

P0300

Misfire recognized

P0301

Cylinder 1 – Misfire detected

P0302

Cylinder 2 – Misfire detected

P0303

Cylinder 3 – Misfire detected

P0304

Cylinder 4 – Misfire detected

P0305

Cylinder 5 – Misfire detected

P0306

Cylinder 6 – Misfire detected

P1585

Misfire with empty fuel tank

Function

To detect misfire, the decrease of engine speed is evaluated when no combustion occurs at one or more cylinders.

Faults that are emission related and faults that are damaging to the Three Way Catalytic Converter (TWC) are separate categories.

The engine speed is measured with an inductive sensor that is located above the ring gear of the flywheel.

The ring gear is divided into three segments. For the detection, the difference is calculated by the time measured between the segments. This difference is corrected by a mean value that is developed over several segments to compensate for the engine speed fluctuations caused by driving conditions. If the corrected value is above a specified value which depends on engine speed and engine load, a misfire is detected.

Diagnostic conditions

A cycle of 1,000 crank shaft revolutions each is evaluated (for misfire damaging to the TWC, 200 crank shaft revolutions). The misfire occurrences are compared to a threshold value. If the number of misfire is larger than the threshold value, a fault is recorded in memory.

The Malfunction Indicator Lamp (MIL) is switched on and stays on, when the misfire rate is above the threshold value for two consecutive driving cycles, when the FTP-limit values are exceeded by 1.5 times.

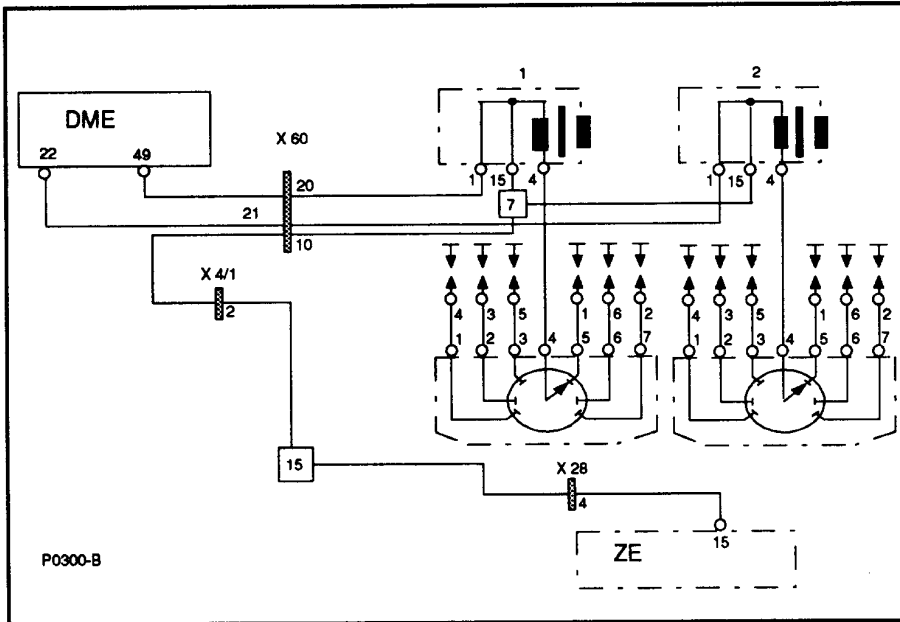
The MIL blinks if the misfire rate may lead to permanent damage to the TWC. The MIL goes back to consultant on when the misfire rate no longer reaches the threshold.

Note

When the fuel tank is driven to empty, misfire can occur. For this reason the fuel level in the tank is also stored in memory. If the tank was empty, there was probably no fault.. Erase DTC memory and road test vehicle.
 Short circuits to B+ or ground of the Oxygen Sensors (HO2S) ahead of the TWC cause the mixture to be too rich or too lean. This can cause misfiring. If an additional DTC for an HOS2 ahead of the TWC is stored in memory, first correct this fault and road test vehicle.

