

a m b

s

Modification: Model 124 with engines 104.942 and 104.992 included

Installation Instructions

Coolant Pre-heater

20.1

Model 124

To prevent the engine from cooling off completely at low ambient temperatures, an electric coolant Pre-heater is available for retrofitting. The unit, which can both heat the engine coolant and keep it warm, is installed in a drain plug bore in the engine block. An electrical plug is provided for connecting the coolant Pre-heater to standard household current supply. The unit's power consumption is 500 W at a voltage of 220 V (115V optional).

The installation instructions are subdivided into the following sections:

- A. Procedure
 - a) Model 124.020/080 with 102.92 engine
Model 124.021/041/081 with 102.96 engine
Model 124.023/043/083 with 102.98 engine
 - b) Model 124.036 with 119.974 engine (500E)
 - c) Model 124.120/180 with 601.91 engine
Model 124.125/127/185 with 602.91 engine
Model 124.13/190 with 603.91 engine
Model 124.330 with 603.913 engine (4MATIC)
 - d) Model 124.128/188 with 602.96 engine (turbo)
Model 124.133/193 with 603.96 engine (turbo)
Model 124.333/393 (4MATIC) with 603.96 engine (turbo)
 - e) Models 124.007/026/027 with 103.94 engine
Model 124.226 (4MATIC) with 103.94 engine
Models 124.030/050/090 with 103.98 engine
Models 124.230/290 (4MATIC) with 103.98 engine
Models 124.008/028/029/088 with 104.942 engine
Models 124.031/051/091 with 104.98 engine
Model 124.061 (conv.) with 104.98 engine
Models 124.032/052/066 with 104.992 engine
 - f) Model 124.019/040/079 with 111.940

engine

(e

x

c. with Tempomat)

Model 124.022/042/082 with 111.960

engine

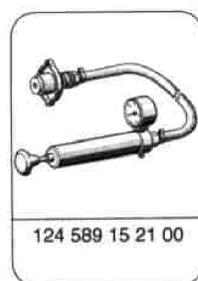
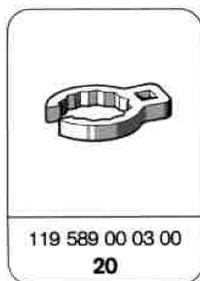
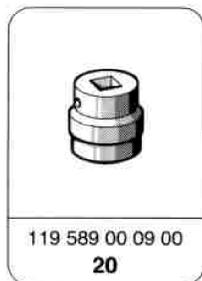
(e

x

c. with Tempomat)

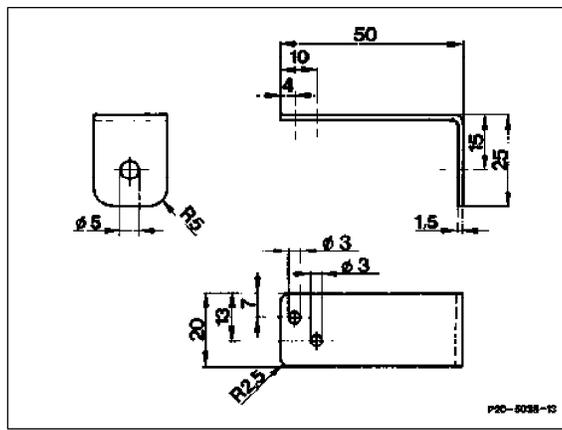
B. Parts order

Special tools



A. Procedure

Shop-made, Model 124.036
only

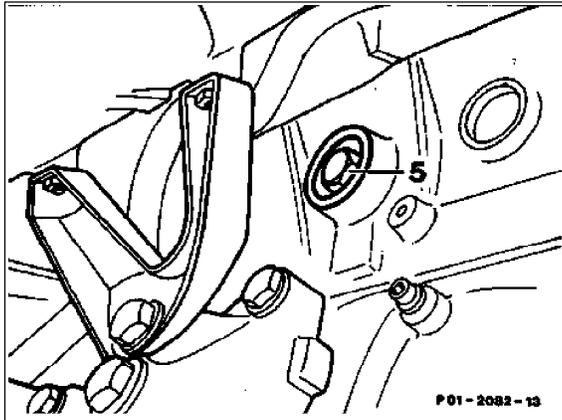


Bracket for mounting retainer for plug from
coolant Pre-heater

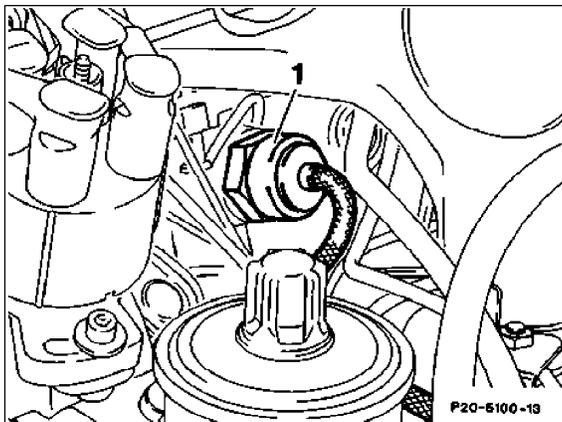
a) **Models 124.020/080 (engine 102.92), 124.021/041/081 (engine 102.96)
124.023/043/083 (engine 102.98)**

- 1 Disconnect the ground cable from the battery.
- 2 Remove the lower engine-compartment insulation panels (Repair Manual 01-006).
- 3 Drain all coolant from engine (RA 20-010).

4 Unscrew the threaded plug (5) from the left side of the engine block.
Special tool 119 589 00 09 00.



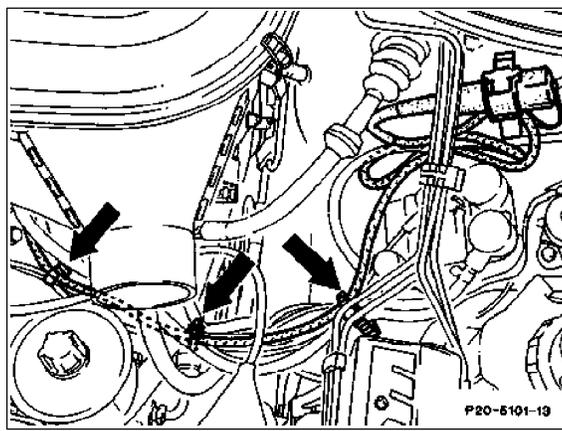
5 Install O-ring on the coolant Pre-heater (1) , then thread heater into the engine block.
Tightening
tor
q
ue: 70 Nm.



