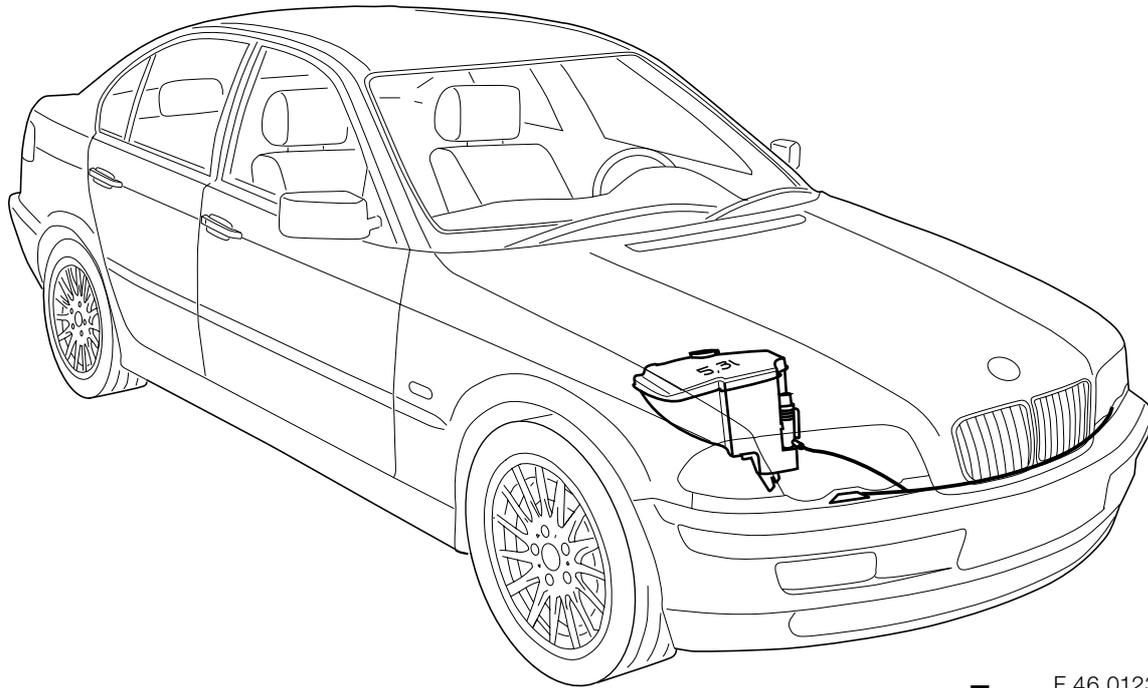




# Parts and Accessories Installation Instructions



F 46 0123 EVA

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## Headlight Cleaning System (SRA) BMW 3 Series (E46)

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

Retrofit kit No.           82 19 9 416 441  
                                  61 67 0 142 197  
                                  61 67 0 136 729  
                                  82 19 0 004 352

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## **Important information**

The retrofit kit is only for use within the dealership organisation.

## **Target group**

The target group for these installation instructions is specialist personnel trained on BMW cars with specialist knowledge of vehicle electrical systems.

All servicing, repair and installation work on BMW cars is completed at your own risk.

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

## **Safety instructions**

Before installation, please note the following:

All tightening torque values are to be taken from the current repair manuals and must be observed.

Ensure that cables and lines are not kinked or damaged as you install them and that they do not interfere with the freedom of movement of other vehicle components.

