

2003-08 ACCESSORIES AND EQUIPMENT

Park Assist - 9pa_Cayenne

PARKASSIST

INTRODUCTION

General instructions/safety instructions

WARNING: Danger of injury and damage to the vehicle when the vehicle is in motion.

- Never step in front of or behind a vehicle unless it is in gear and the parking brake is applied to prevent it from rolling.
- The system is subject to physical detection limits and does not free the driver from his/her responsibility to be careful!
- The system cannot detect short, thin and small obstacles and persons who are lying on the ground. It also cannot detect surfaces with unfavorable reflective characteristics, e.g. snow or glass.

WARNING: Danger of injury and damage due to unusual vehicle handling when plugs or components are disconnected!

- Never disconnect plugs when the vehicle is in motion or drive the vehicle with plugs disconnected.
- Drive only with all parts fully installed and connected.

NOTE:

- The rear ParkAssist system is inoperable when a trailer is hitched (plug with load in the trailer socket).
- A warning tone is issued if the system is faulty. This tone differs from the continuous tone that is issued when an obstacle is detected.
- External weather conditions such as ice, snow or dirt can also impair the functioning of the sensors and result in a fault being stored.

CAUTION: Danger of damage due to improper handling of batteries and control unit plug connections!

- Never disconnect battery with engine running.
- Never start engine if battery terminal clamps are not connected securely
- Never puff off or push on plug connections for the control units or other electronic components when the ignition is switched on
- Always disconnect the negative terminal of the battery and pull off all

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plug connections to the vehicle electrical system control unit when carrying out welding work on the vehicle

Troubleshooting procedure

If the fault is currently 'not present', please check the following:

- Diagnostic conditions are met
- All plug connections and ground points of the affected current path are OK.
- Set all wiring harnesses of the affected current path to a state that corresponds to driving by pulling and shaking them.

Diagnostic conditions

NOTE: Important! Always connect a suitable battery charging device to the vehicle electrical system battery before starting diagnosis. All unnecessary loads must also be switched off.

NOTE: The fault can only be identified if the requirements listed under 'Diagnostic conditions' are met. For this reason, the specified procedure must be observed after a fault is repaired:

1. Erase fault memory
2. Satisfy the requirements listed under 'Diagnostic conditions'.
3. Read out fault memory again

Possible causes of fault

NOTE: The 'possible causes of fault' that are responsible for the fault are listed here. Please note that in certain circumstances further faults can be stored in the fault memory after troubleshooting (e.g. if plugs are disconnected). After carrying out repairs, read out the fault memory of all control units and erase any faults.

Diagnosis/troubleshooting

NOTE: The fault memory Info key [F8] on Porsche System Tester II No. 9588 can be used to access the 'extended fault memory'. The following information can be displayed:

Fault type

The following fault types are possible:

- no display

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- upper limit value exceeded
- lower limit value not reached
- mechanical fault
- no signal/communication
- no or incorrect basic setting/adaptation
- Short circuit to B+
- Short circuit to ground
- implausible signal
- open circuit/short circuit to ground
- open circuit/short circuit to B+
- Open circuit
- electrical fault in electric circuit
- please read out fault memory
- faulty
- cannot be checked now

Fault status

The following status types are possible:

- present
- not present
 1. Erase fault memory
 2. Satisfy the requirements listed under 'Diagnostic conditions'.
 3. Read out fault memory again

TOOLS

WARNING: Danger of personal injury while working with special tools.

- 9588 Never hang the Porsche System Tester II over the steering Wheel.

NOTE: Plug contacts are optimally designed to suit the plug system. Operations on pins can cause contact problems. Always use suitable measurement tools for adapter plugs and test cables.

BATTERY CHARGING DEVICE

Refer to equipment instructions.

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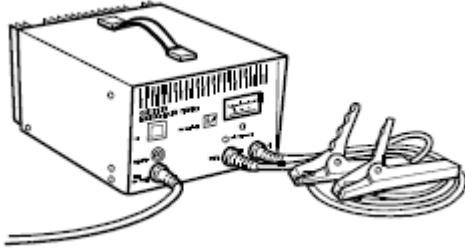


Fig. 1: Identifying Battery Charging Device

Courtesy of PORSCHE OF NORTH AMERICA, INC.

9588 Porsche System Tester II



Fig. 2: Identifying 9588 Porsche System Tester II

Courtesy of PORSCHE OF NORTH AMERICA, INC.

Commercially available digital multimeter



Fig. 3: Identifying Digital Multimeter

Courtesy of PORSCHE OF NORTH AMERICA, INC.

9684 Measurement tool set

97



9684

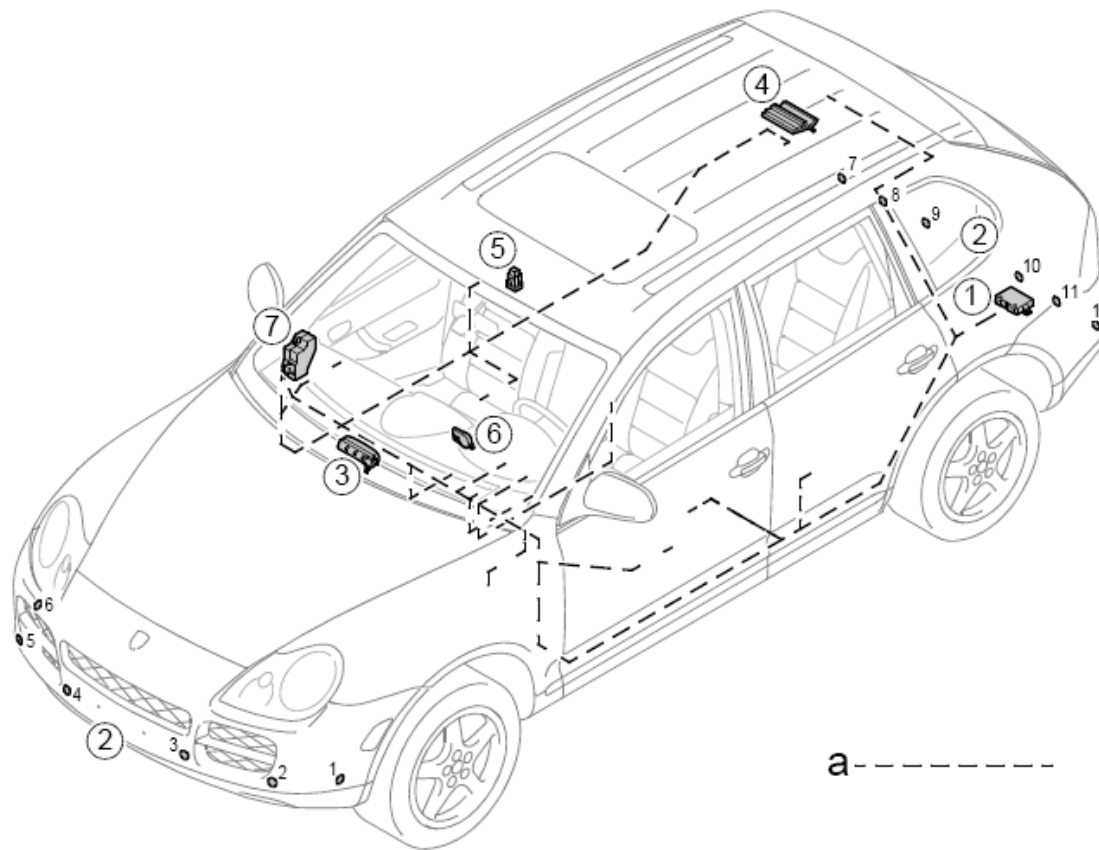
000 721 968 40

Fig. 4: Identifying 9684 Measurement Tool Set
Courtesy of PORSCHE OF NORTH AMERICA, INC.

COMPONENT ARRANGEMENT

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1 - ParkAssist control module

2 - ParkAssist sensors

- ☐ 1 outer front left (OFL)
- ☐ 2 centre front left (CFR)
- ☐ 3 inner front left (IFL)
- ☐ 4 inner front right (IFR)
- ☐ 5 centre front right (CFR)
- ☐ 6 outer front right (OFR)
- ☐ 7 outer rear right (ORR)
- ☐ 8 centre rear right (CRR)
- ☐ 9 inner rear right (IRR)
- ☐ 10 inner rear left (IRL)
- ☐ 11 centre rear left (CRL)
- ☐ 12 outer rear left (ORL)

3 - Display field (LED segments), front

4 - Display field (LED segments), rear

5 - Switch (button)

6 - Buzzer

7 - Fuse carrier at left of dashboard

a - CAN comfort

Fig. 5: Identifying Park Assist Components Arrangement

Courtesy of PORSCHE OF NORTH AMERICA, INC.

