

Original BMW Accessories. Installation Instructions.



Trailer tow hitch retrofit (removable tow ball)

BMW 5 Series Saloon (E60)

BMW 5 Series Touring (E61)

Retrofit kit No.	71 60 2 155 437	Electrical components retrofit kit E60/E61 with SA 715
	71 60 2 155 439	Electrical components retrofit kit E61
	71 60 2 155 440	Electrical components retrofit kit E60
	71 60 6 782 128	Removable trailer tow hitch E60/E61
	71 60 6 786 759	Removable trailer tow hitch E60/E61 without SA 715

Installation time

The installation time is **approx. 4.0 hours**. This may vary depending on the condition of the car and the equipment in it.

The installation time specified does not include the time spent on programming/coding.

The total costs for the programming time should be taken into account when calculating retrofitting costs (reimbursement through warranty is not permissible).

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, wiring diagrams, servicing manuals and work instructions, in a rational order, using the prescribed tools (special tools) and observing current health and safety regulations.

In the event of any installation or function problems, restrict the troubleshooting session to about 0.5 hours for mechanical work or 1 hour for electrical work.

In order to reduce costs and avoid any additional expense, send a query immediately to the Technical Parts Support via the Aftersales Assistance Portal (ASAP).

Specify the following information:

- Chassis number,
- part number of the retrofit kit,
- a precise description of the problem,
- work steps already carried out.

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

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.

Installation information

The electric fan must be exchanged in various cars (see EPC HG-17 for part numbers and further details).

If you do not replace the electric fan, the towing capacity will be reduced and the engine may stop.

Cover **D** is to be painted subject to consultation with the customer.

Deburr holes and treat them with anti-corrosive coatings as set out in BMW directives to protect them from corrosion.

Ensure that the cables and/or lines are not kinked or damaged as you install them in the car. Costs arising from 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 pictures show LHD cars; proceed accordingly on RHD cars.

After the installation work, the retrofit must be programmed/coded via the **-Conversion-** path.

Ordering instructions

Bottom centre guide **B**, oddments tray **F**, wing nut **L** and heat shield **V** are not part of the retrofit kit and must be ordered separately (see EPC for part number and details.)

Legal requirements

Type approvals for trailer tow hitches exist that comply with EC Directive 94/20/EC Appendix VII with EC approval symbol **e13 00-1171** (for cars before 9/07 or with SA 715/SA 337) or **e13 00-2482** (for cars after 9/07 or without SA 715/SA 337).

If you comply with these regulations and notes in these installation instructions, no special acceptance test pursuant to § 19 of the German Road Traffic Licensing Directive and no special entry in the vehicle registration document is necessary.

Information for the customer

The section on "Statutory regulations pursuant to EC Directive 94/20/EC" at the end of the Installation Instructions is to be printed out and handed to the customer.

List of special equipment

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

- SA 300** Inflatable spare tyre
- SA 316** Automatic tailgate control
- SA 465** Through-load system
- SA 508** Park Distance Control (PDC)
- SA 715** M aerodynamic kit

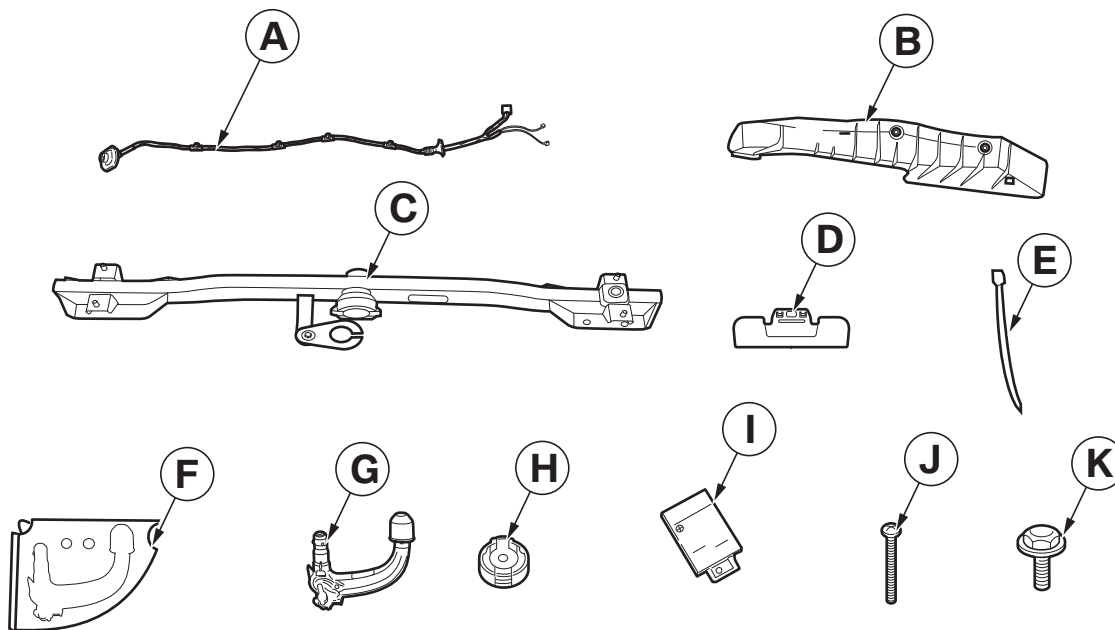
Special tools required

None

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1. Parts list

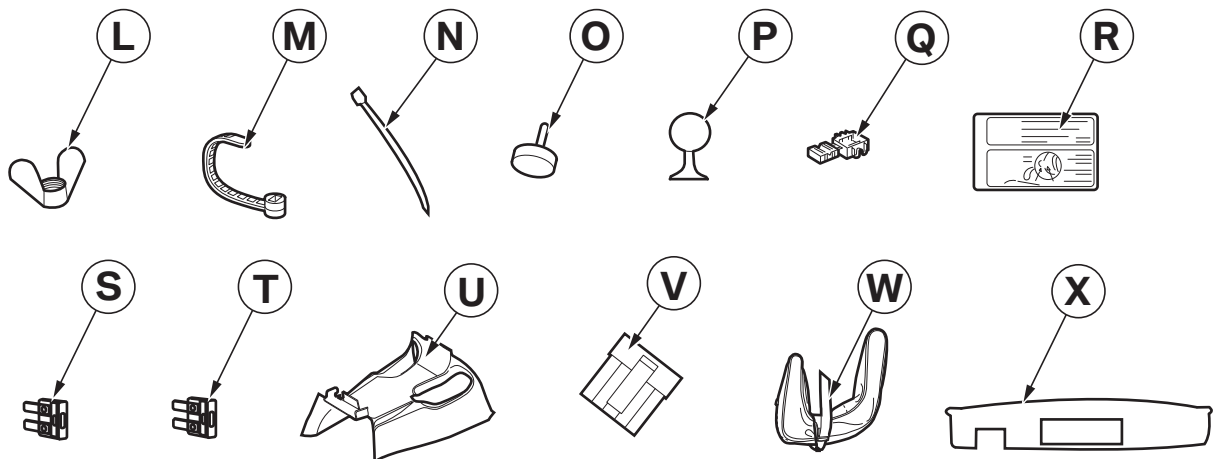


060 1405 Z

Legend

- A** Wiring harness
- B** Bottom centre guide (order separately for cars with SA 715 or cars after 03/07)
- C** Trailer tow hitch
- D** Cover (cars before 03/07 only)
- E** Velcro strip
- F** Storage facility (not supplied in the retrofit kit)
- G** Ball head
- H** Socket
- I** Trailer module
- J** Philips screw M5 x 35 mm (3x)
- K** Hexagon screw with washer M10 x 25 mm (8x)

1. Parts list



060 1406 Z

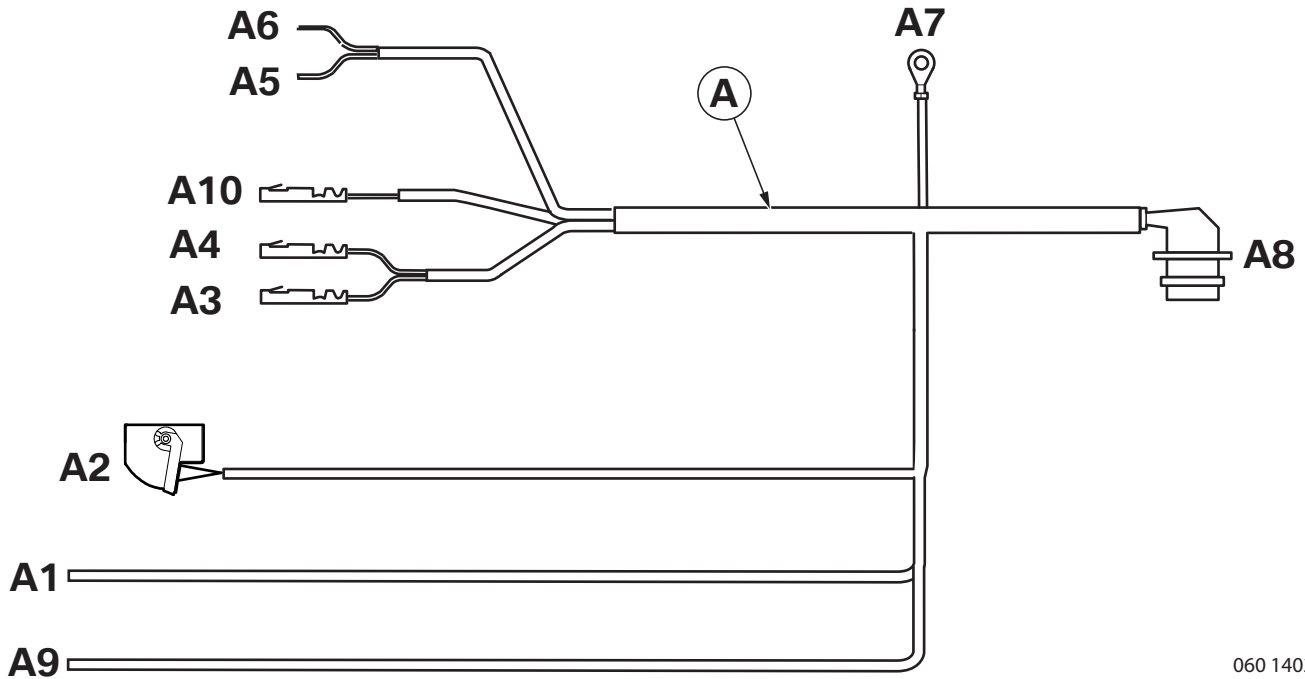
Legend

- L** Wing nut M8 (not supplied in the retrofit kit)
- M** Cable tie for coarse stud bolt (4 x)
- N** Cable tie 200 x 3.6 mm (20 x)
- O** Key (2 x)
- P** Cover caps (2 x)
- Q** Miniature connector (4 x)
- R** Information label
- S** Fuse 20 A (2 x)
- T** Fuse 30 A
- U** Heat shield (not supplied in the retrofit kit)
- V** 12-pin socket casing
- W** Tow ball bag
- X** Diffuser (cars with SA 715 only)

