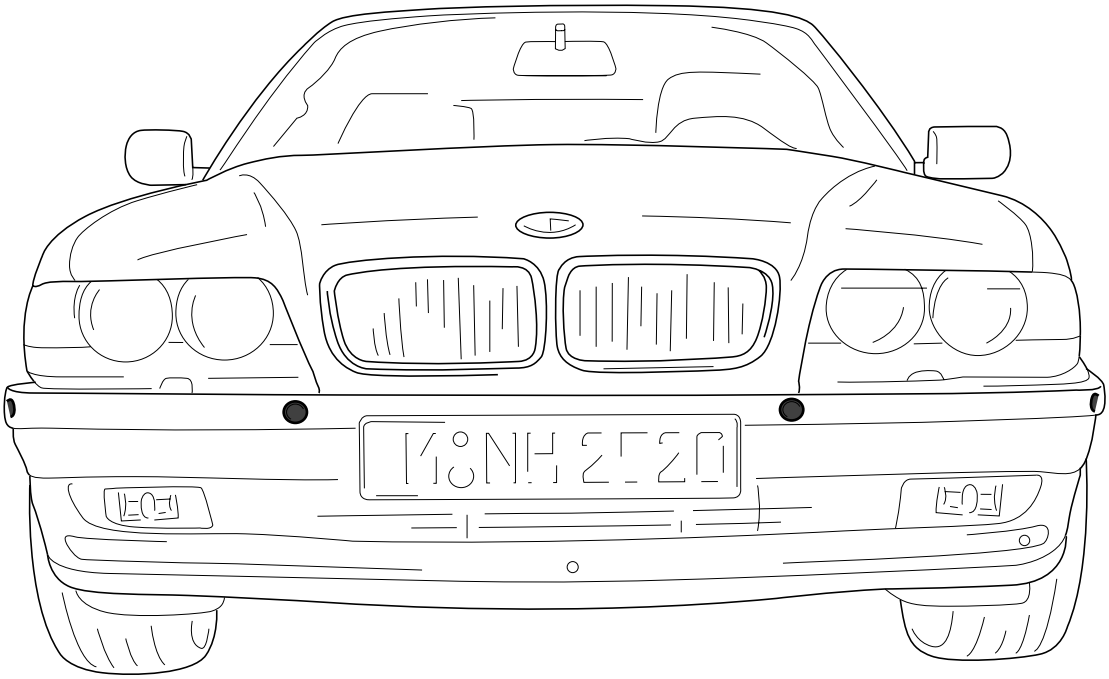
Teile und Zubehör - Einbauanleitung



F 38 0007 EVA

BMW Parts and Accessories – Installation Instruction
Park Distance Control (PDC), front and rear
BMW 7 Series (E38)

Best.-Nr. 01 29 0 000 793 II/99 Printed in Germany

Contents

1 Important information

These installation instructions are only for use within the BMW dealer organisation.
The installation time is approx. 5.5 hours but may vary depending on the condition of the car and the equipment in it.

Specialist knowledge of BMW cars is required for the installation work.

All work is to be completed using the latest BMW
- Repair instructions,
- Service manuals,
- Diagnostics manuals
- Circuit diagrams,
- Work instructions,

in a rational sequence using the prescribed tools (special tools) and pursuant to the relevant health and safety regulations.

General notes
All work is shown for a left-hand drive model. On right-hand drive models some of the work must be completed the opposite way round.
If the specified PIN slots are already in use, bridges, double crimps or parallel end stops are to be used.
Deburr drilled holes and treat them with the anti-corrosive action prescribed by BMW.

Safety notes
To prevent faults, make sure that you use the exact installation routes for the wiring harnesses in the car.

Under no circumstances should you use so-called "Scotchlock connectors" since they may cause faults in the vehicle's electrical system. If you have no alternative but to use these connectors, only the designs approved by BMW may be used.

Ensure that the cables are not kinked or damaged when they are installed in the car since otherwise, this too may cause faults which then require a great deal of work for their localisation. The costs incurred as a result of this will not be reimbursed by BMW.

2. Installation instructions

2. 1 Preliminary work

Disconnect battery.
Print out error memory.
Remove rear seat bench.
Remove rear headrests.
Remove rear seat backrest.
Remove C pillar trim on both sides.
Remove rear window shelf.
Remove boot mat.
Remove centre rear bumper guard.
Remove rear bumper.
Remove boot trim at the rear right.
Remove wheel arch trim at the rear right.
Remove door sill strips on the right-hand side.
Remove side trim at the front right.
Remove trim in the footwell on the right-hand side.
Remove trim on the centre console at the front right.
Remove wheel arch trim at the front right.
Remove the front bumper guards on both sides.
Remove the front bumper.

2.2 Overview of power supply wiring harness

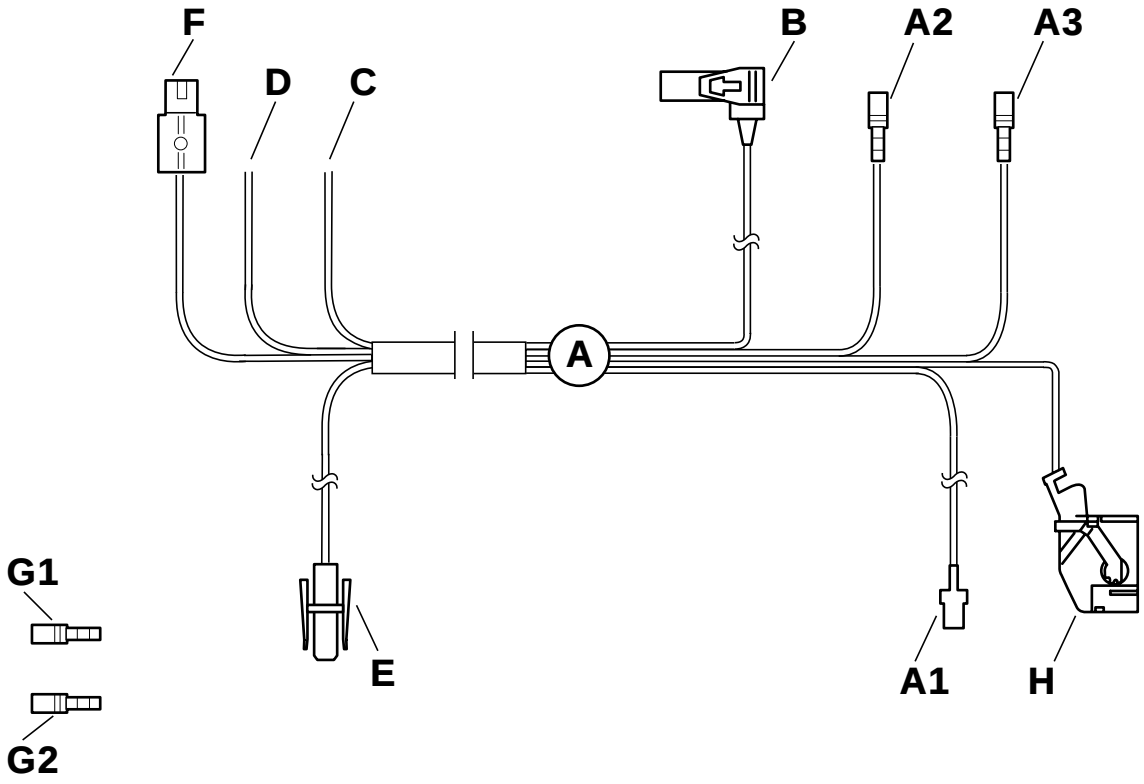
Fold out folded page 2-19.

Item	Design/Description	Cable colour	Connection location in car	Abbreviation/Slot
A	Power supply wiring harness			
A1	Blade terminal contact	GN/BK	Connect to fuse holder IV, A49, at fuse slot F64	X10018/32
A2	Joint connector contact	WI/GR/YE	Connect to I bus joint connector behind the rear boot trim above the right-hand wheel arch	X18226
A3	Joint connector contact	BR/BK	Connect to ground joint connector next to the battery	X13075
B	2-pin socket casing		Connect to PDC speaker (H40) below the rear window shelf, right	X362
C		GR/RD	Select the GR/RD cable, cable cross-section 0.5 mm^2 or 0.75 mm^2, in the centre console at the front and secure cable C with miniature high-speed connectors, cars without a switch centre only	X001
D		BR/BK	Select the BR/BK cable, cable cross-section 0.5 mm^2 or 0.75 mm^2, in the centre console at the front and secure cable D with miniature high-speed connectors, cars without a switch centre only	X002
E	1-pin socket casing	BK/YE	On LHD only, connect to gong (H10), pin T4, on RHD only, connect to I1	X363
F	6-pin socket casing		Connect to PDC switch (S111), cars without a switch centre only	X361
G1	Socket contact		Cars with a switch centre only, cut BR/BL/YE cable above the 6-pin socket casing F, crimp on G1 and connect to the plug in the switch centre (X1869), pin 9	X1869/9
G2	Socket contact		Cars with a switch centre only, cut BR/GR/YE cable above the 6-pin socket casing F, crimp on G2 and connect to the plug in the switch centre (X1869), pin 8	X1869/8
H	12-pin socket casing		Connect to PDC control unit (A81)	X300

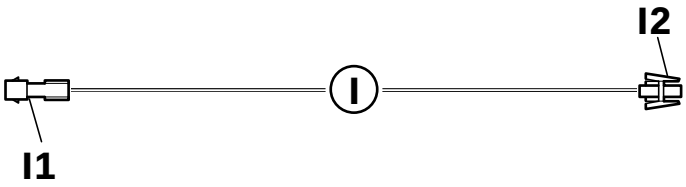
2.3 Overview of adapter wiring harness for RHD models

Fold out folded page 2-21.

