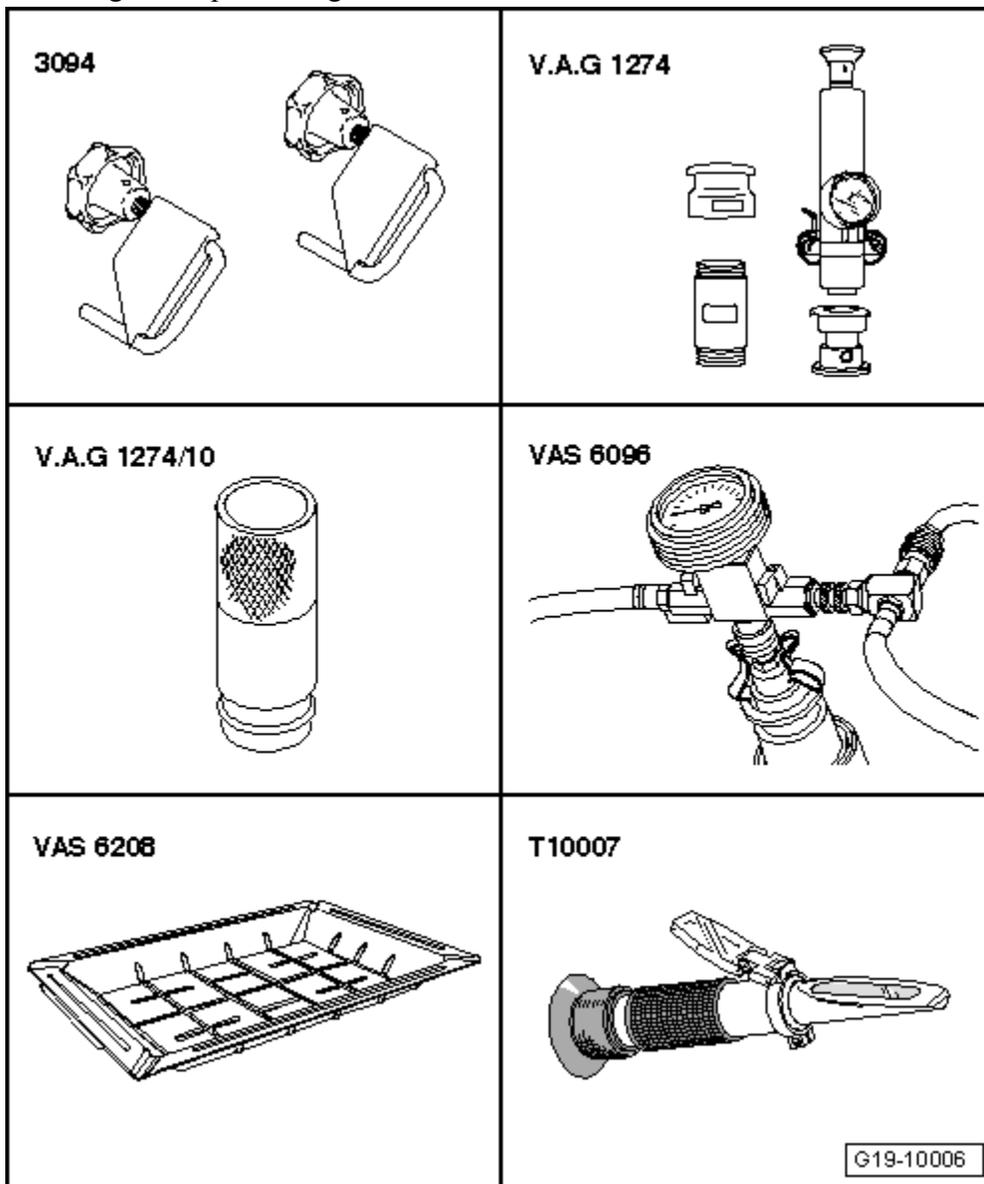


Draining and replenishing coolant



Special tools and workshop equipment required

- t Hose clamps up to Ø 25 mm -3094-
- t Cooling system tester -V.A.G 1274/1- from -V.A.G 1274-
- t Pipe for cooling system tester -V.A.G 1274/10-
- t Cooling system filler unit -VAS 6096-
- t Drip tray for workshop cranes -VAS 6208- or -V.A.G 1306-
- t Refractometer -T10007-

Draining



Note

Collect drained coolant in a clean container for disposal or re-use.

