

Operating Manual

ANCOR Headrest

Active Noise Cancelling offered by recalm



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WEEE registration number: DE 58864221

Original operating instructions

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1. About this Operating Manual

These operating instructions apply to the ANCOR Headrest audio system, which is used for premium entertainment, communication and active noise cancellation. It contains information on correct installation, commissioning, operation and troubleshooting.

These operating instructions are intended for persons installing ANCOR Headrest in a vehicle, putting it into operation and operating it for the first time.

1.1. Other Applicable Documents and Weblinks

	<p>The adjacent QR code opens the web link: www.recalm.com/datasheets.</p> <p>Current and additional information on the ANCOR Headrest can be viewed there, e.g. data sheets, this operating instruction and operating instructions in other languages.</p>
	<p>The adjacent QR code leads to the download of the ANCOR Headrest app from the Android App Store. The app can be used for additional functions & operation of the ANCOR Headrest.</p>
	<p>Service requests can be made via the following weblink: service.recalm.com</p>


1.2. Presentation of Information

Standardised warnings, symbols, terms and abbreviations are used in these operating instructions to ensure quick and safe work with the ANCOR Headrest. These are explained in the following chapters for better understanding.

1.2.1. Warnings

These operating instructions contain warnings regarding actions that could result in personal injury or property damage. The measures described to avert danger must be observed.

Warnings are structured as follows:

 SIGNAL WORD
Type or source of danger! Consequences of non-compliance. ► Security measure.

The signal words have the following meaning:




Signal Word	Meaning
DANGER	Indicates a hazard that will certainly result in death or serious injury if you do not avoid the hazard.
WARNING	Indicates a hazard which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a hazard that can lead to minor to moderate injuries if not avoided.

Signal Word	Meaning
ATTENTION	Indicates possible material damage. The environment, property or the appliance itself may be damaged if the danger is not avoided.

1.2.2. Abbreviations Used

ANC	Active Noise Cancelling
ANCOR	Active Noise Cancelling offered by recalM
A2B	Automotive audio bus (interface for data transmission for noise cancellation)
CAN-Bus	Controller area network bus (interface for data exchange between several control units)
dB	Decibel (logarithmic unit of sound pressure level; an increase of 10 dB corresponds to double the volume)
dB(A)	Decibel according to frequency weighting filter A (sound pressure level in dB, which is calculated according to A-weighting and depending on the distance and frequency range of the sound source)
GND	Ground (voltage designation of the ground)
PTT	Push-To-Talk

1.2.3. Symbols

	If this information is not observed, the appliance cannot be used or operated optimally.
	Instructions for action: describes activities that must be executed.
	Result: describes the result of an executed Instructions for action.
QR code	Points to further web links or to the Access the ANCOR Headrest app.
<i>Menu</i>	Menu items in the ANCOR Headrest app are shown in italics.
[button]	Buttons of the ANCOR Headrest app are displayed in shown in square brackets.

2. Important Safety Instructions

ANCOR Headrest has been developed and manufactured in accordance with the generally recognised rules of technology. Nevertheless, failure to adhere to the basic safety instructions and warnings in these operating instructions may result in personal injury and damage to property.

- ▶ Read these operating instructions thoroughly and completely before using the ANCOR Headrest.
- ▶ Store this operating manual in a legible condition. Ensure that it is accessible to all users at all times.
- ▶ Always pass the ANCOR Headrest on to third parties together with this operating manual.

2.1. Intended Use

ANCOR Headrest is an audio system for active noise reduction in closed vehicle cabins and is mounted on the vehicle's headrest for operation.

ANCOR Headrest may only be used by qualified persons and in industrial or commercial context.

ANCOR Headrest may only be used in construction, forestry and agricultural vehicles that recalm GmbH considers to be authorised.

To ensure effective use of the optional ANC, ANCOR Headrest must be configured for the respective vehicle variant on which the device is used before operation.

The operating conditions specified in the technical data must always be complied with.

Active Noise Cancelling (ANC) using ANCOR Headrest is only possible in a limited frequency and sound pressure range, see section "Application range" in chapter "Technical data".

ANCOR Headrest may only be used together with the approved parts included in the scope of delivery.

Intended use also includes reading and understanding these operating instructions in full, in particular the chapter “Important safety instructions”.

2.2. Non-Intended Use

Any use other than the intended use is not permitted. Improper use is deemed to be when

- ▶ ANCOR Headrest is used in any other way than described in the chapter “Intended use”,
- ▶ ANCOR Headrest is used under operating conditions that differ from those described in these operating instructions,
- ▶ ANCOR Headrest or parts of the scope of delivery are converted or technically modified.

If the ANCOR headrest is not used as intended, all warranty claims are void.

The manufacturer is not liable for damage to the ANCOR Headrest or for personal injury caused by improper use.

2.3. User Qualification

The activities described in these operating instructions require knowledge of the function and structure of the vehicle on which the ANCOR Headrest is used. To ensure operational safety, these activities may therefore only be carried out by a person who is familiar with the vehicle and any necessary safety precautions, is adequately instructed and has a suitable driving licence.

ANCOR Headrest may only be installed, commissioned and operated by persons who have familiarised themselves with the use of the device and the associated risks by reading these operating instructions.

2.4. General Safety Instructions

- ▶ Follow all instructions in this operating manual to avoid hazards and prevent damage to the ANCOR Headrest.
- ▶ Only carry out installation, commissioning, cleaning and troubleshooting work on the ANCOR Headrest when the vehicle is switched off.
- ▶ Only use ANCOR Headrest and all supplied components if they are in perfect technical condition and within the performance range specified in the technical data (see chapter "Technical data").
- ▶ Do not use ANCOR Headrest in potentially explosive or corrosive environments.
- ▶ Do not expose ANCOR Headrest to any harmful radiation, such as microwave, UV, laser or X-ray radiation.
- ▶ Protect ANCOR Headrest against damage from penetrating solids, foreign bodies, liquids or flying fibres.
- ▶ If the vehicle is not in use for a longer period, disconnect the ANCOR Headrest from the power supply. Depending on the vehicle variant, the on-board power socket is also supplied with power when the vehicle ignition is switched off.
- ▶ Do not carry out maintenance and repair work on the ANCOR Headrest yourself. This work may only be carried out by authorized dealers or by the recalm Service.
- ▶ After installation, ensure that the driver's field of vision remains unrestricted and sufficiently illuminated. Use aids such as reversing cameras or mirrors for indirect vision.
- ▶ When turning the driver's seat or adjusting the backrest, the ANCOR Headrest may collide with parts of the vehicle cabin, potentially causing unintended vehicle operation. Avoid such collisions and ensure that unintentional vehicle operation does not occur.
- ▶ Do not hold on to the ANCOR Headrest when getting in and out of the vehicle to avoid damaging the appliance.

- ▶ When moving or adjusting movable parts inside the cabin, collisions between the ANCOR headrest and parts of the vehicle cabin may occur, which could unintentionally trigger vehicle operation. Avoid such collisions and ensure that unintentional vehicle operation does not occur.
- ▶ Only use ANCOR Headrest with appropriate caution in bad weather or strong winds. Inclement weather or strong winds can impair the performance of the ANCOR Headrest and lead to noise.
- ▶ Ensure that the speakers and microphones on the device frame are not covered by clothing or other materials.
- ▶ Ensure that cables and other components installed in the vehicle are securely fastened and clearly labeled to prevent damage or injury. This is particularly important for components in the footwell.

2.5. Work on the Electrical Equipment

Any modifications to the electrical equipment of the appliance may only be carried out by the recalm service.

The device may only be opened by authorized dealers and the recalm service.

- ▶ Check the ANCOR Headrest and the supplied components regularly for obvious defects, e.g. loose connections or damage to the insulation.
- ▶ In the event of faults in the electrical equipment, disconnect the power supply from the ANCOR Headrest and contact recalm service.

The use of the service interfaces is reserved for authorized dealers and the recalm service.

2.6. Behaviour in an Emergency

Malfunctions or dangerous situations can result in an immediate risk of injury to persons or a risk of damage to the ANCOR Headrest or

other devices in the working environment.

- ▶ If necessary, stop the vehicle and put it out of operation.
- ▶ Disconnect the ANCOR Headrest from the power supply.
- ▶ If necessary, leave the vehicle and call for help.
- ▶ Malfunctions should preferably be rectified by the authorised dealer or, in an emergency, by the recalm service.

2.7. Behaviour in the Event of Increased Noise Exposure

In rare cases, the sound pressure level of the interference source can be amplified by a malfunction of the ANCOR Headrest. Sound pressure levels of up to 105 dB(A) can be emitted. If a person is exposed to such noise for longer than 5 minutes, there is a risk of permanent hearing damage.

- ▶ Ensure that you are not exposed to noise for longer than 5 minutes. If the problem cannot be solved using the following steps, leave the vehicle cabin and move away from the source of the noise.
- ▶ If the ANCOR Headrest does not deactivate the ANC automatically, deactivate the ANC manually using the button on the device frame or via the ANCOR Headrest app.
- ▶ Activate the ANC again.

If the malfunction persists:

- ▶ Deactivate the ANC again and disconnect the ANCOR Headrest from the power supply.
- ▶ Contact the authorised dealer or recalm service in an emergency.