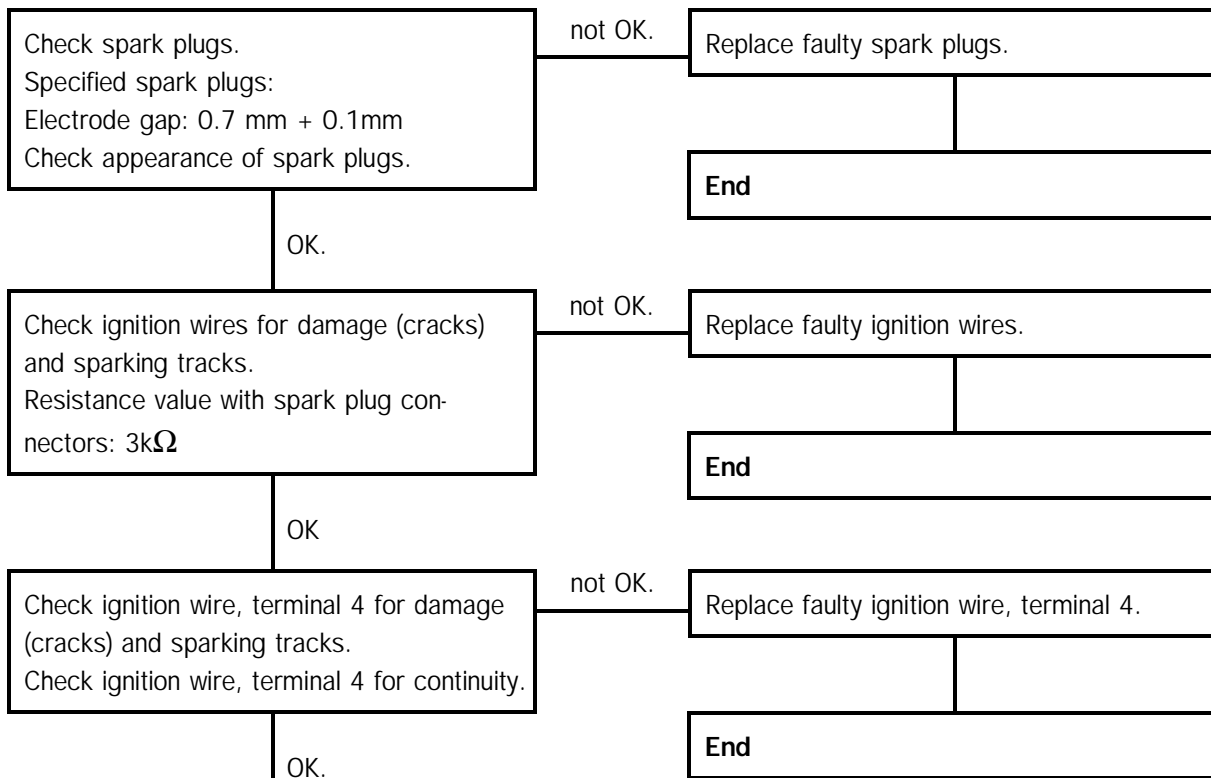
DTC No.	Fault conditions	Fault areas
P0300	Misfire of several cylinders	- contaminated, faulty or wron spark plug - Ignition wires faulty - Faulty high tension insulation - Acceleration restrictions - Loose connections
P0301	Misfire cylinder 1	
P0302	Misfire cylinder 2	
P0303	Misfire cylinder 3	
P0304	Misfire cylinder 4	
P0305	Misfire cylinder 5	
P0306	Misfire cylinder 6	
	Combustion misfire	- Mixture too rich - Mixture too lean
P1585	Misfire and fuel tank empty	Fuel tank empty

