

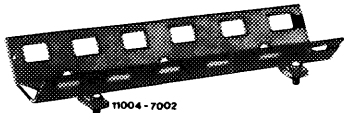
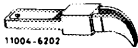
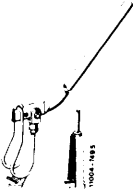
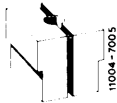
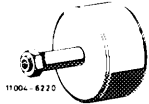

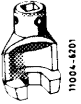
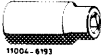
05–250 Removal and installation of valve springs

Valve clearance	Cold engine (ca. 20 °C)	Warm engine (60 °C ± 15 °C)
Intake	0.10 ¹⁾	0.15 ¹⁾
Exhaust	0.25	0.30

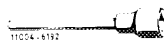
1) 0.05 mm more for consistent outside temperatures below –20 °C.

Tightening torques	Nm
Cylinder head bolts M 12 x 1.5	100
M 8 bolts for camshaft housing	25
Mounting bolts for camshaft sprockets	80
Ball locating ring in chain tensioner	25
Cylinder head cover bolts and capped nuts	5

Special tools

Rail to hold down valve springs		110 589 06 62 00
Magnetic lifter for valve collets		116 589 06 63 00
Depressor for valve spring		110 589 04 61 00
Chain tensioner holder		110 589 02 31 00
Impact extractor for bearing pin (basic unit)		116 589 20 33 00
M 6 x 50 bolt for impact extractor		116 589 01 34 00
Valve adjusting wrench 17 mm, 1/2" square		110 589 00 01 00
Wrench socket 27 mm, 1/2" square to turn engine		001 589 65 09 00

Wrench socket 10 mm
1/2" square, 140 mm long



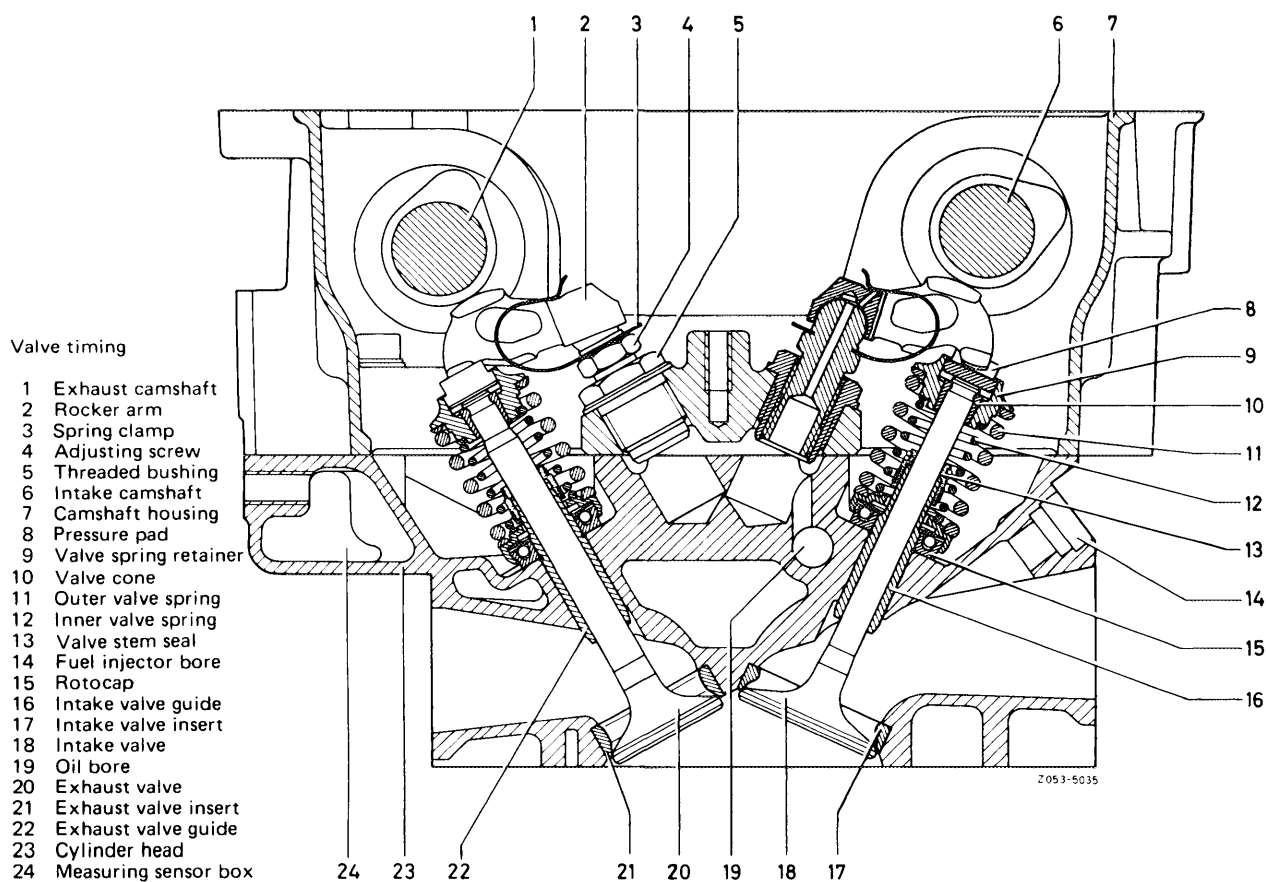
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Conventional tool