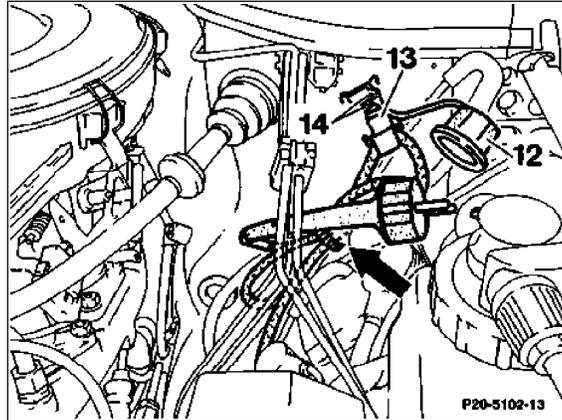
6 Use cable straps (arrows) to attach the electrical lead from the coolant Pre-heater to the vacuum line.

M

Route lead well away from all potential sources of abrasion.

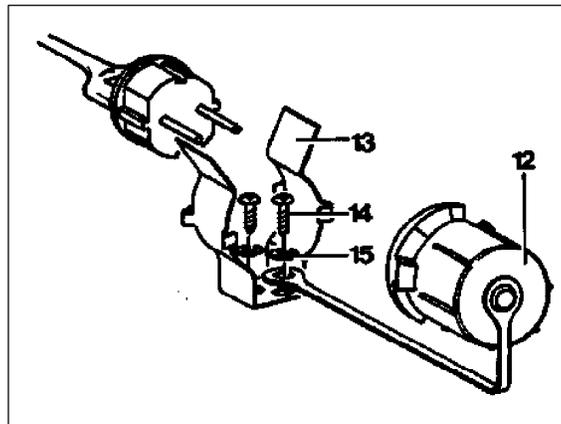


7 Use sheet-metal screws (14) to attach spring clamp (13) and cap (12) to the left-side firewall (see diagram). Use the socket which is already present in the firewall and drill a second hole with a 3 mm diameter.



Diagram

- 12 Cap
- 13 Spring clamp
- 14 Screw (B3.9 x 9.5)
- 15 Washer (A4.3)

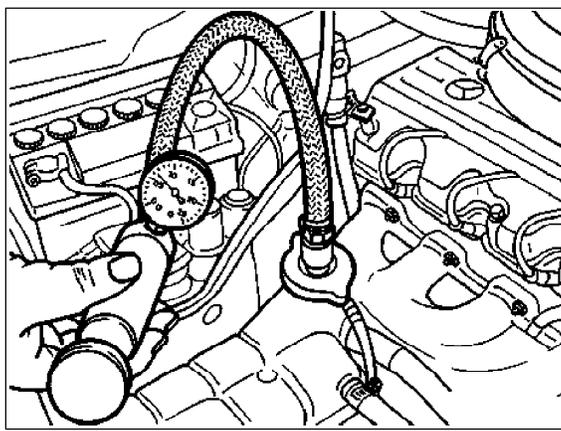


8 Reconnect the battery ground cable.

9 Refill the engine cooling system
(RM 20-010).

10 Check the cooling system for leaks
(RM 20-017). Special tool 124 589 15 21 00.

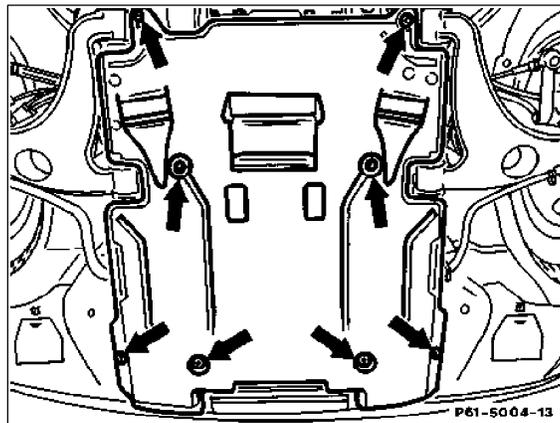
11 Install lower engine compartment insulation panel
(RM 01-006).



b) Model 124.034 (119.975 engine), 124.036 (119.974 engine)

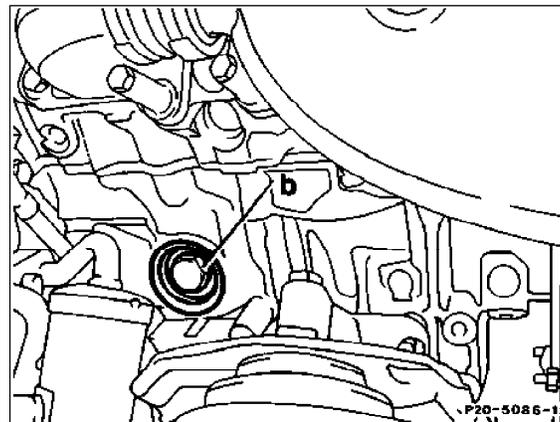
1 Disconnect the ground cable from the battery.

2 Remove the lower engine-compartment
insulation panels.



3 Drain all coolant from engine (RA 20-010).

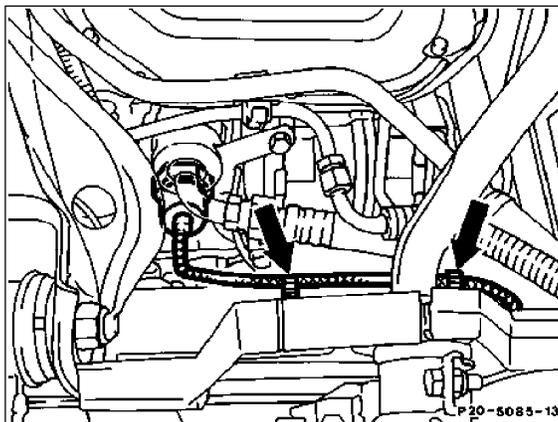
4 Unscrew the threaded plug (b) from the left side
of the engine block.
Special tool 119 589 00 09 00.



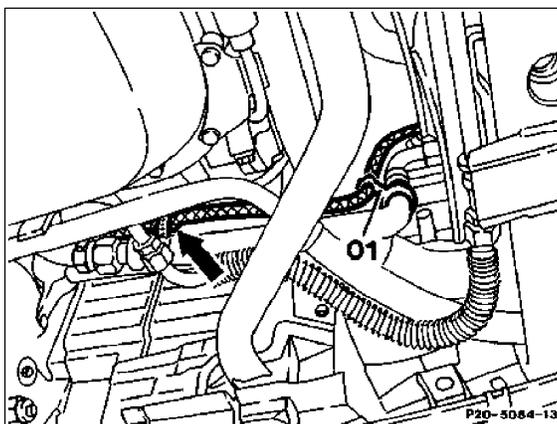
5 Place O-ring on the coolant Pre-heater and
thread heater into the engine block.
Special tool 119 589 00 03 00.