2. Preparatory work

	ISTA No.
Conduct a brief test	---
Disconnect the negative pole of the battery	61 20 900
The following components must be removed first of all	
Battery	
Bumper trim	51 12 ...
Support for bumper trim	
Impact absorbers on both sides (parts are no longer required)	51 12 ...
Boot floor trim	51 47 101
Control unit cover in the spare wheel trough	
Trim for tail panel	51 46 050
Flap in the luggage compartment on the left	
Luggage compartment wheel arch trim, left	51 47 151
Flap in the luggage compartment on the right	
Luggage compartment wheel arch trim, right (cars without SA 316 or SA 508 only)	51 47 161
Rear right entry area cover strip (cars built after 09/06 only)	57 47 030
Bottom right B pillar trim (cars built after 09/06 only)	51 43 150
Front right entry area cover strip (cars built after 09/06 only)	57 47 000
Bottom right A pillar trim (cars built after 09/06 only)	51 43 070
Right glove box (cars built after 09/06 only)	51 16 366
Release fuse holder I (cars built after 09/06 only)	61 13 040
Cars with SA 465 only	
Side backrest section on rear seat right (cars without SA 508 only)	52 26 008
Side backrest section on rear seat left	52 26 008
Cars without SA 465 only	
Backrest for rear seat	52 24 010
Cars with SA 715 only	
Renew diffuser X on rear bumper trim	51 12 ...

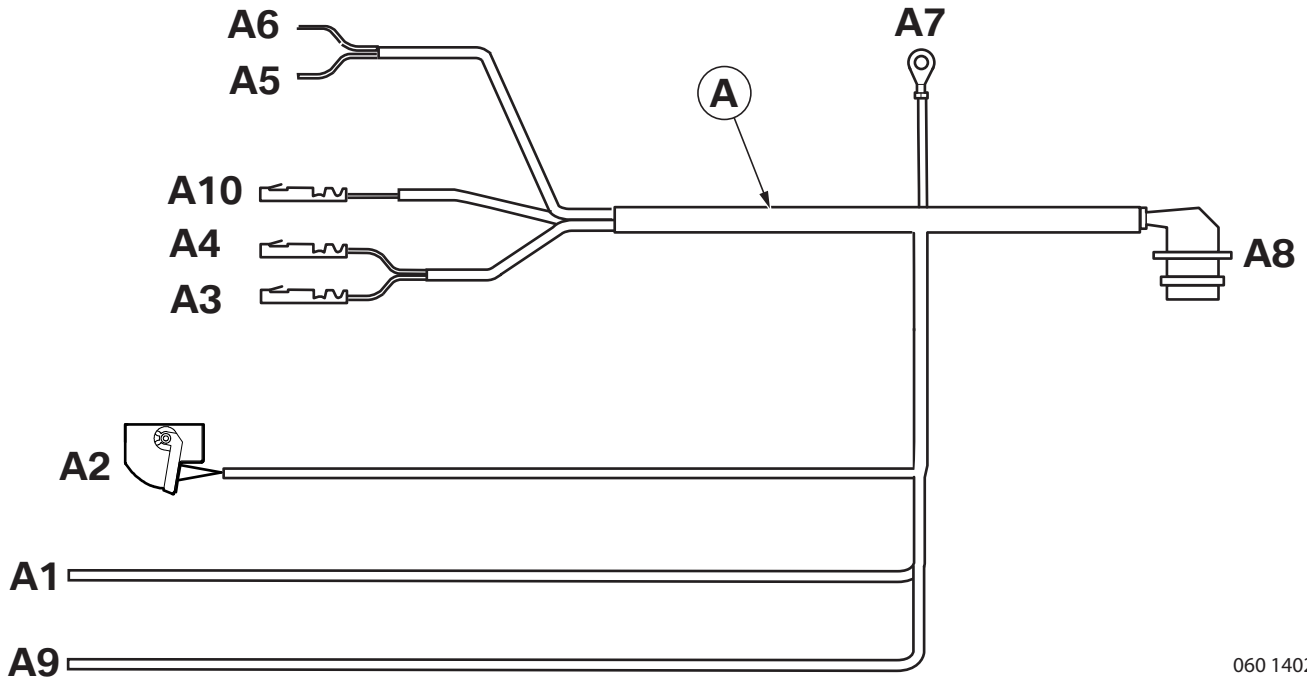
3. Connection diagram



060 1402 Z

Branch/Item	Designation	Signal	Cable colour/ Cross-section	Connection location in the car	Abbreviation/ Slot
A	Wiring harness	---	---	---	---
A1	Cable open	BL_M	SW/GE 0,50 mm ²	E60 cars only With miniature connector Q to SW/GE cable of the standard wiring harness near the rear left entry E61 cars only With miniature connector Q on SW/GE cable of the standard wiring harness near the rear right side of the car	---
A2	SW 20-pin socket casing	---	---	On trailer module I	X609
A3	Socket contact	Terminal 30	RT/SW 2,50 mm ²	Cars before 9/05 only On fuse holder A46 , SW 10-pin plug Cars after 9/05 only On fuse holder A46 , SW 10-pin plug	X11010 PIN 8 X11011 PIN 9
A4	Socket contact	Terminal 30	RT/GN 2,50 mm ²	Cars before 9/05 only On fuse holder A46 , SW 10-pin plug Cars after 9/05 only On fuse holder A46 , SW 10-pin plug	X11010 PIN 7 X11011 PIN 11
A5	Cable open	K-CAN H	SW 0,50 mm ²	Cars without SA 508 and without SA 316 only With miniature connector Q on SW cable on the standard wiring harness near the rear right entry Cars with SA 508 only With miniature connector Q on SW cable of the PDC control unit in the spare wheel trough Cars with SA 316 only With miniature connector Q to the SW cable on the HKL control unit in the spare wheel trough	---

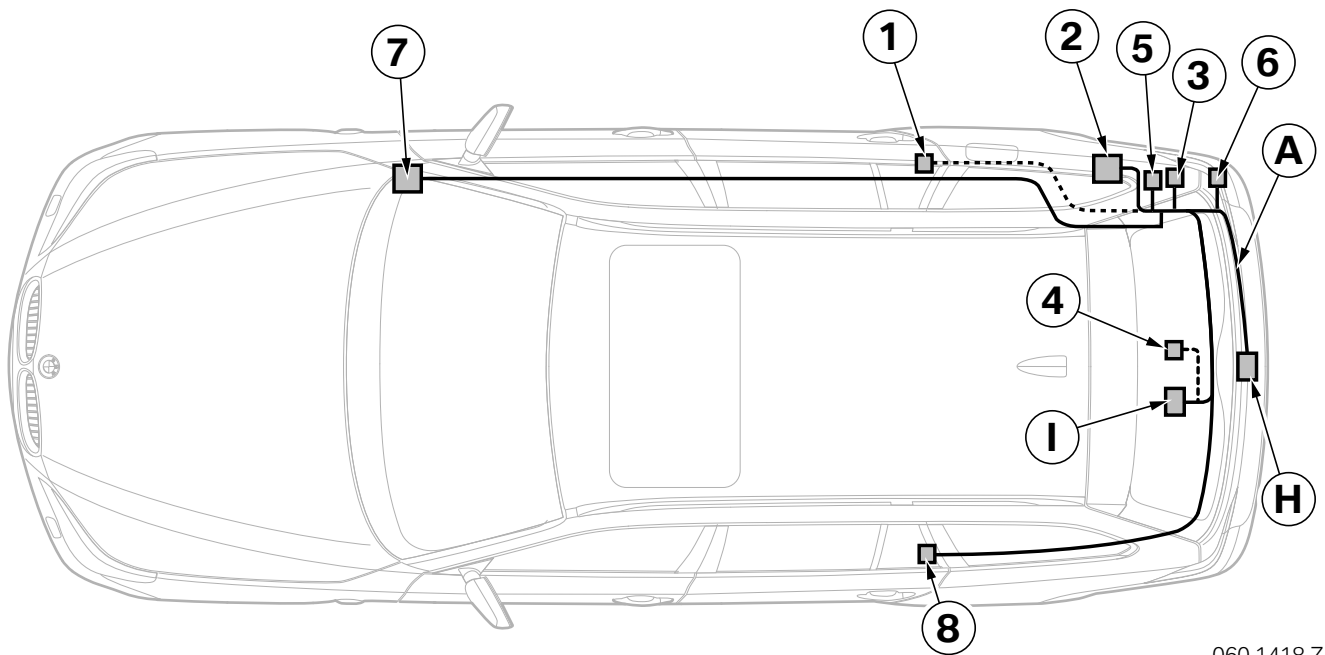
3. Connection diagram



060 1402 Z

Item	Designation	Signal	Cable colour/ Cross-section	Connection location in the car	Abbreviation/ Slot
A6	Cable open	K-CAN L	GE 0.50 mm ²	Cars without SA 508 and without SA 316 only With miniature connector Q on GE cable of the standard wiring harness near the rear right entry Cars with SA 508 only With miniature connector Q on GE cable of the PDC control unit in the spare wheel trough Cars with SA 316 only With miniature connector Q on GE cable on the tailgate lift control unit in the spare wheel trough	---
A7	Eyelet M6	Terminal 31	BR 2.50 mm ²	Below the right rear light, to earth support point	X13794
A8	SW 13-pin socket casing	---	---	On socket H	X630
A9	Cable open	Terminal 49 RR	BL/BR 0.75 mm ²	Cars after 9/06 only Using miniature connector Q on BL/BR cable of the standard wiring harness to the right rear light	X318 PIN 3
A10	Socket contact	Terminal 30	RT/VI 2.50 mm ²	Cars after 9/06 only On fuse holder A41 , E60 cars only SW 10-pin plug	X11004 PIN 3

