

Installation and Operating Instructions



Rear View System

GM-59-HD

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or experienced radio TV technician for help.



This installation instruction does not replace any missing knowledge in
Automobile engineering and auto-electric
In case you are not familiar in above please contact specialized workshop

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Information on using the installation instructions



Safety precaution : Failure to observe these warning may result in injuries to persons or damage of material.



Caution! Safety precaution: Failure to observe this warning may result in damage to materials and impair the device.

◆ The rhombus indicates installation steps which have to be carried out.
To ensure easy assembly, read through these installation and operating instructions before beginning assembly.

If the instructions do not answer all questions or if the installation steps are not clear, please contact our technical customer service.

General safety and installation instructions

Warning! Improper cable connections may result in short circuits which can cause:

- cable fires
- activation of the airbag
- electronic control equipment is damaged
- electrical functions (blinkers, brake-lights, horn, ignition, lights) fail.

The following indications must be therefore considered :

! For working on the cables, the following terminal designations are used :

- 30** (input from battery plus direct)
- 15** (switched plus, behind battery)
- 31** (return cable from battery, earth)
- 58** (parking lights) (reversing lights)

The securest form of connection is by soldering the cable ends and then insulating the connection. For detachable connections, use only insulated cable brackets, connector plugs, and flat pin bushing. Do not use wire connectors.

Use crimp pliers for connecting the cables with cable lugs, plugs, or flat pin bushings.

With cable connections to 31 (earth) : Screw the cable with cable lug and toothed lock washer to an a vehicle-specific earthing-bolt or screw it with a cable lug, sheet-metal screw and toothed lock washer to the car's bodyworks

Always ensure that the connection is properly earthed!

Warning! Due to risk of short circuits, always disconnect the negative pole of the battery before starting work. In the case of vehicles with a supplementary battery, also disconnect the negative pole.

! **Caution!** Please note with the disconnection of the battery that all volatile memories of the convenience electronics will lose their stored data.

Depending on the vehicle's equipment, the following data may need to be reprogrammed :
Radio code, vehicle clock, time switch clock, onboard computer, seat position instructions on how to reset these can be found in the relevant operating instructions.

Warning! The components of the device which are inside the vehicle must be **carefully** fixed so that they cannot come loose and injure the vehicle's occupants under any circumstances (sudden braking, traffic accident).

Technical Data

Color TFT LCD Monitor (GM-59-HD) key Specifications :

TV System : NTSC/PAL/AUTO
Operating Voltage : DC 11~32 volts
Power consumption : 12 watt MAX
LCD : 7" wide Color TFT LCD (16:9)
Resolution : 1440(H)*234(V) Dots
Brightness : 400 cd/m²
Operating temperature : +14°F ~ +140°F (-10°C to 60°C)
Storage temperature : -22°F ~ +176°F (-30°C ~ 80°C)
Dimensions (W*H*D) : 180*123*41.5 (mm)
15*65*30 (mm) - Connector box

Color CCD Camera (GC-27C) key Specifications : Motorized Lens Cover camera

TV System : NTSC/PAL
Picture sensor : 1/3" CCD (Sony)
Resolution : 270K pixels
Min. illumination : 0 LUX (LED & CDS ON)
Viewing angle : 140°
Microphone sensitivity : -56dB
Operating Voltage : DC 9.7~12V from monitor
Power consumption : 1.5W (Heater on 5W)
Operating temperature : -4°F ~ 122°F (-20°C to 50°C)
Storage temperature : -22°F ~ 167°F (-30°C ~ 75°C)
Dimensions (W*H*D) : 114*71*93 (mm) incl. holder and protection

Optional Color CCD Camera (GC-703C) key Specifications : Heavy Duty Camera

TV System : NTSC/PAL
Picture sensor : 1/3" CCD (Sony)
Resolution : 270K pixels
Min. illumination : 2 LUX with F1.2 lens
Viewing angle : 92°
Microphone sensitivity : -56dB
Operating Voltage : DC 9.7~12V from monitor
Power consumption : 1.5W (Heater on 5W)
Operating temperature : -4°F ~ 122°F (-20°C to 50°C)
Storage temperature : -22°F ~ 167°F (-30°C ~ 75°C)
Dimensions (W*H*D) : 85*80*75 (mm) incl. holder and protection

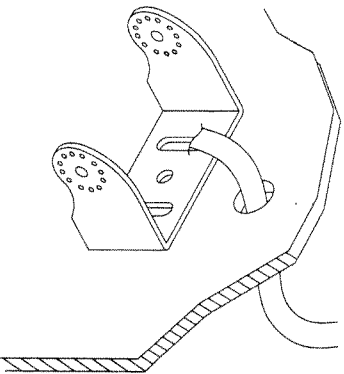
We reserve the right to make technical changes!

Making the passage for the camera connection cable

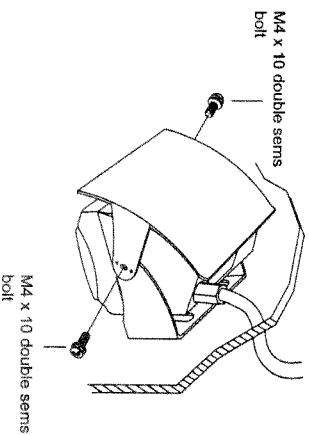
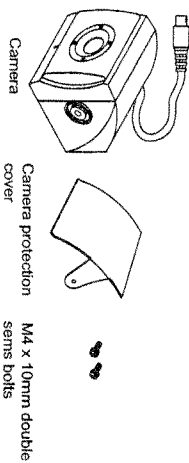
⚠️

- Please also see the notes on laying the cables on page 22. As far as possible, use existing apertures for the connection cable, e.g. ventilation grids. If none are available, a hole of 20mm Ø must be drilled. Before starting, make sure there is enough clearance for the drill to emerge.
- ◆ Drill a hole of 20mm Ø near to the location of the camera.
 - ◆ All holes which are drilled in metal must be deburred and treated with rust-proofing agent.
 - ◆ Provide all sharp-edged passages with bushing.

Drill hole of 20mm



Parts required for securing the camera cover



Securing the camera protection cover and the camera in the camera holder

- For fitting the camera, use only the M 4 x 10mm screws. Longer screws will damage the camera.

Slide the protection cover over the camera. Adjust the camera that way the lens shows to the ground right behind the vehicle.

Loosely fit the camera with the M 4 x 10mm screws. The screws will be tightened as soon as the camera has been properly aligned with the help of the monitor.

General safety and installation instructions



Pay attention when locating the monitor that this is no assembled within the radius of an airbag. Otherwise danger of injury exists when it is being activated.

- ⚠️ **Caution!** To check the voltage in electric cables, use only a diode test lamp or a voltmeter. Test lamps which lights up consume too much current and the vehicle electronics may be damaged.

