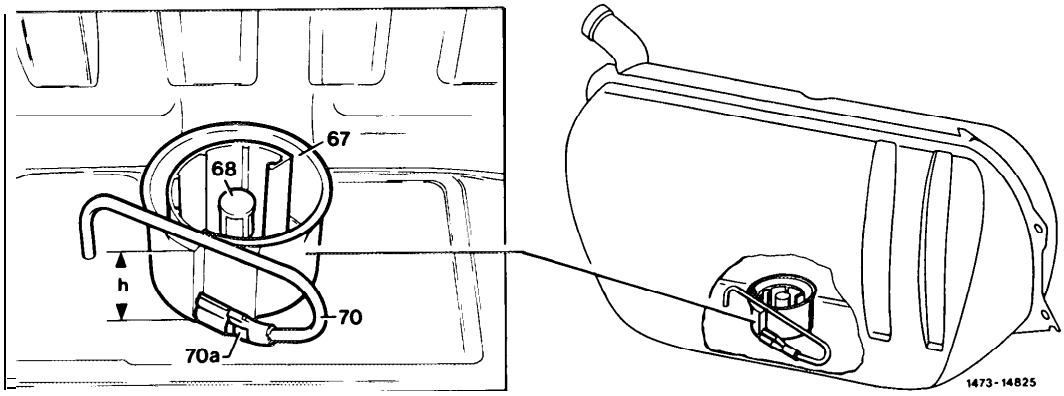
Job No.

Operation of fuel tank with surge bowl . . . . . 47 – 010
Operation of fuel gauge pickup . . . . . – 020
Operation of fuel tank positive and negative ventilation . . . . . – 030
Removal and installation of fuel tank . . . . . – 100
Removal and installation of fuel gauge pickup . . . . . – 120
Function of fuel evaporation system . . . . . – 200
Checking the fuel evaporation system . . . . . – 300
Function of fuel cooler . . . . . – 400

47-010 Operation of fuel tank with surge bowl



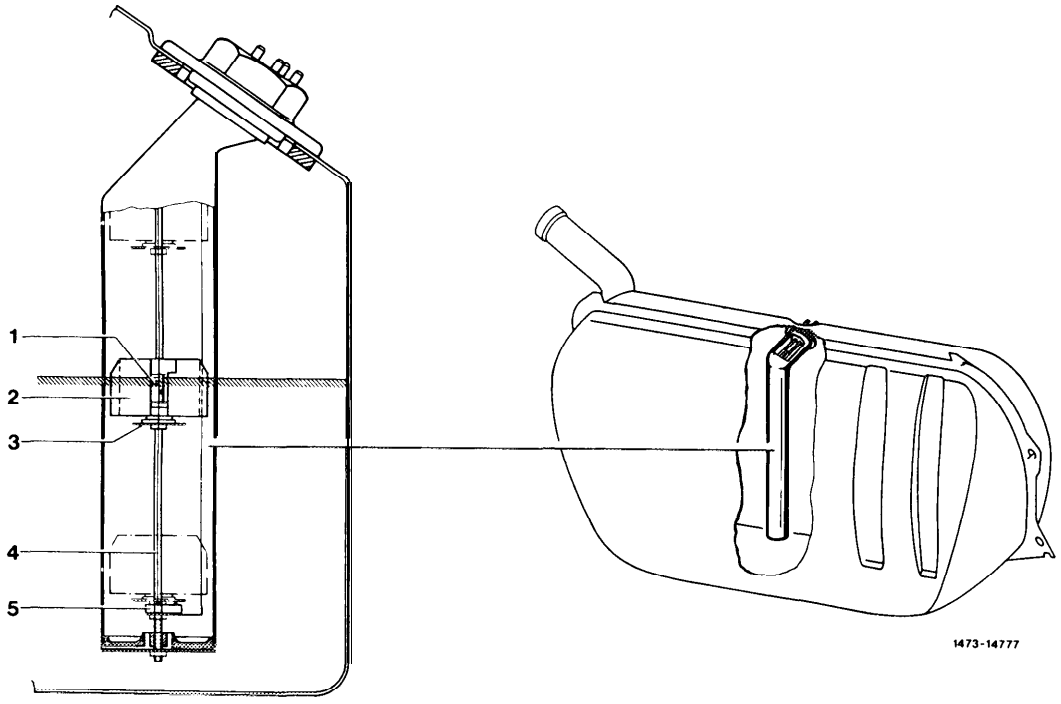
67 surge bowl
68 Fuel tank
70 Return line
70a Return nozzle

A surge bowl (67) is installed in the fuel tank. Its duty is to reliably supply the engine with fuel at low fuel level in the fuel tank and with prolonged driving on winding roads.

While the fuel pump is running, the return fuel jet flows from the return nozzle (70a) at high speed into the surge tank. In this way it drags along into the surge bowl (arrow) the fuel surrounding the return nozzle.

The fuel level (h) is maintained in the surge bowl even when the fuel level in the fuel tank drops below the level (h).

47–020 Operation of fuel gage pickup



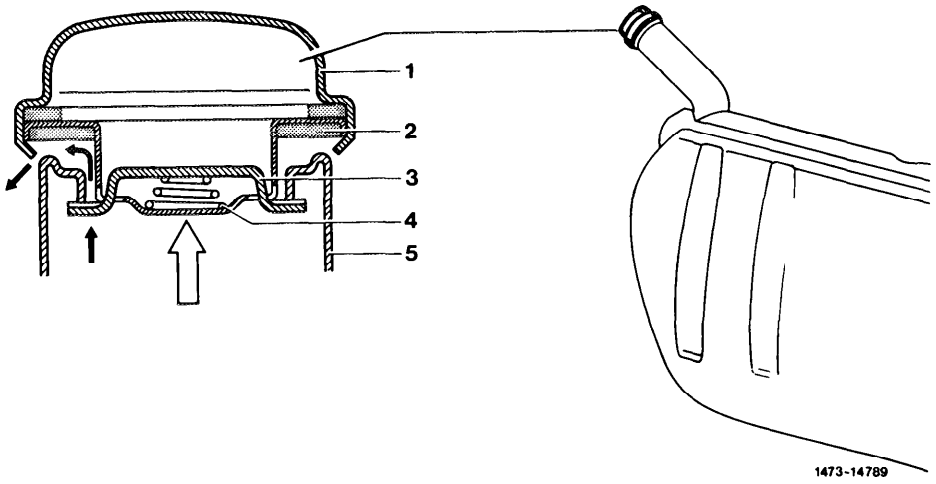
1 Sliding contact
2 Float
3 Contact plate
4 Guide and contact rod
5 Reserve warning contact

When the fuel level drops in the fuel tank, the sliding contact (1) on the float (2) increases the resistance value, the voltage drops and the indicating needle in the instrument cluster will swing back.
When the fuel level drops to the reserve volume, the reserve warning contact (5) closes and connects the reserve warning lamp to ground. The reserve warning lamp lights up when the ignition is switched on (control function). As soon as the engine is running, it goes out provided the fuel tank contains more than just the reserve volume.

