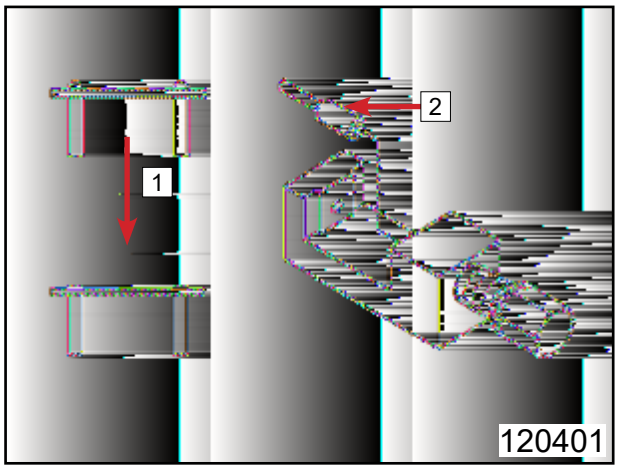
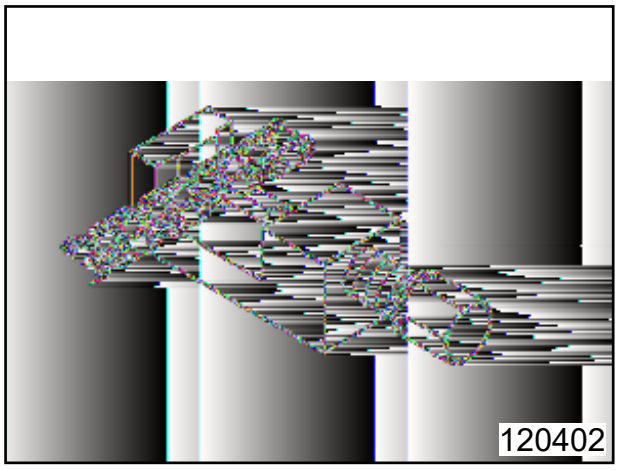
12.5 Chain Inspection

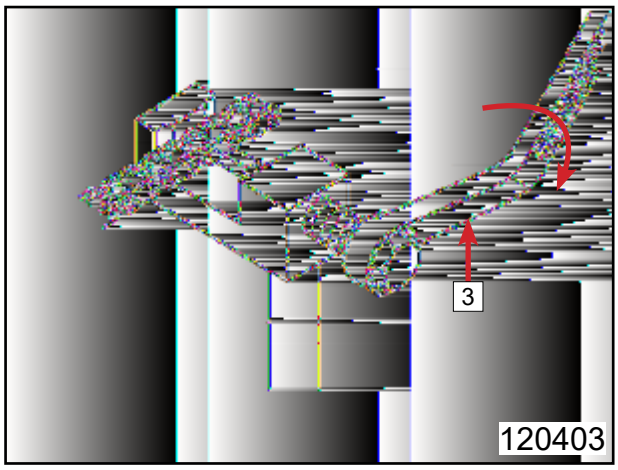
Press hard [1] to make two pin heads parallel.
Set the cutting and riveting pin [2] as picture shows.



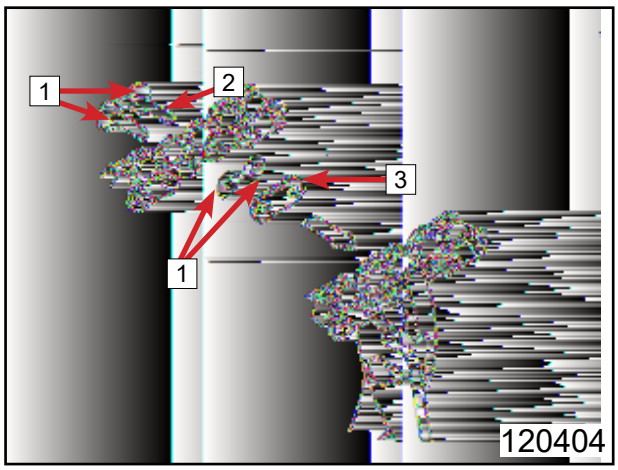
Tighten the bolt to narrow the pin seat until it touches chain pin.
Make sure the centers of cutting and riveting pin and chain pin are aligned.



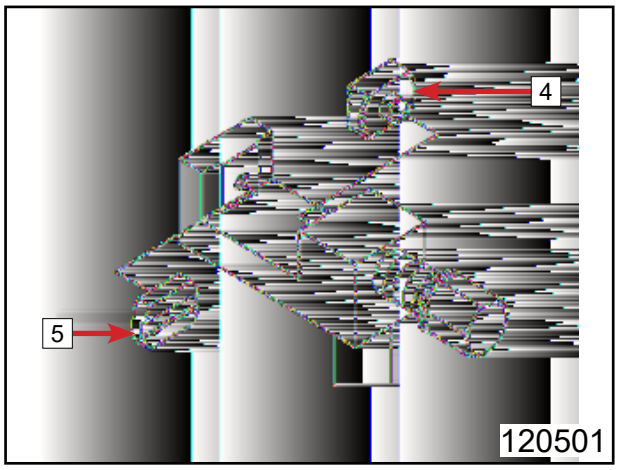
Rotate the pin seat with wrench [3] clockwise to remove the chain pin.



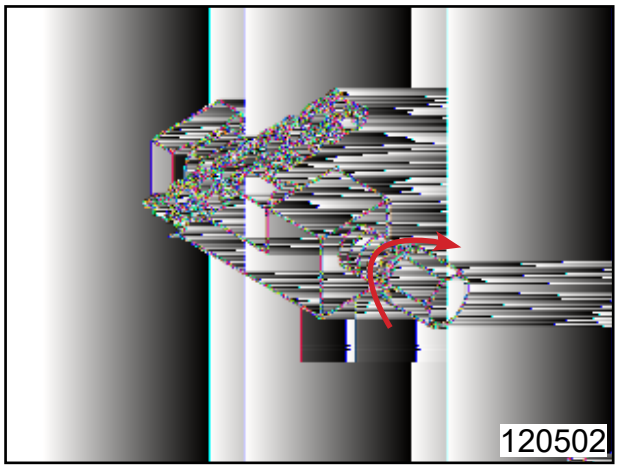
Drive Chain Installation
Install new chain knots on chain to replace the old ones.
Remove the chain boards of new drive chain.
Apply grease on chain pin [2] and seal rings [1].
Engage the chain and rear chain sprocket.
Insert chain pins into chain knots.
Install seal rings [1].
Install chain boards and make the mark [3] face outside.
Fix the chain board with hand or plier.
Make sure the seal ring is installed correctly in case of the chain grease leaking.



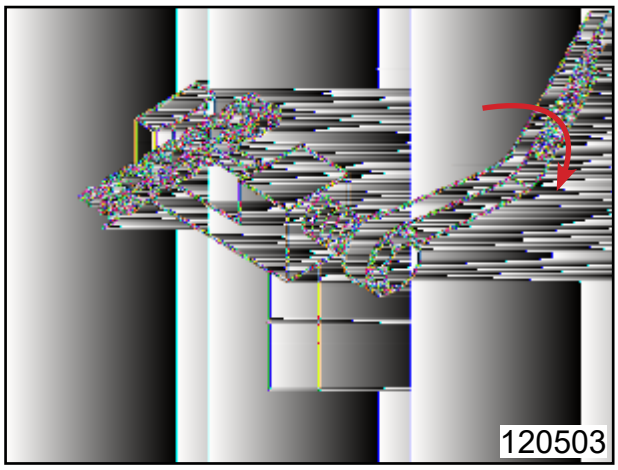
Set the holder [4] and [5].



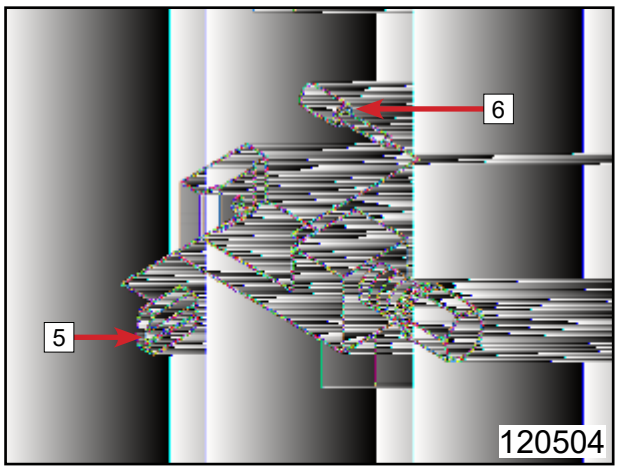
Align the holder and chain board.
Rotate the pin seat until it touches the chain board.



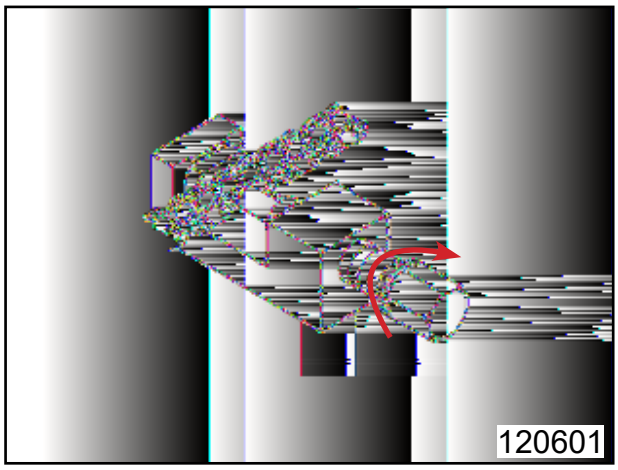
Rotate the pin seat with wrench clockwise until two pins get into the grooves of holder.
Remove holder [4].



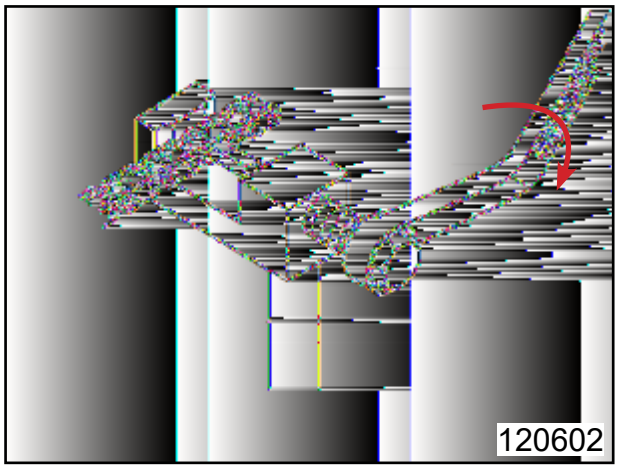
Set the holder [5] and cutting and riveting pin [6] as picture shows.



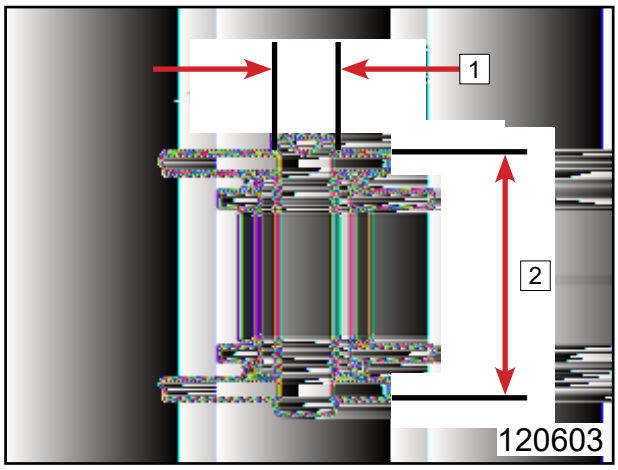
Rotate the pin seat until it touches chain pin.



Rotate the wrench clockwise until cutting and riveting pin head touches chain pin to rivet.
Other chain pins installation follows the same procedures.

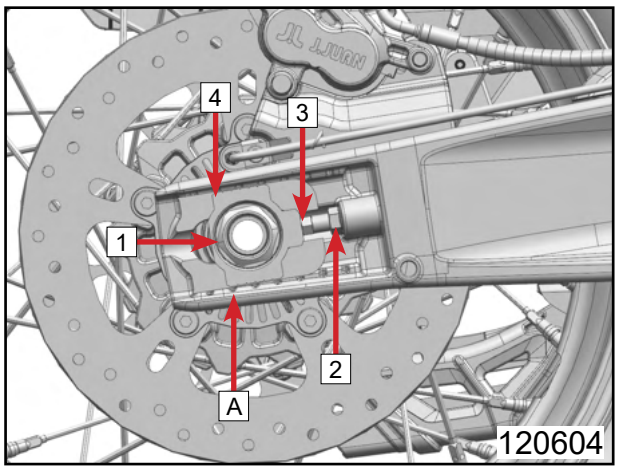


Inspection
After installation, inspect riveting knots for cracks. Measure chain pin outer diameter [1] and chain board width [2].
Chain pin outer diameter
Standard: 5.45mm~5.55mm
Chain board width
Standard: 17.25mm~17.45mm
Cut and re-rivet the chain knots if out of standard.



12.5.1 Chain Looseness Adjustment
Adjust adjusting nut [2] according to requirement.
Chain sag standard: 30mm~40mm

⚠CAUTION: Adjusting nuts must be set the same distance on both sides.



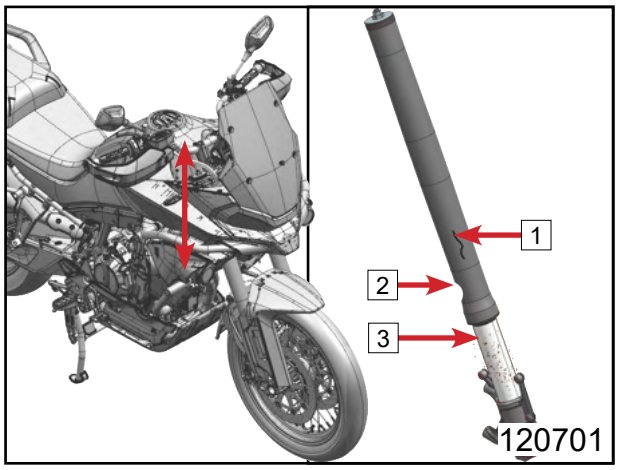
12.6 Front Shock Absorber

Inspection

Inspect front shock absorber appearance for damage 2, cracks 1 or other damage. Replace if any defect is found.

Clean dust and mud 3 on front shock absorber.

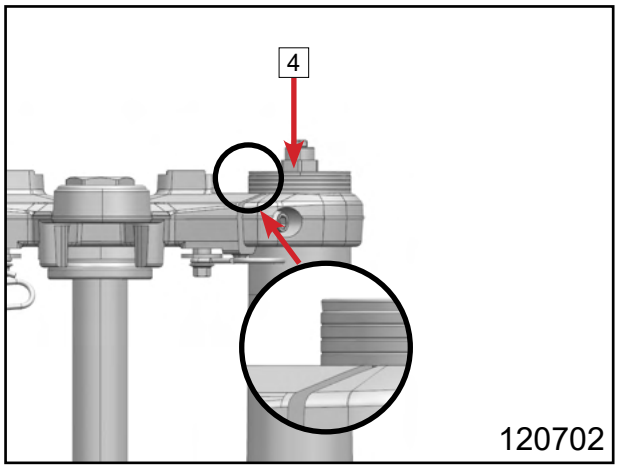
Press down handlebar several times to check compression/rebound function of front shock absorber.



Installation

Reverse the removal procedures for installation.

⚠CAUTION: During installation, the upper surfaces 4 of both shock absorbers should parallel.

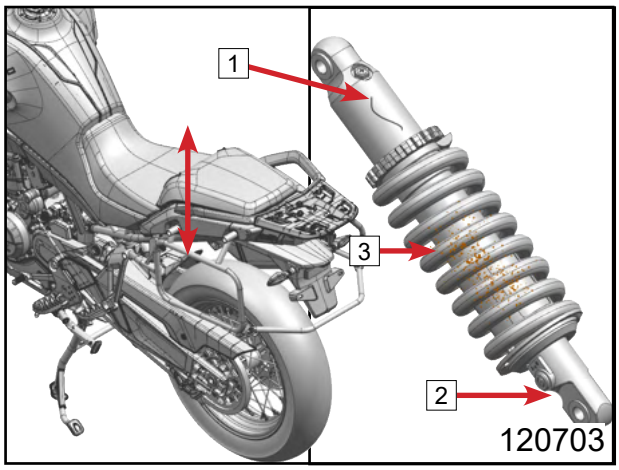


12.7 Rear Shock Absorber

Inspect rear shock absorber appearance for damage 2, cracks 1 or other damage. Replace if any defect is found.

Clean dust and mud 3 on rear shock absorber.

Press down seat several times to check compression/rebound function of front shock absorber.



ENGINE

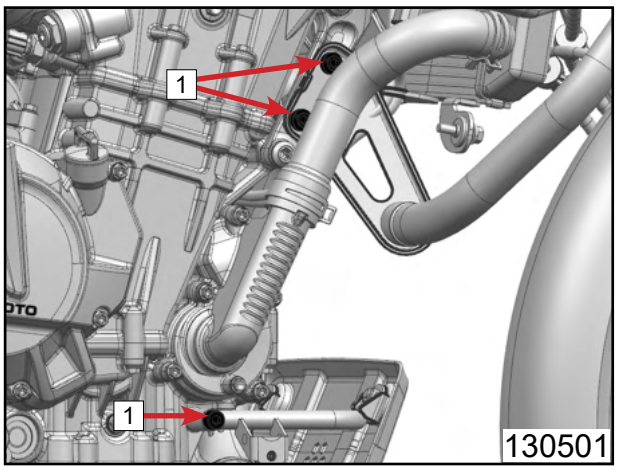
13.1 Removing The Engine

Preparatory work

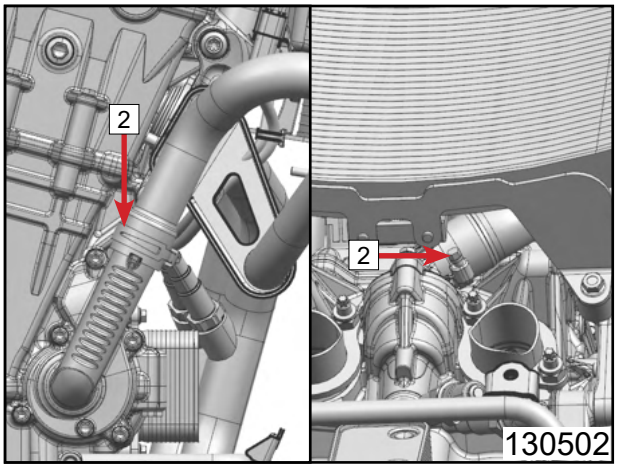
Switch off the ignition by turning the ignition key to the position.
Remove the seat.
Disconnect the negative cable of the 12-V battery.
Remove main silencer.
Raise motorcycle with rear lifting gear.
Remove the left side cover.
Remove the battery cover.
Remove left fuel tank cover.
Remove the right side cover.
Remove right fuel tank spoiler.
Remove engine guard.
Remove the fuel tank.
Remove the exhaust system.
Drain the coolant.

Main work

Remove screws 1.
Hang the activated charcoal filter to the side.



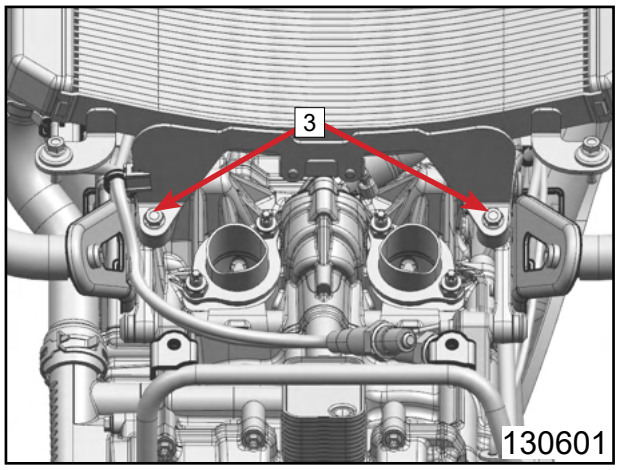
Loosen hose clips 2.
Pull off the radiator hoses.



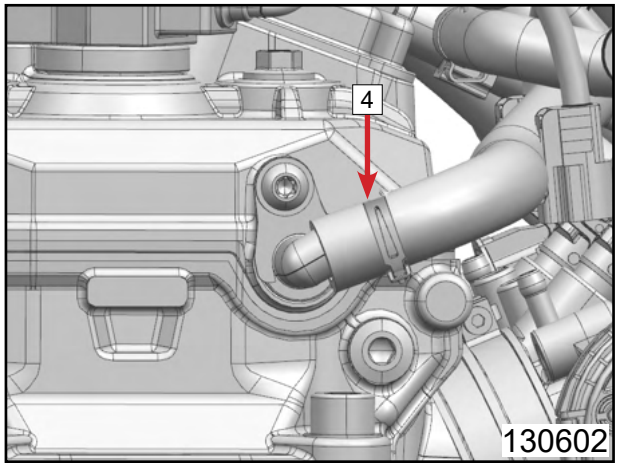
Remove screws 3.
Swing the radiator forward.

Info
Pay attention to the cooling fins.

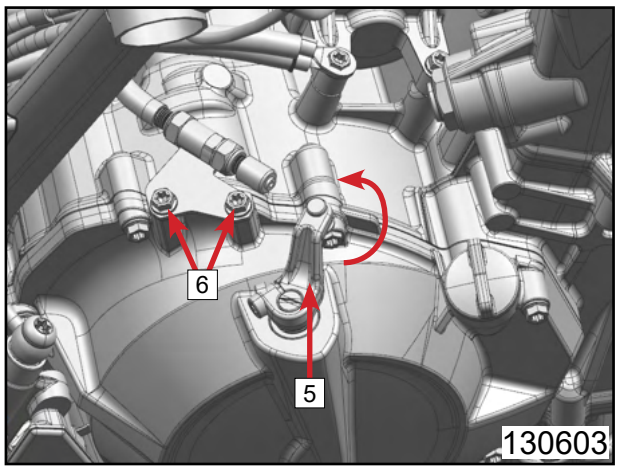
Remove the cable ties.
Disconnect plug-in connector.



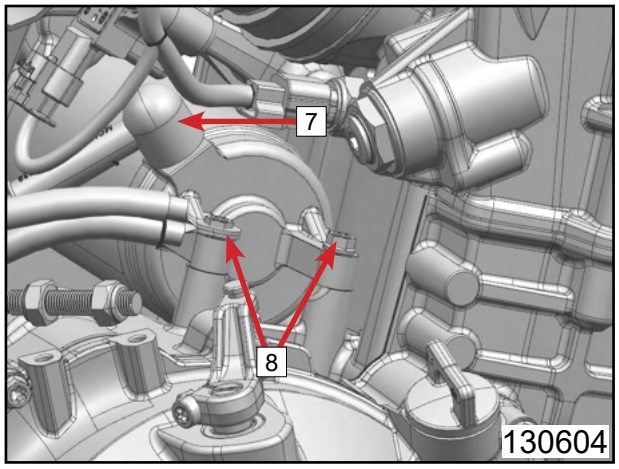
Remove hose clamo 4 and pull off the vent hose.



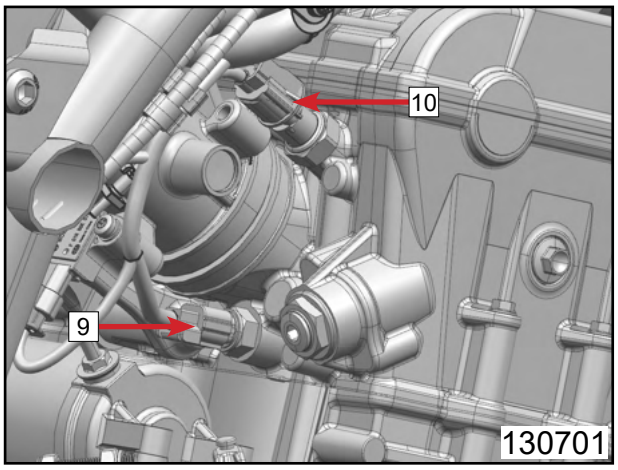
Swivel clutch release lever 5 counterclockwise and detach the inner clutch cable.
Remove screws 6.
Hang the inner clutch cable with bracket to the side.



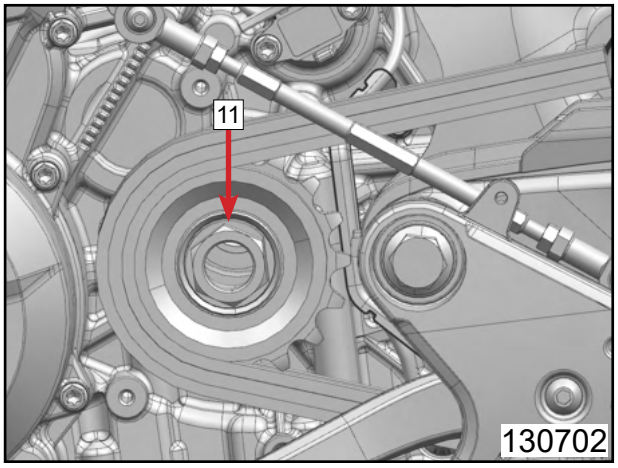
Push back protection cap 7 and remove the nut.
Hang the positive cable to the side.
Remove screws 8.
Hang the ground wire to the side.



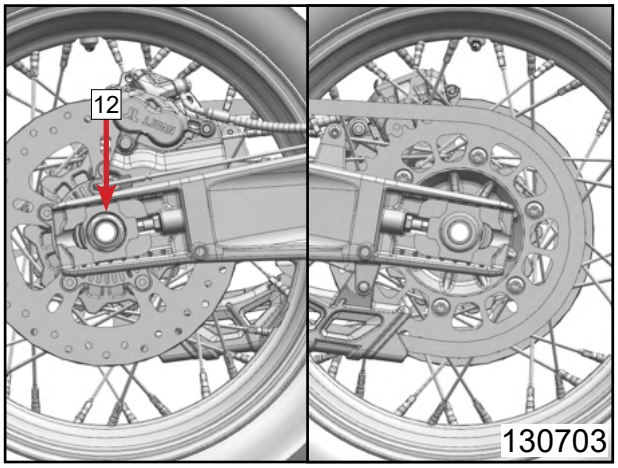
Disconnect connector [9] from the coolant temperature sensor.
Unplug connector [10] from the oil pressure sensor.



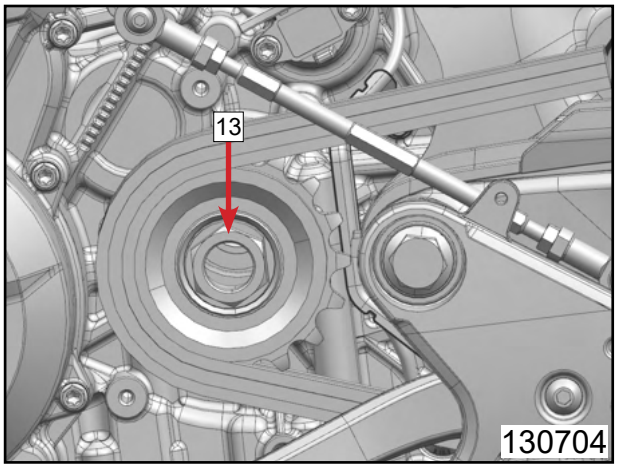
Bend up the lock washer.
Have an assistant operate the reat brake.
Loosen nut [11].



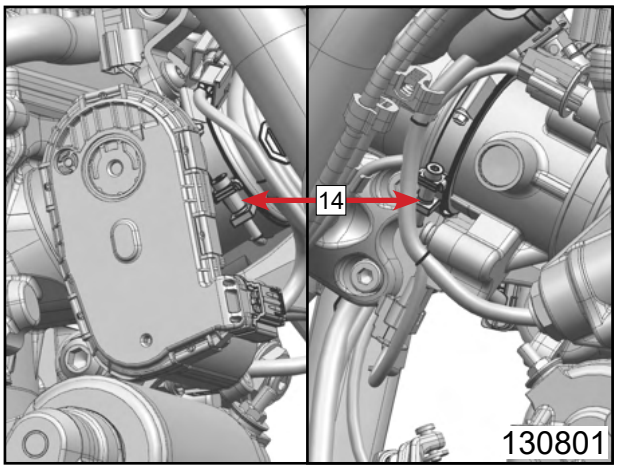
Remove nut [12].
Remove the chain adjuster.
Push the rear wheel into the foremose position.



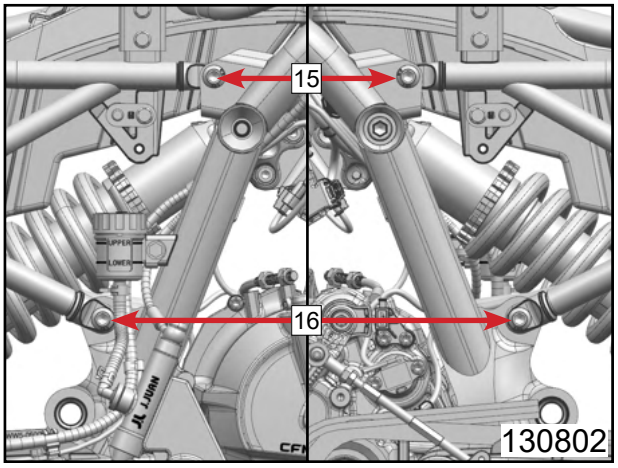
Remove nut [13] with the lock washer.
Take off the engine sprocket.



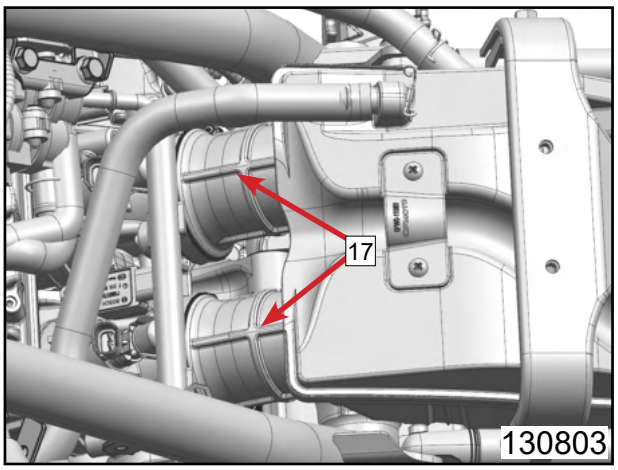
Loosen hose clips 14.



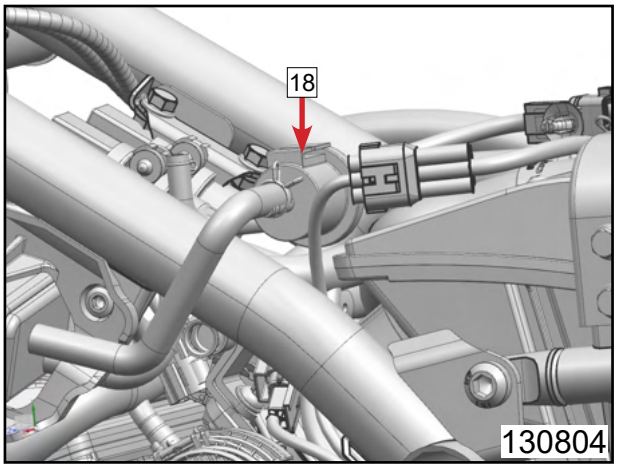
Loosen screws 15.
Remove screws 16.
Swivel the subframe downward.



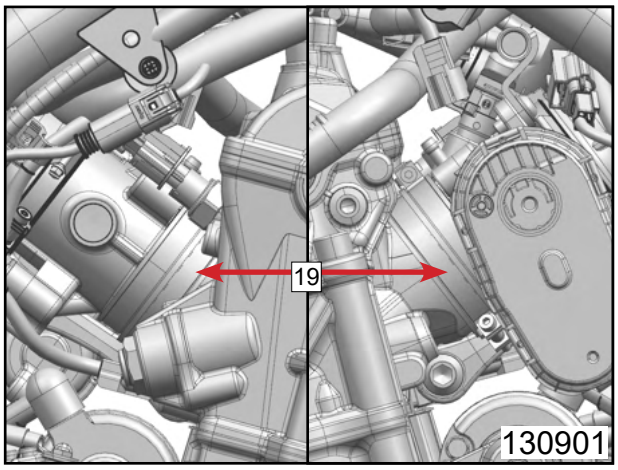
Remove hose clips 17.



Pull iff hose18.

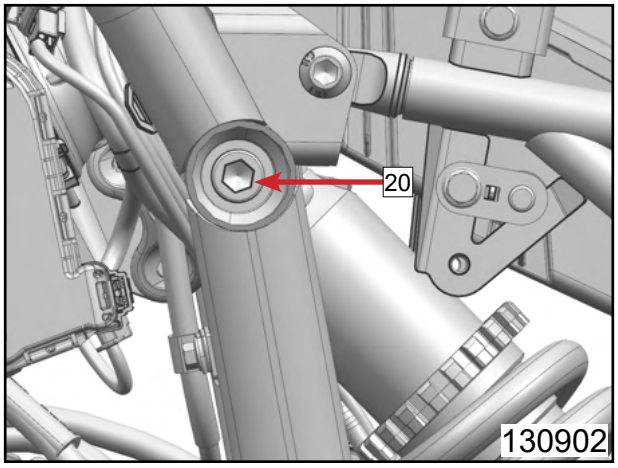


Loosen hose clips 19.
Pull off the throttle valve body toward the rear and remove to the side.

