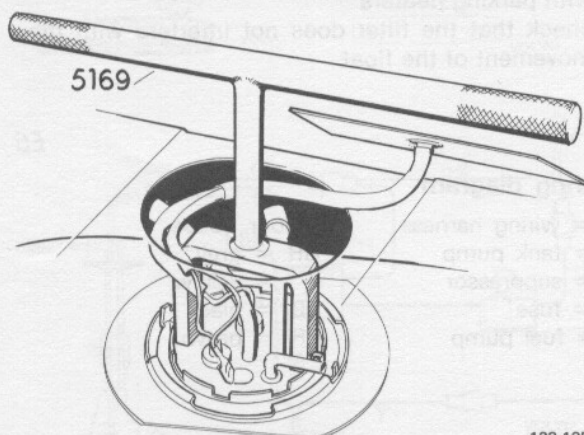
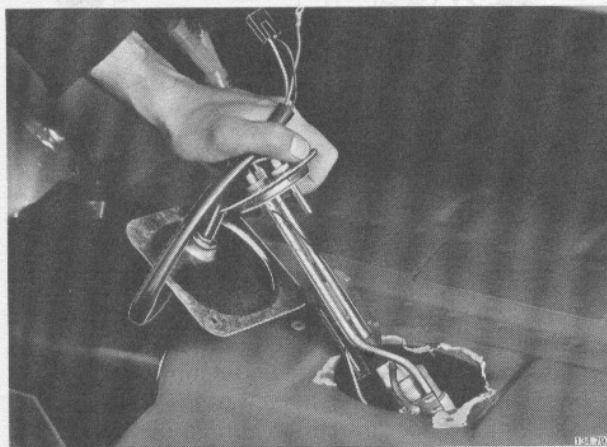
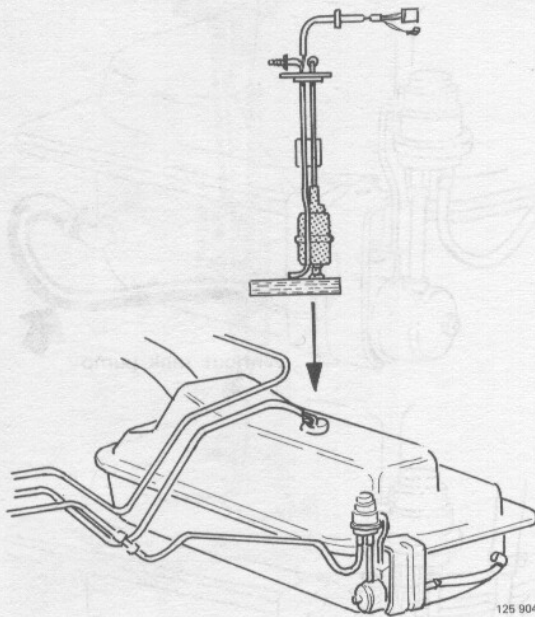


E. CI system components, checking, replacement, etc.

TANK PUMP

Operations E1-10



E1

General

The tank pump was introduced in production in 1977. The pump may have, however, been fitted to earlier vehicles.

E2

Fault symptoms

A defective tank pump may cause low line pressure.

The following symptoms can arise:

- increased noise level at the main fuel pump
- low top speed, poor engine performance
- juddering, engine cut-out (fuel-vapour locks).

E3

Check the tank pump

Carry out the repair operations B1, 7, 55-56.

E4

Tank sender unit, removing/fitting

Necessary if the tank pump or filter is to be replaced.

The unit is removed/fitted through the aperture in the rear floor section.

First unscrew the fuel tank cap to release any overpressure in the fuel system.

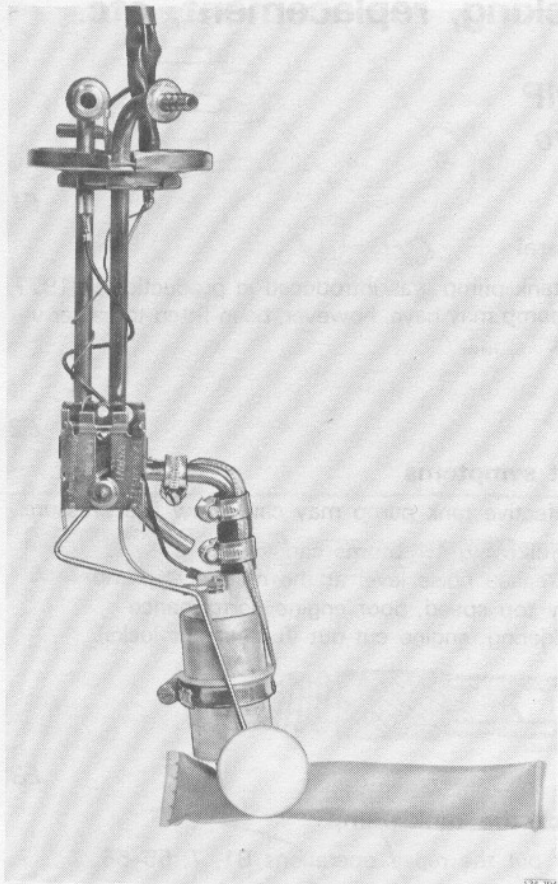
Use tool **5169** to remove the unit.

Use a **new** O-ring when re-fitting the unit. Lubricate the O-ring first with glycerine or similar.

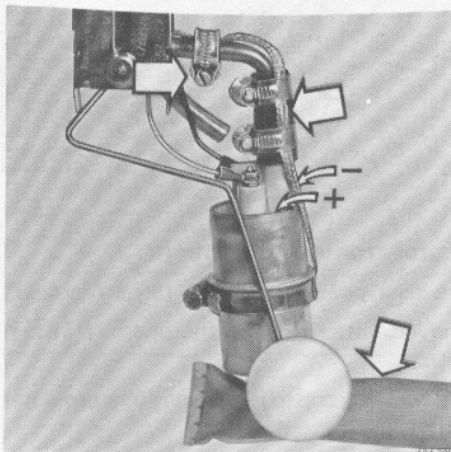
There are three different types of units and tank pumps, see pages 58-61.

Note! Types 2 or 3 may have been fitted to earlier vehicles if the fuel tank has been replaced.

Tank pump



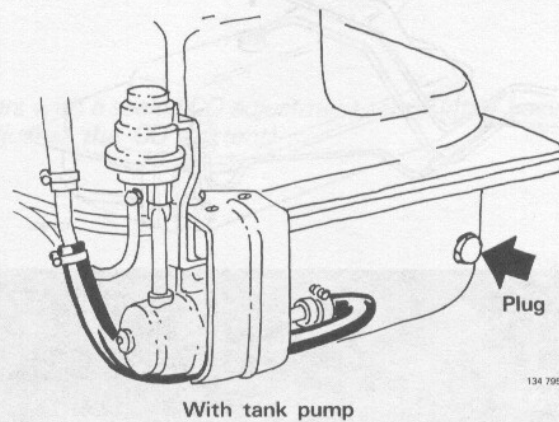
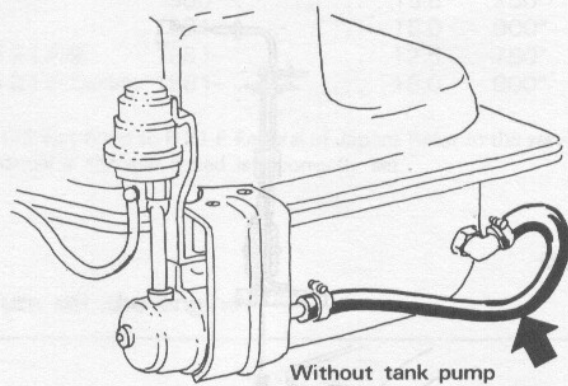
134 794



134 797

Type 1
Operations E5-6

Applies to models from 1975-1976 and early part of 1977



134 795

E5

Replacement of tank pump/filter:

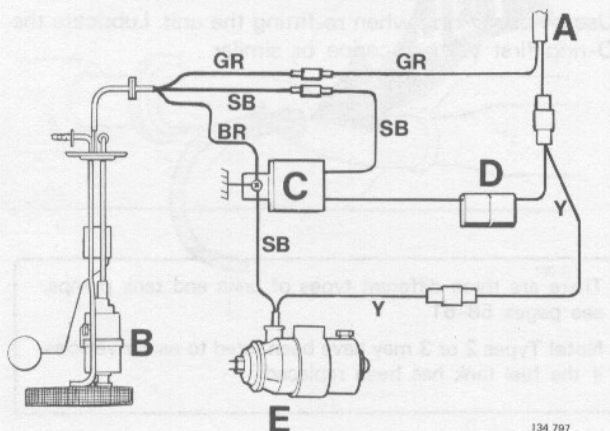
- locate the upper clip as shown, otherwise it will be difficult to fit the unit in the tank
- route the earth/ground lead under the hose clips. If this is not done the movement of the float will be inhibited. Do not stretch the earth/ground lead
- the return hose must be fitted on vehicles equipped with parking heaters
- check that the filter does not interfere with the movement of the float

E6

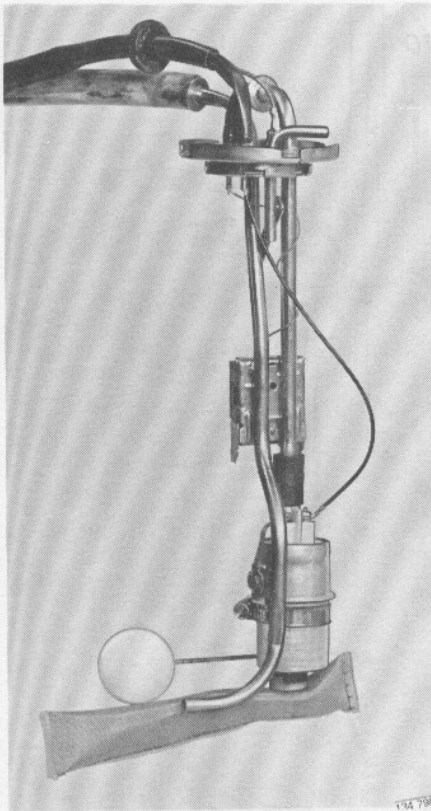
Wiring diagram

- A = wiring harness
- B = tank pump
- C = suppressor
- D = fuse
- E = fuel pump

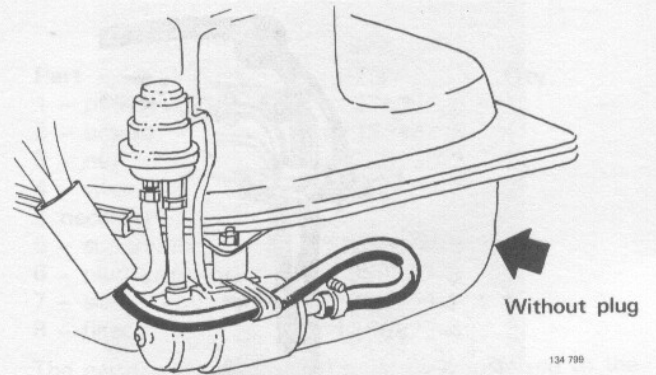
- Colour codes**
- GR = grey
 - Y = yellow
 - SB = black
 - BR = brown



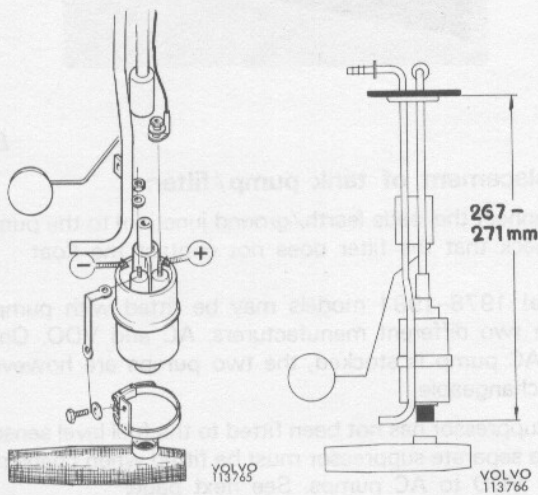
134 797



Type 2
Operations E7-8
1977-1978



134 798

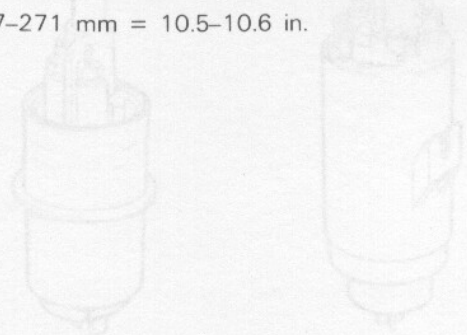


E7

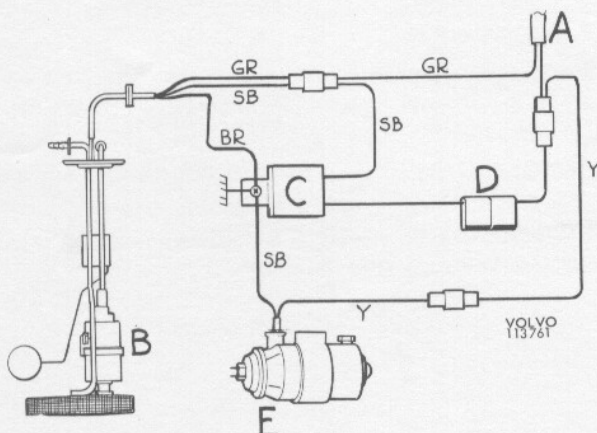
Replacement of tank pump/filter:

- connect the leads to the pump
- check the height, see left, adjust if necessary
- check that the filter does not contact the float.

267-271 mm = 10.5-10.6 in.



E8

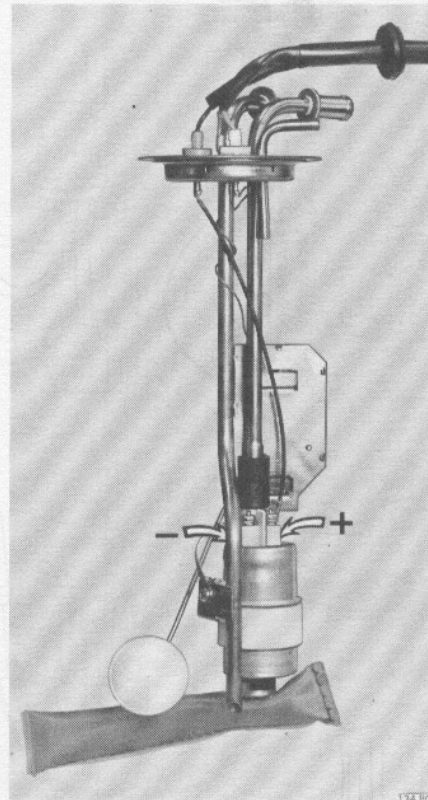
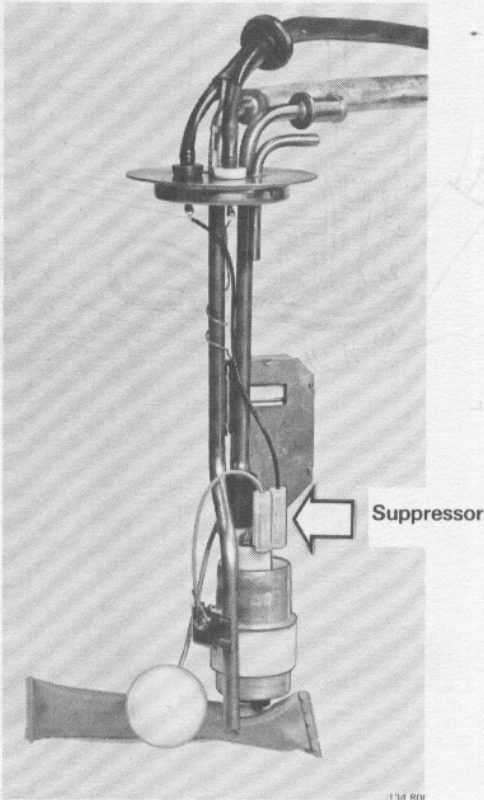


Wiring diagram

- A = wiring harness
- B = tank pump
- C = suppressor
- E = fuse
- E = fuel pump

- Colour codes**
- GR = grey
 - Y = yellow
 - SB = black
 - BR = brown

Type 3
Operations E9-10
1978-



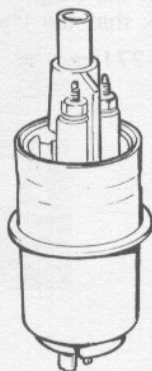
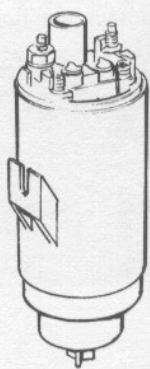
E9

Replacement of tank pump/filter:

- connect the leads (earth/ground junction) to the pump
- check that the filter does not contact the float.

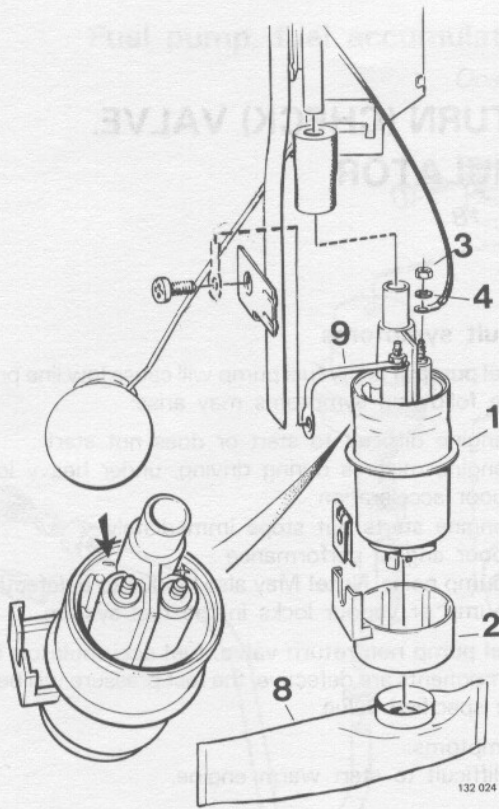
Note! 1978-1981 models may be fitted with pumps from two different manufacturers, AC and VDO. Only the AC pump is stocked, the two pumps are however interchangeable.

If a suppressor has not been fitted to the fuel level sensor unit a separate suppressor must be fitted when changing from VDO to AC pumps. See next page.



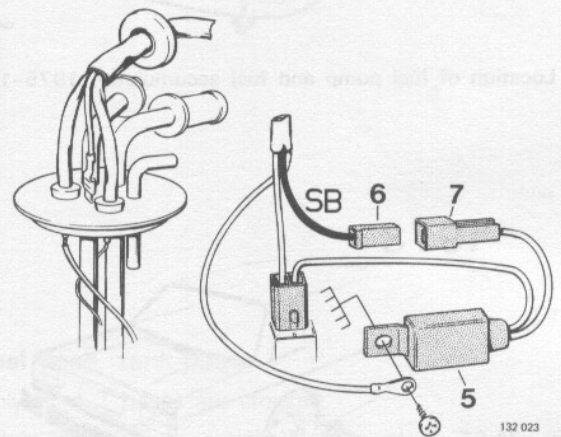
E10

Parts required when changing from VDO to AC tank pump



Part	P/N	Qty
1 - pump	1276330-6	1
2 - bracket	1235444-5	1
3 - nut	1266390-2	2
4 - washer	940121-7	2
If necessary,		
5 - suppressor	1235204-3	1
6 - plug insulator	958207-3	1
7 - sleeve insulator	958208-1	1
8 - filter	1266822-4	1

The earth/ground strap (9) must be transferred to the new pump, and where applicable the suppressor must be connected in series with the positive terminal of the pump.

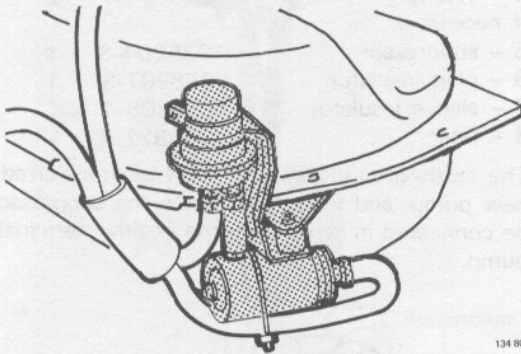


FUEL PUMP WITH NON-RETURN (CHECK) VALVE. FUEL ACCUMULATOR

Operations E11-18

1975-1977

E11



134 902

Location of fuel pump and fuel accumulator, 1975-1977

Fault symptoms

Fuel pump: a faulty fuel pump will cause low line pressure. The following symptoms may arise:

- engine difficult to start or does not start
- engine misfires during driving, under heavy load
- poor acceleration
- engine starts but stops immediately
- poor engine performance
- pump noise. **Note!** May also be due to a defective tank pump or vapour locks in the fuel system.

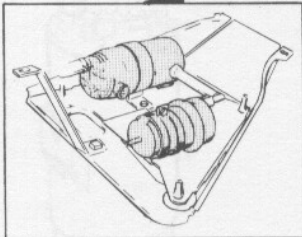
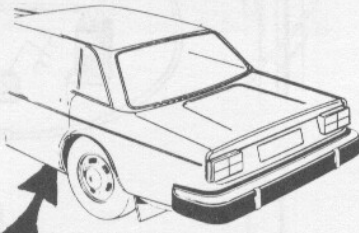
Fuel pump non-return valve, fuel accumulator: if these components are defective, the rest pressure will be below the specified value.

Symptoms:

- difficult to start warm engine.

1978 -

E12



134 903

Location of fuel pump and fuel accumulator, 1978-

Inspection

Fuel pump

Record the pressure. Carry out the following operations B1, 7, 14-16.

Fuel pump non-return valve/fuel accumulator

Measure the rest pressure. Carry out the following operations B1, 7, 14-16, 22-23.

Replacement

Fuel pump: never fit an old non-return valve to a new pump (a new non-return valve and seal is included with the new pump).

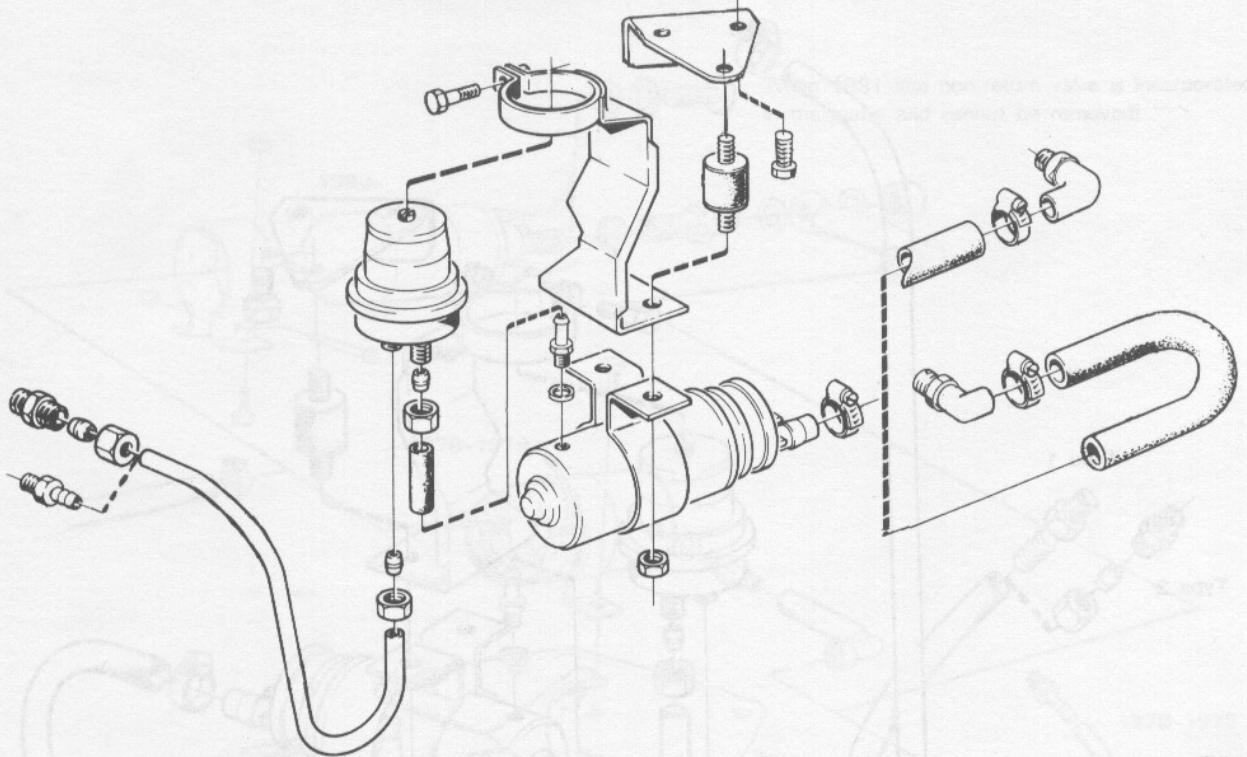
On replacing the pump, check that all pressures are correct, check also the idle speed and CO content.

Fuel pump non-return valve or fuel accumulator: check the rest pressure after replacement.

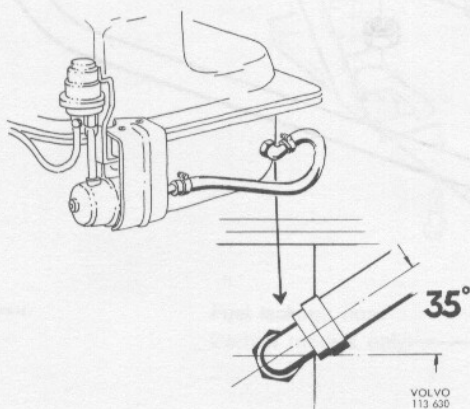
E13

Fuel pump, fuel accumulator 1975–1977 without tank pump

Operations E14–15



134 804

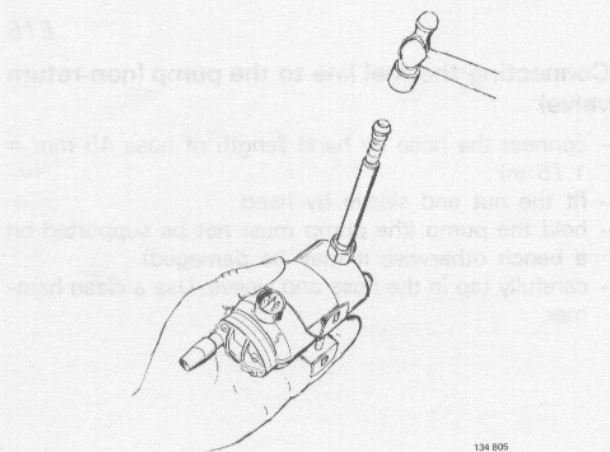


E14

Fuel hose, tank-pump

Only type 2 hoses are stocked.

