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1. Notes on safety



Incorrect installation

Incorrect installation can lead to damage to the device or to the vehicle! Special knowledge and capabilities are necessary for the installation of the handsfree system. Incorrectly connected cables or short-circuit can result in serious device damage. Before you begin with the installation, the car battery is to be disconnected. It is urgently recommended to have the installation carried out in a specialist workshop.



Danger of injury

Unsuitable installation locations can cause injuries in case of a road accident or make safety systems ineffective. Consider the references in the Chapter „**Installation**“!



Danger of injury / material damage

When levering out paneling, pointed or sharp tools can result in injuries and material damage. Lever out parts carefully. Do not place any direct pressure on connection cables!



Impairment of traffic safety

Inattention can lead to dangerous traffic situations. Also in the handsfree mode, you must always pay attention to the traffic situation. The telephone may be used by the driver during driving in handsfree mode only! Dispense with a telephone call in difficult situations, as appropriate!



Damage to the airbag

If an incorrect installation location is selected, the airbag can be damaged or impaired in its function. Attach the components outside of the area of influence of the airbags!

**Insulation damage**

Damaged insulation can lead to device damage. In their layout position, the cables may not be subjected to tension. Route the cables so that they are not squeezed or rub against objects.

**Damage of important vehicle parts**

With the boring of fastening holes or screwing in sheet metal screws, important vehicle parts or lines can be damaged. Pay attention to sufficient installation free space, also behind the boltholes and drilling holes.

**Influence of the on-board electronics**

In spite of high radiation-emission security, influences of the on-board electronics can result in case of inappropriate installation. Consider the references of the vehicle manufacturer!

**Damages through incorrect spare parts**

Incorrect spare parts or replacement parts can lead to faults. Employ only those parts listed in the section „**Spare parts and accessories**“!

2. Introduction

Many thanks for choosing a handsfree system from Funkwerk Dabendorf GmbH!

Our communication solutions make an important contribution to traffic safety and to the convenient use of your mobile telephone in the car.

The Audio 2010 offers you the possibility to operate different mobile telephones in your vehicle with the same universal system. This is achieved through the Bluetooth® radio transmission standard.

Before the installation of the „Audio 2010“ in your vehicle, please insure that your telephone interacts with it correctly. Where appropriate, inquire with your dealer or your specialist workshop. Our service is also glad to remain available to you for information. You can find further information on compatibility with different mobile telephones on our website.

To increase the operating convenience and your security with making a call while driving, the Audio 2010 is provided with an interactive voice-activity detection. Please note that special knowledge and capabilities are necessary for the installation of this handsfree system.

Proceed as follows with the installation

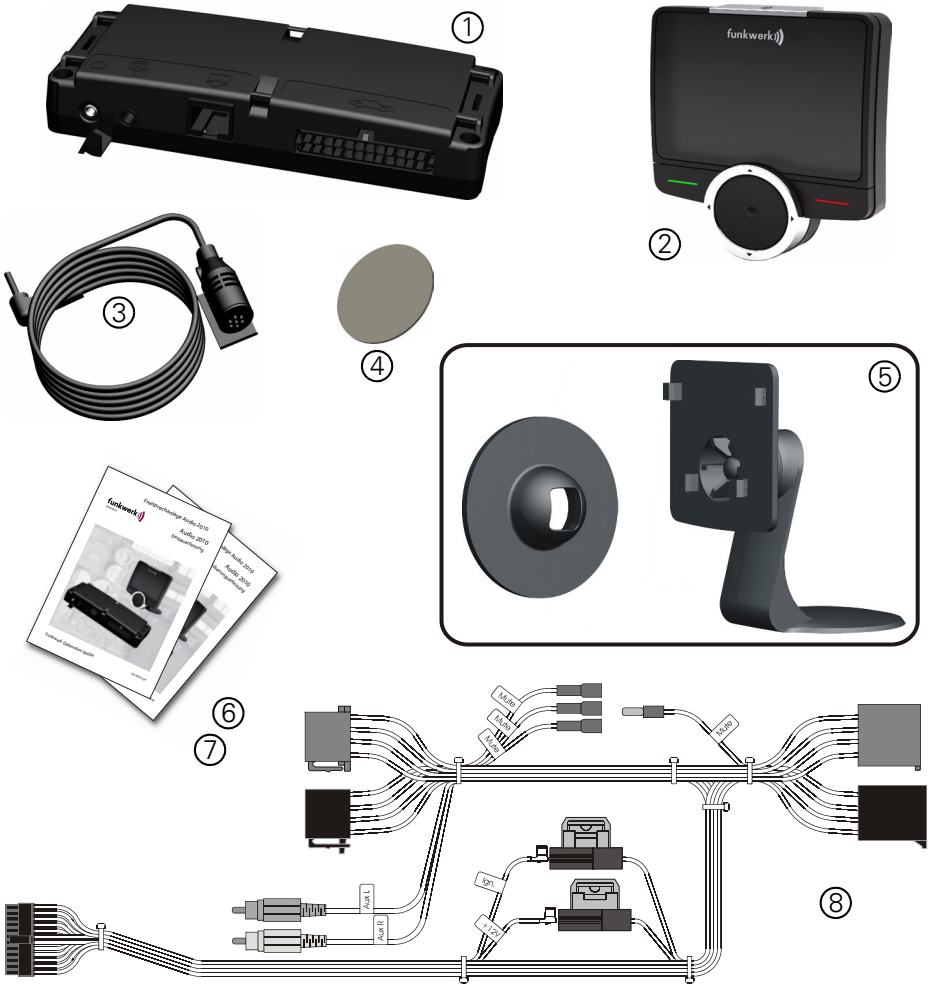
First of all check whether all parts are completely present as indicated in the illustration overleaf. Lay out the necessary tools before the installation. Determine the installation locations for the respective components based on the criteria described in the Chapter „Installation“. Then install the handsfree system in the car according to the installation instructions.

