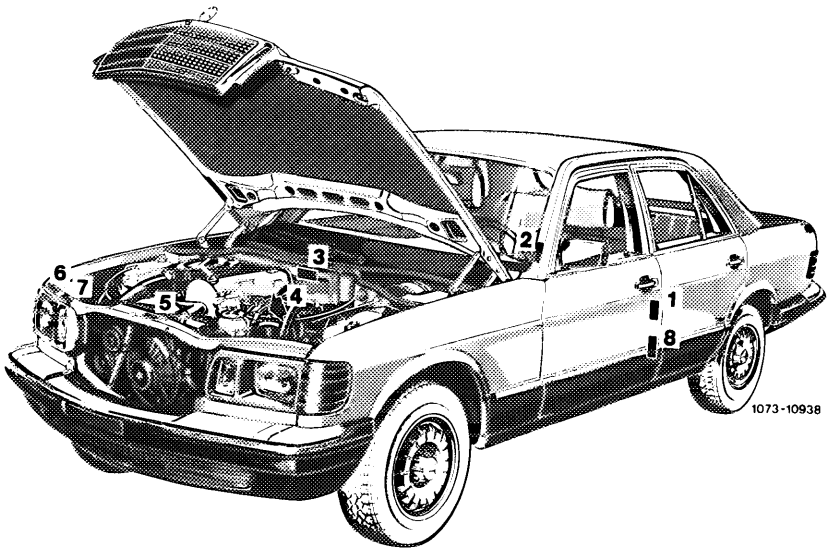
Identification of vehicle

When ordering spare parts, please quote chassis and engine numbers.

With your MERCEDES-BENZ you receive two vehicle data cards listing all major vehicle data.

Example:

Identification plates 300 SD

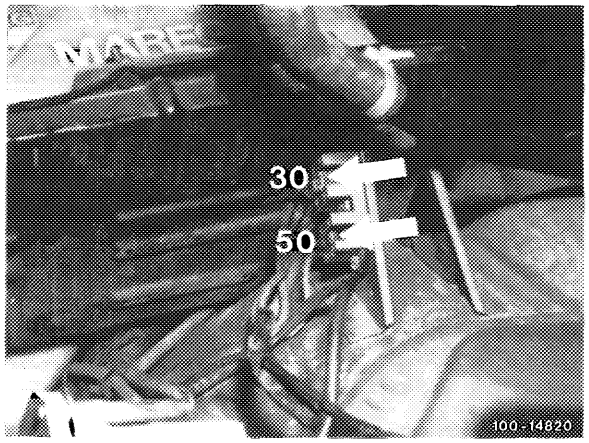


1 Certification tag (left door pillar)
2 Identification tag (left window post)
3 Chassis no.
4 Engine no.
5 Body no. and paintwork no.
6 Emission control tag
7 Information tag
California version
Vacuum line routing for emission control system
8 Emission control tag
Catalyst information

Checking

1 Remove heating plugs or injection nozzles.

2 Connect contact handle under battery to cable connector terminal 30 and 50.



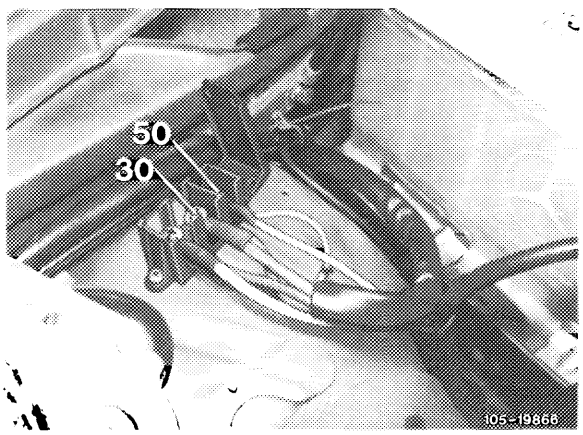
Model 116.120

The cable connector is attached at the following points:

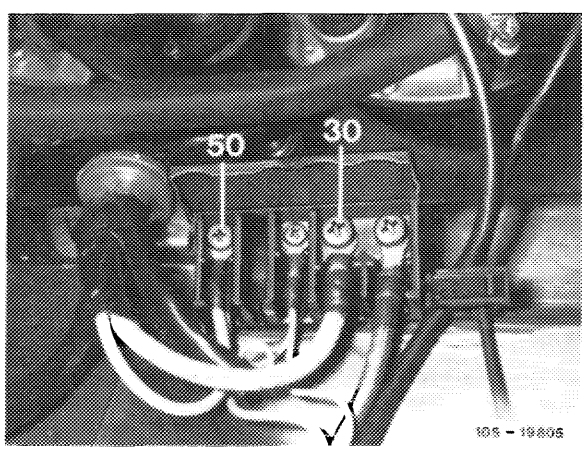
Model 116.120: Under battery.

Model 123 : On wheelhouse, right.

Model 126.120: On frame side member



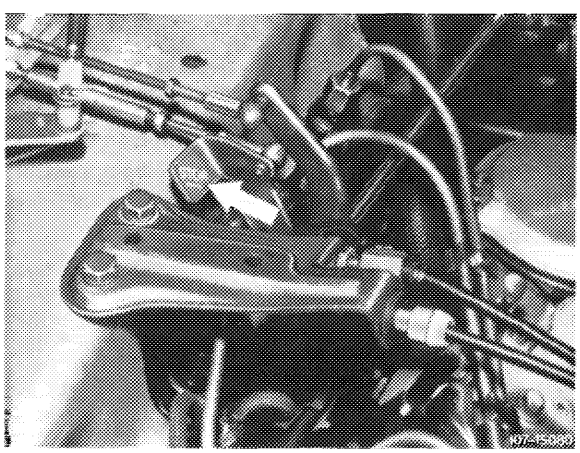
Model 123



Model 126.120

3 Rotate engine several times at transmission idle position, so that residue and soot are thrown out.

Attention!
For the above purpose, push shutoff lever (stop) in direction of engine so that the injection pump is not injecting.



