

Technical training.

Product information.

G14 Complete Vehicle



BMW Service

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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: November 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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G14 Complete Vehicle

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G14 Complete Vehicle

1. Introduction

1.1. Overview

The BMW 8 series convertible with the development name G14 is the first open-air model in the BMW 8 series family. With its exceptional driving dynamics, effortless long-distance comfort, exquisite equipment and cutting-edge technology, it provides a new top class in the luxury segment.



The new 2+2-seater from BMW is a convertible sports car with a high-quality, fully-automatic fabric soft top. Luxury and sportiness come together in perfect harmony in the G14. It offers extensive standard equipment, such as integral active steering, sport exhaust, adaptive M-suspension, leather-covered instrument panel, ambient light and adaptive LED headlights.



From a technical viewpoint, the G14 is in a number of aspects based on the G15. Therefore many components' operating principles are already described for the G15.

Compared to the G15, the following changes are particularly noteworthy:

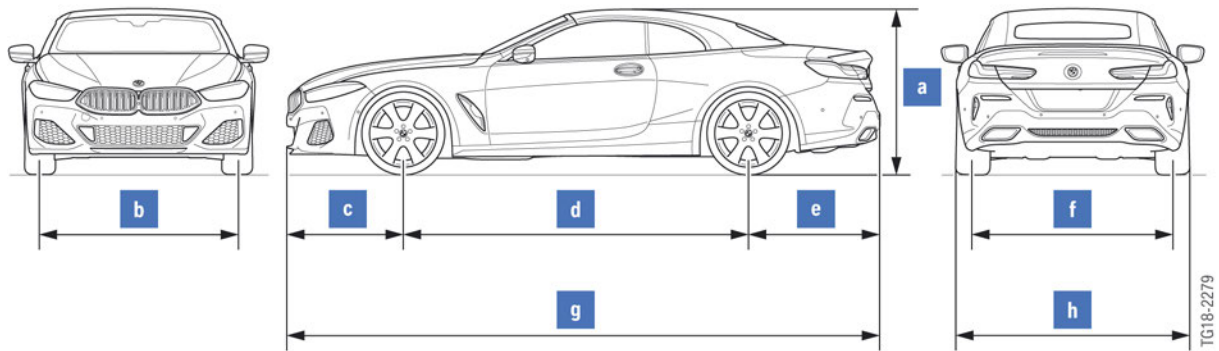
- Fully-automatic, electro-hydraulic fabric soft top
- With high-quality wind deflector as standard
- Active, fully-recessed rollover protection system
- Additional cross-struts in the body structure
- Automatic operation of the tailgate with hydraulic drive
- Use of SRT leather (Sun Reflective Technology) on seats with dark leather colors
- Neck warmer built into the front headrests
- Rear headrest shell
- Driver's door switch cluster with 4 power window regulator buttons and an all-window button
- Electrically operated rear side windows.

G14 Complete Vehicle

1. Introduction

1.2. Outer dimensions

The exterior dimensions of the G14 are shown below:



G14 outer dimensions

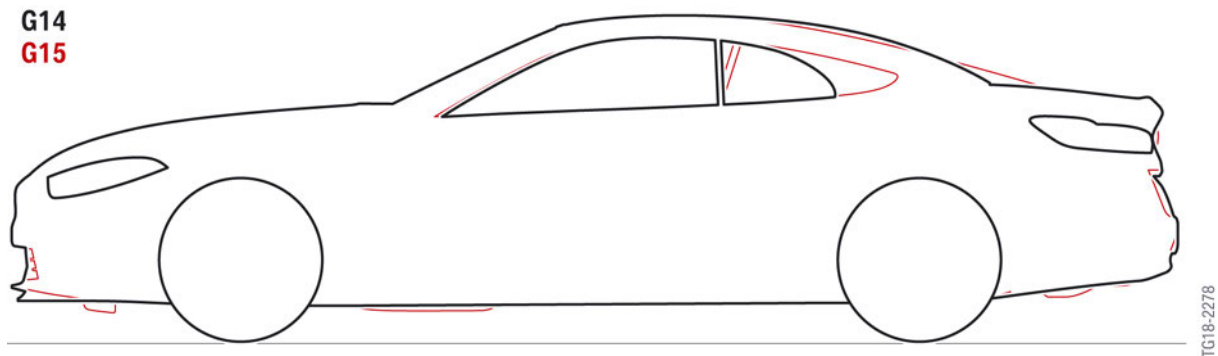
Index	Explanation	Unit	BMW M850i xDrive
a	Vehicle height	[mm]	1345
b	Front track width, basic wheels	[mm]	1619
c	Front overhang	[mm]	958
d	Wheelbase	[mm]	2822
e	Rear overhang	[mm]	1076
f	Rear track width, basic wheels	[mm]	1642
g	Vehicle length	[mm]	4856
h	Vehicle width excluding/ including exterior mirrors	[mm]	1902/2137

G14 Complete Vehicle

1. Introduction

1.3. Dimensions, data and comparison of outlines

The following graphic compares the silhouette of the G14 to that of an G15:



Silhouette comparison of G14/G15

The following table shows the most important data of the G14 and compares this directly with the G15:

	Unit	G14 M850i xDrive	G15 M850i xDrive	Difference
Vehicle height	[mm]	1345	1346	-1
Vehicle length	[mm]	4856	4856	0
Wheelbase	[mm]	2822	2822	0
Width excluding exterior mirrors	[mm]	1902	1902	0
Vehicle width with exterior mirrors	[mm]	2137	2137	0
Vehicle curb weight (US)	[lbs]	4736	4478	+258
Payload	[lbs]	772	772	0
Luggage compartment volume	[l]	350/280	420	-70/-140

1.4. Weights and payload

The vehicle curb weights and the payloads of the G14 are set out in the following table:

Model	Unit	Vehicle curb weight (US)	Payload
BMW M850i xDrive	[lbs]	4736	772

G14 Complete Vehicle

1. Introduction

1.5. Models

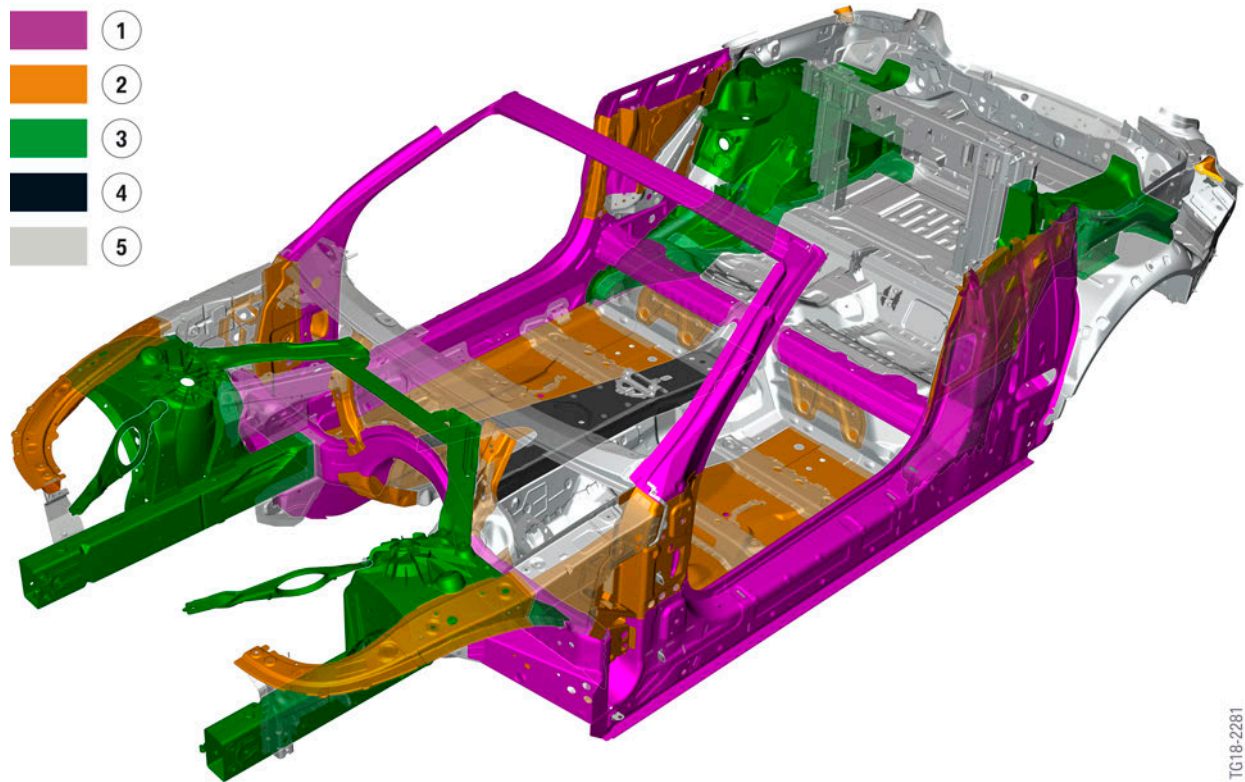
The G14 will be available at market introduction with the following models:

Model	Engine	Displacement [cc]	Power output [kW (HP)]	Torque [Nm (lb-ft)]
BMW M850i xDrive	N63T3	4395	390 (523)	750 (553)

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2. Body Structure

2.1. Materials



G14 material overview, body structure

Index	Explanation
1	Ultra-high strength hot-formed steel (> 900 N/mm ²)
2	Multiphase steel (> 300 N/mm ²)
3	Aluminum
4	Carbon
5	Other steel

As with the G15, the lightweight body concept of the G14 is made of high-strength hot-formed steel, aluminum and carbon. Thanks to the material mix, the materials are able to contribute their specific strengths to the vehicle in the best possible way.

The number of aluminum components (die-cast and extruded profiles) has increased considerably. For example, the rear longitudinal carrier and strut dome are made from aluminum as in the G15.

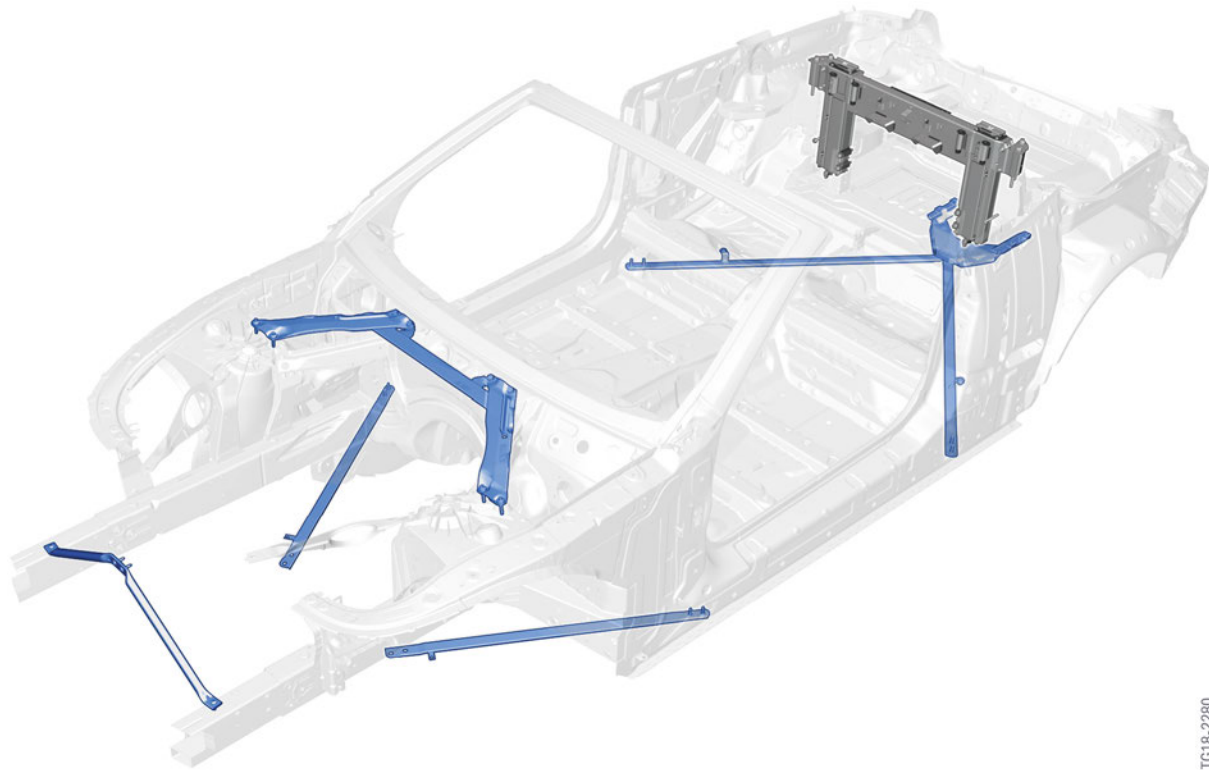
G14 Complete Vehicle

2. Body Structure

2.2. Stiffening measures

2.2.1. Braces

Like on all BMW convertibles, additional cross-struts are installed on the G14 in comparison with the Coupé version. Together with the rollover protection module, these increase the rigidity of the body and are particularly effective in preventing body distortion.



