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# Table of Contents

## E63/E64 Complete Vehicle

Subject	Page
<b>E63 Complete Vehicle</b> .....	<b>3</b>
History of BMW Coupes .....	3
501 502 and 503 .....	3
3200 CS .....	3
2000 CS to 3.0 CSi .....	4
E9 .....	4
E24 .....	4
E31 .....	4
<b>E63 Introduction</b> .....	<b>5</b>
<b>Technical Data</b> .....	<b>6</b>
Dimension Comparison .....	7
<b>Body</b> .....	<b>8</b>
Aluminum Doors .....	8
Hood .....	8
Fenders .....	8
Trunk Lid .....	11
<b>Panorama Sunroof</b> .....	<b>11</b>
<b>E64 Complete Vehicle</b> .....	<b>12</b>
Convertible Body .....	13

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# Complete Vehicle

**Model: E63/E64**

**Production: Start of Production MY 2004**

# OBJECTIVES

After completion of this module you will be able to:

- Relate the significant innovations of the E63/64
- Explain special construction materials of the E63/E64
- Explain the chassis changes of the E64

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## E63 Complete Vehicle

### History of BMW Coupes

The Coupe bodystyle has always been associated with words such as style, elegance, sportiness and exclusivity. This was the case when in 1909 Henry Ford introduced his celebrated "Tin Lizzy," the Coupe version of the Model T. And this was also the case when in 1931 BMW launched its first - small - white/blue Coupe called the DA4.

Ever since then, the Coupe has played a vital role in BMW's success and image. Even in difficult times for BMW, this "beautiful sister of the Saloon" has heightened the profile of the BMW marque amidst the mass of car manufacturers. Today as ever the combination of sportiness and elegance arouses the passions of the public.

This is especially true of high-performance luxury-class Coupes. It is these models in particular which are the focus of the general public's interest, attracting huge crowds around them at motor shows and thereby highlighting the marque image. BMW has always taken the bull by the horns and thus the new BMW Coupe is continuing a proud tradition.

### 501 502 and 503

1951 saw the launch of the BMW 501, known in popular parlance as the "baroque angel." The 502 with V8 engine arrived in 1954. In the same year, the 501 and 502 Coupes were fashioned from these Saloons. The intention was to offer particularly discerning customers something quite unique for a price of 20,000 deutschmarks - at the time, however, you could buy your own house for that amount of money. Barely 50 of these Coupes were sold in the first year.



In 1955 BMW made its debut on the international stage in Frankfurt with the 503 Coupe. A V8 engine and every conceivable luxury available at the time such as leather upholstery and power windows established it as a luxury toy for the super-rich. 276 of these 503 Coupes costing roughly 30,000 marks each had been built by 1959.

### 3200 CS



In 1961 the famous Italian body stylist Nuccio Bertone was commissioned to design a new BMW V8 Coupe. Clear, smooth lines exuded elegant dynamics. By 1965 Bertone had delivered 603 bodies to BMW, where they were completed - in accordance with individual customer requirements - to create the 3200 CS.

## 2000 CS to 3.0 CSi

In mid-1965 BMW presented a new, not quite so selectively targeted Coupe based on the successful new 4-cylinder Saloons. The BMW designers had discovered a new BMW line: compact, sportily elegant and above all distinctive.



## E9



Three years later this 2000 CS Coupe was completely redesigned and equipped with a 6-cylinder engine. The range now stretched from the 2800 CS through to the 3.0 CSi Coupe.

The E9 Coupe utilized the technology and engineering of the new top-class 2500 and 2800 Saloons but was closely allied to the 2000 CS in terms of form and shape.

This Coupe with a 2.5 to 3-liter engine created a stir not only on the boulevards but also on the racetrack. In the guise of the 3.0 CSL lightweight Coupe, these racers with up to 900 bhp under the bonnet and Hans-Joachim Stuck, Brian Redman or Ronnie Petersson behind the wheel ran the competition of Porsche and Ford into the ground.

A total of 44,237 of the 2000 CS and E9 were built in a period of 11 years.

## E24

The first BMW Coupe to be called a 6 Series came onto the market in 1976. The oil crisis and burgeoning environmental awareness brought a halt to the rushed explosion of power. But even with an engine developing from 185 to 286 bhp (M version), this Coupe was in no way underpowered.