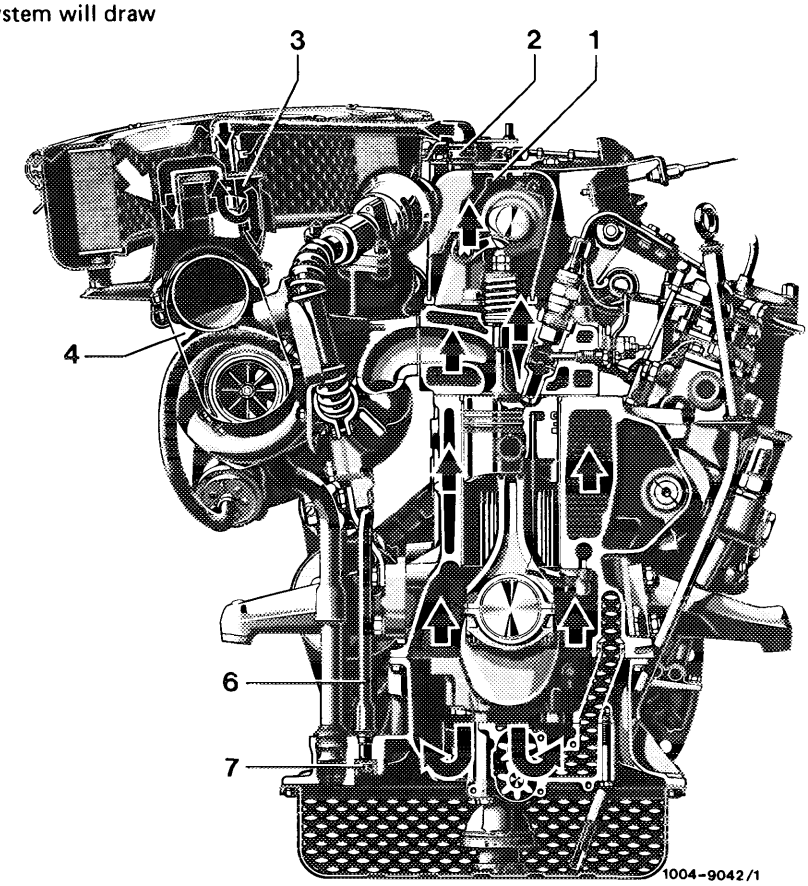
B. (USA) Federal starting 1981, (USA) California starting 1980

The complete engine breathing system requires no maintenance.

The engine blow-by gases and cylinder crankcase vapors are flowing via vent plate (1), which is revited to cylinder head cover, and connection (2) to cyclonic oil separator (3), which is located in air cleaner housing.

From there, they are flowing by way of the intake line (4) in front of compressor and together with the intake air into the combustion chambers.

The oil separated in cyclonic oil separator (3) flows through return line (6) and check valve (7) installed in oil pan upper half toward oil pan. The check valve prevents that the vacuum in intake system will draw oil vapors out of oil pan.

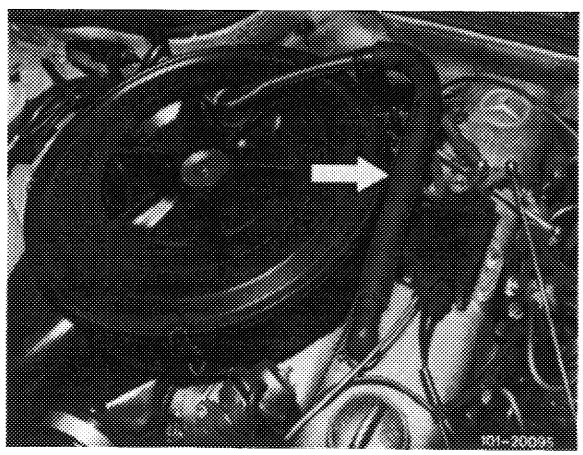


1 Vent plate
2 Connection
3 Oil separator
4 Intake line
6 Return line
7 Check valve

Fresh air

Blow-by gases

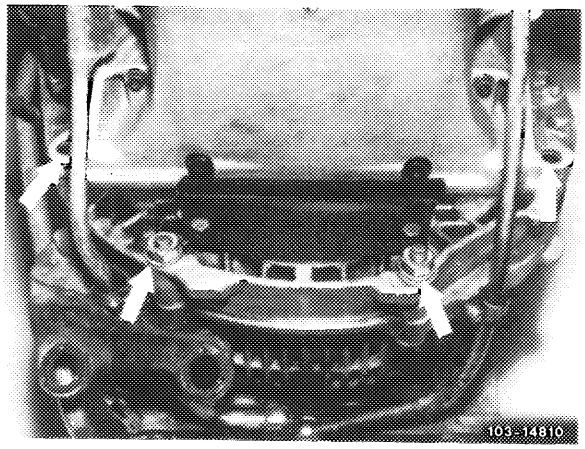
Starting model year 1981, the vent line between cylinder head cover and air cleaner has been changed from oval to round for better flow characteristics (arrow).



12 Unscrew the 4 lower screws on intermediate flange (arrows).

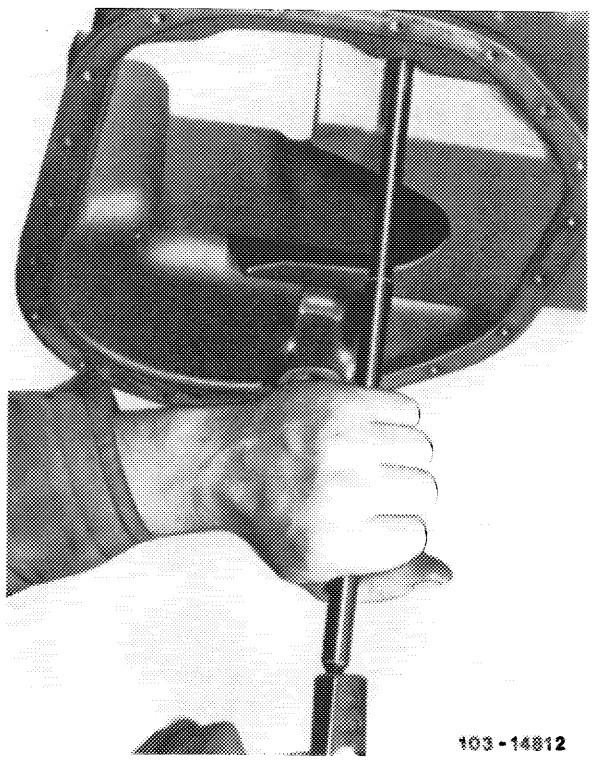
13 Unscrew cover plate on intermediate flange.

