

Technical training. Product information.

G29 Body



BMW Service

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BMW Group University
Technical Training

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General information

Symbols used

The following symbol is used in this document to facilitate better comprehension or to draw attention to very important information:



Contains important safety information and information that needs to be observed strictly in order to guarantee the smooth operation of the system.

Information status: October 2018

BMW Group vehicles meet the requirements of the highest safety and quality standards. Changes in requirements for environmental protection, customer benefits and design render necessary continuous development of systems and components. Consequently, there may be discrepancies between the contents of this document and the vehicles available in the training course.

The information contained in the training course materials is solely intended for participants in this training course conducted by BMW Group Technical Training Centers, or BMW Group Contract Training Facilities.

This training manual or any attached publication is not intended to be a complete and all inclusive source for repair and maintenance data. It is only part of a training information system designed to assure that uniform procedures and information are presented to all participants.

For changes/additions to the technical data, repair procedures, please refer to the current information issued by BMW of North America, LLC, Technical Service Department.

This information is available by accessing TIS at www.bmwcenternet.com.

Additional sources of information

Further information on the individual topics can be found in the following:

- Owner's Handbook
- Integrated Service Technical Application
- Aftersales Information Research (AIR)

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G29 Body

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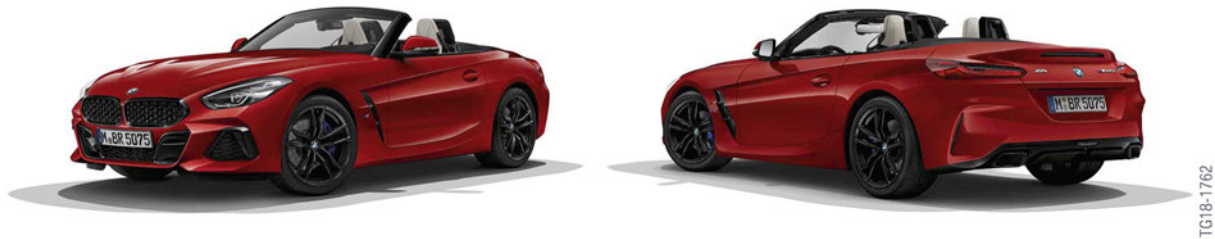
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G29 Body

1. Introduction

1.1. The new BMW Z4

With the G29 BMW presents the 3rd generation of the Z4.

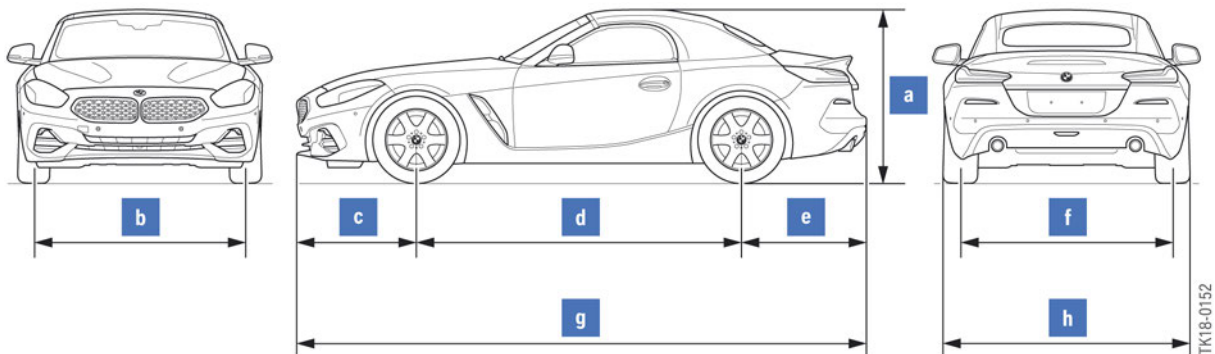


TG18-1762

G29 views from front left and rear left

The vertically aligned headlights, the BMW radiator grill in mesh design, the bonnet protruding over the wheels in the classic sports car style, large air breather on the front wheel arches and the distinctive air contour lip integrated in the trunk contribute to the characteristic appearance of the new BMW Z4.

1.2. Outer dimensions



TK18-0152

G29 outer dimensions

Index	Explanation	Unit	Z4 sDrive30i	Z4 M40i
a	Vehicle height	[mm]	1306	1303
b	Front track width, basic wheels	[mm]	1618	1594
c	Front overhang	[mm]	919	920
d	Wheelbase	[mm]	2470	2470
e	Rear overhang	[mm]	947	947
f	Rear track width, basic wheels	[mm]	1612	1589
g	Vehicle length	[mm]	4336	4337
h	Vehicle width excluding/including exterior mirrors	[mm]	1864/2024	1864/2024

G29 Body

1. Introduction

1.3. Weights and payload

You can find the vehicle curb weights and payloads of the G29 in the following table:

Model	Power output [kW (HP)]	Unit	Vehicle curb weight	Payload
Z4 sDrive30i	190 (255)	lbs	3287	463
Z4 M40i	285 (381)	lbs	3457	551

1.4. History

1.4.1. Overview



BMW Z4 generations

Index	Explanation
A	BMW Z4 E85 (Roadster)
B	BMW Z4 E89
C	BMW Z4 G29

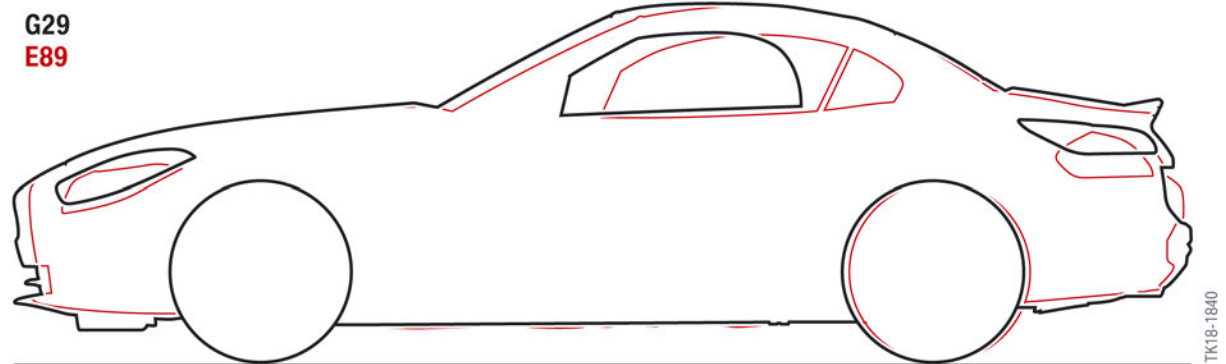
The E85 is the first Roadster of the model range Z4 and was produced from 2002 to 2008. The E85 has a soft top, which has to be manually opened and closed in the basic equipment. Under the development code E86 a Z4 Coupé was also available.

The E89 is the successor to the E85 and the first Z4 with a retractable hardtop. It was produced from 2008 to 2016.

G29 Body

1. Introduction

1.4.2. Silhouette comparison E89/G29



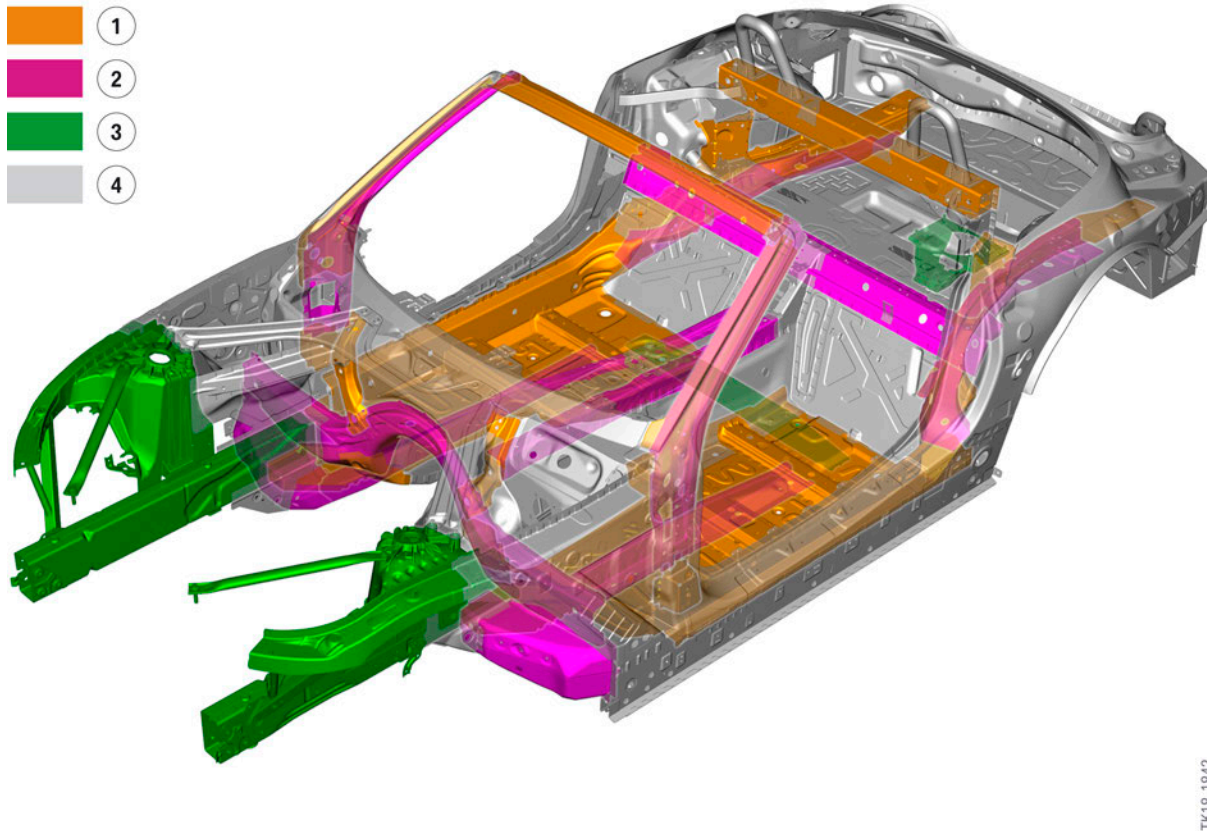
Silhouette comparison of G29 with E89

Explanation	Unit	G29 Z4 sDrive30i	E89 Z4 sDrive30i	Difference
Vehicle height	[mm]	1306	1274	+32
Front track width, basic wheels	[mm]	1618	1511	+98
Front overhang	[mm]	919	850	+57
Wheelbase	[mm]	2470	2496	-26
Rear overhang	[mm]	947	893	+54
Rear track width, basic wheels	[mm]	1612	1562	+54
Vehicle length	[mm]	4336	4237	+99
Vehicle width excluding/ including exterior mirrors	[mm]	1864/2024	1790/1951	+74/+73

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2. Body Structure

2.1. Materials



G29 body structure materials

Index	Explanation
1	Multiphase steels (high-strength steels $> 300 \text{ N/mm}^2$)
2	Hot-worked steels (ultra high-strength steels $> 900 \text{ N/mm}^2$)
3	Aluminum
4	Other steels

The engine supports and spring supports of the G29 are made of aluminum. This allows an optimal weight distribution of the body structure.

