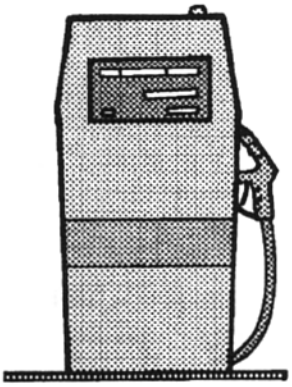
MFI LH 2.4 system specifications

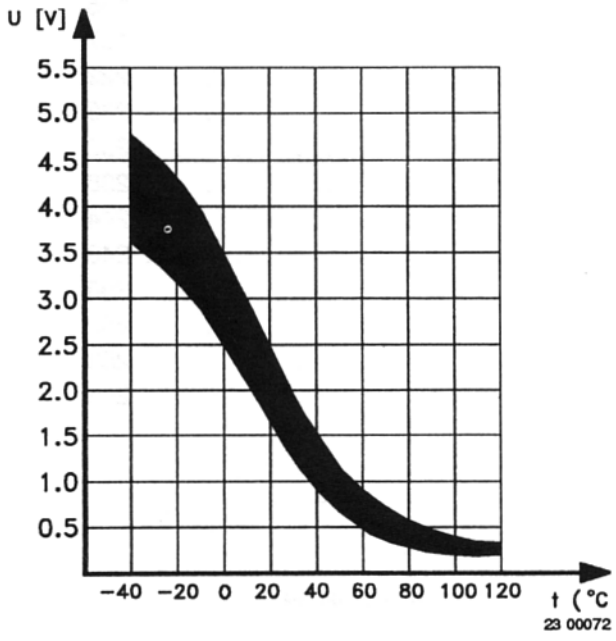

S145 695

Fuel, octane rating

B 200 G, B 204 E/GT,
B 230 G/GT, B 234 G..... 95, octane unleaded gasoline can be used.

B 200 F/FT, B 204 FT,
B 230 F/FB/FT, B 234 F..... 91–95 (RON), octane unleaded gasoline must be used.

Engine Coolant Temperature (ECT) sensor



DI EZ 116 K system specifications

Type .....Electronic

Firing order 1-3-4-2

Engine	Timing (BTDC)	Engine speed rps
B 200 F	12°	**12.1–13.8** (725–825)
B 204 E	15°	**14.2–15.8** (850–950)
B204 FT/GT	10°	**13.0–13.7** (780–820
B 230 FB	12°	**12.9 (775)**
B 230 FT/GT	12°	**12.2–12.8** (730–770)
B 234 F/G	15°	**13.3–15.0 (800–900)**

Ignition coil

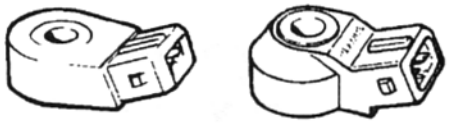
Primary coil resistance (between output 1 and 15.....0.6–0.8 Ω

Secondary coil resistance (between output 1 and the high tension output).... 6.9–8.5 kΩ

Knock sensor (KS)

Torque setting, type I .....11 Nm (8 ft.lbs)

type II.....20 Nm (15 ft.lbs)



I II

S146804

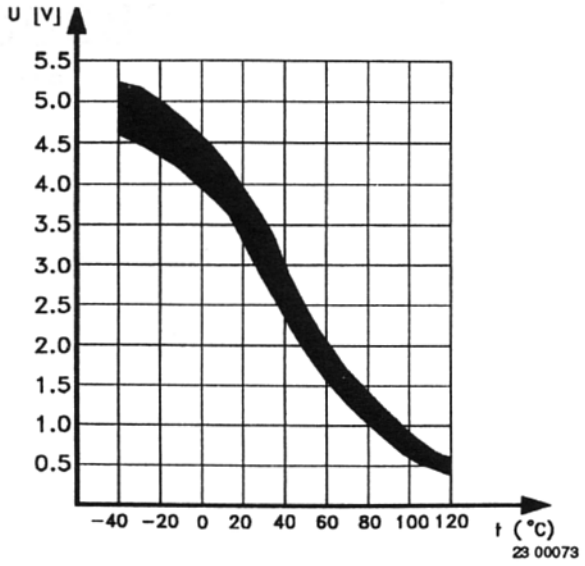
Spark plugs

Engine	Designation	P/N	Set no.
B 200 F/FT/G	WR7DC	1 367 528-5	270 746-1
B 204 E/FT/GT, B 234 F/G	WR6DC	1 367 529-3	270 747-9
B 230 F/FB/FT/GT/G	WR7DC	1 367 528-5	270 746-1

Electrode gap.....0.7–0.8 mm

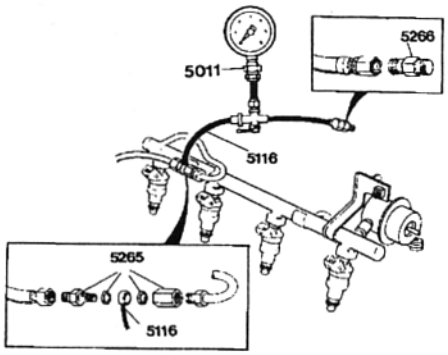
Torque setting, dry threads.....25 Nm (18 ft.lbs)

Engine Coolant Temperature (ECT) sensor

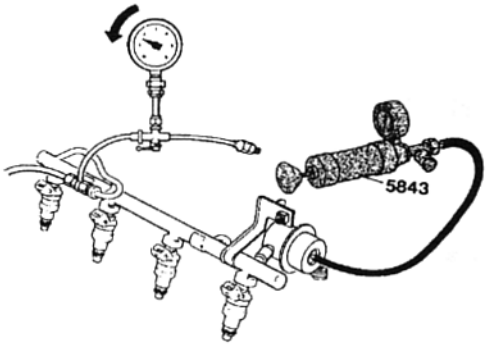


Special tools

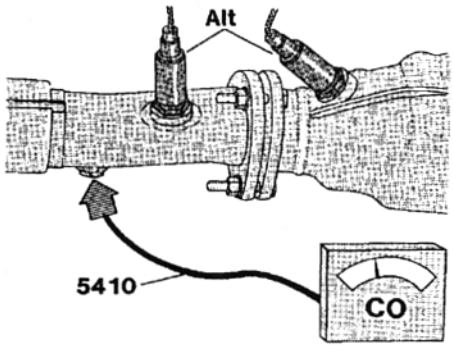
Number	Designation	Use
999-		
5011	Pressure gauge	Measuring fuel pressure.
5116	Hose	Connecting the pressure gauge.
5843	Vacuum pump	Checking the pressure regulator and pressure sensor.
5410	Connections	
9921	Volvo Mono tester	Idle speed and checking ignition leads.
998-		
8900	3-Gas Analyses	Idle speed, CO, CO_2 and HC readings.