- ⚠️ **Caution!** In order to avoid damage, pay attention that there is sufficient free space for the drill outlet. Every drill hole must be deburred and treated with a rust-proofing agent.

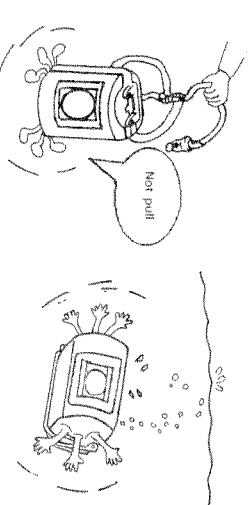
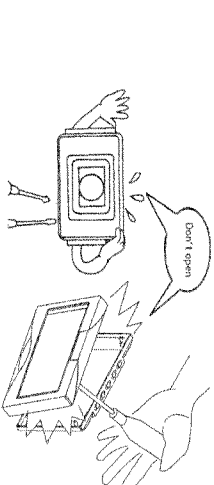
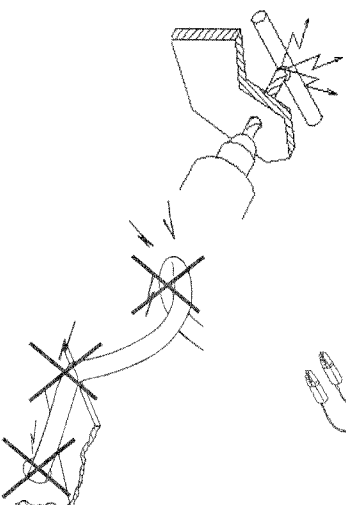
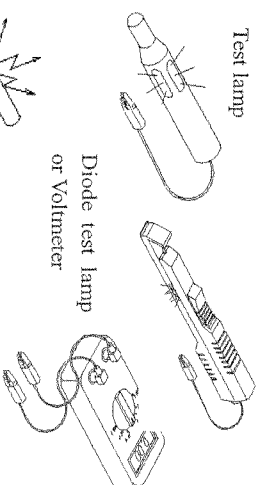
- ⚠️ **Caution!** When laying the electric wirings, it must always be observe that they:
1. are not sharply bent or twisted
 2. do not rub on the edges
 3. are always protected when laid through sharp-edged openings.

- ⚠️ **Caution!** Opening the camera can damage the sealing. The proper functioning of the camera is on longer possible.

- ⚠️ **Caution!** Do not pull at the cables since this could impair the tightness and the operability of the camera.

- ⚠️ **Caution!** When the Vehicle is washed, the camera must be powered off and the cover closed. The camera is protected against the irrush of water (IP-68). The sealings withstand a soft-pressure cleaner. The camera is not suited for operation under water.

- ⚠️ **Attention!** The plug connection at the camera is not protected against water. Therefore you should seal it with the supplied sealing tape.

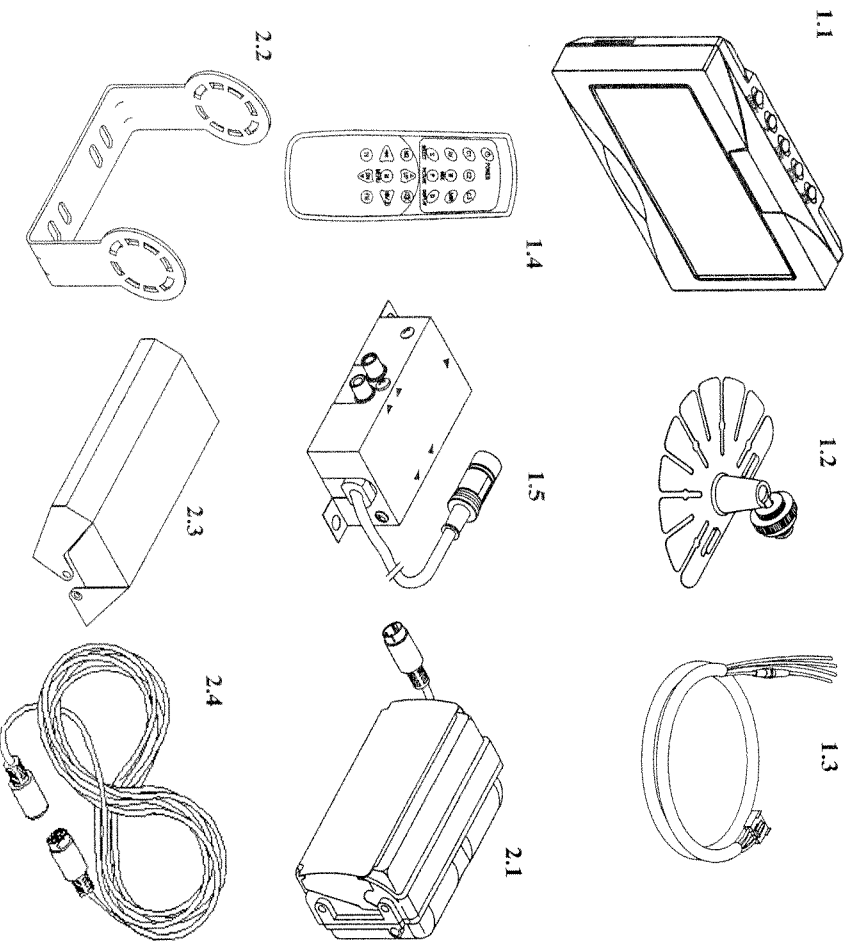


Delivery kit (Scope of delivery)

No.	Quantity	Designation	Article No.
1	1	Monitor kit	GM-S9-110
1.1	1	Monitor	
1.2	1	Monitor assembly foot	
1.3	1	Connecting cable	
1.4	1	Remote control	
1.5	1	Connector box	
2	1	Camera kit	GC-27C
2.1	1	Camera	
2.2	1	Camera holder	
2.3	1	Camera protection cover	
2.4	1	System cable 20m	

3 Installation kit

Technical specifications subject to changes!



- ◆ Hold the camera holder at the chosen mounting position and mark at least two different drilling points.

When securing with metal screws

Mounting using metal screws may only be done on steel sheet with a thickness of at least 1.5mm. When drilling holes in steel sheet, please note the following:

- To prevent the drill from slipping, punch a starting hole using a hammer and prick punch.
- Debar all the drill holes and treat them with rust-proofing agent.
- Before starting, make sure there is enough clearance on the other side for the drill to emerge.