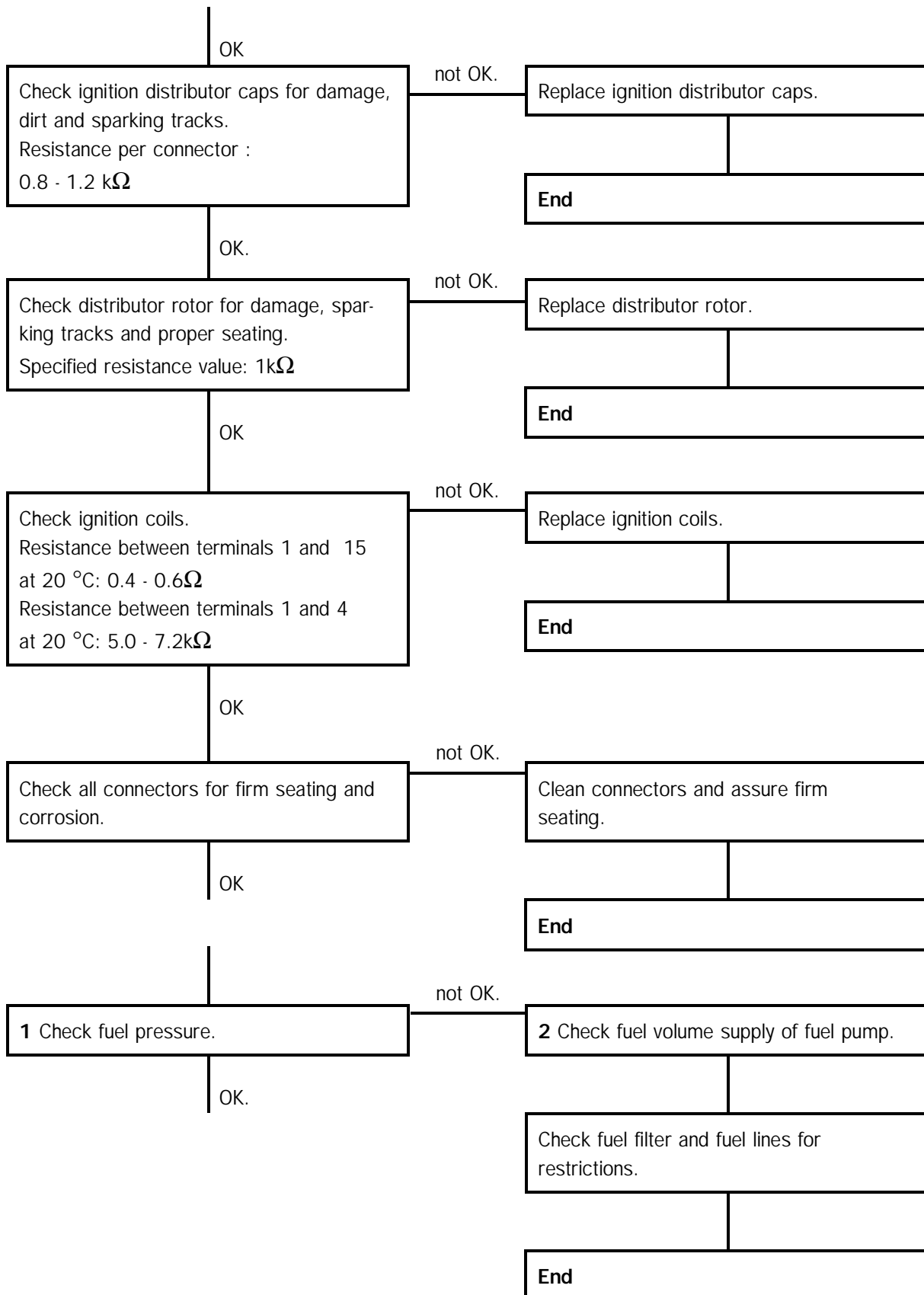
Wiring Diagram

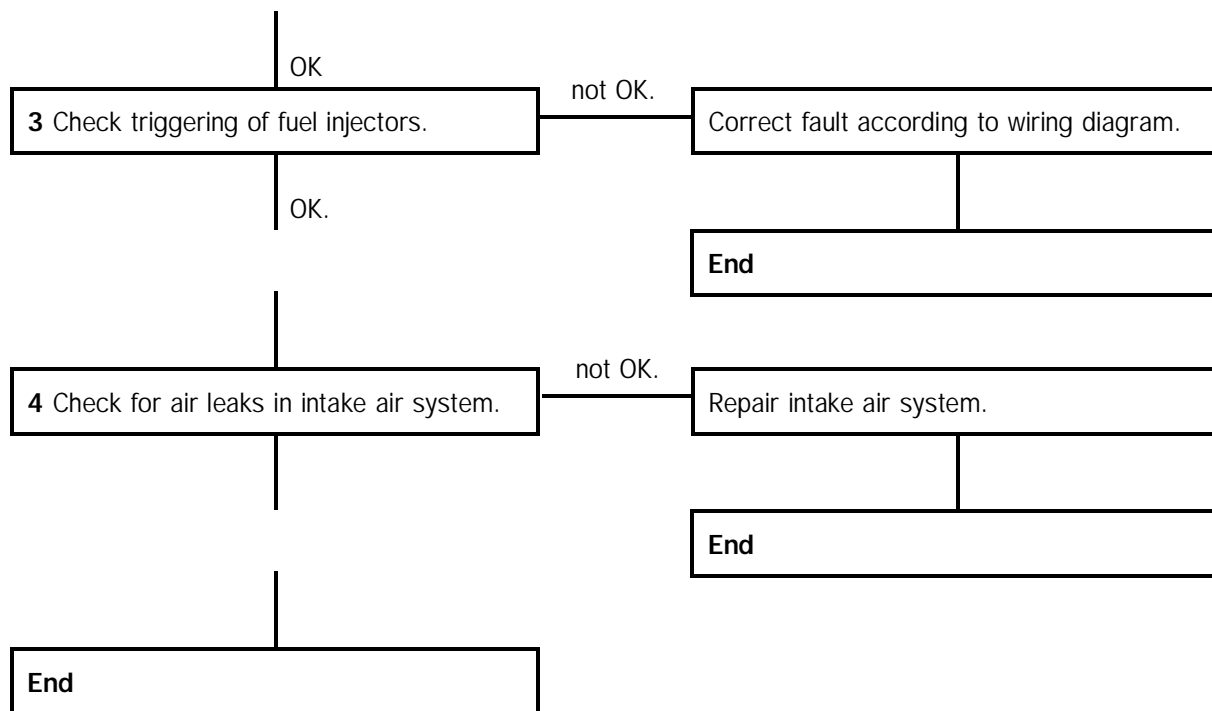


Diagnostic procedure

Test requirements: Engine mechanically OK







1 Check fuel pressure