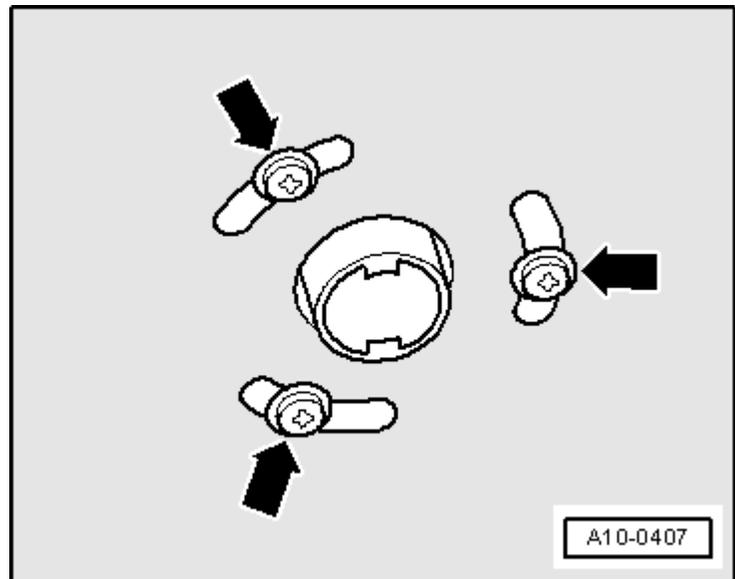
 **WARNING**

Hot vapour/coolant may escape when opening the expansion tank. Cover the cap with a cloth and open carefully.

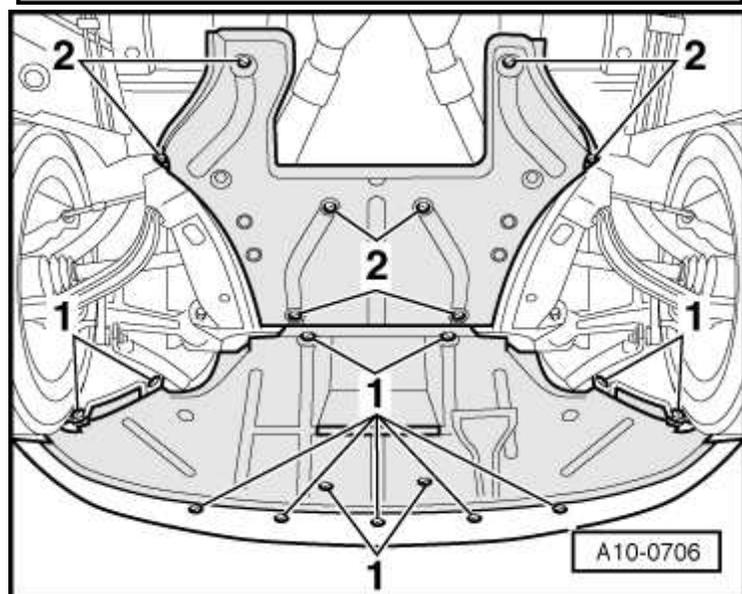
- Open cap of coolant expansion tank.

On vehicles with auxiliary heater, screw out

- bolts -arrows- for attaching exhaust pipe of auxiliary/supplementary heater to noise insulation.



- Unfasten quick-release fasteners -1- and detach front noise insulation.



- Place drip tray for workshop cranes -VAS 6208- or -V.A.G 1306- beneath engine.
- Screw out drain plugs -1 ... 3- and drain off coolant.

Replenishing

 **Note**

The cooling system is filled all year round with a mixture of water and radiator anti-freeze/anti-corrosion agent.

Use is only to be made of the coolant additive Plus -G 012 A8F A1- (“abbreviated to: G12+”) “meeting specification TL VW 774 F”. Other coolant additives could considerably impair anti-corrosion action in particular. The resultant damage could lead to loss of coolant and consequently to serious engine damage.

The coolant additive “G12+” can be mixed with the additives “G11” and “G12”.

“G12+” and coolant additives marked “meeting specification TL VW 774 F” prevent frost and corrosion damage, stop scale forming and at the same time also increase the boiling point. The cooling system must therefore be filled all year round with anti-freeze and anti-corrosion additive.

On account of the higher boiling point, the coolant helps to enhance engine reliability under heavy loads particularly in countries with tropical climates.

Frost protection must be ensured down to approx. $-25\text{ }^{\circ}\text{C}$ (in countries with an Arctic climate down to approx. $-35\text{ }^{\circ}\text{C}$).

