

**WARNUNG**

Gefahr des Verlusts der Text-Bild-Zuordnung beim Ausdruck.

- **Aus technischen Gründen kann derzeit nicht ausgeschlossen werden, dass trotz einwandfreier Darstellung auf dem Bildschirm beim Ausdruck der Zusammenhang von Text und zugehörigem Bild verloren geht.**
- **Wird der Fehler nicht bemerkt, besteht die Gefahr, daß Arbeiten nicht korrekt durchgeführt werden und es dadurch zu Personen- und Sachschäden kommt.**

→ Vergleichen Sie deshalb nach dem Druckvorgang unbedingt die Ausdrücke mit der Bildschirmdarstellung. Korrigieren Sie die Ausdrücke im Fehlerfall so, daß der Inhalt der Bildschirmdarstellung zutreffend wiedergegeben wird.

**WARNING**

Danger of losing text-figure correspondence when printing out.

- **For technical reasons, it can currently not be ruled out that the correspondence between text and associated figure can be lost when it is printed out, even though the display on the screen is correct.**
- **If the fault is not noticed, there is the danger that work will not be performed correctly which can cause injury and damage.**

→ Therefore, always compare printouts with the screen display after printing them out. Correct the printouts if they are faulty so that the content of the screen display matches that on the printouts.

**AVERTISSEMENT**

Risque de perte de la correspondance texte-illustration lors de l'impression papier.

- **Pour des raisons techniques, il ne peut pas être exclu à l'heure actuelle que, même en cas d'affichage correct à l'écran, la correspondance entre le texte et l'illustration puisse être erronée sur l'impression papier.**
- **Si l'erreur passe inaperçue, on court le risque d'exécuter certaines opérations de manière incorrecte pouvant conduire à des dommages corporels et matériels.**

→ Comparez impérativement pour cette raison les impressions papier avec l'affichage à l'écran. Corrigez-les en cas d'erreur de manière à reproduire correctement l'affichage à l'écran.

**ATTENZIONE**

Pericolo di perdita dell'abbinamento testo-immagine nella stampa.

- **Per motivi tecnici non è escluso che, nonostante la rappresentazione sullo schermo risulti perfetta, durante la stampa venga persa la corrispondenza fra testo e relativa immagine.**
- **Se tale difetto non viene rilevato vi è il pericolo che i lavori non siano eseguiti correttamente; ciò può avere come conseguenza lesioni e danneggiamenti.**

→ Per questo motivo, dopo la stampa è assolutamente necessario confrontare le stampe con la rappresentazione sullo schermo. In caso di errore si prega di correggere le stampe, così da garantire la riproduzione esatta della rappresentazione sullo schermo.

**ADVERTENCIA**

Al imprimir se corre el riesgo de perder la correcta asignación de las figuras al texto.

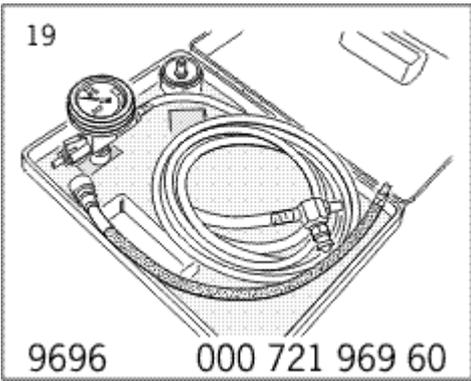
- **Por motivos técnicos, por el momento no se puede descartar que, aun siendo correcta la imagen que aparezca en la pantalla, al imprimir se pierda la correlación entre el texto y la figura correspondiente.**
- **Si este error pasara desapercibido, existe el riesgo de que los trabajos no se ejecuten de forma correcta y, por tanto, se produzcan daños personales y materiales.**

→ Por ello le rogamos que tras el proceso de impresión compare siempre las copias impresas con la imagen de la pantalla. En caso de error, corrija las copias impresas de forma que se correspondan con el contenido de la imagen de la pantalla.

19 38 17 Draining and filling in coolant (includes bleeding) - as of MY 2003

- [Tools and materials](#)
- [Information](#)
- [Draining coolant](#)
- [Filling the cooling system \(includes bleeding\)](#)
- [Bleeding vehicles with auxiliary heater](#)

Tools

Designation	Type	Number	Explanation
Filling device	special tool	9696	
Assembly tools for spring band clamps	commercially available tool	NR.72	<p style="text-align: center;">PORSCHE</p> <p style="text-align: center;">siehe Handbuch Werkstattaufrüstung</p> <hr/> <p style="text-align: center;">Voir le Manuel Equipement d'atelier</p> <hr/> <p style="text-align: center;">Refer to the Workshop Equipment manual</p> <hr/> <p style="text-align: center;">Vease Manual de Equipamiento de Taller</p> <hr/> <p style="text-align: center;">Vedere il Manuale dell'attrezzatura d'officina</p> <hr/> <p style="text-align: center;">ワークショップ・イクイップメント・マニュアルを参照</p>
Flexible screwdriver a/f 7	commercially available tool	NR.73-1	