Tightening
tor
q
ue: 70 Nm.

6 Route the electrical lead to the coolant Pre-heater toward the front, attaching it to the coolant pipe with cable straps (arrows).

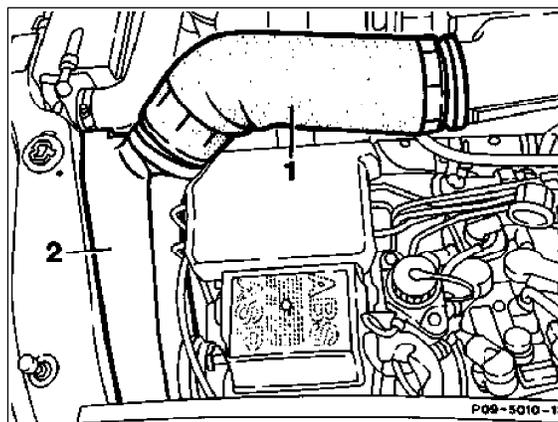


7 Continue by attaching the electrical lead to the oil cooler line with clamp (01). Then run the wire beneath the line to the receiver/drier (AC) before running the wire upward at the left wheelhousing; attach with cable straps.



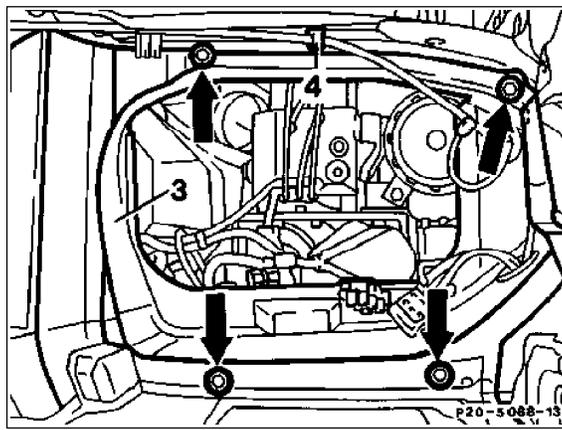
M
Route electrical leads so as to maintain the maximum possible distance between wiring and sources of heat and abrasion such as drive belts and the exhaust manifold.

8 Remove the left-side air-intake hose (1).
E
Extract the air-intake shroud (2) behind the left headlight upward and out.



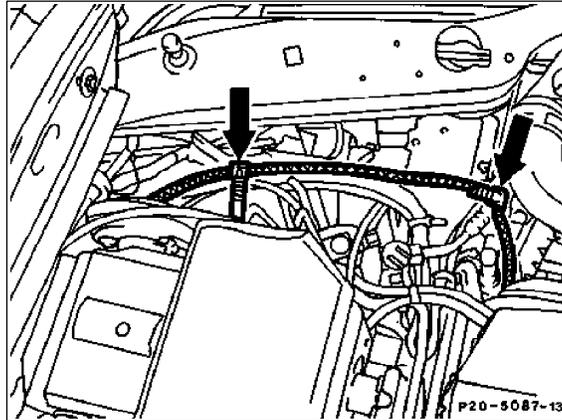
9 Remove the left-side headlight.

10 Remove the shroud (3) behind the left-side headlight by unscrewing the four bolts (arrows). Remove the hood-release cable from the clip (4).

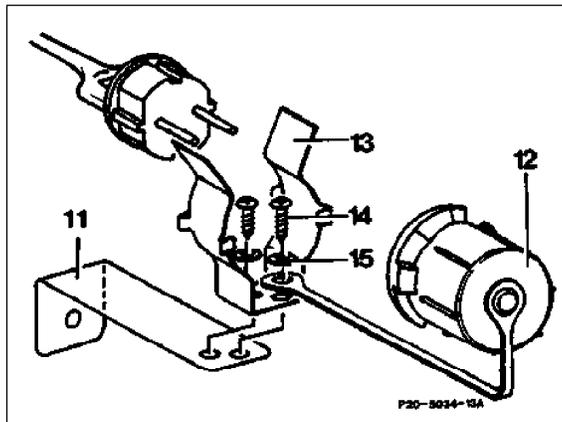


11 Pull the electrical wires for the headlights and their rubber grommets toward the rear to remove. Swivel the shroud (3) toward the front.

12 Route the electrical lead along the wiring harness at the left-side wheelhousing (below the headlight housing) and attach at the factory-installed cable straps (arrows).

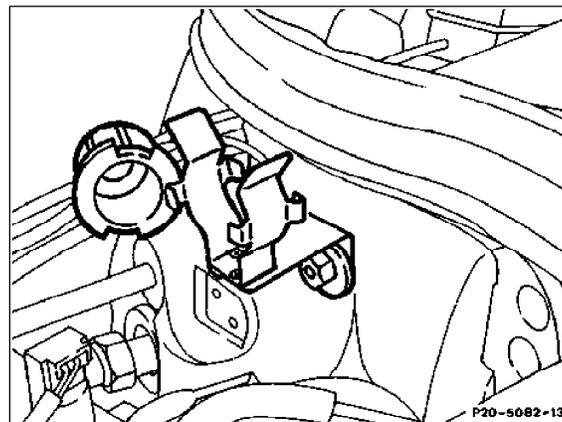


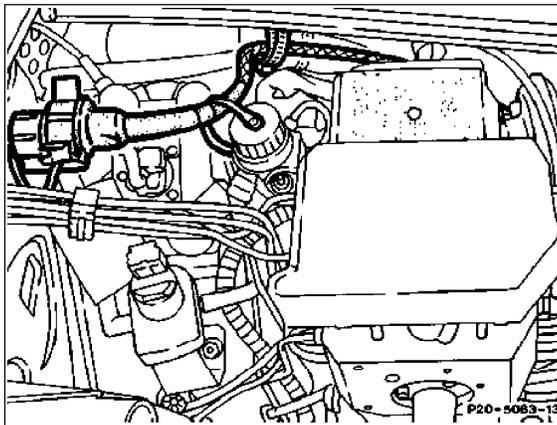
13 Attach the spring clamp (13) and the cap (12) for the plug to the shop-made bracket (11).