When fitting the hose, tighten the nipple to **70 Nm** (52 ft.lb.) Then turn until the nipple points **35°** backwards and upwards.



E15

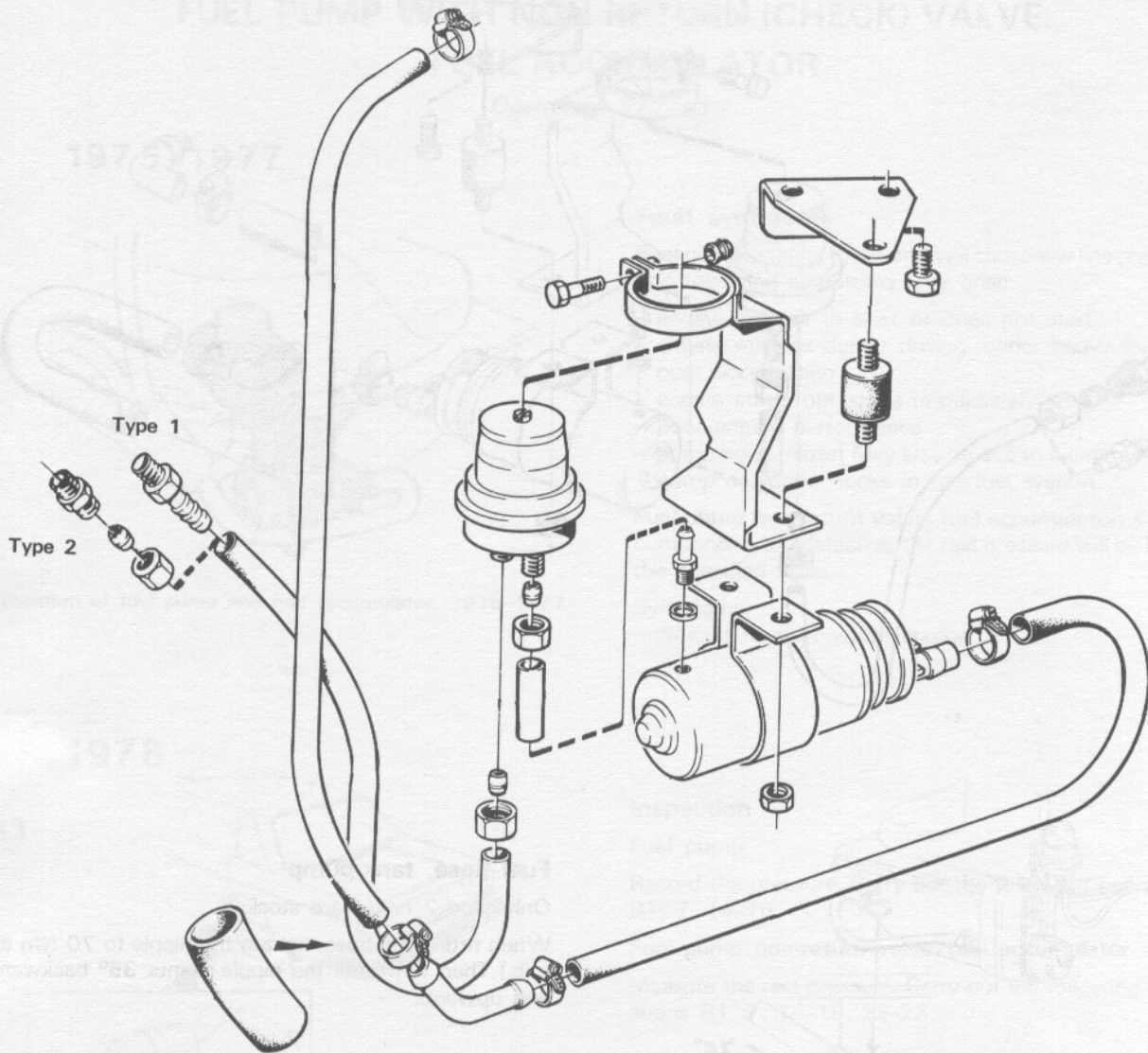
Connecting the fuel line to the pump (non return valve)

- connect the hose by hand (length of hose 45 mm = 1.75 in)
- fit the nut and sleeve by hand
- hold the pump (the pump must not be supported on a bench otherwise it may be damaged)
- carefully tap in the hose and sleeve. Use a clean hammer.

134 805

Fuel pump, fuel accumulator 1975-1977 with tank pump

Operation E16

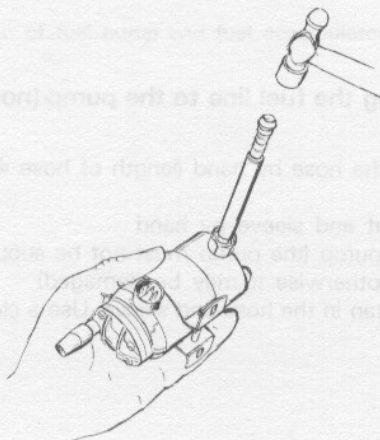


134 806

E16

Connecting the fuel line to the pump (non-return valve)

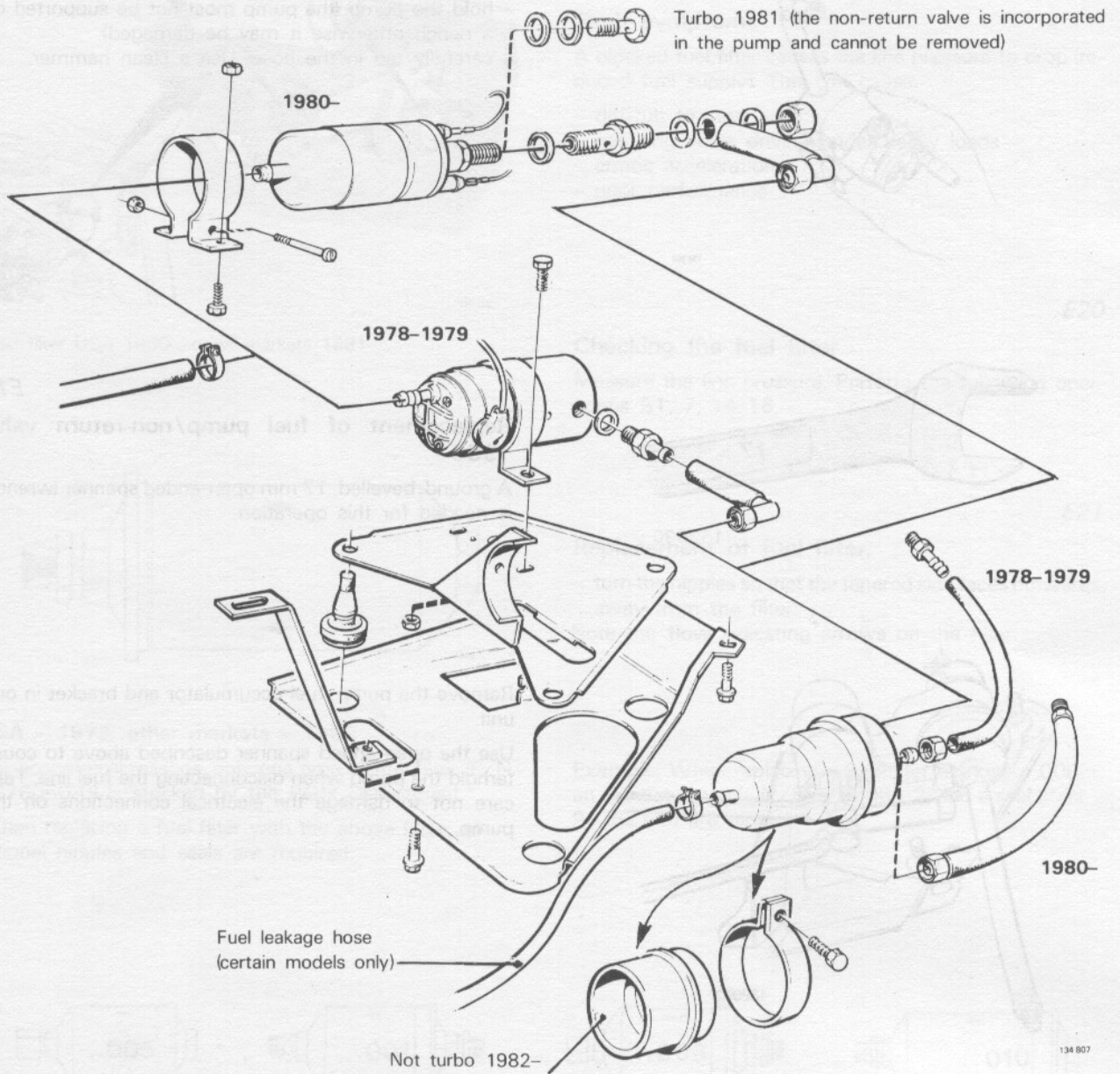
- connect the hose by hand (length of hose 45 mm = 1.75 in)
- fit the nut and sleeve by hand
- hold the pump (the pump must not be supported on a bench otherwise it may be damaged)
- carefully tap in the hose and sleeve. Use a clean hammer.



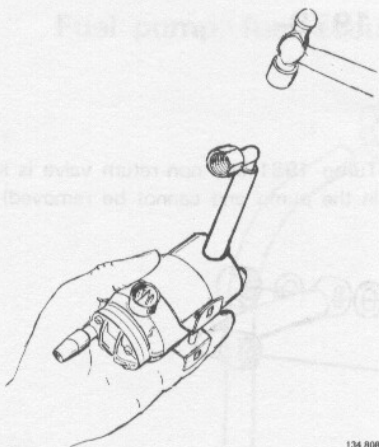
134 806

Fuel pump, fuel accumulator 1978-

Operations E17-18



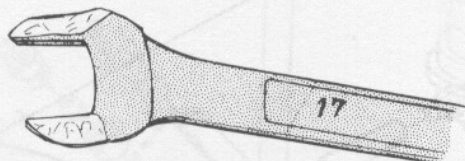
For hose installation/replacement of non-return valve, see over leaf.



E17

Connecting the fuel line to the pump (non-return valve) 1978-1979:

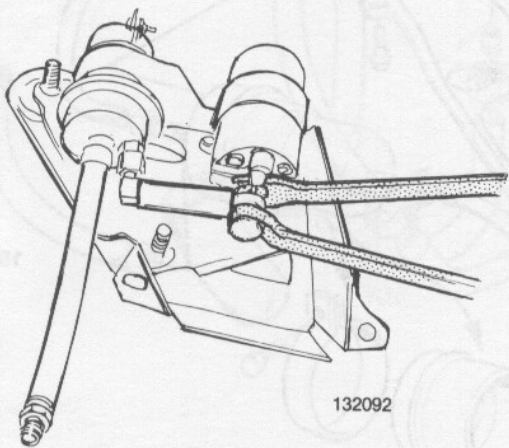
- connect the hose by hand
- hold the pump (the pump must not be supported on a bench otherwise it may be damaged)
- carefully tap in the hose. Use a clean hammer.



E18

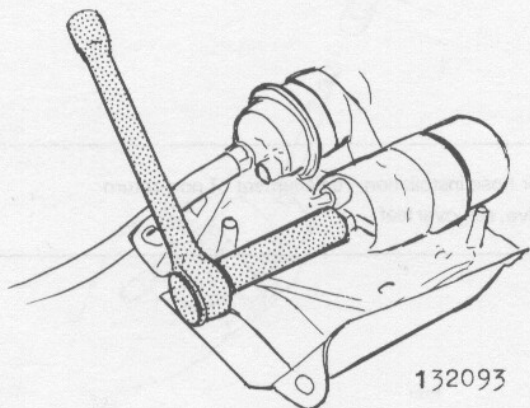
Replacement of fuel pump/non-return valve 1980-

A ground, bevelled, 17 mm open-ended spanner (wrench) is needed for this operation.



Remove the pump, fuel accumulator and bracket in one unit.

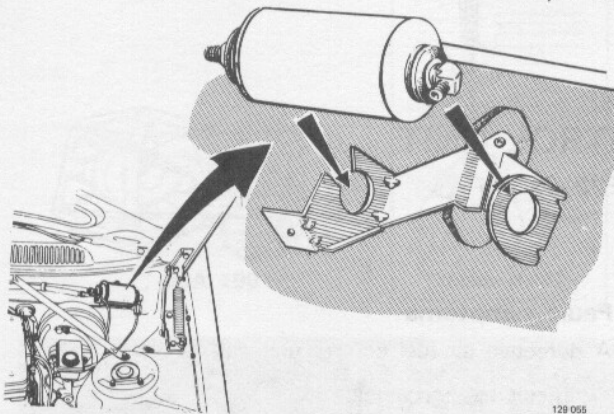
Use the open-ended spanner described above to counterhold the pump when disconnecting the fuel line. Take care not to damage the electrical connections on the pump.



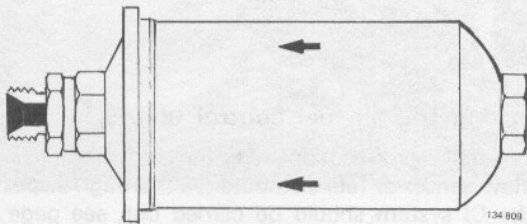
Use a long 17 mm socket spanner (wrench) to remove/install the non-return valve.

FUEL FILTER

Operations E19-21



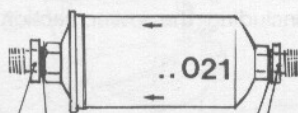
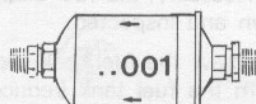
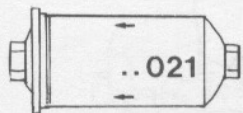
Fuel filter USA 1980-, other markets 1981-



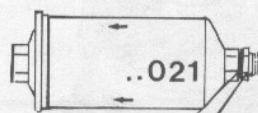
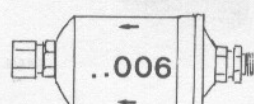
USA - 1979, other markets - 1980

For economical reasons, only one type of fuel filter (P/N 1276050-0) is stocked by the Parts Department.

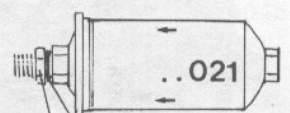
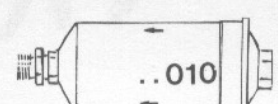
When replacing a fuel filter with the above filter, additional nipples and seals are required.



947282-0
1276069-0
947621-9
1276068-2



947621-9
1276068-2



947282-0
1276069-0

134 810

E19

Fault symptoms

A blocked fuel filter causes the line pressure to drop (reduced fuel supply). This can cause:

- difficult to start engine
- misfiring while driving under heavy loads
- erratic acceleration
- poor performance

E20

Checking the fuel filter

Measure the line pressure. Perform the following operations B1, 7, 14-16.

E21

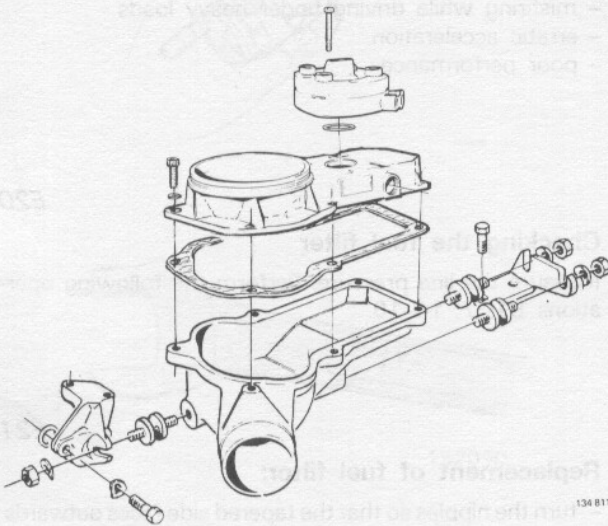
Replacement of fuel filter:

- turn the nipples so that the tapered side faces outwards, away from the filter
- Note the **flow** indicating arrows on the filter.

Example: When replacing a fuel filter marked ..006, an additional nipple (P/N 1276068-2) and a seal (P/N 947621-9) are required.

AIR-FUEL CONTROL UNIT

Operations E22-39



E22

Fault symptoms

A defective air-fuel control unit can cause:

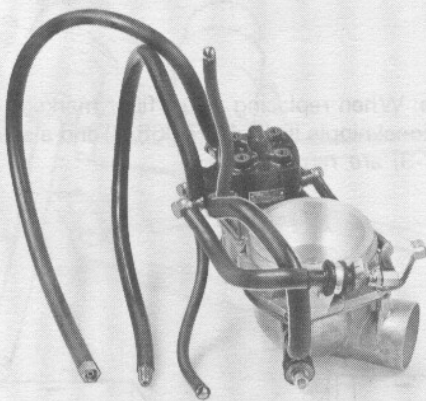
- difficult to start engine
- engine does not start
- erratic operation
- erratic acceleration
- excessive fuel consumption
- variable CO content
- dieselling (running-on).

E23

Checking the air-fuel control unit

Before replacing/reconditioning the air-fuel control unit (air flow sensor or fuel distributor), a thorough inspection of the CI system should be carried out, see page 22.

E/F



E24

Removing the air-fuel control unit

If necessary, the fuel distributor can be removed on its own and inspected.

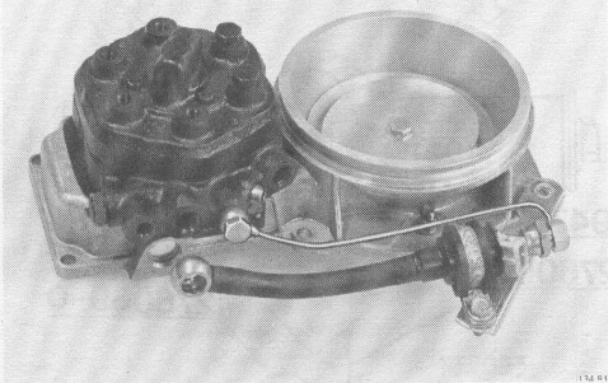
Unscrew the fuel tank cap to release any overpressure from the fuel tank (reduces fuel spillage).

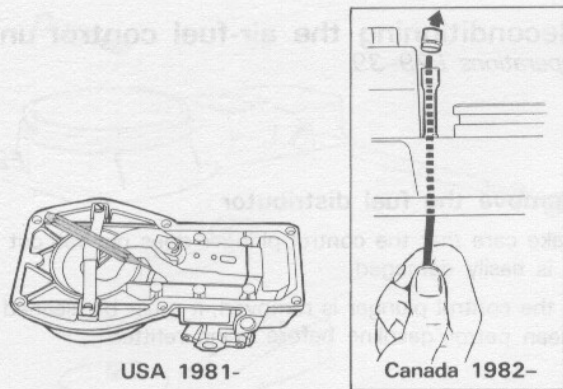
Clean all hose connections before disconnecting the fuel lines.

Inhex 5 mm.

E/F engines: remove the complete air-fuel control unit, including the lower section.

Turbo

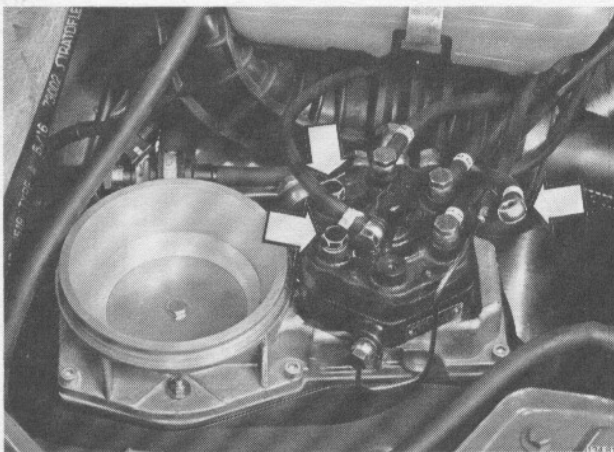




USA 1981-

Canada 1982-

134 896



E25

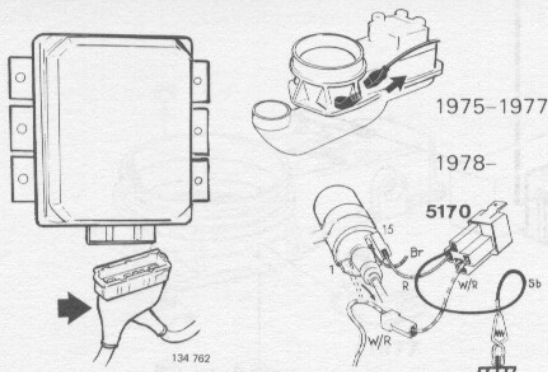
Install the air-fuel control unit

Use new seals, inhex 5 mm.

After fitting the unit, check that the air flow sensor plate moves freely.

Reconnect all fuel lines with the exception of one injector line. Use new seals.

Caution! The fuel distributor fitted to turbo engined vehicles is the same as the one used for 6 cylinder engines but two of the outlet ports are plugged. Under no circumstances should the fuel lines be connected to these ports.



E26

Start the fuel pump

Disconnect the ignition system control unit.

1975-1977: withdraw the connector from the air flow sensor.

1978-: connect test relay **5170**.

Turn on the ignition.



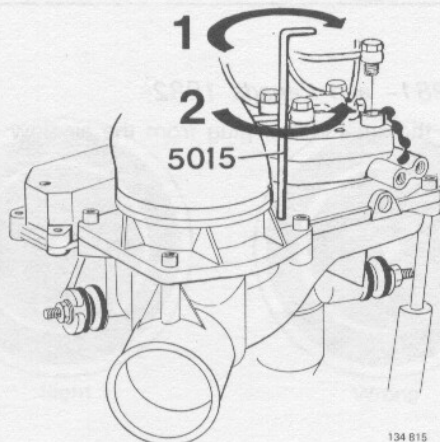
E27

Basic-set the air-fuel control unit (CO adjustment screw)

Turn the CO screw clockwise (right) until fuel is supplied from the open outlet.

Then tighten the screw by 1/2 a turn. Use **5015**.

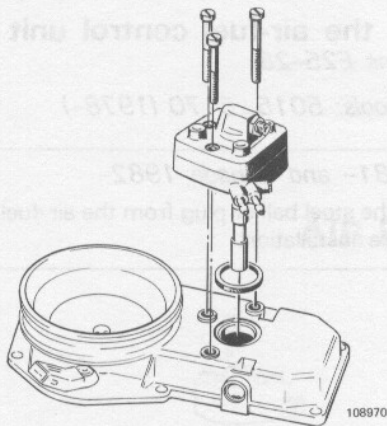
Turn off the ignition and reconnect the fuel line.



E28

Check/adjust:

- all pressures
- the rest position of the sensor plate
- idle speed
- CO content.



Reconditioning the air-fuel control unit Operations E29-39

E29

Remove the fuel distributor

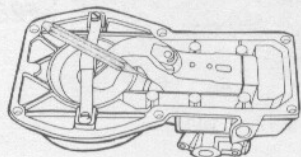
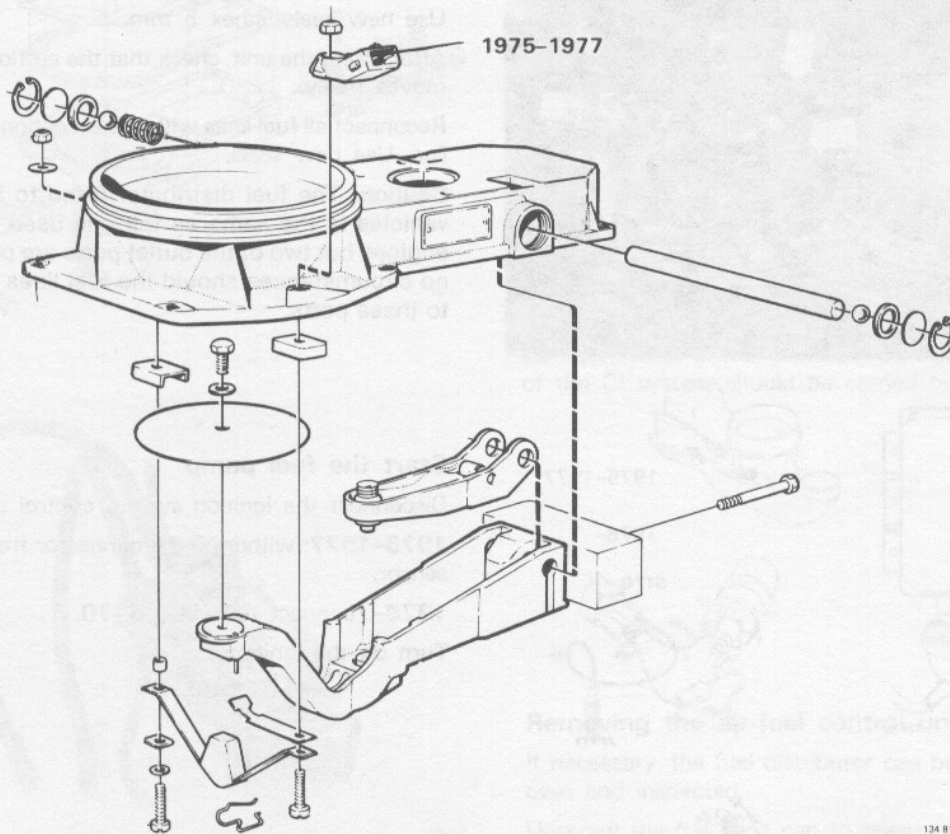
Take care that the control plunger does not fall out as it is easily damaged.