CONNECTOR ASSIGNMENT

CONNECTOR ASSIGNMENT FOR PARKASSIST CONTROL MODULE

Connector A, 20-pin:

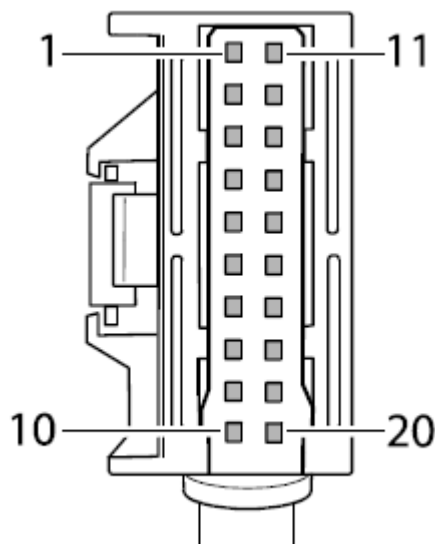


Fig. 6: Identifying Connector Pinouts For Connector A
Courtesy of PORSCHE OF NORTH AMERICA, INC.

CONNECTOR PINOUTS REFERENCE

Pin	Designation	Pin	Designation
1	Terminal 30	2	CAN comfort (high)
3	CAN comfort (low)	4	ParkAssist display field (LED segments) ground
5	ParkAssist display field (LED segments) supply voltage	6	ParkAssist display field (LED segments) signal
7	Not used	8	Not used
9	ParkAssist buzzer supply voltage	10	ParkAssist buzzer signal
11	Terminal 31	12	ParkAssist switch (button) ground
13	ParkAssist LED switch (button) function light voltage supply	14	ParkAssist switch (button) signal
15	Terminal 15	16	Not used
17	Not used	18	Not used
19	Not used	20	Not used

Connector B, 16-pin:

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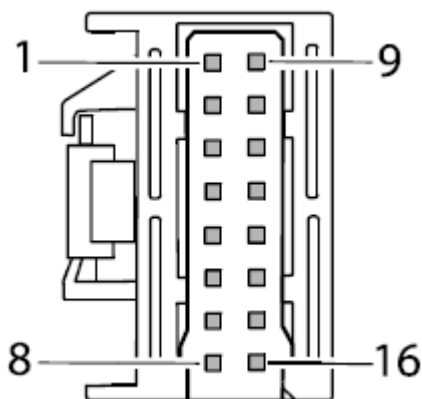


Fig. 7: Identifying Connector Pinouts For Connector B
Courtesy of PORSCHE OF NORTH AMERICA, INC.

CONNECTOR PINOUTS REFERENCE

Pin	Designation	Pin	Designation
1	Ground for front ParkAssist sensors	2	Voltage supply for front ParkAssist sensors
3	Outer front left ParkAssist sensor 1 signal	4	Centre front left ParkAssist sensor 2 signal
5	Inner front left ParkAssist sensor 3 signal	6	Inner front right ParkAssist sensor 4 signal
7	Centre front right ParkAssist sensor 5 signal	8	Outer front right ParkAssist sensor 6 signal
9	Ground for rear ParkAssist sensors	10	Supply voltage for rear ParkAssist sensors
11	Outer rear right ParkAssist sensor 7 signal	12	Centre rear right ParkAssist sensor 8 signal
13	Inner rear right ParkAssist sensor 9 signal	14	Inner rear left ParkAssist sensor 10 signal
15	Outer rear left ParkAssist sensor 12 signal	16	Outer rear left ParkAssist sensor 12 signal

SENSOR PLUG

Sensor plug

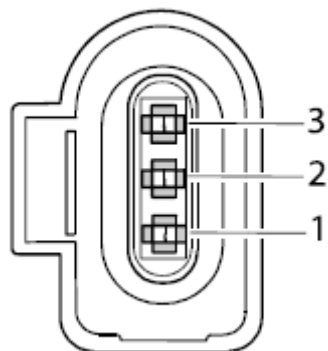


Fig. 8: Identifying Connector Pinouts For Sensor Plug
Courtesy of PORSCHE OF NORTH AMERICA, INC.

CONNECTOR PINOUTS REFERENCE

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Pin	Designation	Pin	Designation
1	Sensor supply voltage	2	Sensor signal
3	Sensor ground		

FAULT OVERVIEW

FAULT OVERVIEW CHART

Fault code	Fault text	Fault effect
<u>0003</u>	Control unit faulty	• System does not function • Visual and audible fault indication
<u>0149</u>	No or incorrect basic setting/coding or programming	• System does not function • Visual and audible fault indication
<u>0429</u>	ParkAssistent display field (LED segments), front left	• No or faulty visual display function
<u>0430</u>	ParkAssistent display field (LED segments), front right	• Limited visual display function
<u>0431</u>	ParkAssist display field (LED segments), rear	• Limited visual display function
<u>0432</u>	ParkAssist display field/buzzer supply voltage	• No visual or audible fault indication
<u>0433</u>	Switch (button)	• System cannot be switched off with button
<u>0434</u>	ParkAssist sensor 3, inner front left	• Visual and audible fault indication • Stop warning
<u>0435</u>	ParkAssist sensor 4, inner front right	• Visual and audible fault indication • Stop warning
<u>0436</u>	ParkAssist sensor 10, inner rear left	• Visual and audible fault indication • Stop warning
<u>0437</u>	ParkAssist sensor 9, inner rear right	• Visual and audible fault indication • Stop warning
<u>0455</u>	KESY control unit (CAN comfort)	• System does not function
<u>0457</u>	Vehicle electrical system control unit (CAN comfort)	• Display fields at maximum brightness
<u>1044</u>	Gateway control unit (instrument cluster) incorrectly coded	• -
<u>1299</u>	Gateway (instrument cluster)	• System does not function
<u>1312</u>	CAN drive	• System does not function
<u>1336</u>	CAN comfort OFF	• System does not function • Visual and audible fault indication

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<u>1341</u>	Instrument cluster	• -
<u>1517</u>	AHK control unit	• Cannot switch off when towing trailer
<u>1543</u>	ParkAssist buzzer	• No or limited audible warning
<u>1545</u>	ParkAssist sensor 12, outer rear left	• Visual and audible fault indication • Stop warning
<u>1546</u>	ParkAssist sensor 11, Centre rear left	• Visual and audible fault indication • Stop warning
<u>1547</u>	ParkAssist sensor 8, Centre rear right	• Visual and audible fault indication • Stop warning
<u>1548</u>	ParkAssist sensor 7, outer rear right	• Visual and audible fault indication • Stop warning
<u>1549</u>	Sensor power supply	• Visual and audible fault indication
<u>1626</u>	ParkAssist sensor 6, outer front right	• Visual and audible fault indication • Stop warning
<u>1627</u>	ParkAssist sensor 5, Centre front right	• Visual and audible fault indication • Stop warning
<u>1628</u>	ParkAssist sensor 2, Centre front left	• Visual and audible fault indication • Stop warning
<u>1629</u>	ParkAssist sensor 1, outer front left	• Visual and audible fault indication • Stop warning

FAULT CODE 0003

CONTROL UNIT FAULTY

Diagnostic conditions

- Ignition on
- Internal function test

Possible cause of fault

- ParkAssist control unit faulty

Affected pins

-

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DIAGNOSIS/TROUBLESHOOTING

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction	Display OK	If not OK
1 Replace ParkAssist control unit	--> End	

FAULT CODE 0149

NO OR INCORRECT BASIC SETTING/CODING OR PROGRAMMING

NOTE: Also refer to the 91 74 19 REMOVING AND INSTALLING CONTROL MODULE FOR PARKASSIST - AS OF MY 2003 (ALL MODELS) (Setting Parameters).

Diagnostic conditions

- Ignition on
- ParkAssist control unit internal function test

Possible cause of fault

- ParkAssist control unit not coded/parameterised or incorrectly so

NOTE: After coding or entering new parameters, the ignition must be switched off and on again. Only then are the new functions active.

