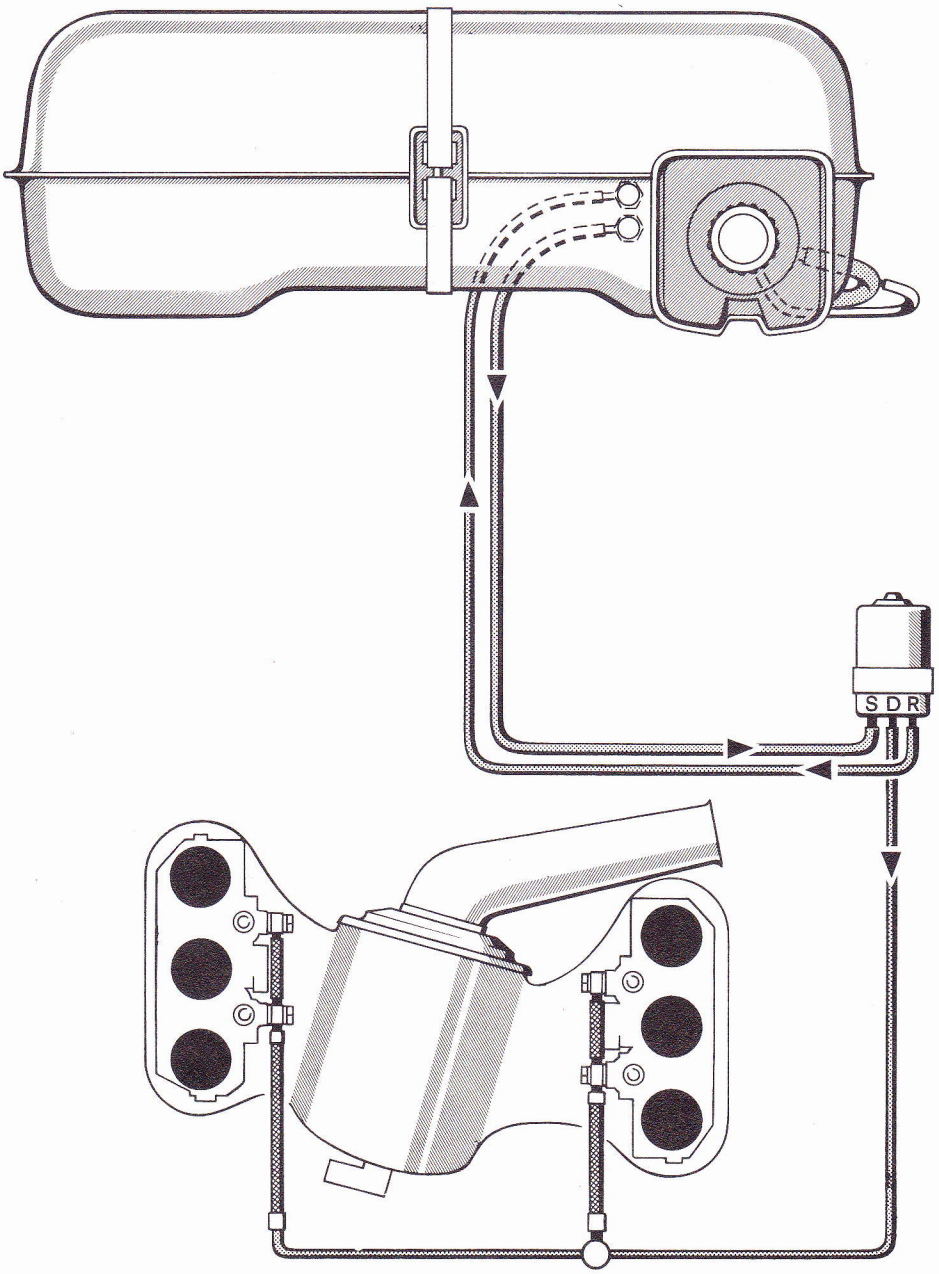
Kraftstoffanlage
Fuel System
Système d'alimentation
Sistema d'alimentazione

FUEL SYSTEM

The fuel is drawn from the fuel tank by an electric fuel pump and flows through the pressure line to the two Weber triple-throat carburetors. Excess fuel flows back to the fuel tank through the return line.



AIR FILTER

The air filter filters the intake air of the engine and muffles the intake noise. This is accomplished by using a large paper cartridge, which must be cleaned or replaced regularly depending on local conditions.

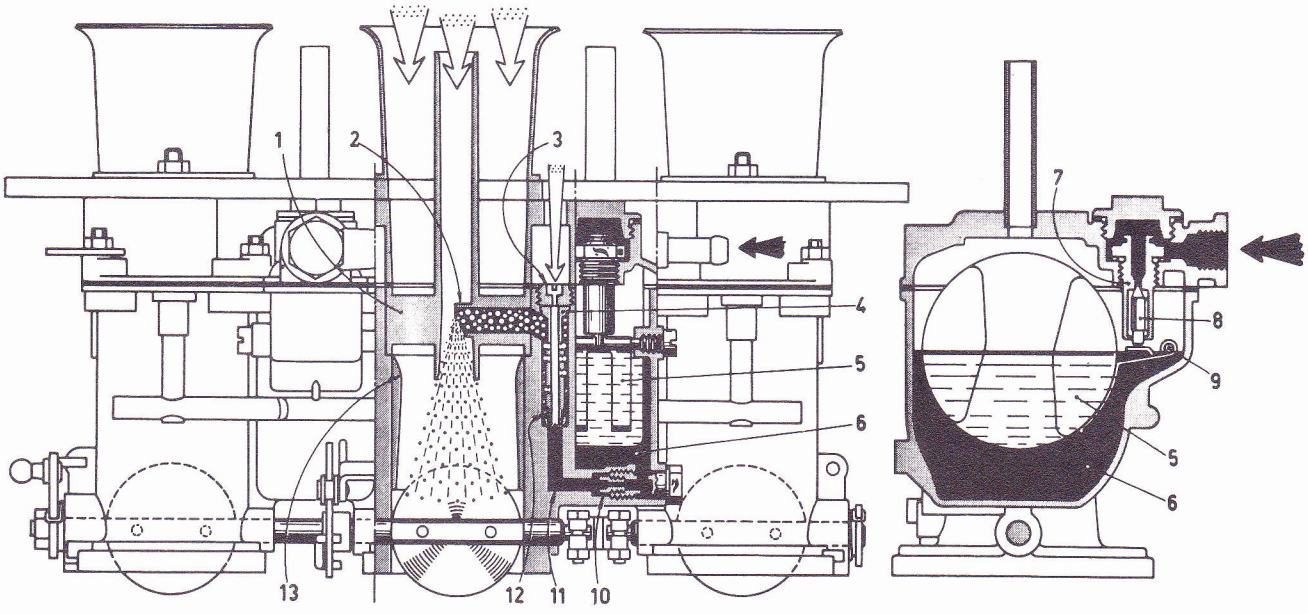
The air filter consists of air filter housing with filter element and the cover with the intake funnel. The filter element is accessible when the cover is removed. The complete air filter is held to the connecting member by clamps. A hose attached to the base of the air filter housing permits water from condensation to escape through a rubber drain valve. The thick hose on the filter housing ventilates the oil reservoir. For safety reasons, the filter housing connection for the oil reservoir venting hose is provided with a flame and arrester cartridge.

