

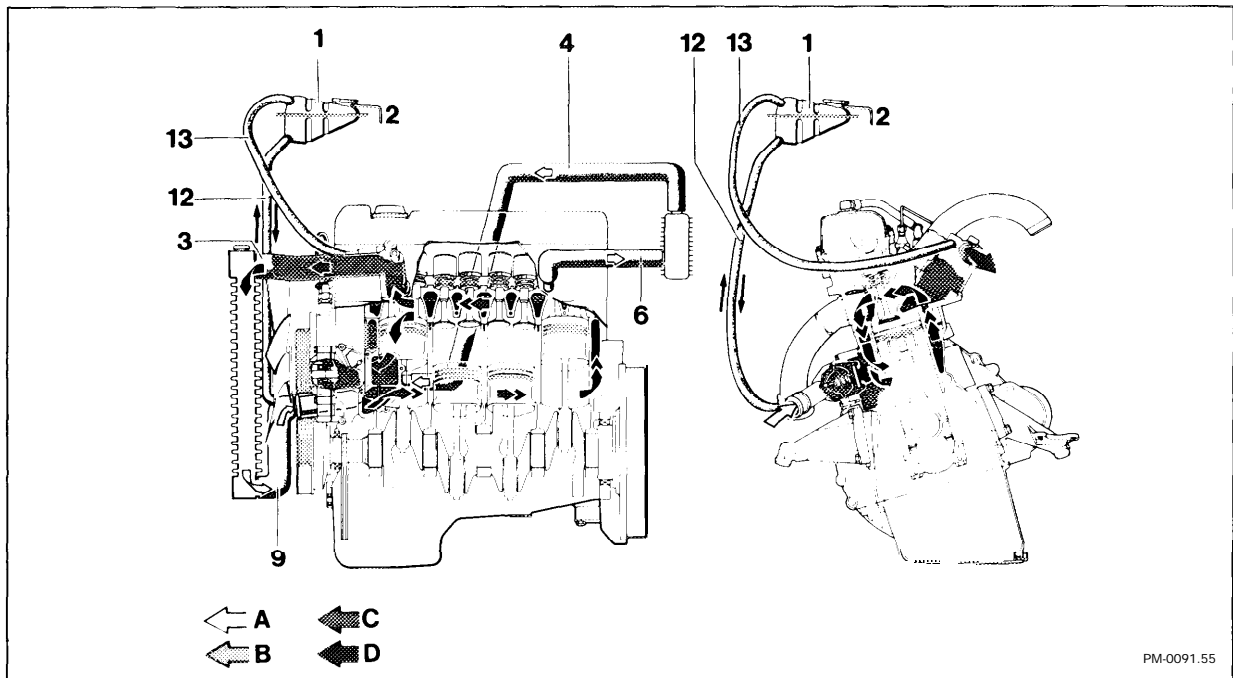
Engine Cooling System - 20



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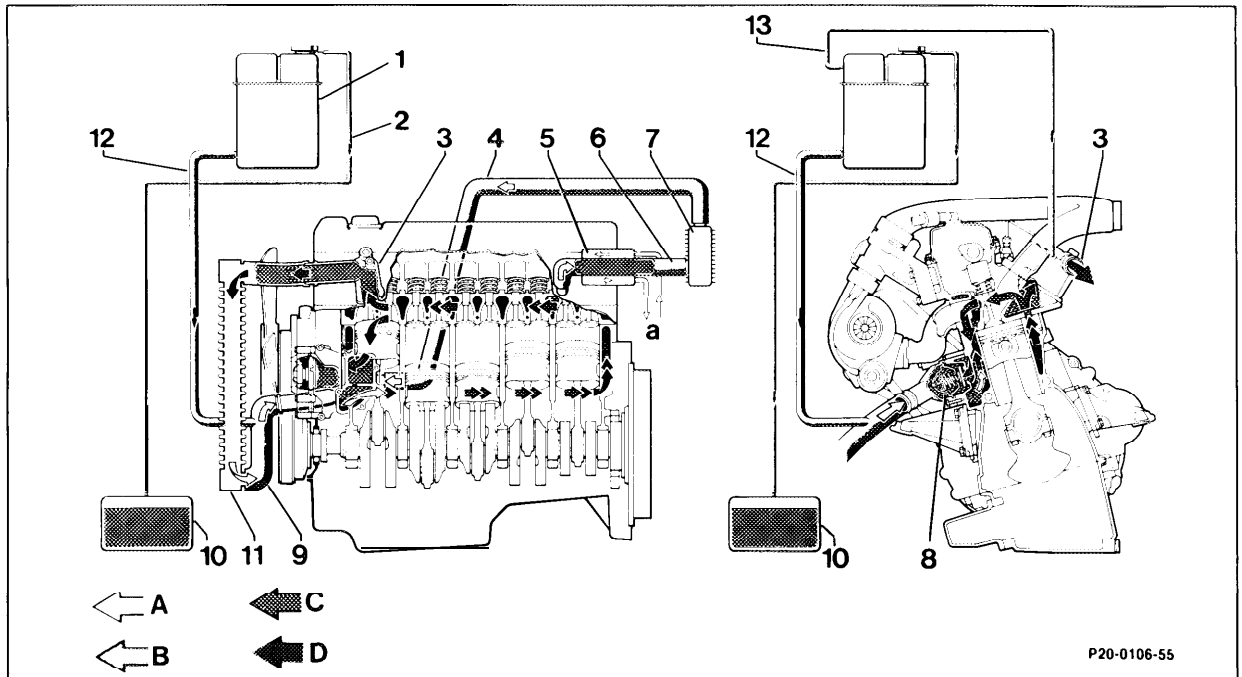
20-005 Coolant circuit and engine cooling

Coolant circuit engine 602.91



- | | | | |
|---|---|----|--|
| 1 | Expansion tank | 9 | From radiator to coolant pump via thermostat |
| 2 | Overflow line | 12 | Filling hose |
| 3 | From cylinder head to radiator | 13 | Vent line |
| 4 | Return from heating system (heat exchanger) | A. | Radiator circuit above 100 °C |
| 6 | Feed to heating system (heat exchanger) | B. | Bypass circuit up to 85 °C |
| | | C. | Cool water |
| | | D. | Heating |

Coolant circuit engine 602.96, 603.96



- | | | | |
|---|---|----|--|
| 1 | Expansion tank | 9 | From radiator to coolant pump via thermostat |
| 2 | Overflow line | 10 | Overflow tank (engine 603.96) |
| 3 | From cylinder head to radiator | 11 | Radiator |
| 4 | Return from heating system (heat exchanger) | 12 | Filling hose |
| 5 | Fuel heat exchanger | 13 | Vent line |
| 6 | Feed to heating system (heat exchanger) | A. | Radiator circuit above 100 °C |
| 7 | Heat exchanger | B. | Bypass circuit up to 85 °C |
| 8 | Thermostat | C. | Cooled water |
| | | D. | Heating |

Note

Engine 603.96 has an overflow tank (10) in addition to the expansion tank. The overflow tank is installed in the wheelhouse of the right front fender.

Function of overflow tank

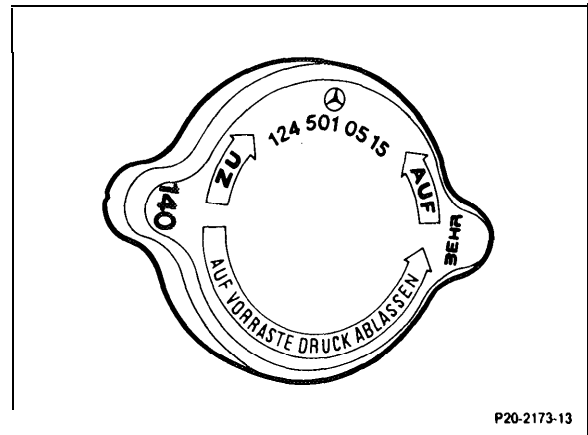
The overflow tank protects the engine from loss of coolant at high outside temperatures. Coolant may flow out along the overflow line after shutting off the engine at high outside temperatures.

The coolant overflow is collected in the overflow tank.

After the engine and the coolant has cooled down, a vacuum is produced in the cooling system which causes the coolant which has flowed into the overflow tank to flow back into the expansion tank.

To enable the vacuum to build up after cooling down, the cap of the expansion tank must provide a tight seal.

The cap (1.4 bar) is fitted with a rubber seal for this purpose.



Function of coolant thermostat

Engine	Start of opening °C	Fully open °C
602	85 ± 2	100
602.96, 603.96	80 ± 2	94

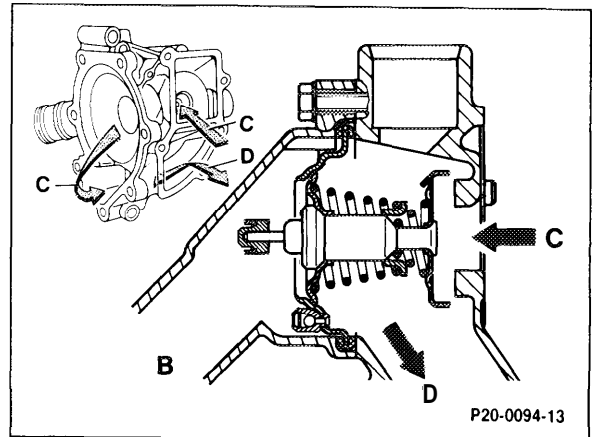
Note

The function of the coolant thermostat is outlined in the description below, using, as an example, a naturally aspirated engine.

Warm-up period – coolant temperature up to approx. 85 °C

Up to a coolant temperature of approx. 85 °C the main valve is closed and the bypass plate is fully open. The flow (B) from the radiator is thus interrupted. The coolant flows through the bypass passage (C) directly through the coolant pump into the crankcase (D).

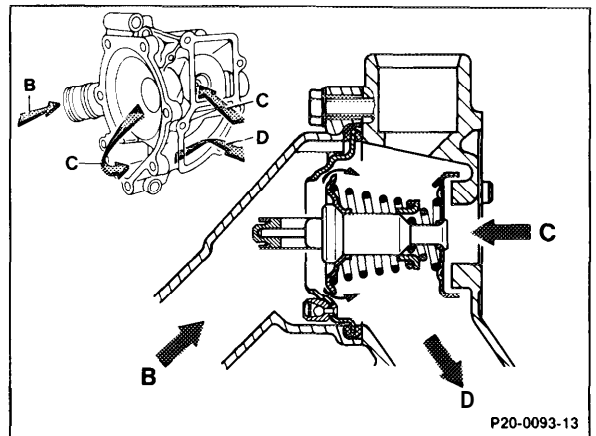
- C From crankcase (bypass passage)
- D To crankcase



Part-load operation – coolant temperature approx. 85 °C up to maximum 100 °C

At coolant temperatures above approximately 85 – 100 °C the main valve and bypass plate are mostly open, depending on engine load. The coolant flows from the radiator (B) through the bypass passage (C) through the coolant pump into the crankcase (D).

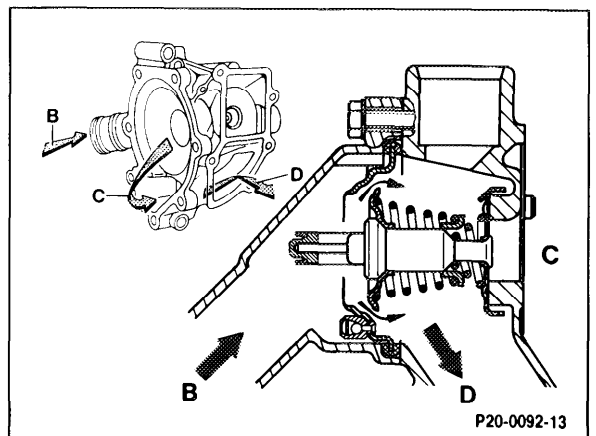
- B From radiator
- C From crankcase (bypass passage)
- D To crankcase



Full-load operation – high outside temperature (coolant at above 100 °C)

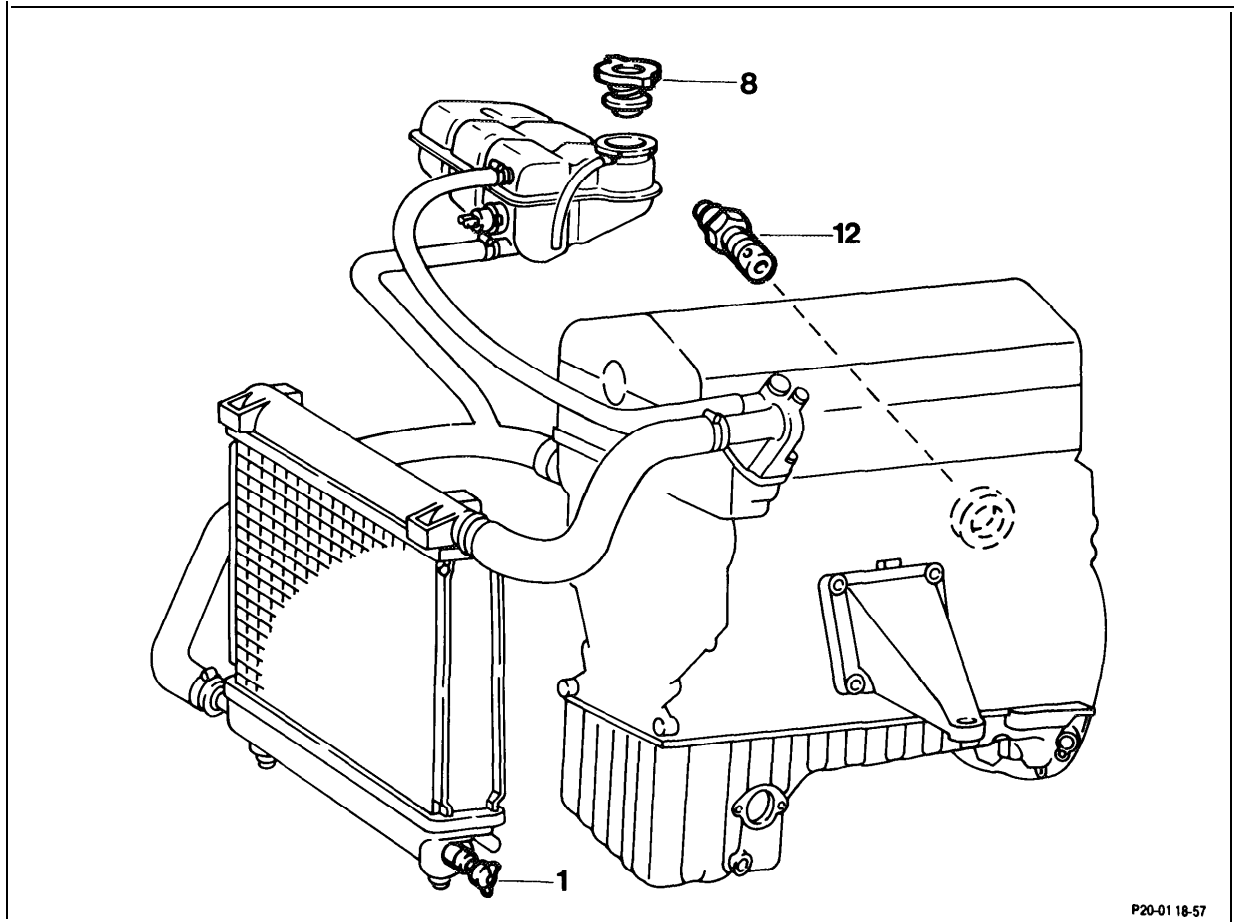
At coolant temperatures above approx. 100 °C the main valve is fully open. The bypass passage (C) is sealed off by the bypass plate. The entire quantity of coolant flows through the radiator.

The cooling system is automatically bled through a ball valve in the coolant thermostat when it is filled during engine operation.



20-010 Engine coolant replacement - Antifreeze table

Preceding work:
Engine compartment covering bottom removed (01-006).



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Heater switch	set to maximum heating capacity.
Cap(8)	remove, refit.
Drain plug (1)	open, close, 1.5 - 2 Nm, drain coolant (step 2).
Drain plug (12) and drain connection	open, close, 30 Nm, drain coolant (steps 3, 4).
Old coolant	flush out.
Coolant	pour in up to marking on expansion tank (10) (step 6).
Engine	run until coolant thermostat opens, approx. 90 - 100 °C (step 7).
Coolant level	check (step 8).
Cooling system	check for leaks (20-017).

Warning

Open cap only when coolant temperature is below 90 °C.

Total capacities of cooling system with heating system and mixing ratio of anti-corrosion/antifreeze agent¹⁾ and water²⁾ in liters

Model	Engine	Total capacity of cooling system with heating system	Mixing ratio anti-corrosion/antifreeze agent/water for antifreeze prot. down to	
			-30 °C	-45 °C
124	602.96	8	3.5/4.5	4.5/3.5
124, 126	603.96/97	10	4.5/5.5	5.5/4.5
201	602.911, 602.96	8	3.5/4.5	4.5/3.5

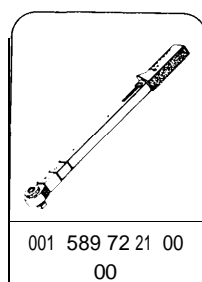
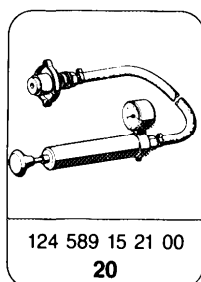
1) See Service Product Specifications sheet 325.1 and 325.2

2) See Service Product Specifications sheet 310

Tightening torques

	Nm
Radiator drain plug	1.5 - 2
Crankcase drain plug	30
Drain connection (engine 602 and 603 only)	30

Special tools



Commercial tool

Antifreeze protection tester
Prestone-W-Check (Union Carbide)

e.g. Ph. Gather,
4020 Mettmann

Notes, see VOI Environmental Protection Catalog

Water

Use water which is clean and not too hard. Usually drinking water satisfies these requirements. The content of dissolved substances in the water may result in corrosion.

Anti-corrosion/antifreeze protection

The anti-corrosion/antifreeze agent must perform the following tasks:

- Adequate corrosion and cavitation protection for all components
- Antifreeze protection
- Provides increased boiling point

50% by vol. anti-corrosion/antifreeze agent must be added to the water. This concentration offers antifreeze protection down to approx. -37 °C. A higher concentration is only recommended for very low ambient temperatures.

More than 55% by vol. anti-corrosion/antifreeze agent reduces the antifreeze protection and reduces the heating capacity.

55% by vol. anti-corrosion/antifreeze agent offers antifreeze protection down to approx. -45 °C. Anti-corrosion/antifreeze agent increases the boiling point, in other words the coolant does not evaporate so rapidly. This avoids coolant being lost at high coolant temperatures.

Use only approved anti-corrosion/antifreeze agents (see Service Product Specifications sheets 325.1 and 325.2).

Operational monitoring of coolant

Check the coolant for resistance to low temperatures at the start of the cold season of the year. Check anti-corrosion/antifreeze agent concentration once a year in areas with high outside temperatures.

When adding coolant (after loss of coolant), it must be assured that there is an anti-corrosion/antifreeze agent portion of 50% by vol. in the coolant to provide antifreeze protection down to -37 °C.

The anti-corrosion protection in the coolant is reduced over the period of operation. The coolant then has a sharply corrosive effect. The maximum permissible period of use of the specified coolant in car engines is 3 years. Before adding fresh coolant, the used coolant should be first flushed out of the system.

Draining

- 1 Set heating switch to maximum heating capacity.
- 2 Open cap on expansion tank in stages, allow system pressure to escape and remove cap.

Warning

Open cap only when coolant temperature is below 90 °C.

- 3 Open drain plug on the radiator.

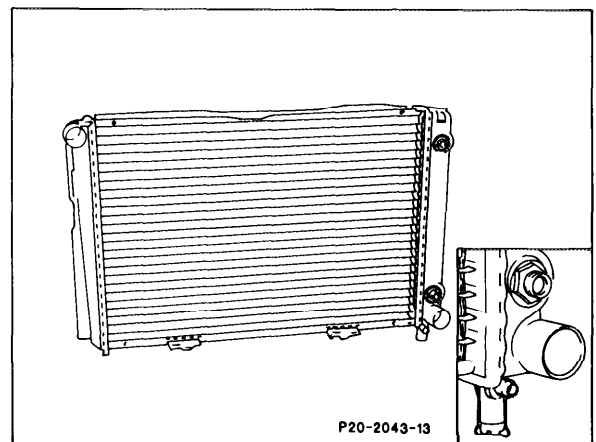
Note

An extension hose can be fitted to the drain connection for collecting coolant.

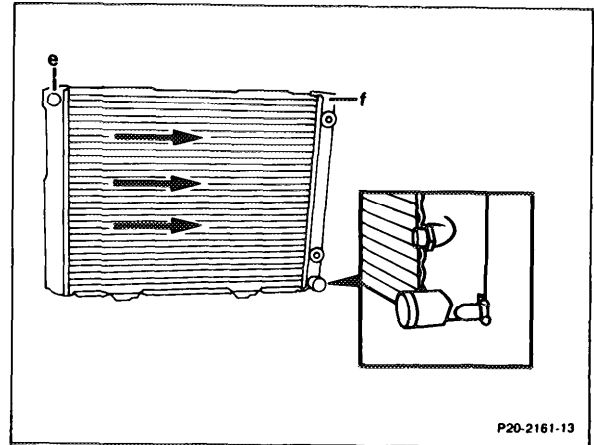
Installation instruction

Tightening torque 1.5 – 2 Nm.

Drain plug on models without air conditioning

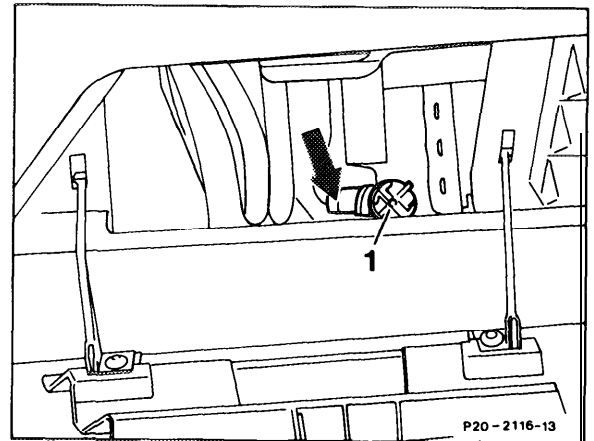


Drain plug on models with air conditioning



On models with air conditioning, open flap for towing lug at front right of lower bumper molding.

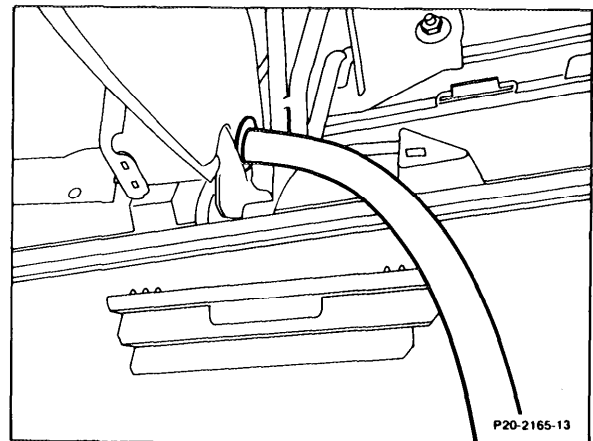
- 1 Drain plug on models with air conditioning



Note

On models with air conditioning, the plug below the right side wheelhouse at the noise encapsulation should be removed. An extension hose can be fitted onto the drain connection of the radiator through this opening.