After installation

After the installation, take some time and make yourself familiar with the operation of the system. Make some telephone calls, where you can determine the optimal conditions for volume and speech direction before you use the handsfree system in road traffic.

We wish you a lot of success!

3. Scope of delivery



- 1 - Electronic box
- 2 - Actuator with OLED display
(cable length 2m)
- 3 - Microphone (cable length 2,5m)
- 4 - Adhesive pad

- 5 - Installation set
- 6 - Installation instructions
- 7 - Operating manual
- 8 - ISO connection cable *)
(cable length 1m)

*) according to supply variant

4. Technical data

Electronic box dimensions	131,9mm x 54mm x 23mm
Display dimension	55mm x 61,9mm x 21mm
Operating voltage	11 V to 15 V
Quiescent current take-up	max. 0,1 mA
Operating current level	max. 750 mA
Fuse	2 x 5A
Temperature range	-10 °C to +55 °C

5. Certifications



e-Approbation

Type approval in accordance with Directive:
72/245/EWG (2009/19/EG)

„Electromagnetic compatibility in MOTOR VEHICLES“



This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

6. Installation



Incorrect installation

Incorrect installation can lead to damage to the device or the vehicle! Special knowledge and capabilities are necessary for the installation of the handsfree system. Incorrectly connected cables or short-circuits can lead to serious device damage. Before you begin with the installation, the car battery needs to be disconnected.

It is urgently recommended to have the installation carried out in a specialist workshop.

6. 1. Identify prerequisites

Vehicle

The system may be installed only in vehicles with an in-vehicle voltage of 12 V, minus pole to ground. If no car radio is existing, an external loudspeaker is necessary.

Telephone

In order to enable operation of this system, a Bluetooth® compatible telephone must be used.

Muting (radio mute switching)

The muting function ensures that the radio sound volume is switched off during a telephone call. The muting is supported by the system. You can find out in the documentation on the car radio whether your car radio has a muting connection.

The mute signal is a ground signal!

External loudspeaker / phone connection of the car radio

The switchover of the radio loudspeakers to the system is implemented through switching contacts. These are designed for a maximum loudspeaker power of 35 W (sine). Loudspeaker powers above 35 W lead to premature wear of the switching contacts. Use either the telephone input of the car radio, or an external loudspeaker at higher output power (5 W / 4 Ω).

Checking cable lengths

Before you attach the components permanently, check whether the mounting locations are selected so that the cable lengths are sufficient in order to connect the individual parts with each other. Consider the following references in the stipulation of the installation locations.

6. 2. *Selecting installation locations of the components*



Danger of injury

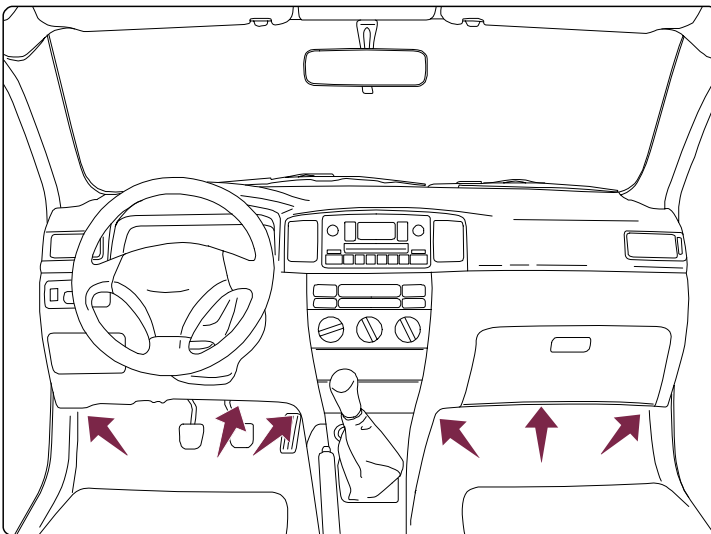
Unsuitable installation locations can cause injuries in case of a road accident, or make safety systems ineffective!

Selection of the installation location for the electronic box

In the electronic box an antenna is installed for the radio link to the mobile telephone. The radiation emission is implemented mainly in the direction of the front panel, therefore it should be mounted with installation in the passenger compartment, facing in. A vertical installation is optimal. Metallic shielding between the faceplate and the passenger compartment, such as panels of metal or metal coated plastics, impair the link to the mobile telephone.

Suitable for the electronic box:

- Passenger area near the central console under the paneling
- Vehicle-specific installation console (specialist retailing)
- Behind the glove compartment

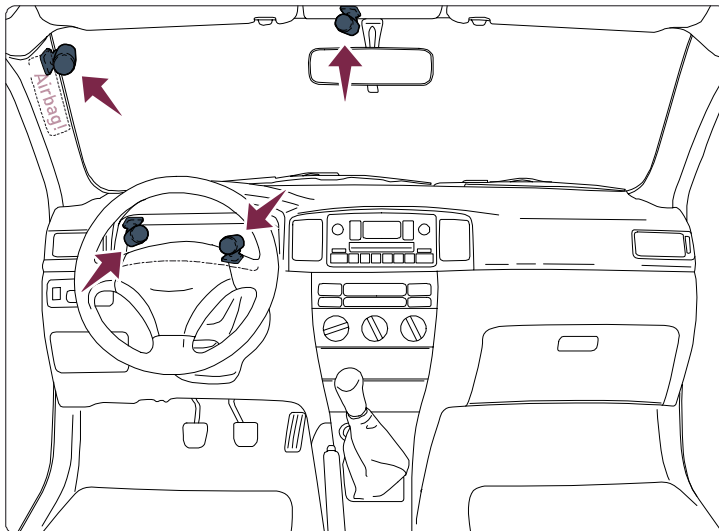


Unsuitable for the electronic box:

- Leg and knee area
- Possible impact area of the head
- Area of influence of the airbag
- In the engine compartment
- Behind the radio
- Near the fuse box

Selection of the installation location for the microphone**Suitable for the microphone:**

- If voice sound is applied to the microphone unobstructed, the separation distance between speaker and microphone should be approx. 35 cm
- On the A-pillar (between front windscreen and side window)
- Near the driver sun visor
- On the instrumentation panel
- On the steering column

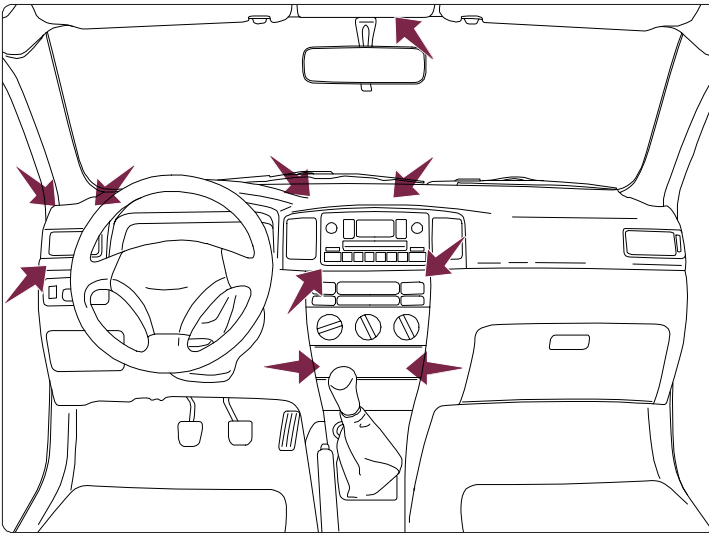


Unsuitable for the microphone:

- In loudspeaker proximity (less than 80 cm separation distance)
- Under the instrumentation panel
- In the air stream of the window or the fan

Selection of the installation location actuator/display**Suitable for the actuator:**

- Central console between driver and passenger
- On the instrumentation panel, a location which can be easily reached by the driver

**Unsuitable for the actuator:**

- Area of influence of the airbag
- Possible impact area of the head
- Outside of the range of the driver

6. 3. Preparation for installation of the components

Dismantle radio

1. Remove the radio panel carefully, with help of a plastic wedge. In this case it is to be ensured that no holding lugs or interlocks are broken off.
2. According to type of the radio, the fixing screws are to be loosened with a screwdriver or a special extraction tool.

Remove the plug connector from the radio (radio stations stored by the customer are deleted).

Note:

Before the removal of the radio, it is to be noted whether a radio code is possibly required. If indicating instruments for the airbag are integrated into the panel, you should not switch on the ignition plug connector after pulling the plug connector, since this can result in an error report of the airbag. (e.g. VW Passat 3 C)

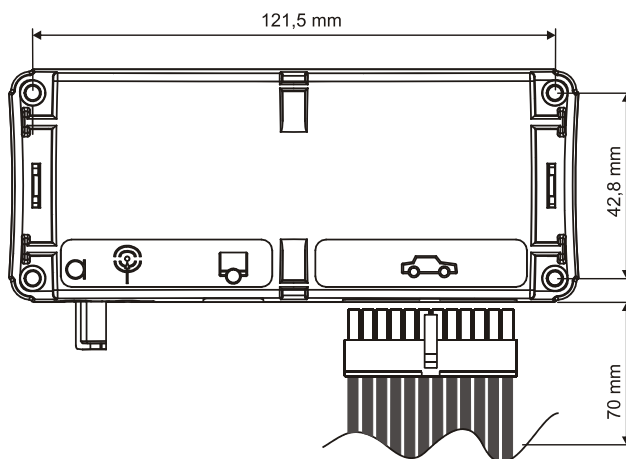
6. 4. Fastening of the electronic box

The electronic box offers two possibilities for fastening.

Possibility 1 - through installation with bolts:

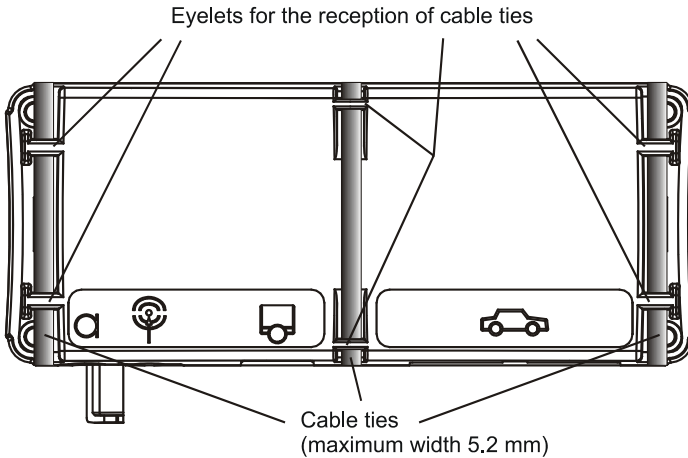
First stipulate the fastening points. Note that approx. 70 mm space for the plug connection remains. Now mark the screw positions.

Use four sheet metal screws with the corresponding spacing washers for the fixing of the electronic box. We recommend a sheet metal screw with the measurements „ST 2.9x25 DIN 7981“. These are optimally suitable for the fixing of the electronic box. Pre-drill with a 2 mm drill.