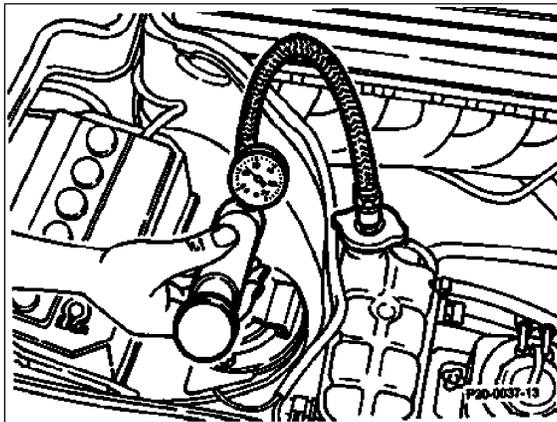
- 11 Bracket (shop-made)
- 12 Cap
- 13 Clamp
- 14 Screw (B3, 9x9.5)
- 15 Washer (A4, 3)

14 Bolt the bracket (shop-made) with plastic nut for mounting the switchover valve to the left side off the firewall.





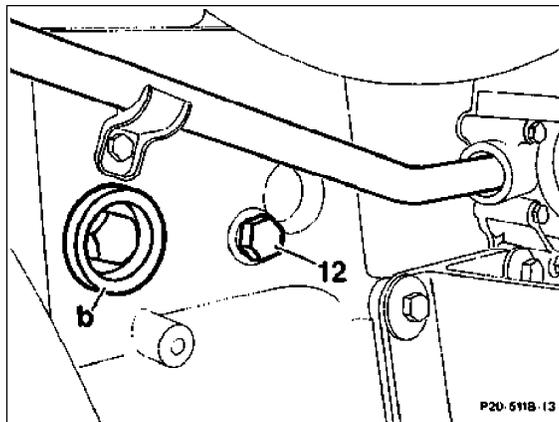
- 15 Install shroud (3), air-intake shroud (2), air-intake hose (1) and left headlight.
- 16 Reconnect the battery ground cable to the battery.
- 17 Refill system with coolant (RM 20-017).
- 18 Check cooling system for leaks (RM 20-017), Special tool 124 589 15 21 00.
- 19 Install lower engine-compartment encapsulation panel.



c) Model 124.120/180 (engine 601.91), 124.125/127/185 (engine 602.91), 124.13/190 (engine 603.91), 124.330 (603.913 engine)

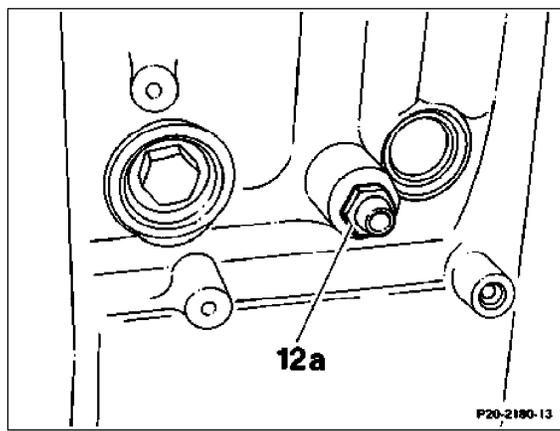
- 1 Disconnect the ground cable from the battery.
- 2 Remove the lower engine-compartment encapsulation panel (RM 01-006).
- 3 Completely drain coolant from engine (RM 20-010).
- 4 Unscrew the threaded plug (b) from the right side of the engine block.
Special tool 119 589 00 09 00.

Engine 601
12 Hex. bolt



Engine 602/603

12a Drain plugs



5 Fit the O-ring and screw the coolant Pre-heater unit into the engine block.

Tightening

tor

q

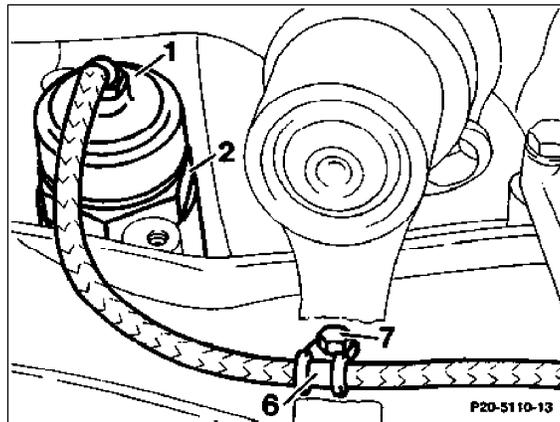
ue : 70 Nm.

6 Route the electrical lead for the coolant Pre-heater along the right side of the engine block and to the attachment point at the front.

M

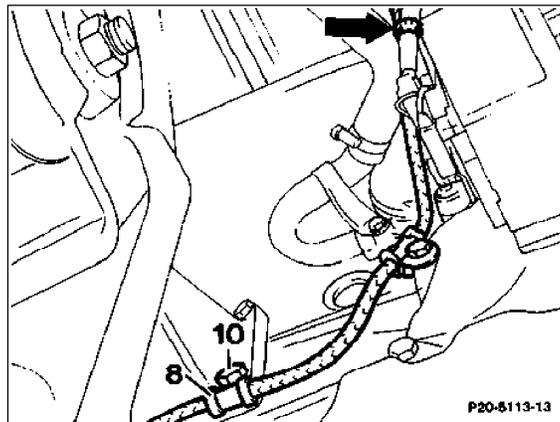
Route lead well away from all potential sources of chafing and abrasion.

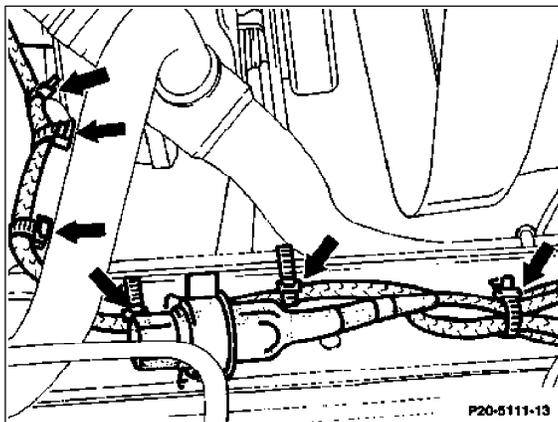
- 1 Engine block heater
- 2 O-ring
- 6 Clamp
- 7 Combination bolt with Allen fitting (M6x22)



7 Continue by using a clamp to attach the lead to the engine mount. Clamp the wire to the alternator bracket and then connect it to the main alternator harness with three cable straps (arrows). Run the wire to the right side member and attach it with three cable straps (arrows) using the holes provided at the factory.