Note
In control function the reserve warning lamp lights up with less intensity, when reaching the reserve volume, with more insensity.

Check fuel gage (54-269).

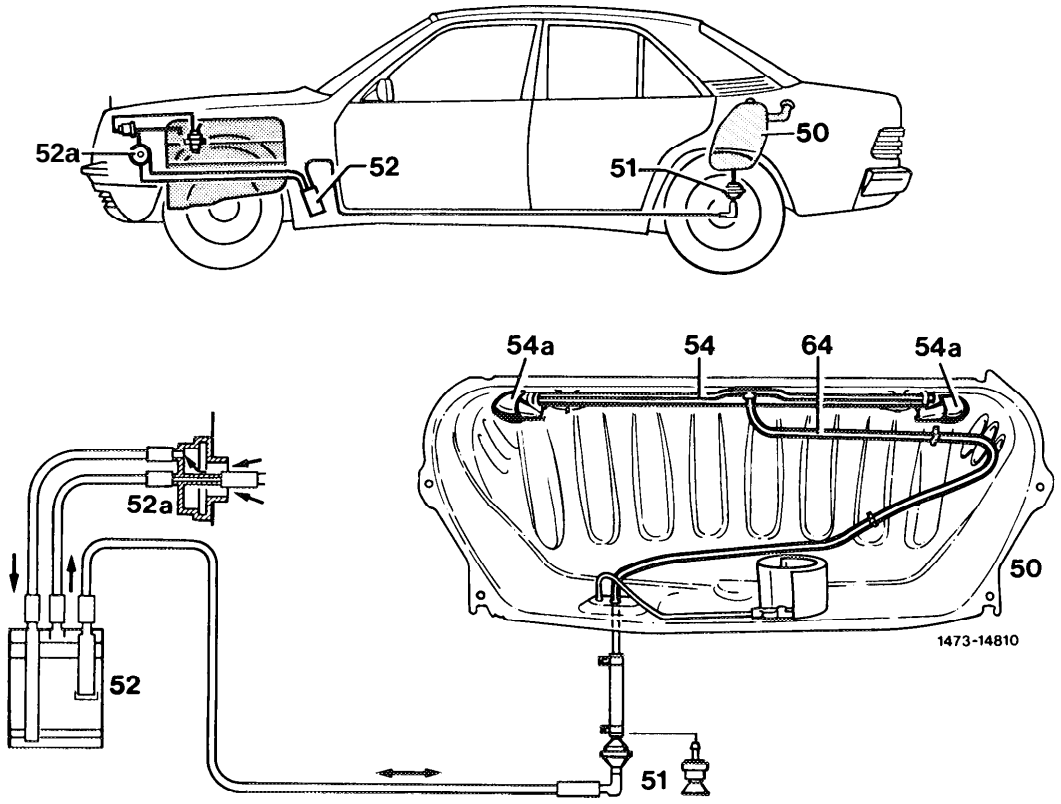
A. Closing cap



All models
1 Closing cap
2 Sealing ring
3 Closing clip
4 Compression spnng
5 Filler neck

At a gage pressure of **100-300** mbar the fuel vapors can escape via the closing cap. However, this is only possible when for instance the breather pipe from the fuel tank is blocked through damage or improper installation. With the system in operating condition, a pressure of up **to 50 mbar may occur in the fuel tank.**

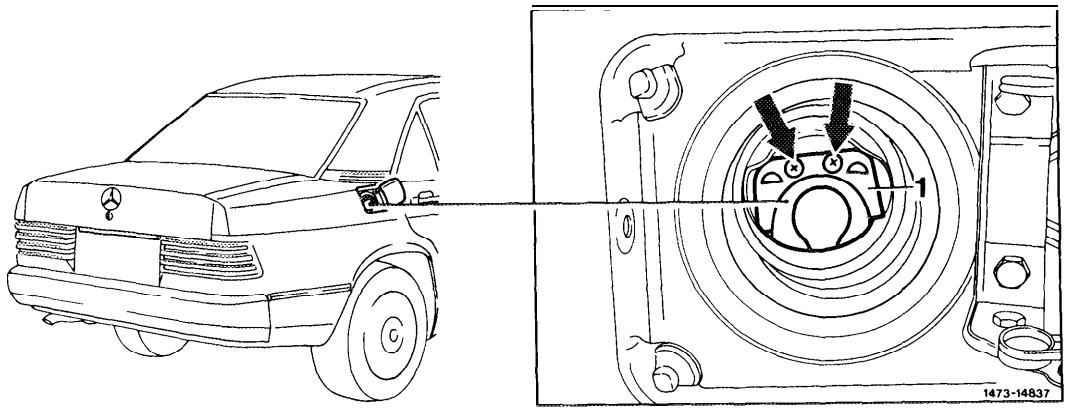
B. Models 124, 126 and 201



The ventilation system consists of a central pipe (54) each with one fuel trap (54a) at the ends. The fuel traps prevent that fuel escapes via the breather pipes. From the central pipe the breather pipe (64) leads to the breather valve (51). On vehicles with fuel evaporation system, positive and negative ventilation of the fuel tank (50) takes place via the charcoal cannister (52) and the diaphragm (52a).

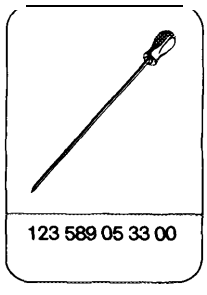
Job number of the job texts and work units and standard texts and flat rates respectively 47-0050