14 Unscrew oil pan lower half and remove.



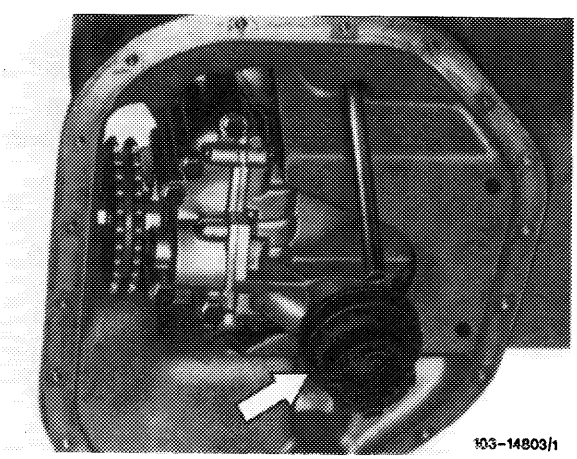
15 Knock-out oil dipstick guide tube as far as possible by means of knocking-out mandrel 9 mm dia. for valve guides.

Attention!
The oil dipstick guide tube cannot yet be pulled out.



16 Pull off adaptor with strainer on oil pump (arrow).

17 Unscrew oil pan upper half.



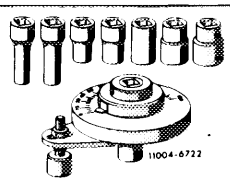
Dimensions of connecting rod bolt

Part no.	Thread dia.	Necked-down dia. when new (Fig. item 1)	Min. necked-down dia. c
615 038 02 71	M 10 x 1	8.4–0.1	8.0
Installation pressure of connecting rod bolt			45000 N

Tightening of connecting rod nuts

Initial tightening torque	40–50 Nm
Angle of rotation torque	90–100°

Special tool

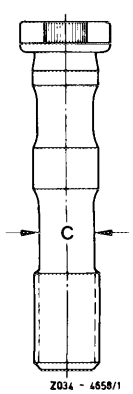
Angle of rotation tool		116 589 01 13 00

Self-made tool

Steel plate	refer to Fig. item 3

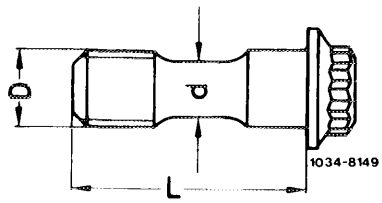
Checking

1 Measure minimum necked-down dia. prior to re-use.



Necked-down screws

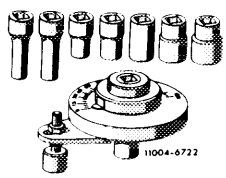
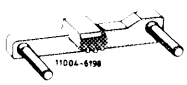
Part no.		110 990 04 19
Thread dia. D		M 10 x 1
Necked-down stem dia. d	when new	7.7–0.2
	minimum dia.	7.3
Length L		31



Tightening torques

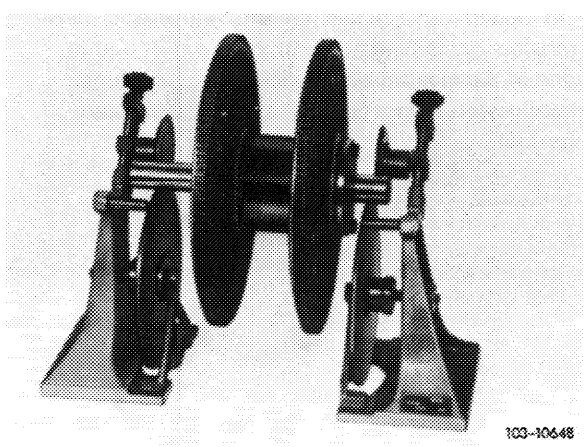
Initial torque	30–40 Nm
Angle of rotation torque	90–100°

Special tools

Angle of rotation tool		116 589 01 13 00
Detent		110 589 00 40 00

Note

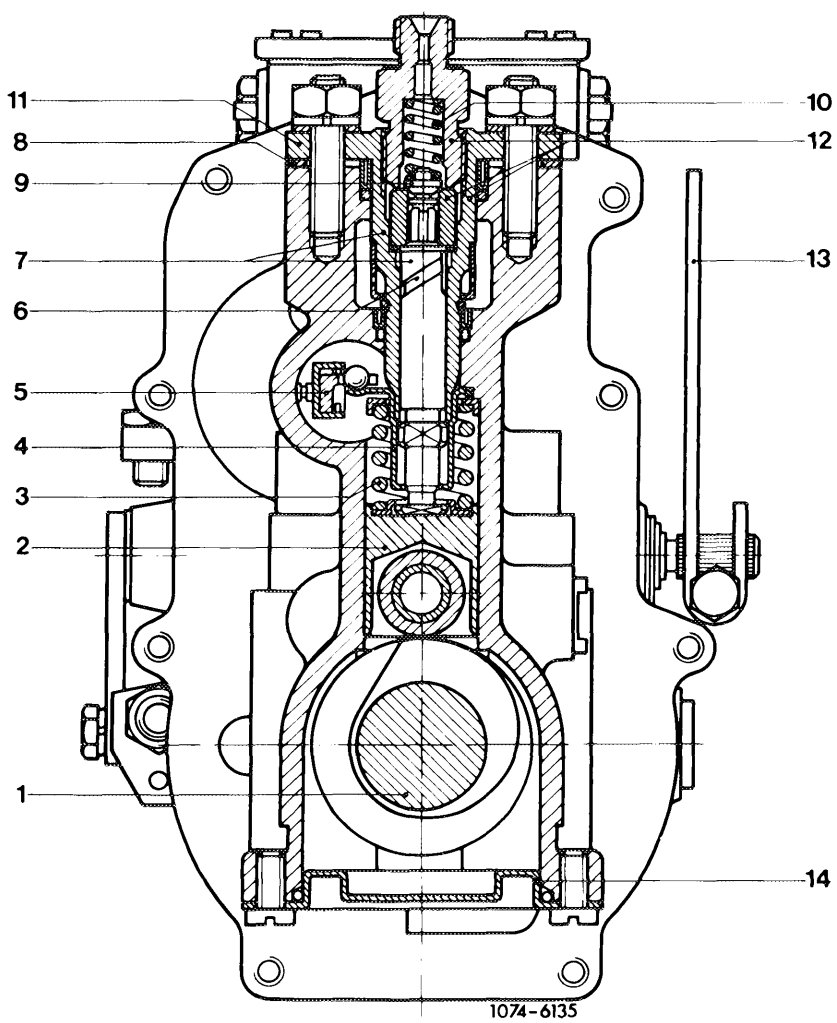
If a new flywheel is installed, set new wheel to balancing condition of removed wheel (03–440).



