Retrofit Guide for Mercedes-Benz Air Balance System [Code P21]

For vehicles: w213, w222, x253, x290

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Air Balance System Overview

Fragrance System, Basic Function

Model **all (CAR)**
 with code P21 (Air quality package)

Overview
- General
- Location
- Function requirements

Location
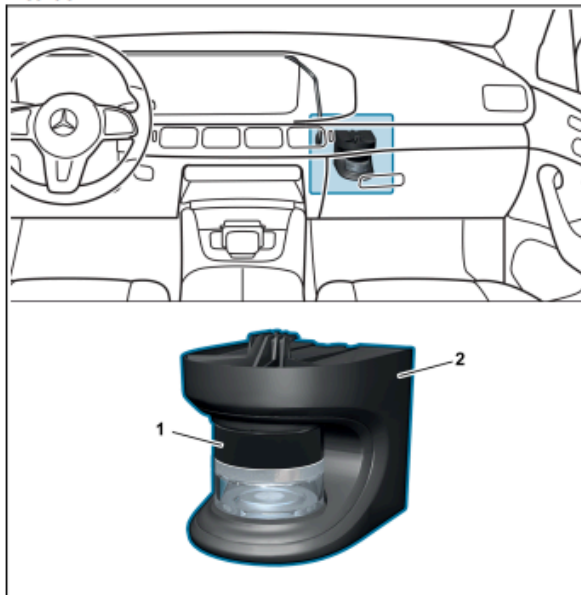The flacon (1) with the liquid fragrance is located in a holder in the glove compartment.

[i] The flacon (1) is held in the holder magnetically and is stored safely if physical shocks or accidents occur.
1 Vial
2 Perfume atomizer generator

Function requirements
- Circuit 15 ON
- Climate control switched on
- Flacon (1) inserted
- Glove compartment CLOSED

- Function
General
Using the fragrance system can enrich the vehicle interior air with different fragrances. The fragrance system is controlled via the climate control.

P83.40-5585-82

- Perfume atomization activated
Function
 A fan in the fragrance system generates its own air flow. This flows over the surface of the fragrance and becomes enriched with fragrance molecules. The air then flows through an opening in the vehicle interior and diffuses there.
The fragrance is timed. After approx. 5 min it switches off and on again. Due to the timing, the vehicle occupants do not get used to the fragrance and so the fragrance remains effective.
When the glove compartment is opened, the fragrance system switches off, the flacon lighting switches on and the flacon (1) changes from the operating position to the removal position.

Ionizer, Basic Function

Model all (CAR)
with code P21 (Air quality package)

Overview
This document contains information on:
- General
- Location

Location
The ionizer (1) is located on the air duct leading to the driver's side air vent.

1 *Driver side air vent ionizer*

- Function requirements
- Functions

General
Air ionization makes it possible to refresh and clean the air in the vehicle interior. Interior air ionization is odorless, as such vehicle occupants cannot directly perceive it. Ionizers are controlled by control of the climate control.
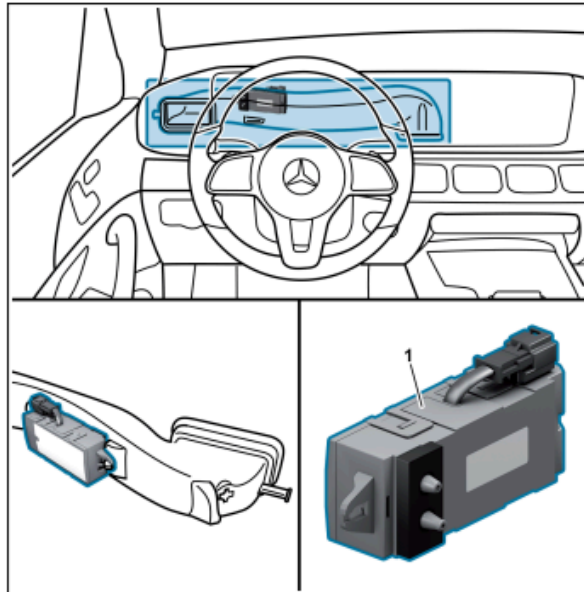
P83.40-5586-82

Function requirements
- Climate control switched on
- Ionization active

- Blower switched on

Function
The ionizer (1) binds dust. This effect is based on the fact that charged ions attach to dust particles in the air. As a result of their electrostatic interaction, they encourage integration with other particles to form a larger cluster. The ionizer (1) then filters this cluster more easily than individual particles.

Required Parts

Listed below are parts you'll need to complete the retrofit, the electrical plugs are technically optional, but it's nice being able to remove things as intended if needed in the future.

Note: Most cars already have the air ducts which also already have the supported ionizer bracket, you just need to poke the missing holes for the ionizer probes to go in.

Air Balance Parts

- Mounting Plate Bolts: A001984572964
- Hose Assembly Bracket: A0029957277
- Air Duct: A2138303501 *(your car should have this already)*
- Air Duct: A2138313000 *(your car should have this already)*
- Fragrance System Mounting Plate: A2228900087
- Fragrance System Housing: 2228900100
- Fragrance System Ionization Control Module: A2238351600
    - **Note:** There is a cap on the ionizer probes, ***remove before installing!***
- Fragrance System Hose Assembly: A2538000000

Receiving Electrical Plugs

- Fragrance System Receiving Plug: A0385457228
- Ionizer Receiving Plug: A0395456628
    - Requires cutting off small protrusion

Wiring Instructions

This section will cover how to wire the Fragrance System and Ionizer.

Note: Once the glove compartment is out, it's a good idea to wire both the Fragrance System and Ionizer at the same time before continuing to install either. This way, everything is ready to be plugged in and nothing needs to be taken apart again.
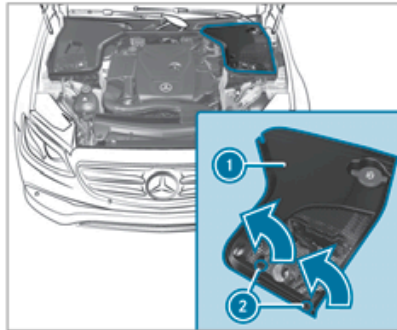
Fuse Box Locations

Opening

⚠ **WARNING** Risk of injury from using the windscreen wipers while the engine bonnet is open

When the engine bonnet is open, and the windscreen wipers are set in motion, you can be trapped by the wiper linkage.
▶ Always switch off the windscreen wipers and ignition before opening the engine bonnet.

▶ Turn clip ❷ on cover ❶ a quarter-turn to the left.
▶ Pull cover ❶ upwards in the direction of the arrow.
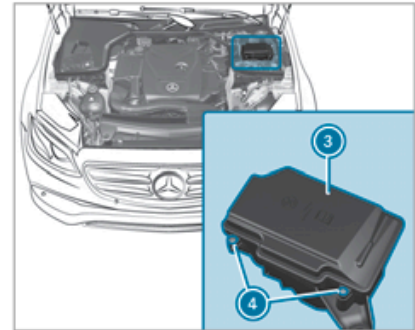
▶ Remove any existing moisture from the fuse box using a dry cloth.
▶ Loosen screws ❹, remove fuse box lid ❸ from the top.

Closing
▶ Check whether the seal is positioned correctly in lid ❸.