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

## **Special tools required**

DIS or MoDiC

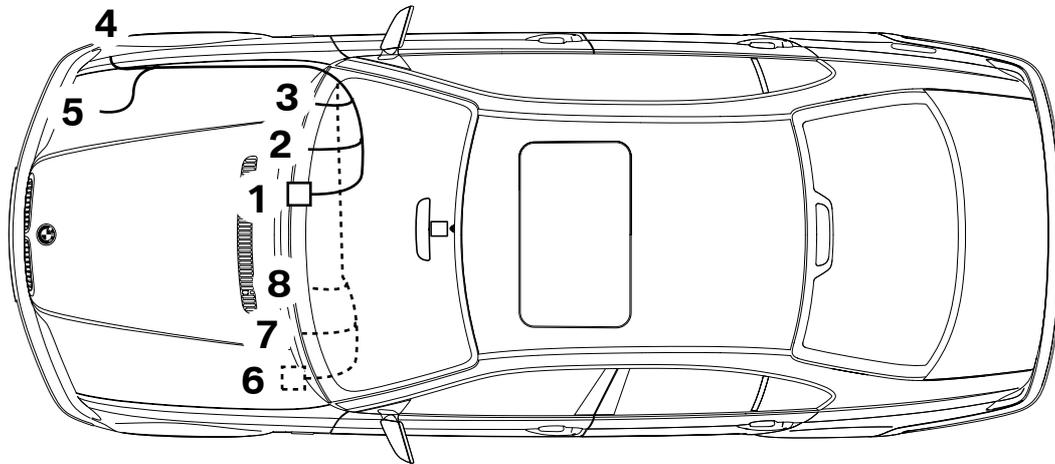
# 1. Preparations

	<b>TIS instruction No.</b>
Print out error memory	
Disconnect the battery	
<b>The following components must be removed first of all:</b>	
On 4-cylinder models up to 9/2001: Battery and battery holder	
Remove the covers below the headlights (keep the rubber seals, the covers are no longer required) (not with BMW 3 Series compact (E46/5)).	
Indicator lights	
Front bumper trim	
Headlights	
Washer reservoir (some of the components contained in it will be required later)	
Glove compartment	
Trim below glove compartment	
Front right door sill strip	
A pillar trim at the bottom right	
Air scoop (only for cars with auxiliary fan)	
Air guide duct (only for cars with auxiliary fan)	
Auxiliary fan (only for cars with auxiliary fan)	
<b>Only in RHD cars:</b>	
Accelerator pedal module	



This kit contains four unpainted covers (two covers with the BMW 3 Series compact (E46/5)). Paint these with the appropriate body colour in accordance with the current BMW painting instructions before installing them. ◀

## 2. Installation and cabling diagram

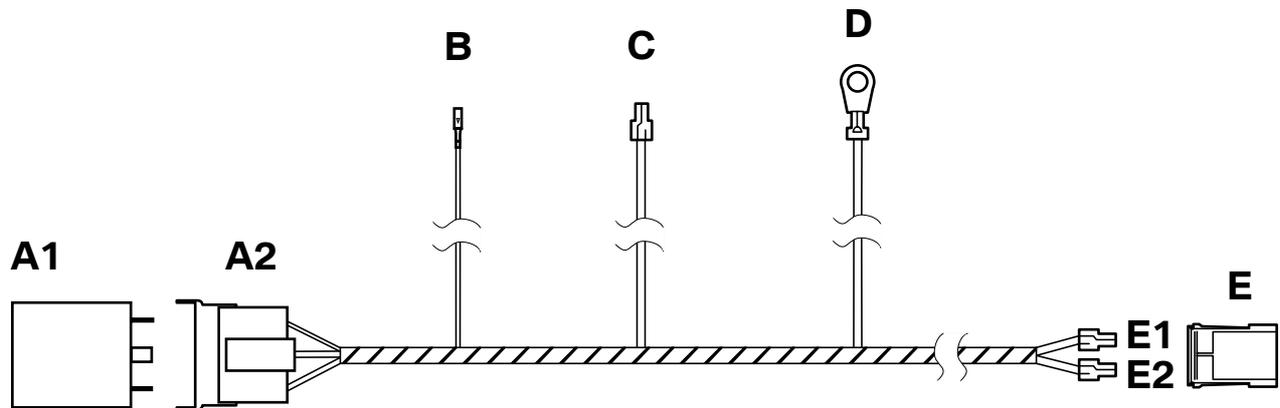


046 0943 V

### Legend

- 1 Relay socket in LHD models
- 2 Relay holder behind glove compartment in LHD models
- 3 Fuse holder behind glove compartment in LHD models
- 4 Earth post connection behind right-hand indicator light
- 5 HCS pump
- 6 Relay socket in RHD models
- 7 Relay holder behind glove compartment in RHD models
- 8 Fuse holder behind glove compartment in RHD models