PORSCHE

siehe Handbuch Werkstattausrüstung

Voir le Manuel Equipement d'atelier

Refer to the Workshop Equipment manual

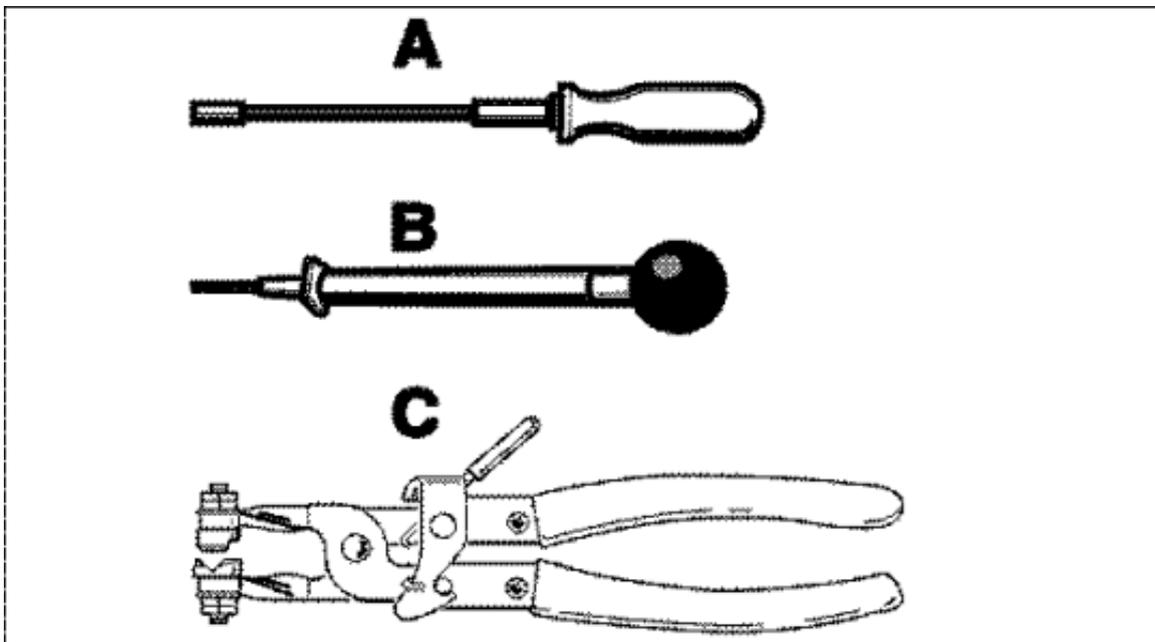
Vease Manual de Equipamiento de Taller

Vedere il Manuale dell'attrezzatura d'officina

ワークショップ・イクイップメント・マニュアルを参照

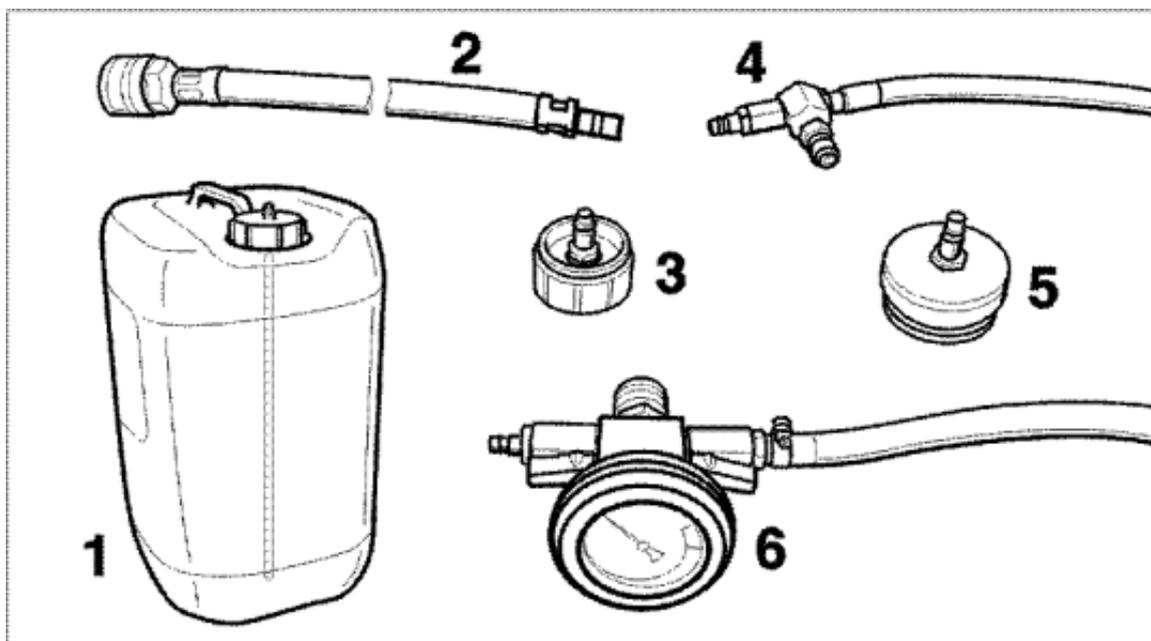
Tools and materials

Special tools



Special tools 1

- Flexible screwdriver a/f 7 (for loosening or tightening screw hose clamps) **Flexible screwdriver a/f 7**
- A- NR.73-1**
- Antifreeze protection testing device (for checking the antifreeze content in the cooling system. The design **B-** can deviate from that shown in the picture.)
- Spring band clamp pliers (for opening and closing spring band clamps) **Assembly tools for spring band**
- C- clamps NR.72**



Special tools 2 **Filling device 9696**

- 1- - Canister (canister with lifting tube, capacity approx. 30 l, with volume scale)
- 2- - Hose extension
- 3- - Adapter K 22 (included in the scope of delivery of radiator vacuum filling device)
- 4- - Venturi nozzle (included in the scope of delivery of radiator vacuum filling device)
