

VOLVO

Service Manual

Fault tracing

Repairs

Maintenance

2-3-2 6
Section 2 (23)

Engine B28F

700 Series
1983-



Contents

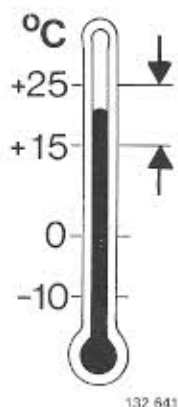
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Order No. TP 30795/1

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N. CO setting, general instructions

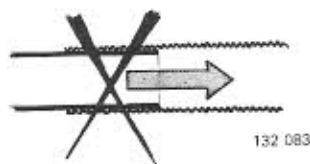
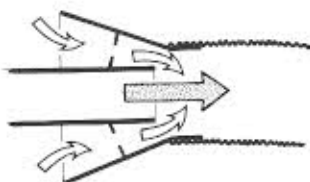
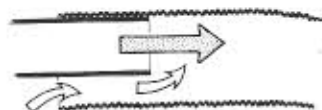


N1

Temperature

Checking/adjustment of CO content must be performed at room temperature i.e. 15–25°C (59–77°F) and at the earliest 5 minutes after the coolant thermostat has opened.

Engine must be warmed-up from completely cold.



132 083

N2

Exhaust gas extraction

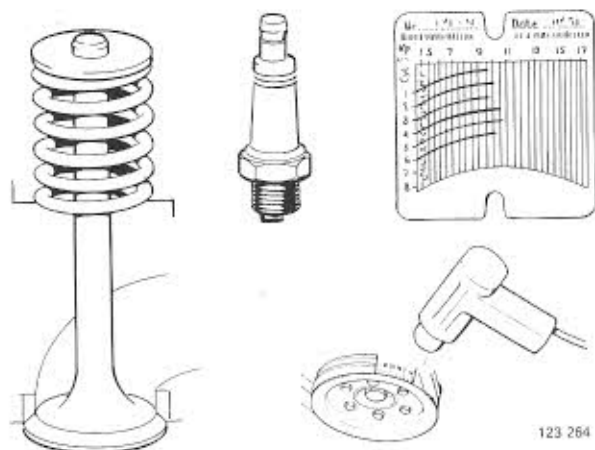
Use an open type connection, see fig.

Too much extraction causes incorrect measurements.

N3

Reading CO gauge

Rev up engine for a short while before each reading. This is done partly to prevent engine/fuel from becoming too hot and partly to make sure that air flow sensor plate takes up correct position.



N4

Setting CO content

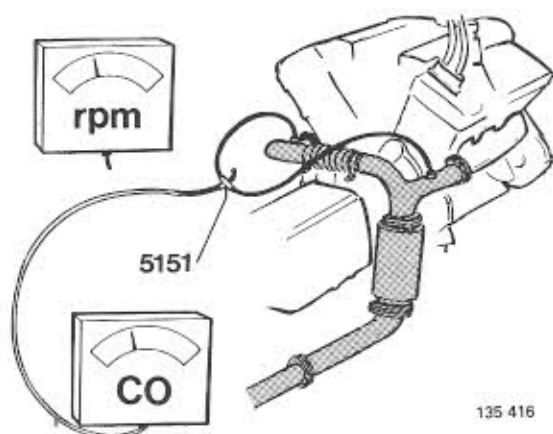
CO content is set at factory and does not normally need to be reset.

Only adjust CO if it does not comply with specifications and all other possible causes have been checked and rectified.

CO adjustment is sealed by a steel ball.

N. Idle speed and CO content, checking/adjusting*

Special tools: 5151,
5102 and 5232 (for adjustment)



N5

Connect CO gauge and tachometer

Use connection 5151. Adjusting knob must be in center position.

N6

Start and warm-up engine

Engine must be warmed-up from completely cold engine. Keep engine running 5 minutes after coolant thermostat has opened.

N7

Disconnect Lambda-sond



N8

Check idle speed

Note! Air conditioner must be switched off.

Idle speed = 12.5 r/s (750 r/min).

If incorrect, see page 44 (basic setting of CIS-system).

N9

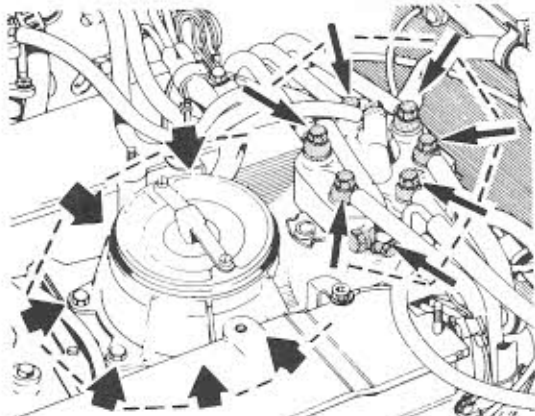
Check CO content

0.7–1.3%.

Adjust if necessary, see N10–15. Otherwise continue with N16.

Note! If CO content is very high, Lambda-sond system can be at fault.

*See Supplementary Information

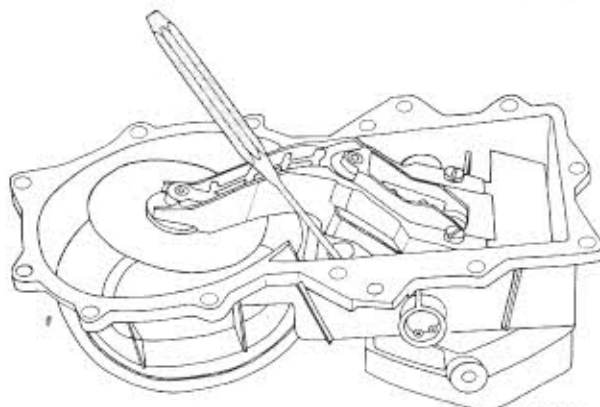
Adjusting CO content

130 950

N10

Disconnect air/fuel control unit

Make sure no dirt enters air flow sensor or fuel distributor.



130 951

N11

Tap out steel ball

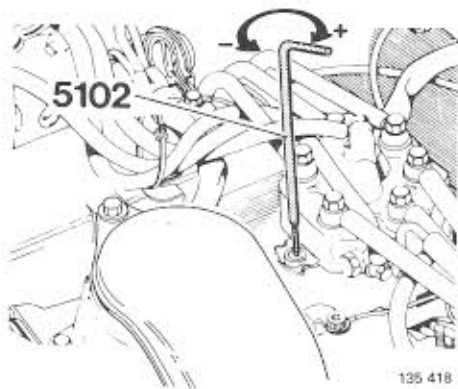
Use 3 mm (0.125 in) punch, bent slightly.

N12

Install air/fuel control unit and connect fuel lines

If necessary install new gasket between top and bottom parts of air flow sensor.

Use new copper washers for fuel lines.



135 418

N13

Connect air inlet duct

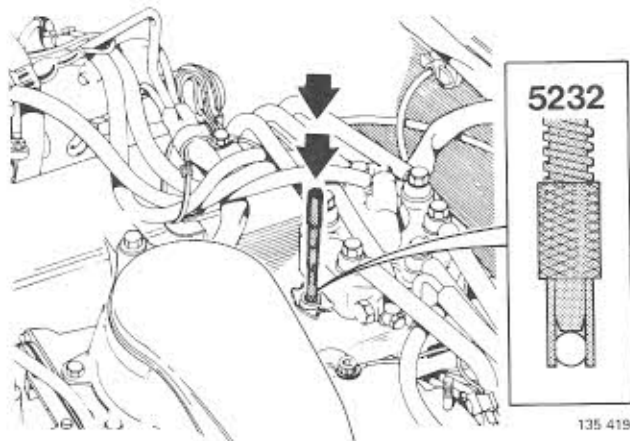
N14

Adjust CO content

Setting value 1%

Use wrench 5102. Counter-clockwise (left) reduces CO content and clockwise (right) increase CO content.

After each adjustment: remove wrench 5102 and cover hole in air flow sensor for CO adjustment. Rev up engine briefly. If this is not done incorrect results will be obtained.



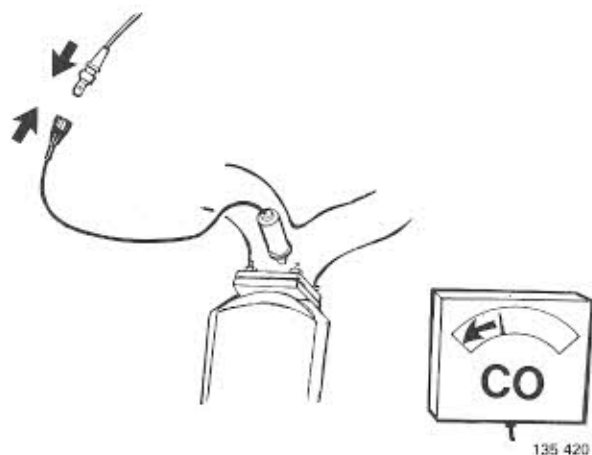
135 419

N15

Seal fuel control unit

Install steel ball with sealing tool 5232. Tap ball into position.

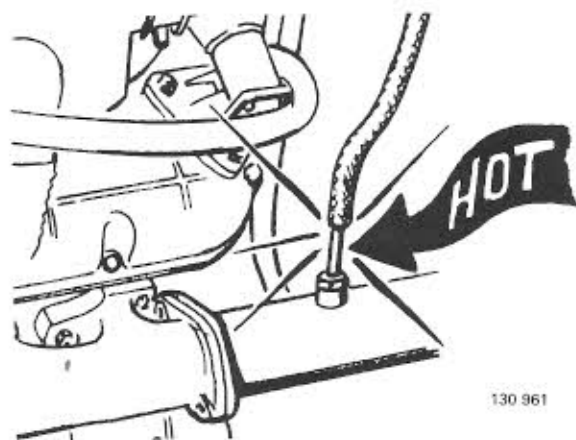
N16



Connect Lambda-sond

CO content must drop to **less than 1%**.
If not, see fault tracing of Lambda-sond.

N17



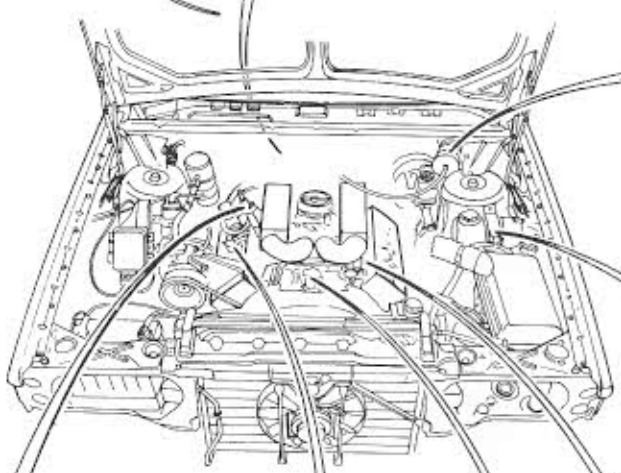
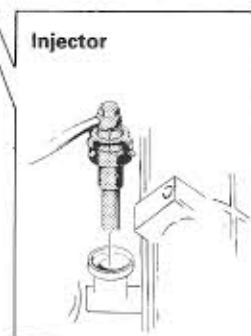
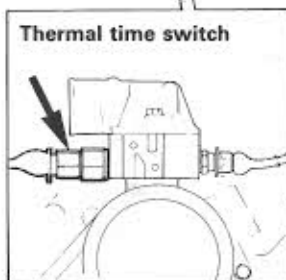
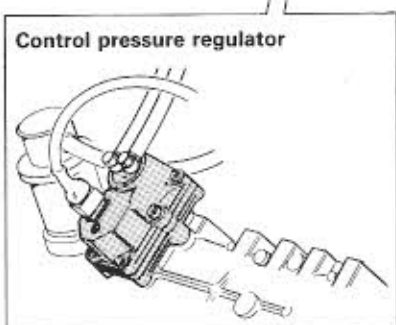
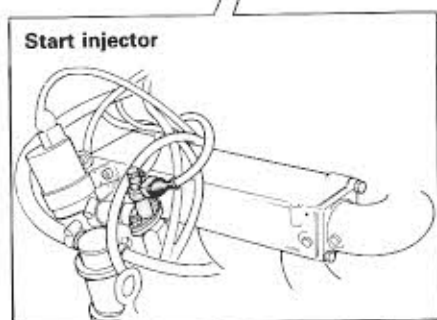
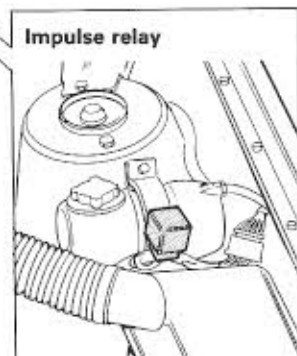
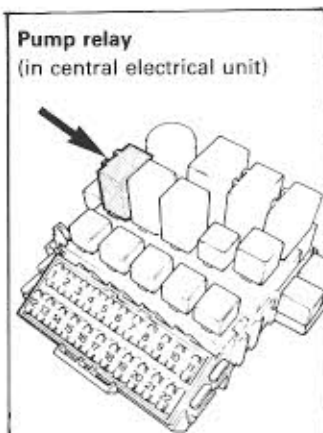
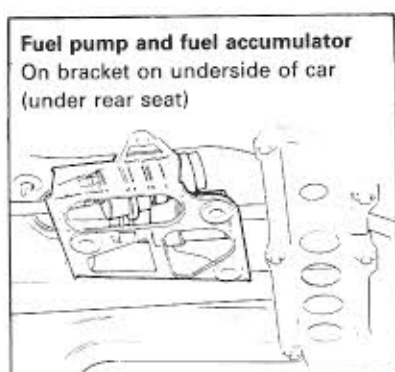
Turn off engine

Remove measuring equipment

Warning! Connecting nipples for CO gauge will be very hot.

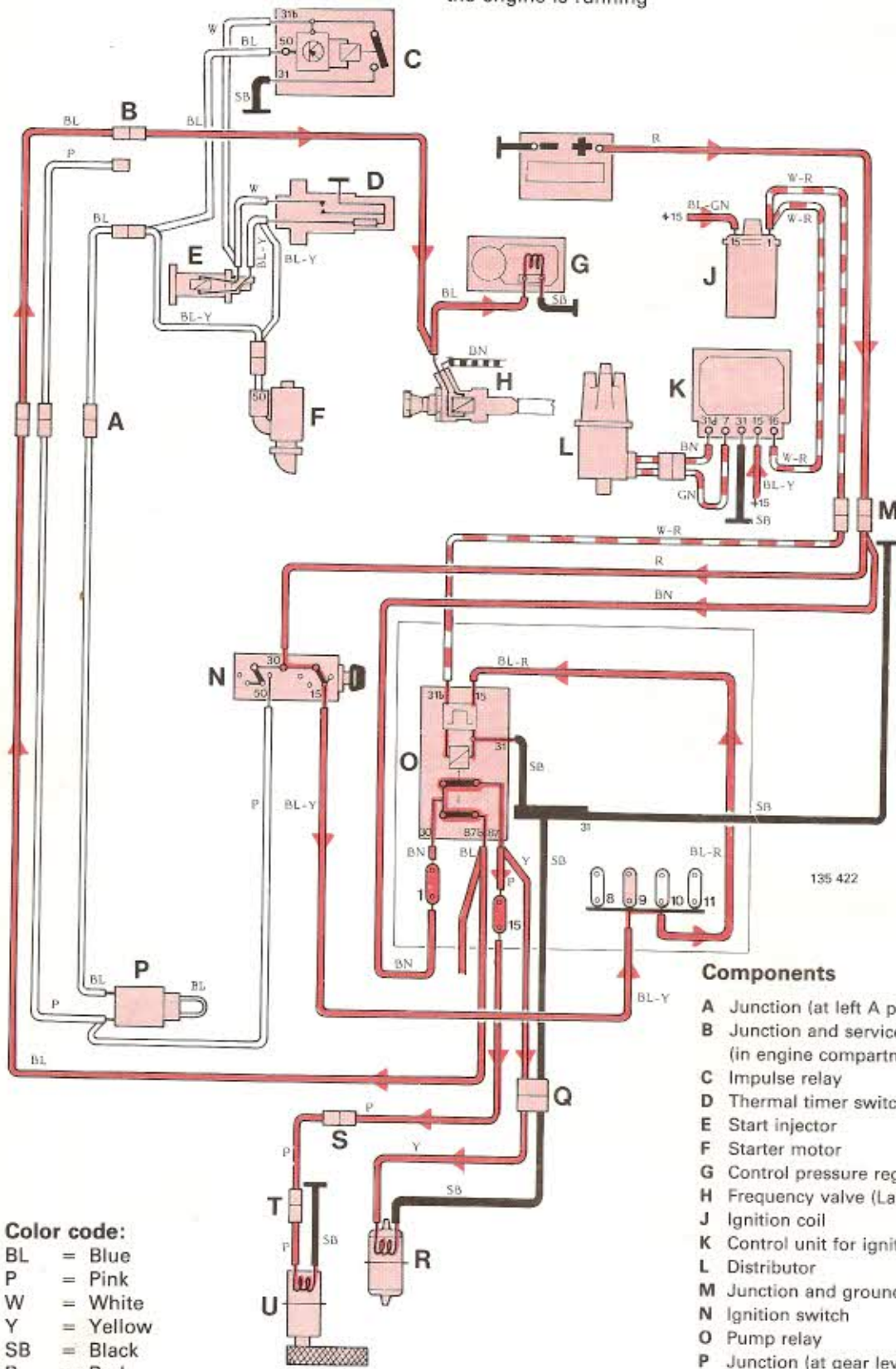
Install plugs in exhaust pipe.

CI-system Location of components



Wiring diagram, CI-system

The diagram shows the flow of current when the engine is running



- Color code:**
 BL = Blue
 P = Pink
 W = White
 Y = Yellow
 SB = Black
 R = Red
 GN = Green
 BN = Brown

Components

- A Junction (at left A pillar)
- B Junction and service outlet (in engine compartment)
- C Impulse relay
- D Thermal timer switch
- E Start injector
- F Starter motor
- G Control pressure regulator
- H Frequency valve (Lambda-sond system)
- J Ignition coil
- K Control unit for ignition system
- L Distributor
- M Junction and ground lead (at right A pillar)
- N Ignition switch
- O Pump relay
- P Junction (at gear lever)
- Q Junction (behind central electrical unit)
- R Fuel pump
- S Junction (at left A pillar)
- T Junction and ground lead (in trunk)
- U Tank pump

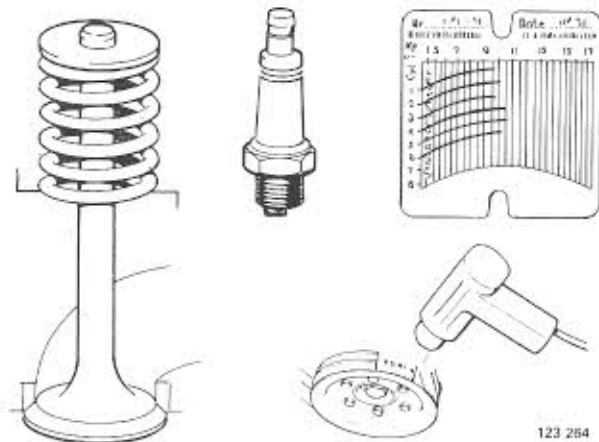
O. Important information

01

Before checking CI-system

Ensure that the vehicle is mechanically and electrically sound before checking the CI system. Correct octane fuel supplied by well known companies must be used.

The following points should be checked:



123 264

Mechanical

- compression
- valve clearance
- vacuum hoses and connections
- throttle control and kick-down cable
- air filter
- intake manifold (air leakage)
- exhaust gas system (leakage)

Electrical

- spark plugs
- HT leads
- distributor cap
- ignition coil
- ignition setting, incl. advance
- all electrical connections
- constant idle speed system (CIS)

Exhaust gas purification

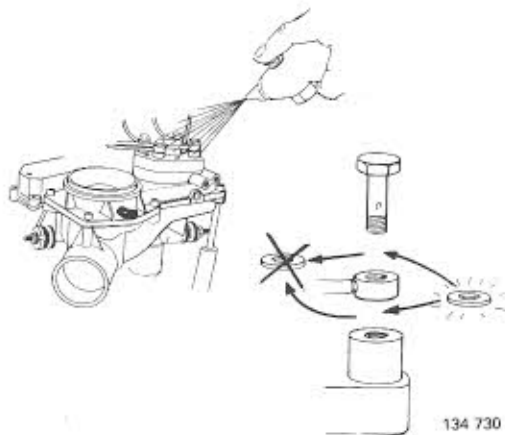
- crankcase ventilation
- evaporative system
- Lambda-sond system
- catalytic converter

02

Cleanliness

Utmost cleanliness should be observed when working on the CI system.

All fuel connections should be carefully cleaned before removal.



134 730

03

Gaskets, seals

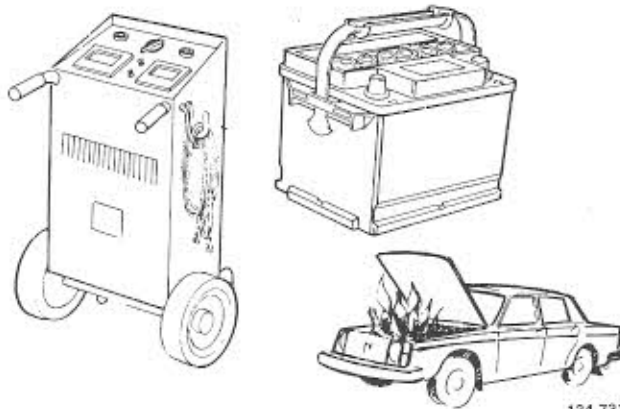
Always use new gaskets/seals.

04

Battery

It is important when testing the different components to ensure that the battery voltage is not too low.

A battery charger can be connected if necessary. Max. charging current 15 A.



134 731

05

WARNING

Extreme care should be taken to avoid causing sparks especially when testing the start injector and injectors.

P. Fault tracing, CI-system

P1

General

The instructions in this section apply only if the engine is free from mechanical and/or electrical faults.

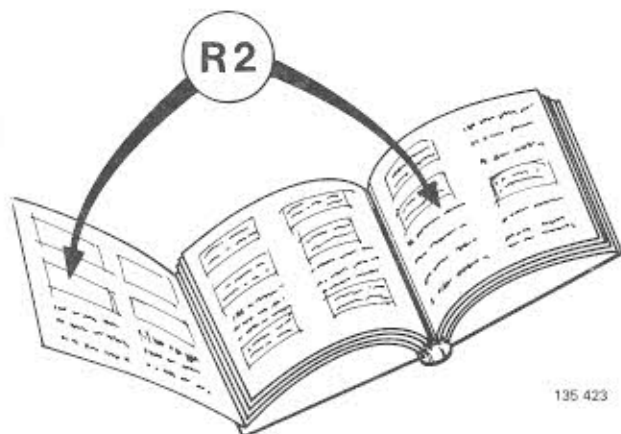


P2

Description:

Only the most common and easily detected fault symptoms are included in this section.