In the areas of the body structure that are relevant in the event of an accident, mainly high-strength and ultra high-strength steels are used. For example, the A-pillar and the windscreen frame are reinforced with ultra high-strength, hot-worked steels. Thanks to the particularly rigid windscreen frame in conjunction with the rollover protection bars, the survival space of the occupants is guaranteed in the event of a rollover.

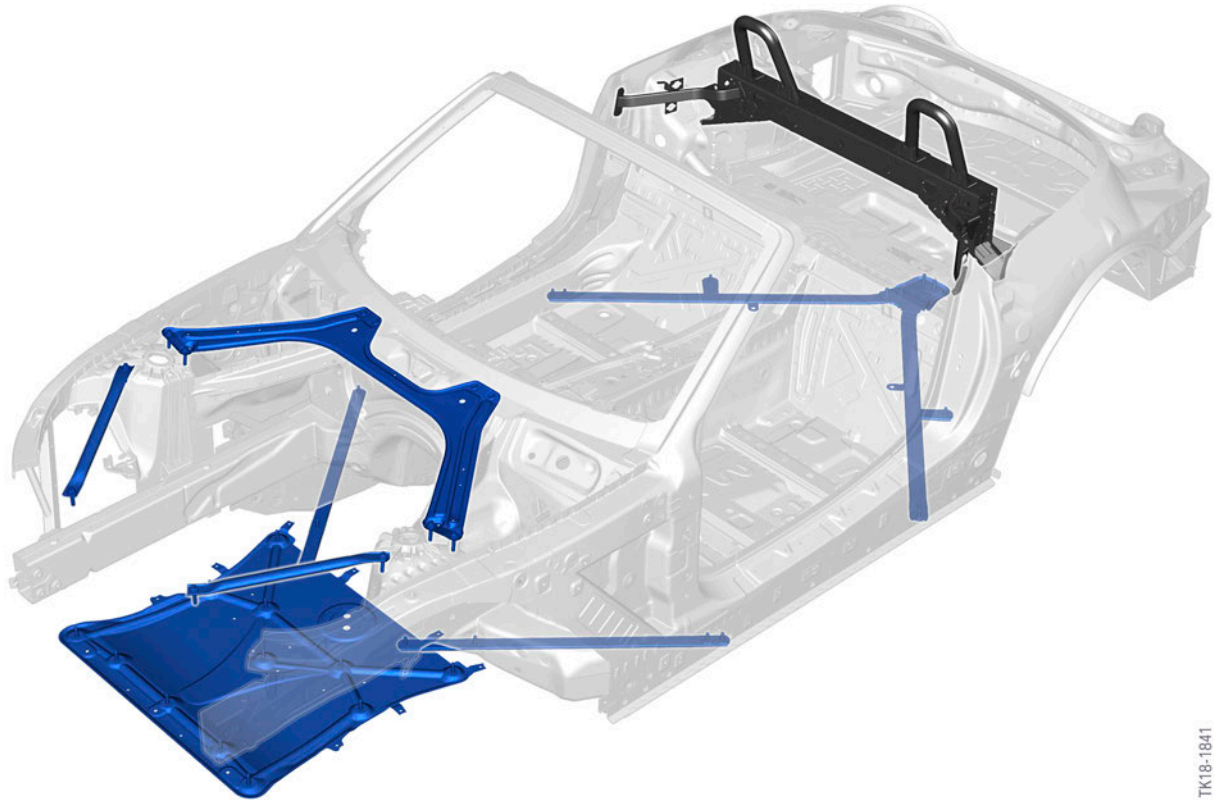
G29 Body

2. Body Structure

2.2. Stiffening measures

The body structure of the G29 is reinforced by numerous struts. A stiffening plate at the front axle provides stability.

The G29 has a fixed rollover protection bar for the driver and front passenger. This also serves to brace the body, thus ensuring high driving dynamics.



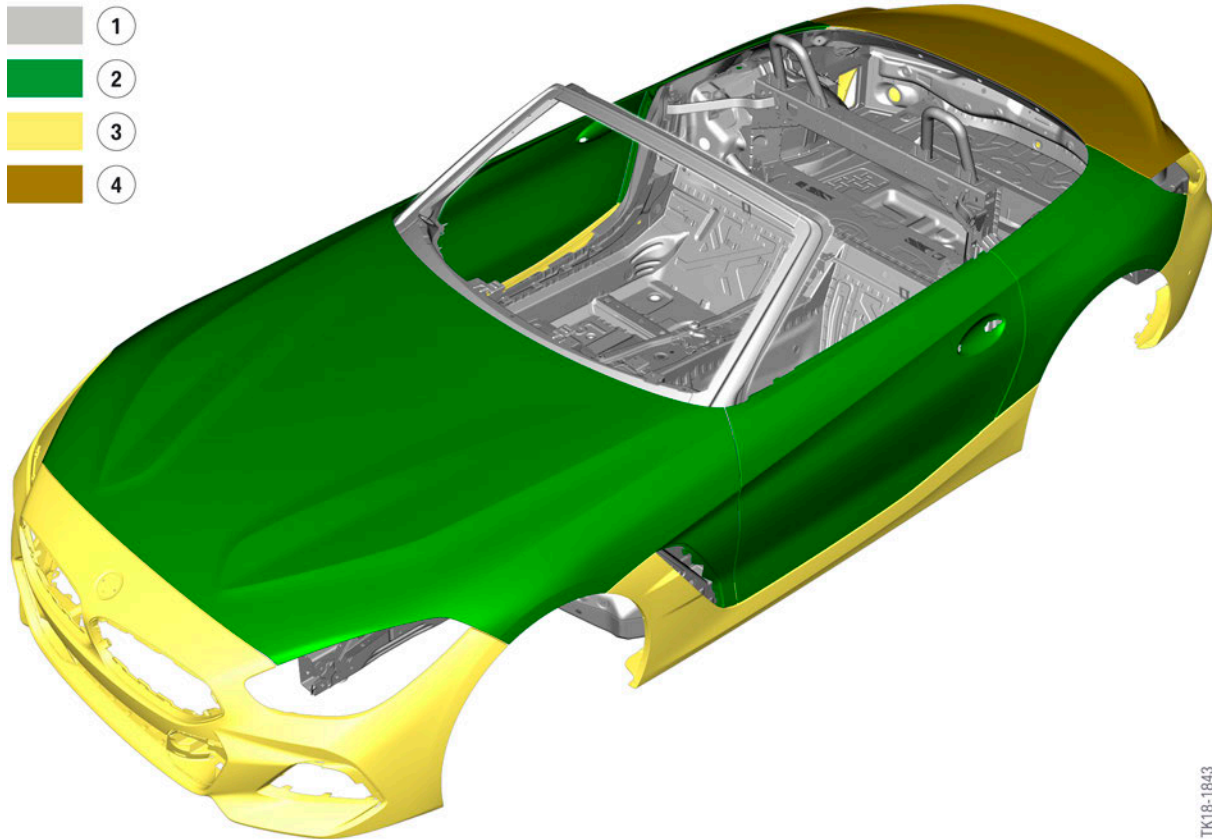
G29 strut concept

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G29 Body

3. Outer Body Skin

3.1. Materials



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G29 outer body skin materials

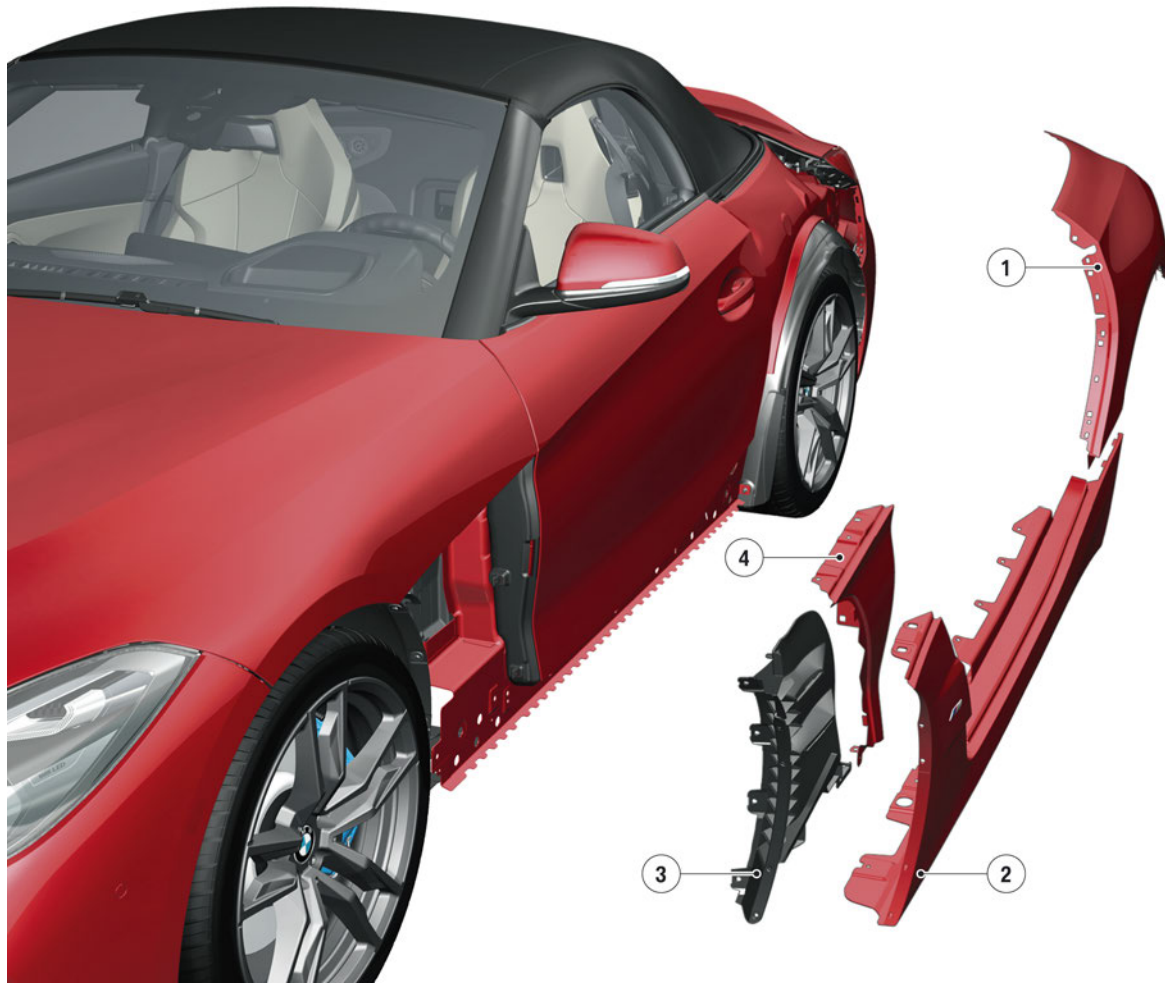
Index	Explanation
1	Steel
2	Aluminum
3	Thermoplastic
4	Sheet Molding Compound (SMC)

G29 Body

3. Outer Body Skin

3.2. Outer skin concept

The body outer skin parts at the side are connected via screw and plug connections. It is possible to adjust the components. However, only small tolerances are permitted.