- ◆ Drill a hole of 5.0mm Ø in the pre-marked places.
- ◆ Screw the camera holder into place using the 6 x 20mm metal screws

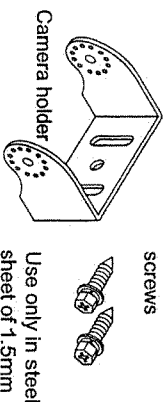
When securing with bolts

When drilling holes, please note the following:

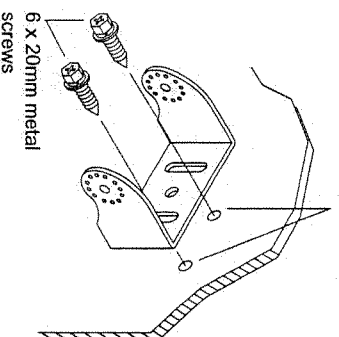
- Before starting, make sure there is enough clearance on the other side for the drill to emerge.
- When tightening the nuts, make sure that the bolts cannot be pulled through the bodywork (if necessary use bigger washers or metal plates).

- ◆ Drill holes of 6.5mm Ø in the pre-marked places.
- ◆ Screw on the camera holder using the M6 x 20 mm bolts or longer ones if the bodywork thickness requires.

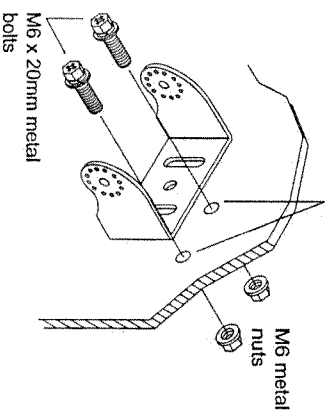
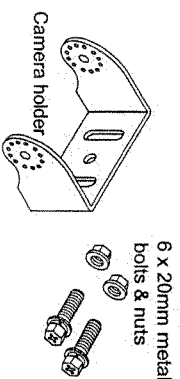
Parts required when securing with metal screws



Use only in steel sheet of 1.5mm thickness



Parts required when securing with bolts and nuts



Installing the outside camera (Optional camera, GC-703C)

Caution! Mounting the camera may change height or length of your vehicle, which are mentioned in the vehicle documents. Please follow the legal requirements of your country.

Warning! Select the position for the outside camera and secure it so firmly that there can be absolutely no danger to any persons standing nearby (e.g. through branches of trees sliding over the roof). As the outside camera should be fitted at a height of at least 2 m in order to provide a reasonable field of vision, make sure you are standing on a secure base when working.

General installation instructions!

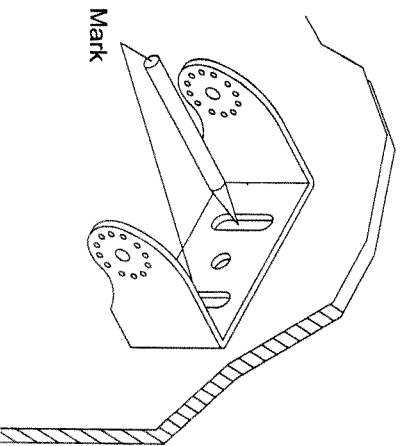
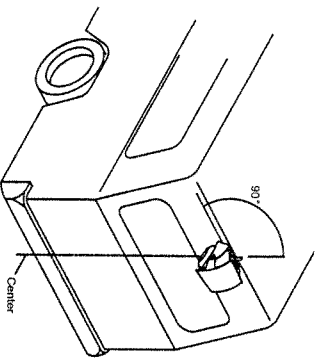
Before fitting the outside camera, please note the following points:

- To ensure a reasonable field of vision, the camera should be mounted at a height of at least 2m.
- The mounting position must be sufficiently secure (e.g. branches sliding over the roof of the vehicle might get caught in the camera).
- The camera must be mounted horizontally and centrally on the rear of the vehicle.

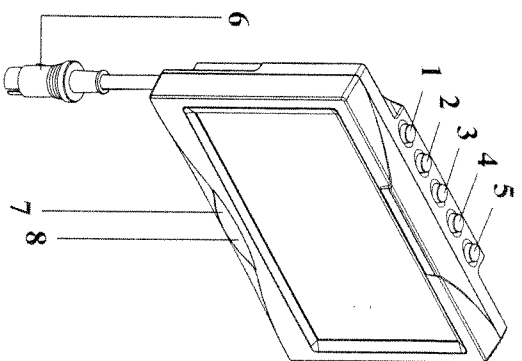
- The securst mode of mounting is by bolts which go right through the bodywork, whereby a number of points must be considered:

1. Is there enough clearance behind the position selected for mounting?
2. Every passage through the metal must be suitably protected to prevent water from entering (i.e. by inserting the bolts with a sealing compound and/or applying a sealing compound to the external mounting components).
3. Is the bodywork strong enough at the mounting position to allow the camera holder to be sufficiently tightened?

If you are unsure about the mounting position you have chosen, contact the body makers or their representative.

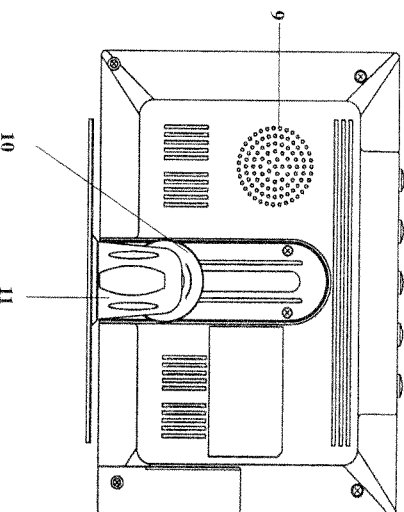


Function description of the monitor



FRONT PANEL

- 1 STANDBY
- 2 UP
- 3 DOWN
- 4 SELECT
- 5 MENU
- 6 Connecting cable input
- 7 Stand-by LED display
- 8 Infrared Receiver



REAR PANEL

- 9 Loudspeaker
- 10 Fastening bolt for the monitor
- 11 Monitor assembly foot

Button description of the monitor

1 STANDBY On/off switch

2 UP This key has 3 functions

- Increase of the volume during normal operation
- Modification of the setting within a function e. g. contrast (after calling up the menu)
- By pressing this key when putting in the reverse gear, the distance markings move upwards

3 DOWN This key has 3 functions

- Decrease of the volume during normal operation
- Modification of the setting within a function e. g. contrast (after calling up the menu)
- By pressing this key when putting in the reverse gear, the distance markings move downwards.

4 SELECT This key has 3 functions

- Selection of the video sources (CA1 -> CA2 -> AV -> CA1...) Press shorter than 1.5seconds.
- Selection of the functions e.g. picture setting (after calling up the menu)
- Deleting and calling OSD letters of title & time (press longer than 1.5 seconds) during normal operation.

5 MENU This key has 2 functions

- Activation of the dimmer function (press shorter than 1.5 seconds) during normal operation.
- Calling up the menu (press longer than 1.5 seconds, four menus can be called up). Press the key once again to call up the individual menus.
 - a: PICTURE = Functions for the image setting
 - b: USER = Selection of the system function
 - c: TIME = Setting time and date
 - d: INSTALL = Setting the camera function (e.g. mirror function)

6 Bush for the monitor cable of the connection box

7 Standby display

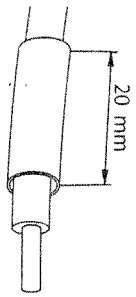
8 Infrared receiver

! Attention! The plug connection of the system does not offer any protection against water penetration. Make absolutely sure to provide the connection with a seal strip. Self-vulcanizing seal strip is best suited.

