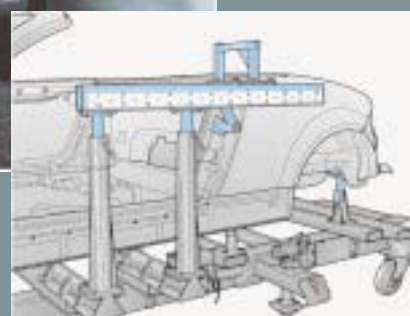


Service.



Audi TT Roadster

Design and Function

Self-Study Programme 220





Page

Body

Body Overview	4
Roll bar	6
Occupant protection	7
Gantry gauge	8

Soft top control

Semiautomatic soft top	10
Soft top design	12
Hydraulic diagram	14
Fitting locations	
Manual soft top	18
Semiautomatic soft top	19
System overview	20
Function diagram	25

Bulkhead 26

Central locking 28

Interior monitor 29

The Self-Study Programme provides you with information regarding designs and functions.

The Self-Study Programme is not a Workshop Manual!

For maintenance and repair work, always refer to the current Technical Literature.

New!



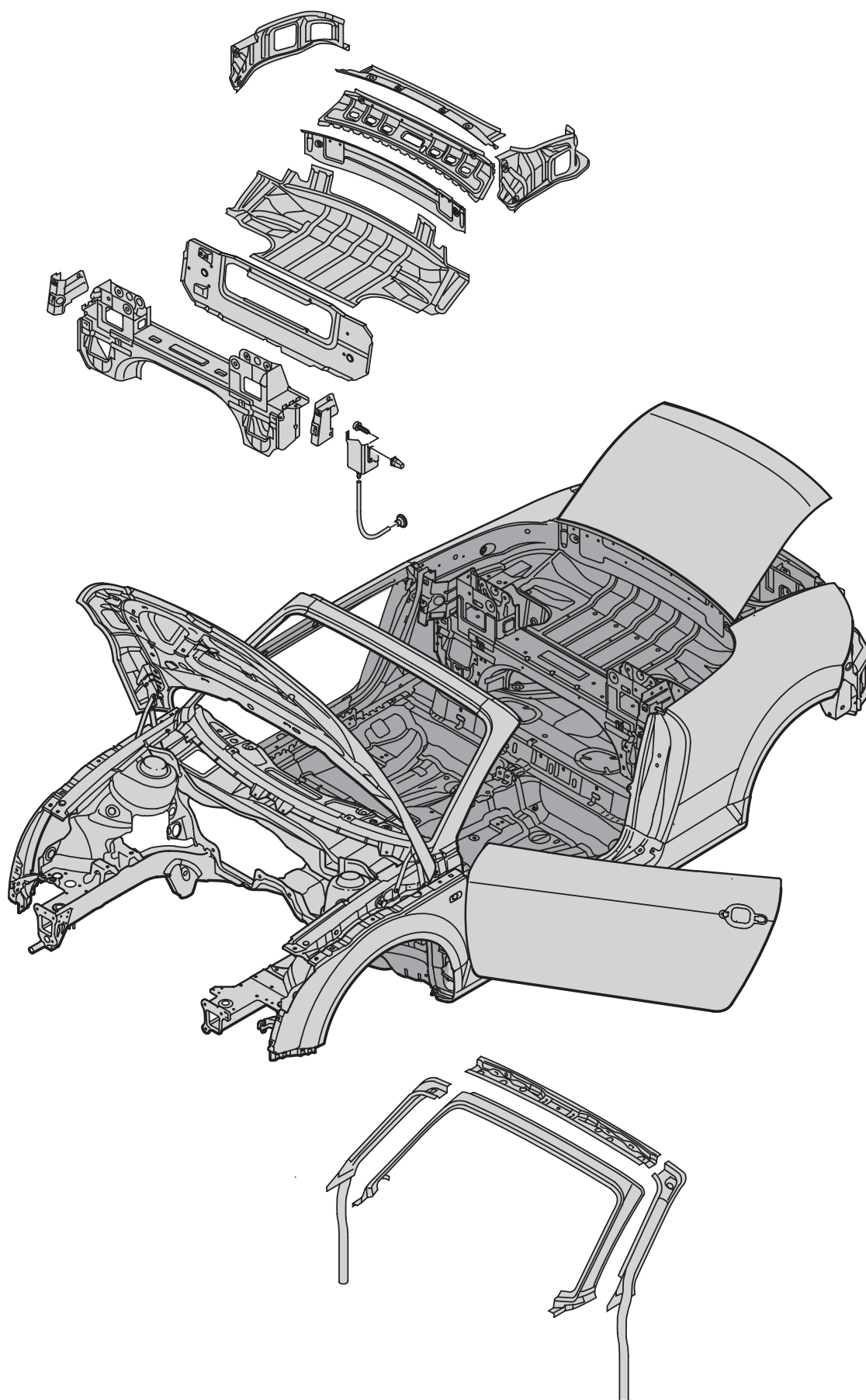
**Important!
Note!**

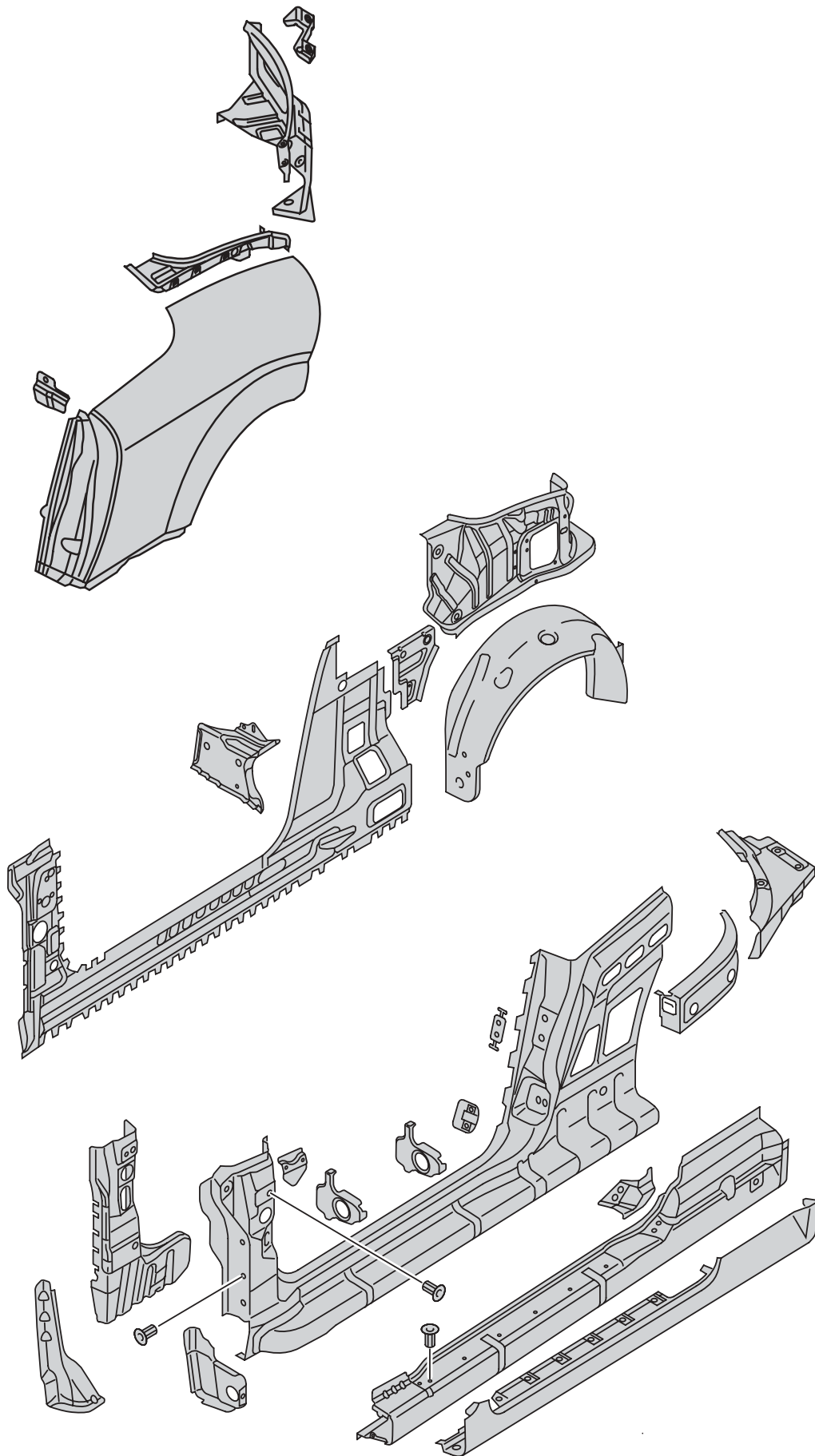


Body



Body Overview

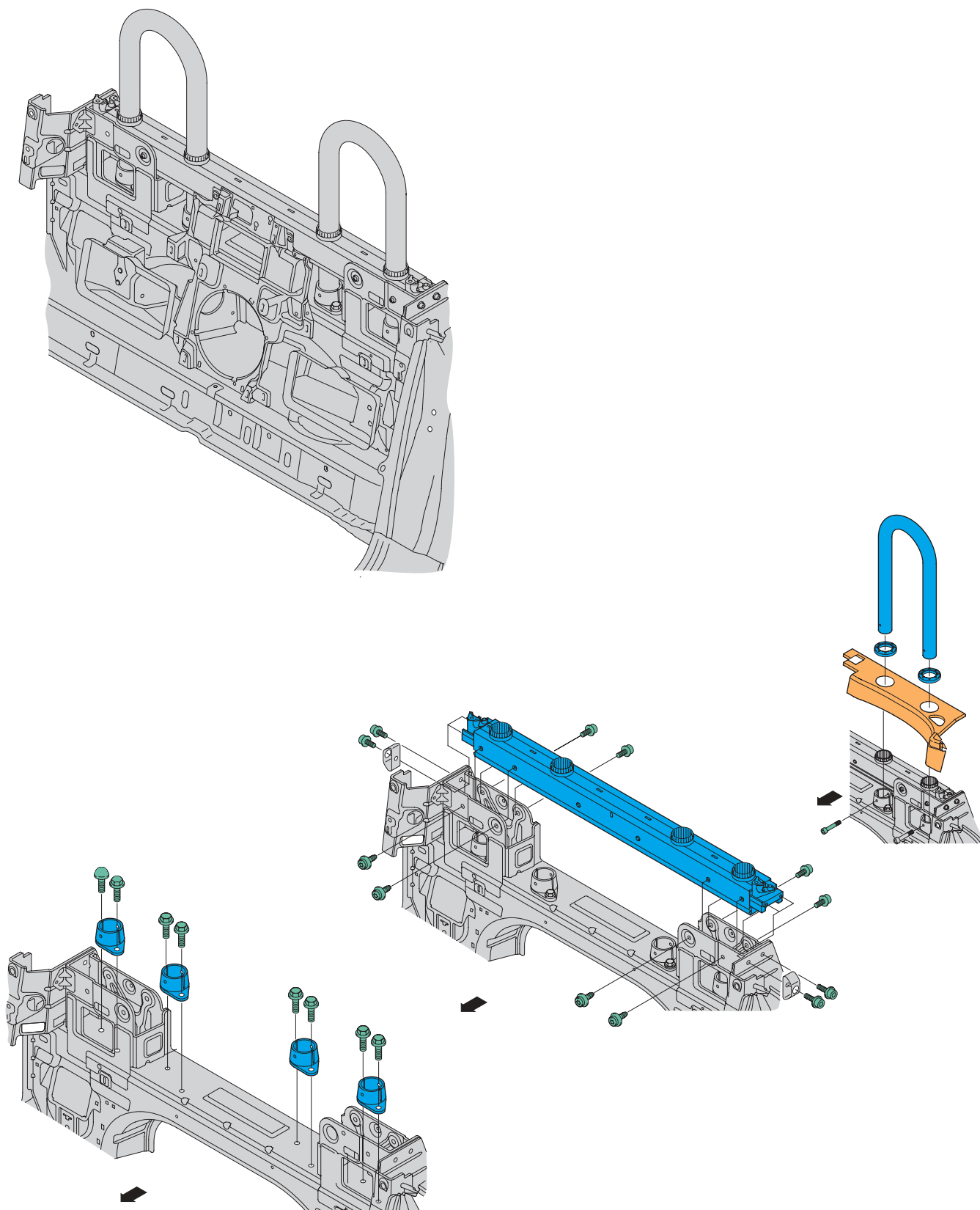




Body

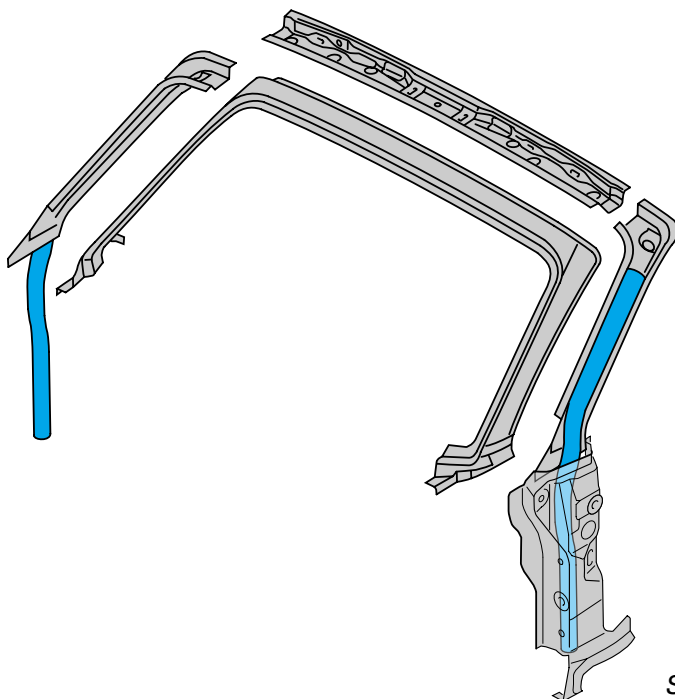


Roll bar

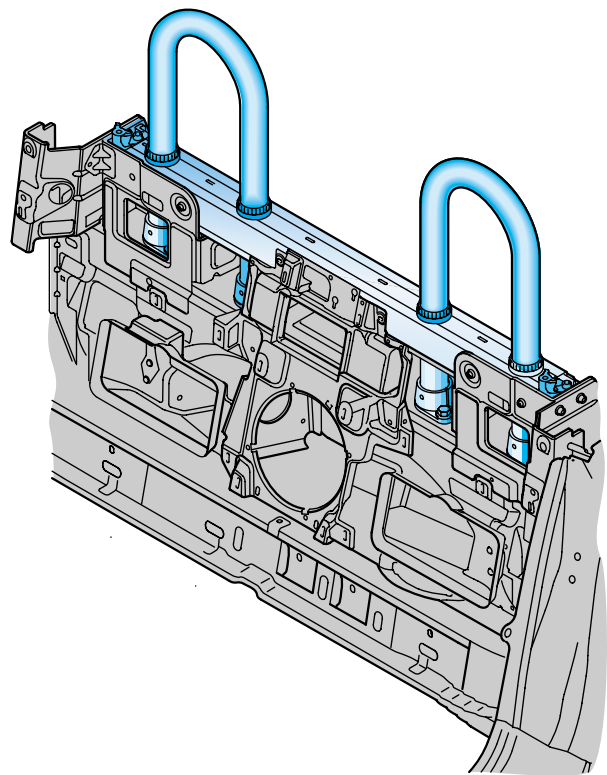


SSP220_002

Occupant protection



SSP220_004



SSP220_003

Despite the lack of a roof structure, the convertible driver is provided with sufficient protection in the event of a rollover, and a saloon-like survival space is preserved. The conceptual drawback of open-top convertibles is offset in the Audi TT roadster by a highly effective and yet exceedingly aesthetic solution.

