



Kenwood CMOS-320 Universal Multi View Camera Universal Rear View Camera Owner's Manual

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KENWOOD

CMOS-320 / CMOS-220

**UNIVERSAL MULTI-VIEW CAMERA/ UNIVERSAL REAR VIEW CAMERA
INSTRUCTION MANUAL
JVCKENWOOD Corporation**

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CMOS-320 Universal Multi View Camera Universal Rear View Camera

Take the time to read through this instruction manual.

Familiarity with installation and operation procedures will help you obtain the best performance from your new Universal Camera.

For your records

Record the serial number, found on the back of the unit, in the spaces designated on the warranty card, and in the space provided below. Refer to the model and serial numbers whenever you call upon your Kenwood dealer for information or service on the product.

Model CMOS-320/CMOS-220 Serial number

US Residence Only

Register Online

Register your Kenwood product at www.Kenwoodusa.com

Before Use/ Installation Procedure



WARNING

To prevent injury or fire, take the following precautions:

- To prevent a short circuit, never put or leave any metallic objects (such as coins or metal tools) inside the unit.
- Installation and wiring of this product require specialist skill and experience. To assure your safety, please request a specialist technician to install the unit.
- When you make a hole to install the camera, check the location of pipes, tanks and wiring and avoid touching them. Otherwise it may cause the fire.
- When you make a hole with a drill, use goggles to protect your eyes.



CAUTION

To prevent damage to the product, take the following precautions:

- Make sure to ground the unit to a negative 12V DC power supply.
- When replacing a fuse, only use a new fuse with the prescribed rating. Using a fuse with the wrong rating may cause your unit to malfunction.
- Do not use your own screws. Use only the screws provided. If you use the wrong screws, you could damage the unit.

NOTE



- A rear view camera is a camera that provides symmetrical images in the same way as rear and side view mirrors.
- Connection to a TV with an RCA video input is possible, but confirm whether the TV you use has a reverse gear connection function.
- This product is designed to supplement the driver's rear view, but the camera images do not show all dangers and obstacles. Be sure to look behind you when reversing to confirm the view.
- This product features a wide-angle lens, so the near view is wide and the far view is narrow, which may create a false sense of distance. Be sure to look behind you when reversing to confirm the view.
- Do not wash your car with an automatic car wash or high-pressure water as it may result in water entering the camera or the camera falling off.
- Check camera bracket installation before driving.
 - Are the screws loose?
 - Is the camera bracket firmly secured?
 - If the rear view camera comes loose while you are driving it may cause an accident.
- Before finally installing the unit, connect the wiring temporarily, making sure it is all connected up properly, and the unit and the system work.

- When mounting this unit, make sure none of the leads are trapped between this unit and the surrounding metalwork or fittings.
- Do not mount this unit near the heater outlet, where it would be affected by heat, or near the doors, where rainwater might splash onto it. (Never install in locations such as the above because of the danger of malfunction due to high temperatures.)
- Before drilling any mounting holes always check behind where you want to drill the holes. Do not drill into the gas line, brake line, electrical wiring or other important parts.
- If this unit is installed in the passenger compartment, anchor it securely so it does not break free while the car is moving, and cause injury or an accident.
- If this unit is installed under a front seat, make sure it does not obstruct seat movement. Route all leads and cords carefully around the sliding mechanism so they do not get caught or pinched in the mechanism and cause a short circuit.

Care and maintenance

- When the product gets dirty, wipe dry with a silicon cloth or soft cloth. If it is seriously stained, remove stain with a cloth moistened with a neutral cleaner and then wipe the cleaner away. Do not use a hard cloth and/or a volatile substance such as lacquer thinner or alcohol, scratches, deformation, degradation and/or damage may result.
- When a lens component gets dirty, wipe gently with a soft cloth moistened with water. Do not rub with a dry cloth to prevent scratching the lens.

Installation Procedure

1. To prevent a short circuit, remove the key from the ignition and disconnect the  battery.
2. Make the proper input and output wire connections for each unit.
3. Connect the wiring harness wires in the following order: ground, ignition and camera unit.
4. Install the unit in your car.
5. Reconnect the  battery.

WARNING

- If you connect the ignition wire (Red) to the car chassis (Ground), you may cause a short circuit, that in turn may start a fire. Always connect those wires to the power source running through the fuse box.
- Do not cut out the fuse from the ignition wire (Red). The power supply must be connected to the wires via the fuse.



CAUTION

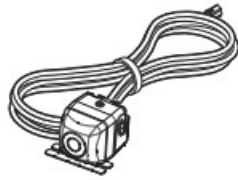
- If your car's ignition does not have an ACC position, connect the ignition wires to a power source that can be turned on and off with the ignition key. If you connect the ignition wire to a power source with a constant voltage supply, as with battery wires, the battery may die.

- If the fuse blows, first make sure the wires aren't touching to cause a short circuit, then replace the old fuse with one with the same rating.
- Insulate unconnected wires with vinyl tape or other similar material. To prevent a short circuit, do not remove the caps on the ends of the unconnected wires or the terminals.
- After the unit is installed, check whether the brake lamps, blinkers, wipers, etc. on the car are working properly.
- Install so that it does not obstruct the rear field of view.
- Install so that it does not protrude from the side of the car.
- Do not perform installation in rain or fog.
- When humidity is high, dry the surface to which the unit is to be attached before installing.
- Moisture on the attachment surface reduces adhesive strength, which may lead to the unit coming off.
- Do not attach the camera bracket to areas on the car body treated with fluorocarbon resin, or glass.
- May result in the rear view camera falling off.
 - Do not apply water to the unit.
 - Do not expose the unit to rain.
 - Do not subject the camera to unnecessary force.
 - Thoroughly clean where tape is used for sticking on the unit.
- Refer to the Instruction's manual for details on connecting the other units, then make connections correctly.
- Secure the wiring with cable clamps or adhesive tape.

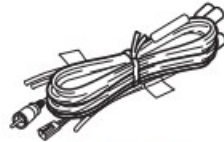
To protect the wiring, wrap adhesive tape around them where they lie against metal parts.
- Route and secure all wiring so it cannot touch any moving parts, such as the gear shift, handbrake and seat rails.
- Do not route wiring in places that get hot, such as near the heater outlet. If the insulation of the wiring melts or gets torn, there is a danger of the wiring short-circuiting to the vehicle body.
- When replacing the fuse, be sure to use only fuse of the rating prescribed on the fuse holder.
- To minimize noise locate the TV antenna cable, radio antenna cable and RCA cable as far away from each other as possible.
- Lay the cords by avoiding high-temperature areas. Use corrugated tubes for wiring inside the engine room. If a cord contacts a high-temperature area of the vehicle, the coating may melt and cause short-circuiting, which may lead to a fire or electric shock hazard.

Accessories

Camera (with camera bracket)1



Power cord1



CMOS-320



CMOS-220

Grommet1

Camera bracket clamping screw.....1



CMOS-320 only

Switch unit.....1

Double-side adhesive tape1



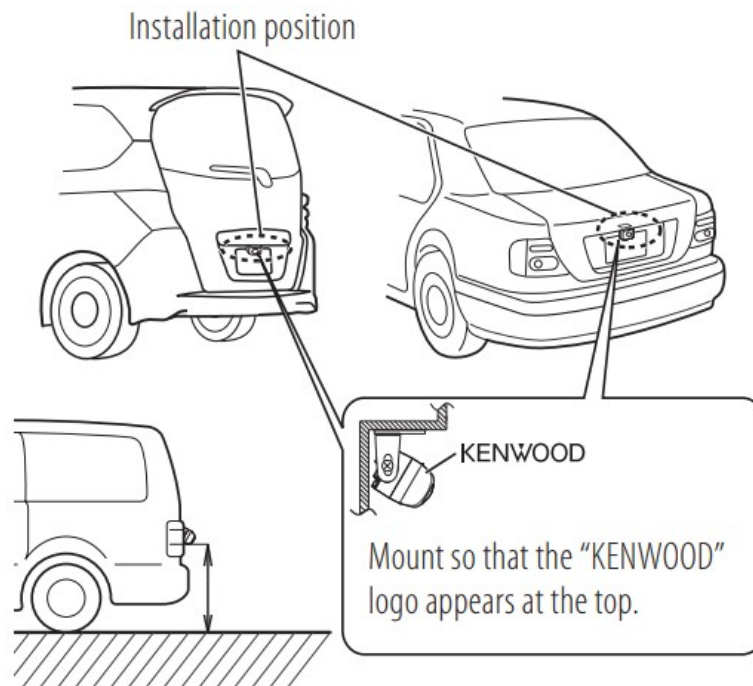
Installation

CAUTION

- The adjustments during camera setting may be hindered depending on the camera installation position. Do not install the camera securely but attach it only temporarily until the camera setting has completed.

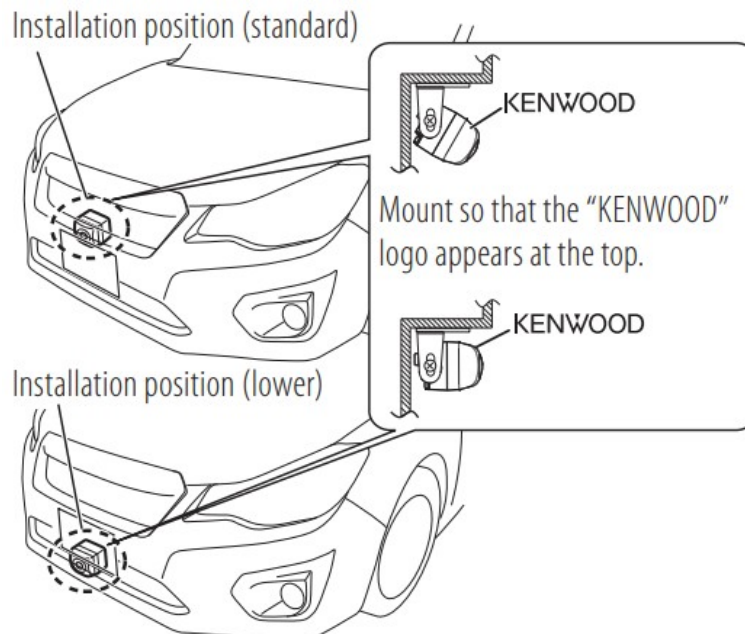
Recommended Installation Position

Examples of correct camera installation on the rear of the vehicle



The CMOS-320 should be installed at a height of 50 cm (1.64 feet) or more.

Examples of correct camera installation on the front of the vehicle (CMOS-320 only)



The CMOS-320 should be installed at a height of 30cm to 80cm (0.98feet to 2.62feet).

