11 00 039 Checking compression of all cylinders (N57)

Special tools required:

- 11 0 235
- 11 8 880

Necessary preliminary work:

- Remove all glow elements.

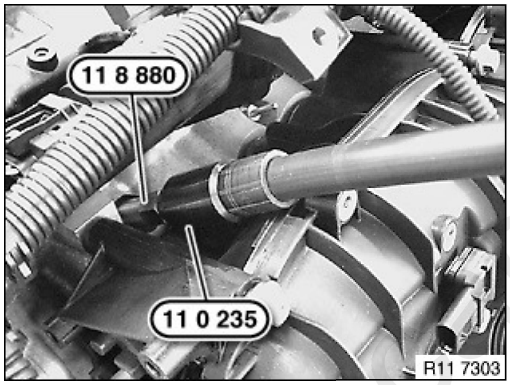
Warning!

On vehicles with manual gearbox:

There must be no drive position engaged during the starting operation.

Important!

To prevent the injection system from injecting, it is necessary to disconnect the injection system plug connections.



Screw in special tools 11 8 880 and 11 0 235 .*Note:*
The compression check on all cylinders must have a constant battery voltage. If necessary, connect an auxiliary battery.

The number of engine revolutions must be the same for each cylinder during the compression check (the measuring result could be distorted).

Compression pressure.

Assemble engine.

Clear DDE fault memory.

Check function of DDE.

00 Danger of injury if oil comes into contact with eyes and skin



Danger of injury!

Contact with eyes or skin may result in injury!

Possible symptoms are:

- Impaired sight
- Irritation of the eyes
- Reddening of the skin
- Rough and cracked skin



Protective measures/rules of conduct:

- Wear safety goggles.
- Wear oil-resistant protective gloves.
- Observe country-specific safety regulations.



First aid measures:

- Eye contact: Immediately flush eyes with lots of water for at least 15 minutes. In the case that it is available, use an eye wash bottle. If eye irritation persists, consult a doctor.
- Skin contact: Wash off with soap and water immediately. If irritation persists, consult a doctor.

  Note: Do not use solvents/thinners.

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00 Danger of poisoning if oil is ingested/absorbed through the skin



Danger of poisoning!

Ingesting oil or absorbing through the skin may cause poisoning!

Possible symptoms are:

- Headaches
- Dizziness
- Stomach aches
- Vomiting
- Diarrhoea
- Cramps/fits
- Unconsciousness



Protective measures/rules of conduct:

- Fill oil in appropriately marked containers only.
- Do not fill oil in containers meant for drinking out of. (bottles for beverages, glasses or cups)
- Observe country-specific safety regulations.



First aid measures:

- Do not induce vomiting.

  If the person affected is still conscious, he/she must rinse out their mouth with water, drink plenty of water and consult a doctor immediately.

  Do not administer anything to an unconscious person via their mouth; place them in a stable position on their side. Call the emergency doctor immediately.

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11 00 000 Differences among engine block versions (N57TÜ)

Engine generation = N57

Distinguishing features:

Lengthwise = **D**

Displacement = **3.0 l**

Power stage = **S** /T /O / U

S= Top power stage (3 exhaust turbocharger).

T= Top power stage (2 exhaust turbocharger).

O = Upper power stage.

U= Lower power stage.

Expansion stage = **1 (TU)** (first technical update)

Expansion stage = **2 (TU)** (second technical update)

	Power in kilowatts (KW)	Displacement in litres			
N57 D30 S1	280 KW	3 l			
N57 D30 T1	230 KW	3 l			
N57 D30 O1	190 KW	3 l			
N57 D30 U1	%	3 l			

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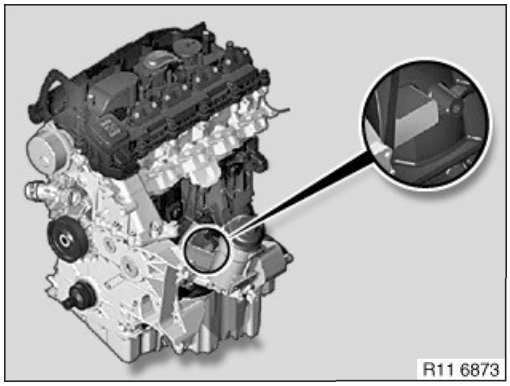
Engine identification

Engine number at the marked surface.

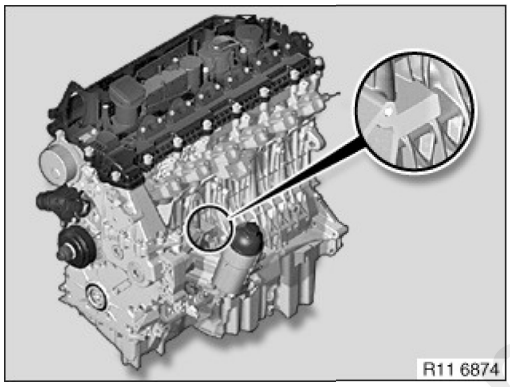
Replacement drives are already assigned a number containing the identification and engine number at the factory.

The old drive number must be imprinted for replacement crankcases.

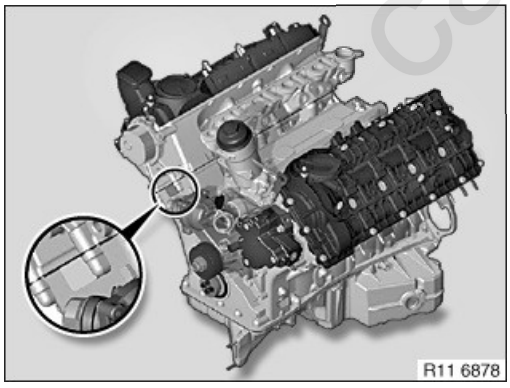
Magnesium crank cases feature a label, the engine number does not need to be embossed.



M47 / M47TU / M47T2

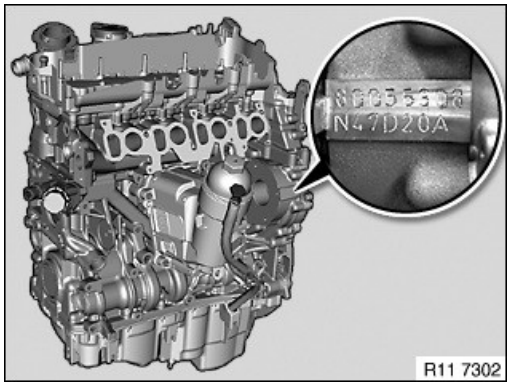


M57 / M57TU / M57T2

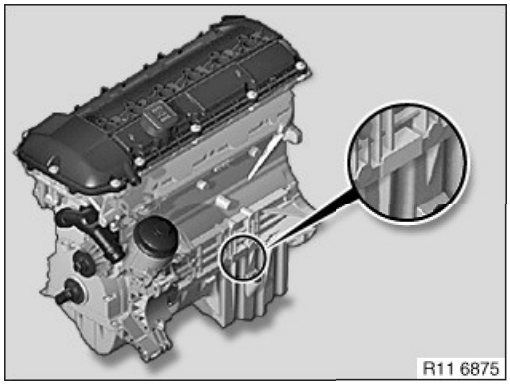


M67 / M67TU

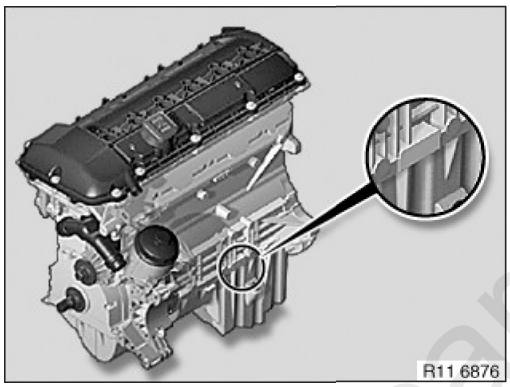
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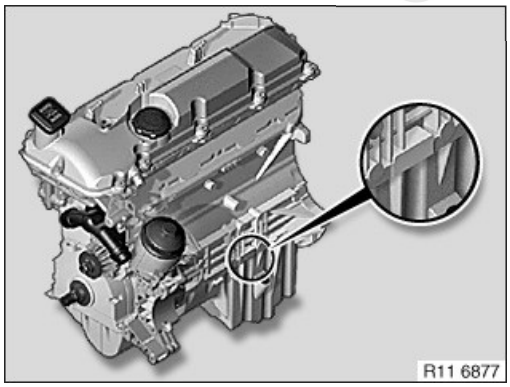
N47 / N47S / N47C / N47T / N57 / N57S / N57T



M52 / M52TU

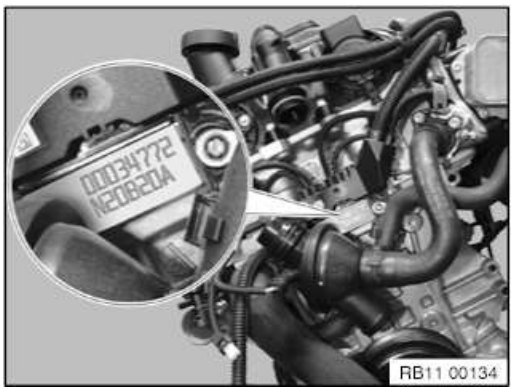


M54

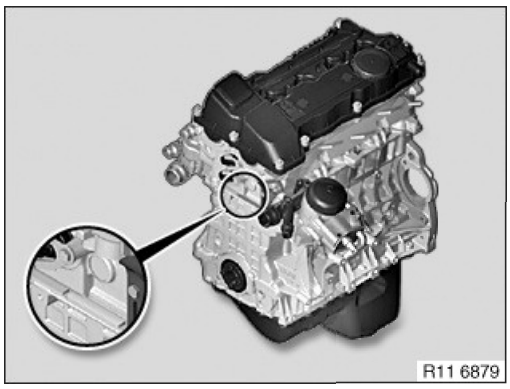


M56

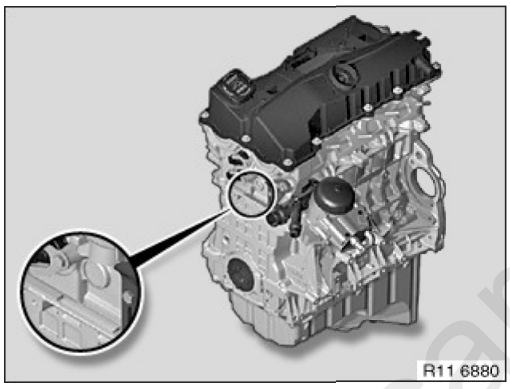
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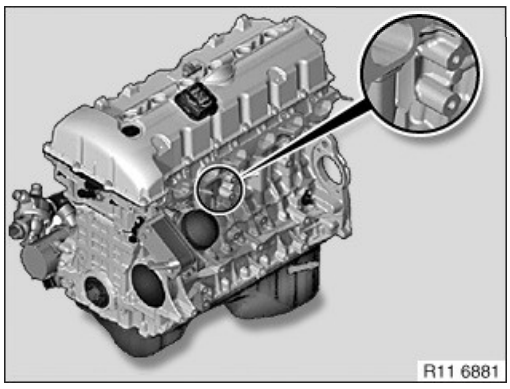
N20 / N26



N40 / N45 / N45T / N43

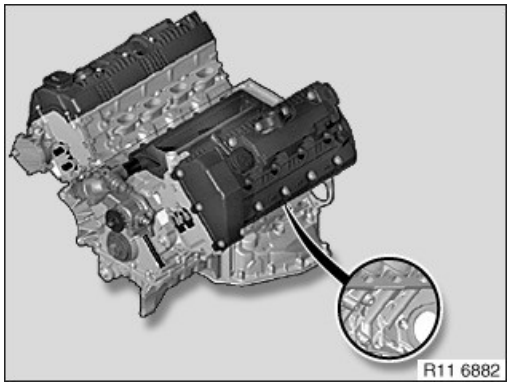


N42 / N46 / N46T

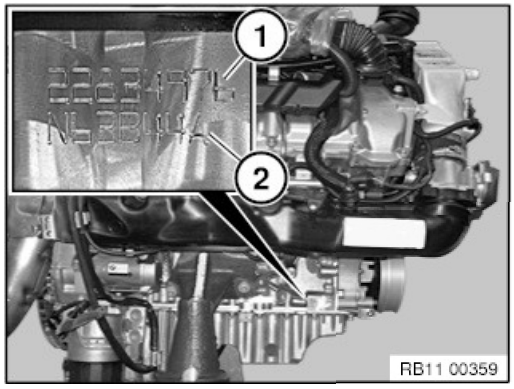


N51 / N52 / N52K / N52T / N53 / N54 / N55

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N62 / N62TU



Position (1) engine number.

PositionÂ (2) engine code letters.

N63, N63O1. N63O2

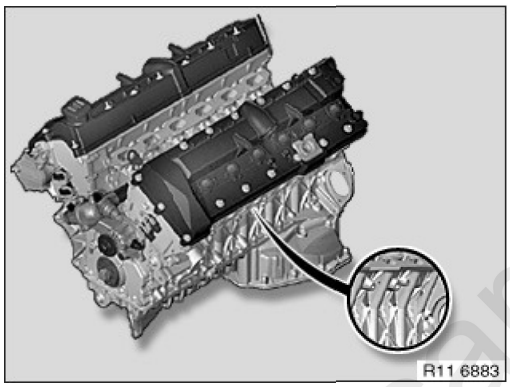
S63

N74, N74O1,

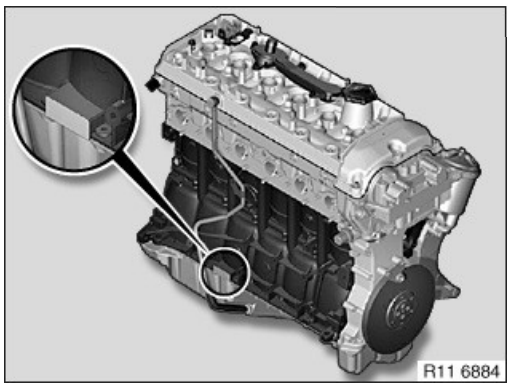
S63T0 to engine number 2001 0052 on right side cyl. 1-4.

S63T0 from engine number 2001 0053 on left side cyl.l 5-8.

E72 Vehicles must be imprinted on the left side cyl. 5-8.

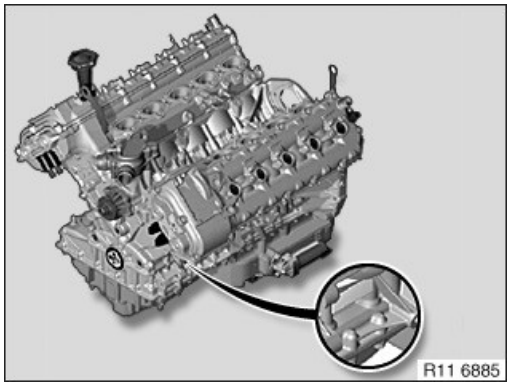


N73



S54

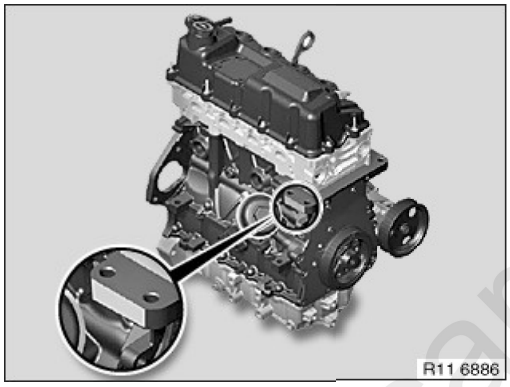
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S85 / S65



S55

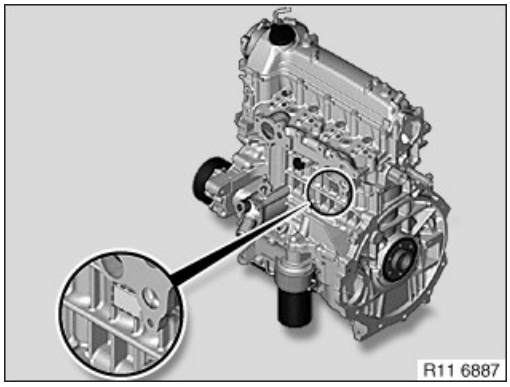


W10 / W11



W16

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W17



W20

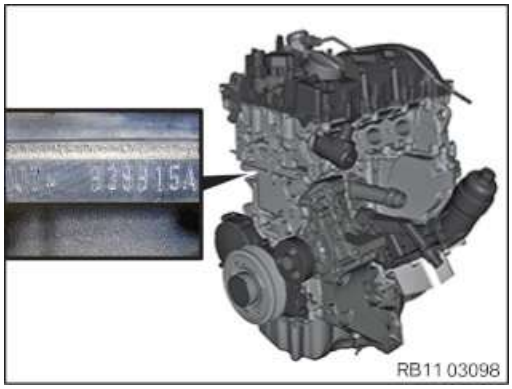


N12 / N13 / N14 / N16 / N18

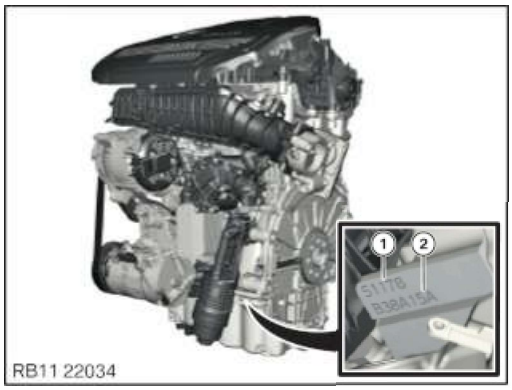


B37 / B38**A** / B47 / B48**A**
in the area of the oil sump

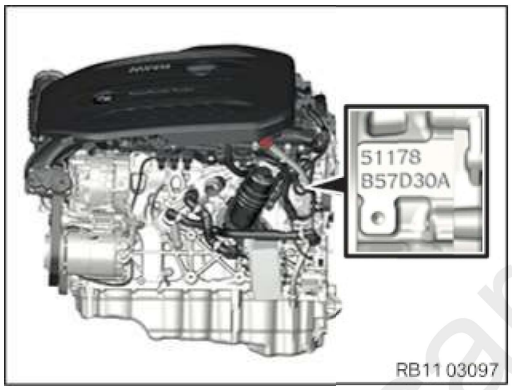
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B38**B** / B48**B**



B38



B57



B58

Assemble engine.

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11 00 300 Engine oil consumption measurement

Attention!

This procedure for measuring oil consumption may not be used for the S 85 due to the oil pan design.

Many complaints about oil consumption are caused by the oil level being measured using the wrong method.

The oil consumption should be measured after a distance of 7,500 km at the earliest, as the process of running in the engine will not have been essentially completed and the engine oil consumption stabilised until this distance has been covered.

Engine oil consumption that may occur in an engine can only be determined by the customer on the basis of the refilled engine oil quantity. As soon as the engine oil level falls below the MAX mark on the dipstick, many customers top up the engine oil without paying attention to a number of basic rules, such as the vehicle must be standing on level ground, a certain period of time must be left to allow the oil to flow back to the sump. In such cases, the available container sizes (e. g. 1-litre can) make it easy to top up above the MAX mark. Too much added engine oil is damaging to the engine and is consumed more quickly due to the splash effect.

It is therefore recommended to allow the engine oil level to the MIN mark and only then to add the required engine oil quantity. The distance between the marks is equivalent to approx. 1.0 to 1.5 litres.

The procedure for checking the oil level is given in the Owner's Handbook for the vehicle concerned.

The service delegates will only deal with claims made under warranty if exact measurements by weighing are available (see below).

Measuring oil consumption by weighing:

To assess a warranty or goodwill claim, only the following oil consumption measurement method by weighing can be accepted (this must have been carried out by a BMW contractual partner):

Note:

The engine must not leak any oil.

Engine oil may only be drained off when the engine is at its normal operating temperature. The engine oil temperature must be at least 90 °C and read off on the diagnosis system.

Preparation:

1. Eliminate any leaks and traces of oil before measuring the engine oil consumption.
2. Allow the engine to run at idling speed for 5 minutes, during which the engine oil temperature must not drop below 90 °C.
3. Unscrew the main flow oil filter cover (the engine oil will flow back into the oil sump from the oil filter housing).
4. Unscrew the oil drain plug.
5. Allow the engine oil to drain off for 15 minutes.
   If necessary, remove the fan/fan cowl.
6. Turn the engine once through 360 degrees by the vibration damper.
7. Allow the engine oil to drain off for 15 minutes.
8. Retighten the primary flow oil filter.
9. Pour in the specified engine oil quantity for the engine type in question (with filter change).
10. Drive the vehicle for a distance of at least 1,000 km/500 miles. Increasing the mileage will produce significantly better measuring results.
    Measurement procedure:
11. Check the engine for leaks; if the engine is not tight, the examination will not be meaningful.
12. Prepare the measuring container to be able to capture the oil quantity.
13. Allow the engine to run at idling speed for 5 minutes, during which the engine oil temperature must not drop below 90 °C.
14. Unscrew the main flow oil filter cover (the engine oil will flow back into the oil sump from the oil filter housing).
15. Unscrew the oil drain plug.
16. Allow the engine oil to drain off for 15 minutes.

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If necessary, remove the fan/fan cowl.

17. Turn the engine once through 360 degrees by the vibration damper.
18. Allow the engine oil to drain off for 15 minutes.
19. Weight the **amount of drained engine oil**. (Engine oil has a density of about 0.86 g/cm³ at room temperature.)

$$\text{Engine oil consumption} = \frac{\text{Amount of oil added (cm³) - amount of oil drained off (g): 0.86 g/cm³}}{\text{mileage reading when draining - mileage reading when adding engine oil}}$$

Example:

Volume of oil added at mileage reading 44,800: 4.000 cm³

Weight of oil added at mileage reading 45,900: 2.700 g

$$\text{Engine oil consumption} = \frac{\text{4.000 cm3 - 2.700 g : 0.86 g/cm³}}{\text{45,900 km - 44,800 km}} = 0.78 \text{ cm³/km}$$

0.78 cm³/km = 0.78 l/1,000 km

Test certificate for engine oil consumption:

Vehicle data: _____

BMW (type): _____

Chassis number: _____

Added oil quantity (in ccm): _____ ccm at kilometre reading:_____

less drained off oil quantity (in g) : 0.86 (g/ccm) _____ ccm at kilometre reading:_____

=> oil consumption: _____ ccm => mileage: _____ km

Oil consumption [l/1000 km] =

_____ *[ccm] oil consumption* _____ [km] mileage

Oil consumption after balancing out: _____ l/1000 km

Oil grade: _____

Oil grade: _____

Viscosity: _____

Cause of damage: _____

_____ _____

Dealer address Signature

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11 00 ... Engine oil consumption measurement

Procedure for engine oil consumption measurement, see following documents:

- Engine oil consumption measurement (all without S85)
- Engine oil consumption measurement (only S85 with one oil drain plug)
- Engine oil consumption measurement (only S85 with two oil drain plugs)
- Record on oil consumption measurement

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11 . . . . . Equipment recoding special tool number of the transverse member for fixing the engine in the installation location

Equipment recoding from 00 0 200 to 00 6 0 000

Designation	Special tool new	Special tool previous
Cross-member, previous	---	00 0 200
Cross-member, new	00 6 000	---
Mounting bridge	00 6 001	00 0 201
Spindle with hook	00 6 002	00 0 202
Extension	00 6 003	00 0 203
Adapter support	00 6 004	00 0 204
Extension	00 6 005	00 0 205
Chain with hook	00 6 006	00 0 209
Set of supports	00 6 010	00 0 206
Set of supports	00 6 020	00 0 207
Set of supports	00 6 030	00 0 208
Connector	00 6 031	---
Profile strip (2 x)	00 6 032	---
Supports (4 x)	00 6 033	---
Set of supports	00 6 040	---
Profile strip	00 6 041	00 0 451
Supports (2 x)	00 6 042	00 0 452
Supports, short (2 x)	00 6 043	---
Set of supports	00 6 050	---
Profile strip (2 x)	00 6 051	---
Supports, short (2 x)	00 6 052	---
Supports, long (2 x)	00 6 053	---
Support, long	00 6 060	---
Supports (2 x)	00 6 070	---

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11 00 ... Handling components after flood damage

Flood damage can occur if the permissible fording depth of a vehicle is exceeded. Ingress of water can cause damage to the engine (water shock) or components.

Because dirt particles generally enter into the component with the water (e.g. starter motor, wiring harness), the components need to be thoroughly inspected.

Residual moisture in the components leads to corrosion (increased contact resistance in the component), which can lead to a component failure at a later time.

If water ingress into the electrical components cannot be ruled out, it is recommended to replace the component to ensure correct functioning through the vehicle lifetime.

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11 00 091 Installing the replacement engine (N57 D30 U/O 0/1)

Special tools required:

- 11 4 180
- 11 5 320
- 11 8 740
- 11 8 741
- 11 9 260
- 11 9 265

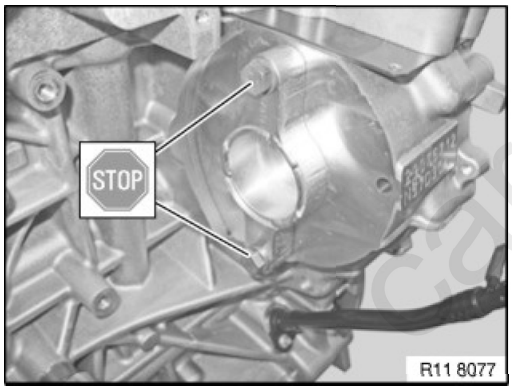
Important!

Do not remove transportation retainer (adapter) of high pressure pump without special tool.

Risk of damage to timing chain drive.

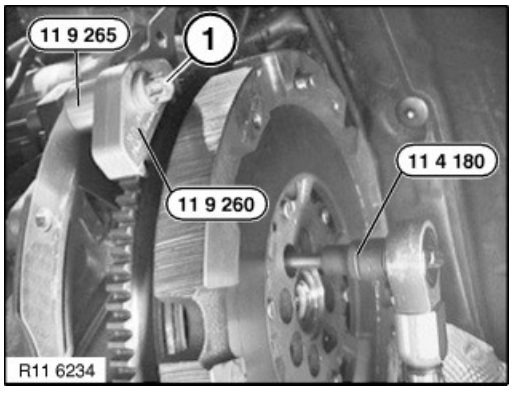
Necessary preliminary work:

- Remove engine.
- Convert all assemblies.



Important!

Do not remove transportation retainer without special tool 11 8 740 .



Manual gearbox:

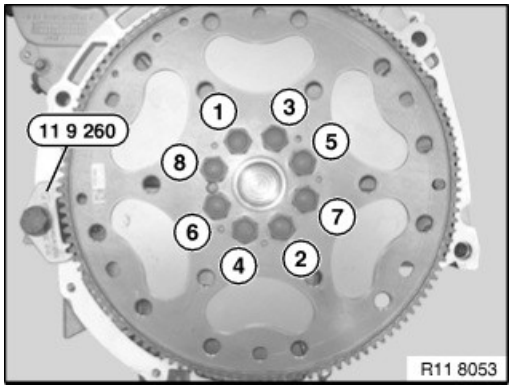
Install flywheel.

Installation note:
Replace screws.

Insert flywheel bolt with special tool 11 4 180 .

Secure flywheel with transmission bolt (1) and special tool 11 9 260 / 11 9 265 .

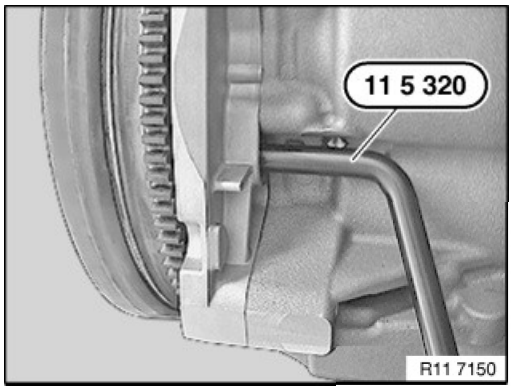
Tightening torque: 11 22 2AZ.



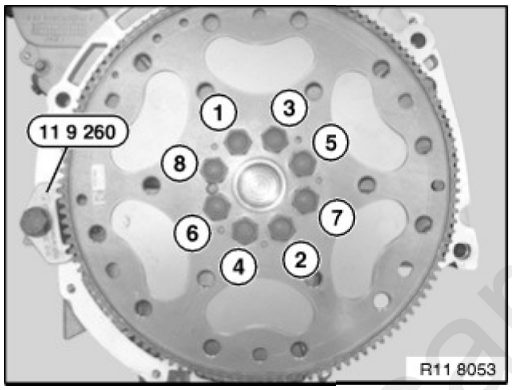
Install flywheel.

Screw in bolts (1 to 8).

Installation note:
Replace screws.



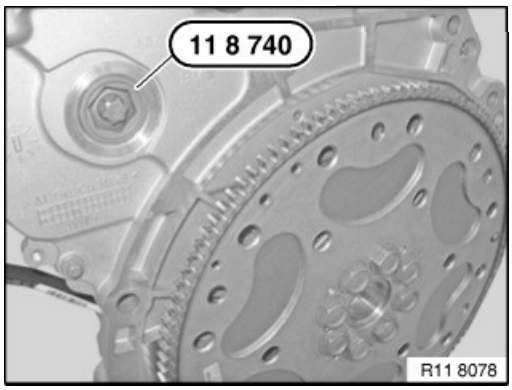
Secure engine in TDC setting with special tool 11 5 320 .



Fit special tool11 9 260 .

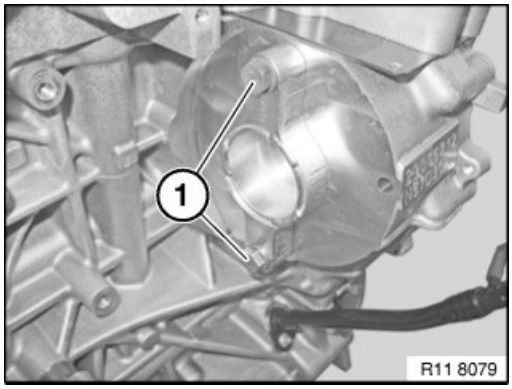
Tighten bolts in sequence (1 to 8).

Tightening torque: 11 22 2AZ.

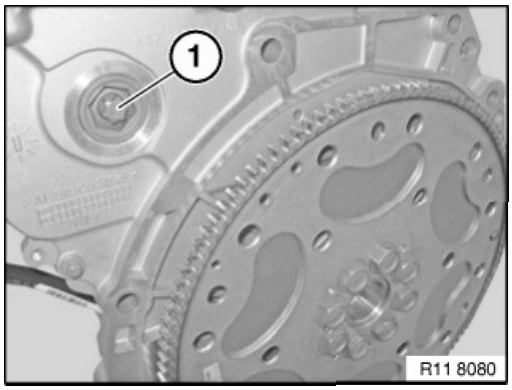


Screw in special tool 11 8 740 .

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Release screws (1).

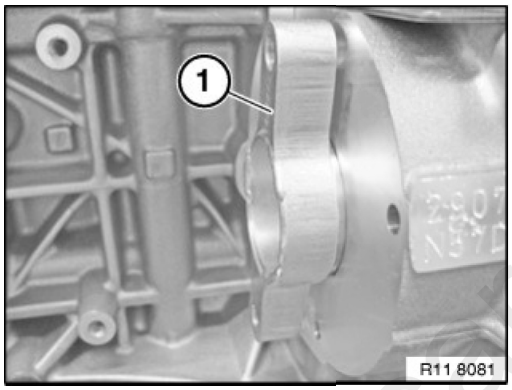


Important!

Special tool 11 8 741 remains in timing case housing.

Central bolt (1) remains in camshaft sprocket.

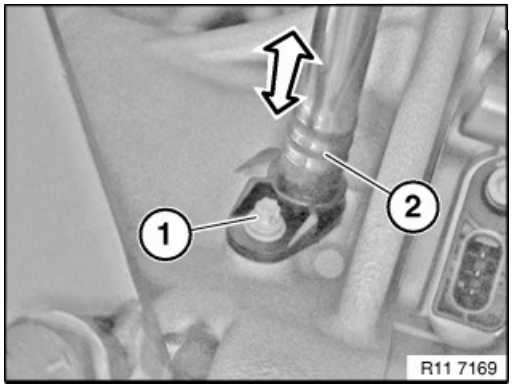
Remove central bolt (1).*Note:*
Central bolt (1) is supported on special tool 11 8 740 until transportation retainer is pressed out towards rear.



Remove transportation retainer (1).

Install high pressure pump.

Transportation retainer (1) must be sent back to BMW (obligatory return).



Release screw (1).

Tightening torque: 11 00 1AZ.

Remove vacuum line (2) in direction of arrow.

Installation note:
Replace O-ring on vacuum line.

Assemble engine.

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Mounting engine on assembly stand (N57)

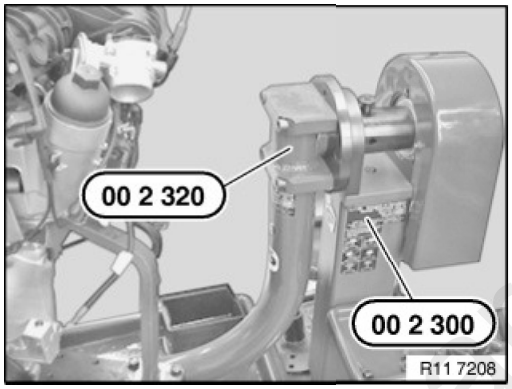
Special tools required:

- 00 2 300
- 00 2 320
- 00 2 322
- 00 2 328

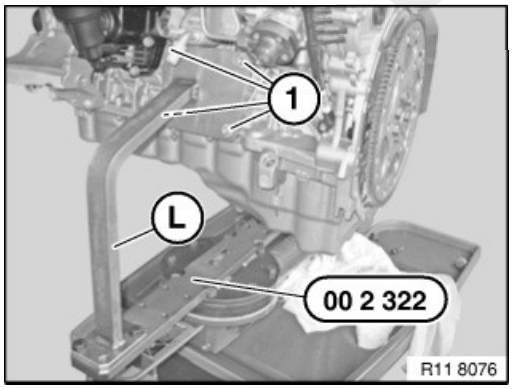
Important!
Pay attention to manufacturer's information

Necessary preliminary tasks:

- Remove engine.
- Remove engine support arm on left and right.

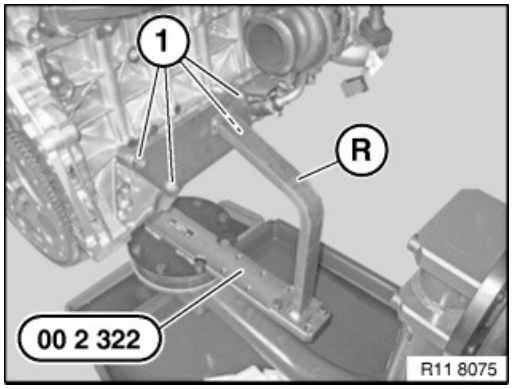


Prepare special tool 00 2 300 together with the special tool 00 2 320 .



Attach special tool 00 2 328 to fixture (L) on left of engine support arm with screws (1).

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Attach special tool 00 2 328 to fixture (R) on right of engine support arm with screws (1).

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11 00 ... Overview of consumables (Electronic Parts Catalogue)

1.0 Sealing compound for **injection**.

	Repair instructions (engine)	Designation, Electronic Parts Catalogue	Part number, Electronic Parts Catalogue	Application examples
1.1	S55, S65, S85	Loctite 171000 primer	83 19 7 515 683	For hardening Loctite 193140 sealing compound
1.2	S55, S65, S85	Loctite 193140 liquid sealing compound	83 19 0 439 030	Sealing between crankcase upper and lower halves
1.7	W20	Dow Corning liquid sealing compound	07 58 0 397 777	Sealing between crankcase upper and lower halves Sealing of oil sump

2.0 Sealing compound for **application**.

	Designation in repair instructions	Designation, Electronic Parts Catalogue	Part number, Electronic Parts Catalogue	Application examples
2.1	M41, M47, M47TU, M47T2, M50, M51, M52, M52TU, M54, M57, M57TU, M57T2, M60, M62 N12, N14, N16, N18 N20, N26 N40, N42, N45, N45N, N46, N46N, N43, N47, N47top, N47C N47D1 N51, N52, N52N, N53, N54, N55, N57, N57T, N62, N62TU, N63, N63O1 N73, N73H, N74 S14, S38, S50, S52, S54, S62, S65, S85	Drei Bond 1209 liquid sealing compound	07 58 9 062 376	For sealing junction points on crankcase
2.2	N12, N13, N14, N16, N18, N20, N26, N40, N42,N43, N45, N46, N51, N52, N53, N54, N55 W10, W11, W16,	Loctite 5970 liquid sealing compound	83 19 0 404 517	Sealing between crankcase upper and lower sections.
2.2	N47top, N47D1, N47C1 N57D1 N57S1, B32 ,B36 ,B37 ,B38 ,B42 ,B46 ,B47 ,B48 ,B57 ,B58	Loctite 5970 liquid sealing compound	83 19 0 404 517	Timing case cover sealing, oil sump, coolant pump, component carrier.
2.3	N12, N14, N16, N18 W16	Loctite 648 liquid sealing compound	07 58 9 067 732	Sealing between the seal plug and crankcase
2.4	N12, N13, N14, N16, N18 W16	Loctite 121078 liquid sealing compound	83 19 2 223 765	Sealing between cover sleeve and crankcase

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3.0 **Cleaning agent**.

	Designation in repair instructions	Designation, Electronic Parts Catalogue	Part number, Electronic Parts Catalogue	Application examples
3.1	N12, N13, N14, N18, N20, N26, N45, N46, N45T, N46T, N43, N51, N52, N52Kp, N52TU, N53, N55, N63, N63S, N63 Hybrid, N63O1, N63O2 N73, N74 B37, B38 B47, B48, B58	Cold cleaner (chlorine free)	83 19 0 026 956	Cleaning assemblies, washing engine
3.2	M47, M47T1 M47T2, M57 M57T1, M57T2 N47 K/U/O/T 0/1 N47C	Universal cleaner	83 19 2 360 981	Clean intake pipe.
3.3	All	Brake cleaner	83 19 2 365 214	Clean.

4.0 Lubricant for **application**.

	Designation in repair instructions	Designation, Electronic Parts Catalogue	Part number, Electronic Parts Catalogue	Application examples
4.1	N12, N13, N18, N20, N26, N42, N46, N46TU, N51, N52, N52KP, N52TU, N55, N62, N62TU, N63O0, N63O1, N63O2, N73 S55, S63T0 B38, B48, B58	Lubricating grease Longtime PD1	83 19 2 160 340	For greasing the splined shaft on actuator drive/gearing of intermediate shaft.
4.2	M47, M47TU, M47T2, M57, M57TU, M57T2,	High-temperature assembly paste	83 23 0 309 003	For greasing the thread on the exhaust turbocharger.
4.3	N12, N13, N14, N16, N18 N20, N26, N40, N42, N45, N45TU N46, N46TU, N43. N51, N52, N52Kp, N52TU, N53, N54, N55. N62, N62TU, N63O0, N63O1, N63O2 N73, N73H, N74. S63T1, S65, S85. B38, B48, B58	High temperature paste	83 19 2 158 851 83 19 2 158 852	For greasing the threads on the oxygen sensors.

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4.4	N47, N47O1 N47C1, N47T N47D1 N57 N57D1 N63O0, N63O1, N63O2 S63, S63T0	Copper paste	81 22 9 400 794	For greasing the double hex head bolt on the exhaust turbocharger. For greasing the central bolt on the VANOS gear.
4.5	M47, M47TU, M47T2 M57, M57TU, M57T2 N47, N47O1 N47C1, N47T N47D1 N57 N57D1	High-temperature grease (UrethynE2).	83 23 0 441 070	For greasing the injectors or injector shafts. Solenoid valve and piezo injector.
4.6	N47T0, N47T1 N57T0, N57T1, N57S1 B47T0,	Assembly paste	83 29 9 407 778	For lubricating the O-rings of the pressure pipes. Multistage turbocharging assembly.
4.7	W20	Assembly paste, grease	No longer greased.	For greasing the torsion splined shaft.
4.8	N63O1, N63O2	Assembly paste, grease	83 23 9 407 778	For greasing the central bolt on the crankshaft.
4.9	W20	Assembly paste, grease	83 23 9 407 778	Grease O-ring on alternator.

5.0 lubricant for **filling**

	Designation in repair instructions	**Designation, Electronic Parts Catalogue**	**Part number, Electronic Parts Catalogue**	**Application examples**
5.1	M47, M57	Exhaust turbocharger additive	83 19 2 362 168	For filling the exhaust turbocharger after the renewal.
5.2	B32, B36, B37, B38, B42, B46, B47, B48, B58	Exhaust turbocharger additive, petrol MSP	83 19 2 457 276	For filling the exhaust turbocharger after the renewal.

6.0 Lubricants to loosen locked **screw connections.**

	Designation in repair instructions	**Designation, Electronic Parts Catalogue**	**Part number, Electronic Parts Catalogue**	**Application examples**
6.1	M47, M47TU, M47TU2, M57, M57TU, M57TU2. N47, N47C, N47D1, N57, N57D1, N57S1 W16, W17, B37, B47, B57	Brunox lubricating grease	83 23 0 418 567	For releasing the glow elements.
6.2	E89 F10, F11.	Brunox lubricating grease	83 23 0 418 567	For releasing and tightening the screw connection of the rubber mounts.

7.0 **Leak detection spray and contact spray**

	Designation in repair instructions	**Designation, Electronic Parts Catalogue**	**Part number, Electronic Parts Catalogue**	**Application examples**

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7.1	Petrol: N13, N20, N26, N54, N55 B38, B48, B58 Diesel fuel: M47, M47TU, M47TU2, M57, M57TU, M57TU2. N47, N47C, N47D1, N57, N57D1, B37, B47	Leak detection spray	83 19 9 407 861	Check charge air path for tightness. Example: leakage on charge air hose or charge air cooler.
7.2	S55	Contact spray	81 22 9 400 208	For cleaning and protecting of electrical plug connections.

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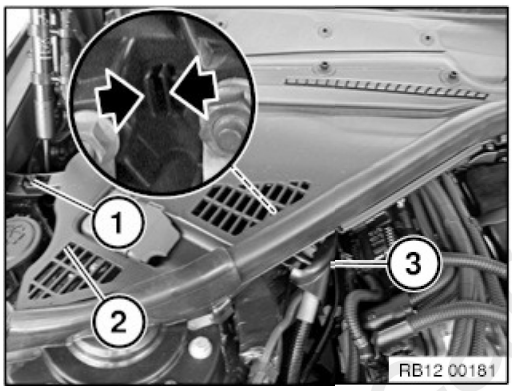
11 00 50 Removing and installing/renewing engine N57T

Special tools required:

- 11 0 070
- 17 2 050
- 00 9 030

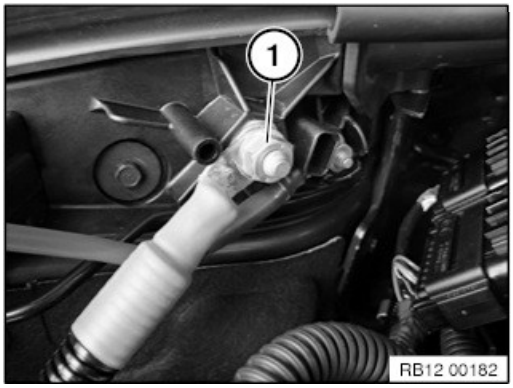
Necessary preliminary tasks:

- Move engine compartment lid into service position.
- Disconnect negative battery cable.
- Remove electronics box.
- Remove acoustic cover at rear.
- Remove radiator.
- Remove left pressure pipe.
- Remove right pressure pipe.
- Draw off A/C system.
- Remove front output shafts (AWD only).
- Remove transmission.



Unlock lock (1) and slightly raise service cover (2) until lock of cover (3) is accessible.

Unlock lock and remove cover (3).

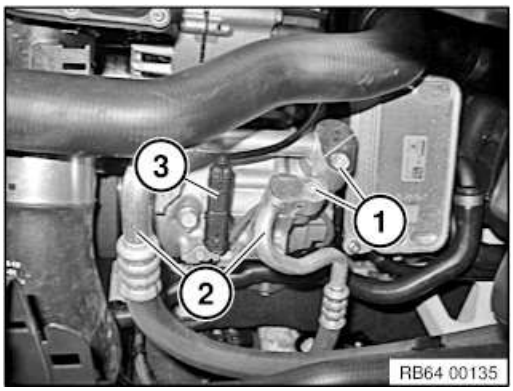


Slacken nut (1).

Tightening torque 12 52 4AZ.

Remove positive battery cable from battery positive terminal.

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Release screws (1).

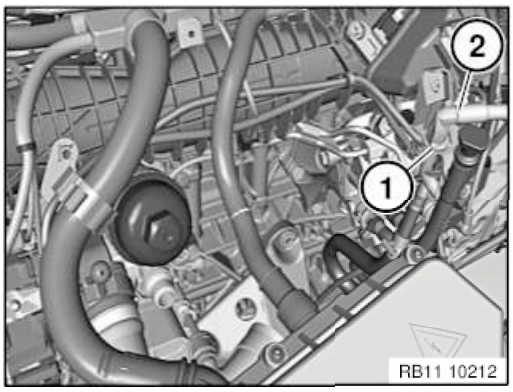
Tightening torque 64 52 1AZ.

Remove pressure and intake pipes (2) and set aside.

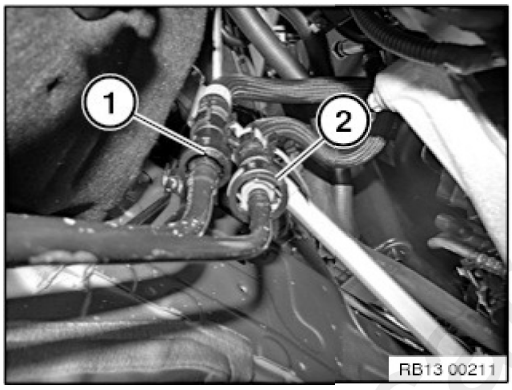
Unfasten plug connection (3) and disconnect.

Installation note:
Replace sealing rings.

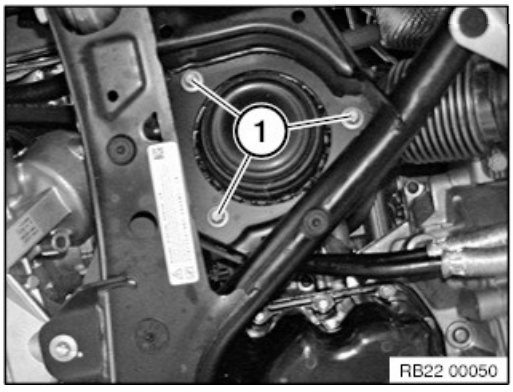
Use special tool 00 9 030 to install sealing rings without damaging them.



Unlock quick-release fasteners (1) and detach vacuum line (2).



Unlock and disconnect the fuel delivery line (2) and return line (1).

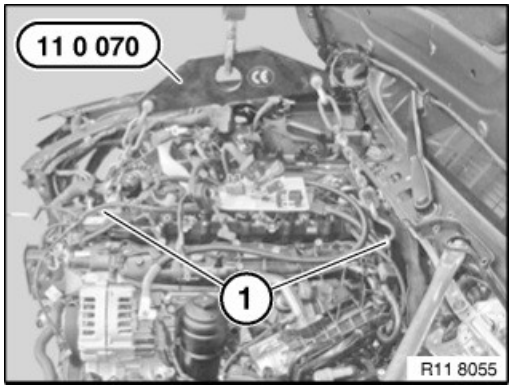


Pull the vacuum lines off the engine mounts.

Release screws (1) on left and right engine mounts.

Tightening torque 22 11 1AZ.

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Suspend special tool from lifting eyes (1) at front and rear.

11 0 070 Lift out engine with special tool.

Assemble engine.

Check cooling system for leaks.

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00 Safety information for working on vehicles with automatic engine start-stop function (MSA)



Warning!

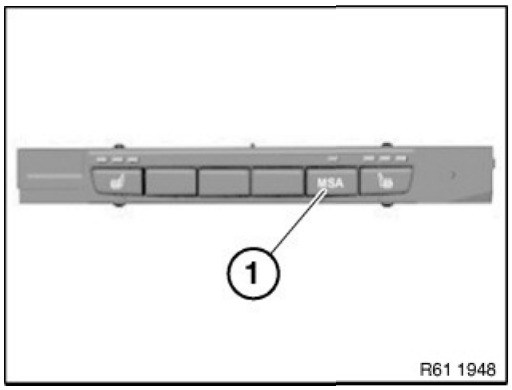
If the engine hood/bonnet contact is pulled upwards (workshop mode), the information "switch closed" is output. The automatic engine start-stop function is active.

An automatic engine start is possible.

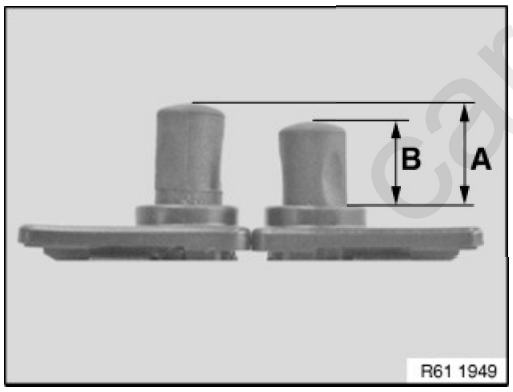
Observe safety precautions when working on MSA vehicles.

Before carrying out practical work on the engine, always ensure that the MSA functionality is deactivated so as to prevent automatic engine starting while work is being carried out in the engine compartment.

MSA function is deactivated by:



- Deactivate MSA by means of button (1) in passenger compartment
- Open seat belt buckle and driver's door



- Open engine bonnet/hood and ensure that engine hood/bonnet contact is not in workshop mode
  - Workshop mode

    A = 10 mm
  - Basic setting (engine hood/bonnet open)

    B = 7 mm

To make sure that the engine hood/bonnet contact is at the basic setting, if necessary press the hood/bonnet contact up to the limit position before starting work and slowly release.



When working with diagnosis tools:

- Observe instructions in diagnosis tool

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Note:
For further information on automatic engine start-stop function (MSA):

- Refer to the Service Information (bulletin) (for manual transmissions) Service Information (bulletin) 61 01 07 335
- Refer to the Service Information (bulletin) (for automatic transmissions or twin-clutch gearboxes) Service Information (bulletin) 61 01 10 629

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00 Safety instructions for handling oil



Warning!

Danger of poisoning if oil is ingested/absorbed through the skin!

Risk of injury if oil comes into contact with eyes and skin!



Recycling:

Observe country-specific waste disposal regulations.



Measures if oil is unintentionally released:

- Personal precautionary measures: Danger of slipping! Keep non-involved persons away from the work area. Wear personal protective clothing/equipment.
- Environmental protection measures: Prevent oil from draining into drain channels, sewerage systems, pits, cellars, water and the ground.
- Limiting spread: Use oil blocks to prevent the surface spread of oil.
- Cleaning procedure: Bind and dispose of escaped oil with nonflammable absorbents.

  Note: Do not flush oil away with water or aqueous cleaning agents.

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11 00 670 Secure the engine in installation position (F30, F31, F32, F33, F34,F36)



Special tools required:

- 00 6 100
- 00 6 130
- 2 318 635
- 00 6 050



Warning!

Danger of injury!

Observe following instructions relating to special tool:

1. Prior to each use, check the special tools for defects, modifications and operational reliability.
2. Damaged/modified special tools must not be used!
3. No changes or modifications may be made to the special tools!
4. Keep special tools dry, clean and free of grease.



Note:

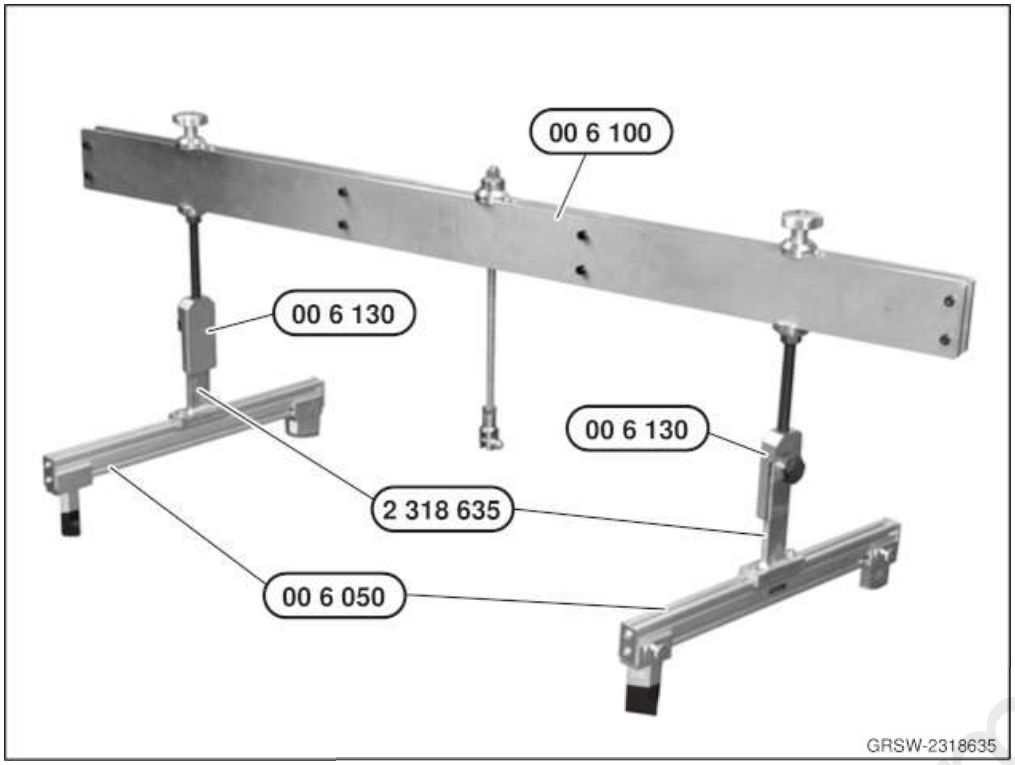
- Numbering system for special tools has been re-encoded.



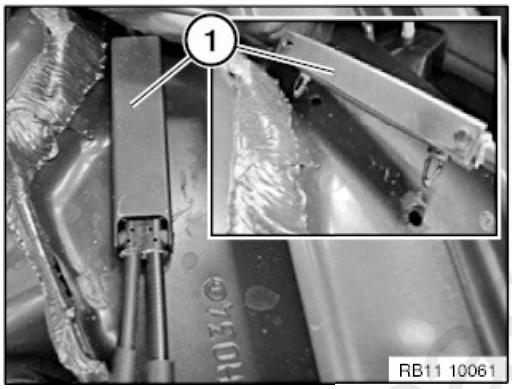
Necessary preliminary tasks:

- Secure the engine compartment lid in the service position.
- Remove acoustic cover
- Remove underbody protection
- F33 convertible only, remove front-end struts.

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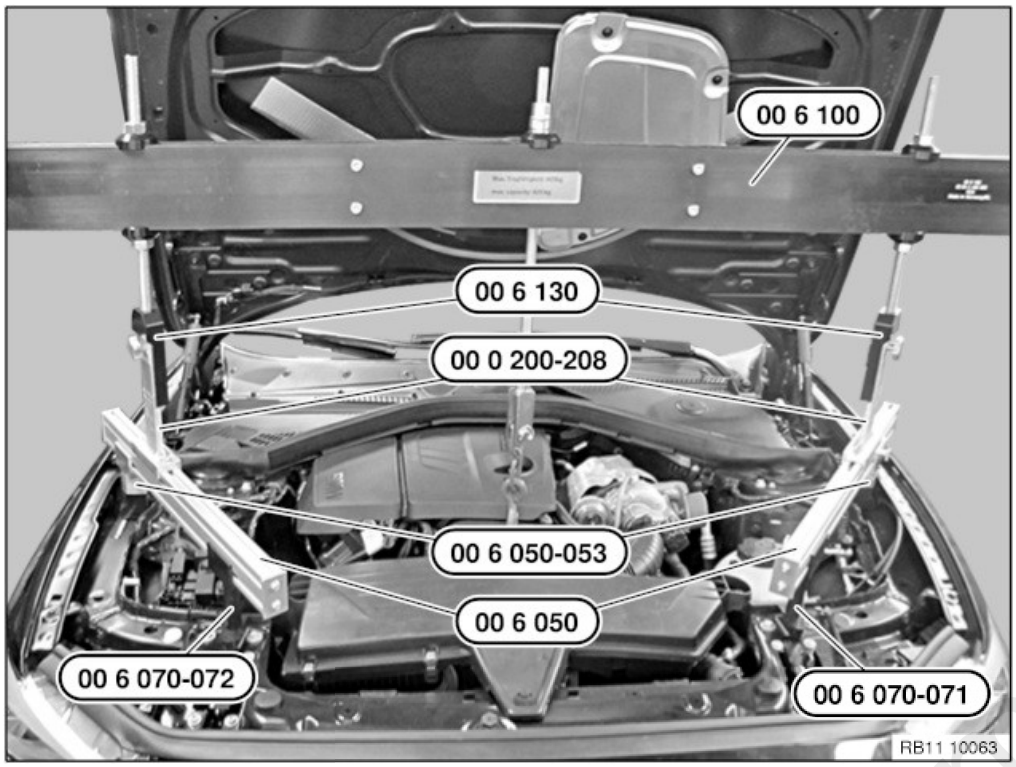


Completion of the traverse 00 6 100 : complete with the adapters 00 6 130 , the T-pieces 2 318 635 and the supports00 6 050 , 00 6 070-072, 00 6 070-071, 00 6 050-053.



Unclip Bowden cable (1) for hood opening.

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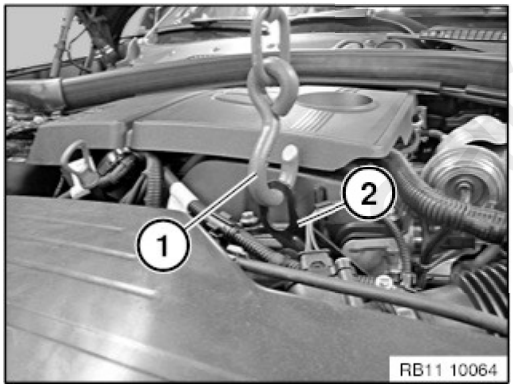
Important!
Risk of damage!

Position transverse member 00 6 100 on contact points with a second person helping.

Warning!
Danger of injury!

Align all struts and feet.

Tighten down all screws and nuts on cross-member 00 6 100 .



Attach chain with hook (1) into lifting lug or towing hook (2), depending on the engine.



Warning!

Danger of injury!

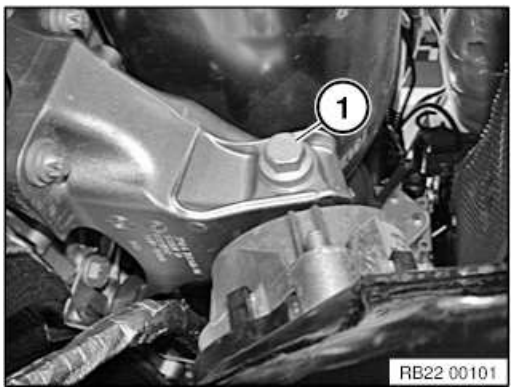
Tighten down all screws and nuts on transverse member 00 6 100 .

Important!