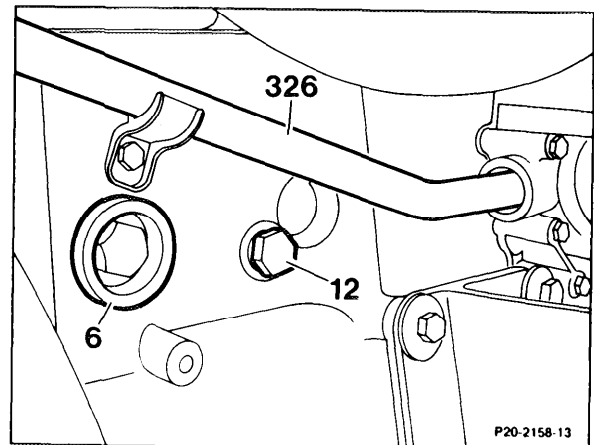
Extension hose fitted on (with air conditioning)



- 4 Unscrew drain plug (12) on crankcase.

Installation instruction

Tightening torque 30 Nm.

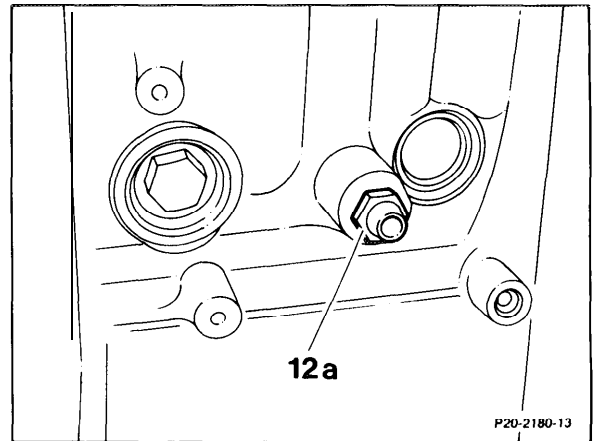


Note

Engines 602 and 603 have a drain connection (12a) in place of the drain plug. A hose can be fitted onto this drain connection for draining.

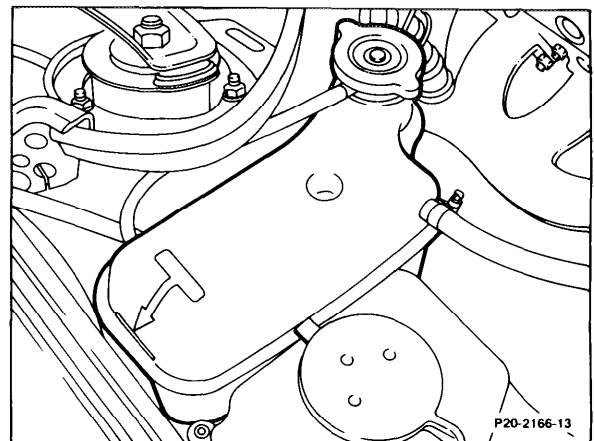
Installation instruction

Tightening torque 30 Nm.

**Filling in coolant**

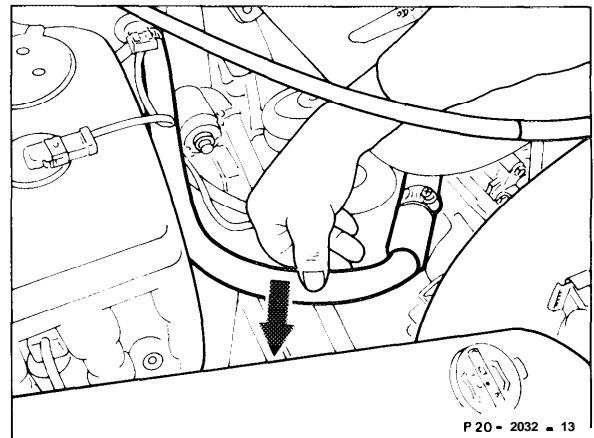
- 5 Flush out old coolant.
- 6 Slowly pour in coolant up to the marking (arrow) on the expansion tank.

Marking on expansion tank

**Note**

The filler hose can be pressed down (arrow) when adding coolant to ensure that it flows more quickly from the expansion tank into the radiator and engine.

- 7 Run engine until the coolant thermostat opens (coolant temperature approx. 90 – 100 °C).

**Note**

Close filler connection at expansion tank from a coolant temperature of approx. 60 – 70 °C.

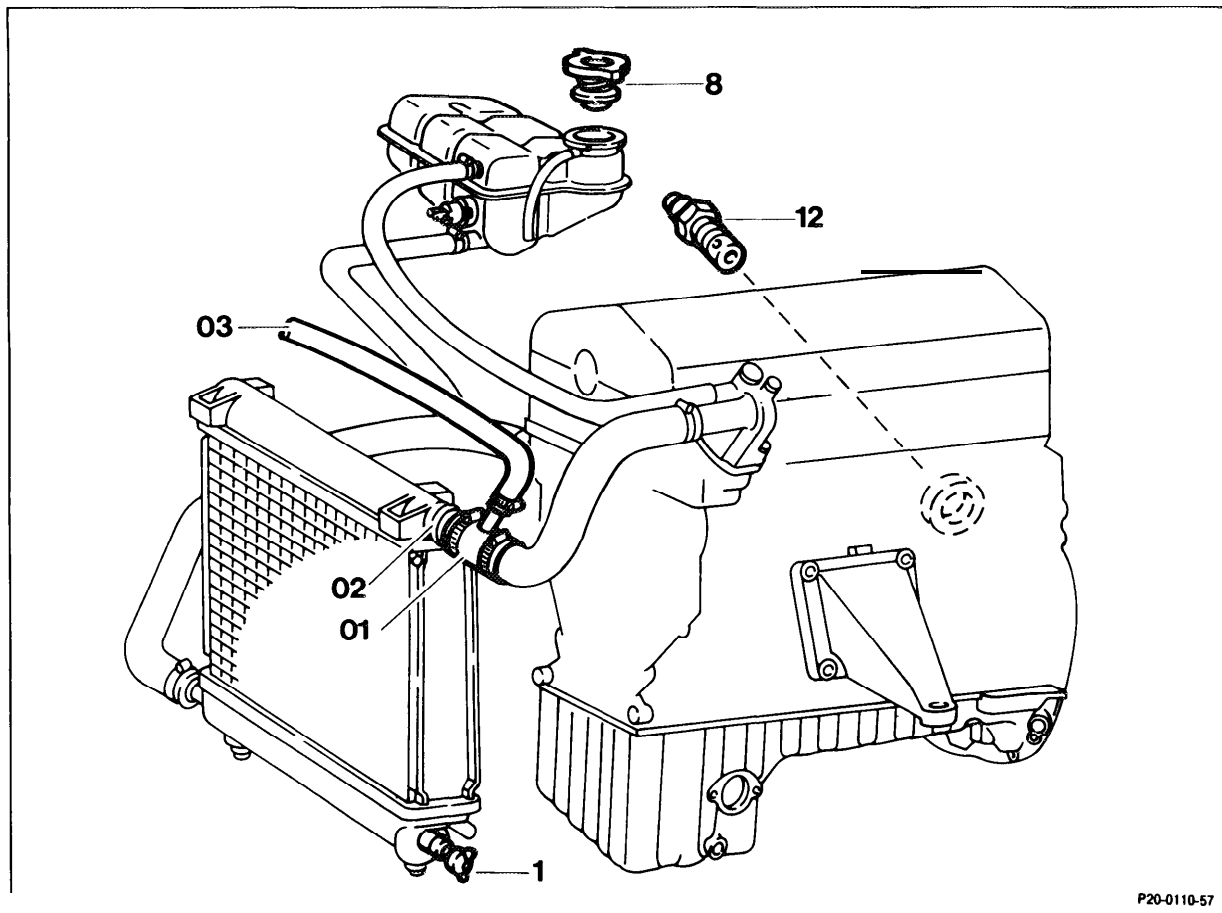
- 8 Check coolant level; top off to specified marking, if necessary.
- 9 Check cooling system for leaks (20-017).

20-015 Cleaning and flushing cooling and heating system

Preceding work:

Engine compartment covering bottom removed (01-006).

Coolant drained (20-010).



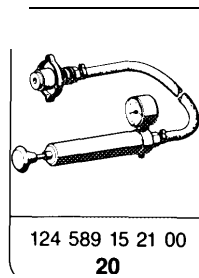
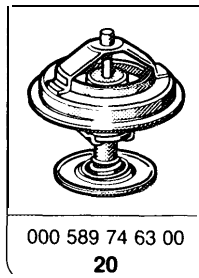
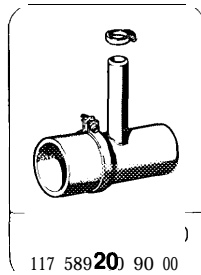
P20-0110-57

Coolant thermostat	remove and install forcibly-opened thermostat Part No. 000 589 74 63 00 (step 1).
Flushing connection pipe (01)	install and connect tap water hose (03) (steps 2 and 3).
Cooling system	flush (step 4 – 20, 22).
Cooling system expansion tank	remove and install, flush out (step 21).
Cooling system	check for leaks (20-017).

Service products

Anti-corrosion/antifreeze agent	000 989 08 25
Citric acid powder (0.5 kg)	000 989 10 25

Special tools



Notes

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

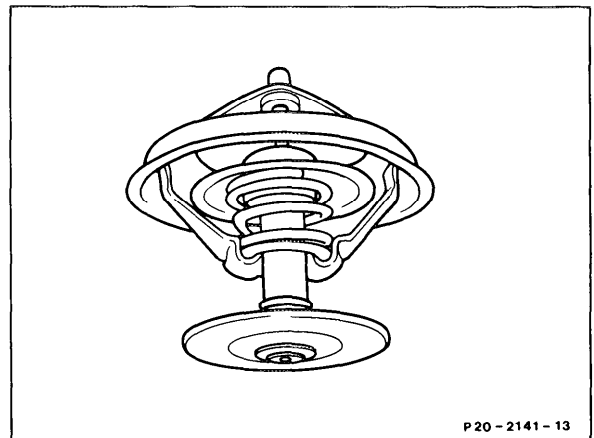
The deposits are recognizable as a jelly-like mass or, when the radiator is empty and dry, from a grey layer on the cooler connection pipes.

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

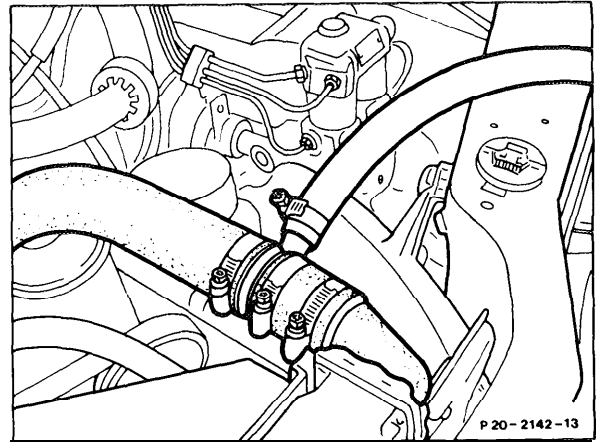
Radiators which have cooling pipes which are fully or partially clogged, must be replaced.

Scope of flushing operation

- 1 Remove coolant thermostat and install forcibly-opened thermostat 000 589 74 63 00 with sealing ring.



- 2 Connect flushing connection pipe Part No. 117 589 00 90 00 with connection hose between radiator and coolant hose.
- 3 Connect a tap water hose to the flushing connection pipe.
- 4 Open cap of expansion tank.
- 5 Set heater to "warm".



Models with auxiliary heater

6 If automatic heating control is fitted, set the temperature selectors to "Max" or, if automatic climate control is fitted, press the "Defrost" button so that the circulation pump is switched on when the engine is running.

7 Open bleeder valve of the auxiliary heater.

8 Flush cooling and heating system with flowing water for approx. 5 minutes with the engine running (approx. 2500 rpm) so that the remaining coolant is flushed out.

Caution!

During the flushing operation, the cooling system must always be completely filled. Adjust feed quantity accordingly.

9 Allow flushing water in the radiator and crankcase to completely drain out. Screw in drain plugs at radiator and crankcase.

10 Dissolve 15 kg citric acid powder (0.5 kg, Part No. 000 989 16 25) in 5 liters of water in a suitable vessel.

11 Pour cleaning solution into the coolant expansion tank and top off with water as far as the marking on the expansion tank.

12 Close bleeder screw of auxiliary heater.

13 Close cap of expansion tank.

14 Run engine for 15 minutes at approx. 2500 rpm. The solution must flow through the heat exchanger (step 5).

15 Following this, drain cleaning solution.

Caution!

Empty the cleaning solution (citric acid mixture) into a standard workshop oil and water separator.

16 Open the bleeder screw of the auxiliary heater.

17 Flush cooling and heating system for approx. 10 minutes with flowing water with engine running (2500 rpm). The water must flow through the heat exchanger (see steps 5 and 8).

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

19 Install normal coolant thermostat with new seal.

20 Screw coolant drain plugs into radiator and crankcase.

21 Remove coolant expansion tank, flush out once again separately, and install.

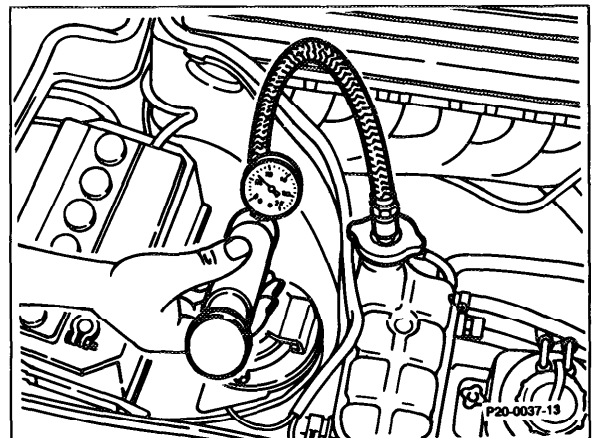
Note

The cleaning solution is not completely removed when drained because of pockets or recesses in the coolant expansion tank.

22 If car fitted with auxiliary heater, connect plastic hose to bleeder valve and open valve.

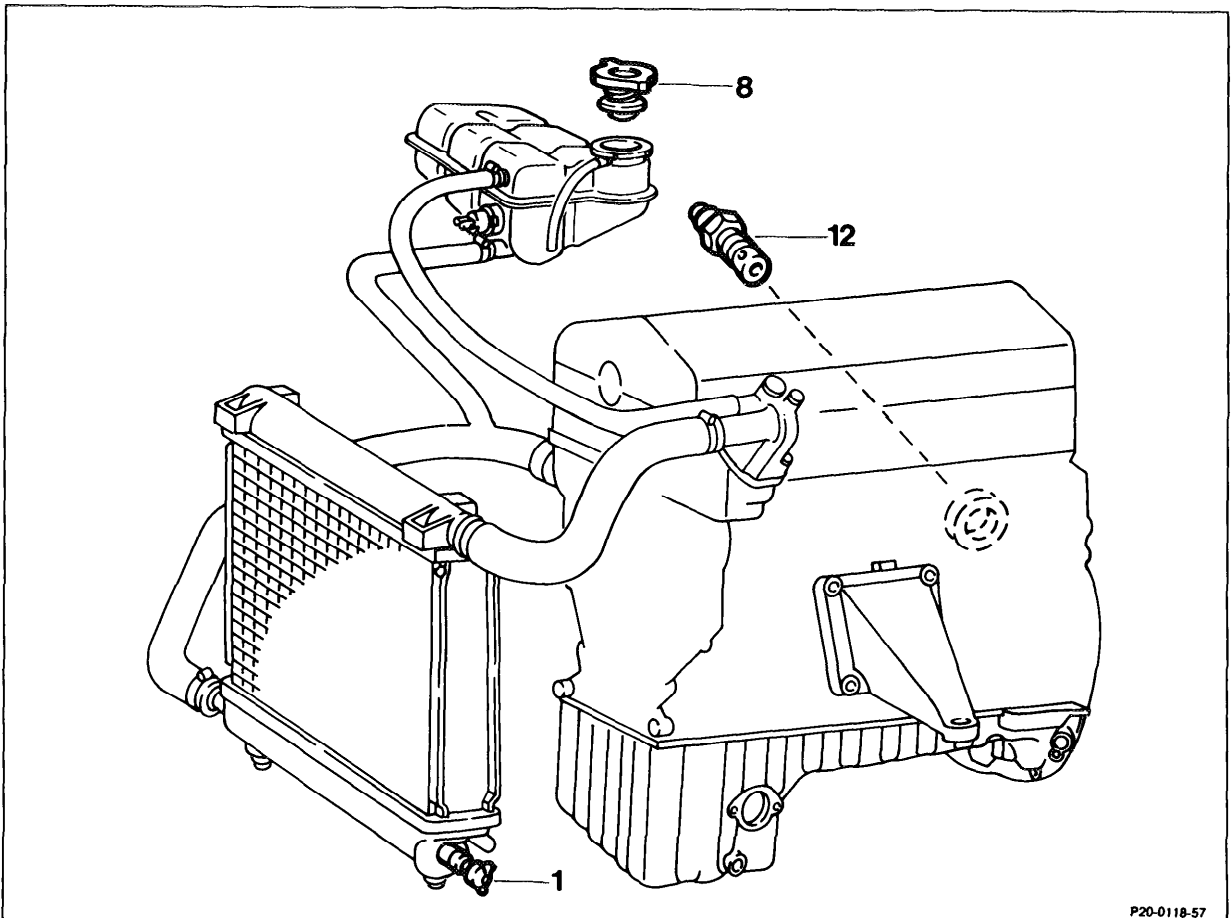
23 Add fresh coolant (20-010).

24 Check cooling system for leaks (20-017).



20-016 Removing oil from cooling and heating system

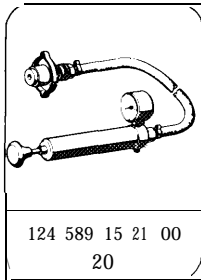
Preceding work:
 Coolant drained (20-010).
 Coolant thermostat removed (20-110).



P20-0118-57

Heater control	set to "warm" (step 1).
Cooling system	fill with a 5 % flushing solution (step 2).
Engine	warm up to normal operating temperature and run for approx. 5 minutes (step 3).
Flushing solution	drain and fill cooling system twice with fresh water, run engine each time for approx. 5 minutes, completely drain flushing solution (steps 5 and 6).
Cooling system	check for leaks (20-017).

Special tool



Note

Oil must be removed from the cooling system if engine oil, automatic transmission fluid on models fitted with automatic transmission, or hydraulic oil entered the cooling system.

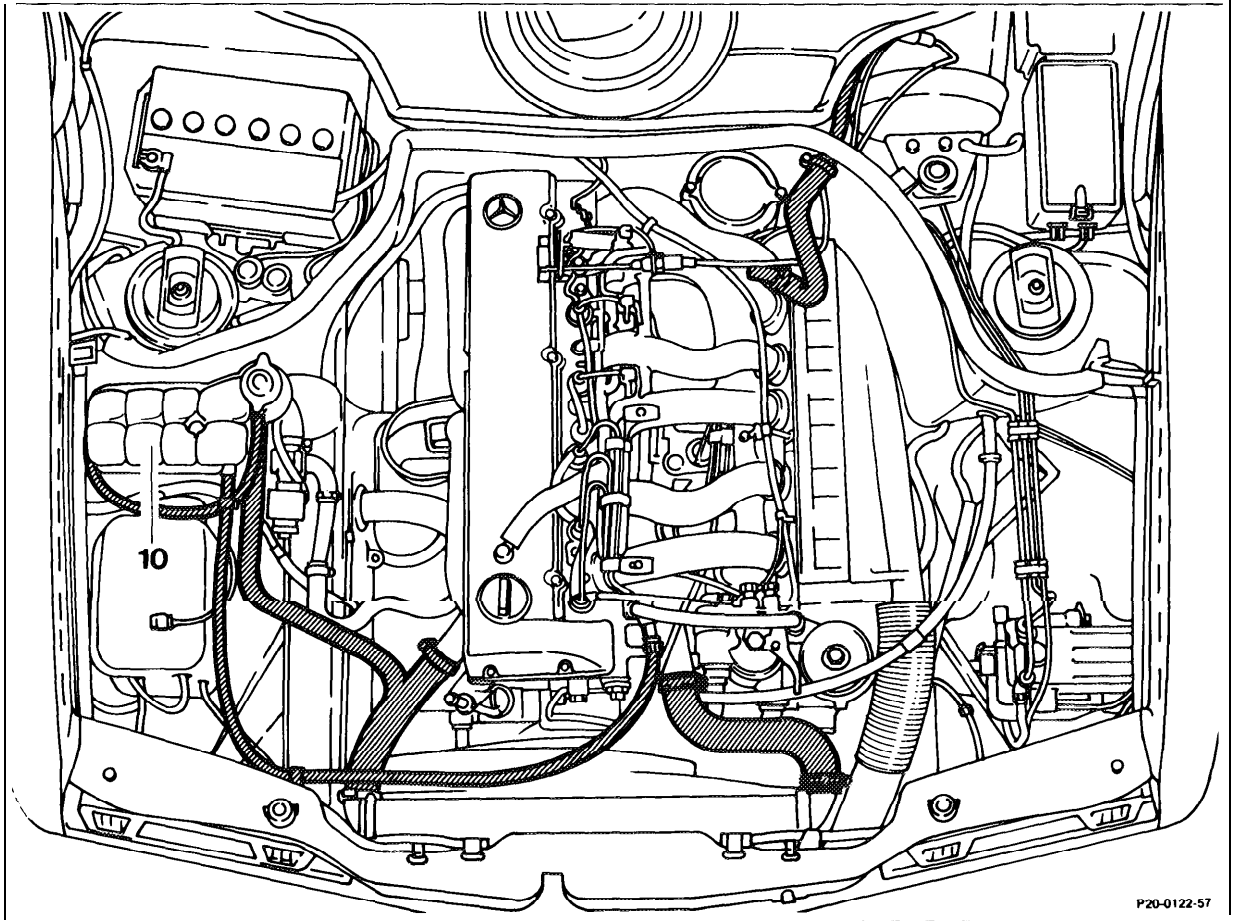
Removing oil

- 1 Set heater control to full capacity.

Caution!

On vehicles with light alloy radiators, strong alkaline cleaners such as P3 Standard (supplier: Henkel) must not be used.

- 2 Fill the cooling system with a 5 % solution of water and neutral cleaner or with a mild alkaline cleaner such as 3-Croni (supplier: Henkel) or Grisiron 7220 (supplier: Farbwerke Hoechst).
- 3 Warm up engine to approx. 80 °C by running at moderate rpm and maintain for approx. 5 minutes at this temperature.
- 4 Switch off engine and allow cooling system to cool down to approx. 50 °C.
- 5 Drain solution completely.
- 6 Immediately following this step, fill cooling system twice with fresh water, warm up engine (approx. 5 minutes) and drain.
- 7 Check cooling system for leaks (20-017).