Comfort and engine and chassis electronics made the 6 Series a huge international success. By the time production was terminated in 1989, a total of 86,199 had been sold in a period of 14 years: Never before had a BMW Coupe been so successful.

## E31

BMW ensured its place in automobile history with the introduction in 1989 of the 8 Series Coupe. Two years after the market launch of the first German 12-cylinder engine since the 1930s in the 750i, this power plant was transplanted into an absolute luxury-class Coupe. The latest in engineering, technology and design which BMW was able to offer was just what was needed.

With an 8-cylinder version also introduced later, it was always possible to reach 250 km/h effortlessly (cut-off) whenever one wanted. But what this car also uniquely offered was the sheer pleasure of smooth driving with the reassurance of optimum safety. A total of 31,283 E31 models were built over a period of 10 years.



## E63 Introduction

All the significant innovations of the E65 or E60 are also offered in the 6 Series Coupe. However the E63 also offers new features of its own. The most important of these new features are:

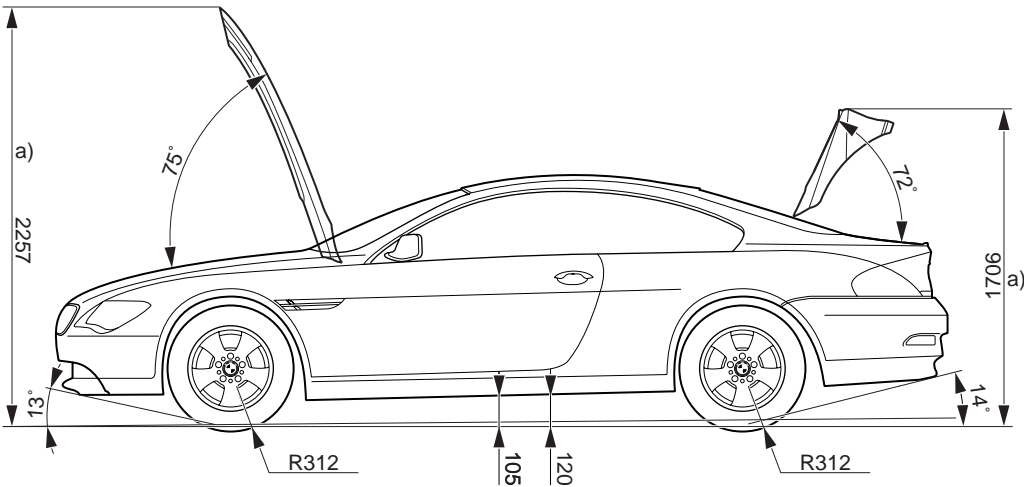
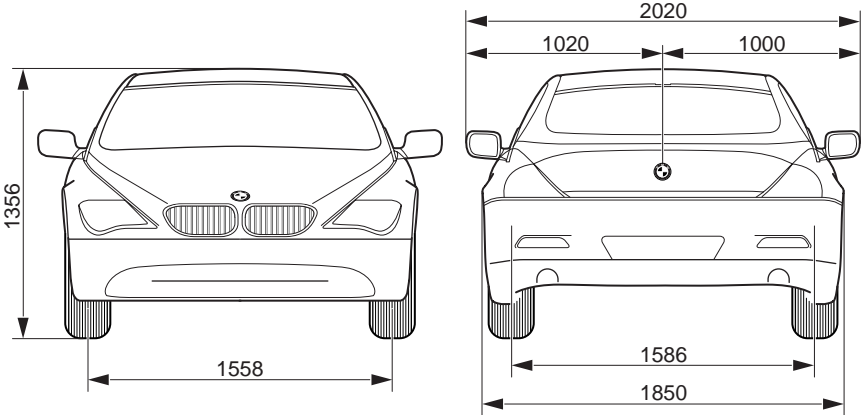
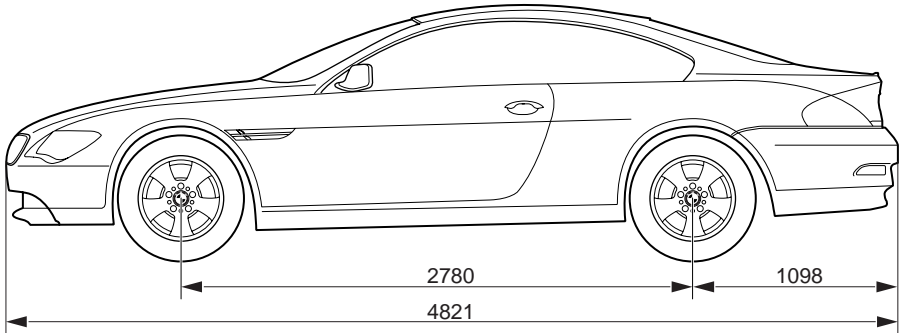
- Body of composite construction. Doors made of aluminum, hood made of bonded aluminum, side panels made of thermoplastic and trunk lid made of SMC plastic extend far beyond the GRAV (reduced weight aluminum front end) of steel and aluminum already established in the E60.
- "Panorama" glass sunroof with a comparatively huge surface, whose floating roofliner comes in two parts so that when opened it can be accommodated under the remaining area of the steel roof in front of the rear window.

