

11 12 100

**Removing and
installing cylinder
head (M57)****Special tools required:**

- [00 2 530](#)
- [00 9 120](#)
- [11 2 300](#)
- [11 3 340](#)
- [11 6 050](#)
- [11 6 321](#)
- [11 6 322](#)
- [11 6 480](#)
- [13 5 020](#)

**Necessary preliminary tasks:**

[Instructions for disconnecting and connecting battery.](#)

Disconnect battery negative terminal.

Remove cylinder head cover.

Remove [A/C compressor drive belt](#).

Remove [alternator drive belt](#).

[Drain coolant.](#)

[Remove](#) vacuum pump.

**Important!**

When working on the oil, coolant or fuel circuit, you must protect the alternator against contamination.

Cover alternator with suitable materials.

Failure to comply with this procedure may result in an alternator malfunction.

If the charge air hoses are not fitted dry and without grease, this will result in supercharger failure.

Fit charge air hoses dry and without grease.

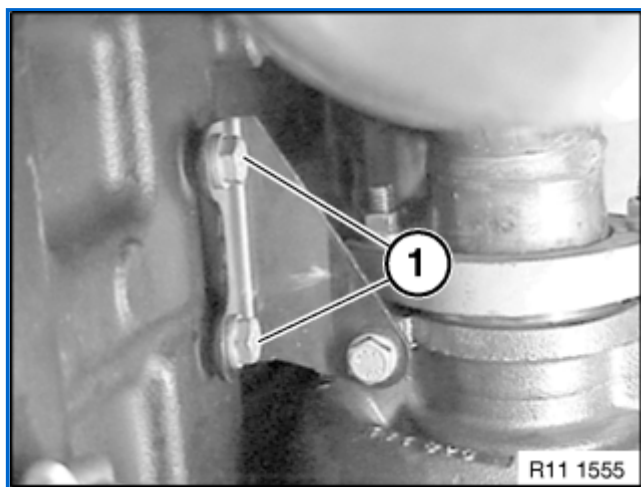
**Removal:**

Removal of cylinder head is described separately from installation. Assembly sequence for removal and installation is different.

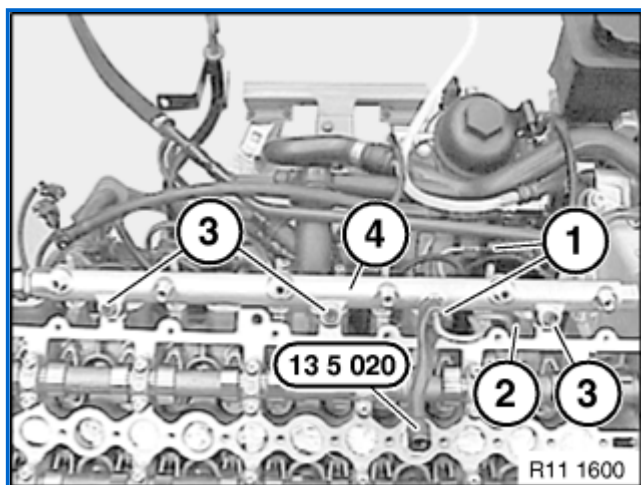
Note:

Some illustrations show the engine removed.

Remove engine shield at bottom.



Slacken screws (1) on turbocharger holder.



Detach pressure line (1) with special tool [13 5 020](#).

Tightening torque [13 53 8AZ](#).

Installation note:

Make sure rubber mount (2) is correctly positioned.

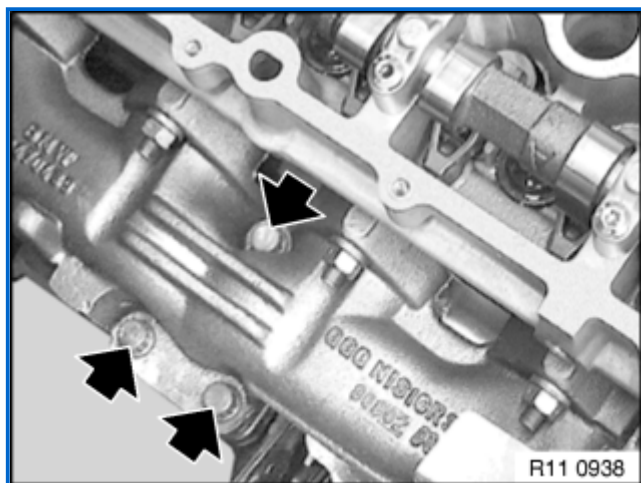
Release screws (3).

Remove pressure accumulator (4).

Detach exhaust turbocharger from exhaust manifold.