Item	Design/Description	Cable colour	Connection location in car	Abbreviation/Slot
I	Adapter cable for RHD		For RHD models only	
I1	1-pin plug casing	BK/YE	Connect to E	X003
I2	1-pin socket casing	BK/YE	Connect to gong (H10), pin T4	X363



F 38 0085 EVA



F 38 0083 EVA

2.4 Overview of ultrasonic converter wiring harness, rear

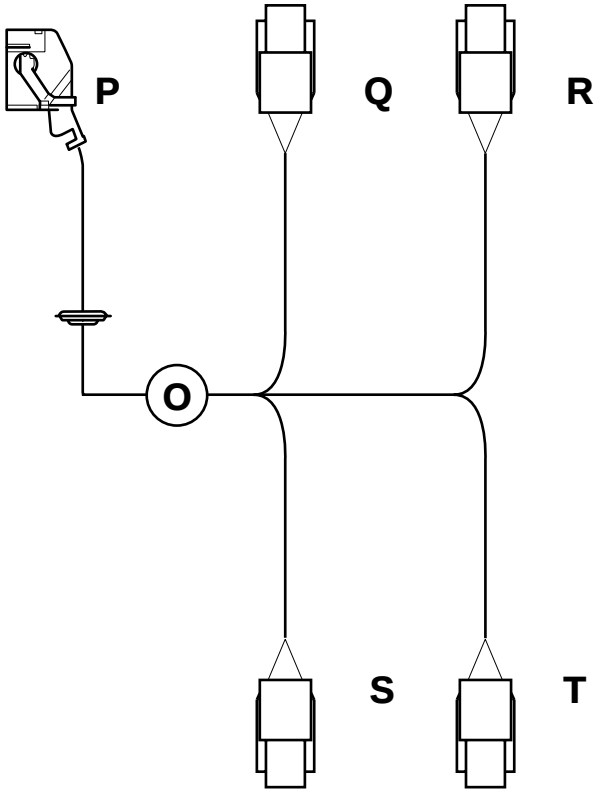
Fold out folded page 2-31.

Item	Design/Description	Cable colour	Connection location in car	Abbreviation/ Slot
O	Ultrasonic converter wiring harness			
P	12-pin plug		PDC control unit (A81)	X18013
Q	3-pin socket casing		Ultrasonic converter in bumper, rear left	X18020
R	3-pin socket casing		Ultrasonic converter in bumper, rear centre left	X18021
S	3-pin socket casing		Ultrasonic converter in bumper, rear centre right	X18022
T	3-pin socket casing		Ultrasonic converter in bumper, rear right	X18023

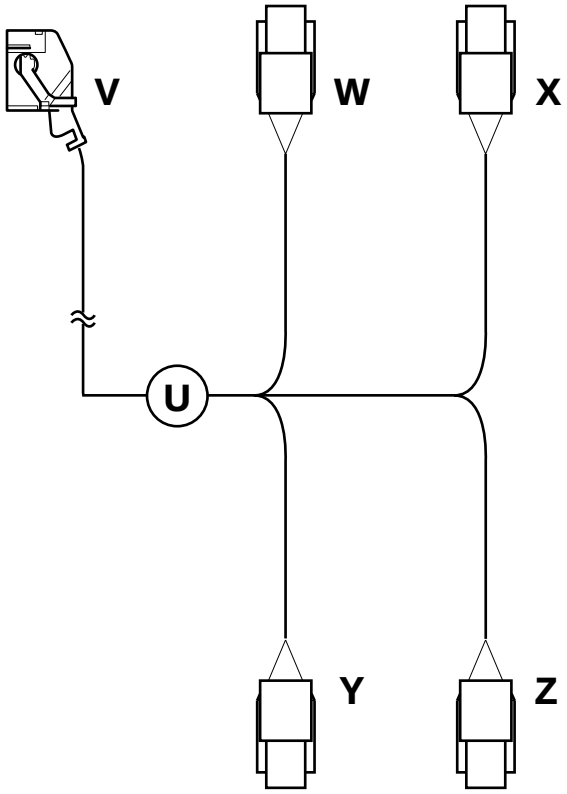
2.5 Overview of ultrasonic converter wiring harness, front

Fold out folded page 2-33.

Item	Design/Description	Cable colour	Connection location in car	Abbreviation/ Slot
U	Ultrasonic converter wiring harness			
V	12-pin plug		PDC control unit (A81)	X18362
W	3-pin socket casing		Ultrasonic converter in bumper, front left	X18016
X	3-pin socket casing		Ultrasonic converter in bumper, front centre left	X18017
Y	3-pin socket casing		Ultrasonic converter in bumper, front centre right	X18018
Z	3-pin socket casing		Ultrasonic converter in bumper, front right	X18019



F 38 0036 EVA



F 38 0084 EVA

2.6 Installation of power supply wiring harness

Fold out folded page 2-51.

A
Lay the power supply wiring harness (1) to the control unit holder (2), the rear window shelf (3) and the ground post (4) along the right-hand door sill strips to the gong (5) and to the switch for the PDC (6) in the centre console at the front.
Lay the rear ultrasonic converter wiring harness (8) from the control unit holder (2) towards the rear bumper to the ultrasonic converters (9).
Lay the front ultrasonic converter wiring harness (10) from the control unit holder (2) along the right-hand door sill strips towards the front bumper to the ultrasonic converters (11).
RHD models only
Connect the adapter wiring harness (7) to the power supply wiring harness (10) and lay it to the gong (5).

B
Remove the expanded rivets (1), push the emergency control (2) through the insulation felt (3) and take out the insulation felt (3).
Remove the car jack (4).

C
Undo the three hexagonal nuts (5) and take out the relay holder (6). Turn the relay holder (6) through 180° in the direction indicated by the arrow.

D
Undo the two catch mechanisms (7) on the right and left and pull out the fuse holder (8). Connect branch **A1** from the power supply wiring harness, with the green/black cable, to fuse holder IV (8) (X10018) A49, pin 32, fuse slot F64. Insert a 5 A fuse into fuse slot F64.

E
Secure the control unit (9) on the control unit holder (11) using the plastic nut (10).

F
Push the welded studs on the control unit holder through the holes in the body reinforcement (14) and secure the control unit (12) behind the body reinforcement (14) using the hexagonal nuts (13) as shown in the drawing.
If there are no holes in the body reinforcement (14), drill them using a 7.5 mm twist drill bit , using the following dimensions:
a = 32 mm, b = 48 mm,
c = 18 mm, d = 42 mm

G
Push the boot trim over the wheel arch on the right-hand side to one side, select the joint connector for the I bus (X18226) with the white/grey/yellow cable on the vehicle wiring harness (15) and expose it.

H
Connect the joint connector contact **A2** on the white/grey/yellow cable (16) on the power supply wiring harness to a free slot in the I bus joint connector (17) (X18226).

I
Connect the brown/black ground cable **A3** on the power supply wiring harness to the ground joint connector (18) (X13075) next to the battery.

J
Remove the cut-out in the noise insulation(19) for the PDC speaker. Lay the 2-pin socket casing **B** for connecting the PDC speaker from the boot side through the grommet (20) near the PDC speaker.
Thread the power supply wiring harness (21) from the side of the boot through the grommet (20).

K
Insert the PDC speaker (22) into the holes in the boot bulkhead and secure it from the boot using the plastic nut (23). Connect the 2-pin connector **B** to the PDC speaker (22).

L
Lay the power supply wiring harness along the right-hand door sill strips under the glove box and into the centre console at the front. Lay the black/yellow cable (24) to the gong (25) on the trim in the footwell on the right-hand side (26). Connect the 1-pin socket casing **E** to the cable (24) in pin T4 on the gong (25).

RHD models only
Connect the 1-pin plug casing **I1** on the adapter cable for RHD cars **I** to the 1-pin socket casing **E** and lay it to the installation site of the gong (H10) on the left-hand side of the car. Connect the 1-pin socket casing **I2** on the adapter cable for RHD cars **I** to pin T4 on the gong (25).

Continue with Figure M on folded page 2-53.

M
Cars without a switch centre only
Carefully lever out the trim (27) with a screwdriver. Push the heater switch (28) through the switch aperture in the direction indicated by the arrow and disconnect the connection plug.