1. Remove heater blower at the rear left of the engine compartment.
2. Remove valve cover at test connection of fuel distributor line.

Note

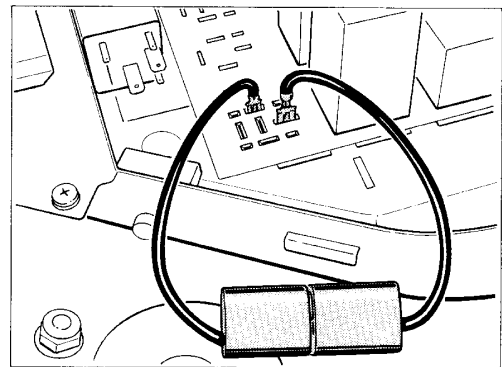
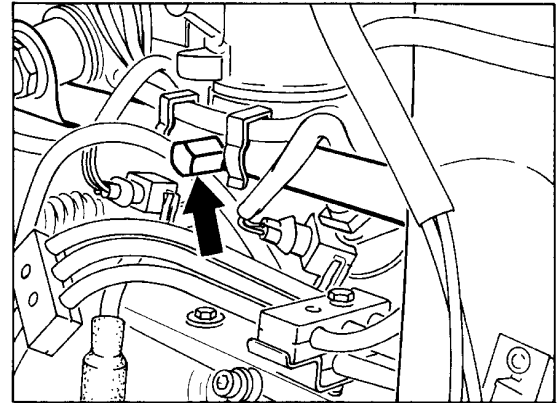
Cover must be used **only** once.