A. All models with catalytic converter emission control system

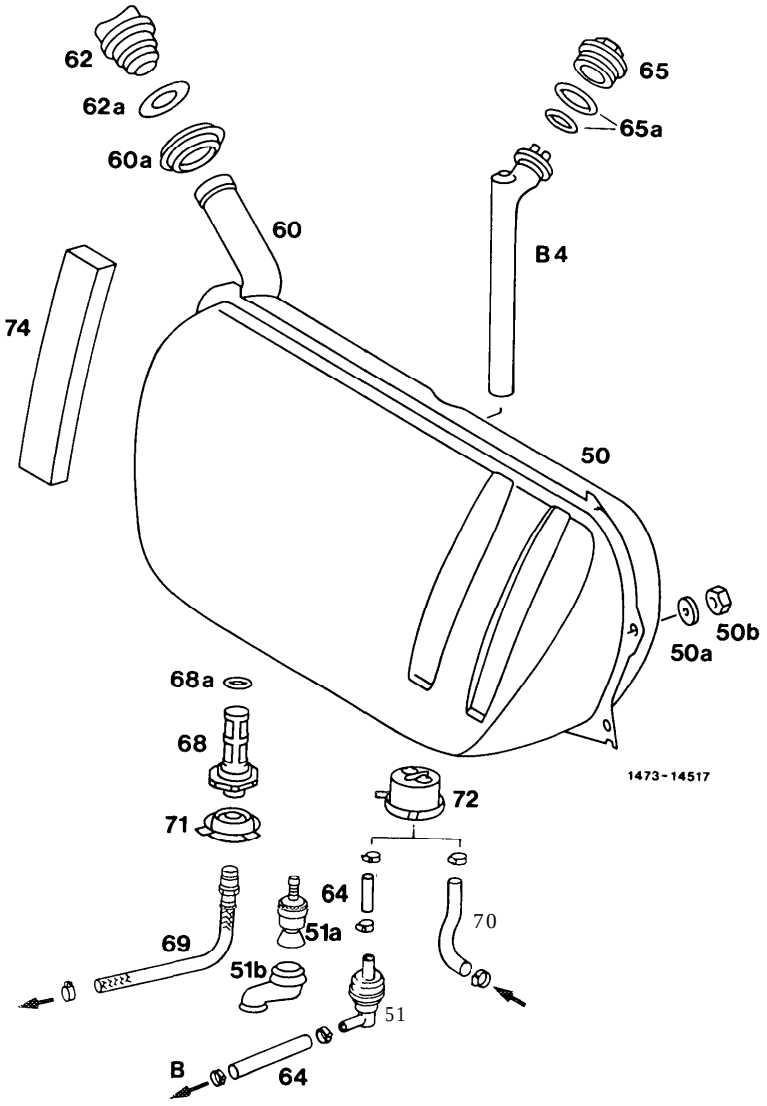


Guide funnel (1) . . . . . remove, install. For this purpose, use special tool 123 589 05 33 00 to remove as far as possible the rivets (arrows), drive in with mandrel. Because of the smaller filling gun for unleaded fuel a guide funnel (1) has been installed. When replacing the fuel tank, install a guide funnel.

Special tool



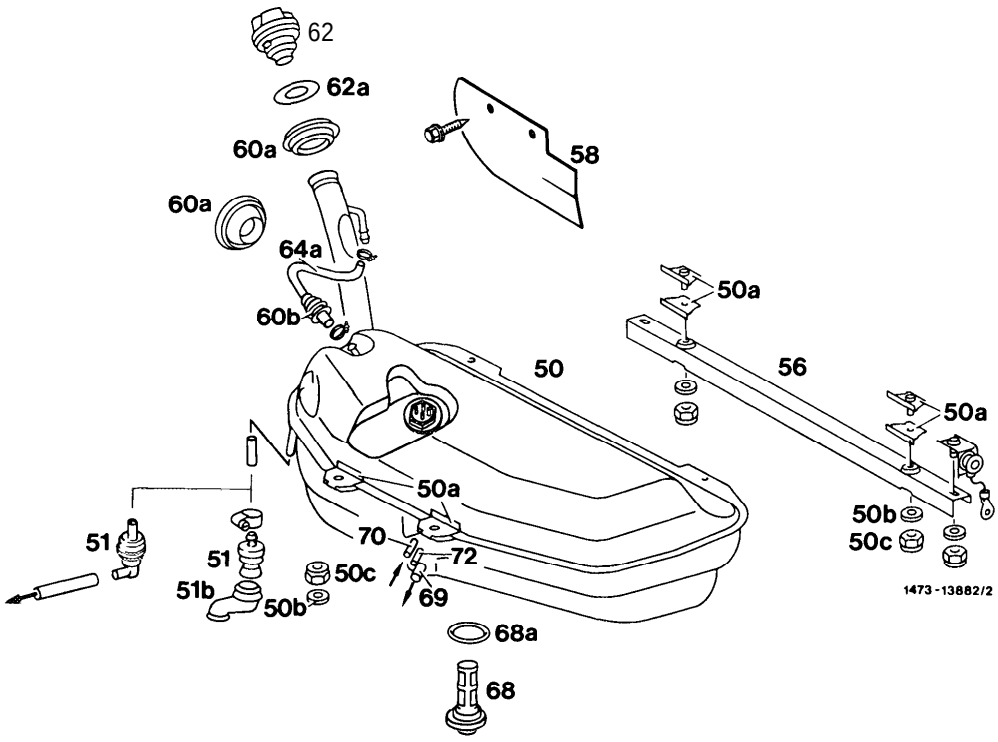
B. Model 124 Sedan



Safety regulations	observe, risk of accidents !
Ground cable, battery	disconnect, connect.
Fuel tank (50)	drain. Carefully pump out fuel so that no residual fuel quantity remains in the fuel tank. Filling capacity is approximately 70 liters. Glue on 4 damping strips (74) with MB universal glue 000 989 92 71 if required.
Closing cap (62)	remove, install. Check sealing ring (62a), renew if required.
Sealing sleeve (60a)	remove, install
Fuel tank covering and left, right lateral boot covering	remove, install.