Cars with a switch centre only
Carefully lever out the switch centre (not shown) with a screwdriver and disconnect the connection plug.
Push the heater switch (28) through the switch aperture in the direction indicated by the arrow and disconnect the connection plug.

N
Cars without a switch centre only
Thread the 6-pin socket casing **F** through a switch aperture and connect it to the PDC switch (29).
Connect up connectors **C** and **D** to the power supply wiring harness as follows.

Select the grey/red cable with a cross-section of 0.5 mm^2 or 0.75 mm^2 from a wiring harness under the radio and secure connector **C** using a miniature high-speed connector.

Select the brown/black cable with a cross-section of 0.5 mm^2 or 0.75 mm^2 from a wiring harness under the radio and secure connector **D** using a miniature high-speed connector.

Insert the PDC switch (29) in the switch aperture and cover the switch apertures you have not used with a trim to match the interior of the car.

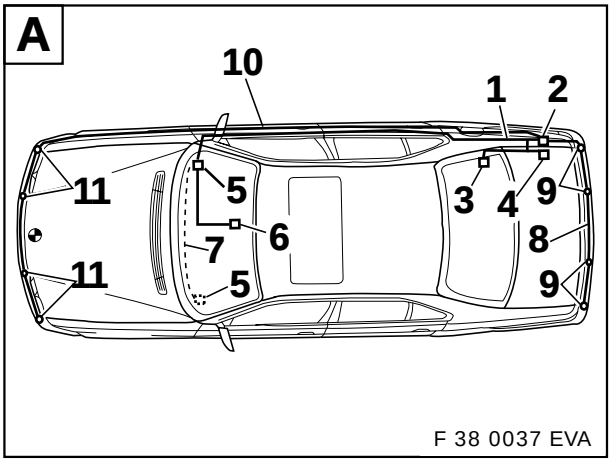
O
Cars with a switch centre only
Thread the 6-pin socket casing **F** through the aperture for the switch centre. Cut the brown/blue/yellow cable and the brown/grey/yellow cable just above the socket casing **F**, strip them and crimp on the two 1-pin socket contacts **G1** and **G2** as follows:

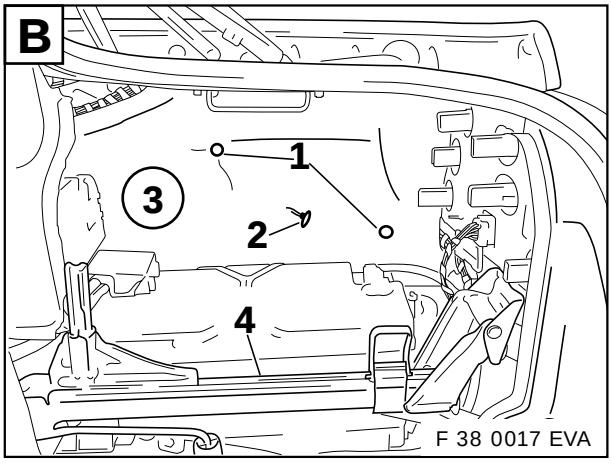
Crimp socket contact **G1** to the brown/blue/yellow cable and connect it to the connection plug (30) (X1869) on the switch centre, **pin 9**.

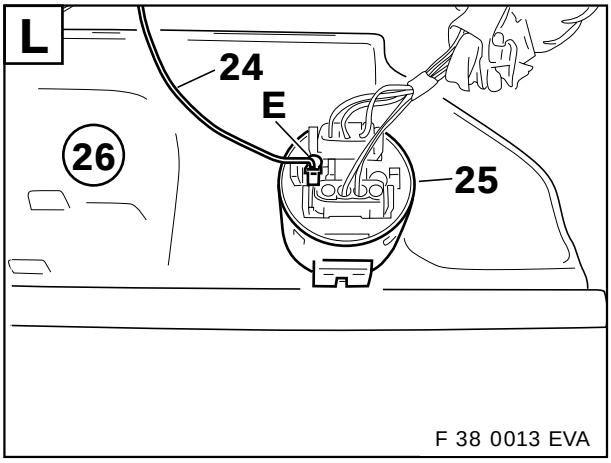
Crimp socket contact **G2** to the brown/grey/yellow cable and connect it to the connection plug (30) (X1869) on the switch centre, **pin 8**.

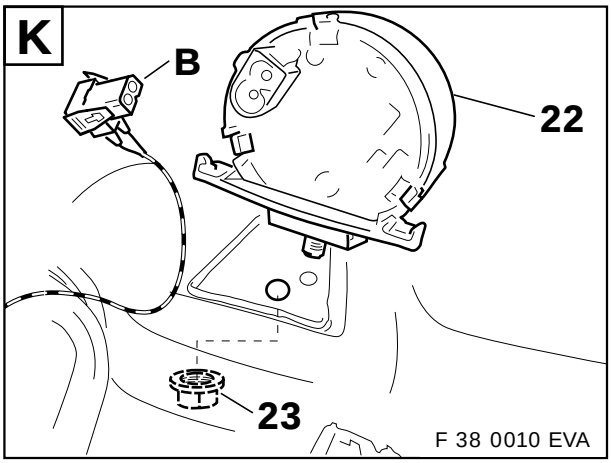
▷ Cables **C** (grey/red) and **D** (brown/black) are not required, they are to be insulated and tied back. ◀

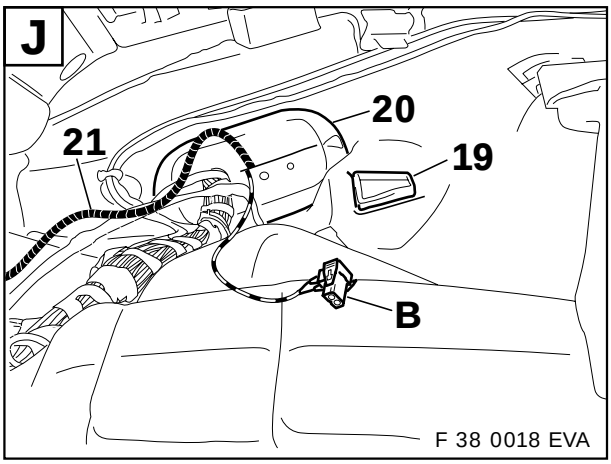
▷ The standard switch centre is to be replaced by the "High version" switch centre (complete switch/button assignment). The switches and buttons not in use are to be covered with a blind cover. ◀

