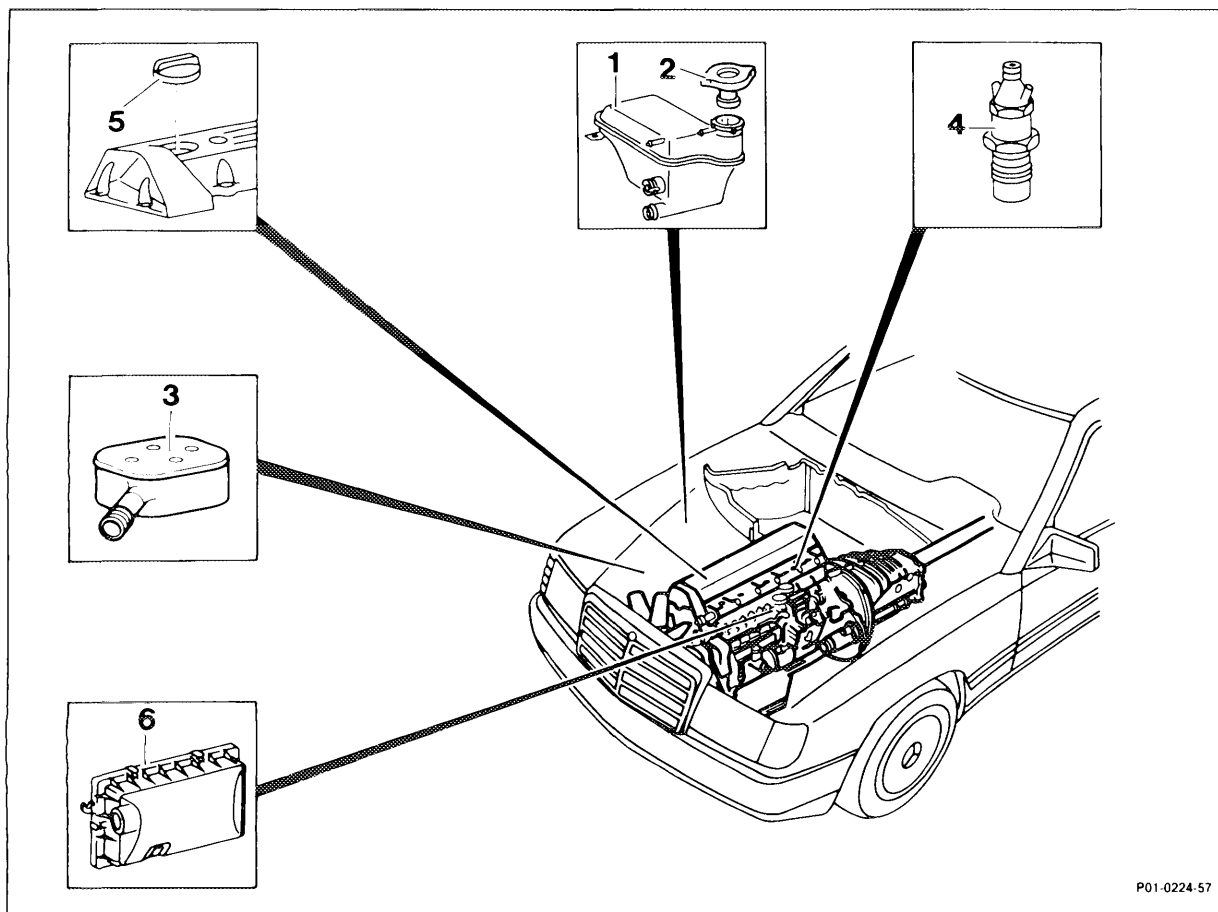


01-015 Checking cylinders for leaks



P01-0224-57

- | | |
|---|--|
| Engine | warm up to operating temperature (approx. 80 °C) (item 1). |
| Nozzle holders (4) | remove, install (07-230). |
| Coolant expansion tank (1) | ⚠ Warning
Open cap (2) on coolant expansion tank only at coolant temperatures below 90 °C. |
| | Remove cap (2), install. Add coolant, if necessary (items 3 - 4). |
| Air cleaner on naturally aspirated engines (6) and on Turbo-engines (3) | remove air cleaner cover, install (item 5). |
| Oil filler cap (5) | remove, install (item 6). |

Engine move piston of cylinder to be checked to TDC, ignition stroke, connect and calibrate cylinder leakage tester (items 7 – 9).

Cylinder determine pressure loss (items 10 – 12).

Note

Check other cylinders in firing order.