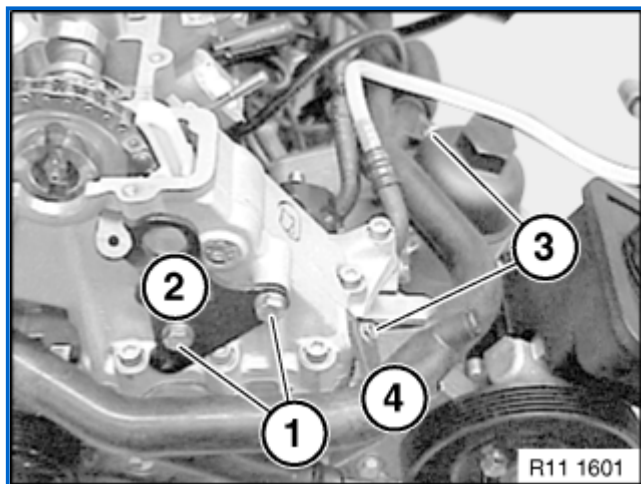
Installation note:

Replace gasket.



Coat threads with copper paste.

Tightening torque [11 65 1AZ](#).

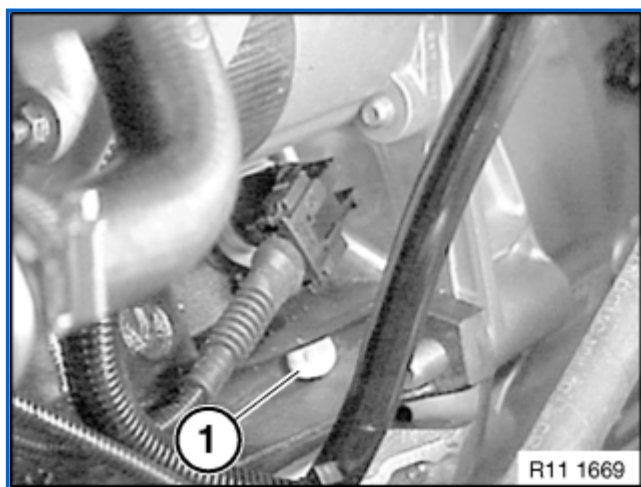


Release screws (1).

Remove suspension element (2).

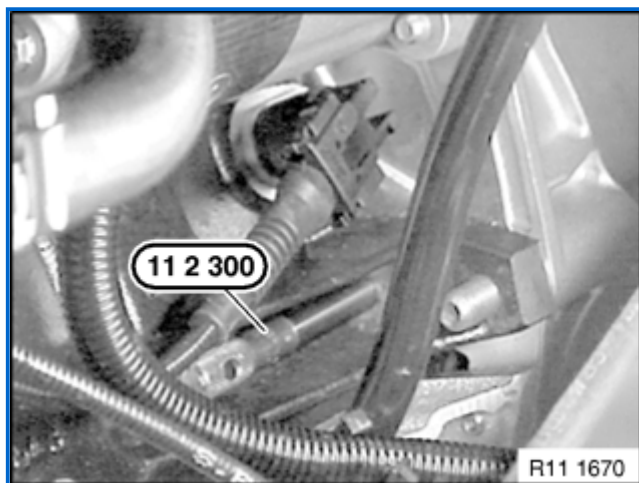
Release screws (3).

Remove return pipe (4).

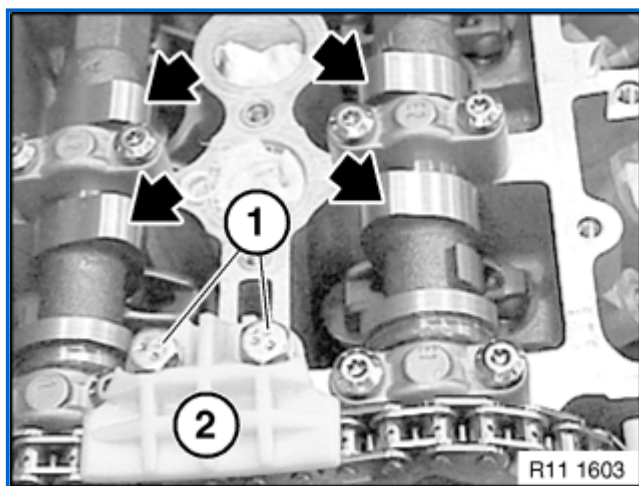


Pull out protective cap (1) at rear of crankcase underneath starter motor.

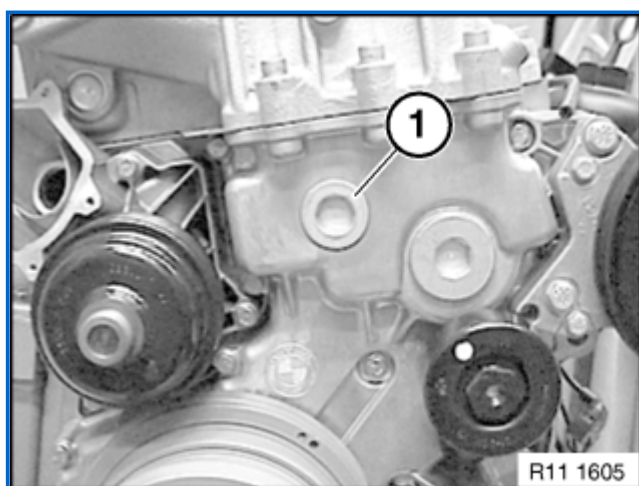
Crank engine with special tool [11 6 480](#) at front vibration damper in direction of rotation.