The coolant concentration must not be reduced by adding water even in warmer seasons and in warmer countries. The anti-freeze ratio must be at least 40 %.

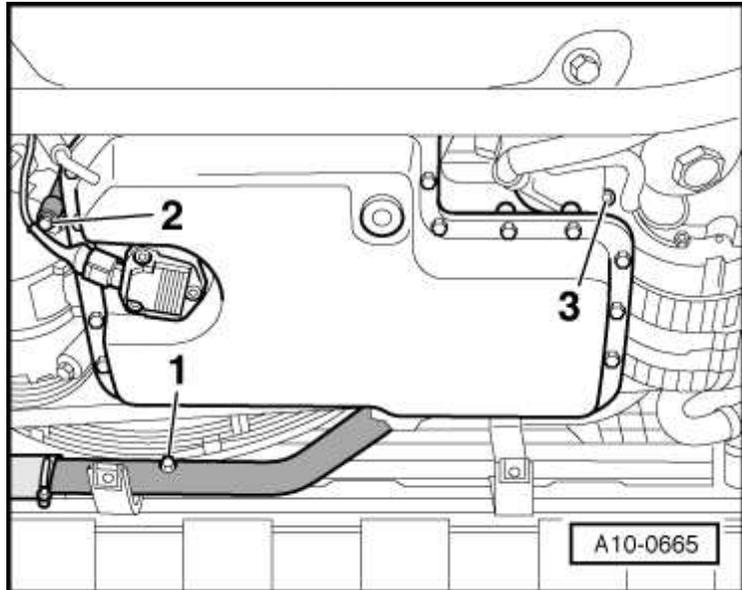
If greater frost protection is required in very cold climates, the amount of “G12+” can be increased, however only up to 60 % (giving frost protection to around $-40\text{ }^{\circ}\text{C}$) as otherwise frost protection decreases again and cooling efficiency is also impaired.

Exclusive use is to be made of clean drinking water for mixing coolant.

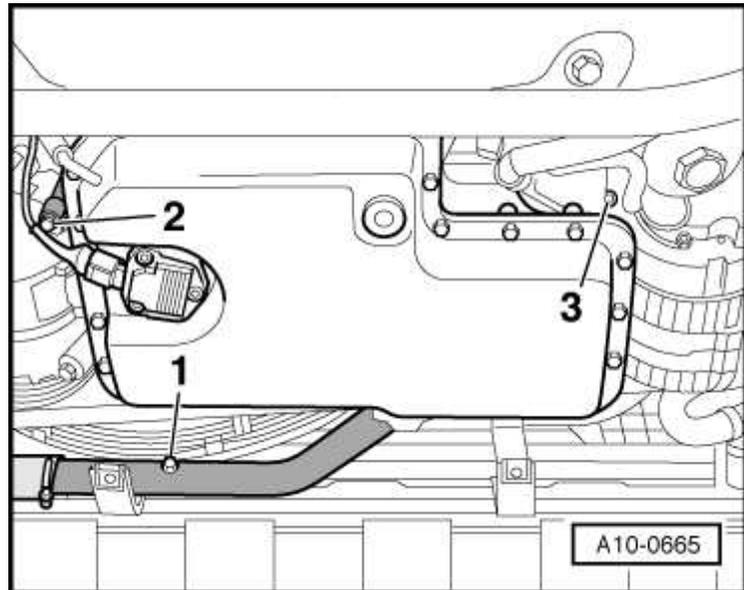
If the radiator, heat exchanger, cylinder head, cylinder head gasket or cylinder block has been replaced, do not re-use the old coolant.

Never re-use contaminated coolant.

For checking anti-freeze protection in cooling system, use must be made for coolant additive “G12+” of the refractometer -T10007-.



- Replace sealing rings and tighten drain plugs -1 ... 3-.



- Fill coolant tank -VAS 6096/1- with at least 14 litres of coolant pre-mixed to the correct ratio:

1 “G12+” (40 %) and water (60 %) for frost protection down to -25 °C

1 “G12+” (50 %) and water (50 %) for frost protection down to -35 °C

1 “G12+” (60 %) and water (40 %) for frost protection down to -40 °C

- Screw adapter for cooling system tester - V.A.G 1274/1- to coolant expansion tank.

