

Original BMW Accessories. Installation Instructions.



M Performance Alcantara Steering Wheel II with Race Display Retrofit

BMW 1 Series (F20/F21)

BMW 2 Series (F22/F23)

BMW 3 Series (F30/F31/F34/F35)

BMW 4 Series (F32/F33/F36)

BMW M2 Coupé (F87)

BMW M3 Saloon (F80)

BMW M4 Convertible/Coupé (F82/F83)

Retrofit kit number

32 30 2 230 189	M Performance steering wheel II with Race Display
32 30 2 344 148	M Performance steering wheel II with Race Display for M3/M4 cars
32 30 2 413 015	M Performance steering wheel II with Race Display for M2 cars

Installation time

The installation time is **approx. 1.5 hours** for the M Performance steering wheel II with Race Display. This may vary depending on the condition of the vehicle and the equipment in it.

Important information

These installation instructions are primarily designed for use within the BMW dealership organisation and by authorised BMW service companies.

These installation instructions are intended for use by qualified specialist staff trained on BMW vehicles with the relevant expert knowledge.

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

If you experience installation or function problems, restrict troubleshooting to approx. 0.5 hours for mechanical work and 1.0 hour for electrical work.

To avoid unnecessary extra work and/or costs, send an inquiry straight away to the technical parts support team via the Aftersales Assistance Portal (ASAP).

Quote the following information:

- Chassis number,
- Retrofit kit part number,
- A detailed description of the problem,
- and any work already carried out.

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

Pictograms



Denotes instructions that draw your attention to dangers.



Denotes instructions that draw your attention to special features.

◀ Denotes the end of the instruction or other text.

Installation information

Ensure that the cables and/or lines are not kinked or damaged as you install them in the car. Costs arising from this will not be reimbursed by BMW AG.

Additional cables/lines that you install must be secured with cable ties.

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

All pictures show LHD cars; proceed accordingly on RHD cars.

Once the installation work is complete, basic settings need to be carried out on the M Performance steering wheel.

Ordering instructions

Airbag module **H** is not included with the retrofit kit and can if necessary be transferred over from the existing steering wheel.

Can generally be installed in all vehicles. The parts listed below can be adopted from the existing steering wheel or must be ordered and exchanged for the vehicle-specific SAs. See the relevant table entitled "M Sport steering wheel" and the associated add-on parts for more information.

When exchanging the airbag unit, it does not require decoding.

If fitted with SA 248 (heated steering wheel), the heating function will not work, the heating key on the steering column will have no function when fitted. An error memory entry be made in the control unit but this can be ignored. If necessary a blind cover can be ordered (see EPC for information and part number).

- 1 / 2 Series cars with basic steering wheel, leather steering wheel (SA 240), Sport steering wheel (SA 255)

The airbag unit, multifunction keys and, if applicable, shift paddles as well as steering wheel electronics (cable, control unit, vibration generator) must be ordered for an M sport steering wheel and replaced.

- 1 Series cars with M Sport steering wheel (SA 710) built before 03/14

The airbag unit, multifunction keys and, if applicable, shift paddles as well as steering wheel electronics (cable, control unit, vibration generator) must be ordered for an M sport steering wheel and replaced.

- 1 Series cars built after 03/14 with M Sport steering wheel (SA 710) and 2 Series cars with M Sport steering wheel (SA 710)

Adoption of all parts possible.

- 3 / 4 Series car with basic steering wheel, leather steering wheel (SA 240), Sport steering wheel (SA 255)

Airbag unit, multi-function keys and possibly shift paddles as well as steering wheel electronics (cable, control unit, vibration generators) must be ordered for an M Sport steering wheel and replaced.

- 3 / 4 Series cars with M Sport steering wheel (SA 710)

Adoption of all parts possible.


- M2/M3/M4 cars

Adoption of all parts possible.

Special tools required

00 9 317, panel wedge

Information for the workshop and customer

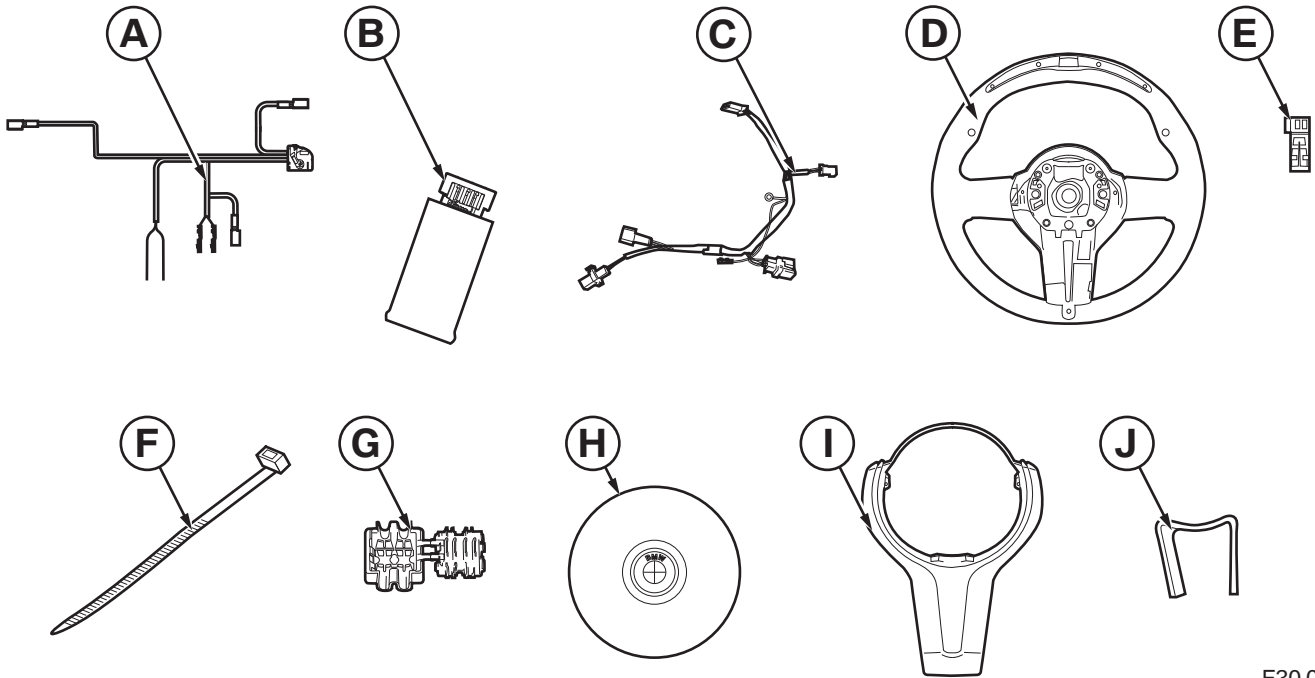
 No entry is required in the vehicle's paperwork, and no operating permit needs to be carried for the M Performance steering wheel. The approval is included in the general EC approval for the relevant vehicles from BMW.

