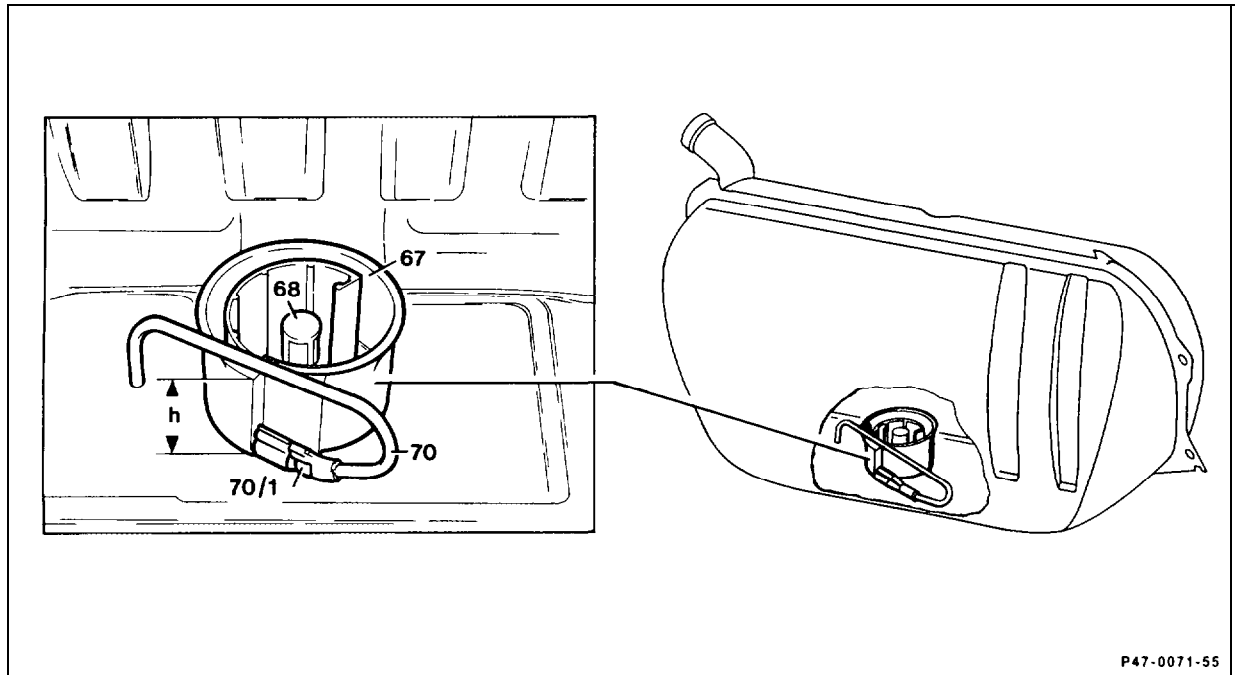




	Job No.
Function of fuel tank with surge bowl	47 - 010
Function of fuel gauge sending unit	47 - 020
Function of fuel tank ventilation	- 030
Removal and installation of fuel tank	- 100
Removal and installation of fuel gauge sending unit	- 120
Function of evaporative emission system	- 200
Testing evaporative emission system	- 300
Function of fuel cooler	- 400

47-010 Function of fuel tank with surge bowl



67 Surge bowl
68 Fuel filter

70 Return line
70/1 Return jet

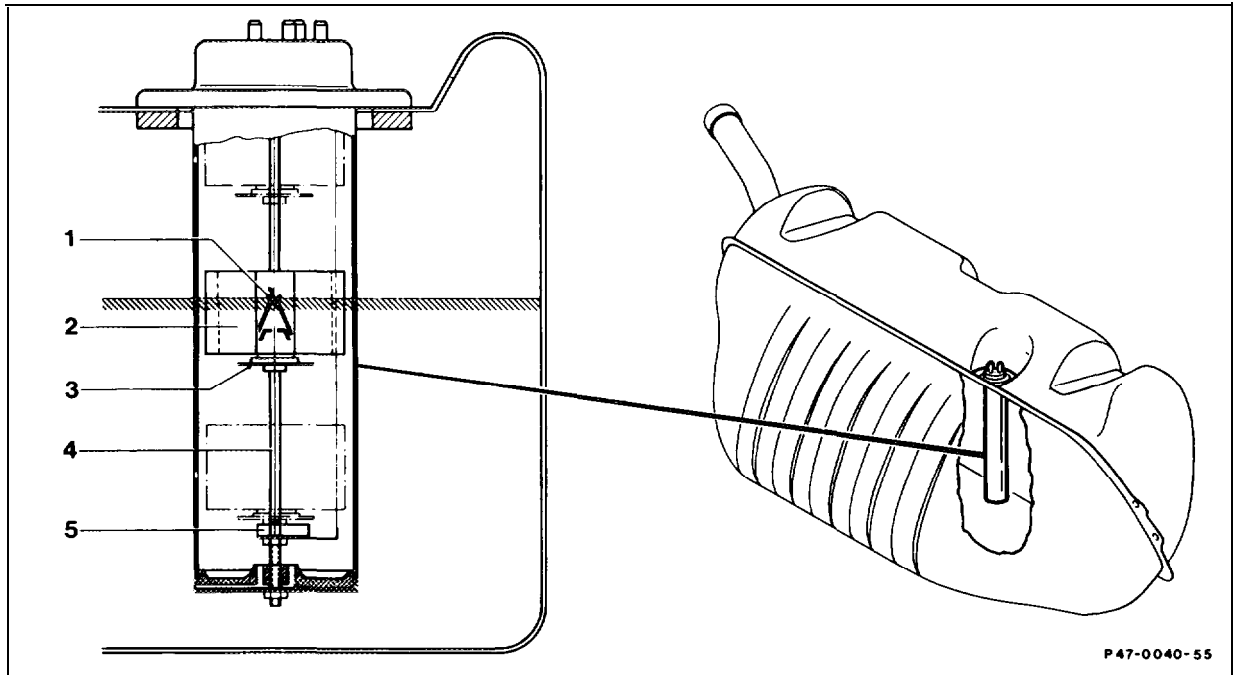
A surge bowl (67) with fuel strainer (68) is installed in the fuel tank. Its task is to reliably supply fuel to the engine when the fuel level in the tank is low and when driving through long curves.

When the fuel pump is running, the fuel return jet flows along the return line (70) at high speed out of the return nozzle (70a) into the surge bowl. It entrains and carries with it into the surge bowl the fuel around the return nozzle.

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

As of 1989, a cover with an approx. 20 mm Ø hole is fitted additionally on the surge bowl (67). This ensures that the fuel supply of the injection system is assured even if there is only a slight quantity of fuel in the tank (reserve quantity) and during high lateral acceleration.

47-020 Function of fuel gauge sending unit



- 1 Wiper contact
- 2 Float
- 3 Contact plate

- 4 Guide and contact rod
- 5 Reserve warning contact

As the fuel level drops, the wiper contact (1) at the float (2) detects a higher resistance, the current drops and the gauge needle in the instrument moves back.

If the fuel level drops to reserve quantity, the reserve malfunction indicator contact (5) is closed and ground is thus connected to the reserve malfunction indicator lamp.

