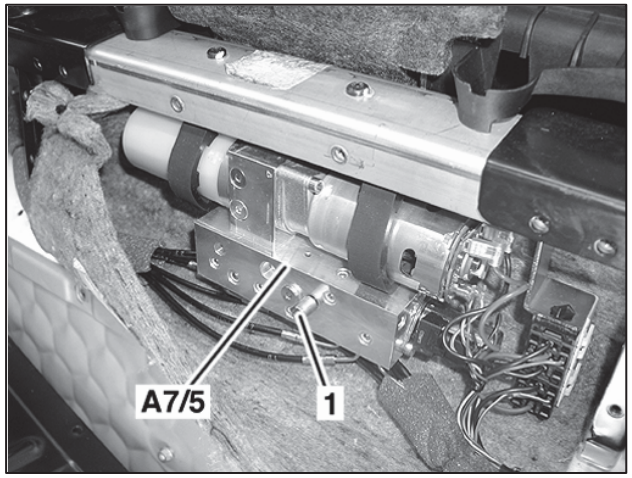
Hydraulic Unit (A7/5)

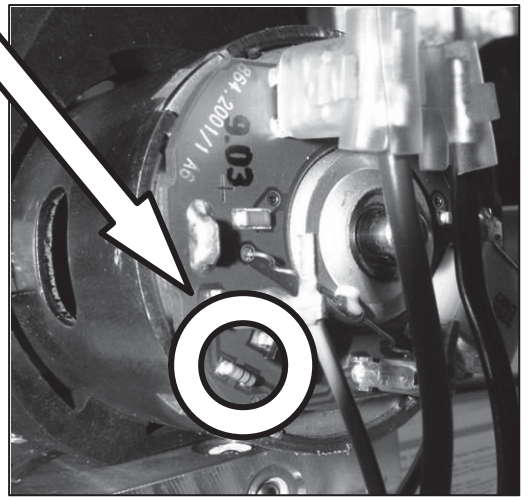
- Contains:
  - Hydraulic pump motor
  - Hydraulic reservoir
  - 1 solenoid valve
  - Check & control valve block

Hydraulic Unit Pump

- Reversible electric pump motor
  - Pump changes direction of rotation during operation
  - Pump pressure 140 ±10 bar (2030 psi)
  - Motor temperature monitored via PTC sensor on pump circuit board (A7/5b1)



1 Emergency release valve



A7/5b1 Temperature sensor

Open Vario roof from closed non-actuated state:
Enable < 75 °C (167°F)
Disable/Interrupt >85°C (185°F)

Subsequently close or relock Vario roof:
Enable < 85 °C (185°F)
Disable/Interrupt >90°C (194°F)

Hydraulic Unit Oil Reservoir

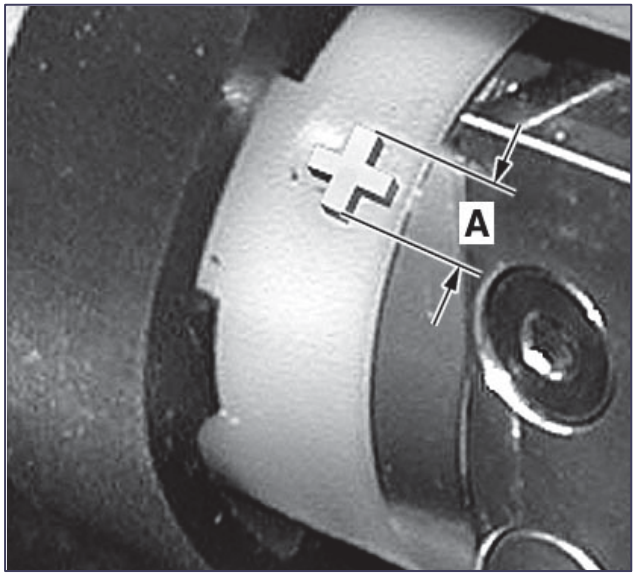
Checking oil level:

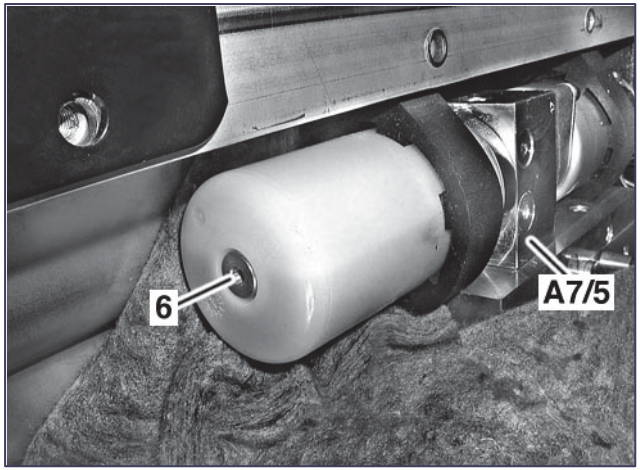
- Oil level must be within the marking (A) on reservoir with roof open

If level is too low, look for leakage.