3. Technical Data

3.1. ANCOR Headrest

3.1.1. Dimensions, Weight and Material

Width	560 mm
Depth	230 mm
Height	250 mm
Weight	4.5 kg
Enclosure protection class	IP54
Material	ABS/PC, RAL 9005

3.1.2. Ambient and Operating Conditions

Distance between the headrest bars (centre to centre)	Min. 112 mm Max. 193.5 mm
Diameter of the headrest bars	Min. 10 mm Max. 14 mm
Headrest width	Max. 30 cm
Field of application	ANC frequency band: 50 bis 500 Hz Audio frequency band: 50 bis 20.000 Hz Sound pressure level: up to 105 dB(A)
Operating temperature	-40 to +70 °C

Relative humidity	Max. 70%
Overtemperature cut-out	From 75 °C with 10 °C hysteresis (transition to normal operation from 65 °C)
Use in earthquake zones	Yes
Vibration resistance according to DIN EN 60068-2-64/-27	Random vibration: up to 2.97 g Shock vibration: up to 25 g
Cleanliness according to cleanroom/cleanroom class	No

3.1.3. Storage

Temperature	-55 to +105 °C
Relative humidity	Max. 70%

3.1.4. Electrical Data

Power supply cable connection	Deutsch DT06-6S-CE 13, 6-pin
Supply voltage	8–24 V DC
Power consumption	Max. 120 W
Short-circuit resistance	Yes, individual pins from the supply connector to GND and to the supply voltage
Polarity reversal protection	Yes
Condensation protection	Yes

Interfaces	1x A2B 1x Ethernet 1x USB 1x Micro USB 1x CAN
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3.1.5. Electromagnetic compatibility

Current injection test (BCI) according to ISO 11452-4:2011	Class A (up to 60mA, Pmax 25 W)
Test pulses on supply lines in accordance with ISO 7637-2:2011 and ISO 7637-3:2007	1: class C 2a: class A 2b: class C 3a: class A 3b: class A a + b: class A
Test pulses on supply lines according to ISO 16750-2:2012	Starting impulse: class A Load dump pulse: class C
Interference immunity test against electrostatic discharge (ESD) according to ISO 10605:2008	Class A

3.1.6. Interference Emissions

30 to 75 MHz, BB	64 to 54 dB(μ V/m)
75 to 400 MHz, BB	54 to 65 dB(μ V/m)
400 to 1000 MHz, BB	65 dB(μ V/m)

3.1.7. In Accordance with

EMC Directive 2014/30/EU
DIN EN ISO 13766-1:2018: earth-moving and construction machinery - EMC of machines with internal electrical systems - Part 1: general EMC requirements
DIN EN ISO 14982:2009: agricultural and forestry machinery - EMC - test methods and evaluation criteria

3.2. Radio Module

3.2.1. Dimensions, Weight and Material

Width	160 mm
Depth	93 mm
Height	55 mm
Weight	292 g
Material	ABS

3.2.2. Ambient and Operating Conditions

Operating temperature	-40 to +85 °C
Relative humidity	Max. 70%
Use in earthquake zones	Yes
Cleaning in accordance with cleanroom/class specifications	No

3.2.3. Storage

Temperature	-55 to +105 °C
Relative humidity	Max. 70%

3.2.4. Electrical Data

Polarity protection	No
Condensation protection	No
Interfaces	1x AUX input (radio) 1x Radio cable 1x Push-to-Talk 1x A2B

3.2.5. Electromagnetic Compatibility

Current injection test (BCI) according to ISO 11452-4:2011	Class A (up to 60mA, Pmax 25 W)
Test pulses on supply lines in accordance with ISO 7637-2:2011 and ISO 7637-3:2007	1: class C 2a: class A 2b: class C 3a: class A 3b: class A a+ b: class A
Test pulses on supply lines in accordance with ISO 16750-2:2012	Starting impulse: class A Load dump pulse: class C
Immunity test against electrostatic discharge (ESD) in accordance with ISO 10605:2008	Class A

3.2.6. Interference Emissions

30 to 75 MHz, BB	64 to 54 dB(μV/m)
75 to 400 MHz, BB	54 to 65 dB(μV/m)
400 to 1000 MHz, BB	65 dB(μV/m)

3.2.7. In Accordance with

EMC Directive 2014/30/EU
DIN EN ISO 13766-1:2018: earth-moving and construction machinery - EMC of machines with internal electrical systems - Part 1: general EMC requirements

DIN EN ISO 14982:2009: agricultural and forestry machinery -
EMC - test methods and evaluation criteria

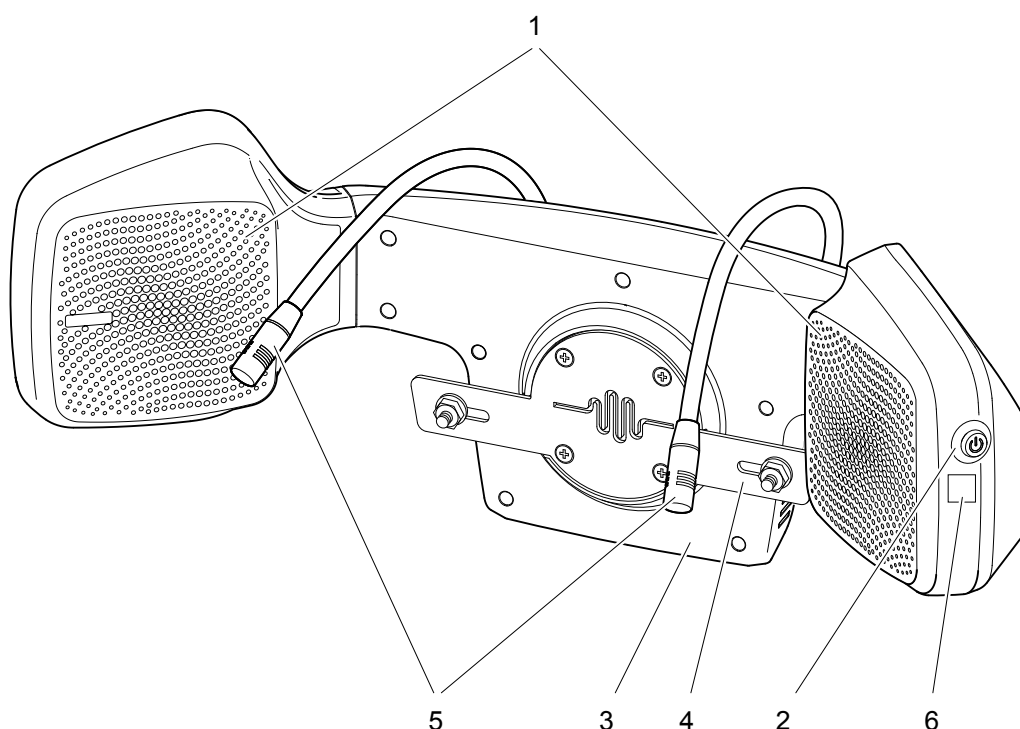
4. Scope of Delivery

The scope of delivery includes:

- One ANCOR Headrest acoustic unit with gooseneck microphones
- One supply cable
- Two clamping rings
- One operating manual
- One quick guide to installation and operation
- Optional: a radio module
- Optional: acceleration sensors for ANC including mounting material
- Optional material for cable assembly and management

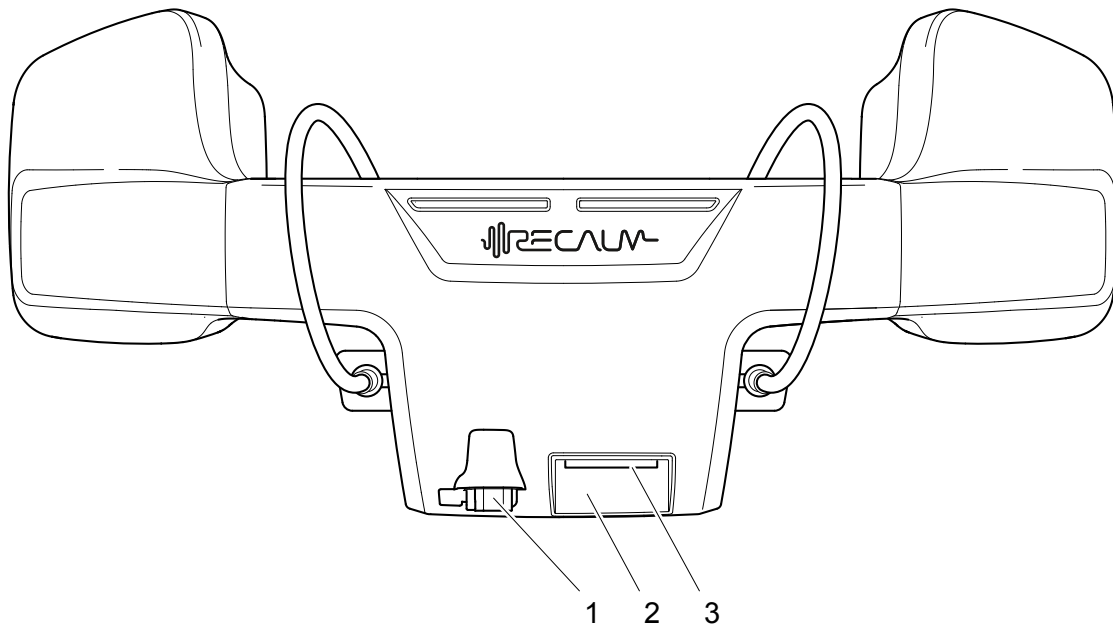
5. Device Description

5.1. ANCOR Headrest



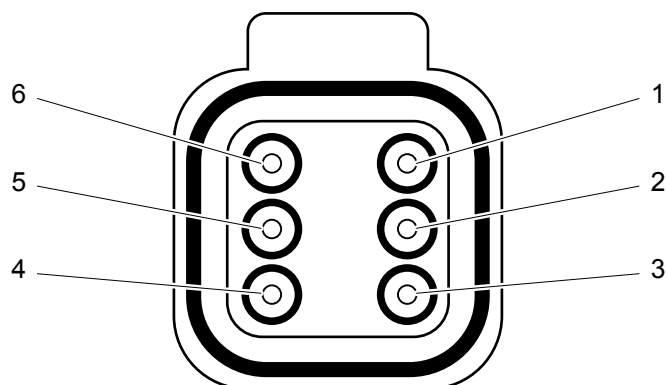
Img. 1 Front View of the ANCOR Headrest

1	Speaker
2	Push button with LED
3	Device frame
4	Bracket
5	Gooseneck microphones
6	QR code with digital rating plate and access to operating instructions in other languages



