

# Parts and Accessories. Installation Instructions.



## Front camera retrofit BMW 7 Series (E65 and E66)

**These installation instructions are only valid for cars with SA 609 (navigation system)**

**Retrofit kit No.**            66 21 0 301 009  
                                     66 21 0 303 090

### Installation time

The installation time is approx 4,0 - 4,5 hours, but this may vary depending on the condition of the car and the equipment in it. If the switchbox additional kit has already been installed, the installation time will be reduced by approx. 1,0 hours.

### 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), an inquiry is to be sent straight away to the technical parts support via the Aftersales Assistance Portal (ASAP), quoting the chassis number, the part number of the retrofit kit and a precise description of the problem.**

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

See ASAP for details of the pictograms.

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.

Before you install the retrofit system, test the control module status with the CIP (coding, customising, programming) test program. If the test detects incorrect statuses in one or more control modules, these must be updated first using the "Load software" function.

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

## Installation information

Due to the large number of bumper trims, the installation of the front camera cannot be shown in detail for every equipment variant. The installation work is to be carried out in the same way.

## Ordering instructions

The additional switchbox kit (see EPC for part numbers and versions) does not form part of the retrofit kit and must be ordered separately if there is no rear-view camera installed in the car.

### Pictograms



Denotes instructions that draw your attention to dangers.



Denotes instructions that draw your attention to special features.

◀ denotes the end of the instruction or other text.

Subject to technical modifications.

## List of special equipment

The following special equipment must be taken into consideration when installing the retrofit kit:

**SA 601** TV function

**SA 602** On-board monitor with TV function

**SA 609** Navigation system

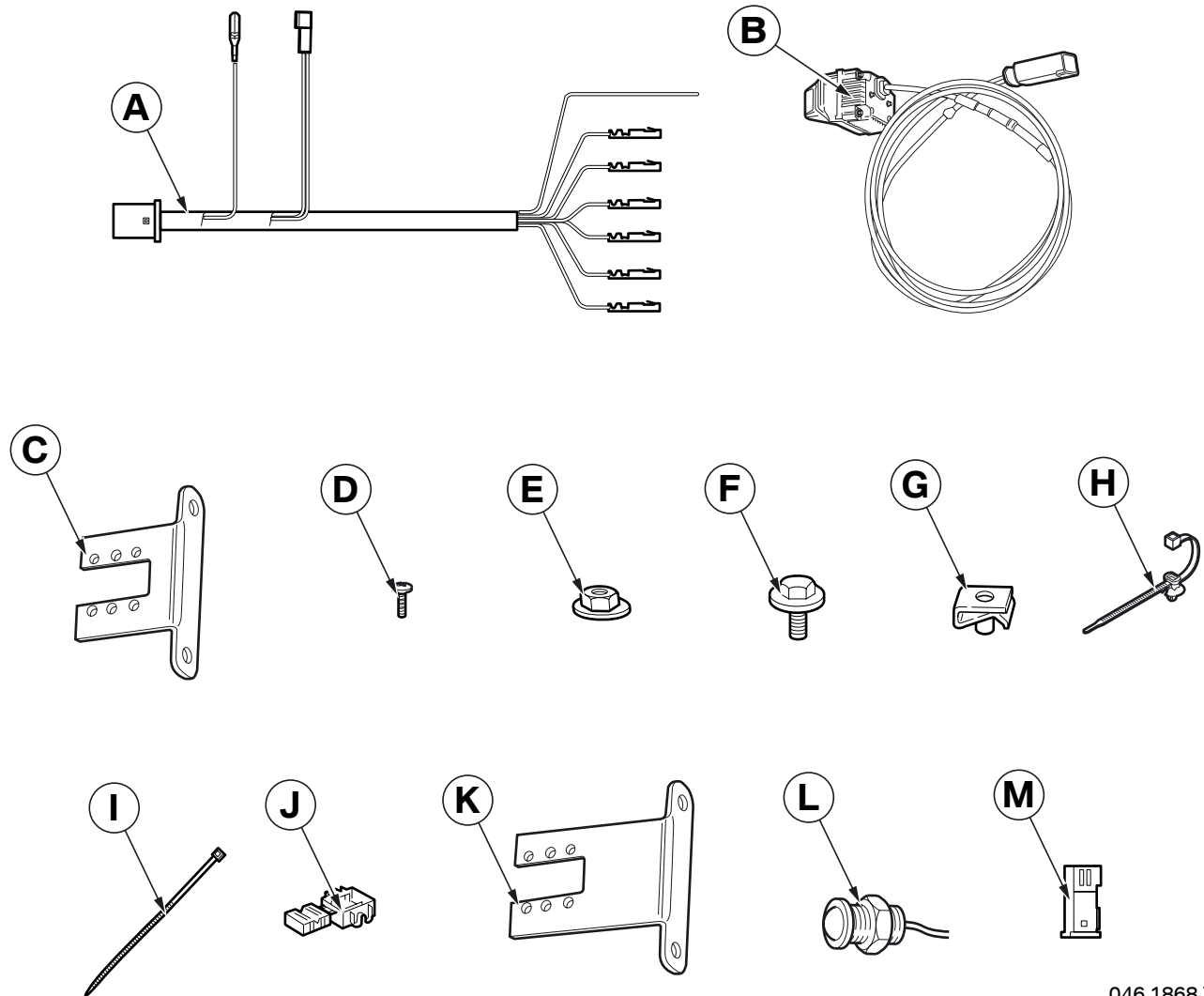
## Special tools required

None

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## 1. Front camera retrofit kit parts list