Possibility 2 - through installation with cable ties:

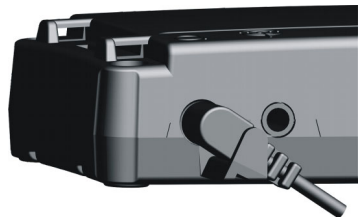
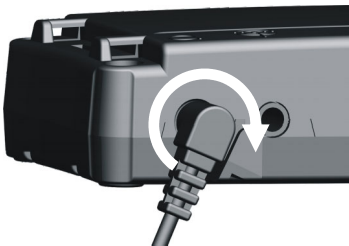
Eyelets, separately provided for the cable tie assemblies, are located on the electronic box.



6. 5. Mounting microphone

Note:

1. In order to guarantee effortless laying of the line, steering column paneling or similar paneling parts must be removed as appropriate.
2. The microphone line is to be laid so that no further functions are impaired.
3. Route the jack plug of the microphone to the electronic box and plug in. The connection and securing of the microphone jack plug is displayed in the following illustration:



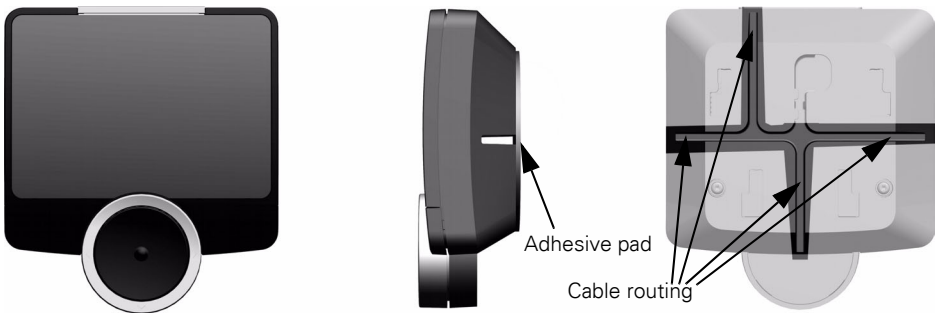
6. 6. Installation of the display and actuator



Surfaces to be bonded must be free from grease and dust. Clean the planned location with a suitable cleaning agent, such as e.g. spirit. Employ these agents only if the plastics or painted wood surfaces do not dissolve and are not self-lubricating. Unsuitable agents are e.g. petroleum ether, acetone, turpentine, trichlorine ethylene and similar cleaning agents!

Variant 1

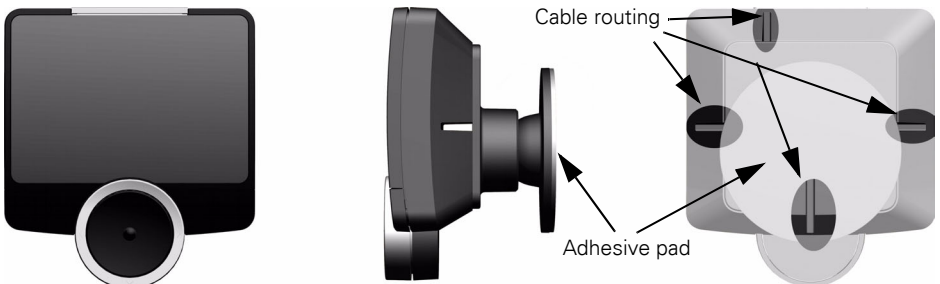
With the aid of an adhesive pad, the display can be attached directly on a flat surface.



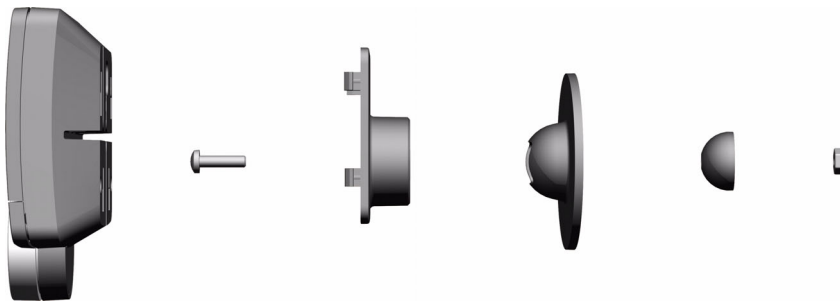
In order to structure the installation as inconspicuous as possible, the display has 4 possibilities of routing out the ribbon cable.

Variant 2

The display can also be attached with a ball adapter, which can also be individually adjusted after fixing. The ball adapter is attached on a flat surface with the aid of the adhesive pad.

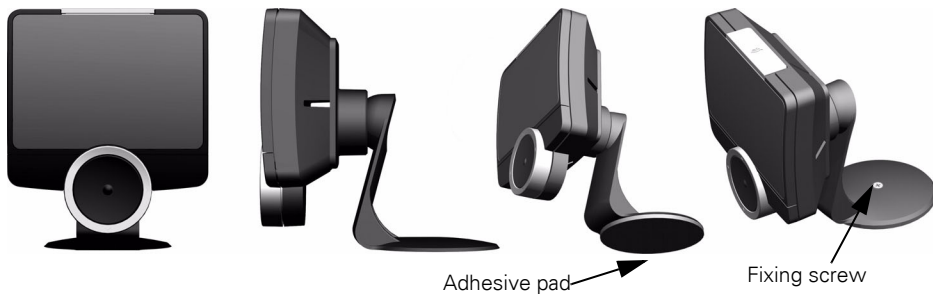


Assembly of the components (Variant 2)

