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Introduction

Model: E93

Production: From Start of Production

OBJECTIVES

After completion of this module you will be able to:

- Understand dimensional changes of the E93
- Understand basic body construction of the E93
- Understand changes to seating on the E93

The 3 Series Convertible



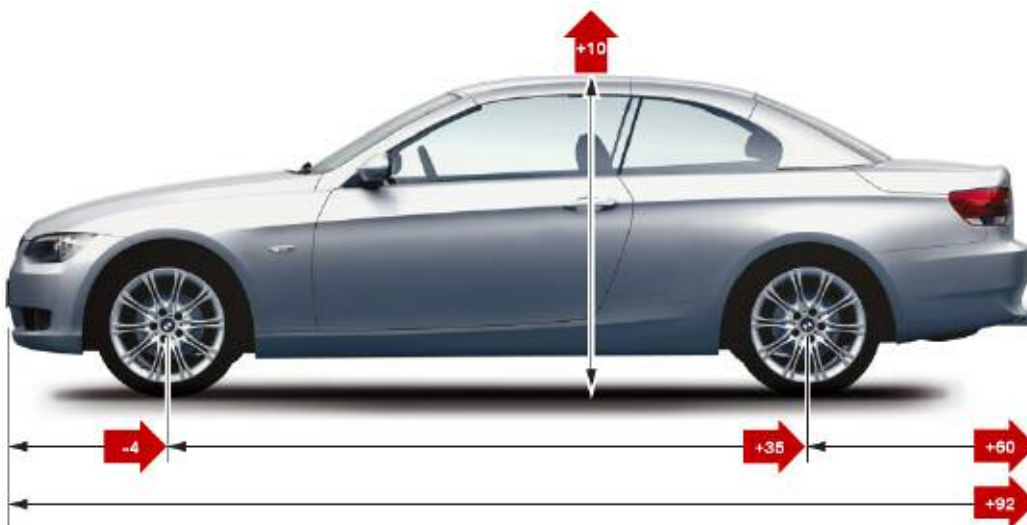
With the 3 Series Convertible, customers have always enjoyed the exhilarating feeling of driving with the top down.

The E93 consistently continues this line while adopting the sporty characteristics of the E92. This sport-orientated performance is reflected in the deep-drawn front and the wide, flat rear.

New engines, an even more rigid body with 19 Hz torsion frequency (torsional rigidity) and a sophisticated strut, chassis and suspension concept support the sports character.

Dimensions and Weight

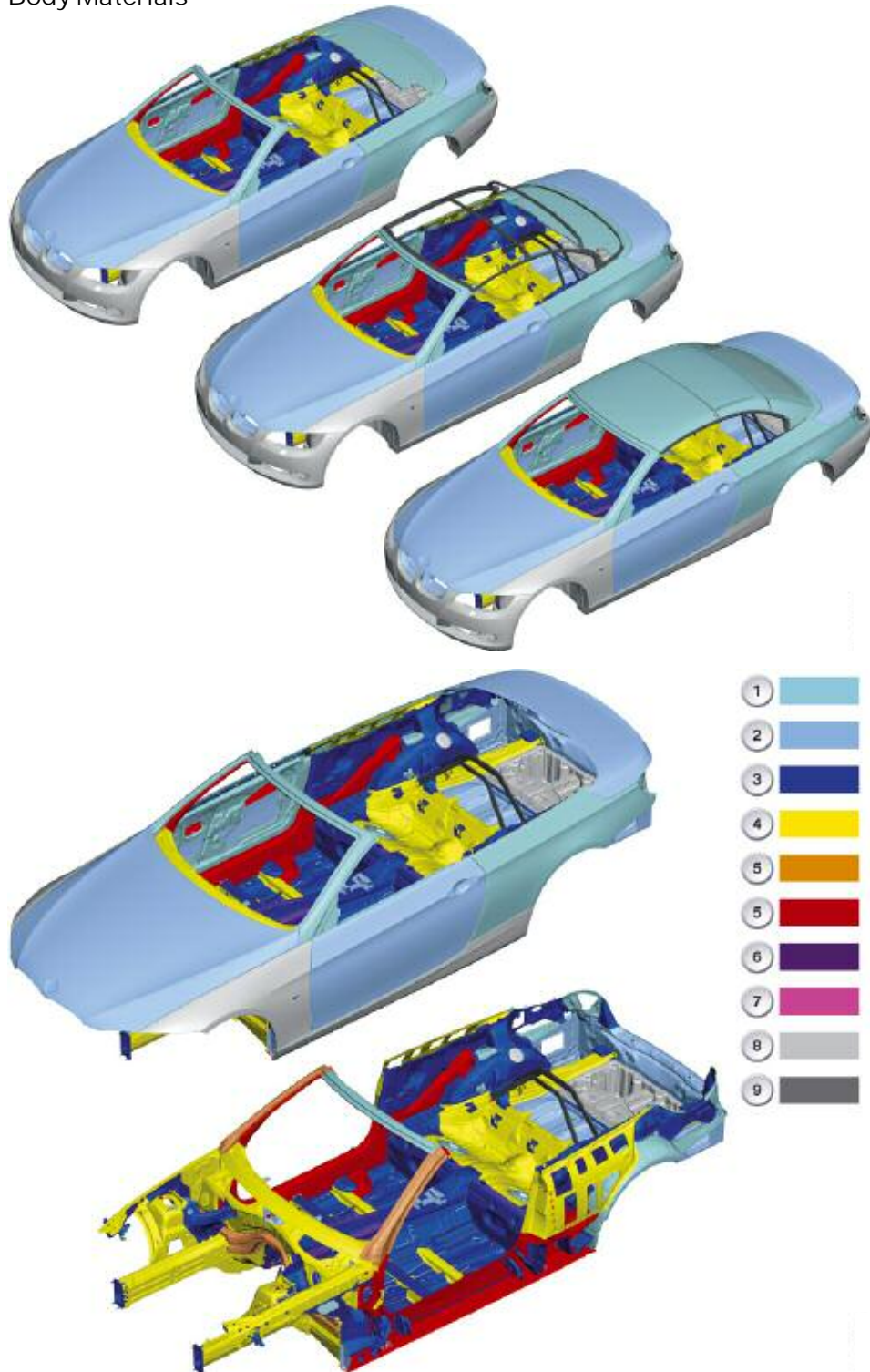
In terms of dimensions, the E93 is larger compared to the E46/C. The E93 is 4580 mm long, 1782 mm wide and 1384 mm high. The weight has also increased from 1565 kg (E46) to 1655 kg (E93).