### 3. HCS wiring harness connection overview

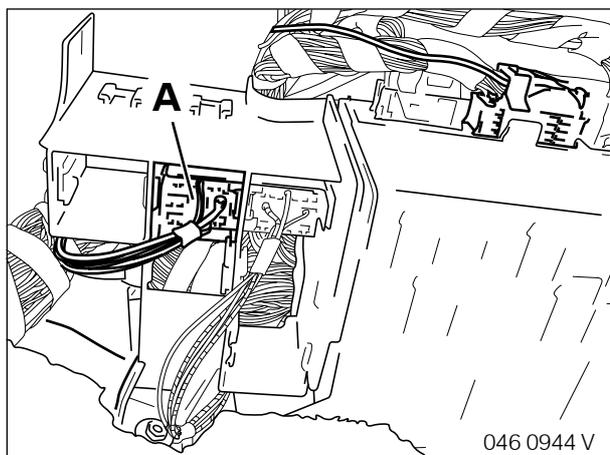


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Item	Description	Signal	Cable colour	Connection location in the car	Abbreviation / Slot
A1	HCS relay	---	---	Insert into relay socket (no. A2)	X61
A2	Relay socket	---	---	Relay holder behind glove compartment	---
B	Blade terminal contact	---	BL/SW	Base module B, black 54-pin plug behind the glove compartment	X253/12
C	Blade terminal contact	---	RT/GR	Fuse holder I, A46 on fuse slot F51 behind the glove compartment	X10015/14
D	Cable lug A6	---	BR	Earth post connection behind the right-hand indicator light	X166
E	Grey 2-pin plug	---	---	HCS pump	---
E1	Blade terminal contact	---	BR	Grey 2-pin plug of the HCS pump	X1011/1
E2	Blade terminal contact	---	SW/BR	Grey 2-pin plug of the HCS pump	X1011/2

#### 4. To route the HCS wiring harness

- ▷ Lay the cables of the HCS wiring harness along the standard wiring harness and secure them so that they do not interfere with any other components and do not cause any rattling noises. ◀

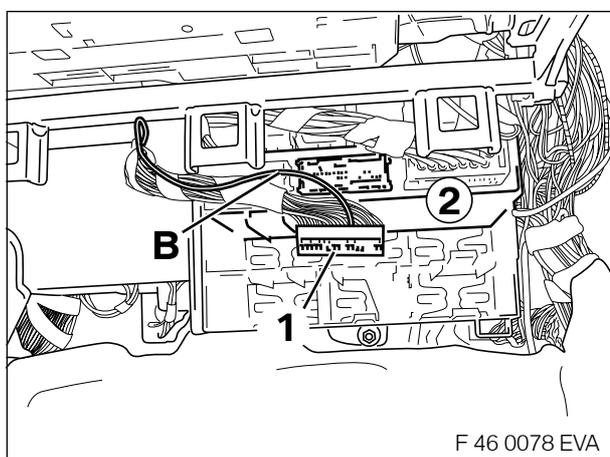


##### Only for LHD models:

From below, insert branch **A** (relay socket **X61**, **A1** with relay **A2** connected) into the relay holder.

- ▷ In cars with a production date after 09/98, the relay is fitted on the side of the module holder behind the glove compartment instead of being plugged into the relay carrier from below. ◀

Route the HCS wiring harness along the standard wiring harness to the right.

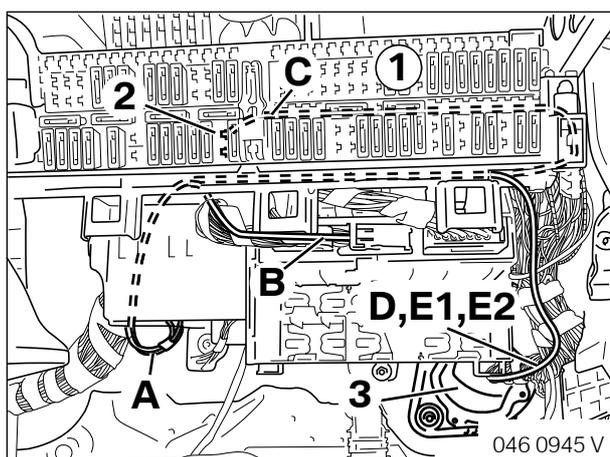


##### Only for LHD models:

Disconnect and dismantle the black 54-pin plug **X253** (1) on the base module **B** (2).

Route branch **B** (BL/SW cable) to pin strip **X253** (1) and connect it into slot 12 there.

Assemble plug **X253** (1), connect it to the base module **B** (2) and secure it.