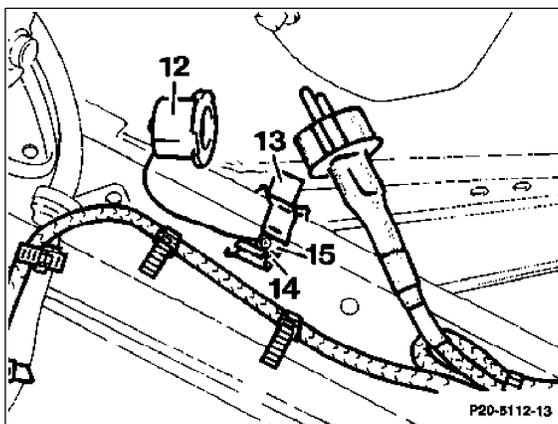
- 8 Clamp
- 10 Combination hex. bolt (M8x45)





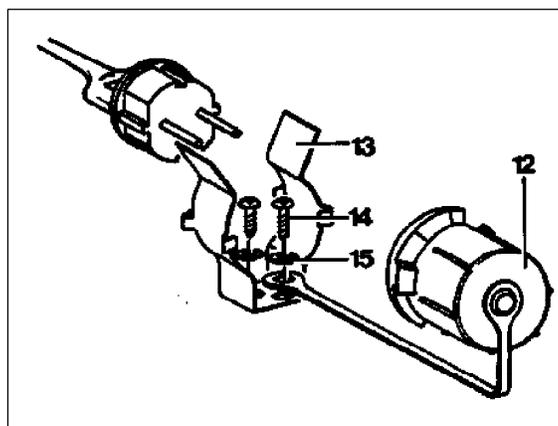
8 Drill two holes, dia. 3mm, in the right side member for attaching the spring clamp (13) and the cap (12) with two sheet-metal screws (14) (see diagram).

M
Coat the holes
with
Z
inc paint.



Mounting diagram

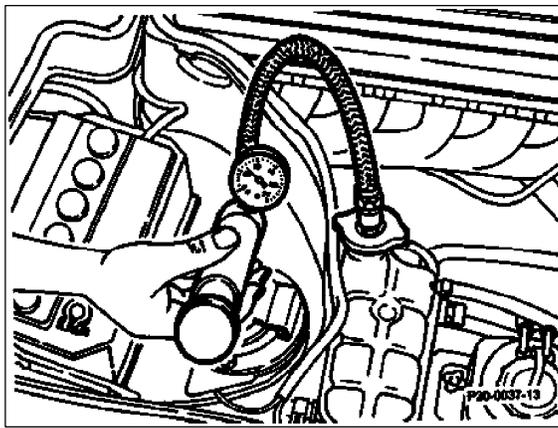
- 12 Cap
- 13 Spring clamp
- 14 Screw (B3, 9x9.5)
- 15 Washer (A4, 3)



9 Reconnect the ground cable to the battery.

10 Refill system with coolant (RM 20-010).

11 Check cooling system for leaks
(RM 20-017).
Special tool 124 589 15 21 00.



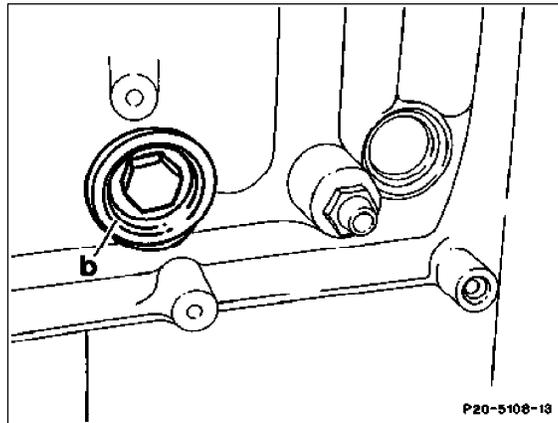
12 Install lower engine-compartment encapsulation panel (RM01-006).

**d) Model 124.128/188 (engine 602.96), 124.133/193 (engine 603.96),
124.333/393 (engine 603.96)**

- 1 Disconnect the ground cable from the battery.
- 2 Remove the lower engine-compartment encapsulation panel (RM 01-006).
- 3 Completely drain coolant from engine (RM 20-010).

4 Unscrew the threaded plug (b) from the right side of the engine block.
Special tool 119 589 00 09 00.

5 Fit the O-ring and screw the coolant Pre-heater unit into the engine block.
Tightening torque: 70 Nm.

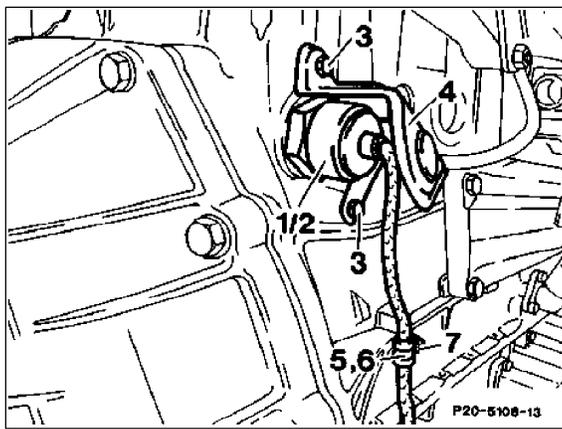


6 Use two
 he
 x
 . combination bolts and washers
 (M6
 x
 15) (3) to attach the heat shield (4) above the block
 heater (1).

7 Route the electrical lead for the block heater
 down the right side of the block and secure it in place.

M

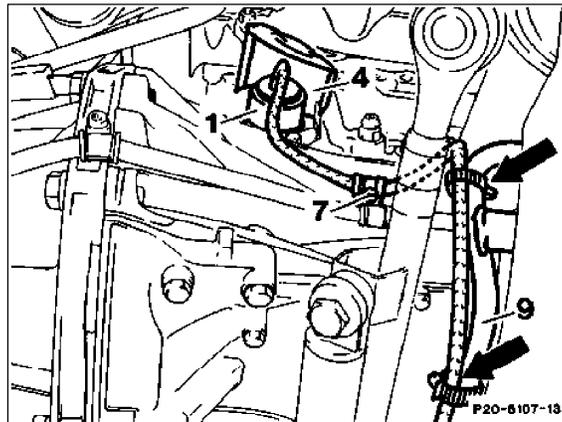
Route lead well away from all potential sources of
 chafing and abrasion.



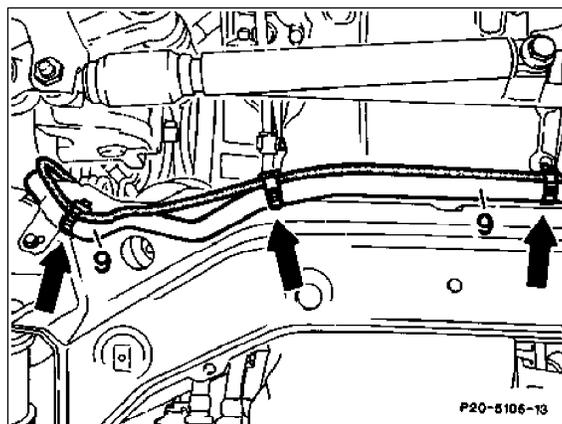
- 1 Engine block heater
- 2 O-ring
- 3 Hex. combination bolt and washer (M6x15)
- 4 Heat shield
- 5 Washer A8.4 (3 mm)
- 6 Clamp
- 7 Combination Allen bolt and washer (M6x22)

8 Continue by running the lead along the heater
 core return line (9) below the engine to the left side of
 the vehicle. Secure the lead with cable straps.