Adding oil:

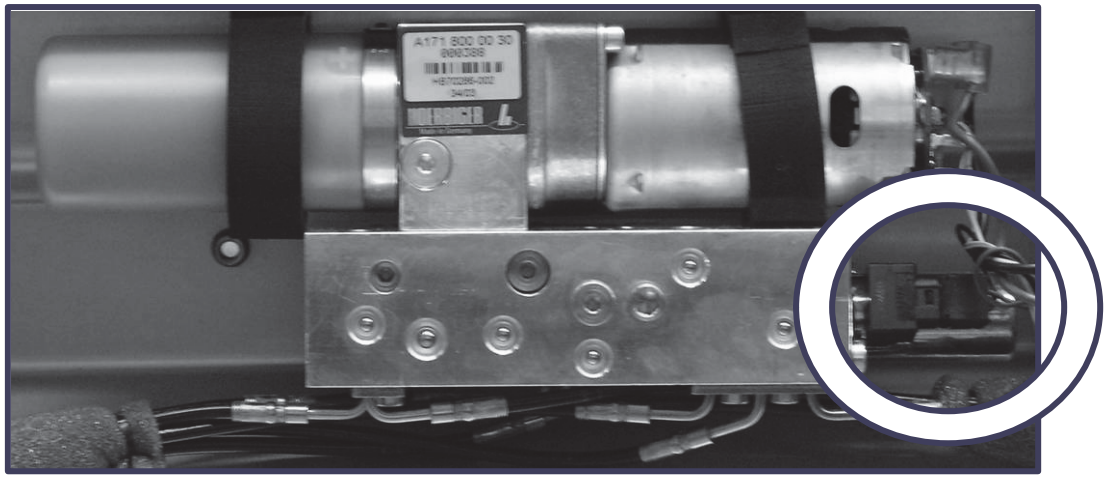
- Remove hydraulic unit (A7/5) from bracket
- Turn until filler screw (6) can be unscrewed without losing oil
- Add oil
- Recheck in installed position



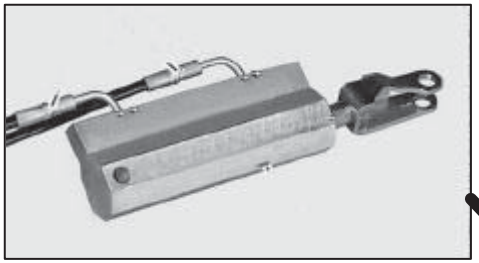


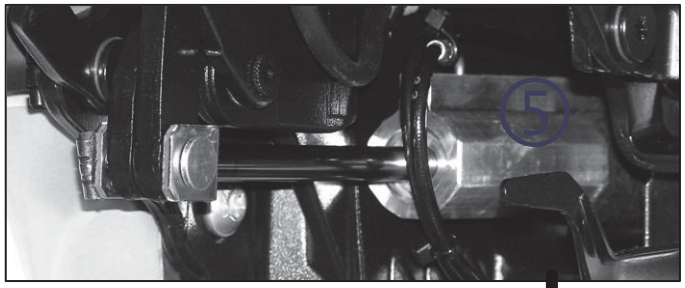
Solenoid Valve (A7/5y1)

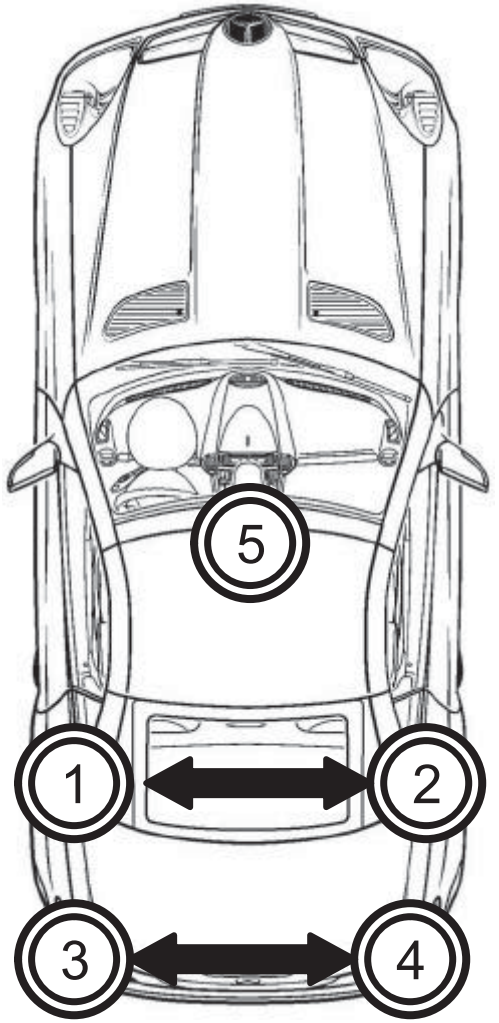
- Routes oil pressure to respective side of tubular frame and front lock cylinders
  - Rest position to close trunk lid and front lock
  - Power is applied to open trunk lid and front lock
- Used during Stop Mode to hold the cylinders in hydraulic lock