P20-0122-57

Pressure cap

open in stages, allow system pressure to escape and remove.

Coolant level

⚠ Warning

The pressure cap must only be opened if the coolant temperature is below 90 °C.

must extend up to the mark on the expansion tank (10).

Heater switch

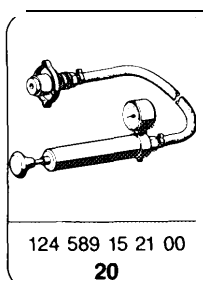
set to maximum heating capacity.

Tester

124 589 15 21 00, attach to expansion tank (10) and pressurize cooling system, approx. 1.4 bar gauge pressure.

Check all cooling and heating hoses and their connection points for loss of coolant. Check condition of hose clips, tighten if necessary.

Special tool



Commercial tool

7 mm wrench socket on flexible shaft for hose clips with worm drive

e. g. Hazet,
D-5630 Remscheid
Order No. 426-7

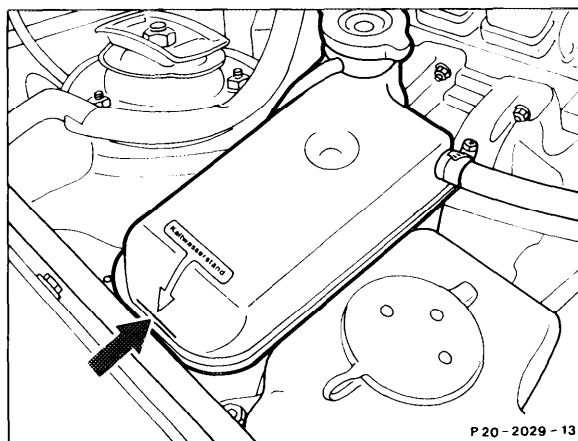
Checking for leaks

1 Turn cap to 1st detent and allow system pressure to escape, then turn to 2nd detent and remove cap.

Warning

The pressure cap must only be opened if the coolant temperature is below 90 °C.

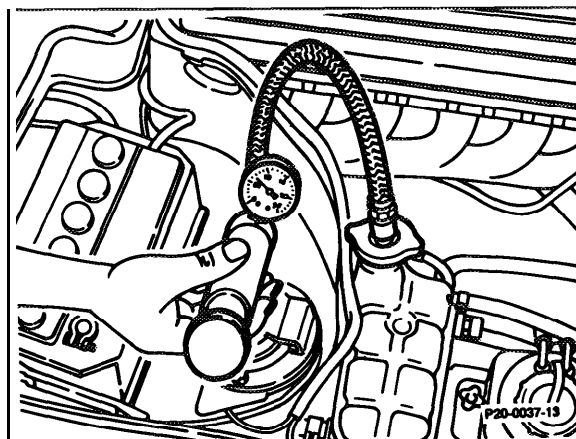
2 The coolant level must extend up to the marking on the expansion tank (arrow).



3 Pressurize cooling system with the tester 124 589 15 21 00 (approx. 1.4 bar).

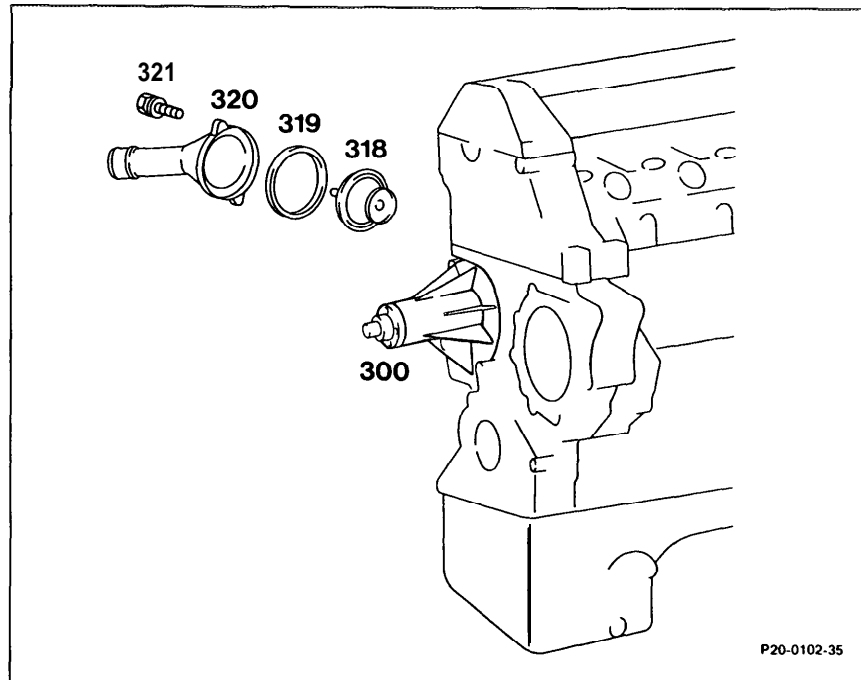
4 Check all cooling and heating water hoses and their connection points for loss of coolant.

Check that hose clips are in proper condition and correctly seated, replace or tighten as necessary.



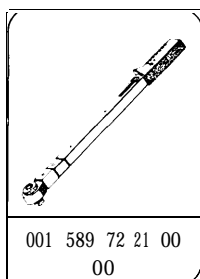
20-110 Removal and installation of thermostat

Preceding work:
Coolantdrained (20-010).



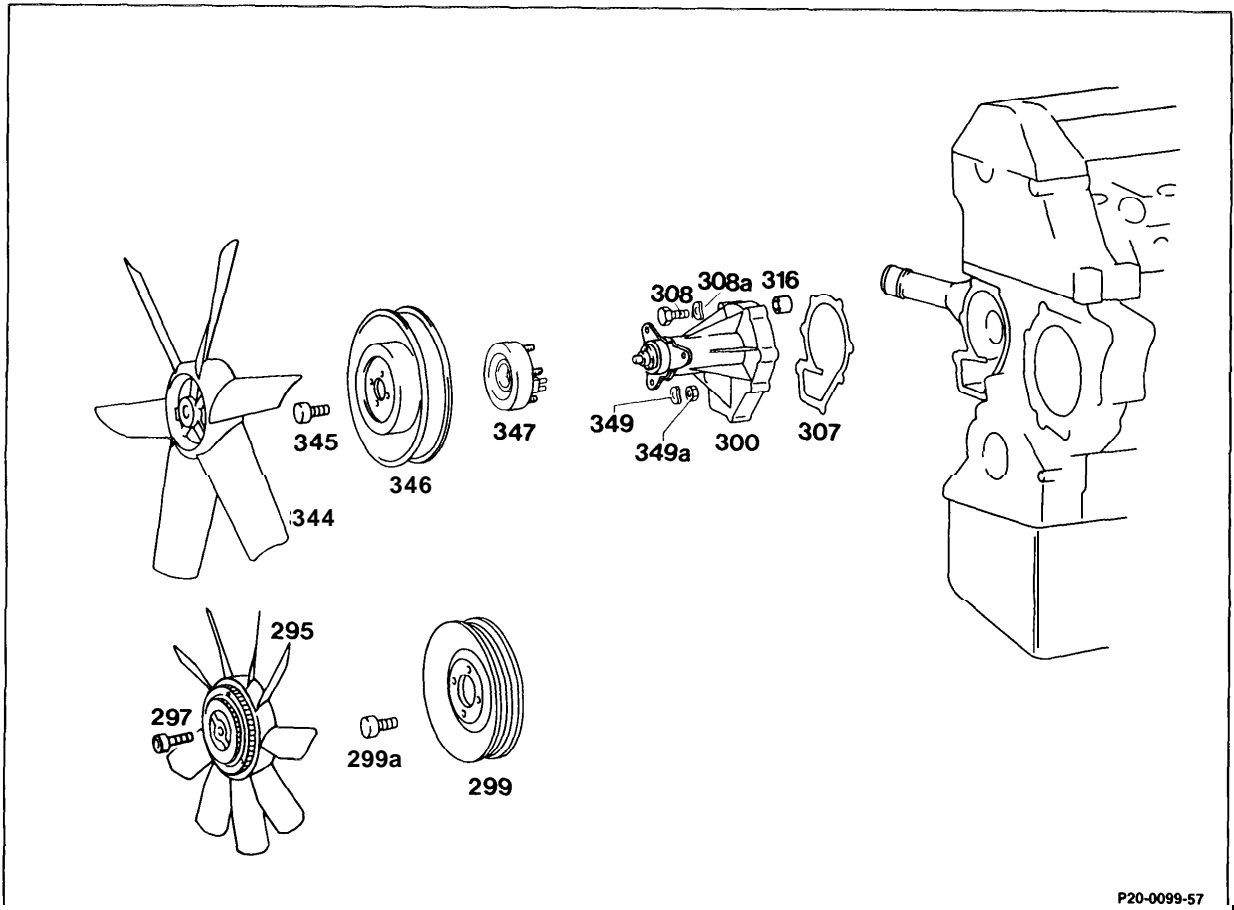
- | | |
|---------------------------|---|
| Housing cover (320) | unscrew from coolant pump, screw on, bolts (321), 10 Nm. Replace seal (319). |
| Thermostat (318) | check. Make note of installation position; the recess on the thermostat must be aligned with the rib in the thermostat housing cover. |
- Note**
Thermostat and thermostat housing cover are marked with a green dot on turbo engines.

Special tool



20-210 Removal and installation of coolant pump

Preceding work:
 Coolant drained (20-010).
 Radiator removed (Model 201 .126 only) (20-420).
 Poly V-belt removed (13-342).



P20-0099-57

Engine 602, 603:

- | | |
|--|--|
| <p>Fan with viscous fan coupling (295)</p> <p>Belt pulley (299, 346)</p> | <p>unbolt, bolt on, hexagon socket bolt (297), 45 Nm.</p> <p>Use screwdriver 103 589 01 09 00, torque wrench 001 589 66 21 00 and counter holder 603 589 00 40 00 (step 2).</p> <p>unbolt, bolt on. Hexagon socket bolts (299a), 10 Nm, Torx screws (345), 15 Nm (step 3).</p> |
|--|--|

Caution!

The magnet carrier must not be removed.

Engine 601:

Magnet body (347)

Remove cable, unbolt hexagon nut (349a) and remove magnet body (steps 4, 5).

Coolant pump (300)

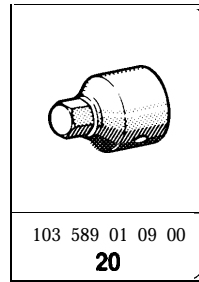
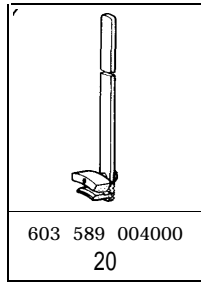
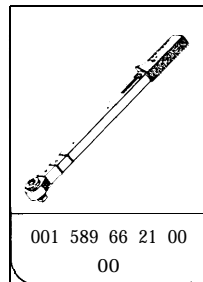
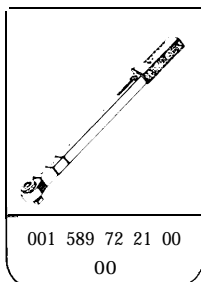
unbolt, bolt on, replace hexagon bolts (308), 10 Nm. Replace gasket (307), clean sealing surface.

Tightening torques

Nm

Hexagon bolts of fan	25
Hexagon socket screws of viscous fan coupling	45
Hexagon bolts of coolant pump	10
Hexagon socket screw of belt pulley	10
Torx screw of belt pulley	15

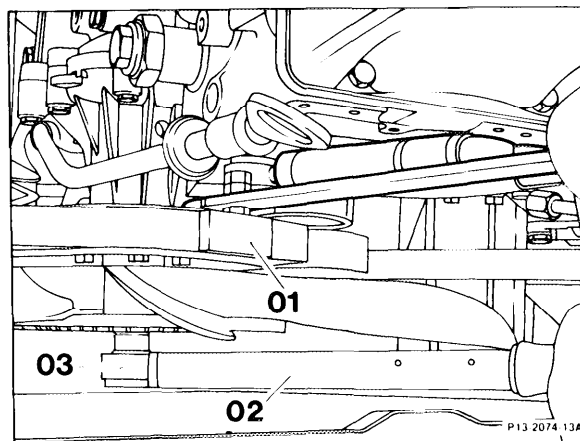
Special tools



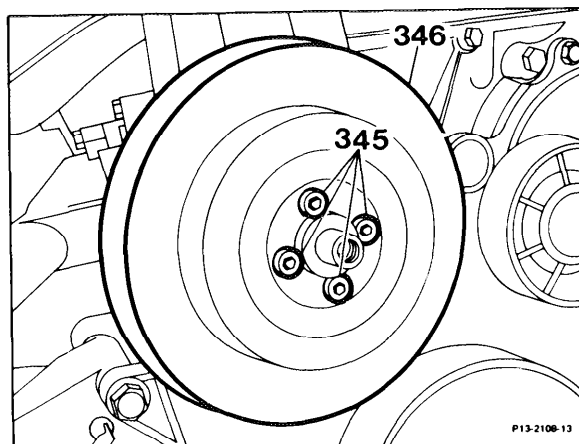
Removal

Engine 602, 603

2 Detach fan cowl, place over the fan.
Unscrew viscous fan coupling, using screwdriver
insert 103 589 01 09 00 (03), torque wrench
001 589 72 21 00 (02) and counter holder
603 589 00 40 00 (01).



3 Unbolt hexagon socket bolts (345) and
remove belt pulley (346).

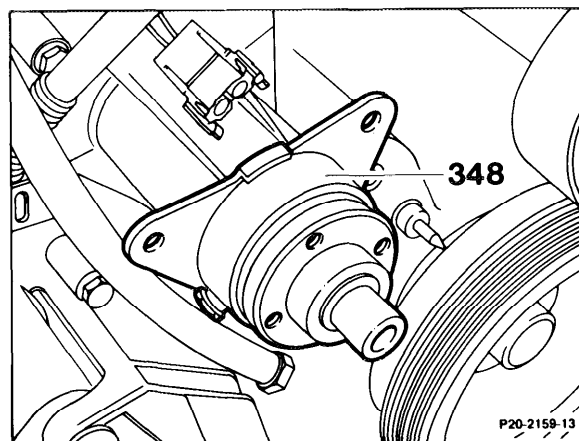


Note

The magnet carrier (348) is bonded to the
coolant pump housing and must not be removed.

6 Unbolt coolant pump.

7 Clean sealing surfaces.



Installation

8 Insert coolant pump with new gasket and tighten hexagon bolts.

Tightening torque 10 Nm.

9 Install magnet body and plug in cable.

10 Install belt pulley.

Tightening torque

Hexagon socket screw 10 Nm,

Hexagon socket torx screw 15 Nm.

The remaining parts are installed in reverse order.

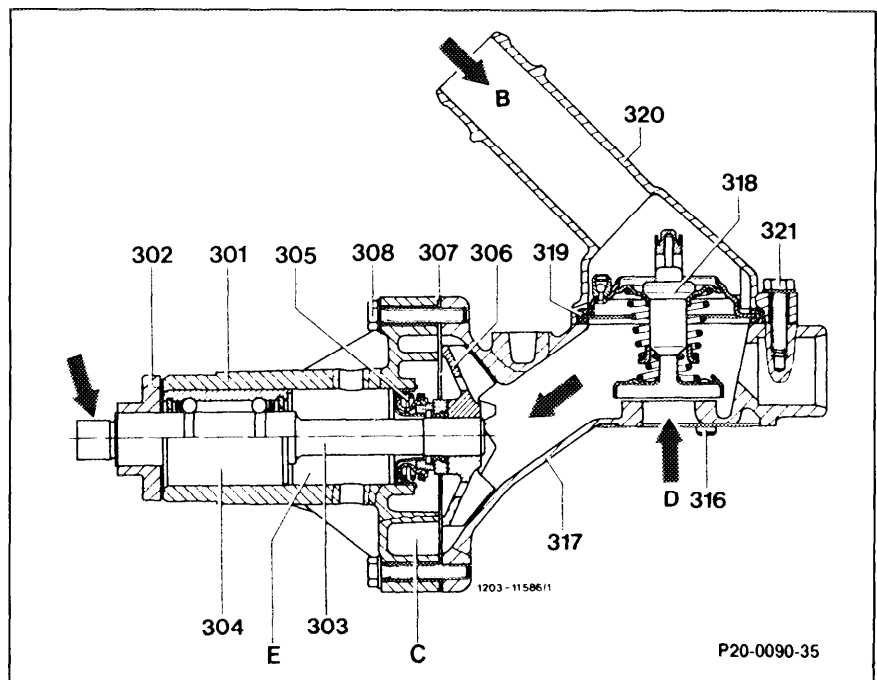
20-215 Notes on coolant pump

General

The coolant pump located at the bottom right of the engine is attached to a light alloy housing bolted to the crankcase. The coolant thermostat (318) is also contained in this housing.

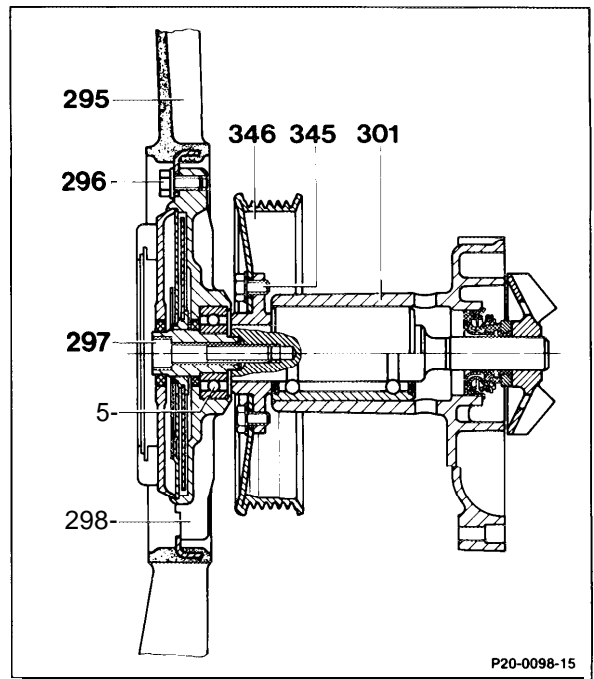
A flange (302) is pressed onto the coolant pump shaft (303) for attaching the belt pulley. An expansion space (E) is located between coolant pump bearing (304) and cassette seal (305). The fan is attached at the stub end (arrow).

- 301 Coolant pump housing
- 302 Flange
- 303 Coolant pump shaft
- 304 Coolant pump bearing
- 305 Cassette seal
- 306 Impeller
- 307 Gasket
- 308 Hexagon bolt
M 6 x 35
- 316 Fit pin
- 317 Light alloy housing
- 318 Coolant thermostat
- 319 Gasket
- 320 Inlet connection
- B Inlet connection to radiator
- C Pump chamber
- D Inlet from crankcase
- E Expansion space



Engine 602 and 603
Arrangement of viscous fan coupling and coolant pump

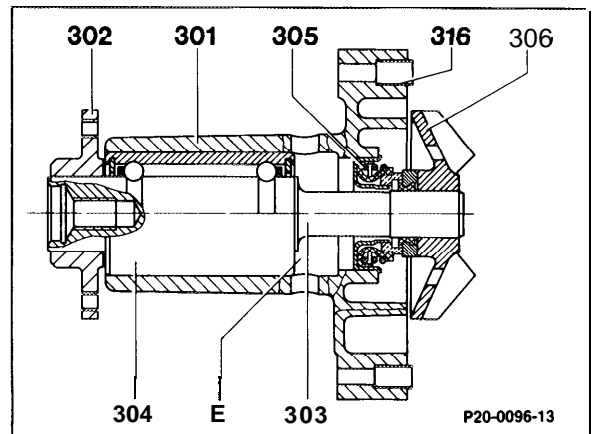
- 5 Ball bearing
- 295 Fan
- 296 3 bolts M 6 × 14
- 297 Hexagon socket screw M 10 × 40
- 298 Viscous fan coupling
- 301 Coolant pump housing
- 345 4 hexagon bolts M 6 × 12
- 346 Belt pulley



The coolant pump of engine 602 and 603 is strengthened at the coolant pump housing (301) and at the coolant pump bearing (304) because of the heavier viscous fan coupling.

The diameter of the impeller (306) on all the engines is identical.

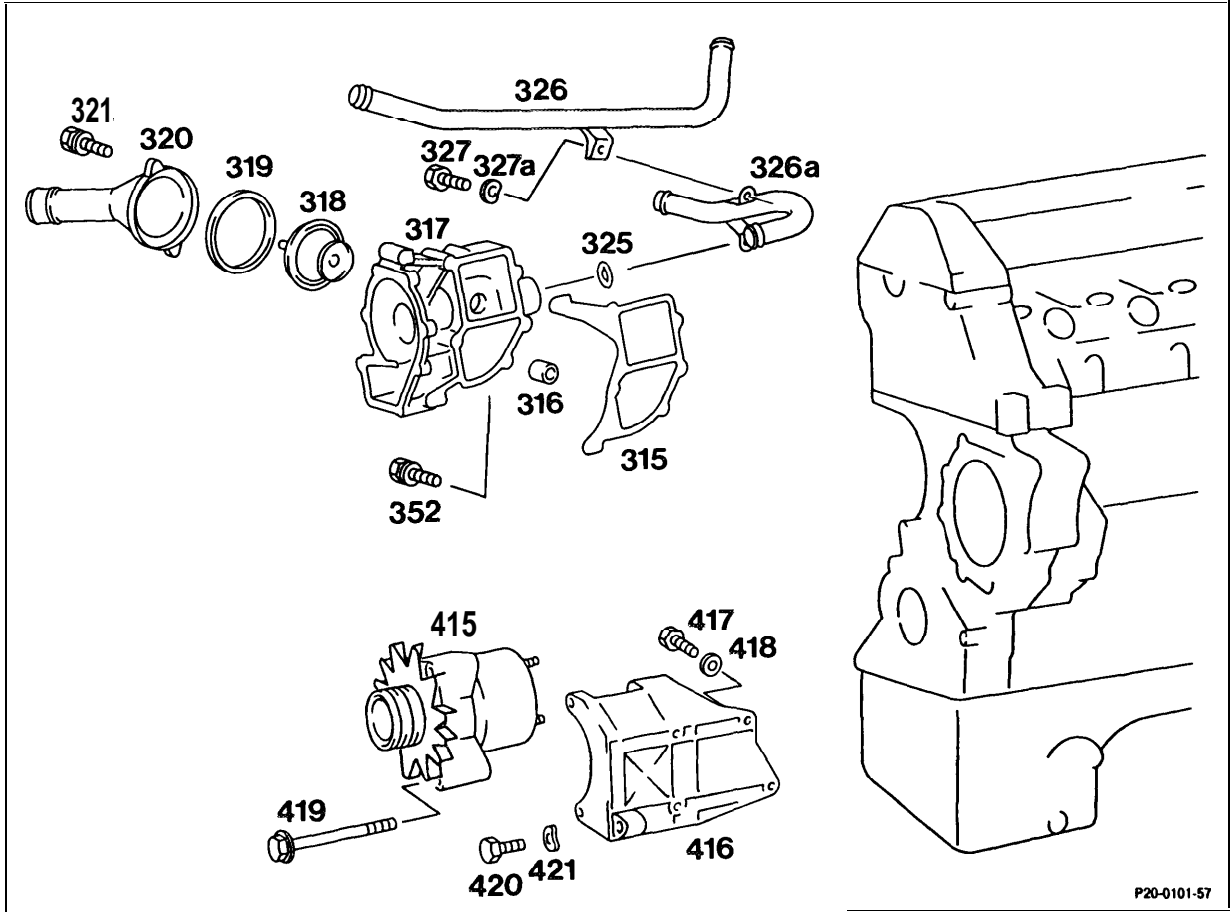
The coolant pump shaft has a tapped hole M 10 × 22 at the front for attaching the viscous fan coupling.