- 5- - Adapter K 60 (included in the scope of delivery of radiator vacuum filling device)
- 6- - Pressure gauge (included in the scope of delivery of radiator vacuum filling device)

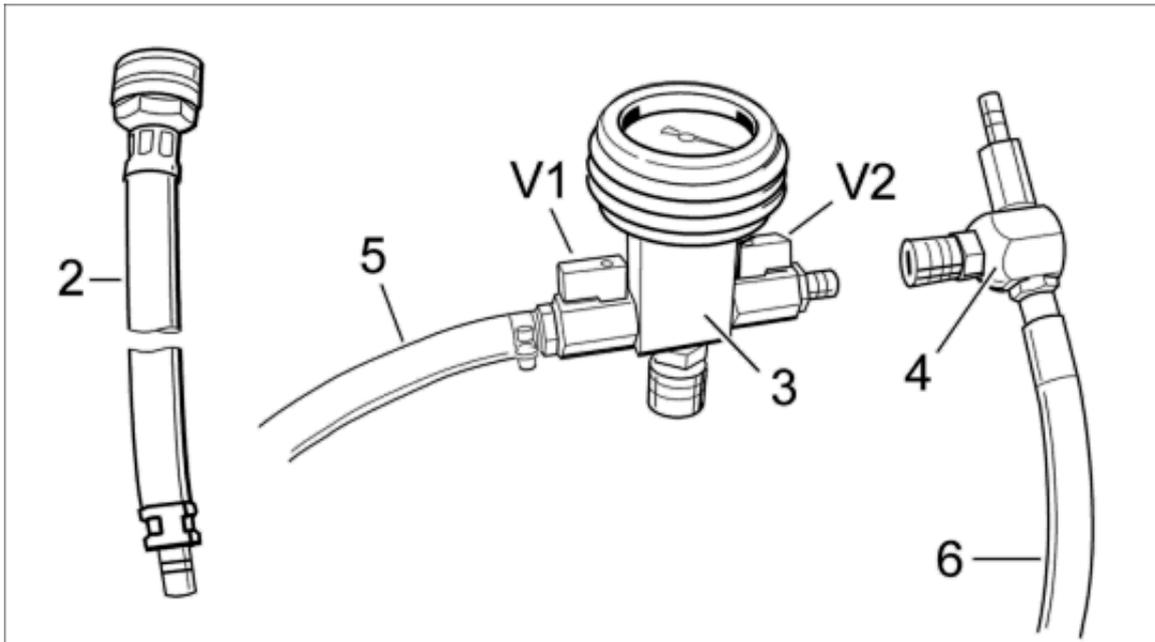
Information

Components of the radiator vacuum filling device



Note

- Pay attention to the special features in the corresponding chapter for vehicles with auxiliary heater.
→ 193817 Draining and filling coolant (includes bleeding) - chapter on "Bleeding"



Vacuum filling device components **Filling device 9696**

- 1- - Adapter K 22 (installed in place of the cap on the coolant reservoir.)
- 2- - Hose extension FZ 100 (installed between K22 and KVB 01.)
- 3- - KVB 01 (vacuum pressure gauge with two shut-off valves)
 - - Shut-off valve V1 (shutoff valve for the filler hose.)
- V1-**
 - - Shut-off valve V2 (shutoff valve for the filler hose.)
- V2-**
- 4- - Venturi nozzle (a vacuum is produced in this component by means of compressed air. A pressure between 6 and 10 bar must be present.)
- 5- - Filler hose (the cooling system is refilled via this hose.)
- 6- - Return lines (the compressed air and the extracted coolant are drawn off via this hose.)

