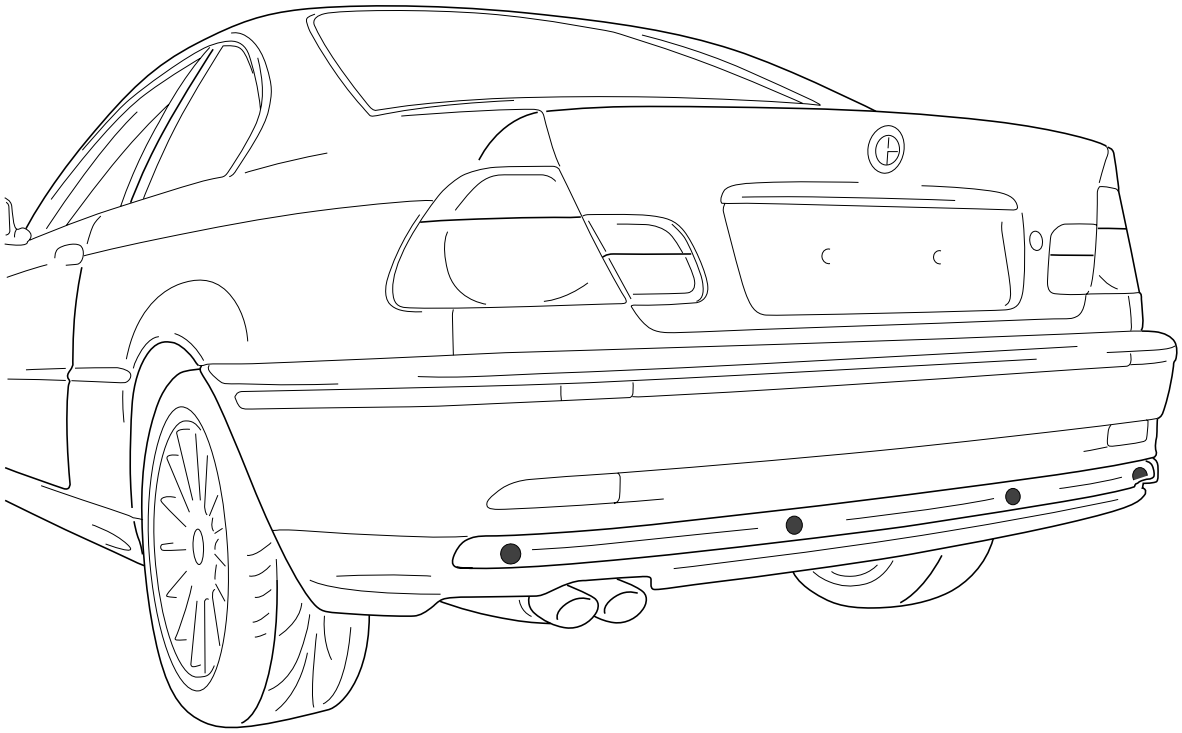
Teile und Zubehör - Einbauanleitung



F 46 0139 EVA

BMW Parts and Accessories – Installation Instruction
Park Distance Control (PDC), rear
BMW 3 Series E46 coupé, convertible (E46/2/C)

Best.-Nr. 01 29 0 021 514 II/2003 Printed in Germany

Contents **Page**

1. Important Notes

General notes

Installation time
Installation time is approx. 4 hours
The installation time can vary according to the condition and fittings of the vehicle.

Target Group

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 operations should be carried out with the aid of the current BMW
- repair instruction manuals (see Technical Information System)
- circuit diagrams (see Diagnostic Information System)
in a logical sequence using the prescribed tools (special tools) whilst observing the applicable health and safety regulations.

Assembly notes
The retrofit wiring harness should be installed in such a way as to exclude any possibility of it becoming kinked or chafed.
If specified pins or spaces are already assigned, bridges, double crimpings or parallel connections will have to be made.
All work is represented as taking place on a left-hand drive vehicle. For right-hand drive vehicles, certain oper-ations will have to be carried out in mirror-image.
Reference should be made to the current repair instructions for all tightening torques and these must be observed without exception.

Safety notes

The currently valid accident prevention regulations should be observed.

2. Installation instructions

Contents **Page**

21 Preparatory work

Carry out short test.
Disconnect battery

The following parts must be dismantled for the sake of the retrofit:

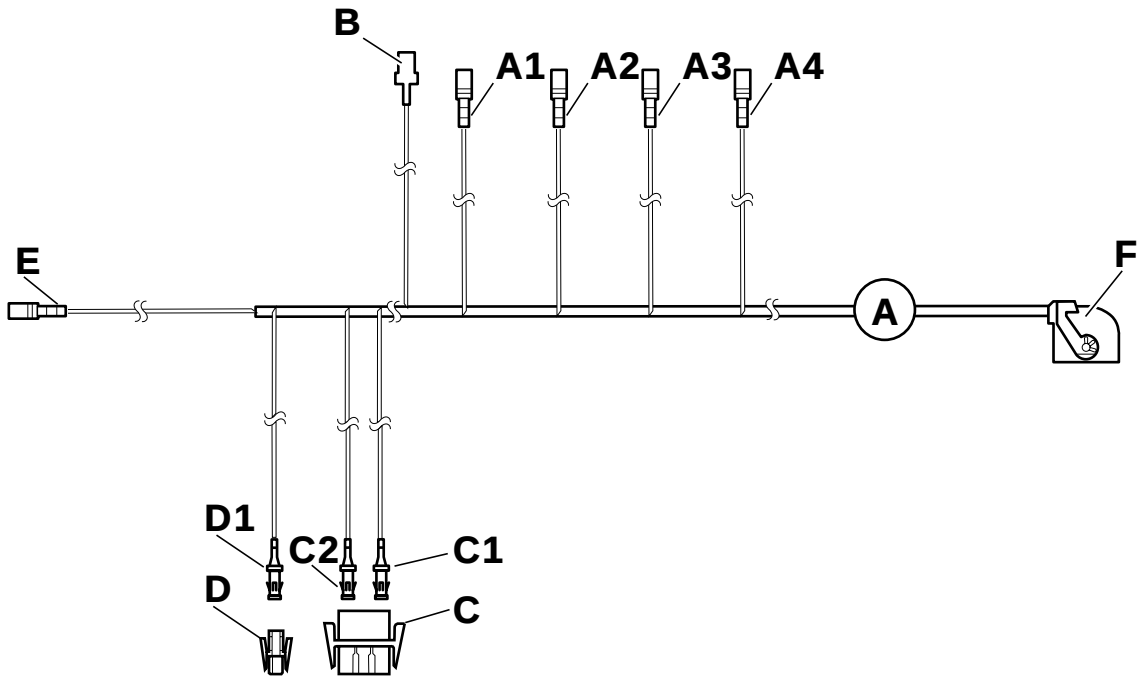
Footwell trim-panel on the driver's side.
Glove box.
A-pillar trim-panel in footwell, right.
Sill-strip seal, right.
Rear seat bench.
Rear seat back (only vehicles without through-load system).
Side bolster rear right (only vehicles with through-load system).
Side trim panel in rear compartment, right.
Trim panel in boot, right.
Rear bumper.