If the control plunger is removed, it must be cleaned in clean petrol/gasoline before being refitted

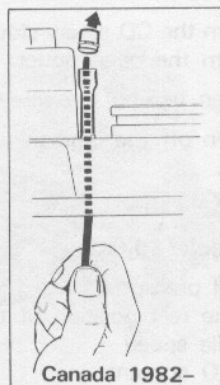
E30

Disassemble the air-flow sensor

Clean and inspect all parts. Replace if and as necessary.

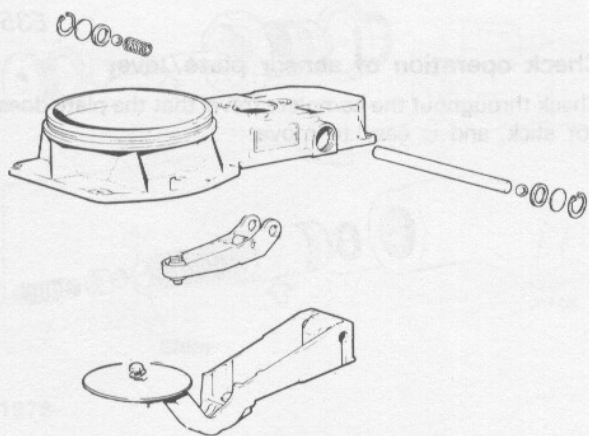


USA 1981-

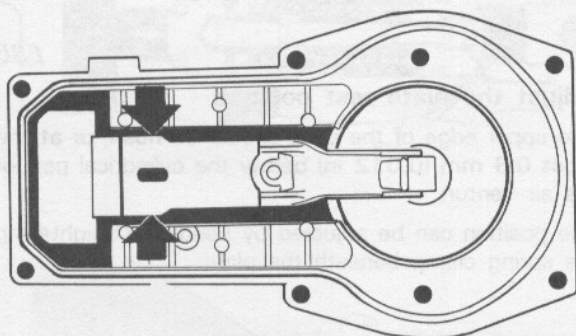


USA 1981- and Canada 1982-

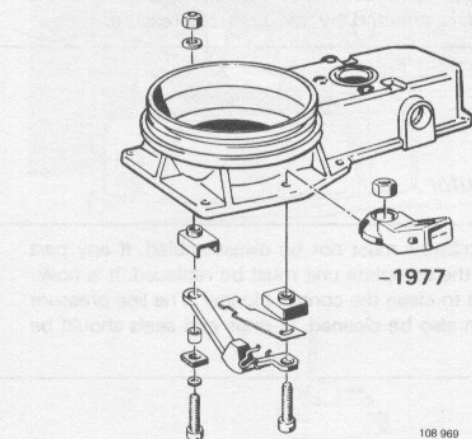
Remove the steel ball or plug from the air flow sensor.



120 443

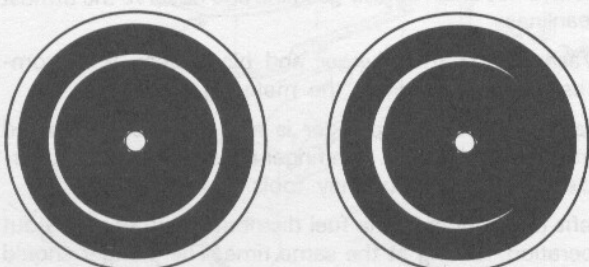


120 444



-1977

108 969



Right

Wrong

108 604

E31

Reinstall the lever + plate and adjustment arm

Grease the bearing seats, shaft, balls and spring.

E32

Reinstall the counterbalance

Centre the lever before tightening the retaining screws for the counterbalance.

The CO adjustment screw should be opposite the drilled hole in the housing. Key/wrench **5015** can be used to check this.

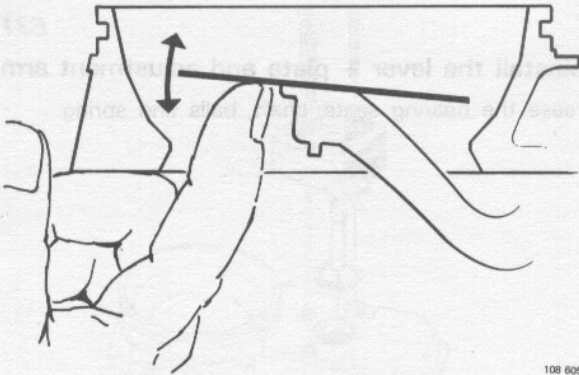
E33

Install the stopper for the plate

E34

Centre the plate

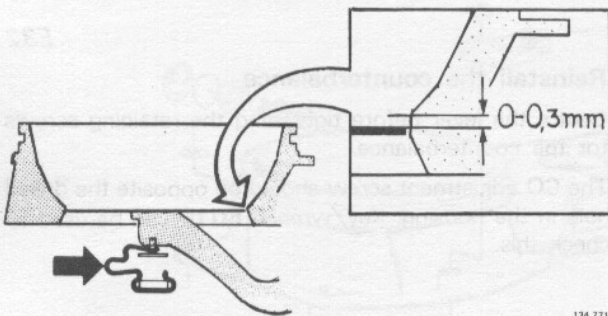
Adjust to obtain an equal space all the way round. Un-screw the centre bolt to adjust the plate.



E35

Check operation of sensor plate/lever

Check throughout the complete travel that the plate does not stick, and is easy to move.



E36

Adjust the plate rest position

The upper edge of the plate should be **flush**, or at the most **0.3 mm (0.012 in)** below the cylindrical part of the air venturi.

The position can be adjusted by bending/straightening the spring clamp beneath the plate.

Note! The rest position of the sensor plate should be checked before fitting the air-fuel control unit. It is advisable to set the plate as near flush as possible. This is because the plate takes up a lower rest position when the unit is installed and is affected by the control pressure.

Fuel distributor

The fuel distributor must not be disassembled. If any part is defective, the complete unit must be replaced. It is however possible to clean the control plunger. The line pressure regulator can also be cleaned. O-rings and seals should be replaced.

E37

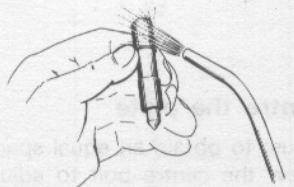
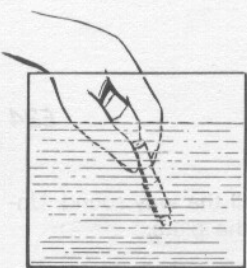
Clean and check the control plunger

Always use clean petrol/gasoline and observe the utmost cleanliness.

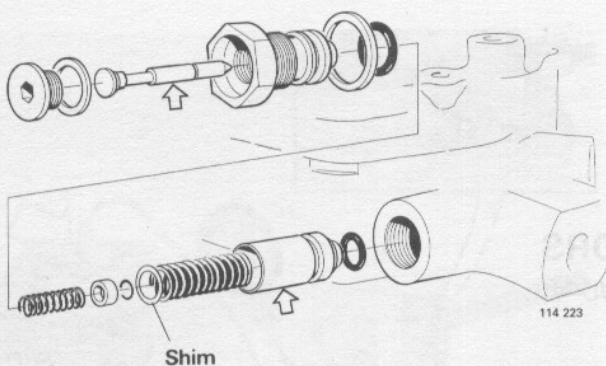
Wash the control plunger and blow clean with compressed air. Also clean the metering slits.

Make sure that the plunger is not damaged or coated with carbon deposits. Use finger nails to remove dirt particles, on no account may tools be used.

Refit the plunger in the fuel distributor and check in-out operation, turning at the same time. The plunger should move freely, if not replace the complete fuel distributor.



E38



Clean and inspect the line pressure regulator

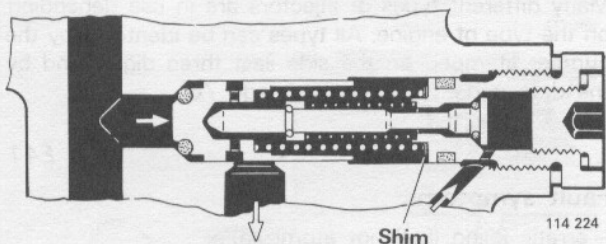
Use clean petrol/gasoline and observe the utmost cleanliness.

Disassemble and clean the regulator.

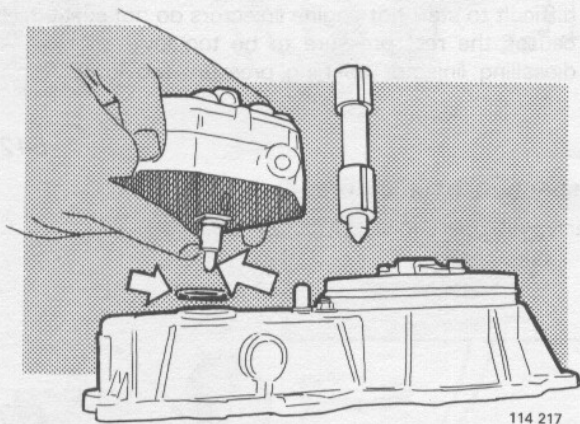
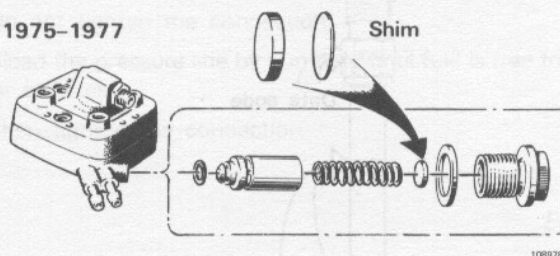
Replace worn and damaged parts. **Caution!** The piston must not be replaced separately. If the piston is defective, the complete fuel distributor should be replaced.

Reassemble and fit the regulator, using new O-rings and seals.

1978-



1975-1977



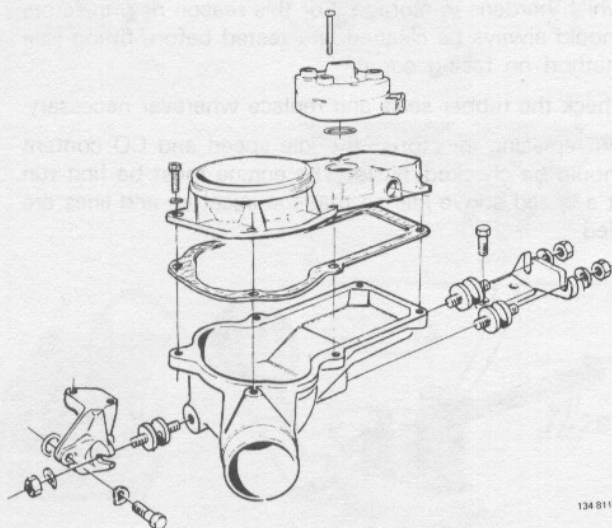
Fit the fuel distributor to the air flow sensor

Use a new O-ring and make sure that it sits correctly.

Take care that the control plunger does not fall out. If damaged it must be replaced.

Torque the screws evenly. Tightening torque 3.6 Nm (2.5 ft. lb).

E39



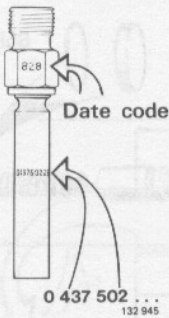
E/F engines

Assemble the upper and lower parts of the air fuel control unit. Use a new seal. Inhex 5 mm.

Check that the lever moves freely after tightening.

INJECTORS

Operations E40-49



E40

General

Many different types of injectors are in use depending on the type of engine. All types can be identified by the number stamped on the side (last three digits) and by the date code. See table on page 76.

E41

Fault symptoms:

- erratic idling (fuel not atomized)
- low top speed/poor engine performance (fuel not atomized)
- misfiring while driving under heavy loads
- difficult to start hot engine (injectors do not seal which causes the rest pressure to be too low)
- dieselling (injector opening pressure too low).

E42

Inspection of injectors

Carry out operations B1, 7, 27-39.

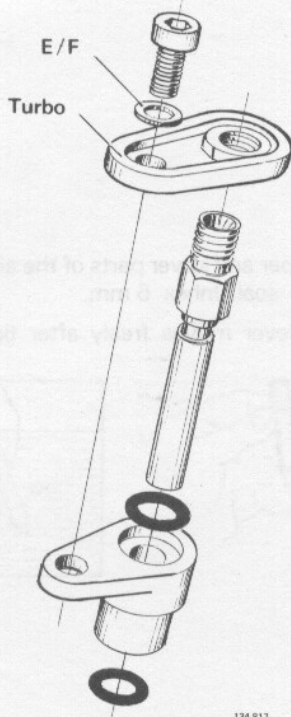
E43

Replacing injectors

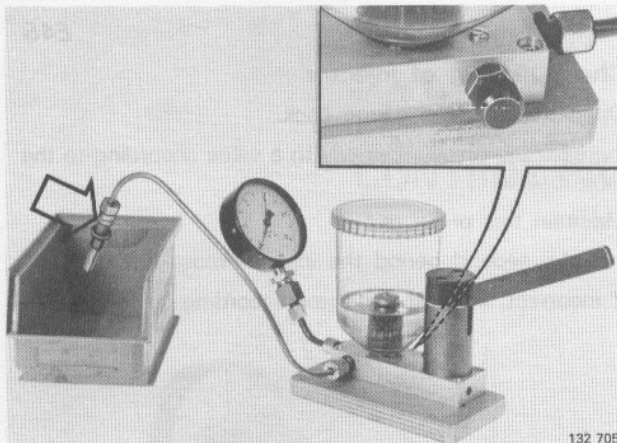
New injectors are filled with a rustproofing compound which hardens in storage. For this reason new injectors should always be cleaned and tested before fitting (see method on facing page).

Check the rubber seals and replace wherever necessary.

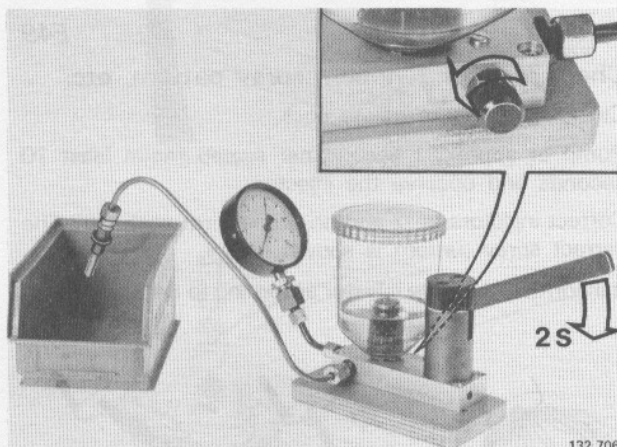
On replacing injector(s), the idle speed and CO content should be checked. **Note!** The engine must be first run at a speed above idle so that the injectors and lines are bled.



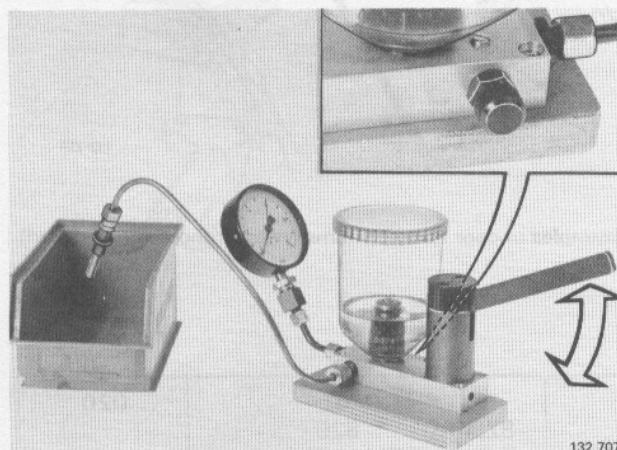
134 817



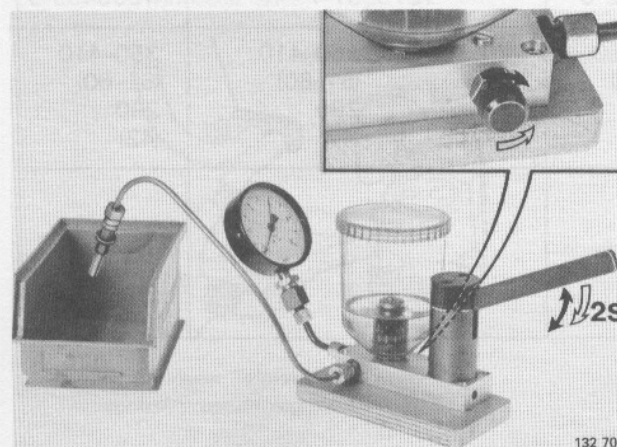
132 705



132 706



132 707



132 708

Cleaning and testing injectors

Operations E44-49

Special tool: 9934

Use liquids intended for cleaning purposes such as Shell K30, Esso-Versol, Shell Mineral spirits 135 or similar products.

Warning! Never exceed a pressure of **600 kPa (87 psi)** during the test.

E44

Connect the injector to tester 9934

Do not tighten the connection.

Bleed the pressure line by pumping until fuel is free from air bubbles.

Then tighten the connection.

E45

Ensure that the injector is free from dirt

Open the pressure gauge cock.

Pump slowly, about 2 seconds per sweep. Check that the pressure rises to at least **100-150 kPa (15-22 psi)**.

If not, the injector is blocked and must be cleaned.

E46

Clean the injector (whenever necessary)

Pump strongly 15-20 times. Then repeat E45.

If the pressure is still too low, then the injector should be replaced.

E47

Check the opening pressure

Close the pressure gauge cock.

Quickly pump a few times to remove all air from the injector.

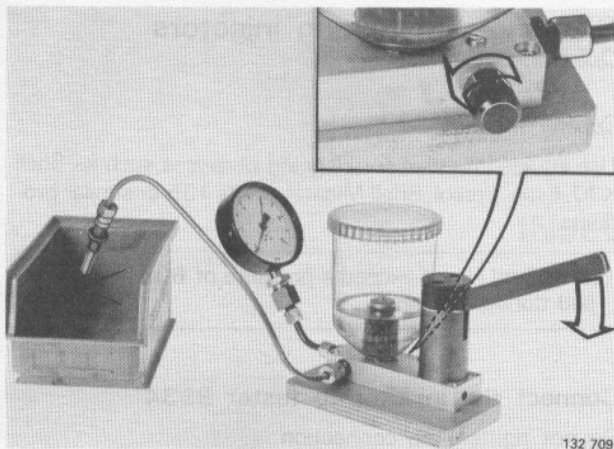
Open the pressure gauge cock.

Pump slowly, approx. 2 seconds per sweep. Record the pressure when the injector opens.

See chart overleaf for opening pressures.

If incorrect, replace the injector.

Injectors



132 709

E48

Check sealing of injector

Open the pressure gauge cock.

Increase the pressure slowly to a value according to the table below.

Maintain this pressure.

In a 15 second period the injector must not drip.

If incorrect, clean the injector according to E46.

E49

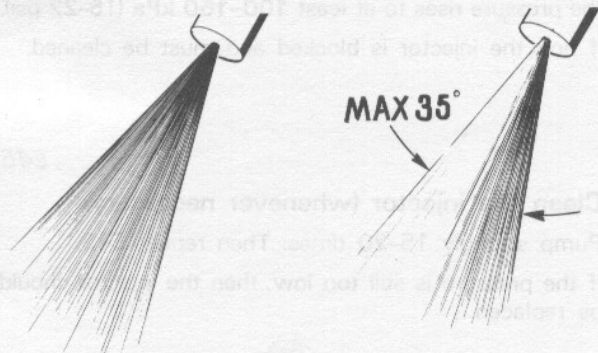
Check injector function, spray pattern, etc.

Close the pressure gauge cock.

Pump at approx. 1 second per sweep for at least 10 seconds and observe the injector.

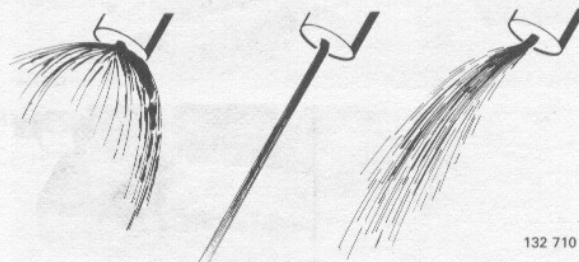
Correct injectors buzz and no drops form at the tip. The correct spray pattern is shown below.

If incorrect, clean the injector according to E46 and retest.



Correct spray pattern

Acceptable spray pattern



132 710

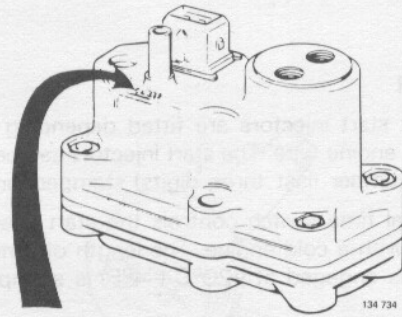
Examples of poor spray patterns (injector should be renewed)

Injectors	Bosch no. Date code Volvo no.	...007	...015		...020
		463972-0	-828	829- 1276037-7	1306499-3
Opening pressure	kPa (psi)	300-360 (43-52)	320-380 (46-55)	350-410 (51-60)	350-410 (51-60)
No leakage permitted below	kPa (psi)	240 (35)	260 (38)	290 (42)	290 (42)
Engine type: B 19 E, B 21 E, B 21 F-5 -1978 1979- B 21 F-9, B 21 F-Turbo, B 23 E B 19/21 E-Turbo		X		X X	X

* Replaced as spare part by P/N 1276037-7 (...015)

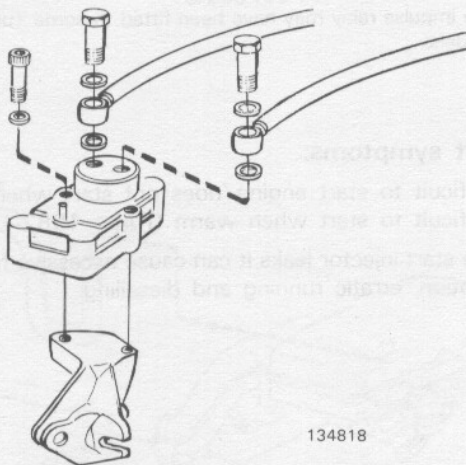
CONTROL PRESSURE REGULATOR

Operations E50–E53



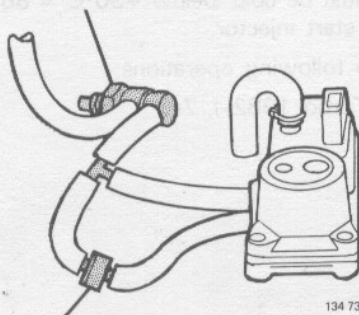
0 438 140 . . .

134 734



134818

Thermostat valve



134 737

Delay valve. Coloured side away from control pressure regulator.

E50

General

The type of control pressure regulator fitted varies with engine type, and can be identified by the number stamped (last three digits) on the top.

E51

Fault symptoms

A defective control pressure regulator causes an incorrect pressure.

The following symptoms can arise:

- incorrect fuel-air mixture
- difficult to start engine
- erratic running, possibly stalling
- excessive fuel consumption (low control pressure)
- poor engine performance/low top speed
- hesitates when accelerating, backfires
- erratic running on acceleration
- misfiring while driving under heavy load.

E52

Checking the control pressure regulator

Measure the control pressure. The engine must be cold (below +30°C = 86°F).

Perform the following operations:

B1–2, 7, 14–15, 17–18, 19 (E-Turbo), 21 (F-engines 1981– excl. Japan).

E53

Replacing the control pressure regulator

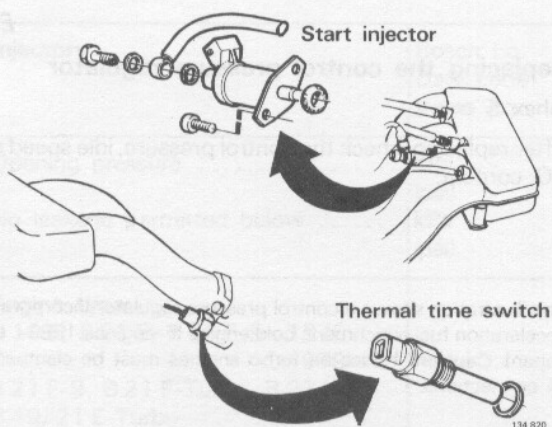
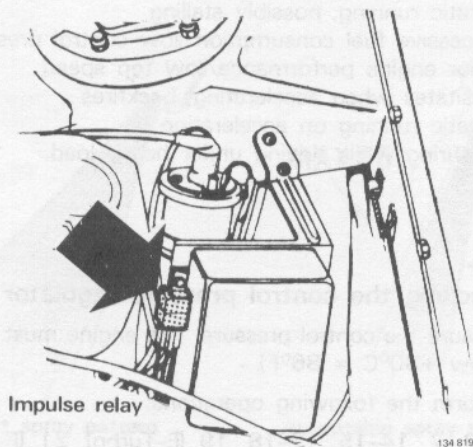
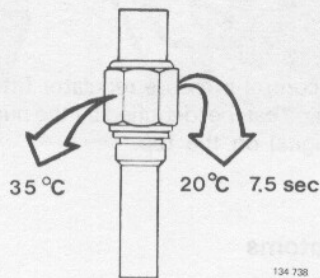
Inhex 5 mm.

After replacing, check the control pressure, idle speed and CO content.

The illustration shows a control pressure regulator incorporating acceleration fuel enrichment, cold engine (F-engines 1981–, excl. Japan). **Caution!** Hoses on turbo engines must be clamped at all connections.

START INJECTOR, THERMAL TIME SWITCH, IMPULSE RELAY

Operations E54-56



E54

General

Different start injectors are fitted depending on model year and engine type. The start injectors can be identified by the number (last three digits) stamped on the side.

A thermal time switch controls the start injector when starting with a cold engine. The length of time the start injector is engaged at -20°C (-4°F) is stamped on the collar.

An impulse relay is fitted to Turbo vehicles 1982-*, and controls the start injector during warm starts.