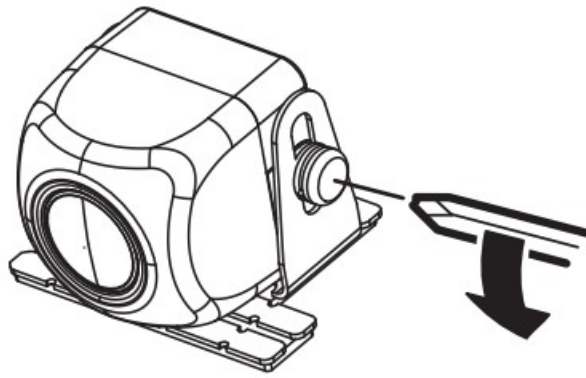
Installing the Camera/Adjusting its angle

1. **Decide the camera installation position.**

2. **Clean the camera installation surface.**

Using a commercially available cleaner, wipe dirt, moisture and oil away from the surface on which the camera bracket is to be attached.

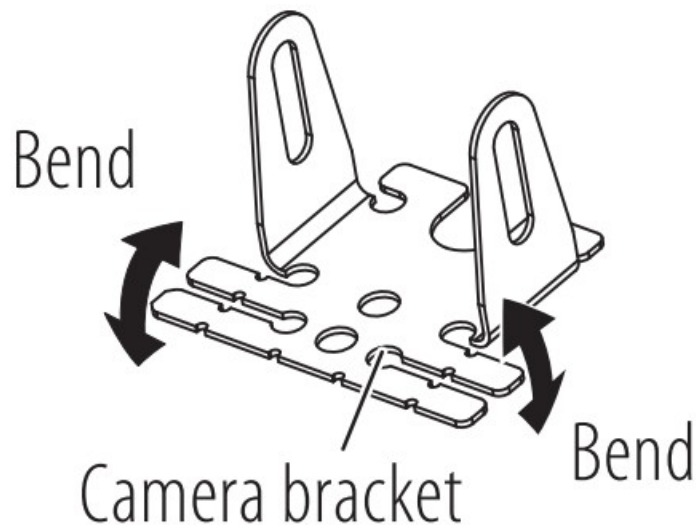
3. **Loosen the camera bracket retaining screws.**



Using a commercially available Phillips screwdriver, loosen the two retaining screws.

Perform steps 4 and 5 only when they are required.

4. **If required, separate the camera bracket from the camera and adjust the shape according to the surface on which it will be attached.**



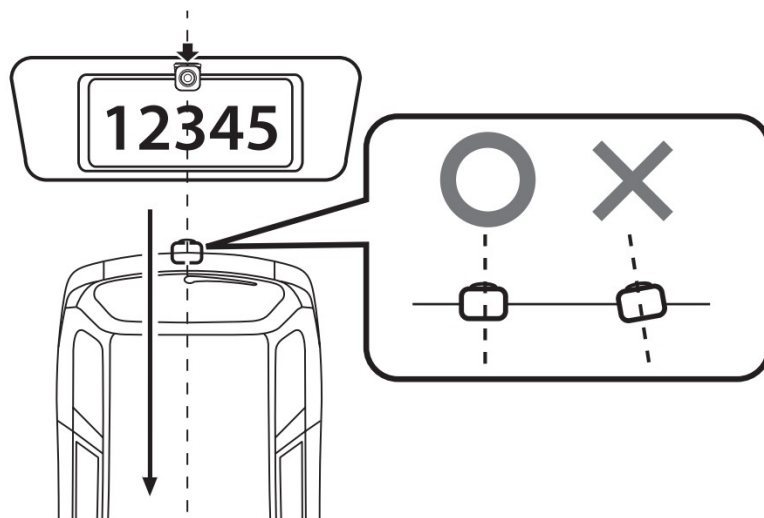
Adjust the camera bracket shape so that it fits the camera installation position.

5. **Mount the camera on the camera bracket.**

Mount so that the “KENWOOD” logo appears at the top.

6. **Fix the camera temporarily with tape, etc.**

Using a piece of tape, etc., fix the camera temporarily.



Install the camera at the center of the vehicle and not to hide the number plate. And also install straight toward the forward/reverse direction of the vehicle. Be careful not to lean the camera toward other directions of the vehicle, etc.

7. **Complete all of the required connections.**
8. **Display the camera video.**

Before viewing the camera, apply the parking brake and chock the wheels so that the vehicle will not move. Otherwise, an unexpected accident may result.

For displaying the camera video, read the instruction manual for your video monitor.

When the camera is installed as a rearview camera:

Change the shift lever to the R (Reverse) range to view the image of the rear of the vehicle.

When the camera is installed as a front camera (CMOS-320 only):

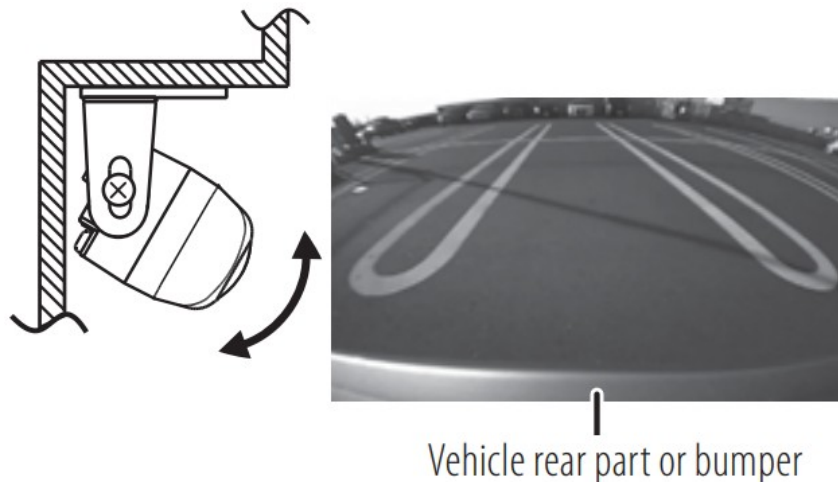
Refer to the instruction manual of the unit that you have connected this camera to, and display the image of the front of the vehicle.

9. Adjust the camera angle.

When adjusting the camera angle, be careful not to stretch the camera cord.

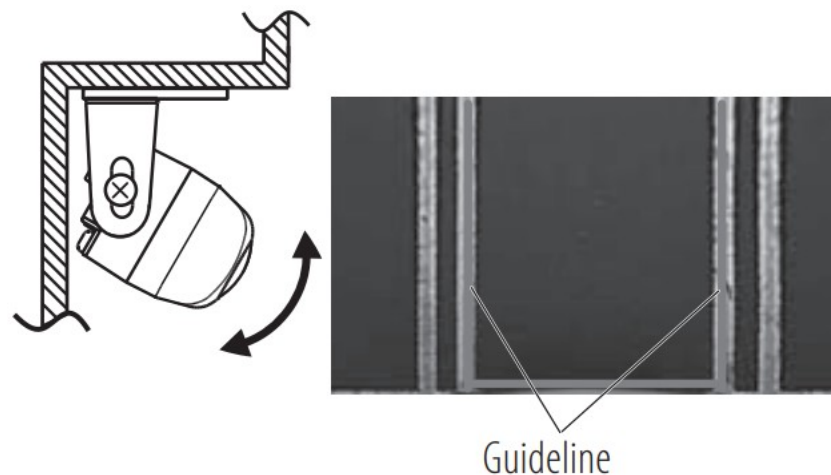
When installing CMOS-220 as a rearview camera:

Adjust the angle so that the rear of the vehicle or the bumper can be seen at the bottom of the monitor.



When installing CMOS-320 as a rearview camera:

Refer to "Display View Switching" (page 14) and switch the image to [Overhead View]. Adjust the camera angle so that the guideline and the parking lines become vertical.



When installing CMOS-320 as a front camera:

Before adjusting the camera angle, perform "Camera ID Setting" (page 13) and "Camera Setting Procedure" (page 10).

When you select [Standard] for "Mounting Position Setting", switch the image to [Overhead View] (page 14) and adjust the camera angle so that the guideline and the parking lines become vertical.

When you select [Lower] for "Mounting Position Setting", switch the image to [Corner View] (page 14) and then adjust the angle of the camera to straighten the ground lines in the left and right screens.



10. Set the camera.

When using CMOS-320 as a rearview camera:

Refer to page 9 to 13 and perform “Preparation Before

Camera Setting”, “Overhead View Image Adjustment” and “Wide View Guideline Adjustment”.

When using CMOS-320 as a front camera:

When you select [Standard] for “Mounting Position Setting”, refer to page 9 to 13 and perform “Preparation Before Camera Setting”, “Overhead View Image Adjustment” and “Wide View Guideline Adjustment”.

When you select [Lower] for “Mounting Position Setting”, refer to page 9 to 13 and perform “Preparation Before Camera Setting” and “Overhead View Image Adjustment”. You cannot perform “Wide View Guideline Adjustment”.

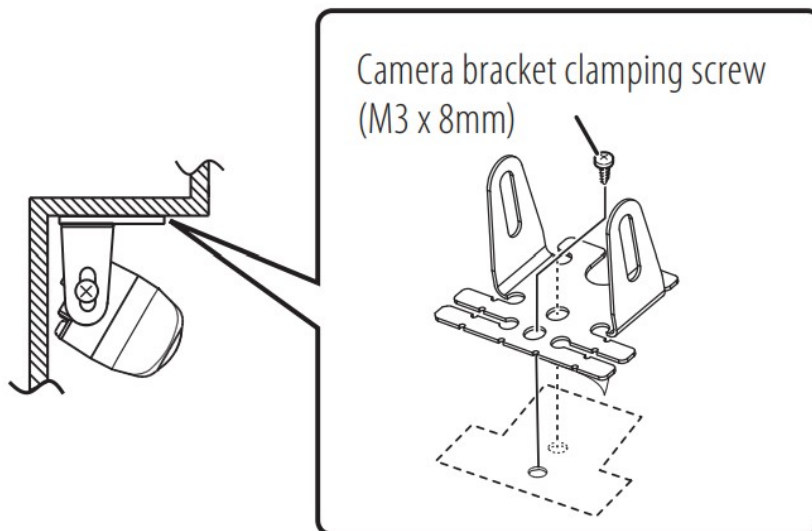
11. After adjusting the camera angle, tighten the retaining screws firmly.

Inspect the retaining screws at times. If they are loose, tighten them firmly.