The customer must be notified that if SA 248 (steering wheel heating) is installed, the heating function will not work. The switch on the steering column trim for steering wheel heating remains without function. ◀

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1. Parts list for the M Performance steering wheel II with Race Display



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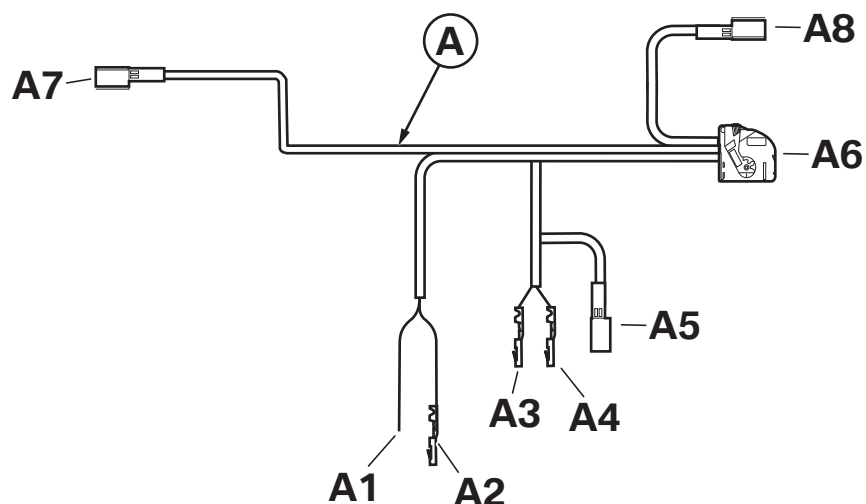
Legend

- A** Retrofit cable - Part No. 2 334 010
- B** Control unit - Part No. 2 334 013
- C** Wiring harness - Part No. 2 354 871 (already pre-installed in the steering wheel)
- D** M Performance steering wheel
- E** 2-pin socket casing - Part No. 2 360 043
- F** Cable ties (15 x)
- G** Miniature connector - Part No. 8 364 566 (2 x)
- H** Airbag module (not supplied with the retrofit kit)
- I** Finisher for M Performance steering wheel - Part No. 2 345 203
- J** Clamp spring

2. Preparatory work

	ISTA No.
Conduct a brief test	---
Disconnect the negative pole of the battery	12 00 ...
Airbag module	32 34 020
Steering wheel	32 33 ...
The following components must be removed first of all	
Trim for door pillar at the bottom right	51 43 150
Bottom right dashboard trim	51 45 181
Door sill cover strip trim at the bottom right	51 47 000
Steering column trim lower section	32 31 020
Steering column trim upper section	32 31 003
Steering column switch cluster (SCSC)	61 31 008
Front Electronic Module (FEM) control unit	61 35 270
Expose the wiring harness plug on the right	---