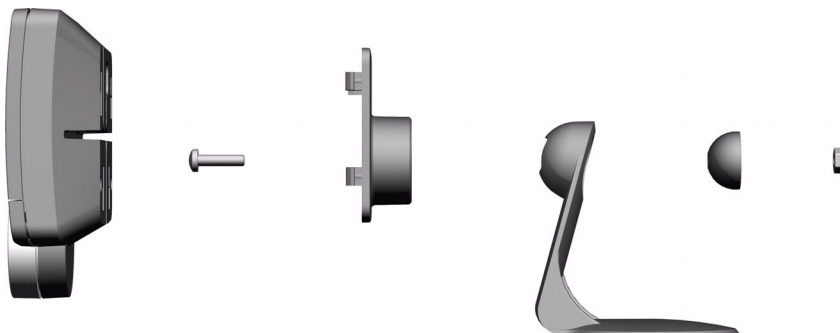


Variant 3

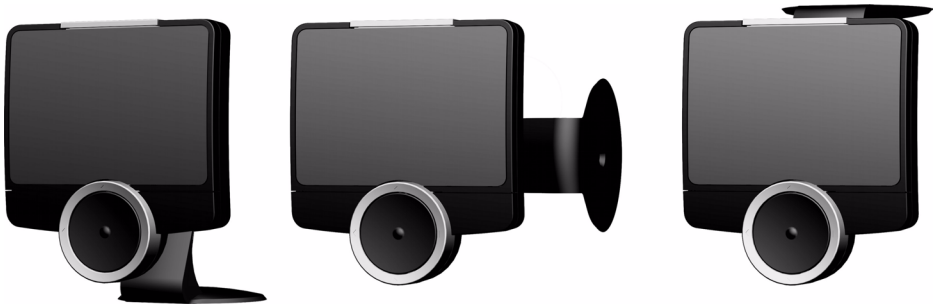
If you wish to attach the display with the stand base, you can attach this with the adhesive pad or with a bolt.



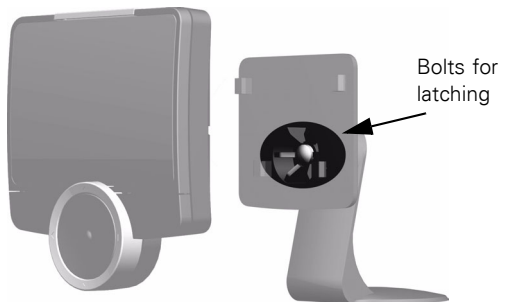
Installation of the retention foot (Variant 3)



The utilization of the stand base offers you further possibilities for installation. The display can also be mounted on its side or upside down.



With Variants 2 and 3 you should latch the stand base and ball adapter after alignment of the display by means of the bolts.



After selection of a position for the actuator, blind covers and trim strips possibly have to be dismantled in order to enable the laying of the connecting leads behind the instrument cluster.

Note:

The actuator should be in the field of vision of the driver, in order to ensure ease of operation when driving. The actuator must not obstruct the driver.

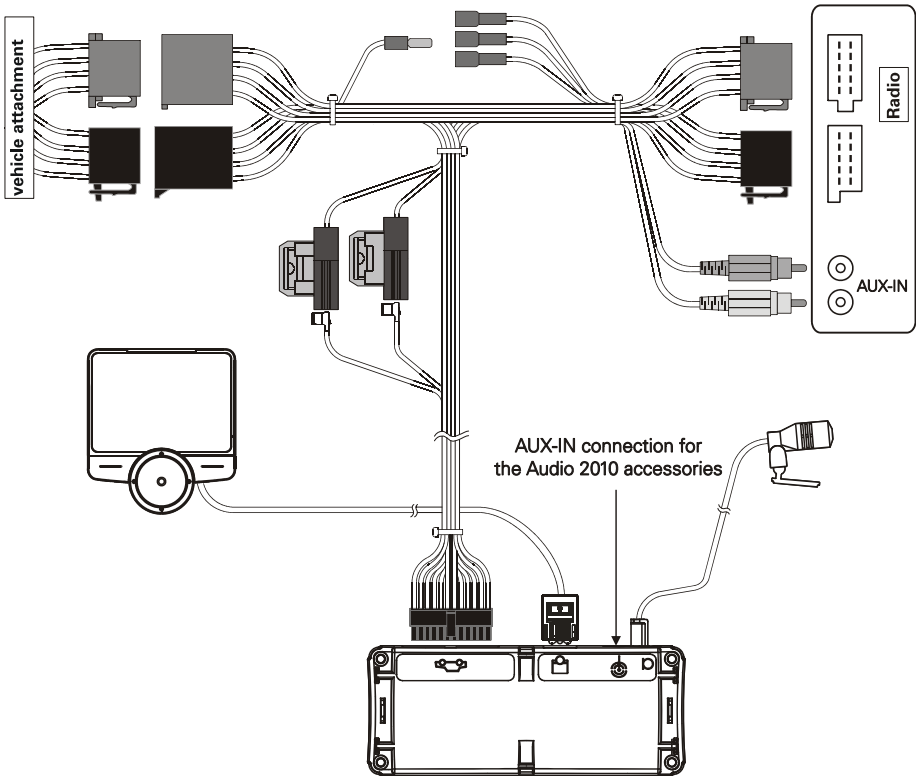
7. Connection to the vehicle electronics using an adapter cable

7.1. Installation of the ISO connection cable

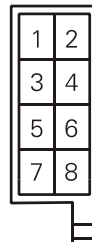
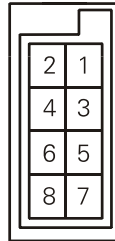


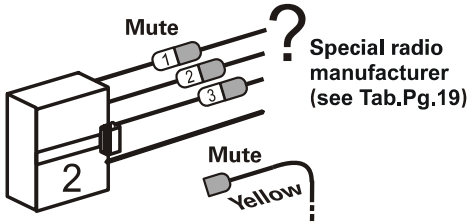
Before the installation of the cable is begun, the battery must be disconnected! The minus pole must be disconnected from ground for this purpose.

The installation of the cable can be seen in the illustration below.