Two roll bars anchored to the vehicle body and projecting beyond the two head restraints, in combination with the ultra-rigid A pillar / windscreen cross-member combination, afford the vehicle occupants highly effective protection even in the event of a rollover.

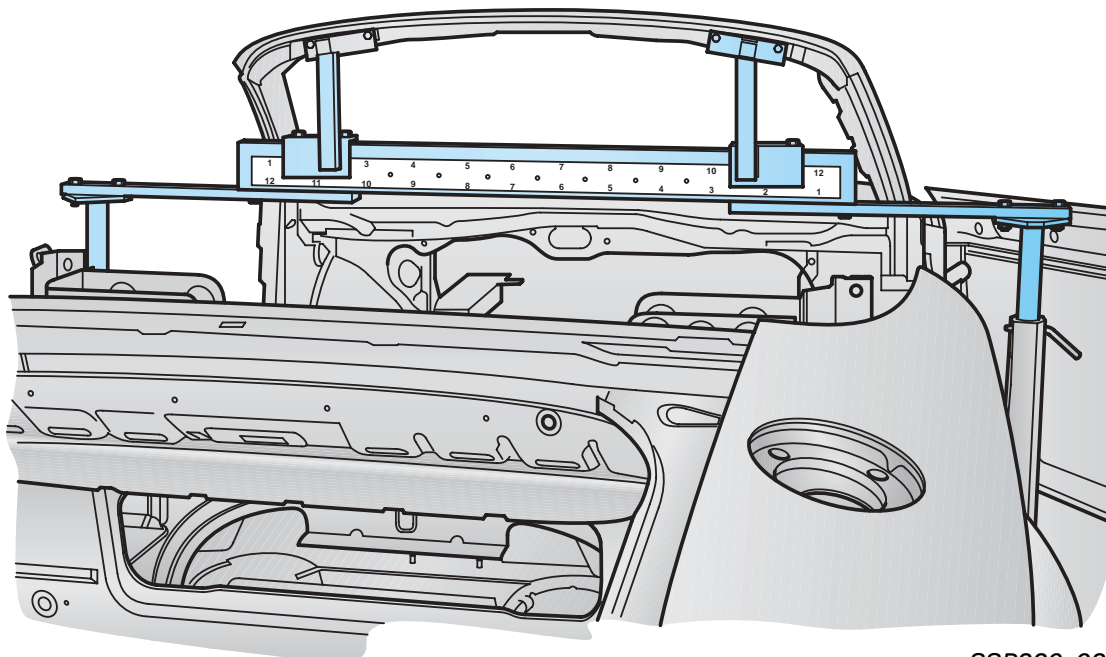
The A pillar comprises a pipe-in-pipe system reinforced with high-tensile steel. In addition, tubular aluminium roll bars adapted from the body contours of the vehicle occupants give the roadster a special, sporty look.



You can find information regarding further occupant protection measures in SSP 207.



Gantry gauge



SSP220_026

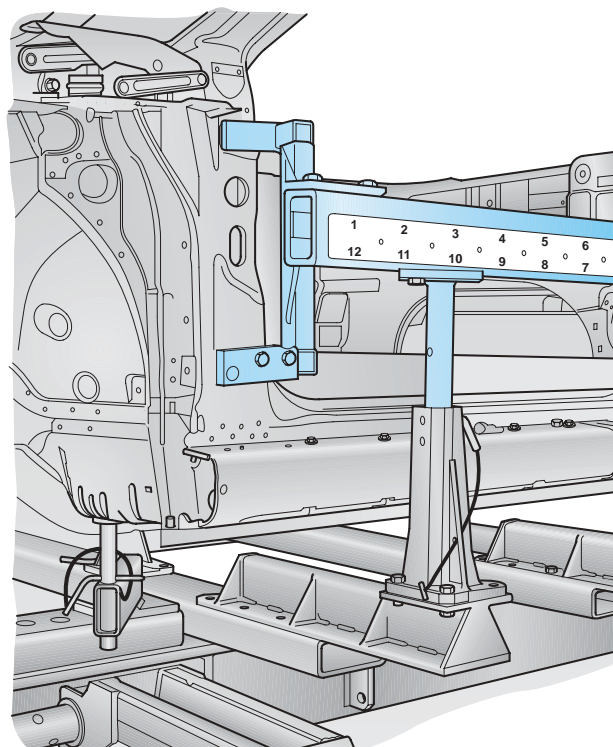
As with the Audi TT Coupé, the alignment bracket set VAS 5020/6 is also used in the Audi TT roadster.

In connection with the known gantry gauge VAS 5007, the TT roadster requires alignment bracket set supplement VAS 5007/8.

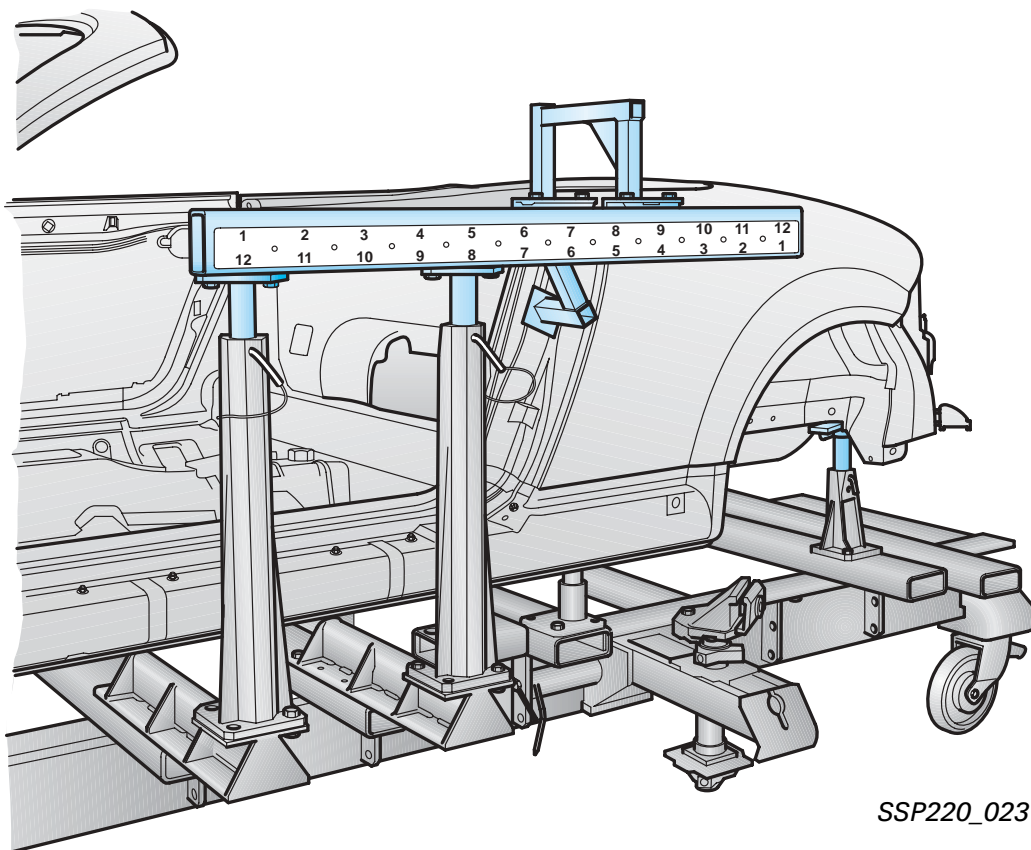
The following locating points are measured:

- Soft top locks at left/right on windscreen frame
- A pillar
- Striker plate mount, B pillar
- Soft top main bearing mount, left/right

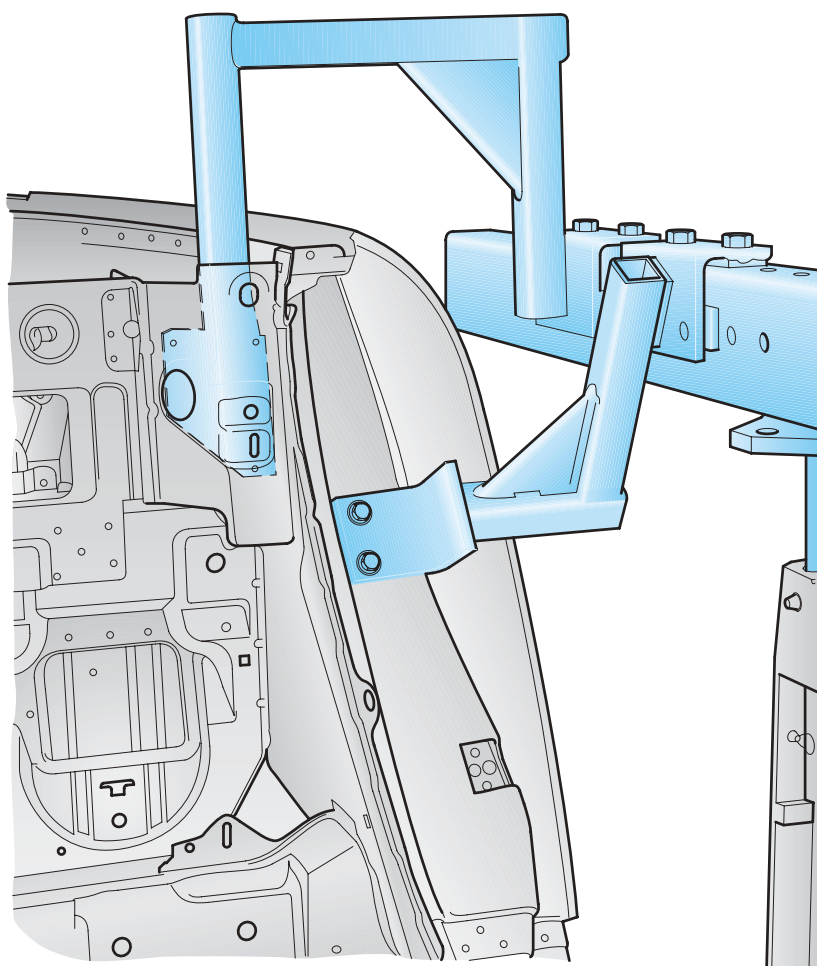
Correctly positioned on the vehicle body, the locating points ensure an ideal soft top geometry.