▶ Insert lid ❸ into the bracket at the rear of the fuse box.
▶ Fold down lid ❸ of the fuse box and tighten screws ❹.
▶ Insert cover ❶ on both sides.
▶ Turn clip ❷ on cover ❶ one quarter-turn to the right.
▶ Close the bonnet.

Opening and closing the fuse box in the cockpit

The fuse box is on the side of the dashboard under a cover.
▶ Contact a Mercedes-Benz Service Centre for further information.

Opening and closing the fuse box in the front passenger footwell

Observe the notes on electrical fuses (→ page 431).
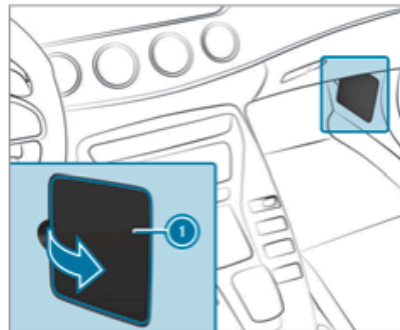

▶ Open cover ❶ in the direction of the arrow and remove it.

Opening and closing the fuse box in the load compartment

Observe the notes on electrical fuses (→ page 431).
▶ Open the load compartment floor .
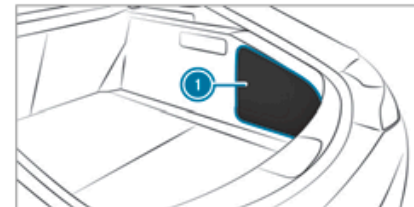
▶ Remove cover ❶.

The fuse allocation chart is on the side of the fuse box.
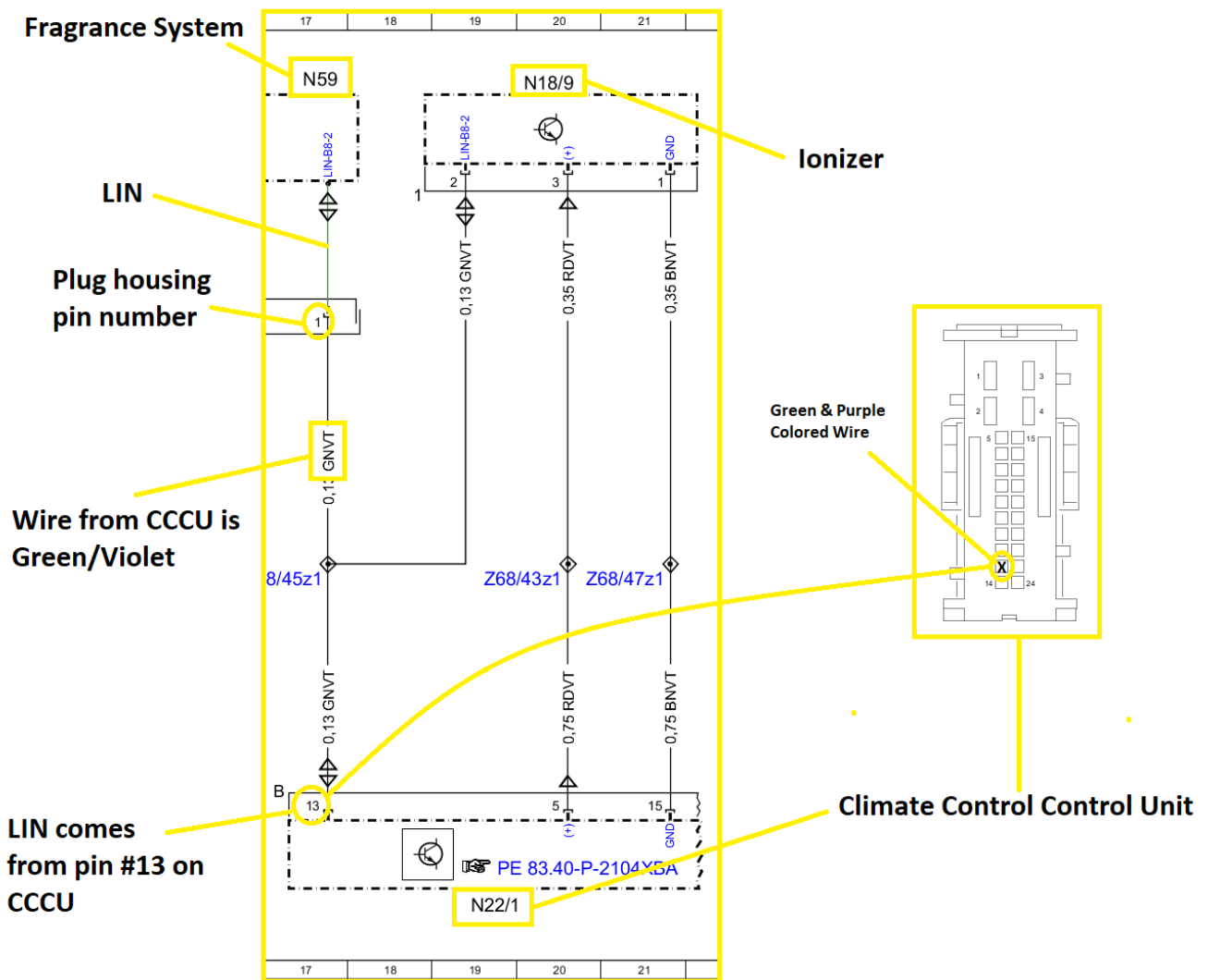
Fragrance System

Note: Wire colors mentioned in the headers of these sections correspond with the plug wires coming from the Fragrance System itself *(see image directly below this text)*, **not** the climate control control unit's (CCCU) wires.
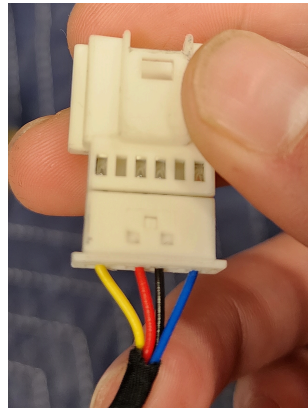
Yellow Wire (LIN)

The yellow wire on the plug of the fragrance generator corresponds with the CCCU LIN wire, which is located at pin 13 on the CCCU's connection plug behind the glove compartment.

Note: The Ionizer LIN will connect to the same wire *(covered in Ionizer section)*.

Red Wire (Power)

The original connection for the fragrance system power, which eventually links up with an MBR2 (labeled on fuse box) shared fuse, provided related packages which use the fuse are installed, may or may not exist if your car didn't originally come with the Air Balance package.

For this reason, among others, using a fuse tap adapter which plugs into the passenger side footwell area fuse box on the red wire coming from the fragrance system plug is an alternative and preferred approach. Based on wiring diagrams of the fragrance system in vehicles which come with the system, a 5amp fuse is required. ***This will be shared with the Ionizer power wire***.

Replace an existing 5 amp standard fuse with the wiretap, plugging the removed fuse and a new one for the Air Balance equipment *(e.g., it has both 5 amp fuses plugged into it when you're done)* and reconnect it to the fuse box. Do not plug into a previously empty slot as it may not have power running to it.

Note: The fuses in the fusebox mentioned above are all running to t30 power, so you should be able to use any fuse. Using an existing 5 amp is recommended because it removes guess work on which fuse to plug into which hole or if there may be extra/less power going to something by mistake.