Tightening torque: **2.5 + 0.5 Nm**

3. Connect pressure gauge P 378 or VW 1318 with attachment line 9559 and connect to test connection.
4. Remove ECM relay (R53) from fuse/relay panel and connect terminals 30 and 87b with locally manufactured fused jumper cable and trigger fuelpump with system tester.
Fuel pump must work now.

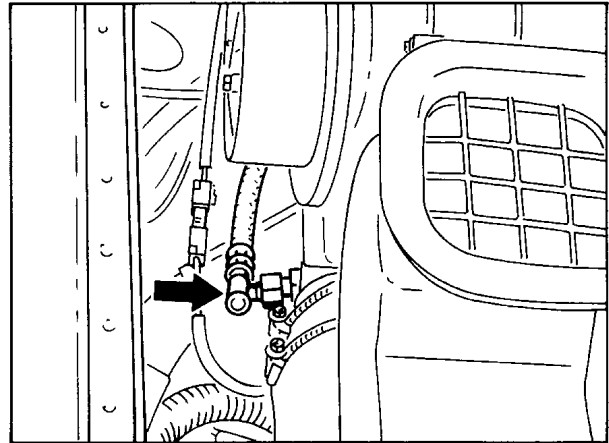
5. Test values:

Engine not running:	3,8 ± 0.2 bar
Engine at idle:	3,3 ± 0,2 bar



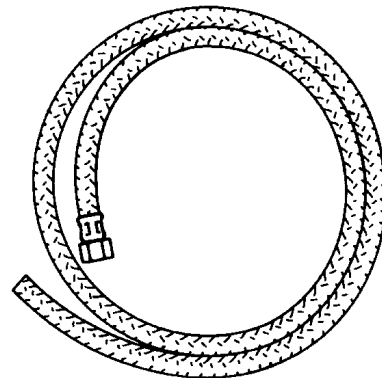
2 Check volume supply of fuel pump.

1. Remove heater fan at rear left of engine compartment.
2. Remove fuel return line at fuel pressure regulator, making sure that you counter when you do this. Collect remaining fuel.



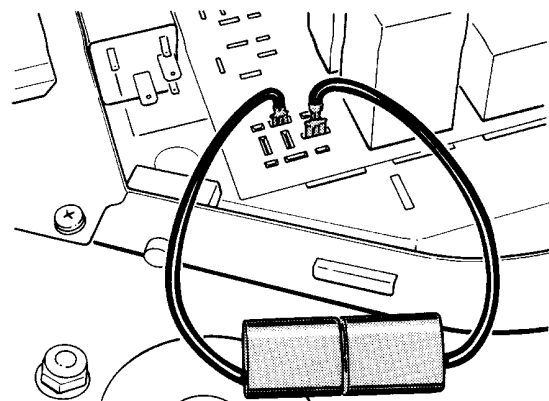
2306 - 24

3. Connect special tool hose 9507, (Order No. 000.721.950.70) to pressure regulator and hold in a measuring vessel.



1742 - 20

4. Disconnect ECM relay (R53) from fuse/relay panel and connect terminals 30 and 87 b (labeled 3 and 7 on fuse/relay panel) with locally manufactured fused jumper cable and trigger fuel pump with system tester. The fuel pump must work now.