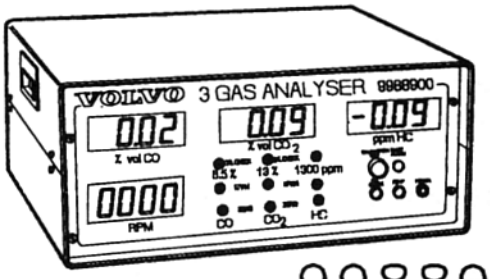
S139 915



S139 920

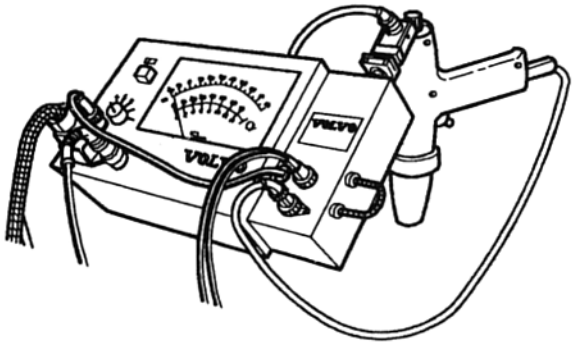


S148 684



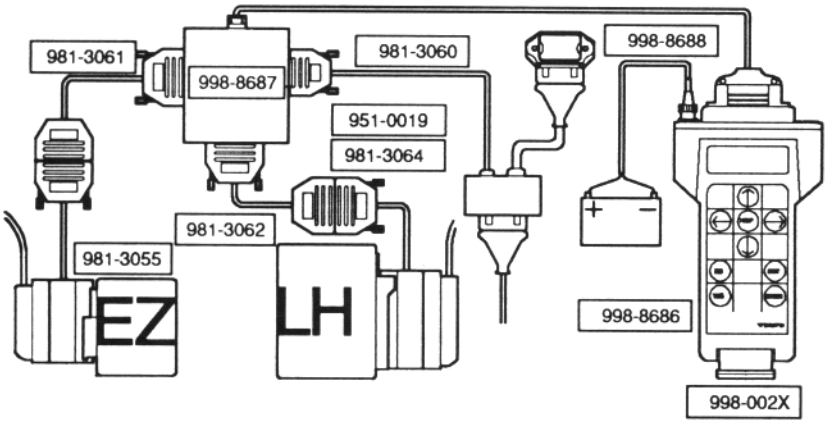
9988900

S08 00019



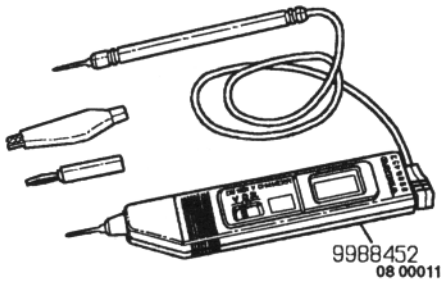
S08 00020

Number	Designation	Use
951-		
0019	35-pole adapter	Connecting the Volvo ST to MFI systems
002X	Memory cassettes	X=1 Swedish, Finnish X=2 English, Spanish X=3 French, English X=4 German, Italian X=5 Dutch, French X=6 Japanese, English
0060	Multimeter	Voltage, current, resistance, frequency, time, pulse quota
981-		
3010	Volvo Diagnostic Key ST	Communication with the OBD system
3055	25-pole adapter	Connecting the Volvo ST to DI
3060	Power stage adapter	Connecting the Volvo ST to the power stage
3061	Extension lead	25 x 25 pin
3062	Extension lead	62 x 50 pin
3064	35-pole adapter	Connecting the Volvo ST to MFI,
3190	Test box	Taking readings at the control module
3191	25-pole adapter	Connecting the test box to DI
3192	35-pole adapter	Connecting the test box to MFI
998-		
8452	Test pen	Voltmeter, ohmmeter and multimeter
8686	Volvo ST	Measuring and displaying signals and registering faults.
8687	Distribution box	Connecting adapters to the Volvo ST
8688	Connector lead	Connecting the battery to the Volvo ST
999-		
6525	Multimeter	Voltage, current, resistance

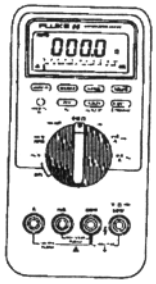


08 00044A

S152 049

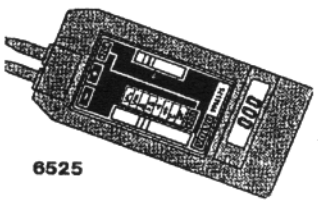


08 00011



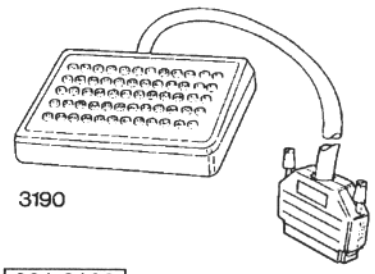
951-0060

08 00077S



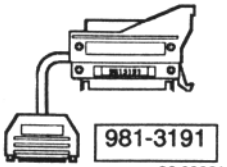
999-6525

S145 704



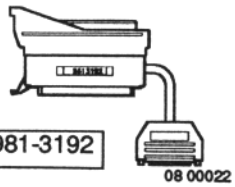
981-3190

S151 183



981-3191

08 00021



981-3192

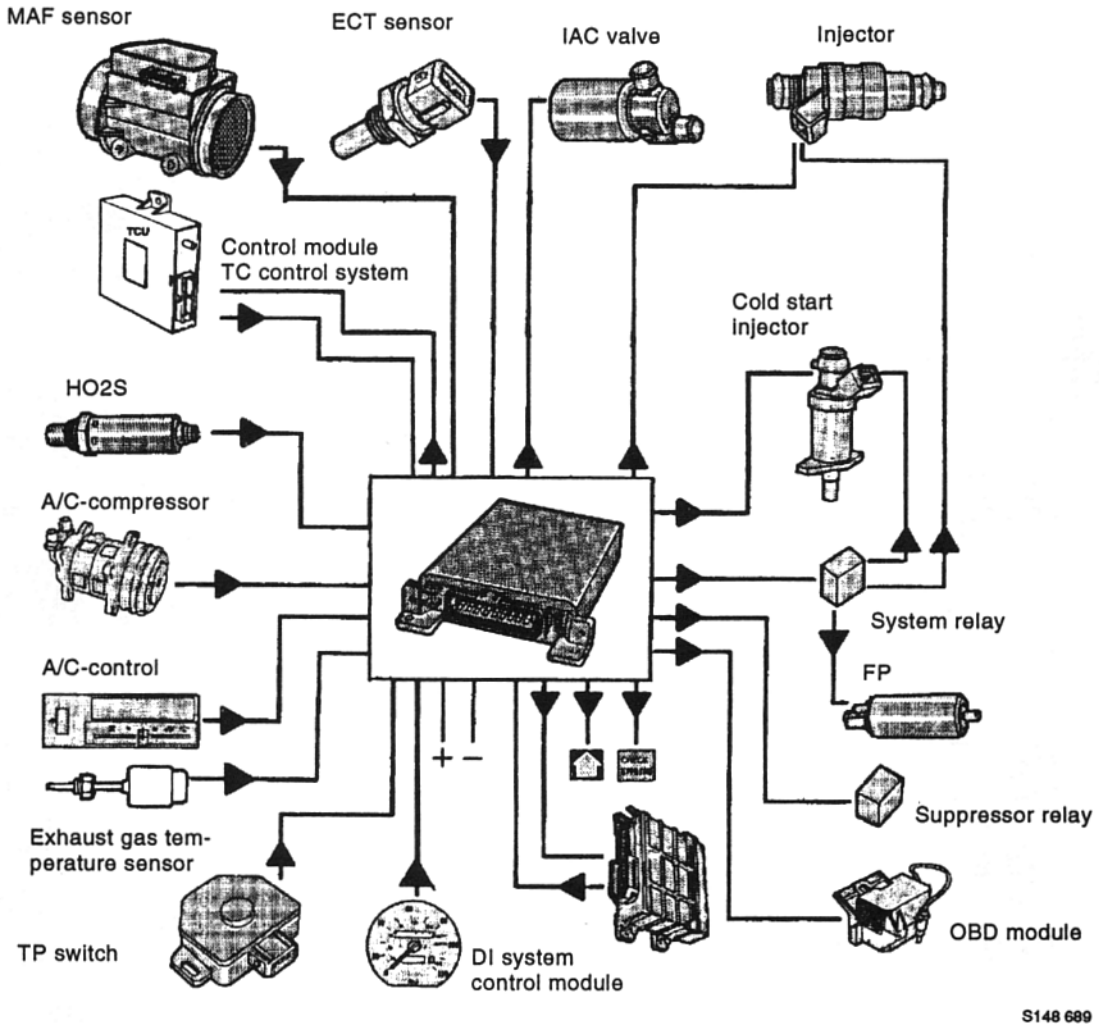
08 00022

Design and function

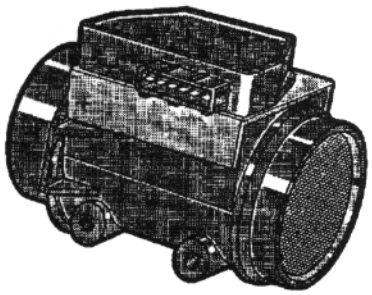
Multiport Fuel Injection (MFI) system LH 2.4

The MFI system can be divided into five sub-systems.