Lock engine with cylinder no. 1 at TDC firing position.
Insert special tool [11 2 300](#) for this purpose.

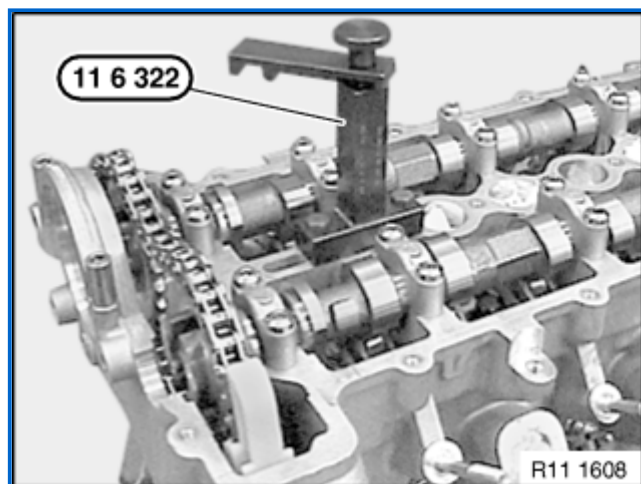
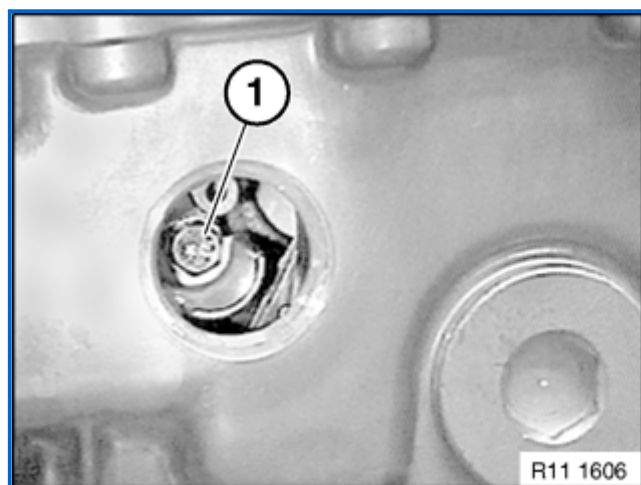


The cam peaks of cylinder no. 1 must point to each other (see arrows).
Release screws (1).
Remove guide rail (2).

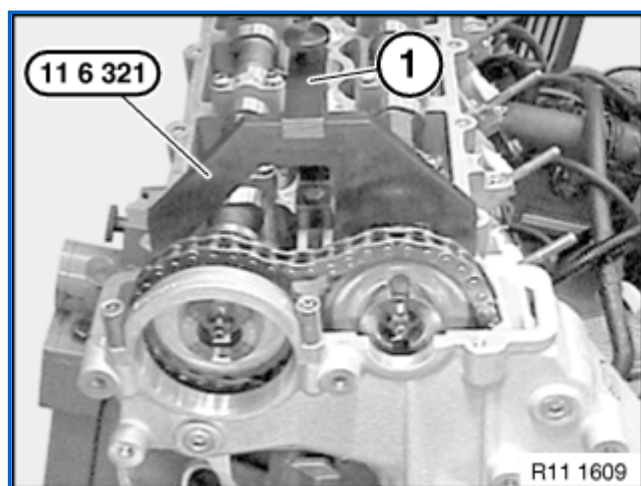


Open screw plug (1).

Slacken screw (1) of hydraulic chain tensioner (for reducing oil pressure).

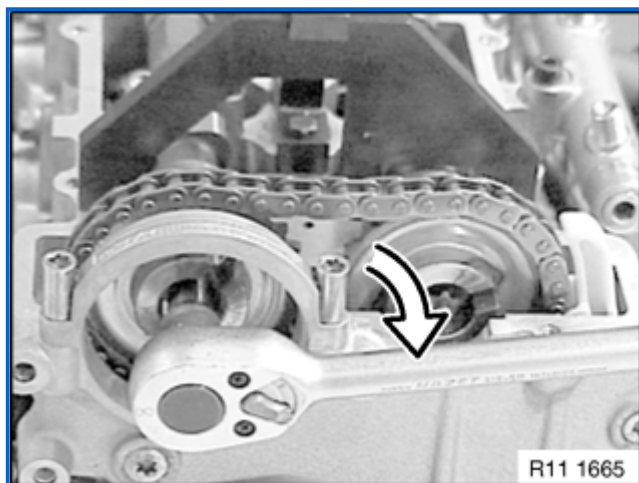


Fit special tool [11 6 322](#) on cylinder head.