Cylinder leak tester

e.g. made by Bosch EFAW 210 A

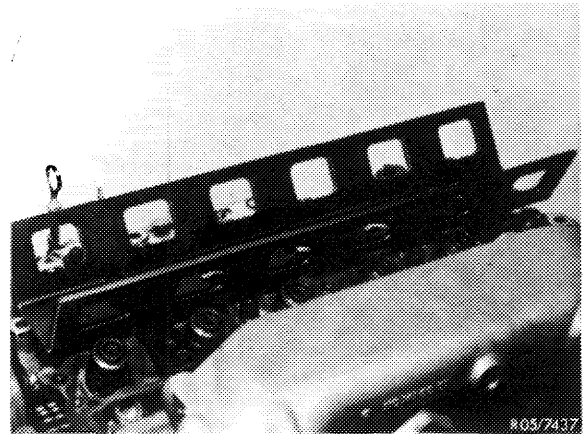
e.g. made by SUN CLT 228



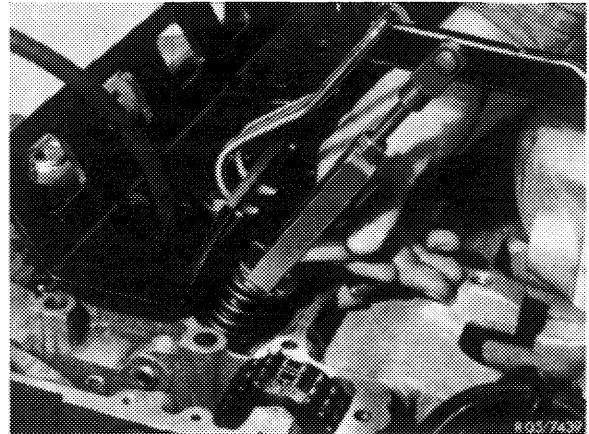
Removal

- 1 Remove camshaft housing (01-470).
- 2 Remove pressure pads (8).
- 3 Unscrew spark plug of respective cylinder and set piston to ignition TDC to prevent valves from dropping in.

- 4 Bolt hold-down rail to cylinder head.
- 5 Support valves with pneumatic air (cylinder leak tester).



- 6 Loosen valve collets by applying light knocks from a hammer to valve spring retainers.
- 7 Press down valve spring retainer with removal and installation tool and remove valve collets with magnetic lifter.



Attention!

Valves must not rest on piston skirt, since this could bend the valves.

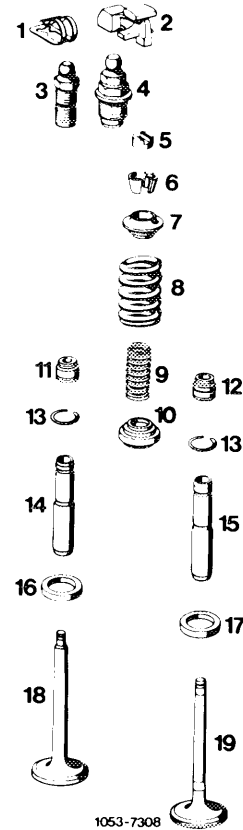
- 8 Remove valve spring retainer, outer and inner valve springs.

Installation

- 9 Check valve springs and replace if necessary (05–260).
- 10 Replace valve stem seals (05–270).
- 11 Further installation in reverse sequence of removal.

Attention!

Install valve springs that tighter coil ends rest on rotocap.



Valves and rocker arms

- | | |
|---|----------------------------|
| 1 Spring clamp | 10 Rotocap |
| 2 Rocker arm | 11 Exhaust valve stem seal |
| 3 Adjusting screw | 12 Intake valve stem seal |
| 4 Threaded bushing with adjusting screw | 13 Circlip |
| 5 Pressure pad | 14 Exhaust valve guide |
| 6 Valve cone | 15 Intake valve guide |
| 7 Valve spring retainer | 16 Exhaust valve insert |
| 8 Outer valve spring | 17 Intake valve insert |
| 9 Inner valve spring | 18 Exhaust valve |
| | 19 Intake valve |

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