Layout of injection pump

The layout of the injection pump is essentially the same as that of the M injection pump. On the other hand, the element assembly (12) is mounted to injection pump housing by means of holding flange (11).

The fastening nuts of the element assembly should never be loosened, since otherwise the basic adjustment of the respective element will be changed and renewed adjustment on the bench will be required.



1 Camshaft
2 Roller tappet
3 Compression spring
4 Control bushing
5 Control rod
6 Control edge
7 Element
8 Adjusting plate
9 Pressure valve
10 Pressure valve spring
11 Holding flange
12 Element assembly
13 Adjusting lever
14 Closing cover

07.1–145 Checking fuel pump and bypass valve

Job no. of flat rates or standard texts and flat rates data 07–8800 or 5700.

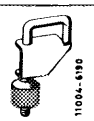
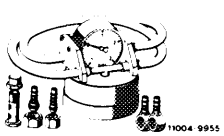
Test values

Bosch designation		FP/K 22 MW 8, MW 22
Vacuum	Measuring point	prior to fuel pump inlet
	at idle speed bar vacuum	0.1
Delivery pressure	Measuring point	between fuel pump and main fuel filter
	at idle speed bar gauge pressure	0.6– 0.8
	at 3000/min bar gauge pressure	min. 0.8
Delivery end pressure	at idle speed bar gauge pressure	min. 1.1
	at 3000/min bar gauge pressure	min. 1.3

Fuel bypass valve

	Opening pressure in bar gauge pressure
at idle speed	0.6–0.8
at 3000/min	min. 1.3

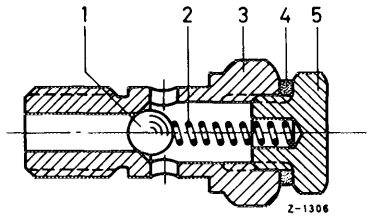
Special tools

Clip for fuel hose		000 589 40 37 00
Tester for fuel pump		617 589 04 21 00

7 What to do in case feed pressure is inadequate:

a) Check bypass valve, removing, disassembling and cleaning for this purpose.

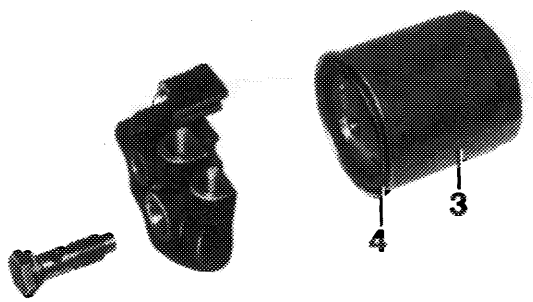
Increase preloading of compression spring (2), lengthening spring to 26–27 mm.



1 Ball
2 Compression spring
3 Body
4 Sealing ring
5 Screw plug

b) Check fuel filter for clogging. If necessary, **fit new filter element with body (3) and sealing ring (4).**

c) Exchange suction and delivery valves or fuel pump (07.1–235).