3. Connection diagram for the M Performance steering wheel II with Race Display

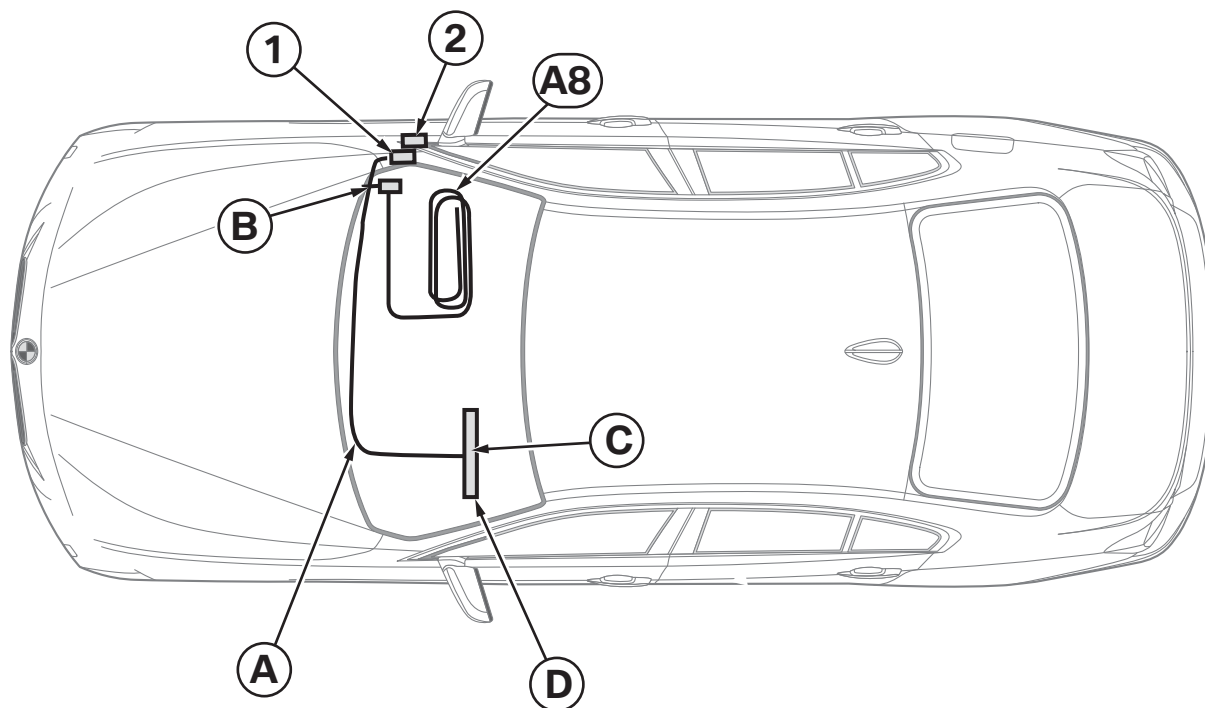


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Legend

Item	Designation	Signal	Cable colour / cross-section	Connection location in the car	Abbreviation / slot
A	Retrofit cable				
A1	Cable open	Terminal 30b	GN/GR 0.5 mm ²	With miniature connector G to the right door wiring harness plug	(X5*1B) PIN 14
A2	Socket contact	Terminal 31	BR 0.5 mm ²	With miniature connector G to the right door wiring harness plug	(X5*1B) PIN 27
A3	Socket contact	FA-Can High	BL/RT 0.35 mm ²	FEM to the side in the right-hand footwell	CON2 (A173*2B) PIN 19
A4	Socket contact	FA-Can Low	RT 0.35 mm ²	FEM to the side in the right-hand footwell	CON2 (A173*2B) PIN 18
A5	SW 2-pin plug casing		BL/RT RT 0.35 mm ²	With socket casing E to the disconnected cables from plug CON2	
A6	SW 12-pin socket casing			To control unit B	
A7	Socket contact		WS/BL 0.35 mm ²	To steering column switch cluster SCSC	
A8	3-pin socket casing			Optionally to lap trigger measuring sensor	

4. M Performance steering wheel II (with Race Display) installation and cabling diagram

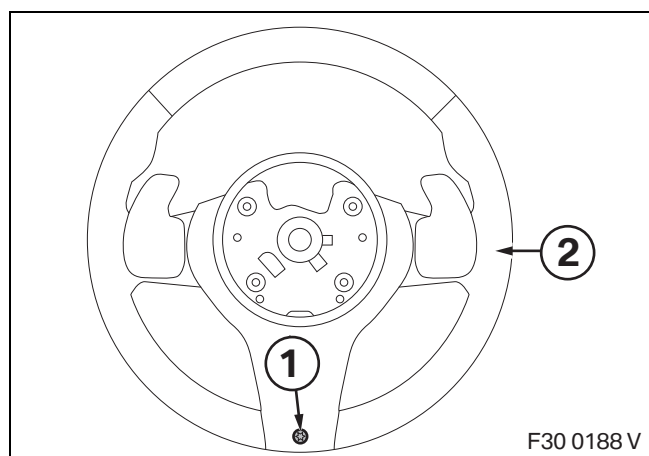


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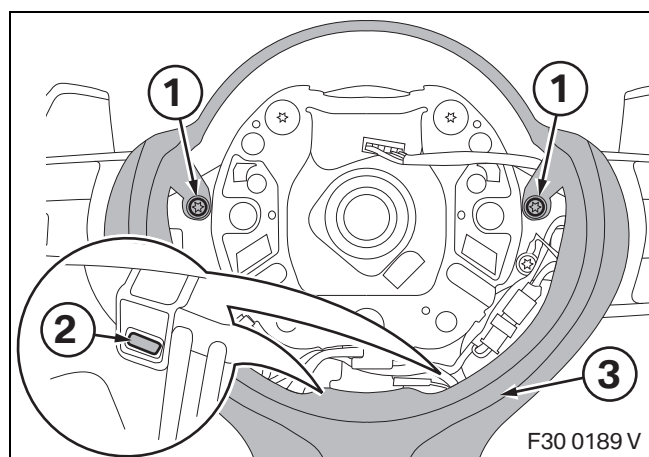
Legend

- A** Retrofit cable
 - B** Control unit
 - C** Wiring harness
 - D** M Performance steering wheel
-
- A8** Connecting cable for optional LAP trigger measuring sensor
 - 1** FEM at the bottom to the side of the right-hand footwell
 - 2** Right door wiring harness plug

5. Removal of the steering wheel

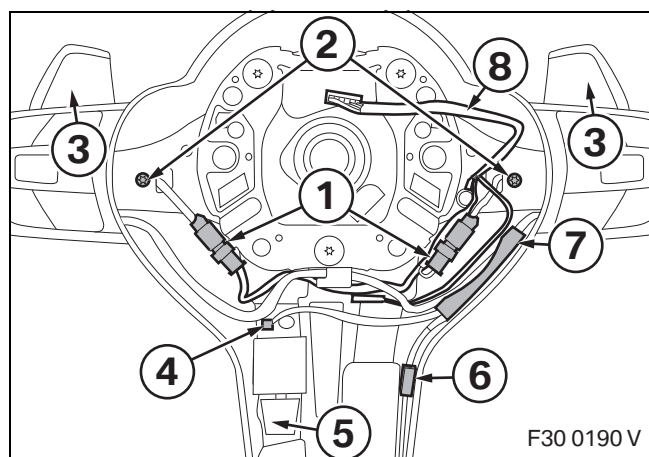


Loosen and remove the screw (1) on the back of the steering wheel (2).



Loosen and remove the screws (1).

Press in the clip (2) slightly on both sides and remove the finisher (3).



▣ The control module (7) will only be present if a lane departure or lane change warning or DRIVING ASSISTANT and/or a steering wheel heating system are fitted. This control module (7) must be included in the new steering wheel. ◀

Only if Sport automatic shift paddles (SA 2TB) are installed:

Loosen the plugs (1) from the holders and pull them out.

