

Original BMW Accessory. Installation Instructions.



Rear-view camera retrofit BMW 3 Series Touring (E91)

These installation instructions only apply to cars with an on-board monitor.

Retrofit kit No. 66 21 0 406 999 Additional kit LVDS converter
 66 21 0 407 001 Rear-view camera retrofit kit

Installation time

The installation time is approx 3.5 -4.0 hours, but this may vary depending on the condition of the car and the equipment in it.

Important information

These installation instructions are primarily designed for use within the BMW dealership organisation and by authorised BMW service companies.

In any event the target group for these installation instructions is specialist personnel trained on BMW cars with the appropriate specialist knowledge.

All work must be completed using the latest BMW repair manuals, circuit diagrams, servicing manuals and work instructions in a rational order using the prescribed tools (special tools) and observing current health and safety regulations.

To avoid unnecessary extra work and/or costs, if any installation or function problems occur, after a brief troubleshooting session (approx. 0.5 hours), contact the following:

- 1. Either your national subsidiary or your regional office**
- 2. The Support team via the Aftersales Assistance Portal (ASAP) using the optional technical parts support application.**

Specify the chassis number and the part number of the installed retrofit kit and give a precise description of the problem.

Do not archive the hard copy of these installation instructions since daily updates are made by ASAP.

Pictograms



Denotes instructions that draw your attention to special features.



Denotes the end of the instruction or other text.

Subject to technical modifications.

Installation information

Ensure that the cables/lines are not kinked or damaged as you install them in the car.
The costs incurred as a result of this will not be reimbursed by BMW AG.

Additional cables/lines that you install must be secured with cable ties.

If the specified PIN chambers are occupied, bridges, double crimps or twin-lead terminals must be used.

All the figures show LHD cars, proceed in exactly the same way on RHD cars.

Ordering instructions

The additional LVDS converter is not included in the retrofit kit and must be ordered separately (see EPC for part number and further details).

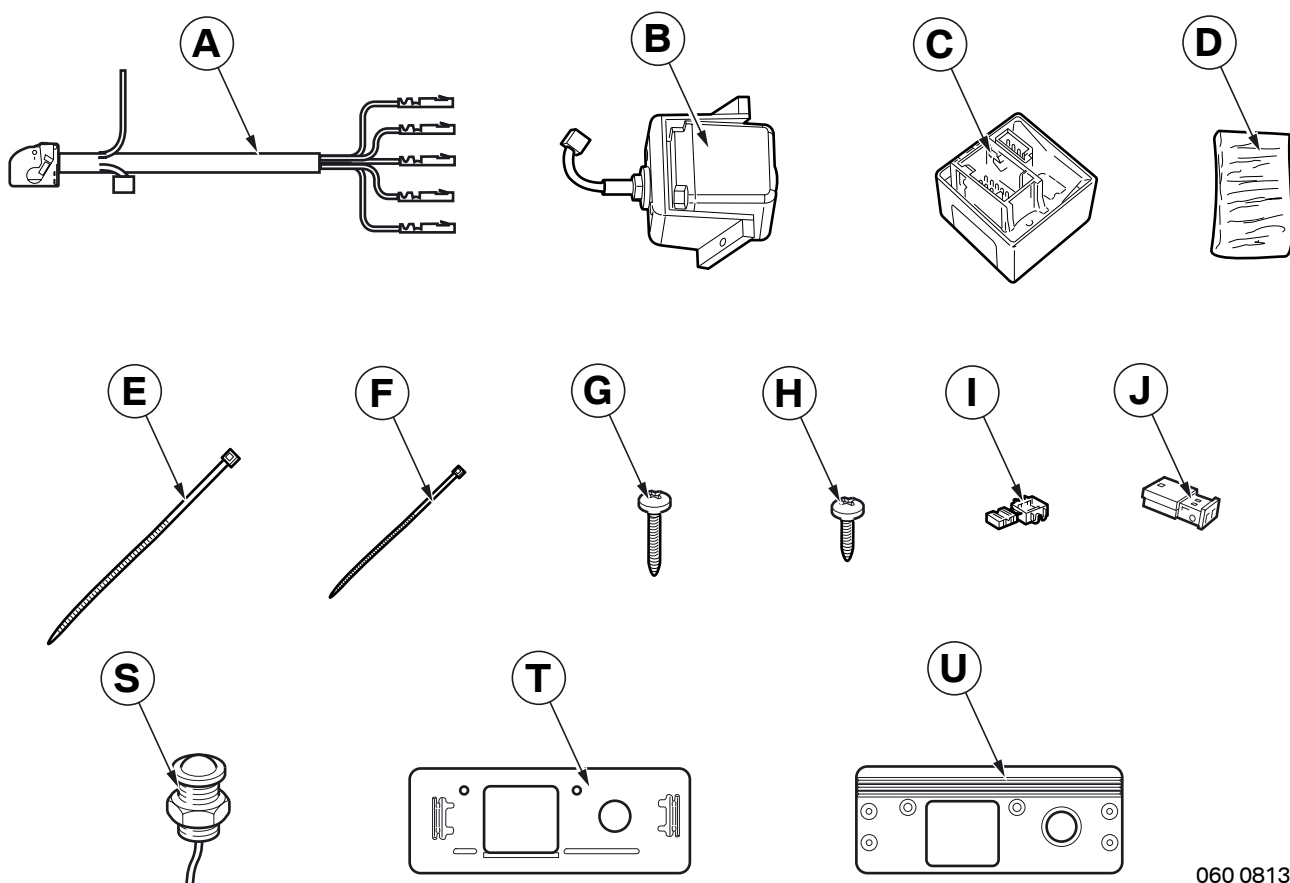
Special tools required

00 9 310, Installation wedges

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1. Rear-view camera parts list