2.2 Overview power supply wiring harness

Open fold-out page 2-25 !

Item	Package / Designation	Cable colour	Connection point in vehicle	Code designation/ plug-in place
A	Power supply wiring harness			
A1	1-pole blade terminal contact	Bl/Ye	plug into joint connector RS	X 428
A2	1-pole blade terminal contact	Br	plug into joint connector, earth - only vehicles without gong (H10)	X 219
A3	1-pole blade terminal contact	Wt/Rd/Ye	plug into joint connector K-Bus	X 10116
A4	1-pole blade terminal contact	Rd/Ye	plug into joint connector VA (*ZKE consumer deactivation), only vehicles without gong (H10)	X 10189
B	1-pole blade terminal contact	Gn/Wt	at fuse holder II, A47 plug-in place F 24	X 10016 Pin 48
C	3-pole socket housing		at gong (H10)	X 522
C1	1-pole socket contact	Br	plug into socket housing C Pin 1	X 522 Pin 1
C2	1-pole socket contact	Rd/Ye	plug into socket housing C Pin 3	X 522 Pin 3
D	1-pole socket housing		at gong (H10) Pin T4	X 363
D1	1-pole socket contact	Bl/Gr	plug into socket housing D	X 363
E	1-pole blade terminal contact	Br/Bl	plug into joint connector, footwell driver's side	X 217
F	12-pole plug connector		at PDC control unit	X 300

* ZKE = central body electronics

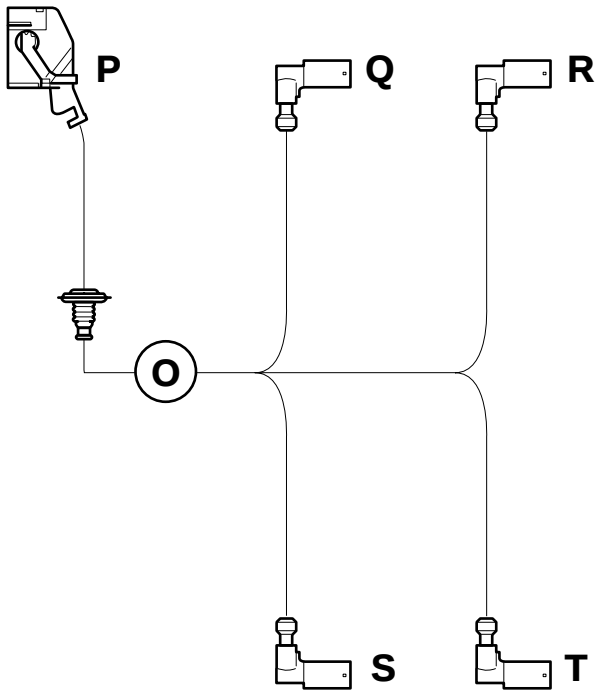


F 46 0150 EVA

2.3 Overview ultrasonic sensor wiring harness

Open fold-out page 2-35!

Item	Package / Designation	Cable colour	Connection point in vehicle	Code designation/ plug-in place
O	Ultrasonic sensor wiring harness			
P	12-pole plug connector		PDC control unit	X 18013
Q	3-pole socket housing		at ultrasonic sensor in bumper HL	X 18020
R	3-pole socket housing		at ultrasonic sensor in bumper HML	X 18021
S	3-pole socket housing		at ultrasonic sensor in bumper HMR	X 18022
T	3-pole socket housing		at ultrasonic sensor in bumper HR	X 18023



F 46 0190 EVA

2.4 Installation of ultrasonic sensor wiring harness

Open fold-out page 2-45!

A
Only E46/2
Install power supply wiring harness (1) from the PDC control unit (2) to the fuse box (3), to the gong (4) at the footwell trim-panel on the driver's side and to the joint connector (5) in the vicinity of the steering column. Install ultrasonic sensor wiring harness (6) from the PDC control unit (2) to the ultrasonic sensors (7).

B
Only E46/C
Install power supply wiring harness (1) from the PDC control unit (2) to the fuse box (3), to the gong (4) at the footwell trim-panel on the driver's side and to the joint connector (5) in the vicinity of the steering column. Install ultrasonic sensor wiring harness (6) from the PDC control unit (2) to the ultrasonic sensors (7).

C
Carefully release the catch mechanisms of the lower finisher (1) and remove it from the bumper trim panel (2). Insert new finisher for support of the ultrasonic sensors in the bumper trim panel (2).

▷ To avoid scratching the bumper trim panel (2), the change of finishers should be undertaken from the inside of the bumper trim panel (2).◀

D
Insert ultrasonic sensor (1) in the finisher (2) until the snap-in lock engages.

▷ The illustration shows installation of one ultrasonic sensor. Proceed in the same way for installation of the other ultrasonic sensors.◀

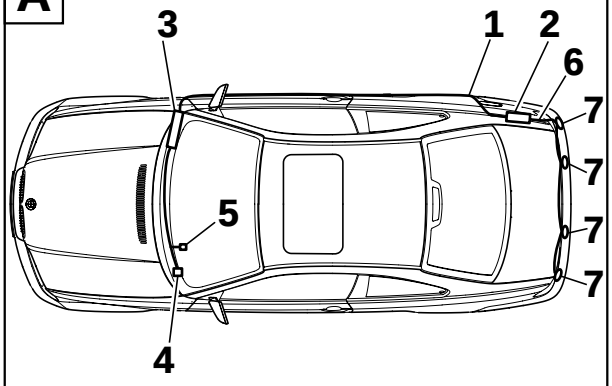
E
Put cable straps (1) on the weld studs (2) and remove covering cap (3).

F
Attach ultrasonic sensor wiring harness (1) with the aid of the cable straps (2). Thread plug connector **P** through the opening in the body and insert the grommet (3). Lay plug connector **P** to the installation location of the PDC control unit.

G
Plug connectors **Q**, **R, S, T** of the ultrasonic sensor wiring harness onto the respective ultrasonic sensors (1). Install bumper trim panel in the reverse order of disassembly.

