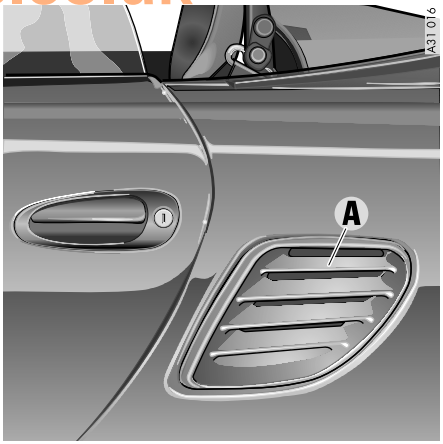
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**Warning!**

**Danger of fire.**

▷ Never use ashtray for waste paper disposal, as it could pose a fire hazard.




## Ashtray

### Opening

▷ Press ashtray lid briefly.

### Emptying

▷ Open ashtray and carefully pull out ash insert by the lid.

**Danger!**

**Danger of fire in engine compartment due to burning cigars or cigarettes.**

▷ Do not throw any lit cigars or cigarettes out of the vehicle.
They can be blown into the air inlets **A** by the air flow and cause a fire in the engine compartment.

▷ ▷ ▷



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## Cigarette Lighter

**Warning!**

**Danger of fire and burning.**
**The cigarette lighter is ready for use, regardless of the ignition lock position.**

- ▷ Never leave unsupervised children in the car.
- ▷ Never touch the heating element or sides of the lighter.
- ▷ Hold the lighter by the knob only.

### Heating lighter

- ▷ Push in knob of the cigarette lighter.
  When ready for use, the lighter will snap back.

### Operating additional appliances

With the cigarette lighter removed, the socket may be used for small electrical appliances, such as a shaver or hand vacuum cleaner.
**Maximum rating: 150 Watt.**

- ▷ Do not operate electrical appliances for more than 5 minutes when engine is off (battery will otherwise discharge).
- ▷ Do not damage the socket by trying to insert plugs of the wrong design.

## Sports Exhaust System

The sports exhaust system can be switched off or on when the ignition is switched on.
If the rocker switch is not operated, the sports exhaust system will be on when the engine is started.

### Switching off

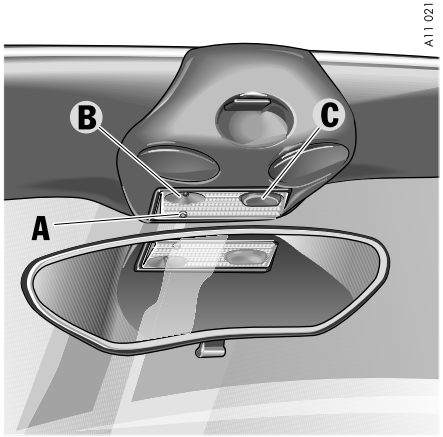
- ▷ Press the rocker-switch symbol.
  Indicator light comes on.

### Switching on

- ▷ Press the rocker-switch symbol again.
  Indicator light goes out.


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**A** - *Orientation light switch*
**B** - *Orientation light*
**C** - *Interior light switch*

## Interior lights

### in vehicles without automatic anti-glare mirrors

Please observe the chapter “Load switch-off”.

### Interior light

#### Switching off

▷ Press left half of switch.

#### Switching to continuous illumination

▷ Press right half of switch.

#### Switching on and off automatically

▷ Move switch to center position.

The interior light is **switched on** when a door is unlocked or opened or when the ignition key is withdrawn from the ignition lock.

The interior light is **switched off** with a delay of approx. 30 seconds after the door is closed.
The interior light goes out immediately as soon as the ignition key is inserted in the ignition lock or the vehicle is locked.

### Orientation light

Light-emitting diodes in the doors and in the interior light improve your orientation inside the vehicle when it is dark.
The light-emitting diodes are switched on when the vehicle is unlocked and switched off again when the vehicle is locked.

#### Light-emitting diode in the interior light

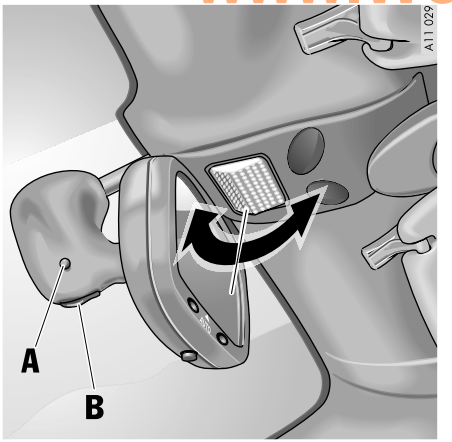
Changing the brightness of the light-emitting diode.

▷ Press switch **A** with a pointed object (such as a ball-point pen).
The brightness changes.

▷ ▷ ▷

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**A** - *Orientation light switch*
**B** - *Orientation light*

## Interior lights

### in vehicles with automatic anti-glare mirrors

Please observe the chapter “Load switch-off”.

**Note**

▷ Switch off the automatic anti-glare operation of the mirrors before you switch on the interior light.
Otherwise the mirrors might accidentally go into anti-glare operation.

### Interior light

**Switching off**

▷ Tilt the light lens forward.

**Switching to continuous illumination**

▷ Tilt the light lens rearward.

**Switching on and off automatically**

▷ Move light lens to center position.

The interior light is **switched on** when a door is unlocked or opened or when the ignition key is withdrawn from the ignition lock.

The interior light is **switched off** with a delay of approx. 30 seconds after the door is closed.
The interior light goes out immediately as soon as the ignition key is inserted in the ignition lock or the vehicle is locked.

### Orientation light

Light-emitting diodes in the doors and in the bracket of the interior mirror improve your orientation inside the vehicle when it is dark.
The light-emitting diodes are switched on when the vehicle is unlocked and switched off again when the vehicle is locked.

**Light-emitting diode in the bracket of the interior mirror**

Changing the brightness of the light-emitting diode.

▷ Press switch **A**.
The brightness changes.


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## Footwell Lights

The lights are switched on automatically when a door is opened and go out with a delay of approx. 30 seconds after the door is closed.

**Switching to continuous illumination**

▷ Press the rocker-switch symbol in the center console.
Indicator light comes on.

The light between the sun visors and the door guard lights are switched on additionally. The lights are automatically switched off after approx. 12 minutes in order to save the vehicle battery.
The lights can be switched back on by pressing the rocker switch again.




**Switching lights off**

▷ Press the indicator light in the rocker switch.

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# Storage in the Passenger Compartment

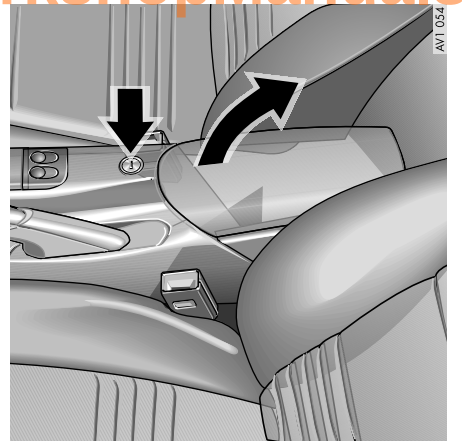
**Warning!**

**Unsecured luggage and heavy objects may come loose during braking, rapid directional changes or in an accident and cause serious personal injury or death.**

- ▷ Do not transport any heavy objects in the storage trays.
- ▷ Do not carry unsecured luggage or objects in the passenger compartment.

## Additional storage possibilities

- in the door panel,
- in the door sill on the passenger side,
- in the center console,
- clothes hook and pocket on back of front seat.




## Storage tray between the seats

### Opening

- ▷ Press the locking knob and lift the lid.
  There is a coin holder in the forward part of the storage tray.

### Locking

- ▷ Lock the compartment to secure the contents against unauthorized access.




## CD or Cassette Holder

Occupied drawers are indicated by a red window.

### Opening drawers

- ▷ Push the button of the drawer you wish to open.

### Closing drawers

- ▷ Fold the **CD** drawer up and close until it clicks shut.
  Close the **cassette** drawer until it clicks shut.


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### Opening

▷ Pull the catch and open the lid.

### Locking

Lock the catch to secure the contents against unauthorised access.

## Glove compartment

**⚠ Warning!**

**Risk of injury by the glove compartment lid in case of an accident.**

▷ Keep the glove compartment lid closed while driving.

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## Cupholder

**(holder for drinks cans and cups)**

▷ Keep the cupholder closed while driving.

**Warning!**

**Risk of scalding or damage due to spilling drinks.**

▷ Only use containers which fit.

▷ Never put overfull containers in the cupholder.

▷ Never use hot drinks.







### Extending cupholder

▷ Press the cupholder symbol.

The cup holder can be pulled out to accommodate a second container.

### Pulling the cupholder out

▷ Grasp cupholder at the handle recess and pull it out.

### Closing cupholder

▷ Push cupholder drawer in.

▷ Close and engage the cupholder.


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## Luggage Storage on Engine Compartment Lid

**Warning!**

**Unsecured luggage and heavy objects may come loose during braking, rapid directional changes or in an accident and cause serious personal injury or death.**

- ▷ Do not transport any heavy objects under the luggage net, in the storage trays or in the passenger compartment.
- ▷ Keep shutters of the storage box closed while driving.

**Risk of damage.**

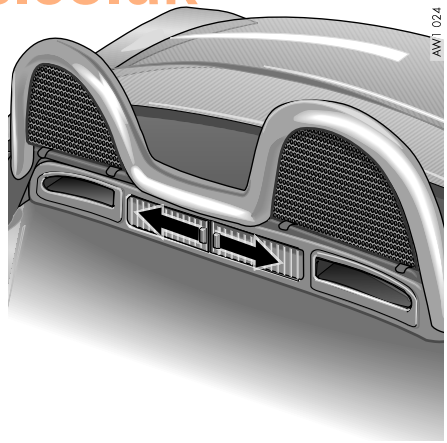
- ▷ Items of luggage or objects must neither hinder convertible top movement nor be in contact with the convertible top or rear window in such a way as to cause abrasion damage.

Attachment and removal of the luggage net and storage box are described in the chapter “Engine compartment lid”.




### Luggage net

- ▷ Secure items of luggage or objects under the luggage net to prevent them from slipping out.




### Storage box

**Opening center storage tray**

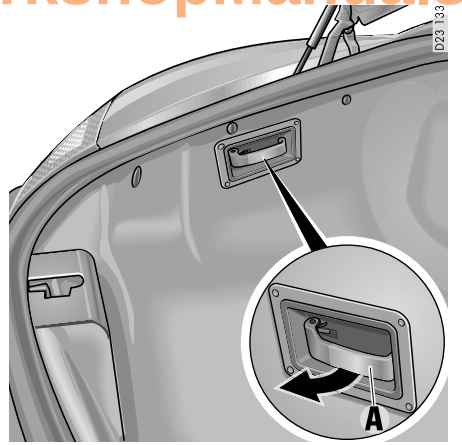
- ▷ Move both shutters in the direction indicated by the arrows.

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*Front luggage compartment*




*Rear luggage compartment*

## Trunk Entrapment

Depending on the production date, your vehicle is equipped with an internal front/rear trunk release mechanism.

A person trapped in the luggage compartment can release the lid from the inside using unlocking handle **A**.
The handle **A** is fluorescent and glows in the dark.

### Warning light

The warning lights in the instrument panel and in the on-board computer light up when unlocking handle **A** is operated.

- ▷ Stop the vehicle immediately when the warning lights light up.
- ▷ Check the luggage compartment.
- ▷ Close the lid.

### Front luggage compartment lid

#### Function with vehicle stationary

If the luggage compartment lid is unlocked with unlocking handle **A**, the lid can be opened from the inside immediately.

#### Function with vehicle in motion

If the luggage compartment lid is unlocked with unlocking handle **A** when a speed of 3 km/h (2 mph) is exceeded, the warning lights in the instrument panel and in the on-board computer light up.
At the same time, the lid is unlocked and the latch striker pops into the catch-hook position. The lid lock is fully released as soon as the car slows to less than 2 mph (3 km/h), and the trapped person can open the lid immediately.


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**Danger!**

**Risk of accident.**
**If the warning lights in the instrument panel and in the on-board computer light up when the vehicle is in motion, the lid may impact in front of the windshield and can tear off.**
**You can lose control of the vehicle.**

- ▷ Stop the vehicle immediately when the warning lights light up.
- ▷ Check the luggage compartment.
- ▷ Close the lid.

## Rear luggage compartment lid

If the rear luggage compartment lid is unlocked with unlocking handle **A**, the lid opens immediately.

- ▷ Stop the vehicle immediately when the warning lights light up.
- ▷ Check the luggage compartment.
- ▷ Close the lid.

**Note**

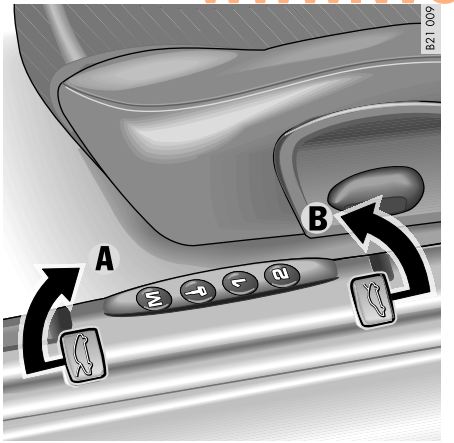
The front lid cannot be opened from the inside if the battery is disconnected or empty.
**Safety reasons therefore require that you unscrew the latch striker of the front lid lock if you plan to put the vehicle out of operation for an extended period.**
Please consult your authorized Porsche dealer. They will advise you about the necessary measures.

**Note**

- ▷ When loading the luggage compartment, make sure that items of luggage or other objects cannot become caught on handle **A**.
  This could cause the luggage compartment to open unintentionally.

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**A** - *Opening front luggage compartment lid*
**B** - *Opening rear luggage compartment lid*

## Luggage Compartment Lids

### Unlocking

▷ Operate the appropriate pull-button next to the driver's seat.
When the lid is open, the luggage compartment is lit.
Also refer to the chapter "Load switch-off".

The luggage compartment lids can also be unlocked with the radio remote control.
Refer to the chapter "Keys".

**Important note**

If the vehicle battery is discharged, the lids can be opened only by connecting an external electrical power source.
Please observe the chapter "Electrical system" or the description inside the fuse box cover.

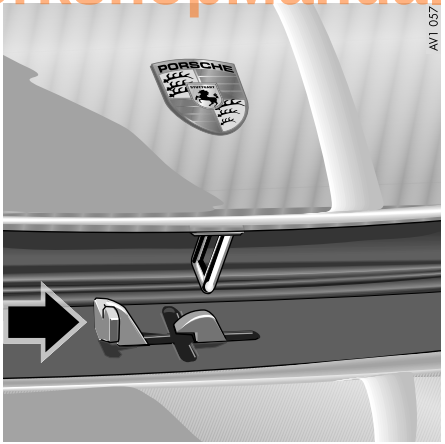
### Warning light

The warning lights in the instrument panel and on-board computer come on if the lids are not completely closed.

▷ Fully close the lid.


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## Opening front luggage compartment lid

**Caution!**

**Risk of damage to luggage compartment lid or windshield wipers.**

- ▷ Make sure that the windshield wipers are not folded out forwards when opening the luggage compartment lid.

- ▷ Raise lid slightly and unlatch the safety catch with the lever (arrow).

## Closing luggage compartment lid

- ▷ Lower lid and let it fall into the lock. If necessary, push the lid with the palm of your hand in the area of the lock.

- ▷ Check that the lid has correctly engaged in the lock.

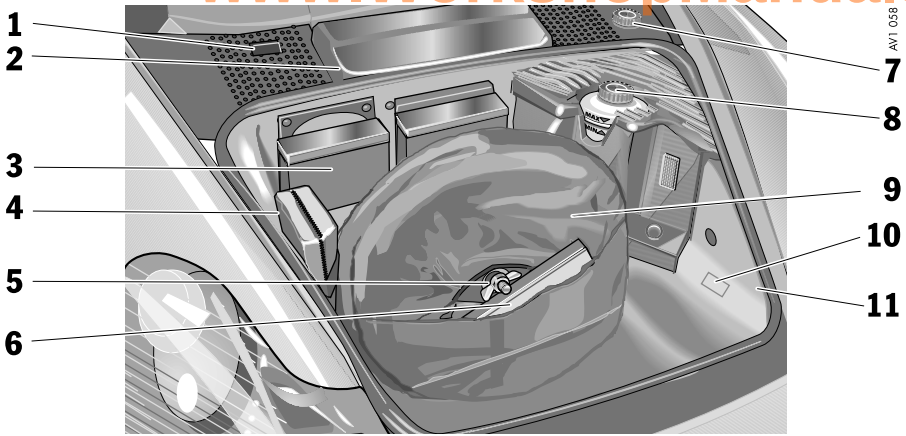
**Warning!**

**Risk of loss of control or an accident, resulting in serious personal injury.**

- ▷ Should you notice at any time while driving that one of the lids is not secured properly, please stop immediately in a suitable place and close it.
  The front lid may fly up impairing vision.

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## Front Luggage Compartment

1 – Vehicle identification number (VIN)
2 – Battery
3 – Compact disc changer
4 – Space for first aid kit
5 – Spare-wheel fastening (wing nut)
6 – Space for warning triangle
7 – Fluid reservoir for cleaning windows and headlights
8 – Brake-fluid reservoir
9 – Tool kit and jack are located behind the spare wheel
(spare wheel must be removed)
10 – Paint data
11 – Headlight adjustment and locking

**Note**

Vehicles without Litronic headlights:
To keep headlight range and driving behaviour unchanged, items of luggage should be distributed as uniformly as possible between the two luggage compartments.

## Rear Luggage Compartment

1 – Dipstick for engine oil
2 – Topping up engine oil
3 – Topping up coolant
4 – Coolant level
5 – Bulb-holder latch
6 – Relay carrier
7 – Raised brake light


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## Porsche Communication Management (PCM)

▷ Refer to the separate operating instructions before putting the PCM into operation.

When put into operation for the first time, a distance of approx. 31 miles (50 km) must be driven in order for the navigation system to complete the process of fine calibration.
The same applies when the tires are changed (e.g. summer/snow tires) or new tires fitted.
Full location accuracy is not yet achieved during the fine-calibration process.

If the vehicle has been transported (e.g. ferry, car train), the system may take a few minutes after being switched on before it determines the current location.

Serious tire slip (e.g. spinning wheels on snow) may result in temporarily inaccurate navigation.

When the battery has been disconnected, it may take up to 15 minutes before the navigation system becomes operational again.

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## Car Audio Operation/Tips

**For radio operation see your radio manual which is included with your on-board literature.**

Also see the chapter on "Load switch-off".

### FM reception

A vehicle is not an ideal place to listen to a radio.
Because the vehicle moves, reception conditions are constantly changing.
Buildings, terrain, signal distance and noise from other vehicles are all working against good reception.
Some conditions of FM may appear to be problems when they are not.

The following characteristics are completely normal for a given reception area, and they do not indicate any problem with the radio itself.

#### Note

Electronic accessories should only be installed by your authorized Porsche dealer.
Equipment which has not been tested and approved by Porsche may impair radio reception.

#### Fading and drifting

FM range is limited to about 25 miles (40 km), except for some high power stations.

If a vehicle is moving away from the desired station's transmitter, the signal will tend to fade and/or drift. This condition is more prevalent with FM than AM, and is often accompanied by distortion.
Fading and drifting can be minimized to a certain degree by careful attention to fine tuning or selection of a stronger signal.

#### Static and fluttering

When the line-of-sight link between a transmitter and vehicle is blocked by large buildings or mountains, the radio sound may be accompanied with static or fluttering because of the characteristic of FM.
In a similar effect, a fluttering noise is sometimes heard when driving along a tree-lined road.

This static and fluttering can be reduced by adjusting the tone control for greater bass response until the disturbance has passed.

#### Multipath

Because of the reflecting characteristics of FM, direct and reflected signals may reach the antenna at the same time (multipath) and cancel each other out.
As a vehicle moves through these electronic dead spots, the listener may hear a momentary flutter or loss of reception.

#### Station swapping

When two FM stations are close to each other, and an electronic dead spot, such as static or multipath area, interrupts the original signal, sometimes the stronger second signal will be selected automatically until the original one returns.
This swapping can also occur as you drive away from the selected station and approach another station of a stronger signal.


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## Cassette tape player

**Caution!**

**To avoid damage to cassette tape player and tapes.**

- Use only cassette tapes of good quality, having no damage.
- Avoid using tapes with a total playing time longer than 90 minutes.
  Longer tapes are not recommended because of the thinner cross section of the tape.
- Be sure that the tape is not slack and that the label is firmly secured on the shell before inserting the cassette into the player.
- Have the tape firmly wound around the tape by turning the hub with a pencil or similar items. Be careful not to touch the exposed tape surface.
- When not in use, take the cassette out of the player, put it back into its case and store it away from dust, magnets and direct sunlight.
  Leaving the cassette tape on the dashboard in the sun can damage the tape.
- Keep the playback head, capstan and pinch roller clean.
- Remove tape coating residue accumulated on the head, capstan and pinch roller once or twice a month.
  A cleaning tape, which can do this, should be available in audio stores.
- Do not oil any part of the tape player and do not insert any object other than a cassette tape into the slot.

## Compact disc player

**Caution!**

**To avoid damage to compact disc player and discs.**

- Use only compact discs labeled as shown, having no dirt, damage or warpage.
- Never attempt to disassemble or oil any part of the player unit.
  Do not insert any object other than a disc into the slot.
  Remember there are no user-serviceable parts inside the compact disc player.
- Do not allow the disc to sustain any fingerprints, scrapes or stickers on the surfaces. This may cause poor sound quality
  Hold the disc only on the edge or center hole.
- When not in use, take the disc out of the player, put the disc back into its case and store it away from dust, heat, damp and direct sunlight.
  Leaving the disc on the dashboard in the sun can damage the disc.
- If the disc gets dirty, clean the disc by wiping the surfaces from the center to the outside in a radial direction with a soft cloth.
  Do not use a conventional record cleaner or anti-static record preservative.
  Disc cleaners are available in audio stores.

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## Car Telephone and Aftermarket Alarms

**Important legal and safety information regarding the use of cellular telephones:**

Some states may prohibit the use of cellular telephones while driving a vehicle. Check the laws and regulations on the use of cellular telephones in the areas where you drive.

**⚠ Danger!**

**Risk of an accident.**
**Severe personal injury or death can result in the event of an accident.**
**Looking away from the road or turning your attention away from your driving can cause an accident and serious or fatal injury.**

When using your cellular telephone, you should always:

- ▷ Give full attention to your driving - pull off the road and park before making or answering a call if traffic conditions so require; **and**
- ▷ Keep both hands on the steering wheel - use hands-free operation (if available) - pull off the road and park before using a hand-held telephone.

**It is essential to observe the instructions of the telephone manufacturer before putting the telephone into operation.**

Any portable telephone or radio transmitter which is used in a Porsche must be properly installed in accordance with the technical requirements of Porsche.

**The transmission power must not exceed 10 W.**
The devices must possess a type approval for your vehicle and have an **"e" symbol**.

If you should require equipment with transmission power values greater than 10 W, please consult your authorized Porsche dealer for this purpose. He is familiar with the technical requirements for installing devices of this kind.

The antennas for all radios and telephones with a transmitting antenna must be externally mounted.

The improper installation of radios or telephones or use of a radio or telephone with a transmitting antenna inside the car may cause **the warning lights to come on.**

Improper installation of such equipment can create a discharged battery or excessive current draw from added equipment.

If aftermarket systems are installed by non-dealership technicians or outside the selling dealer, problems may result. Installation of aftermarket equipment is not covered under the New Car Warranty.

- ▷ Consult your authorized Porsche dealer about the installation of non Porsche approved equipment.

### Reception quality

The reception quality of your car telephone will change constantly when you are driving. Interference caused by buildings, landscape and weather is unavoidable. It may become particularly difficult to hear when using the hands-free function due to external noise such as engine and wind noise.

### Automatic car-wash

- ▷ Unscrew the external antenna before using an automatic car-wash.


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## Gearshifting

The positions of the gears are shown on the gearshift lever.

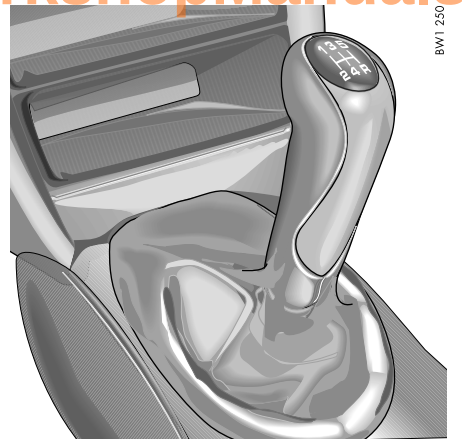
**Warning!**

**Risk of an accident.**

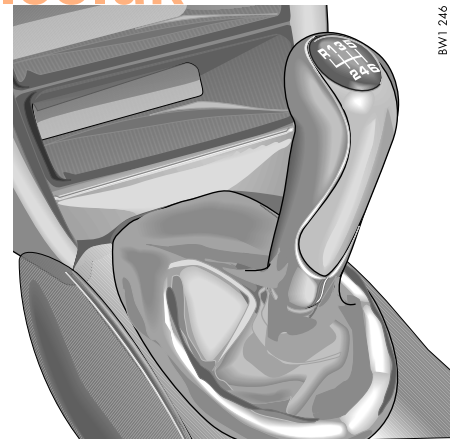
- ▷ Always check the movement of the clutch pedal before driving and make sure that it is not obstructed by a floor mat or any other object.
- ▷ Secure the floor mat to prevent it from sliding into positions that could interfere with the safe operation of your vehicle.
  Your Porsche dealer can offer you floor mats of the correct size including a securing possibility.

**To avoid damage to the clutch and transmission:**

- ▷ Always depress the clutch pedal fully when changing gears.
  Make sure that the gearshift lever is completely engaged.
- ▷ Only shift into reverse when the car has come to a complete stop.




*Boxster*




*Boxster S*

### Reverse

- ▷ Depress the clutch pedal for several seconds before shifting into reverse.
  Only then move the gearshift lever to the left, overcoming the spring tension, and then to the front.
  Both back-up lights come on when the transmission is put into reverse (with ignition on).

### Permitted engine speed

- ▷ Change into a higher gear before the needle reaches the red mark on the tachometer, or ease off the accelerator.

If the red zone is reached during acceleration, fuel feed is interrupted.

**Caution!**

**To avoid severe engine damage.**

- ▷ Always observe the engine rpm before downshifting to a lower gear, so you do not exceed the maximum engine rpm.



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## Tiptronic S

The Porsche Tiptronic is a five-speed transmission with an “Automatic” and “Manual” selection mode.

In **automatic selection mode** (selector lever position **D**), gear-changing is automatic.
You can change temporarily from automatic to manual mode using the toggle switches on the steering wheel.

In **manual selection mode** (selector lever position **M**), you change gear using the toggle switches on the steering wheel.

You can change between selector lever position **D** and **M** as you wish while driving.

### Note

Take care not to operate the toggle switches on the steering wheel inadvertently in either automatic or manual mode, thereby triggering undesired gear changes.




### Locking button

To prevent unintended gear shifts, the locking button in the selector lever (arrow) must be pressed to change to position **R** or **P**.

### Keylock position

This position allows the ignition key to be removed only after the gearshift selector lever button is depressed and moved to position ”P“. This ensures that the driver engages the parking lock before leaving the vehicle and turns the ignition key to position ”O“, then the ignition key can be removed from the ignition switch.

### Shiftlock (selector lever lock)

The shiftlock system is another feature to prevent inadvertent movement of the vehicle.

#### Ignition switch position 0

The selector lever (locking button) is locked.

#### Ignition switch position 1

With the vehicle stationary, the selector lever cannot be moved from the **P** or **N** positions, unless the brake pedal is depressed.

### Starting the engine

The engine can be started only in selector lever position **P** or **N**.

### Driving off

- ▷ Select the desired drive position (**D**, **M** or **R**) for driving off only when the engine is idling and while depressing the brake pedal.
- ▷ Since the car creeps when in gear, do not release the brake until you want to drive off.
- ▷ After selecting a gear, do not accelerate until you can feel that the gear has been selected.

▷ ▷ ▷

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## Indicator "A" for selector lever position and engaged gear

When the engine is running, the selector lever position and engaged gear are indicated.

### Vehicles without on-board computer

**If the selector lever is between two positions:**

The selector lever position in the instrument cluster flashes.

▷ Engage the selector lever correctly.

**If there is a fault in the transmission:**

The **4th-gear** display flashes.
Also refer to "Emergency program".

▷ To remedy the fault, immediately consult an authorized Porsche dealer.

### Vehicles with on-board computer

**If the selector lever is between two positions:**

- The selector lever position in the instrument cluster flashes, **and**
- the warning "selector lever not engaged" appears on the display of the on-board computer.

▷ Engage the selector lever correctly.

**If there is a fault in the transmission:**

- The **4th-gear** display flashes.
- The warning "Tiptronic emergency run" appears in the on-board computer.
  Also refer to "Emergency program".

▷ To remedy the fault, immediately consult an authorized Porsche dealer.


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## Selector Lever Positions

### P – Parking lock

In selector lever position **P**, the driven wheels are mechanically locked.

▷ Select only when car has been stopped.

▷ Engage parking lock **after** applying the handbrake and release it **before** releasing the handbrake.

The **ignition key** can be withdrawn only in selector lever position **P**.

### R – Reverse

▷ Select only when car has been stopped and the brake is applied.

### N – Neutral

Selector lever position **N** must be selected for towing or in car washes, for example.

▷ Select the desired position for moving off (**D**, **M** or **R**) only when the engine is idling and while depressing the brake pedal.

▷ Select position **N** while driving **only** if the car is threatening to skid in slippery conditions. Otherwise **N** should not be selected while driving.

### D – Automatic selection mode

▷ Select position **D** for "normal" driving. The gears are shifted automatically according to the accelerator position and speed.

Depending on the way the vehicle is driven and on the resistance (e.g. uphill), the gear-changing points are shifted towards higher or lower engine-speed ranges.
The accelerator position, driving speed, engine speed, longitudinal and lateral acceleration and the road profile all have an influence on the gear-changing characteristic.

Unwanted upward shifts, e.g. before bends, are prevented by swiftly releasing the accelerator pedal.

Depending on lateral acceleration, upward shifts on bends are not made until the engine-speed limit is reached.

Under braking, and depending on the amount of deceleration, the Tiptronic shifts down earlier.
For subsequent cornering, the right gear is engaged when pressure is applied to the brakes before the bend.
The bend is taken in the right gear, and when you accelerate out of the bend you do not have to shift down.

#### Driving off

In **2nd gear**, the vehicle drives off with the throttle only slightly open.
Drive off in **1st gear** with the throttle open wider or when the engine is cold.

▷ ▷ ▷

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**Shifting gear on the steering wheel**

With the toggle switches on the steering wheel, you can change temporarily from automatic selection mode **D** to manual mode **M**.

Advantages:
- Shifting down before bends and on entering built-up areas.
- Shifting down on downward slopes (engine braking)
- Shifting down for brief spurts of acceleration
- Selecting 1st gear for moving off

The manual selection mode remains engaged:
- for cornering (depending on the lateral acceleration) and overrunning,
- when the vehicle is stationary (e.g. at a junction).

The system leaves manual selection mode:
- automatically after approx. 8 seconds (unless cornering or overrunning),
- if you depress the accelerator to kickdown,
- after moving off.

**Temporary change-down**

Conditions:
Speed is higher than approx. 33 mph (54 km/h).

▷ Depress accelerator quickly.
The Tiptronic changes temporarily to the sportiest gear-changing map, i.e. to the highest possible gear-changing points. Correspondingly, the transmission shifts down immediately by one or two gears.

Ending the function:

▷ Release the accelerator markedly (by approx. 25%).