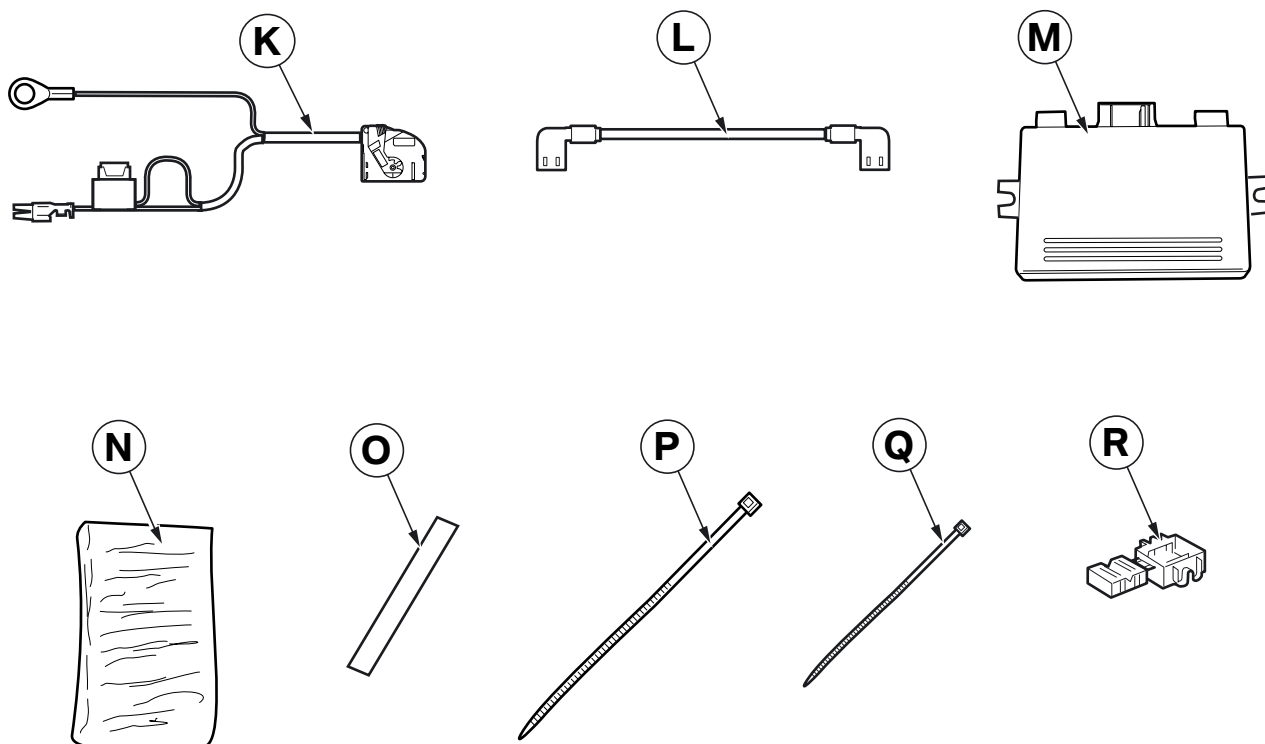


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Legend

- A** Rear-view camera wiring harness
- B** Rear-view camera
- C** Control module
- D** Protective strip
- E** Cable tie 292 x 4.8 mm
- F** Cable tie 200 x 3.6 mm (20x)
- G** Philips screw 3.5 x 16 (6x)
- H** Philips screw 3.5 x 9.5 mm (4x)
- I** Miniature connector (5x)
- J** 2-pin plug casing (not required)
- S** Button
- T** Mounting plate
- U** Mounting plate (not required)

2. LVDS converter parts list



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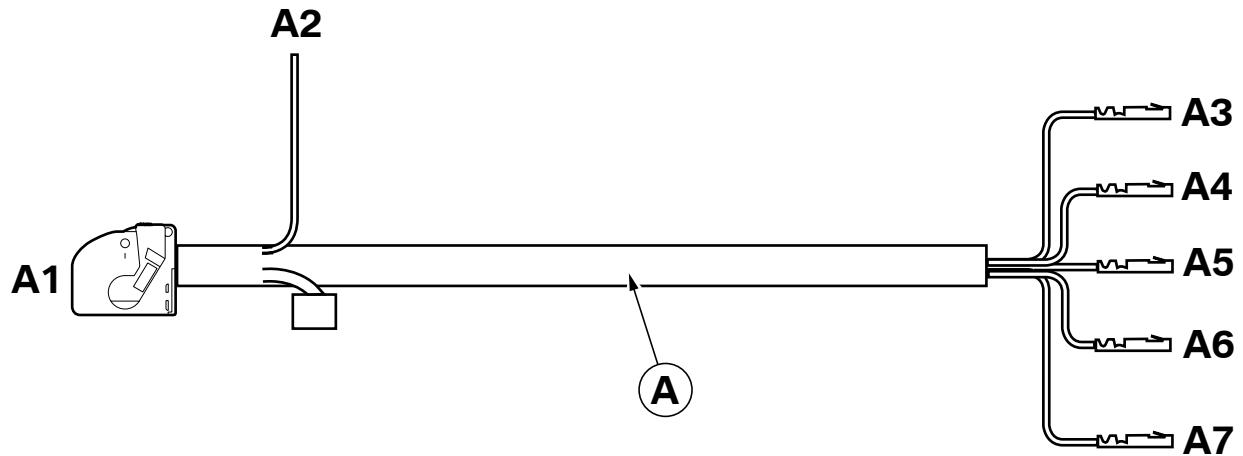
Legend

- K** LVDS wiring harness
- L** Connection cable
- M** LVDS converter
- N** Protective strip (not required)
- O** Sealing strip
- P** Cable tie 445 x 4.8 mm (2x)
- Q** Cable tie 200 x 3.6 mm (10x)
- R** Miniature connector (2x)

3. Preparations

	TIS No.
Conduct a brief test	---
Disconnect negative pole of battery	12 00 ...
The following components must be removed first of all	
Pedal trim	51 45 185
Décor trim on right of instrument panel	51 45 380
Heating/air-conditioning control	64 11 377
Car Communication Computer (CCC) or Audio system controller (ASK)	65 83 010 65 12 200
Glove compartment	51 16 360
Release fuse holder	---
Door sill strip, front (interior) right	51 47 000
Side footwell trim on right A pillar	51 43 070
Door sill strip, rear (interior) right	51 47 030
Trim for door pillar at the bottom right	51 43 150
Backrest side section, rear seat, right	52 26 008
Boot wheel arch trim flap, right	---
Roof pillar trim, rear (D pillar) right	51 43 252
Lower the rear headlining on the right	---
Boot lid trim, external and internal on the right	---
Boot lid hinge trim, right	---
Trim for the boot lid	51 49 000
Button for opening the boot lid, no longer required	51 24 145