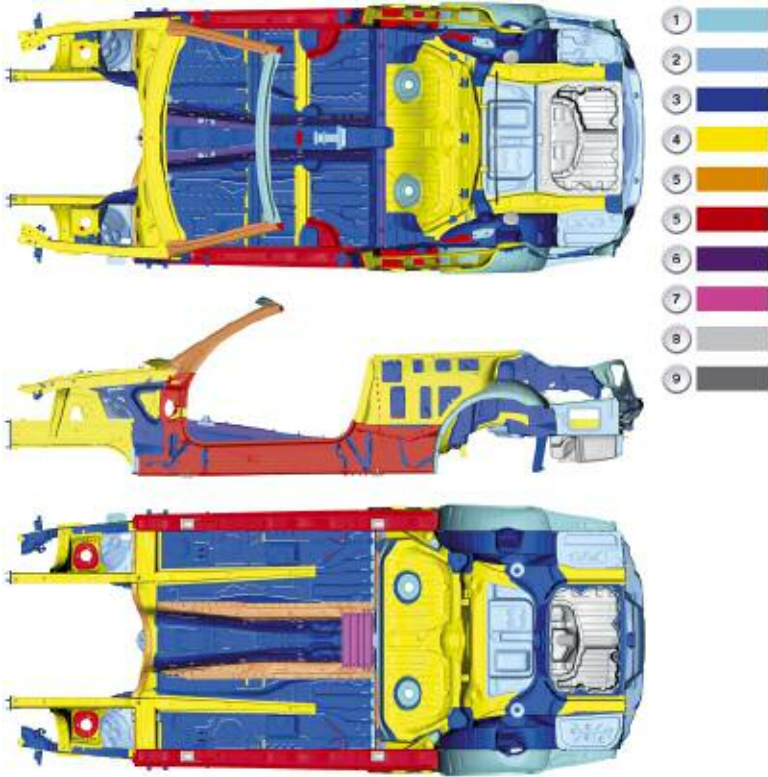
Bodyshell

By using high-strength materials, the philosophy of lightweight body construction has been consistently realized in the E93.

