

Removing and installing cylinder head

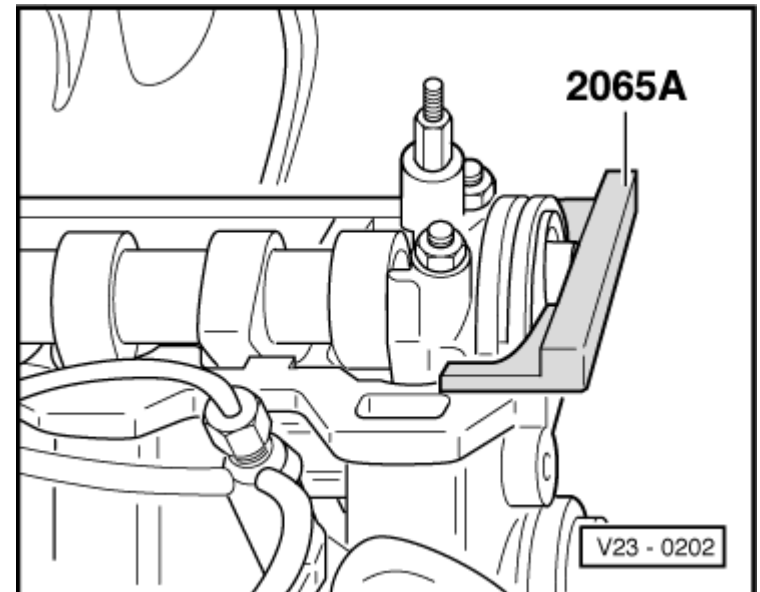
Installing cylinder head

Notes:

- Replace the cylinder head bolts.
- When performing repairs, replace seals, gaskets, self-locking nuts and bolts which have a specified tightening angle.
- If repairing, carefully remove any remains of gasket material from the cylinder head and cylinder block. Make sure that no long scores or scratches are made on the surfaces.
- Carefully remove any remaining emery and abrasive material.
- No oil or coolant must be allowed to remain in the blind holes for the cylinder head bolts in the cylinder head.
- Remove new cylinder head gasket from packaging, just before installation.
- Handle gasket extremely carefully. Damaging the silicone layer or the indented area will lead to leaks.
- After working on the valve gear, turn the engine carefully at least 2 rotations to ensure that none of the valves make contact when the starter is operated.
- Hose connections and hoses for charge air system must be free of oil and grease before assembly. Lubricants must never be used.

Procedure

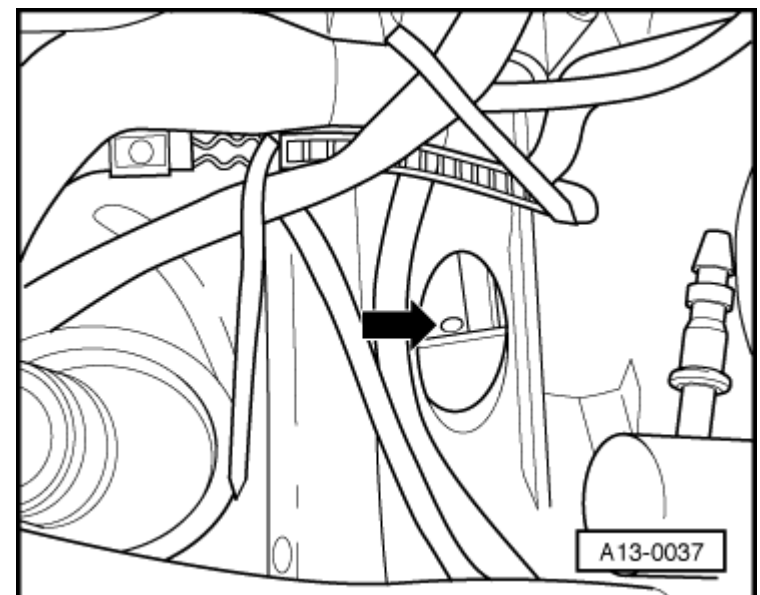
- Before positioning cylinder head, set crankshaft and camshaft to TDC of No. 1 cylinder. It must be possible to insert setting bar 2065 A in the camshaft...



- ...and the TDC mark -arrow- must be at the reference edge.

Note:

Illustration shows vehicle with manual gearbox.

