

Tightening Torques in kpm

| | | | |
|------------------------------------------|----------------------------------------------|---------------------|------|
| Cylinder head bolts | with engine cold | 1st tightening step | 3 |
| | | 2nd tightening step | 5 |
| | inspection at 80°C cooling water temperature | 6 | |
| Bolts for attaching cylinder head covers | | | 0.5 |
| Bolt for attaching camshaft gears | | | 10.5 |
| Injection valves to cylinder head | | | 1.0 |

Special Tools

| | |
|-----------------------------------------------------------|------------------|
| Socket spanner insert 8 mm for cylinder head bolts | 000 589 38 07 00 |
| Socket spanner insert 8 mm offset for cylinder head bolts | 000 589 34 07 00 |
| Special spanner 8 mm for cylinder head bolts | 000 589 00 13 00 |
| Socket wrench | 187 589 03 07 00 |

Note

The removal and installation of the lefthand and righthand cylinder head is combined in this description. Wherever differences occur during assembly, that is, when other parts and units must be removed, these items in the description are marked with the following abbreviations:

RC = Righthand cylinder head
LC = Lefthand cylinder head

Removal

- 1 Drain cooling water from radiator and cylinder crankcase (drain plugs on crankcase – Fig. 1).
- 2 Remove air cleaner.
- 3 RC: Remove battery.
- 4 Disconnect cable set for electronic injection system.

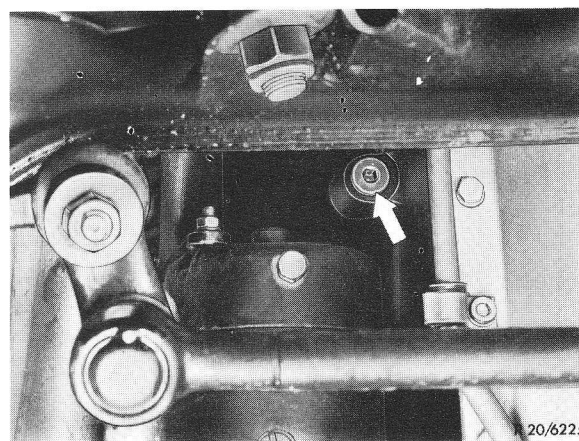


Fig. 1

Drain plugs on crankcase right and left

- 5 Loosen ring line (1) with injection valves (2) and remove (Fig. 2).
- 6 Loosen screw (refer to arrow in Fig. 3), remove lock washer, push longitudinal control shaft in direction of front wall and remove. Watch out for the two plastic bushings.

05.1 Removal and Installation of Cylinder Head

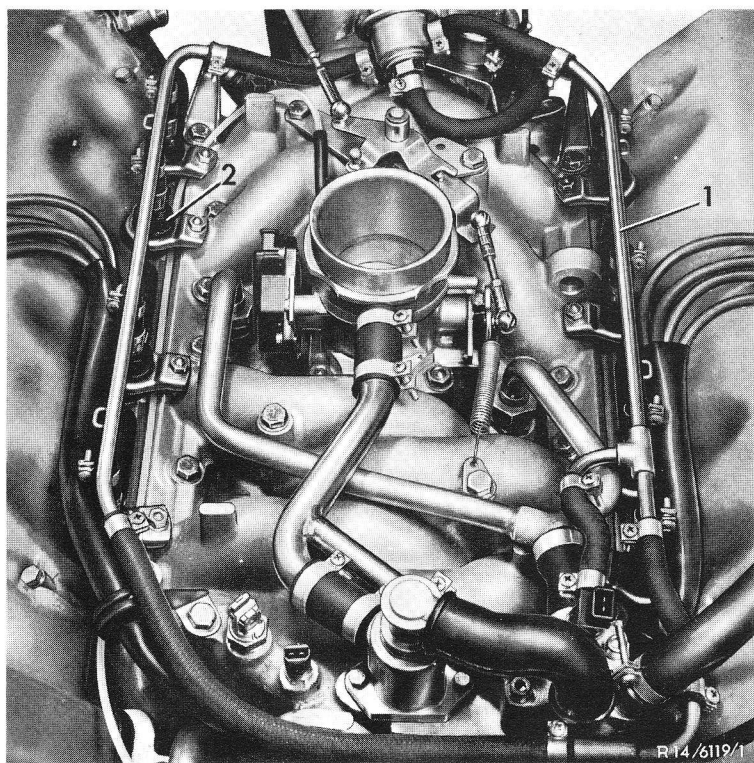


Fig. 2

- 1 Ring line
- 2 Injection valves

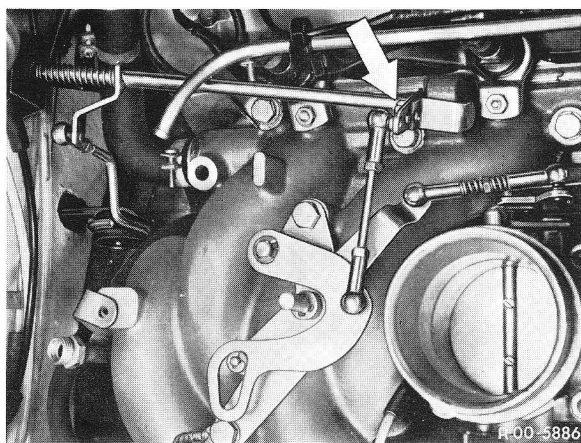


Fig. 3

7 Loosen all connections on intake pipe and cylinder heads. Remove intake pipe.

Note: The intake pipe is located by four hollow dowel pins (14) (Fig. 4).