Tip: In order to minimize corrosion in the plug, we recommend you to apply some grease, e.g. pole fat into one of the plugs.

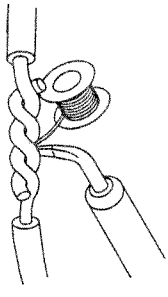
Further extension cables can be obtained when needed from your dealer.

Function description of the connector box

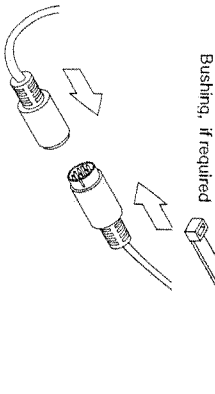
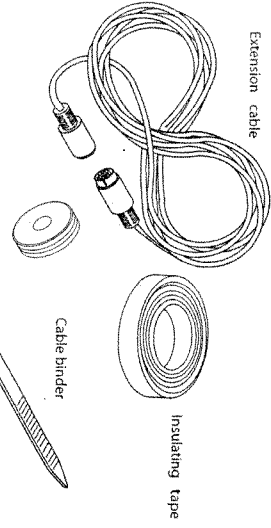


2. pull a shrink hose of approx. 20 mm length over a cable,

3. twist both cables around each other and solder,

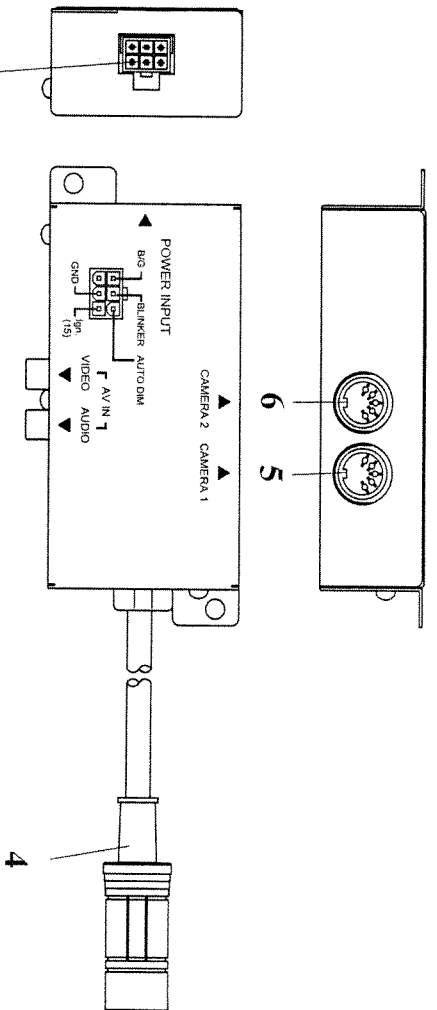
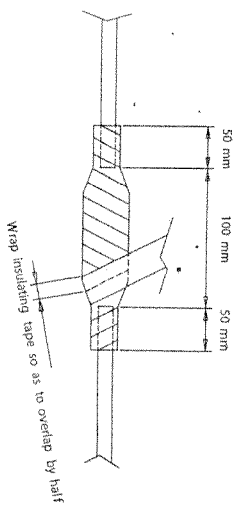


4. push shrink hose over the solder joint and slightly heat up.



Cable laying from the monitor to the camera

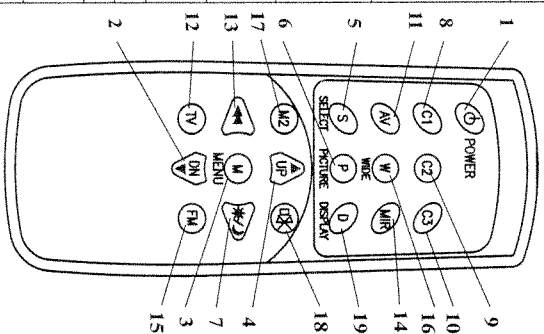
- ◆ Lay the system cable of the camera into the interior of the vehicle.
- ◆ Install the extension cable from the monitor to the camera
- ◆ Connect the camera connecting cable with the extension cable
- ◆ Insulate the plug connection with the supplied seal strip
- ◆ Fasten the cable safely in the vehicle in order to avoid it getting caught (risk of dropping). This can be done by using cable belts, insulating belt or by sticking with glue.
- ◆ Begin with the sealing of the openings only after all adjustment work at the camera is concluded and the required lengths of the connecting cables are determined



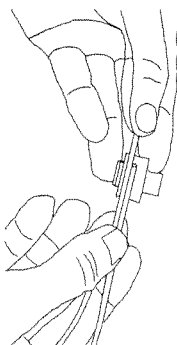
- 1 Connecting cable
- 2 Video connection (RCA)
- 3 Audio connection (RCA)
- 4 Monitor cable of the connection box
- 5 Input camera 1
- 6 Input camera 2

Description of the remote control

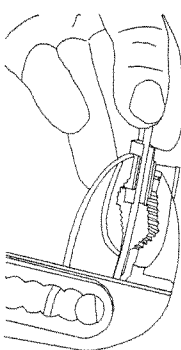
No	Key	Description
1	STANDBY	On/Off switch
2	DOWN▼	This key has 3 functions. – Decrease of the volume during normal operation. – Modification of the setting within a function e.g. brightness (after calling up the menu). – By pressing this key when putting in the reverse gear the distance markings move downwards. Calling up the menu on the screen. Three menus can be called up : a: PICTURE = Functions for the image setting b: USER = Selection of the system function c: TIME = Setting time and date d: INSTALL = Setting the camera function (e.g. mirror function)
3	MENU	This key has 3 functions. – Increase the volume during normal operation – Modification of the settings within a function e.g. contrast (after calling up the menu) – By pressing this key when putting in the reverse gear the distance markings move upwards.
4	UP ▲	This key has 2 functions Selection of the video sources (CA1→CA2→AV) Selection of the functions e.g. picture setting (after calling up the menu)
5	SELECT	Calls up the functions CONTRAST, BRIGHTNESS etc. directly for the picture setting. Carry out the setting with the key UP or DOWN.
6	PICTURER	Regulates the brightness to night operation temporarily
7	DIMMER	Selection of the camera 1
8	C1	Selection of the camera 2
9	C2	Selection of the camera 3 (camera input 3 is not available))
10	C3	Selection of the video input (RCA)
11	AV	Not available
12	TV	Not available
13	SEARCH	Not available
14	MIRROR	Reversing left and right of picture temporarily
15	FM	Not available
16	WIDE	Setting of the screen format NOR/NOR: 4:3, picture format 4:3 WIDE/WIDE: picture format 16:9 FULL/BREIT, picture format 16:9 middle enlarged
17	MONITOR2	Not available
18	MUTE	Switches off the tone temporarily
19	DISPLAY	This key has 2 functions – Deleting or calling OSD letters of Title & Time temporarily – Leaving the menu



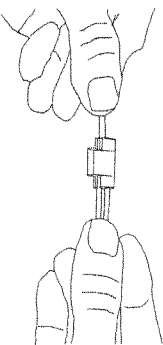
- The new cable lies with the end at approx. 3/4 in the rear groove.