The reserve malfunction indicator lamp lights up when the ignition is switched on (check function). As soon as the engine is running, it goes out provided the fuel tank contains more than the reserve quantity.

Note

The reserve malfunction indicator lamp lights up with a weak light for the check function, and with a stronger light to indicate reserve quantity.

Testing function of fuel gauge sending unit (54-256).

Testing fuel gauge (54-257).

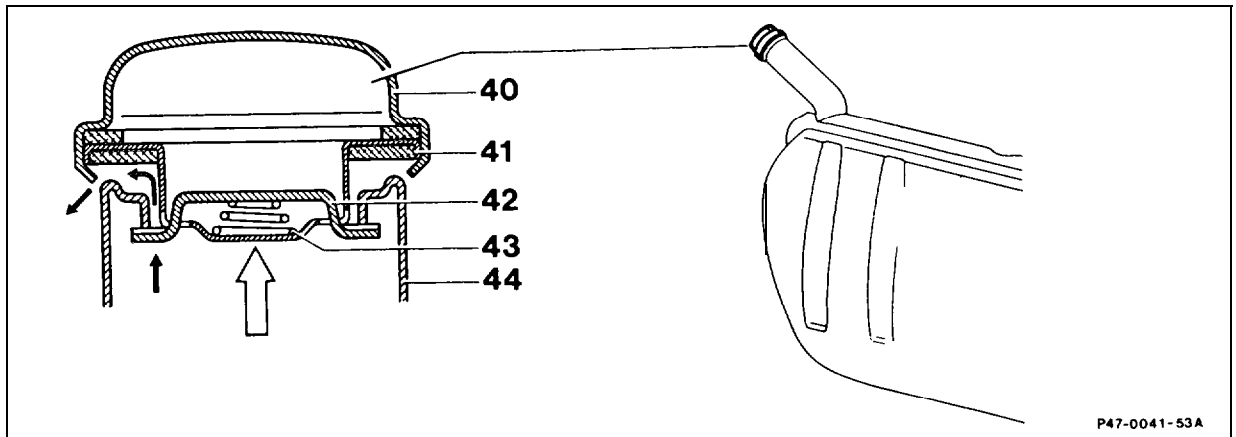
Model 201 as of 09/87

The installation attitude has been modified from approx. 15° (deviation from vertical) to approx. 5°. The gauge has been harmonized to the new attitude of the sending unit as follows:

An electronic control delays the switch-on and switch-off of the reserve malfunction indicator by approx. 2 minutes to prevent the lamp flickering in the transition range to the reserve indication.

47-030 Function of fuel tank ventilation

Fuel filler cap



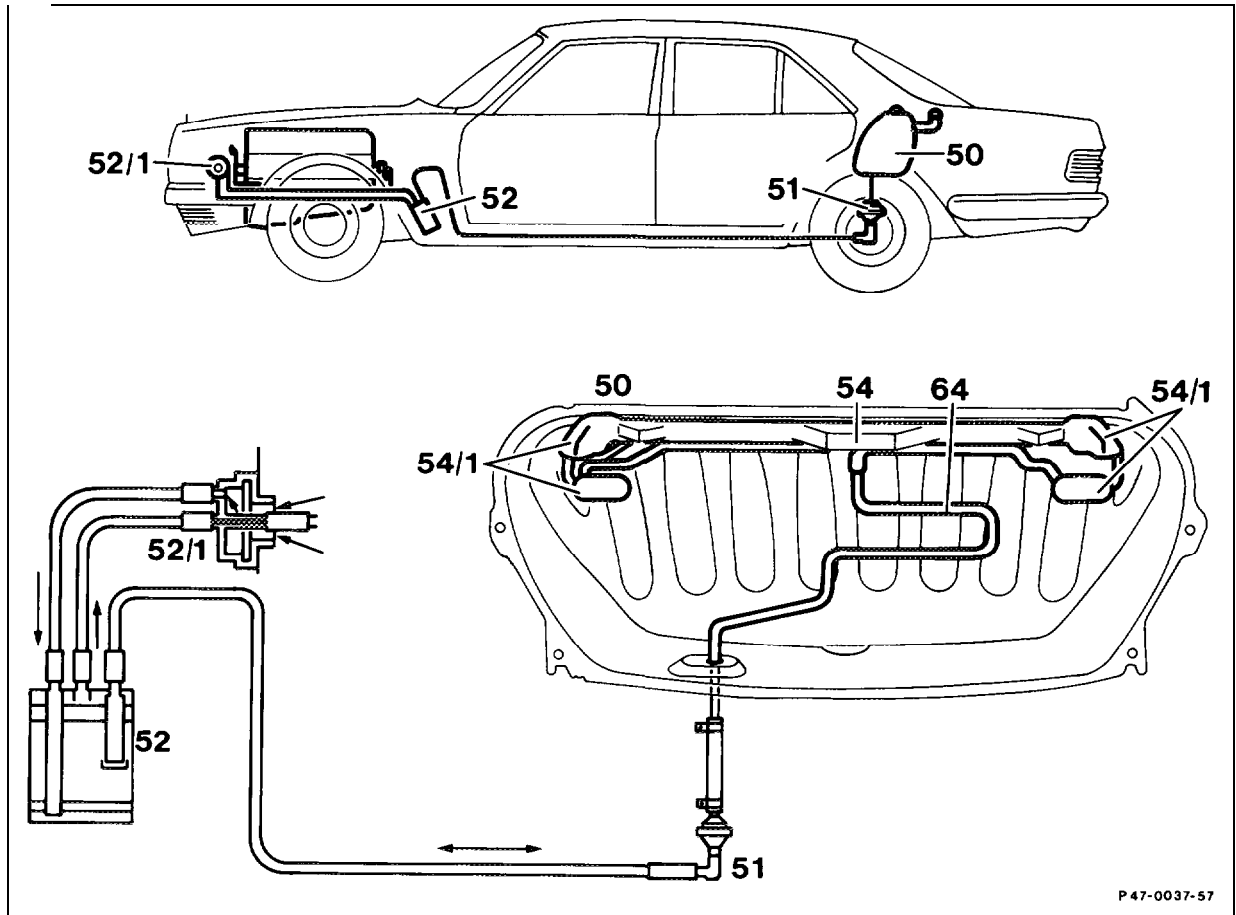
40 Filler cap
41 Seal
42 Locking bar

43 Compression spring
44 Filler neck

When an pressure of 100 – 300 mbar exists, the fuel evaporation gases are able to escape through the fuel filler cap (emergency ventilation e. g. if vent line crimped or vent valve defective).

Note

The fuel filler cap is equipped with a plastic ring as a phased introduction measure to facilitate use. The filler cap (3) slides on this ring with low friction and engages in both end positions.



P 47-0037-57

50 Fuel tank
 51 Vent valve
 52 Charcoal canister
 52/1 Cup seal

54 Central pipe
 54/1 Fuel trap
 64 Vent line

The vent system consists of a central pipe (54) with fuel traps (54/1). The fuel traps prevent the fuel escaping along the vent line (64). The vent line (64) runs from the central pipe to the vent valve (51).