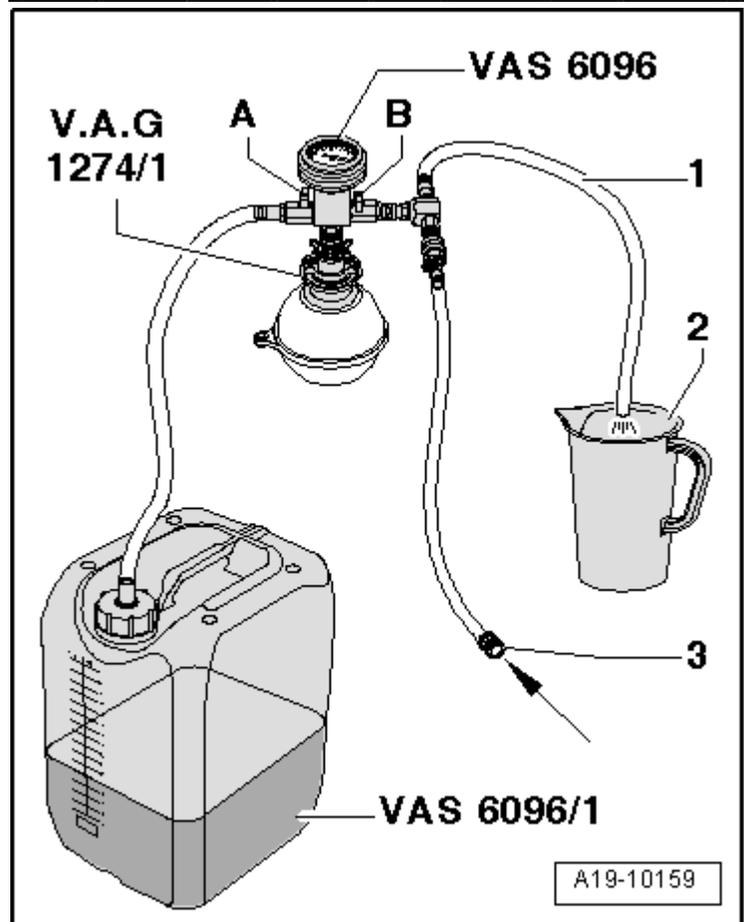
- Attach cooling system filler unit - VAS 6096- to adapter -V.A.G 1274/1-.

- Route exhaust air hose -1- into a small vessel -2- (the exhaust air entrains a small quantity of coolant, which is to be collected).

- Close the two valves -A- and -B- by setting lever at right angle to direction of flow.

- Connect hose -3- to compressed air supply.

1 Pressure: 6 ... 10 bar



- Open valve -B- by setting lever to direction of flow.

The vacuum booster generates a vacuum in the cooling system.

1 The pointer of the indicating instrument must move into the green zone.

Additionally open valve -A- briefly by
 – setting lever to direction of flow so that
 hose of coolant tank -VAS 6096/1- is filled
 with coolant.

– Close valve -A- again.

– Leave valve -B- open for a further 2
 minutes.

1 The vacuum booster continues to generate
 vacuum in the cooling system.

1 The pointer of the indicating instrument
 must remain in the green zone.

– Close valve -B-.

The pointer of the indicating instrument
 must stop in the green zone. The vacuum in
 the cooling system is then sufficient for
 subsequent filling.

If the pointer is below the green zone:

– Repeat procedure.

If the vacuum decreases, there is a leak in the
 cooling system.