General

The fuel delivered by the electric pump flows via the float needle valve (7) to the float chamber (6). The float (5) suspended on shaft (9) pushes with its extension against the valve needle (8) and thereby keeps the fuel level constant. Each carburetor has two float chambers.

Normal Operation

The fuel flows from the float chamber (6) via the main nozzle (10) and the duct (11) to the mixing tube port (12). Here, the fuel is mixed with the compensating air which is drawn up via the air correction nozzle (3) and emerges from the port of the mixing tube (4). The fuel-air mixture enters via the mixture outlet (2) into the mixing chamber which consists of the pre-atomizer (1) and the venturi (13).

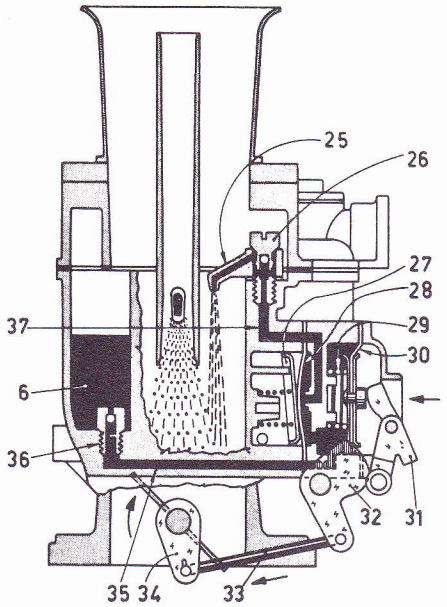


1 Preatomizer
2 Mixture outlet
3 Air correction nozzle
4 Mixing tube
5 Float
6 Float chamber
7 Float needle valve
8 Valve needle
9 Shaft
10 Main nozzle
11 Duct
12 Mixing tube port
13 Venturi

Acceleration

When the throttle valves are closing, the lever (34) releases the diaphragm (30), which draws fuel from the float chamber (6) via the suction valve (36) and the duct (35) through the pressure of the spring (29).

When the throttle valves are opened, the lever (34) actuates the cam (32) via the pull rod (33). The cam actuates the lever (31) and the diaphragm (30) will force fuel into the three intake ducts via the pressure valve which consists of the diaphragm (28), piston (27), duct (37), ball valves (26) and the pump nozzles (25).



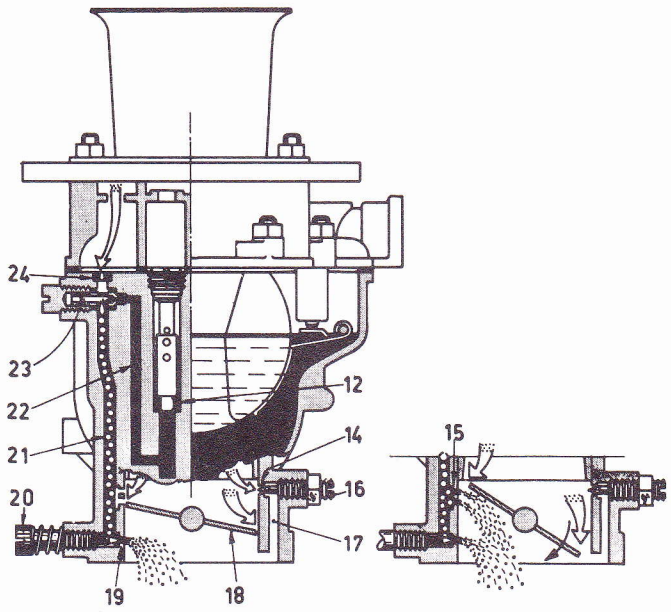
6 Float chamber
25 Pump nozzle
26 Ball valve
27 Piston
28 Diaphragm
29 Spring
30 Diaphragm
31 Lever
32 Cam
33 Pull rod
34 Lever
35 Duct
36 Suction valve
37 Duct

Idling

The fuel is drawn up from the mixture port (12) via duct (22) to the idle jet (23) where it is mixed with the air which enters via the idle air hole (24).

The air-fuel mixture flows through the duct (21) to the idle-mixture outlet port (19) under the throttle valve (18). The size of the outlet port can be changed by the cone shaped idle mixture control screw (20). Just above the throttle valve are three secondary idle ports (15), which also deliver idle air-fuel mixture under the influence of the vacuum created when the throttle valve is opened. This permits a perfect transition from idle speed to higher speeds.

To ensure uniform air delivery in all three intake ducts when the throttle valves (18) are in idling position, each intake duct is provided with an air control screw (16), which permits changing the size of the bore (14) to adjust the quantity of air which arrives via duct (17) below the throttle valve.



12 Mixing tube port
14 Bore
15 Secondary idle ports
16 Air control screw
17 Duct
18 Throttle valve
19 Idle mixture outlet port
20 Idle mixture control screw
21 Duct
22 Duct
23 Idle jet
24 Idle air hole

EXHAUST EMISSION CONTROL

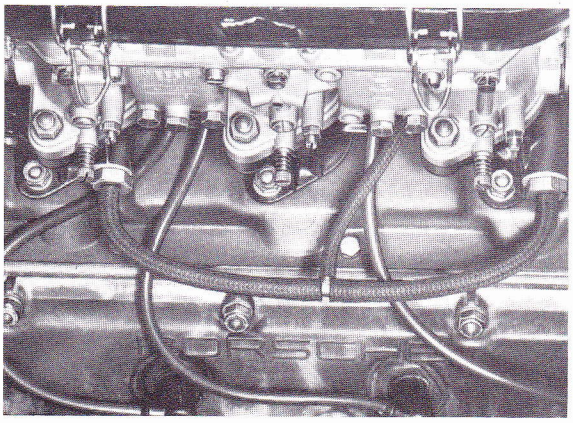
The exhaust gas of gasoline engines contains toxic carbon monoxide and hydrocarbons. These parts depend heavily on the fuel/air ratio of the mixture. The ignition timing, temperature and engine condition are also of considerable importance.

