

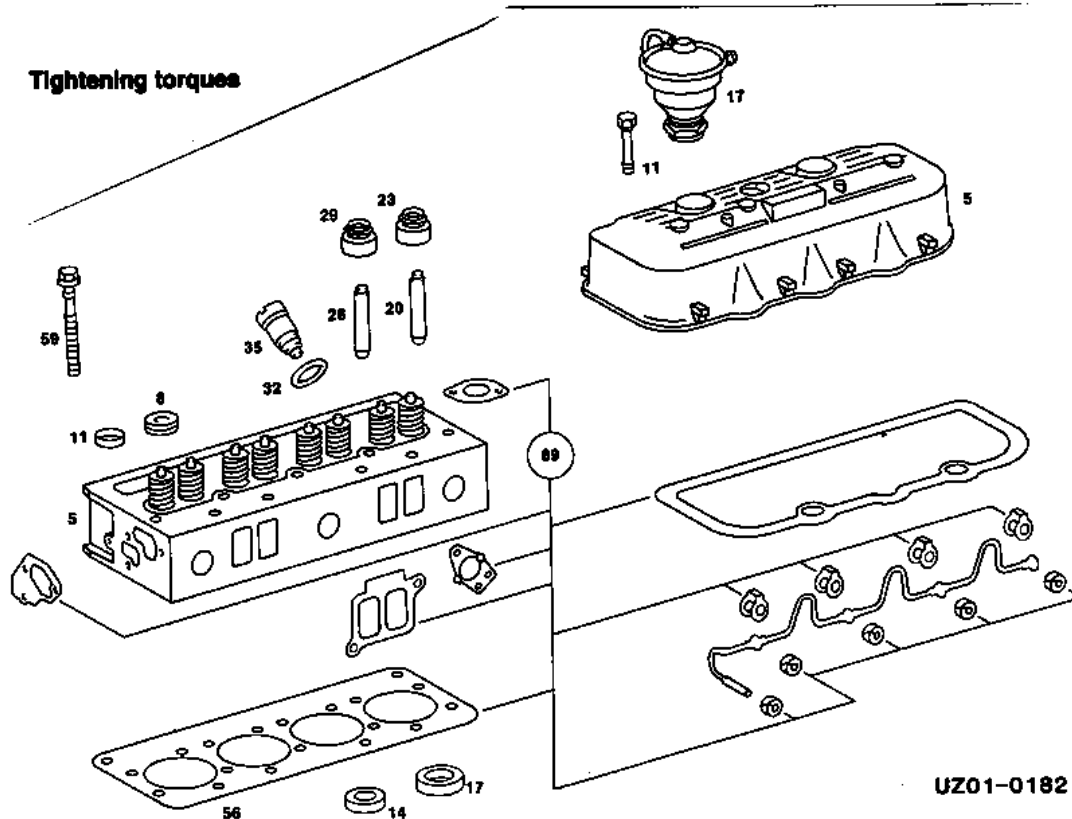
## Technical data

Shank length of the cylinder head bolts	Hexagon bolts	mm	max. 112
	Twelve-point headed bolts	mm	max. 113
Valve clearance with cold engine (under 50°C)	Inlet	mm	0,40
	Exhaust	mm	0,60

## Expendable materials

Cons. No.	Designation	Part Number
3	Locking agent: Loctite 221	002 989 69 71

## Tightening torques



Cons. No.	Designation	Thread	Nm	Torquing angle
59	<b>Tighten cylinder head bolts in 4 stages.</b>	M 12		
	1st stage		60	
	2nd stage		90	
	3rd stage		120	
	4th stage		—	90°
Tightening after warm-up or during 1st service omitted. permissible elongation up to max. 113 mm				