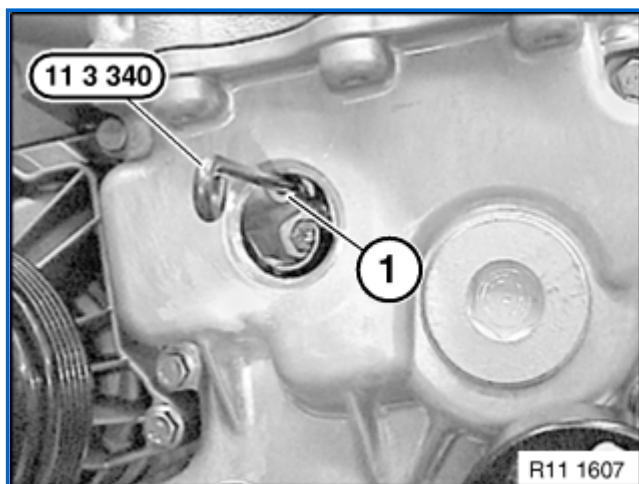


Position special tool [11 6 321](#) on intake camshaft and secure with special tool [11 6 322](#).

Slowly and carefully rotate exhaust camshaft at Torx screw in direction of rotation until the



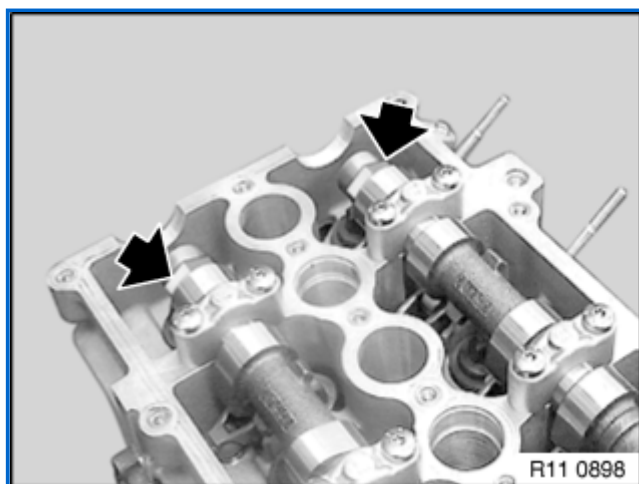
hydraulic chain tensioner is compressed.



Insert special tool [11 3 340](#) in the chain tensioner (1).

Note:

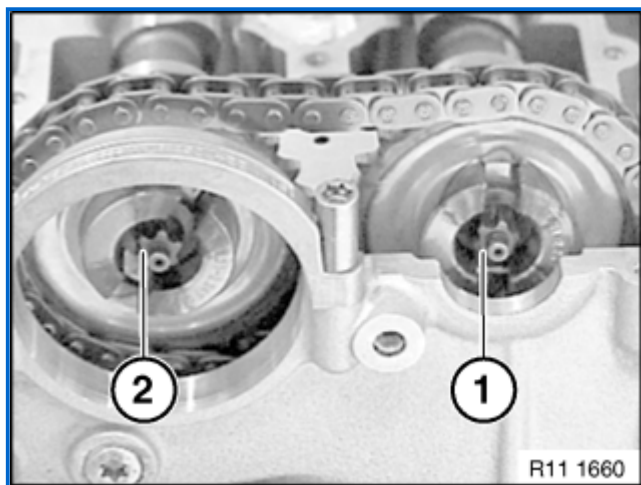
If one or both camshaft sprockets are removed without the hydraulic chain tensioner being locked, the chain tensioner piston will slip out and can then only be pressed back again with a considerable amount of effort.



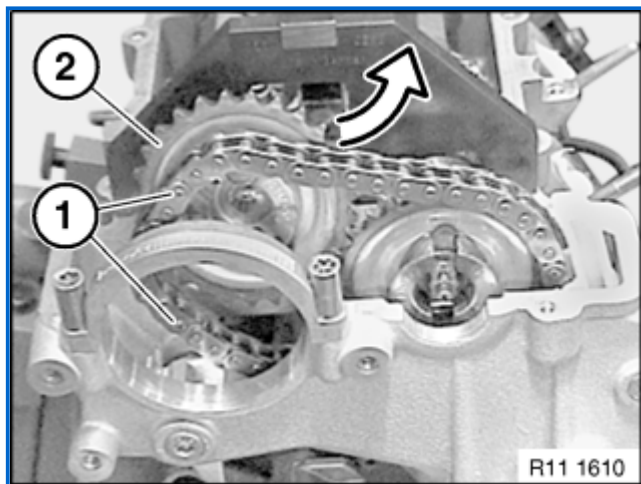
When releasing the camshaft screw connection:

Grip the camshafts at the hexagon head.