Remove the screws (2) from the shift paddles (3) and remove the shift paddles (3).

Only if lane change warning (SA 5AG) or lane departure warning (SA 5AD) or DRIVING ASSISTANT (SA 5AS) are installed:

disconnect the plug (4) from the vibration generator (5).

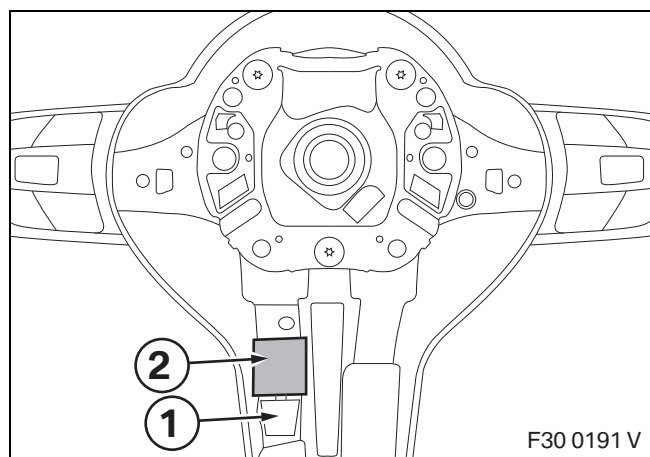
Only if steering wheel heating (SA 248) is installed:

remove the plug (6) from the control module (7).

For all cars:

The wiring harness (8) remains in the standard steering wheel and is not required.

5. Removal of the steering wheel

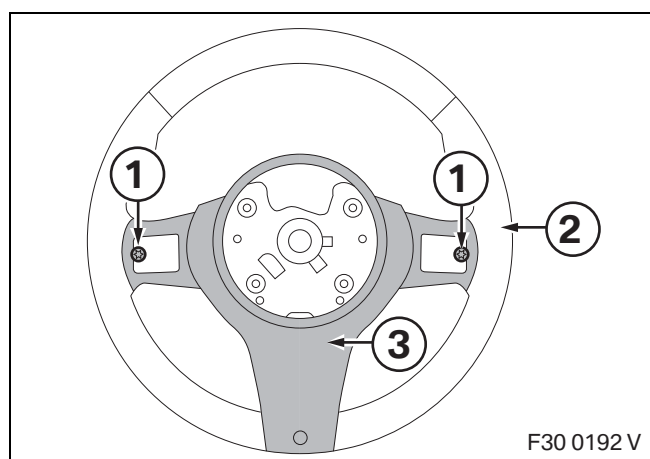


Only if lane change warning (SA 5AG) or lane departure warning (SA 5AD) or DRIVING ASSISTANT (SA 5AS) are installed:

▶ If there is a piece of foam on the vibration generator (1), this must be removed and replaced during installation. When the clamp spring (2) is being removed, push firmly upwards on the clamp spring (2) to release the barb at the bottom of the clamp spring (2). ◀

Remove the clamp spring (2) from the vibration generator (1) and remove the vibration generator (1).

⚠ The clamp spring (2) must not be re-used. ◀



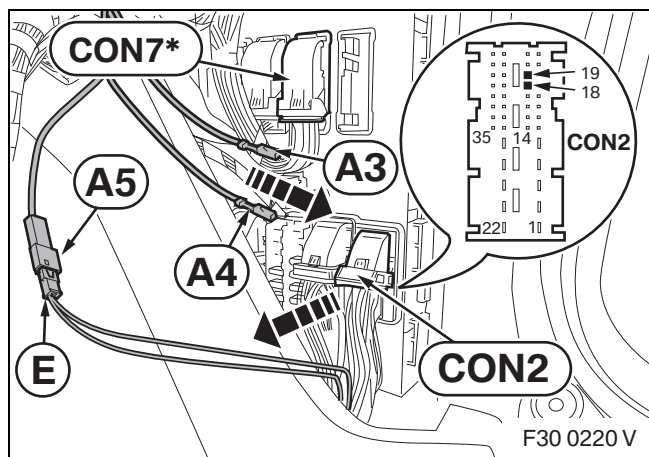
For all cars:

Loosen and remove the screws (1) on the back of the steering wheel (2).

Remove the rear cover (3).

Remove the steering wheel (2).

6. Installing the M Performance steering wheel II (with Race Display) retrofit kit



▶ In some cases on the **F82**, the FA Can signals are not present at **PIN 18** and **PIN 19** of **CON2** (**A173*2B**), but rather at **PIN 35** and **PIN 36** of **CON7*** (**A173*7B**). The pin assignment is the same as for **CON2**, however **PIN 18** becomes **PIN 35 (CON7*)** and **PIN 19** becomes **PIN 36 (CON7*)**. ◀

Route branches **A3-A5** to the FEM in the right-hand footwell.

Disconnect cable from **PIN 18** and **PIN 19** of plug **CON2**, 42-pin, and connect as follows to socket casing **E**:

- Cable from **PIN 19** to **PIN 1** (BL/RT)
- Cable from **PIN 18** to **PIN 2** (RT)

Connect branches **A3** and **A4** as follows to plug **CON2**:

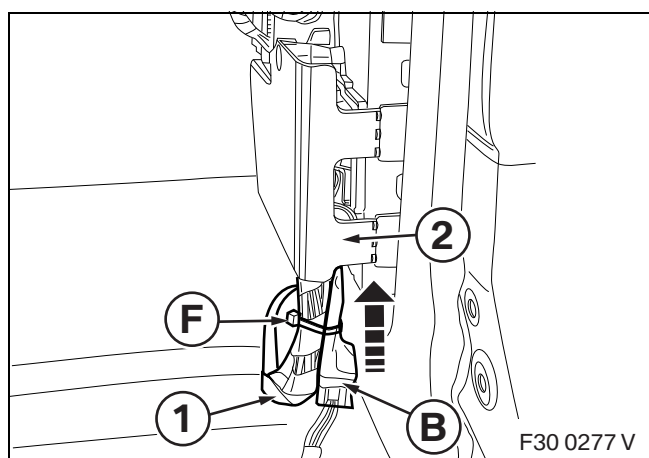
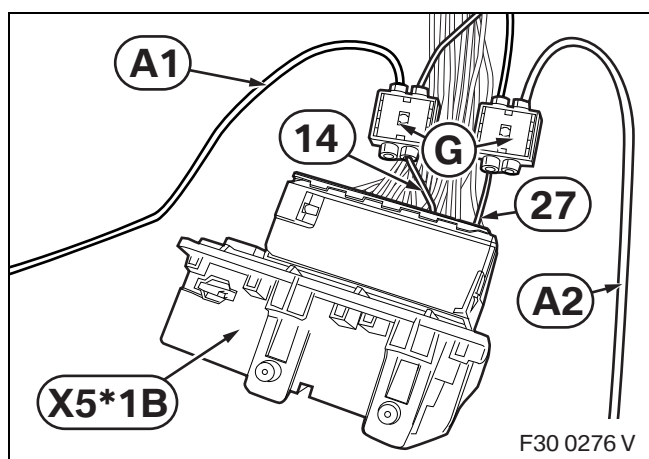
- Branch **A3**, BL/RT cable, to **PIN 19**
- Branch **A4**, RT cable, to **PIN 18**

Connect branch **A5** to socket casing **E**.

Connect branch **A1**, GN/GR cable, with RT/GR cable from **PIN 14** to right door wiring harness **X5*1B** using miniature connector **G**.

▶ Remove socket contact **A2** using suitable tools. ◀

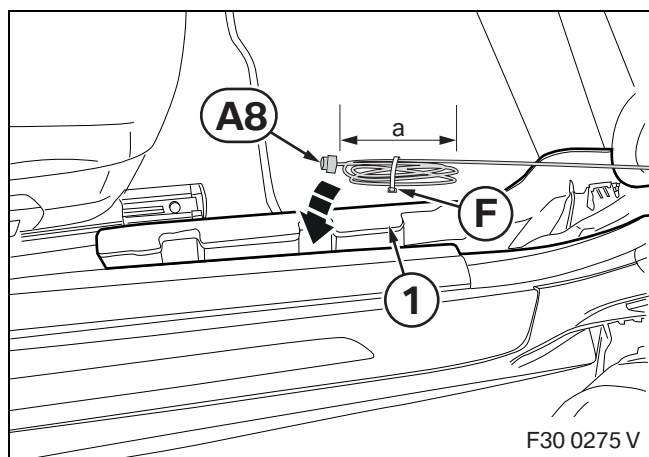
Connect branch **A2**, BR cable, with BR cable from **PIN 27** to right door wiring harness **X5*1B** using miniature connector **G**.



⚠ Control unit **B** must not have any contact with conductive sheet metal parts or body parts. It must definitely not touch the floor pan. The control unit **B** must not be subjected to mechanical stresses or moisture. ◀

Secure the control unit **B** at a suitable place on the wiring harness (1) using cable tie **F**, then push the control unit **B** as far as possible under the FEM cover (2) and then tighten the cable tie **F**.

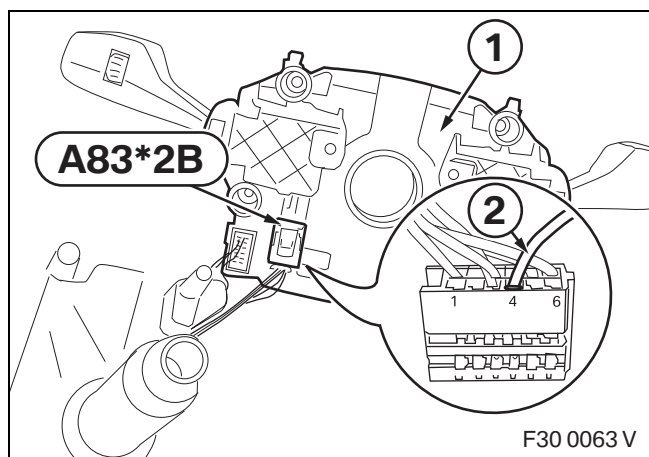
6. Installing the M Performance steering wheel II (with Race Display) retrofit kit



Coil up the connection cable for the optional LAP trigger measuring sensor **A8** in a length of **a = 20 to 30 cm**, tie it up with cable ties **F** and then store it under the floor trim on the door sill strip (1).

☐ Notify the customer about the location of the LAP trigger cable **A8**.

An optional measurement trigger can be connected to the LAP trigger cable. The measurement trigger is used to automatically record lap times at the start/finish point of a race track. Refer to the information in the owner's manual. ◀



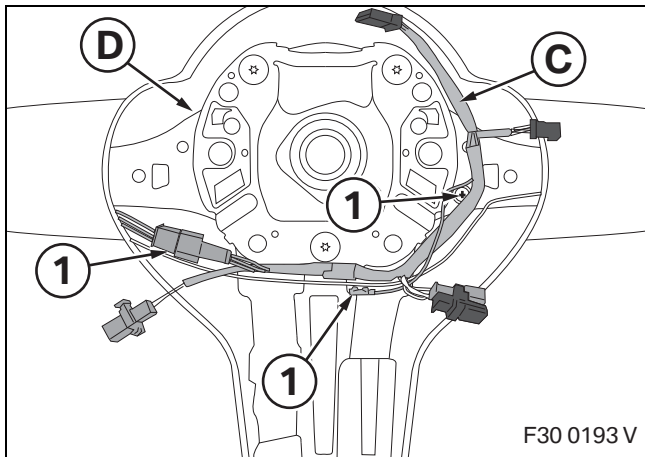
Route WS/BL cable to the driver's side.

Uninstall the steering column switch cluster (1) as per **ISTA** from the standard steering wheel.

Connect cable WS/BL (2) to plug **A83*2B PIN 4**.