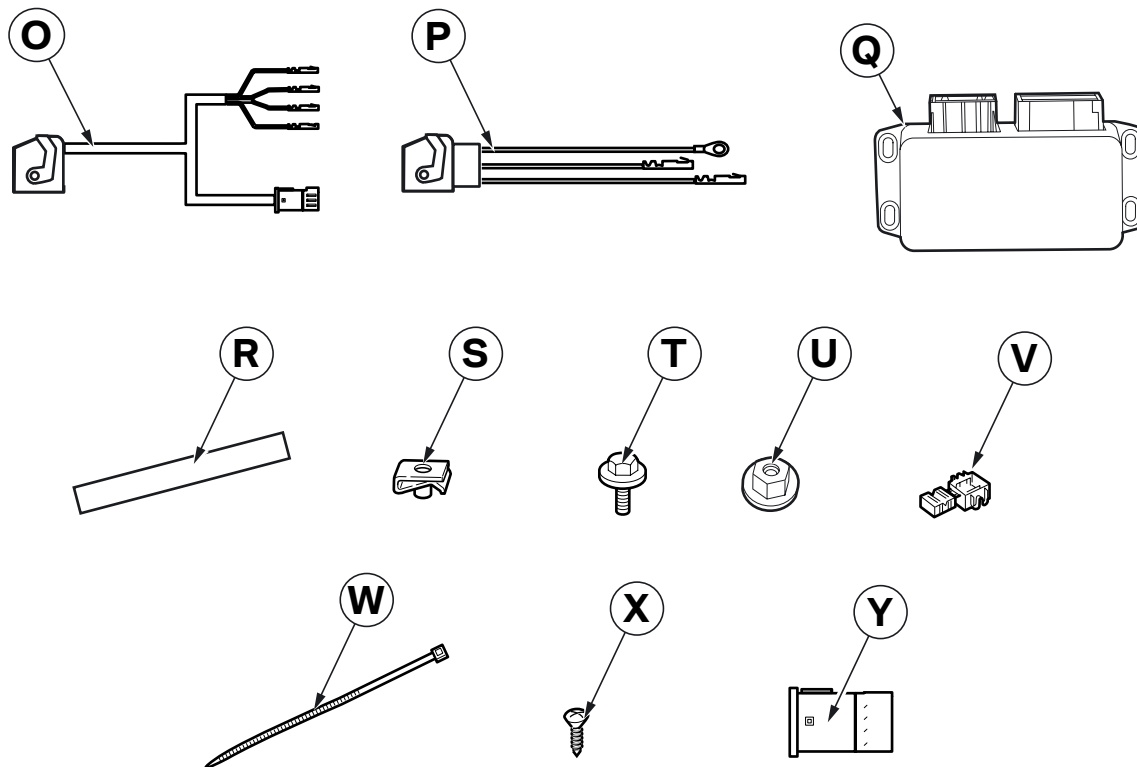


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### Legend

A	Wiring harness	H	Cable tie holder (2x)
B	Front camera	I	Cable tie 200 x 3.6 mm (20x)
C	Holder	J	Miniature connector
D	Philips screw 2.5 x 5 mm (4x)	K	Alternative holder
E	Hexagonal nut with washer M5 (2x)	L	Button
F	Hexagonal screw with washer M5 x14 mm (2x)	M	Plug casing
G	Speed nut M5 (2x, not required)	N	Part not required

## 2. Additional switchbox kit parts list



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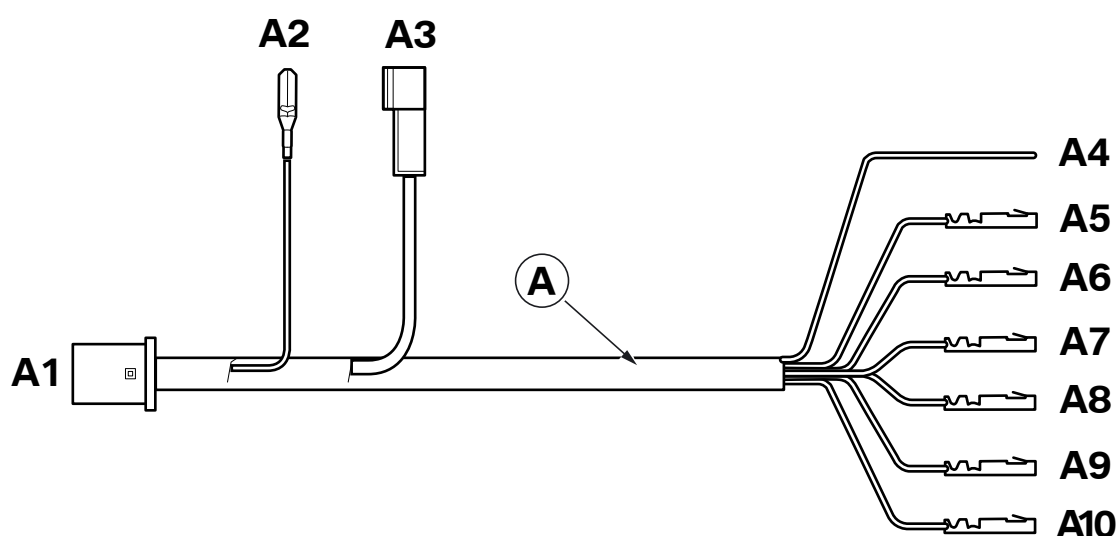
### Legend

- O Adapter cable
- P Supply cable
- Q Switchbox
- R Sealing strip (2x)
- S Speed nut M5 (4x, not required)
- T Hexagonal screw with washer M5 x 14 mm (4x, not required)
- U Hexagonal nut with washer M5 (4x, not required)
- V Miniature connector (3x)
- W Cable tie 200 x 3.6 mm (15x)
- X Fillister head screw ST 4.2 x 13 mm (4x)
- Y 4-pin BL socket casing

### 3. Preparations

	TIS No.
Conduct a brief test	---
Disconnect the negative pole of the battery	12 00 ...
<b>The following components must be removed first of all</b>	
Front bumper trim	51 11 156
Microfilter casing right	---
E box cover	---
Glove compartment	51 16 366
Release the front fuse holder	---
Pedal trim	51 45 185
Steering wheel	32 34 000
Bottom section of steering column trim	32 31 020
A pillar trim at the bottom left	51 43 070
Door sill strip (front left)	51 47 000
Door sill strip (rear left)	51 47 030
Seat bench	52 24 ...
Rear left backrest	52 24 ...
Boot floor trim	51 47 101
Left boot wheel arch trim	51 47 151
<b>Only cars without an existing rear-view camera</b>	
Right boot – wheel arch trim	51 47 161
Rear closing panel trim	---
Navigation computer	65 90 510

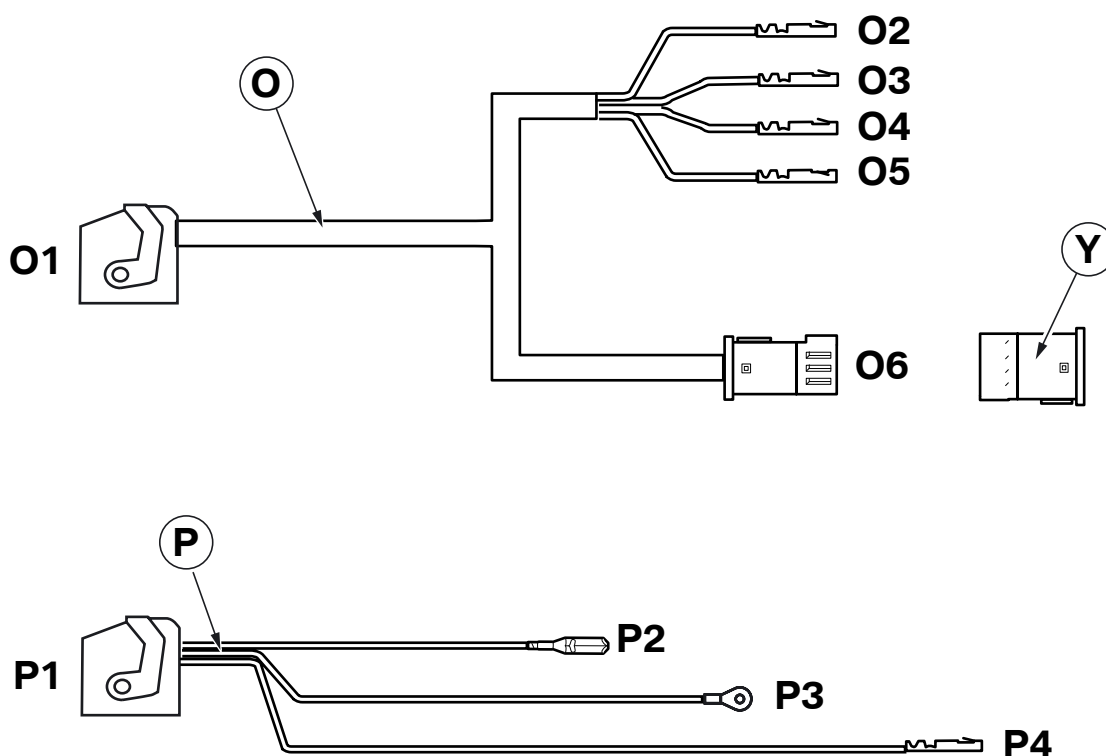
## 4. Front camera retrofit kit connection diagram