G14 strut concept

TG18-2280

2.2.2. Rollover protection system

In the G14, the active rollover protection system installed as standard is located behind the head rests and is fully recessed. It is a passive safety system which is automatically activated in the event of rollover or a critical driving (for example extreme lengthwise or crosswise tilting) and which, together with the windshield frame, ensures a survival space for the occupants.

Rollover is detected by the roll rate sensor and vertical acceleration sensor in the Advanced Crash Safety Module (ACSM). This emits a signal (all-fire signal) for activating the two pyrotechnic actuators in the rollover protection system.

A triggering unit with a pyrotechnic element is located at both the left- and right-hand lower end of the rollover protection system. Each of the two triggering units indirectly releases a preloaded compression spring via the pyrotechnic element in order to extend a rollover bar to the left and right.

G14 Complete Vehicle

2. Body Structure

When the all-fire signal is received by the pyrotechnic element, this triggers and generates gas pressure in the floor of the triggering unit. This extends a piston which opens a predetermined breaking point and thus the retaining part of the compression spring and pre-accelerates the rollover bar over a short stroke. The preloaded compression spring is now released and the rollover bar is extended. In its end position, it form-locks by means of pawls and a toothed bar.



After the rollover protection system is triggered, the ignition elements and the triggering systems are inactive. In this case, the rollover protection system must be completely replaced.

The rollover protection system may only be removed and installed or replaced as a whole! Removing and installing or replacing individual components is not permitted.



Risk of life-threatening injuries!

Work on pyrotechnic parts may only be carried out by expert and appropriately trained people.

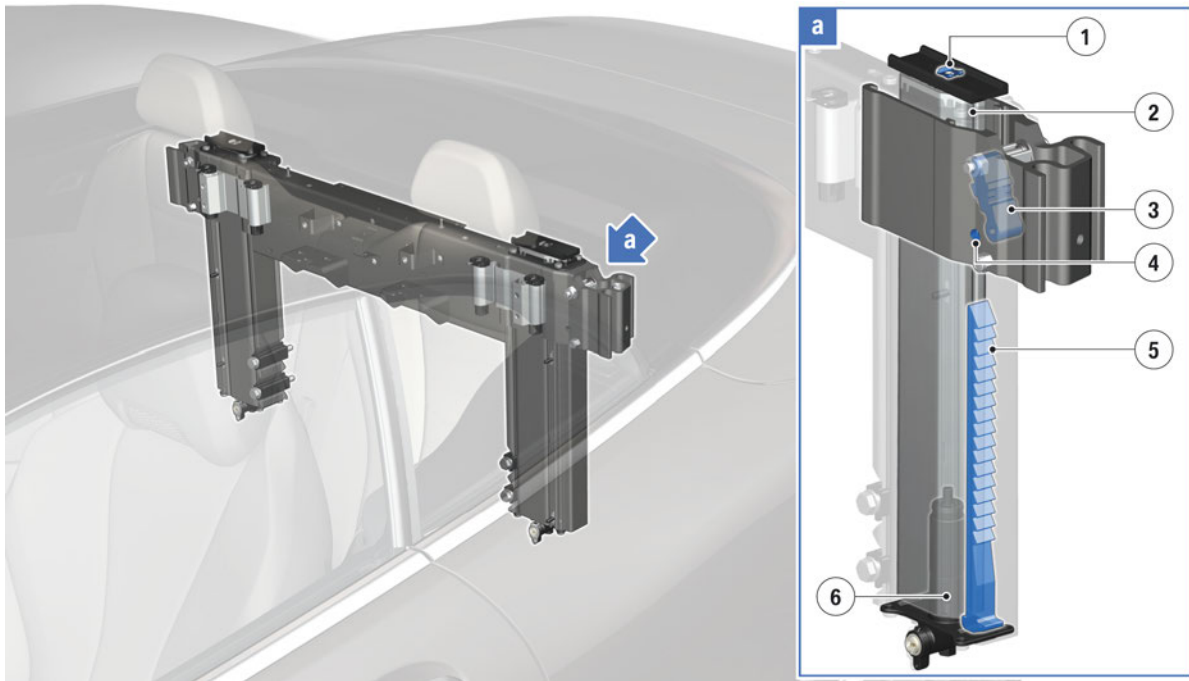
The rollover protection system is under considerable spring tension! Incorrect handling can trigger the rollover protection system unexpectedly and cause injuries.



When carrying out repair work on the rollover protection system, ensure that no foreign bodies find their way into the system, otherwise it will be damaged! Depending on the type of repair, it may be reasonable to remove the rollover protection system for the duration of the repair work.

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2. Body Structure



G14 rollover protection system

Index	Explanation
1	Locking clip
2	Rollover bar
3	Locking pawl
4	Hole (access for the allen key to open the pawl)
5	Rollover bar toothed bar
6	Triggering unit with pyrotechnic element

Checking the rollover protection system

After accident repairs, and in particular rear end and side collisions, a visual inspection of the rollover protection system shall be carried out. Deformations to nearby components can lead to locked-up stress, affecting the operation of the rollover protection system (for example increased implementation time). Furthermore, foreign bodies that have entered the rollover protection system can block the system.

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2. Body Structure

To check the freedom of motion of the rollover bar and the operation of the pawl and toothed bar, the rollover bar can be pulled out and pushed in manually. To do this, the rear seat backs must be folded down and all negative battery terminals must be disconnected. The next steps are to:

Extend

- 1 Unclip the cover from the rollover bar at the top and the cover behind the rear seat back.
- 2 Remove the locking clip at the top of the rollover bar using a suitable tool.
- 3 Pull the rollover bar upwards to the limit stop. Metallic noises should be clearly heard (pawl sliding over the toothed bar).
- 4 It must be possible to pull the rollover bar out slightly and snap it into the end position.

Retract

- 1 Pull the inner profile upwards to the end stop and hold.
- 2 Insert a 6mm allen key through the hole (see diagram "G14 rollover protection system", index 4) into the pawl, turn 90 degrees and hold. This unlocks the pawl and releases the rollover bar on the toothed bar.
- 3 Slowly lower the rollover bar downwards as far as possible and remove the allen key. Attention! In no event should you drop the rollbar as this will damage the lower support!
- 4 Press the rollover bar downwards and secure the locking clip.
- 5 Clip the covers into place.

Result

- If the rollover bar does not clip into the end position or if it cannot be pulled out slightly, the rollover protection system must be replaced.
- If the rollover bar does not slide downwards without any resistance, the rollover protection system must be replaced.

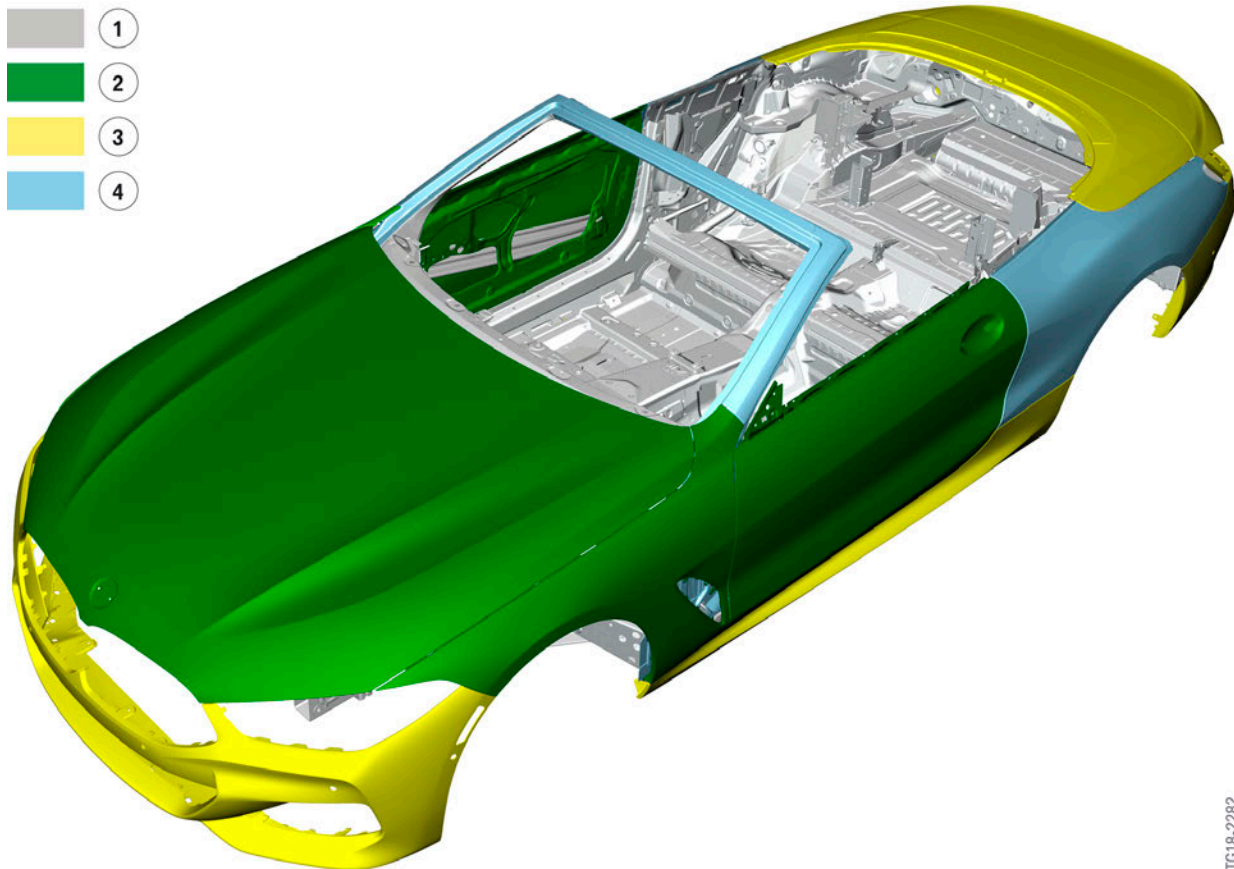
These checks must always be carried out on both sides.

Unlike with previous active rollover protection systems on BMW convertibles, the preloaded compression springs in this system cannot be released by means of a test triggering.

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3. Outer Body Skin

3.1. Materials



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G14 overview of materials, outer body skin

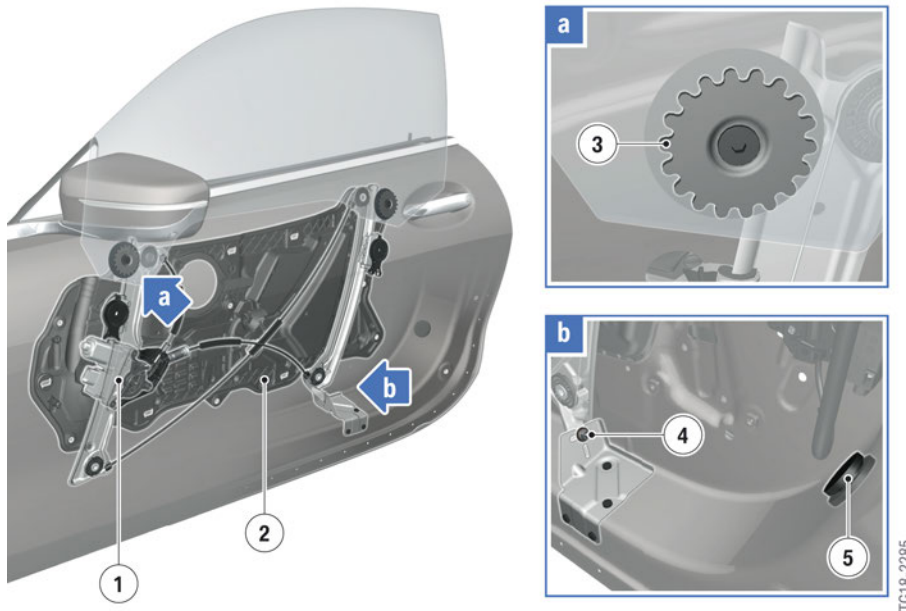
Index	Explanation
1	Other steel grades
2	Aluminum
3	Plastic (SMC, PP, EPDM)
4	Deep drawing steel

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4. Doors, Lids and Hatches

4.1. Doors

The doors of the G14 have an aluminum shell design. A plastic module carrier divides the interior of the door into a dry and wet side. It is mounted on the door structure by means of screws and bayonet fittings. Sensitive components, such as speakers and airbag sensors, are located on the dry side. The power window motor and the power window mechanism are located on the wet side.