4. Installation and cabling diagram



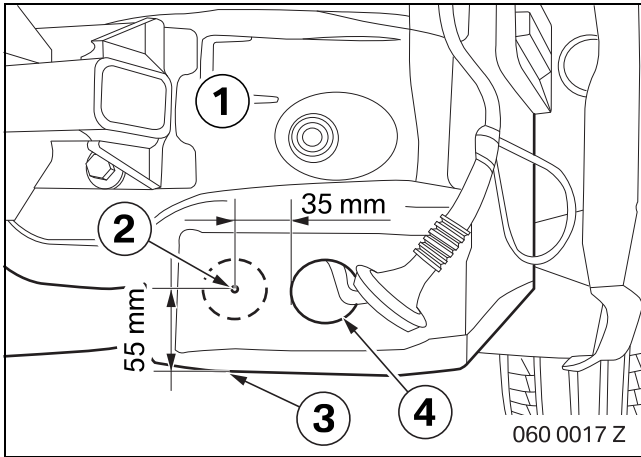
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Legend

- A** Wiring harness
- H** Socket
- I** Trailer module

- 1** K-CAN H/L pick-up (cars without SA 508 only)
- 2** Fuse holder **A46** (E61 cars after 9/06 only)
- 3** Earth support point **X13794**
- 4** K-CAN H/L pick-up (cars with SA 316, SA 508 only)
- 5** Centre brake light pick-up (E61 cars only)
- 6** Terminal 49 HR pick-up (cars after 9/06 only)
- 7** Fuse holder **A41** (E60 cars after 9/06 only)
- 8** Centre brake light pick-up (E60 cars only)

5. Installing the trailer tow hitch and socket

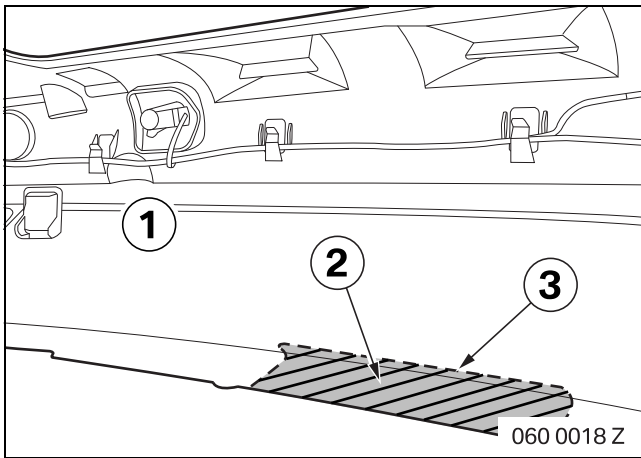


Mark dimensions on the rear closing panel (1) as follows and centrepunch at the drilling point (2):

- 35 mm from the outside of the cable passage (4)
- 55 mm from the bottom edge (3)

Drill through the back panel (1) at the drilling point (2) and enlarge the hole using a 40 mm step drill bit.

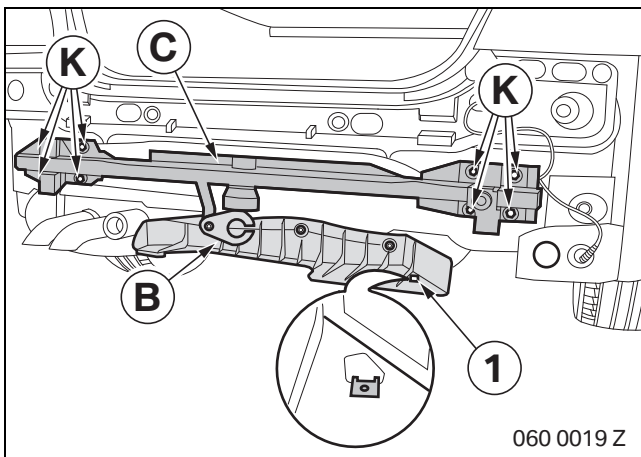
Deburr the hole and coat the bare surfaces with preservative.



Cars built before 3/07 only

▶ Note the marking (3) on the bumper trim (1). ◀
Saw out the bumper trim (1) in the marked area (2).

Deburr the cut edges.



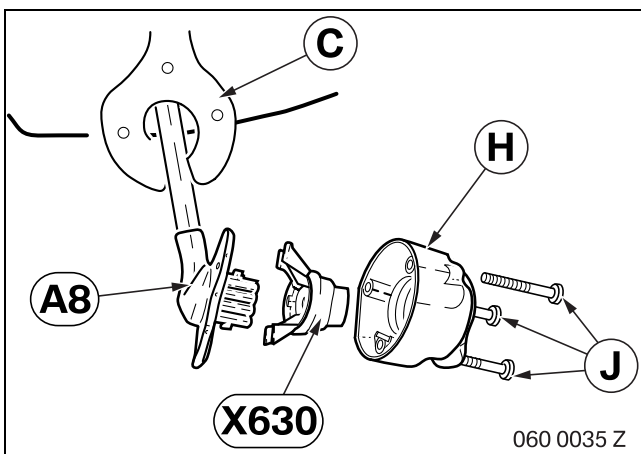
All cars

⚠ Note the tightening torque value:
50 Nm + turn through 90° (±30°). ◀

Screw trailer tow hitch **C** on using hexagon screws **K**.

Replace the existing guide by bottom centre guide **B**.

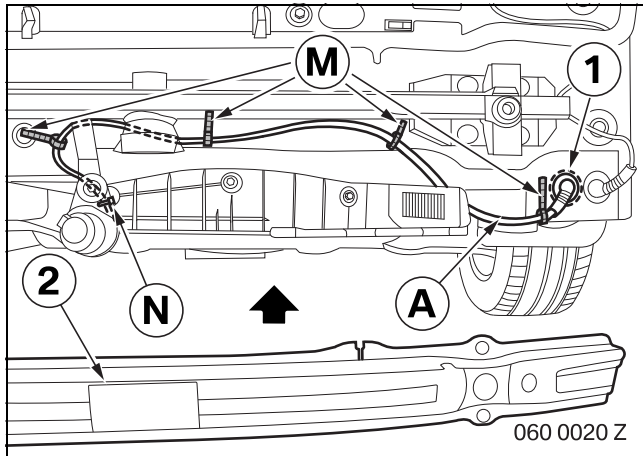
Clip the sheet metal nut (1) into bottom centre guide **B**.



Connect branch **A8** to plug **X630** of socket **H**.

▶ The socket cover must open to the left. ◀
Use Philips screws **J** to screw socket **H** onto trailer tow hitch **C**.

5. Installing the trailer tow hitch and socket

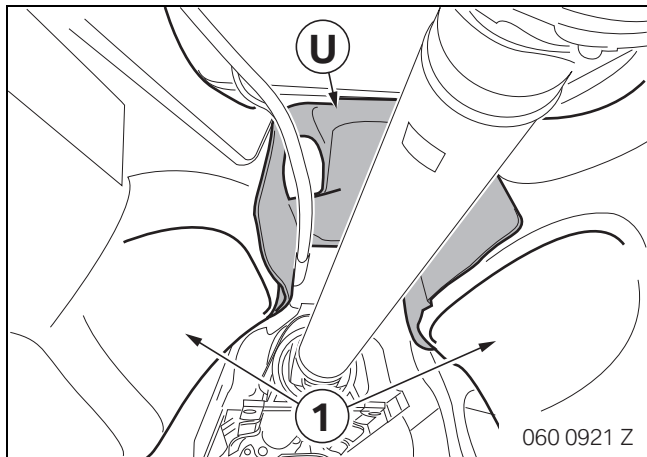


Use cable tie **N** and cable ties for coarse stud bolts **M** to attach wiring harness **A**.

Thread cable kit **A** through the hole (1) into the luggage compartment.

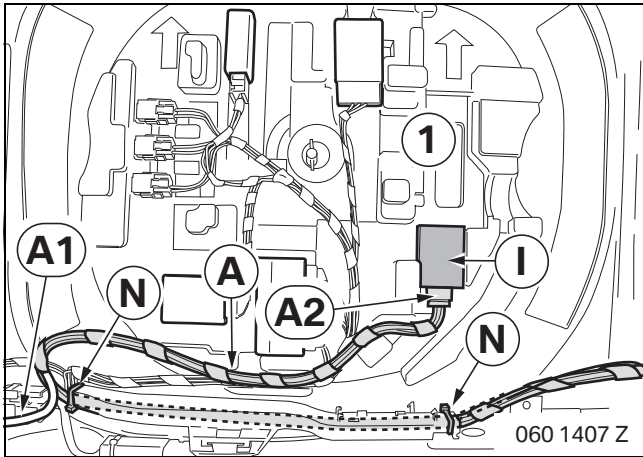
Install the holder for bumper trim (2) as described in ISTA RA 51 12 050.

6. Fitting the heat shield (cars with M47 engines only)



Place heat shield **U** on the fuel tank (1).

7. Routing and connecting the wiring harness (E60 cars only)

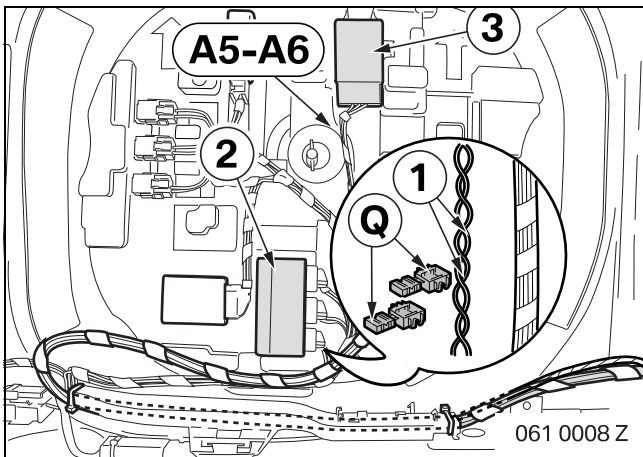


Connect branch **A2** to trailer module **I**.

Plug trailer module **I** into a free slot in the control unit holder (1).