##### Only for LHD models:

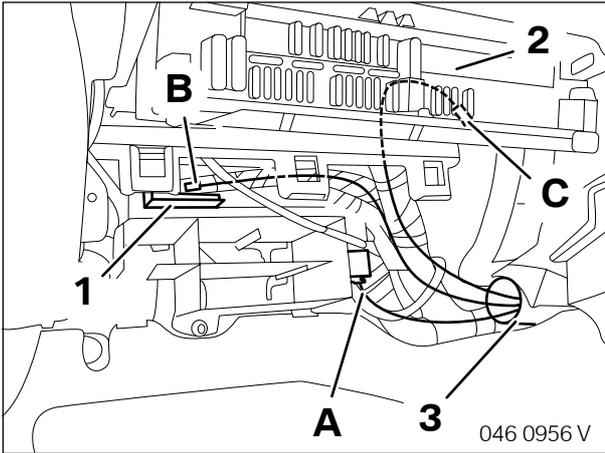
Route branch **C** (RT/GR cable) to fuse distributor I, A46, **X10015** (1) behind the glove compartment and clip into slot 14 (2) (fuse slot no. 51).

- ▷ To facilitate installation, disconnect the fuse distributor **X10015** and separate the fuse strips. ◀

Connect the fusible link 30A to fuse slot no. 51 (2).

Route branches **D** (BR cable), **E1** (BR cable) and **E2** (SW/BR cable) through the grommet (3) in the right-hand footwell into the engine compartment and on towards the front along the standard wiring harness.

4. To route the HCS wiring harness



**Only for RHD models:**

Attach branch **A** (relay socket **X61, A1** with relay **A2** connected) onto the side of the module holder behind the glove compartment.

Route branch **B** (BL/SW cable) to the black 54-pin plug **X253** (1) on the base module (B) and connect it into slot 12 there.

Route branch **C** (RT/GR cable) to fuse distributor I, A46, **X10015** (2) behind the glove compartment and clip into slot 14 (fuse slot no. 51).

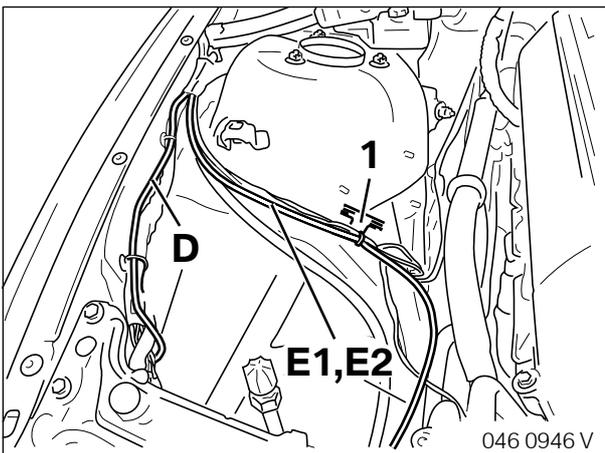
▶ In cars with a production date before 09/98, the relay is plugged into the relay holder from below. ◀

Connect the fusible link 30A to fuse slot no. 51.

Route branches **D** (BR cable), **E1** (BR cable) and **E2** (SW/BR cable) through the corrugated tube (3) to the right, then along the standard wiring harness to the grommet in the right-hand footwell and from there into the engine compartment. Route branches **D**, **E1** and **E2** further along the standard wiring harness towards the front.

Route branch **D** (brown cable) along the inner wing and further towards the front.

Route branches **E1** and **E2** along the MacPherson strut tower and attach to the cable holder (1).

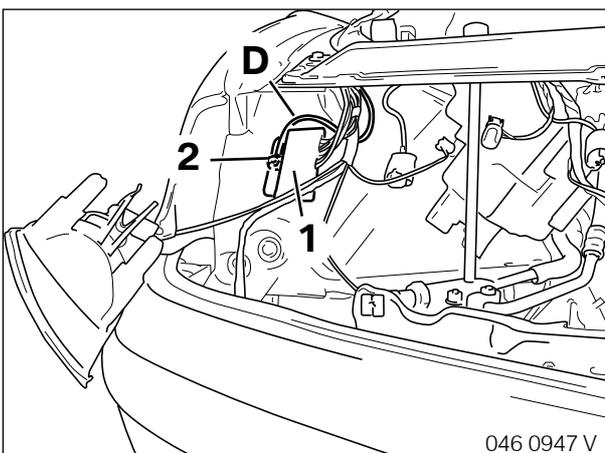


Route branch **D** (BR cable) to the earth post connection **X166** (1) behind the right-hand indicator light.