Img. 2 Back View of the ANCOR Headrest

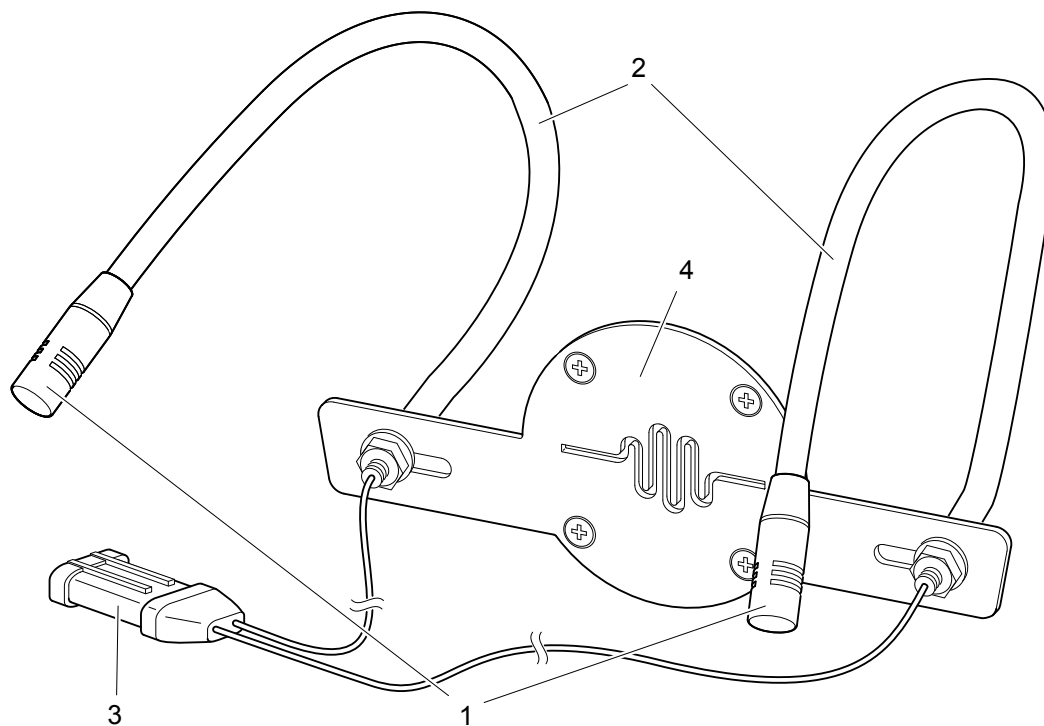
1	Plug connector for 6-pin Deutsch plug (supply voltage, A2B bus)
2	Nameplate with device designation and QR code for the digital operating instructions
3	Service connections (only for authorised dealers and the recalm service): 1x Ethernet connection 1x USB port (retrieval of statistical data) 1x Micro USB



Img. 3 Pin Assignment of the 6-pin Deutsch Connector

1	VIN (red)
2	GND (black)
3	CAN_N (yellow)
4	CAN_P (green)
5	A2B_A_N / A2B_B_N (green)
6	A2B_A_P / A2B_B_P (yellow)

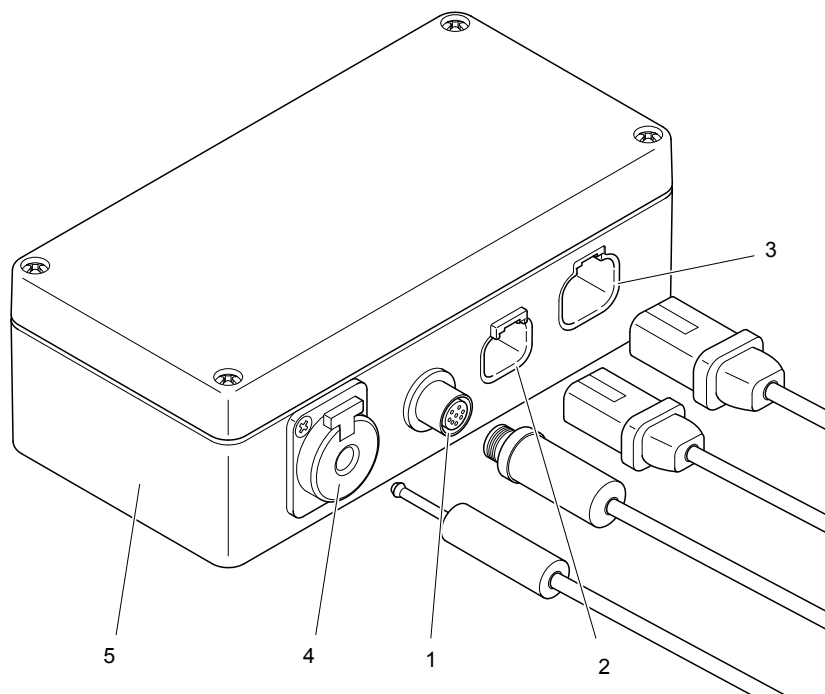
5.2. Gooseneck Microphones



Img. 4 Gooseneck Microphones with Mounting Plate

1	Left and right microphone
2	Flexible metal hose
3	Superseal plug, 4-pin, connection to ANCOR Headrest
4	Mounting plate and screws

5.3. Radio Module

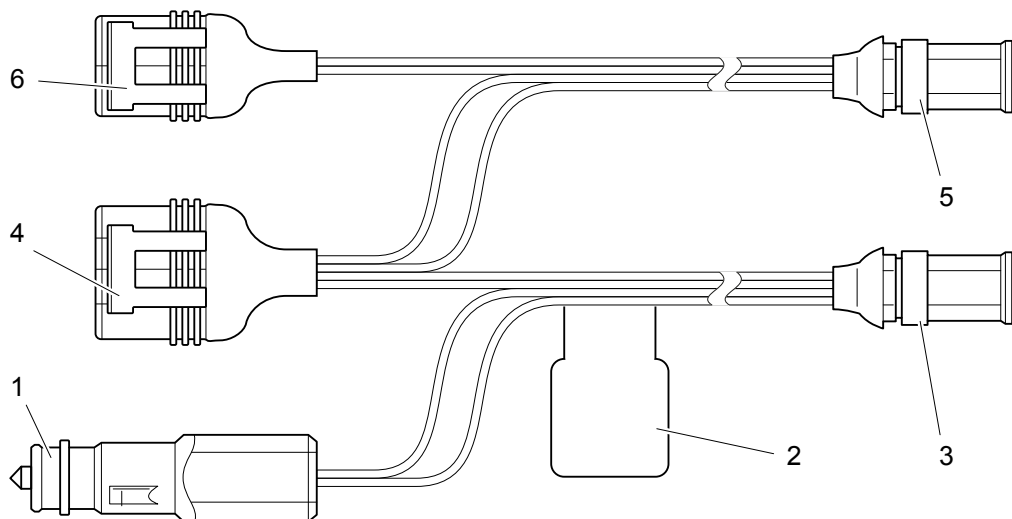


Img. 5 Radio Module

1	Connection for radio cable
2	Connection for push-to-talk
3	Connection to the main wiring harness
4	6.3 mm jack for audio line-in (radio connection)
5	Label

5.4. Cable

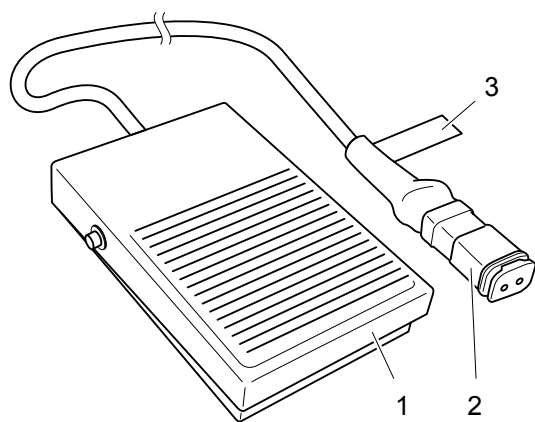
5.4.1. Main Cable Harness



Img. 6 Connection of the Main Wiring Harness

1	Car plug
2	Label
3	Deutsch plug, 6-pin, main plug ANCOR Headrest
4	Superseal plug, 4-pin, Connection to the gooseneck microphones
5	Deutsch plug, 4-pin, connection to radio module
6	Superseal plug, 2-pin for additional A2B connections