Route wiring harness **A** and secure it to the standard wiring harness using cable ties **N**.

Route branch **A1** to the left-hand side of the car.



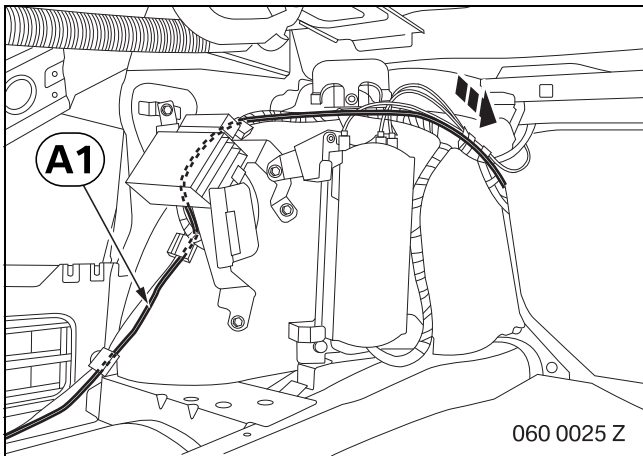
Cars with SA 316 or SA 508 only

Connect branches **A5-A6** to the PDC control unit (2) or the tailgate lift control unit (3) as follows:

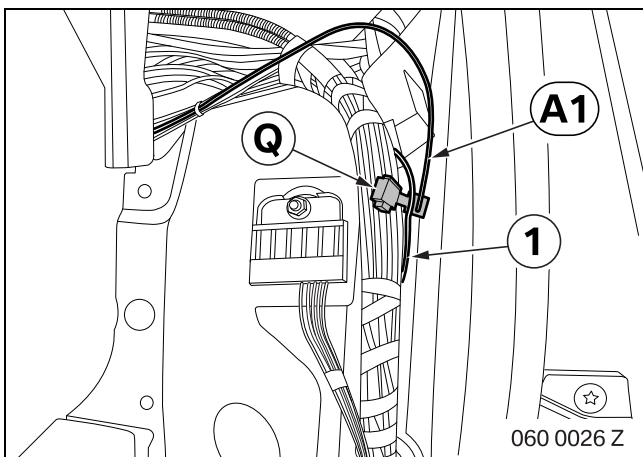
- Connect the twisted cables (1) to the twisted cables of the same colour on the PDC control unit (2) or HKL control unit (3) using miniature connectors **Q**.


Cars without SA 316 or SA 508 only

Route branches **A5-A6** to the right-hand side of the car.



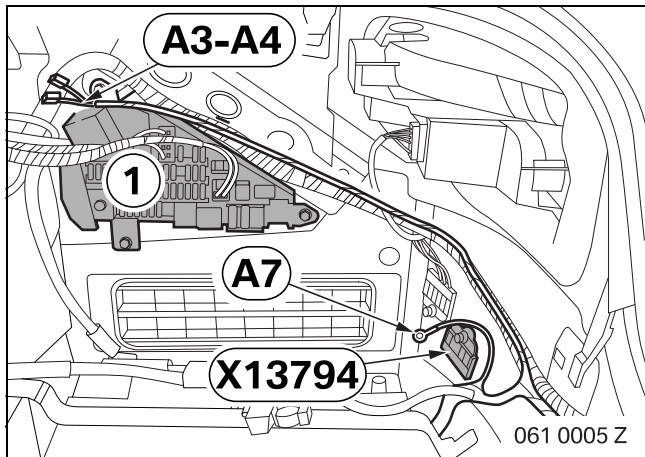
Route branch **A1** to the area of the rear left entrance area.



 Check whether the centre brake light signal is available on the standard cable (1), SW/GE cable. ◀

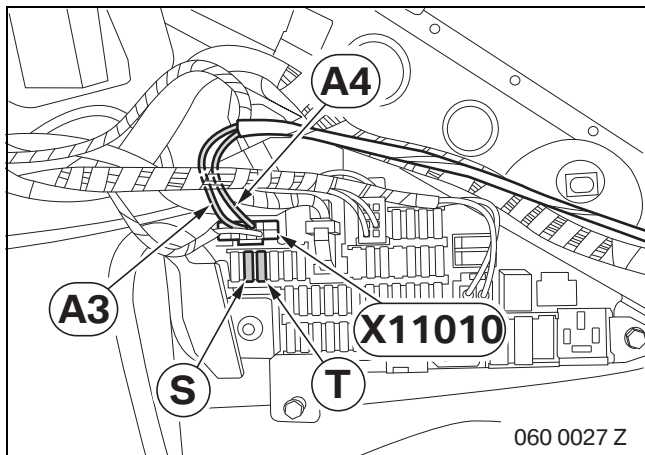
Use miniature connector **Q** to connect branch **A1** to the SW/GE cable of the standard wiring harness (1).

7. Routing and connecting the wiring harness (E60 cars only)



Route branches **A3-A4** to fuse holder (1).

Secure branch **A7** to earth support point **X13794**.



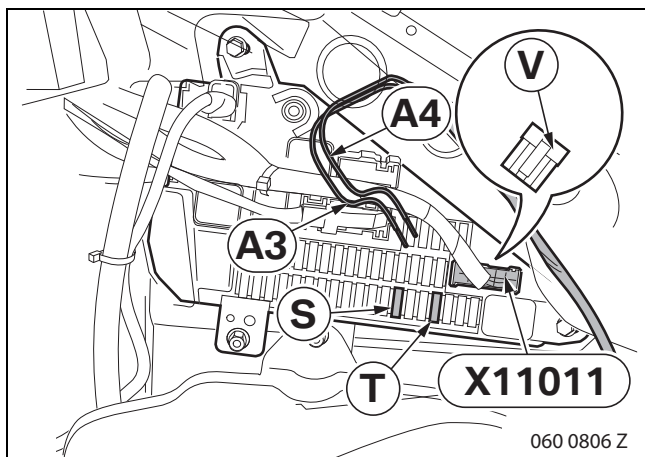
Cars before 9/05 only

Connect branches **A3** and **A4** into the SW 10-pin plug **X11010** as follows:

- Branch **A3**, RT/SW cable, to PIN 8
- Branch **A4**, RT/GN cable, in PIN 7

Insert fuse 20 A **S** into slot 74.

Insert fuse 30 A **T** into slot 73.



Cars after 9/05 only

⚠ If plug **X11011** is not available, socket casing **V** must be used. ◀

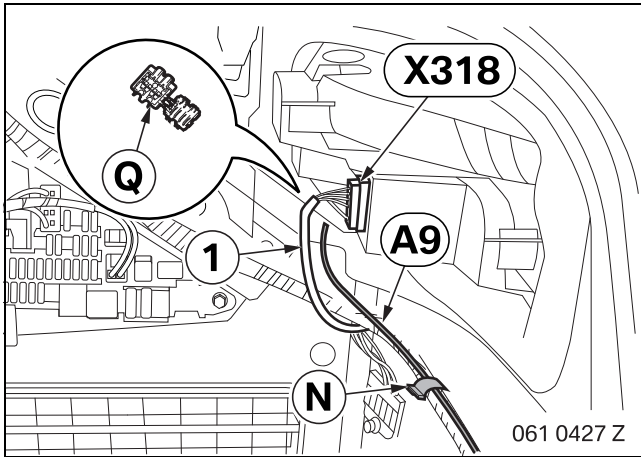
Connect branches **A3** and **A4** to SW 12-pin plug **X11011** or to socket casing **V** as follows:

- Branch **A3**, RT/SW cable, to PIN 9
- Branch **A4**, RT/GN cable, in PIN 11

Insert fuse 20 A **S** into slot 65.

Insert fuse 30 A **T** into slot 62.

7. Routing and connecting the wiring harness (E60 cars only)

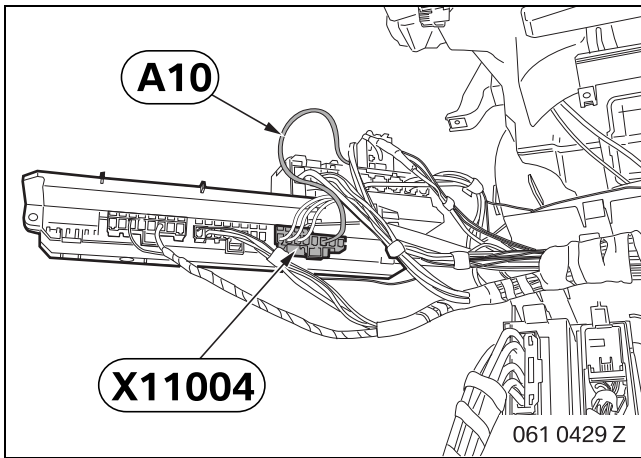


Cars built before 9/06 only

Isolate branch **A9**, BL/BR cable, and tie back, it is no longer required.

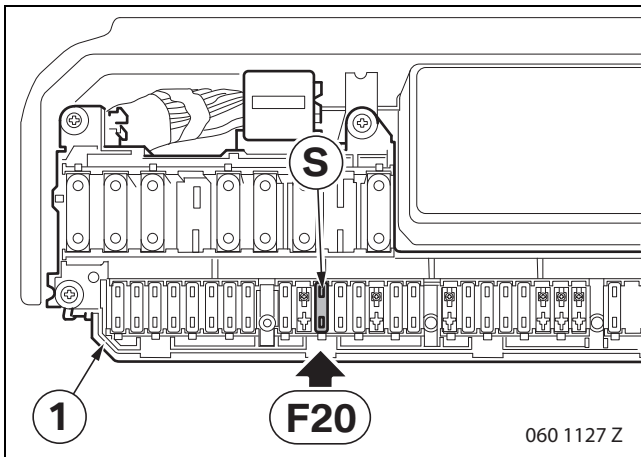
Cars after 9/06 only

Connect branch **A9**, BL/BR cable, to miniature connector **Q** on the standard cable (1), BL/BR cable, of plug **X318** pin 3 and attach with cable tie **N**.