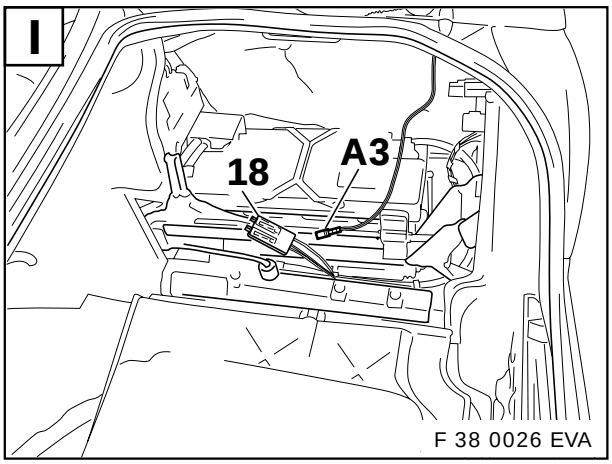

A
10
1
2
11
5
3
4
9
6
8
7
11
5
9
F 38 0037 EVA

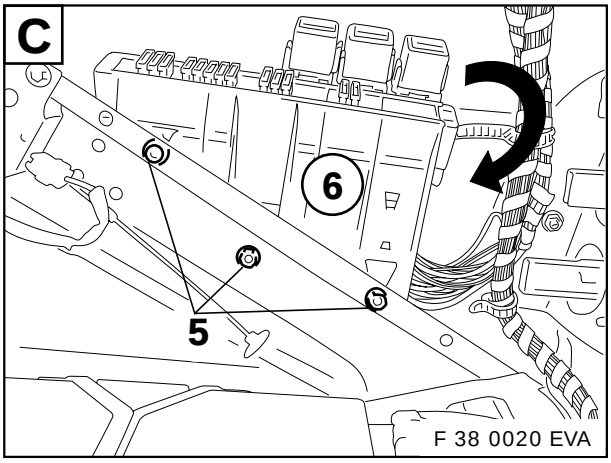

B
1
3
2
4
F 38 0017 EVA

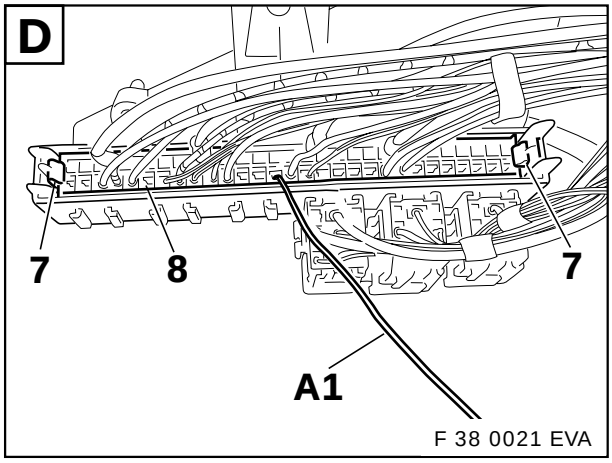

L
24
E
26
25
F 38 0013 EVA

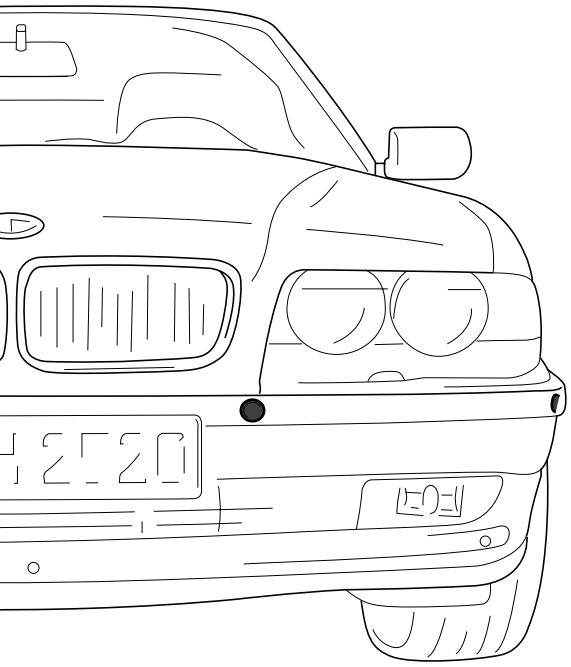

K
B
22
23
F 38 0010 EVA


J
20
21
19
B
F 38 0018 EVA

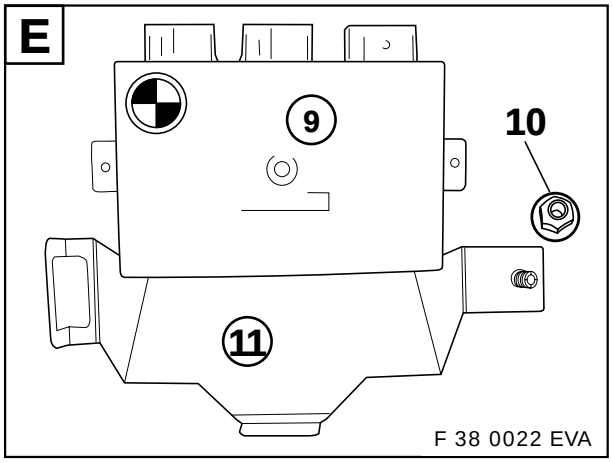

I
18
A3
F 38 0026 EVA

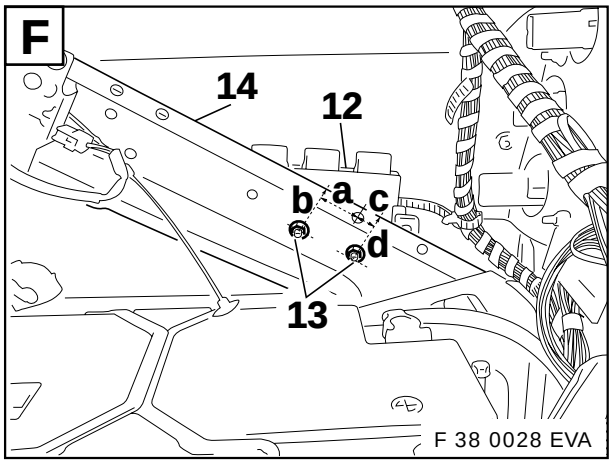

C
6
5
F 38 0020 EVA

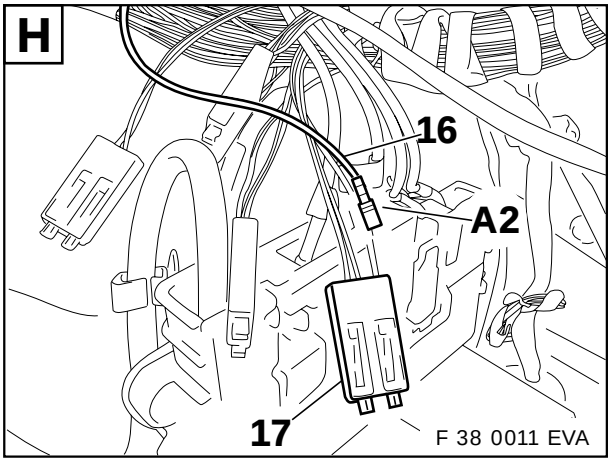

D
7
8
7
A1
F 38 0021 EVA

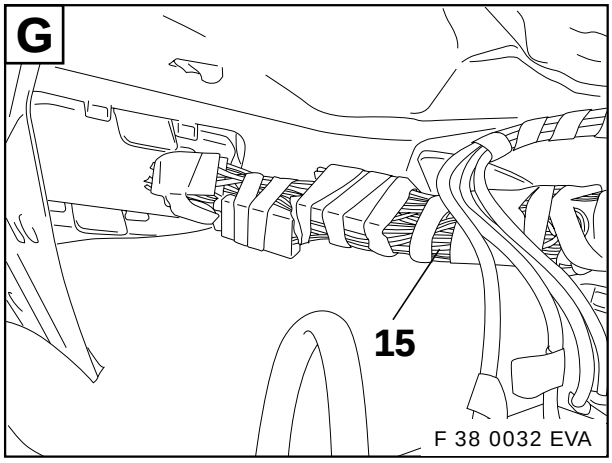


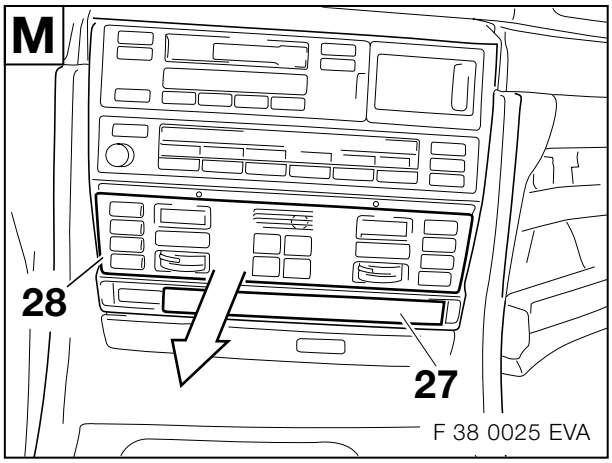
F 38 0007 EVA

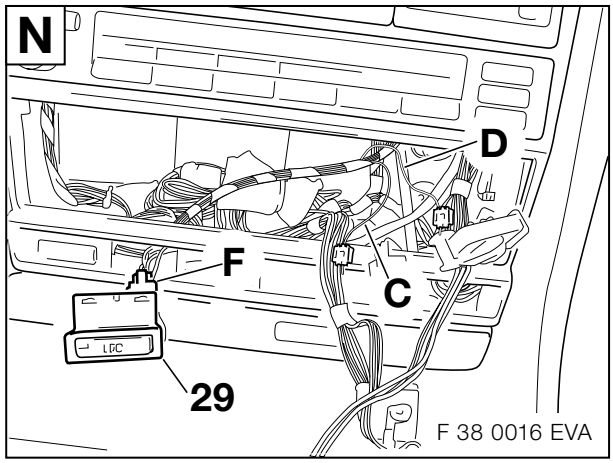

E
9
10
11
F 38 0022 EVA

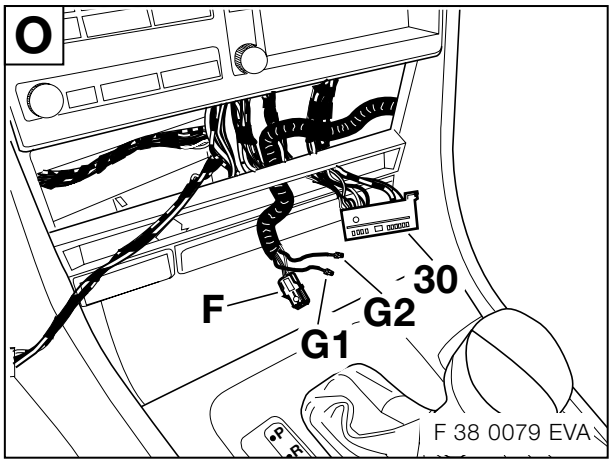

F
14
12
a
b
c
d
13
F 38 0028 EVA


H
16
A2
17
F 38 0011 EVA


G
15
F 38 0032 EVA


M
28
27
F 38 0025 EVA


N
D
F
C
29
F 38 0016 EVA


O
30
F
G2
G1
F 38 0079 EVA

2.7 Installation of ultrasonic converter wiring harness

Fold out folded page 2-71.