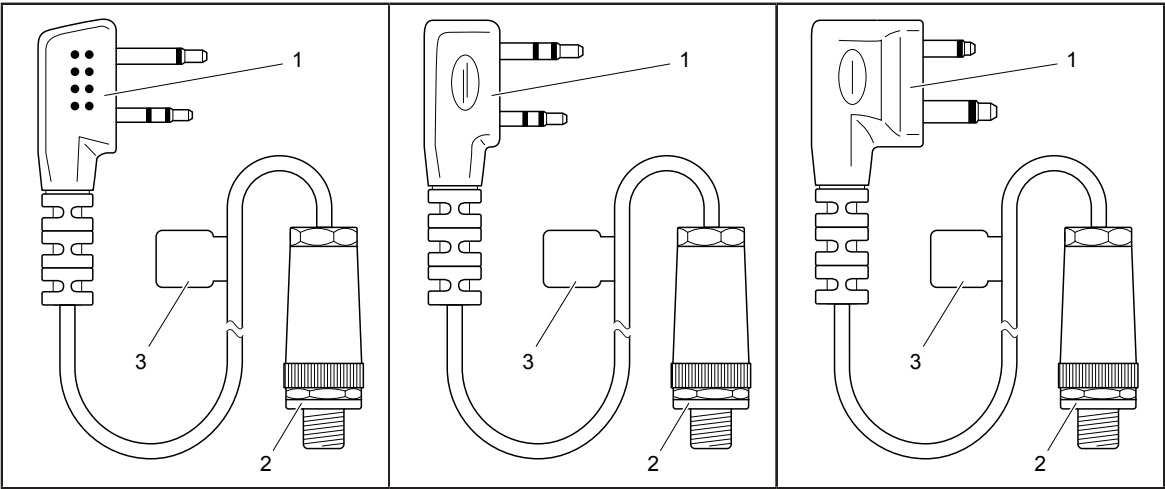
5.4.2. Push-To-Talk Foot Pedal



Img. 7 Push-to-Talk Foot Pedal

1	Foot pedal
2	Plug for connection to the radio module
3	Label

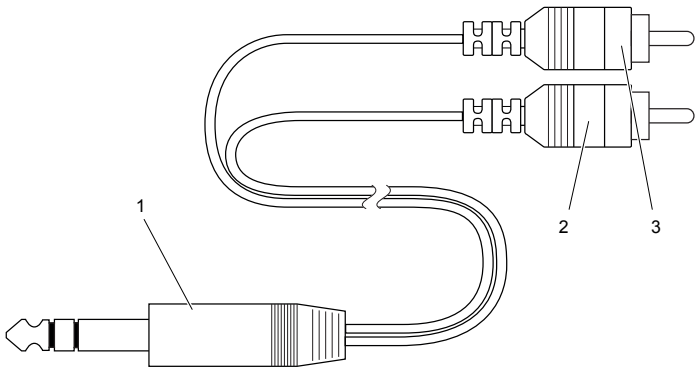
5.4.3. Radio Connection Cable



Img. 8 Radio Connection Cable

1	Connection to the radio module
2	Connection to the radio
3	Label

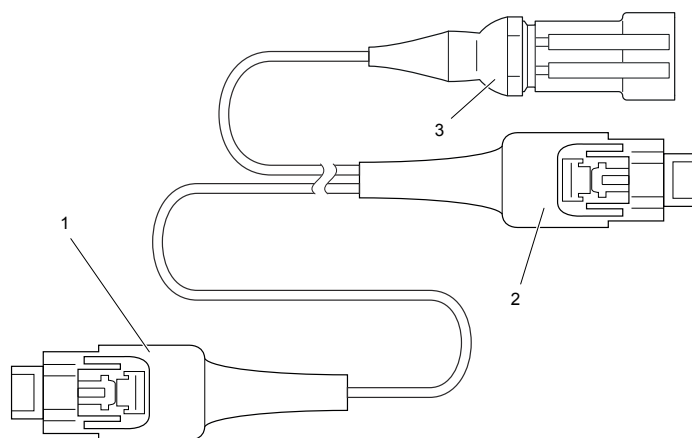
5.4.4. AUX Audio Cable



Img. 9 AUX Audio Cable

1	6.3 mm Stereo Jack
2	RCA male left (white)
3	RCA male right (red)

5.4.5. Sensor Cable



Img. 10 Sensor Cable

1	Accelerometer connection, AC2, Mini50, 4-pin
2	Acceleration sensor connection, AC1, Mini50, 4-pin
3	Superseal plug, 2-pin for connection to the main wiring harness

5.5. Function

ANCOR Headrest is a premium audio system that has been developed to make everyday work easier and safer for machine operators through new communication and audio options. The most important functions are described in the following sections.

5.5.1. Entertainment and Communication

ANCOR Headrest can be used as an audio entertainment and communication system by connecting it to a smartphone via Bluetooth. Music and hands-free calls can be made via the integrated speakers and microphones using the smartphone controls.

5.5.2. Radio Module (optional)

The optional radio module can be used to connect a variety of different company radios. The PTT foot pedal, which can be positioned anywhere in the cab, enables hands-free radio communication without reaching over to the radio and without interrupting the work in progress.

Available are PMR, business and CB radio options from Kenwood, Motorola, Midland, iCom and Stabo. Helmet radio solutions from 3M Peltor LiteCom can be used to communicate via a compatible handheld radio. The speakers and microphones integrated in the ANCOR Headrest ensure crystal-clear voice quality. Depending on the configuration, incoming radio messages can take priority over telephone communication to ensure maximum safety. Thanks to the adaptive volume control, the music volume of audio entertainment is automatically reduced as soon as a radio message is received.

5.5.3. ANC (optional)

The ANCOR Headrest can be used for active noise reduction in vehicle cabins and is based on the principle of Active Noise Cancelling (ANC). Disturbing and unhealthy sound pressure levels are reduced with the help of artificially generated countersound.

The ANCOR Headrest's internal sensors and external acceleration sensors are used to measure and digitise airborne and structureborne noise in the environment. They record the noise close to the noise source at maximum speed, which gives the control unit more computing time to determine the necessary counter-noise and then reduce it as accurately as possible.

The counter-sound is emitted via the ANCOR Headrest speakers. The opposing waves of counter-sound and background noise overlap

and cancel each other out in a certain frequency range (destructive interference). This noticeably reduces the background noise in the user's area.

5.6. LED Overview

The button on the device frame of the ANCOR Headrest has two LEDs that indicate the current operating status of the ANCOR Headrest.

Signal	Operating condition
Blue off	ANC inactive
Blue lights up constantly	ANC active
Blue flashes	Bluetooth pairing active
Red off	ANCOR Headrest error-free
Red lights up constantly	Overtemperature cut-out active or fault during starting process or starting process active
Red flashes	Malfunction present

6. Assembly

Prerequisites:

- The driver's seat has a headrest with headrest bars.
- The dimensions of the driver's seat headrest correspond to the requirements specified in the technical data (see chapter "technical data").

6.1. Dismantling the Headrest

DANGER

Risk of injury due to uncontrolled operation of the vehicle!

If the driver's seat is moved, parts of the vehicle controls may be triggered. People can be seriously injured if the vehicle starts up or moves in an uncontrolled manner.

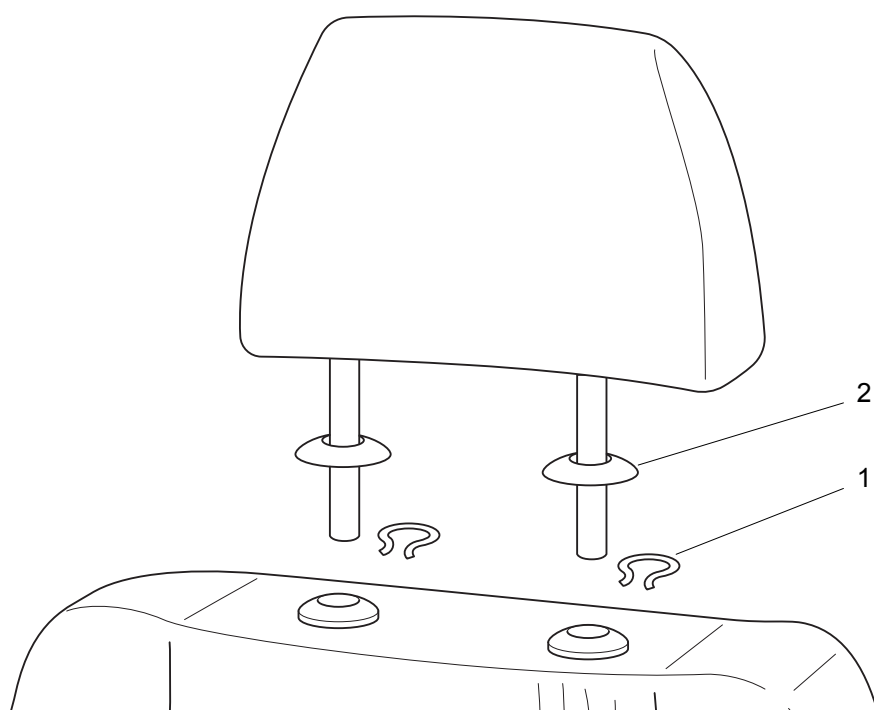
- ▶ Only carry out work on the driver's seat when the vehicle is switched off.

CAUTION

Risk of minor injuries due to jammable parts!

Fingers or parts of the skin can be trapped when working on the clampable parts of the headrest and the ANCOR Headrest bracket.

- ▶ Proceed with caution during the work.
- ▶ Fold the backrest of the driver's seat into a horizontal position.
- ▶ Pull out the driver's seat headrest as far as possible.



Img. 11 Release the Headrest

- ▶ Remove the covers (2) of the headrest guide in which the headrest rods are inserted.
- ▶ Pull the retaining clips (1) out of the recess in the headrest guide. If necessary, use a tool such as a screwdriver or spanner.
- ▶ Pull the headrest completely out of the headrest guide.
- ▶ Replace the retaining clips (1) in the recesses of the headrest guide.
- ▶ Remove the covers (2) from the headrest bars.
- ▶ Place the covers (2) back on the respective headrest guide.
- ▶ Fold the backrest of the driver's seat into the upright position.

6.2. Mounting ANCOR to the Headrest

CAUTION

Risk of minor injuries and damage to property!