- **The control system** controls fuel and air quantities in order to provide the optimum fuel mixture and correct idle speed.
- **The sensor system** gives information to the control system in order to provide optimum control.
- **The fuel distribution system** is controlled by the control system and distributes fuel to the cylinders.
- **The evaporative emission (EVAP) system** manages the gases evaporating from the fuel tank
  (not B 204 E/FT/GT).
- **The on-board diagnostic (OBD) system** is common to the fuel system and DI system. It has three test functions to facilitate fault tracing. The OBD system is described at the end of the section Design and function.



Sensor system



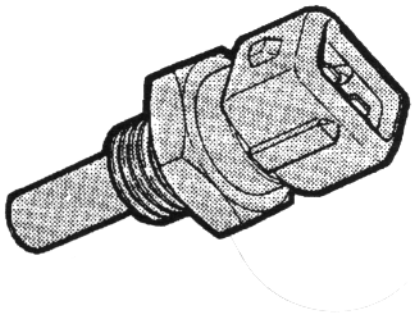
S145 662

Mass air flow (MAF) sensor

The MAF sensor measures the mass of air drawn into the engine. It automatically compensates for air pressure and temperature which affect the density of the air. There is a wire in the MAF sensor which is heated to a temperature 150°C (270°F) higher than the intake air temperature (IAT). When the mass of air passing this wire increases it is cooled and it requires a higher current to keep the wire at the correct temperature. This current provides a measurement of the air passing the heated wire.

When the engine is stopped deposits are burnt off by electrically heating the wire to 1000°C (1832°F) for about a second. Were deposits allowed to collect the control module would receive false signals which would result in an incorrect fuel mixture.

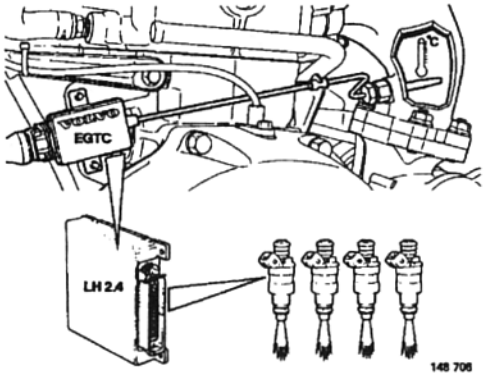
The MAF sensor on the B 200 G, B 204 E, B 230 G, B 234 G and B 204 GT has an adjustment screw to set the idling CO content. This has been omitted on the other engines as the HO2S control is adaptive throughout its range.



S145 618

Engine coolant temperature (ECT) sensor

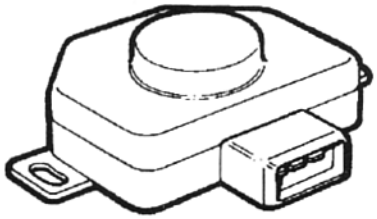
Sends signals to the control module so that it can control injection time and idle speed in relation to engine temperature. It is mounted in the cylinder head and cooled by engine coolant.



S148 706

Exhaust gas temperature sensor (B 204 FT/GT)

The exhaust gas temperature sensor consists of a thermal element in the exhaust manifold before the TC unit. It senses exhaust gas temperature and sends a signal to the fuel system control module, which gradually lengthens injection time when the exhaust gas temperature reaches a critical level (approx. 950 °C or 1740 °F). This contributes to a lower combustion temperature which in turn reduces the exhaust gas temperature. The increased fuel supply stops when the exhaust gas temperature has reached normal.



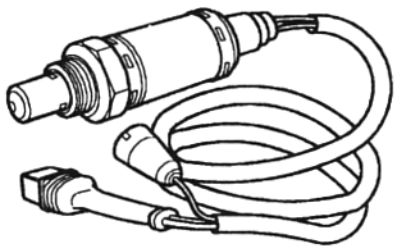
S151 508

Throttle position (TP) switch

Sends signals to the MFI and DI system control modules that the throttle is closed or wide open.

In the B204FT/GT the TP switch also contains a potentiometer which sends the TC control system information about the throttle position.

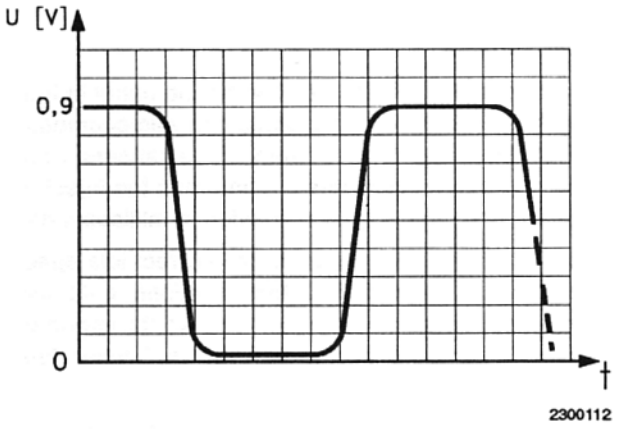
TC models do not use the full load switch.



2300111

Heated oxygen sensor (HO2S)

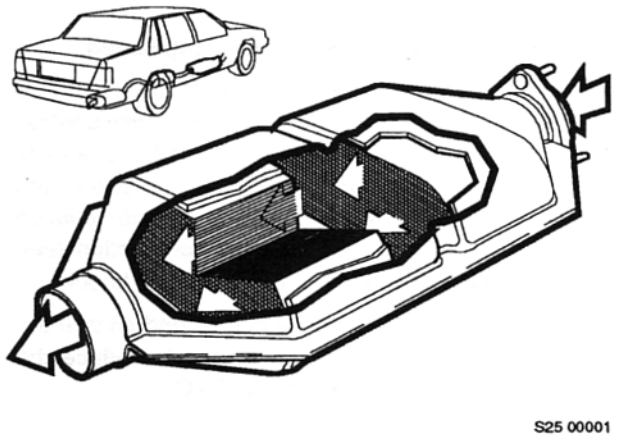
Normally 14.7 kg air to 1 kg fuel is given as the ideal mixture for complete combustion. This mixture is called lambda = 1 (λ= 1). The mixture can be gauged by measuring the oxygen content of the exhaust gases after combustion by using an HO2S.



The HO2S produces a voltage signal proportional to the oxygen content in the exhaust gases. This signal alternates from high to low at the ideal mixture of 14.7 kg air/1 kg fuel. A rich mixture produces a high voltage while a weak mixture produces a low voltage. This voltage varies between 0.1–0.9 volt. The control module bases the quantity of fuel injected on this signal so as to achieve the ideal mixture, $\lambda = 1$.

The HO2S will only operate above a certain temperature, approx. 285°C (545°F). It is **electrically heated** so that it reaches operating temperature quickly. When the ignition is switched on a current is applied to a PTC resistor, the resistance of which increases with temperature. This provides a short warm up time and keeps the sensor at the correct operating temperature when the exhaust gas temperature is low.

In engines without a TWC (B 230 GT, B 204 GT), i.e engines for markets where unleaded gasoline is not fully available, an HO2S which can withstand leaded fuel must be used. However, this HO2S has a limited lifespan and must be replaced regularly.