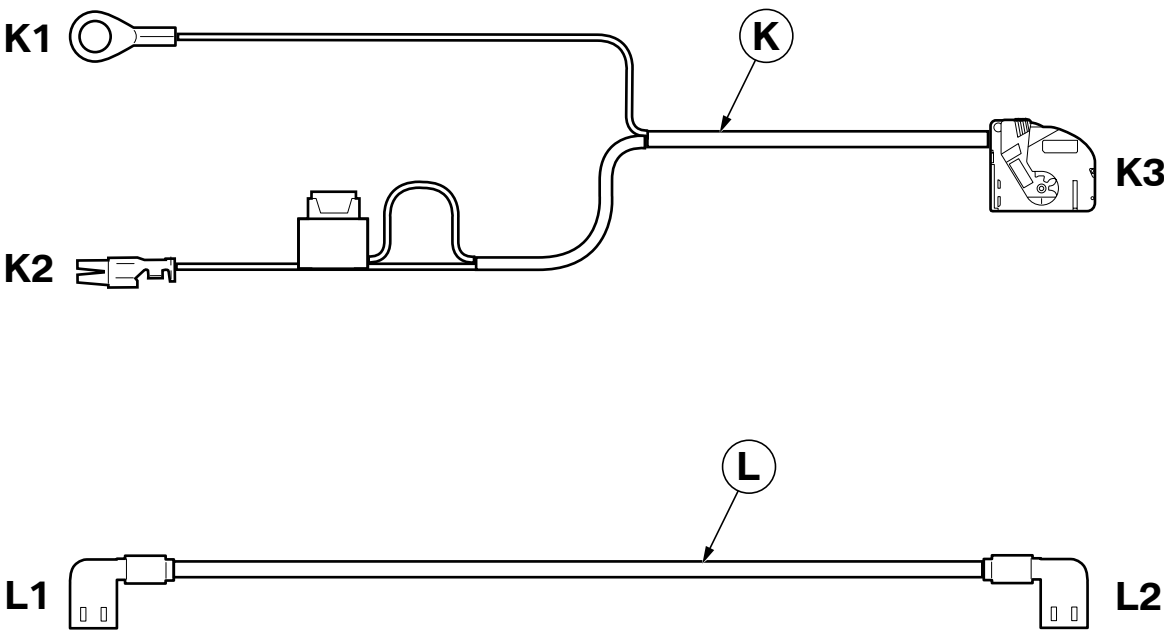
4. Rear-view camera connection diagram



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Branch/ Item	Designation	Signal	Cable colour / Cross-section	Connection location in the car	Abbreviation / Slot
A	Rear-view camera wiring harness	---	---	---	---
A1	12-pin SW socket casing	---	---	To control module C	---
A2	Cable open	RFS	GN 0.35 mm ²	With miniature connector I to SW/BL cable from right reversing light	X328 PIN 1
A3	Socket contact	Video +	Transparent 0.14 mm ²	To branch K3 on the LVDS wiring harness	PIN 9
A4	Socket contact	Video -	BR/SW 0.35 mm ²	To branch K3 on the LVDS wiring harness	PIN 18
A5	Socket contact	Terminal 30g	RT 0.75 mm ²	To branch K3 on the LVDS wiring harness	PIN 4
A6	Socket contact	Terminal 31	BR 0.75 mm ²	To branch K3 on the LVDS wiring harness	PIN 6
A7	Socket contact	RFSg	GN 0.5 mm ²	To branch K3 on the LVDS wiring harness	PIN 10

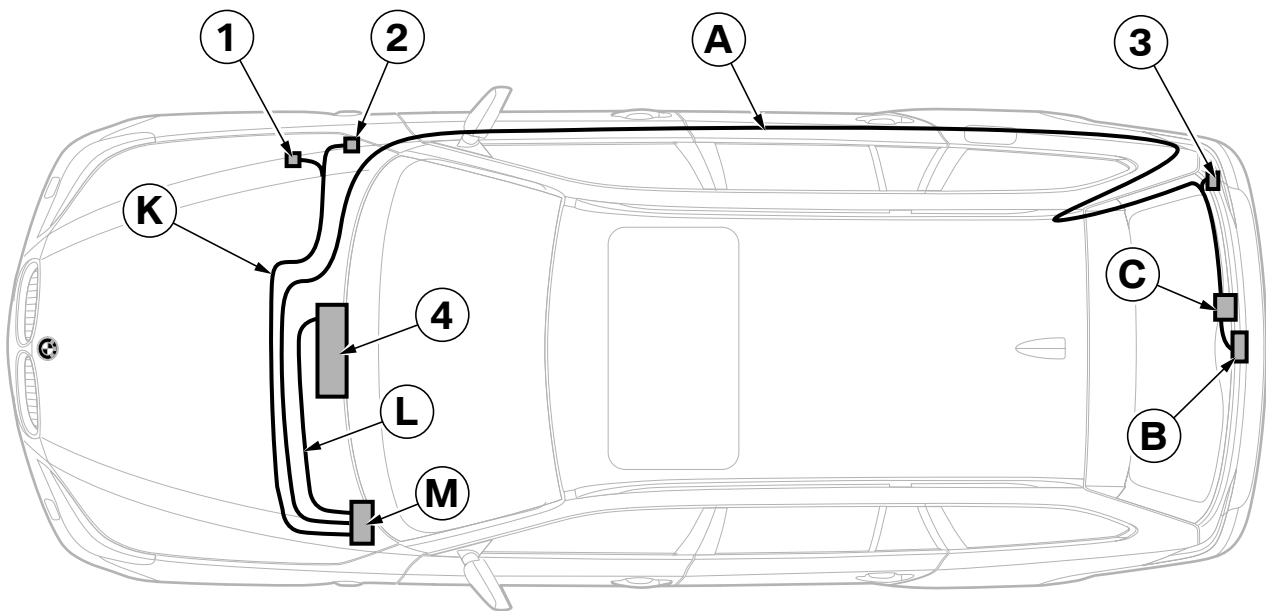
5. LVDS converter connection diagram



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Branch/ Item	Designation	Signal	Cable colour / Cross-section	Connection location in the car	Abbreviation / Slot
K	LVDS wiring harness	---	---	---	---
K1	Eyelet M6	Terminal 31	BR 0.75 mm ²	To joint connector in passenger side footwell	X490
K2	Double flat spring contact	Terminal 30g	RT 0.75 mm ²	To fuse holder with miniature connector R to RT/ WS cable	X110003 PIN 3
K3	18-pin BL socket casing	---	---	To LVDS converter M	---
L	Connection cable	---	---	---	---
L1	10-pin socket casing, VI	---	---	To LVDS converter M	---
L2	10-pin WS socket casing	---	---	Cars with ASK only To ASK Cars with CCC only To CCC with coding removed	X13820 X13820

6. Installation and cabling diagram



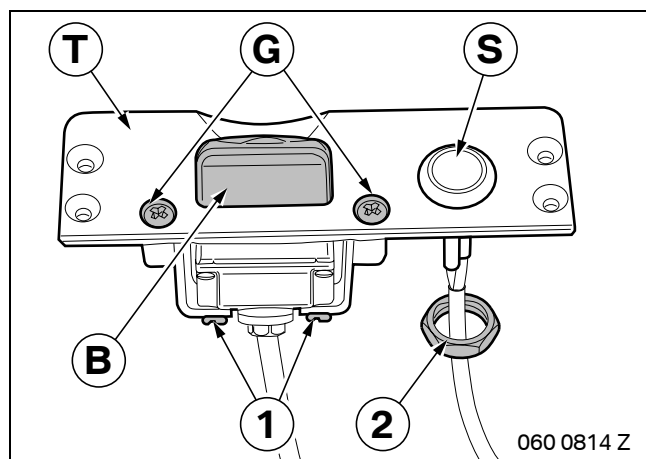
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Legend