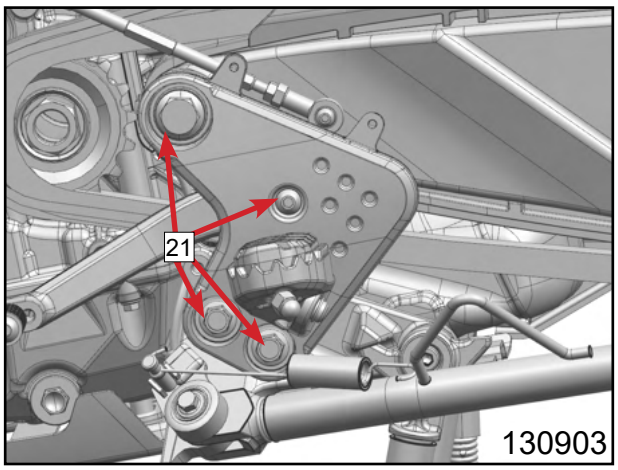


使用支撑物支撑在发动机底部。

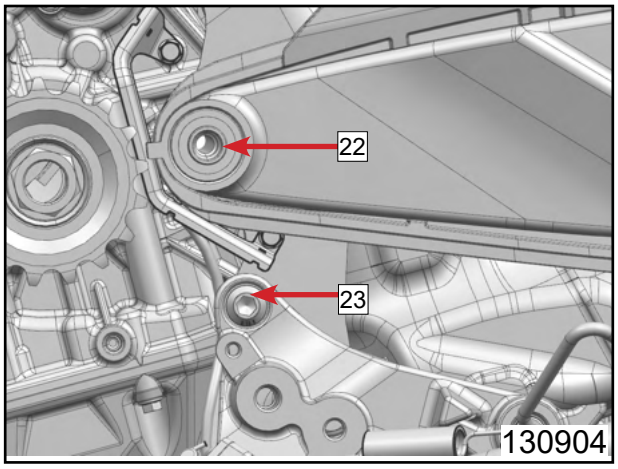
Remove protection cap.
Loosen screw 20.



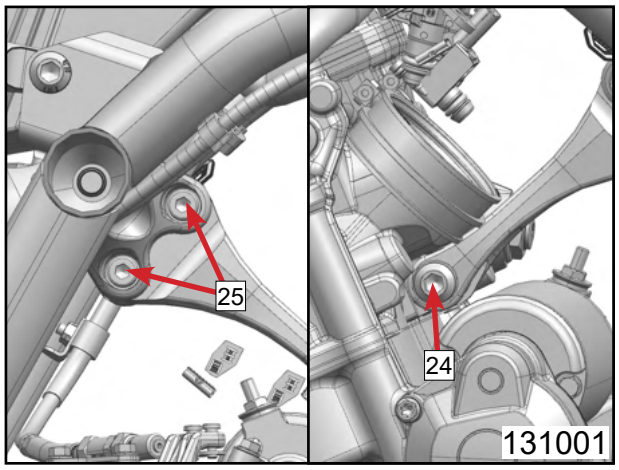
Remove screw 21.
Remove the footest bracket.



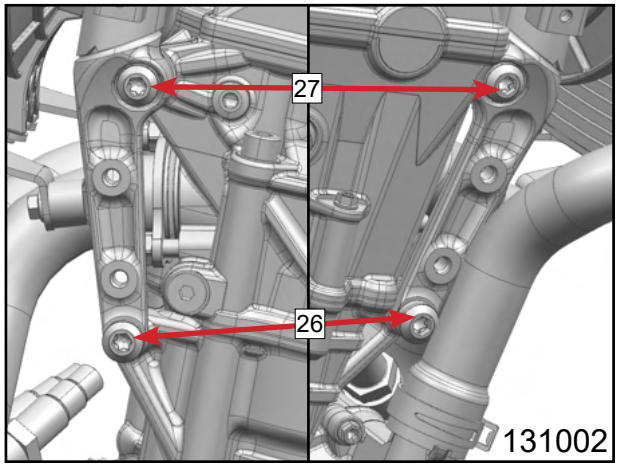
Remove screw 22.
Pull out swingram pivot 23 far enough so that the engine is released but the link fork remains secured.



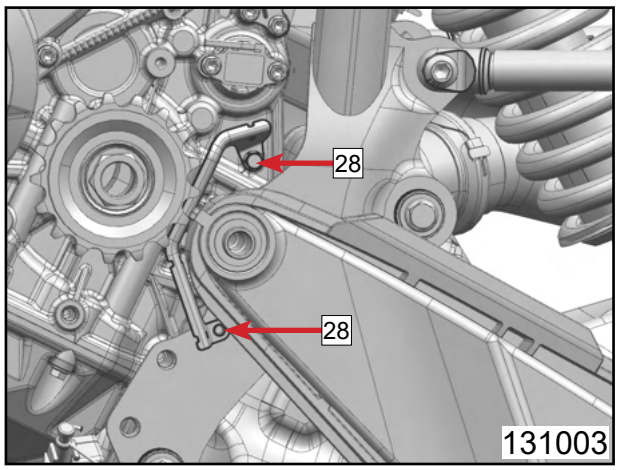
Remove screw 24.
Remove screws 25.
Take off the engine bearer.



Remove screws 26.
Remove screws 27.



Remove screws 28.



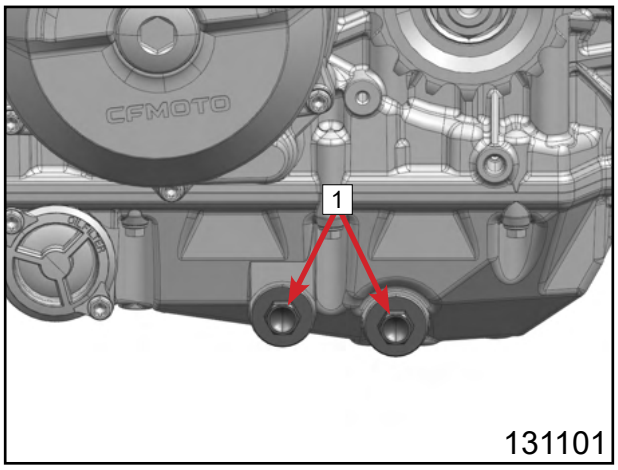
取下发动机。

Info
The help of an assistant is useful in this step. Make sure that the motorcycle is sufficiently secured againsr falling over. Cover the components them against damage.

13.2 Engine Disassembly

13.2.1 Draining the engine oil

Remove oil drain plugs (1) with the magnet, O-rings, and oil screen.
Completely drain the engine oil.



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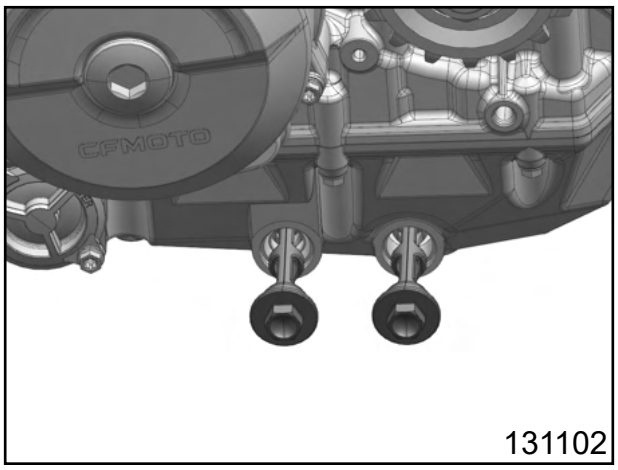

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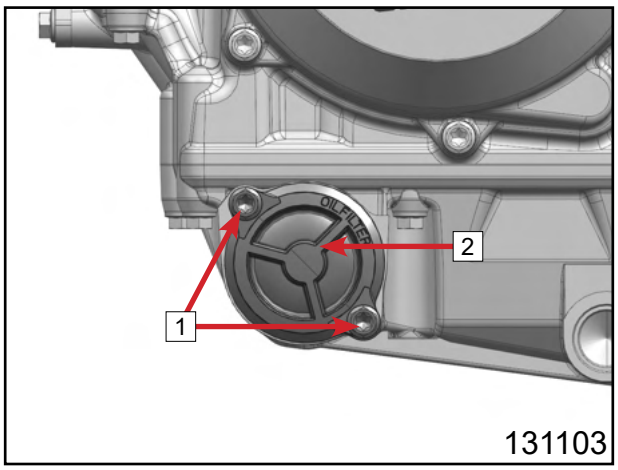
13.2.2 Removing the oil filter

Remove screws (1).
Take off oil filter cover (2) with the O-ring.



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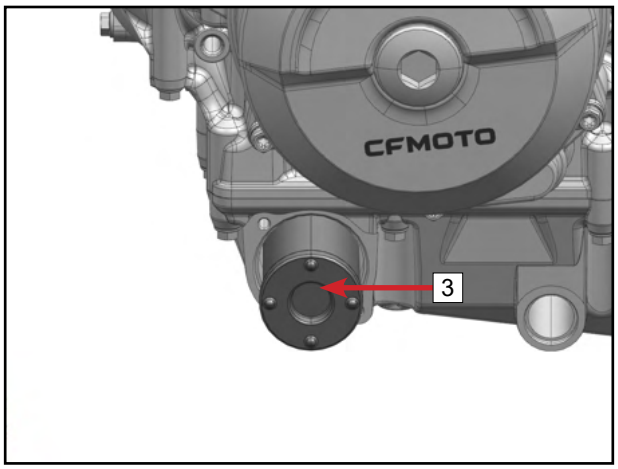
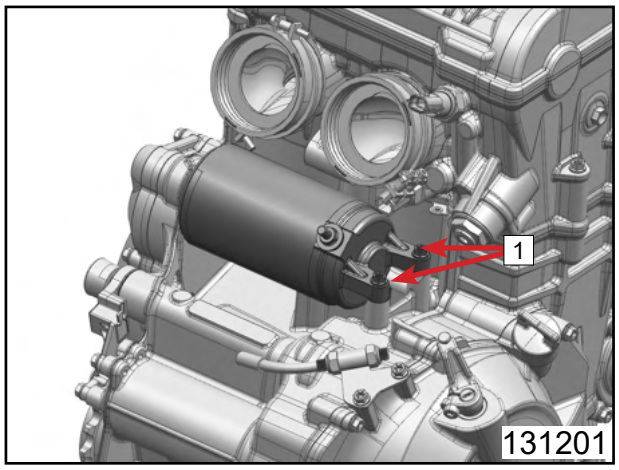
Remove oil filter (3).



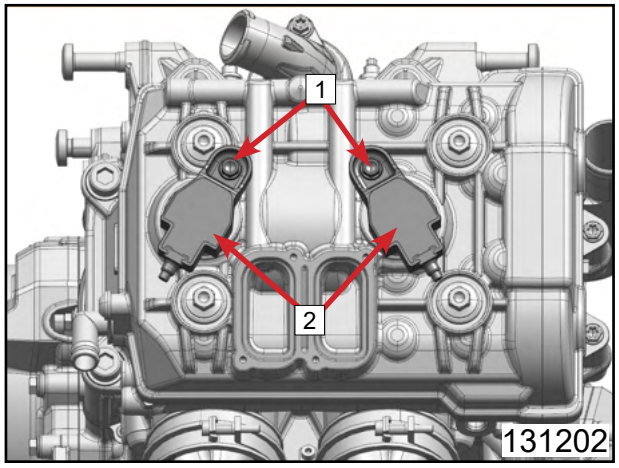
13.2.3 Removing the starter motor

Remove screw (1).
Take off the starter motor.

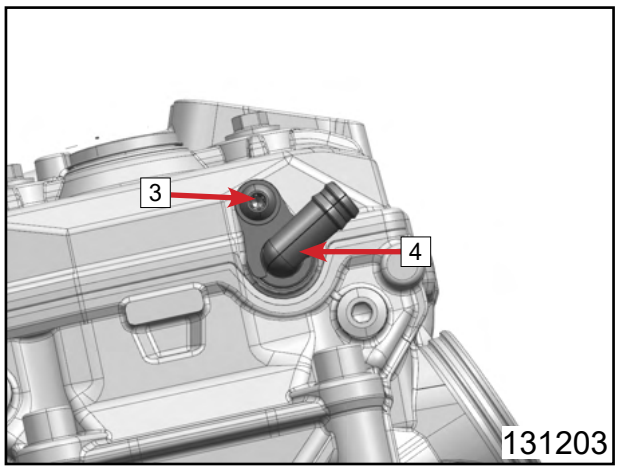


13.2.4 Removing the valve cover

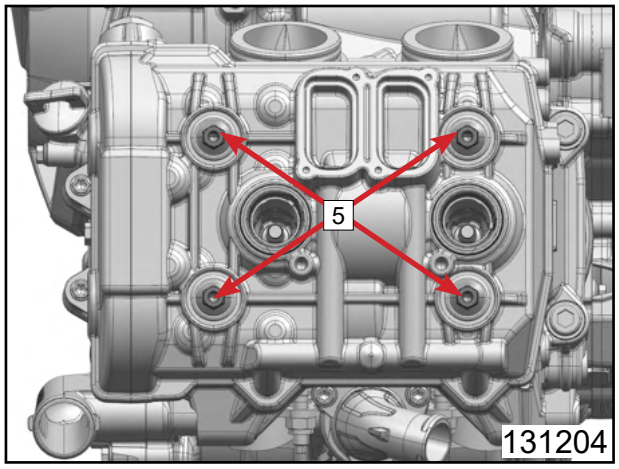
Remove screws (1).
Remove ignition coils (2).



Remove screw (3) with retaining bracket.
Pull off bleeder flange (4)

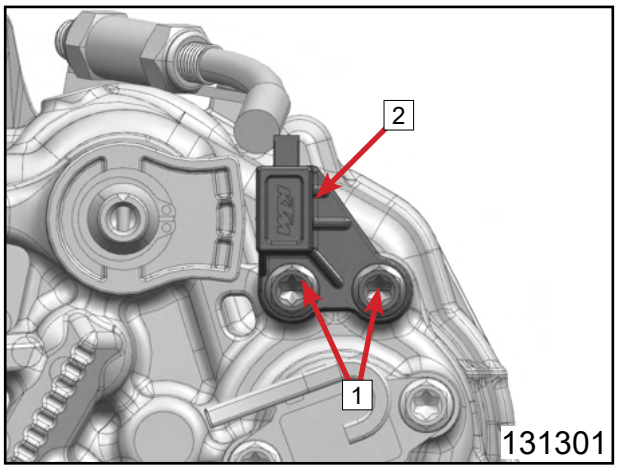


Remove screws (5) with gaskets.
Take off the valve cover with the valve cover seal.

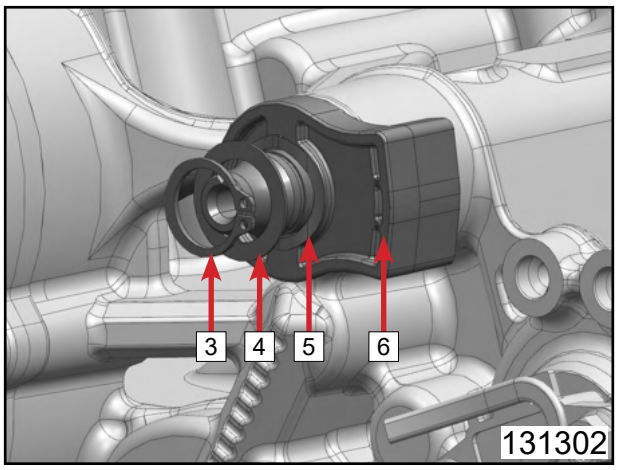


13.2.5 Removing shift shaft sensor

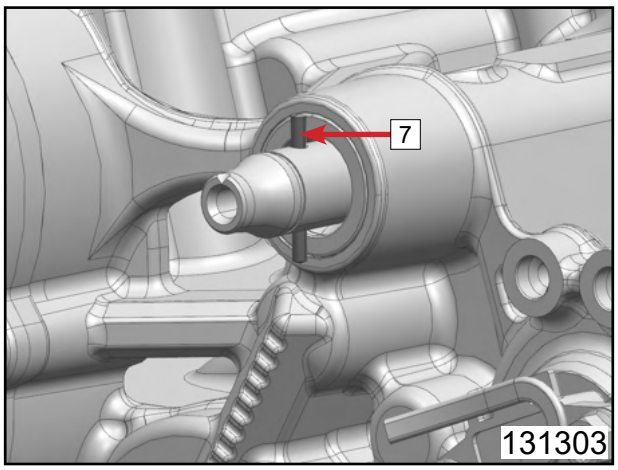
Remove screws (1).
Take off the shaft sensor (2).



Remove lock ring (3).
Remove washer (4).
Remove locating washer (5).
Take off magnetic holder (6).

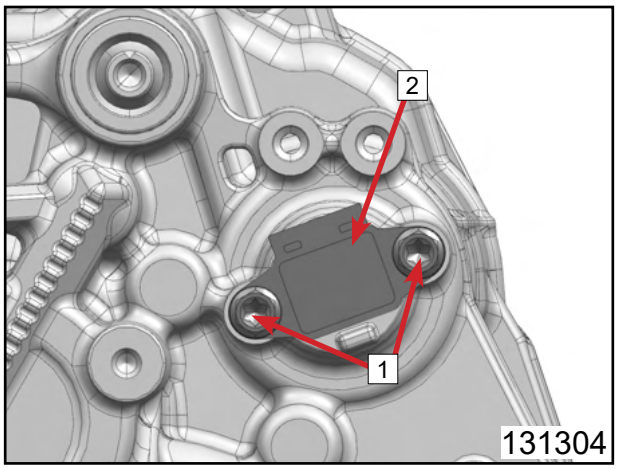


Remove pin (7).



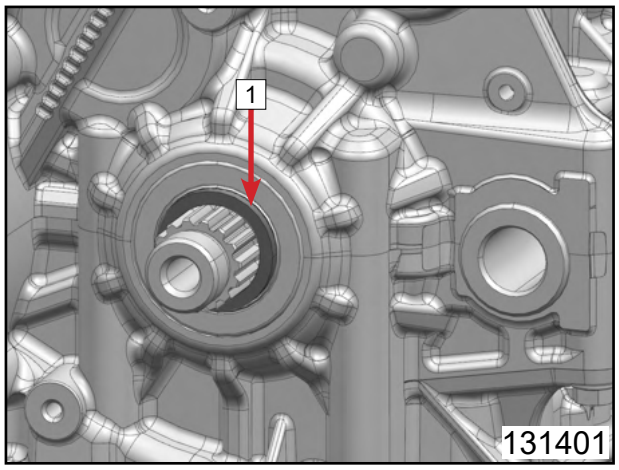
13.2.6 Removing the gear position sensor

Remove the cable tie.
Remove screws (1).
Take off gear position sensor (2).



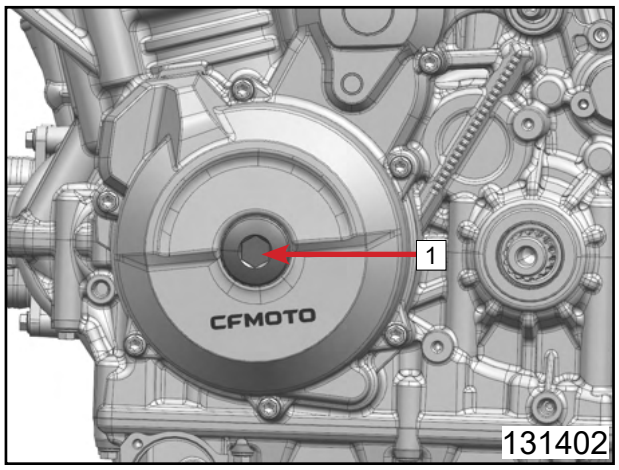
13.2.7 Removing the spacer

Remove spacer (1) of the countershaft.
Remove the O-ring.

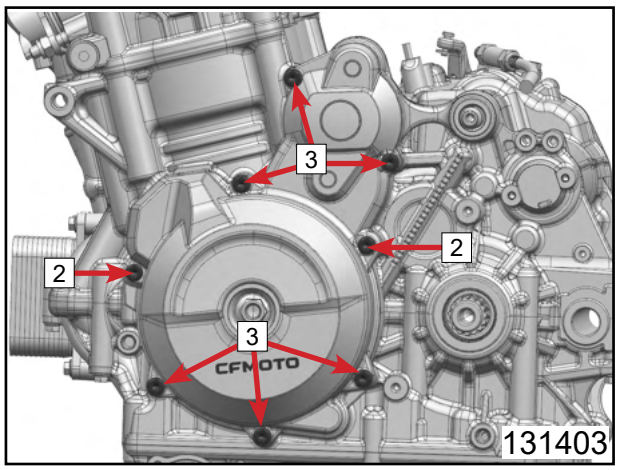


13.2.8 Removing the alternator cover

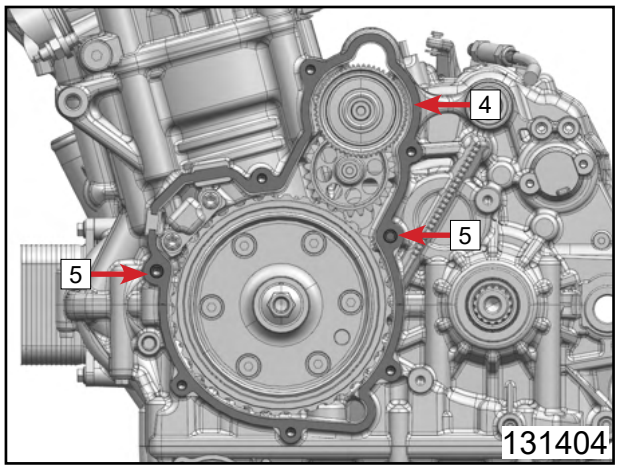
Remove screw plug (1) with the O-ring.



Remove screws (2) and (3).



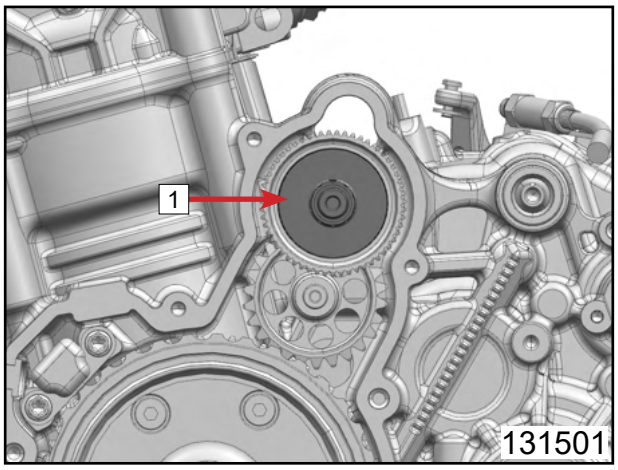
Mount puller ande pull off the alternator.
Take off alternator cover gasket (4).
Remove dowels (5).



13.2.9 Removing the torque limiter and the starter intermediate gear

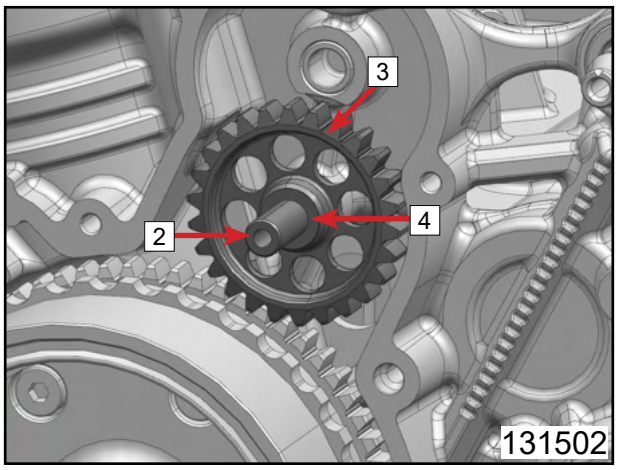
Take off torque limiter (1) with washer.

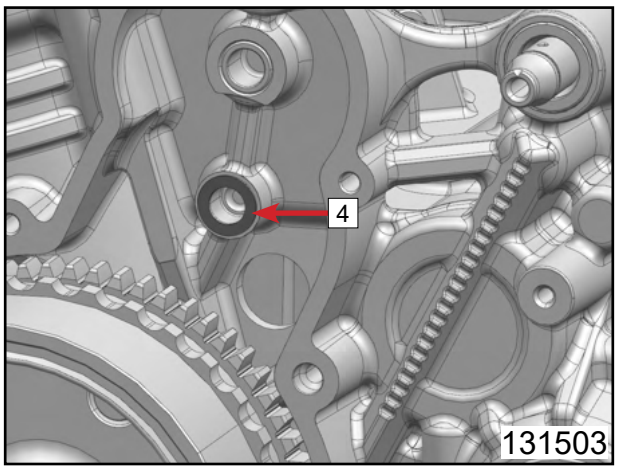
Info
The washer usually sticks to the engine case.



Take off shaft (2) and starter intermediate gear (3) with needle bearing and washers (4).

Info
The rear washer usually sticks to the engine case.



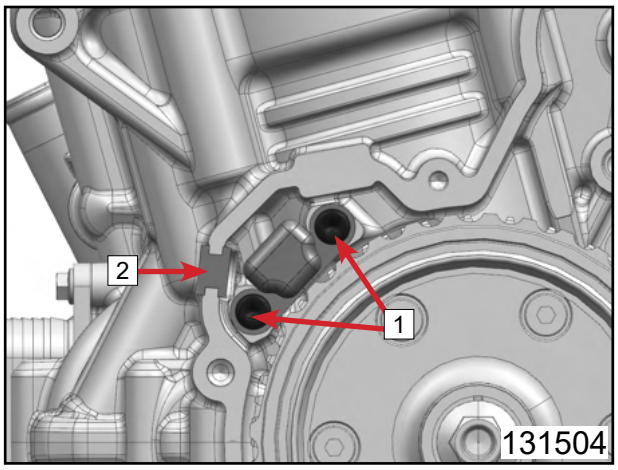


13.2.10 Removing the crankshaft speed sensor

Remove screws (1).

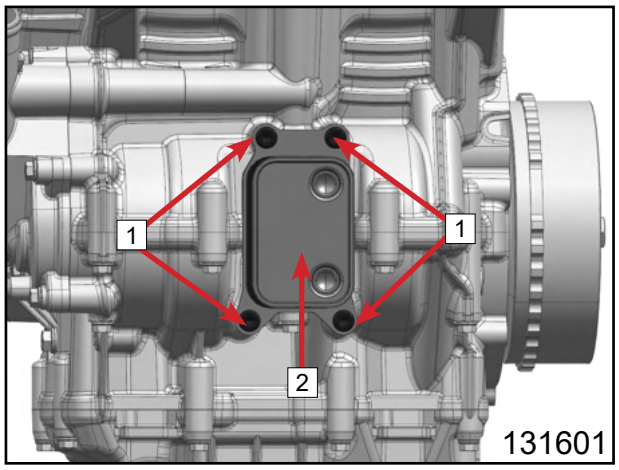
Pull rubber grommet (2) out of the engine case.

Remove the crankshaft speed sensor.

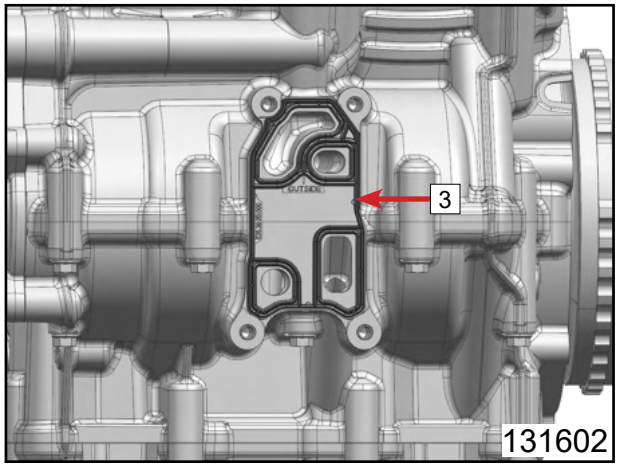


13.2.11 Removing the heat exchanger

Remove screws (1).
Take off heat exchanger (2).

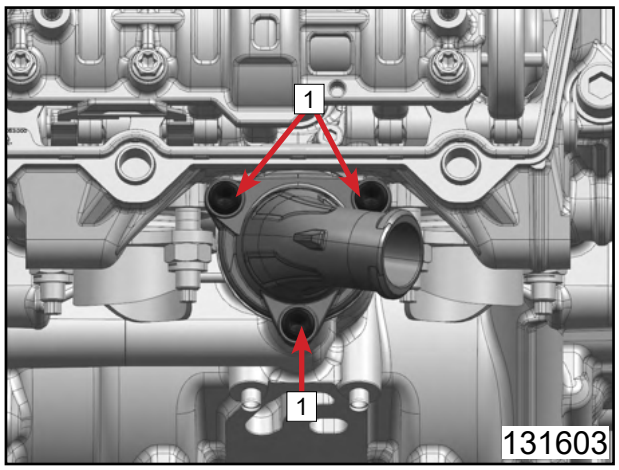


Remove gasket (3).

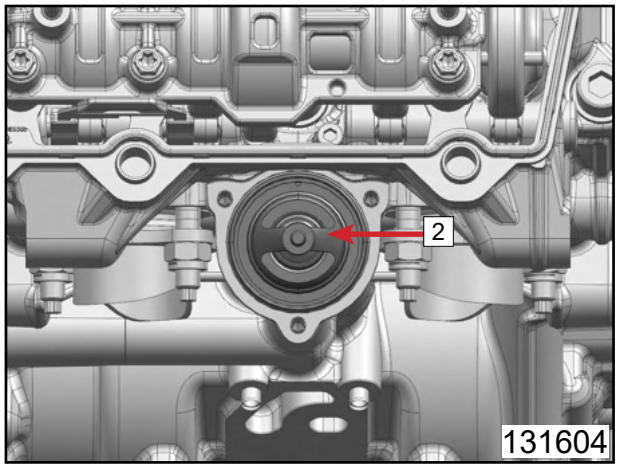


13.2.12 Removing the thermostat

Remove screws (1).
Take off the thermostat case.

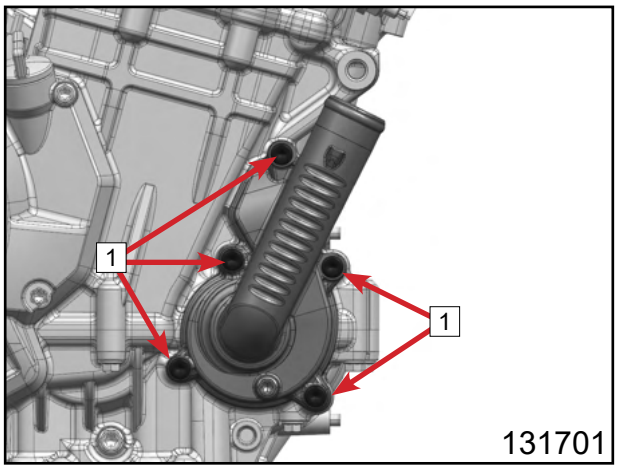


Remove thermostat (2).

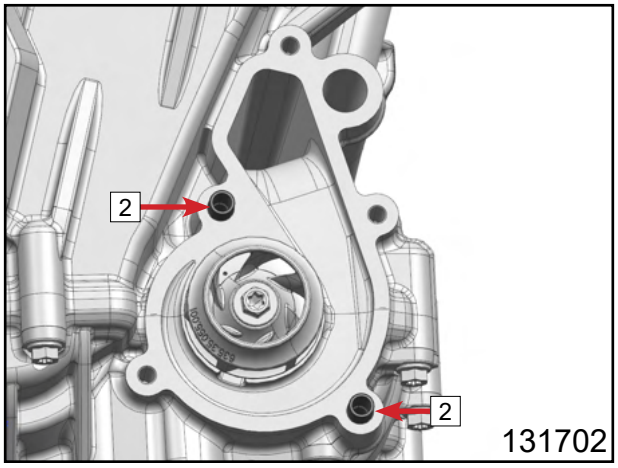


13.2.13 Removing the water pump impeller

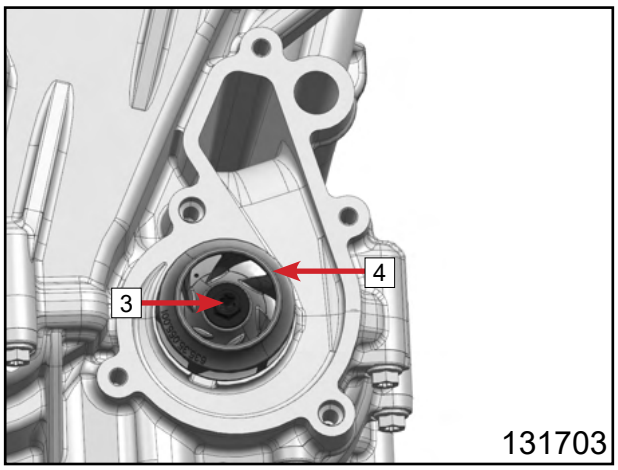
Remove screws (1).
Take off water pump cover with the gasket.



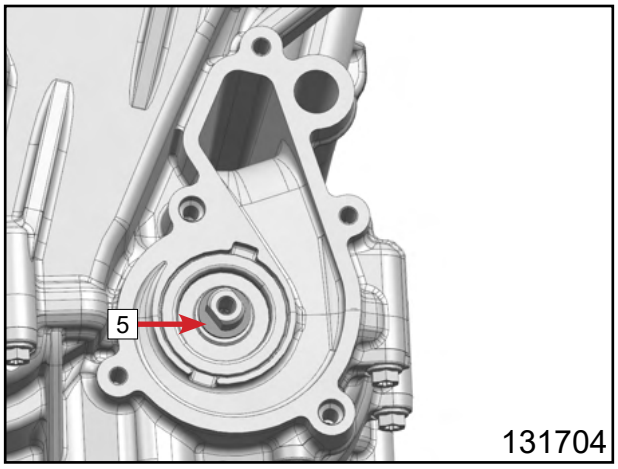
Remove dowels (2).