In the event that several components malfunction or more complex symptoms occur, it may be necessary to overhaul the entire system. Perform a complete inspection of the CI system before proceeding with extensive repairs.



The fold-out section overleaf contains a list of the most common symptoms and related checks.

The letter and number (e. g. R2) after each check refer to operations in the "Inspection of CI system".

Refer also to the wiring diagram on page 8.

Fold out this section while performing fault tracing procedures.

Symptoms, probable faults/remedies

Engine does not start

Probable cause	Operation
Air inlet system, leakage	R1, 3
Fuel pump, defective	R6-8
Air-fuel control unit (control plunger) seizes	R10
Incorrect pressure	R11, 13-20
Sensor plate height, incorrect	R21

Cold engine difficult to start

Probable cause	Operation
Start injector, defective	R2, 4-5

Hot engine difficult to start

Probable cause	Operation
Start injector impulse relay, defect	R4
Start injector leaking	R6-9
Rest pressure too low	R11, 13-14, 18-19

Engine difficult to start cold + hot

Probable cause	Operation
Air inlet system, leakage	R1, 3
Start injector, defective	R2, 4-5
Sensor plate position, incorrect	R12
Line pressure, incorrect	R6-7, 13-15, 20
Sensor plate height, incorrect	R21

Erratic running, cold + during warming-up

Probable cause	Operation
Control pressure, cold, incorrect	R2, 6-7, 13-14, 16

Erratic running, hot engine

Probable cause	Operation
Control pressure warm, incorrect	R6-7, 13-14, 17

Erratic running, cold + hot engine

Probable cause	Operation
Air inlet system, leakage	R1, 3
Control pressure, incorrect	R2, 6-7, 13-17
CO content, incorrect	N5-17
Throttle valves, loose	-

Erratic running + excessive fuel consumption

Probable cause	Operation
Start injector leakage	R6-9
Control pressure, incorrect	R2, 6-7, 13-17
CO content, incorrect	N5-17

Low top speed + poor performance

Probable cause	Operation
Throttle control setting, incorrect, throttle valve does not open fully	AU1-6
Incorrect control pressure	R6-7, 13-14, 17
Tank pump, defective	R6-7, 46-47
Fuel pump capacity, too low	R48
CO content, incorrect	N5-17

Erratic idle

Probable cause	Operation
Engine does not run on all cylinders	-
Air inlet system, leakage	R1, 3
Air-fuel control unit seizes	R6-7, 10-11
Throttle valve, loose	-
Injectors leaking, poor spray pattern	R22-25

Q. Flushing fuel system

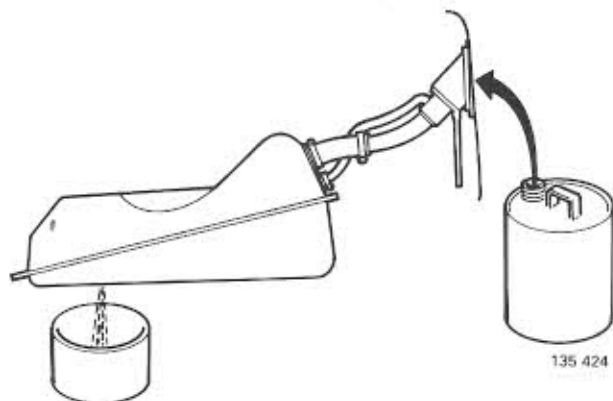
The fuel tank should be flushed if water has (or is believed to have) condensed in the system.

The presence of water in the fuel system is indicated by:

- engine stoppage
- difficult cold starting
- erratic idling
- low output (poor performance)

The following equipment is necessary to flush the fuel system:

- fuel tank drainer or a large container for collecting the fuel
- approx. 6 liter (6 qts) white spirit (Shell Mineral Spirits 135, Shell K30, Esso-Versol or equivalent)
- two drain pans approx. 1.5 liter (1.5 qts) each
- two hoses approx. 1 meter (3 ft) long, to fit to the return line and the fuel pump
- clamping pliers **2901**
- test relay **5170**



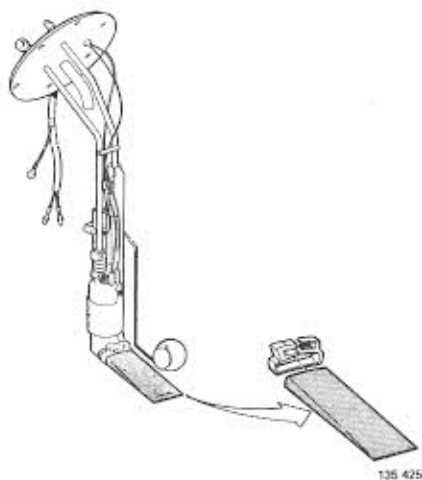
Q1

Clean fuel tank

Drain fuel and fill tank with approx. 4 liter (4 qts) of white spirit.

Rock car so that white spirit mixes with any water present in tank.

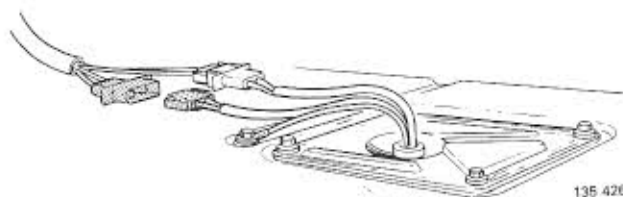
Drain tank.



Q2

Install a new tank pump filter

See page 33.

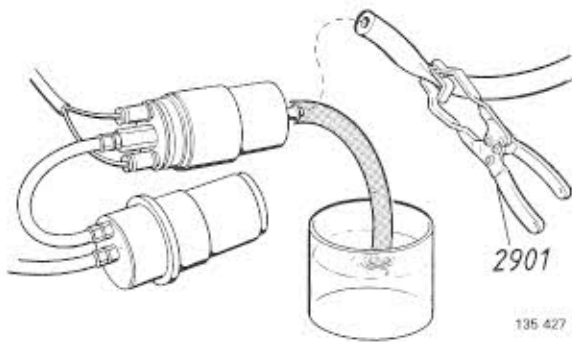


Q3

Disconnect tank pump

Disconnect plug in trunk.

Cl-system, flushing



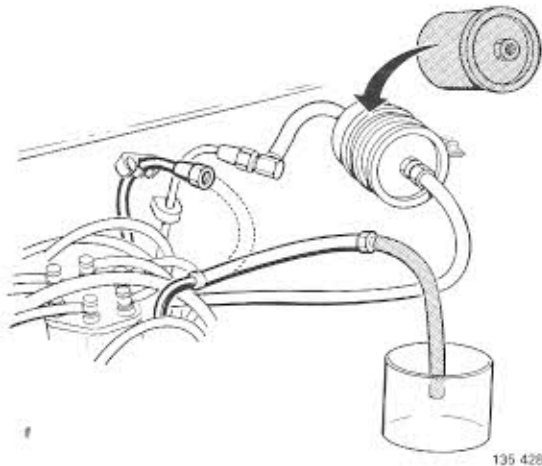
Q4

Connect fuel pump to a vessel containing white spirit (at least 2 liter = 2 qts)

Block fuel line between pump and tank. Use clamping pliers **2901**.

Disconnect line from pump inlet.

Connect one end of hose (approx. 1 met. = 3 ft) to pump and submerge other end in a jar containing white spirit.



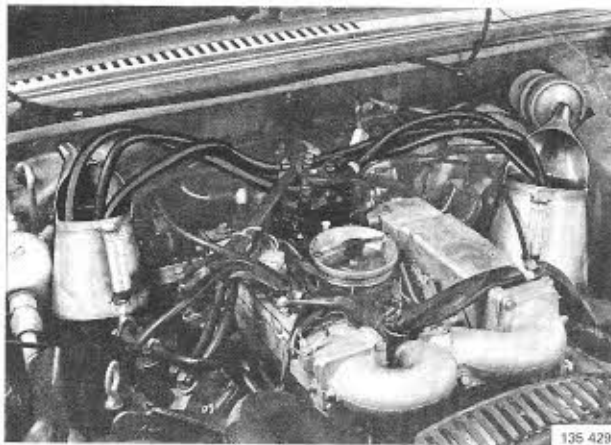
Q5

Connect return line to an empty vessel

Separate return line on firewall. Connect one end of a hose (approx. 1 meter = 3 ft) to return line and submerge other end in an empty vessel (capacity approx. 1.5 liters = 1.5 qts).

Q6

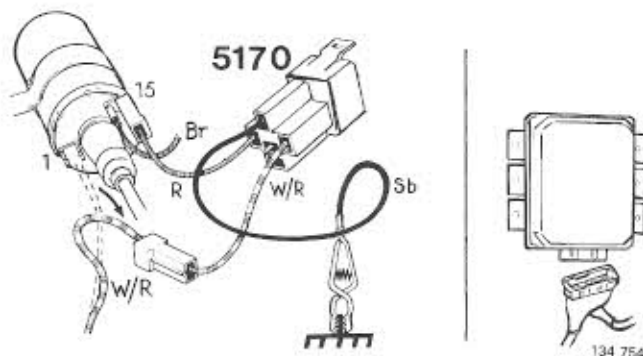
Install new fuel filter



Q7

Remove injectors

Place ends of fuel lines in empty vessel (capacity approx. 1.5 liters = 1.5 qts).

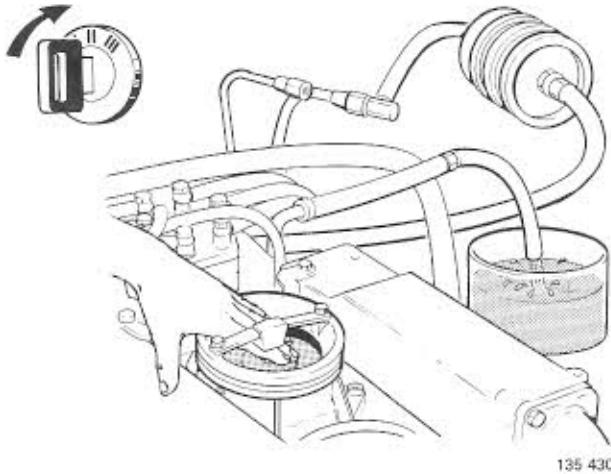


Q8

Prepare start of fuel pump

Connect test relay **5170**.

Withdraw plug from ignition system control unit. Take care not to lose rubber seal in connector.



135 430

Q9

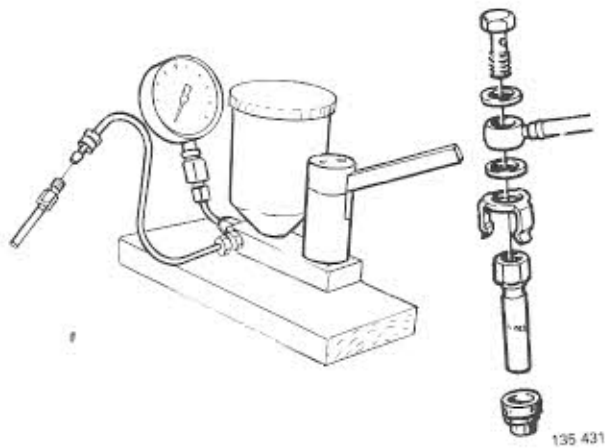
Flush system

Disconnect inlet hose.

Turn on ignition to start fuel pump.

Push down air flow sensor plate until it bottoms. Release plate after 1.5 liters (1.5 qts) white spirit has flushed through system.

Turn off ignition.



135 431

Q10

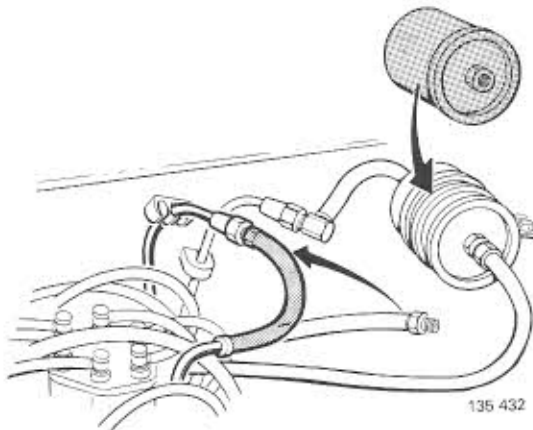
Clean and test injectors

If necessary see page 35.

Q11

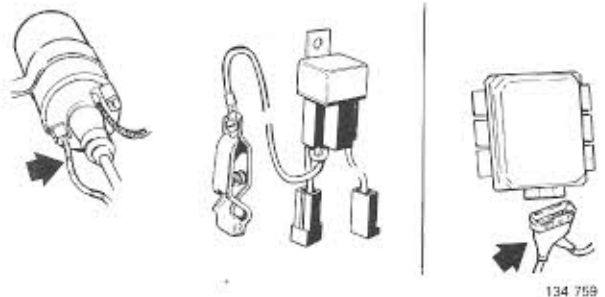
Install injectors

Reconnect fuel lines.



135 432

Q12

Install new fuel filter. Reconnect return line

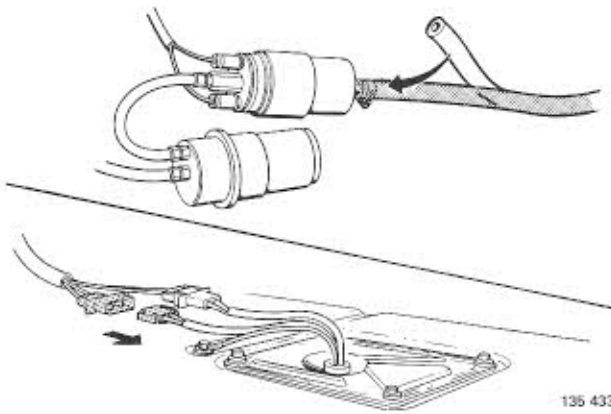
134 759

Q13

Connect connectors

Disconnect test relay 5170. Reconnect lead to terminal 1 on ignition coil.

Reconnect ignition system control unit. Make sure that rubber seal is fitted correctly to protect against water and moisture ingress, which would otherwise cause corrosion, poor contacts, etc.



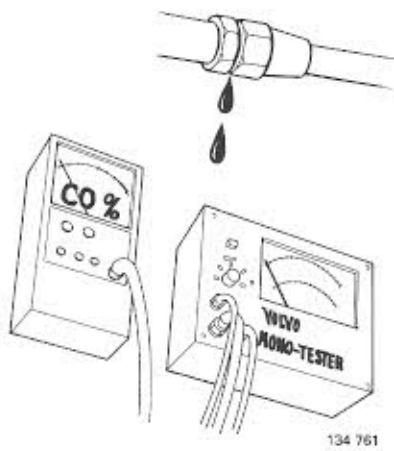
135 433

Reconnect fuel line to fuel pump

Q14

Reconnect tank pump plug

Q15



134 761

Fill tank with new fuel

Q16

Start engine. Check for leakage

Q17

Check/adjust idle speed and CO content

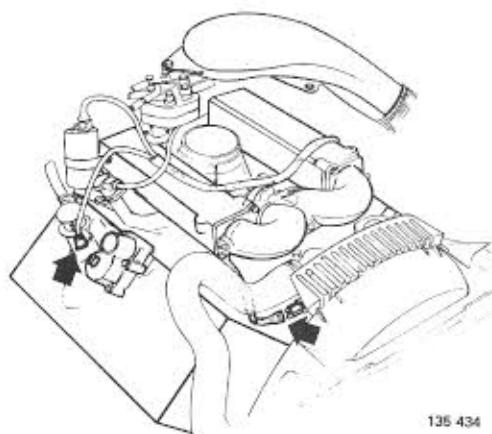
Q18

See page 4.

R. Inspection of CI system

Special tools: 2901, 5011, 5170, 5228, 5229
5014 or 0976 + 0977

Engine must be cold at start of inspection.
Under +30°C (86°F) to check control pressure-cold.
Under +35°C (95°F) to check thermal time switch in place.



135 434

Preparatory work (R1-2)

R1

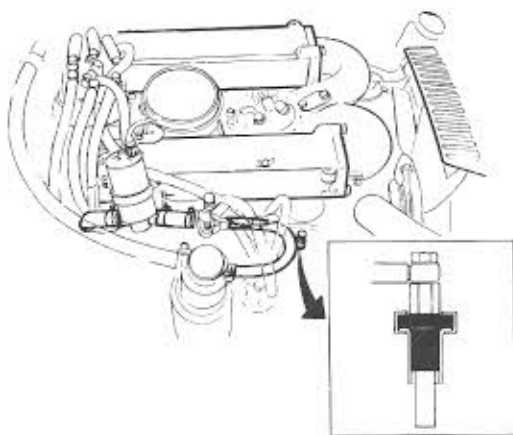
Detach air intake from air-fuel control unit

R2

Disconnect plugs from:

- thermal time switch
- control pressure regulator

Above components must be disconnected or they will heat up during inspection and invalidate results.
(It can take as long as an hour for a component to cool down again.)



135 435

Inlet system (R3)

R3

Make sure that inlet system does not leak

Air must not leak between air flow sensor and engine.

Check:

- hose connections at air control valve and start injector tube, and all vacuum hoses
- O-rings
- if all screw joints are tight
- that injectors are fitted correctly and that rubber seals are intact

Air leakage: correct as required.



Start injector (R4-9)

R4

Check start injector and impulse relay

Note! Thermal timer must be disconnected.

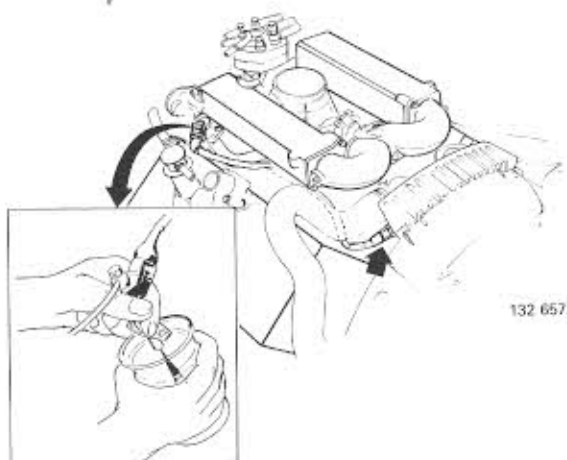
Disconnect red-white cable from terminal 1 on ignition coil.

Detach start injector from pipe and hold it over a glass jar.

Run starter motor and observe injector. Fuel should be injected after approx. 1.5 seconds, with subsequent injection for 0.1 second—pause 0.3 second—injection for 0.1 second—pause 0.3 second.

Incorrect timing: replace impulse relay.

No injection



R5

Check start injector and thermal timer

Note! Engine must be cold, below +15°C (59°F).

In cases of doubt remove thermal timer and test separately.

Reconnect thermal timer plug.

Hold injector above a glass jar. Run starter motor and observe injector.

Fuel should be injected continuously; injection time does however depend on temperature of engine. Max. = approx. 7.5 seconds at -20°C (-4°F) or colder. Time then becomes shorter as temperature increases. At 15°C (59°F), thermal timer is disconnected and injector is controlled by impulse relay (see R4).

Do not install the start injector.

Incorrect injection time: replace thermal timer.

Pulsating injection (see R4): open circuit in leads or defective thermal timer.

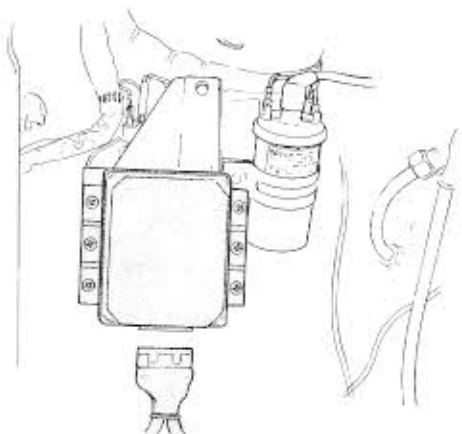
Replace if necessary.

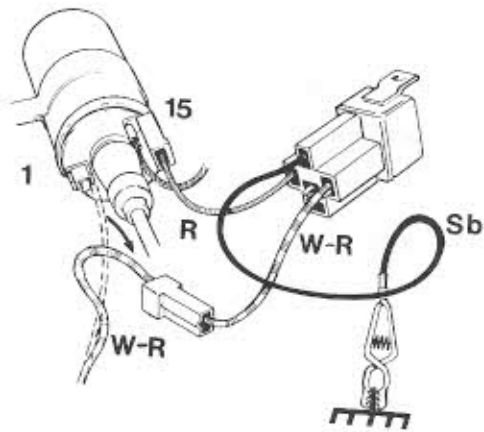
R6

Disconnect plug from ignition system control unit

This is partly as a safety precaution and partly necessary to be able to start fuel pump using test relay 5170.

Caution! Do not lose rubber seal in plug.





132 659

R7

Connect test relay 5170

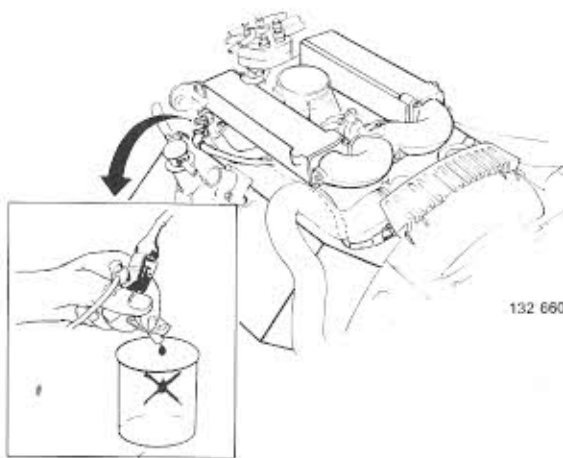
Relay simulates pulses from ignition system control unit and consequently engages pump relay.

R8

Start fuel pump

Switch on ignition, fuel pump should start.

Does not start



132 660

R9

Make sure that start injector does not leak

Max. rate = 1 drop per minute.

If greater, replace injector.

Install injector.

Air-fuel control unit (R10–12)

R10

Make sure that air-flow sensor plate does not jam

Depress plate for a **short while** and listen to injectors. **Note!** Control pressure offers some resistance when depressing plate, do not mistake this for jamming.

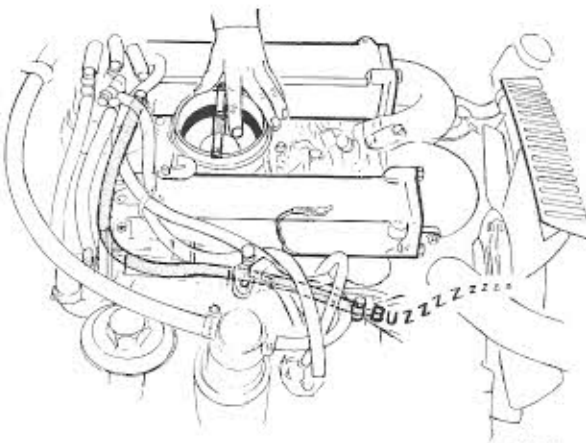
Injectors must be "quiet" when plate is at its rest position, and start to buzz on depressing plate.