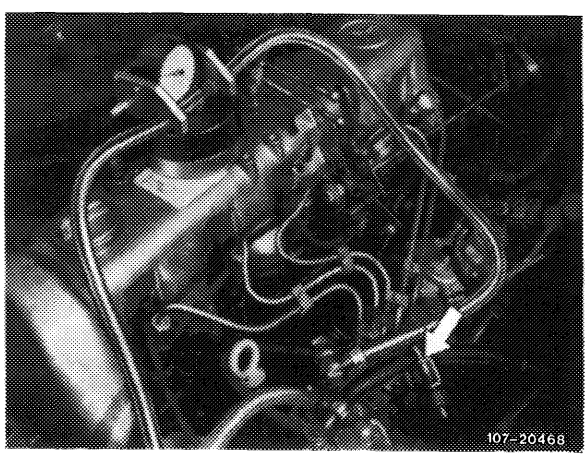
Checking final fuel feed pressure

8 Using clip (arrow), nip fuel return hose.

9 Measure final fuel feed pressure at idle speed and 3000/min.

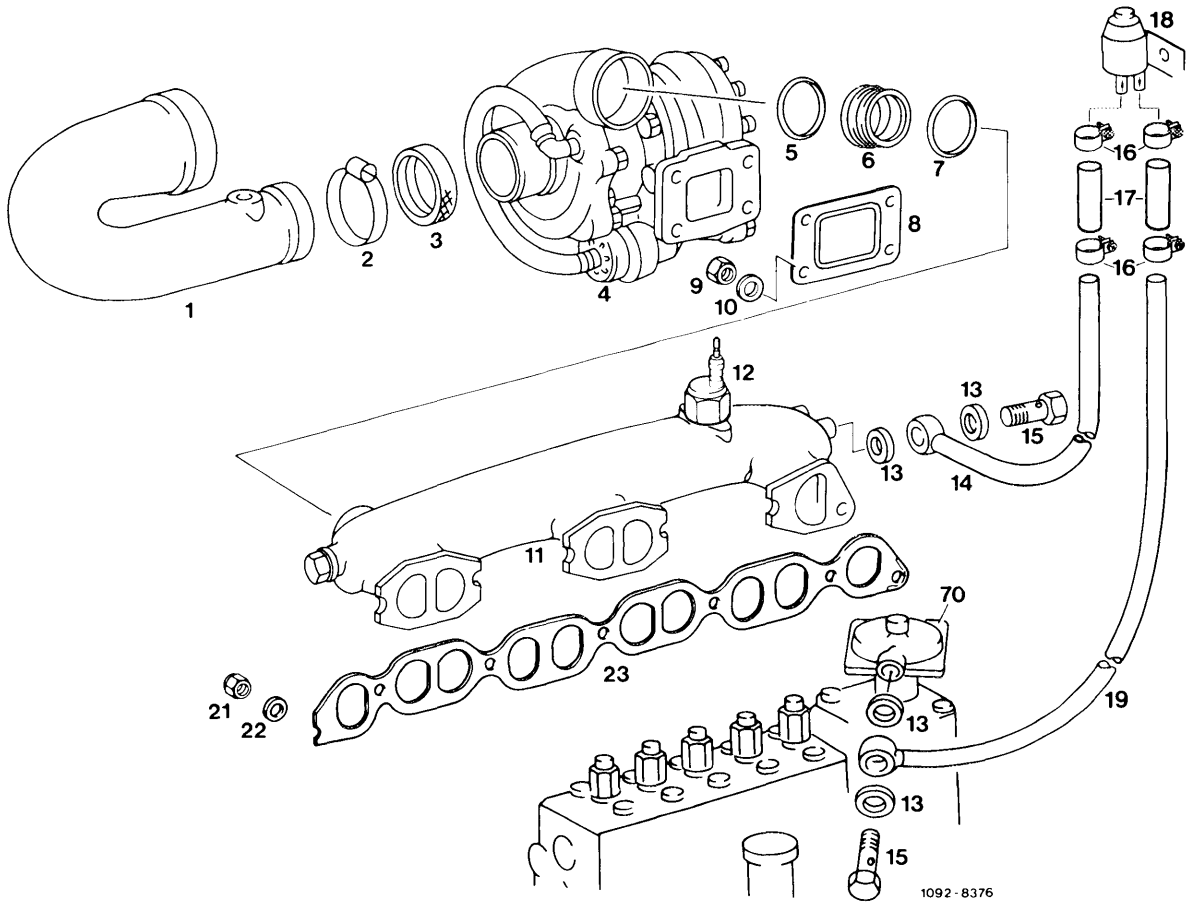
Min. 1.1 bar gauge pressure at idle speed.

Min. 1.3 bar gauge pressure at 3000/min.



10 If final feed pressure is inadequate, exchange suction and delivery valves or fuel pump (07.1–235).

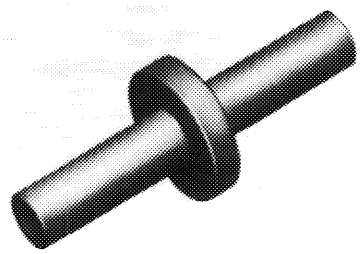
A. Exhaust Gas Turbocharger



1 Intake line
2 Hose clip
3 Rubber sealing ring
4 Turbocharger
5 Rubber sealing ring
6 Adapter fitting
7 Rubber sealing ring
8 Flange gasket
9 Heat-resistant nut
10 Washer
11 Intake manifold
12 Pressure switch
13 Sealing ring
14 Delivery line from intake manifold
15 Union screw
16 Hose clip
17 Connecting hose
18 Switchover valve
19 Delivery line to aneroid compensator
21 Nut
22 Washer
23 Gasket
70 Aneroid compensator

Orifice (63)

Orifices of different diameter may be installed between the two distributors on vacuum control valve (65).

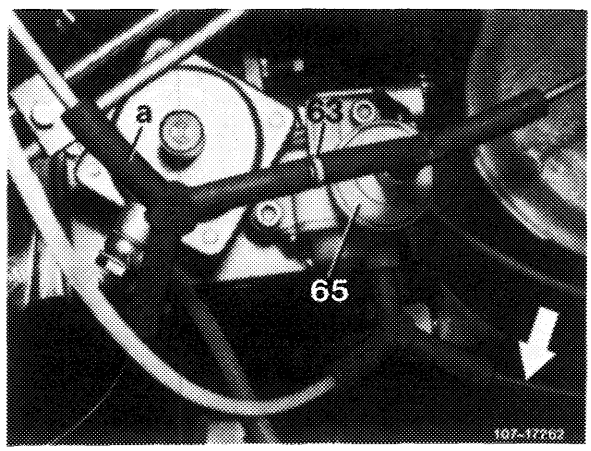


107-17058

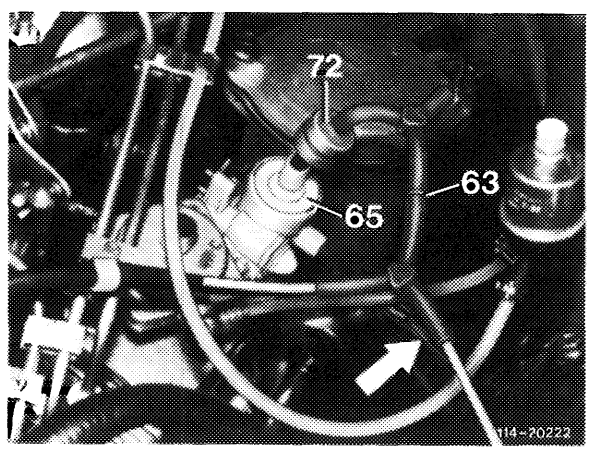
Color code and diameter of orifices

green	= 0.7 mm
white	= 0.8 mm
blue	= 1.0 mm
red	= 1.1 mm
yellow	= 2.0 mm (unthrottled)

The ID of the orifice depends on the tolerances of the adjusting angle on regulating lever (1) of injection pump and vacuum control valve (65).