Affected pins

-

DIAGNOSIS/TROUBLESHOOTING

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction	Display OK	If not OK
1 Correctly code ParkAssist control unit	--> End	

FAULT CODE 0429

PARKASSISTENT DISPLAY FIELD (LED SEGMENTS), FRONT LEFT

Diagnostic conditions

- Ignition on
- ParkAssist control unit internal function test
- Selector lever position in transmission range R or N

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Possible cause of fault

- Wiring connection between control unit and display fields (LED segments) faulty
- ParkAssistent display field (LED segments), front, faulty
- ParkAssist control unit faulty

NOTE: **The display fields (LED segments), front left and right, are not separate components. They can be exchanged as a complete unit only.**

Affected pins

Plug A for ParkAssist control unit:

- Pin 6 'PDC display, signal'
- Pin 5 'PDC display voltage'
- Pin 4 'PDC display GND'

Plug for display field (LED segments):

- Pin 1 'Battery voltage'
- Pin 2 'ground'
- Pin 3 'signal'

DIAGNOSIS/TROUBLESHOOTING

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction			Display OK	If not OK
1	Check voltage supply line	• Ignition off • Pull off plug for display field (LED segments) • Ignition on • Selector lever position in transmission range R or N • Measure voltage between pin 1 of display field plug and ground (vehicle)	11.4...14.5V Go to Step 2	Repair line or line connection --> End
2	Check ground connection for display field (LED segments)	• Measure resistance between pin 2 of display field plug and ground (vehicle)	< 5 ohms Go to Step 3	Repair line or line connection --> End
3	Check signal line for short circuit to B+	• Switch off ignition • Measure voltage between pin 3 of display field plug and ground (vehicle)	< 0.3 V Go to Step 4	Repair line or line connection --> End
	Check signal line for	• Measure resistance between pin 3 of	infinity	Repair line or

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4	short circuit to ground (vehicle)	display field plug and ground (vehicle)	ohms Go to Step 5	line connection --> End
5	Check signal lead for open circuit	Measure resistance between pin 3 of plug for display field and pin 6 of plug A for ParkAssist control unit	< 5 ohms Go to Step 6	Repair line or line connection --> End
6	Replace display field (LED segments)		--> End	Go to Step 7
7	Replace ParkAssist control unit		--> End	

FAULT CODE 0430

PARKASSISTENT DISPLAY FIELD (LED SEGMENTS), FRONT RIGHT

Diagnostic conditions

- Ignition on
- ParkAssist control unit internal function test
- Selector lever position in transmission range R or N

Possible cause of fault

- Wiring connection between control unit and display fields (LED segments) faulty
- ParkAssistent display field (LED segments), front, faulty
- ParkAssist control unit faulty

NOTE: The display fields (LED segments), front left and right, are not separate components. They can be exchanged as a complete unit only.

Affected pins

Plug A for ParkAssist control unit:

- Pin 6 'PDC display, signal'
- Pin 5 'PDC display voltage'
- Pin 4 'PDC display GND'

Plug for display field (LED segments):

- Pin 1 'Battery voltage'
- Pin 2 'ground'
- Pin 3 'signal'

DIAGNOSIS/TROUBLESHOOTING

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DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction			Display OK	If not OK
1	Check supply voltage	• Ignition off • Pull off plug for display field (LED segments) • Ignition on • Measure voltage between pin 1 of display field plug and ground (vehicle)	11.4...14.5V Go to Step 2	Repair line or line connection --> End
2	Check ground connection for display field (LED segments)	• Measure resistance between pin 2 of display field plug and ground (vehicle)	< 5 ohms Go to Step 3	Repair line or line connection --> End
3	Check signal line for short circuit to B+	• Switch off ignition • Measure voltage between pin 3 of display field plug and ground (vehicle)	< 0.3V Go to Step 4	Repair line or line connection --> End
4	Check signal line for short circuit to ground	• Measure resistance between pin 3 of display field plug and ground (vehicle)	infinity ohms Go to Step 5	Repair line or line connection --> End
5	Check signal line for open circuit	• Measure resistance between pin 3 of plug for display field and pin 6 of plug A for ParkAssist control unit	< 5 ohms Go to Step 6	Repair line or line connection --> End
6	Replace display field (LED segments)		--> End	Go to Step 7
7	Replace ParkAssist control unit		--> End	

FAULT CODE 0431

PARKASSIST DISPLAY FIELD (LED SEGMENTS), REAR

Diagnostic conditions

- Ignition on
- ParkAssist control unit internal function test
- Selector lever position in transmission range R or N

Possible cause of fault

- Wiring connection between control unit and display fields (LED segments) faulty
- ParkAssist display field (LED segments), rear, faulty
- ParkAssist control unit faulty

NOTE: Unlike at the front, there is a combined fault code for the rear, left and right.

Affected pins

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NOTE: There is a further plug connection for the rear display field (LED segments) in the area of the roof console.

Plug A for ParkAssist control unit:

- Pin 6 'PDC display, signal'
- Pin 5 'PDC display voltage'
- Pin 4 'PDC display GND'

Plug for display field (LED segments):

- Pin 1 'Battery voltage'
- Pin 2 'ground'
- Pin 3 'signal'

DIAGNOSIS/TROUBLESHOOTING

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction			Display OK	If not OK
1	Check voltage supply line	• Ignition off • Pull off plug for display field (LED segments) • Ignition on • Check supply voltage: Measure voltage between pin 1 of display field plug and ground (vehicle)	11.4...14.5V Go to Step 2	Repair line or line connection --> End
2	Check ground connection for display field (LED segments)	• Check ground connection: Measure resistance between pin 2 of display field plug and ground (vehicle)	< 5 ohms Go to Step 3	Repair line or line connection --> End
3	Check signal line for short circuit to B+	• Switch off ignition • Measure voltage between pin 3 of display field plug and ground (vehicle)	< 0.3 V Go to Step 4	Repair line or line connection --> End
4	Check signal line for short circuit to ground	• Measure resistance between pin 3 of display field plug and ground (vehicle)	infinity ohms Go to Step 5	Repair line or line connection --> End
5	Check signal line for open circuit	• Measure resistance between pin 3 of plug for display field and pin 6 of plug A for ParkAssist control unit	< 5 ohms Go to Step 6	Repair line or line connection --> End
6	Replace display field (LED segments)		--> End	Go to Step 7
7	Replace ParkAssist control unit		--> End	

FAULT CODE 0432

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PARKASSIST DISPLAY FIELD/BUZZER, SUPPLY VOLTAGE

Diagnostic conditions

- Ignition on
- ParkAssist control unit internal function test
- Selector lever position in transmission range R or N

Possible cause of fault

- Supply voltage for display fields (LED segments) and buzzer outside allowable limits (8.0 - 16.5 V)
- Wiring connection between control unit and display fields (LED segments) and buzzer faulty
- ParkAssist display field/buzzer faulty
- ParkAssist control unit faulty

NOTE: If the buzzer is too quiet, this may also be caused by deposits of dirt and metal filings on the magnets of the buzzer.

Affected pins

Plug A for ParkAssist control unit:

- Pin 5 'PDC display voltage'
- Pin 4 'PDC display GND'
- Pin 9 'PDC tone generator +'

Plug for display field (LED segments):

- Pin 1 'Battery/supply voltage'
- Pin 2 'Ground/GND'

Plug for buzzer (loudspeaker/tone generator):

- Pin 1 '1'
- Pin 2 '2'

NOTE: In the wiring connection to the rear display field, there is an additional disconnection point in the area of the roof console.

DIAGNOSIS/TROUBLESHOOTING

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction	Display OK	If not OK
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1	Check display supply voltage	• Switch off ignition • Pull plug off display field • Switch on ignition • Measure voltage between pin 1 of display field plug and vehicle ground	11.4...14.5 V Go to Step 2	Repair wire or replace wiring harness --> End
2	Check ground supply line	• Measure resistance between pin 2 of display field plug and ground (vehicle)	< 5 ohms Go to Step 3	Repair wire or replace wiring harness --> End
3	Check buzzer supply voltage	• Measure voltage between pin 1 of buzzer plug and vehicle ground	11.4...14.5 V Go to Step 4	Repair wire or replace wiring harness --> End
4	Check supply lines for open circuit between control unit plug and plug for display fields (LED segments) or buzzer	• Switch off ignition • Pull plug A off ParkAssist control unit • Measure resistance of connecting leads from plug for control unit to plug for display field or buzzer: • Pin 6 and pin 3 • Pin 5 and pin 1 • Pin 9 and pin 1 (buzzer)	< 5 ohms Go to Step 5	Repair wire or replace wiring harness --> End
5	Check supply lines for short circuit to ground between plug for control unit and plug for display fields (LED segments) or buzzer	• Measure resistance to ground (vehicle) of display field plug or buzzer plug lines: • Pin 5 or pin 1 • Pin 9 or pin 1 (buzzer)	infinity ohms Go to Step 6	Repair wire or replace wiring harness --> End
6	Replace ParkAssist control unit		--> End	

FAULT CODE 0433

NOTE: If the duration of the signal from the switch is too long (e.g. if pressed too long) > 60 seconds, the system automatically activates.