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Branch/ Item	Description	Signal	Cable colour / Cross-section	Connection location in the car	Abbreviation / Slot
A	Wiring harness	---	---	---	---
A1	Black 4-pin socket casing	---	---	To the front camera <b>B</b>	---
A2	Joint connector contact	Terminal TAA	SW/WS 0.50 mm <sup>2</sup>	To joint connector, GE/WS cables, behind the glove compartment	X10184
A3	Black 2-pin socket casing	---	---	With plug casing <b>M</b> to button <b>L</b>	---
A4	Cable open	Terminal R	VI/WS 0.35 mm <sup>2</sup>	With miniature connector to supply cable <b>P</b> , VI/WS cable 0.50 mm <sup>2</sup>	PIN 10
A5	Socket contact	Video +	WS 0.35 mm <sup>2</sup>	To branch <b>P1</b>	PIN 21
A6	Socket contact	Video -	SW 0.35 mm <sup>2</sup>	To branch <b>P1</b>	PIN 8
A7	Socket contact	Terminal 30	RT 0.75 mm <sup>2</sup>	To branch <b>P1</b>	PIN 22
A8	Socket contact	Terminal 31	BR 0.75 mm <sup>2</sup>	To branch <b>P1</b>	PIN 9
A9	Socket contact	Terminal R	VI/WS 0.35 mm <sup>2</sup>	To branch <b>P1</b>	PIN 7
A10	Socket contact	DFAHL terminal	SW/WS 0.50 mm <sup>2</sup>	To branch <b>P1</b>	PIN 20

## 5. Additional switchbox connection diagram

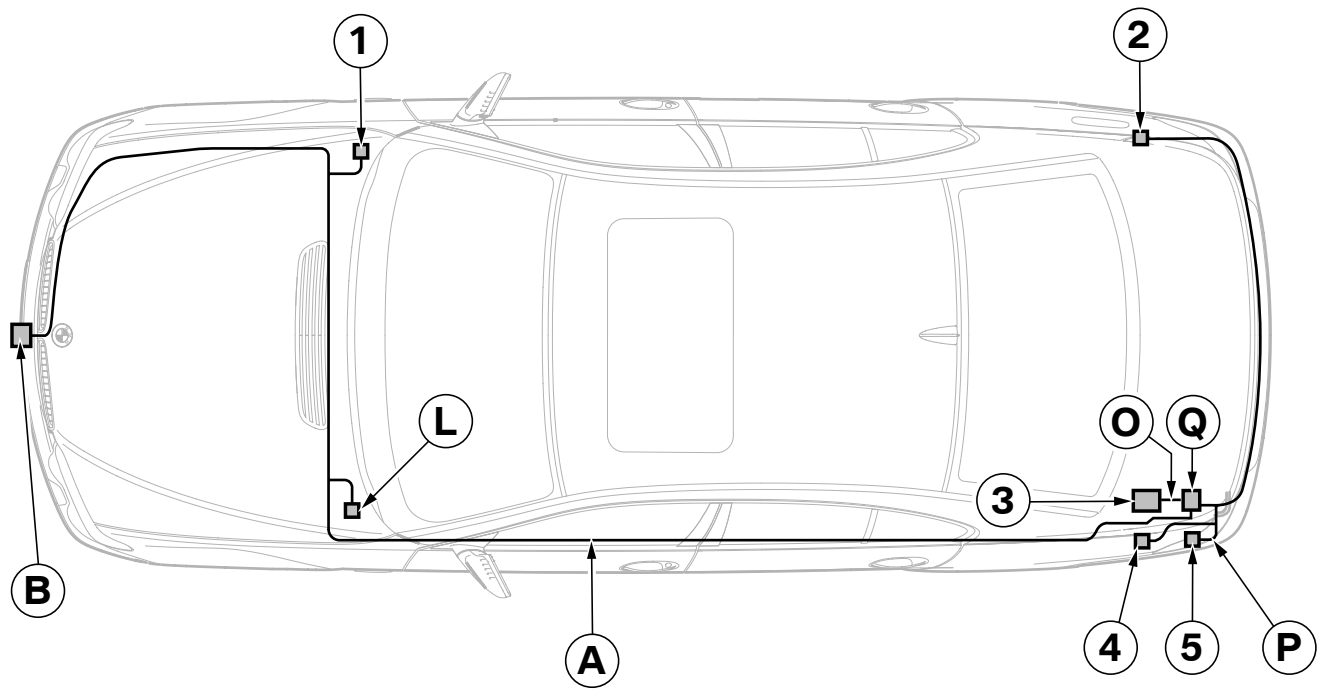


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Branch/ Item	Description	Signal	Cable colour / Cross-section	Connection location in the car	Abbreviation / Slot
O	Adapter cable	---	---	---	---
O1	18-pin natural socket casing	---	---	To the switchbox <b>Q</b>	---
O2	Socket contact	NAVR	WS/RT 0.35 mm <sup>2</sup>	To navigation computer plug	X1312 PIN 3
O3	Socket contact	NAVH	WS/GN 0.35 mm <sup>2</sup>	To navigation computer plug	X1312 PIN 4
O4	Socket contact	NAVB	VI 0.35 mm <sup>2</sup>	To navigation computer plug	X1312 PIN 5
O5	Socket contact	NAV_31	Shield	To navigation computer plug	X1312 PIN 13
O6	4-pin BL plug casing	---	---	To disconnected cables in car, with socket casing <b>Y</b>	---
P	Supply cable	---	---	---	---
P1	26-pin BL socket casing	---	---	To the switchbox <b>Q</b>	---
P2	Joint connector contact	Terminal 30	RT 0.75 mm <sup>2</sup>	To joint connector, RT/WS cables, behind the module holder	X1889
P3	Eyelet M6	Terminal 31	BR 0.75 mm <sup>2</sup>	To joint connector, BR and BR/SW cables, below the left tail light	X13094
P4	Socket contact	Terminal R	VI/WS 0.50 mm <sup>2</sup>	To the power module	X1856 PIN 18
Y	4-pin BL socket casing	---	---	To branch <b>O6</b>	---