The mixture varies according to the engine operating conditions; this means that the composition of the exhaust gas also varies.

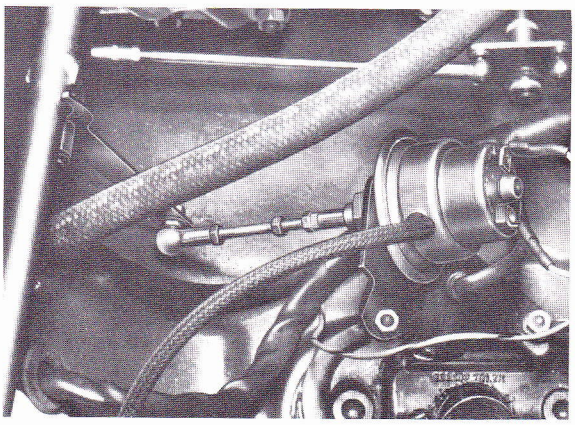
The carburetor and distributor are set so that the proportion of carbon monoxide and hydrocarbon in the exhaust system are kept to a minimum.

The throttle positioner opens the throttle valves slightly in accordance with the intake manifold vacuum. This prevents the proportion of hydrocarbons in the exhaust from increasing, when the vehicle is overrunning the engine.

The result is, that the engine is provided with an adequate charge and ignitable air fuel mixture even under overrunning conditions. Thereby no large portion of unburned fuel will enter the exhaust system which will substantially eliminate backfiring.



Vacuum reduction for throttle valve positioner



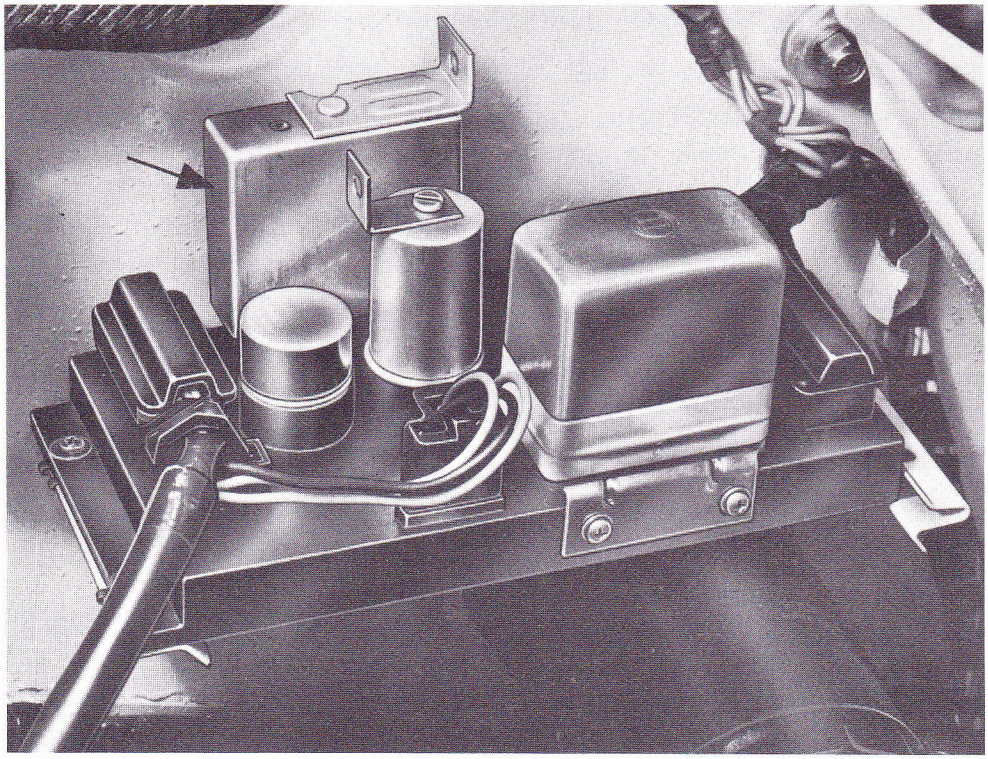
Throttle valve positioner

SPEED SWITCH

At speeds above 1,600 rpm the switch sets the electromagnetic changeover valve to its through position and permits the vacuum in the intake manifold to influence the diaphragm. When deaccelerating, the vacuum increases and pulls the actuating rod of the throttle positioner which, at the same time, will slightly turn the carburetor linkage in the direction of full throttle. The throttle valves will then be unable to close completely and the path of the supplementary mixture to the individual intake manifolds in unobstructed.

The magnetic valve closes below 1,500 ± 50 rpm, the vacuum end of the diaphragm box is vented and the throttle valves will now close to the idling position.

The speed switch receives its impulses from the ignition breaker points.



Adjusting Weber Carburetor 40 IDT P1 3C1 and 40 IDT P1 3C

Carburetor Type	40 IDT P1 3C1/3C
Venturi	27
Preatomizer	4.5
Main nozzle	105
Air correction nozzle	170
Mixing tube	F1
Idling nozzle	45
Pump nozzle	50
Idling air nozzle	145
Pump suction valve	closed
Quantity injected	0.5 cc/stroke
Float needle valve	1.75
Pump valve	closed
Mixture outlet	5 mm (.97 in.)
Idling mixture outlet	1.0 mm (.039 in.)
Bypass holes	1. = 0.70 mm (.028 in.) 2. = 1.30 mm (.051 in.) 3. = 1.20 mm (.047 in.)

Float level adjustment: Upper edge of float from upper edge of carburetor housing without seal 12.5 - 13.0 mm (.49 in. - .51 in.)

Fuel level: 20.75 ± 1 mm (.81 in ± .03 in.) from upper edge carburetor housing at a pump pressure of 4.2 psi.

Adjust at idle speed with special tool P 226 a

TOOLS TYPE 914/6

No.	Description	Special Tool	Explanation
1	Level measuring gauge	P 226 a	
2	Fuel line clamp		local purchase item
3	Measuring gauge	P 25 a	

REMOVING AND INSTALLING AIR FILTER

Removing

1. Loosen oil venting hose on oil filler connection.
2. Open clamps on air filter housing.
3. Remove water drain hose from housing bottom.