- A** Rear-view camera wiring harness
- B** Rear-view camera with button
- C** Control module
- K** LVDS wiring harness
- L** Connection cable
- M** LVDS converter

- 1** Terminal 30g tap on fuse holder, plug **X11003**
- 2** Terminal 31 tap on joint connector **X490**
- 3** RFS tap on reversing light, plug **X328**
- 4** ASK or CCC, plug **X13820**

7. To install the rear-view camera with button and control module

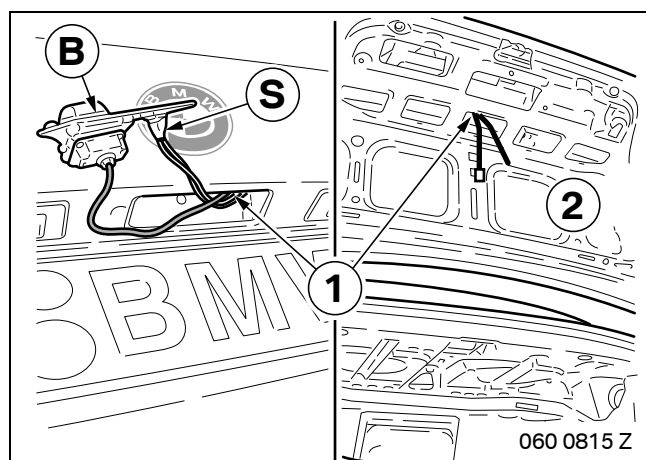


There must be a seal between the mounting plate **T** and the rear-view camera **B**. ◀

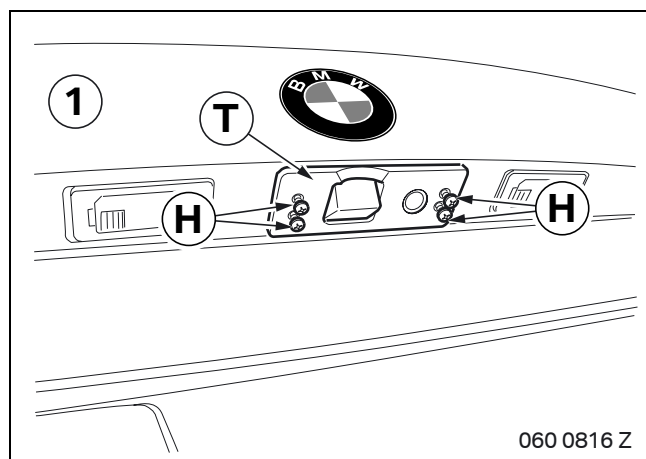
Secure the rear-view camera **B** on the mounting plate **T** with screws **G**.

Align the rear-view camera **B** using the screws (1) if necessary, at right-angles to the mounting plate **T**.

Insert the button **S** into the mounting plate **T** and secure it with a union nut (2).

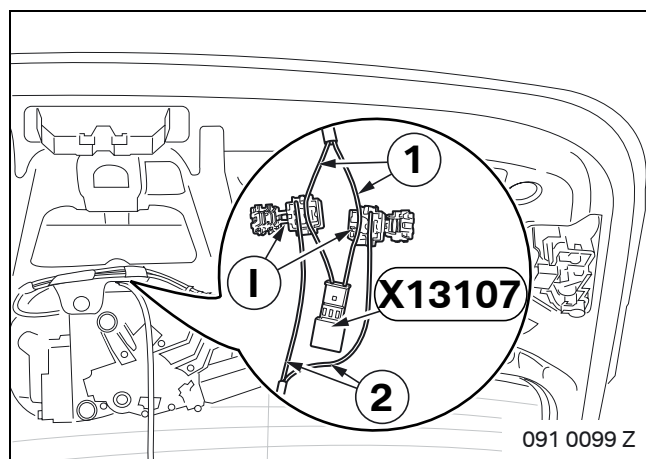


Route the cables (1) from the rear-view camera **B** and button **S** to the boot lid (2).



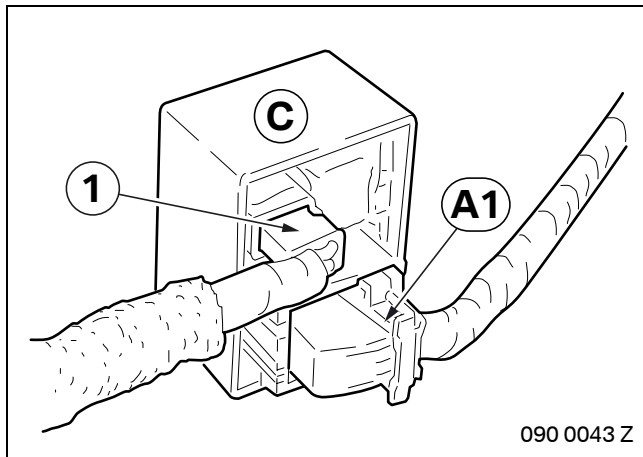
The area between the mounting plate **T** and boot lid (1) must be sealed. ◀

Insert mounting plate **T** into the opening in the boot lid (1) and use screws **H** to secure it.

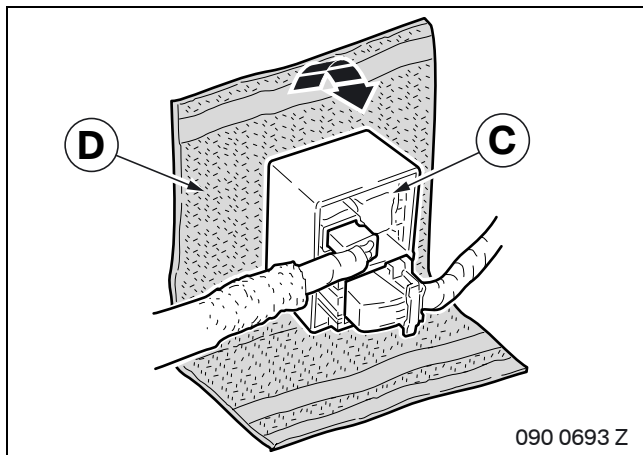


Connect the cables (2) from the button **S** to the cables (1) from plug **X13107** (2-pin SW) using miniature connectors **I**.

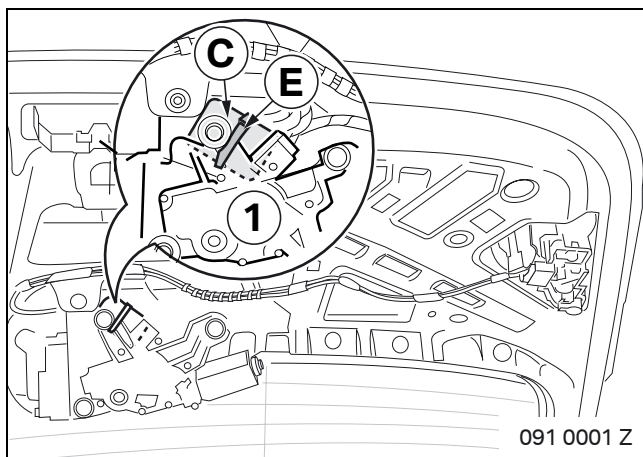
7. To install the rear-view camera with button and control module



Connect the connection plug (1) of the rear-view camera and branch **A1** (SW 12-pin plug) to control module **C**.