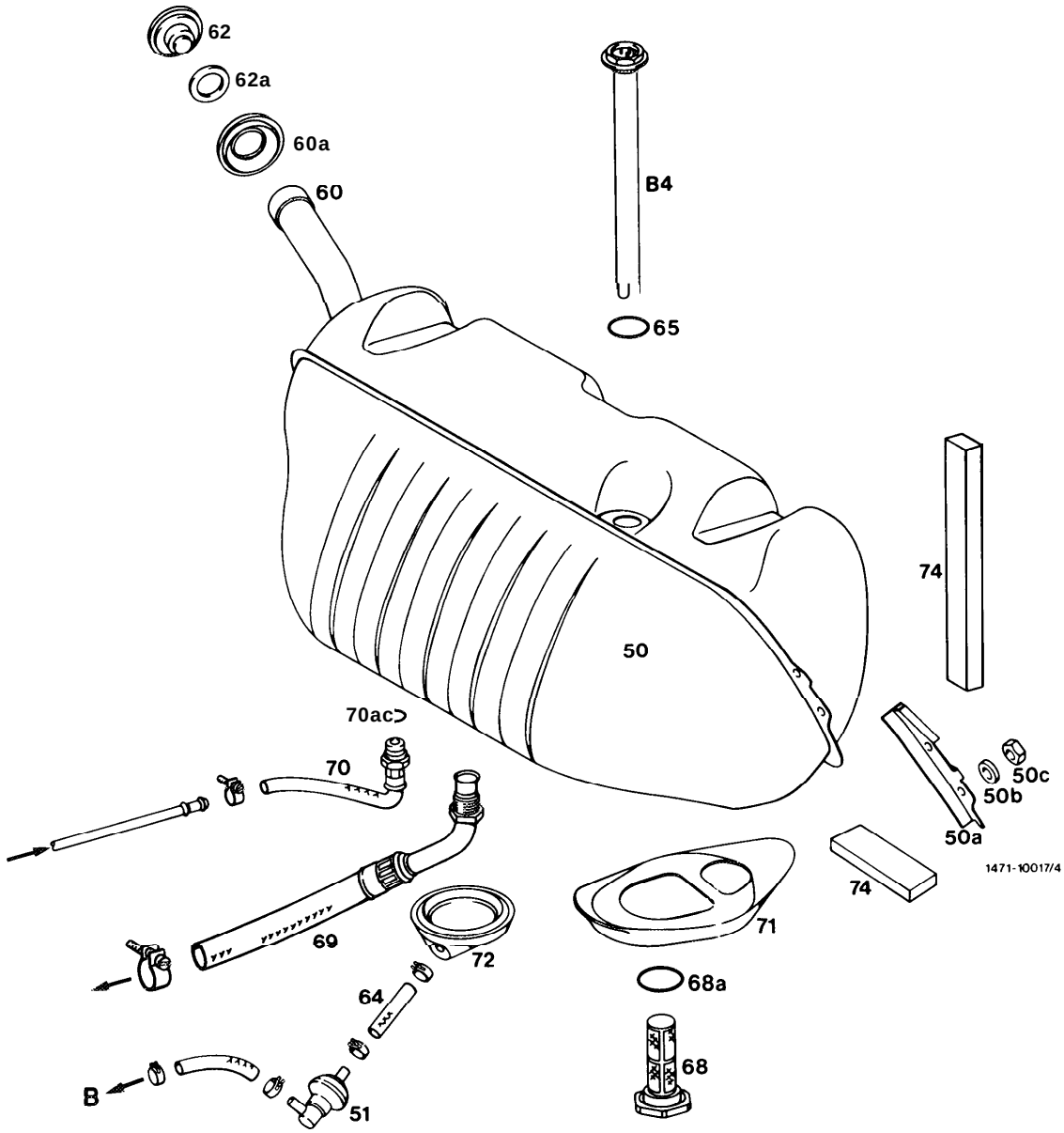
Fuel gage	pull off, fit connector on pickup (B4), check function. Remove, install pickup (B4) 39 Nm if required (47-120). Renew sealing rings.
Supply hose (69), return hose (70), breather valve (51, 51a)	disconnect, connect, 28 Nm. Check reusability. Collect residual fuel. Plug connections. Check seals (71, 72) for proper seating.
Nut (50b, 4 required)	21 Nm, use 4 washers (50a).
Fuel filter (68)	remove, install if required, 39 Nm, clean, check for reusability, renew sealing ring (68a).
Briefly run engine	check connections for leaks.

C.124 T-Sedan



Safety regulations	observe, risk of accidents!
Ground cable, battery	disconnect, connect.
Closing cap (62a)	remove, install. Check sealing ring (62a) renew if required.
Fuel tank (50)	drain, carefully pump out fuel so that no residual fuel quantity remains in the tank. Filling capacity is approx. 72 liters. Between rear-end floor and fuel tank, glue in damping strips with MB universal glue 000 989 92 71 if required.
Sealing sleeves (60a)	remove, install.
Front load compartment flap or 3rd seat bench back rest	remove, install.
Covering front storage compartment	loosen and fold back; fold forward and attach.
Breather line (64a)	remove, install. Pre-assemble on the fuel tank upon installation. Install the pipe with a steady decline and without kinks. Check sealing sleeve (60b) for proper seating.
Fuel gage	pull off, fit connector on pickup (B4). Check function. Remove, install pickup (B4) 39 Nm (47-120) if required, renew sealing rings.
Sealing sleeve (60a, 2 required)	remove, install.
Supply hose (69), return hose (70), leak-off pipe (72)	disconnect, connect, check reusability. Collect residual fuel. Plug hoses.
Breather valve (51)	dismount, mount (only vehicles with fuel evaporation system).
Exhaust	disconnect, connect (suspend with V-belt) on both rear exhaust suspensions.
Splashguard (58) filler neck	dismount, mount.
Bracket level pipe (left side)	dismount, mount.
U-rail (56)	remove, install, 30 Nm (support fuel tank). Nuts (50c) self-locking.
Attachment (50a-50c) fuel tank front	unscrew, screw on, 30 Nm. When removing the fuel tank ensure that the connection for the breather line (64a, on the filler neck) does not hook into a cable or pipe. Push exhaust and level pipe to the left.
Fuel filter (68)	remove, install if required, 39 Nm, clean, check reusability. Renew sealing ring (68a).
Briefly run engine	check connections for leaks.

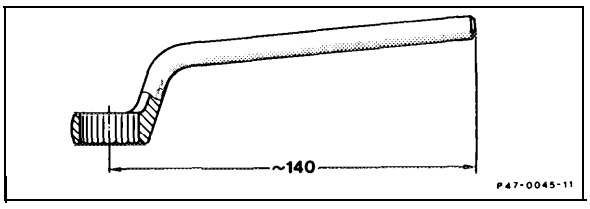
D. Model 126


62
62a
60a
60
B4
65
74
50
70ac
70
50c
50b
50a
1471-10017/4
74
71
69
72
68a
64
68
B
51