		Socket contact housing		Allocation of the power supply plug connection
Radio - type	Pin	Control color	Function	
Audi / VW / Grundig	1			Allocation of the socket from behind (see Table)
	2		Mute	
	3			
	4	blue	Ignition (Ter.15)	
	7	red	Battery + (Ter.30+)	
	8	brown	Battery - (Ter.31)	
Socket contact housing				
Radio - type	Pin	Control color	Function	
Ford / Mercedes / Porsche / Becker	1			Allocation of the connector from behind
	2			
	3		Mute	
	4	red	Battery + (Ter.30+)	
	7	blue	Ignition (Ter.15)	
	8	brown	Battery - (Ter.31)	
Socket contact housing				
Radio - type	Pin	Control color	Function	
Blaupunkt	1			Allocation of the connector from behind
	2		Mute	
	3			
	4	red	Battery + (Ter.30+)	
	7	blue	Ignition (Ter.15)	
	8	brown	Battery - (Ter.31)	
Socket contact housing				
Radio - type	Pin	Control color	Function	
Philips	1		Mute	Allocation of the connector from behind
	2			
	3			
	4	red	Battery + (Ter.30+)	
	7	blue	Ignition (Ter.15)	
	8	brown	Battery - (Ter.31)	





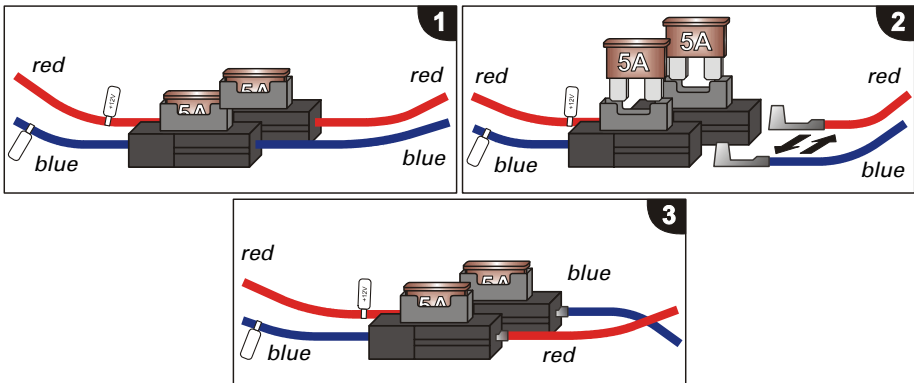
Checking the mute inputs

The mute inputs 1-3 can be seen in the illustration. The yellow mute cable of the Audio 2010 is connected to one of these inputs. Please refer to the table for which mute input is to be used.

The matching mute connection is separated and connected with the yellow cable.

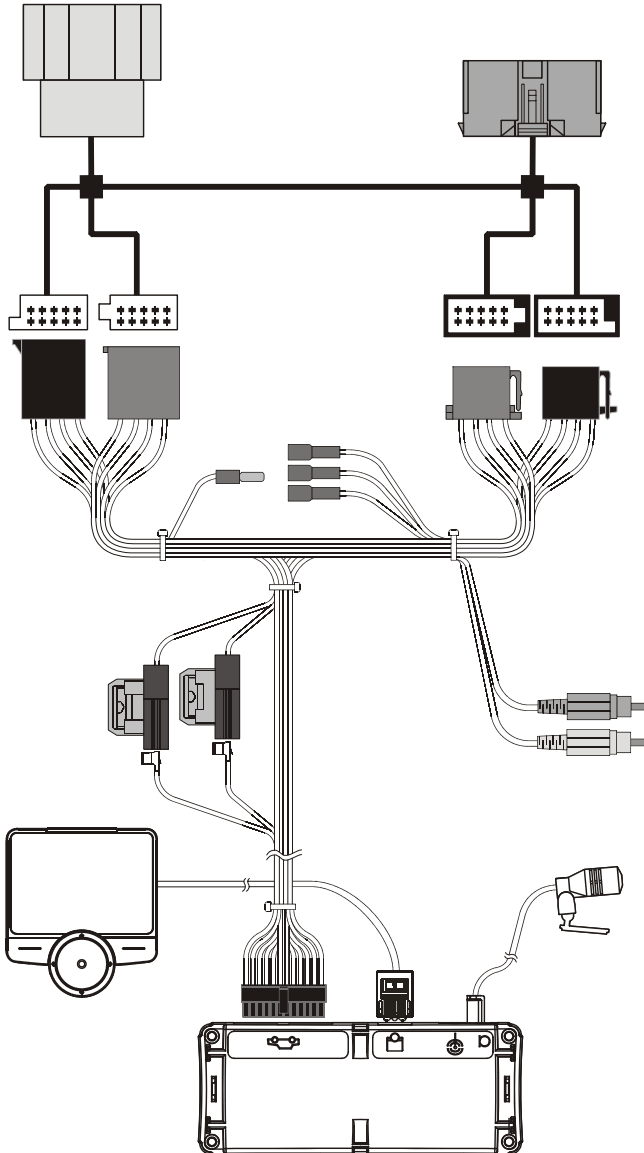
7.2. Checking the installation

If the ISO connection cable has been connected correctly, the message www.fwd-online.de is represented on the display with ignition switch-off. If this message does not appear, then the ignition cable (blue) must be interchanged with the voltage supply cable (red) (see Fig.).