Air is admitted to and released from the fuel tank (50) through the charcoal canister (52) and the cup seal (52/1).

The fuel tank on models without fuel evaporation control system is vented directly to atmosphere by the vent valve (51).

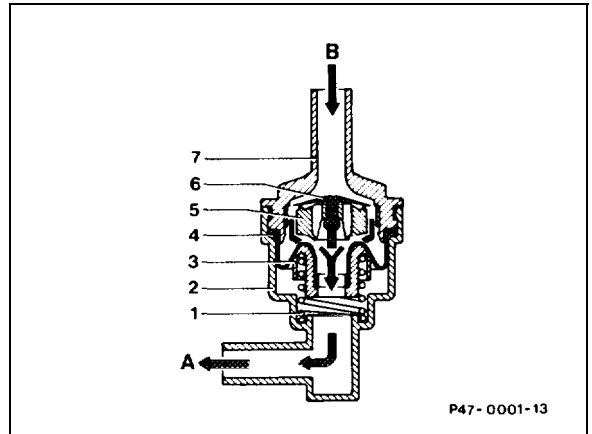
Function of vent **valve** (51)

If an overpressure of 30 – 50 mbar is exceeded in the fuel tank, the vent valve (4) opens and the fuel vapors flow to the charcoal canister.

Note

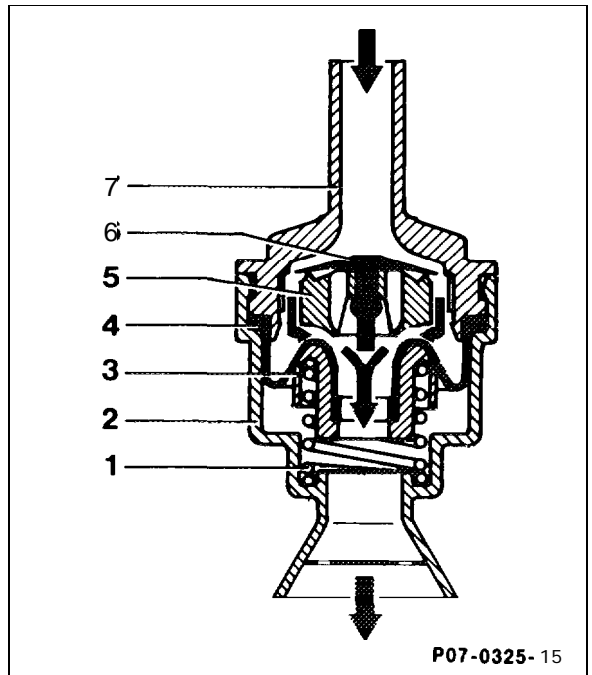
The pressure in the fuel tank improves the fuel supply and counteracts the formation of vapor bubbles.

Vent valve (51) to charcoal canister open



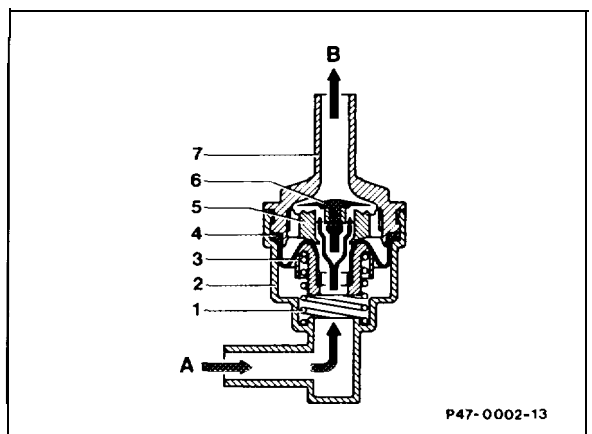
Vent valve opened when overpressure exists. Fuel tank vented to atmosphere (without fuel evaporation control system).

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



If a vacuum of 1 – 16 mbar is produced in the fuel tank, the air admission valve (6) opens. Air is admitted to the fuel tank of vehicles fitted with fuel evaporation control system through a seal on the left wheelhouse and through the charcoal canister (see 47-200).

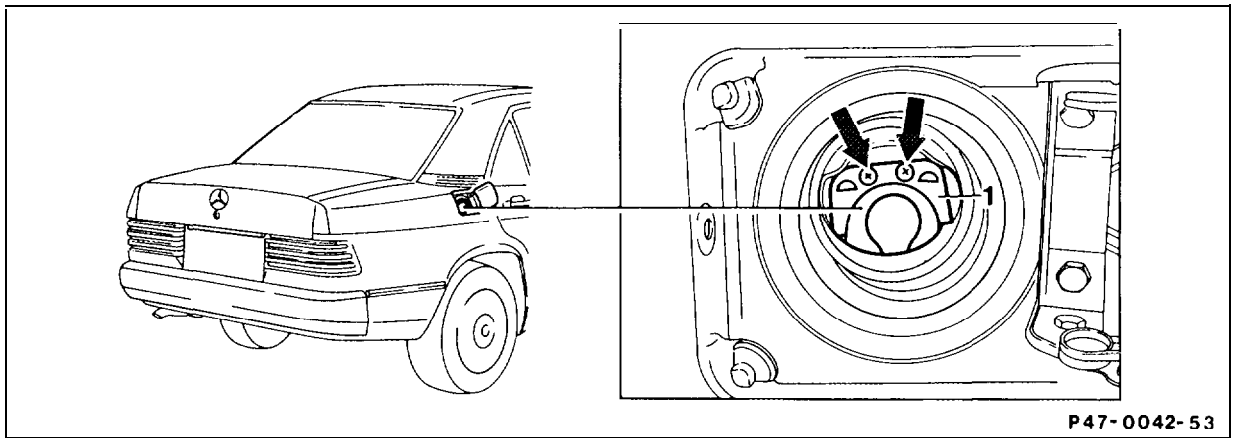
Vent valve (51) to fuel tank open



47-100 Removal and installation of fuel tank

Preceding work:

A. Removal and installation of guide funnel (on all models with catalytic emissions control system)



Guide funnel (1) remove, install by pulling out the two rivets (arrows) as far as the **stop** with special tool 123 589 05 33. When installing, knock in with drift.

Caution!

Ensure that no rivets drop into the fuel tank otherwise they negate the function of the surge bowl (reserve fuel quantity cannot be used).