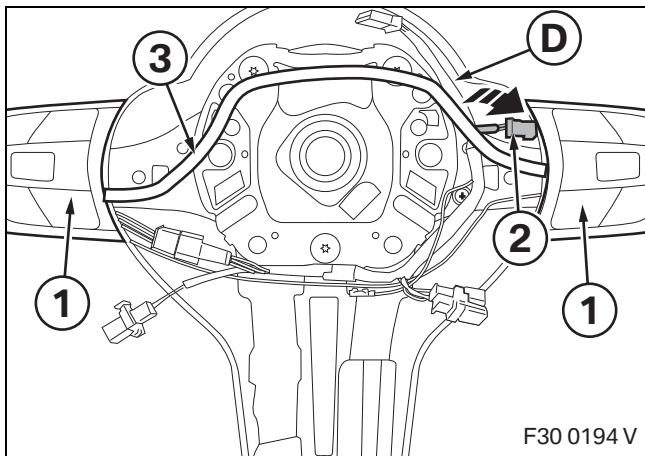
Install the steering column switch cluster (1) in the M Performance steering wheel.

7. Fitting the M Performance steering wheel II (with Race Display)

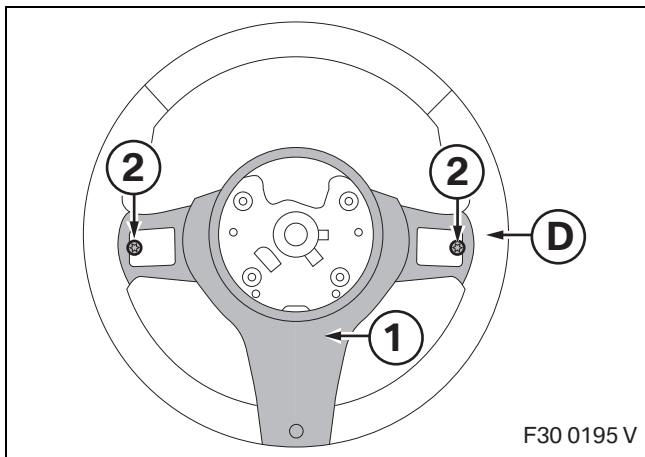


☐ M Performance steering wheel **D** already has a special steering wheel adapter cable **C** installed which is designed so that both the steering wheel electronics and any necessary special equipment can be connected. ◀

Steering wheel adapter cable **C** is connected in three places (1) to M Performance steering wheel **D**.

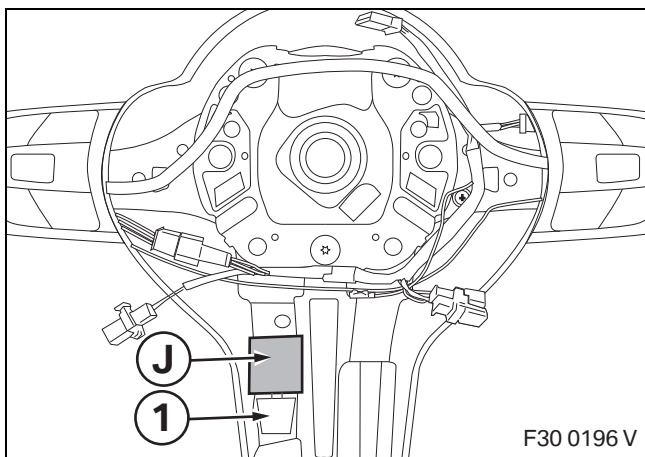


Position the multi-function keys (1) on the left and right of M Performance steering wheel **D**. Connect the plug (2) on the right to the socket. Initially move the connection cable (3) away at the top.



☐ Do not crush or trap the cables. ◀

Place the rear cover (1) on top and screw the screws (2) through M Performance steering wheel **D** into the multi-function keys.

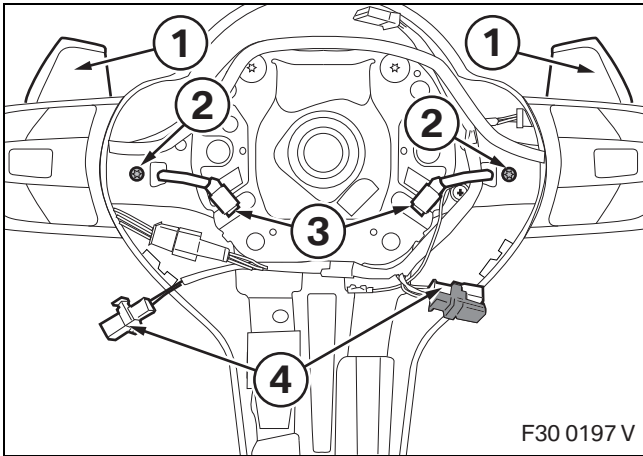


Only if lane change warning (SA 5AG) or lane departure warning (SA 5AD) or DRIVING ASSISTANT (SA 5AS) are installed:

☐ If there was a piece of foam on the vibration generator (1), this must be replaced. ◀

Insert the vibration generator (1) and secure with enclosed clamp spring **J**.

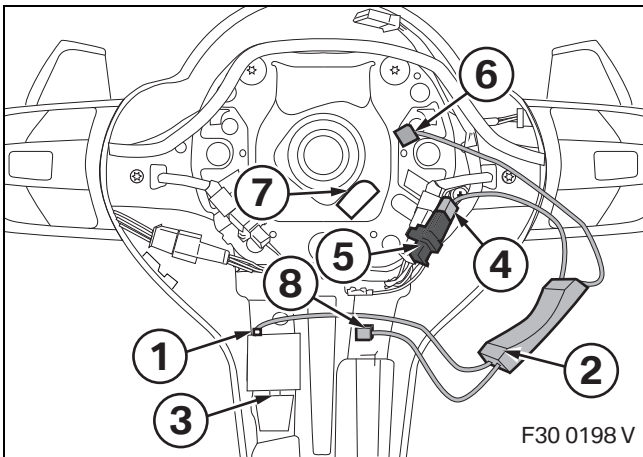
7. Fitting the M Performance steering wheel II (with Race Display)



Only if Sport automatic shift paddles (SA 2TB) are installed:

Secure shift paddles (1) with screws (2).