G14 door module carrier

Index	Explanation
1	Power window motor
2	Door module carrier
3	Multi-tooth screw (range of adjustment of side window in z and x direction)
4	Bolts with fastening nuts (range of adjustment of side window in y-direction)
5	Cover (access to the range of adjustment position 4)

4.1.1. Side windows

On the G14 too, the correct adjustment of the front and rear frameless side window is very important. The following characteristics are thus achieved in the side window area:

- Leak-tightness (avoids wind noise and water ingress)
- Avoidance of rattling and creaking
- No undesired reversing of the side windows during the closing action (anti-trap function).

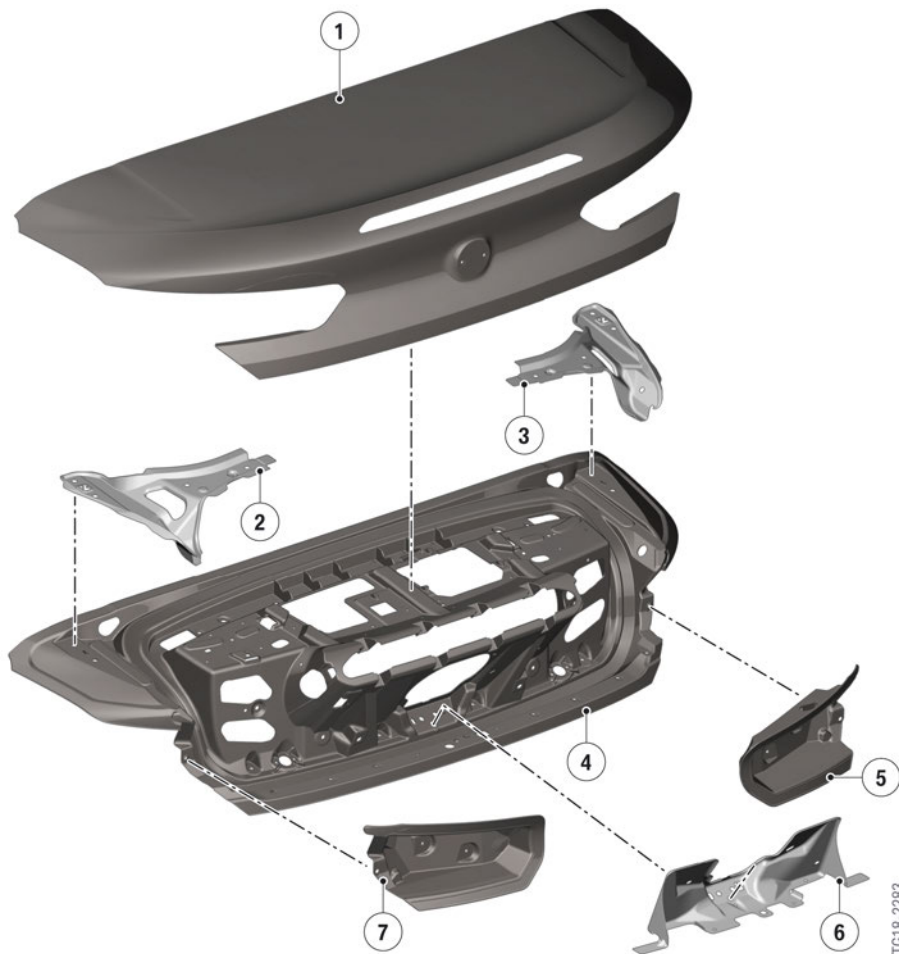
The special tool required to adjust the side window adjustment elements match those of the current BMW convertibles and coupés.

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4. Doors, Lids and Hatches

The current repair instructions must always be observed for the procedure and exact dimensions for correct adjustments.

4.2. Tailgate



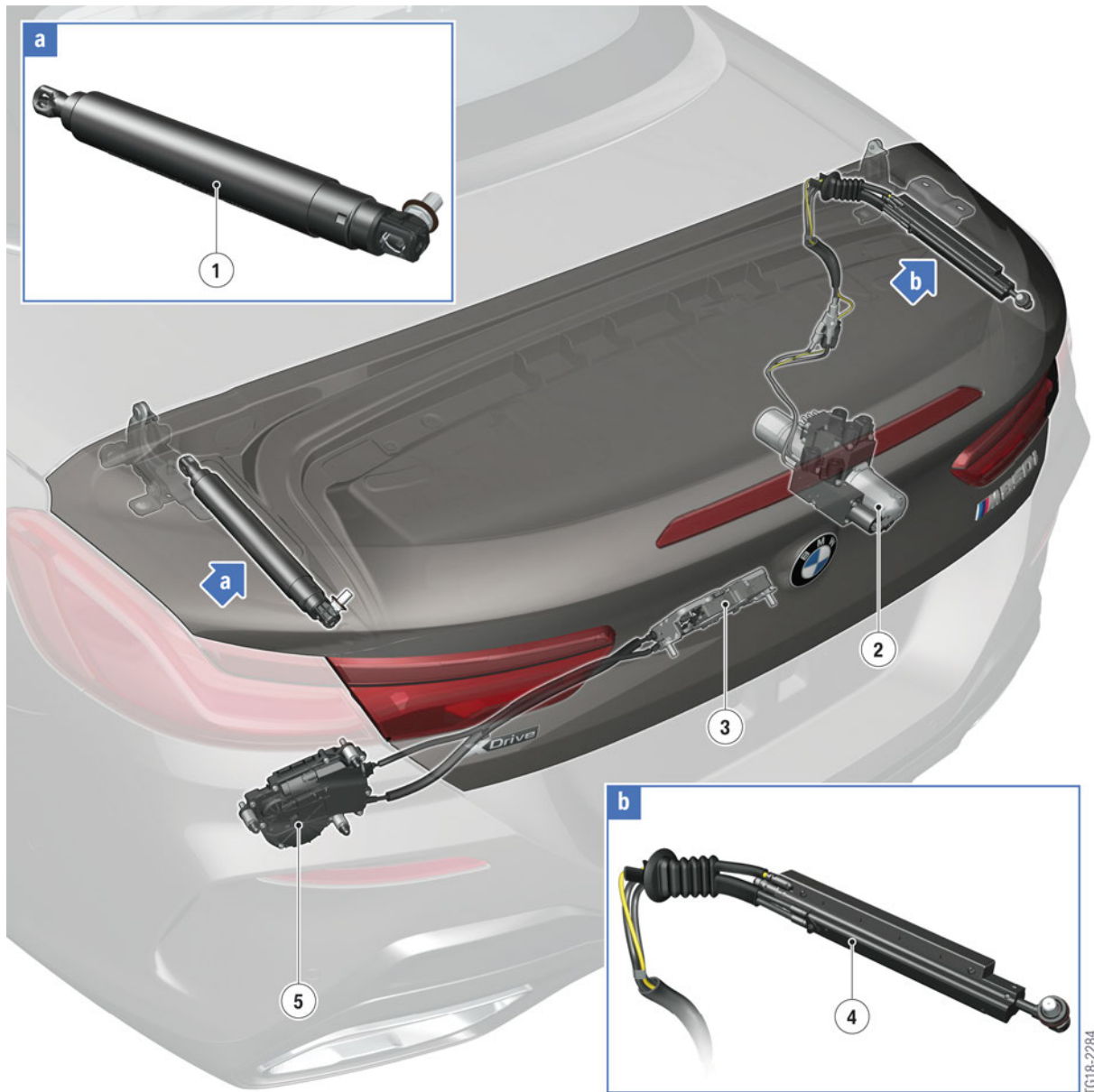
G14 tailgate components

Index	Explanation
1	Outer skin (plastic)
2	LH hinge reinforcement (steel)
3	RH hinge reinforcement (steel)
4	Inner shell (plastic)
5	RH tail light housing (plastic)
6	Lock reinforcement (steel)
7	LH tail light housing (plastic)

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4. Doors, Lids and Hatches

The tailgate is primarily made from a "sheet moulding compound" (SMC) fiber-reinforced plastic material with a surface that can be coated by means of an In-Mould Coating (IMC) procedure. In-Mould Coating is a procedure during which the surface of the shaped part is coated while still in the mould. Additional facing components are thus not required, thereby increasing the freedom in the geometric design and reducing the weight.



G14 tailgate

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4. Doors, Lids and Hatches

Index	Explanation
1	Spring support
2	Hydraulic unit
3	Tailgate lock
4	Hydraulic cylinder with integrated sensor
5	Automatic Soft Close system

The G14 features an automatic tailgate operation as standard. On the G14, a single-sided hydraulic drive on the right-hand side of the tailgate is used for the very first time, with its hydraulic circuit integrated into the convertible top hydraulics. This facilitates use of a compact drive requiring little space.

A closing assistance mechanism (Automatic Soft Close system) is used to lock the tailgate into the tailgate latch.

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5. Passenger Compartment

5.1. Overview



G14 interior equipment

Index	Explanation
1	Power window switch, front left
2	Power window switch, front right
3	Power window switch, rear right
4	Power window switch, rear left
5	Central power window regulator switch
6	Convertible top button
7	Frameless interior mirror
8	Display (integrated automatic heating/air conditioning system)
9	Heating and air conditioning controls
10	Radio operating unit
11	Cover (wireless charging station and cup holder)
12	Selector lever
13	Controller
14	Light operating unit

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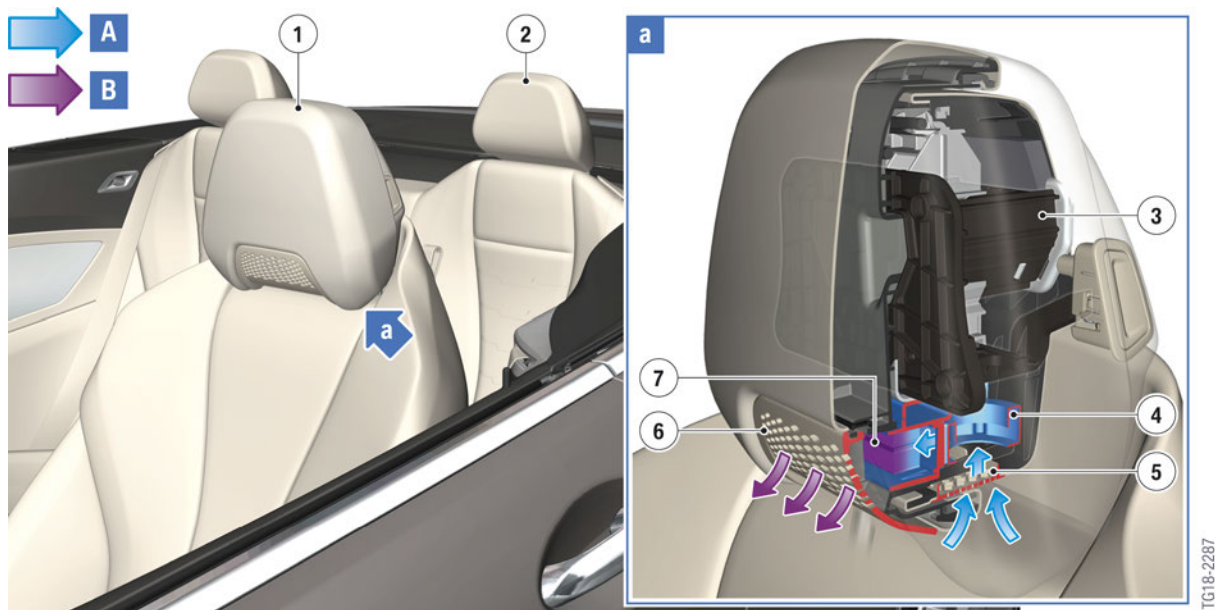
5. Passenger Compartment

5.2. Front seats

As on the G15 electrically-adjustable multi-function seats with memory function are installed in the basic version of the G14 for the driver and front passenger. The switches for fore-and-aft seat adjustment are on the seat.