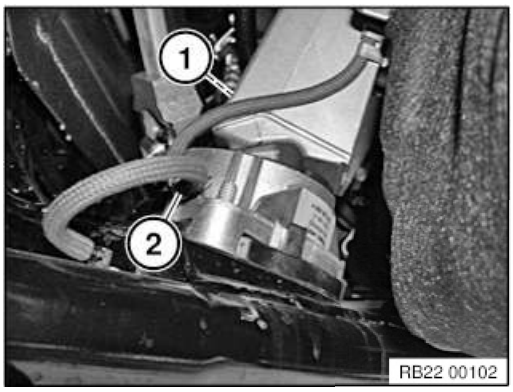
Before lifting the engine, check the lifting lugs for damage (cracks) and to ensure they are seated securely.

Avoid a change of engine position in the transverse or longitudinal direction.

Always make sure there is sufficient clearance between the engine (or its add-on parts) and the body.



Undo the bolt (1) on the right-hand engine mount.
Tightening torque 22 11 2AZ



Unclip the vacuum hose from the left engine mount.
Loosen the nut (1) on the left engine mount.
Tightening torque 22 11 2AZ
Raise engine approx. 10 mm with cross member.

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11 00 ... Service engine oil (N57 D30 U/O/T 1)



Warning!

Risk of scalding!

Carry out work on the vehicle only when wearing oil- and heat-resistant protective gloves incl. forearm protection, face guard and protective apron.



Attention!

Carry out engine oil service only when the engine is at operating temperature.

Observe the exact engine oil filling capacity.

Overfilling the engine with engine oil will result in **engine damage**.

Attention!

Risk of damage!

When working on the engine oil, coolant or fuel circuit, it is essential always to protect the alternator against dirt contamination.

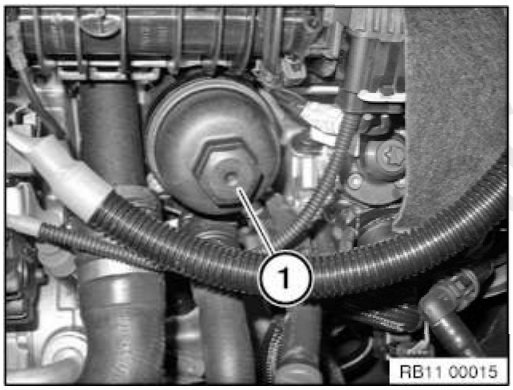
Cover alternator with suitable materials.



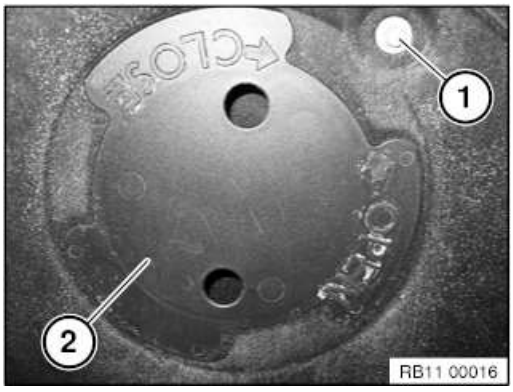
Recycling:

Catch and dispose of drained engine oil in a suitable collecting vessel.

Observe country-specific waste disposal regulations.



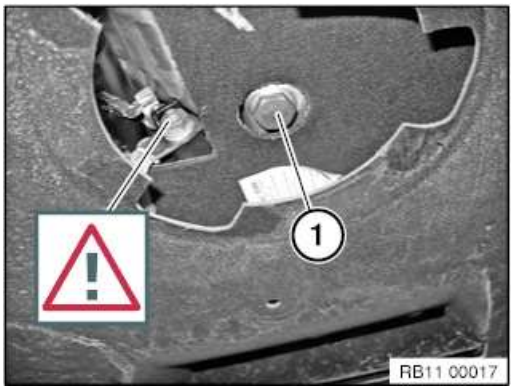
Release oil filter cover (1) with a suitable tool.*Note:*
Engine oil flows out of the oil filter housing and back into the oil sump.



F10, F11

Release screw (1).

Open and close service opening (2) in direction of arrow.

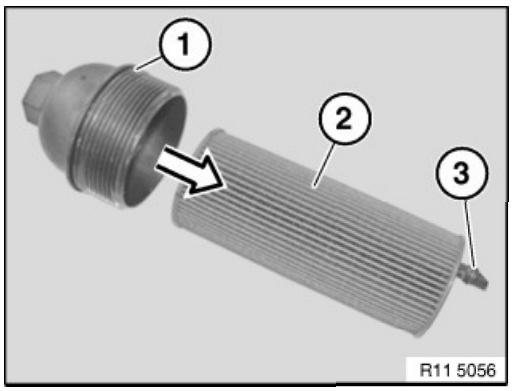


Attention!
Risk of shorting at starter motor!

Open oil drain plug (1) of oil sump and drain engine oil.

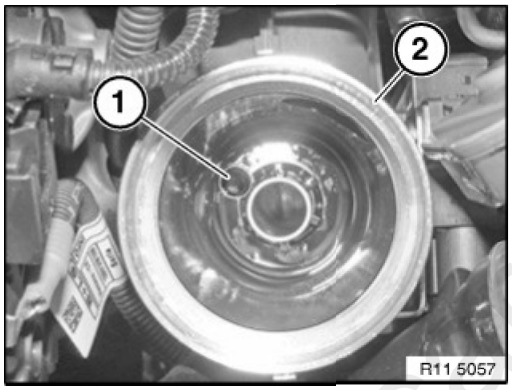
Tightening torque 11 13 1AZ.

Installation note:
Replace sealing ring.

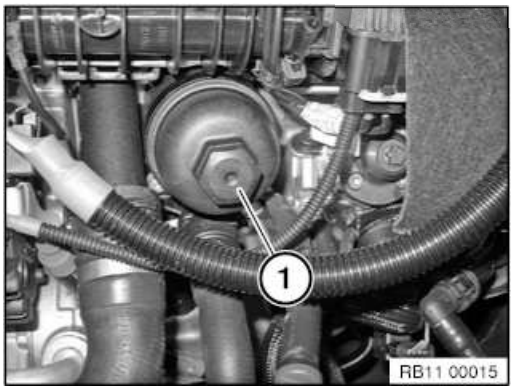


Pull out oil filter element (2) in direction of arrow.*Installation note:*
Replace oil filter element (2) and sealing ring (1).

Note:
Moisten sealing ring (1) on oil filter cover and sealing ring (3) on oil filter element guide with engine oil.



Note:
Observe the guide bore (1) for oil filter element in oil filter housing (2).



Secure oil filter cover (1) with a suitable tool.

Tightening torque 11 42 1AZ.

Note:
Pour in engine oil.

Start engine and run at idle until oil pressure indicator light goes out.

Switch off engine.

Check oil filter cover (1) and screw plug on oil sump for tightness.

Assemble engine.

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Checking oil level:

- Park vehicle on a horizontal surface
- Using the oil dipstick, check the engine oil level after five minutes on the engine at operating temperature
- Top up engine oil if necessary

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11 12 729 Checking cylinder head for watertightness (N57O/T 0/1)

Special tools required:

- 2 318 431
- 2 337 568

Important!

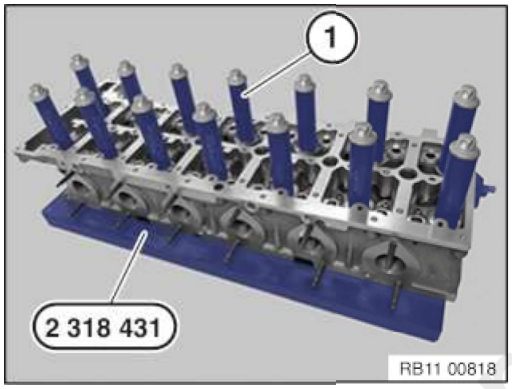
Pressure-test cylinder head to max. **3** bar.

Heat cylinder head to 60 °.

Check for formation of bubbles in a water bath.

Necessary preliminary tasks:

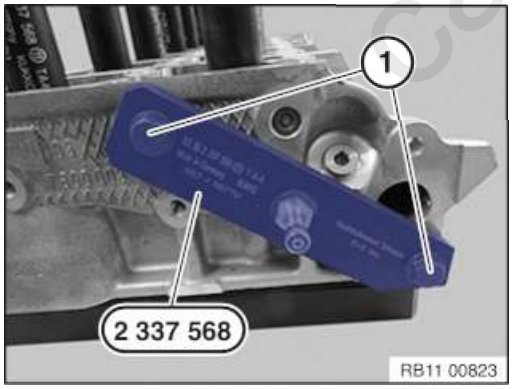
- Remove cylinder head.
- Disassemble cylinder head.



Note:
Mounting special tool 2 318 431

Secure special tool 2 318 431 with the original cylinder head bolts (1).

Tightening torque: **25 Nm**.



Secure special tool2 337 568 with bolts (1).*Note:*
Compressed air at valve (1) must not exceed **3 bar**.

Heat cylinder head to 60 °.

Check for formation of bubbles in a water bath.

Assemble engine.

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11 12 ... Clean intake plenum (N47, N57)

Necessary preliminary work:

- Remove intake plenum

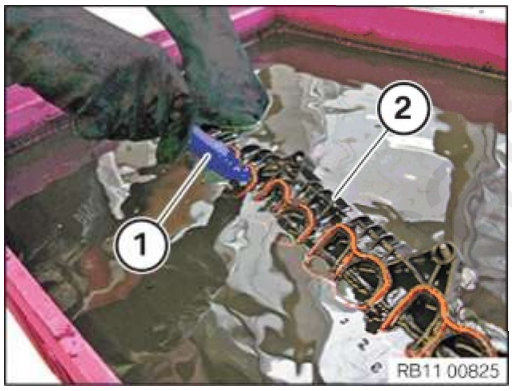
Dismantle intake plenum:

- Remove throttle body
- If applicable, remove adjuster
- If applicable, remove the preheating control unit
- If applicable, remove charging pressure sensor

Wear protective goggles and gloves.

Caution!
Never place electrical components in cleaning agent!

- Put on personal protective clothing/equipment!
- Prepare cleaning agent: Mix 2 parts water with 1 part BMW universal cleaner (part number: 83 19 2 360 981) mixed
- Place intake plenum in cleaning agent
- Adhere to an application time of at least 1 h



Wear protective goggles and gloves.

Caution!
Do not clean electrical components with a parts cleaning unit or high pressure cleaner.

- Remove the intake plenum (2) from the cleaning agent
- Clean the openings of the intake plenum (2) and swirl flaps using the brush (1)

  (Part number: 83 19 2 298 237)
- Clean throttle valve, exhaust-gas recirculation valve, mixing tube and mounted parts with brush (1) if necessary
- Clean the intake plenum (2) with a parts cleaning unit or a high-pressure cleaner.
- Check all seals for damage and replace if necessary.

Pay attention to country specific instructions for disposal.

obdiagn.com

Required follow-up work:

Assemble intake plenum:

- Installing the throttle body
- If applicable, install adjuster
- If applicable, install preheating control unit
- If applicable, install charging pressure sensor

- Install intake plenum

cardiagn.com

11 12 800 Cleaning cylinder heat intake channels and intake plenum (N47, N57)

Special tools required:

- 11 6 480
- 11 5 320
- 2 356 969
- 2 356 966
- 2 356 967
- 00 9 120

Necessary preliminary work:

- Disconnect battery negative cable
- Removing intake plenum
- Remove electric fan if necessary
- Remove underbody protection
- Remove stiffening plate if necessary

Dismantle intake plenum:

- Remove throttle body
- If applicable, remove adjuster
- If applicable, remove preheating control unit
- If applicable, remove charging pressure sensor



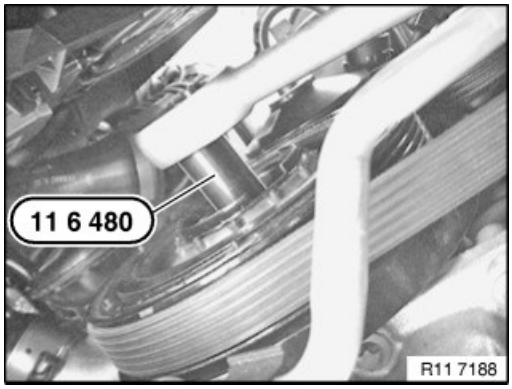
Wear protective goggles and gloves.



Caution!
Never place electrical components in cleaning agent!

- Wear personal protective clothing/equipment
- Prepare cleaning agent: Mix 2 parts water with 1 part BMW universal cleaner (see Section 3.2)
- Place intake plenum in cleaning agent
- Observe application time of at least 1 hour

cardiagn.com



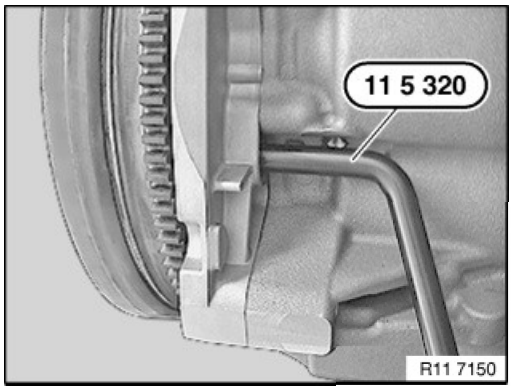
Crank engine to cylinder no. 1 TDC setting:

Crank engine with special tool11 6 480 to TDC firing position of cylinder 1.

Caution!

Do not crank engine in reverse direction.

Note:
Figure N47D.



Remove protective cap of timing case cover.

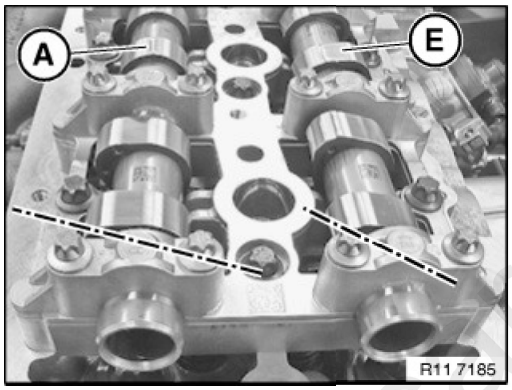
Crank engine at central bolt with special tool 11 6 480

Block crankshaft with special tool 11 5 320 in the TDC firing position of cylinder 1.

Caution!

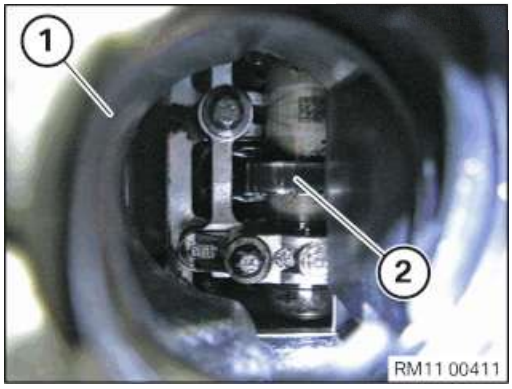
Do not turn the engine back.

Special tool 11 6 480 must be removed before starting the engine.



The cam on the intake camshaft (E) points obliquely upwards at cylinder No. 1.

The cam on the exhaust camshaft (A) points obliquely outward to the left at cylinder No. 1.



Note:
Visual inspection via oil filler cap (1) if necessary. Remove oil filler neck if necessary.

Cam (2) on exhaust camshaft points obliquely outward to the left at cylinder No. 1.

Figure N47.

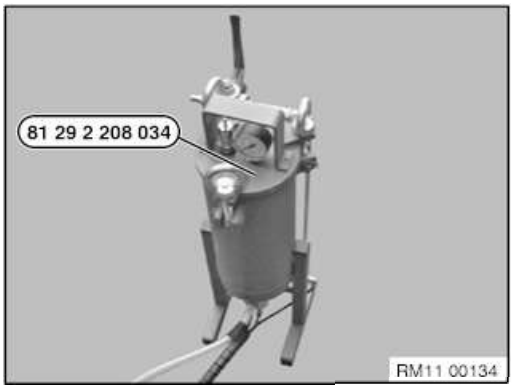
cardiagn.com

Cleaning intake ports: Caution!

Risk of engine damage!

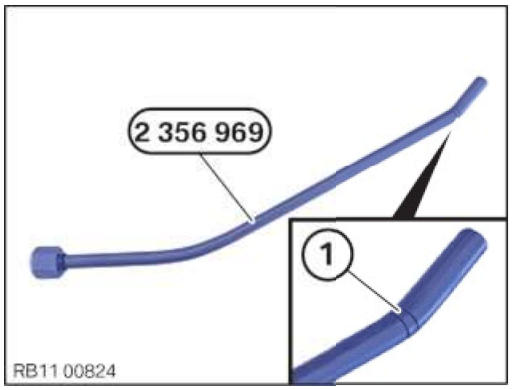
When cleaning the intake ports, it must be ensured that the intake valves of the corresponding cylinder are closed.

Start with the 1st cylinder when cleaning the intake ports.



The following are required:

- Blasting tool 81 29 2 208 034
- Walnut shell granulate
- Vacuum cleaner



Caution!

Front area of sensors is marked with two notches. These can additionally be highlighted in colour.

During the blasting process, only pull the wands out of the vacuum adapter until the mark becomes visible.

Blasting wand for swirl ports:

- 2 356 969



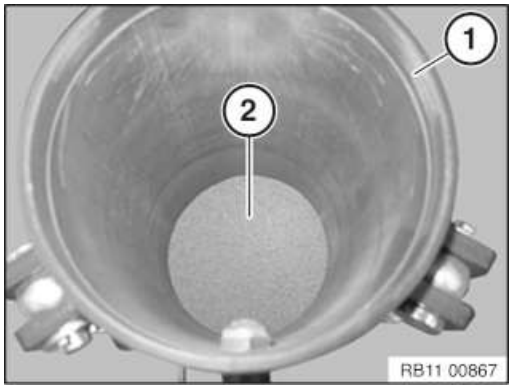
Vacuum adapter for tangential swirl port:

- 2 356 966

Vacuum adapter for swirl port:

- 2 356 967

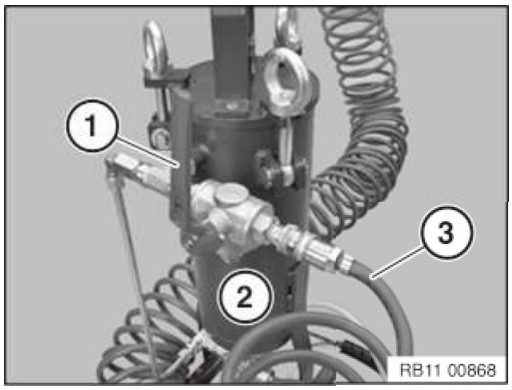
mgrdiagn.com



Note:
Use 2 litres of granulate per cleaning operation; this corresponds to a blasting duration of approx. 20 seconds.

Open blasting tool (1) and pour in 2 litres of granulate (2).

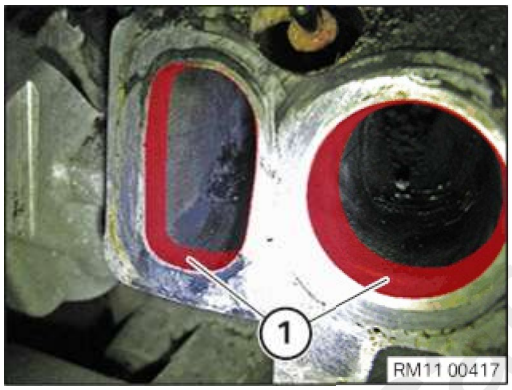
Close the device again.



Note:
Operating pressure 6 - 8 bar.

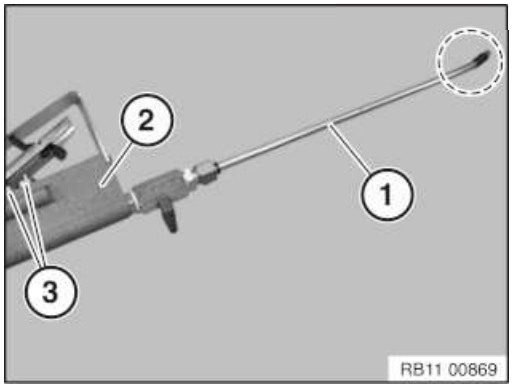
Close main valve (1) on blasting tool (2).

Connect compressed air (3).



Cleaning the swirl port of 1st cylinder:

Prior to the blasting process, clean the front area of both intake ports (1) of first cylinder with a suitable tool (e.g. plastic scraper, brushes 83 19 2 298 237).



Screw together blasting wand 2 356 969 (1) and actuator (2).

Open blasting tool and pour in 2 l granulate.

Close the device again.

Note:
Actuator (3) has two stages!

In stage one, only compressed air flows through the blasting wand.

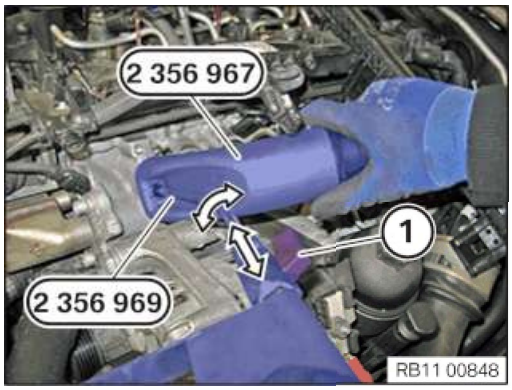
In stage two (operation is fully pressed), granulate is added (blasting process).

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Connect vacuum adapter 2 356 967 to vacuum cleaner. Hold vacuum adapter 2 356 967 against swirl port at no. 1 cylinder.

Open the main valve on the blasting tool and switch the vacuum cleaner on.



Caution!

Danger of injury!

Risk of damage!

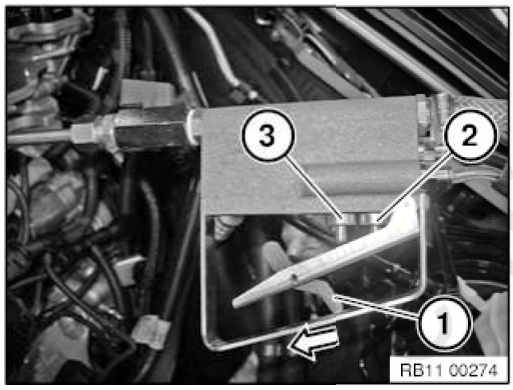
Second person required to assist.

Blasting wand may only be pulled out until the mark becomes visible.

Wear safety goggles

Insert blasting wand 2 356 969 in the adapter 2 356 967 .

Open the actuator valve (1).



Slide locking lever (1) to the front in direction of arrow.

Operate compressed-air valve (2) at stage one; compressed air can now flow in.

Fully operate valve (3) at stage two; walnut shell granulate is now injected.

Clean intake port, rotating the blasting wand and moving it vertically up and down.

Blasting wand may only be pulled out until the mark becomes visible.

When you notice that the collection container is becoming empty, continue operation for at least 10 seconds at stage one in order to swirl up and draw off the remaining granulate.

Close operation valve. Close main valve, check pressure drop at the pressure gauge.

Evaluate result if necessary.

If necessary, repeat procedure.



Cleaning the tangential swirl port of 1st cylinder:

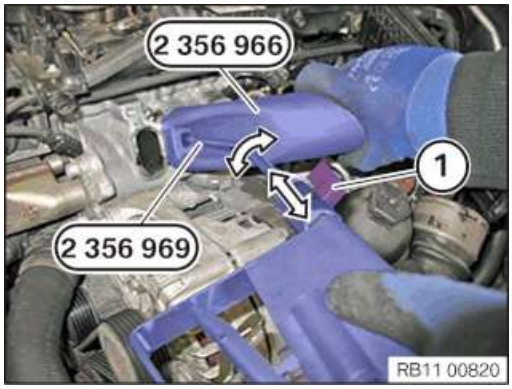
Open blasting tool and pour in 2 l granulate.

Close the device again.

Connect vacuum adapter 2 356 966 to vacuum cleaner. Hold vacuum adapter 2 356 966 on swirl port of first cylinder.

Open the main valve on the blasting tool and switch the vacuum cleaner on.

.com



Caution!

Danger of injury!

Risk of damage!

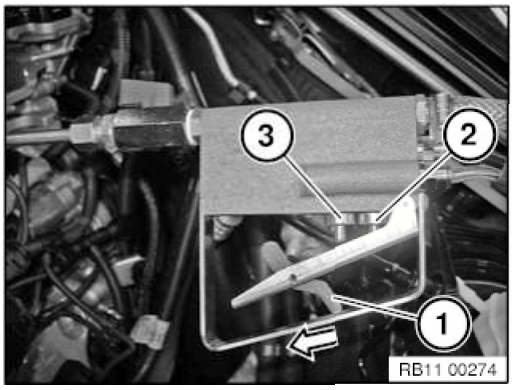
Second person required to assist.

Blasting wand may only be pulled out until the mark becomes visible.

Wear safety goggles

Insert blasting wand 2 356 969 in the adapter 2 356 966 .

Open the actuator valve (1).



Slide locking lever (1) to the front in direction of arrow.

Operate compressed-air valve (2) at stage one; compressed air can now flow in.

Fully operate valve (3) at stage two; walnut shell granulate is now injected.

Clean intake port, rotating the blasting wand and moving it vertically up and down.

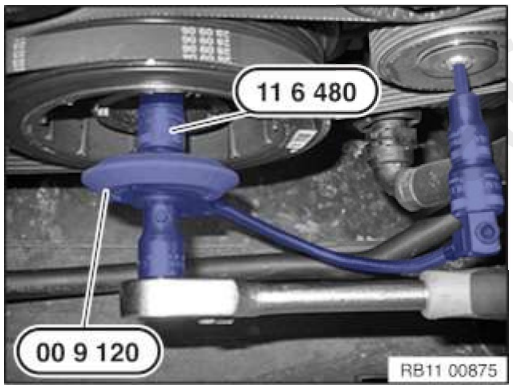
Blasting wand may only be pulled out until the mark becomes visible.

When you notice that the collection container is becoming empty, continue operation for at least 10 seconds at stage one in order to swirl up and draw off the remaining granulate.

Close operation valve. Close main valve, check pressure drop at the pressure gauge.

Evaluate result if necessary.

If necessary, repeat procedure.



Cleaning the other cylinders:

Caution!

Do not crank engine in reverse direction.

Remove special tool for securing the crankshaft.

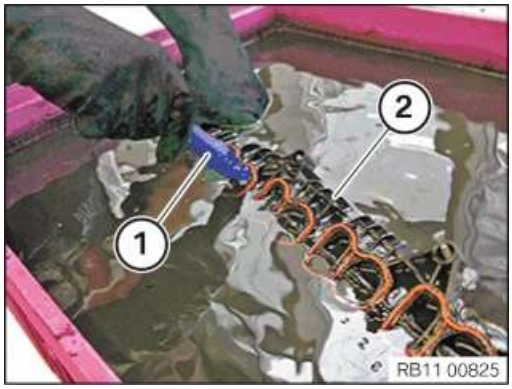
Proceed in the standard firing order while using the same procedure to clean the swirl ports at the remaining cylinders.

Firing order:

- **1 3 4 2** (4-cylinder engine)
- **1 5 3 6 2 4** (6-cylinder engine)

Thereby, turn motor on the central screw with 00 9 120 and 11 6 480 respectively by **180°** (4-cylinder-engine) and/or **120°** (6-cylinder-engine).

Note:
Figure M47.



Wear protective goggles and gloves.

Caution!
Do not clean electrical components with a parts cleaning unit or high pressure cleaner!

- Remove the intake plenum (2) from the cleaning agent
- Clean the openings on intake plenum (2) and swirl flap using the brush (1)

  (Part number: 83 19 2 298 237)
- Clean throttle valve, exhaust-gas recirculation valve, mixing tube and mounted parts with the brush (1) if necessary
- Then clean intake plenum (2) with a parts cleaning unit or a high-pressure cleaner
- Check all seals for damage and replace if necessary.

Observe country-specific waste disposal regulations.

Required follow-up work:

Dismantle intake plenum:

- Installing the throttle body
- If applicable, install adjuster
- If applicable, install preheating control unit
- If applicable, install charging pressure sensor

- Crank the engine at the central bolt at minimum twice

- Install intake plenum
- If necessary, install an electric fan
- Install underbody protection
- If necessary, install stiffening plate
- Connect battery earth lead
- Reset the quantity correction under:
  - Service functions
  - 01 Drive
  - Digital Diesel Electronics
  - Reset correction values of injectors

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11 12 100 Removing and installing cylinder head (N57 D30U/O/T 0/1)

Special tools required:

- 00 2 530
- 00 9 120
- 11 4 470
- 11 5 320
- 11 6 050
- 11 6 480
- 11 8 760

Important!

There must be no coolant, water and engine oil in any of the threaded holes in the engine block.

Fit new cylinder head bolts.

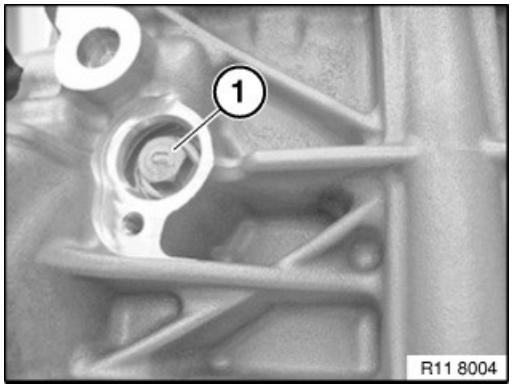
Do not wash off bolt coating.

Jointing torque and angle of rotation must be observed without fail (**risk of damage!**).

Reworking of cylinder head is not permitted.

Necessary preliminary tasks:

- Remove cylinder head cover.
- Remove injector nozzles.
- Remove intake plenum.
- Undo negative lead from battery.
- Undo exhaust turbocharger from exhaust manifold.
- Drain and dispose of coolant.
- Remove exhaust-gas recirculation cooler
- Disconnect coolant hoses.



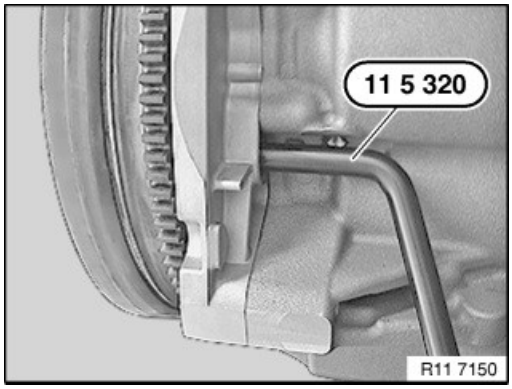
Open coolant drain plug on engine block.

Tightening torque 11 11 2AZ.

Installation note:

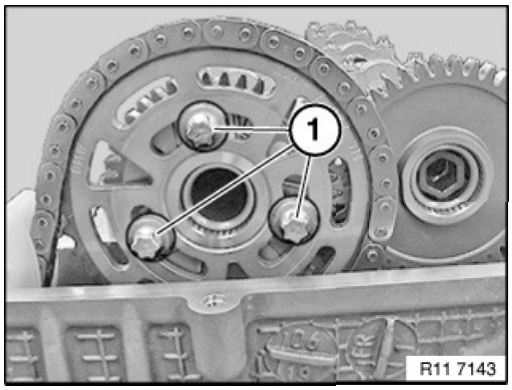
Replace gasket.

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Crank engine with special tool 11 6 480 in direction of rotation until piston of cylinder 1 is in TDC position.

Use special tool 11 5 320 to secure flywheel in TDC firing position of cylinder 1.

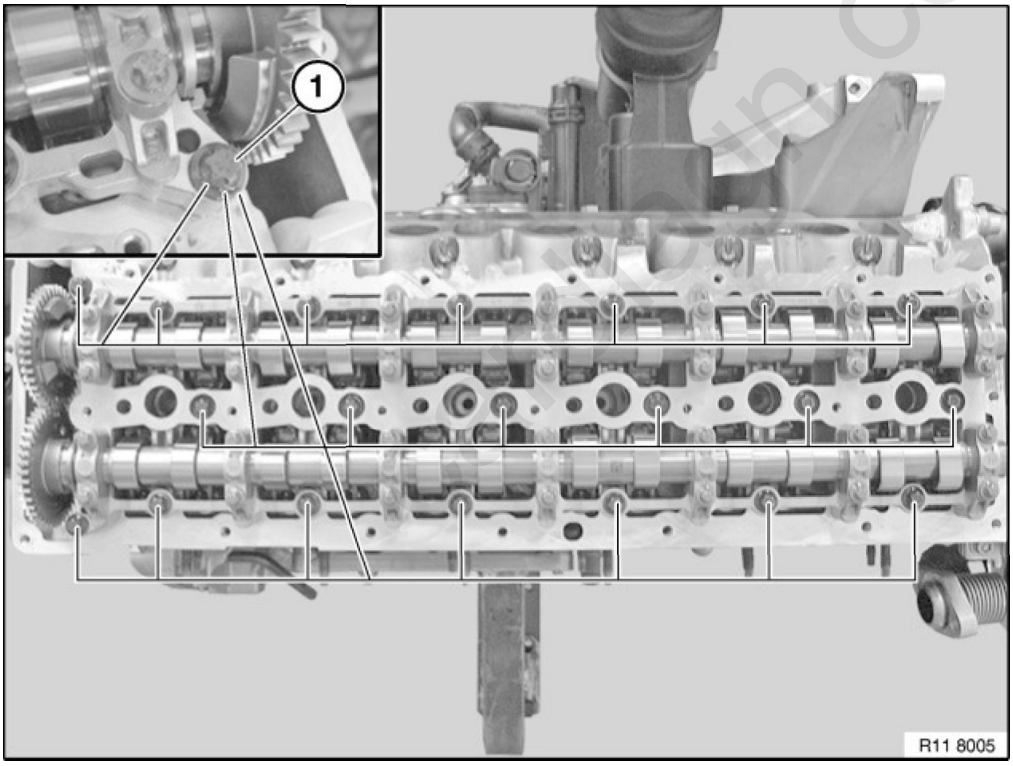


Remove chain tensioner at top.

Release camshaft bolts (1).

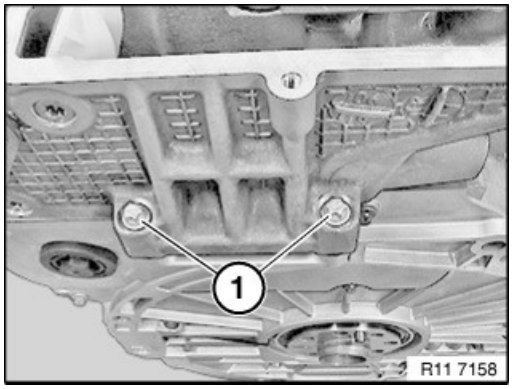
Tightening torque 11 31 1AZ.

Remove camshaft sprocket.

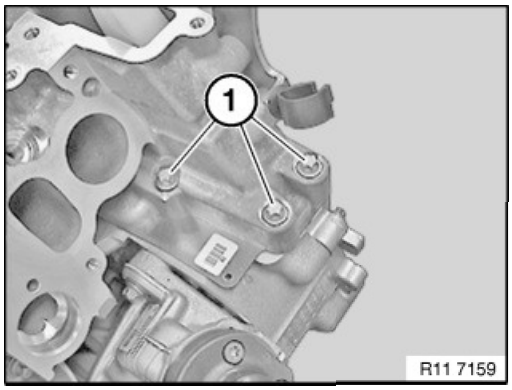


Release screws (1) from outside inwards in 1/2 turns.

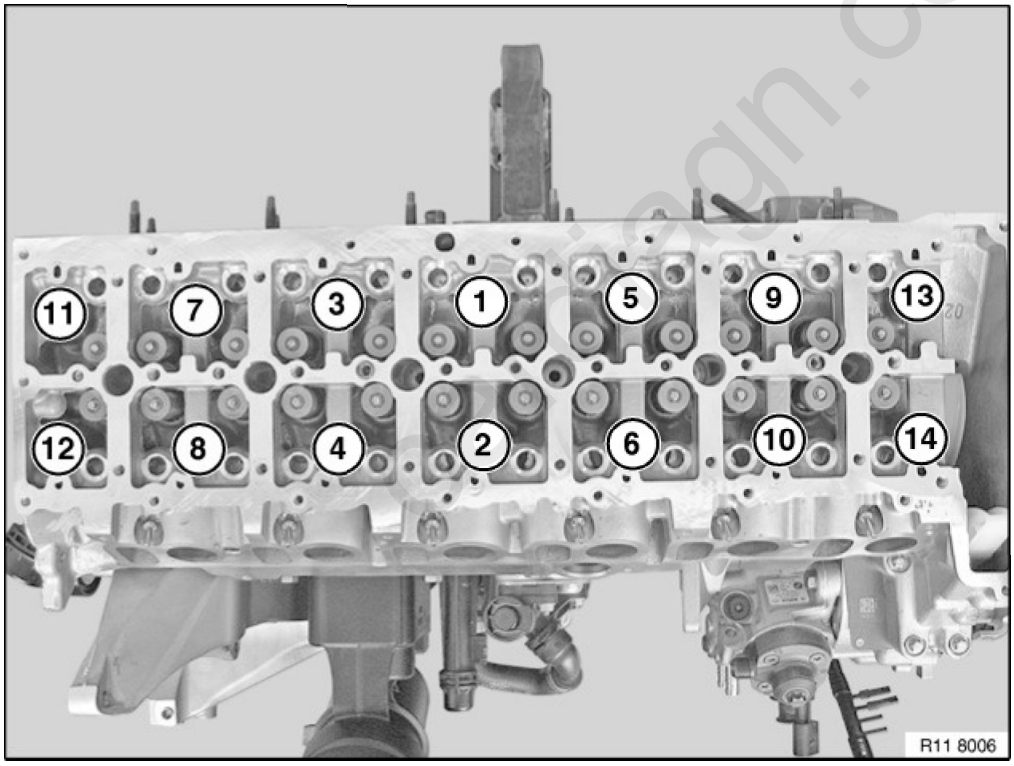
Remove camshaft carrier.



Release screws (1).

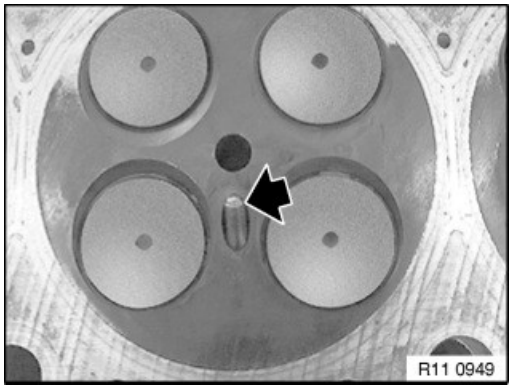


Release screws (1).



Release screws (1 to 14) from outside inwards in 1/2 turns.

Remove cylinder head.

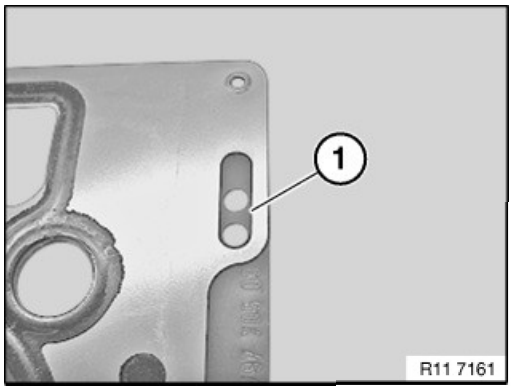


Important!

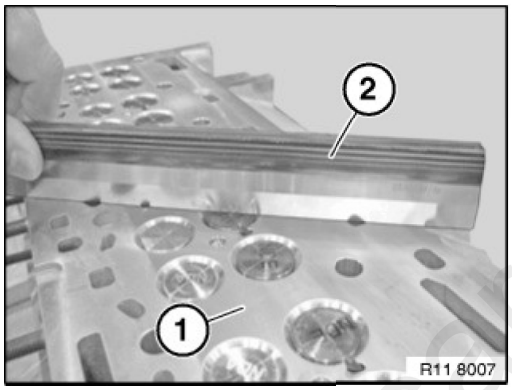
The glow elements protrude at the sealing surface and may be damaged when the cylinder head is put down.

Set down cylinder head in such a way that glow elements are not damaged.

If necessary, remove glow elements with special tool 11 6 050 .



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

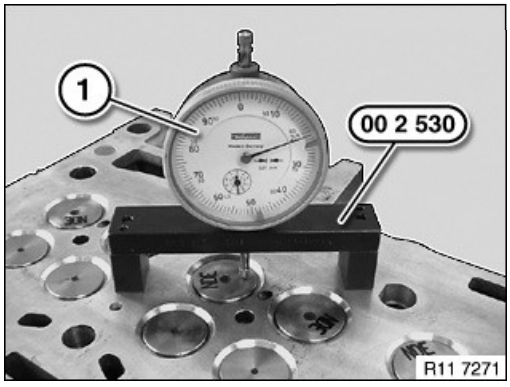


Clean sealing surfaces with special tool 11 4 470 .

Check evenness of cylinder head (1) with a straightedge (2).

Max. deviation from flatness (longitudinal) **0.10 mm**.

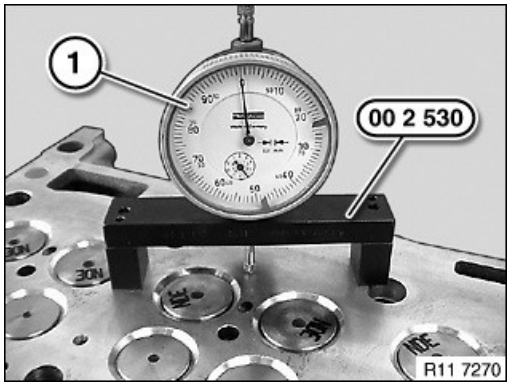
Max. deviation from flatness (transverse) **0.05 mm**.



Position special tool 00 2 530 with dial gauge (1) on valve.

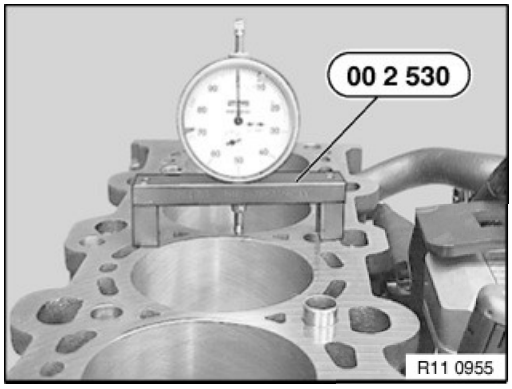
Determine valve underprotrusion.

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Position special tool 00 2 530 with dial gauge (1) on cylinder head.

Set dial gauge (1) to zero.

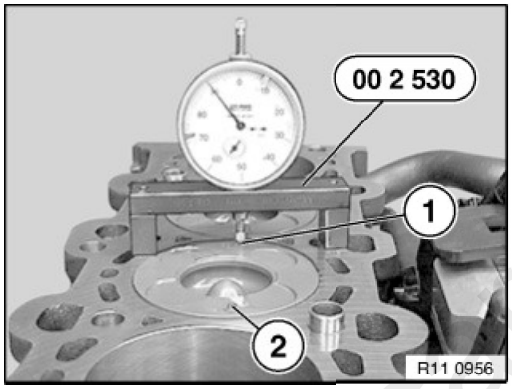


Clean sealing surfaces with special tool 11 4 470 .

If work is 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 sealing surface and set under preload to zero.

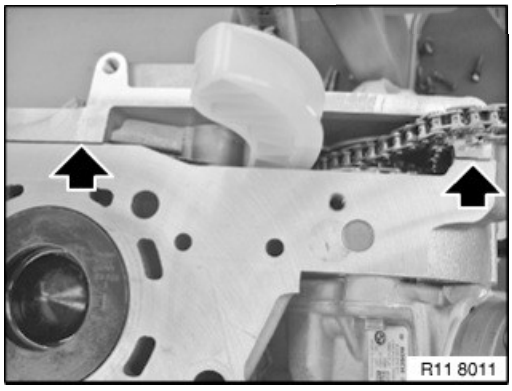


Clean piston at measuring points (1 and 2).

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

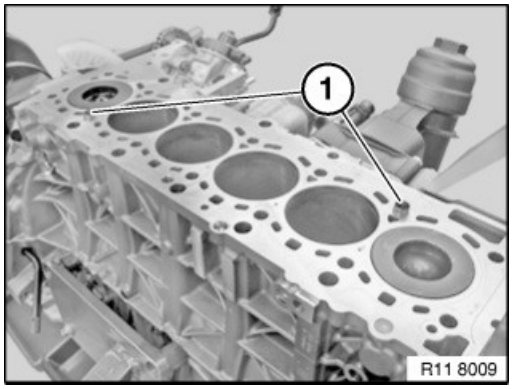
Measure and note down piston protrusion at measuring points (1 and 2) on all 4 pistons.

Installation note:
Determine thickness of cylinder head gasket.



Installation note:
Coat transition from crankcase to gear case cover with Drei Bond 1209 sealing compound.

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Check fitting sleeves (1) for damage and correct installation position.

Clean sealing surfaces with special tool 11 4 470 .

Reinstall cylinder head gasket.

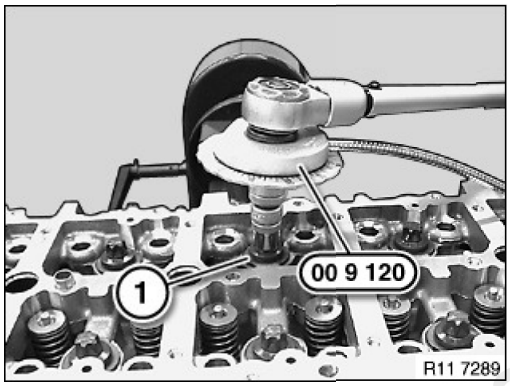
Important!

There must be no coolant, water and engine oil in any of the threaded holes in the engine block.

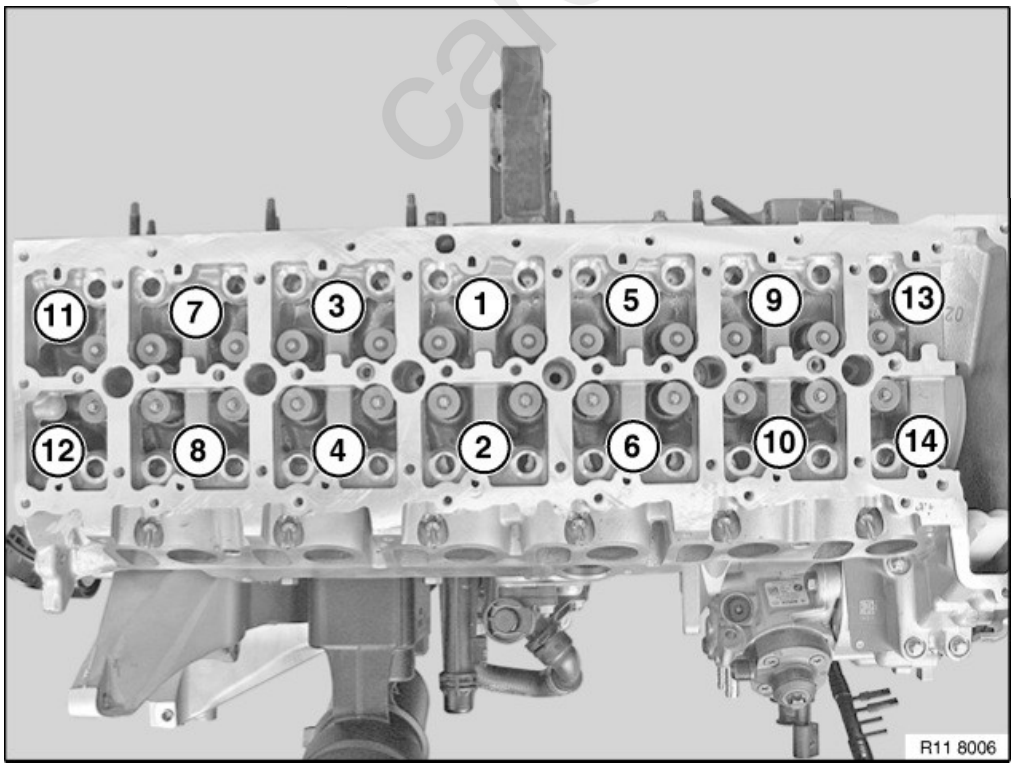
Fit new cylinder head bolts.

Do not wash off bolt coating.

Jointing torque and angle of rotation must be observed without fail (**risk of damage!**).



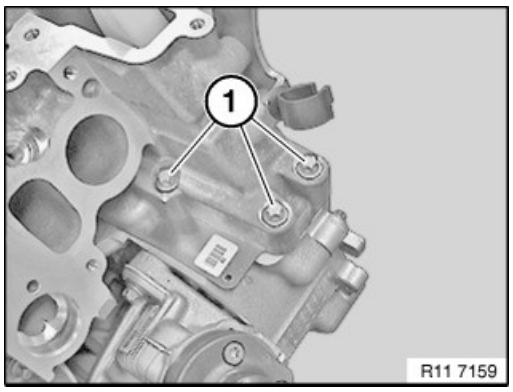
Secure cylinder head bolts (1) with special tool 00 9 120 .



Tighten cylinder head bolts in sequence (1 to 14).

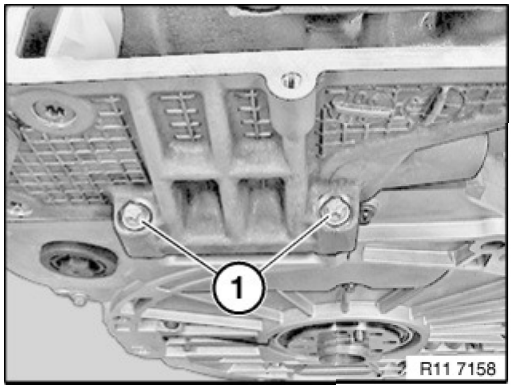
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Tightening torque: 11 12 1 AZ.



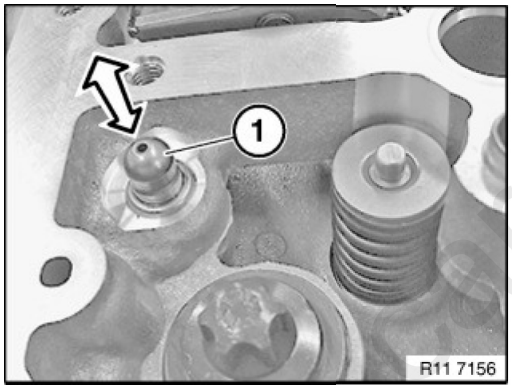
Install and tighten down screws (1).

Tightening torque: 11 00 4 AZ.

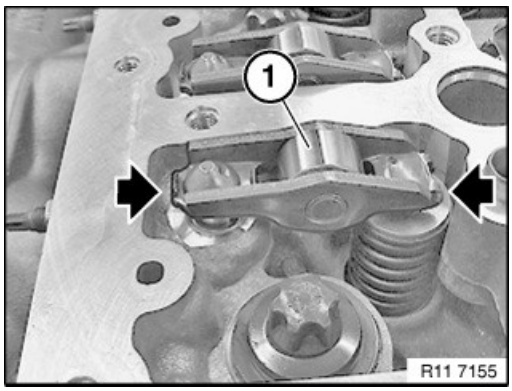


Install and tighten down screws (1).

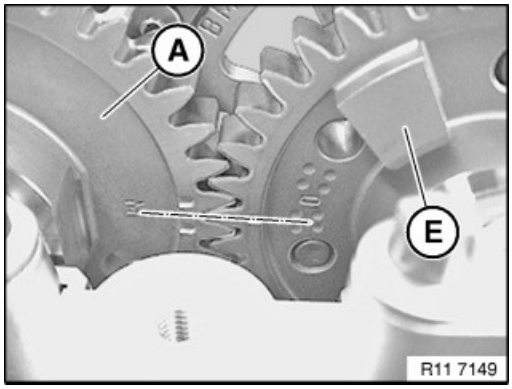
Tightening torque: 11 00 4 AZ.



Make sure that the hydraulic valve clearance compensating element (1) is installed in the correct position.

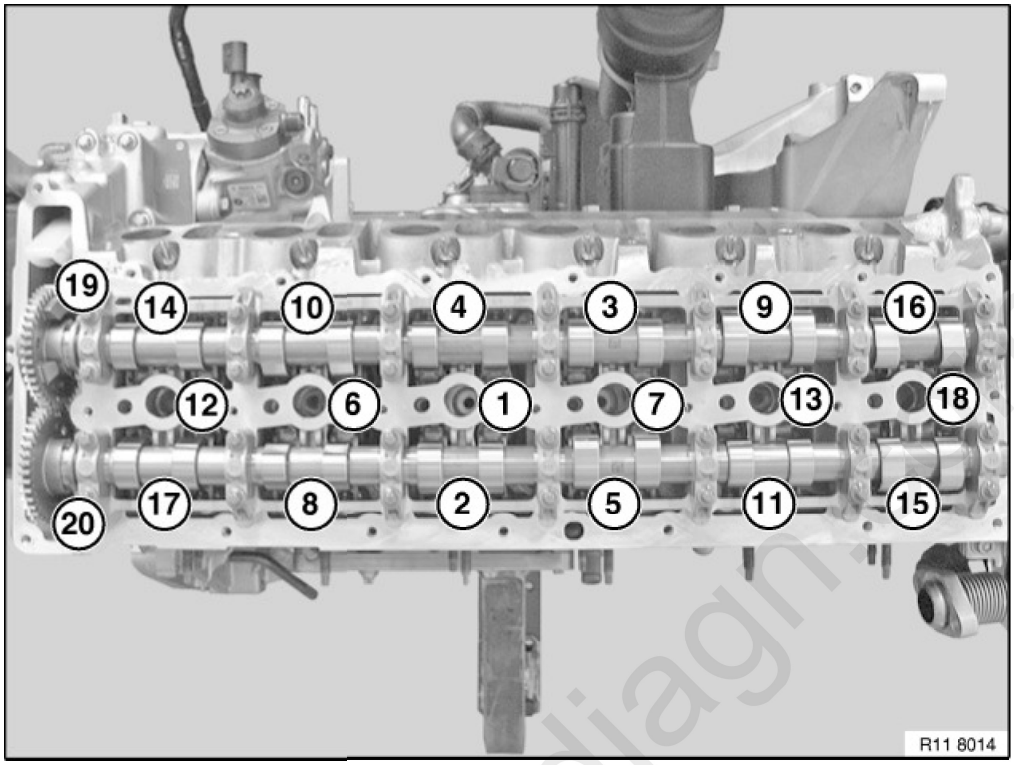


Make sure roller cam followers (1) are in correct installation position.



Important!

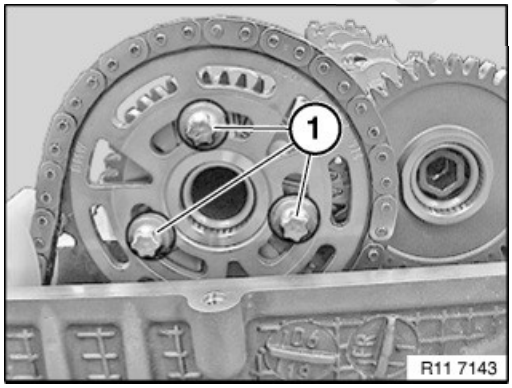
The camshaft sprockets (A and E) must be adjusted to the marking before the camshaft carrier is mounted on the cylinder head. **Risk of damage!** to engine valves.



Place camshaft carrier on cylinder head.

Tighten bolts in sequence (1 to 20).

Tightening torque: 11 31 3 AZ.



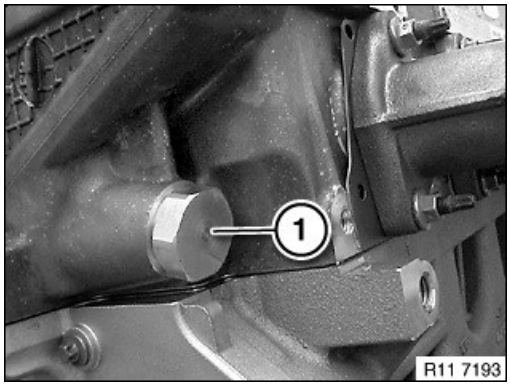
Install chain sprocket with timing chain.

Insert bolts (1).

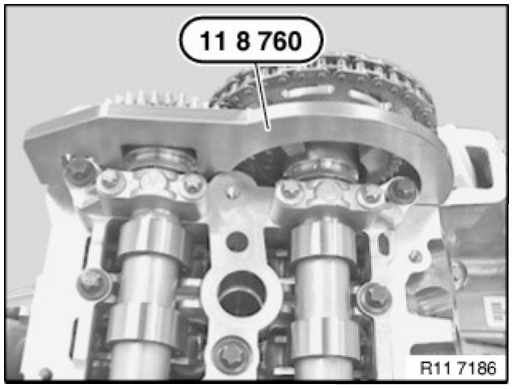
Join bolts (1) to 10 Nm.

Release bolts (1) through 90°.

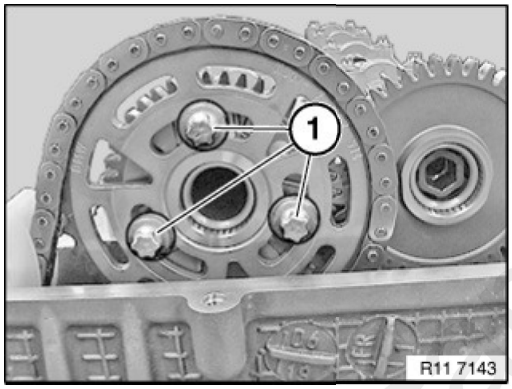
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Install chain tensioner (1).



Place special tool 11 8 760 on mounting flats of exhaust camshaft.*Note:* Special tool 11 8 760 must lie flush on cylinder head.



Tighten camshaft bolts (1).

Tightening torque: 11 31 1AZ.

Assemble engine.

Check timing.

Remove all special tools.

Cooling system must be topped up, bled and checked for watertightness.

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11 12 000 Removing and installing/sealing cylinder head cover (N57 D30 U/O/T 0/1)

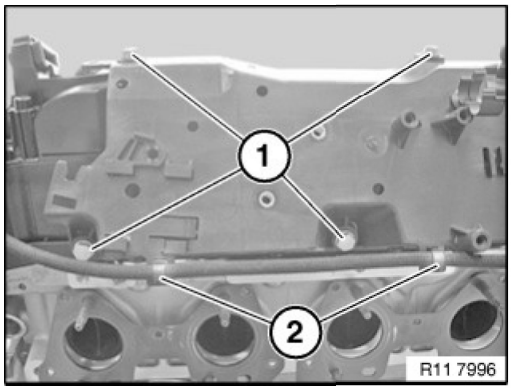
Important!

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

Cover alternator with suitable materials.

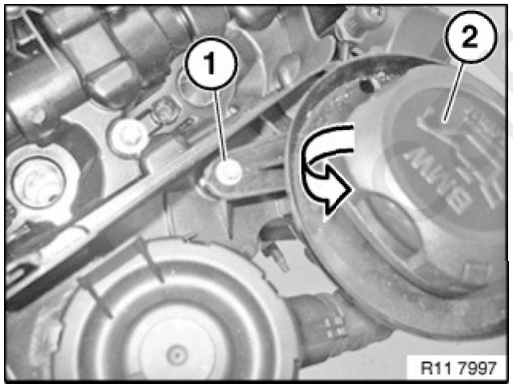
Necessary preliminary work:

- Remove intake plenum.
- Remove all injectors.
- Remove pressure accumulator.
- Release engine wiring harness in area of cylinder head cover.



Release screws (1).

