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DRIVING SUPPORT PERFECTVIEW

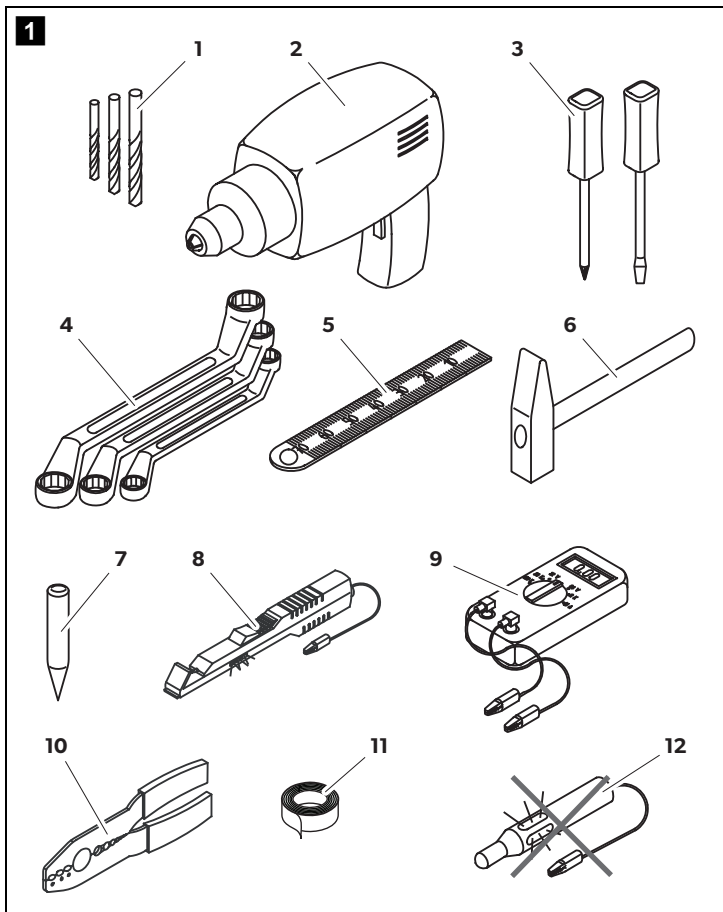


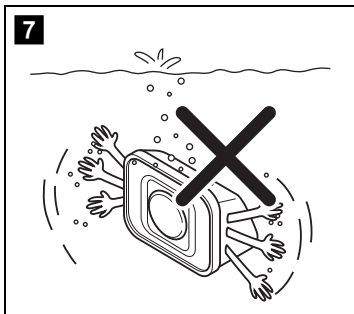
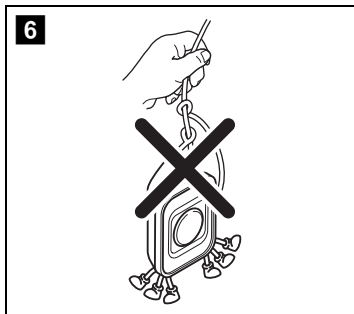
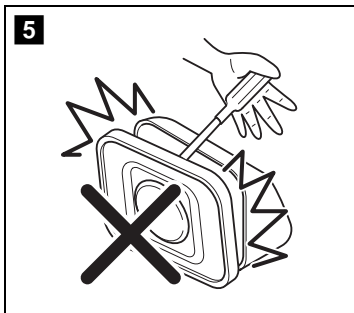
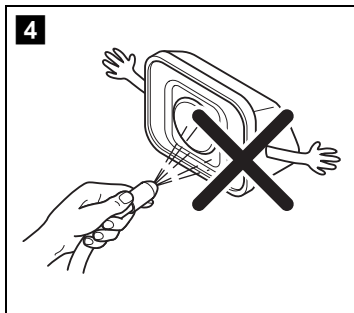
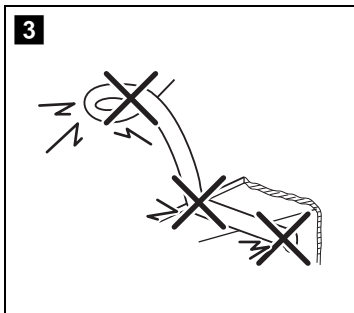
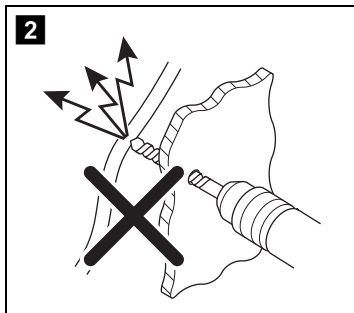