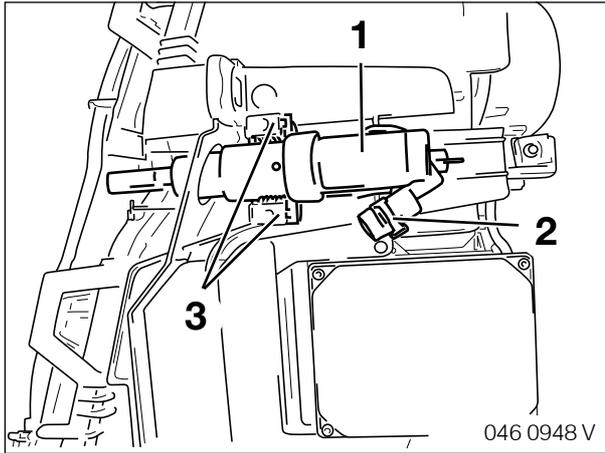
Unscrew the retaining nut (2), put the cable lug of branch **D** onto the stud bolt and attach with the nut (2).

Apply anti-corrosion measures approved by BMW to the cable lug.

▶ If xenon lights are also being retrofitted into the vehicle, next route the xenon light wiring harness. ◀



## 5. To install the telescopic jets



The telescopic jets on the left and right are identical. If necessary, twist the rear part of the telescopic jets (1) so the hose connection (2) will point towards the middle of the vehicle when the headlights are subsequently installed. This is the only way the telescopic jets can be fitted onto the headlights.

The procedure is illustrated for the left-hand headlight. Proceed accordingly on the right-hand side. ◀

Attach the telescopic jet (1) to the underside of the headlight and clip in the retaining lugs (3).

## 6. To route the HCS hose line and install the headlights

Cut the hose line provided to the following lengths:

### All models apart from the BMW 3 Series compact (E46/5):

Hose line from the T-piece to the left telescopic jet 910 mm.

Hose line from the T-piece to the right telescopic jet 160 mm.

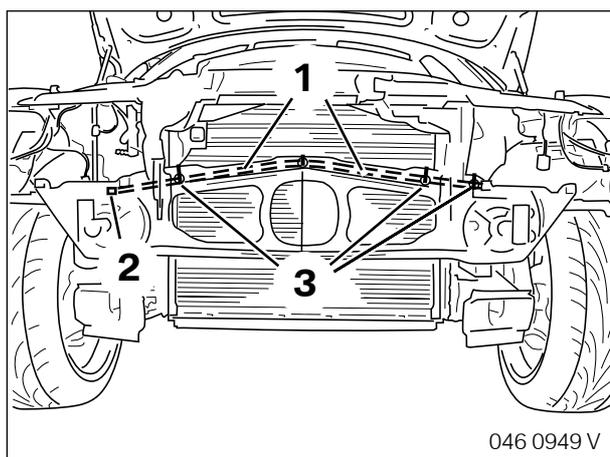
Hose line from the T-piece to the HCS pump in the washer reservoir 200 mm.

### BMW 3 Series compact (E46/5) only:

Hose line from the T-piece to the left telescopic jet 850 mm.

Hose line from the T-piece to the right telescopic jet 120 mm.

Hose line from the T-piece to the HCS pump in the washer reservoir 200 mm.



### All models:

Route the 910 mm long hose line (1) (850 mm in the BMW 3 Series compact (E46/5)) along the inside of the front of the car.

Fit a black barbed plug onto the left-hand end of the hose and attach with a supplied hose clip.

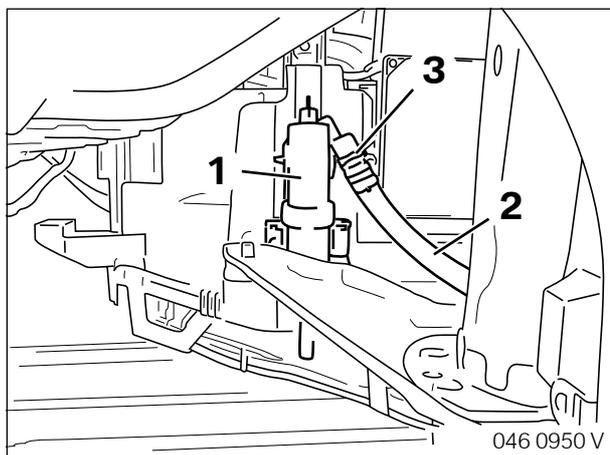
Put a supplied hose clip onto the right-hand end of the hose.