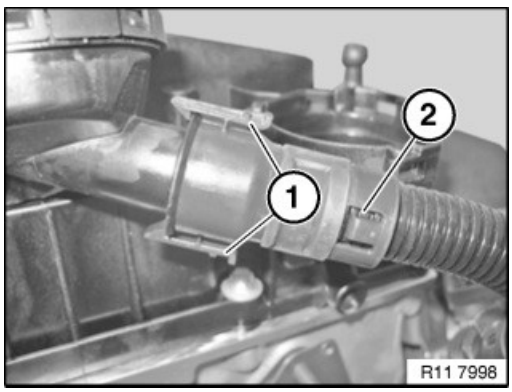
Lay cable clip (2) to one side.



Release screw (1).

Turn oil filler neck (2) in direction of arrow to stop.

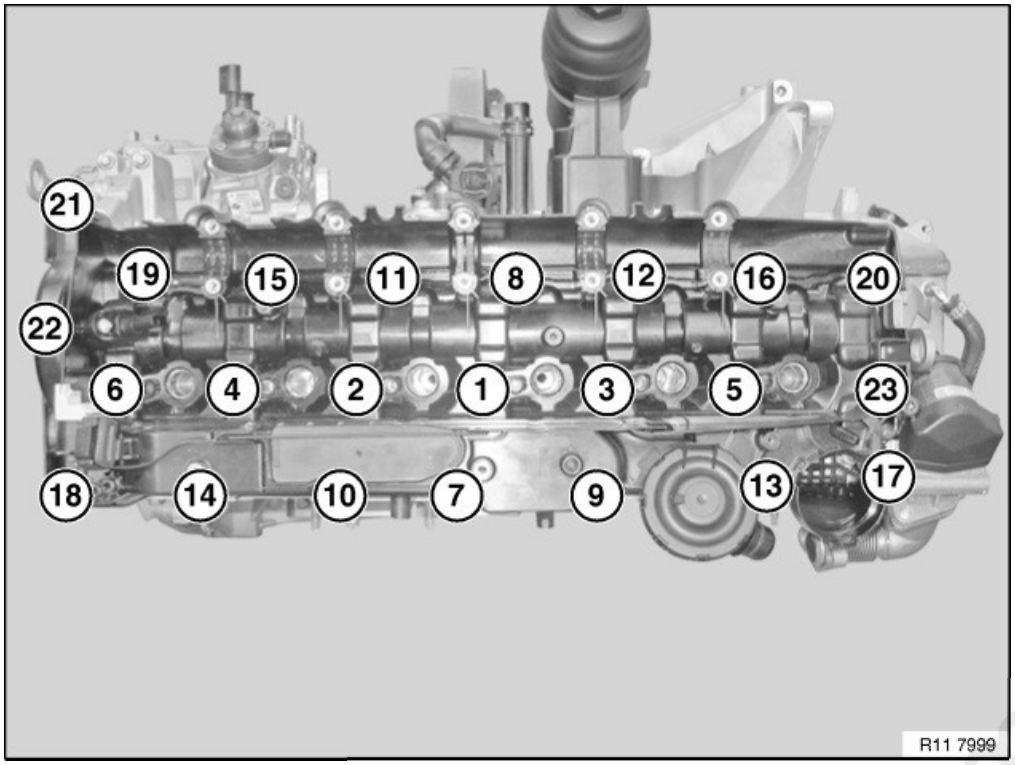
Lift out oil filler neck (2).



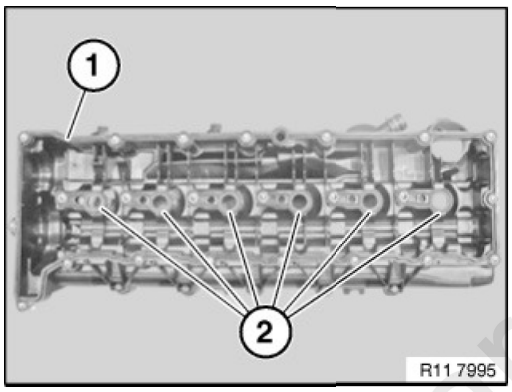
Press locking hooks (1) down.

Remove hose (2) for engine ventilation.

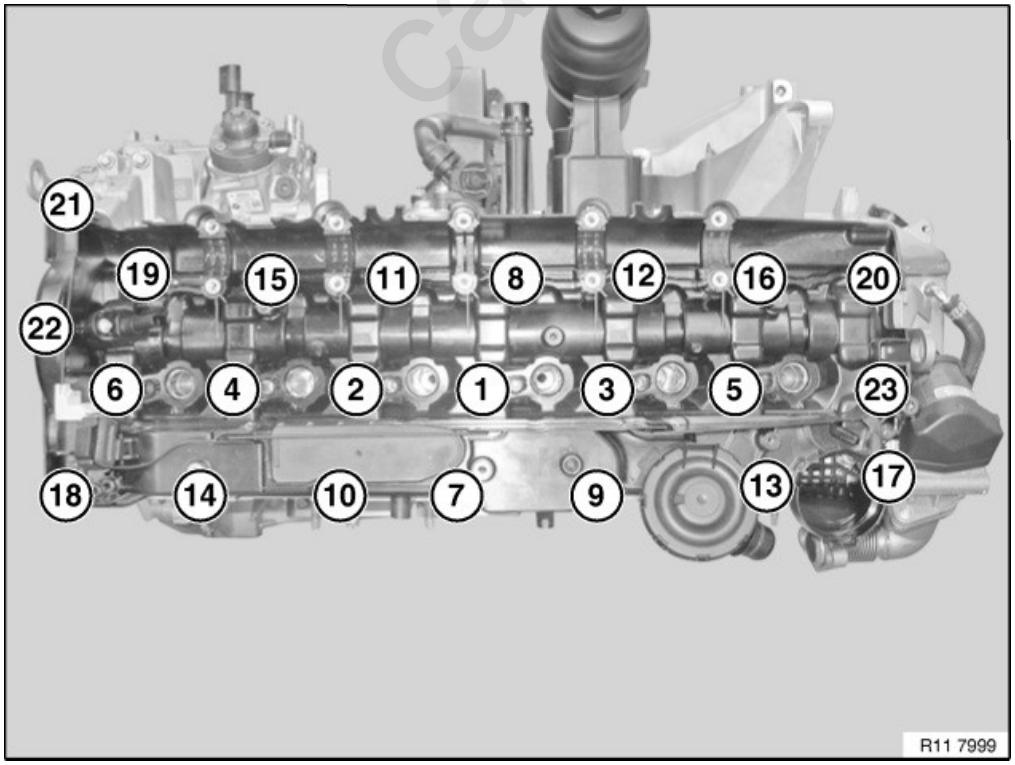
diagn.com



Undo cylinder head cover bolts in the sequence 23 to 1.



Replace profile seals (1 and 2).



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Install cylinder head cover with new profile seal.

Secure cylinder head cover bolts in the sequence 1 to 23.

Tightening torque: 11 12 4AZ.



Assemble engine.

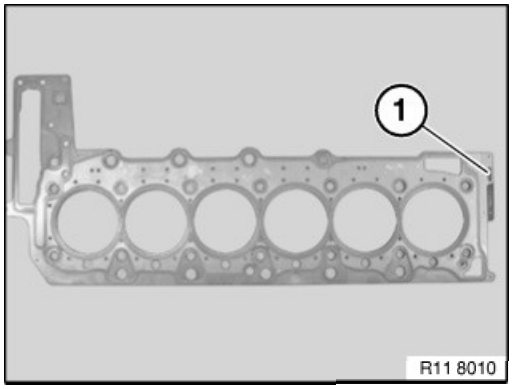
Check engine for leak tightness.

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11 12 501 Replacing cylinder head gasket (N57 D30 U/O/T 0/1)

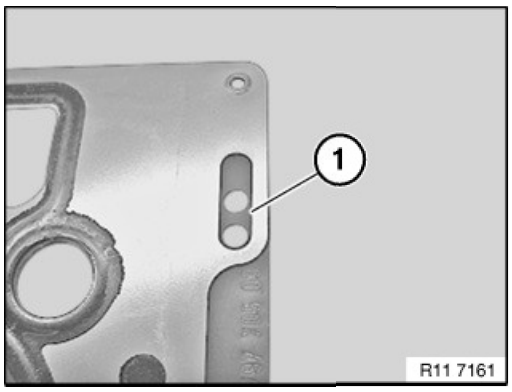
Necessary preliminary tasks:

- Remove cylinder head.



The cylinder head gasket is designed as a beaded metal gasket.

Pay attention to gasket thickness (1).



Highest piston protrusion at measuring points (1 and 2) of all 4 pistons determines thickness of cylinder head gasket.

Piston protrusion up to 0.92 mm

- Install 1-hole cylinder head gasket.

Piston protrusion >0.92 ... 1.03 mm

- Install 2-hole cylinder head gasket.

Piston protrusion greater than >1.03 ... 1.18 mm

- Install 3-hole cylinder head gasket.

Assemble engine.

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11 13 000 Removing and installing, sealing or replacing oil sump (N57 D30 O/T 1)

Special tools required:

- 00 0 200
- 00 0 201
- 00 0 202
- 00 0 204
- 00 0 208
- 11 0 000
- 11 8 780
- 11 4 472
- 11 4 471

Necessary preliminary work:

- Remove starter motor.
- Drain engine oil.
- Remove oil dipstick guide tube.
- Remove front axle differential (AWD).
- Removing bearing support (all-wheel drive).
- Lower front axle support.

Note:

Front axle alignment is not required.

Caution!

Engines with surface sealant:

Application time of sealing bead max. 12 minutes.

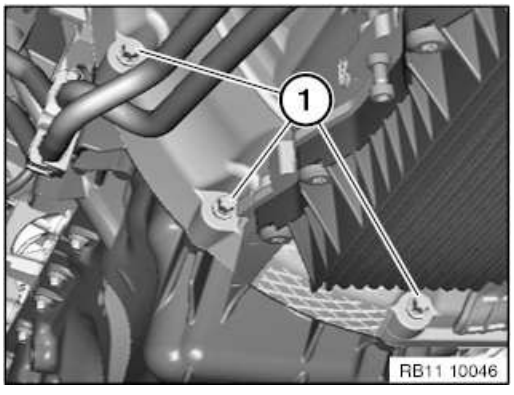


Illustration: Automatic transmission

Release screws (1) from transmission.

Automatic transmission: Tightening torque 24 00 1AZ.

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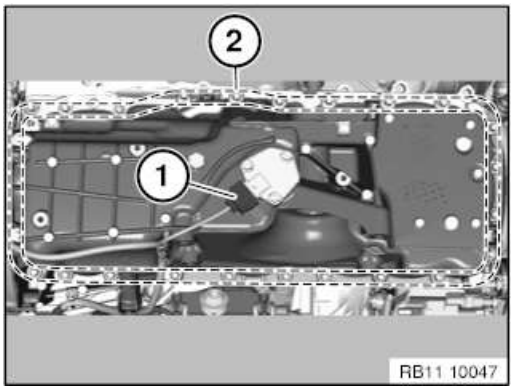


Illustration: 4WD

Installation note:

Renew gasket.

Unplug connector (1) from oil level switch and unclip cable in area of oil sump.

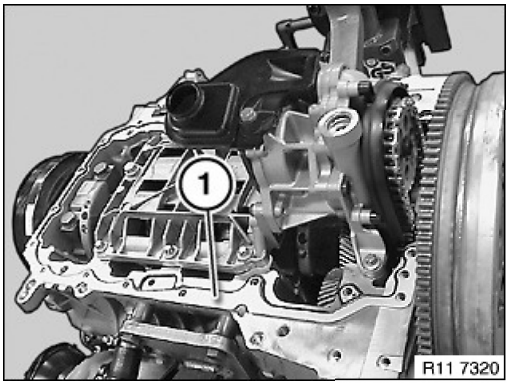
Modify oil level sensor if replacing oil sump.

Release oil sump bolts along dashed line (2).

Tightening torque 11 13 2AZ.

Detach oil sump downward.

Installation note:
Tighten down all screws diagonally and evenly.

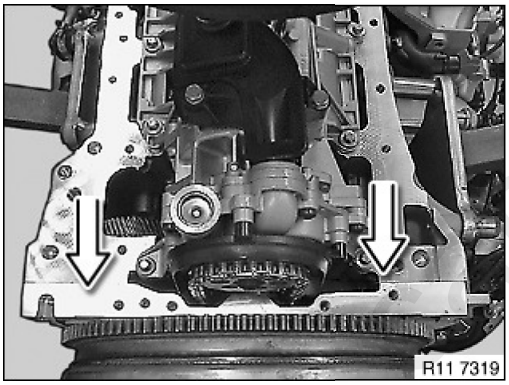


Graphic N47T

Only on vehicles with gasket

Remove gasket (1).

Remove gasket debris from sealing surface and clean sealing surface.



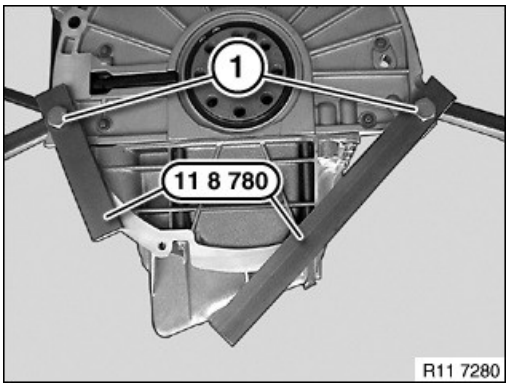
Installation note:
Use liquid sealant 2.1 Drei Bond.

Apply Drei Bond liquid sealant lightly and evenly in the area of the arrows on the differential cover to the engine block.

Caution!

Oil sump gasket must not be lubricated.

Install oil sump with a new gasket.

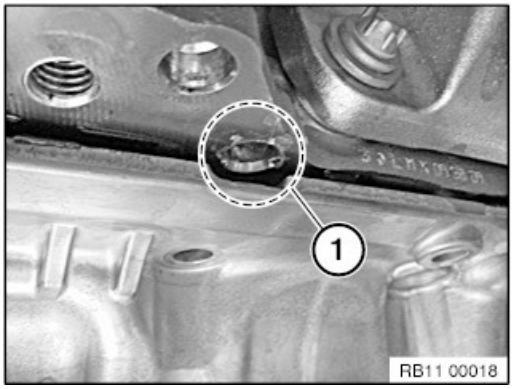


Installation note:
Special tool 11 8 780 is only necessary if the engine or the transmission is removed.

Position special tool 11 8 780 with transmission bolts (1) so that engine oil sump is exactly flush with engine block.

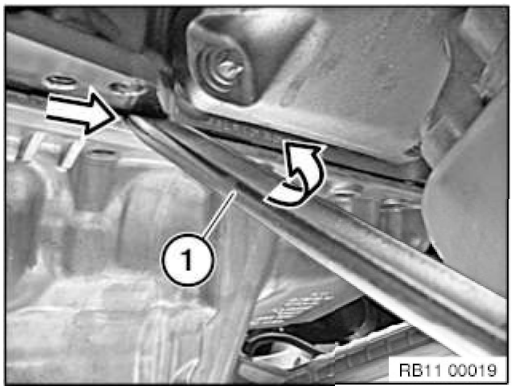
Attaching the oil sump.

.com

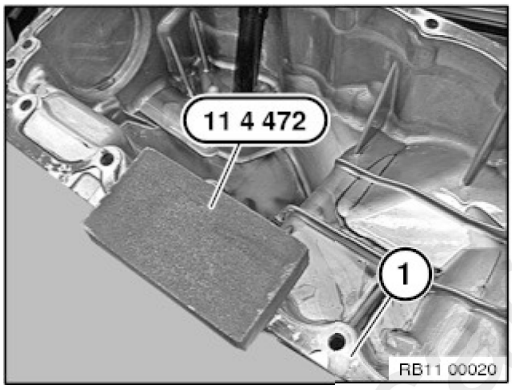


Engines with liquid seal: Caution!

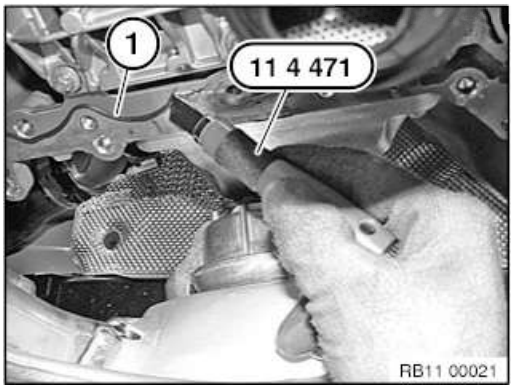
The oil sump can only be loosened in the areas (1) where an aperture is present in the oil sump.



Use a suitable crow bar (1) at the appropriate point to release the oil sump in direction of arrow.

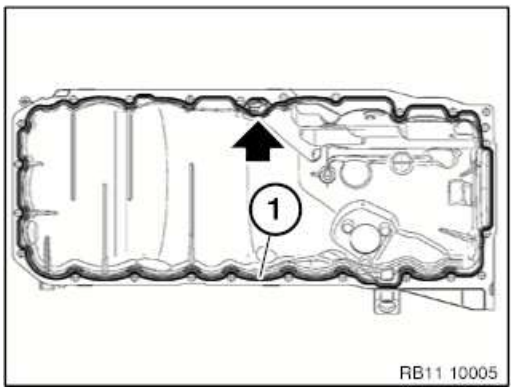


Clean sealing surface (1) with special tool 11 4 472 .*Installation note:* Sealing surfaces must be free of oil, grease and cleaning agents.



Clean sealing surface (1) with special tool 11 4 471 .*Installation note:* Sealing surfaces must be free of oil, grease and cleaning agents.

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Apply sealing compound:

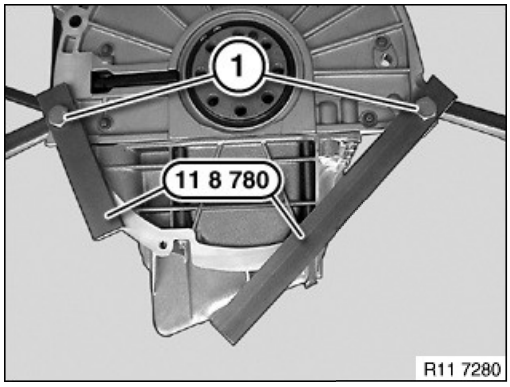
Apply the sealing compound in area (1).

Make sure that the sealing bead runs along the inner edge.

The oil return channel must be completely surrounded (see arrow).

Installation note:
The oil sump must be installed approximately 10 minutes after application of the sealing compound.

Sealant height approximately 2 to 2.5 mm.



Installation note:
Special tool 11 8 780 is only necessary if the engine or the transmission is removed.

Position special tool 11 8 780 with transmission bolts (1) so that engine oil sump is exactly flush with engine block.

Attaching the oil sump.

Assemble engine.

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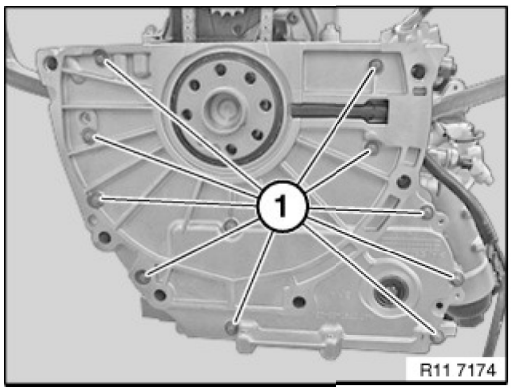
11 14 110 Removing and installing, sealing / replacing rear gear case cover (N57 D30 U/O/T 0/1)

Special tools required:

- 00 9 120
- 11 8 815
- 11 4 470

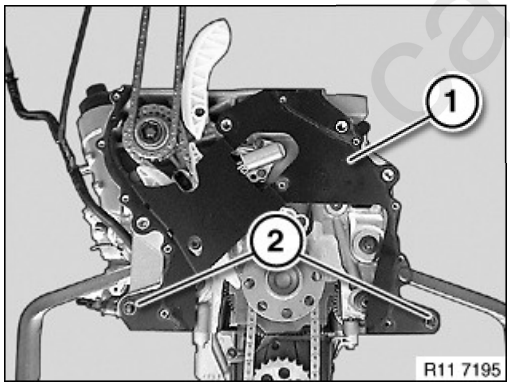
Necessary preliminary work:

- Remove engine.
- Mount engine on assembly stand.
- Remove flywheel.
- Remove cylinder head.
- Removing oil sump.



Release bolt holding high pressure pump.

Release screws (1).

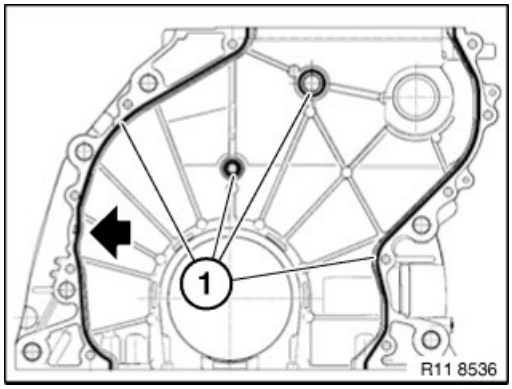


On engines N57 and up to 03/2011.

Remove beaded metal gasket (1).

Check fitting sleeves (2) for damage, replace if necessary.

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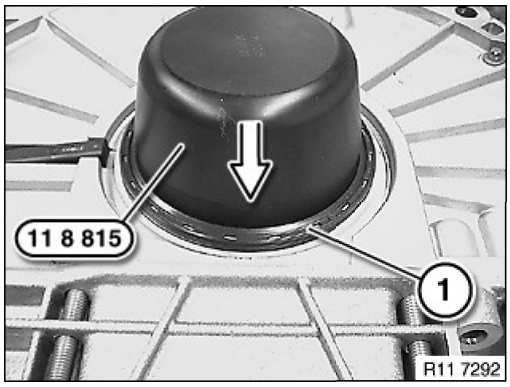
On engines N57 from 03/2011.

Installation note:
Application time of sealing bead (1) max. 12 min.

Remove gasket remnants with special tool 11 4 470 .

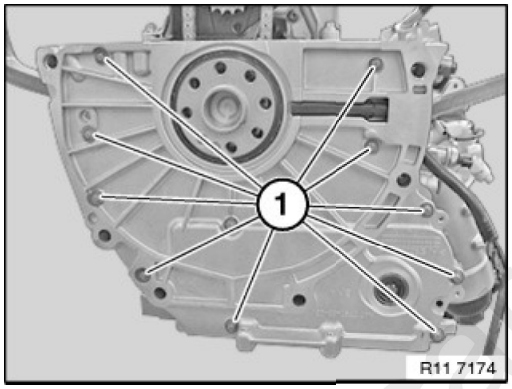
Apply sealing bead (1) at marked points.

Thickness of sealing bead: **1.5 to 2.0 mm.**

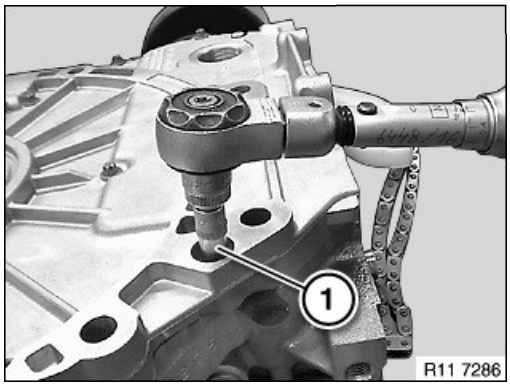


Preassemble special tool 11 8 815 on crankshaft.

Fit accelerator pedal module ring (1) with end cover dry and without lubricant.



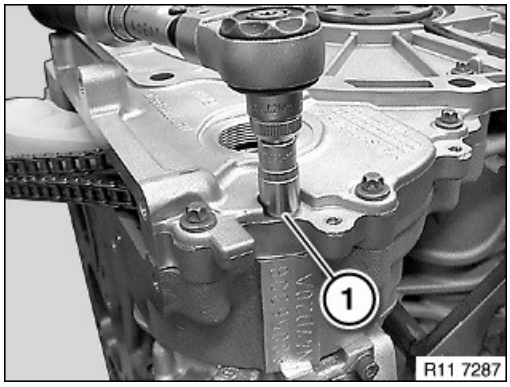
Insert bolts (1).



Secure special tool 00 9 120 with bolts (1).

Tightening torque: 11 14 2AZ.

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Insert screw (1) of high pressure pump (if fitted).

Assemble engine.

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11 14 005 Replacing front crankshaft seal (N57 D30 U/O/T 0/1)

Special tools required:

- 11 8 801
- 11 8 802
- 11 8 803
- 11 8 804

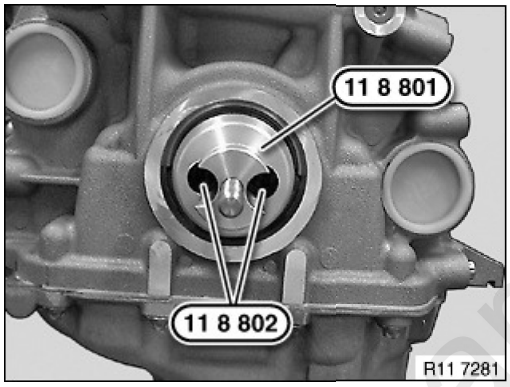
Important!

Accelerator pedal module rings must be installed in a dry condition.

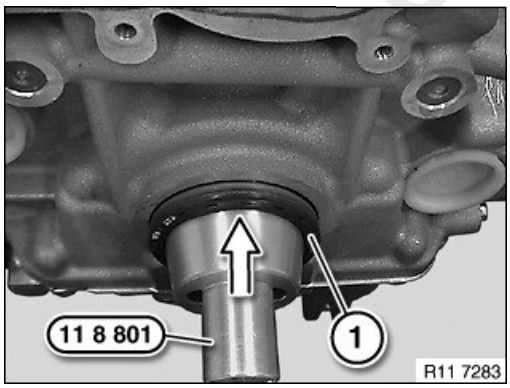
Do not use engine oil or lubricant.

Necessary preliminary tasks:

- Remove vibration damper.
- Lever out FPM ring using suitable tool.

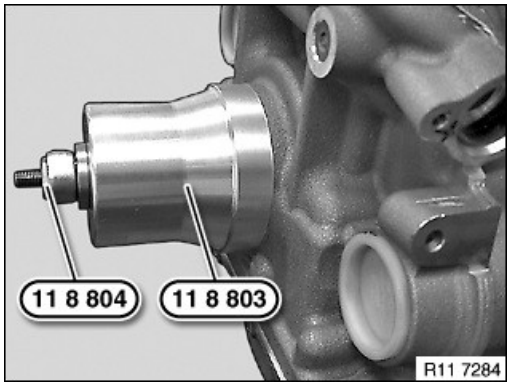


Fasten special tool 11 8 801 with11 8 802 on the crankshaft.*Note:* Graphic N47.



Position accelerator pedal module ring on the special tool 11 8 801 .*Note:* Graphic N47.

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Pull on accelerator pedal module- ring with special tool 11 8 803 and 11 8 804 .

Screw in special tool 11 8 803 until it is flush with the crankkcase.

Note:
Graphic N47.

Assemble engine.

Important!
Do not start engine without drive belt **(risk of damage!)**.

Check engine for leak tightness.

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11 14 151 Replacing rear crankshaft seal (N57 D30 U/O/T 0/1)

Special tools required:

- 11 8 810
- 11 8 811
- 11 8 812
- 11 8 813
- 11 8 814
- 11 8 815

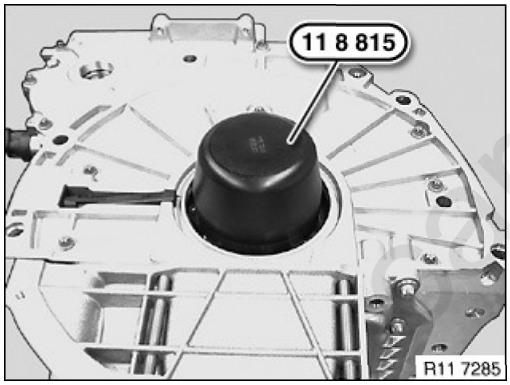
Necessary preliminary tasks:

- Drain off engine oil
- Remove flywheel
- Remove accelerator pedal module ring using suitable tool

Important!

Accelerator pedal module rings must be installed in a dry condition.

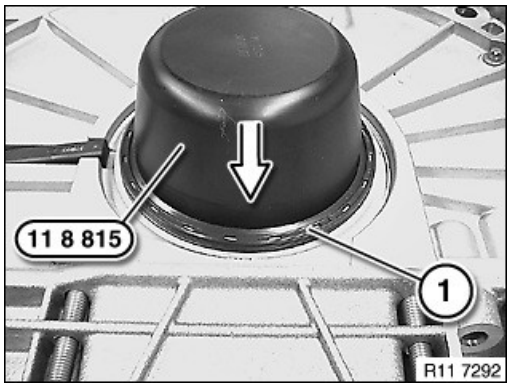
Do not use engine oil or lubricant.



Important!

Risk of damage to special tool at chamfer in area of end face.

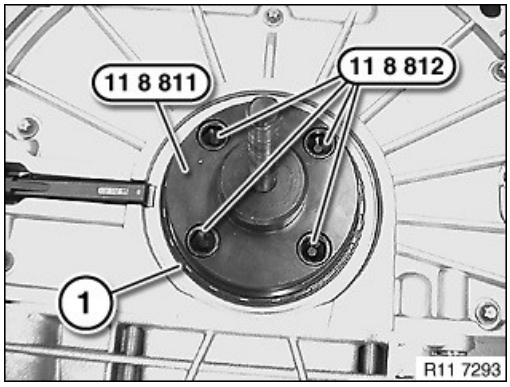
Position special tool 11 8 815 on crankshaft.



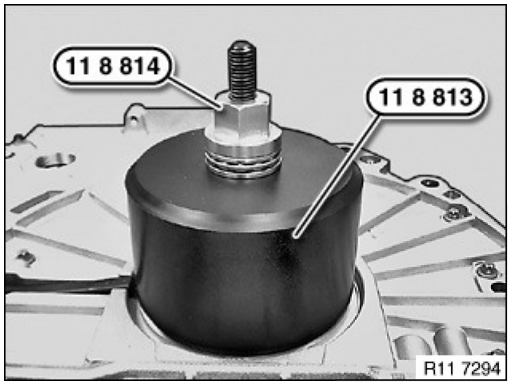
Use special tool 11 8 815 to fit FPM ring (1) in direction of arrow just up to gear case cover and position.

Remove special tool 11 8 815 .

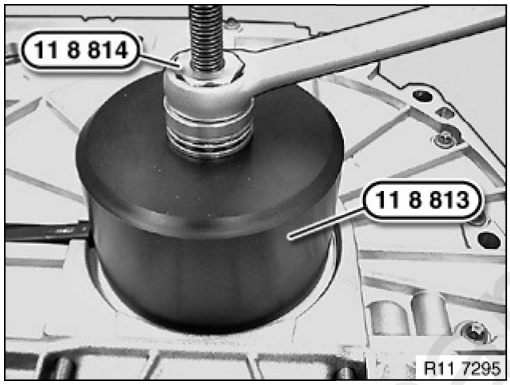
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Fasten special tool 11 8 811 with special tool 11 8 812 on the crankshaft.
Position accelerator pedal module ring (1).



Slide on special tool 11 8 813 .
Screw down special tool11 8 814 .



Press in accelerator pedal module ring with special tool 11 8 813 .
Screw in special tool 11 8 813 up to gear case cover.

Remove all special tools 11 8 810 .
Assemble engine.
Check engine for leak tightness.

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11 21 531 Replacing all crankshaft main bearing shells (N57 D30 U/O/T 0/1)

Special tools required:

- 00 2 590

Important!

Replace main bearing bolts.

There must be no oil in the blind holes **(risk of cracking)**.

Do not wash off bolt coating.

Incorrect installation of the bearing cap leads to damage to the crankcase.

Check grinding stage of crankshaft.

Installation note:

The assignment of the bearing shells in the crankcase (classification) may no longer apply after the crankshaft has been replaced.

Install yellow bearing shells in crankcase (see BMW Parts installation instructions).

Bearing classification from 1 to 3 possible.

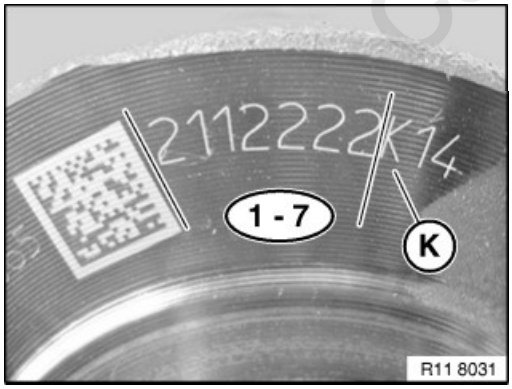
1: Bearing colour - yellow

2: Bearing colour - green

3: Bearing colour - white

Necessary preliminary tasks:

- Remove crankshaft.



Bearing classification in bearing cap:

The number combination from left to right is from 1 to 7.

The designation (K) stands for ”Kupplungsseite” (German = clutch end).

Possible combination of bearing colours.

1: 2 = green

2: 1 = yellow

3: 1 = yellow

4: 2 = green

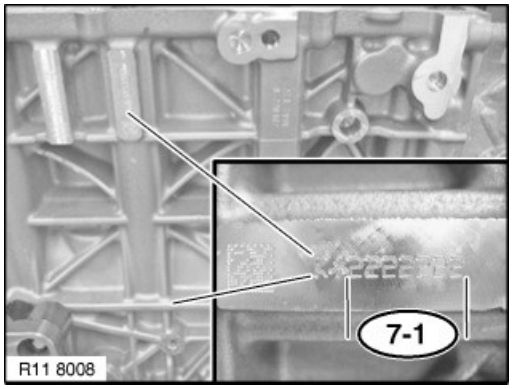
5: 2 = green

6: 2 = green

7: 2 = green

See graphic.

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Bearing classification in crankcase:

The letter K= ”Kupplungsseite” (German = clutch end).

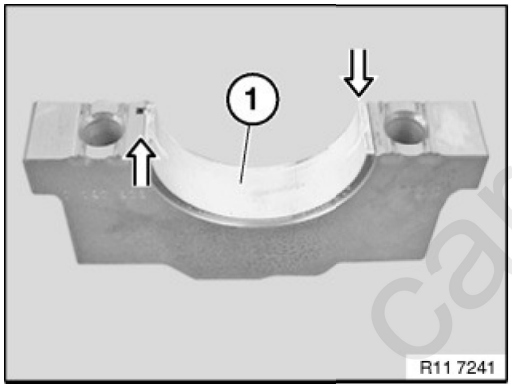
The number combination from left to right is from bearing seat 7 to 1.

Possible combination of bearing colours.

1:	2 = green
2:	2 = green
3:	2 = green
4:	2 = green
5.	2 = green
6.	2 = green
7.	2 = green

See graphic.

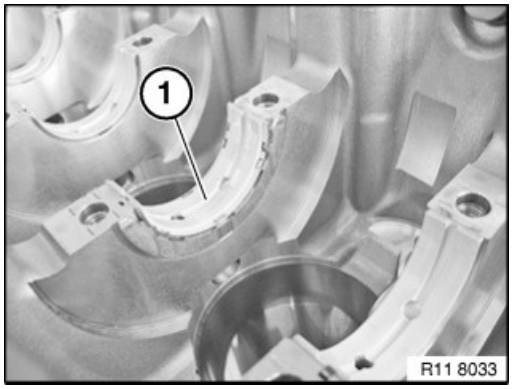
(1) Bearing cap / yellow	**(1)** Bearing cap / yellow	**(2)** Bearing cap / green
(1) Crankcase / yellow	**(2)** Crankcase / green	**(2)** Crankcase / green
(2) Bearing cap / green	**(2)** Bearing cap / green	**(2)** Bearing cap / green
(1) Crankcase / yellow	**(2)** Crankcase / green	**(3)** Crankcase / white
(2) Bearing cap / green	**(3)** Bearing cap / white	**(3)** Bearing cap / white
(2) Crankcase / green	**(2)** Crankcase / green	**(3)** Crankcase / white



Place main bearing shell (1) with no lubricating groove in the bearing cap (see arrows).

Installation note:
Note guide lug on main bearing shell (1).

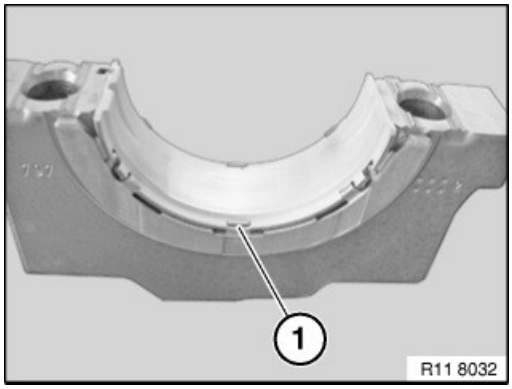
Observe combination of bearing colours according to the table.



Place main bearing shell (1) with lubricating groove in crankcase (see arrows).

Observe combination of bearing colours according to the table.

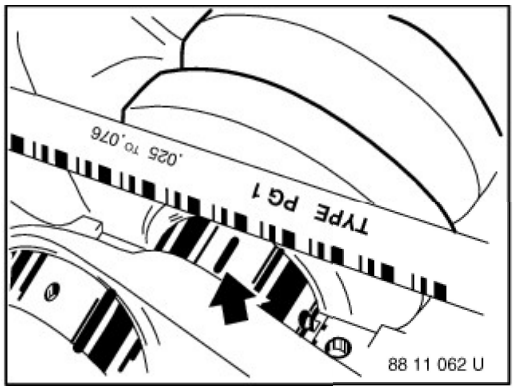
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Installation note:
Thrust bearing (1) on the crankshaft is installed at bearing position 4.

Observe combination of bearing colours according to the table.

Observe grinding stage of main bearing journals.



Position special tool 00 2 590 on main bearing to be measured and bolt to main bearing cap.

Tightening torque: 11 11 1AZ.

Remove main bearing cap. Read off bearing clearance at width of crushed plastic thread (Plastigage) with aid of measuring scale.

If necessary, install new bearing shells or bearing shells with different colour coding to correct radial clearance.

Assemble engine.

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11 21 500 Replacing crankshaft (N57 D30 O/U/T 0/1)

Special tools required:

- 00 2 010
- 00 9 120
- 11 6 251
- 11 6 252
- 11 6 480

Important!

Replace main and connecting rod bolts.

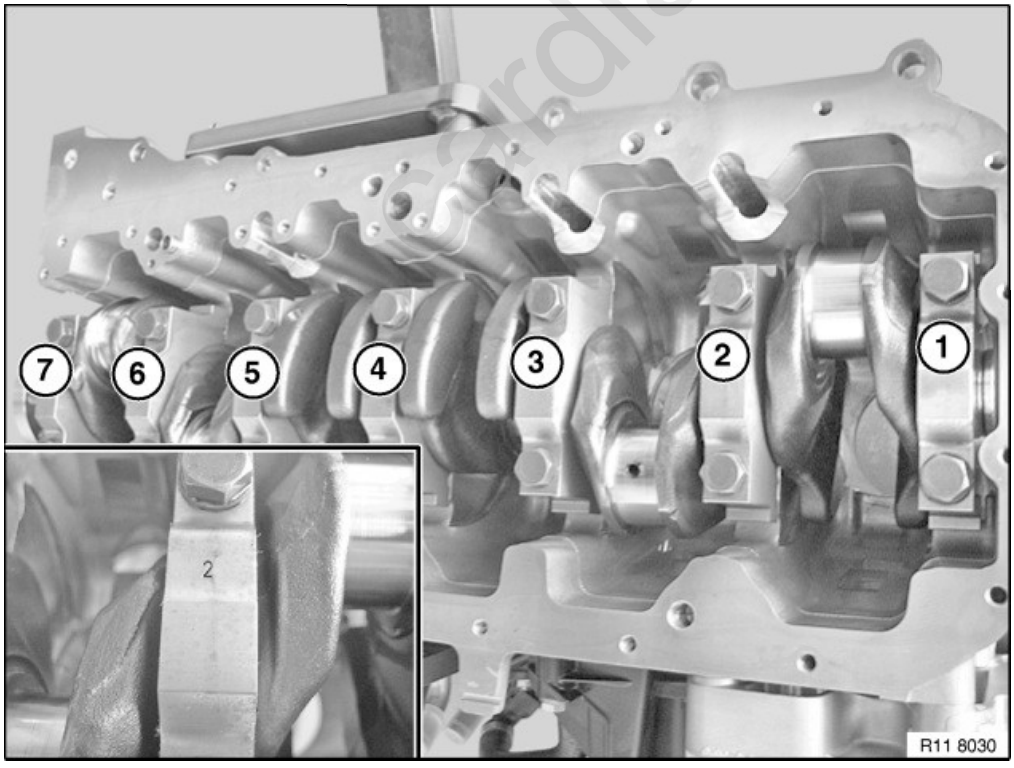
There must be no oil in the blind holes **(risk of cracking)**.

Do not wash off bolt coating.

Incorrect installation of the bearing caps will result in damage to the crankcase.

Necessary preliminary tasks:

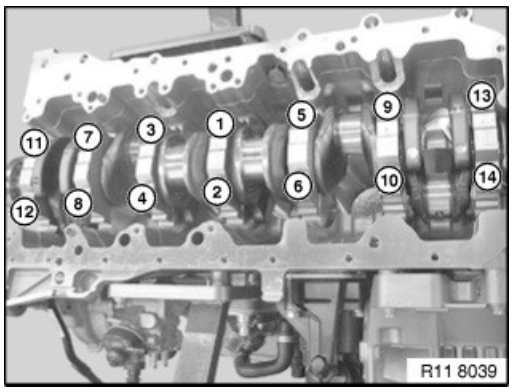
- Remove engine.
- Remove oil pump.
- Remove end cover at rear.
- Remove all pistons.
- Remove both timing chains.



Note:
Bearing caps 1...7 are marked on the intake end.

Bearing cap 4 is installed as a thrust bearing.

Graphic at bearing seat number 2.



Release main bearing screw connections in sequence 14 to 1 on main bearing caps.

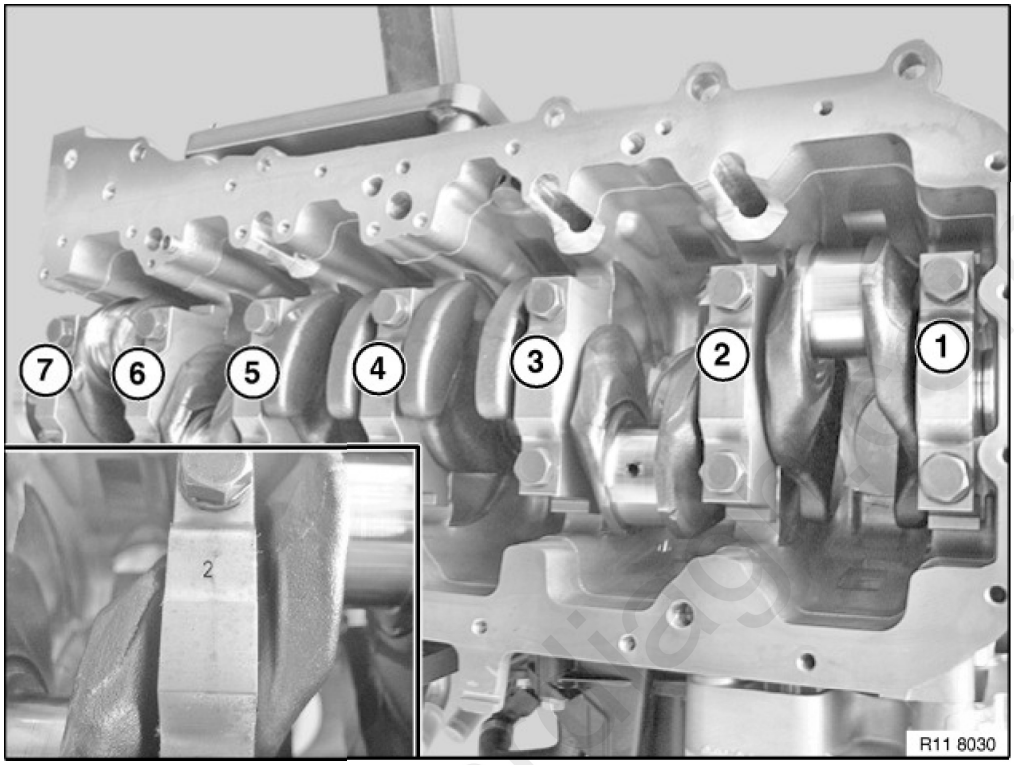
Remove main bearing caps 1...7.

Important!

With the assistance of a second person, remove crankshaft and carefully place to one side.

Pay attention to oil hole in bearing shell.

Pay attention to installation position of crankshaft main bearing shells.



Note:
Lubricate all bearing shells.

Install crankshaft.

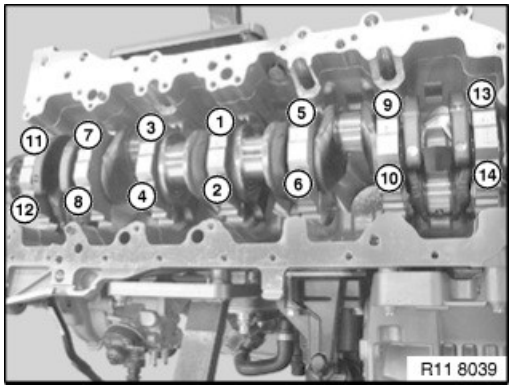
Fit bearing caps 1 to 7 in such a way that the identification numbers always face towards the intake side.

Both locating grooves of bearing shells in crankcase and on bearing cap must be mounted on one side.

Important!
The crankcase will be damaged if the bearing caps are installed incorrectly or in the wrong position.

Damage to moulding on crankcase.

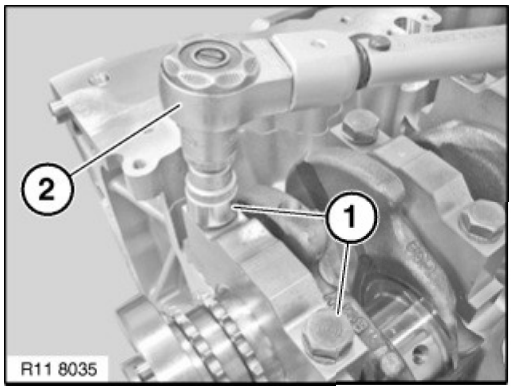
Align all bearing caps.



Fit main bearing bolts.

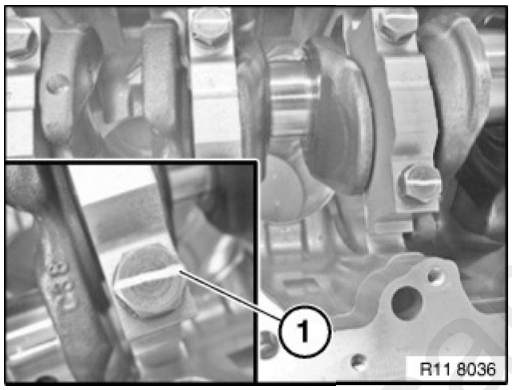
Tighten main bearing bolts in sequence (1 to 14) (follow bolt tightening specifications).

Tightening torque: 11 11 1AZ.



Join all main bearing bolts (1) in sequence 1 to 14 with a torque wrench (2).

Tightening torque: 11 11 1 AZ.



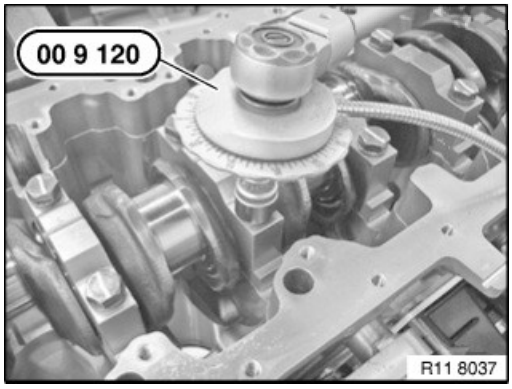
Installation note:
To visually check the main bearing bolts, apply a marking (1) to the bolt head after joining the main bearing bolts for the first time.

Mark all main bearing bolts with a coloured line (1) in the same axial direction.

Join all main bearing bolts in sequence 1 to 14 (second joining).

Tightening torque: 11 11 1 AZ.

Visually check main bearing bolts.

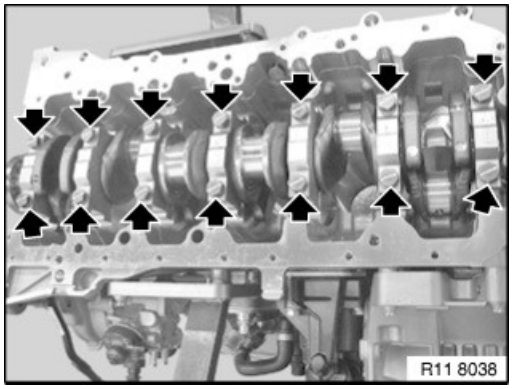


Secure main bearing bolts with special tool 00 9 120 .

Tightening torque: 11 11 1 AZ.

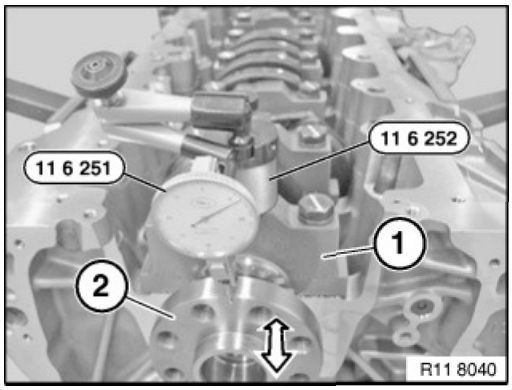
Visually check main bearing bolts.

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Installation note:
If the screw connection at the main bearing bolts is concluded, check the colour coding.

All colour coding on the main bearing bolts must point in the same direction.

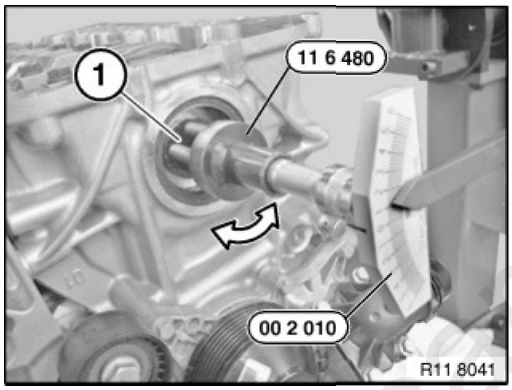


Secure special tool 11 6 252 to bearing seat (7) with magnet.

Alternately slide crankshaft (2) in direction of arrow onto block.

Set special tool 11 6 251 to zero.

Check side clearance.



Determining crankshaft breakaway torque:

Insert all vibration damper bolts (1) by hand.

Rotate crankshaft in direction of arrow with special tool 00 2 010 in conjunction with special tool 11 6 480 .

Friction coefficient of crankshaft.

Assemble engine.

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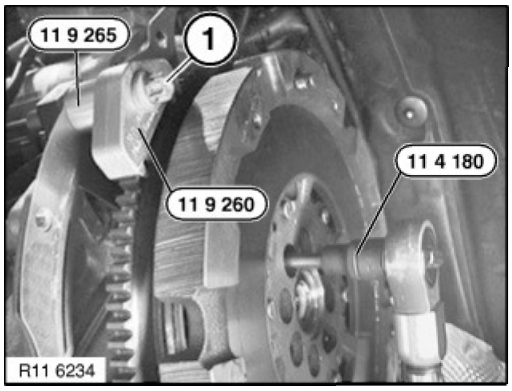
11 22 000 Removing and installing/replacing flywheel (N57 D30 U/O/T 0/1)

Special tools required:

- 11 4 180
- 11 9 260
- 11 9 265

Necessary preliminary tasks:

- Remove transmission.

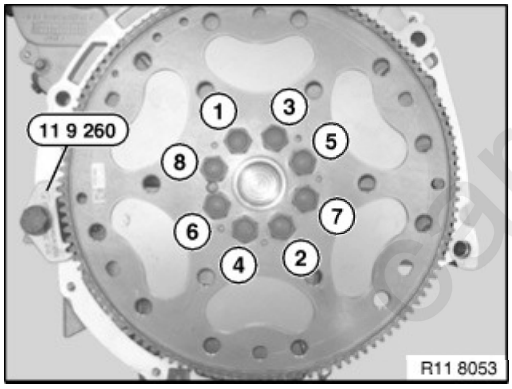


Manual transmission:

Secure flywheel with transmission bolt (1) and special tool 11 9 260 / 11 9 265 .

Release flywheel studs with special tool 11 4 180 /

Tightening torque: 11 22 2AZ.



Automatic transmission:

Secure flywheel with special tool 11 9 260 .

Unfasten flywheel studs.

Installation note:
Replace screws.

Secure bolts in sequence 1 to 8.

Tightening torque: 11 22 1AZ.

Assemble engine.

bmwdiagn.com

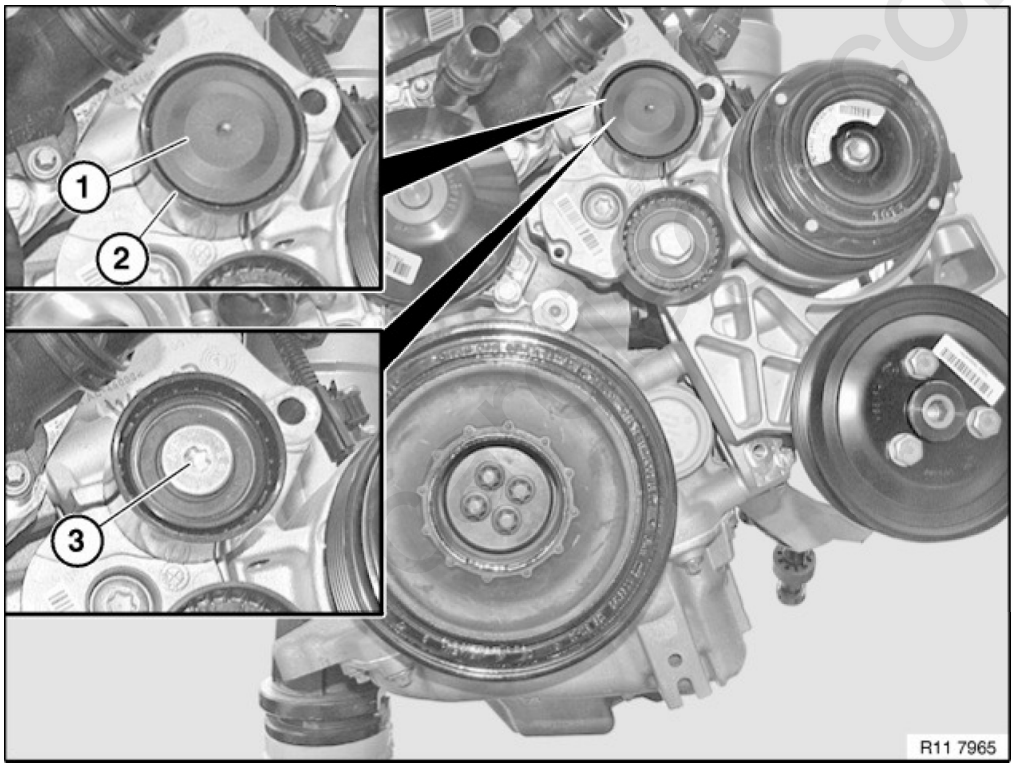
11 23 010 Removing and installing/replacing vibration damper (N57 D30U/O/T 1)

Special tools required:

- 11 6 480
- 11 7 221
- 11 7 222
- 11 7 223

Necessary preliminary tasks:

- Remove acoustic cover.
- Remove front acoustic cover (F06, F10, F11, F12, F13, F30, F31 only).
- Remove fan cowl with electric fan.
- Remove drive belt for alternator in the area of the vibration damper.



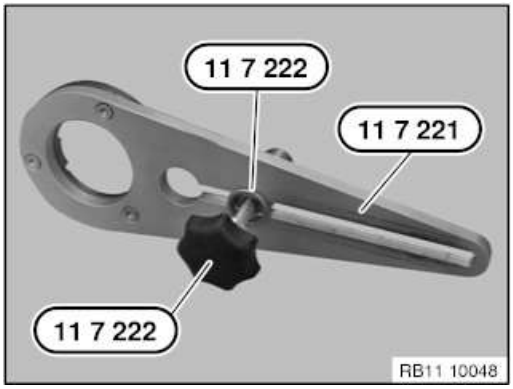
Note:
Drive belt shown removed for greater clarity.

Using a suitable tool, lever off protective cap (1) from deflecting element (2).

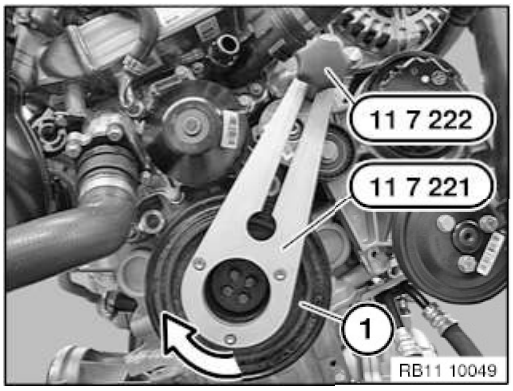
Release screw (3).

Tightening torque 11 00 4AZ.

Remove deflection pulley (2).



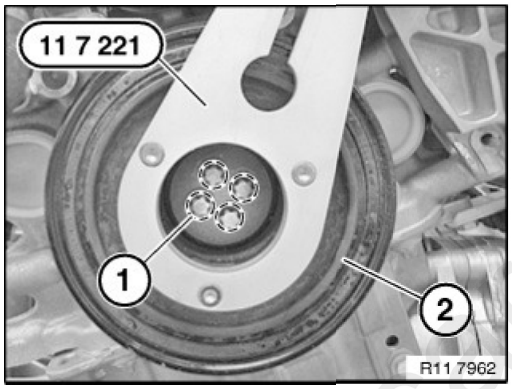
Assemble special tool 11 7 221 with special tool 11 7 222 .



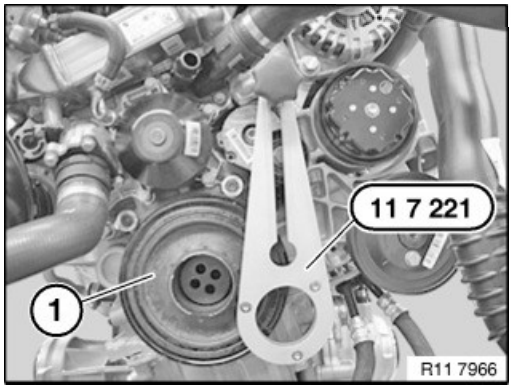
Screw special tool 11 7 221 with special tool 11 7 222 into receptacle of the guide pulley.

Secure special tool 11 7 221 vibration damper (1).

Note:
If necessary, use special tool 11 7 221 to turn the vibration damper in the direction of travel until the special tool 11 6 480 audibly clicks into place on the vibration damper.



Undo bolts (1) on vibration damper (2).



Remove special tool 11 7 221 in the area of the vibration damper (1).

Remove vibration damper.

Tightening torque 11 23 1AZ.

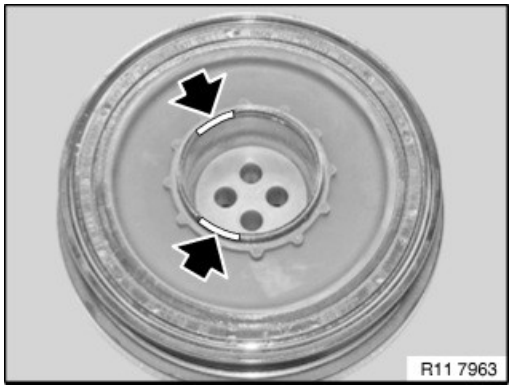
Installation note:
Replace screws.

Replace radial shaft seal at front.