If the headrest with the ANCOR Headrest fitted is held onto the vehicle during entry or exit, people can easily injure themselves and the ANCOR Headrest can fall down.

- ▶ Before getting in or out of the vehicle, place the headrest with the ANCOR Headrest on the driver's seat.

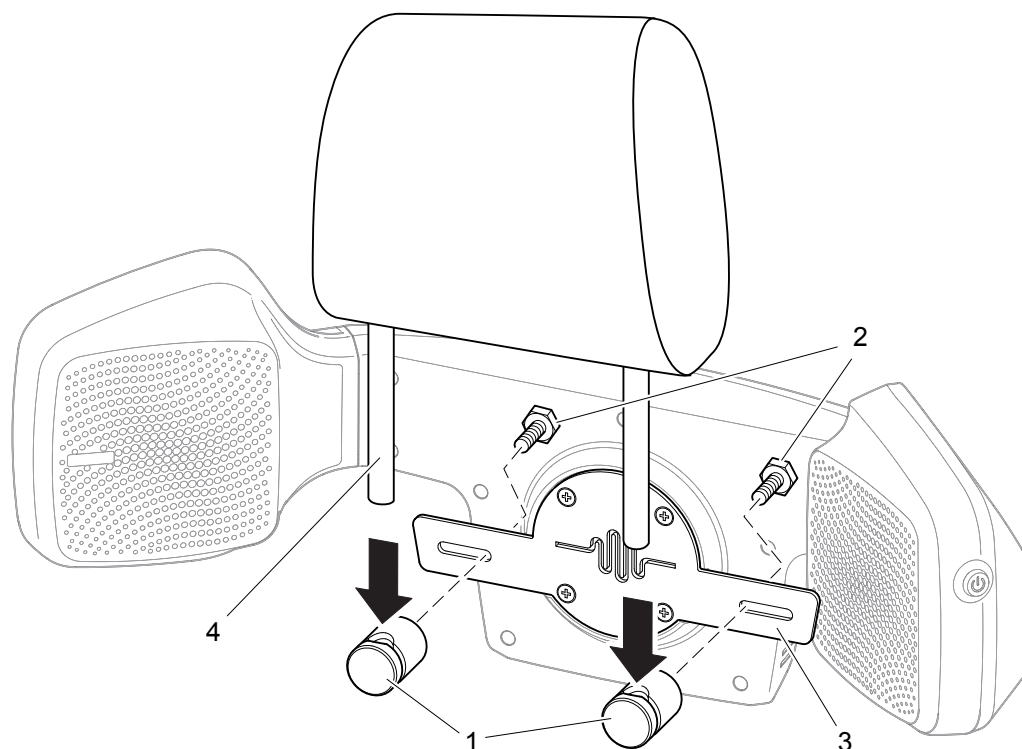
ATTENTION

Danger of collision!

If the ANCOR Headrest is installed inside the vehicle cab, there is a risk of collision between the carrying out the work, the ANCOR Headrest and parts of the vehicle cab or vehicle controls.

- ▶ Only install outside the vehicle cab.

- ▶ Place the ANCOR Headrest on a flat surface outside the vehicle cabin.
- ▶ Guide the headrest rods through the clamping cylinders of the bracket on the ANCOR Headrest.
- ▶ To do this, move the clamping cylinders at a distance from each other.



Img. 12 Fastening the ANCOR Headrest

- ▶ Tighten the screws (2) on the back of the clamping cylinder (1) using a spanner (width 10 mm).
- ▷ The clamping cylinders of the ANCOR Headrest are fixed.



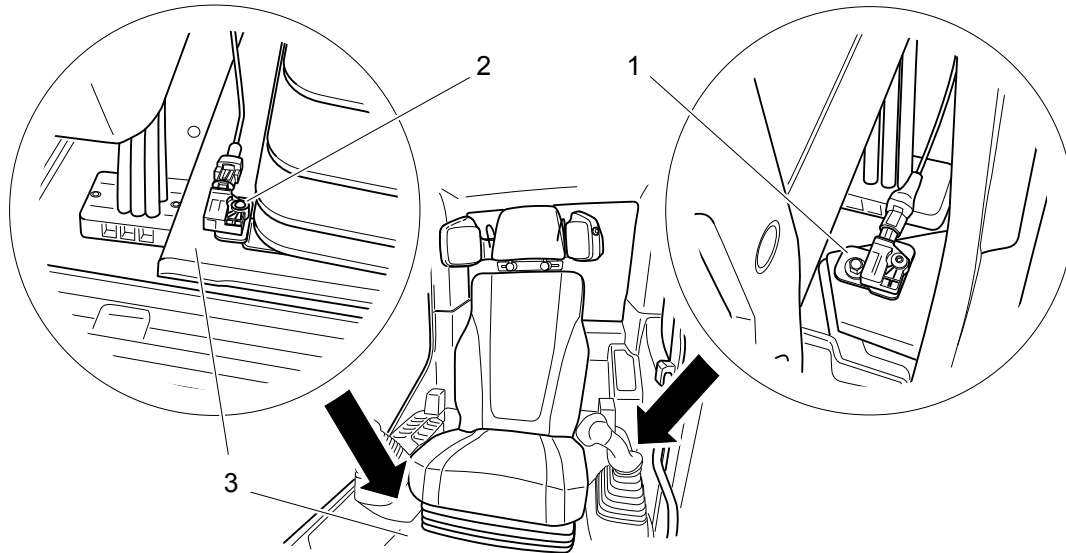
The clamping rings supplied can also fix the headrest in position so that the weight of the ANCOR Headrest does not pull the headrest down unintentionally.

To fix the height of the headrest:

- ▶ Slide the clamping rings over the headrest rods (4) to the height at which the headrest is later to be held in the headrest guide.
- ▶ Tighten the grub screws of the clamping rings (1) with an Allen key (3 mm).
- ▶ Place the headrest with the ANCOR Headrest fitted on the on the surface of the driver's seat.
- ▶ Get into the vehicle cab.

- ▶ Fold the backrest of the driver's seat into a horizontal position.
- ▶ Insert the headrest rods (4) back into the headrest guide.
- ▶ Set the desired height of the headrest.

6.3. Mounting the ANC Module (optional)



Img. 13 Mounting the Acceleration Sensors

If the ANCOR Headrest package includes the optional ANC solution:

- Install at least two ACC sensors on the machine.

The ACC sensors can be mounted freely on existing screw points on the vehicle.

Recommendation:

- Fit the first sensor (2) with the sensor plate (3) to the front right of the seat.
- Fit the second sensor (1) to the left of the seat at the bottom of the door.

The effectiveness of the ANC is influenced by how close they are placed to the loudest source of interference, e.g. in the direction of the vehicle engine.

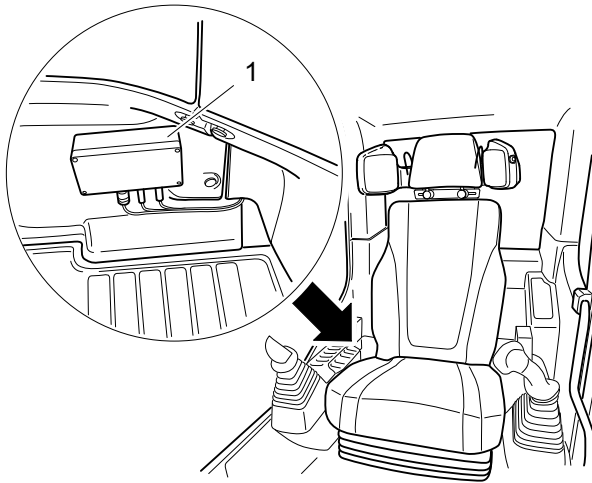
Therefore, individual placements can be made outside the cabin.

6.4. Mounting the Radio Module (optional)

CAUTION

Safety warning!

- ▶ All cables routed inside or outside the vehicle cab represent a potential tripping hazard and/or other hazards.
- ▶ Secure and label all cables to prevent accidents.



Img. 14 Mounting the Radio Module

If the ANCOR Headrest package includes the optional radio module:

- ▶ Install the radio module (1) in the interior and near the ANCOR Headrest.

A Velcro fastener allows for easy installation, and it is recommended to attach the module to the side or back of the driver's seat.

The placement should prevent the module from being moved or being pulled, and at the same time allow additional cables to be long enough to be connected to the corresponding components (operator radio; AUX cable) or attached where they are needed for safe operation (PTT foot pedal).

6.4.1. Foot Pedal

The PTT foot pedal is equipped with a Velcro fastener, allowing easy and flexible positioning on the cab floor.

- Clean the surface before sticking on the foot pedal.



There are alternative wiring options. Any analog button can be connected between the two contacts, e.g. a manual button or a joystick button.

6.4.2. Operator Radio

Prerequisites:

- The customer has a supported radio device, the complete list can viewed at www.recalm.com/faq/.
- Power for the radio (if connected to the power supply) and ANCOR Headrest are at the same voltage potential.
- Universal connection of the radio is accessible.