MuHize Stardard Fuse Holder

ATC
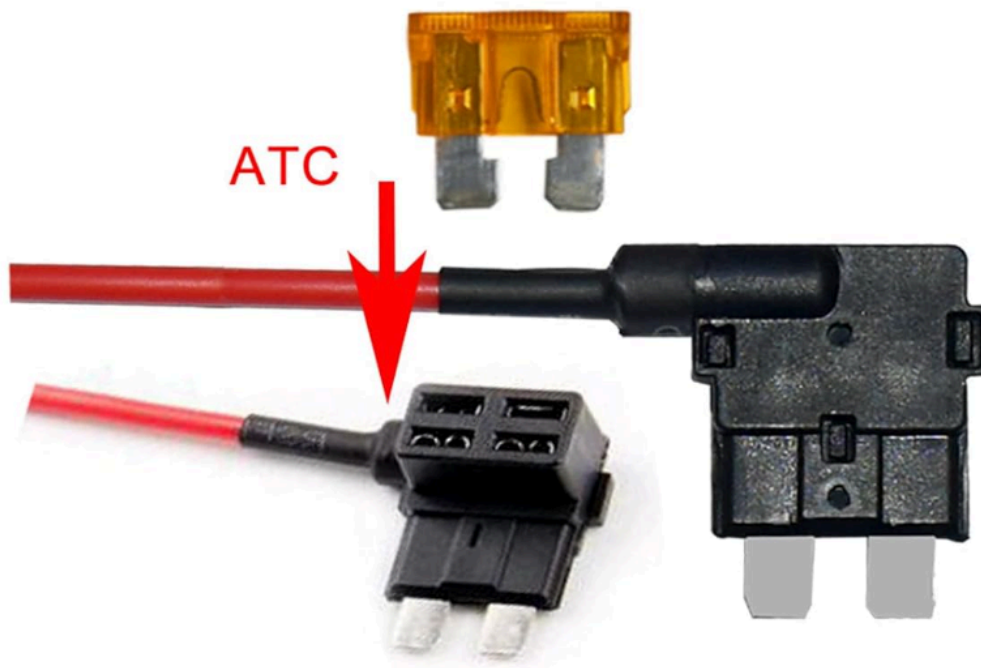
DUAL-SLOT FUSE HOLDER:
Provides one fuse holder to protect existing circuit and a second fuse holder to protect new circuit

Black Wire (Ground)

The black wire coming from the fragrance system plug corresponds with the ground wire, you can run it to an existing ground.

Note: You may end up running the Ionizer ground to the same location *(covered in Ionizer section)*.

Fragrance System

Grounding Point

N59

Ground

Plug housing pin number
4 2 5

0.35 BN

Code L W34
Code R W34/3

Connects to

☞ PE 54.15-P-2519XBA

F1/3

W15/7

W34/3

W15/9
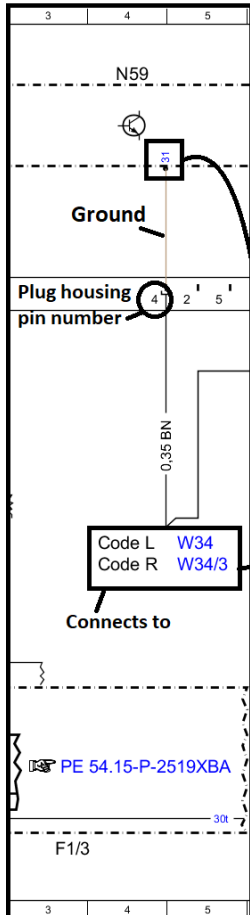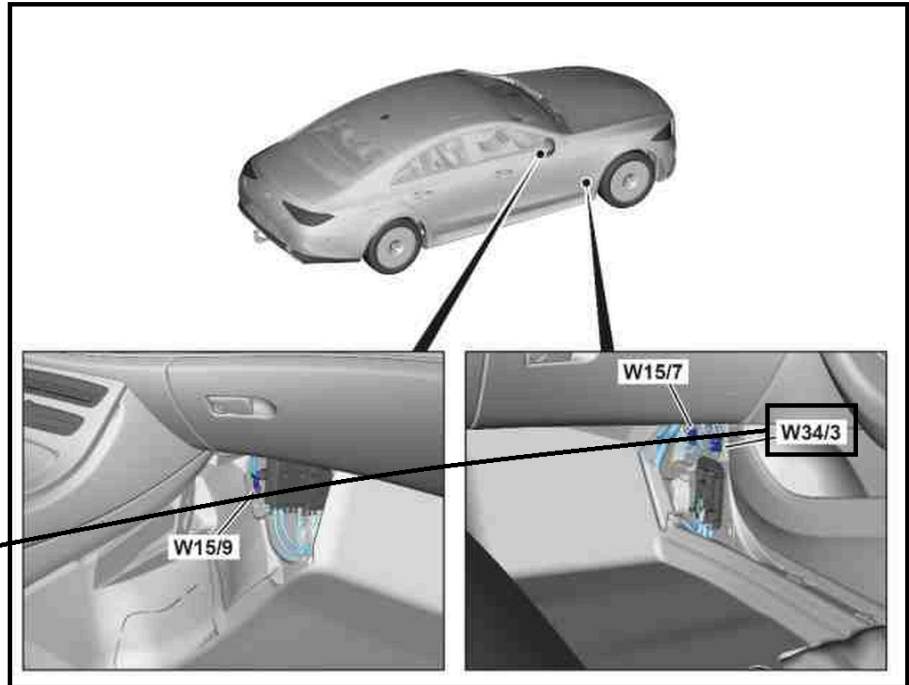
31	Circuit 31	Return line to battery negative or ground connection (direct), 12 V on-board electrical system

Blue Wire (Signal)

The blue wire coming from the fragrance system plug corresponds with the signal wire, which connects to the signal wire of the glove compartment light. The wire will likely be blue, gray or yellow. The other wire is a ground which is brown or black by Mercedes standards, and there are only two wires.

When in doubt, choose the glove box light wire that is not brown or black.

Fragrance System

Plug housing pin number

Singal

Pin 3 of the X29/1 receiver is the preferred location, if wires are not available in both front/back, use the S17/9 connection option instead.