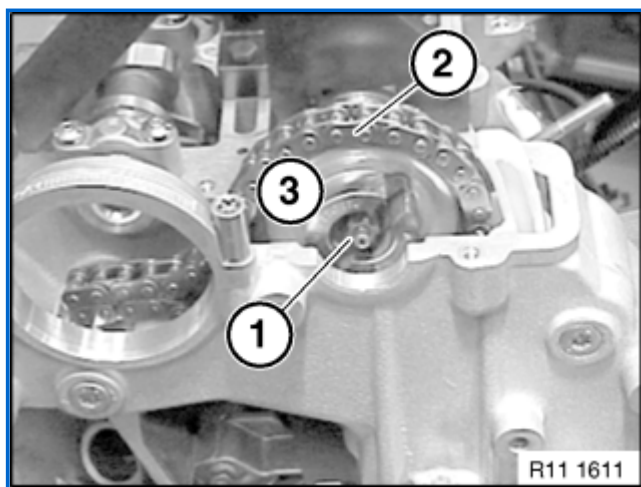
- Slacken screw (1) on intake camshaft



- Slacken screw (2) on exhaust camshaft
- Remove screw (2) on exhaust camshaft

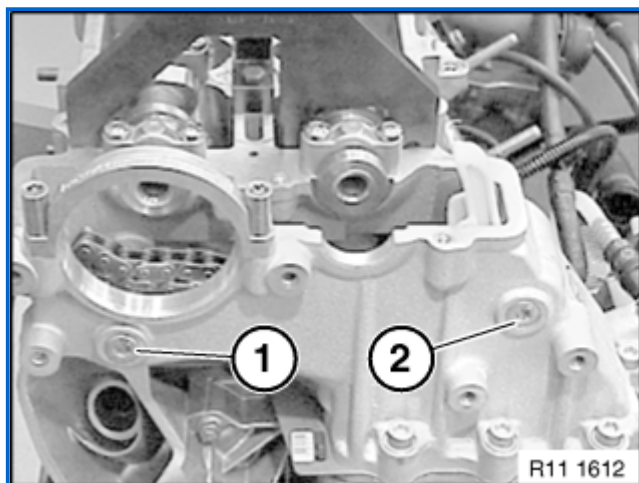


Slide exhaust sprocket wheel forwards.
Lift timing chain (1) over exhaust sprocket wheel.
Remove exhaust sprocket wheel (2) in direction of arrow.

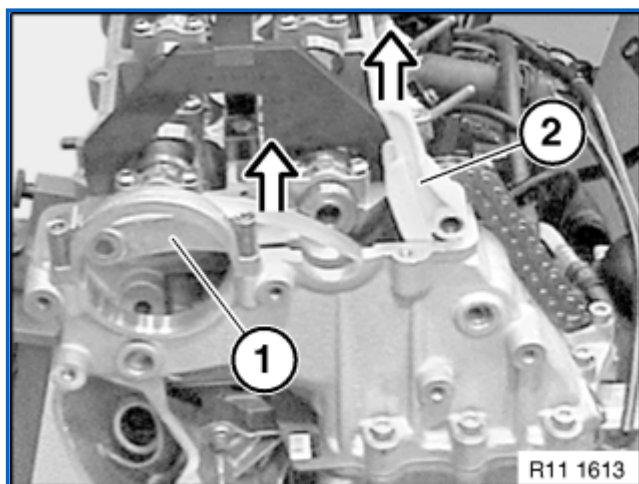


Remove bolt (1).
Lift timing chain (2) over intake sprocket wheel.
Remove intake sprocket wheel (3).

Release bearing pin (1) on tensioning rail.
Release bearing pin (2) on guide rail.

**Installation note:**

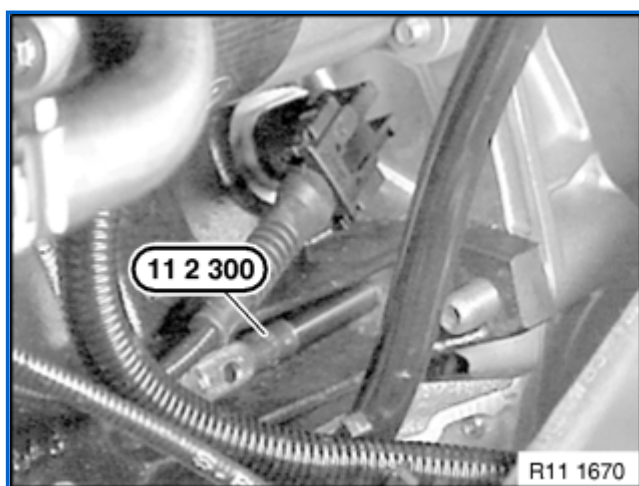
The bearing pins are micro-encapsulated and must be replaced.



Remove tensioning rail (1) in upward direction.

Pull out guide rail (2) in upward direction.