Remove screw (3).
Remove water pump impeller (4).

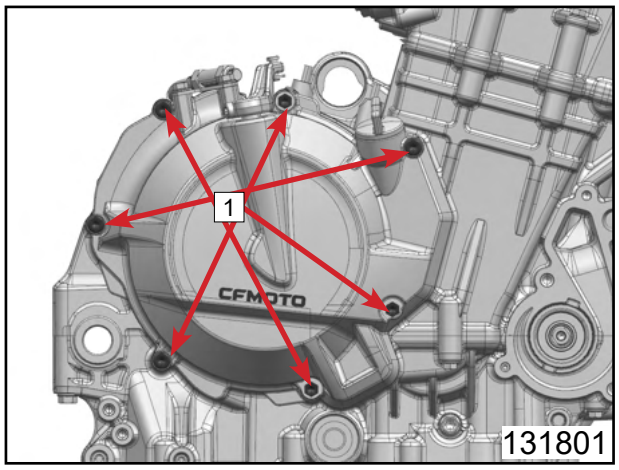


Remove from washer (5).

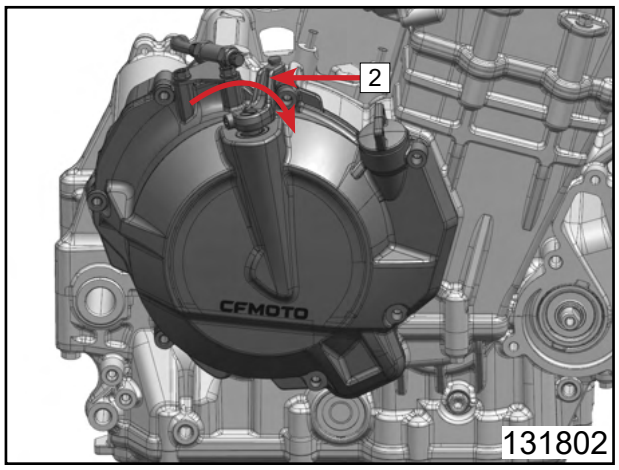


13.2.14 Removing the clutch cover

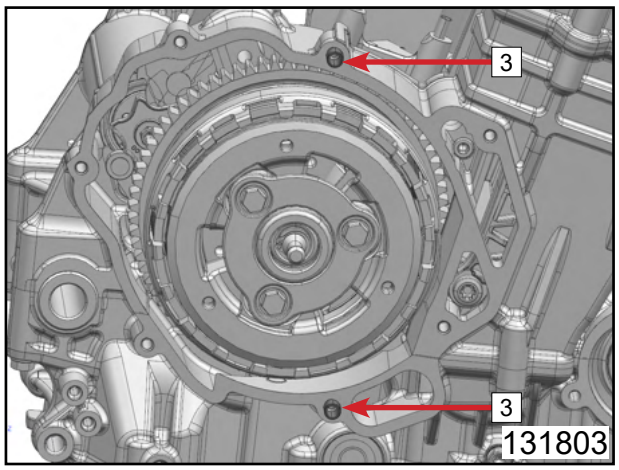
Remove screws (1).



Swivel the clutch lever (2) clockwise and take off clutch cover with clutch cover gasket.



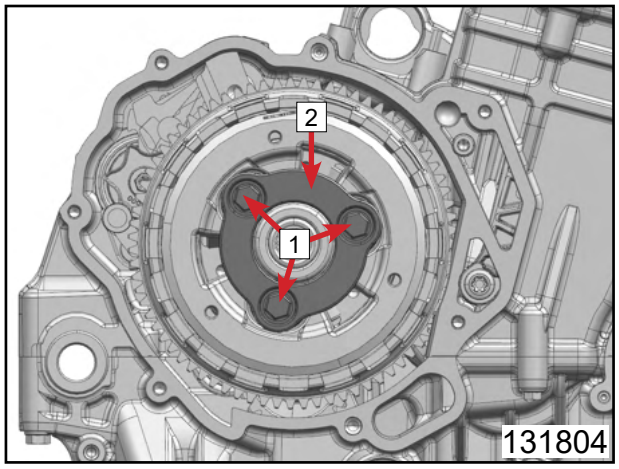
Remove dowels (3).



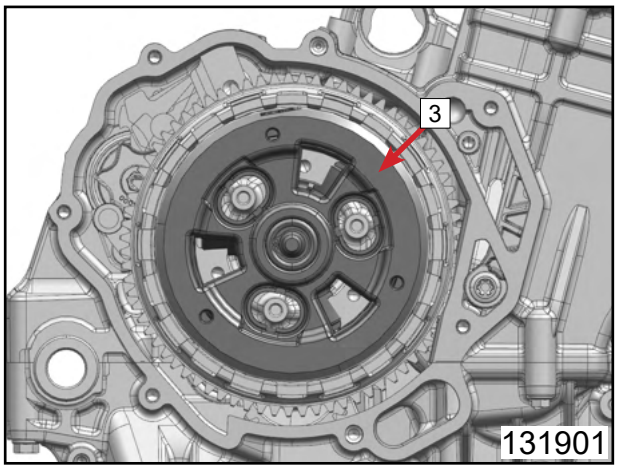
13.2.15 Removing the clutch discs

Remove screws (1).

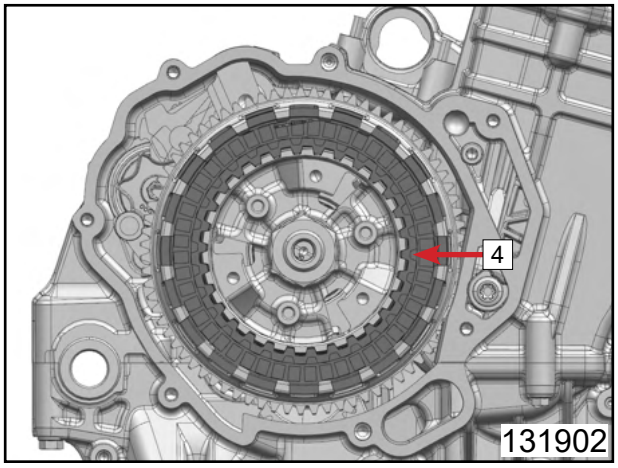
Take off clutch center (2) and the springs.



Remove clutch pressure cap (3).

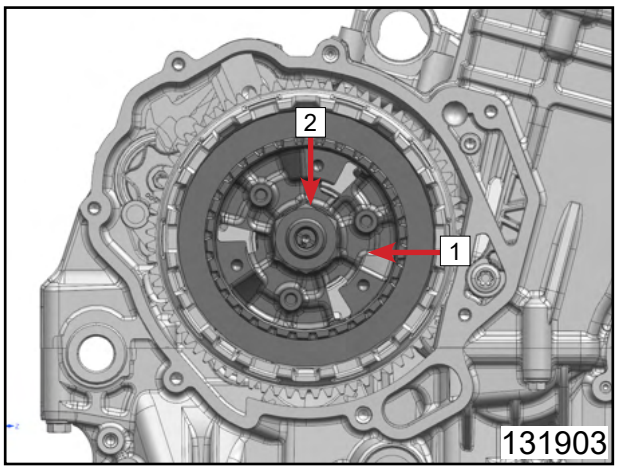


Remove clutch discs (4), support ring, and pretension ring.



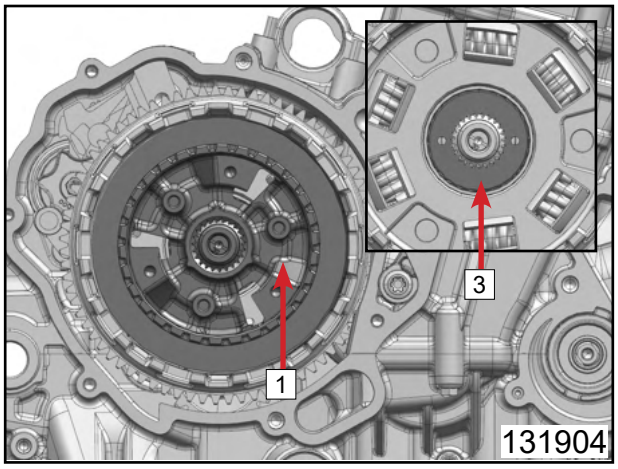
13.2.16 Removing the clutch basket

Hold the inner clutch hub (1) with the special tool (Holding wrench).
Remove nut (2) with the washer.



Take off inner clutch hub (1) and washer (3).

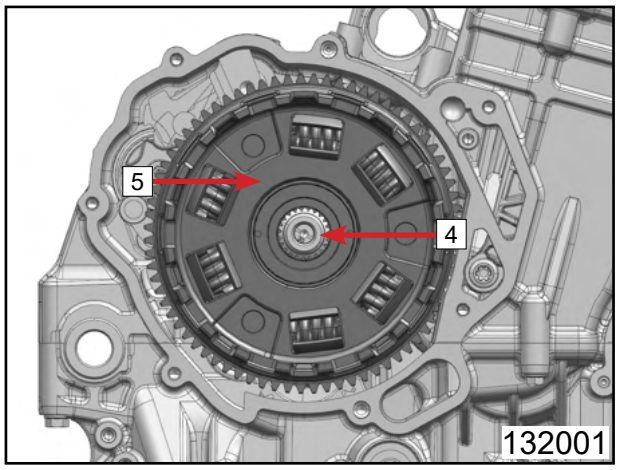
Info
The washer usually sticks to the inner clutch hub.



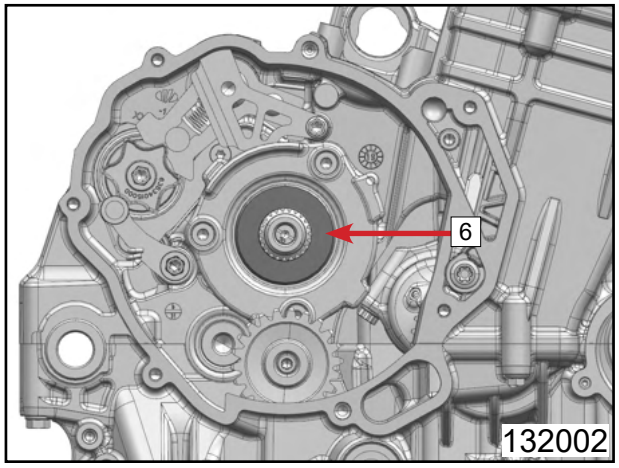
Remove needle bearing (4).

Info
Use a magnetic rod to make disassembly easier. Do not use pliers, as otherwise the needle bearing will be damaged.

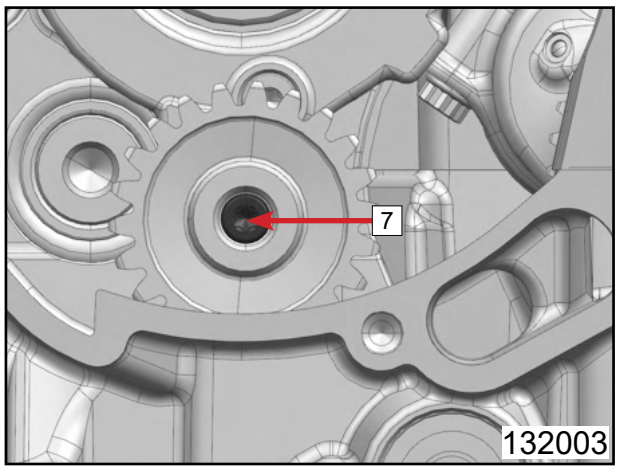
Take off clutch basket (5).



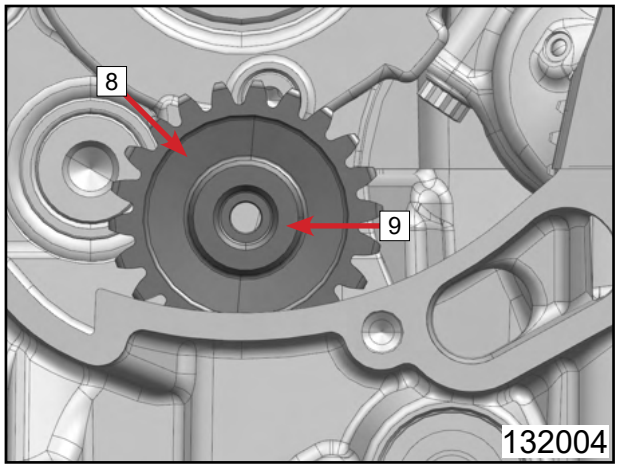
Remove washer (6).



Remove screw (7).

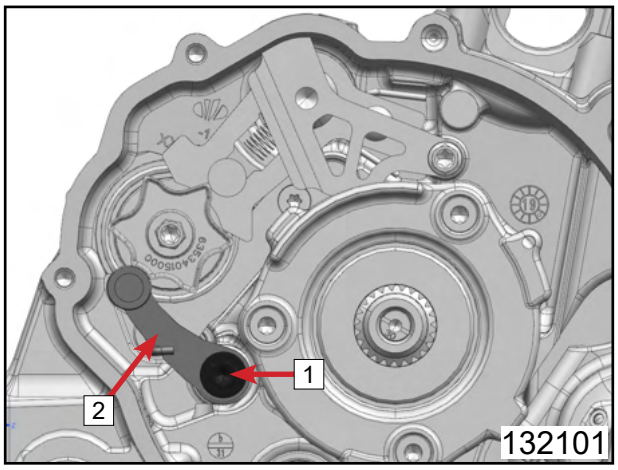


Take off intermediate gear (8) with collar bushing (9).



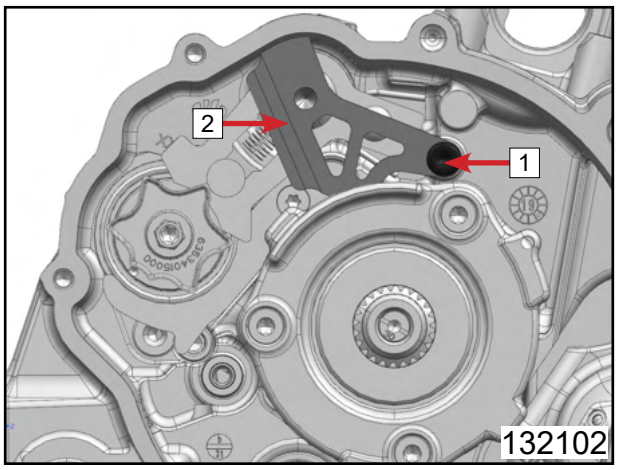
13.2.17 Removing locking lever

Remove screw (1).
Take off locking lever (2) with the sleeve and spring.

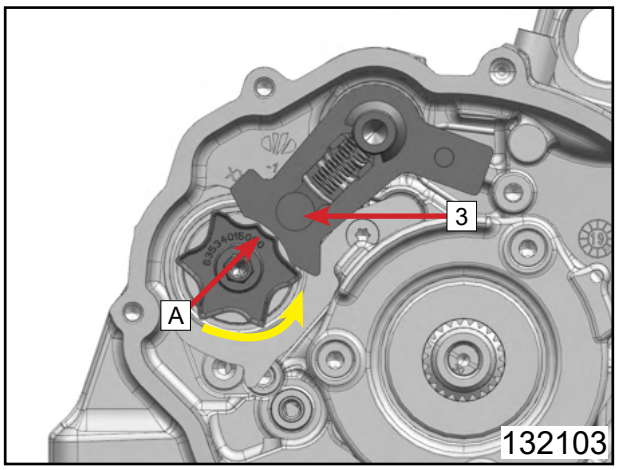


13.2.18 Removing the shift shaft

Remove screw (1).
Take off retaining bracket (2).

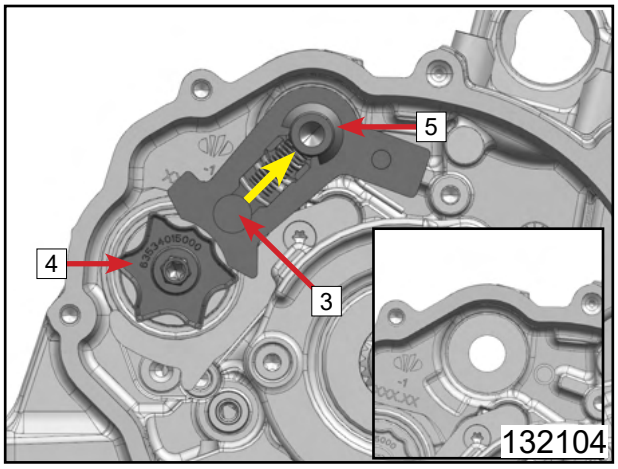


Twist shift drum until the neutral position (A) is aligned with the sliding plate (3).



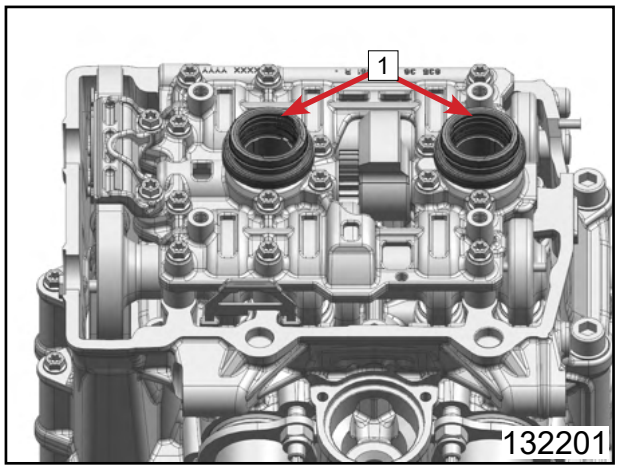
Push sliding plate (3) away from shift drum locating unit (4).
Remove shift shaft (5) with washer (6)

Info
The washer usually sticks to the engine case.

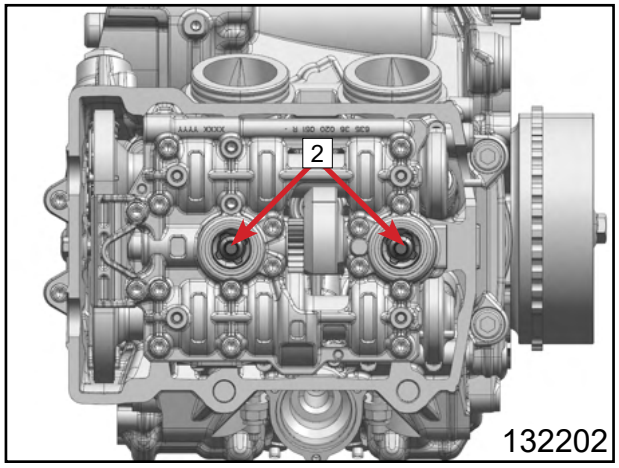


13.2.19 Removing the spark plugs

Remove spark plug shaft inserts (1) with the gaskets.



Remove the spark plugs (2).

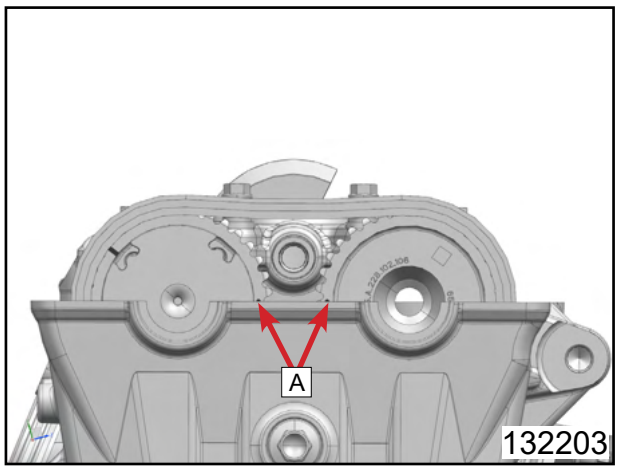


13.2.20 Removing the camshafts

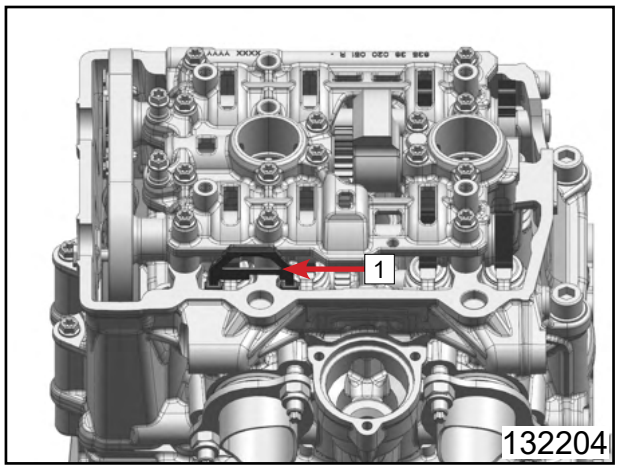
Turn the crankshaft counterclockwise and set it to ignition top dead center of cylinder 2.

The OT2 marking (A) are aligned with the sealing surface.

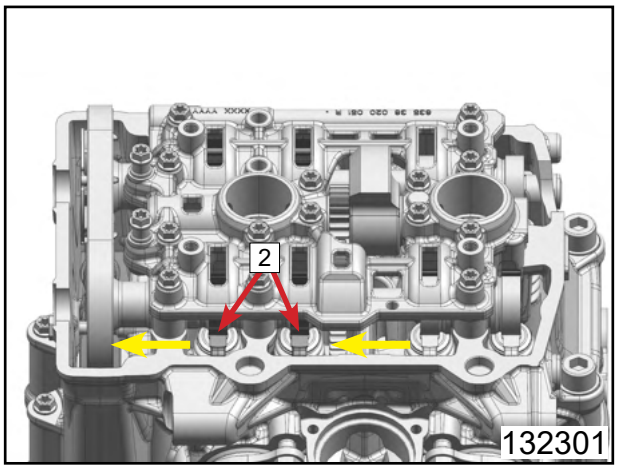
Info
The OT2 markings are dot markings.



Remove cam lever clip (1).

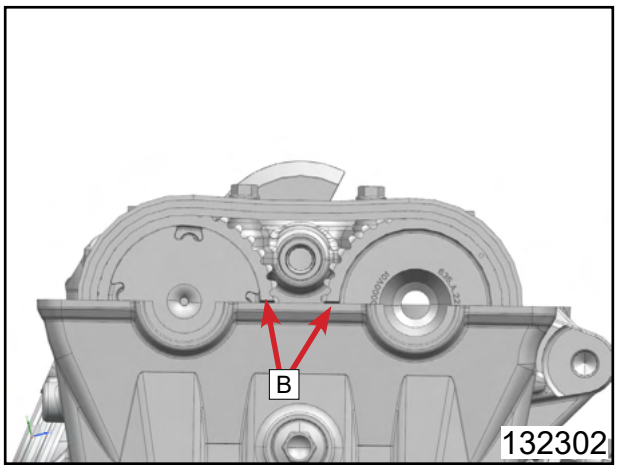


Push exhaust cam lever (2) on cylinder 2 to the side.



Set the crankshaft to ignition top dead center of cylinder 1.
The OT1 marking (B) are aligned with the sealing surface.

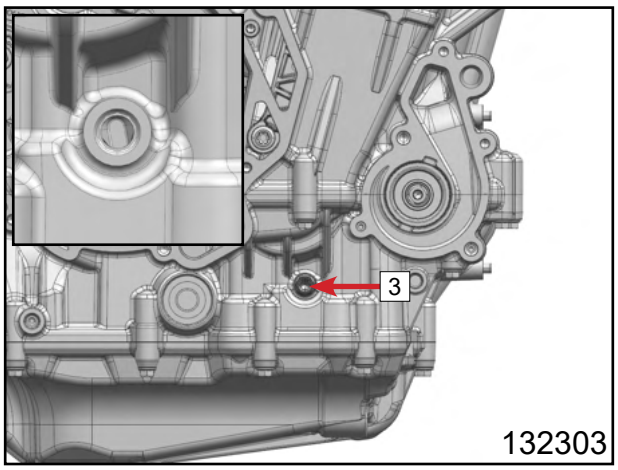
Info
The OT1 markings are dot markings.



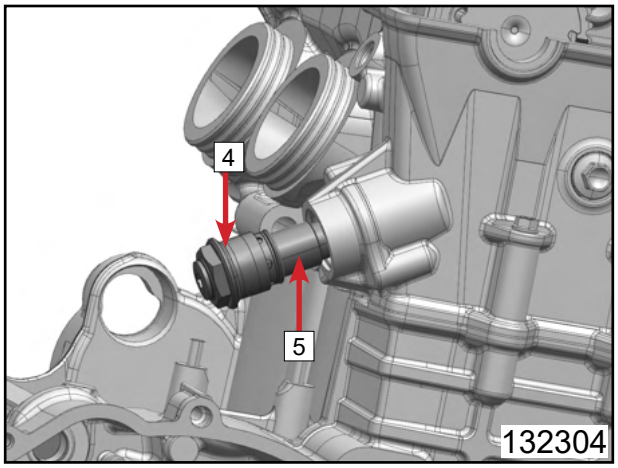
Remove screw (3) with the washer.

Info
Look through the hole to check that the position hole of the crankshaft is visible.

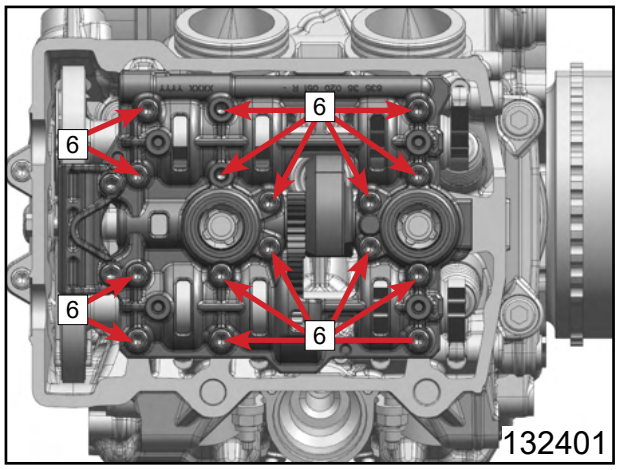
Mount special tool (locking screw).



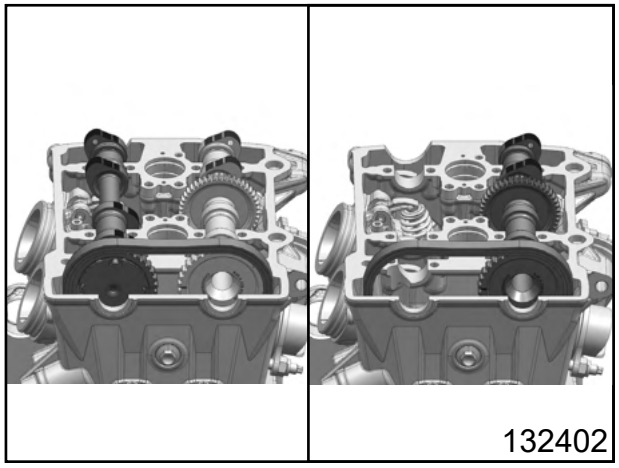
Remove screw (4) with the O-ring.
Take off timing chain tensioner (5) with O-ring.



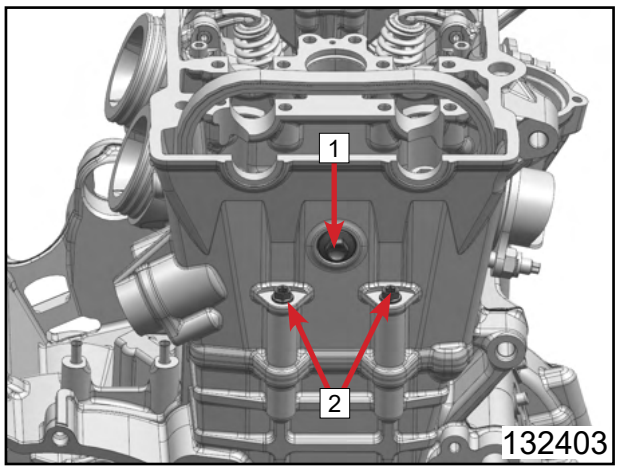
Loosen and remove screws (7) from the outside to the inside.
Take off camshaft bearing bridge with balancer shaft.



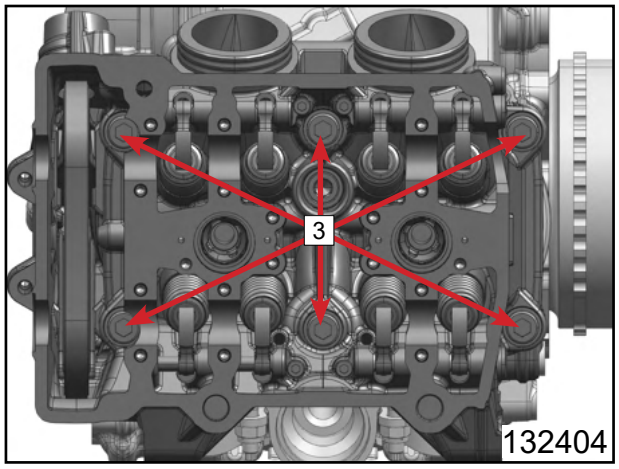
Raise the camshafts at the rear and take the timing chain off the rear sprocket.
Remove camshaft.



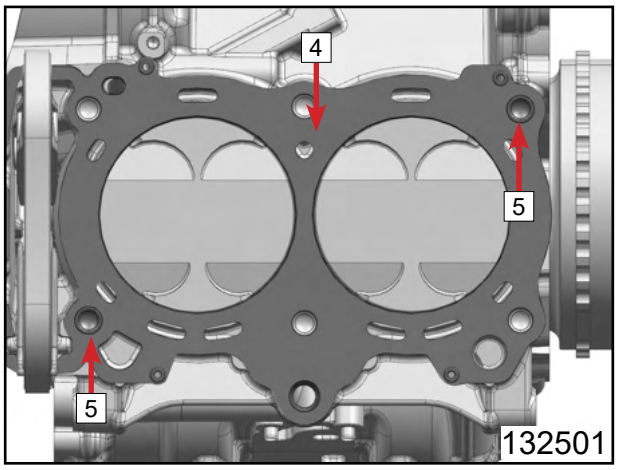
13.2.21 Removing the cylinder head
Remove screw (1) with gasket.
Remove screw (2).



Loose screws (3) in a crisscross pattern and remove them with the washers.
Take off the cylinder head.

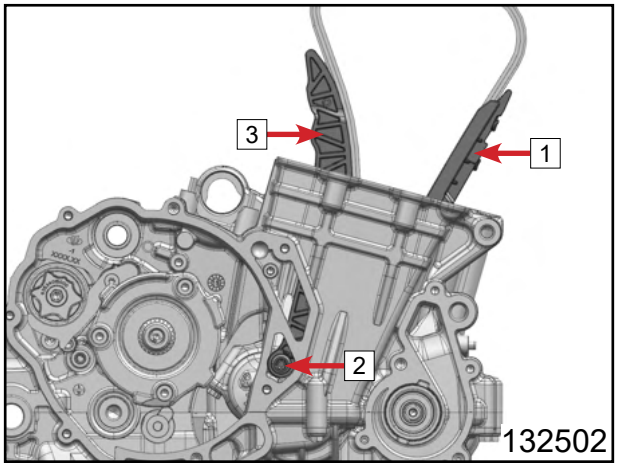


Take off cylinder head gasket (4).
Remove dowels (5).



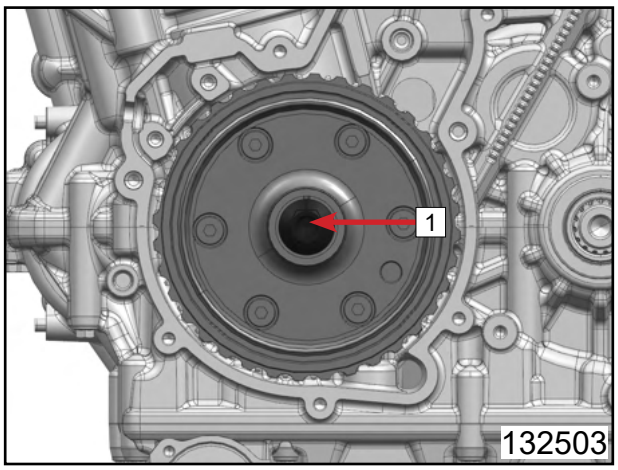
13.2.22 Removing the timing chain rails

Remove guide rail (1) upward.
Remove screw (2).
Remove tensioning rail (3) with support bushing upward.