SSP220_025



SSP220_023



SSP220_024

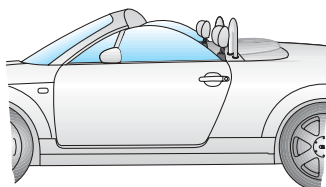
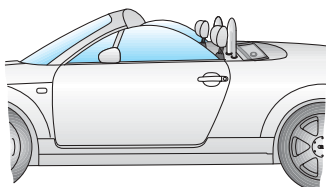
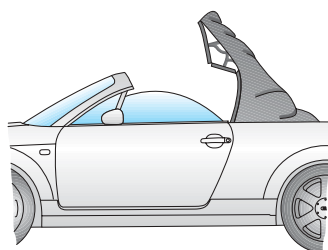
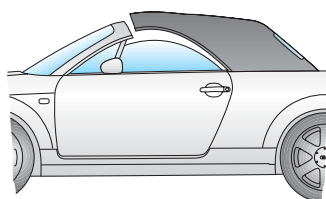
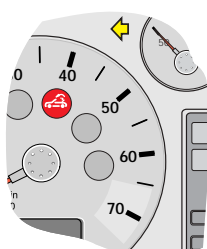
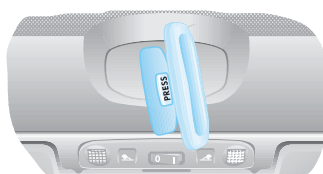
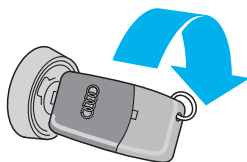
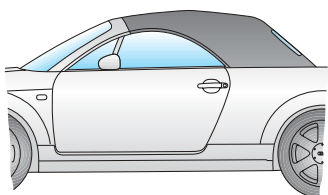
Soft top control



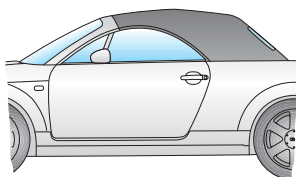
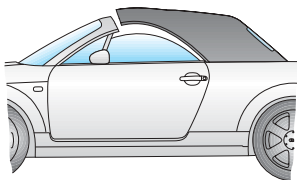
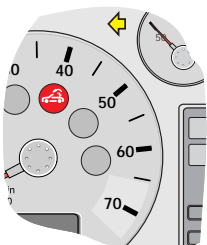
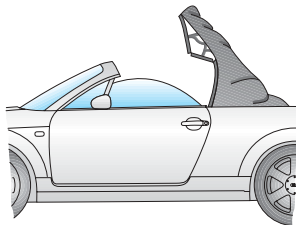
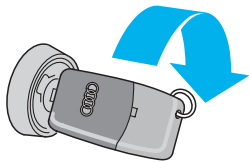
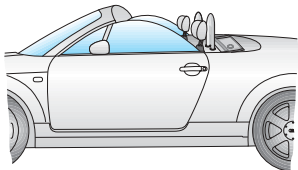
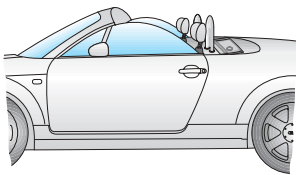
Semiautomatic soft top

Open soft top:

1.
 - Vehicle stationary (< 5 kph)
 - Ignition "On"
2.
 - Press down the release knob and fold down the locking handle.
3.
 - Turn the handle anticlockwise as far as the stop and push the soft top up out of the interlock.
(turn back handle and fold in)
4.
 - The warning lamp for the soft top comes on, and the door window panes are lowered automatically by approx. 30 mm.
5.
 - Pull switch in central console.
 - The soft top is opened and stowed in the soft top box by means of two hydraulic cylinders.
 - The door window panes close automatically.
 - The warning lamp goes out.
6.
 - Fit tonneau cover.
(refer to Operating Manual)



For safety reasons, the vehicle should only be driven with the tonneau cover fitted when the soft top is open.



Close soft top

1.

- Remove the tonneau cover and stow it away in the luggage compartment. (refer to Operating Manual)

2.

- Vehicle stationary (< 5 kph)
- Ignition "On"



When the tonneau cover is fitted, the soft top function is deactivated or disabled.

- Press down the switch in the central console in order to close the soft top.

- The warning lamp for the soft top comes on and the door window panes are lowered automatically by approx. 30 mm.

3.

- Press down the release knob and fold down the locking handle.

4.

- Turn the handle anticlockwise as far as the stop, then pull the soft top down into the lock and close.
- The door window panes close automatically.
- The warning lamp goes out.



Soft top control

Soft top design

Soft top fabric



Tension clamp



The weave and tensioning of the soft top fabric are designed to maintain an air stream for as long as possible.

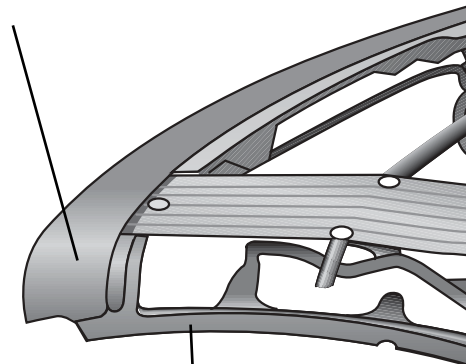
The soft top fabric is secured to the bracing hoops by tension clamps. For visual reasons, these bracing hoops have plastic linings.

Soft top frame (mechanism)

SSP220_046

Raising the front roof rail allows the soft top to be stowed away in the soft top box by means of a kinematic chain (roof links 1 and 2 plus the main link) . The tensioning strut simultaneously folds down from its "stretched" position into the stowed position in the soft top box.

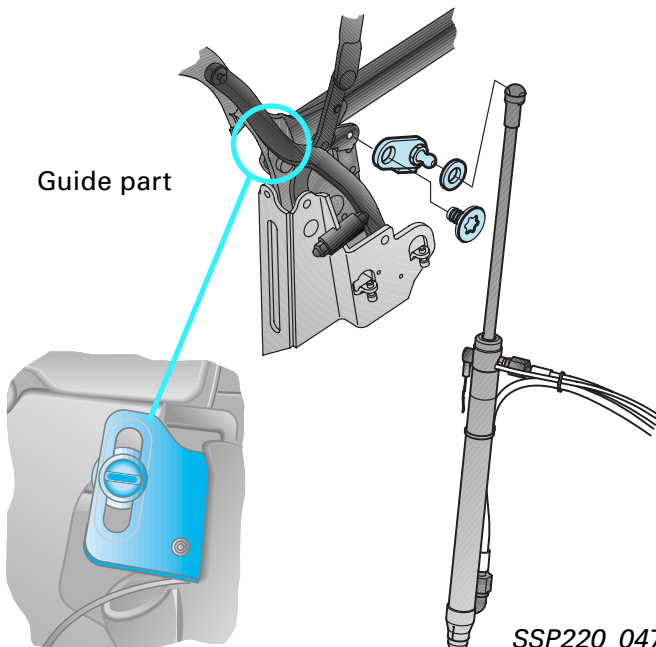
Front roof rail



Roof link 1

Hydraulic cylinder with main bearing

Guide part



For better stowage of the soft top, there is a guide part on the tensioning strut at the point of anchoring to the main bearing.

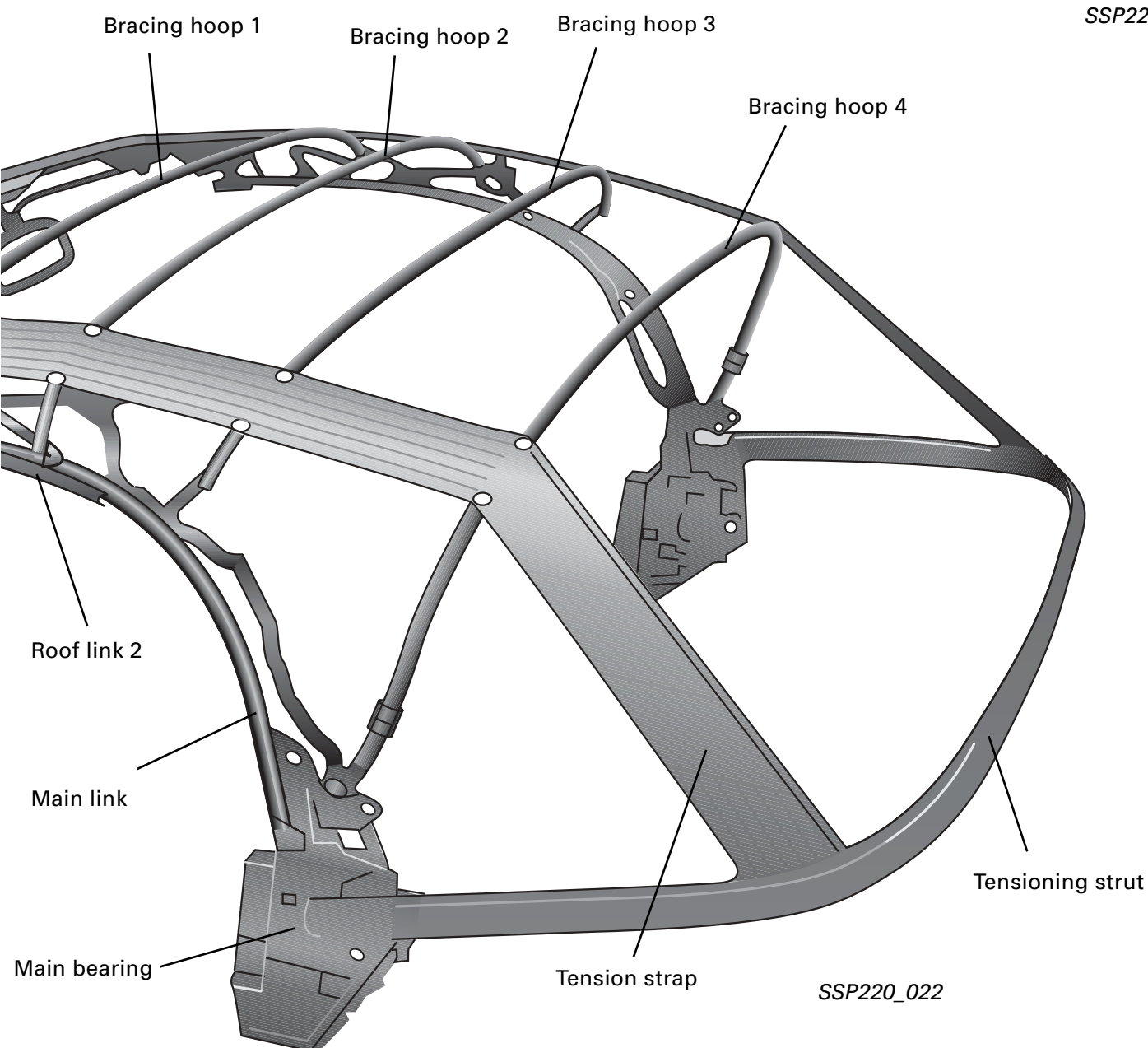
SSP220_047

Tonneau cover

Use the tonneau cover to protect the stowed soft top.