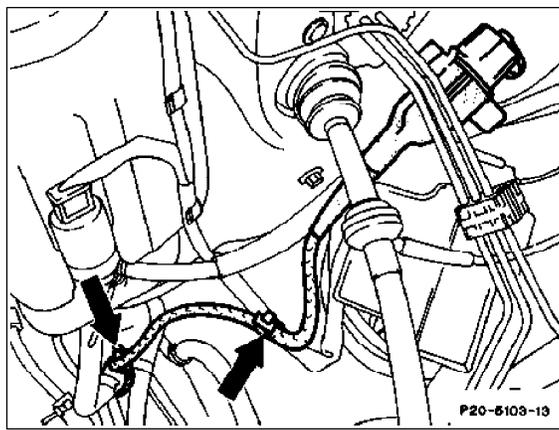
Right side of engine block



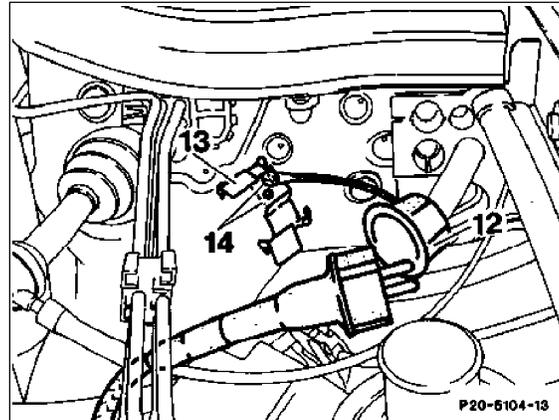
Lower right front of engine block



9 Run the lead to the left side of the firewall and attach it with cable straps (arrows).

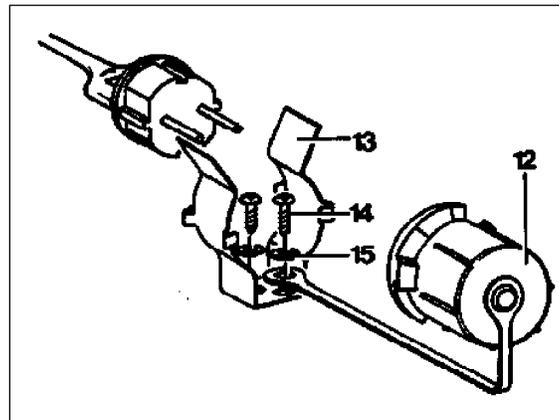


10 Drill two holes, dia. 3 mm, in the left side of the firewall as attachment points for the spring clamp (13) and the cap (12) with two sheet-metal screws (14) (see diagram).



Mounting diagram

- 12 Cap
- 13 Spring clamp
- 14 Screw (BZ 4.2 x 16)
- 15 Washer (A4,3)

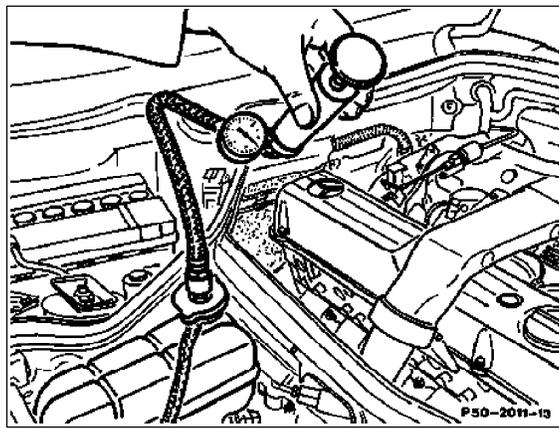


11 Reconnect the ground cable to the battery.

12 Refill the system with coolant (RM 20-010).

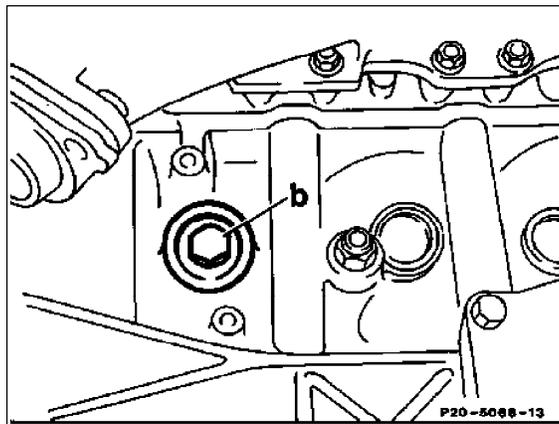
13 Check cooling system for leaks
(RM 20-017).
Special tool 124 589 15 21 00.

14 Install lower engine-compartment encapsulation
panel (RM 01-006).



- e) **Models 124.007/026/027 (engine 103.94), 124.226 (engine 103.94)
124.030/050/090 (engine 103.98), 124.230/290 (engine 103.98)
124.008/028/029/088 (engine 104.942)
124.031/051/091 (engine 104.98), 124.061 (engine 104.98)
124.032/052/066 (engine 104.992)**

- 1 Disconnect the ground cable from the battery.
- 2 Remove the lower engine-compartment encapsulation panel (RM 01-006).
- 3 Completely drain coolant from engine (RM 20-010).
- 4 Unscrew the threaded plug (b) from the right side of the engine block.
Special tool 119 589 00 09 00.
- 5 Fit the O-ring and screw the coolant pre- heater unit into the engine block.
Tightening torque : 70 Nm.



6 Use two

he

x

. bolts

(M6

x

15) with washers to attach the heat shield (6) above the block heater (1).

7 Run the electrical lead from the coolant Pre-heater along the right side of the engine block and toward the front. Route the lead over the attachment point on the engine subframe and attach with clamps.

The attachment components must be mounted on the engine subframe

in the following

se

q

uence:

7 Washer A8.4 (3 mm) between engine subframe and clamp

8 Clamp

9 Washer A8.4 (1.5 mm)

10

He

x

. bolt

(M

8

x

40)

M

Route electrical leads

so as to maintain the

ma

x

imum possible distance between

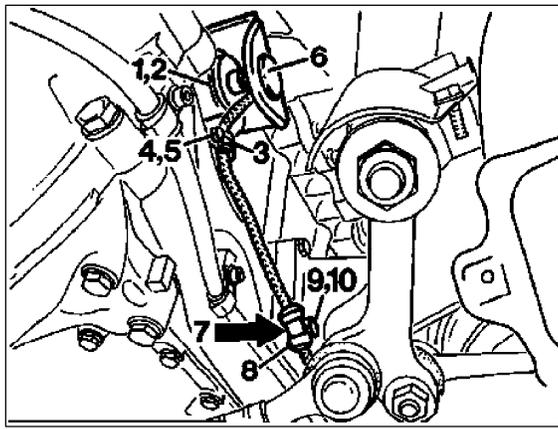
wiring and the

e

x

haust manifold. Avoid installing near potential sources

of abrasion.