TK18-1789

G29 outer skin concept

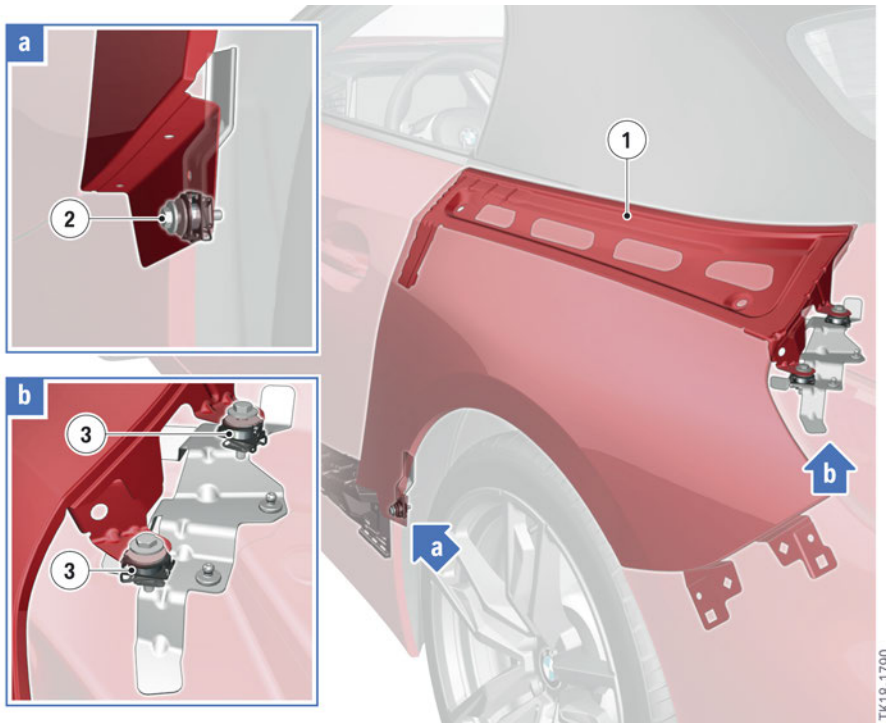
Index	Explanation
1	Rear quarter side panel
2	Side sill trim panel with front side panel section
3	Air breather
4	Front side panel

The air breather and the front side panel are secured at the side frame via screw connections. The side sill is secured via screw and plug connections. There is also a fastening between air breather and side sill using plastic expanding rivets at the front of the wheel arch.

G29 Body

3. Outer Body Skin

The fastening of the rear side panel at the side frame is effected using screw connections. There is an adjusting element at the bottom of the C-pillar for the alignment in y direction. In the upper area the rear side panel is secured via a carrier plate. The carrier plate can be adjusted using two adjusting elements for the trunk in z direction.



G29 adjusting elements, rear side panel

Index	Explanation
1	Carrier plate, rear side panel
2	Adjusting element, y direction
3	Adjusting element, z direction

G29 Body

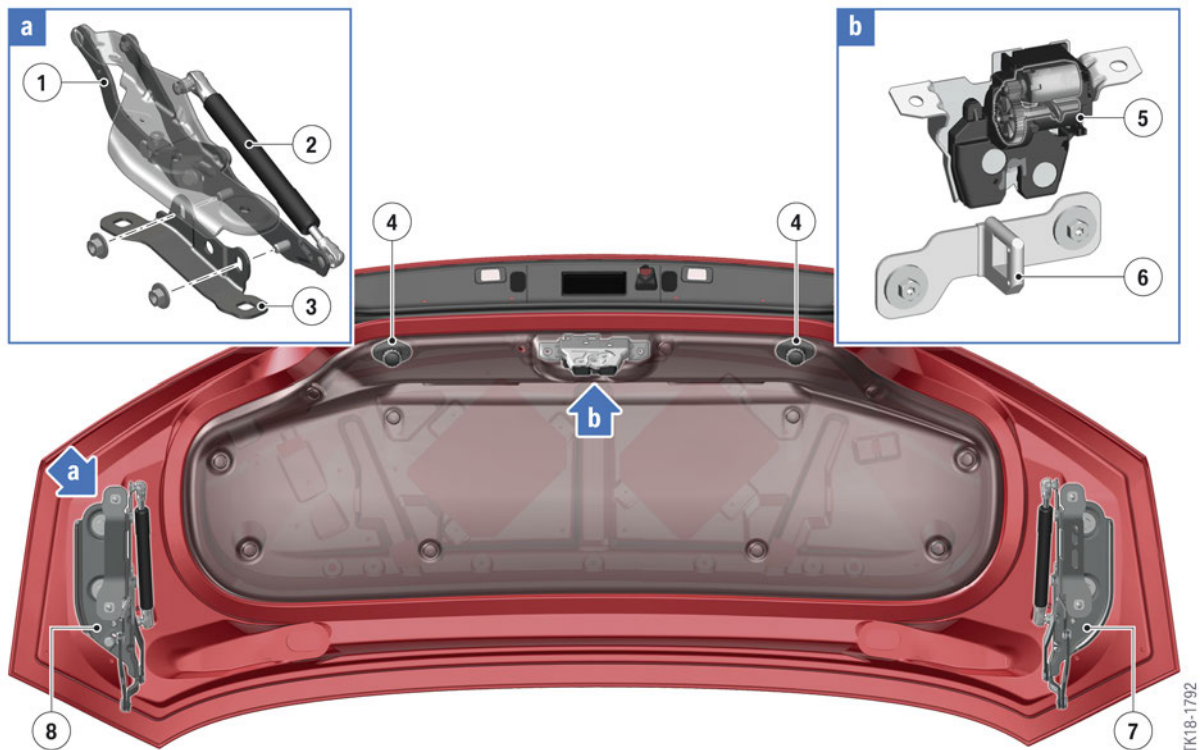
4. Hood, Trunk and Doors

4.1. Hood

The G29 has an aluminum hood. The hood also makes up a large part of the front fenders.

4.2. Trunk

The trunk is made mainly from the thermosetting plastic "Sheet Molding Compound" (SMC). Steel carrier plates are integrated at the fastening areas of the trunk hinges for reinforcement.



G29 overview of trunk

Index	Explanation
1	Hinge part at the trunk
2	Gas pressure spring
3	Hinge part at the body structure
4	Adjusting element
5	Trunk lock including servomotor
6	Lock striker
7	Trunk hinge, left
8	Trunk hinge, right

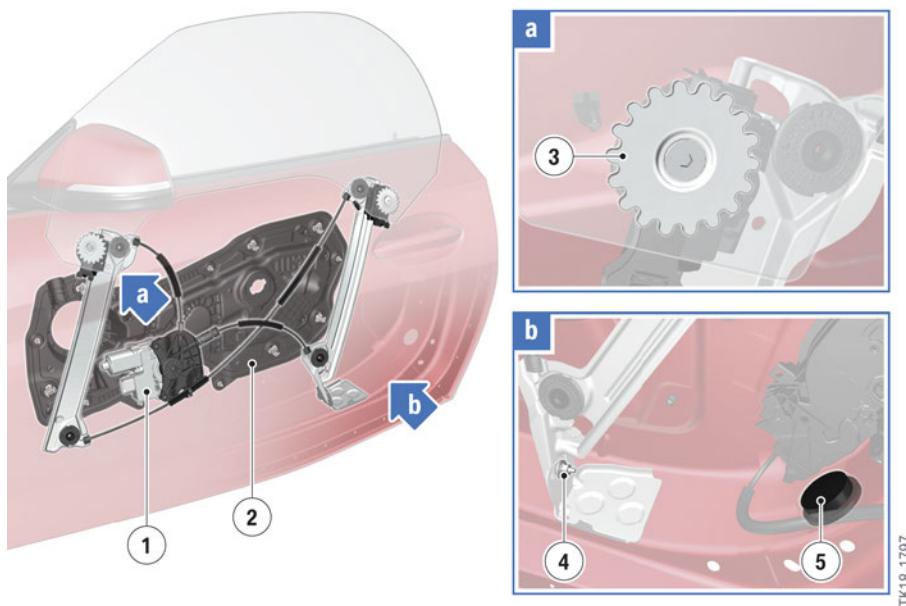
G29 Body

4. Hood, Trunk and Doors

The trunk can be adjusted via the attachment points of the trunk hinges, via the lock striker of the trunk lock, as well as via the adjusting elements in the rear area of the trunk. However, the trunk can also be dismantled without changing its setting. For this, the trunk hinges are disconnected into two parts and joined by screw connections.

4.3. Doors

The doors of the G29 have an aluminum shell design. The plastic module carrier separates the wet side from the dry side. The power window motor and the power window mechanism are positioned on the wet side.



G29 power windows

Index	Explanation
1	Power window motor with transmission
2	Door module carrier
3	Multi-tooth screw (range of adjustment of door window glass in z and x direction)
4	Nut (range of adjustment of door window glass in y direction)
5	Trim (access for range of adjustment, Pos. 4)

The adjusting elements of the side windows in x, y and z direction have no differences compared to those of the current BMW convertibles and Coupés with frameless side windows.

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5. Passenger Compartment

5.1. Instrument panel

When designing the interior equipment the focus was on the purist sporting character of the new BMW Z4. The driver-oriented cockpit design is supported by a dynamic forward-directed alignment. The clearly structured arrangement of all operating elements also promotes concentration on the driving experience in the new BMW Z4.



G29 dashboard

5.2. Seats

Power front M sport seats with memory function for driver and passenger are standard on the G29. The following optional equipment both for driver and front passenger:

- Heated seats

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5. Passenger Compartment



TK18-1788

G29 sports seat

Index	Explanation
1	Drive, backrest
2	Drive, forward/back seat adjustment
3	Drive, seat height adjustment
4	Drive, seat angle adjustment

The memory buttons are located in the door trim panel on the right and left. Two seat positions can be saved using the memory buttons.