Note

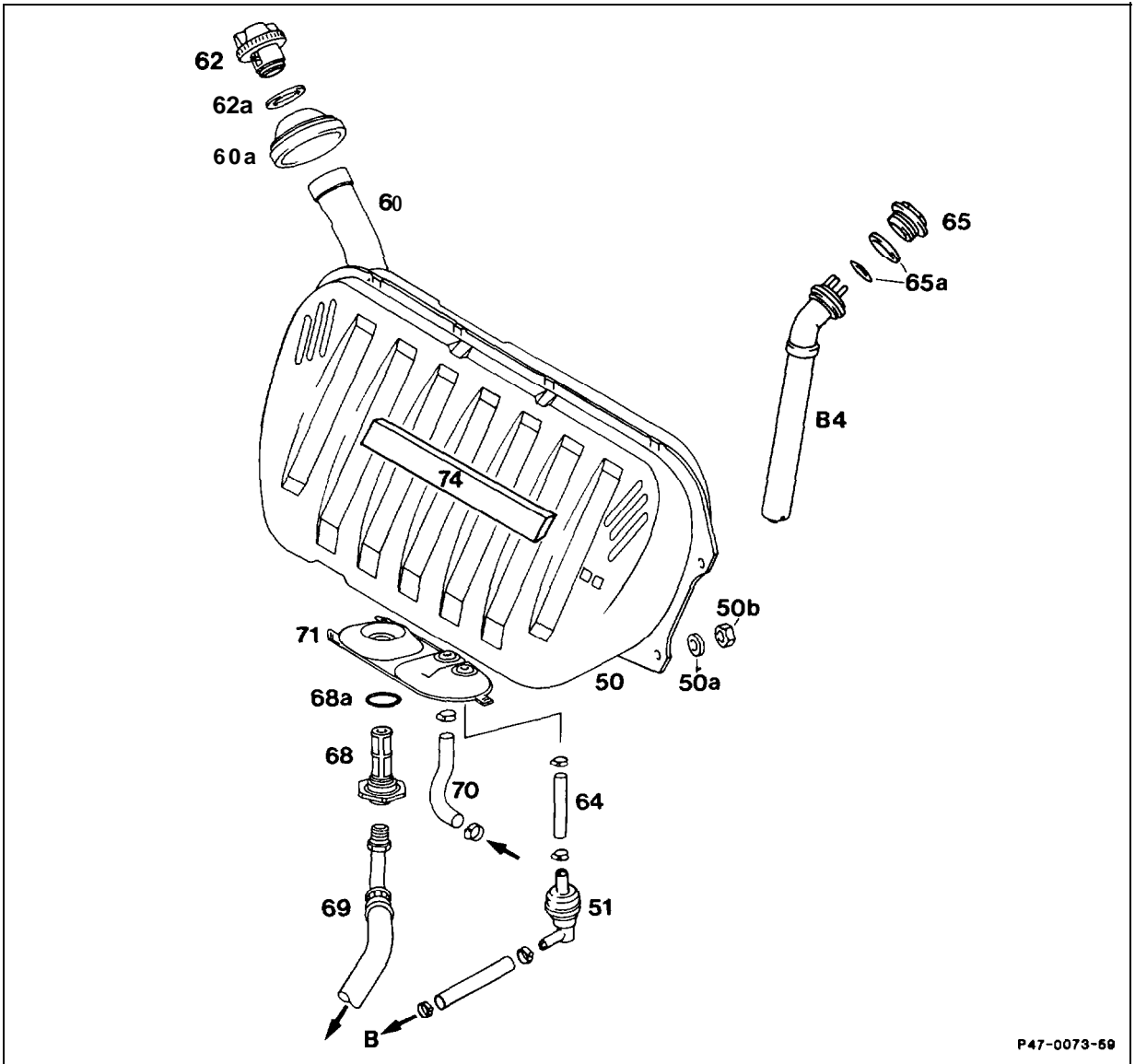
A guide funnel (1) is installed because of the smaller dispensing pistol for unleaded fuel. A guide funnel must be installed if the fuel tank is replaced.

National version (USA)

Guide funnel with additional notches (arrows) to facilitate installation.

Production breakpoint: June 1989

Model	Vehicle Ident	End No.
	A/B	F
201		637121



P47-0073-69

Fuel gauge sending unit (B4)
 Fuel filler cap (62)
 Seal (62a)
 Fuel tank (SO)

 Cup seal (60a)
 Fuel tank panelling
 Feed hose (69), return hose (70),
 vent valve (51)

WARNING!

Pay attention to safety precautions. Risk of accident!

remove, install (47-I 20).
 take off, fit on.
 check, replace if necessary.
 empty. Carefully pump out fuel so that no fuel remains in the tank. Capacity approx. 55 or 70 litres, respectively.
 remove, fit in.
 remove, install.
 take off, fit on.

Note

Collect remaining fuel.
 Seal connections.
 Check suitability for re-use.
 Ensure cup seal (71) is correctly seated.
 Tightening torque 28 Nm.

Nuts (50b, 4 off)

unscrew, screw on. Slacken tensioning screw at tensioning strap (see note), tighten.

Installation instruction

Use shims (50a).
 Tightening torque 21 Nm.

Fuel tank (50)

remove, insert.

Note

Pull drain hose slightly upward and lay behind the rim edge of fuel tank. After installing fuel tank, lay drain hose correctly again. Stick sound deadening strips (74) if necessary with MB universal adhesive 000 989 92 71.

Fuel strainer (68)

remove, clean, check suitability for re-use, install.

Tightening torque 39 Nm.

Seal (68a)

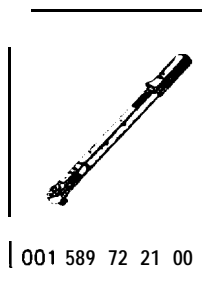
replace.

Engine

run briefly.

Check connections for leaks.

Special tool

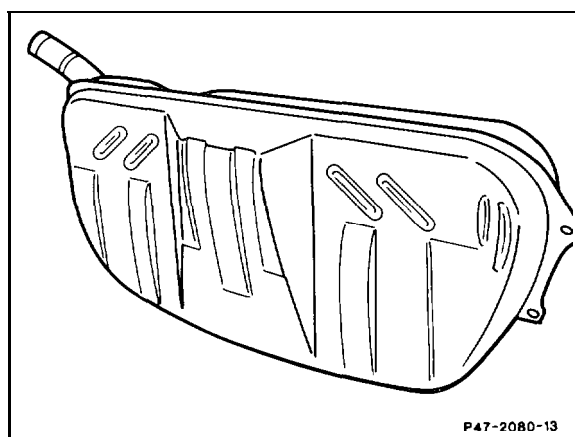


Note


Fuel tank, Model 201 as of 09/88

The contours of the fuel tank have been adapted to the modified space conditions.

Capacity approx. 55 or 70 liters, respectively, reserve quantity approx. 6.5 or 8 liters, respectively.



55-liter fuel tank of sheet steel

The 55-litre fuel tank is manufactured either of sheet steel or of plastic. Only the sheet steel version is supplied to the .