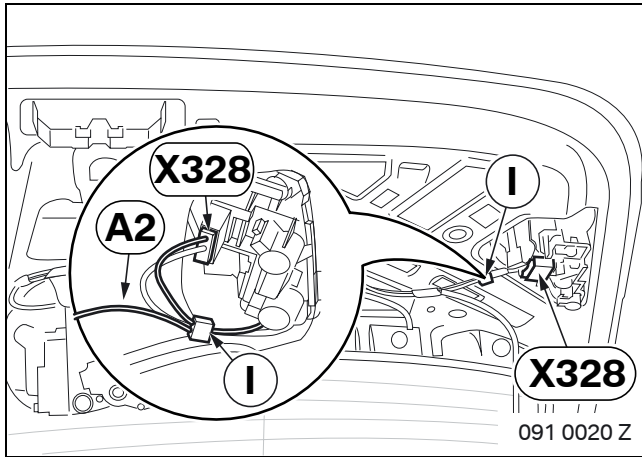


Affix protective strip **D** to control module **C**.
Cut off any excess lengths.

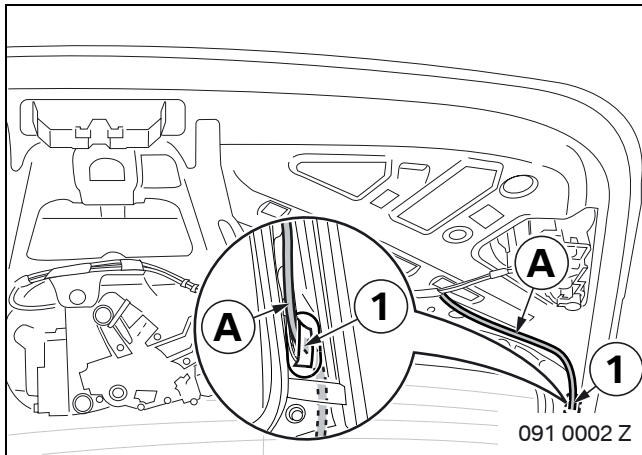


Use cable tie **E** to attach the control module **C** to the wiper motor (1).

8. To install and connect the rear-view camera wiring harness

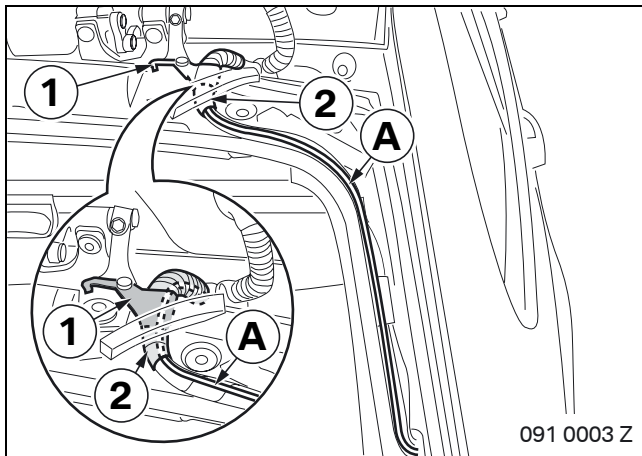


Use a miniature connector **I** to connect branch **A2**, GN cable, to the SW/BL cable from plug **X328** (PIN 1).



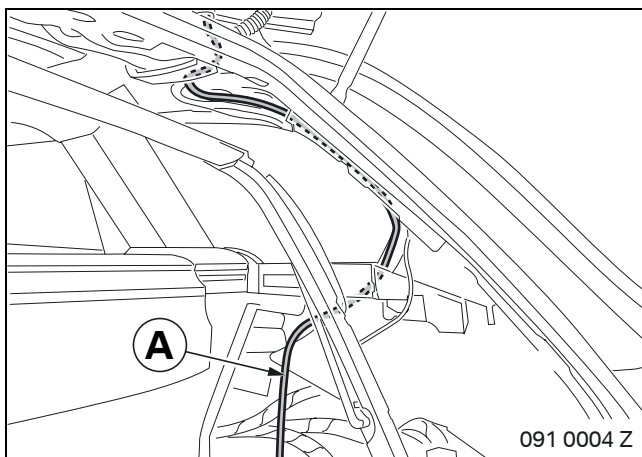
Route wiring harness **A** through the grommet (1) in the boot lid.

Seal the grommet (1).



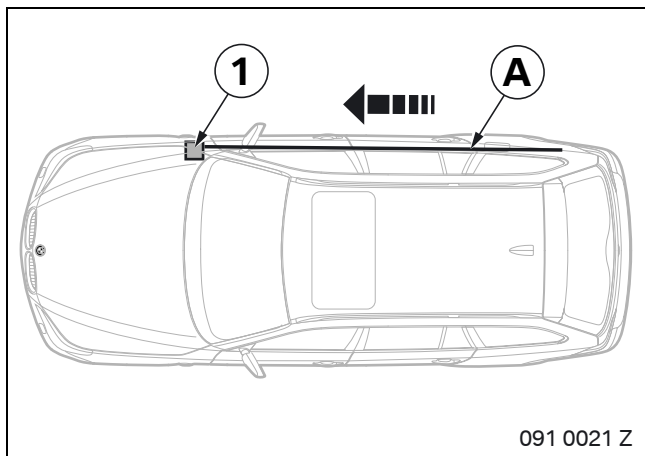
Unscrew the holding plate (1).

Thread the rear-view camera wiring harness **A** through the cable grommet (2).

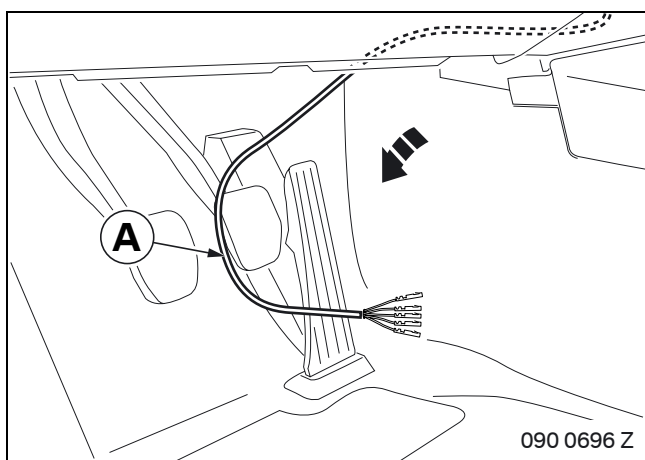


Route rear-view camera wiring harness **A** along the standard wiring harness to the boot.