The backrest folding with comfort access function (automatic operation of the seat when folding) is activated by means of a leather strap on the rear of the seat in the headrest area. The headrests are retracted automatically to prevent them from contacting the roof liner.

Visually integrated head restraints are equipped with all the functionality and comfort of a height and depth-adjustable head restraint. An optional neck warmer integrated into the headrest can be ordered for the driver and front passenger seat. This ensures particularly comfortable driving as it keeps the head and shoulders pleasantly warm. If the roof is open, the warm air system of the neck warmer is adjusted automatically according to the speed and outside temperature. One of three temperature levels can also be selected.



G14 seats

TG18-2287

Index	Explanation
A	Cold air
B	Warm air
1	Front headrests with integrated neck warmer
2	Rear headrests built into the body
3	Headrest depth adjustment

G14 Complete Vehicle

5. Passenger Compartment

Index	Explanation
4	Electric fan
5	Air inlet
6	Air outlet
7	PTC auxiliary heating

5.3. Rear seats

Unlike on the G15 the rear headrests are built in on the G14.

Both rear seat backrests can be folded forwards separately (50/50 split). The through-loading design offers considerable variability when using the luggage space. The rear seat backrests are unlocked via two mechanical remote backrest unlocking mechanisms in the luggage space.

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6. Soft Top

The G14 fully-automatic, electrohydraulic fabric soft top. This is a new feature that has been strongly weight-optimized. The multiple roof-bow piping design and a multilayer non-woven material and acoustic insulation have helped reduce wind noise even further. In both variants, the soft top fabric is available in black and as an option in anthracite with a silver effect.

Comparing the fabric soft top of the G14 with that on the F12, the following points stick out:

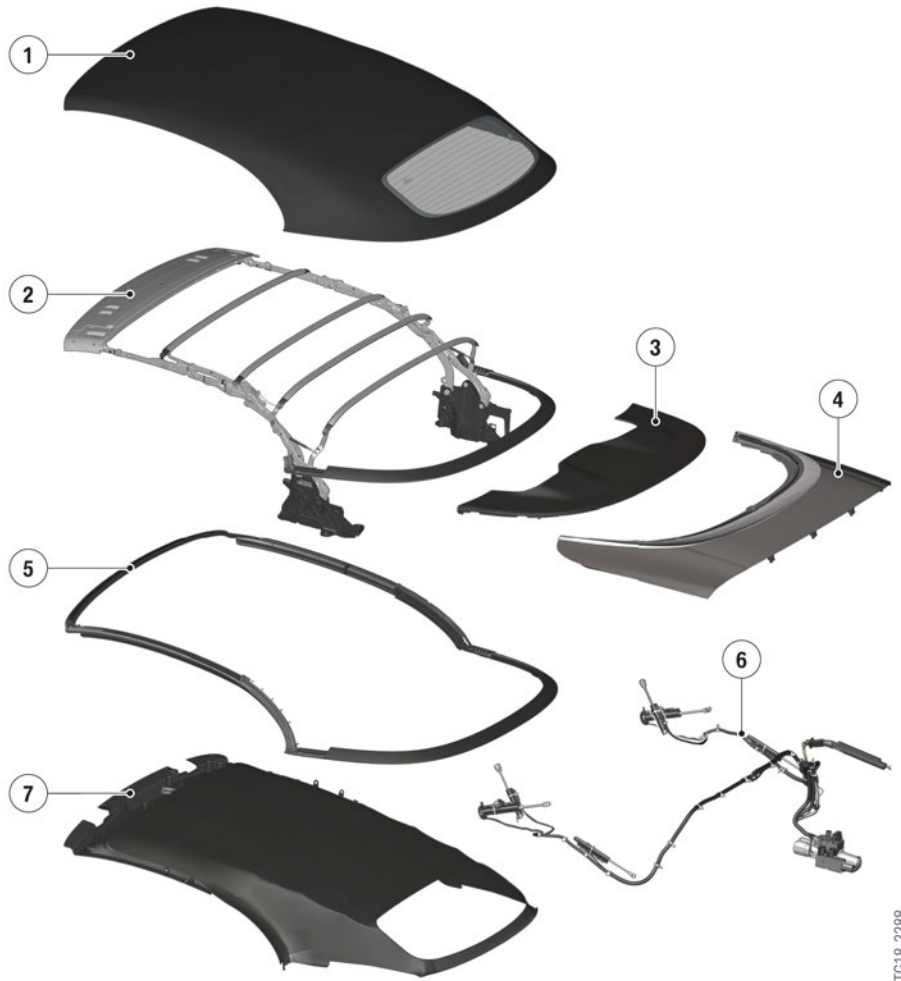
- Tensioning bow roof on the G14 instead of a fin roof on the F12.
- Much lighter: 58 kg (127 lbs) on the G14 compared to 75 kg (165 lbs) on the F12.
- Much quieter in terms of both the driving noise with the fabric soft top closed and the functional noise when opening and closing.
- Much quicker positioning speed, taking 15 seconds to open and to close the fabric soft top on the G14 compared to 19 seconds to open and 24 seconds to close it on the F12.
- Possible to open and close the top up to a speed of 50 km/h (31 mph) on the G14 compared to 40 km/h (25 mph) on the F12.
- More innovative convertible top lid (quieter, improved visual appearance, modified folding mechanism).

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6. Soft Top

6.1. System components

6.1.1. Overview



TG18-2288

G14 overview of soft top components

Index	Explanation
1	Soft top cover
2	Convertible top frame
3	Convertible top lid trim panel
4	Convertible top compartment lid
5	Seals
6	Hydraulic system
7	Headlining

G14 Complete Vehicle

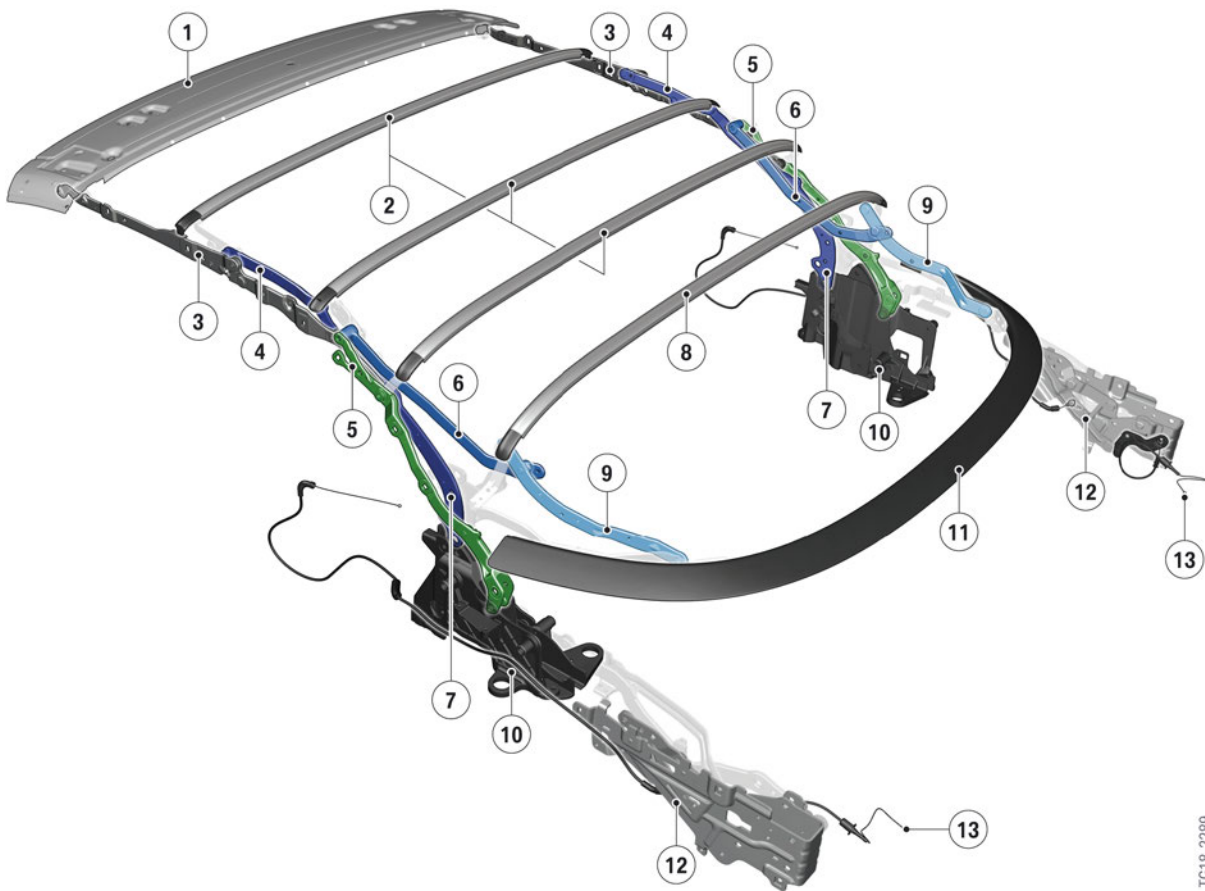
6. Soft Top

The main soft top components, divided into mechanical, hydraulic and electrical components, are described in the following text:

6.1.2. Mechanical components

Convertible top frame

The convertible top frame is the framework to which the soft top cover, the headlining and the seals are mounted. On the G14, it is built with tensioning bow in order to improve the acoustics in the multiple roof bow piping design. The essential components of the convertible top frame are shown in the following diagram:



G14 convertible top frame

Index	Explanation
1	Soft top bow, front
2	Soft top bow, center
3	Front roof frame suspension link
4	Front roof frame coupler arm
5	Main pillar

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6. Soft Top

Index	Explanation
6	Landau bar 1
7	Main controller
8	Soft top bow, rear
9	Landau bar 2
10	Convertible top main bearing
11	Soft top bow
12	Convertible top lid main bearing and kinematics
13	Bowden cable for manual release of convertible top lid

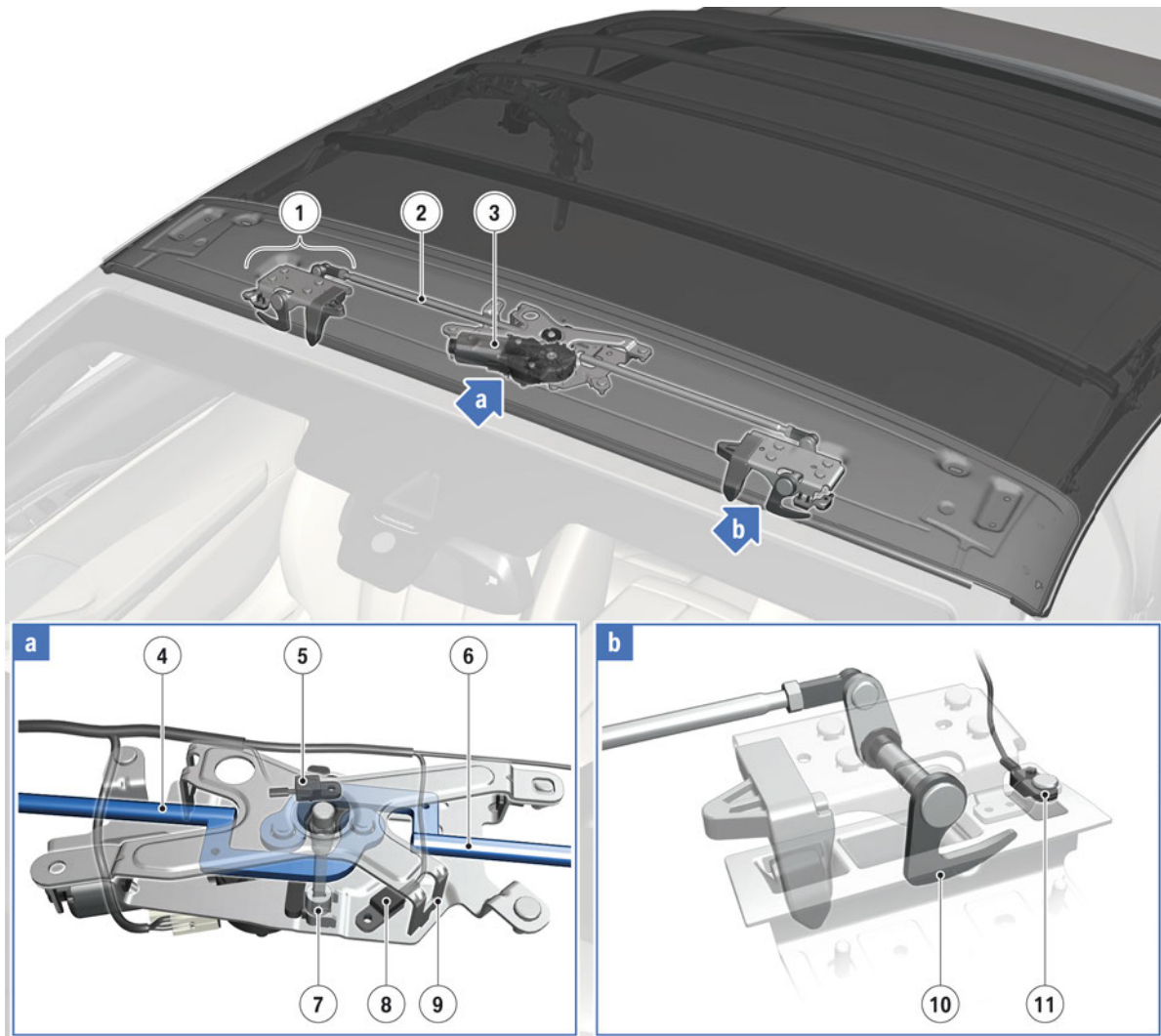
The convertible top frame is connected at the two convertible top main bearings to the bodyshell. The main pillars, via the intermediate gearbox connecting bar, and the tensioning bow, via the toggle joint, are driven by the hydraulic cylinders to open and close the soft top. The soft top is locked at the cowl panel by the front soft top bow.