8 RC: On automatic transmission, unscrew transmission fluid filler pipe on cylinder head.

9 RC: Remove alternator with holder.

10 RC: On engine 116.980/981, loosen holder for engine damper.

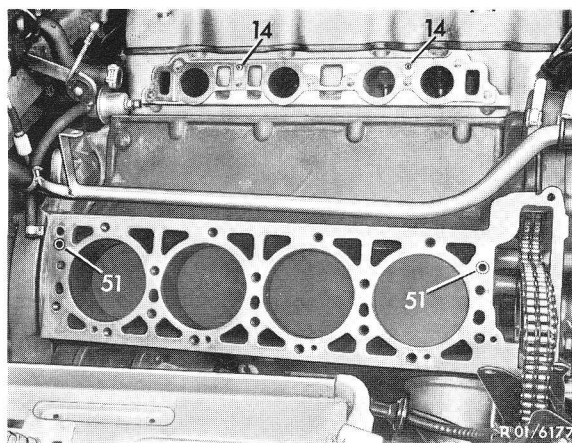


Fig. 4

- 14 Hollow dowel pins — suction pipe
- 15 Hollow dowel pins — cylinder head

11 LC: Remove high pressure oil pump with carrier by also removing ignition distributor.

12 Unscrew exhaust system.

- 13 RC: Remove chain tensioner (05.1–240).
- 14 Remove cylinder head covers.
- 15 **Mark camshaft gear and chain.** Loosen camshaft gear and remove.
- 16 Remove upper slide rails (05.1–255).
- 17 Unscrew cylinder head bolts in reverse sequence of tightening diagram, that is, start at the rear (Fig. 5).

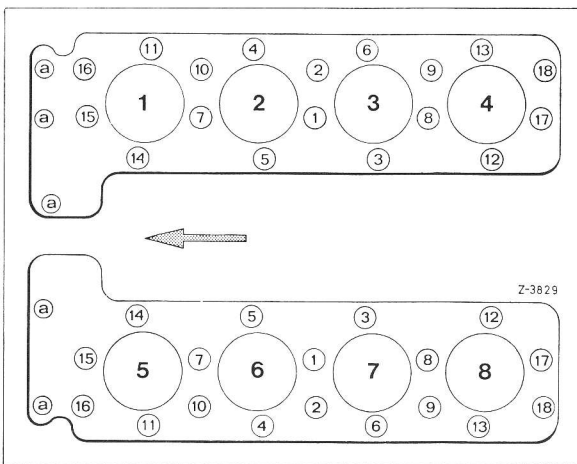


Fig. 5

Caution! Loosening and tightening of cylinder head bolts requires three different types of spanners (Fig. 6, 7 and 8).

