

11 21 531 Replacing all crankshaft main bearings (N14)



Special tools required:

11 4 470



Important!

Modified assignment of bearings.

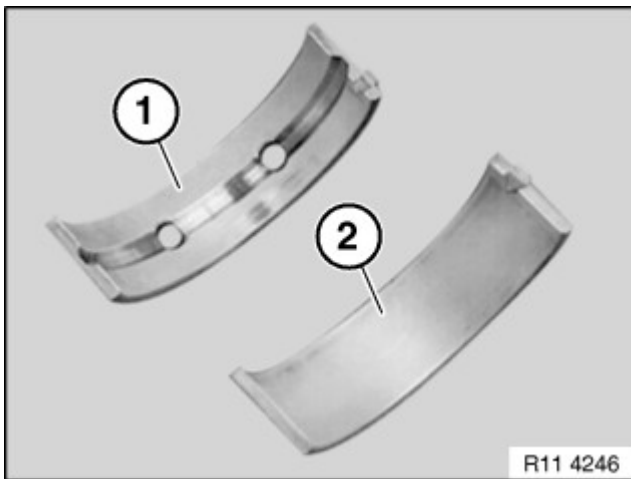
Bearing (1) is at the output end (clutch end)

Determine main bearing colours; the designations on the crankcase and crankshaft are always required and can only be determined using the table.



Necessary preliminary tasks:

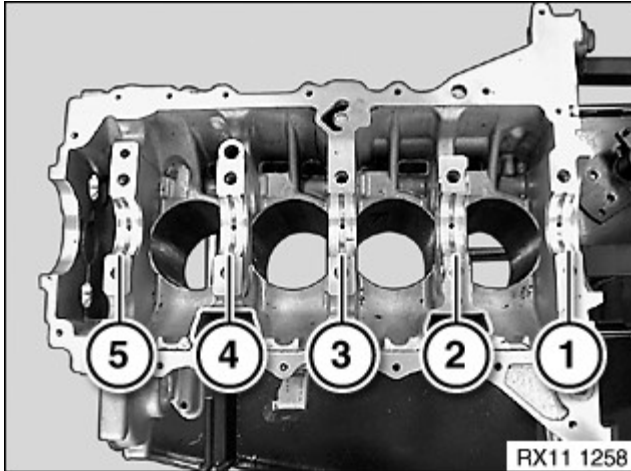
Remove crankshaft.



Installation:

Bearing shell (1) with lubricant groove must be fitted in crankcase upper section.

Bearing shell (2) without lubricant groove must be fitted in crankcase lower section (bedplate).



Important!

Modified assignment of bearings.

Bearing (1) is at the output end (clutch end)

Bearings (1 to 5).

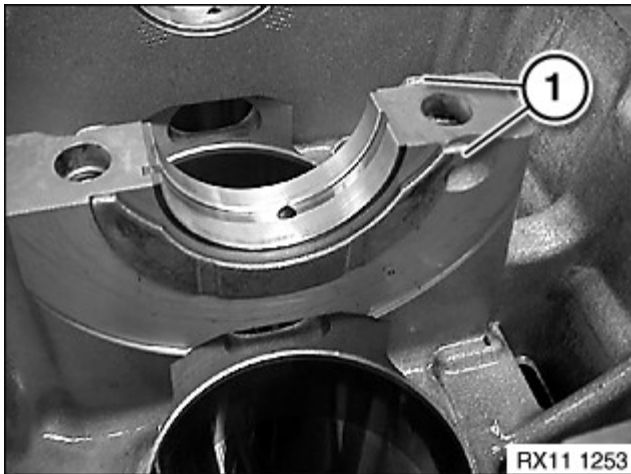
Bearing (2) is a guide bearing.

Important!

Clean sealing surfaces.

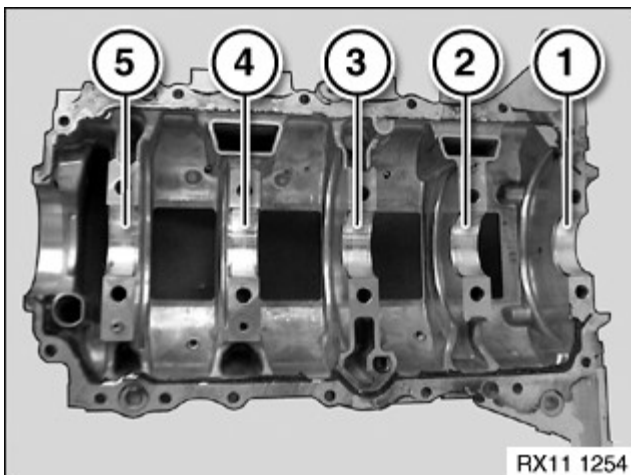
Do **not** clean sealing faces with a metal-cutting tool.

Clean sealing faces with special tool 11 4 470 only.



Insert guide rings (1) in crankcase at bearing block (2) with groove facing outwards.

If necessary, attach with engine oil to crankcase.



Important!

Modified assignment of bearings.