- 301 Coolant pump housing
- 302 Flange
- 303 Coolant pump shaft
- 304 Coolant pump bearing
- 305 Cassette seal
- 306 Impeller
- 316 Fit sleeve
- E Deformation space

20-230 Removal and installation of coolant pump housing

Preceding work:
Coolant pump removed (20-210).
Alternator removed (15510)



P20-0101-57

Ground cable to battery	disconnect, connect.
Supporting bracket for alternator (416)	unbolt, bolt on, hexagon bolts (417, 420), 25 Nm.
Return lines (326,326 a)	unbolt at crankcase, bolt on, withdraw from coolant pump housing (317), insert. Replace O-ring (325).

Caution!

Do not coat O-ring with oil or grease; use only antifreeze.

Engines 602.96, 603.96 with automatic transmission:

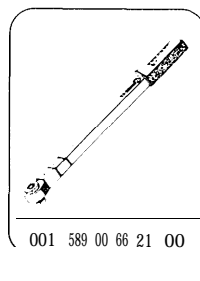
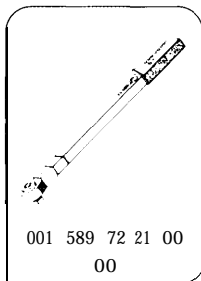
Cable from temperature switch	detach, plug in.
Temperature switch	unscrew, refit.

- Coolant pump housing (317) unbolt, bolt on, hexagon bolts (352),
10 Nm. Clean sealing surface and replace
gasket (315).
- Cooling system check for leaks (20-017).

Tightening torques

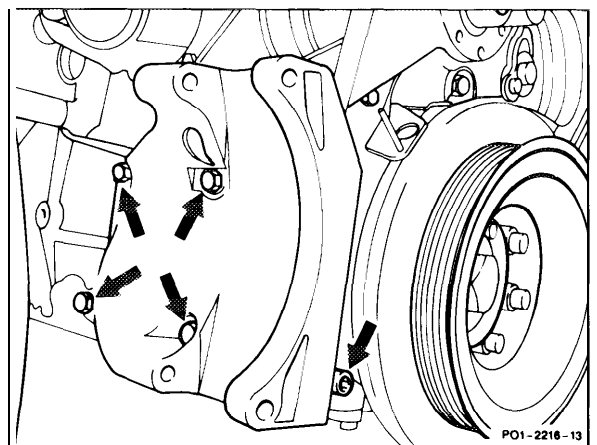
	Nm
Hexagon bolts of coolant pump housing	10
Hexagon bolts of supporting bracket for alternator	25
Hexagon bolts of alternator	45

Special tools

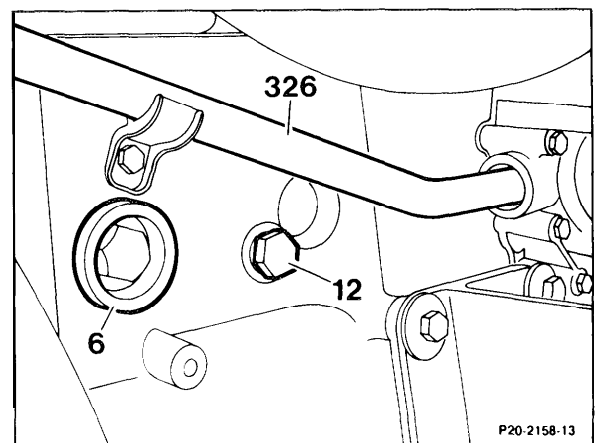


Removal

- 1 Disconnect ground cable at the battery.
- 2 Unbolt supporting bracket for alternator (arrows).

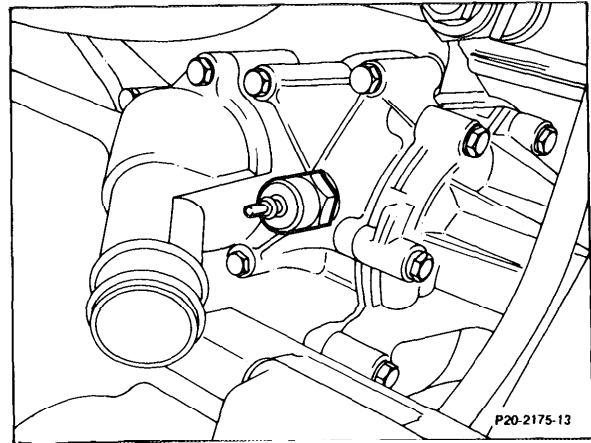


- 3 Unbolt return line (326) at the crankcase and withdraw from the coolant pump housing.



Engines 602.96 and 603.96 with automatic transmission:

4 Detach cable for temperature switch in coolant pump housing and unscrew temperature switch.



5 Unbolt coolant pump housing.

6 Clean sealing surfaces.

Installation

7 Replace O-ring on return line.

Note

Keep O-ring free of grease. The O-ring can be dipped in coolant to ease installation.

8 Fit coolant pump housing onto the return line and install onto crankcase with a new gasket.

Tightening torque 10 Nm.

9 Bolt return line onto the crankcase.

10 Install supporting bracket for alternator (419) and tighten fastening bolts.

Tightening torque 25 Nm.

11 Connect ground cable to the battery.

12 Check cooling system for leaks (20-017).

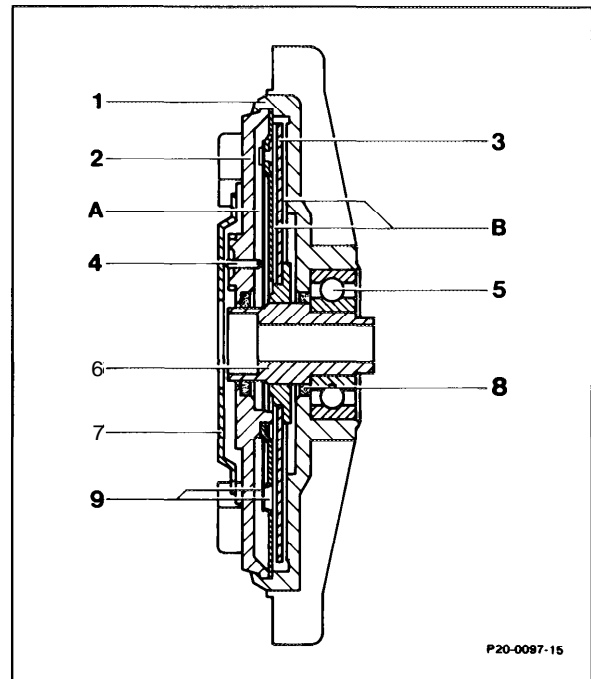
20-310 Temperature-controlled viscous fan coupling

Function

The viscous fan coupling is a maintenance-free hydraulic coupling which operates proportionately to temperature.

When the engine is started (cold start), the fan initially runs at a higher speed until the oil has flowed back from the working chamber (B) into the storage chamber (A). Following this, the fan coupling shuts off. Fan speed in the off state depends on engine speed. Fan speed, in any case, does not exceed 1000 rpm.

This state is maintained until the engine has reached the fan activating temperature.

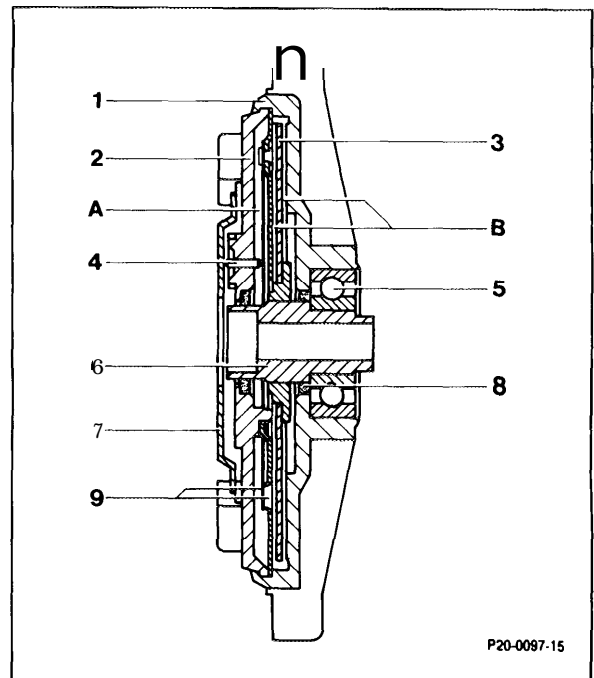


- 1 Coupling body (secondary part)
- 2 Cover
- 3 Driving plate (primary part)
- 4 Switch pin
- 5 Ball bearing
- 6 Bearing bush
- 7 Bimetal strip
- 8 Seal
- 9 Valve
- A Storage chamber
- B Working chamber

If the coolant temperature rises due to higher engine loads or high outside temperatures, the air which flows through the radiator and contacts the bimetal strip (7), becomes warmer. The bimetal strip (7) alters its shape as it heats up and opens a valve (9) at approx. 71 °C by means of a pin (4) and thus also the passage for the oil from the storage chamber (A) into the working chamber (B), which causes the fan to activate.

The coolant temperature during this switching operation remains between approx. 90 and 95 °C.

When the coupling is engaged, fan speed increases proportionally with increasing engine speed in the lower rpm range, without exceeding 3300 rpm in the upper range.



- Coupling body (secondary part)
- 2 Cover
- 3 Driving plate (primary part)
- 4 Switch pin
- 5 Bail bearing
- 6 Bearing bush
- Bimetal strip
- 8 Seal
- 9 Valve
- A Storage chamber
- B Working chamber

Checking activation temperature

Run engine at 4000 – 5000 rpm. Once a coolant temperature of approx. 90 – 95 °C has been reached, the speed of the viscous fan coupling must increase, which can be clearly heard.

Repair

It is not possible to repair a defective coupling; it must be replaced.

Transportation and storage

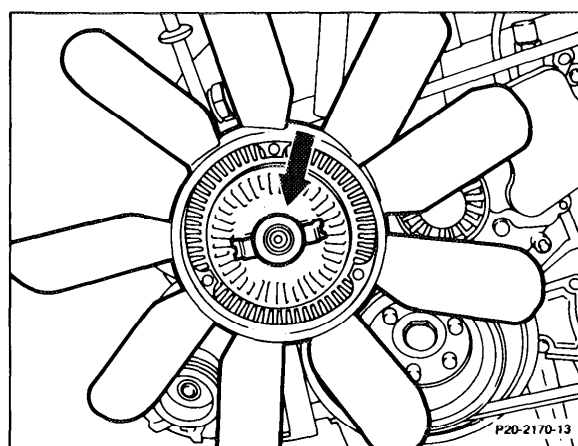
Temperature-controlled viscous fan couplings must be transported upright. For brief periods – e. g. for installation purposes, the coupling may be placed on the flange side, but never on the front side.

Caution!

The bimetal strip must not be bent or damaged.

Distinguishing features

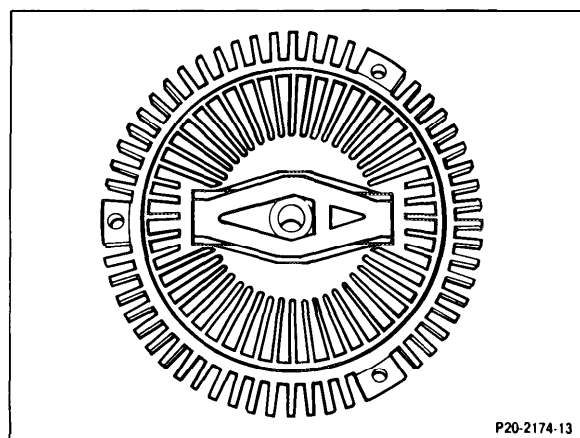
Engine 602.911 bimetal spring; color silver grey.
Imprinted Part No. 603 200 00 22 (arrow).



The viscous fan couplings of engine 602.96 and 603.96 have been strengthened to compensate for an enlarged fan.

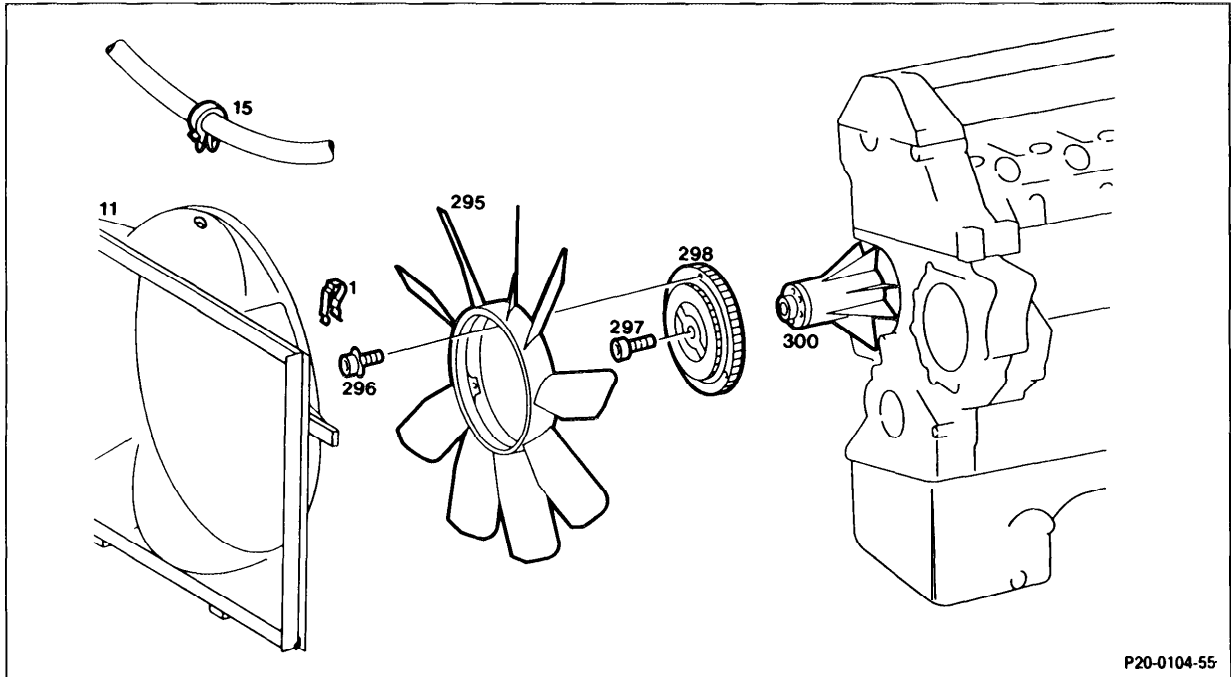
Bimetal spring; color metal-colored.

Red imprinted Part No. 603 200 04 22.



20-312 Removal and installation of viscous fan coupling

Preceding work:
Radiator removed - only Model 201.126, 124.133, 124.193
(20-210).



Hose holder (15)	unclip, clip in.
Retaining clip (1)	pull off, fit on.
Fan cowl (11)	place over the fan.

Hexagon socket screw (297)	<p>Caution! Separate split fan cowls and remove. unscrew, screw in, 45 Nm, using screwdriver insert 103 589 01 09 00, torque wrench 001 589 72 21 00 and counter-holder 603 589 00 40 00 (step 3).</p>
Fan (295) with viscous fan coupling (289)	remove at coolant pump (300), insert.
Fan (295)	unscrew, screw on, hexagon socket screw (296), 10 Nm.

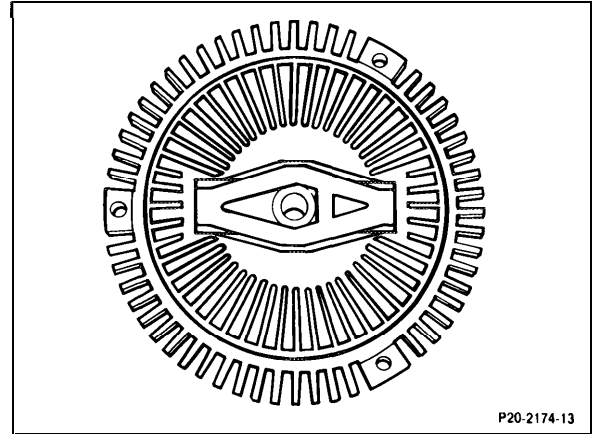
Caution!
Notice direction of rotation of fan (295).
Inscription must be facing direction of travel.

Tightening torques

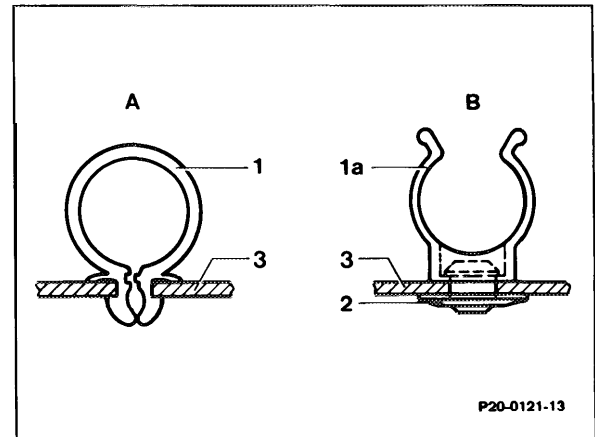
	Nm
Hexagon socket bolts of fan	10
Hexagon socket screw of viscous fan coupling	45

Note

As a distinguishing feature on engines 602 and 603.91 a silver-colored sticker with Part No. 603 200 00 22 and 603 200 04 22, respectively, is attached to the viscous fan coupling. A red inscription appears on the same part for engine 603.96.



The hose holder for attaching the vent hose at the fan cowl has been modified from a single-section version to a two-section version.



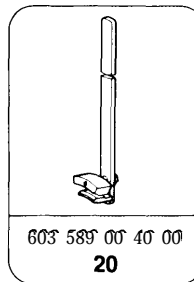
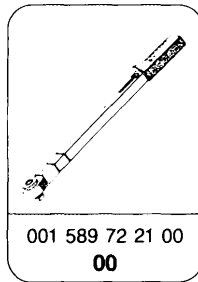
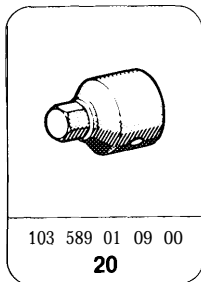
A Previous version
B Present version

Production breakpoint: 10/87 - OY88

Model	Engine	Engine End No.		Vehicle Ident End No.	
		manual transmission	automatic transmission	A	F
124.133 124.193	603.960	*	*	732131	*
201.126	602.911	*	*	455028	*

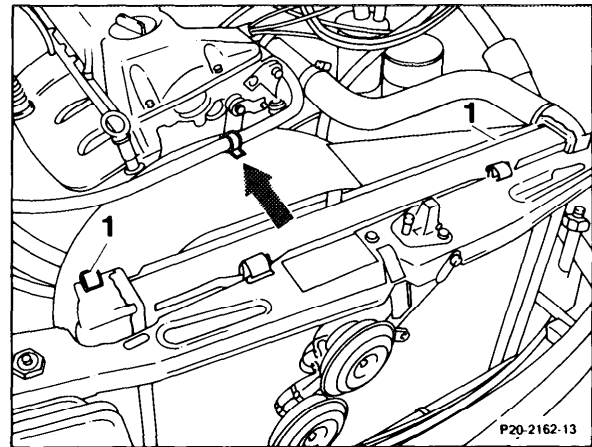
* not registered

Special tools



Removal

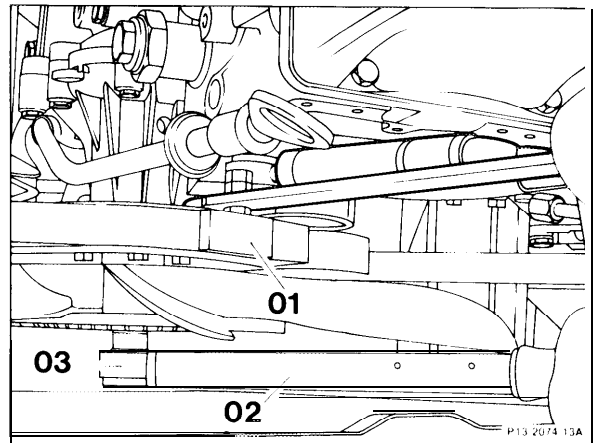
- 1 Remove clip together with vent line from fan cowl (arrow).
- 2 Pull off retaining clips (1) for fan cowl. Place fan cowl over the fan.



3 Unbolt viscous fan coupling with torque wrench 001 589 72 21 00 (02) and screwdriver insert 103 589 01 09 00 (03). Hold the belt pulley with the counter-holder 603 589 00 40 00 (01) when performing this step.

4 Remove viscous fan coupling together with fan and fastening bolt.

5 Unbolt fan from the viscous fan coupling.



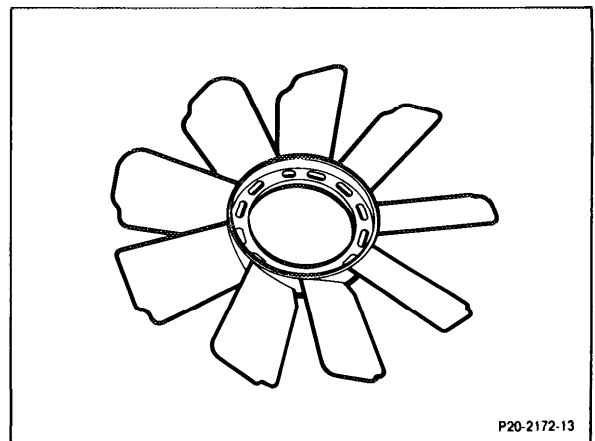
Installation

Caution!

Notice direction of rotation of fan. Marking must be pointing in direction of travel.

6 Bolt fan onto the viscous fan coupling.

Tightening torque 10 Nm.