5 Hydraulic Cylinders







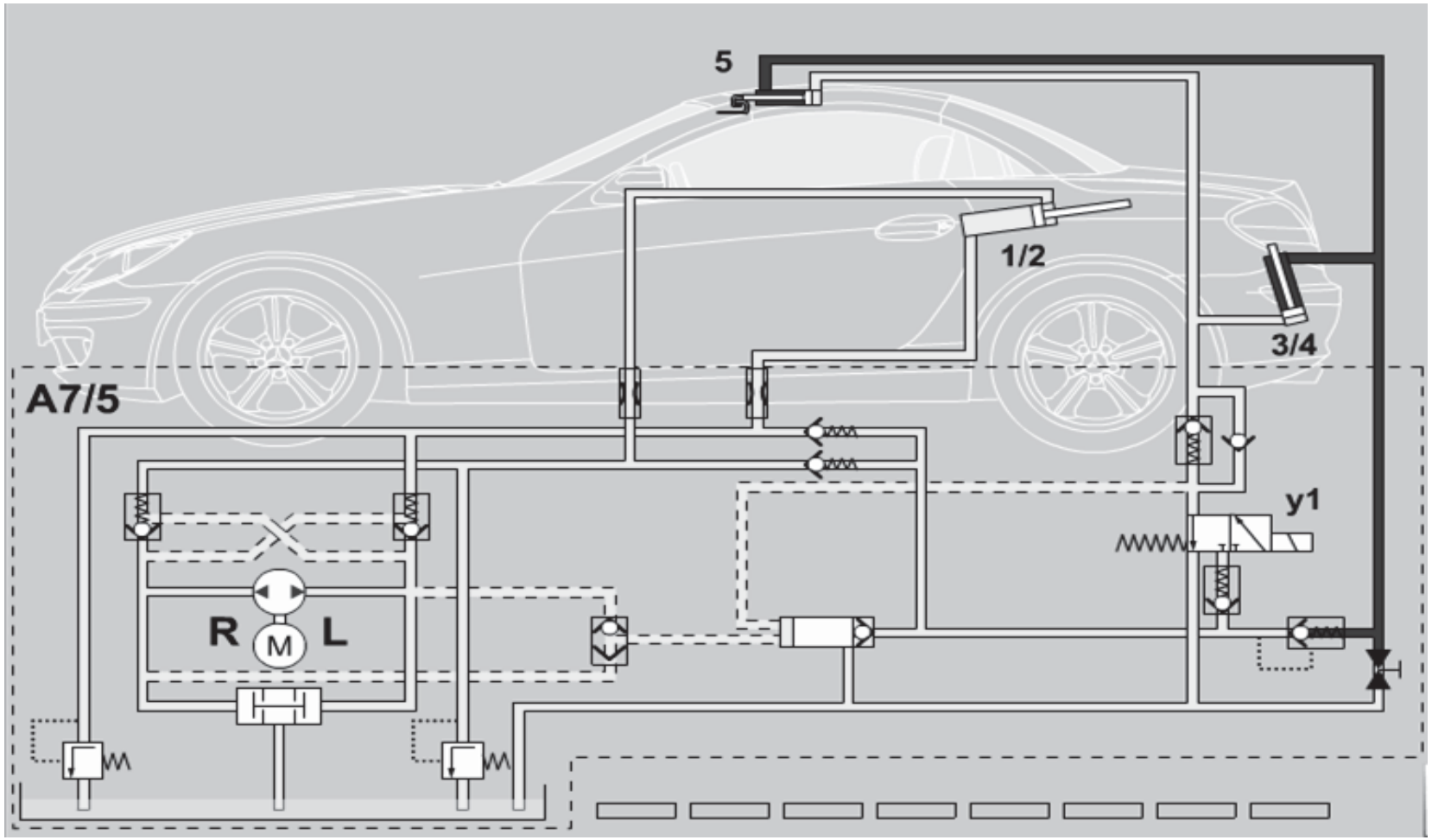
roof latch

roof

trunk lid

Note: cylinder numbers refer to diagram on next page

Check & Control Valve Block



1/2 Hydraulic cylinders - Vario Roof
3/4 Hydraulic cylinders - Tubular Frame
5 Hydraulic cylinder - Vario Roof lock at front