Thread the plugs (3) through the openings and connect them to the plugs of the same colours (4).



Only if lane change warning (SA 5AG) or lane departure warning (SA 5AD) or DRIVING ASSISTANT (SA 5AS) are installed:

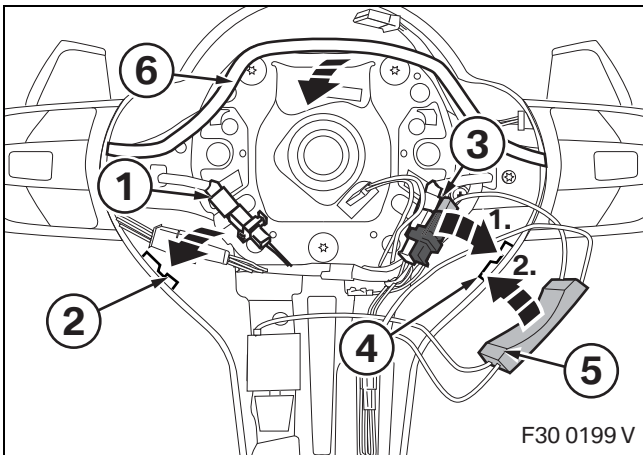
Connect the plug (1) from the control module (2) to the vibration generator (3).

Connect the small black plug (4) from the control module (2) to the socket of the same colour (black/blue double socket) (5).

☒ The plug (6) from the control module (2) is connected to the shrouded plug (7) on the coil spring in the car. ◀

Only if steering wheel heating was installed:

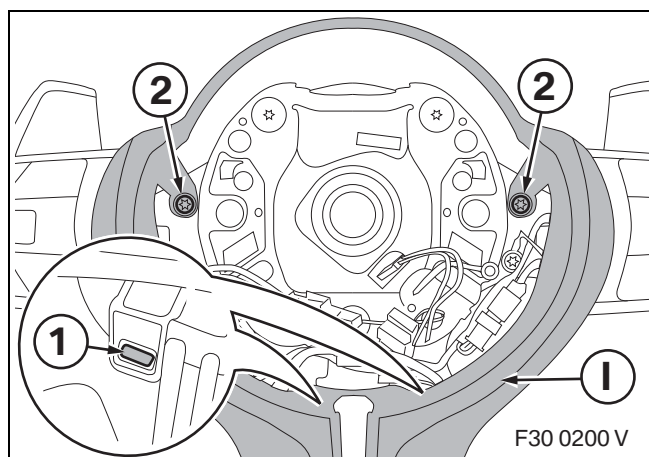
Route the cable with the white plug (8) for the steering wheel heating from the control module (2) to the space in front of the foam. Do not connect it.



For all cars:

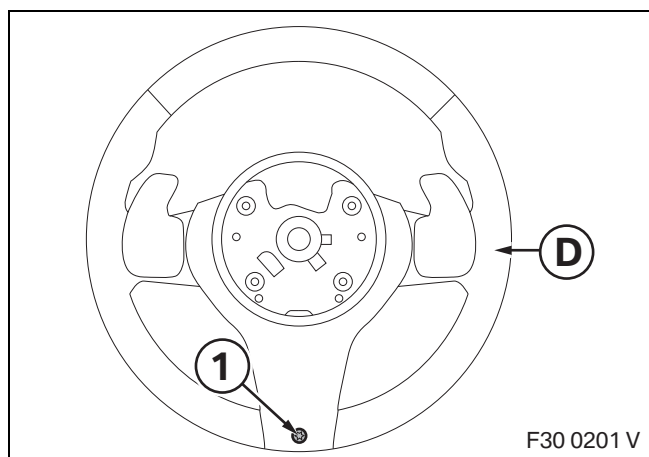
Clip the plug (1) into the guide (2). Clip the double plug (3) into the guide (4). Then press the control module (5) into the guide (4). Route the multi-function cable (6) along the bottom via the control module (5).

7. Fitting the M Performance steering wheel II (with Race Display)



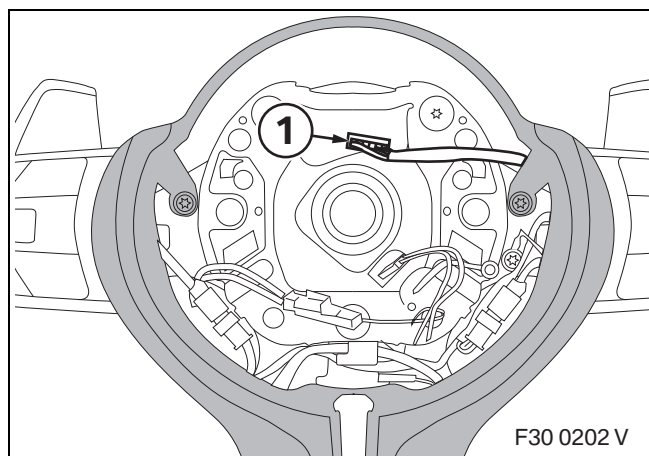
Position M Performance finisher **I** and clip clip (1) in on both sides.

Secure M Performance finisher **I** with screws (2).



Do not crush or trap the cables. ◀

Screw in the screw (1) on the reverse of M Performance steering wheel **D**.



Do not crush or trap the cables. The cables must not run in front of the openings through which the airbag springs can be triggered. If necessary tie the cables with mini cable ties or adhesive tape. ◀

Install the steering wheel in the car as described in **ISTA**.

Insert the black plug (six cables) (1) on the installed steering wheel cable through the openings into the shrouded plug for the coil spring.

Install the airbag module as described in **ISTA**.

8. Concluding work, coding and basic settings for the M Performance steering wheel II with Race Display

This retrofit system does not require coding.