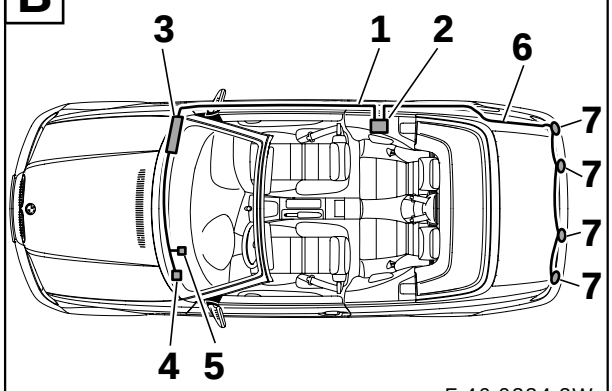
⚠ When the ultrasonic sensor wiring harness is being installed and the connectors on it, care should be taken to see that there is no possibility of contact with parts of the exhaust or other moving parts.◀

A



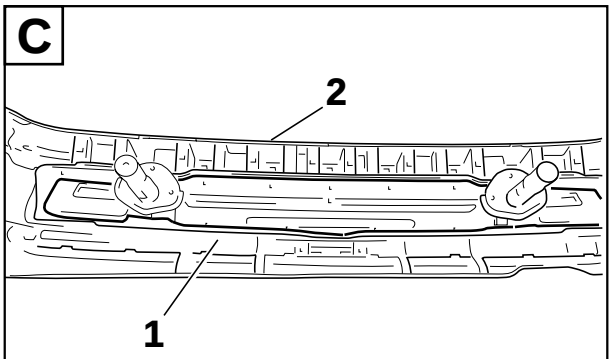
F 46 0149 EVA

B



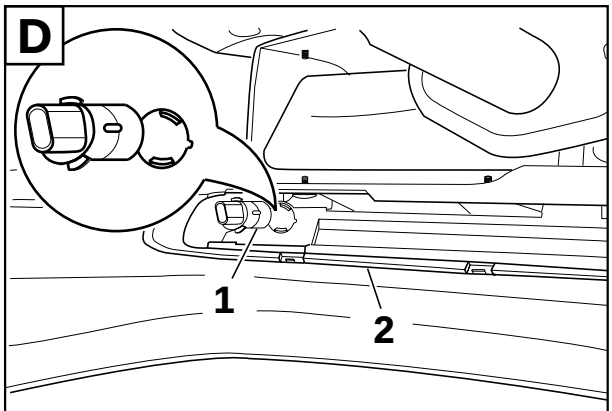
F 46 0334 2W

C



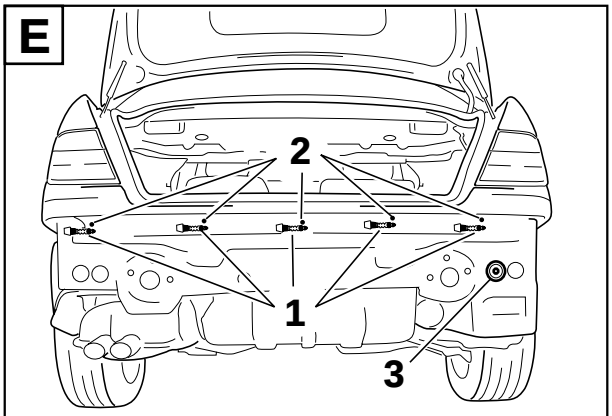
F 46 0148 EVA

D



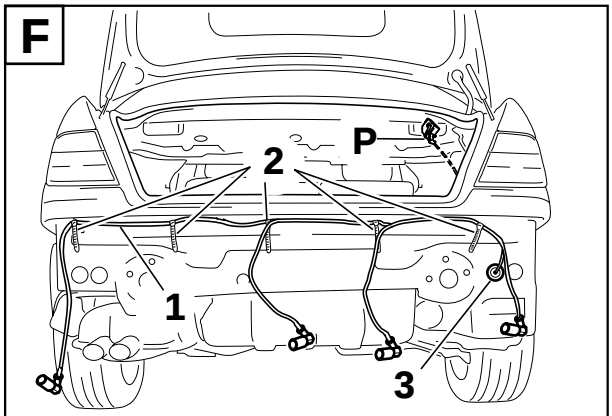
F 46 0194 EVA

E



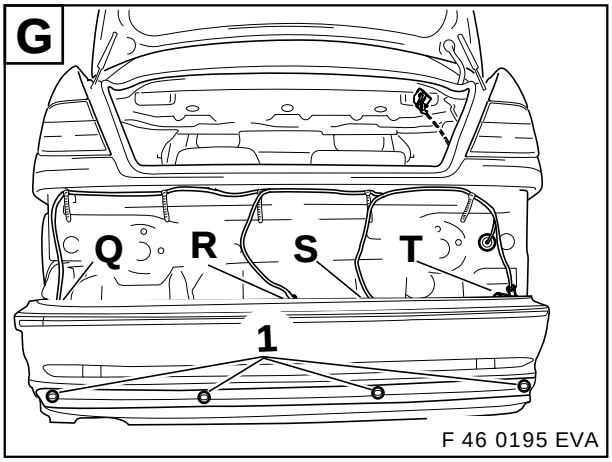
F 46 0145 EVA

F



F 46 0146 EVA

G



F 46 0195 EVA

2.4 Installation of ultrasonic sensor wiring harness

Open fold-out page 2-45!

A
Only E46/2
Install power supply wiring harness (1) from the PDC control unit (2) to the fuse box (3), to the gong (4) at the footwell trim-panel on the driver's side and to the joint connector (5) in the vicinity of the steering column. Install ultrasonic sensor wiring harness (6) from the PDC control unit (2) to the ultrasonic sensors (7).

B
E46/C only
Lay the power supply wiring harness (1) from the PDC control module (2) to the fuse box (3), to the gong (4) on the footwell casing on the driver's side and to the joint connector (5) near the steering column.
Lay the ultrasonic converter wiring harness (6) from the PDC control module (2) to the ultrasonic converters (7).

C
Only cars up to 03/2003
Carefully release the engagement pins on the bottom trim (1) and take the trim out of the bumper casing (2).
Insert the new trim to hold the ultrasonic converters into the bumper casing (2).

To avoid scratching the bumper trim panel (2), the change of finishers should be undertaken from the inside of the bumper trim panel (2).

D
Only cars up to 03/2003
Insert the ultrasonic converter (1) into the trim (2) until the interlock engages.

The illustration shows installation of one ultrasonic sensor. Proceed in the same way for installation of the other ultrasonic sensors.