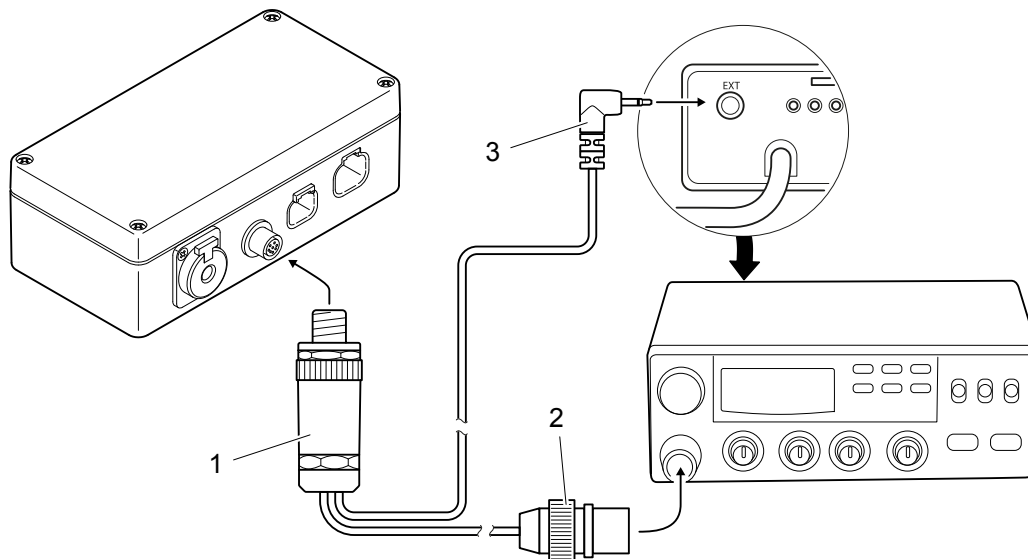
ANCOR Headrest supports the following radio standards

- PMR, operating and CB radio options

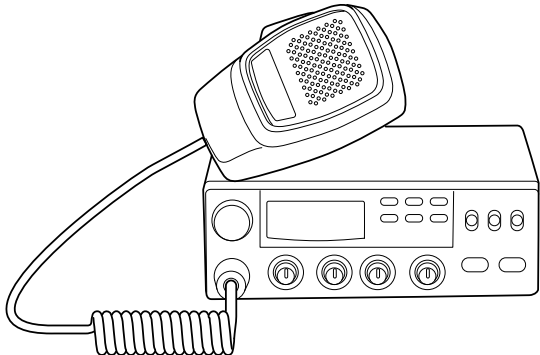
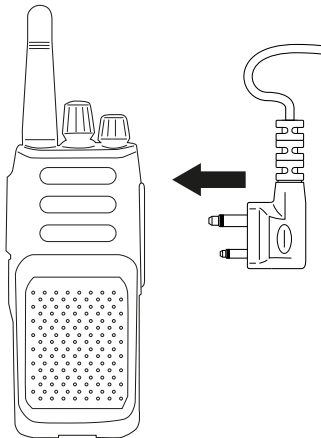


For up-to-date overviews and information on supported manufacturers and models, please scan the QR code or go to www.recalm.com/faq/.

Connect the radio control unit to the radio module:



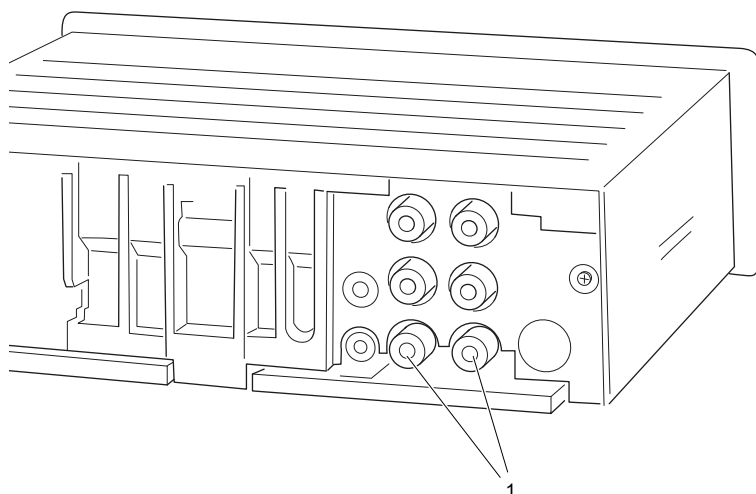
Img. 15 Connecting the Radio Control to the Radio Module

CB Mobile Radio	Handheld Radio
	
<ul style="list-style-type: none"> ▶ Make the universal connection on the back of the radio accessible. ▶ Plug the supplied radio cable (3) into the universal connection on the back of the radio. ▶ Unscrew the handset of the radio. ▶ Connect the supplied PTT foot pedal cable (2) instead. ▶ Connect the cable (1) to the radio module. 	<ul style="list-style-type: none"> ▶ Remove the cap from the universal connection on the side of the radio. ▶ Plug the supplied radio cable into the universal connection. ▶ Connect the cable to the radio module.

6.4.3. Connecting a Radio

Prerequisites:

- Access to the radio's preamplifier outputs.
- The equaliser functions in the menu items of the radio must be switched off.
- For radios with loudspeaker output only: A high-low adapter (not included in the scope of delivery).
- Machine loudspeakers can be deactivated.

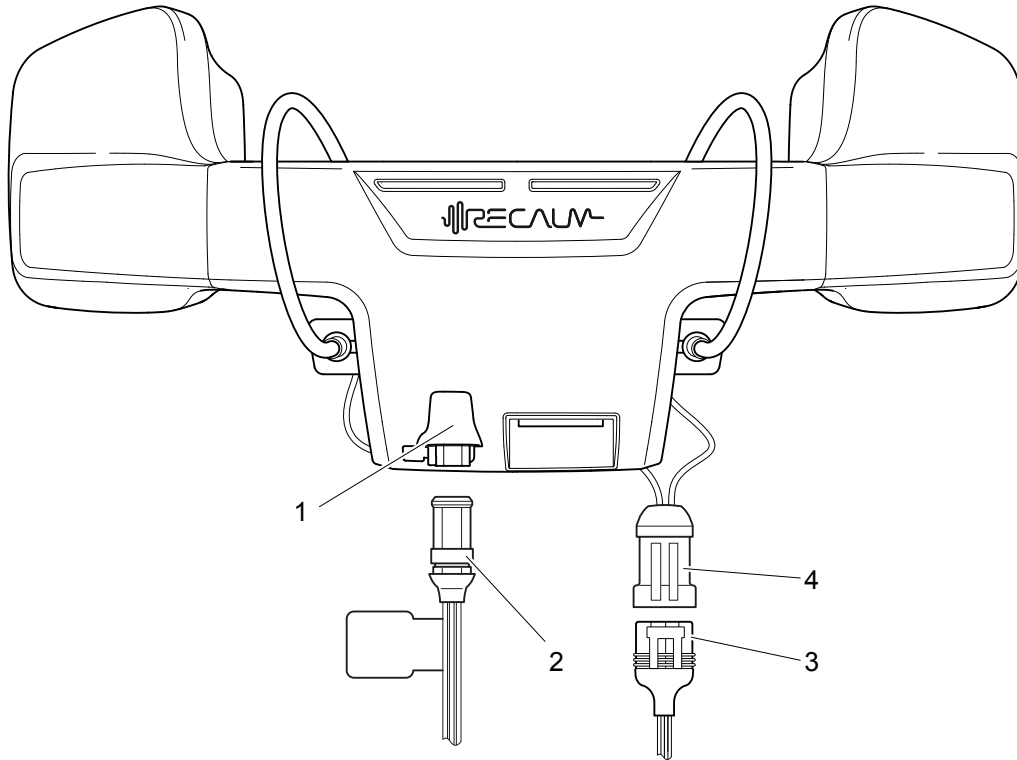


Img. 16 Connecting a Radio

1	Preamplifier output
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- ▶ Connect the radio integrated in the machine using the AUX cable supplied if you want to listen to the radio via ANCOR Headrest.
- ▶ Connect the two cinch connections of the AUX cable to the sockets of the preamplifier outputs (1).
- ▶ Deactivate the machine loudspeakers, e.g. by disconnecting the upper ISO plug.
- ▶ Plug the 6.3 jack plug of the AUX cable into the radio module.

6.5. Connecting the Supply Cable



Img. 17 Connecting a Supply Cable

- ▶ Insert the 6-pin Deutsch connector (2) into the connector on the underside of the ANCOR Headrest (1).
- ▶ Insert the Superseal connector (3) into the gooseneck microphone plug (4).

Radio module only:

- ▶ Insert the 4-pin Deutsch connector into the radio module.
- ▶ Connect the PTT foot pedal cable to the radio module.
- ▶ Connect the control radio to the radio module using the cable.

Only with ANC option:

- ▶ Connect the Superseal connectors to the ACC sensors.
- ▶ Use cable ties, cable clamps and cable conduit to secure loose cables.

6.6. Establishing the Power Supply



ATTENTION

Risk of battery discharge in the vehicle!

Depending on the vehicle variant, the on-board voltage socket is also supplied with voltage when the vehicle ignition is switched off.

- ▶ Disconnect the vehicle plug from the on-board voltage socket if the vehicle is not going to be used for a long period of time.



ATTENTION

Risk of damage to the vehicle connector!

The red cap on the vehicle connector is used to provide a better grip in the on-board power supply socket.

- ▶ Only use the vehicle connector with the red cap.

- ▶ Insert the vehicle plug into the vehicle's on-board power supply socket.
- ▶ Turn on the vehicle ignition to establish the power supply.
 - ▷ The ANCOR Headrest will begin the start-up process.
 - ▷ The red LED on the ANCOR Headrest button will light up constantly.
 - ▷ Once the start-up process has been successfully completed (after about 60 seconds), the red LED will go out and the "System ready" signal tone will sound.



If the start-up process is not successfully completed and the red LED on the button remains lit:

- ▶ Disconnect the ANCOR Headrest from the power supply and repeat the above steps.
- ▶ If the problem persists, contact your authorized dealer or recalm service.

7. Commissioning

After installation and successful setup, ANCOR Headrest can be used for basic communication and entertainment purposes.

However, for a more personalized communication profile and optional ANC calibration, it is recommended to request setup through the authorized dealer or recalm service.