Secure the special tool 11 7 221 again in the area of the vibration damper to tighten the screws.

Tighten screws crosswise.

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Installation note:
Position vibration damper as illustrated when refitting.

Assemble engine.**Important!**

Do not run engine without ribbed drive belt.

Risk of damage! to vibration damper.

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11 24 571 Replacing all connecting rod bearings (N57 D30 U/O/T 0/1)

Special tools required:

- 00 2 590
- 00 9 120

Important!

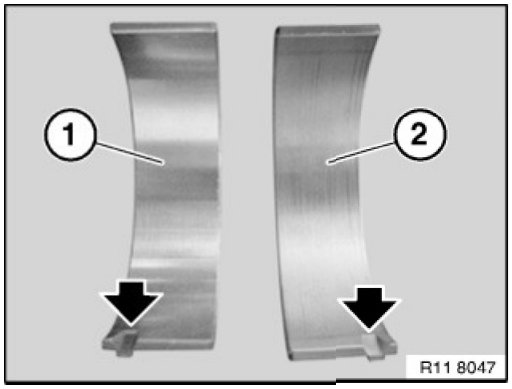
Different connecting rod bearing shells.

Connecting rod and connecting rod bearing cap are **different**.

Replace connecting rod bolts.

Necessary preliminary tasks:

- Remove all pistons.



Important!

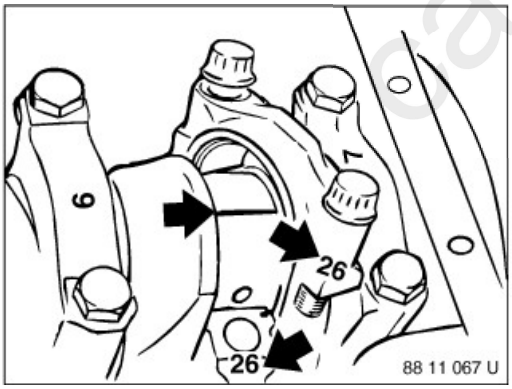
Note grinding stages on crankshaft.

Insert one bearing shell for each connecting rod.

Connecting rod bearing (1) is for the connecting rod bearing cap.

Connecting rod bearing (2) is for the connecting rod.

Installation note:
Observe encoding of connecting rod bearing shells.



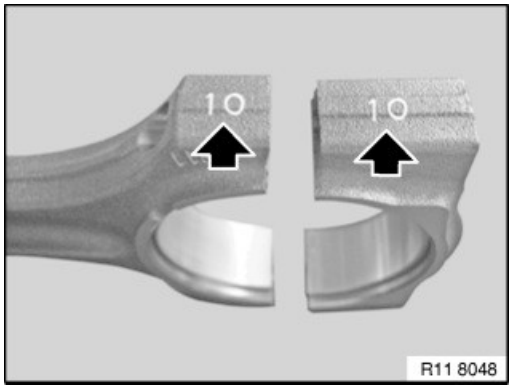
Install piston with connecting rod.

Check connecting-rod bearing play.

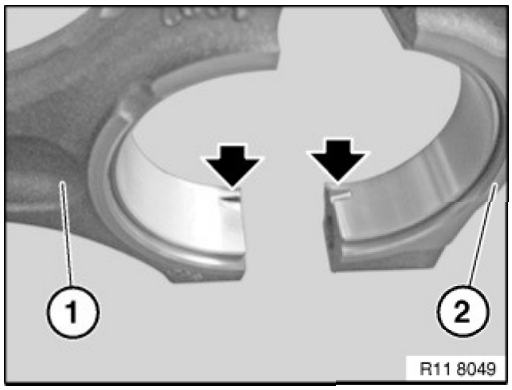
Piston in BDC position.

Fit special tool 00 2 590 (Plastigage type PG 1) to oil-free crankshaft.

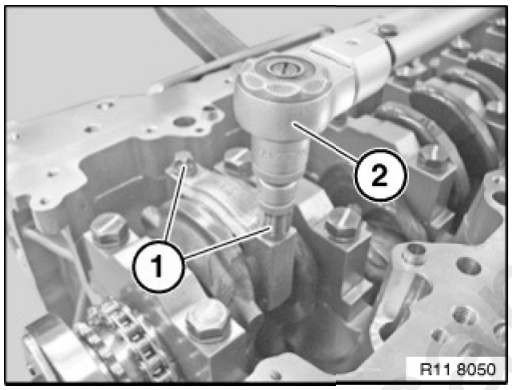
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Fit connecting rod bearing cap so that matching numbers match.



Both encodings (anti-twist lock) on connecting rod big end (2) and on connecting rod (1) must point to each other.



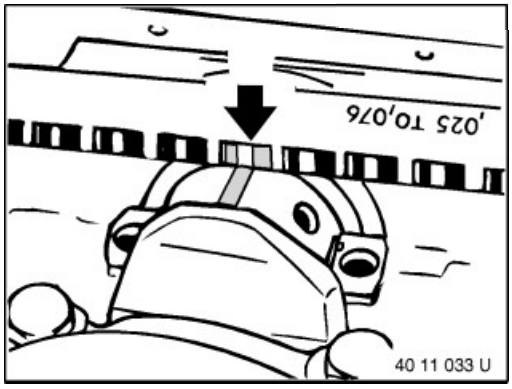
Important!

Do not turn the connecting rods or crankshaft.

To check connecting-rod bearing play, use old connecting rod bolts.

Tighten down connecting rod bolts (1) with special tool 00 9 120 .

Tightening torque 11 24 1AZ.



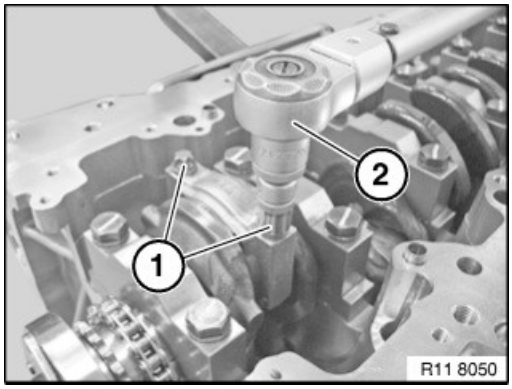
Unscrew connecting rod bearing cap.

Read off bearing clearance at width of crushed plastic thread (Plastigage) with aid of measuring scale.

Connecting-rod bearing play.

Remove Plastigage.

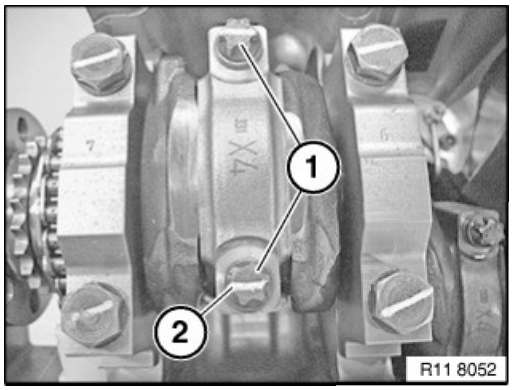
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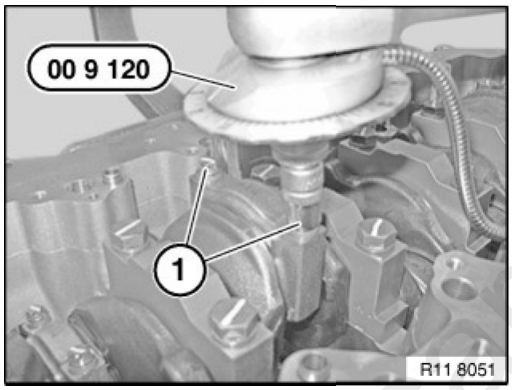
Install new connecting rod bolts (1).

Join connecting rod bolts (1).

Tightening torque: 11 24 1 AZ.



Mark all connecting rod bolts (1) with a coloured mark (2) in the same axial direction.*Installation note:*
See illustration.



Secure connecting rod bolts (1) with special tool 00 9 120 .

Tightening torque: 11 24 1 AZ.

Installation note:
Visually check connecting rod bolt connection.

Assemble engine.

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11 25 530 Removing and installing/replacing all pistons (N57 D30 U/O/T 0/1)

Special tools required:

- 00 2 530
- 11 5 464
- 11 8 140
- 11 8 831
- 11 8 860

Warning!

Protective goggles must be worn when working on the piston pin circlip.

Necessary preliminary work

- Remove engine.
- Remove cylinder head.
- Removing oil sump.
- Remove oil pump with vacuum pump.

Attention!

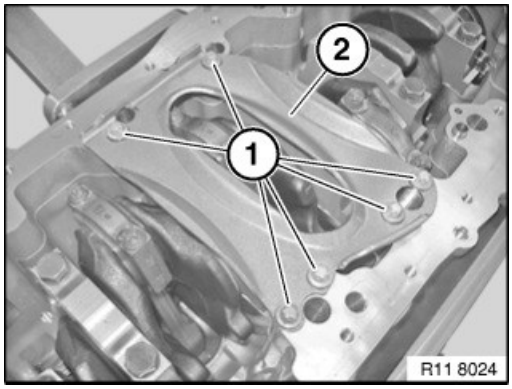
Risk of damage to cylinder barrel.

If pistons, connecting rods and bearing shells are reused, they must be reinstalled in the same places.

Individual connecting rod replacement is not permitted; they are classified by weight class.

Connecting rods and connecting rod bearing caps are denoted with the same pairing letters; mixing them up will result in engine damage.

Piston and gudgeon pins are paired and must not be fitted individually.

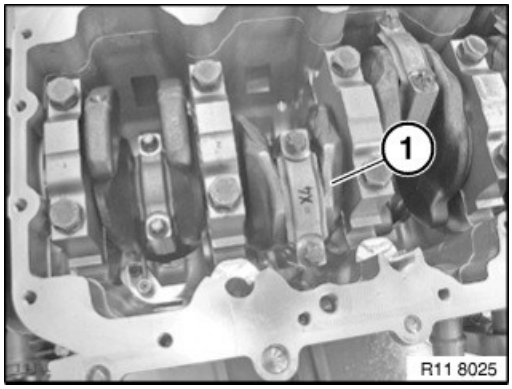


Release screws (1).

Tightening torque: 11 00 4 AZ.

Remove reinforcement plate (2).

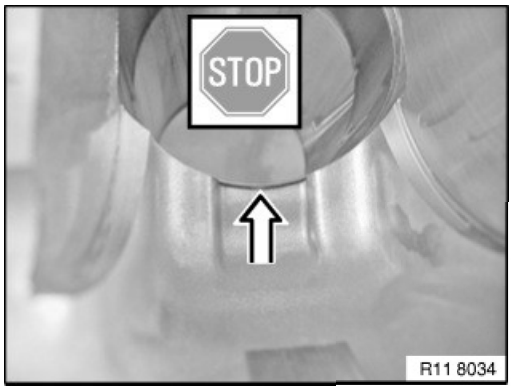
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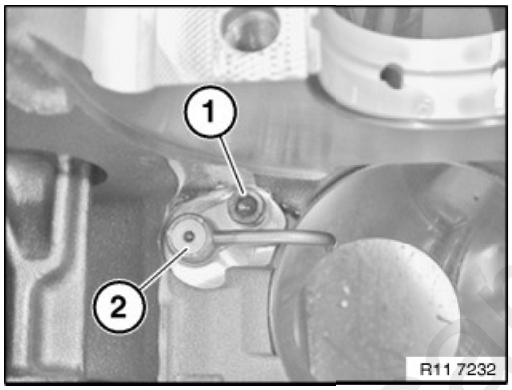
Attention!

Position crankshaft (1) vertically on piston to be removed.

Proceed with care at the cylinder wall and oil spray nozzles **Risk of damage**!



Carefully remove piston with connecting rod **Risk of damage!** from cylinder barrel (see arrow).

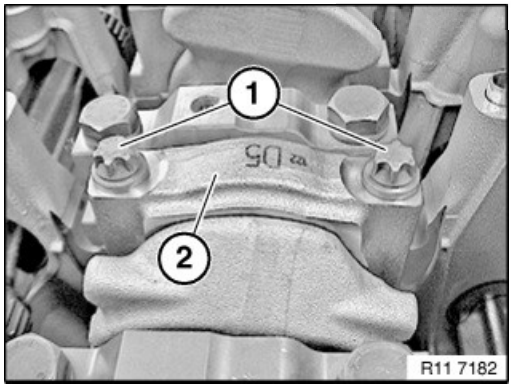


Attention!

Do not release screw (1).

Oil spray nozzles (2) must not be maladjusted or bent.

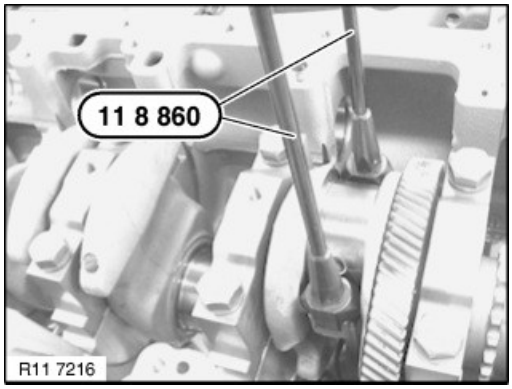
A bent oil spray nozzle cannot be adjusted and must be replaced.



Undo connecting rod bearing bolts (1).

Remove connecting rod bearing caps (2) and set down in neat order.

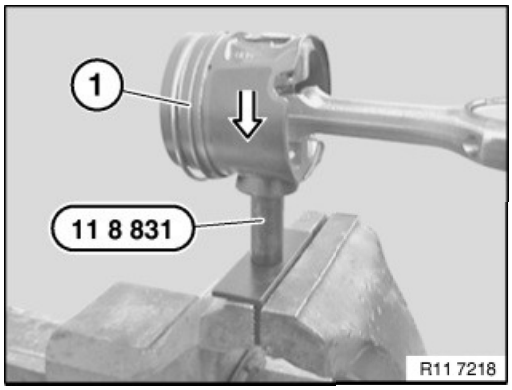
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Screw special tool 11 8 860 in at large connecting rod eye.

Installation note:
Pay attention to protective edge.

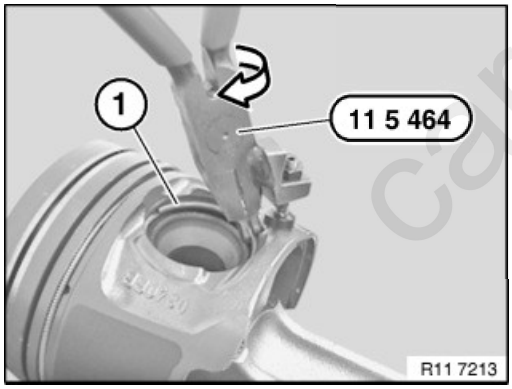
Remove piston with connecting rod towards bottom.



Position piston (1) with connecting rod on special tool 11 8 831 .

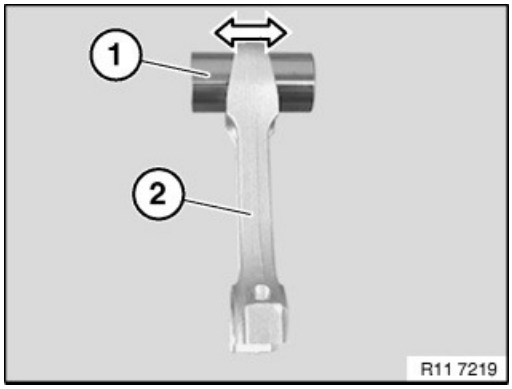


Warning!
Safety goggles must be worn for the next operation.



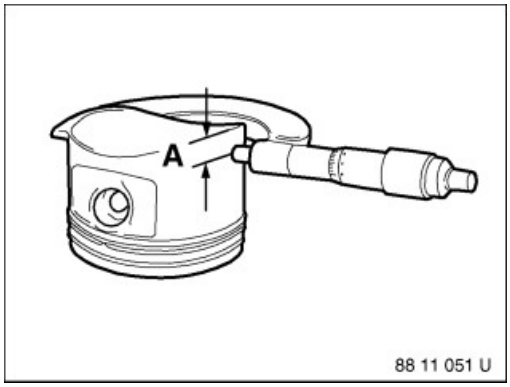
Warning!
Safety goggles must be worn.

Lever out piston circlip (1) with special tool11 5 464 in direction of arrow.**Attention!**
Piston and gudgeon pin are matched to each other.
They must not be mixed up.



If necessary, replace connecting rods.*Installation note:*
It must be possible to press gudgeon pin (1) through the bush (small connecting rod eye) and must not display any significant play.

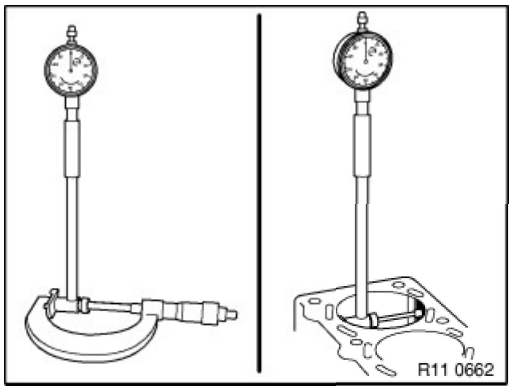
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Before installation, measure piston installation clearance. Measure piston diameter with micrometre at measuring point A from lower edge of piston and offset at 90° to the axis of the gudgeon pin.

Distance A,

Refer to Technical Data.



Adjust micrometre to cylinder bore of engine block. Set internal measuring device on micrometre to zero. Measure bottom, centre and top of cylinder bore in direction of travel and direction of rotation.

Diameter of the cylinder bore,

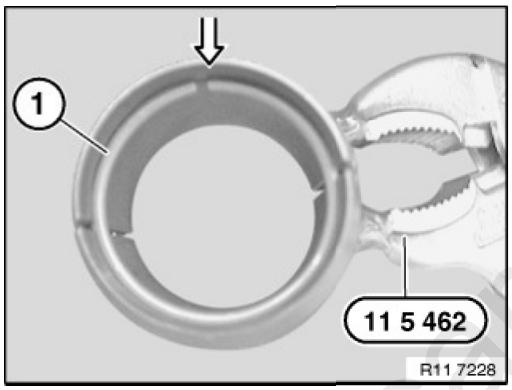
Technical Data.

Piston installation clearance,

Technical Data.

Permitted total wear clearance,

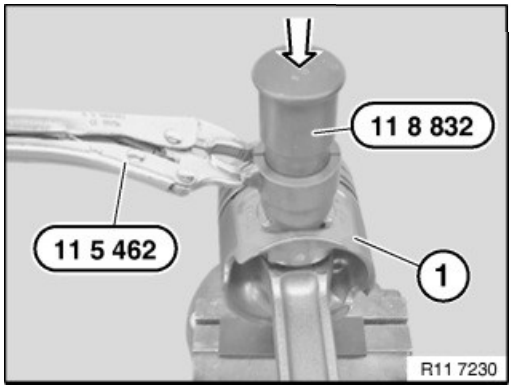
Technical Data.



Warning!

Safety goggles must be worn.

Fit gudgeon pin retaining ring (1) in connecting rod at the piston.



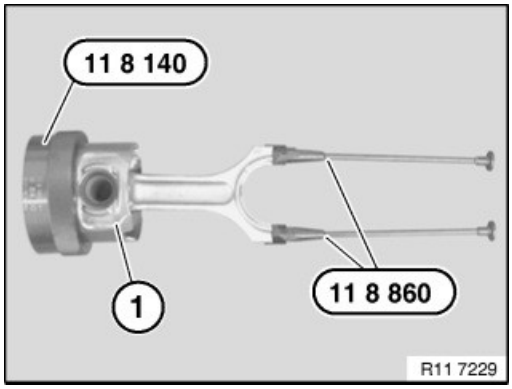
Attention!

Piston and gudgeon pin are matched to each other.

They must not be mixed up.

Install circlip so that opening is opposite recess.

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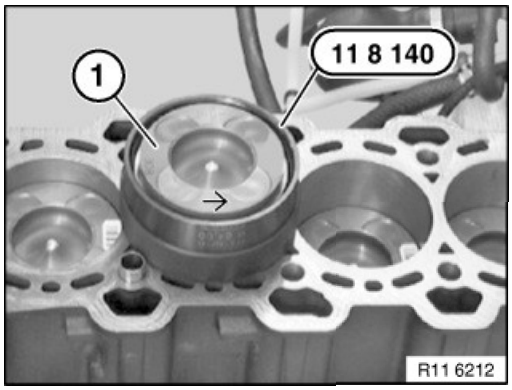


Align contact points of piston rings (offset at approx. 120°, but do not arrange over gudgeon pin boss).

Oil piston and piston rings.

Prepare piston with piston rings on special tool 11 8 140 .

Screw special tool 11 8 860 on at large connecting rod eye.



Insert piston (1) with connecting rod in cylinder.

Attention!

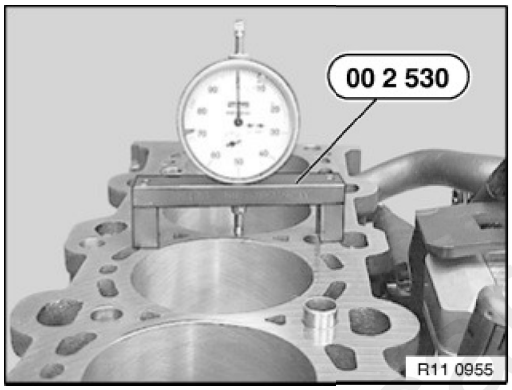
Risk of piston ring breakage.

Risk of damage to oil spray nozzle.

Press in piston with finger force only, do **not** knock in.

Install piston so that arrow points forward in direction of travel.

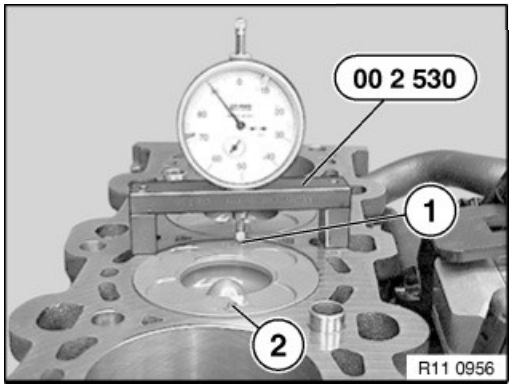
Bolt piston (1) with connecting rod to crankshaft.



The gasket thickness must be recalculated when repair work is carried out on the crankshaft drive or pistons.

Measuring the **piston protrusion:**

Fit dial gauge with measuring fixture special tool 00 2 530 on cleaned engine block sealing surface and set to zero under preload.



Position piston at TDC.

Clean piston at measuring points (1 and 2).

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

Measure and note down piston protrusion at measuring points (1 and 2) on all pistons.

Determine thickness of cylinder head gasket.

Assemble engine.

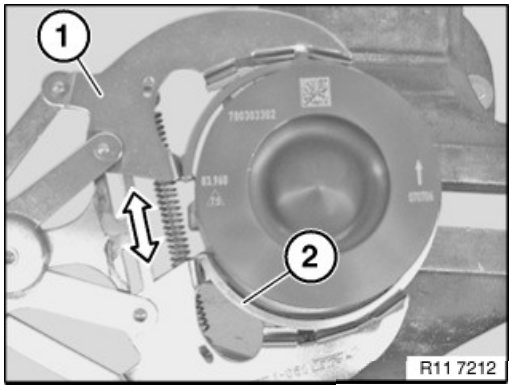
Check engine function and check for leak tightness.

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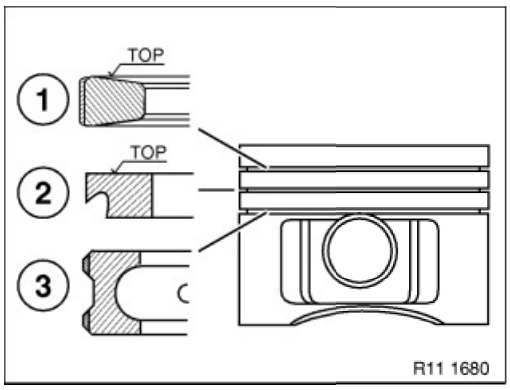
11 25 671 Replacing piston rings of all pistons (N57 D30 U/O/T 0/1)

Necessary preliminary work:

- Remove pistons.



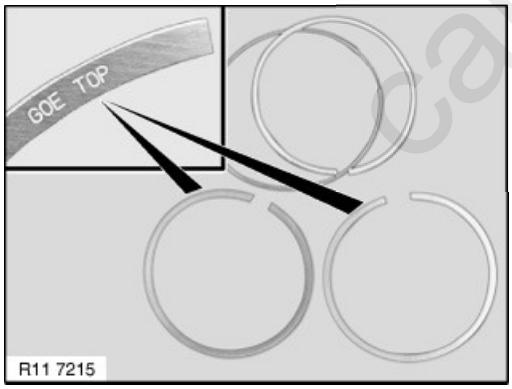
Remove all piston rings (2) with piston ring pliers (1).**Note:**
It might not be possible to find the identification on used piston rings.
Put aside piston rings in correct sequence and installation position.



Installation note:
Install piston rings with "TOP" to piston crown.

1. Taper face compression ring
2. Stepped ring
3. Bevelled roof ring with spiral expander

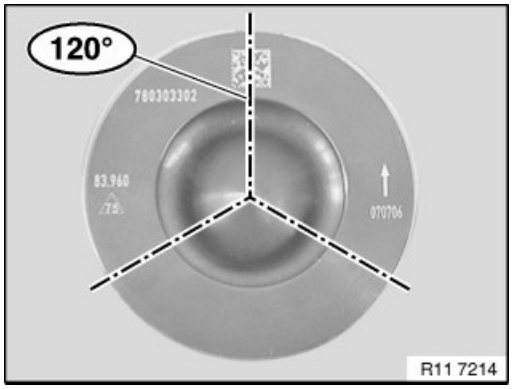
Arrange piston ring contact points with offset of approx. 120° to one another, but not over gudgeon pin boss.



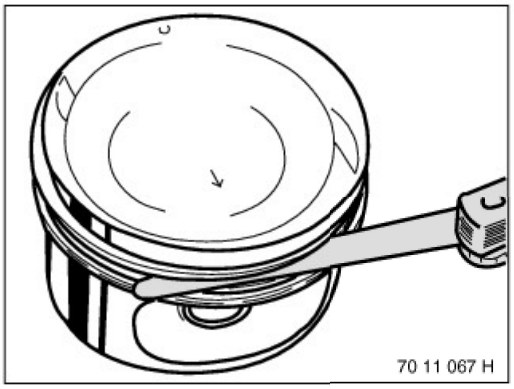
Installation note:
Marking (TOP) must point towards piston crown.

The oil scraper ring has no identification marking and can be installed in any position.

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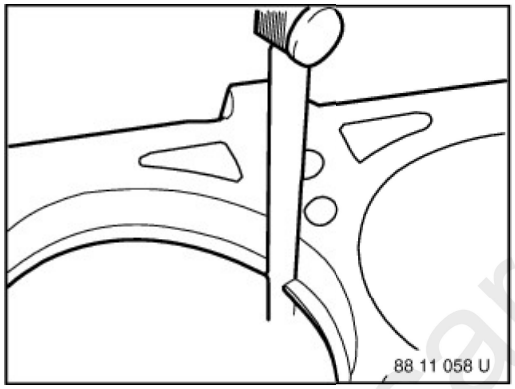


Position piston rings offset **120°** to each other.



Measure side clearance.

Refer to Technical Data.



Measure end clearance.

Refer to Technical Data.

Assemble engine.

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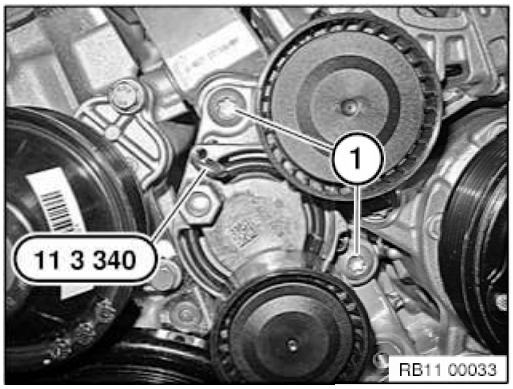
11 28 020 Removing and installing/replacing belt tensioner for alternator (N57 D30 U/O/T 1)

Special tools required:

- 11 3 340

Necessary preliminary tasks:

- Remove alternator drive belt.



Release screws (1).

Tightening torque 11 28 1AZ.

Remove belt tensioner (2) with roller and deflecting element.

Assemble engine.

If the tensioning device is no longer needed, special tool 11 3 340 must be removed using a vice.

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11 28 010 Removing and installing/replacing drive belt for alternator (N57 D30 U/O/T 1)

Special tools required:

- 11 3 340

Important!

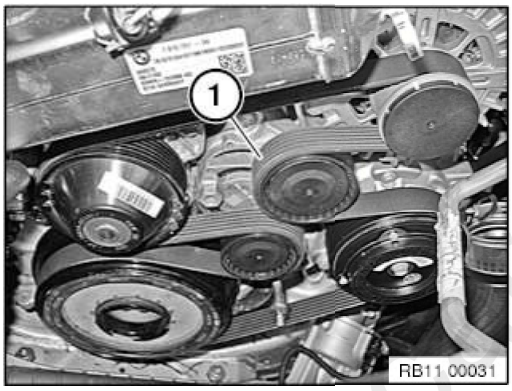
Check drive belt for coolant and oil residues, replace if necessary.

The drive belt must be replaced if it is contaminated with hydraulic fluid.

If the drive belt is to be reused, mark direction of travel and reinstall drive belt in same direction of rotation. Before removing, note how the drive belt is routed.

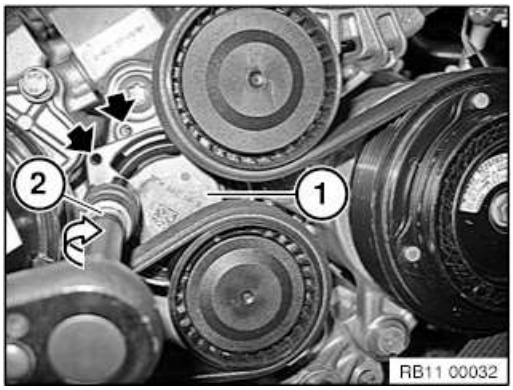
Necessary preliminary work:

- Remove front acoustic cover (not F25)
- Remove fan cowl



Important!

Belt tensioner (1) is preloaded.

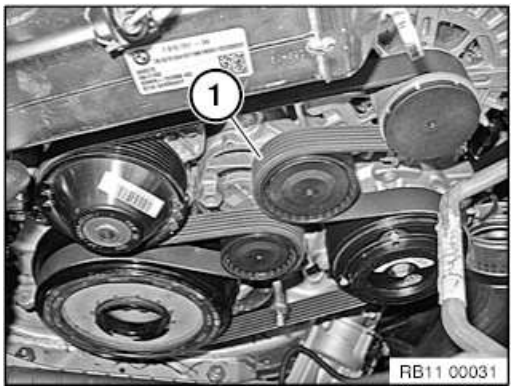


Increase preload on tensioning pulley (1) with tool (2) until special tool can be positioned on tensioning pulley 11 3 340 (1).

Preload belt tensioner (1).

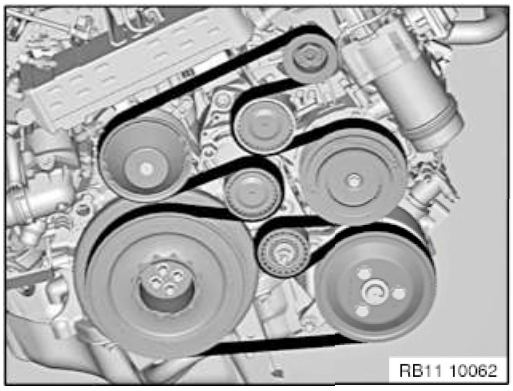
Both bore holes, see arrow, must be flush.

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Routing of drive belt without Dynamic Drive

Remove drive belt.



Routing of drive belt with Dynamic Drive

Remove drive belt.

Assemble engine.*Installation note:*
Check drive belt for correct installation position and, if reusing, observe direction of travel. **Risk of damage**.

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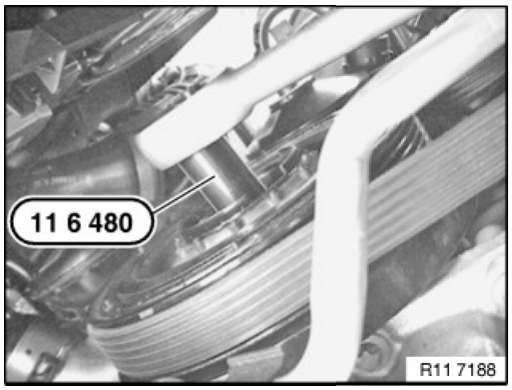
11 31 505 Adjusting timing of camshafts (N57 D30 U/O/T 0/1)

Special tools required:

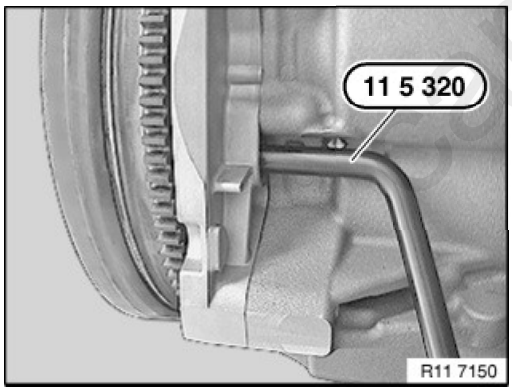
- 11 4 480
- 11 5 320
- 11 6 480
- 11 8 760

Necessary preliminary tasks:

- Remove underbody protection
- Remove cylinder head cover.
- Remove stiffening plate (only all-wheel drive vehicles).

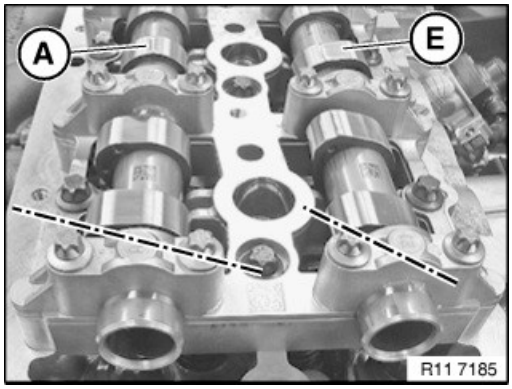


Crank engine at central bolt with special tool 11 6 480 **Important!**
Do not crank the engine back!
Special tool 11 6 480 must be removed before start-up of engine!



Remove protective cap of gear case cover.

Block crankshaft with cylinder no. 1 in TDC firing position with special tool11 5 320 .

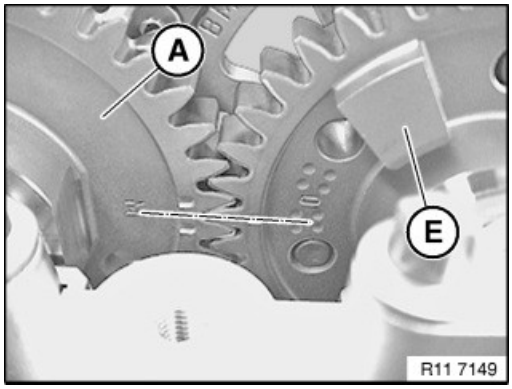


It must be possible to read the part number on the exhaust and intake camshafts (E and A) from above.

The cam on the intake camshaft (E) points obliquely upwards at cylinder No. 1.

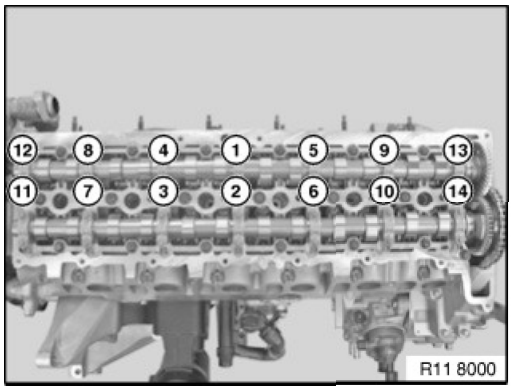
The cam on the exhaust camshaft (A) points obliquely outward to the left at cylinder No. 1.

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The marking on exhaust sprocket wheel (A) must be aligned with the marking on intake sprocket wheel (E).*Note:*
See illustration.

The exhaust camshaft must be removed if the marks do not agree (are not aligned).

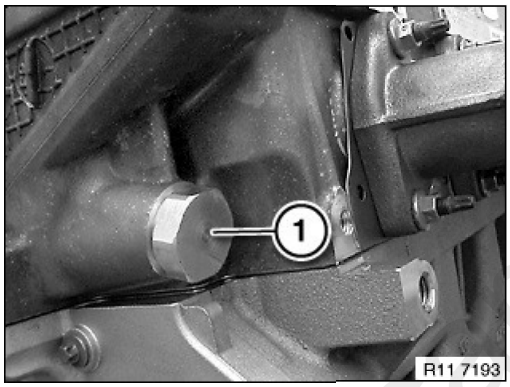


Release all bolts of bearing caps A1 to A7 working from the outside inwards.

Tightening torque: 11 31 2AZ.

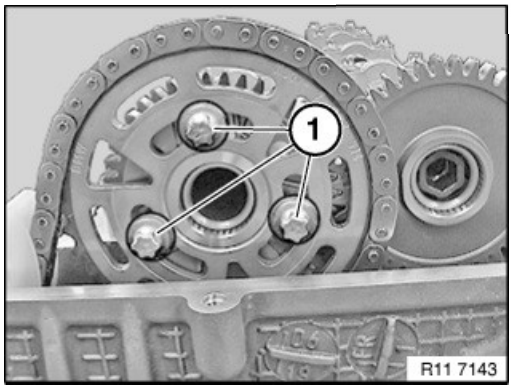
Remove exhaust camshaft in upward direction.

Place all components on special tool 11 4 480 in a tidy and orderly fashion.



Release chain tensioner (1).

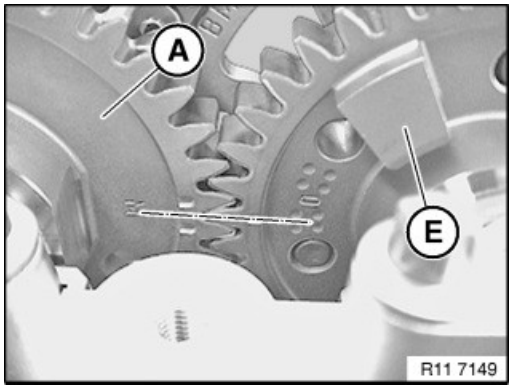
Tightening torque: 11 12 2AZ.



Remove camshaft bolts (1) and detach camshaft sprocket.

Tightening torque: 11 31 1AZ.

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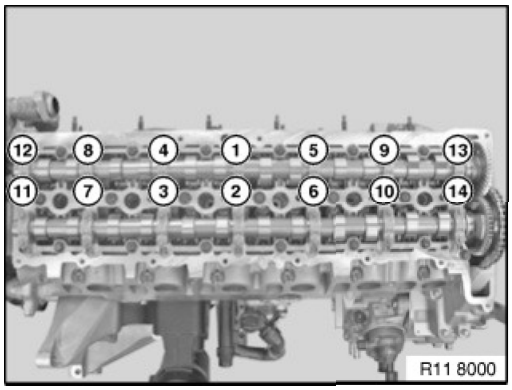


Position intake camshaft (E).

Installation note:
Note installation position of roller cam follower.

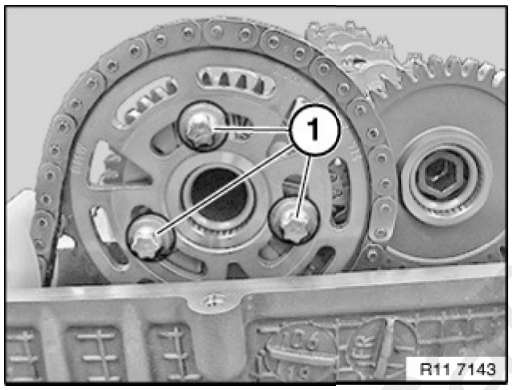
Fit exhaust camshaft (A) in such a way that both marks are aligned.

Note:
See illustration.



Tighten all bearing caps A1 to A7 working from the inside outwards.

Tightening torque: 11 31 2AZ.

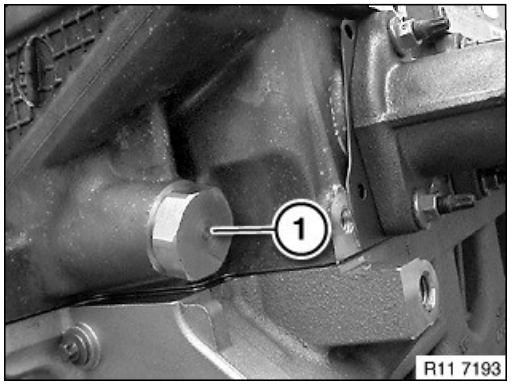


Place the camshaft sprocket with timing chain on the intake camshaft such that bolts (1) are located in the centre of the slots.

Insert bolts (1).

Join bolts (1) to 10 Nm.

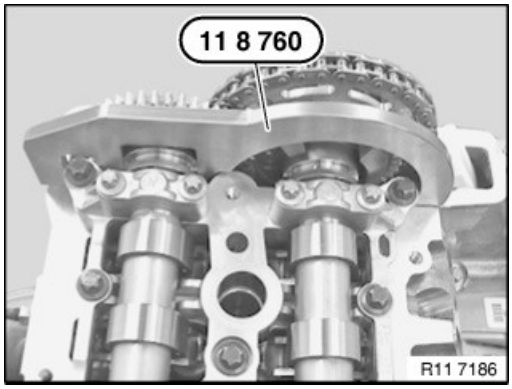
Release bolts (1) again by a 90° turn.



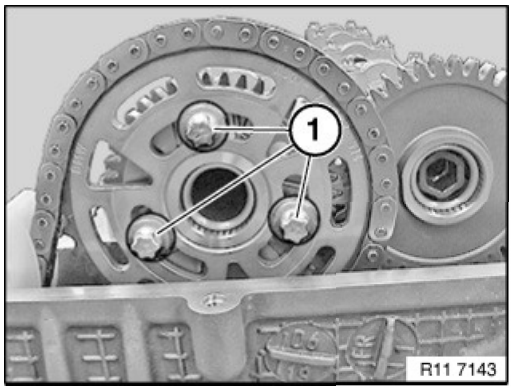
Install chain tensioner (1).

Tightening torque: 11 12 2AZ.

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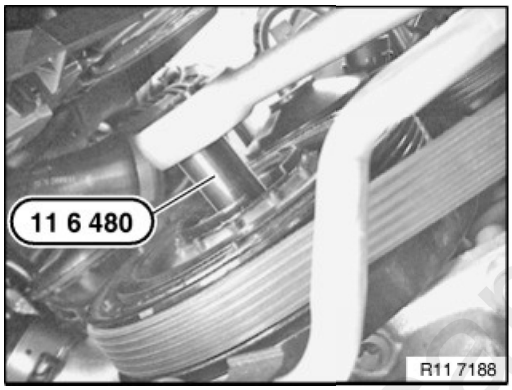


Place special tool 11 8 760 on exhaust camshaft.**Note:**
Special tool 11 8 760 must lie flush on cylinder head.



Tighten down screws (1).

Tightening torque: 11 31 1AZ.



Crank engine twice in direction of rotation with special tool 11 6 480 up to TDC firing position of cylinder no. 1.

Check camshaft adjustment.

Important!
Do not crank the engine back!

Assemble engine.

Turn over engine twice.

Check timing.

Important!
Special tool 11 5 320 must be removed before starting engine.

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11 31 544 Check the timing chain for elongation and replace the timing chain above (N57)

Special tools required:

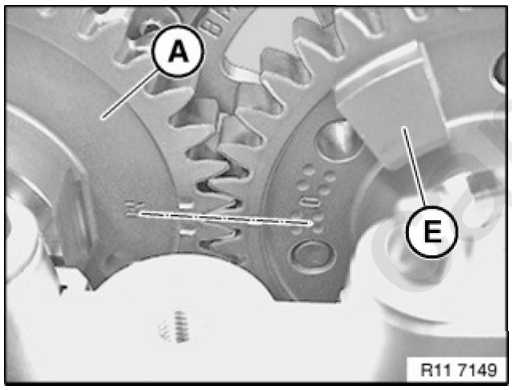
- 2 354 985
- 2 409 647
- 11 5 320
- 11 6 480
- 11 8 760
- 2 353 281

Installation note:
The removal and installation of the timing chain require the use of special tool 2 354 985 and 2 409 647 .

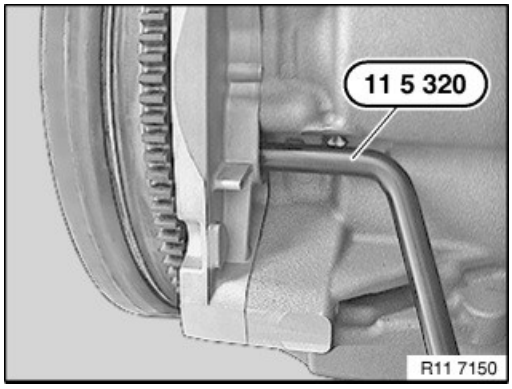
All tools shown are available in tool set 2 354 985 and 2 409 647 .

Necessary preliminary tasks:

- Check top timing chain
- Remove cylinder head cover.



The marking on exhaust sprocket wheel (A) must be aligned with the marking on intake sprocket wheel (E).*Note:*
See illustration.



Installation note:
Do not turn the engine in reverse as this will distort the measured values.

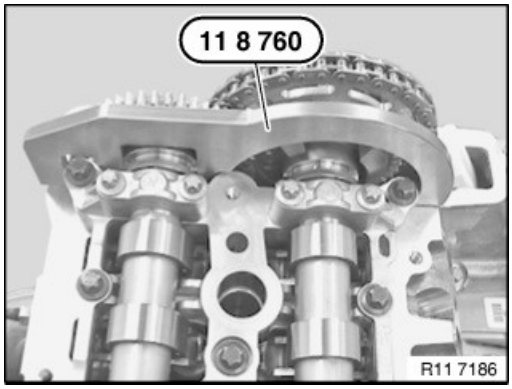
Special tool 11 5 320 must be exactly in the alignment position.

Remove protective cap of timing case cover.

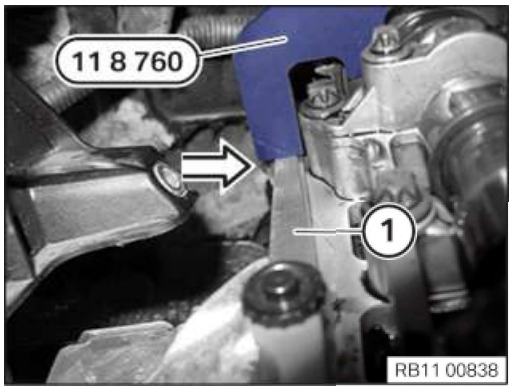
Turn engine with special tool 11 6 480 .

Use special tool 11 5 320 to block the crankshaft in the TDC firing position Cylinder 1

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Place special tool 11 8 760 on exhaust camshaft.



Determine gap dimension.

Slide the feeler gauge (1) between the cylinder head and the special tool 11 8 760 without jamming (see arrow).

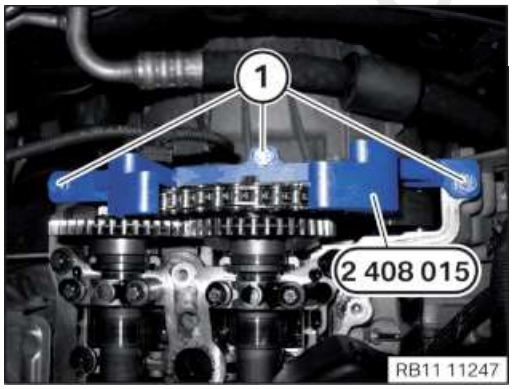


Follow diagnosis instruction.



Attention!

Loose chain sections can fall into the engine!



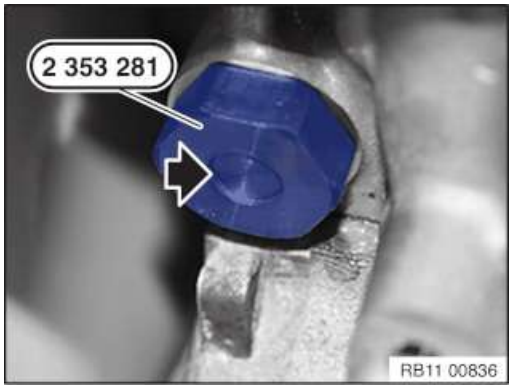
Attention!

Screws (1) can fall into the chain drive **risk of damage!**

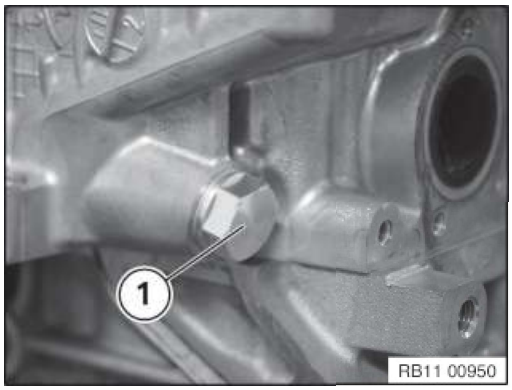
Secure the special tool 2 408 015 on the cylinder head with the bolts (1).

Tightening torque 11 00 2AZ.

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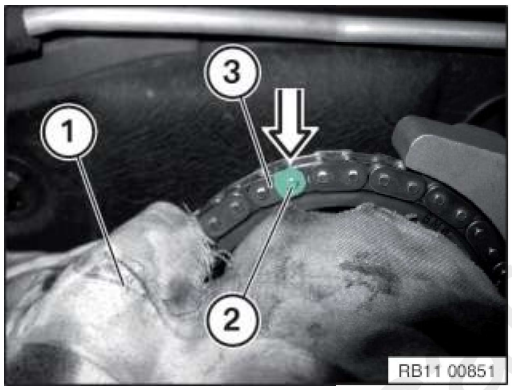
Remove special tool 2 353 281 .



Installation note:
Install chain tensioner with part number 8 576 201 (AF 24).

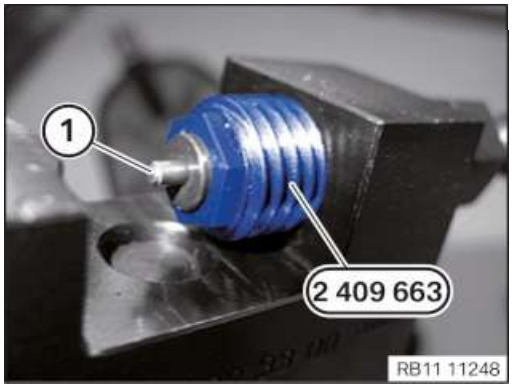
Renew the sealing ring.

Tightening torque 11 12 2AZ.



Cover cylinder head (1) at chain drive with a suitable cleaning cloth.

Mark right rivet (2) at cover tab (3) (see arrow).



Prepare special tool 2 354 983:

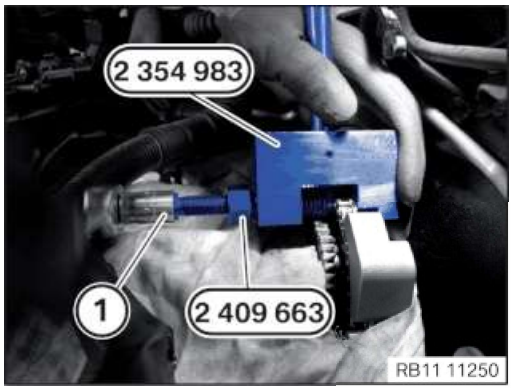
Insert the special tool 2 409 663 with push-out bolts (1) into the special tool 2 354 983.

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Note:
Bore hole (centring aid)

Turn back the pressing-off bolt on special tool 2 409 663 up to short length (arrow).



Opening the timing chain:

Attention!

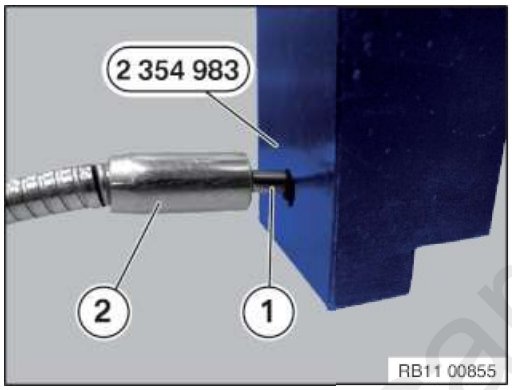
Loose rivet can fall in the engine compartment.

Seal bore hole on special tool 2 354 983 with suitable auxiliary materials.

Position special tool 2 354 983 on timing chain (rivet) (centre).

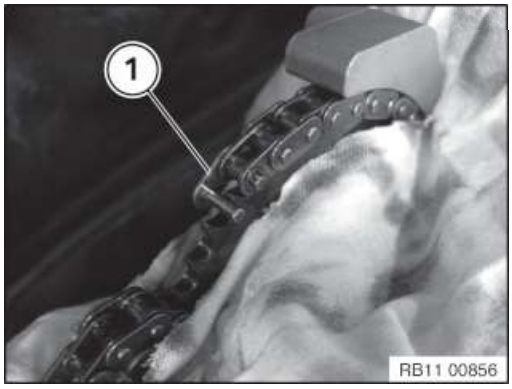
Pretension spindle 2 409 663 up to bolt/limit position of timing chain by hand.

Press off the rivet with the pressing-off bolt (1) and screw in the special tool up to limit position.



Remove rivet (1) from special tool 2 354 983 with a magnet (2).

Remove special tool 2 354 983.



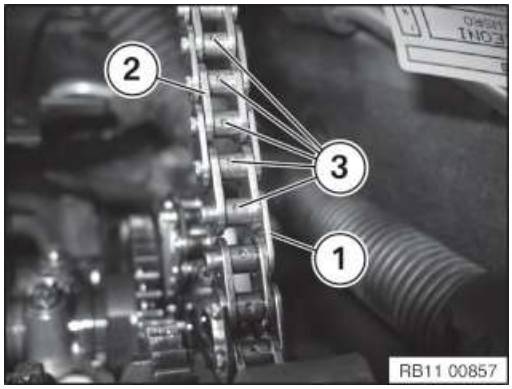
Installation note:
Coat ends of chain lock (1) with grease.

Tightening the timing chain:

Attach chain lock (1) in the open timing chain.

Check camshaft sprocket for wear.

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Attention!

Observe direction of installation!

Oil holes (3) must be visible from the outside.

Attach timing chain (2) in the chain lock (1).

Both timing chains must be aligned with each other.

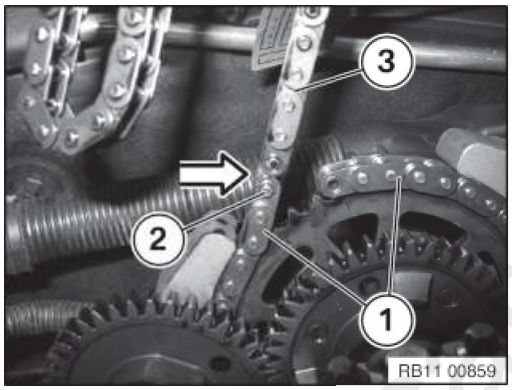
Outer tab on lock (1) must be aligned with the outer tabs of the timing chains (see graphic).



Note:
Turn engine in direction of engine rotation until the run-through timing chain can be removed.

Keep timing chains (1) under tension.

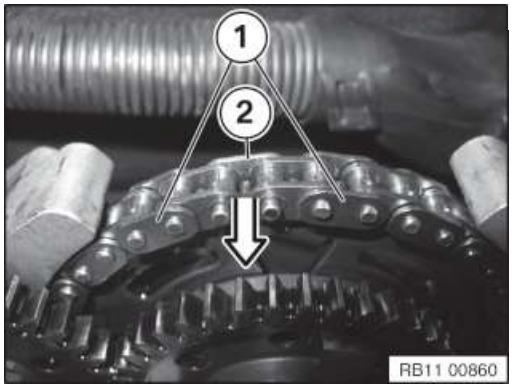
Do not crank engine too far under any circumstances.



Attention!

Loose components can fall into the chain drive **risk of damage!**

Remove timing chain (3) with chain lock (2).



Pressing in the timing chain:

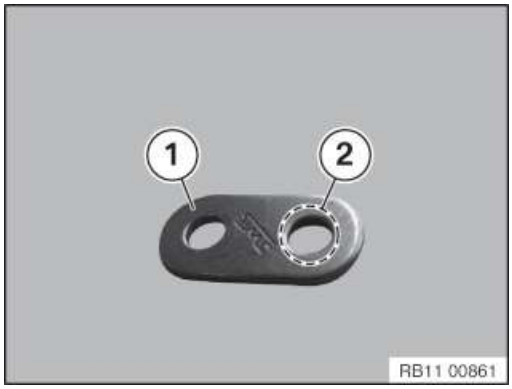
Attention!

Loose components can fall into the chain drive **risk of damage!**

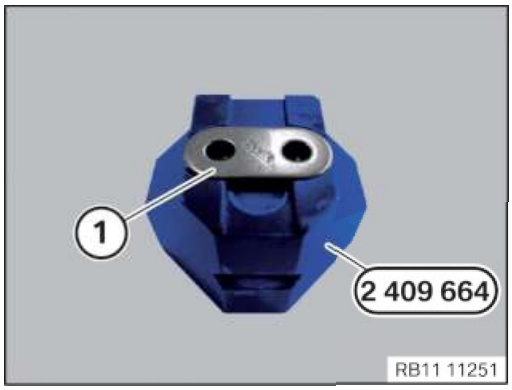
Press in both end of timing chain (1) on camshaft sprocket.

Insert chain lock (2) from the rear through both ends of new timing chain (1).

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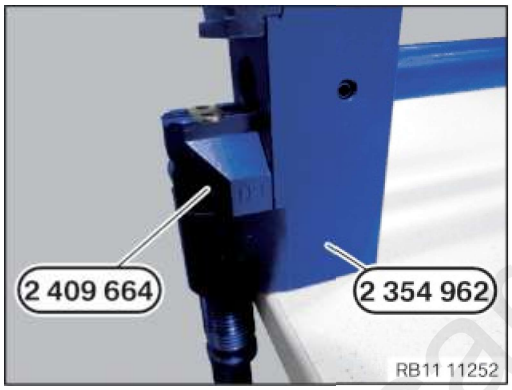


Installation note:
Rounded sides (2) of cover tab (1) must point towards timing chain.



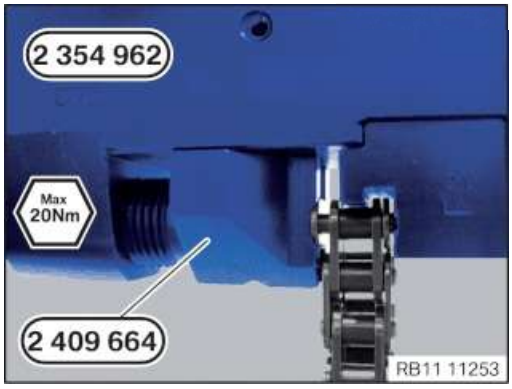
Prepare the special tool 2 409 664 with the cover tab (1) using the rounded side (see graphic).

Fasten the cover tab (1) on the magnet of the special tool 2 409 664.



Attention!
Loose components.

Prepare the special tool 2 409 664 with the cover tab on the special tool 2 354 962.



Attention!
Maximum 20 Nm

Do not increase the torque, because of risk of damage on the chain lock.