## 6. Installation and cabling diagram



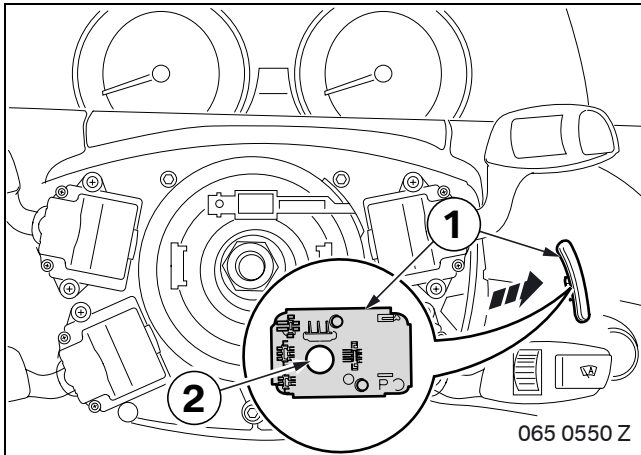
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### Legend

- A Wiring harness
- B Front camera
- L Button
- O Adapter cable
- P Supply cable
- Q Switchbox

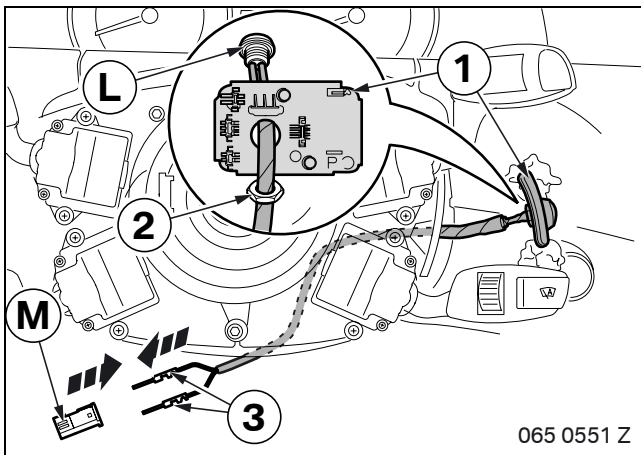
- 1 Terminal TAA pick-up **X10184**
- 2 Terminal R pick-up on power module, plug **X1856**
- 3 Navigation computer
- 4 Terminal 30 pick-up, **X1889**
- 5 Terminal 31 pick-up, **X13094**

## 7. To install the button



Remove the trim (1) and mark the hole position (2) as shown.

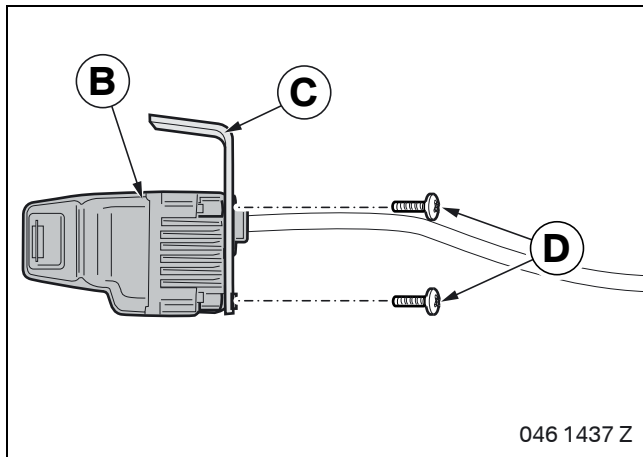
Drill through the trim (1) at the hole position (2) using a 14 mm step drill bit.



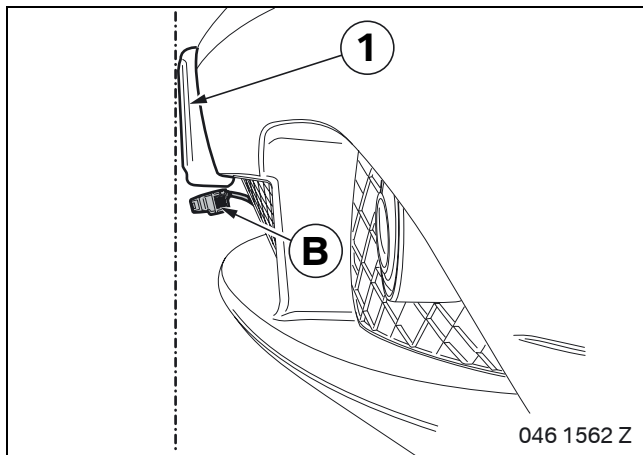
Secure the button **L** to the trim (1) with a union nut (2).

Connect both contacts (3) to plug casing **M**.

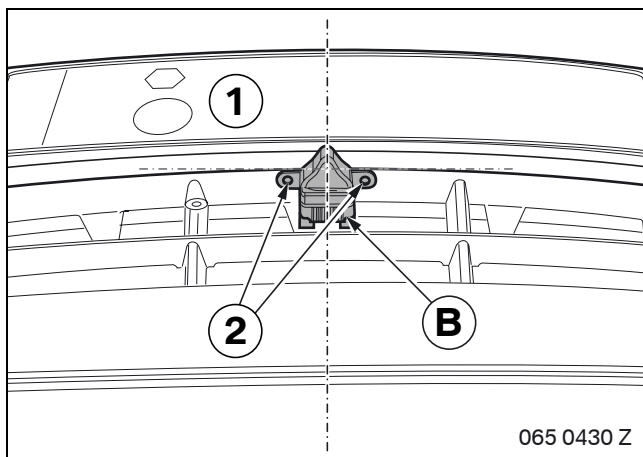
## 8. To install the front camera



Secure the front camera **B** to the holder **C** using Philips screws **D**.



**!** The front camera **B** must not project beyond the edge of the car (1), otherwise the homologation for the car will be invalid. **!**

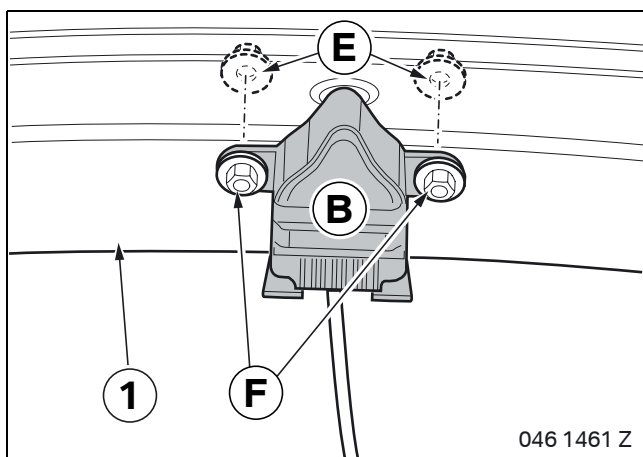


Position the front camera **B** on the bumper trim (1) as follows:

- In the centre on the underside
- Align with the longitudinal axis of the car

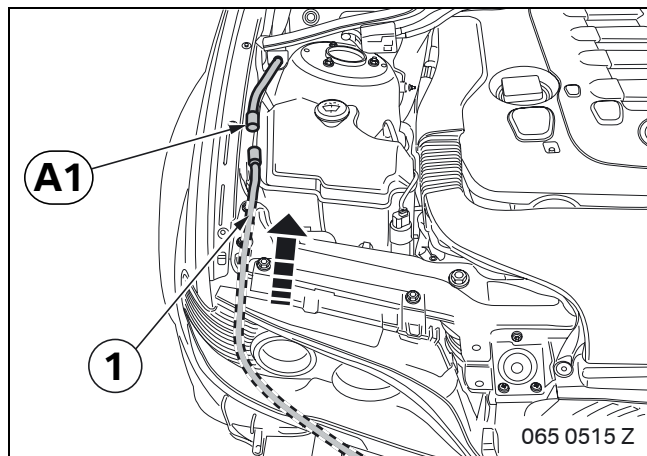
Mark the positions of the holes (2).