8. Operation

We recommend using the ANCOR Headrest app because the app offers more extensive usage options (see the chapter “ANCOR Headrest App Operation”). The app is not required for basic operation of the ANC.

Requirements:

- The ANCOR Headrest is connected to the power supply.
- The ANCOR Headrest is in a fault-free operating state.
- The ANCOR Headrest is connected to your mobile device via Bluetooth for use with the ANCOR Headrest app.
- The ANCOR Headrest has been successfully put into operation.

8.1. Activating and deactivating ANC



Desired background noise, e.g. from the radio or hands-free system, can affect the perception of noise reduction.

However, this does not affect the actual function of the ANC.

- ▶ To activate the ANC, press the button on the ANCOR Headrest.
 - ▷ The blue LED on the button will light up continuously.
- ▶ To deactivate the ANC, press the button on the ANCOR Headrest again.
 - ▷ The blue LED on the button will go out.

8.2. Connect a Smartphone via Bluetooth



The exact serial number of the ANCOR Headrest is stored on the type plate or in the digital product label. The type plate is located on the underside of the device. The digital product label is located behind the QR code on the ANCOR Headrest.

If you are experiencing problems with the Bluetooth connection, see the chapter “Bluetooth connection problems”.

- ▶ Activate Bluetooth on your mobile device and make the device visible to other devices.
- ▶ Press and hold the **BUTTON** on the ANCOR Headrest for 3 seconds until the blue LED on the button flashes and an audible tone is played.
 - ▷ The Bluetooth pairing mode of the ANCOR Headrest is started.

To connect ANCOR Headrest to your mobile device for the first time:

- ▶ Select ANCOR Headrest in the Bluetooth settings on your mobile device.
 - ▷ A successful connection is signaled by a tone. In addition, the **BUTTON** stops flashing.
 - ▷ ANCOR Headrest will now automatically connect to the paired device when it is in range. To do this, the connection must not be terminated manually via the mobile device.

Cancel the Bluetooth pairing mode:

- ▶ Press and hold the ANCOR Headrest BUTTON for 3 seconds.

Delete the list of previously paired devices on the ANCOR Headrest:

- ▶ Press and hold the ANCOR Headrest BUTTON for 6 seconds while it is in pairing mode.

8.3. Operating the ANCOR Headrest App

This chapter explains only the most important functions of the ANCOR Headrest app that are recommended for optimal use of ANCOR.

More detailed information on how to use the app is available as part of the onboarding process within the app.

The ANCOR Headrest app supports the following basic functions, among others:

- Settings for the Bluetooth connection
- Activating and deactivating the ANC
- Visualization of the current ANC performance



The range of functions offered by the app is constantly being expanded. In the near future, the device will be able to be adjusted and calibrated to individual needs.

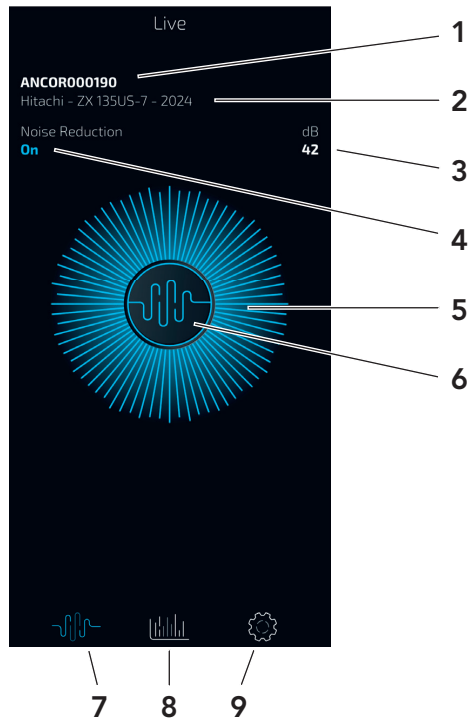
Download the ANCOR Headrest app from the Android store:



- ▶ Open the link to the ANCOR Headrest app using the QR code below.
- ▶ Download the ANCOR Headrest app from your mobile device's app store.
- ▶ Install the ANCOR Headrest app on your mobile device.

Live view user interface

If the mobile device is connected to the ANCOR Headrest via Bluetooth, the ANCOR Headrest app will switch to the live view after opening.



Img. 18 Live view of the ANCOR Headrest App

1	Connected ANCOR Headrest
2	Machine information
3	Noise level after ANC
4	ANC activity
5	Visualization of performance
6	ANC on/off button
7	Live view button
8	Device configuration button
9	Settings button

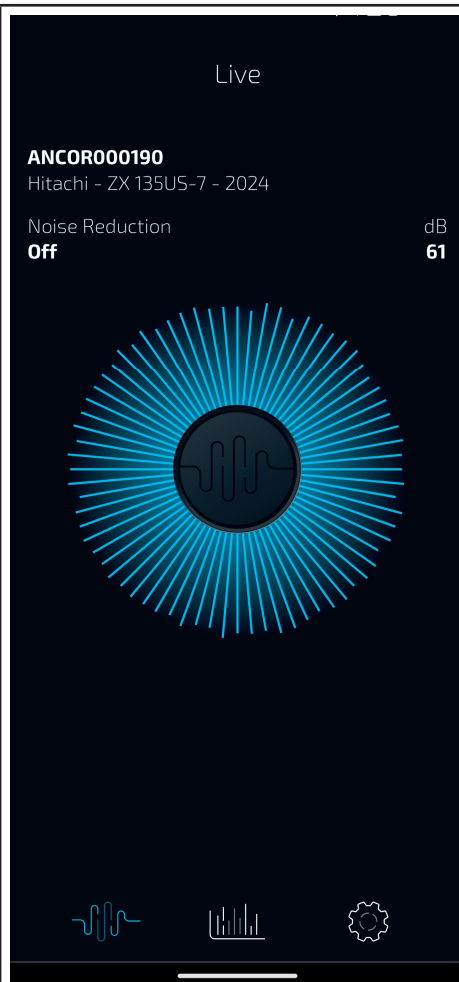
8.3.1. Activate and Deactivate ANC in the App



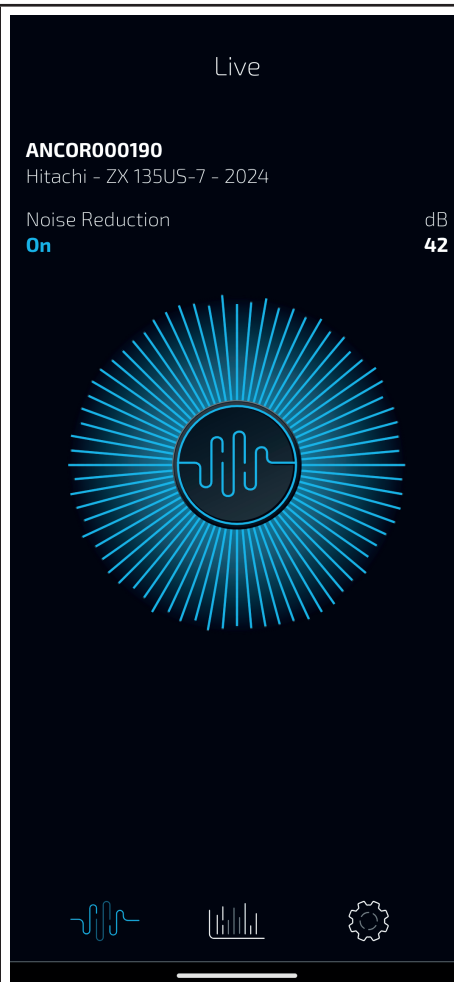
Desired background noise, e.g. from the radio or hands-free system, can affect the perception of noise reduction.

However, this does not affect the actual function of the ANC.

► Open the ANCOR Headrest app.



Img. 19 Live view with ANC off



Img. 20 Live view with ANC on

- ▶ Press the “Live View” button.
 - ▷ The ANCOR Headrest app switches to Live View.
 - ▷ Live View shows a visualization of the current performance of the ANC (even if ANC is deactivated).
- ▶ To activate the ANC, press the [ANC on/off] button.
 - ▷ The [ANC on/off] button turns blue.
 - ▷ The blue LED of the button on the ANCOR headrest is constantly lit.
- ▶ To deactivate the ANC, press the [ANC on/off] button again.
 - ▷ The blue background of the [ANC on/off] button goes out.
 - ▷ The blue LED of the button on the ANCOR headrest goes out.

9. Cleaning and Maintenance

9.1. Cleaning ANCOR Headrest

- ▶ Regularly check the area around the speakers on the ANCOR headrest or the microphones of the A2B sensors for dust or dirt.
- ▶ Use a slightly damp cleaning cloth to remove stubborn dirt.

9.2. Maintaining ANCOR Headrest

Maintenance work is carried out exclusively by authorized dealers and recalm service staff.

10. Troubleshooting

10.1. Troubleshooting Measures

The following table provides an overview of possible faults that may occur in the ANCOR Headrest or its components, their possible causes and how to rectify them.

Malfunction	Possible cause	Remedy
<p>The ANC function is behaving erratically or there is no noticeable noise reduction.</p> <p>The red LED on the ANCOR Headrest is not flashing.</p>	ANCOR Headrest configured incorrectly	Configure the ANCOR Headrest for your vehicle.
	Goosenecks in the wrong position	Return the goosenecks to their original position.
<p>The red LED on the ANCOR Headrest is lit constantly.</p>	Startup process unsuccessful	<p>Disconnect and restore the power supply.</p> <p>If the problem persists, contact the authorized dealer or recalm service.</p>
	Overheat shutdown active	Deactivate overheat shutdown.