8. To install and connect the rear-view camera wiring harness

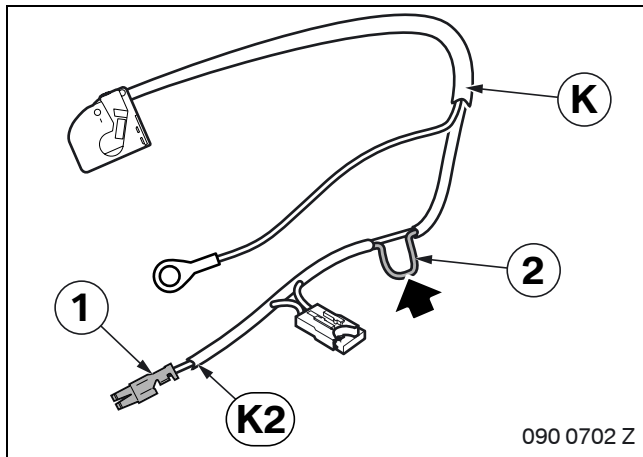


Route the rear-view camera wiring harness **A** along the standard wiring harness into the footwell on the passenger's side (1).



Route the rear-view camera wiring harness **A** along the standard wiring harness into the footwell on the driver's side.

9. To install and connect the LVDS wiring harness



Prepare the LVDS wiring harness **K** as follows:

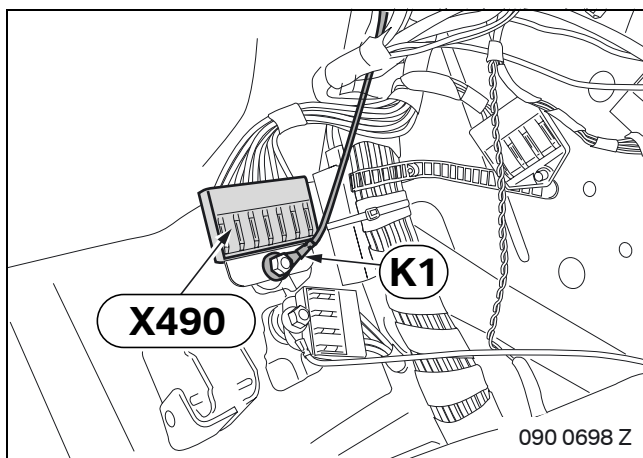
- Remove contact (1) from branch **K2**, RT cable

Cars with ASK only

- Cut the cable loop (2), GE cable
- Insulate the cut cables

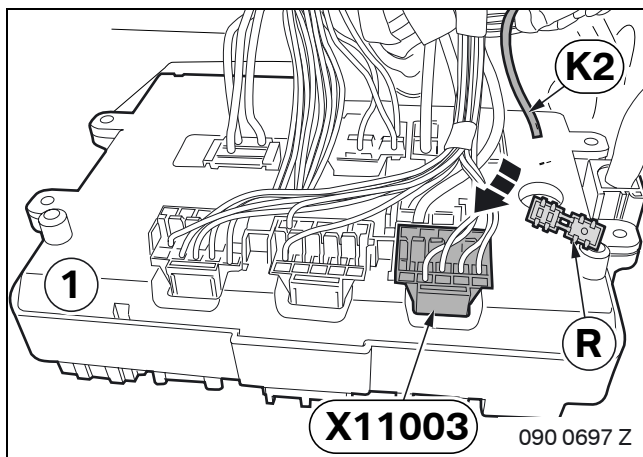
All cars

Secure branch **K1**, BR cable, to joint connector **X490**, BR cable.

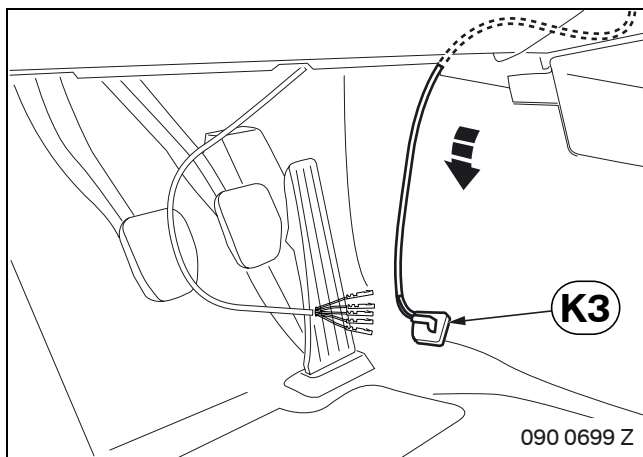


Route branch **K2**, RT cable, to plug **X11003** (15-pin BL) on the fuse holder (1).

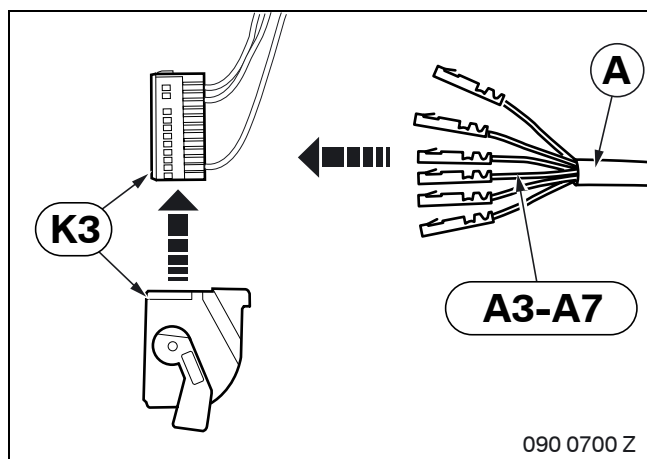
Use a miniature connector **R** to connect branch **K2**, to the RTWS cable from plug **X11003** (PIN 3).



Route branch **K3** (18-pin BL plug) along the standard wiring harness to the footwell on the driver's side.