- Close the connector and press the metal seam with the combination pliers into the connector, so that a current connector can be produced.



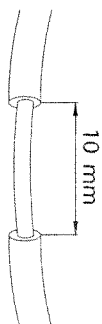
- Press the protective cap down and let it engage at the connector. Check the attachment of the branch connection by pulling on the cable.



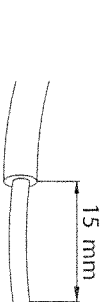
Providing correct soldered joints

In order to connect a cable to original lines:

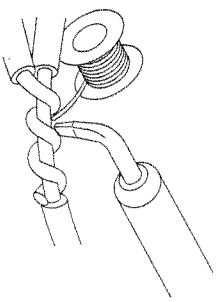
- insulate 10 mm from the original line,



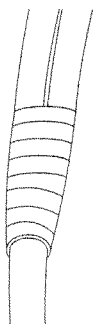
- insulate 15 mm of the cable that is to be connected,



- then wrap the cable that is to be connected around the original line and solder,

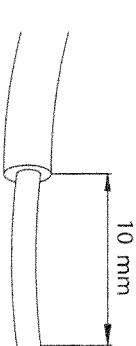


- insulate cable with insulating tape.



In order to connect 2 cables with each other:

- insulate both cables,



Laying the cables

! General information on the cable laying!

Unprofessional cable-laying and cable connections cause again and again malfunctions or damage of components.

Correct laying and connection of cables is essential for long-lasting, fault-free functioning of retrofit components.

Please note the following points:

- Install the cable, depending on the possibility, always in the interior of the vehicle. There it is better protected than outside the vehicle. If you, however, install the cable outside the vehicle, pay attention that there is a safe attachment (by additional cable clips, insulating tape etc.).
- In order to avoid damage to the cable, keep always sufficient distance to overheated and moving vehicle parts (exhaust pipes, driving shafts, generators, ventilators etc.) when installing cables.
- Wrap each connection at the cable (also in the vehicle) tightly with a good insulating-tape.
- Pay attention when installing the cable that these: 1. are not sharply bent and twisted 2. do not rub at the edges, 3. are not laid through sharp-edged openings.
- Each breakthrough at the skin must be protected by appropriate measures against the inrush of underground water, e.g. through inserting of the cable with sealing compound and by washing off the cable and the bushing with sealing compound.

! Attention! The plug connection of the system does not offer any protection against water penetration. Make absolutely sure to provide the connection with a seal strip. Self vulcanizing seal strip e.g. of 3 M is best suited.

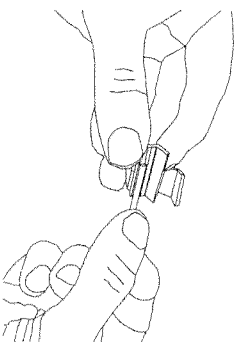
Tip: In order to minimize corrosion in the plug, we recommend you to apply some grease, e.g. pole fat into one of the plugs.

Use of the branch connectors

In order to avoid loose contacts at the branch connections, it is important that the cable cross-sections fit the branch connectors.

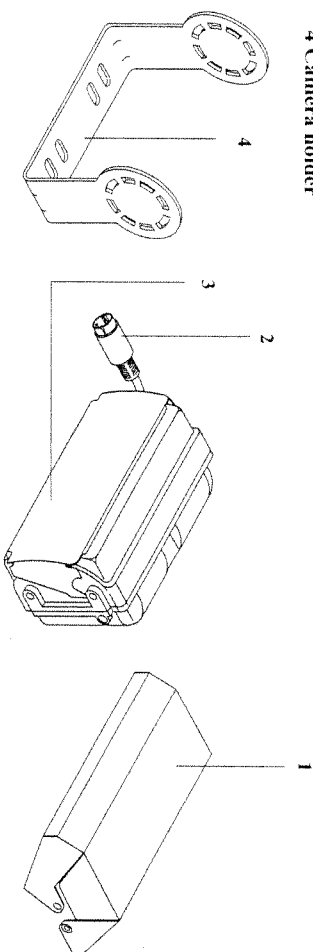
Working steps for the use of the branch connector :

1. Lay the cable that is to be extracted into the front groove of the branch connector.



Function description of the camera (CC-27C)

- 1 Camera protection cover
- 2 Connection cable
- 3 Motorized lens cover
- 4 Camera holder

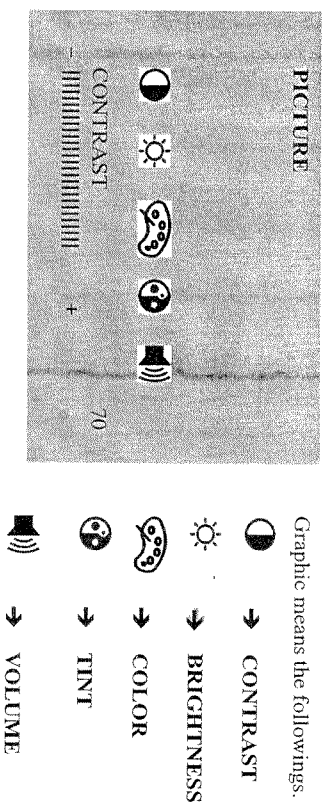


Monitor menu display

The monitor (RV-59-HD) is equipped with an On-Screen-Display function which displays (OSD) date, camera, channel, mirror mode and distance markings. These functions can be selected on MENU.

Calling up the menu (press longer than 1.5 seconds) four menus can be called up. Press the key once again to call up the individual menus.

For calling up the menu PICTURE/ BILD press the key MENU longer than 1.5seconds. The menu PICTURE/ BILD appears.



Graphic means the followings.

- CONTRAST
- BRIGHTNESS
- COLOR
- TINT
- VOLUME

Select the function (e. g. contrast) by pressing the key SELECT correspondingly often. The setting within the function can be modified with the keys UP and DOWN.

**Tint is not displayed with PAL video signal.

For calling up the menu **USER/NTUZER** press the key **MENU** once again. The menu **USER/NTUZER** appears.

Select the function (e. g. **SELECTION**) by pressing the key **SELECT** correspondingly often. The setting within the function can be modified with the keys **UP** and **DOWN**.