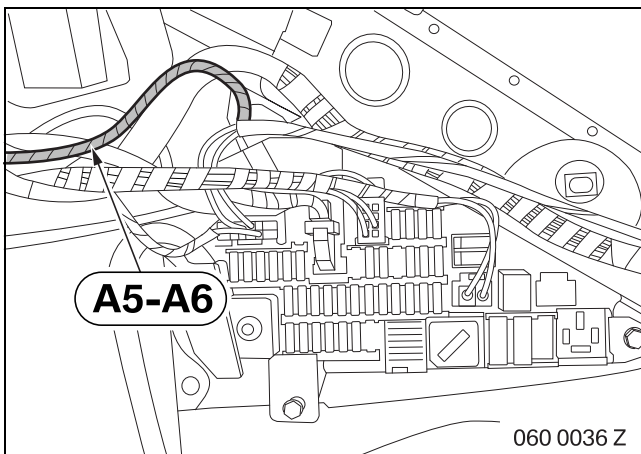
Route branch **A10** along the standard wiring harness to the passenger footwell.

Connect branch **A10**, RTM cable, to plug **X11004**, natural 8-pin, pin 3.



Attach the fuse holder (1).

Insert fuse 20 A **S** into slot **F20**.



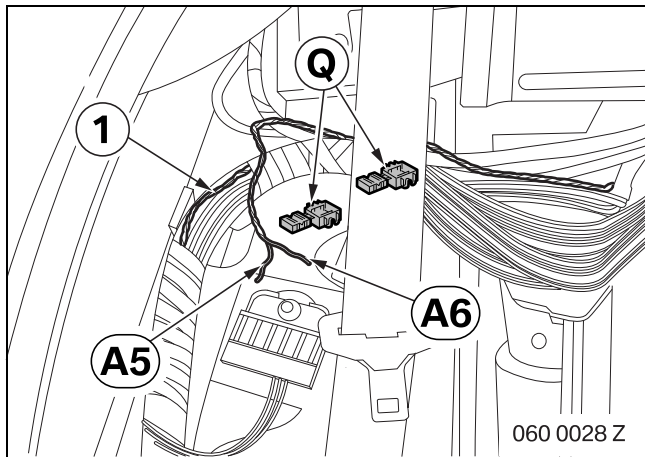
Cars with SA 316 or SA 508 only

Insulate branches **A5-A6** and tie them back.

Cars without SA 316 or SA 508 only

Route branches **A5-A6** to the area of the rear right entrance area.

7. Routing and connecting the wiring harness (E60 cars only)



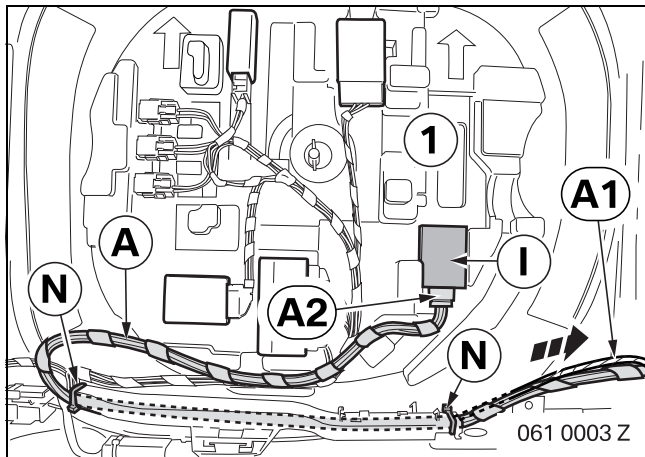
Connect branch **A5**, SW cable, and **A6**, GE cable, to the twisted cables (1) of the same colours using miniature connectors **Q**.

If the CAN-High and CAN-Low cables are not present, branches **A5** and **A6** must be extended and routed to the installation point of KGM **A16760**.

Connect branches **A5** and **A6** as follows using miniature connectors **Q** to the cables on plug **X16760** :

- Branch **A5**, SW cable, to PIN 9
- Branch **A6**, GE cable, to PIN 8

8. Routing and connecting and connect the wiring harness (E61 cars only)

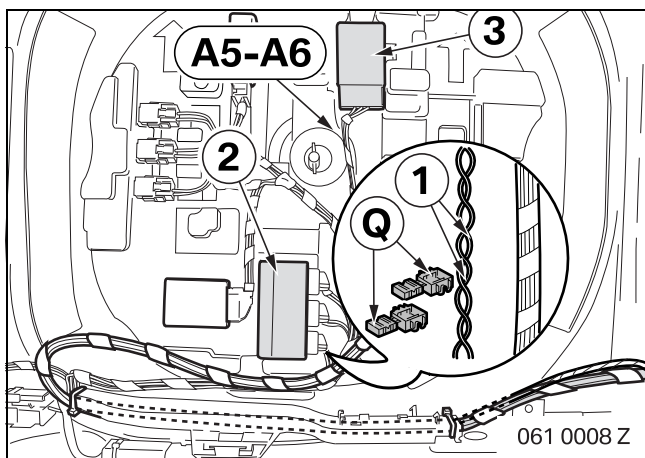


Connect branch **A2** to trailer module **I**.

Plug trailer module **I** into a free slot in the control unit holder (1).

Route wiring harness **A** and secure it to the standard wiring harness using cable ties **N**.

Route branch **A1** to the right-hand side of the car.



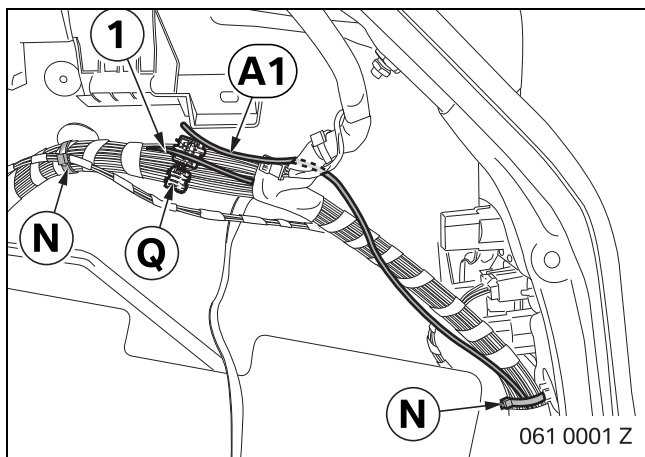
Cars with SA 316 or SA 508 only


Connect branches **A5-A6** to the PDC control unit (2) or the tailgate lift control unit (3) as follows:

- Connect the twisted cables (1) to the twisted cables of the same colour on the PDC control unit (2) or HKL control unit (3) using miniature connectors **Q**.

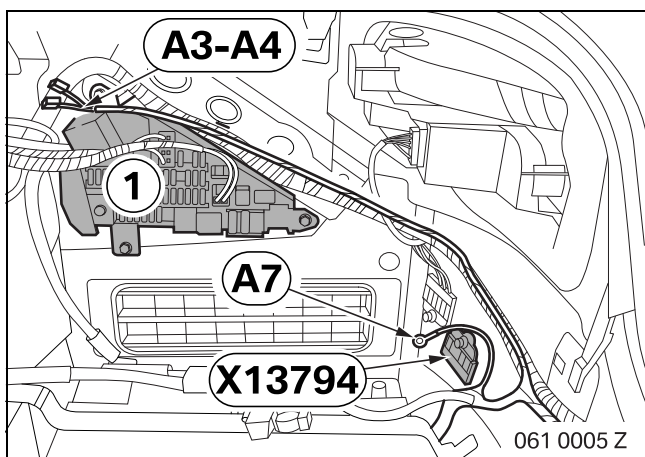
Cars without SA 316 or SA 508 only

Route branches **A5-A6** to the right-hand side of the car.



 Check whether the centre brake light signal is available on the standard cable (1), SW/GE cable. ◀

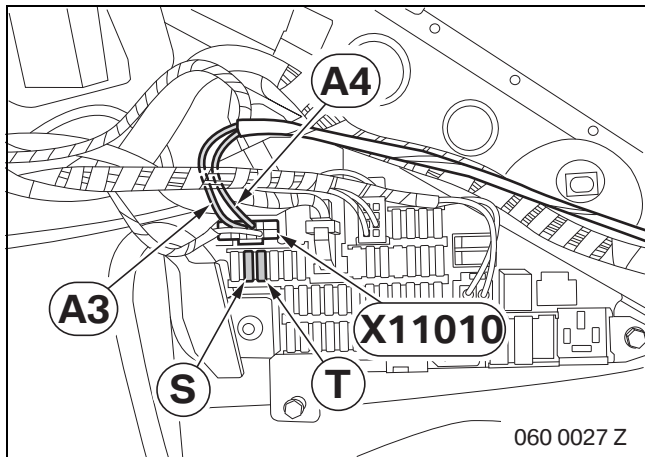
Connect branch **A1** to the standard cable (1), SW/GE cable, using miniature connector **Q** and secure it with cable tie **N**.



Route branches **A3-A4** to fuse holder (1).

Secure branch **A7** to earth support point **X13794**.

8. Routing and connecting and connect the wiring harness (E61 cars only)



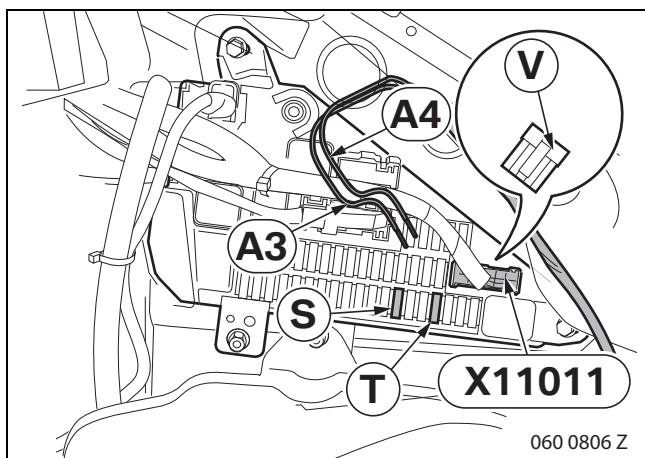
Cars before 9/05 only

Connect branches **A3** and **A4** into the SW 10-pin plug **X11010** as follows:

- Branch **A3**, RT/SW cable, to PIN 8
- Branch **A4**, RT/GN cable, in PIN 7

Insert fuse link 20 A **S** into slot 74.

Insert fuse link 30 A **T** into slot 73.