Fit the T-piece (2) and close the hose clip.

Attach the hose line (1) onto the front of the car with cable ties (3).



Clip the T-piece (2) onto the front of the car from behind after you have installed the hose line. ◀

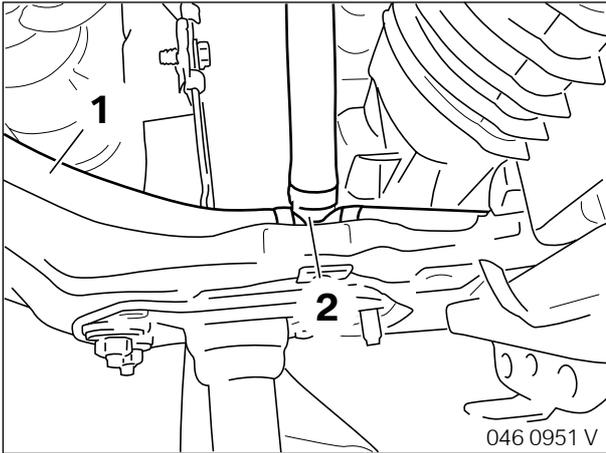


Install the left-hand headlight (with the telescopic jet (1) fitted).

Use the barbed plug fitted to the hose line (2) to connect the hose line to connection (3) of the telescopic jet on the left-hand headlight.

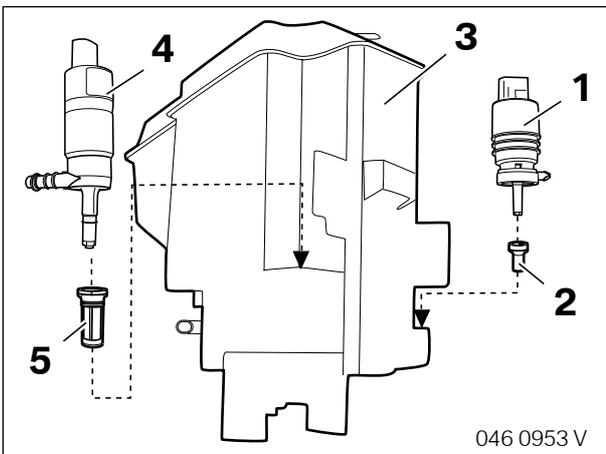
Check the hose line (2) has engaged in connection (3) of the telescopic jet (1).

6. To route the HCS hose line and install the headlights



Connect the 160 mm long hose line (1) (120 mm in the BMW 3 Series compact (E46/5)) onto the end of the T-piece (2) which is pointing to the right.

Attach a black barbed plug to the other end of the hose and secure both ends of the hose with the supplied hose clips.



Take the washing water pump (1) for the headlight cleaning system out of the washer reservoir originally installed in the vehicle. Fit it with a new pump screen (2) and transfer it into the washer reservoir (3) supplied with the parts kit.

Take the HCS pump (4) supplied with the parts kit and the pump screen (5) and install them into the washer reservoir (3).

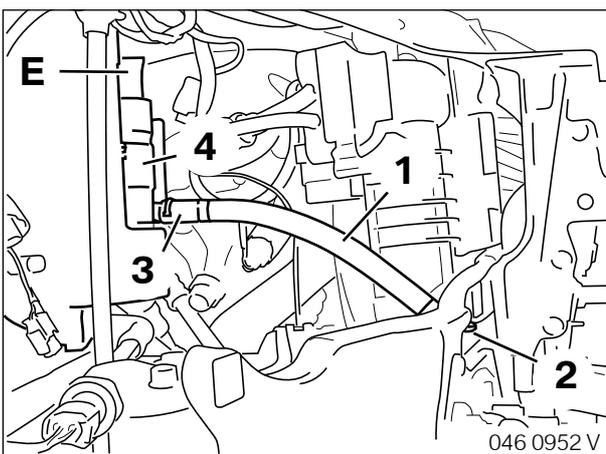
Install the completed washer reservoir (3).

Connect branch **E** of the HCS wiring harness to the HCS pump (4).

Connect the washing pump of the headlight cleaning system. Connect the level sensor.