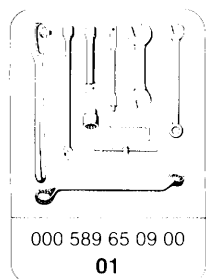
Permissible pressure loss

Total, engine	max. 25 %
Valves and cylinder head gasket	max. 10 %
Piston rings	max. 20 %

Tightening torques

	Nm
Union nuts on injection lines (reference value)	10 – 20
Nozzle holders in prechambers	70 + 10
Nozzle holders for angular injection	30

Special tool



Commercially available tools

Cylinder leakage tester	e.g.	Bosch, EFAW 210 A Sun, CLT 228
Adapters and connectors	e.g.	Bosch Order no. 1 687 010 016

Testing

- 1 Warm engine up to operating temperature (approx. 80 °C).
- 2 Remove all nozzle holders (07-230).

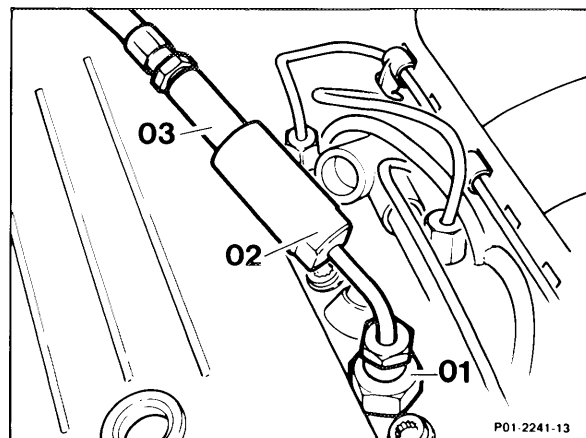
Warning

Open cap on coolant expansion tank only at coolant temperatures below 90 °C.

- 3 Remove cap on coolant expansion tank.
- 4 Check coolant level in coolant expansion tank and add, if necessary.
- 5 Open retaining strap on air cleaner cover on naturally aspirated engines or unscrew hex. head bolts on air cleaner cap on Turbo-engines, remove air cleaner cap and take out filter cartridge.
- 6 Remove oil filler cap.
- 7 Move piston in cylinder to be checked to TDC, ignition stroke.

8 Bolt appropriate adapter (01) with straight or angular connector (02) into precombustion chamber of cylinder to be checked.

9 Calibrate cylinder leakage tester and bolt connection hose (03) of tester onto connector (02).



10 Fill cylinder with compressed air and read off any pressure loss on tester.

11 If pressure is lost, determine cause; check by listening whether pressure is exhausted through cylinder head gasket, intake manifold, exhaust, oil filler cap or prechambers of adjacent cylinder(s) and check for formation of air bubbles in coolant in coolant expansion tank.

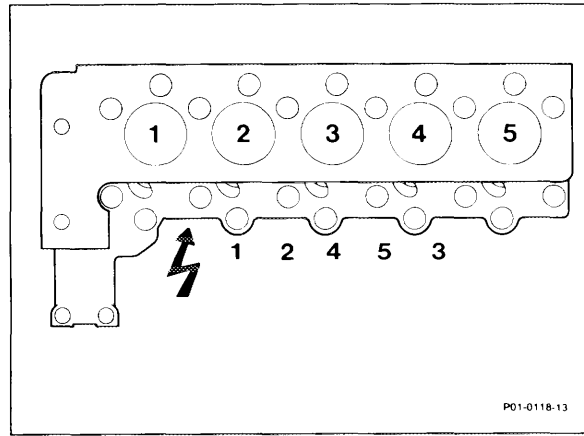
Note

If pressure loss and air loss through the oil filler cap are present , the possible causes can be limited by spraying engine oil on the piston crown of the cylinder being tested. The oil seals the gap between the piston and cylinder. If pressure loss is no longer present for a short time, the cause is in all probability the piston, piston rings or cylinder running surface.

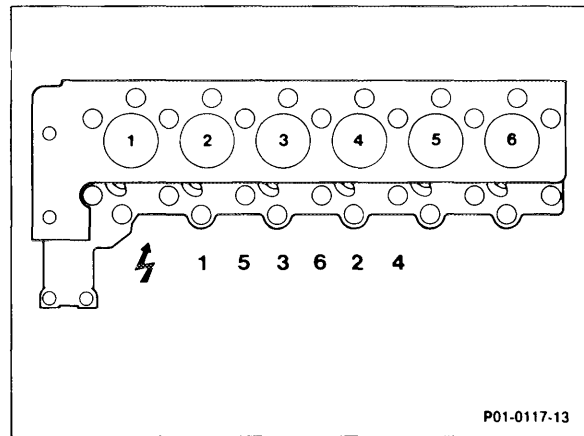
The position of the piston ring gaps can result in incorrect determination of the cause. If it is suspected that the pressure loss results from the piston ring gaps being positioned directly above one another, completely reassemble engine and repeat test after operating engine for a short time.

12 Perform test on other cylinders in engine ignition sequence.

Ignition sequence, engine 602



Ignition sequence, engine 603



13 Assemble in opposite order.