12. Fix the camera firmly in position.

Peel off the paper liner from the double-side adhesive tape on the camera bracket and attach it. After attaching, push the camera bracket with your finger to ensure close adhesion. Do not touch the adhesive surface with your hand or peel and reattach an attached tape, as these will degrade the adhesive force and may cause the camera bracket to be detached. If required, secure the bracket on the vehicle body using the camera bracket clamping screw.

The camera bracket has two holes for the screw. Select one of them to fit the position of the attachment.



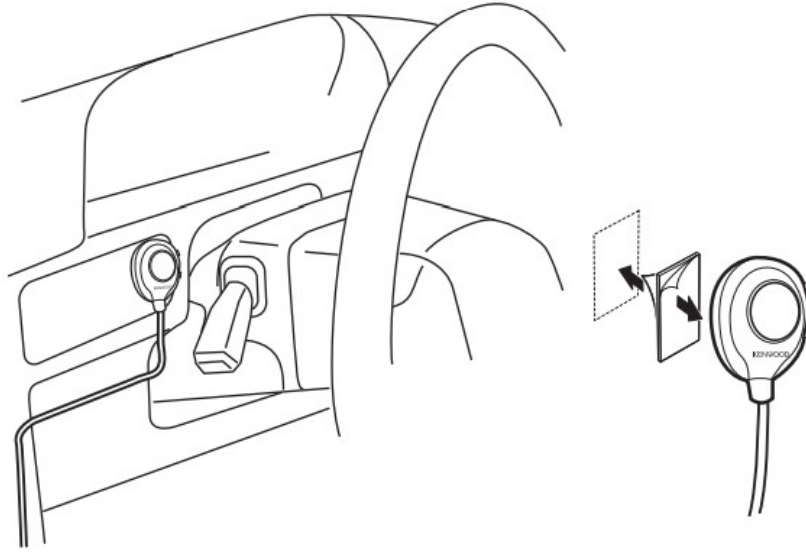
Installing the Switch Unit (CMOS-320 only)

1. Clean the switch unit installation surface.

Using a commercially available cleaner, wipe dirt, moisture and oil away from the surface on which the switch unit is to be attached.

2. **Attach double-side adhesive tape on the**

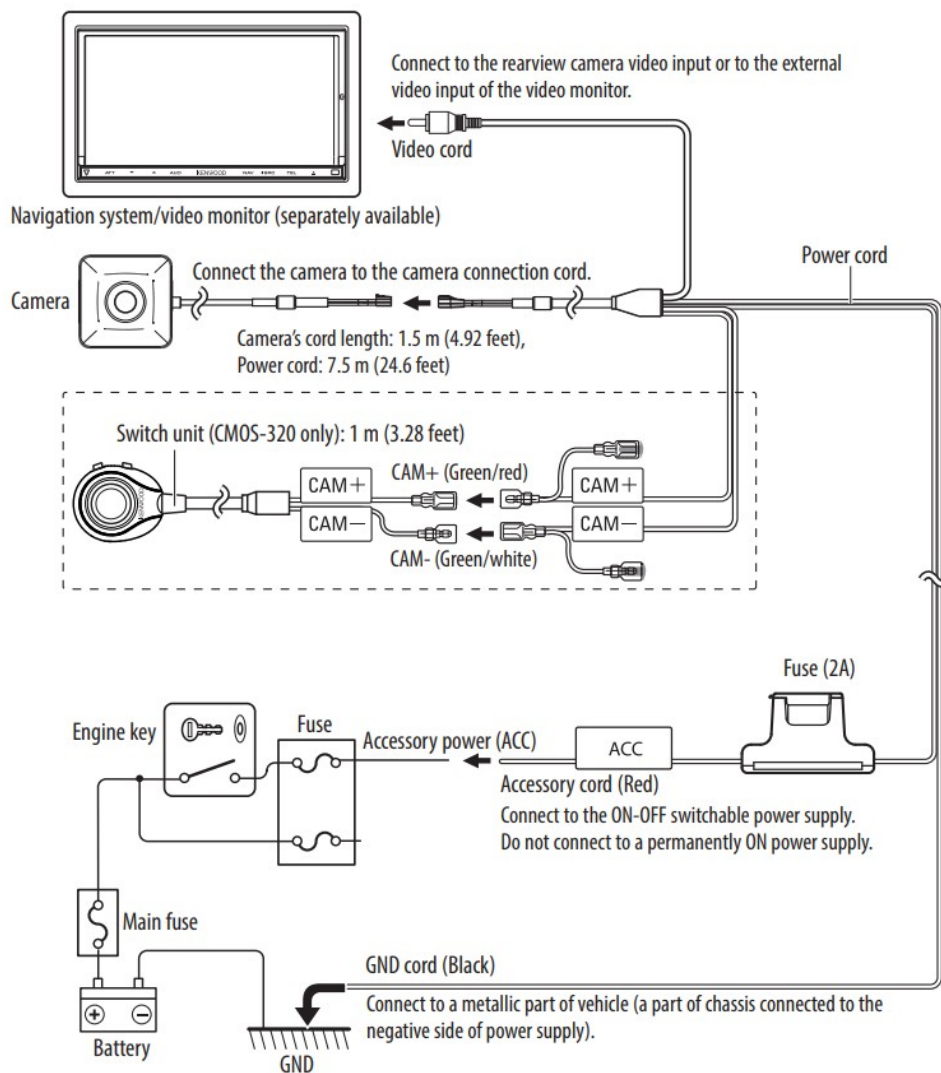
bottom of the switch unit and then attach it in an easy-to-operate position, for example near the dashboard on the driver seat side.



When using the camera as a front camera and with a Kenwood navigation system, this switch unit is used only for the ID setting of the CMOS-320 unit. So you do not have to attach the switch unit with double-side adhesive tape. For the ID setting, see “Camera ID Setting”(page 13)

Connections

Basic Connections



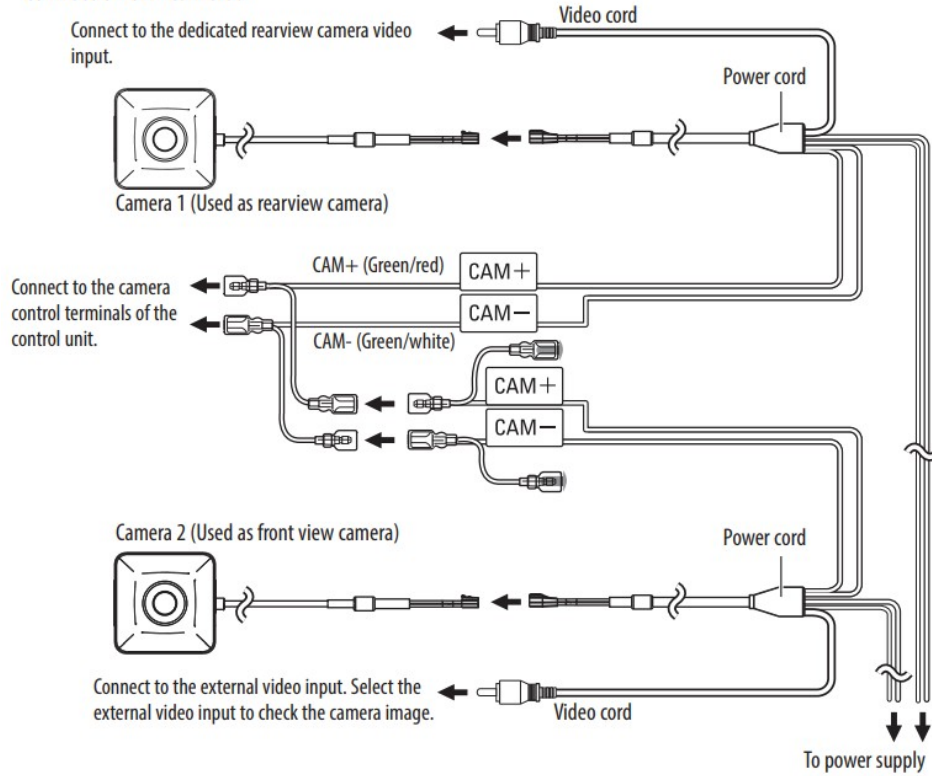
CAUTION

- If the engine key of your vehicle does not have the ACC position, branch the wire energized when the engine key is ON and connect it to the accessory power cord.
- Before proceeding to connections, make sure that the engine key is not inserted and disconnect the (-) terminal of the battery to prevent the short-circuiting incident.

System Connection (CMOS-320 only)

- When connecting the camera to a Kenwood navigation system etc, (Control unit) equipped with the camera control function, use the provided control unit connection cord. This allows the control unit to switch the display view and adjust the camera as well on touch the control unit screen.
- When using two CMOS-320 units (for the front and rear), it is required to set an ID for the front camera. For details, see "Camera ID Setting" (page 13).
- Connect the power supply in the same way as "Basic Connections".
- The provided switch unit is not used in the system connection.

Connection of 2 Cameras



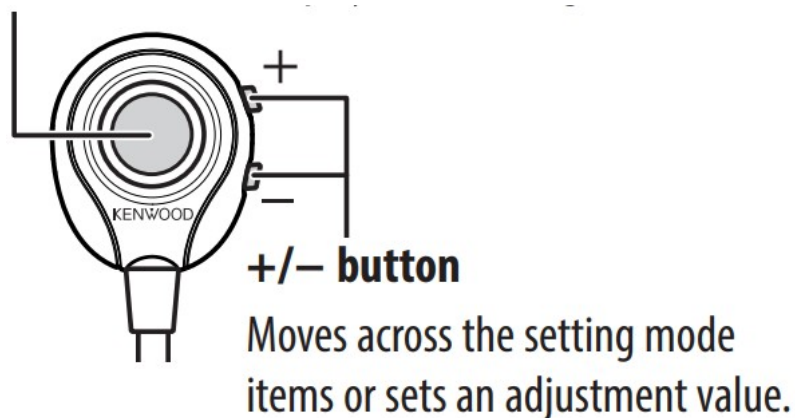
Camera Setting (CMOS-320 only)

Switch Unit Operation

The switch unit can be used to switch the image display mode, view/hide the guideline display and adjust the camera.

View button

- Switches the image display mode.
- Select an item in the setting mode.
- Press and hold to display or hide the guidelines.