SSP220_020



SSP220_022



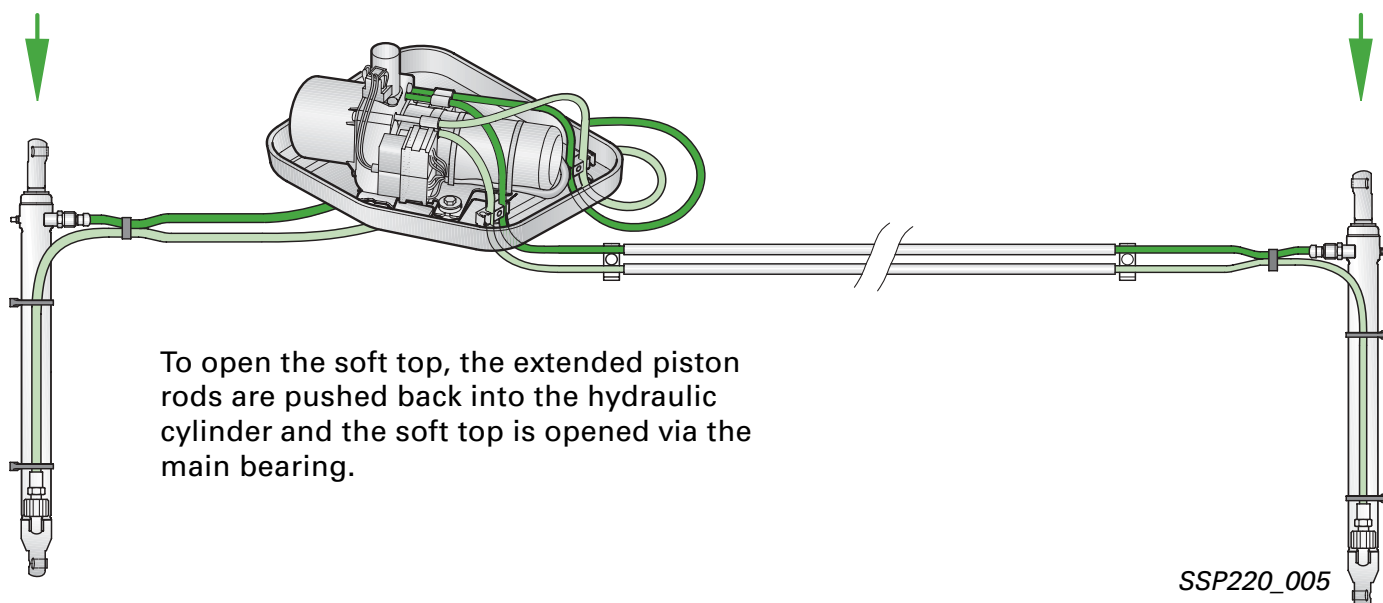
Soft top control

Hydraulic diagram

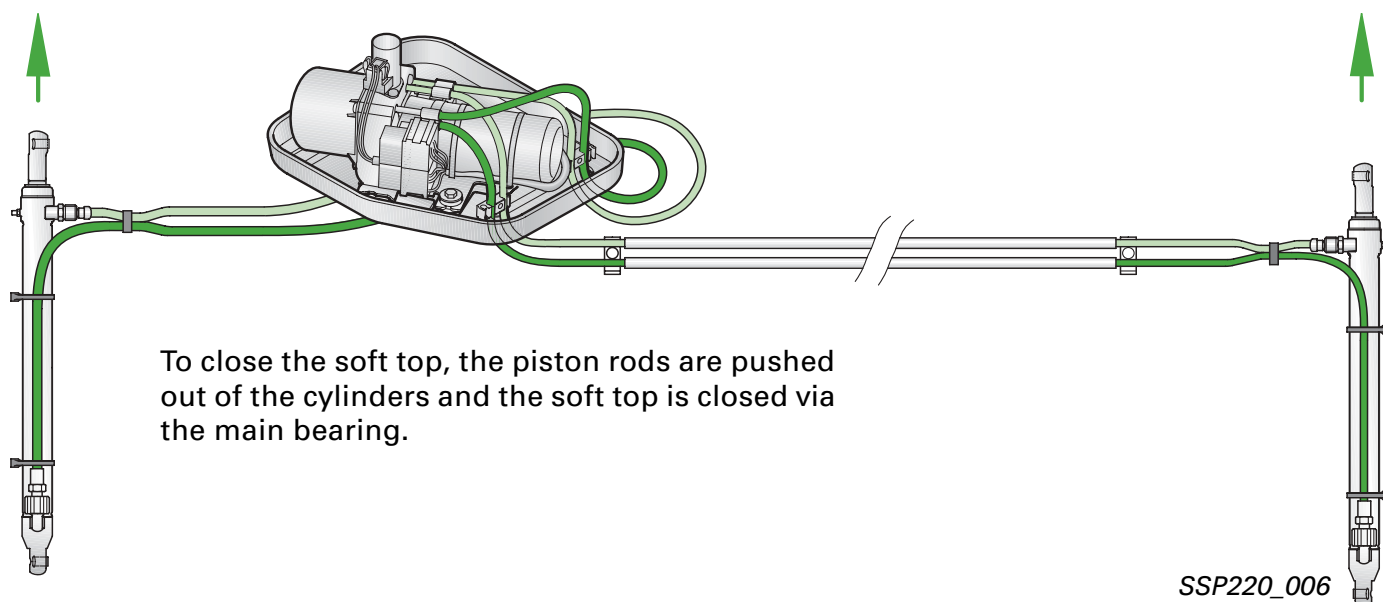


Depending on the direction of rotation of the electric motor, the rotor piston pump forces oil through a 2-way valve into the corresponding pressure lines routed to the hydraulic cylinders.

"Open" soft top

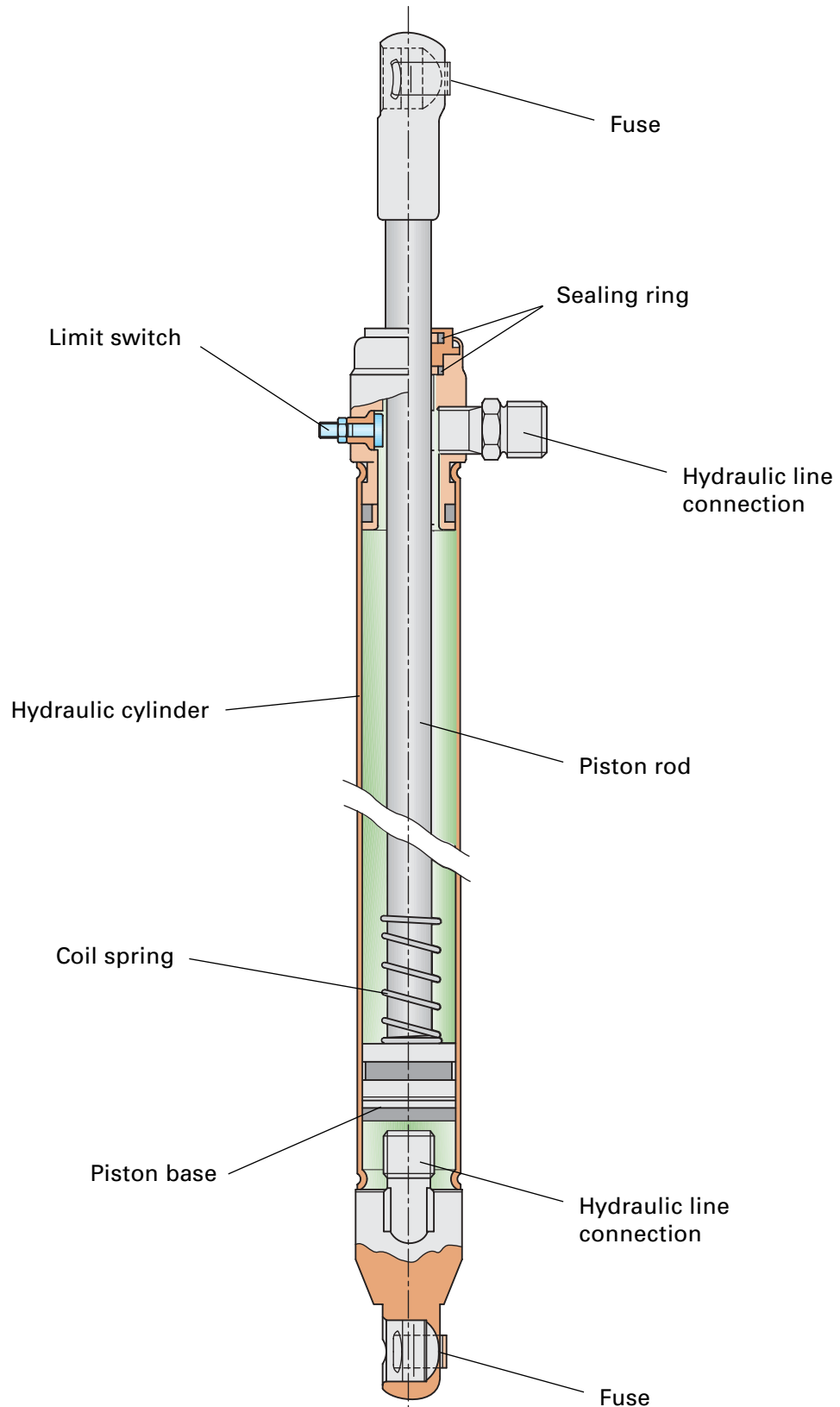


"Close" soft top



Position "soft top stowed"

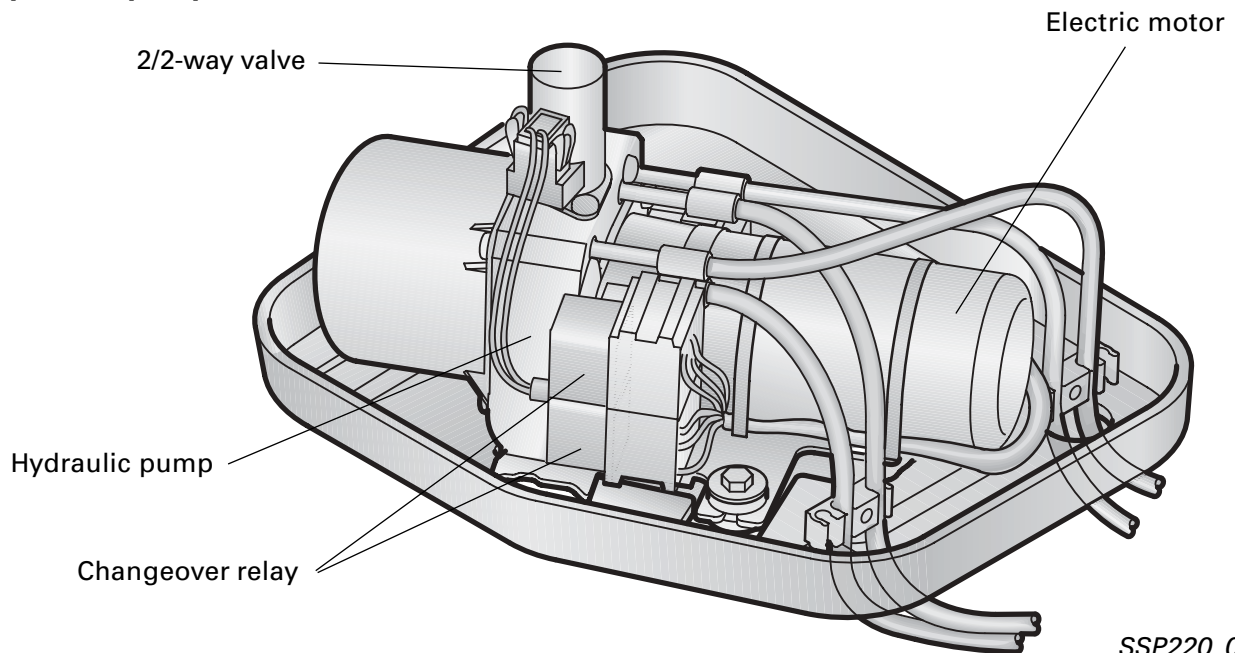
Double-action, bidirectional hydraulic cylinder.