E93 Use of Body Materials

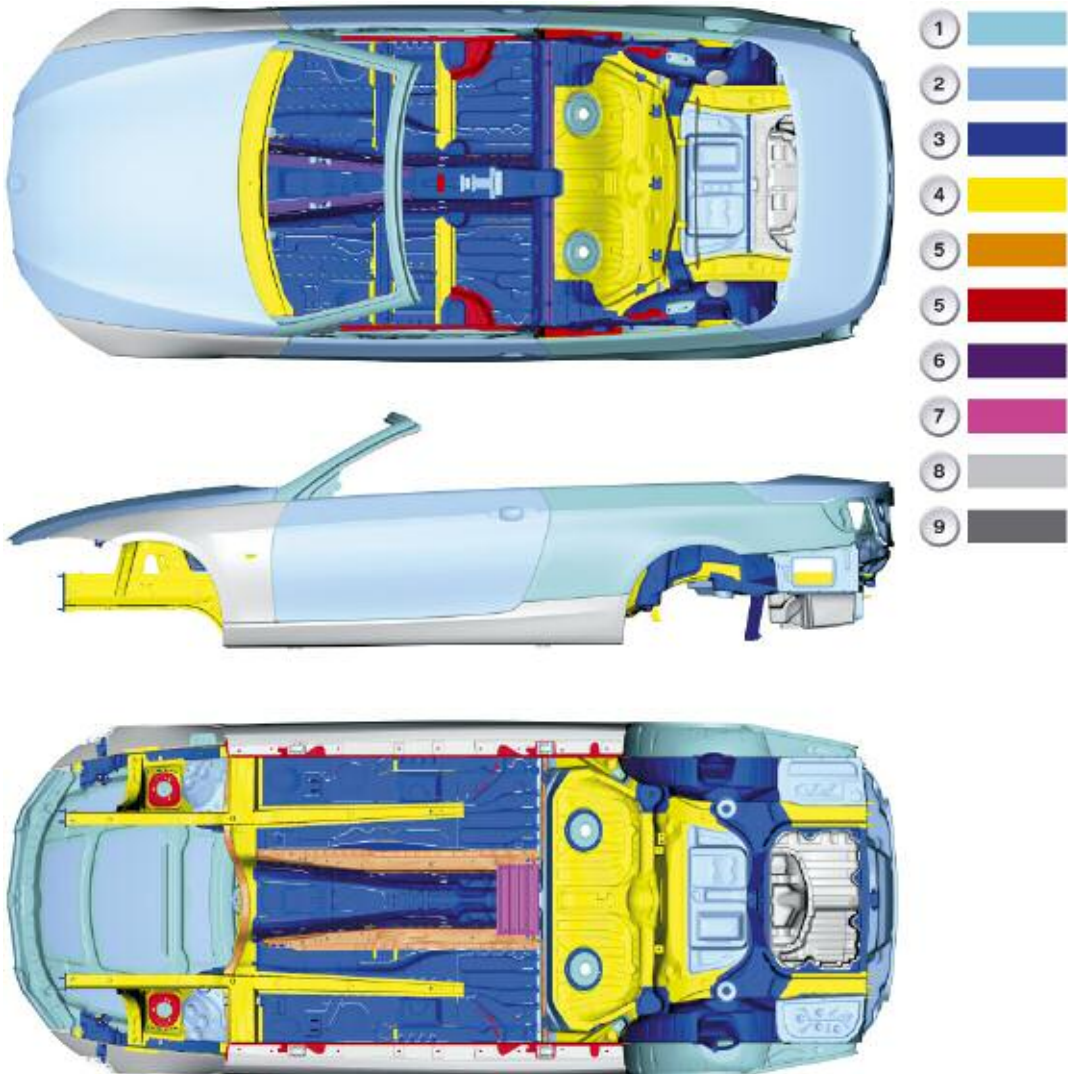


E93 Use of Body Materials



Index	Explanation	Index	Explanation
1	DC 03/04	6	HC 600 c/HD 680 C/HC 680 C
2	HC 180 BD/HC 220 BD	7	22 Mn B5, Docol 1000 DP
3	HC260 BD/HC 300 BD	8	Plastics
4	HC 400 TD/HC 380 LAD	9	Other
5	HC 420 LAD		

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Higher dynamic forces are introduced into the body structure while driving due to the runflat tires and harder suspension setup in the E93 compared to the E46/C. Consequently, the rigidity targets have been raised even further compared to the E46/C.

Torsional Rigidity	E46/C	E93
Dynamic	17.5 Hz	19 Hz
Static	11500 Nm/°	14500 Nm/°

The sill represents the decisive load path from the front end to the rear end. A horizontal flange is used between the inner and outer sill shell in order to optimally utilize the available package space for bending and torsional rigidity. The sill is reinforced with transverse bulkheads.

To effectively absorb stress and strain, the outer skin panel of the sill is designed as a flexibly rolled sheet metal component with wall thickness varying between 2.00 mm and 3.00 mm. The greatest wall thickness is at the nodes for the A and B-pillars.