Draining coolant

Draining coolant



ATTENTION

Danger of poisoning!

- **Coolant additives and cleaning liquids are toxic.**

- Swallowing coolant additives and cleaning liquids must be urgently avoided.
- Do not consume any food or drink while working (danger of accidental mixing).
- If swallowed, observe the warning information on the containers and contact a doctor. If necessary, show the doctor the warning information on the packaging.



ATTENTION

Danger of scalding with hot coolant!

- Never open the cooling system when it is hot. Emerging coolant may be very hot and can cause scalding.
- The cooling system must be depressurised before being opened.
- Allow engine to cool down.

**DANGER**

The vehicle fans can continue running or start up automatically.

- **Injuries which can lead to the loss of body parts.**

- The power supply to the fans must be disconnected before starting work on the radiator, radiator fans, or the belt drive. → Disconnect fuse carrier [9PAAE1 9PAAE7 9PAAF1] → *Disconnect fuse carrier [9PAAAD1 9PAAAD7 9PAAJ1]* or battery → Work instructions after disconnecting the battery

**ATTENTION**

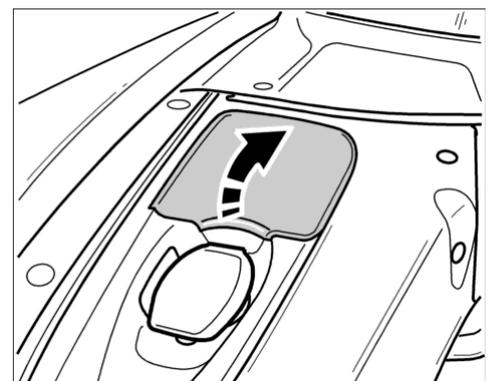
Risk of damaging the cooling system!

- Do not relieve the system pressure of the cooling system and then run the engine.
- Relieving the system pressure and subsequently starting the engine can cause severe damage to components in the cooling system. If the cooling system must be opened when it is hot, allow the cooling system to cool down before starting the engine again.

**Note**

- *The coolant filled in at the factory is intended to suffice for the entire service life. As long as the coolant is not contaminated by foreign bodies or other fluids it need not be changed.*
- *Different coolant additives must not be mixed and doing so may damage the cooling system. Only use original Porsche coolant additives.*
- *The coolant must be set to antifreeze protection of -37 °C. This corresponds to a mixing ratio of 50 : 50 (coolant additive : water). This mixing ratio provides optimum corrosion and antifreeze protection.*
- *Coolant additives, coolants and cleaning agents must be disposed of according to the respective, applicable national laws.*
- *Seals in the cooling system must be replaced by new ones following disassembly.*

1. Open maintenance cover.



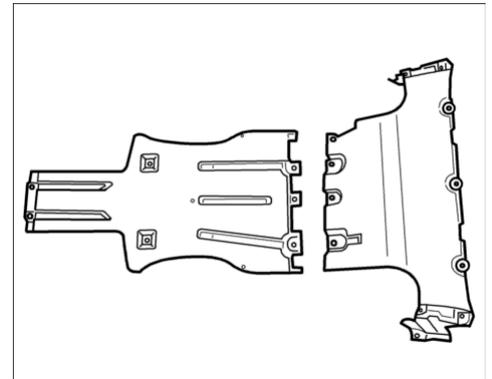
Maintenance cover

2. Carefully open the cap on the coolant reservoir. Unscrew the cap in an anti-clockwise direction.
3. Open cap on the reservoir and remove.