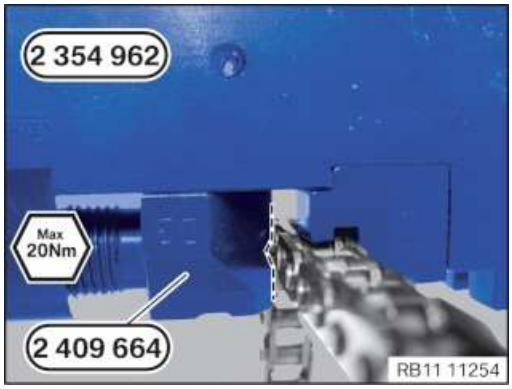
Manually join cover tab on chain lock to spindle on special tool 2 354 962.

Make sure chain locks and special tool 2 409 664 are positioned exactly **risk of damage!**

Press on cover tabs with 20 Nm.

Graphic shows removed chain drive.

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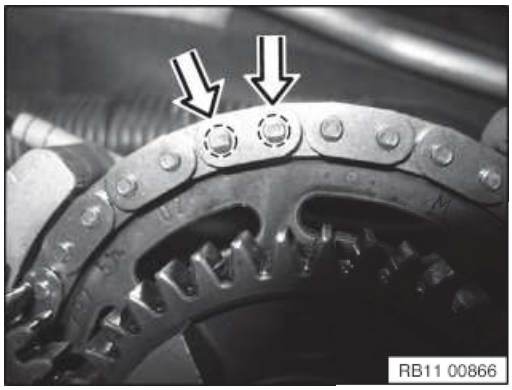
Attention!

Do not exceed maximum **20 Nm** torque on chain lock not **risk of damage!**

For safety purposes, the chain lock must be pressed in again.

Remount the special tool 2 409 664 on special tool 2 354 962 (see graphic).

Press in both rivets individually on chain lock with special tool 2 354 962 to maximum **20 Nm**.



Check both rivets (see graphic).



Follow diagnosis instruction.

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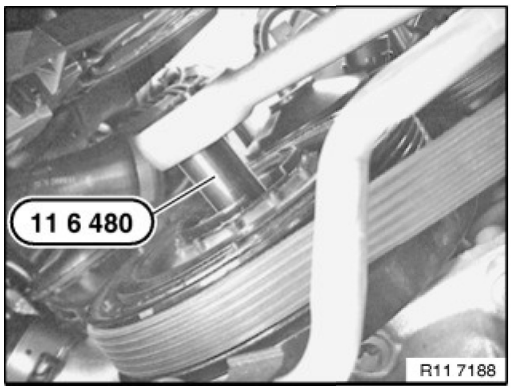
11 31 005 Checking camshaft timing (N57 D30 U/O/T 0/1)

Special tools required:

- 11 5 320
- 11 6 480
- 11 8 760

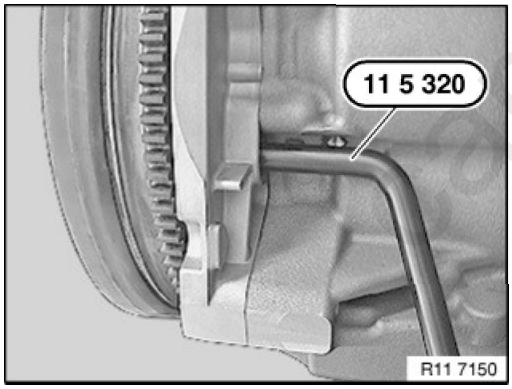
Necessary preliminary tasks:

- Remove underbody protection.
- Remove cylinder head cover.
- Remove stiffening plate (only four-wheel drive).



Crank engine with special tool 11 6 480 to TDC firing position of first cylinder.**Important!**

Do not crank engine back.



Remove protective cap of gear case cover.

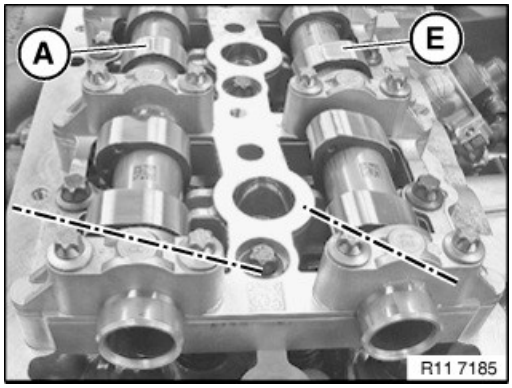
Crank engine at central bolt with special tool 11 6 480

Use special tool 11 5 320 to block the crankshaft in the TDC firing position Cylinder 1

Important!

Do not turn the engine back.

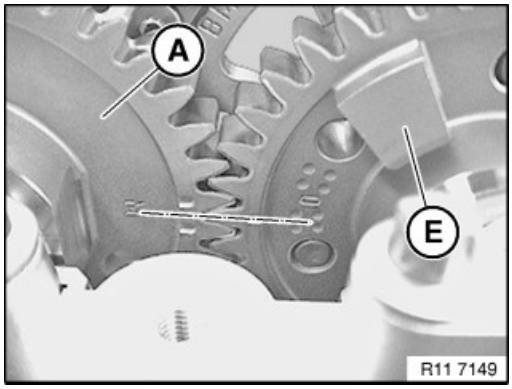
Special tool 11 6 480 must be removed before starting engine.



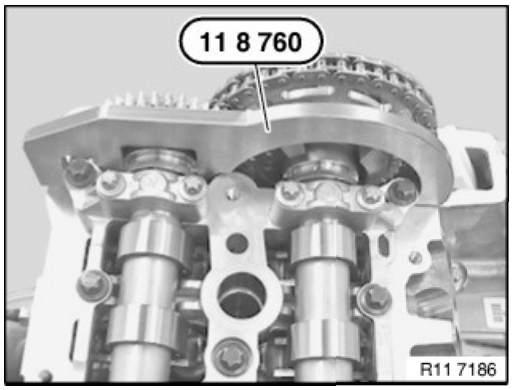
The cam on the intake camshaft (E) points obliquely upwards at cylinder No. 1.

The cam on the exhaust camshaft (A) points obliquely outward to the left at cylinder No. 1.

bmwdiagn.com



The marking on exhaust sprocket wheel (A) must be aligned with the marking on intake sprocket wheel (E).*Note:*
See graphic.



Place special tool 11 8 760 on exhaust camshaft.

Note:

Special tool 11 8 760 must lie flush on cylinder head.

If necessary, adjust camshaft timing.

Assemble engine.**Important!**

Special tool 11 5 320 must be removed before starting engine.

cardiagn.com

11 31 540 Checking timing chain for elongation and replacing chain tensioner (N57)

Special tools required:

- 2 353 281
- 11 6 480

Attention!

Measurement of timing chain is only possible during manual cranking (dynamic).

An engine start is **not** permissible.

Cranking the engine is only permissible with a special tool (chain tensioner) installed.

Attention!
Do not crank engine against direction of rotation, apply mark to vibration absorber.

Necessary preliminary tasks:

- Remove the chain tensioner and remove the sealing ring
- Start diagnosis test module in:

  Activities

  Information search

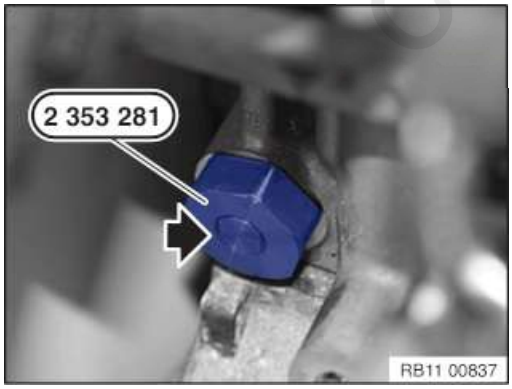
  Function structure

  Power train

  Digital Diesel Electronics

  Engine mechanics

  Timing chain



Attention!

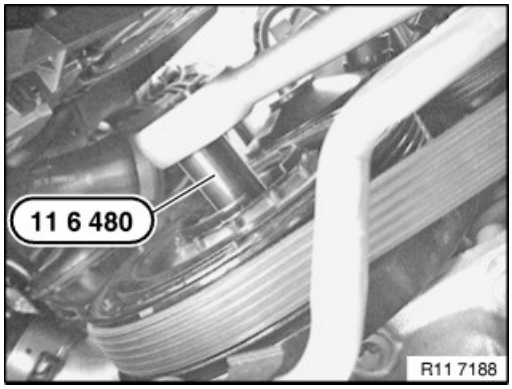
Cranking the engine is only permissible with a special tool (chain tensioner) installed.

Install special tool 2 353 281 **without** sealing ring.

Install special tool 2 353 281 **without** shim.

Tightening torque: 70 Nm.

cardiagn.com



Attention!

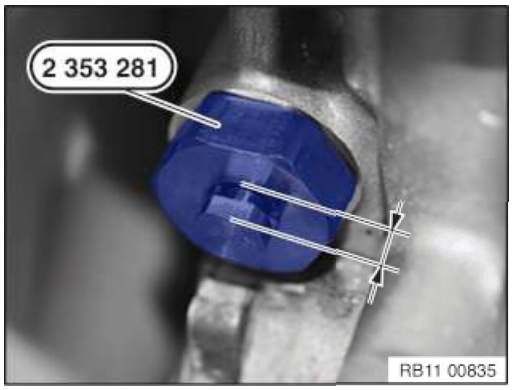
Do not crank engine against direction of rotation, apply mark to vibration absorber.

Crank engine with special tool11 6 480 .

Measurement of timing chain.

Crank the engine at a constant speed in direction of rotation **4 times**.

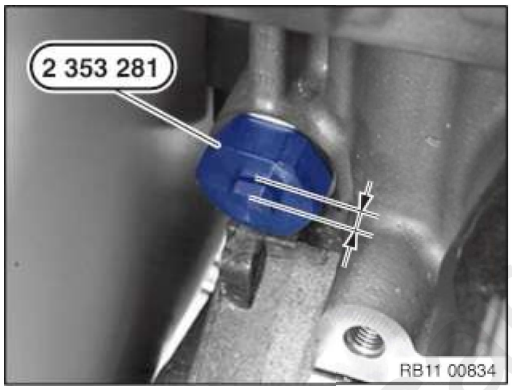
Determine minimum dimension on special tool 2 353 281 with the aid of a second person.



Determine protrusion or short length of the measuring pin on special tool 2 353 281 (see graphic).

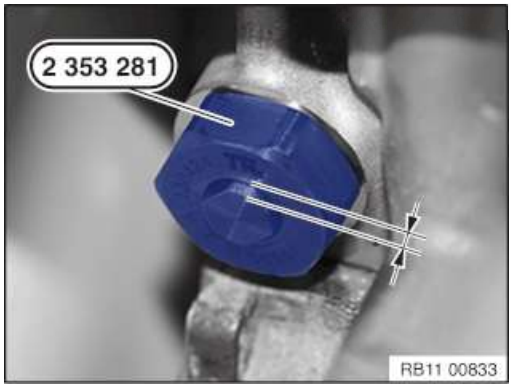
Graphic: **A**

Minimum protrusion greater than 4 mm (indentation visible).



Graphic: **B**

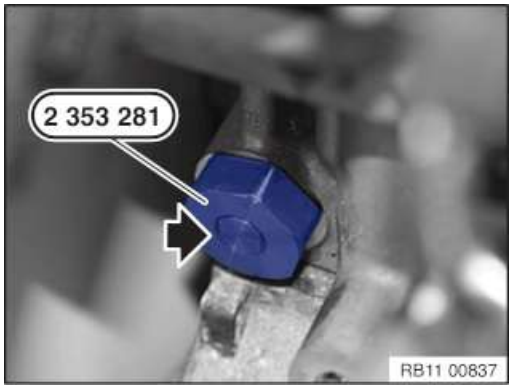
Minimum protrusion 4 mm (indentation not visible).



Graphic: **C**

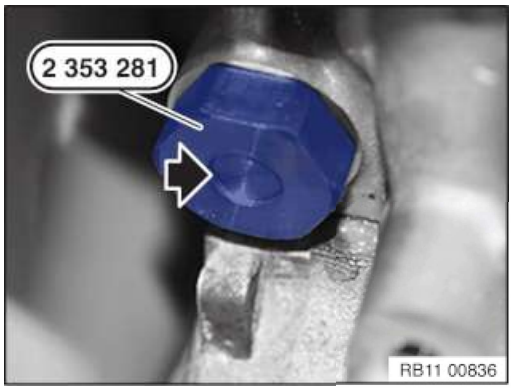
Minimum protrusion 2 mm.

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Graphic: **D**

Measuring pin flush with reference surface (see arrow).



Graphic: **E**

Short length to reference surface (see arrow).



Installation note:
Follow diagnosis instruction.

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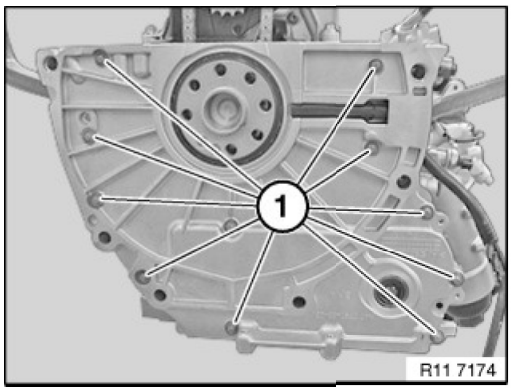
11 14 110 Removing and installing, sealing / replacing rear gear case cover (N57 D30 U/O/T 0/1)

Special tools required:

- 00 9 120
- 11 8 815
- 11 4 470

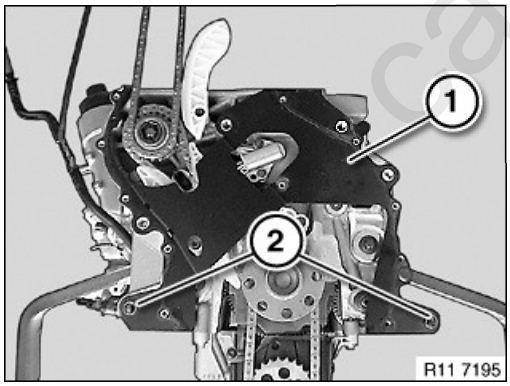
Necessary preliminary work:

- Remove engine.
- Mount engine on assembly stand.
- Remove flywheel.
- Remove cylinder head.
- Removing oil sump.



Release bolt holding high pressure pump.

Release screws (1).

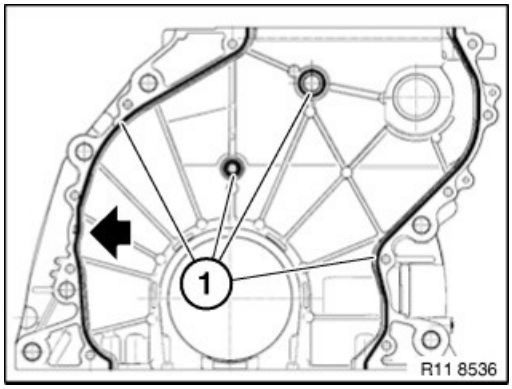


On engines N57 and up to 03/2011.

Remove beaded metal gasket (1).

Check fitting sleeves (2) for damage, replace if necessary.

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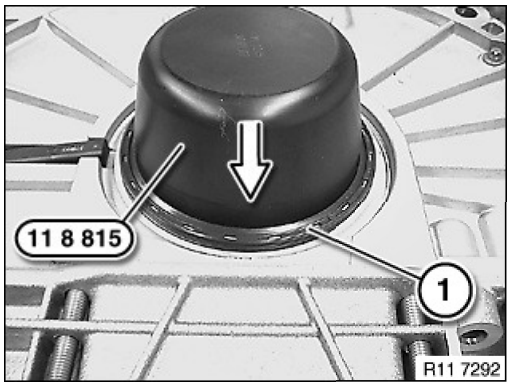
On engines N57 from 03/2011.

Installation note:
Application time of sealing bead (1) max. 12 min.

Remove gasket remnants with special tool 11 4 470 .

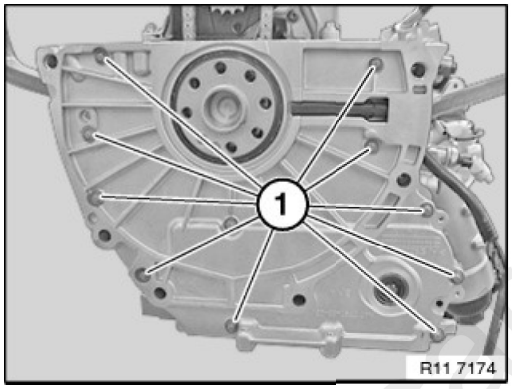
Apply sealing bead (1) at marked points.

Thickness of sealing bead: **1.5 to 2.0 mm.**

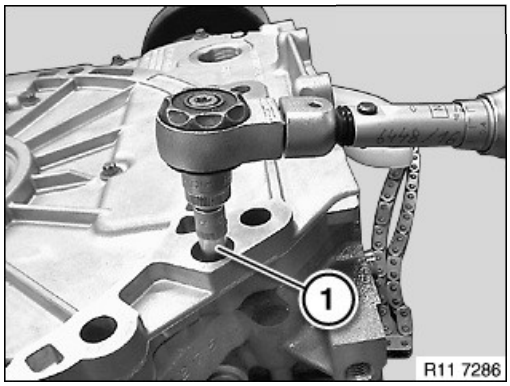


Preassemble special tool 11 8 815 on crankshaft.

Fit accelerator pedal module ring (1) with end cover dry and without lubricant.



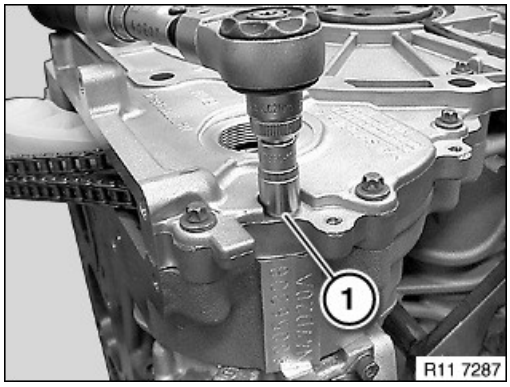
Insert bolts (1).



Secure special tool 00 9 120 with bolts (1).

Tightening torque: 11 14 2AZ.

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Insert screw (1) of high pressure pump (if fitted).

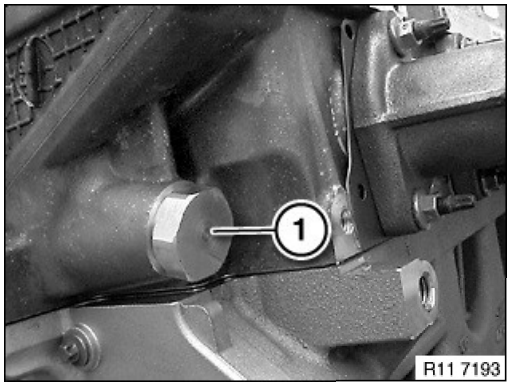
Assemble engine.

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11 31 090 Removing and installing/replacing chain tensioner piston (N57 D30 U/O/T 0/1)

Necessary preliminary work:

- Remove acoustic cover
- Remove air filter housing.



Release chain tensioner (1).

Tightening torque: 11 12 2AZ.

Important!

Have a cleaning cloth ready. A small quantity of engine oil will emerge after the screw connection has been released.

Make sure no oil runs into the clutch housing.

Installation note:
Replace sealing ring.



If the chain tensioner is reused, its oil chamber must be drained. Place chain tensioner on a level support and slowly compress.

Repeat process twice.

Assemble engine.

carsdiagn.com

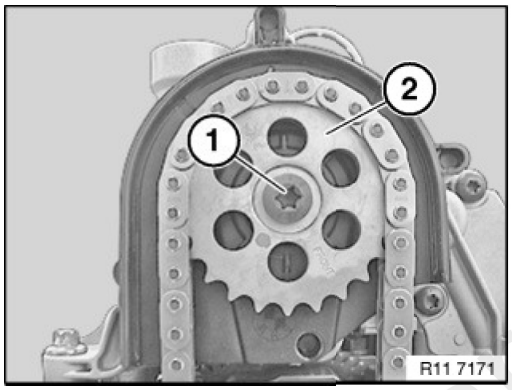
11 31 052 Replacing both timing chains (N57 D30 U/O/T 0/1)

Special tools required:

- 11 3 340
- 11 4 320
- 11 5 320
- 11 8 740
- 11 9 260

Necessary preliminary work:

- Remove engine.
- Mount engine on assembly stand.
- Remove cylinder head.
- Removing oil sump.
- Remove gear case.



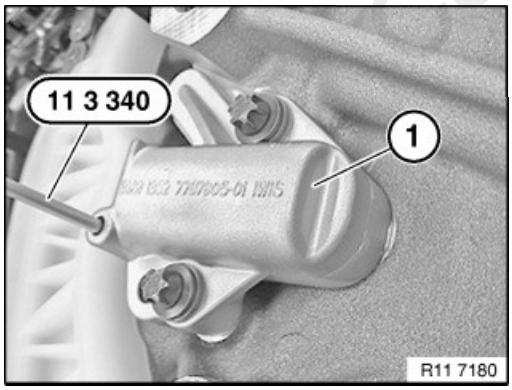
Secure crankshaft with special tool 11 4 320 for bracing.

Important!

Left-hand threads.

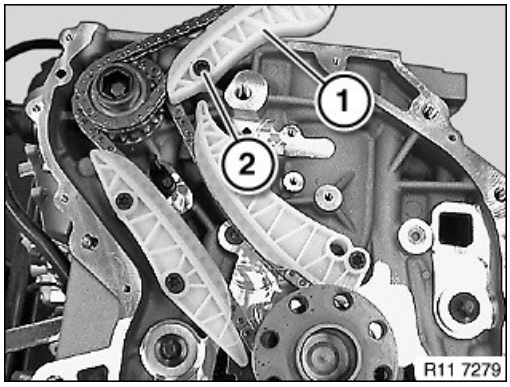
Release central bolt (1).

Remove camshaft sprocket (2) with timing chain of oil pump.



Lock chain tensioner (1) at bottom with special tool 11 3 340 .

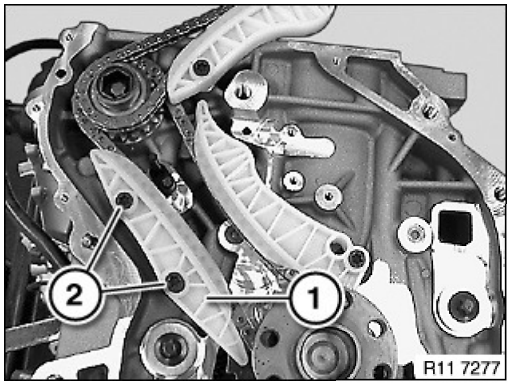
Remove chain tensioner (1).



Remove tensioning rail (1) from bearing pin (2).

Remove timing chain for the cylinder head.

(Picture shows N47).

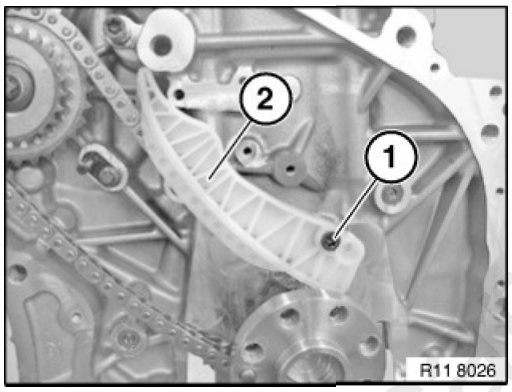


Unfasten screws (2).

Remove slide rail (1).

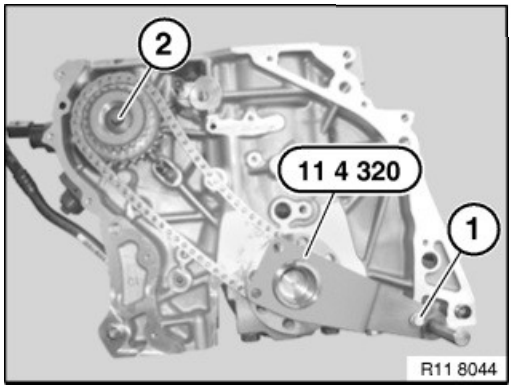
Installation note:
Tightening torque: 11 11 3AZ.

(Picture shows N47).



Release screw (1).

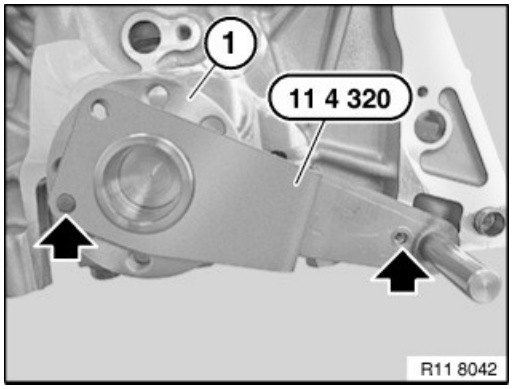
Remove tensioning rail (2).



Note:
To release high pressure pump central bolt (2), use special tool 11 4 320 to secure crankshaft from rotating.

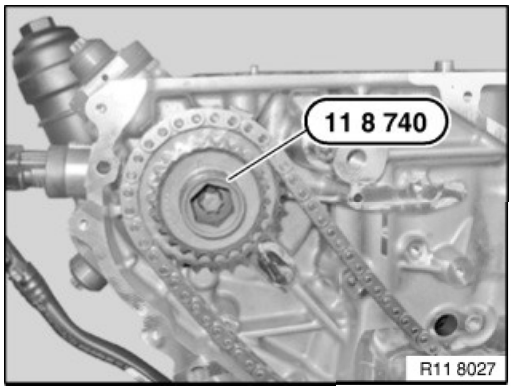
Position special tool 11 4 320 and secure to crankcase with bolt (1).

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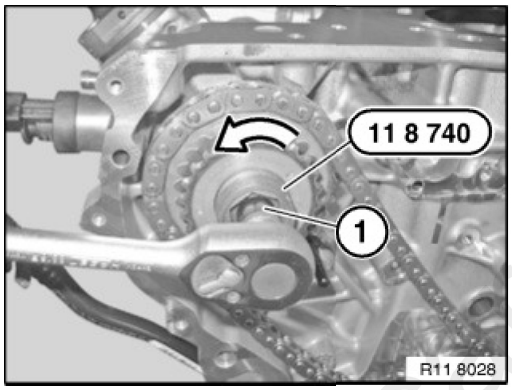


Installation note:
Pay attention to dowel pin on crankshaft (1).

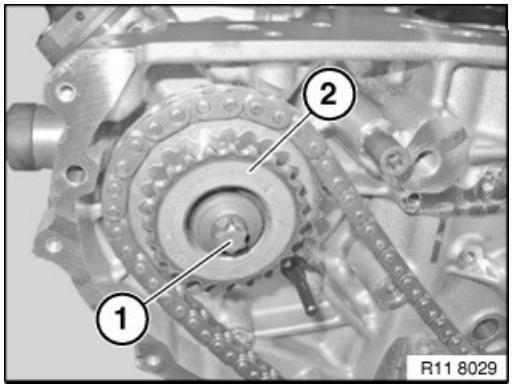
Secure special tool 11 4 320 to the crankcase with a screw M6.



Hand-tighten special tool 11 8 740 in secondary sprocket wheel of high-pressure pump.



Twist out central bolt (1) of high pressure pump in direction of arrow until impeller has detached from taper of high pressure pump.

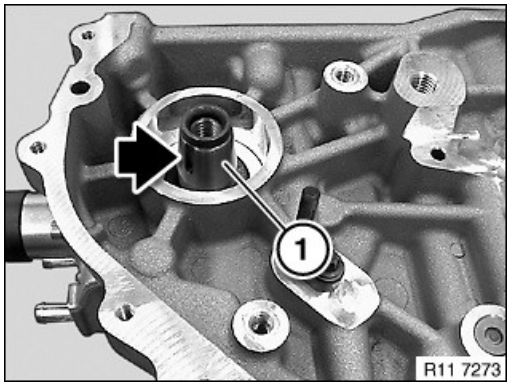


Remove special tool 11 8 740 .

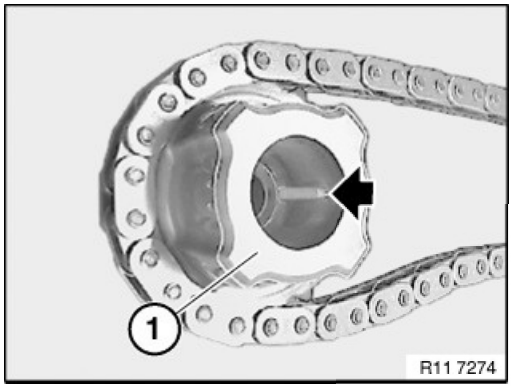
Remove central bolt (1).

Remove special tool 11 4 320 .

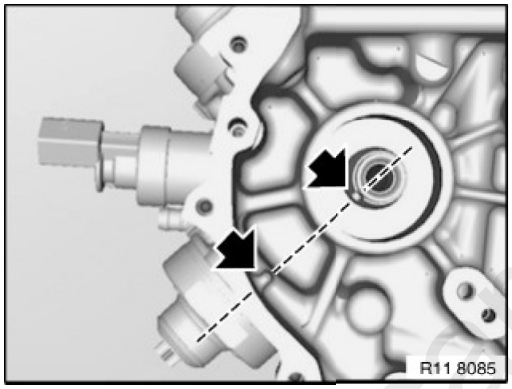
Remove secondary sprocket wheel (2) with timing chain.



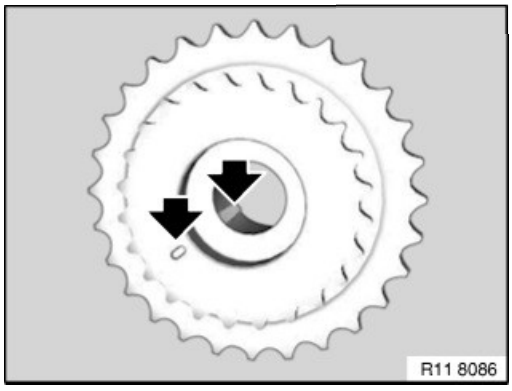
Installation note:
Pay attention to spline groove on high pressure pump (1).



Installation note:
Pay attention to lug for spline groove on camshaft sprocket (1) of high pressure pump.

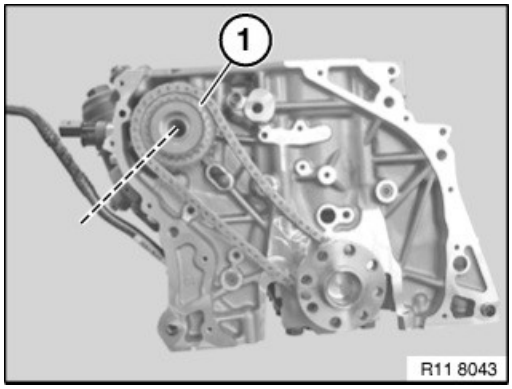


Installation note:
Marking on crankcase (cast lug) and groove on high pressure pump must be in line.

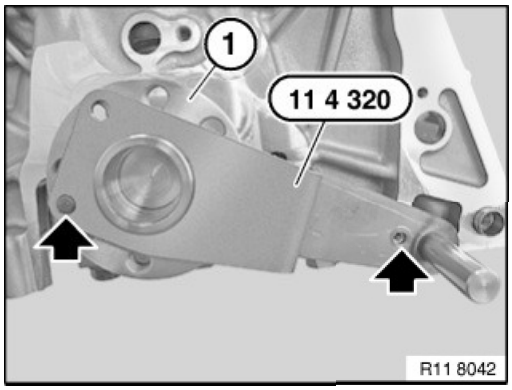


Installation note:
Groove and marking (0) on pinion are on a single plane.

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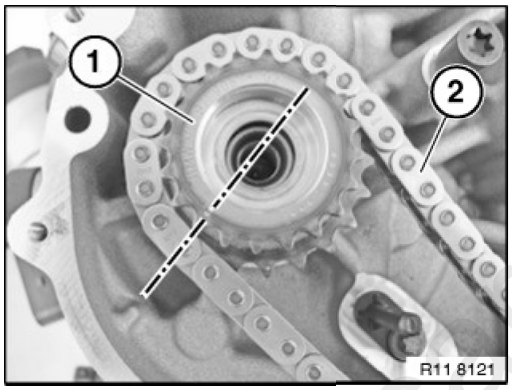
Place timing chain with impeller (1) on crankshaft gear.



Important!

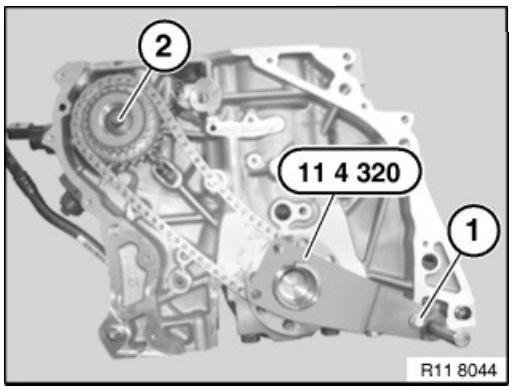
High pressure pump and crankshaft must be positioned towards each other.

Secure crankshaft (1) to crankcase at firing TDC, cylinder no. 1, with special tool 11 4 320 .



Position impeller (1) with timing chain (2) on high pressure pump.

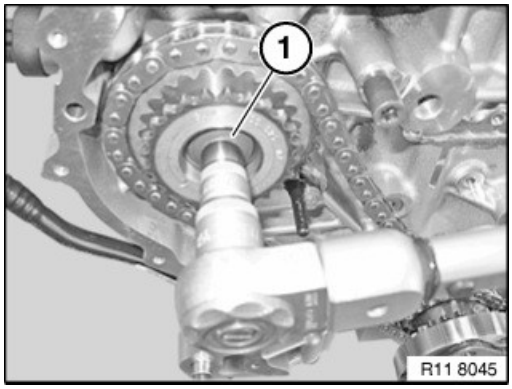
Marking (0) and cast lug must be in line.



Secure special tool 11 4 320 with a M6x15 screw (1).

Screw in central bolt (2) of high pressure pump.

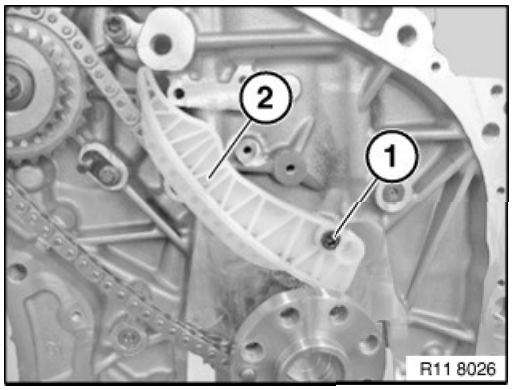
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Secure central bolt (1) of high pressure pump.

Tightening torque: 13 52 1 AZ.

Remove special tool 11 4 320 .



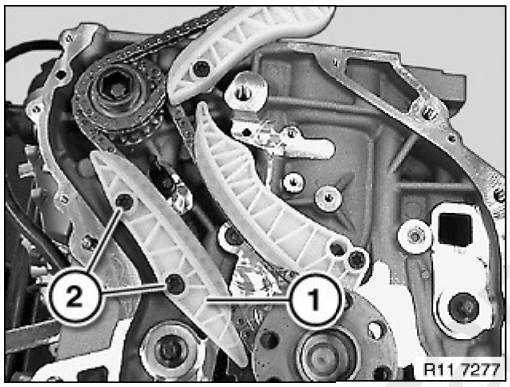
Important!

Clean all threads of bearing journals.

Position tensioning rail (2).

Screw in bearing journals (1).

Tightening torque: 11 11 3AZ.



Important!

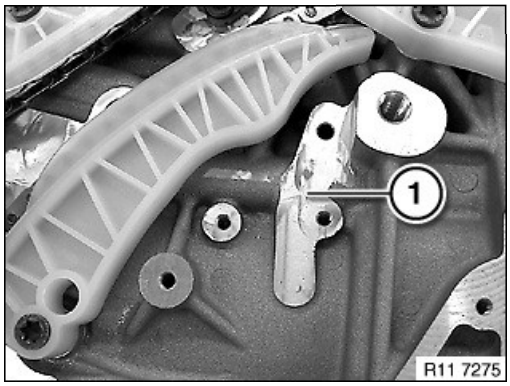
Clean all threads of bearing journals.

Position guide rail (1).

Screw in bearing journals (2).

Tightening torque: 11 11 3AZ.

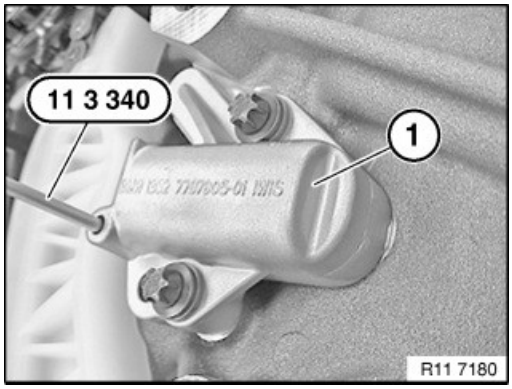
(Picture shows N47).



Important!

Clean sealing surfaces (1) with compressed air.

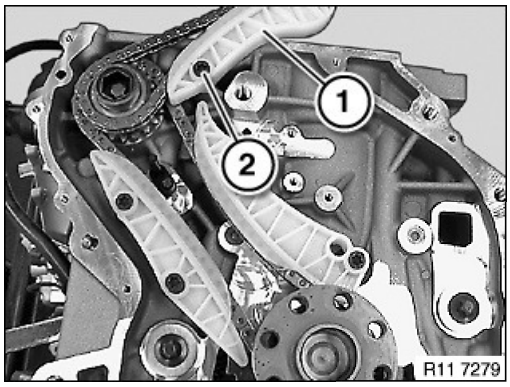
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Secure hydraulic chain tensioner (1) at bottom with two screws.

Tightening torque: 11 11 4AZ.

Remove special tool 11 3 340 .

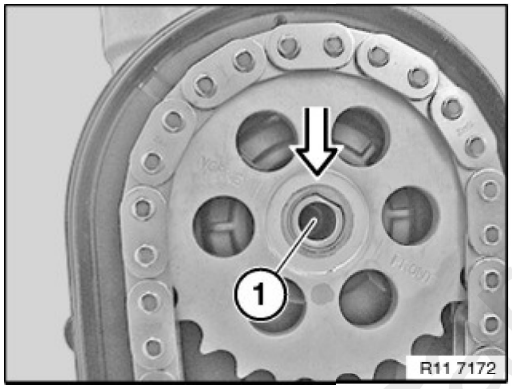


Position tensioning rail (1) for cylinder head.

Screw in bearing journals (2).

Tightening torque: 11 11 3AZ.

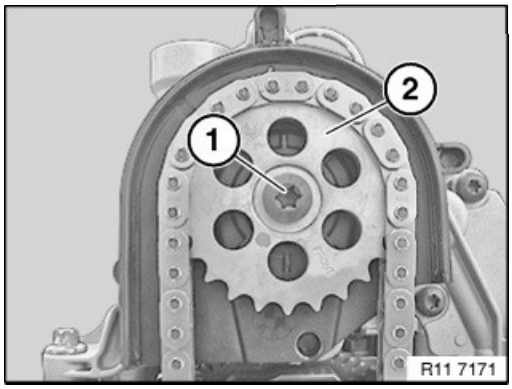
(Picture shows N47).



Position timing chain with secondary sprocket wheel for oil pump.*Installation note:*

Pay attention to mounting flats on oil pump shaft (1) (see arrow).

Fit special tool11 4 320 .



Important!

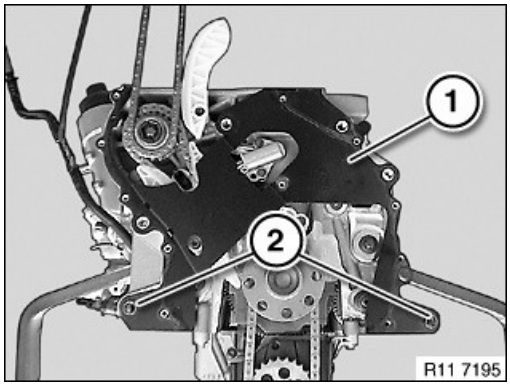
Left-hand threads.

Insert screw (1).

Tightening torque: 11 41 2AZ.

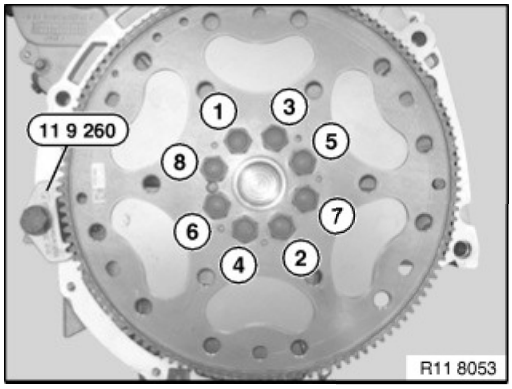
Remove special tool 11 4 320 .

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Installation note:
Check fitting sleeves (2) for damage.

Position beaded metal gasket (1).

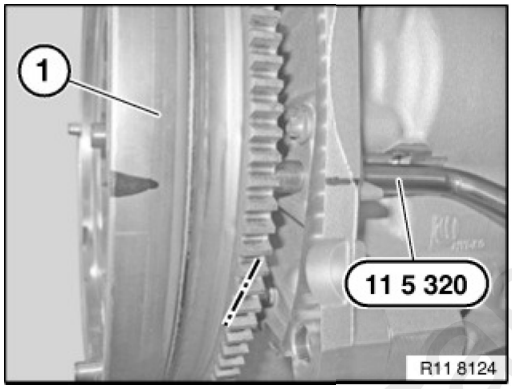


Installation note:
Flywheel must be installed to determined TDC.

Position flywheel.

Secure flywheel with special tool 11 9 260 .

(Picture shows automatic transmission).



Turn flywheel (1) back.

Use special tool 11 5 320 to block the crankshaft in the TDC firing position Cylinder 1

Assemble engine.

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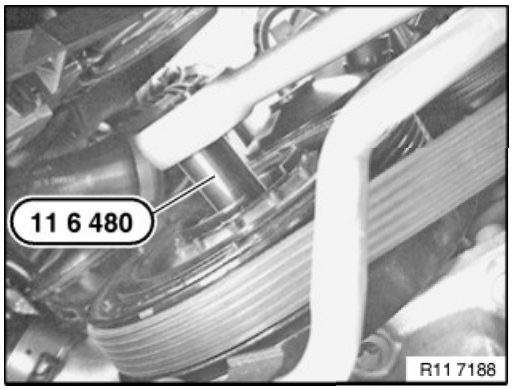
11 31 028 Replacing exhaust camshaft (N57 D30 U/O/T 0/1)

Special tools required:

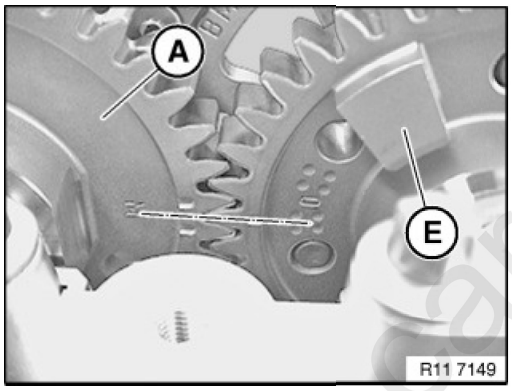
- 11 6 480

Necessary preliminary tasks:

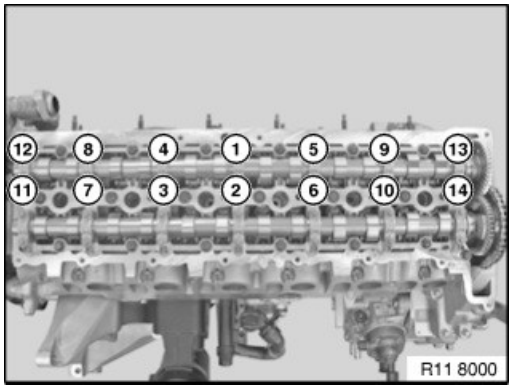
- Remove cylinder head cover.



Crank engine with special tool 11 6 480 to firing TDC position of cylinder no. 1.**Important!**
Do not turn the engine back.



Check position of exhaust and intake camshafts (see graphic).



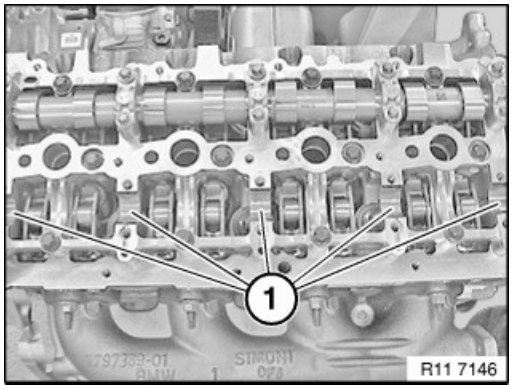
Remove exhaust camshaft.

Note:
It is not necessary to adjust the engine timing in order to remove the exhaust camshaft.

Release bearing caps A1 to A7 by 1/2 a turn at a time, working from the outside inwards.

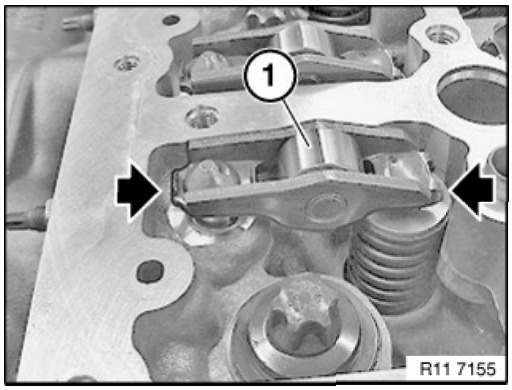
Feed exhaust camshaft upwards to remove.

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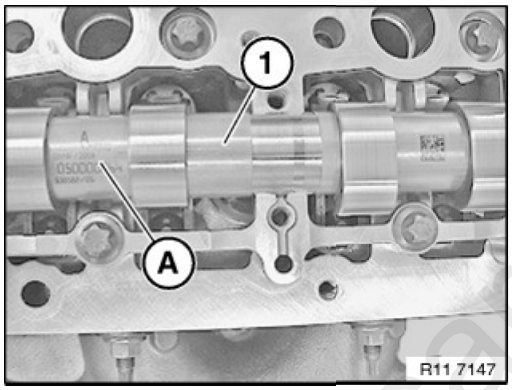


Preparation for installation:

Oil all bearing positions (1).

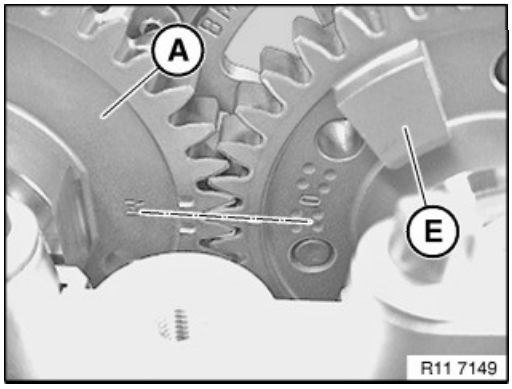


Check installation position of the roller cam followers **(risk of damage!)**.



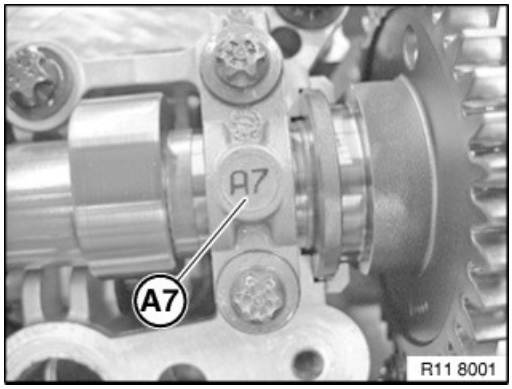
Install exhaust camshaft:

Insert exhaust camshaft (1) marked with (A).



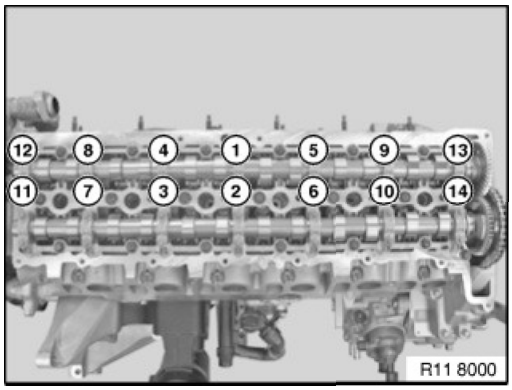
The marks on both camshafts (A and E) must agree when installing exhaust camshaft (A) (see graphic).

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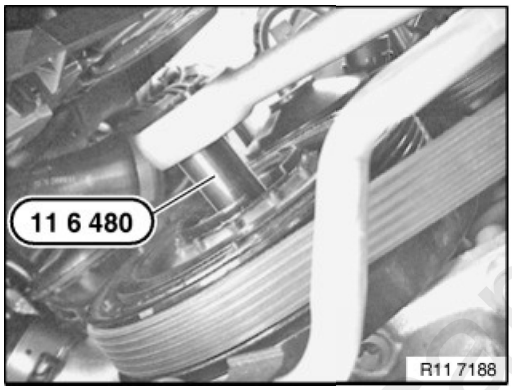
Fit all bearing caps A1 to A7.

The bearing caps can be read from the intake side.



Tighten bearing caps A1 to A7 by 1/2 a turn at a time on the camshaft carrier, working from the inside outwards.

Tightening torque: 11 31 2AZ.



Using special tool 11 6 480 , crank engine twice in direction of rotation until cylinder no.1 is back in TDC firing position.

Check camshaft adjustment.

Important!

Do not turn the engine back.

Assemble engine.

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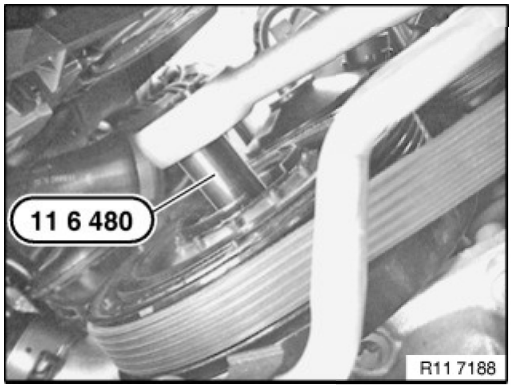
11 31 025 Replacing intake camshaft (N57 D30 U/O/T 0/1)

Special tools required:

- 11 5 320
- 11 6 480
- 11 8 760

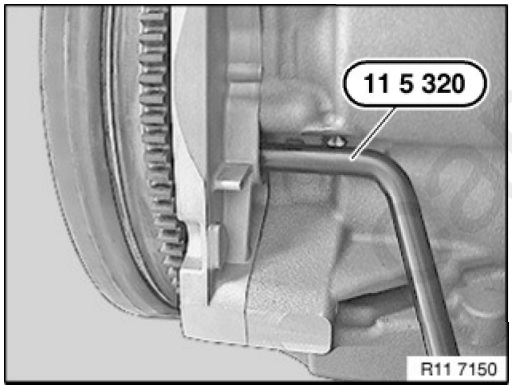
Necessary preliminary work:

- Remove cylinder head cover.
- Remove engine splash guard.



Crank engine with special tool 11 6 480 to TDC firing position of first cylinder.**Important!**

Do not crank the engine back.

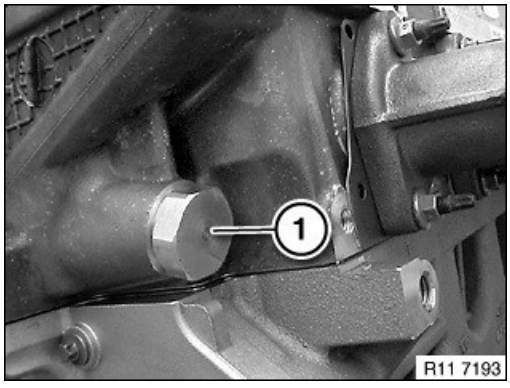


Remove protective cap of gear case cover.

Block crankshaft with cylinder no. 1 in TDC firing position with special tool 11 5 320 .

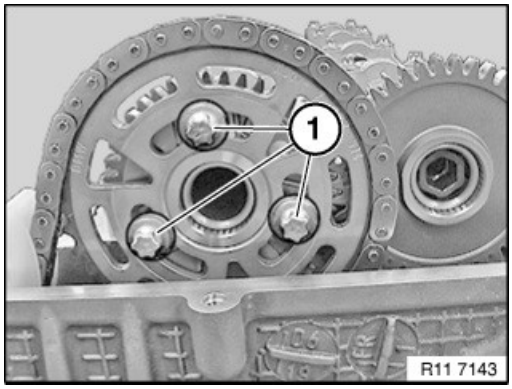
Important!

Do not turn the engine back.



Release chain tensioner (1).

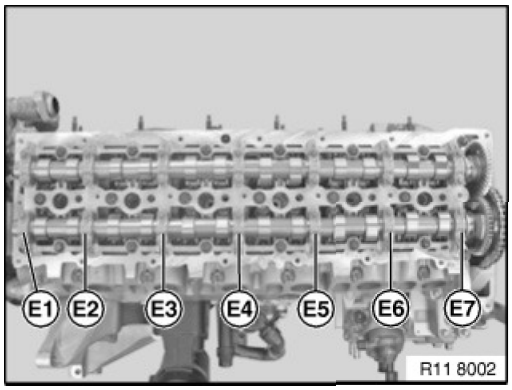
carsdiagn.com



Release screws (1).

Remove camshaft sprockets from camshaft and feed out of timing chain.

Secure timing chain against falling out.

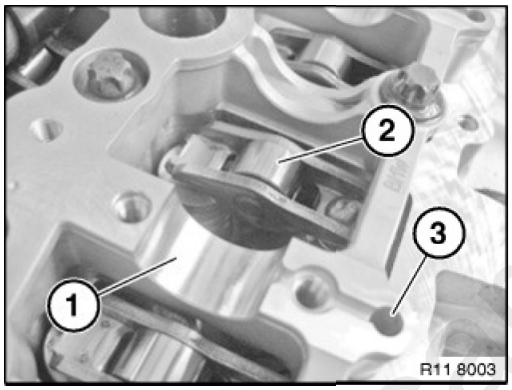


Remove intake camshaft.

Note:
It is necessary to adjust the engine timing in order to remove the intake camshaft.

Release bearing caps E1 to E5 by 1/2 a turn at a time, working from the outside inwards.

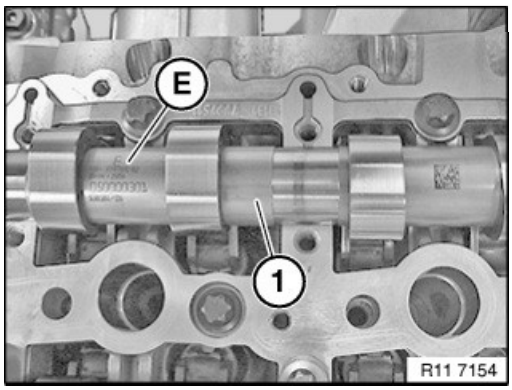
Pull intake camshaft upwards to remove.



Moisten all bearing positions (1) with engine oil.

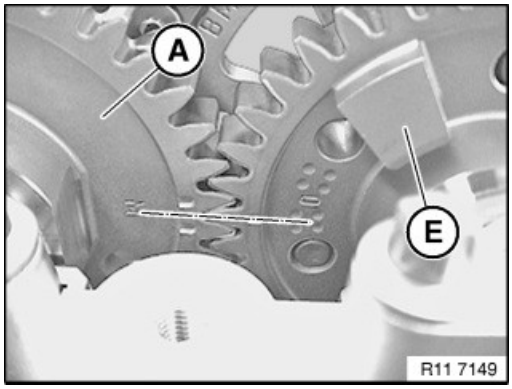
Check installation position of roller cam followers (2) **(risk of damage!)**.

Check all engine oil feed bores (3) for cleanness.

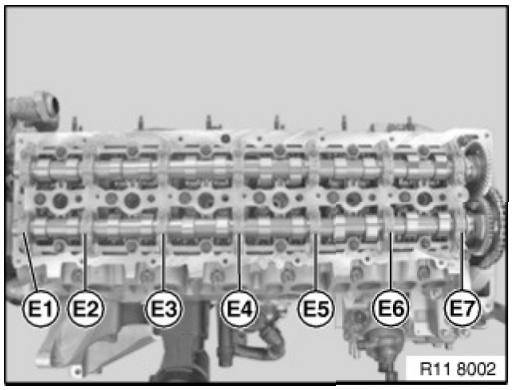


Insert intake camshaft (1) marked with (E).

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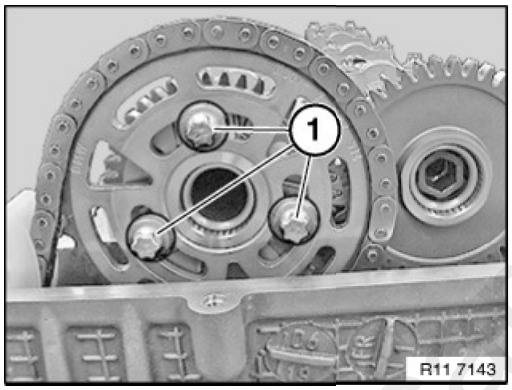
The marks on both camshafts (A and E) must agree when installing intake camshaft (E) (see graphic).



Install intake camshaft.

Tighten bearing caps E1 to E7 by 1/2 a turn at a time on the camshaft carrier, working from the inside outwards.

Tightening torque: 11 31 2AZ.

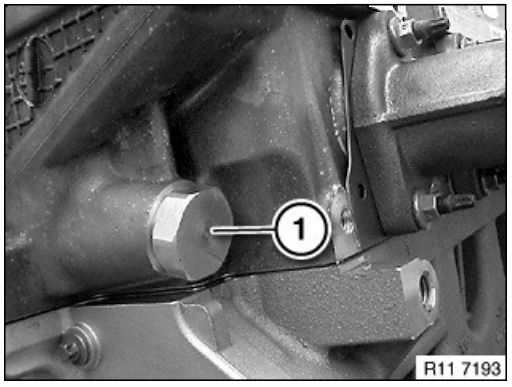


Place the camshaft sprocket with timing chain on the intake camshaft such that bolts (1) are located in the centre of the elongated holes.

Insert bolts (1).

Join bolts (1) to 10 Nm.

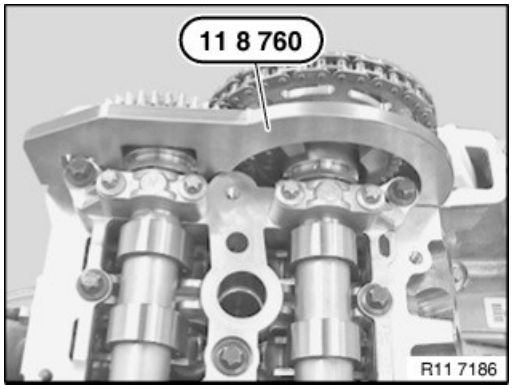
Release bolts (1) again by a 90° turn.



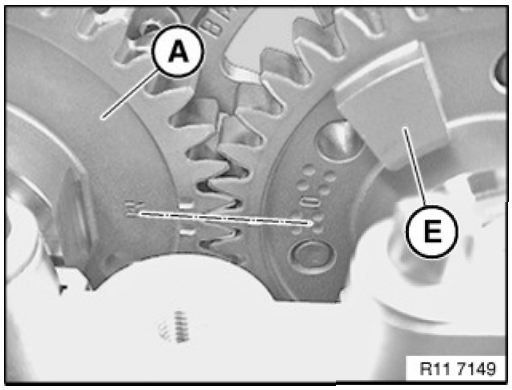
Install chain tensioner (1).