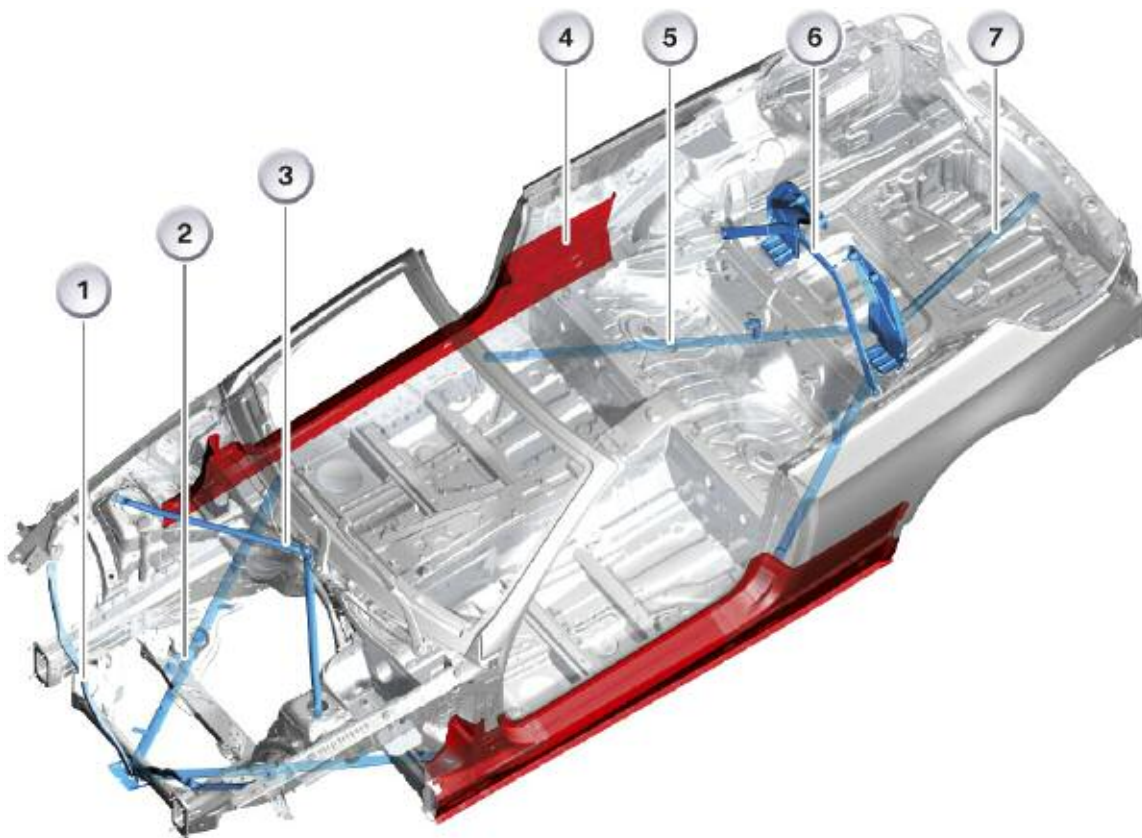
With minimum weight, the partition is an assembled module that provides a large, customer-friendly load space. Also in this area, the main load paths run via struts.

Strut Concept

A strut concept is employed with the aim of increasing the body rigidity, consisting of:

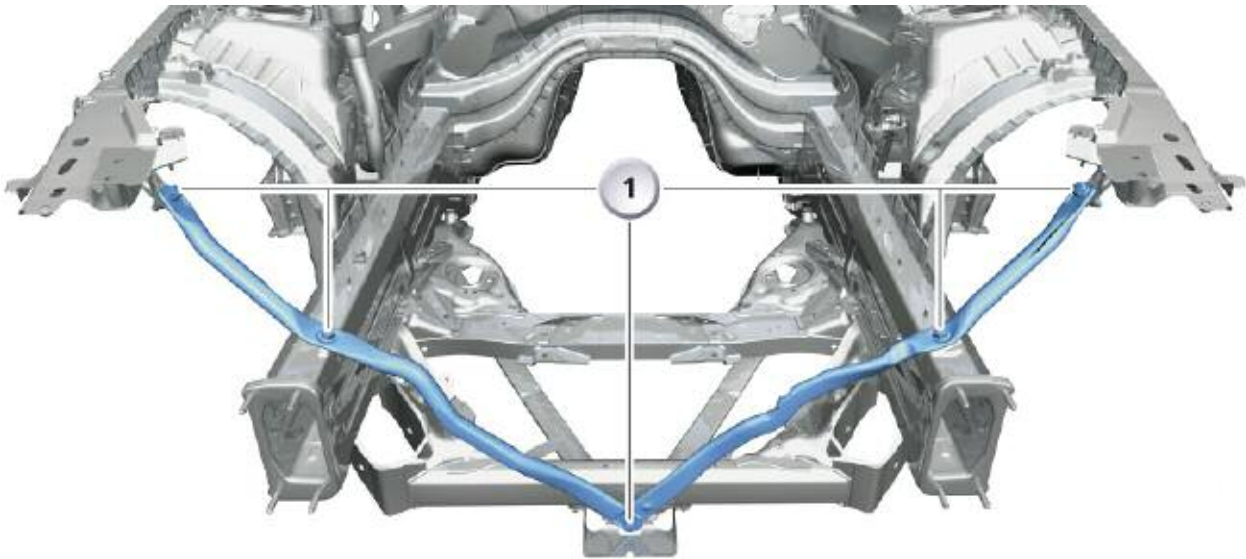
- Front end struts
- Spring strut tower - bulkhead - struts
- Front axle subframe - struts
- Tension struts at rear
- Strut in rollover protection system

The cross section of the sill has been additionally increased compared to the E92.