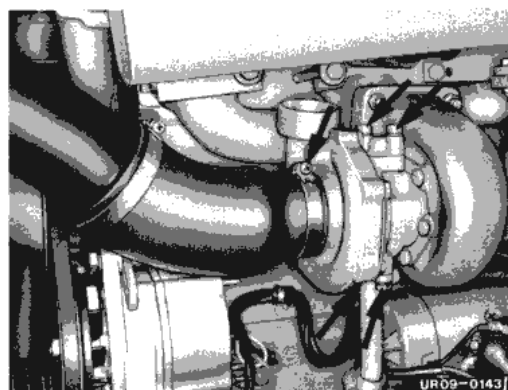
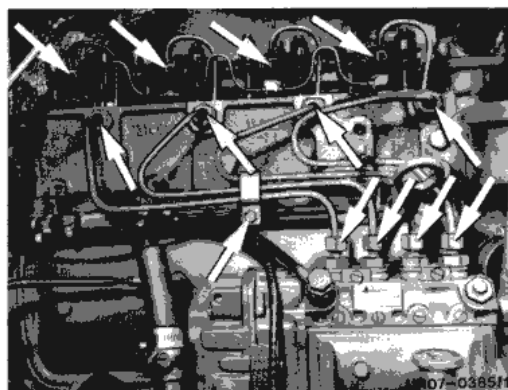
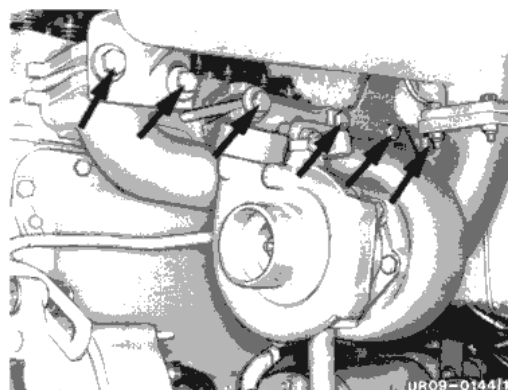
## Tightening torques

Cons. No.	Designation	Thread	Nm
–	Injection nozzle, start pilot – A, LA engine	M 10	20
–	Cylinder head cover to cylinder head	M 8	25
–	Rocker arm bearing bracket, complete to cylinder head	M 12	100
–	Pressure and leakage oil line to cylinder head	M 16	10
–	Pressure line to injection pump	M 12	25

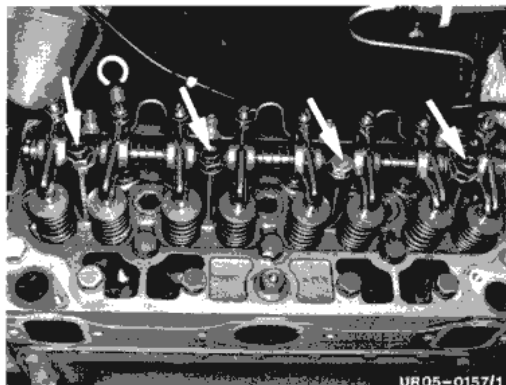
## X5 Removal

## 01G22 Preceding jobs

01/3 – Drain coolant.

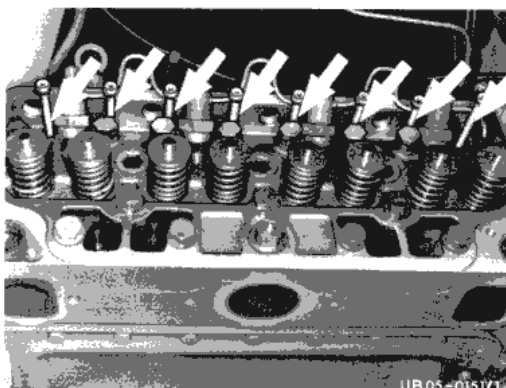
01H018 **Note:** Make sure that engine is cold. Removal is similar for all engine models.05/001 **1** Remove cylinder head cover, see 3.1/1 (K 03).01/1389 **2** If necessary detach coolant compressor lines, fuel lines, mounts, cable binders etc.01/1390 **3** With installed cold start reservoir detach reservoir with mount and lines.07/443 **4** Remove injection lines.01/1391 **5** Detach intake pipe, detach oil supply and return line on turbocharger and plug bores.01/958 **6** Detach exhaust manifold from cylinder head.01H245 **Note:** With A or LA engine, detach turbocharger with exhaust manifold or charge air manifold..T  
01.24.1/2  
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- 01/959 **7** Remove rocker arm brackets with rocker arm shaft and rocker arm.