Three-way catalytic converter (TWC)

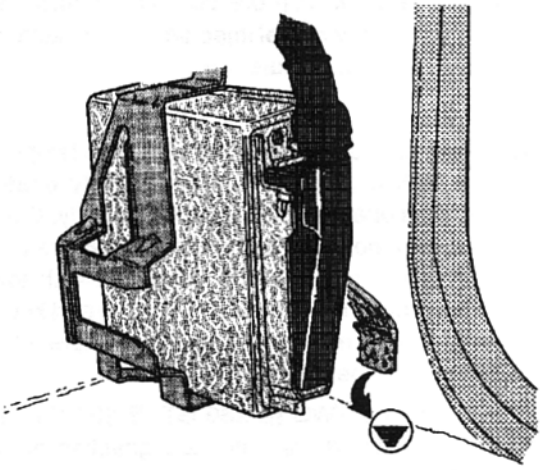
The TWC converts 90-95 % of the harmful substances in the exhaust gases to nontoxic ones.

The TWC cleans by:

- Oxidising unburned hydrocarbons (HC) to steam (H_2O) and carbon dioxide (CO_2)
- Oxidising carbon monoxide (CO) to carbon dioxide (CO_2)
- Reducing nitrogen oxides (NO_x) to nitrogen gas (N_2)

If the TWC is to work properly the HO2S must be producing the correct signal so that the fuel/air mixture is optimal ($\lambda=1$). The higher temperatures caused by air leaks in the exhaust system or unburnt fuel (if the engine is not firing on all cylinders for example) can damage the TWC.

Control system



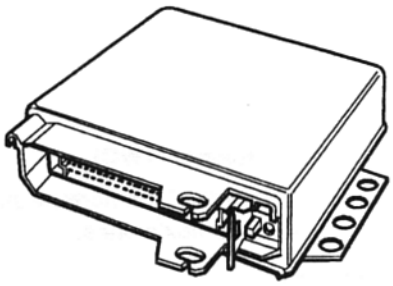
S145743

Control module

The control module is located behind the panel in front of the right hand door post. It contains a microcomputer which receives signals from the various sensors. From this information it calculates the time that the injectors should be open per engine revolution in milliseconds.

It controls the IAC valve so that the correct idle speed is obtained. It also controls other functions, cold start injectors and FPs for example. One of its important functions is to communicate with the DLC when fault tracing.

The control module is adaptive - it adapts its calculations to experienced values.



2300113

When starting a special program is run which gives two injections per revolution.

At very low engine temperatures (below approx. –16°C (5°F)) the cold start valve is operated as well.

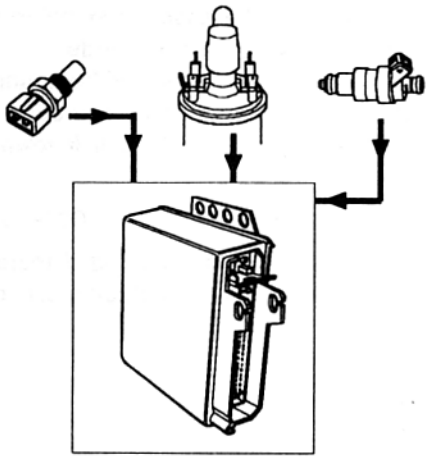
The choke operates up to an engine temperature of approx. 60°C (140°F).

Under normal driving conditions the injection time is controlled by the signal from the MAF sensor and the HO2S.

When accelerating injection time is lengthened.

Knock enriching (does not apply to B 204 FT/GT, B 230 F) is carried out when the DI system knock controller retards all cylinders a number of degrees but knocking still occurs. The control module increases the amount of fuel if knocking (which raises combustion temperatures) occurs. This reduces combustion temperature which suppresses any tendency to knock.

At full load the fuel/air mixture is enriched so that the engine produces maximum power and to reduce the heat burden on the engine and the TWC.

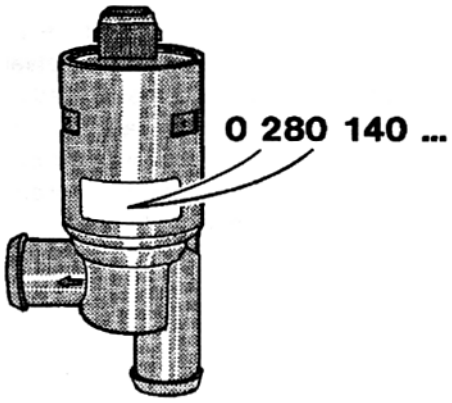


2300114

Over-revving is prevented by an engine speed limiter shutting down the injectors.

When decelerating (TP switch in idle mode) the fuel injection is shut down at engine speeds of above approx. 2000 rpm. It restarts at approx. 1400–2000 rpm, depending on engine temperature. This function has been gradually omitted from the B 230 FB engine for 1992 models.

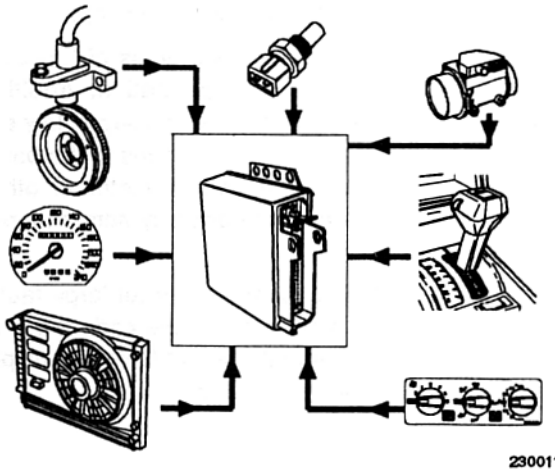
The control module runs an **emergency program** (limp home mode), if certain signals are faulty or missing. The program gives the signals a predetermined value which allows the car to be driven to the workshop.



S145 794

Idle air control (IAC) valve

The IAC valve has two tasks. Firstly it must hold the engine idle speed constant no matter what the load from the automatic transmission, A/C, FC, power steering or GEN. Secondly it must supply air to the engine when the engine is braking the car so that the partial vacuum in the intake manifold is kept at a permissable level. The valve is only operative and controlled by the control module when the idle switch is closed. If the idle switch is open the valve goes into an open standby mode while still receiving signals from the control module.



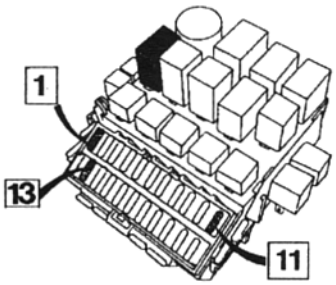
2300115

To provide the IAC valve with the proper opening angle the control module utilises information about engine speed, engine temperature and intake air mass. Then information from the speedometer is used to ascertain whether the car is moving or stationary, from FC at full speed (B 230 F/FT, B 234 F 1992–, B 204 FT/GT) from the A/C control when the A/C is switched on and from the A/C compressor when it starts and stops. On cars with automatic transmission the idle control also receives information about the gear engaged.

Idle speed is mainly determined by engine temperature. However, depending on variables, speed can be altered by the A/C being turned on, the FC switching to full speed or a gear being engaged on cars with automatic transmission.

The system relay

The system relay is controlled by the control module and powers the FPs, the injectors, the IAC valve, the cold start valve, the MAF sensor, the HO2S pre-heat resistor and some of the control module functions.



S145797

Fuses

The system relay is protected by a 25 A fuse. The FP and HO2S pre-heat resistor are protected by a 15 A fuse.

Fan control (FC)

(Applies to 1992 models with A/C)

The fan is controlled by half and full speed relays. The operation of these is based on ECT, vehicle speed and A/C system pressure.

The fan operates at half speed if:

ECT is above 102°C (216°F)

The A/C system pressure is greater than 17 bar (247 psi) on the high pressure side and the vehicle speed is less than 100 km/h (60 mph).