E
Only cars after 03/2003

When fitting the ultrasonic converter holders and the ultrasonic converters (1) ensure that the ultrasonic converters (1) are aligned with their connection jacks as shown.

F
Only cars after 03/2003
Mark and centrepunch the centre point within the marking (1).
Drill a hole (diameter 27 mm).

Make a locking device (1) with a suitable tool, whilst maintaining the prescribed alignment of the ultrasonic converters (see Figure 046 1041 V).

G
Only cars after 03/2003
Insert the ultrasonic converter holders (1) into the holes.

The interlocks (2) must engage. If necessary chamfer the holes from the inside of the bumper.

Insert the ultrasonic converters (3).

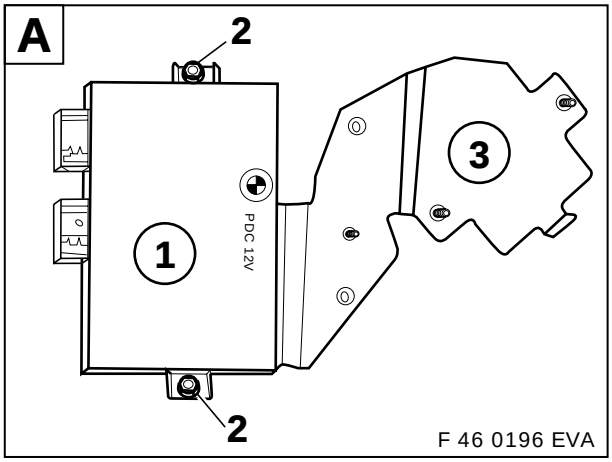
The locking hooks on the ultrasonic converters (3) must engage.

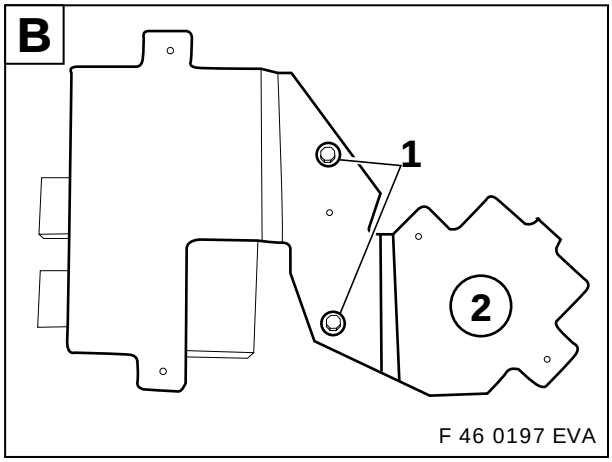
H
Attach cable ties (1) to the welded studs (2) and remove the cover cap (3).

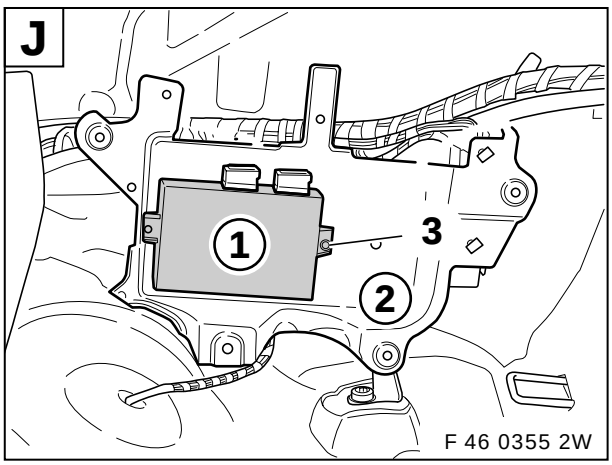
I
Secure the ultrasonic converter wiring harness (1) using the cable ties (2). Thread plug **P** through the opening in the body and insert the grommet (3). Lay plug **P** to the installation site of the PDC control module.

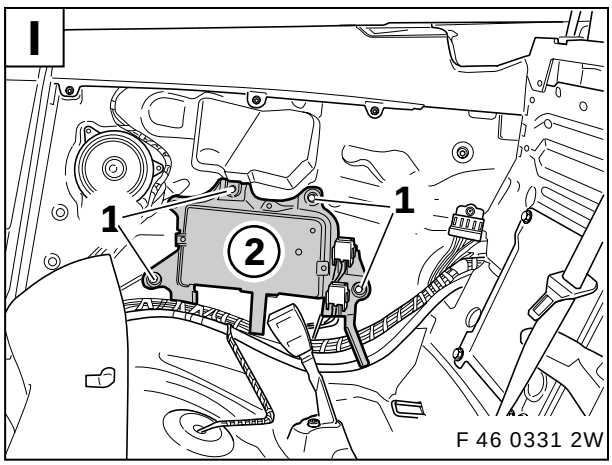
J
Connect plugs **Q, R, S, T** on the ultrasonic wiring harness to the relevant ultrasonic converters (1).
Install the bumper casing by following the instructions for its removal in reverse.

 When the ultrasonic sensor wiring harness is being installed and the connectors on it, care should be taken to see that there is no possibility of contact with parts of the exhaust or other moving parts.