A
Remove the cover cap on the rear of the vehicle. Thread the rear ultrasonic converter wiring harness (1) through the aperture in the body and insert the new grommet (2).

If there is already a cable with a grommet on the vehicle, remove the grommet from the ultrasonic converter wiring harness. Cut the inner part from the outer part of the grommet on the vehicle and then cut the inner part near a prepared aperture. Thread the ultrasonic converter wiring harness through the outer part of the grommet on the vehicle and insert it into the inner part of the grommet on the vehicle, connect the two grommet parts and return them to the vehicle. ◄

B
Place the cable ties (3) on to the welded studs and secure the ultrasonic converter wiring harness (4) to them.

C
Carefully remove the chrome trims (5) from the bumper guards without the PDC (not shown) and secure them on the PDC bumper guards. Then insert the ultrasonic sensors (6) into the sensor mountings (7) in the PDC bumper guards.
The illustration shows a PDC bumper guard from the rear left, proceed accordingly for the other PDC bumper guards.

The position of the sensors is coded. When inserting the sensors ensure that the catch mechanisms engage correctly. ◄

D
Thread connectors **Q, R, S** and **T** through the holes (8) in the rear bumper and refit the bumper to the car.

E
Connect connector plug **T** to the sensor (9).
The illustration shows the connection of the sensor on the outer PDC bumper guard, proceed accordingly for the other sensors.
Then refit the bumper guards to the bumper.

F
Insert the cable clips (10) into the holes in the front air guide (11) and secure the front ultrasonic converter wiring harness (12) to them.

G
Lay the ultrasonic converter wiring harness (16) in the cable cover in the front right wheel arch to the cable grommet (13). To make it easier to thread the wiring harness through the grommet (13), carefully disconnect the plug insert (14) from the plug casing (15). Using two blunt screwdrivers, stretch the grommet and thread the ultrasonic converter wiring harness (16) through it.

H
Raise the carpet (17) in the right-hand footwell to gain access to the cable cover in the bulkhead (18). Release this cable cover (18) by unscrewing the two plastic nuts (19) and pull the ultrasonic converter wiring harness (20) into the interior of the car. Lay the ultrasonic converter wiring harness (20) along the vehicle wiring harness under the right-hand door sill strips to the boot to the installation site of the PDC control unit. Use the mountings for the vehicle wiring harness to secure the ultrasonic converter wiring harness (20).

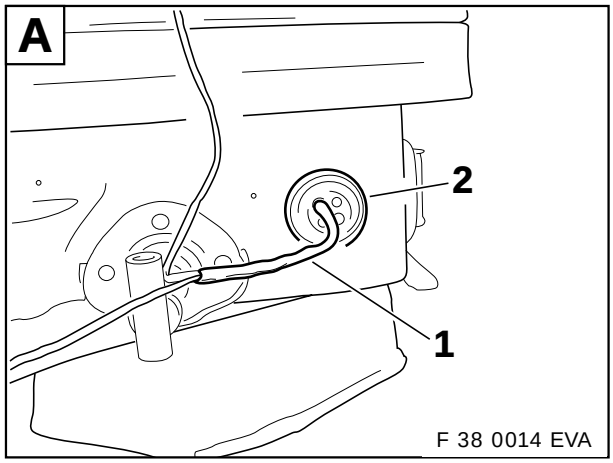
I
Thread connectors **W, X, Y** and **Z** through the holes (21) in the front bumper and refit the bumper to the car.

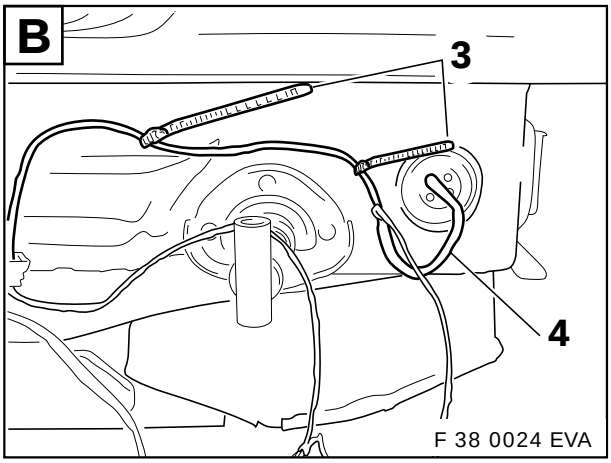
J
Carefully remove the chrome trims (22) from the bumper guards without the PDC (not shown) and secure them on the PDC bumper guards. Then insert the ultrasonic sensors (23) into the sensor mountings (24) in the PDC bumper guards.
The illustration shows a PDC bumper guard from the rear left, proceed accordingly for the other PDC bumper guards.

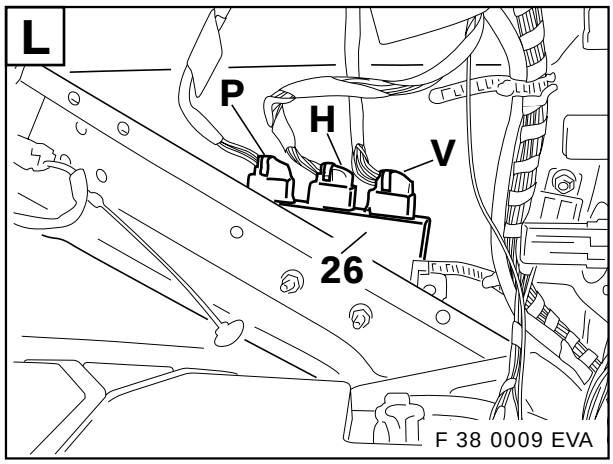
The position of the sensors is coded. When inserting the sensors ensure that the catch mechanisms engage correctly.◀

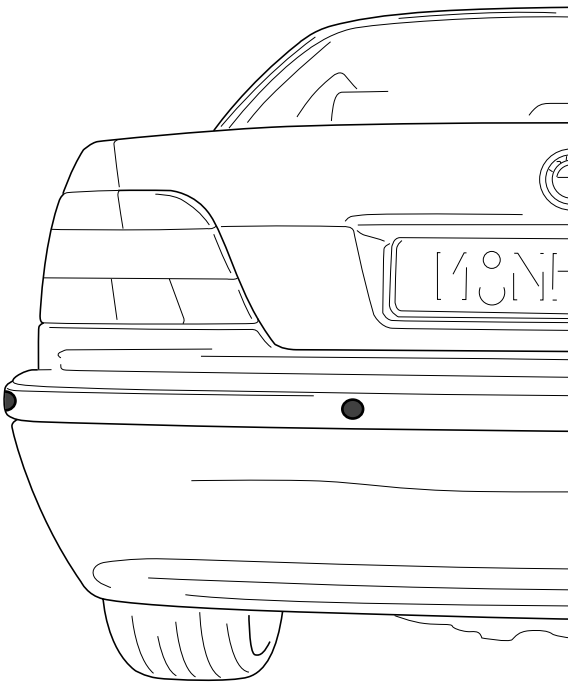
K
Connect connector plug **W** to the sensor (25).
The illustration shows the connection of the sensor on the left-hand PDC bumper guard, proceed accordingly for the other sensors.
Then refit the bumper guards to the bumper.

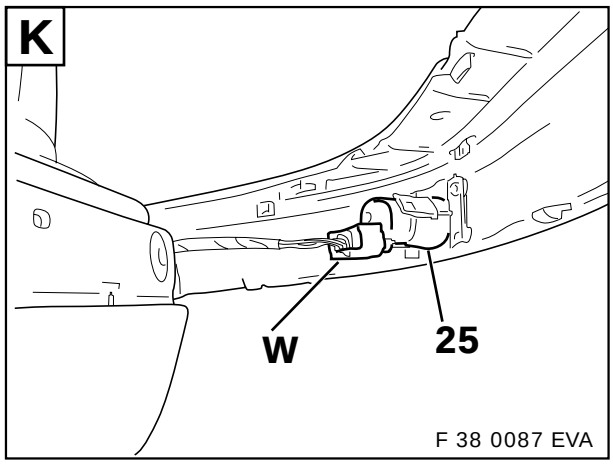
L
Connect plugs **V, P** and **H** into the same coloured opposite plugs in the control unit (26) and secure them with retaining bars.