Malfunction	Possible cause	Remedy
An audible signal will sound and the red LED on the ANCOR headrest will flash.	Limited functionality due to incorrect software version	Press and hold button for at least 10 seconds If the error occurs again, read out the error codes and contact customer services.
	Sensor chain wired incorrectly	Wire in the following order: ANCOR - goosenecks - wireless module - ANC sensors. Then press and hold the button for at least 10 seconds to restart. If the problem persists, contact customer service.
Bluetooth connection with a mobile device is not possible.	Incorrect Bluetooth settings on the mobile device	Fix Bluetooth connection problems.
	Bluetooth mode of the ANCOR Headrest not activated	
Uplink or downlink phone is malfunctioning.	Use of a cell phone with limited functionality	Overview of cell phones with limited use: www.recalm.com/faq

10.2. Reading the Error Code and Making a Service Request

When the ANCOR Headrest emits a single beep and the red LED on the ANC button flashes.

- ▶ Press and hold the button on the ANCOR Headrest for at least 10 seconds.
 - ▷ The ANCOR Headrest will restart.
- ▶ Wait until the ANCOR Headrest is ready for operation again and check whether the malfunction persists.

If the fault reoccurs, the error code in the ANCOR Headrest can be read out via the ANCOR Headrest app and sent to the authorized dealer or recalm service.


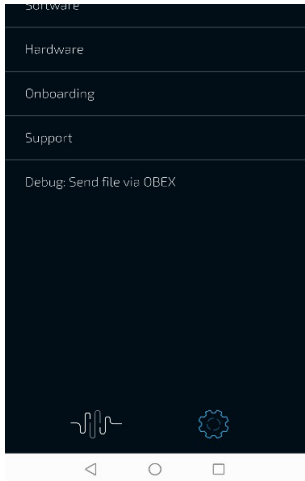
Prerequisites:

- The red LED on the ANCOR Headrest button is flashing.
- The Bluetooth connection to the ANCOR Headrest can be established.

If the red LED on the ANCOR Headrest button is constantly lit and a Bluetooth connection is not possible:

- ▶ Make sure that the excess temperature cut-off is not active.
- ▶ Contact the authorized dealer or recalm service to make the ANCOR Headrest operational again.

To read an error code:

	<ul style="list-style-type: none"> ▶ Scan the QR code to submit a service request to our help center (service.recalm.com) ▶ Or write a message to our Whatsapp service number: +49 1525 8493243 ▶ Wait for the recalm service to contact you.
	<ul style="list-style-type: none"> ▶ Open the ANCOR Headrest app. ▶ Press the „Settings“ button. ▶ Select the „Support“ menu item. <ul style="list-style-type: none"> ▷ The error data available on the ANCOR Headrest is read and written to an error log. ▷ The mobile device's e-mail program opens and the error log is automatically inserted as an attachment in a new e-mail.

10.3. Solving Bluetooth Connection Problems

It is possible that the ANCOR Headrest may not appear in the list of available devices within the ANCOR Headrest app.

If no available device is found, the ANCOR Headrest app will automatically open the Bluetooth settings of the mobile device for verification.

The ANCOR Headrest will exit Bluetooth mode.

- ▶ Press and hold the button on the ANCOR Headrest for at least 10 seconds.
Alternatively, disconnect the ANCOR Headrest from the power supply and then reconnect it.
 - ▷ The ANCOR Headrest will restart.
- ▶ Wait until the ANCOR Headrest is ready for operation.

-
- ▶ Check the Bluetooth settings of the mobile device, especially the visibility for other devices.
 - ▶ Make sure that the ANCOR Headrest and the mobile device are not too far apart (within a radius of about 100 meters).
 - ▶ Press and hold the button on the ANCOR Headrest for at least 5 seconds.
 - ▷ The ANCOR Headrest's Bluetooth mode will start.
 - ▶ In the mobile device's Bluetooth settings, make sure that the ANCOR Headrest is already paired with the mobile device.
 - ▶ Wait until the desired ANCOR Headrest appears in the list of available devices within the ANCOR Headrest app.
 - ▶ Select the ANCOR Headrest.
 - ▶ If the ANCOR Headrest still does not appear in the list of available devices, contact your authorized dealer or recalm service.

10.4. Overheating Shutdown

The ANCOR Headrest is equipped with an overheating shutdown feature that prevents damage to the device when used at very high temperatures.

In this case, the ANCOR Headrest will automatically shut down.

- ▶ When operating the ANCOR Headrest, observe the specified ambient conditions.

If the overheating shutdown is active:

- ▶ Reduce the ambient temperature in the vehicle cabin, e.g. using the vehicle's air conditioning system.
- ▶ Wait until the ANCOR Headrest has cooled down and switches back on automatically.
- ▶ If the ANCOR Headrest cannot be put back into operation, contact the authorized dealer or recalm service.

10.5. Resolving ANC Functionality Limitations

If there is no noticeable noise reduction from ANC or if there are irregularities in the ANC function:

- ▶ Ensure that the ANCOR Headrest has been fully commissioned and that ANC has been calibrated for the vehicle variant in which the device is being used.
- ▶ Ensure that the gooseneck microphones are correctly positioned between the ears and speakers.
- ▶ Make sure that all hardware components are connected in the correct order.
- ▶ Deactivate the ANC and disconnect the ANCOR Headrest from the power supply.
- ▶ Reconnect the power supply.
 - ▷ The ANCOR Headrest will restart.
- ▶ Activate the ANC and check the function.

If the ANC function is still limited:

- ▶ Repeat the above steps.

After the third boot process with possible instabilities, the ANCOR Headrest automatically switches to error mode and the red LED on the button starts flashing.

- ▶ Follow the steps in the chapter “Reading error codes and making service requests”.

11. Decommissioning and Dismantling

It is necessary to decommission the ANCOR Headrest if

- malfunctions occur that cause increased noise pollution,
- the ANC exhibits irregular behavior,
- a fault is present that cannot be remedied by the measures described in the "Troubleshooting" chapter,
- the ANCOR Headrest is to be dismantled.

11.1. Putting ANCOR Headrest out of Operation



ATTENTION

Risk of damage to the vehicle connector!

The red cap on the vehicle connector is used to provide a better grip in the on-board power supply socket.

- ▶ Only use the vehicle connector with the red cap.

- ▶ Disconnect the vehicle plug from the vehicle's on-board power supply socket.
- ▶ Disconnect the 6-pin Deutsch connector from the connector on the underside of the ANCOR headrest.

11.2. Dismantling the Headrest

DANGER

Risk of injury due to uncontrolled operation of the vehicle!

When the driver's seat is adjusted, parts of the vehicle controls may be triggered. People can be seriously injured by the vehicle starting up or moving in an uncontrolled manner.

- ▶ Only work on the driver's seat when the vehicle is switched off.

CAUTION

Risk of minor injuries due to pinching!

When working on the clampable parts of the headrest and the ANCOR Headrest bracket, fingers or parts of the skin can be pinched.

- ▶ Proceed with caution during the work.

- ▶ Fold the backrest of the driver's seat to a horizontal position.
- ▶ Remove the headrest guide covers in which the headrest rods are inserted.
- ▶ Pull the retaining clips out of the headrest guide recesses. If necessary, use a tool such as a screwdriver or wrench.
- ▶ Pull the head restraint with the ANCOR Headrest completely out of the head restraint guide.
- ▶ Put the head restraint down safely.
- ▶ Reinstall the retaining clips in the indentations of the head restraint guide.
- ▶ Remove the covers from the head restraint rods.
- ▶ Put the covers back on the respective head restraint guides.
- ▶ Fold the backrest of the driver seat into the upright position.

11.3. Detaching ANCOR from the Headrest

CAUTION

Risk of minor injuries and property damage!

If the headrest with the mounted ANCOR Headrest is held on the vehicle during entry or exit, people can easily be injured and the ANCOR Headrest can fall down.

- ▶ Before entering or exiting the vehicle, place the headrest with the ANCOR Headrest on the driver's seat.

ATTENTION

Risk of collision!

When installing the ANCOR Headrest inside the vehicle cabin, there is a risk of collision between the person installing it, the ANCOR Headrest and parts of the vehicle cabin or vehicle controls.

- ▶ Only carry out the installation outside the vehicle cabin.
- ▶ Place the headrest with the ANCOR Headrest outside the vehicle cabin on a flat surface.

If the supplied clamping rings were used:

- ▶ Loosen the grub screws of the clamping rings with an Allen key (3 mm).
- ▶ Remove the clamping rings from the headrest rods.
- ▶ Loosen the screws on the back of the clamping cylinders with a wrench (10 mm).
- ▶ Pull the headrest rods out of the clamping cylinders.
 - ▷ ANCOR Headrest is released from the headrest.
- ▶ Put the ANCOR Headrest down safely.
- ▶ Put the headrest rods back into the headrest guide.
- ▶ Set the headrest to the desired height.
- ▶ Disconnect the cable connections between the components used and remove the cables from the vehicle.

12. Storage

- ▶ Comply with the storage conditions (see chapter „Technical data“).
- ▶ Store the ANCOR Headrest only in closed, non-explosive areas.
- ▶ Make sure that the storage area is well ventilated and dry.

13. Disposal

- ▶ Dispose of the ANCOR Headrest and the supplied components in accordance with the legal requirements of the respective country.
- ▶ Do not dispose of the ANCOR Headrest in household waste. In accordance with European Directive 2012/19/EU on waste electrical and electronic equipment, used electrical appliances must be collected separately and recycled in an environmentally friendly manner via a local recycling company. Our WEEE registration number is: DE 58864221.
- ▶ When disposing of packaging, please observe the legal requirements for waste separation in the respective country. Further information about recycling of these products is available from your local council office or your local community recycling collection point.

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