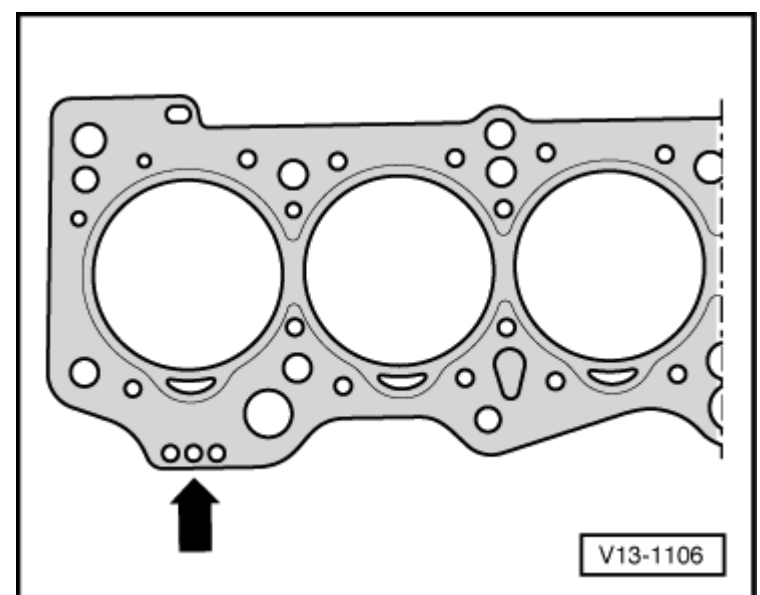


- Note markings on cylinder head gasket.

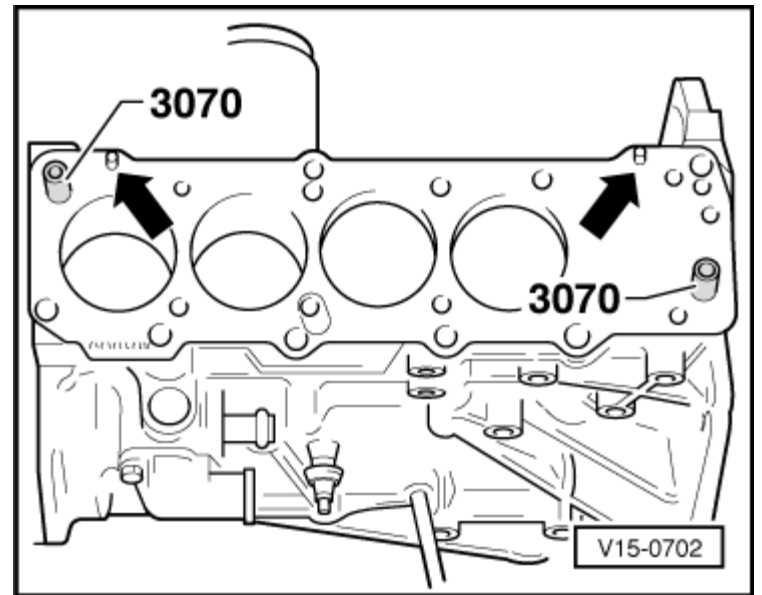
- Holes or notches = arrow

Notes:

- If the cylinder head gasket or the cylinder head has been replaced, select a new gasket according to the number of holes or notches on the old gasket.
- If parts of the crank assembly have been replaced, the new cylinder head gasket must be selected by measuring the piston projection at TDC => Page [13-68](#).



- To centre, screw guide pins from 3070 into holes for cylinder head bolts 9 and 10.
- Place cylinder head gasket in position.
 - Note position of centralising pins in cylinder block -arrows-.
 - Check installation position of cylinder head gasket: mark "top" or the part No. must face cylinder head.
- Position cylinder head.
- Fit 10 cylinder head bolts and tighten by hand.



- Unscrew guide pins with removal tool from 3070 through bolt holes in cylinder head and install remaining cylinder head bolts.
- Tighten cylinder head bolts in four stages in sequence shown as follows:
- Tighten using torque wrench:
 - 1st Stage: 40 Nm
 - 2nd Stage: 60 Nm
- Tighten with rigid wrench:
 - 3rd Stage: 90°(1/4 turn) further
 - 4th Stage: 90°(1/4 turn) further

Note:

It is not necessary to retighten cylinder head bolts after repairs have been performed.

- Install toothed belt (adjust valve timing) => Page [13-26](#)

Note:

Observe all instructions on removing and installing the toothed belt =>from Page [13-21](#)

- Install cylinder head cover => Page [15-8](#)
- Install ribbed belt =>Page [13-10](#)
- Installation and stress-free alignment of exhaust system =>Page [26-24](#)
- Replace coolant => Page [19-12](#)

Note:

When the battery is reconnected make sure that the vehicle equipment (radio, clock, electrical window lifter) is activated according to the operating instructions.

- Check commencement of injection of injection pump:

=> [Diesel Direct Injection and Glow Plug System \(TDI 5-cylinder\); Repair group 23; Servicing diesel direct injection system](#)

Tightening torques

Component	Nm
Front exhaust pipe to turbocharger	30
Front exhaust pipe to gearbox	25
Injector pipes to injectors/injection pump	25
Oil supply pipe to turbocharger	25
Oil return pipe to turbocharger	30
Hose clamps for coolant hoses	2
Hose clamps for air duct hoses	3.5