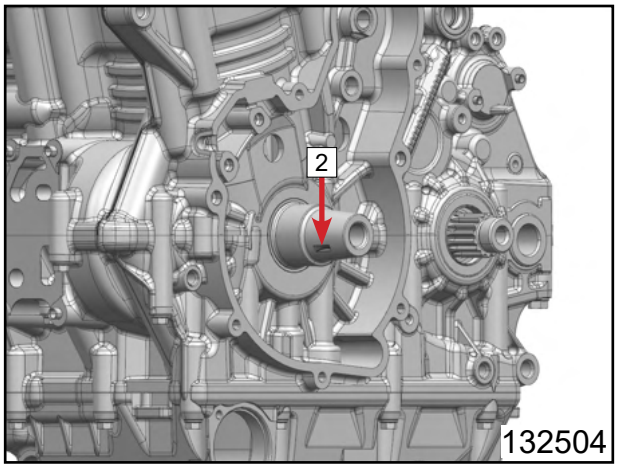


13.2.23 Removing the rotor

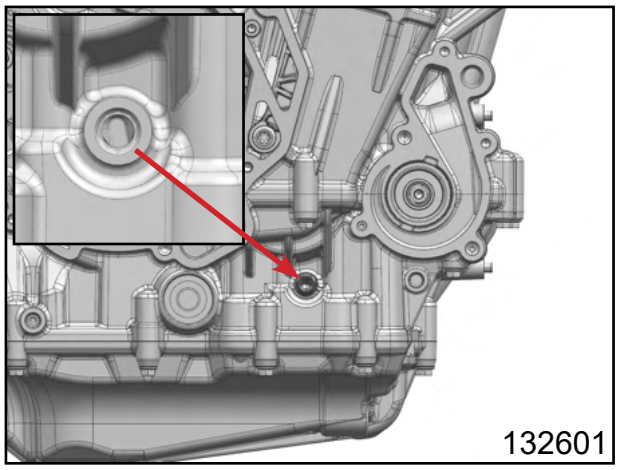
Remove screw (1).
Mount special tool (pressing tool).
Mount special tool (puller) on the rotor.
Hold it tight using the special tool and pull off the rotor by turning the screw in.
Remove the special tool.



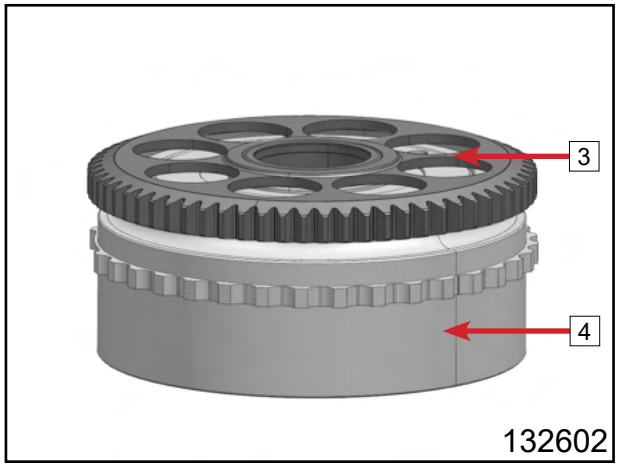
Remove woodruff key (2).



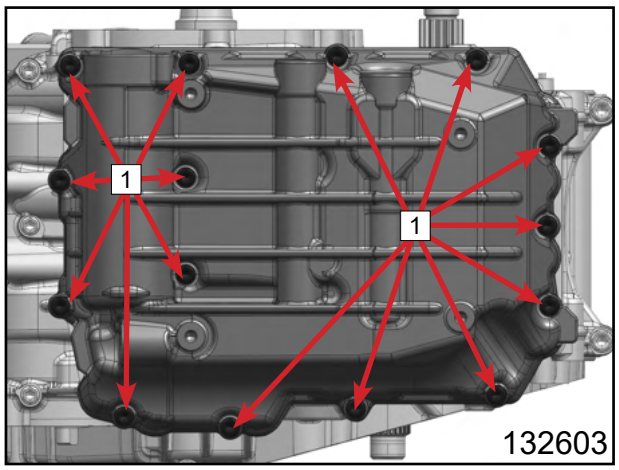
Remove special tool (locking screw).



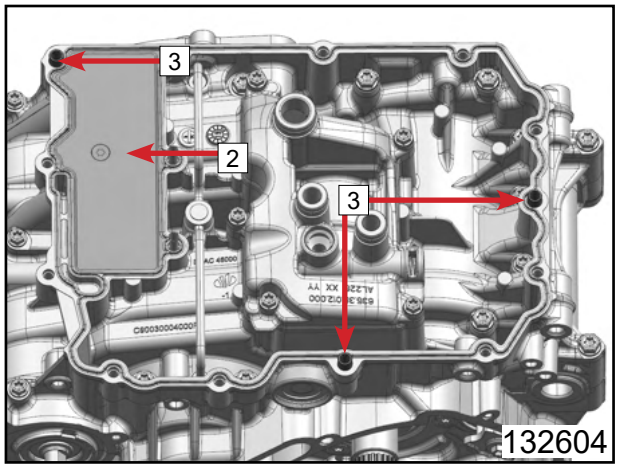
Take off freewheel gear (3) from rotor (4).



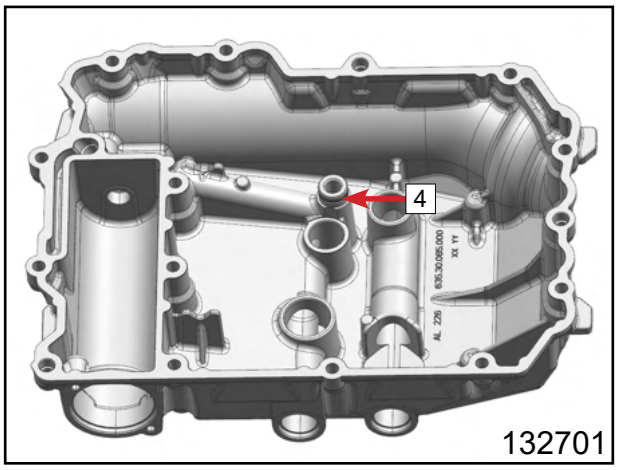
13.2.24 Removing the oil pan
Remove screws (1).
Take off oil pan.



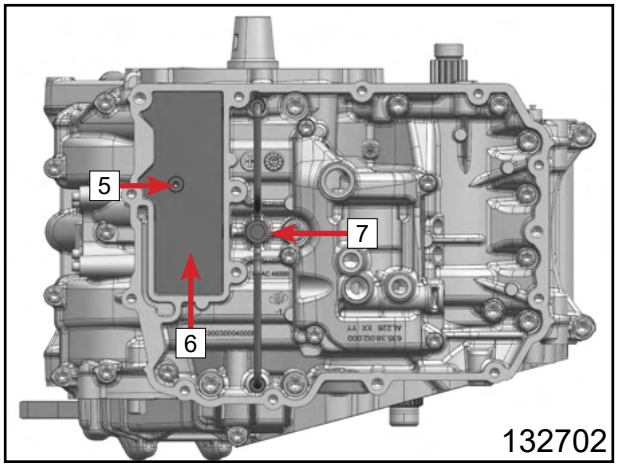
Take off gasket (2).
Remove dowels (3).



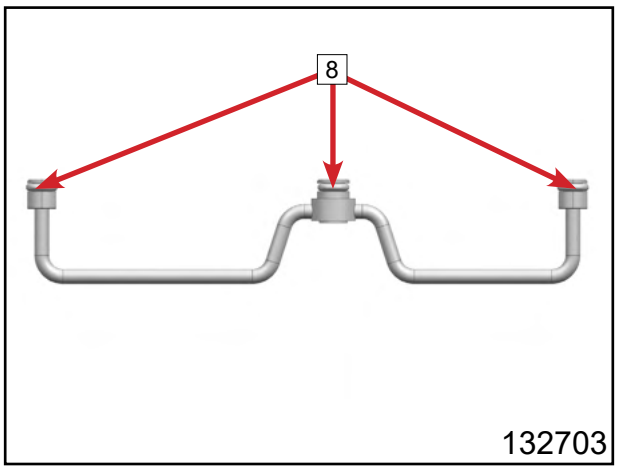
Remove O-ring (4).



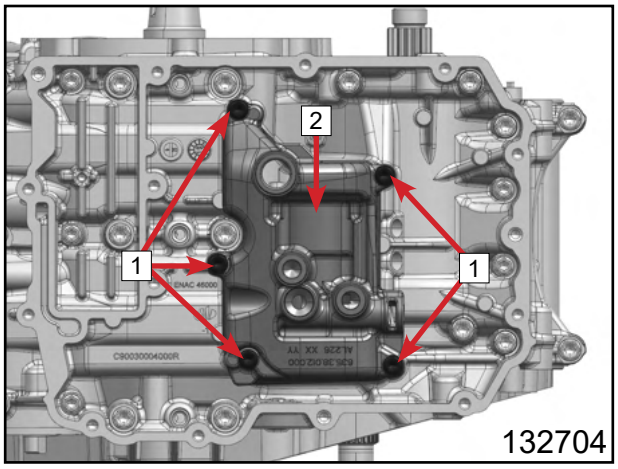
Remove screw (5).
Remove pressure plate (6).
Take off oil line (7).



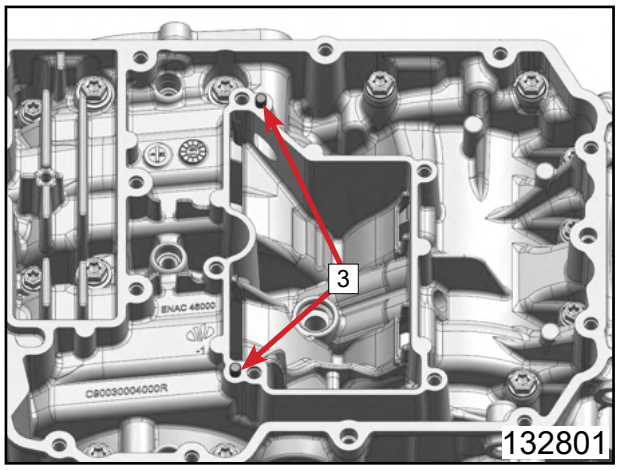
Take off O-rings (8) from the oil line.



13.2.25 Removing the oil pump unit
Remove screws (1).
Take off oil pump unit (2).

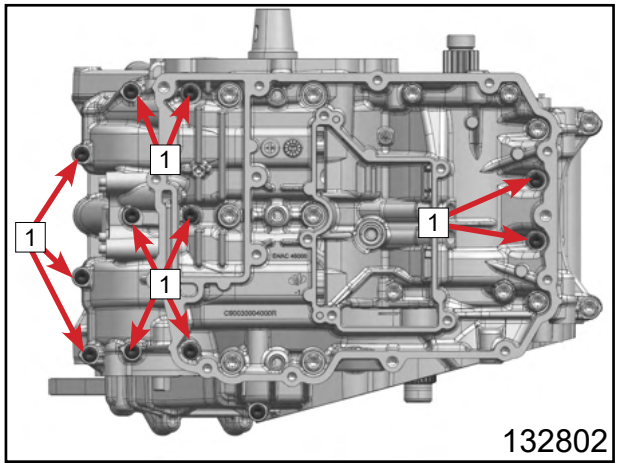


Remove locating pins (3).

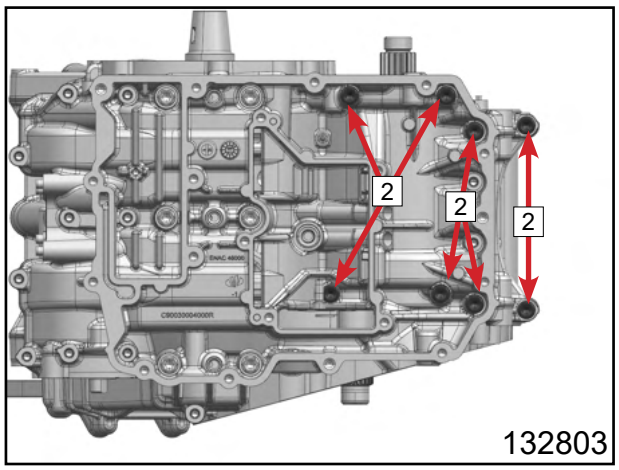


13.2.26 Removing the engine case downwards

Remove screws (1).

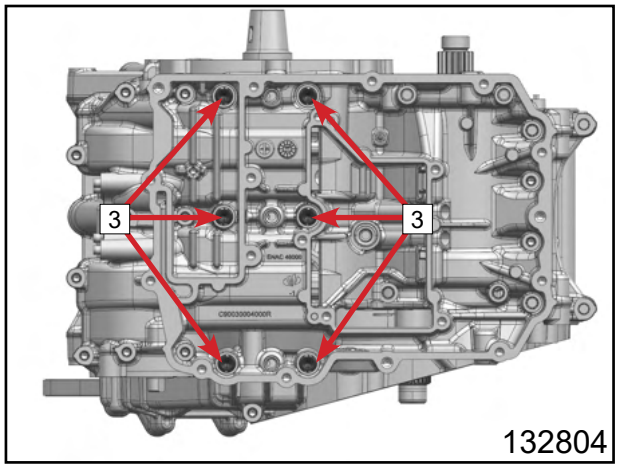


Remove screws (2).

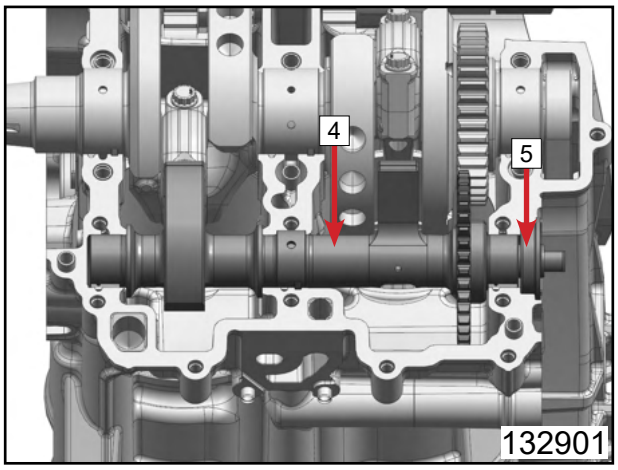


Loosen screws (3) in a crisscross pattern and remove them with the washers.
Take off lower section of the engine case.

Info
Ensure that the bearing shells remain in place.

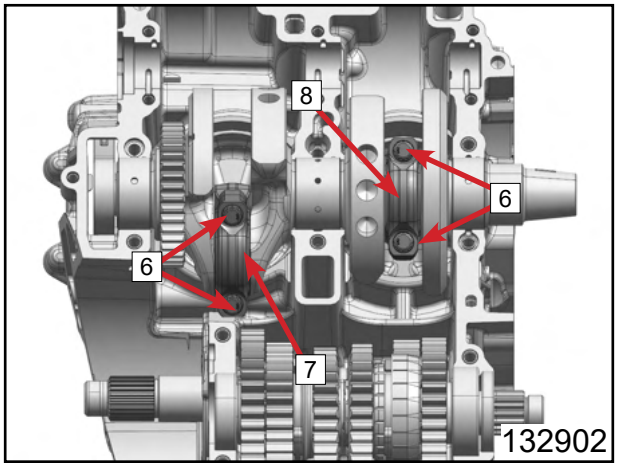


Remove balancer shaft (4) with radial shaft seal ring (5).

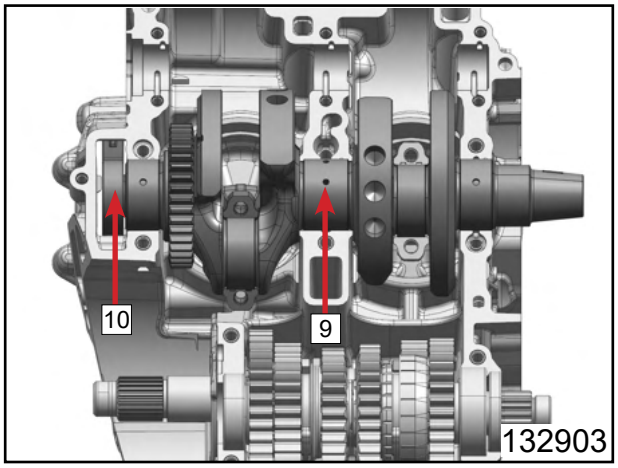


Remove screws (6).
Take off conrod bearing covers (7) and (8).

Info
The conrod bearing covers and connecting rods are marked together and must never be mixed up.

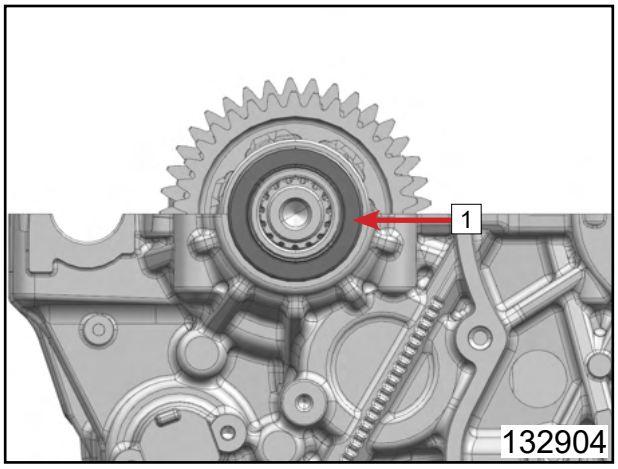


Remove crankshaft (9) with timing chain (10).

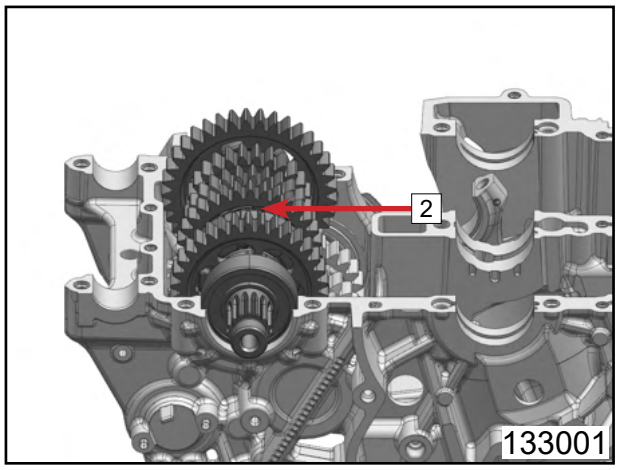


13.2.27 Removing the transmission shafts

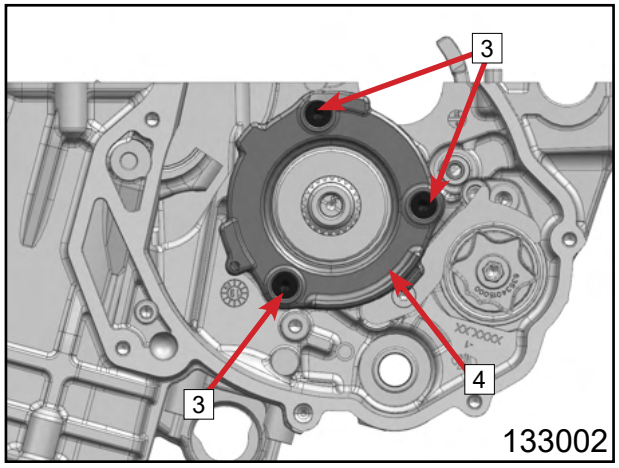
Remove radial shaft seal ring (1).



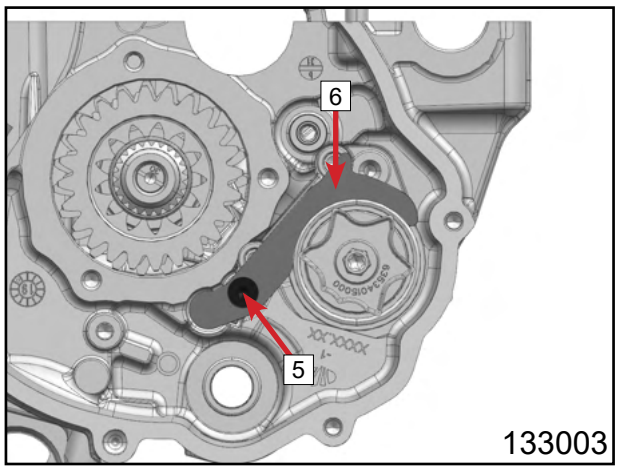
Take off countershaft (2).



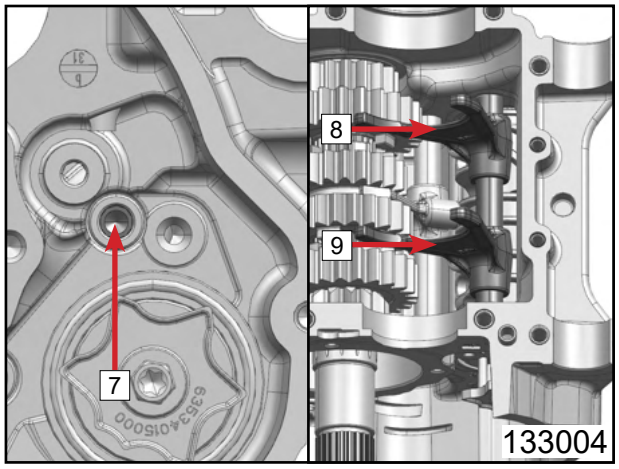
Remove screws (3).
Take off bearing support (4) with bearing.



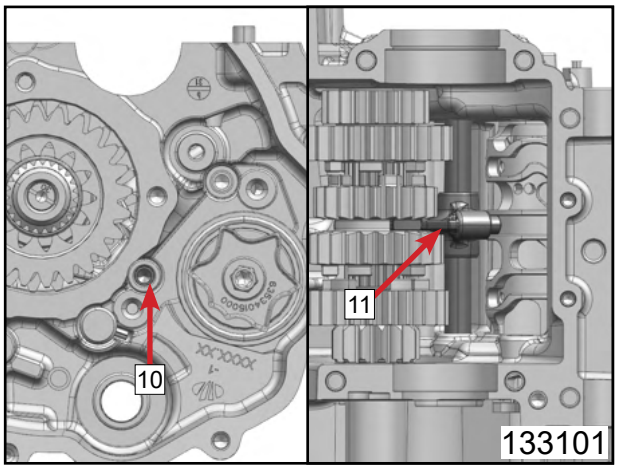
Remove screw (5).
Take off retaining bracket (6).



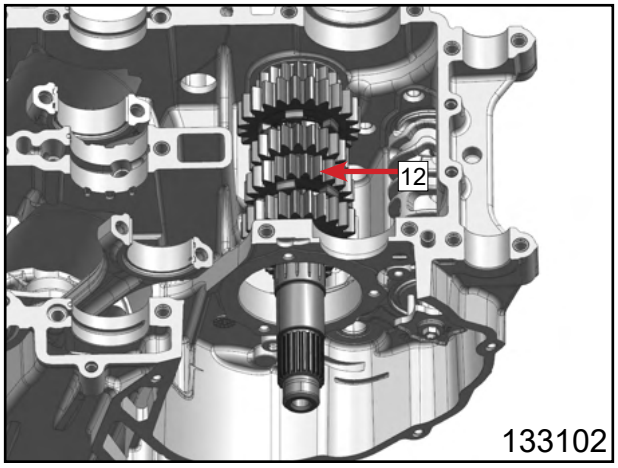
Mount appropriate M8 screw in the shift rail (7).
Remove shift rail (7).
Remove shift forks (8) and (9).



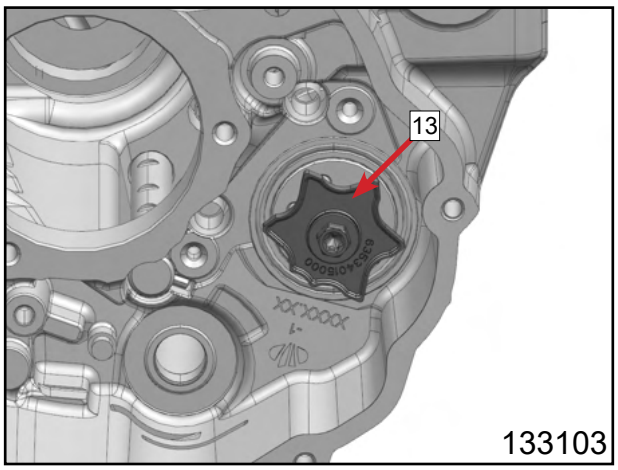
Mount appropriate M8 screw in the shift rail (10).
Remove shift rail (10).
Remove shift forks (11).



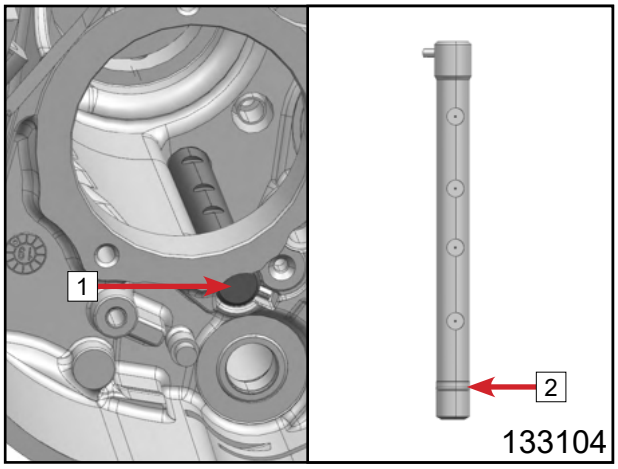
Remove main shaft (12).



Remove shift drum (13).



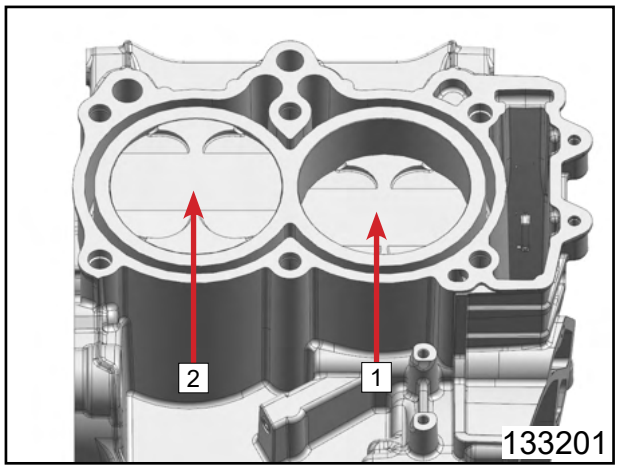
13.2.28 Removing oil spray tube.
Remove oil spray tube (1).
Remove O-ring (2).



13.2.29 Removing the piston

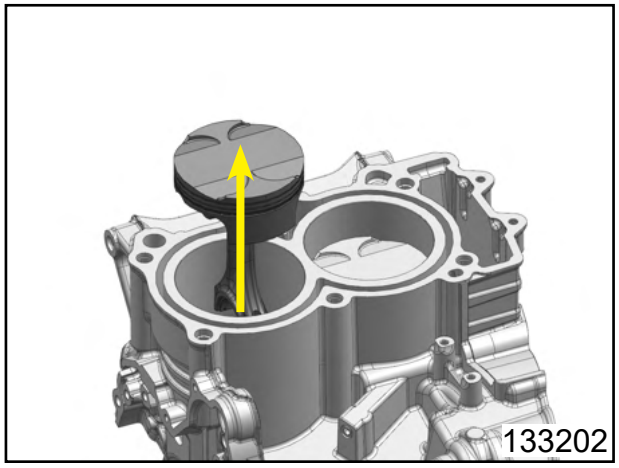
Swing the upper section of the engine case upward.
Mark the piston (1) and (2).
Remove any deposits in the upper area of the cylinders.

Info
Ensure that the cylinders are not damaged.

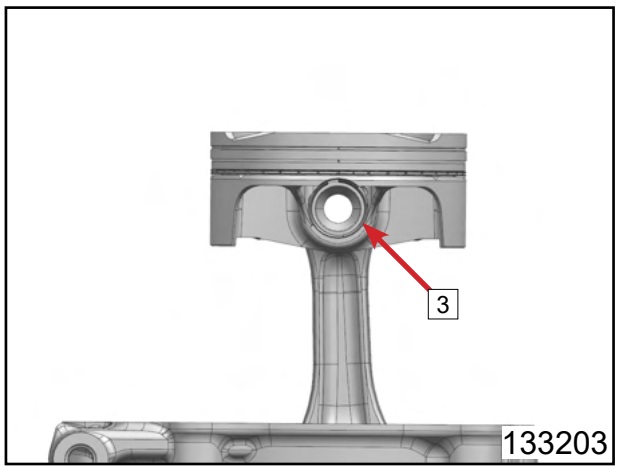


Remove piston with connecting rod upward out of the cylinder.

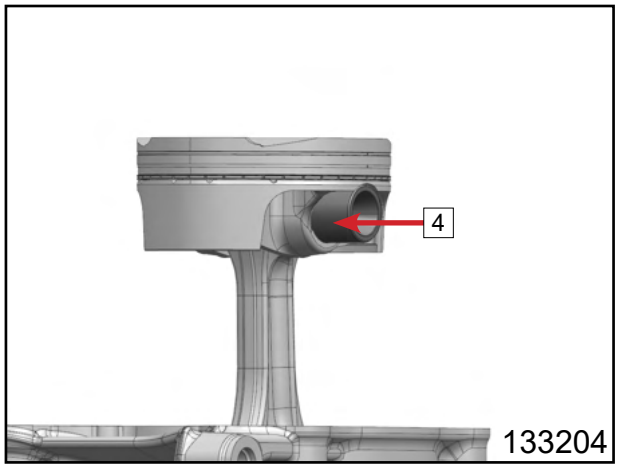
Info
Make sure that the connecting rod does damage the cylinder.



Clamp connecting rod in the vise.
Guideline: Use soft jaws.
Remove piston ring lock (3).



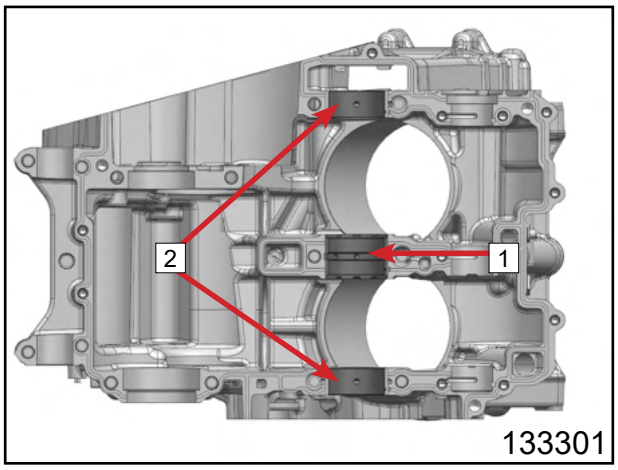
Remove piston pin (4).
Take off the piston.
Make the piston and connecting rods belonging together correspondingly.



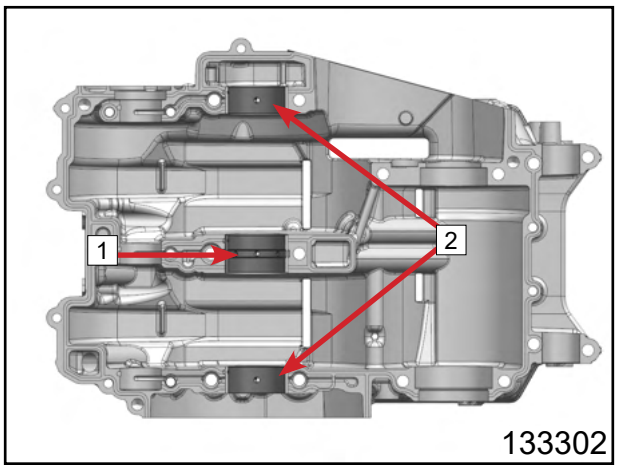
13.3 Working on individual parts

13.3.1 Checking the radial clearance of crankshaft bearings

Remove any remnants of sealing compound and clean the sections of the engine case thoroughly.
Clean bearing shells (1) and (2).

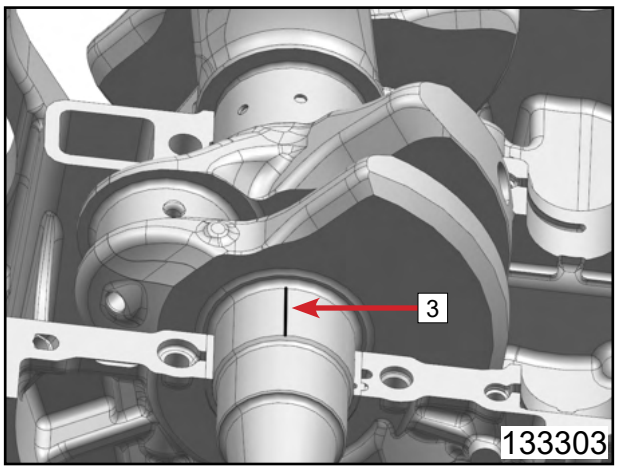


133301



133302

Position crankshaft in the upper section of the engine case.
Insert plastigauge clearance gauge (3) 90° offset to the bearing joint.

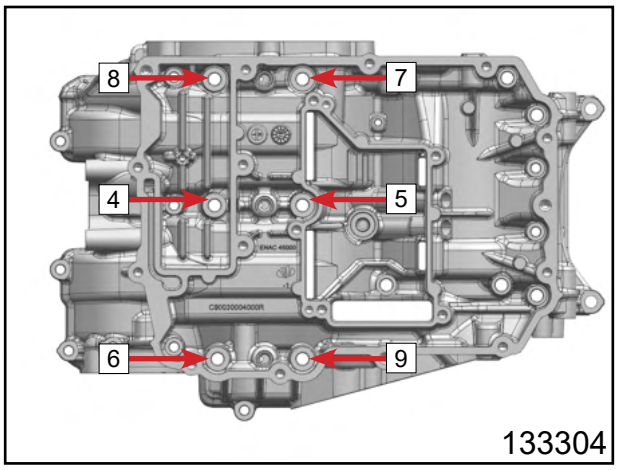


133303

Mount lower engine case.
mount screws with washers and tighten in the order (4) to (9).
guideline:

Screw,engine case	M8×90	25N•m(18.4lbf•ft) Screw support greased

Info
Do not twist crankshaft.