Cowl panel lock drive

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

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6. Soft Top



G14 cowl panel lock

Index	Explanation
1	Convertible top latch
2	Pushrod
3	Electric cowl panel lock drive
4	RH connecting rod
5	Hall effect sensor, cowl panel lock drive opened
6	Pushrod, left
7	Connection for manual operation

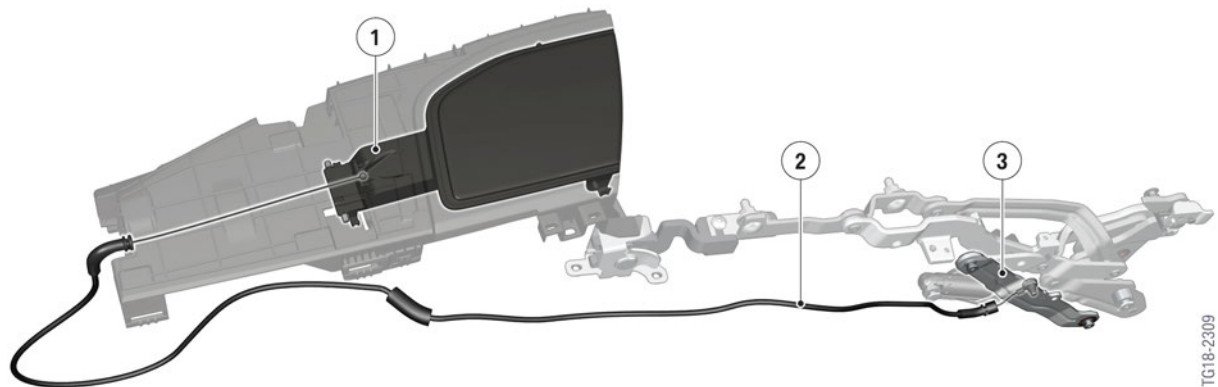
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6. Soft Top

Index	Explanation
8	Hall effect sensor, cowl panel lock drive opened
9	Electric drive bracket
10	Retaining hook
11	Hall effect sensor, cowl panel locked, left

Linkage aperture flaps

The linkage aperture flaps are controlled mechanically via a Bowden cable. The Bowden cable is secured to a suspension link on the convertible top lid kinematics. When opening the convertible top lid, the linkage aperture flaps are opened at the same time by means of the coupling with the convertible top lid kinematics.



G14 linkage aperture flap

TG18-2309

Index	Explanation
1	Linkage aperture flap
2	Bowden cable
3	Coupler arm

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6. Soft Top

Convertible top compartment lid



TG18-2300

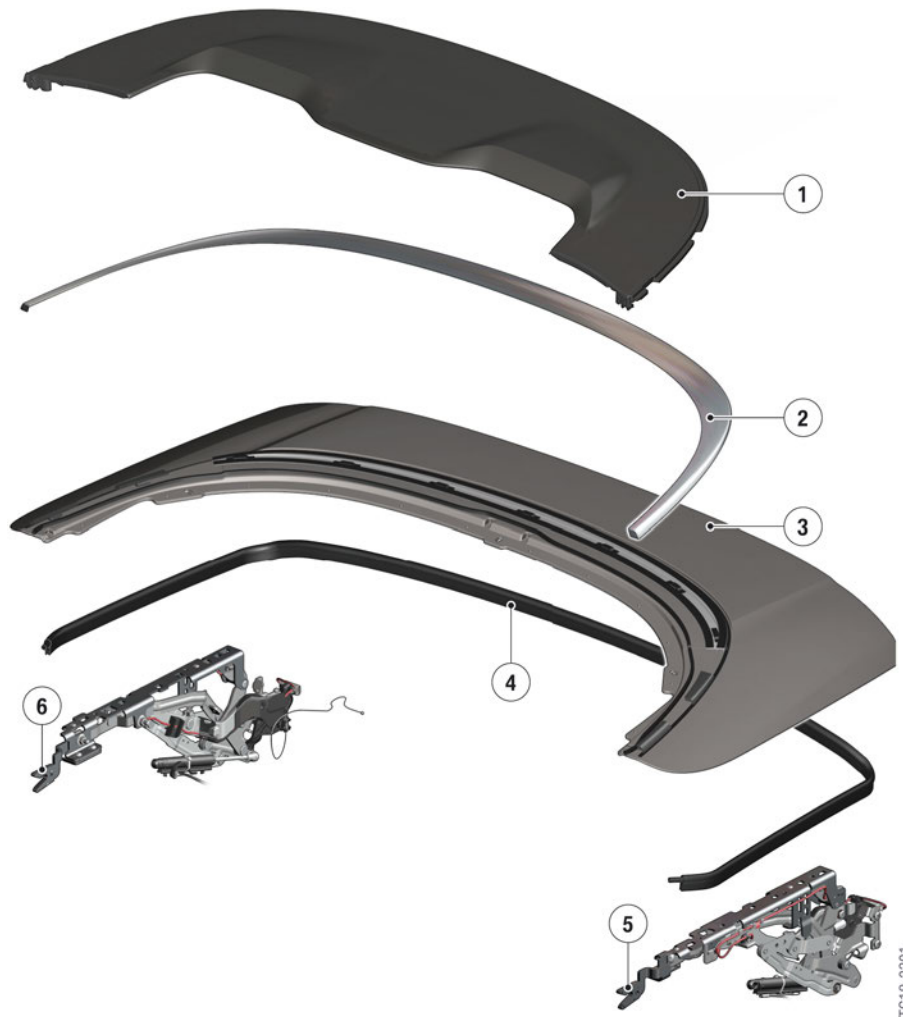
G14 convertible top compartment lid

Index	Explanation
1	Convertible top compartment lid

The convertible top lid also contributes to the harmonious and high-quality total appearance. On the G14, the convertible top lid trim panel in leather grain with stitching is coordinated with the cockpit and door trim. An optical leap (as with other convertibles) between the inner waistbelt rail on the rear side windows and the trim strip of the convertible top lid is prevented by the fact that we have not sealed the trim strip on the G14 but the trim panel on the convertible top lid. This allows a constant cross-section to be obtained in the transition area of the two trim strips (with no gap).

G14 Complete Vehicle

6. Soft Top



G14 individual convertible top lid components

Index	Explanation
1	Convertible top lid trim panel
2	Trim strip
3	Convertible top lid body
4	Gasket
5	LH convertible top lid kinematics
6	RH convertible top lid kinematics

The convertible top lid shell consists of a "Sheet Moulding Compound" (SMC) fiber-reinforced plastic material. The convertible top lid trim panel completely closes the front area of the convertible top lid and is a 15 mm sandwich element made from polyurethane and glass-fiber matting. A weight optimization of the convertible top lid is achieved such that the areas of the convertible top lid shell are cleared under the trim panel. The strength of the convertible top lid nevertheless remains unaffected as the convertible top lid shell is not the only carrying element, with the trim panel also playing a supportive role. Through this combination of convertible top lid shell and trim panel, approx. 5 kg

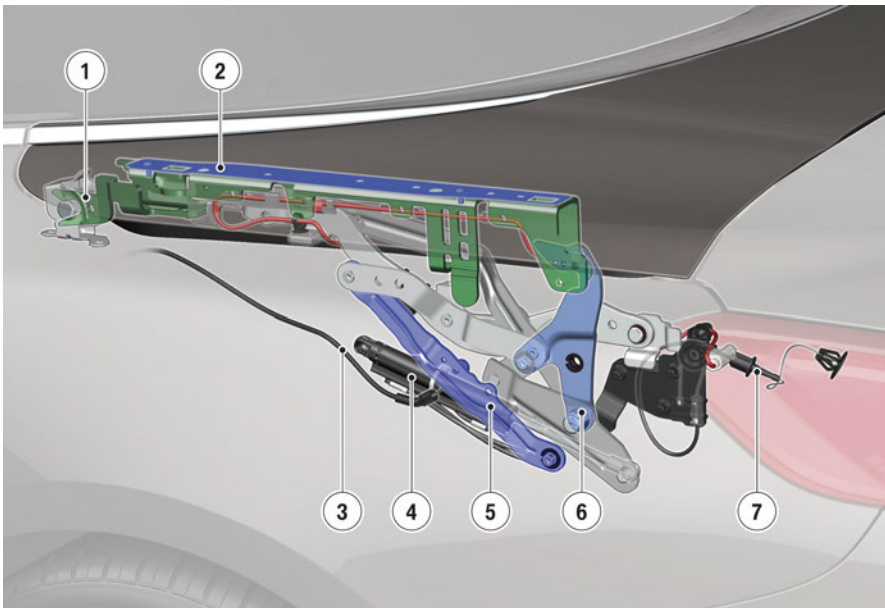
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6. Soft Top

(11 lbs) (compared to F12) could be saved in the convertible top lid without affecting either the stability or strength.

A trim strip is fitted between the convertible top lid shell and the trim panel. When fastening the trim strip, the correct screw sequence and torque must be observed. Furthermore, it must be correctly position on the convertible top lid and the correct gap dimension must be observed. To this end, the individual operations in the repair instructions must be carried out in the specified sequence.

Convertible top lid kinematics



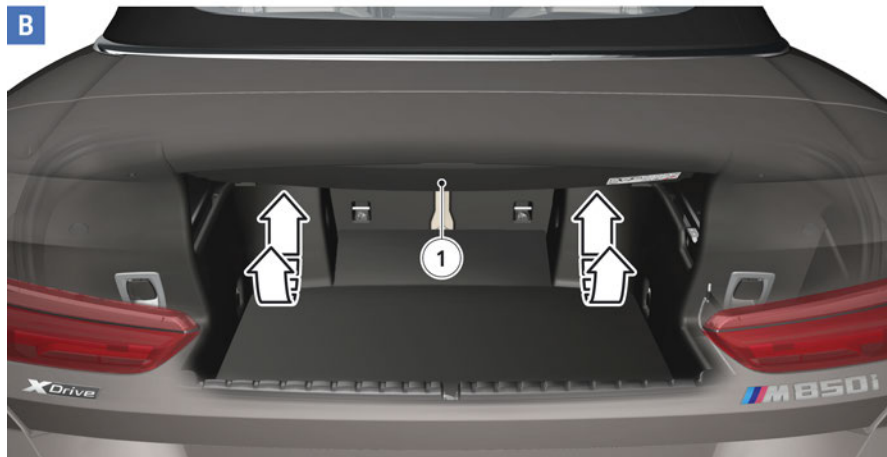
G14 convertible top lid kinematics

Index	Explanation
1	Convertible top lid front locking (including z-direction adjustment element)
2	Convertible top lid holding strip with spacer plate (adjustment possibilities x, y and z direction)
3	Linkage outlet flap Bowden cable
4	Hydraulic cylinder
5	Coupler arm
6	Rear convertible top lid locking hooks
7	Bowden cable for manual release of convertible top lid

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6. Soft Top

Variable convertible top compartment floor



G14 variable convertible top compartment floor

Index	Explanation
A	Variable convertible top compartment floor, lower position
B	Variable convertible top compartment floor, upper position
1	Variable convertible top compartment floor

By folding the variable convertible top compartment floor to the upper position, the volume of the trunk can be increased from 280 to 350 liters when the fabric soft top is closed.