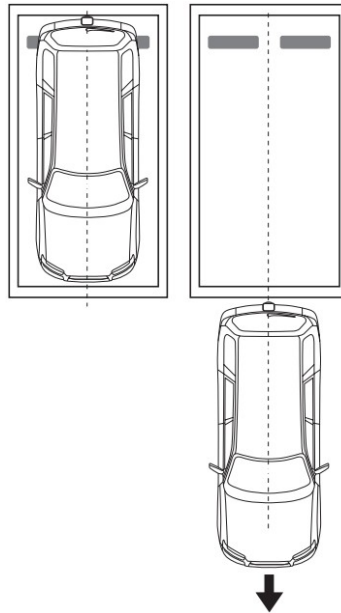


Preparation Before Camera Setting

When the camera is installed as a rearview camera:

1. Stop the vehicle.
In a parking space with white lines and tire stoppers, park the vehicle in the center of the white line frame.
2. Advance the vehicle.
 - Move the vehicle forward until the entire parking space can be viewed in the camera image.

- Be sure to apply the parking brake and push the brake pedal so that the vehicle is completely stationary.
- Perform the setting in a place that will not cause nuisance to other people.

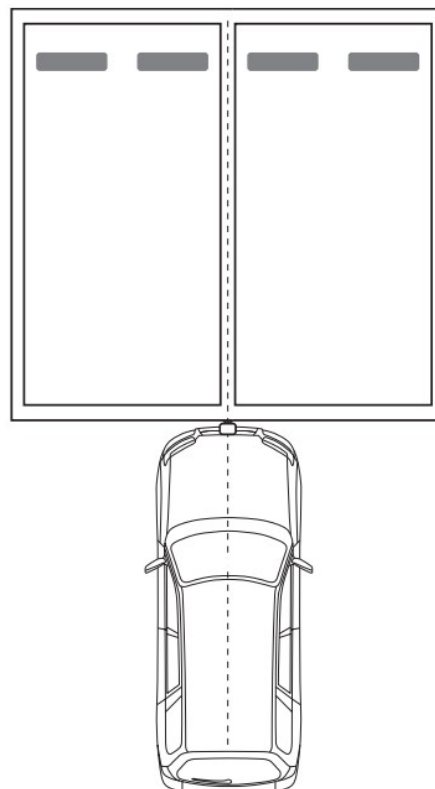


When installing the front camera at a height of 50cm (1.64 feet) or more:

Prepare as same as the rearview camera.

When installing the front camera below 50cm in height:

1. Install the camera at the center of the vehicle (page 4).
 - If not, the image may not be symmetric in the “Corner View”.
 2. Move the vehicle on the center of the parking line.
 - You can use a long stick instead of the parking line if you can not use the 2 parking lots etc.
 - Be sure to apply the parking brake and push the brake pedal so that the vehicle is completely stationary.
- Perform the setting in a place that will not cause nuisance to other people.



3. Set the camera.

Adjust the “Overhead View Image Adjustment” (page 10, 11) so that the parking line is displayed vertically in

the center.

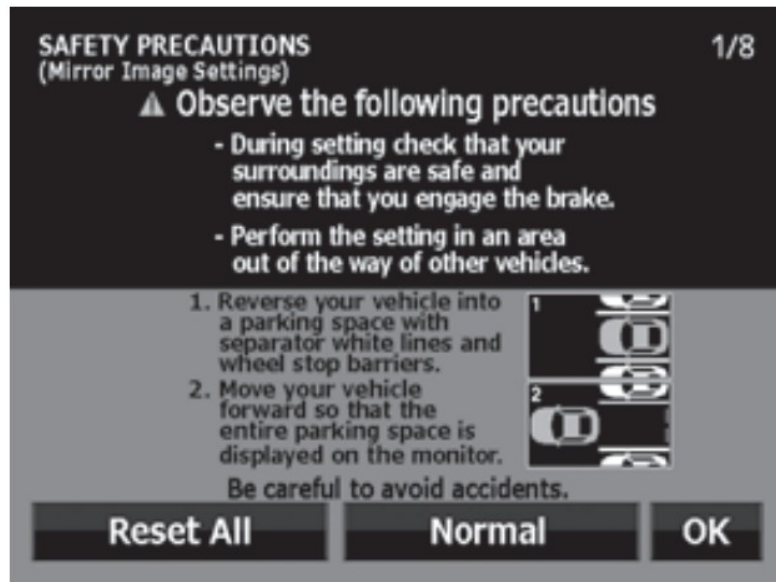
Camera Setting (CMOS-320 only)

Camera Setting Procedure

1. Complete all of the required connections in advance.
2. Display the camera video.

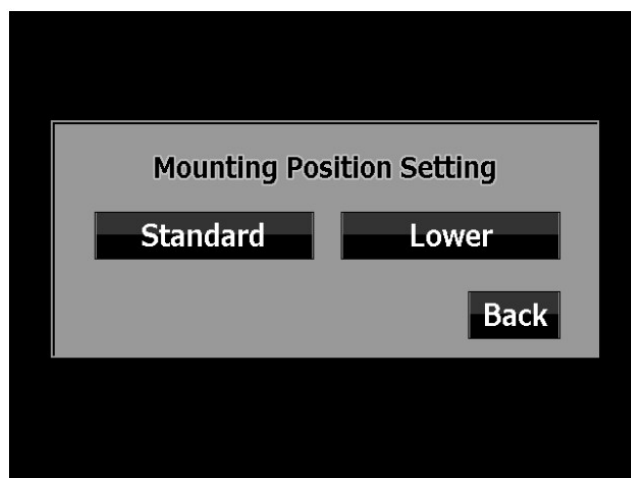
For displaying the camera video, read the instruction manual for your video monitor.

3. Press and hold the view and + buttons of the switch unit simultaneously to enter the camera adjustment mode.
4. First select the positioning of the camera.



Use the + or – button to select an item and press the view button to enter the selection.

- When using the camera as the rearview camera, select [OK]. And then go to step 6.
 - When using the camera as the front camera, select [Normal] and then select [OK]. And then go to step 5.
 - Selecting [Reset All] resets all of the camera settings to the defaults.
5. Adjust the camera's mounting position with the + or – buttons on the switch unit.



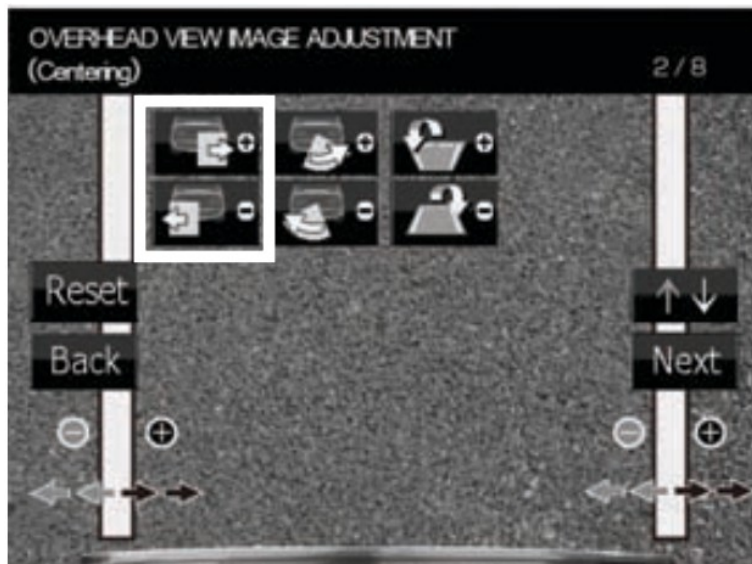
Select [Standard] when installing the camera at a height of 50cm to 80cm (1.64feet to 2.62feet).Select [Standard] when installing the camera at a height of 50cm to 80cm (1.64feet to 2.62feet).

Select [Lower] when installing the camera at a height of 30cm to below 50cm (0.98feet to below 1.64feet).

6. Select a camera adjustment item and adjust it.

The following items are available for camera adjustment.

1. Overhead view image adjustments (Centering, Right-and-Left angle, Up-and-Down Angle)
2. Wide view guideline adjustments (Size, Horizontal direction, Red Line Position Setting) To select an item:
Press the + or – button to select an item and press the view button to enter the selection. When an adjustment item is selected, the frame of its icon turns from blue to yellow.
To adjust the item:
After selecting the item, press the + or – button to adjust it and press the view button to enter the adjusted value. 7 End the setting.



Adjustment is possible by two steps to the left and right.

If the adjustment is not possible in the currently available range, change the camera position before retry.

- Select [Back] to go back to the previous adjustment item.
- Select [Next] to advance to the next adjustment item.
- Selecting [Reset] in an individual adjustment item resets the camera setting of that item to the default.
- Select [↑↓] to invert the icon upside down.

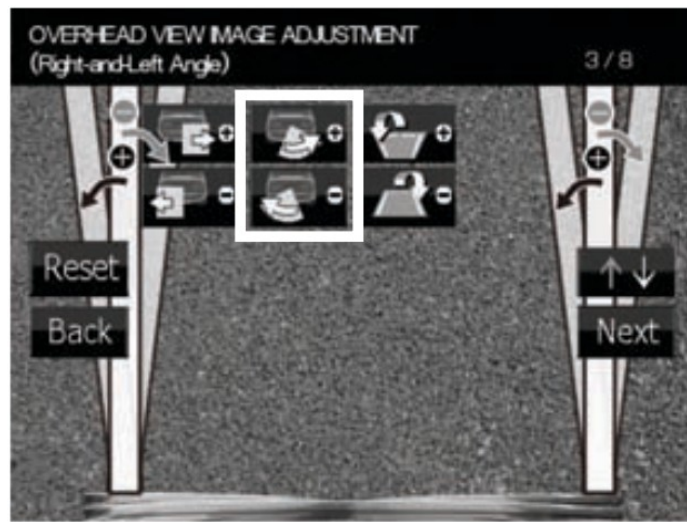
After completing the adjustment, press the view button.

Advances to “OVERHEAD VIEW IMAGE ADJUSTMENT (Right-and-Left ANGLE)”.

Overhead View Image Adjustment (Right-and-Left Angle)

This item adjusts the horizontal angle (in the rotary direction) of the camera installation position.

1. Select “OVERHEAD VIEW IMAGE ADJUSTMENT (Right-and-Left ANGLE)”.
2. Press the + or – button of the switch unit so that the center of the parking space is displayed vertically.



Adjustment is possible by one step to the left and right. If the adjustment is not possible in the currently available range, change the camera position before retrying.