Drill through the bumper trim (1) using a 5.5 mm twist drill bit.



Secure the front camera **B** to the bumper trim (1) using hexagonal screws **F** and hexagonal nuts **E**.

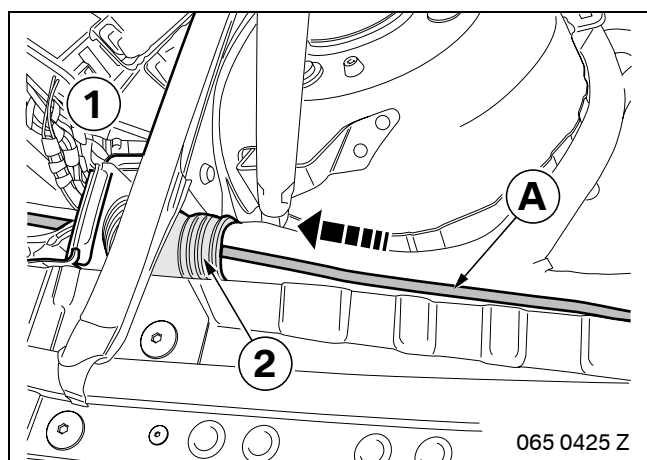
## 9. To install and connect wiring harness A



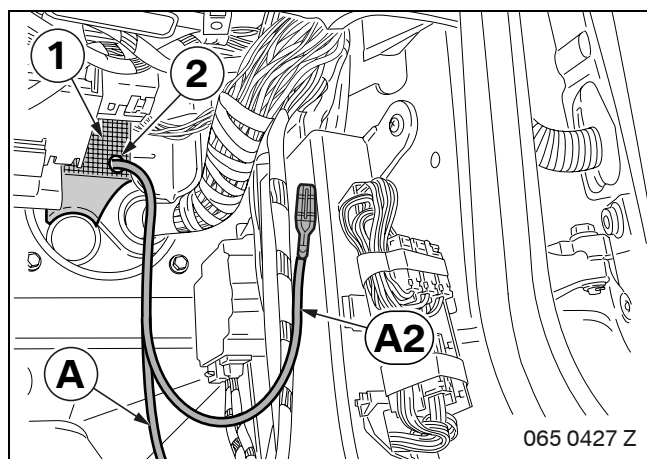
Route the camera cable (1) behind the right headlight and install the bumper trim.

▶ To prevent picture problems, do not connect and secure branch **A1** (SW 4-pin socket casing) in the immediate vicinity of the headlight. ◀

Connect branch **A1** to the plug on the camera cable (1).



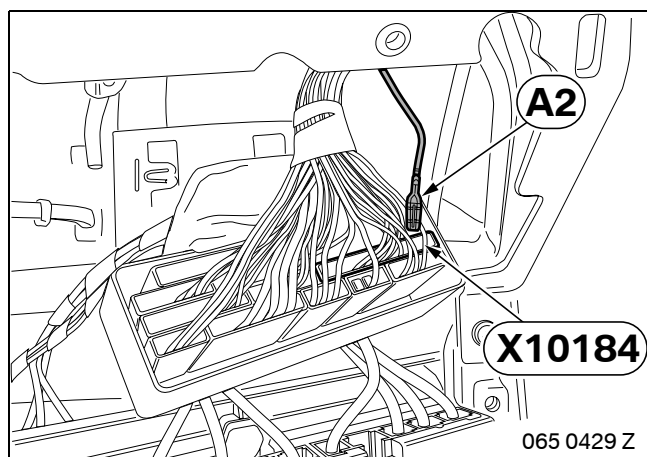
Route wiring harness **A** through the grommet (2) into the E box (1).



Drill through the air inlet grille (1) of the E box using a 10 mm twist drill bit.

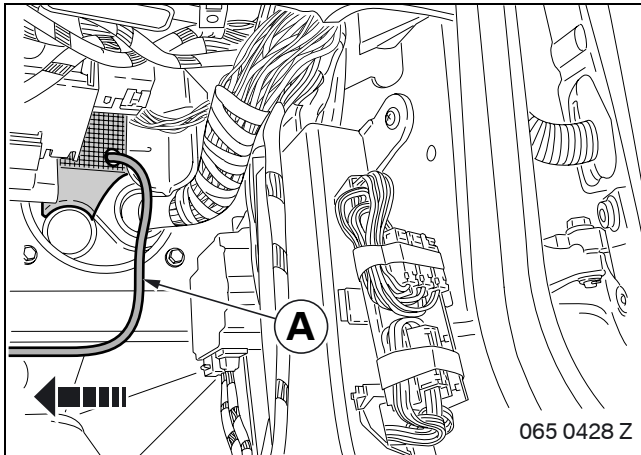
Route the wiring harness **A** through the hole (2) into the interior of the car.

Route branch **A2**, SW/WS cable, to the joint connector box.

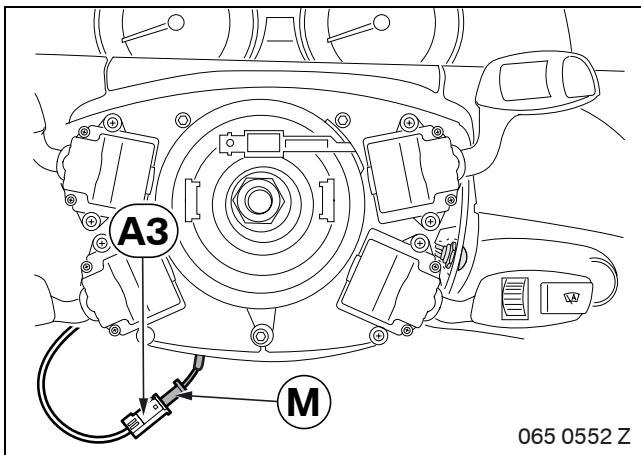


Connect branch **A2**, SW/WS cable, to joint connector **X10184**, GE/WS cable.

9. To install and connect wiring harness A

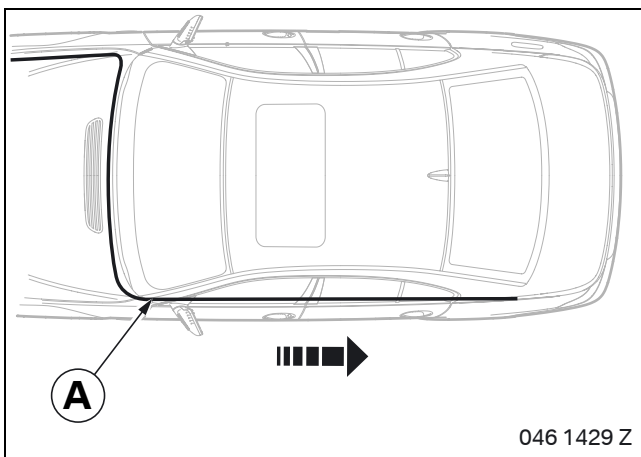


Route wiring harness **A** to the left footwell.