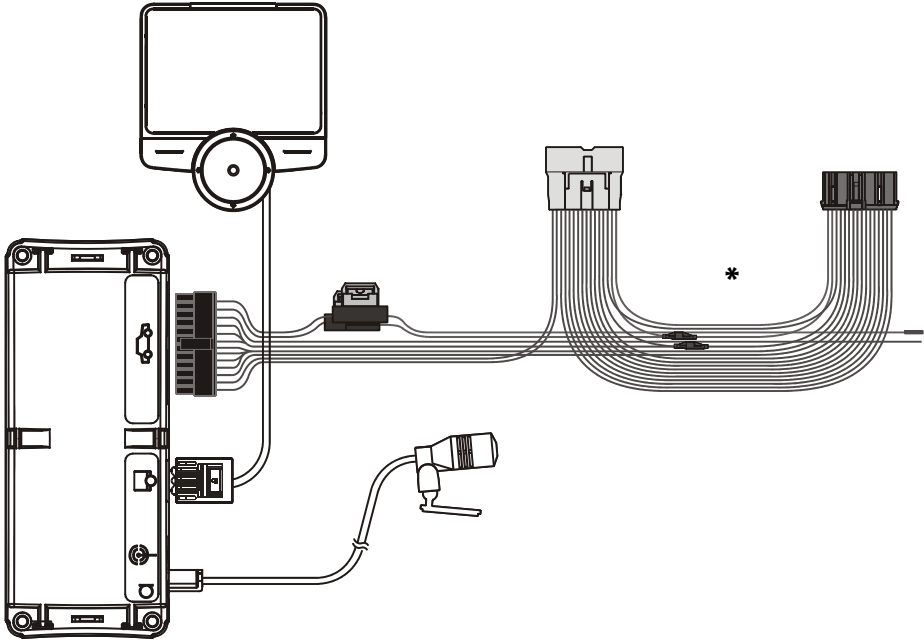
7.3. Installation with additional ISO(2Car) adapter

If your vehicle does not have an ISO plug connector, you have the possibility to connect the handsfree system to the vehicle electronics using an ISO adapter. (see Fig. below)



7. 4. *Installation with the aid of a vehicle-specific connecting cable*

If a vehicle-specific cable is employed (also designated Audio2Car Cable), this is connected as displayed in Fig.



*) Similar to illustration

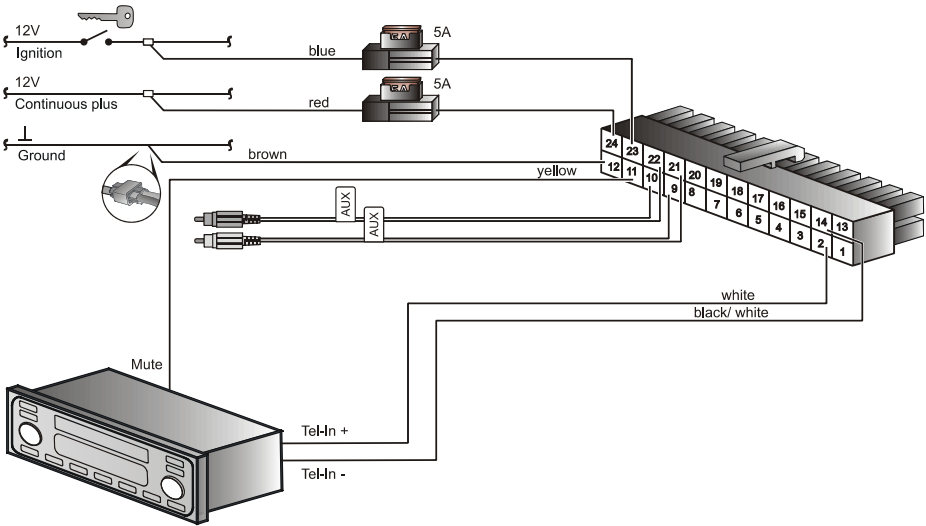
8. Connection to the vehicle electronics by separate wiring of the lines

Electronic box connector pin assignment

Pin	Color	Function
1	yellow	Loudspeaker RR+
2	white	Loudspeaker RF+
3	green	Loudspeaker LF+
4	orange	Loudspeaker LR+
5	orange	Radio LR+
6	green	Radio LF+
7	white	Radio RF+
8	yellow	Radio RR+
9	red	Line out R+
10	white	Line out L+
11	yellow	Mute
12	brown	GND
13	yellow / black	Loudspeaker RR-
14	white / black	Loudspeaker RF-
15	green / black	Loudspeaker LF-
16	orange / black	Loudspeaker LR-
17	orange / black	Radio LR-
18	green / black	Radio LF-
19	white / black	Radio RF-
20	yellow / black	Radio RR-
21	black	Line out R-
22	brown	Line out L-
23	blue	Ignition 12V
24	red	Continuous plus 12V

8. 1. *Reproduction over the phone connection of the car radio*

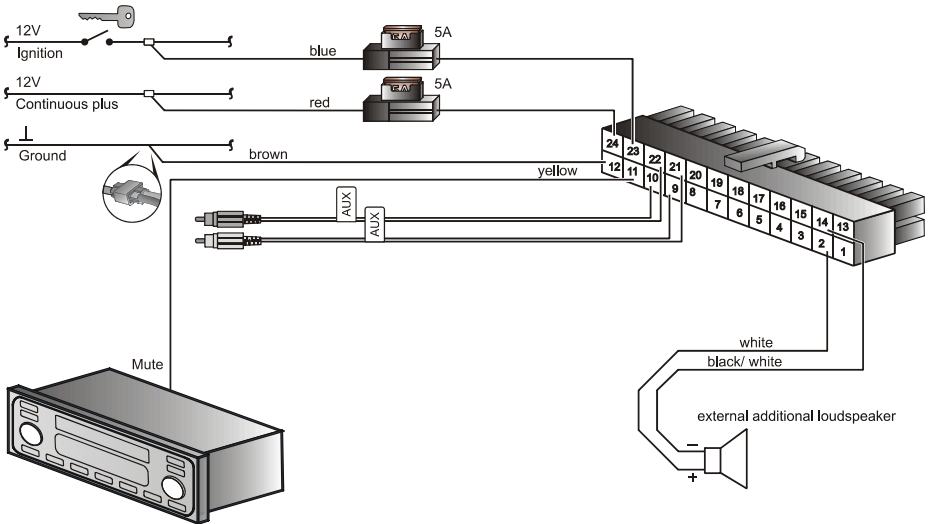
If your car radio has a phone connection (also often designated as „Tel-In“), then you can connect the loudspeaker output of the electronic box directly with this, according to the sketch (lines white, + and black/white, - of the adapter cable set). This is the most convenient solution.