Blue/Brown.. the blue may appear grey if color is light

🖙 PE 54.21-P-2114XBA
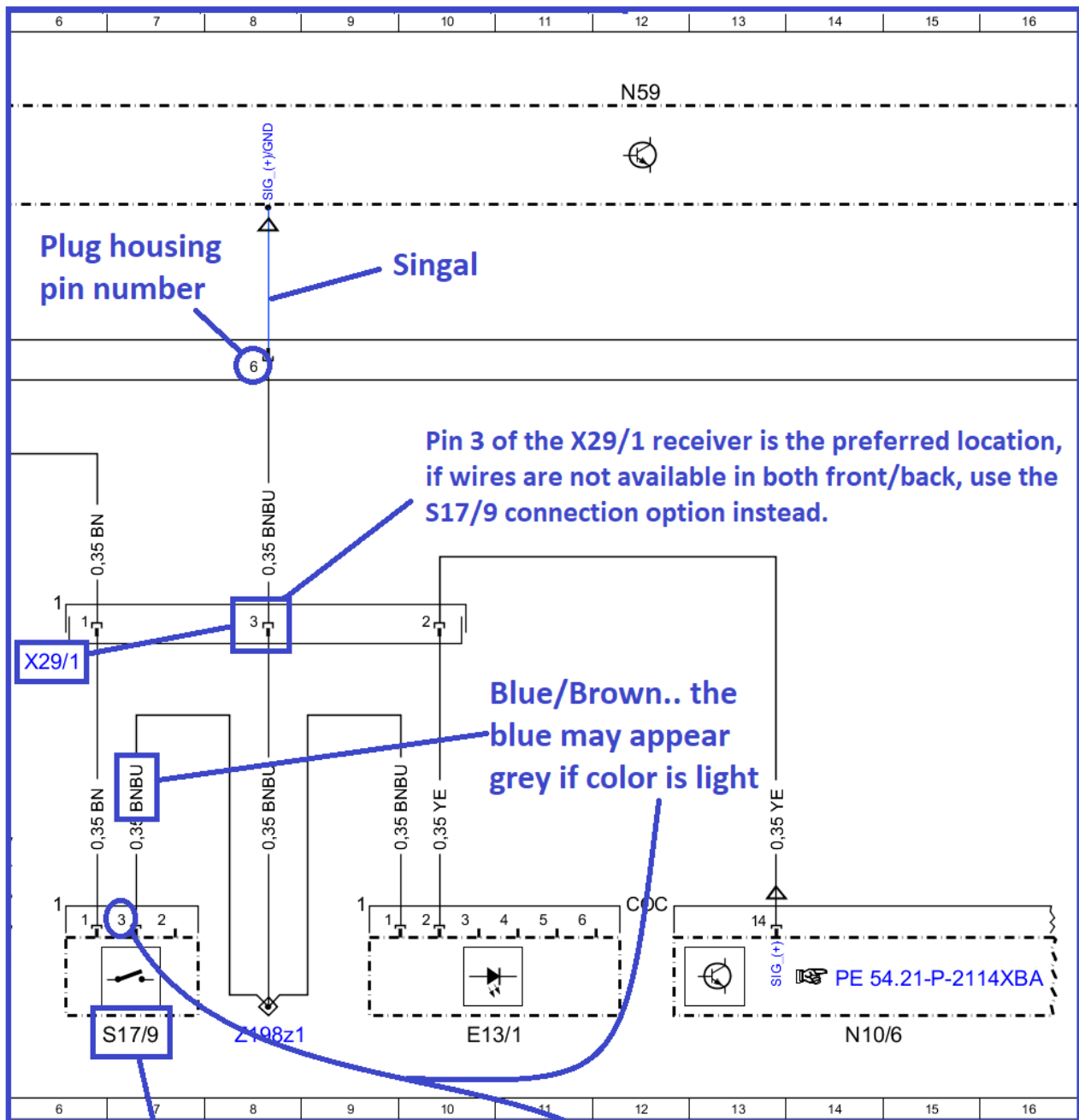
Glove Box Lamp Switch

Glove Box Lamp Connector Pin, #3

Reference Images
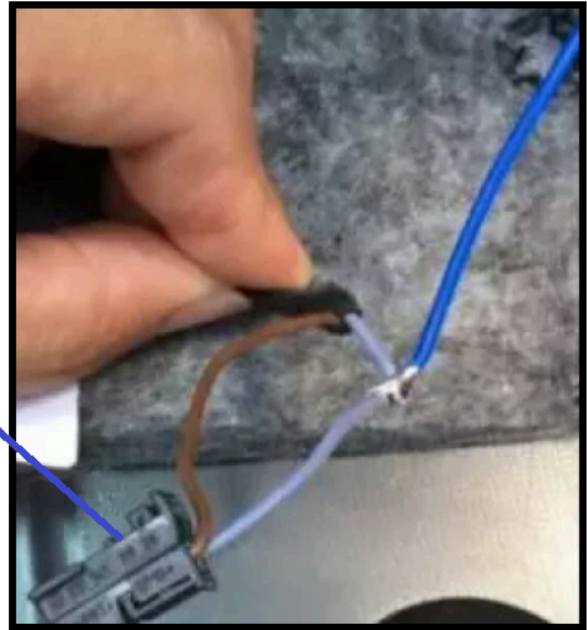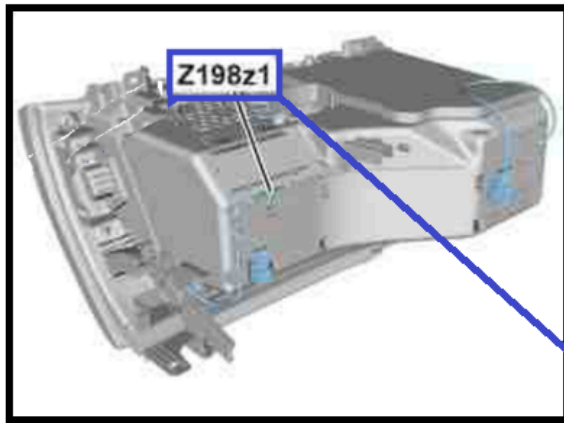
In this image set, the blue signal wire from the fragrance system plug is being spliced into the gray signal wire of the glove compartment light plug *(which connects to Z198z1 from the image)*. The color of the signal wire on the plug, in this case gray, may vary. On the x290 it is yellow. One thing is certain, the other wire is a ground, which will always be either brown or black with Mercedes vehicles. When in doubt, choose the wire that is not brown or black.

Ionizer

Pin 1 (Ground)

You may connect the ground pin to the most convenient grounding location, it's recommended to use the same grounding location used for the Fragrance System. However, any grounding location will work as long as the connection is secure.

Pin 2 (LIN)

The LIN pin will connect into the same LIN wire as the Fragrance System.

Pin 3 (Power)

The power pin will connect with the same power source as the Fragrance System. You can splice the power cables of both the Fragrance System and Ionizer together and connect them into the same fuse tap adapter. Realistically, the Ionizer and Fragrance System should not use more than 1 or 2 amps, so the 5 amp fuse is still perfect.

Reference Images

In this image set, you can see which pins correspond with which wire type.

Physical Installation

Fragrance System

Installing (or removing) the Fragrance System requires removing the passenger footwell (for wiring), display module, instrument panel trim, and glove compartment. From there you will pop out the reserve pieces for the Fragrance System, install the part, and once wiring and hose installation are done, put everything back and plug it all in..