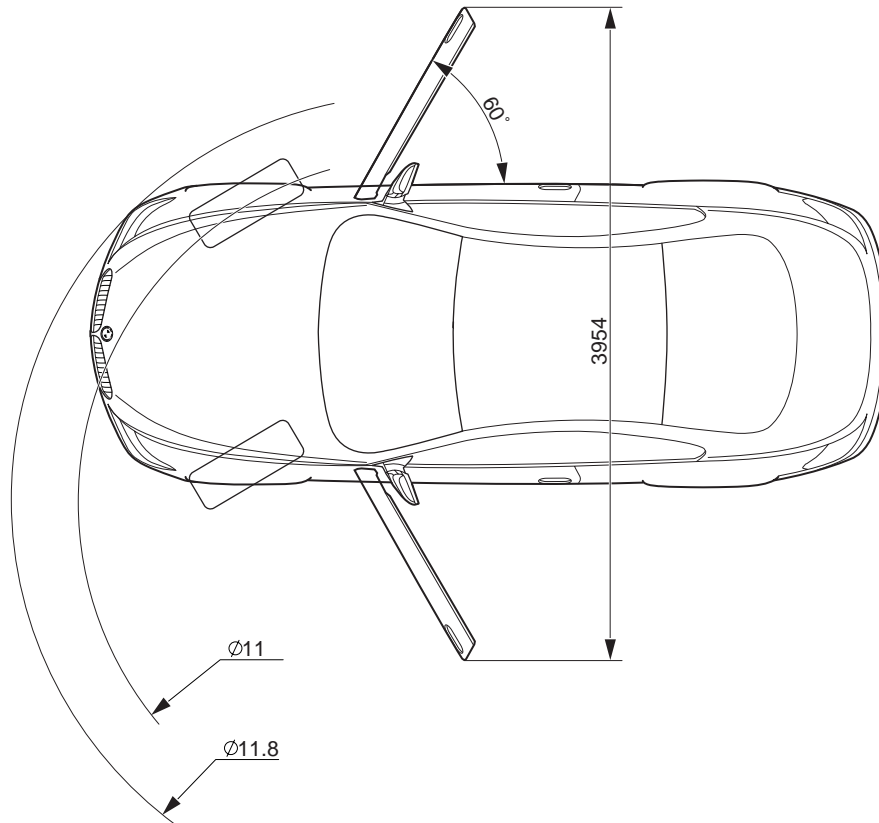
Additional new features introduced on the E63 will migrate to other models.

- "CCC" Car Communication Computer is the central control unit for all Information/communication systems in the E63
- "HUD" Head up Display
- New DWA with improved sensor capability
- Knee air bags



# Technical Data





### Dimension Comparison

	<b>E63</b>	<b>E60</b>		<b>E24</b>		<b>E31</b>	
<b>Length (mm)</b>	4820	4841	+ 21	4755	- 65	4780	- 40
<b>Width (mm)</b>	1855	1846	- 9	1725	- 130	1855	0
<b>Height (mm)</b>	1373	1469	+ 96	1353	-20	1340	+ 33
<b>Unloaded weight (kg)</b>	1690	1695	+ 5	1505	- 185	1855	+ 165
<b>Additional load (kg)</b>	450	560	+ 110	345	- 105	345	- 105
<b>Trunk volume (l)</b>	450	520	+ 70	360	- 90	320	- 130