USER	ENG
LANGUAGE	ENG
SCREEN	WIDE
TITLE	ON
TIME	ON

*** POSSIBLE SETTINGS :**

LANGUAGE : ENGLISH/ GERMAN (ENG/DEUT)
SCREEN FORMAT : NOR / NOR, 4:3, picture format 4:3
WIDE / WEIT, picture format 16:9
FULL / BREIT, picture format 16:9
 middle enlarged
TITLE : CAMERA TITLE DISPLAY ON/OFF
TIME : TIME DISPLAY ON/OFF

For calling up the menu **TIME/UEZEIT** press the key **MENU** once again. The menu **TIME/UEZEIT** appears.

Select the function (e. g. **DATE**) by pressing the key **SELECT** correspondingly often. The setting within the function can be modified with the keys **UP** and **DOWN**.

TIME	08:25
DATE	MAYY01
YEAR	2005

- Hour/Month adjustable by **UP BUTTON**
 - Minute/Date adjustable by **DOWN BUTTON**
 - Year adjustable by **UP/DOWN BUTTON**

For calling up the menu **INSTALL/AUSWAHL** press the key **MENU** once again. The menu **INSTALL/AUSWAHL** appears.

Select the function (e. g. **SELECTION**) by pressing the key **SELECT** correspondingly often. The setting within the function can be modified with the keys **UP** and **DOWN**.

INSTALL	CAM1
REAR	CAM1
CAM1	MIR
CAM2	NOR

*** POSSIBLE SETTINGS :**

REAR : Selection of priority camera (CAM1 or CAM2) which is triggered by rear gear.
 The other camera will be triggered blinker line.
CAM1 : Selection of real picture or mirrored picture for camera1
CAM2 : Selection of real picture or mirrored picture for camera2

**** Note1 :** The distance mark will be appeared on the picture of camera which set as **MIR** (mirrored).

**** Note2 :** Engaging the reverse gear, only distance mark will be appeared on the mirrored camera picture without any OSD. At the moment, any key is not available except **UP/DOWN** key for moving distance bar.

Installing of the connection box

The connection line consists of 6 branch lines as below :

Red= voltage supply 12 V to 24 V (max. 32 V)

Black/brown = earth cable

White = control wire for switching on the dimmer function (night operation)

Yellow = control wire for switching on the side camera. The connection is to be made at the

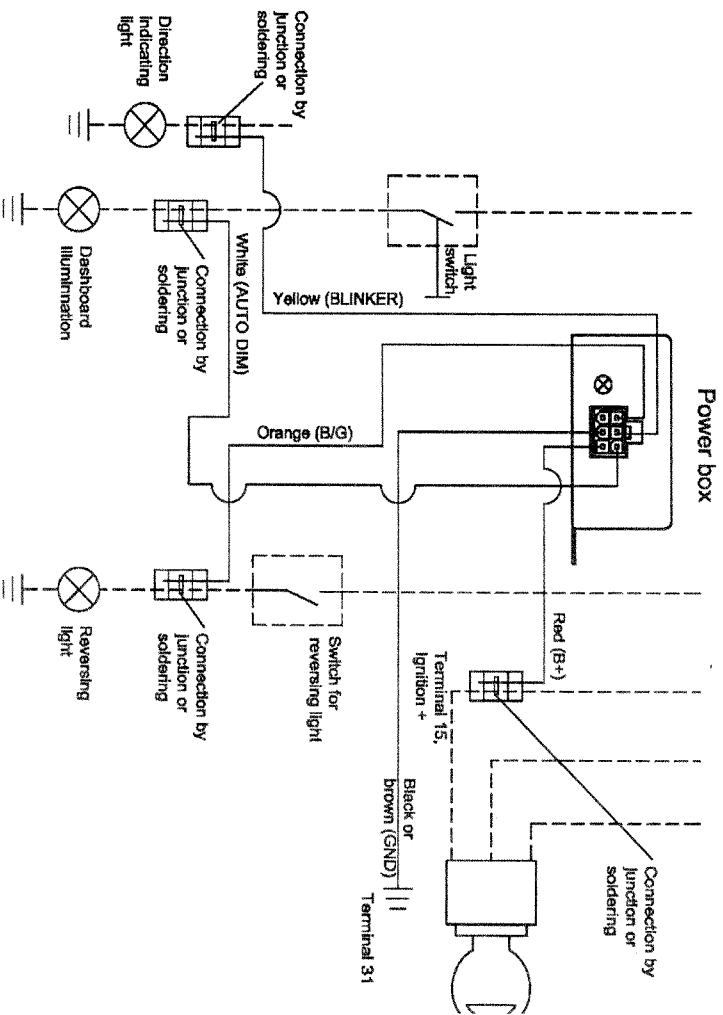
INDICATOR

Orange = control wire for switching on the reversing camera. The connection is to be made at the reversing light.

the reversing light.

Ensure good contact. Wrap each connection at the cable (also in the vehicle) tightly with a good

insulating-tape.



Installing of the monitor

- ◆ Screw the countersunk bolts M 3 x 6 mm into the Ø M 3 mm drill holes of the camera. In order to minimize the corrosion of the screws, it is recommendable to grease the tap-holes.

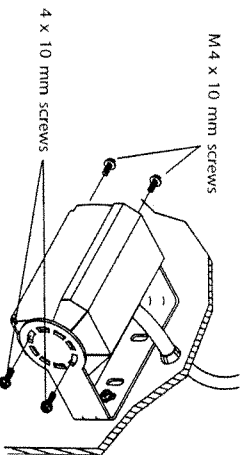
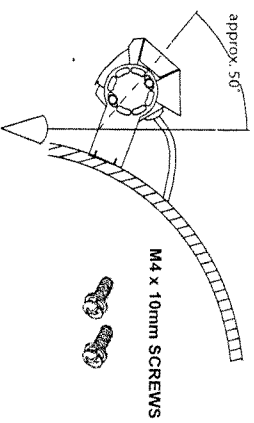
Attachment of the camera in the camera holder

- ⚠ Use only the screws M 4 x 10 mm for the assembly of the camera. Longer screws damage the camera.

- ◆ Insert the camera into the camera holder and align it in such a way that the objective forms an angle of approx. 50° to the vertical axle of the vehicle.

- ◆ Fasten the camera loosely with the screws M 4 x 10 mm. The screws are tightened as soon as the alignment of the camera has taken place by means of the monitor.

In order to minimize the corrosion of the screws, it is recommendable to grease the tap-holes.



- ⚠ **Warning!** Select the position for the monitor in such a way that there is no possibility of the vehicle's occupants being injured under any circumstances. (emergency braking, road accident). The monitor must not obstruct the driver's view.