Remove Passenger Footwell Panel

Shown on model 257.### 1#

1	Cover
2	Screw
3	Retaining clips
4	Electrical connector
5	Hook
6	Electrical connector
E17/15	Right front footwell lamp
B10/36	Right footwell air outlet temperature sensor
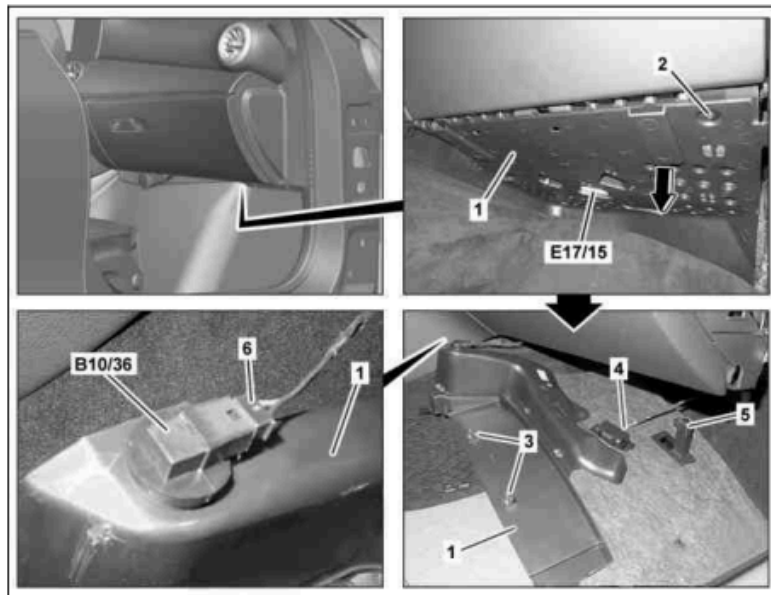
P68.10-5586-06

	Information on preventing damage to electronic components due to electrostatic discharge		AH54.00-P-0001-01A
⟨⟩ ⟨⟩	**Remove/install**		
1	Adjust front passenger seat to the rear.		
2	Remove front door sill.		
3	Switch off ignition and store transmitter key outside of transmission range (min. 2 m).		
4	Remove screw/bolt (2).		
5	Unclip trim (1) from retaining clamps (3).	⌇ Long wedge	*115589035900
6	Push trim (1) on bracket (5) to the outside, unhook, and lower (arrow) until electrical connectors (4, 6) are accessible.		
7	Disconnect electrical connectors (4, 6).		
8	Remove trim (1).		
9	Remove right footwell vent air outlet temperature sensor (B10/36) or left footwell vent air outlet temperature sensor.	When replacing trim (1).	
10	Remove right front footwell lamp (E17/15) or left front footwell lamp.	When replacing trim (1).	
11	Install in the reverse order.		
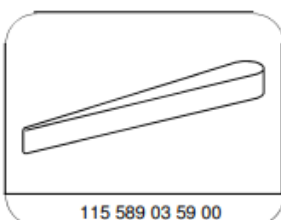
115 589 03 59 00

Long wedge

Remove Display Module

**Shown on model 257 except code 464
(Digital instrument cluster, full display)**

1   Display module
A1   Instrument cluster
A40/8   Audio/COMAND display
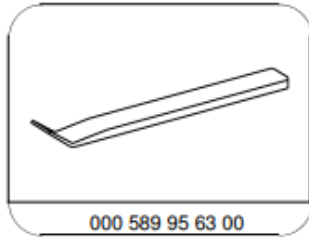
000 589 95 63 00
Dismantling tool

P54.33-5671-05

2   Cover

3   Screw

|				AH54.00-P-0001-01A
		Information on preventing damage to electronic components due to electrostatic discharge		
⌧ ⌧		**Remove/install**		
1		Switch off ignition and store transmitter key outside of transmission range (min. 2 m).		
2		Move steering wheel all the way to the rear and down.		
3		Slide disassembly tool between instrument panel and cover (2) (arrows); unclip cover (2) and remove.	🛠 Dismantling tool	*000589956300
4		Unscrew bolts (3).	ⓘ **Installation:** Push display module (1) forwards and tighten bolts (3).	
5		Slightly lift retaining tabs under the screws (3) using a suitable tool and tilt the display module (1) out of the instrument panel.	ⓘ Do not apply too much force when lifting up the retaining tabs of the bolts (3). Otherwise, the display module (1) may be damaged.	
6		Remove display module (1) until the electrical connectors are accessible.		
7		Separate electrical connectors.	ⓘ The number of electrical connectors may vary depending on the equipment.	
8		Remove display module (1).	ⓘ The instrument cluster (A1) and audio/ COMAND display (A40/8) are integrated into the display module (1).	
9		Install in the reverse order.		

Remove Passenger Trim Piece
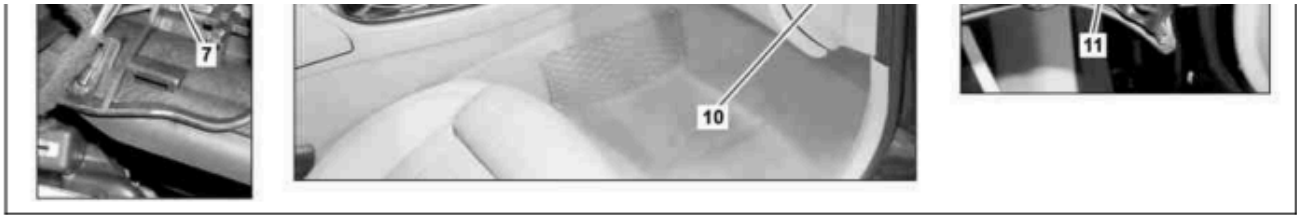
P68.10-4974-08

Shown on model 257.### 1# with code 891 (Premium ambient lighting)

6	Light-emitting diode	8	Display module	10	Cover
7	Electrical connector	9	Passenger side trim pieces	11	Light-emitting diode

**Shown on model 257 with code 891
(Premium ambient lighting)**

9   Passenger side trim pieces
12   LEDs
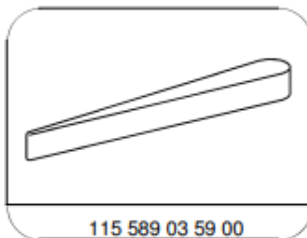
115 589 03 59 00

Long wedge
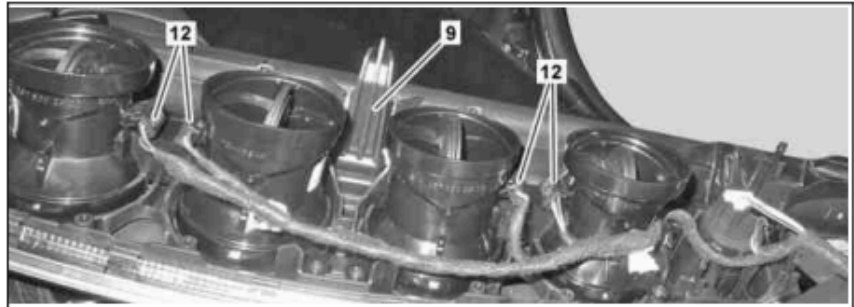
P68.10-5648-04

	Information on preventing damage to electronic components due to electrostatic discharge		AH54.00-P-0001-01A
⬚ ⬚	**Remove/install**		
1	Move steering wheel all the way to the rear and to the bottom.		
2	Disconnect ground line from battery.		AR54.10-P-0003FR
3	Release edge guard in the area of the cover (10).	ℹ️ **Installation:** Ensure that edge guard is seated correctly.	
4	Remove cover (10).	🔧 Long wedge	*115589035900
5	Remove display module (8) and place to one side with connected electric lines.		AR54.30-P-6023FR
6	Unclip front passenger side trim piece (9) along the entire length at the bottom.	ℹ️ Start unclipping in the area of the previously removed cover (10). 🔧 Long wedge	*115589035900
7	Tilt front passenger side trim piece (9) slightly toward the top and guide out of the instrument panel.	ℹ️ **Installation:** Pay attention for correct seat on center nozzles and separation point to driver side trim piece.	
8	Detach electrical connector (7).		
9	Disconnect light-emitting diodes (6, 11, 12) from the fiber-optic cables.	Model 257, 290 with code 891 (Premium ambiance illumination)	
10	Remove front passenger side trim piece (9).		
11	Remove KEYLESS-GO start/stop button.	When replacing front passenger side trim element (9).	AR54.25-P-4000FR
12	Remove center air vent.	When replacing front passenger side trim element (9).	AR83.10-P-4509FR
13	Install in the reverse order.		