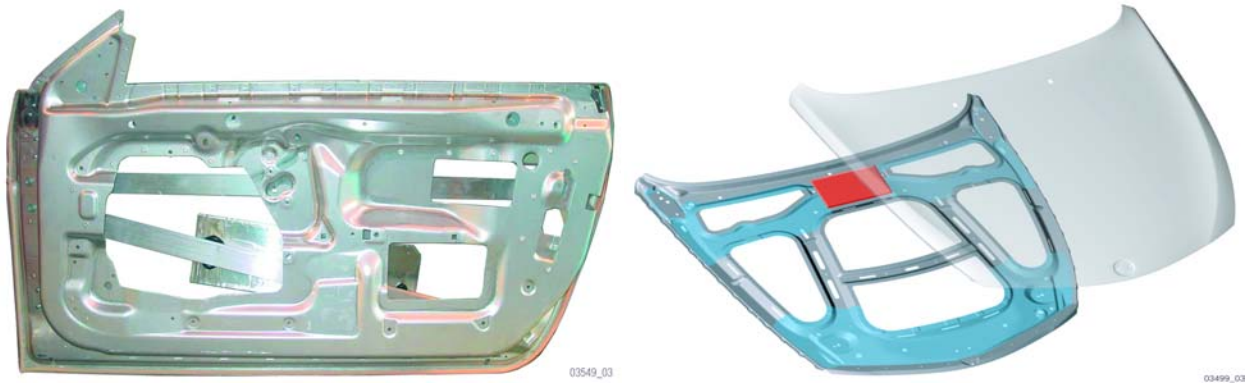
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## Body

### Aluminum Doors

The E63 has aluminum doors. This feature reduces the weight of the car by 10 kg.

The E63's aluminum doors exceed all internal BMW rigidity and safety requirements. Each door has two reinforcement members with door hooks arranged in a V-shape.



### Hood

As in the E60, the E63's hood is made of aluminum.

However, a new manufacturing process is used. For the first time in a BMW vehicle, the inner and outer skin panels of the bonnet are joined with a 2-component adhesive as an underlining. This turns the two skin panels into a single structural unit.

This manufacturing procedure helps to keep both aluminum skin panels thin, a factor which reduces the bonnet weight by 12 kg. Even the acoustic behavior is improved. The increased rigidity prevents the bonnet from vibrating almost completely at high speeds. This vibration is normally absorbed without being noticed and can disturb the driver's concentration while driving.

The hood of the E63 can be moved into a service position. A special tool is needed for this purpose.

The gap dimensions to the side panel and to the bumper are adjusted via elongated holes. These elongated holes are situated on the hinges and on the bonnet lock.

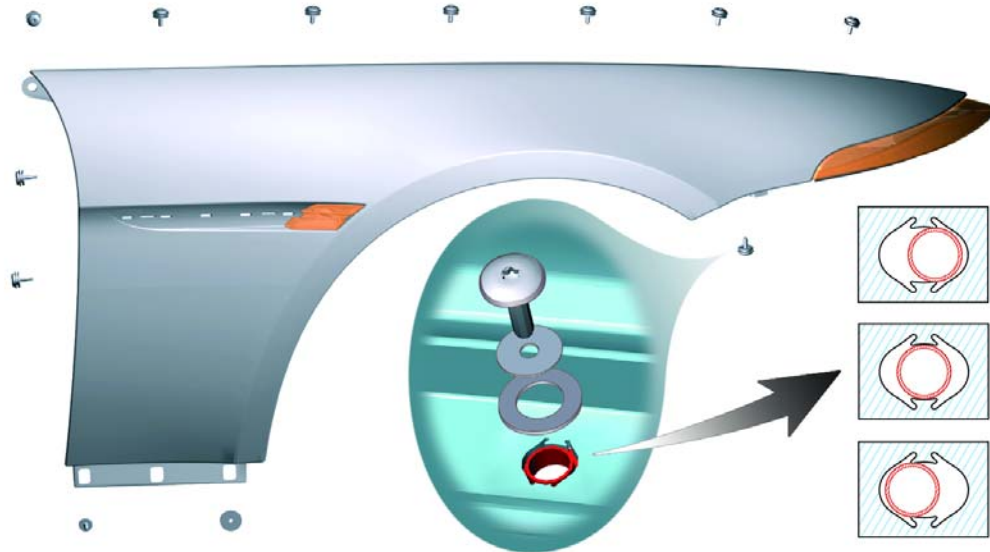
### Front Fenders

For the first time in a vehicle built by the BMW Group, a thermoplastic (in this instance "Noryl GTX" from GE Plastics) has been used for the large-scale manufacture of a side panel.