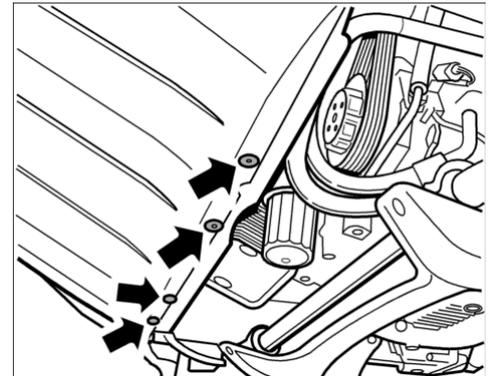
Cap on coolant reservoir

4. Remove engine guard. → 108019 Removing and installing engine guard - chapter on "Removing"



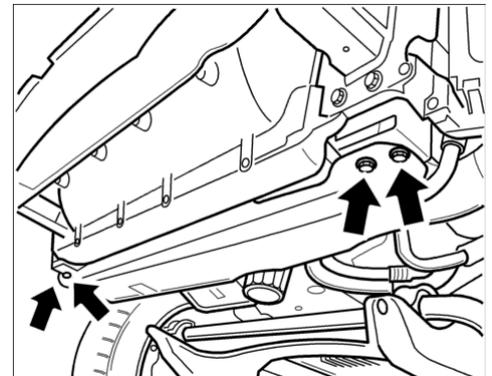
Engine guard

5. Release the front apron on the underside.



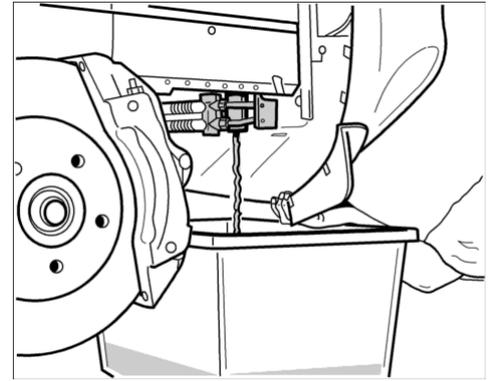
Front apron fastening screws

6. Remove the support plate under the radiator. To do this, loosen the 4 fastening screws.



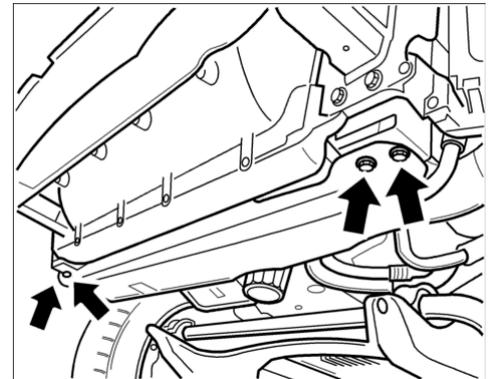
Support plate fastening screws

7. Drain cooling system. If present, remove the drain plug from the radiator, otherwise open the lowest coolant hose on the radiator, and drain the coolant into a container and dispose of it according to the applicable national laws if no longer required.
8. Fit a new drain plug on the radiator and tighten it. If removed, fasten coolant hose.



Draining cooling system

9. Install the support plate under the radiator. Tighten the four fastening screws. → **Tightening torque: 17 ftlb.**



Support plate fastening screws

Filling the cooling system (includes bleeding)

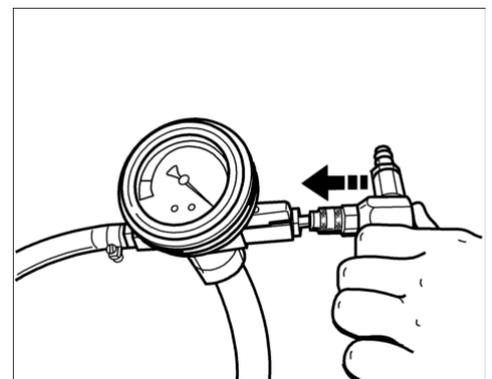
Filling cooling system (includes bleeding)

1. Screw the cap adapter for the coolant reservoir (K 60) onto the reservoir.
2. Connect the flexible extension (Fz 100) to the cap.
3. Connect the vacuum pressure gauge of the bleeder tool to the flexible extension. When doing so, ensure that both shut-off valves are closed (positioned at 90° to flow direction).
4. Connect the Venturi nozzle to the vacuum pressure gauge.



Note

- *The coolant amount provided must be approx. 2 litres more than the amount which has to be filled. → Technical data for M48/00 engine (Cayenne S) [9PAAE1 9PAAE7] → Technical data for M48/00 engine (Cayenne S) [9PAAD1 9PAAD7 9PAAF1 9PAAJ1], → Technical data for M48/50 engine (Cayenne Turbo) [9PAAF1 9PAAJ1] → Technical data for M48/50 engine (Cayenne Turbo) [9PAAD1 9PAAD7 9PAAE1 9PAAE7], → Technical data for BFD engine (Cayenne) [9PAAD1 9PAAD7] → Technical data for BFD engine (Cayenne) [9PAAE1 9PAAE7 9PAAF1 9PAAJ1]*
- *Because differing quantities of coolant can drain away for different types of repairs, the filling capacities can vary greatly. Recommendation: To be on the safe side, fill the canister to 30 l, then bleed the cooling system. The difference after bleeding is the suctioned-in coolant quantity. Observe volume scale on the canister.*