If there is no level sensor in the new washer reservoir (3), also transfer this from the washer reservoir originally fitted in the car. Any filler tube installed in the washer reservoir (3) is not required in cars with a HCS. ◀



Connect the 200 mm long piece of hose (1) onto the end of the T-piece (2) which is pointing towards the engine compartment.

Push two hose clips over it and install the white connector (3) on the other end of the hose. Connect the hose line (1) to the HCS pump (4) using the connector (3) and secure it.

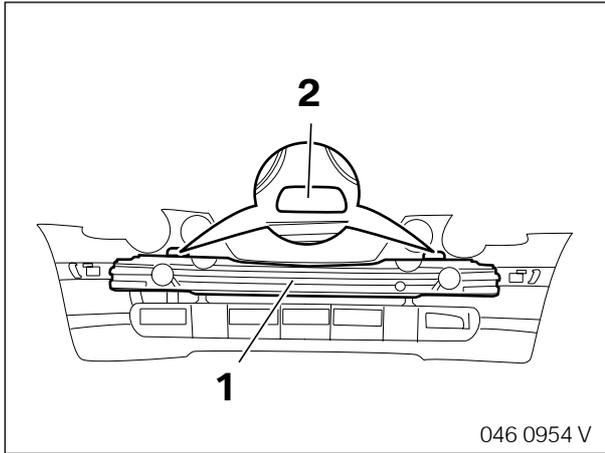
Secure both ends of the hose with hose clips and clip the T-piece (2) onto the front of the car.

Install the right-hand headlight (with the telescopic jet fitted).

Insert the hose line with the barbed plug installed onto the connection for the telescopic jet in the right-hand headlight.

Check the hose line has engaged in the connection of the telescopic jet.

## 7. To make cut-outs in the front bumper trim (only BMW 3 Series compact (E46/5))



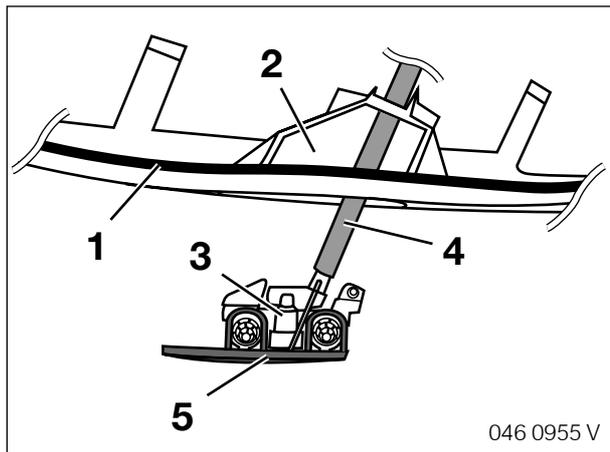
Remove the support (1) for the front bumper trim.

Cut out the marked areas (2) in the front bumper trim.

Fit the support (1) onto the front bumper trim.

Install the front bumper trim back onto the car in the opposite sequence to its removal.

## 8. To install the covers and headlight cleaning jets



### All models apart from the BMW 3 Series compact (E46/5):

Remove the rubber seals (1) from the removed covers below the headlights and fit them onto the new covers (2) with cutouts which have been painted in the body colour.

Clip in the covers (2) with cut-outs below the headlights.

### All models:

Connect the headlight cleaning jets (3) onto the telescopic jets (4) and clip them in.

Carefully pull out the headlight cleaning jets (3) and telescopic jets (4) towards the front and fit the body coloured spray jet covers (5) onto the headlight cleaning jets (3).



The spray jet covers (5) and headlight cleaning jets (3) are different on the left and right. Note the embossing on the rear or underneath. ◀



Figure 046 0955 V shows the cover below the headlight. In the BMW 3 Series compact (E46/5), the headlight cleaning jets (3) and the telescopic jets (4) are pulled out through the cut-outs in the front bumper trim. When doing this, make sure that the cut-outs in the bumper trim are large enough and the components do not interfere with one another. ◀

## 9. Coding

This retrofit system requires coding.

The coding is necessary to ensure that the retrofit system is fully functional and does not cause malfunctions and faults in combination with other electrical vehicle systems.

In addition the retrofit system is stored in the central coding key of the IKE/instrument cluster.

The coding process is completed using the DIS/MoDIC and is completed automatically using the current coding program in the "Retrofit" path.

The procedure is user-guided, simply follow the text instructions to complete the various steps.

Print out the error memory and the modified coding key label and attach to the car.