**Kickdown**

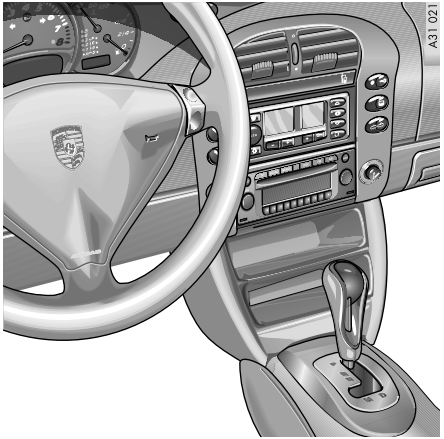
The kickdown function is active in selector lever position **D**, even if you temporarily change to manual mode **M** using the toggle switches on the steering wheel.

▷ For optimum acceleration, e.g. when overtaking, depress the accelerator pedal beyond the full-throttle point (kickdown).

The transmission shifts down depending on the speed of travel and engine speed.
Upward shifts occur at the highest possible engine speeds.
These gear-changing speeds remain active until the accelerator is released to approx. 80% of the wide open throttle position.


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## M - Manual Selection Mode

The currently selected gear is retained if you change from **D** to **M**.

If you shift from **M** to **D**, the gear-changing map suitable for your current driving style is selected and the appropriate gear is selected.

**Warning!**

**The kickdown function is not active in manual selection mode “M”.**

▷ Therefore shift down manually when accelerating (e.g. to overtake).

Two toggle switches in the upper steering-wheel spokes let you comfortably and reliably select the five forward gears.

**Shifting up**

▷ Press upper part (+) of a toggle switch.

**Shifting down**

▷ Press lower part (–) of a toggle switch.

Depending on driving speed and engine speed, you can shift up or down at any time.
Gear changes which would exceed the upper or lower engine-speed limit are not executed by the controller.

You can shift down two gears at once by quickly pressing the toggle switches twice.

If the engine-speed limit is reached, an automatic upward shift is performed or, just before idling speed is reached, a downward shift is performed.

▷ Select an appropriately low gear on upward and downward slopes.
This will ensure optimum use of engine power and engine braking.

If manual mode fails, the control electronics switch to automatic mode. In this event, the instrument cluster will display selector lever position **D**.

▷ To remedy the fault, please consult an authorized Porsche dealer.

▷ ▷ ▷

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## Slip monitoring

When the speeds of rotation of the front and rear axles differ by more than the maximum permissible value, integrated slip monitoring shifts up to the next gear.
This increases driving stability on a slippery surface.

### Note

Slip monitoring is also deactivated when Porsche Stability Management (PSM) is switched off.

## Stopping

- ▷ For a brief stop, e.g. at a traffic light, leave the selector lever in drive position and hold the vehicle with the brake pedal.
- ▷ For a longer stop with the engine running, select position **N** (neutral).
- ▷ Do not hold the car on a slope using the accelerator. Use the brake pedal or the handbrake instead.
- ▷ Before leaving the vehicle, always apply the handbrake and move the selector lever to position **P**.

## Parking

- ▷ Go easy on the accelerator.
- ▷ When parking or manoeuvring in a small space, control the speed by careful use of the footbrake.

## Driving in winter

In wintery road conditions it is advisable to take steep inclines in manual mode. This prevents the occurrence of gear changes that could cause wheelspin.

## Tow-starting, towing

Refer to the chapter “Towing”.

## Emergency program

**⚠ Warning!**

**Reverse gear lock monitoring is disabled in the emergency running program.**
**Damage to the vehicle may result as well as loss of control, if the vehicle is moving forward fast enough to cause rear wheel lockup.**

- ▷ Do not shift into **R** while the vehicle is moving forward.

A transmission fault is indicated by the following symptoms:

- The **4th-gear** display flashes.
- The warning “Tiptronic emergency run” appears in the on-board computer.
- The transmission no longer shifts.
  Regardless of selector lever position, 4th is the only forward gear still available.

- ▷ Adapt your driving style to the changed handling.
- ▷ To remedy the fault, please consult an authorized Porsche dealer.


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# Mobile Roofs

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## Convertible Top

Brief operating instructions can be found on the back side of the driver's sun visor.

Refer to the chapter "Car care instructions".

**Warning!**

**When opening or closing the convertible top, serious personal injury may occur if a person's body parts are near or in the way of the convertible top mechanism's moving parts.**

▷ Make absolutely sure that nobody can be injured by the convertible-top mechanism or the convertible-top compartment lid.

**Do not operate convertible top:**

- If the basic carrier of the Roof Transport System is fitted.
  Please always observe the Roof Transport System operating instructions.
- At temperatures below 0° C.
- When one side of the car is on a curb, a hoist or a jack.
- When items of luggage or other objects hinder the convertible top movement or are in abrasive contact with the convertible top or rear window.
  Items of luggage or objects on the luggage tray above the engine compartment lid must be put in the storage box or be secured under the net to prevent their sliding out.

▷ Drive only with the convertible top fully open or closed.

▷ Avoid frequent operation of the convertible top with the engine off; the vehicle battery would be unintentionally discharged rapidly.

▷ The convertible top must be operated only when the car is stationary. Make sure there is sufficient clearance above the convertible top (e.g. in the garage).

▷ To prevent damp stains and abrasions, only open the convertible top in a dry, clean state.

▷ Park your car in the shade whenever possible, as the fabric, rubber material and color can be harmed by long exposure to sunlight.

### Door windows

If the door windows are closed, they will automatically be lowered a few centimeters before the convertible top is opened or closed.

The door windows close automatically when the convertible top is locked with the latching lever on the windshield frame.



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## Preconditions for operation of the convertible top

- The handbrake must be engaged.
- The ignition must be switched on (engine on or off).

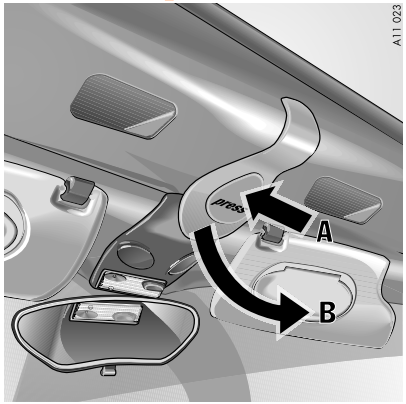
## Opening convertible top

**Warning!**

**Risk of injury and damage when operating the convertible top.**

▷ Make absolutely sure that nobody can be injured by the convertible-top mechanism or the convertible-top compartment lid.

▷ In order to abort convertible top operation in the event of danger, immediately release the switch.




### Unlatching the locking lever

▷ Press the unlocking plate (arrow **A**). The lever **B** snaps into grip position.

### Unlocking convertible top

▷ Swing locking lever to rear (arrow **B**).




### Opening convertible top

▷ Operate rocker switch continuously until indicator light in the instrument panel goes off (convertible top in final position).

▷ ▷ ▷

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## Closing convertible top

**Warning!**

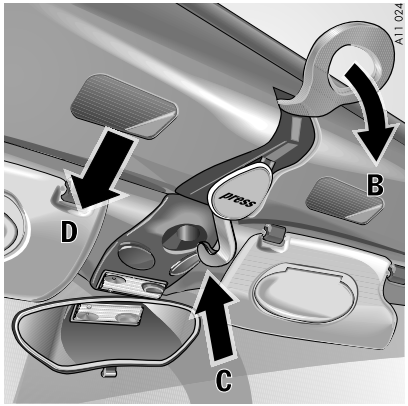
**Risk of injury and damage when operating the convertible top.**

- ▷ Make absolutely sure that nobody can be injured by the convertible-top mechanism or the convertible-top compartment lid.
- ▷ In order to abort convertible top operation in the event of danger, immediately release the switch.
- ▷ Keep the lids of the make-up mirrors in the sun visors closed when closing the convertible top.




### Closing convertible top

- ▷ Operate rocker switch continuously until indicator light in the instrument panel goes off (convertible top in final position).




### Locking convertible top

- ▷ Swing locking lever forward (arrow **B**) until it perceptibly engages.
  The latching hook must engage in its socket in the windshield frame (arrow **C**).

### Note

The engagement of the latching hook can be assisted by pulling the convertible top to the windshield using the handle recess in the convertible-top frame (arrow **D**).


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## Emergency operation

▷ Before performing emergency operation, please check:
Was the ignition switched on and the hand-brake applied?
Are the electrical fuses defective?
See the chapter on "Electrical system".

**⚠ Warning!**

**There is a danger of injury and risk of damage during emergency operation.**
**There is a danger of crushing or pinching body parts at all moveable convertible top parts which could cause serious personal injury.**

▷ Take great care when performing emergency operation.

▷ Do not operate the convertible top during and after emergency operation.

▷ Lever off joint rods only with the greatest care.

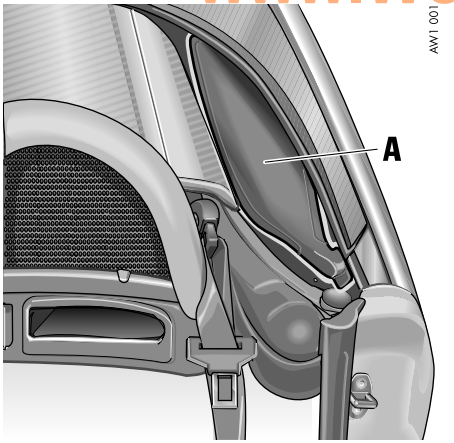
▷ If the convertible top is not in the rearward final position, the convertible-top compartment lid or the convertible top could fall down when the joint rods are levered off.
For this reason, hold convertible top or convertible-top compartment lid firmly before levering off the second joint rod.

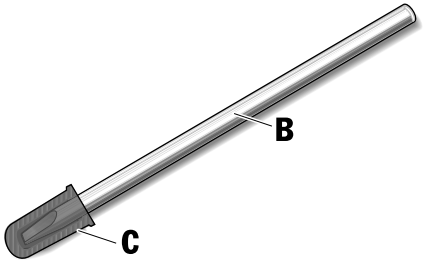
▷ During emergency operation, ensure that the paint is not damaged.

▷ ▷ ▷

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**Warning!**

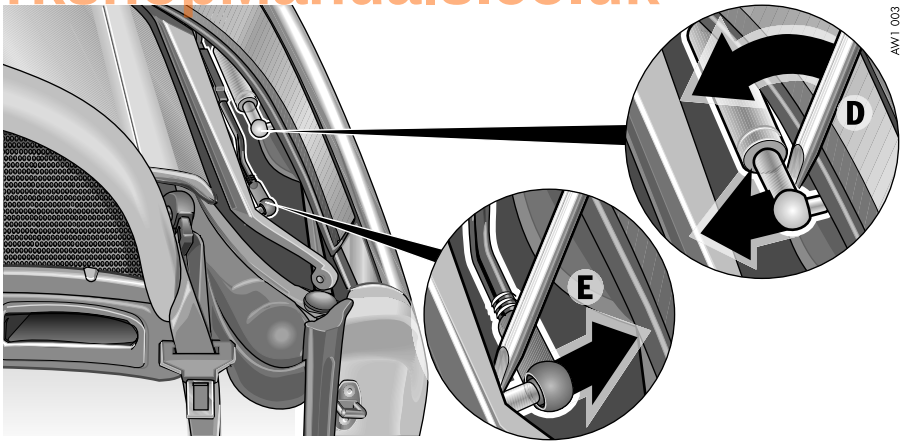
**Danger of crushing or pinching.**

- ▷ Lever off joint rods only with the greatest care.
- ▷ If the convertible top is not in the rearward final position, the convertible-top compartment lid or the convertible top could fall down when the joint rods are levered off.
  For this reason, hold convertible top or convertible-top compartment lid firmly before levering off the second joint rod.

1. Remove the ignition key so that the convertible top is not operated unintentionally.
2. On both sides of the car, unclip the black rod cover **A** and pull it up and out.
3. Take lever of the wheel-bolt spanner **B** out of the tool kit.
   Remove cap **C** from lever **B**.


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***Example:*** *Convertible top in rearward final position*
**D** - *Joint rod for convertible-top compartment cover (black ball head fastening)*
**E** - *Joint rod for convertible top (red ball head fastening)*

The position and accessibility of the joint rods change depending on the position of the convertible top. It can be helpful to fold up the rear part of the convertible top (see chapter “Engine compartment lid”).

4. Lever joint rod **D** (black fastening) off the ball head with blade of lever **B**.
   As the connection is under spring tension, a corresponding amount of force is required to lever off the ball head, creating danger of crushing and pinching.

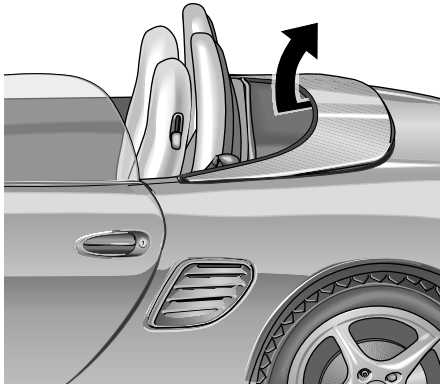
5. When levering off joint rod ”D“ on the other side of the vehicle, the convertible-top compartment cover must be held so that it does not fall down in an uncontrolled manner to protect against injury from a fallen cover.

▷ ▷ ▷

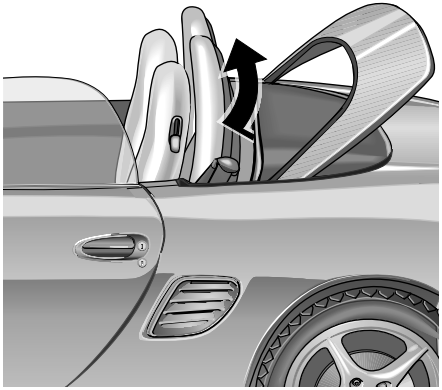
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6. Grasp convertible-top compartment cover in the center and set up completely (arrow).

7. Lever joint rod **E** (red fastening) off the ball head with blade of lever **B**.
   A corresponding amount of force is required to lever off the ball head, creating danger of crushing and pinching.

8. When levering off joint rod "E" on the other side of the vehicle, the convertible top must be held so that it does not fall down in an uncontrolled manner to protect against injury from a fallen cover.

9. Lift convertible top with both hands (arrow) and close. Lock convertible top.

10. Carefully lower convertible-top compartment cover.

**Caution!**

**Danger of damage at the convertible top.**

- ▷ After emergency operation, do not operate the convertible top with the rocker switch.
- ▷ Drive slowly to an authorized Porsche dealer in order to have the fault remedied.



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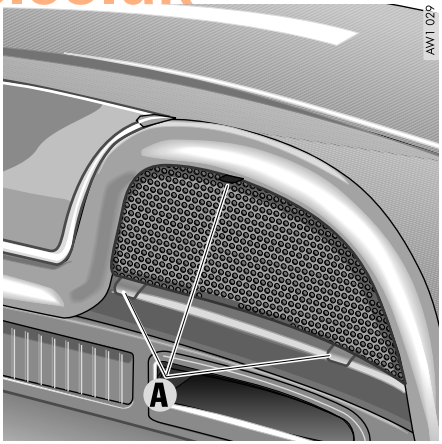
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## Windstop

▷ Make sure that all windstop parts are fastened securely, especially when driving with the convertible top open.

### Note

When the convertible top is closed, it is a good idea to remove the center section of the windstop to permit good ventilation of the interior or for demisting the rear window.
This is particularly the case in cold, wet weather.




### Removing outer windstop parts

▷ Press windstop parts rearwards out of the supplemental safety bar.

### Installing outer windstop parts

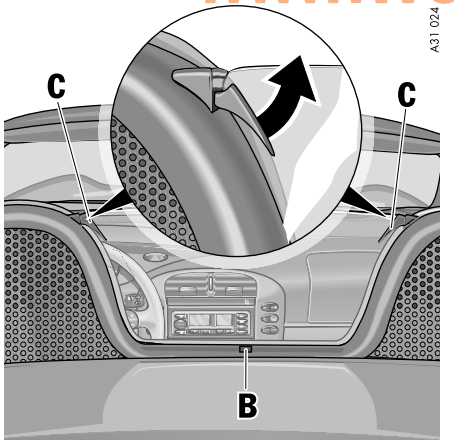
▷ Insert the outer windstop parts into the supplemental safety bar from behind.

▷ Make sure that the three plastic tongues **A** fully engage in the supplemental safety bar.

▷ ▷ ▷

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## Removing windstop central part

- ▷ Open one of the two locking levers on the windstop (arrow), hold open, push down the windstop and pull it out of the fastening points to the rear.
- ▷ Repeat the procedure on the second locking lever.
- ▷ Put windstop centre section in the protective pocket, close the Velcro closure.

**⚠ Caution!**

**Risk of damage to windstop.**

- ▷ In order to avoid scratches, the windstop central part should be stowed in the storage box only in its protective pocket.
- ▷ Do not place any heavy objects on the windstop.

## Installing windstop central part

- ▷ Remove windstop centre section from the protective pocket.
- ▷ First insert the centre section in receiver **B** from the rear, then press forward and down and engage in the upper fastening points **C**.


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## Hardtop

Your authorized Porsche dealer will be glad to give advice about correct hardtop storage.

Since the convertible top stays open for a long time, it must be absolutely dry and clean before being opened to install the hardtop.
This prevents damp stains and abrasion damage.

### Note

Vehicles delivered from the factory without a hardtop are not equipped with the inserts for locking the pivot locks.
Before a hardtop is fitted for the first time, it is essential to have the required parts retrofitted by an authorized Porsche dealer.




### Fitting the hardtop

1. Open doors and convertible top.

2. Carefully remove both plastic covers (arrow) out of the pivot locks, using a screwdriver. Store plastic covers.

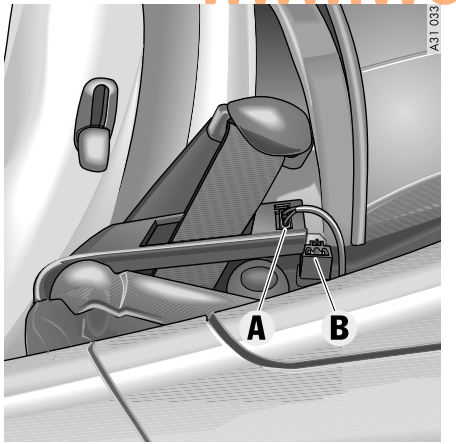
### Note

These plastic covers are included with cars that are factory-equipped with a hardtop.

▷ ▷ ▷

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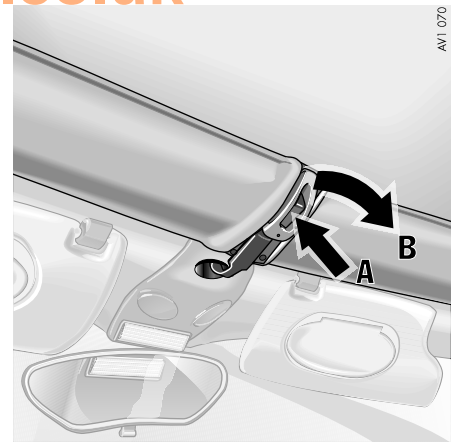
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3. Unplug plug **A** of the heated rear window and insert it into jack **B**.
   The white dot on the plug must face the passenger compartment.




4. Remove cover from front latching lever (arrow).



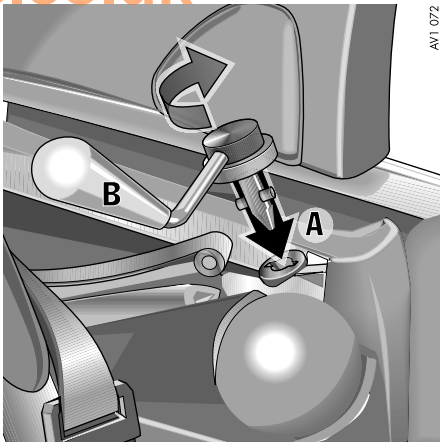

5. Press red securing knob on front latching lever (arrow **A**).
   Open latch completely (arrow **B**).


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6. Put rear pivot locks in the opening position.
   The handles must point inwards.




7. Open doors.
   With one person on each side, grasp hardtop and **carefully** lift over the car.

8. Insert hardtop front into the sockets on the windshield frame (arrows).

**⚠ Warning!**

**Danger of pinching fingers or hands.**

▷ Evenly lower the hardtop at both sides

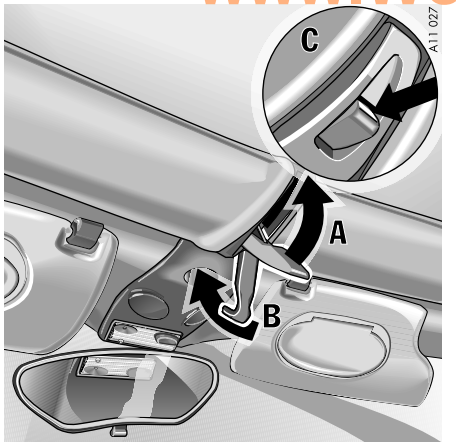
9. Lower hardtop at rear.
   The pivot locks must be completely sunken into the locks (arrow **A**).
   If necessary, move latching lever slightly.

10. Swing both latching levers to the rear until they can be felt to engage (arrow **B**).

▷ ▷ ▷

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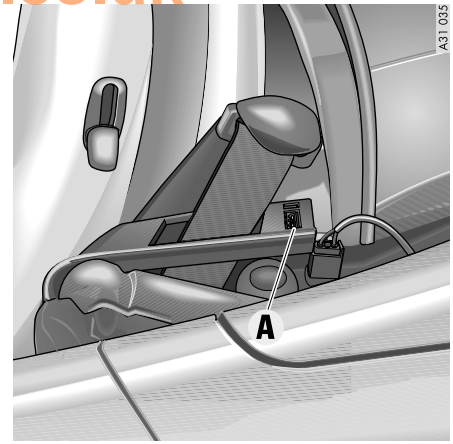

11. Swing latching lever of front latch to the rear (arrow **A**).
    The latching hook must engage in its socket in the windshield frame (arrow **B**). **This also disables the convertible top operating motor.**
    When the hardtop is correctly latched, the white marking stripe on the red securing knob (arrow **C**) must be visible.

**Caution!**

**Danger of damage due to inadvertant operation of the convertible top with the hardtop fitted.**

▷ Make sure that the front latch is always correctly locked.
This disables the convertible top drive.

12. Fit cover on the front latching lever.




13. Insert the plug of the hardtop heated rear window into jack **A**.
    The white dot must face forward.


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## Removing the hardtop

1. Make sure that the hardtop is placed on a clean, soft surface.

2. Open doors.

3. Unplug plug of the hardtop heated rear window.
   Insert plug of the convertible top heated rear window.

4. Remove cover from the front latching lever.

5. Open front latch.

6. Open rear pivot locks (swivel forward).

**Warning!**

**Danger of pinching fingers or hands.**

▷ Evenly lift the hardtop at both sides

7. With one person on each side, grasp the hardtop.
   Lift hardtop at rear and pull out of the sockets on the windshield frame at front.

8. Carefully lift the hardtop up and off the vehicle to the rear.

9. Close front hardtop latch.
   Fit cover on the front latch.

10. Close pivot locks on the vehicle with the plastic covers.

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## Roof Transport System

**Follow the separate instructions for fitting the Roof Transport System.**

Fitting commercially available luggage racks is **not** possible.

The **Porsche Roof Transport System** allows the transport of various sports and hobby equipment.
Your authorized Porsche dealer will be pleased to inform you about the many uses of the Roof Transport System.

**⚠ Warning!**

**Risk of an accident, loss of control and damage to the vehicle.**

- ▷ Completely remove the Roof Transport System before using an automatic car wash.
- ▷ Do not operate the convertible top when the basic carrier is installed.
- ▷ Fit the side support elements of the basic carrier only in conjunction with the transverse supporting pipes.
- ▷ The permissible useable load of 165 lbs (75 kg), the permissible total vehicle weight and the permissible axle loads must not be exceeded.
  See the chapter on "Weights".
  Items of luggage must not project substantially beyond the side of the load area.
  Distribute load evenly, with heavy items as low as possible.
  Every item must be fixed and secured to the basic carrier with a rope or lashing strap (do not use elastic rubber tensioners).
- ▷ Before every journey, and at regular intervals during long trips, check that Roof Transport System and load are secure.
  Retighten if necessary and secure additionally by locking.
- ▷ In the loaded state, adjust maximum speed to the nature, size and weight of the load being carried.
  In no case, however, should you drive at more than 90 mph (140 km/h).
- ▷ With the basic carrier installed and no load, do not exceed a maximum speed of 110 mph (180 km/h) since driving stability will be adversely affected.
  Adapt your driving style and speed to the changed conditions.
  Nevertheless, Porsche recommends that you do not exceed the posted speed limit.
- ▷ Driving, braking and steering behavior of the vehicle change due to the higher center of gravity and the greater wind-resistant area.
  You should adapt your driving style appropriately.

**Note**

Since fuel consumption and noise are increased with the Roof Transport System installed, it should not remain on the car if it is not in use.


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## Exercise Extreme Caution when Working on your Vehicle

**Warning!**

**Ignoring the following instructions may cause serious personal injury.**

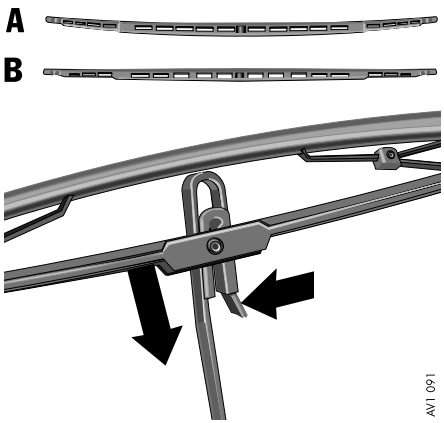
- The engine compartment of any motor vehicle is a potentially hazardous area. If you are not fully familiar with proper repair procedures, do not attempt the adjustments described on the following pages.
  This caution applies to the entire vehicle.
- Only work on your vehicle outdoors or in a well ventilated area.
- Ensure that there are no open flames in the area of your vehicle at any time when fuel fumes might be present. Be especially cautious of such devices such as hot water heaters which ignite a flame intermittently.
- Before working on any part in the engine compartment, turn the engine off and let it cool down sufficiently. Hot engine compartment components can burn skin on contact.
- Be alert and cautious around engine at all times while the engine is running.
  If work has to be performed with the engine running, always set the parking brake, and make sure the shift lever is in neutral or the selector lever is in position "P" or "N".
- In particular, be very careful to ensure that items of clothing (ties, shirt, sleeves etc.), jewelry, long hair, hand or fingers cannot get caught in the engine-compartment blower, fan, belts or other moving parts.
  The radiator and radiator fans are in the front of the car.
  The fans can start or continue running as a function of temperature, even with the engine switched off.
  Carry out work in these areas only with the engine off and exercise extreme caution.
- Your Porsche is equipped with an electronic ignition system. When the ignition is on, high voltage is present in all wires connected with the ignition system; therefore, exercise extreme caution when working on any part of the engine while the ignition is on or the engine is running.
- Always support your car with safety stands if it is necessary to work under the car. The jack supplied with the car is not adequate for this purpose.
- When working under the car without safety stands but with the wheels on the ground, make sure the car is on level ground, the wheels are blocked, and that the engine cannot be started.
  Remove the ignition key.
- Do not smoke or allow an open flame around the battery or fuel.
  Keep a fire extinguisher in close reach.
- Incomplete or improper servicing may cause problems in the operation of the car. If in doubt about any servicing, have it done by your authorized Porsche dealer.
  Improper maintenance during the warranty period may affect your Porsche warranty coverage.
- Supplies of fluids, e. g. engine oil, brake fluid or coolant, are hazardous to your health.
  Keep these fluids out of children's reach and dispose of them in accordance with the appropriate regulations.
- Some countries require additional tools and special spare parts to be carried.
  Please make enquiries before driving abroad.

### Power measurements

Power measurements on dynamometers are not approved by Porsche.


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**A** - *Passenger's side*
**B** - *Driver's side*

## Wiper Blades

When wiper performance deteriorates, replace the wipers.

**⚠ Caution!**

**Risk of damage if the wiper arm accidentally falls back on to the window.**

▷ Always hold the wiper arm securely when replacing the wiper blade.

1. Pull out ignition key.
   Fold wiper arm away from the window.

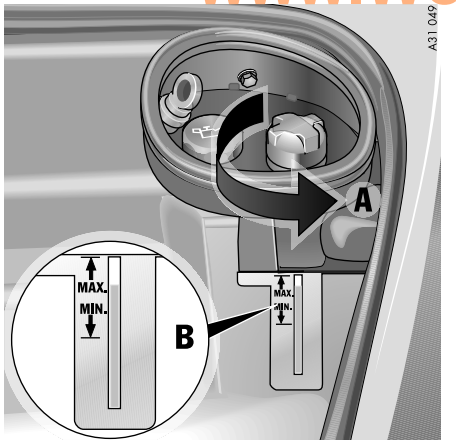
2. Press together the plastic spring of the wiper blade (right arrow).
   Pull wiper blade out of wiper arm.

3. Insert new wiper blade and ensure it engages.
   Ensure that the new wiper blade goes into the same position (direction of spoiler) in the wiper arm and engages.

4. Carefully fold wiper arm back on to the window.

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**A** - *Coolant expansion tank cap*
**B** - *Coolant level*

## Coolant Level

Follow the instructions in the "Cautions" chapter.

The cooling system is filled at the factory with a permanent coolant.
It provides year-round protection from corrosion and freezing down to – 31°F/– 35°C (Nordic countries – 40°F/– 40°C).

Only use antifreeze authorized by Porsche.

### Checking coolant level

The expansion tank with its filler orifice is in the rear luggage compartment.

▷ Check the coolant level regularly at the transparent window of the expansion tank.

When the engine is cold and the car is level the fluid level must lie between the "Min." and "Max." markings.

### Topping off coolant

**⚠ Warning!**

**Danger of serious personal injury from scalding. Coolant is hazardous to your health, and may be fatal if swallowed.**

▷ Do not open the cap of the expansion tank while the engine is hot.

▷ Allow the engine to cool down before opening the cap and protect your hands, arms and face from any possible escape of hot coolant.

▷ Keep coolant out of children's reach.

▷ Also, keep coolant away from your pets.
They can be attracted to it should there be a spill, or to used coolant left in an open container. Coolant can be deadly to pets if consumed.

**Risk of damage from overflowing coolant.**

▷ Take care while topping off coolant not to soil the luggage compartment or items of luggage.


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1. Switch engine off and let it cool.
   See the chapter on the "Cooling system".

2. Cover the expansion tank cap with a thick rag.
   Open cap slowly and carefully and allow overpressure to escape.
   Then unscrew cap completely.

3. Only add a mixture of antifreeze and water in equal parts, and do not exceed the "Max." mark.

   **Antifreeze in coolant:**
   50% gives protection down to – 31°F/– 35°C
   60% gives protection down to – 58°F/– 50°C

4. Screw cap firmly on.

If in an emergency pure water has been added, the mix ratio must be corrected at an authorized Porsche dealer.

Marked loss of coolant indicates leakage in the cooling system.
The cause should immediately be remedied at an authorized Porsche dealer.

## Engine-compartment blower, radiator fan

The radiator and radiator fans are in the front of the car.
The engine-compartment blower is mounted in the engine compartment.

**⚠ Warning!**

**Risk of injury.**
**After the engine is switched off, the engine-compartment and coolant temperatures are monitored for approx. 20 minutes.**
**During this period, and depending on temperature, the engine-compartment blower and radiator fans may continue to run or start to run.**

▷ Carry out work in these areas only with the engine off and exercise extreme caution.

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## Engine Oil

### Engine oil consumption

It is normal for your engine to consume oil.
The rate of oil consumption depends on the quality and viscosity of oil, the speed at which the engine is operated, the climate, road conditions as well as the amount of dilution and oxidation of the lubricant.

If the vehicle is used for repeated short trips, and consumes a normal amount of oil, the engine oil measurement may not show any drop in the oil level at all, even after 600 miles (1000 km) or more. This is because the oil is gradually becoming diluted with fuel or moisture, making it appear that the oil level has not changed.
The diluting ingredients evaporate out when the vehicle is driven at high speeds, as on an expressway, making it then appear that oil is excessively consumed after driving at high speeds.

If the conditions you drive your vehicle in are dusty, humid, or hot, the frequency of the oil change intervals should be greater.

If the vehicle is driven at a high rate of speed, climatic conditions are warm, and the load is high, the oil should be checked more frequently, as driving conditions will determine the rate of oil consumption.