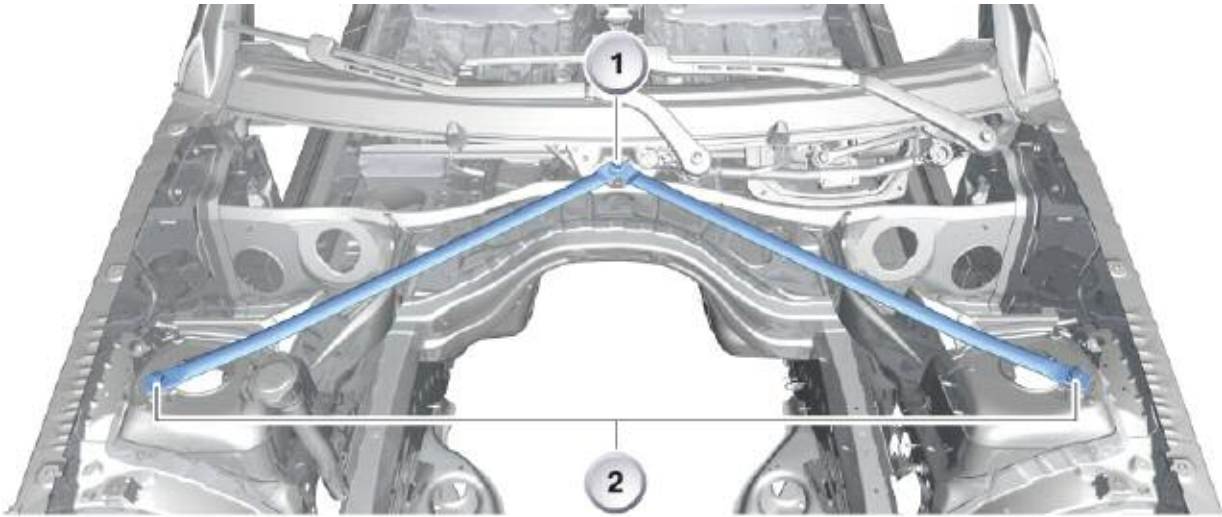
Index	Explanation	Index	Explanation
1	Diagonal strut, engine compartment	5	Underbody strut
2	Front axle subframe struts	6	Strut in rollover protection system
3	Spring tower strut	7	Tension strut
4	Sill		

Diagonal Strut, Engine Compartment



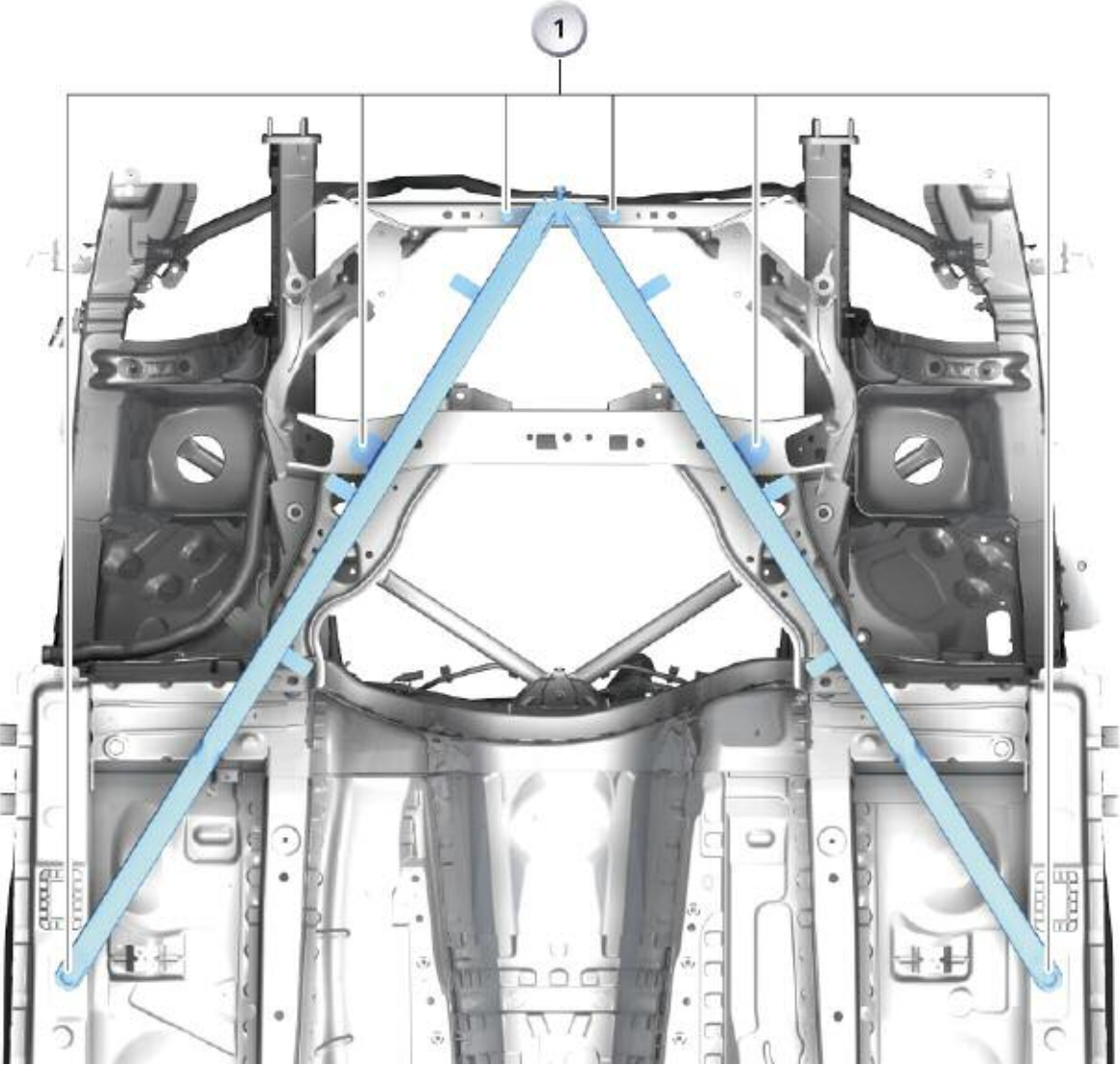
Index	Explanation
1	Mounting points of diagonal strut