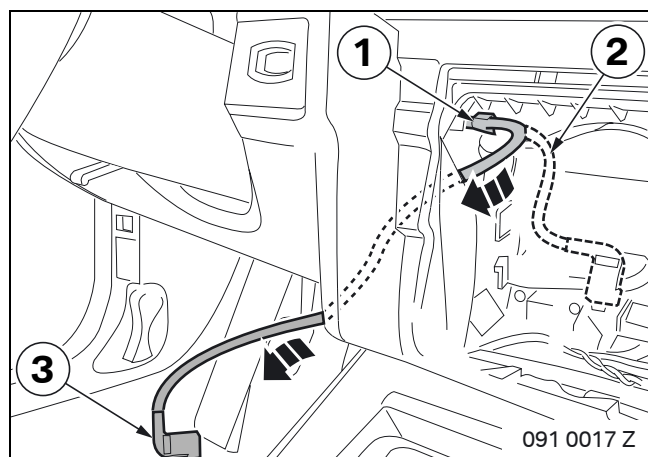
9. To install and connect the LVDS wiring harness



Connect the rear-view camera wiring harness **A** to branch **K3** (18-pin BL plug) as follows:

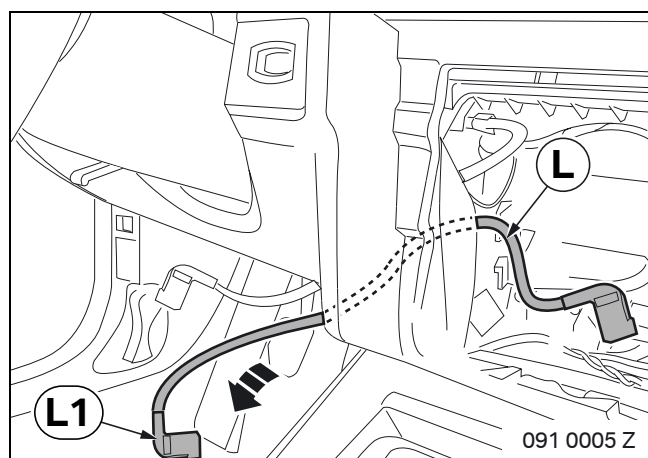
- Branch **A3**, transparent cable, to PIN 9
- Branch **A4**, BL/SW cable, to PIN 18
- Branch **A5**, RT cable, to PIN 4
- Branch **A6**, brown cable, to PIN 6
- Branch **A7**, GN cable, to PIN 10

10. To install and connect the connection cable

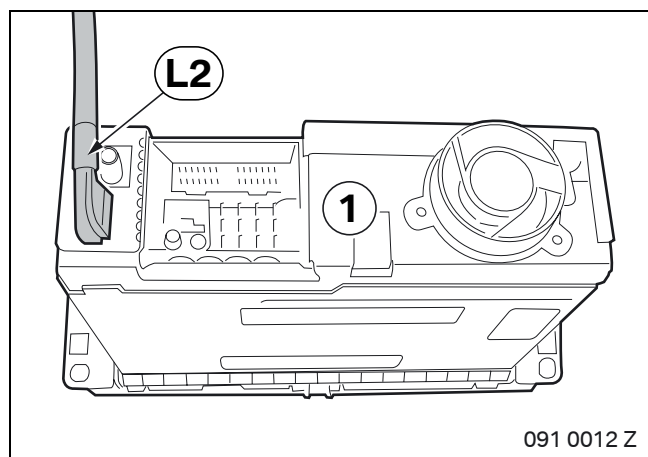


Disconnect the existing signal cable (2) from the cable holder (1).

Route the plug (3) on the existing signal cable (2) into the footwell on the driver's side.

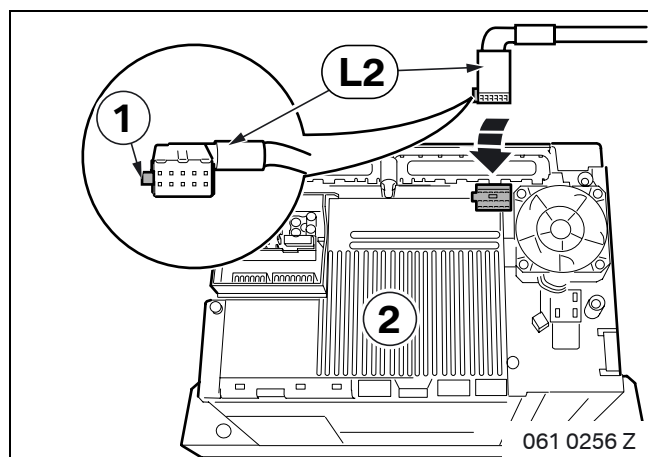


Connect branch **L1** (10-pin VI plug) on the connection cable **L** to the footwell on the driver's side.



Cars with ASK only

Connect branch **L2** (10-pin WS plug) to ASK (1).

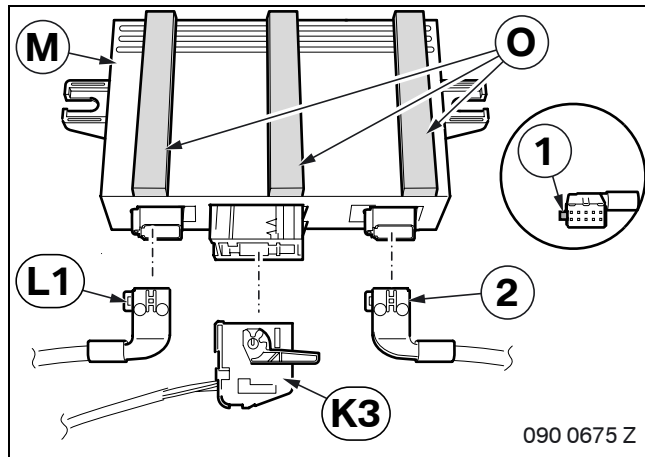


Cars with CCC only

Remove coding (1) from branch **L2** (10-pin WS plug).

Connect branch **L2** to CCC (S) as shown.

11. To install and connect the LVDS converter



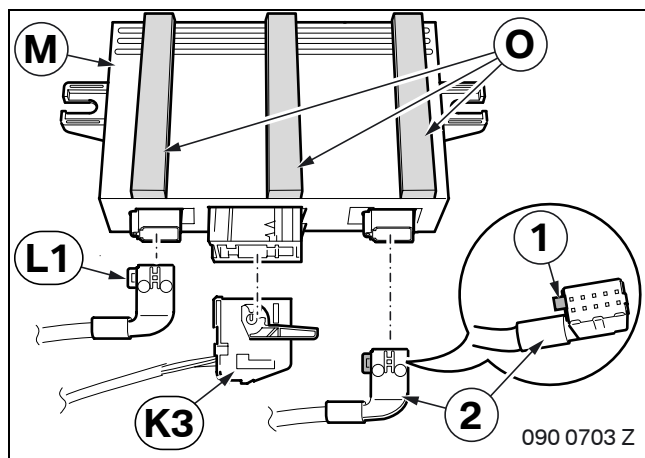
Cars with ASK only

Use the coding (1) on the plugs to connect them correctly. ◀

Connect the plugs to the LVDS converter **M**:

- Plug (2) on the existing signal cable (10-pin WS)
- Branch **K3** (18-pin BL plug)
- Branch **L1** (10-pin VI plug)

Affix sealing strips **O** to the LVDS converter **M**.