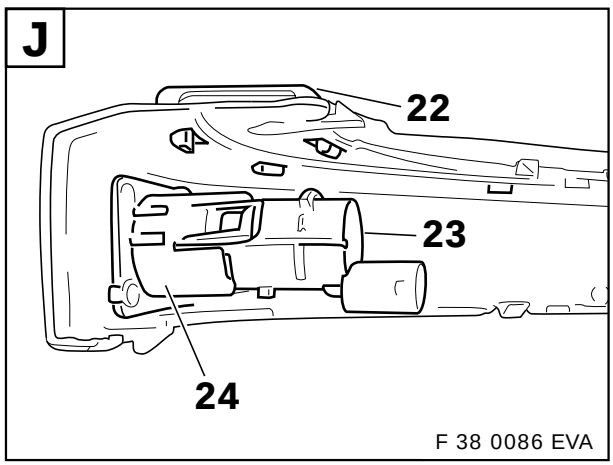

A
2
1
F 38 0014 EVA

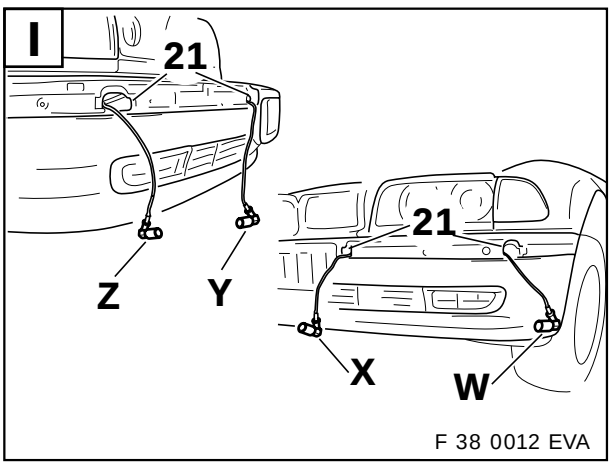

B
3
4
F 38 0024 EVA

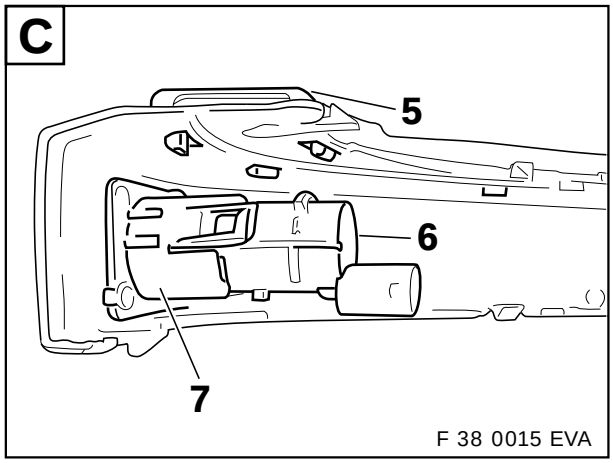

L
P
H
V
26
F 38 0009 EVA

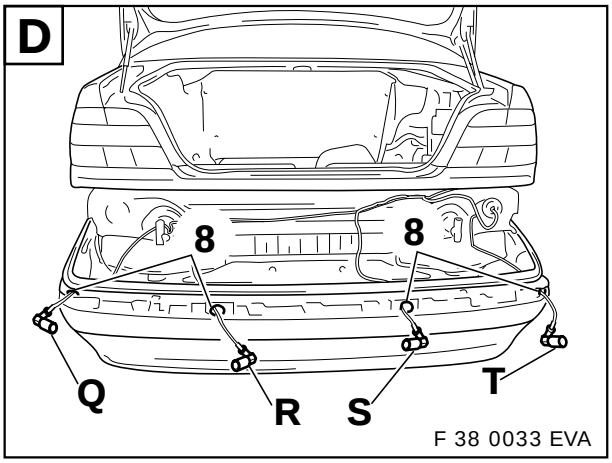


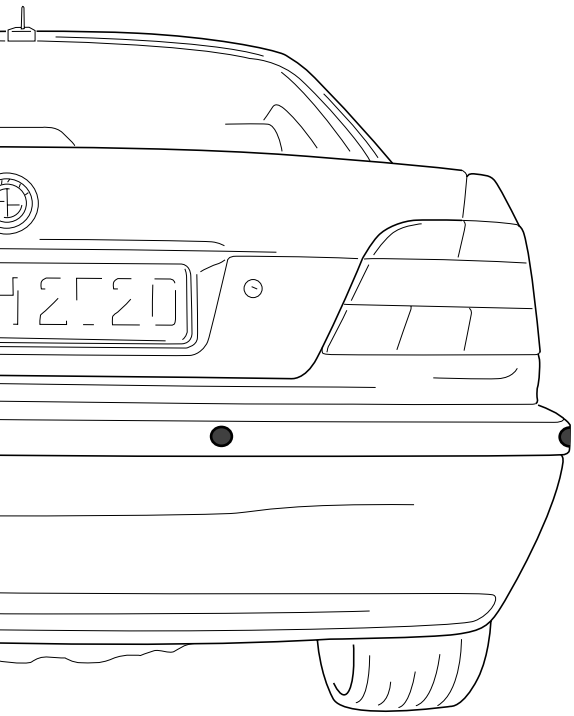

K
W
25
F 38 0087 EVA


J
22
23
24
F 38 0086 EVA

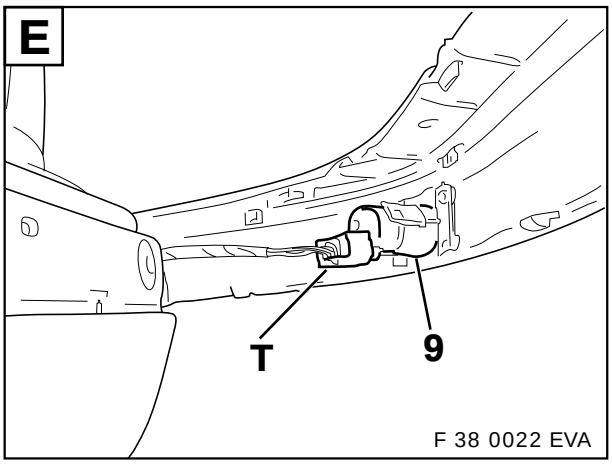

I
21
Z
Y
21
X
W
F 38 0012 EVA

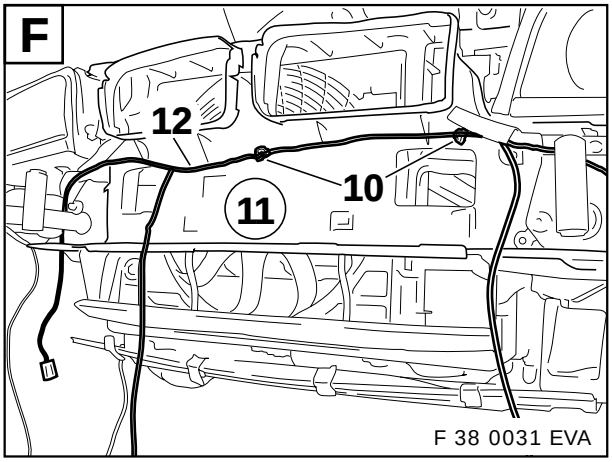

C
5
6
7
F 38 0015 EVA

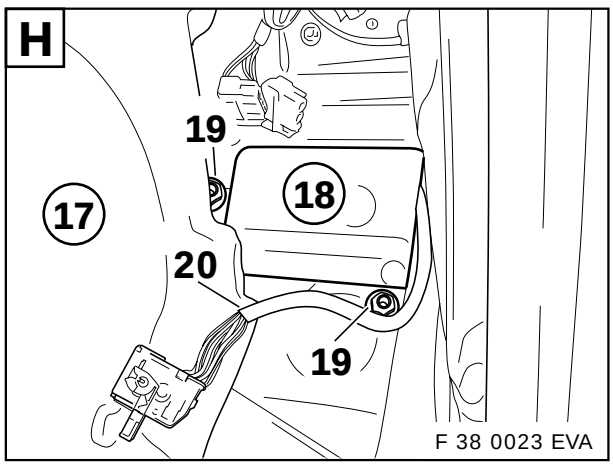

D
8
8
Q
R
S
T
F 38 0033 EVA

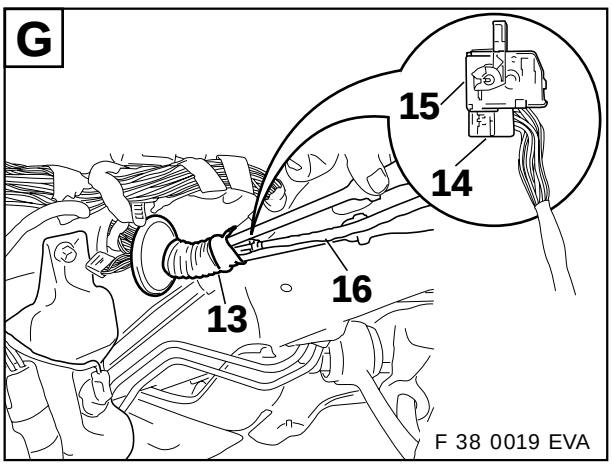


F 38 0027 EVA


E
T
9
F 38 0022 EVA


F
12
10
11
F 38 0031 EVA


H
19
17
18
20
19
F 38 0023 EVA


G
15
14
16
13
F 38 0019 EVA

2.8 Coding the PDC control unit

To ensure the optimal adjustment of the PDC retrofit system to the specific situation of the car, the PDC control unit must be coded. The Mobile Diagnosis Computer MoDIC (III) or the DIS with CD version 16 (or higher) is required for this coding work. It is not possible to complete the coding with an older version.
The procedures are described briefly in the following:

Connect the MoDIC (III) to the diagnostics plug in the car and switch on the ignition.