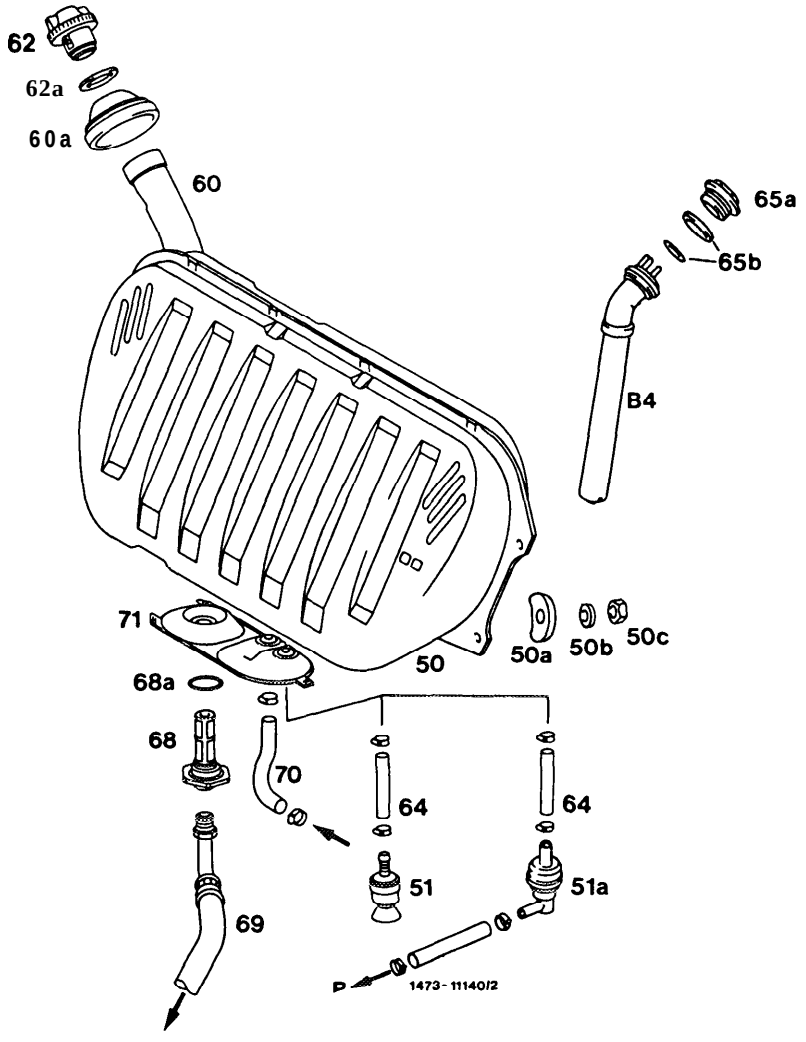
Safety regulations	observe, risk of accidents!
Ground cable, battery	disconnect, connect.
Closing cap (62)	remove, install. Check sealing ring (62a), renew if required.
Fuel tank (50)	drain. Carefully pump out fuel so that no residual quantity remains in the fuel tank. Filling capacity is approx. 90 liters. Glue in 4 damping strips (74) with MB universal glue 000 989 92 71 if required.
Sealing sleeve (60a)	remove, install.
Partition panel trunk/fuel tank	remove, install.
Supply hose (69), return hose (70), breather valve (51)	disconnect, connect, 28 Nm, check for reusability. For return line (70), use shortened box wrench (selfmade), renew sealing ring (70a). Collect residual fuel, plug connections. Check seals (71, 72) for proper seating.
Nuts (50c, 4 required)	21 Nm, use 4 washers (50b)
Fuel gage	pull off, fit connector to pickup (B4). Check function. Remove, install pickup (B4) 39 Nm, (47-120) if required, renew sealing ring.
Fuel filter (68)	remove, install if required. 39 Nm, clean, check for reusability, renew sealing ring (68a).
Briefly run engine	check connections for leaks.

Selfmade tool

Shorten commercially available box wrench as shown.



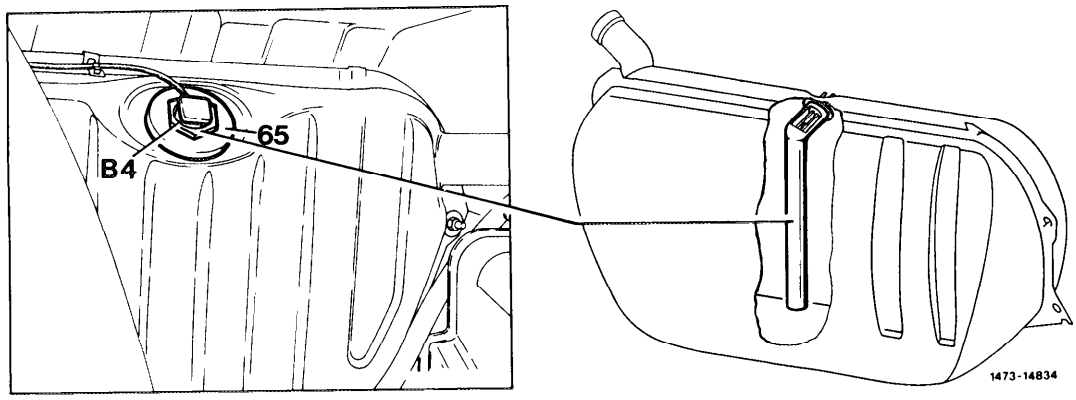
E. Model 201



Safety regulations	observe, risk of accidents!
Ground cable, battery	disconnect, connect.
Closing cap (62)	remove, install. Check sealing ring (62a), renew if required.
Fuel tank (50)	drain. Carefully pump out fuel so that no residual quantity remains in the fuel tank. Filling capacity is approx. 55 liters. Glue in 4 damping strips with MB universal glue 000 989 92 71 if required.
Sealing sleeve (60a)	remove, install.
Covering fuel tank	disconnect, connect.
Fuel gage	pull off, fit connector on pickup (84). Check function. Remove, install pickup (B4) 39 Nm, (47-120) if required, renew sealing ring.
Supply hose (69), return hose (70), breather valve (51)	disconnect, connect, 28 Nm, check reusability. Collect residual fuel. Plug connections.Check seal (71) for proper seating.
Nut (50b, 4 required)	21 Nm. Use 4 washers (50a).
Drain hose from tank trough	before removing the fuel tank, pull drain hose slightly up and route behind fuel tank edge. After installation, route in the proper position.
Fuel filter (68)	remove, install, if required. 39 Nm, clean, check for reusability, renew sealing ring (68a).
Briefly run engine	check connections for leaks.