- Connect the battery
- Conduct a brief test
- Conduct a function test
- Re-assemble the car
- Make basic settings

Basic settings

To ensure correct functioning, two basic settings must be performed once installation is complete:

- While switching on the ignition, hold the left key **L** and right key **R** down simultaneously on the M Performance steering wheel
- Use the **R** key to toggle between diesel and petrol cars (the box around the symbol means selected)
- Press the **R** key to save the setting and to switch to the "Speed correction factor" setting
- Start the engine and keep it at a constant, easily-readable speed (e.g. 1000 rpm)
- Compare the display on the steering wheel with the display on the speedometer
- A long press of the **R** key allows you to increase the correction factor or, by pressing the **R** key briefly several times, reduce it until the two displays match
- Switch the ignition off. The settings are saved automatically

Cars with heated steering wheel

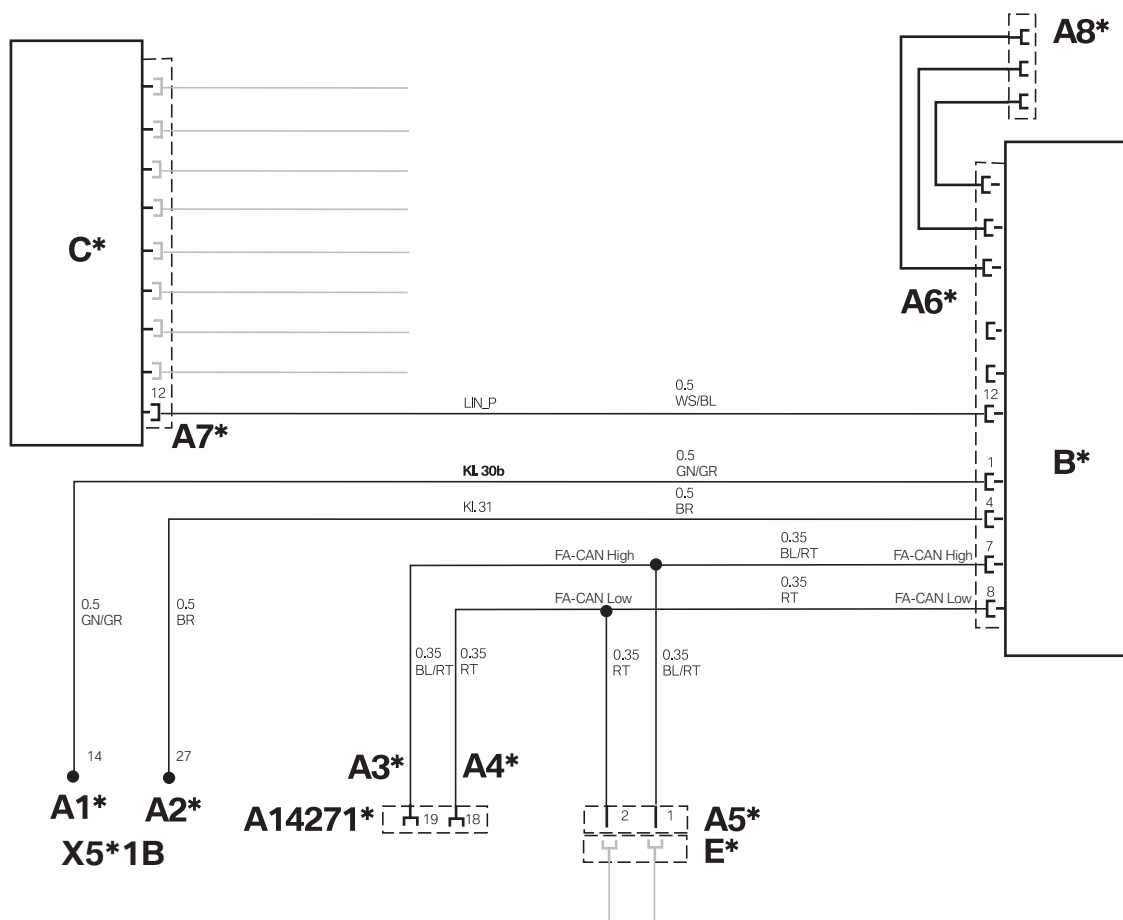
If fitted with SA 248 (heated steering wheel), the heating function will not work, the heating key on the steering column will have no function when fitted. An error memory entry be made in the control unit but this can be ignored. If necessary a blind cover can be ordered (see EPC for information and part number).

Demo mode

To provide an overview of the functions of the M Performance steering wheel, a demo mode of around 120 seconds can be enabled in an endless loop.

- While switching on the ignition, hold the left key **L** and right key **R** down simultaneously on the M Performance steering wheel
- In the Basic Settings menu, press the left key **L** and right key **R** on the M Performance steering wheel simultaneously for around 2 seconds. Demo mode begins in an endless loop.
- To end demo mode, switch off the ignition

9. M Performance steering wheel II with Race Display wiring diagram



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Legend

- A1*** Cable open, with miniature connector **G** to the cable on right door wiring harness **X5*1B**, PIN 14
- A2*** Socket contact, with miniature connector **G** to the cable on right door wiring harness **X5*1B**, PIN 27
- A3*** Socket contact, to FEM, plug BL 42-pin **CON2**, PIN 19
- A4*** Socket contact, to FEM, plug BL 42-pin **CON2**, PIN 18
- A5*** SW 2-pin plug casing, to socket casing **E***
- A6*** SW 12-pin socket casing, to control unit **B***
- A7*** Socket contact, to steering wheel switch cluster SCSC
- A8*** 3-pin socket casing for optional LAP trigger measuring sensor

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

Cable colours

BL	Blue	GR	Grey	RT	Red
BO	Bordeaux (Burgundy)	L-GN	Light green	SW	Black
BR	Brown	NT	Natural	TR	Transparent
GE	Yellow	OR	Orange	VI	Violet
GN	Green	RO	Pink	WS	White