Cars after 9/05 only

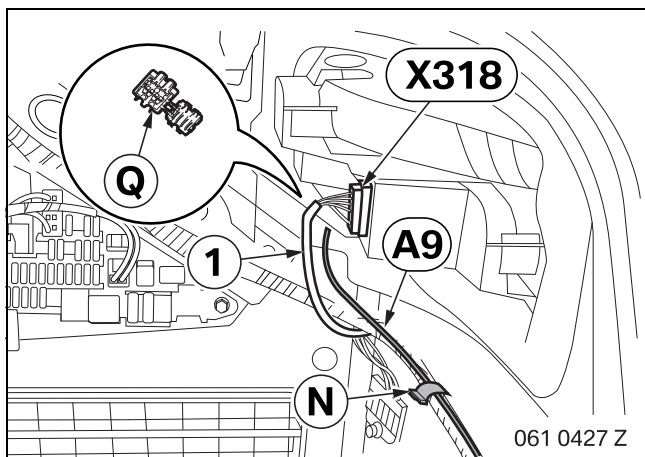
▶ If plug **X11011** is not available, socket casing **V** must be used. ◀

Connect branches **A3** and **A4** to SW 12-pin plug **X11011** or to socket casing **V** as follows:

- Branch **A3**, RT/SW cable, to PIN 9
- Branch **A4**, RT/GN cable, in PIN 11

Insert fuse link 20 A **S** into slot 65.

Insert fuse link 30 A **T** into slot 62.



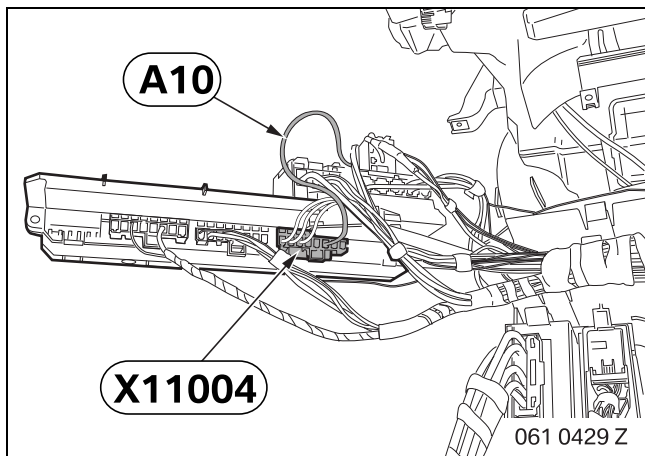
Cars built before 9/06 only

Isolate branch **A9**, BL/BR cable, and tie back, it is no longer required.

Cars after 9/06 only

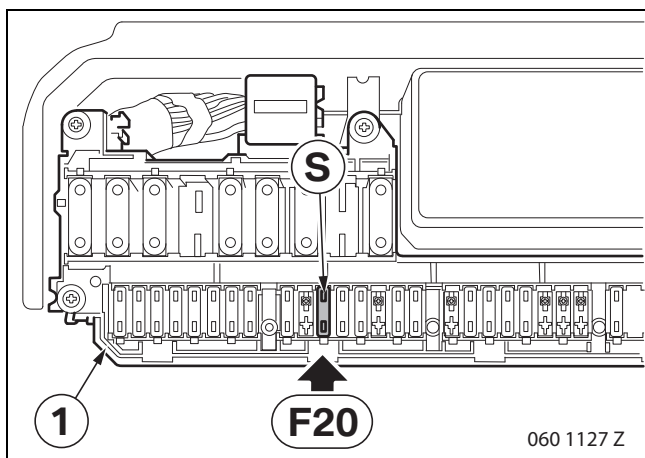
Connect branch **A9**, BL/BR cable, to miniature connector **Q** on the standard cable (1), BL/BR cable, of plug **X318** pin 3 and attach with cable tie **N**.

8. Routing and connecting and connect the wiring harness (E61 cars only)



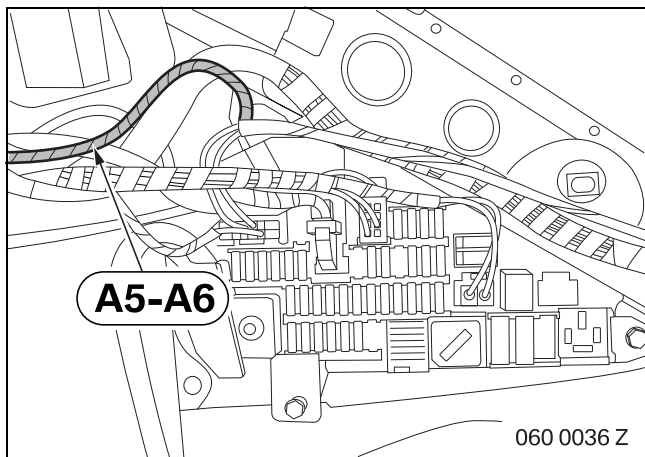
Route branch **A10** along the standard wiring harness to the passenger footwell.

Connect branch **A10**, RTMI cable, to plug **X11004**, natural 8-pin, pin 3.



Attach the fuse holder (1).

Insert fuse 20 A **S** into slot **F20**.

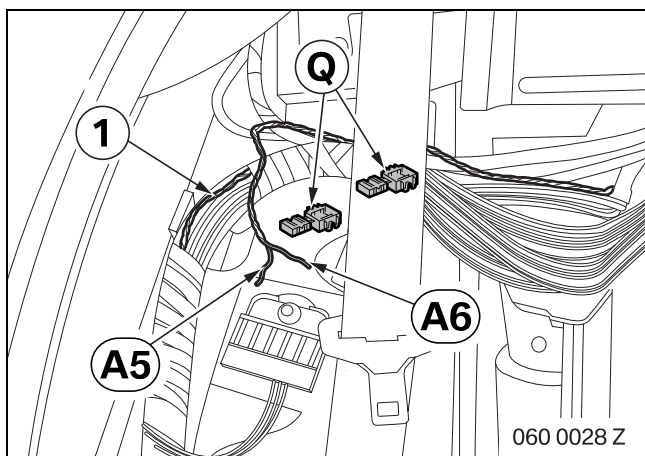


Cars with SA 316 or SA 508 only

Insulate branches **A5-A6** and tie them back.

Cars without SA 316 or SA 508 only

Route branches **A5-A6** to the area of the rear right entrance area.

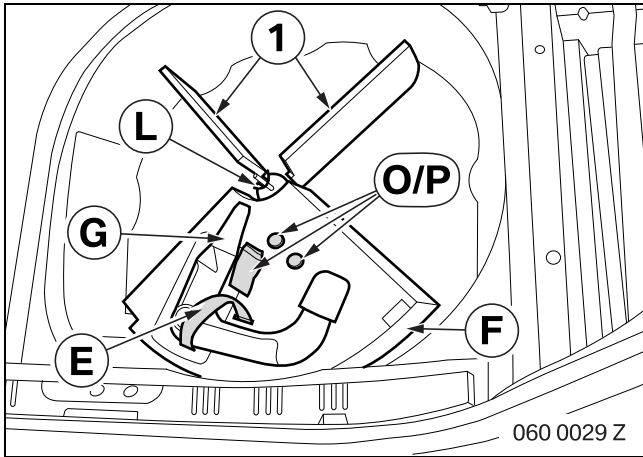


Connect branch **A5**, SW cable, and **A6**, GE cable, to the twisted cables (1) of the same colours using miniature connectors **Q**.

If the CAN-High and CAN-Low cables are not present, branches **A5** and **A6** must be extended and routed to the installation point of KGM **A16760**. Connect branches **A5** and **A6** as follows using miniature connectors **Q** to the cables on plug **X16760** :

- Branch **A5**, SW cable, to PIN 9
- Branch **A6**, GE cable, to PIN 8

9. Installing the storage facility




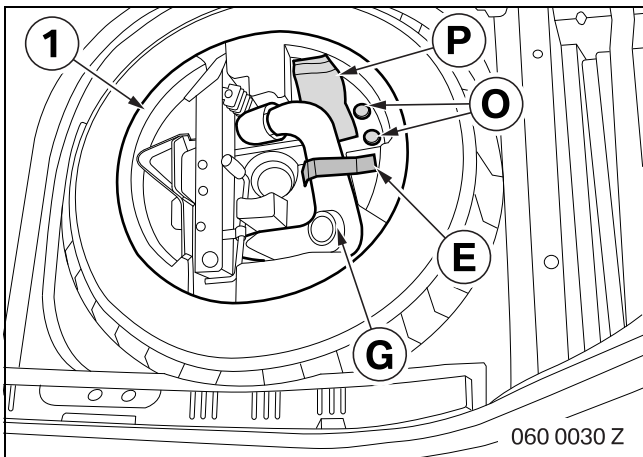
Cars without SA 300 before 3/07 only and cars after 3/07 with SA 715 only

Thread Velcro strip **E** into storage fixture **F**.

Remove two of the ribs (1) and use wing nuts **L** to screw storage fixture **F** into the spare wheel trough.

Secure tow ball **G** using Velcro strip **E**, put in keys **O** and cover caps **P**.


 Enter the key number in the owner's manual. ◀

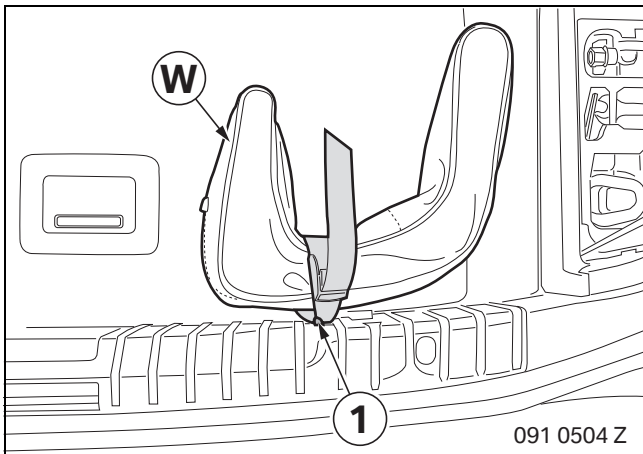


Cars with SA 300 before 3/07 only and cars after 3/07 with SA 715 only

Thread Velcro strip **E** into the existing storage fixture (1).

Secure tow ball **G** using Velcro strip **E**, put in keys **O** and cover caps **P**.