Remove Glove Compartment
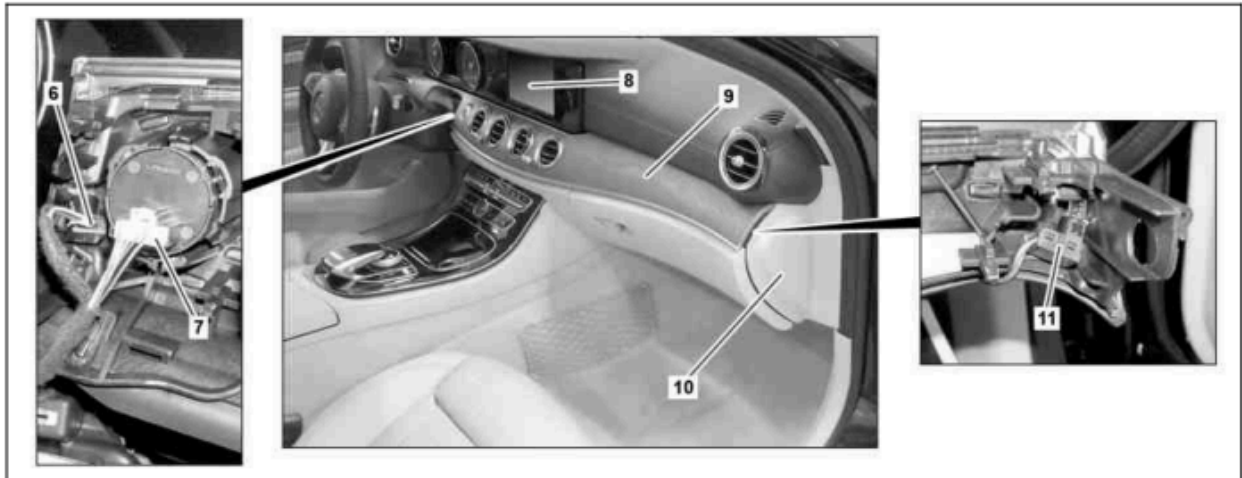
P68.10-4974-08
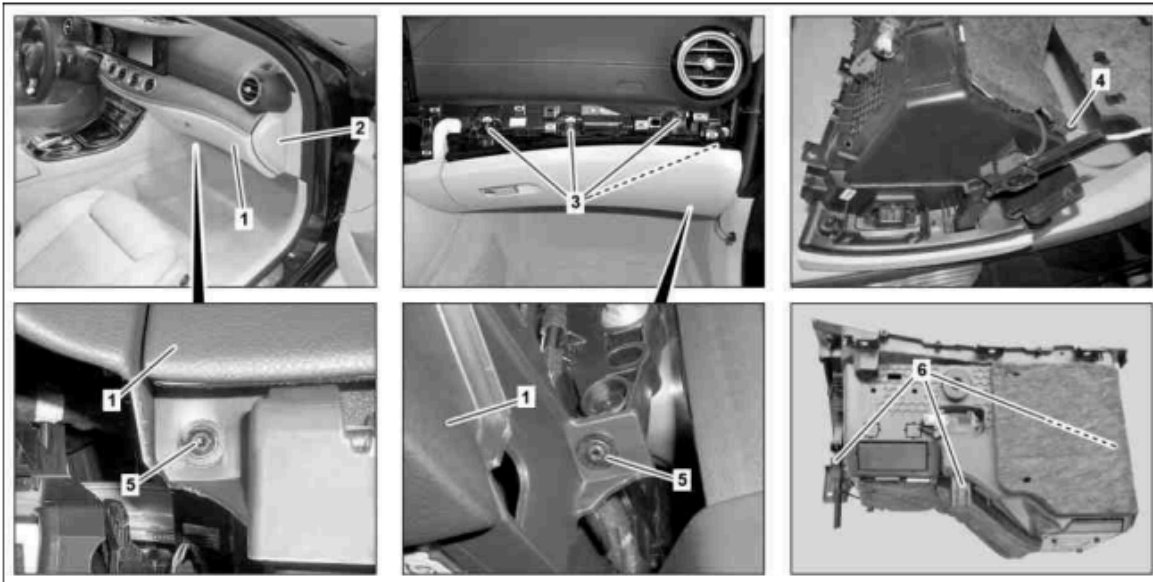
P68.10-4958-09

Shown on model 257 except code P21 (air quality package)

| 1 | Glove compartment | 3 | Bolts | 5 | Screw |
| 2 | Cover | 4 | Electrical connector | 6 | Guides |

⧉ ⧈	**Remove/install**		
1	Remove trim piece from front passenger side instrument panel and place to one side.		AR68.10-P-1187FR
		ℹ Do not disconnect electrical connectors.	
2	Remove trim under front passenger side instrument panel.		AR68.10-P-1502FR
3	Remove bolts (5).		
4	Remove screw/bolts (3).	ℹ One bolt (3) is located in the glove compartment (1) on right.	
5	Pull out glove compartment (1) until the electrical connector (4) is accessible.	ℹ **Installation:** Push guides (6) of glove compartment (1) into instrument panel.	
6	Detach air duct from glove compartment (1).		
7	Disconnect electrical connection (4).		
8	Disconnect electrical connector from separate trunk locking switch (S88/6).	Model 257 with code 887 (independent boot locking)	
9	Disconnect electrical connector and hose from fragrance system alternator.	Model 257, 290 with code P21 (Air quality package)	AR83.40-P-0201FR
10	Remove glove compartment (1).		
11	Remove separate trunk locking switch (S88/6) from the glove compartment (1).	Model 257 with code 887 (independent boot locking) When replacing glove compartment (1).	
12	Remove fragrance system alternator from the glove compartment (1).	Model 257, 290 with code P21 (Air quality package) When replacing glove compartment (1).	AR83.40-P-0201FR
13	Remove glove compartment lamps from the glove compartment (1).	When replacing glove compartment (1).	
14	Install in the reverse order.		