## 10. Concluding work

Reassemble the car by following the instructions for its dismantling in reverse order.

### Function test



The headlight cleaning system only functions when dipped headlights are switched on. ◀

The headlight cleaning system is activated in conjunction with the windscreen cleaning system. Operate the switch for the windscreen washer system to do this.

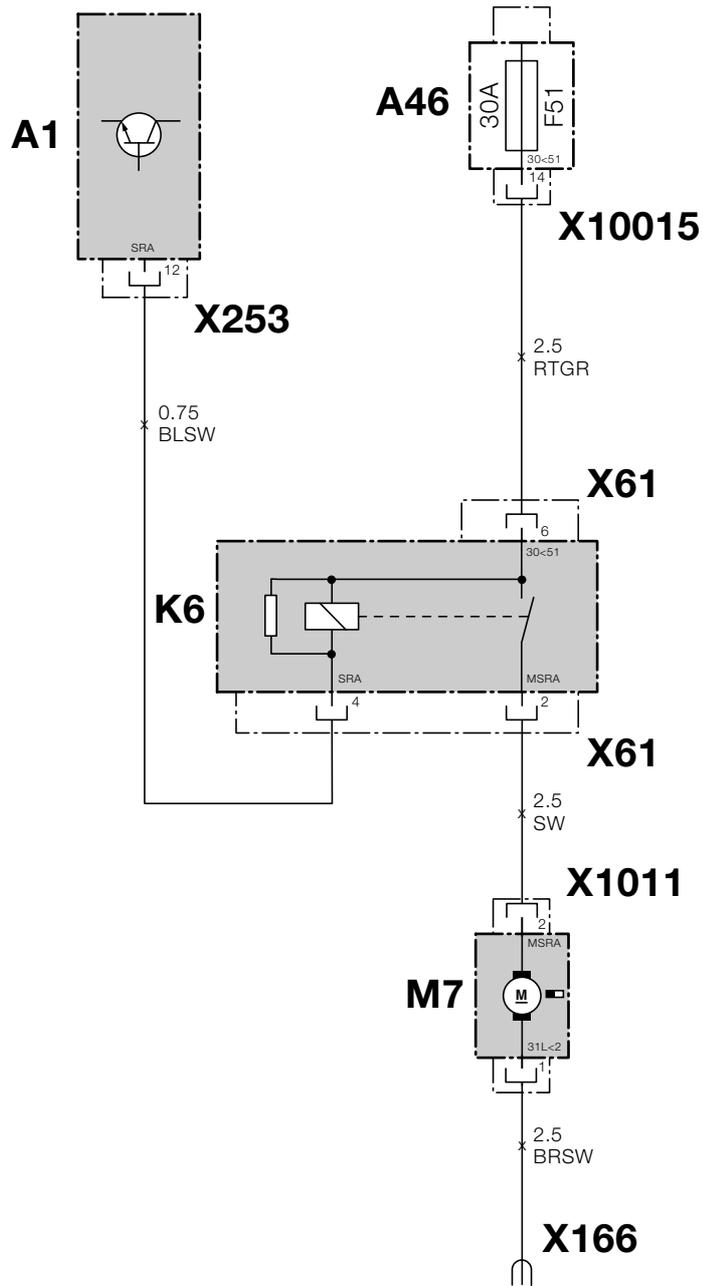
The headlight cleaning system is prevented from operating for about 3 minutes after it has been used. In order to repeat the spraying of the headlight cleaning jets immediately, you have to switch the ignition off and on again first.

### Setting the headlights and headlight cleaning jets

The headlight cleaning jets are preset. The point where the jet hits must be about in the middle of the dipped or high-beam headlights when the spray jet is pulled out all the way.

Set the spray jets according to the current repair manual if necessary.

# 11. Circuit diagram



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11.

## Legend

<b>A1</b>	Base module
<b>K6</b>	HCS module
<b>M7</b>	Headlight water pump
<b>A46</b>	Fuse distributor I, A46 behind glove compartment
<b>X61</b>	Relay socket
<b>X166</b>	Earth cable lug A6 behind the right-hand indicator light
<b>X253</b>	Black 54-pin plug on base module B
<b>X1011</b>	Grey 2-pin plug of the HCS washing water pump
<b>X10015</b>	Fuse holder I, A46

## Cable colours

BL	blue
SW	black
RT	red
GR	grey
BR	brown