Tightening torque: 11 12 2AZ.

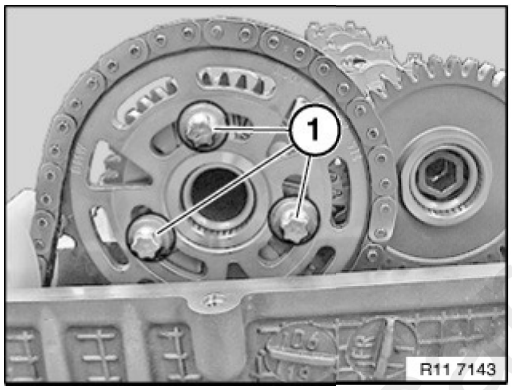
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Place special tool 11 8 760 on exhaust camshaft.**Note:**
Special tool 11 8 760 must lie flush on cylinder head.

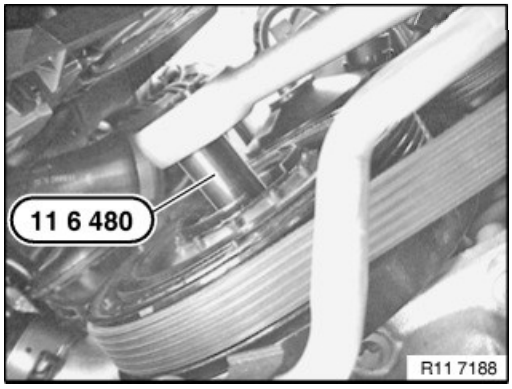


Marks on both camshafts (A and E) must agree (be aligned) (see graphic).



Tighten camshaft bolts (1).

Tightening torque: 11 31 1AZ.



Remove all special tools.

Crank engine twice in direction of rotation with special tool 11 6 480 up to firing TDC position of cylinder no. 1.

Check camshaft adjustment.

Important!
Do not crank the engine back.

Assemble engine.

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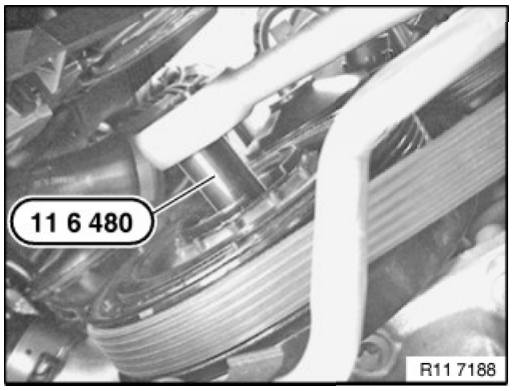
11 33 062 Removing and installing/renewing all hydraulic valve clearance compensating elements (N57 D30 U/O/T 0/1)

Special tools required:

- 11 4 480
- 11 5 320
- 11 6 480

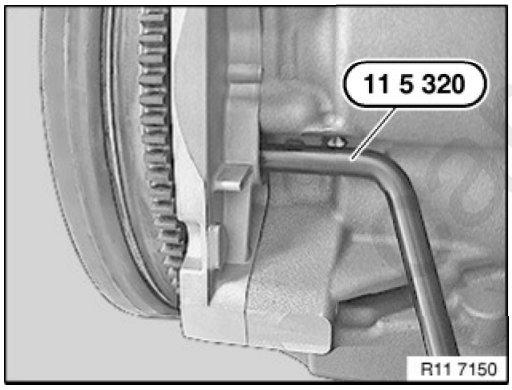
Necessary preliminary tasks:

- Remove cylinder head cover.



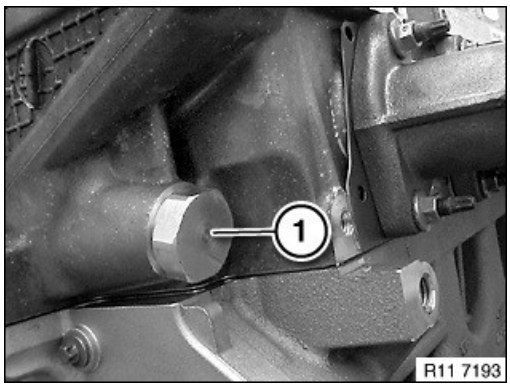
Crank engine with special tool 11 6 480 to TDC firing position of cylinder no. 1.**Important!**

Do not crank the engine back.



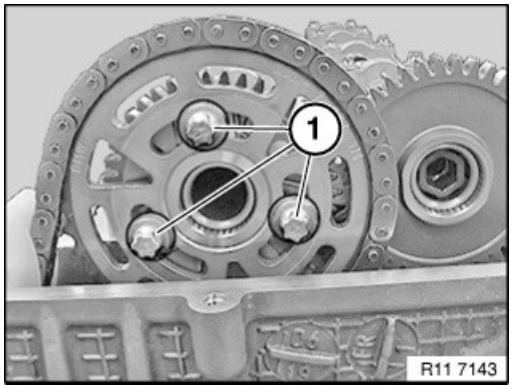
Remove protective cap of gear case cover.

Block crankshaft in firing TDC position of cylinder no. 1 with special tool 11 5 320 .



Release chain tensioner (1).

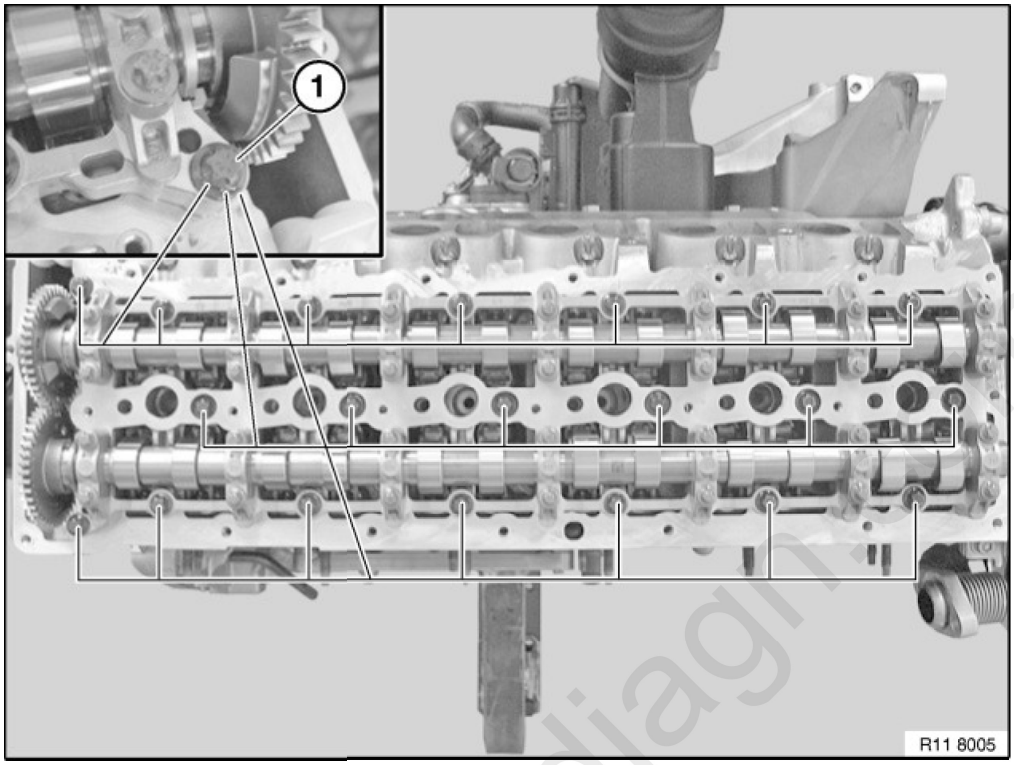
Tightening torque: 11 12 2 AZ..



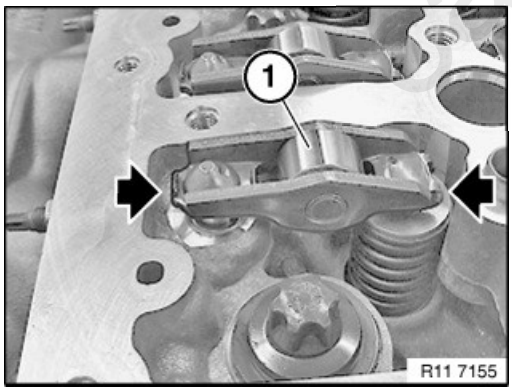
Release screws (1).

Remove camshaft sprocket from assembled shaft and feed out of timing chain.

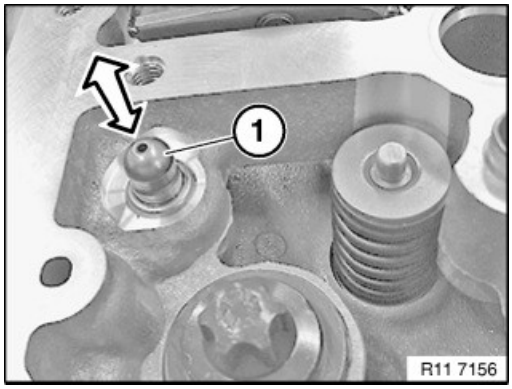
Place timing chain in cylinder head.



Release all bolts (1) from outside inwards.

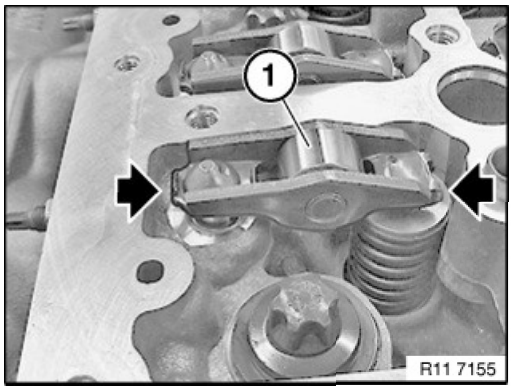


Set down all roller cam followers (1) in an orderly fashion on special tool 11 4 480 .*Installation note:*
Reuse roller cam followers in the same positions.

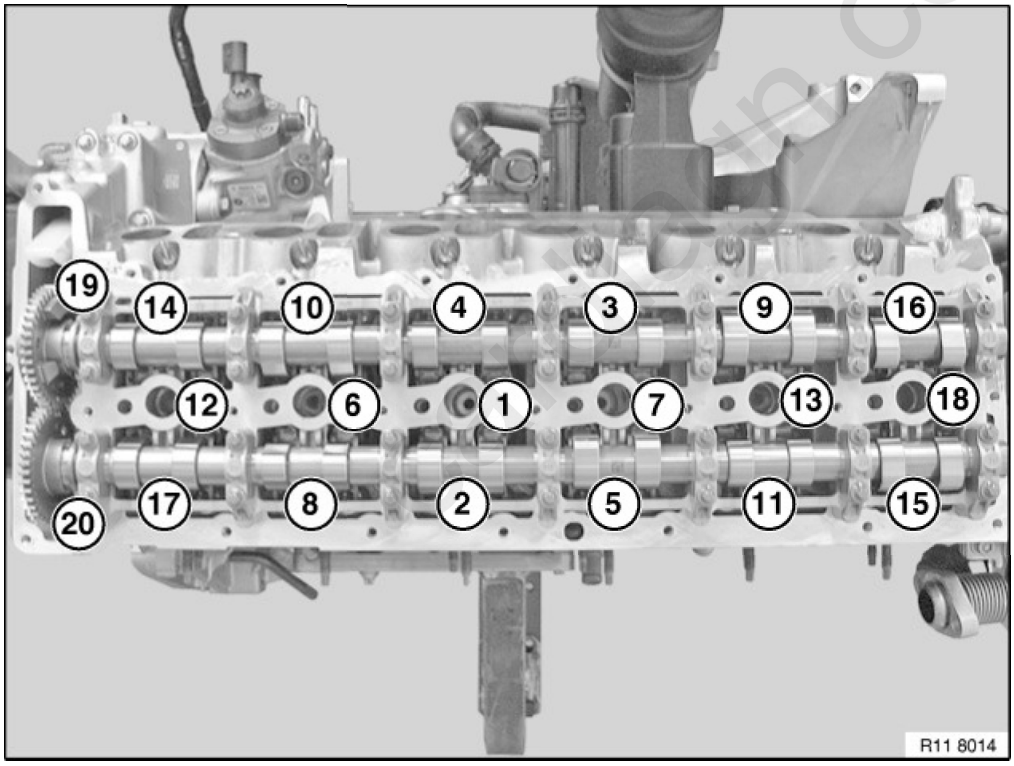


Remove compensating element (1) in direction of arrow.*Installation note:* If reusing compensating elements (1), set down in an orderly fashion in special tool 11 4 480 .

Reuse compensating elements in the same positions.



Position roller cam follower (1) on hydraulic valve clearance compensating element.



Installation note:
Make sure roller cam followers are in correct installation positions.

Place camshaft carrier on cylinder head.

Tighten bolts in sequence (1 to 20).

Tightening torque: 11 31 3AZ.

Adjust valve timing.

Assemble engine.

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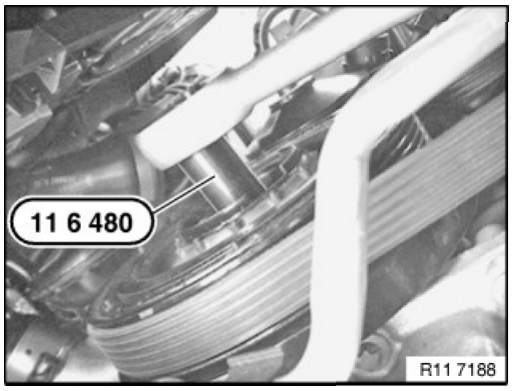
11 33 062 Removing and installing/renewing all rocker arms (N57 D30 U/O/T 0/1)

Special tools required:

- 11 4 480
- 11 5 320
- 11 6 480

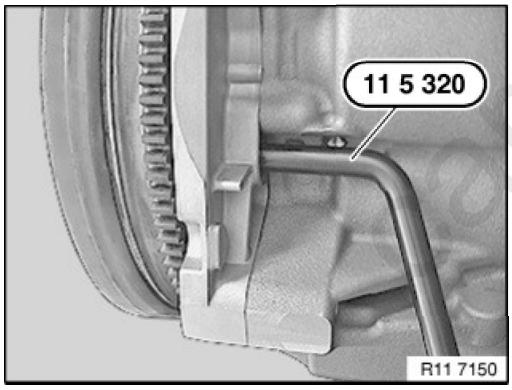
Necessary preliminary tasks:

- Remove cylinder head cover.



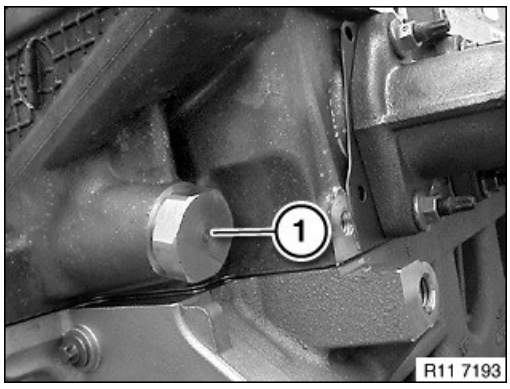
Crank engine with special tool 11 6 480 to TDC firing position of cylinder no. 1.**Important!**

Do not crank the engine back!



Remove protective cap of gear case cover.

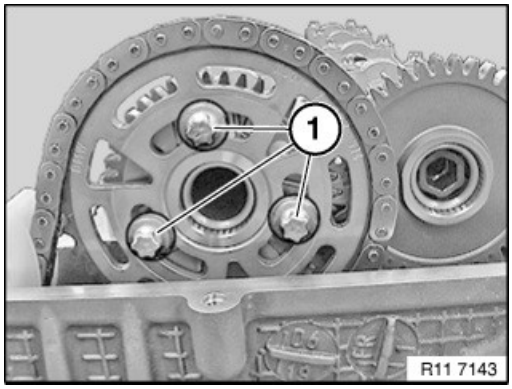
Block crankshaft in firing TDC position of cylinder no. 1 with special tool 11 5 320 .



Release chain tensioner (1).

Tightening torque: 11 12 2AZ.

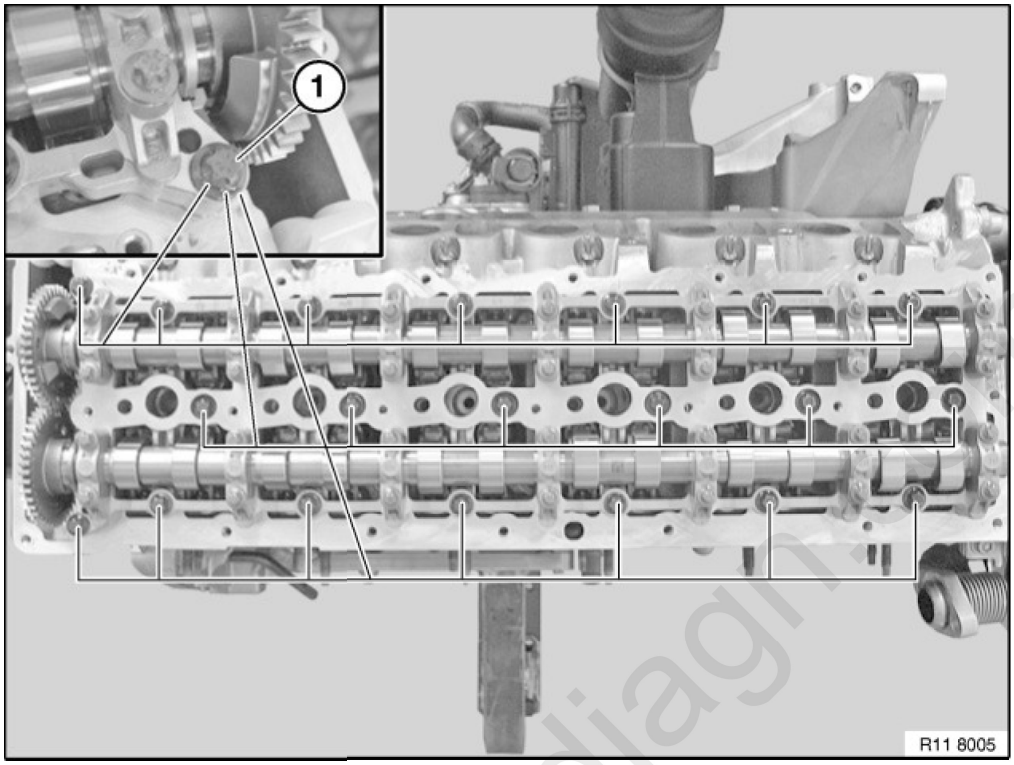
diagn.com



Release screws (1).

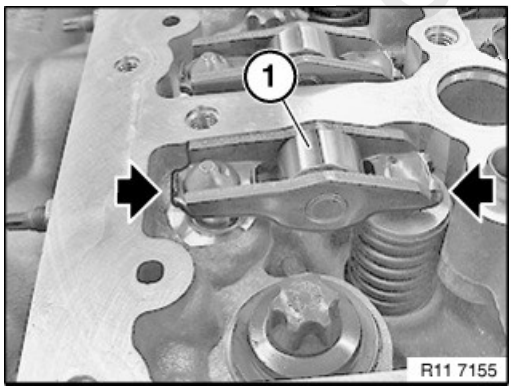
Remove camshaft sprocket from assembled shaft and feed out of timing chain.

Place timing chain in cylinder head.

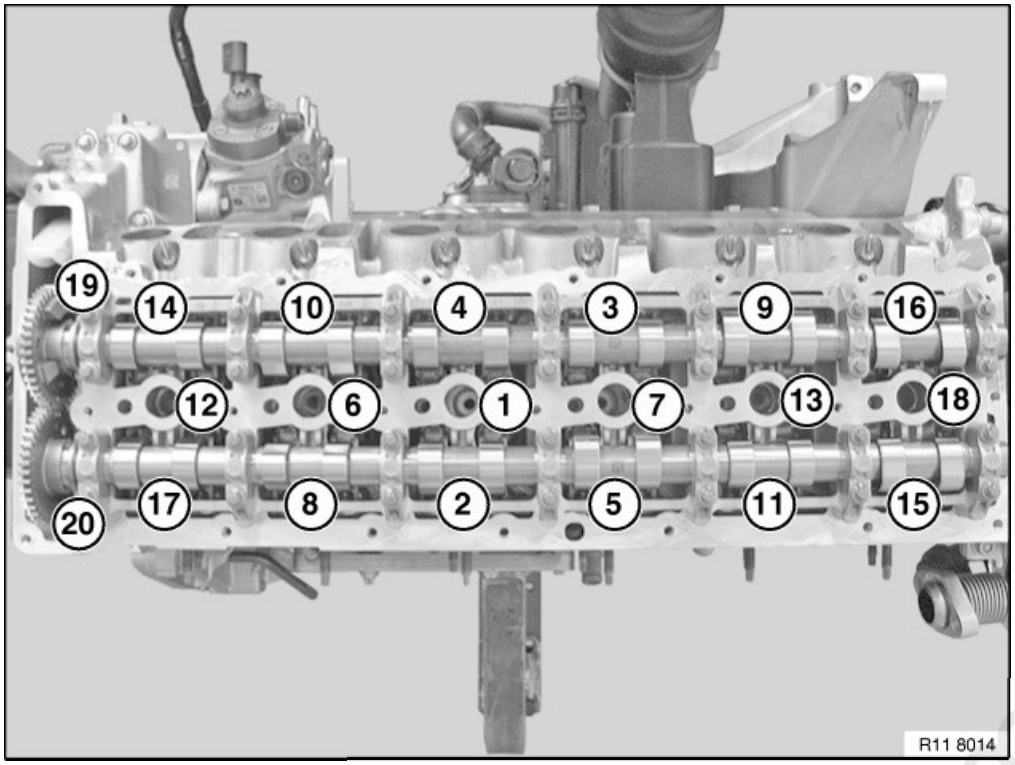


Note:
Both camshafts can be removed with the camshaft carrier.

Release all bolts (1) from outside inwards.



Remove all rocker arms (1) and lay down on special tool 11 4 480 in an orderly manner.*Installation note:*
Already used rocker arms (1) may only be reused in the same position.



Installation note:
Make sure roller cam followers are in correct installation positions.

Place camshaft carrier on cylinder head.

Tighten bolts in sequence (1 to 20).

Tightening torque: 11 31 3AZ.

Adjust valve timing.

Assemble engine.

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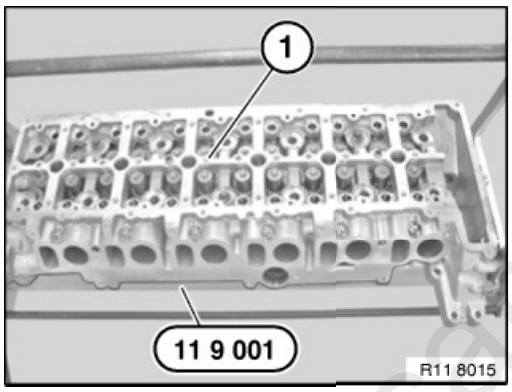
11 34 715 Replacing all valve springs (N57 D30 U/O/T 0/1)

Special tools required:

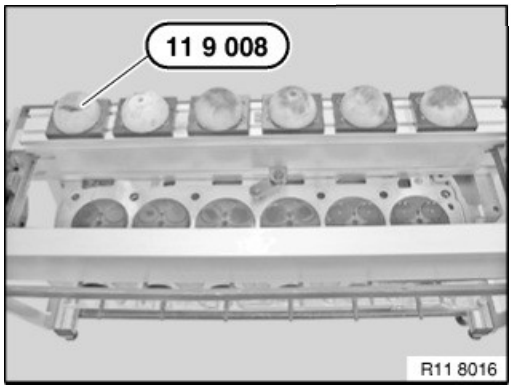
- 11 4 480
- 11 8 840
- 11 9 000
- 11 9 001
- 11 9 005
- 11 9 006
- 11 9 008
- 11 9 009
- 11 9 011

Necessary preliminary tasks:

- Remove cylinder head.

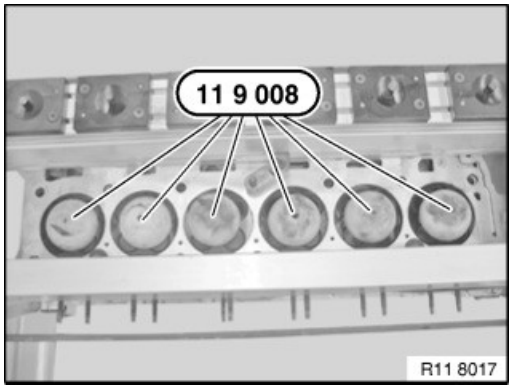


Mount cylinder head (1) on special tool 11 9 001 .

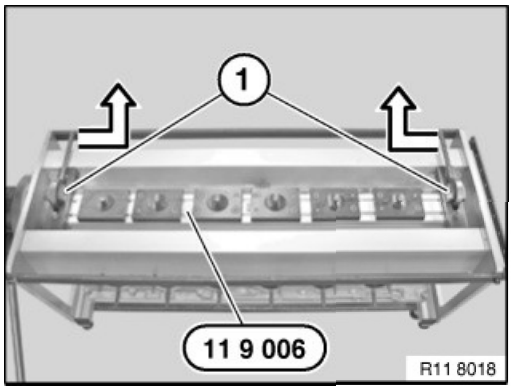


Remove all special tools 11 9 008 .

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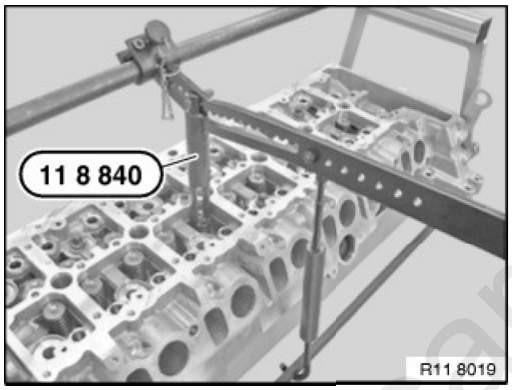
Position special tool 11 9 008 with straight surface on combustion chamber side of cylinder head (see illustration).*Note:*
Procedure for all 4-, -6- and 8-cylinder diesel engines.



Insert special tool 11 9 006 .

Lock special tool 11 9 005 in direction of arrow.

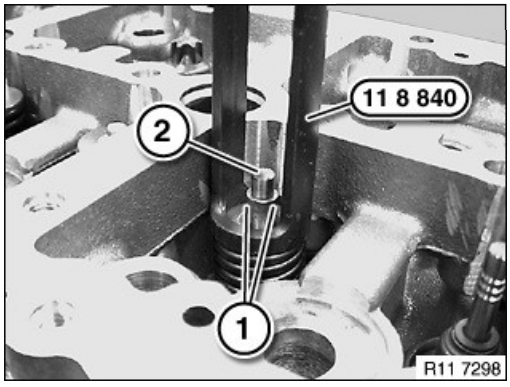
Rotate cylinder head, using special tool 11 9 000 , 180° into installation position.



Align special tool 11 9 009 in direction of valve axis. Select corresponding groove in special tool 11 8 840 .

Press down valve spring on upper spring cup with special tool 11 9 009 .

Hook in with special tool 11 9 011 .

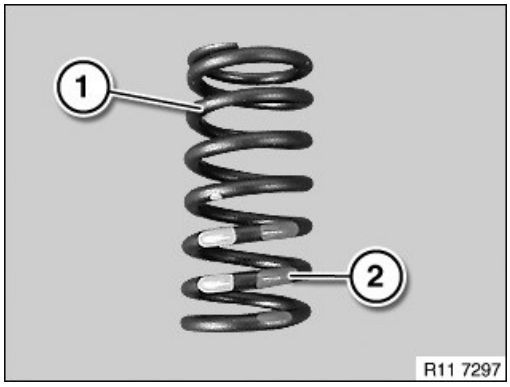


Use a magnet to remove valve keys (1) from valve (2).

Remove valve spring and spring cup.

Place down valve springs and valve keys on special tool 11 4 480 in an orderly manner.

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Check colour code of valve spring (1).

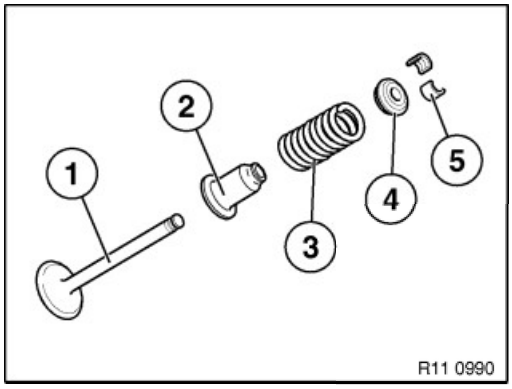
The colour orange (2) on the valve spring is important for allocation purposes.

Mixed installation is possible.

Possible colour sets:

- Yellow - orange
- Green - orange
- Blue - orange

The installation position of the valve spring can be freely selected.



Installation sequence:

1. Valve
2. Valve stem seal
3. Valve spring
4. Top spring cup
5. Valve keys

If necessary, replace valve stem seals.

Assemble engine.

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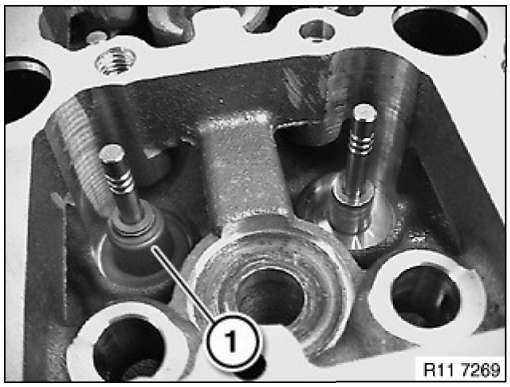
11 34 560 Replacing all valve stem seals (N57 D30 U/O/T 0/1)

Special tools required:

- 11 1 480
- 11 6 380

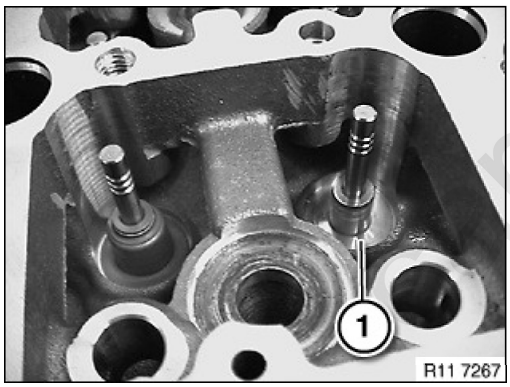
Necessary preliminary tasks:

- Remove cylinder head.
- Remove all valve springs.

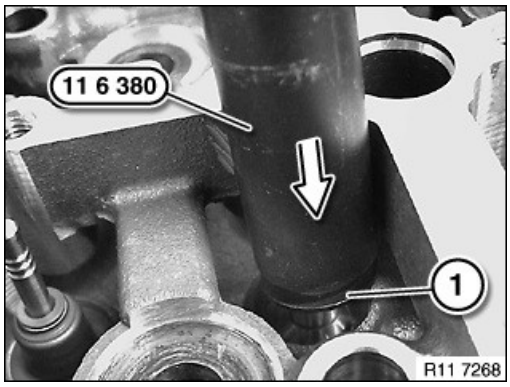


Tap open valve stem seal (1) with special tool 11 1 480 or with a size 13 or 14 hexagon bit.

Remove valve stem seal (1) with a twisting and pulling action.



The contact surface (1) must be clean.



Installation note:
Before installing the valve stem seals, the protective grommet must be fitted on the valve stem **Risk of damage!** to the sealing lip!

Press on valve stem seal (1) to stop using special tool 11 6 380 in direction of arrow.

rdiagn.com



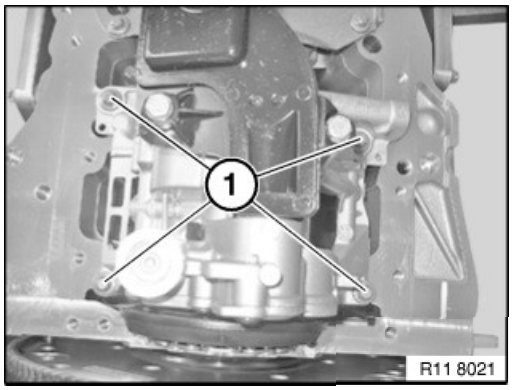
Assemble engine.

cardiagn.com

11 41 000 Removing and installing/replacing oil/vacuum pump (N57 D30 U/O/T 0/1)

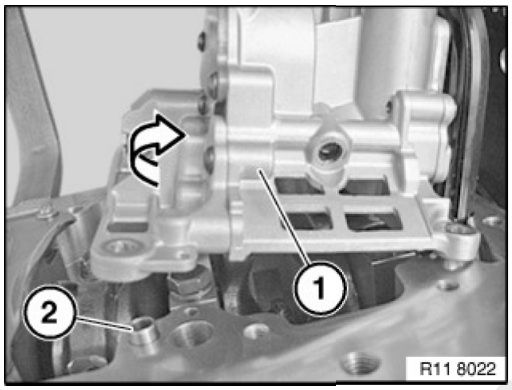
Necessary preliminary work:

- Removing oil sump.



Release screws (1).

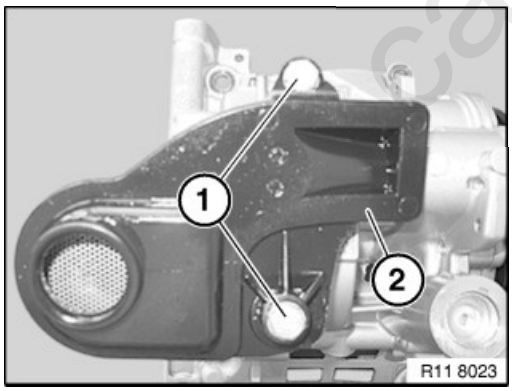
Tightening torque: 11 41 1 AZ.



Lift oil/vacuum pump (1) in direction of arrow.

Remove timing chain from sprocket wheel.

Installation note:
Check fitting sleeves (2) for damage.



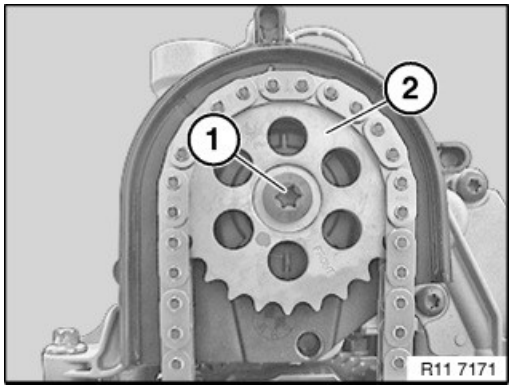
Replacing oil/vacuum pump:

Release screws (1).

Remove oil strainer (2) by turning.

Installation note:
Replace O-ring.

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Replacing oil/vacuum pump:

Important!

Left-hand threads.

Bolt (1) does **not have to be opened** when the oil/vacuum pump is exchanged.

Tightening torque: 11 41 2 AZ.

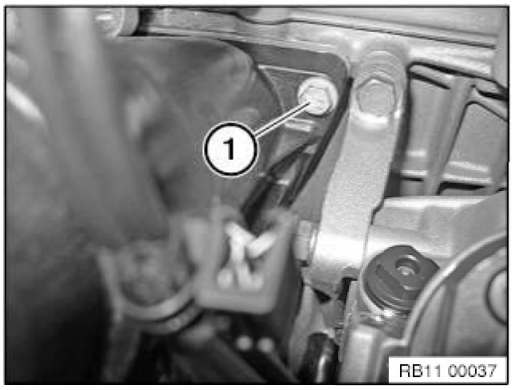
Assemble engine.

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11 42 020 Removing and installing/replacing complete full-flow oil filter (N57 D30 U/O/T 1)

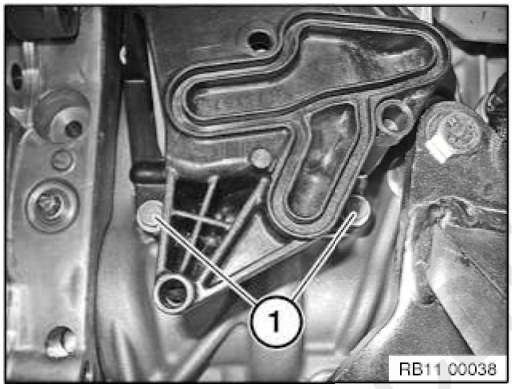
Necessary preliminary work:

- Drain coolant.
- Remove intake plenum.
- Remove coolant pipe.
- Remove transmission oil cooler (if fitted).
- Change engine oil.



Release screw (1).

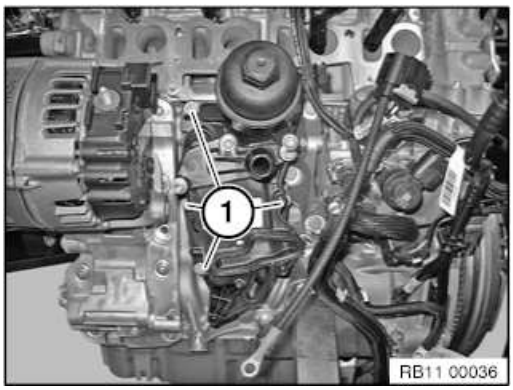
Tightening torque: 11 42 5AZ.



Release screws (1).

Tightening torque: 11 42 5AZ.

Lift out oil filter housing.

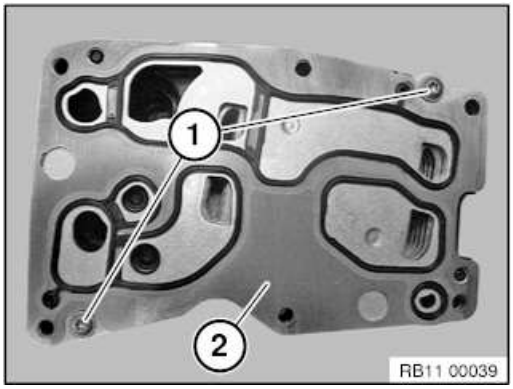


Release screws (1).

Tightening torque: 11 42 5AZ.

Remove oil filter module.

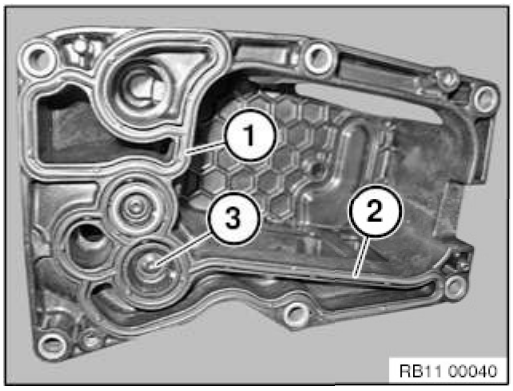
carsdiagn.com



Release screws (1).

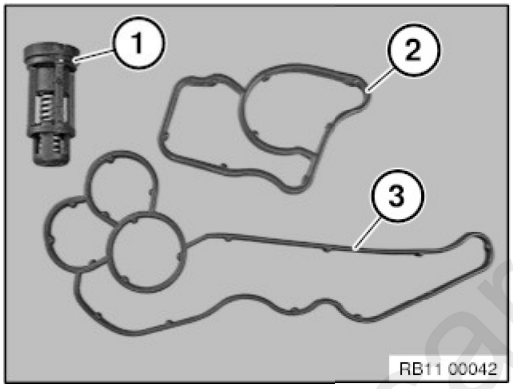
Tightening torque: 11 42 5AZ.

Installation note:
Replace sealing element (2).



Remove seals (1 and 2).

Remove non-return valve (3).



Installation note:
Replace non-return valve (1).

Replace profile seal (2).

Replace profile seal (3).

Assemble engine.

cardiagn.com

11 42 230 Removing and installing/replacing oil feed line for high-pressure exhaust turbocharger (N57T1)

Warning!

Risk of burning!

Only perform this repair work on an engine that has cooled down.

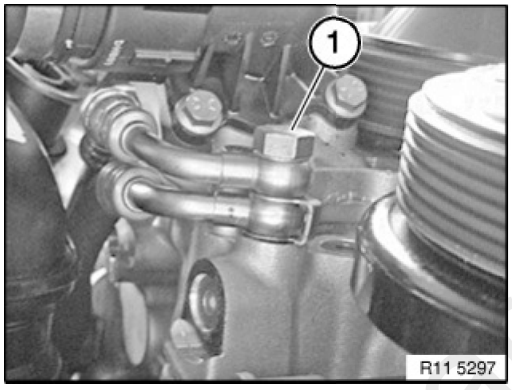
Recycling:

Catch escaping engine oil with suitable auxiliary materials.

Observe country-specific waste disposal regulations.

Necessary preliminary tasks:

- Remove diesel particulate filter.
- Remove high-pressure exhaust turbocharger
- Remove right pressure pipe.
- Remove electronics box.



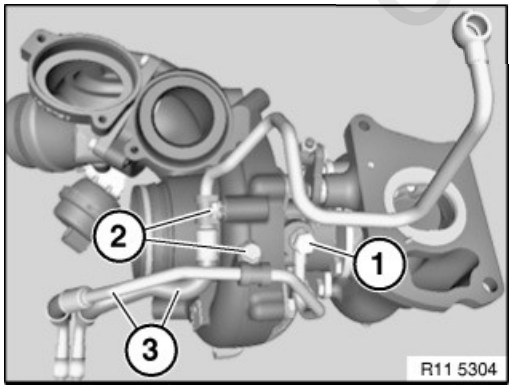
Release banjo bolt (1).

Tightening torque 11 42 2AZ.

Note:
Catch escaping engine oil with suitable auxiliary materials.

Replace sealing rings.

Disconnect engine oil pipes from engine block.



Release screws (2) at oil feed line (3) of high-pressure exhaust turbocharger.

Tightening torque 11 42 9AZ.

Installation note:
Make sure engine oil pipe is in correct installation position.

Graphic shows removed low-pressure exhaust turbocharger.

Assemble engine.

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11 42 235 Removing and installing/replacing oil feed line of low-pressure exhaust turbocharger (N57T1)

Warning!

Risk of burning!

Only perform this repair work on an engine that has cooled down.

Recycling:

Catch escaping engine oil with suitable auxiliary materials.

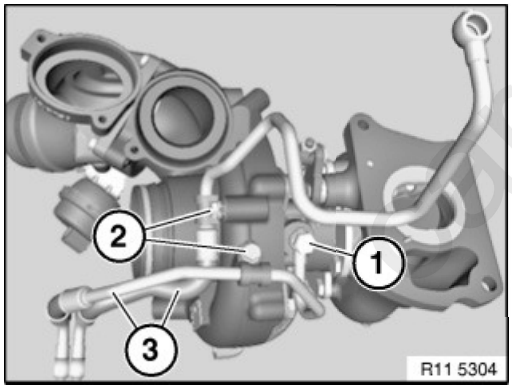
Observe country-specific waste disposal regulations.

Necessary preliminary tasks:

- Remove diesel particulate filter.
- Remove high pressure exhaust turbocharger.
- Remove right pressure pipe.
- Remove electronics box.

Note:

Low pressure charger can only be removed together with exhaust manifold.



Release banjo bolt (1).

Tightening torque 11 42 6AZ.

Replace sealing rings.

Unfasten screws (2).

Tightening torque 11 42 9AZ.

Detach engine oil pipe (3) from exhaust turbocharger and remount on new exhaust turbocharger.

Installation note:

Make sure engine oil pipe is in correct installation position.

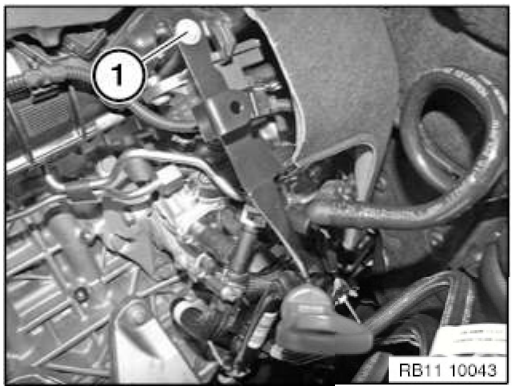
Assemble engine.

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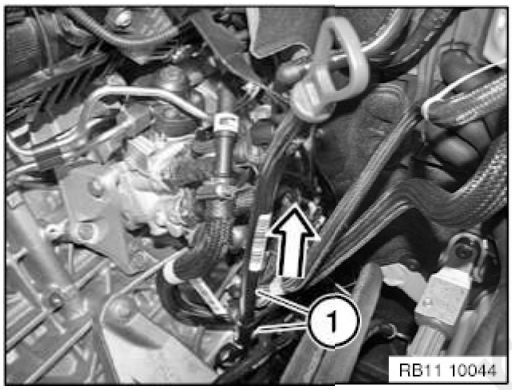
11 43 000 Removing and installing/renewing guide tube for oil dipstick (N57 D30 U/O/T 1)

Necessary preliminary tasks:

- Remove acoustic cover
- Remove intake silencer housing.



Release screw (1) on intake plenum.



Release cables and hoses (1) on guide tube.

Remove guide tube for oil dipstick in direction of arrow.

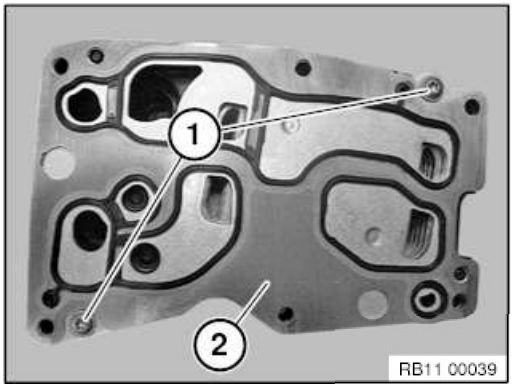
Installation note:
Replace O-ring.

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11 44 001 Removing and installing/renewing oil-to-water heat exchanger (N57 D30 U/O/T 1)

Necessary preliminary tasks:

- Remove full-flow oil filter.



Release screws (1).

Remove panel together with heat exchanger (2).

Tightening torque: 11 42 4AZ.

Assemble engine.

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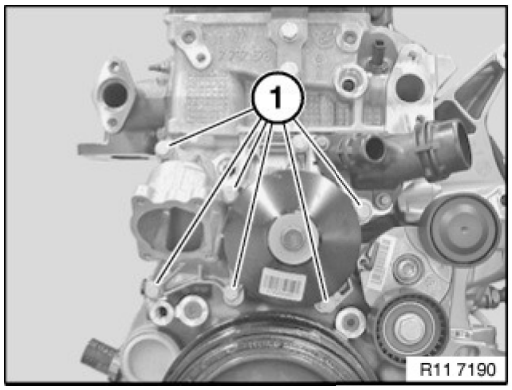
11 51 000 Removing and installing/replacing coolant pump (N57T)

Installation note:

1. All screws, nuts, bolts and hose clamps removed during the repair must be replaced.
2. Retaining elements on chassis and suspension and steering parts must be replaced.

Necessary preliminary tasks:

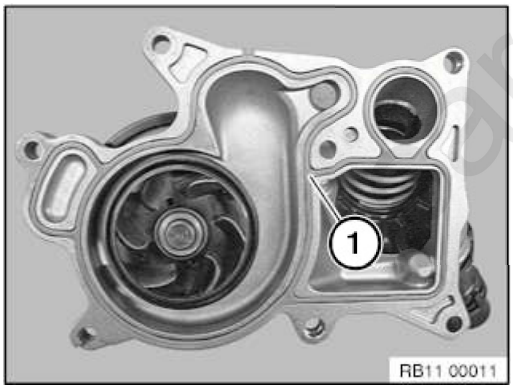
- Remove drive belt for alternator
- Remove exhaust-gas recirculation cooler
- Remove coolant thermostat



Release boltsÂ (1) and remove coolant pump.

Tightening torque 11 51 1AZ.

Note:
Picture shows N47.



Installation note:
Seal coolant pump (1) with liquid sealing compound 2.2.

Assemble engine.

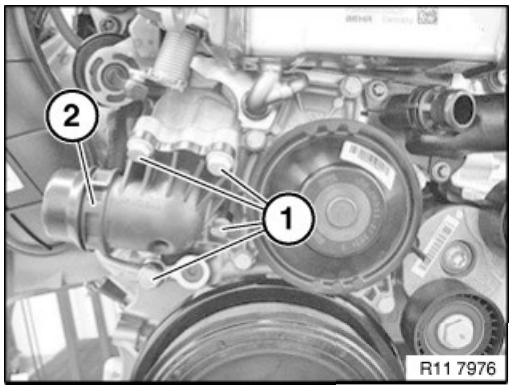
Vent cooling system and check for leak tightness.

ardiagn.com

11 53 000 Removing and installing or replacing coolant thermostat (N57)

Necessary preliminary tasks:

- Drain coolant.
- Remove fan cowl.



Graphic N47.

Release coolant hose from coolant thermostat.

Release screws (1) on thermostat housing (on N57T 3 screws).

Tightening torque: 11 00 2 AZ

Remove thermostat housing.

Installation note:
Replace gasket.

Assemble engine.

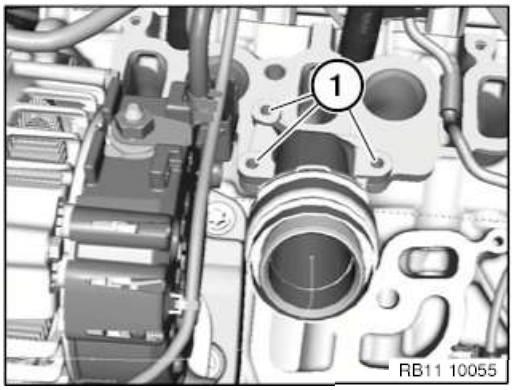
Fill and bleed cooling system.

cardiagn.com

11 53 742 Removing and installing/renewing coolant pipe (N57 D30 U/O/T 1)

Necessary preliminary work:

- Remove intake plenum.



Release screws (1).

Tightening torque 11 12 5AZ.

Remove connecting branches.

Replace gasket.

Assemble engine.

Top up coolant.

Check cooling system for leak tightness.

cardiagn.com

11 12 ... Clean intake plenum (N47, N57)

Necessary preliminary work:

- Remove intake plenum

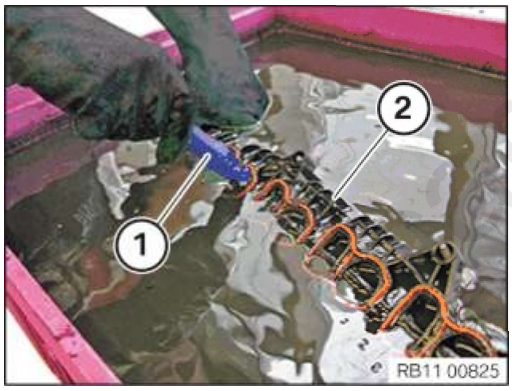
Dismantle intake plenum:

- Remove throttle body
- If applicable, remove adjuster
- If applicable, remove the preheating control unit
- If applicable, remove charging pressure sensor

Wear protective goggles and gloves.

Caution!
Never place electrical components in cleaning agent!

- Put on personal protective clothing/equipment!
- Prepare cleaning agent: Mix 2 parts water with 1 part BMW universal cleaner (part number: 83 19 2 360 981) mixed
- Place intake plenum in cleaning agent
- Adhere to an application time of at least 1 h



Wear protective goggles and gloves.

Caution!
Do not clean electrical components with a parts cleaning unit or high pressure cleaner.

- Remove the intake plenum (2) from the cleaning agent
- Clean the openings of the intake plenum (2) and swirl flaps using the brush (1)

  (Part number: 83 19 2 298 237)
- Clean throttle valve, exhaust-gas recirculation valve, mixing tube and mounted parts with brush (1) if necessary
- Clean the intake plenum (2) with a parts cleaning unit or a high-pressure cleaner.
- Check all seals for damage and replace if necessary.

Pay attention to country specific instructions for disposal.

obdiagn.com

Required follow-up work:

Assemble intake plenum:

- Installing the throttle body
- If applicable, install adjuster
- If applicable, install preheating control unit
- If applicable, install charging pressure sensor

- Install intake plenum

cardiagn.com

11 12 800 Cleaning cylinder heat intake channels and intake plenum (N47, N57)

Special tools required:

- 11 6 480
- 11 5 320
- 2 356 969
- 2 356 966
- 2 356 967
- 00 9 120

Necessary preliminary work:

- Disconnect battery negative cable
- Removing intake plenum
- Remove electric fan if necessary
- Remove underbody protection
- Remove stiffening plate if necessary

Dismantle intake plenum:

- Remove throttle body
- If applicable, remove adjuster
- If applicable, remove preheating control unit
- If applicable, remove charging pressure sensor



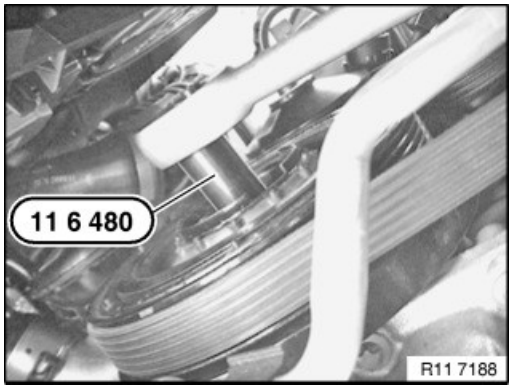
Wear protective goggles and gloves.



Caution!
Never place electrical components in cleaning agent!

- Wear personal protective clothing/equipment
- Prepare cleaning agent: Mix 2 parts water with 1 part BMW universal cleaner (see Section 3.2)
- Place intake plenum in cleaning agent
- Observe application time of at least 1 hour

cardiagn.com



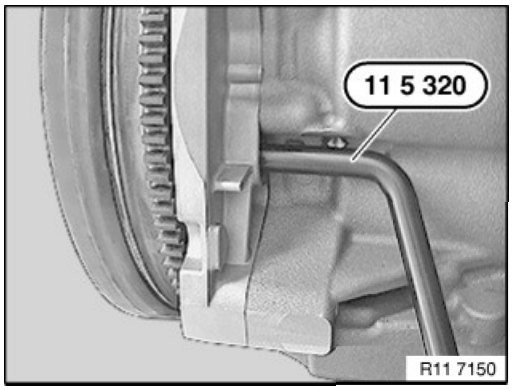
Crank engine to cylinder no. 1 TDC setting:

Crank engine with special tool11 6 480 to TDC firing position of cylinder 1.

Caution!

Do not crank engine in reverse direction.

Note:
Figure N47D.



Remove protective cap of timing case cover.

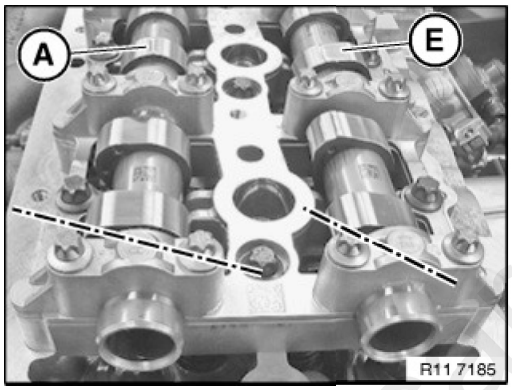
Crank engine at central bolt with special tool 11 6 480

Block crankshaft with special tool 11 5 320 in the TDC firing position of cylinder 1.

Caution!

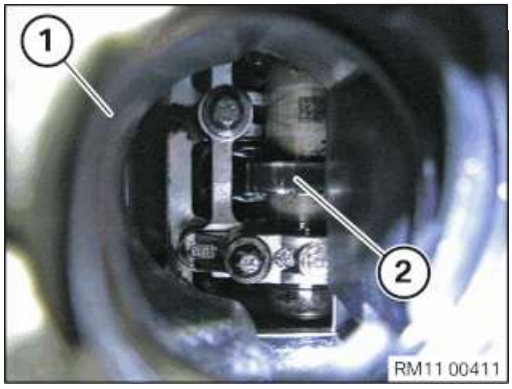
Do not turn the engine back.

Special tool 11 6 480 must be removed before starting the engine.



The cam on the intake camshaft (E) points obliquely upwards at cylinder No. 1.

The cam on the exhaust camshaft (A) points obliquely outward to the left at cylinder No. 1.



Note:
Visual inspection via oil filler cap (1) if necessary. Remove oil filler neck if necessary.

Cam (2) on exhaust camshaft points obliquely outward to the left at cylinder No. 1.

Figure N47.

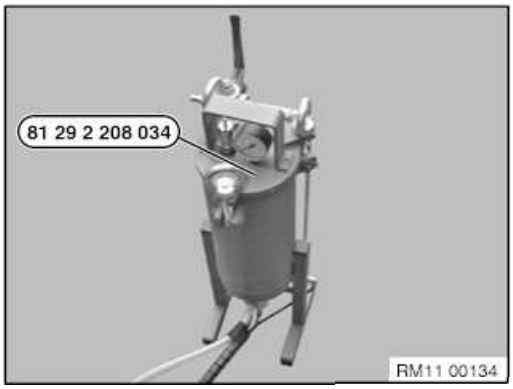
cardiagn.com

Cleaning intake ports: Caution!

Risk of engine damage!

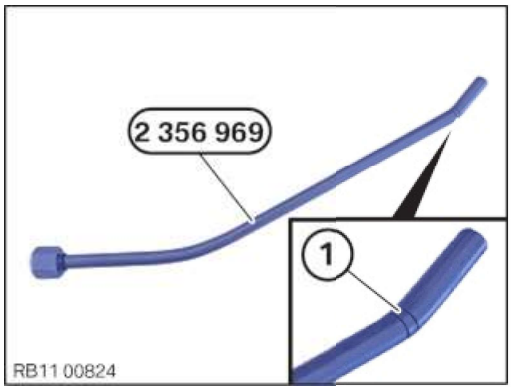
When cleaning the intake ports, it must be ensured that the intake valves of the corresponding cylinder are closed.

Start with the 1st cylinder when cleaning the intake ports.



The following are required:

- Blasting tool 81 29 2 208 034
- Walnut shell granulate
- Vacuum cleaner



Caution!

Front area of sensors is marked with two notches. These can additionally be highlighted in colour.

During the blasting process, only pull the wands out of the vacuum adapter until the mark becomes visible.

Blasting wand for swirl ports:

- 2 356 969



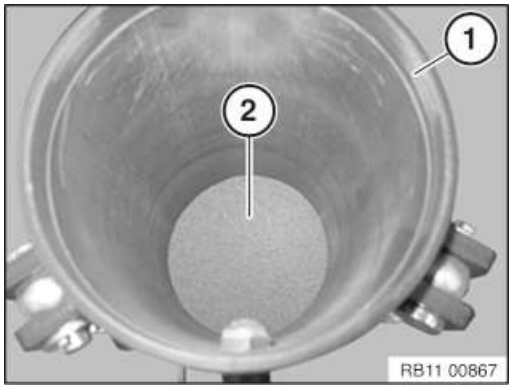
Vacuum adapter for tangential swirl port:

- 2 356 966

Vacuum adapter for swirl port:

- 2 356 967

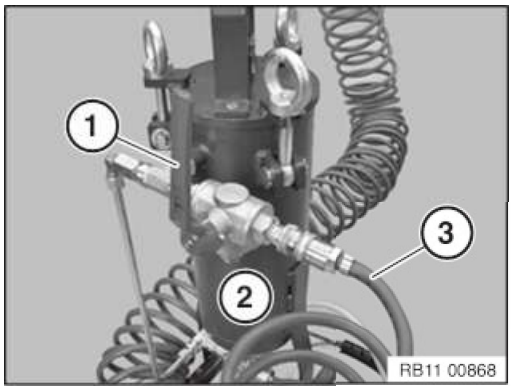
mgrdiagn.com



Note:
Use 2 litres of granulate per cleaning operation; this corresponds to a blasting duration of approx. 20 seconds.