3. After completing the adjustment, press the view button.

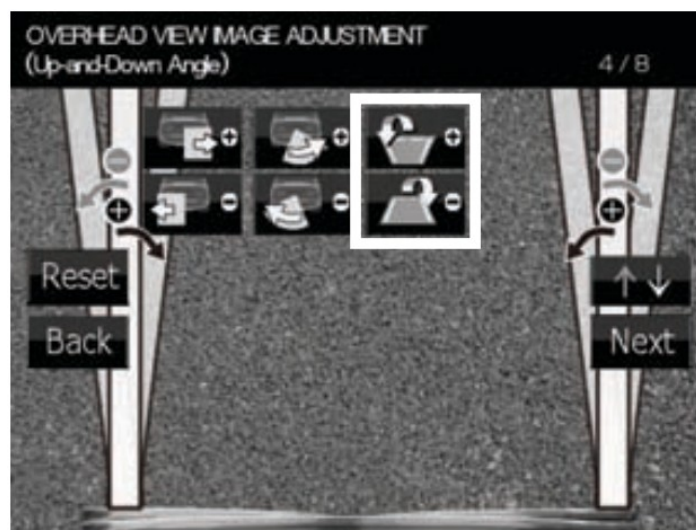


Advances to "OVERHEAD VIEW IMAGE ADJUSTMENT (Up-and-Down ANGLE)".

Overhead View Image Adjustment (Up-and-Down Angle)

This item adjusts the vertical angle (inclination) of the camera installation position.

1. Select "OVERHEAD VIEW IMAGE ADJUSTMENT (Up-and-Down ANGLE)".
2. Press the + or – button of the switch unit so that the lines indicating the vehicle width are shown vertical.



Adjustment is possible by one step up and down. If the adjustment is not possible in the currently available range, change the camera position before retrying.

3. After completing the adjustment, press the view button.
4. Select [Next].

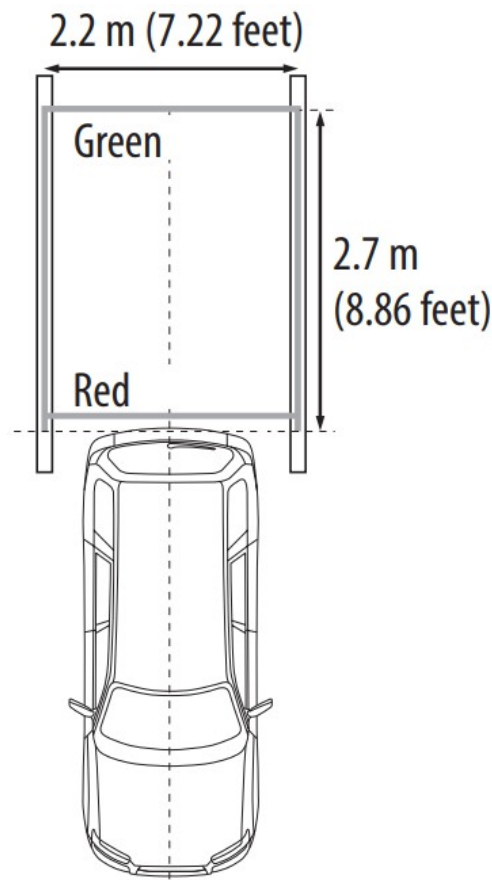


Advances to "GUIDELINE ADJUSTMENT (Size)".

Camera Setting (CMOS-320 only)

For Guideline Adjustment

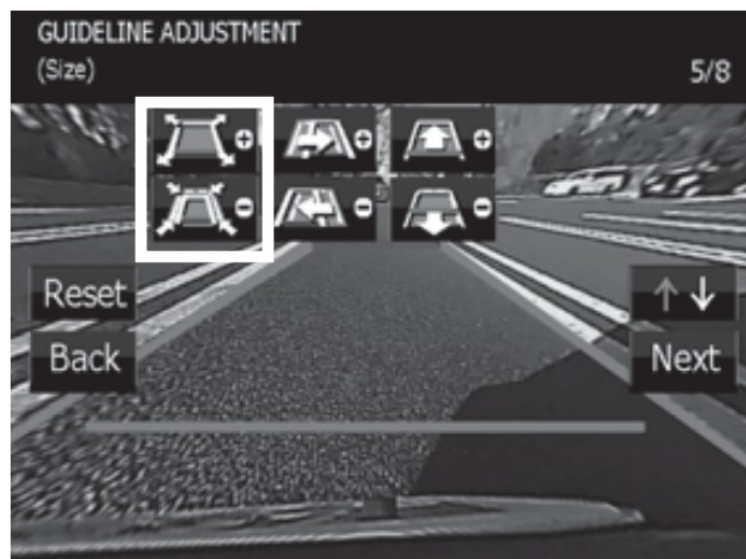
- The subsequent adjustments adjust the sizes, lengths and positions of the guidelines displayed in the wide view and overhead view. By default, guidelines shown below are displayed assuming that the camera installation height is 80 cm (2.62 feet) and that the distance between the left and right lines of the parking space is 2.2 meters (7.22 feet).
- The red line is used to indicate the parking position and can set it independently from other guide lines.



Wide View Guideline Adjustment (Size)

This item adjusts the overall size of guidelines displayed in the wide view.

1. Select "GUIDELINE ADJUSTMENT (Size)".
2. Press the + or – button of the switch unit to adjust the size.

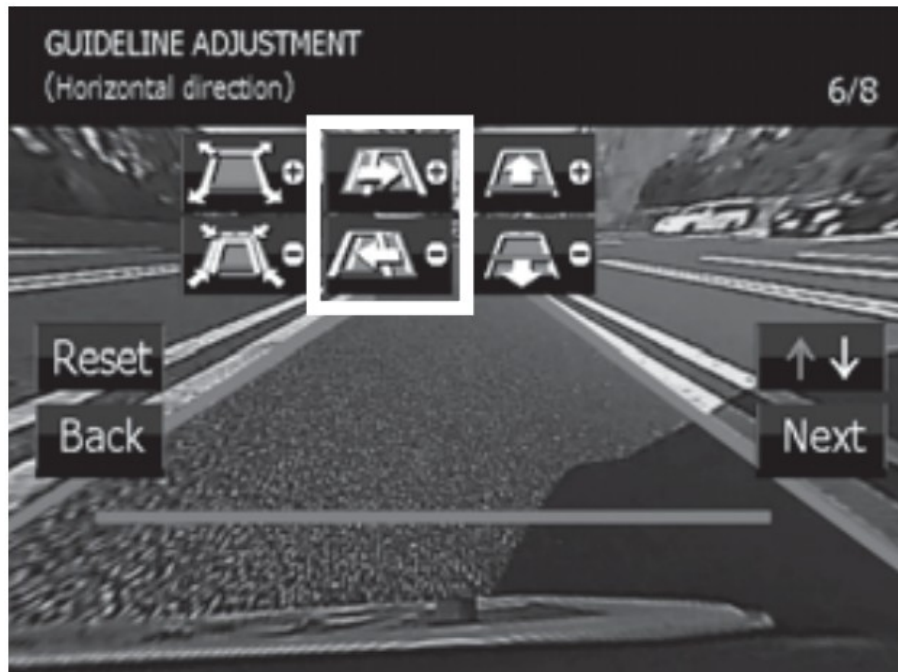


3. After completing the adjustment, press the view button.
Advances to "GUIDELINE ADJUSTMENT (Horizontal direction)".

Wide View Guideline Adjustment (Horizontal Direction)

This item adjusts the left-right positioning of the guidelines displayed in the wide view.

1. Select “GUIDELINE ADJUSTMENT (Horizontal direction)”.
2. Press the + or – button of the switch unit to adjust the left-right positioning.



3. After completing the adjustment, press the view button.



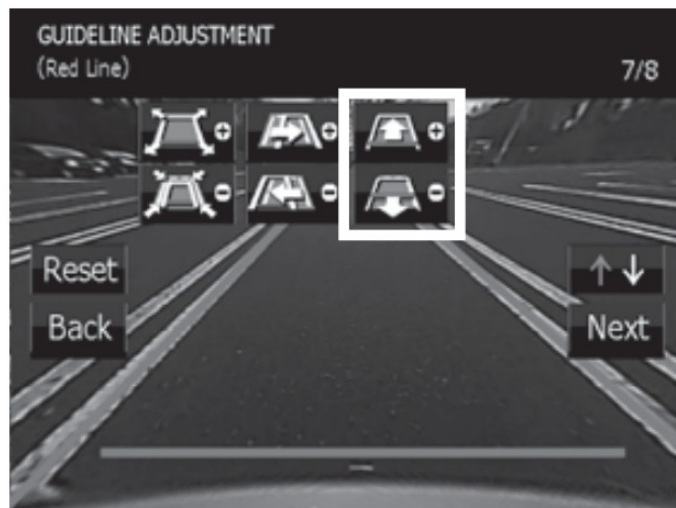
Advances to “GUIDELINE ADJUSTMENT (Red Line Position Setting)”.

Wide View Guideline Adjustment (Red Line Position Setting)

This item adjusts the position of the red line displayed in the wide view. The red line can be used independently to set the reference line for the vehicle parking position.

1. Select “GUIDELINE ADJUSTMENT (Red Line Position Setting)”.
2. Press the + or – button of the switch unit to adjust the position of the red line.

Move the red line until the edge of your vehicle’s bumper. If the edge of your vehicle’s bumper cannot be seen in the monitor, move the red line around the edge of your vehicle.

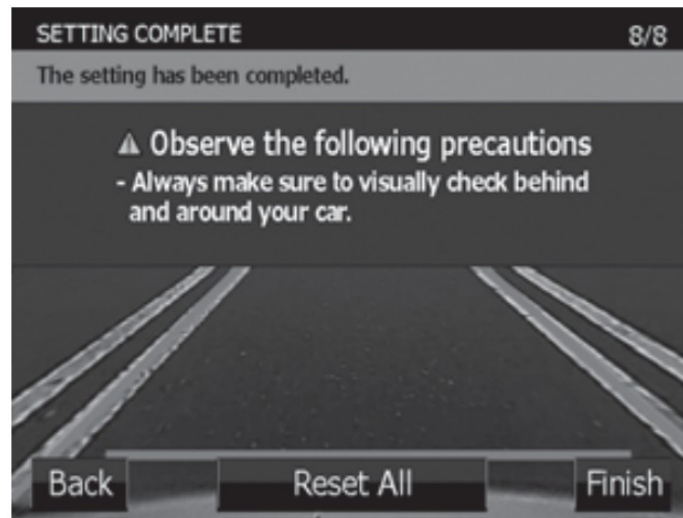


3. After completing the adjustment, press the view button.
4. Select [Next].



Advances to "SETTING COMPLETE".

Finishing the Camera Setting



1. Press the + or – button of the switch unit to select [Finish] and press the view button.

Camera ID Setting

When connecting a CMOS-320 as a front camera to a enwood navigation system equipped with the camera control function, it is required to assign the ID to [Front Camera].