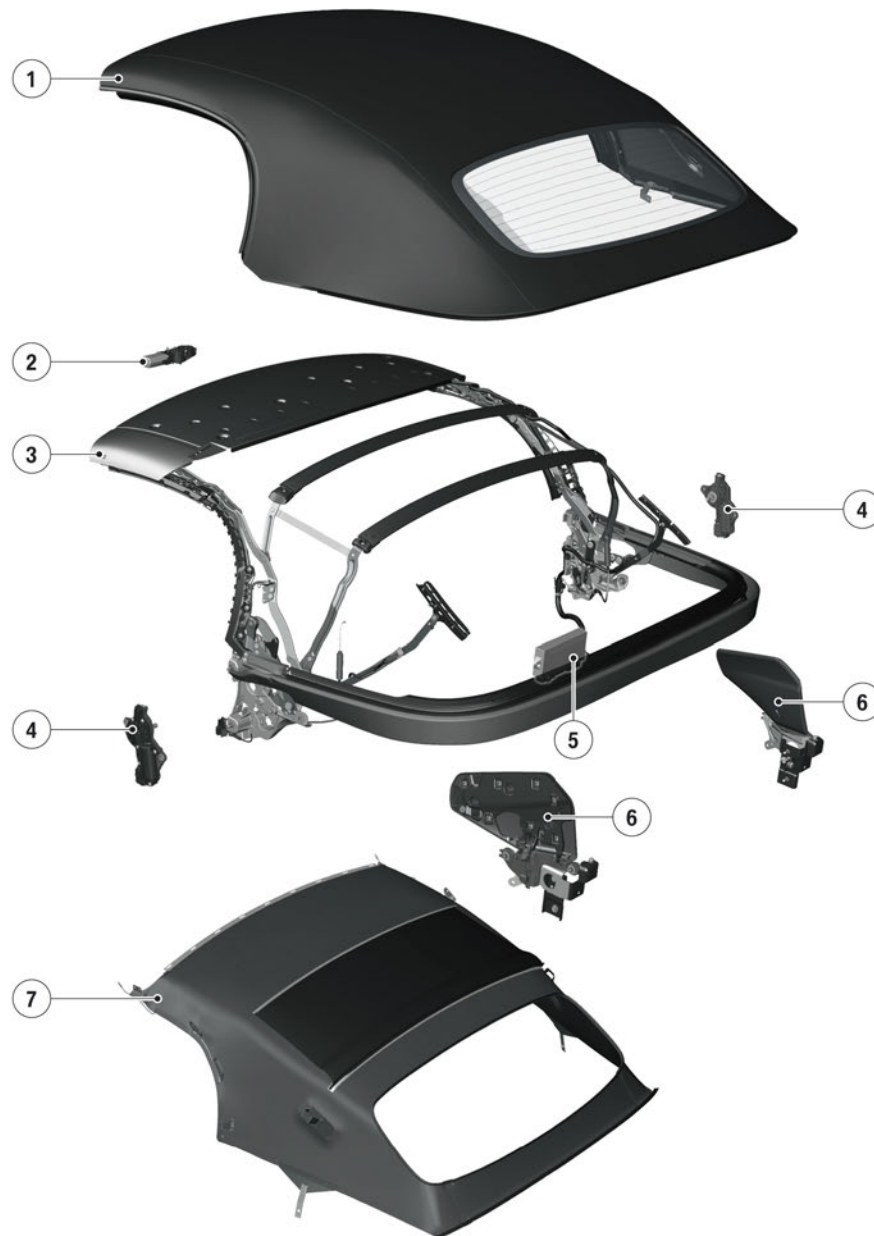
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6. Soft Top

The high-quality soft top of the G29 can be opened and closed fully automatically by means of electric motors up to a driving speed of 50 km/h (31 mph). A convertible top compartment lid is not used. This means the soft top can be opened or closed in approximately 10 seconds.

6.1. System components

6.1.1. Overview



G29 overview of soft top components

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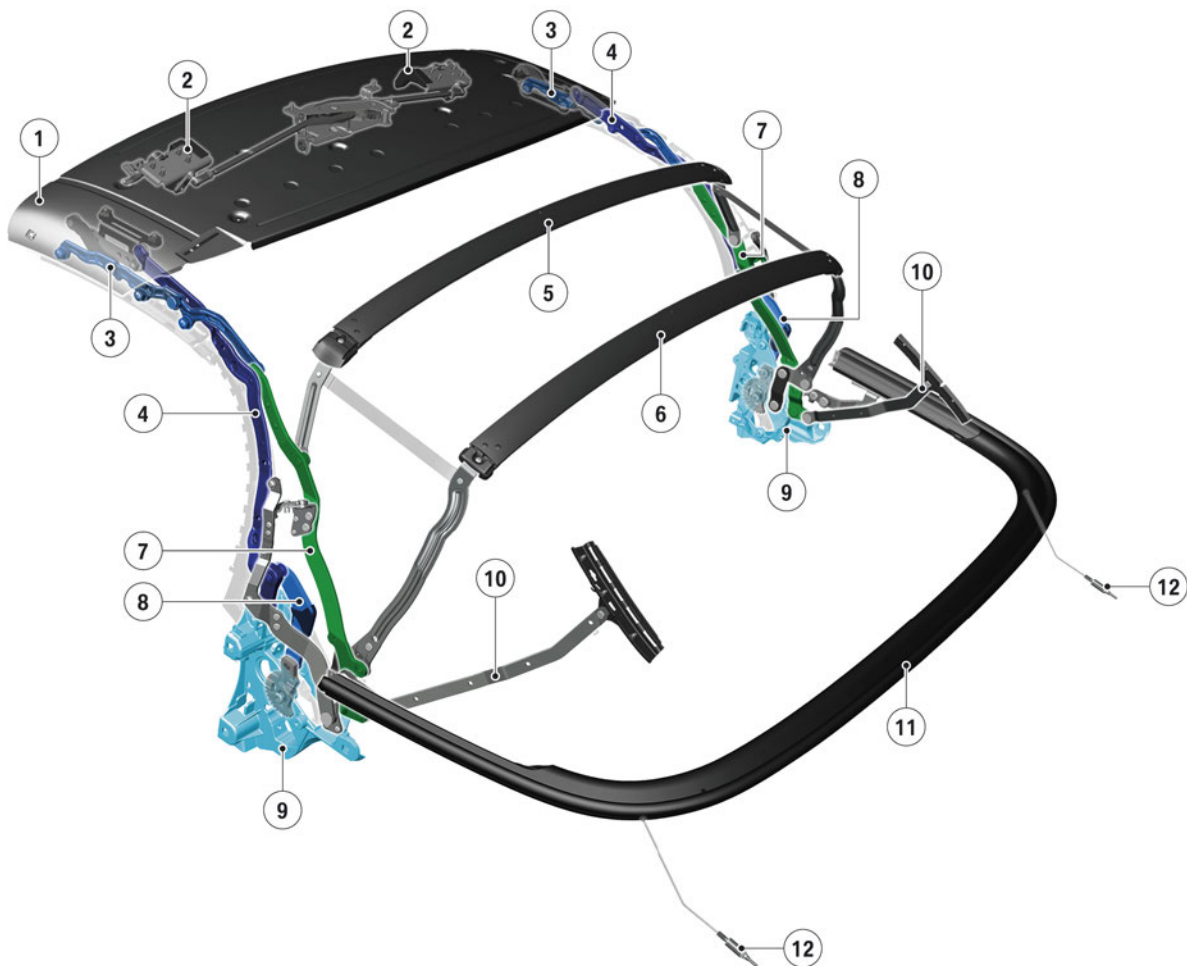
G29 Body

6. Soft Top

Index	Explanation
1	Soft top cover with rear window
2	Electric cowl panel lock drive
3	Convertible top frame
4	Convertible top drive unit
5	Convertible Top Module (CVM)
6	Linkage aperture flap
7	Headlining

6.1.2. Mechanical components

Convertible top frame



G29 Convertible top frame

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6. Soft Top

Index	Explanation
1	Front bow
2	Cowl panel lock drive
3	Convertible top roof mechanism guide
4	Main pillar
5	Soft top bow, center
6	Soft top bow, rear
7	Main pillar convertible top mechanism guide
8	Drive arm
9	Convertible top main bearing
10	Convertible top mechanism guide, rear window
11	Soft top bow
12	Belt tensioner

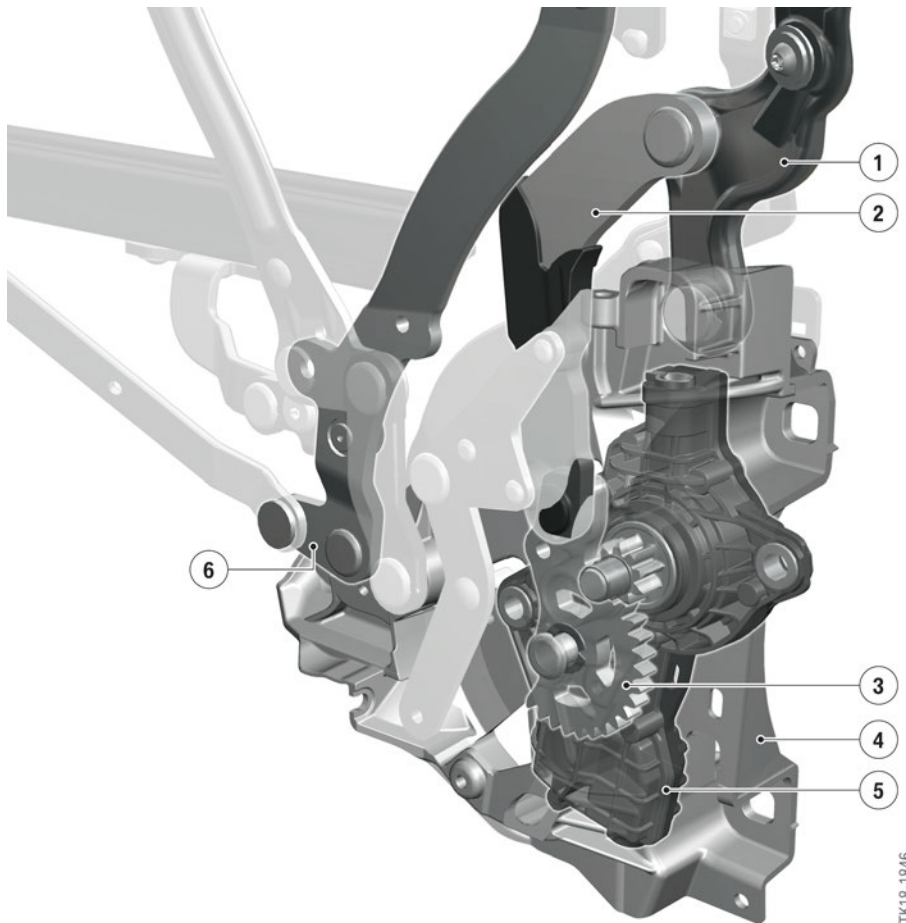
The soft top bow is held under mechanical tension by a tension cable on the right and left. The tension cables can be detached without changing their setting in an intermediate setting of the soft top. Refer to the repair instructions to find out in which situations a setting is necessary.

Lifting mechanism

Unlike many other BMW convertibles, the two main pillars are not moved by hydraulic cylinders, but rather by an electric motor on each pillar. This requires multi-stage gear transmission.