SSP220_007

Soft top control

Hydraulic pump unit

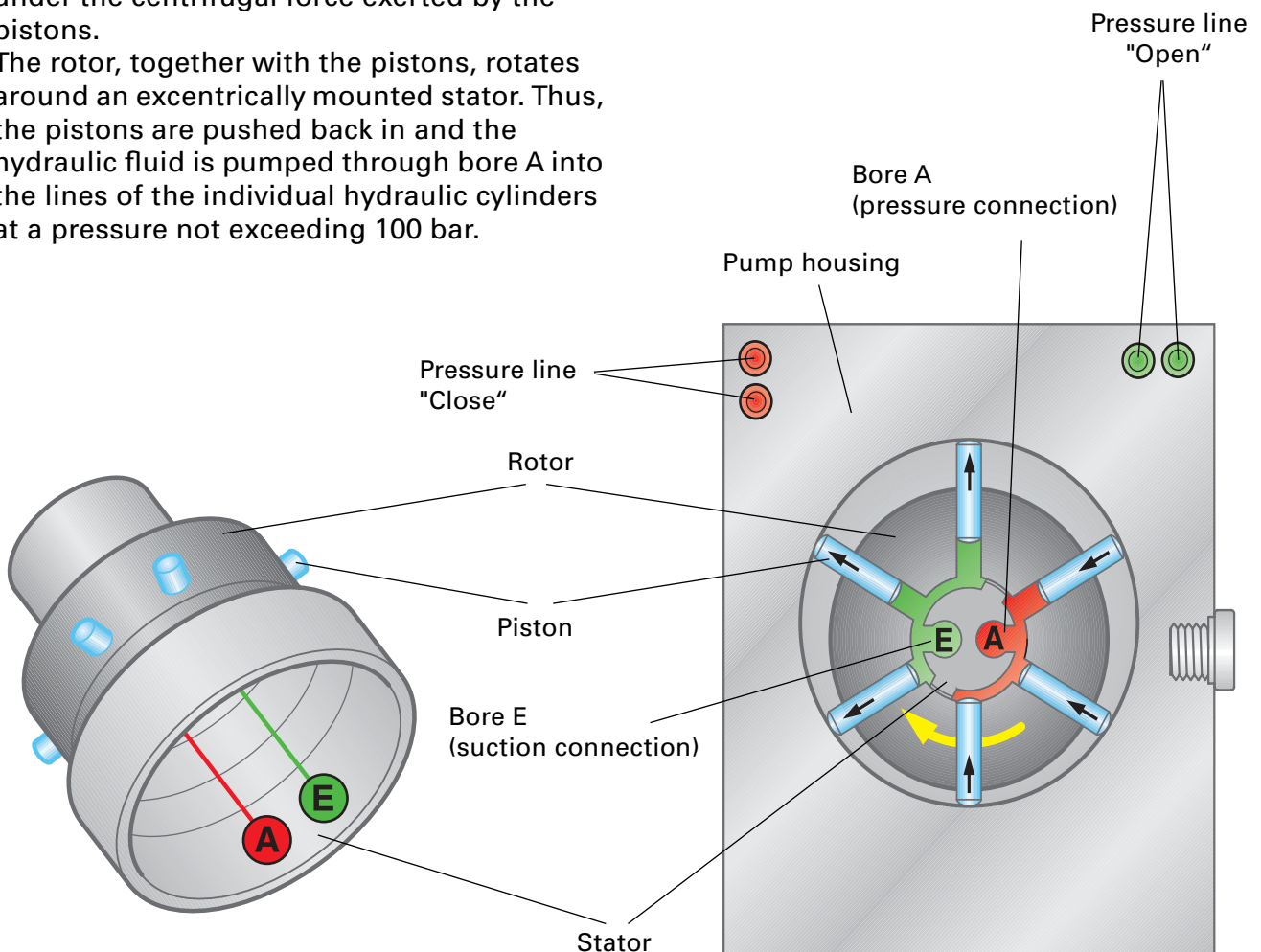


SSP220_009

Hydraulic pump

The pump is designed as a rotor piston pump. The pump draws hydraulic fluid out of the tank through bore E. The cylinders are filled under the centrifugal force exerted by the pistons.

The rotor, together with the pistons, rotates around an eccentrically mounted stator. Thus, the pistons are pushed back in and the hydraulic fluid is pumped through bore A into the lines of the individual hydraulic cylinders at a pressure not exceeding 100 bar.

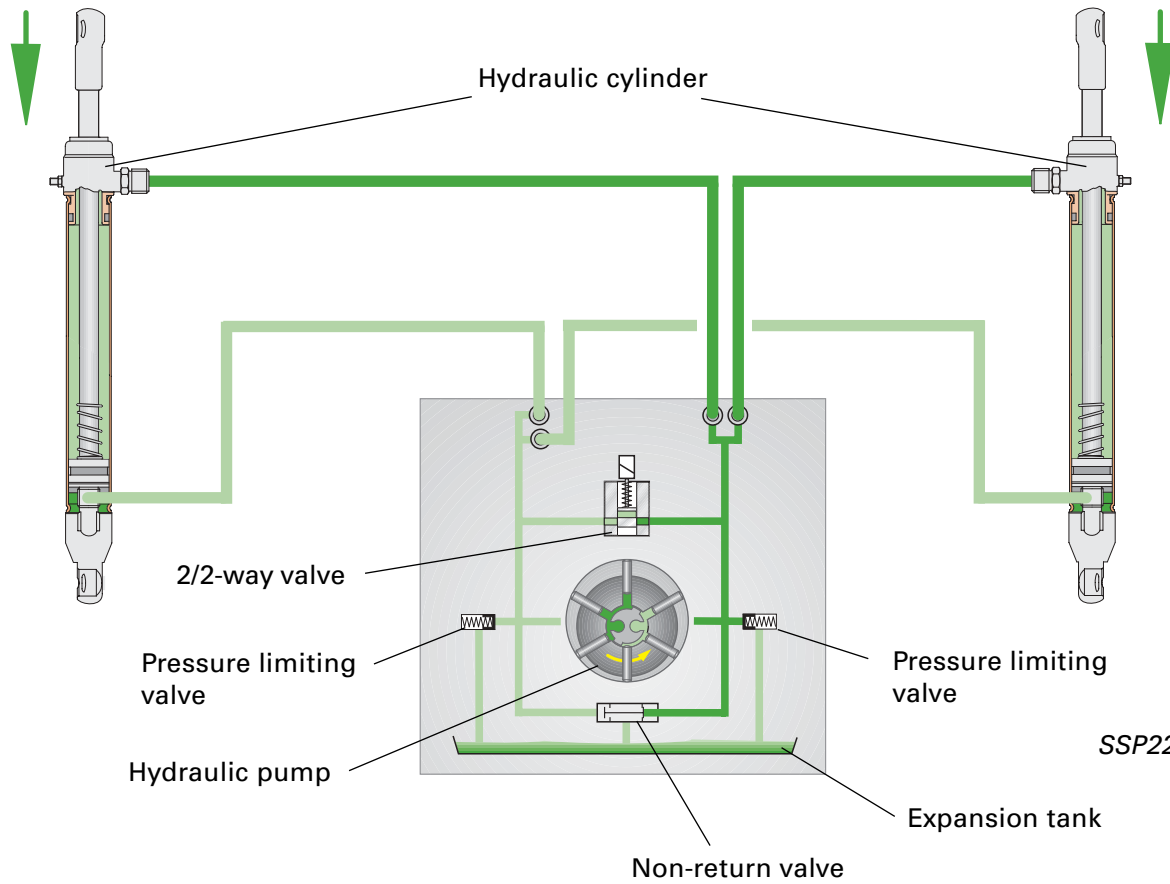


SSP220_053

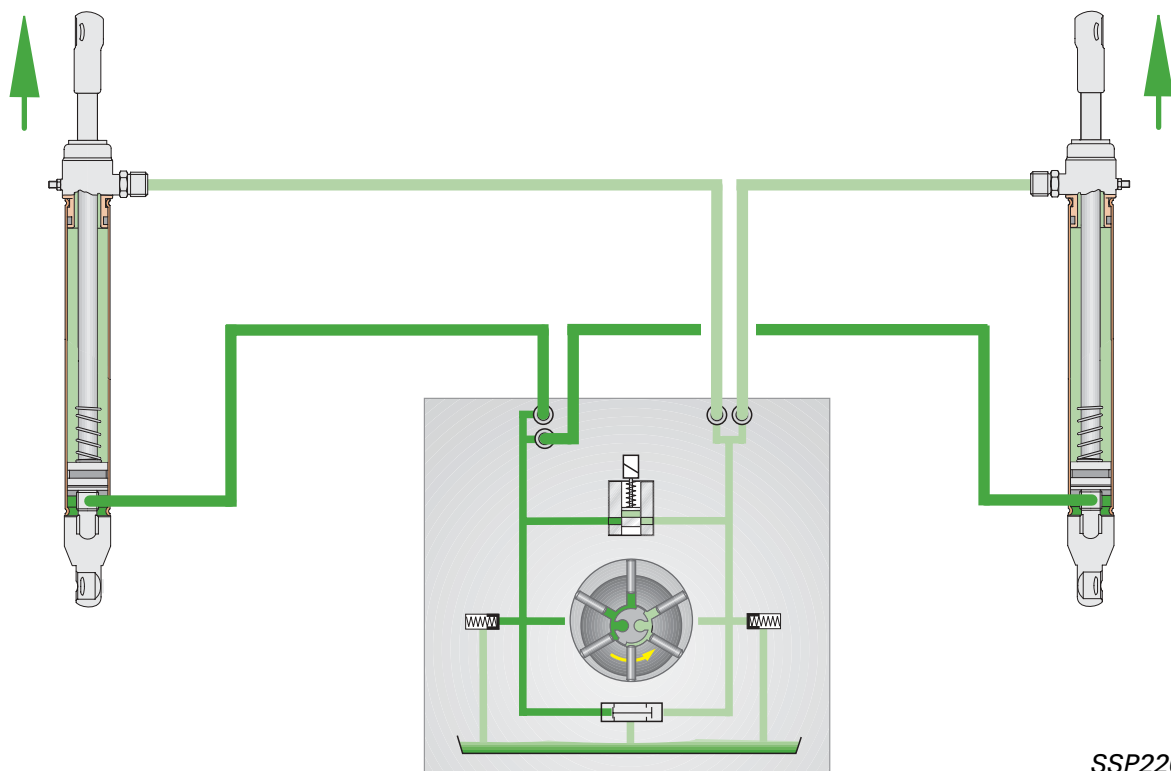
SSP220_054



Open soft top



Close soft top



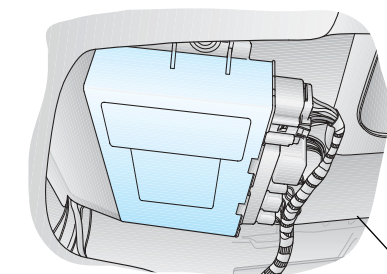
Soft top control

Fitting locations

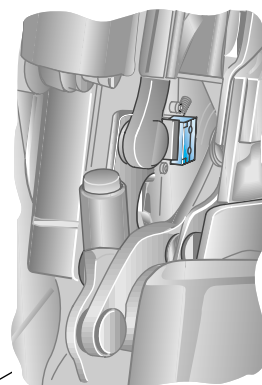
Manual soft top



To enhance ease of use, the soft top is equipped with two gas-filled springs which make it easier to lift the soft top out of the the soft top box. In addition, a set of compression springs is installed in the main bearing (left/right) in order to make the soft top easier to open and close.