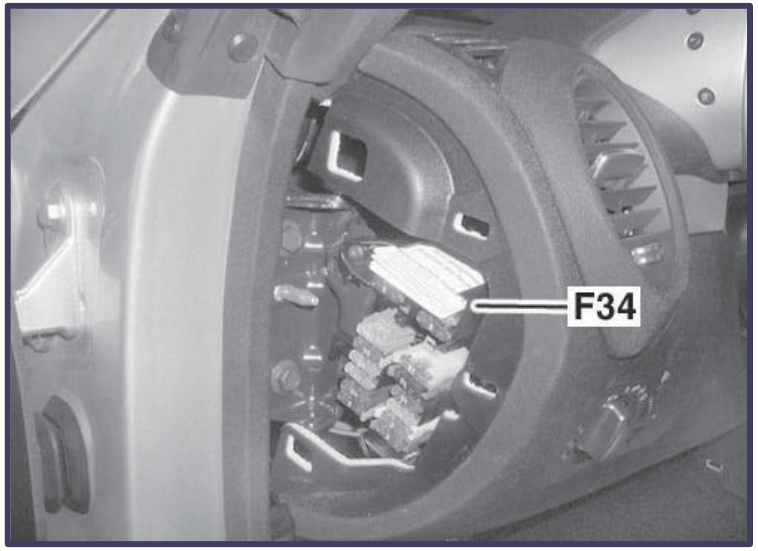
A7/5 Vario Roof hydraulic unit
A7/5y1 Vario Roof - solenoid valve

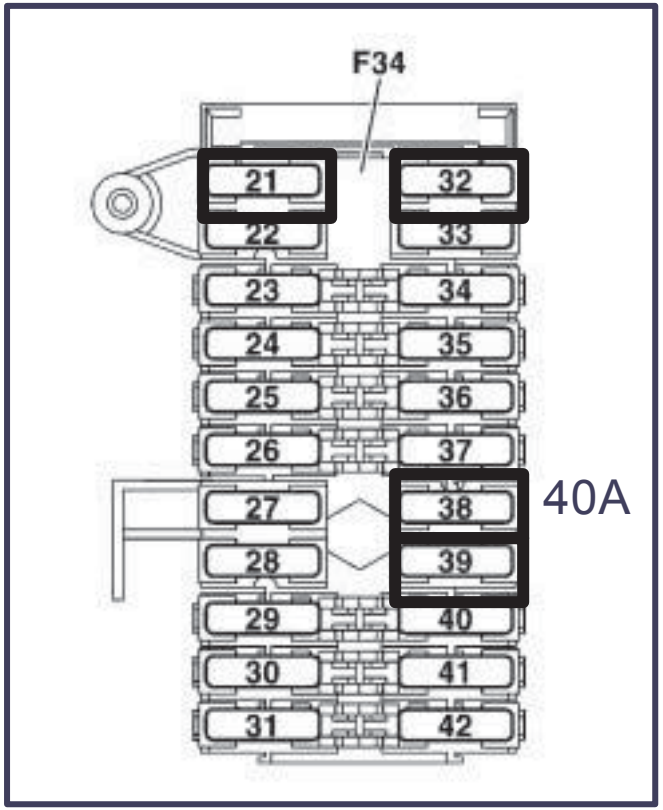
Electrical Components

Fuses
Control Module
Relays
Solenoid valve (covered previously)
Limit Switches

Fuse Location

F34 (interior fuse box)