Plate should return to its rest position directly on release.

Plate jams: recondition air-flow sensor.

Injectors buzz with plate in rest position: control plunger in fuel distributor has jammed, clean/replace.

Injectors quiet when plate depressed: incorrect line pressure.



132 661

R11

Switch off ignition

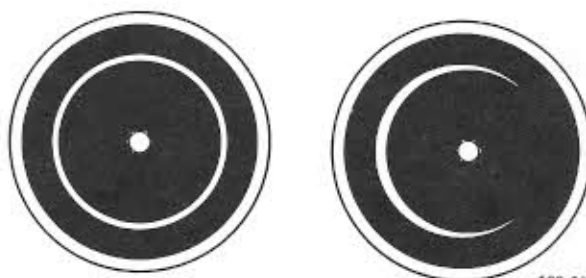
R12

Check plate position

No part of plate may touch air venturi. Make sure that plate does not have any side play.

Side play: recondition air-flow sensor.

Incorrect position: loosen center screw and adjust. Tighten screw.

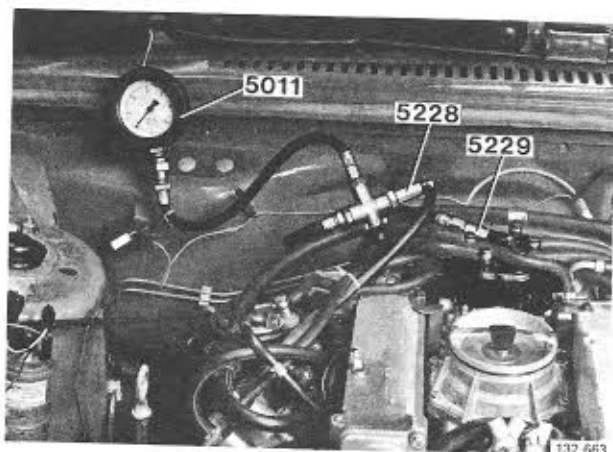


108 604

Correct

Incorrect

17



Checking all pressures (R13-20)

R13

Connect pressure gauge 5011

Connect it between control pressure regulator and fuel distributor.

Use nipples 5228 and 5229.

R14

Switch on ignition to start fuel pump

R15

Check line pressure

Turn gauge cock (on 5011) to position 1 (i. e. towards fuel distributor).

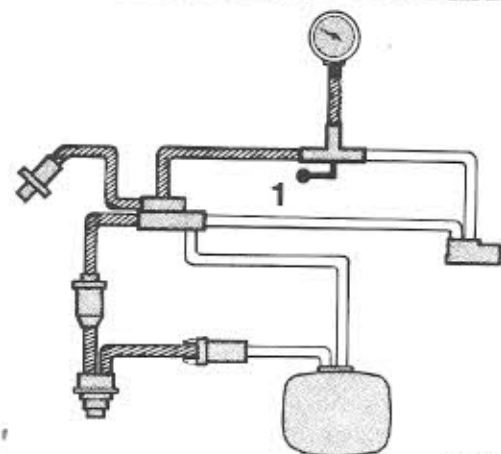
Record pressure when it is stable.

Line pressure must be 470-550 kPa (67-73 psi).

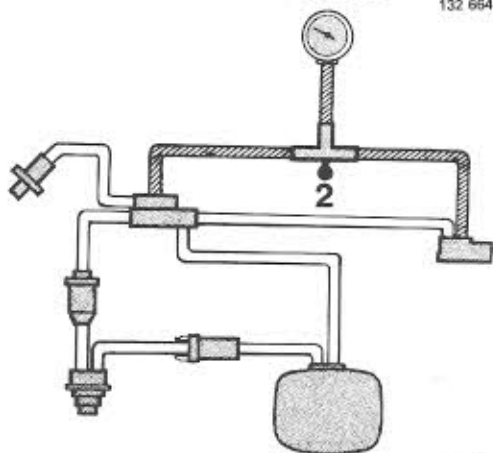
Too low



Too high



132 664



132 665

R16

Check control pressure (cold control pressure regulator)

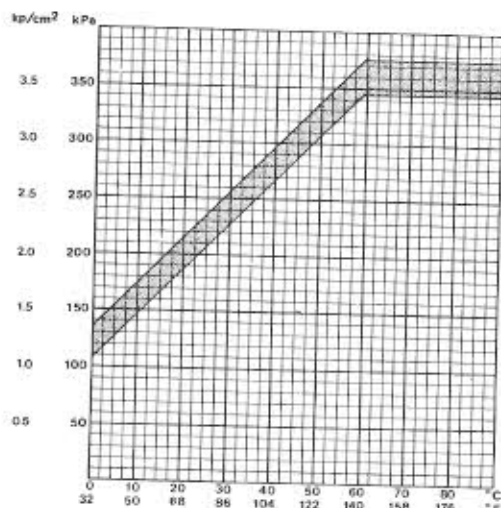
Turn gauge cock on 5011 to position 2 (at right angles to hoses).

Control pressure regulator should be at room temperature.

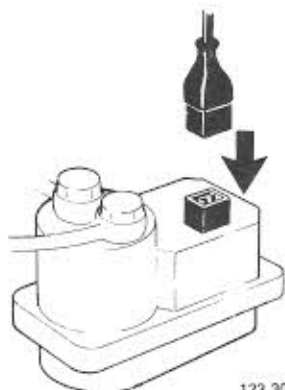
Correct control pressures at different temperatures are shown in below graph.

Too low: test with a new control pressure regulator.

Too high



132 943/7



123 302

R17

Check control pressure (warm control pressure regulator)

Connect plug to control pressure regulator. Regulator will now receive heating current.

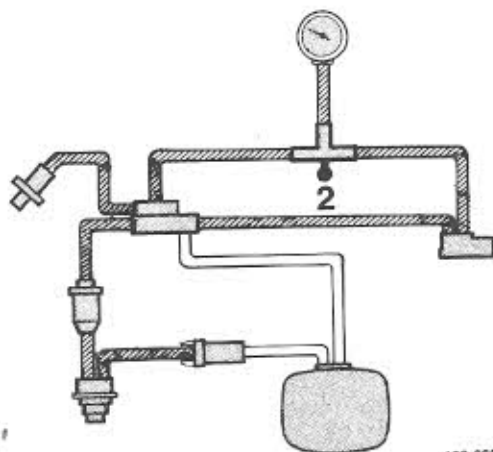
After approx. **5 min**, control pressure should have increased to **345–375 kPa** (49–53 psi).

Too low

R52

Too high

R51



132 066

R18

Check rest pressure

Turn gauge cock on 5011 to position 2 (at right angles to hoses).

Switch off ignition.

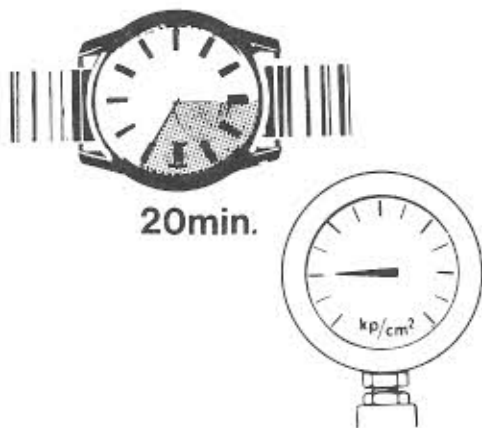
Record pressure when it is stable and also for a further minute.

Rest pressure should be: **240–320 kPa** (34–45 psi), and must not drop within 1 minute.

Pressure does not drop but is incorrect: adjust line and rest pressures, see page 31.

Pressure drops

R54



120 393

R19

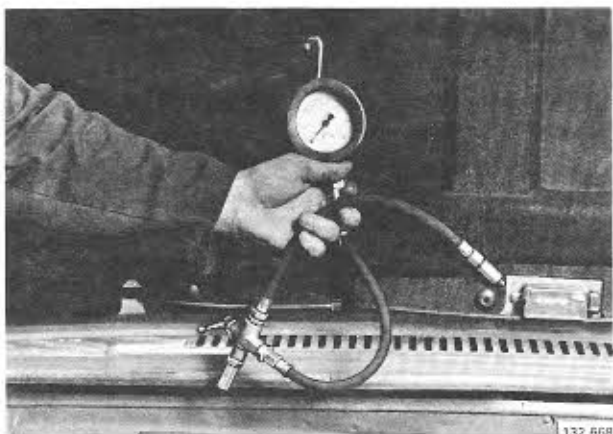
Check pressure drop for 20 minutes

Especially important if it is difficult to start a hot engine.

Pressure after 20 minutes should be **at least 240 kPa** (34 psi).

Too low

R54

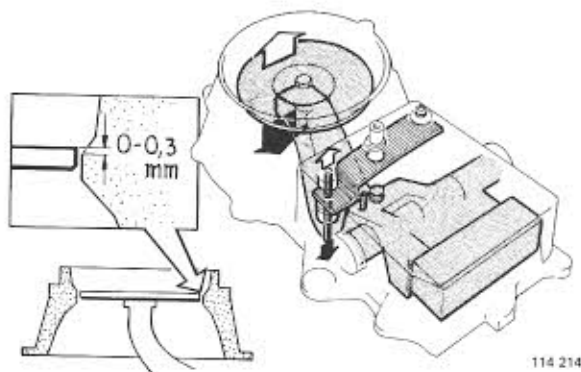


137 668

R20

Disconnect pressure gauge 5011 + nipples

Reconnect normal hose to fuel distributor.



Air-fuel control unit (R21)

R21

Check air flow sensor plate rest position

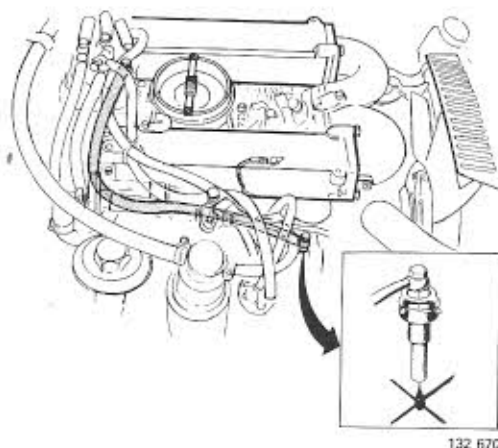
Switch on ignition.

Control pressure regulator must be warm.

Upper edge of plate should lie **flush**, or at **most 0.3 mm (0.012 in)** above cylindrical part of air venturi.

Switch off ignition.

Incorrect position: adjust by tapping pin at spring, see fig upwards/downwards. It will be necessary to remove upper part of air flow sensor to tap pin upwards.



Injectors, fuel distributor (R22-24)

R22

Remove injectors from cylinder heads

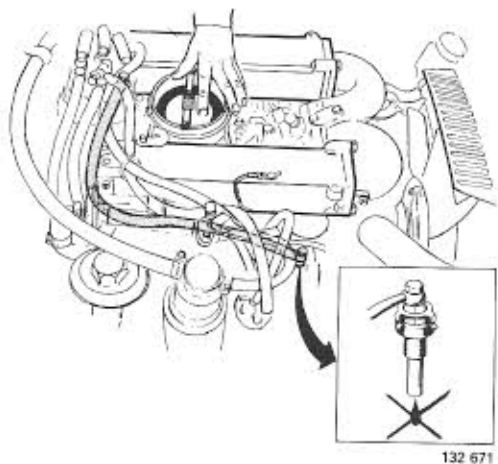
R23

Make sure that fuel distributor does not leak

Switch on ignition to start fuel pump.

Observe injectors, they may become moist but must not start to drip.

Injectors drip: internal leakage in fuel distributor, replace.



R24

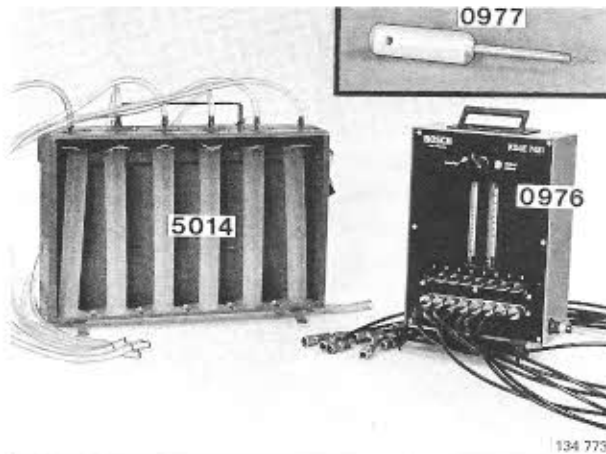
Check injectors for leakage at rest pressure

Switch off ignition.

Depress sensor plate until slits for control plunger open, observe injectors.

Injectors may become moist but must not leak by more than 1 drop in 15 seconds.

One or more injectors leak: clean injectors and test with test apparatus described on page 35.



134 773

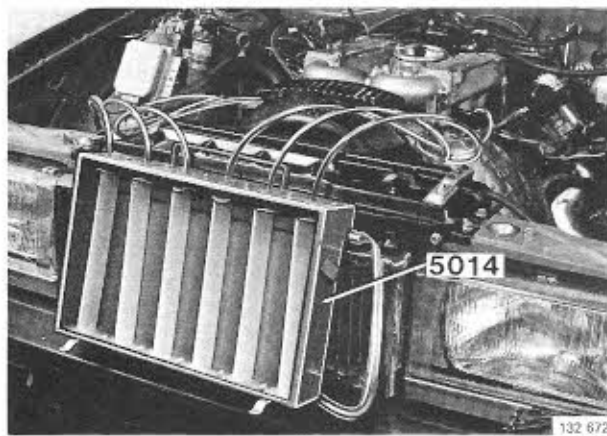
R25

Check difference between fuel delivered from each injector

This test should only be carried out in cases of obvious engine malfunction. Otherwise, continue with operation R34, page 24.

There are two different types of measuring equipment in use:

- meter 0976, see operation R28.
- fuel metering unit 5014, see operation R26 below.



132 672

Meter 5014 Operations R26-27

R26

Connect fuel metering unit 5014

Note! To obtain correct readings, all hoses should either be empty or full at start of test.

Switch on ignition to start fuel pump.

Depress sensor plate halfway. Keep it depressed at this position until 100 cm^3 of fuel is collected in one of measuring cylinders. Release plate.

Injectors must start delivering fuel at same time. Max. fuel deviation must not exceed 20%.

Switch off ignition.

Greater than 20%: repeat test to be exactly sure.

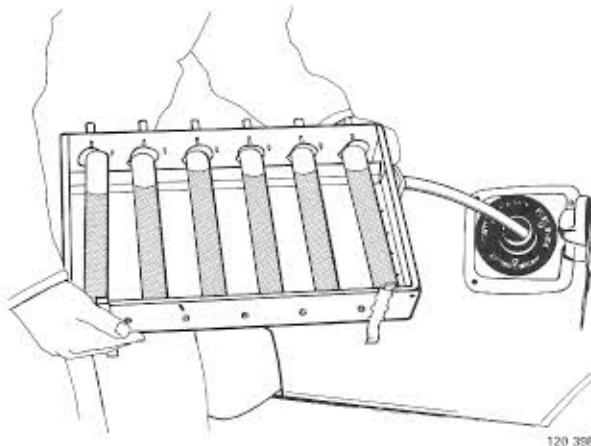
If deviation is still greater than 20%, swap hoses between two injectors (one correct and one faulty) and repeat test.

If results are still same, injector or hose is defective. Clean injector and test in test equipment described on page 35.

If other injector malfunctions, fuel distributor is defective and will have to be replaced.



132 673



120 388

R27

Disconnect fuel metering unit

Pour fuel back into tank.

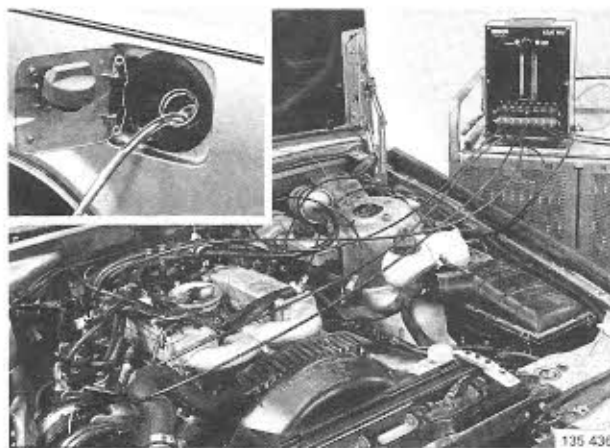
Continue with

→ R34

Meter 0976
Operations R28-33

Note! Fuel pump must be running during test. A battery charger (max. charge 15A) can be connected to prevent battery from discharging.

Low battery voltage will decrease fuel pump capacity and test results will be invalid.



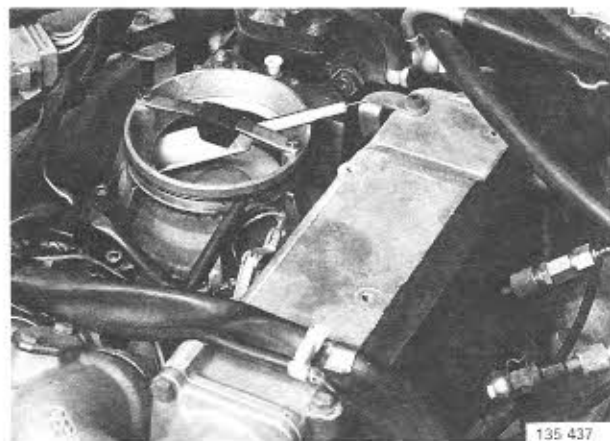
R28

Connect meter 0976

Support meter on a flat surface, next to car, and make sure that it is horizontal by checking built-in spirit (bubble) level.

Connect injectors to hoses from meter, injector no. 1 to hose no. 1, etc.

Insert meter return line in fuel tank.

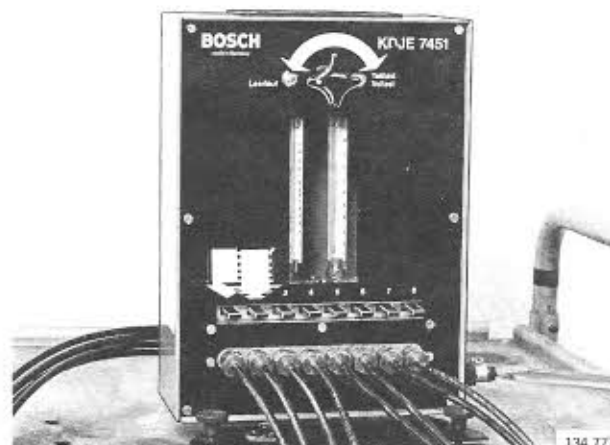


R29

Evacuate meter

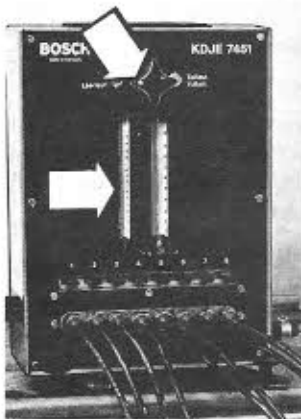
Turn on ignition.

Depress air flow sensor plate to its max. position. Insert tool 0977 so that plate does not move.



Depress meter switches one at a time and open meter knob. Continue until both tubes in meter are evacuated and free from air bubbles.

Remove 0977 and release air flow sensor plate.



135 438

R30

Check fuel flow at idle position

Turn meter knob to left (white spot).

Depress switch for injector no. 1. Depress air flow sensor plate until a flow of approx. 6 cm³/min. is obtained. Keep plate in this position with tool **0977**.

Depress switches for remaining injectors one at a time in order to find out which injector has lowest fuel flow.

Depress switch for injector with lowest flow. Position tool **0977** so that flow becomes 6.0, 6.6 or 7.2 cm³/min.

Check fuel flow for remaining injectors. Flow values for remaining injectors can only lie above set value.

Set value6.0 cm³/min.

6.6 "

7.2 "

Max. permissible fuel flow7.2 cm³/min.

7.9 "

8.6 "



132 673

Incorrect fuel flow:

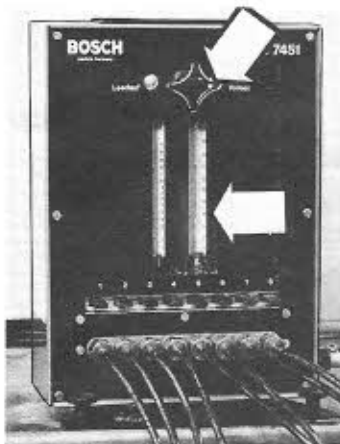
Turn off ignition.

Swap a fuel line with an incorrect flow, with a fuel line having a correct flow (at the fuel distributor).

Repeat flow test.

If fault still remains on same injector, either injector or fuel line is defective. Clean injector and test in test apparatus described on page 35.

If fault moves to other injector, fuel distributor is defective and will have to be replaced.



135 439

R31

Check fuel flow at part load

Turn meter knob to right (white spot).

Position tool **0977** so that fuel flow for injector with lowest flow becomes 40, 50 or 60 cm³/min.

Check fuel flow for remaining injectors.

Set fuel flow40 cm³/min.

40 "

60 "

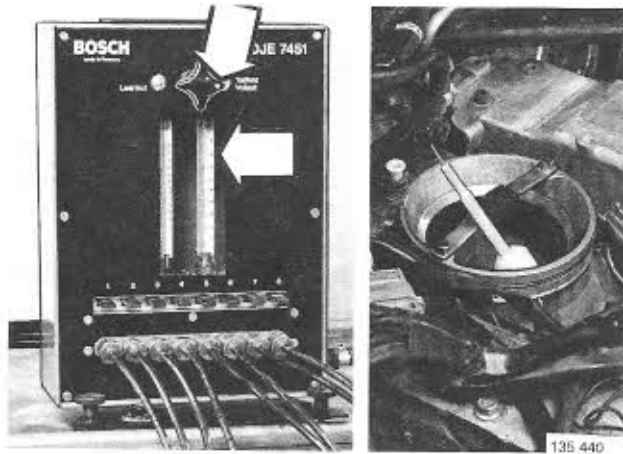
Max. permissible fuel flow46 cm³/min.

57 "

68 "

Incorrect fuel flow: turn off ignition. Swap fuel lines at fuel distributor. Repeat test, as previously described.

CI-system, inspection



R32

Check fuel flow at full load

Turn meter knob to right (white spot).

Depress sensor plate to its max. position. Check which injector has lowest fuel flow. Position tool **0977** so that flow for this injector becomes 120, 140 or 160 cm³/min. Select as high a value as possible.

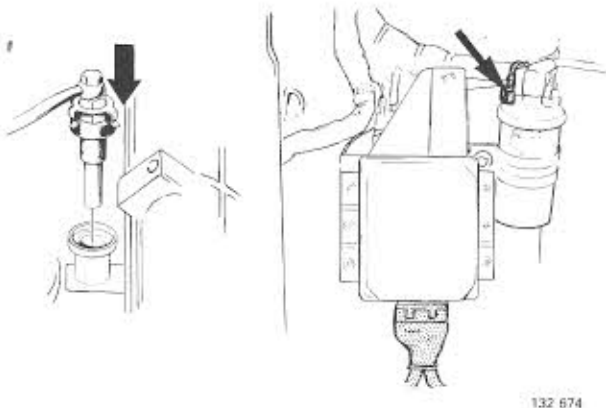
Check fuel flow for remaining injectors.