Connecting the Venturi nozzle to the vacuum pressure gauge

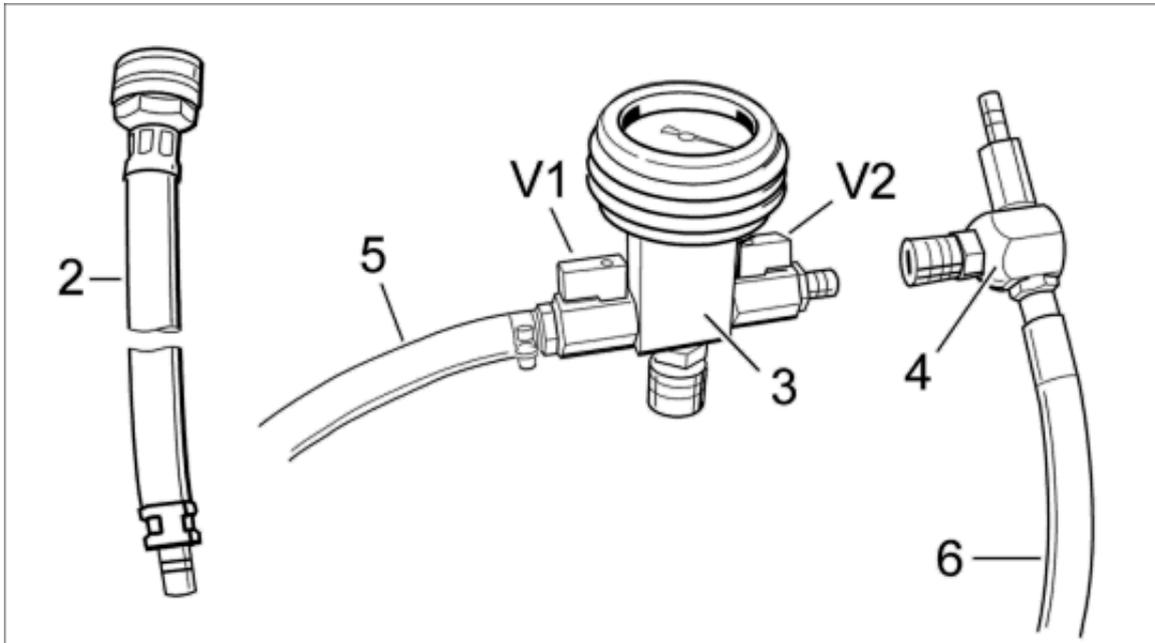
- An antifreeze content of $-35\text{ }^{\circ}\text{C}$ corresponds to a mixture of 50:50 (antifreeze: water).

- Place a canister with a sufficient amount of coolant and with an antifreeze content of $-35\text{ }^{\circ}\text{C}$ beside the vehicle near the reservoir.



Note

- The bleeding process is completed more quickly if the canister is positioned at roughly the same height as the coolant expansion tank.
- Push the filler hose -5- of the vacuum pressure gauge onto the canister connection. Lay the return line -6- from the Venturi nozzle to a second container (bucket).



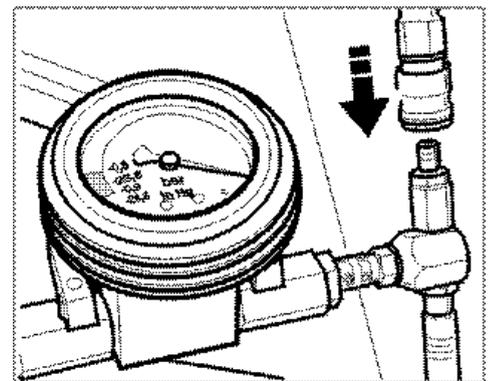
Vacuum filling device components



Note

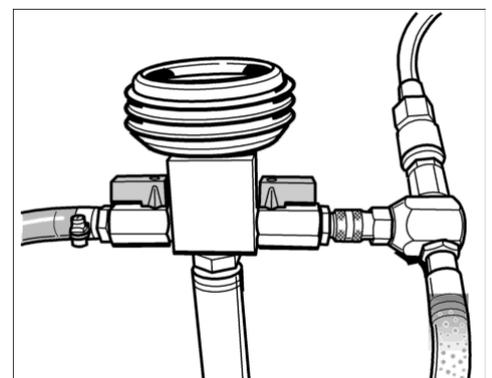
- A hissing sound after connecting the compressed air supply is usual.

- Connect the compressed air supply.



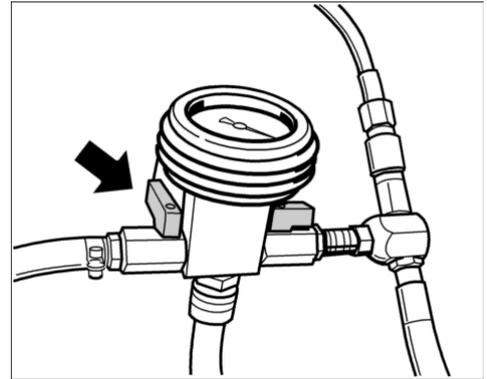
Connecting the compressed air supply

- Open both shut-off valves on the vacuum pressure gauge until the transparent filler hose -5- has completely filled with coolant.