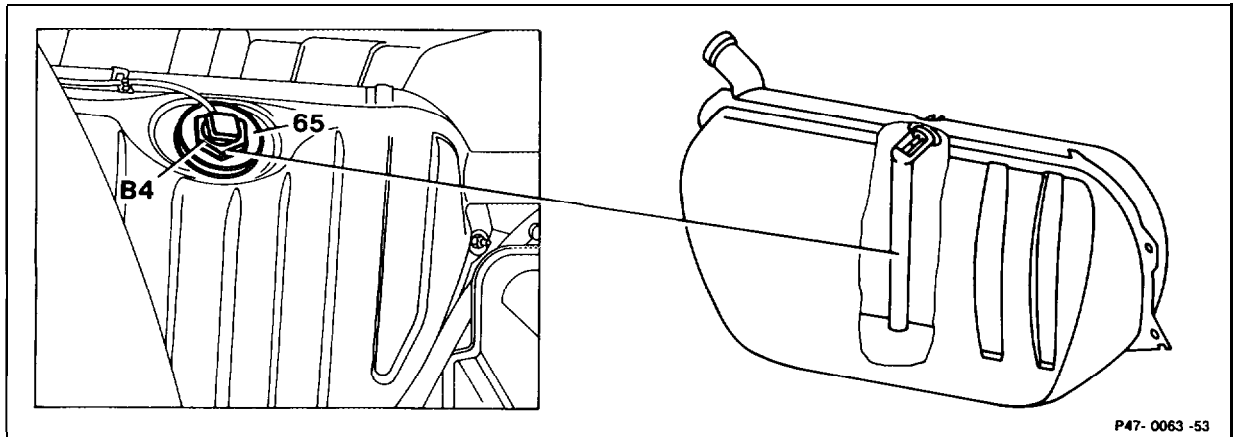
Repair Instruction

Fuel tanks as of 09/88 cannot be installed in vehicles manufactured prior to this date. The plastic fuel tank has different cup seals at the rear floor and filler neck from the sheet steel fuel tank.

47-I 20 Removal and installation of fuel gauge sending unit

Preceding work:

Model 201



Battery ground cable	disconnect, connect.
Fuel tank panelling	Model 201 Remove fuel tank panelling only partially.
Connector at fuel gauge sending unit (84)	disconnect, plug in. Secure to prevent it slipping.
Sealing flange (65)	unscrew, screw on.

Note

If fuel tank full, pump out approx. 8 litres beforehand.

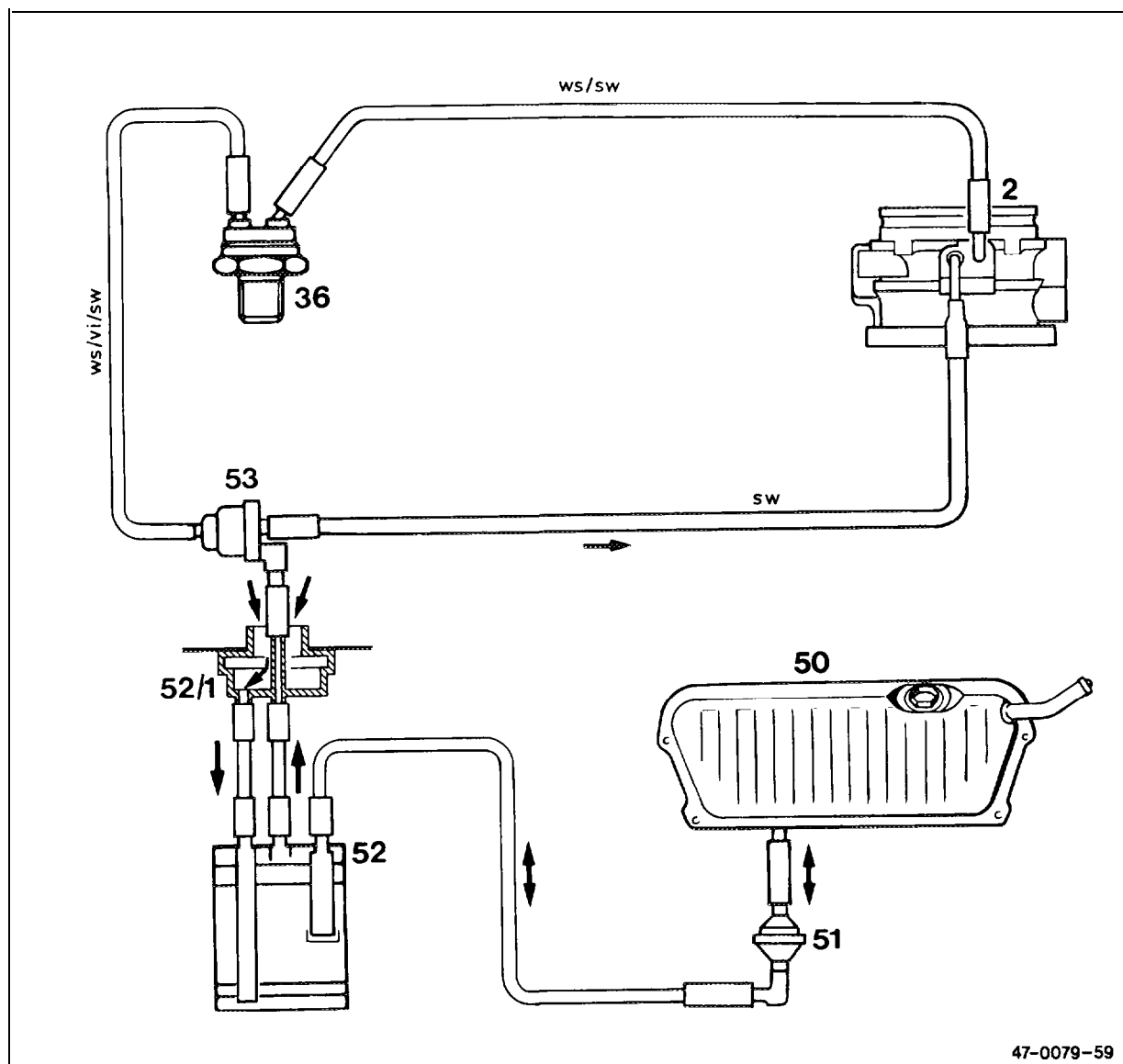
Fuel gauge sending unit (B4)	remove, run dry if necessary, install. Remove securing pin below adhesive strip (only new part). Replace seal. Tightening torque 39 Nm.
------------------------------------	--

Model 201 as of 09/87

The installation attitude has been modified for approx. 15° (deviation from vertical) to approx. 5° . The gauge has been harmonized to the new sending unit attitude (see Group **54**).

The modified sending unit (5") may also be installed in place of the previous sending unit (15°), but not vice versa.

47-200 Function of evaporative emission system



47-0079-59

Function diagram of evaporative emission system

2	Throttle body assembly	51	Vent valve
36	Thermo valve (50 °C red or as of 09/87 70 °C black/white)	52	Charcoal canister
50	Fuel tank	52/1	cup seal
		53	Purge valve

General

To minimize the fuel vapors escaping to atmosphere, an evaporative emission system is installed. The fuel vapors from the fuel tank (50) are passed to the charcoal canister (52) where they are stored. Depending on the operating conditions of the engine, the fuel vapors are drawn off by means of the intake manifold vacuum through the purge valve (53) and the throttle body assembly and combusted in the engine.

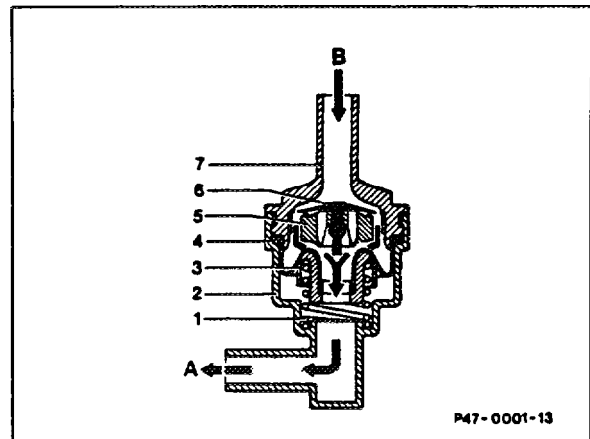
No fuel vapors are drawn off if:

- the engine coolant temperature drops below approx. 50 °C or 70 °C, respectively (thermo valve (36)),
- the throttle blade contacts the closed throttle position.