* The impulse relay may have been fitted to some Turbo 1981 models.

E55

Fault symptoms:

- difficult to start engine/does not start when cold
- difficult to start when warm (Turbo 1982-).

If the start injector leaks it can cause excessive fuel consumption, erratic running and dieselling.

E56

Inspection of parts

The engine must be cold (below $+30^{\circ}\text{C}$ = 86°F) when checking the start injector.

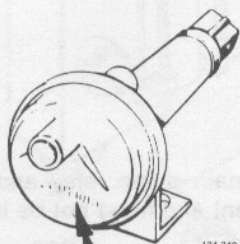
Carry out the following operations:

B1, 4-5, 6 (Turbo 1982-), 7-8.

AUXILIARY AIR VALVE

Operations E57-59

E57



134 740

0 280 140 . . .

General

The auxiliary air valve fitted depends on model year and engine. They can be identified by the number stamped on the end of the valve.

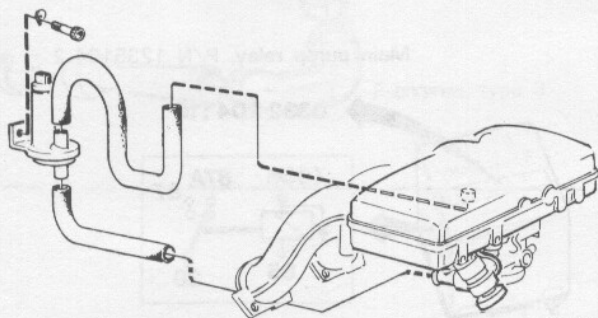
Cars equipped with the constant idle speed system (CIS) are not fitted with an auxiliary air valve.

E58

Fault symptoms:

- difficult to start engine/does not start when cold
- idle speed too high (valve does not close).

E59



134 821

Inspection of auxiliary air valve

The engine must be cold (below +30°C = 86°F) when inspecting the auxiliary air valve.

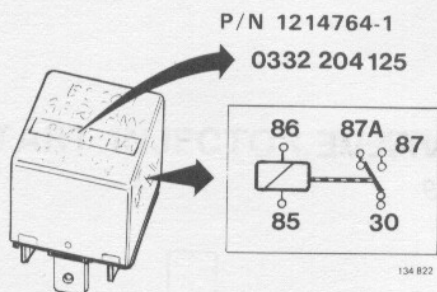
Carry out the following operations:

B1-2, 13, 26.

Caution! Hose clamps must be fitted to all connections on Turbo engine vehicles.

RELAYS

Operations E60-62

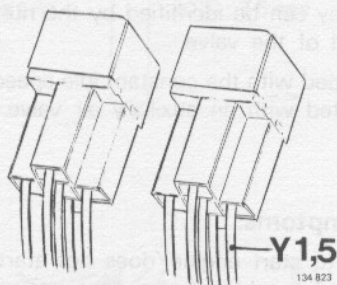


E60

1975

The main pump relay and the tank pump relay are the same and are interchangeable.

Main fuel pump Tank pump



1976-1977

Caution! The main pump relay and the tank pump relay are different and **must not be interchanged**.

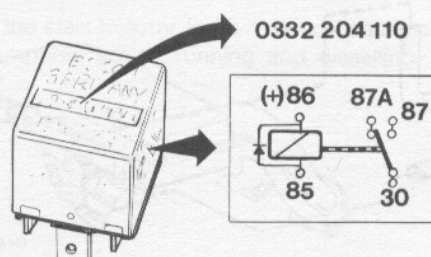
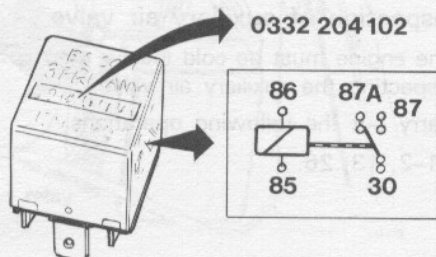
A yellow lead (\varnothing 1.5 mm = 0.006 in) is connected to the tank pump relay connector

Early type
(Not stocked)

Late type

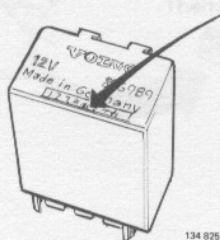
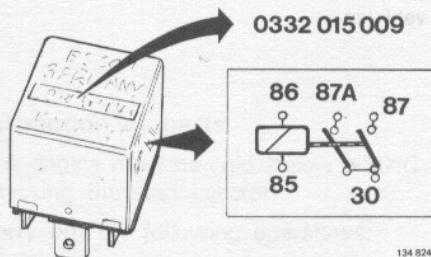
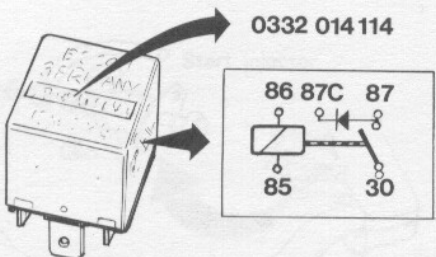
Main pump relay, P/N 1234750-6

Main pump relay, P/N 1235134-2



Tank pump relay, P/N 1234751-4

Tank pump relay, P/N 1235020-3



E62

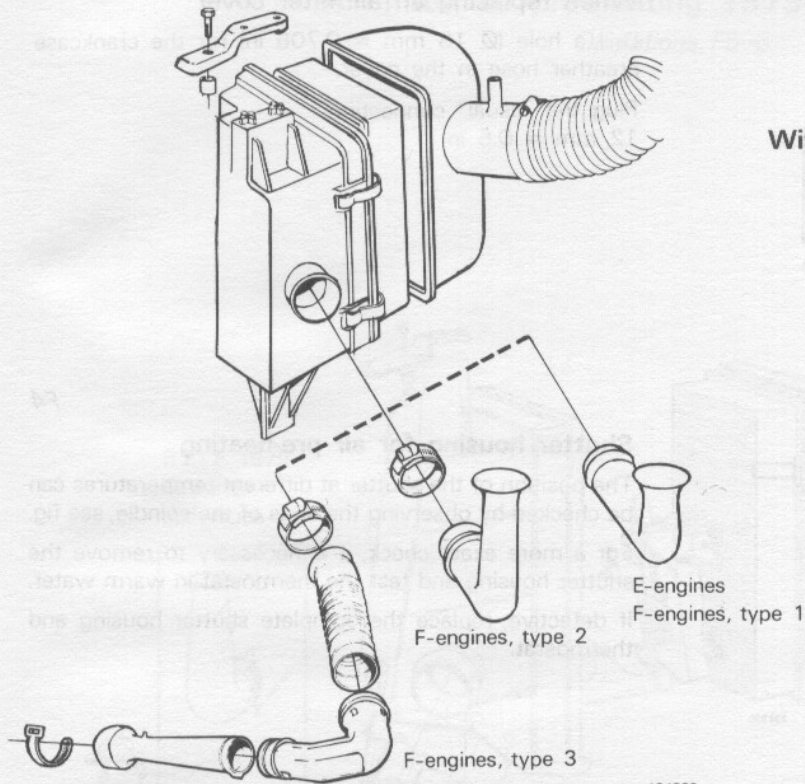
1978-

One relay (transistorized).

F. Miscellaneous

Air filter, air pre-heating 1975-1978

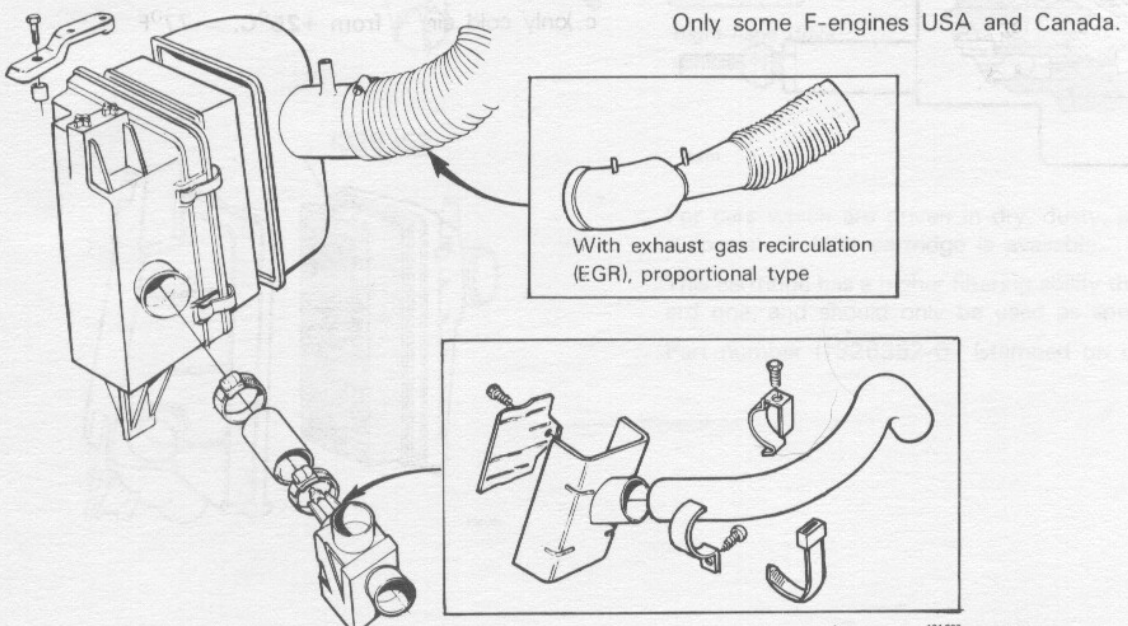
Operations F1-4



Without air pre-heating

F1

134826

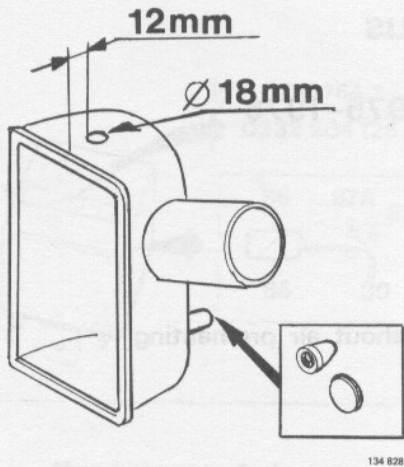


With air pre-heating

Only some F-engines USA and Canada.

F2

134 827



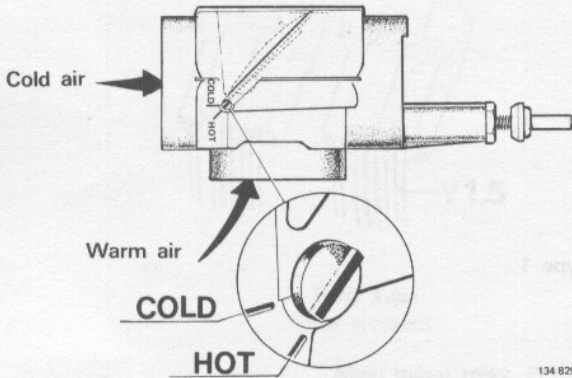
With air pre-heating
F3-4

F3

When replacing an air filter cover

Drill a hole (\varnothing 18 mm = 0.708 in) for the crankcase breather hose in the cover.

Plug the "usual" connection.
12 mm = 0.5 in.



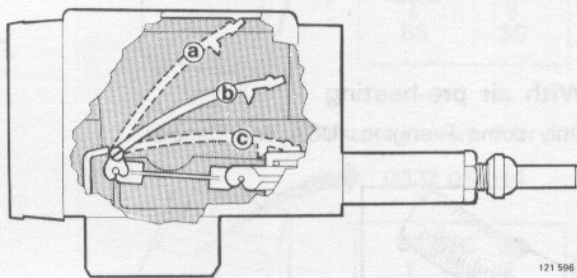
F4

Shutter housing for air pre-heating

The position of the shutter at different temperatures can be checked by observing the ends of the spindle, see fig.

For a more exact check, it is necessary to remove the shutter housing and test the thermostat in warm water.

If defective, replace the complete shutter housing and thermostat.



Shutter positions:

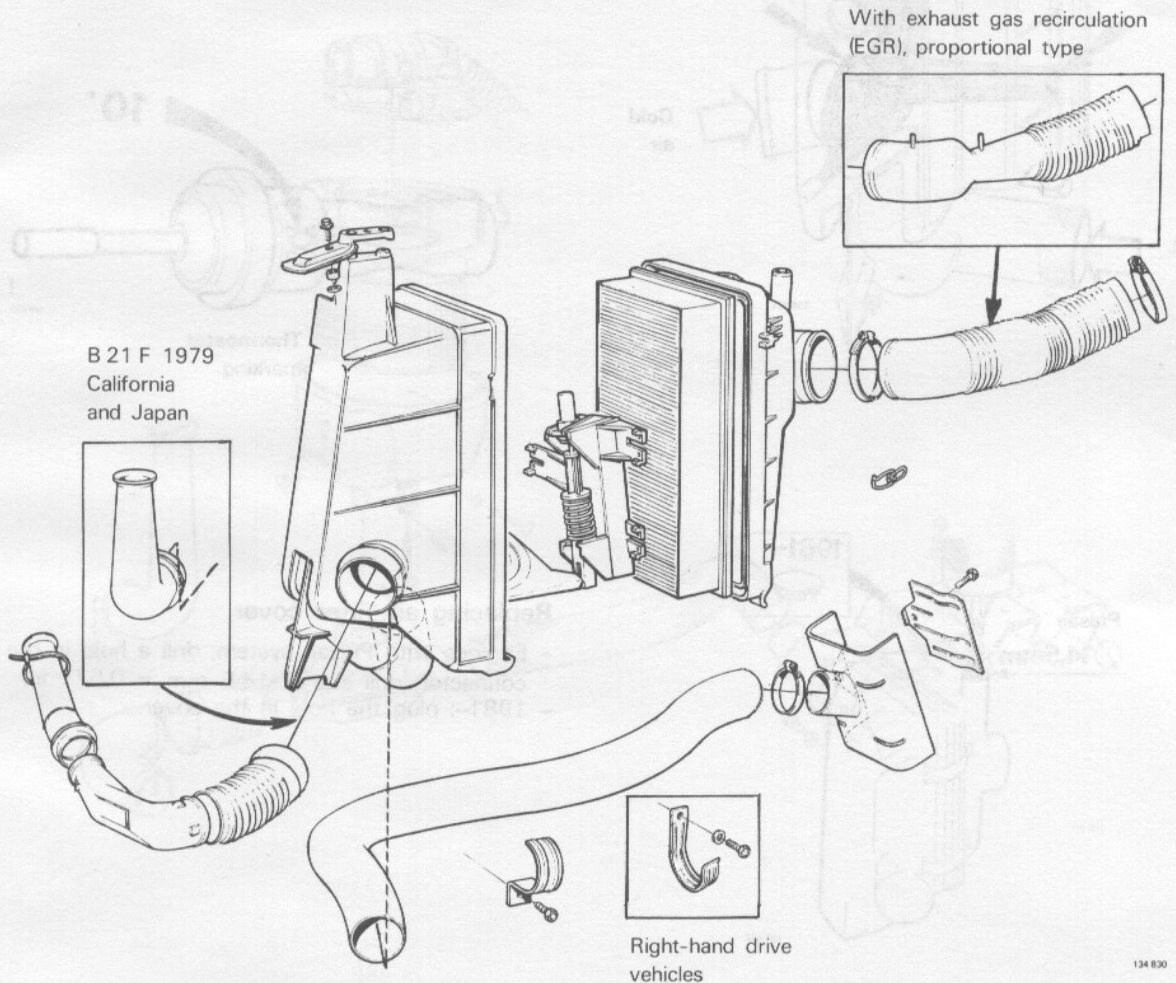
a (hot air only) = up to + 15°C = 59°F

b (intermediate)

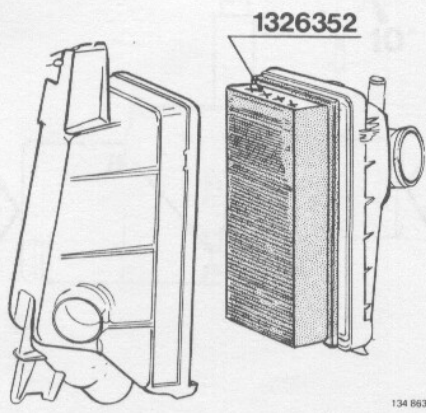
c (only cold air) - from +25°C. = 77°F

Air filter, air pre-heating 1979- (excl. Turbo)

Operations F5-6



134 830



134 863

For cars which are driven in dry, dusty, polluted areas a special air filter cartridge is available.

This cartridge has a higher filtering ability than the standard one, and should only be used as specified.

Part number (1326352-0- (stamped on cartridge).

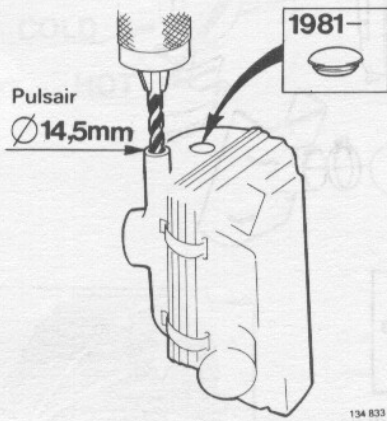
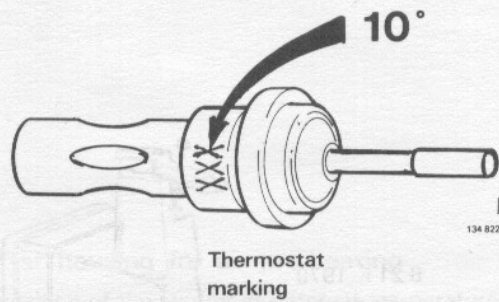
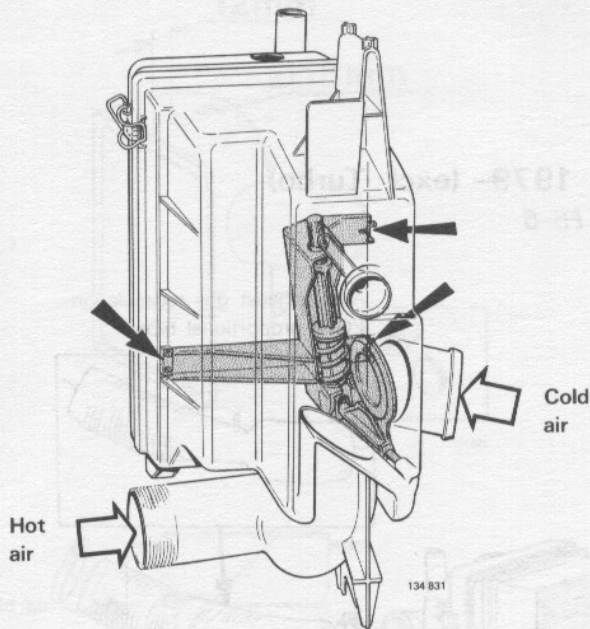
F5

Thermostat and air pre-heating mechanism

Shutter positions:

- hot air only = up to $+5^{\circ}\text{C} = 41^{\circ}\text{F}$
- cold air only = from $+15^{\circ}\text{C} = 59^{\circ}\text{F}$.

The shutter mechanism and thermostat are held in position by plastic clips, see fig.

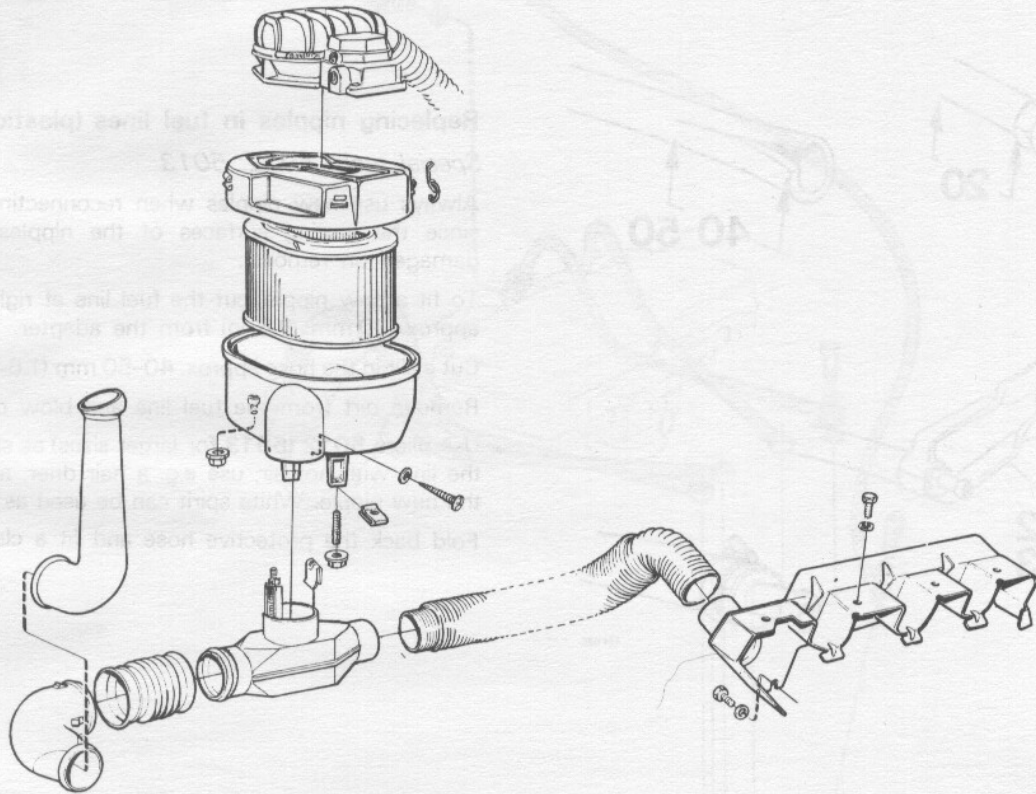


Replacing air filter cover

- Engines with Pulsair system: drill a hole in the hose connector, drill size $\varnothing 14.5 \text{ mm} = 0.571 \text{ in.}$
- 1981-: plug the hole in the cover.

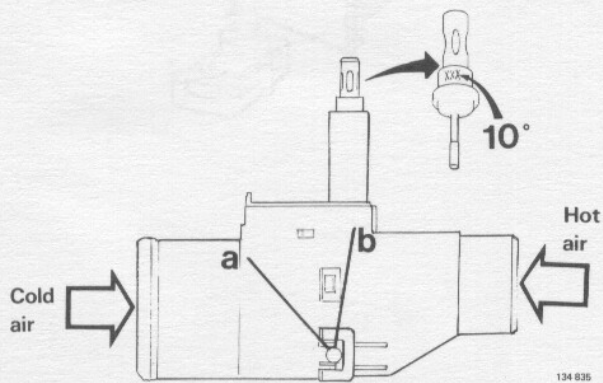
F6

Air filter, air pre-heating Turbo 1981-
Operation F7



134 834

F7



134 835

Shutter positions:

- a hot air only = up to $+5^{\circ}\text{C} = 41^{\circ}\text{F}$
- b cold air only = from $+15^{\circ}\text{C} = 59^{\circ}\text{F}$.

FUEL LINES

Operations F8-13

F8

Replacing nipples in fuel lines (plastic hoses)

Special tools: 5012, 5013

Always use new nipples when reconnecting fuel lines since the sealing surfaces of the nipples are easily damaged on removal.

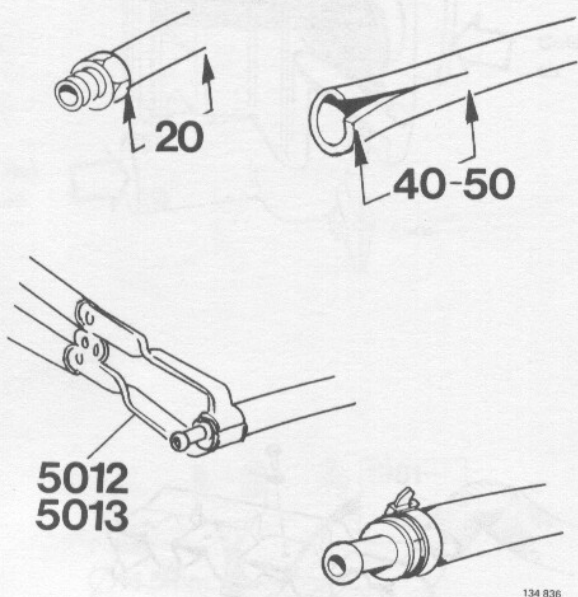
To fit a new nipple, cut the fuel line at right angles at approx. 20 mm (0.8 in) from the adapter.

Cut a slit in the hose approx. 40-50 mm (1.6-2.0 in) long.

Remove dirt from the fuel line and blow clean.