PARKASSIST SWITCH (BUTTON)

Diagnostic conditions

- Ignition on
- ParkAssist control unit internal function test

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- Selector lever position in transmission range R or N

Possible cause of fault

- ParkAssist switch (button) pressed too long (> 60 seconds)
- Switch sticks or is faulty
- Wiring connection between control unit and switch faulty
- ParkAssist control unit

Affected pins

Plug A for ParkAssist control unit:

- Pin 12 'PDC switch, GND'
- Pin 13 'PDC function LED'
- Pin 14 'PDC switch, signal'

Plug for roof console/switch (roof module) wiring harness:

- Pin 1 (LED) 'PDC function'
- Pin 2 (switch signal) 'PDC switch'
- Pin 3 (ground) 'PDC GND'

DIAGNOSIS/TROUBLESHOOTING

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction			Display OK	If not OK
1	Check switch (button)	• Using the Porsche System Tester II No. 9588, check switch function	Erase fault memory --> End	Go to Step 2
2	Check switch (button) with multimeter	• Switch off ignition • Pull off plug for telematics/ParkAssist switch in roof console • Measure resistance at the switch module between pins 2 and 3	Switch (button) not pressed: infinity ohms Switch (button) pressed: < 5 ohms.	Replace switch (button) or roof console --> End
3	Check ground supply line of roof console switch	• Measure resistance between pin 3 of plug for telematics/ParkAssist roof console and ground (vehicle)	< 5 ohms Go to Step 4	Repair wire or replace wiring harness --> End
	Check signal line of	• Switch off ignition • Pull plug off ParkAssist control unit		Repair wire or

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4	switch (button) for short circuit to ground	Measure resistance between pin 14 of plug A for ParkAssist control unit and ground (vehicle)	infinity ohms Go to Step 5	replace wiring harness --> End
5	Check signal line of switch (button) for open circuit	Measure resistance between pin 14 of plug A for ParkAssist control unit and pin 2 of plug for telematics/ParkAssist switch in roof console	< 5 ohms Go to Step 6	Repair wire or replace wiring harness --> End
6	Replace ParkAssist control unit		--> End	

FAULT CODE 0434

PARKASSIST SENSOR 3, INNER FRONT LEFT

Diagnostic conditions

- Ignition on
- Selector lever position in transmission range R or N
- ParkAssist control unit internal function test
- Vehicle speed briefly greater than 14 km/h

Possible cause of fault

NOTE: **Fault entry due to environmental conditions: this fault can also occur if the sensors are heavily soiled, iced-up or have been painted. In addition, intense sound sources such as pneumatic hammers can cause defects.**

- Adverse environmental conditions
- Short or open circuit in wires between control unit and sensor
- Sensor faulty
- ParkAssist control unit faulty

Affected pins

Plug for sensor wiring harness:

- Pin 1 'PDC sensor, battery voltage'
- Pin 2 'PDC sensor, signal'
- Pin 3 'PDC sensor, GND'

Plug B for control unit wiring harness:

- Pin 1 'PDC sensor, front -'
- Pin 2 'PDC sensor, front +'

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- Pin 5 'PDC sensor, inner FL'

DIAGNOSIS/TROUBLESHOOTING

NOTE: If the above environmental conditions can be eliminated as a cause and the fault has the status "present", troubleshooting must be performed.

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction			Display OK	If not OK
1	Visual inspection	• Check sensor for heavy external soiling or damage • Check the sensor plug for damage and corrosion	Go to Step 2	Remove dirt from sensor and replace, or repair sensor plug --> End
2	Perform drive link test for sensor(s)	• Using Porsche System Tester II No. 9588 perform drive link test for sensors	Test drive to check fault cleared --> End	Go to Step 3
3	Check supply voltage for sensor(s), see also <u>FAULT CODE 1549</u> for sensor supply voltage	• Switch off ignition • Pull plug off sensor • Switch on ignition • Selector lever position in transmission range R or N • Measure voltage between pin 1 of sensor plug and vehicle ground	approx. 8.5 V Go to Step 4	Repair wire or replace wiring harness Go to Step 7
4	Check ground line of sensor	• Measure voltage between pin 1 and pin 3 of sensor plug	approx. 8.5 V Go to Step 5	Repair wire or replace wiring harness --> End
5	Check signal line of sensor for short to ground	• Switch off ignition • Pull plug off ParkAssist control unit • Measure resistance between pin 5 of plug B for ParkAssist control unit and ground (vehicle)	infinity ohms Go to Step 6	Repair wire or replace wiring harness --> End
6	Check signal line of sensor for short to B+	• Switch on ignition • Measure voltage between pin 5 of plug B for ParkAssist control unit and ground (vehicle)	< 0.3 V Go to Step 7	Repair wire or replace wiring harness --> End
		• Measure resistance between pin		Repair wire or

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7	Check signal line of sensor for open circuit	5 of plug B for ParkAssist control unit and pin 2 of sensor plug	< 5 ohms Go to Step 8	replace wiring harness --> End
8	Replace sensor		--> End	Go to Step 9
9	Replace control unit ParkAssist		--> End	

FAULT CODE 0435

PARKASSIST SENSOR 4, INNER FRONT RIGHT

Diagnostic conditions

- Ignition on
- Selector lever position in transmission range R or N
- ParkAssist control unit internal function test
- Vehicle speed briefly greater than 14 km/h

Possible cause of fault

NOTE: **Fault entry due to environmental conditions: this fault can also occur if the sensors are heavily soiled, iced-up or have been painted. In addition, intense sound sources such as pneumatic hammers can cause defects.**

- Adverse environmental conditions
- Short or open circuit in wires between control unit and sensor
- Sensor faulty
- ParkAssist control unit faulty

Affected pins

Plug for sensor wiring harness:

- Pin 1 'PDC sensor, battery voltage'
- Pin 2 'PDC sensor, signal'
- Pin 3 'PDC sensor, GND'

Plug B for control unit wiring harness:

- Pin 1 'PDC sensor, front -'
- Pin 2 'PDC sensor, front +'
- Pin 6 'PDC sensor, inner FR'

DIAGNOSIS/TROUBLESHOOTING

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NOTE: If the above environmental conditions can be eliminated as a cause and the fault has the status "present", troubleshooting must be performed.

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction		Display OK	If not OK
1	Visual inspection	Go to Step 2	Remove dirt from sensor and replace, or repair sensor plug --> End
2	Perform drive link test for sensor	Test drive to check fault cleared --> End	Go to Step 3
3	Check supply voltage for sensor, see also FAULT CODE 1549 for sensor supply voltage	approx. 8.5 V Go to Step 4	Repair wire or replace wiring harness --> End
4	Check ground line of sensor	approx. 8.5 V Go to Step 5	Repair wire or replace wiring harness --> End
5	Check signal line of sensor for short to ground	infinity ohms Go to Step 6	Repair wire or replace wiring harness --> End
6	Check signal line of sensor for short to B+	< 0.3 V Go to Step 7	Repair wire or replace wiring harness --> End
7	Check signal line of sensor for open circuit	< 5 ohms Go to Step 8	Repair wire or replace wiring harness --> End
8	Replace sensor	--> End	Go to Step 9

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9|Replace control unit ParkAssist

--> End

FAULT CODE 0436

PARKASSIST SENSOR 10, INNER REAR LEFT

Diagnostic conditions

- Ignition on
- Selector lever position in transmission range R or N
- ParkAssist control unit internal function test
- Vehicle speed briefly greater than 14 km/h

Possible cause of fault

NOTE: **Fault entry due to environmental conditions: this fault can also occur if the sensors are heavily soiled, iced-up or have been painted. In addition, intense sound sources such as pneumatic hammers can cause defects.**

- Adverse environmental conditions
- Short or open circuit in wires between control unit and sensor
- Sensor faulty
- ParkAssist control unit faulty

Affected pins

Plug for sensor wiring harness:

- Pin 1 'PDC sensor, battery voltage'
- Pin 2 'PDC sensor, signal'
- Pin 3 'PDC sensor, GND'

Plug B for control unit wiring harness:

- Pin 9 'PDC sensor, rear -'
- Pin 10 'PDC sensor, rear +'
- Pin 14 'PDC sensor, inner RL'

DIAGNOSIS/TROUBLESHOOTING

NOTE: **If the above environmental conditions can be eliminated as a cause and the fault has the status "present", troubleshooting must be performed.**

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DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction		Display OK	If not OK
1	Visual inspection	- Check sensor 10 for heavy external soiling or damage - Check the sensor plug for damage and corrosion	Go to Step 2 Remove dirt from sensor and replace, or repair sensor plug --> End
2	Perform drive link test for sensor	Using 9588 Porsche System Tester II perform drive link test for corresponding sensors	Test drive to check fault cleared --> End Go to Step 3
3	Check supply voltage for sensor, see also FAULT CODE 1549 for sensor supply voltage	- Switch off ignition - Pull plug off sensor - Switch on ignition - Selector lever position in transmission range R or N - Measure voltage between pin 1 of the sensor plug and ground (vehicle)	approx. 8.5 V Go to Step 4 Repair wire or replace wiring harness --> End
4	Check ground lead of the sensor	Measure voltage between pin 1 and pin 3 of sensor plug	approx. 8.5 V Go to Step 5 Repair wire or replace wiring harness --> End
5	Check signal line of sensor for short to ground	- Switch off ignition - Pull plug off ParkAssist control unit - Measure resistance between pin 14 of plug B for ParkAssist control unit and ground (vehicle)	infinity ohms Go to Step 6 Repair wire or replace wiring harness --> End
6	Check signal line of sensor for short to B+	- Switch on ignition - Measure voltage between pin 14 of plug B for ParkAssist control unit and ground (vehicle)	< 0.3 V Go to Step 7 Repair wire or replace wiring harness --> End
7	Check signal lead of the sensor for open circuit	Measure resistance between pin 14 of plug B for ParkAssist control unit and pin 2 of sensor plug	< 5 ohms Go to Step 8 Repair wire or replace wiring harness --> End
8	Replace sensor	--> End	Go to Step 9
9	Replace control module for ParkAssist	--> End	