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6. Soft Top



G29 lifting mechanism (left)

Index	Explanation
1	Main pillar
2	Drive arm
3	Sprocket, main pillar
4	Convertible top main bearing
5	Convertible top drive unit (electric motor with transmission and drive pinion)
6	Main pillar convertible top mechanism guide

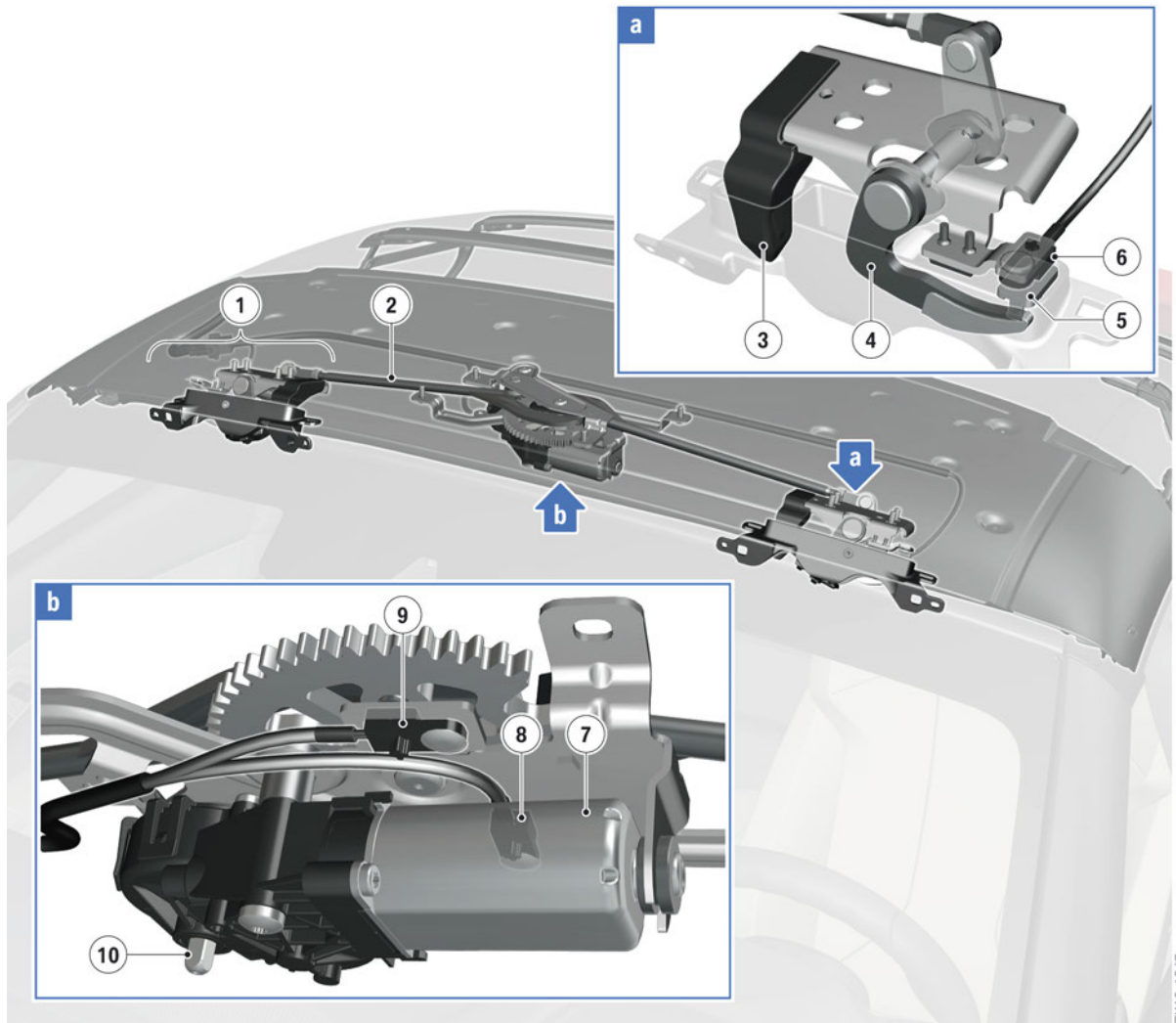
Cowl panel lock drive

The soft top is locked at the cowl panel in closed state. To lock the front bow to the windscreen frame, the retaining hooks are moved by an electric motor via pushrods and a transmission. The electrical drive of the cowl panel lock drive is located at the front bow.

The retaining hooks of the cowl panel lock drive are closed also when the soft top is opened in order to avoid damaging the soft top fabric.

G29 Body

6. Soft Top



TK18-1847

Cowl panel lock drive

Index	Explanation
1	Convertible top latch
2	Pushrod
3	Guide pin
4	Retaining hook
5	Magnet (in base plate at cowl panel)
6	Hall effect sensor, cowl panel locked, left
7	Electric cowl panel lock drive
8	Hall effect sensor, cowl panel lock drive opened
9	Hall effect sensor, cowl panel lock drive closed
10	Square (for manual actuation)

G29 Body

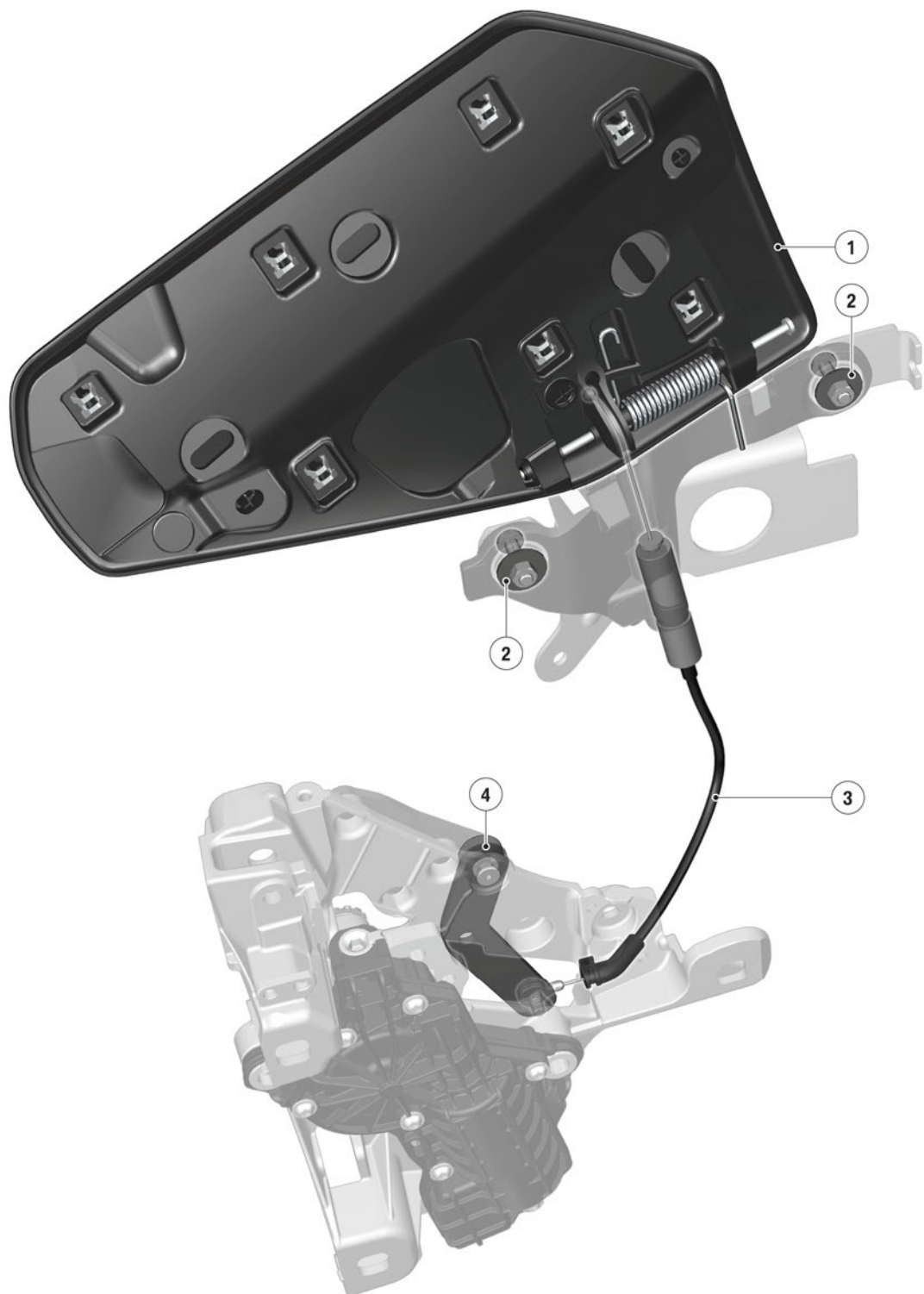
6. Soft Top

Linkage aperture flaps

The linkage aperture flaps are controlled mechanically via a Bowden cable. The Bowden cable is secured at a lever in the area of the main bearing.

When the soft top is closed the linkage aperture flaps are opened by spring force. Only upon opening of the soft top – shortly before it is placed down in the convertible top compartment – are the linkage aperture flaps closed by the Bowden cables.

G29 Body
6. Soft Top



G29 linkage aperture flap, left

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G29 Body

6. Soft Top

Index	Explanation
1	Linkage aperture flap (trim)
2	Adjusting element
3	Bowden cable
4	Lever, opening mechanism

The linkage aperture flaps can be set in x, y and z direction. For this, they are connected to the bodysheel via 2 adjusting elements.