Set fuel flow	Max. permissible fuel flow
120 cm ³ /min.	131 cm ³ /min.
140 "	153 "
160 "	175 "

Incorrect fuel flow: turn off ignition. Swap fuel lines at fuel distributor. Repeat test, as previously described.

R33

Turn off ignition and disconnect test apparatus



R34

Install injectors

R35

Disconnect test relay 5170. Re-connect plug to ignition system control unit

Re-connect red-white cable to terminal 1 on ignition coil.

Do not forget rubber seal. Without it water can enter and cause oxide formation, poor contacts, etc.

R36

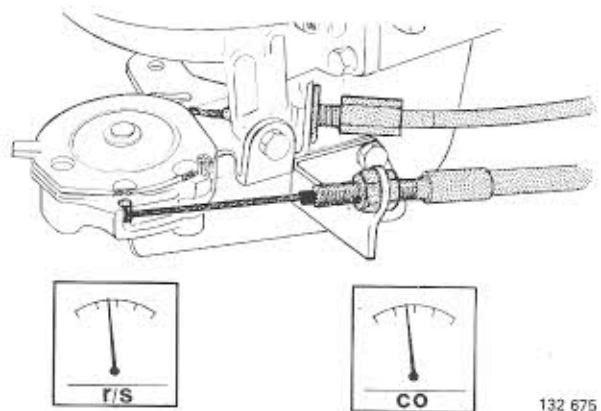
Check/adjust throttle controls

See AU1—6.

R37

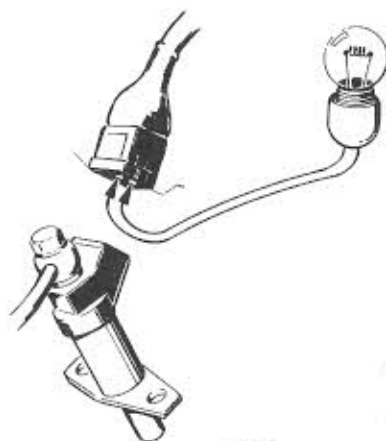
Check/adjust idle speed and CO content

See N5—17.



End of inspection

Different faults discovered during inspection (R38–57)



120 374

From R4: No fuel injected from start injector

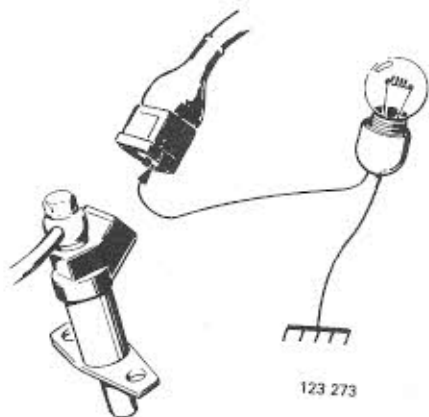
When fault has been rectified, proceed from R5 page 16.

R38

Check for voltage at start injector when starter motor is operating

Measure across both pins. **Note!** See R4 if light flashes.

Voltage: test using a new start injector.



123 273

R39

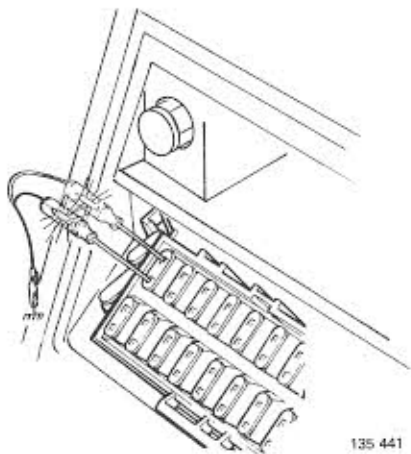
Check for voltage between plug and ground when starter motor is operating

Measure across blue-yellow lead and ground.

Voltage: open circuit in lead to impulse relay or defective impulse relay.

No voltage: open circuit in blue-yellow lead to start injector.

End



135 441

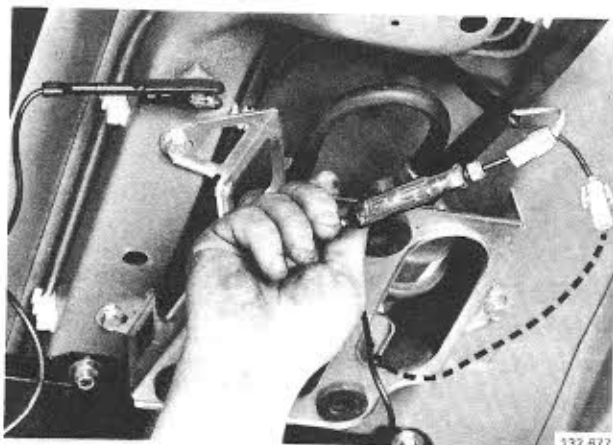
From R8: Fuel pump does not start

When fault has been rectified, proceed from R9 page 17.

R40

Check fuse No. 1

Use a test lamp or remove and check visually.



R41

Check for voltage at fuel pump

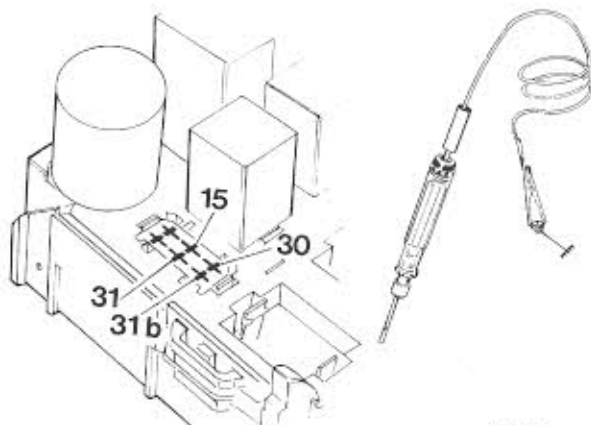
Also check ground lead.

Voltage and ground lead OK: defective fuel pump, replace.

R42

Pull out central electrical unit

Remove pump relay

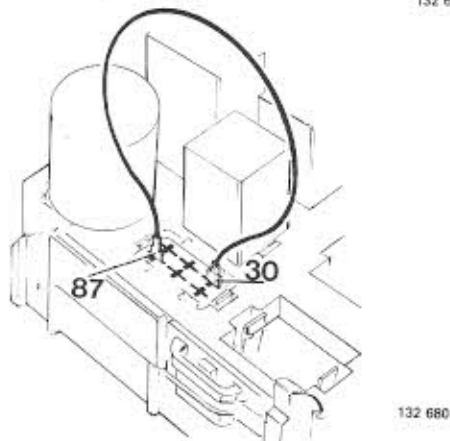


R43

Make sure that there are no open circuits

Use a test lamp, the lamp should glow in all of following cases:

- terminal 30 and ground (lead from fuse no 1 – relay)
- terminal 15 and ground (lead fusebox – relay)
- terminal 31b and ground, lamp flashes (lead from test relay 5170 – pump relay)
- terminal 31 and 30 (ground lead)



R44

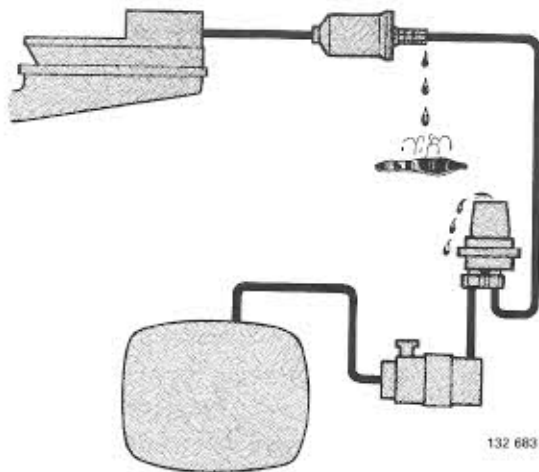
Check lead between relay and fuel pump

Connect a lead between terminals 30 and 87. Listen if fuel pump starts.

Starts: defective pump relay, replace.

Does not start: open circuit in lead from pump relay – fuel pump.

End

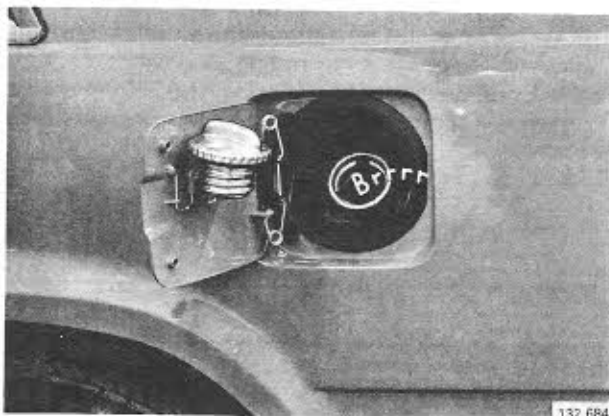
**From R15: Line pressure too low**

When fault has been rectified, proceed from R16 page 18.

R45

Fuel leakage?

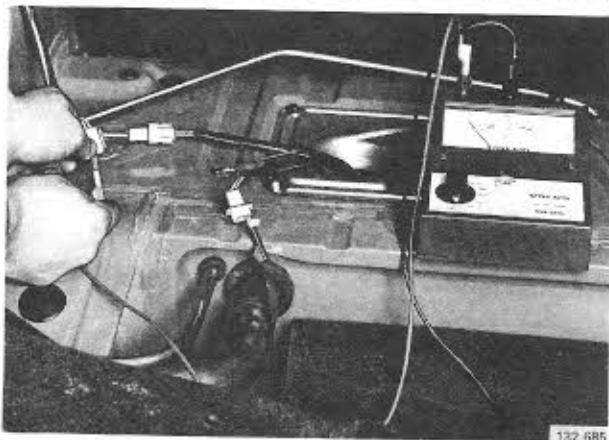
Between fuel pump and fuel distributor.

**Check tank pump**

Unscrew fuel tank cap and listen for sound of pump. A defective tank pump often causes an increase in noise level at main fuel pump.

Tank pump does not work: check fuse no 15 and make sure that current flows to pump. If correct, retest with a new tank pump.

R46

**Check tank pump current consumption**

Connect an ammeter to pink lead in trunk. Current should be 1–2 A.

Incorrect: check tank pump and filter. If correct, re-test with a new tank pump.

R47

Check fuel pump capacity

Switch off ignition.

Unscrew fuel tank cap to release overpressure.

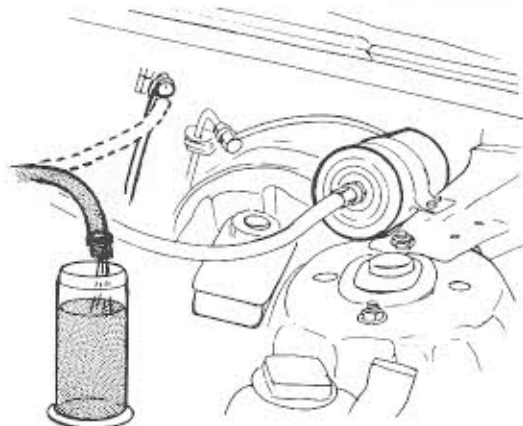
Disconnect return line at connection in engine compartment and hold end above a measuring cylinder.

Switch on ignition for **30 seconds**, min. volume of fuel should be **1 liter (1 qt)**.

Re-connect return line.

Incorrect pump capacity: re-test with a new fuel pump. If this does not help, fault may be due to a blocked fuel filter, fuel line or fuel distributor.

R48

**Adjust line and rest pressures**

See R58, page 31.

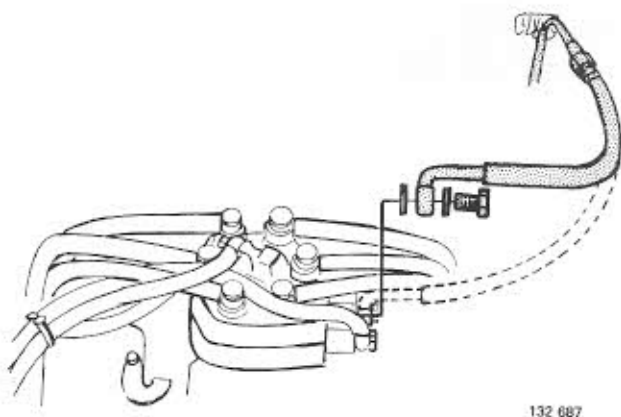
R49

End

From R15: Line pressure too high

When fault has been rectified, proceed with R16 page 18.

R50



Check that return line is not blocked

Switch off ignition.

Unscrew fuel tank cap to release overpressure.

Disconnect return line from fuel distributor and blow through line.

Blocked line: clean or if need be replace.

OK:

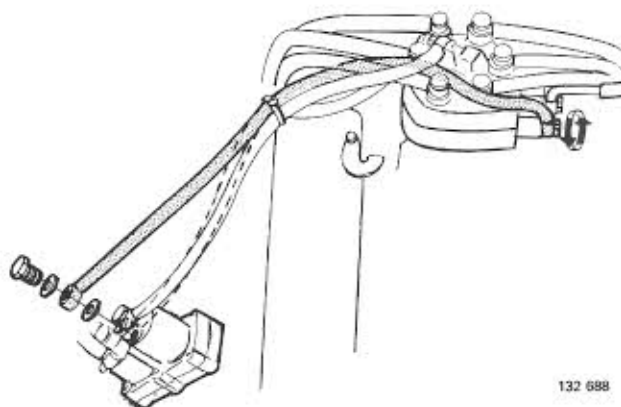
- make sure that fuel fitting screw holes are not blocked. Re-connect return line.
- check rest pressure, see R18 page 23. Then adjust line and rest pressures, and clean line pressure regulator.

End

From R16 and 17: Control pressure too high (cold/warm control pressure regulator)

When fault has been rectified, proceed from R17 resp. R18 on page 18.

R51



Check return line from control pressure regulator to fuel distributor

Switch off ignition.

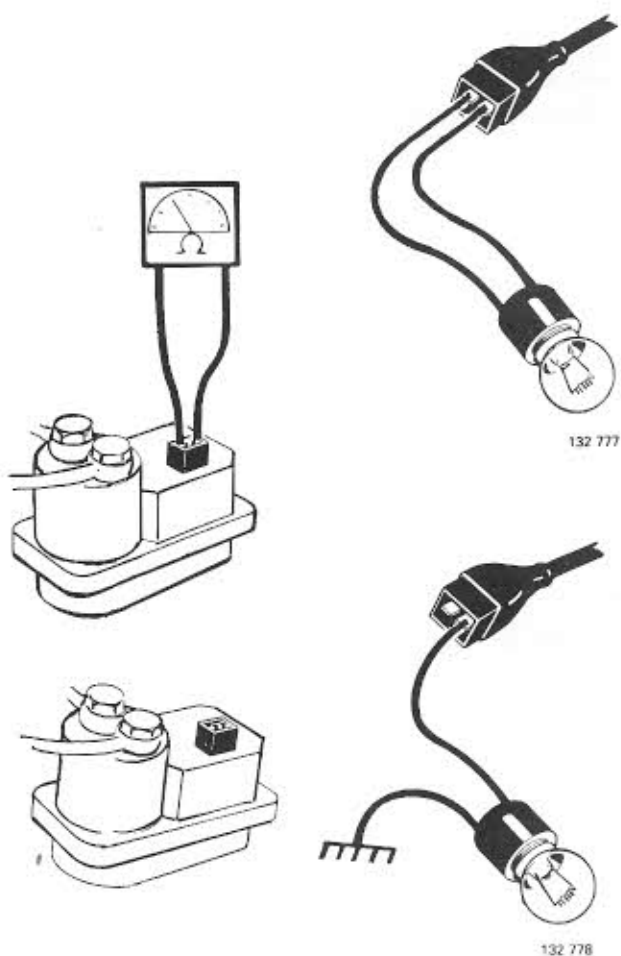
Unscrew fuel tank cap to release overpressure.

Disconnect return line from control pressure regulator and slacken it at fuel distributor. Blow through line.

Blocked line: clean, or if need be replace.

OK: check that fuel fitting screw holes are not blocked. Re-test with a new control pressure regulator. If this does not help, line pressure regulator in fuel distributor may be blocked.

End



From R17: Control pressure too low (warm control pressure regulator)

When fault has been rectified, proceed from R18 page 19.

R52

Check for voltage at control pressure regulator

Measure across plug pins.

Voltage: measure regulator resistance
 below +13°C (55°F) 31.5–38.5 Ω
 above +17°C (62°F) 12.6–15.4 Ω

If resistance is correct, fault is due to a poor contact between regulator and plug.

R53

Check for voltage between plug and ground

Connect between blue lead and ground.

Voltage: open circuit in lead to ground.

No voltage: open circuit in lead between pump relay and control pressure regulator.

End

From R18 and 19: Rest pressure drops

When fault has been rectified, proceed with R20 page 19.

R54

Check rest pressure, gauge cock in position 1

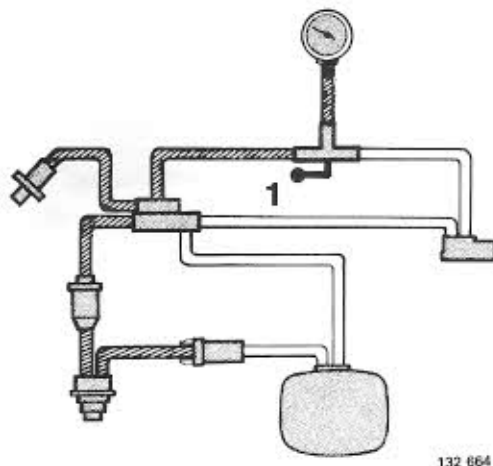
Switch on ignition to build up pressure in system.
 Switch off ignition.

Turn gauge cock on 5011 to position 1 (towards fuel distributor).

Wait and record pressure after 5 minutes, this is necessary because fuel accumulator compensates for any leakage as long as it contains fuel under pressure.

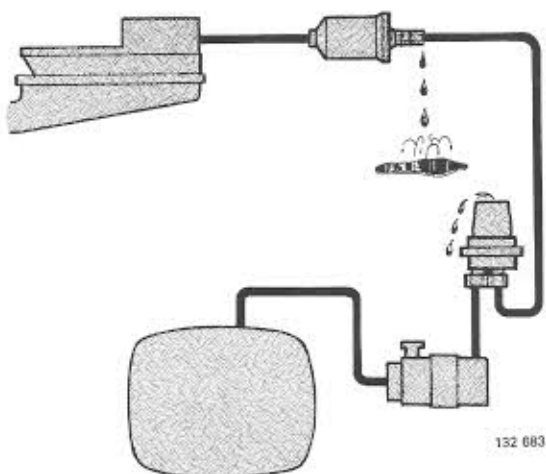
Pressure does not drop in position 1: fault is due to one or more of following:

- fuel line leak
- needle valve in line pressure regulator does not close. Clean, renew needle valve and fitting, if and as necessary.



132 664

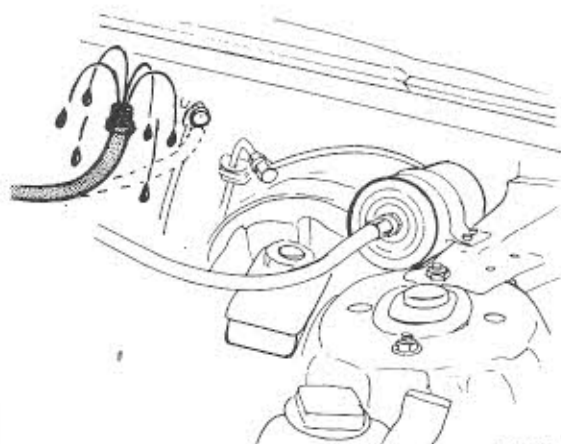
CI-system, inspection



Fuel leaks?

From fuel pump to fuel distributor.

R55



Make sure that line pressure regulator does not leak

Unscrew fuel tank cap to release overpressure.

Switch on ignition to build up pressure.

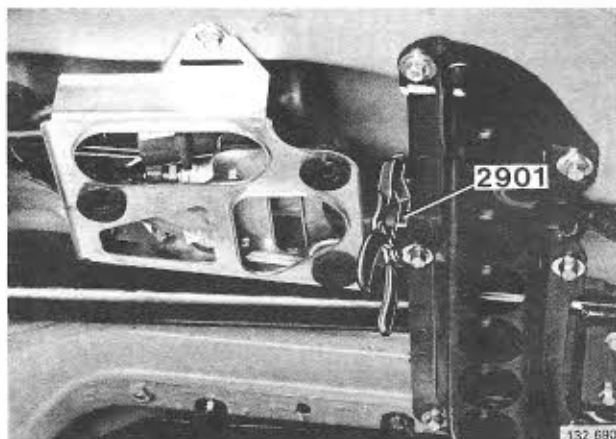
Switch off ignition.

Detach return line (junction next to filter) and hold end of hose up. If fuel flows out of hose, line pressure regulator is leaking.

Reconnect return line.

Line pressure regulator leaking: replace O-ring. If this does not help, replace fuel distributor complete.

R56



Check fuel pump non-return valve

Switch on ignition to build up pressure.

Switch off ignition.

Block line between tank pump and fuel pump. Use pliers 2901.

Record rest pressure for 5 minutes.

Rest pressure drops: start injector or line to it leaking.

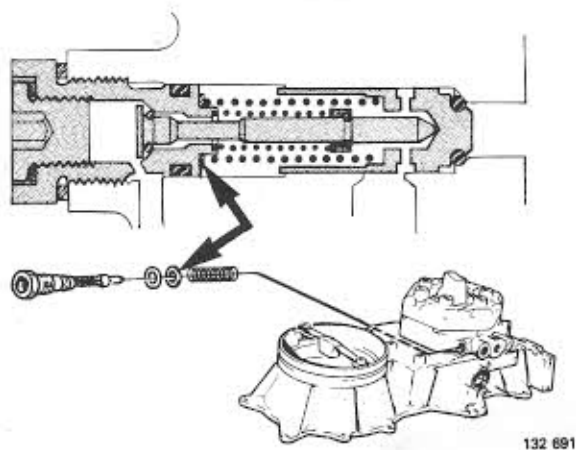
Rest pressure does not drop: non-return valve is leaking, replace.

R57

End

Adjustment of line and rest pressures

R58



Remove or install shims to line pressure regulator as necessary.

Line and rest pressures are affected to a similar extent by shims. Both increase by addition of shims and vice versa.