1. Install the switch unit.
Refer to "Basic Connections" (page 7) for the connection.
2. Display the image of the front camera on the monitor of the Kenwood navigation system.
For displaying the image, refer to the instruction manual of it.
3. Press and hold the + button of the switch unit for more than 2 seconds, and then press and hold the – button for more than 2 seconds.
4. Press the + or – button of the switch unit to select the camera ID, and press the view button.



5. After setting, press the + or – button of the switch unit to select [Finish] and press the view button.
6. Turn off the ACC.
7. Disconnect the switch unit.
8. Connect CAM+/CAM– to the Kenwood car navigation system.
9. Turn on the ACC.

Display View Switching (CMOS-320 only)

Display View Switching

The CMOS-320 camera system can display 4 kinds of camera images.

With an image displayed on the monitor, press the view button of the switch unit.

Each press switches the image display mode in the following order.

Ultra Wide View

Wide-angle image covering a horizontal angle of about 195°.



Wide View

Camera image covering a horizontal angle of about 135°.



Overhead View

Image seen from the viewpoint straight up above the vehicle.



Depending on the camera installation position, the Overhead View image may not be displayed correctly.

- Overhead View may appear twice, depending on the connected navigation system.

Corner View

The views seen from the two corners of vehicle are displayed on the left and right halves of the screen.



When connecting the camera to a Kenwood navigation system etc, (Control unit) equipped with the camera control function, use the provided control unit connection cord. This allows the control unit to switch the display view as well on touch the control unit screen (page 8).

Specifications

Camnit (CMOS-320)

Output video

: Wide-angle mirror image (for rearview)/wide- angle normal image (for front view) Sensor: 1/3.6-inch color CMOS sensor Number of pixels: Approx. 330,000 pixels

Lens

: Wide angle, Focal length $f=1.05$ mm, F value 2.0 Angles of view

: Horizontal: Approx. 195°

: Vertical: Approx. 145°

Video output: 1.0 Vp-p/ 75 Ω

Illumination range: Approx. 0.9 to 100,000 lux Iris system: Electronic iris

Scanning system: Interlace

Synchronizing system: Internal synchronization

Dimensions (WxHxD): 23.4 x 23.4 x 26.1 mm

Weight: Approx. 23 g (without cable)

Camera Unit (CMOS-220)

Output video

: Wide-angle mirror image (for rearview)

Sensor: 1/3.6-inch color CMOS sensor

Number of pixels: Approx. 330,000 pixels

Lens

: Wide angle, Focal length $f=1.12$ mm, F value 2.2

Angles of view

: Horizontal: Approx. 128°

: Vertical: Approx. 103°

Video output: 1.0 Vp-p/ 75 Ω

Illumination range: Approx. 0.9 to 100,000 lux

Iris system: Electronic iris

Scanning system: Interlace

Synchronizing system: Internal synchronization

Dimensions (WxHxD): 23.4 x 23.4 x 23.9 mm

Weight: Approx. 22 g (without cable)

Switch Unit (CMOS-320 only)

Dimensions (WxHxD): 27.5 x 32.8 x 12 mm

Weight: Approx. 10 g (without cable)

General

Operating voltage: 14.4V (9.0 V – 16.0 V) Max. current consumption (CMOS-320): 100 mA Max. current

consumption (CMOS-220): 50 mA

- Mirror image means that the video image inverts the left and right just like the image seen on the rearview mirror or a side mirror.
- Specifications subject to change without notice.

Information on Disposal of Old Electrical and Electronic Equipment and Batteries (applicable for countries that have adopted separate waste collection systems)



Products and batteries with the symbol (crossed- out wheeled bin) cannot be disposed as household waste. Old electrical and electronic equipment and batteries should be recycled at a facility capable of handling these items and their waste byproducts.



Pb Contact your local authority for details in locating a recycle facility nearest to you. Proper recycling and waste disposal will help conserve resources whilst preventing detrimental effects on our health and the environment.

Notice: The sign “Pb” below the symbol for batteries indicates that this battery contains lead.

Declaration of Conformity with regard to the EMC Directive 2004/108/EC

Declaration of Conformity with regard to the RoHS Directive 2011/65/EU

Manufacturer:

JVC KENWOOD Corporation

3-12 Moriya-cho, Kanagawa-ku, Yokohama-shi, Kanagawa, 221-0022, Japan

EU Representative's:

JVCKENWOOD NEDERLAND B.V.

Amsterdamseweg 37, 1422 AC UITHOORN, The Netherlands

NOTICE: This Class B digital apparatus complies with Canadian ICES-003.

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:0

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION.

FCC CAUTION

This equipment may generate or use radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

FCC NOTE

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 may cause harmful interference to radio communications, if it is not installed and used in accordance with the instructions. 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 an experienced radio/TV technician for help.

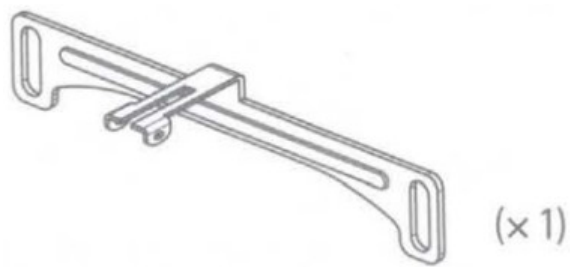


This main unit is designed to mount the following cameras on the rear of the car. Refer also to the INSTRUCTION MANUAL supplied with your camera.

- CMOS-130/CMOS-230/CMOS-320/CMOS-740H D

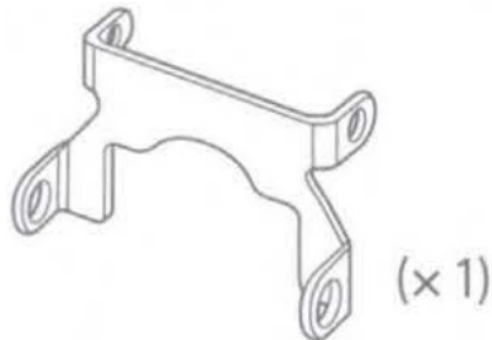
Kit Components

(A) Main unit

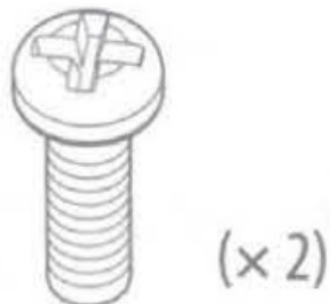


For CMOS-130/CMOS-230/CMOS-320

(B) Camera bracket

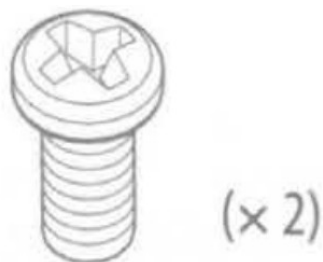


(c) Screw



M2.5 × 6 mm

(D) Screw



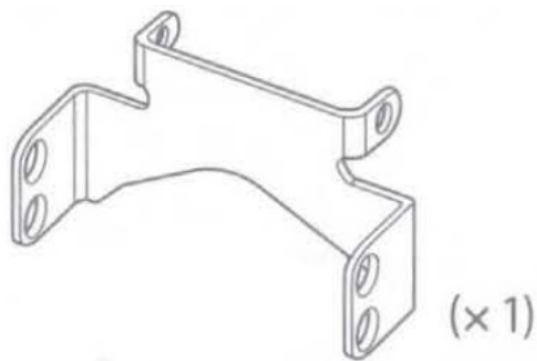
M3 × 5 mm

(E) Washer

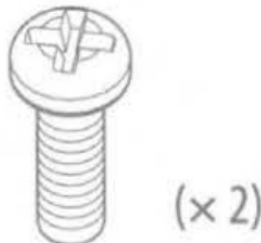


For CMOS-740HD

(F) Camera bracket



(G) Screw



M2.5 × 6 mm

(H) Screw



M3 × 4 mm

(I) Washer

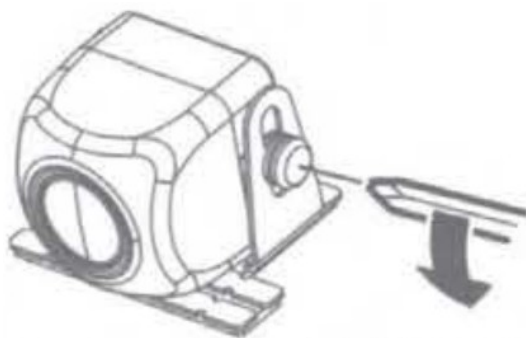


Installation Procedure

Attaching the Camera to the Main Unit

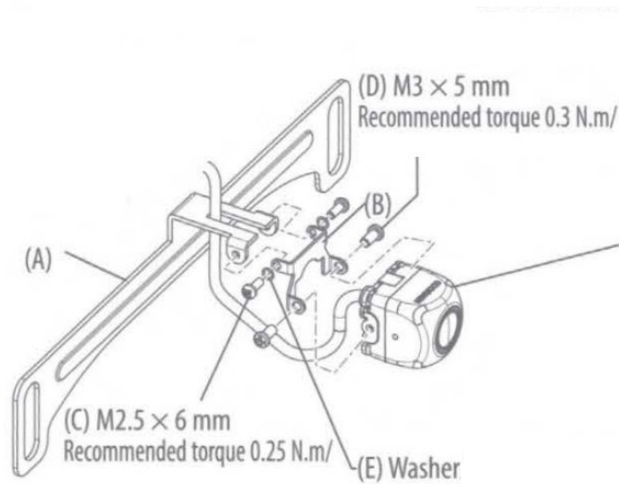
For CMOS-130/CMOS-230/CMOS-320/Para CMOS-130/CMOS- 230/CMOS-320/Para CMOS-130/CMOS-230/CMOS-320:

Before attaching the camera to the main unit, detach the original bracket from the camera using a screwdriver (not supplied).