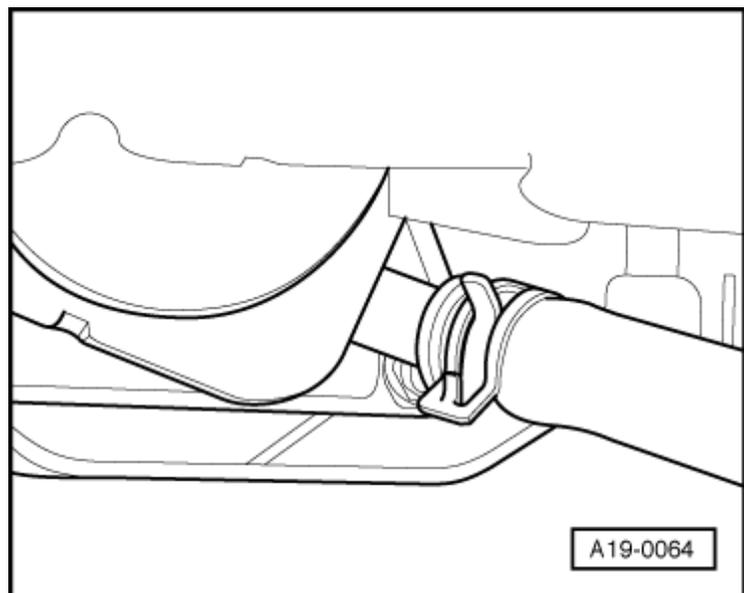
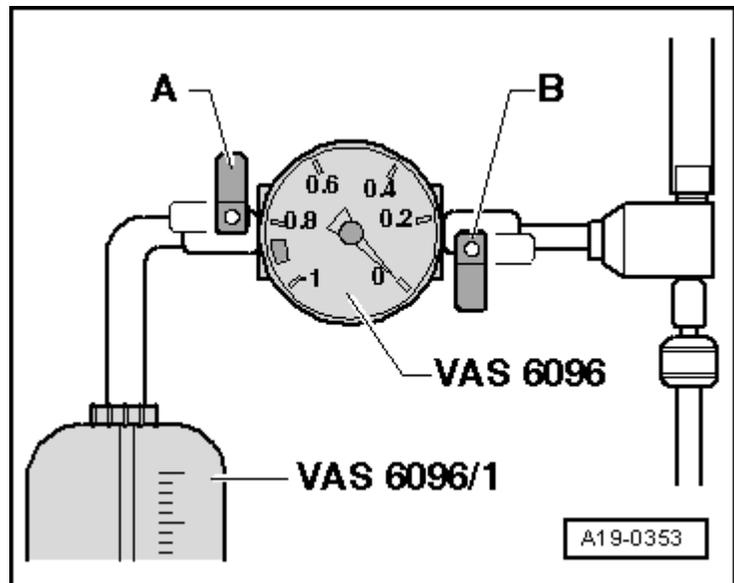
– Detach compressed air hose.

– Open valve -A-.

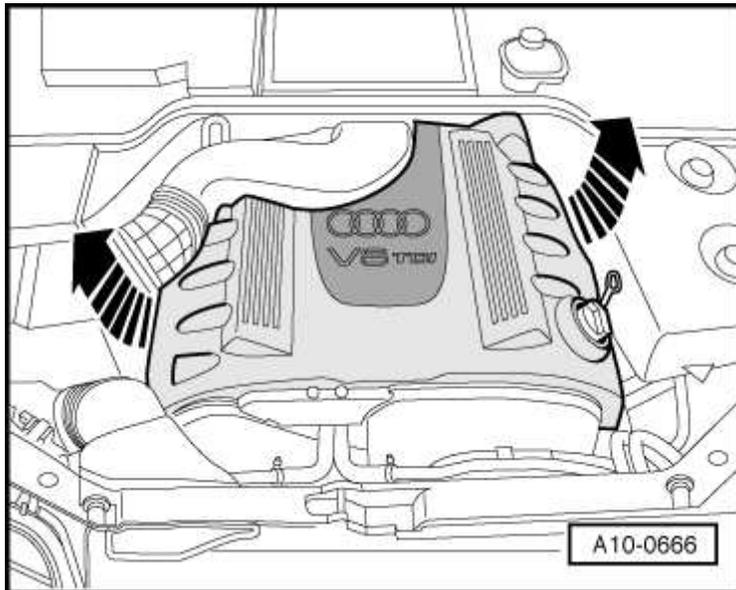
The vacuum in the cooling system causes
 coolant to be drawn in from the coolant tank -
 VAS 6096/1-; the cooling system is filled.

– Detach cooling system filler unit -
 VAS 6096- from expansion tank.

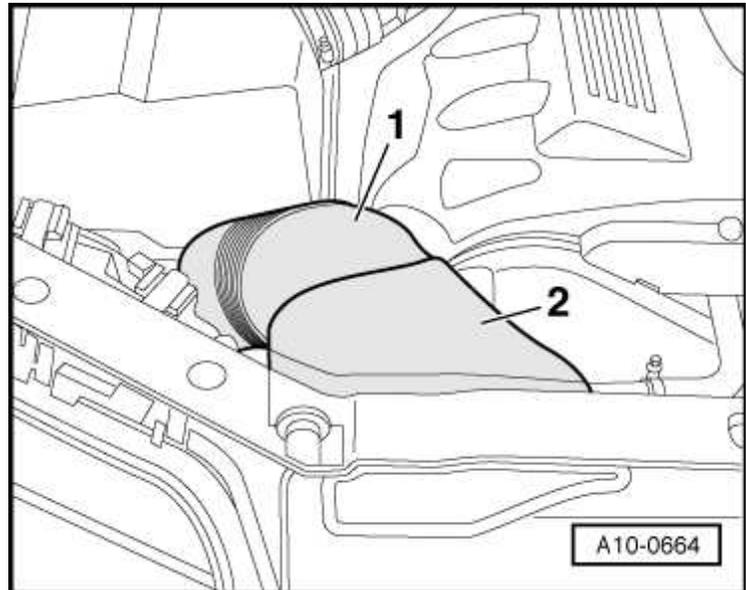
– Attach pipe for cooling system tester -
 V.A.G 1274/10- to adapter -V.A.G 1274/1-