Shut-off valves on the vacuum pressure gauge

9. Close the left shut-off valve (V1) on the vacuum pressure gauge and allow a vacuum to build up in the cooling system.

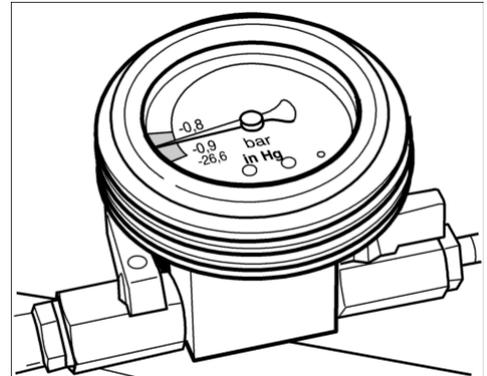


Closing the left shut-off valve (V1)

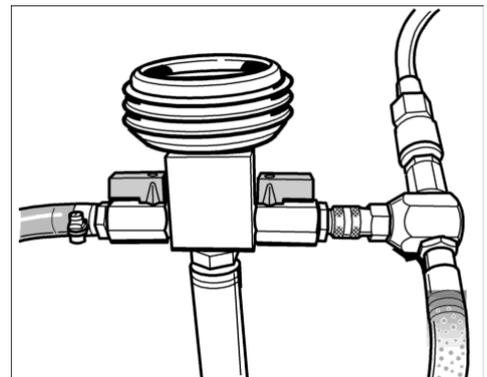


Note

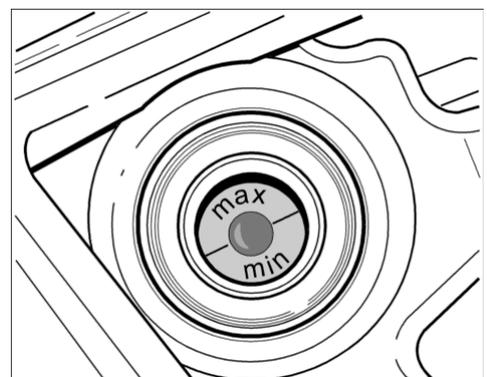
- If no vacuum is generated (the pointer does not move to the green area), there is a leak in the cooling system.
 - Deformation of the rubber hoses of the cooling system is normal.
 - When the pressure gauge pointer is in the green area of the display scale, a sufficient vacuum has been built up.
 - After both shutoff valves on the vacuum pressure gauge have been closed and the compressed air supply has been disconnected, the vacuum must not drop. If the vacuum drops within approx. 30 seconds, there is a leak in the coolant circuit.
10. When there is a sufficient vacuum in the cooling system (indicator is in the green area), close the right shut-off valve (V2) and then disconnect the compressed air supply.
11. Re-open the left shut-off valve (V1) on the vacuum pressure gauge. The cooling system is then filled.
12. When there is no trace of vacuum present or the coolant is no longer drawn from the canister, open the right shut-off valve (V2).
13. Then remove the complete filling tool (including the cap K 60).
14. If necessary, fill the coolant reservoir with coolant to the maximum marking.



When there is sufficient vacuum, close the right shut-off valve (V2)

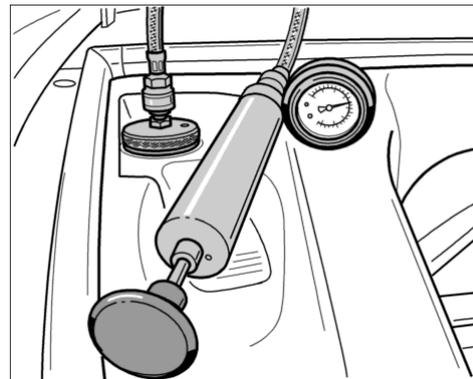


Opening right shut-off valve



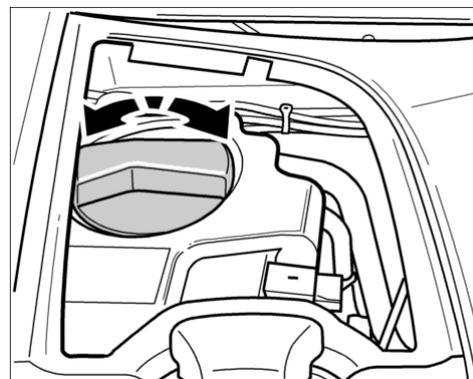
Maximum marking for coolant reservoir**Note**

- *If necessary, the system can be checked for leaks. → 190101 Checking cooling system - chapter on "Checking"*



Cooling system test device

15. Screw on the cover of the reservoir in a clockwise direction.
16. Close the maintenance cover.
17. Re-install the complete engine guard. → 108019 Removing and installing engine guard - chapter on "Installing"
18. Conduct a test drive with the vehicle, check the fluid level in the reservoir after the cooling system has cooled again and, if necessary, fill up to the max marking with coolant.