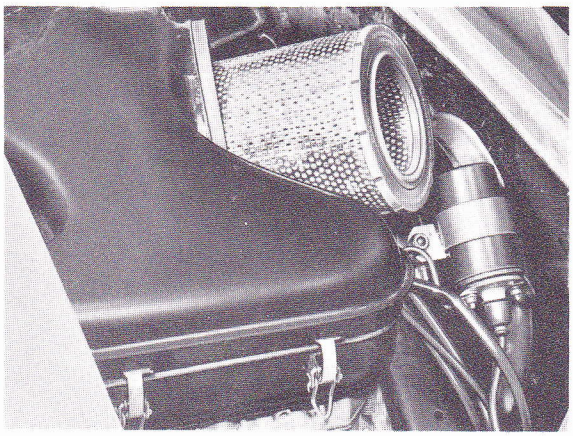
Installing

Install in reverse order.

Make sure the water drain hose for condensation is attached again.

Cleaning

1. Loosen wing nuts on cover and remove cover.
2. Remove paper cartridges from housing and check for contamination.
   Note
   Do not wash or lubricate paper cartridge. If necessary, lightly knock out any loose dirt or blow out with compressed air from the outside toward the inside. Replace heavily contaminated paper cartridges.

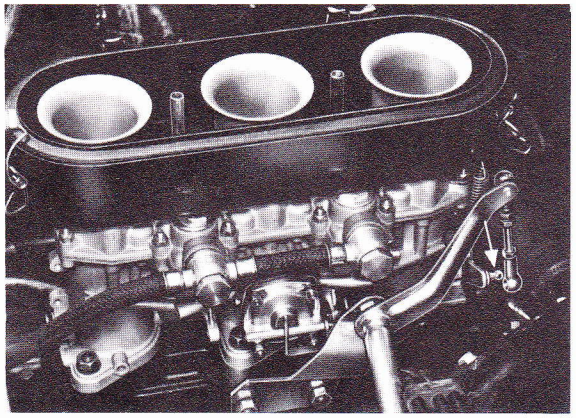


3. Carefully clean inside of filter housing with a clean oil-moistened rag.
4. Check rubber seal on housing for damage, replace if necessary.
5. Insert and align cartridge.
6. Install cover and tighten wing nuts.

REMOVING AND INSTALLING CARBURETOR

Removing

1. Remove air filter assembly.
2. Loosen fuel lines.
3. Disconnect linkage.



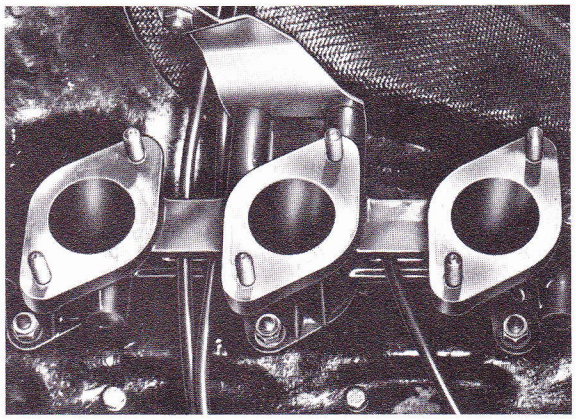
4. Loosen carburetor fastening nut and remove carburetor.

   Note!
   When removing carburetor from intake manifolds be sure that no washers drop into manifold openings.