- 01/093 **8** Remove pushrods with care.

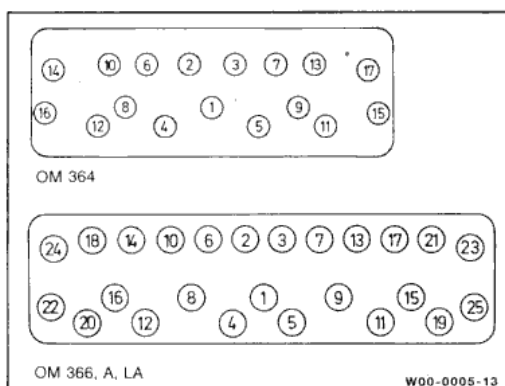
01H020 **Note:** In order to prevent withdrawal of the tappets from the guides, first release the tappets by quickly moving the pushrods up and down.



- 01/094 **9** Unscrew all cylinder head nuts or cylinder head bolts in opposite order to tightening diagram.

01G23 **Valid for 366, A, LA**

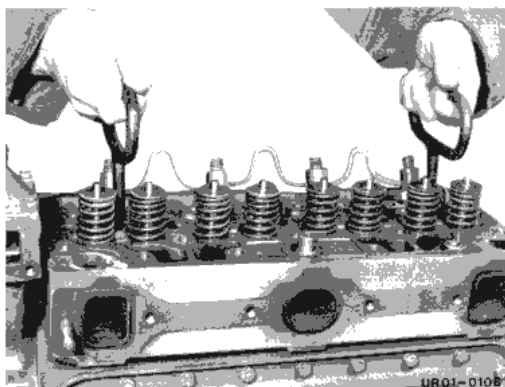
01/1392 From engine end no. 071 684 cylinder head bolts with twelve-point head are installed. The twelve-point headed bolts can be subsequently interchanged with all engines.



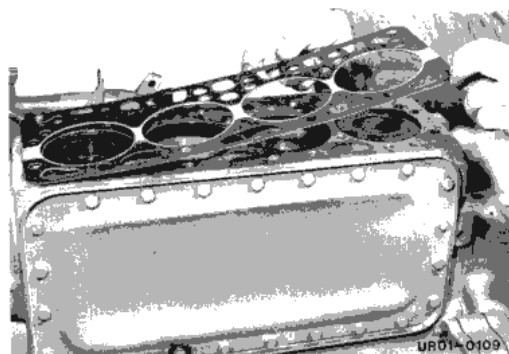
- 01/970 **10** Lift off cylinder head.

01H022 **Important!** Deposit cylinder head so that no damage is done to injection nozzles.

- 01/146 **11** Disassemble cylinder head, see 5.1/1 (K 04).

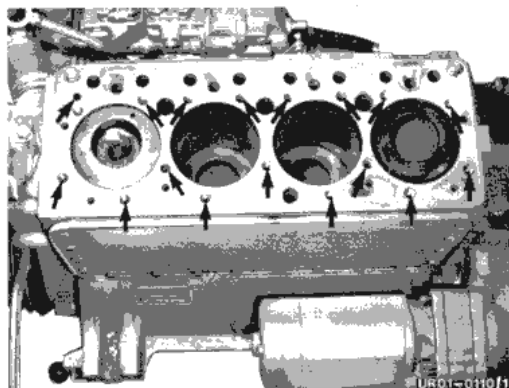


01/343 **12** Remove cylinder head gasket.