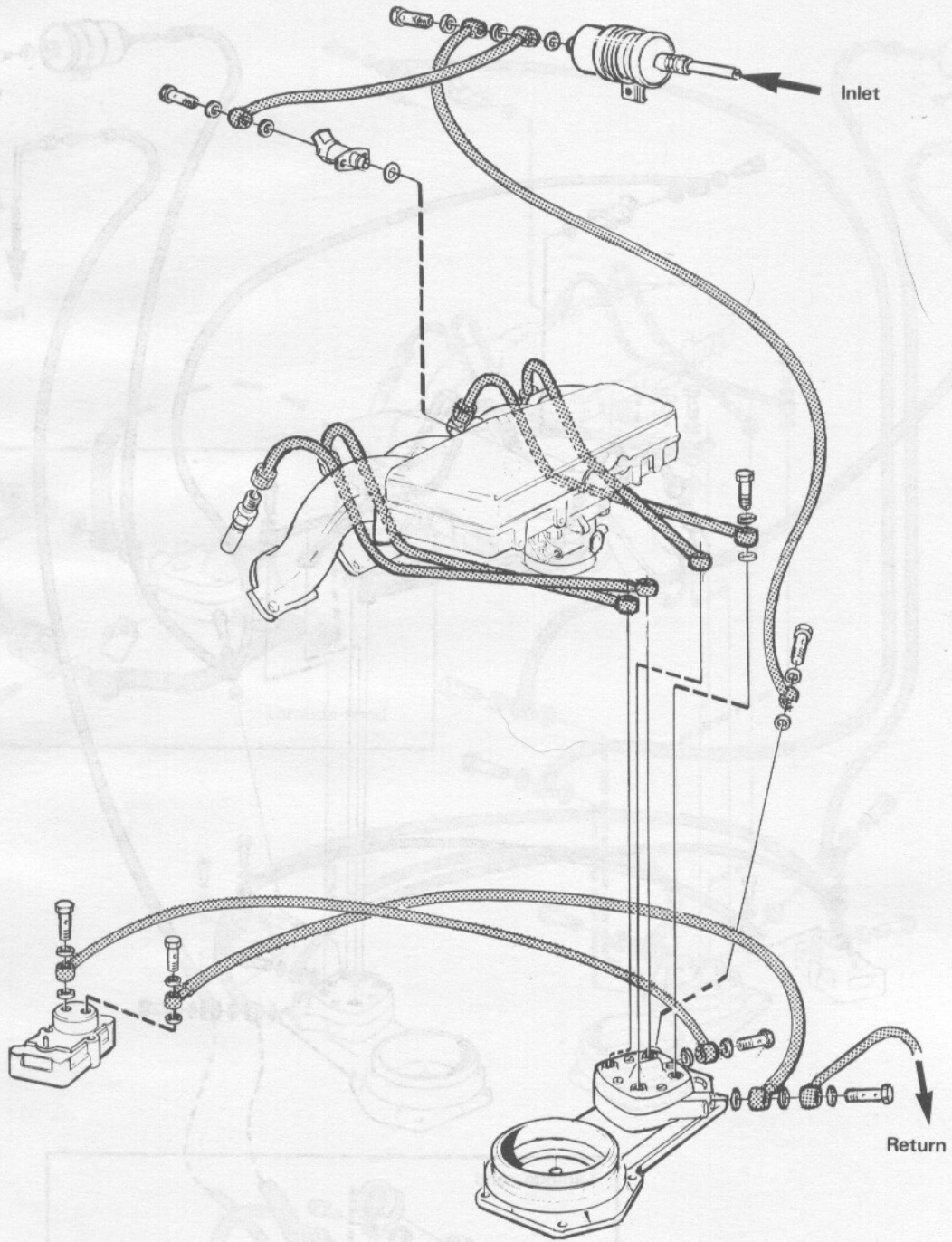
Use pliers **5012** (**5013** for larger sizes) as shown. Heat the line with hot air, use e.g. a hair drier, and press in the new nipple. White spirit can be used as a lubricant.

Fold back the protective hose and fit a clamp.



E-engines 1975

F9

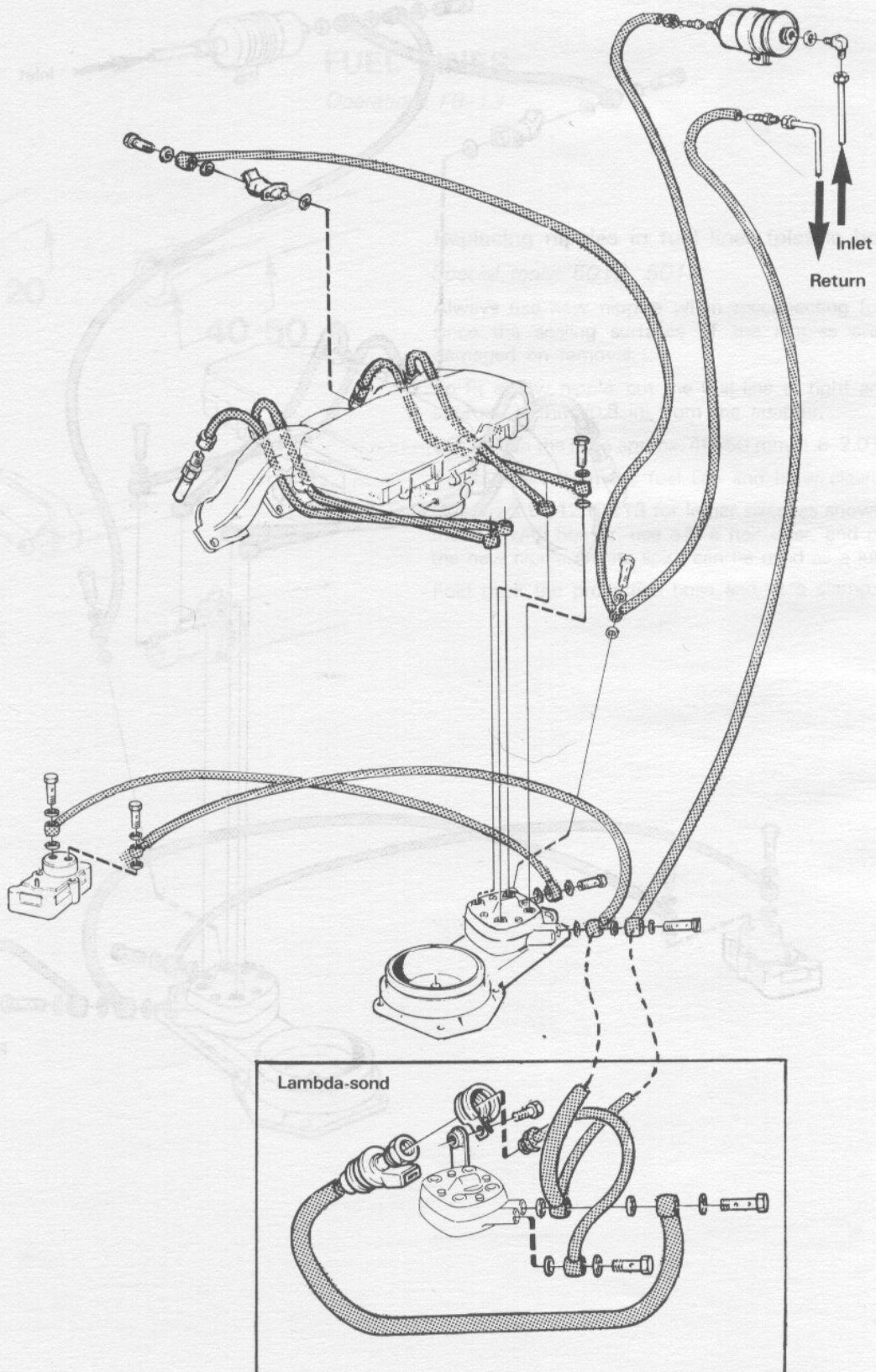


134 837

E/F engines 1976-1977

F10

Also B 21 E Sweden + Australia 1978 and early manufactured 1979 models.

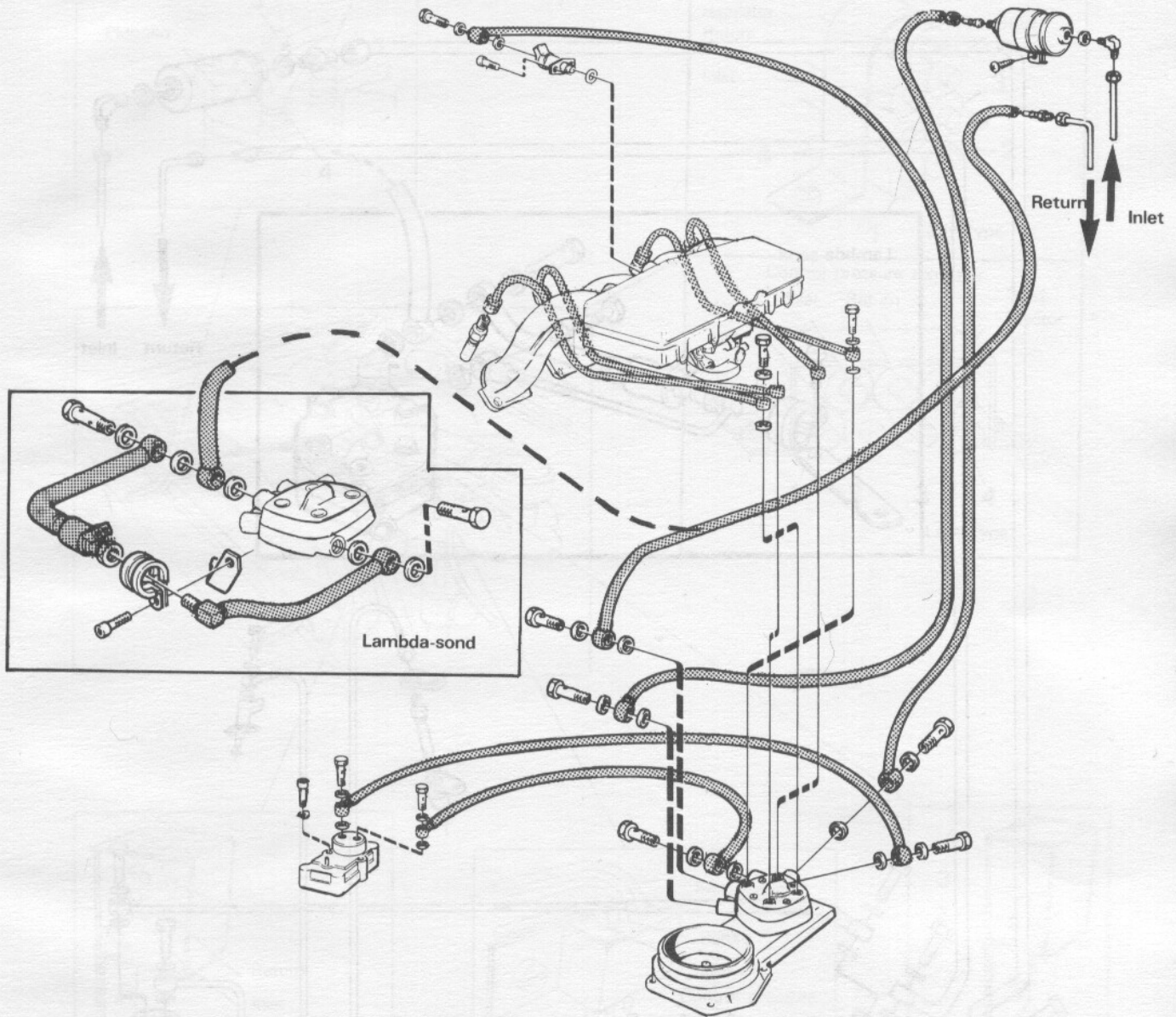


134-0-j

E/F engines 1978-

F11

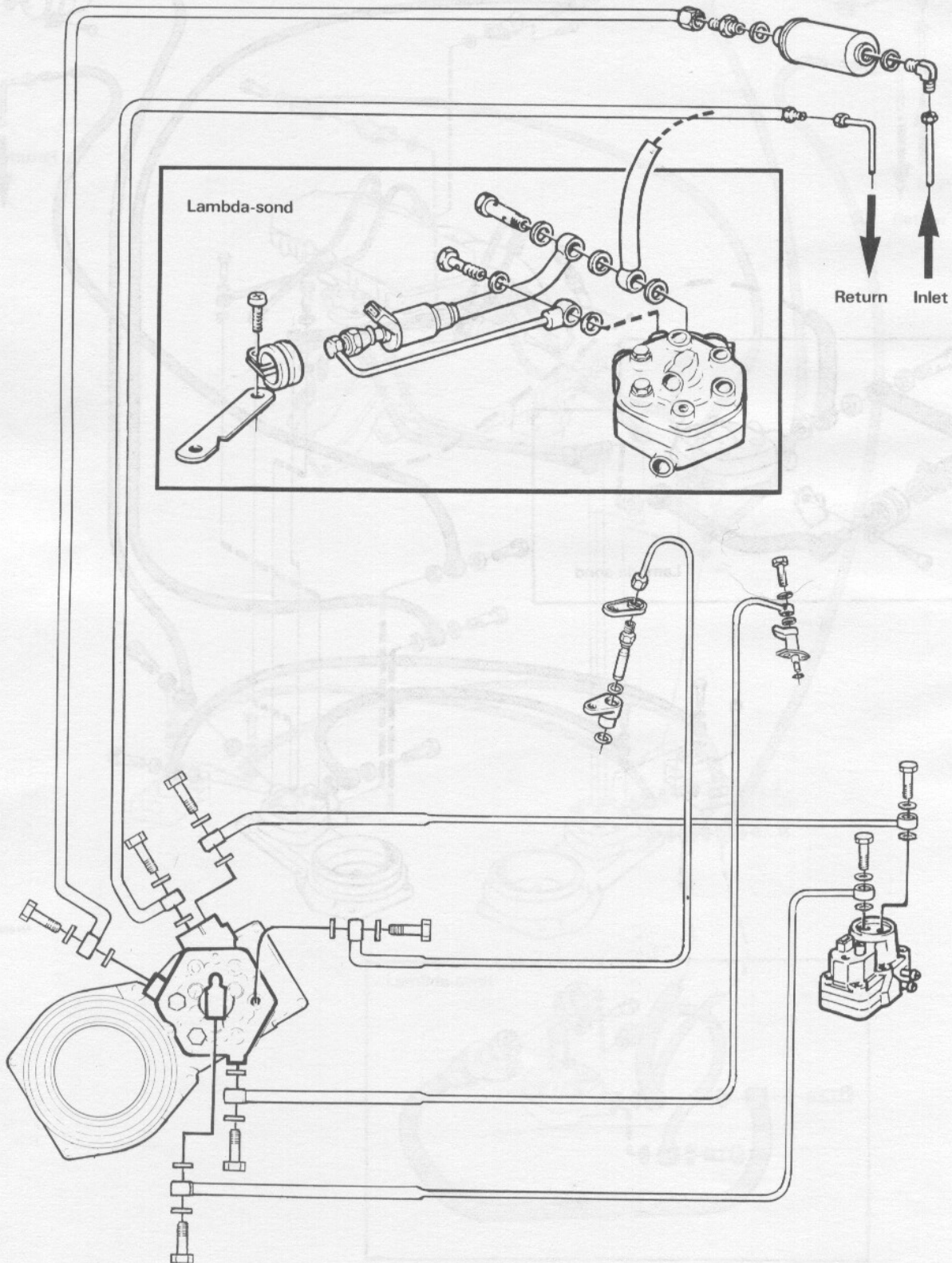
Note! B 21 E Sweden + Australia late manufactured 1979- models.



E/T-Turbo 1981-

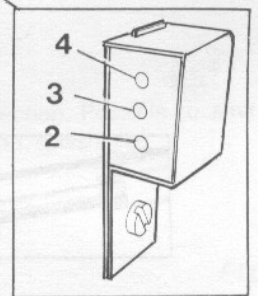
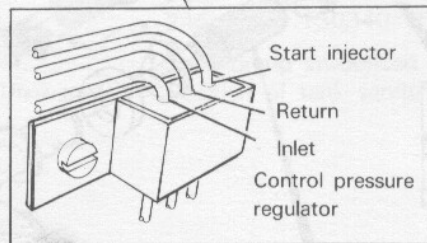
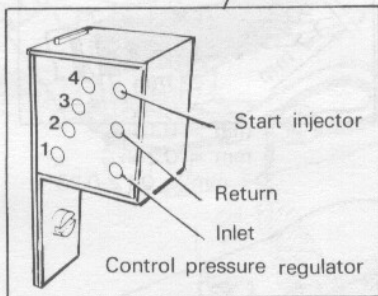
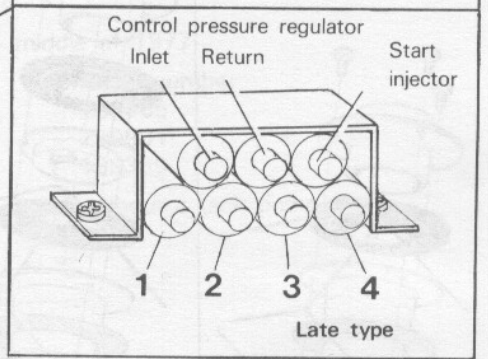
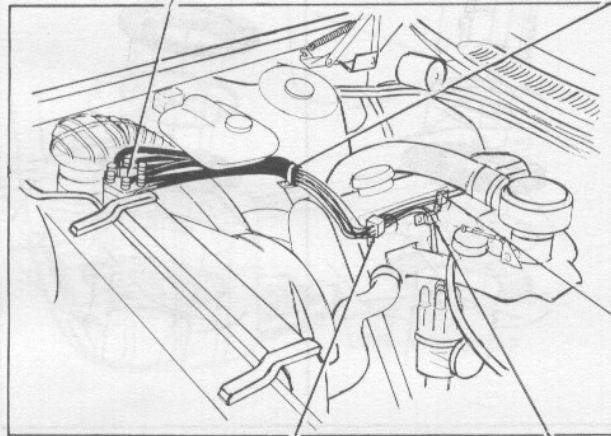
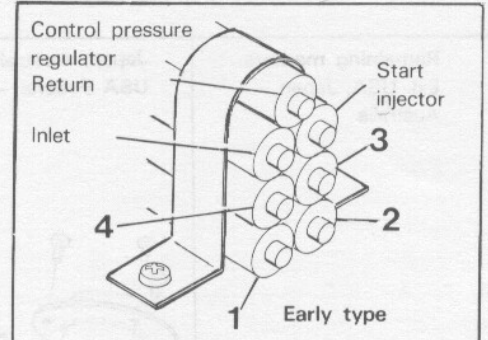
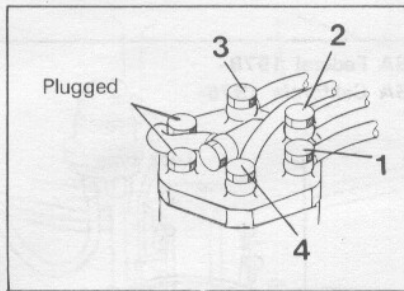
F12

For clamping of fuel lines see next page.



E/F-Turbo 1981-

F13

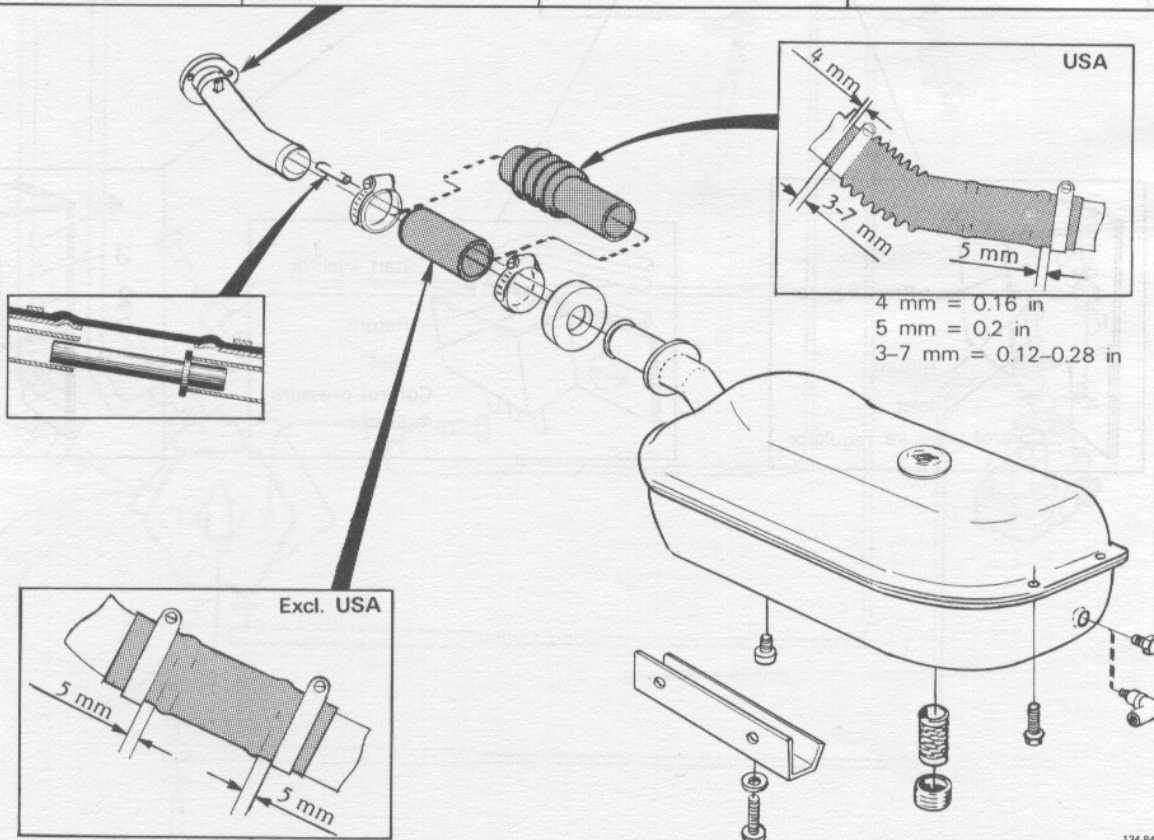
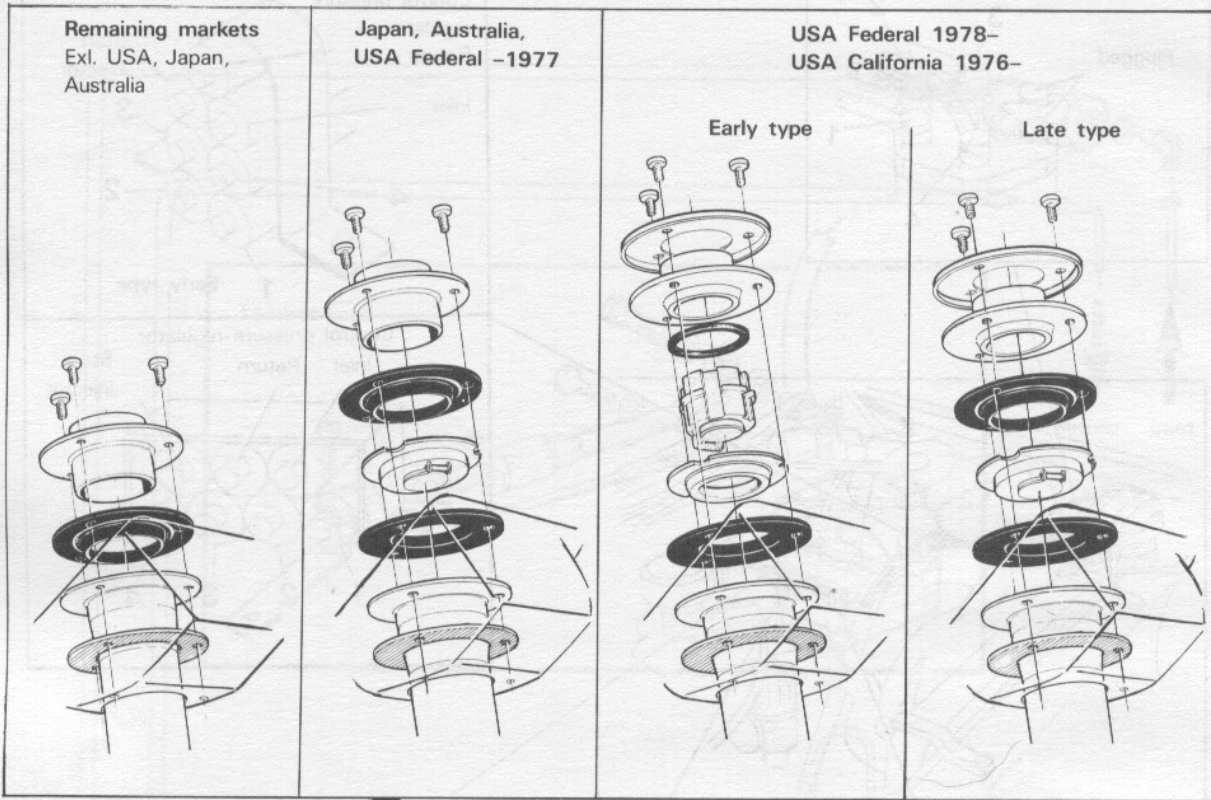


134 941

FUEL TANK 1975- MIDDLE OF 1978

Operations F14-37

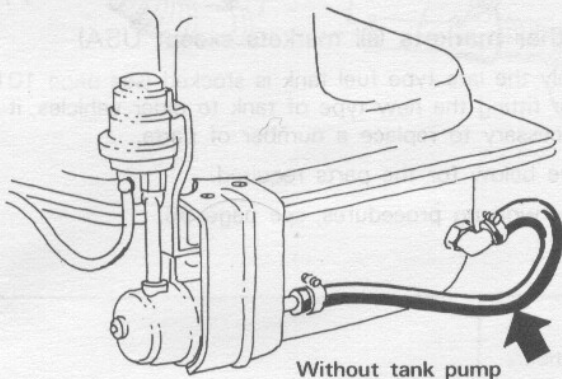
Model	Chassis number
242	- 130642
244	- 315493
245	- 181314



134 842

Fuel tank types

Three different types of fuel tanks have been fitted to vehicles manufactured between 1975 and the middle of 1978. The difference between the types lies in the location of the tank sender unit and splash can in the tank, and also the attachment of the tank sender unit.



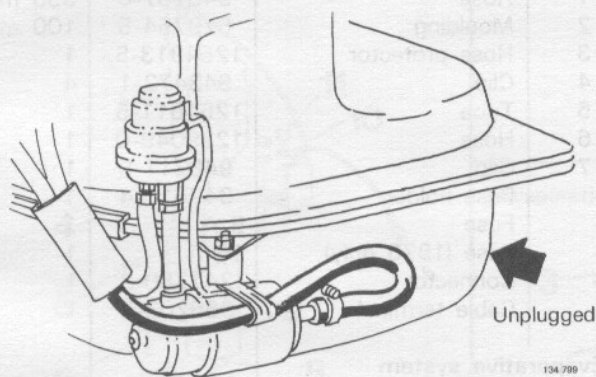
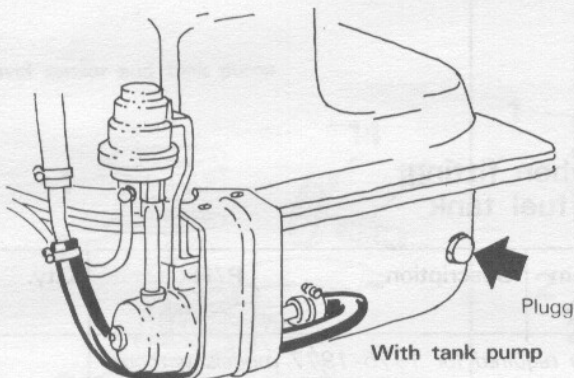
F14

Type 1

1975 – middle of 1977.