Bearing (1) is at the output end (clutch end)

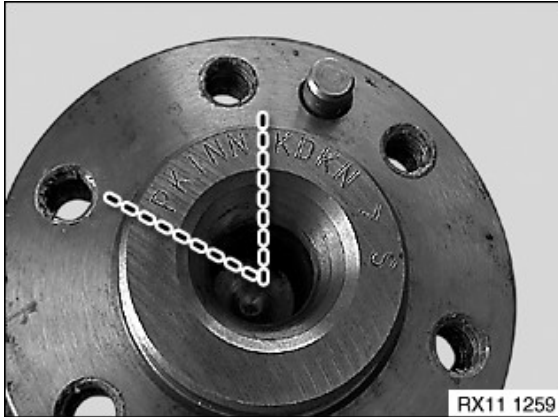
Bearings (1 to 5).

Important!

Clean sealing surfaces.

Do **not** clean sealing faces with a metal-cutting tool.

Clean sealing faces with special tool 11 4 470 only.



Bearing classification on crankcase upper half:

Bearing allocation 1-5: the designations on the crankcase and crankshaft are always required.

Refer to the table for the colour code.

Example:

Bearing 1.	Letter P
Bearing 2.	Letter K
Bearing 3.	Letter I
Bearing 4.	Letter N
Bearing 5.	Letter N



Bearing classification on crankcase upper half:

Bearing allocation 1-5: the designations on the crankcase and crankshaft are always required.

Refer to the table for the colour code.

Example:

Bearing 1.	Letter T
Bearing 2.	Letter Q
Bearing 3.	Letter Q
Bearing 4.	Letter R
Bearing 5.	Letter R

Table overview of bearing classification: upper half

Identifying letter of crankshaft

[illegible]

P	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Sw
Q	Or	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Gr
R	Or	Or	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Gr
S	Or	Or	Or	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Gr	Gr	Gr	Gr	Gr	Gr	Gr
T	Or	Or	Or	Or	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Gr	Gr	Gr	Gr	Gr	Gr
U	Or	Or	Or	Or	Or	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Gr	Gr	Gr	Gr	Gr
X	Or	Or	Or	Or	Or	Or	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Gr	Gr	Gr	Gr
Y	Or	Or	Or	Or	Or	Or	Or	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Gr	Gr	Gr
Z	Or	Or	Or	Or	Or	Or	Or	Or	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Gr



Crankshaft bearing colours:

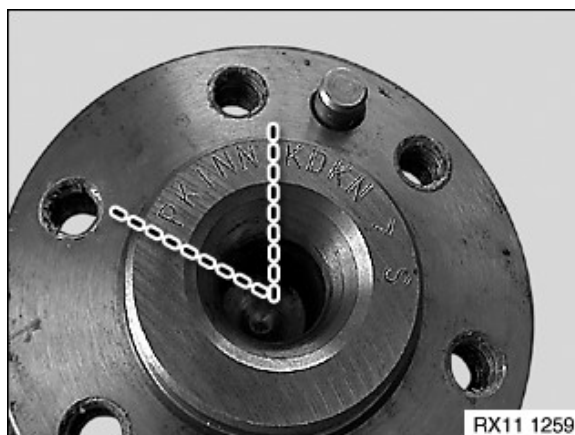
BL= Blue.

SW= Black.

Gr= Green.

Ge Yellow.

Or Orange.



Bearing classification on crankcase lower half:

Bearing allocation 1-5: the designations on the crankcase and crankshaft are always required.

Refer to the table for the colour code.

Example:

Bearing 1.	Letter P
Bearing 2.	Letter K
Bearing 3.	Letter I
Bearing 4.	Letter N
Bearing 5.	Letter N



Bearing classification on crankcase lower half:

Bearing allocation 1-5: the designations on the crankcase and crankshaft are always required.

Refer to the table for the colour code.

Example:

Bearing 1.	Letter T
Bearing 2.	Letter Q
Bearing 3.	Letter Q
Bearing 4.	Letter R
Bearing 5.	Letter R

Table overview of bearing classification: lower half

Crankshaft

Bearings 1-5		A	B	C	D	E	G	H	I	K	M	N	P	Q	R	S	T	U
Crankcase	A	Gr	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Bl	Bl	Bl	Bl	Bl	Bl	Bl	Bl
	B	Gr	Gr	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Bl	Bl	Bl	Bl	Bl	Bl	Bl
	C	Gr	Gr	Gr	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Bl	Bl	Bl	Bl	Bl	Bl
	D	Gr	Gr	Gr	Gr	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Bl	Bl	Bl	Bl	Bl
	E	Gr	Gr	Gr	Gr	Gr	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Bl	Bl	Bl	Bl
	G	Gr	Gr	Gr	Gr	Gr	Gr	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Bl	Bl	Bl
	H	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Bl	Bl
	I	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Bl
	K	Ge	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Sw	Sw	Sw	Sw	Sw	Sw	Sw	Sw
	M	Ge	Ge	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Sw	Sw	Sw	Sw	Sw	Sw	Sw
	N	Ge	Ge	Ge	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Sw	Sw	Sw	Sw	Sw	Sw
	P	Ge	Ge	Ge	Ge	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Sw	Sw	Sw	Sw	Sw
	Q	Ge	Ge	Ge	Ge	Ge	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Sw	Sw	Sw	Sw
	R	Ge	Ge	Ge	Ge	Ge	Ge	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Sw	Sw	Sw
	S	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Sw	Sw
	T	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Sw
	U	Or	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Gr	Gr	Gr	Gr	Gr	Gr	Gr	Gr
	X	Or	Or	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Gr	Gr	Gr	Gr	Gr	Gr	Gr
	Y	Or	Or	Or	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Gr	Gr	Gr	Gr	Gr	Gr
	Z	Or	Or	Or	Or	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Ge	Gr	Gr	Gr	Gr	Gr