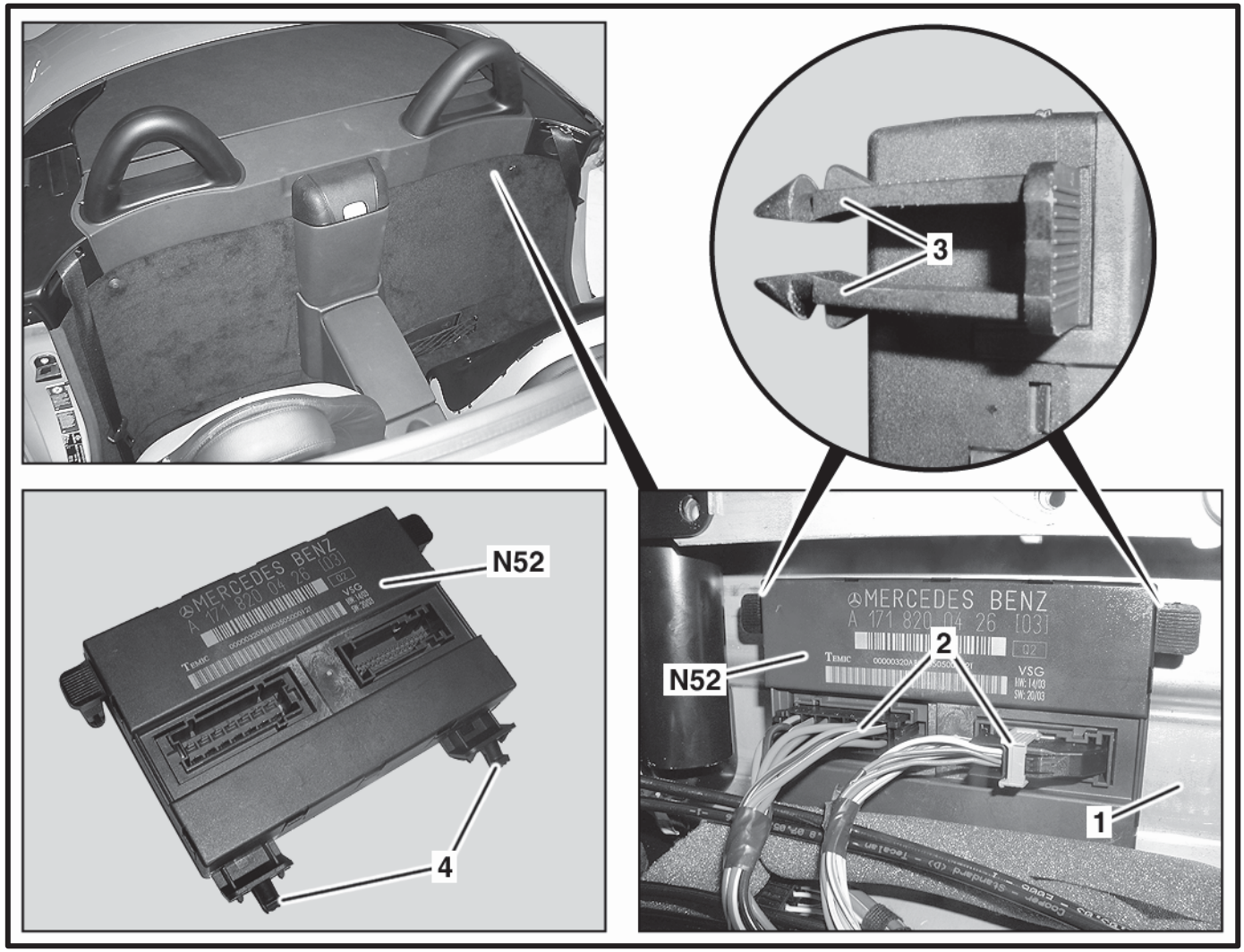




f21
f32
f39
VR Control unit (N52)

f38 – VR Hydraulic unit

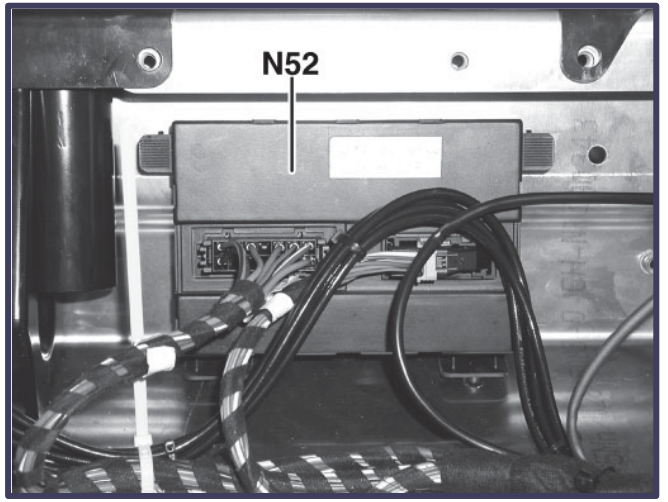
Control Module (N52) Location

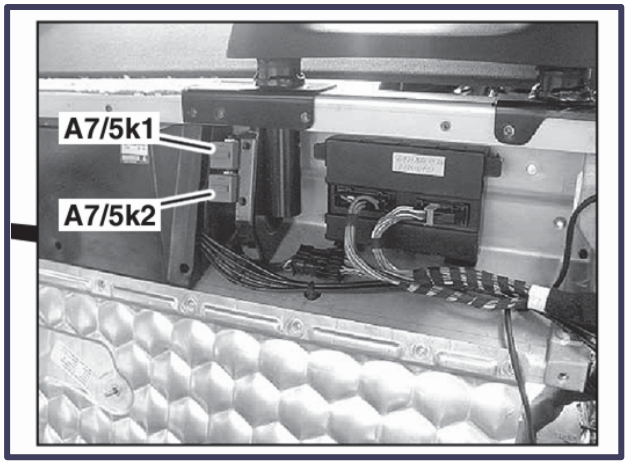


1=Cross member 2=Connectors 3&4=Mounting tabs

Control Module & Limit Switches

- Control Module (N52) tasks:
  - Control of hydraulic unit
  - Control of rear side window motors
  - Send function and warning messages over CAN B
  - Read switch position and sensor values
  - Control Vario Roof Hydraulic unit relays to change direction of pump motor rotation
    - A7/5k1 & A7/5k2
- 5 limit switches indicate position of roof components.