Model	Chassis number
242	- 106765
244	- 200331
245	- 130339

Manufactured without a tank pump.



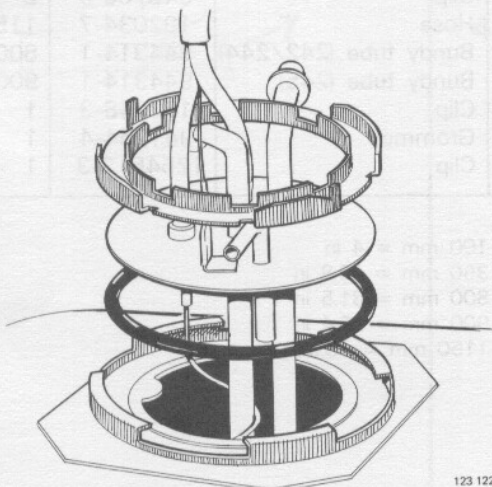
F15

Type 2

Middle of 1977 – end of 1977.

Model	Chassis number
242	106766–122894
244	200332–274964
245	130340–163834

Tank pump introduced in production. Possible to alter. Position of tank sender unit and splash can.



F16

Type 3

Beginning of 1978 – middle of 1978.

Model	Chassis number
242	122895–130642
244	274965–315493
245	163835–181314

Modified attachment of tank sender unit.

Replacement of fuel tank

Operations F17-37

F17

F18

USA

Type 1 fuel tanks: only one type of replacement tank is available P/N 1255740-1. Old parts can be transferred to the new tank.

Type 2 fuel tanks: only one type of replacement tank is available P/N 1255739-3. Old parts can be transferred to new tank.

Type 3 fuel tanks: no longer stocked, new type now available. For fitting the new type of tank to older vehicles, it is necessary to replace a number of parts. See below for the parts required.

For working procedures, see page 96.

Other markets (all markets except USA)

Only the late type fuel tank is stocked (see page 101). For fitting the new type of tank to older vehicles, it is necessary to replace a number of parts.

See below for the parts required.

For working procedures, see page 96.

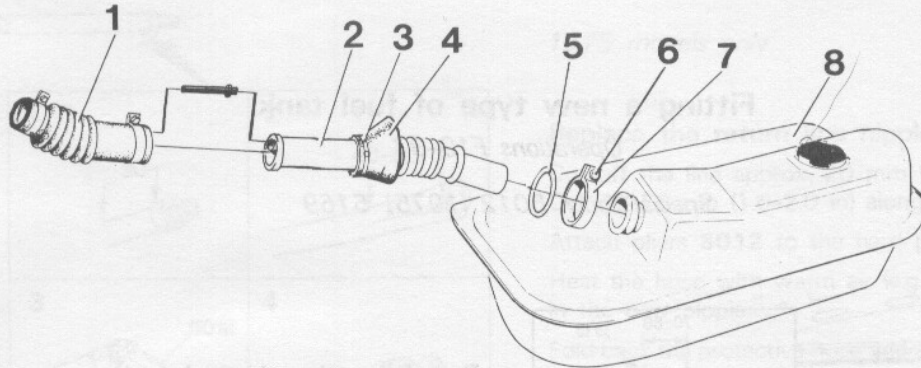
Parts required when fitting a new type of fuel tank

Item No.	Description	P/N	Qty.
Fuel tank incl. filter tube			
1	Filler hose	1304240-3	1
2	Filler tube	1255189-1	1
3	Clip	948211-8	1
4	Rubber seal	1254461-1	1
5	O-ring	949282-8	1
6	Screw	955274-6	1
7	Clip	1254606-5	1
8	Fuel tank	1255754-2	1
Level sender and tank pump			
1	Lock ring	1235324-9	1
2	O-ring	949276-0	1
3	Level sender	1258854-7	1
4	Hose	1235388-4	1
5	Screw	947279-6	1
6	Spring clip	942866-5	1
7	Filter	1266822-4	1
8	Bracket	1235444-6	1
9	Tank pump	1276330-6	1
10	Washer	940121-7	2
11	Nut	1266390-2	2
12	Clip	647709-5	1
13	Sealing sleeve	687245-1	1
14	Hose clip (1975 only)	948210-0	1
15	Nipple (1975 only)	947411-2	1

Item No.	Description	P/N	Qty.
<i>Also required for 1975-1977 models without tank pump</i>			
1	Hose	943707-0	350 mm
2	Moulding	679754-5	100 mm
3	Hose protector	1254913-5	1
4	Clip	943472-1	4
5	Tube	1254611-5	1
6	Hose	1229049-0	1
7	Clip	948211-8	1
-	Fuse holder	949611-4	1
-	Fuse	5 A	1
-	Fuse (1976 only)	16 A	1
-	Connector	247780-3	1
-	Cable terminal	958203-2	1
Evaporative system			
1	Clip	946709-3	2
2	Hose	192034-7	1150 mm
3	Bundy tube (242/244)	944314-1	800 mm
3	Bundy tube (245)	944314-1	900 mm
4	Clip	192248-3	1
5	Grommet	941264-4	1
6	Clip	1254513-3	1

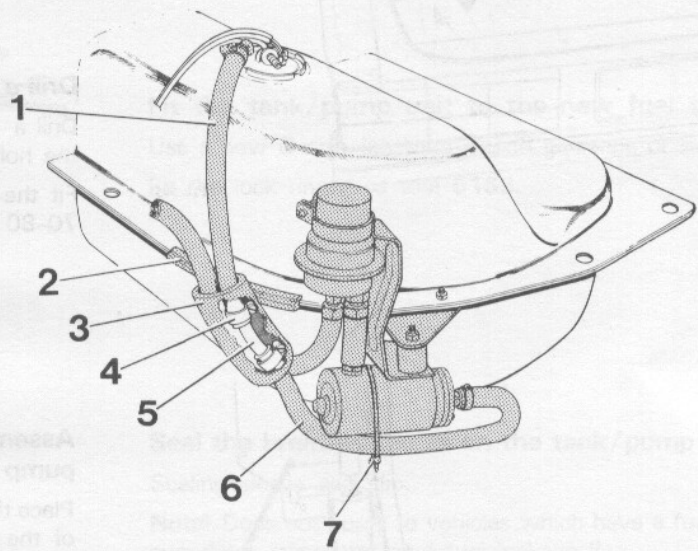
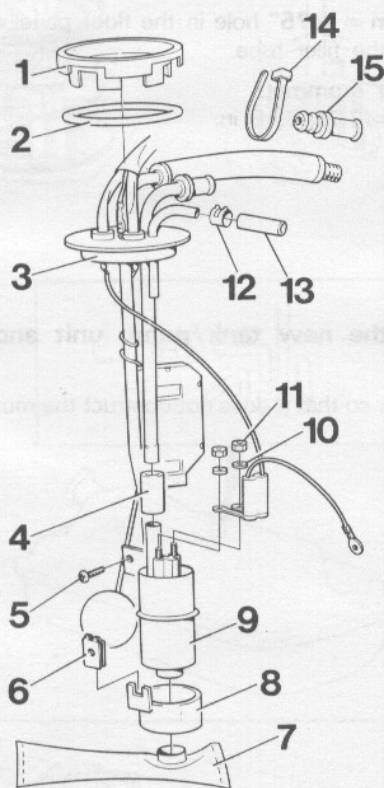
100 mm = 4 in
 350 mm = 13.8 in
 800 mm = 31.5 in
 900 mm = 35.4 in
 1150 mm = 45.3 in

Fuel tank incl. filler tube

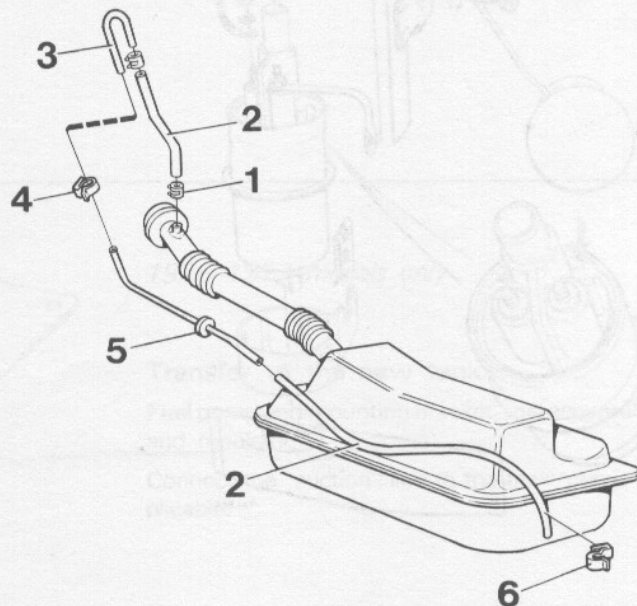


Additional parts required for 1975-1977 models without tank pump

Level sensor and tank pump



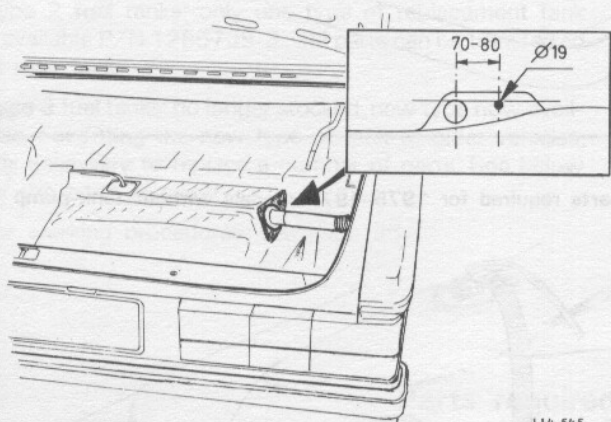
Evaporative system



Fitting a new type of fuel tank

Operations F19-37

Special tools: 5012 (1975), 5169



F19

Pull down the old fuel tank

Disconnect the battery ground lead first.
Drain the fuel.

F20

Drill a hole to take the evaporative system tube

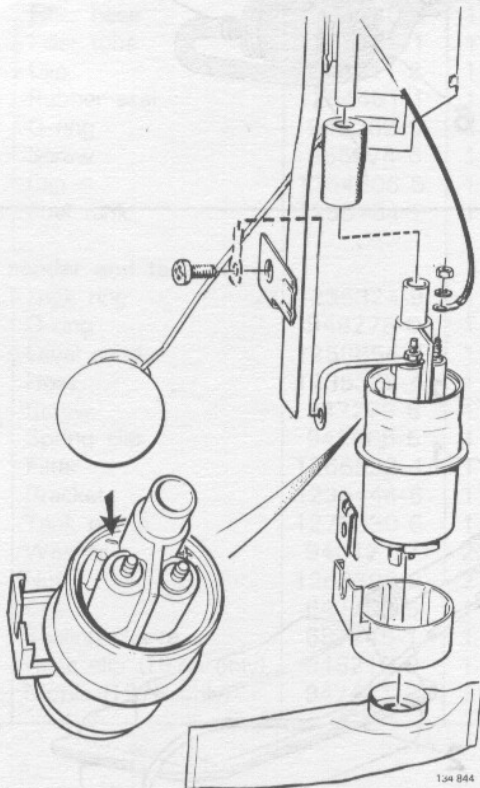
Drill a 19 mm = 0.75" hole in the floor panel next to the hole for the filler tube.

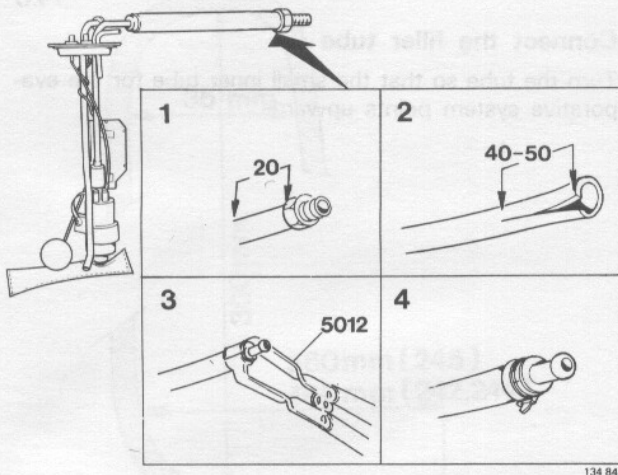
Fit the rubber grommet.
70-80 mm = 2.75-3.15 in.

F21

Assemble the new tank/pump unit and tank pump

Place the filter so that it does not obstruct the movement of the float.





1975 models only

F22

Replace the return line nipple

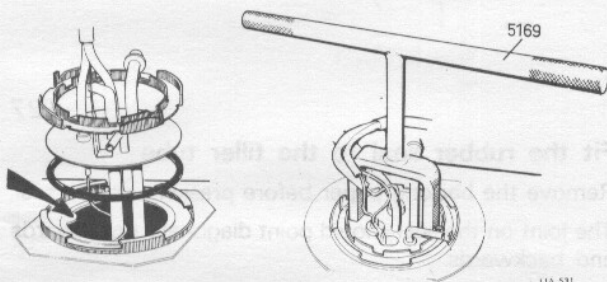
Cut off the line approx. 20 mm (0.8 in) from the nut. Cut 40-50 mm (1.6-2.0 in) along the protective hose.

Attach pliers **5012** to the hard plastic hose.

Heat the hose with warm air (e.g. hair drier) and press in the new nipple.

Fold back the protective hose and secure it with a clamp.

134 845



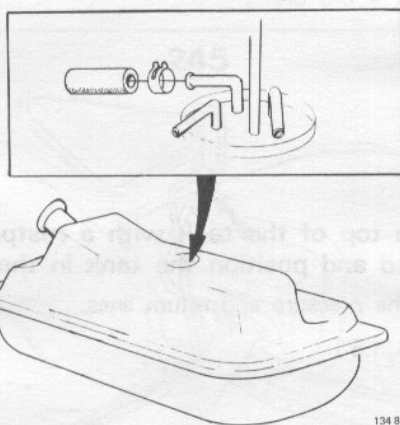
F23

Fit the tank/pump unit to the new fuel tank

Use a new O-ring, lubricate it with glycerine or similar.

Fit the lock ring. Use tool **5169**.

114 531



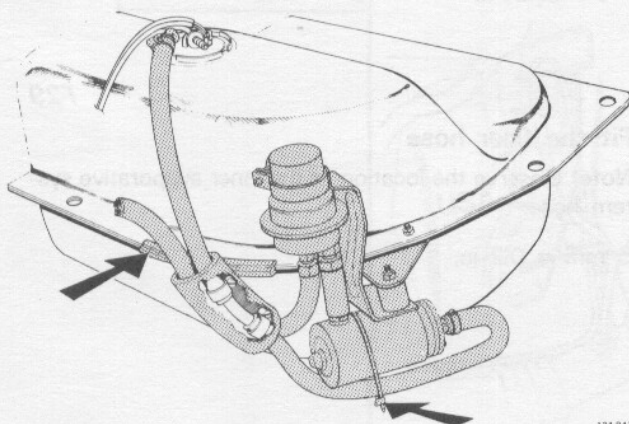
F24

Seal the breather nipple on the tank/pump unit

Sealing sleeve and clip.

Note! Does not apply to vehicles which have a fuel accumulator incorporating a fuel leakage line.

134 846



1975-1977 models only

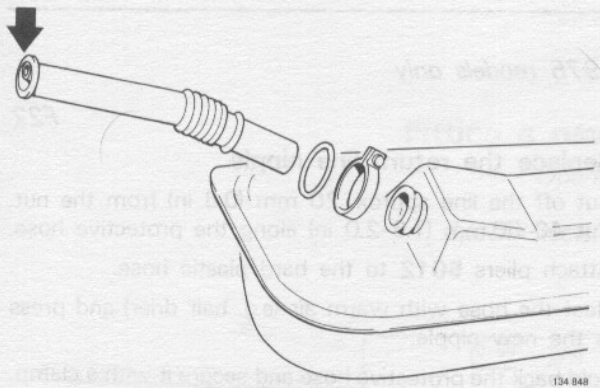
F25

Transfer to the new tank:

Fuel pump and mounting bracket, fuel accumulator, hoses and moulding.

Connect the "suction" line to the tank/pump unit as applicable.

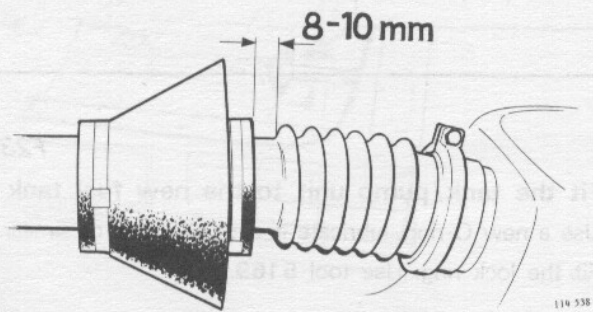
134 847



F26

Connect the filler tube

Turn the tube so that the small inner tube for the evaporative system points upwards.



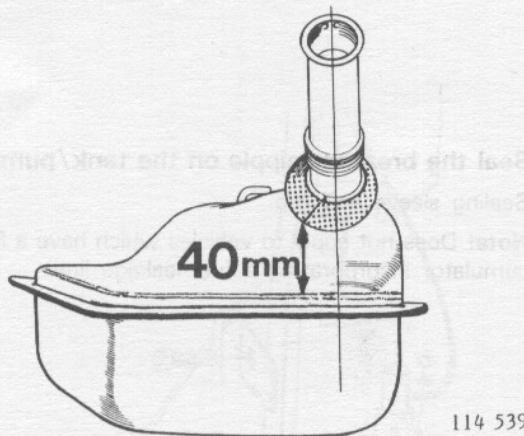
F27

Fit the rubber seal to the filler tube

Remove the backing paper before pressing on the seal. The joint on the seal should point diagonally downwards and backwards.

Fit two hose clamps, cut off pieces not used.

8-10 mm = 0.3-0.4"

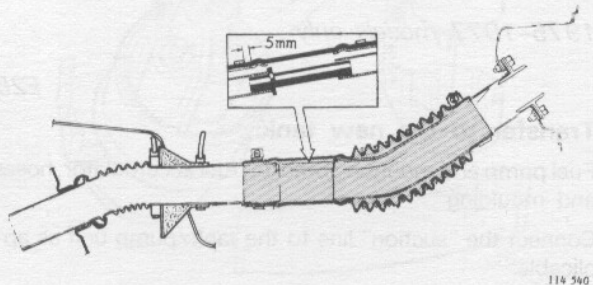


F28

Coat the top of the tank with a rustproofing compound and position the tank in the car

Connect the pressure and return lines.

40 mm = 1.6"

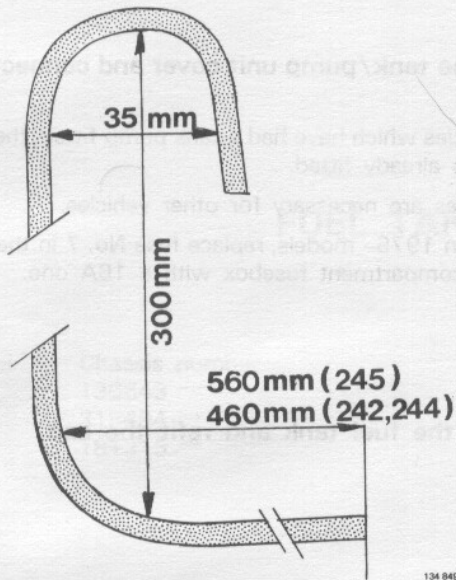


F29

Fit the filler hose

Note! Observe the location of the inner evaporative system hose.

5 mm = 0.2 in.



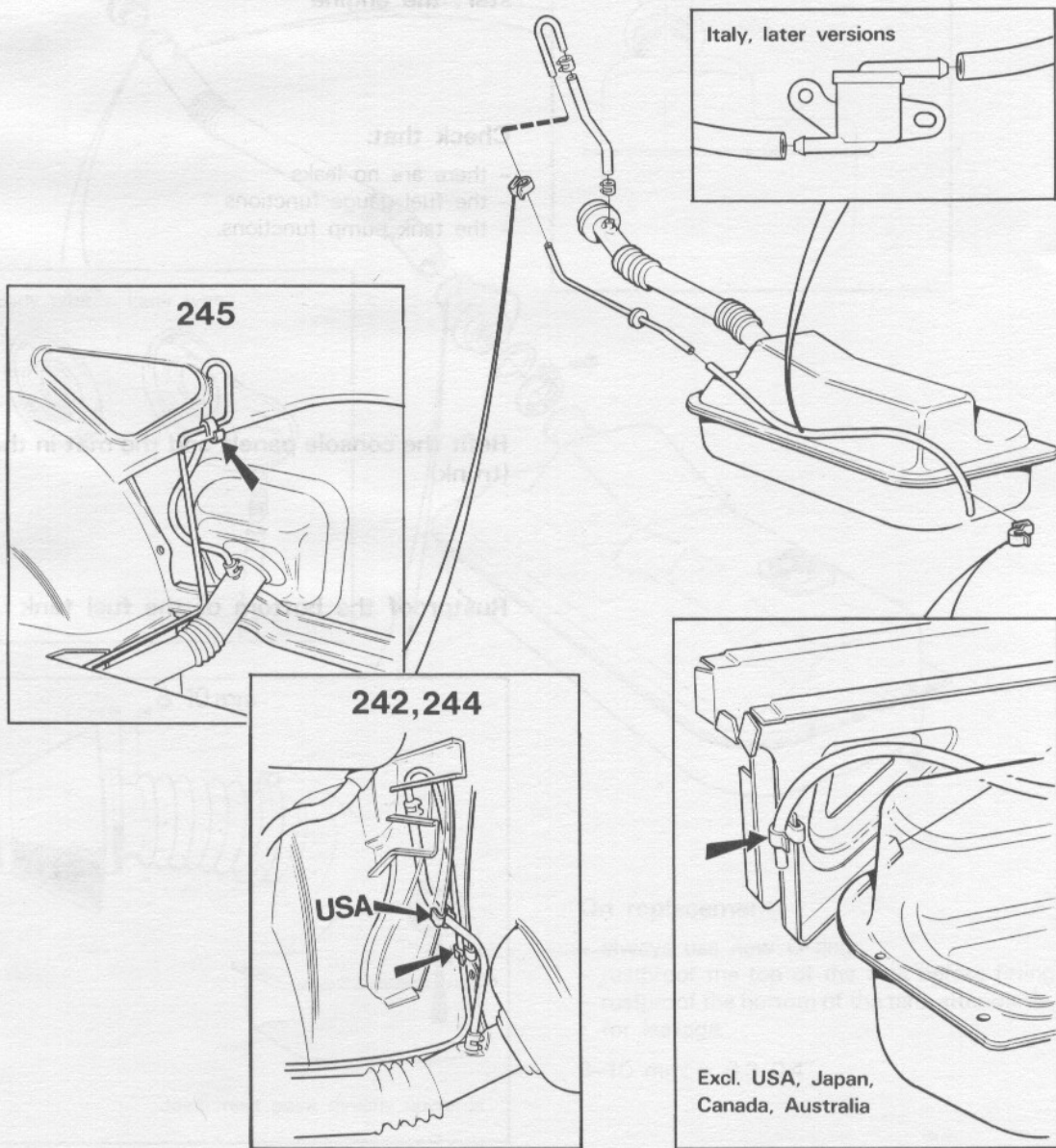
Shape a new evaporative tube

- 35 mm = 1.4"
- 300 mm = 11.8"
- 460 mm = 18"
- 560 mm = 22"

F30

F31

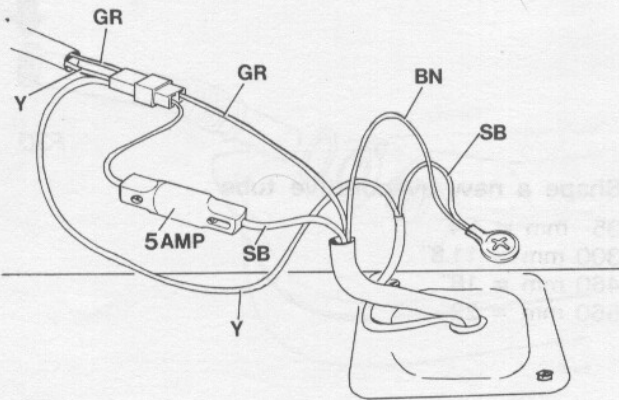
Install the evaporative system



134 849

134 850

Fuel tank



114 558

F32

Refit the tank/pump unit cover and connect the wiring

On vehicles which have had a tank pump fitted, the fuse holder is already fitted.

New ones are necessary for other vehicles.

Note! On 1975- models, replace fuse No. 7 in the passenger compartment fusebox with a 16A one.

F33

Fill up the fuel tank and refit the cap

F34

Reconnect the battery earth/ground lead and start the engine

F35

Check that:

- there are no leaks
- the fuel gauge functions
- the tank pump functions.