5. Cover intake manifolds.

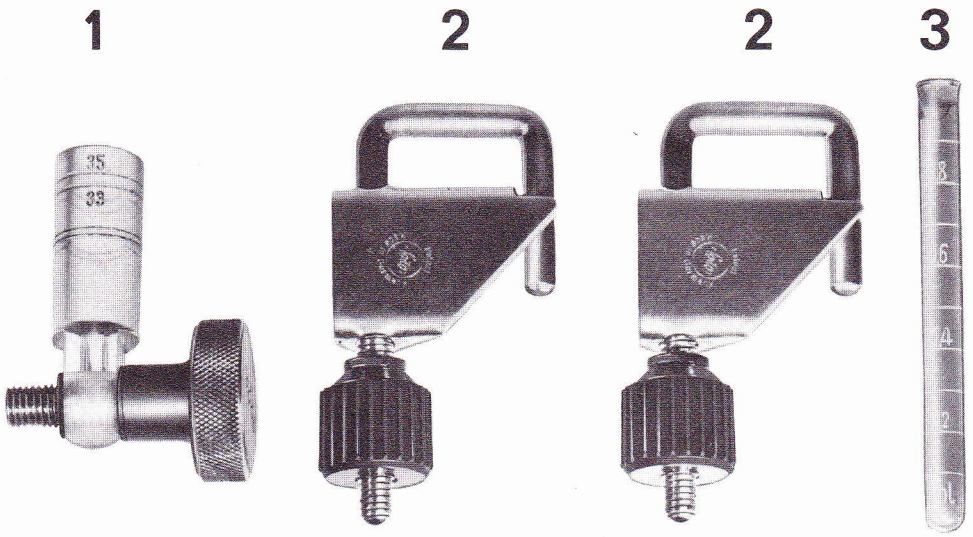
Installing

1. Replace carburetor mounting gaskets. Clean surfaces carefully and align gaskets with manifold openings.

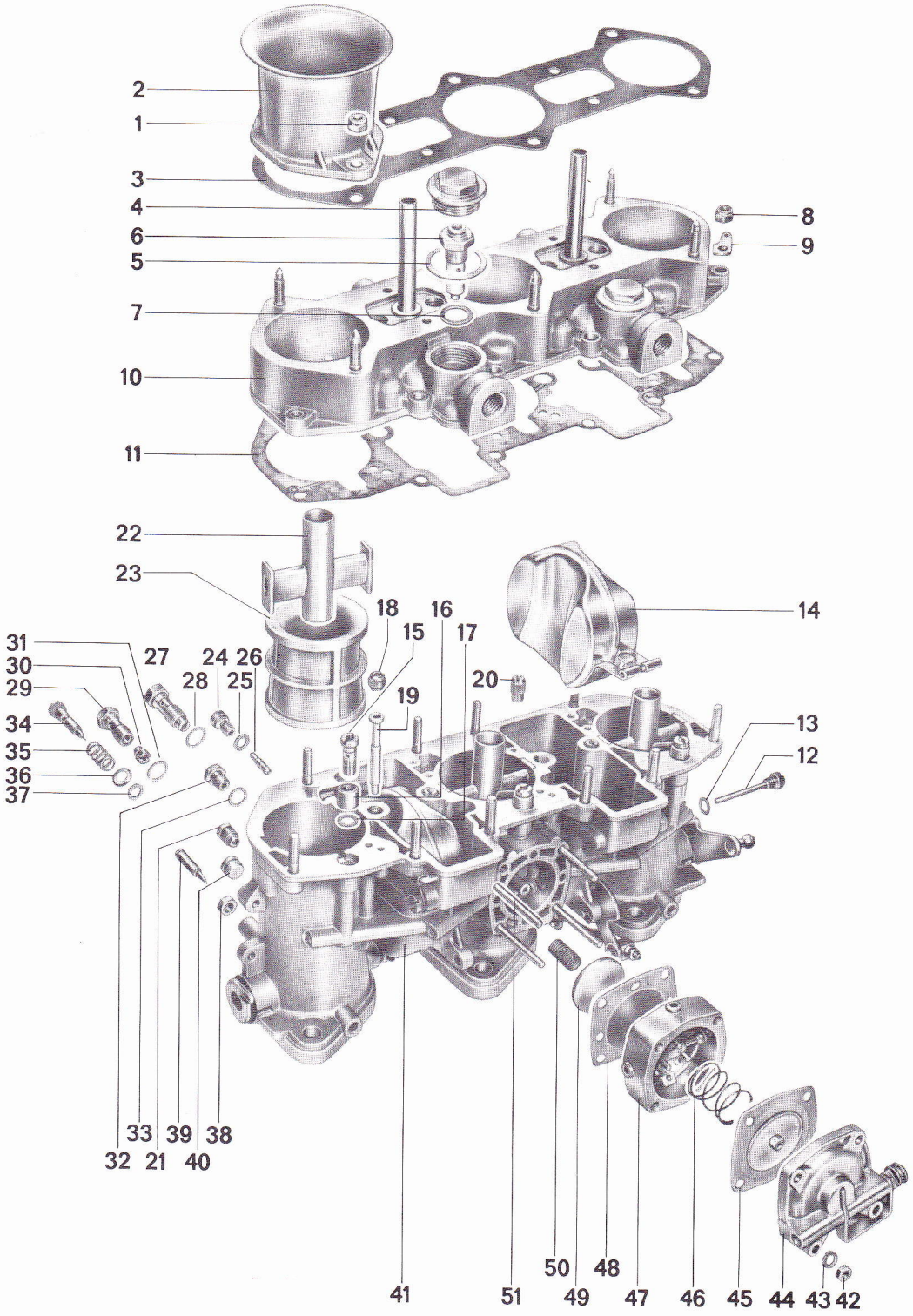


2. Adjust linkage, if necessary. (Throttle valves should close fully.)
3. Adjust idle speed.

TOOLS



No.	Description	Special Tool	Explanation
1	Level measuring gauge	P 226 a	
2	Fuel line clamp		local purchase item
3	Measuring gauge	P 25, a	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No.	Description	Qty.	Note when Removing	Note when Installing	Spec. Instr.
1	Self-locking hex. nut	6		Check, replace if required	
2	Intake funnel	3	Remove only if required		
3	Gasket	1		Replace	
4	Plug	2			
5	Gasket	2		Replace	
6	Float needle valve	2		Check, replace if required	
7	Gasket (shim)	2		Replace	
8	Self-locking hex. nut	10		Check, replace if required	
9	Holde	1			
10	Cover assembly	1			
11	Gasket	1		Replace	
12	Screw for float shaft	2	Remove locking wire	Secure with locking wire	
13	Gasket	2		Replace	
14	Float	2		Check, replace if required	
15	Pressure valve	3		Check ball guide	
16	Pump nozzle	3			
17	Gasket	3		Replace	
18	Air correction nozzle	3			
19	Mixing tube	3	Pull out with a fitting, slightly tapered mandrel, if required		
20	Suction valve	1		Check ball guide	
21	Venturi attachment screw	3	Remove locking wire	Secure with locking wire	

No.	Description	Qty.	Note when Removing	Note when Installing	Spec. Instr.
22	Atomizer	3	Tap lightly until seat is free	Hole should point to mixing tube	
23	Venturi	3			
24	Jet carrier				
25	Gasket	3		Replace	
26	Idle jet	3			
27	Main jet (complete)	3			
28	Gasket	3		Replace	
29	Jet carrier	3			
30	Main jet	3			
31	Gasket	3		Replace	
32	Drain screw	2			
33	Sealing ring	2			
34	Idle speed adjusting screw	3			
35	Spring	3			
36	Spacing washer	3			
37	O-ring	3		Check, replace if necessary	
38	Hex. nut	3			
39	Air adjusting screw	3			
40	Inspection plug for secondary idle ports	3			
41	Carburetor housing	1		Clean ducts and blow out with compressed air	
42	Hex. nut	4			

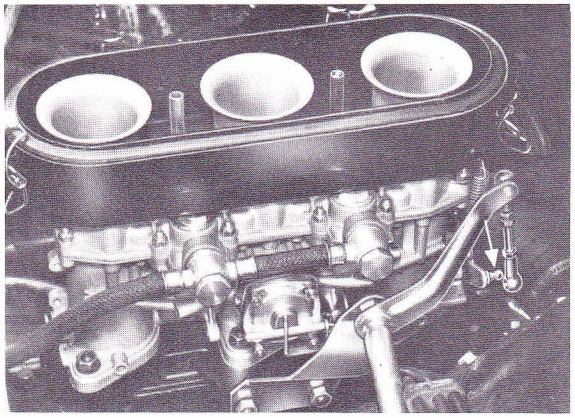
No.	Description	Qty.	Note when Removing / Installing	Spec. Instr.
43	Lock washer	4	Replace	
44	Pump cover	1		
45	Diaphragm	1	Check, replace if required	
46	Spring	1		
47	Pump base	1		
48	Diaphragm	1	Check, replace if required	
49	Plunger	1		
50	Spring	1		
51	Stud	4		

Blow out all parts, jets and ducts with compresses air after cleaning.

ADJUSTING IDLE SPEED

Make sure that the throttle valves on both carburetors are in idling position (screw idle speed adjusting screws down for approx. 1 turn, starting from the completely closed throttle valve). Check that idle speed mixture screws are screwed out approximately 2 1/2 turns.