Function

If an pressure of 30 – 50 mbar is reached in the fuel tank, the vent valve (4) opens and the fuel vapors flow to the charcoal canister.

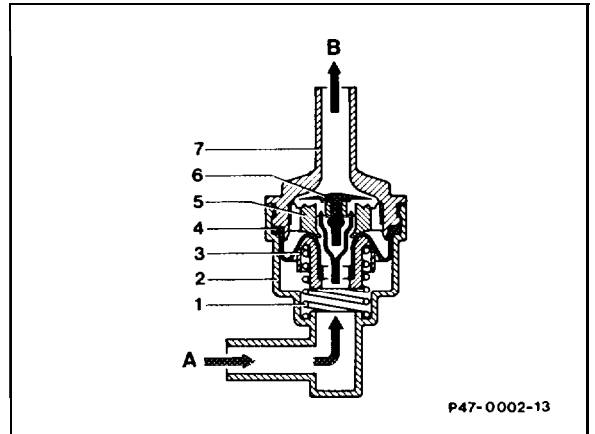
Vent valve (51) to charcoal canister open



- | | |
|----------------------|------------------------------|
| 1 Compression spring | 6 Air admission valve |
| 2 Valve housing | 7 Connection fitting |
| 3 Spring retainer | A Charcoal canister connect. |
| 4 Vent valve | B Fuel tank connection |
| 5 Valve plate | |

If a vacuum of 1 – 16 mbar is produced in the fuel tank, the air admission valve (6) opens. Air or fuel vapors are then drawn in through the charcoal canister.

Vent valve (51) to fuel tank open



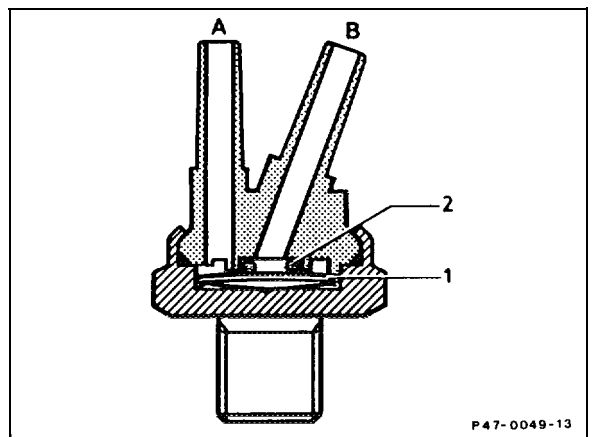
When the engine is running and the engine coolant temperature is more than 50 °C or 70 °C respectively, the intake manifold vacuum passes through the thermo valve to the purge valve (connection C) when the throttle is slightly open.

Thermo valve

40 °C black

50 °C red

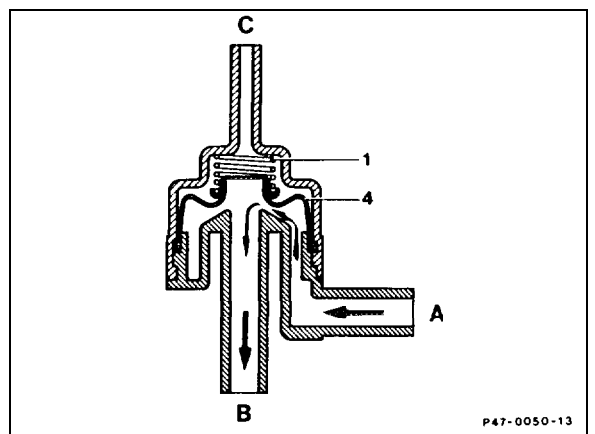
70 °C black with white ring



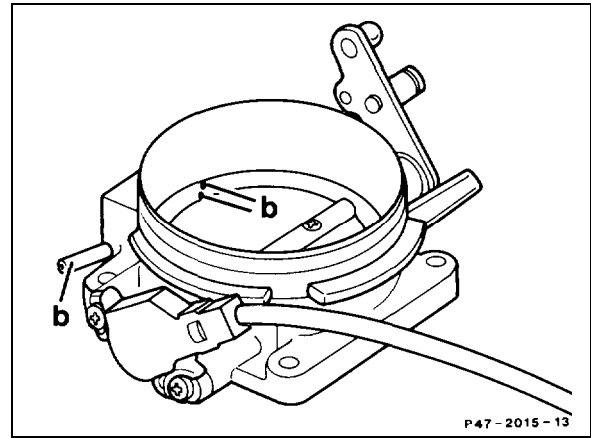
- 1 Bimetal plate
- 2 O-ring
- A To purge valve
- B To throttle valve assembly

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

- Purge valve (53) open
- 1 Compression spring
- 4 Diaphragm
- A To charcoal canister
- B To throttle body assembly
- C Vacuum connection

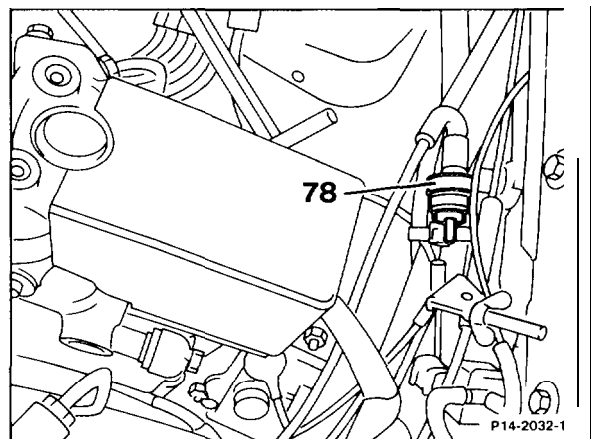


If the throttle is opened further, the two exhaust ports (b) in the throttle body assembly, which merge into a common passage, are activated in turn. As a result, the fuel vapors stored in the charcoal canister are drawn off. The activated carbon is regenerated. The throttle body assembly has a vacuum and an exhaust port.