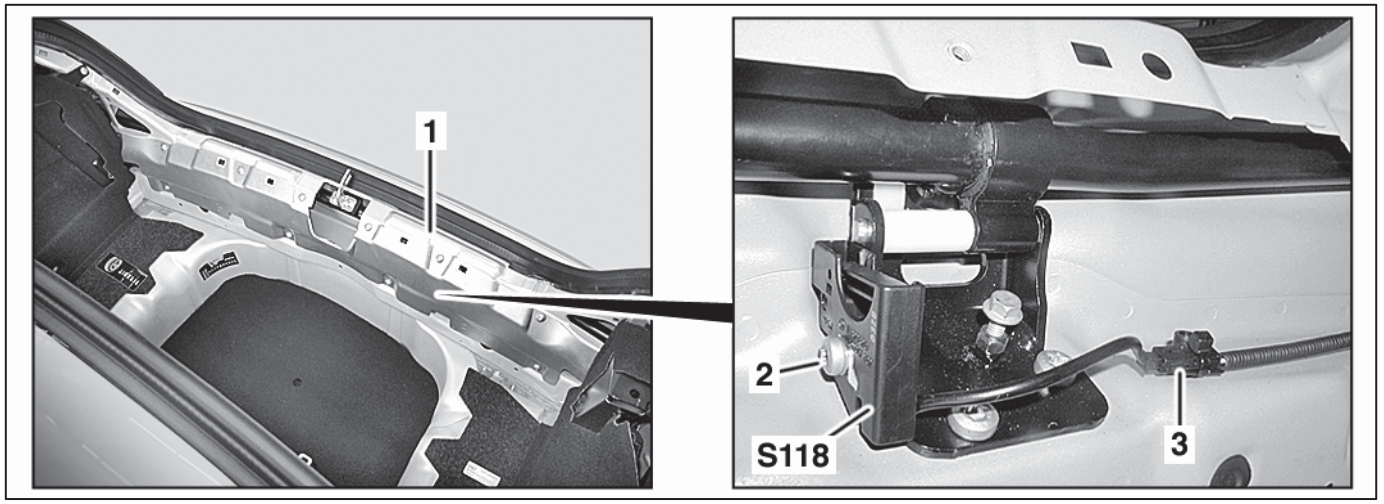




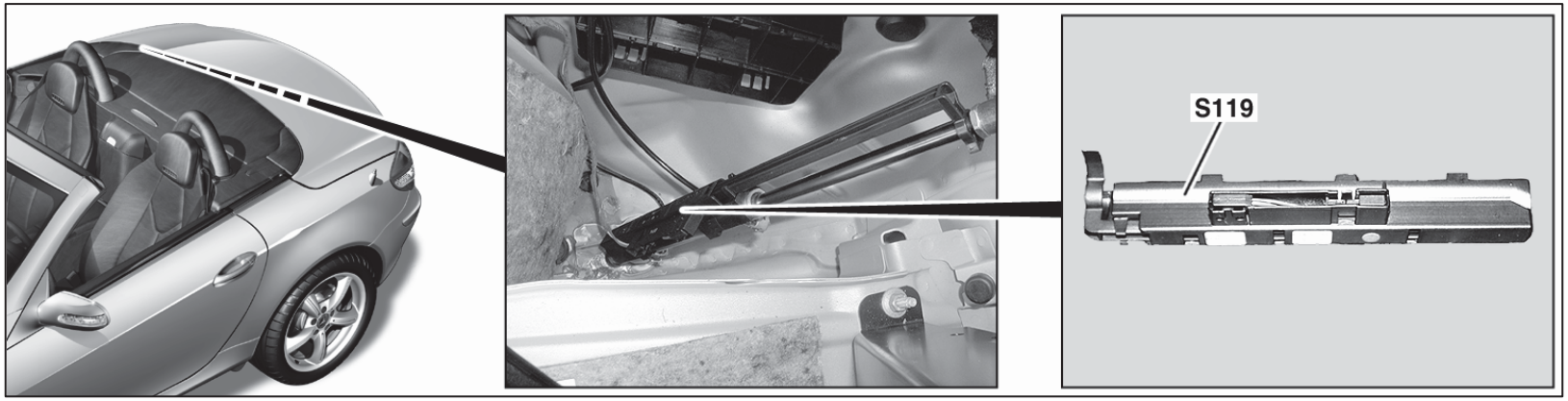
Note: High amperage consumers (windows/pump) are switched on with 80ms time delay

Tubular Frame Limit Switches

Tubular frame “locked” switch (S118)