Select the **"Coding/Program"** menu

"Coding ZCS"		<Enter>
"Coding using central coding key (ZCS)"	**Version 16.0** (or higher)	<Enter>
Select **"Series E38"**		<Enter>
"Retrofit"		<Enter>
"PDC"		<Enter>
"Automatic coding"		<Yes>

 After completing the coding, switch off the ignition for approx. 10 seconds.◄

2.9 Information for the customer

The Park Distance Control is designed to help the driver both drive forwards and reverse into a parking space.
A signal indicates the current distance from an obstacle. The measurement field for the four front sensors and the two rear corner sensors ends approx. 60 cm behind or in front of the bumper. The two rear centre sensors have a range of approx. 150 m. The system is activated automatically after approx. one second when reverse gear or selector lever position R is engaged and the ignition key is in position 2. After the car has travelled a distance of approx. 50 m or exceeds a speed of approx. 30 kph, the system cuts out. It is possible to switch the system on and off manually using the key in the centre console (the control light goes on and off).
The distance to an obstacle is indicated by an interval tone. The closer an object is to the rear of the car, the shorter the intervals become. When the distance to an object is less than 30 cm, the signal converts to a permanent tone. The system signals the distance at the front with a high-pitched tone, whilst the rear tone has a lower pitch.

A warning tone approx. five seconds in length after the system has been activated indicates a defect (if it has been activated by engaging reverse gear it is only indicated by the control light). Have the cause remedied by your BMW dealer.

 Despite using the PDC, estimating the distance to an obstacle is always the responsibility of the driver.◄

 The sensors should be kept clean and free of ice to ensure that they function correctly. To clean them with a steam jet do not direct the jet at the sensors for a long time. Always keep the jet more than 10 cm away from the sensors.◄

 Further information is given in the owner's manual supplied with the car.◄

3. Circuit diagram

Fold out folded page 3-9/11/13.

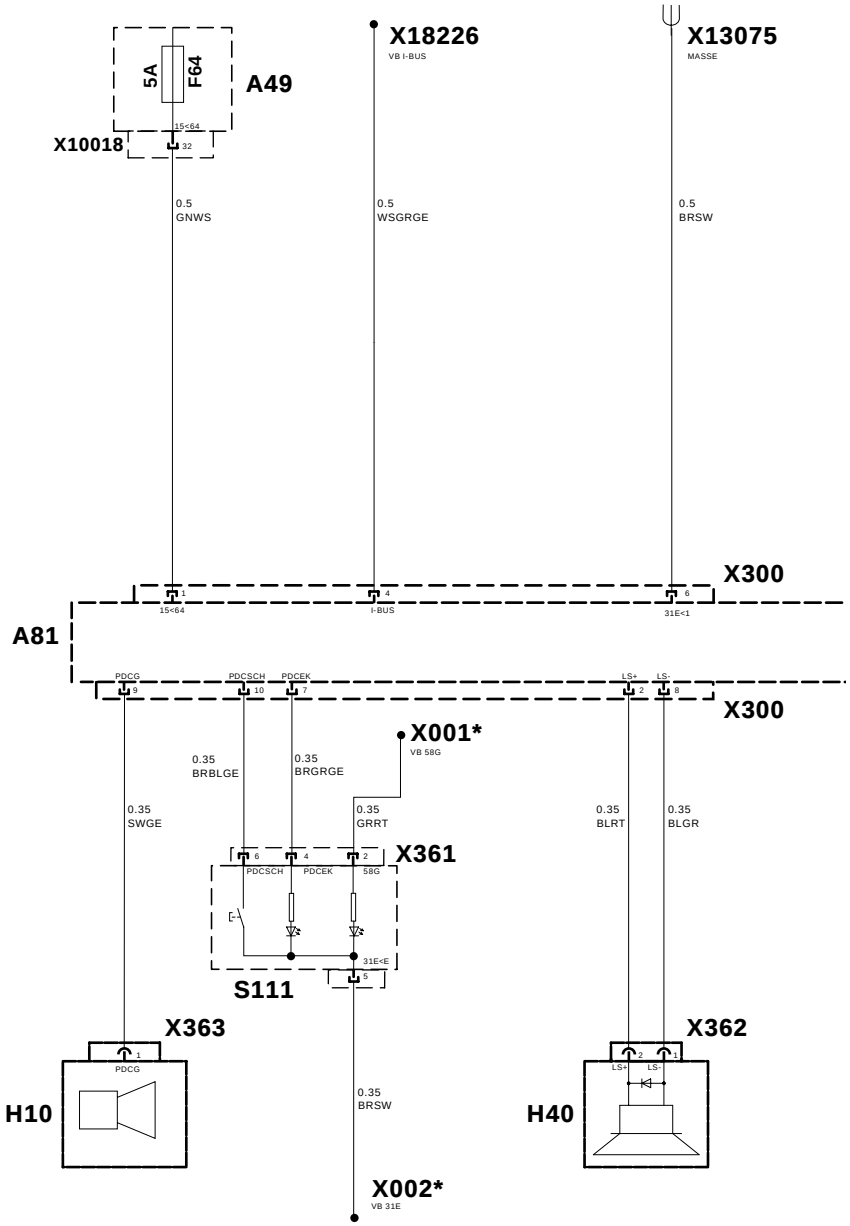
A49	Fuse holder
A81	PDC control unit
A169	Switch centre
B30	Converter front left
B31	Converter front centre left
B32	Converter front centre right
B33	Converter front right
B34	Converter rear left
B35	Converter rear centre left
B36	Converter rear centre right
B37	Converter rear right
F64	5 A fuse
H10	PDC speaker
H40	PDC speaker
S111	PDC switch
X001*	Connector 58G (instrument and search lights)
X002*	Connector 31E
X003*	1-pin plug
X300	12-pin plug
X361	6-pin PDC switch plug
X362	2-pin PDC speaker plug
X363	1-pin socket for gong
X1869	23-pin switch centre plug
X10018	Fuse holder
X13075	Connector 31E
X18226	I bus connector
X18013	12-pin plug
X18016	3-pin plug
X18017	3-pin plug
X18018	3-pin plug
X18019	3-pin plug
X18020	3-pin plug
X18021	3-pin plug
X18022	3-pin plug
X18023	3-pin plug
X18362	12-pin plug

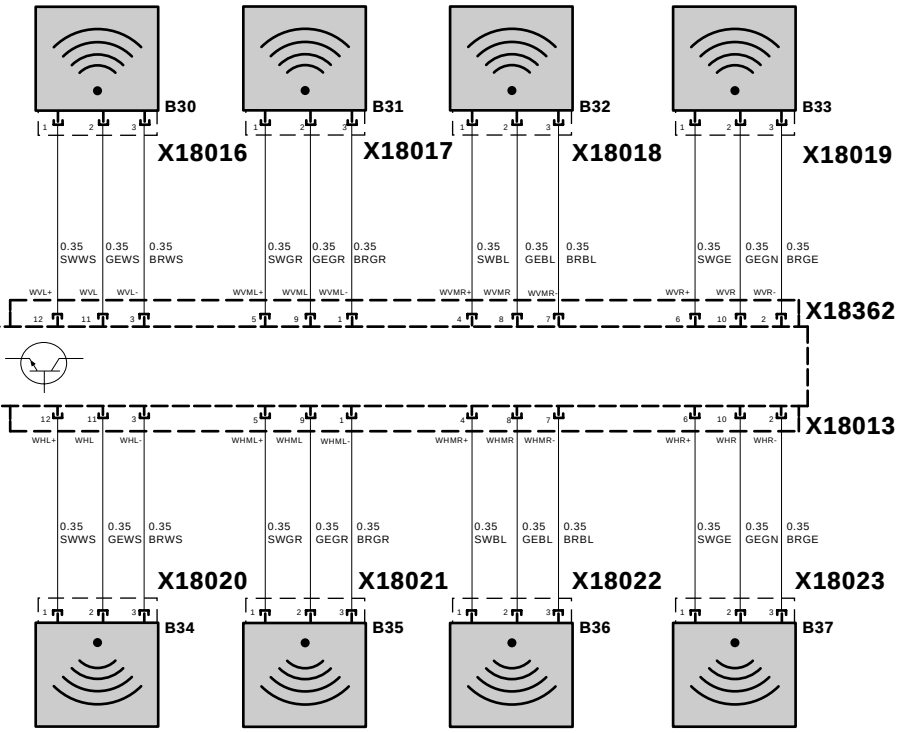
The items marked with an asterisk (*) only refer to this circuit diagram.
All other items conform to BMW After-Sales circuit diagrams.