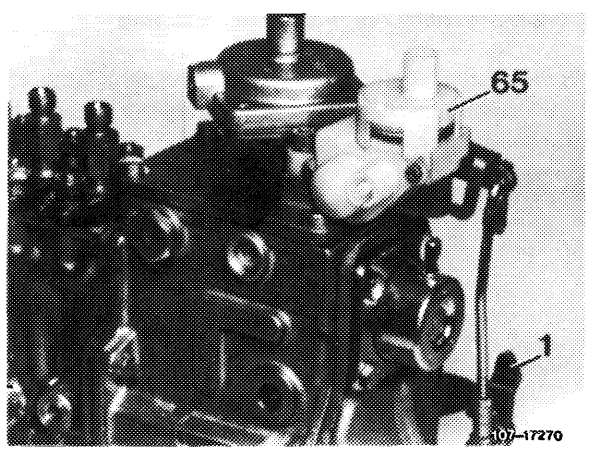
Model year 1980



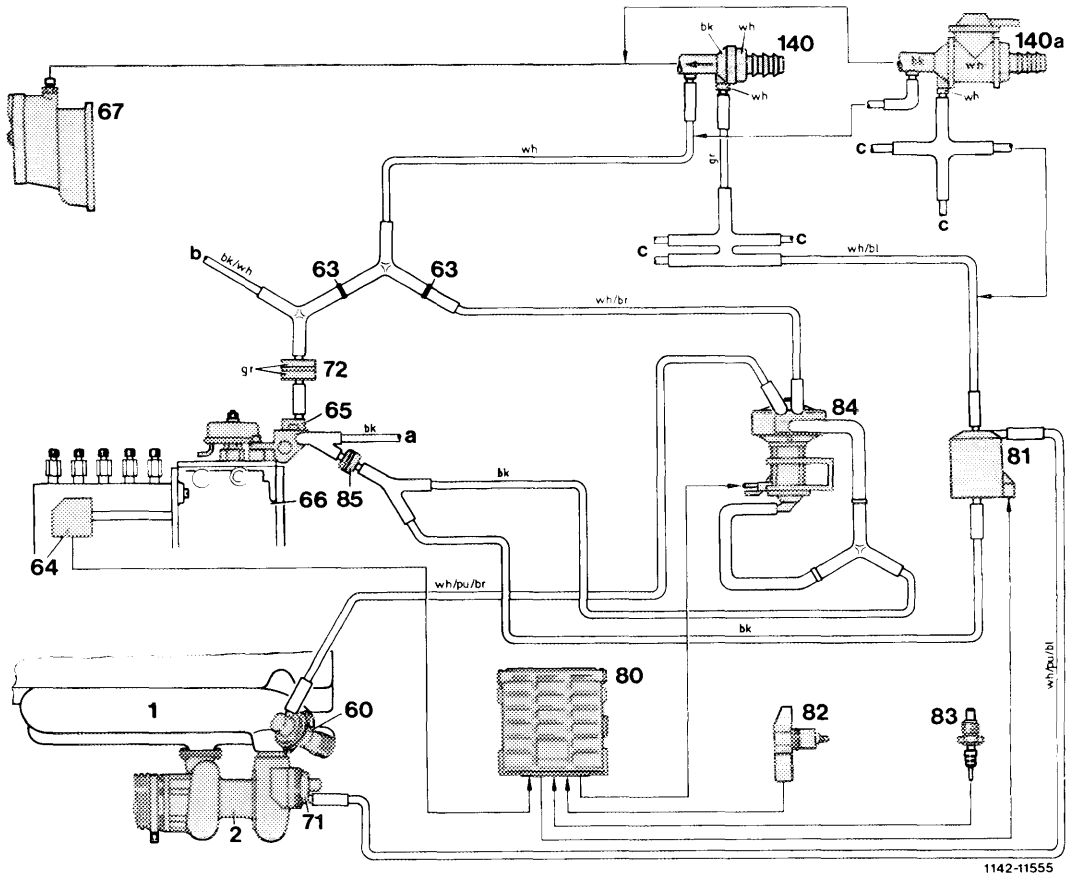
Model year 1981

Vacuum control valve (65)

The vacuum control valve serves to control venting of EGR valve. At idle, the vacuum line to automatic transmission, to thermovalve 40 °C/104 °F and switch-over valve (64a) is constantly vented by way of a small annular gap in vacuum control valve. The vacuum amounts to approx. 350–500 mbar.



C. (USA) model year 1984 California



Function diagram vacuum line installation

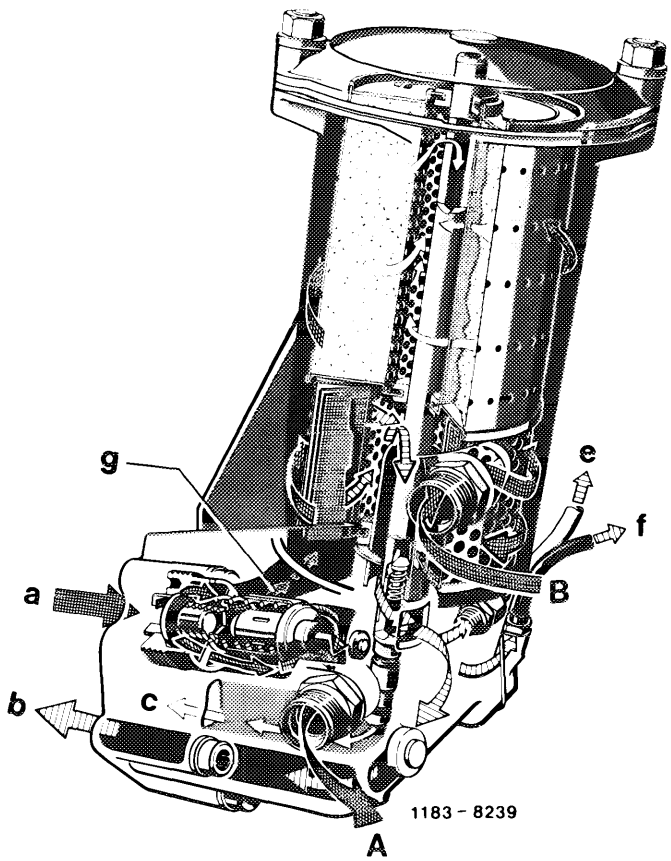
1	Intake manifold	81	Switchover valve	bk	= black
2	Exhaust gas turbocharger	82	Rpm sensor	bl	= blue
50	EGR-valve	83	Temperature sensor coolant (NTC)	br	= brown
63	Orifice 0.5 mm	84	Pressure converter	gr	= green
64	Control rod travel indicator	85	Vent filter	pu	= purple
65	Vacuum control valve	140	Check valve, model 123	re	= red
66	Injection pump	140a	Check valve, model 126	wh	= white
67	Vacuum pump	a	Vent line to passenger compartment		
71	Circulating air safety valve	b	To automatic transmission		
72	Vacuum damper	c	Remaining consumers		
80	Control unit				