- The engine in your vehicle depends on oil to lubricate and cool all of its moving parts.
  Therefore, the engine oil should be checked regularly and kept at the required level.
- Make it a habit to have the engine oil level checked with every fuel filling.
- The oil pressure warning light is not an oil level indicator.
  The oil pressure warning light indicates serious engine damage may be occuring when lit, if engine rpm is above idle speed.

## Engine Oil Level

Follow the instructions in the "Cautions" chapter.

▷ Regularly check the oil level using the oil level gauge in the instrument panel.
See the chapter on "Engine oil level gauge" and "On-Board computer".

**⚠ Warning!**

**Engine oil is hazardous to your health and may be fatal if swallowed.**

▷ Keep engine oil out of children's reach.

**Used engine oil contains chemicals that have caused cancer in laboratory animals.**

▷ Always protect your skin by washing thoroughly with soap and water.

The dipstick and oil filler are in the rear luggage compartment.


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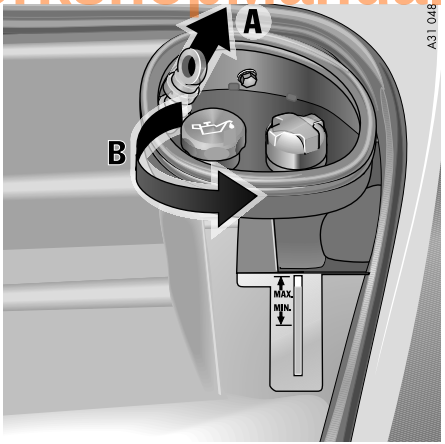
## Preconditions for correct oil level measurement with the dipstick

- Vehicle must be level.
- Engine must be switched off and at operating temperature.
- Let engine oil flow into the oil pan for a few minutes after the engine has stopped running.

**Caution!**

**Risk of damage from overflowing engine oil.**

▷ Take care while checking and topping off engine oil not to soil the luggage compartment or items of luggage.



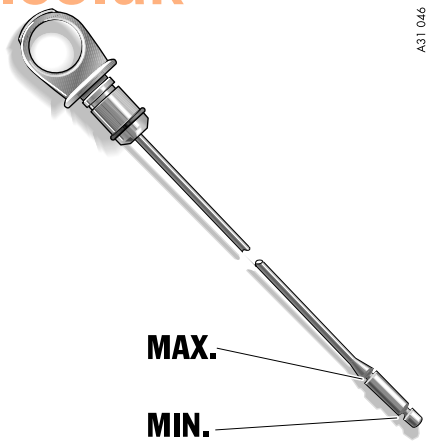

**A** - *Dipstick*
**B** - *Cap of oil filler*

## Checking the oil level

1. Withdraw dipstick and wipe it with a clean, lint-free cloth.

2. Push dipstick fully home, withdraw again and read off the oil level.
   Push dipstick in as far as the stop.

The oil level must in no case fall below the minimum or exceed the maximum oil level on the dipstick.
The difference between the two marks is approximately 1.25 liters/1.33 quarts.




## Topping off engine oil

1. If necessary, add engine oil half a liter at a time. Unscrew the cap of the oil filler.

2. Check oil level with the dipstick again after a few minutes.

3. Push dipstick in as far as the stop.
   Push filling aid in with the cap and close cap carefully.

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## Engine Oil Recommendation

Recommended oil viscosity ranges dependent on ambient temperatures:

| Ambient temperature (seasonal) | SAE Viscosity Range **Mineral** oil based engine oils | Ambient temperatures (seasonal) | SAE Viscosity Range **Synthetic** oil based engine oils |
|---|---|---|---|
| generally higher than 50°F/10°C | 15 W-40<br>20 W-50<br>20 W-40 | generally higher than 50°F/10°C | 10 W-40<br>15 W-40<br>15 W-50 |
| generally lower than 50°F/10°C | 15 W-40<br>10 W-40<br>10 W-30 | generally lower than 50°F/10°C | 10 W-40<br>10 W-30<br>5 W-30 |
| generally lower than 14°F/–10°C | 10 W-30<br>5 W-30 | | |

**Use only engine oils labelled as API SH or SJ, or ILSAC GF 1 and viscosity grades of SAE 10 W-40 or higher.**

**Preferably you should use synthetic or semisynthetic engine oils.**
**If in doubt ask your authorized Porsche dealer for Porsche tested and approved all-season oils.**


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## Oil change

The engine oil has to be changed at the intervals listed in your **Maintenance Schedule**.

See "Capacities".

We recommend that you have the engine oil changed at your Porsche dealer, who has the required oils and the necessary filling equipment.

If you suspect an oil leak in the engine have your dealer check it out immediately.

All current engine oils are compatible with each other, i.e. when making an oil change it is not necessary to flush the engine if you wish to use a different brand or grade of oil.
Since, however, each brand of oil has a special composition, you should, if possible, use the same oil brand if it becomes necessary to top up between oil changes.

Porsche engines have long intervals between oil changes. You can make best use of these long oil change intervals by using multigrade oils since these are largely independent of seasonal fluctuations in temperature.

If your vehicle is used frequently in stop-and-go traffic in cold weather, the engine will not always be properly warmed up.
Condensation from products of combustion may accumulate in the oil. In this case, it is advisable to change the oil more frequently so that your engine once again has 100 % efficient engine oil.

## Engine oil performance class

Engine oil is not only a lubricant, but also serves to keep the engine clean, to neutralize the dirt which penetrates into the engine through combustion and to protect the engine against corrosion.
To perform these functions, the oil is provided with additives which have been specially developed for these functions.
The efficiency of an oil is expressed, for example, by the API, ILSAC or ACEA classifications.

Use only engine oils with the classification API SH or SJ, or ILSAC GF 3, or ACEA A3 (Europe).

## Viscosity

Like all liquids, engine oil is viscous when cold, and thin-bodied when warm. The viscosity of an oil is expressed by its SAE class. For cold viscosity (measured at temperatures below 32°F/0°C) the SAE class is given as a number and the letter "W" (as in winter), for hot viscosity (measured at 212°F/100°C) the SAE class is given only as a number.

The viscosity of an oil is, therefore, always the same if it has the same number of an SAE class.

E.g.: A 10 W-30 oil and a 10 W-40 oil have the same viscosity when cold (below 0°C); when hot (at 212°F/100°C) the oil with the number 30 is thinner than the oil with the number 40.

Oils with two viscosities are called multigrade oils; oils with only one viscosity are termed single-grade oils.

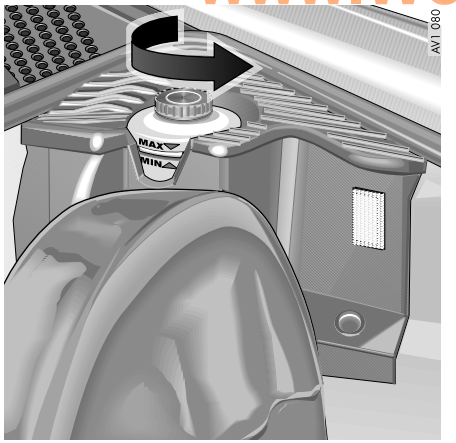
Single-grade oils can only be used for the narrow temperature range identified by their SAE number; multigrade oils cover a wider temperature range.

The viscosity of the engine oil for your Porsche has to be chosen according to the ambient temperature given in the engine oil recommendation table.



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## Brake Fluid Level

Follow the instructions in the "Cautions" chapter.

**Use only new (unused) Original Porsche brake fluid.**

**Warning!**

**Brake fluid is hazardous to your health, and may be fatal if swallowed.**
**Brake fluid also attacks paintwork.**

- ▷ Keep brake fluid out of children's reach.
- ▷ Take care while topping off brake fluid not to soil the luggage compartment or items of luggage.

### Checking the brake fluid level

The reservoir for the hydraulic braking and clutch systems is in the front luggage compartment.

- ▷ Check the brake-fluid level regularly at the transparent reservoir.

The fluid level should always lie between the "Min" and "Max" marks.

A slight decrease in the fluid level due to wear and automatic readjustment of the disc brakes is normal.
If, however, the fluid level falls markedly or below the "Min" mark, the braking system may have developed a leak.

- ▷ Have the braking system checked immediately at an authorized Porsche dealer.

### Changing the brake fluid

Brake fluid absorbs moisture from the air over time. This accumulation of water lowers the boiling point and, under certain operating conditions, can affect the braking action.
Therefore have the brake fluid changed in accordance with the change intervals stated in the brochure "Maintenance".

### Warning light USA

### Warning light Canada

The brake-fluid warning lights in the instrument panel and on-board computer indicate:

- brake-fluid level too low,
- in conjunction with large pedal travel, braking-circuit failure.

**If the warning lights should light up while driving:**

- ▷ Stop immediately in a suitable place.
- ▷ Do not continue driving.
  Please have the fault remedied at your nearest authorized Porsche dealer.


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## Fuel Economy

**Fuel economy will vary depending on where, when and how you drive, optional equipment installed, and the general condition of your car.**
**A car tuned to specifications and correctly maintained, will help you to achieve optimal fuel economy.**

- ▷ Have your vehicle tuned to specifications.
  Air cleaner should be dirt free to allow proper engine "breathing".
  Battery should be fully charged.
  Wheels should be properly aligned.
  Tires should be inflated at correct pressure.
- ▷ Always monitor your fuel consumption.
- ▷ Drive smoothly, avoid abrupt changes in speed as much as possible.
- ▷ Avoid jack rabbit starts and sudden stops.
- ▷ Do not drive longer than necessary in the lower gears. Shifting into a higher gear early without lugging the engine will help save fuel.
- ▷ Prolonged "warm up" idling wastes gas. Start the vehicle just before you are ready to drive. Accelerate slowly and smoothly.
- ▷ Switch off the engine if stationary for longer periods (traffic lights, jams, level crossings).
- ▷ Any additional weight carried in the vehicle reduces fuel economy. Always keep cargo to a minimum and remove all unnecessary items.
- ▷ Organize your trips to take in several errands in one trip.
- ▷ All electrical accessories contribute to increased fuel consumption.
- ▷ Only switch on the air conditioning when necessary.
- ▷ Do not drive with the Roof Transport System mounted unless you need it.

**The EPA estimated m.p.g. is to be used for comparison purposes, actual mileage may be different from the estimated m.p.g., depending on your driving speed, weather conditions and trip length. Your actual highway mileage will probably be less than the estimated m.p.g.**

- ▷ Please observe all local and national speed limits.

## Operating Your Porsche in other Countries

Government regulations in the United States and Canada require that automobiles meet specific emission regulations and safety standards. Therefore, cars built for the U.S. and Canada differ from vehicles sold in other countries.

If you plan to take your Porsche outside the continental limits of the United States or Canada, there is the possibility that

- unleaded fuel may not be available;
- unleaded fuel may have a considerably lower octane rating. Excessive engine knock and serious damage to both engine and catalytic converters could result;
- service may be inadequate due to lack of proper service facilities, tools or diagnostic equipment;
- replacement parts may not be available or very difficult to get.

**Porsche cannot be responsible for the mechanical damage that could result because of inadequate fuel, service or parts availability.**

If you purchased your Porsche abroad and want to bring it back home, be sure to find out about shipping and forwarding requirements, as well as current import and customs regulations.

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# Fuel

**Warning!**

**Fuel is highly flammable and harmful to health.**

- ▷ Fire, open flame and smoking are prohibited when handling fuel.
- ▷ Avoid contact with skin or clothing.
- ▷ Do not inhale fuel vapors.

**To prevent damage to the emission control system and engine:**

- ▷ Never drive the tank completely out of fuel.
- ▷ Avoid high cornering speeds after the warning lights have come on.

Follow the instructions in the "Fuel Economy", "Emission Control System" and "Fuel level gauge" chapters.

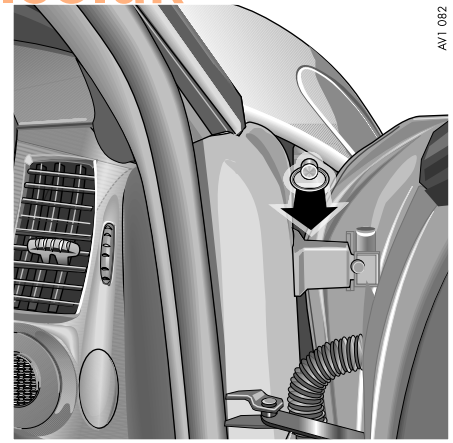



## Opening the filler flap

The filler opening is under the filler flap in the front right fender.

- ▷ With the vehicle unlocked, press on the front part of the filler flap (arrow) to open the flap.

The filler flap is centrally locked along with the other locks.




**If there is a defect in the automatic unlocking system:**

- ▷ Open the passenger door.
- ▷ Pull the ring in the right-hand door aperture (arrow).


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## Refuelling

Fuel tank capacity is listed under "Capacities". Porsche does not recommend the use of fuel additives.

1. **Important:** Stop the engine and switch off the ignition.

2. Slowly unscrew the tank cap.
   Hang the tank cap on the plastic strap of the filler flap.

3. Insert fuel-hose nozzle fully into the filler neck with the handle of the fuel-hose nozzle facing down.

4. Do not add further fuel once the correctly operated automatic fuel-hose nozzle has switched off.
   Fuel could spray or could run over in warm temperatures.

5. Replace the tank cap immediately after refuelling and turn it until you hear it and feel it engage.

**If you lose the tank cap, you must replace it only with an original part to reduce the possibility of a fire in the event of a collision.**

**Note**

The oil level is automatically measured during refuelling.
The measured oil level is displayed for approximately one minute when the ignition is switched on or the engine is started.

However, this measurement is performed only if the following preconditions are met:
Engine is at operating temperature, ignition is off, refuelling is completed within 15 minutes.

**Check engine warning light**

If the warning light in the instrument panel comes on and remains on while driving, it suggests:

- an improperly fastened tank cap **or**
- refuelling with engine running.

▷ ▷ ▷

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## Fuel Recommendations

Your Porsche is equipped with catalytic converters and must use **UNLEADED FUEL ONLY**.

Your engine is designed to provide optimum performance and fuel economy using unleaded premium fuel with an octane rating of **98 RON (93 CLC or AKI)**. Porsche therefore recommends the use of these fuels in your vehicle.

Porsche also recognizes that these fuels may not always be available. Be assured that your vehicle will operate properly on unleaded premium fuels with octane numbers of at least **95 RON (90 CLC or AKI)**, since the engine's "Electronic Oktane™ knock control" will adapt the ignition timing, if necessary.

**The use of UNLEADED FUEL ONLY is critically important to the life of the catalytic converters. Deposits from leaded fuels will ruin the converters and make it ineffective as an emission control device.**

Cars with catalytic converters have a smaller fuel tank opening, and gas station pumps have smaller nozzles. This will prevent accidental pumping of leaded fuel into cars with catalytic converters.

Unleaded fuels may not be available outside the continental U.S. and Canada. Therefore, we recommend you do not take your car to areas or countries where unleaded fuel may not be available.

### Octane ratings

Octane rating indicates a fuel's ability to resist detonation. Therefore, buying the correct octane gas is important to prevent engine "damage".

The RON octane rating is based on the research method. The CLC (U.S. Cost of Living Council octane rating) or AKI (**a**nti**k**nock **i**ndex) octane rating usually displayed on U.S. fuel pumps is calculated as research octane number plus motor octane number, divided by 2, that is written as:

$$\frac{RON+MON}{2} \quad \text{or} \quad \frac{R+M}{2}$$

The CLC or AKI octane rating is usually lower than the RON rating:

For example: 95 RON equals 90 CLC or AKI.

### Fuels containing alcohol and ether

Some areas of the U.S. require oxygenated fuels during certain portions of the year. Oxygenated fuels are fuels which contain alcohols (such as methanol or ethanol) or ether (such as MTBE).

Under normal conditions, the amount of these compounds in the fuel will not affect driveability.

You may use oxygenated fuels in your Porsche, provided the octane requirements for your vehicle are met. We recommend, however, to change to a different fuel or station if any of the following problems occur with your vehicle:

- Deterioration of driveability and performance.
- Substantially reduced fuel economy.
- Vapor lock and non-start problems, especially at high altitude or at high temperature.
- Engine malfunction or stalling.


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### Fuels containing MMT

Some North American fuels contain an octane enhancing additive called methylcyclopentadienyl manganese tricarbonyl (MMT).

If such fuels are used, your emission control system performance may be negatively affected.

The check engine warning light on your instrument panel may turn on.
If this occurs, Porsche recommends you stop using fuels containing MMT.

## Portable Fuel Containers

**⚠ Danger!**

**Portable fuel containers, full or partially empty, may leak causing an explosion, or result in fire in case of an accident.**

▷ Never carry additional fuel in portable containers in your vehicle.

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## Emission Control System

### In the interest of clean air

Pollution of our environment has become a problem that is of increasing concern to all of us. We urge you to join us in our efforts for cleaner air in controlling the pollutants emitted from the automobile.

Porsche has developed an emission control system that controls or reduces those parts of the emission that can be harmful to our environment. Your Porsche is equipped with such a system.

Porsche warrants the Emission Control System in your new car under the terms and conditions set forth in the Warranty Booklet.

You, as the owner of the vehicle, have the responsibility to provide regular maintenance service for the vehicle and to keep a record of all maintenance work performed. To facilitate record keeping, have the service performed by authorized Porsche dealers. They have Porsche trained technicians and special tools to provide fast and efficient service.

### To assure efficient operation of the Emission Control System

- Have your vehicle maintained properly and in accordance with the recommendations described in your Maintenance Booklet.
  Lack of proper maintenance, as well as improper use of the vehicle, will impair the function of the emission control system and could lead to damage.
- Do not alter or remove any component of the emission control system.
- Do not alter or remove any device, such as heat shields, switches, ignition wires, valves, etc., which are designed to protect your vehicle's emission control system.
  In addition to serious engine damage, this can result in a fire if excess raw fuel reaches the exhaust system.
- Do not continue to operate your vehicle if you detect engine misfire or other unusual operating conditions.

### Parking

**⚠ Warning!**

**Danger of fire.**

- Do not park or operate the vehicle in areas where the hot exhaust system may come in contact with dry grass, brush, fuel spill or other flammable material.
- If your car catches on fire for any reason, call the fire department.
  Do not endanger your life by attempting to put out the fire.

### Undercoating

**⚠ Warning!**

**Danger of fire and serious personal injuries.**

- Do not apply additional undercoating or rustproofing on or near the exhaust manifold, exhaust pipes, catalytic converters or heat shields. During driving the substance used for undercoating could overheat and ignite.


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## How Emission Control Works

When an automobile engine is running, it uses energy generated through the combustion of a mixture of air and fuel. Depending on whether a car is driven fast or slowly or whether the engine is cold or hot, some of the fuel (hydrocarbons) may not be burned completely, but may be discharged into the engine crankcase or exhaust system. Additonal hydrocarbons may enter the atmosphere through evaporation of fuel from the fuel tank. These hydrocarbons (HC), when released into the air, contribute to undesirable pollution.

In addition, carbon monoxide (CO) and oxides of nitrogen (NOx) contribute to engine emissions. They, too, are formed during the combustion process and discharged into the exhaust system.

To reduce these pollutants, your Porsche is equipped with a precisely calibrated fuel injection system to assure a finely balanced air/fuel mixture under all operating conditions.

### Oxygen sensor

The oxygen sensor, installed in the exhaust pipe continuously senses the oxygen content of the exhaust and signals the information to an electronic control unit. The control unit corrects the air/fuel ratio, so the engine always receives an accurately metered air/fuel mixture.

### Crankcase ventilation

Through crankcase ventilation, undesirable emissions from the engine crankcase are not permitted to reach the outside atmosphere. These emissions are recirculated from the crankcase to the air intake system. From here the emissions mix with the intake air and are later burned in the engine.

### Catalytic converters

The catalytic converters are efficient "clean-up" devices built into the exhaust system of the vehicle. The catalytic converters burn the undesirable pollutants in the exhaust gas before it is released into the atmosphere.

**The exclusive use of unleaded fuel is critically important for the life of the catalytic converters. Therefore, only unleaded fuel must be used.**

**The catalytic converters will be damaged by:**

- push or tow starting the vehicle
- misfiring of the engine
- turning off the ignition while the vehicle is moving or
- driving until the fuel tank is completely empty
- by other unusual operating conditions.

▷ Do not continue to operate your vehicle under these conditions, since raw fuel might reach the catalytic converters. This could result in overheating of the converters. Federal law prohibits use of leaded fuel in this car.

▷ ▷ ▷

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## Fuel Evaporation Control

### Fuel tank venting

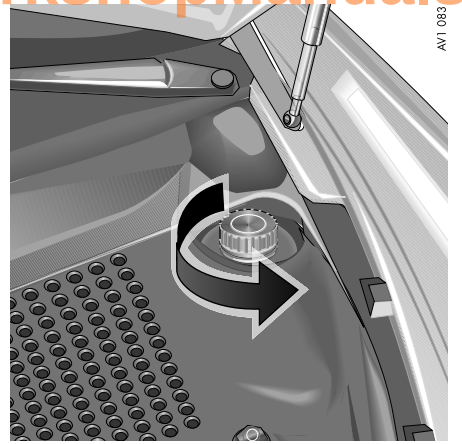
The evaporation chamber and the carbon canister prevent fuel from escaping to the atmosphere at extreme high outside temperatures, when driving abruptly around curves and when the car is parked at an incline or in any other nonlevel position.

### Vapor control system and storage

When the fuel tank is filled, vapors are collected in the evaporation chamber by a vent line leading the vapors to the carbon canister where they are stored as long as the engine does not run.

### Purge system

When the engine is running, the fuel vapors from the canister will be mixed with fresh air from the ambient air of the canister. This mixture will be directed to the intake air housing by the tank vent line, mixed with the intake air and burned during normal combustion.




## Washer Fluid

The reservoir, with a blue screw cap, is in the front luggage compartment, to the rear left.

### Capacity

- Without headlight cleaning system: approximately 2.5 liters.
- With headlight cleaning system: approximately 7 liters.

Clean water is generally not enough to clean the windshield and headlights.
It is advantageous to add a winter cleaner giving antifreeze protection or a suitable summer cleaner, depending on the season. Follow the instructions for the mixing ratio.

▷ Do not use engine coolant anti-freeze or any other solution that can damage the car's paint, in the washer reservoir.

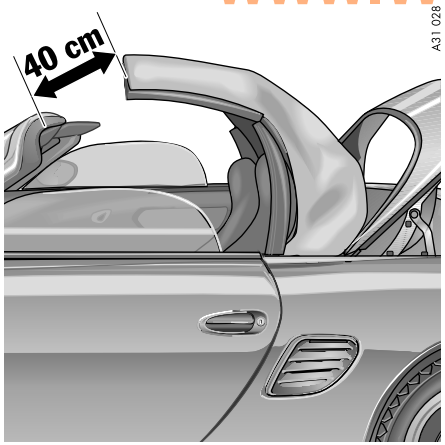
▷ Please note all the information on the container of the cleaning agent.

### Warning light

The warning lights in the instrument panel and on-board computer light when approximately 0.5 liter is left in the reservoir.

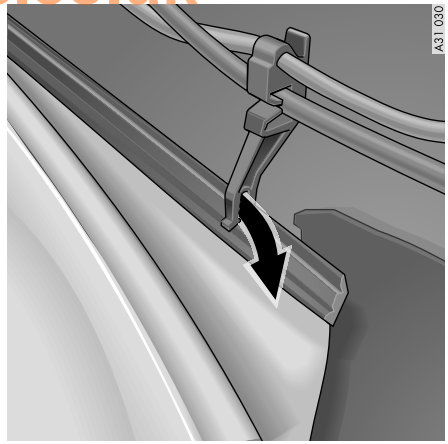

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## Opening Engine Compartment Lid

### Moving convertible top to service position

1. Open or close the convertible top far enough so that it is approximately 40 cm away from the windshield frame. See the chapter on "Convertible top".

2. **Withdraw the ignition key so that the convertible top cannot be operated unintentionally.**

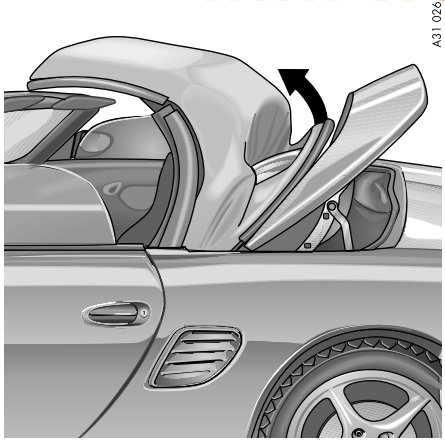
3. Pull off the two lower ball heads of the tension ropes (arrow).

4. Unclip fabric covering from the two holders (arrow) downwards.

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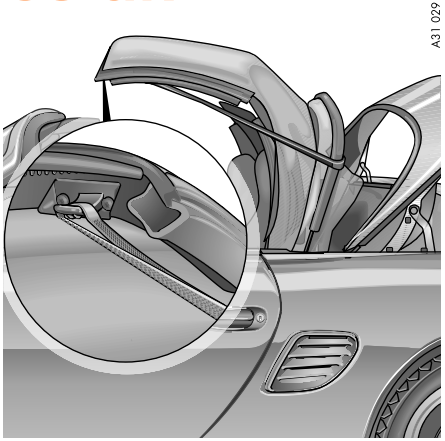
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5. Fold rear part of the convertible top forward (arrow). Press upper part of the rear window down when doing this.




6. Undo Velcro fastening strip of the restraining strap.

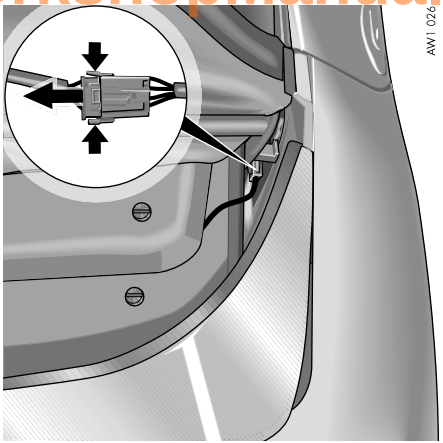


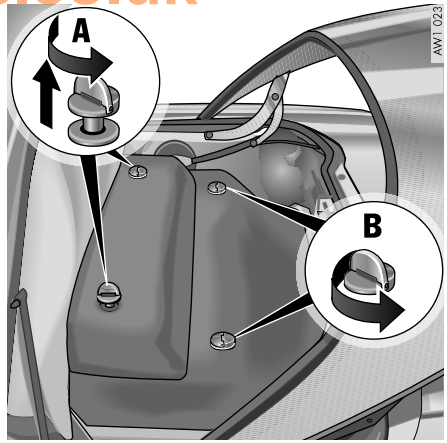

7. Engage restraining strap in the convertible top guide.


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## Disengaging luggage net

▷ On vehicles with luggage net, unhook the hooks on both sides of the roll-over bar (arrow).

## Removing storage box

▷ On vehicles with BOSE High End sound package, disconnect the electrical plug connection of the loudspeakers.
To do this, press the securing levers (small arrows) at the sides.
The plug connection is fastened on the outer right side of the roll-over bar.

▷ Open turn-locks **A** of the storage box and pull out by approx. 1.5 cm until they engage.
Take out storage box to the rear.

## Removing carpet covering

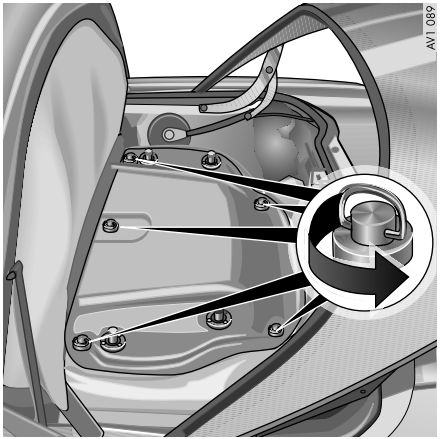
▷ Open turn-locks **B** of the carpet covering.
Remove carpet covering.

On vehicles with luggage net, the two front turn-locks also have to be opened.

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### Removing engine compartment lid

▷ Open all 5 turn-locks of the engine compartment lid.

▷ Remove engine compartment lid.

**⚠ Warning!**

**Risk of intoxication. Exhaust or fumes from the engine compartment could enter the passenger compartment.**

▷ Do not drive with the engine compartment lid open.

## Closing Engine Compartment Lid

1. **Withdraw the ignition key so that the convertible top cannot be operated unintentionally.**

**⚠ Warning!**

**Risk of intoxication. Exhaust or fumes from the engine compartment could enter the passenger compartment.**

▷ Make sure that the engine compartment lid closes tightly and all turn-locks are fully locked.

2. Put on engine compartment lid.
   Fully lock all 5 turn-locks of the engine compartment lid.

3. Put on carpet covering.
   Lock turn-locks of the carpet covering.
   Vehicles with luggage net: 4 turn-locks.
   Vehicles with storage box: 2 turn-locks.

4. Push storage box under the supplemental safety bar from behind.
   Press down and lock turn-locks of the storage box.

5. On vehicles with BOSE High End sound package, connect the electrical plug connection of the loudspeakers.

6. Disengage the retaining strap and fasten it at the rear part of the convertible top with the Velcro fastening strip.

7. Fold down rear part of the convertible top.

8. Clip fabric covering into both holders.

9. Engage both lower ball heads of the tension ropes.

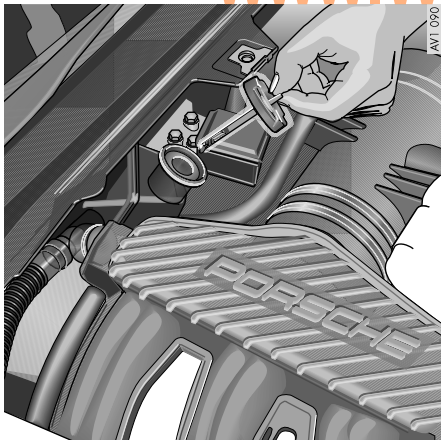
10. Open or close convertible top.
    Refer to the chapter “Convertible top”.

### Engine compartment lid behind the seats

An additional lid for assembly and servicing work is located under the carpet behind the seats.


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## Power Steering

The hydraulic fluid reservoir is located in the engine compartment.

### Note

The flow noise heard at full steering lock is design-related and does not indicate a defect in the steering system.

**⚠ Warning!**

**Risk of accident.**
**When the engine is stopped (e.g. when on tow) or the power steering has failed there is no steering assistance.**
**Therefore, substantially more force will have to be exerted in order to steer.**

- ▷ Exercise great care when being towed.
- ▷ Have the fault remedied at your nearest authorized Porsche dealer.

### Checking hydraulic fluid

Follow the instructions in the "Cautions" chapter.

Only use hydraulic fluid authorized by Porsche.
See chapter "Capacities"

Check the fluid level with the engine stopped and **cold** (approximately 68°F/20°C).

1. Open the engine compartment lid.
   See the chapter on "Engine compartment lid".

2. Open the reservoir cap.

3. Wipe measuring rod.
   Close lid and reopen. The fluid level should lie in the area below the "Cold" marking.
   Add hydraulic fluid if necessary.

4. Close cap carefully.
   Close engine compartment lid.

Noticeable loss of fluid indicates leakage in the system.
The cause should be remedied immediately at an authorized Porsche dealer.

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## Air Filter

The air filter is on the left-hand side of the engine compartment.

A dirty air filter not only reduces engine performance, but can lead to premature engine wear.

Regular filter replacement is part of the routine maintenance service.

▷ In dusty conditions, check the filter element more frequently and replace if necessary.

## Particle Filter

The fresh air passing through the particle filter into the passenger compartment is virtually free of dust and pollen.

▷ If the outside air is polluted by exhaust fumes, press the circulating-air button.

A dirty filter can be the cause of reduced air flow:

▷ Have filter replaced by your authorized Porsche dealer.

Regular filter replacement is part of the routine maintenance service.

## Automatic Transmission Fluid

The torque converter and the transmission are lubricated with Automatic Transmission Fluid (ATF). The final drive requires transmission oil. See "Capacities".