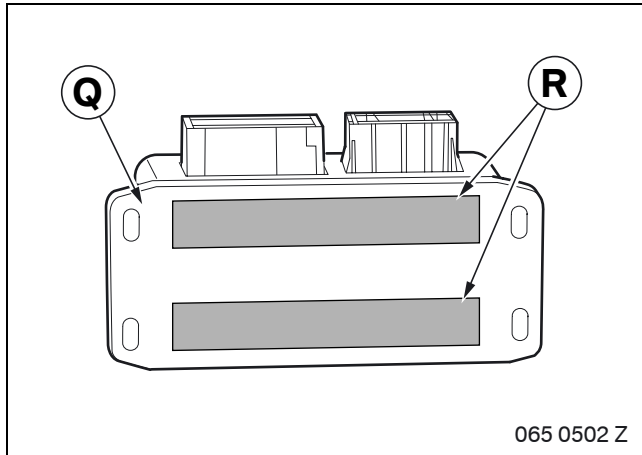
Route branch **A3** (SW 2-pin socket casing) to the steering column.

Connect branch **A3** to the plug casing **M**.



Route wiring harness **A** along the standard wiring harness to the left side of the boot.

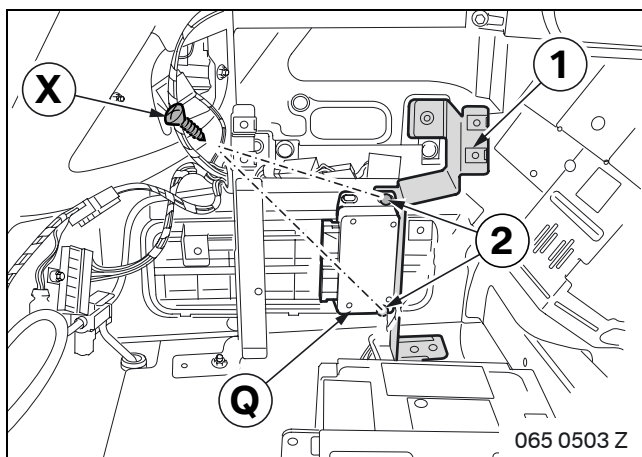
## 10. To install the switchbox



Affix sealing strip **R** to the rear of the switchbox **Q**.



Depending on accessibility and equipment, there are two possible ways of installing the switchbox **Q**. ◀

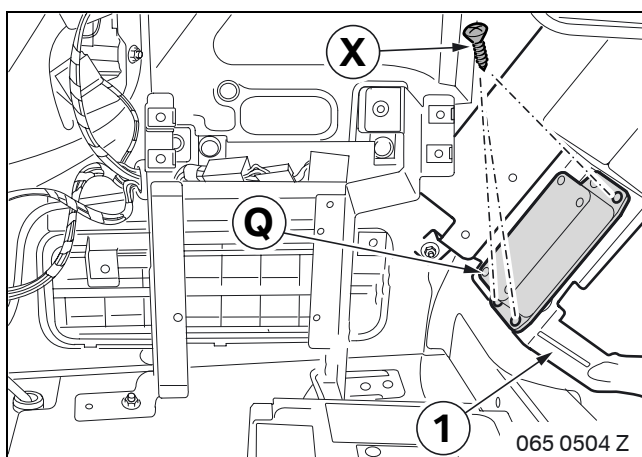


### First possibility

Place the switchbox **Q** against the front base support (1) and mark the holes (2).

Drill through the front base support (1) with a 3.5 mm twist drill bit.

Secure the switchbox **Q** using fillister head screws **X**.



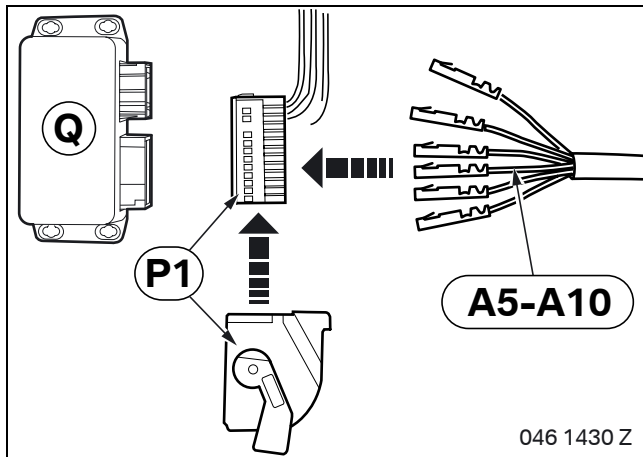
### Second possibility

Place the switchbox **Q** against the holder (1) and mark three holes.

Drill through the holder (1) with a 3.5 mm twist drill bit.

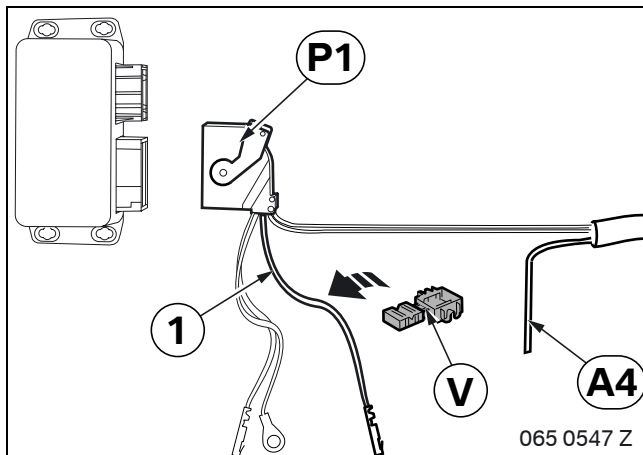
Secure the switchbox **Q** using fillister head screws **X**.

## 11. To connect the switchbox



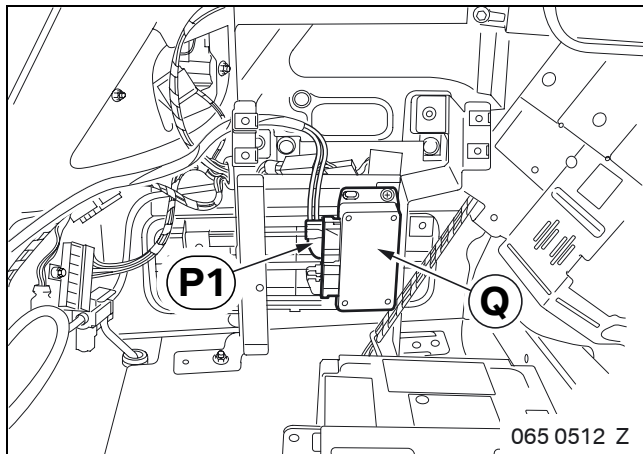
Route branches **A5 - A10** to the switchbox **Q** and connect them as follows to branch **P1**:

- Branch **A5**, WS cable, to PIN 21
- Branch **A6**, SW cable, to PIN 8
- Branch **A7**, RT cable, to PIN 22
- Branch **A8**, BR cable, to PIN 9
- Branch **A9**, VI/WS cable, to PIN 7
- Branch **A10**, SW/WS cable, to PIN 20

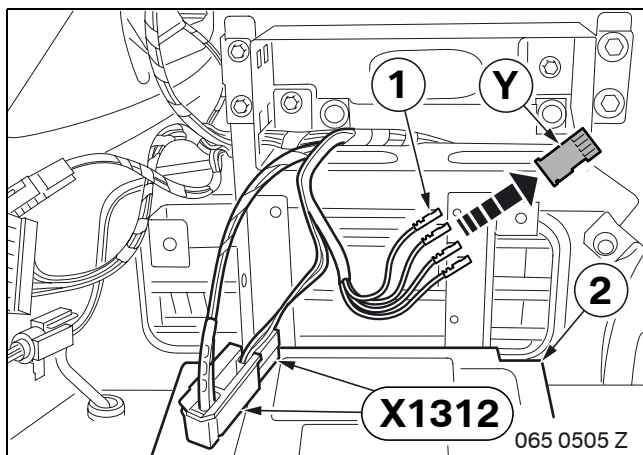


Connect branch **A4**, VI/WS cable, as follows to branch **P1**:

- Branch **A4** to the VI/WS cable (1) using a miniature connector **V**



Connect branch **P1** to the switchbox **Q**.

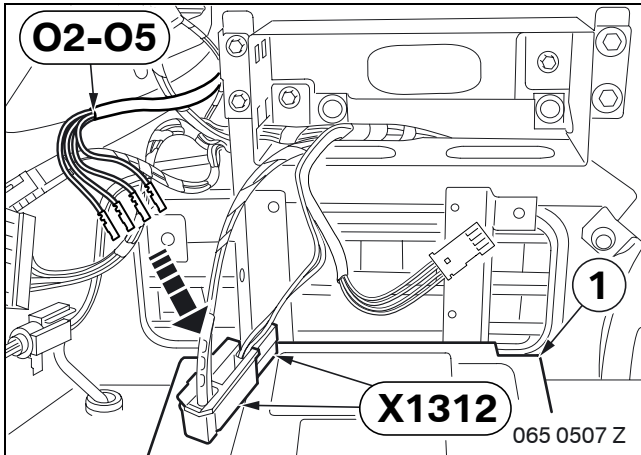


Disconnect the following cables (1) from plug **X1312** on the navigation computer (2) and connect them to socket casing **Y**:

- RT cable from PIN 3 in **X1312** to PIN 3 of the socket casing **Y**
- GN cable from PIN 4 in **X1312** to PIN 1 of the socket casing **Y**
- BL cable from PIN 5 in **X1312** to PIN 2 of the socket casing **Y**
- Screen from PIN 13 in **X1312** to PIN 4 of the socket casing **Y**

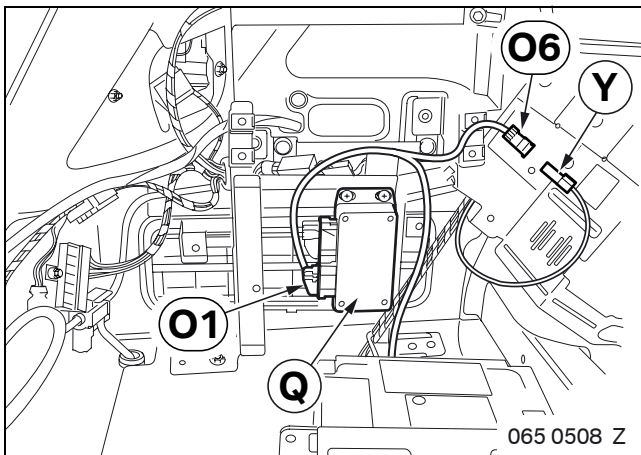


## 11. To connect the switchbox



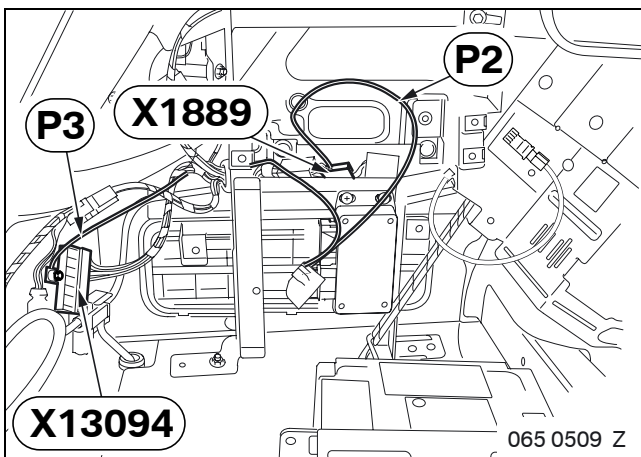
Connect branches **02 – 05** as follows to plug **X1312** on the navigation computer (1):

- Branch **02**, WS/RT cable, to PIN 3
- Branch **03**, WS/GN cable, to PIN 4
- Branch **04**, VI cable, to PIN 5
- Branch **05**, screen, to PIN 13



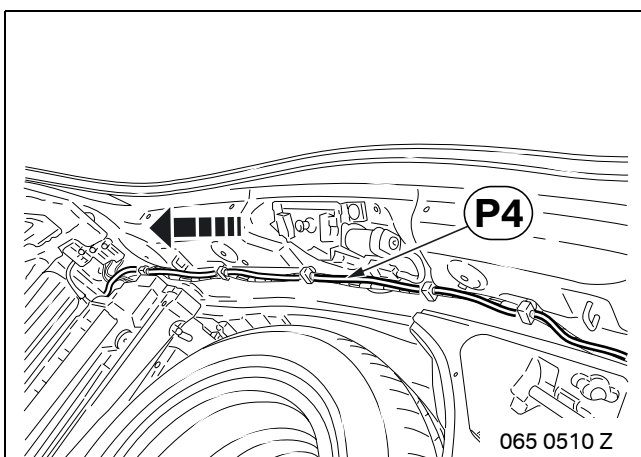
Connect the socket casing **Y** to branch **06**.

Connect branch **01** to the switchbox **Q**.



Connect branch **P2**, RT cable, to the tied-back joint connector **X1889**, RT/WS cable.

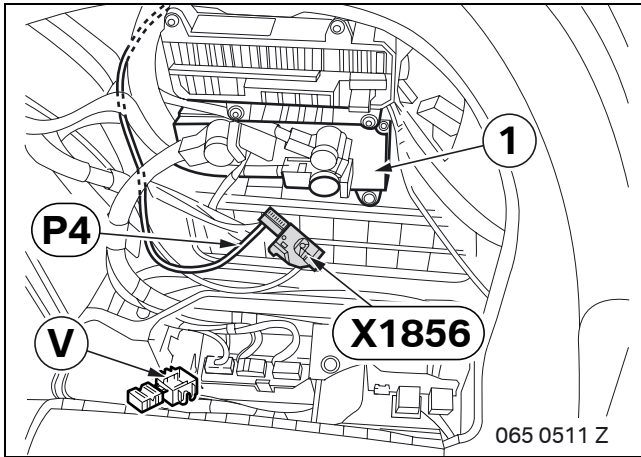
Connect branch **P3**, BR cable, to joint connector **X13094**, BR cable.