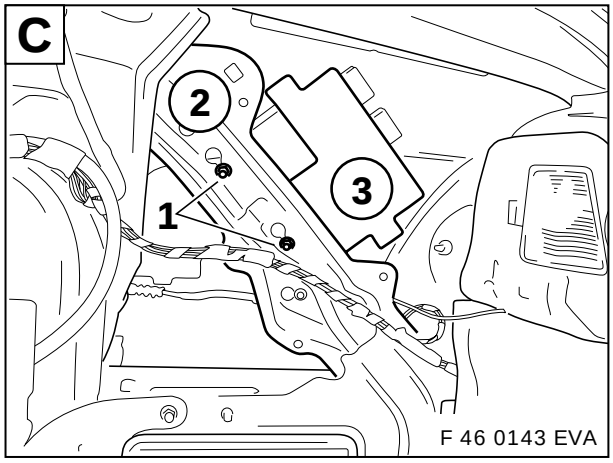

A
2
PDC 12V
1
3
2
F 46 0196 EVA


B
1
2
F 46 0197 EVA


J
1
3
2
F 46 0355 2W

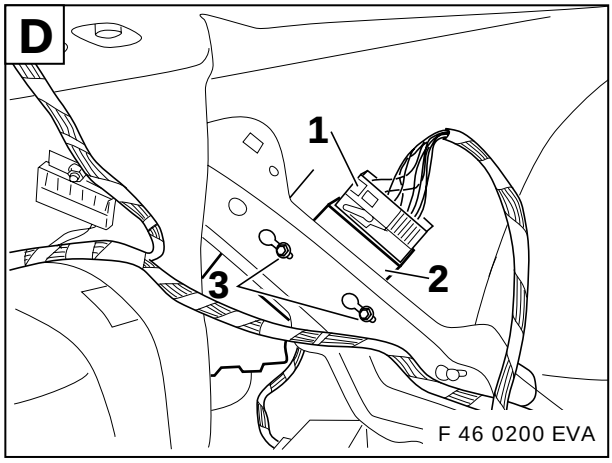

I
1
1
2
F 46 0331 2W

C



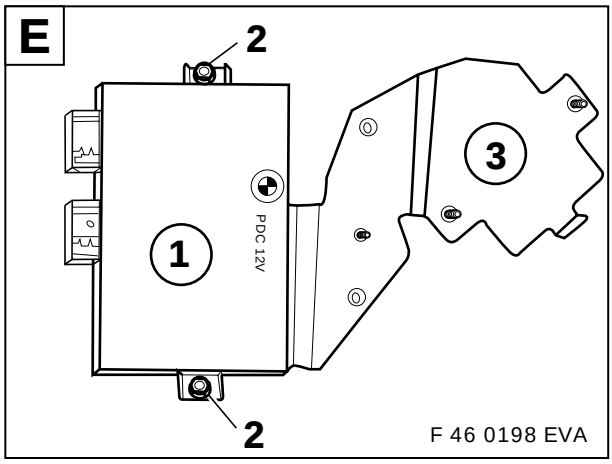
F 46 0143 EVA

D



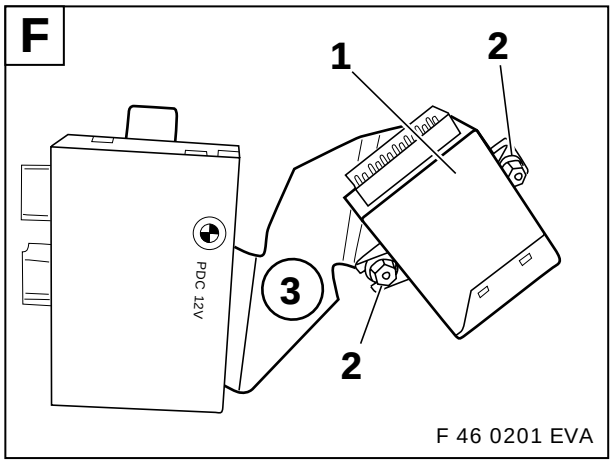
F 46 0200 EVA

E



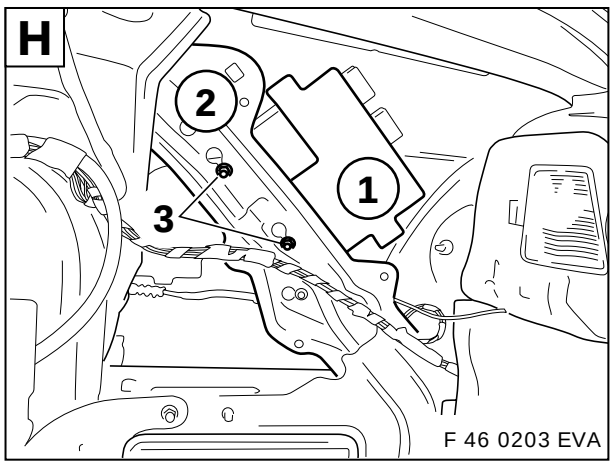
F 46 0198 EVA

F



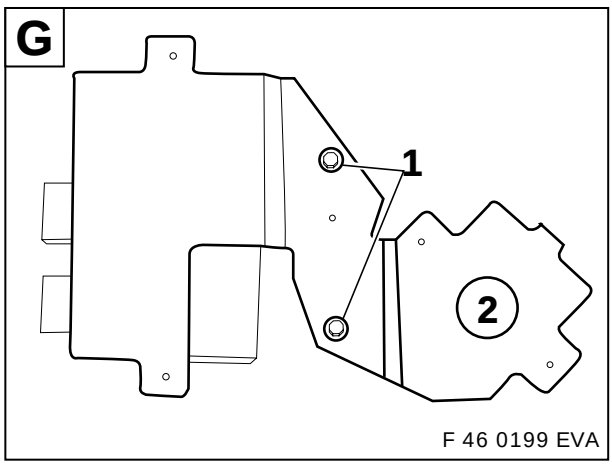
F 46 0201 EVA

H



F 46 0203 EVA

G



F 46 0199 EVA

2.6 Installation of power supply wiring harness

Open fold-out page 2-73 !

A
Only E46/2
Guide the power supply wiring harness (1) from the PDC control unit in the boot through the grommet (2) on the right behind the rear seat bench and install it along the right sill strips to the fuse box above the glove box.

In right-hand drive models, the same installation route of the power supply wiring harness as in left-hand drive models should be adhered to. For this purpose, the ties on the power supply wiring harness must be opened up.◄

B
Only E46/C
Install ultrasonic sensor wiring harness (1) through the cable guide from the boot into the rear compartment.
Install the power supply wiring harness (2) from the installation location of the PDC control unit to the fuse box above the glove box.

C
All models
Insert branch cable **B** of the power supply wiring harness, cable colour green/white, into the fuse holder II, A47 (1) (X10016), plug-in place F 24, Pin 48 and put in 5A flat-bladed fuse (2).

D
Plug in cables of the power supply wiring harness into the respective joint connectors of the joint connector box (1) as follows:

Only vehicles without gong fitted

Cable **A1** with cable colour blue/yellow	connector X428
Cable **A2** with cable colour brown	connector X219
Cable **A3** with cable colour white/red/yellow	connector X10116
Cable **A4** with cable colour red/yellow	connector X10189

Only vehicles with gong fitted

Cable **A1** with cable colour blue/yellow	connector X428
Cable **A3** with cable colour white/red/yellow	connector X10116

Tie back branch cables **A2** and **A4** which are not required.◄

E
Only vehicles without gong fitted
Cut out pre-punched aperture (1) for the gong (2) out of the foot-well trim panel on the driver's side (3) and insert the gong (2).
Insert socket contact **D1**, cable colour blue/grey, in the 1-pole socket housing **D**. Insert socket contact **C1**, cable colour brown, in the 3-pole socket housing **C**, Pin 1, and insert socket contact **C2**, cable colour red/yellow, in the 3-pole socket housing **C**, Pin 3.
Plug in socket housings (**D**, **C**) into the relevant plug-in places on the gong as follows:

1-pole socket housing **D** in plug-in place T4 (X 363)
3-pole socket housing **C** in plug-in place T3 (X 522)

Vehicles with gong fitted
Insert socket contact **D1** with cable colour blue/grey into the 1-pole socket housing **D** and insert into the plug-in place T4 (X363) on the gong.