Open blasting tool (1) and pour in 2 litres of granulate (2).

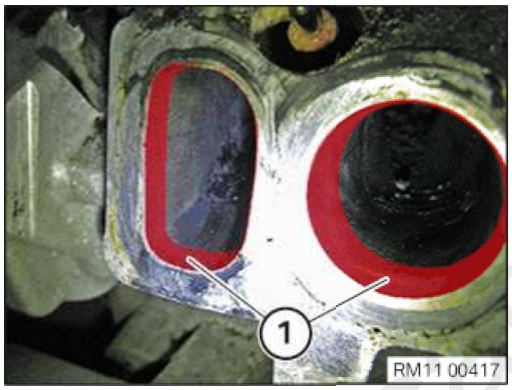
Close the device again.



Note:
Operating pressure 6 - 8 bar.

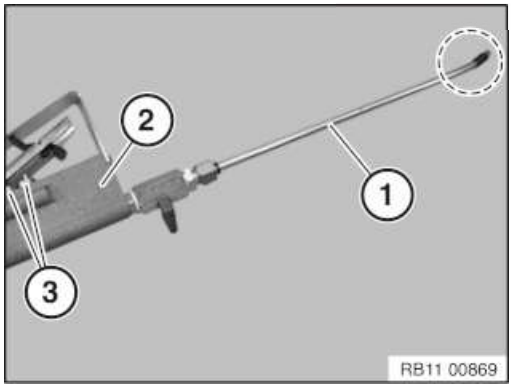
Close main valve (1) on blasting tool (2).

Connect compressed air (3).



Cleaning the swirl port of 1st cylinder:

Prior to the blasting process, clean the front area of both intake ports (1) of first cylinder with a suitable tool (e.g. plastic scraper, brushes 83 19 2 298 237).



Screw together blasting wand 2 356 969 (1) and actuator (2).

Open blasting tool and pour in 2 l granulate.

Close the device again.

Note:
Actuator (3) has two stages!

In stage one, only compressed air flows through the blasting wand.

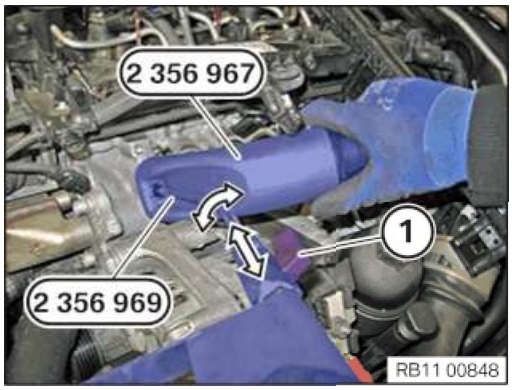
In stage two (operation is fully pressed), granulate is added (blasting process).

cardiagn.com



Connect vacuum adapter 2 356 967 to vacuum cleaner. Hold vacuum adapter 2 356 967 against swirl port at no. 1 cylinder.

Open the main valve on the blasting tool and switch the vacuum cleaner on.



Caution!

Danger of injury!

Risk of damage!

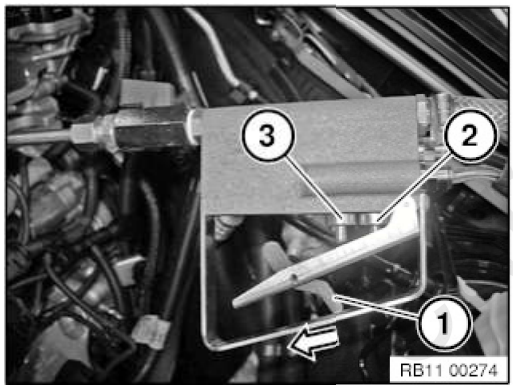
Second person required to assist.

Blasting wand may only be pulled out until the mark becomes visible.

Wear safety goggles

Insert blasting wand 2 356 969 in the adapter 2 356 967 .

Open the actuator valve (1).



Slide locking lever (1) to the front in direction of arrow.

Operate compressed-air valve (2) at stage one; compressed air can now flow in.

Fully operate valve (3) at stage two; walnut shell granulate is now injected.

Clean intake port, rotating the blasting wand and moving it vertically up and down.

Blasting wand may only be pulled out until the mark becomes visible.

When you notice that the collection container is becoming empty, continue operation for at least 10 seconds at stage one in order to swirl up and draw off the remaining granulate.

Close operation valve. Close main valve, check pressure drop at the pressure gauge.

Evaluate result if necessary.

If necessary, repeat procedure.



Cleaning the tangential swirl port of 1st cylinder:

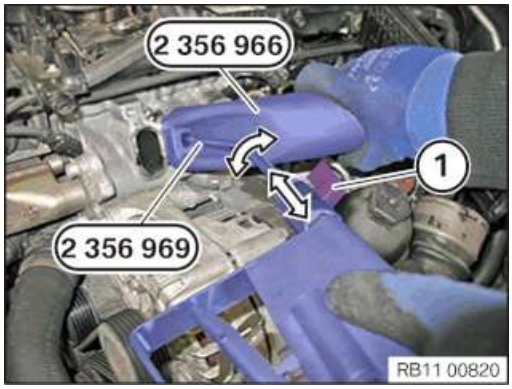
Open blasting tool and pour in 2 l granulate.

Close the device again.

Connect vacuum adapter 2 356 966 to vacuum cleaner. Hold vacuum adapter 2 356 966 on swirl port of first cylinder.

Open the main valve on the blasting tool and switch the vacuum cleaner on.

.com



Caution!

Danger of injury!

Risk of damage!

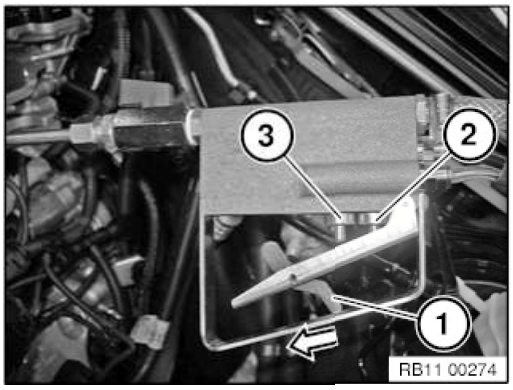
Second person required to assist.

Blasting wand may only be pulled out until the mark becomes visible.

Wear safety goggles

Insert blasting wand 2 356 969 in the adapter 2 356 966 .

Open the actuator valve (1).



Slide locking lever (1) to the front in direction of arrow.

Operate compressed-air valve (2) at stage one; compressed air can now flow in.

Fully operate valve (3) at stage two; walnut shell granulate is now injected.

Clean intake port, rotating the blasting wand and moving it vertically up and down.

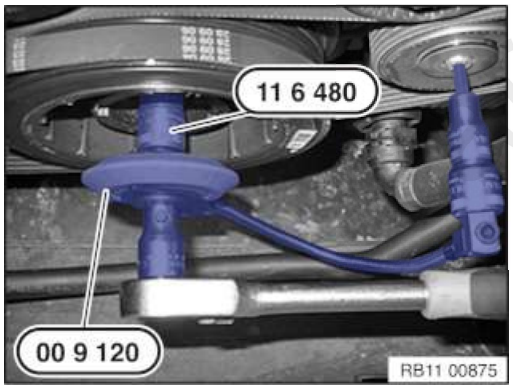
Blasting wand may only be pulled out until the mark becomes visible.

When you notice that the collection container is becoming empty, continue operation for at least 10 seconds at stage one in order to swirl up and draw off the remaining granulate.

Close operation valve. Close main valve, check pressure drop at the pressure gauge.

Evaluate result if necessary.

If necessary, repeat procedure.



Cleaning the other cylinders:

Caution!

Do not crank engine in reverse direction.

Remove special tool for securing the crankshaft.

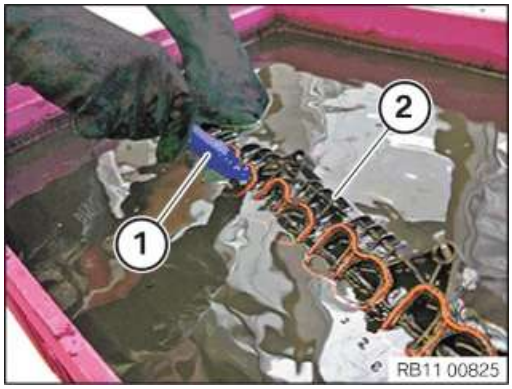
Proceed in the standard firing order while using the same procedure to clean the swirl ports at the remaining cylinders.

Firing order:

- **1 3 4 2** (4-cylinder engine)
- **1 5 3 6 2 4** (6-cylinder engine)

Thereby, turn motor on the central screw with 00 9 120 and 11 6 480 respectively by **180°** (4-cylinder-engine) and/or **120°** (6-cylinder-engine).

Note:
Figure M47.



Wear protective goggles and gloves.

Caution!
Do not clean electrical components with a parts cleaning unit or high pressure cleaner!

- Remove the intake plenum (2) from the cleaning agent
- Clean the openings on intake plenum (2) and swirl flap using the brush (1)

  (Part number: 83 19 2 298 237)
- Clean throttle valve, exhaust-gas recirculation valve, mixing tube and mounted parts with the brush (1) if necessary
- Then clean intake plenum (2) with a parts cleaning unit or a high-pressure cleaner
- Check all seals for damage and replace if necessary.

Observe country-specific waste disposal regulations.

Required follow-up work:

Dismantle intake plenum:

- Installing the throttle body
- If applicable, install adjuster
- If applicable, install preheating control unit
- If applicable, install charging pressure sensor

- Crank the engine at the central bolt at minimum twice

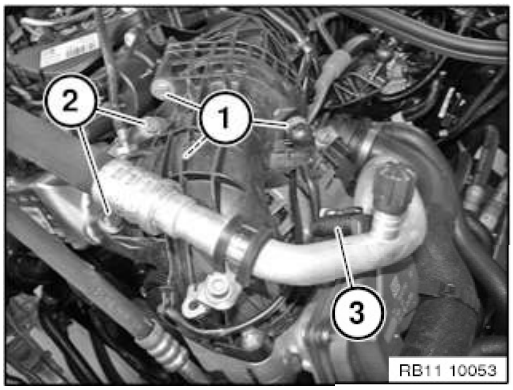
- Install intake plenum
- If necessary, install an electric fan
- Install underbody protection
- If necessary, install stiffening plate
- Connect battery earth lead
- Reset the quantity correction under:
  - Service functions
  - 01 Drive
  - Digital Diesel Electronics
  - Reset correction values of injectors

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11 61 ... Removing and installing / replacing mixing tube for intake air (N57 D30 O1 with SCR)

Necessary preliminary work:

- **Only at the time of replacement or cleaning of the mixing tube:** Reset adaptation values with diagnosis system
- Remove throttle body

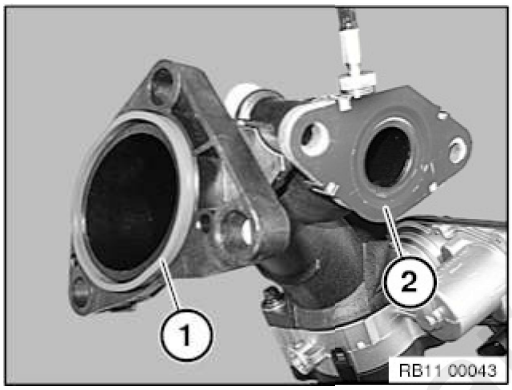


Release screws (1).

Unfasten screws (2).

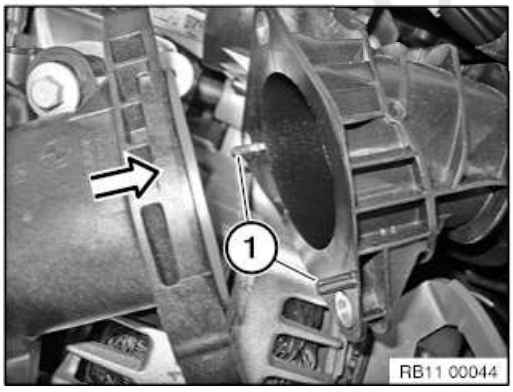
Disconnect plug connection (3).

Remove mixing tube.



Installation note:
Replace O-ring (1).

Replace seal (2).



Installation note:
Pay attention to mounting lugs (1).

Remove mixing tube in direction of arrow.

Assemble engine.

.

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11 61 550 Removing and installing/renewing intake plenum (N57 D30 O/T 1)

Installation note:
If the air intake plenum is replaced, the stop values for the swirl flaps must be deleted and taught in again.

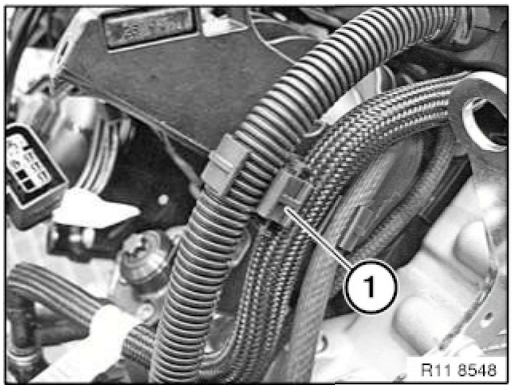
Follow diagnosis instruction.

Attention!

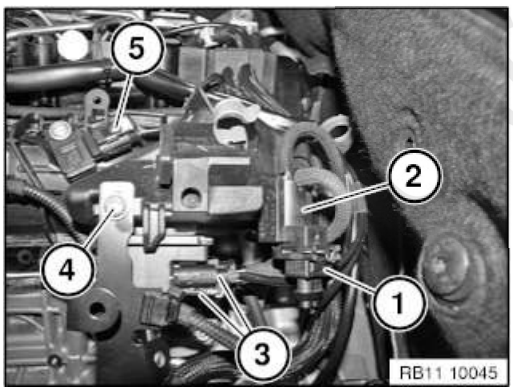
Incorrect assembly of the swirl-flap controller results in malfunction / lack of power!

Necessary preliminary tasks:

- Remove acoustic cover at rear.
- Remove throttle valve at intake plenum.



Push the cable clamps (1) between the bulkhead and engine on both halves apart and remove.



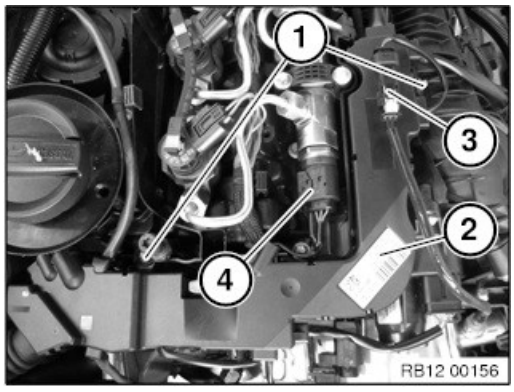
Disconnect plug connection (1) from the electric changeover valve (2) of the engine mount.

Detach the electric changeover valve (2) in direction of arrow and lay to one side.

Disconnect plug connections (3) on preheating control unit.

Release screw (4) on guide tube (oil dipstick).

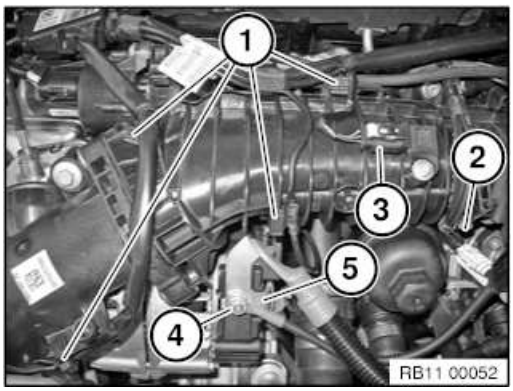
Disconnect plug connection (5).



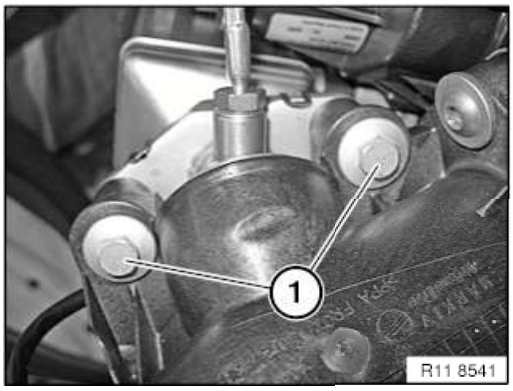
Release screws (1).

Remove cable channel (2) from the cylinder head cover. To do this unlock and detach connectors (3) and (4).

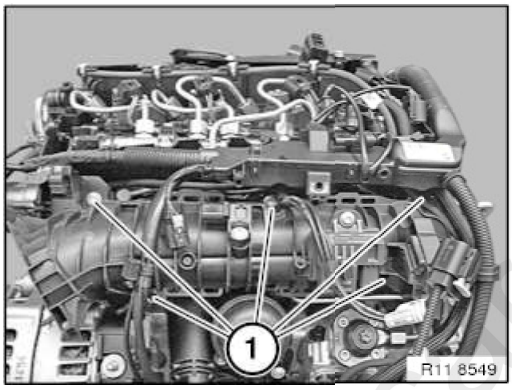
Slide cable channel to one side.



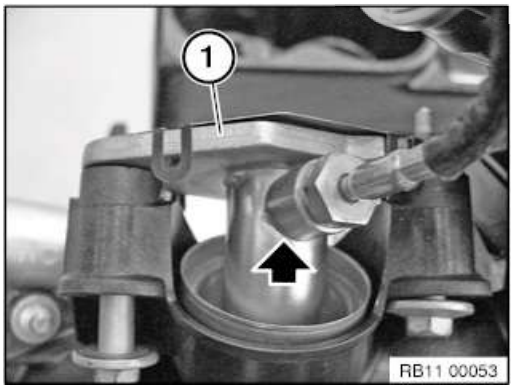
Loosen all cable clamps (1 and 2) on the intake plenum.
Disconnect plug connection (3) at charge air pressure sensor.
Release nut (4) on alternator.
Tightening torque: 12 52 2AZ
Lay positive battery cable (5) to one side.



Loosen screws (1) on the exhaust-gas recirculation cooler.

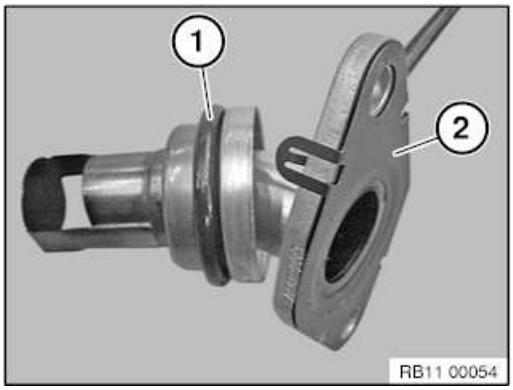


Release screws (1).
Remove intake system upwards.
Graphic N47T.



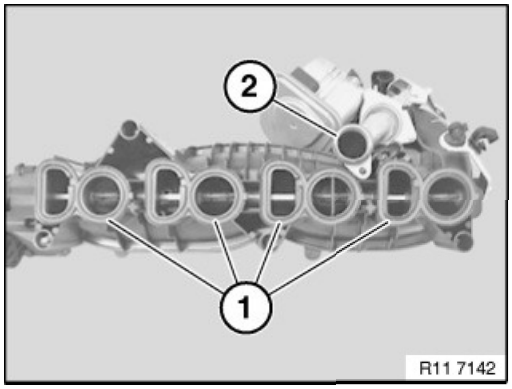
Remove the exhaust-gas recirculation pipe (1) in direction of arrow.

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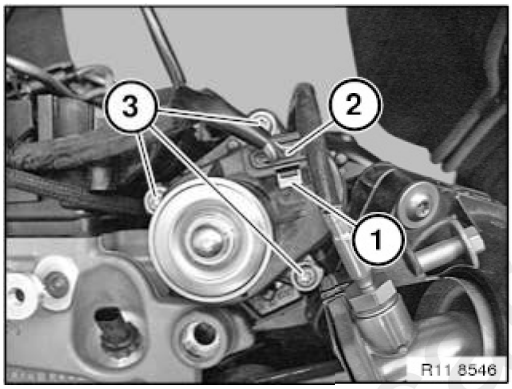


Installation note:
Replace O-ring (1).

Replace beaded metal gasket (2).



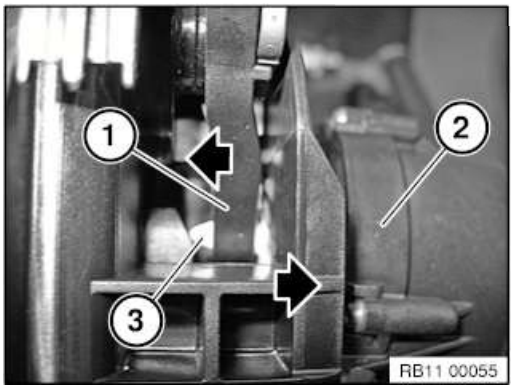
Installation note:
Replace gaskets (1).
Note:
Graphic N47.



Replace intake plenum.

Loosen screws (3).

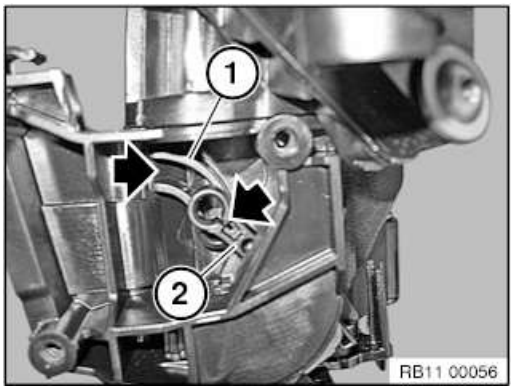
Remount swirl-flap controller (2).



Slide swirl-flap controller (2) in the direction of arrow towards front.

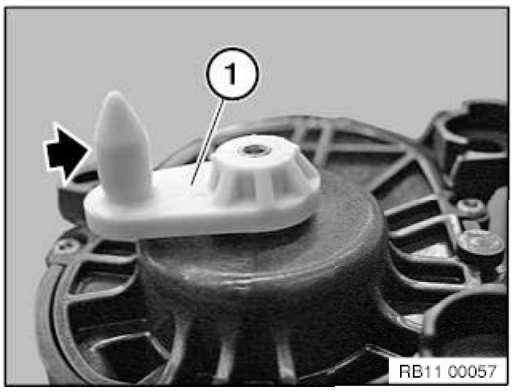
Lift the connecting lever (1) with a screwdriver in direction of arrow until the guide lever (3) is disconnected from the connecting lever (1).

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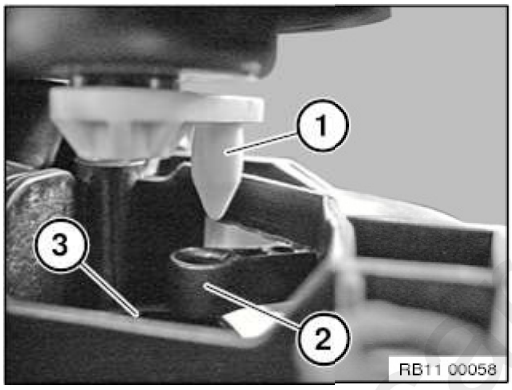


Before the swirl-flap controller can be mounted, the connecting lever (1) must be positioned toward the intake air collected.

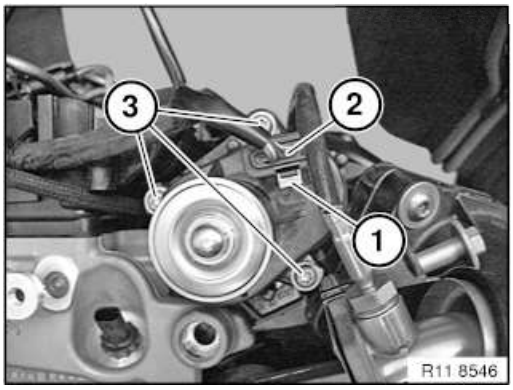
Prepare the connecting lever (2) for the guide (1) on the intake plenum.



The adjustment plate (1) on the swirl-flap controller is edited at the marked area.

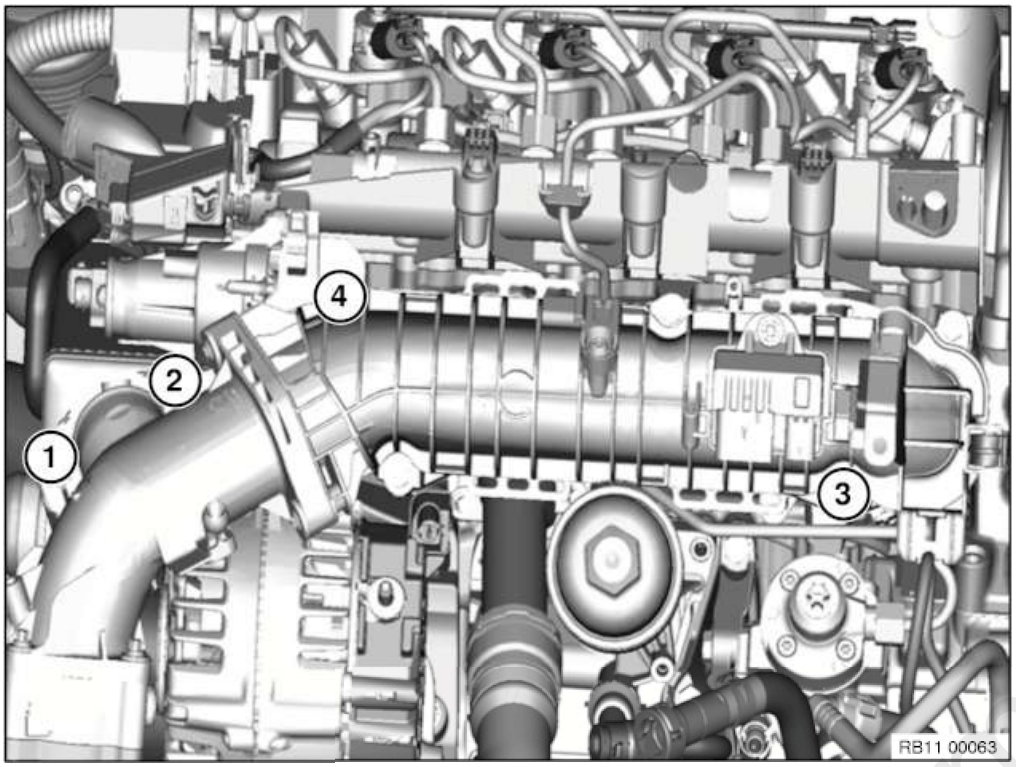


The adjustment plate (1) on the swirl-flap controller must be positioned with the connecting lever (2) of the swirl flaps toward the guide groove (3) on the intake air collector before the swirl-flap controller can be attached.



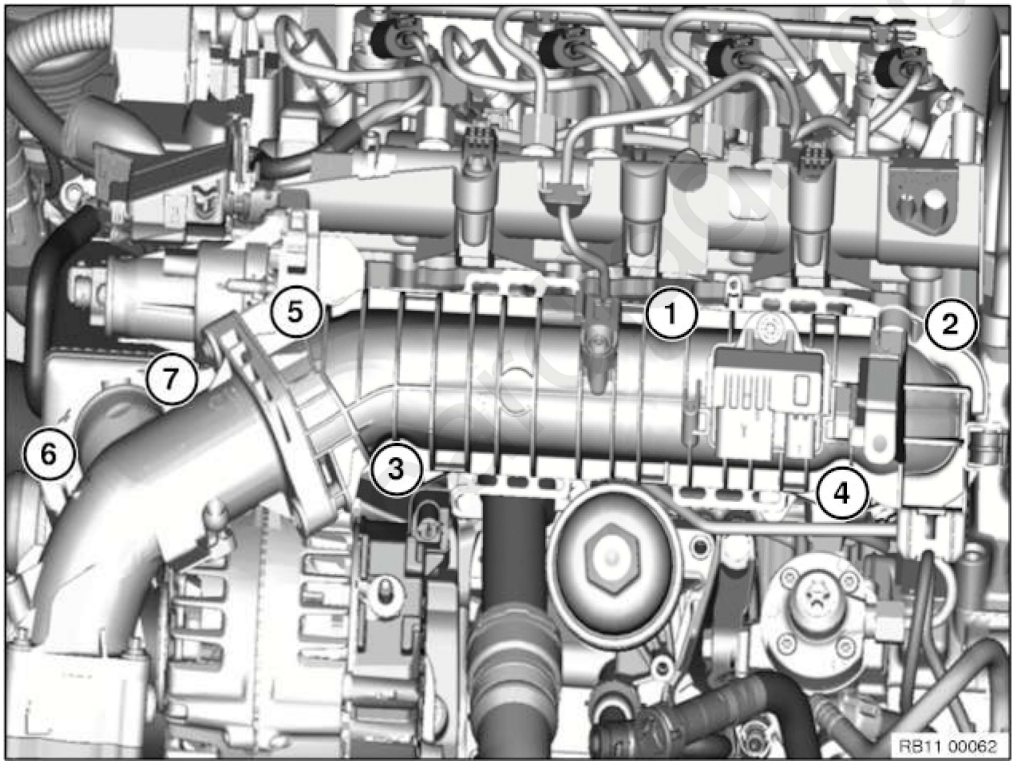
Secure the actuator drive (1) with screws (3).

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Graphic N47T.*Installation note:*
Position the intake system on the cylinder head.

Tack the air intake system on in the following order (from 1 to 4).



Graphic N47T.

Installation note:
To ensure tightness of the air intake system, the tightening sequence must be complied with.

Tighten the air intake system in sequence (1 to 7).

Tightening torque: 11 61 1AZ.

Assemble engine.

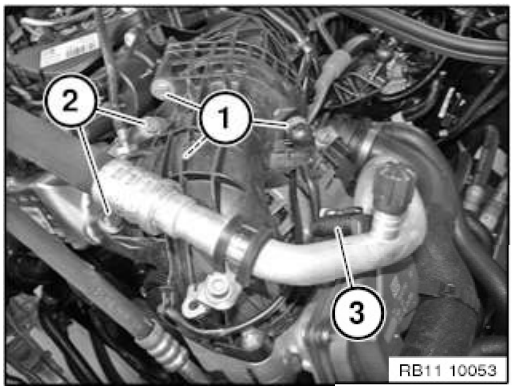
Check air intake system for leaks.

Check function of DDE.

11 61 ... Removing and installing/renewing mixing tube for intake air (N57 D30 U/O/T 1)

Necessary preliminary work:

- **Only on replacement or cleaning of the mixing tube.** Reset adaptation values with diagnosis system
- Remove throttle valve assembly.

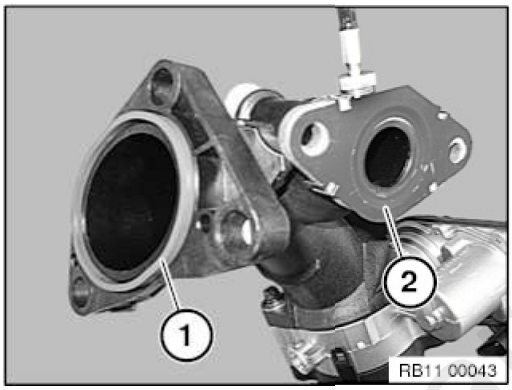


Release screws (1).

Unfasten screws (2).

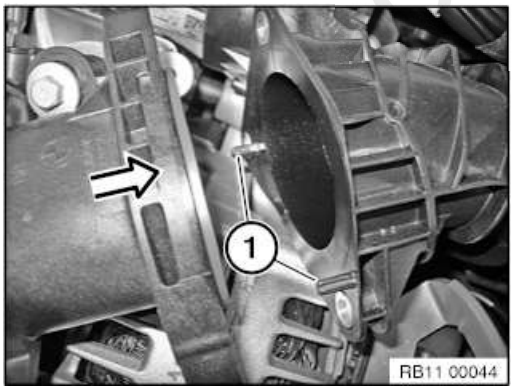
Disconnect plug connection (3).

Remove mixing tube.



Installation note:
Replace O-ring (1).

Replace seal (2).



Installation note:
Pay attention to mounting lugs (1).

Remove mixing tube in direction of arrow.

Assemble engine.

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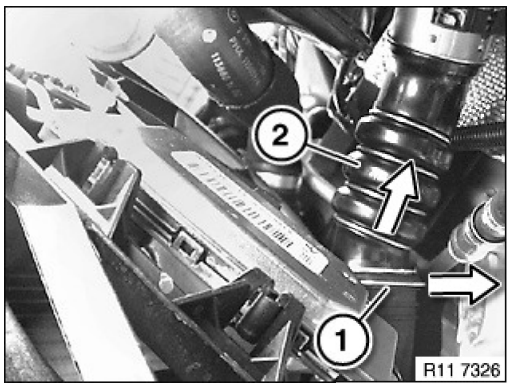
11 61 360 Removing and installing/renewing pressure pipe from exhaust turbocharger to charge air cooler (N57 D30 O/T 1)

Important!

In the event of a leak at the pressure pipe, there is a **risk of damage** to the exhaust turbocharger.

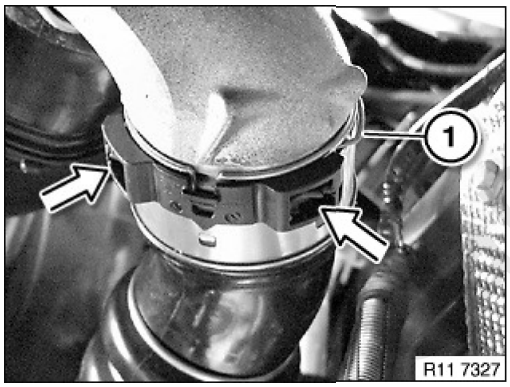
Necessary preliminary work:

- Remove front underbody protection.



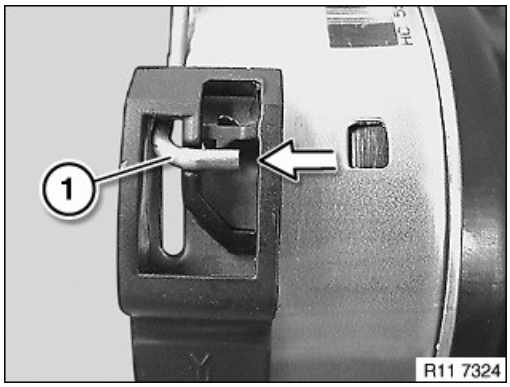
Release lock (1) in direction of arrow.

Release pressure pipe (2) in direction of arrow.



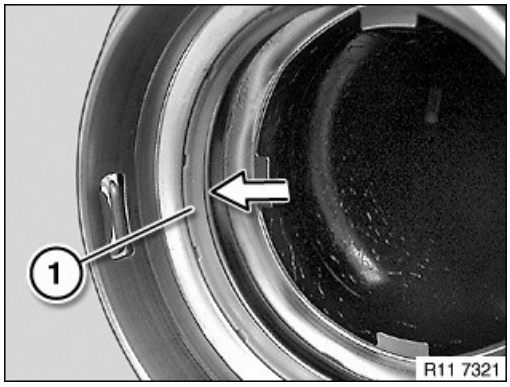
Release lock (1).

Lock (1) must snap into place in fixture (see arrows).



Note:

Snap lock (1) into place on lock (see arrow).



Check sealing lip (1) for damage.*Installation note:*
If sealing lip (1) is damaged, the gasket must be replaced.

Important!

In the event of a leak at the pressure pipe, there is a **risk of damage** to the exhaust turbocharger.



Check sealing ring for damage.*Installation note:*
If sealing ring is damaged, replace gasket.

Important!

In the event of a leak at the pressure pipe, there is a **risk of damage** to the exhaust turbocharger.

Assemble engine.

Check air intake system for leaks.

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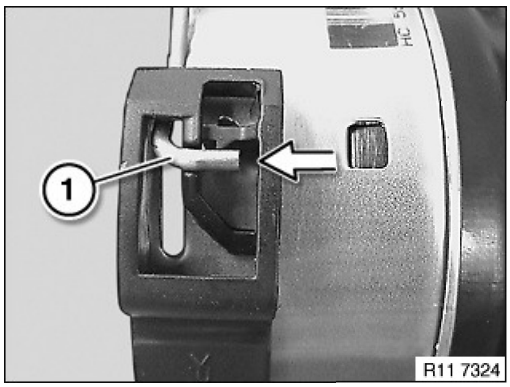
11 61 350 Removing and installing/renewing pressure pipe on throttle body (N57 D30 O/T 1)

Important!

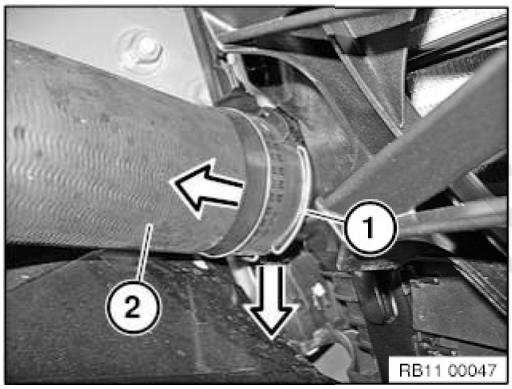
In the event of a leak at the pressure pipe, there is a **risk of damage** to the exhaust turbocharger.

Necessary preliminary work:

- Remove front underbody protection.

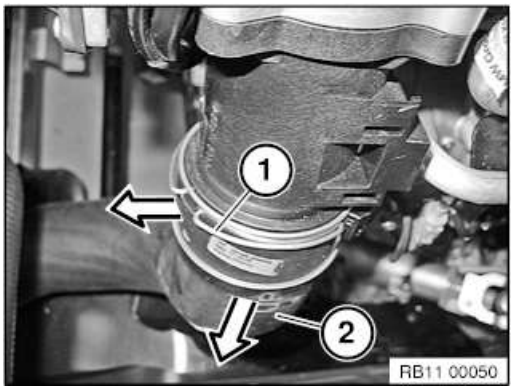


Note:
Lock (1) must snap into place in bracket (see arrow).



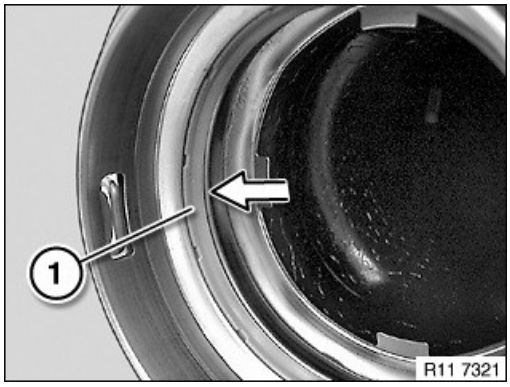
Release lock (1) with a suitable tool.

Disconnect pressure pipe (2) from charge air cooler.



Release lock (1) in direction of arrow.

Release pressure pipe (2) in direction of arrow.



Important!

In the event of a leak at the pressure pipe, there is a **risk of damage** to the exhaust turbocharger.

Check sealing lip (1) for damage.*Installation note:*
If sealing lip (1) is damaged, the gasket must be replaced.



Important!

In the event of a leak at the pressure pipe, there is a **risk of damage** to the exhaust turbocharger.

Check sealing ring for damage.*Installation note:*
If sealing ring is damaged, replace gasket.

Assemble engine.

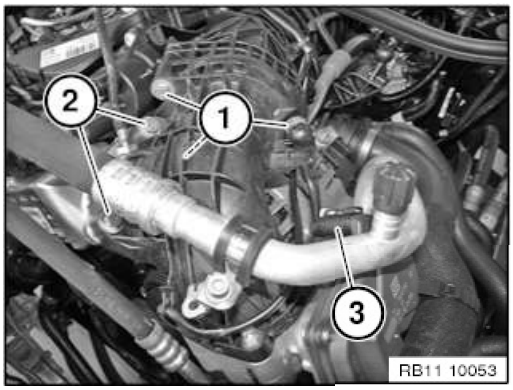
Check air intake system for leaks.

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11 61 ... Removing and installing/replacing mixing tube for intake air (N57 D30 O/T 1)

Necessary preliminary work:

- **Only at the time of replacement or cleaning of the mixing tube:**
  Reset adaptation values with diagnosis system
- Remove throttle body

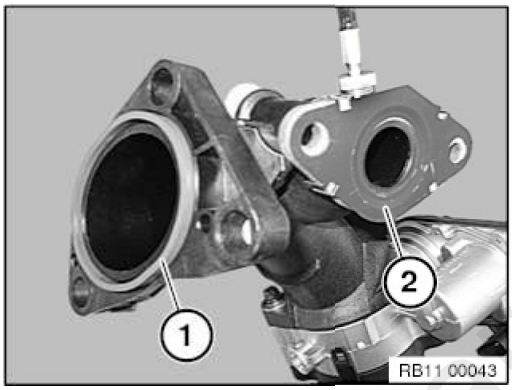


Release screws (1).

Unfasten screws (2).

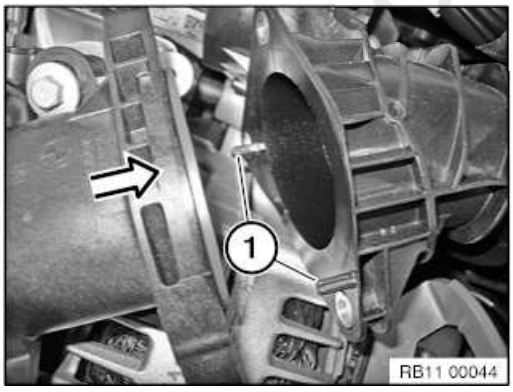
Disconnect plug connection (3).

Remove mixing tube.



Installation note:
Replace O-ring (1).

Replace seal (2).



Installation note:
Pay attention to mounting lugs (1).

Remove mixing tube in direction of arrow.

Assemble engine.

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18 40 040 Removing and installing, sealing/replacing exhaust manifold (N57 D30 T 1)

Warning!

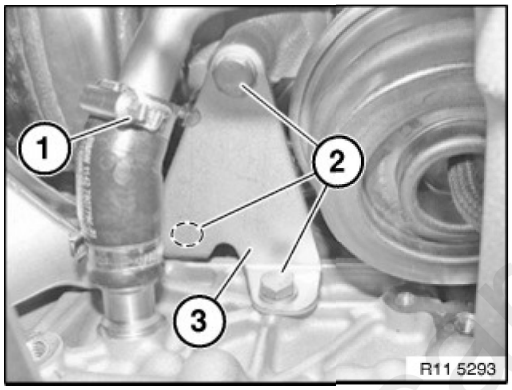
Risk of burning!

Only perform this repair work on an engine that has cooled down.

Note:
Exhaust manifold can only be removed together with low-pressure turbocharger.

Necessary preliminary tasks:

- Remove diesel particulate filter.
- Remove high pressure exhaust turbocharger.
- Remove right pressure pipe.
- Remove clean air pipe.
- Drain coolant.



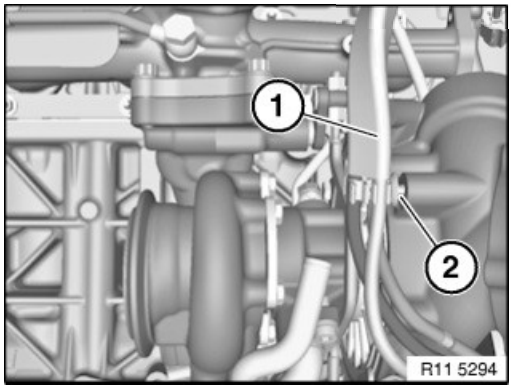
Release clamp (1) on oil return pipe.

Tightening torque 11 65 2AZ.

Unfasten screws (2).

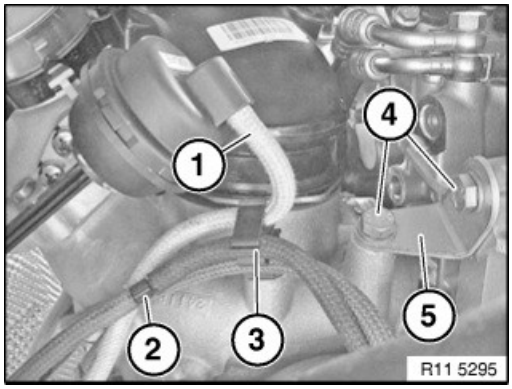
Tightening torque 11 65 2AZ.

Remove bracket (3).



Release vacuum lines (1) of turbocharger at clamp (2).

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Disconnect yellow vacuum line (1) from vacuum unit.

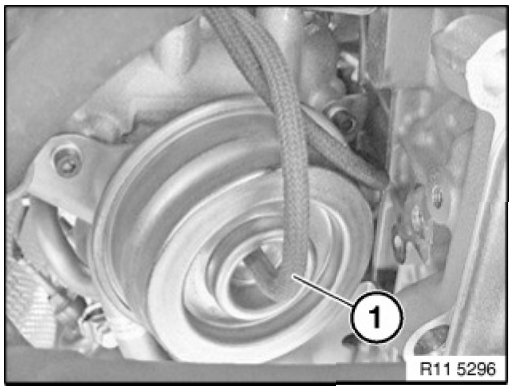
Disconnect red vacuum line at separation point (2) from black vacuum line.

Release vacuum lines from clamp (3).

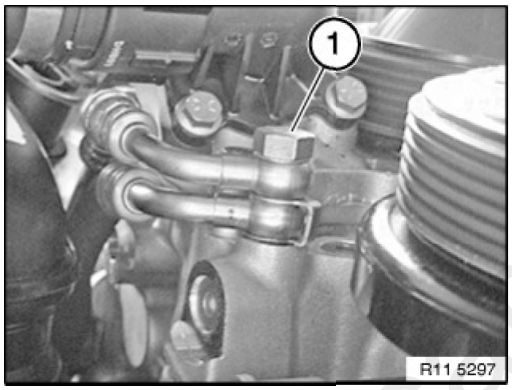
Release screws (4).

Tightening torque 11 65 2AZ.

Remove bracket (5).



Disconnect blue vacuum hose from vacuum unit (wastegate valve).



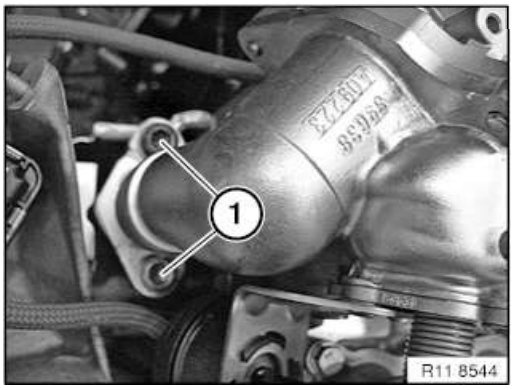
Release banjo bolt (1).

Tightening torque 11 42 2AZ.

Note:
Catch escaping engine oil with suitable auxiliary materials.

Replace sealing rings.

Disconnect engine oil pipes from engine block.

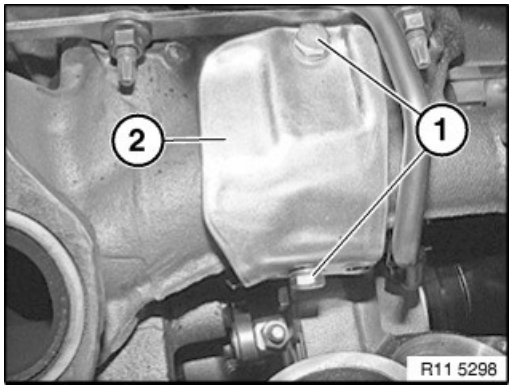


Release screws (1).

Installation note:
Grease screws with assembly paste 4.2.

Tightening torque 18 31 8AZ.

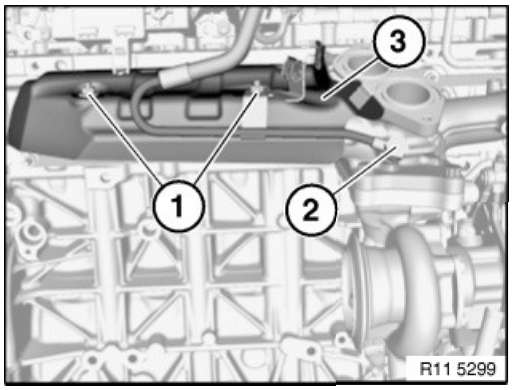
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Release screws (1).

Tightening torque 18 31 6AZ.

Remove heat shield (2).



Unscrew nuts (1).

Tightening torque 18 31 6AZ.

Unfasten banjo bolt (2).

Tightening torque 18 31 6AZ.

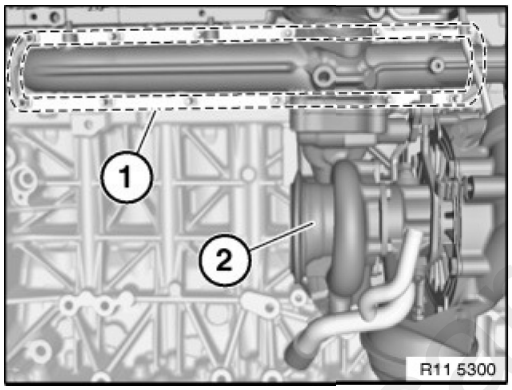
Replace sealing rings.

Important!

To ensure operational reliability, use stainless steel sealing washers.

Remove exhaust backpressure pipe from exhaust manifold.

Remove heat shield (3).



Release all nuts along dashed line (1).

Tightening torque 18 31 7AZ.

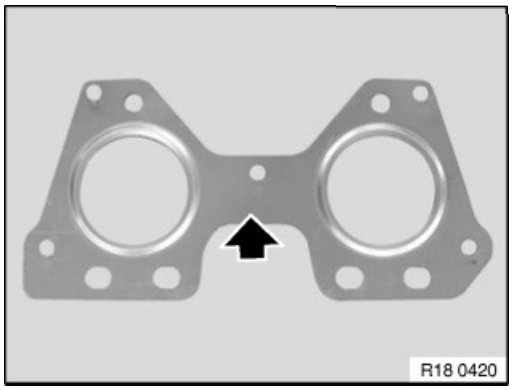
Installation note:
Replace self-locking nuts.

Clean sealing surfaces of exhaust manifold.

Replace gaskets.

Reinstall reinforcement plates.

Release exhaust manifold together with exhaust turbocharger (2) from engine block. Feed out and remove exhaust manifold with exhaust turbocharger (2) toward the top.

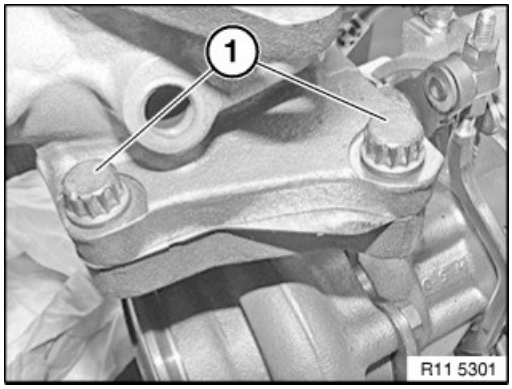


Important!

Manifold gaskets are graphite-coated on one side!

The graphite coating must be fitted on the manifold side.

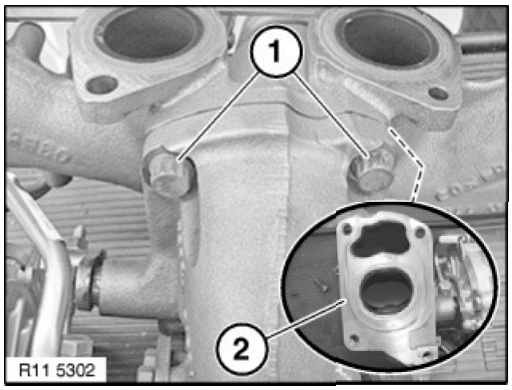
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Only for exhaust manifold replacement:

Release screw (1) from exhaust turbocharger.

Tightening torque 11 65 2AZ.



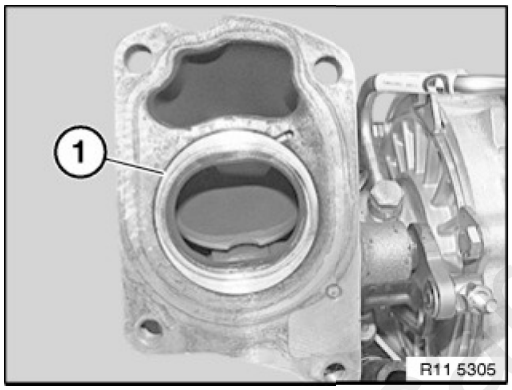
Release screws (1) beneath exhaust manifold.

Tightening torque 11 65 2AZ.

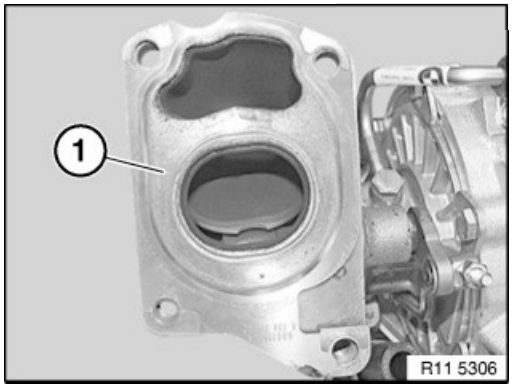
Release exhaust turbocharger from exhaust manifold.

Replace exhaust manifold.

Replace gasket (2) between turbocharger and exhaust manifold.



Installation note:
Spacer ring (1) for control flap of low-pressure stage must be reinstalled.
Operating failure!



Clean sealing surfaces.

Replace gasket (1) between turbocharger and exhaust manifold.

Apply a thin coating of copper paste to bolt thread.

To avoid damaging screw threads and prevent turbocharger leakage, insert retaining screws in 1/2 turns simultaneously.

Assemble engine.

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11 65 020 Damage on the exhaust turbocharger due to obstructed oil supply lines



Caution!

If there is damage on the exhaust turbocharger:

- **Complaint:**

  Power loss, malfunction indicator lamp on

  Damage to the exhaust turbocharger.

  After damage to the exhaust turbochargers, the oil supply lines are often not replaced and the oil is not changed, this can lead to damage to the exhaust turbocharger again.

  Further, fault code entries in the preheating system or to the charging pressure controller (variable turbine geometry) are not considered.

  For N57X, additionally the following faults can be stored: 292200 Charging pressure controller (variable turbine geometry): Position sensor in charging pressure controller faulty or undervoltage 48F6 in charging pressure controller (variable turbine geometry)

  Attention: Subsequent damage is not covered by the warranty!

- **Cause**

  The oil supply lines for the exhaust turbocharger are clogged or blocked by oil sludge/coking. Due to that, oil supply to the exhaust turbocharger may be inadequate and can cause damage to the exhaust turbocharger again.

  Malfunctions in the preheating system can lead to clogging of the diesel particulate filter and thus to problems with the charging pressure control or the charging pressure build-up. Consequence: Problems at cold start or the engine does not start due to a faulty preheating system. Power loss or overheating of the exhaust branch.

  If the new exhaust turbocharger is not filled with enough oil prior to installation, the shaft bearings can be damaged at the first starting operation itself.

- **Solution**

  Proceed as follows in response to a customer complaint:

  If fault code entries are available for the preheating system, the preheating system must be repaired. Then delete the fault memory.

  Caution!

  If the engine does not heat up or only heats up very slowly because of a defective thermostat, this can result in premature or repeated damage to the exhaust turbocharger. **Always** check the coolant thermostat and thermostat for the EGR cooling if there is a complaint, and repair if applicable.

  Engine oil and filter exchange must be carried out on the engine absolutely, so as to guarantee operation of the changed exhaust turbocharger with fresh oil!

  Since the oil feed line as well as the oil return line may coke with increased mileage especially in the cable connection area of the exhaust turbocharger, the followings rules are applicable:

  Engines with one exhaust turbocharger:

  - Exhaust turbocharger exchange due to electrical fault on the exhaust turbocharger (vehicle mileage/km up to 100,000

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km):

- Check the oil feed line, oil return line and the associated banjo bolts for coking, **replace if applicable**.
- If the oil return line is replaced, the connecting pipe on the crankcase must **always** be cleaned, as it is also subject to coking!
- If a replacement is not necessary: If the exhaust turbocharger is offered only along with the oil return line and oil feed line in the Electronic Parts Catalogue (EPC), it can be removed from the order list again.

- Exhaust turbocharger exchange due to electrical fault on the exhaust turbocharger (vehicle mileage/km starting at 100,000 km):
  - Replace the oil feed line, oil return line and the associated banjo bolts.
  - If the oil return line is replaced, the connecting pipe on the crankcase must **always** be cleaned, as it is also subject to coking!
- Exchanging the exhaust turbocharger if there is mechanical damage on the exhaust turbocharger:
  - Always replace the oil feed line, oil return line and the associated banjo bolts.
  - If the oil return line is replaced, the connecting pipe on the crankcase must **always** be cleaned, as it is also subject to coking!

Engines with several exhaust turbochargers:

- Exchanging one or several exhaust turbochargers due to electrical faults on the exhaust turbocharger (vehicle mileage/km up to 100,000 km):
  - Check the oil feed lines, oil return lines and the associated banjo bolts of **all** exhaust turbochargers (including the intact exhaust turbocharger) for coking, **replace if applicable**.
  - If all the oil return lines are replaced, all the connecting pipes on the crankcase must **always** be cleaned, as they are also subject to coking!
  - If a replacement is not necessary: If the exhaust turbocharger is offered only along with the oil return line and oil feed line in the Electronic Parts Catalogue (EPC), it can be removed from the order list again.
- Exchanging one or several exhaust turbochargers due to electrical faults on the exhaust turbocharger (vehicle mileage/km starting at 100,000 km):
  - Replace the oil feed lines, oil return lines and the associated banjo bolts of **all** exhaust turbochargers (including the intact exhaust turbocharger).
  - If all the oil return lines are replaced, all the connecting pipes on the crankcase must **always** be cleaned, as they are also subject to coking!
- Exchanging one or several exhaust turbochargers if there is mechanical damage on the exhaust turbocharger:
  - Always replace the oil feed lines, oil return lines and the associated banjo bolts of **all** exhaust turbochargers (including the intact exhaust turbocharger).
  - If all the oil return lines are replaced, all the connecting pipes on the crankcase must **always** be cleaned, as they are also subject to coking!

In case the diesel particulate filter is foul with oil, clean or replace it, if necessary.

In order to exclude that the oil supply to the exhaust turbocharger is

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not impaired due to faulty crankcase ventilation, carry out a function check of the crankcase ventilation in this regard. The corresponding test module can be found in ISTA at:

- Power train
- Digital Diesel Electronics
- Engine ventilation
- Internal engine pressure

When installing the exhaust turbocharger, the exhaust turbocharger itself needs to be filled to capacity with fresh engine oil through the oil intake hole before the oil feed line is mounted. Important: Never use liquid sealing compounds when connecting the engine oil pipe as they can block the oil ducts.

After installing the exhaust turbocharger, start the engine and let it run at idle for 2 to 3 minutes before increasing the speed.

If required, initiate a regeneration of the diesel particulate filter

Important: For vehicles with N57x engines that have fault memory entries that are at the top, a successful diesel particulate filter regeneration must be carried out.

Then delete the fault memory.

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11 65 045 Removing and installing / replacing low pressure exhaust turbocharger (large exhaust turbocharger) (N57 D30 T 1)



Warning!

Risk of burning!

Only perform this repair work on an engine that has cooled down.



Recycling:

Catch escaping engine oil with suitable auxiliary materials.

Observe country-specific waste disposal regulations.



Note:

Troubleshooting on exhaust turbocharger.



Attention!

For exhaust turbocharger damage:

It is mandatory to follow the instructions.

- Pressure pipes
- Charge air cooler
- Intake plenum

- check the above for foreign bodies, damage and correct operation, replacing if necessary.