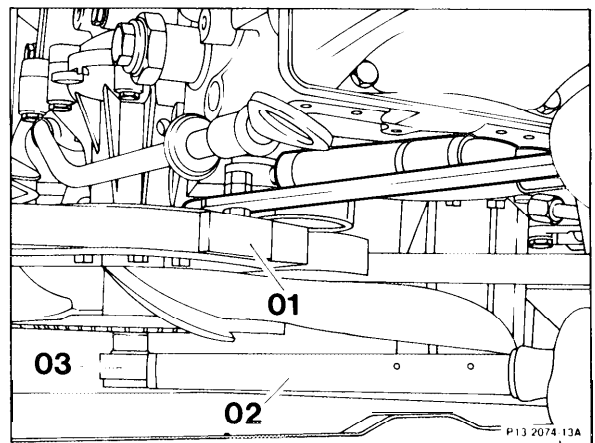
7 Fit fan with viscous fan coupling and fastening screw onto the coolant pump.

8 Tighten the hexagon socket bolt with screwdriver insert 103 589 01 09 00 (03) and torque wrench 001 589 72 21 00 (02). Hold the belt pulley securely with the counter-holder 603 589 00 40 00 (01) when performing this step.

Tightening torque 45 Nm.

9 Install fan cowl.

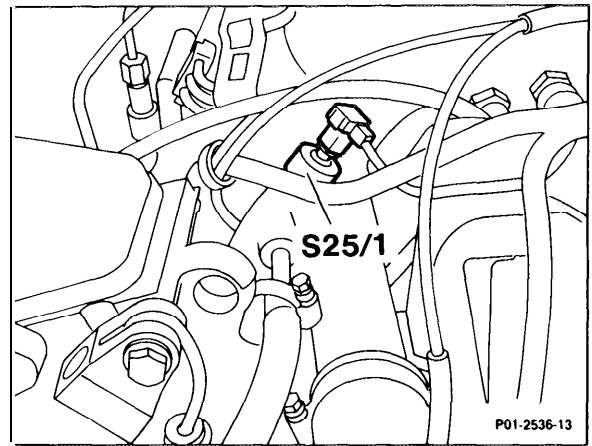
10 Attach vent line at fan cowl.



20-330 Magnetic fan coupling

The magnetic fan coupling is activated by a 100 °C temperature switch (S25/1) mounted at the outlet connection.

The electromagnetic fan coupling is maintenance-free.

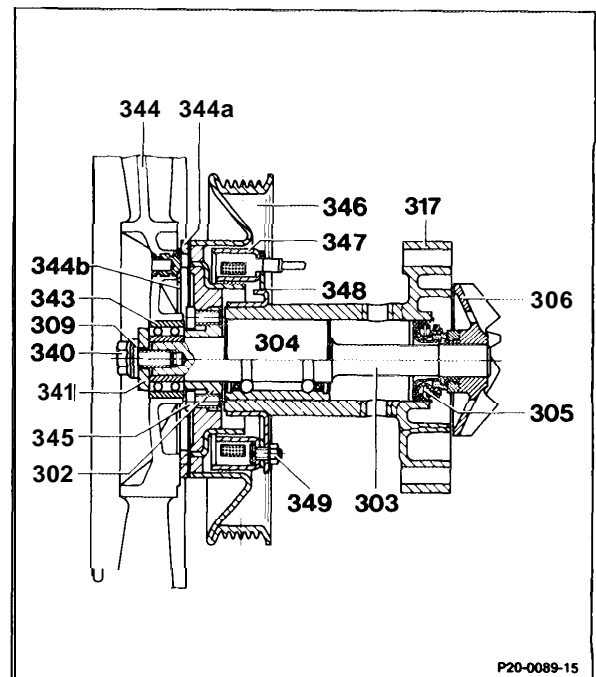


Design of the electromagnetic fan coupling

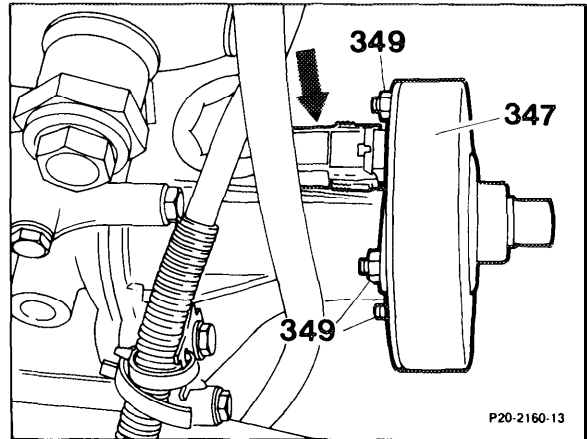
The magnet body (347) is attached to the magnet carrier (348) with 3 nuts (349).

The magnet carrier is bonded to the coolant pump housing and does not need to be removed.

- | | |
|------|-------------------------------|
| 302 | Flange |
| 303 | Shaft |
| 304 | Bearing |
| 305 | Cassette seal |
| 306 | Impeller |
| 309 | Tensioning plate |
| 317 | Coolant pump housing |
| 340 | Collar bolt |
| 341 | Washer |
| 343 | Bearing |
| 344 | Fan |
| 344a | Armature |
| 344b | Leaf spring |
| 345 | Hexagon socket screw M 6 x 12 |
| 346 | Belt pulley |
| 347 | Magnet body |
| 348 | Magnet carrier |
| 349 | Hexagon nut |

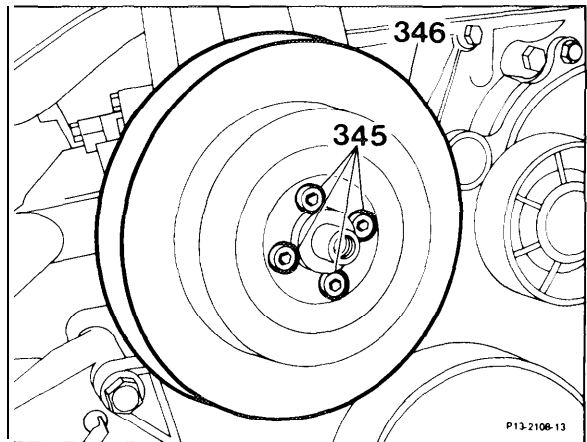


The electric cable is connected to the magnet body (347) via a coupling (arrow).



The belt pulley (346) is mounted to the coolant pump shaft in front of the magnet body.

The belt pulley (346) is bolted to the flange of the coolant pump with 4 hexagon socket bolts (345) or torx bolts.



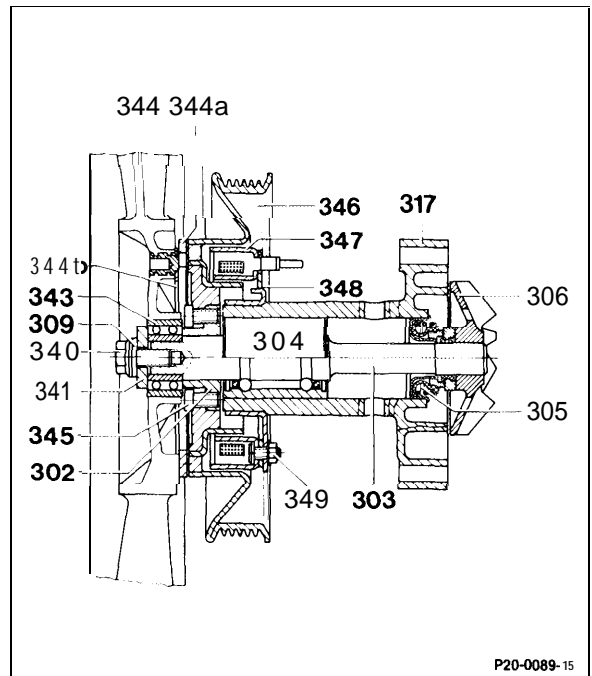
Function

The fan is activated only if the ignition is turned on and the coolant is at a temperature above 98 - 102 °C.

Voltage is applied constantly to the magnet body (347) through fuse No. 10 terminal 15 (1 st version).

Below a coolant temperature of 98 - 102 °C the fan is switched off and only rotates as a result of air flow over the fan when the vehicle is moving.

A negative voltage is applied by the temperature switch in the outlet connection at no less than a coolant temperature of 102 °C.



The armature (344a) is attracted by the magnet body (347) and presses against the face of the belt pulley (346).

The fan becomes rigidly attached to the belt pulley and rotates at coolant pump speed.

If the coolant temperature drops below 93 – 98 °C, the temperature switch opens and the armature is lifted off the belt pulley (346) by leaf springs (344b).

On vehicles with air conditioning, the fan and electric auxiliary fan are activated through a double contact relay which is activated by the 52 °C temperature switch at the fluid reservoir.

If the air conditioning is off, the 100 °C temperature switch at the outlet connection alone engages or disengages the fan.

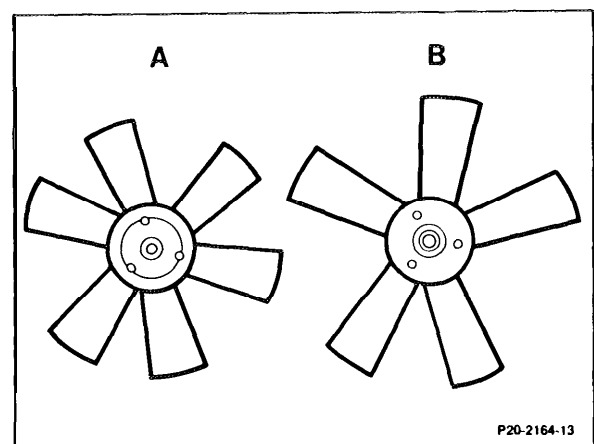
The armature (344a) and the ball bearing (343) are fitted to or to the inside of the fan.

The ball bearing is sealed on both sides with cover plates.

Fan

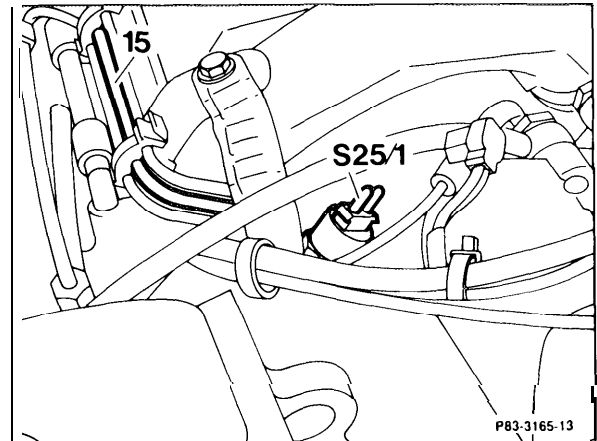
The fan (A) has 6 blades and a diameter of 380 mm.

On vehicles with air conditioning, the fan (B) has 5 blades and a diameter of 430 mm.

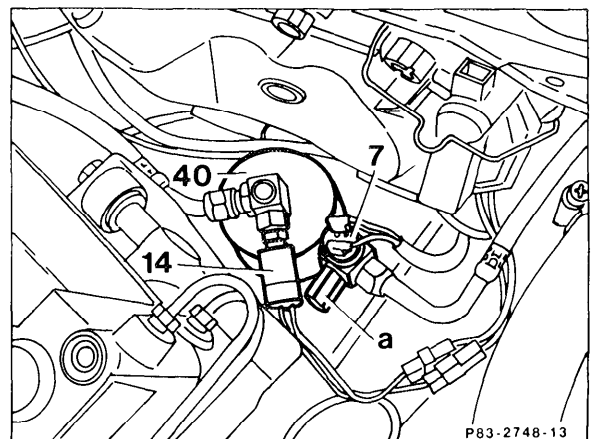


**Modification to electromagnetic coupling
Model 201**

Effective 10 84 a modified electrical center has been installed. As a result, the electromagnetic coupling is operated by a positive voltage through a 2-pin temperature switch (**S25 1**) (previously negative voltage).



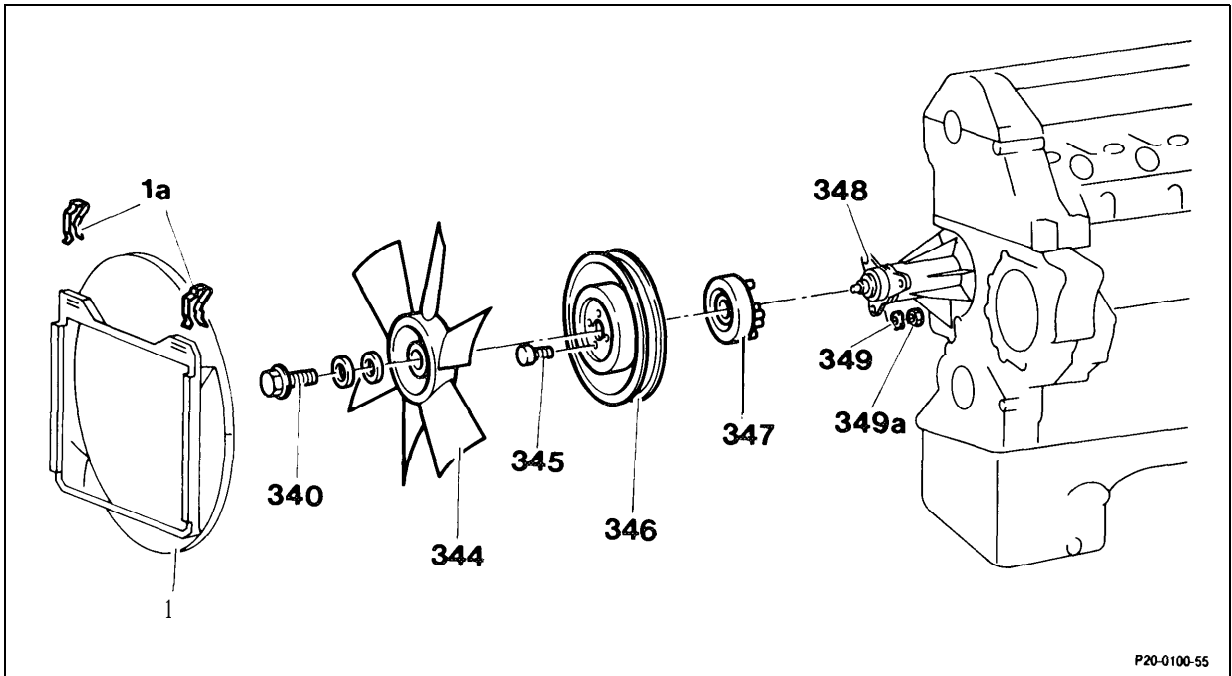
On vehicles with air conditioning positive is connected through a relay also after the pressure switch (14) closes.



20-335 Removal and installation of magnetic fan coupling

Preceding work:

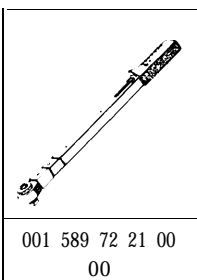
Poly V-belt removed (13-342).



P20-0100-55

Retaining clips (1 a)	remove, refit.
Fan cowl (1)	detach, attach, place over fan.
Fan (344)	unbolt, bolt on, 25 Nm.
Belt pulley (346)	unbolt, bolt on, hexagon socket bolt 10 Nm or torx screw 14 Nm.
Magnet body (347)	pull off cable connection, fit on, unbolt nuts (349a), bolt on.
Magnet carrier (348)	do not remove from coolant pump, check for tightness, secure with adhesive 001 989 45 20 10, if necessary.

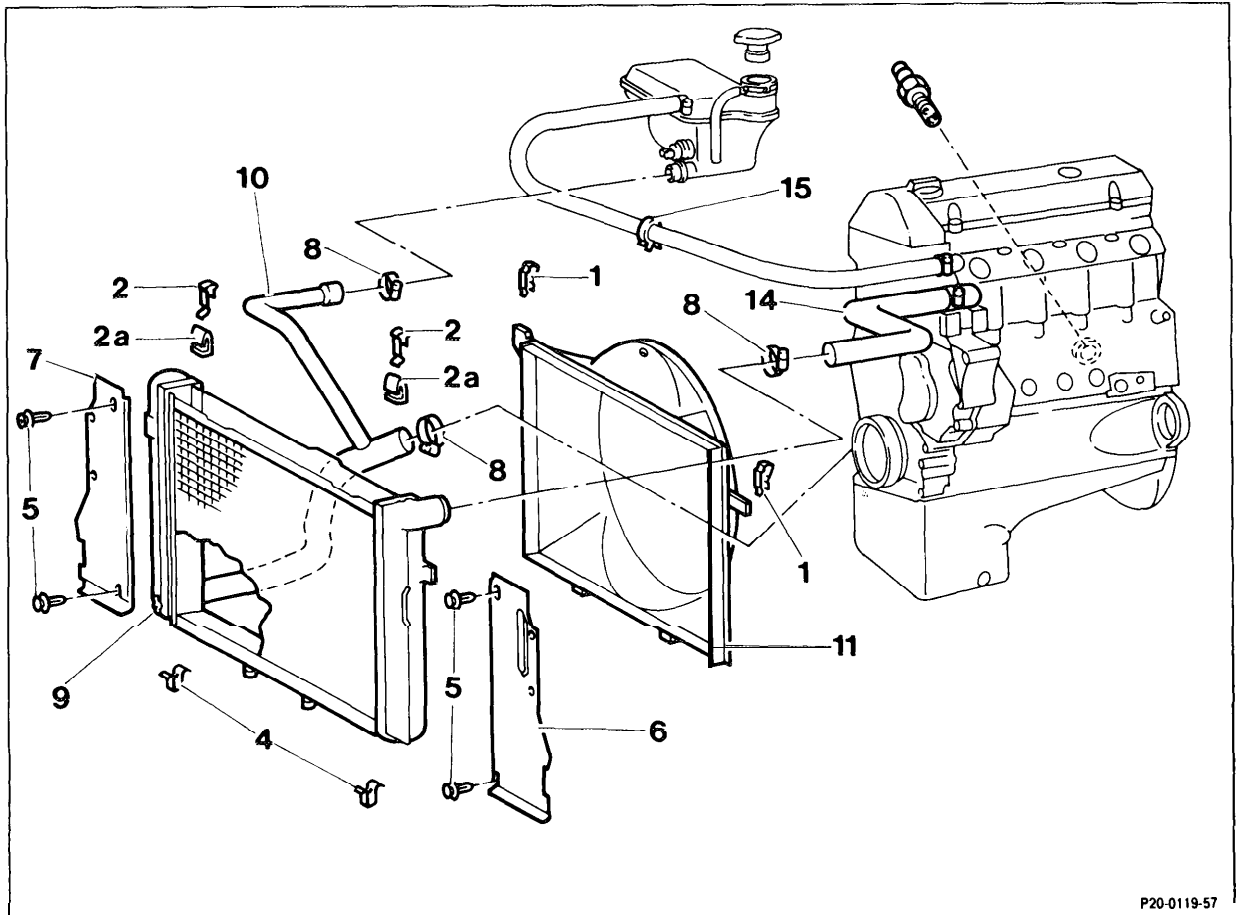
Special tools



001 589 72 21 00
00

20-420 Removal and installation of radiator

Preceding work:
 Bottom engine compartment covering removed (01-006).
 Coolant drained (20-010).



P20-0119-57

Vehicles with automatic transmission:

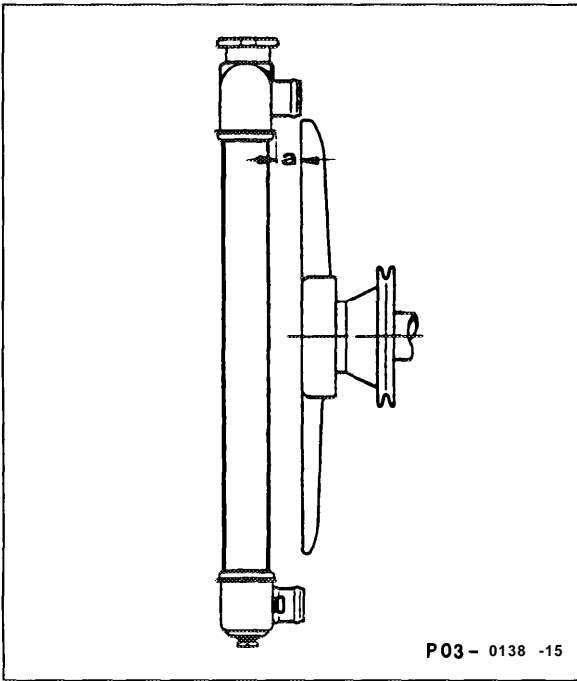
Oil lines at cooler	unbolt, bolt on, clamp with special tool 000 589 40 37 00 (step 1).
Holder (15)	for vent hose, unclip, clip in (step 4).
Flat spring (1)	remove, insert.
Fan cowl (11)	remove, insert. Place fan cowl (11) over the fan.
Coolant hoses (10, 14)	detach, attach, check condition.
Expanding rivets (5)	remove, insert (step 5).
Radiator coverings (6, 7)	remove, install.

Retaining clip (4)	pull off, fit on.
Model 201.128	
Radiator bridge	unbolt, on.
Model 201.128	
Front bumper	remove, attach (88-200).
Evaporator	unbolt from radiator, screw on.
Flat spring (2)	withdraw, insert.
Radiator (9)	lift out, insert.
Cooling system	check for leaks (20-017).

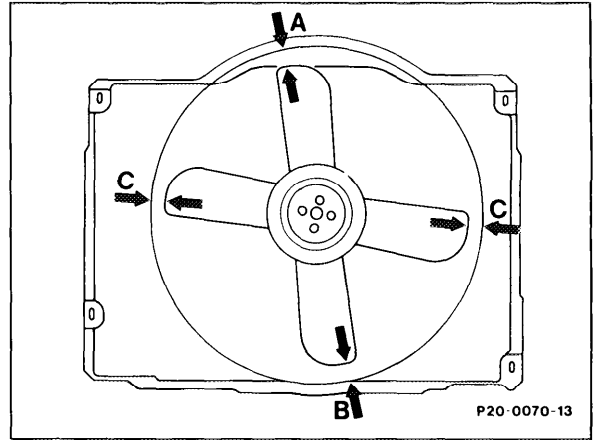
Installation dimensions for radiator, fan and fan cowl

Model	Engine	Distance "a" from fan to radiator, approx. mm	Distance from fan to cowl, approx. mm		
			A	B	C
124.128	602.962	87	22 19.5 ¹⁾	28 25.5 ¹⁾	20 22.5 ¹⁾
124.133	603.960	178			
124.193	603.962	87			
126.125	603.961	87	17.5	23.5	15.5
126.135	603.970	34	22	28	20
201.126	602.911	19	19.5	25.5	22.5
201.128	602.961	178			

¹⁾ Two-section fan cowl

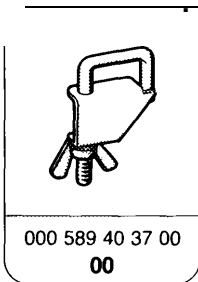


Radiator/fan



Fan/fan cowl

Special tool



Commercial tool

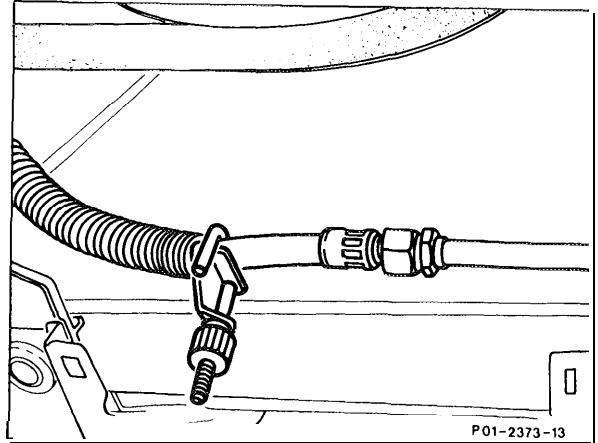
7 mm wrench socket on flexible shaft
for hose clips with worm drive

e. g. Hazet,
D-5630 Remscheid
Order No. 426-7

Removal

Vehicles with automatic transmission:

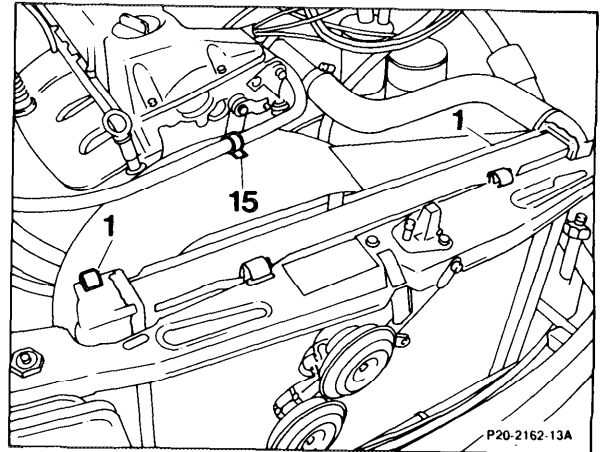
1 Clamp oil lines at automatic transmission with special tool 000 589 40 37 00, moving the spiral spring slightly to the side and unscrewing at the radiator.