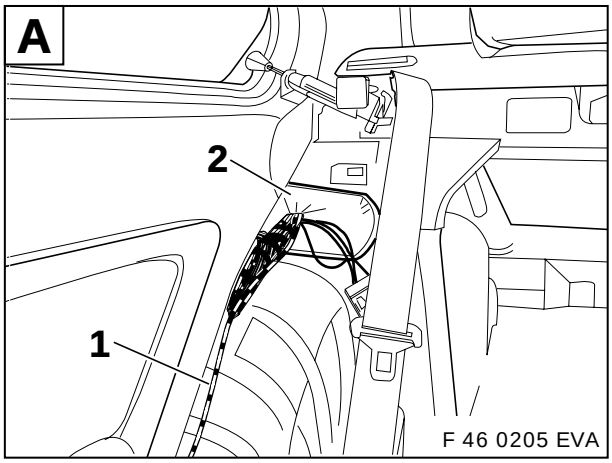
Tie back not needed cable.◄

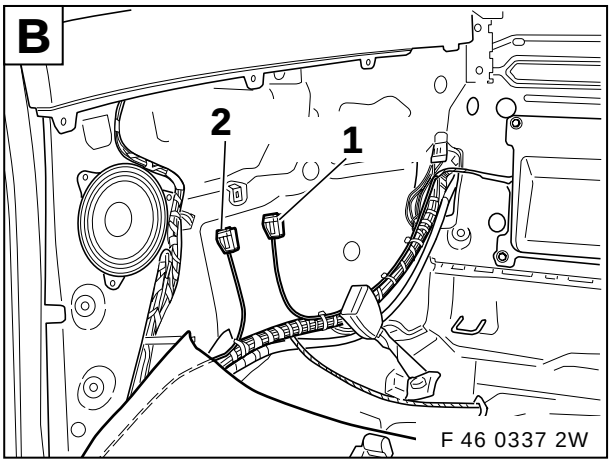
F
Insert blade terminal **E** with cable colour brown/black into the joint connector (1) (X 217) in the vicinity of the steering column in the footwell on the driver's side.
In right-hand drive models, tie back the not-needed cable lengths.

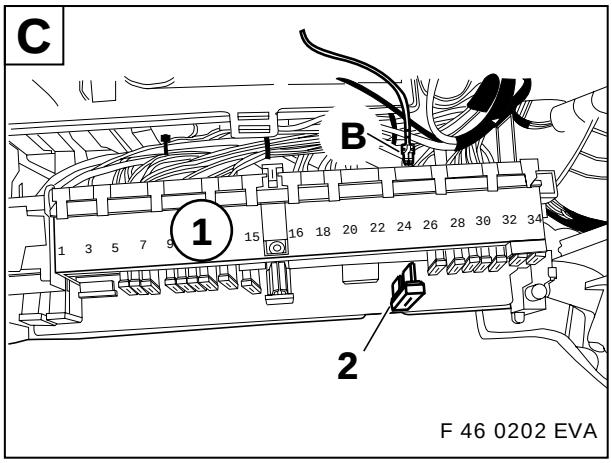
 Choose the installation route of the cable so as to rule out any possible damage to it from moving parts. Fasten joint connector and cable with cable ties at suitable places.◀

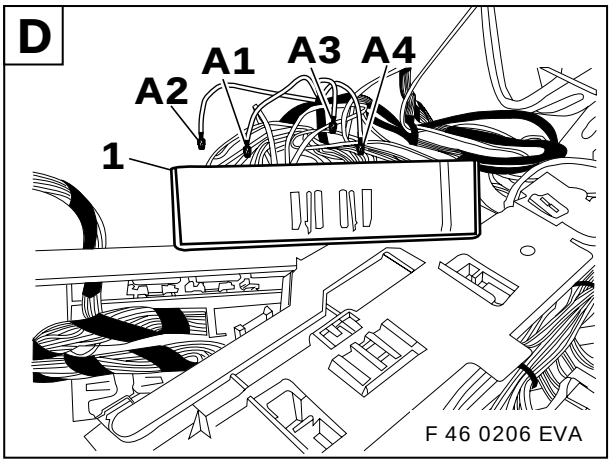
G
Only E46/2
Insert connectors **P**, **F** in the same-colour mating connectors of the PDC control unit (1) and arrest them in place with the security braces.

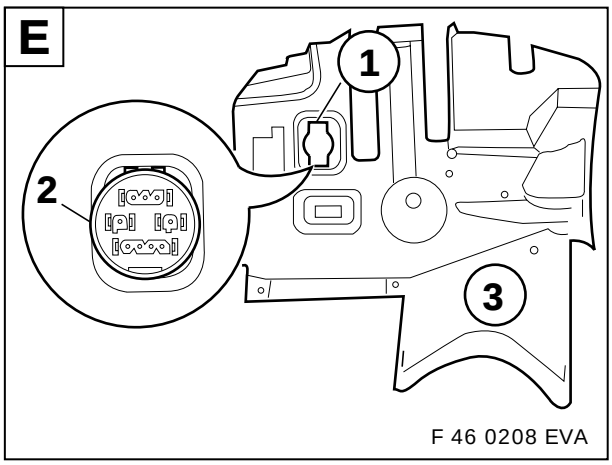
H
Only E46/C
Insert connectors **P**, **F** in the same-colour mating connectors of the PDC control unit (1) and arrest them in place with the security braces.