Shims are available in three thicknesses:

- 0.1 mm = pressure change 15 kPa (2.1 psi)
- 0.15 mm = pressure change 22 kPa (3.1 psi)
- 0.6 mm = pressure change 90 kPa (13 psi)

Line pressure should be set to **470–550 kPa**
(67–78 psi)

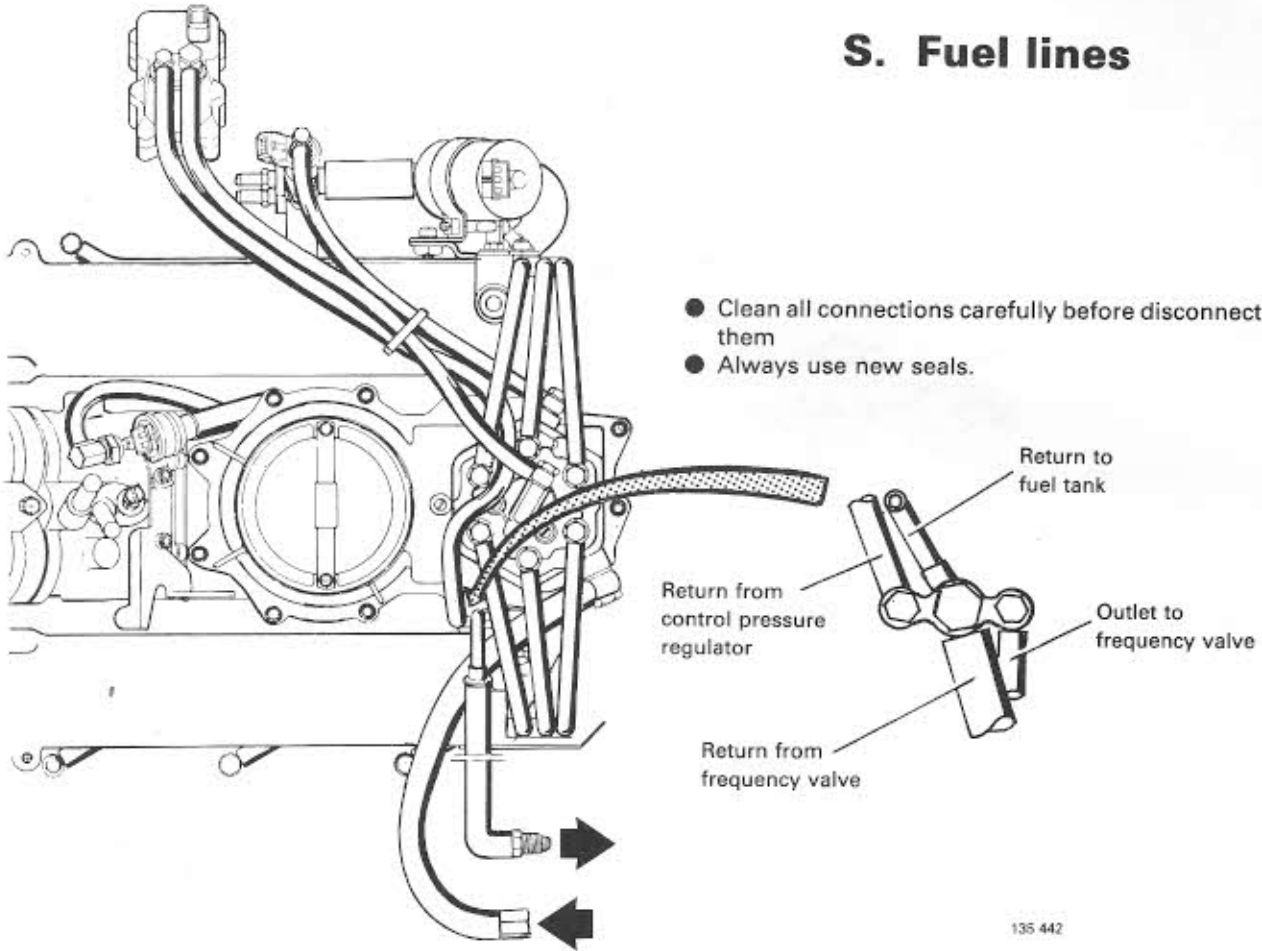
Rest pressure should be set to **240–320 kPa**
(34–45 psi)

End

S. Fuel lines

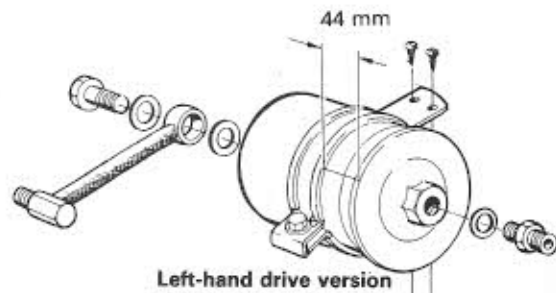
S1

- Clean all connections carefully before disconnecting them
- Always use new seals.



135 442

T. Fuel filter



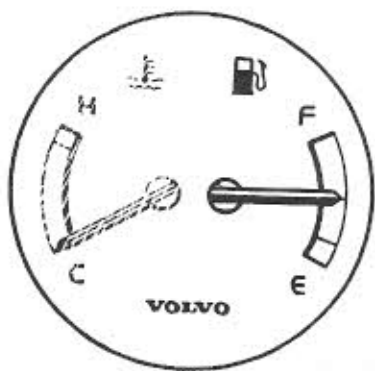
T1

Fuel filter must be installed with steel end at outlet side
44 mm = 1.75 in.

132 703

U. Tank pump/filter

U1

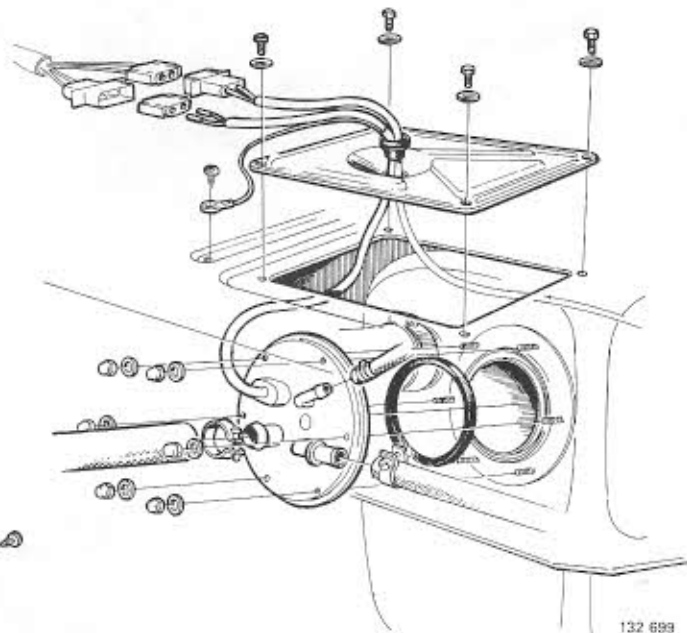


132 698

On removing the tank gauge unit

If spillage is to be avoided, fuel tank should not be more than half full.

Drain plug is located at bottom of tank.

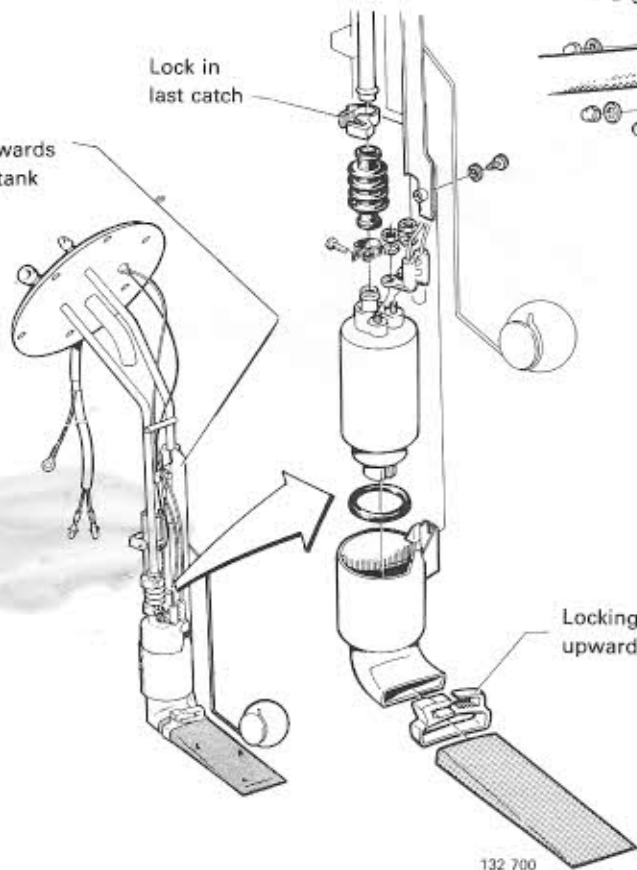


Use a new unit seal

Tank unit pressed towards bottom of tank by spring.

Lock in last catch

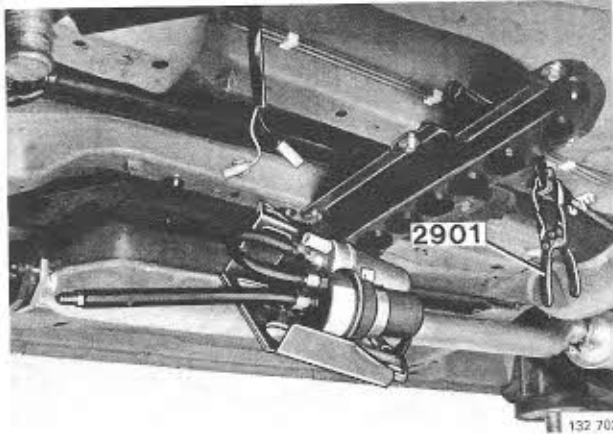
Locking tabs upwards



132 700

V. Fuel pump, check valve, fuel accumulator, replacement

Special tool: 2901

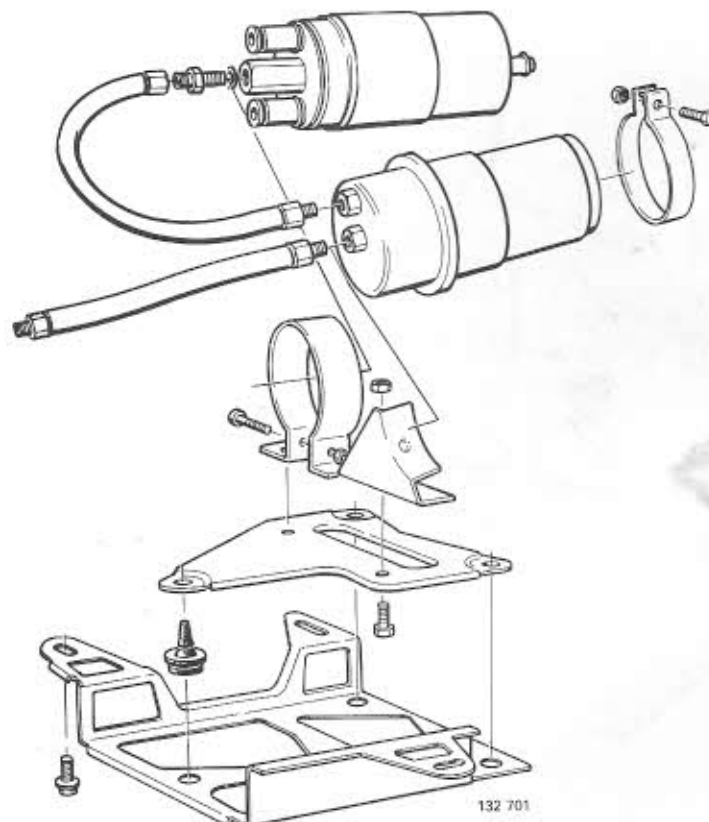


V1

Remove complete mounting assembly.

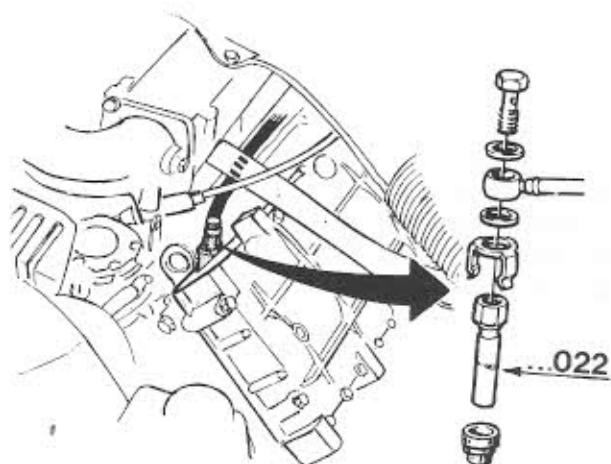
Block fuel line from tank pump to fuel pump. Use clamping pliers 2901.

Note! Never use old check valve on a new pump (new valve and seal supplied with new pump).

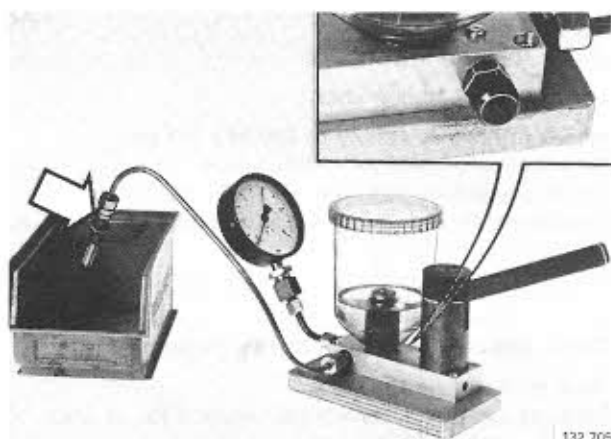


X. Injectors

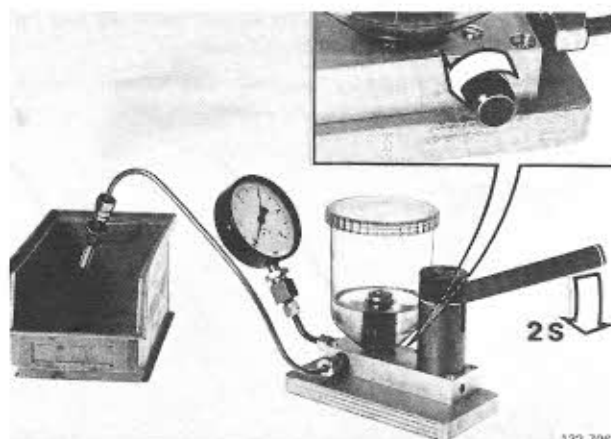
Special tools: 9934



132 704



132 705



132 706

X1

Replacement

New injectors are filled with a rustproofing compound. On storing, the compound hardens which is why injectors should always be cleaned and tested before installing (see method below).

Type designation must be 0 437 502 022.

Check rubber seals and replace wherever necessary.

Testing and cleaning

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

Note! Never exceed a pressure of 600 kPa (85 psi) during the test.

X2

Connect injector to tester 9934

Use adapter P/N 243 895-0. Do not tighten.

Bleed pressure line by pumping until fuel is supplied without air bubbles. Then tighten connection.

X3

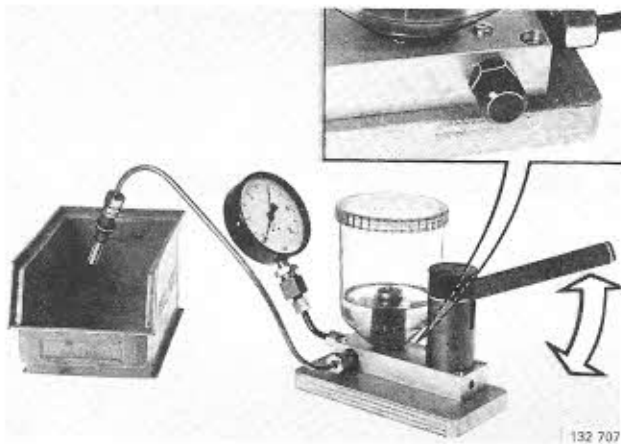
Check to see if injector is leaking

Open pressure gauge cock. Pump slowly, about 2 seconds per pump sweep. Check that pressure rises to at least 100–150 kPa (14–21 psi).

If not, injector is leaking and must be cleaned.

Injectors

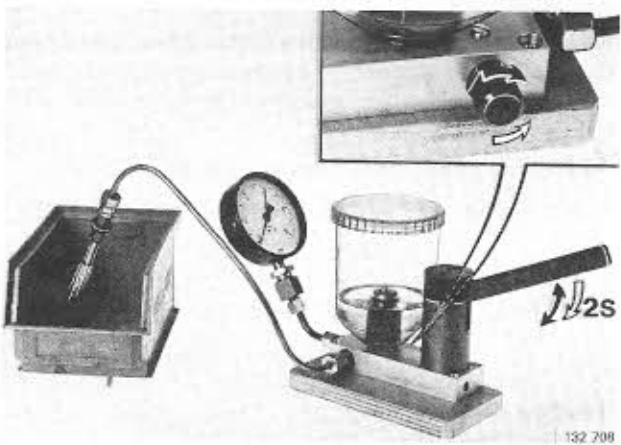
X4



Clean injector (whenever necessary)

Pump strongly 15–20 times. Then repeat X3.
If pressure is still too low, injector should be replaced.

X5



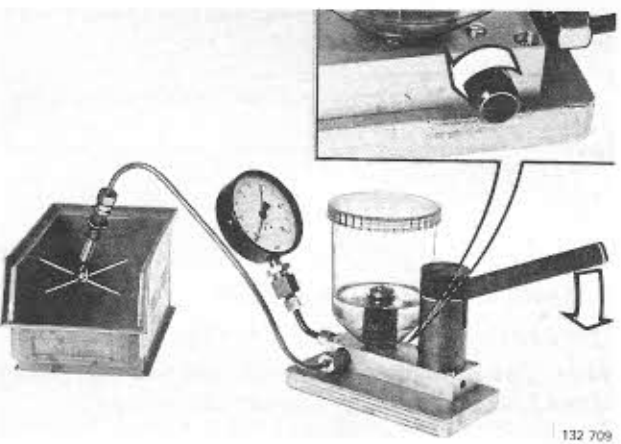
Check opening pressure

Close pressure gauge cock.
Quickly pump a few times to vent injector.
Open pressure gauge cock.
Pump slowly, approx. 2 seconds per pump sweep. Record pressure when injector opens.

Opening pressure **350–410 kPa (50–58 psi)**.

If incorrect, replace injector.

X6



Check injector tightness

Open pressure gauge cock.
Increase pressure slowly to **290 kPa (41 psi)**.
Keep pressure constant at this value.
In a **15 second** period, injector must not drip.
If incorrect, clean injector according to X4 and re-test.

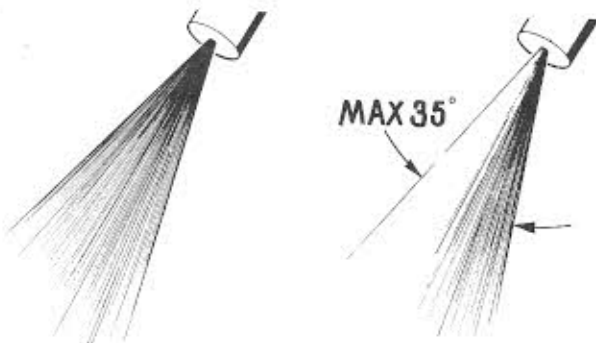
X7

Check injector function, spray pattern, etc

Close pressure gauge cock.
Pump at approx. 1 sweep per second for at least 10 seconds and observe injector.

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

If incorrect, clean injector according to X4 and retest.



Correct spray pattern

Acceptable spray pattern



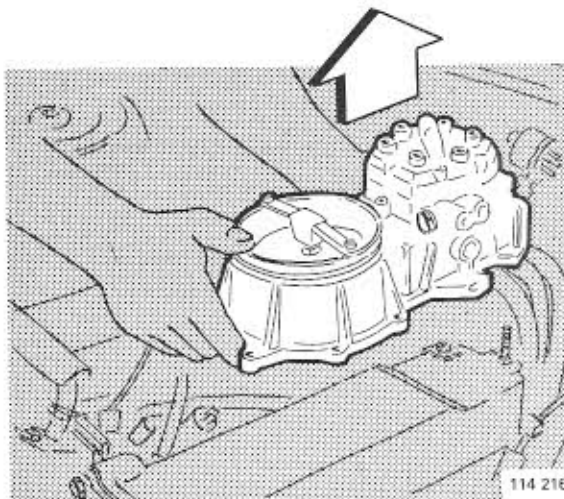
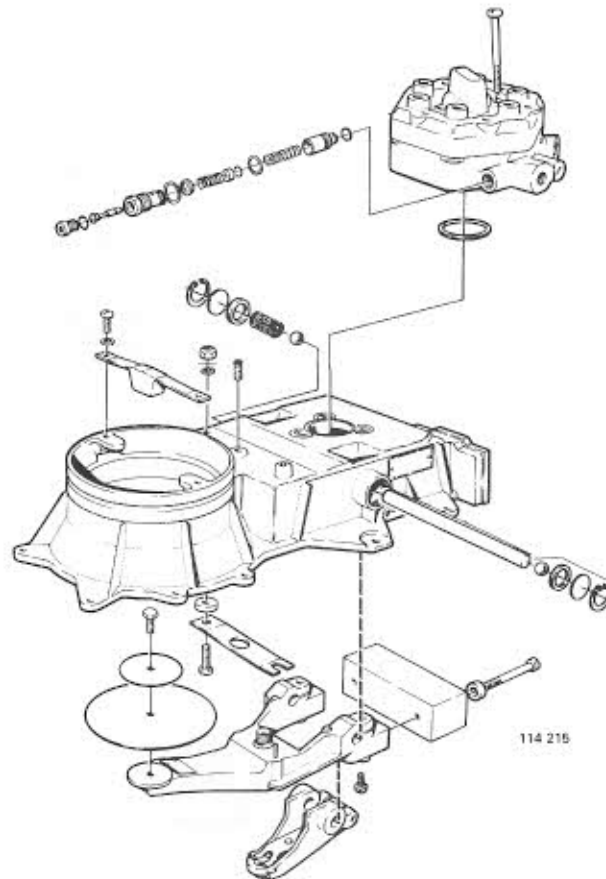
Examples of poor spray patterns (Injector should be replaced).

132 710

Y. Air-fuel control unit

Note! If necessary, fuel distributor can be removed and checked separately

Special tools: 5102, 5170



Removal of air-fuel control unit (Y1-2)

Y1

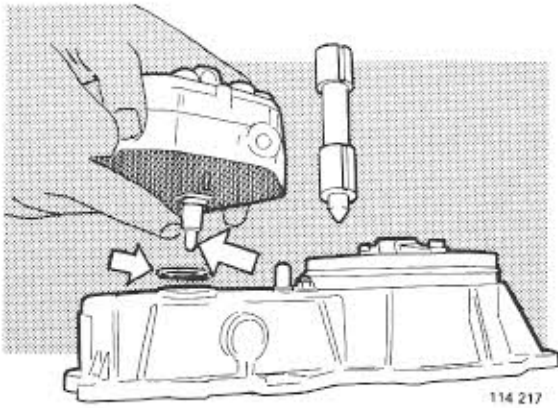
Remove upper section of air-flow sensor along with fuel distributor

Unscrew fuel tank cap to release overpressure (minimizes fuel spillage).