Starting at an oil temperature of approx. 110 °C the thermostat (11) starts to displace control valve (12), which arrives at its end position at approx. 125 °C. In end position, the direct flow toward combination filter element is locked except for a given quantity of oil (g). This quantity of oil is enough to guarantee lubrication of engine at low outside temperatures, when continuous flow in oil cooler is widely obstructed by viscous oil.

The larger oil quantity flows to air-oil cooler and is cooled there, it will then flow back to oil filter housing and flows through oil filter element from outside in inward direction.

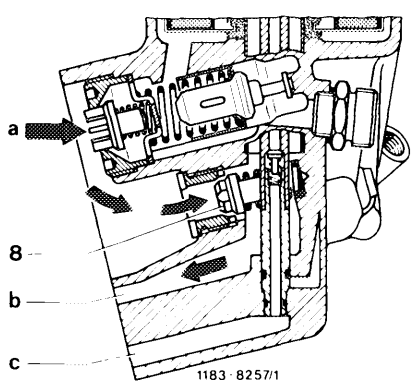
The cleaned oil flows through riser (22) or return flow pipe (18) to bearing points or to oil pan.

Attention!
On engine 617.950 (model 116) a 95 °C thermostat has been installed in oil filter up to engine end No. 019718. Here, thermostat control starts at approx. 95 °C and ends at approx. 110 °C.



A Uncleaned oil toward air-oil cooler
B Uncleaned oil from air-oil cooler
a From oil pump
b To bearing points
c Finely filtered oil toward oil pan
e To exhaust gas turbocharger
f To oil pressure gage (models 116 and 123)
g Oil quantity directly to combination filter element

If the oil filter element is badly contaminated and the differential pressure between the contaminated side and the clean side of the filter exceeds 3.5 bar, bypass valve (8) will open. The oil will then flow uncleaned toward engine and exhaust gas turbocharger.

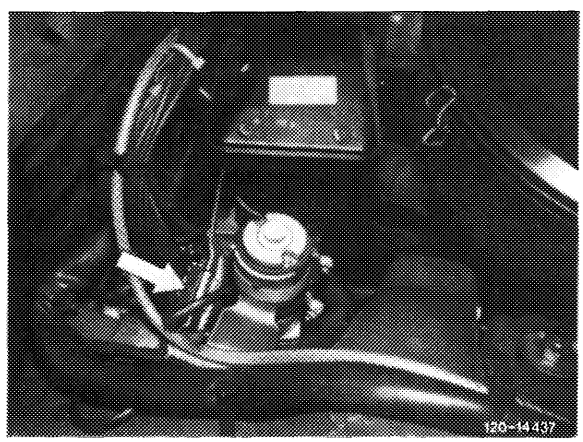


8 Bypass valve
a From oil pump
b To bearing points

3 Slowly fill in coolant up to mark on expanding tank (Fig. item 1). Do not mount closing cover.

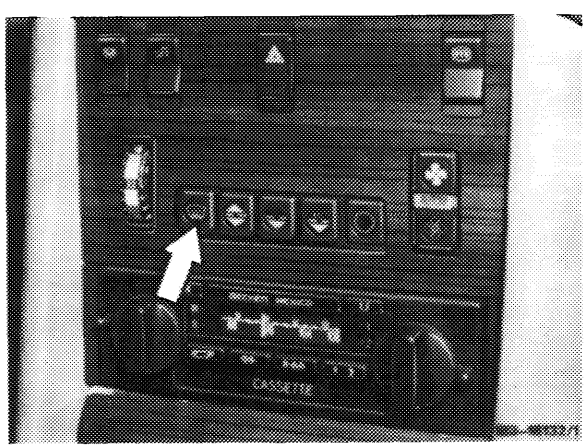
4 Start engine and warm up to approx. 40 °C.

5 On **model 116** pull plug of heating water pump (arrow) from supply line. Connect heating water pump to battery by means of self-made tool. Push "DEF" button.



On **model 123 with automatic climate control** and on **model 126,** push "DEF" button (arrow).

On **model 123 with and without air conditioning** set heater lever to max. heating capacity.