FAULT CODE 0437

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PARKASSIST SENSOR 9, INNER REAR RIGHT

Diagnostic conditions

- Ignition on
- Selector lever position in transmission range R or N
- ParkAssist control unit internal function test
- Vehicle speed briefly greater than 14 km/h

Possible cause of fault

NOTE: **Fault entry due to environmental conditions: this fault can also occur if the sensors are heavily soiled, iced-up or have been painted. In addition, intense sound sources such as pneumatic hammers can cause defects.**

- Adverse environmental conditions
- Short or open circuit in wires between control unit and sensor
- Sensor faulty
- ParkAssist control unit faulty

Affected pins

Plug for sensor wiring harness:

- Pin 1 'PDC sensor, battery voltage'
- Pin 2 'PDC sensor, signal'
- Pin 3 'PDC sensor, GND'

Plug B for control unit wiring harness:

- Pin 9 'PDC sensor, rear -'
- Pin 10 'PDC sensor, rear +'
- Pin 13 'PDC sensor, center RR'

DIAGNOSIS/TROUBLESHOOTING

NOTE: **If the above environmental conditions can be eliminated as a cause and the fault has the status "present", troubleshooting must be performed.**

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction		Display OK	If not OK
	• Check sensor 9 for heavy external soiling or damage		Remove dirt from sensor and replace.

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1	Visual inspection	Check the sensor plug for damage and corrosion	Go to Step 2	or repair sensor plug --> End
2	Perform drive link test for sensor	Using 9588 Porsche System Tester II perform drive link test for corresponding sensors	Test drive to check fault cleared --> End	Go to Step 3
3	Check supply voltage for sensor, see also FAULT CODE 1549 for sensor supply voltage	- Switch off ignition - Pull plug off sensor - Switch on ignition - Selector lever position in transmission range R or N - Measure voltage between pin 1 of the sensor plug and ground (vehicle)	approx. 8.5 V Go to Step 4	Repair wire or replace wiring harness --> End
4	Check ground lead of the sensor	Measure voltage between pin 1 and pin 3 of sensor plug	approx. 8.5 V Go to Step 5	Repair wire or replace wiring harness --> End
5	Check signal line of sensor for short to ground	- Switch off ignition - Pull plug off ParkAssist control unit - Measure resistance between pin 13 of plug B for ParkAssist control unit and ground (vehicle)	infinity ohms Go to Step 6	Repair wire or replace wiring harness --> End
6	Check signal line of sensor for short to B+	- Switch on ignition - Measure voltage between pin 13 of plug B for ParkAssist control unit and ground (vehicle)	< 0.3 V Go to Step 7	Repair wire or replace wiring harness --> End
7	Check signal lead of the sensor for open circuit	Measure resistance between pin 13 of plug B for ParkAssist control unit and pin 2 of sensor plug	< 5 ohms Go to Step 8	Repair wire or replace wiring harness --> End
8	Replace sensor		--> End	Go to Step 9
9	Replace control module for ParkAssist		--> End	

FAULT CODE 0455

KESSY CONTROL UNIT (CAN COMFORT)

Diagnostic conditions

- Ignition on

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- ParkAssist control unit internal function test
- Selector lever position in transmission range R or N

Possible cause of fault

- No signal/communication (no signal from KESSY control unit on CAN comfort)
- Fault entered in KESSY control unit

Affected pins

Plug A for control unit:

- Pin 3 'CAN comfort (low)'
- Pin 4 'CAN comfort (high)'

DIAGNOSIS/TROUBLESHOOTING

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction		Display OK	If not OK
1	Continue troubleshooting, refer to <u>CHECKING INSTRUCTIONS/CAN DATA BUS</u> .	--> End	

FAULT CODE 0457

VEHICLE ELECTRICAL SYSTEM CONTROL UNIT (CAN COMFORT)

Diagnostic conditions

- ParkAssist control unit internal function test

Possible cause of fault

- No signal/communication (no signal from vehicle electrical system control unit on CAN comfort)
- Read out fault memory (from vehicle electrical system control unit)

Affected pins

Plug A for ParkAssist control unit:

- Pin 3 'CAN comfort (low)'
- Pin 2 'CAN comfort (high)'

NOTE: With this fault, the display fields (LED segments) might be at full brilliance.

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DIAGNOSIS/TROUBLESHOOTING

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction	Display OK	If not OK
1 Check fault type using [F8]	'no signal/communication' Go to Step 2 'please read out fault memory' Go to Step 3	
2 Check fault memory in the ParkAssist control unit for further faults	Further faults present => Correct the faults according to instructions	Go to Step 3
3 Read out fault memory in vehicle electrical system control unit	Further faults present => Correct the faults according to instructions	Go to Step 4
4 Continue troubleshooting, refer to <u>CHECKING INSTRUCTIONS/CAN DATA BUS</u> .	--> End	

FAULT CODE 1044

CONTROL UNIT (INSTRUMENT CLUSTER/GATEWAY) CODED INCORRECTLY

Diagnostic conditions

- Ignition on
- ParkAssist control unit internal function test
- Internal function test on instrument cluster and gateway

Possible cause of fault

- Instrument cluster/gateway coded incorrectly

NOTE: This fault can occur if the instrument cluster/gateway does not detect the ParkAssist control unit

Affected pins

-

DIAGNOSIS/TROUBLESHOOTING

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction	Display OK	If not OK
1 Read out instrument cluster/gateway fault memory	Go to Step 2	
2 Code instrument cluster/gateway correctly	--> End	

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FAULT CODE 1299

GATEWAY

Diagnostic conditions

- Ignition switched on
- ParkAssist control unit internal function test

Possible cause of fault

- Communication problem with the gateway

Affected pins

Wiring harness plug for ParkAssist control unit:

- Pin 7 'CAN Infotainment (high)'
- Pin 8 'CAN Infotainment (low)'

DIAGNOSIS/TROUBLESHOOTING

NOTE: If there is no incoming signal via CAN Infotainment using several control units, CAN Infotainment must be checked for open or short circuits. Refer to 'CHECKING INSTRUCTIONS/CAN DATA BUS'.

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction		Display OK	If not OK
1	Check fault memory in gateway for faults	Further faults present => Correct the faults	Go to Step 2
2	Continue troubleshooting, refer to <u>CHECKING INSTRUCTIONS/CAN DATA BUS</u> .	CAN, isolate fault in accordance with checking instructions --> End	

FAULT CODE 1312

CAN DRIVE

Diagnostic conditions

- Ignition on
- ParkAssist control unit internal function test
- Internal function test on instrument cluster and gateway

Possible causes of fault

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- CAN drive faulty (CAN drive line faulty)

Affected pins

Plug A for ParkAssist control unit:

- Pin 3 'CAN drive (low)'
- Pin 2 'CAN drive (high)'

DIAGNOSIS/TROUBLESHOOTING

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction		Display OK	If not OK
1	Continue troubleshooting, refer to <u>CHECKING INSTRUCTIONS/CAN DATA BUS</u> .	--> End	

FAULT CODE 1336

CAN COMFORT OFF

Diagnostic conditions

- ParkAssist control unit internal function test
- Ignition on

Possible cause of fault

- Short circuit between CAN lead (high) and CAN lead (low)
- Short circuit to B+
- Short circuit to ground
- Fault in a control unit connected to CAN comfort

Affected pins

Plug A for ParkAssist control unit:

- Pin 3 'CAN comfort (low)'
- Pin 2 'CAN comfort (high)'

DIAGNOSIS/TROUBLESHOOTING

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction		Display	If not
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		OK	OK
1	Continue troubleshooting, refer to <u>CHECKING INSTRUCTIONS/CAN DATA BUS</u> .	--> End	

FAULT CODE 1341

INSTRUMENT CLUSTER

Diagnostic conditions

- ParkAssist control unit internal function test

Possible cause of fault

- No signal/communication (no signal from instrument cluster on CAN comfort)

Affected pins

Plug A for ParkAssist control unit:

- Pin 3 'CAN comfort (low)'
- Pin 2 'CAN comfort (high)'

DIAGNOSIS/TROUBLESHOOTING

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction	Display OK	If not OK
1 Continue troubleshooting, refer to <u>CHECKING INSTRUCTIONS/CAN DATA BUS</u> .	--> End	

FAULT CODE 1517

TRAILER HITCH CONTROL UNIT

NOTE: With this fault, the rear ParkAssist sensor system is activated even with a trailer.