 Enter the key number in the owner's manual. ◀



All cars after 03/07 without SA 715

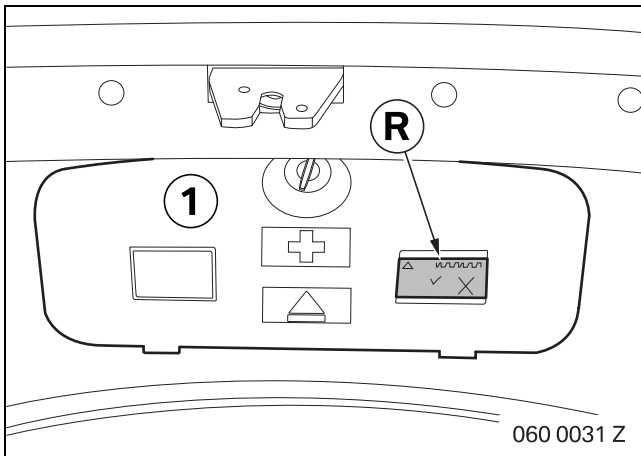
Place the tow ball **G** in tow ball bag **W** for safe keeping.

Secure tow ball bag **W** to the lashing point (1) using a lashing strap.

10. Concluding work and coding

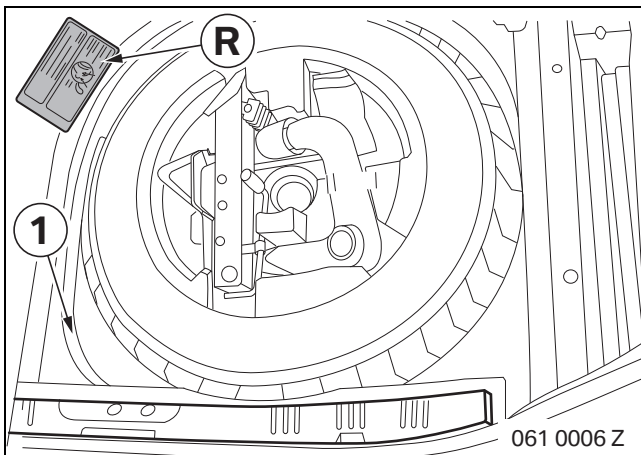
The retrofit system requires programming/coding.

- Connect the battery
- Carry out a vehicle test using the ISTA system and note or work through any entered error memory
- Change in the ISTA/P car programming
- Select the "Trailer tow hitch" retrofit via the – **Conversion** – path and work through the created action plan
- If using ISTA/P, please note the instructions in the ISTA/P application documentation
- Fit tow ball **G** as set out in the owner's manual and ensure that the tow ball **G** moves easily and is secure
- Re-fit the car components as required



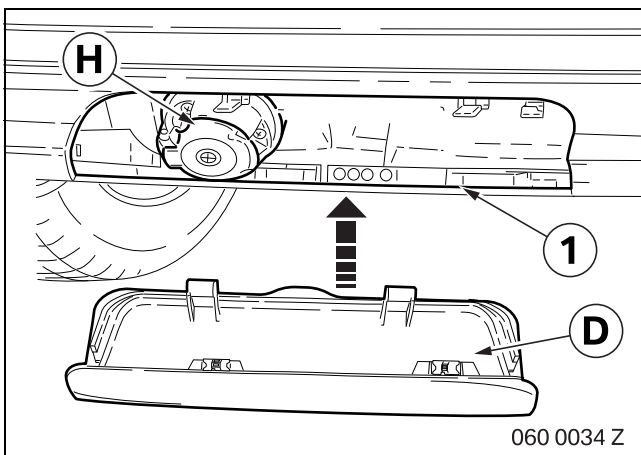
E60 cars only

Stick information label **R** onto the tool compartment (1).



E61 cars only

Affix information label **R** to the luggage compartment floor (1).



All cars

Close the opening in the bumper trim (1) using cover **D**.

All cars

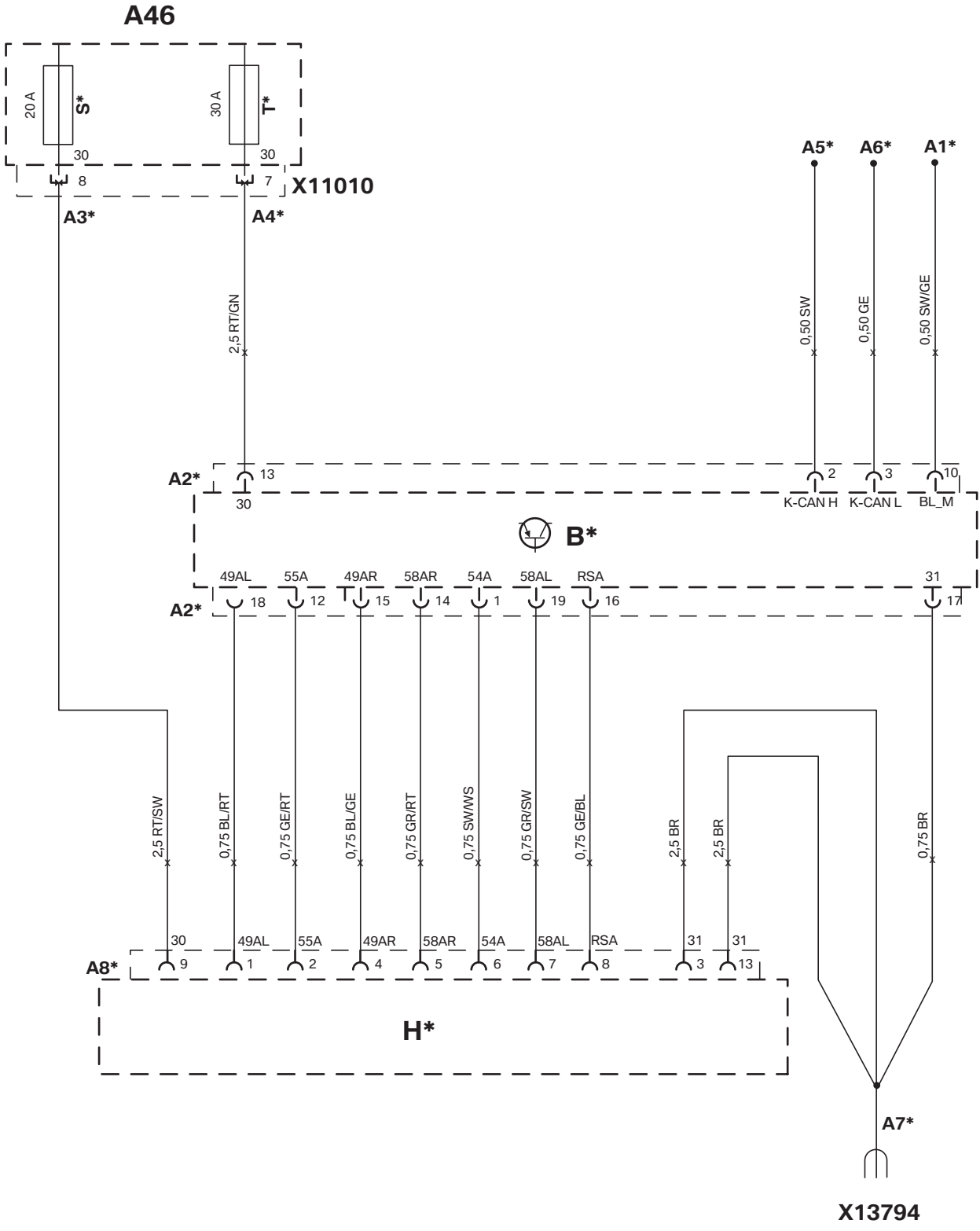
Check the light signals on trailer socket **H**.

10. Concluding work and coding



The section on “Statutory regulations pursuant to EC Directive 94/20/EC” at the end of the Installation Instructions is to be printed out and handed to the customer. ◀

11. Wiring diagram (cars built before 9/05 only)



060 1436 Z

11. Wiring diagram (cars built before 09/05 only)

Legend

A1*	Centre brake light pick-up, connected to standard wiring harness using miniature connector Q
A2*	SW 20-pin socket casing, on trailer module I
A3*	On socket casing X11010 of rear fuse holder A46
A4*	On socket casing X11010 of rear fuse holder A46
A5*	K-CAN H pick-up, connected to standard wiring harness using miniature connector Q
A6*	K-CAN L pick-up, connected to standard wiring harness using miniature connector Q
A7*	On earth support point connection X13794 below the right tail light
A8*	SW 13-pin socket casing, on socket H
A46	Rear fuse holder

H* Socket

I* Trailer module (**A6**)