1. Run engine to operating temperature.
2. Remove air cleaner assembly.
3. Adjust dwell angle and timing.
4. Check carburetor actuating rods for proper fit at connecting joints.
5. Disconnect linkage at throttle valve levers.



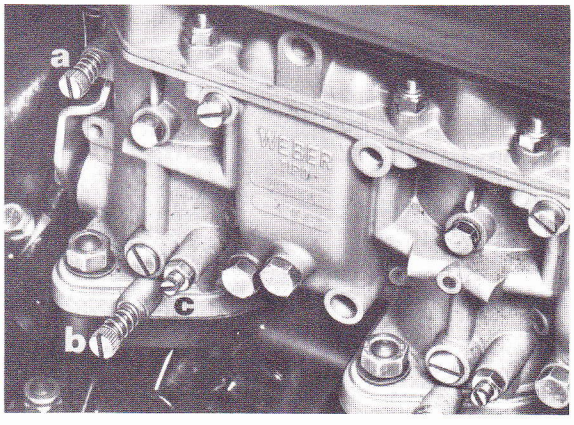
6. Turn idle speed adjusting screw to run engine up to 1,200 - 1,400 rpm. Be sure that both idle speed adjusting screws are turned the same amount.
7. Adjust mixture control screws in such a manner that engine runs as smooth and even as possible at idle speed.
8. Place synchrotester on one intake funnel. Make sure that the adjuster of the tester is turned up wide (piston in lower part of visual gauge), so that the flow conditions in the mixing chambers are changed as little as possible.
9. Place synchrotester on remaining intake funnels and synchronize with air control screws.

   Note!
   Unscrew air control screws only to the extent required, and repeat basic adjustment.

10. Screw both idle speed adjusting screws back completely until the specified idle speed of 900 ± 50 rpm is attained.
11. Check adjustment of carburetor with synchrotester and correct, if necessary.

    The exhaust gas rating when measured with an exhaust gas analyzer may be as high as 3,5% ± 0,5% CO (percent by volume).

12. Connect linkage.
13. Mount air cleaner assembly.
14. Adjust mixture control screws on carburetors, once again if necessary, until the engine runs smoothly.



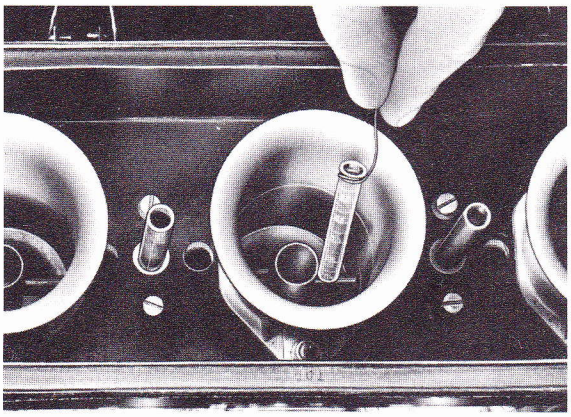
a - Idle speed adjusting screw
b - Mixture control screw
c - Air control screw

ADJUSTING QUANTITY INJECTED BY ACCELERATING PUMP

1. Remove air filter assembly.

2. Remove linkage from throttle valve lever.

3. Hold measuring gauge P 25 a against mouth of injection pipe and push throttle lever against stop.

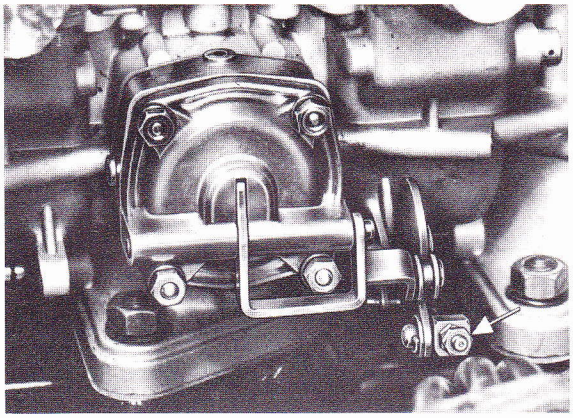


4. Check fuel quantity.

5. The quantity injected per stroke should be 0.5 ± 0.1 cc.

Note!
The pump jet has no influence on the quantity injected. In addition the quantity injected must be the same for all carburetors.

6. If necessary, regulate quantity injected by adjusting the pump linkage.



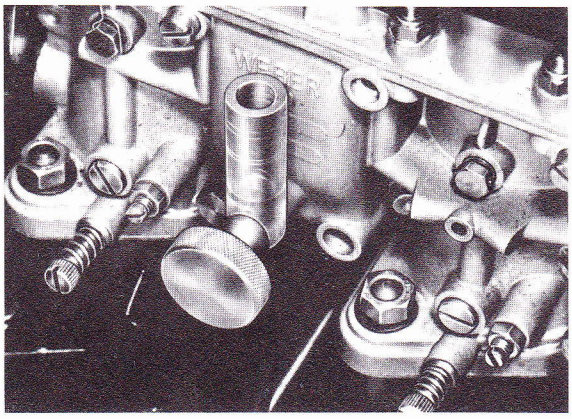
7. Connect linkage to throttle valve lever.

INSPECTING AND ADJUSTING FUEL LEVEL

If the fuel level must be checked, proceed as follows.

Inspecting

1. Place vehicle on a level surface.
2. Remove plug on float chamber and screw level measuring device P 226 a to chamber.

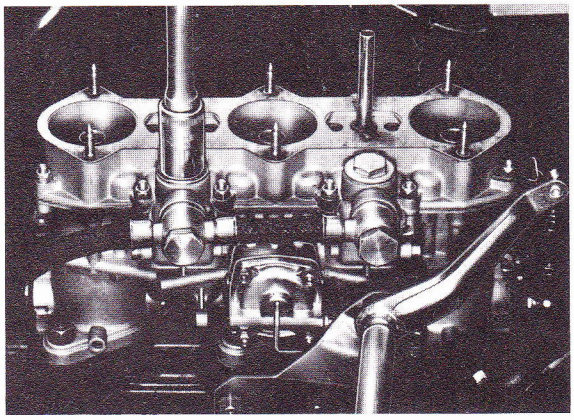


3. Run engine at idling speed. The fuel level should between the two inspection marks.

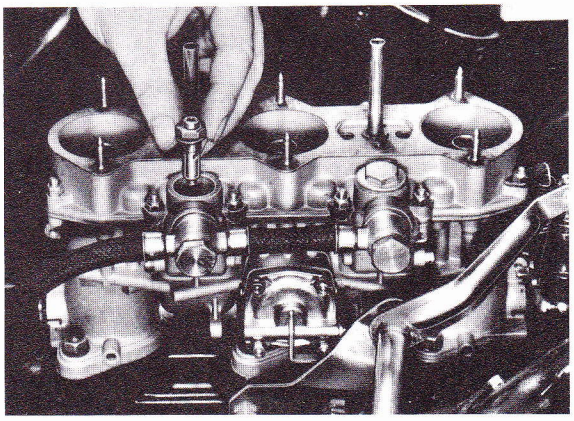
   If the level is wrong, adjust as follows.