F36

Refit the console panels and the mat in the boot (trunk)

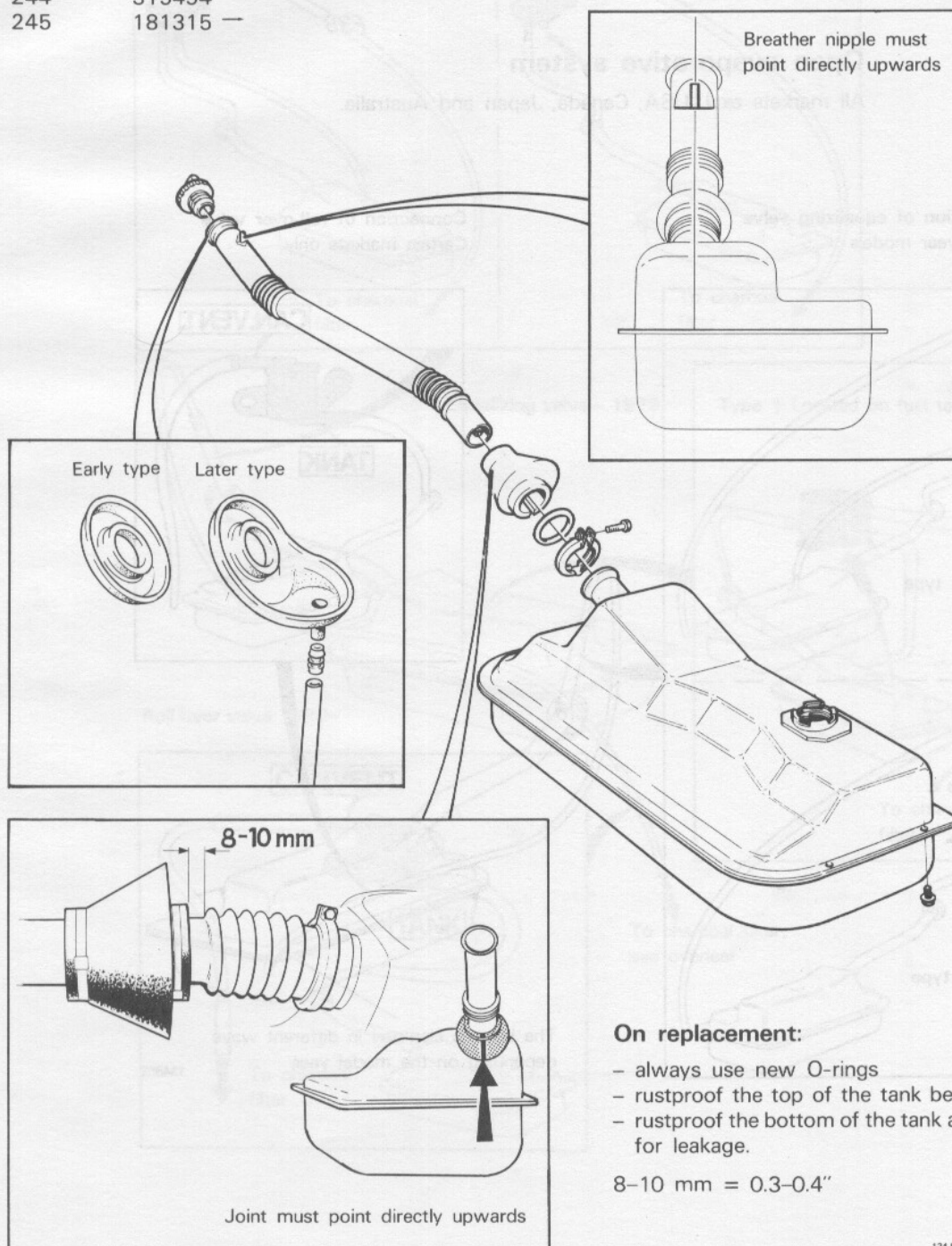
F37

Rustproof the bottom of the fuel tank

FUEL TANK, MIDDLE OF 1978-

Operation F38

Model	Chassis number
242	130643 —
244	315494 —
245	181315 —



F38

On replacement:

- always use new O-rings
- rustproof the top of the tank before fitting in vehicle
- rustproof the bottom of the tank afterwards, and check for leakage.

8-10 mm = 0.3-0.4"

EVAPORATIVE SYSTEM

Operations F39-43

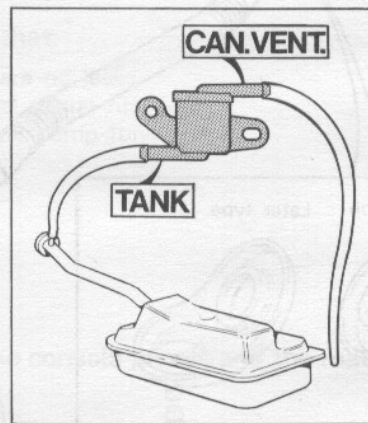
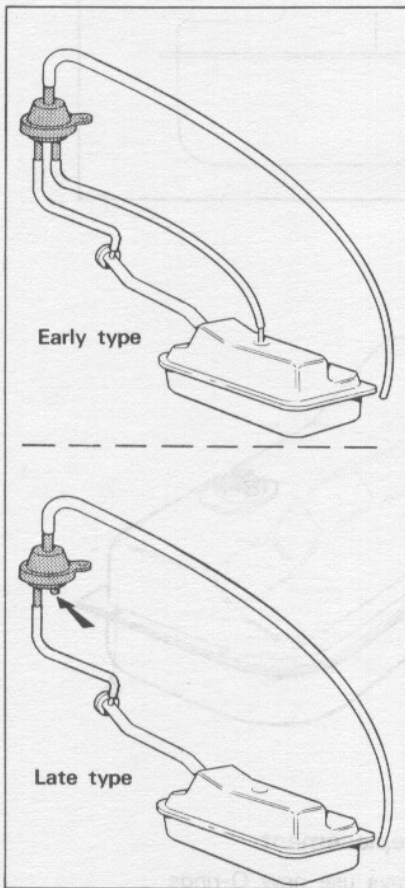
F39

Open evaporative system

All markets excl. USA, Canada, Japan and Australia.

Connection of equalizing valve
Not all year models

Connection of roll-over valve
Certain markets only



The hose is clamped in different ways depending on the model year

134852

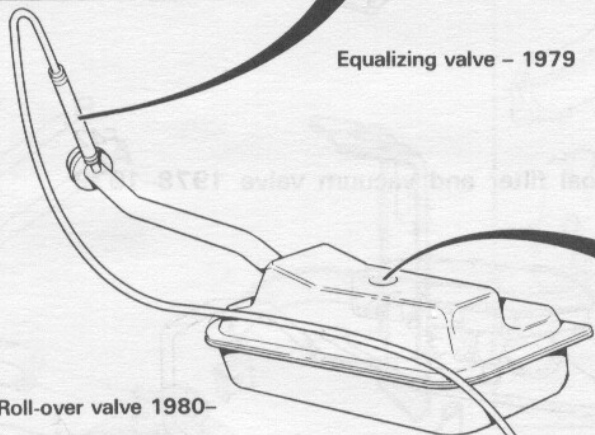
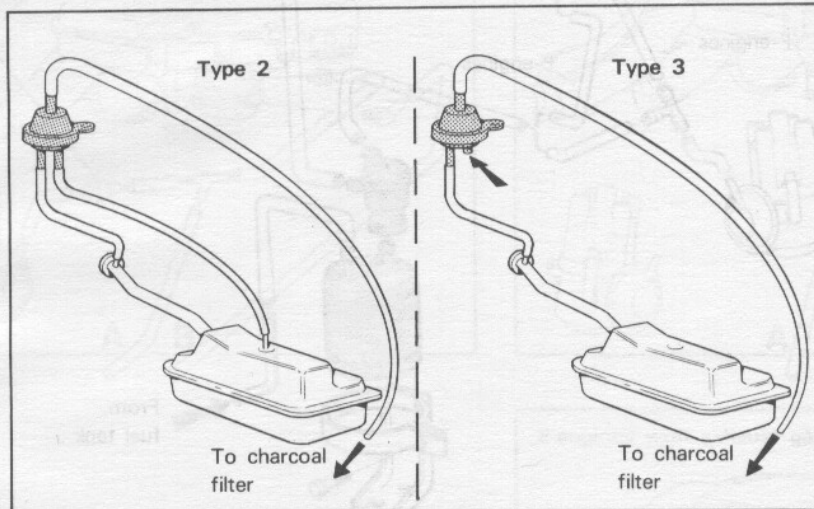
Closed evaporative system
USA, Canada, Japan and Australia

Operations F40-43

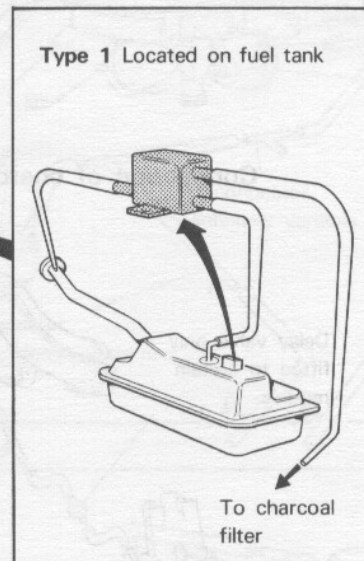
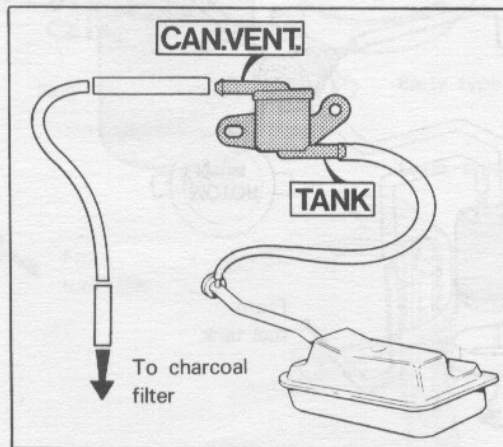
F40

Connection of equalizing valve and roll-over valve

The equalizing valve was discontinued in 1980 and replaced by the roll-over valve.



Roll-over valve 1980-

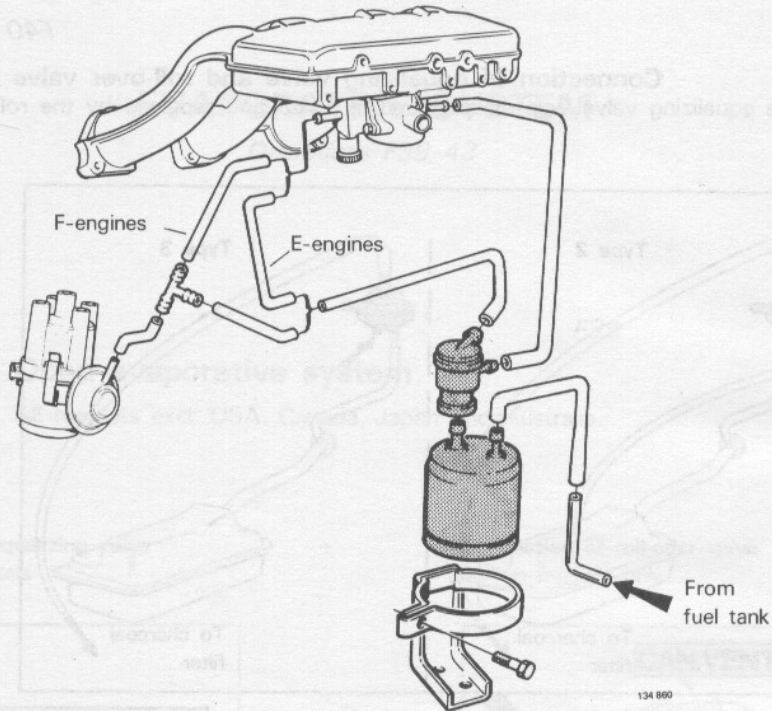


Type 1 Located on fuel tank

134 853

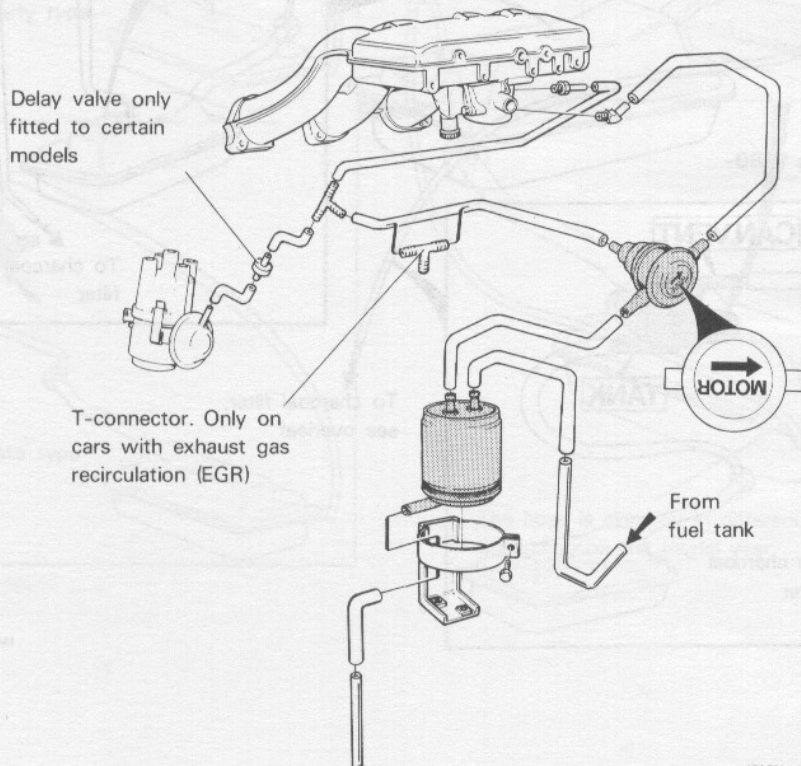
F41

Connection of charcoal filter and vacuum valve 1975-1977



F42

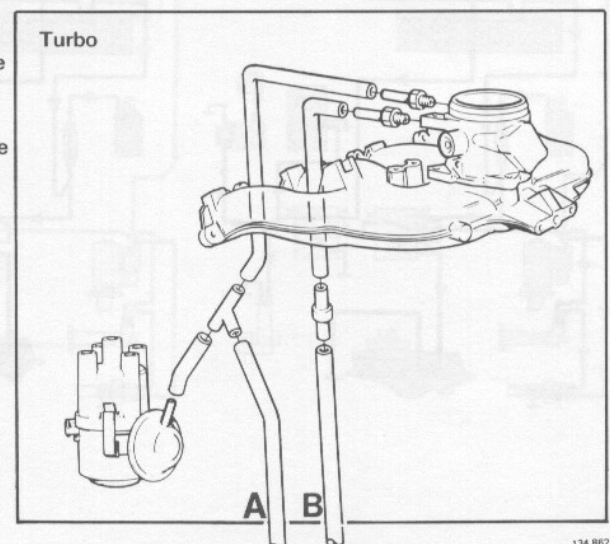
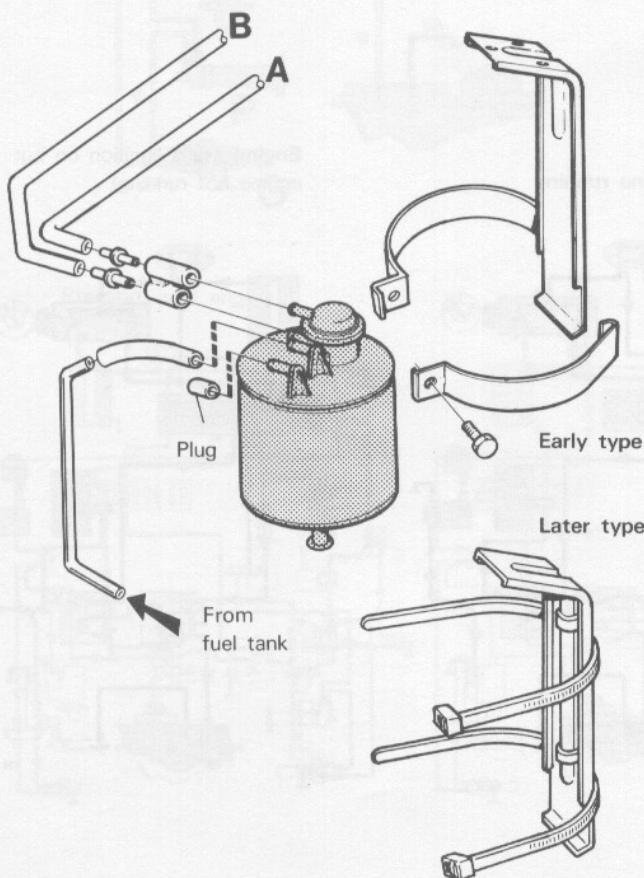
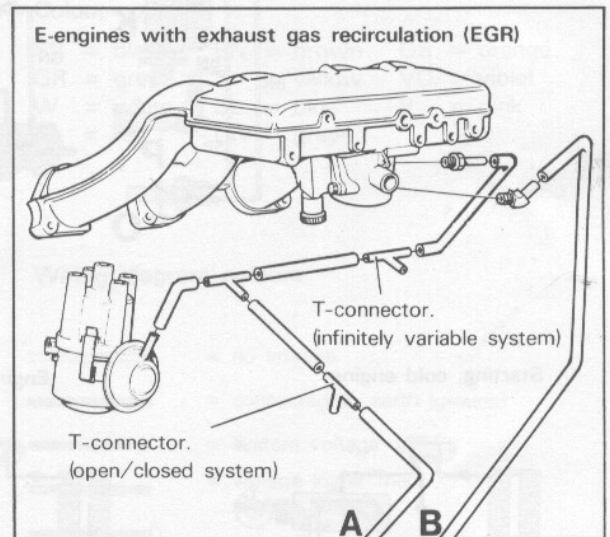
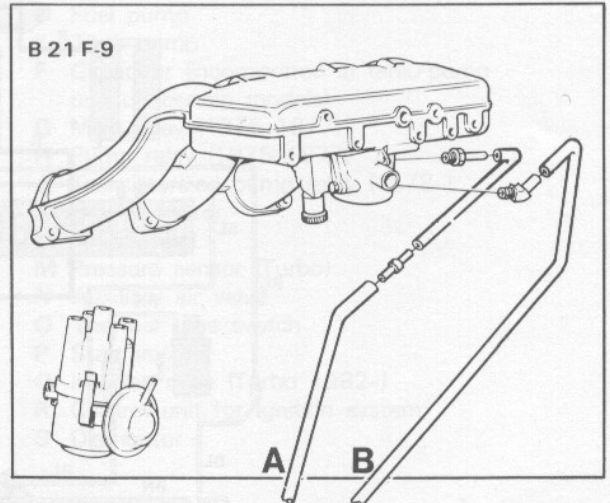
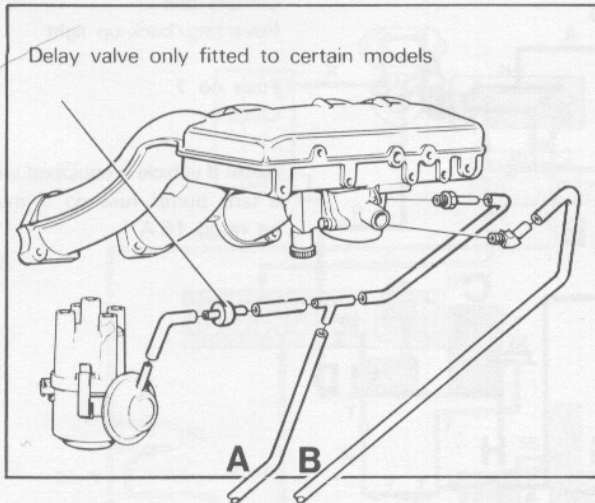
Connection of charcoal filter and vacuum valve 1978-1979



F43

Connection of charcoal filter and vacuum valve 1980-

B 21 F-5 and E-engines without exhaust gas recirculation (EGR)



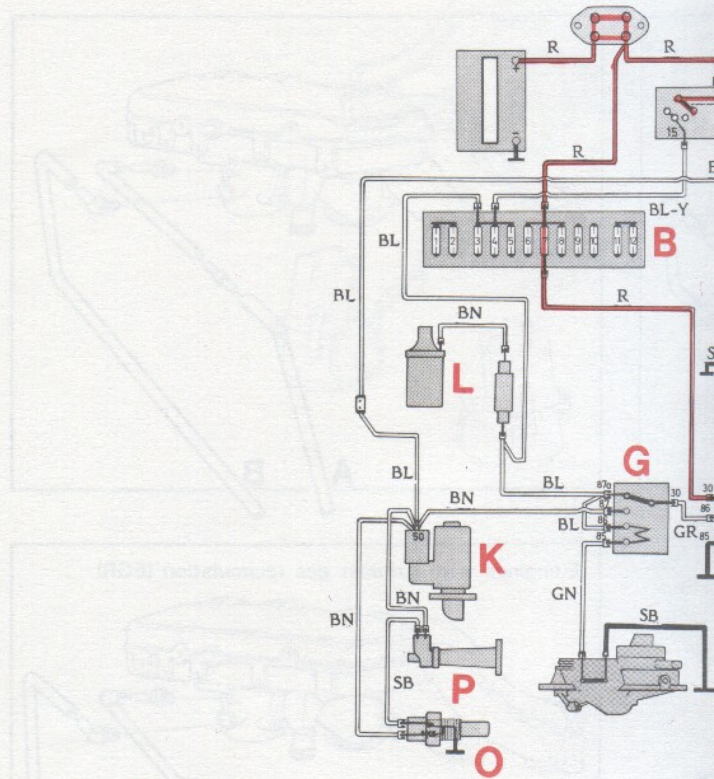
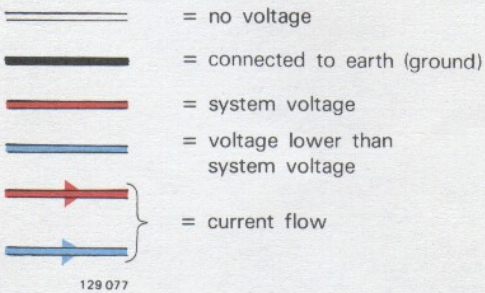
List of components

- A Ignition switch
- B Fusebox
- C Control pressure regulator
- D Fuel pump
- E Tank pump
- F Capacitor (incorporated in tank/pump unit on certain models)
- G Main relay (1975-1977)
- H Pump relay (1975-1977)
- J Transistorized pump relay (1978-)
- K Starter motor
- L Ignition coil
- M Pressure sensor (Turbo)
- N Auxiliary air valve
- O Thermal time switch
- P Start injector
- Q Impulse relay (Turbo 1982-)
- R Control unit for ignition system
- S Distributor

Colour code:

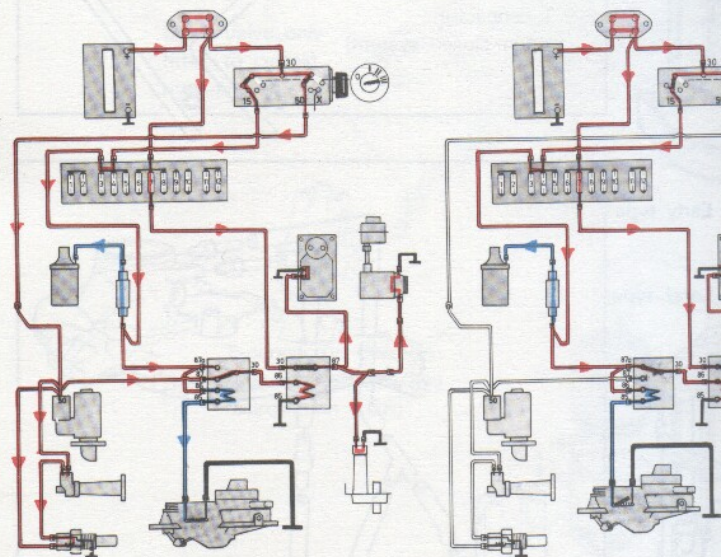
- | | | |
|------------|------------|-------------|
| SB = black | BN = brown | OR = orange |
| GR = grey | Y = yellow | VO = violet |
| W = white | BL = blue | P = pink |
| R = red | GN = green | |

Wiring diagram colours

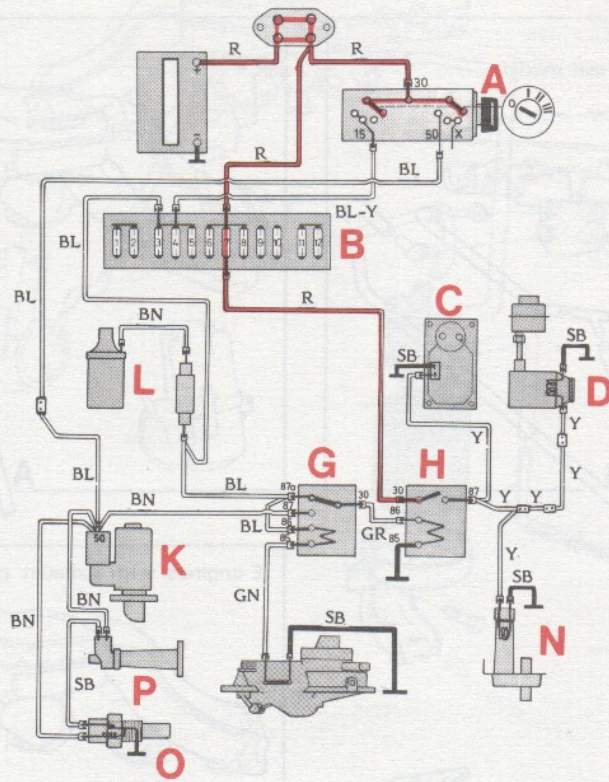


Starting, cold engine

Engine running



CI system 1975



Fuse no 4
 Glove compartment light
 Heated driver seat
 Climate unit
 Reversing/back-up light

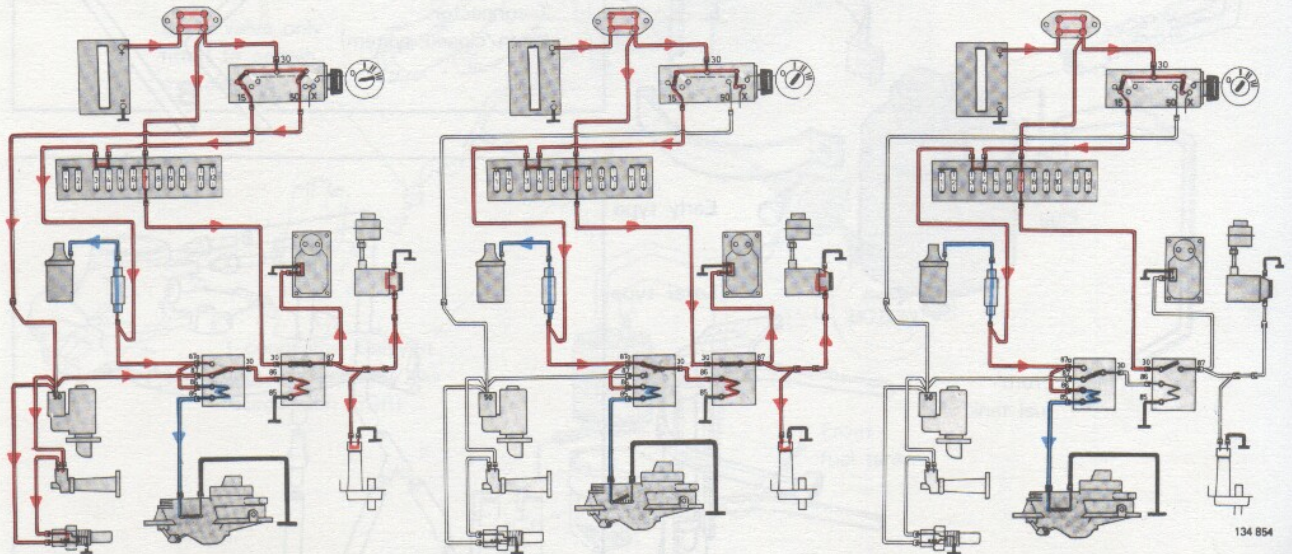
Fuse no 7
 Clock

Note! If vehicle is equipped with a tank pump, fuse no. 7 must be rated 16 A.