8. 2. *Reproduction over an external loudspeaker*

In the following cases, an external loudspeaker (4Ω, min. 5W) must be employed:

- If loudspeakers of the car radio should not be employed
- If the output power of the loudspeaker channel exceeds 35 W (sine) and no telephone connection to the car radio is provided
- If the car radio is operated with active boxes and no telephone connection to the car radio is provided.

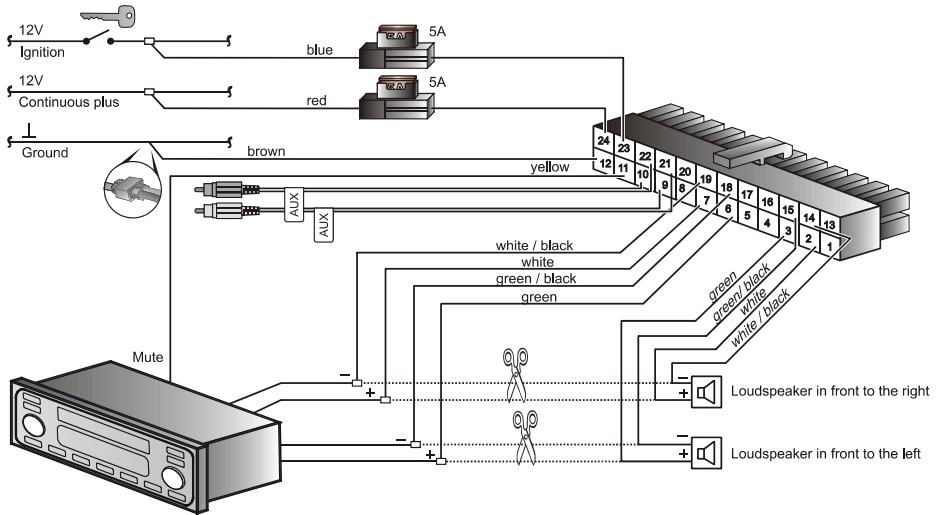


Feedback loops disturb the intelligibility. Place the external loudspeaker at a distance of at least 80 cm from the microphone. For fixing the external loudspeaker, note the references of the respective manufacturer. The loudspeaker controls can be connected to the white (Pin 2) and black/white (Pin 14) lines of the connecting cable. Before this, the line is to be separated from the ISO plug connector.

8. 3. *Reproduction over the loudspeakers of the car radio*

If your car radio does not have a phone connection, you can connect the loudspeaker output of the electronic box with the existing car loudspeakers, according to the sketch.

It is recommended to use the front right loudspeaker, since here the feedback loop risk is low, and the communication remains good. In this case, an automatic switchover is implemented from radio to hands-free operation.



9. FAQ - Frequently Asked Questions

Problem	Cause	Solution
Vehicle does not have any ISO plug connectors on the radio		Utilization of an ISO adapter (see Section 7.3)
		Utilization of a vehicle-specific cable (see Section 7.4)
		Separate wiring system of the individual lines (see Section 8.1 - 8.3)
No Terminal 15 (ignition plus) is on the radio	As a result of introduction of the CanBus system, the ignition signal is no longer necessary on the radio with many car manufacturers.	Utilization of a CanBus adapter
		Ignition identification box (e.g. „Ignibox“)
		Ignition contact is at other locations in the vehicle e.g.: an ignition signal could be applied: - Fuse box - Cigarette lighter - Air-conditioning plant
Radio does not mute	No contact, or incorrect contact, connected	Connect contact on the radio. (You can find information on that in the directions of the radio)
	In spite of connected contact, no „mute“ of the radio.	„Mute“ must be switched on in the setting-adjustment menu of the radio. (You can find information on that in the directions of the radio)

On switching off the ignition, the call is interrupted.	Are the lines for continuous plus and ignition plus interchanged on the line circuit of the hands-free system.	Connect lines correctly (see Section 7.2)
Strong echo at the other end of the call	Loudspeaker couples into the microphone branch	Increase separation distance between microphone and loudspeaker
		Reduce loudspeaker volume
Call subscriber complains about too low communication volume	Microphone too low	Reduce separation distance between microphone and driver
		Adapt the microphone level in the settings menu

Accessories FWD:

- ① Base plate for charging holders
- secure hold of the charging holder
- ② Universal charging holder
- The charging holder* is the practical accessory for Bluetooth® handsfree systems. It offers secure retention and enables the charging of the mobile telephone battery in the vehicle. Ideal for high-mileage drivers and frequent telephone users.
 - * Function only in combination with ①
 - intelligent electronic charger for the mobile telephone
 - secure retention of the mobile telephone in the charging holder
 - external antenna connection for excellent call quality
- ③ Stick-on antenna
- for the installation in combination with the base plate, if external antenna is existing
- ④ Gray microphone
- for installation in vehicles with bright interior
- ⑤ idapter
- control of the iPod over the Audio 2010
 - Battery charging of the iPod
- ⑥ External additional loudspeaker
- Audio reproduction



11. Declaration of Conformity

This device works with Bluetooth® radio technology. In some countries, this device cannot be used or is allowed to a limited extent only. Please find out about such restrictions and do not employ the device if you are not sure whether the use is allowed or not in a certain country.

Bluetooth® is a brand of Bluetooth SIG, Inc.

Herewith

Funkwerk Dabendorf GmbH
Märkische Straße
D-15806 Dabendorf

declares that the

„Audio 2010“ Handsfree System

is in agreement with the basic requirements and the other relevant specifications of Directive 1999/5/EC.

CE 0681

funkwerk 
dabendorf

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