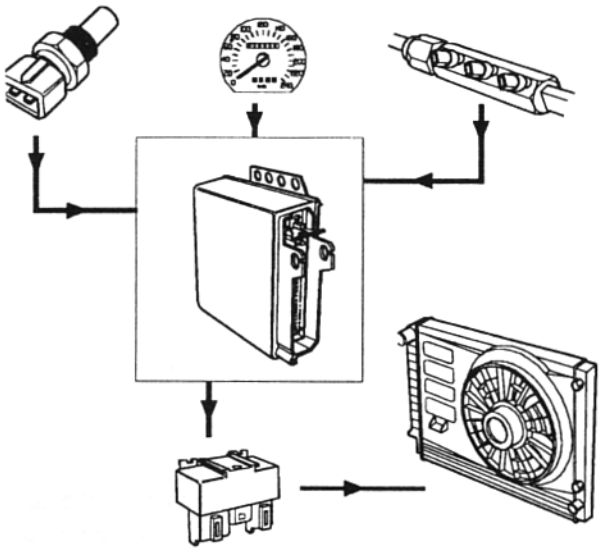
The fan operates at full speed if:

ECT is above 115°C (240°F) or the pressure in the A/C system high pressure side exceeds 22 bar (320 psi).

The fan always starts at half speed for 15 seconds before it can operate at full speed. It always runs at half speed for at least 5 seconds when it stops operating at full speed. If the ignition is turned off when the fan is operating at full speed it will continue at half speed for 5 seconds.

So as not to overload the engine there is a delay which prevents the fan from starting for 9 seconds after the engine has been started, no matter what the engine temperature or A/C system pressure.

To cool the engine and avoid overheating, the fan will continue to operate at half speed for three minutes if engine temperature exceeds 105°C (221°F) when the ignition is switched off.



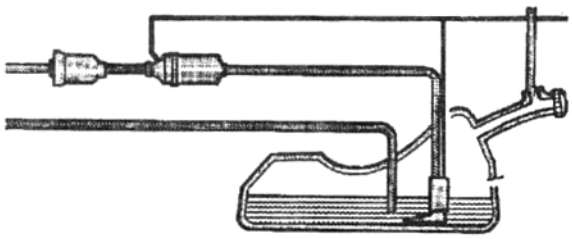
2300116

Fuel distribution system

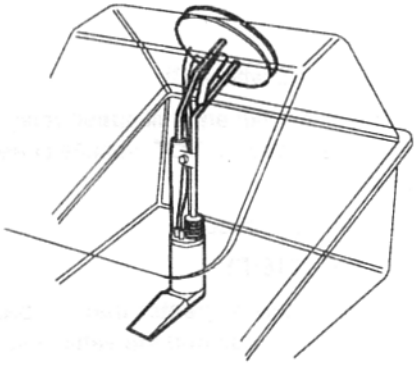
EB2

The fuel distribution system consists of

- Tank pump
- FP
- Fuel filter
- Fuel injection manifold



S145 678

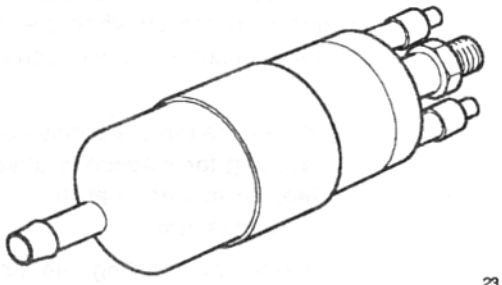


23 00117

Fuel tank pump

An electrical impeller pump maintains pressure in the line to the main FP to counteract the partial vacuum in the main pump's low side.

The tank pump has a coarse strainer filter.



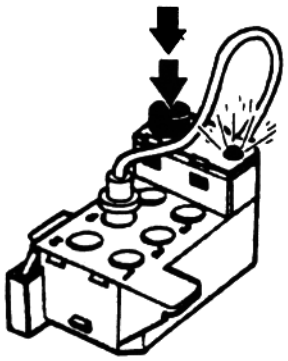
23 00118

Fuel pump (FP)

An electrical roller pump which is cooled by the fuel running through it. It has a non-return valve and overflow valve which opens if the pressure becomes too great.

Both tank and FPs are connected and operate when the starter motor or engine are running. If the engine stops running and the ignition is on, the control module cuts the power to the pumps so as to minimise the risk of fire in the event of an accident.

FG2



S152 547

Diagnostic test mode (DTM) 2

- Go into DTM 2 and check the TP switch in accordance with CB4 and CB5.

If response code 3-3-4 is obtained

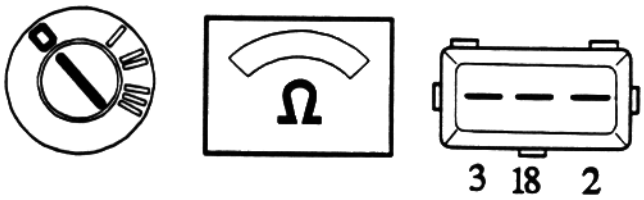
Intermittent fault.

- Check the wiring between terminal 2 in the TP switch connector and DI#7 for loose contacts in accordance with NA5 and clean the TP switch connector in accordance with NA7.

If response code 3-3-4 is not obtained

- check the TP switch FG3.

FG3



30 00129

Checking the throttle position (TP) switch

– Ignition off.
– Disconnect the TP switch.

Connect an ohmmeter between terminals 18 and 2 on the TP switch.

The ohmmeter should read approx. 0 Ω.

– Open the throttle a little.

The ohmmeter should read infinite resistance.

If both readings are OK

- check the wiring between terminal 2 on the TP switch connector and DI#7 for breaks in accordance with NA2 and clean the TP switch connector in accordance with NA7.

If both readings deviate

- try using a new TP switch.

FH. Diagnostic trouble code (DTC) 2-4-1 DI EZ 116 K (NTC)

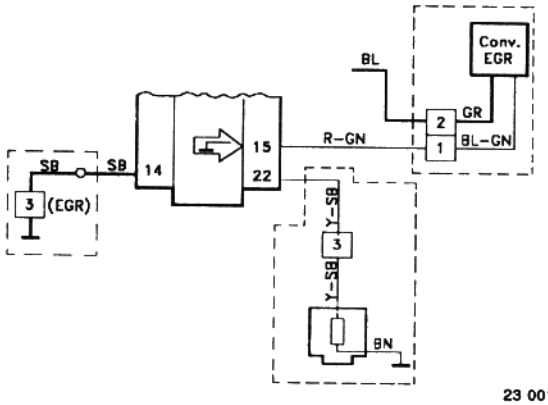
* 2-4-1 EGR system flow too low (NTC)

EGR systems with NTC type temperature sensors

Chassis numbers for EGR systems with NTC sensors

The following table shows the chassis numbers of the cars in which NTC type EGR sensors were installed at the factory. The chassis numbers are divided into car models and place of manufacture. Cars with lower chassis numbers have had PTC type EGR sensors installed.