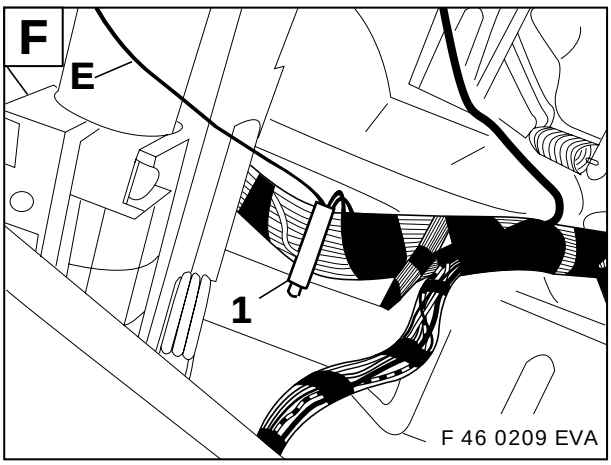

A
2
1
F 46 0205 EVA

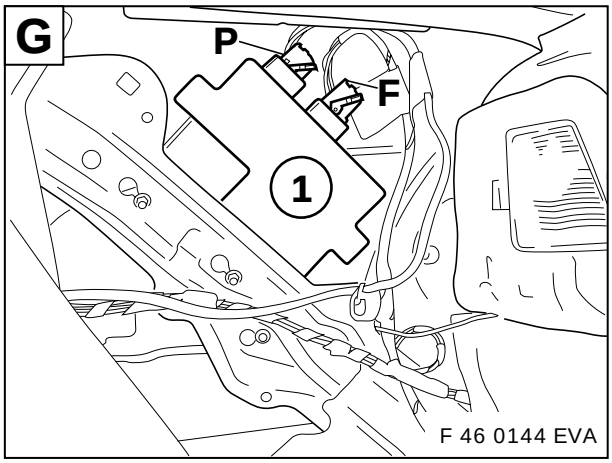

B
2
1
F 46 0337 2W

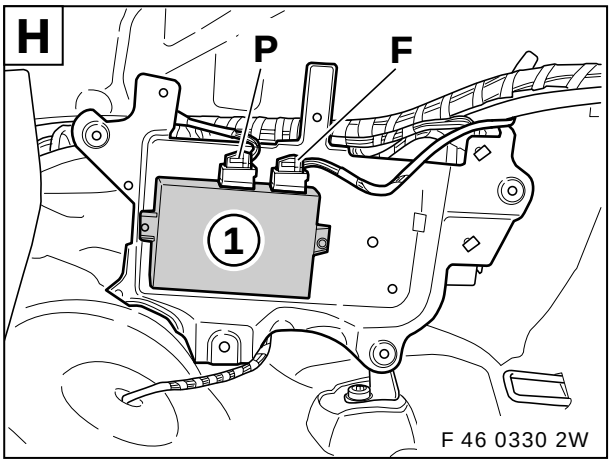

C
B
1
1 3 5 7 9 15 16 18 20 22 24 26 28 30 32 34
2
F 46 0202 EVA


D
A2
A1
A3
A4
1
F 46 0206 EVA


E
1
2
3
F 46 0208 EVA


F
E
1
F 46 0209 EVA


G
P
F
1
F 46 0144 EVA


H
P
F
1
F 46 0330 2W

2.7 Coding the PDC control unit

Coding of the PDC control unit is necessary in order to provide optimal conformity of the PDC retrofit system to the vehicle-specific conditions. For coding the PDC control unit, the Mobile Diagnostic Computer MoDiC (III) or the DIS with CD version 15 (or higher) is required. Coding with an older version is not possible.
The following sets out briefly the step-by-step procedure for coding:

Connect MoDiC (III) to the diagnostic plug in the vehicle and switch on the ignition.

 Watch for sufficient battery voltage during coding, if necessary connect battery charger.◄

Select menu item **“Coding/Programme”**

“Coding ZCS”		<Enter>
“Coding via central coding key (ZCS)”	**Version C15.0** (or higher)	<Enter>
Select **“Series E46”**		<Enter>
“Retrofit”		<Enter>
“PDC”		<Enter>
“automatic coding”		<Yes>

 When coding is terminated, switch off ignition for approx. 10 seconds◄

2.8 Information for the customer

Park Distance Control is an aid to the driver when reversing into parking. A signal announces the distance away from an obstruction. The measurement field for the two corner sensors ends at approx. 60 cm behind the bumper. The two middle sensors have a range of approx. 150 m. The system is activated in ignition key position 2 automatically and then every second thereafter if the reverse gear or selector lever position R is engaged. Having exceeded a driven distance of approx. 50 m or a speed of approx. 30 km/h, the system switches off.
The distance to an obstruction is indicated by an interval signal. The closer an object gets, the shorter the interval between signals. If the distance to a perceived object is less than 30 cm, a continuous signal sounds. The system is deactivated in vehicles with trailers as it is unable to make any sensible measurements.

A 5-seconds long warning signal after activation of the system indicates a function fault. Please have the cause remedied by BMW Service.

 Estimation of obstacles always falls into the area of responsibility of the driver despite the existence of the PDC.◄

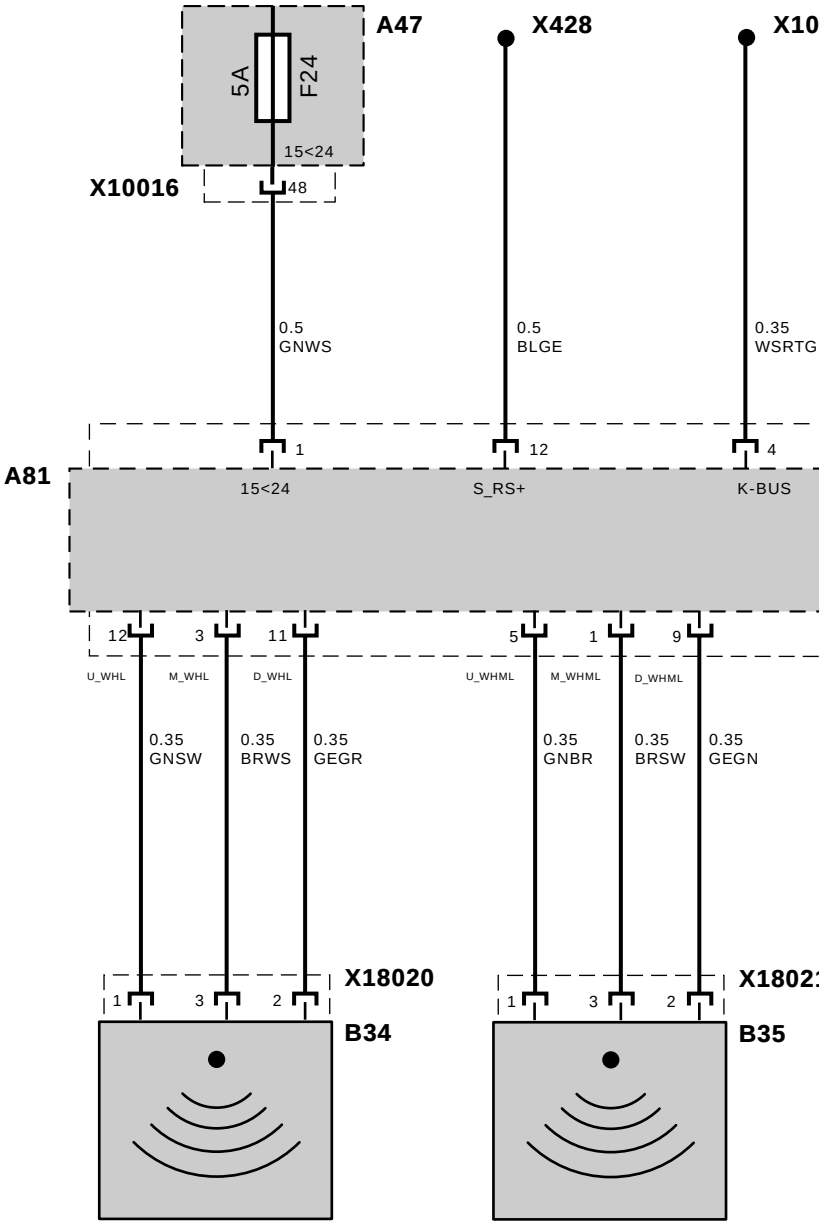
 The sensors should be kept clean and free of ice in order to assure their full functional capacity. Do not keep the spray directed on the sensors for any length of time when cleaning them with a steam jet. Always keep to a distance greater than 10 cm.◄