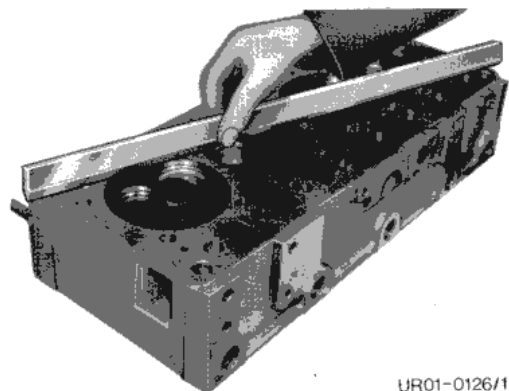
01/097 **13** Clean cylinder head and crankcase parting surfaces.

01H023 **Important!**  
Blind holes in crankcase must **not** show any signs of dirt or oil.



01/971 **14** Check mating surfaces with straightedge. Permissible unevenness over a length of 150 mm max. 0.04 mm or over the entire length max. 0.15 mm.

01H024 **Note:** Twisted or damaged mating surfaces are refaced in which case the required surface roughness of 0,008 to 0,016 mm should be maintained. Disassemble cylinder head, see 5.1/1 (K 04). Reface cylinder head, see 5.2/1 (A 05).



## X6 Installation

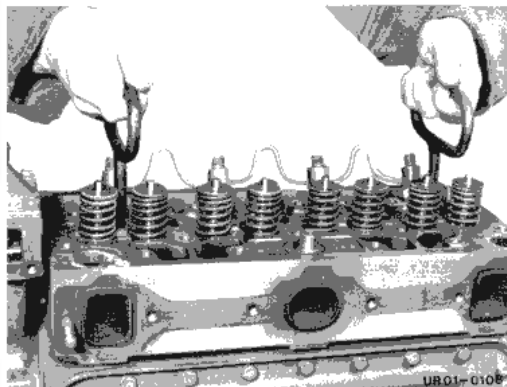
01/099 **1** Position new cylinder gasket on crankcase, with lettering pointing **upwards**.



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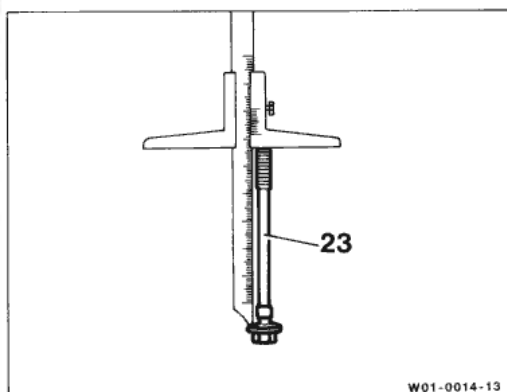
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- 01/100 **2** Mount cylinder head on crankcase.



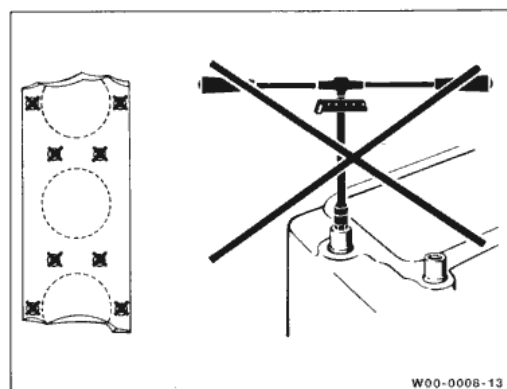
- 01/1393 **3** Check shank length of the cylinder head bolts.

01/1400 Twelve-point headed bolts  
permissible elongation up to max. 113 mm.



01H246 **Note:** When renewing the cylinder head bolts only install twelve-point headed bolts. Observe new tightening specifications.

- 01/1394 — Apply information plate to the cylinder head cover.