Diagnostic conditions

- Ignition on
- ParkAssist control unit internal function test

Possible cause of fault

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- No signal/communication (no signal from trailer hitch control unit on CAN comfort)

Affected pins

Plug A for ParkAssist control unit:

- Pin 3 'CAN comfort (low)'
- Pin 2 'CAN comfort (high)'

DIAGNOSIS/TROUBLESHOOTING

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction		Display OK	If not OK
1	Continue troubleshooting, refer to <u>CHECKING INSTRUCTIONS/CAN DATA BUS</u> .	--> End	

FAULT CODE 1543

PARKASSIST BUZZER

NOTE: The buzzer is also referred to as a loudspeaker or tone generator

Diagnostic conditions

- Ignition on
- ParkAssist control unit internal function test
- Selector lever position in transmission range R or N

Possible cause of fault

- Wiring connection between control unit and buzzer faulty
- Buzzer faulty
- ParkAssist control unit faulty

Affected pins

Plug A for ParkAssist control unit:

- Pin 9 'PDC tone generator +'
- Pin 10 'PDC tone generator, signal'

Buzzer plug:

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- Pin 1 '1'
- Pin 2 '2'

DIAGNOSIS/TROUBLESHOOTING

NOTE: To power the buzzer, the ignition must be switched on.

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction			Display OK	If not OK
1	Measure buzzer supply voltage	• Switch off ignition • Pull off buzzer plug • Switch on ignition • Measure voltage between pin 1 of buzzer plug and vehicle ground	11.4...14.5 V Go to Step 2	Repair line or line connection --> End
2	Check buzzer signal line for open circuit	• Switch off ignition • Pull plug A off ParkAssist control unit • Measure line resistance between pin 10 of plug A for ParkAssist control unit and pin 1 of buzzer plug	< 5 ohms Go to Step 3	Repair line or line connection --> End
3	Check buzzer signal line for short circuit to B+	• Measure voltage between pin 1 of buzzer plug and ground (vehicle)	< 0.3 V Go to Step 4	Repair line or line connection --> End
4	Check buzzer signal line for short circuit to ground	• Measure resistance of signal line between pin 1 of buzzer plug and ground (vehicle)	infinity ohms	Repair line or line connection --> End
5	Replace buzzer		--> End	Go to Step 6
6	Replace ParkAssist control unit		--> End	

FAULT CODE 1545

PARKASSIST SENSOR 12, OUTER REAR LEFT

Diagnostic conditions

- Ignition on
- Selector lever position in transmission range R or N
- ParkAssist control unit internal function test
- Vehicle speed briefly greater than 14 km/h

Possible cause of fault

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NOTE: Fault entry due to environmental conditions: this fault can also occur if the sensors are heavily soiled, iced-up or have been painted. In addition, intense sound sources such as pneumatic hammers can cause defects.

- Adverse environmental conditions
- Short or open circuit in wires between control unit and sensor
- Sensor faulty
- ParkAssist control unit faulty

Affected pins

Plug for sensor wiring harness:

- Pin 1 'PDC sensor, battery voltage'
- Pin 2 'PDC sensor, signal'
- Pin 3 'PDC sensor, GND'

Plug B for control unit wiring harness:

- Pin 9 'PDC sensor, rear -'
- Pin 10 'PDC sensor, rear +'
- Pin 16 'PDC sensor, outer RL'

DIAGNOSIS/TROUBLESHOOTING

NOTE: If the above environmental conditions can be eliminated as a cause and the fault has the status "present", troubleshooting must be performed.

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction			Display OK	If not OK
1	Visual inspection	• Check sensor 12 for heavy external soiling or damage • Check the sensor plug for damage and corrosion	Go to Step 2	Remove dirt from sensor and replace, or repair sensor plug --> End
2	Perform drive link test for sensor	• Using 9588 Porsche System Tester II perform drive link test for corresponding sensors	Test drive to check fault cleared --> End	Go to Step 3
3	Check supply voltage for sensor, see also FAULT	• Switch off ignition • Pull plug off sensor • Switch on ignition • Selector lever position in	approx. 8.5 V	Repair wire or replace wiring

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	CODE 1549 for sensor supply voltage	transmission range R or N Measure voltage between pin 1 of the sensor plug and ground (vehicle)	Go to Step 4	harness --> End
4	Check ground lead of the sensor	Measure voltage between pin 1 and pin 3 of sensor plug	approx. 8.5 V Go to Step 5	Repair wire or replace wiring harness --> End
5	Check signal line of sensor for short to ground	- Switch off ignition - Pull plug off ParkAssist control unit - Measure resistance between pin 16 of plug B for ParkAssist control unit and ground (vehicle)	infinity ohms Go to Step 6	Repair wire or replace wiring harness --> End
6	Check signal line of sensor for short to B+	- Switch on ignition - Measure voltage between pin 16 of plug B for ParkAssist control unit and ground (vehicle)	< 0.3 V Go to Step 7	Repair wire or replace wiring harness --> End
7	Check signal lead of the sensor for open circuit	Measure resistance between pin 16 of plug B for ParkAssist control unit and pin 2 of sensor plug	< 5 ohms Go to Step 8	Repair wire or replace wiring harness --> End
8	Replace sensor		--> End	Go to Step 9
9	Replace control module for ParkAssist		--> End	

FAULT CODE 1546

PARKASSIST SENSOR 11, CENTRE REAR LEFT

Diagnostic conditions

- Ignition on
- Selector lever position in transmission range R or N
- ParkAssist control unit internal function test
- Vehicle speed briefly greater than 14 km/h

Possible cause of fault

NOTE: Fault entry due to environmental conditions: this fault can also occur if the sensors are heavily soiled, iced-up or have been painted. In addition, intense sound sources such as pneumatic hammers can cause defects.

- Adverse environmental conditions

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- Short or open circuit in wires between control unit and sensor
- Sensor faulty
- ParkAssist control unit faulty

Affected pins

Plug for sensor wiring harness:

- Pin 1 'PDC sensor, battery voltage'
- Pin 2 'PDC sensor, signal'
- Pin 3 'PDC sensor, GND'

Plug B for control unit wiring harness:

- Pin 9 'PDC sensor, rear -'
- Pin 10 'PDC sensor, rear +'
- Pin 15 'PDC sensor, Centre RL'

DIAGNOSIS/TROUBLESHOOTING

NOTE: If the above environmental conditions can be eliminated as a cause and the fault has the status "present", troubleshooting must be performed.

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction			Display OK	If not OK
1	Visual inspection	• Check sensor 11 for heavy external soiling or damage • Check the sensor plug for damage and corrosion	Go to Step 2	Remove dirt from sensor and replace, or repair sensor plug --> End
2	Perform drive link test for sensor	• Using 9588 Porsche System Tester II perform drive link test for corresponding sensors	Test drive to check fault cleared --> End	Go to Step 3
3	Check supply voltage for sensor, see also FAULT CODE 1549 for sensor supply voltage	• Switch off ignition • Pull plug off sensor • Switch on ignition • Selector lever position in transmission range R or N • Measure voltage between pin 1 of the sensor plug and ground (vehicle)	approx. 8.5 V Go to Step 4	Repair wire or replace wiring harness --> End
				Repair wire or

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4	Check ground lead of the sensor	• Measure voltage between pin 1 and pin 3 of sensor plug	approx. 8.5 V Go to Step 5	replace wiring harness --> End
5	Check signal line of sensor for short to ground	• Switch off ignition • Pull plug off ParkAssist control unit • Measure resistance between pin 15 of plug B for ParkAssist control unit and ground (vehicle)	infinity ohms Go to Step 6	Repair wire or replace wiring harness --> End
6	Check signal line of sensor for short to B+	• Switch on ignition • Measure voltage between pin 15 of plug B for ParkAssist control unit and ground (vehicle)	< 0.3 V Go to Step 7	Repair wire or replace wiring harness --> End
7	Check signal lead of the sensor for open circuit	• Measure resistance between pin 15 of plug B for ParkAssist control unit and pin 2 of sensor plug	< 5 ohms Go to Step 8	Repair wire or replace wiring harness --> End
8	Replace sensor		--> End	Go to Step 9
9	Replace control module for ParkAssist		--> End	

FAULT CODE 1547

PARKASSIST SENSOR 8, CENTRE REAR RIGHT

Diagnostic conditions

- Ignition on
- Selector lever position in transmission range R or N
- ParkAssist control unit internal function test
- Vehicle speed briefly greater than 14 km/h

Possible cause of fault

NOTE: **Fault entry due to environmental conditions: this fault can also occur if the sensors are heavily soiled, iced-up or have been painted. In addition, intense sound sources such as pneumatic hammers can cause defects.**

- Adverse environmental conditions
- Short or open circuit in wires between control unit and sensor
- Sensor faulty
- ParkAssist control unit faulty

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Affected pins

Plug for sensor wiring harness:

- Pin 1 'PDC sensor, battery voltage'
- Pin 2 'PDC sensor, signal'
- Pin 3 'PDC sensor, GND'

Plug B for control unit wiring harness:

- Pin 9 'PDC sensor, rear -'
- Pin 10 'PDC sensor, rear +'
- Pin 12 'PDC sensor, Centre RR'

DIAGNOSIS/TROUBLESHOOTING

NOTE: If the above environmental conditions can be eliminated as a cause and the fault has the status "present", troubleshooting must be performed.