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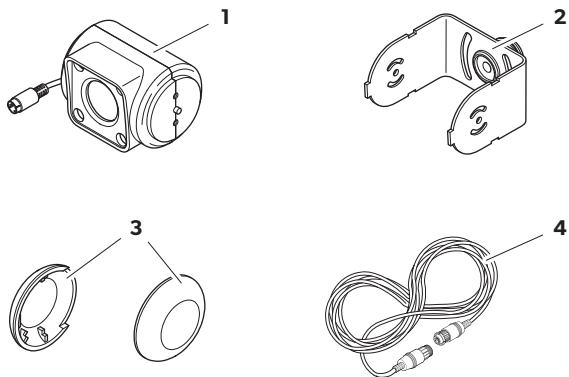
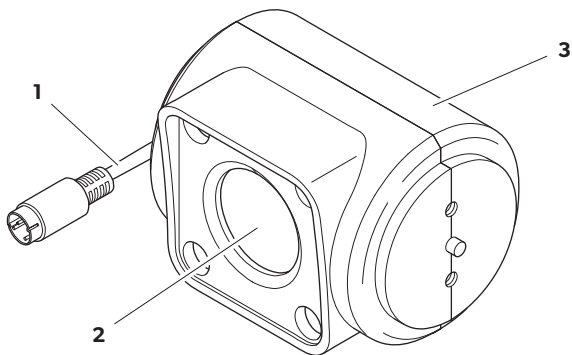
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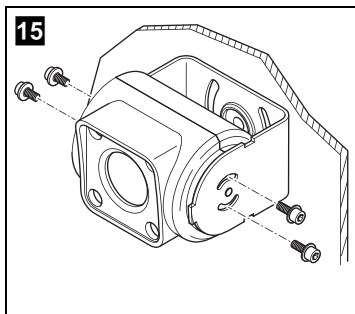
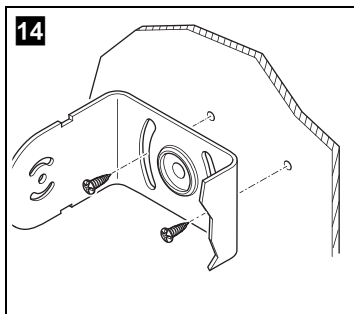
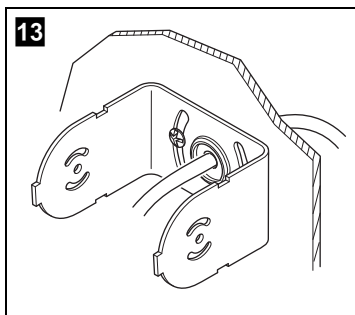
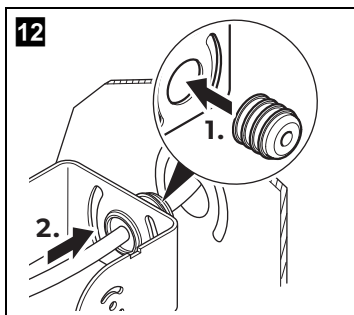
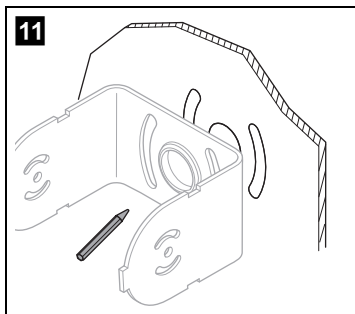
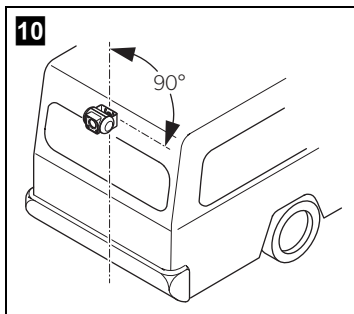
Rear View Video Camera