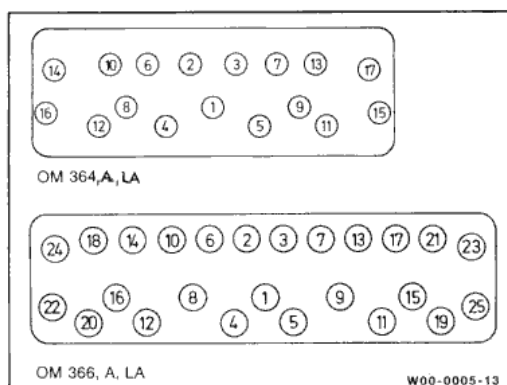


- 01/1395 **4** Lightly oil cylinder head bolts, screw in and tighten in the specified sequence in the following stages.

01/1399 Twelve-point headed bolt:

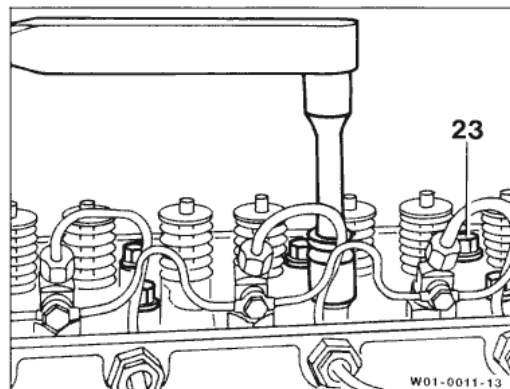
1st stage 60 Nm.  
2nd stage 90 Nm.  
3rd stage 120 Nm.  
4th stage 90° tightening angle.

**Retightening is omitted.**



01H247

**Note:** If the tightening value is exceeded with a cylinder head bolt, remove the cylinder head bolt, check elongation and tighten, starting at stage 1.

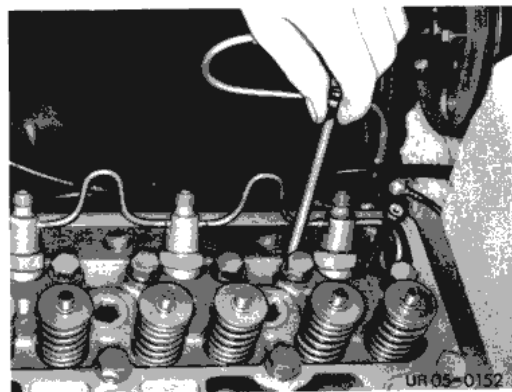


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**5** Install pushrods.

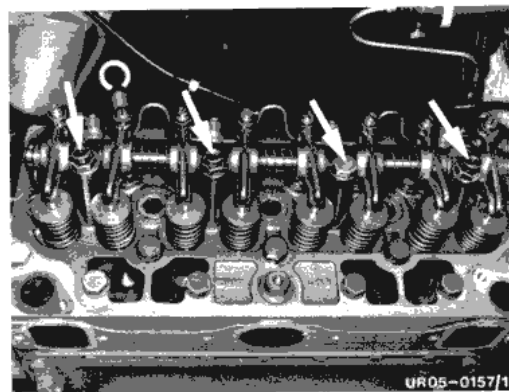
01H248

**Note:** Oil tappet bearings with engine oil.



01/106

**6** Install rocker arm brackets with rocker arm shafts and rocker arm, loosen valve adjusting screws and tighten rocker arm brackets to 100 Nm.



01/107

**7** Install connecting nipple and spring.

01H31

**Note:** Install connecting nipple with small inside diameter in direction of travel. Check for correct seat.

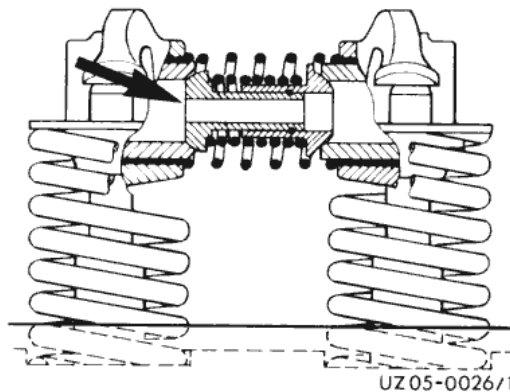
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**Valid for 366, A, LA**