Clean all hose connections before disconnecting.

Allen wrench 5 mm.

Air-fuel control unit

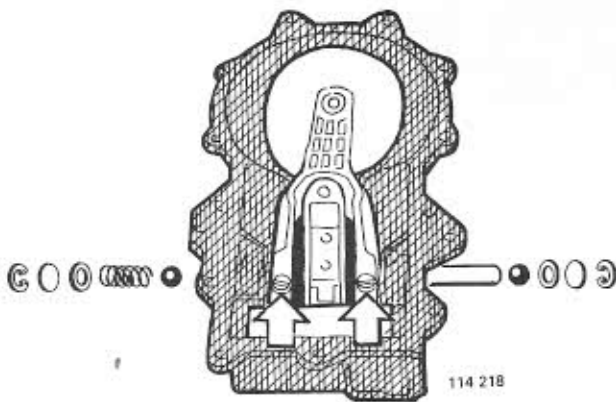


Y2

Remove fuel distributor

This should be done carefully to prevent control plunger from falling out and becoming damaged.

A control plunger which has been removed must always be cleaned in clean gasoline before reinstalling.



Reconditioning air flow sensor (Y3-10)

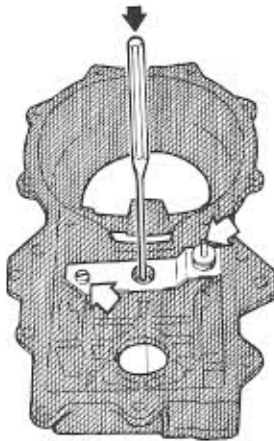
Y3

Remove lever and adjustment arm

Slacken clamping screws, lever - shaft.

Remove snap-rings, cover washers, O-rings, spring (one side) and balls. It may be necessary to tap lightly on side to free balls.

Press out shaft and lift out lever and adjustment arm.



Y4

Clean and inspect all parts

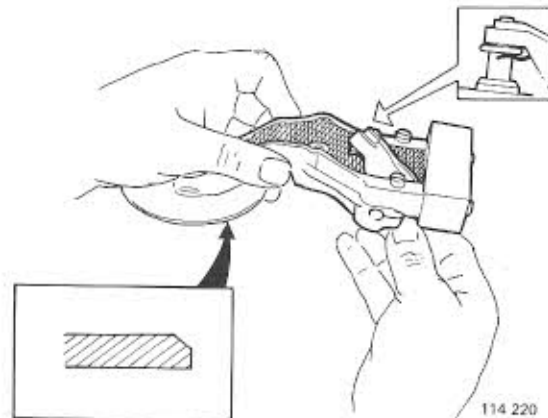
Replace worn or damaged parts.

Make sure that spring and pin (for adjusting height of sensor plate) are not loose.

Y5

Remove seal (steel ball) from air flow sensor

3 mm drift (0.125 in).



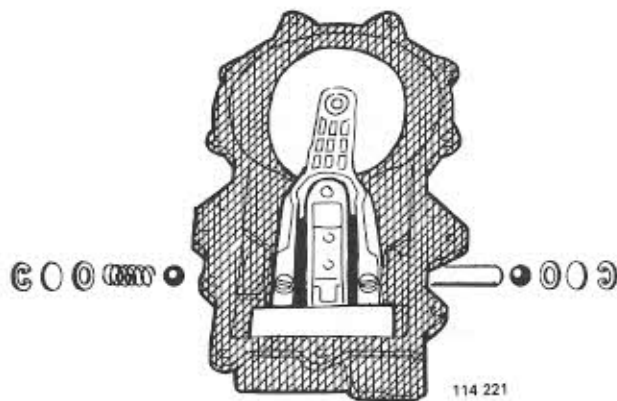
Y6

Assemble lever and adjustment arm

Install counterbalance (if removed).

Place adjustment arm in lever.

If sensor plate has been removed: plate should be positioned so that bevelled edge faces lever.



114 221

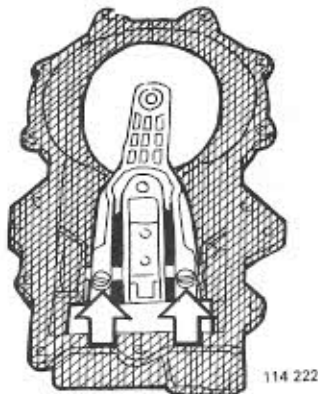
Assemble air flow sensor

Grease bearing seats, shaft, balls and spring.

Place lever and adjustment arm in air flow sensor and press in shaft. **Note!** Hold adjustment arm straight when shaft is pressed into position, otherwise shaft will not be free to turn.

Install balls, spring, O-rings, cover washers and circlips. Spring should be installed in side where bearing seat is deepest.

Y7



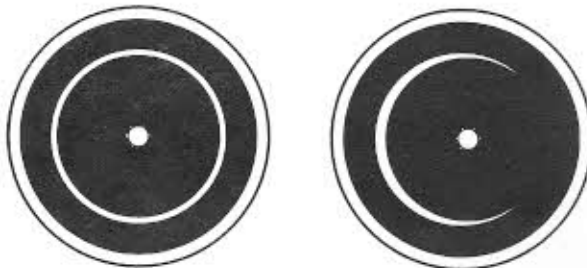
114 222

Align lever

CO adjustment screw should lie directly in front of hole in housing. Use key 5102 to check.

Tighten clamping screws, lever – shaft.

Y8



Correct

Incorrect 108 604

Center sensor plate

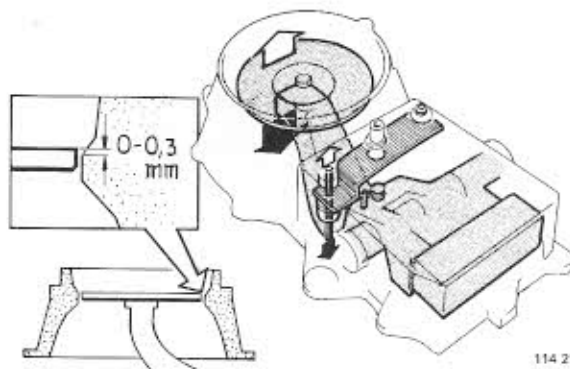
Adjust to obtain an equal space all around. Unscrew center bolt when adjusting plate.

Y9

Check operation of sensor plate/lever

Parts should move easily and without binding.

Y10



114 214

Adjust sensor plate rest position

Upper edge of plate should lie flush, or at the most 0.3 mm (0.012 in) above cylindrical part of air venturi.

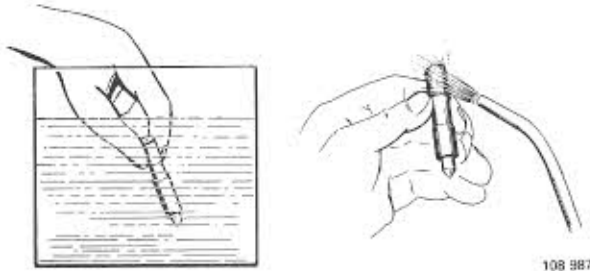
If necessary adjust position by tapping pin (indicated) either upwards or downwards.

Recheck position of sensor plate after refitting air-fuel control unit in vehicle.

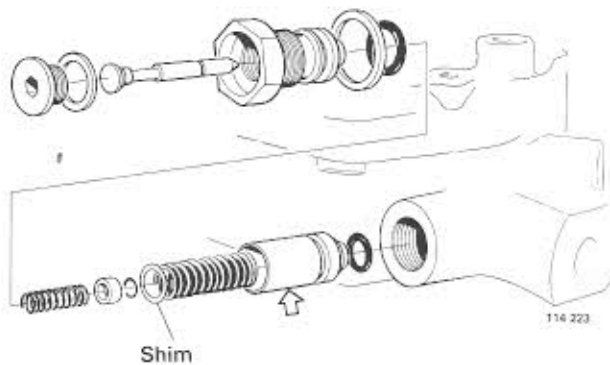
Y11

Note! It is advisable to set sensor plate slightly above flush position. This is because when unit is installed it is only possible to tap pin downwards i. e. lower position of plate.

Air-fuel control unit

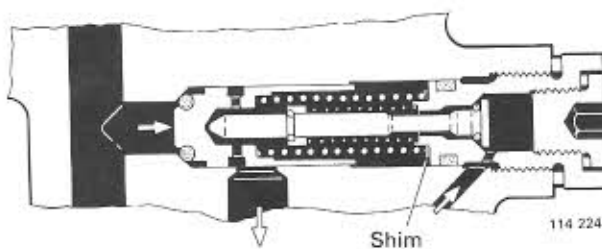


108 887



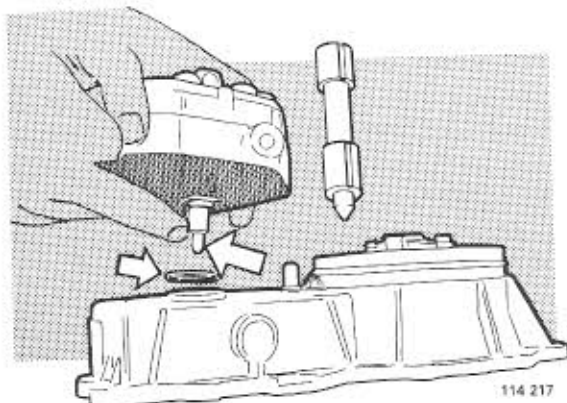
Shim

114 223



Shim

114 224



114 217

Reconditioning the fuel distributor (Y12-13)

Fuel distributor must not be disassembled. If any part is defective, complete unit must be replaced. It is however possible to clean control plunger.

Line pressure regulator can also be cleaned, O-rings and seals should be replaced.

Y12

Clean and check control plunger

Always use clean gasoline and observe utmost cleanliness.

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

Make sure that plunger is not damaged, use non-metallic brush to remove dirt particles (**on no account use metal tools**).

Install plunger in fuel distributor and check that it moves freely. If it binds, replace complete fuel distributor.

Y13

Clean and check line pressure regulator

Use clean gasoline and observe utmost cleanliness.

Disassemble and clean regulator.

Replace worn or damaged parts. **Caution!** Pistons must not be replaced separately. If defective complete fuel distributor must be replaced.

Assemble regulator and install, using new O-rings and seals.

Installing air-fuel control unit (Y14-17)

Y14

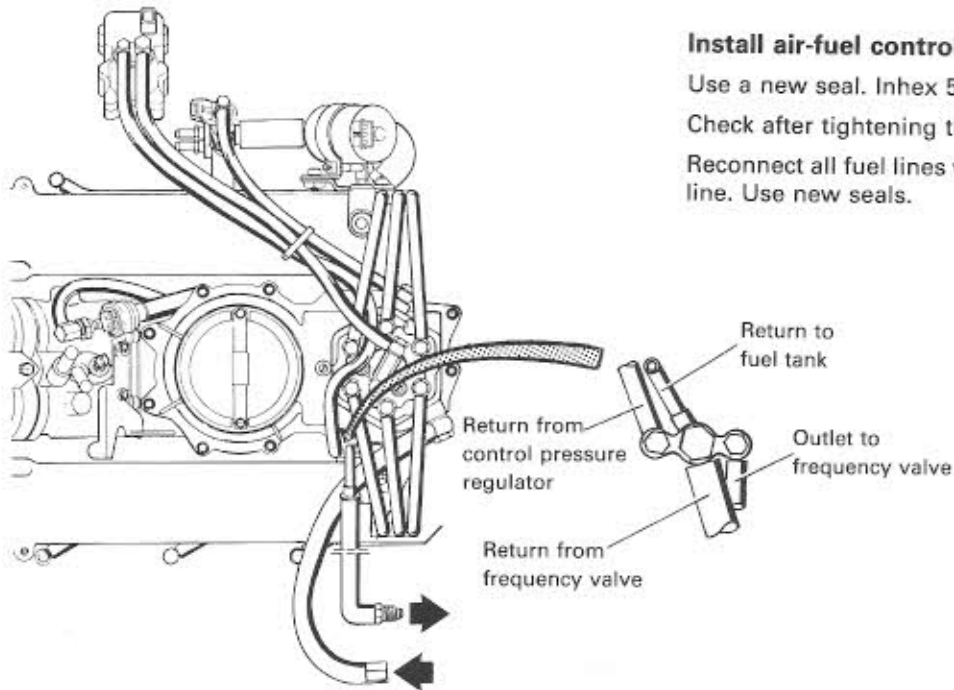
Install fuel distributor on air-fuel sensor

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

Take care that control plunger does not fall out and become damaged.

Tighten screws evenly. Tightening torque 3.6 Nm (2.6 ft. lb.).

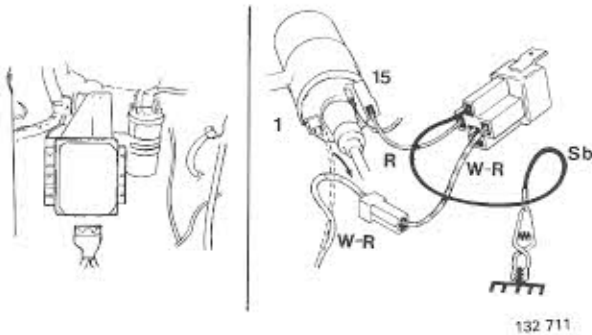
Y15

**Install air-fuel control unit**

Use a new seal. Inhex 5 mm.

Check after tightening that sensor plate moves freely.

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



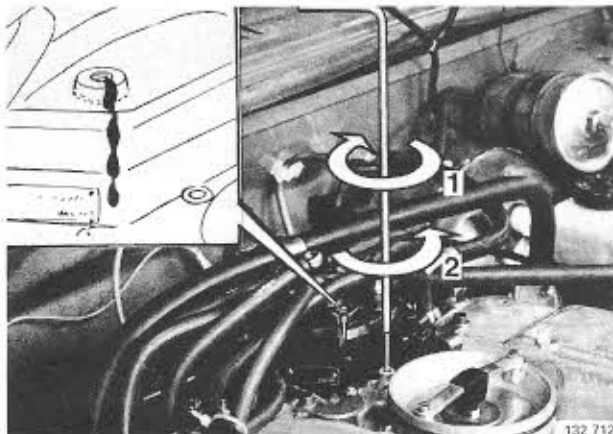
132 711

Y16

Basic setting of air-fuel control unit (CO adjustment screw)

Disconnect plug from ignition system control unit.

Connect test relay 5170.



132 712

Switch on ignition

Turn CO screw clockwise without pressing until fuel is supplied from open outlet. Then turn screw by an additional half a turn. Use wrench 5102.

Switch off ignition and reconnect fuel line.

Remove test relay 5170 and reconnect control unit. **Caution!** Make sure that rubber seal in control unit connector is correctly installed. Without seal, water can enter and cause rust and oxide formation.

Y17

After installing air-fuel control unit, check/adjust following

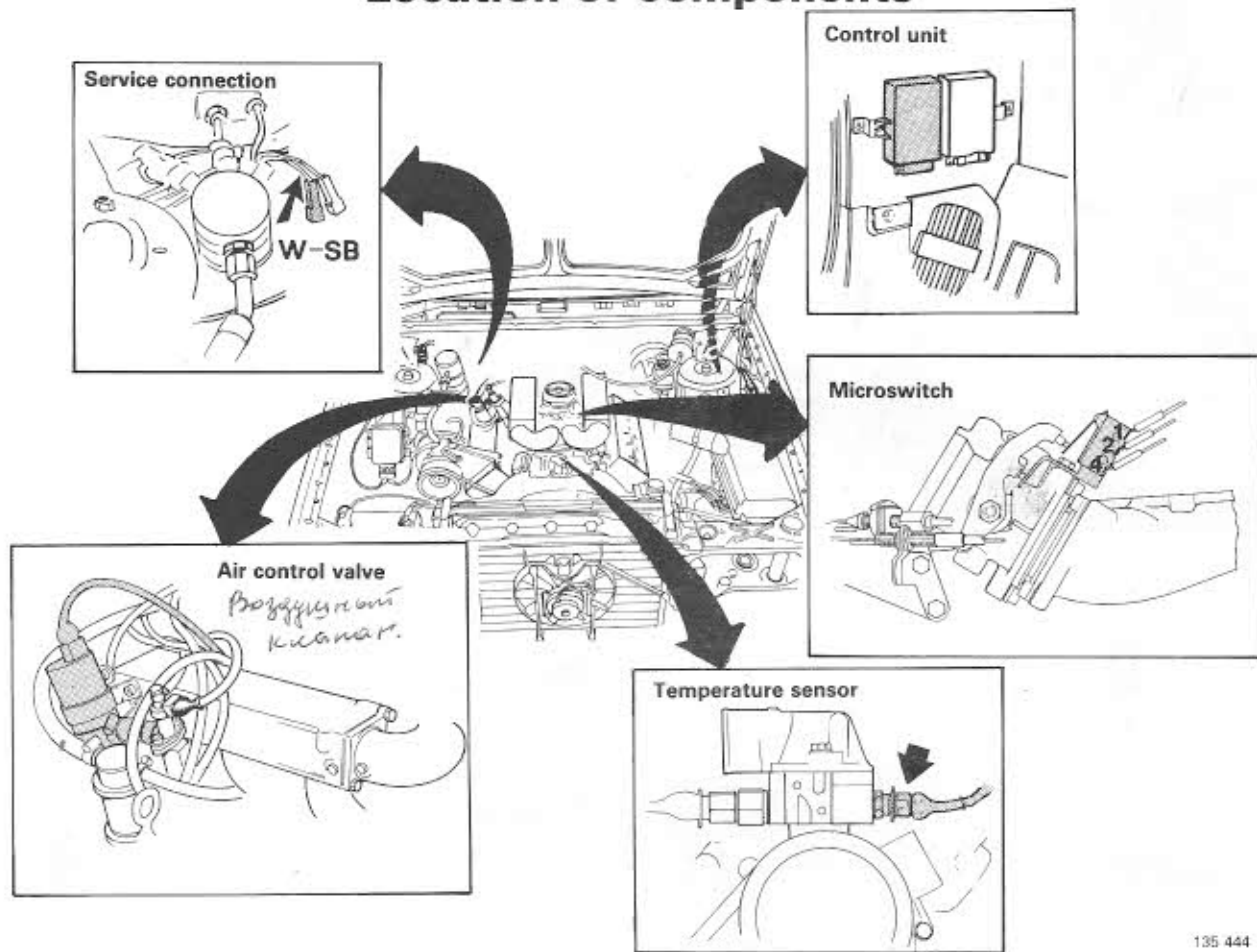
- all pressures in system. See R6—7 page 16 and R13—20 page 18.
- sensor plate rest position. See R21 page 20.
- idle speed and CO content. See N5—17 page 4.

CIS-system

CIS-SYSTEM

Constant idle speed system

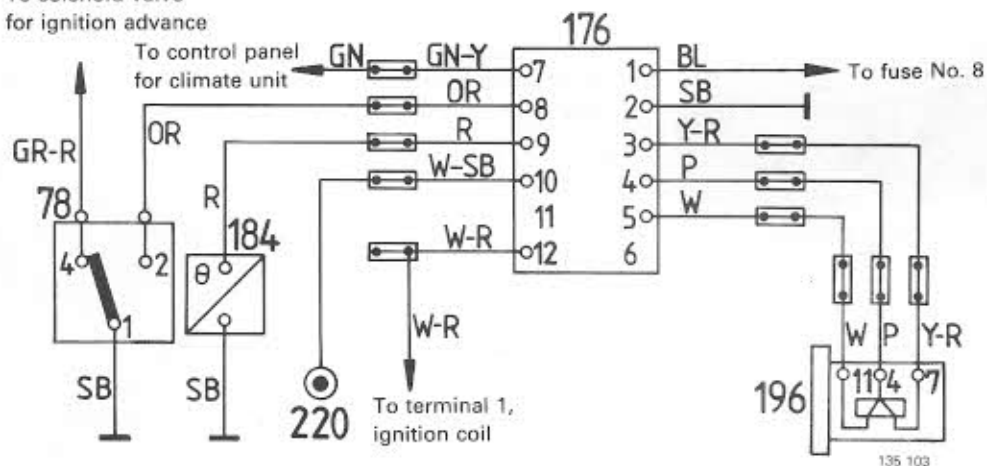
Location of components



135 444

Wiring diagram

To solenoid valve
for ignition advance



Legend:

- 78 = microswitch
- 176 = control unit
- 184 = temperature sensor
- 196 = air control valve
- 220 = service connection

Color code:

- GR = grey
- R = red
- OR = orange
- SB = black
- Y = yellow
- W = white
- BL = blue
- P = purple

135 103

Fault symptoms

Fault symptoms in system may be caused by external faults, see list below.

Note! All symptoms below can be caused by poor electrical contacts (eg oxide formation etc).

Fault symptom	Possible cause
Idle speed fluctuates By more than ± 20 r/min	<ul style="list-style-type: none"> - ignition setting - ignition advance system - CO content - air leakage
Idle speed too high Check that air conditioning unit is disengaged	<ul style="list-style-type: none"> - incorrectly adjusted microswitch - temperature sensor defective or not connected - ignition advance system - throttle valve incorrectly set
Idle speed too low	<ul style="list-style-type: none"> - blocked air hoses - crankcase ventilation
No control	<ul style="list-style-type: none"> - throttle control incorrectly set - microswitch incorrectly set
Engine stalls when braking to stop	<ul style="list-style-type: none"> - ignition setting - CO content - throttle valve incorrectly set
No fast idle, cold engine	<ul style="list-style-type: none"> - temperature sensor defective or damaged cable
No increase in engine speed when AC connected	<ul style="list-style-type: none"> - AC controls



135 445

Idle speed

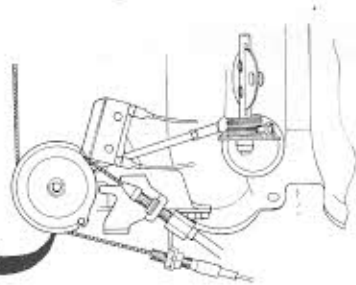
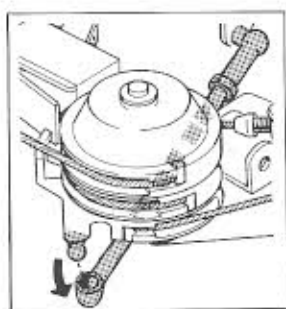
Cold engine -20°C (-4°F) approx. **18 r/s** (1100 r/min).
Engine speed reduces as engine heats up and stabilizes at approx $+15^{\circ}\text{C}$ ($+59^{\circ}\text{F}$).

Hot engine

AC disengaged **12.5 r/s** (750 r/min)
AC engaged **15.0 r/s** (900 r/min)

Z. Basic setting and inspection of CIS-system

Engine warmed-up to normal operating temperature.



135 446

Z1

Disconnect link rod from throttle pulley

Ensure that the pulley moves smoothly and does not bind.