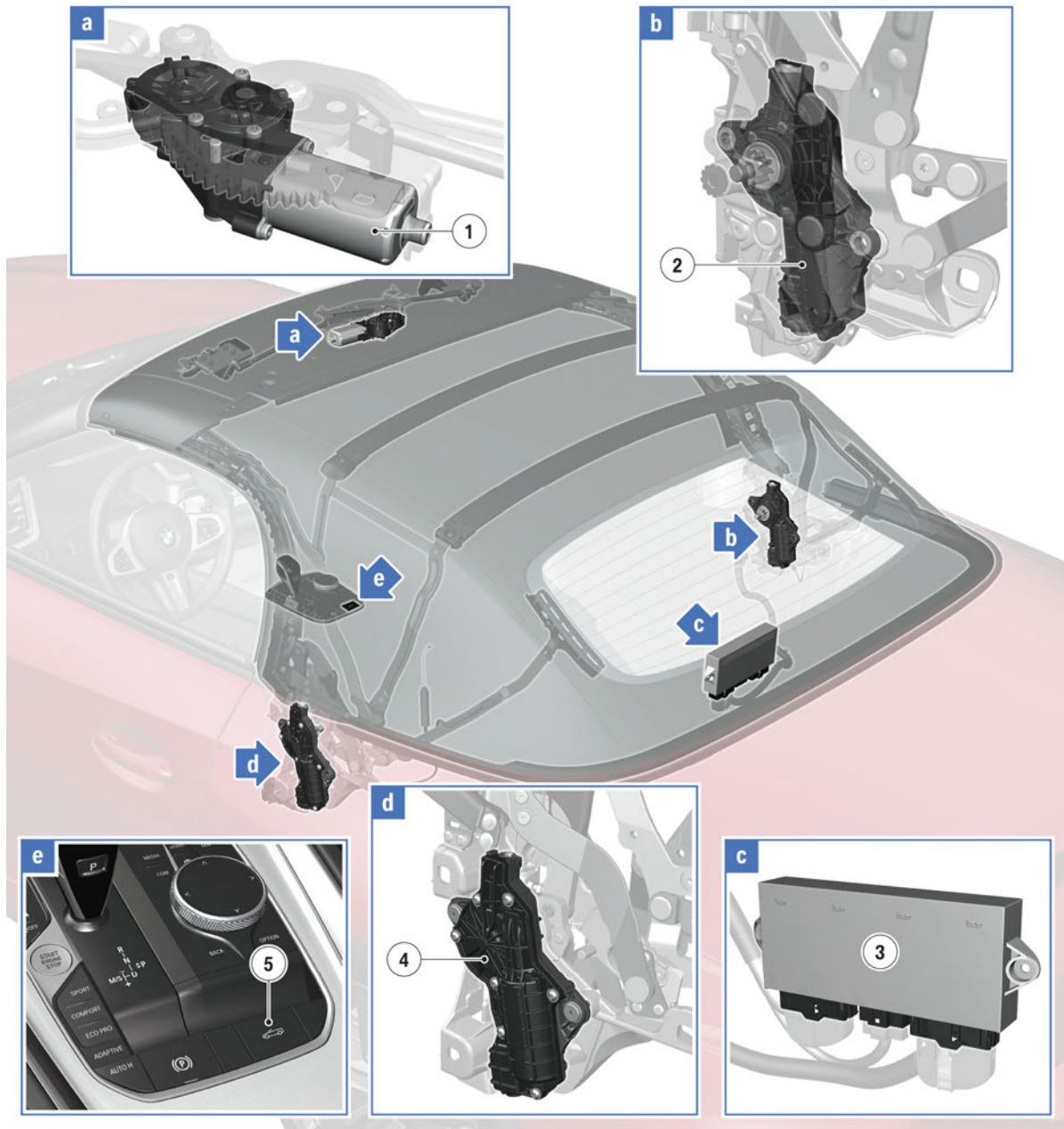
6.1.3. Electrical components

Buttons, control unit and drive

The electrical drives of the soft top (convertible top drive unit and electrical drive for cowl panel lock drive) are controlled by the Convertible Top Module (CVM). It receives the request directly via the convertible top button. Upon actuation via the ID transmitter the Convertible Top Module receives the request via the K-CAN2.

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6. Soft Top



Convertible top button, Convertible Top Module (CVM) and convertible top drives

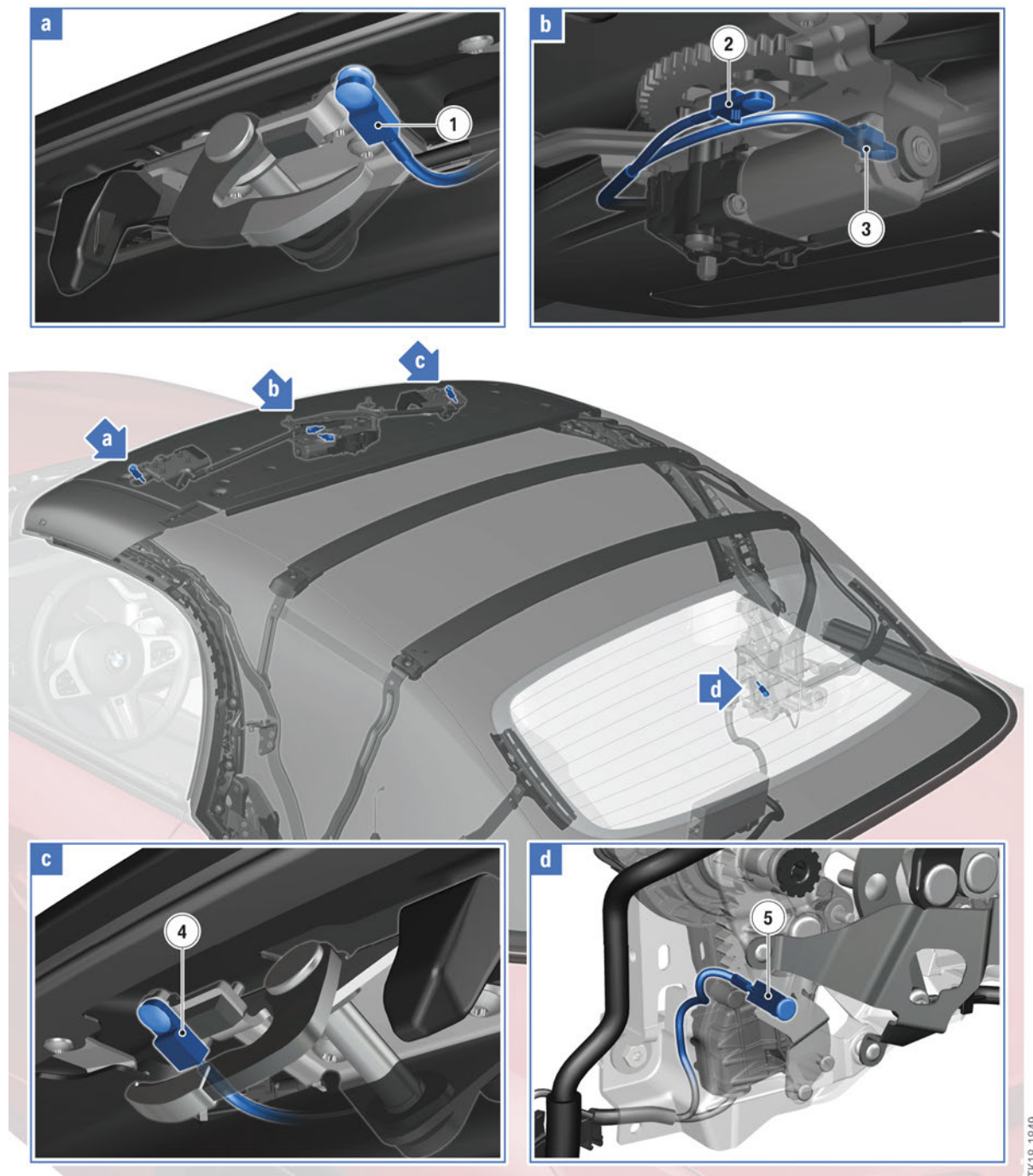
Index	Explanation
1	Electric cowl panel lock drive
2	Convertible top drive unit, right (incl. incremental sensor)
3	Convertible Top Module (CVM)
4	Convertible top drive unit, left (incl. incremental sensor)
5	Convertible top button

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6. Soft Top

Sensors

The respective position of the soft top, as well as the status of the cowl panel lock drive, is detected via 5 hall effect sensors as well as the incremental sensors integrated in the convertible top drive units. Microswitches – like in other current BMW convertible top systems – are not used.



G29 sensors, convertible top position

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6. Soft Top

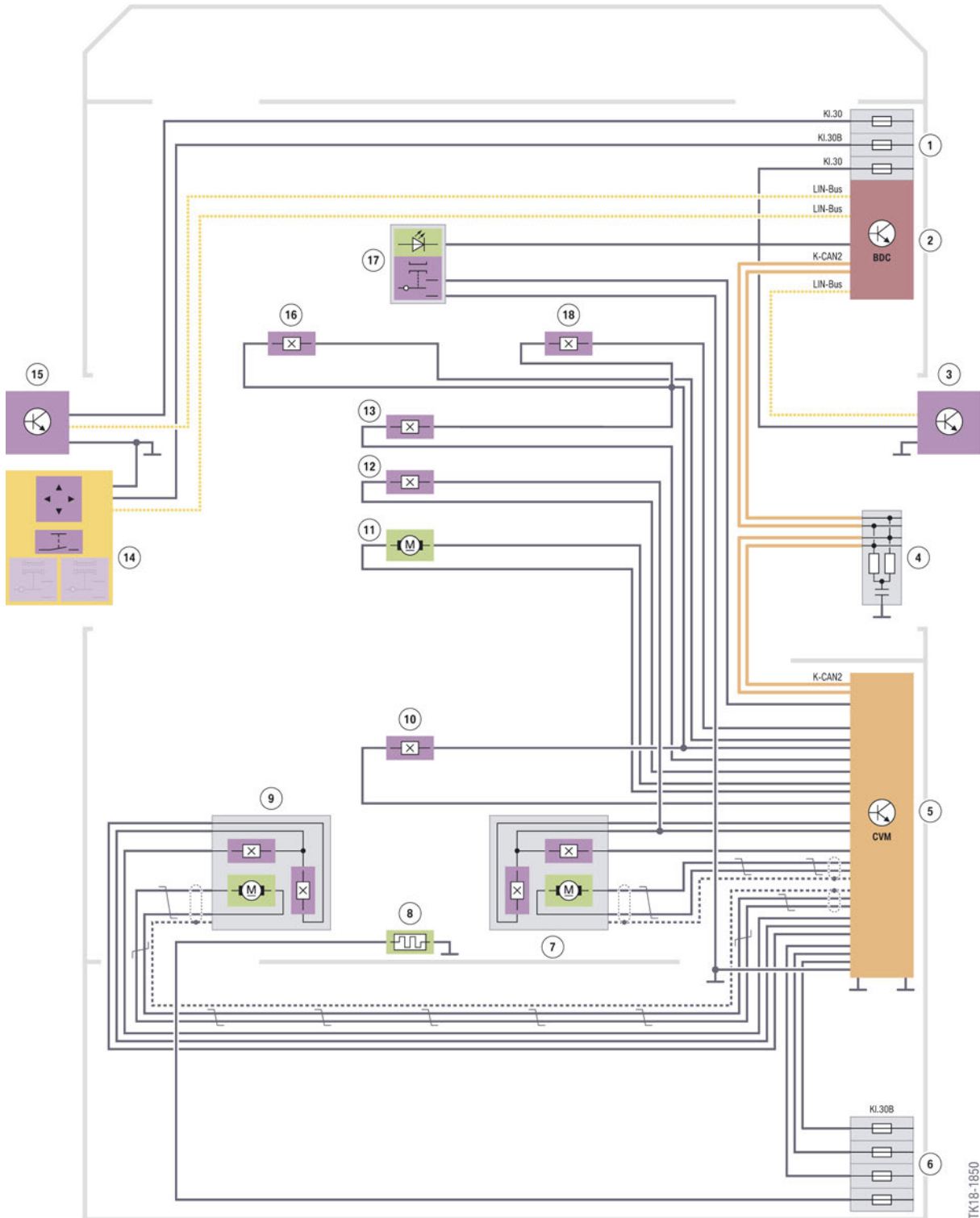
Index	Explanation
1	Hall effect sensor, cowl panel locked, left
2	Hall effect sensor, cowl panel lock drive closed
3	Hall effect sensor, cowl panel lock drive opened
4	Hall effect sensor, cowl panel locked, right
5	Hall effect sensor, convertible top lowered

- **Hall effect sensor, cowl panel locked, left:**
The hall effect sensor is located at the front bow on the left and is secured at the convertible top latch. A magnet installed at the cowl panel serves as a counterpart. The hall effect sensor only detects the magnets when the retaining hooks are closed and the cowl panel is locked.
- **Hall effect sensor, cowl panel lock drive closed:**
The hall effect sensor is located at the front bow in the area of the electrical drive for the cowl panel lock drive. A magnet is installed in the sprocket of the linkage. When the sprocket reaches the end position "Closed", the hall effect sensor detects the magnets.
- **Hall effect sensor, cowl panel lock drive opened:**
The hall effect sensor is located at the front bow in the area of the electrical drive for the cowl panel lock drive. A magnet is installed in the sprocket of the linkage. When the sprocket reaches the end position "Open", the hall effect sensor detects the magnets.
- **Hall effect sensor, cowl panel locked, right:**
The hall effect sensor is located at the front bow on the right and is secured at the convertible top latch. A magnet installed at the cowl panel serves as a counterpart. The hall effect sensor only detects the magnets when the retaining hooks are closed and the cowl panel is locked.
- **Hall effect sensor, convertible top lowered:**
The hall effect sensor is located in the lower area of the right convertible top main bearing. When the soft top is completely stowed, the hall effect sensor detects the corresponding position of the main pillar drive gear. For this, a magnet is installed at the corresponding position of the main pillar drive gear.
- **Incremental sensor:**
Two incremental sensors are located in both convertible top drive units. The Convertible Top Module (CVM) determines the revolutions and direction of rotation of the convertible top drive units.