Mouting on engine:

- 1 Engine block heater
- 2 O-ring
- 3 Clamp
- 4 Clamp (A6.4)
- 5 Hex. bolt (M6x15)
- 6 Heat shield
- 7 Washer A8.4 (3mm)
- 8 Clamp
- 9 Washer A8.4 (1.5mm)
- 10 Hex. bolt (M8x40)

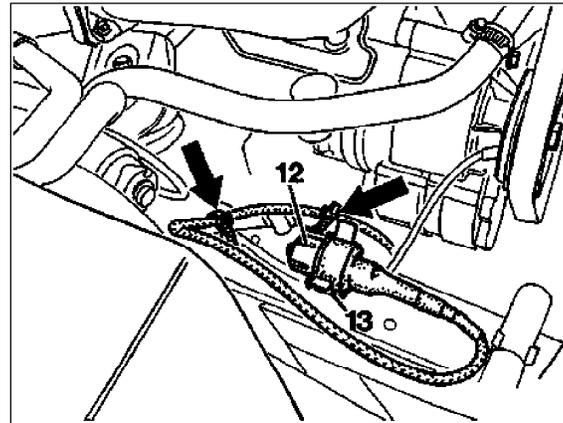
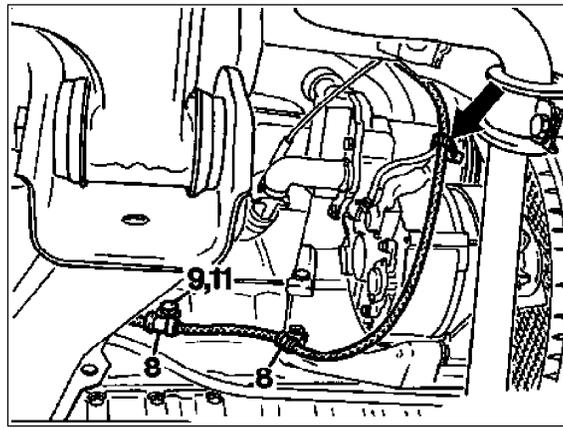
8 Continue by using clamps to attach the lead to the engine block and to the alternator bracket, then connect it to the main alternator harness with three cable straps (arrows). Run the wire to the right side member.

Mounting on engine block and alternator bracket:

- 8 Clamp
- 9 Washer A8.4 (1.5 mm)
- 11 Hex. bolt (M8x20)

M

Ensure that the wire is routed well away from drive belts and pulleys.



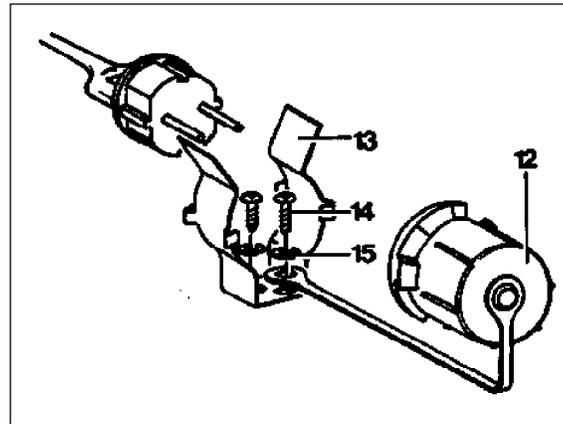
9 Drill two holes, dia. 3 mm, and attach the spring clamp (13) and cap (12).

Mounting diagram:

- 12 Cap
- 13 Spring clamp
- 14 Screw (B3.9x9.5)
- 15 Washer (A 4.3)

M

Coat holes with zinc paint.

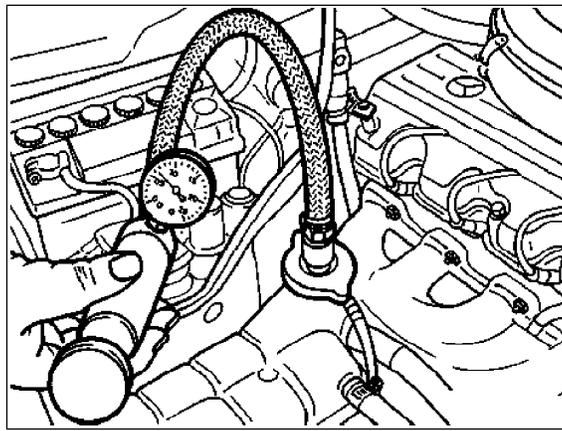


10 Reconnect the ground cable to the battery.

11 Refill the system with coolant (RM20-010).

12 Check cooling system for leaks (RM20-017).
Special tool 124 589 15 21 00.

13 Install lower engine-compartment encapsulation panel.



**f) Model 124.019/040/079 with 111.940 engine (except vehicles with Tempomat)
Model 124.022/042/082 with 111.960 engine (except vehicles with Tempomat)**

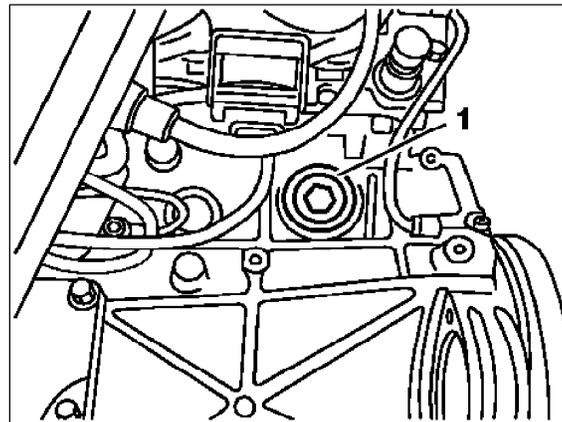
1 Disconnect the ground cable from the battery.

2 Remove lower engine-compartment encapsulation panel (Maintenance manual).

3 Completely drain coolant from engine (RM 20-1142).

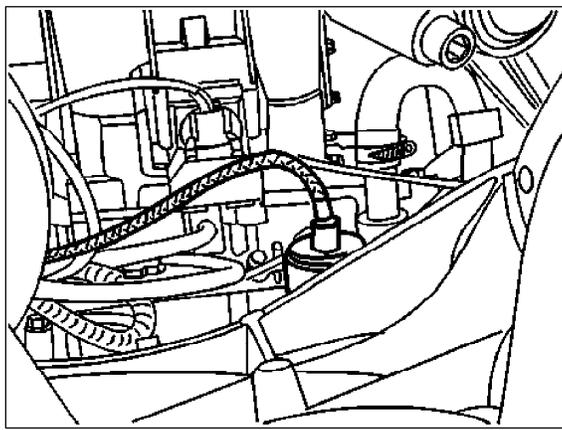
4 Remove the starter (RM 15-7100).