Z2

Connect rev counter and start engine

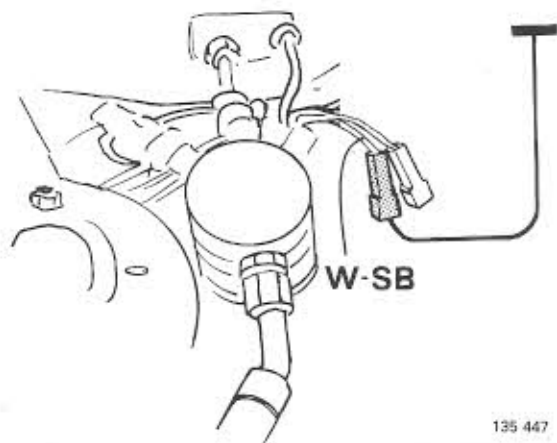
Note! AC must be disengaged.

Z3

Connect service connection for CIS to ground

Air control valve takes up basic position.

R = service socket for Lambda-sond
W-SB = service socket for CIS



135 447

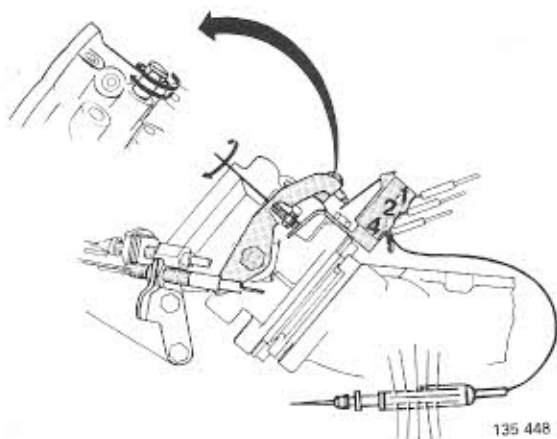
Z4

Basic throttle valve setting

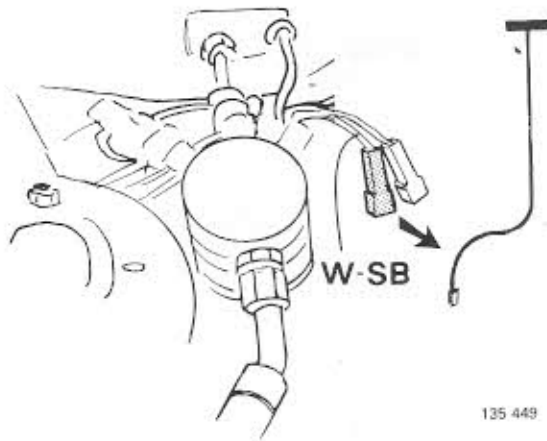
Make sure that idle adjustment screw is screwed in i.e. bottoms. This screw is for engine without CIS-system.

Connect a test lamp between terminal 4 on the micro-switch and a 12V power source. The lamp should light, if not-screw in upper adjustment screw until it does.

Adjust engine speed with the lower adjustment screw to 11.7 r/s (700 r/min). **Note!** The test lamp must remain on throughout adjustment otherwise setting will be incorrect.



135 448



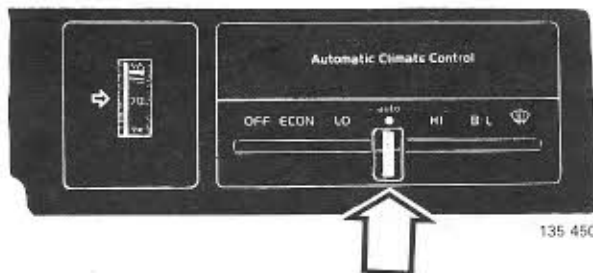
135 449

Z5

Check idle speed control

Disconnect ground from the service connection.

Engine speed will increase briefly and then stabilize at 12.5 r/s (750 ± 20 r/min).



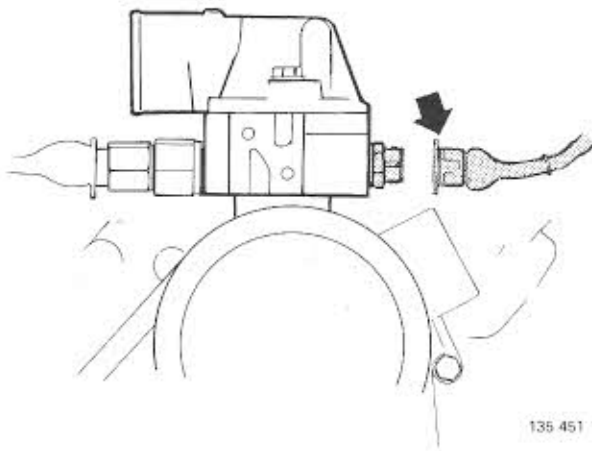
135 450

Z6

Check increase in engine speed when AC engaged

Engine speed should increase to 15.0 r/s (900 r/min).

Disengage AC.



135 451

Z7

Turn off engine

Z8

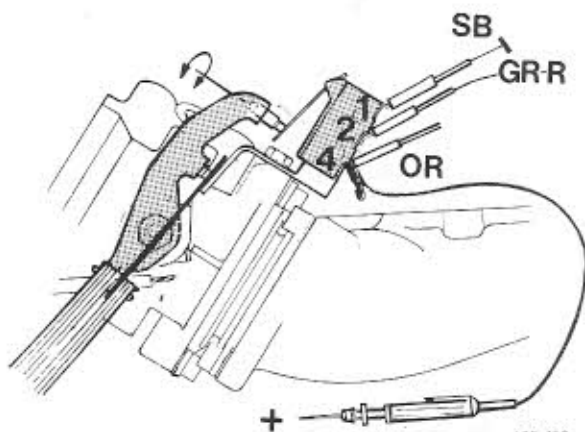
Check fast idle

Disconnect plug from temperature sensor.

Start engine. Engine speed must now be 26.6–40 r/s (1600–2400 r/min).

Connect plug. Engine speed should return to normal again.

Turn off engine.



135 452

Z9

Adjust microswitch

Insert 0.3 mm (0.012 in) feeler gauge at lower adjustment screw.

Unscrew upper adjustment screw until test lamp goes out. Then screw in until lamp just lights.

Check setting with 0.2 mm (0.008 in) and 0.6 mm (0.024 in) feeler gauge.

0.2 mm = lamp on, 0.6 mm = lamp off.

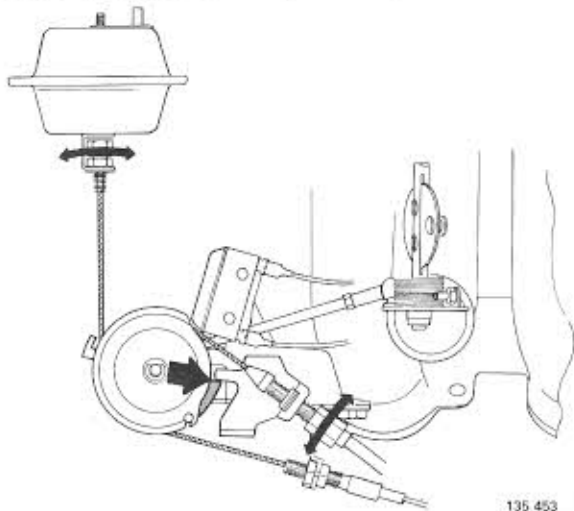
CIS-system, basic setting and inspection

Z10

Adjust throttle cable and cruise control cable (if equipped)

Both cables taut in idle position, but must not move throttle pulley.

At full throttle, pulley should contact stop. On return it must contact the other.



135 453

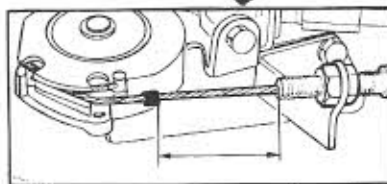
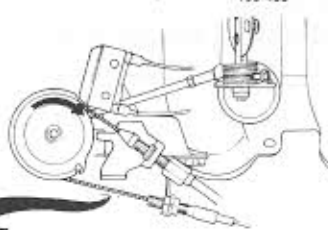
Z11

Adjust kick-down cable

Depress accelerator pedal fully.

Note! Do not adjust the cable by hand otherwise the setting will be incorrect.

At full throttle: distance between cable sleeve and clip = **50.4–52.6 mm (1.98–2.10 in)**.



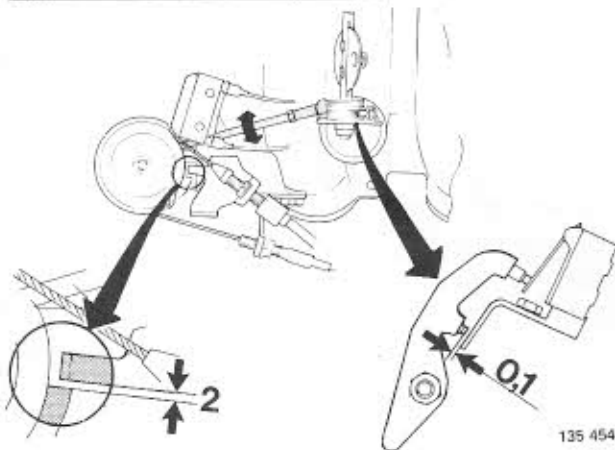
135 456

Z12

Connect and adjust link rod

Insert **2 mm (0.080 in)** feeler gauge at throttle pulley stop.

Adjust link rod to obtain **0.1 mm (0.004 in)** clearance between adjustment screw and stop.



135 454

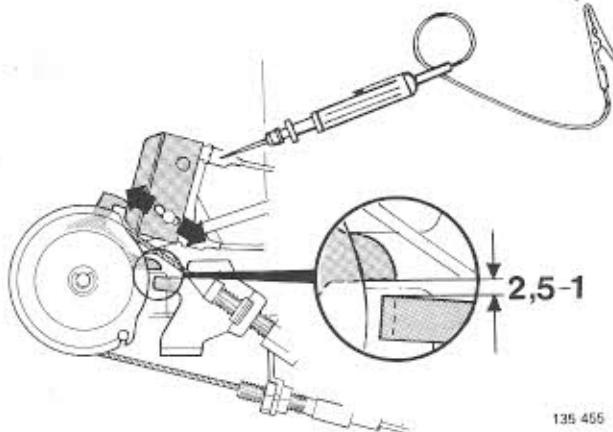
Z13

Adjust microswitch at throttle bobbin

Connect test lamp between microswitch (yellow cable) and 12V power source.

Adjust microswitch to connect (lamp lights) **2.5–1 mm (0.1–0.04 in)** between throttle bobbin and full throttle.

Note! Cars adjusted for high altitude: disconnect microswitch.

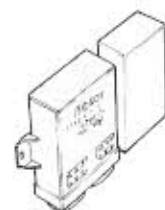
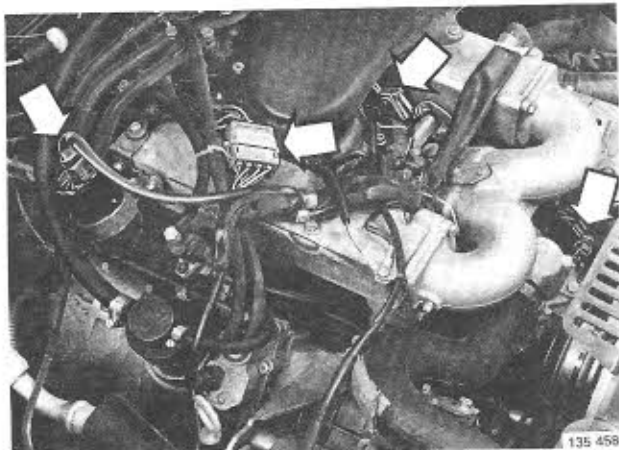
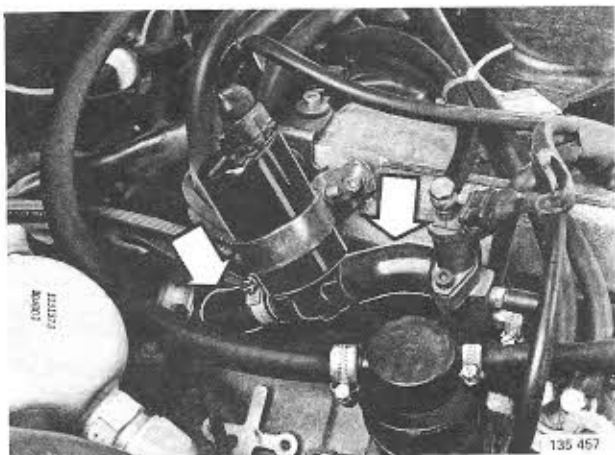


135 455

AA. Fault tracing of CIS system

It is assumed in instructions below that engine is in a good condition and that ignition is correctly set.

Ignition must be off when connecting/disconnecting electrical connections.



135 459

AA1

Check air hoses

Make sure that hoses are not crimped or damaged.

If engine speed is far too low:

Check hoses, nipples and air valve for blockages.

Blockages can be caused by carbon deposits from engine crankcase. Check oil change intervals and oil grade. Correct as necessary.

AA2

Check electrical connections

Correctly connected?

Note! Poor connections can cause many symptoms.

AA3

Disconnect plugs from control unit and turn on ignition

Caution! Ignition must be off when disconnecting plugs.

AA4

Check current supply

Connect test lamp between terminal 1 and ground.

Lamp must light. If not first check fuse No. 8.

AA5

Check ground connection

Connect test lamp between terminals 1 and 2.

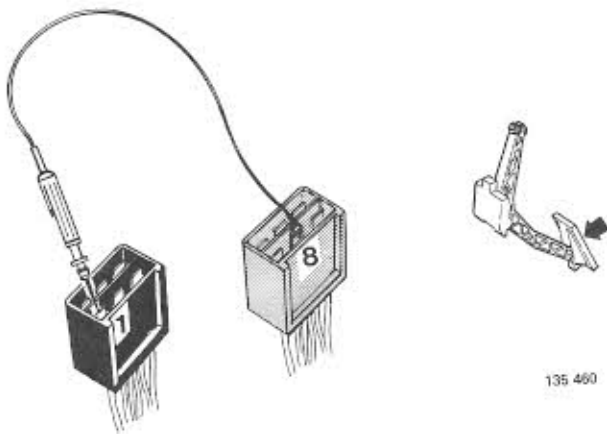
Lamp must light.

AA6

Check that service connection is not grounded

Connect test lamp between terminals 1 and 10.

Lamp must not light.



135 460

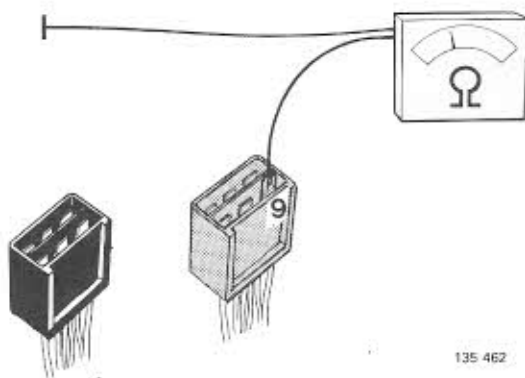
AA7

Check microswitch

Connect test lamp between terminals 1 and 8.

Lamp must be off in idle position and on when accelerator depressed.

If necessary adjust microswitch see Z13, page 46.



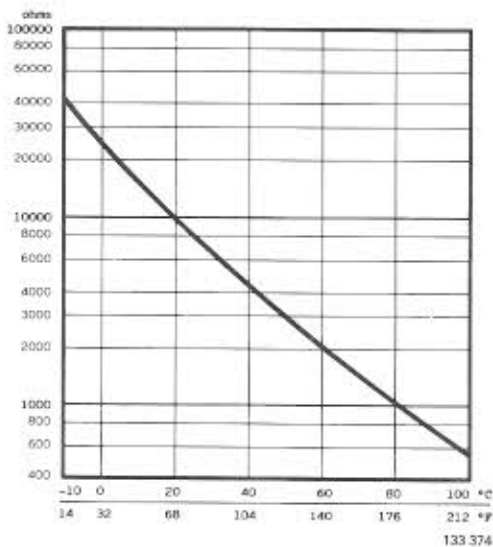
135 462

AA8

Check temperature sensor

Connect ohmmeter between terminal 9 and ground.

Correct resistance at different temperatures shown in diagram. If incorrect, repeat measurement at temperature sensor. If in doubt, remove sensor and test at different temperatures.



Suitable test temperatures:

-10°C (14°F)	32 000 - 53 000 Ω
+20°C (68°F)	8 500 - 11 500 Ω
+80°C (176°F)	770 - 1 320 Ω

AA9

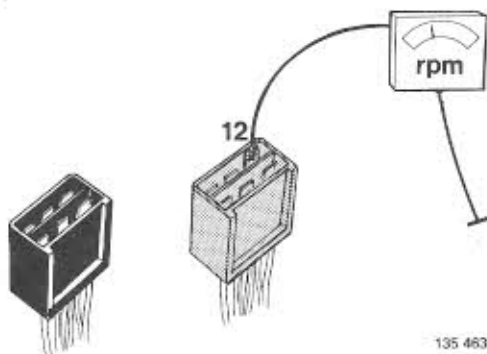
Check signal from ignition coil

Connect rev counter to terminal 12.

Start engine.

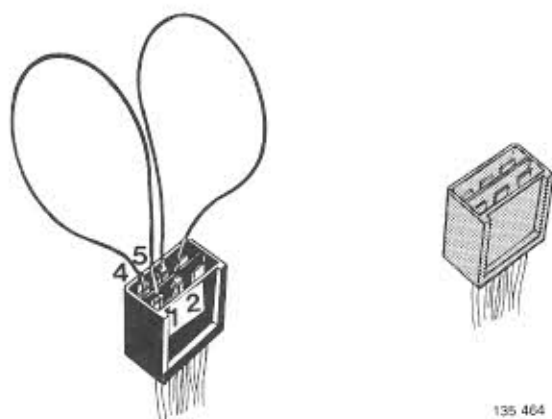
Rev counter should indicate engine speed.

Leave rev counter connected and engine running.



135 463

AA10



135 464

Check air control valve

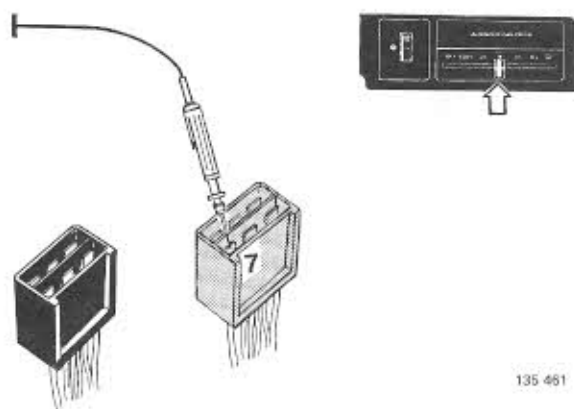
Two short cables are needed:

Connect one between terminals 5 and 2 and the other between terminals 4 and 1.

Engine speed must remain constant at **26.6–40 r/s** (1600–2400 r/min). Defective air control valve is indicated by low engine speed.

Disconnect rev counter

AA11



135 461

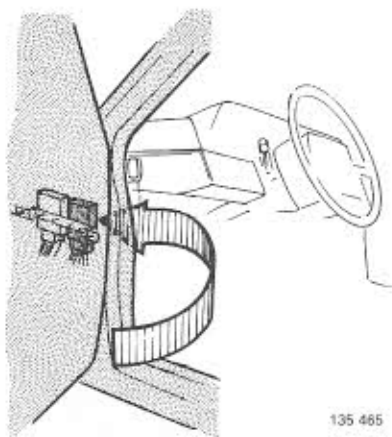
Check connection to AC control panel

Engine must be running when performing this step.

Connect test lamp between terminal 7 and the ground.

Lamp must be off when AC off and light when AC on.

AA12



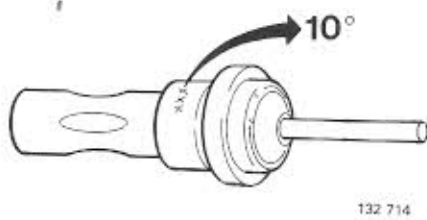
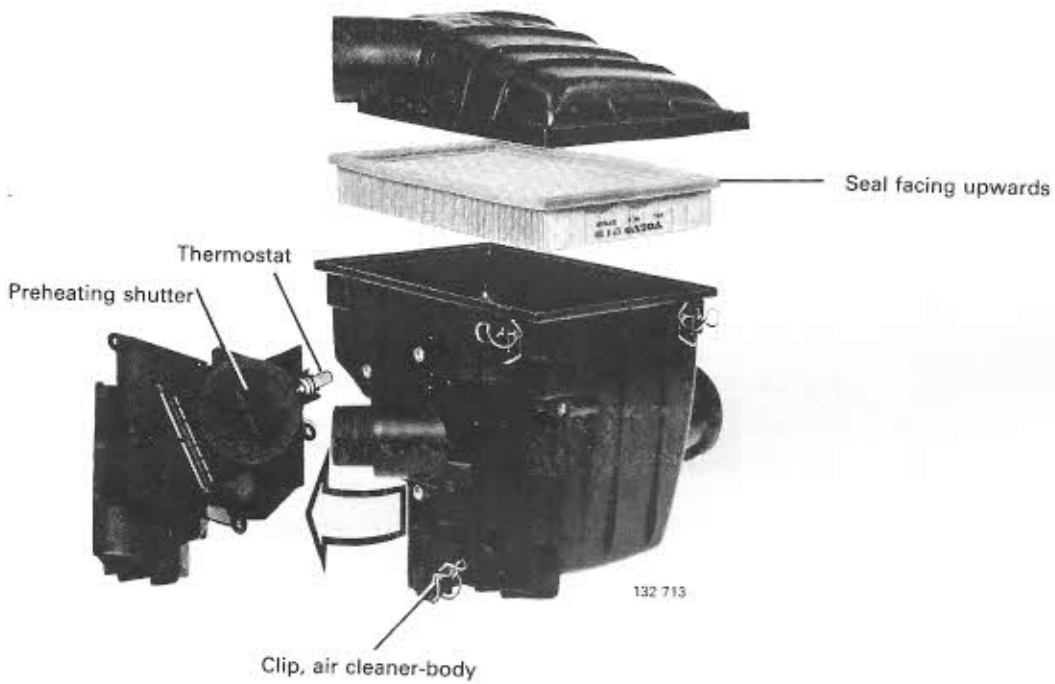
135 465

Test with new control unit

If no fault is found in above tests, connect new control unit and retest.

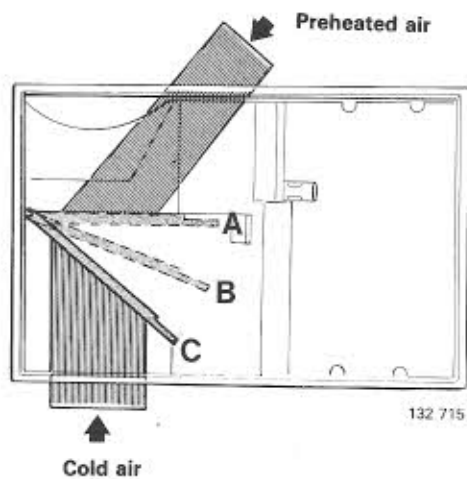
Caution! Ignition must be off when disconnecting/connecting plugs.