2 Seal off coolant hoses at the radiator.

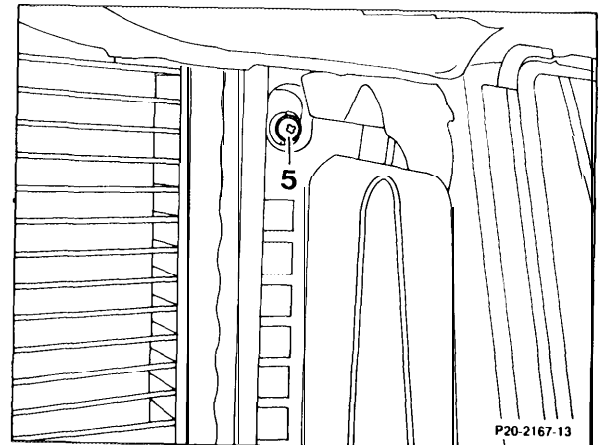
3 Withdraw hose holder (15).

4 Pull out flat springs (1) for fan cowl, raise cowl slightly and place over the fan.

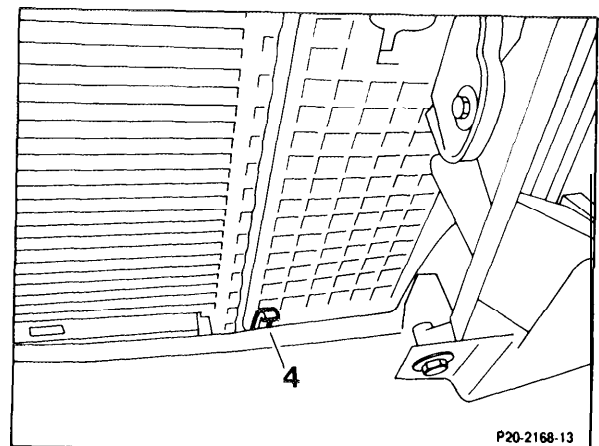


5 Remove the expanding rivet (5) on the right and left side for the side radiator covering.

6 Remove radiator coverings.



7 Remove the retaining clip (4) at the bottom right and left.

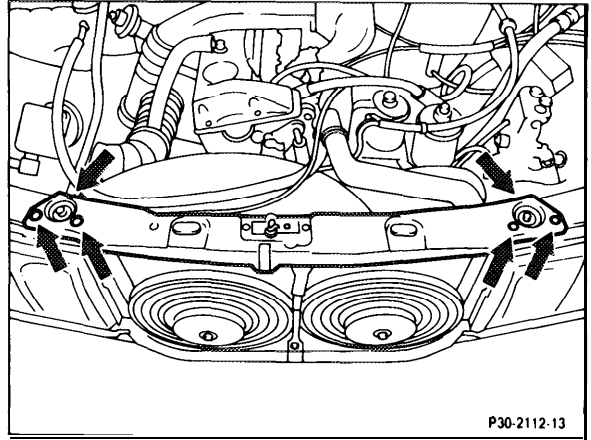


Model 201.128

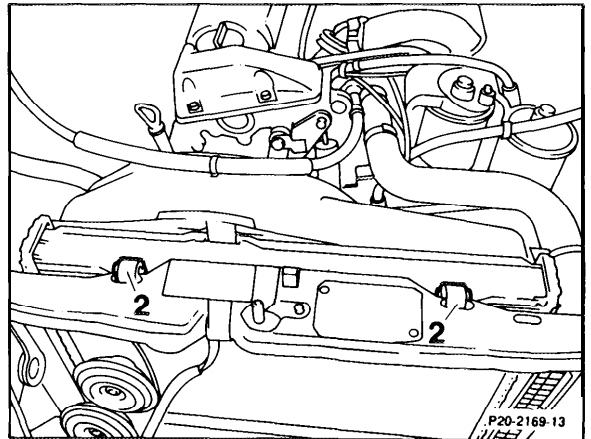
8 Unbolt radiator bridge (arrows).

Note

The front bumper must be removed on vehicles with air conditioning in order to be able to unbolt the evaporator from the radiator (88-200).



9 Withdraw flat springs (2) for radiator and lift out radiator.

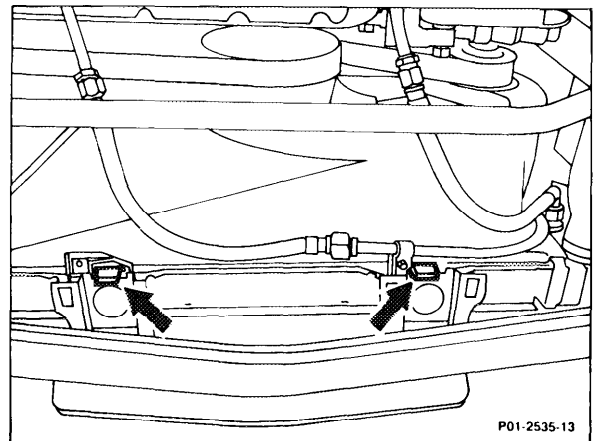


Installation

Installation is performed in the reverse order.

Note

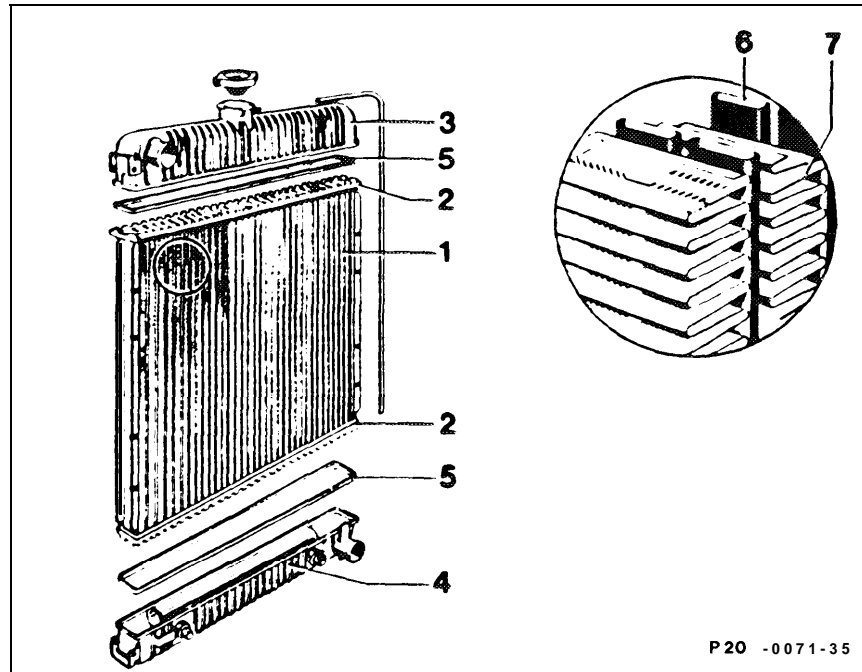
Ensure that the fixing mounts of the radiator are correctly positioned into the rubber grommets of the bottom holders and that the holders of the fan cowl are correctly inserted into the retaining clips on the radiator (arrows).



10 Check cooling system for leaks (20-017).

20-425 Repairing radiator

Preceding work:
Radiator removed (20-420)



Radiator honeycomb (1)	check for signs of damage.
Radiator	clean and seal hose connections and oil cooler line (steps 1 – 4).
Radiator	pressure test with tester 124 589 15 21 00 and 605 589 00 25 00 in water bath, mark leak point, reduce pressure and blow-dry radiator with compressed air (steps 5 – 10).
Top and bottom water tanks (3, 4)	check for leaks.
Gasket (5)	check for leaks.
Radiator	seal leak point with repair kit radiator sealant 123 989 00 20 (steps 11 – 15).

⚠ Warning

Note safety instructions!

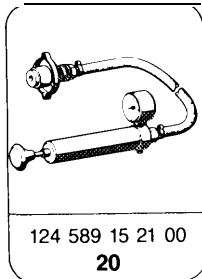
Radiator	pressure-test at 1.4 bar gauge pressure in water bath, check for leaks (steps 16 – 17).
Radiator	install (20-420).
Cooling system	check for leaks (20-017).

Sealant

Repair kit radiator sealing

123 989 00 20

Special tools



Commercial tool

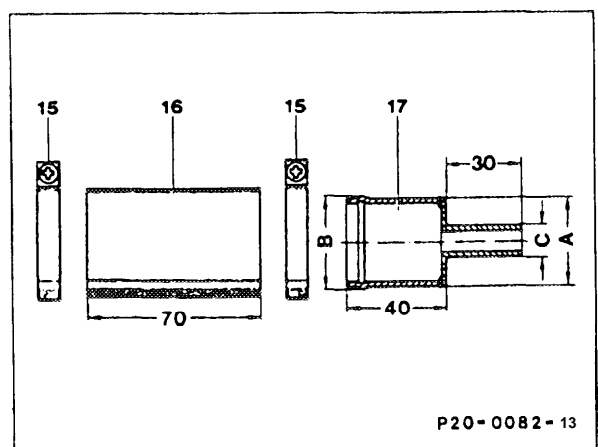
7 mm wrench insert with flexible shaft
for hose clips with worm drive

e. g. Hazet,
D-5630 Remscheid
Order No. 426-7

Shop-made tool

Cap for top hose connection:

- 15 2 clips L 3646, Part No. 916026 036000
- 16 Piece of hose, Part No. 201 501 38 82
- 17 Reducer made from two tubes
- A 35 mm dia.
- B 39 mm dia
- C 12 mm dia

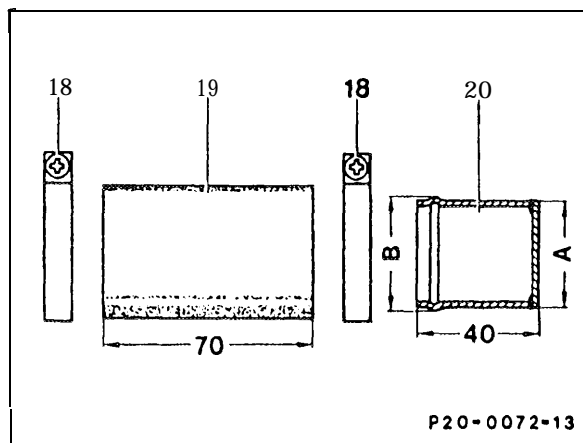


P20-0082-13

Shop-made tool

Cap for bottom hose connection:

- 18 2 clips L 3646, Par-t No. 916026 036000
- 19 Piece of hose, Part No. 201 501 38 82
- 20 Cap from a tube
- A 35 mm dia.
- B 39 mm dia.



Designation	Use
Priming liquid	Preparation of base
Undiluted sealant	For properly sealing accessible points
Diluted sealant	For sealing difficult-to-reach points (e. g. sides of cooling tubes)

Sealant and priming liquid have a storage life of approx. 1 year provided they are always sealed airtight after use.

Priming liquid which has become cloudy should no longer be used.

The following parts or points in the coolant circuit can be sealed with the sealant:

- a) Plastic water tanks (3 and 4).
- b) Heavy metal water tanks (holes up to 1.5 mm diameter).
- c) Light and heavy metal cooling tubes (6).
- d) Tube plate (2).
- e) Beaded collar (connecting point between radiator honeycomb and water tank).
- f) Heat exchanger of heating system.

Fractured or cracked fastening straps or cracks at the connection fittings cannot be repaired.

Brazing or soldering on heavy metal radiators with plastic water tanks may only be performed on the honeycomb (1) at a distance of at least 20 mm from the water tank otherwise the high brazingsoldering temperature will damage the gasket (5) and the water tank (3 and 4). Leaks which are located closer to the water tank should be repaired only with sealant.

The radiator does not have to be removed from the vehicle for sealing. In this case, it is sufficient to drain the coolant and to pressure-test the cooling system with the tester (approx. 1.4 bar gauge pressure) after sealing.

Caution!

Light alloy radiators with plastic water tanks cannot be repaired by brazingsoldering.

Sealant is available in diluted and undiluted form in order to seal leaks of different accessibility at the radiator (e. g. more difficult in the honeycomb than at the water tank).

The various sealant versions and the priming liquid are combined in a repair kit Part No. 123 989 00 20.

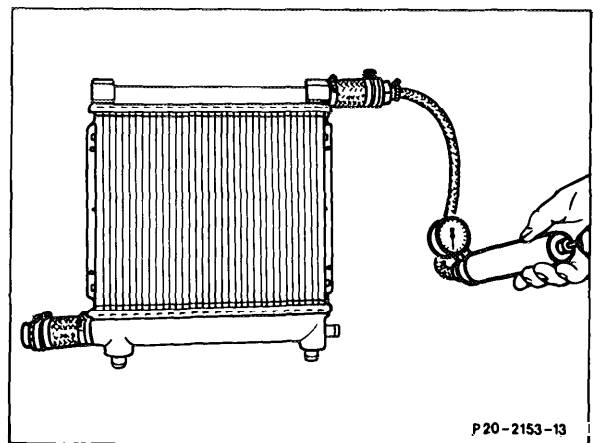
⚠ Warning

The priming liquid is easily combustible (note safety instructions, Hazard Class A 1).

Acetic acid is released until the sealant has completely cured. For this reason, avoid contact with skin. Clean affected areas immediately with water and soap. Rinse out eyes with water. Consult a doctor if necessary.

Sealing

- 1 If the leakage point cannot be properly located with the radiator installed, remove radiator (20-420).
- 2 Clean radiator.
- 3 Seal hose connections with the shop-made caps.
- 4 Seal connections of the transmission oil cooler with plastic caps or plugs from old oil cooler lines. Cut off the oil cooler lines just behind the nipple and solder on.
- 5 Connect testers 124 589 15 21 00, 605 589 00 25 00 to the radiator.
- 6 Place radiator in a water bath.
- 7 Pressurize radiator with the tester and check location of rising air bubbles.
- 8 Mark leakage points.
- 9 Remove radiator and reduce pressure.



10 Blow-dry radiator with compressed air.

11 Clean leakage point and area around it with a commercial cleaning agent (e. g. tri or white spirit).

It is not necessary to remove any paint. The radiator should then be blown-dry at the affected point with compressed air.

There must not be any dust or grease residues present on the surface.

12 Apply a very thin and even coat of priming liquid with a brush.

Apply the priming liquid at and around the point to be sealed. Pour the quantity of priming liquid required for the repair in a separate vessel to avoid polluting the entire can of priming liquid.

 **Warning**

Note safety instructions!

13 Allow priming liquid to dry for approximately 10 minutes at room temperature.

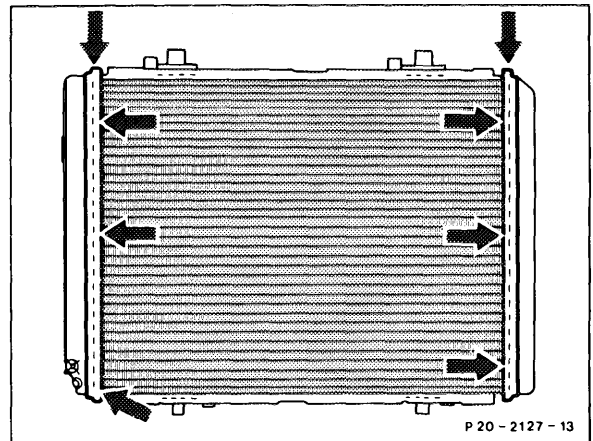
14 Apply diluted or undiluted sealant according to accessibility. Use brush, spatula or the like for spreading the sealant.

Caution!

During application and spreading sealant, ensure that no air is trapped.

Using the same method as for cleaning and priming, apply the sealant not only at the point to be sealed but also around it. If there are several leak points at the beaded collar (arrows) it is recommended to seal the beaded collar completely around its circumference.

Seal leaks in the honeycomb from both sides.



After completing the sealing procedure, close tube immediately. Acetic acid is released until the sealant has completely cured. Avoid contact with skin. Clean affected areas immediately with water and soap. Rinse out eyes with water. Contact a doctor if necessary.

15 Leave radiator upright or face-down for at least 3 hours for the sealant to dry. Depending on the quantity of sealant applied and the size of the point treated, it may take up to 24 hours for the sealant to cure to form a permanent elastic joint at room temperature.

16 Pressure-test radiator for approx. 5 minutes in a water bath at 1.4 bar gauge pressure.

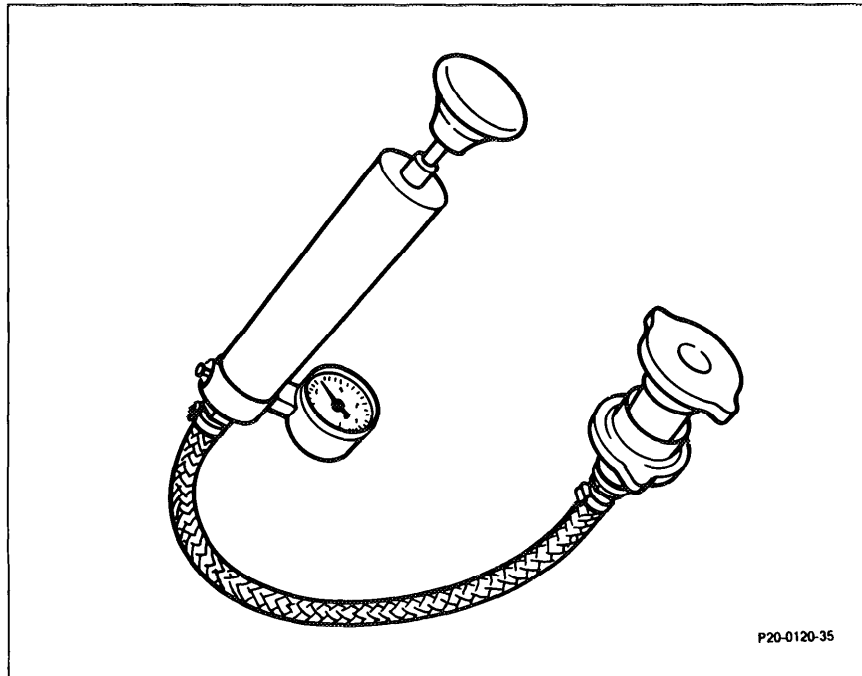
If any leaks remain, repeat sealing operation starting at step 8.

17 Remove testers and plugs.

18 Install radiator (20-420).

19 Check cooling system for leaks (20-017).

20-430 Testing radiator or expansion tank cap



Double connection 000 589 77 63 00 connect to leak tester 124 589 15 21 00.
 Cooling system pressure cap screw onto double connection 000 589 73 63 00.
 Opening pressure test.

Pressure cap

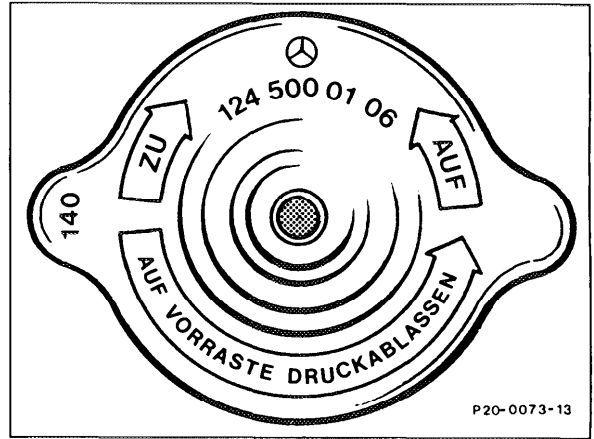
Pressure cap code number		120	140
Pressure relief valve opens at bar gauge pressure	new	1.2 ± 0.1	1.4 ± 0.1
	used	1.2 - 0.1	1.4 - 0.1
Vacuum valve opens at bar vacuum		0.1	

Note

If corrosion is present on the expansion tank cap, it must be replaced.

Engines 602.961, 603.960, 603.961

The opening pressure of the cap has been increased from the previous 1.2 bar to 1.4 bar; with standard antifreeze protection down to -30 °C, the permissible coolant temperature is increased as a result from 125 to 129 °C.

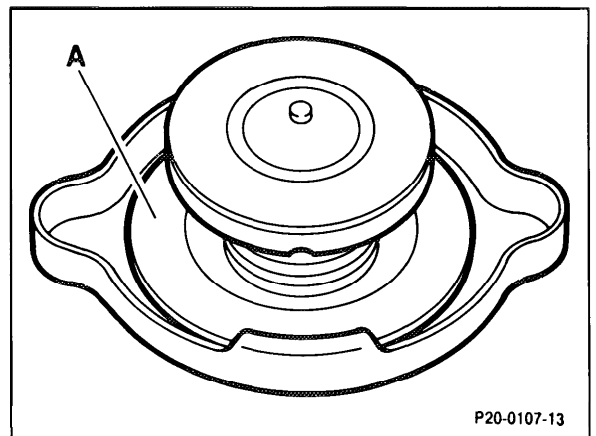


Production breakpoint: 02 - 09/86

Model	Engine	Engine End No.		Vehicle End No.	
		manual transmission	automatic transmission	A	F
124.133	603. 960	*	*	*	*
124.193	603. 960	*	*	*	017987
126.125	603.961	*	*	*	*
201.128	602.961	*	*	*	271512

* not registered

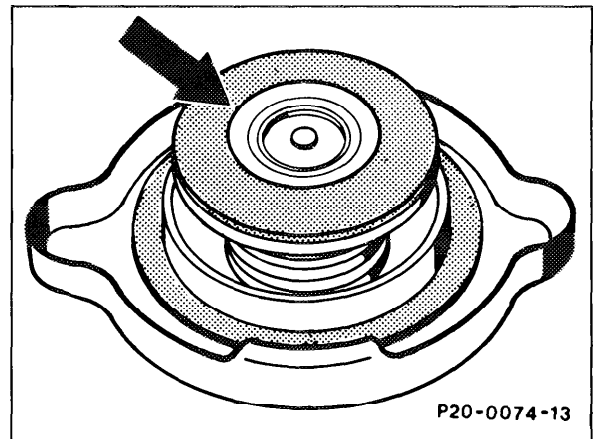
This cap is provided with a rubber seal (A) to prevent any outside air from being drawn in (when vacuum exists in cooling system).