01/1401

**8** Adjust valve clearance.

Intake valve	0,40 mm
Exhaust valve	0,60 mm



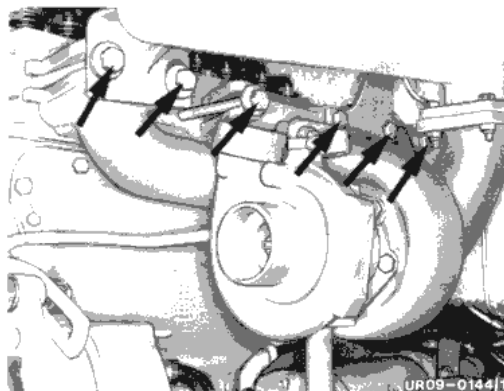
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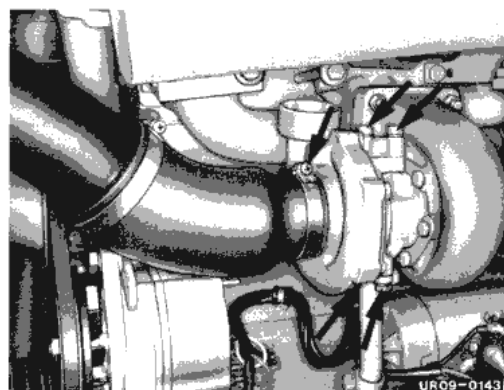
- 01/1396 **9** Attach exhaust manifold to cylinder head and tighten to 50 Nm or 30 Nm.

01H249 **Note:** With turbocharger attach with exhaust manifold or charge air manifold.

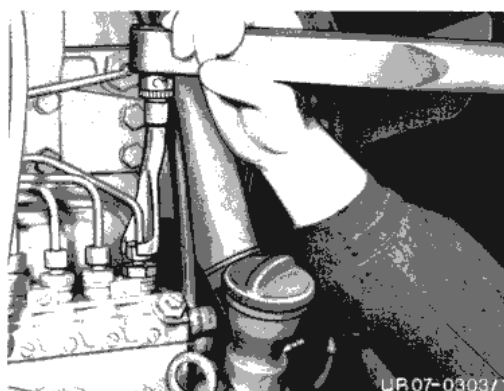


- 01/355 **10** Attach intake pipe.

01H250 **Note:** With A, LA engine attach oil supply and return line to turbocharger.

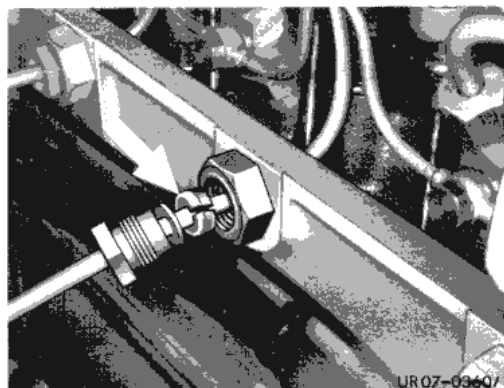


- 01/543 **11** Attach injection lines and tighten to 25 Nm.



- 01/977 **12** Tighten injection lines, install screw plug (size 24) with sealing compound no. 3. Renew rubber seals on the leadthrough and tighten screw plug (size 17) to 10 Nm.

- 01/1397 **13** Attach coolant lines, compressor lines, fuel lines, mounts.



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4.1/7  
4.1/7

**06/6**     **14** Fit cylinder head cover,  
see 3.1/1 (K 03).

**01/1408**   **15** Fill with coolant. Check cooling system for  
leaks.

**01H11**     **Note:** The reservoir ought to be 2 thirds full.

**07/724**     **16** Bleed fuel system.