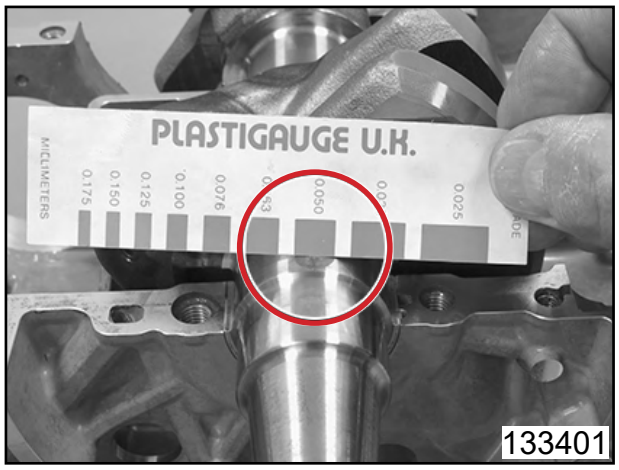
133304

Remove lower section of the engine case again. Compare plastigauge clearance gauge with the data on the packaging.
Guideline :

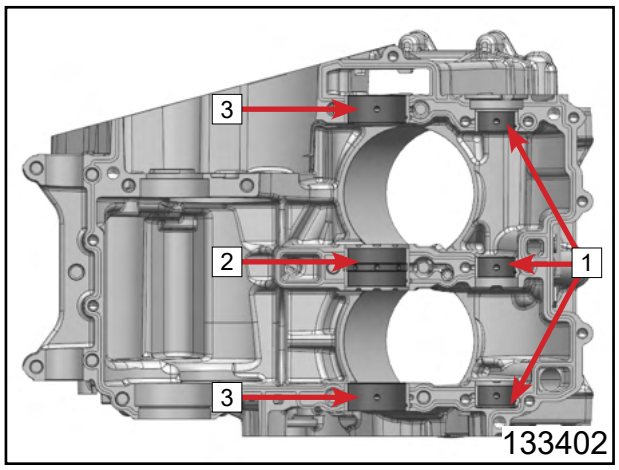
Crankshaft bearing	
New condition	0.030mm~0.060mm
Wear limit	0.080mm

Info
The width of the plastigauge clearance gauge indicates the bearing play.

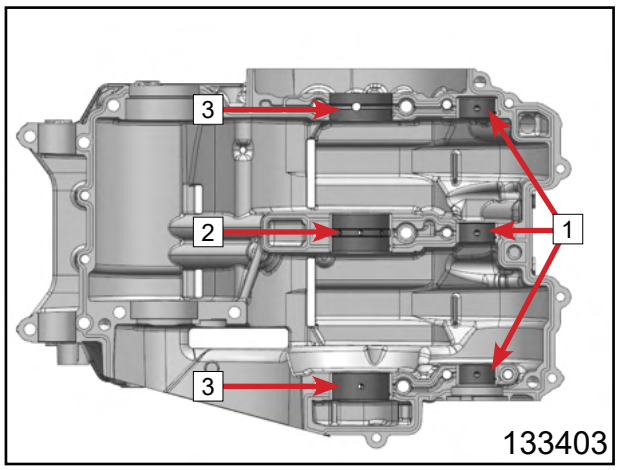
Clean the part.



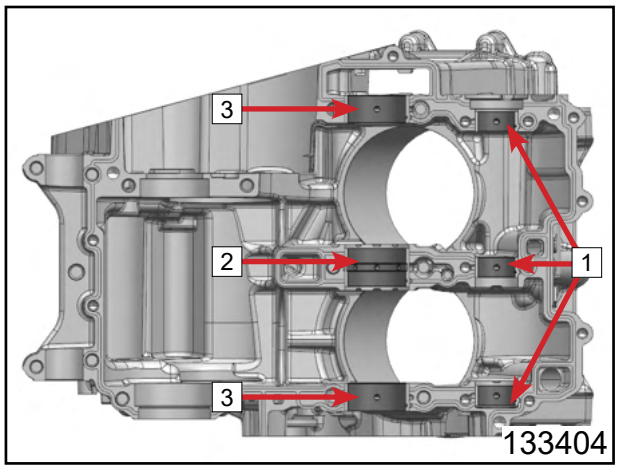
13.3.2 Changing the main bearing shells
Remove bearing shells (1) of the balancer shaft from the upper section of the engine case.
Remove bearing shells (2) and (3) of the crankshaft from the upper section of the engine case.
Clean seat of the bearing shells.



Remove bearing shells (1) of the balancer shaft from the lower section of the engine case.
Remove bearing shells (2) and (3) of the crankshaft from the lower section of the engine case.
Clean seat of the bearing shells.
Select the main bearing shells.
Mount new bearing shells (2) and (3) in the lower section of the engine case.
Mount new bearing shells (1) in the lower section of the engine case

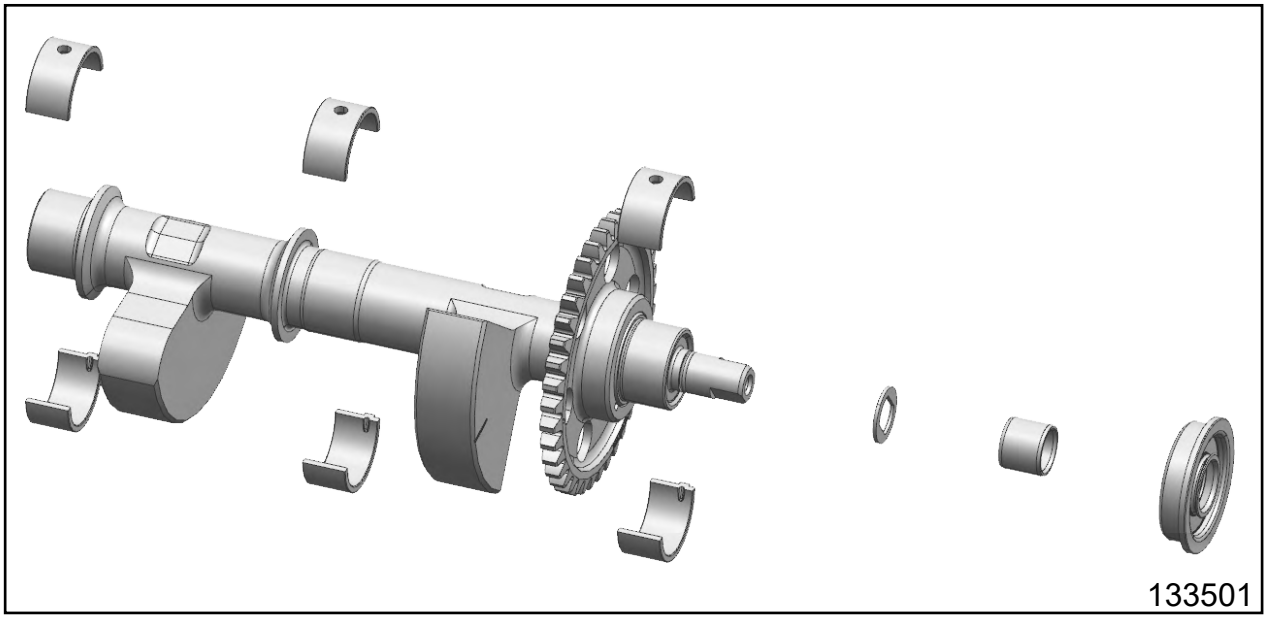


Mount new bearing shells (2) and (3) in the upper section of the engine case.
Mount new bearing shells and (1) in the upper section of the engine case.



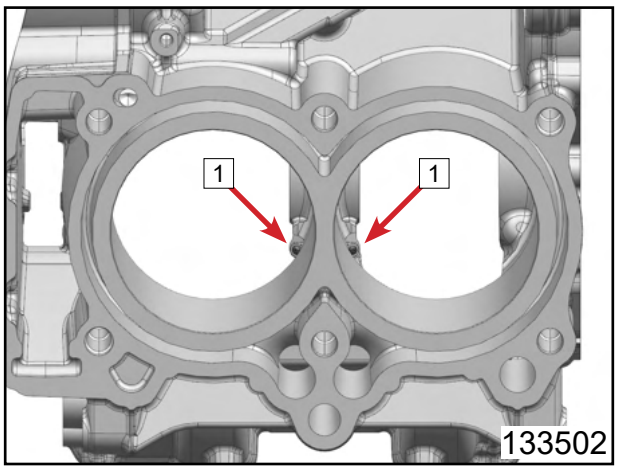
13.3.3 Checking the balancer shaft

Clean all parts well.
Check the pivot points of the balancer shaft for damage and wear.
If there is damage or wear:
Change the balancer shaft.
Check the bearing shells of the balancer shaft for damage, abrasion and wear.
If there is damage, abrasion or wear:
Change bearing shells.

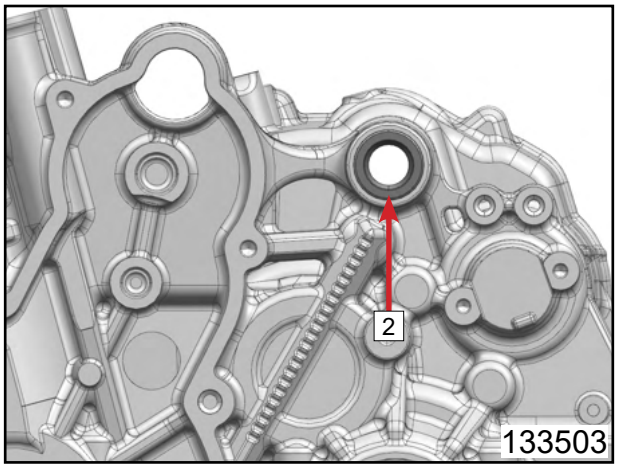


13.3.4 Working on the upper section of the engine case

Remove oil nozzles (1).



Remove radial shaft seal ring (2) of the shift shaft.



Remove any remnants of the sealing compound and clean the section of the engine case thoroughly.
Warm the section of the engine case in an oven.

Guideline

130 °C

Knock the section of the engine case with the right and left side against a level wooden board. This will cause the bearings to drop out of the bearing seats.

Info
Any bearings that remain in the section of the engine case must be removed using a suitable tool. A washer is located behind the bearing (7). Make sure that this washer is not damaged.

Warm the section of the engine case again.

Guideline

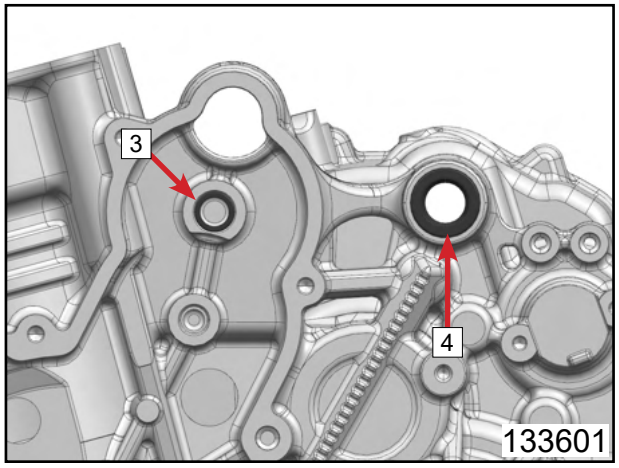
130 °C

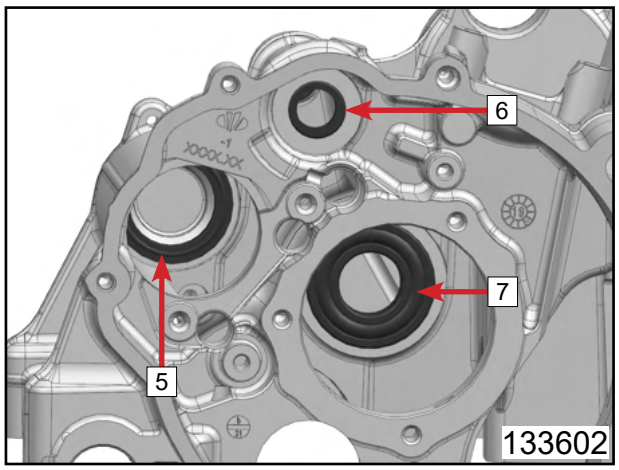
Insert new cold bearings (3) and (4) in the bearing seat on the left side of the heated section of the engine case; if necessary, use a suitable pressing tool to push them all the way in and make them flush.

Info
When pressing in, ensure that the section of the engine case lies flat in order to prevent damage. Only press the bearings in using the outer bearing race; otherwise, the bearings will be damaged when they are pressed in.

Insert new cold bearings (5), (6) and (7) in the bearing seat on the right side of the heated section of the engine case; if necessary, use a suitable pressing tool to push them all the way in and make them flush.

Info
Do not forget the washer under the bearing (7). When pressing in, ensure that the section of the engine case lies flat in order to prevent damage. Only press the bearings in using the outer bearing race; otherwise, the bearings will be damaged when they are pressed in.





After the section of the engine case has cooled, check that the bearings are firmly seated.

Info
If the bearings are not firmly seated after cooling, it is likely that they will rotate in the engine case when warm. In this case, the engine case must be renewed.

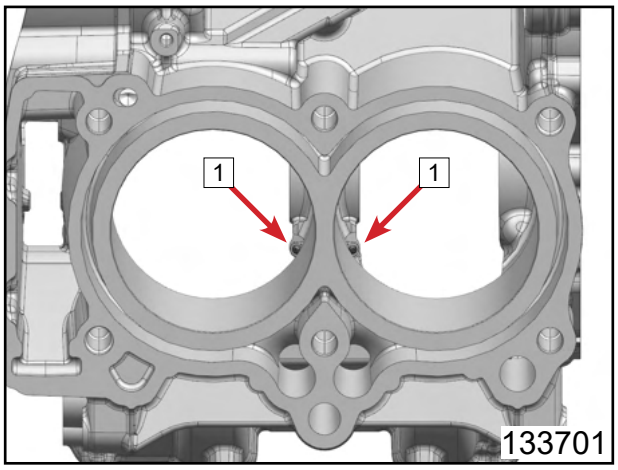
Press in new radial shaft seal ring (2) of the shift shaft from the outside to the inside with the open side facing in.

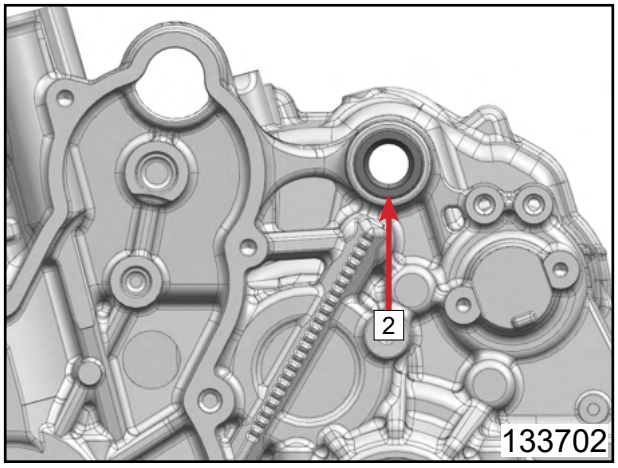
Info
The radial shaft seal ring must be flush on the outside.

Blow compressed air through all oil channels and oil nozzles, and check that they are clear.
Mount and tighten oil nozzles (1).

Guideline

Oil nozzle for piston cooling	M5	2 N•m (1.5 lbf •ft) 243 螺纹胶

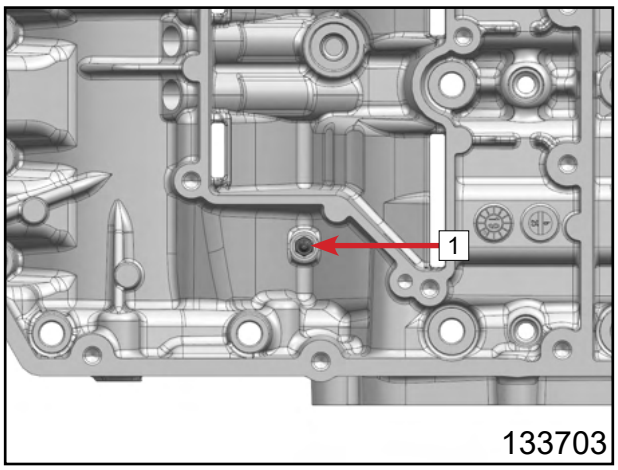




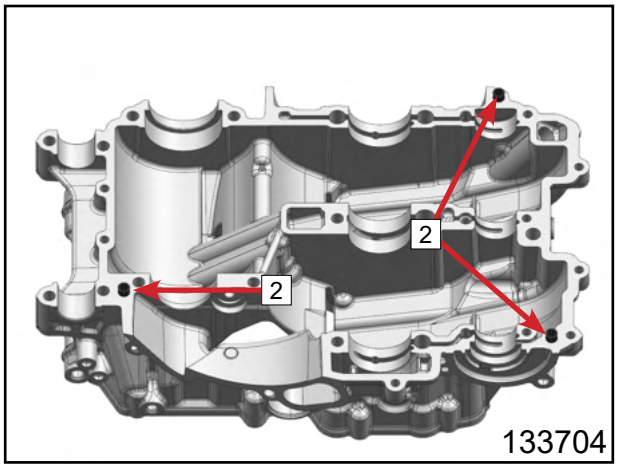
13.3.5 Working on the lower section of the engine case

Remove oil nozzle (1).
Blow compressed air through all oil channels and oil nozzles, and check that they are clear.
Mount and tighten oil nozzle (1).
Guideline

Nozzle, engine vent	M5	2 N•m (1.5 lbf •ft) 243 螺纹胶



Swivel section of the engine case.
Check that dowels (2) are seated correctly.

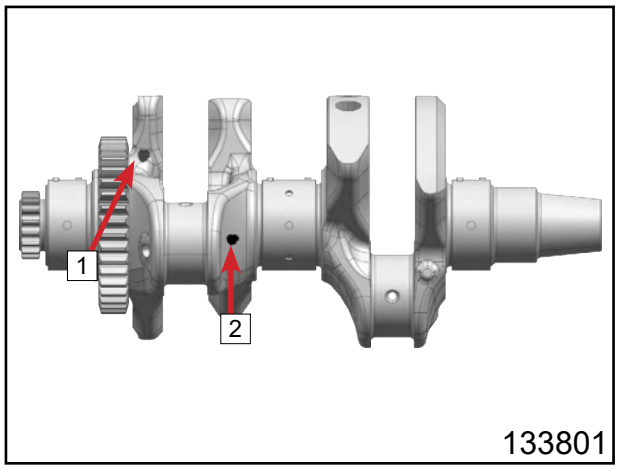


13.3.6 Selecting the main bearing shells

New crankshaft

Select the new bearing shells according to color coding (1).

Info
Color coding (2) refers to the conrod bearing.



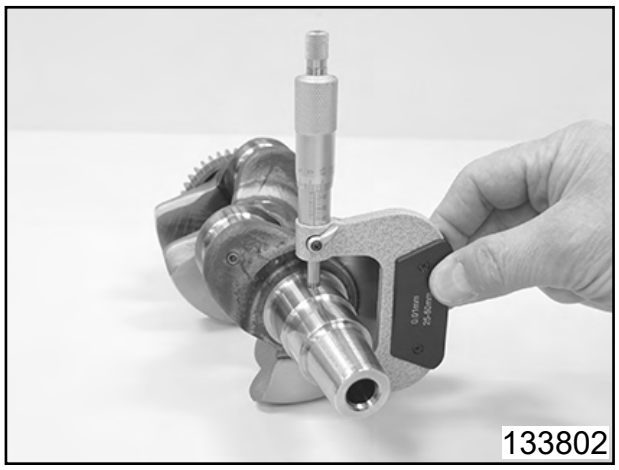
133801

Used crankshaft

Measure all main bearing shells and select the new bearing shells accordingly.

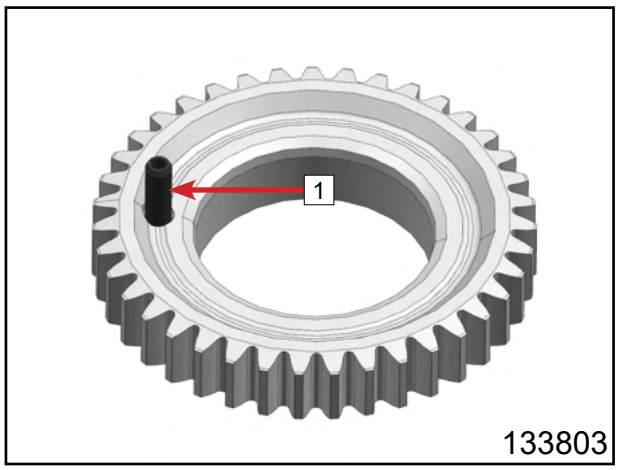
Guideline

Crankshaft - main bearing diameter
Blue 37.985mm ~ 37.995 mm
Red 37.995mm ~ 38.005 mm


133802

13.3.7 Installing the primary gear wheel

Mount dowel pin (1) in the primary gear wheel.



133803

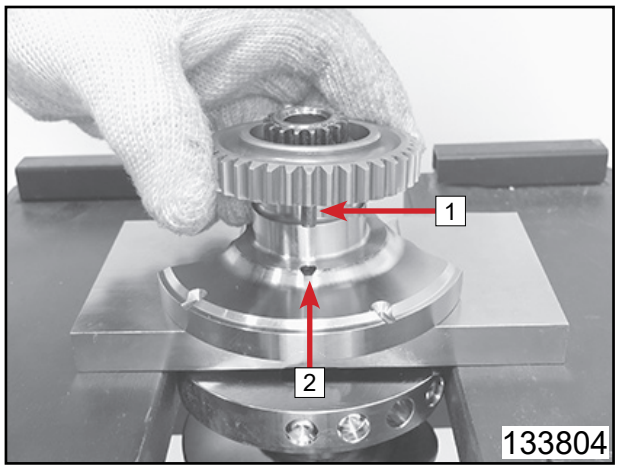
Position the crankshaft with special tool (Separator plate） in the press.

Heat up primary gear wheel.

Guideline：150 °C (302 °F)

Position primary gear wheel on the crankshaft.

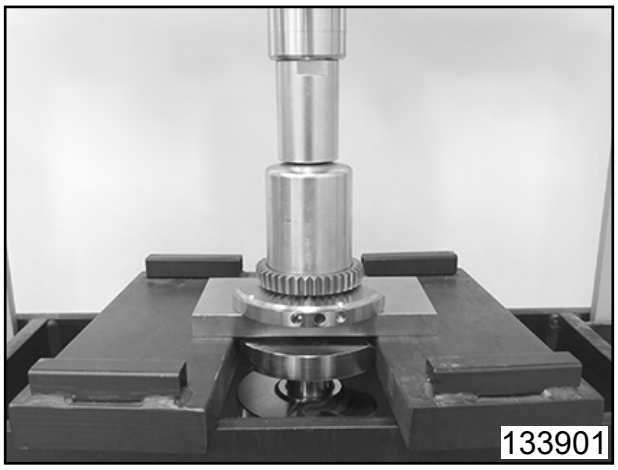
Dowel pin (1) engages in hole (2).



133804

Mount primary gear wheel all the way with special tool (Pressing tool).

The marking is visible after mounting.



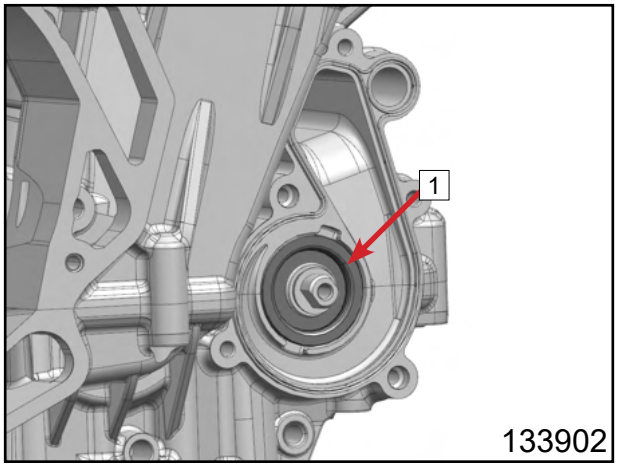
13.3.8 Radial shaft seal ring of water pump, changing

Preparatory work

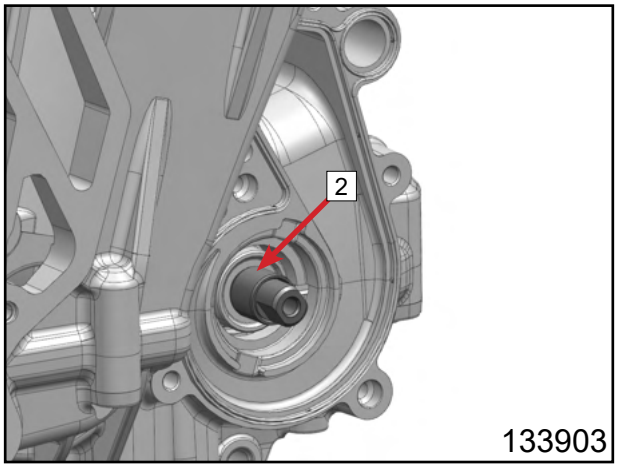
Remove the water pump impeller.

Main work

Remove radial shaft seal ring (1) of the water pump.



Remove water pump impeller (2).



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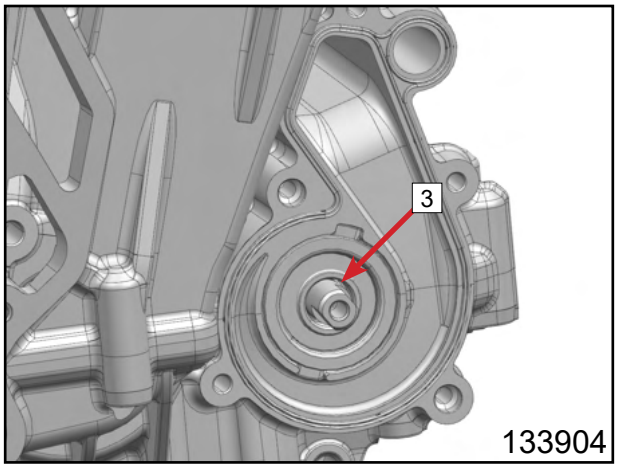
Remove O-ring (3).

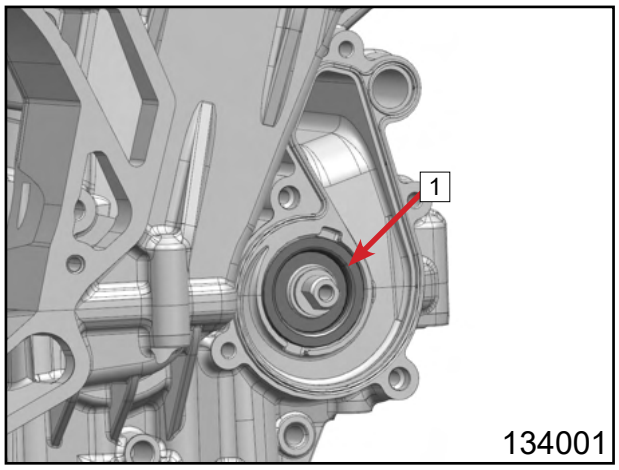
Grease and mount the new O-ring (3).

Long-life grease

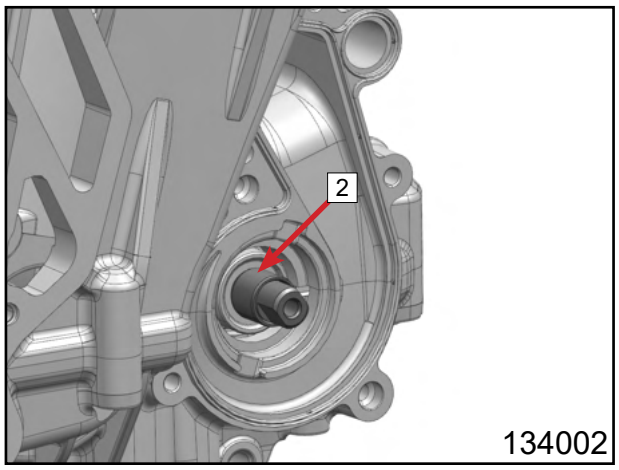


Grease and mount new radial shaft seal ring (1).

Long-life grease



Mount the new water pump impeller (2).



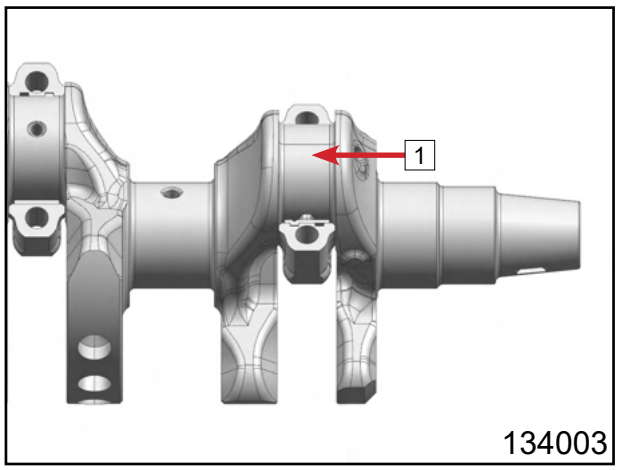
Finishing work

Mount the water pump cover.

13.3.9 Checking the radial clearance of lower conrod bearing

Info
Perform operations for both connecting rods.

Position the bearing shells. Insert Plastigauge clearance gauge (1) 90° offset to the bearing joint.



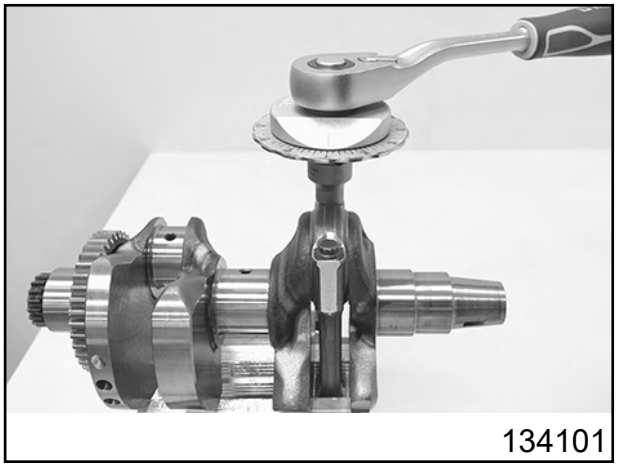
Position the conrod bearing cover. Mount and tighten the screws.

Guideline:

Screw, conrod bearing	M8	1st stage: 5 N•m (3.7 lbf•ft) 2nd stage: 15 N•m (11.1 lbf•ft) 3rd stage: 90° Collar and thread oiled

Special tool :
Multi-tooth wrench socket Angle disc

Info
Do not twist connecting rod.

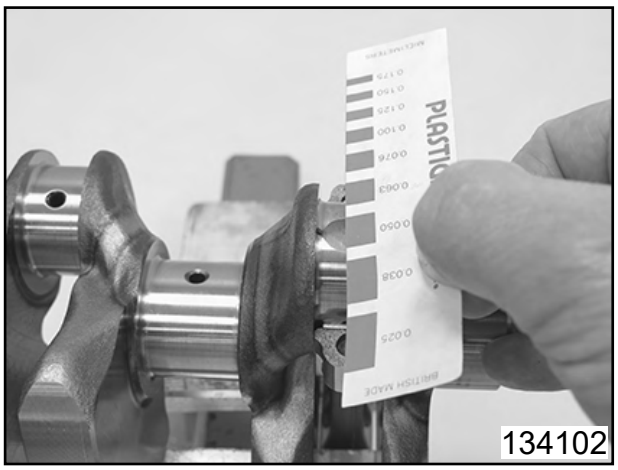

134101

Remove the conrod bearing cover again. Compare Plastigauge clearance gauge with the data on the packaging.

Guideline:

Connecting rod - radial clearance of lower conrod bearing
New condition:0.030mm~0.060 mm
Wear limit:0.080 mm

Info
The width of the Plastigauge clearance gauge indicates the bearing play.


134102

Clean the parts.

13.3.10 Changing the conrod bearing

Info
Perform operations for both connecting rods.

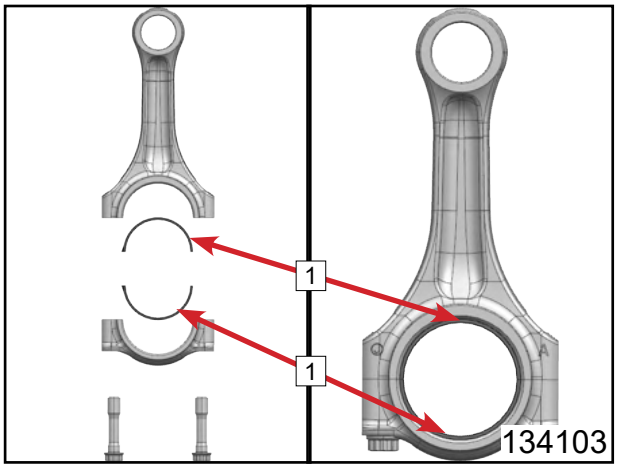
Condition

Connecting rod removed

Main work

Take off bearing cover and remove bearing shells (1).

Info
The conrod bearing cover and connecting rod are jointly marked. Make sure that each conrod bearing cover is mounted on the same connecting rod.