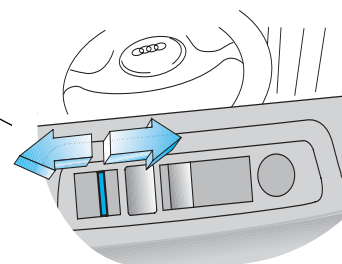
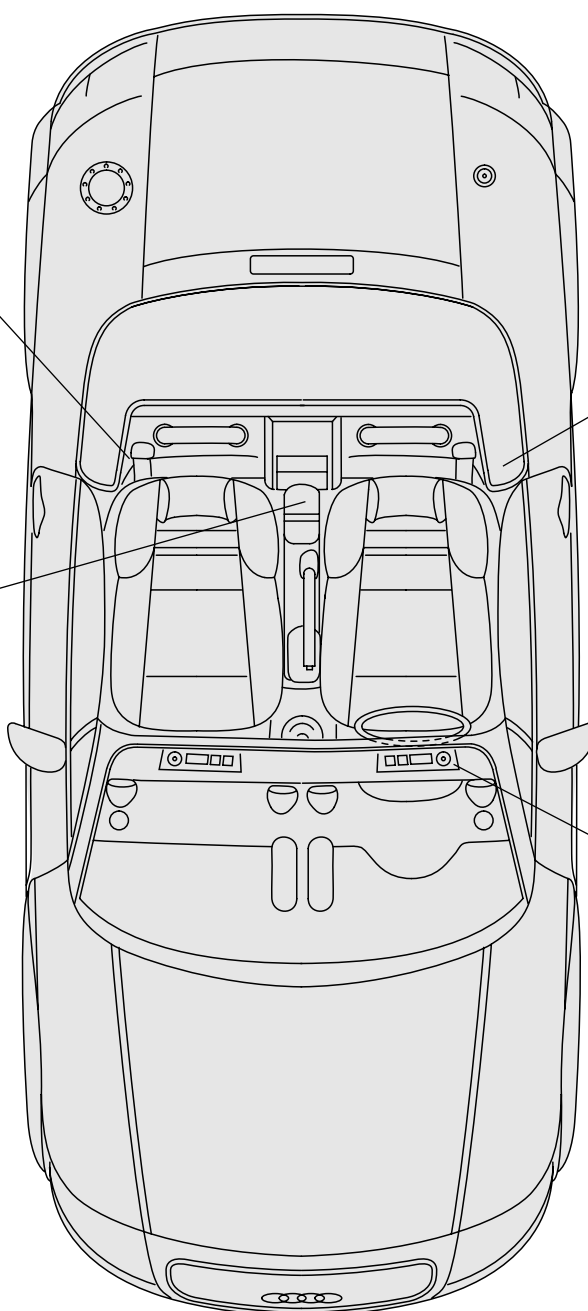
Central locking and anti-theft alarm control unit J 379



Microswitch
Soft top stowed

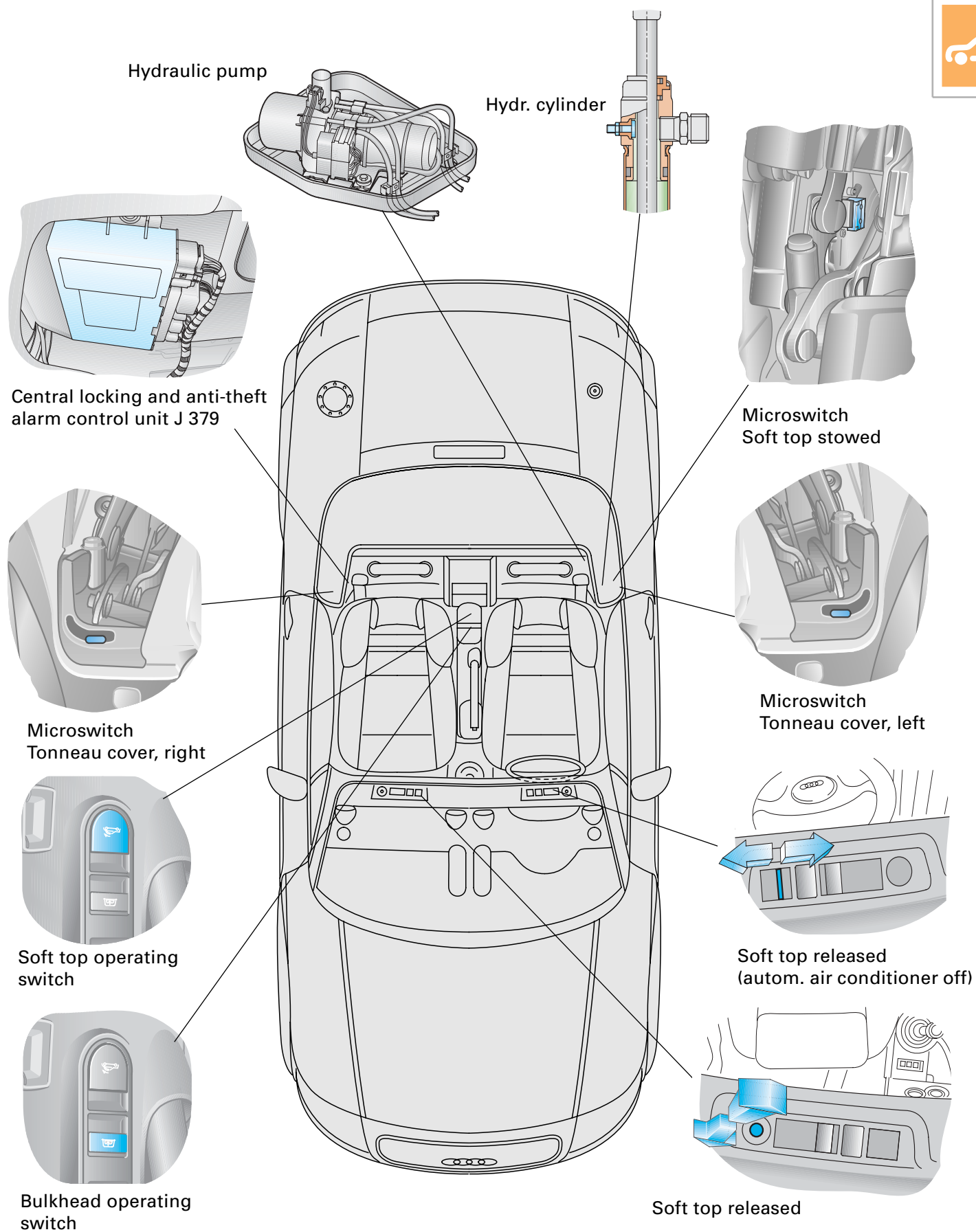


Bulkhead (optional)



Microswitch
Soft top released

Semiautomatic soft top



Soft top control

Semiautomatic soft top System overview



Ignition "On"

Road speed signal, dash panel
insert

Switch for soft top control

Air conditioner operating and
display unit
(no automatic operation)

Microswitch
(Soft top released)

Operation

Microswitch
(soft top released)

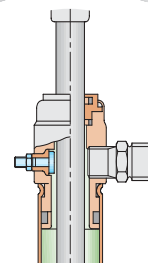
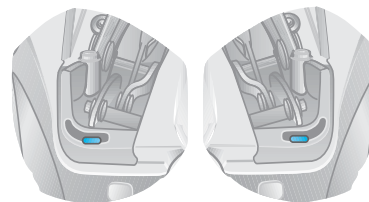
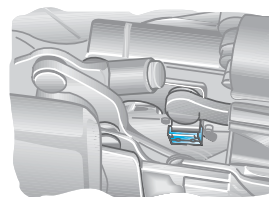
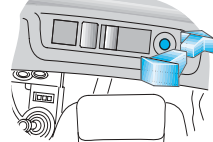
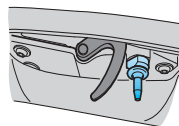
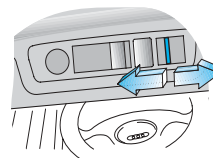
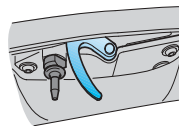
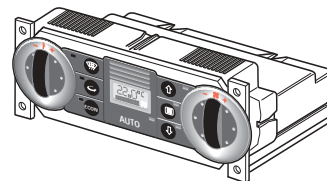
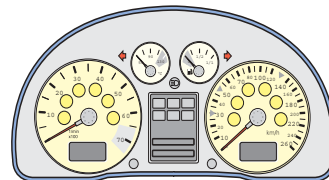
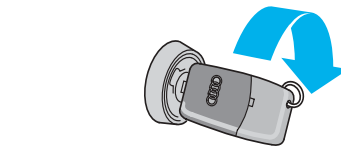
Operation

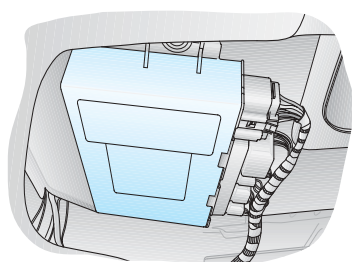
Microswitch
(Soft top stowed)

Microswitch
(tonneau cover, left)

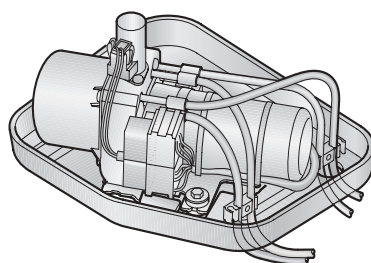
Microswitch
(tonneau cover, right)

Hydraulic cylinder switch,
left

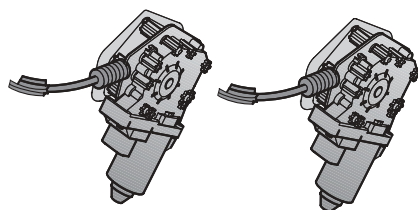




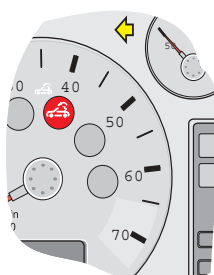
Central locking and anti-theft
alarm control unit J 379



Hydraulic pump
(with changeover relay)



Power windows



Soft top warning light

Soft top control



Semiautomatic soft top

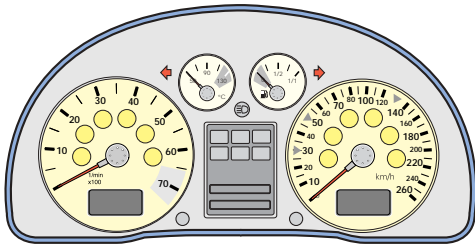
The soft top is controlled via central locking control unit J379.

Self-diagnosis: Address word 35

Combination processor in instrument cluster J218

Signal utilisation:

Central locking control unit J379 receives the vehicle road speed signal from the combination processor. This is a criterion for enabling the switch for soft top operation at road speeds of less than 5 kph.



Microswitch - soft top released

The left catch hook on the soft top operates the microswitch integrated in the lock. This signal is utilised for:

- Activating the soft top warning lamp
- Lowering the door window panes (30 mm)
- Switching off the automatic air conditioning mode

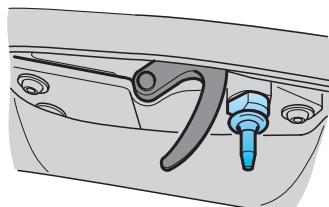
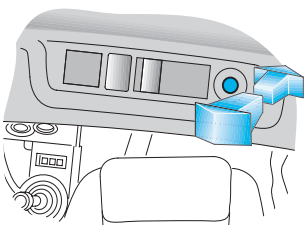
The signal supplied by the sender for interior temperature sensor G65 in the air conditioner/Climatronic operating and display unit is suppressed and the previously set temperature and fresh-air blower values are retained.



The short-stroke function (10 mm) for raising and lowering the door window panes is executed via the door contact switch.

Microswitch - soft top released

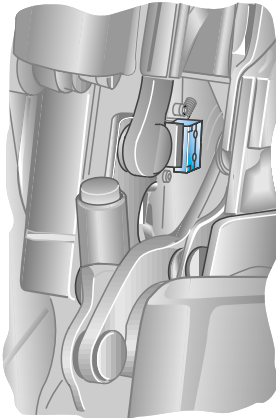
The microswitch integrated in the right lock in the windscreen frame closes as soon as the centring pin leaves the lock when raising the soft top. The second criterion for enabling the switch for soft top control is fulfilled.