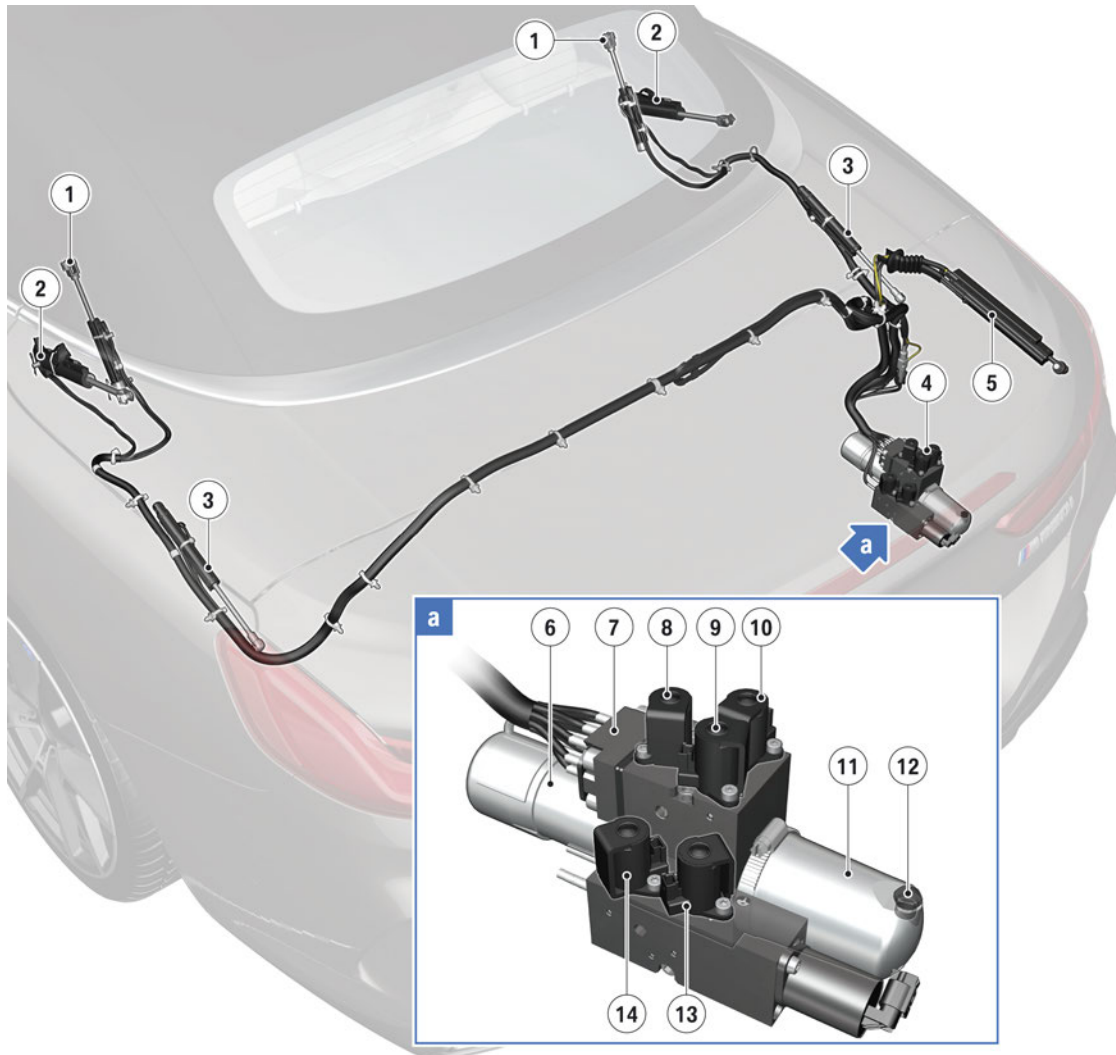
Before the soft top is opened, the variable convertible top compartment floor must be returned to the lower position. This is detected by a microswitch and reported to the Convertible Top Module.

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6. Soft Top

6.1.3. Hydraulic components

Overview



G14 overview of the hydraulic components

Index	Explanation
1	Hydraulic cylinder, soft top bow
2	Hydraulic cylinder, main pillar
3	Hydraulic cylinder, convertible top compartment lid
4	Hydraulic unit
5	Tailgate hydraulic cylinder
6	Drive unit (pump motor with hydraulic pump)
7	Switching block

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6. Soft Top

Index	Explanation
8	Solenoid valve (for activating the changeover valve V1 – soft top)
9	Solenoid valve (for activating the changeover valve V2 – soft top)
10	Solenoid valve (for activating the changeover valve V3 – soft top)
11	Oil reservoir
12	Fluid filler plug
13	Solenoid valve (for activating the changeover valve V4 – tailgate)
14	Solenoid valve (for activating the changeover valve V5 – tailgate)

Function

The convertible top is driven hydraulically. The hydraulic system for the fabric soft top comprises six hydraulic cylinders which are activated by the hydraulic unit via pairs of hydraulic lines. Each pair of hydraulic cylinders operates via suspension links to the main pillars, the tensioning bow and the convertible top lid. The hydraulic cylinders can be pressurized at the piston and rod ends. Another hydraulic cylinder operates on the tailgate via its own circuit integrated into the convertible top hydraulics.

The direction in which the hydraulic cylinders are actuated is dependent on the direction in which the hydraulic pump rotates and on the position of the corresponding changeover valve. When a hydraulic cylinder is pressurized at both ends, the pressure at the piston rod end is dominant (due to the larger reference surface) and the piston rod extends.

The hydraulic unit is located at the rear right in the luggage compartment. The hydraulic fluid does not have to be changed (life-time oil filling). The hydraulic system is automatically bled into the oil reservoir, for example after repair work.

The temperature of the hydraulic system is determined by the Convertible Top Module (CVM) by means of a computing model. If a certain temperature threshold is exceeded, the fabric soft top will be prevented from opening or closing (thermal protection). In the intermediate position, the fabric soft top can still be moved due to a danger of pinching, even if the thermal protection is activated. In this case, only the "closed" end position is blocked.

The system pressure is restricted by a pressure limiting valve to 180 bar (+ 10 bar). The operating pressure of the hydraulic pump is between 190 and 200 bar.

If the convertible top movement is interrupted, the hydraulic system is automatically depressurized after a certain time. If the LIVE or DRIVE vehicle condition is activated, this happens after approx. 10 minutes, otherwise after a few seconds.



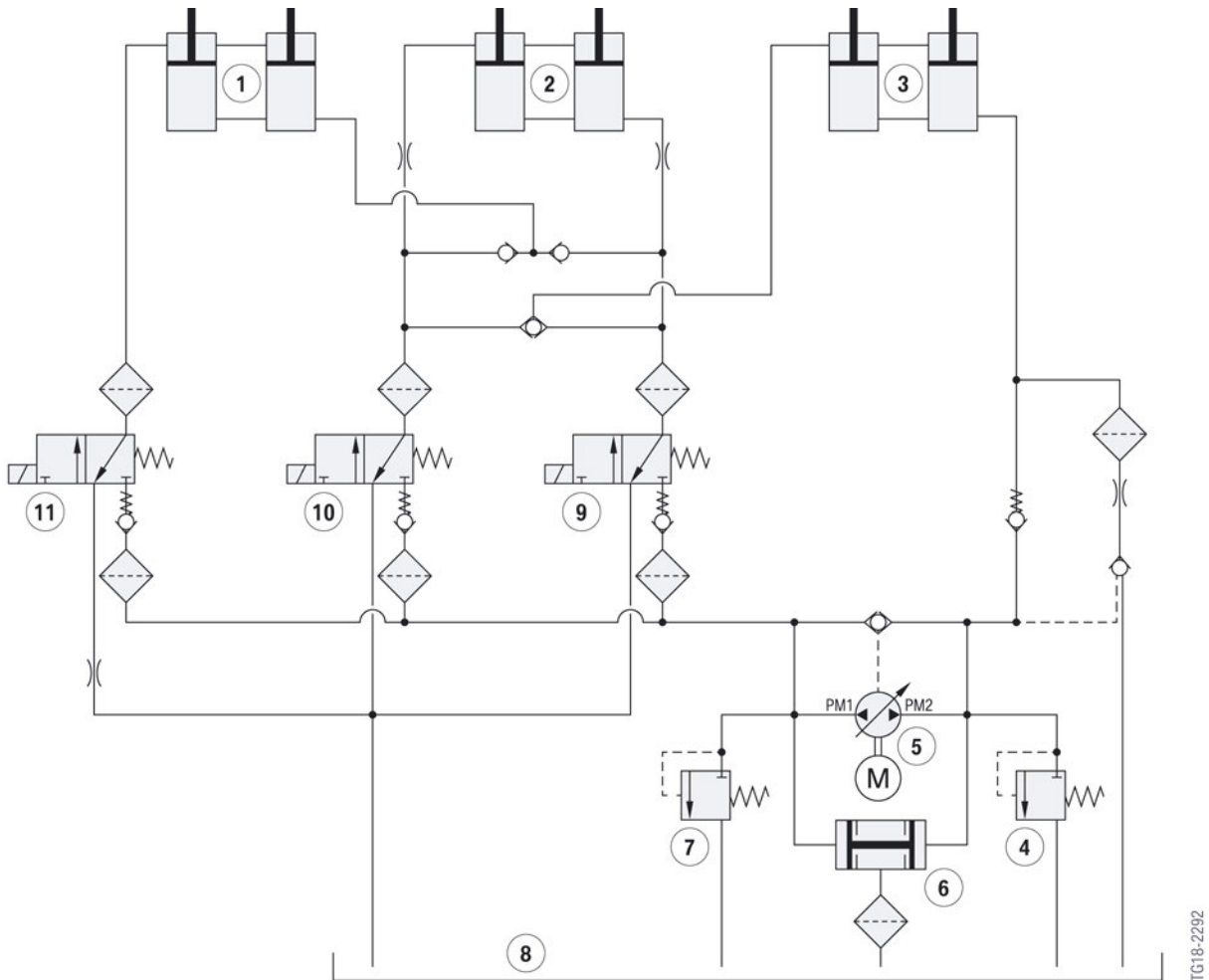
If the hydraulic system has been depressurized beyond the end positions of the fabric soft top, the fabric soft top and the convertible top lid can move unintentionally and cause injury. The convertible top compartment lid is closed in sections, whereby the changeover valve 1 is supplied with current on a rotating basis. Particular attention must be paid to this during repair or diagnostic work.

If the fabric soft top is completely closed or open and the tailgate has not been actuated, the entire hydraulic system is depressurized.

G14 Complete Vehicle

6. Soft Top

System schematic, convertible top hydraulics



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G14 convertible top system layout and specification diagram (fabric soft top closed)

Index	Explanation
1	Convertible top lid hydraulic cylinder (convertible top lid closed)
2	Main pillars hydraulic cylinder (main pillars deployed)
3	Tensioning bow hydraulic cylinder (tensioning bow down)
4	Pressure-limiting valve
5	Hydraulic pump (PM1/PM2 direction of rotation)
6	Twin pressure valve
7	Pressure-limiting valve
8	Oil reservoir
9	Changeover valve V1
10	Changeover valve V2
11	Changeover valve V3

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6. Soft Top

Valve switchings

Open soft top	Direction of rotation		Changeover valve		
	PM1	PM2	V1	V2	V3
Lifting the tensioning bow	X				X
Unlocking and opening the convertible top lid	X		X		X
Opening and deactivating the fabric soft top	X		X	X	
Closing and locking the convertible top lid	X			X	X

Close soft top	Direction of rotation		Changeover valve		
	PM1	PM2	V1	V2	V3
Unlocking and opening the convertible top lid	X		X	X	
Positioning and closing the fabric soft top	X		X		X
Closing and locking the convertible top lid	X			X	X
Deactivating the tensioning bow		X			

6.1.4. Electrical components

Overview

The following electrical components are primarily involved in the function of the soft top:

- Convertible Top Module (CVM)
- Convertible top button in the center console
- Electric cowl panel lock drive
- Hydraulic pump electrical drive in the convertible top hydraulic circuit
- 2 relays for activating hydraulic pump motor
- 3 solenoid valves for activating the changeover valves in the convertible top hydraulic circuit
- 12 Hall effect sensors detecting the position of the fabric soft top and the convertible top lid
- 1 microswitch to detect the position of the variable convertible top compartment floor.