Do not tow the car or run the engine without ATF in the transmission. The automatic transmission may be damaged by even a tiny speck of dirt, only a clean funnel or spout must be used when adding ATF.

The ATF and transmission oil has to be checked and changed at the intervals listed in your Maintenance Schedule.

We recommend that you have the ATF and transmission oil changed at your Porsche dealer, who has the required lubricants and the necessary filling equipment.

If you suspect an oil leak in the transmission, have your authorized Porsche dealer check it out immediately.

## Manual Transmission Oil

The transmission oil has to be checked and changed at the intervals listed in your Maintenance Schedule. See "Capacities".

We recommend that you have the transmission oil changed at your Porsche dealer, who has the required lubricants and the necessary filling equipment.

If you suspect an oil leak in the transmission, have your authorized Porsche dealer check it out immediately.


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## Car Care Instructions

**Follow the instructions in the "Cautions" chapter.**

**Regular and correct care helps to maintain the value of your car and is also a precondition for the New Vehicle Warranty and the Anti Corrosion Warranty.**

**Your authorized Porsche dealer has specially developed car-care products from the Porsche program available either singly or as complete car-care sets. They will be pleased to help you select suitable products.**

**Whether you use Porsche products or other commercially available cleaning agents first make sure of their correct application.**

A Porsche that is well-cared for can look like new for years. It all depends on the amount of care the owner is willing to give the car.

**⚠ Warning!**

**Risk of serious personal injury or damage to the vehicle or property.**
**Cleaning agents may be hazardous to your health.**
**Most chemical cleaners are concentrates which require dilution. High concentrations might cause problems ranging from irritation to serious injury as well as damage to your vehicle.**

- ▷ Keep cleaning agents out of reach from children.
- ▷ Observe all caution labels.
- ▷ Always read directions on the container before using any product. These directions may contain information necessary to avoid personal injury.
- ▷ Do not use fuel, kerosene, naphtha, nail polish remover or other volatile cleaning fluids. They may be toxic, flammable or hazardous in other ways. Only use spot removing fluids in a well vented area.
- ▷ Do not clean the underside of chassis, fenders, wheel covers, etc., without protecting your hands and arms as you may cut yourself on sharp-edged metal parts.

Moisture and road salt on brakes may affect braking efficiency.

- ▷ Test the brakes after each vehicle washing.

▷ ▷ ▷

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## Washing

The best method of protecting your car from the damaging effects of the environment is frequent washing and the application of a preservative. The underside of your vehicle should also be washed thoroughly, at the latest when salt is no longer spread on the roads.

The longer salt, road dust and industrial dust, dead insects, bird droppings or substances from trees (resin, pollen) are allowed to remain on the bodywork, the more serious is their harmful effect.

New cars should be washed carefully with plenty of clear water to protect the new paint work. Dark paint finishes show up the smallest of surface damage (e.g., scratches) more readily than lighter colors.

Dark colors are also more susceptible to scratching because of the composition of their pigments and require particularly careful paint care.

▷ Do not wash your car in bright sunlight or while the bodywork is still hot.

▷ When washing by hand, use abundant water, a soft sponge or wash brush, and Porsche car shampoo.

▷ Begin by spraying the body thoroughly with water to rinse away loose dirt.

▷ After washing, rinse the car with plenty of water and then dry with a chamois leather.
Do not use the same chamois leather for drying as you use for cleaning the windshield and windows.

**⚠ Warning!**

**Moisture which gets on to the brakes during a car wash can reduce braking efficiency or make the brakes pull unevenly which could increase the danger of an accident, causing serious personal injuries or death.**

▷ Always apply the brakes a few times after washing the car to test braking efficiency and dry the brake discs.
When doing this, take care not to hamper other road users behind you (traffic conditions permitting).

### Automatic car washes

Optional add-on parts or parts which project beyond the contours of the vehicle may be damaged by design features (e.g. brushes) of automatic car washes.

**The following parts are particularly susceptible to damage:**

- Windshield wipers (always switch them off to prevent them wiping unintentionally in intermittent or sensor operation)
- External telephone antenna (always unscrew)
- Roof Transport System (always remove completely)
- Fixed rear spoiler or extended rear spoiler
- Wheels (the wider the rim and the lower the tire height, the greater the risk of damage)
- High-gloss wheels (to prevent these from getting scratched, do not clean with the wheel-cleaning brushes of the car wash).

▷ Please consult the operator before using automatic car washes.

▷ Wash and dry by hand all points not reached by a car wash, such as door and lid seams or door sills.

### Note

Automatic car washes spray water at odd angles and high pressures, which are not seen in normal driving. Therefore, water can sometimes find its way into the passengers compartment during or shortly after the car wash.


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## Convertible top

▷ Never remove snow and ice using a sharp edged object.

Incorrect care and treatment can damage the convertible top and cause leaks. Any repair work can be done by your authorized Porsche dealer.

### Important note

**No folding top is 100% leak proof.**
Due to the constant changing of loads and strains to which a car is subject to when driving on roads, minor wind noise and seepage at joints between the top, body and doors on convertible tops cannot be completely sealed in certain areas. Therefore small leaks are considered normal for these models. In addition, your convertible top should not be washed in a car wash. The top may experience damage by the brushes or may experience leaks due to the high pressure water streams directed in areas which would not encounter water in normal driving conditions.

### Cleaning

Do not wash the convertible top each time the car is washed.
It is usually sufficient to spray or wash it with clean water.

▷ Brush dust off the convertible top in the direction of the weave using a soft brush.

▷ Only if there is heavy dirt, wet the convertible top with lukewarm water and the Porsche Wash-Shampoo & convertible-top cleaner, using a sponge or soft brush, and rub gently.
Rinse Wash-Shampoo & convertible-top cleaner thoroughly off the convertible top with clean water.

▷ After washing it, treat the convertible-top cover at least once a year with the special Porsche convertible-top care product.
Do not allow the convertible-top care product to come into contact with paint or windows. If it does, remove immediately.

▷ If there is leakage in the convertible-top cover or at its seams or folds, the special Porsche convertible-top care product can be used.

▷ Please note the information on the container.

▷ Remove bird droppings immediately since the acid in them will make the rubber swell and the convertible top will become leaky.

▷ Open convertible top only when it is completely dry, otherwise damp stains and scrub marks may occur which cannot be removed.

▷ Try to remove spots from the convertible-top cover by rubbing carefully with a soft rubber sponge.

## Door locks

▷ To prevent the door locks from freezing during the cold season, the lock cylinders should be covered during a wash.

▷ Should the locks freeze, use an ordinary deicer. In many cases, a well warmed key can help.
Never use excessive force.

▷ ▷ ▷

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## Paint

▷ Never rub a dusty car with a dry cloth since dust particles are abrasive and could dull and damage the surface finish.

The paintwork of your car is exposed to all types of mechanical and chemical conditions, particularly climatic ones such as bright sunlight, rain, frost and snow. Ultraviolet light, rapid changes in temperature, rain, snow, industrial dust and chemical deposits constantly attack the paint which is only able to withstand such exposure in the long term if it is given regular care and attention.

▷ Do not apply silicone polishes to the windshield, windows or convertible top.

▷ Do not treat matt-painted components with preservatives or polishes as this will spoil the matte effect.

### Preservation

The paint surface becomes dull over time due to weathering. It is therefore necessary to preserve the paint regularly.
This keeps the paint shiny and elastic. Dirt is prevented from adhering to the paint surface and industrial dust is prevented from penetrating the paint.

Provided it is washed and treated with preservative regularly, the brand new finish of your car will be retained for years to come.

▷ Apply the Porsche paint preservative after the car wash and polish it dry to obtain a bright finish or simply add a liquid preservative regularly to the final rinse water and rub down with a leather chamois.

### Polishing

Do not resort to using Porsche polish until it becomes evident that the normal preservatives no longer produce the desired finish.

### Spots and stains

▷ Remove tar stains, grease, oil spots and dead insects as soon as possible with Insect Remover. They can cause discoloration if allowed to remain on the paintwork.

▷ Wash the affected area immediately after treating it.

### Minor paint damage

▷ Have minor paint damage, such as scratches, scores or chips caused by flying stones, repaired immediately by your authorized Porsche dealer before corrosion sets in.

However, if there are already traces of corrosion, they must first be removed carefully and thoroughly. Coat the area with a rust-proofing primer and finish off with a top coat. The paint code and color number are found on the vehicle's paint data plate.


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## Cleaning and preserving engine compartment

The engine compartment and the surface of the engine are treated with a corrosion-inhibitor at the factory.

If degreasing solvents are used to clean the engine compartment or the engine is washed down, the process almost invariably removes the corrosion-inhibiting coating. It is then absolutely necessary to have a durable preservative applied to all surfaces, body seams, joints and assemblies in the engine compartment. This also applies when corrosion-inhibitor parts are replaced.

Effective corrosion-proofing is particularly important during the cold weather season. If your car is driven frequently in areas where salt has been spread on the roads, the whole engine compartment should be cleaned thoroughly after the winter to prevent salt from causing any lasting damage. A full under-body wash should also be performed at the same time.

**⚠ Caution!**

**Risk of damage to the generator.**

▷ Do not point the cleaning jet directly at the generator, or cover the generator.

## Windows

The road dust which settles on the windshield and windows contains particles of tire rubber and oil residue. The interior trim and upholstery release particles, particularly in strong sunlight, which collect on the insides of the windows. These deposits are augmented by impurities in the air which enters the car through the fresh air vents.

▷ Clean all windows regularly, inside and outside, with Porsche window cleaner.
Remember to clean the wiper blades as well and replace them once or twice every year, depending on condition.

▷ If you use a chamois leather for the windows, do not use it for paintwork as it will otherwise pick up a certain amount of preservative or polish and could smear the windows and thus impair vision.

▷ Remove dead insects with the Porsche insect remover.

## Undercoating

The underside of your car is durably protected against chemical and mechanical influences.

As it is not possible to exclude the risk of damage to this protective coating in day to day driving, it is advisable to have the underside of the car inspected at certain intervals - preferably before the start of winter and again in spring - and the undercoating restored as necessary.

Your authorized Porsche dealer is familiar with the bodyseal treatment procedures and has the necessary equipment for applying factory approved materials. We recommend that you entrust them with such work and inspections.

Unlike conventional spray oils, undercoating and rust-proofing compounds based on bitumen or wax do not attack the sound-proofing materials applied at the factory.

**⚠ Warning!**

**Danger of fire and serious personal injuries.**

▷ Do not apply additional undercoating or rust-proofing on or near the exhaust manifold, exhaust pipes, catalytic converters or heat shields. During driving the substance used for undercoating could overheat and ignite.

▷ ▷ ▷



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▷ Before applying fresh underseal, carefully remove deposits or dirt and grease. Once it has dried, the new undercoating compound forms a tough protective coating which provides efficient rust-proofing of the floor panels and components.

▷ Always apply a fresh coating of suitable preservative to unprotected areas after cleaning the underside of the body, the transmission, the engine or carrying out repairs to underbody, engine or transmission components.

Effective rust-proofing is particularly important during the cold weather season. If your car is driven frequently in areas where salt has been spread on the roads, the whole engine compartment should be cleaned thoroughly after the winter to prevent salt from causing any lasting damage. A full under-body wash should also be performed at the same time.

## Door, roof, lid and window seals

▷ Wash dirt (e.g. abrasion, dust, road salts) from all seals regularly using warm soapy water. Do not use any chemical cleaning agents or solvents.

When there is a frost hazard, the outer door seals and the front and rear lid seals can be protected against freezing into place by a suitable care product.

**In order to prevent damage to the anti-friction coating, the inner door seals, the convertible top seals and hardtop seals must not be treated with care products.**

## Headlights, lights, interior and exterior plastic parts

▷ Use **only** clean water and a little dishwashing detergent to clean light lenses, plastic headlight lenses, plastic parts and surfaces.
Do not clean when dry.
Use a soft sponge or a soft, lint-free cloth. Gently wipe the surface without applying too much pressure.
The Porsche inside window cleaner is also suitable for cleaning plastic surfaces. Follow the cleaning instructions on the container.
Never use other chemical cleaners or solvents.

▷ Rinse cleaned surfaces with clear water.

▷ ▷ ▷


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## Light alloy wheels

Also refer to "Car washes".

Pitting may occur if metallic particles which cause contact corrosion (e.g. brass or copper in brake dust) are allowed to remain on the aluminum for too long.

▷ If possible, wash the wheels with a sponge or wash brush about every two weeks. In areas where salt is spread on winter roads or there is a lot of airborne industrial dust, it is best to clean the wheels weekly.
**The Porsche Light Alloy Wheel Cleaner (ph-value 9.5) can be used for this purpose.**
**If the ph-value of the detergent is incorrect, the protective coating on the wheels will be destroyed.**

**Polishes which dissolve oxides, such as those frequently used for other metals, or abrasive tools or agents are unsuitable because they break down the oxide film of the protective coating and will cause discoloration of the wheel.**

▷ Every three months, after cleaning, coat the wheels with a car wax or non-corrosive grease (vaseline).
Using a clean cloth thoroughly rub the grease into the surface.

## Leather

### Characteristics and special features

The natural surface markings of leather, e.g. creases, healed scars, insect sting marks, structural differences and slight variations in shade and grain add to the attractiveness of the natural leather product.

A special mention must be made here of natural leather.
For natural leather, carefully selected hides of the highest quality are used. It is not covered completely with dye on production.
"Nature's signature" is therefore easily recognisable.
This fine material is distinguished by an outstanding seating comfort, special suppleness and a typical patina.

### Leather care and treatment

▷ Clean all types of leather regularly to remove fine dust using a soft, damp, white woollen cloth or a commercially available microfibre cloth.

▷ Remove heavy contamination with Porsche leather cleaner.
Please always follow the instructions for use given on the containers.

**Caustic cleaners and hard cleaning objects must not be used.**

**Perforated leather must under no circumstances get wet on its reverse side.**

Once cleaned, leather (particularly the heavily stressed leather seats) must be treated only with Porsche leather care liquid.

▷ ▷ ▷



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## Fabric, upholstery, carpets and floor-mats

▷ Use only a vacuum cleaner or a medium stiff brush.

▷ Remove stains and spots with Porsche stain remover.

The Porsche range of accessories includes floor-mats to protect the carpets in summer and winter.

**Warning!**

**Risk of an accident.**

▷ Always check the movement of the pedals before driving and make sure that they are not obstructed by a floor mat or any other object.

▷ Secure the floor mat to prevent it from sliding into positions that could interfere with the safe operation of your vehicle - do not lie them loosely in the vehicle.
Your Porsche dealer will be glad to offer you floor mats of the correct size including a securing possibility.

## Alcantara

Do not use a leather care product to clean Alcantara.

For regular care it is sufficient to clean the cover with a soft brush.

### Cleaning when lightly soiled

▷ Wet a soft cloth with water or a neutral soap solution and wipe off the dirt.

### Cleaning when heavily soiled

▷ Wet a soft cloth with lukewarm water or thinned white spirit and dab the dirt from the outside in.

## Safety belts

If it becomes necessary to clean the belts, you can use any mild washing agent.
Allow the belts to dry prior to retracting, but avoid direct sunlight.

▷ Only use suitable cleaners.
If unsuitable cleaners are used or any attempt is made to dye or bleach the belts, the webbing may be weakened and thus constitute a safety risk.


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## Storing your Porsche

If you intend to store your Porsche for a prolonged period, please consult your authorized Porsche dealer. The staff will be glad to advise you on the most suitable and necessary methods.

▷ Clean your vehicle thoroughly inside and outside.
Clean the engine compartment.
The under carriage and chassis components should be free of dirt and salt deposits.

▷ Fill up the fuel tank.

▷ Change the oil and oil filter, and run the engine for several minutes.

▷ Increase the tire pressure to 58 psi (4 bar).
It is not recommended to lift the vehicle, due to the possibility of corrosion on shock absorber piston shafts.
The vehicle should be moved slightly, approximately every four weeks, to prevent flat spot on the tires.

### Climate control

The air conditioning system should be in good working condition and fully charged.

### Windshield/Headlight washer

▷ Check and correct antifreeze/cleaning solution level as necessary.

### Electrical system

▷ Remove the battery from the vehicle and store it in a cool dry place, not on a cement floor.
**When the battery is disconnected, the alarm system is deactivated.**

▷ Recharge the battery every 3 months. If the battery remains in the vehicle with the cables connected, it is necessary to check, remove and recharge the battery every 2-3 weeks.
**Do not fast charge the battery.**

▷ Follow the instructions in the "Battery" chapter.

### Vehicle interior

The interior must be dry, especially in the area of the floor carpets. The use of drying agents (Silica-Gel) is recommended in vehicles with leather interior and in areas with high humidity. The recommended amount is 3 fabric bags of 1.1 lbs. (500 grams) each placed on the floor carpets.

Windows, doors, lids and top must be closed. The air flaps should be opened.

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# Practical Tips, Emergency Service

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## Exercise Extreme Caution when Working on your Vehicle

**Warning!**

**Ignoring the following instructions may cause serious personal injury.**

- The engine compartment of any motor vehicle is a potentially hazardous area. If you are not fully familiar with proper repair procedures, do not attempt the adjustments described on the following pages.
  This caution applies to the entire vehicle.

- Only work on your vehicle outdoors or in a well ventilated area.

- Ensure that there are no open flames in the area of your vehicle at any time when fuel fumes might be present. Be especially cautious of such devices such as hot water heaters which ignite a flame intermittently.

- Before working on any part in the engine compartment, turn the engine off and let it cool down sufficiently. Hot engine compartment components can burn skin on contact.

- Be alert and cautious around engine at all times while the engine is running.
  If work has to be performed with the engine running, always set the parking brake, and make sure the shift lever is in neutral or the selector lever is in position "P" or "N".

- In particular, be very careful to ensure that items of clothing (ties, shirt, sleeves etc.), jewelry, long hair, hand or fingers cannot get caught in the engine-compartment blower, fan, belts or other moving parts.
  The radiator and radiator fans are in the front of the car.
  The fans can start or continue running as a function of temperature, even with the engine switched off.
  Carry out work in these areas only with the engine off and exercise extreme caution.

- Your Porsche is equipped with an electronic ignition system. When the ignition is on, high voltage is present in all wires connected with the ignition system; therefore, exercise extreme caution when working on any part of the engine while the ignition is on or the engine is running.

- Always support your car with safety stands if it is necessary to work under the car. The jack supplied with the car is not adequate for this purpose.

- When working under the car without safety stands but with the wheels on the ground, make sure the car is on level ground, the wheels are blocked, and that the engine cannot be started.
  Remove the ignition key.

- Do not smoke or allow an open flame around the battery or fuel.
  Keep a fire extinguisher in close reach.

- Incomplete or improper servicing may cause problems in the operation of the car. If in doubt about any servicing, have it done by your authorized Porsche dealer.
  Improper maintenance during the warranty period may affect your Porsche warranty coverage.

- Supplies of fluids, e. g. engine oil, brake fluid or coolant, are hazardous to your health.
  Keep these fluids out of children's reach and dispose of them in accordance with the appropriate regulations.

- Some countries require additional tools and special spare parts to be carried.
  Please make enquiries before driving abroad.



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## Tires/Wheels

The original equipment tires and wheel rims on your Porsche comply with all applicable Federal Motor Vehicle Safety Standards.

**For your safety remember the following:**

- Wheel rims and wheel bolts are matched to fit your Porsche.
- If you intend to use other than original equipment wheels, be sure that they conform to Porsche specifications for your model.
  Only tires with the same make and with the same specification code (e.g. "N0", "N1"...) can be mounted.
- The use of wheel rims and wheel bolts that do not meet specifications of the original factory installed equipment will affect the safe operation of your vehicle.
- Before you plan on exchanging wheels, or snow tires already mounted on the wheel rims, consult your authorized Porsche dealer. Your dealer has the technical information necessary to advise you which wheel rims and wheel bolts are compatible with the original factory installations.

**Warning!**

**Risk of loss of control and serious personal injury.**

▷ If while driving, your vehicle experiences a sudden vibration or ride disturbance, and/or you suspect that possible damage to your tires or vehicle has occurred, you should immediately reduce your speed without excessive use of the brakes.

▷ Stop the vehicle as soon as possible, and inspect the tires.
If you cannot determine the cause for the disturbance, have your vehicle towed to the nearest Porsche or tire dealer to have your vehicle or tire(s) inspected.

▷ Continuing to operate the vehicle without correction could result in a loss of control and serious personal injury.

▷ ▷ ▷

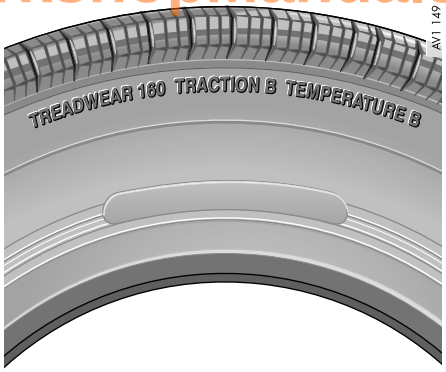


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## Uniform Tire Quality Grading

Quality grades can be found where applicable on the tire sidewall between tread shoulder and maximum section width.




*Example*

All passenger car tires must conform to Federal Safety Requirements in addition to these grades.

### Treadwear

The treadwear grade is a comparative rating based on the wear rate of the tire when tested under controlled conditions on a specific government test course.
For example, a tire graded 150 would wear one and a half (1-1/2) times as well on the government course as a tire graded 100.
The relative performance of tires depends upon the actual conditions of their use, however, and may depart significantly from the norm due to variations in driving habits, service practices and differences in road characteristics and climate.

### Traction AA, A, B, C

The traction grades, from highest to lowest, are AA, A, B, and C and they represent the tire's ability to stop on wet pavement as measured under controlled conditions on specified government test surfaces of asphalt and concrete.
A tire marked C may have poor traction performance.

**Warning!**

The traction grade assigned to this is based on braking (straight-ahead) traction tests and does not include cornering (turned) traction, acceleration, hydroplaning or peak traction characteristics.


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### Temperature A, B, C

The temperature grades are A (the highest), B and C, representing the tire's resistance to the generation of heat and its ability to dissipate heat when tested under controlled conditions on a specified indoor laboratory test wheel.
Sustained high temperatures can cause the material of the tire to degenerate and reduce tire life, and excessive temperature can lead to sudden tire failure.
The grade C corresponds to a level of performance which all passenger car tires must meet under the Federal Motor Vehicle Safety Standard No. 109.
Grades B and A represent higher levels of performance on the laboratory test wheel than the minimum required by law.

**⚠ Warning!**

The temperature grade for this tire is established for a tire that is properly inflated and not overloaded.
Excessive speed, underinflation, or excessive loading, either separately or in combination, can cause heat buildup and possible tire failure.

## Tire pressures

**⚠ Warning!**

**Incorrect tire pressure causes increased tire wear and adversely affects road handling.**

- ▷ Always use an accurate tire pressure gauge when checking inflation pressures.
- ▷ Do not exceed the maximum tire pressure listed on the tire sidewall. (Also refer to "Technical data").
- ▷ Cold tire inflation pressure means: all tires must be cold, ambient temperature maximum 68°F (20°C), when adjusting the inflation pressure.
  Avoid sunlight striking the tires before measuring cold pressures, since the pressures would rise from temperature influence.
- ▷ Valve caps protect the valve from dust and dirt, and thus from leakage.
  Always screw caps tightly down.
  Replace missing caps immediately.
- ▷ For safety reasons, don't use tire inflating bottles.

## Tire traction

**⚠ Warning!**

**When driving on wet or slushy roads, a wedge of water may build up between the tires and the road. This phenomenon is known as "hydroplane" and may cause partial or complete loss of traction, vehicle control or stopping ability.**

- ▷ Reduce speed on wet surface to prevent this.

## Tire life

Tire life depends on various factors, i.e., road surfaces, traffic and weather conditions, driving habits, type of tires and tire care.

- ▷ Inspect your tires for wear and damage before driving off. If you notice uneven or substantial wear, wheels might need alignment or tires should be balanced or replaced.

▷ ▷ ▷



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## Tire wear

The original equipment tires on your Porsche have built-in tire wear indicators. They are molded into the bottom of the tread grooves and will appear as approximately 1/2 in (12 mm) bands when the tire tread depth is down to 1/16 of an in (1.6 mm).

When the indicators appear in two or more adjacent grooves, it is time to replace the tires. We recommend, however, that you do not let the tires wear down to this extent.
Worn tires cannot grip the road surface properly and are even less effective on wet roads.

In the United States, state laws may govern the minimum tread depth permissible. Follow all such laws.

**Warning!**

**Driving on worn tires can result in loss of control of the vehicle and could cause severe personal injuries.**

- Do not drive with worn tires or tires showing cuts or bruises as they may lead to sudden deflation and loss of control which could cause severe personal injury.
- Specialized high performance tires on high performance sports cars exhibit more wear than those on a family sedan, or even a high performance sedan.
  Therefore, it is important to check your tire pressure and condition at least every two weeks.

If you notice that tires are wearing unevenly, consult your Porsche dealer.
Uneven wear may not always be due to improper wheel alignment. It can be the result of individual driving habits such as cornering at high speeds. If the tire pressure is not checked and adjusted regularly, abnormal tire wear can also occur.

## Tire care

- Avoid damaging tires and wheel rims.
- If you must drive over a curb or other obstacle, drive slowly and at an obtuse angle.
- Check tires for uneven wear and damage before driving off.
- Remove imbedded material.
- Replace worn or damaged tires immediately.
- Keep oil, fuel, brake fluid, etc. away from tires.
- Replace missing valve stem caps.
- Keep tires inflated correctly.


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## Tire damage, puncture

▷ Check tires for imbedded material, cuts, punctures, cracks and bulges (side wall) before driving off.

In case of tire damage, where it is uncertain whether there is a break in the ply with all its consequences or tire damage caused by thermal or mechanical overloading due to loss of pressure or any other prior damage, we recommend that the tire be replaced for safety reasons.

If one faulty tire is replaced it should be noted that the difference in tread depth on one axle must not exceed 30 %.
Handling inconsistencies may result.

▷ Perform a visual inspection if necessary.

## Tire replacements

If in doubt, contact your Porsche dealer or Porsche Importer of your country.
Use only tire makes and types tested by Porsche.

**If you do not use a Porsche recommended replacement tire, make sure that you purchase your new tires from a reputable tire dealer and that the dealer complies with all manufacturers warnings for those tires.**

**Only tires with the same make and with the same specification code (e.g. "NO", "N1"...) can be mounted.**

**Before mounting new tires, check with your Porsche dealer about the current release status.**

**Use tires with "ZR" quality standards.** There are currently no standards concerning tire strength at speeds above 150 mph (240 km/h).

Tires should be replaced no less than on one axle at the time.
Only tires of the same make and type must be used. Mixed tires are not permissible.

Initially, new tires do not have their full traction. You should therefore drive at moderate speeds during the first 60 - 120 miles (100 - 200 km).

If new tires are installed only on one axle, a noticeable change in handling occurs due to the different tread depth of the other tires.
This happens especially if only rear tires are replaced. However, this condition disappears as the new tires are broken in.

▷ Please adjust your driving style accordingly.

Installation of new tires should only be done by a qualified tire technician.

## Valves

Rubber valve stems must be replaced every time a tire is replaced.
For steel valves, the installation and replacement instructions must be observed.
Use only genuine Porsche steel valves.

## Parking at the curb

**Warning!**

**Hard impacts against curbs (or traffic islands) are dangerous and may cause hidden tire damage which is not noticeable until later. Such damage can result in accidents at high speeds causing severe personal injury.**
**Depending on the force of impact, the edge of the rim can also be damaged.**

▷ If you are in doubt, have the wheel checked by an expert, particularly if you suspect damage on the inside.

▷ If you must drive over a curb or other obstacle, drive slowly and at an obtuse angle. Exercise care when parking along curbs.

▷ ▷ ▷



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## Wheel alignment, wheel balancing

As a precaution, have wheels with summer tires balanced in the spring, and those with mud and snow tires before winter.
Unbalanced wheels may affect car handling and tire life.
Only the specified weights may be used for wheel balancing.
Self-adhesive weights must not come into contact with cleaning agents, since they could drop off.
A wheel should always be balanced after a tire repair.
Uneven tread wear indicates wheel imbalance. In this event, the vehicle should be checked at an authorized Porsche dealer.

**Warning!**

**If, during a journey, uneven running or vibrations occur that could be caused by damage to tires or the car, the speed must be reduced immediately, but without braking sharply.**
**If you continue your trip without having the cause of the fault remedied, you might lose control of your vehicle which could cause severe personal injury.**

▷ Stop the vehicle and check the tires.

▷ If no cause for the fault can be found, drive carefully to the nearest authorized Porsche dealer.

## Removing and storing tires

▷ After changing, adjust tire pressure and torque wheel bolts diagonally to 94 ftlb (130 Nm).
See "Changing wheels".

**Tires must always remain on the same side of the vehicle.**
When wheels are removed, the direction of rotation and position of each wheel should be marked.

**Example**

FR (front right), FL, RR and RL.

Wheels must always be fitted in accordance with their marking.

The preception that tire durability and performance are immune to the effects of storage and age is unfounded.
Chemical additives, which make the rubber elastic, lose their effectiveness in the course of time and the rubber becomes brittle and cracks.

**Therefore, the tires, especially the spare tire, should be inspected from time to time.**

**Note**

Under no circumstances should tires older than 6 years be used on your Porsche.

The age of the tire can be obtained from the "DOT" code number. If, for example, the last four numbers read 1202, then the tire was produced in the 12th week of 2002.

**Store tires in a cool and dry place.**

## Snow tires

For a better grip on snow and ice, use radial M+S tires with studs.
Check with your local Motor Vehicle Bureau for possible restrictions.

**Warning!**

**Risk of loss of control and damage to the vehicle as well as severe personal injury.**
**The standard tires profile and rubber mixture are optimized for wet and dry driving conditions, and may not prove favorable for snow conditions.**

▷ Therefore install M+S tires before driving in such conditions.


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**Before mounting snow tires, consult with your Porsche dealer. He has the technical information necessary to advise you on wheel and tire compatibility.**

Snow tires should have the same load capacity as original equipment tires and should be mounted on all four wheels.
Snow tires with studs should be run at moderate speeds when new in order to give the studs time to settle.

**⚠ Warning!**

**Tires with badly worn treads and studs are very dangerous and could cause accidents resulting in severe personal injuries.**

▷ Make sure they are replaced immediately.

Do not drive a vehicle equipped with snow tires at prolonged high speed.
Snow tires do not have the same degree of traction on dry, wet or snowfree roads as a normal tire.
Furthermore, snow tires wear rapidly under these conditions.

Snow tires do not fulfill their purpose if the tread depth is less than 5/32 in (4 mm).

**Comply with all state and local laws governing snow tire and tread depth requirements.**

## Snow chains

**⚠ Caution!**

**Risk of damage to body, axle or brake components.**

▷ Fit snow chains only to the rear wheels, and only with the tire/rim combination listed in the Technical Data.
To ensure adequate clearance between chain and body, Porsche recommends only the use of fine-link chains such as those approved by Porsche.

▷ Follow instructions issued by the supplier of the chains.

Different states and countries have varying statutory requirements regarding maximum speed. Check with local authorities for possible restrictions.

▷ Remove chains as soon as the roads are free of ice and snow.

## Tire designations

Due to new speed and load ratings for radial tires, new designations have come into force for snow tires for your Porsche.

The designation to be used for ZR tires is e.g., 255/40 ZR 17 (Z = code letter for radial tires for speeds above 150 mph (240 km/h).



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## Jack, Tools

**Warning!**

**The jack must be used only to raise the car for wheel changing.**
**The jack must never be used as a support to work underneath the vehicle. If the jack is accidentally dislodged, you or bystanders could suffer severe personal injury.**

- ▷ Never jack up other vehicles or other loads with the jack.
- ▷ Always place the car on stable supports if you have to work under it.
  When working under the vehicle, always use safety stands specifically designed for this purpose.

See chapter “Changing Wheels“.




The jack and tools are located on the reverse side of the spare wheel.

The foam insert of the spare wheel can be used as a knee rest when changing wheels.

## Lifting the Vehicle with a Lifting Platform or Garage Lift

The car must be raised **only** at the illustrated jacking points. See chapter "Changing Wheels“.
Lifting at any other place may damage the vehicle or may result in personal injury.