Factory	Model	Chassis no. from	Engine
VTV	745	356 681	6 842 495 FS
	944	75 257	6 842 495 FS
	945	42 849	6 842 495 FS
VTV	745	356 681	6 842 496 FT
	944	75 248	6 842 496 FT
	945	42 849	6 842 496 FT
VKAV	964	21 863	
	965	7 155	
VEC	744	2 535 010	6 842 495 FS
	745	2 356 190	
	945	2 040 729	
	745	2 356 186	6 842 496 FT
VDUV	745	356 668	
	944	074 961	
	945	041 943	



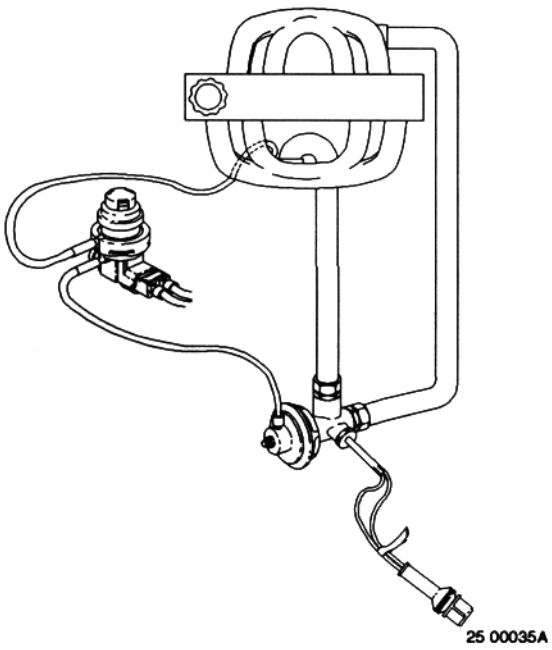
23 00169

For EGR systems with PTC temperature sensors see section FJ.

DTC conditions:

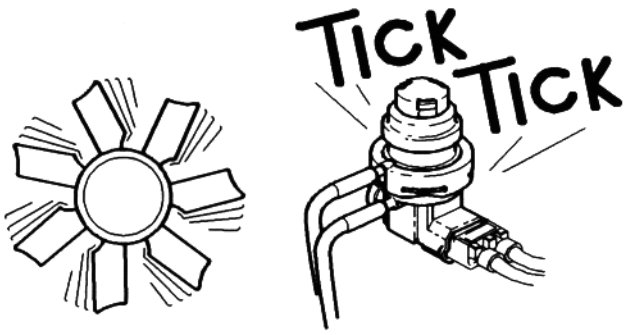
– Warm engine (above 65°C (149°F)), engine at part loads and the EGR signal does not change.

When the control module sends a control signal to the EGR vacuum controller the signal from the EGR temperature sensor should change. If it does not do so the control module interprets this as a flow fault and logs the DTC .


25 00035A

Causes of fault:
- Break in the signal wiring
- No voltage to the EGR vacuum controller
- Faulty EGR vacuum controller
- Poor vacuum to the EGR valve (in the white hose)
- Defective yellow hose (split, clogged)
- Faulty EGR valve (does not open)
- Faulty temperature sensor

NOTE!
Be careful when removing yellow and white hoses. The hoses may burst or crack if they are removed roughly from nipples.



25 00024

FH1

Check that the EGR vacuum controller is working

– Start and warm up the engine.

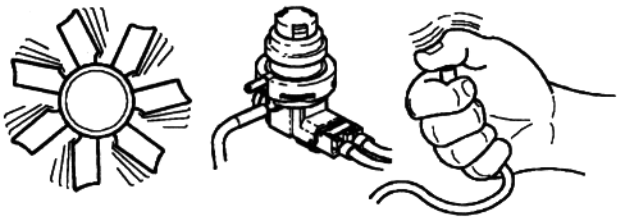
Place your hand on the EGR vacuum controller and rev the engine (over 2000 rpm) several times. The vacuum controller **should tick.**

If the EGR vacuum controller ticks (is operating)

- check the vacuum to the EGR vacuum controller FH2.

If the EGR vacuum controller does not tick (not operating)

- check the voltage to the EGR controller FH5.



25 00031

FH2

Checking the vacuum to the EGR vacuum controller

– Engine running.

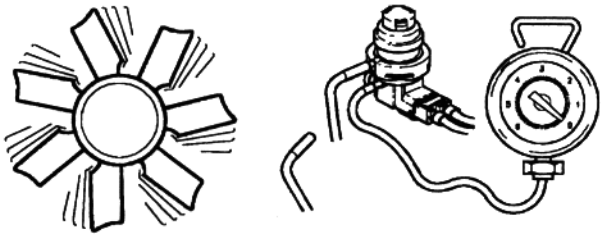
Carefully remove the white hose from the EGR vacuum controller and check to see if there is a vacuum in the hose.

If there is no vacuum

- check the white hose between the EGR vacuum controller and the intake manifold. The hose should not leak or be clogged. Replace the hose if necessary.

If there is a vacuum

- check the vacuum from the EGR vacuum controller FH3.



25 00026

FH3

Checking the vacuum from the EGR vacuum controller

– Engine running.
– Connect the white hose to the EGR vacuum controller.
– Carefully remove yellow hose from the controller.
– Connect a pressure gauge to the controller nipple.

Rev the engine. Check that the controller is not losing the vacuum. The pressure gauge needle should oscillate rapidly.

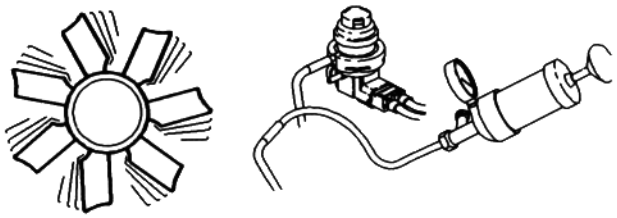
If the pressure gauge needle does not oscillate

- try using a new EGR vacuum controller.

If the pressure gauge needle oscillates

- check the EGR valve FH4.

FH4



2500020A

Checking the EGR valve

– Engine running.
– Connect a vacuum pump to the yellow hose at the EGR vacuum controller.

Pump up a vacuum (max. 30 kPa = 4.3psi). Check that the EGR valve moves and is holding the vacuum. The engine should idle unevenly when the valve is open.

There are three possibilities, as follows:

If the valve does not open:

- Check to see if the yellow hose is clogged. If the hose is OK, try using a new EGR valve.

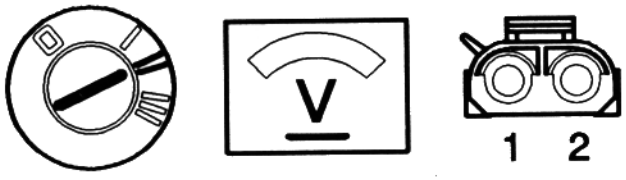
If the valve opens but loses vacuum:

- Check the yellow hose for leaks. If the hose is OK, try using a new EGR valve.

If the valve opens and holds a vacuum, but the engine idles evenly:

- The EGR pipes are clogged. Clean the pipes.

FH5



30 00129

Checking the voltage to the EGR controller

– Switch off the engine.
– Ignition on.
– Disconnect the connector.

Connect a voltmeter between terminal 2 in the EGR vacuum controller wiring connector and GND. The voltmeter should read battery voltage.

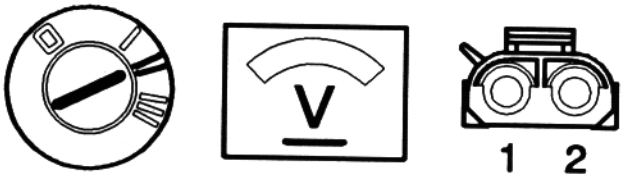
If this value is OK:

- Check the signal wiring FH6.

If the reading is incorrect (no voltage):

- Check the wiring between terminal 2 on the EGR vacuum controller and the ignition switch for breaks in accordance with NA2.

FH6



30 00129A

Checking the signal wiring

– Ignition on.
– Connector disconnected.

Connect a voltmeter between terminals 1 and 2 in the EGR vacuum controller wiring connector. The voltmeter should read 0 V.

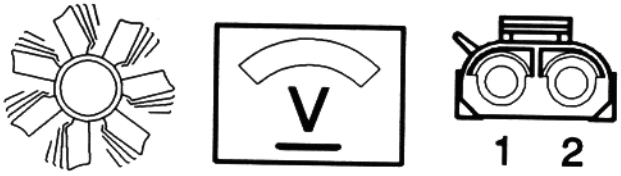
If the voltmeter reads 0 V

- check the signal FH7.