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6. Soft Top

Buttons, control unit and drives



G14 convertible top button, Convertible Top Module and drive

Index	Explanation
1	Electric cowl panel lock drive
2	Convertible top button
3	Convertible Top Module (CVM)

Sensors

All positions of the fabric soft top which are relevant for the movement process are monitored by 12 hall effect sensors and one microswitch and signalled to the Convertible Top Module (CVM). All sensors of the soft top are supplied with voltage by the Convertible Top Module (CVM) and have diagnostic capability.

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6. Soft Top



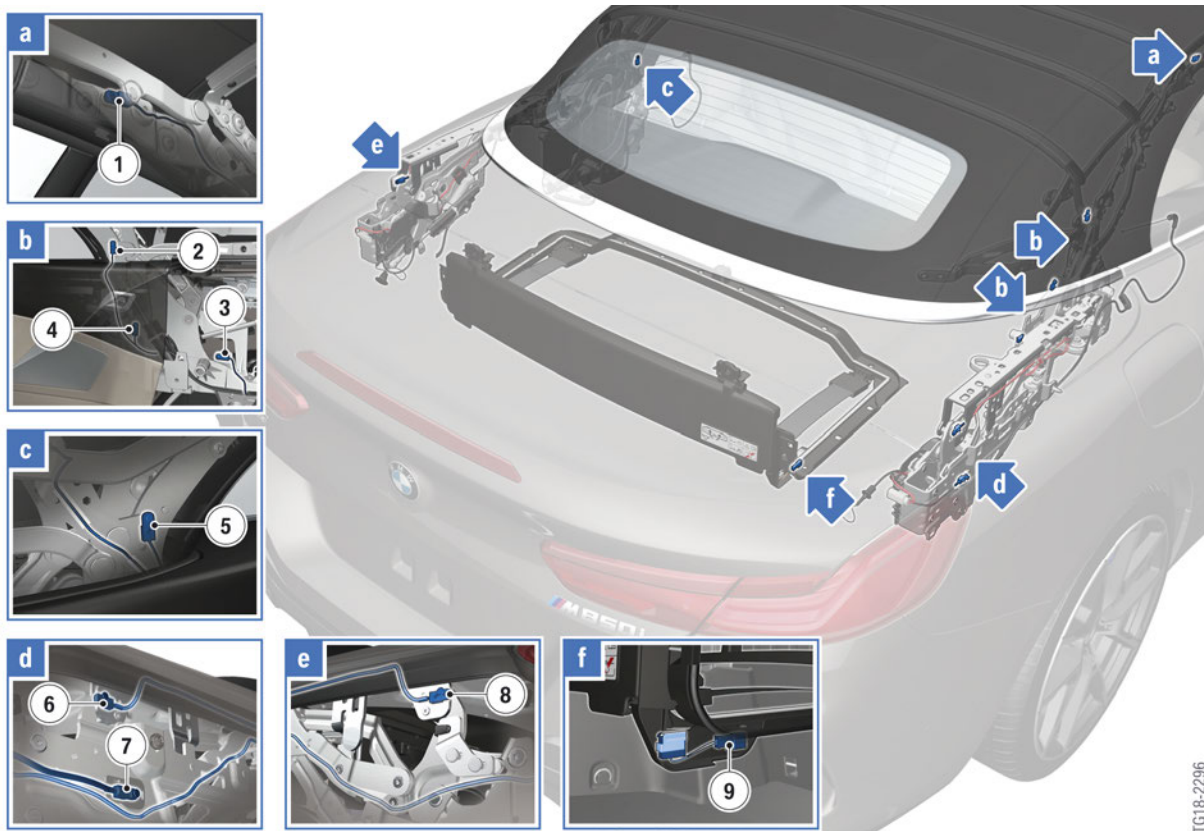
G14 overview of front convertible top sensors

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

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6. Soft Top

- **Hall effect sensor, cowl panel lock drive closed:** The hall effect sensor is located on the front soft top bow in the area of the drive on the windshield panel locking carrier plate. When the drive has reached the "closed" end position, the hall effect sensor records the corresponding position of the rotary disc on the windshield panel locking drive.
- **Hall effect sensor, cowl panel lock drive opened:** The hall effect sensor is located on the front soft top bow in the area of the drive on the windshield panel locking carrier plate. When the drive has reached the "open" end position, the hall effect sensor records the corresponding position of the rotary disc on the windshield panel locking drive.
- **Hall effect sensor, cowl panel locked, left:** The hall effect sensor is located at the front left of the soft top bow and is secured at the convertible top latch. A magnet installed on the left of the windshield panel serves as a counterpart. The hall effect sensor only detects the magnet when the LH safety catches are closed and the fabric soft top is actually locked to the windshield on the left and not only appears to be locked to the windshield outside the support.
- **Hall effect sensor, cowl panel locked, right:** The hall effect sensor is located at the front right of the soft top bow and is secured at the convertible top latch. A magnet installed on the right of the windshield panel serves as a counterpart. The hall effect sensor only detects the magnet when the RH safety catches are closed and the fabric soft top is actually locked to the windshield on the right and not only appears to be locked to the windshield outside the support.



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G14 overview of rear convertible top sensors

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Index	Explanation
1	Hall effect sensor, fabric soft top deployed
2	Hall effect sensor, tensioning bow down and locked on right
3	Hall effect sensor, fabric soft top down
4	Hall effect sensor, soft top bow positioned
5	Hall effect sensor, tensioning bow down and locked on left
6	Hall effect sensor, convertible top lid closed and locked on right
7	Hall-effect sensor, convertible top lid open
8	Hall effect sensor, convertible top lid closed and locked on left
9	Microswitch for variable convertible top compartment floor down

- **Hall effect sensor, fabric soft top deployed:** The hall effect sensor is located inside on the RH suspension link to the central roof frame. A magnet is located on the outside of the front right roof frame coupler arm, in the central area. If the fabric soft top is deployed, the hall effect sensor detects the magnet.
- **Hall effect sensor, tensioning bow down and locked on:** The hall effect sensor is located outside on the RH toggle joint for the tensioning bow drive. A magnet is located at the rear of the inside of the RH balance link. If the tensioning bow is completely down and locked in the upper dead point position, the hall effect sensor detects the magnet.
- **Hall effect sensor, fabric soft top down:** The hall effect sensor is located to the rear on the inside of the RH soft top bearing. A magnet is located in the middle of the inside of the RH balance link. If the fabric soft top is completely down, the hall effect sensor detects the magnet.
- **Hall effect sensor, soft top bow positioned:** The hall effect sensor is located to the front on the inside of the RH soft top bearing. A magnet is located on the RH toggle joint for the tensioning bow drive, on a protruding arm. If the tensioning bow is completely deployed, the hall effect sensor detects the magnet.
- **Hall effect sensor, tensioning bow down and locked on left:** The hall effect sensor is located outside on the LH toggle joint for the tensioning bow drive. A magnet is located at the rear of the inside of the LH balance link. If the tensioning bow is completely down and locked in the upper dead point position, the hall effect sensor detects the magnet.
- **Hall effect sensor, convertible top lid closed and locked on right:** The hall effect sensor is located on the right rear closing bow of the convertible top lid. A magnet is located on the RH locking hook of the convertible top lid. If the convertible top lid is closed and locked on the right, the hall sensor detects the magnet.

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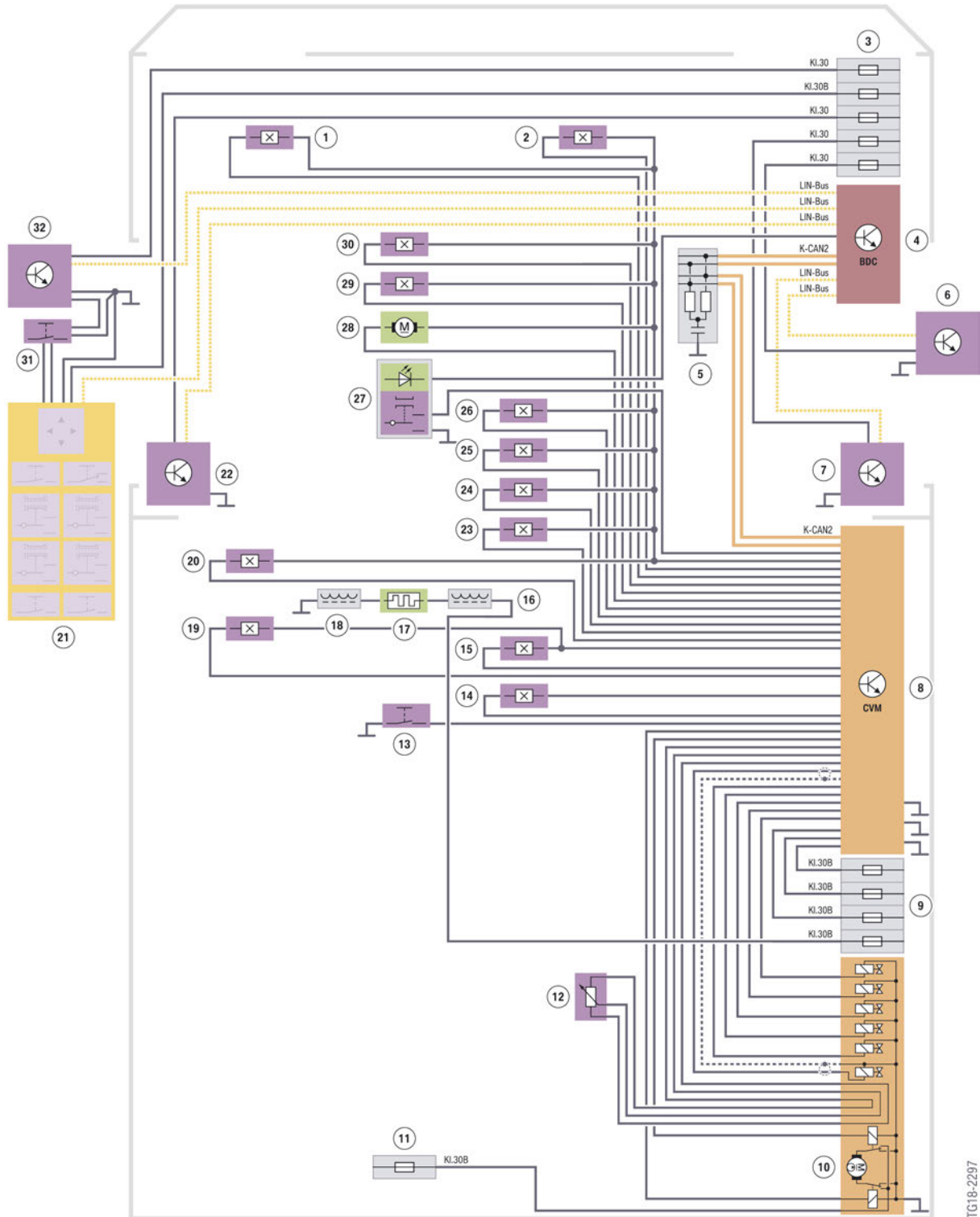
6. Soft Top

- **Hall-effect sensor, convertible top lid open:** The hall effect sensor is located at the rear on the RH soft top lid bearing. A magnet is located in the central area of the convertible top lid coupler arm, which also actuates the Bowden cable for the linkage outlet flap. If the convertible top lid is completely deployed, the hall effect sensor detects the magnet.
- **Hall effect sensor, convertible top lid closed and locked on left:** The hall effect sensor is located on the left rear closing bow of the convertible top lid. A magnet is located on the LH locking hook of the convertible top lid. If the convertible top lid is closed and locked on the left, the hall sensor detects the magnet.
- **Microswitch for variable convertible top compartment floor down:** The microswitch is located in the convertible top compartment on the left. When the hinged plate of the variable convertible top compartment floor is moved down fully, the microswitch is operated by the hinged plate.