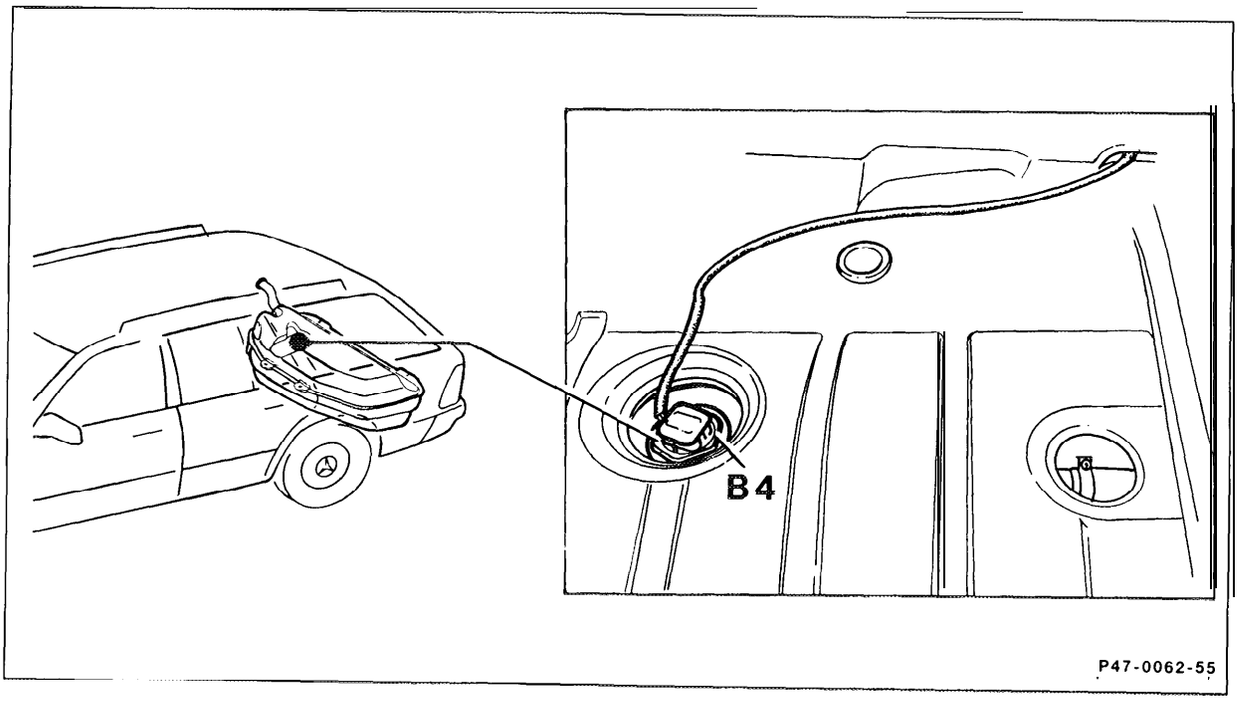
47–120 Removal and installation of fuel gage pickup

A. Models 124 Sedan, 201



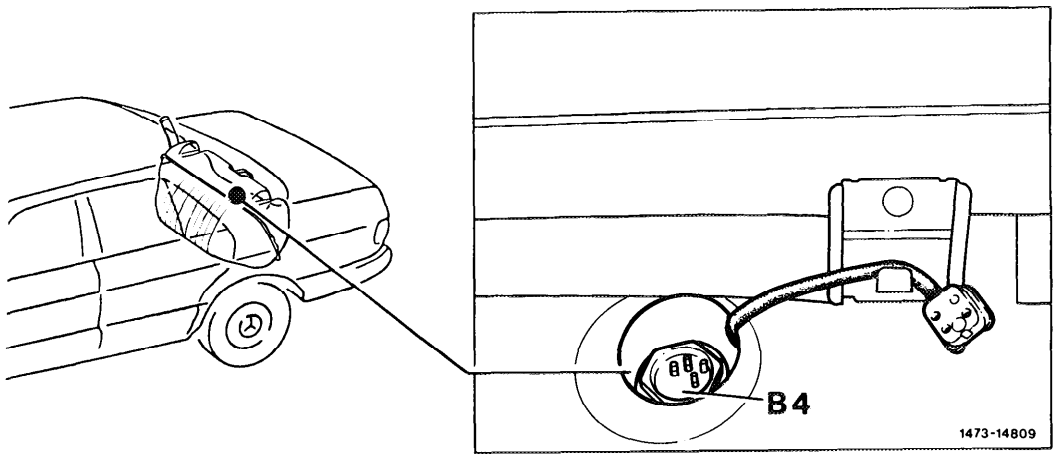
Ground cable, battery	disconnect, connect.
Covering fuel tank	remove, install, model 201 only partially.
Connector on pickup (B4)	pull-off, fit.
Sealing flange (65)	unscrew, screw on, 39 Nm, if fuel tank is full, first pump out approx. 8 liters. Renew sealing rings.
Pickup (B4)	remove, install, allow to run dry if required. Remove safety pin under adhesive foil (only with new part).

B. Model 124 T-Sedan

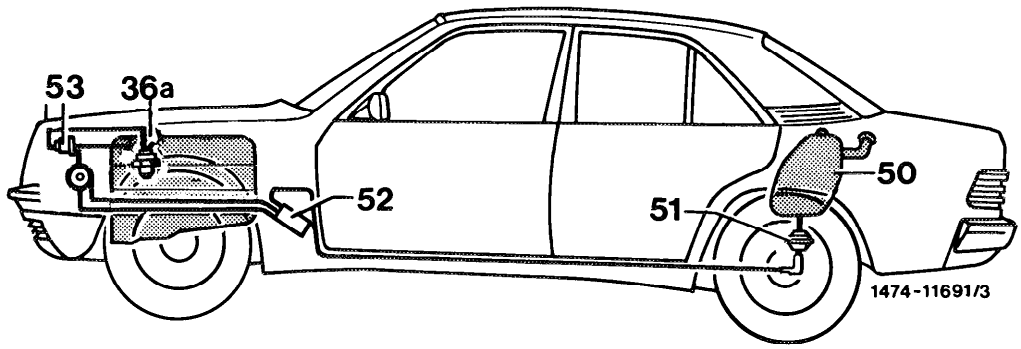


Ground cable, battery	disconnect, connect.
Front load compartment flap and 3rd seat bench back rest	remove, install.
Load compartment covering	partially remove, install.
Closing cab	remove, install.
Connector on pickup (B4)	pull off, fit.
Pickup (B4)	remove, install, 39 Nm, allow to run dry if required. Remove safety pin under adhesive foil (only with new part).

C. Model 126



Ground cable, battery	disconnect, connect.
Rear seat bench, rear back rest	remove, install (91-l 70).
Closing cap	remove, install.
Connector on pickup (B4)	pull off, protect against sliding, fit.
Pickup (B4)	remove, install 39 Nm, allow to run dry if required. Renew sealing ring. Remove adhesive foil and safety pin (only with new part).