**Caution!**

**Risk of serious damage to the engine or the vehicle.**

- ▷ Never lift the vehicle by the engine, transmission or axles.
- ▷ Don’t damage any sensitive components in the vicinity of the jacking points.

### Platform lift

Before the car is driven on to a lifting platform, it must be ensured that there is enough space between the lifting platform and the vehicle.

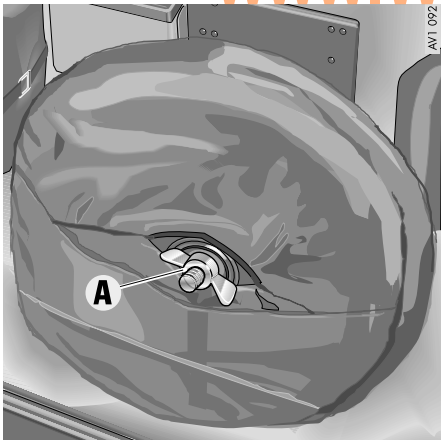
### Garage lift

A garage lift must be used **only** at the illustrated jacking points.
Jacking at any other place may damage the vehicle or may result in personal injury.



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## Spare Wheel

The spare wheel is secured in the front luggage compartment with a wing nut **A**.

There is a plastic sheet in the tool pocket to store the damaged wheel.

**Important note**

Follow all warnings and instructions found in this manual for changing a wheel.

▷ Check the pressure of the spare wheel regularly: **4.2 bar (60 psi)**.

**⚠ Warning!**

**Risk of an accident.**
**For safety reasons, the following instructions for the use of the spare wheel must be followed exactly.**

▷ Refer to the chapter “Spacer rings” before fitting the spare wheel.
If incorrectly fitted, the spare wheel may come off whilst driving.

▷ Check the tire filling pressure immediately after fitting the spare wheel.

▷ The spare wheel must be used only over short distances in cases of emergency.
After repair or replacement, re-mount the road wheel and tire as soon as possible.

▷ Avoid rapid acceleration, hard braking and high cornering speeds to prevent loss of vehicle control.
The maximum permitted speed is 50 mph/80 km/h and must not be exceeded because of altered driving characteristics and for reasons of wear.
The tread depth of the spare wheel is subject to the same laws as the original tires.

▷ The vehicle must be fitted with only **one** spare wheel.

▷ Do not use a spare wheel from other vehicles on your car.
Likewise, the spare wheel from your vehicle must not be used on other cars.

▷ To avoid damage, do not use automatic car washes when the spare wheel is installed.

## Spacer Rings

**⚠ Warning!**

**Risk of accident. If incorrectly fitted, the spare wheel may come off while driving which could result in serious personal injury or death.**

▷ **5 mm spacer rings on front and rear axles:**
If 5 mm spacer rings are fitted to the wheel hubs, **do not remove** these before fitting the spare wheel.

▷ **17 mm spacer rings on rear axle:**
If 17 mm spacer rings are fitted to the wheel hubs, the appropriate spacer ring must be **removed** before the spare wheel is fitted.
To mount the spare wheel, use the wheel bolts which were used to fasten the spacer ring.



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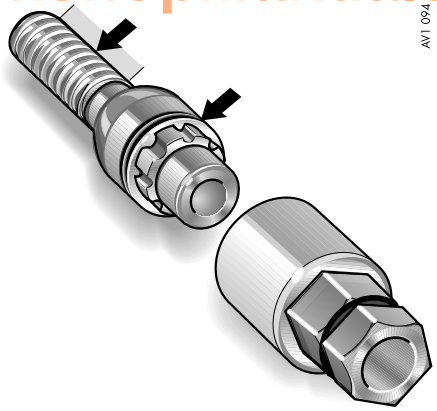
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## Wheel Bolts

**Warning!**

**Risk of wheel bolt breakage and wheel separation, resulting in severe personal injury or death.**

▷ Follow all instructions concerning wheel bolts.




▷ Always clean the wheel bolts before fitting.

▷ Apply a thin coat of **Optimoly TA** (aluminium paste) on the thread and between the bolt head and movable spherical cap ring (arrows). **The bearing surface of the spherical cap facing the wheel must not be greased.**

▷ Replace damaged wheel bolts.
Only use the Original Porsche wheel bolts specially designed for this vehicle type.

**Note**

On vehicles with 17 mm spacer rings on the rear axle, the wheels are secured with nuts.

**Tightening torque**

Tightening torque of wheel bolts and wheel nuts: **130 Nm**

## Wheel Securing Bolts

The wrench socket for the wheel securing bolts is in the tool pocket.

To loosen or tighten the wheel bolt with anti-theft protection, a wrench socket with the appropriate coding must be used between the wheel bolt and the wheel-bolt spanner.

▷ When positioning the wrench socket, ensure that it engages fully in the teeth of the wheel bolt.

If the wheels have to be removed at the workshop, please do not forget to hand over the wrench socket for the wheel securing bolts along with the car key.



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## Changing Wheels

**Warning!**

**Failure to follow these instructions may result in serious personal injuries to you or to bystanders.**

**Before changing the wheel**

- If you have a flat tire, move a safe distance off the road. Turn the emergency flasher on and use other warning devices to alert other motorists.
- Do not park your vehicle where it may contact dry grass, brush or other flammable materials. The hot parts of the exhaust system could set such materials on fire, thereby causing both property damage and severe or fatal physical injury.
- Passengers must not remain in the vehicle when it is jacked up.
- Before you change a wheel, be sure the ground is level and firm. If necessary, use a board under the jack to ensure that the jack does not sink into the ground.
- Set the parking brake and block the wheels opposite the flat tire on the other side of the vehicle.

**While operating the jack**

- The jack is only to be used for changing a wheel. Do not use it as a support to work under the car.
- The car must be jacked up only at the illustrated jacking points.
  Lifting at any other place may damage the vehicle or may result in personal injury.
  Never jack the car up by the body or the bumpers.
- For safety reasons do not use tire inflating bottles.
  Do not use commercially available sealant bottles.

**Sequence of operation**

**Warning!**

**The jack must be used only to raise the car for wheel changing.**
**The jack must never be used as a support to work underneath the vehicle. If the jack is accidentally dislodged, you or bystanders could suffer severe personal injury.**

- Never jack up other vehicles or other loads with the jack.
- Always place the car on stable supports if you have to work under it.
  When working under the vehicle, always use safety stands specifically designed for this purpose.

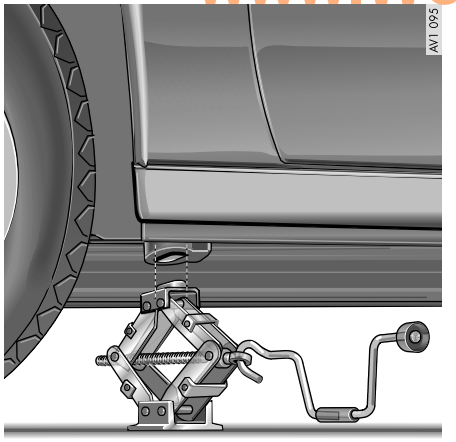
Please use a suitable knee rest, e.g. the foam insert of the spare wheel, to protect your clothing against soiling.

▷ ▷ ▷

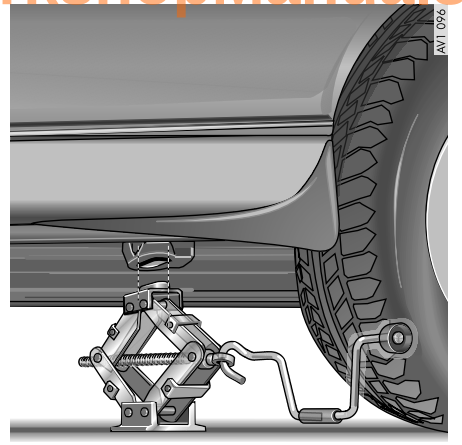


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*Jacking point for front wheel change*




*Jacking point for rear wheel change*




*Screwing in assembly aid*

1. Slightly loosen the wheel bolts of the wheel to be changed.

2. Set up jack only at the points provided.
   The jack foot must be in contact over its whole area.
   Use a suitable support if necessary.

3. Hold jack still and wind it up until its head enters the jacking point on the car.
   Only jack car up until the wheel to be changed is completely off the ground.

4. Remove top wheel bolt and screw in assembly aid from the tool kit.
   Remove the remaining wheel bolts.

5. Change wheel.

6. Please note chapter "Wheel bolts".
   Insert four wheel bolts and tighten by hand.
   Remove assembly aid, screw in remaining bolt.
   Initially tighten screws in diagonally opposite sequence so that the wheel is centered.

Refer to "Spacer Rings" and "Spare Wheel" if necessary.

7. Lower car and remove jack.

8. Tighten wheel bolts in diagonally opposite sequence.

**Important note**

Immediately after changing a wheel, adjust the tire filling pressure (refer to Page 5) and use a torque wrench to check the prescribed tightening torque of the wheel bolts (130 Nm).



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## Electrical System

In order to avoid damage and faults in electrical or electronic systems, electrical accessories should be installed at your authorized Porsche dealer.

▷ Only use accessories authorized by Porsche.

**Warning!**

**Risk of short circuit and fire.**
**Replacing fuses or relays with the engine running or the ignition on could cause electrical shock.**

▷ Disconnected the battery during all work on the electrical system. See chapter "Battery".

### Relays

Defective **relays** should be changed only by an authorized workshop.

### Radio code

The theft-protection code of the radio must be entered again if the battery was disconnected.

### Alarm system, central locking

The status of the central locking and alarm system is not changed by disconnecting the battery.
When the battery is disconnected, the alarm system ceases to function.

### Overload protection

If the central locking system is operated more than ten times within a minute, further operation is blocked for 30 seconds.

### Load switch-off after two hours or five days

If the ignition key is removed, loads which are switched on or in standby (e.g. power windows, luggage compartment lighting, interior light, radio) are automatically switched off after approximately **2 hours**.

If the vehicle is not started or unlocked with the remote control within **five days**, the remote control standby function is switched off (to prevent discharging of the car battery).

1. In this case, unlock the driver's door with the key at the door lock.
   Leave the door closed in order to prevent the alarm system from being triggered.

2. Press button **1** on the remote control.

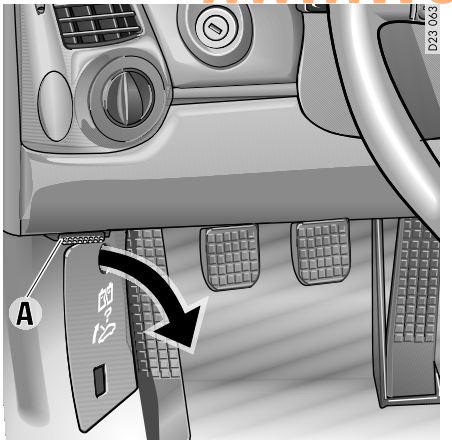
The remote control is now activated again.

▷ ▷ ▷



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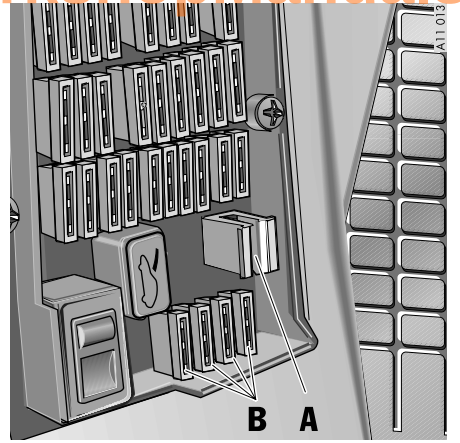



**A** - *Diagnostic socket*

## Replacing fuses

In order to prevent damage to cables and consumers in the electrical system due to short circuits and overloads, the individual circuits are protected by fuses.

The fuse box is at lower left in the driver's footwell and is protected with a plastic cover.




**A** - *Plastic gripper*
**B** - *Spare fuses*

1. Before replacing a fuse, switch off all electrical consumers and remove the ignition key.

2. To open, pull the cover off at the finger hole (arrow).
   The **fuse plan** and **instructions for emergency unlocking of the luggage compartment lids** can be found on the inside of the cover.

3. To check or replace a fuse, remove it from the spring clip using the plastic gripper **A**.
   A blown fuse indicates an overload in the circuit and can be identified by the melted metal strip.

4. Replace only with fuses of the same rating.
   Spare fuses **B** are in the lowest section of the fuse box.

### Important note

▷ If a fuse blows repeatedly, please immediately consult an authorized Porsche dealer, so that the short circuit can be located and corrected.

▷ Never try to "repair" fuses: you may cause serious damage to other parts of the electrical system.



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## Emergency unlocking of the luggage compartment lids

If the battery is discharged, the lids can be opened only with the aid of a donor battery.

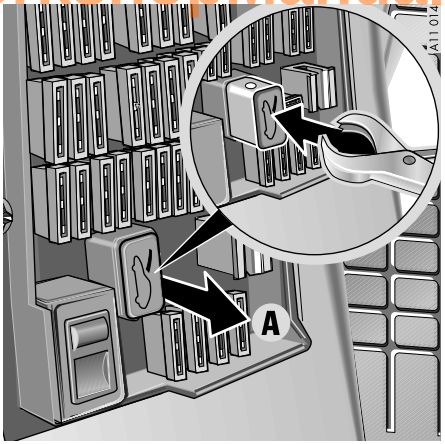
### Unlocking lids

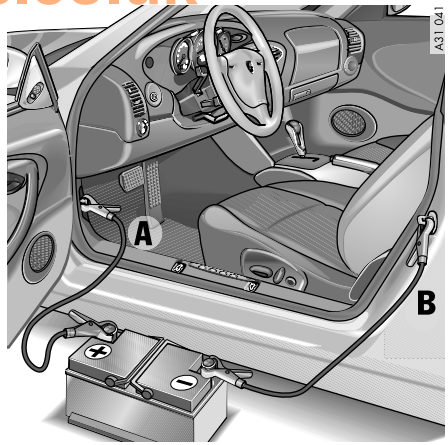
1. Use the key to unlock the vehicle at the door lock.
   Leave the key in the door lock.

2. Remove plastic cover over the fuse box.

3. Pull out positive terminal **A** in the fuse box.

4. Use a jumper cable to connect the positive terminal of the donor battery with positive terminal **A** in the fuse box.




**Note**

If the vehicle was locked, the alarm horn will sound when the negative cable is connected.

5. Use the second jumper cable to connect the negative terminal of the donor battery with latch striker **B**.

6. Switch the alarm system off by locking and unlocking at the door lock.

7. Unlock the luggage compartment lid with the switch.

8. Disconnect the negative cable first, then the positive cable.

9. Push positive terminal **A** into the fuse box and push on the plastic fuse box cover.

**Note**

The engine cannot be started with this method. Please observe the chapter “Emergency Starting with Jumper Cables” for this purpose.



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## Battery

**Warning!**

**Risk of short circuit and fire.**

- Observe all warning notes on the battery.
- Disconnect the battery during all work on the electrical system.
- Do not lay tools or other metal objects on the battery as they could cause a short circuit across the battery terminal.

**Hydrogen gas generated by the battery could cause an explosion, resulting in severe personal injuries.**

- Do not expose the battery to an open flame, electrical spark or a lit cigarette.

**Risk of severe personal injury and damage to the fabric, metal or paint.**

- Wear eye protection.
- Do not allow battery acid to come in contact with your skin, eyes, fabric or painted surfaces.
- If you get electrolyte, which is an acid, in your eyes or on your skin, immediately rinse with cold water for several minutes and call a doctor.
- Spilled electrolyte must be rinsed off at once with a solution of baking soda and water to neutralize the acid.

**Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm.**

- Always protect your skin by washing thoroughly with soap and water.

### Charge state

A well charged battery will not only prevent starting problems but will also last longer.

**In order to avoid discharging the battery unintentionally:**

- Curtail unnecessary power consumption, particularly in city traffic or when travelling short distances only.
- Always remove the ignition key when leaving the car.
- Avoid using the Porsche Communication Management system when the engine is not running.



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## Battery care

▷ Ensure that battery is securely mounted.

▷ Keep terminals and connections clean and properly tightened.
Corrosion can be prevented by coating the terminals and connections with petroleum jelly or silicone spray.

▷ Ensure that vent caps are securely tightened to prevent spillage.

## Checking the electrolyte fluid level

Generally, the electrolyte level must be checked more often in summer than in the winter, and more often when driving long distances.

▷ When adding water, use only clean vessels.
In no case may alcohol (e.g. window cleaner residues) be permitted to enter the battery.

▷ Unscrew and open the filler vent caps of each cell.

With the car horizontal, the fluid level should meet the indicator mark in each cell.

▷ If necessary, top up with **distilled water**.
**Do not use acid.**
Only fill up to the mark, otherwise the electrolyte will overflow when the battery is being charged and cause damage.

## Battery charging

Automotive batteries loose their efficiency when not in use.
The charge available in your battery can be measured with a battery hydrometer.
We recommend that the battery voltage be tested by your Porsche dealer who has the appropriate equipment.

If the car is not driven for prolonged periods, the battery must be charged at least every 6 weeks.
A discharged battery allows rapid formation of sulfates, leading to premature deterioration of the plates.

▷ ▷ ▷



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**Warning!**

**Hydrogen gas generated by the battery could cause an explosion, resulting in severe personal injuries.**

- ▷ Charge battery in a well ventilated area.
- ▷ Never charge a frozen battery. It may explode because of gas trapped in the ice. Allow a frozen battery to thaw out first.
- ▷ If you get electrolyte, which is an acid, in your eyes or on your skin, immediately rinse with cold water for several minutes and call a doctor.

### Slow battery charging

1. Pay attention to all warnings and follow instructions that come with your battery charger.
2. When charging, ensure adequate ventilation.
3. Remove battery (see "Removing battery").
4. All vent caps should be open.
   The fluid level should meet the indicator mark in each cell.
5. Ensure that charger is switched off – danger of short circuit!
6. Connect charger cables.
   **Charger cables must be connected POSITIVE (+) to POSITIVE (+) and NEGATIVE (–) to NEGATIVE (–).**
7. Switch on charger.
   Normally, a battery should be charged at no more than 10 percent of its rated capacity. Rated capacity of the battery in your vehicle is listed on the battery housing.
8. After charging, turn off charger and disconnect charger cables.
9. Tighten the vent caps and reinstall battery (see "Installing battery").

### Winter operation

During the winter months, battery capacity tends to decrease as temperatures drop.
Additionally, more power is consumed while starting, and the headlights, heater, rear window defogger, etc., are used more frequently.

- ▷ Let your Porsche dealer test the battery's capacity before winter sets in.

### Replacing battery

The service life of the battery is subject to normal wear; it depends graetly on care, climatic conditions, and driving conditions (distances, loads).

- ▷ Only use an original Porsche battery, with the correct part number, as a replacement.
- ▷ Please observe the disposal instructions for batteries.



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## Removing the battery

The requisite tool is in the tool kit.

The battery is located in the front luggage compartment under a black plastic lid.

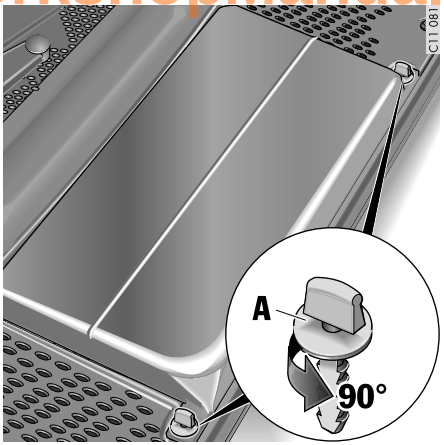
**Warning!**

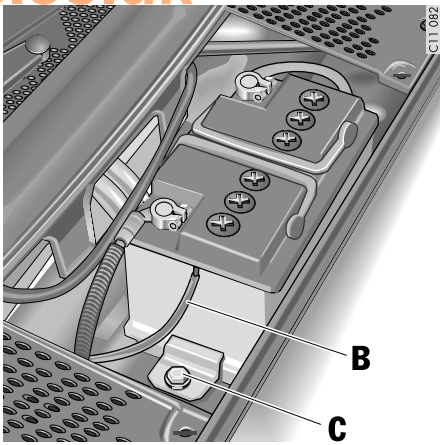
**Risk of damage to alternator and electronic control units.**

- ▷ Do not disconnect the battery while the engine is running.
  This also applies to cars equipped with a battery main switch.
- ▷ Never drive the car with a disconnected battery.

**Risk of caustic burns from escaping acid.**

- ▷ Keep vent caps on to avoid spillage.
- ▷ Do not tilt the battery when removing and installing it.




1. Switch off engine and all electrical loads.
2. Open turn-locks **A**.
   Remove plastic lid.
3. Pull off central vent hose **B**.
4. Important: disconnect the negative (–) ground wire first, and then the positive (+) cable – danger of short circuit!
5. Unscrew fastening screw **C**.
6. Remove battery.

## Installing the battery

1. Put battery in.
2. Screw in fastening screw **C**.
3. Important: connect the positive (+) cable first, and then the negative (–) ground wire – danger of short circuit!
4. Push on central vent hose **B**.
5. Fit plastic lid. Lock turn-locks **A**.
6. Enter the radio code again.



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## Emergency Starting with Jumper Cables

See the chapter "Battery" and "Emergency unlocking of the luggage compartment lids".

If the battery is discharged, e.g. in winter or after the car has been parked for a long time, the battery of another car can be used for starting with the help of jumper cables.
Make sure the voltage of both batteries is the same.
The capacity (Ampere hours, Ah) of the booster battery must not be substantially less than that of the discharged battery.
The discharged battery must be correctly connected to the vehicle's electrical system.

**Note**

- ▷ Do not try to start the car by pushing or towing. Damage to the catalytic converters and other components of the car may result.

**⚠ Warning!**

**Risk of damage and serious personal injury due to short circuit.**

- ▷ Use only jumper cables of adequate diameter cross-section and fitted with completely insulated alligator clips.
- ▷ Follow all warnings and instructions of the jumper cable manufacturer.
- ▷ When connecting jumper cables, make sure that they cannot get caught in any moving parts in the engine compartment.
  The jumper cables must be long enough so that neither vehicles nor cables touch another.
- ▷ The vehicles must not be in contact, otherwise current might flow as soon as the positive terminals are connected.
- ▷ The cable clamps must not be allowed to contact each other when one end of the jumper cables are connected to a battery.
- ▷ Ensure that tools or conductive jewellery (rings, chains, watch straps) do not come into contact with live parts of the vehicle.
- ▷ Improper hook-up of jumper cables can ruin the alternator.

**Danger of caustic burns.**

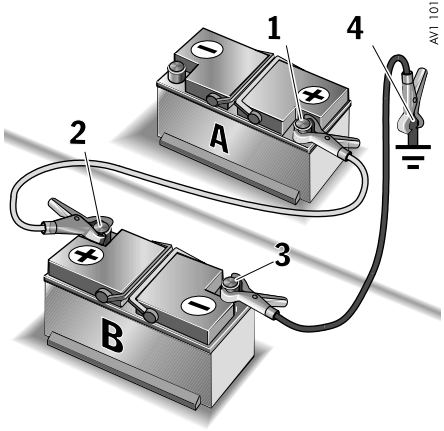
- ▷ Do not lean over the battery.

**Danger of gas explosion.**

- ▷ Improper use of booster battery to start a vehicle may cause an explosion, resulting in severe personal injuries.
- ▷ Keep sources of ignition away from the battery, e.g. open flame, burning cigarettes or sparking due to cable contact or welding work.
- ▷ A discharged battery can freeze even at 14°F (–10°C).
  Before connecting jumper cables, a frozen battery must be thawed out.


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**A** - *Booster battery*
**B** - *Discharged battery*

**Connect jumper cables in the following sequence:**

1. Check electrolyte level of each cell. If necessary, fill with distilled water to just above plates.

2. On a vehicle with a discharged battery: turn off all consumers and accessories, move the gear shift lever into the neutral position and set the parking brake.

3. Attach the **positive cable** first to the positive terminal **1** of the booster battery **A**, then to the positive terminal **2** of the discharged battery **B**.

4. Connect the **negative cable** first to the negative terminal **3** of the discharged battery **B**,
   then to a suitable earthing point **4** on the body of the vehicle with the booster battery.
   This earthing point must lie as far as possible from the battery.

5. Run the engine of the booster car at a higher speed.

6. Start the engine.
   An attempted start using jumper cables should not last more than 15 seconds. Then allow a waiting period of at least one minute.

7. With the engine running, remove both jumper cables in the reverse order.



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## Lights, Replacing Bulbs

**Warning!**

**Risk of short circuit.**

- Always switch off the relevant consumer when changing bulbs.

**Risk of injury. The Litronic headlights are under high voltage when installed.**

- Be careful during all work in the area of the Litronic headlights.

**Risk of damage. Bulbs of a higher wattage can damage the lamp housing.**

- Only the bulbs shown in the chart may be used.

---

- New bulbs must be clean and free from grease. **Therefore, never touch bulbs with your bare hands.**
  Use a cloth or soft paper while replacing bulbs.
- For reasons of traffic safety, we recommend that you always carry spare bulbs so that you can have a correctly illuminated car at all times.
  In certain countries, the carrying of spare bulbs is mandatory.

**Caution!**

**Risk of damage to headlights due to excessive temperatures and abrasion.**

- Attach no coverings (e.g. films, "stone guards") in the area of the headlights.
- Use soapy water only to clean light lenses and plastic headlight lenses.
  In no case may chemical cleaners or other volatile cleaning fluids be used.
- To prevent scratches, do not rub with a dry or merely moist cloth, tissue or insect sponges.

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**Note**

The headlights may mist up, depending on the ambient temperature and humidity.

- To prevent the headlight from misting, do not cover the gap (e.g. "stone guards" or films) between headlight and body.



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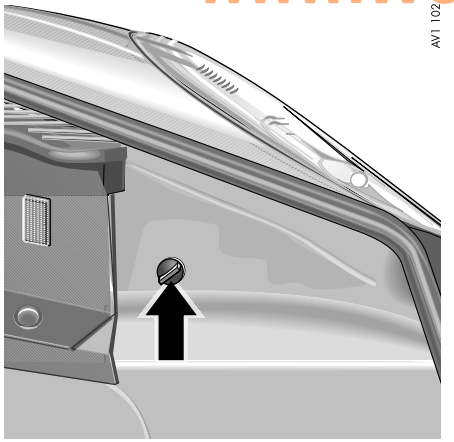
## Bulb Chart

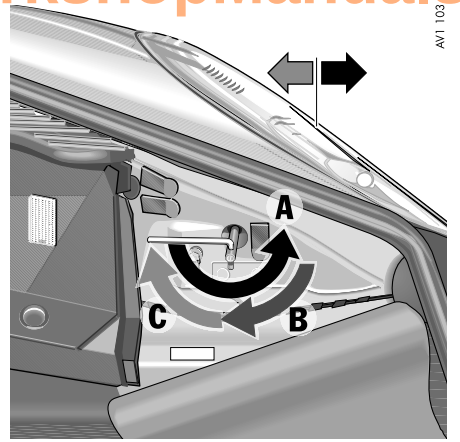
| | Socket | Type, rating |
|---|---|---|
| High beam, low beam<br>Litronic low beam | PX 26 D<br>Philips, D 2 S | H7, 55 W |
| Fog lights | PX 26 D | H7, 55 W |
| Rear fog light,<br>Reversing light, brake light | BA 15 S | P 21 W |
| Front turn signal light | BA 15 S | MSCD 40 |
| Rear turn signal light | BAU 15 S | PY 21 W |
| Tail light | BA 15 S | R 5 W |
| Parking light front<br>Side marker light front<br>Interior light<br>Door guard/kerb light | W 2.1 x 9.5 D | W 5 W |
| Parking light front (Litronic) | | H 6 W |
| Raised brake light<br>Side marker light rear | W 2.1 x 9.5 D | W 3 W |
| License plate light | SV 8.5 | C 5 W |
| Luggage compartment light | SV 8.5 | K 10 W |



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*Litronic headlights*

## Headlights

### Removal

1. Detach side carpeting.
   Therefore unscrew plastic nut (arrow).

2. Remove rubber plugs from the unlocking opening.
   Place socket wrench from tool kit on the unlocking spindle.
   The tongue of the wrench should point horizontally to the rear.

3. Turn wrench approximately 180° to the front **A**.
   The headlight is now unlocked and can be pulled forward out of the fender.

   On Litronic headlights, disconnect the electrical plug connection.
   To do this, press the unlocking tab (arrow) and pull the plug off.

4. Turn wrench back that it points vertically down **B**.



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## Installing

1. Insert headlight housing into the guide rails.

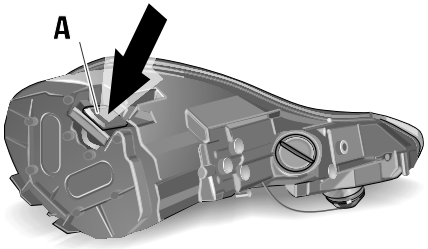
2. On Litronic headlights, connect the electrical plug connection.
   Push headlight fully into the fender.

3. Push headlight to the rear and at the same time turn the socket wrench until it points horizontally to the rear **C**.
   The headlight locking device must perceptibly and audibly engage.

4. Check headlight for a firm seating, e.g. by pulling it in the area of the direction indicator light.

5. Insert rubber plugs into the unlocking opening and secure carpeting.
   Check the function of all lights.

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**A** - *Unlocking the cover*

## Low beam, high beam and parking light

### Opening the lid of the headlight housing

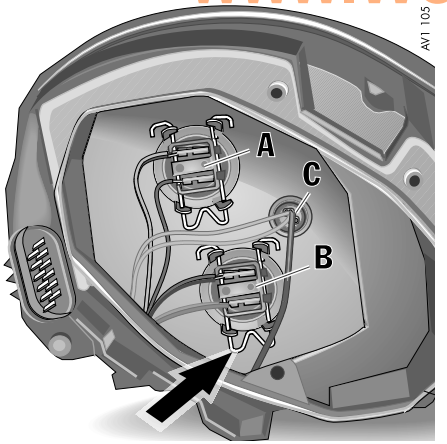
▷ Press release tab **A** and remove lid.

▷ ▷ ▷



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**A** - *Low beam*
**B** - *High beam*
**C** - *Parking light*

**Parking light**

1. Pull parking light holder out of the headlight reflector.

2. Pull bulb out of the holder and replace (bayonet lock on Litronic headlights).

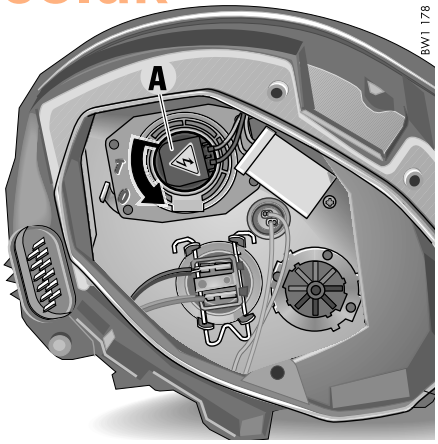
3. Press holder into the reflector.

**Bulb change**
**– high beam (on all headlights)**
**– low beam (on headlights without Litronic)**

1. Pull off plug of defective bulb.

2. Press fastening loop downwards (arrow) and swivel to the side.
   Replace defective bulb.
   Make sure that new bulb is seated correctly.

3. Reassemble in the reverse order.



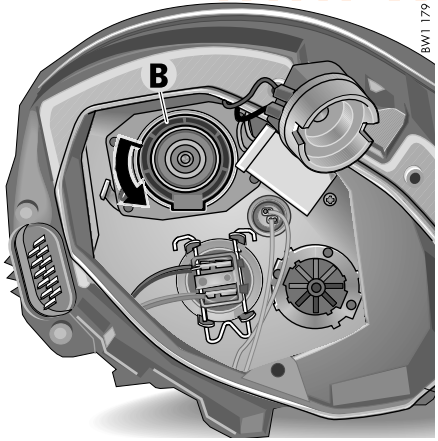

**A** - *Dipped beam*

**Bulb change – dipped beam (on Litronic headlights)**

1. Turn plug counter-clockwise (bayonet lock) and pull it off.


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2. Turn clamping ring **B** counter-clockwise (bayonet lock) and pull it off.