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction			Display OK	If not OK
1	Visual inspection	• Check sensor 8 for heavy external soiling or damage • Check the sensor plug for damage and corrosion	Go to Step 2	Remove dirt from sensor and replace, or repair sensor plug --> End
2	Perform drive link test for sensor	• Using 9588 Porsche System Tester II perform drive link test for corresponding sensors	Test drive to check fault cleared --> End	Go to Step 3
3	Check supply voltage for sensor, see also FAULT CODE 1549 for sensor supply voltage	• Switch off ignition • Pull plug off sensor • Switch on ignition • Selector lever position in transmission range R or N • Measure voltage between pin 1 of the sensor plug and ground (vehicle)	approx. 8.5 V Go to Step 4	Repair wire or replace wiring harness --> End
4	Check ground lead of the sensor	• Measure voltage between pin 1 and pin 3 of sensor plug	approx. 8.5 V Go to Step 5	Repair wire or replace wiring harness --> End
		• Switch off ignition		

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5	Check signal line of sensor for short to ground	• Pull plug off ParkAssist control unit • Measure resistance between pin 12 of plug B for ParkAssist control unit and ground (vehicle)	infinity ohms Go to Step 6	Repair wire or replace wiring harness --> End
6	Check signal line of sensor for short to B+	• Switch on ignition • Measure voltage between pin 12 of plug B for ParkAssist control unit and ground (vehicle)	< 0.3 V Go to Step 7	Repair wire or replace wiring harness --> End
7	Check signal lead of the sensor for open circuit	• Measure resistance between pin 12 of plug B for ParkAssist control unit and pin 2 of sensor plug	< 5 ohms Go to Step 8	Repair wire or replace wiring harness --> End
8	Replace sensor		--> End	Go to Step 9
9	Replace control module for ParkAssist		--> End	

FAULT CODE 1548

PARKASSIST SENSOR 7, OUTER REAR RIGHT

Diagnostic conditions

- Ignition on
- Selector lever position in transmission range R or N
- ParkAssist control unit internal function test
- Vehicle speed briefly greater than 14 km/h

Possible cause of fault

NOTE: **Fault entry due to environmental conditions:** this fault can also occur if the sensors are heavily soiled, iced-up or have been painted. In addition, intense sound sources such as pneumatic hammers can cause defects.

- Adverse environmental conditions
- Short or open circuit in wires between control unit and sensor
- Sensor faulty
- ParkAssist control unit faulty

Affected pins

Plug for sensor wiring harness:

- Pin 1 'PDC sensor, battery voltage'

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- Pin 2 'PDC sensor, signal'
- Pin 3 'PDC sensor, GND'

Plug B for control unit wiring harness:

- Pin 9 'PDC sensor, rear -'
- Pin 10 'PDC sensor, rear +'
- Pin 11 'PDC sensor, outer RR'

DIAGNOSIS/TROUBLESHOOTING

NOTE: If the above environmental conditions can be eliminated as a cause and the fault has the status "present", troubleshooting must be performed.

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction			Display OK	If not OK
1	Visual inspection	• Check sensor 7 (RR outside) for heavy external soiling or damage • Check the sensor plug for damage and corrosion	Go to Step 2	Remove dirt from sensor and replace, or repair sensor plug --> End
2	Perform drive link test for sensor	• Using Porsche System Tester II No. 9588 perform drive link test for corresponding sensors	Test drive to check fault cleared --> End	Go to Step 3
3	Check supply voltage for sensor, see also FAULT CODE 1549 for sensor supply voltage	• Switch off ignition • Pull plug off sensor • Switch on ignition • Selector lever position in transmission range R or N • Measure voltage between pin 1 of the sensor plug and ground (vehicle)	approx. 8.5 V. Go to Step 4	Repair wire or replace wiring harness --> End
4	Check ground line of sensor	• Measure voltage between pin 1 and pin 3 of sensor plug	approx. 8.5 V Go to Step 5	Repair wire or replace wiring harness --> End
5	Check signal line of sensor for short to ground	• Switch off ignition • Pull plug off ParkAssist control unit • Measure resistance between pin 11 of plug B for ParkAssist control unit and ground (vehicle)	infinity ohms Go to Step 6	Repair wire or replace wiring harness --> End

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6	Check signal line of sensor for short to B+	• Switch on ignition • Measure voltage between pin 11 of plug B for ParkAssist control unit and ground (vehicle)	< 0.3 V Go to Step 7	Repair wire or replace wiring harness --> End
7	Check signal line of sensor for open circuit	• Measure resistance between pin 11 of plug B for ParkAssist control unit and pin 2 of sensor plug	< 5 ohms Go to Step 8	Repair wire or replace wiring harness --> End
8	Replace sensor		--> End	Go to Step 9
9	Replace control unit ParkAssist		--> End	

FAULT CODE 1549

SENSOR POWER SUPPLY

Diagnostic conditions

- Ignition on
- ParkAssist control unit internal function test
- Selector lever position in transmission range R or N

Possible cause of fault

- Wiring connection between control unit and sensors faulty
- Sensors faulty
- ParkAssist control unit faulty

Affected pins

Plug B for ParkAssist control unit:

- Pin 1 'PDC sensor -, front'
- Pin 2 'PDC display +, front'
- Pin 9 'PDC sensor -, rear'
- Pin 10 'PDC sensor +, rear'

DIAGNOSIS/TROUBLESHOOTING

NOTE:

- To power the sensors, the ignition must be switched on and the selector lever position in transmission range R or N
- If the supply voltage is low, this may be due to the resistance of the loads (sensors) being too small

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- If the supply voltage is high, this may be due to a short circuit to B+ (12 volts)

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction			Display OK	If not OK
1	Measure sensor power supply	• Switch off ignition • Pull plug off sensor • Switch on ignition • Selector lever position in transmission range R or N • Measure voltage between pin 1 of relevant sensor plug and ground (vehicle) • To isolate faults in the case of undervoltage: pull off all sensor plugs in turn	approx. 8.5 V Go to Step 2	Repair line or line connection If short-circuit in sensor, replace accordingly --> End
2	Check ground supply line for sensors	• Measure resistance between pin 3 of sensor plug and ground (vehicle)	< 5 ohms Go to Step 3	Repair line or line connection --> End
3	Replace ParkAssist control unit		--> End	

FAULT CODE 1626

PARKASSIST SENSOR 6, OUTER FRONT RIGHT

Diagnostic conditions

- Ignition on
- Selector lever position in transmission range R or N
- ParkAssist control unit internal function test
- Vehicle speed briefly greater than 14 km/h

Possible cause of fault

NOTE: Fault entry due to environmental conditions: this fault can also occur if the sensors are heavily soiled, iced-up or have been painted. In addition, intense sound sources such as pneumatic hammers can cause defects.

- Adverse environmental conditions
- Short or open circuit in wires between control unit and sensor
- Sensor faulty

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- ParkAssist control unit faulty

Affected pins

Plug for sensor wiring harness:

- Pin 1 'PDC sensor, battery voltage'
- Pin 2 'PDC sensor, signal'
- Pin 3 'PDC sensor, GND'

Plug B for control unit wiring harness:

- Pin 1 'PDC sensor, front -'
- Pin 2 'PDC sensor, front +'
- Pin 8 'PDC sensor, outer FR'

DIAGNOSIS/TROUBLESHOOTING

NOTE: If the above environmental conditions can be eliminated as a cause and the fault has the status "present", troubleshooting must be performed.

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction			Display OK	If not OK
1	Visual inspection	• Check sensor for heavy external soiling or damage • Check the sensor plug for damage and corrosion	Go to Step 2	Remove dirt from sensor and replace, or repair sensor plug --> End
2	Perform drive link test for sensor	• Using 9588 Porsche System Tester II perform drive link test for sensors	Test drive to check fault cleared --> End	Go to Step 3
3	Check supply voltage for sensor, see also <u>FAULT CODE 1549</u> for sensor supply voltage	• Switch off ignition • Pull plug off sensor • Switch on ignition • Selector lever position in transmission range R or N • Measure voltage between pin 1 of sensor plug and vehicle ground	approx. 8.5 V Go to Step 4	Repair wire or replace wiring harness --> End
4	Check ground lead of the sensor	• Measure voltage between pin 1 and pin 3 of sensor plug	approx. 8.5 V Go to Step 5	Repair wire or replace wiring harness

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				--> End
5	Check signal line of sensor for short to ground	• Switch off ignition • Pull plug off ParkAssist control unit • Measure resistance between pin 8 of plug B for ParkAssist control unit and ground (vehicle)	infinity ohms Go to Step 6	Repair wire or replace wiring harness --> End
6	Check signal line of sensor for short to B+	• Switch on ignition • Measure voltage between pin 8 of plug B for ParkAssist control unit and ground (vehicle)	< 0.3 V Go to Step 7	Repair wire or replace wiring harness --> End
7	Check signal lead of the sensor for open circuit	• Measure resistance between pin 8 of plug B for ParkAssist control unit and pin 2 of sensor plug	< 5 ohms Go to Step 8	Repair wire or replace wiring harness --> End
8	Replace sensor		--> End	Go to Step 9
9	Replace control module for ParkAssist		--> End	

FAULT CODE 1627

PARKASSIST SENSOR 5, CENTRE FRONT RIGHT

Diagnostic conditions

- Ignition on
- Selector lever position in transmission range R or N
- ParkAssist control unit internal function test
- Vehicle speed briefly greater than 14 km/h

Possible cause of fault

NOTE: **Fault entry due to environmental conditions: this fault can also occur if the sensors are heavily soiled, iced-up or have been painted. In addition, intense sound sources such as pneumatic hammers can cause defects.**

- Adverse environmental conditions
- Short or open circuit in wires between control unit and sensor
- Sensor faulty
- ParkAssist control unit faulty

Affected pins

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Plug for sensor wiring harness:

- Pin 1 'PDC sensor, battery voltage'
- Pin 2 'PDC sensor, signal'
- Pin 3 'PDC sensor, GND'

Plug B for control unit wiring harness:

- Pin 1 'PDC sensor, front -'
- Pin 2 'PDC sensor, front +'
- Pin 7 'PDC sensor, Centre FR'

DIAGNOSIS/TROUBLESHOOTING

NOTE: If the above environmental conditions can be eliminated as a cause and the fault has the status "present", troubleshooting must be performed.