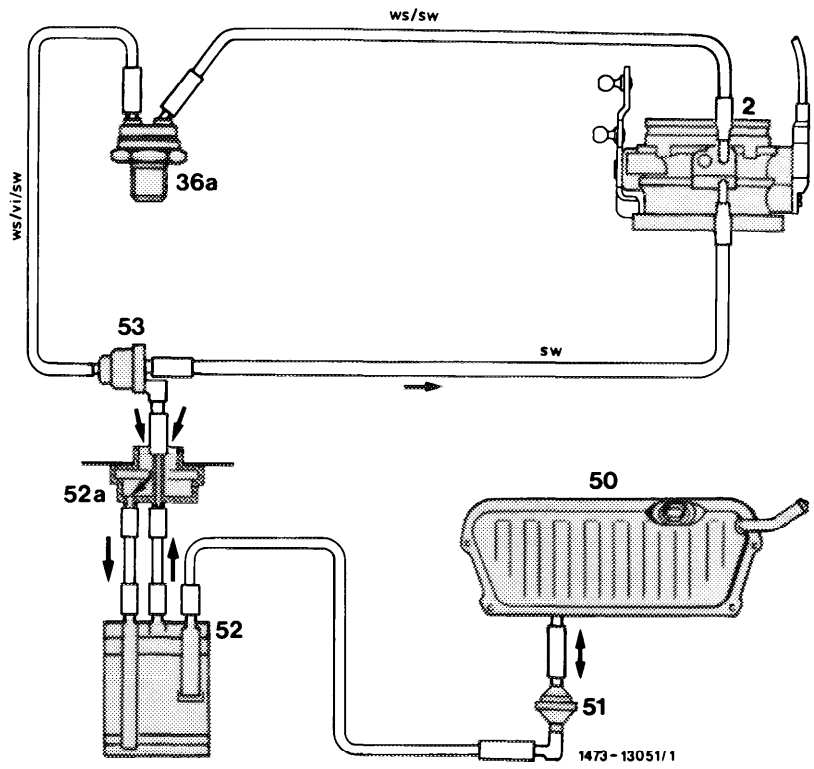
36a	50 °C red thermo valve
50	Fuel tank
51	Breather valve
52	Charcoal canister
52a	Diaphragm
53	Purge valve

General

A fuel evaporation system has been installed in order to allow less fuel vapors to escape into the atmosphere. The fuel vapors from the fuel tank (50) are directed to the charcoal canister (52) where they are stored. Depending on the operating conditions of the engine, the fuel vapors are evacuated via the purge valve (53) and the intake assembly by means of the intake manifold vacuum and burnt in the engine. Below approx. 50 °C coolant temperature and/or throttle valve at idle speed stop, the fuel vapors are not extracted.

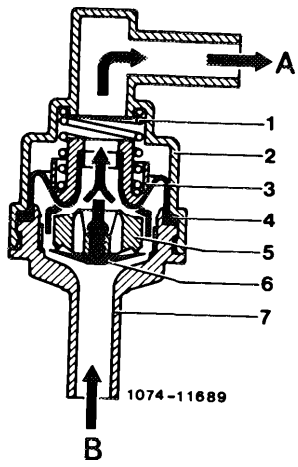
Function diagram

2	Intake pipe assembly
36	Thermo valve (50 °C, red)
50	Fuel tank
51	Breather valve
52	Charcoal canister
52a	Diaphragm



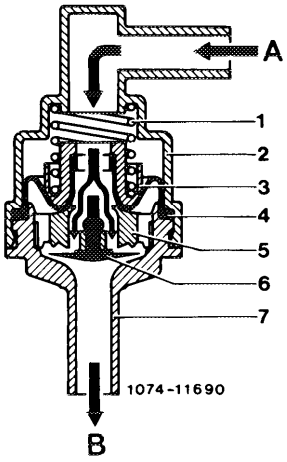
Function

If a gage pressure of 30-50 mbar is reached in the fuel tank, the breather valve (4) opens and the fuel vapors flow to the charcoal canister. The breather valve (51) to the charcoal canister is opened.



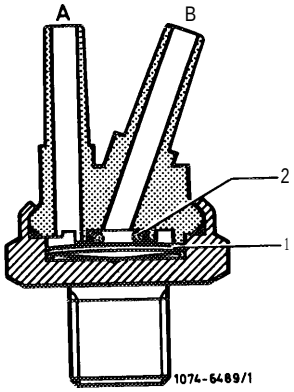
1	Compression spring	6	Vent valve
2	Valve housing	7	Connection
3	Spring retainer	A	Charcoal canister connection
4	Breather valve	B	Fuel tank connection
5	Valve plate		

If a vacuum of 1-16 mbar is reached in the fuel tank, the vent valve (6) opens. As a result, air and fuel vapors are drawn in via the charcoal canister.



Breather valve (51) to fuel tank open

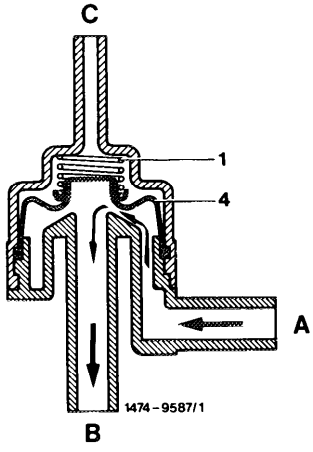
With engine running at a coolant temperature above 50 °C the intake manifold vacuum is applied to the purge valve (connection C) through the thermo valve as from a slightly opened throttle valve position.



Thermo valve 50 °C red
1 Bi-metal plate
2 0-nng
A To the purge valve
B To the intake pipe assembly

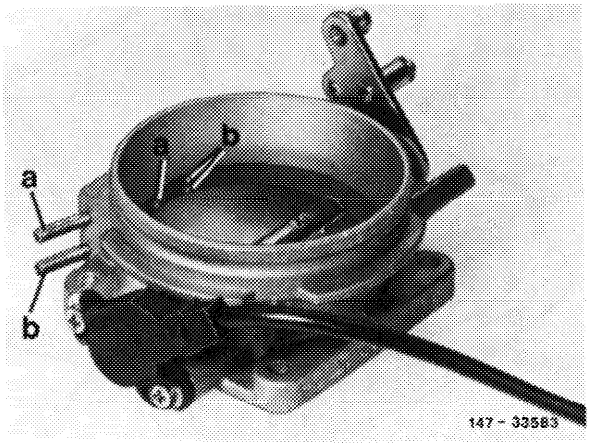
As of a vacuum of 20-35 mbar the diaphragm (4) is pulled up against the spring force. The passage from connection A to B is opened.

Purge valve (53) open
1 Compression spring
4 Diaphragm
A Connection charcoal canister
B Connection intake pipe assembly
C Vacuum connection