!!!_ustrat1on used_1s_of CMOS-230
With KENWOOD logo facing upwards

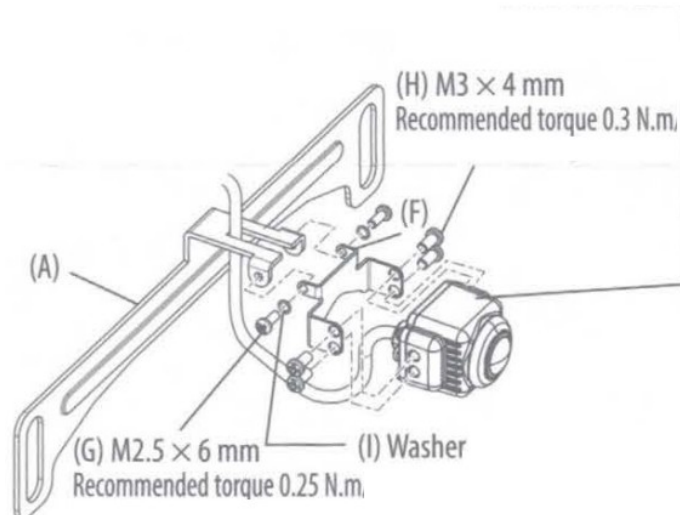
With KENWOOD logo facing upwards



For CMOS-740HD

With KENWOOD logo facing upwards

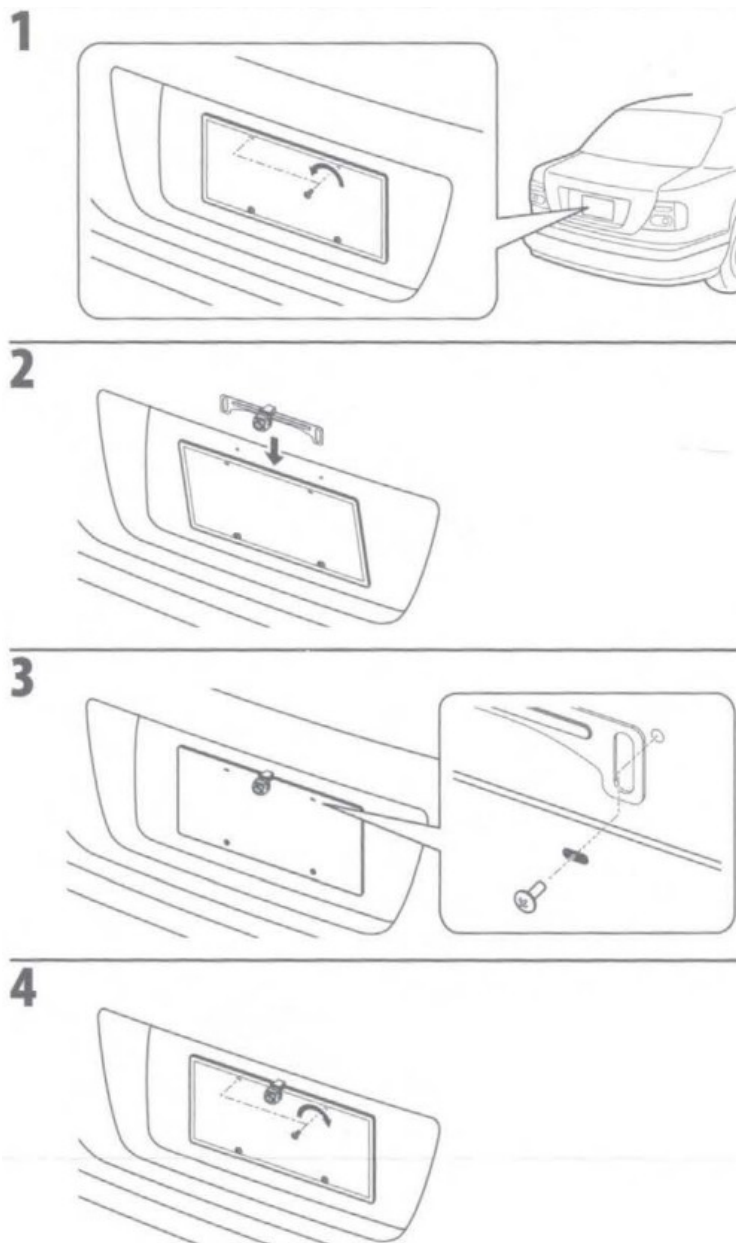
With KENWOOD logo facing upwards,



Do not use the camera bracket and camera bracket screws supplied with your camera

Installing to the License Plate

Install the main unit as illustrated below.



- For details on the camera wiring connection and camera installation position, refer to the INSTRUCTION MANUAL supplied with your camera.

Kenwood Warranty Card

Check whether S/No is written!

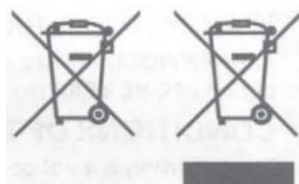
Dear Customer,

Thank you for purchasing this kenwood product. As mentioned in the pages of this booklet. our warranty is only valid in the countries listed. If your country is not listed please contact your retailer for information on warranty procedure, or write to:

JVC KENWOOD Customer Information Center

3-12, Moriyacho,

Kanagawa-ku, Yokohama-shi, Kanagawa 221-0022, Japan



U .S.A.

JVCKENWOOD USA Corporation

This warranty will be honored only in the U.S.A.

KENWOOD LIMITED WARRANTY FOR CAR STEREO COMPONENTS

HOW LONG IS THE WARRANTY

JVCKENWOOD USA Corporation ("Kenwood") warrants this product for a period of one (1) year from the date of original purchase.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as specified below, this warranty covers all defects in material and workmanship in Kenwood car stereo components. The following are not covered by the warranty:

1. Any product which is not distributed in the U.S.A. by Kenwood or which is not purchased in the U.S.A. from an authorized Kenwood car stereo dealer or an automobile dealer, unless the product is purchased through the U.S.A Military Exchange Service.
2. Any product on which the serial number has been defaced, modified or removed.
3. Damage, deterioration or malfunction resulting from:
 - a. Any shipment of the product (claims must be presented to the carrier).
 - b. Installation or removal of the product.
 - c. Accident, acts of nature, misuse, abuse, neglect, unauthorized product modification or failure to follow instructions supplied with the product.
 - d. Repair or attempted repair by anyone not authorized by Kenwood.
 - e. Any other cause which does not relate to a product defect.

WHO IS PROTECTED

This warranty is enforceable only by the original purchaser.

WHAT WE WILL PAY FOR

We will pay for all labor and material expenses for covered items. Payment of shipping charges is discussed in the next section of this warranty.

HOW TO OBTAIN WARRANTY SERVICE

If your KENWOOD product ever needs service:

1. Take or ship it to any KENWOOD Authorized Service Center in the U.S.A. along with & complete description of the problem. (if you are uncertain as to whether a Service Center is authorized, please call 1-800-KENWOOD for the nearest Service Center. 1-800-536-9663).
2. Although you must pay any shipping charges if it is necessary to ship the product for warranty service, we will pay the return shipping charges if the repairs are covered by the warranty within the United States.
3. Whenever your units are taken or sent for warranty service, you must include a copy of the original dated sales receipt as proof of warranty coverage.

LIMITATION OF IMPLIED WARRANTIES

ALL IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE LENGTH OF THIS WARRANTY.

EXCLUSION OF DAMAGES

KENWOOD'S LIABILITY FOR ANY DEFECTIVE PRODUCT IS LIMITED TO THE REPAIR OR REPLACEMENT OF THE PRODUCT AT OUR OPTION. KENWOOD SHALL NOT BE LIABLE FOR:

1. INSTALLATION OR REMOVAL CHARGES, DAMAGE TO OTHER PROPERTY CAUSED BY ANY DEFECTS IN KENWOOD CAR STEREO COMPONENTS, DAMAGES BASED UPON INCONVENIENCE, LOSS OF USE OF THE PRODUCT; OR
 2. ANY OTHER DAMAGES, WHETHER INCIDENTAL, CONSEQUENTIAL OR OTHERWISE.
- SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS AND/OR

DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS AND EXCLUSIONS MAY NOT APPLY TO YOU.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. If a problem develops during or after the Limited Warranty Period, or if you have any questions regarding the operation of the product, you should contact your KENWOOD Authorized Dealer or Authorized Service Center. If the problem or your question is not handled to your satisfaction, please contact our Customer Relations Department at the address listed below:

JVCKENWOOD USA Corporation

PO Box 22745, 2201 E. Dominguez St. Long Beach, CA 90810-5745 Tel: (800) 536-9663
www.us.jvckenwood.com

ATTENTION

This card and receipt (or invoice) are necessary to purchase a new panel in case of theft or damage.

MILITARY

Units purchased through the U.S.A. military exchange service overseas may be serviced under warranty in the continental U.S.A., subject to the following conditions.

1. The original warranty is in effect.
2. Proof of purchase is provided to the servicer.

WARRANTY FOR MILITARY MARKET

JVC KENWOOD corporation is proud of the quality and workmanship of its audio equipment. This unit has been properly designed, tested and inspected before it was shipped to you. If properly installed and operated in accordance with instructions furnished, it should give you an optimum reliable performance.

WARRANTY PERIOD

This product is warranted for a period of (1) year from the date of the original purchase.

SCOPE OF WARRANTY

Except as specified below, this warranty covers all defects in materials and workmanship of the Kenwood brand products.

During the warranty period, any authorized Kenwood Service Center in the military market listed in the back of this warranty card will provide you free-of-charge both parts and labor required to correct any defect in materials or workmanship.

The following are not covered by this warranty.

1. Voltage conversions.
2. Periodic check-ups which do not disclose any defect covered by the warranty.
3. Cabinets, grilles, other exterior finishes, belts, tape heads, and other non-durable parts and accessories.
4. Units on which the serial number has been effaced, modified or removed.
5. Installation and/or removal charges.
6. Damaged magnetic tapes.
7. House call charges for any repairs.
8. Shipping or delivery charges to or from an authorized Kenwood Service Center.
9. This warranty will not cover any failure that is due to any of the following conditions in accordance with the visual inspection of the authorized Kenwood Service Center:

* Improper maintenance or repair, including the installation of parts or accessories that do not conform to the quality and specifications of the original parts.

* Misuse, abuse, neglect, unauthorized product modification or failure to follow instructions contained in the Owner's Manual.

* Accidental or intentional damages.

* Repairs or attempted repairs by an unauthorized agency. (All repairs must be performed at an authorized

Kenwood Service Center.)

* Damages or deteriorations caused during shipment (Claims must be presented to the carrier).

* Damages or deteriorations resulting from removal and/or replacement.

PURCHASER'S RESPONSIBILITIES

As the purchaser of a new Kenwood brand product, you are requested to do the following in order to obtain Kenwood warranty service.

1. Retain your sales slip or other evidence of purchase for proving your eligibility for requesting Kenwood warranty service.
2. Make your unit available to an authorized Kenwood Service Center in the military market for inspection and approved warranty service, or ship your unit in its original carton box or equivalent, fully insured and shipping charges prepaid, to the authorized Kenwood Service Center.

LIMITATION OF IMPLIED WARRANTIES

Any and all implied warranties, including warranties of merchantability and fitness for a particular purpose, shall be limited in duration to the length of this warranty.