Installation and Operating Manual 9

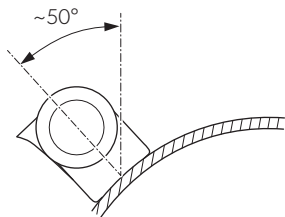




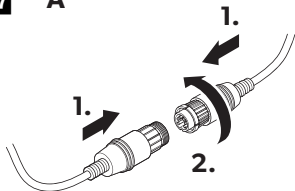
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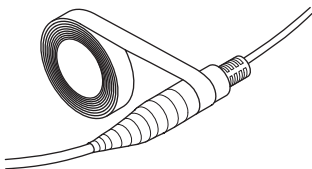
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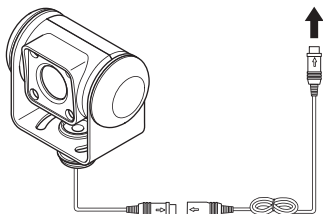
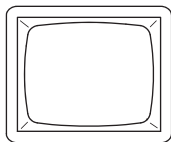
17 A



B

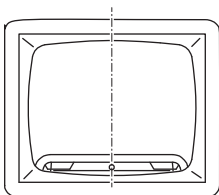


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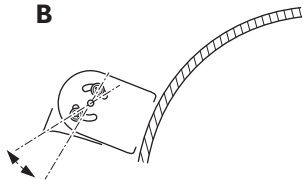


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A



B



Please read this instruction manual carefully before installation and first use, and store it in a safe place. If you pass on the product to another person, hand over this instruction manual along with it.

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1 Explanation of symbols



WARNING!

Safety instruction: Failure to observe this instruction can cause fatal or serious injury.



CAUTION!

Safety instruction: Failure to observe this instruction can lead to injury.



NOTICE!

Failure to observe this instruction can cause material damage and impair the function of the product.



NOTE

Supplementary information for operating the product.

2 Safety and installation instructions

Please observe the prescribed safety instructions and stipulations from the vehicle manufacturer and service workshops.

The manufacturer accepts no liability for damage in the following cases:

- Faulty assembly or connection
- Damage to the product resulting from mechanical influences and excess voltage
- Alterations to the product without express permission from the manufacturer
- Use for purposes other than those described in the operating manual

Please note the following:

- To prevent the risk of short circuits, always disconnect the negative terminal of the vehicle's electrical system before working on it.
If the vehicle has an additional battery, its negative terminal should also be disconnected.
- Inadequate supply cable connections could result in short circuits, causing:
 - Cable fires
 - The airbag being triggered
 - Damage to electronic control equipment
 - Electrical malfunctions (indicators, brake light, horn, ignition, lights)
- When working on the following cables, only use insulated cable terminals, plugs and flat sockets:
 - 30 (direct supply from positive battery terminal)
 - 15 (connected positive terminal, behind the battery)
 - 31 (return cable from the battery, earth)
 - 58 (reversing light)

Do **not** use porcelain wire connectors.

- Use a crimping tool (fig. **1** 10, page 3) to connect the cables.
- Screw the cable when connecting cable 31 (earth).
 - Screw on the cable using a cable terminal and serrated washer to one of the vehicle's earth bolts or
 - screw the cable to the bodywork using a cable terminal and a self-tapping screw.Make sure there is a good earth connection.