The decision to use a thermoplastic was made for 3 primary reasons:

- The E63 as a luxury-class car should be distinct in terms of design from the E60 mass-produced model. However, the level of remodeling required for this purpose cannot be accomplished in steel or aluminum and the same argument applies to integrating the direction indicator and the chrome trim bar in the side panel.



- The weight-reducing potential of thermoplastic is 50% compared with a side panel made of sheet steel; in this particular case 2 kg per side panel of thermoplastic as against 4 kg per side panel of sheet steel.
- Increased buckling resistance as the primary customer benefit for reducing minor damage and the corrosion-resistant properties of the material.

Because plastic expands or contracts in direct response to the outside temperature, the side panel is mounted in a "floating" manner. This means that the the front side panels are attached in such a way as to allow the material to expand or contract without incurring damage.

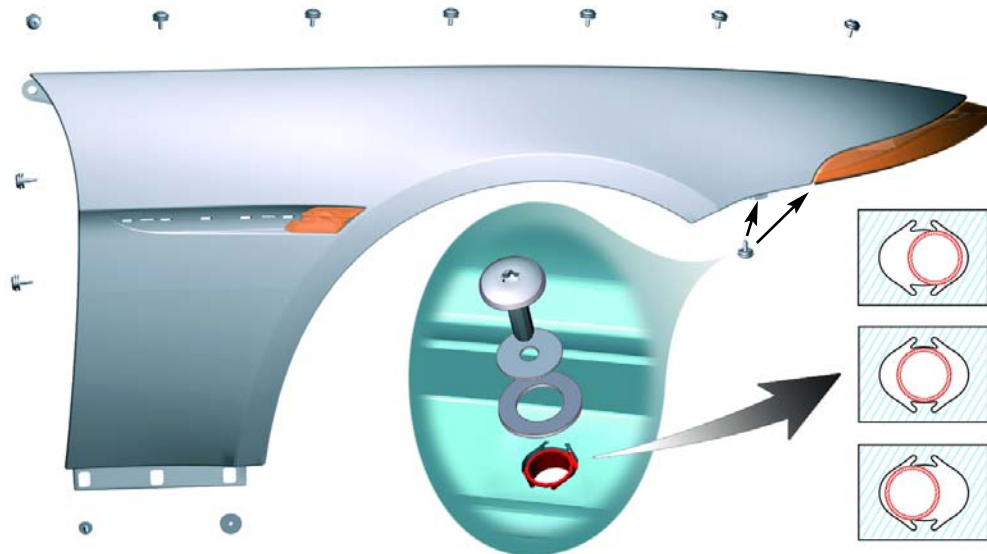
The connection to the body is established by means of 3 screw connections on the A-pillar, 2 screwing points in the sill area and 8 screwing points on the reduced-weight aluminum front end (GRAV).

To allow linear expansion as a function of the climatic conditions, the screwing points on the GRAV are designed to be "floating." A maximum linear expansion of 2.5 mm is possible in the vehicle longitudinal direction; in the event of further expansion, the side panel assumes a block setting.



## Workshop Exercise (optional) - Front Fender Removal/Install

1. Before removing front fender, you must first remove the rocker panel cover.
2. Remove the 2 screws from the front of the inner fender liner and fold in (where it joins the front bumper cover).
3. The upper light housing (above headlamps) will be removed with the fender.
4. Remove the bolts (Torx T30) and 2 nuts at the rear fender base as shown below:



5. Note which bolts are different \_\_\_\_\_
6. Consult Repair Instructions, are there any special tools required for adjusting/ installing the fender assembly? (if so, what is the tool number and what is it for)  
\_\_\_\_\_  
\_\_\_\_\_
7. Before installing a fender, allow time for it to “climatize” in the same area as the vehicle (temperature, humidity, moisture, etc) for expansion/contraction.