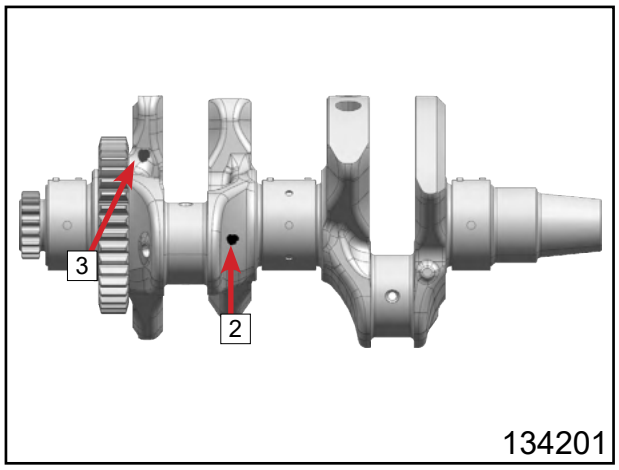


134103

New crankshaft

Select the new bearing shells according to color coding (2).

Info
Color coding (3) refers to the crankshaft bearing.



Used crankshaft

Measure the crank pin diameter and select the new bearing shells accordingly.

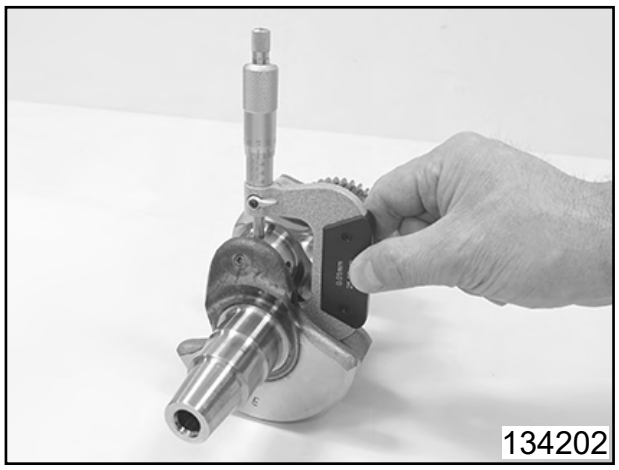
Guideline:

Crankshaft - crank pin diameter
Blue: 37.983 mm~ 37.993 mm
Red: 37.993 mm~ 38.003 mm

Check pivot points for damage and abrasion.

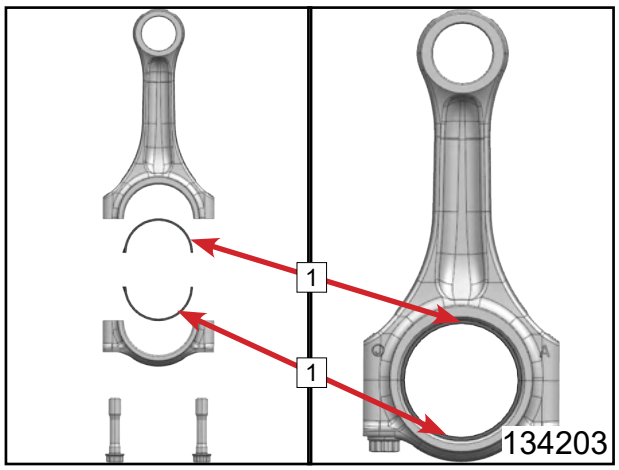
If damage or abrasion is discernible:

Change the crankshaft.



Mount new bearing shells (1) on conrod bearing cover and connecting rod.

Info
The conrod bearing cover and connecting rod are jointly marked. Make sure that each conrod bearing cover is mounted on the same connecting rod.

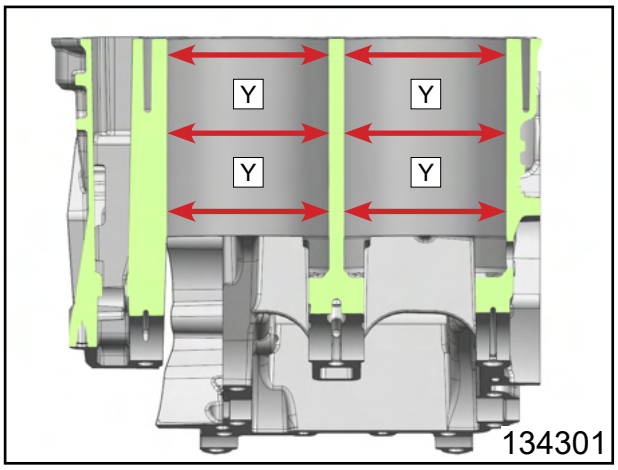


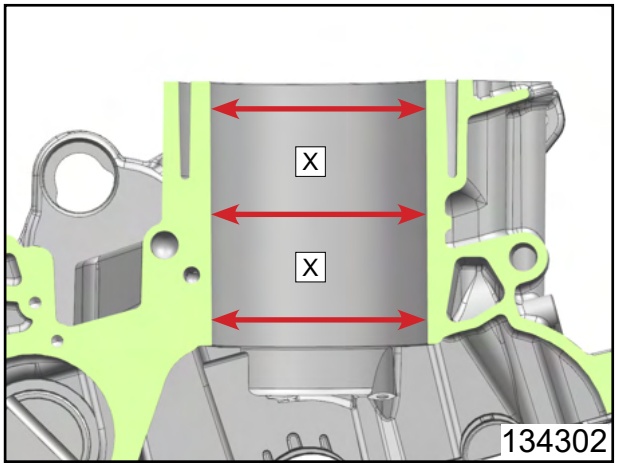
Finishing work

Check the radial clearance of lower conrod bearing.

13.3.11 Checking/measuring the cylinder

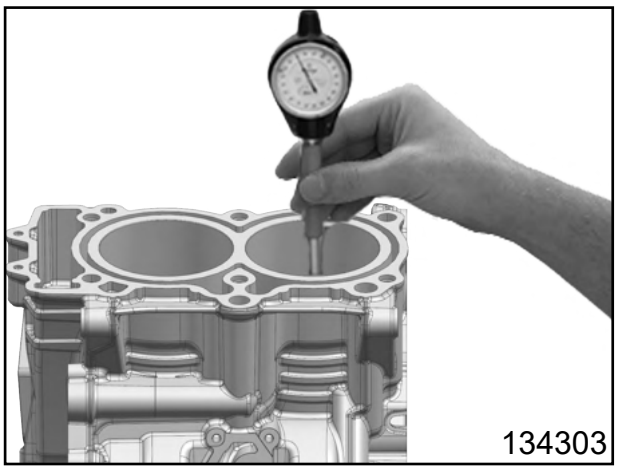
Check the O-ring of the chain adjuster for damage and wear.
If there is damage or wear: Change the O-ring.
Check the cylinder bearing surface for damage.
If the cylinder bearing surface is damaged: Change the cylinder and piston.
\Measure the bore diameter at several locations on the (X)- and (Y)-axes using a micrometer to identify oval wear.





Guideline:

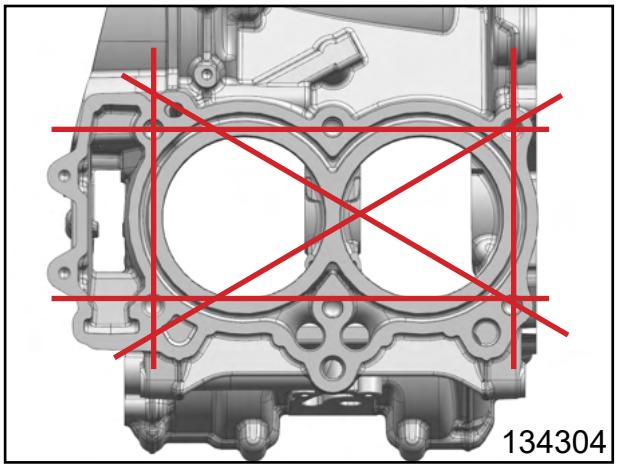
Cylinder - bore diameter
Size:88.000mm~88.012 mm



Using a straightedge and the special tool(Feeler gauge), check the sealing surface of the cylinder head for distortion.

Cylinder/cylinder head - sealing area distortion
≤ 0.05 mm

If the measured value does not meet specifications: Change engine case.



13.3.12 Checking/measuring the piston

Check the piston bearing surface for damage.

If the piston bearing surface is damaged: Replace the piston and, if necessary, the cylinder.

Check that the piston rings move easily in the piston ring grooves.

If the piston ring is stiff: Clean the piston ring groove.

Tip
An old piston ring can be used to clean the piston ring groove.

Check the piston rings for damage.

If the piston ring is damaged: Change the piston ring.

Info
Mount the piston ring with the marking facing upward.

Use the special tool (Feeler gauge) to measure clearance (A) of the piston rings in the piston ring groove.

Guideline

Piston ring - groove clearance
First ring (rectangular ring) ≤ 0.08 mm (≤ 0.0031 in)
Second ring (lower compression ring) ≤ 0.08 mm (≤ 0.0031 in)
Oil scraper ring ≤ 0.06 mm (≤ 0.0024 in)

If clearance (A) is larger than the specified value:

Change the piston and piston rings.

Check/measure the cylinder.

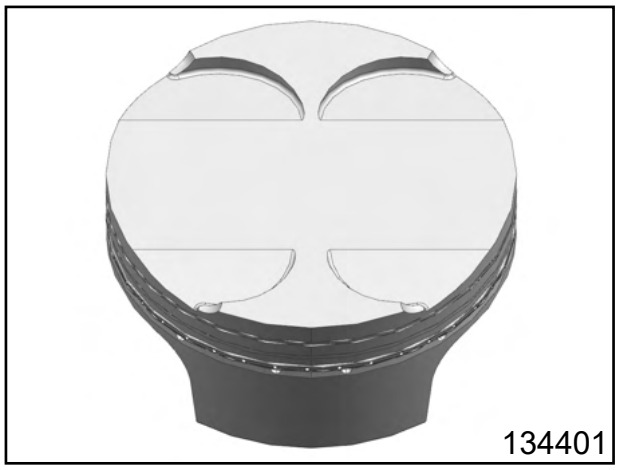
Check piston pin for discoloration, signs of wear or flaking of the coating.

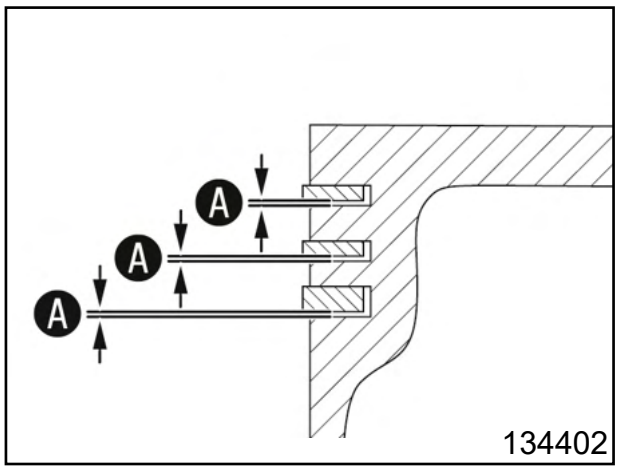
If the piston pin exhibits significant discoloration/signs of wear, or the coating is flaking: Change the piston pin.

Place the piston pin in the connecting rod and check the seating for play.

If the piston pin seating has excessive play:

Change the connecting rod and piston pin.

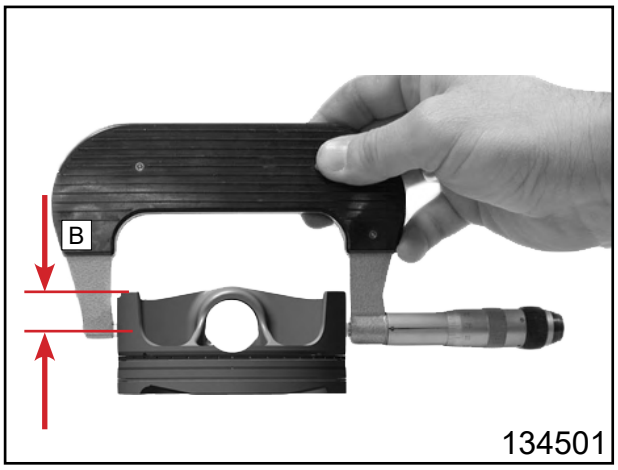

134401



134402

Measure the piston at the piston skirt, at right angles to the piston pin, at a distance (B).
Guideline

Piston - diameter
Size 87.920mm~ 87.980 mm
Distance (B) 6 mm (0.24 in)



134501

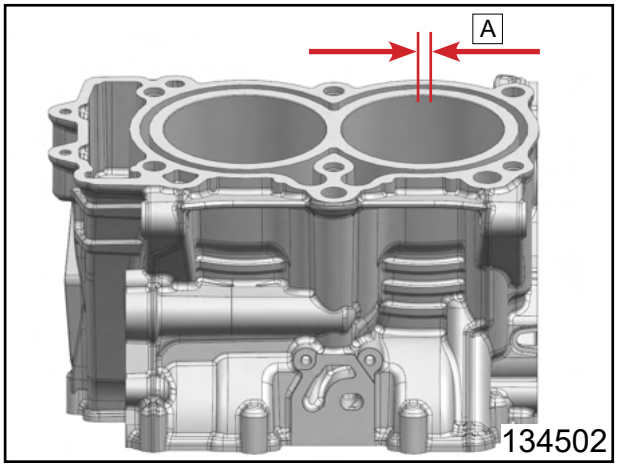
13.3.13 Checking the piston ring end gap

Remove the piston ring from the piston.
Place the piston ring in the cylinder and align with the piston.

Guideline

Below the upper edge of the cylinder
10 mm

Measure end gap (A) with a feeler gauge.



134502

Guideline

Piston ring end gap
Compression rings: ≤ 0.80 mm
Oil scraper ring: ≤ 1.00 mm

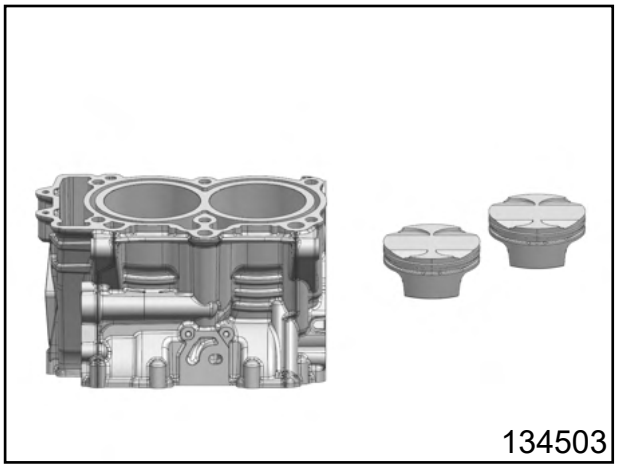
If the end gap is greater than the specified value: Check/measure the cylinder.
If cylinder wear lies within the specified tolerance: Change the piston ring.
Mount the piston ring with the marking facing toward the piston head.

13.3.14 Determining the piston/cylinder mounting clearance

Check/measure the cylinder.
Check/measure the piston.
The smallest piston/cylinder mounting clearance is the result of the smallest cylinder bore diameter minus the largest piston diameter. The largest piston/cylinder mounting clearance is the result of the largest cylinder bore diameter minus the smallest piston diameter.

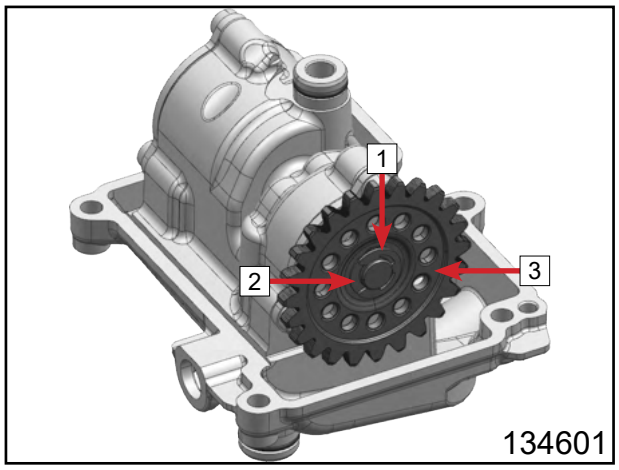
Guideline

Piston/cylinder - mounting clearance
New condition: 0.035mm~0.070 mm
Wear limit: 0.10 mm

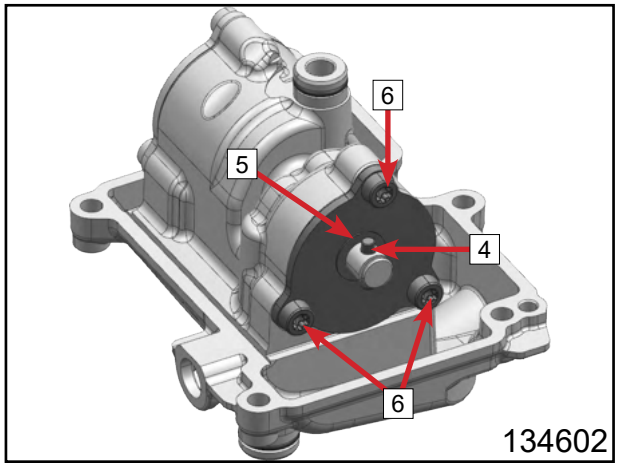

134503

13.3.15 Removing the oil pumps

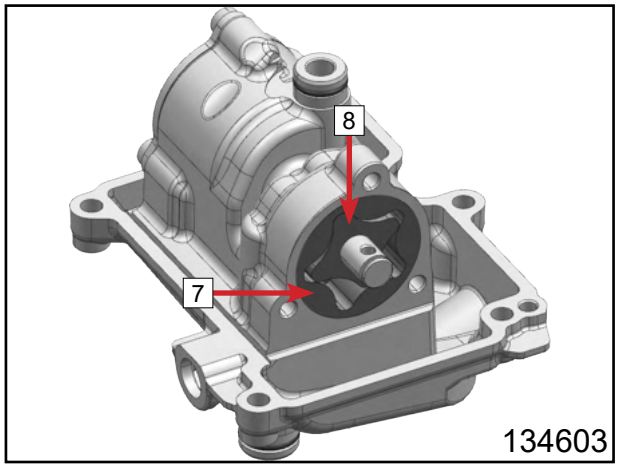
Remove lock ring (1) and washer (2).
Take off oil pump gear wheel (3).



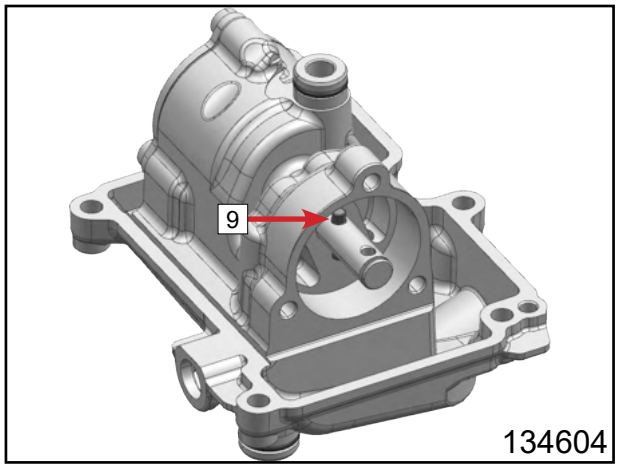
Remove pin (4) and washer (5).
Remove screws (6).
Take off the oil pump cover.



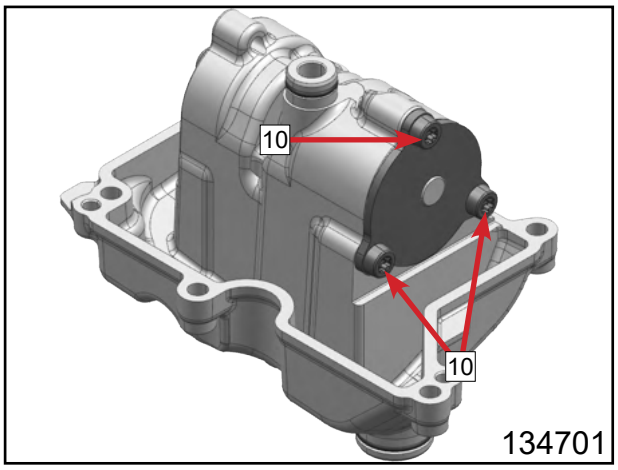
Remove external rotor (7).
Remove internal rotor (8).



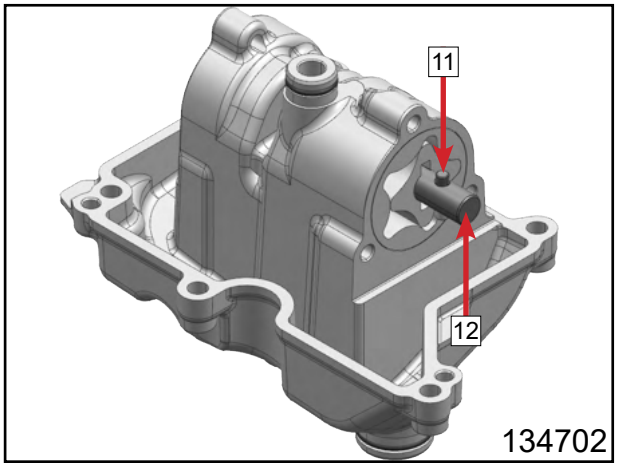
Remove pin (9).



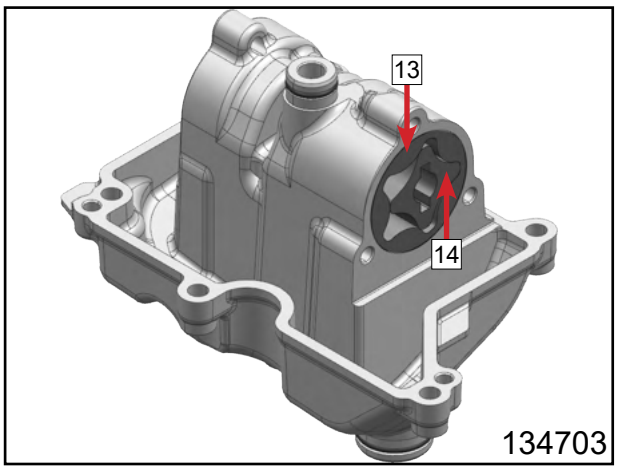
Remove screws (10).
Take off the oil pump cover.



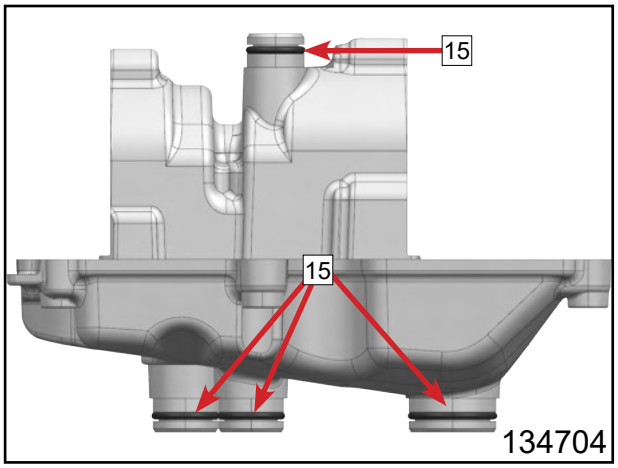
Remove pin (11) and oil pump shaft (12).



Remove external rotor (13) and internal rotor (14).



Remove O-rings (15).

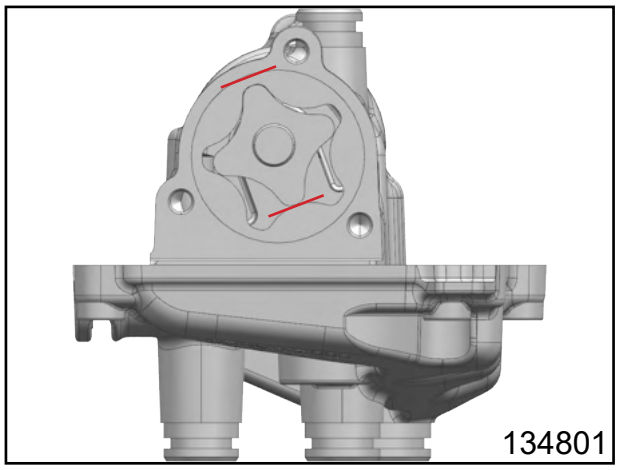


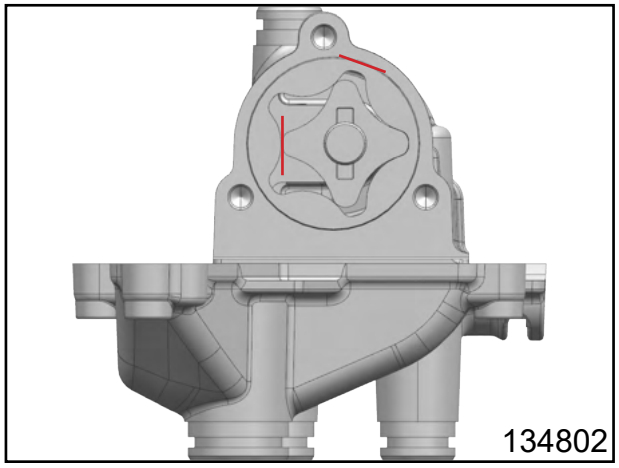
13.3.16 Checking the oil pumps for wear

Use a feeler gauge to measure the play between the external rotor and oil pump housing as well as between the external rotor and internal rotor.

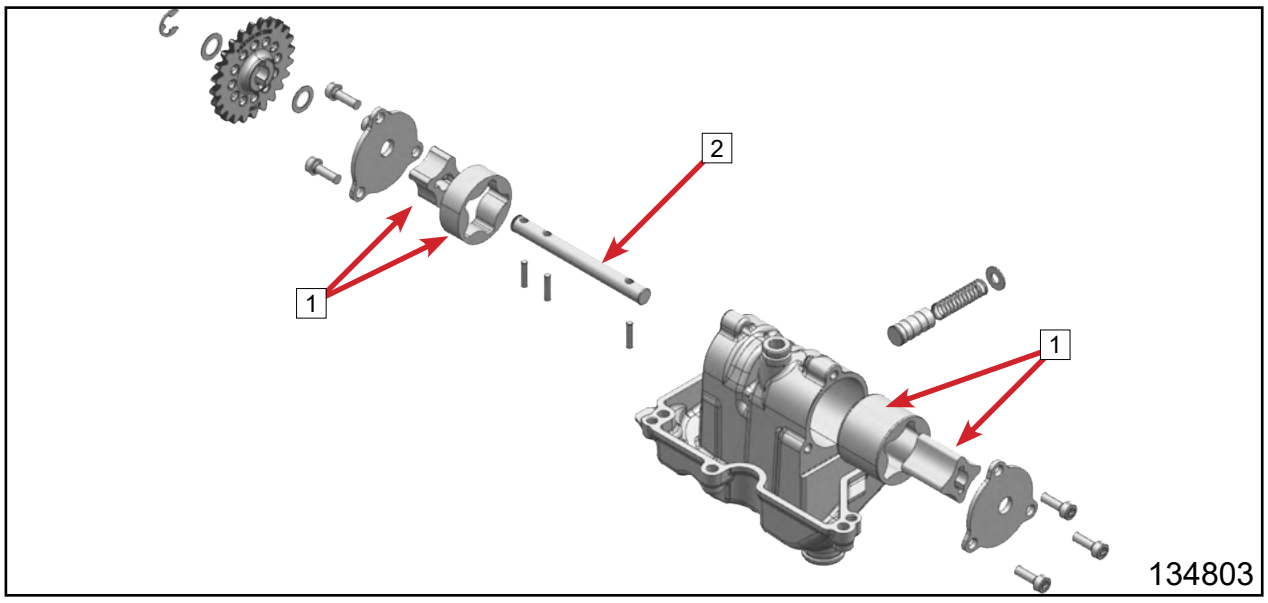
Oil pump
Play between external rotor and oil pump housing: ≤ 0.15 mm
Clearance, external rotor/internal rotor: ≤ 0.20 mm
Axial play: 0.03mm~0.08 mm

If the measured value does not meet specifications: Change the oil pump and, if necessary, the oil pump housing.





Check the internal rotor and external rotor of oil pumps (1) for damage and wear.
If there is damage or wear: Change the oil pumps.
Check oil pump shaft (2) for damage and wear.
If there is damage or wear: Change the oil pump shaft.
Check both oil pump covers for damage and wear.
If there is damage or wear: Change the oil pump cover.

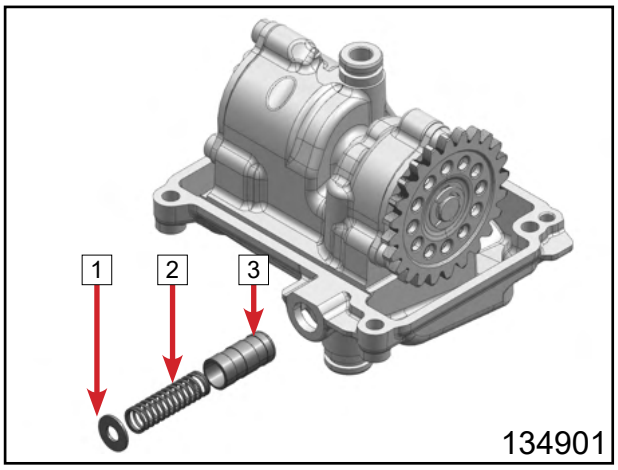


13.3.17 Checking the oil pressure control valve

Remove washer (1).
Remove spring (2).
Measure the length of spring (2).

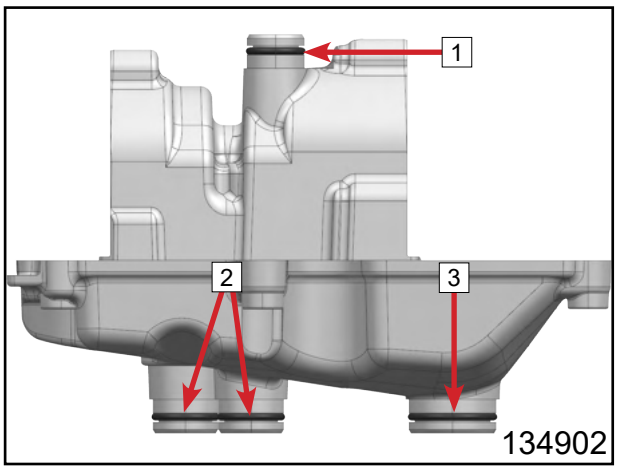
Oil pressure regulator valve - minimum length spring: 40.0 mm

If the measured length is less than the specified value: Change the spring.
Check control piston (3) for damage and wear.
If there is damage or wear: Change the control piston.
Check the control piston for smooth operation in the oil pump housing.
If the control piston is stiff: Change the control piston or the oil pump housing.
Thoroughly oil control piston (3) and spring (2) and mount them.
Mount washer (1).



13.3.18 Installing the oil pumps

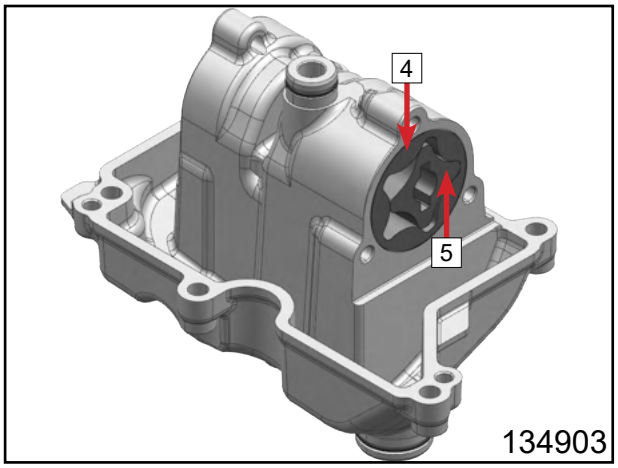
Mount and grease the new O-rings (1), (2) and (3).



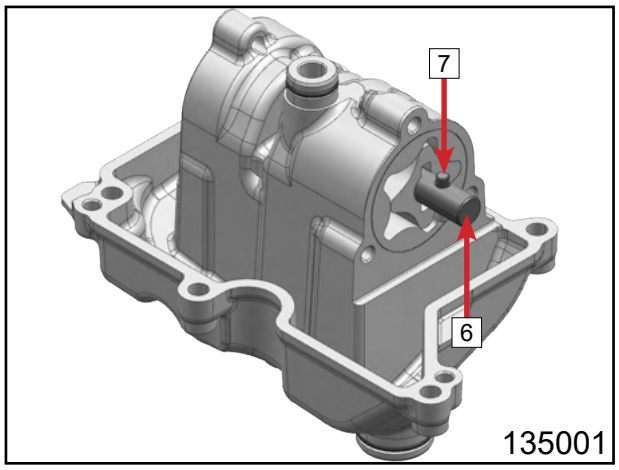
Mount external rotor (4) and internal rotor (5).

The rounded side of the external rotor must face the oil pump housing.

Oil the parts.



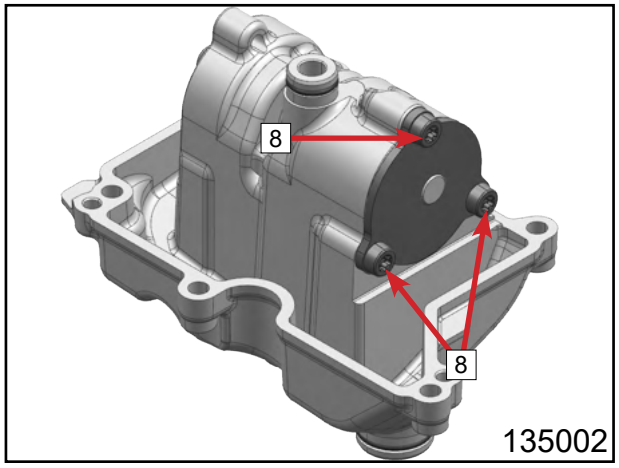
Mount oil pump shaft (6) with pin (7).