If you disconnect the negative terminal of the battery, all data stored in the volatile memories will be lost.

- The following data must be reset, depending on the vehicle equipment options:
 - Radio code
 - Vehicle clock
 - Timer
 - On-board computer
 - Seat position

You can find instructions for making these settings in the operating manual.

Observe the following installation instructions:

- Secure the parts of the camera which are installed in the vehicle in such a way that they cannot become loose under any circumstances (sudden braking, accidents) and cause **injuries to the occupants of the vehicle**.
- Secure any parts of the system concealed by the bodywork in such a manner that they cannot become loose or damage other parts or cables, or impair vehicle functions (steering, pedals, etc.).
- To prevent damage when drilling, make sure there is sufficient space on the other side for the drill head to come out (fig. **2**, page 4).
- Deburr all drill holes and treat them with a rust-protection agent.
- Always follow the safety instructions of the vehicle manufacturer.
Some work (e.g. on retention systems such as the AIRBAG etc.) may only be performed by qualified specialists.

Observe the following instructions when working with electrical parts:

- When testing the voltage in electrical cables, only use a diode test lamp (fig. **1** 8, page 3) or a voltmeter (fig. **1** 9, page 3).
Test lamps with a bulb (fig. **1** 12, page 3) consume voltages which are too high and can damage the vehicle's electronic system.
- When making electrical connections, (fig. **3**, page 4), ensure that:
 - they are not kinked or twisted
 - they do not rub on edges
 - they are not laid in sharp-edged ducts without protection.
- Insulate all connections.

- Secure the cables against mechanical wear by using cable binders or insulating tape, for example on existing cables.

The camera is watertight. However, the seals on the camera cannot withstand a high-pressure cleaner (fig. 4, page 4). Therefore, you should observe the following instructions when handling the camera:

- People (including children) whose physical, sensory or mental capacities or whose lack of experience or knowledge prevent them from using this product safely should not use it without the supervision or instruction of a responsible person.
- Do not open the camera, as this impairs the leak tightness and the function of the camera (fig. 5, page 4).
- Do not pull at the cables, as this impairs the tightness and the function of the camera (fig. 6, page 4).
- The camera is not suitable for use under water (fig. 7, page 4)!

3 Scope of delivery

No. in fig. 8, page 5	Quantity	Description	Ref. no.
1	1	Camera	9600000523
2	1	Camera bracket with bushing sleeve	9600000571
3	2	Side cover	–
4	1	System cable	9102200141
–	1	Fastening material	–
–	1	Installation and operating manual	–

4 Intended use

The CAM45 camera (ref. no. 9600000523) is designed primarily for use in vehicles. It can be used in video systems to observe the space around the vehicle from the driver's seat when, for example manoeuvring or parking.



WARNING!

Danger of personal injury by vehicle.

Reversing video systems are designed merely as an additional aid for reversing, however this does **not** relieve you of the **duty to take proper care when reversing**.

5 Technical description

The camera with integrated microphone, which is encased in an aluminium housing, transmits image and sound to a monitor via a cable. The infrared LEDs improve night vision.

The camera transmits the image as if you were looking in the rear-view mirror.

The camera consists of the following elements:

No. in fig. 9, page 5	Description
1	6-pin connection cable
2	Infrared LEDs
3	Microphone (rear side)

6 Information on electrical connection

6.1 Laying cables



NOTICE! Beware of damage

- When drilling holes, check beforehand that there is sufficient space on the other side for the drill head to come out.
- Cables and connections that are not properly installed will cause malfunctions or damage to components. Correct installation of cables and connections ensures lasting and trouble-free operation of the retrofitted components.
- The cables may not be exposed for long periods to solvents such as benzene, since solvents can damage the cable.