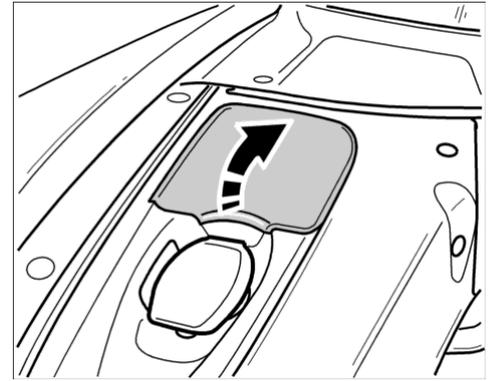
Reservoir cap

Bleeding vehicles with auxiliary heater**Bleeding vehicles with auxiliary heater**

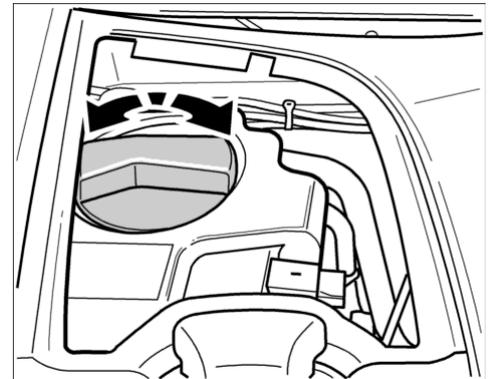
1. Fill and bleed the vehicle as described in the previous chapter using the vacuum filling device. → 193817 Draining and filling coolant (includes bleeding)
2. Warm engine to operating temperature (≥ 90 °C).

**Note**

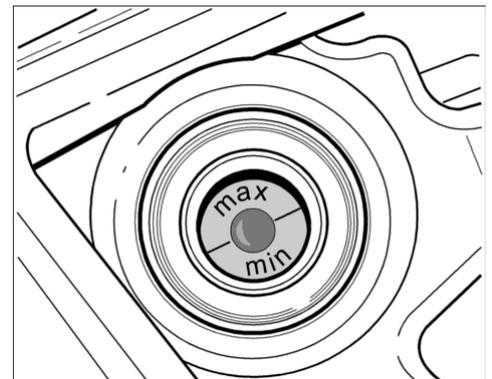
- *Do not activate the 2/3 directional-control valve with the Porsche System Tester above 1500 rpm.*
 - *Activate the 2/3 directional-control valve with the Porsche System Tester below 1500 rpm.*
3. Operate engine for 5 minutes with changing engine speeds. When doing this, run the engine for 10 seconds in idle and then for 10 seconds at 4,000 rpm. In the speed transition from higher engine speeds (1500 to 4000 rpm) to idle (approx. 600), the directional-control valve should be activated with the Porsche System Tester below 1500 rpm. Note that the 2/3 directional-control valve is not activated with the Porsche System Tester above 1500 rpm.
 4. Let the vehicle cool down.
 5. Open maintenance cover.

*Maintenance cover*

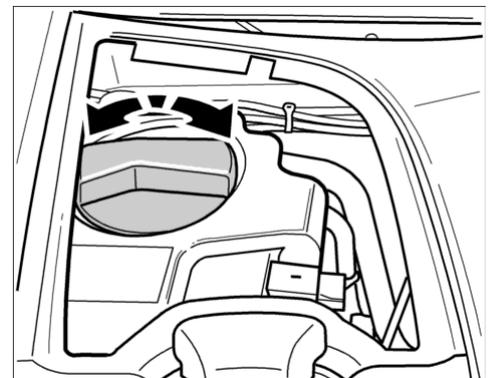
6. Carefully open the cap on the coolant reservoir. Unscrew the cap in an anti-clockwise direction.

*Cap on coolant reservoir*

7. Check coolant level and, if necessary, fill the coolant reservoir with coolant to the maximum marking.

*Maximum marking for coolant reservoir*

8. Screw on the cover of the reservoir.
9. Close the maintenance cover.

*Reservoir cap*

9PAAD1, 9PAAD7, 9PAAE1, 9PAAE7, 9PAAF1, 9PAAJ1

as of MY 2003

Country C00, C02, C05, C07, C08, C09, C10, C11, C12, C13, C14, C15, C16, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27, C28, C32, C33, C34, C35, C36, C37, C38, C39, C45, C46, C98, C99