AB. Air cleaner, preheating



AB1

Illustration shows marking on thermostat and position at +20°C (68°F) air temperature.



AB2

Shutter position at different temperatures

- A = cold air only +15°C (59°F)
- B = intermediate position
- C = hot air only + 5°C (41°F)

AC. Fuel tank

Special tool: 5972

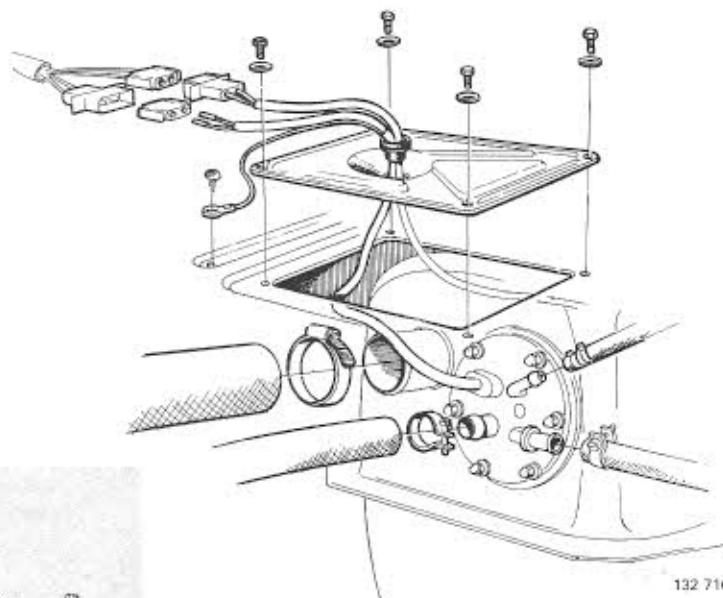


132 718

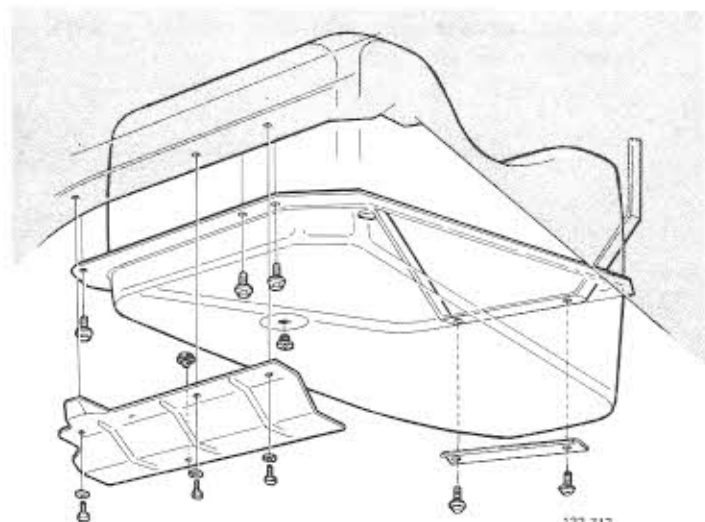
AC1

Remember:

- drain tank before removing. Drain plug is located at bottom of tank
- use stand 5972 to lift/lower the tank (support tank as well)
- if a new tank is to be installed, rustproof top of tank before installing and bottom afterwards.

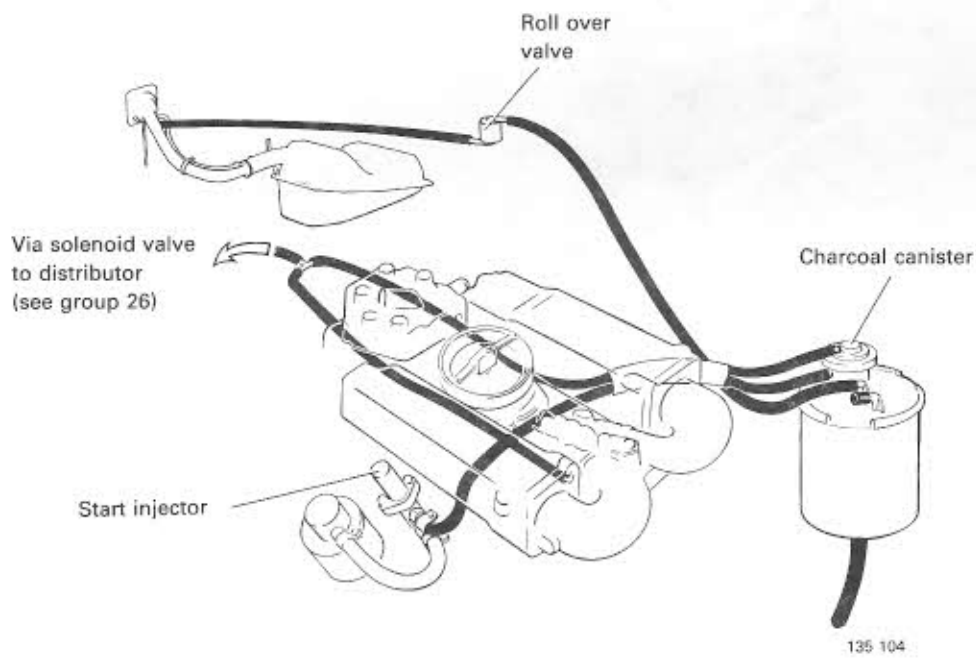


132 716



132 717

AD. Closed evaporative system



AD1

Vacuum valve installed in charcoal canister should open at part throttle.

Roll over valve should close when inclined at angle of more than 45°.

Supplementary Information

Idle Adjustment B28F 1983—

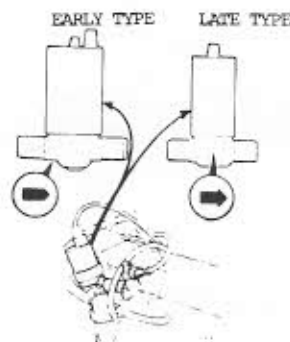
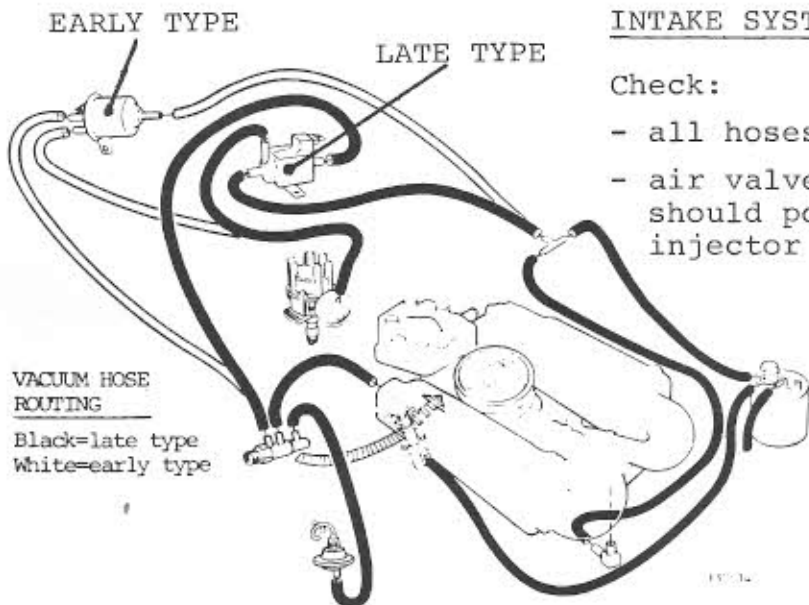
These procedures provide supplemental idle adjustment information for B28F engines, and should be used in conjunction with procedures in the main text of the manual.

PROCEDURE "A"

INTAKE SYSTEM

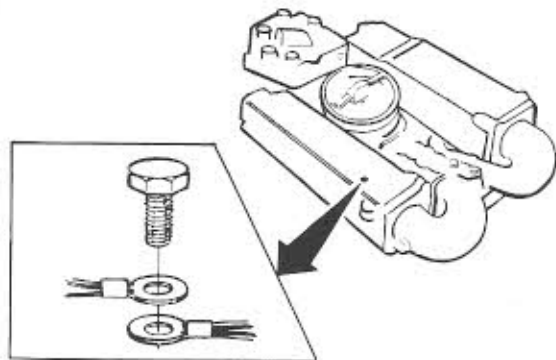
Check:

- all hoses and hose connections
- air valve for CIS system. The arrow should point towards the cold start injector



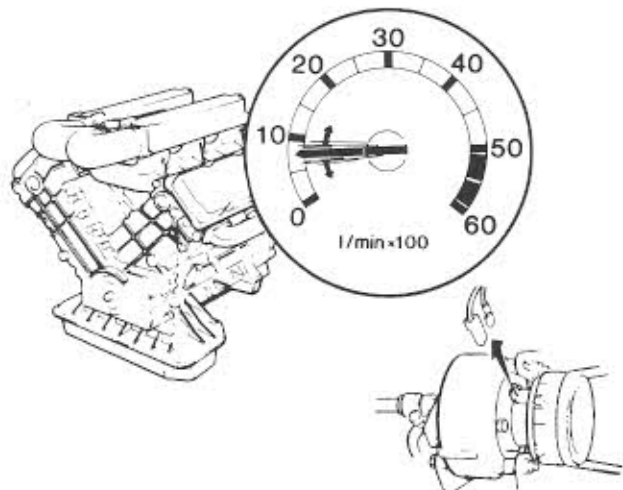
GROUND WIRES AT INLET MANIFOLD

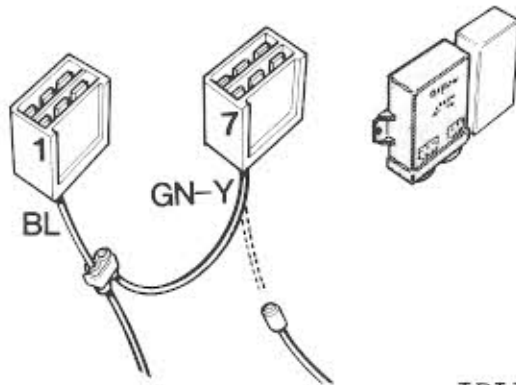
If necessary, replace early type connectors (blade type) with later type (eyelet type).



IDLE SYSTEM (CIS-SYSTEM)

- disconnect the ground wire at AC compressor
- lever at climate control panel in "auto" position
- start engine and warm to operating temperature; check idle quality
- reconnect the ground wire to AC compressor





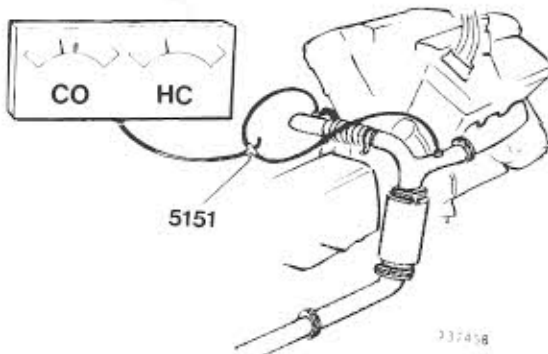
- ignition off
- cut the green/yellow wire (pin #7) 70mm (2.75") from the control unit
- connect the green/yellow wire from (pin #7) to blue wire (pin #1) on the control unit
- insulate the cut green/yellow wire in the cable harness

IDLE ACCEPTABLE ←

PROCEDURE "B"

↓
IDLE NOT ACCEPTABLE

CONNECT CO/HC METER
Use Gauge Connector (9995151-9)



Important!

Check 9995151-9 for leakage, as leaks will give incorrect readings on the test instrument.

Check the following before CO adjustment
(See 760 Service Manual)

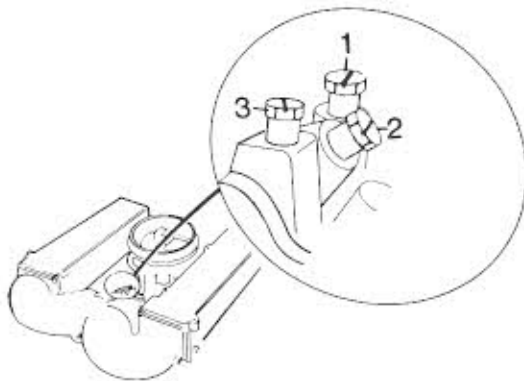
- air fuel control unit sensor plate rest position (Y9-Y11)
- ignition timing (15)

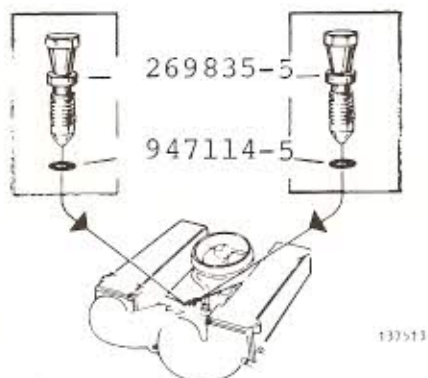
BALANCE SCREWS (2 and 3)

Remove the balance screws by drilling and use of an "easy out."

CAUTION!

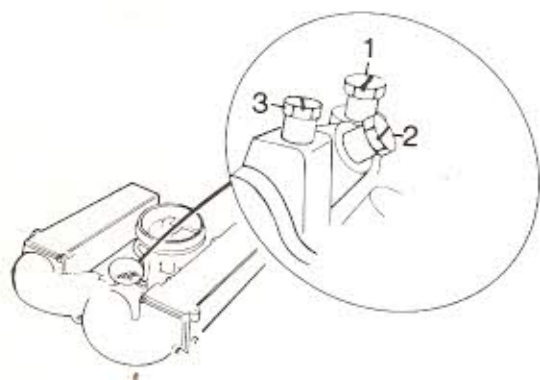
Do not damage the throttle housing nor allow metal pieces to fall into the inlet manifold.





INSTALL NEW BALANCE SCREWS

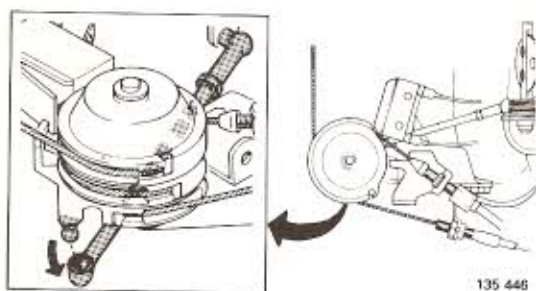
Screw P/N 269835-5 x 2
O-ring P/N 947114-5 x 2



BASIC SETTING

Turn all balance screws to the bottom position (clockwise). Unscrew balance screws 2 and 3 the following amounts:

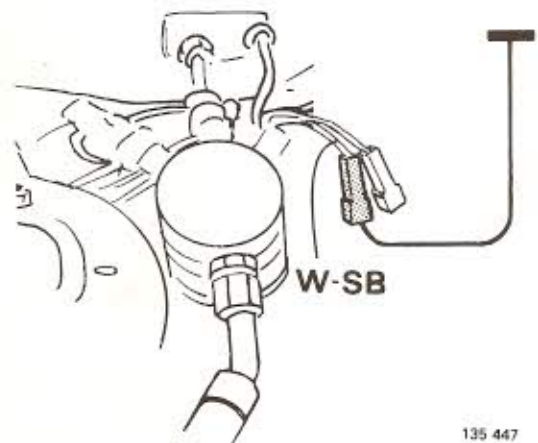
- balance screw (2) 1 turn
- balance screw (3) 5 turns
- DO NOT TURN SCREW (1)



START ENGINE (WARM ENGINE TO OPERATING TEMPERATURE)

Idle System (CIS-System)

Disconnect link rod from throttle pulley. Ensure that the pulley moves smoothly and does not bind.



IDLE SYSTEM (CIS-SYSTEM)

Ground the test pick-up for CIS system.

BASIC SETTING THROTTLE PLATE

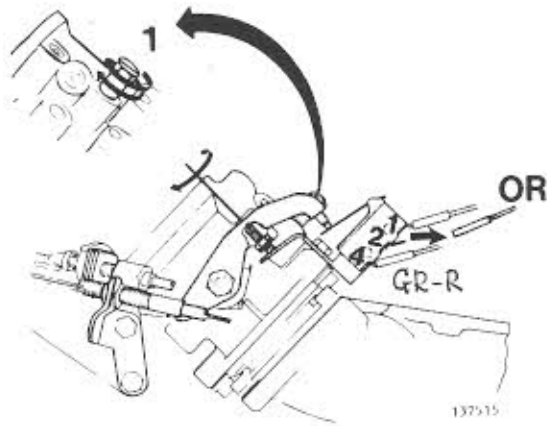
Do not touch screw (1). Should remain in bottom position.

Remove the orange wire from micro switch.

- adjust engine speed to 700 rpm by turning the lower adjustment screw on the throttle plate lever.

- adjust adjustment screw for micro switch

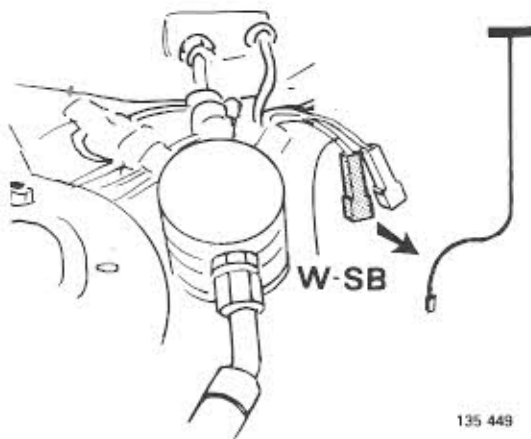
- then adjust speed to 850 rpm with screw (1).

IDLE SYSTEM (CIS-SYSTEM)

Remove the ground wire from the test pick-up.

Specification:

Engine speed with AC off is 900 rpm.

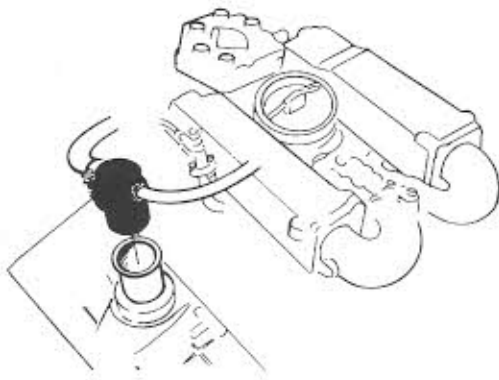
OIL FILLER CAP

Remove the oil filler cap.

CO-ADJUSTMENT

760 Service Manual (N5-N14)

Specification is $0.8\% \pm .3$ with oil filler cap removed.



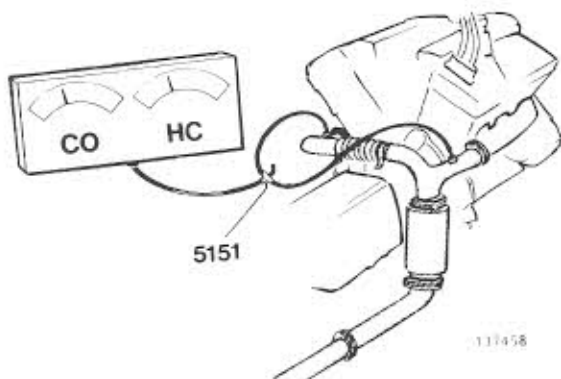
CO-BALANCE CHECK

NOTE:

Left side of intake manifold goes to right bank, and right side to left bank.

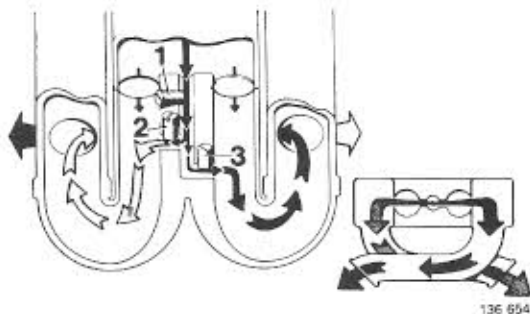
SPECIFICATION TOLERANCES ALLOWED WHEN CHECKING

- The difference between left and right side should not be more than 0.5% CO or no side leaner than 0.5% CO.



CO-BALANCE

Air adjusting screw (1) permits a certain quantity of air to bypass the throttle valves at idle. This air quantity is split between the cylinder banks by screws (2) and (3). Screw (2) for right bank cylinders and screw (3) for left bank cylinders. Balance flow by adjusting the appropriate screw, 2 and/or 3.



DO NOT MOVE SCREW (1)

CHECK HC-LEVEL

Place valve on gauge connector 999-5151-9 in the middle position.

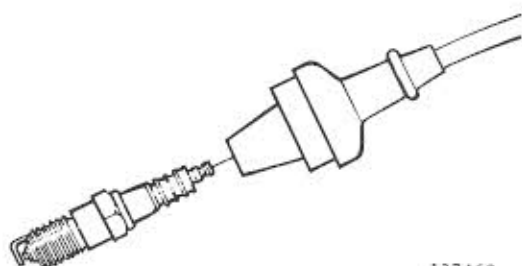
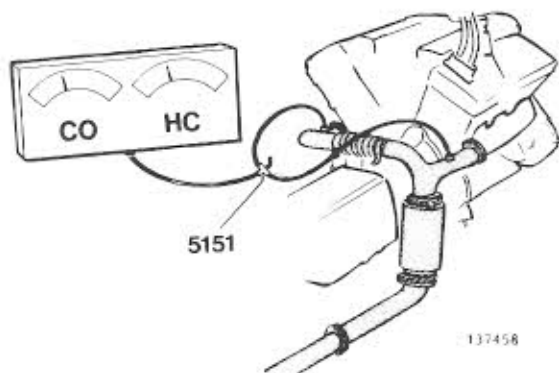
400 ppm or more and unstable

400 ppm and less, instrument reading steady. Engine function correctly.

Check:

Spark plugs
Ignition wires
Injectors
Fuel Meter

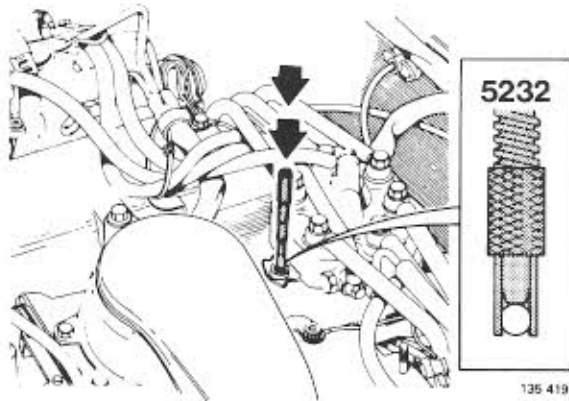
} see 760 Service Manual for diagnosis



AC-System

Reconnect the ground wire to AC-Compressor.

Reconnect the wire to Lamda System.



SEAL FUEL CONTROL UNIT

Install steel ball with sealing tool 999-5232-7. Tap ball into position.



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

(U.S.A. only)

Service literature

*Your
most important
special tool*

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