Therefore, please observe the following instructions:

- As far as possible, use original ducts for laying the cables, or other suitable options such as panelling edges, ventilation grilles or dummy plugs. If no openings are available, you must drill holes for the cables. Check beforehand that there is sufficient space on the other side for the drill head to emerge.
- Wherever possible, lay cables inside the vehicle, as they are better protected there than outside.
If you do need to lay a cable outside the vehicle, ensure that it is well fastened (use additional cable ties, insulating tape etc.).
- To prevent damage to the cables when laying them, ensure that they are far enough away from hot or moving vehicle components (exhaust pipes, drive shafts, light systems, fans, heaters, etc.). Use corrugated piping or other protective materials to protect against mechanical wear.
- Screw on the plug connections for the connecting cables to protect them against water penetration (fig. 17, page 7).

- When laying the cables (fig. **3**, page 4), make sure:
 - they are not kinked or twisted
 - they do not rub on edges
 - they are not routed in sharp-edged ducts without protection.
- Attach the cables securely in the vehicles to prevent tripping hazards. This can be performed by using cable binders, insulating tape or gluing in place with adhesives.
- Protect every through-hole made in the bodywork against water penetration, e.g. by using a cable with a sealant and by spraying the cable and the cable sleeve with sealant.

**NOTE**

Only start sealing through-holes when you have completed all installation work on the camera and have laid the required cable lengths.

7 Fitting the camera

7.1 Tools required

For **installation and assembly**, you will need the following tools:

- Drill bit set (fig. **1** 1, page 3)
- Electric drill (fig. **1** 2, page 3)
- Screwdriver (fig. **1** 3, page 3)
- Set of ring or open-ended spanners (fig. **1** 4, page 3)
- Measuring ruler (fig. **1** 5, page 3)
- Hammer (fig. **1** 6, page 3)
- Centre punch (fig. **1** 7, page 3)

To establish and test the **electrical connection**, the following tools are required:

- Diode test lamp (fig. **1** 8, page 3) or voltmeter (fig. **1** 9, page 3)
- Insulating tape (fig. **1** 11, page 3)
- Cable bushing sleeves (optional)

To **fasten the cables** you may require additional cable binders.

7.2 Fitting the camera



CAUTION!

Select a location for the camera and attach it firmly enough so that it cannot under any circumstances fall off and injure bystanders (e.g. by being knocked off by branches brushing over the roof of the vehicle).



NOTE

If installing the camera alters the vehicle height or the length specified in the vehicle documents, your vehicle must be inspected by the appropriate authorities. This authority must note any such changes your vehicle documents.

Observe the following installation instructions:

- To provide a suitable viewing angle, the camera must be attached at a height of at least 2 m. Ensure that you have a firm place from which to work when mounting the camera.
- Make sure that the installation location of the camera is sufficiently firm (e.g. to prevent the camera from being knocked down by branches that may brush the roof of the vehicle).
- Mount the camera bracket horizontally and in the middle of the rear of the vehicle (fig. **10**, page 6).
- The most secure type of attachment is with screws fitted through the body (not included in scope of delivery). Please observe the following instructions:
 - There must be sufficient space behind the chosen installation location to be able to carry out the mounting procedure.
 - Suitable measures must be taken to prevent water penetrating through any holes made (e.g. by using screws and sealant and/or spraying the outer attachment parts with sealant).
 - The location on the body where you wish to attach the camera must be rigid enough to allow the camera to be tightly fastened.
- Check beforehand that there is sufficient space on the other side for the drill head to come out (fig. **2**, page 4).
- If you are not sure about the location you have chosen, ask your vehicle manufacturer or dealer.



NOTE

We recommend greasing the threads of the bolts to prevent corrosion.

To perform the installation, proceed as follows:

- Hold the camera at the chosen location and mark at least two different points for the drill holes and the duct for the connection cable (fig. **11**, page 6).
- Using a hammer and centre punch, gently pre-punch the previously marked points to prevent the drill head from slipping off.

