

## 20–015 Cleaning cooling and heating system

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### Total filling capacities cooling system with heater and mixing ratio

#### Corrosion-antifreeze protection agent/water in liter

Model	Engine	Total filling capacity cooling system with heater	Mixing ratio corrosion-antifreeze protection agent/water for antifreeze protection up to	
			–30 °C	–45 °C
107.025/045/047	116.960/962/964	12.5	5.50/7.00	7/5.5
107.026/046/048	117.960/962/964/ 967	13.5	6.00/7.50	7.5/6
126.032/033/034/ 035/043/046	116.961/963/965	12.5	5.50/7.00	7/5.5
126.036/037/039/ 044/045	117.961/963/965/ 968	13.5	6.00/7.50	7.5/6

#### Tightening torques

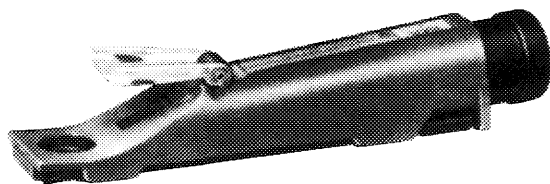
	Model	Nm
Drain plug radiator	107	6–10
	126	1.5–2 <sup>1)</sup>

<sup>1)</sup> This torque can be generated with a washer or coin.

#### Conventional tool

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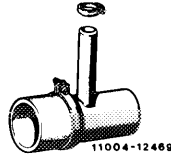
Antifreeze tester  
Prestone VU-Check (Union Carbide)  
e.g. Philipp Gather, D–4020 Mettmann 2



R-4789

## Special tools

Flushing pipe connection with hose piece



117 589 00 90 00

Thermostat positively opened for closing of bypass duct



000 589 74 63 00

## Service products

Corrosion-antifreeze protection agent

000 989 08 25

Citric acid powder (0.5 kg)

000 989 10 25

## Note

High coolant temperatures and low heating capacity can be caused by deposits of corrosion products in the radiator or in the heat exchanger.

The deposits can be identified as a jelly-like substance or, with empty and dry radiator, by a grey layer at the radiator connection pipes.

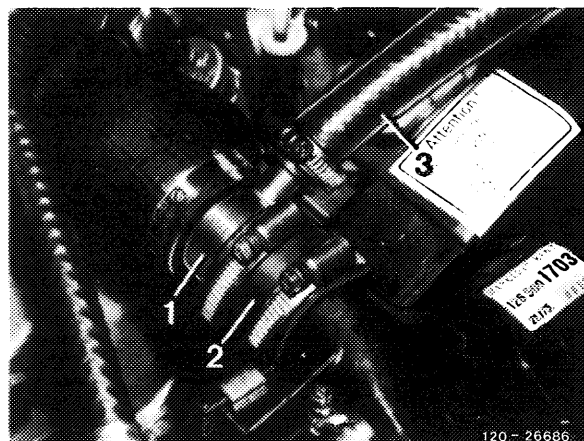
In this case, the cooling and heating system can be cleaned with a 10 % citric acid solution.

## Scope of work

- 1 Drain coolant from radiator. The coolant drain plug on the radiator remains open.
- 2 Remove thermostat and install positively opened thermostat 000 589 74 63 00 with sealing ring. Thus the bypass duct is closed and the flow is directed via the radiator to the coolant pump.
- 3 Connect flushing pipe connection 117 589 00 90 00 with connection hose (2) between radiator and coolant hose.
- 4 Connect a tap water hose (3) to the flushing pipe connection (1).



120-26436



120-26686

- 1 Flushing pipe connection
- 2 Connection hose
- 3 Tap water hose

5 Open expansion tank cap and pull off hose to the overflow tank.

6 Switch off circulation pump to flush the heat exchanger.

To do so, switch on ignition and:

- a) On vehicles with automatic heater engage both temperature dials to position „Max“.
- b) On vehicles with automatic climate control, press the push-button „Defrost“.

7 Open the vent valve of the supplementary heater.

8 With engine running (approx. 2500/min) flush cooling and heating system with running water for approx. 5 minutes to flush out the remaining corrosion-antifreeze protection agent.

**Caution!**

During the flushing process, the cooling system must always be full. Regulate additional quantity accordingly.

9 Drain flushing water in the radiator completely and screw in drain plug.

10 In a clean vessel, prepare a solution of 1.5 kg citric acid powder (0.5 kg, part No. 000 989 10 25) and approx. 5 l of water.

11 Fill the cleaning solution into the expansion tank and top up with water to the mark on the expansion tank.

12 Close the vent screw of the supplementary heater.

13 Close expansion tank cap.

14 Run engine for 15 minutes at approx. 2500/min. The solution must now flow through the heat exchanger (see figure 6).

15 Drain cleaning solution.

**Caution!**

Dispose of the cleaning solution (citric acid mixture) in an oil and water separator as used in workshops

16 Open vent screw of the supplementary heater.

17 Flush cooling and heating system with running engine (2500/min) for approx. 10 minutes with running water. The water must flow through the heat exchanger (see figures 6 and 8).

18 Remove flushing pipe connection and connect coolant hose to radiator.

19 Install normal thermostat.

20 Screw in coolant drain plug in radiator.

21 On vehicles with supplementary heater, connect plastic hose to vent valve and open valve.

22 Slowly fill in new coolant (observe corrosion-antifreeze protection agent) up to the mark.

a) On vehicles with automatic climate control press push-button „Defrost“. With automatic heater, engage both temperature selector dials in position „Max“.

b) Warm up engine while intermittently pressing the accelerator pedal. At approx. 60 °C, close the filler neck with a cap and switch supplementary heater to immediate heating.

c) Vent until the thermostat opens and the coolant runs out of the vent valve free of bubbles. Now close the vent valve.

23 Check coolant level below 90 °C and top up to the specified level if required.