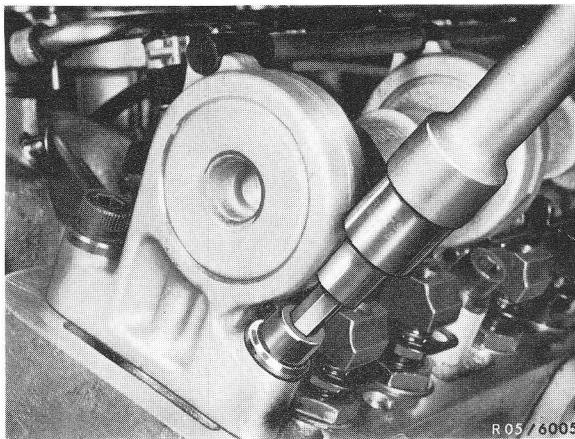


Fig. 6
Socket spanner insert 8 mm

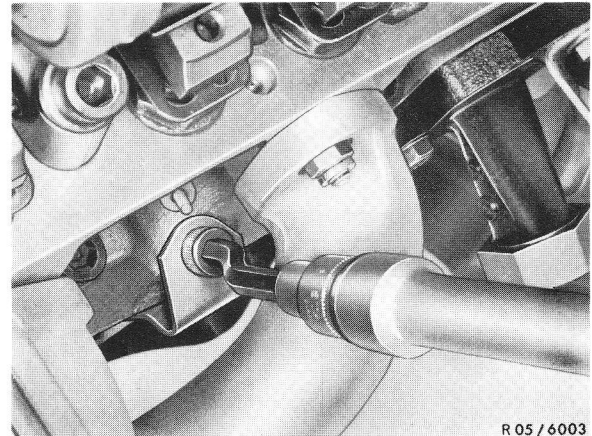


Fig. 7
Socket spanner insert 8 mm offset

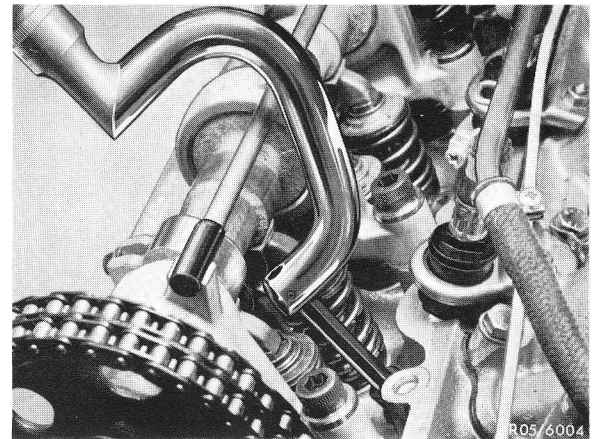


Fig. 8
Special spanner 8 mm

Tighten M 8 bolts "a" (Fig. 5) manually with spanner (approx. 2.5 kpm).

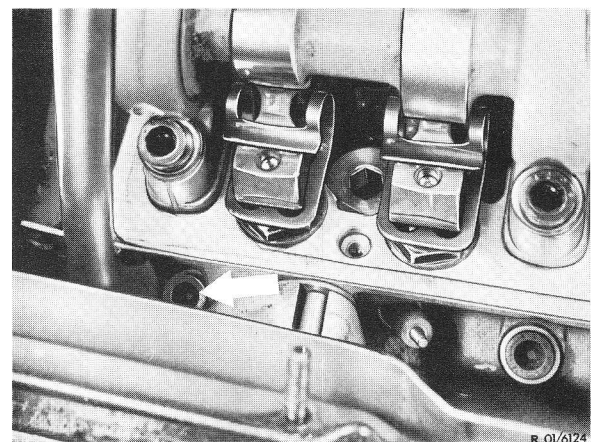


Fig. 9

05.1 Removal and Installation of Cylinder Head

To obtain access to cylinder head bolt (Fig. 9) in the automatic transmission, the oil filler tube for the transmission must be pushed aside.

18 Remove cylinder head. When removing the righthand cylinder head, push tensioning rail with double roller chain toward center of engine so that the tensioning rail will not be caught (Fig. 10).

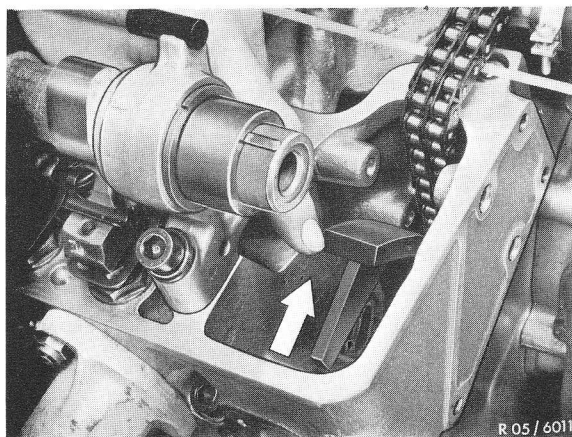


Fig. 10

19 Carefully clean parting surfaces on cylinder head and cylinder crankcase.

Installation

20 Position new cylinder head gasket.

Caution! Do not mix up cylinder head gaskets. The **lefthand** cylinder head has **two** fastening holes on timing housing and the **righthand** head **three** (Fig. 11).

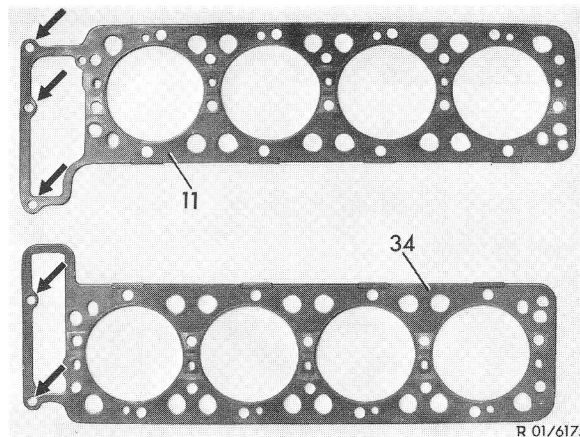


Fig. 11

11 Righthand cylinder head gasket

34 Lefthand cylinder head gasket

21 Position cylinder head. Lubricate cylinder head bolts well on threads and on bolt head contact surface. Tighten cylinder head bolts in steps in the sequence of the tightening diagram (Fig. 5) and to specified torque.

22 For installation proceed vice versa to removal.

23 Check valve clearance (05.1—210).

24 Start engine and check for leaks.

26 Tighten cylinder head bolts after reaching 80°C cooling water temperature.

27 Tighten cylinder head bolts after driving approx. 500 km and check valve clearance (05.1—210).