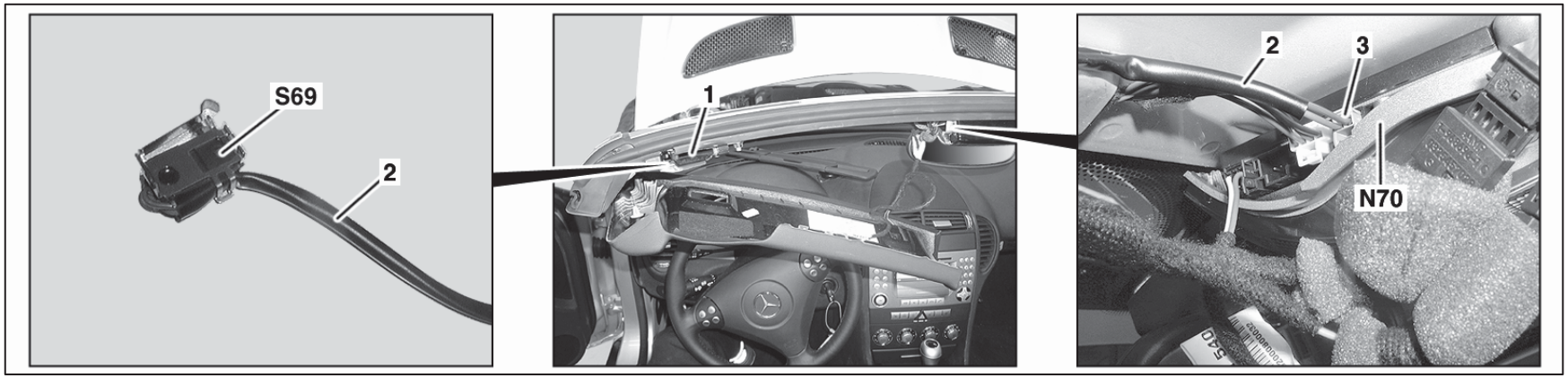


Tubular frame “open” switch (S119)

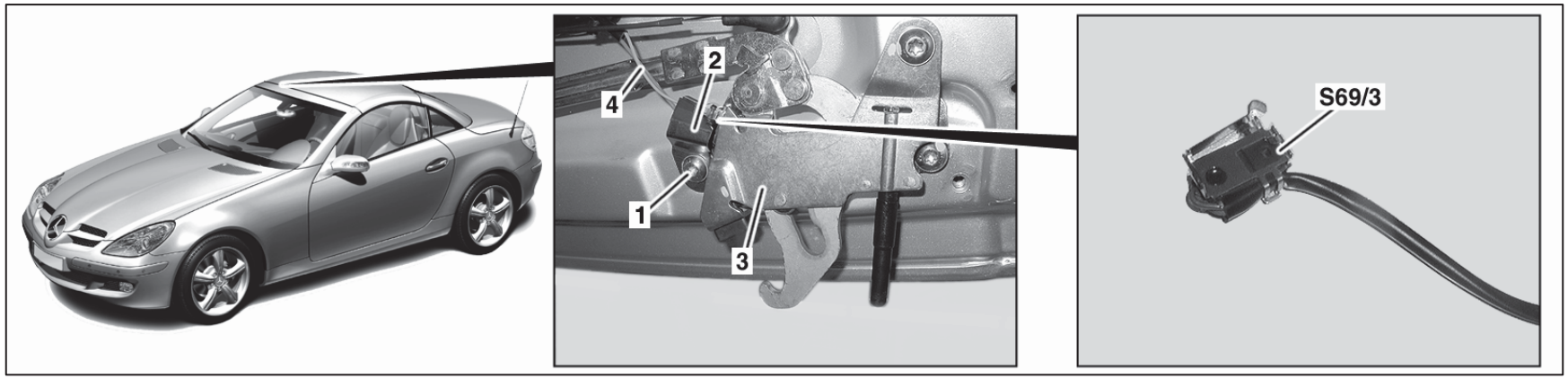


Roof Closed & Locked Limit Switches

Vario Roof “closed” switch (S69) → CAN B input to N52 from Overhead Control Panel (N70)

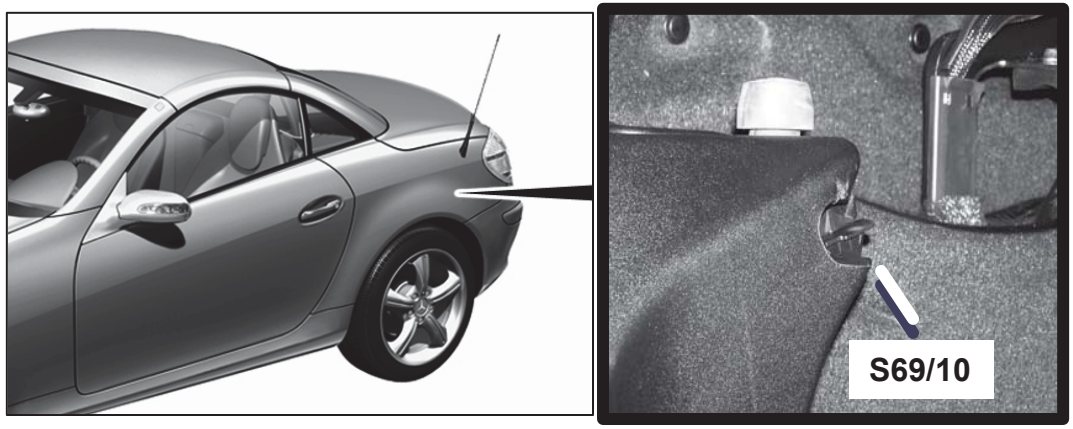


Vario Roof “locked” switch (S69/3)