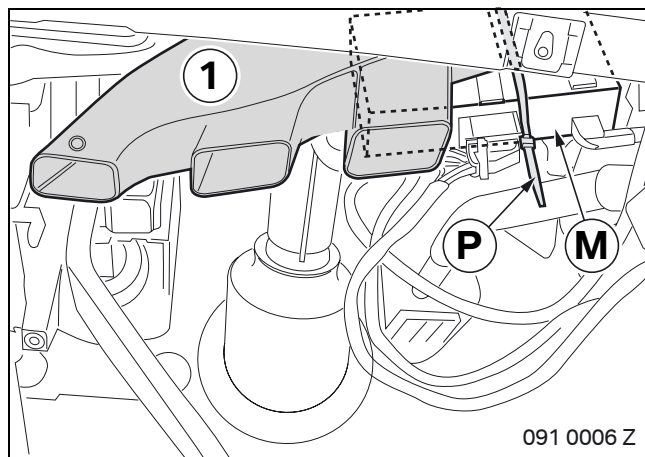
Cars with CCC only

Remove coding (1) from plug (2) on the existing signal cable (10-pin BL).

Connect the plugs to the LVDS converter **M** as shown:

- Plug (2) on the existing signal cable (10-pin BL)
- Branch **K3** (18-pin BL plug)
- Branch **L1** (10-pin VI plug)

Affix sealing strips **O** to the LVDS converter **M**.



All cars

Secure LVDS converter **M** to the rear of the heating duct (1) using cable ties **P**.

Ensure that the steering column can still move freely as required. ◀

12. Concluding work and coding

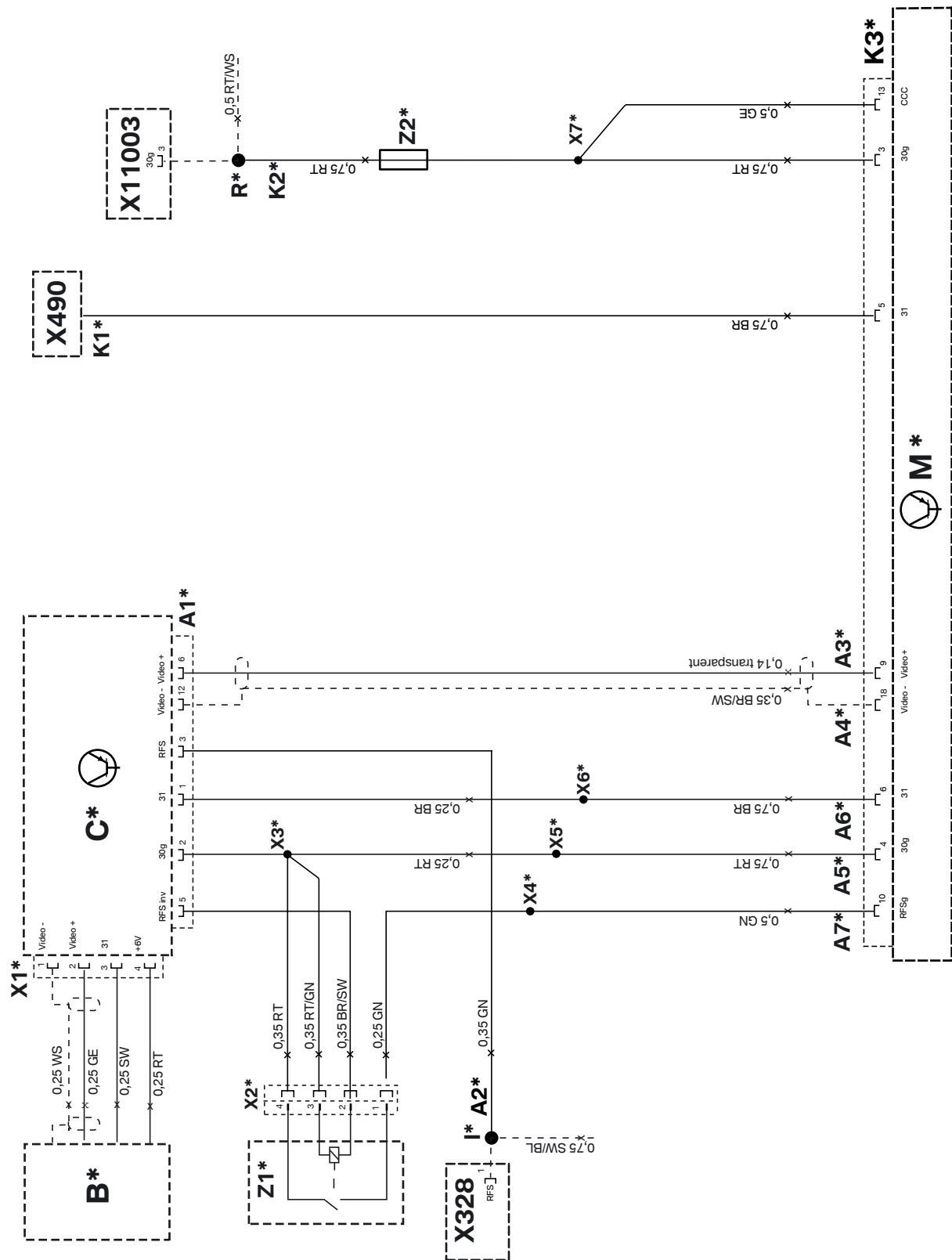
This retrofit system does not require coding.

- Connect the battery
- Conduct a brief test

Check the function of the rear-view camera as follows:

- Switch on the ignition
- Engage reverse, an image must appear on the on-board monitor
- Disengage reverse gear; the on-board monitor must switch off after approx. 5 seconds
- Re-assemble the car

13. Circuit diagram



13. Circuit diagram

Legend

A1*	SW 12-pin plug
A2*	Open cable, RFS terminal pick-up
A3*	Socket contact
A4*	Socket contact
A5*	Socket contact
A6*	Socket contact
A7*	Socket contact
B*	Rear-view camera
C*	Control module
I*	Miniature connector
K1*	Ring eyelet M6, terminal 31 pick-up
K2*	Double flat spring, terminal 30g tap
K3*	18-pin BL plug
M*	LVDS converter
R*	Miniature connector
X1*	SW 4-pin plug
X2*	Miniature relay plug connector, 4-pin WS
X3*	Terminal 30 connector
X4*	Terminal RFSg connector
X5*	Terminal 30g connector
X6*	Terminal 31 connector
X7*	Terminal 30g connector
X328	4-pin SW plug, terminal RFS tap
X490	Joint connector, terminal 31 tap
X11003	15-pin BL plug, terminal 30g tap
Z1*	Miniature relay
Z2*	Fusible link 1 A

All the designations marked with an asterisk (*) apply only to these installation instructions or this circuit diagram.

Cable colours

BL	Blue	RT	Red
BR	Brown	SW	Black
GE	Yellow	VI	Violet
GN	Green	WS	White