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6. Soft Top

System wiring diagram for the Convertible Top Module (CVM)



G29 system wiring diagram for the Convertible Top Module (CVM)

G29 Body

6. Soft Top

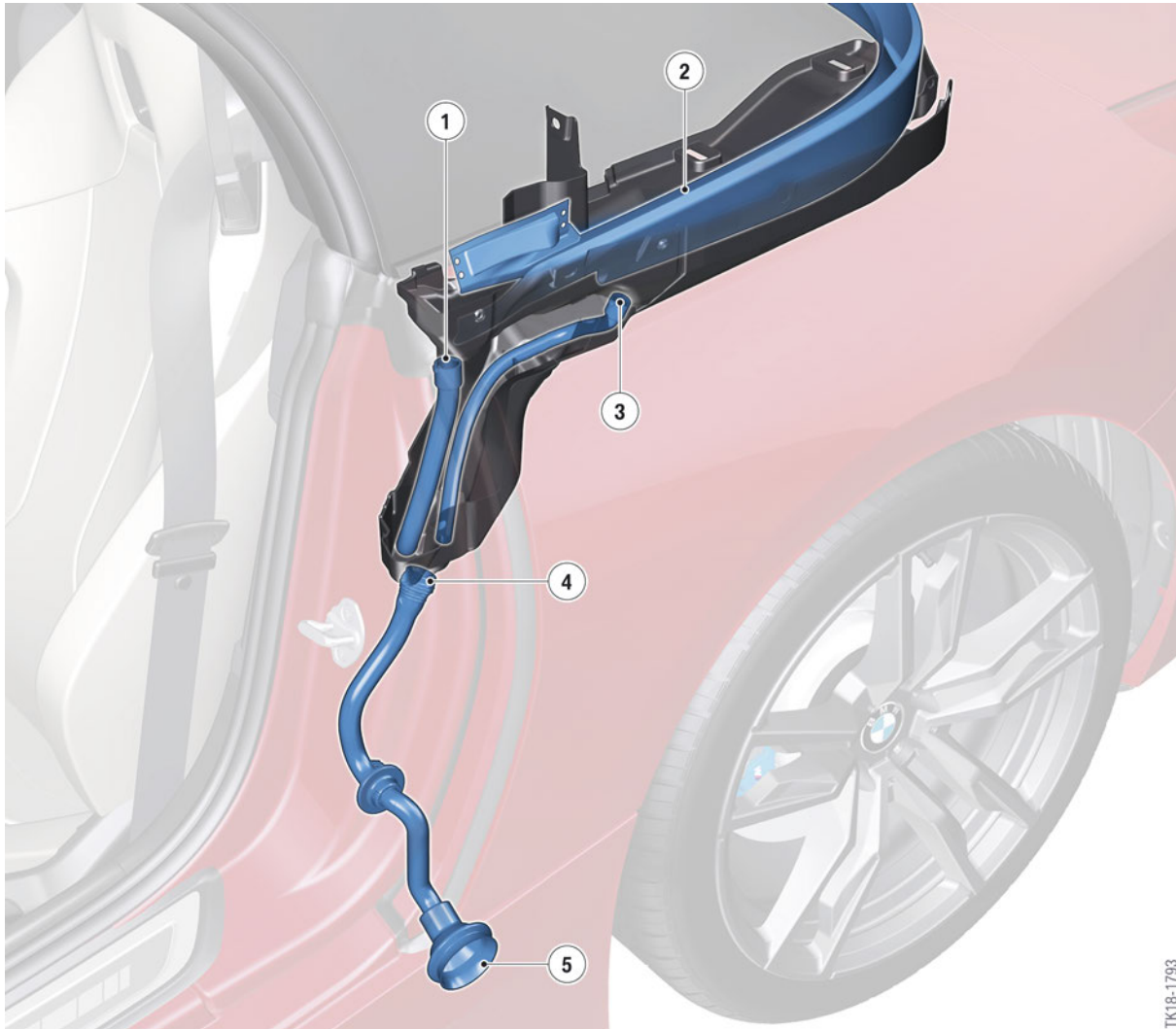
Index	Explanation
1	Power distribution box, front right
2	Body Domain Controller (BDC)
3	Power window electronics, front passenger door
4	CAN terminator K-CAN2
5	Convertible Top Module (CVM)
6	Power distribution box, luggage compartment
7	Convertible top drive unit, right (incl. incremental sensor)
8	Heated rear window
9	Convertible top drive unit, left (incl. incremental sensor)
10	Hall effect sensor, convertible top lowered
11	Electric cowl panel lock drive
12	Hall effect sensor, cowl panel lock drive closed
13	Hall effect sensor, cowl panel lock drive opened
14	Switch block, driver's door
15	Power window electronics, driver's door
16	Hall effect sensor, cowl panel locked, left
17	Convertible top button
18	Hall effect sensor, cowl panel locked, right

G29 Body

6. Soft Top

6.1.4. Water run-off system

The soft top is sealed across the bodyshell via a water liner in the rear and side area. From here the water is directed via plastic trays to the funnels of the water drains.



G29 water run-off system

TK18-1793

Index	Explanation
1	Water drain below front linkage aperture flap
2	Water liner
3	Water drain below rear linkage aperture flap
4	Water drain, convertible top compartment
5	Water drain outlet

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6. Soft Top

6.1.5. Soft top fabric

For the G29 two different soft top fabrics are available for the market introduction.



G29 soft top fabrics

Index	Explanation
A	Moonlight Black
B	Anthracite silver-effect

The convertible top must be removed for the removal and installation of the soft top fabric.

6.1.6. Headlining

The headlining consists of several parts that are connected by a special zip system. The slide for releasing and connecting the separate components is included in the headliner attachment set.

The separate components of the headlining are marked on the upper side with thin lines. They must be aligned with each other when joining the separate components.

The soft top must be removed for the removal and installation of the headlining.

6.1.7. Rear window

The rear window includes rear window heating. The two electrical connections are located in the direction of travel on the left. The rear window is a fixed component of the soft top fabric. The rear window therefore cannot be replaced separately.

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6. Soft Top

6.2. Operation and function

6.2.1. Prerequisites

The following conditions must be satisfied before the convertible top can be opened or closed:

- Driving speed ≤ 50 km/h (31 mph)
- Ambient temperature > -10 °C (> 14 °F) (closing still possible in lower temperatures)
- Vehicle condition RESIDING or DRIVING is active (upon operation via the convertible top button)
- Vehicle condition PARKING or RESIDING is active (upon operation via the ID transmitter)
- Brake pedal pressed (upon operation via the convertible top button)
- ID transmitter in the vicinity (upon operation via the ID transmitter)
- Power window regulators initialized
- Driver's door closed (upon operation via the ID transmitter)
- Battery voltage (open) > 10.5 V (convertible top movements already started will be completed)
- Temperature of electric motors is not too high (the temperature of the electric motors is not measured. Instead the temperature is calculated by the Convertible Top Module using a computational model)
- Vehicle not in transportation mode
- Confirmation of the correct position of the mechanical components by the sensors.

If one of the preconditions is not fulfilled, the opening or closing action will not start. In addition, a Check Control message is displayed in the instrument cluster.

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6. Soft Top

6.2.2. Standard operation

Standard operation of the soft top is performed by means of the convertible top button. The controller is situated in the Center Operation Unit.



G29 convertible top button

Index	Explanation
1	Convertible top button

Movement of the soft top is performed as long as the convertible top button is operated.

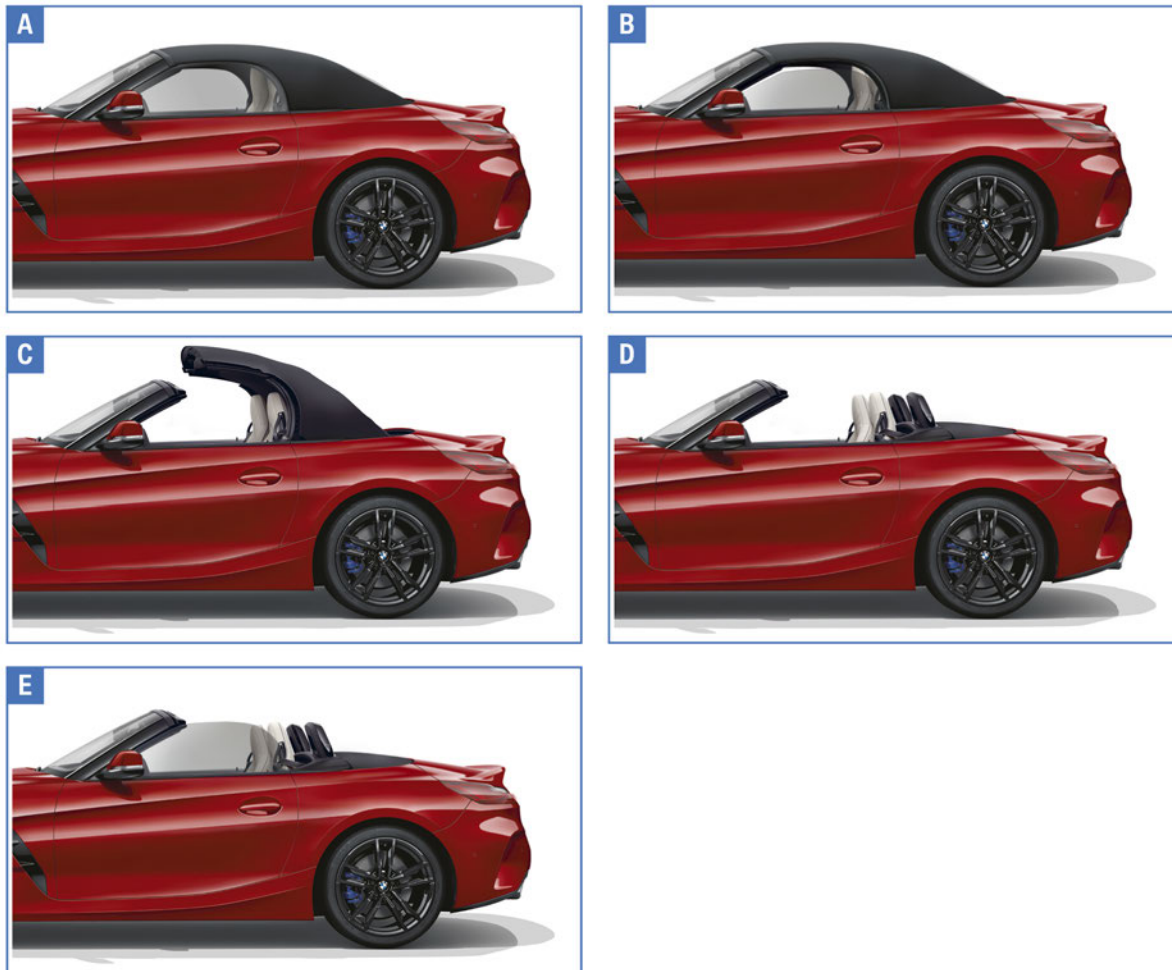
- Press convertible top button: soft top is opened.
- Pull convertible top button: soft top is closed.