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction			Display OK	If not OK
1	Visual inspection	• Check sensor for heavy external soiling or damage • Check the sensor plug for damage and corrosion	Go to Step 2	Remove dirt from sensor and replace, or repair sensor plug --> End
2	Perform drive link test for sensor	• Using Porsche System Tester II No. 9588 perform drive link test for sensors	Test drive to check fault cleared --> End	Go to Step 3
3	Check supply voltage for sensor, see also <u>FAULT CODE 1549</u> for sensor supply voltage	• Switch off ignition • Pull plug off sensor • Switch on ignition • Selector lever position in transmission range R or N • Measure voltage between pin 1 of sensor plug and vehicle ground	approx. 8.5 V Go to Step 4	Repair wire or replace wiring harness --> End
4	Check ground line of sensor	• Measure voltage between pin 1 and pin 3 of sensor plug	approx. 8.5 V Go to Step 5	Repair wire or replace wiring harness --> End
		• Switch off ignition • Pull plug off ParkAssist control unit		Repair wire or

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5	Check signal line of sensor for short to ground	Measure resistance between pin 7 of plug B for ParkAssist control unit and ground (vehicle)	infinity ohms Go to Step 6	replace wiring harness --> End
6	Check signal line of sensor for short to B+	- Switch on ignition - Measure voltage between pin 7 of plug B for ParkAssist control unit and ground (vehicle)	< 0.3 V Go to Step 7	Repair wire or replace wiring harness --> End
7	Check signal line of sensor for open circuit	Measure resistance between pin 7 of plug B for ParkAssist control unit and pin 2 of sensor plug	< 5 ohms Go to Step 8	Repair wire or replace wiring harness --> End
8	Replace sensor		--> End	Go to Step 9
9	Replace control unit ParkAssist		--> End	

FAULT CODE 1628

PARKASSIST SENSOR 2, FRONT LEFT CENTRE

Diagnostic conditions

- Ignition on
- Selector lever position in transmission range R or N
- ParkAssist control unit internal function test
- Vehicle speed briefly greater than 14 km/h

Possible cause of fault

NOTE: Fault entry due to environmental conditions: this fault can also occur if the sensors are heavily soiled, iced-up or have been painted. In addition, intense sound sources such as pneumatic hammers can cause defects.

- Adverse environmental conditions
- Short or open circuit in wires between control unit and sensor
- Sensor faulty
- ParkAssist control unit faulty

AFFECTED PINS

Plug for sensor wiring harness:

- Pin 1 'PDC sensor, battery voltage'
- Pin 2 'PDC sensor, signal'

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- Pin 3 'PDC sensor, GND'

Plug B for control unit wiring harness:

- Pin 1 'PDC sensor, front -'
- Pin 2 'PDC sensor, front +'
- Pin 4 'PDC sensor, FL Centre'

DIAGNOSIS/TROUBLESHOOTING

NOTE: If the above environmental conditions can be eliminated as a cause and the fault has the status "present", troubleshooting must be performed.

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction		Display OK	If not OK
1	Visual inspection	• Check sensor for heavy external soiling or damage • Check the sensor plug for damage and corrosion Go to Step 2	Remove dirt from sensor and replace, or repair sensor plug --> End
2	Perform drive link test for sensor	• Using Porsche System Tester II No. 9588 perform drive link test for sensors Test drive to check fault cleared --> End	Go to Step 3
3	Check supply voltage for sensor, see also <u>FAULT CODE 1549</u> for sensor supply voltage	• Switch off ignition • Pull plug off sensor • Switch on ignition • Selector lever position in transmission range R or N • Measure voltage between pin 1 of the sensor plug and ground (vehicle) approx. 8.5 V Go to Step 4	Repair wire or replace wiring harness --> End
4	Check ground line of sensor	• Measure voltage between pin 1 and pin 3 of sensor plug approx. 8.5 V Go to Step 5	Repair wire or replace wiring harness --> End
5	Check signal line of sensor for short to ground	• Switch off ignition • Pull plug off ParkAssist control unit • Measure resistance between pin 4 of plug B for ParkAssist control unit and ground (vehicle) infinity ohms Go to Step 6	Repair wire or replace wiring harness --> End

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6	Check signal line of sensor for short to B+	• Switch on ignition • Measure voltage between pin 4 of plug B for ParkAssist control unit and ground (vehicle)	< 0.3 V Go to Step 7	Repair wire or replace wiring harness --> End
7	Check signal line of sensor for open circuit	• Measure resistance between pin 4 of plug B for ParkAssist control unit and pin 2 of sensor plug	< 5 ohms Go to Step 8	Repair wire or replace wiring harness --> End
8	Replace sensor		--> End	Go to Step 9
9	Replace control unit ParkAssist		--> End	

FAULT CODE 1629

PARKASSIST SENSOR 1, OUTER FRONT LEFT

Diagnostic conditions

- Ignition on
- Selector lever position in transmission range R or N
- ParkAssist control unit internal function test
- Vehicle speed briefly greater than 14 km/h

Possible cause of fault

NOTE: **Fault entry due to environmental conditions: this fault can also occur if the sensors are heavily soiled, iced-up or have been painted. In addition, intense sound sources such as pneumatic hammers can cause defects.**

- Adverse environmental conditions
- Short or open circuit in wires between control unit and sensor
- Sensor faulty
- ParkAssist control unit faulty

Affected pins

Plug for sensor wiring harness:

- Pin 1 'PDC sensor, battery voltage'
- Pin 2 'PDC sensor, signal'
- Pin 3 'PDC sensor, GND'

Plug B for control unit wiring harness:

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- Pin 1 'PDC sensor -, front'
- Pin 2 'PDC sensor +, front'
- Pin 3 'PDC sensor, outer FL'

DIAGNOSIS/TROUBLESHOOTING

NOTE: If the above environmental conditions can be eliminated as a cause and the fault has the status "present", troubleshooting must be performed.

DIAGNOSIS/TROUBLESHOOTING CHART

Work instruction			Display OK	If not OK
1	Visual inspection	• Check sensor 1 (outer FL) for heavy external soiling or damage • Check the sensor plug for damage and corrosion	Go to Step 2	Remove dirt from sensor and replace, or repair sensor plug --> End
2	Perform drive link test for sensor	• Using 9588 Porsche System Tester II perform drive link test for sensors	Test drive to check fault cleared --> End	Go to Step 3
3	Check supply voltage for sensor, see also FAULT CODE 1549 for sensor supply voltage	• Switch off ignition • Pull plug off sensor • Switch on ignition • Selector lever position in transmission range R or N • Measure voltage between pin 1 of sensor plug and vehicle ground	approx. 8.5 V Go to Step 4	Repair wire or replace wiring harness --> End
4	Check ground lead of the sensor	• Measure voltage between pin 1 and pin 3 of sensor plug.	approx. 8.5 V Go to Step 5	Repair wire or replace wiring harness --> End
5	Check signal line of sensor for short to ground	• Switch off ignition • Pull plug off ParkAssist control unit • Measure resistance between pin 3 of plug B for ParkAssist control unit and ground (vehicle)	infinity ohms Go to Step 6	Repair wire or replace wiring harness --> End
6	Check signal line of sensor for short to B+	• Switch on ignition • Measure voltage between pin 3 of plug B for ParkAssist control	< 0.3 V Go to Step 7	Repair wire or replace wiring harness

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		unit and ground (vehicle)		--> End
7	Check signal lead of the sensor for open circuit	Measure resistance between pin 3 of plug B for ParkAssist control unit and pin 2 of sensor plug	< 5 ohms Go to Step 8	Repair wire or replace wiring harness --> End
8	Replace sensor		--> End	Go to Step 9
9	Replace control module for ParkAssist		--> End	