Necessary preliminary tasks:

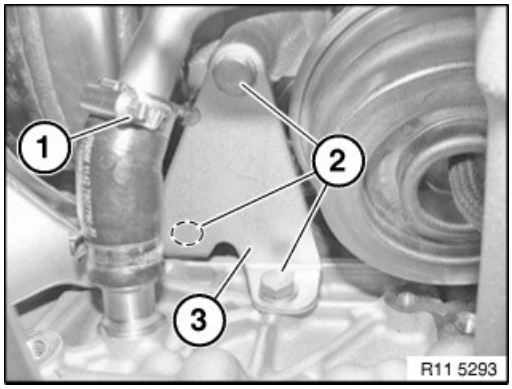
- Drain coolant.
- Remove middle bulkhead sound insulation.
- Remove diesel particulate filter.
- Remove high pressure exhaust turbocharger.
- Remove right pressure pipe.



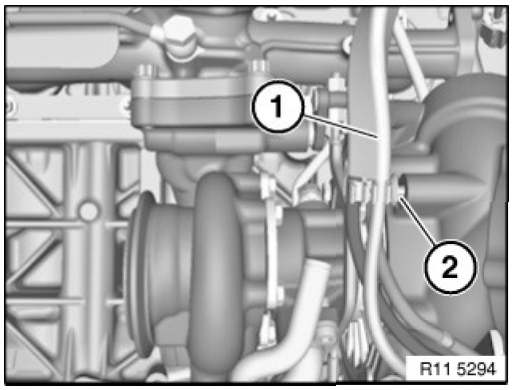
Note:

Low pressure charger can only be removed together with exhaust manifold.

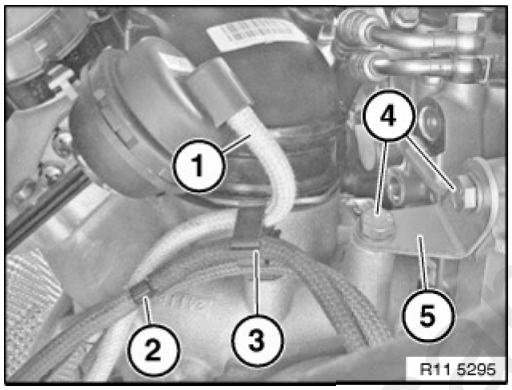
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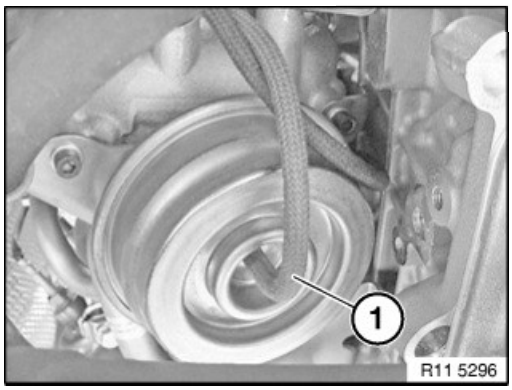
Release the clamp (1) on the oil return line.
Tightening torque 11 65 5AZ
Unfasten screws (2).
Tightening torque 11 65 7AZ
Remove bracket (3).



Release vacuum lines (1) of turbocharger at clamp (2).

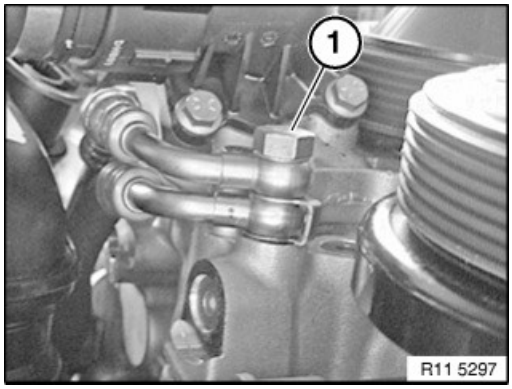


Disconnect white vacuum line (1) from vacuum unit.
Disconnect red vacuum line at separation point (2) from black vacuum line.
Release vacuum lines from clamp (3).
Release screws (4).
Tightening torque 11 65 7AZ
Remove bracket (5).



Disconnect blue vacuum hose from vacuum unit (wastegate valve).

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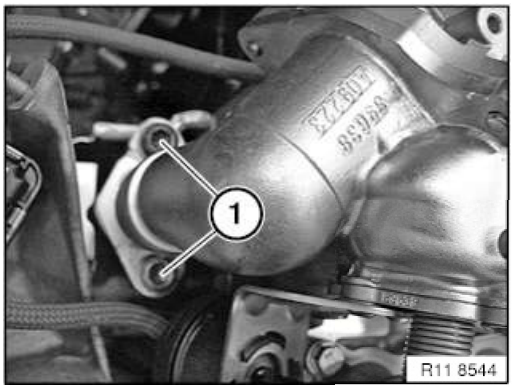
Release banjo bolt (1).

Tightening torque 11 42 2AZ

Note:
Catch escaping engine oil with suitable auxiliary materials.

Renew sealing rings.

Disconnect oil lines from engine block.

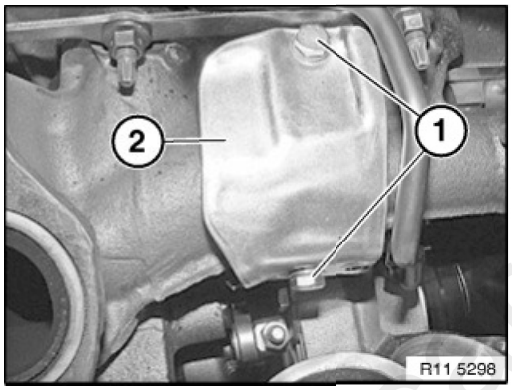


Loosen screws (1) on exhaust manifold.

Disconnect exhaust-gas recirculation pipe from exhaust manifold.

Installation note:
Grease screws with assembly paste 4.2.

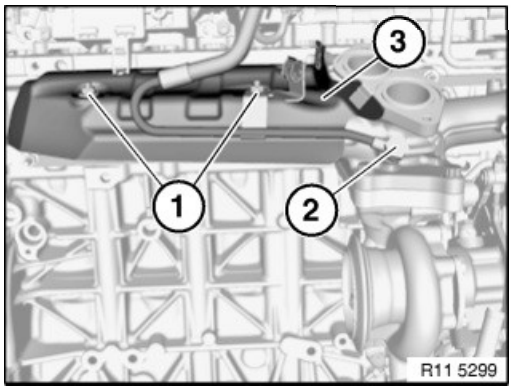
Tightening torque: 11 71 1AZ



Release screws (1).

Tightening torque 18 31 7AZ

Remove heat shield (2).



Unscrew nuts (1).

Tightening torque 18 31 7AZ

Unfasten banjo bolt (2).

Tightening torque 18 31 6AZ

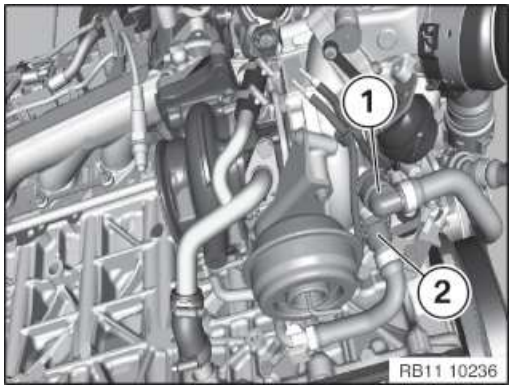
Renew sealing rings.

To ensure operational reliability, use stainless steel sealing washers.

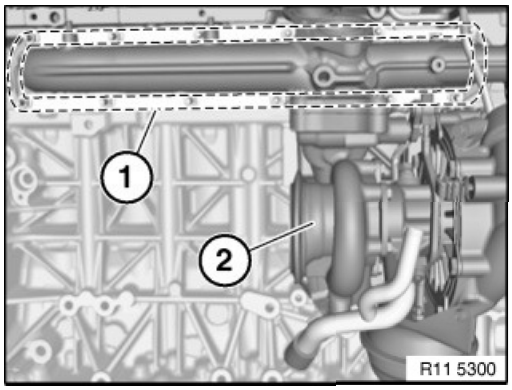
Remove exhaust backpressure pipe from exhaust manifold.

Remove heat shield (3).

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Unlock and pull off the coolant line (1 and 2) from the low pressure turbocharger.



Release all nuts along dashed line (1).

Tightening torque 18 31 3AZ

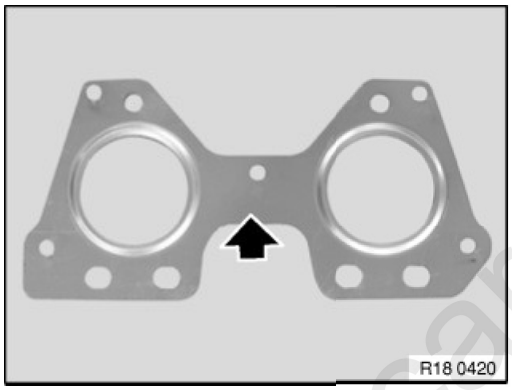
Installation note:
Replace self-locking nuts.

Clean sealing surfaces of exhaust manifold.

Renew gaskets.

Reinstall reinforcement plates.

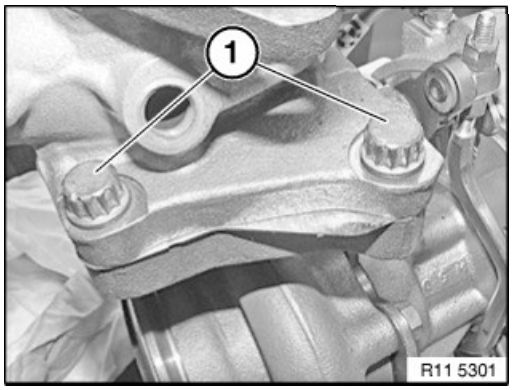
Release exhaust manifold (1) from engine block together with the exhaust turbocharger (2). Feed out and remove exhaust manifold (1) with exhaust turbocharger (2) toward the top.



Attention!

Manifold gaskets are graphite-coated on one side!

The graphite coating must be fitted on the manifold side.

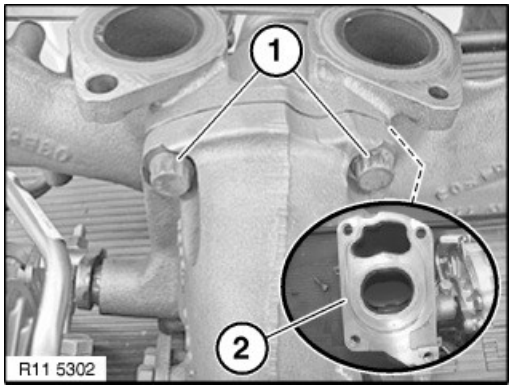


Only when exhaust turbocharger is in use:

Release screw (1) from exhaust turbocharger.

Tightening torque 11 65 2AZ

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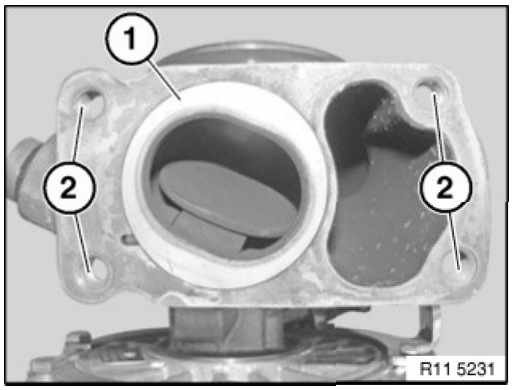


Release screws (1) beneath exhaust manifold.

Tightening torque 11 65 2AZ

Release exhaust turbocharger from exhaust manifold.

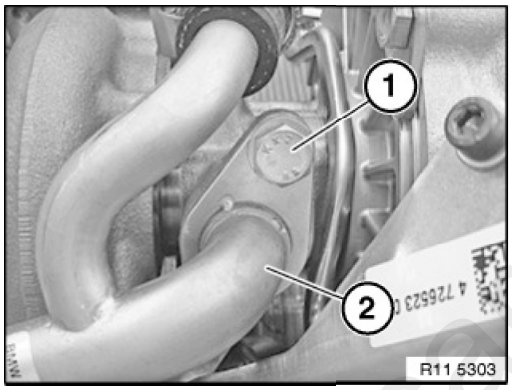
Replace gasket (2) between turbocharger and exhaust manifold.



Attention!

Spacer ring (1) must be fitted without fail.

Clean threads (2) with thread cutter.

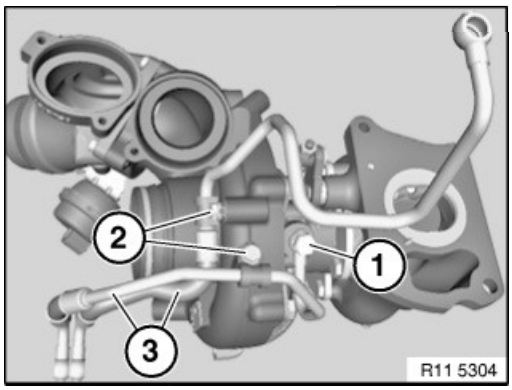


Release screw (1).

Tightening torque 11 42 8AZ

Renew gasket.

Disconnect the oil return line from the exhaust turbocharger and remount it on the new exhaust turbocharger.



Release banjo bolt (1).

Tightening torque 11 42 6AZ

Renew sealing rings.

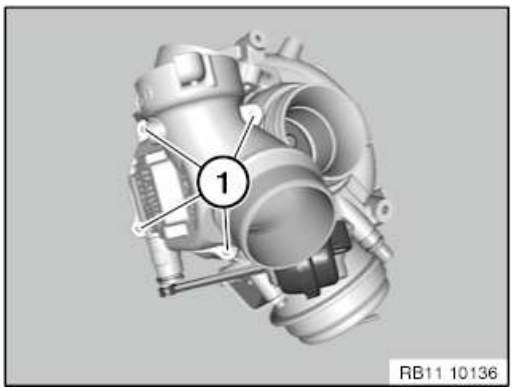
Unfasten screws (2).

Tightening torque 11 42 9AZ

Detach the oil lines (3) from the exhaust turbocharger and remount them on the new exhaust turbocharger.

Installation note:
Make sure oil lines are in correct installation positions.

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Release screw (1).

Tightening torque 11 65 3AZ

Remove bypass from low-pressure turbocharger.

Assemble engine.

Observe bleeding instructions without fail.

Fill and bleed cooling system.

Visual inspection of cooling system for tightness.

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11 65 721 Removing and installing / replacing vacuum control unit for turbine control flap (N57 D30 T0)

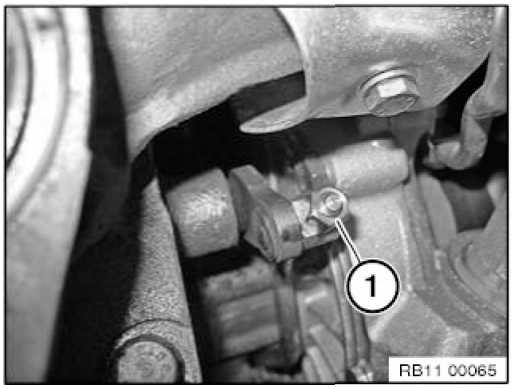
Warning!

Risk of burning!

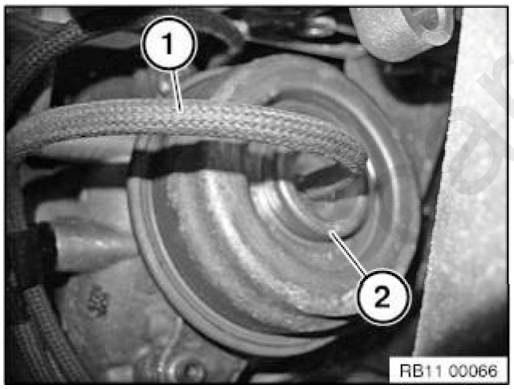
Only perform this repair work on an engine that has cooled down.

Necessary preliminary tasks:

- Refer to functional description
- Perform functional check of turbine control flap, refer to Test module, turbine control flap.
- Remove high pressure exhaust turbocharger.



Slacken nut (1).



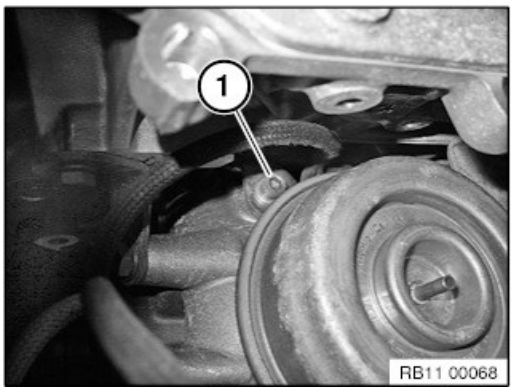
Release blue vacuum line (1) from vacuum unit (2).



Release screws (1).

Tightening torque: 11 00 2AZ.

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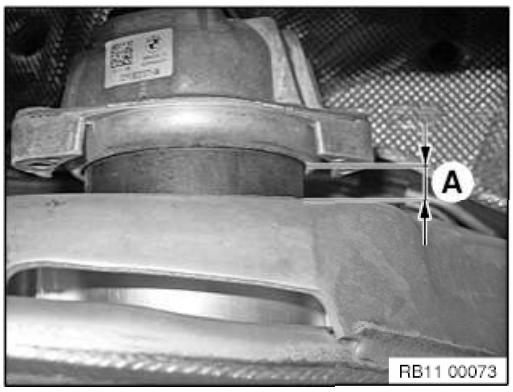
Important!

Risk of damage! At screw connection with exhaust turbocharger.

When fixing screw (1) on exhaust turbocharger, ensure that screw (1) is correctly mounted.

Release screw (1).

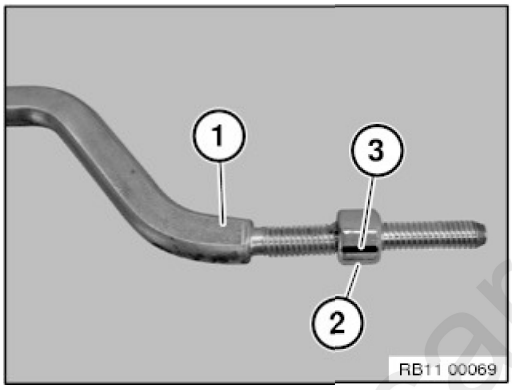
Tightening torque: 11 00 2AZ.



Position engine in installation position.

Dimension (A) approx. 25 mm

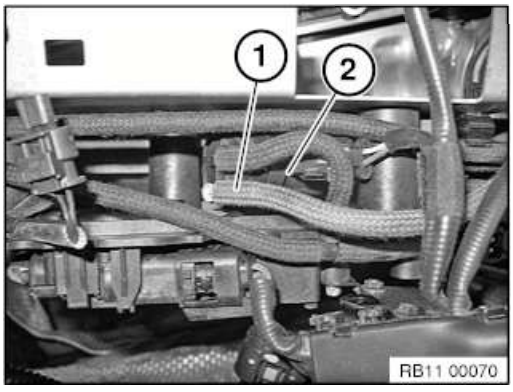
Remove vacuum unit with linkage.



Use setting dimension of adjusting nut (2) of installed vacuum unit.

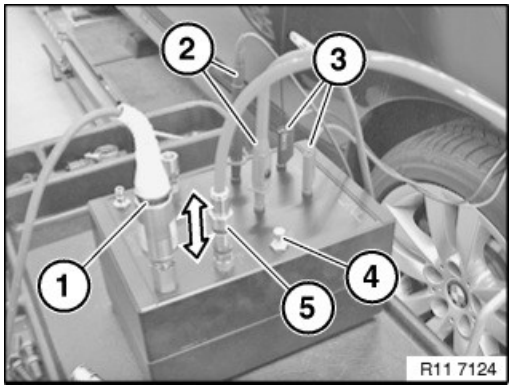
Mark adjusting nut (2) with a coloured mark (3).

Install vacuum unit and connect vacuum line.



Release blue vacuum line (1) from pressure converter (2).

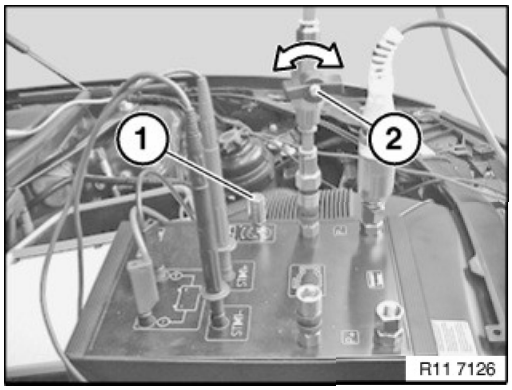
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Vacuum pressure measurement:

Prepare diagnosis tester on vacuum diagnosis unit.

1. Screw in pressure sensor 25 bar.
2. Connect 12V battery cables (3) to vehicle battery positive and negative.
3. Connect Stimuli (2) connection to plus and minus (vacuum pump running).
4. Controller for vacuum connection.
5. Vacuum connection (Red).



Calibration for vacuum pressure measurement:

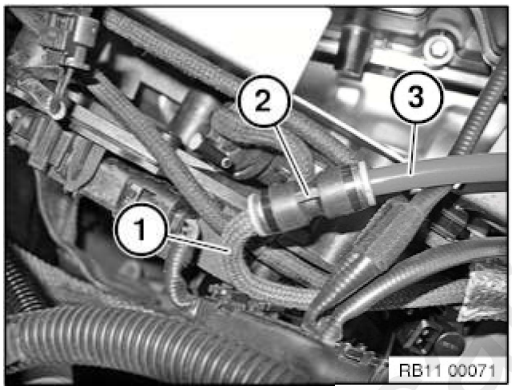
Seal stop cock (2) in direction of arrow.

Release lock nut on controller (1).

Carry out vacuum setting 500 mbar according to BMW diagnosis instructions (IMIB).

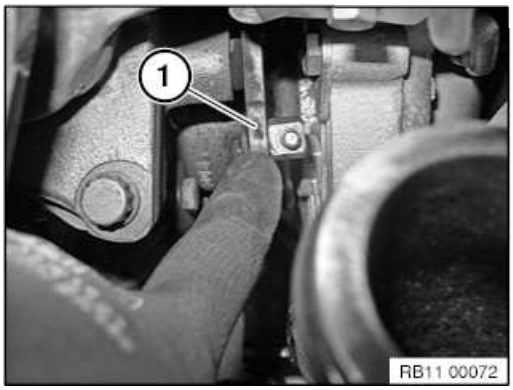
Secure controller (1) hand-tight against turning.

Open stop cock (2) again.



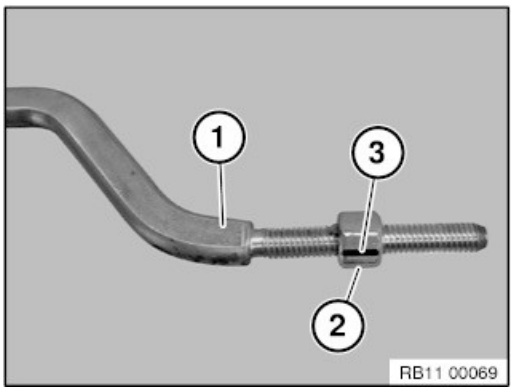
Connect blue vacuum line (1) with connecting element (2) and the vacuum line (3).

The linkage on the vacuum control unit is now tightened.



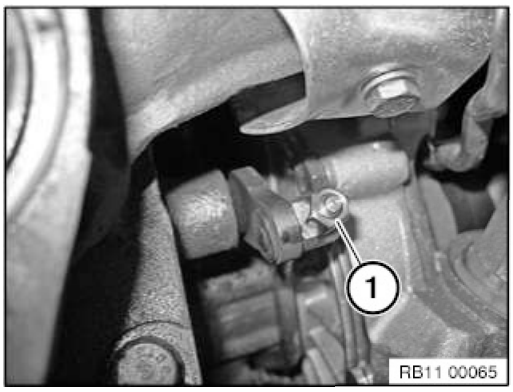
Folding lever (1) must be pressed to the closed position by hand.*Installation note:*
Ensure that the turbine control flap is closed.

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Move adjusting nut (2) on linkage (1) to the point where it is in contact with adjustment lever.*Installation note:*
To ensure that enough adjustment travel is available, adjusting nut (2) **must** be loosened.

Turn adjusting nut (2) by **three rotations** toward vacuum unit, note colour coding (3).



Attach lock nut (1) to linkage.

Tightening torque: 11 00 2AZ.

Assemble engine.

Functional check of turbine control flap, refer to Test module, turbine control flap.

Check function of DDE.

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11 65 040 Removing and installing/replacing high-pressure exhaust turbocharger (small exhaust turbocharger) (N57D30T1)

Warning!

Risk of burning!

Only perform this repair work on an engine that has cooled down.

Recycling:

Catch escaping engine oil with suitable auxiliary materials.

Observe country-specific waste disposal regulations.

Note:

Troubleshooting on exhaust turbocharger.

Attention!

For exhaust turbocharger damage:

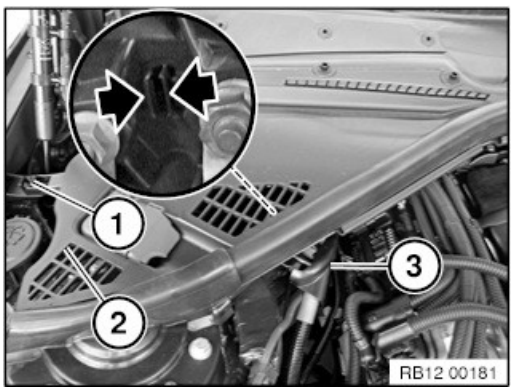
Always follow the notes.

- Pressure pipes
- Charge air cooler
- Intake plenum

- check the above for foreign bodies, damage and correct operation, replacing if necessary.

Necessary preliminary tasks:

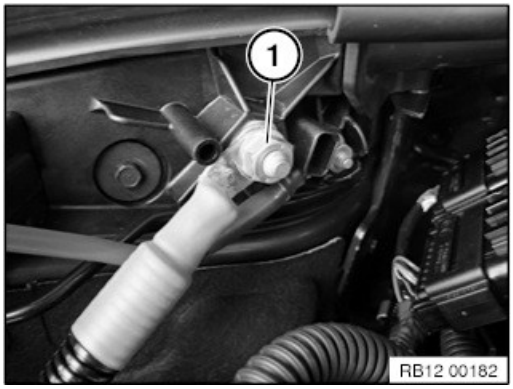
- Disconnect battery.
- Remove acoustic cover at rear.
- Remove intake silencer housing.
- Remove clean air pipe.
- Remove front underbody protection.



Unlock lock (1) and slightly raise service cover (2) until lock of cover (3) is accessible.

Unlock lock and remove cover (3).

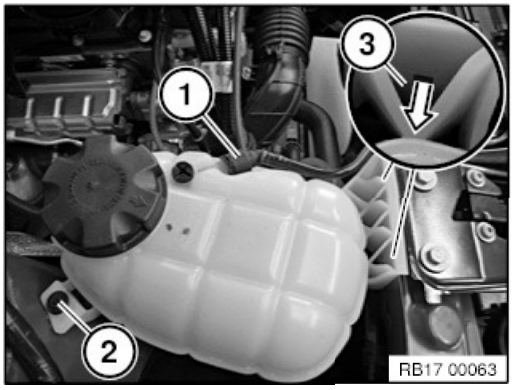
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Slacken nut (1).

Tightening torque 12 52 4AZ

Remove positive battery cable from positive battery connection point.



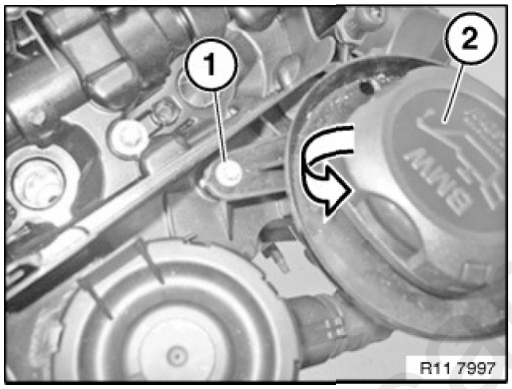
Release expansion tank but do not remove it.

Release screw (2).

Tightening torque 17 10 5AZ

Unlock locks (3) in the direction of the arrow.

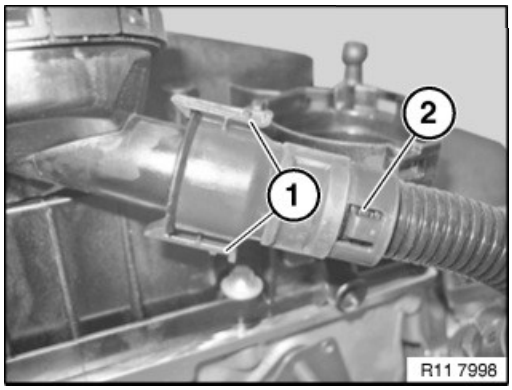
Lay expansion tank to one side.



Release screw (1).

Turn oil filler neck (2) in the direction of the arrow to stop.

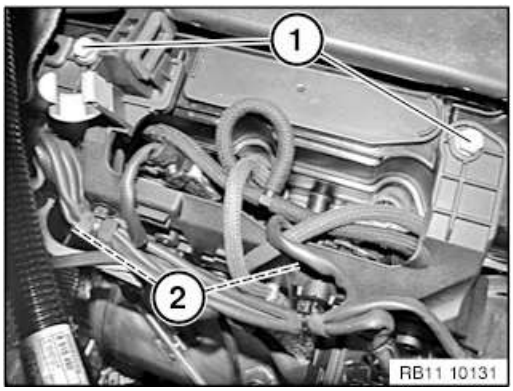
Remove oil filler neck (2) towards top.



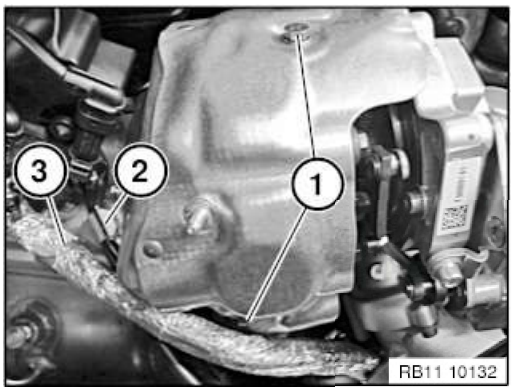
Press locking hooks (1) down.

Remove hose (2) for engine ventilation.

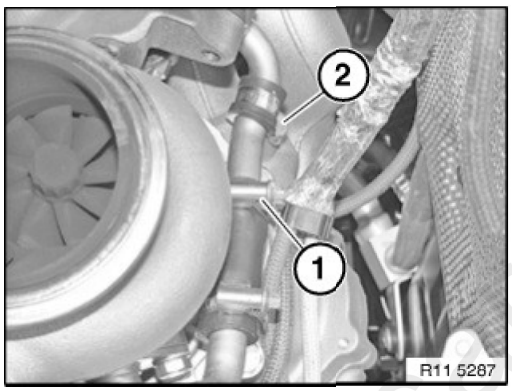
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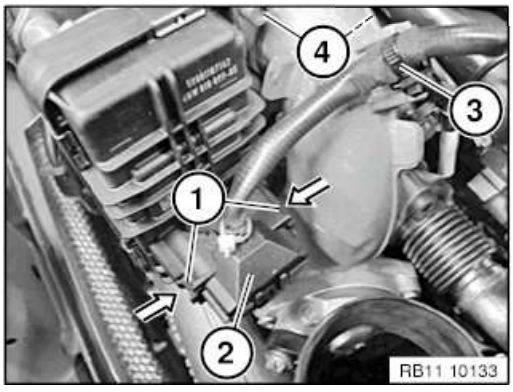
Release screws (1) on top of carrier plate.
Release screws (2, Torx) on bottom of carrier plate.
If necessary, detach cable from clamps.
Lay carrier plate to one side.



Release screws (1) on top and bottom of heat shield.
Tightening torque 11 65 4AZ
Release cable (2,3) from holder.
Feed out heat shield towards rear and remove by pulling upwards.

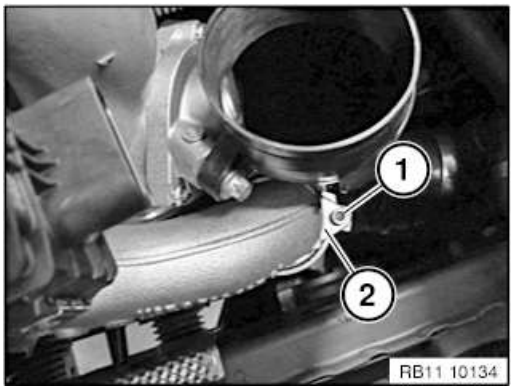


Release hose clamp (1) on the oil return line.
Tightening torque 11 65 5AZ
Release screw (2).
Tightening torque 11 65 6AZ
Release oil return line from exhaust turbocharger.



Press locks (1) together in direction of arrow.
Disconnect plug (2) from exhaust turbocharger.
Detach cable clip (3) from connecting pipe.
Release screws (4) on connecting pipe.
Remove mounting plate.
Tightening torque 11 65 8AZ
Installation note:
Check sealing rings for damage. Replace damaged sealing rings.

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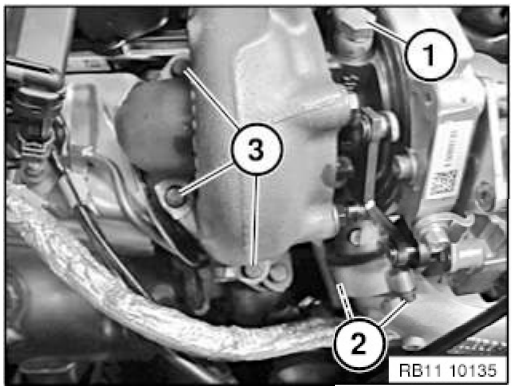


Release screw (1) on bottom of connecting pipe to low-pressure exhaust turbocharger.

Tightening torque 11 65 9AZ.

Remove mounting plate (2).

Installation note:
Check sealing rings for damage. Replace damaged sealing rings.



Release banjo bolt (1).

Tightening torque 11 42 6AZ

Lay engine oil pipe to one side, do **not** bend engine oil pipe!

Catch any leaking oil with appropriate means and dispose.

Renew sealing rings.

Release screws (2) on top of connecting pipe.

Tightening torque 11 65 9AZ

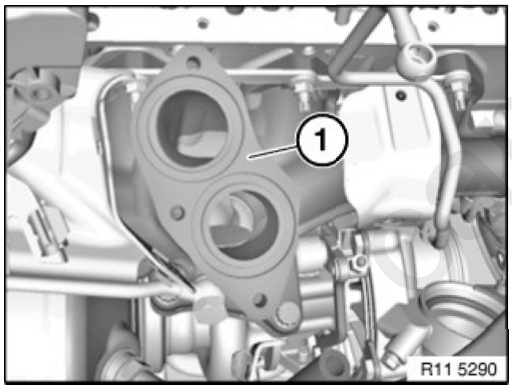
Remove mounting plate.

Installation note:
Check sealing rings for damage. Replace damaged sealing rings.

Loosen screws (3).

Tightening torque 11 65 1AZ.

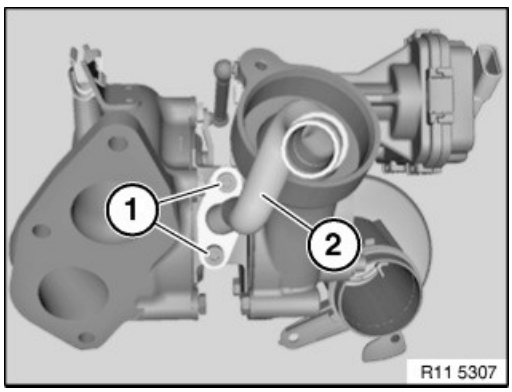
Pull exhaust turbocharger up and remove.



Installation note:
Clean sealing surfaces (1) and replace seals.

Apply a thin coating of copper paste to bolt thread.

To avoid damaging the threads and prevent exhaust turbocharger leaks, insert mounting bolts in 1/2 turns simultaneously.



only if exhaust turbocharger is applied:

Release screws (1).

Tightening torque 11 42 7AZ

Detach oil return line (2) from exhaust turbocharger and remount on new exhaust turbocharger.

Renew gasket.



Assemble engine.

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11 42 230 Removing and installing/replacing oil feed line for high-pressure exhaust turbocharger (N57T1)

Warning!

Risk of burning!

Only perform this repair work on an engine that has cooled down.

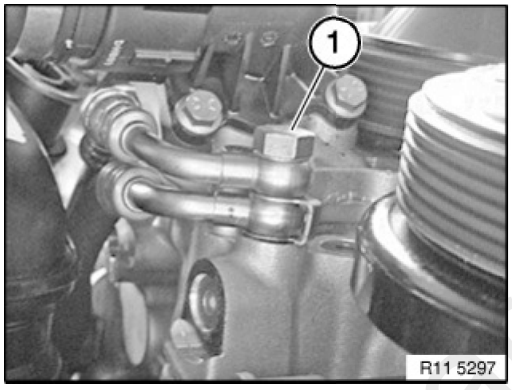
Recycling:

Catch escaping engine oil with suitable auxiliary materials.

Observe country-specific waste disposal regulations.

Necessary preliminary tasks:

- Remove diesel particulate filter.
- Remove high-pressure exhaust turbocharger
- Remove right pressure pipe.
- Remove electronics box.



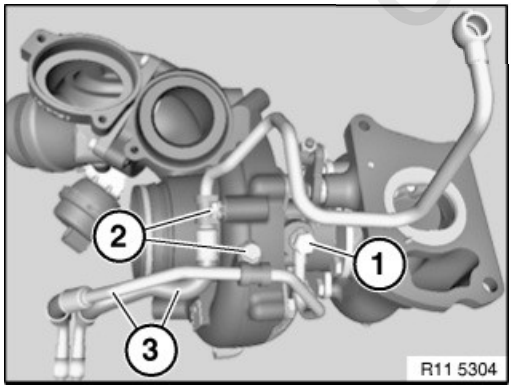
Release banjo bolt (1).

Tightening torque 11 42 2AZ.

Note:
Catch escaping engine oil with suitable auxiliary materials.

Replace sealing rings.

Disconnect engine oil pipes from engine block.



Release screws (2) at oil feed line (3) of high-pressure exhaust turbocharger.

Tightening torque 11 42 9AZ.

Installation note:
Make sure engine oil pipe is in correct installation position.

Graphic shows removed low-pressure exhaust turbocharger.

Assemble engine.

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11 42 235 Removing and installing/replacing oil feed line of low-pressure exhaust turbocharger (N57T1)

Warning!

Risk of burning!

Only perform this repair work on an engine that has cooled down.

Recycling:

Catch escaping engine oil with suitable auxiliary materials.

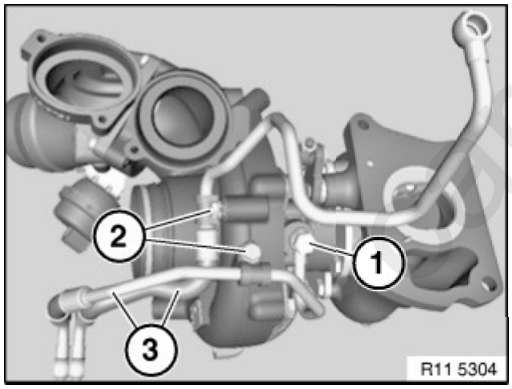
Observe country-specific waste disposal regulations.

Necessary preliminary tasks:

- Remove diesel particulate filter.
- Remove high pressure exhaust turbocharger.
- Remove right pressure pipe.
- Remove electronics box.

Note:

Low pressure charger can only be removed together with exhaust manifold.



Release banjo bolt (1).

Tightening torque 11 42 6AZ.

Replace sealing rings.

Unfasten screws (2).

Tightening torque 11 42 9AZ.

Detach engine oil pipe (3) from exhaust turbocharger and remount on new exhaust turbocharger.

Installation note:

Make sure engine oil pipe is in correct installation position.

Assemble engine.

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11 65 ... Test steps in the event of turbocharger damage



Attention!

The following components must always be checked for foreign bodies, damage and function before installing the new turbocharger.

- Pressure pipe and hoses
- Charge air cooler
- Intake plenum
- If the oil return line is exchanged, then the connecting pipe to the oil sump must ALWAYS be cleaned, as this can even coke!

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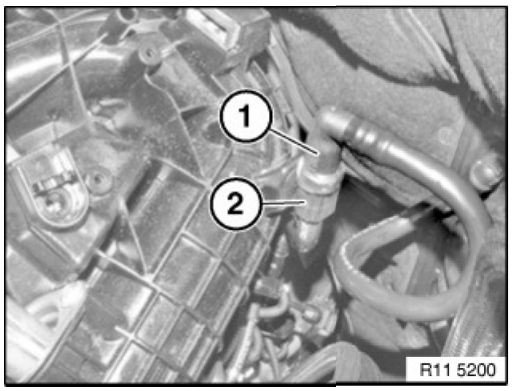
11 66 010 Removing and installing/replacing vacuum line on oil vacuum pump

Important!
Before beginning work, fully press the brake pedal several times to reduce the vacuum pressure in the brake servo. This makes it easier to remove the vacuum hose.

Necessary preliminary tasks:

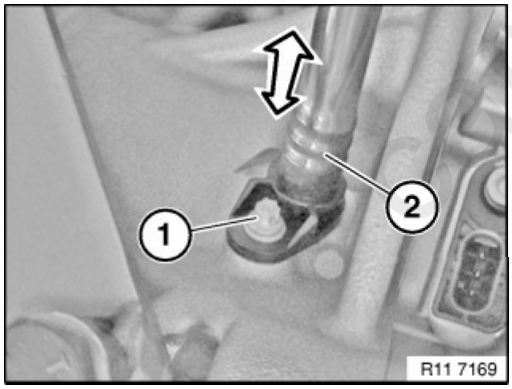
- Read and comply with General Information.
- Remove acoustic cover at rear.

Important!
Do not kink vacuum line.



Unlock vacuum line (1).

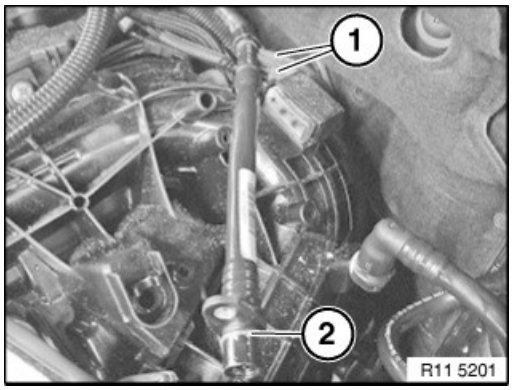
Release clip (2).



Release screw (1).

Installation note:
Tightening torque 11 00 1AZ.

Detach vacuum line (2) in upward direction.



Disconnect vacuum lines (1).*Installation note:*
Replace sealing ring (2).

11 71 100 Removing and installing/replacing exhaust-gas recirculation cooler (N57 D30 O/T 1)

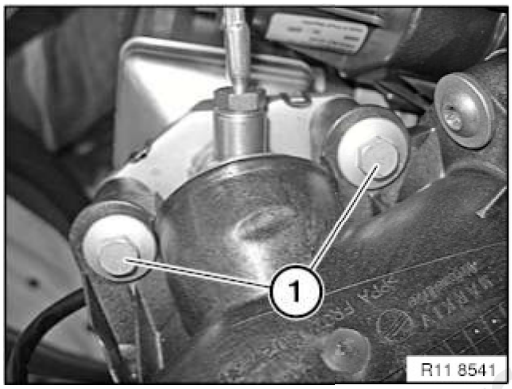
Note:
The adaptation values must be reset after cleaning or replacing the exhaust-gas recirculation cooler.

Warning!
Risk of burning!

Only perform this repair work on an engine that has cooled down.

Necessary preliminary work:

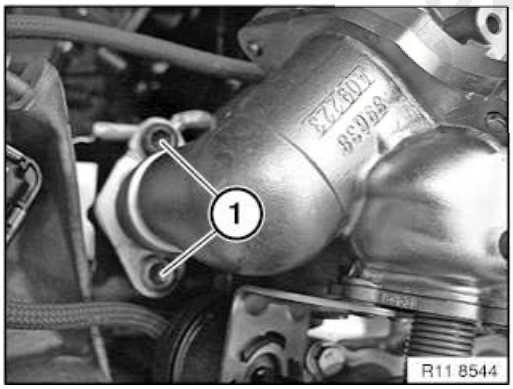
- Remove front acoustic cover (not F25)
- Remove fan cowl
- Drain coolant



Release screws (1).

Installation note:
Renew gasket.

Tightening torque: 11 71 2AZ.



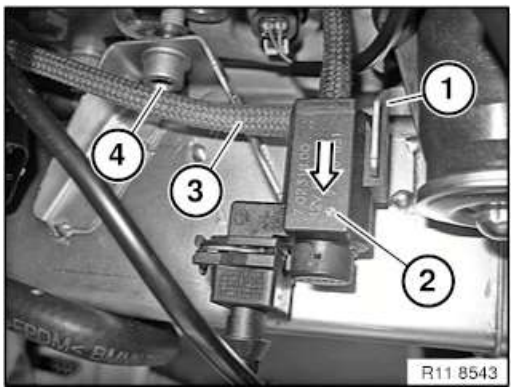
Release screws (1).

Installation note:
Renew screws (1) and seal.

Grease screws with assembly paste 4.2.

Tightening torque: 11 71 1AZ.

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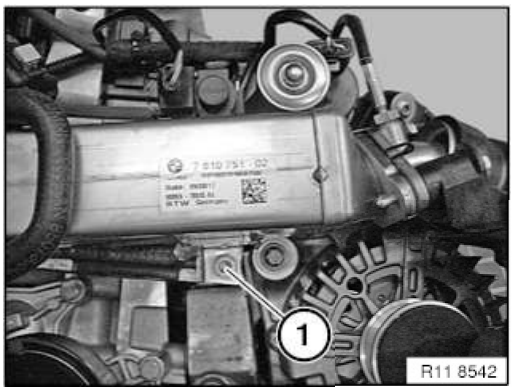


Loosen the electric changeover valve (2) at the retaining clip (1) and pull off in direction of arrow.

Detach vacuum line (3) from electric changeover valve (2).

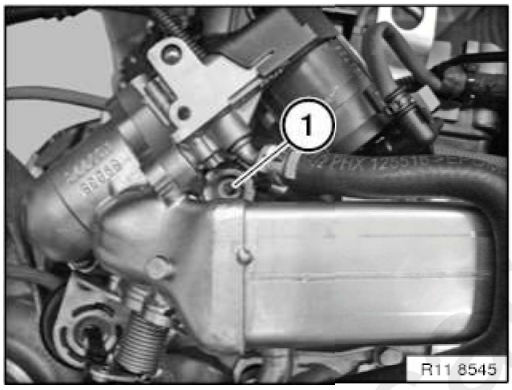
Release screw (4).

Tightening torque: 11 71 3AZ.



Release screw (1).

Tightening torque: 11 71 3AZ.



Release screw (1).

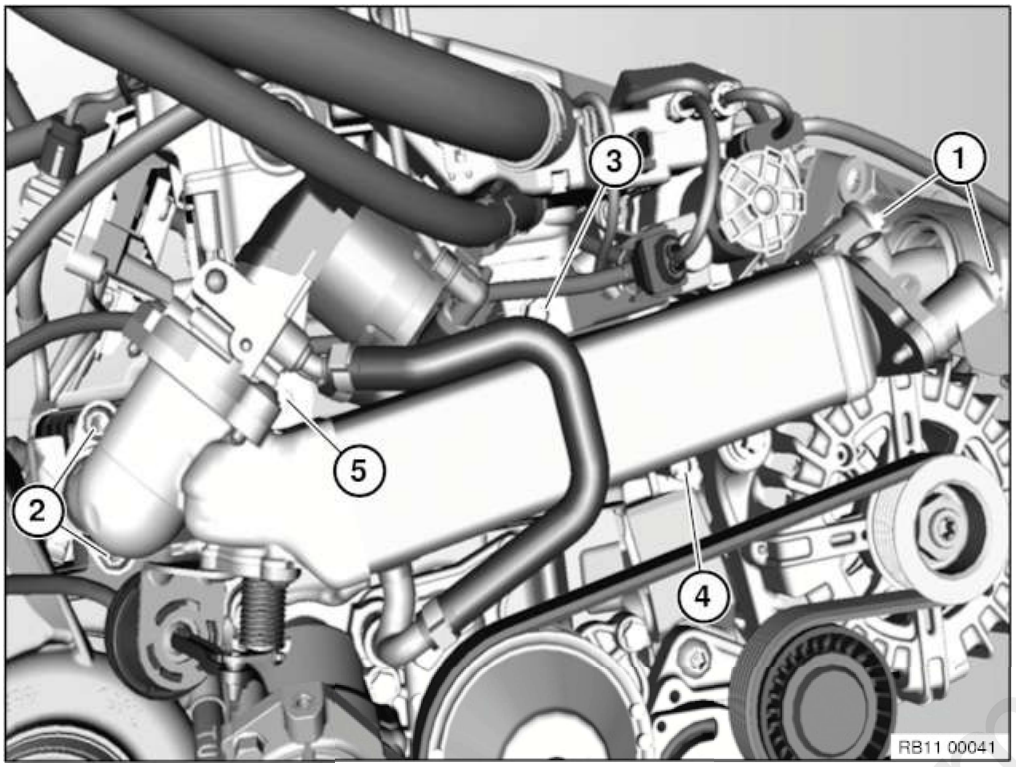
Tightening torque: 11 71 3AZ.

Installation note:
Replace all gaskets.

Renew pipe neck on exhaust-gas recirculation cooler.

Ensure that the pipe neck is mounted without tension.

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Installation note:
Replace screws (2) and seal.

Note screw sequence at the exhaust-gas guide module.

Screwed connections in sequence (1) to (5).

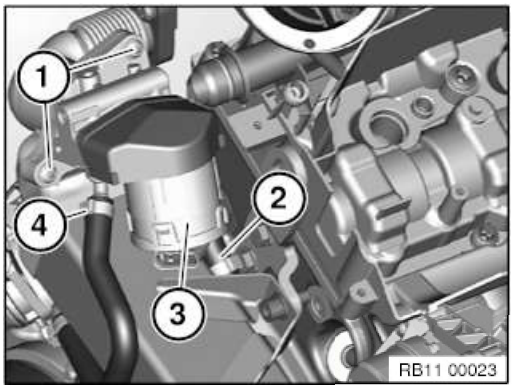
Assemble engine.

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11 74 501 Removing and installing/replacing exhaust-gas recirculation valve (EGR)

Necessary preliminary work:

- Remove front acoustic cover.



Release screws (1) on exhaust-gas recirculation valve (3).

Tightening torque 11 71 4AZ.

Release coolant lines (2 and 4).

Disconnect plug connection on exhaust-gas recirculation valve (3).

Installation note:
Replace O-ring.

Assemble engine.

Add coolant.

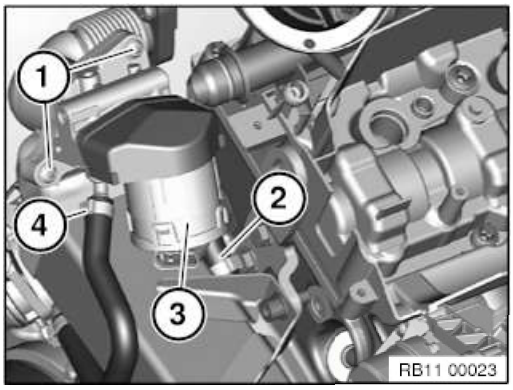
Check function of Digital Diesel Electronics.

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11 74 501 Removing and installing/replacing exhaust-gas recirculation valve (EGR)

Necessary preliminary work:

- Remove front acoustic cover.



Release screws (1) on exhaust-gas recirculation valve (3).

Tightening torque 11 71 4AZ.

Release coolant lines (2 and 4).

Disconnect plug connection on exhaust-gas recirculation valve (3).

Installation note:
Replace O-ring.

Assemble engine.

Add coolant.

Check function of Digital Diesel Electronics.

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13 62 651 Removing/replacing oxygen sensor (N57 D30 O/T 1)

Special tools required:

- 11 7 020

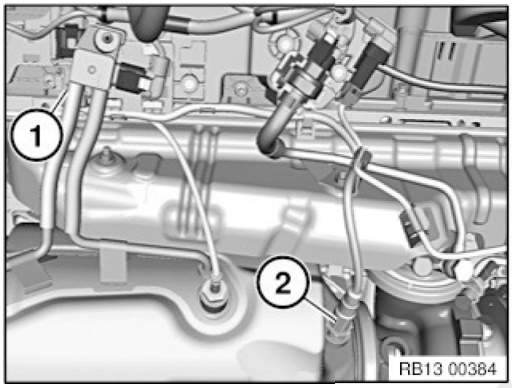
Necessary preliminary tasks:

- Read out the fault memory of the DDE control unit.
- Switch off ignition.
- Remove intake silencer housing.

Warning!

Risk of burning!

Only perform this repair work on an engine that has cooled down.



Disconnect connector (1) and release from bracket.

Release oxygen sensor cable from clamp.

Remove oxygen sensor (2) with special tool 11 7 020 .

Tightening torque 13 62 3AZ.

Installation note:

Threads of new oxygen sensors are already coated with NEVER-SEEZ compound.

If an oxygen sensor is reused, only apply a thin and uniform coat of Never Seez Compound (refer to BMW Parts Department) to thread.

Oxygen sensor section projecting into exhaust branch must not be cleaned or come into contact with lubricant.

Pay attention to cable routing of oxygen sensors.

11 7 020 Use special tool to tighten down oxygen sensor.

Tightening torque 13 62 3AZ.

Cover oxygen sensors when applying underbody protection.

Installation note:

Check stored error/fault messages.

Clear diagnostic fault entries from fault memory.

13 62 534 Replacing exhaust-gas temperature sensor (N57 D30 O/T 1)

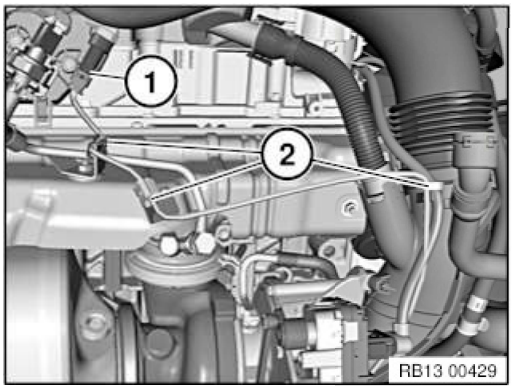
Necessary preliminary tasks:

- Read out the fault memory of the DDE control unit.
- Switch off ignition.
- Remove intake silencer housing.
- Remove front underbody protection.

Warning!

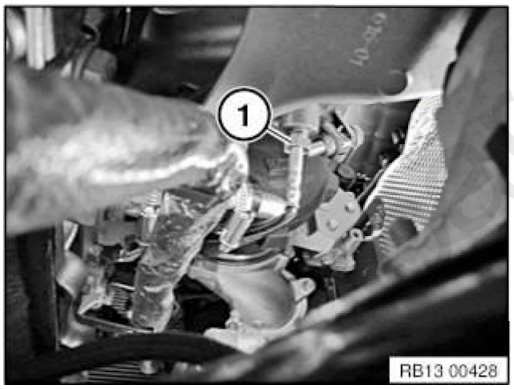
Risk of burning!

Only perform this repair work on an engine that has cooled down.



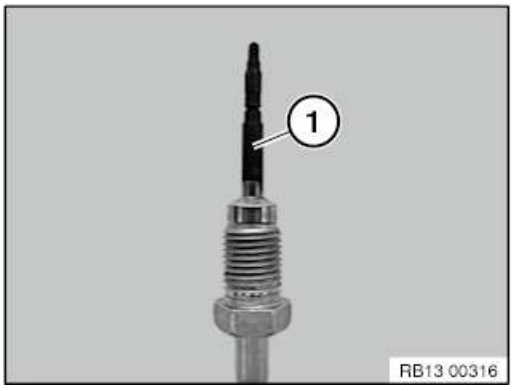
Unlock connector (1) and remove.

Disengage the cable from the clamps (2).



Release exhaust-gas temperature sensor (1) and remove.

Tightening torque 13 62 4AZ.



Important!

When installing the exhaust-gas temperature sensor make sure that the gauge tip (1) is not damaged.

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Installation note:
Check stored error/fault messages.

Clear diagnostic fault entries from fault memory.

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13 62 663 Replacing exhaust-gas temperature sensor (N57 D30 O/T 1)

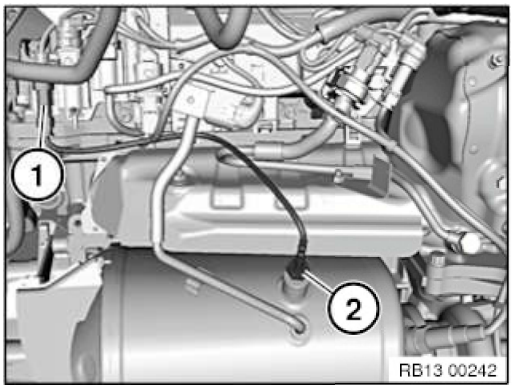
Necessary preliminary tasks:

- Read out the fault memory of the DDE control unit.
- Switch off ignition.
- Remove intake silencer housing.

Warning!

Risk of burning!

Only perform this repair work on an engine that has cooled down.

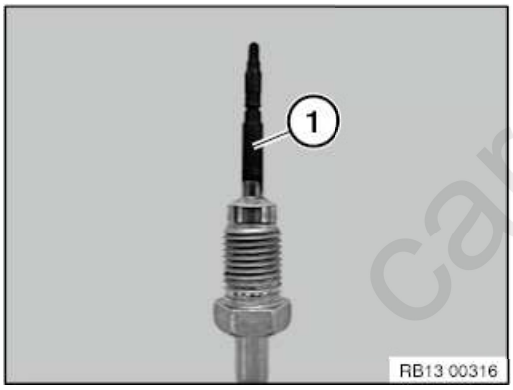


Unlock connector (1) and remove.

Replace cable from clamps.

Release exhaust-gas temperature sensor (2) and remove.

Tightening torque 13 62 4AZ.



Important!

When installing the exhaust-gas temperature sensor make sure that the gauge tip (1) is not damaged.

Installation note:

Check stored error/fault messages.

Clear diagnostic fault entries from fault memory.

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11 . . . . . Equipment recoding special tool number of the transverse member for fixing the engine in the installation location

Equipment recoding from 00 0 200 to 00 6 0 000

Designation	Special tool new	Special tool previous
Cross-member, previous	---	00 0 200
Cross-member, new	00 6 000	---
Mounting bridge	00 6 001	00 0 201
Spindle with hook	00 6 002	00 0 202
Extension	00 6 003	00 0 203
Adapter support	00 6 004	00 0 204
Extension	00 6 005	00 0 205
Chain with hook	00 6 006	00 0 209
Set of supports	00 6 010	00 0 206
Set of supports	00 6 020	00 0 207
Set of supports	00 6 030	00 0 208
Connector	00 6 031	---
Profile strip (2 x)	00 6 032	---
Supports (4 x)	00 6 033	---
Set of supports	00 6 040	---
Profile strip	00 6 041	00 0 451
Supports (2 x)	00 6 042	00 0 452
Supports, short (2 x)	00 6 043	---
Set of supports	00 6 050	---
Profile strip (2 x)	00 6 051	---
Supports, short (2 x)	00 6 052	---
Supports, long (2 x)	00 6 053	---
Support, long	00 6 060	---
Supports (2 x)	00 6 070	---

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