Install Fragrance System
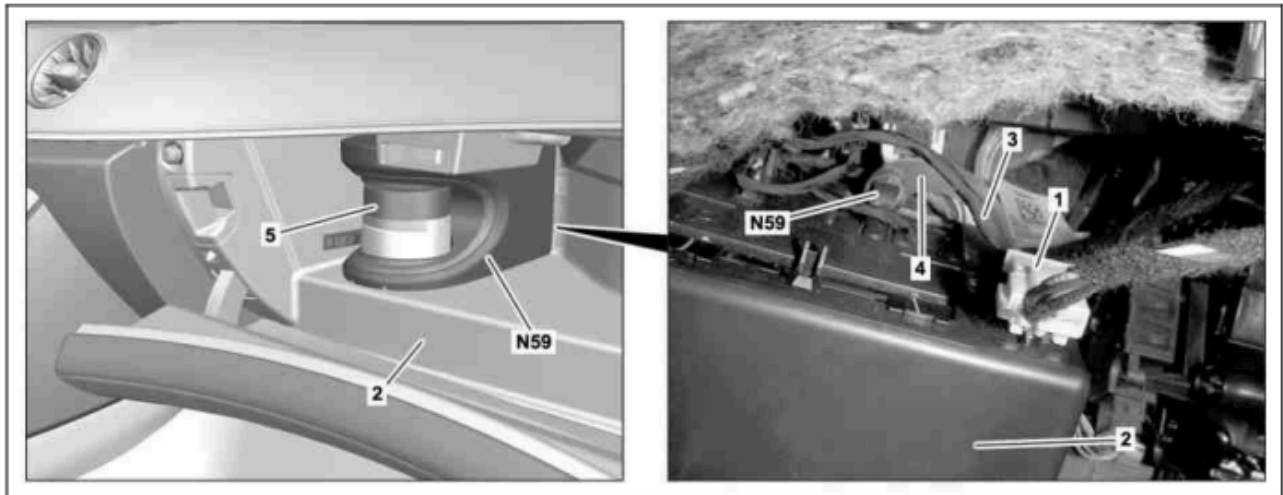
P83.40-5486-08

Shown on model 257

1	Electrical connector
2	Glove compartment
3	Electrical wiring harness

4	Hose
5	Vial
N59	Perfume atomizer generator

Shown on model 257

2	Glove compartment
6	Catch hook
7	Recesses
N59	Perfume atomizer generator
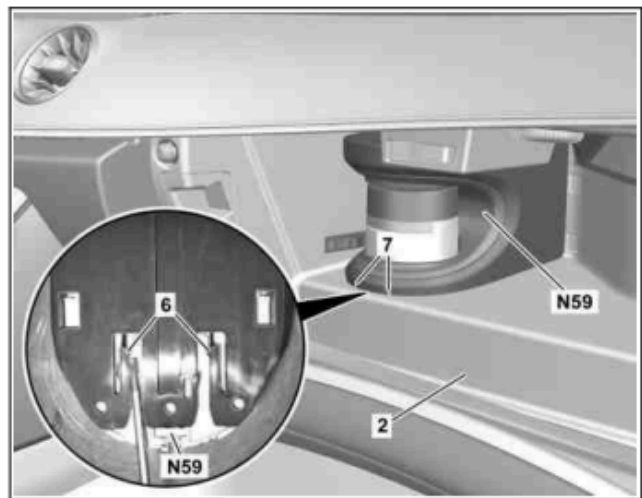
P83.40-5487-11

		Information on preventing damage to electronic components due to electrostatic discharge		AH54.00-P-0001-01A
⛶ ⛶		**Remove/install**		
1		Remove trim under front passenger side instrument panel.		AR68.10-P-1502FR
2		Remove electrical connector (1) from glove compartment (2) and expose electrical wiring harness (3).		
3		Disconnect electrical connector (1).		
4		Detach hose (4) from fragrance system alternator (N59).	ℹ **Installation:** Ensure that hose (4) is seated correctly.	
5		Open flap on glove compartment (2).		
6		Remove flacon (5).		
7		Release catch hooks (6) through cutouts (7) using a suitable tool as shown.		
8		Remove fragrance system alternator (N59).		
9		Install in the reverse order.		

Reference Images

The Fragrance System reserve hole may be difficult to locate, it might be useful to utilize an endoscope or borescope to help see better. It will likely be close to the top, directly under the dash, around where you see the arrow in the picture below.
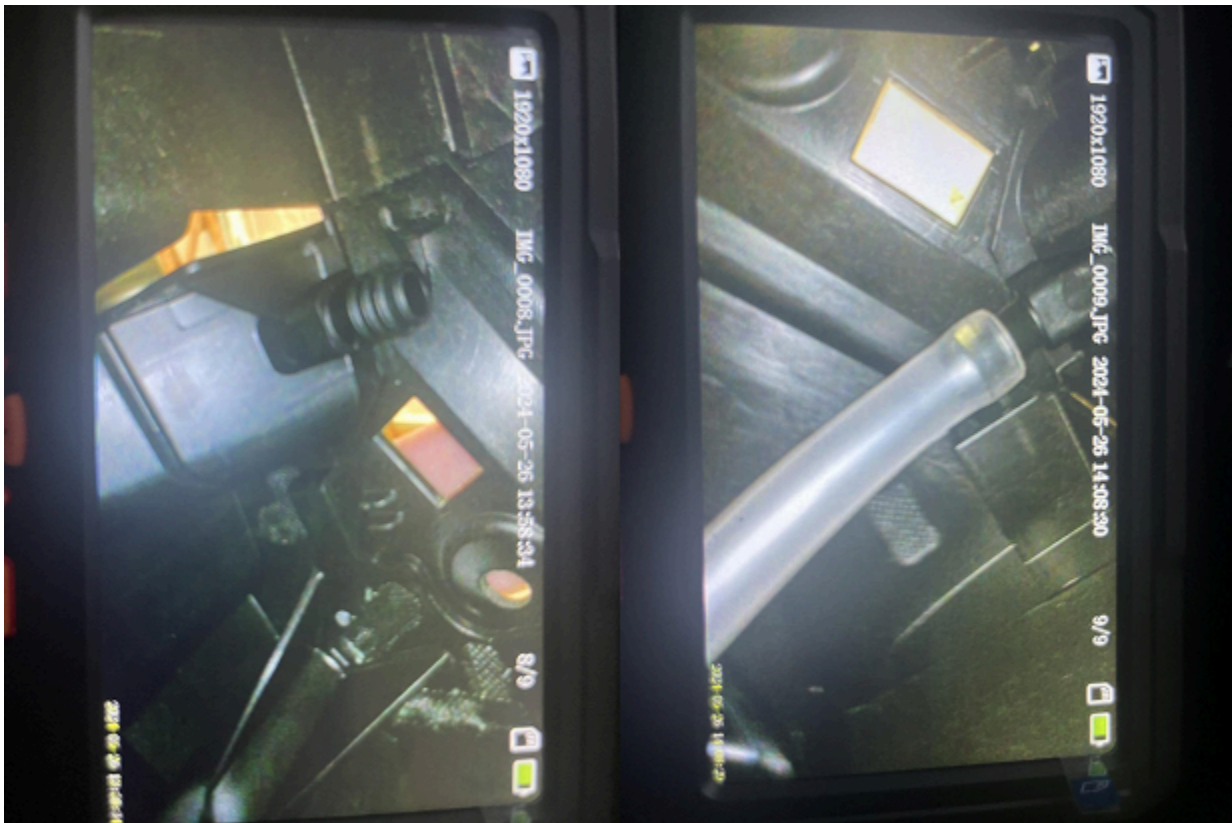
Ionizer

Installing (or removing) the Ionizer requires removing the driver footwell, and installing the ionizer. From there you will pop out the reserve pieces for the Fragrance System, install it, and once wiring is done, put everything back and plug it all in.