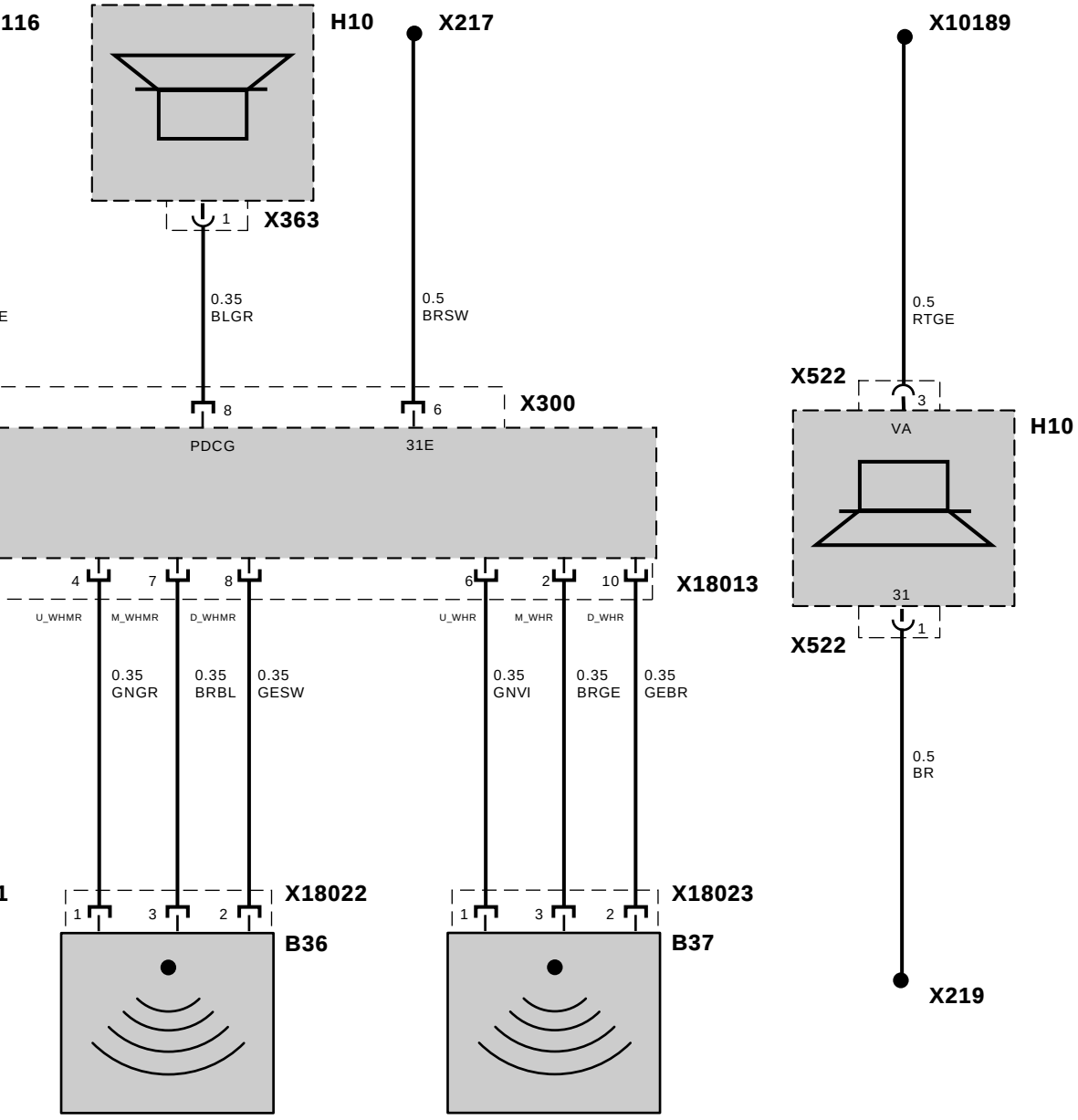
 Please refer to the vehicle owner’s handbook for further information.◄

3. Circuit diagram

Open fold-out page 3-9 !

A47	Fuse holder
A81	STG PDC
H10	Gong
X217	VB 31E
X219	VB 31
X300	12-pole connector
X363	1-pole connector
X428	VB RS
X522	3-pole connector
X10016	Fuse holder
X10116	VB K-bus
X10189	VB VA (consumer deactivation)
X18013	12-pole connector
X18020	3-pole connector
X18021	3-pole connector
X18022	3-pole connector
X18023	3-pole connector
B34	Sensor HL
B35	Sensor HML
B36	Sensor HMR
B37	Sensor HR


A47
5A
F24
15<24
X10016
48
0.5
GNWS
X428
0.5
BLGE
X10
0.35
WSRTG
1
12
4
A81
15<24
S_RS+
K-BUS
12
3
11
5
1
9
U_WHL
M_WHL
D_WHL
U_WHML
M_WHML
D_WHML
0.35
GNSW
0.35
BRWS
0.35
GEGR
0.35
GNBR
0.35
BRSW
0.35
GEGN
X18020
1
3
2
B34
X1802
1
3
2
B35


116
H10
X217
X10189
1
X363
0.35
BLGR
0.5
BRSW
0.5
RTGE
X522
3
X300
8
6
VA
H10
PDCG
31E
4
7
8
6
2
10
X18013
U_WHMR
M_WHMR
D_WHMR
U_WHR
M_WHR
D_WHR
31
1
X522
0.35
GNGR
0.35
BRBL
0.35
GESW
0.35
GNVI
0.35
BRGE
0.35
GEBR
0.5
BR
1
X18022
X18023
1
3
2
1
3
2
B36
B37
X219

F 46 0207 EVA