If voltmeter reads battery voltage

- check the wiring for grounding in accordance with NA3.

FH7



30 00172A

Checking the signal

– Start the engine.
– Connect the voltmeter between terminals 1 and 2 in the EGR vacuum controller wiring connector.

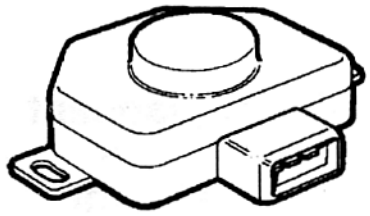
Check the voltmeter while revving the engine. The voltmeter should register a voltage for a moment before returning to 0 V.

If the voltmeter registers a voltage

- try using a new EGR vacuum controller.

If the voltmeter does not register a voltage

- check the wiring between terminal 1 on the controller connector and terminal 15 on the control module for breaks in accordance with NA2.
  If this wiring is OK: Check the wiring between the GND terminal (at the intake manifold) and terminal 14 on the control module as well.



S151 508

Idling/full load

Shows if the idling switch, full load switch is on. The idling switch is shown even if only the DI system is connected.

Air conditioning (A/C), fan

If the car has an A/C system the monitor displays whether the A/C pressostat is on.

The electronic fan control mode is displayed for cars with an electrical fan.

30 00101

DI EZ 116K

RPM and battery voltage (#6) from the DI are displayed when only the DI is connected. When both systems are connected the corresponding MFI values are displayed.

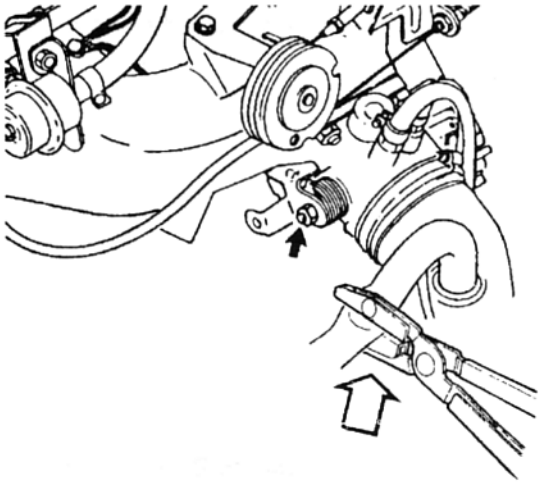
See above

Displays whether EGR control is active in cars with EGR.

Repair

W. Throttle body (TB) and throttle pulley adjustment

WA. Checking the throttle body (TB) adjustment



S150 544

WA1

Checking adjustment

- Warm up the engine.
- Connect an accurate tachometer.
- Engine idling.
- Gear selector in the P position.
- A/C off.
- Pinch the IAC valve hose with a hose clip.

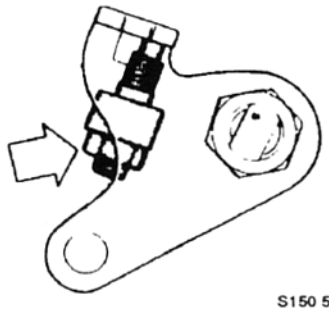
Engine speed should be below 500 rpm. It is not a fault if the engine stops.

If this value is OK:

- Remove the hose clip.
- Return to fault tracing where it was interrupted.

If the reading is incorrect:

- Adjust idle speed WA2.



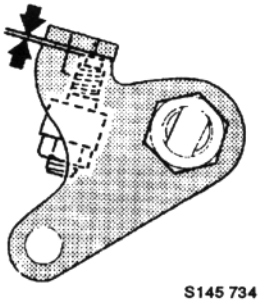
S150 538

WA2

Adjusting idle speed

- Loosen the throttle spindle adjustment screw lock nut.
- If not running, start engine.
- Turn the adjustment screw until idle speed is 480-520 rpm.
- Switch off the engine.
- Tighten the lock nut. Hold the adjustment screw so that it does not turn.

- Continue with Checking WA3.



S145 734

Checking

– Open the throttle and check the gap between the throttle lever and the adjustment screw with a feeler gauge.

With a 0.45 mm feeler gauge there should be no click from the idle switch when the throttle is closed.

With a 0.15 mm feeler gauge there should be a click from the idle switch when the throttle is closed.

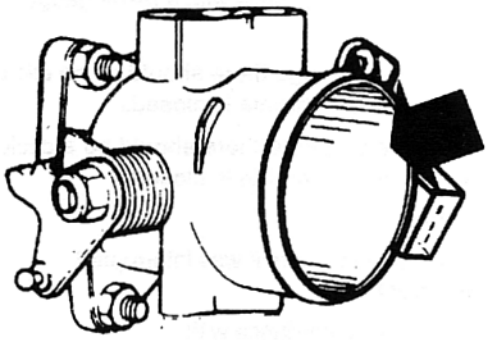
If the gap is OK:

- Return to fault tracing where it was interrupted.

If a gap is incorrect:

- Adjust TP switch in accordance with WC. Adjusting the TP switch

WB. Adjusting the throttle disc



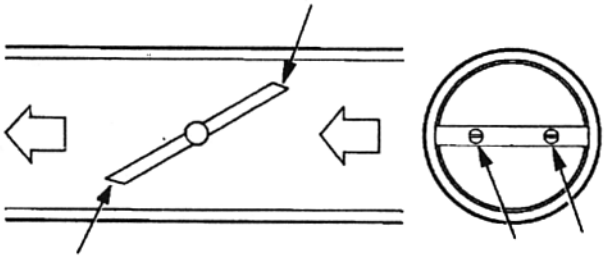
S139 912

WB1

Preparations

- Remove the TB.
- Remove the TP switch from the TB.
- Clean the TB and the throttle disc.
- Loosen the adjustment screw so that the throttle closes completely.
- Loosen the throttle disc screws so that disc is loose. Check that the throttle disc is facing in the right direction.

• Continue with Adjusting the throttle disc WB2.



S150 539

WB2

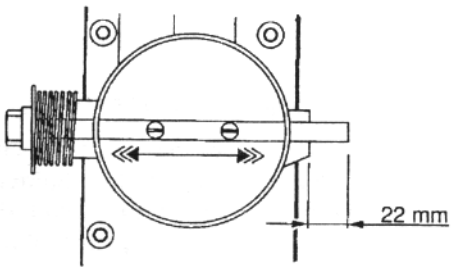
Adjusting the throttle disc

- Hold the TB with the throttle horizontal. Open and close the throttle using the throttle lever several times so that the throttle disc is centred in the throttle opening (open about 1/3 each time).

- Hold the TB to the light.

Turn the disc with your fingers so that the opening becomes as small as possible.

• Continue with Adjusting the throttle spindle WB3.



S150 540

WB3

Adjustment of throttle spindle

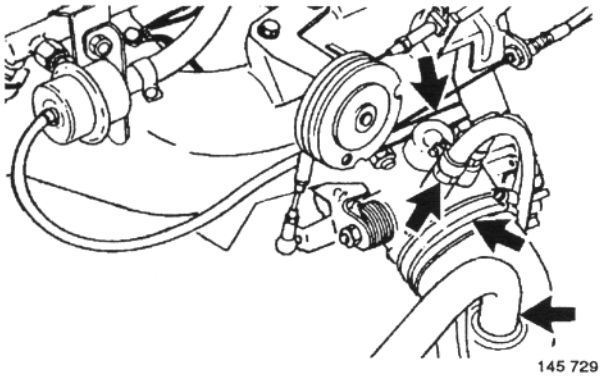
Check that the throttle spindle can be pushed back and forth with little resistance.

Adjust the throttle spindle so that it protrudes max. 22.5 mm (0.86 in) as in the illustration.

NOTE!
The indicated maximum measurment, 22.5 mm, may not be exceeded. Otherwise there is a risk that the throttle spindle will hit the TP switch.