Starting, cold engine

Engine running

Engine stalls (ignition on but engine not running)

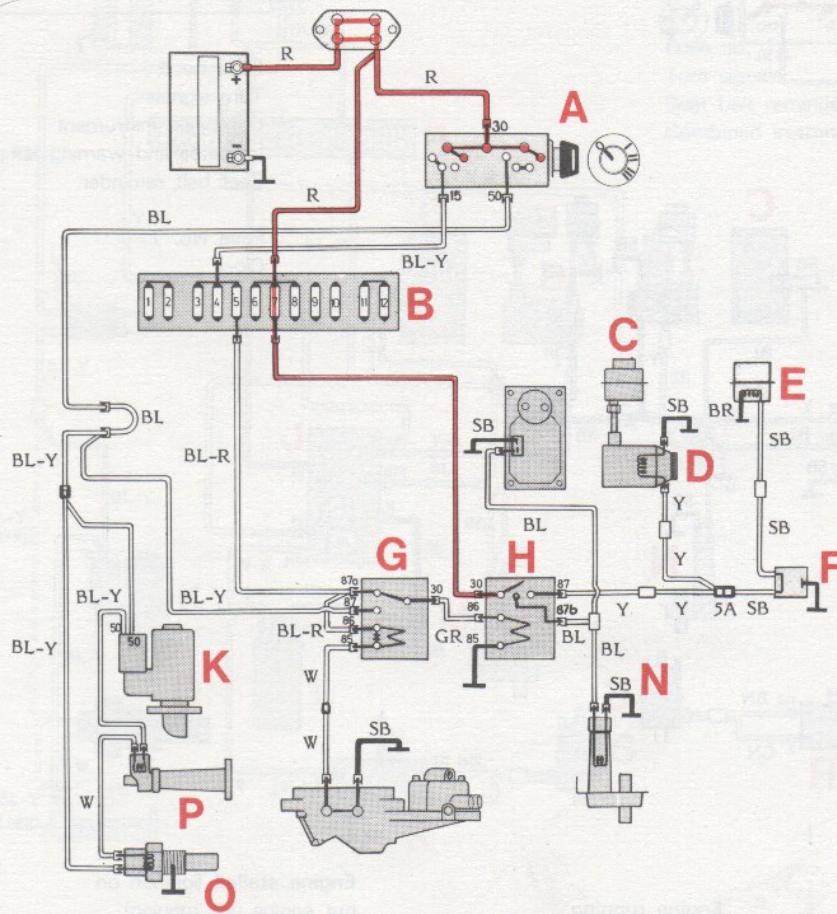


134 854

CI system 1976-1977

For identification of components and colour code, see page 106.

Note! There are different types of relays, see page 80



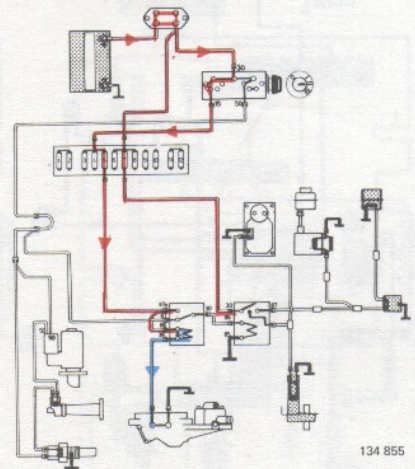
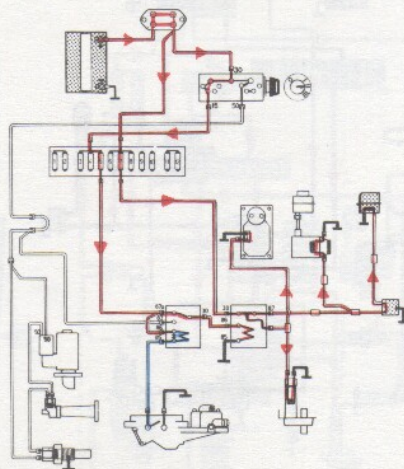
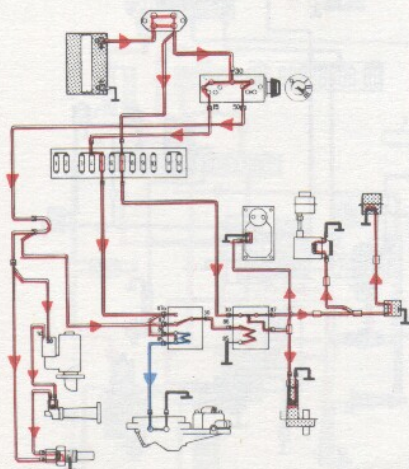
Fuse no 5
 Turn signals
 Combined instrument
 Indicator and warning lamps
 Seat belt reminder
 Door mirrors

Fuse no 7
 Clock

Starting, cold engine

Engine running

Engine stalled (ignition on but engine not running)



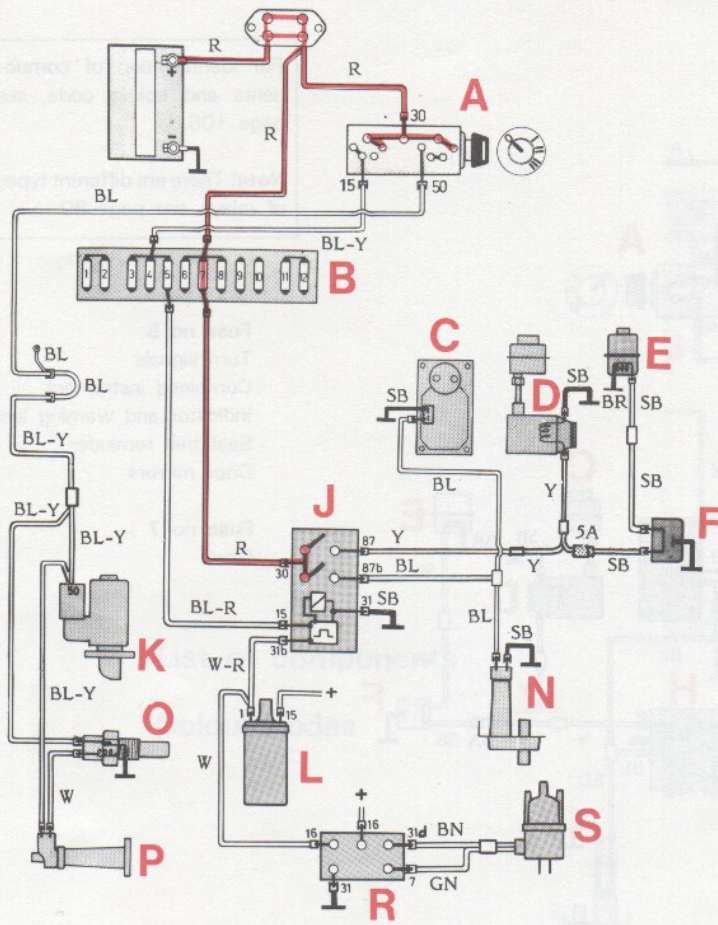
134 855

CI system 1978-

For identification of components and colour code, see page 106.

Fuse no 5
 Turn signals
 Combined instrument
 Indicator and warning lamps
 Seat belt reminder

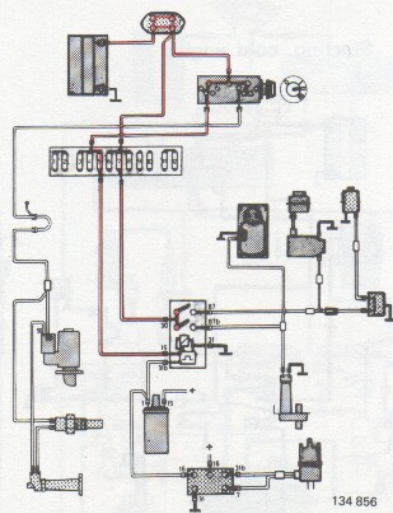
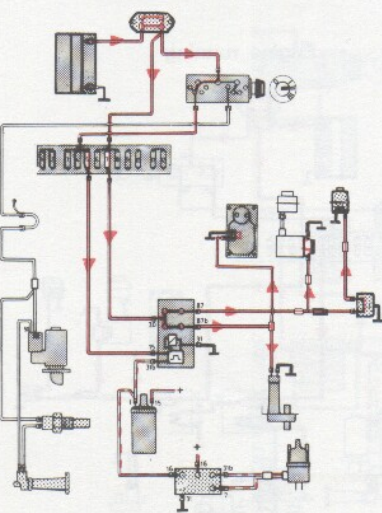
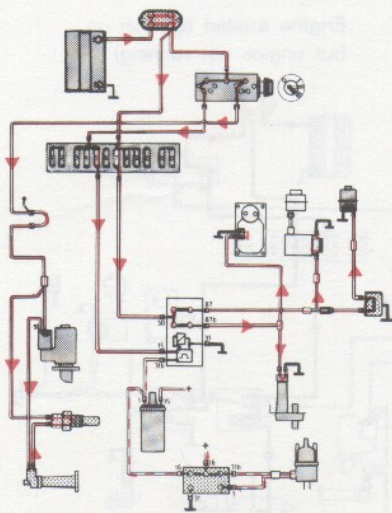
Fuse No. 7
 Clock



Starting, cold engine

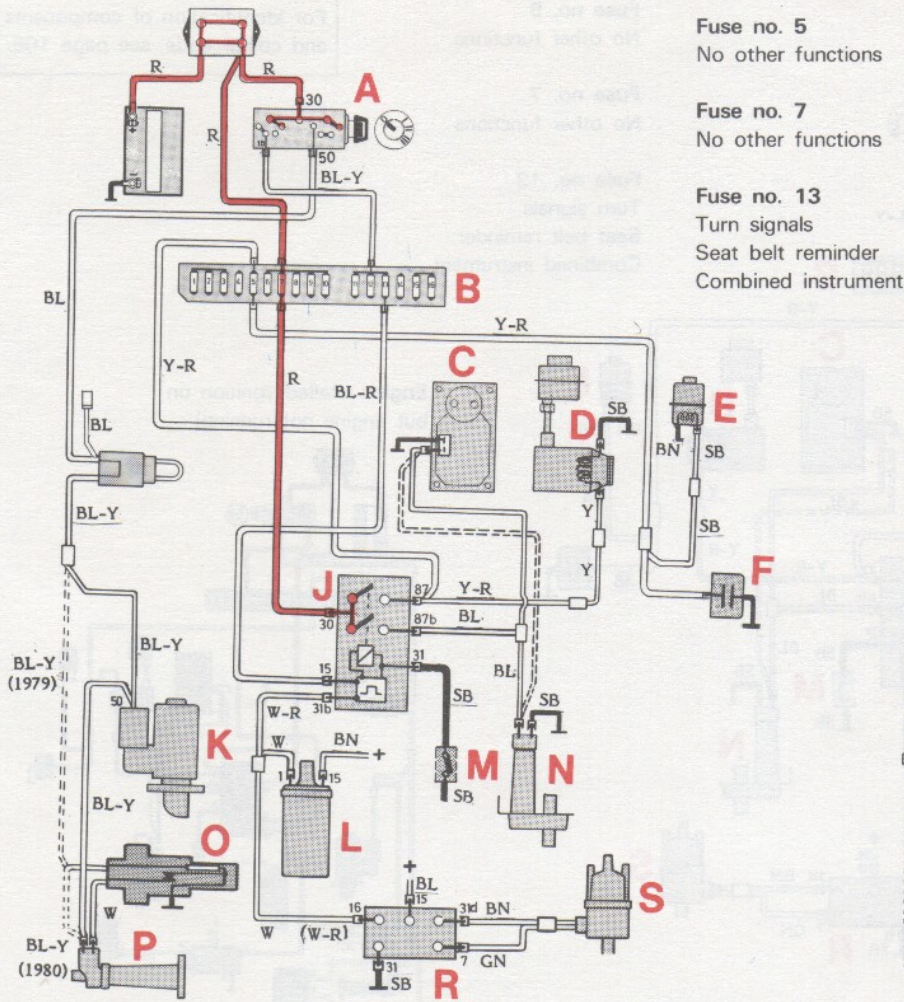
Engine running

Engine stalled (ignition on but engine not running)



134 856

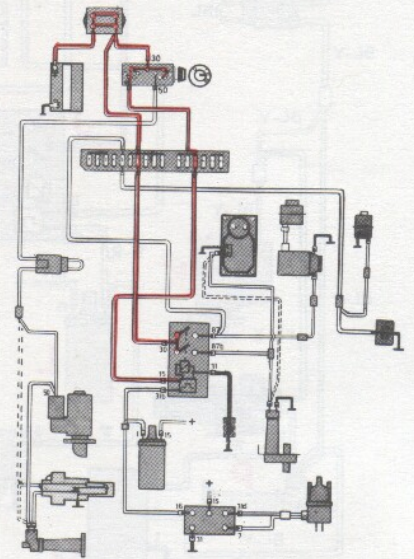
CI system E/F 1979-, Turbo 1981



For identification of components and colour code, see page 106.

- Fuse no. 5**
No other functions
- Fuse no. 7**
No other functions
- Fuse no. 13**
Turn signals
Seat belt reminder
Combined instrument

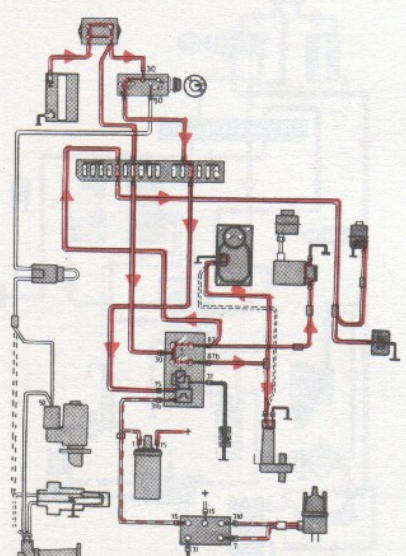
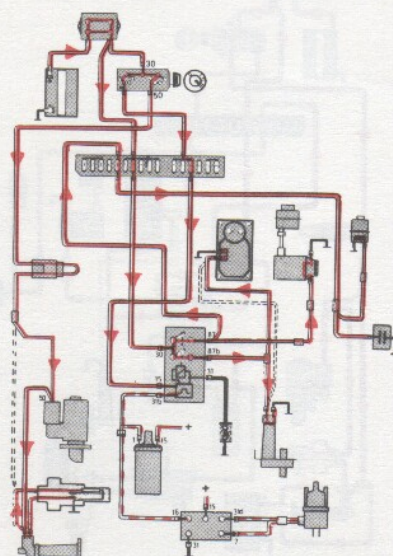
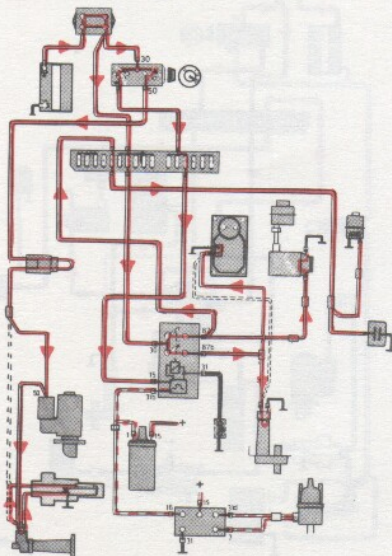
Engine stalled ignition on but engine not running)



Starting, cold engine

Starting, warm engine

Engine running



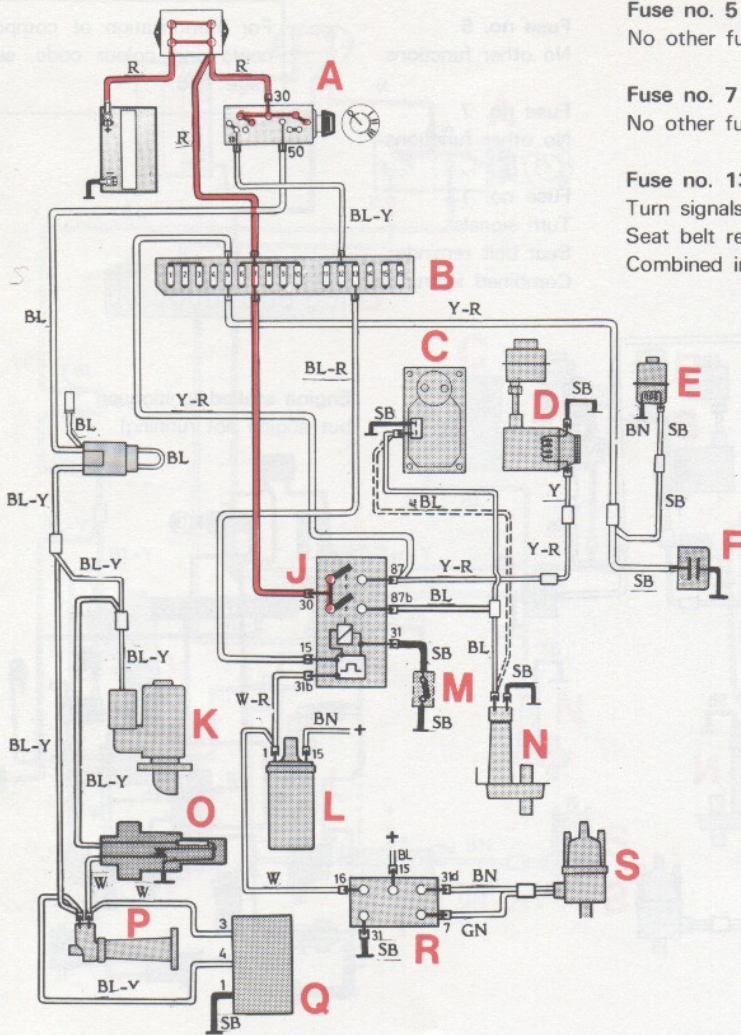
CI system Turbo 1982-

Fuse no. 5
No other functions

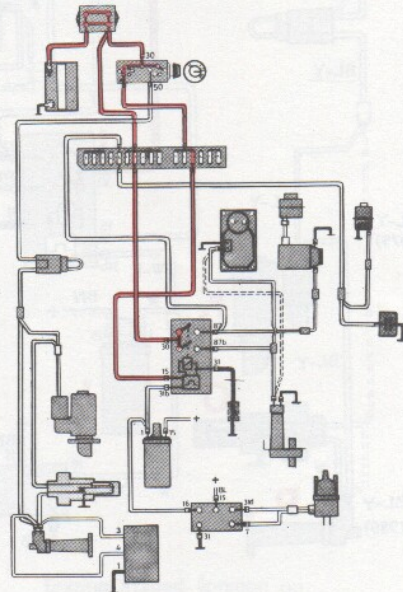
Fuse no. 7
No other functions

Fuse no. 13
Turn signals
Seat belt reminder
Combined instrument

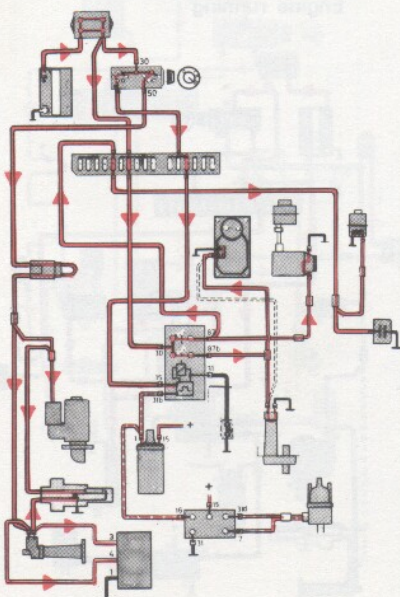
For identification of components and colour code, see page 106.



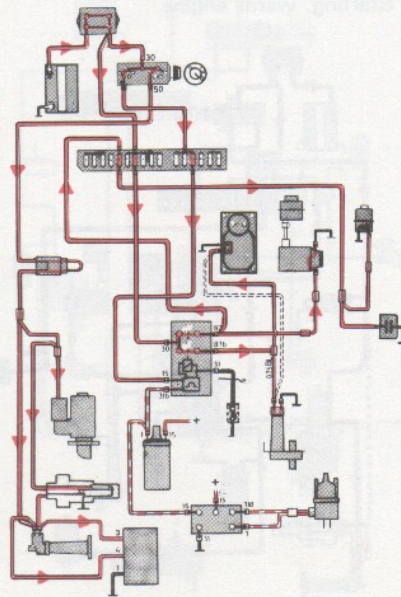
Engine stalled (ignition on but engine not running)



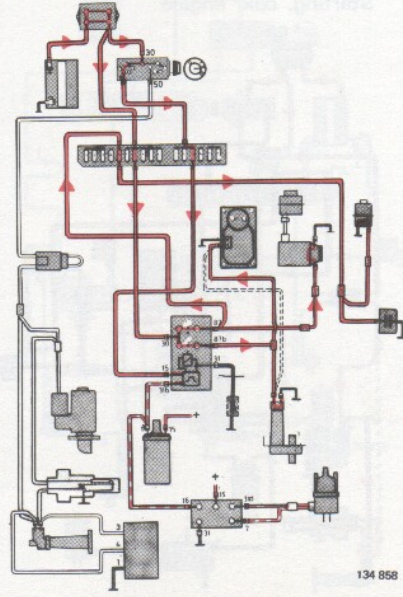
Starting, cold engine



Starting, warm engine



Engine running



Index

	Operation	Page		Operation	Page
Adjustment			Fuel accumulator		
rest pressure	B70	45	fault symptoms	E11	62
CO content	D1-26	48	inspection	E13-16	62
line pressure	B70	45	replacement 1975-1977	E13-16	62
idle speed	D1-26	48	1978-	E13, 17-18	62
Air filter, preheating			Fuel filter		
E/F 1975-1978	F1-4	81	fault symptoms	E19	67
1979	F5-6	83	inspection	E20	67
Turbo 1981-	F7	85	replacement	E21	67
Air-fuel control unit			Fuel lines		
fault symptoms	E22	68	replacement of nipples	F8	86
inspection	E23	68	routing E 1975	F9	87
removing	E24	68	E/F 1976-1977	F10	88
fitting	E25-28	69	1978-	F11	89
reconditioning	E29-39	70	Turbo 1981-	F12-13	90
Auxiliary air valve			Fuel pump		
general	E57	79	fault symptoms	E11	62
fault symptoms	E58	79	checking	E12	62
inspection	E59	79	replacement 1975-1977	E13, 14-16	62
CI-system			1978-		
function		14	E13, 17-18	62	
location of components		16	Fuel tank		
flushing clean	A1-20	17	1975-1978 different types	F14-16	92
inspection	B1-51	22	replacement	F17-27	94
fault tracing	C1-2	46	1978-	F38	101
CO content, checking/adjusting			Idle speed, checking/adjusting		
general	D1-2	48	general	D1-2	48
E-engines, incl. E-Turbo	D3-9	49	E-engines, incl. E-Turbo	D3-9	49
F-engines, without catalytic			F-engines, without catalytic		
converter	D3-9	49	converter	D3-9	49
with catalytic converter	D10-17	51	with catalytic converter	D10-17	51
with Lambda-sond	D18-26	54	with Lambda-sond	D18-25	54
Check (non-return) valve in fuel pump			Impulse relay		
fault symptoms	E11	62	general	E54	78
inspection	E12	62	fault symptoms	E55	78
replacement 1975-1977	E13, 14-16	62	inspection	E56	78
1978-1979	E13, 17	62	Injectors		
1980-	E13, 17-18	62	general	E40	74
Control pressure regulator			fault symptoms	E41	74
general	E50	77	inspection	E42	74
fault symptoms	E51	77	replacement	E43	74
inspection	E52	77	checking/cleaning	E44-49	75
replacement	E53	77	Inspection of CI-system		
Evaporative system			B1-51	22	
Open	F39	102	Line pressure		
Closed	F40-43	103	adjustment	B70	45
Fault tracing of CI-system			Relays		
C1-2	46		1975	E60	80
Flushing of fuel system			1976-1977	E61	80
A1-20	17		1978-	E62	80

	Operation	Page		Operation	Page
Rest pressure			Thermal timer		
adjustment	B70	45	general	E54	78
Special tools		12	fault symptoms	E55	78
Specifications		3	inspection	E56	78
Start injector			Wiring diagrams		
general	E54	78	E 1975		106
fault symptoms	E55	78	E/F 1976-1977		107
inspection	E56	78	1978		108
Tank pump			1979-		109
general	E1	57	Turbo 1981		109
fault symptoms	E2	57	Turbo 1982-		110
inspection	E3	57	component designation		106
replacement type 1	E4, 5-6	57	colour code		106
type 2	E4, 6-8	57			
type 3	E4, 9-10	57			



VOLVO SUPPORTS VOLUNTARY
MECHANIC CERTIFICATION
BY THE N.I.A.S.E.

(U.S.A. only)

Service literature

*Your
most important
special tool*

VOLVO

TP 30454/1

1500.10.85
Printed in U.S.A.