### Notes:

## Trunk Lid

This trunk lid made of SMC (Sheet Moulding Compound) saves approx. 25% weight compared with a corresponding component made of steel.

The trunk lid of the E63 incorporates the aerials for the telephone and the navigation system. This is also an E63 innovation.

Like the thermoplastic front side panels, the SMC trunk lid can also expand slightly under the effects of heat. It is therefore extremely important for the lid to be correctly adjusted.

Surface damage in the form of scratches can be repaired with the BMW repair spatula kit. In the event of fractures or cracks, the complete component must be replaced.



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## Panorama Sunroof

The panorama glass sunroof comprises a glass roof, a two-part floating roofliner, two electric motors and the casing housing the mechanism.

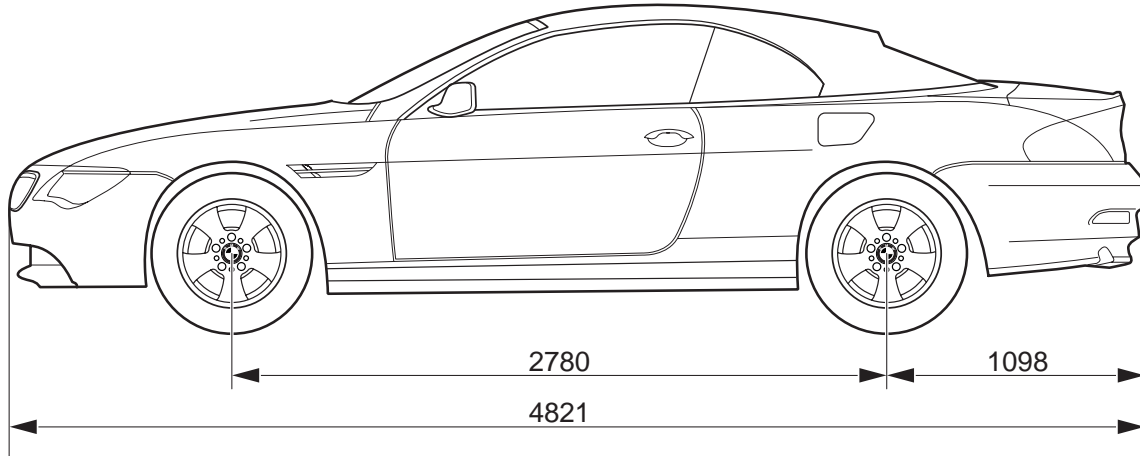
The system is controlled by means of a switch and a control unit which is mounted behind the glovebox. The front electric motor moves the glass roof. The glass roof can only be tilted and cannot be opened fully. The rear electric motor moves the two-part floating roofliner. The roofliner in the E63 is in two parts as there would not be enough space between the rear edge of the sunroof and the front edge of the rear window for a single undivided component.

Both the glass roof and the roofliner have anti-trapping protection.



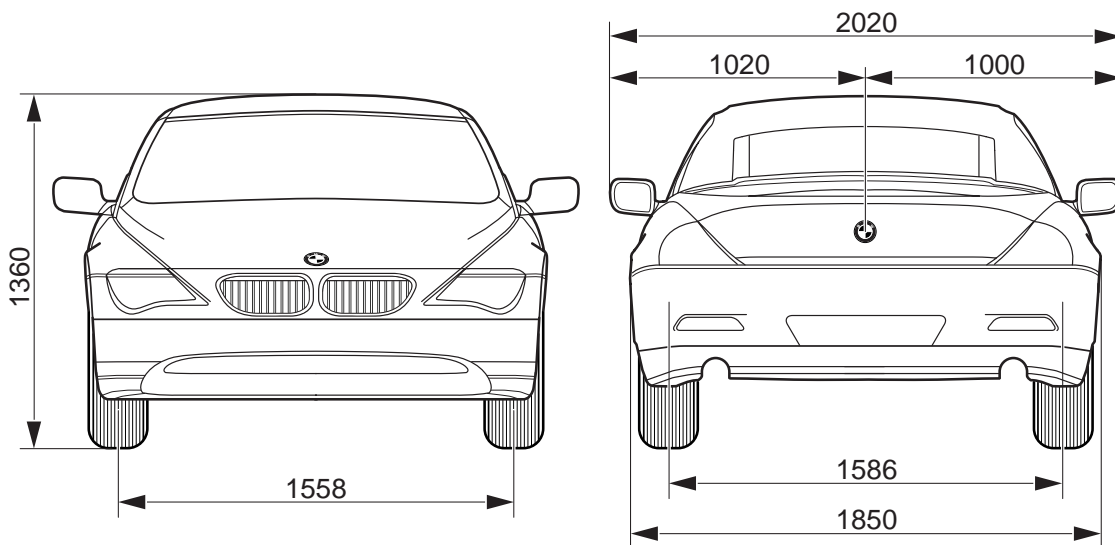
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## E64 Complete Vehicle