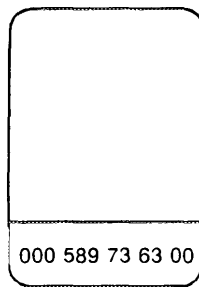
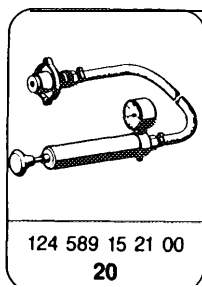
Effective 1 0/87 and 12/87, respectively, pressure caps with and without guide ring (B) have been fitted to engines 602, 603. Only the pressure cap with guide ring is supplied as a replacement part, however.

The modified pressure cap can also be fitted to vehicles manufactured previous to production dates with coolant expansion tank.

- A Seal
- B Guide ring

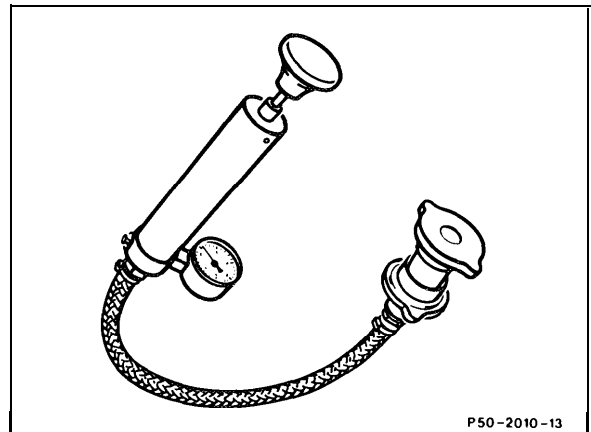


Special tools



Testing pressure relieve valve

- 1 Attach double connection 000 589 73 63 00 to the leak tester 124 589 15 21 00.
- 2 Fit cooling system pressure cap onto the double connection 000 589 73 63 00.
- 3 Test the opening pressure by pumping.

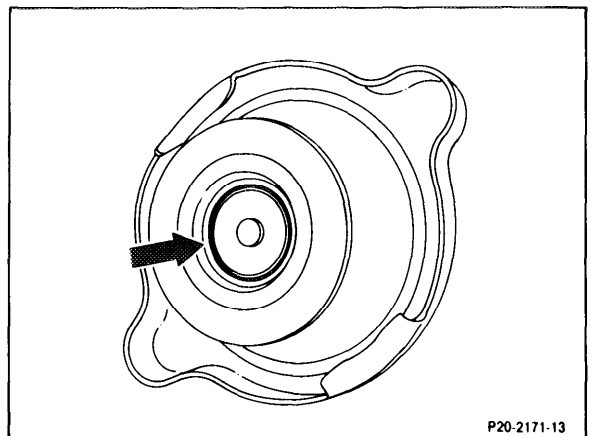


Testing vacuum valve

The vacuum valve (arrow) must be contacting the rubber seal. It must be easily raised and must spring back when released.

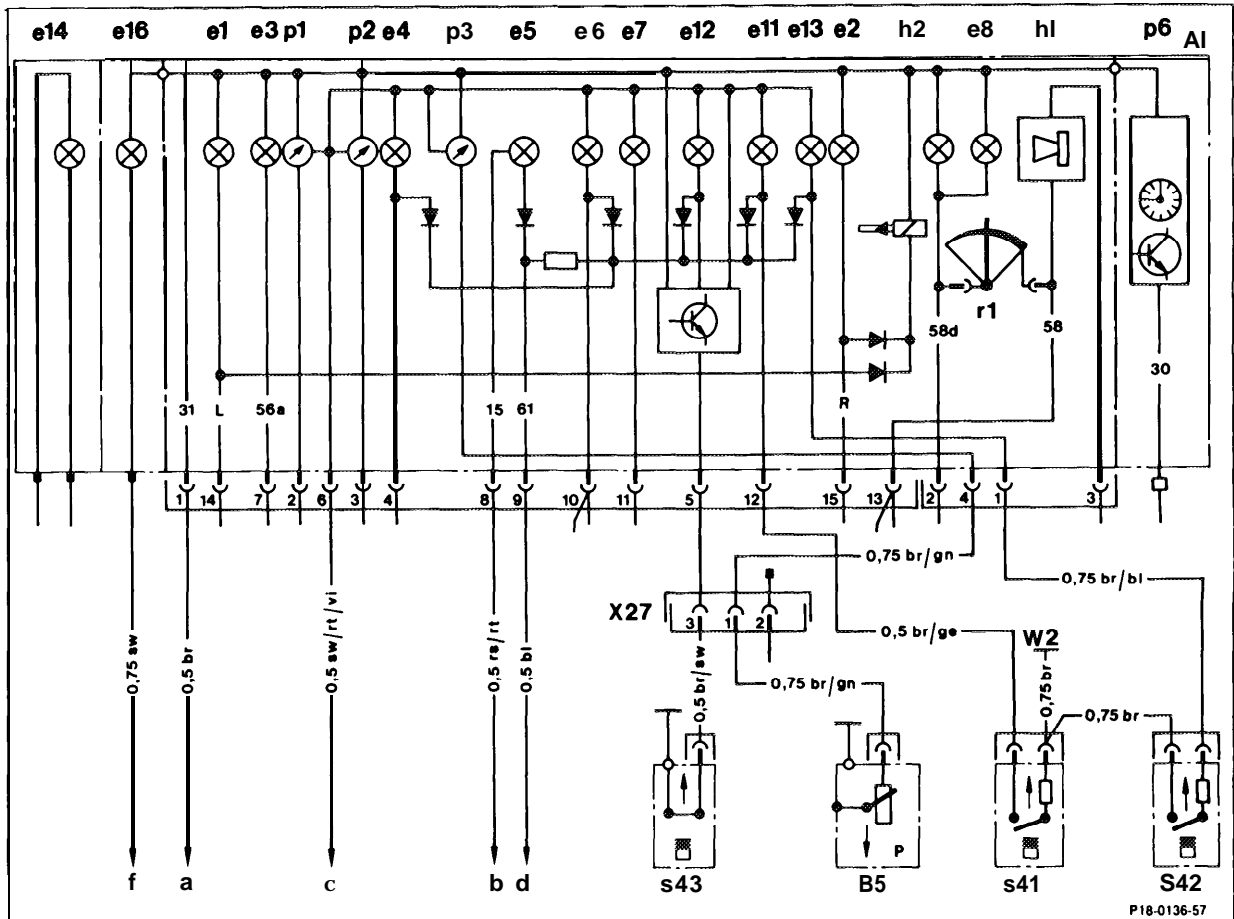
Note

Always replace expansion tank caps which are corroded (surface rust).



20-440 Testing coolant level indicator

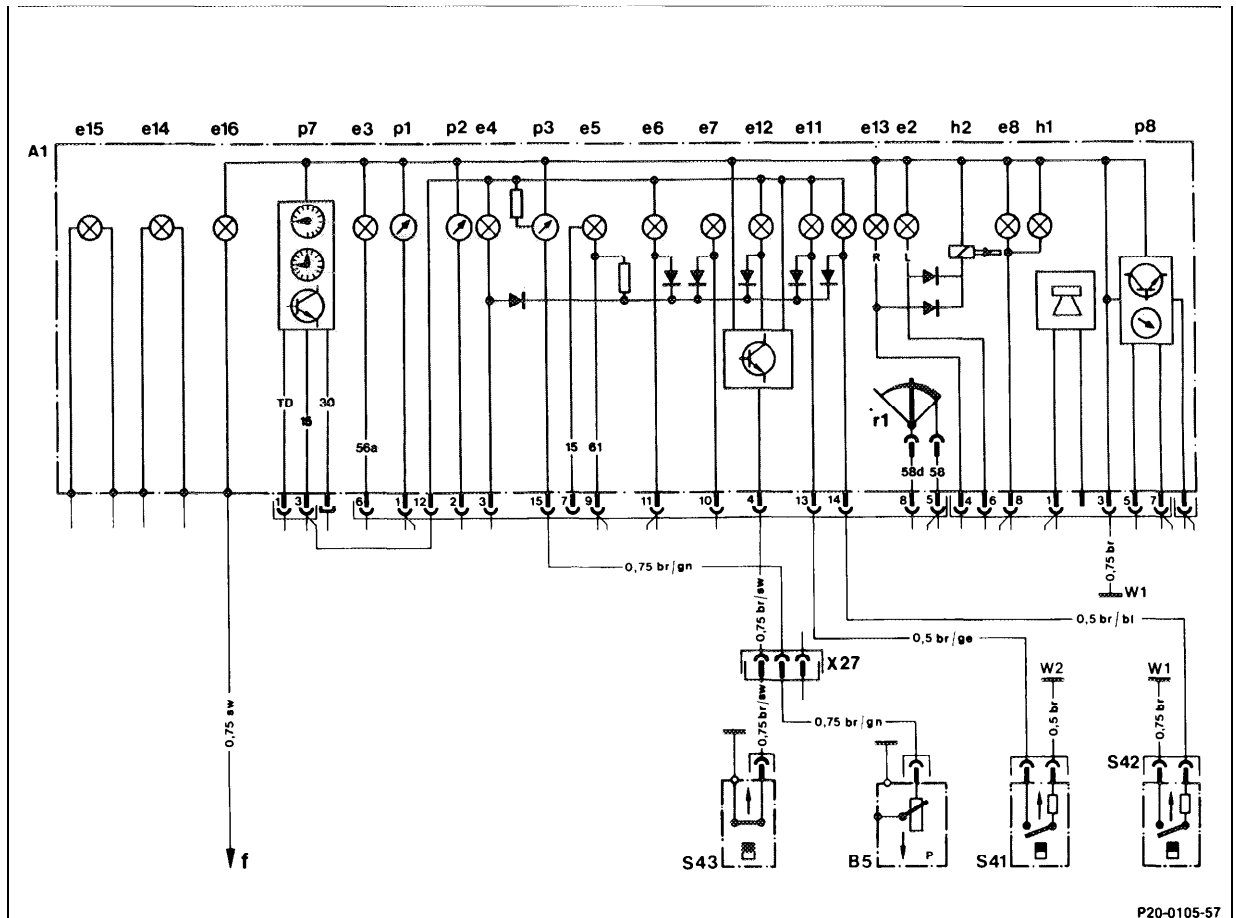
Model 124



Wiring diagram of engine oil level indicator, coolant level indicator, windshield washer level indicator

AI	Instrument cluster	B5	Oil pressure sensor
e1	Left turn signal indicator	s41	Coolant level Indicator lamp switch
e2	Right turn signal Indicator	S42	Windshield washer level indicator lamp switch
e3	High beam indicator	s43	Oil level Indicator lamp switch
e4	Fuel reserve warning lamp	w 2	Ground, front right next to lamp unit
e5	Battery charge indicator	X27	Plug connector, starter harness
e6	Brake pad wear indicator lamp		Main ground behind Instrument cluster W1
e7	Brake fluid and parking brake indicator lamp	a	Fuse 7 terminal 15
e8	Instrument lighting	b	Fuse 5 terminal 15
e1	Coolant level indicator lamp	c	Lamp monitor unit
e12	Oil level indicator lamp	d	Preglow time relay terminal La
e13	Windshield washer level indicator lamp		
e14	Bulb failure indicator lamp		
e16	Preglow Indicator lamp		
h1	Warning buzzer		
p1	Coolant temperature indicator		
p2	Fuel gauge		
p3	Oil pressure gauge		
p6	Electronic clock		

Model 126 1986

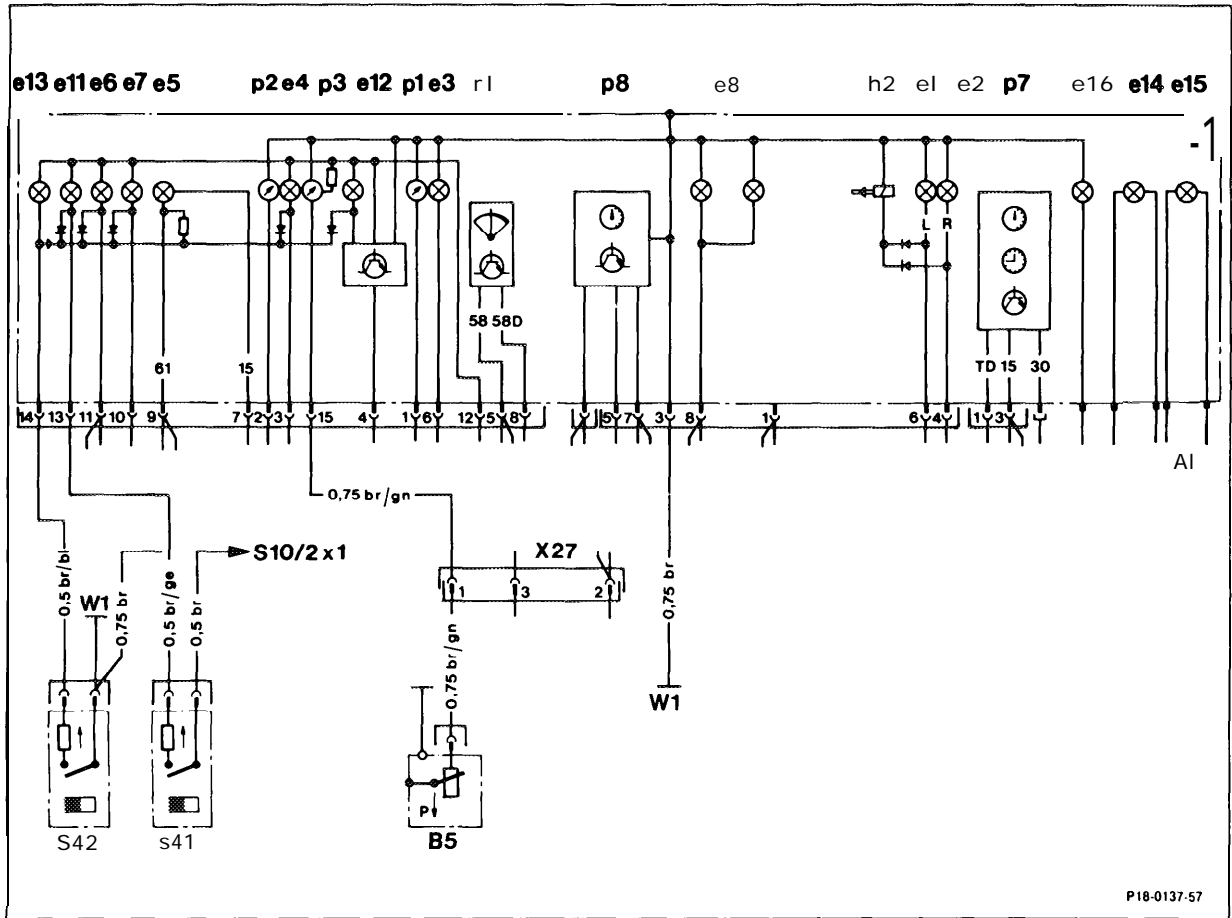


P20-0105-57

Wiring diagram of engine oil level indicator, coolant level indicator, windshield washer level indicator

- | | | | |
|-----|--|-----|---|
| A1 | Instrument cluster | B5 | Oil pressure sensor |
| e1 | Left turn signal indicator | s41 | Coolant level indicator lamp switch |
| e2 | Right turn signal indicator | S42 | Windshield washer level Indicator lamp switch |
| e3 | High beam indicator | s43 | 011 level indicator lamp switch |
| e4 | Fuel reserve warning lamp | W1 | Main ground behind Instrument cluster |
| e5 | Battery charge indicator | w2 | Ground, front right next to lamp unit |
| e6 | Brake pad wear indicator lamp | X27 | Plug connector, starter harness |
| e7 | Brake fluid and parking brake indicator lamp | f | Preglow time relay terminal La |
| e8 | Instrument lighting | | |
| e1 | Coolant level indicator lamp | | |
| e12 | Oil level indicator lamp | | |
| e13 | Windshield washer level indicator lamp | | |
| e14 | Bulb failure indicator lamp | | |
| e15 | Airbag indicator lamp (RS/SRS) | | |
| e16 | Preglow indicator lamp | | |
| h1 | Warning buzzer | | |
| h2 | Audible turn signal indicator | | |
| p1 | Coolant temperature Indicator | | |
| P2 | Fuel gauge | | |
| P3 | Oil pressure gauge | | |
| P7 | Electronic clocktachometer | | |

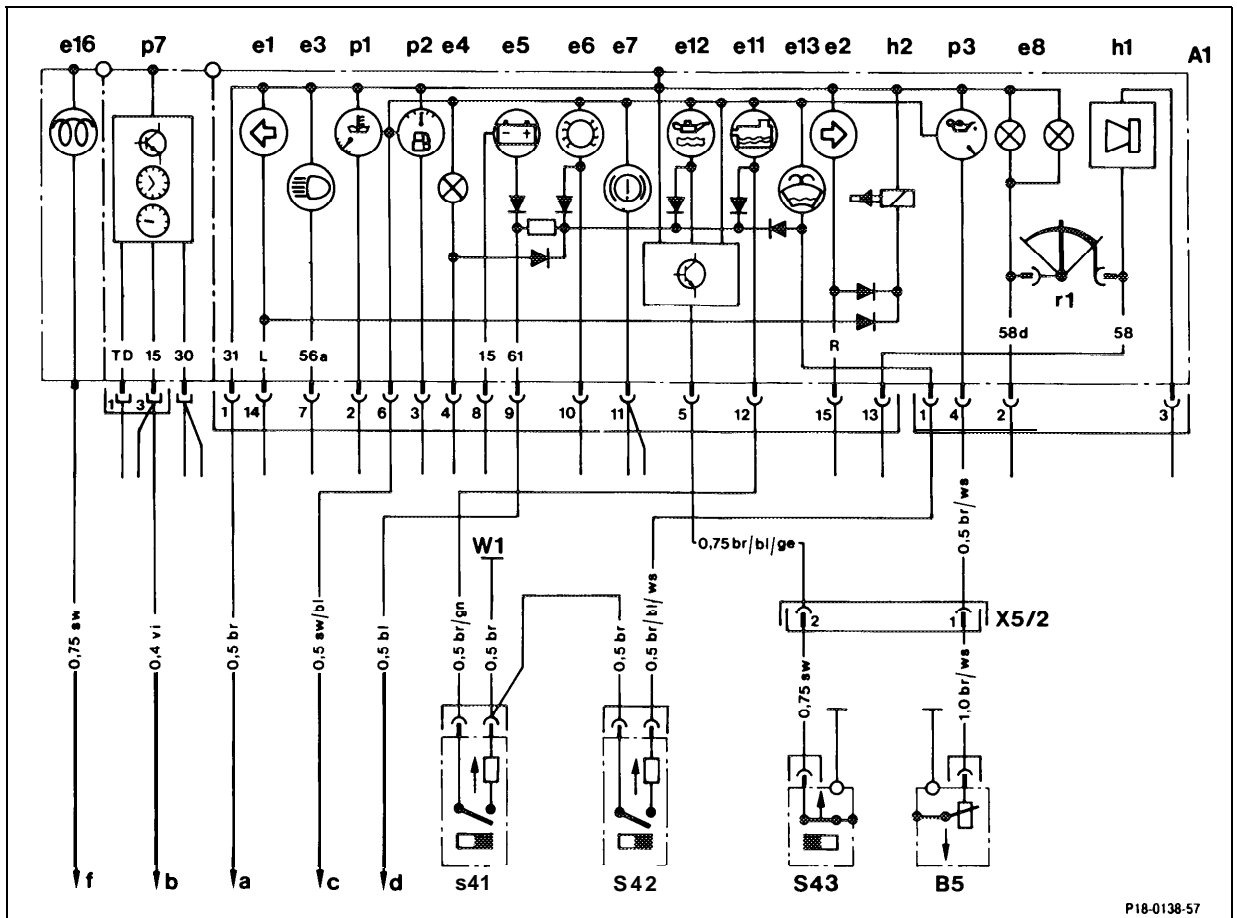
Model 126 1990



Wiring diagram of engine oil level indicator, coolant level indicator, windshield washer level indicator

- | | | | |
|-----|--|---------|---|
| Al | Instrument cluster | B5 | Oil pressure sensor |
| e1 | Left turn signal indicator | S10/2x1 | Connector, front right brake pad contact sensor |
| e2 | Right turn signal indicator | s41 | Coolant level indicator lamp switch |
| e3 | High beam indicator | S42 | Windshield washer level indicator lamp switch |
| e4 | Fuel reserve warning lamp | s43 | 011 level indicator lamp switch |
| e5 | Battery charge Indicator | W1 | Main ground behind Instrument cluster |
| e6 | Brake pad wear indicator lamp | X27 | Plug connector, starter harness |
| e7 | Brake fluid and parking brake indicator lamp | | |
| e8 | Instrument lighting | | |
| e11 | Coolant level indicator lamp | | |
| e12 | Oil level indicator lamp | | |
| e13 | Windshield washer level indicator lamp | | |
| e14 | Bulb failure Indicator lamp | | |
| e15 | Airbag indicator lamp (RS/SRS) | | |
| e16 | Preglow indicator lamp | | |
| h2 | Audible turn signal indicator | | |
| p1 | Coolant temperature indicator | | |
| p2 | Fuel gauge | | |
| p3 | Oil pressure gauge | | |
| p7 | Electronic clock/tachometer | | |
| p8 | Electronic speedometer | | |
| V1 | Instrument lighting rheostat | | |

Model 201



P18-0138-57

Wiring diagram of engine oil level indicator, coolant level indicator, windshield washer level indicator (see Wiring Diagrams Volume 5 for further information)

A1	Instrument cluster	B5	Oil pressure sensor
e1	Left turn signal indicator	S41	Coolant level indicator lamp switch
e2	Right turn signal indicator	S42	Windshield washer level indicator lamp switch
e3	High beam indicator	s43	Oil level indicator lamp switch
e4	Fuel reserve warning lamp	W1	Main ground (behind Instrument cluster)
e5	Battery charge indicator	X5/2	Connector, interior/starter 4-pin
e6	Brake pad wear indicator lamp	a	Main ground behind Instrument cluster W1
e7	Brake fluid and parking brake indicator lamp	b	Electrical centre, connector contact 15 terminal 15 unprotected
e8	Instrument lighting	c	Electrical centre, connector D contact 2 terminal 15 fuse 8
e11	Coolant level indicator lamp	d	Electrical center, connector D contact 8 alternator terminal 61
e12	Oil level indicator lamp	f	Preglow time relay
e13	Windshield washer level indicator lamp		
e16	Preglow indicator lamp		
h1	Warning buzzer		
h2	Audible turn signal indicator		
p1	Coolant temperature indicator		
p2	Fuel gauge		
p3	Oil pressure gauge		
p6	Electronic clock		