Adjusting

1. Remove air filter assembly and take off connection.
2. Remove plug for float needle valve.



3. Unscrew float needle valve.
4. Install appropriate shim under float needle valve. Using a thicker shim will raise the level, using a thinner shim will lower the level.



ADJUSTING EXHAUST EMISSION CONTROL SYSTEM

1. Adjust ignition timing and idle speed.

   a. Adjust point gap to 0.37 - 0.43 mm (0.015 - 0.017 in.). Dwell angle should be 37 - 43°.

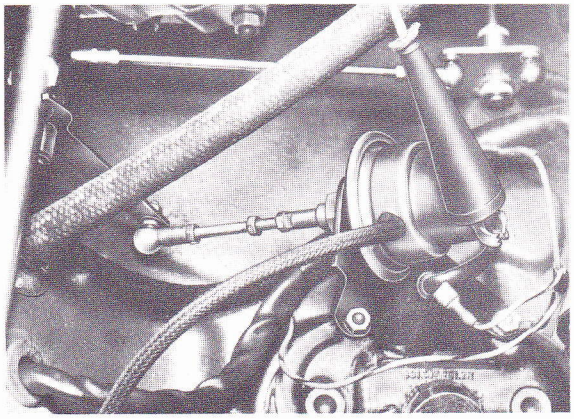
   b. Adjust ignition timing at idle speed (900 - 950 rpm) to 4° ATC. Allow engine to warm up (at least 60° C). After that, check if ignition timing advances to 35° BTC at 6000 rpm. If not, change ignition timing to 2° ATC when idling.

   c. Synchronize carburetors.

   d. Adjust mixture adjusting screws at idle speed with an exhaust gas analyzer until the CO content is 3.5 ± 0.5%.

2. Adjust throttle valve positioner:

   a. Detach wire from the insulated connector on the positioner.



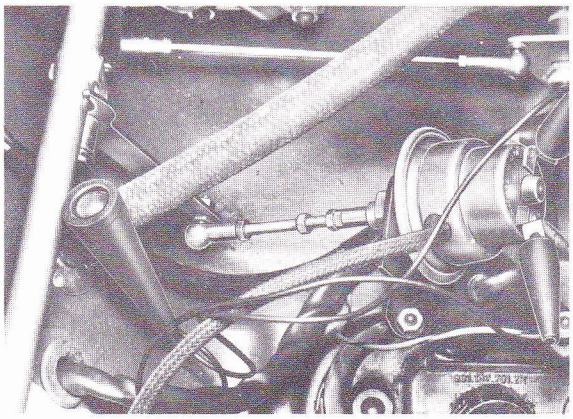
   b. Connect this terminal wil battery (+) or some other hot wire so that the solenoid is actuated.

   c. Keep engine running and turn actuating rod of positioner in such a manner that after accelerating once (approx. 3,000 to 4,000 rpm) and then slowly decelerating a speed of 1,250 - 1,300 rpm is attained. (For this adjustment use a separate tachometer. Do not use vehicle tachometer.).

   d. Reconnect the rpm-transducer wire to the insulated terminal on the throttle positioner. Start engine, accelerate briefly (approx. 3,000 - 4,000 rpm), throttle back and check if an idle speed of 900-950 is being attained.

3. Check rpm-transducer:

   a. Connect test light to both electrical terminals on the throttle positioner. The light should go on at 2,000 - 3,000 rpm.

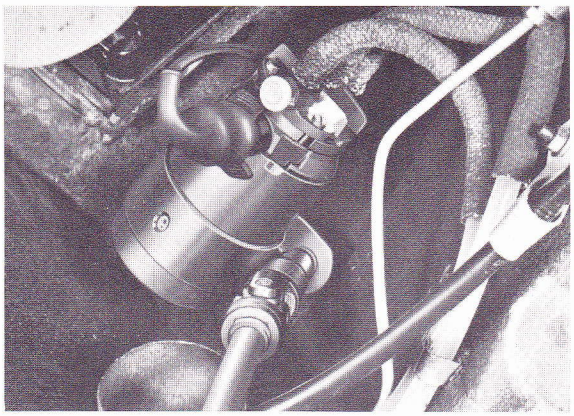


   b. Reduce engine speed; the light must go out at 1,500 ± 50 rpm (cutoff speed). If the light does not go out, replace the rpm-transducer.

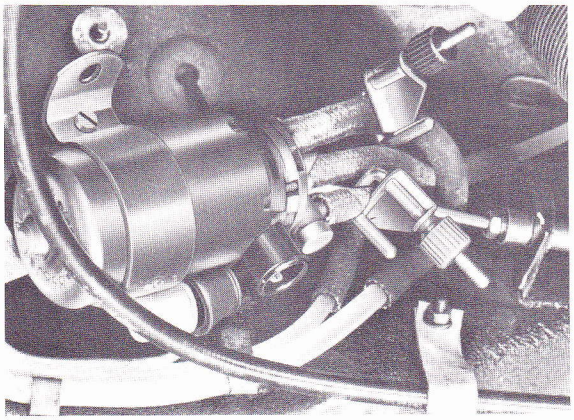
REMOVING AND INSTALLING FUEL PUMP

Removing

1. Remove right hot air hose.
2. Pull off wire plug.
3. Loosen fastening nuts on anti-vibration mount.



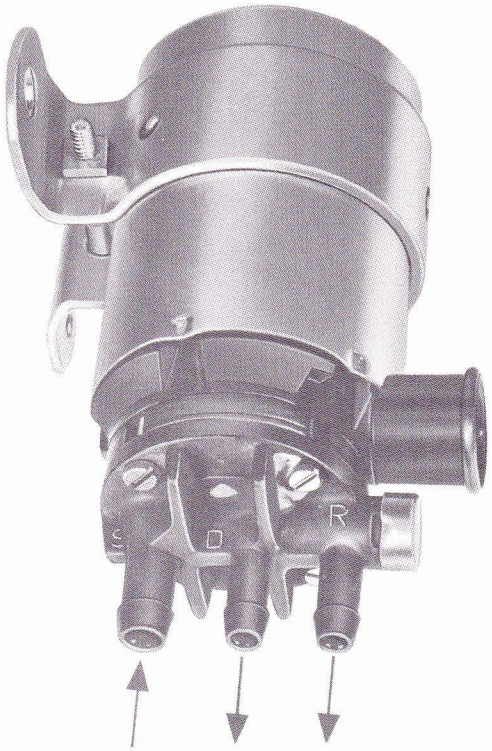
4. Remove pressure line clamp.
5. Remove fuel line clamps and disconnect fuel lines. Do not spill fuel.