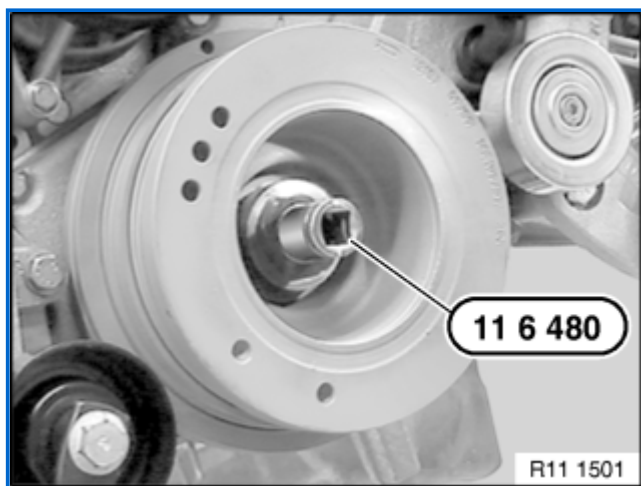
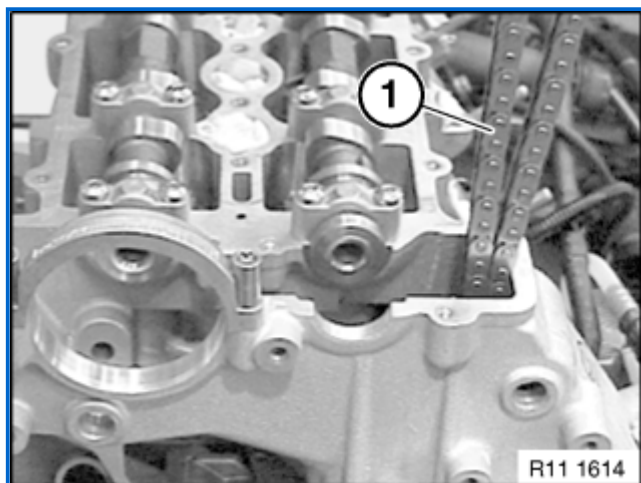
Remove special tool [11 6 321/11 6 322](#).

**Important!**

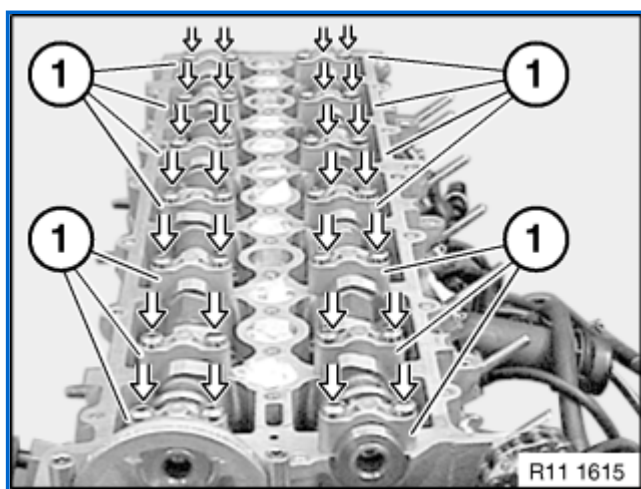
To eliminate the risk of the valves being damaged when the camshafts are subsequently fitted, make sure that none of the pistons is at TDC.

Pull out special tool [11 2 300](#).

Pull up timing chain (1) and hold taut so that the engine can be cranked.



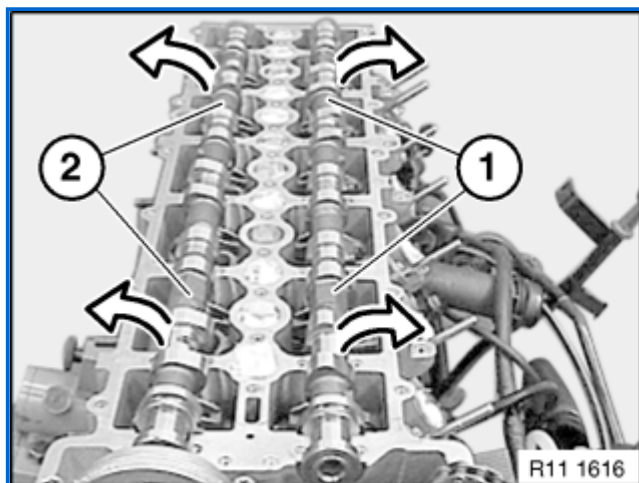
Crank engine at front vibration damper with special tool [11 6 480](#) approx. 45° against direction of rotation.



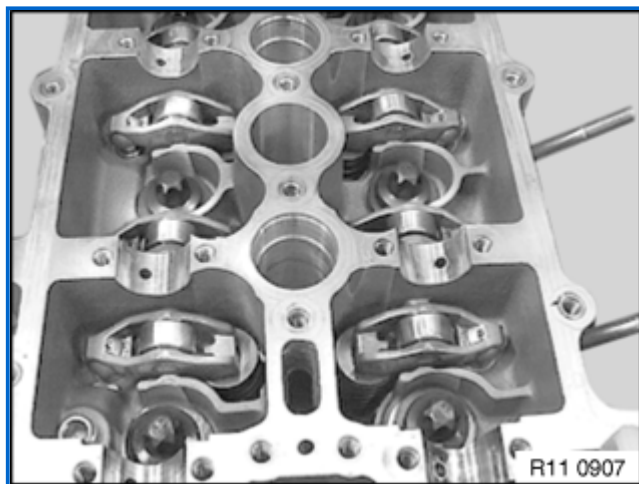
Release screws of camshaft bearing caps (1) in 1/2 revolution increments evenly from outside to inside.