- Tighten the throttle valve fixing screws 0.6 ± 0.1 Nm (5 ± 1 in. lbs).
- Tighten the adjustment screw until it touches the link arm.
- Screw in further QUARTER turn.
- Tighten the lock nut while holding the adjusting screw, 0.6 ± 0.1 Nm (5 ± 1 in. lbs).

• Continue with Installation *WB4.*



145 729

WB4

Installation

- Loosely reinstall TP switch on to TB.
- Install the TB onto the intake manifold.
- Connect all hoses.

• Continue with WC. Adjusting the TP switch.

WC. Adjusting the throttle position (TP) switch

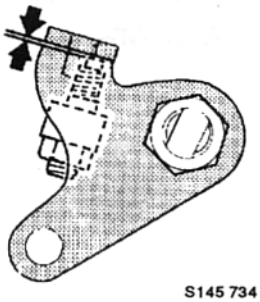
WC1

S137 254

Adjusting the throttle position (TP) switch

A Start by turning the TP switch clockwise as shown by
T the arrow (A) until it stops. Then turn the TP switch
c counter-clockwise as shown in the illustration by the
s arrow (B) until a "click" is heard, and then continue to
tl turn until it stops, but no further. The throttle must not
ti start to open, so hold it closed with a finger on the
throttle disc. Keeping the TP switch in the position,
tighten the screws on the switch.

WC2



S145 734

Checking

– Open the throttle and check the gap between the throttle lever and adjustment screw with a feeler gauge.

With a 0.45 mm feeler gauge there should be no click from the idle switch when the throttle is closed.

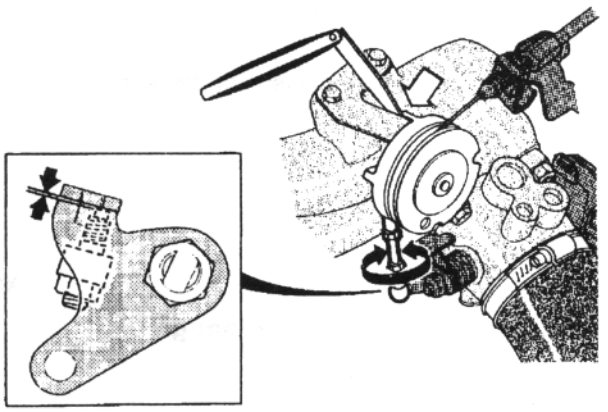
With a 0.15 mm feeler gauge there should be a click from the idle switch when the throttle is closed.

– Connect TP switch connector.

- Continue with WD. Adjusting throttle mechanism.

WD. Adjusting throttle mechanism

WD1



S145 734

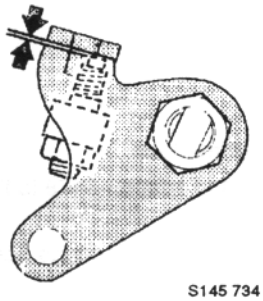
Adjusting the link rod

– Install the link rod.
– Lock the ball joints on the link rod with the snap fasteners.
– Put a feeler gauge, thickness (t) (see table below) at the throttle pulley stop. (t) varies depending on engine types.

Engine	(t)
B 2x0 F/FB, B 2xx FT/GT	2.5 mm
B 2x4 E manual, B 234 G B 234 F automatic with engine version numbers 1289321 and 1289407 model 1989	3.3 mm
B 234 F automatics with other engine version numbers	1.6 mm

– Turn the middle of the link rod until the throttle lever is not in contact with the adjustment screw and the TP switch clicks. Then turn the link rod the other way until the return click is heard from the TP switch. Tighten the link rod lock nuts, first by hand and then with a spanner 0.6±0.15 Nm (0.44±0.1 ft lb). Hold the link rod so it does not turn with the lock nut.

WD2



S145 734

Checking throttle lever play

– Put a feeler gauge at the throttle pulley stop. See the above table.

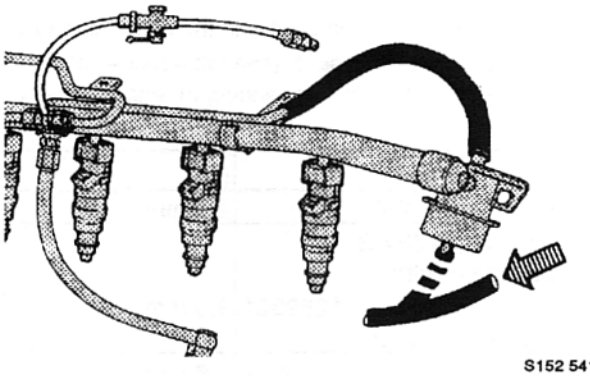
Check:

– That a 0.45 mm feeler gauge will not fit between the throttle lever and the adjustment screw.
– That a 0.10 mm feeler gauge will fit between the throttle lever and the adjustment screw.

If play is not within these limits remove the lock nuts on the link rod and start again at the last section in WD1.

When you have finished adjusting throttle lever, remove the feeler gauge at the throttle pulley stop.

X. Fuel pressure and residual pressure



S152 541

X1

Checking the pressure regulator vacuum hose

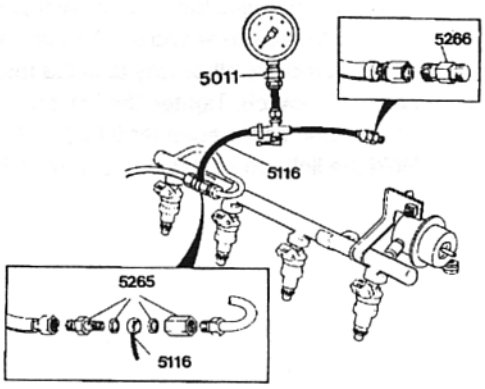
– Remove the vacuum hose from the pressure regulator.
– Check that the hose is not blocked by blowing into it.

If the hose is OK:

- Connect the fuel pressure gauge X2.

If the hose is blocked:

- Check hoses and nipples and remedy the fault.



S139 915

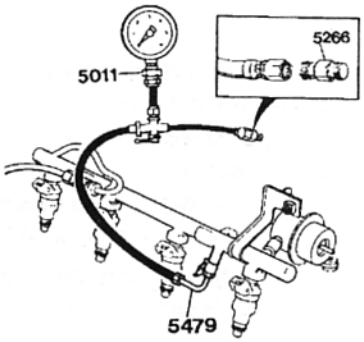
X2

Connecting the fuel pressure gauge

Engine without quick connector

– Ignition off.
– Connect the fuel pressure gauge between the fuel line and the distributor pipe. Use hose 5116 and nipple 5265.
– Plug the free end of the meter's hose with plug 5266.
– Set the valve on 5011 to position 1 (pointing towards hose 5116).

- Continue with Starting FP X3.

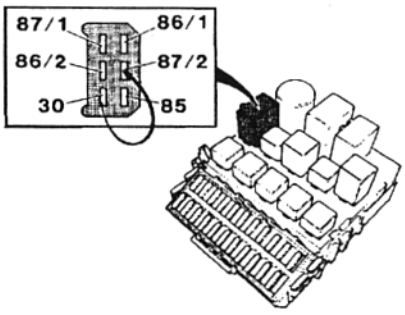


S152 542

Engines with quick connectors

– Connect nipple 9725 and adapter 5479 to the pressure gauge.
– Plug the free end of the pressure gauge hose using a 5266 plug.
– Connect the adapter to the valve on the distributor pipe.

- Continue with Starting FP X3.



S145 741

X3

Starting fuel pump (FP)

– Lift out the central electrical module and remove the system relay.
– Connect a wire terminal 30 and 87/2 on the relay board.

The FP should now start.

- Continue with Measuring system pressure X4.

WARNING!
Jump connecting between the wrong terminals will destroy the LH control module!