5 Unscrew the threaded plug (1) from the left side of the engine block,
Special tool 119 589 00 09 00.



6 Fit the O-ring and screw the coolant Pre-heater unit into the engine block.

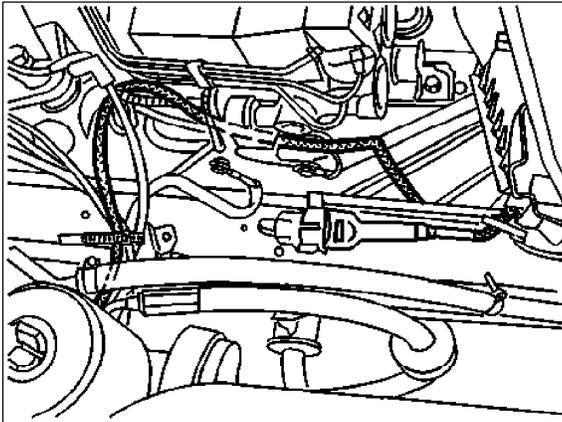
Tightening
tor
q
ue : **70 Nm**.



7 Route the electrical lead for the coolant pre-heater along the engine's wiring harness to the left side member and attach.

M

Route wire well away from potential sources of chafing and abrasion.



8 Use sheet-metal screws (14) to attach the spring clamp (13) and cap (12) to the left side member (see mounting diagram).

Use the factory-drilled hole in the side member and drill a second hole with a 3 mm dia.

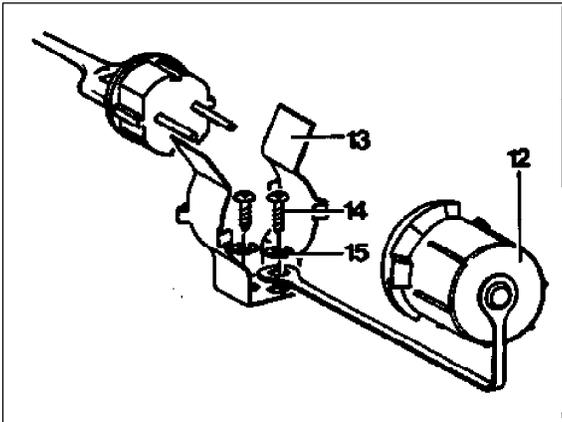
M

Be certain to coat
the sockets
with
z
inc paint.

Mounting diagram

12 Cap
13 Spring clamp

14 Screw (BZ 4.2x16)
15 Washer (A4.3)

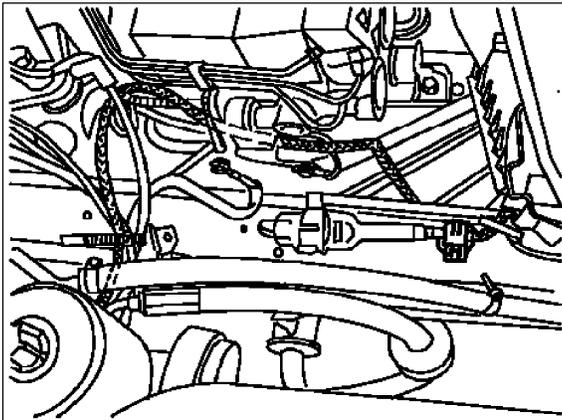


9 Install the wire clamp (000 995 80 44) behind the plug on the left side member.

10 Suspend the remaining electrical wire from the coolant Pre-heater in the wire clamp, coiling any excess in loops.

M

Ensure that the wire is routed well away from drive belts and pulleys.



11 Refill the system with coolant (RM 20-1142).

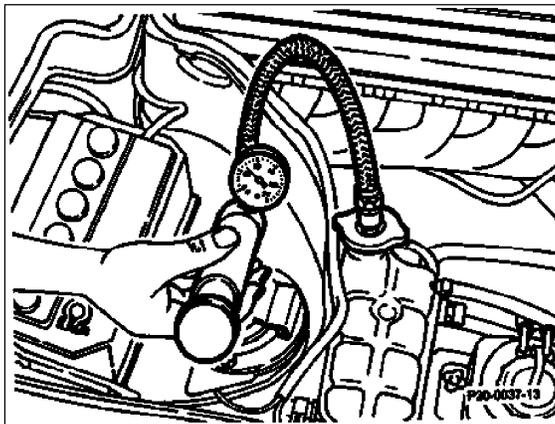
12 Check the cooling system for leaks (RM 20-1010).

Special tool 124 589 15 21 00.

13 Install starter (RM-7100).

14 Install lower engine-compartment encapsulation panel (WHB).

15 Connect the battery ground cable.



B. Parts ordering note

Consult the parts documentation for a listing of the components required for installation:

Number	Description	Group/Option
1	Coolant Pre-heater kit	SA 12.228

Additional requirements according to model:

Model 124.034/036

Number	Description	Part no.
1	Collar clamp (dia. 8 mm)	115 995 03 65
1	Collar clamp (dia. 20 mm)	110 995 01 65

Models 124.020/125/127/130/180/190/330

Number	Description	Part no.
1	Clamp	916016 006202
1	Combination Allen	000912 006022
1	bolt and washer	000931 008244
3	M6	114 997 01 90
x	22	
	He	
x	. bolt	
	M8	
x	45	
	Cable straps	

Models 124.128/133/188/193/333/393

Number	Description	Part no.
1	Heat shield	602 200 00 94
1	Combination Allen	000912 006022
2	bolt and washer	007981 004331
2	M6	914008 006003
	x	
	22	
	Fillister-head philips	
	screw BZ	
	4.2	
	x	
	16	
	He	
	x	
	. combination bolt	
	and washer	
	M6	
	x	
	16	

Models 124.007/008/026/027/028/029/030/031/032/050/051/052/061/066/088/090/091/226/230/290

Number	Description	Part no.
1	Heat shield	602 200 00 94
2	Clamp	916016 006202
1	Washer B8	000137 08204
2	Washer B6	000137 006204
1	He	000933 008045
2	x	000933 006102
	. bolt	
	M8	
	x	
	220	
	He	
	x	
	. bolt	
	M6	
	x	
	15	

Models 124.019/022/040/042/079/082

Number	Description	Part no.
1	Cable clamp	000 995 80 44