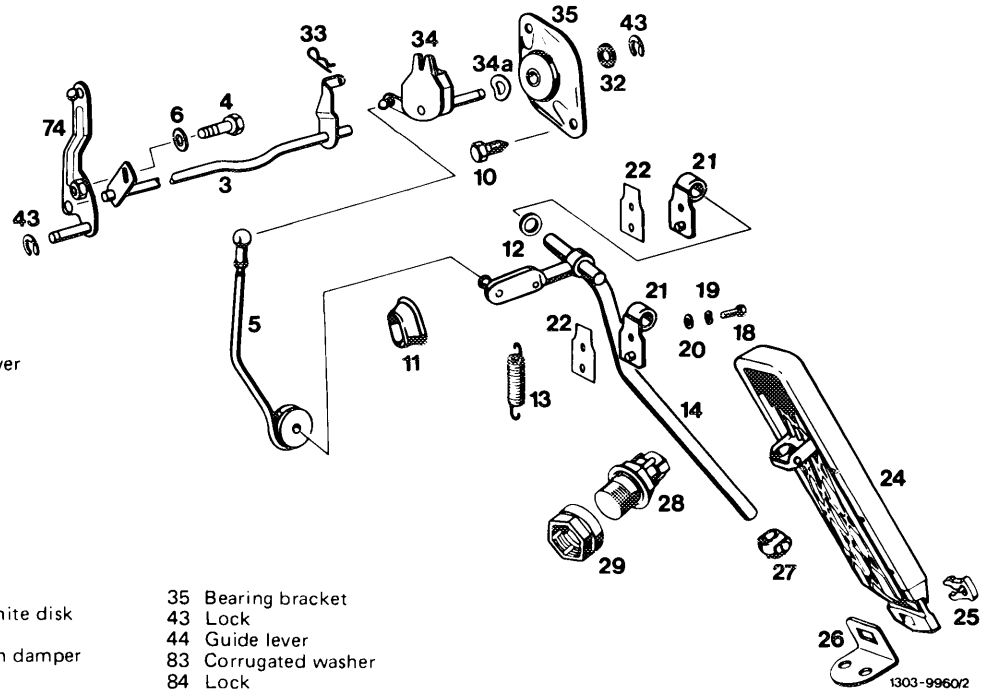
6 Run engine warm under **intermittent** operation until thermostat opens.

Note: Mount closing cover starting at a coolant temperature of approx. 60 °C.

7 On model 116, connect heating water pump again to supply line.

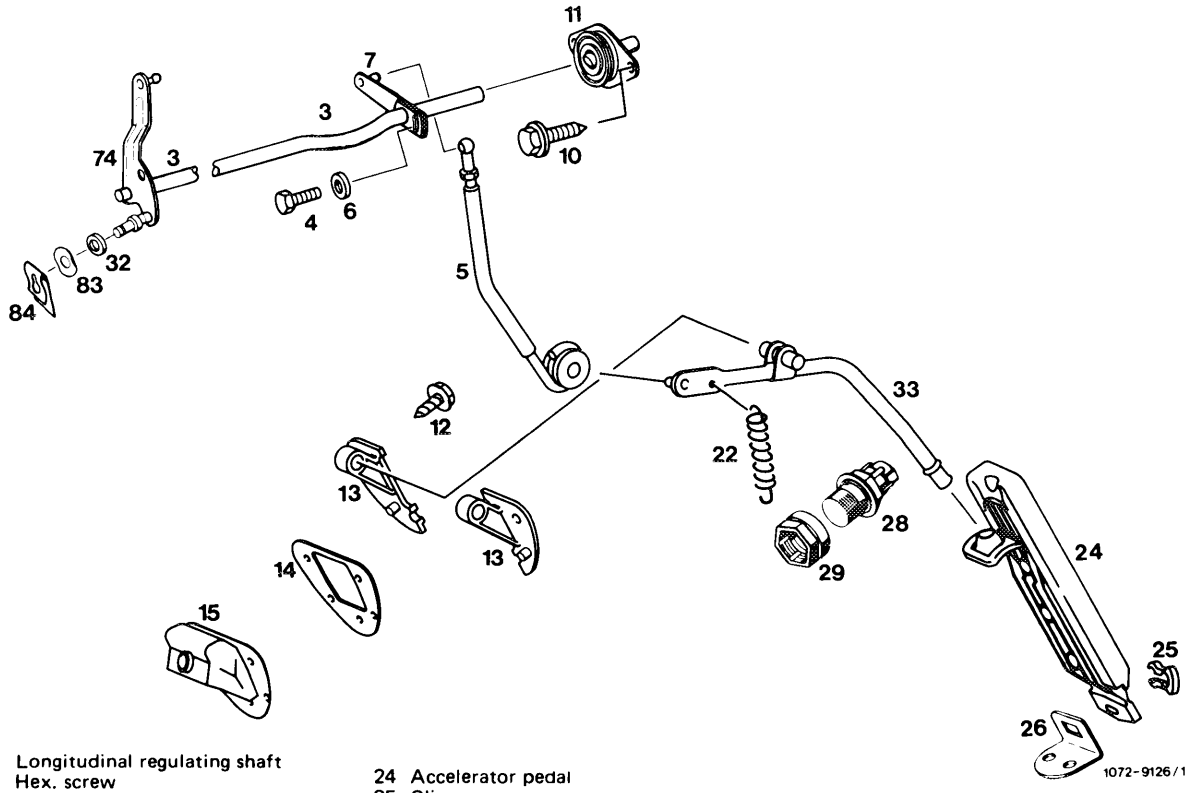
8 Check coolant level (below 90 °C) and fill up to specified level.

Chassis regulation
Model 123.1



3 Longitudinal regulating shaft
4 Adjusting screw
5 Pushrod
6 Washer
10 Screw
11 Rubber grommet
12 Plastic spacing ring
13 Return spring
14 Accelerator pedal lever
18 Hex. screw
19 Corrugated washer
20 Washer
21 Bearing
22 Gasket
24 Accelerator pedal
25 Clip
26 Fastening plate
27 Joint
28 Kickdown switch
29 Adjusting nut
32 Copper netting-graphite disk
33 Lock
34 Regulating lever with damper
34a Corrugated washer
35 Bearing bracket
43 Lock
44 Guide lever
83 Corrugated washer
84 Lock

Model 126.120



3 Longitudinal regulating shaft
4 Hex. screw
5 Pushrod
6 Washer
7 Guide shaft
10 Hex. screw
11 Bearing for longitudinal regulating shaft
12 Hex. screw
13 Bearing
14 Intermediate plate
15 Rubber sleeve
22 Return spring
24 Accelerator pedal
25 Clip
26 Fastening plate
28 Kickdown switch
29 Adjusting nut
32 Plastic spacing ring
33 Accelerator pedal lever
74 Guide lever
83 Corrugated washer
84 Lock