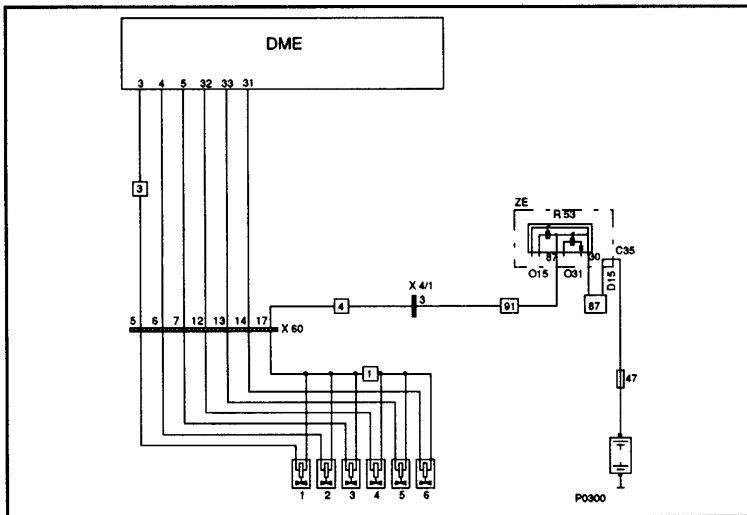
1728-20

5. Allow fuel to flow into a measuring vessel.
Fuel volume supply must be at least 850 cm³/30s, i.e. after these 30 seconds, the measuring vessel must contain at least 850 cm³ fuel.

Note

Observe the safety regulations under all circumstances.

3 Check triggering of fuel injectors.



The fuel injectors can be triggered one by one with system tester 9288 in menu point "output check". The opening of the fuel injectors is however difficult to hear (muffled).

If no pulse is audible, check triggering as follows:

a) Voltage supply

1. Remove connector of fuel injector to be checked.
2. Connect voltmeter between injector connector, cavity 2 and ground.
3. Switch ignition on.

Specified value: battery voltage. If meter does not read battery voltage, check wiring according to wiring diagram for continuity or short circuit.

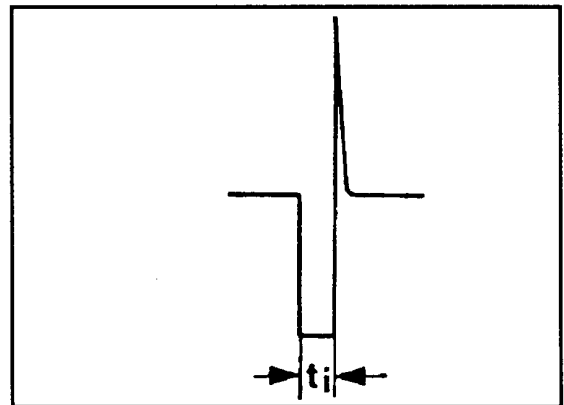
b.) Coil resistance of fuel injectors

1. Remove connector of fuel injector to be checked.
2. With ohmmeter, measure resistance between terminals of fuel injector.

Specified value: 15 - 17 W

c.) Injection end stage (minus supply)

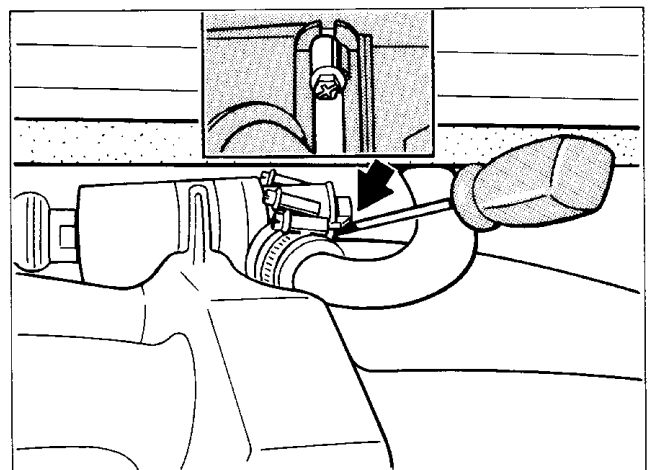
1. Connect special tool V.A.G 1315 A/1 between fuel injector and connector.
2. Connect engine tester according to manufacturer's instructions. Connect tester cable with adapter cable.
Caution:
Tester cables must not contain ground connections.
3. Start engine: For a perfectly working injector endstage, the following display must be shown at starting rpm.

**Note**

If the engine does not start, or if the idling speed drops, replace tester cable at adapter cable.