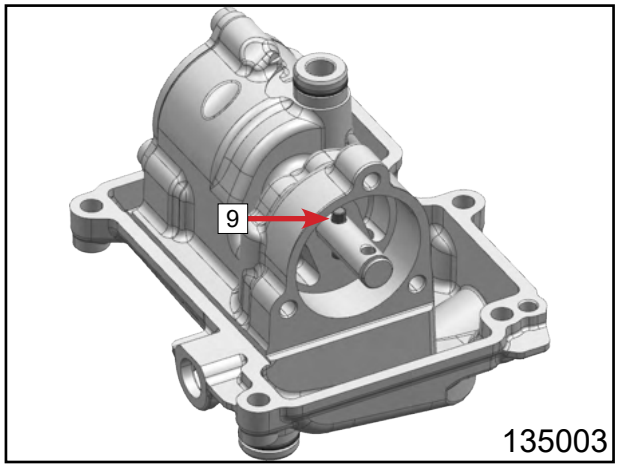
Position the oil pump cover.
Mount and tighten screws (8).

Guideline

Screw, oil pump cover	M6	10 N•m 243 螺纹胶



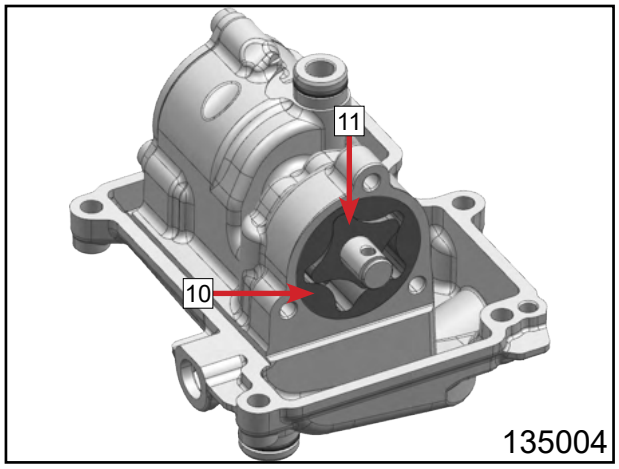
Mount pin (9).



Mount external rotor (10) and internal rotor (11).

The rounded side of the external rotor must face the oil pump housing.

Oil the parts.

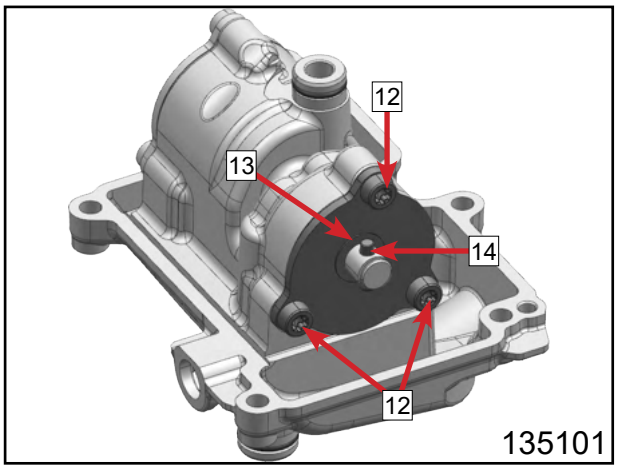


Position the oil pump cover.
Mount and tighten screws (12).

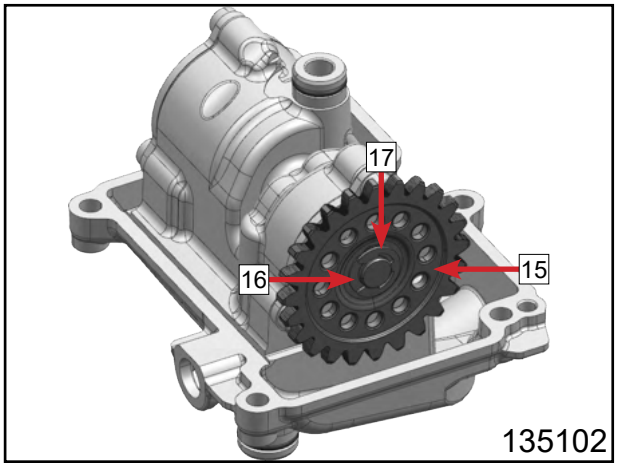
Guideline

Screw, oil pump cover	M6	10 N•m 243 螺纹胶

Mount washer (13).
Mount pin (14).



Mount oil pump gear wheel (15).
Mount washer (16) and lock ring (17).



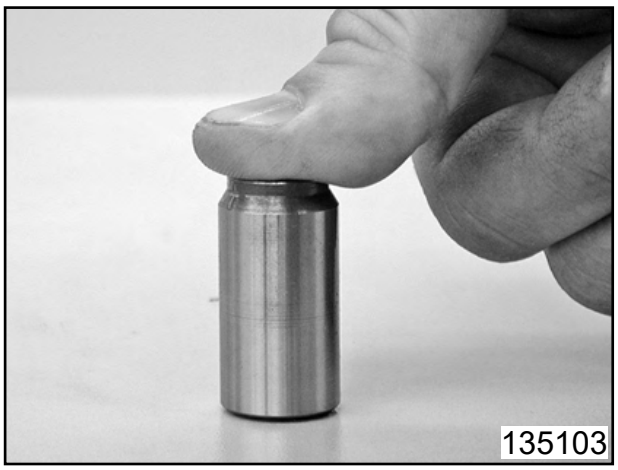
13.3.19 Preparing timing chain tensioner for installation

Fully compress the timing chain tensioner.

Info
This requires considerable force since the oil has to be pressed out.

Release the timing chain tensioner.

Without pressure, the timing chain tensioner expands fully.



Place two compensating disks or similar aids next to the piston of the timing chain tensioner. This should ensure that when pushed down, the piston does not fully withdraw.

Guideline

Thickness of the compensating disks
2mm~ 2.5 mm

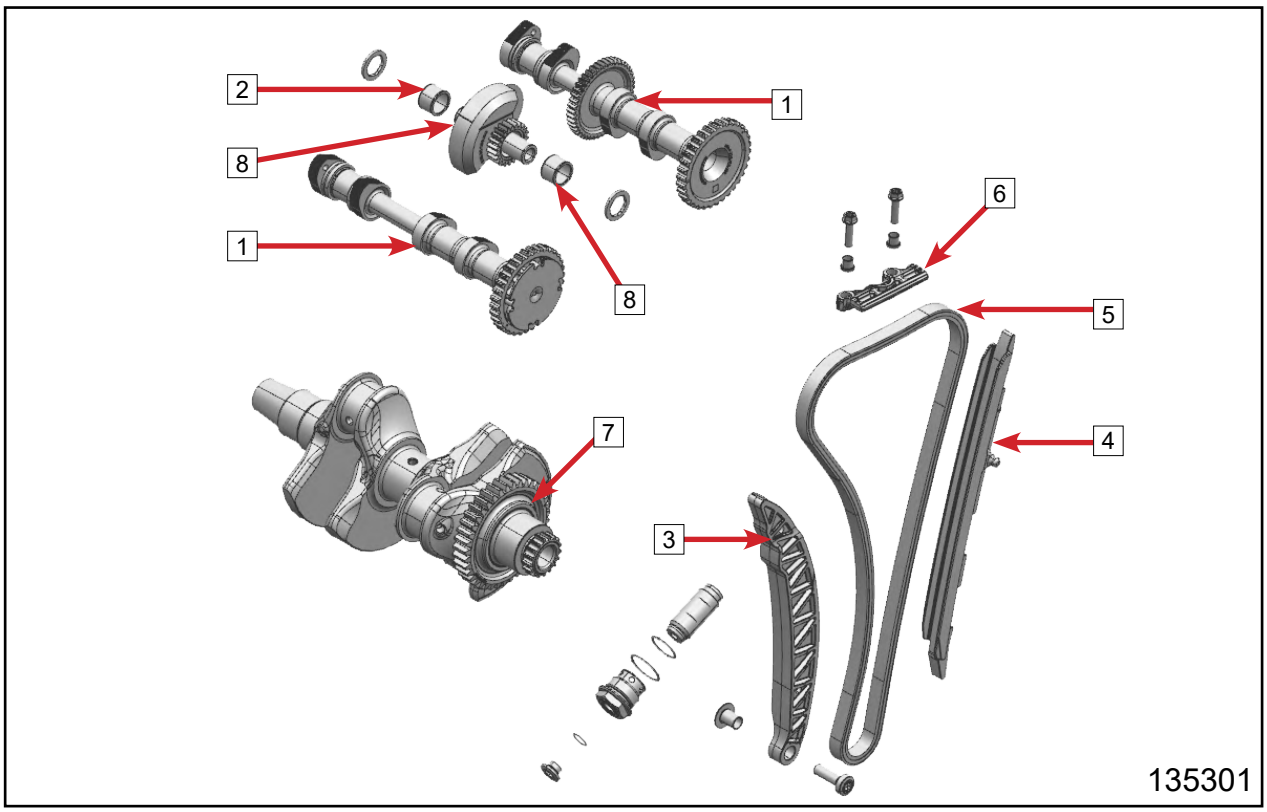
Release the timing chain tensioner.

The latching system locks and the piston stops moving.

End position of piston after latching
3 mm

Info
This position is necessary for installation. If the timing chain tensioner is now pressed in once more (while it is installed) and then pulled out no more than halfway (preventing it from coming out fully), the latching system locks and the timing chain tensioner can no longer be compacted; this function is necessary to ensure sufficient tension of the timing chain, even at low oil pressure.

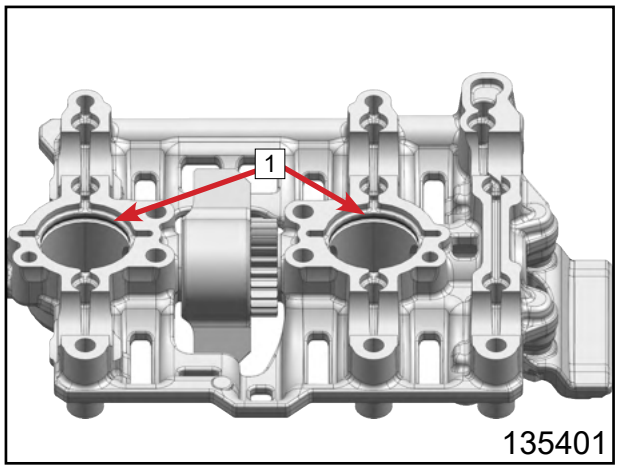
13.3.20 Checking the timing assembly



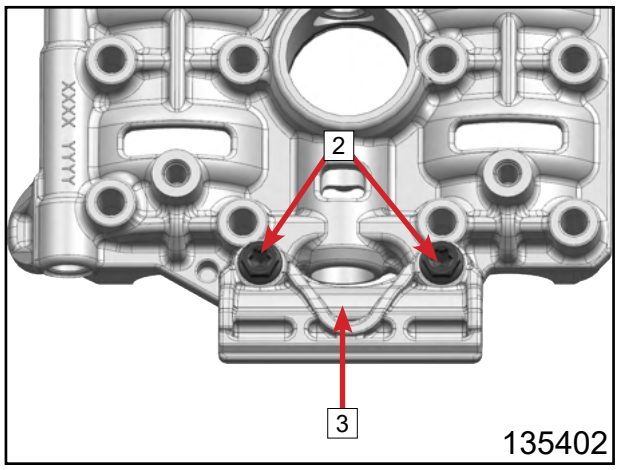
Clean all parts well.
Check camshafts (1) for damage and wear.
If there is damage or wear: Change the camshafts.
Check balancer shaft (2) for damage and wear.
If there is damage or wear: Change the balancer shaft.
Check tensioning rail (3) for damage and wear.
If there is damage or wear: Change the tensioning rail.
Check guide rail (4) for damage and wear.
If there is damage or wear: Change the guide rail.
Check timing chain (5) for damage and wear.
If there is damage or wear: Change the timing chain.
Check the timing chain links for smooth operation. Let the timing chain hang down freely.
The chain links no longer align in a straight line: Change the timing chain.
Check guide rail (6) for damage and wear.
If there is damage or wear: Change the guide rail.
Check timing chain sprocket (7) for damage and wear.
If there is damage or wear: Change the crankshaft.
Check balancer shaft bearing (8) for damage and wear.
If there is damage or wear: Change the balancer bearing.

13.3.21 Working on the camshaft bearing bridge

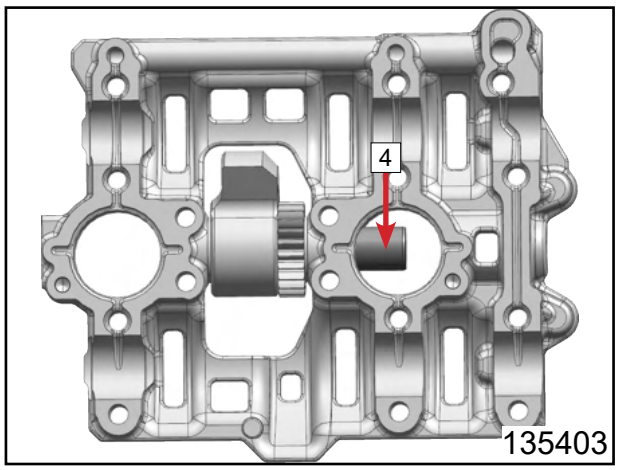
Remove O-rings (1).



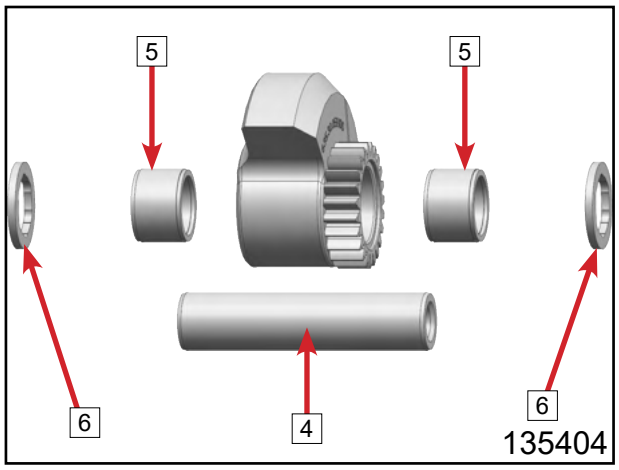
Remove screws (2).
Take off guide rail (3).



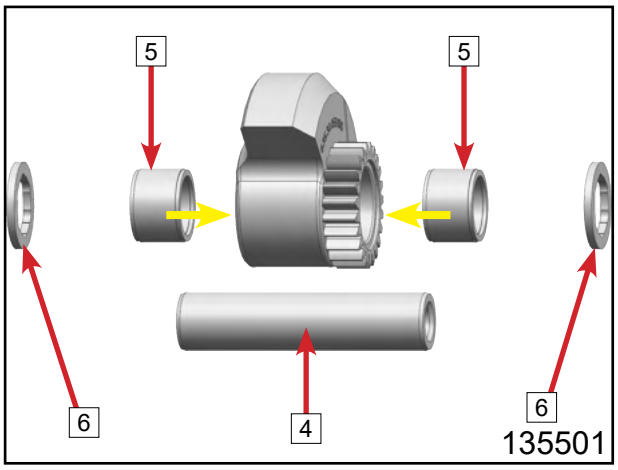
Pull out spindle (4) of the balancer shaft with appropriate screw M10.



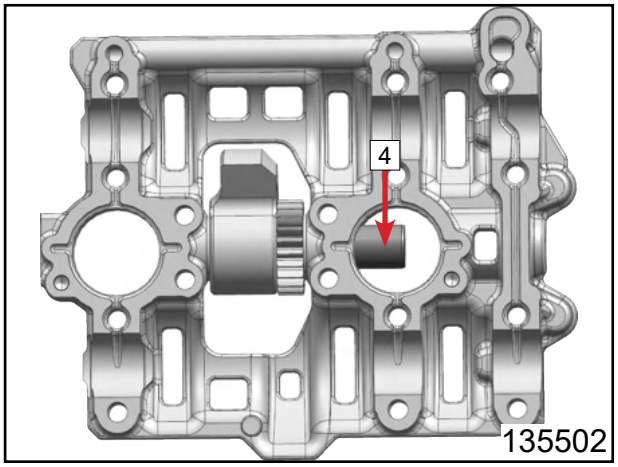
Remove balancer shaft with needle bearings (5) and washers (6).



Mount new needle bearings (5) in the balancer shaft and oil.
Position balancer shaft with washers (6) in the camshaft bearing bridge.

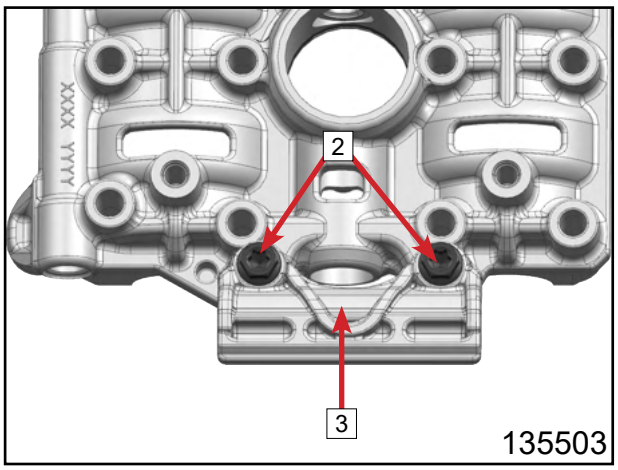


Mount spindle (4) of the balancer shaft in the center between the spark plug shafts.
Remove screw M10.

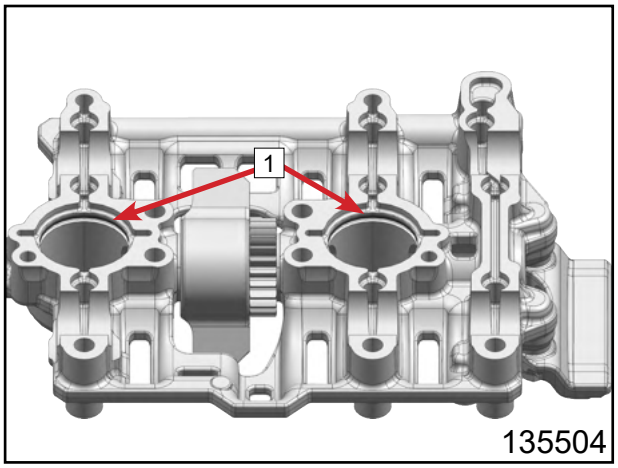


Position guide rail (3).
Mount and tighten screws (2).
Guideline

Screw, upper guide rail
M6
8 N•m 243 螺纹胶

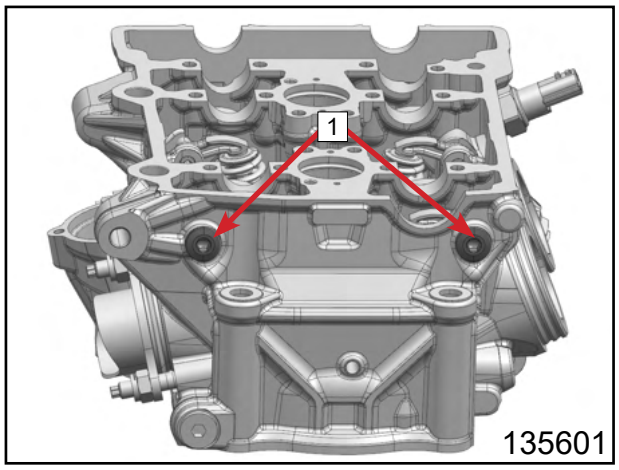


Mount and grease the new O-rings (1).

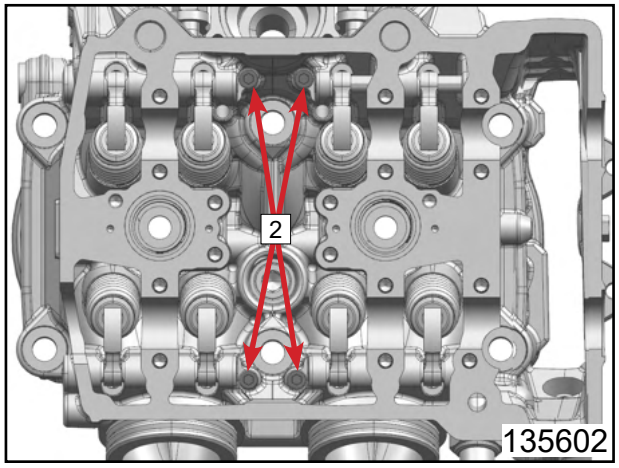


13.3.22 Working on the cylinder head

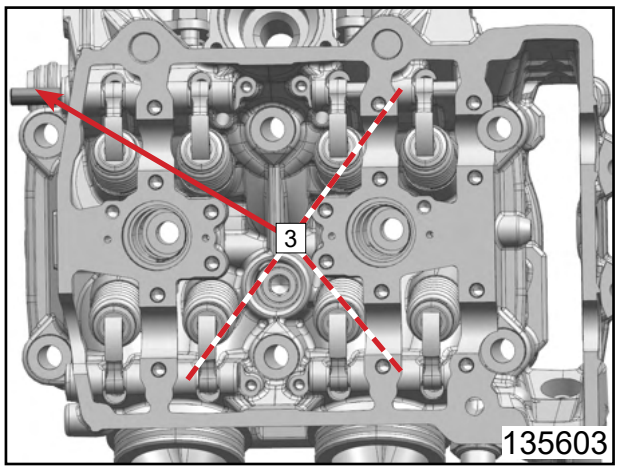
Remove screw plugs (1) with the O-rings.



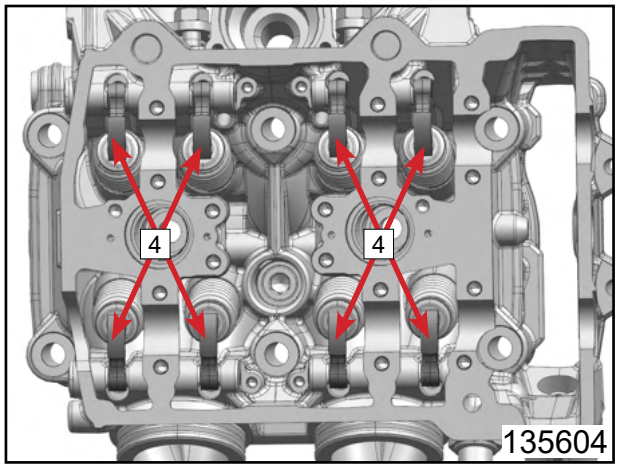
Remove screws (2).



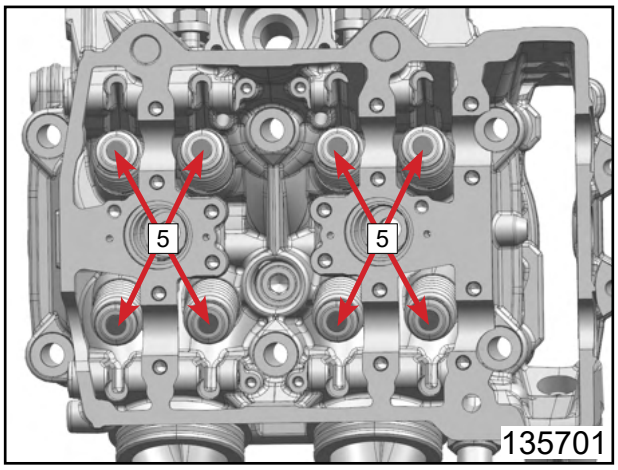
Mount disassembly tool M4.
Remove cam lever shafts (3).



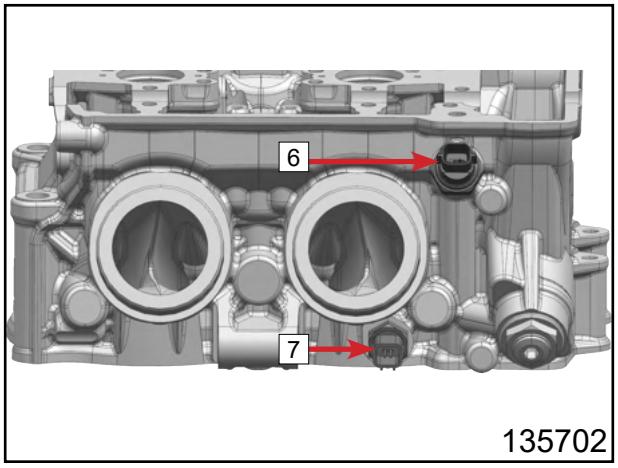
Take off cam lever (4).



Remove shims (5) and label according to their normal built-in position.

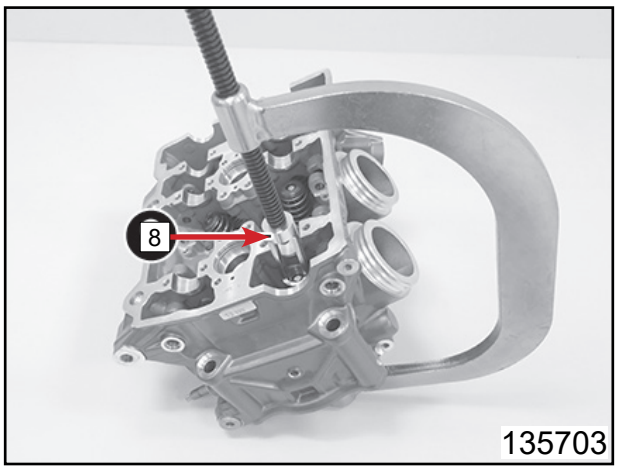


Remove oil pressure sensor (6) with O-ring.
Remove coolant temperature sensor (7) with the O-ring.

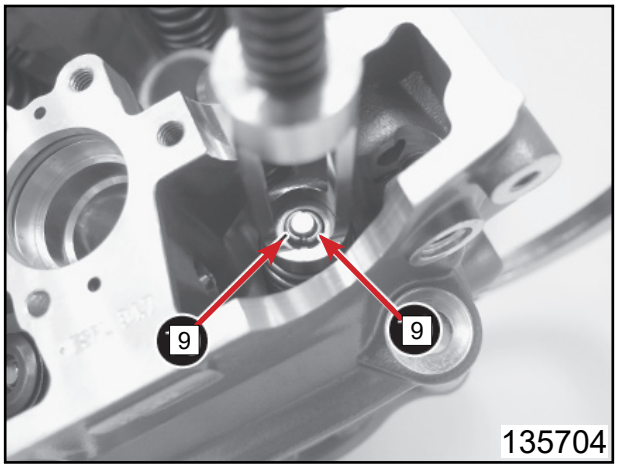


Tension valve spring with special tool (8).

Valve spring mounter
Insert for valve spring lever

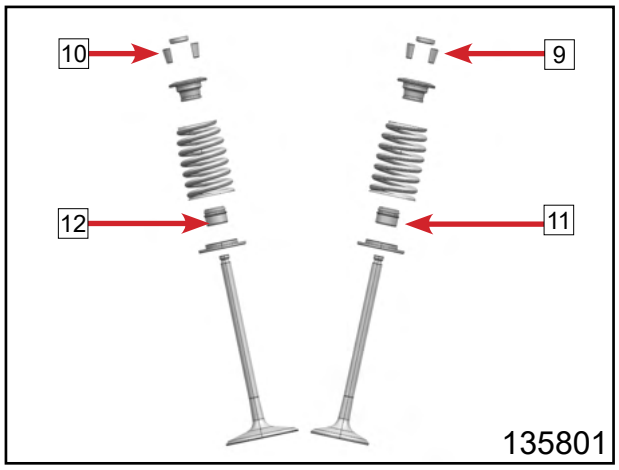


Remove valve collets (9) and release the valve spring.

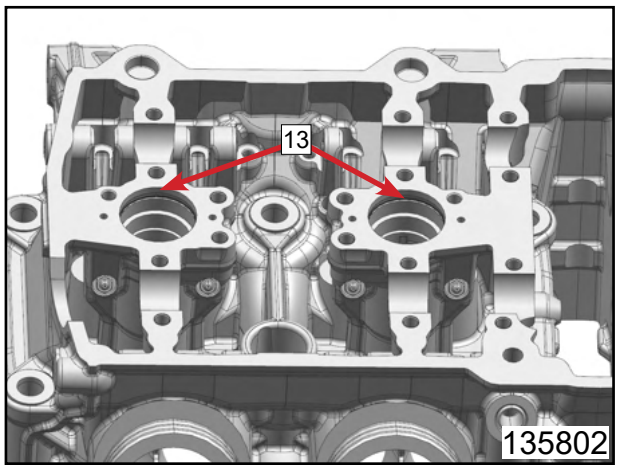


Remove valve spring retainers (10), valve springs, valve stem seals (11) and valve spring seats (12).

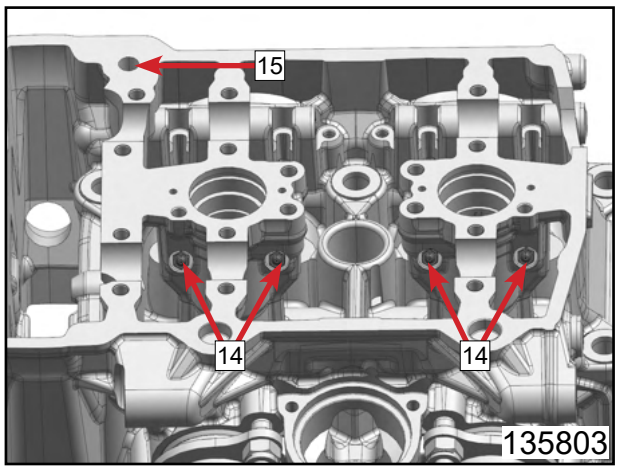
Info
Place the valves in a box according to their normal built-in position and label them.



Remove O-rings (13).



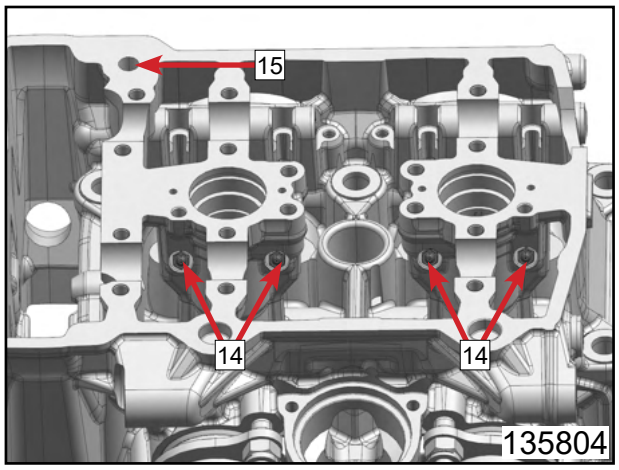
Remove oil nozzles (14).
Remove oil screen (15) and clean it.
Check the cylinder head.



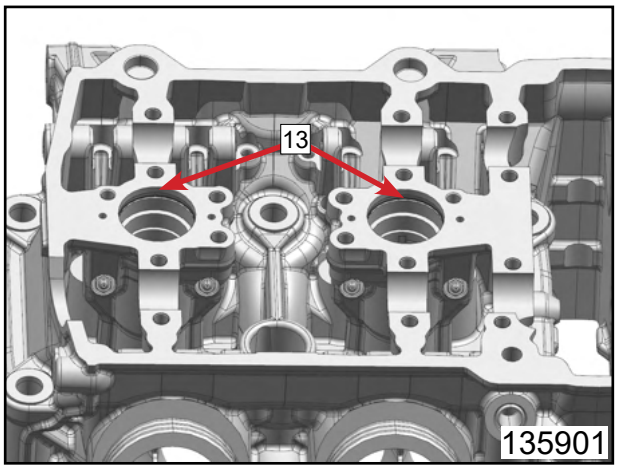
Mount oil screen (15).
Mount oil nozzles (14).

Guideline

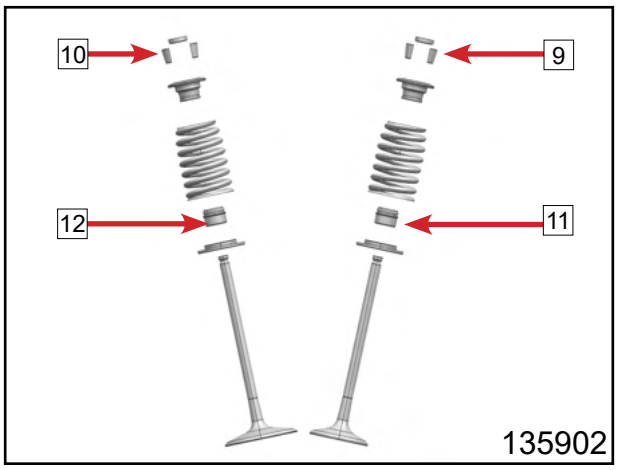
Oil nozzle in cylinder head
M5
2 N•m 243 螺纹胶



Mount and grease O-rings (13).



Mount valve spring seats (12) and new valve stem seals (11).
Mount valve spring retainers (10) and valve springs.