Creating a through-hole for the camera connection cable (fig. 12, page 6)**NOTE**

If possible, use available openings, such as ventilation grilles, to feed the connection cables through. If there are no existing ducts, you must drill a hole of \varnothing 16 mm.

**NOTICE! Beware of damage**

Check beforehand that there is sufficient space on the other side for the drill head to come out.

- ▶ Drill a hole with a \varnothing 16 mm at the previously marked duct.
- ▶ Deburr all drill holes that have been made in the sheet metal and apply rust-protection.

Screw on camera using self-tapping screws (fig. 13, page 6)**NOTICE! Beware of damage**

Self-tapping screws may only be fastened to steel metal with a minimum thickness of 1.5 mm.

- ▶ Drill the holes, with a \varnothing of 4 mm, at each of the markings.
- ▶ Deburr all drill holes and apply rust-protection.
- ▶ Screw on the camera bracket using 5 x 20 mm self-tapping screws.

Fitting the camera**NOTICE! Beware of damage**

Only use the screws supplied to mount the camera. Longer screws will damage the camera.

- ▶ Guide the camera cable into the vehicle interior.
- ▶ Slide the camera into the camera bracket.
- ▶ Fasten the camera **loosely** using the two screws M3 x 6 mm in the slots (fig. 15, page 6).
- ▶ Provisionally align the camera, so that the lens is at an angle of approx. 50° to the vertical axis of the vehicle (fig. 16, page 7).

Establishing the electrical connection for the camera



NOTE

- Lay the camera cable so that, should you need to remove the camera, you can access the plug connection between the camera and the extension cable easily. This greatly facilitates the disassembly.
- To minimise corrosion in the plug, apply a small amount of grease, such as pin grease, in one of the plugs.

- Insert the camera cable plug into the socket for the extension cable.
- Screw on the plug connection of the connecting cables to protect against water penetration (fig. 17, page 7).

Aligning the camera



NOTE

To do this you must first install and electrically connect a monitor (see schematic connection diagram fig. 18, page 7).

- Align the camera using the image on the monitor to help you:
The monitor image should show the rear or the bumper of the vehicle at the bottom edge of the screen. The middle of the bumper should be in the middle of the screen (fig. 19, page 7).
- Check the function of the camera after you have connected it to a monitor.

Fastening the camera

- Tighten the two fastening screws in the slots on the monitor bracket.
- Fit side covers into place (fig. 20, page 8).

8 Cleaning and caring for the camera



NOTICE! Beware of damage

Do not use any sharp or hard objects for cleaning since they may damage the device.

- Clean the camera with a soft, damp cloth from time to time.

9 Warranty

The statutory warranty period applies. If the product is defective, please contact the manufacturer's branch in your country (see the back of the instruction manual for the addresses) or your retailer.

For repair and guarantee processing, please send the following items:

- Defect components
- A copy of the receipt with purchasing date
- A reason for the claim or description of the fault


10 Disposal

- Place the packaging material in the appropriate recycling waste bins wherever possible.



If you wish to finally dispose of the product, ask your local recycling centre or specialist dealer for details about how to do this in accordance with the applicable disposal regulations.

11 Technical data

	PerfectView CAM45
Ref. no.:	9600000523
Image sensor:	1/4" CCD
Pixels:	Approx. 250000 pixels
Video standard:	PAL, 1 Vpp
Sensitivity:	< 1 Lux / 0 Lux with infrared LEDs
Viewing angle:	Approx. 120° diagonal Approx. 80° horizontal Approx. 65° vertical
Operating voltage:	11 to 16 V==
Consumption:	1.2 W
Operating temperature:	-20 °C to +70 °C
Protection class:	IP69k
Vibration resistance:	6g
Dimensions W x H x D (with bracket):	78 x 60 x 50 mm
Weight:	Approx. 0.18 kg
Certification:	

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