Switch for soft top control

If the previous two criteria have been fulfilled, the hydraulic pump is activated via central locking control unit J379 when the soft top switch is operated.



Microswitch - soft top stowed

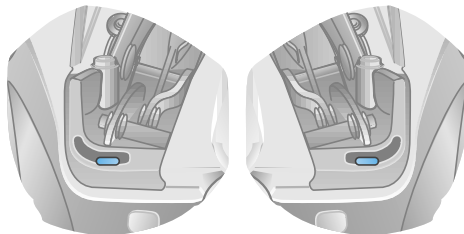
(in the left-hand main bearing)

Signal utilisation:

- Switches the hydraulic pump off
- Rear window heating off
- Soft top warning light off
- Door window panes being raised

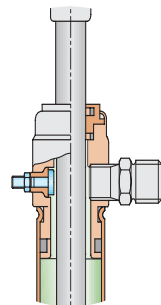


If the soft top is open and stored, the short-stroke function is not executed when opening and closing the doors.



Microswitch - tonneau cover, left/right

If the tonneau cover is fitted properly, the microswitches are closed. The central locking control unit uses this signal to suppress the function of the switch for soft top operation. Consequently, it is not possible to close the soft top.



Switch at left-hand hydraulic cylinder

The switch closes as soon as the piston of the hydraulic cylinder reaches the upper stop and the soft top begins to close. The incoming signal is utilised to switch off the hydraulic pump.

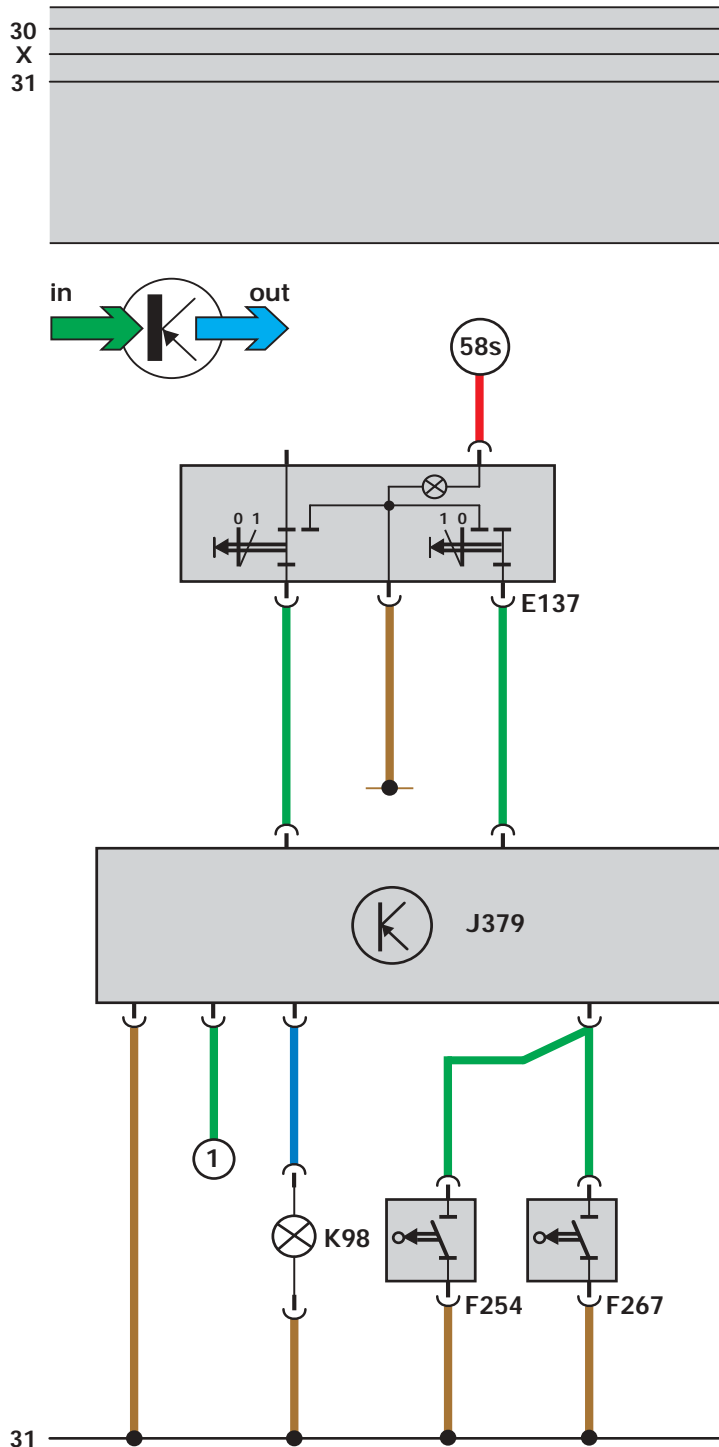


Switch statuses can be exported to measured value blocks 9 and 10 by means of the Diagnostic Testing and Information System.

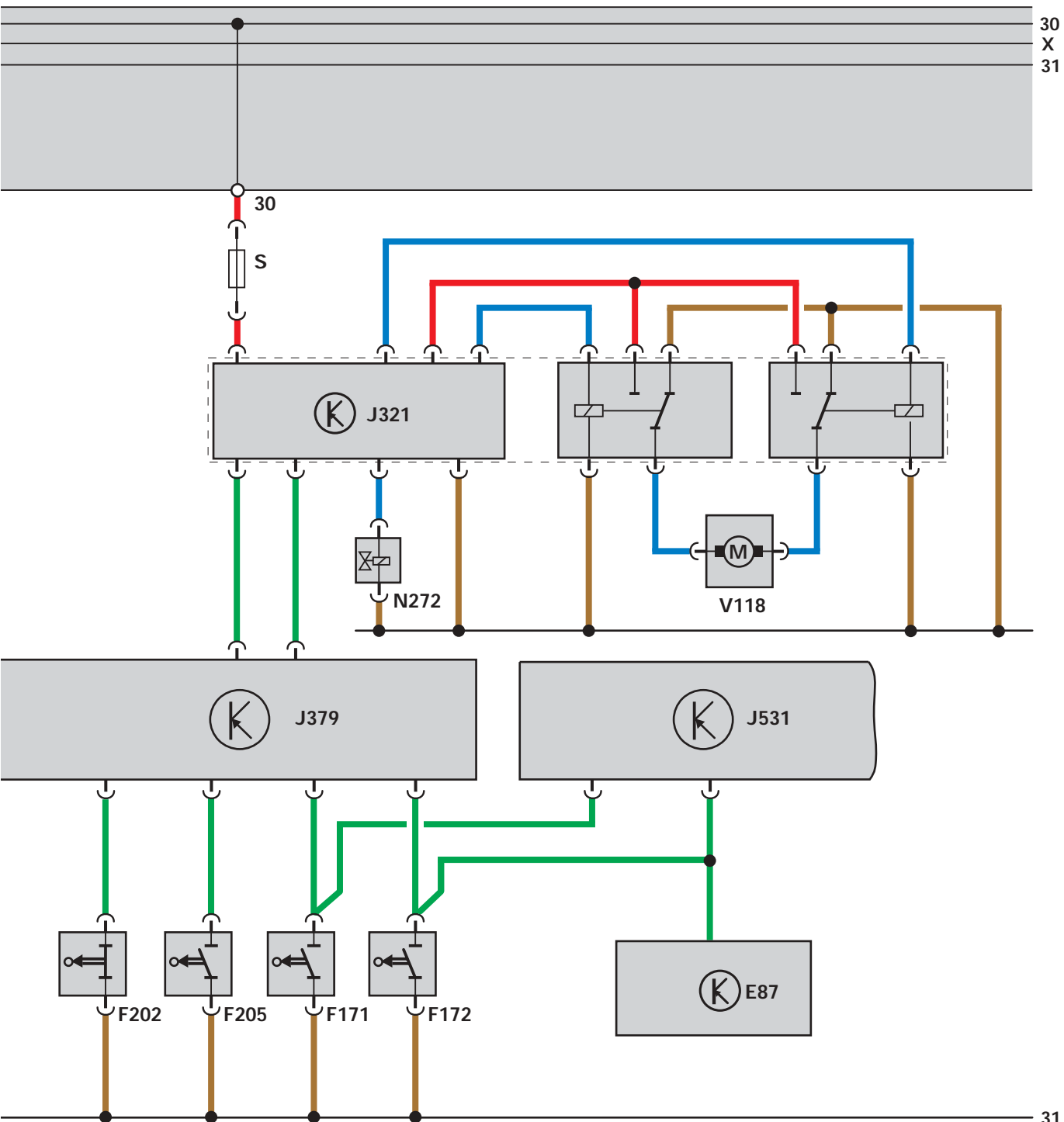
Soft top control

Function diagram

Semiautomatic soft top



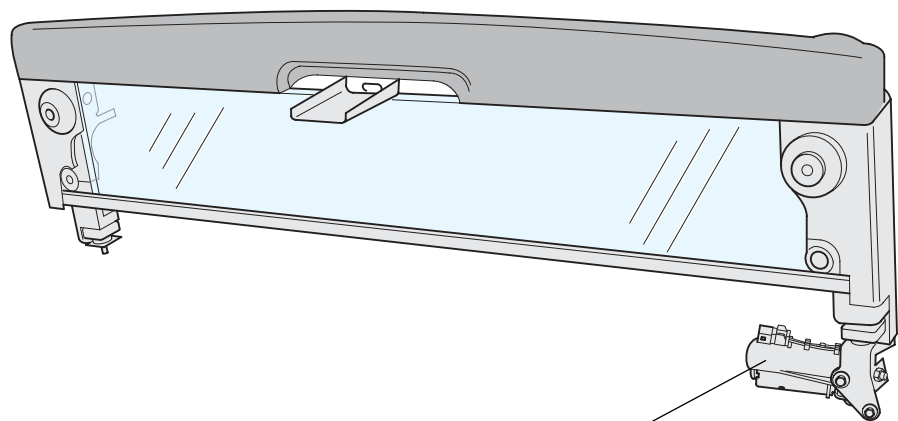
- | | |
|------|--|
| E87 | Signal for air conditioner operating and display unit (no automatic operation) |
| E137 | Soft top operation button |
| F171 | Soft top stowed switch |
| F172 | Soft top released switch |
| F202 | Soft top switch, front |
| F205 | Soft top released switch |
| F254 | Tonneau cover left switch |
| F267 | Tonneau cover right switch |
| J321 | Relay for hydraulic pump soft top operation |
| J379 | Central locking and anti-theft alarm control unit |
| J531 | Bulkhead control unit |
| K98 | Soft top released warning lamp |
| N272 | Solenoid valve for hydraulic pump |
| S | Fuse |
| V118 | Soft top hydraulic pump |
| 1 | Road speed signal from combination processor in dash panel insert J218 |



SSP220_048

Bulkhead

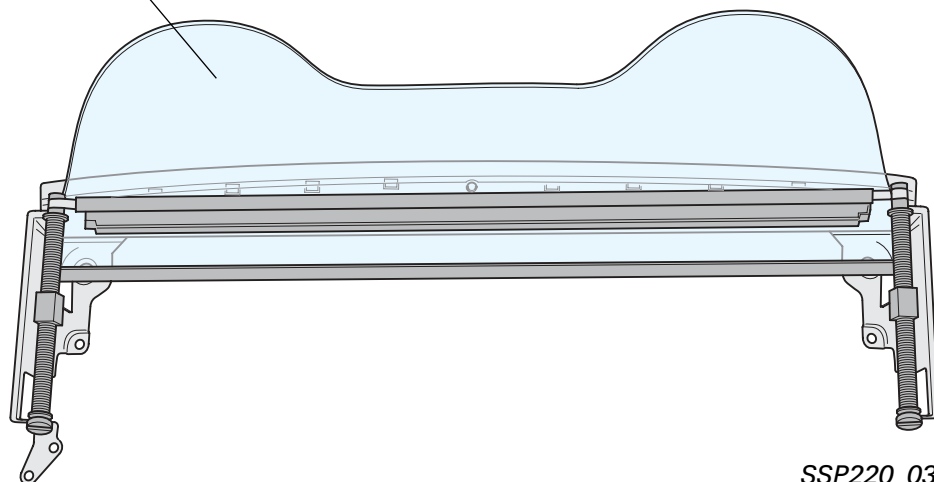
The bulkhead can only be raised if the soft top is stowed; the latter is detected via the "Soft top stowed" microswitch.