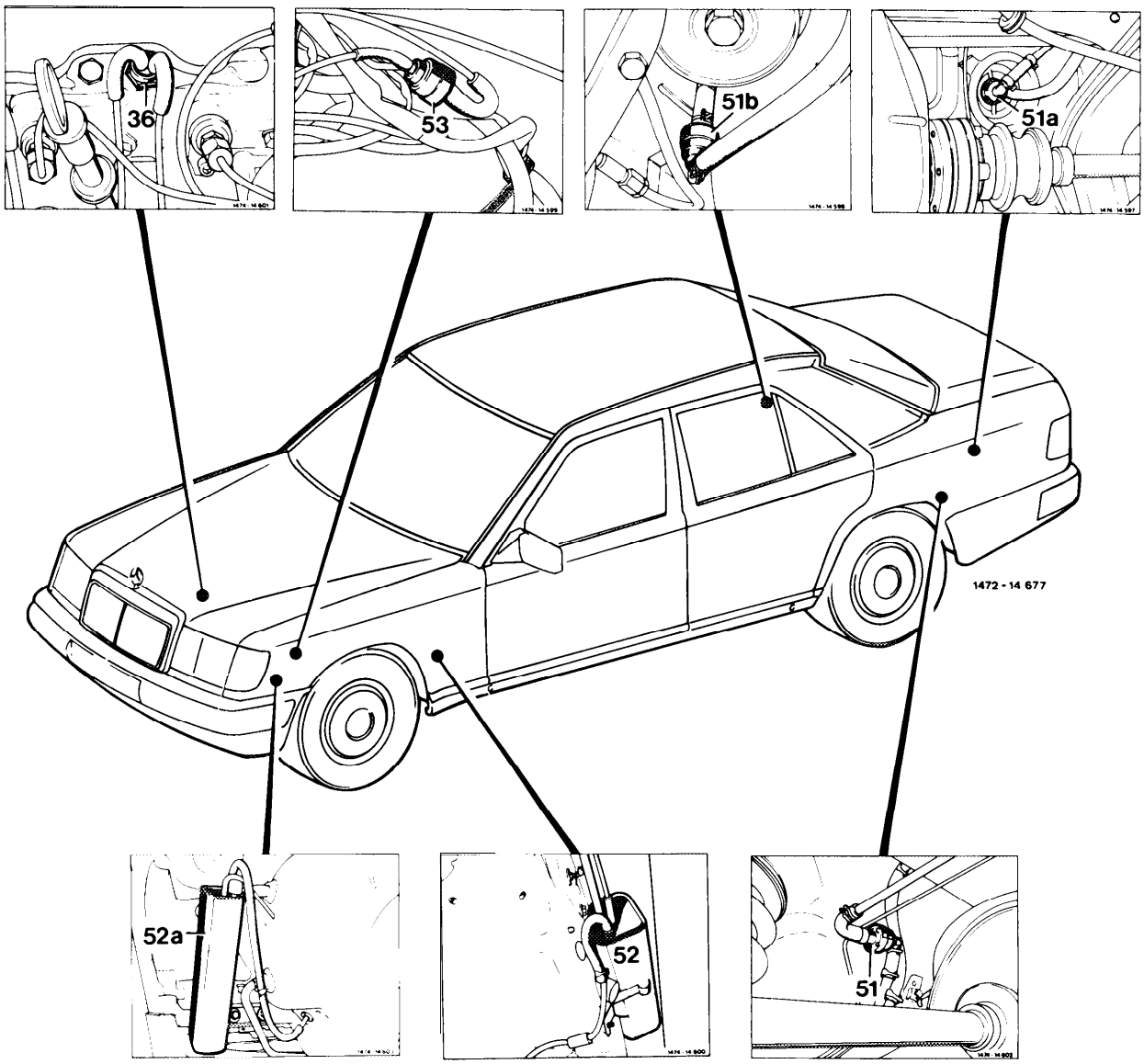


If the throttle valve is further opened, the two extraction bores (b) in the intake pipe assembly, which end in a common passage, become active one after the other, in this way extracting the fuel vapors stored in the charcoal canister. The charcoal in the canister is regenerated.

The intake pipe assembly has vacuum and extraction connection.



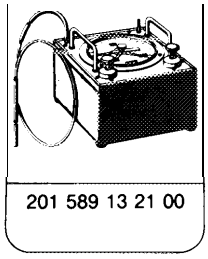
a Vacuum control bore
b Extraction bores



Engine operation temperature	approx. 80 °C engine oil temperature.
Purge valve (53, in the engine compartment front left)	pull off on the inner wing and slowly increase engine rpm to approx. 3000/min. No extraction at idle speed. Extraction commences with increasing speed.
Thermo valve 50 °C, red (36, in sensor strip)	check for continuity.

Vacuum lines (white/black and white/purple/black)	ensure proper connection to the intake pipe assembly and thermo valve (36). Check condition.
Breather valve (51, Model 107, 51 a, Models 124 sedan, 201, 126, 51 b 124 T-sedan)	connect tester 201 589 13 21 00 to the fuel tank connection and check function (gage pressure 30-50 mbar, vacuum 1-16 mbar).
Lines	from fuel tank (50) via breather valve (51). Check charcoal canister (52, remove bulkhead if necessary), purge valve (53) to the intake pipe assembly (black).
Charcoal canister (52, Models 124 126, 201; 52a, Model 107)	all connections must have free access to each other.

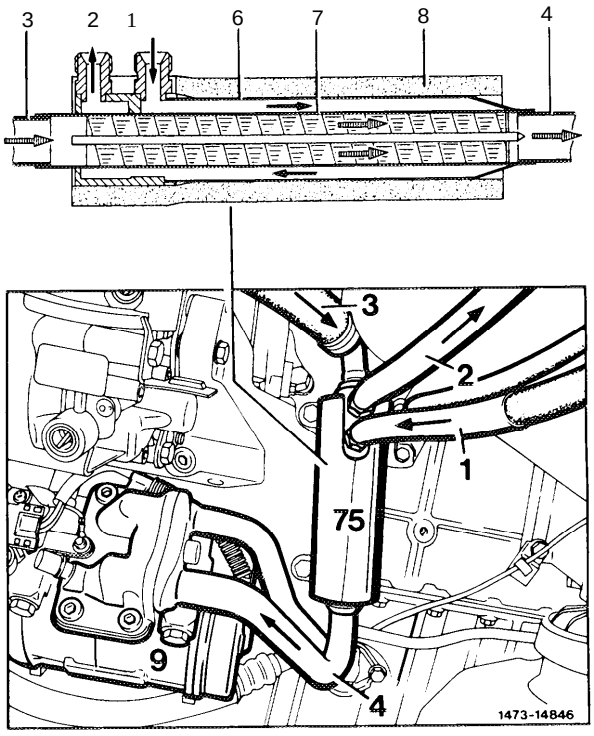
Special tool



201 589 13 21 00

47–400 Function of fuel cooler

(AUS), (J), (USA) (all models)



75 Fuel cooler
1, 2 Fuel return line
3, 4 Refrigerant return line
6 Outer pipe
7 Inner pipe
8 Insulating hose
9 Refrigerant compressor

A fuel cooler has been installed in order to reduce the formation of bubbles in the fuel system with high outside temperatures. This cooler is located in the coolant return line between evaporator and refrigerant compressor. The fuel cooler is attached to the engine.

With the engine running, the excess fuel in the fuel distributor returns unpressurized through the fuel cooler into the fuel tank.

As long as the refrigerant compressor is switched on, heat is extracted from the fuel by means of the gaseous refrigerant flowing through the inner pipe of the fuel cooler.