Remove bearing caps and set down in order.

Remove intake camshaft (1) and carefully set down.

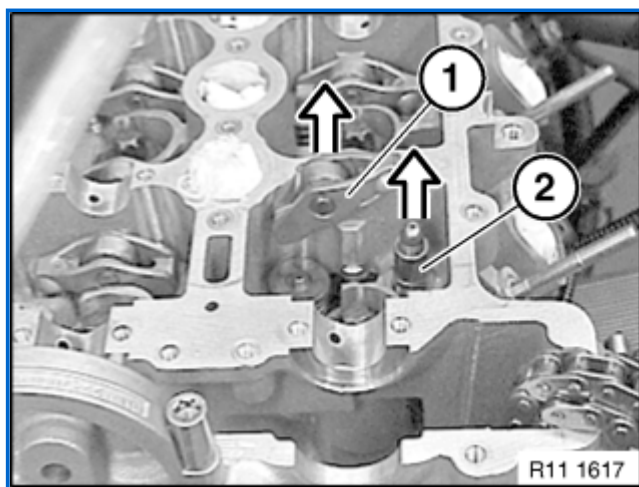


Remove exhaust camshaft (2) and carefully set down.



Note:

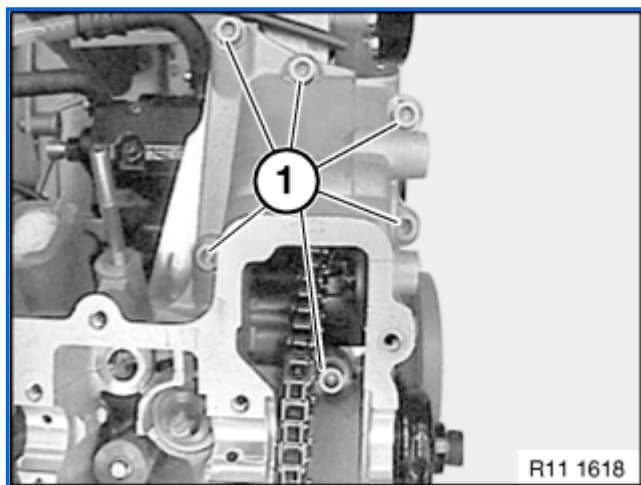
Worn rocker arms may only be reused on the same grooves of the camshaft.



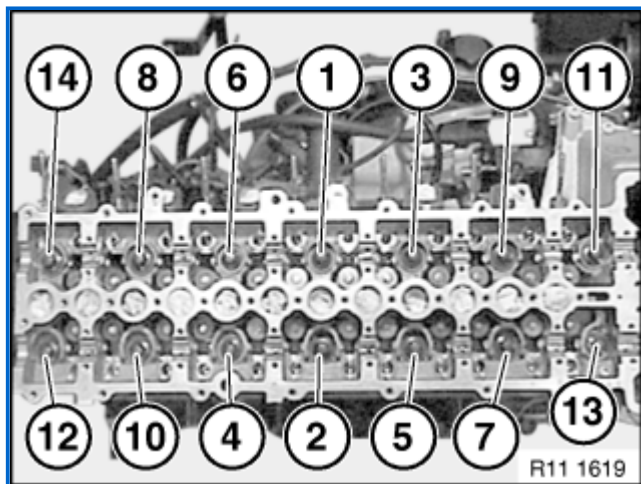
Remove all rocker arms (1) and set down in order.

Remove all valve clearance compensating elements (2) and set down in order.

Release screws (1).



Replace cylinder head bolts.



Unfasten cylinder head bolts from outside to inside in following sequence 14 ... 1.

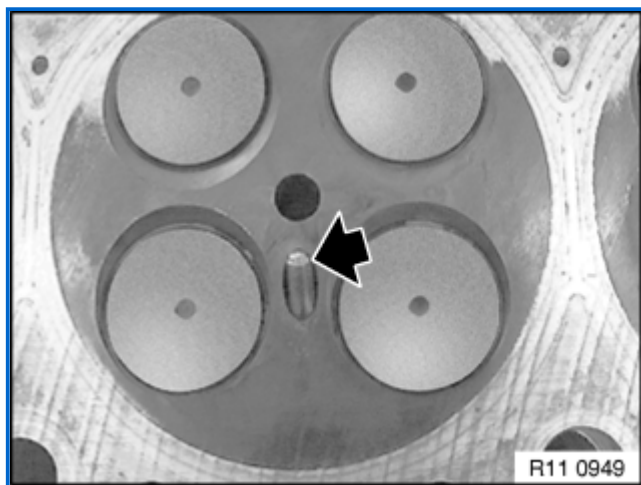
Installation note:

Fit new cylinder head bolts.