3. Replace defective bulb.
   When doing so, ensure bulb is seated properly.

4. Reassemble in reverse order.

**Closing the lid of the headlight housing**

▷ Insert retaining lugs of lid into the headlight housing and close lid until it perceptibly engages.

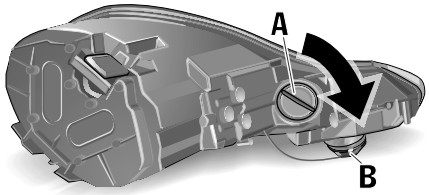
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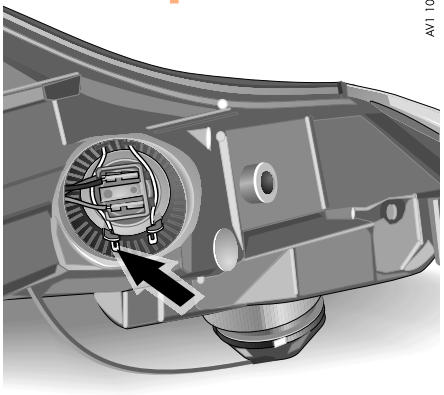
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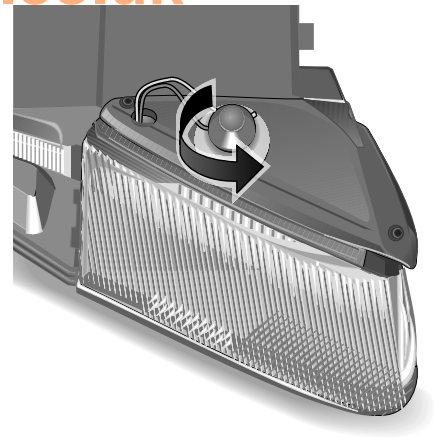
AV1 106




AV1 107



AV1 108



**A** - *Fog light*
**B** - *Turn signal light*

## Fog light

1. Turn closure lid **A** in the headlight housing clockwise (arrow) and remove.

*Fog light*

2. Pull off plug.

3. Press fixing loop downwards (arrow) and swivel inwards.
   Replace defective bulb.
   Make sure that new bulb is seated correctly.

4. Reassemble in the reverse order.

*Turn signal light*

## Turn signal light

1. Turn bulb holder **B** counterclockwise and remove it from the headlight housing.

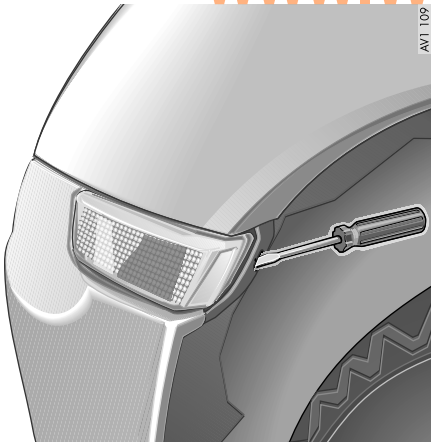
2. Replace bulb (bayonet mount).

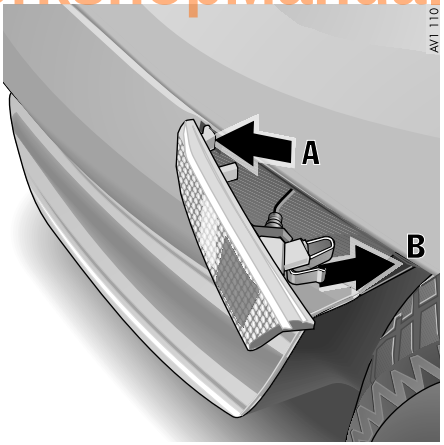
3. Insert lamp holder and turn it clockwise.



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## Side Marker Light

1. Remove closure cap in the wheelhouse liner with the screwdriver.

2. Insert screwdriver into the opening in the wheelhouse liner at right angles to the side marker light housing.
   By pressing with the screwdriver, disengage the securing spring of the side marker housing.

3. Remove side marker light and undo bulb holder (bayonet mount).

4. Remove bulb from the holder and replace. Insert holder.

5. Insert the side marker tabs (arrow **A**) into the fender at the front.
   Engage securing spring (arrow **B**) in the fender.

6. Press closure cap into the wheelhouse liner. Check operation of the light.

## Door Guard / Curb Light

1. With a screwdriver (arrow), carefully push out the light.

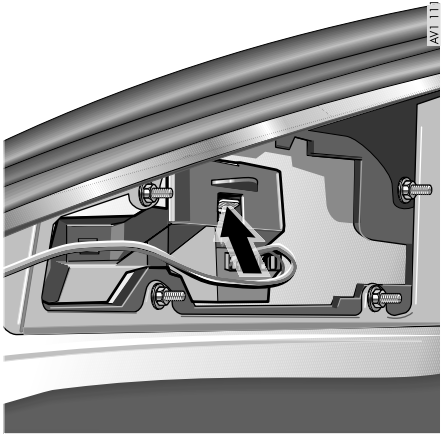
2. Pull bulb holder out of light housing. Remove defective bulb and replace.

3. Install bulb holder and insert light.



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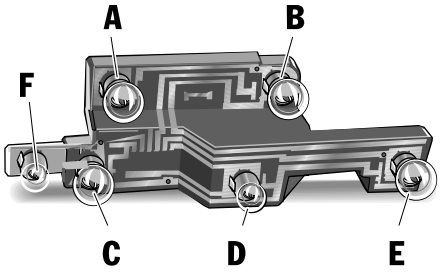

*Tail light left*

## Tail Light

**Removing the bulb holder:**

1. Remove carpeting covering the tail light. Unscrew the securing nuts to do this.

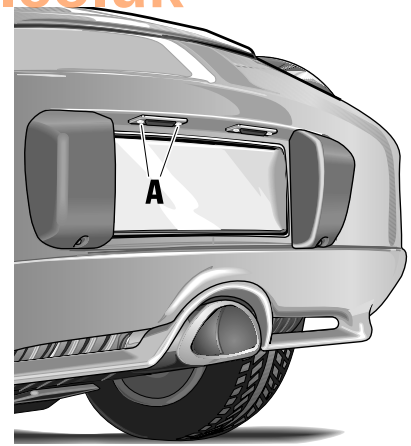
2. Press the mounting of the bulb holder upwards (arrow) and remove bulb holder.




**A** - *Turn signal light*
**B** - *Reversing light*
**C** - *Rear fog light*
**D** - *Tail light*
**E** - *Brake light*
**F** - *Side marker light*

3. Replace defective bulb (bayonet mount).

4. Reassemble in reverse order. Check operation of the light.




## License Plate Lights

1. Undo both screws **A** and remove light.

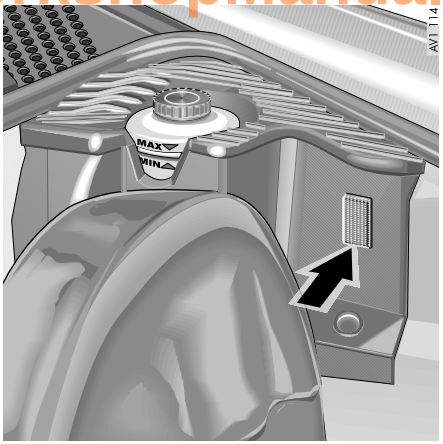
2. Push rubber covering back, remove defective bulb from between the contact springs and replace.

3. Reassemble in reverse order. Check operation of the light.



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## Luggage Compartment Lights, Footwell Lights

1. With a screwdriver (arrow), carefully press light out of the cutout in the lining.

2. Remove defective bulb from between the contact springs and replace.

3. Insert the light into the cutout first from one side then from the other. Check operation.

## Interior Light

1. With a screwdriver, carefully press light out of the cutout in the lining.

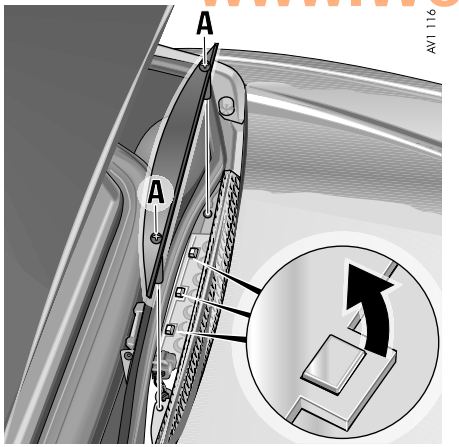
2. Undo bulb holder (bayonet mount). Remove bulb and replace.

3. Reassemble in reverse order. Check operation of the light.



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## Raised Brake Light

1. Open convertible top until the convertible-top compartment lid is fully open.
   Pull out ignition key.

2. Unscrew securing screws **A** and remove black plastic cover.

3. Disengage all six securing tabs (arrow) of the bulb holder and remove bulb holder.

4. Remove defective bulb and replace.

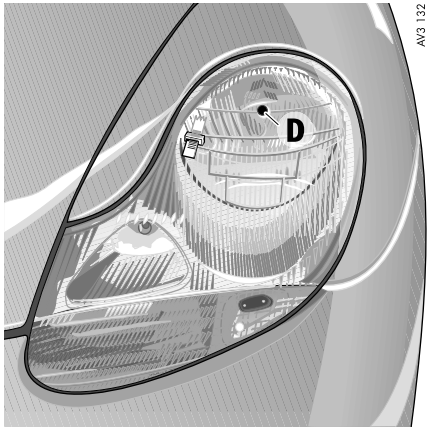
5. Insert bulb holder and engage all six securing tabs.
   Put on and screw down the black plastic cover.

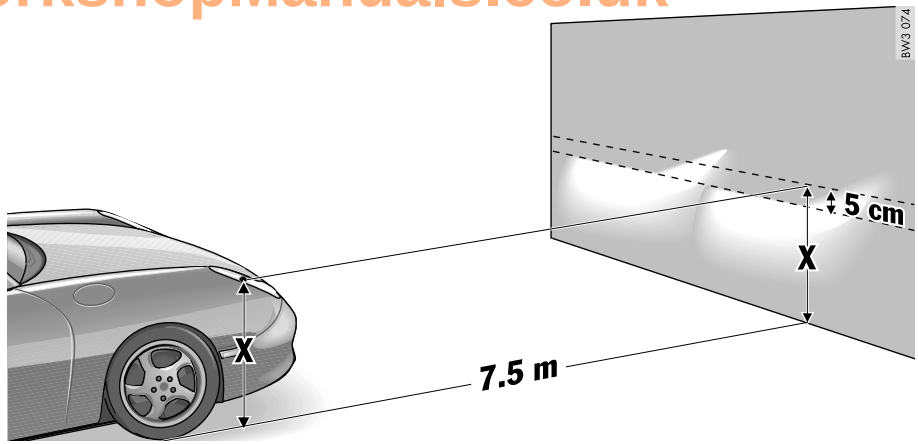
6. Close convertible top and check operation of the light.



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## Adjusting Headlights

**See caution on "Replacing Bulbs".**

### Adjustment

The adjustment is made with the vehicle ready to drive and the fuel tank completely filled.

The driver's seat must be loaded by a person or a 165 lbs./75 kg weight and the tire pressures must meet the prescribed values.
After being loaded, the car must be rolled a few meters so that the suspension can settle.

For checking the headlight adjustment, the vertical position of the cutoff of the lowbeam (see fig.) has to be projected on a vertical screen (wall) in distance of 7.5 m from the front lens of the headlamp.

### Vehicles without Litronic headlights

The correct position of the cutoff is 5 cm at 7.5 m (0.4°) below a horizontal line, **x** cm from ground to reference mark **D**.

### Vehicles with Litronic headlights

The correct position of the cutoff is 5 cm at 7.5 m (0.4°) below a horizontal line, **x** cm from ground to the center of the headlamp lens.

Lateral adjustment of the headlights should be carried out at a specialist workshop with an optical adjustment unit.

### Distance

Visual aim shall be performed at not less than 7.5 m (this value is a rounded down conversion from the 25-foot distance typical of field aim using a screen). The 7.5 m distance is measured from the headlamp lens to the viewing screen.

▷ ▷ ▷



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### Floor

The surface upon which the vehicle rests is flat and approximately level.

### Screen

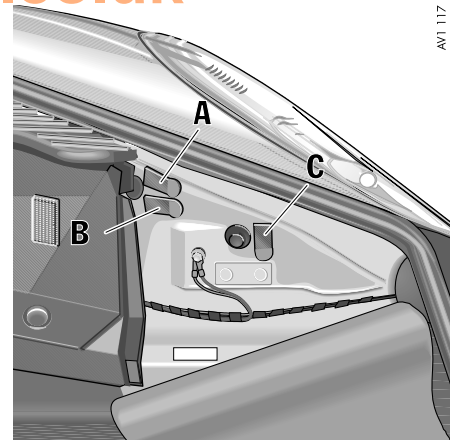
The screen upon which headlamp beams are projected is perpendicular to the floor and the vehicle's longitudinal axis, flat, uniformly light in color, unobstructed, and wide and high enough to accommodate the vehicle beam patterns to be aimed.

The screen should be wide enough to provide at least 1 m of space outboard of the vehicle's headlamp spacing.




### Adjustment screws

Detach side carpeting in luggage compartment. Therefore unscrew plastic nut (arrow).
Open the cover of the appropriate adjustment screw.
The setting is adjusted by turning the hexagon socket screws right or left, as appropriate.




**A** - *Headlight lateral adjustment*
**B** - *Headlight vertical adjustment*
**C** - *Fog light height adjustment*

### Lateral adjustment (screw A)

▷ turn clockwise = beam moves right
turn counter clockwise = beam moves left

### Vertical adjustment (screw B)

▷ turn clockwise = beam moves down
turn counter clockwise = beam moves up

The fog light adjustment **C** should only be done at a specialist workshop with an optical adjustment unit.


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# Towing

Certain state statutes and local ordinances prohibit towing with a chain, rope or even a tow bar.
In addition, damage to your vehicle may result from improper procedures.
Consult your authorized Porsche dealer for details.

## Vehicle towing

Flat bed towing is the preferred type of towing to be used on Porsche vehicles.
Under certain circumstances, wheel lifts may be used when the vehicle will not roll.
**The vehicle must be towed with all four wheels off the ground, otherwise damage to the vehicle may result.**

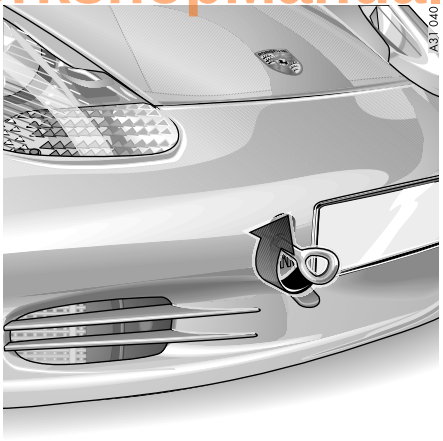
## Towing eye

The towing eye is contained in the tool kit.

**⚠ Caution!**

**Risk of damage to the vehicle.**

▷ Use the towing eye only for an emergency to remove the vehicle off the road. The towing eye is to be used only to pull the vehicle onto the flat bed, tractor or towing aparatus if the vehicle will roll freely. Under no circumstances is the vehicle to be secured using the towing eye.




▷ Never use the towing eye to tow this or any other vehicle.

### Front mounting

1. Carefully lift the plastic lid at its lower edge and pull it forward out of the bumper.
2. Completely screw in the towing eye.




### Rear mounting

1. Remove license plate.
2. Carefully remove the plastic cap between the bumpers with a screw driver.
3. Completely screw in the towing eye.

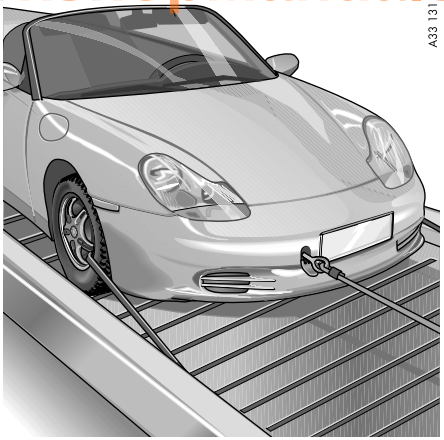
▷ ▷ ▷



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## Pulling vehicle onto flat bed

1. Position wooden ramps at the base of the flat bed to reduce the angle of the pull.

2. Reel in the hoist cable and check the underside of the vehicle for any interference.

## Tieing down vehicle on flat bed

1. Carefully feed towing straps through the opening in the **rear wheels**.
   Make sure metal parts of straps do not damage rim.
   Make sure the strap is flat over the rim bead.
   Make sure brake backing plate is not damaged.

2. Secure straps to rear of flat bed.

3. Reel in hoist cable only far enough to tension tie-down straps.

4. Carefully feed towing straps through the opening in the **front wheels**.
   Make sure metal parts of straps do not damage rim.
   Make sure the strap is flat over the rim bead.
   Make sure brake backing plate is not damaged.

5. Secure straps to front of flat bed.

6. Release tension on hoist cable, but do not disconnect.
   Use hoist cable as a safety cable.



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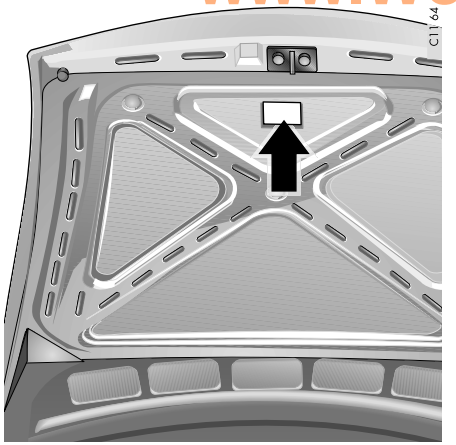
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# Vehicle Identification, Technical Data



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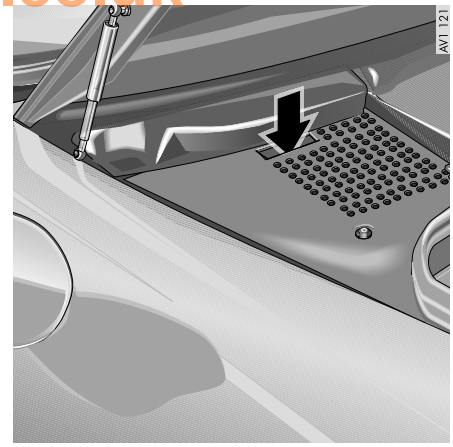

This label contains the following information:

1. Vehicle Identification No.
2. Type/Type description
3. Engine code/Transmission code
4. Paint No./Interior
5. Optional equipment

A duplicate of this label is in your Maintenance Booklet.

**Note**

This data bank cannot be re-ordered if it is lost or damaged.




## Vehicle Identification

**When ordering spare parts or making inquiries, please always quote the vehicle identification number.**

### Vehicle identification label

Vehicle identification label is attached to the inner side of the front luggage compartment hood below the hood lock. It contains all important data about your car.

### Vehicle identification number

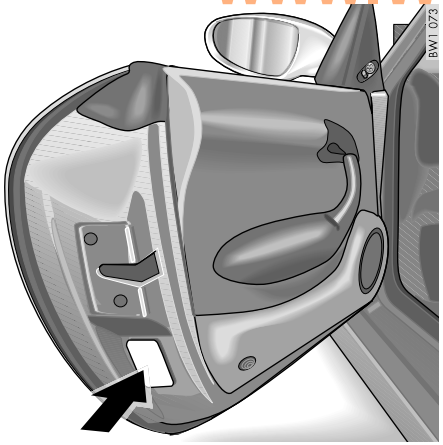
In accordance with Federal Safety Regulations, the vehicle identification number of your car is located at the bottom left of the windshield frame and can be seen from the outside.

The vehicle identification number is also in the front luggage compartment on the right next to the battery (arrow).



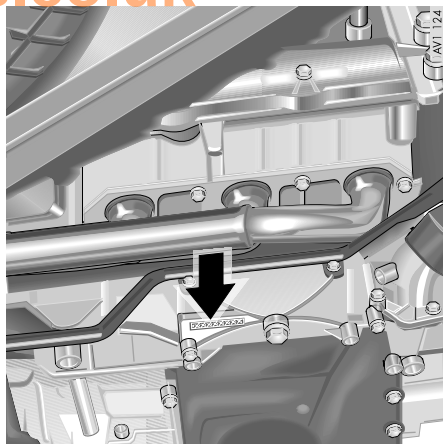
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## Safety compliance sticker

The safety compliance sticker is your assurance that your new Porsche complies with all applicable Federal Motor Vehicle Safety Standards which were in effect at the time the vehicle was manufactured.

The sticker also shows the month and year of production and the vehicle identification number of your car (perforations) as well as the **G**ross **V**ehicle **W**eight **R**ating and the **G**ross **A**xle **W**eight **R**ating.

## Paint data

The paint data plate is attached to the left side wall under the carpet in the front luggage compartment.

## Engine number

The engine number is stamped on the underside of the crankcase.



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# Technical Data

## Engine data

| | Boxster | Boxster S |
|---|---|---|
| Type | Horizontally opposed engine, liquid cooled | Horizontally opposed engine, liquid cooled |
| Number of cylinders | 6 | 6 |
| Bore | 3.37 in./85.5 mm | 3.66 in./93 mm |
| Stroke | 3.07 in./78 mm | 3.07 in./78 mm |
| Cubic capacity | 163.96 cu. in./2687 $cm^3$ | 193.98 cu. in./3179 $cm^3$ |
| Compression ratio | 11.0 : 1 | 11.0 : 1 |
| Net-horsepower, SAE J 1349 | 225 hp/168 kW | 258 hp/191 kW |
| at crankshaft speed | 6300 rpm | 6200 rpm |
| Net torque, SAE J 1349 | 192 ft. lb./260 Nm | 229 ft. lb./310 Nm |
| at crankshaft speed | 4700 rpm | 4600 rpm |
| Alternator | 1680 W/120 A | 1680 W/120 A |
| Firing order | 1 - 6 - 2 - 4 - 3 - 5 | 1 - 6 - 2 - 4 - 3 - 5 |
| Engine control | Stationary high-voltage distribution, sequential injection, cylinder-selective knock-control, stereo oxygen sensor closed-loop control, diagnostic system, 4 overhead camshafts, Porsche VarioCam, hydraulic valve clearance compensation | |


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## Transmission

### Boxster

| Gear ratios | Manual transmission | Tiptronic S |
|---|---|---|
| 1st gear | 3.50 : 1 | 3.66 : 1 |
| 2nd gear | 2.12 : 1 | 2.00 : 1 |
| 3rd gear | 1.43 : 1 | 1.41 : 1 |
| 4th gear | 1.09 : 1 | 1.00 : 1 |
| 5th gear | 0.84 : 1 | 0.74 : 1 |
| Reverse | 3.44 : 1 | 4.10 : 1 |
| Final drive ratio | 3.56 : 1 | 4.02 : 1 |

### Boxster S

| Gear ratios | Manual transmission | Tiptronic S |
|---|---|---|
| 1st gear | 3.82 : 1 | 3.66 : 1 |
| 2nd gear | 2.20 : 1 | 2.00 : 1 |
| 3rd gear | 1.52 : 1 | 1.41 : 1 |
| 4th gear | 1.22 : 1 | 1.00 : 1 |
| 5th gear | 1.02 : 1 | 0.74 : 1 |
| 6th gear | 0.84 : 1 | |
| Reverse | 3.55 : 1 | 4.10 : 1 |
| Final drive ratio | 3.44 : 1 | 3.73 : 1 |

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## Driving Performance*

| Boxster | Manual transmission | Tiptronic S |
|---|---|---|
| Maximum speed | 157 mph/253 km/h | 154 mph/248 km/h |
| Acceleration 0 – 60 mph | 6.2 seconds | 7.0 seconds |
| Acceleration 0 – 100 km/h (62 mph) | 6.4 seconds | 7.3 seconds |

| Boxster S | Manual transmission | Tiptronic S |
|---|---|---|
| Maximum speed | 164 mph/264 km/h | 160 mph/258 km/h |
| Acceleration 0 – 60 mph | 5.4 seconds | 6.1 seconds |
| Acceleration 0 – 100 km/h (62 mph) | 5.7 seconds | 6.4 seconds |

* At DIN empty weight and half load, without performance-inhibiting extra equipment


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## Tires, Rims, Tracks

| Boxster | | | Tires | Rim | Rim offset | Track |
|---|---|---|---|---|---|---|
| **Summer tires** | | front | 205/55 ZR 16 | 6 J x 16 H2 | 50 mm | 57.7 in./1465 mm |
| | | rear | * 225/50 ZR 16 | 7 J x 16 H2 | 40 mm | 60.2 in./1528 mm |
| | or | front | 205/50 ZR 17 | 7 J x 17 H2 | 55 mm | 57.3 in./1455 mm |
| | | rear | 255/40 ZR 17 | 8.5 J x 17 H2 | 48 mm | 59.5 in./1512 mm |
| | | | | | 50 mm | 59.4 in./1508 mm |
| | or | front | 225/40 ZR 18 | 7.5 J x 18 H2 | 50 mm | 57.7 in./1465 mm |
| | | rear | 265/35 ZR 18 | 9 J x 18 H2 | 52 mm | 59.2 in./1504 mm |
| | or | front | 225/40 ZR 18 | 8 J x 18 H2 | 50 mm | 57.7 in./1465 mm |
| | | rear | 265/35 ZR 18 | 10 J x 18 H2 | 47 mm | 59.6 in./1514 mm |
| **Snow tires** | | front | 205/55 R 16 89 T M+S | 6 J x 16 H2 | 50 mm | 57.7 in./1465 mm |
| | | rear | * 225/50 R 16 92 T M+S | 7 J x 16 H2 | 40 mm | 60.2 in./1528 mm |
| | or | front | 205/50 R 17 89 T M+S | 7 J x 17 H2 | 55 mm | 57.3 in./1455 mm |
| | | rear | * 225/45 R 17 90 T M+S | 8.5 J x 17 H2 | 48 mm | 59.5 in./1512 mm |
| | | | | | 50 mm | 59.4 in./1508 mm |
| | or | front | 205/50 R 17 89 T M+S | 7 J x 17 H2 | 55 mm | 57.3 in./1455 mm |
| | | rear | 255/40 R 17 94 T M+S | 8.5 J x 17 H2 | 48 mm | 59.5 in./1512 mm |
| | | | | | 50 mm | 59.4 in./1508 mm |
| | or | front | 225/40 R 18 88 H M+S | 7.5 J x 18 H2 | 50 mm | 57.7 in./1465 mm |
| | | rear | 265/35 R 18 93 H M+S | 9 J x 18 H2 | 52 mm | 59.2 in./1504 mm |

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| Boxster S | | | Tires | Rim | Rim offset | Track |
|---|---|---|---|---|---|---|
| **Summer tires** | | front | 205/50 ZR 17 | 7 J x 17 H2 | 55 mm | 57.3 in./1455 mm |
| | | rear | 255/40 ZR 17 | 8.5 J x 17 H2 | 48 mm | 59.5 in./1512 mm |
| | | | | | 50 mm | 59.4 in./1508 mm |
| | or | front | 225/40 ZR 18 | 7.5 J x 18 H2 | 50 mm | 57.7 in./1465 mm |
| | | rear | 265/35 ZR 18 | 9 J x 18 H2 | 52 mm | 59.2 in./1504 mm |
| | or | front | 225/40 ZR 18 | 8 J x 18 H2 | 50 mm | 57.7 in./1465 mm |
| | | rear | 265/35 ZR 18 | 10 J x 18 H2 | 47 mm | 59.6 in./1514 mm |
| **Snow tires** | | front | 205/50 R 17 89 H M+S | 7 J x 17 H2 | 55 mm | 57.3 in./1455 mm |
| | | rear | * 225/45 R 17 90 H M+S | 8.5 J x 17 H2 | 48 mm | 59.5 in./1512 mm |
| | | | | | 50 mm | 59.4 in./1508 mm |
| | or | front | 205/50 R 17 89 H M+S | 7 J x 17 H2 | 55 mm | 57.3 in./1455 mm |
| | | rear | 255/40 R 17 94 H M+S | 8.5 J x 17 H2 | 48 mm | 59.5 in./1512 mm |
| | | | | | 50 mm | 59.4 in./1508 mm |
| | or | front | 225/40 R 18 88 H M+S | 7.5 J x 18 H2 | 50 mm | 57.7 in./1465 mm |
| | | rear | 265/35 R 18 93 H M+S | 9 J x 18 H2 | 52 mm | 59.2 in./1504 mm |

The load capacity coefficient (e.g. "89") and maximum speed code letter (e.g. "T") are minimum requirements.

**WARNING**
Installation of sizes not authorized by Porsche may have a dangerous effect on the driving stability and could result in severe personal injury or death.


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| | |
|---|---|
| **Tire and rim sizes** | Extensive tests are performed before specific tires and wheels are approved by Porsche. Your Porsche dealer has information about approved tires and wheels and is happy to assist you. If aftermarket tires and/or wheels are installed which are not approved by Porsche, the vehicle's roadability and handling characteristics might be impaired. Since Porsche has no data on such combinations, Porsche cannot stand behind the safety or durability of these aftermarket combinations. |
| **Snow chains** | Can be mounted only on the rear wheels; **maximum speed 30 mph/50 km/h.** Use only Porsche authorized fine-link cross-type or edge chains. **Snow chain clearance can be guaranteed only with the tire + rim combination marked *.** |
| **Spare wheel** | T 105/95 R 17 high-pressure tire on 3.5 J x 17 rim. **Maximum speed 50 mph/80 km/h.**<br>**Always comply with the instructions in the chapter "Spare wheel".** |

## Tire pressure for cold tires

| | | |
|---|---|---|
| **Summer and snow tires** | front | 29 psi/2.0 bar |
| | rear | 36 psi/2.5 bar |
| **Spare wheel** | front and rear | 60 psi/4.2 bar |

These tire pressures apply only to the tire makes and types approved by Porsche.
**Always observe instructions in the chapter "Tires and Tire Care".**

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## Capacities

Use only fluids and fuels authorized by Porsche. Your authorized Porsche dealer will gladly advise you.
**Your Porsche has been designed so that it is not necessary to mix any additives with oils or fuels.**

| | |
|---|---|
| **Engine** | Oil change quantity without oil filter approx. 8.5 quarts/8 liters<br>Oil change quantity with oil filter approx. 8.7 quarts/8.25 liters<br>Reference indication is the level on the oil dipstick. Also refer to the section "Engine Oils". |
| **Coolant** | **Boxster**<br>Manual transmission: approx. 4.76 U.S. gallons/18 liters<br>Tiptronic S: approx. 5.02 U.S. gallons/19 liters<br>**Boxster S**<br>Manual transmission: approx. 5.81 U.S. gallons/22 liters<br>Tiptronic S: approx. 6.08 U.S. gallons/23 liters |
| **Manual transmission and differential** | **Boxster:** approx. 2.4 quarts/2.25 liters<br>**Boxster S:** approx. 3 quarts/2.8 liters |
| **Tiptronic S** | approx. 10.4 quarts/9.8 liters |
| **Differential with Tiptronic S** | approx. 0.85 quarts/0.8 liters |
| **Power steering** | approx. 1.1 quarts/1 liter hydraulic fluid Pentosin CHF 11 S® |
| **Brake fluid** | approx. 0.4 quarts/0.4 liters; use only Original Porsche brake fluid |
| **Windshield washer** | approx. 2.6 quarts/2.5 liters without headlight washer<br>approx. 7.4 quarts/7 liters with headlight washer |


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**Fuel tank**

Refill volume approx. 16.9 U.S. gallons/64 liters, including approx. 2.6 U.S. gallons/10 liters reserve

**Fuel quality**

Your engine is designed to provide optimum performance and fuel economy using **unleaded premium fuel with an octane rating of 98 RON (93 CLC or AKI).** Porsche therefore recommends the use of these fuels in your vehicle.

Porsche also recognizes that these fuels may not always be available. Be assured that your vehicle will operate properly on unleaded premium fuels with octane numbers of at least **95 RON (90 CLC or AKI)**, since the engine's "Electronic Oktane™ knock control" will adapt the ignition timing, if necessary.