Electric motor

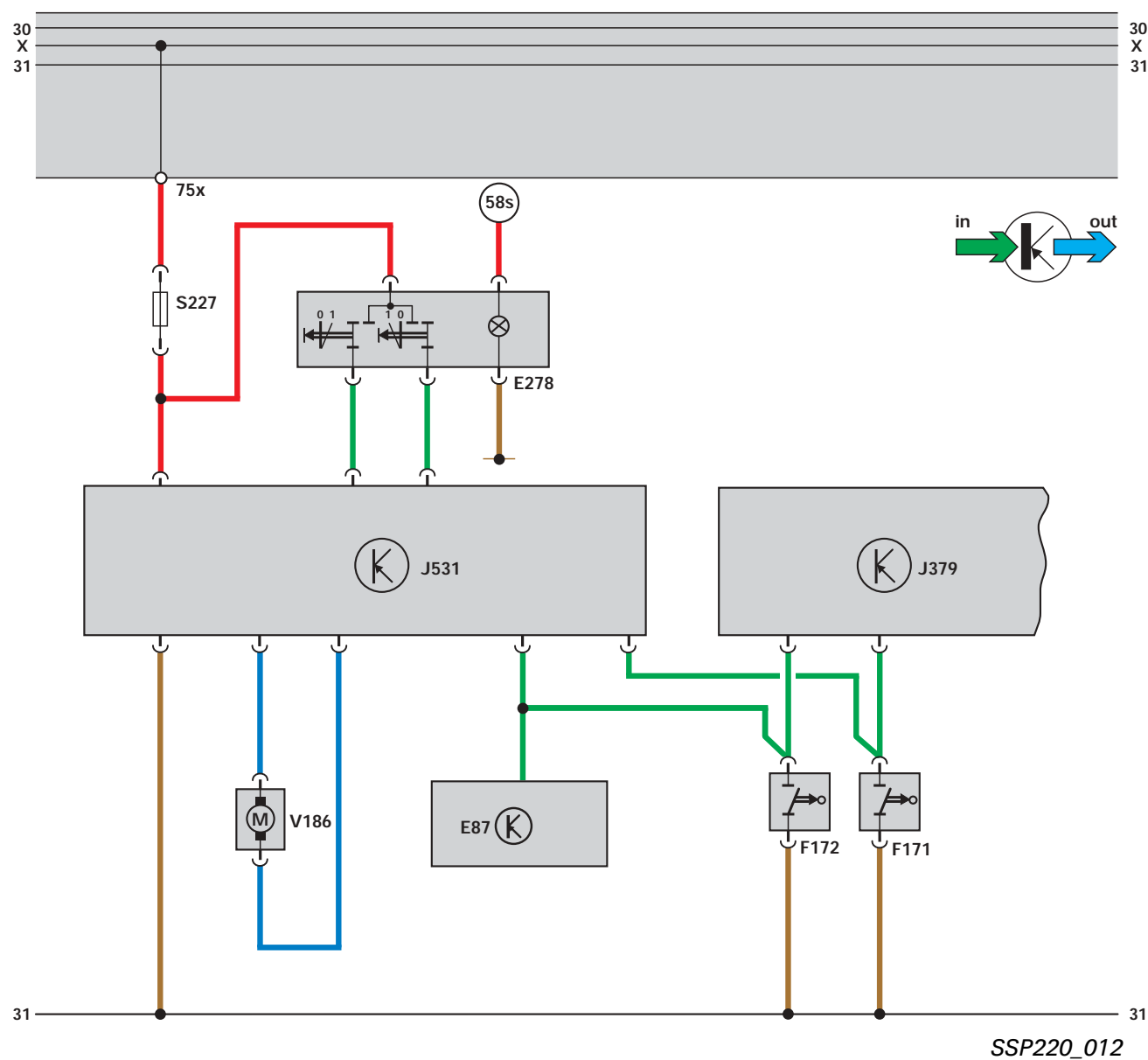
SSP220_011

Glass pane



SSP220_036

Function diagram



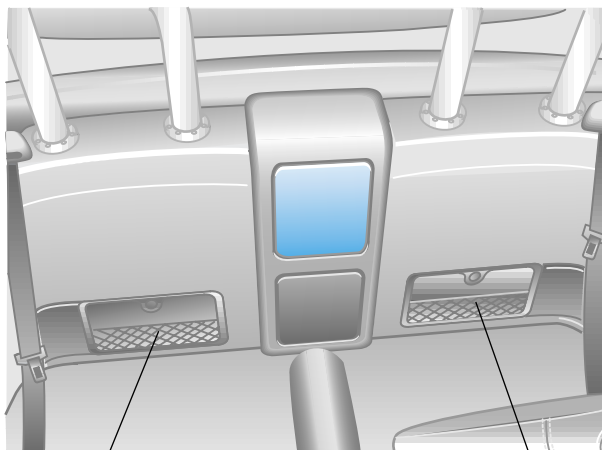
- E278 Button for bulkhead operation
- F171 Soft top stowed switch
- F172 Soft top released switch
- J379 Central locking and anti-theft alarm control unit
- J531 Bulkhead control unit
- S227 Fuse
- V186 Motor for bulkhead operation

SSP220_012

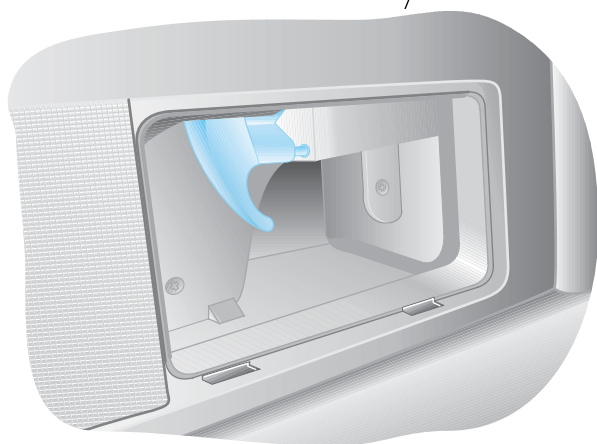
Central locking

Stowage compartment

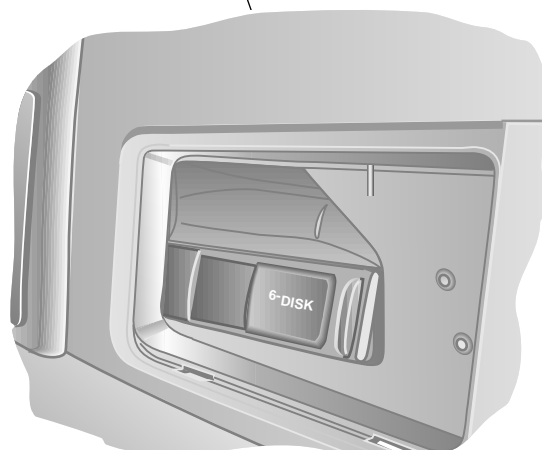
The stowage compartment is locked and unlocked by the central locking system.



SSP220_017



SSP220_015



SSP220_016

Emergency release, luggage compartment

Operating the handle activates the luggage compartment emergency release by means of a bowden cable.

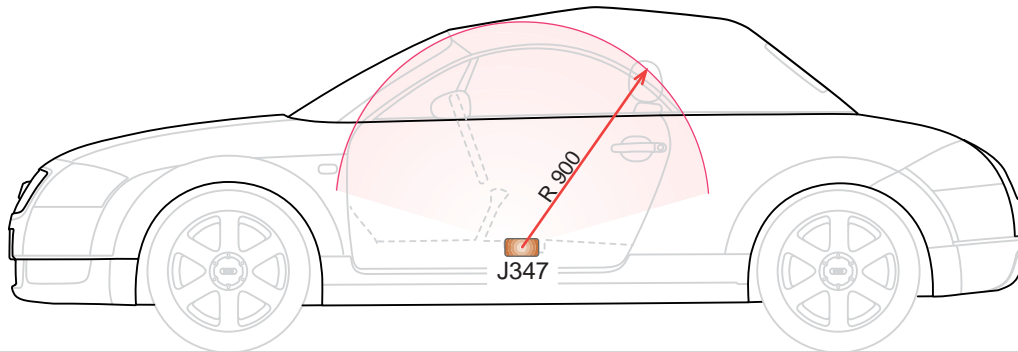
The compartment must be locked with the ignition key.

CD changer tray

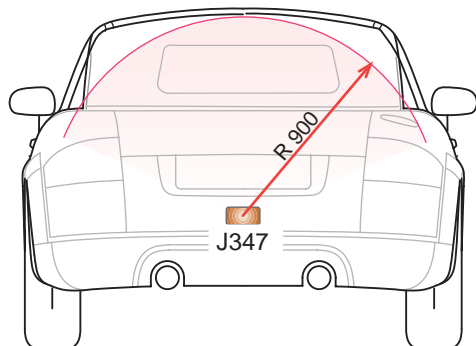
The CD changer tray is locked and released by the central locking system.

CD player optional

Megawave interior monitor



SSP220_042



SSP220_041

Audi has developed a new interior monitoring system which is ideal for such open-topped vehicles as the Audi TT Roadster.

The system requirement is a precisely demarcated theoretical "protective sheath" in the form of a hemispherical shell whose intrusion is detectable at any time. However, the system must not pick up movements outside this protective sheath irrespective of their velocity, object size and reflectivity.

The radius of the "protective sheath" is defined by the distance between the ultrasonic sensor module and the shortest point within the bounds of the vehicle.

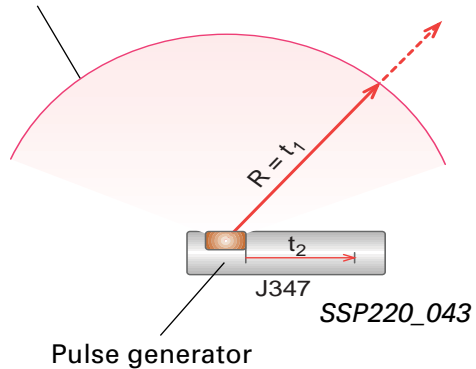


The megawave interior protection system is implemented by pulse radar.



Interior monitor

Theoretical protective sheath

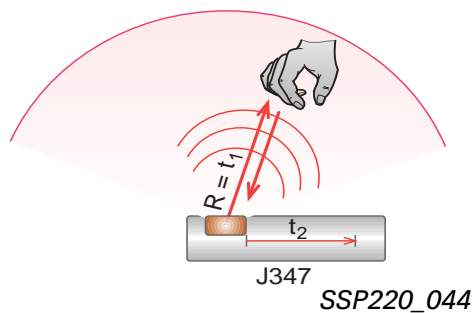


$t_1 = t_2$ do not activate alarm

When the system is active, the module cyclically emits radar pulses with a very low wattage (t_1).

The same pulse is supplied to a so-called delay line within the control unit (t_2).

A measuring process in parallel with actual measurement in the defined vehicle interior is therefore simulated.



$t_1 < t_2$ activate alarm

If the propagation time of the radar pulse from the transmitter antenna to the reflecting object and back to the receiver antenna equates to at least the period set in the control unit (t_2), then the signal is evaluated in the control unit and the alarm is triggered if necessary.



SSP220_014

The interior monitor can still be switched off using the switch in the central console.

Dear Reader,

In this Self-Study Programme you will have been able to familiarise yourself with the Audi TT Roadster.

Our objective is to make our Self-Study Programmes interesting for you!

That is why we are giving you the opportunity to submit your views or suggestions for future Self-Study Programmes.

To help you, we have provided the following questionnaire.

We will take into consideration suggestions sent to us under the fax number +49 841/ 89-36367.

Thank you for your support.

**With kind regards,
Service Technology TrainingTeam**