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6. Soft Top

System wiring diagram for the Convertible Top Module



G14 system wiring diagram for the Convertible Top Module (CVM)

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6. Soft Top

Index	Explanation
1	Hall effect sensor, cowl panel locked, left
2	Hall effect sensor, cowl panel locked, right
3	Power distribution box, front right
4	Body Domain Controller (BDC)
5	CAN terminator (K-CAN2)
6	Front right power window regulator electronics
7	Rear right power window regulator electronics
8	Convertible Top Module (CVM)
9	Power distribution box, rear right
10	Hydraulic unit
11	B+ distributor battery
12	Tailgate hydraulic cylinder sensor
13	Microswitch for variable convertible top compartment floor down
14	Hall-effect sensor for soft top compartment cover open
15	Hall effect sensor, convertible top lid closed and locked on right
16	Wave trap 1
17	Heated rear window
18	Wave trap 2
19	Hall effect sensor, convertible top lid closed and locked on right
20	Hall effect sensor, tensioning bow down and locked on right
21	Switch block, driver's door
22	Rear left power window regulator electronics
23	Hall effect sensor, tensioning bow down and locked on left
24	Hall effect sensor, fabric soft top down
25	Hall effect sensor, soft top bow positioned
26	Hall effect sensor, fabric soft top deployed
27	Convertible top button
28	Electric cowl panel lock drive
29	Hall effect sensor, cowl panel lock drive opened
30	Hall effect sensor, cowl panel lock drive closed
31	Button, tailgate activation
32	Front left power window regulator electronics

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6. Soft Top

6.1.5. Soft top cover

At roll-out, the soft top fabric is available in both variants in black and as an option in anthracite with a silver effect. The rear window with rear window hearing is a fixed component of the soft top fabric. The rear window cannot be replaced separately.

6.1.6. Headlining

As already known, the headlining is secured by means of retaining clips, springs and blind rivets. The headlining is now also secured to the soft top fabric in four positions by means of a zip fastening system. This can be opened and closed for the purposes of assembly and disassembly. The slider for opening and closing the zip fastening system is contained among the spare parts of the headlining attachment kit. Before closing, ensure that the two halves to be zipped together are correctly positioned. Marks are made for this purpose and must be aligned with one another. The soft top need not be removed in order to remove and install the headlining.

6.2. Operation and function

6.2.1. Prerequisites

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

- Brake pedal pressed (upon operation via the convertible top button)
- Driving speed ≤ 50 km/h (31 mph)
- Ambient temperature > -10 °C (> 14 °F) (closing still possible in lower temperatures)
- Battery voltage (open) > 10.5 V (convertible top movements already started will be completed)
- Vehicle condition RESIDING or DRIVING is active (upon operation via the convertible top button)
- ID transmitter in the passenger compartment (upon operation via the convertible top button)
- ID transmitter in the vicinity (upon operation via the ID transmitter)
- Tailgate closed
- Variable convertible top compartment floor folded down
- Driver's door closed (upon operation via the ID transmitter)
- Opening the door when closing the convertible soft top causes the operation to stop (movement continues if the convertible top button is pressed again)
- Starting the engine interrupts the movement of the convertible top (movement continues if the convertible top button is pressed again)
- No repetition lock active (thermal protection)
- Power window regulators initialized
- Parking consumer shut-off not active
- Vehicle not in transportation mode
- Confirmation of the correct position of the mechanical components by the sensors.

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6. Soft Top

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.

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.



G14 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.

Standard operation process:

- Press convertible top button: fabric 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



G14 procedure for opening the soft top

Index	Explanation
A	The fabric soft top and the convertible top lid are closed and locked. The side windows are closed.
B	The side windows are open. The tensioning bow is locked and deployed.
C	The convertible top lid is unlocked and open. At the same time, the soft top is unlocked at the cowl panel.
D	The soft top is swung in the rearward direction.
E	The fabric soft top is folded and stowed in the convertible top compartment.
F	The convertible top compartment lid is closed and locked.

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6. Soft Top

Procedure for closing the soft top



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G14 procedure for closing the soft top

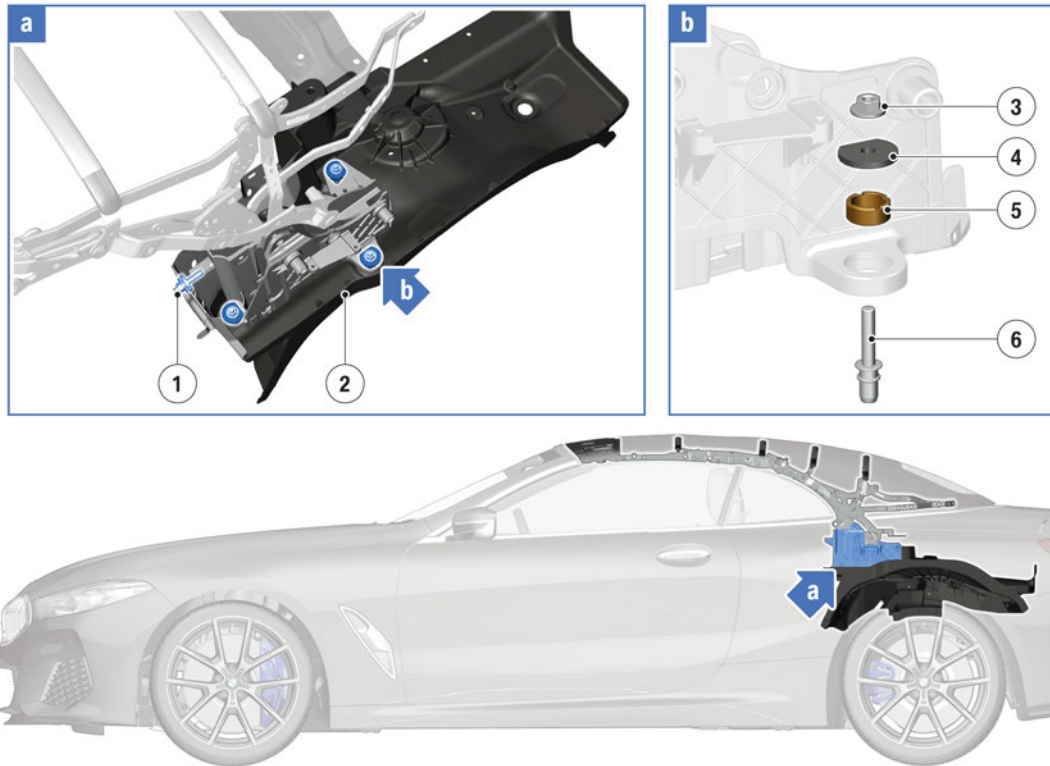
Index	Explanation
A	The fabric soft top and side windows are open. The convertible top lid is closed and locked.
B	The convertible top lid unlocked and open. The soft top is lifted out of the convertible top compartment. If the side windows are closed, they are partially lowered beforehand.
C	The soft top is folded and swung towards the front.
D	The tensioning bow is deployed, the fabric soft top is lowered onto the windshield and the convertible top lid is closed.
E	The convertible top lid is locked. At the same time, the fabric soft top is locked to the windshield panel. The tensioning bow is then lowered and deactivated.
F	The tensioning bow is moved to the upper dead point position and locked. The side windows are closed.

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6. Soft Top

6.3. Notes for Service

6.3.1. Adjusting procedures



G14 soft top bearing adjustment possibilities

Index	Explanation
1	Adjustment screw (adjustment in x direction)
2	Convertible top bearing
3	Lock nut
4	Washer
5	Barrel screw (adjustment in z direction)
6	Threaded bolt

To adjust the fabric soft top, all adjusting nuts and securing nuts on the main soft top bearings must be unscrewed and the washers removed. The fabric soft top is adjusted in the z direction by turning the barrel screws. The barrel screws have an external thread and can be turned inside the main soft top bearings using a special tool. The elongated holes on the main soft top bearings allow adjustment of the soft top in the x and y directions. Consequently, the soft top can be adjusted horizontally around the threaded bolts.

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6. Soft Top

When adjusting, pay attention to the following:

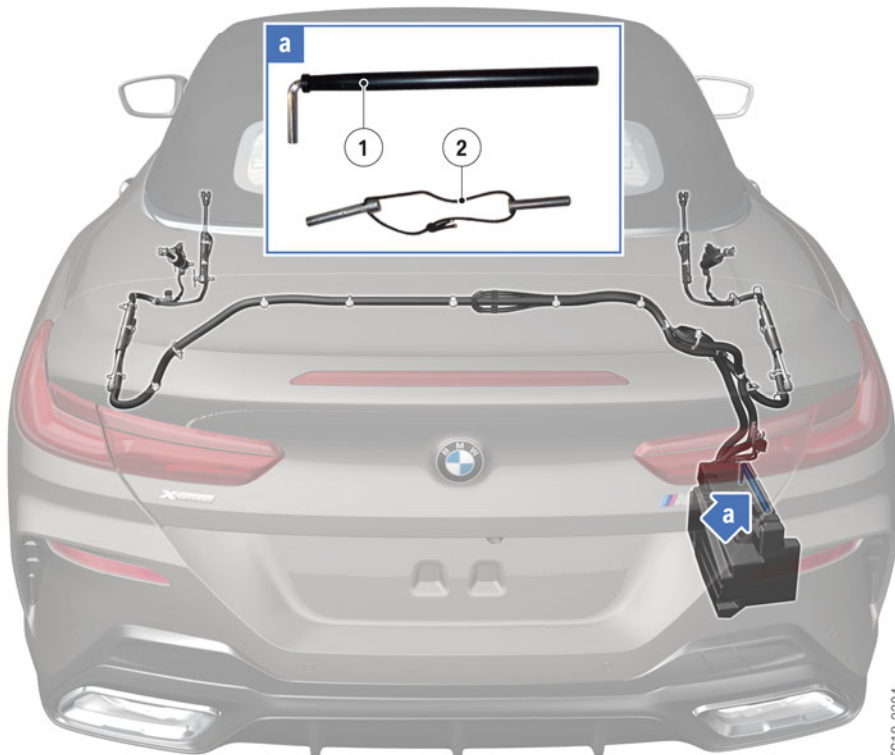
- To simplify adjustment when reinstalling the fabric soft top, it makes sense to mark the position of the main fabric soft top bearings on the body before removing the soft top. After completing the repairs or when replacing the fabric soft top, the convertible top main bearings can be realigned with the markings.
- At the adjustment screw (y direction), the dimension can be roughly measured before removing the fabric soft top before being transferred and adjusted after assembly.
- At the barrel screws (z direction), the dimension can be roughly measured before removing the fabric soft top before being transferred and adjusted after assembly.

After assembly, the position of the fabric soft top on the windshield panel must be checked. The LH and RH windshield panel guide pins on the fabric soft top should be inserted in the middle of the base plate guide bushing on the windshield panel. If this is not the case, the entire fabric soft top must be adjusted in the corresponding direction on the soft top bearings.

6.3.2. Manual closing of the fabric soft top

If necessary, the fabric soft top can be closed manually. This section will describe the basic procedure. However, if the fabric soft top is closed manually, the steps in the repair instructions or owner's handbook must be observed in the prescribed sequence. The special tool required can be found in the soft top tool set in the rear right of the trunk in a foam box on the convertible top hydraulics unit.

Before closing the fabric soft top manually, the side windows must be completely lowered. PARK must then be selected to ensure that the hydraulic system is depressurized.



G14 soft top tool

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6. Soft Top

Index	Explanation
1	Allen key with extension tube
2	Tensioning bow service tool

There are two alternatives to open the fabric soft top manually. One is intended for the customer and is described in the owner's handbook. The other is intended for the workshops and the BMW road assistance vehicle and is described in the ISTA workshop system.

Initially, the convertible top lid is manually unlocked so that it can be opened. Before opening the convertible top lid, the tailgate must be closed.



When closing the tailgate, the convertible top lid must at the same time be pressed downwards laterally at the rear edge on both sides of the vehicle.

If the convertible top lid is unlocked, the tailgate cannot be opened.

After it has been taken out of the convertible top compartment and swung forwards, the fabric soft top is then locked to the windshield panel. The allen key from the vehicle's soft top tool set is used for this purpose. Both procedures are identical up to this point.

In the customer version, the tensioning bow is not moved to the upper dead point position and is thus not locked mechanically. Consequently, the soft top end is not completely closed and there is a light gap between the tensioning bow and the convertible top lid. In dry weather, the vehicle should be taken to the nearest service partner. In this case, a maximum speed of 80 km/h (50 mph) must not be exceeded (draught felt inside the vehicle). In wet weather, the journey must not be continued as this could lead to water entering the passenger compartment. The BMW service number should therefore be called so that the BMW road assistance service can close and lock the fabric soft top.

For the workshop and road assistance service variant, the LH and RH tensioning bow is moved to the upper dead point position using the service tool from the soft top tool box and mechanically locked.



Both variants of the soft top manual operation must always be carried out by two people.

The fabric soft top and the convertible top lid must always be moved in parallel and simultaneously on both sides.

When locking to the windshield panel, one person pushes the front bow downwards while the other person closes the windshield panel lock.

When locking the tensioning bow, one person presses the tensioning bow downwards on the relevant side while the other person moves the tensioning bow to the upper dead point position on the left and right using the another special tool from the soft top tool box and locks it.