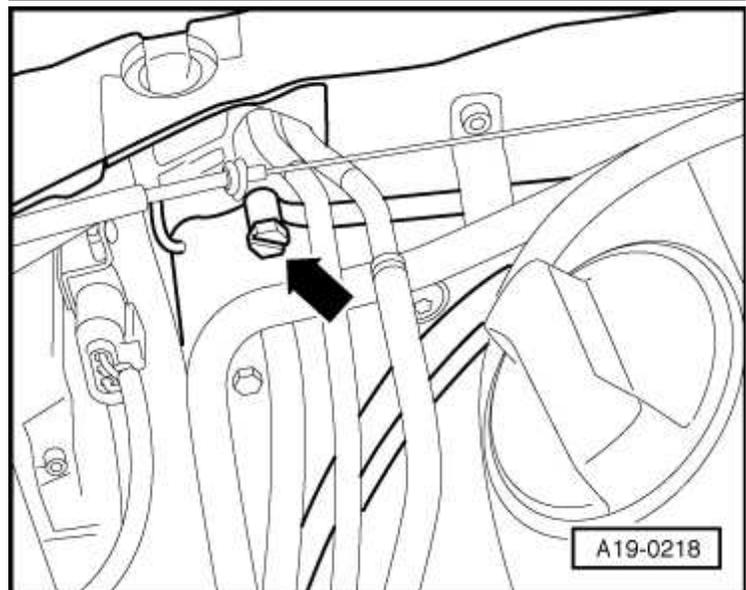
- Detach engine cover -arrows-.



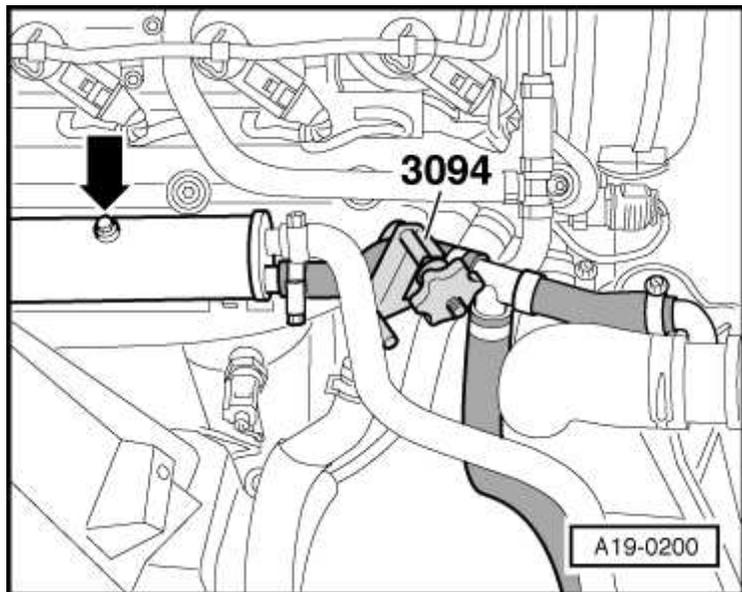
- Unclip cover -2- for air duct at lock carrier.
- Remove air duct -1-.