If the convertible top button is released during the opening or closing of the soft top, the movements of the soft top or the side windows are interrupted immediately. In addition, a Check Control message is displayed in the instrument cluster. The movements are resumed when the convertible top button is operated again.

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6. Soft Top

Procedure for opening the soft top



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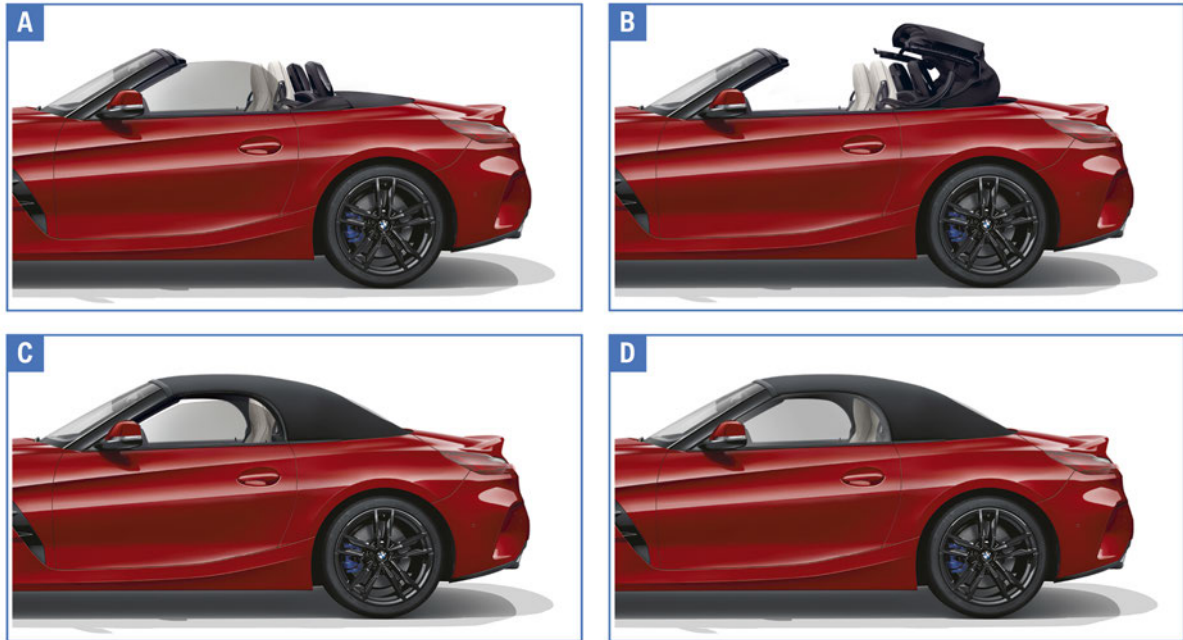
G29 procedure for opening the soft top

Index	Explanation
A	Initial situation: The soft top is locked at the cowl panel and the side windows are fully closed.
B	The side windows are fully lowered. At the same time, the soft top is unlocked at the cowl panel.
C	The soft top is opened via the two convertible top drive units on the right and left.
D	The soft top is fully stowed in the convertible top compartment.

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6. Soft Top

Procedure for closing the soft top



G29 procedure for closing the soft top

TK18-1852

Index	Explanation
A	Initial situation: The soft top is stowed in the convertible top compartment and the side windows are fully closed.
B	The side windows are partially lowered. The soft top is closed via the two convertible top drive units on the right and left.
C	The soft top is set down and locked at the cowl panel.
D	If the convertible top button remains held down, the side windows are fully closed.

6.2.3. Convenience functions

In addition to the standard operation via the convertible top button, the soft top can also be opened and closed via the ID transmitter (market specific with remote key).

To open or close the soft top with the ID transmitter, the Unlock/Lock button must be pressed and held down. After a short waiting period the soft top is opened or closed. The opening or closing action is immediately interrupted when the Unlock/Lock button is released or the button on a different ID transmitter is pressed or the close-range area is left.

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6. Soft Top

6.3. Notes for Service

6.3.1. Diagnostics

The non-electrical diagnosis (NED) in the ISTA workshop information system should also always be included in all diagnostic work relating to water ingress, wind noises or operating noises. This includes information to assist in determining the causes of interference noises and leaks. In addition, remedial measures in the form of repair instructions, graphics or video sequences are shown.

6.3.2. Close soft top manually

The soft top can be closed manually in an emergency. This chapter describes the manual unlocking of the convertible top drive units as well as the manual locking of the soft top at the cowl panel. If the soft top is closed manually, the steps in the repair instructions must be observed in the prescribed sequence.

Manual unlocking of the convertible top drive units

There is a hex fitting under each of the linkage aperture flaps. The convertible top drives are unlocked via the hex fittings at the respective transmission.

The hex fittings lock in the normal operating condition of the ring gear of the respective planetary gear set. If the ring gear is released, the transmission rotates freely. The soft top can then be closed manually.

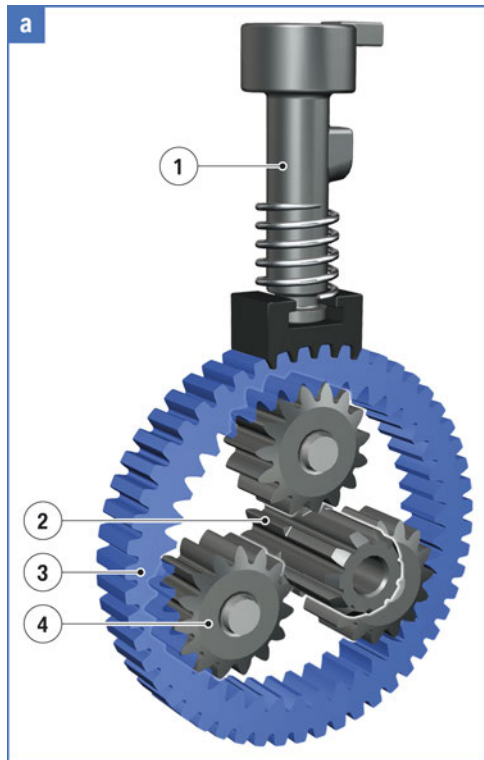
There are marks on the upper side of the hex fittings. They show the current operating condition of the convertible top drive units (locked/unlocked).



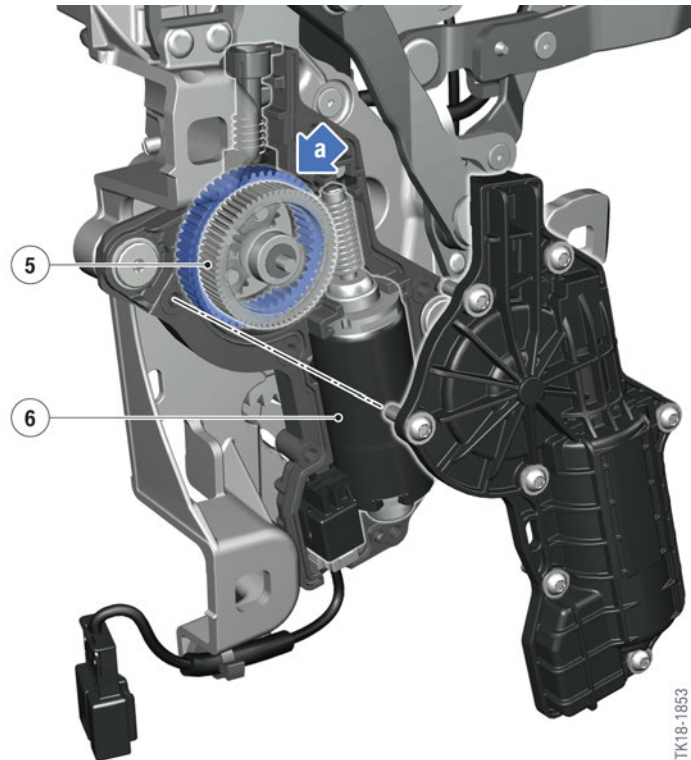
In order to lock the convertible top drive units again that were previously unlocked manually, the hex fittings must be turned when the soft top is opened. You must rock the front bow slightly in order to move the hex fittings into the correct position. Otherwise, the hex fittings could break.

G29 Body

6. Soft Top



G29 structure of convertible top drive unit



TK18-1853

Index	Explanation
1	Hex fitting
2	Sun gear
3	Ring gear
4	Planet gear
5	Sprocket
6	Electric motor

Manual locking at cowl panel

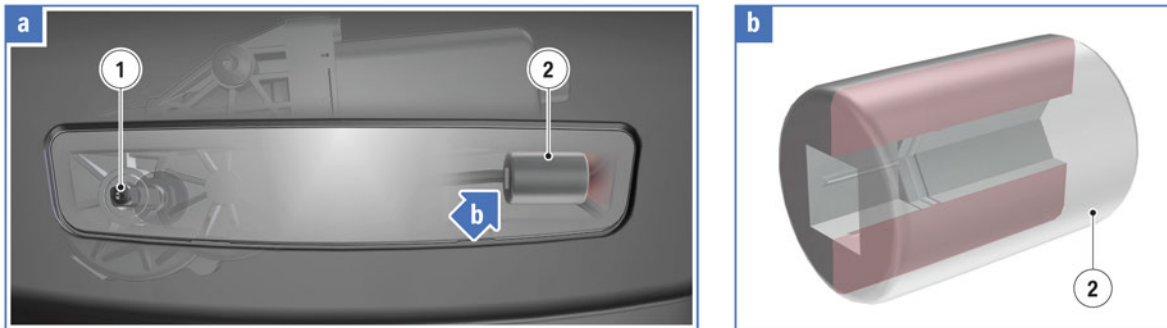
The soft top can be manually locked or unlocked at the cowl panel. The shaft of the drive pinion of the cowl panel lock drive is turned manually.

Two people are required for the manual locking of the soft top at the cowl panel. While one person presses the front bow in the middle down towards closing, the other person actuates the cowl panel lock drive.

A plastic adapter is used in order to connect the hexagon socket wrench in the toolkit with the square bolt of the cowl panel lock drive. It is located behind the trim at the soft top bow at the front.

G29 Body

6. Soft Top



TK18-1796

Manual locking at cowl panel

Index	Explanation
1	Square bolt lock drive (for the manual locking/unlocking of the cowl panel)
2	Adapter, hexagon socket-square (toolkit)



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