EXCLUSION OF CERTAIN DAMAGES

KENWOOD's liability for any defective product is limited to the repair or replacement of said product, at our option, and shall not include damages of any kind, whether incidental, consequential or otherwise, except to the extent prohibited by applicable law.

ATTENTION

This card and receipt (or invoice) are necessary to purchase a new panel in case of theft or damage.

KENWOOD AUTHORIZED SERVICE CENTERS IN MILITARY MARKET

U.S.A.:

In The Continental U.S.A.

For Nearest Authorized Service Center;

Tel: 1-800-536-9663

www.us.jvckenwood.com

EUROPE:

Please inquire at the military resale outlets where you bought your Kenwood products, or

JVCKENWOOD DEUTSCHLAND GMBH:

Konrad-Adenauer Allee 1-11, 61 118 Bad Vilbel, Germany

CANADA

JVCKENWOOD Canada Inc

KENWOOD WARRANTY

JVCKENWOOD Canada Inc. (hereinafter called "KENWOOD"), gives the following written warranty to the original customer of each new Kenwood product distributed in Canada by KENWOOD and purchased from a dealer authorized by KENWOOD.

KENWOOD warrants that each new Kenwood product, under normal use, is free from any defects, subject to the terms and conditions set forth below. If a defect should occur within the warranty period, repairs will be made free of charge for parts and labour when such defects are determined by KENWOOD or its' authorized service centres to be attributable to faulty materials or workmanship at time of manufacture. Please contact KENWOOD to confirm if a dealer or service centre is authorized by KENWOOD.

WARRANTY PERIOD

This Kenwood product is warranted for parts and labour for a period of one (1) year from the date of original purchase, lease or rental, except for products which are used in a professional or commercial application, which are warranted for a period of ninety (90) days for parts and labour and are subject to the terms and conditions of the warranty.

WARRANTY EXCLUSIONS

This warranty excludes:

- (a) Products purchased in a foreign country or purchased in Canada and taken to a foreign country.
- (b) Products purchased from a dealer not authorized by KENWOOD.
- (c) Products with the serial number defaced, altered or missing.
- (d) Periodic check-ups which do not disclose any defects covered by this warranty.
- (e) Defects resulting from disaster, accident, abuse, misuse, lightning, power surges, neglect or lack of periodic maintenance, unauthorized modification or failure to follow instructions in the owner's manual.

- (f) Defects or damage as a result of repairs performed by a person or party not authorized by KENWOOD.
- (g) Defects resulting from the use of parts or devices that do not conform to KENWOOD specifications.
- (h) Damage or deterioration occurring to any exterior finishes, cosmetic parts, tape heads, adaptors, antennas, cables, tapes, discs or faults or damage caused by defective or leaking batteries.
- (i) Defects or damage occurring during shipping (claims should be presented to the shipping company).
- (j) Product voltage and /or line frequency conversions.
- (k) Product installation or removal charges.

TO OBTAIN WARRANTY SERVICE

Should your Kenwood product require warranty service, deliver it to any authorized KENWOOD service centre and present the original copy of your bill of sale and this warranty card as proof of warranty, or send your product fully insured and freight prepaid to the nearest authorized KENWOOD service centre. To avoid possible shipping damage, make sure the product is properly packed. Include a copy of your original bill of sale and this warranty card as proof of warranty along with your name, home and /or work telephone number(s), a complete return address and a detailed description of the fault(s). Products repaired within warranty will be returned freight prepaid to destinations within Canada. The customer is responsible for all freight and related costs for the return of product(s) to destinations outside Canada.

ENTIRE WARRANTY

This warranty constitutes the entire written warranty given by KENWOOD. No person, party, dealer or service centre or their agents or employees are authorized to extend or enlarge this warranty on behalf of KENWOOD by any written or verbal statement or advertisement or promotion, including any extended warranty program or plan that may be offered by the dealer or service centre, unless approved in writing by KENWOOD.

DISCLAIMER

KENWOOD disclaims any responsibility for loss of time or use of the product or any other indirect, incidental or consequential damage to other products or goods, inconvenience or commercial loss.

NOTICE TO CONSUMER

The provisions contained in this written warranty are not intended to limit, modify, take away, disclaim or exclude any warranties or rights you may have which are set forth in any applicable provincial or federal laws or legislation.

IMPORTANT

This warranty card by itself is not considered by KENWOOD as a valid proof of purchase. When applying for warranty repairs, you must present the original copy of your bill of sale and this warranty card as proof of warranty, so we recommend that they be kept in a safe place, should they be required in the future.

JVCKENWOOD Canada Inc.

6070 Kestrel Road, Mississauga, Ontario, Canada L5T 1 SB

Tel.: (905) 670-7211

Fax: (905) 670-7248

ATTENTION

This card and receipt (or invoice) are necessary to purchase a new panel in case of theft or damage.

UK & Ireland

JVCKENWOOD U.K. Limited

Dear User of Kenwood Products

Thank you for having chosen this Kenwood product (the 'Product') If it becomes defective under normal operating conditions, it will be repaired or replaced free of charge, in conformity with the terms of this Warranty card. In the event that the Product was purchased in any EEC Member State and you experience a problem, please take the Product to any official Kenwood importer, Authorized Dealer, Authorized Service Centre or retailer of Kenwood products in the EEC, together with the purchase receipt or other adequate proof of the date of purchase. If it was purchased outside the EEC, the Product must be taken to the retailer from whom it was purchased.

If the Product was purchased in the EEC and you wish to know the location of your nearest Authorized Dealer in the EEC, please contact the following for information:

JVCKENWOOD U.K. Limited

12 Priestley Way, London, NW2 7BA

Tel. 020 8208 7500

www.kenwood-eletronics.co.uk

Please keep this Warranty Card as you will need it should a claim be necessary.

The Product is guaranteed for one year from the date of original purchase from any retailer of Kenwood products. The guarantee covers both materials and workmanship, and the repair shall be carried out free of charge. We reserve the right to replace the Product if it cannot be repaired economically.

Packaging, installation costs and any other costs or risks indirectly related to the actual repair, are not included in the warranty services and will be charged.

Conditions

A Any claim under this warranty must be accompanied by this Warranty Card, and in addition

(a) Your full name and address

(b) The receipt or other document showing the date of purchase from a retailer established in Europe.

(c) The full name and address of the retailer from whom the Product was purchased

(d) The Serial Number and Model name of the Product. If this information cannot be provided, or if the Product has been modified or altered in any way since the date of purchase, Kenwood

Corporation reserves the right to refuse to repair the Product under the terms of this Warranty

B. The Product has been manufactured so that it complies with all national or local standards and safety requirements applicable in the country of first sale by the manufacturer in Europe. Modifications necessary for use elsewhere are not covered by this Warranty, and no liability for repair will be accepted in respect of any work done in this connection, or any damage to the Product arising from such work. If the Product is used in a European country where it is subject to other standards and requirements than those applicable in the country of first sale by the manufacturer in Europe, then any warranty services will be subject to the condition that the user bear the cost of adapting the Product to the applicable standards and requirements. In addition, if the Product is different in type from those marketed by the official importer in the country where it is offered for warranty repair, and the appropriate spare parts are unavailable in this country or the warranty service cannot be provided in this country for another legitimate reason, then the cost of shipping the Product for repair to and from the country of original purchase shall be borne by the user

C This Warranty does not cover:

(a) alterations of the Product, and normal maintenance and adjustments, including periodic check-ups mentioned in the Manual used with the Product;

(b) damage to the Product caused by inadequate or improper repairs carried out by any person or entity which is not authorized by the manufacturer to perform warranty services on its behalf;

(c) damage to the Product caused by negligence, accidents, modifications, defective installation or packaging, misuse, and use of inappropriate spare parts,

(d) damage to the Product caused by fire, immersion in water, lightning, earthquake, inadequate ventilation, Acts of God, incorrect application of main voltage howsoever arising, or any other cause beyond the control of Kenwood;

(e) loudspeakers damaged by application of power levels beyond the rated specification, and damages caused for whatever reason to records, tapes, cassette tapes, video tapes, compact disks, or any other goods which are not the Product itself.

(f) consumable or wearing items requiring replacement as part of normal service, including (but not limited to) phono-cartridges, stylus, drive belts, tape heads, racks, dry cells, rechargeable batteries and final lubes;

(g) the Product from which any or all of the serial numbers has been removed, modified or defaced,

This Warranty is available to any person who has legally obtained the Product

Subject as mentioned above, the Product will be repaired or replaced free of charge. These rights in no way interfere with or otherwise affect the rights of the user of the Product under the applicable legal provisions

ATTENTION

This card and receipt (or invoice) are necessary to purchase a new panel in case of theft or damage.

The following changed from 1, October 2022.

Declaration of Conformity with regard to the EMC Directive 2014/30/EU

Declaration of Conformity with regard to the RoHS Directive 2011/65/EU

Manufacturer:

JVCKENWOOD Corporation

3-12, Moriyacho, Kanagawa-ku, Yokohama-shi,

Kanagawa 221-0022, JAPAN

EU Representative:

JVCKENWOOD Europe B.V.

Rendementsweg 20 B-9, 3641 SL Mijdrecht, THE NETHERLANDS

Declaration of Conformity with regard to the Electromagnetic Compatibility Regulations 2016 (S.I. 2016/1091)

Declaration of Conformity with regard to the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (S.I. 2012/3032) Manufacturer: JVCKENWOOD Corporation


3-12, Moriya-cho, Kanagawa-ku, Yokohama-shi, Kanagawa, 221-0022, JAPAN UK Importer:

JVCKENWOOD U.K. Limited








First Floor, Gleneagles, the Belfry, Colonial Way, Watford, Hertfordshire WD24 4WH, UNITED KINGDOM

KENWOOD

Documents / Resources

	<p>Kenwood CMOS-320 Universal Multi View Camera Universal Rear View Camera [pdf] Owner's Manual</p> <p>CMOS-320, CMOS-220, CMOS-320 Universal Multi View Camera Universal Rear View Camera , Universal Multi View Camera Universal Rear View Camera, Camera Universal Rear View Camera, Universal Rear View Camera, Rear View Camera</p>
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References

-  [Homepage • KENWOOD Deutschland](#)
-  [Inicio • Kenwood](#)
-  [Homepage • KENWOOD Nederland](#)
-  [Homepage • KENWOOD Portugal](#)
-  [Homepage • KENWOOD Europe](#)
-  [KENWOOD USA](#)
-  [JVCKENWOOD USA Corporation](#)
- [User Manual](#)

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