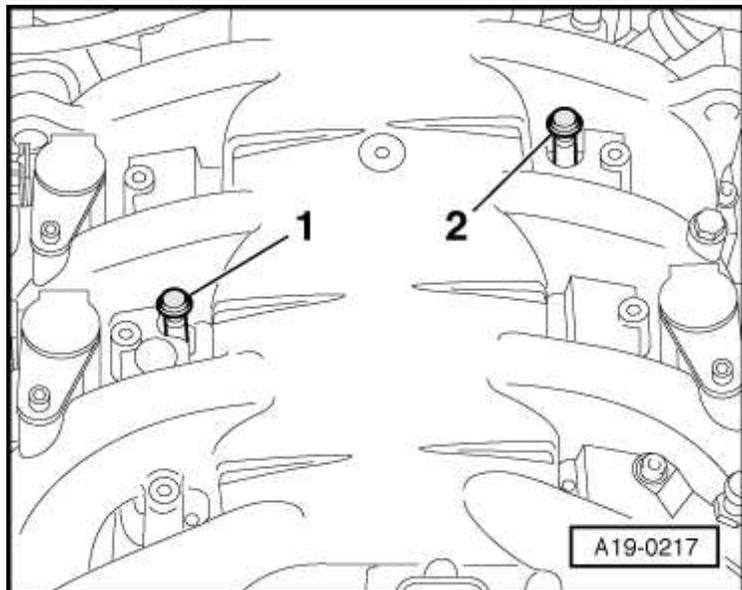
- Open bleed screw -arrow- at radiator.
- Pour in coolant until it emerges at bleeder hole.
- Close bleed screw.



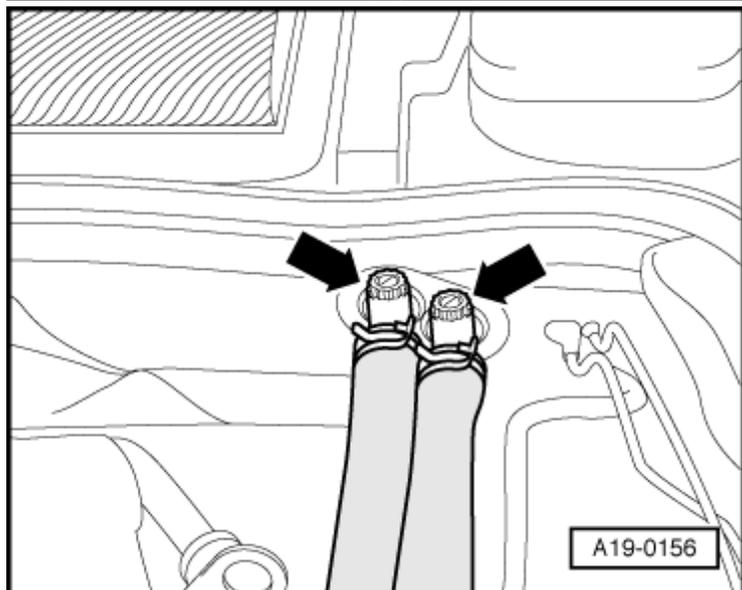
- Use hose clamp -3094- to pinch off coolant hose from fuel cooler to radiator upstream of T-piece.
- Open bleed screw -arrow- at fuel cooler.
- Pour in coolant until it emerges at bleeder hole.
- Detach hose clamp.



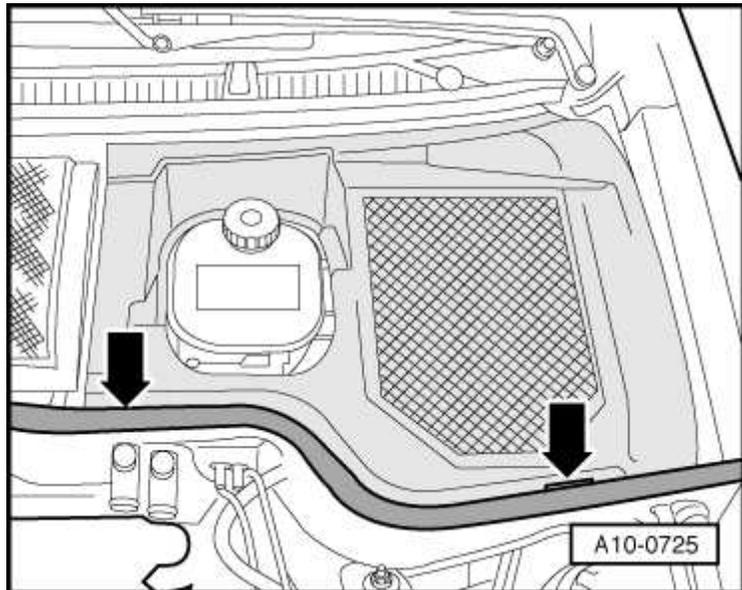
- Open bleed screws -1- and -2- at intake manifold.
- Pour in coolant until it emerges at bleeder holes.
- Close bleed screws.



- Open bleed screws -arrows- at heating system supply and return.
- Pour in coolant until it emerges at bleeder holes.
- Close bleed screws.