The 6 Series E64 Convertible is based on the E63 Coupe. External dimensions for the Convertible are the same as the Coupe. Trunk volume is reduced from 450 L to 350 L (with the top up) and 300 L (with the top down).

Empty weight is increased by 2 00kg, to 1815kg.

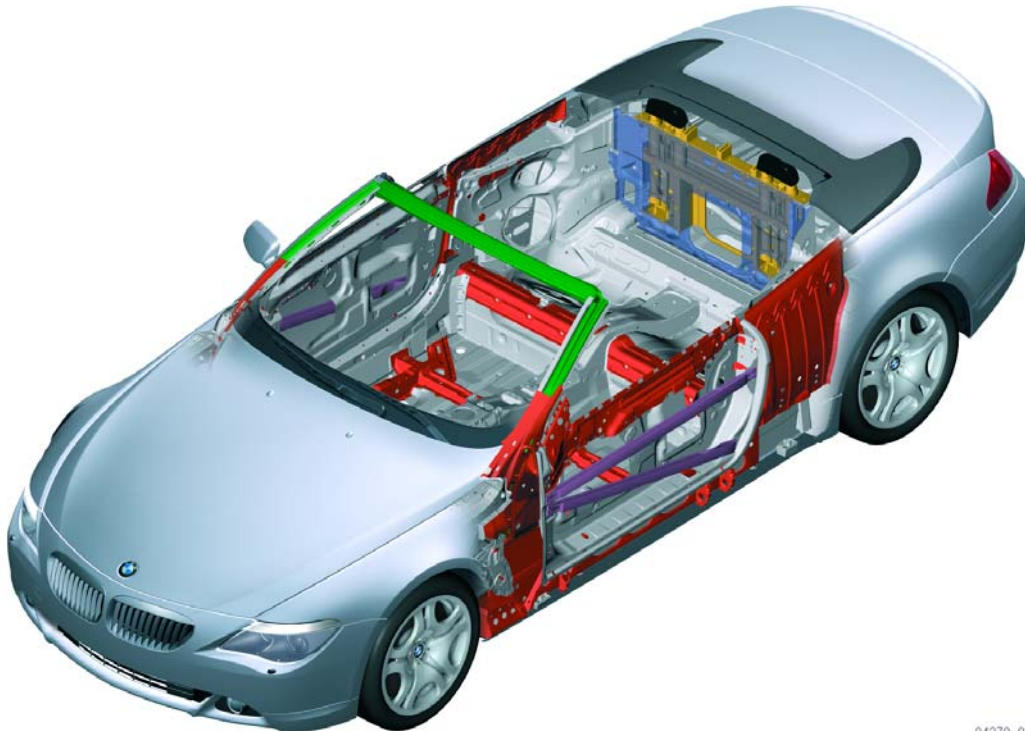


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## Convertible Body

The E64 body has been reinforced in the following areas:

- The A pillar has increased support at the base.
- The windshield frame is made from high-strength steel.
- Additional aluminum extruded bracing is added to the doors.
- The sill rail and crashbox are made from high-strength steel.
- The seat cross member was strengthened; additional bracing has been added for side impact protection.
- The crossmember in the back seat floor area is strengthened.
- The rear seat back area was strengthened and braced for the additional roll over protection.



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- The rear decklid construction is the same as the E63, however the shape and overall size of the decklid is smaller.
- The soft top boot is also constructed with SMC.
- Roll down rear quarter windows have been added.
- E46 Style Convertible seats with integral seat belts are used.