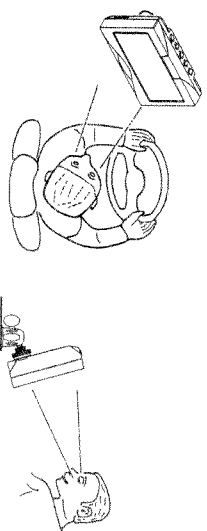
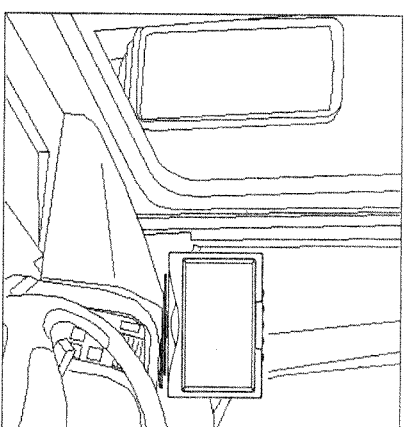
General installation instructions!

Before installing the monitor, please note the following points:

- Screw the monitor holder into the monitor.
- Try out the monitor and holder in different positions in the vehicle.
- When choosing the installation position, ensure that you have an unobstructed view of the monitor.
- The installation position should be level.
- Before final installation, keep clean the chosen position.
- Remember the weight of the monitor.
- Are reinforcements (Φ 5x16 fixing screw) necessary?
- Is it possible to lay the connection and extension cables to the monitor?

When you have considered all these points, installation can begin.

- ◆ Draw outlines of the corners of the monitor holder on the dashboard.
- ◆ Unscrew the monitor holder from the monitor.
- ◆ Place the monitor holder within the monitor.
- ◆ Place the monitor holder within the outlines previously drawn and mark at least four different drilling points.



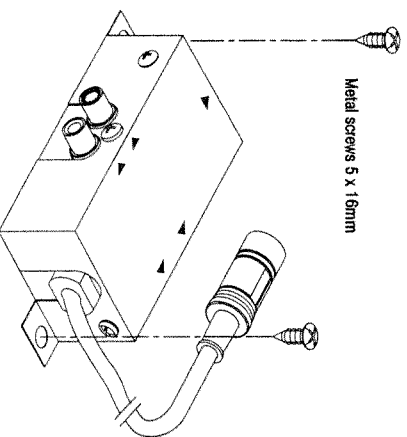
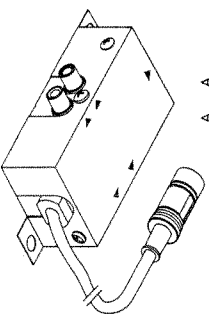
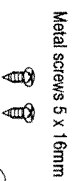
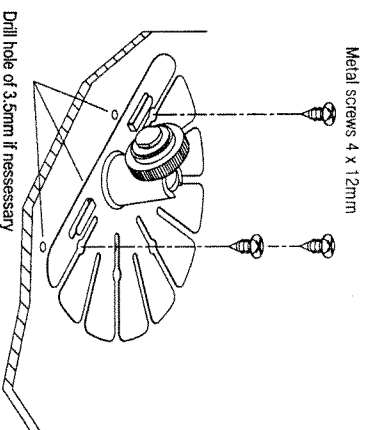
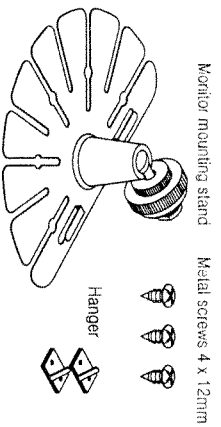
- ⚠ Don't install the monitor within the effective area of airbags. There may arise the risk of injury whilst activation of the airbag



When securing with metal screws

Clean the dashboard surface before fixing mounting stand. After peeling off the red protection film, firmly press mounting stand. If necessary, use metal screws 4 x 12mm to fix mounting stand more firmly on dashboard.

- ◆ Drill hole of 3.5mm in the pre-marked places.
- ◆ Screw the monitor mounting stand into place using the 4x12mm metal screws.
- ◆ Use Hanger to fix multi cable after installing monitor



Execution of the breakthrough for the connecting cable of the camera

Observe the information on the cable-laying.

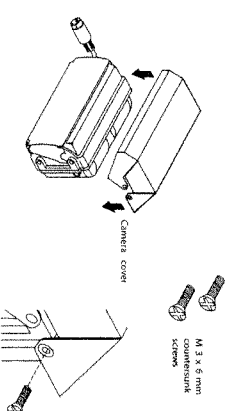
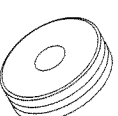
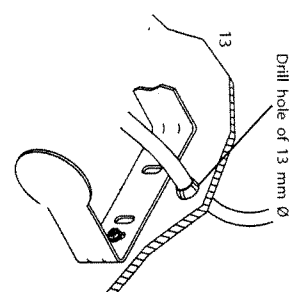
Use for the feed-through of the connecting cable, according to possibility, existing feed-through possibilities, such as e.g. ventilation grids (pay attention to sharp edges) If no feed-through is available, then a hole must be drilled with \varnothing 13 mm. Check before whether sufficient free space for the drill outlet is present.

- ◆ Drill a hole of \varnothing 13 mm nearby the camera.
- ◆ Debar all drill holes which are made in the sheet metal and provide with rust protection.
- ◆ Provide all sharp-edged openings with a suitable bushing.

Attaching the camera protection at the camera

Never mount the camera without the additional protecting cap. Use only the screws M 3 x 6 mm for the assembly of the camera protection. Longer screws damage the camera.

- ◆ Push the camera protection in such a way over the camera that the counter-bores in the camera protection lie above the drill holes of \varnothing M 3 mm of the camera. The other two attachment holes must lie above \varnothing M 4 mm tap holes.



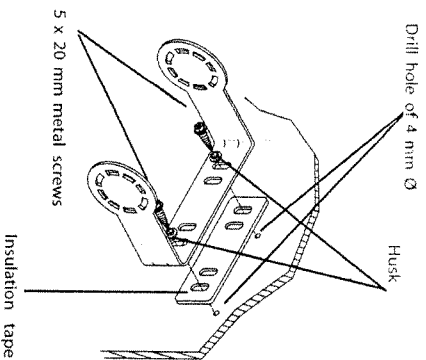
- ◆ Drill a hole of \varnothing 4 mm at the points drawn beforehand.
- ◆ Stick the double-sided adhesive insulating plate onto the assembly side of the holder. This pad serves as gasket and lacquer protection.
- ◆ Screw on camera holder with the metal screws 5 x 20 mm.