Test data

Resistance at coolant level sensor with "max" coolant level	$\infty \Omega$
Resistance at coolant level sensor with "min" coolant level	approx. 15 Ω
Battery voltage	approx. 12 V

Commercial tool

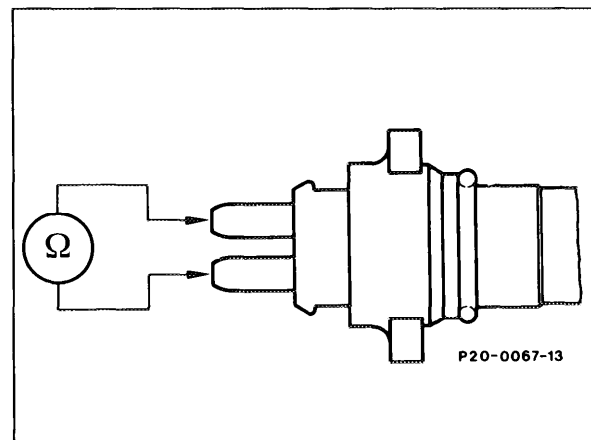
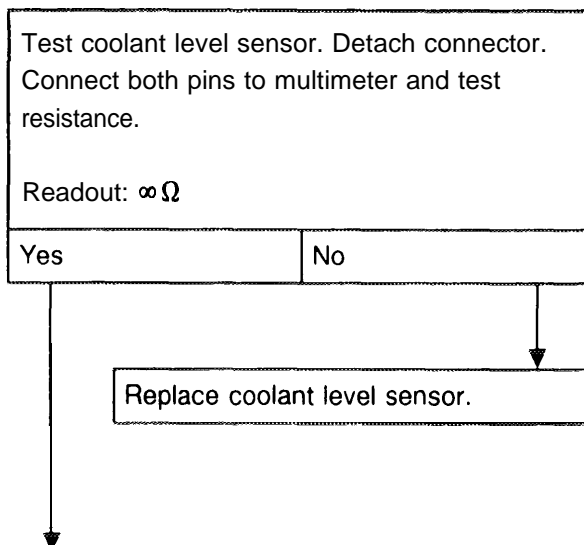
Multimeter	e. g. SUN, DMM-5
------------	---------------------

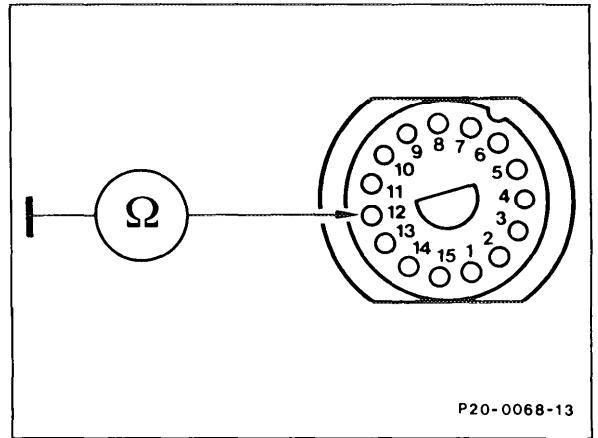
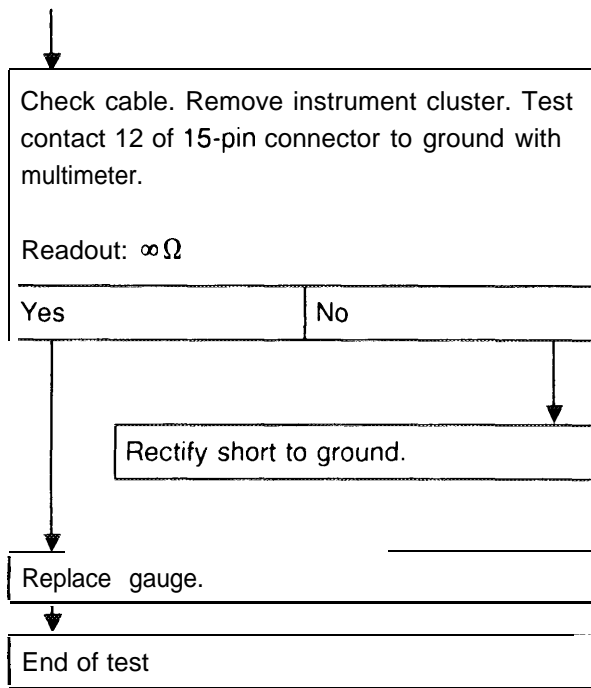
Complaints

- A. Indicator lamp remains on when engine running and coolant level correct.
- B. Indicator lamp does not light up when key in position "2".
- C. Indicator lamp does not light up when engine running and coolant level below "min".

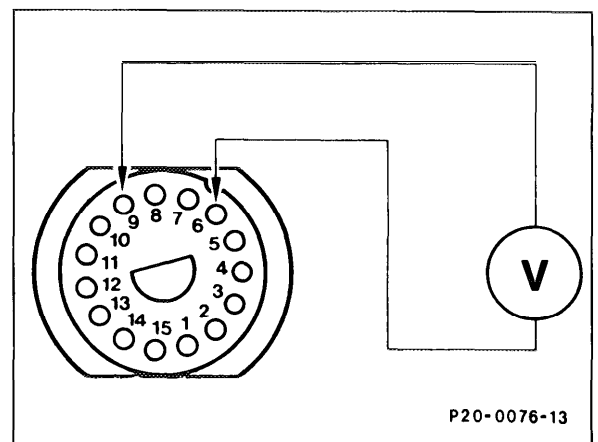
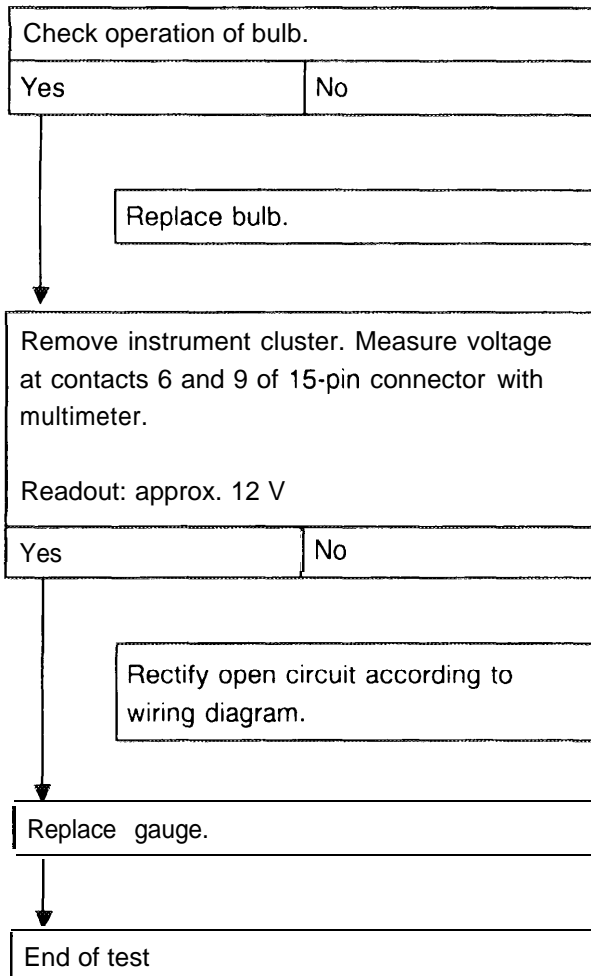
Testing

- A. Indicator lamp remains on when engine running and coolant level correct.

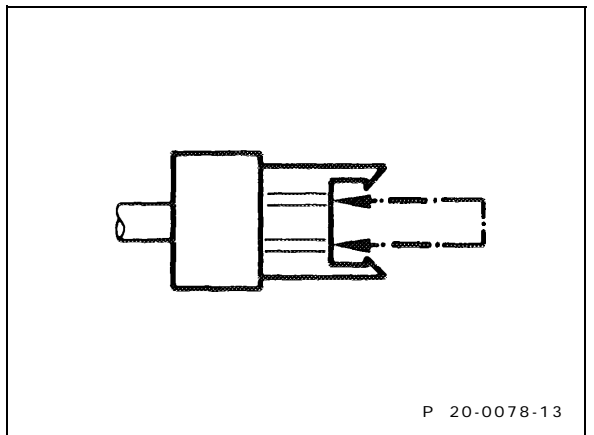
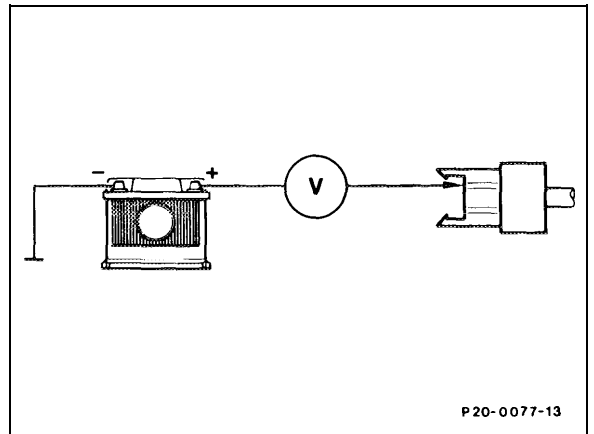
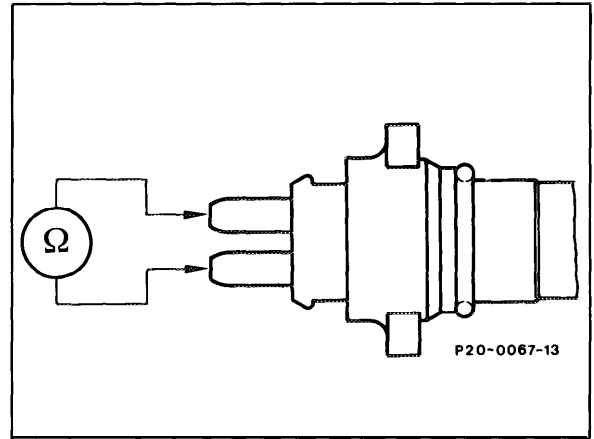
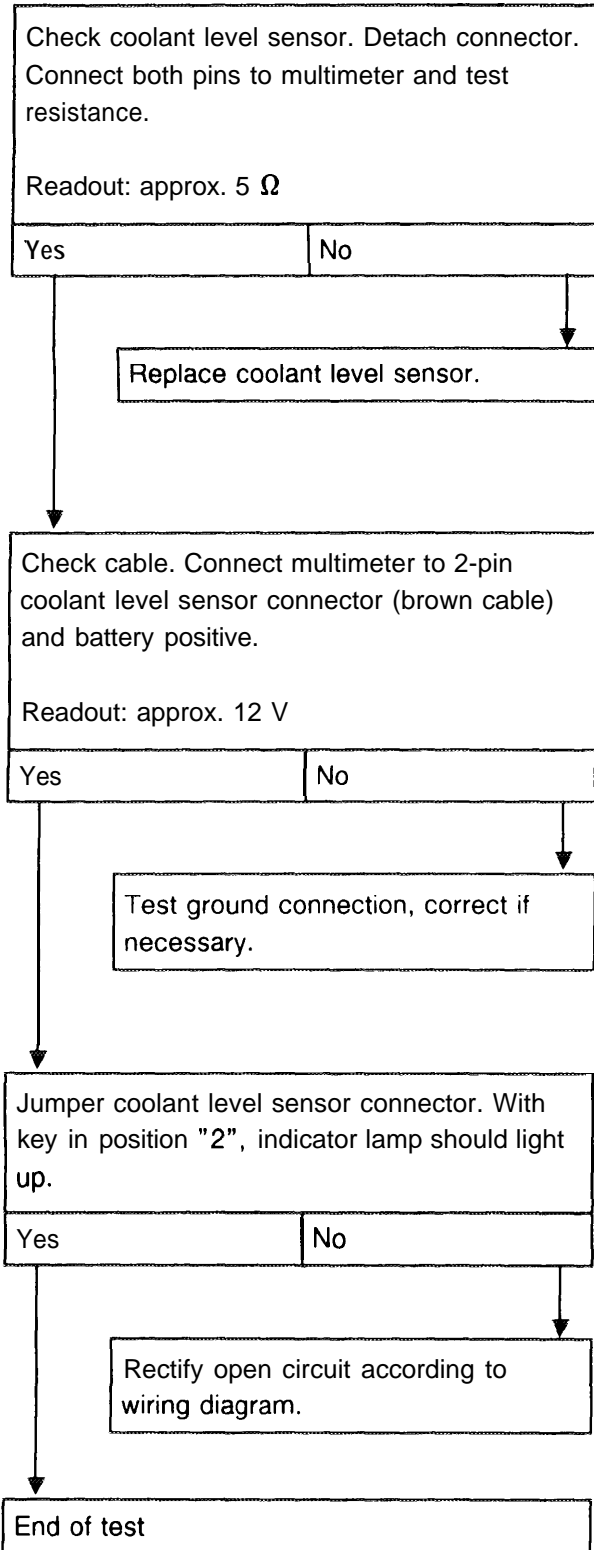




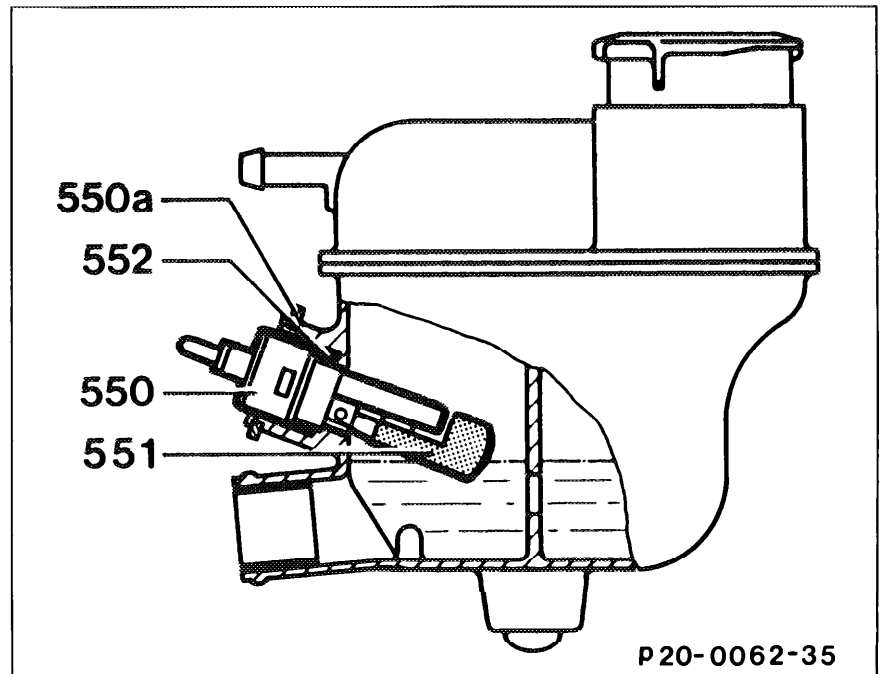
B. Indicator lamp does not light up when key in position "2".



C. Indicator lamp does not light up when engine running and coolant level below "min". Control function section "B" in order.



20-445 Function of coolant level indicator



550	Coolant level sensor
551	Float
552	O-ring

General

The coolant level indicator monitors the coolant level in the expansion tank when the engine is running.

The coolant level indicator lights up when the ignition is switched on (control function) and goes out as soon as the engine is running.

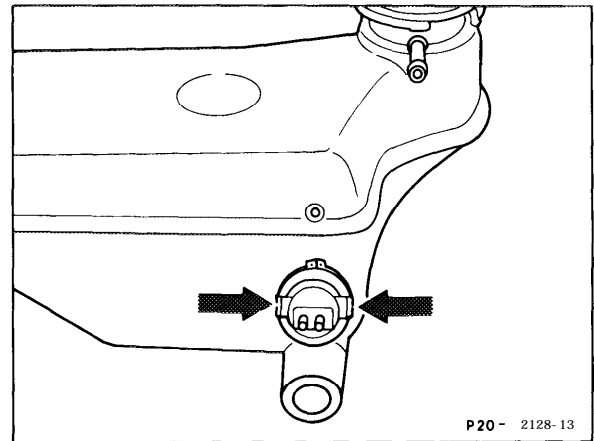
For the control function, the coolant level indicator shows a weak light and a bright light if there is a fault during engine operation.

Components

- Coolant level sensor (550) in expansion tank
- Indicator lamp in instrument cluster.
Symbol: radiator.

To ensure that the coolant level sensor is correctly installed, it has two lugs of different width which fit into matching slots on the expansion tank (arrows).

The sensor is press-fitted in the expansion tank and sealed with an O-ring. Remove locking ring in order to withdraw the coolant level sensor.



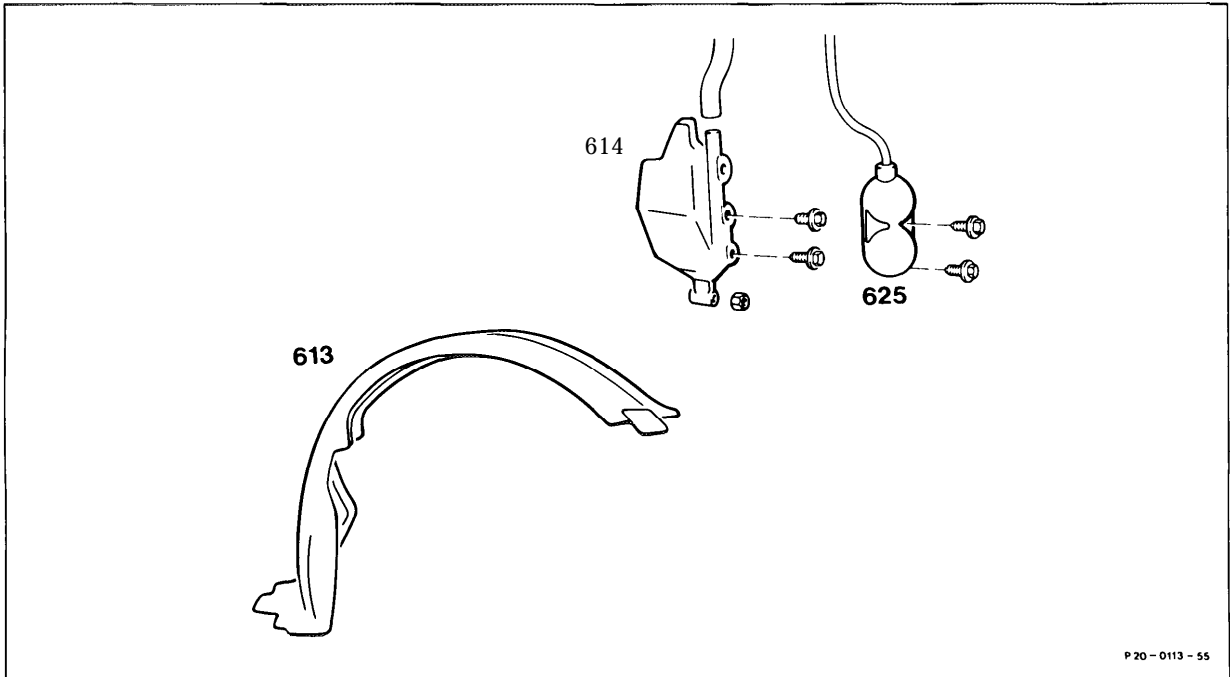
Function

The coolant level in the expansion tank is sensed by a float (551) with permanent magnet attached to the coolant level sensor.

Below a certain coolant level the contact is closed and the indicator lamp lights up.

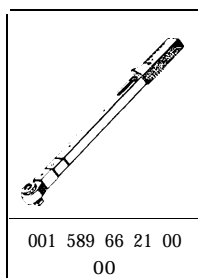
Depending on driving style the indicator lamp lights up briefly and later shows a steady light. If the indicator lamp lights up, top off coolant.

20-450 Removal and installation of overflow tank



Front right wheel	remove, refit.
	Tightening torque 110 Nm.
Partition panel (613) under front fender	remove, install (step 2).
Vacuum reservoir (625)	remove, install (step 3).
Overflow tank (614)	remove, install (step 4).

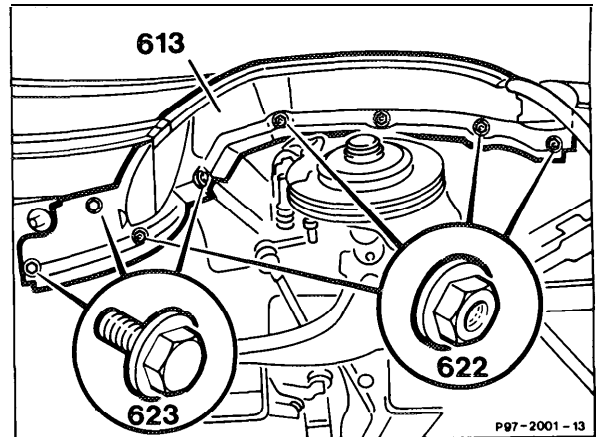
Special tool



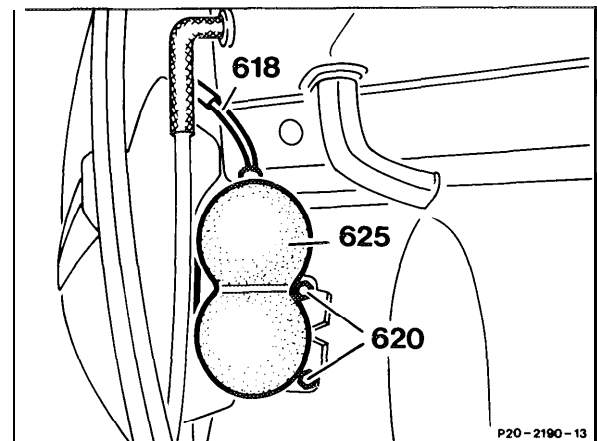
001 589 66 21 00
00

Removal and installation

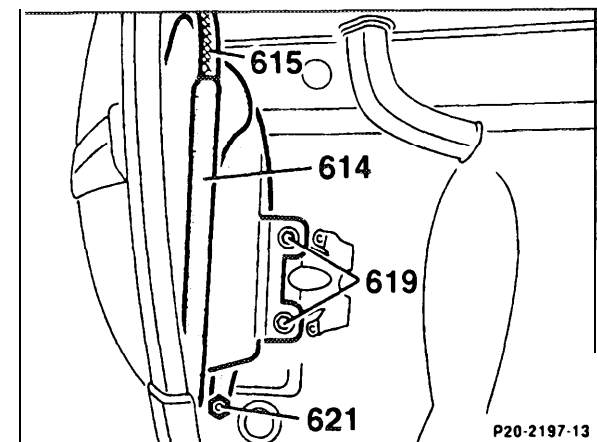
- 1 Remove right front wheel.
- 2 Unscrew bolts (623) and nuts (622), remove partition panel (6 13).



- 3 Detach vacuum hose (618). Remove bolts (629) and remove vacuum tank (625).



- 4 Remove bolts (619) and nut (621). Detach hose (615) and remove overflow tank (614).



- 5 Install in the reverse order.