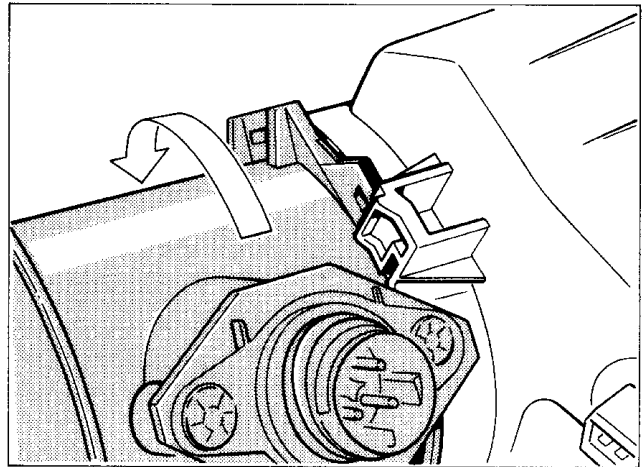
1 Check air intake system for leaks.

1. Remove air cleaner cover and insert.
2. Undo hose clamp on mass air flow sensor with a cross-head screwdriver, e.g. from Messrs. Wiha Order No. 153-1 (350 mm long).



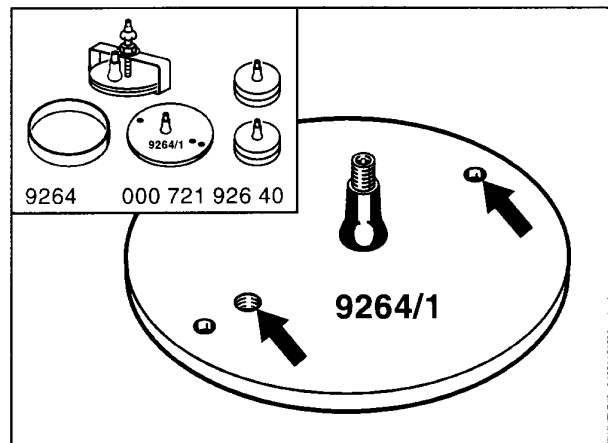
2354 - 24

3. The restricted space available necessitates separation of the mass air flow sensor and air cleaner housing in the engine compartment.
To remove, turn the mass air flow sensor in the direction of the arrow (driving direction), at the same time countering at the air cleaner housing (bayonet lock).

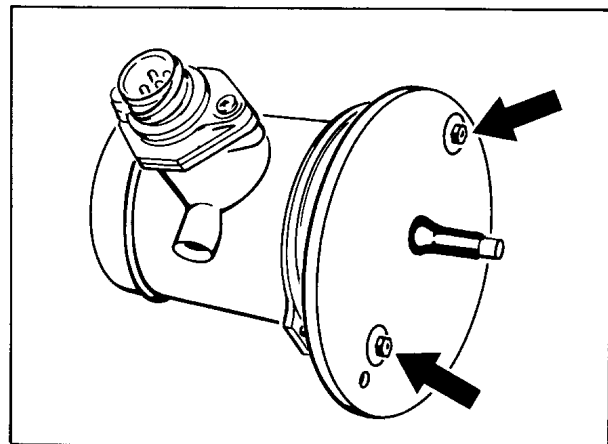


2221 - 24

4. Lever off circlip and remove protective grille.
5. Secure sealing plate 9264/1 on mass air flow sensor using screws M 4 x 40 and washers.



2030 - 20

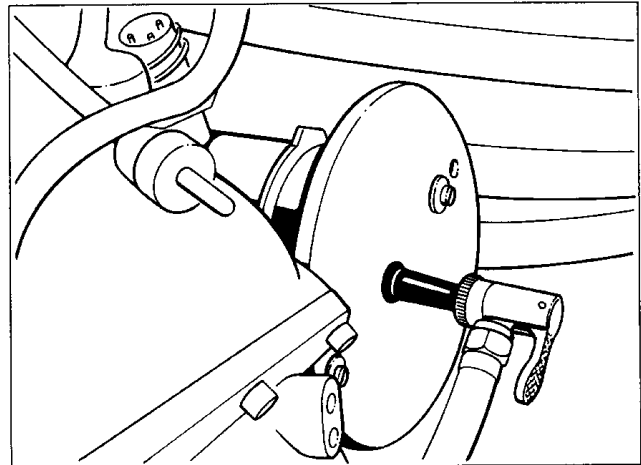


2031 - 20

Note

Check the position of the mass air flow sensor on the sealing plate before finally tightening the screws, i.e. no light gap must be visible upon inspection.