Cable colours:

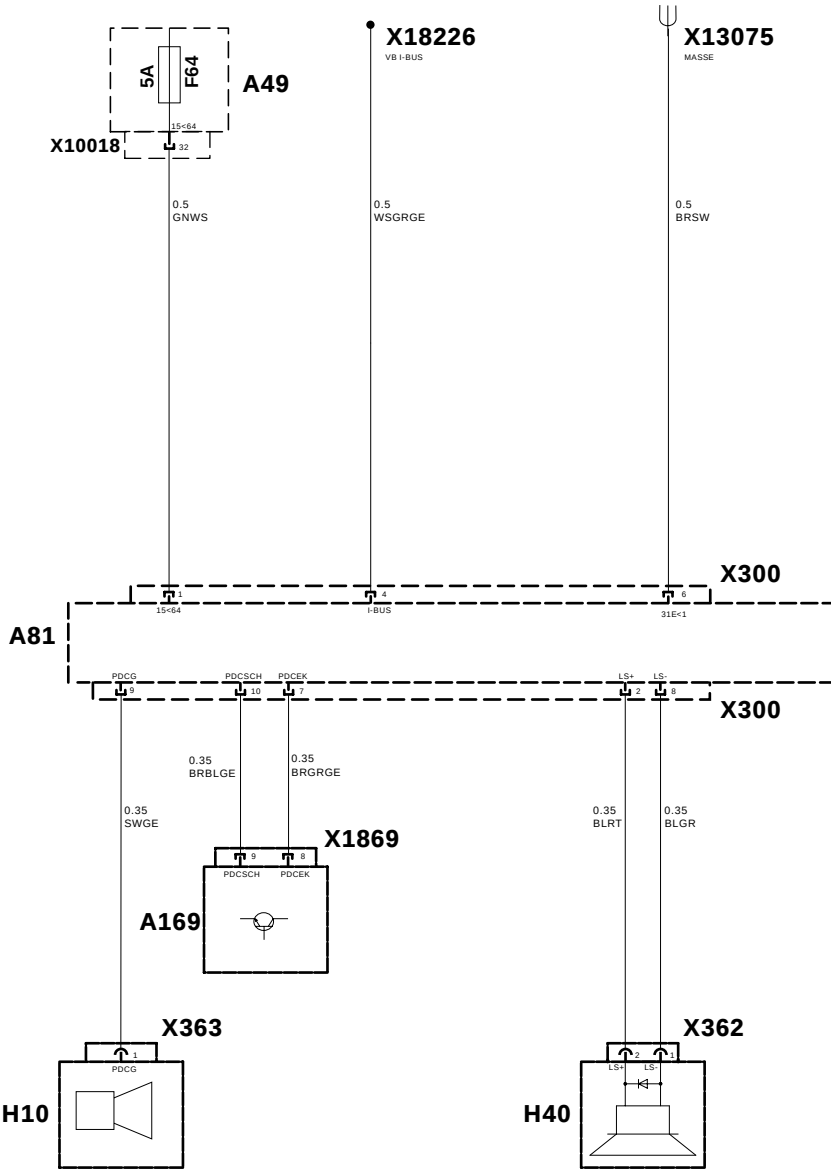
BL = blue
BR = brown
GE = yellow
GN = green
GR = grey
RT = red
SW = black
WS = white

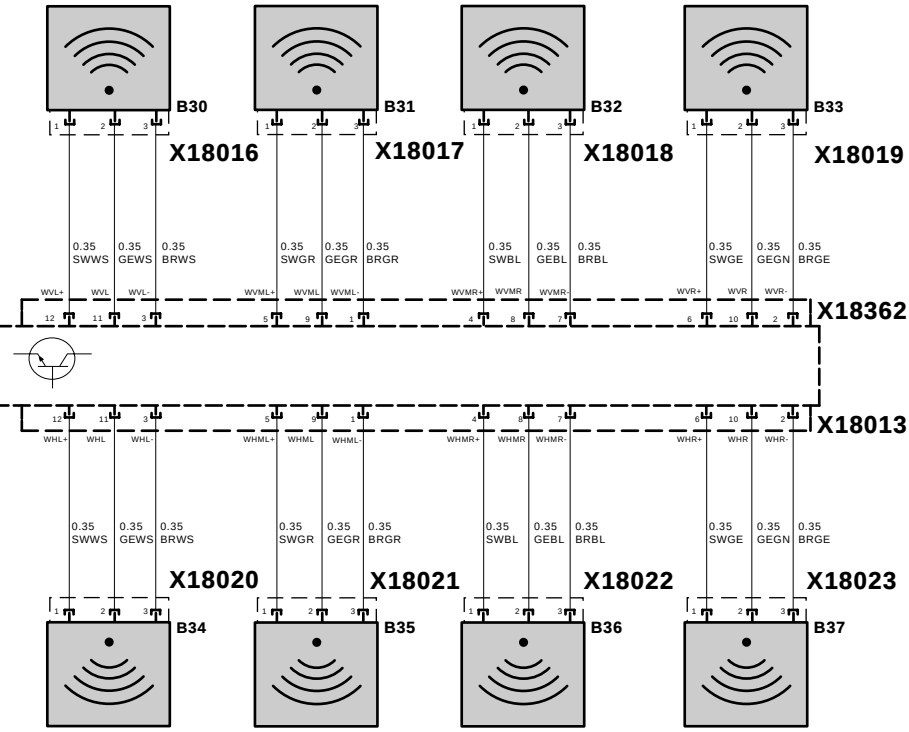
Stromlaufplan Fahrzeuge ohne Schaltzentrum
Circuit diagram for cars without a switch centre
Schéma de câblage des voitures sans centre de distribution
Stroomkringschema auto's zonder schakelcentrum
Kretsschema för bilar utan kopplingscentrum
Schema elettrico vetture senza gruppo interruttori supplementari
Plano de conexiones eléctricas de vehículos sin central de conexiones
Esquema de circuitos de veículos sem painel de comandos



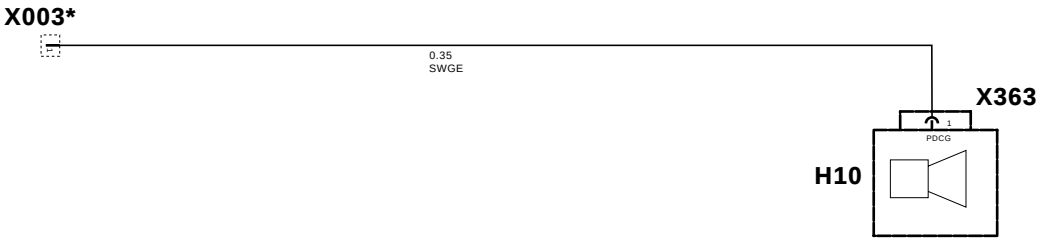

B30
B31
B32
B33
X18016
X18017
X18018
X18019
0.35 SWWS
0.35 GEWS
0.35 BRWS
0.35 SWGR
0.35 GEGR
0.35 BRGR
0.35 SWBL
0.35 GEBL
0.35 BRBL
0.35 SWGE
0.35 GEGN
0.35 BRGE
WVL+
WVL
WVL-
WVML+
WVML
WVML-
WVMR+
WVMR
WVMR-
WVR+
WVR
WVR-
X18362
X18013
WHL+
WHL
WHL-
WHML+
WHML
WHML-
WHMR+
WHMR
WHMR-
WHR+
WHR
WHR-
X18020
X18021
X18022
X18023
B34
B35
B36
B37

Stromlaufplan Fahrzeuge mit Schaltzentrum
Circuit diagram for cars with a switch centre
Schéma de câblage des voitures avec centre de distribution
Stroomkringschema auto's met schakelcentrum
Kretsschema för bilar med kopplingscentrum
Schema elettrico vetture con gruppo interruttori supplementari
Plano de conexiones eléctricas de vehículos con central de conexiones
Esquema de circuitos de veículos sem painel de comandos




B30
B31
B32
B33
X18016
X18017
X18018
X18019
0.35 SWWS
0.35 GEWS
0.35 BRWS
0.35 SWGR
0.35 GEGR
0.35 BRGR
0.35 SWBL
0.35 GEBL
0.35 BRBL
0.35 SWGE
0.35 GEGN
0.35 BRGE
WVL+
WVL
WVL-
WVML+
WVML
WVML-
WVMR+
WVMR
WVMR-
WVR+
WVR
WVR-
X18362
X18013
WHL+
WHL
WHL-
WHML+
WHML
WHML-
WHMR+
WHMR
WHMR-
WHR+
WHR
WHR-
X18020
X18021
X18022
X18023
B34
B35
B36
B37

Stromlaufplan Adapter Rechtslenker-Modelle
Circuit diagram for the adapter for RHD models
Schéma de câblage de l'adaptateur des modèles à direction à droite
Stroomkringschema adapter rechtsgestuurde modellen
Kretsschema för adapter för högerstyrda modeller
Schema elettrico adattatore modelli con guida a destra
Plano de conexiones eléctricas del adaptador para los modelos con el volante a la derecha
Esquema de circuitos da cablagem de adaptação para veículos de volante à direita



F 38 0082 EVA