Spring Tower Strut

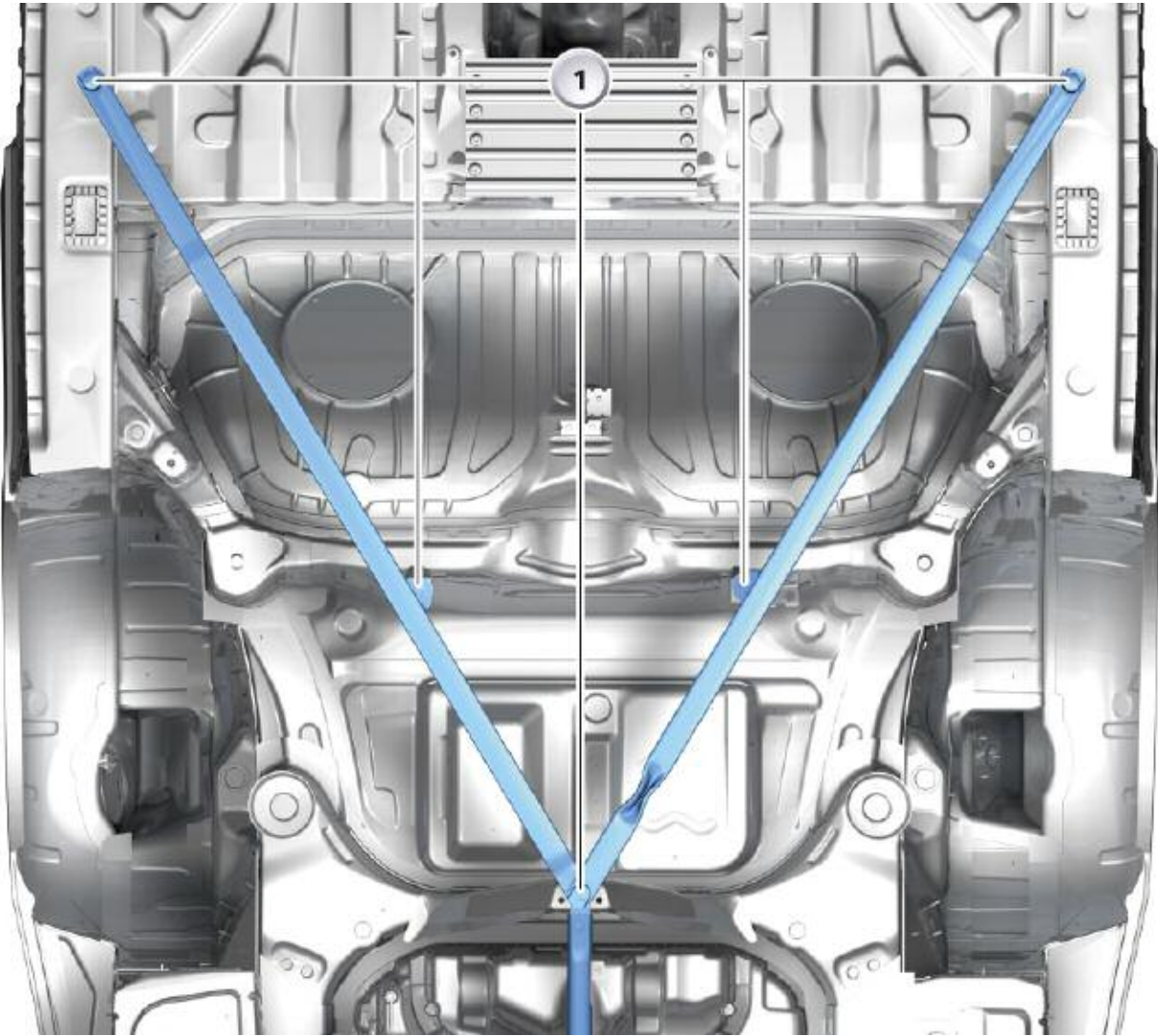


Index	Explanation	Index	Explanation
1	Bulkhead mounting	2	Wheel arch mounting

Underbody Struts



Index	Explanation
1	Mounting points of underbody strut, front



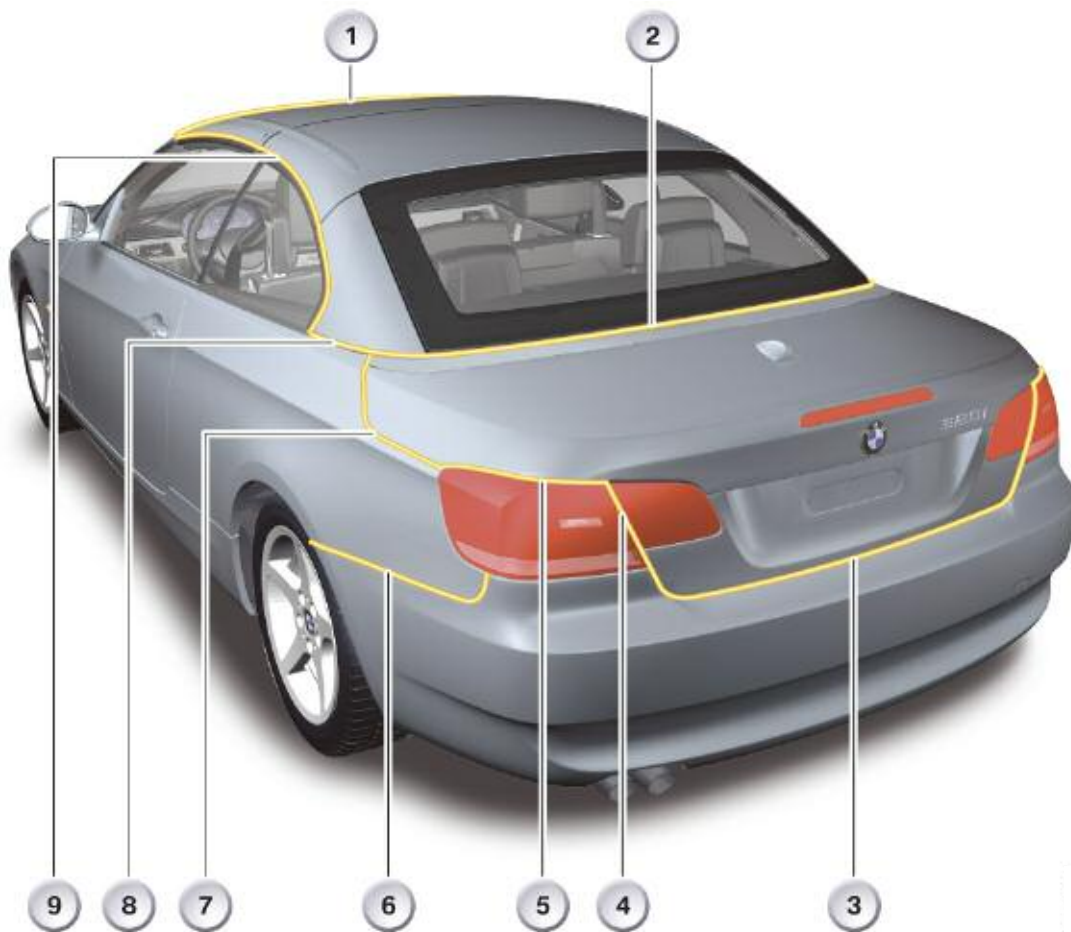
Index	Explanation
1	Mounting points of underbody strut, rear

Aerodynamics

The outstanding aerodynamic qualities of the 3 Series Coupé have been transferred to the 3 Series Convertible. Ultimately, a drag coefficient $c_x = 0.29$ was realized on the 325i.

Joint Reduction

The size of the joint gaps has been reduced on the E93.



Index	Explanation	Index	Explanation
1	5.0 +/- 0.1 mm	6	2.5 +/- 0.6 mm
2	4.0 +/- 1.0 mm (previously 6.0 +/- 1.2 mm)	7	3.8 +/- 0.9 mm (previously 5.0 +/- 1.9 mm)
3	4.2 +/- 0.7 mm (previously 5.2 +/- 0.7 mm)	8	4.0 +/- 1.2 mm (previously 6.0 +/- 1.2 mm)
4	3.8 +/- 1.0 mm (previously 3.8 +/- 2.8 mm)	9	Trim strip offset
5	4.2 +/- 1.2 mm (previously 5.0 +/- 1.2 mm)		

Side Panel

The side panel of the E93 is made from thermoplastic material. It is common part from the E92.

The advantage of a plastic side panel is the weight reduction of approximately 3 kg compared to a side panel made from steel.

Minor bumps are absorbed.

Doors

From a workshop point of view, the doors of the E93 are the same as the doors of the E92. All assembly and installation work corresponds to that of the E92.

The doors of the E93 are also based on a lightweight steel construction. The anti-corrosion concept with a 2C PVC seal is the same as on the E92.