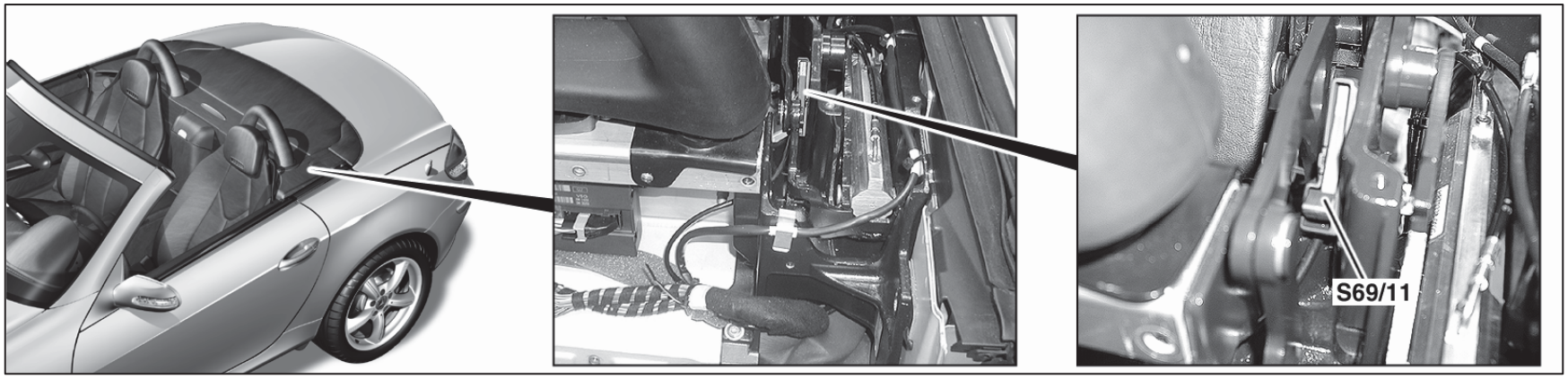


Trunk Partition & Roof Open Limit Switches

Trunk partition “closed” switch (S69/10)



Vario Roof “open / lowered” switch (S69/11)

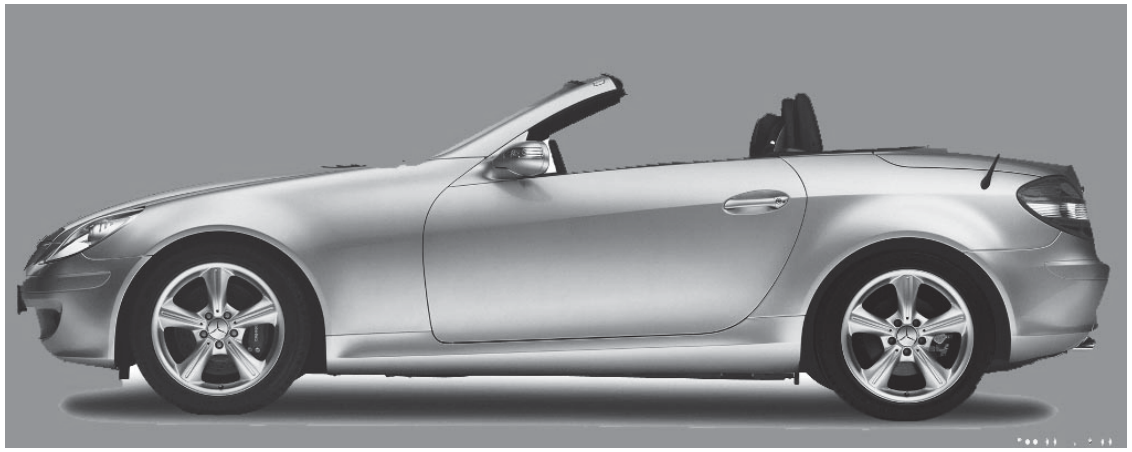


Trunk lid must also be closed –CAN B input to N52 from rear SAM

Emergency Closing

Requirements:

- Job Aid 03-1 “Vario Roof Emergency Closing”
- 6mm hex wrench
- Pry tool to remove cylinder spring tab
- Vehicle’s emergency key (to operate trunk latch)
- 2 people
- SDS/DAS equipment or jumper wires (to close rear windows)



Vario Roof Appendix

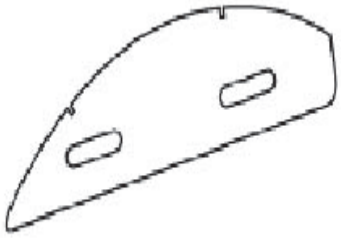
Other VR tools

Roof Adjustment Tools

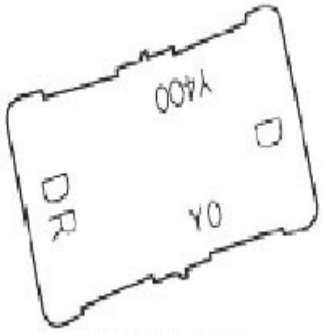
Rear fender/trunk lid gauge

171 589 05 23 00

Roof contour gauge



171 589 04 23 00



Vario roof/
window frame
gauge

171 589 06 23 00