X11010 SW 10-pin socket casing, on fuse holder **A46**

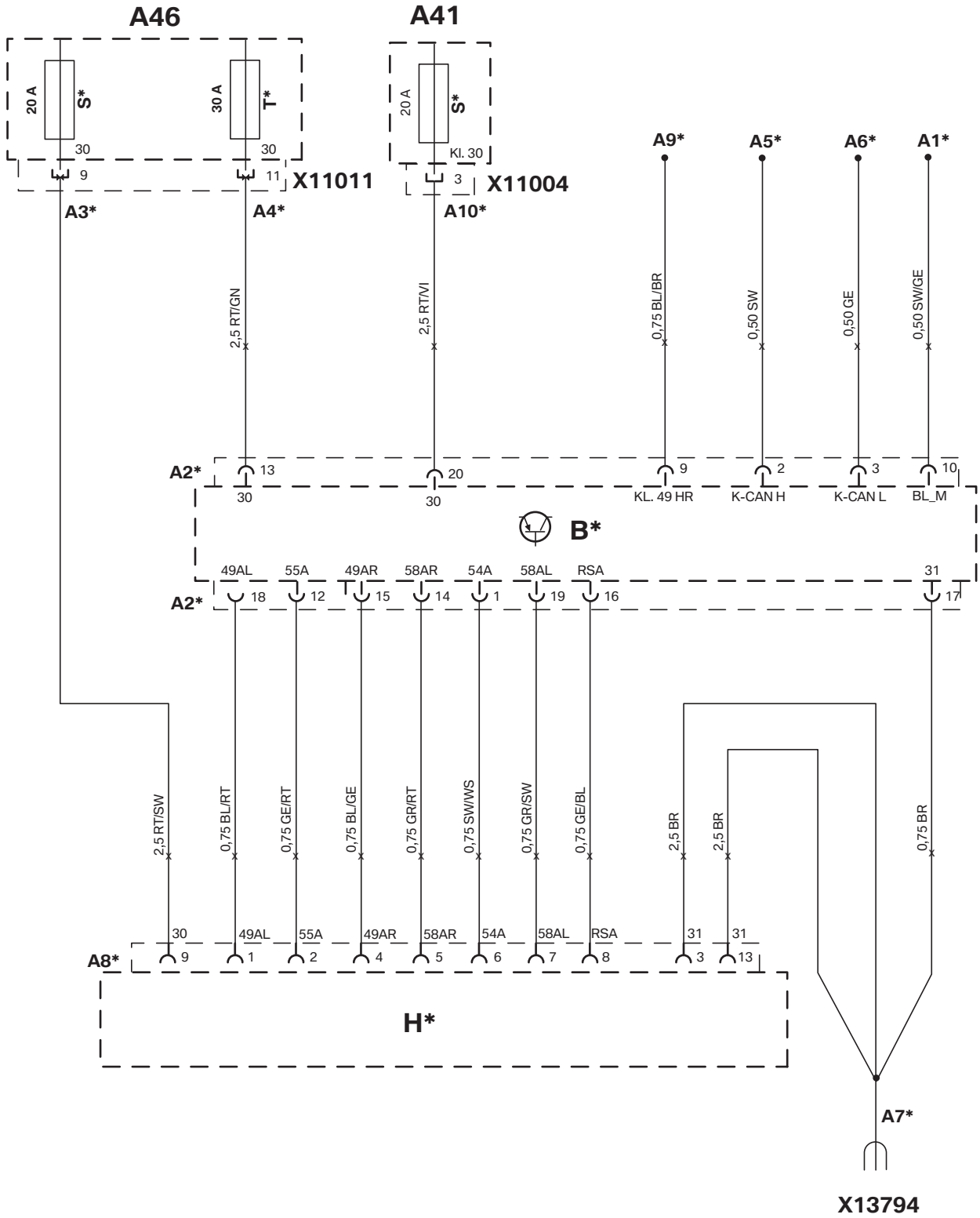
X13794 Joint connector terminal 31 under the left tail light

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

Cable colours

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

12. Wiring diagram (cars built after 9/05 only)



060 1129 Z

12. Wiring diagram (cars built after 9/05 only)

Legend

A1*	Centre brake light pick-up, connected to standard wiring harness using miniature connector Q
A2*	SW 20-pin socket casing, on trailer module I
A3*	On socket casing X11011 of rear fuse holder A46
A4*	On socket casing X11011 of rear fuse holder A46
A5*	K-CAN H pick-up, connected to standard wiring harness using miniature connector Q
A6*	K-CAN L pick-up, connected to standard wiring harness using miniature connector Q
A7*	On earth support point connection X13794 below the right tail light
A8*	SW 13-pin socket casing, on socket H
A9*	Terminal 49 RR pick-up, with miniature connector Q on standard wiring harness (cars built after 09/06 only)
A10*	Socket casing X11004 of front fuse holder A41 (cars after 09/06 only)
A41	Front fuse holder
A46	Rear fuse holder
H*	Socket
I*	Trailer module (A6)

X11004 Natural 8-pin socket casing, on fuse holder **A41**

X11011 SW 10-pin socket casing, on fuse holder **A46**

X13794 Joint connector terminal 31 under the left tail light

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

Cable colours

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

13. Statutory regulations pursuant to EC Directive 94/20/EC

Appendix VII

Regulations for the homologation of a vehicle for the optional installation of mechanical connection devices (trailer tow hitches)

1. General regulations

1.1

The vehicle manufacturer determines which types and classes of connecting devices can be fitted onto the vehicle type, and specifies the values D, V¹, S or U (if applicable) which are based on the design of the vehicle type in combination with the planned type of connecting devices. Code values D, V, S or U for the connection devices approved under this Directive must be equal or greater than the ones that have been specified for the appropriate vehicle type.

1.2.

The connection devices must be installed on the vehicle type in accordance with the installation instructions specified by the vehicle manufacturer and in compliance with the manufacturer of the connection device and the Technical Service. The vehicle manufacturer shall define the permitted points for securing the connection devices to the vehicle type and, if necessary, the mountings, installation plates, etc. that must be mounted on this specific vehicle type.

1.3

Only automatic hitches are allowed to be used for hitching up trailers with a total mass of more than 3.5 tonnes to motor vehicles; these automatic hitches must permit an automatic hitching procedure.

1.4

When connecting devices of class B, D, E and H are fitted to trailers, it is always necessary to assume a value of 32 tonnes for the total mass T of the towing vehicle in order to calculate the D value. If the D value of the connecting device for T = 32 tonnes is not sufficient, the resultant restriction relating to the mass T of the towing vehicle and the mass of the vehicle combination (towing vehicle and trailer) must be specified in the approval sheet for the trailer.

1) The V value must only be specified for vehicles with a technically permissible gross weight in excess of 3.5 tonnes.

13. Statutory regulations pursuant to EC Directive 94/20/EC

2. Special regulations

2.1

Fitting coupling balls and towing brackets (towing ball with trailer tow hitch)

2.1.1

When coupling balls and towing brackets are fitted to a vehicle type of class M1, class M2 below 3.5 tonnes and class N1, the clearance and height dimensions shown in the figure **1** and **2** must be maintained. This requirement does not apply to off-road vehicles in the sense of Appendix II of Directive 92/53/EEC. Unspecified details are to be selected to suit the appropriate purpose. The dimensions and angles must be checked using suitable measuring instruments.

2.1.2

The vehicle manufacturer must supply installation instructions for coupling balls and towing brackets. These installation instructions must specify whether the attachment area requires reinforcing.

2.1.3

It must also be possible to couple and uncouple coupling heads when the longitudinal axis of the coupling head in relation to the centre line of the coupling ball and towing bracket:

- a) is turned horizontally through $b = 60^\circ$ to the right or left (see Figure **2**)
- b) is rotated vertically through $a = 10^\circ$ upwards or downwards (see Figure **1**)
- c) is rotated axially through 10° to the right or left.

2.1.4

The mounted coupling ball must not obscure the rear registration plate or the space provided for the rear registration plate; otherwise, a ball that can be removed without requiring special tools must be used.

2.2 Installing tow ball couplings

2.2.1

Class B coupling heads are permitted to be used with trailers of a gross mass up to 3.5 tonnes. Tow ball couplings are to be installed in such a way that the coupling point of the trailer when the trailer is horizontal and with a permitted axle load is $430 \text{ mm} \pm 35 \text{ mm}$ above the horizontal wheel contact level (see Figure **3**). The horizontal position for caravans and trailers is the position in which the floor or the loading bed is horizontal. On trailers without a reference area of this type (for example boat trailers or the like) the manufacturer of the trailer must specify a suitable reference line to define the horizontal position. The required height only applies to trailers that are to be coupled to the vehicles listed in 2.1.1.

2.2.2

It must be possible to operate coupling heads safely within the clearance of the coupling ball as shown in figures **1** and **2**.

13. Statutory regulations pursuant to EC Directive 94/20/EC

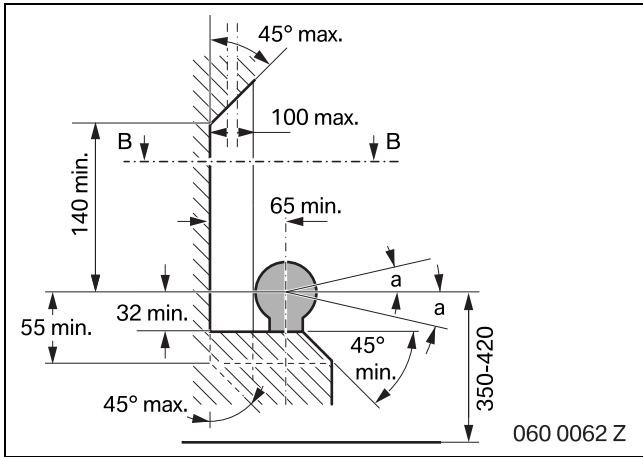


Figure 1
Space for coupling ball, side view.

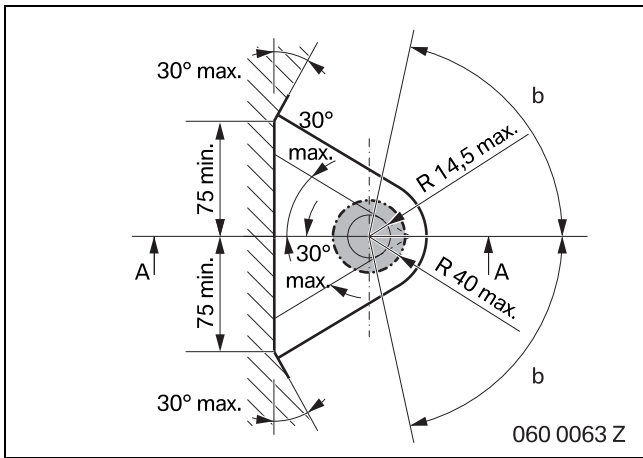


Figure 2
Space for coupling ball, plan view.

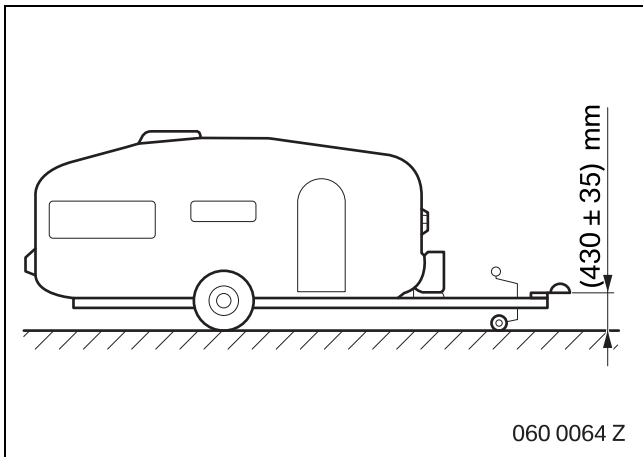


Figure 3
Installation height for the towing ball coupling.