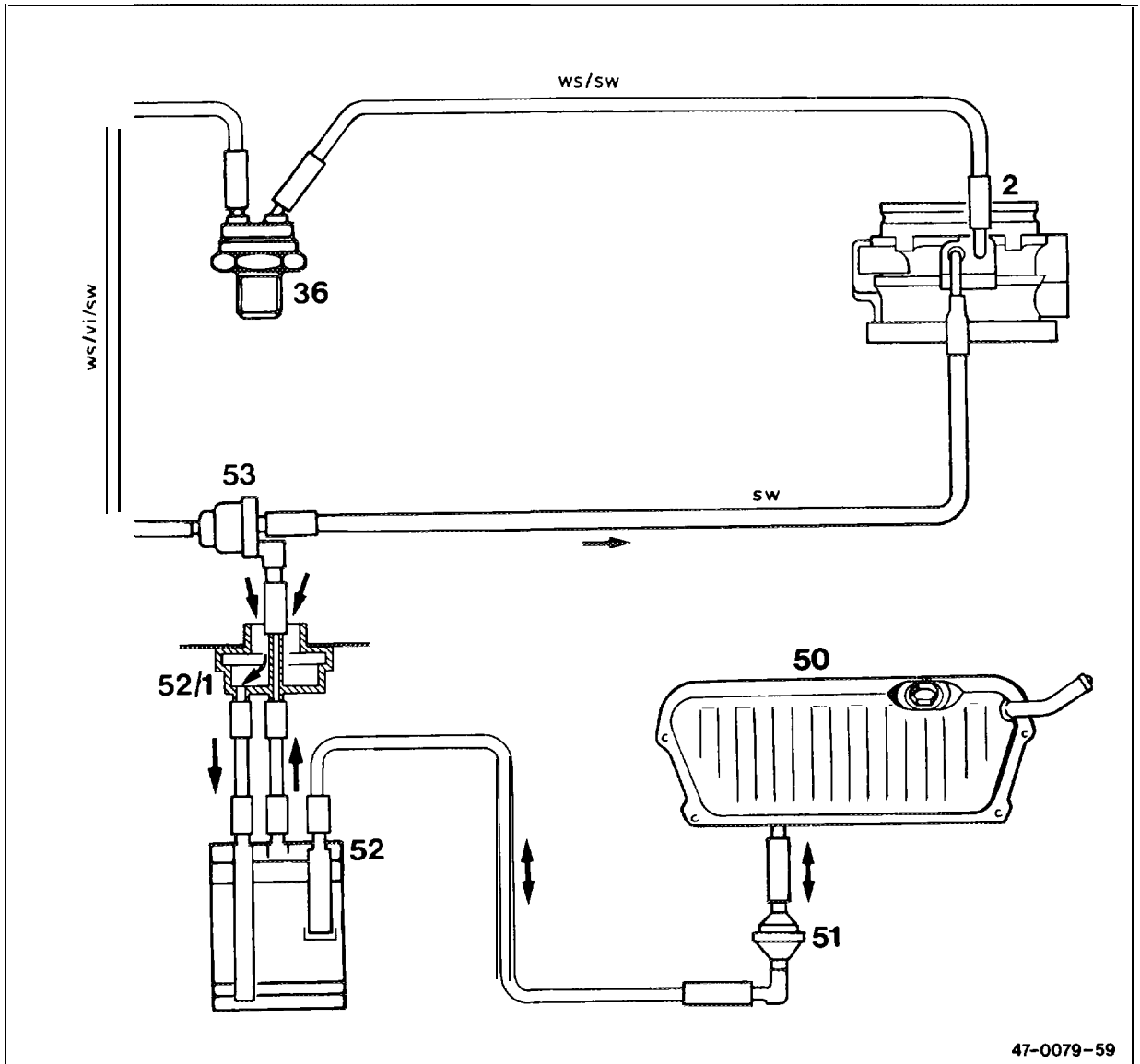


Note

The purge line to the throttle body assembly should be detached at the purge valve (78) and sealed when performing work such as “adjusting idle speed” or “checking, adjusting engine” to prevent the mixture being enriched from the charcoal canister.



47-300 Testing evaporative emission system

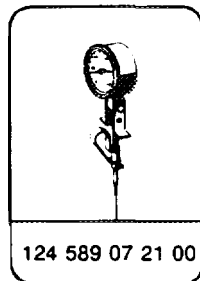
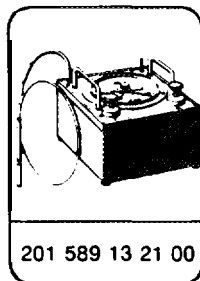


47-0079-59

- | | |
|-----------------------------------|---|
| Engine oil temperature | approx. 80 °C. |
| Purge switchover valve (53) | Special tool 124 589 07 21 00. |
| | detach from black line to charcoal canister and slowly increase engine speed to approx. 3000/min. No extraction is performed when engine idling. Extraction occurs as engine speed rises. |

- Thermo valve (36, in sensor block) check for clear passage.
- Vacuum lines (white/black and
white/violet/black) check they are correctly connected to throttle
body assembly and to **thermo** valve (36). Check
condition.
- Vent valve (51) , test function.
Connect tester 201 589 13 21 00 to connection
fitting to fuel tank (pressure 30 – 50 mbar,
vacuum 1 – 16 mbar).
- Lines from fuel tank via vent valve (**51**), charcoal
canister (52, remove bulkhead if necessary),
purge switchover valve (53) to throttle body
assembly (black), check.
- Charcoal canister (52) check. The connections to each other must not
be blocked.

Special tools

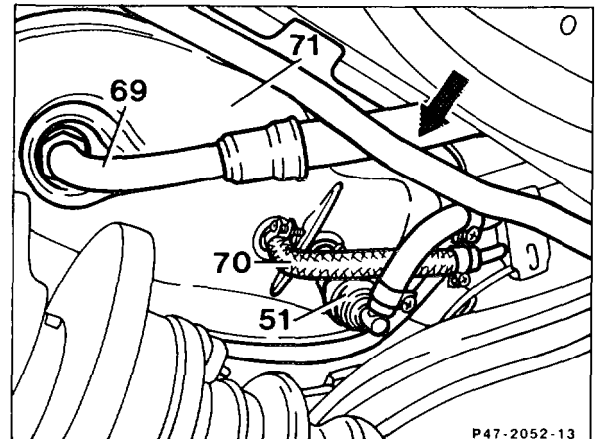


Arrangement of components

Vent valve (51)

It is fitted on at the end of the vent line of the fuel tank.

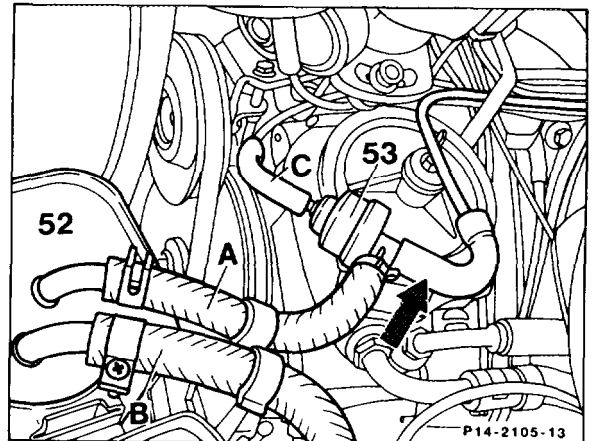
e. g. Model 201



Charcoal canister (52)

a) Model 201 up to 08/84, arrangement in engine compartment.

The floor of the charcoal canister is air-permeable (perforated plate). If the stored fuel vapors are drawn off, the active carbon is regenerated.