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## Weights

| Boxster | Manual transmission | Tiptronic S |
|---|---|---|
| Empty weight (depending on equipment) | 2811 lbs. to 3086 lbs.<br>1275 kg to 1400 kg | 2932 lbs. to 3808 lbs.<br>1330 kg to 1455 kg |
| Maximum gross weight | 3527 lbs./1600 kg | 3649 lbs./1655 kg |
| Maximum axle load, front* | 1709 lbs./775 kg | 1709 lbs./775 kg |
| Maximum axle load, rear* | 2017 lbs./915 kg | 2017 lbs./915 kg |
| Maximum useful load, Roof Transport System** | 165 lbs./75 kg | 165 lbs./75 kg |

| Boxster S | Manual transmission | Tiptronic S |
|---|---|---|
| Empty weight (depending on equipment) | 2910 lbs. to 3153 lbs.<br>1320 kg to 1430 kg | 2998 lbs. to 3241 lbs.<br>1360 kg to 1470 kg |
| Maximum gross weight | 3593 lbs./1630 kg | 3682 lbs./1670 kg |
| Maximum axle load, front* | 1709 lbs./775 kg | 1709 lbs./775 kg |
| Maximum axle load, rear* | 2072 lbs./940 kg | 2072 lbs./940 kg |
| Maximum useful load, Roof Transport System** | 165.3 lbs./75 kg | 165.3 lbs./75 kg |

* The maximum gross weight must not be exceeded.
**Note:** If additional accessories are installed, the useful load will be correspondingly less.

** Use only Original Porsche Roof Transport System.


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## Dimensions

| | | |
|---|---|---|
| Length | | 170.8 in./4340 mm |
| Width | | 70.1 in./1780 mm |
| Height | | 50.8 in./1290 mm |
| Wheelbase | | 95.1 in./2415 mm |
| Ground clearance | | 4.3 in./110 mm |
| Turning circle | | 35.8 ft./10.9 m |
| Overhang angle | front | 13.0° |
| | rear | 15.5° |
| Ramp angle | | 13.0° |

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## Diagrams

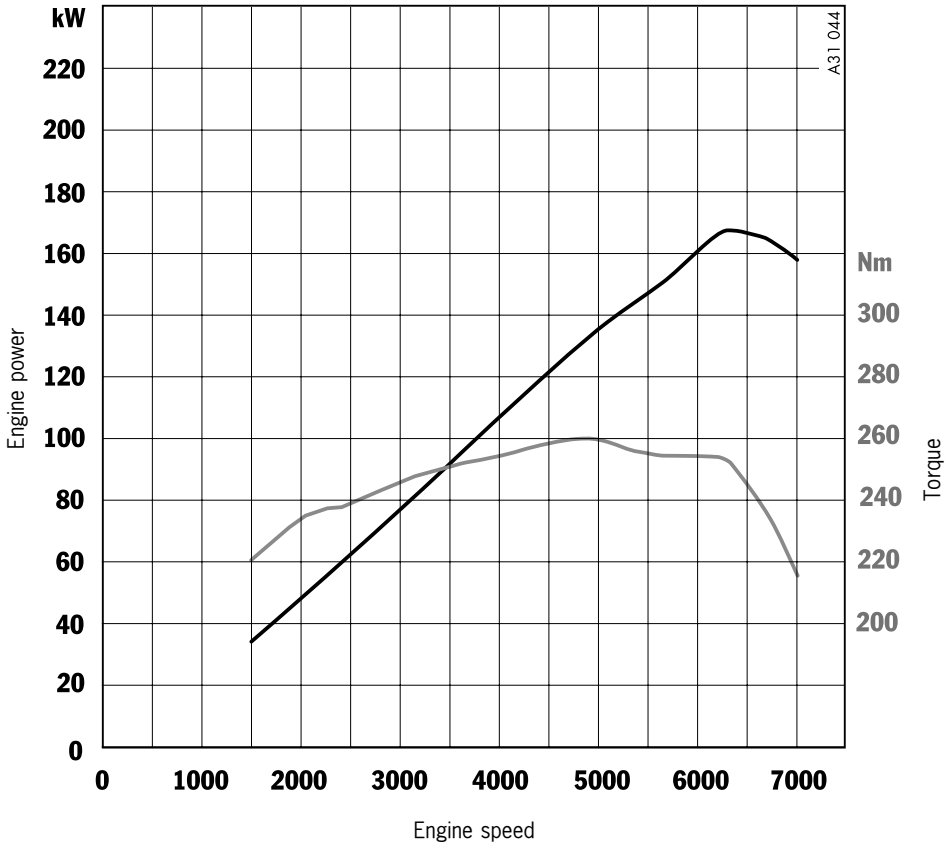
### Acceleration diagram

Values have been determined at DIN empty weight and with a 50 % load without additional equipment.

### Transmission diagram

The transmission diagram is based on standard values on the basis of a mean effective scrub radius. Changes of the scrub radius, the tire tolerance, wear and tear, deviating country equipment and tire slip have not been taken into account.

**Boxster: Engine diagram at full power**

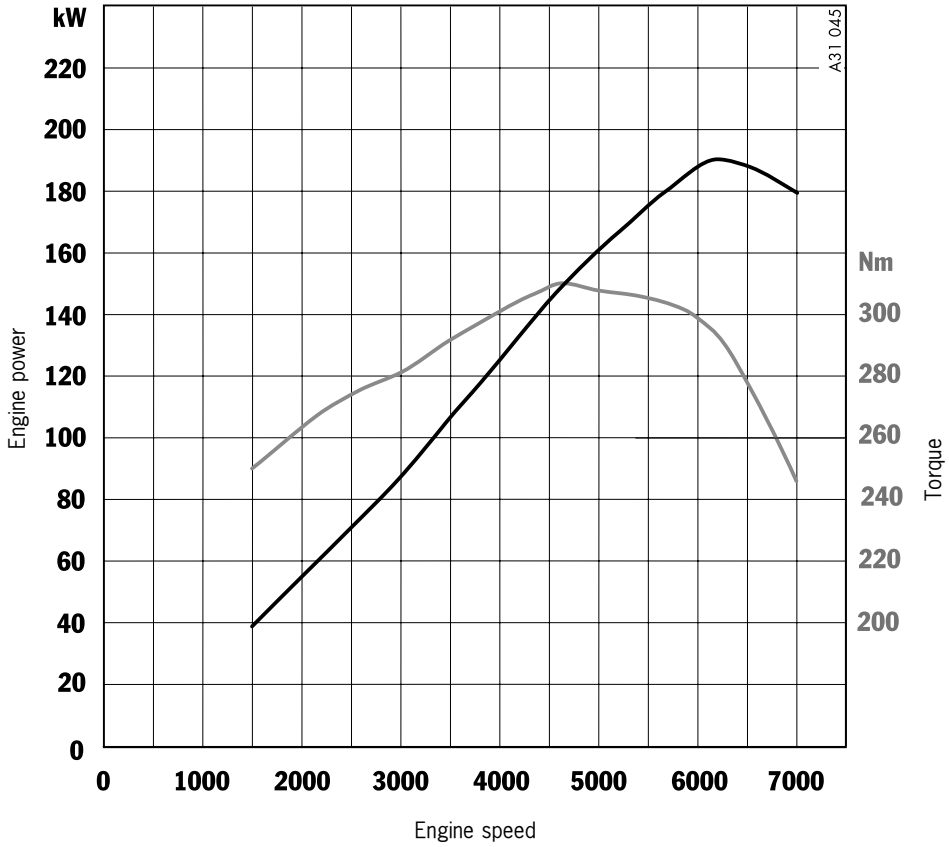





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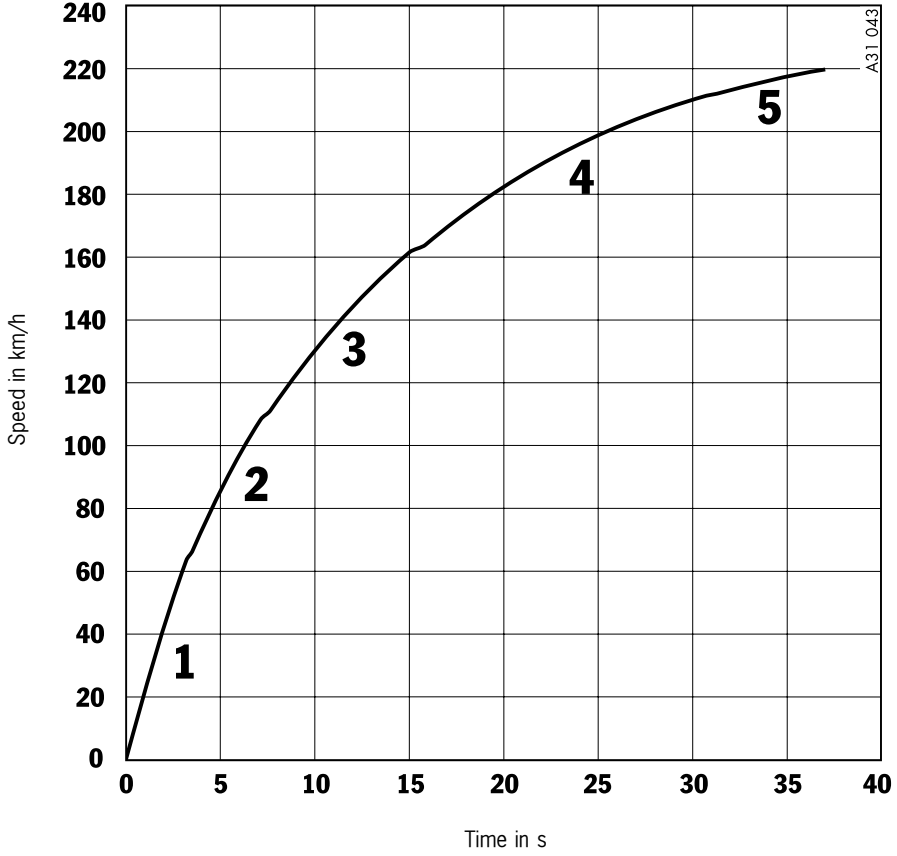
**Boxster S: Engine diagram at full power**




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**Boxster: Acceleration diagram** Manual transmission

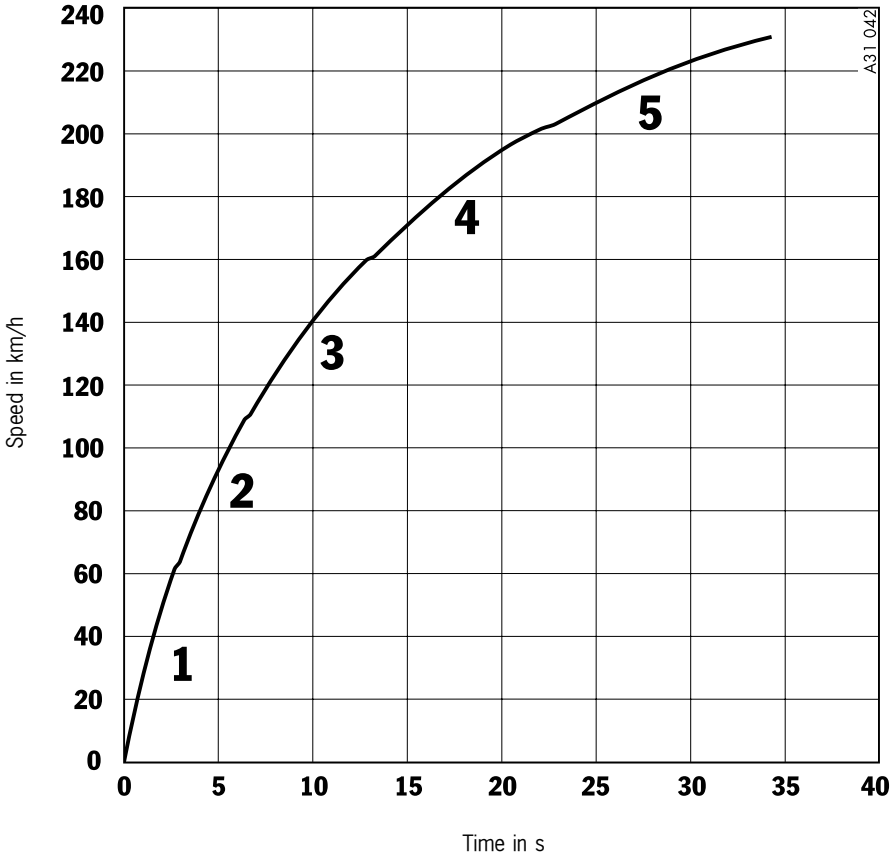





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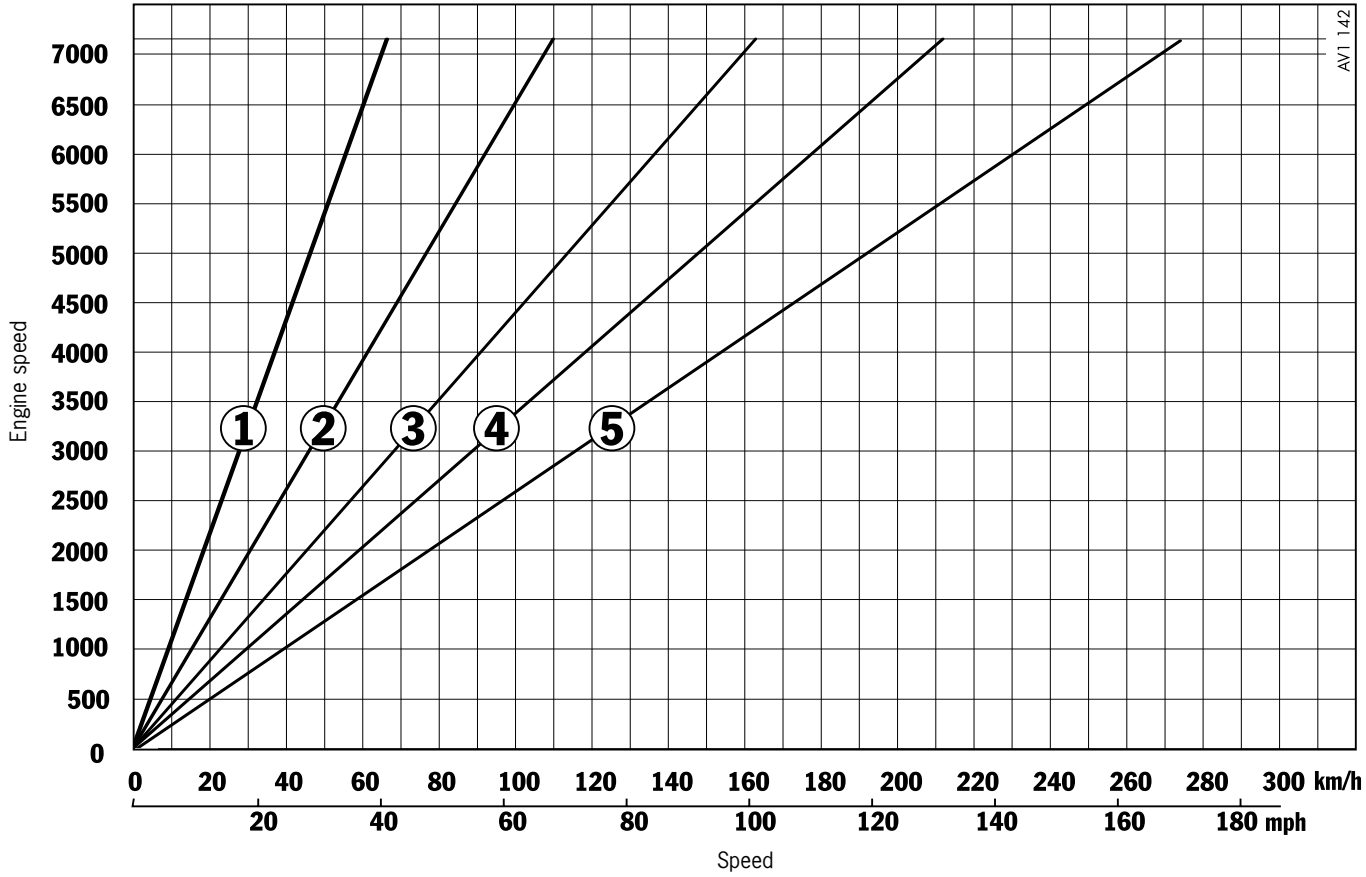
**Boxster S: Acceleration diagram** Manual transmission




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**Boxster: Transmission diagram** Manual transmission

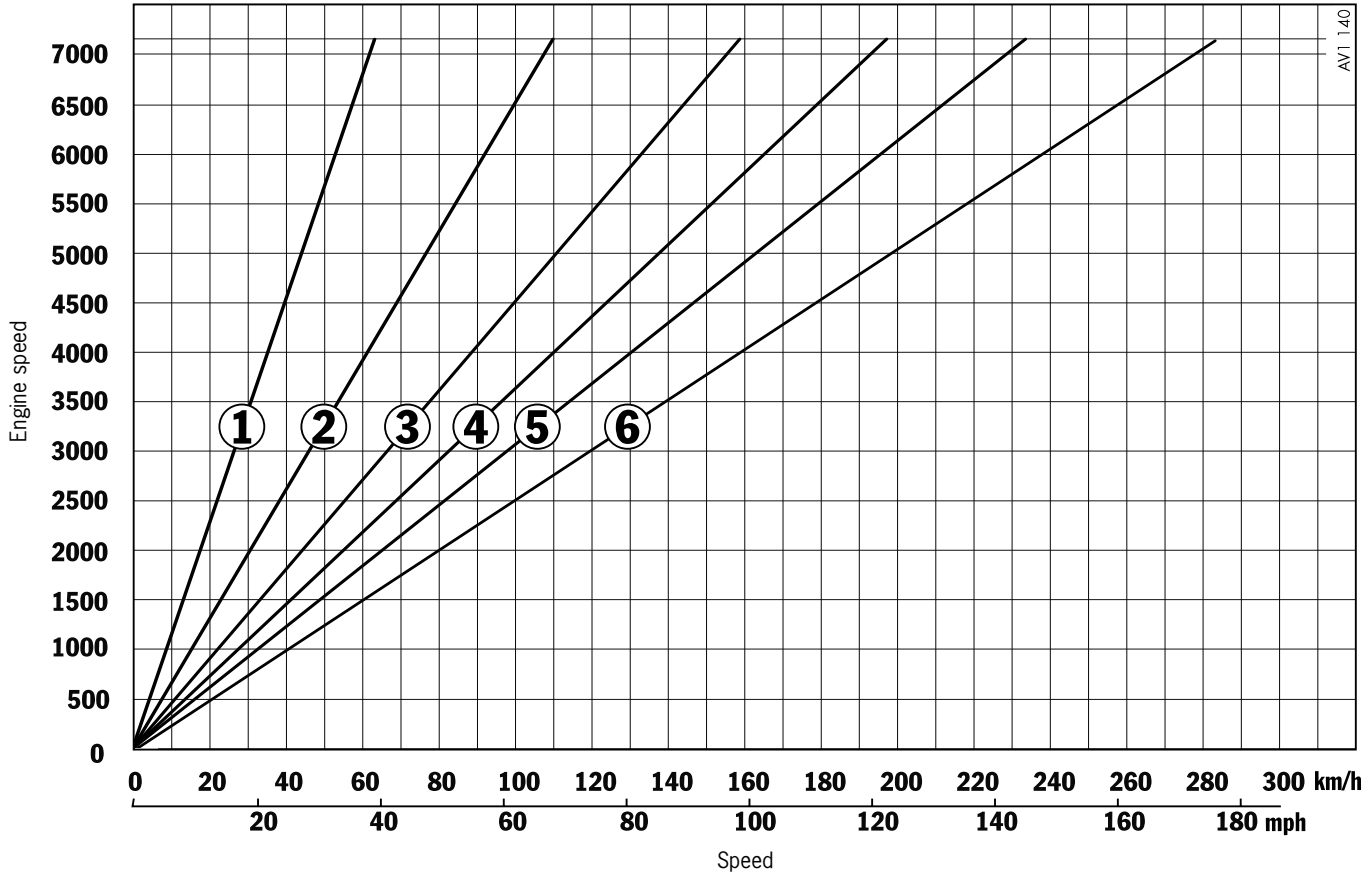





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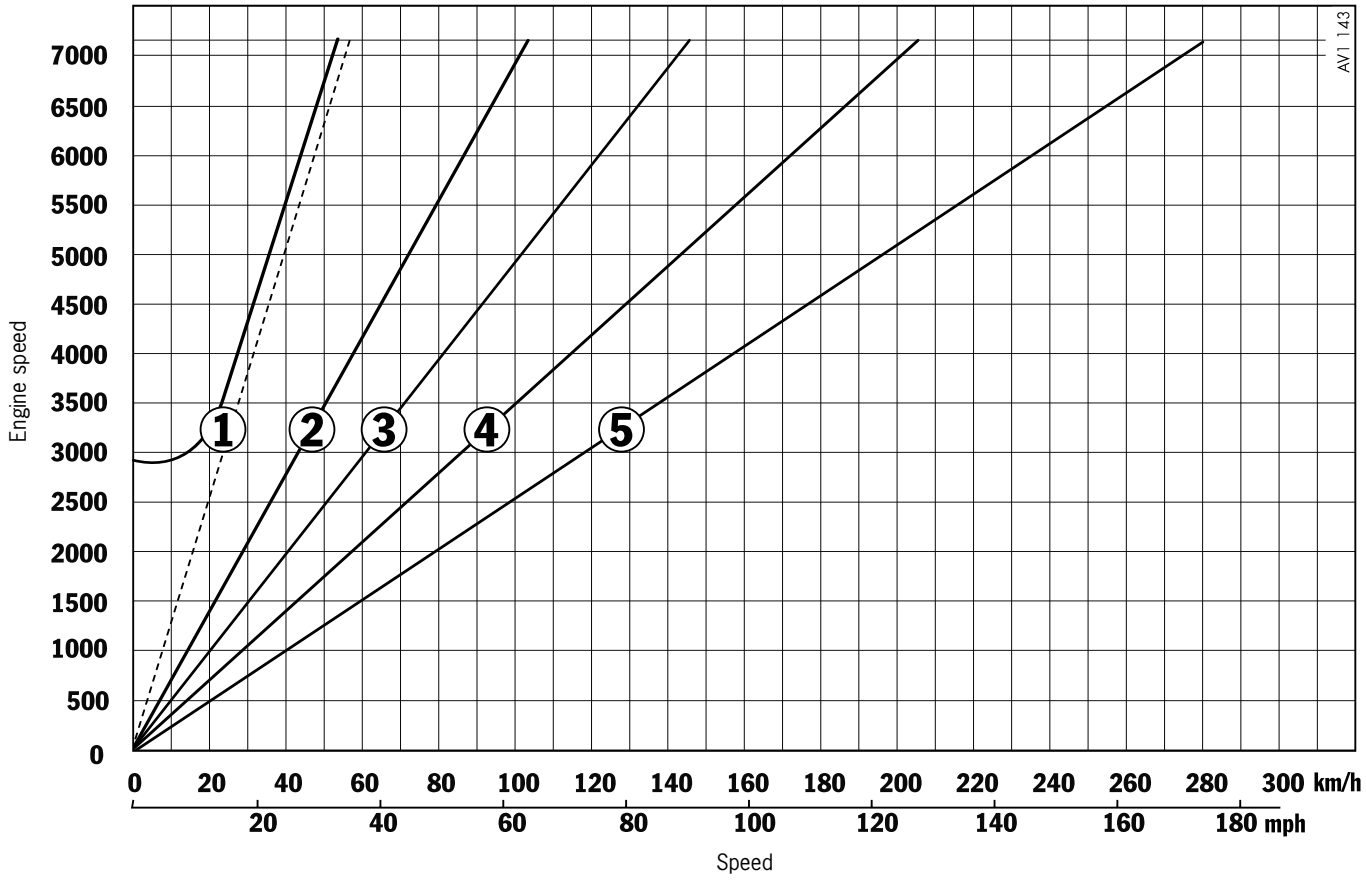
**Boxster S: Transmission diagram** Manual transmission




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## Boxster: Transmission diagram Tiptronic

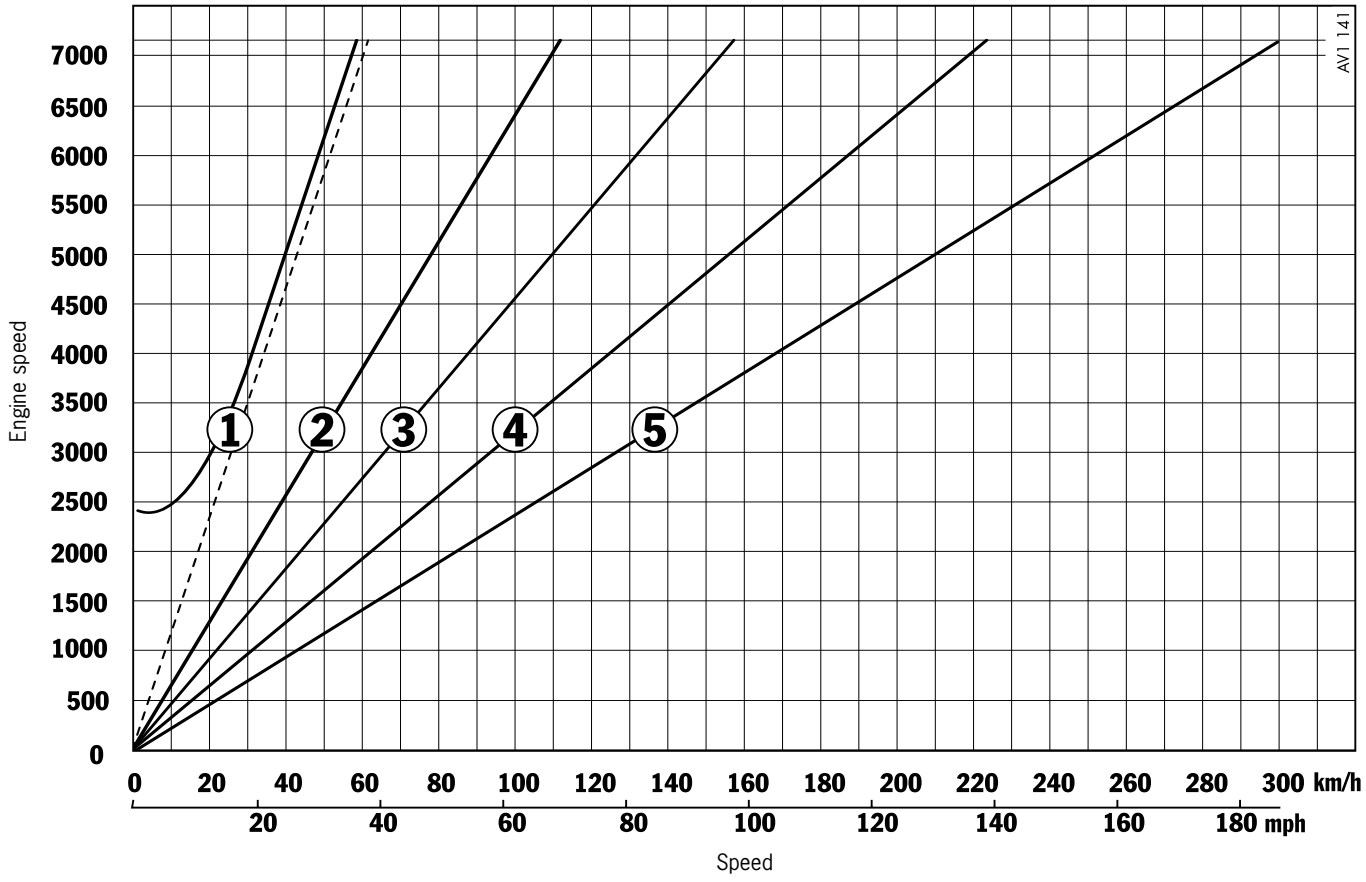





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## Boxster S: Transmission diagram Tiptronic




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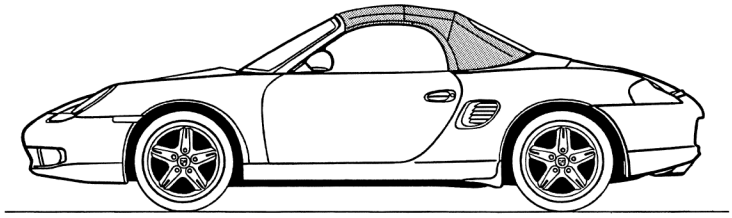
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PORSCHE

# Service Information
# Technik

# 2002



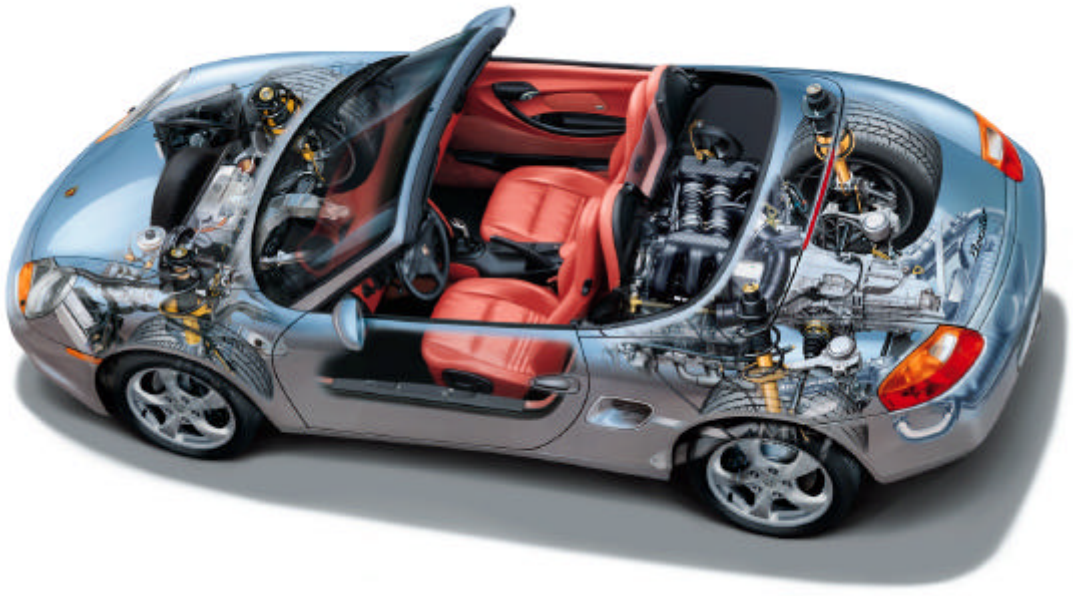
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# Introduction



boxster1

This Technical Service Information describes innovations and modifications to Boxster and Boxster S. The changes for 2002 are limited to minor modific a-tions these modifications are briefly described here.

Attention for measure and adjustment values, torque figures and fluid amounts.

For measurements, adjustment values torque values and fluid capacitys refer to the Workshop Manual.
Content of this brochure reflects information available as of January 2002.

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# 1 Engine

## General

In model year 2002 there are no innovations or modifications on the engine of Boxster / Boxster S. Should we introduce any innovations or modifications, we will describe them in the Technical Information.