Crankshaft bearing colours:

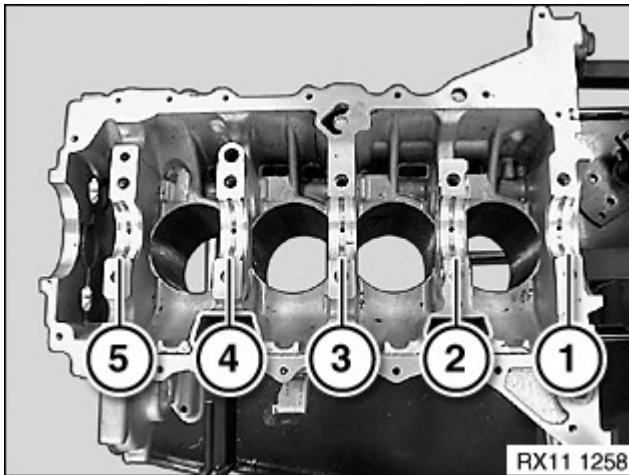
BL= Blue.

SW= Black.

Gr= Green.

Ge Yellow.

Or Orange.



Example: Crankcase upper half:

Combining the dots of the designations of the crankshaft and crankcase produces the following colour combinations.

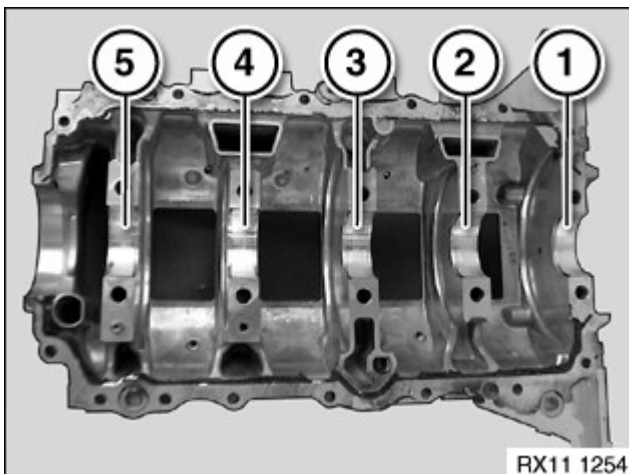
Bearing 1: The letters (P and T) produce in the crankcase upper half the colour Ge= Yellow with lubricant groove.

Bearing 2: K and Q= Ge= Yellow.

Bearing 3: I and Q= Ge= Yellow.

Bearing 4: N and R= Gr= Green.

Bearing 5: N and R= Gr= Green.



Example: Crankcase lower half:

Combining the dots of the designations of the crankcase and crankshaft produces the following colour combinations.

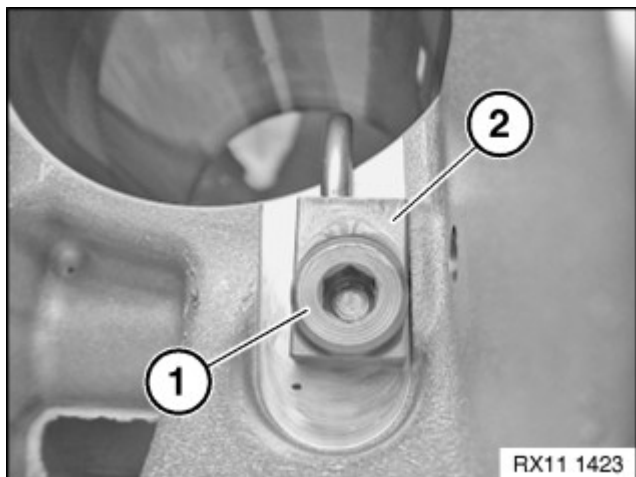
Bearing 1: The letters P. and T. produce in the crankcase lower half the colour Gr= Green without lubricant groove.

Bearing 2: K and Q= Gr= Green.

Bearing 3: I and Q= Gr= Green.

Bearing 4: N and R= Gr= Green.

Bearing 5: N and R= Gr= Green.



Check spray nozzle (2) for damage, replace if necessary.

Release screw (1).

Tightening torque: 11 11 8AZ.

Remove oil spray nozzle (2).

Installation:

Oil spray nozzle (2) is turned when screw (1) is tightened and then rests with its upper corner against crankcase.



Install crankcase lower section.

Assemble engine.