- Build up a pressure of approx. 0.5 bar.
Large leaks are very audible when the pressure has been built up; small leaks can be made visible using leak spray.

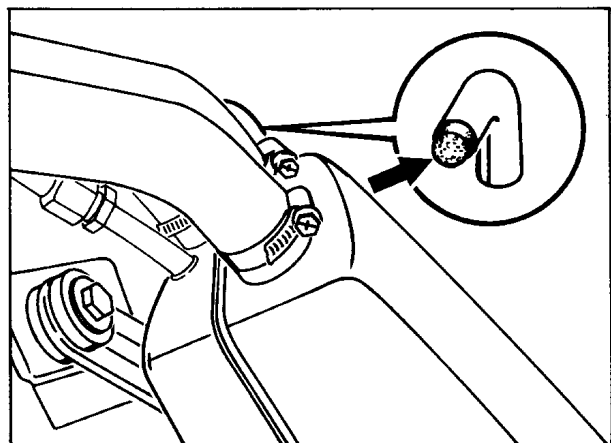


2352 - 24

Note

The pressure relief valve on the oil tank opens at 180 ± 20 mbar.

Block the valve. To do this, remove the front wheel housing liner of the right rear wheel housing. Close off the hose from the oil tank pressure relief valve with a suitable stopper.



2060-20

Remove the stopper from the hose after carrying out the leak test.

Assemble the mass air flow sensor and air cleaner housing in the engine compartment before attaching the mass air flow sensor to the air intake system.

2058-20

5. Remove ECM relay (R53) from central electric fuse/relay panel and bridge cavities 30 and 87 b (markings 3 and 7 on fuse/relay panel) with locally manufactured fused jumper cable. The fuel pump should run now.

1728-20

Let fuel run for 30 seconds into a measuring cylinder.

Fuel volume must be at least 1,100 cm³/30s, meaning that after 30 seconds the measuring cylinder must contain at least 1,100 cm³.

Note

Observe all safety precautions.

3 Check triggering of fuel injectors.**Wiring Diagram**

The fuel injectors can be triggered one by one with system tester 9288 in menu point 'output check'. The opening of the fuel injectors is however difficult to hear (muffled). If no pulse is audible, check triggering as follows:

a) Voltage supply

1. Remove connector of fuel injector to be checked.
2. Connect voltmeter between injector connector, cavity 2 and ground.
3. Switch ignition on.

Specified value: battery voltage. If meter does not read battery voltage, check wiring according to wiring diagram for continuity or short circuit.

b) Coil resistance of fuel injectors

1. Remove connector of fuel injector to be checked.
2. With ohmmeter, measure resistance between terminals of fuel injector.

Specified value: 15 - 17 Ω

c) Injection end stage (minus supply)

1. Connect adapter cable (Bosch-No.: 1 684 463 093) between fuel injector and connector.
2. Connect engine tester according to manufacturer's instructions. Connect tester cable with adapter cable.
Caution:
Tester cables must not contain ground connections.
3. Start engine. For a perfectly working injector end-stage, the following display must be shown at starting rpm.

Note

If the engine does not start, or if the idling speed drops, replace tester cable at adapter cable.

4 Check intake air system for leaks.

1. Remove intake air intercooler and air cleaner.
2. Remove Mass Air Flow Sensor.
3. Remove right side grille.
4. Install sealing cover 9264/1 with bolts M 4 x 40 to Mass Air Flow Sensor.

2031-20

Note

Before tightening the bolts, check positioning of the the sealing cover to the Mass Air Flow Sensor. There must be no light gaps.

5. At right rear wheel well, remove front half of wheel well liner. Close hose of oil reservoir pressure valve with suitable plug.

2060-20

6. Build up pressure of approx. 0.5 bar.

With the pressure applied, you should be able to hear major leaks. For smaller leaks use leak spray.

Note

Checking for leaks should involve the entire intake air system, the intercooler and the oil reservoir.