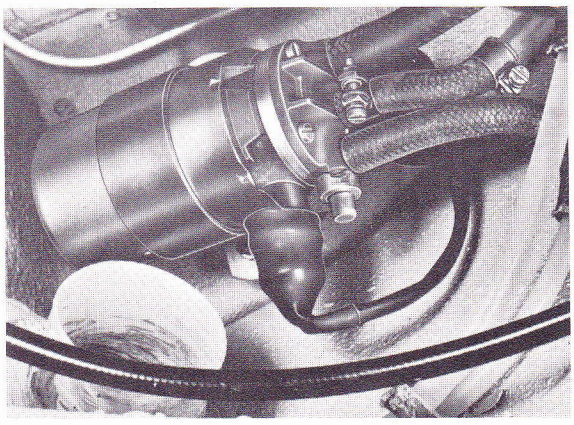
Installing

Observe the following:

1. Check plug connection for corrosion, replace, if necessary. Ensure proper connection.
2. Do not distort anti-vibration mounts.
3. Connect fuel lines according to illustration and remove the clamps.



4. To prevent corrosion, ensure good seat of protective cap.



5. Check all fuel line connections for leaks.

Test Values of Fuel Pump

The test value for fuel pump delivery at 30 seconds and 12 Volt operating voltage is 660 cc - 100 cc.

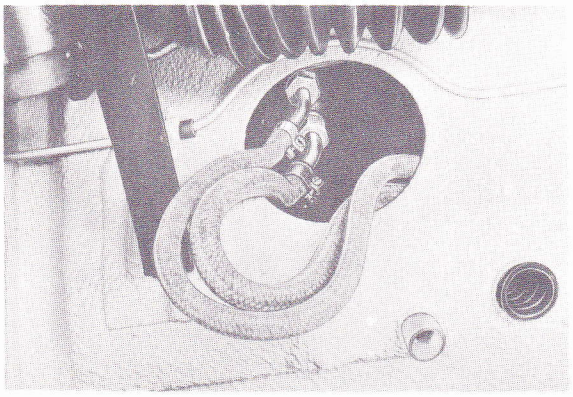
Power input	- 2.5 Amp. at 12 V
Operating pressure	- 0.3 atü (4.2 psi)
Speed	- approx. 2,200 rpm
Operating voltage	- 12 V
Input	- 30 Watts

REMOVING AND INSTALLING FUEL TANK

Removing

1. Remove gravel shield.

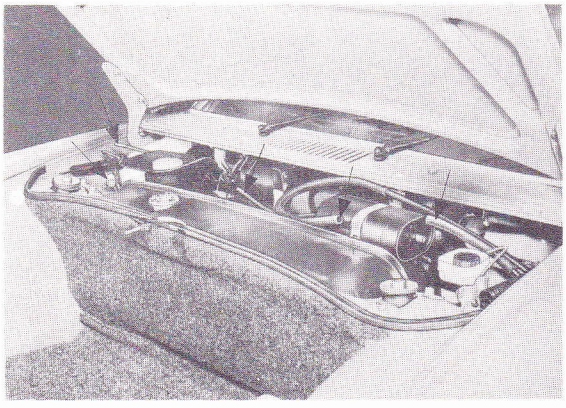
WARNING
Before working on any part of the fuel system, disconnect the battery ground strap. Never smoke or have anything in the area that can ignite fuel. Always keep a fire extinguisher handy.



2. Remove fuel lines and drain fuel tank.

3. Disconnect hoses from activated charcoal filter and expansion chamber.

4. Detach expansion chamber from fuel tank, pull off fuel gauge connector.



5. Loosen mounting strap and pull tank out through the top.

Installing

NOTE

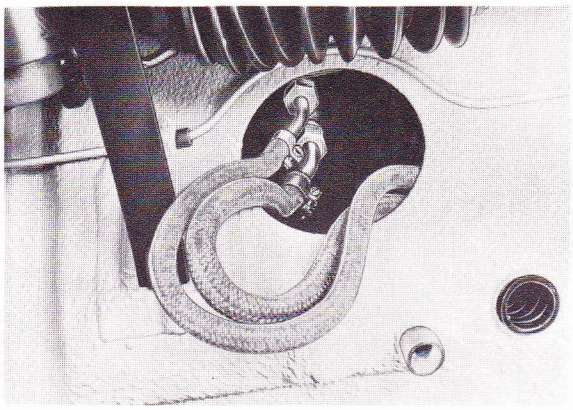
Make sure that all hoses are properly reconnected.

REMOVING AND INSTALLING FUEL TANK

Removal

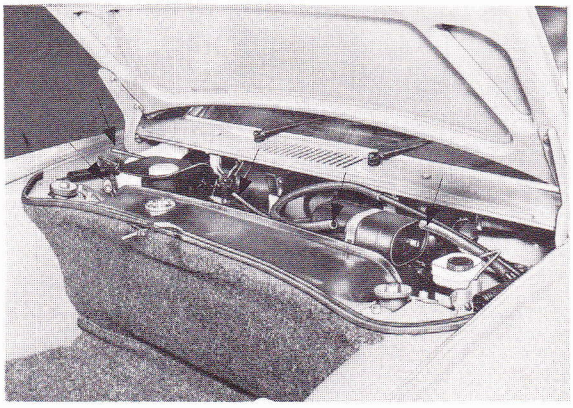
1 - Remove gravel shield.

2 - Drain fuel by detaching fuel hoses under the fuel tank.



3 - Disconnect hoses from activated charcoal filter and expansion chamber.

4 - Detach expansion chamber from fuel tank. Detach fuel gauge connector from sending unit.



5 - Loosen mounting strap and pull tank out through the top.

Installation

Note:

Make sure that the fuel hoses are properly connected and firmly seated.