- Detach left plenum chamber cover - arrows-



- Unplug 2-pin connector -arrow- to pump/valve unit.
- Set heater/air conditioner to “LO” on both sides.



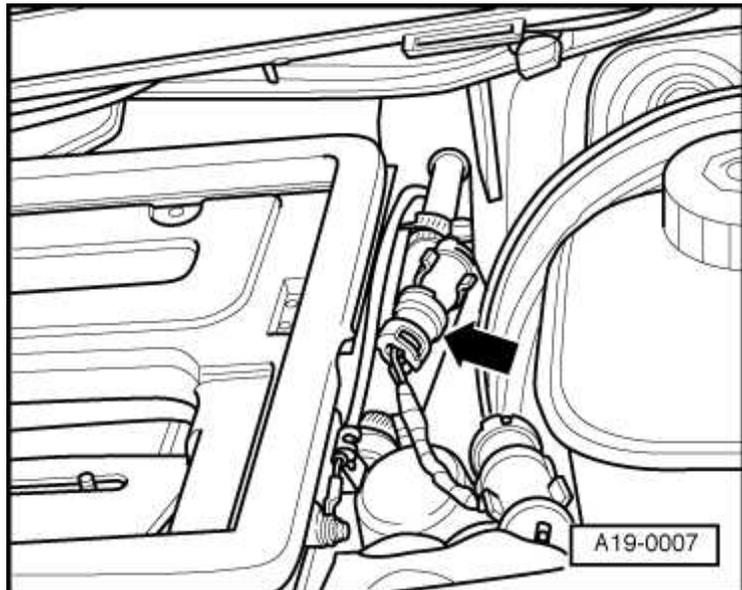
Note

The coolant circulation pump -V50- of the pump/valve unit is not to be started up until the coolant circuit has been bled.

Dry-running would destroy the pump/valve unit.

- Switch the auxiliary heating briefly on and then off again on appropriately equipped vehicles.

- Plug in 2-pin connector -arrow- to pump/valve unit.
- Screw on expansion tank cap.
- Set heater/air conditioner to “HI” on both sides.
- Start engine and maintain engine speed at approx. 2000 rpm for roughly 3 minutes.
- Switch off engine.



WARNING

Hot vapour/coolant may escape when opening the expansion tank. Cover the cap with a cloth and open carefully.

- Check coolant level and replenish coolant if necessary. Coolant level must be on

MAX mark with warm engine and between MIN and MAX marks if engine is cold.

- Check proper filling of cooling system:

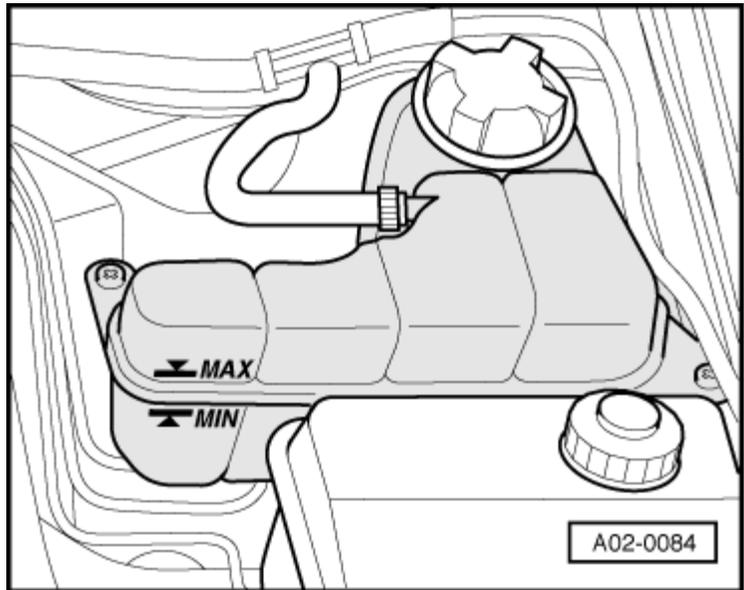
When set to “HI”, the heating system must supply the same temperature on the driver's and front passenger's side.

1 The heater/air conditioner pump/valve unit must not make any noise.

- Repeat bleeding procedure if necessary

→ [Anchor](#).

Tightening torque



Component	Nm
Right coolant drain plug (banjo bolt)	10
Coolant drain plug to coolant drain pipe	18
Coolant drain plug to coolant pipe	10