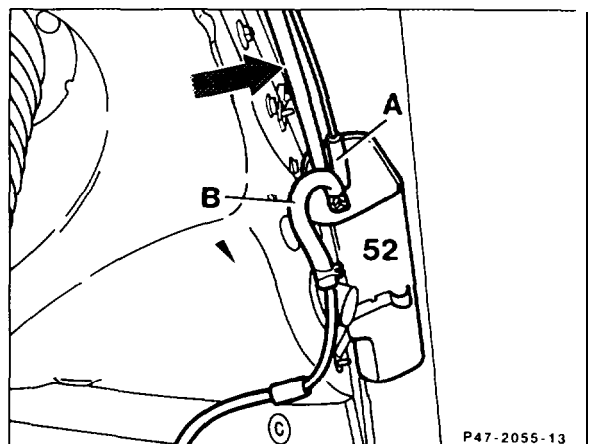
53	Regeneration valve
A/Arrow	Extraction line
B	To fuel tank
C	Vacuum connection

b) Model 201 as of 09/84

As of engines with single-belt drive, the charcoal canister is installed in the front, left wheelhouse. The charcoal canister has a closed metal bottom and therefore has a 3rd connection (arrow) for air admission.

Repair Instruction

Charcoal canister only accessible if bulkhead on left removed.

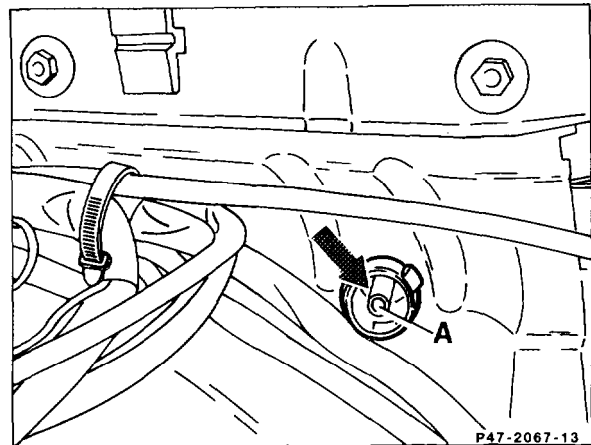


A	Extraction line
B	To fuel tank
Arrow	Air admission line

Model 201 as of 09/87

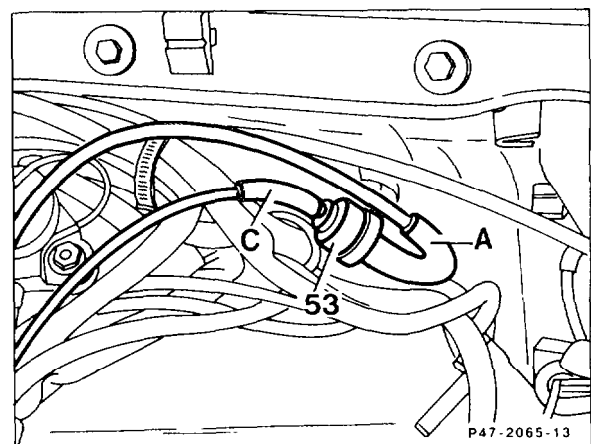
The housing of the charcoal canister is made of plastic (previously sheet steel). Replace steel with steel and plastic with plastic.

If the charcoal canister is installed in the wheelhouse, extractron and air admission line run to the seal (52'1) which is clipped into the wheelhouse. The air admission line merges in the annular chamber (arrow) in the middle of which is connection (A) for the regeneration valve.



Purge switchover valve (53)

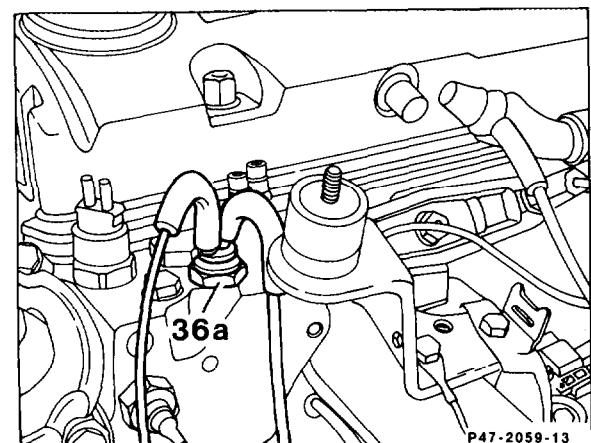
It is fitted into the extraction line (a) from the charcoal canister to the throttle valve assembly.



Thermo valve (36a)

Engines 102.96/98

Installed in the sensor box on the side or on the top of the cylinder head.



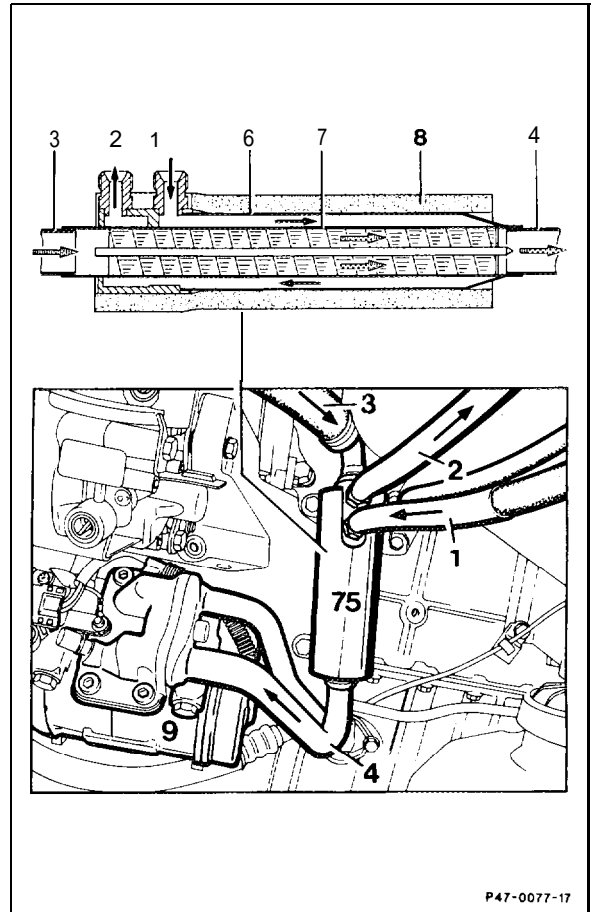
47-400 Function of fuel cooler

All models of national version

USA

Model 201 as of August 1985

- 75 Fuel cooler attached to engine
- 1, 2 Fuel return line
- 3, 4 Engine coolant return line
- 6 Outer pipe
- 7 Inner pipe
- a Insulating hose
- 9 A/C compressor



P47-0077-17

A fuel cooler is installed to reduce the formation of vapour bubbles in the fuel system at high outside temperatures. The fuel cooler is located in the coolant return line between evaporator and AC compressor.

When the engine is running, the excess fuel in the fuel distributor flows back pressureless through the fuel cooler into the fuel tank.

As soon as the **A/C** compressor is switched on, heat is withdrawn from the fuel by the gaseous refrigerant which flows through the inner pipe of the fuel cooler.

**Arrangement of fuel cooler, Model 201
up to 08/85**

- 1 From fuel distributor
- 2 To fuel tank
- 75 Fuel cooler