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# 2 Fuel and ignition system

## General

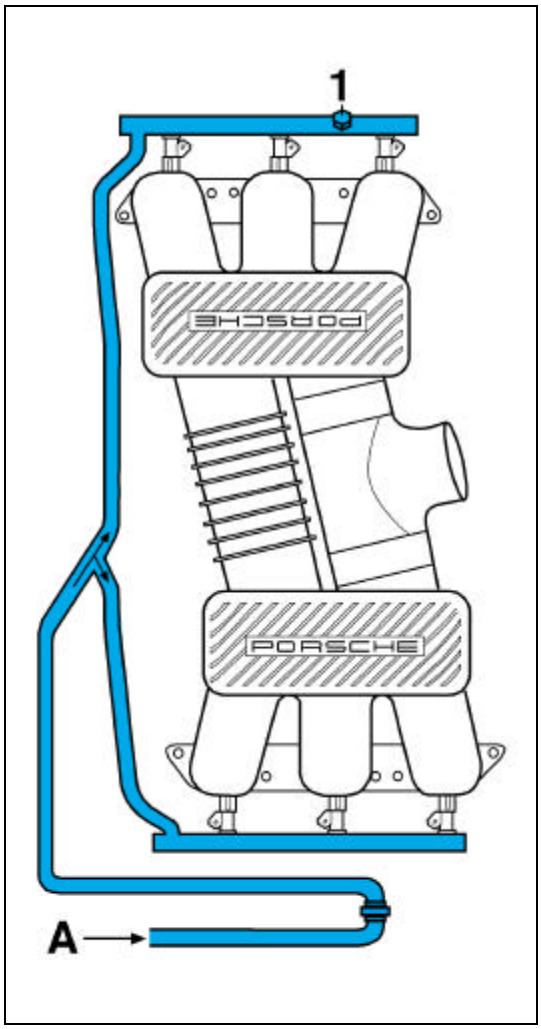
Starting with the model year 2002, following modifications have been introduced in Boxster und Boxster S:

- Fuel system without return link from the engine to the gas tank
- New data sets for the Motronic control unit ME 7.2
- Injection valves EV-6
- Lambda sensor LSF
- Air-mass meter HFM 5

## 20 Returnless fuel system (RF)

In the returnless fuel system, the fuel-pressure control valve as well as fuel filter is integrated into the fuel tank. This enables the system to dispense of the fuel return link from fuel distributor in the engine compartment to gas tank.
Thereby, surplus fuel driven by the electric fuel pump comes from the pressure control valve directly into the fuel tank.
Only the fuel amount injected by injection valves is transported to the fuel distributor in the engine compartment. Dispensing of the return link has the advantage that fuel heated up in the engine compartment does not flow back into the fuel tank and raise the fuel-temperature there.
This results in further decrease of the hydrocarbon-emissions (HC) in the fuel tank and therefore constitutes relief for the tank-vent.
The extent of work as e.g. checking fuel pressure, holding pressure and transport capacity of the fuel pump as well as any special tools needed, is described in the technical handbook.

**Fuel circuit in engine compartment**



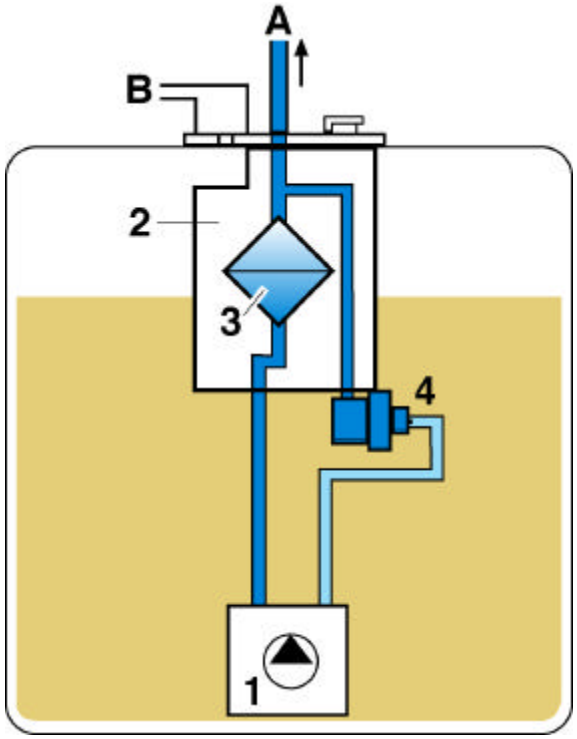

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A – Fuel access (system pressure 3.8 bar)
1 – conn. for pressure control


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### Function graph




2_07_02

A – Fuel pressure link (3.8 bar)
B – Tank vent
1 – Fuel pump
2 – Filter housing
3 – Fuel filter
4 – Pressure control unit

## 2060 Fuel filter

Fuel filter is integrated into the tank installation unit and does not have to be replaced any more. Adapting the mixture is ensures reduction of amount transported.

## 2458 Fuel pressure control valve

The fuel pressure control valve is integrated into the tank installation unit and does not have a connection for venturi vacuum. From idle to full pressure, fuel pressure reaches approx. 3.8 bar. Therefore, amount of fuel injected also depends on the pressure of venturi vacuum. We considered that while calculating injection time with the Motronic control unit.

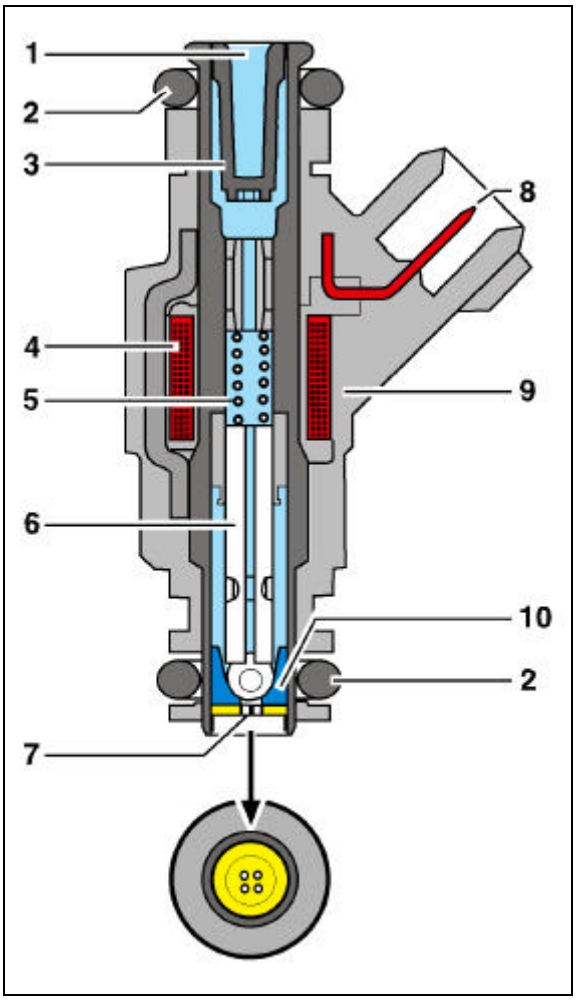
## 2440 Injection valve (EV-6)

This injection valve stands out through its slim exterior measurements and light weight. Also, with this injection valve, the danger of creating steam bubbles in hot fuel is very small.
Therefore it is well suited for application in returnless fuel system, because the fuel temperature in the injection valve is higher versus systems equipped with return link.
The atomization of fuel occurs with a spray hole-disc that has 4 holes. Through the punched spraying holes, high constancy of fuel amounts injected, as well as resistance against generating of fuel deposits is achieved.
Tightening principle cone / ball guarantees high valve tightness in the area of the valve seat.


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### Injection valve as cross-section



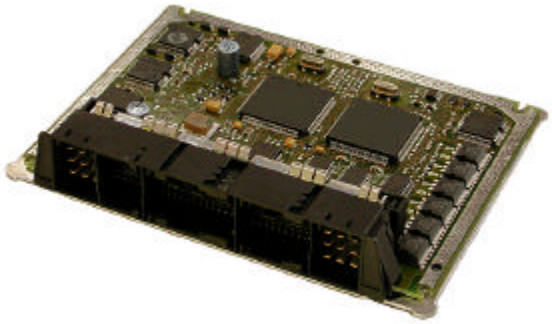

2_01_02

1 – Hydraulic connection
2 – Washers (O-washers)
3 – Filter sieve
4 – Coil
5 – Feather
6 – Valve needle with magnetic anchor and ball
7 – Disc with spray-holes (4 count)
8 – Electrical connection
9 – Valve housing
10 – Valve seat

## 2470 Motronic control unit ME 7.2

Data sets of Motronic control unit ME 7.2 have been adapted to following systems and/or construction components:

- Returnless fuel system
- Injection valves EV-6
- LSF Lambda sensors
- Air-mass meter HFM 5



2_11_01


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**ME 7.2 comprises of following new functions and / or components:**

- On-Board Diagnosis (worldwide)
- LSF Lambda sensors
- Modified hot film air-mass meter HFM 5
- Injection valves EV-6
- Returnless fuel system

## OBD (EOBD)

The driver is advised worldwide via the On-Board-Diagnosis system (**OBD – USA**) or Europa-On-Board- Diagnosis system (**EOBD – Europa / RdW**) with an appropriate warning message (Check Engine lamp)on combo-instrument. The extent of this function is adapted to differing legal regulations globally.




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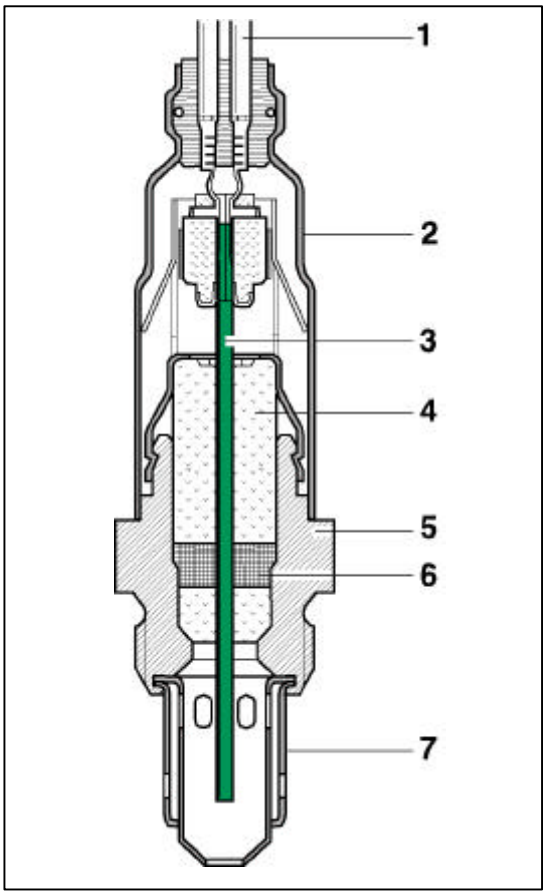
- Check-Engine lamp is lit – emission-relevant error
- Check-Engine lamp blinks – error related to damage of catalytic converter

## 2469/2473 Lambda sensor (LSF)

Grinded LSF Lambda sensor is the extended development of the heated LSH Lambda sensor. Functionally, it corresponds to the heated LSH Lambda sensor with a jump-characteristic curve at Lambda 1. Contrary to LSH, the solid-state electrolyte consists of ceramic foil in LSF Lambda sensor.
Lambda sensors located in front and behind the catalytic converter bear different part numbers.

**Special properties of the new Lambda sensor**

- Short turn-on times of Lambda controls
- Stable control characteristics
- Low demand for heating output
- Fast operational readiness
- Slim part size, low weight




2_10_02

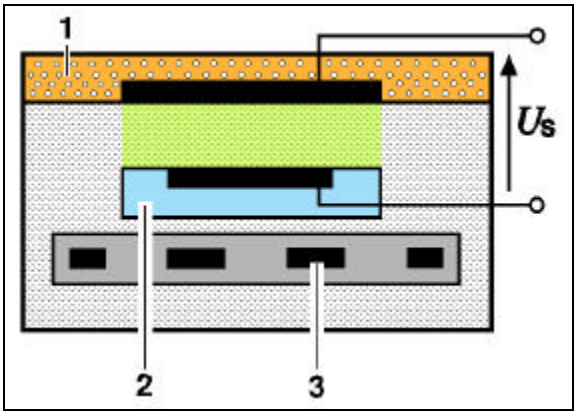
1 – Connector cable
2 – Protective sheath
3 – Grinded sensor element (ceramic foils)
4 – Ceramic supporting pipe
5 – Sensor housing
6 – Ceramic tightness-package
7 – Supporting pipe


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The sensor element of grinded Lambda sensor is constructed of ceramic foils and has the form of elongated plate with a rectangular cross-section. Individual functional layers (electrodes, protective layers, etc.) are produced using silk-screen printing technology. Lamination of individual imprinted foils onto each other also makes it possible to integrate a heater into the sensor element.

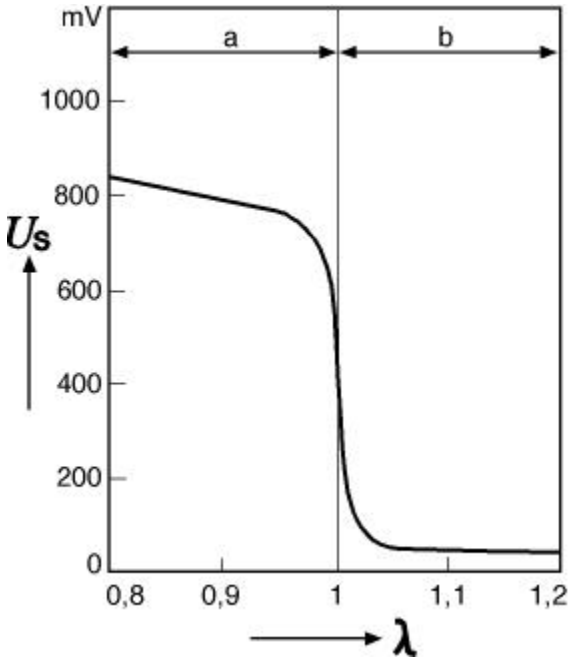
**Components of grinded Lambda sensor**




2_11_02

1 – Exhaust gases
2 – Reference air-canal
3 – Heater
Us – Tension of Lambda sensor

**Characteristic tension curve of Lambda sensor**




2_12_02

Us – Tension of Lambda sensor
? – Air count
a – Saturated mixture (=air deficiency)
b – Thin mixture (=air surplus)

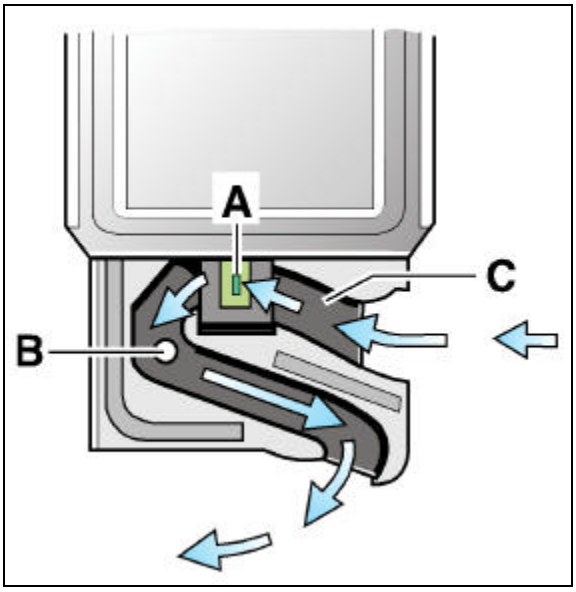

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## 2445 Hot film air-mass meter (HFM 5)

Modified hot film air-mass meter HFM 5 has been introduced in Boxster and Boxster S already in current model year 2000.
With the help of c-form air canal, this air-mass meter became more insensitive to dirt particles and water drops, because they can only enter the sensor element as result of rebound (reflexion). Lateral bore in the air canal serves to reduce pulsation errors.

Attention:
This air-mass meter can only be installed in vehicles from MY 2000 on, after the corresponding data set has been programmed. Refer to the technical handbook Boxter Group 2 TI # 1/00.

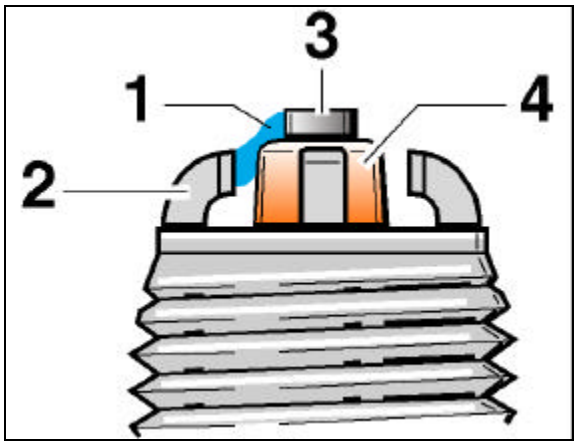



2_13_02

A – Sensor element
B – Lateral bore
C – C-form air canal

## Spark-plugs

4 ground electrodes are positioned laterally to the ceramic in these surface-gap spark-plugs. Sparks (1) thus always glide over the surface of the insulator and jump over a small gas distance to the ground electrode. Thus a better ignition characteristics is attained.
Their replacement interval is 50,000 miles.




2_05_02

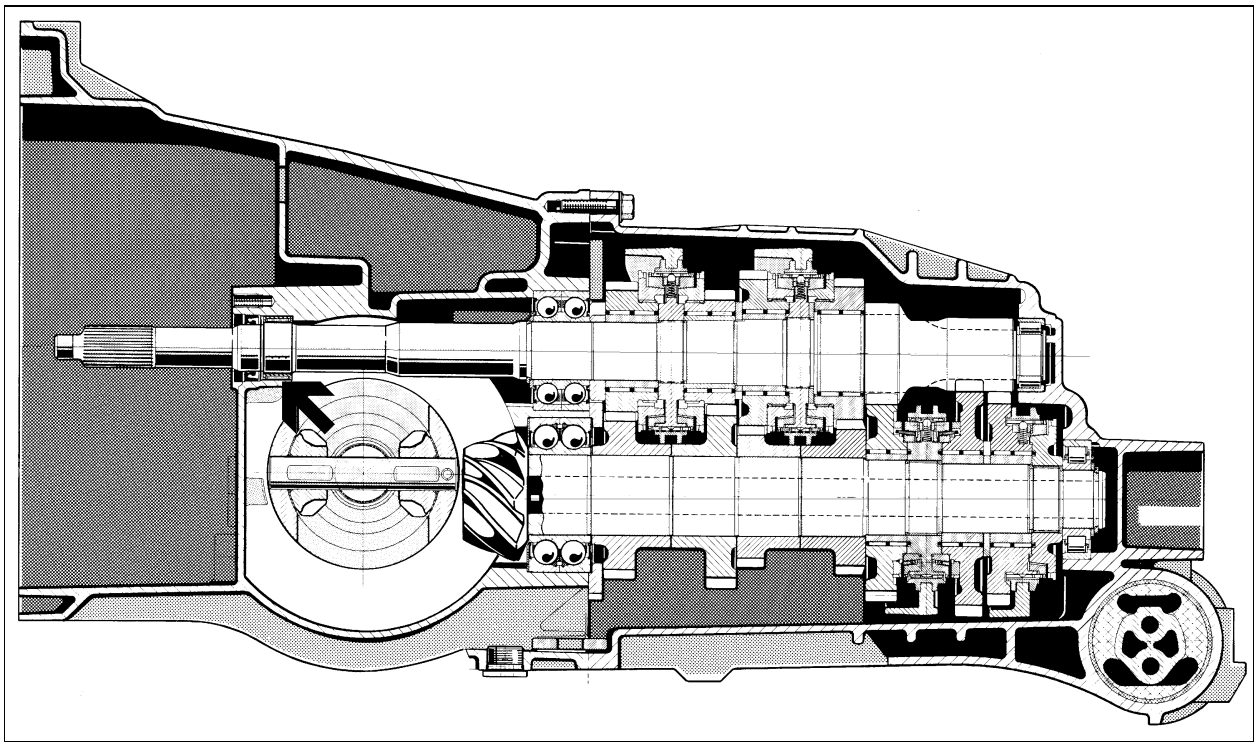
1 – Path of gliding spark
2 – Ground electrode
3 – Middle electrode
4 – Insulator


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# 3 Power transmission: manual gearbox Boxster S

## Six-speed manual transmission G 86/20



In order to minimize vibration, the input shaft in the Boxster S gearbox has been modified from dual to a triple bearing-set (arrow). This modification was introduced during model year 2001 production.


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# 3 Power transmission: Tiptronic gearbox

## General

In model year 2002 there are no innovations or modifications on the Tiptronic-gearbox.
Should we introduce any innovations or modifications, we will describe them in future Technical Information.


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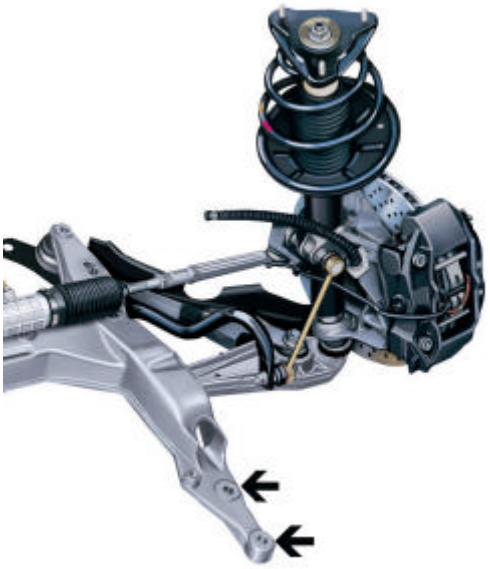
# 4 Chassis

## General

Modifications involving chassis in the course of model change are limited to construction components described below.

## 4009 Front axle outrigger

In the rear attachments to the body (arrow) the front axle outrigger is attached with two bolts instead of one as was previously the case.



4_03_02

## 45 Brake system, PSM 5.7

In order to improve control quality, a new "linear technology" generation of magnetic valves in PSM-hydraulic units has been introduced.

### Function: Linear Technology

With linear technology, valves can be controlled to any cross section. Compared with the prior generation where, the valves only had two positions open or closed, new valves can assume positions in between or be opened and closed slowly. Particularly through "opening slowly again", pressure build-up can be gently applied in critical areas (low friction coefficient). For example when braking on ice, this technology has a lot of benefits. Through the gentle increase of pressure, the vehicle yawing moment does not occur and the vehicle tracks better.

### ABS 5.7 – Wheel speed sensor

With the ABS generation 5.7, a new wheel speed sensor (DF 11) has been introduced in the course of model change. Here, we are dealing with an active wheel speed sensor with Hall-element and IC (integrated circuit). Compared with passive wheel speed sensor, active wheel speed sensor generates a rectangular signal with variable pulse spectrum via internal electronics. This technology not only captures wheel (turning) speed, but also direction of turn, wheel standstill and signal quality.


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# 5 Body

## General

In model year 2002 there are no innovations or modifications to the body. Should we introduce any modifications, we will describe them in future Technical Information.


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# 6 Body design, exterior, occupant protection

## 6913 Pyrotechnic seat-belt tensioner with seat-belt tension limitation.

In model year '02 we have introduced pyrotechnic seat-belt tensioners with seat-belt tension limitation in all the Boxster models.

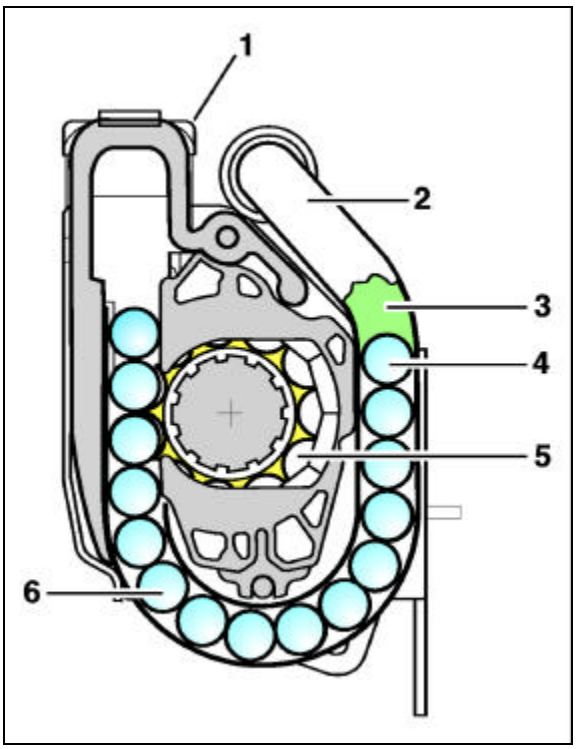


6_07_02

Pyrotechnic seat belt tensioner is installed in one group with the limiter for belt tension. Actuation point for the ignition of the pyrotechnic belt tensioner is calculated along with the airbag ignition point with signals from the sensors for vehicle deceleration. Actuation of the belt tensioner occurs along with the actuation of the front airbag in frontal collision.

In a rear collision only the belt tensioner will be actuated.

**Tensioning process**




6_01_02

1 Ball capture
2 Pipe with propellant charge
3 Gas pressure
4 Piston
5 Pinion gear
6 Inertial bodies (balls)

Balls are driven by pyrotechnic propellant charge. The balls momentum is transferred via pinion gear to the belt reel. By reeling in the belt, slack is eliminated and reeling in the belt tensions the belt.

**Belt tension control**

In order to avoid bruises or internal injuries, tensile force of the belt needs to be limited to a sustainable degree.

At the point when the belt tensile force becomes dangerous, any further tensioning will be avoided.

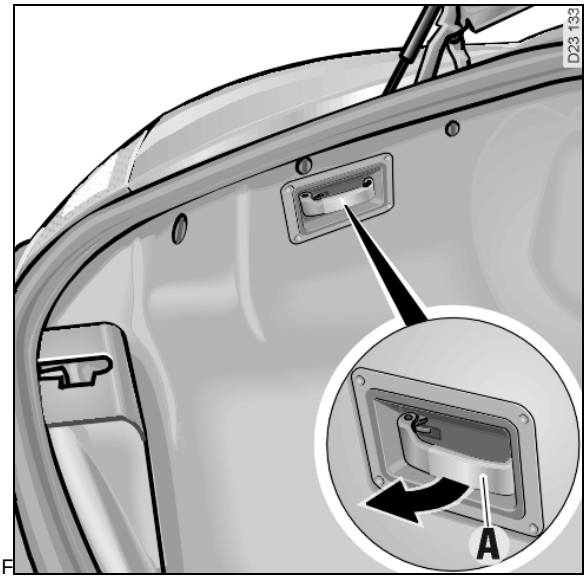

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The belt can be readjusted to a particular length via the torsion shaft in the belt tensioning mechanisim.

## 69 Rear Trunk Entrapment (US only) (internal trunk release)

Because of new legal requirements in the US, a person locked in the trunk has to have to be able to open the trunk lid from the inside. Trunk lid is released by a lever with a fluorescent surface (it glows in the dark) located in the trunk. This feature only refers to the rear trunk.




F D23 133

**Function rear trunk lid:**

A release lever operates the rear lid-lock via a cable. The trunk lid opens immediately when the release-lever is activated.


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# 7 Body design, interior

The switches with high-gloss feature that we have previously used are being replaced with switches in black matte finish. Corresponding black plastic covers as e.g. radio, PCM, PCM-calculator and the cover on adjustment switch for the side mirror match the black matte finish on switches.


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# 8 Heating/ air conditioning system

In model year 2002 there are no innovations or modifications to the heating/ air conditioning system. Should we introduce any modifications, we will describe them in future Technical Information.


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# 9 Electrical

## 9120 Radio

In principle the standard and optional program of model year 2002 corresponds to 2001.

### Bose High-End Sound System (analog)

Model year 2002 will usher in the new Bose High-End Sound System in model year 2002 that will replace "Digital Sound Processing (DSP)“ program.

This system ensures significantly higher sound quality, even in vehicles with the open top. Entirely new amplifier technology with very high efficiency provides sound sources located in the instrument and door panels. In addition, this High-end Sound System offers an extra subwoofer unit in a separate housing, located behind seat recliners.
We refrained from all the adjustment options that would interfere with the output spectrum of the new Sound system, as well as all popular, fix programmed sound parameters for diverse kinds of music.

The Sound System remains a part of the package, but no longer with the DSP-System.

In the new High-End System the sound adjustment for individual musical requirements can only be programmed on the radio or PCM.

The whole concept of the audio system is linear, i.e. all the sound-relevant controls are set to “0” and sound parameters of the amplifier software are optimized for the conditions of vehicle interior.

**Special features of individual components**

**Bose-patented TSM-switching amplifier**
(Two-state modulation)
These compact and powerful output stages with digital switching technology produce less heat and therefore work 50% more efficiently than traditional linear amplifiers, because they only come on when needed. Aside from that, they are lighter and have a significantly longer life span.

**Integrated signal processing:**
It automatically raises the bass element and thus balances the decreasing sensitivity of human sense of hearing in the bass domain while playing low volumes. The process works essentially more differentiated compared to conventional loudness control. It enables dynamic adaptation of the bass element, so that the listener perceives no change.

The music always sounds true-to-life, with rich, deep bass at every volume. Reproduction of words is natural and the system reaches volumes like in concert hall without perceptible distortions.


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**Active equalization:**

This Bose-patented system is adapted to the interior acoustics of every individual Porsche and guarantees balanced and clear sound throughout the complete frequency spectrum.
It creates an environment where the listener can enjoy music reproduction without constantly having to adjust controls. This is only becomes possible with systems especially developed for certain vehicles, analyzed during separate stages of development, with acoustic measurements carried out, and then applied.

**Active compressor adjustment:**

It ensures precise fine adjustment of dynamic sound spectrum. Even when loud passages are being played, the system allows no audible distortions. The sound is always pleasing to the ear.

**Enhanced sound pressure level:**

In order to reproduce basses richly and deeply, sufficient sound pressure must be produced. Conventional solutions with enormous heavy bass loudspeakers move the required large amounts of air. Since this is not the suitable solution for a compact sports car, custom-made loudspeaker housings have been constructed.
These housings with bass reflex technology provide two big advantages:
Deep, convincing bass with a punch throughout the whole passenger compartment as well as avoiding vibrations was our goal. We achieved it by moving air masses required to produce deep frequencies through so-called resonance tubes.
With this palette of technically innovative solutions, the Bose Sound System in Porsche convinces with its unique unadulterated stereo sound.

| **BOSE Sound System** | **Boxster / Boxster S** |
|---|---|
| **Audio / electronics**<br>(in the front dividing partition)<br>Bose signal processing for stereo distortionfree sound at any loudness level | 1 Bose-patented TSM-switching amplifier (TSM = Two-State Modulation)<br><br>5 Linear-amplifier, 5 x 25 Watt<br><br>6 Channels for customized equalization |
| **High-output loudspeakers** | **10** |
| Instrument panel | 2x 8.9 cm middle tones<br>2x 4.3 cm high tones |
| Doors | 2x 11.4 cm bass-middle tones in a 5.5 liter bass-reflex housing |
| Behind the seats | 2x 13.3 cm bass tones in a 11 liter bass-reflex housing, and<br>2x 6.4 cm middle tones in separate 0.2 liter housing chambers |


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## 96 Alarm System

Starting with the model 2002 all Boxster verhicles are equipped with an **extended function** of the a**larm system**.

If the vehicle is unlocked **manually (i.e. with the key)** via the **door lock**, the ignition must be turned on within 10 seconds, because otherwise the alarm system will be activated.

If the alarm system has been activated, it can be switched off by turning on the ignition or by using hand-held transmitter.

Attention

This change causes the previous function of lowering the side window by holding the vehicle-key in the unlock-position to be no longer possible.

## 9110 PCM (Porsche Communication Manag e-ment)

In the course of model year '01 (January 2001), a **new navigational processor** for PCM has been introduced.

Following improvements versus the previous model have been made:

- 4-speed CD-ROM drive allowing substantially faster access times to navigation data. This in turn, ensures prompt route calculation plus deviations from the given target can be tracked faster. In addition, map generation in different graduations is speeded up even more.

- 12-channel GPS-receiver replaces previous one with 8 channels. This enables faster and more exact pinpointing of vehicle position.
- Selective gyroscope supports the vehicle location search and therefore enables faster calibration of the PCM should the need arise.

- Processor with 72 MIPS (mega instructions per second) instead of previous 16 MIPS.

- Flash memory: to save program and other important data, e.g., the last position after power failure, etc., with 4 MB instead of previous 2 MB.

- Main memory with 16 MB instead of previous 2 MB.

There is the option to install this new navigation processor retroactively in already delivered vehicles equipped with PCM.
To ensure flawless operation, the disk drive also requires the new software (CD-ROM in 2000-2) that had been introduced to serial production at the same time.
The new CD is absolutely necessary to upgrade the navigation processor. This CD can also be used as the usual update with the devices delivered previously.

The new CD (release 2000-2) causes following function extensions of PCM that will also benefit previously delivered devices:

- New database, from forth quarter / 99

- Fast calibration of route-length sensor by utilizing the turn radius.

- Improved GPS-reset-handling, i.e., faster reorientation after loss of position (e.g., in an underground garage, with insufficient satellite signal, etc.).


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