Remove Driver Footwell Panel
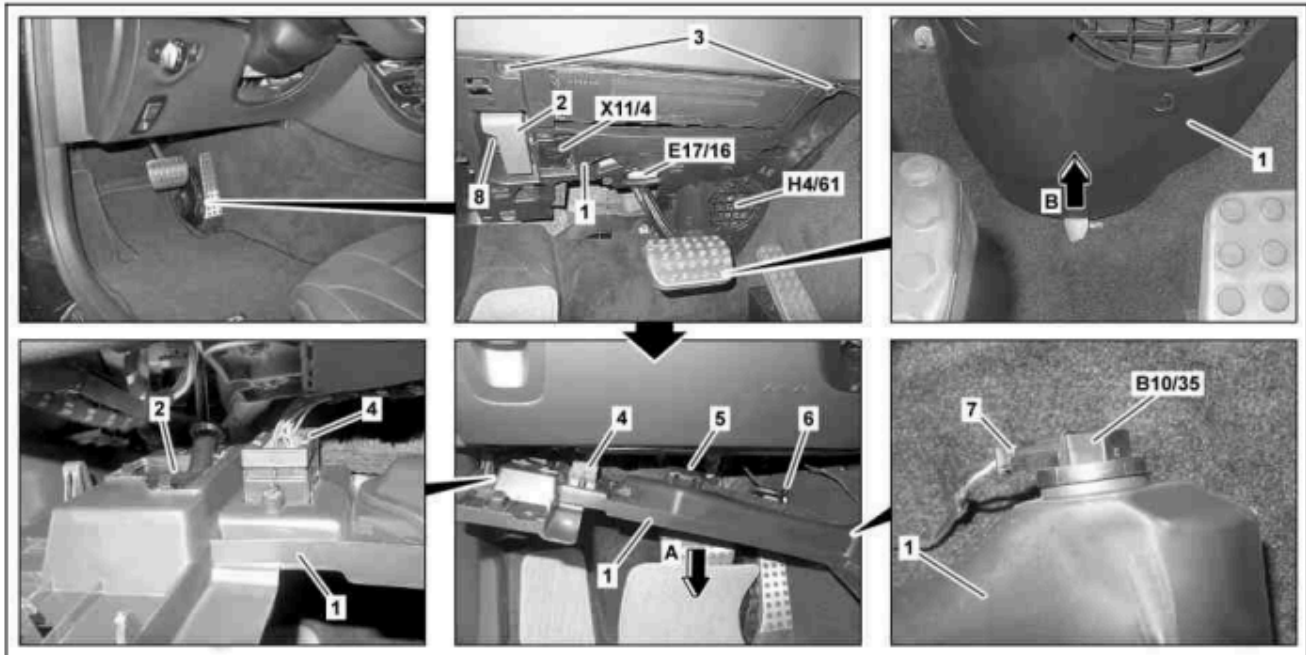
P68.10-5947-09

Shown on model 257.### 1#

1	Cover	7	Electrical connector
2	Engine hood release handle	8	Screw
3	Bolts	B10/35	Left footwell air outlet temperature sensor
4	Electrical connector	E17/16	Left front footwell lamp
5	Electrical connector	H4/61	Instrument cluster speaker
6	Electrical connector	X11/4	Diagnostic connector
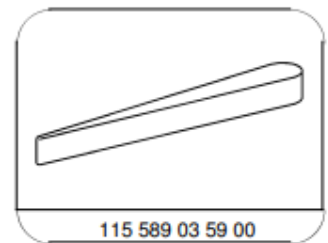
115 589 03 59 00

Long wedge

	Information on preventing damage to electronic components due to electrostatic discharge		AH54.00-P-0001-01A
⊠ ⊠	**Remove/install**		
1	Adjust steering column upward.		
2	Adjust driver seat to the rear.		
3	Switch off ignition and store transmitter key outside of transmission range (min. 2 m).		
4	Remove front door sill.		
5	Remove screw/bolts (3).		
6	Loosen trim (1) and lower (arrow A) until electrical connectors (4, 5, 6, 7) are accessible.	☞ Long wedge	*115589035900
7	Disconnect electrical connectors (4, 5, 6, 7).		
8	Remove screw/bolt (8).		
9	Remove engine hood release handle (2) to the rear out of trim (1).		
10	Unhook retaining tab of trim (1) from floor covering (arrow B) and remove trim (1).		
11	Remove diagnostics connection (X11/4).	When replacing trim (1).	
12	Remove instrument cluster speaker (H4/61).	When replacing trim (1).	
13	Remove left footwell vent air outlet temperature sensor (B10/35) or right footwell vent air outlet temperature sensor.	When replacing trim (1).	
14	Remove left front footwell lamp (E17/16) or right front footwell lamp.	When replacing trim (1).	
15	Install in the reverse order.		

Install Ionizer

Your car should already have an air duct with a bracket you are able to hook the Ionizer onto, but the Ionizer will not be there. The Ionizer holes will also be sealed shut.

Note: You can create a stencil with cardboard and use a hot screwdriver or similar tool to burn out the required holes. Be careful, as the heat may melt the screwdriver handle if too hot.

P83.40-5543-07

Shown on model 257 except code 463 (Head-up Display)

| 1 | Air duct | N18/9 | Driver side air vent ionizer |

Shown on model 257 with code 463 (Head-up Display)

1   Air duct
N18/9   Driver side air vent ionizer
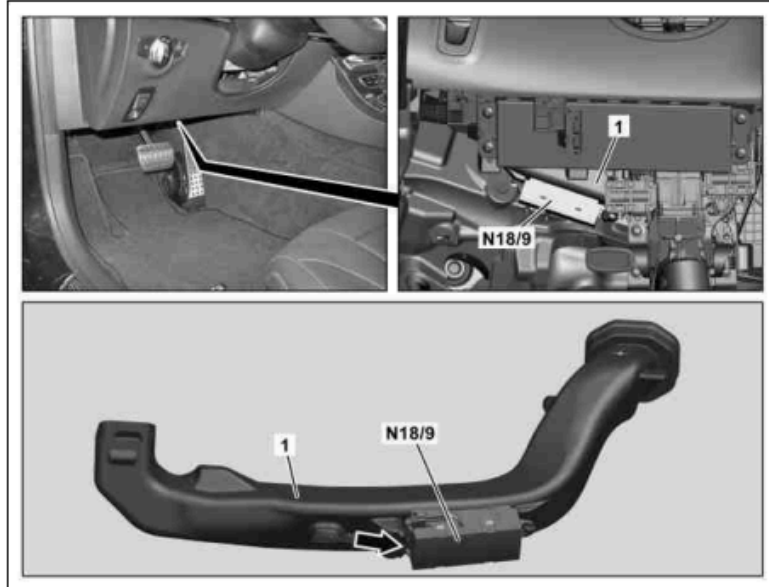
P83.40-5544-06

Coding Instructions

HVAC222 Module

Use the HVAC222 module to unlock the core functionality of your new Air Balance System. After unlocking, you can make changes, they may appear to immediately revert back, but after a hard reset the values will stabilize.

Unlock Access

Set Air Balance to Installed

HVAC222 Module (Continued)

Increase Scent Strength (Optional)

Hard Reset

HU55 Module

The HU55 module will unlock the options in the display module or air conditioning menu related to the Fragrance System and Ionizer.

Enable Air Balance Menus