Route branch **P4**, VI/WS cable, to the right-hand side of the boot.



## 11. To connect the switchbox



Route branch **P4** to the power module (1).

Connect branch **P4** to PIN 18 of plug **X1856**.

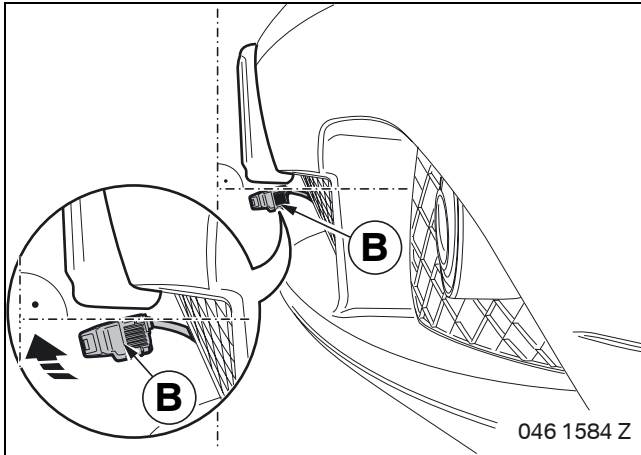


If pin chamber 18 is occupied, use a miniature connector **V** to connect branch **P4** to the VI/BR or GE/RT cable from PIN 18. ◀


## 12. Concluding work and coding

This retrofit system does not require coding.

- Connect the battery
- Conduct a brief test
- Re-assemble the car



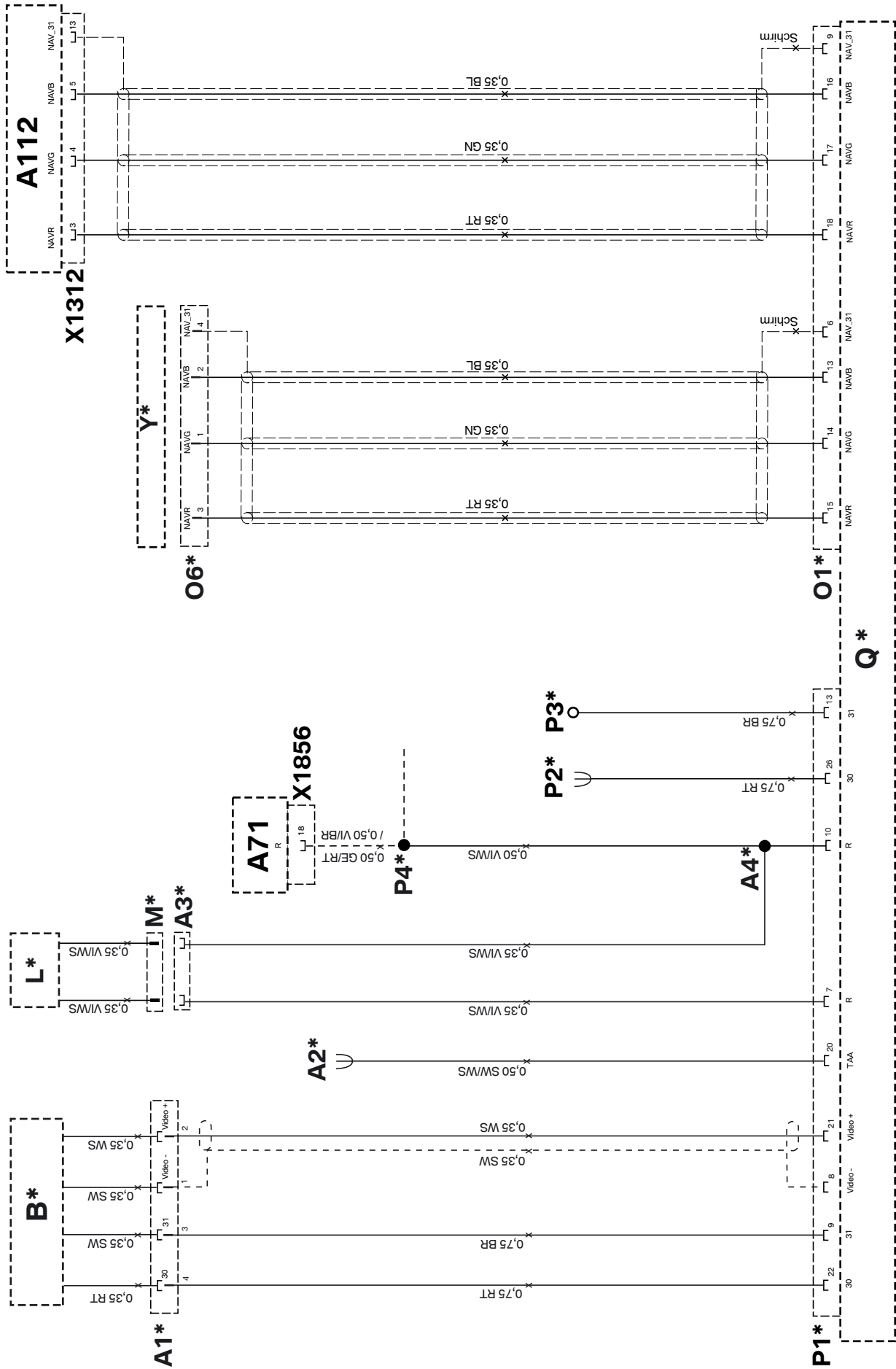
Align the front camera **B** horizontally to the car's axis by carefully bending the holder.

 Make the basic settings in accordance with the owner's manual, otherwise the picture will not be displayed properly. ◀

Check the function of the front camera as follows:

- Switch on the ignition
- Press the button **L**; an image must appear on the on-board monitor
- Press the button **L** again; the on-board monitor must switch over
- The on-board monitor must switch over automatically at a speed of over approx. 10 kph

### 13. Circuit diagram for front camera



### 13. Circuit diagram for front camera

#### Legend

<b>A71</b>	Power module
<b>A112</b>	Navigation computer
<b>B*</b>	Front camera
<b>L</b>	Button
<b>M</b>	SW 2-pin plug casing
<b>Q*</b>	Switchbox
<b>A1*</b>	Black 4-pin socket casing
<b>A2*</b>	Joint connector contact, terminal TAA pick-up
<b>A3*</b>	SW 2-pin socket casing, button connector
<b>A4*</b>	Open cable, terminal R pick-up
<b>O1*</b>	18-pin natural socket casing
<b>O6*</b>	4-pin BL socket casing
<b>P1*</b>	26-pin BL socket casing
<b>P2*</b>	Terminal 30 tap joint connector contact
<b>P3*</b>	Ring eyelet M6, terminal 31 tap
<b>P4*</b>	Socket contact, terminal R pick-up (connect using miniature connector if necessary)
<b>X1312</b>	Black 20-pin socket casing
<b>X1856</b>	Black 18-pin socket casing
<b>Y*</b>	4-pin BL plug casing

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

#### Cable colours

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