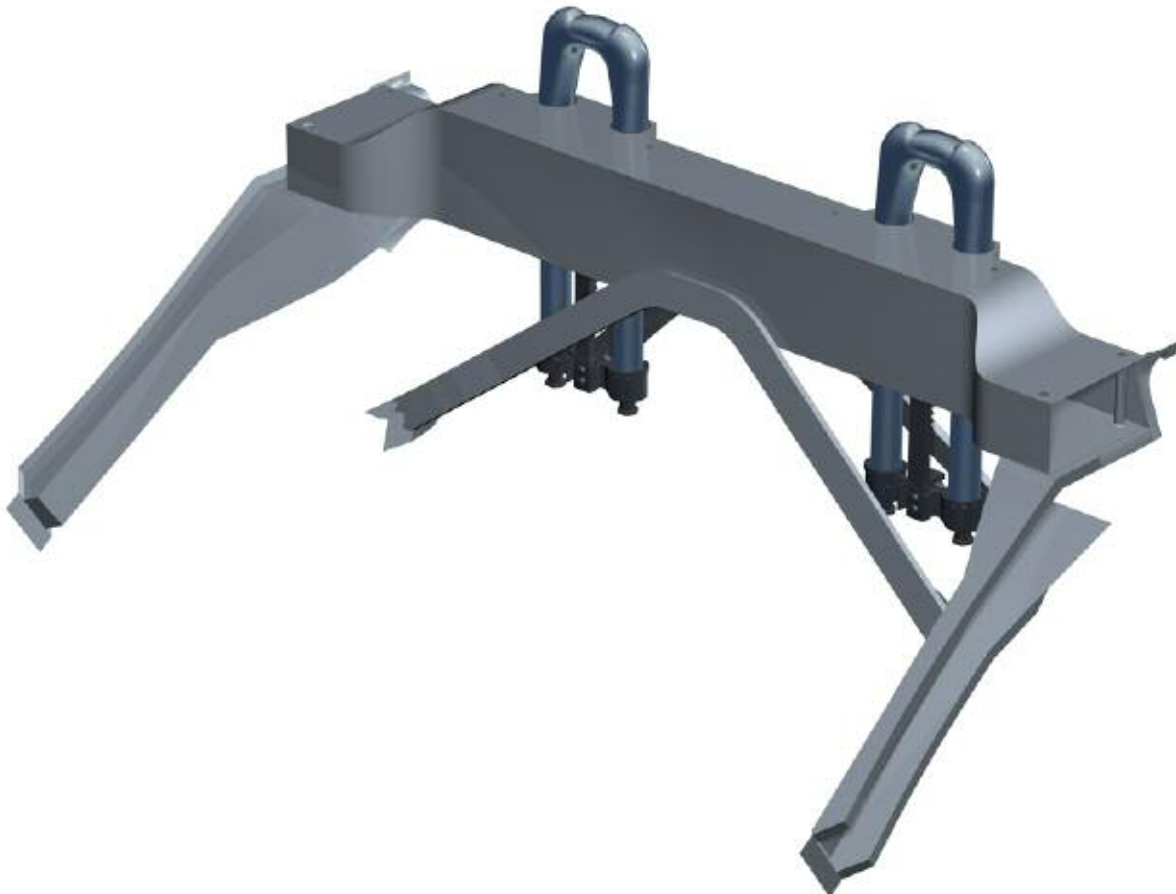
Important Body Equipment

- Retractable three-piece hardtop (see reference material "Retractable hardtop E93")
- Folding rear seat backrest with storage compartment
- Concealed antennas
- Easy-load luggage compartment
- Wind deflector with new functionality
- Multifunctional ski bag with larger through-load width (380 mm instead of 250 mm)

Partition Module

The partition module consists of the aluminum cross member section with nodes and corresponding struts as well as the rollover protection system.

The partition module additionally contains the control units for the Convertible top module (CTM), park distance control (PDC), Passive Go and rollover control (ROC).



Seats

A special feature of the front seats in the E93 is the seat-integrated seat belt system. This system is known from the E46 and E64. A new feature of the leather trim finish is so-called cool leather, i.e. sun reflective technology.

This technology involves a change in physical properties by introducing modified color pigments in the leather, thus achieving a clearly noticeable temperature difference of up to 20°C (on black leather).

The folding rear seat backrest is a new development in the E93.



Ski Bag

The considerably larger ski bag provides the option of storing skis, snowboards as well as a golf bag.

The volume of the luggage compartment is 350 liters and 210 liters with the top down. The front cover of the ski bag is hinged such that it can be opened even when the backrest is in the upright position. In this position, a restricted through-load opening can be used while simultaneously carrying four persons.

The full cross section of the through-load area can be used when the backrest is folded down. The front cover can be detached by means of an adapter system so as to increase the loading cross section even further.

Item	Dimension
Loading width	405 mm
Loading height	263 mm
Ski bag length	1300 mm
Ski bag volume	approximately 0.13 m ³

Rear Bag

The rear bag has been specially developed for the E93 for the purpose of transporting items of luggage, clothing and other items in a clean and dry condition and to protect them from nosy-parkers when the top is down.

The bag is fixed to the vehicle so that it and the contents remain secure even during sudden braking. It fits conveniently under the wind deflector.

Accident Repairs

The following procedures must be complied with in the event of accident damage in the vicinity of the retractable hardtop:

Accident Damage: Replacing boot lid

Procedure - Check kinematic rear end module, support tube and coupling locks and main mount of roof module, including Convertible top compartment lid for damage and replace as required.

Accident Damage: Replacing rear apron

Procedure - Remove and install rear end module for retractable hardtop to perform welding jobs (accessibility of welding tong at weld).

Check both main mounts, support tube and coupling locks when removed for damage and replace as required.

Accident Damage: Replacing rear left or right frame side member

Procedure - Remove and install rear end module for retractable hardtop to perform welding jobs (accessibility of welding tong at weld).

Check both main mounts, support tube and coupling locks when removed for damage and replace as required.