When attaching thread screws

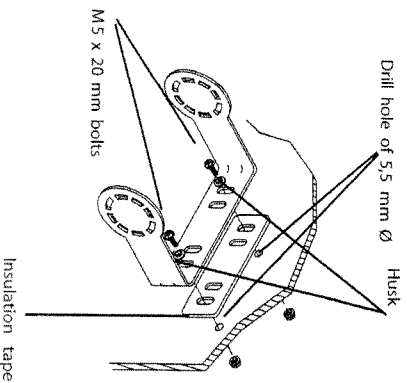
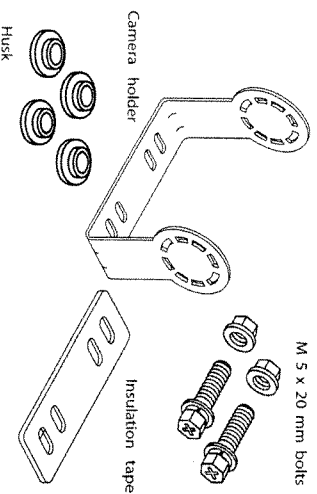
! The following is to be considered when executing drill holes:

- Check before whether sufficient free space for the drill outlet is present.
- In order to prevent a running of the drill, prick punch with hammer and prick punch.
- Debar all drill holes and provide with rust protection.
- Pay attention that the nuts cannot pull themselves through the construction when tightening (use possibly larger washers or sheet metal plates).

- ◆ Drill a hole of \varnothing 5.5 mm at the points drawn beforehand.
- ◆ Stick the double-sided adhesive insulating plate onto the assembly side of the holder. This pad serves as gasket and lacquer protection
- ◆ Screw on camera holder with the thread screws M 5 x 20 mm, or longer thread screws depending upon construction strength.



Necessary parts for the attachment with thread screws



Making the passage for the monitor connection cable

! As far as possible, use original passages or other apertures, ventilation grids or blank switches, for the connection cable. If no such passages are available, a hole be drilled of 13mm.

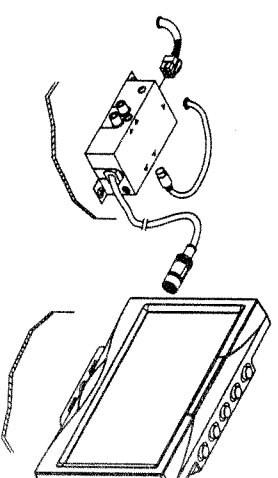
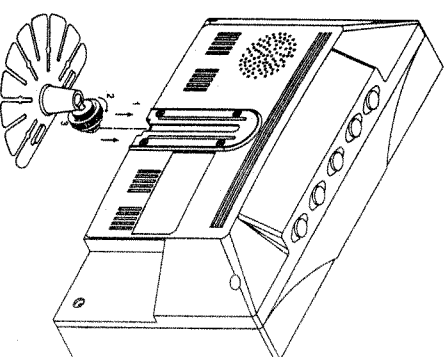
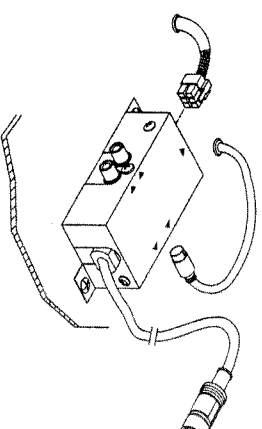
Before starting, make sure there is enough clearance on the other side for the drill to emerge.

- ◆ Drill a hole of 13mm behind the monitor.
- ◆ All holes which are drilled in metal must be deburred and treated with rust proofing agent.
- ◆ Connect the extension cable to jack "C1" and the connection cable to the "power" jack on the rear of the power box.
- ◆ Lay the connection cable and the extension cable under the dashboard.

Securing the monitor in the holder

! For securing the monitor in the mounting stand, let the head of stand go through the hole of monitor backside.

- ◆ And firmly fix monitor with mounting stand by screwing knurled bolts(2 & 3).
- ◆ If need to re-adjust monitor angle, un-screw knurled bolts(2&3). And then firmly fix again the knurled bolts after adjusting monitor angle.



Installing of the outside camera (G:C-27C)

! **Caution!** If the vehicle height or vehicle length which is entered in the car documents is modified by the installation of the camera, then a new inspection by the official bodies responsible (TÜV, DEKRA etc.) must take place. Let the new acceptance be entered into the car documents by your appropriate road traffic authority.

! **Warning!** Select the location of the outside camera in such a way, or attach it in such a secure manner, that under no circumstances (by branches brushing against the vehicle roof) persons be hurt when standing in the vicinity.

Since the outside camera should be attached at a height of at least 2 m to allow a reasonable angle of view, ensure that there is a sufficiently stable workstation.

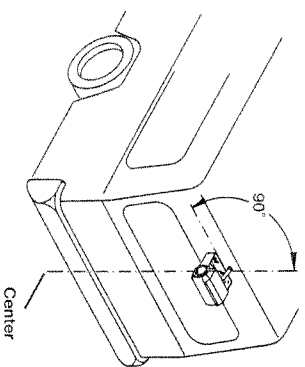
General installation instructions!

Please observe the following points before attaching the outside camera:

- The outside camera should be installed at a height of at least 2 m to allow a reasonable angle of view.
- The assembly place of the outside camera must offer sufficient firmness (e.g. branches brushing against the vehicle roof can get caught in the camera).
- The camera must be attached horizontally and concentrically at the rear of the vehicle.

! **Caution!** Absolutely use the insulating pad supplied and the insulating coverings. Thus fault currents due to bad mass connections are prevented in the vehicle. Stripes in the image up to damages are the consequences of fault currents.

The camera cable must be installed in such a way that you can easily reach the plug connection between camera and connection cable when possibly removing the camera. The disassembly is thereby substantially simplified.



The safest type of attachment is provided through screws being put through the construction, whereby some points are to be considered:

1. Is there enough free space for the assembly behind the selected position?
2. Each breakthrough must be protected by appropriate measures against an inrush of underground water (e.g. by inserting the screws with sealing compound and/or washing off the external mounting brackets with sealing compound).
3. Does the construction at the attachment place offer sufficient firmness so that the camera holder can be tightened firmly enough?

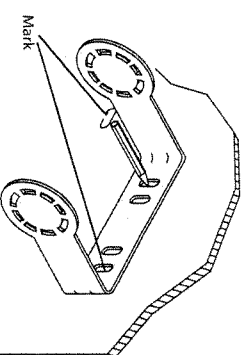
If you are not quite sure about the assembly place selected by you, inquire with the construction's manufacturer or its agency.

- ◆ Hold the camera holder at the selected assembly place and mark at least 2 different drilling points.

When fastening with sheet-metal screws

! The fastening with sheet metal screws may only be made on sheet steels with a minimum thickness of 1.5 mm.

- The following is to be considered when executing drill holes in the metal plate.
- Check before whether sufficient free space for the drill outlet is present.
 - In order to prevent a running of the drill, prick punch with hammer and prick punch.
 - Debar all drill holes and provide with rust protection.



Necessary parts for the attachment with sheet-metal screws