Important!

The glow elements protrude at the sealing surface and may be damaged when the cylinder head is put down.

Remove cylinder head and set down in such a way that glow elements are not damaged.



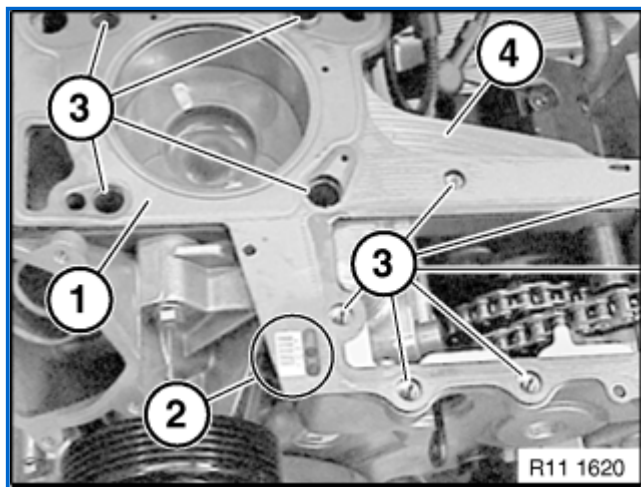
If necessary, remove glow elements with special tool [11 6 050](#).

Note:

Special tools [11 6 050](#) which were delivered prior to 4/98 must be drilled out with 9.5 mm dia. 20 mm deep.

Installation note:

Tightening torque [12 23 2AZ](#).



Remove cylinder head gasket (1).

Observe number of holes (2) of cylinder head gasket.

Remove all traces of oil and coolant from all blind hole threaded holes (3) in crankcase.

Clean sealing surface (4).



Installation:

Installation of cylinder head is described separately from removal. The assembly sequence differs between removal and

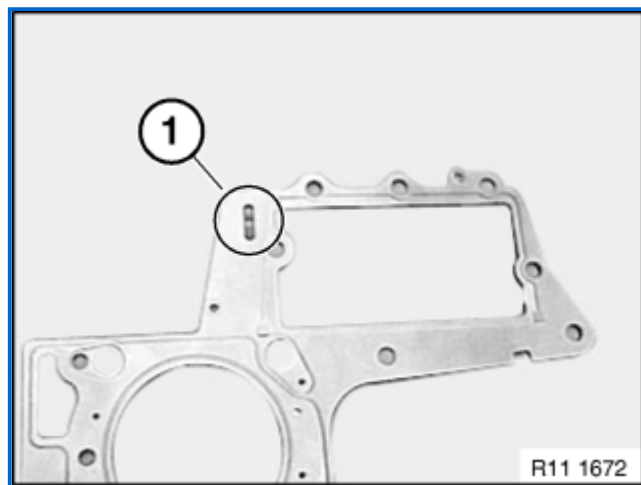
installation.

Note:

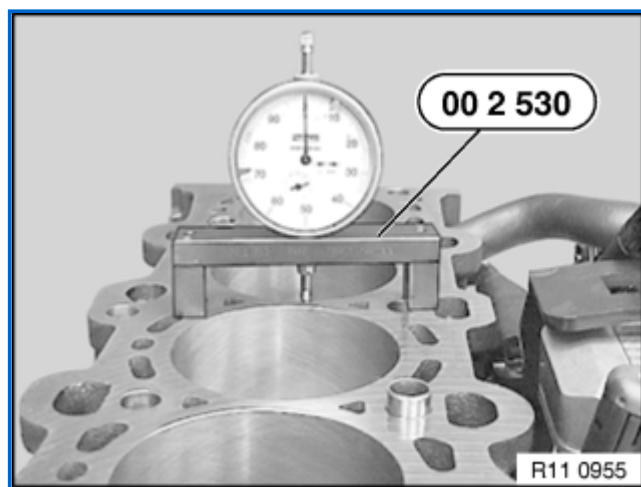
Clean sealing surface of cylinder head and engine block.

Remove gasket remnants with hardwood scraper.

Do not allow any gasket remnants to fall into the oilways and coolant ducts.



Without work on the engine block which alters the piston protrusion, use a new cylinder head gasket with the same thickness marking (1) (number of holes).



If work has been carried out on the crank drive or piston, the gasket thickness must be redetermined.

Measuring the piston protrusion:

Fit dial gauge with measuring fixture special tool [00 2 530](#) on cleaned cylinder head lower face and set to zero under preload.

Clean piston at measuring points (1 and 2).

Fit dial gauge at measuring point (1) on cleaned piston and determine highest point by rotating crankshaft.

...The complete Manual is in:

<https://manuales-taller.sellfy.store/p/bmw-m57-diesel-engine-workshop-repair-manual-de-taller/>

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