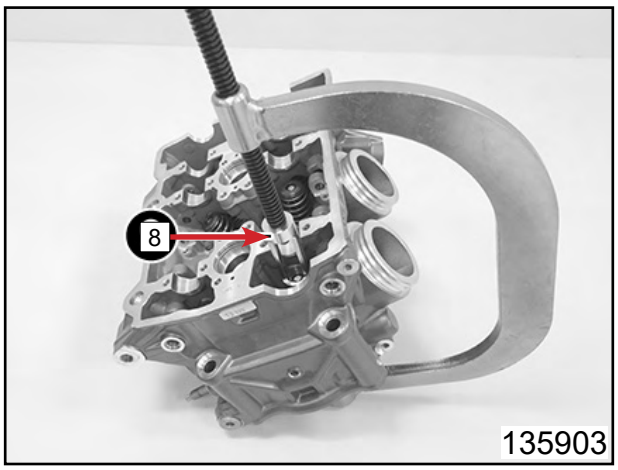


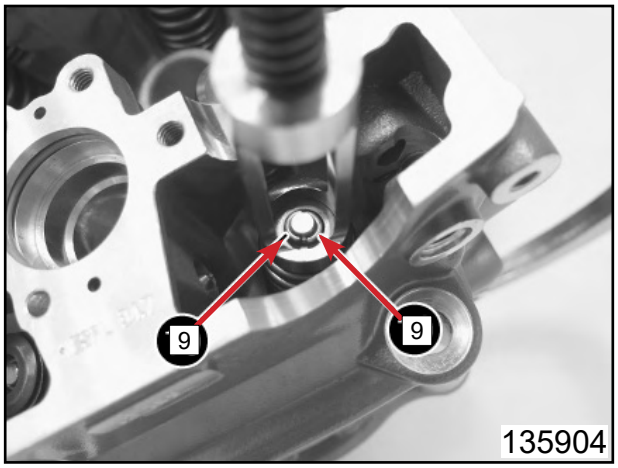
Tension valve spring with special tool (8).

Valve spring mounter
Insert for valve spring lever

Mount valve collets (9). Release the tension on the valve spring.

Info
When mounting the valve collets, check they are seated properly; preferably use a little grease to secure the valve collets on the valve.





Mount coolant temperature sensor (7) with the new O-ring.

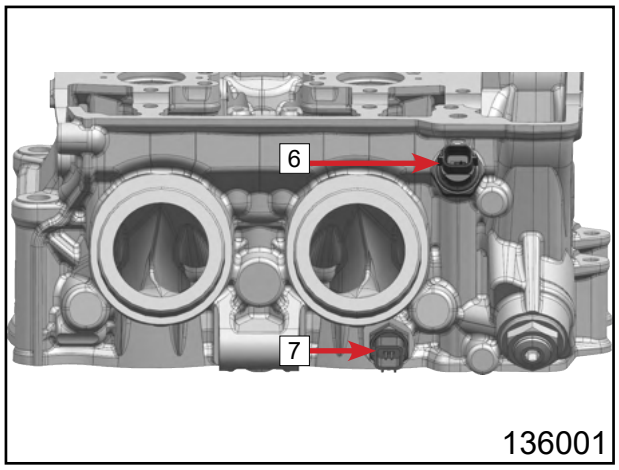
Guideline

Coolant temperature sensor
M10×1.25
10 N•m

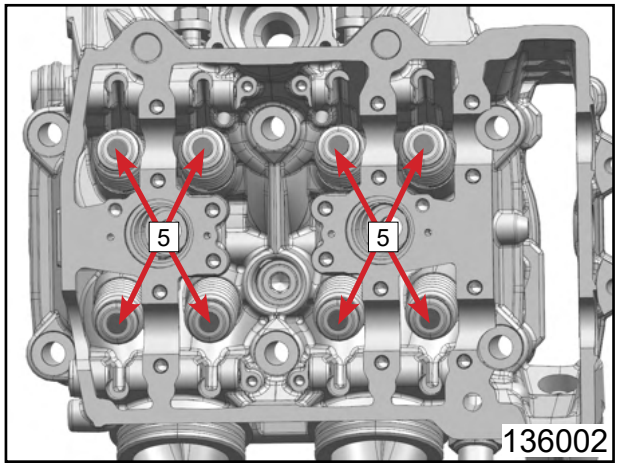
Mount oil pressure sensor (6) with new O-ring.

Guideline

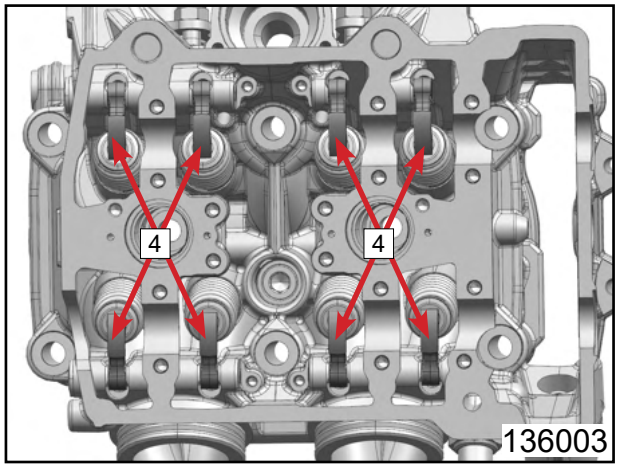
Oil pressure sensor
M10×1
10 N•m



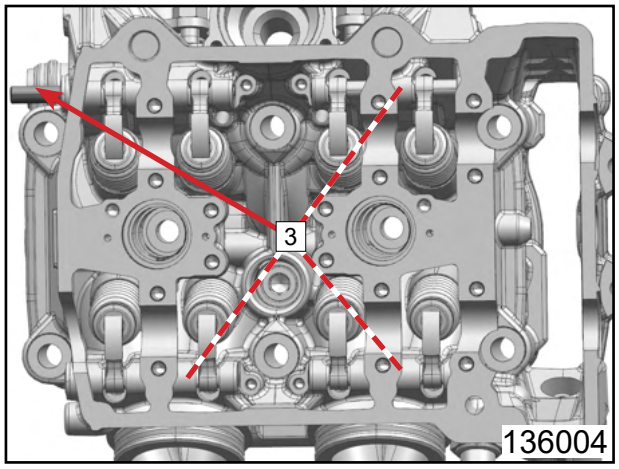
Place shims (5) into the valve spring retainer according to their normal built-in position.



Position cam levers (4).



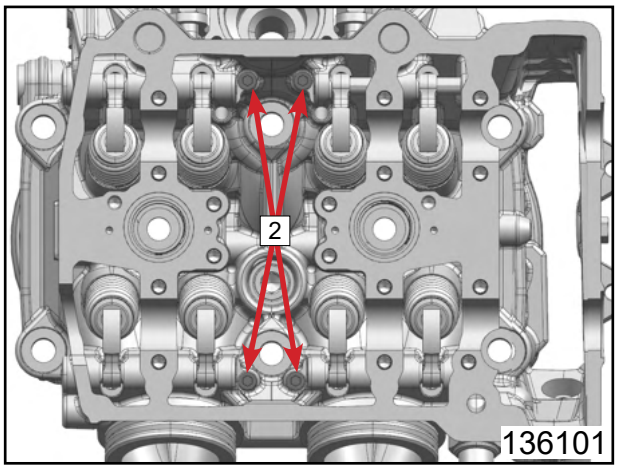
Mount cam lever shafts (3).
Remove disassembly tool.



Mount and tighten screws (2).

Guideline

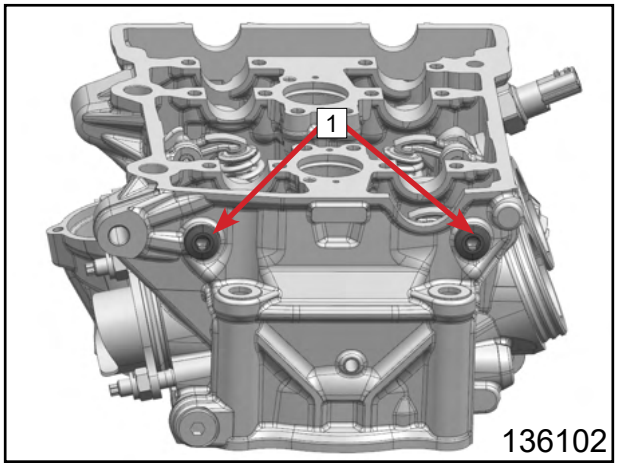
Screw, cam lever axial lock
M5
6 N•m 243 螺纹胶



Mount screw plugs (1) with new O-rings.

Guideline

Screw plug, cam lever axis
M10×1
10 N•m



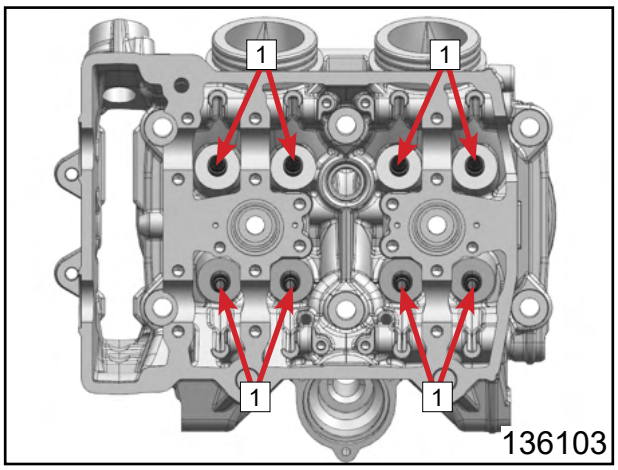
13.3.23 Checking the cylinder head

Check valve guides (1) using the special tool (Limit plug gauge).

If the special tool is easy to insert into the valve guide: Change the valve guide and valve.

Check the sealing surface of the spark plug thread and the valve seats for damage and cracking.

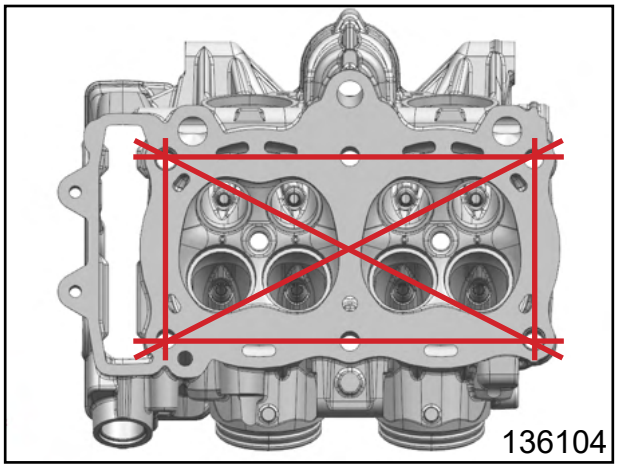
If there is damage or cracking: Change the cylinder head.



Check the sealing surface of the cylinder for distortion using a straightedge and the special tool (Feeler gauge).

Cylinder/cylinder head - sealing area distortion
≤ 0.05 mm

If the measured value does not meet specifications: Change the cylinder head.

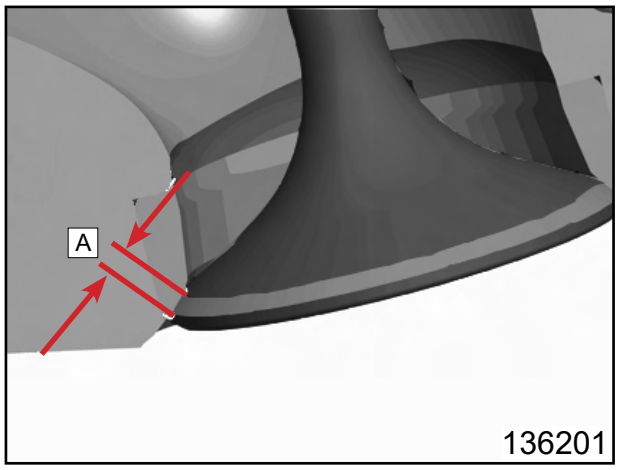


Check sealing seat (A) of the valves.

Valve - sealing seat width	
Intake	2.80 mm

Valve - sealing seat width	
Exhaust	3.00 mm

If the measured value does not meet specifications: Machine the valve seat.
Blow compressed air through all oil channels and oil nozzles, and check that they are clear.



Check valve (2) for damage and wear.
If there is damage or wear: Change the valve.
Check the valve for run-out.

Valve - run-out	
On the valve plate	≤ 0.05 mm
On the valve stem	≤ 0.05 mm

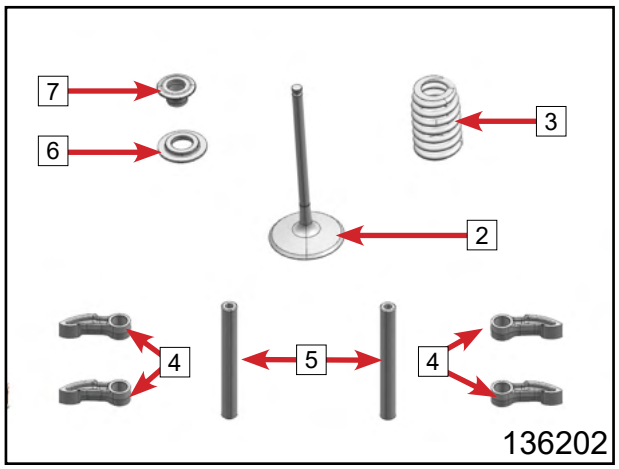
If the measured value does not meet specifications: Change the valve.
Check the valve stem diameter.

Valve - valve stem diameter
Exhaust
4.95mm~4.97 mm
Intake
4.97mm~4.99 mm

If the measured value does not meet specifications: Change the valve.
Check valve spring (3) for damage and wear.
If there is damage or wear: Change the valve spring.
Measure the length of the valve springs.

Valve spring
Minimum length (without valve spring seat)
44.0 mm

If the measured value does not meet specifications: Change the valve springs.
Check cam levers (4) for damage and wear.
If there is damage or wear: Change the cam lever.
Check cam lever shafts (5) for damage and wear.
If there is damage or wear: Change the



cam lever shaft.
Check valve spring seat (6) for damage and wear.
If there is damage or wear: Change the valve spring seat.
Check valve spring retainer (7) for damage and wear.
If there is damage or wear: Change the valve spring retainer.

13.3.24 Checking the clutch

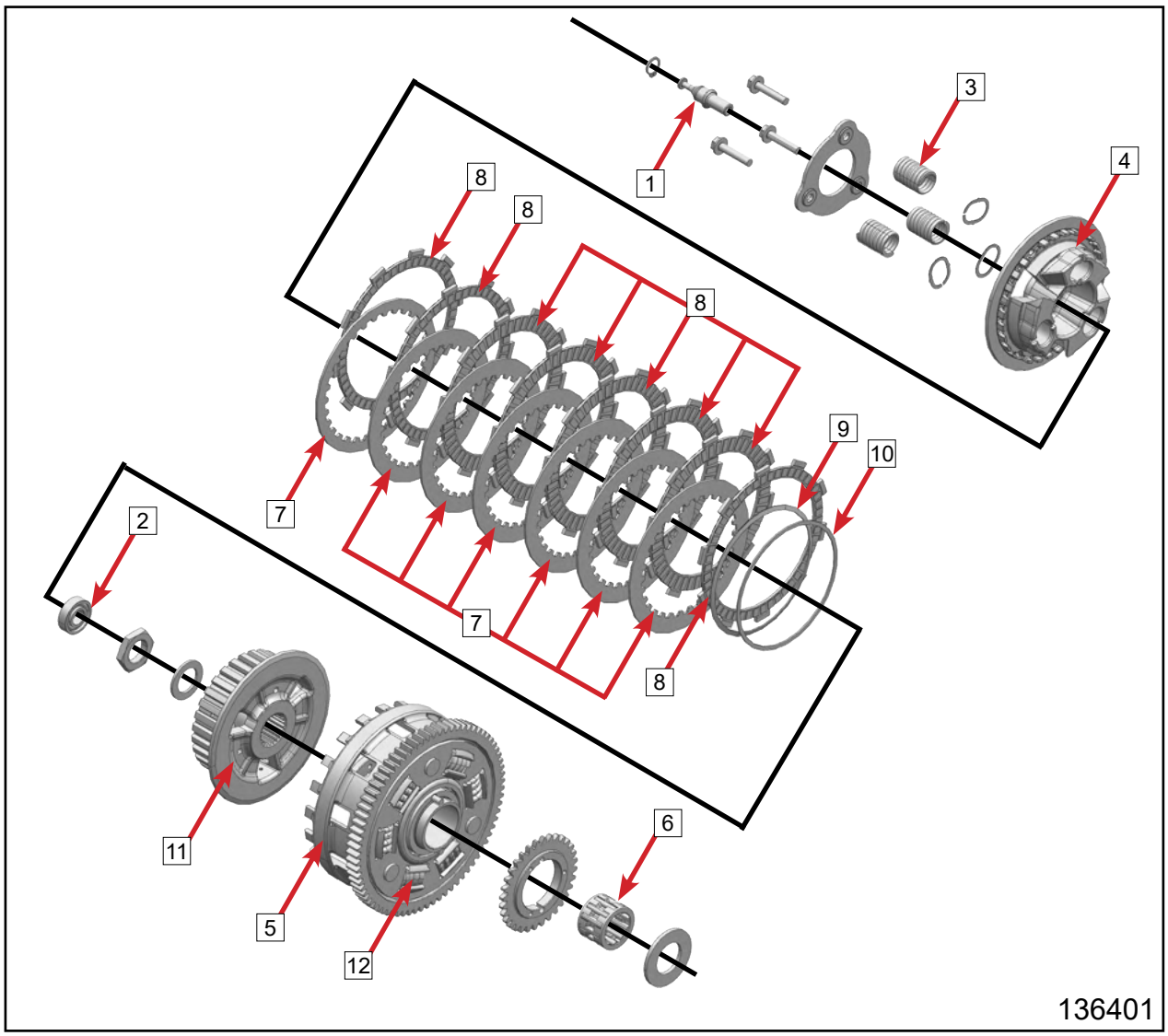
Check clutch push rod (1) for damage and wear.
If there is damage or wear: Change clutch push rod.
Check axial bearing (2) for damage and wear.
If there is damage or wear: Change the axial bearing.
Check the length of clutch springs (3).

Clutch spring - length	≥ 43.0 mm

If the clutch spring length is shorter than specified: Change all clutch springs.
Check the contact surface of clutch pressure cap (4) for damage and wear.
If there is damage or wear: Change the clutch pressure cap.
Check the thrust surfaces of the clutch facing discs in clutch basket (5) for damage and wear.
If there is damage or wear: Change the clutch disc pack and the clutch basket.
Check needle bearing (6) for damage and wear.
If there is damage or wear: Change the needle bearing.
Check intermediate clutch discs (7) for damage and wear.
If the intermediate clutch discs are not level and are pitted: Change the clutch disc pack.
Check clutch facing discs (8) for discoloration and scoring.
If there is discoloration or scoring: Change the clutch disc pack.
Check the thickness of the clutch disc pack.

Clutch disc pack - thickness	
New condition	35.60mm~36.50 mm
Wear limit	34.80 mm

If the clutch disc pack does not meet specifications: Change the clutch disc pack.
Check pretension ring (9) and support ring (10) for damage and wear.
If there is damage or wear: Change the pretension ring and support ring.
Check inner clutch hub (11) for damage and wear.
If there is damage or wear: Change the inner clutch hub.
Check springs (12) of the clutch basket for damage and wear.
If there is damage, wear or play in the direction of rotation: Change the clutch basket.



13.3.25 Removing the shift drum locating unit

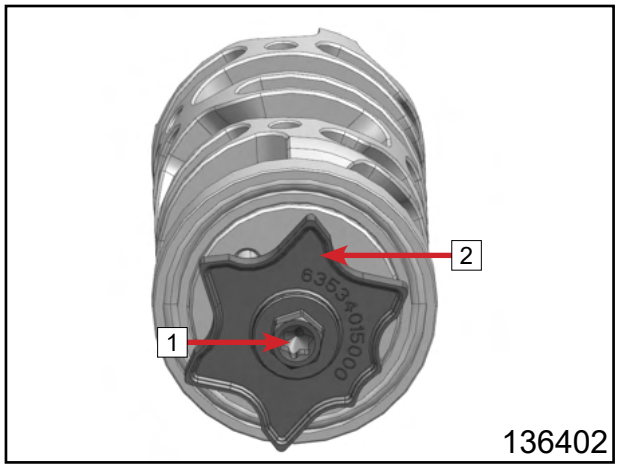
Clamp shift drum.

Guideline

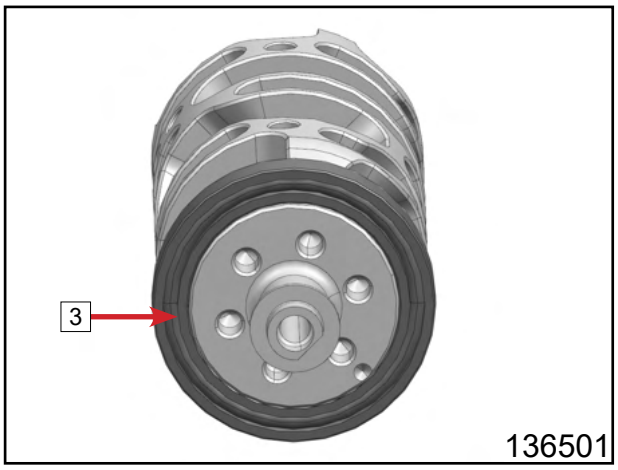
Use soft jaws.

Remove screw (1).

Take off the shift drum locating unit (2).

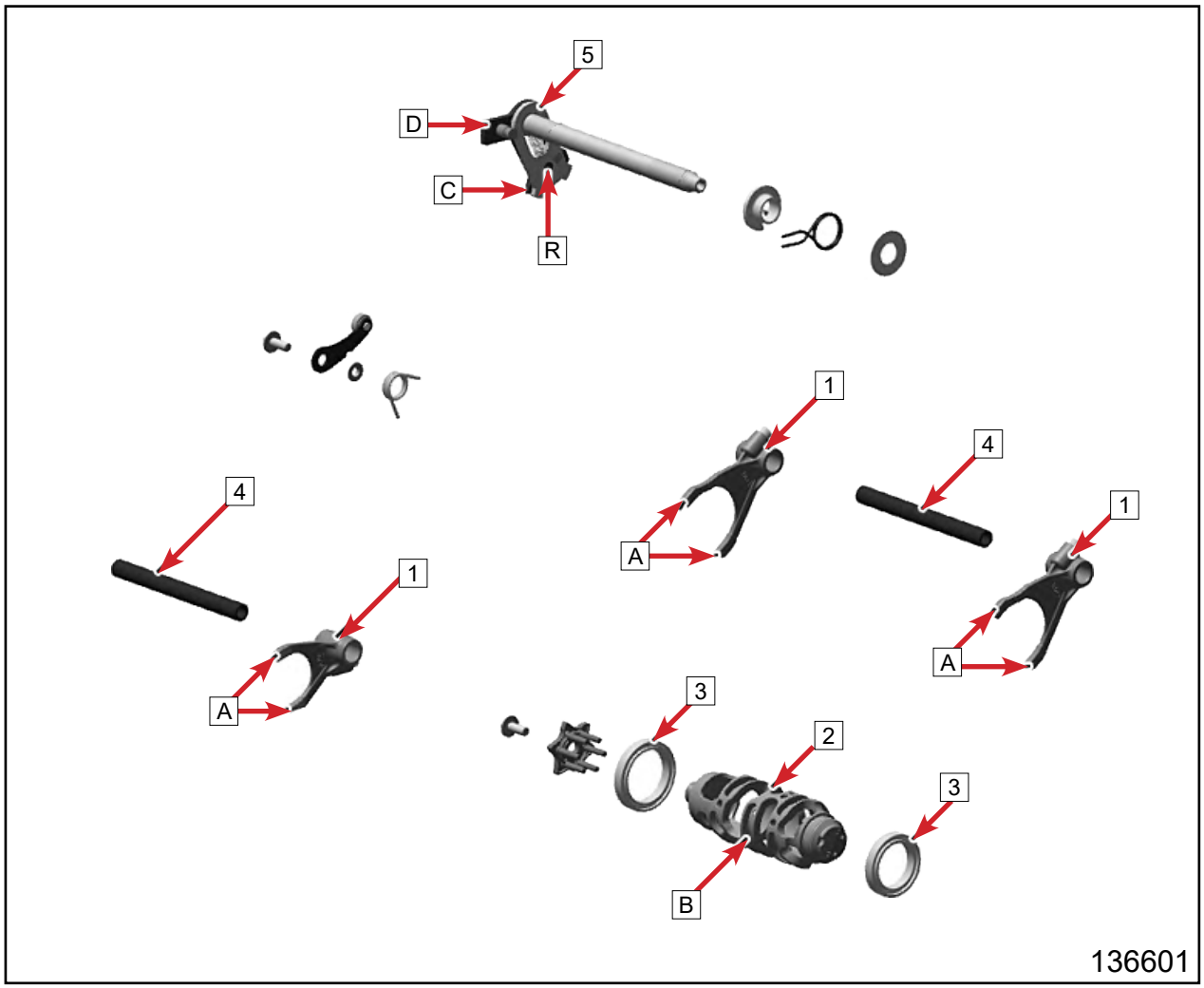


Remove bearing (3).



13.3.26 Checking the shift mechanism

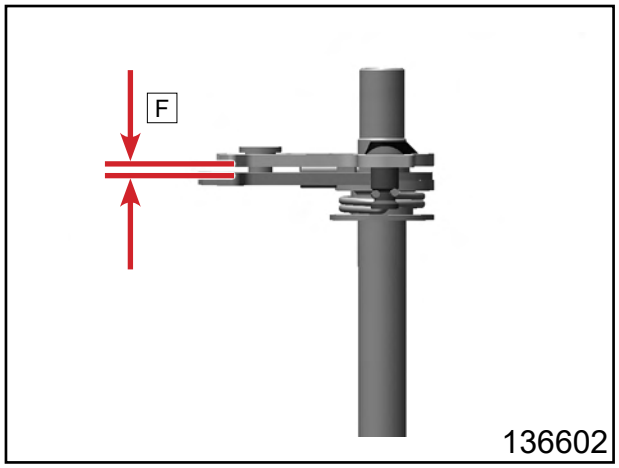
Check shift forks (1) on plate (A) for damage and wear (visual check).
If there is damage or wear: Change the shift fork and gear wheel pair.
Check shift grooves (B) of shift drum (2) for wear.
If the shift groove is worn: Change the shift drum.
Check the seat of the shift drum in bearings (3).
If the shift drum is not seated correctly: Change the shift drum and/or the bearing.
Check bearings (3) for ease of movement and wear.
If the bearings are stiff or are worn: Change the bearings.
Check shift rails (4) on a flat surface for run-out.
If there is run-out: Change the shift rail.
Check the shift rails for scoring, wear and smooth operation in the shift forks.
If there is scoring or corrosion, or if the shift fork is stiff: Change the shift rail.
Check sliding plate (5) in contact areas (C) for wear.
If the sliding plate is worn: Change the sliding plate.
Check return surface (D) on the sliding plate for wear.
If deep notches are present: Change the sliding plate.
Check guide pin (E) for looseness and wear.
If the guide pin is loose and/or worn: Change the sliding plate.
Preassemble the shift shaft.



Check clearance (F) between the sliding plate and the shift quadrant.

Shift shaft - play in sliding plate/shift quadrant
0.40mm~ 0.80 mm

If the measured value does not meet specifications:
Change the sliding plate.



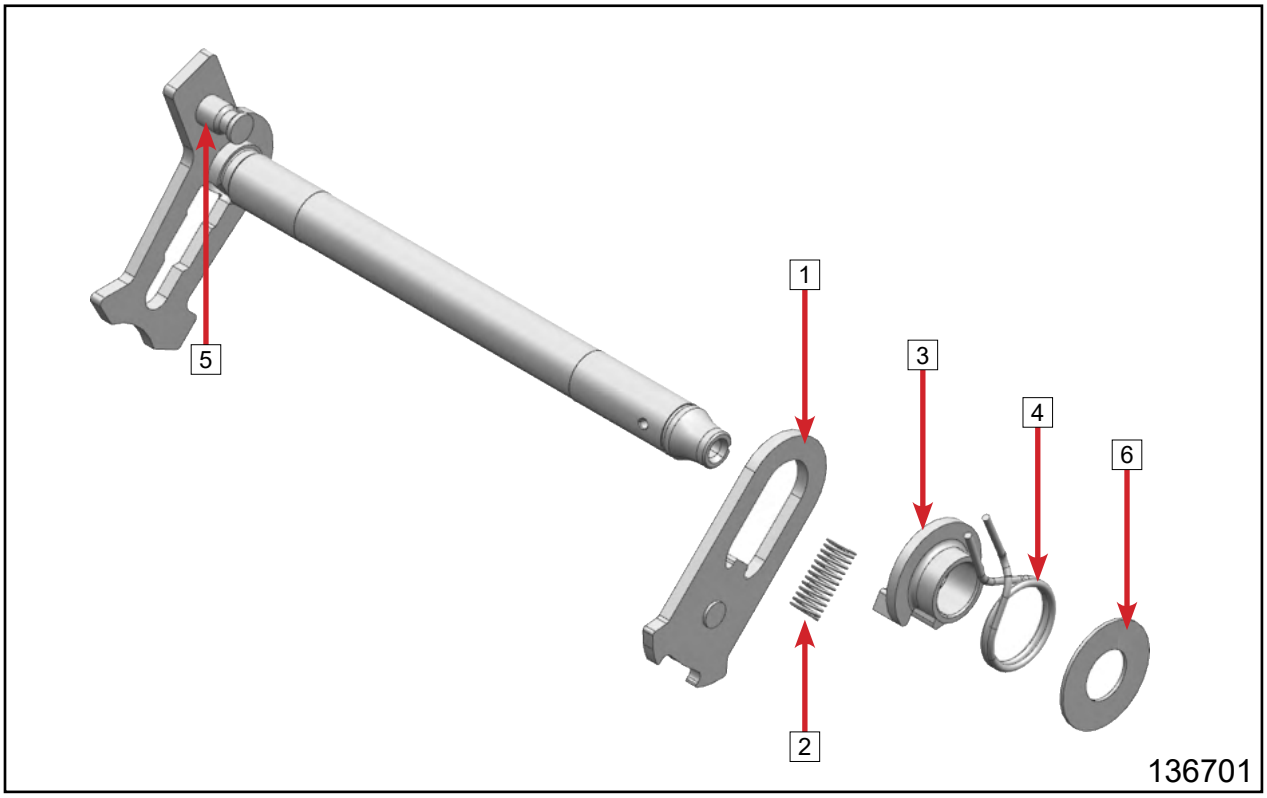
13.3.27 Preassembling the shift shaft

Fix the short end of the shift shaft in a vise.

Guideline:

Use soft jaws.

Mount sliding plate (1) with the guide pin facing down and attach the guide pin to the shift quadrant.
Mount pressure spring (2).
Push on spring guide (3), push return spring (4) over the spring guide with the offset end facing upward and lift the offset end over abutment bolt (5).
Mount stop disk (6).



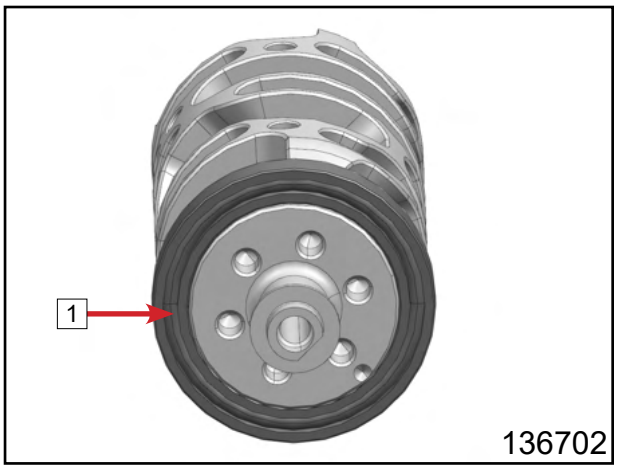
13.3.28 Installing the shift drum locating unit

Clamp shift drum.

Guideline

Use soft jaws.

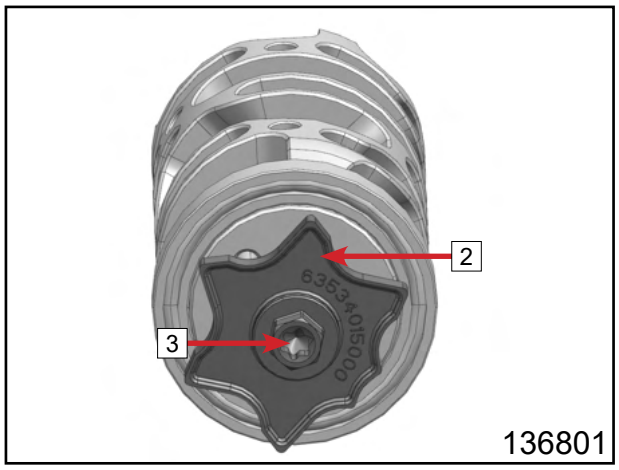
Mount bearing (1).

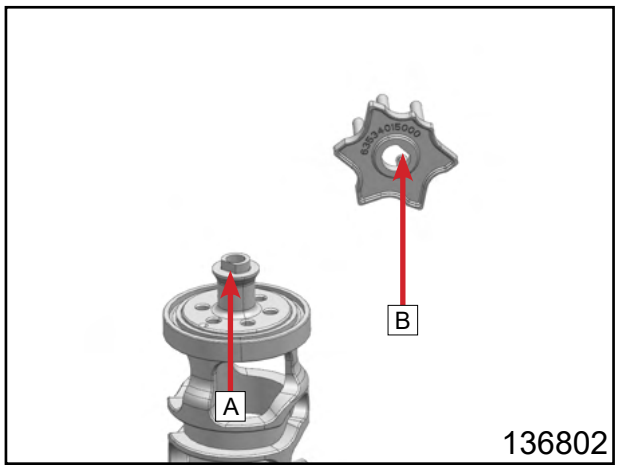


Position shift drum locating unit (2).
]The flat surface (A) of the shift drum engages in the flat surface (B) of the shift drum locating unit.
Mount and tighten screw (3).

Guideline:

Screw, shift drum locating
M6
10 N•m 243 螺纹胶





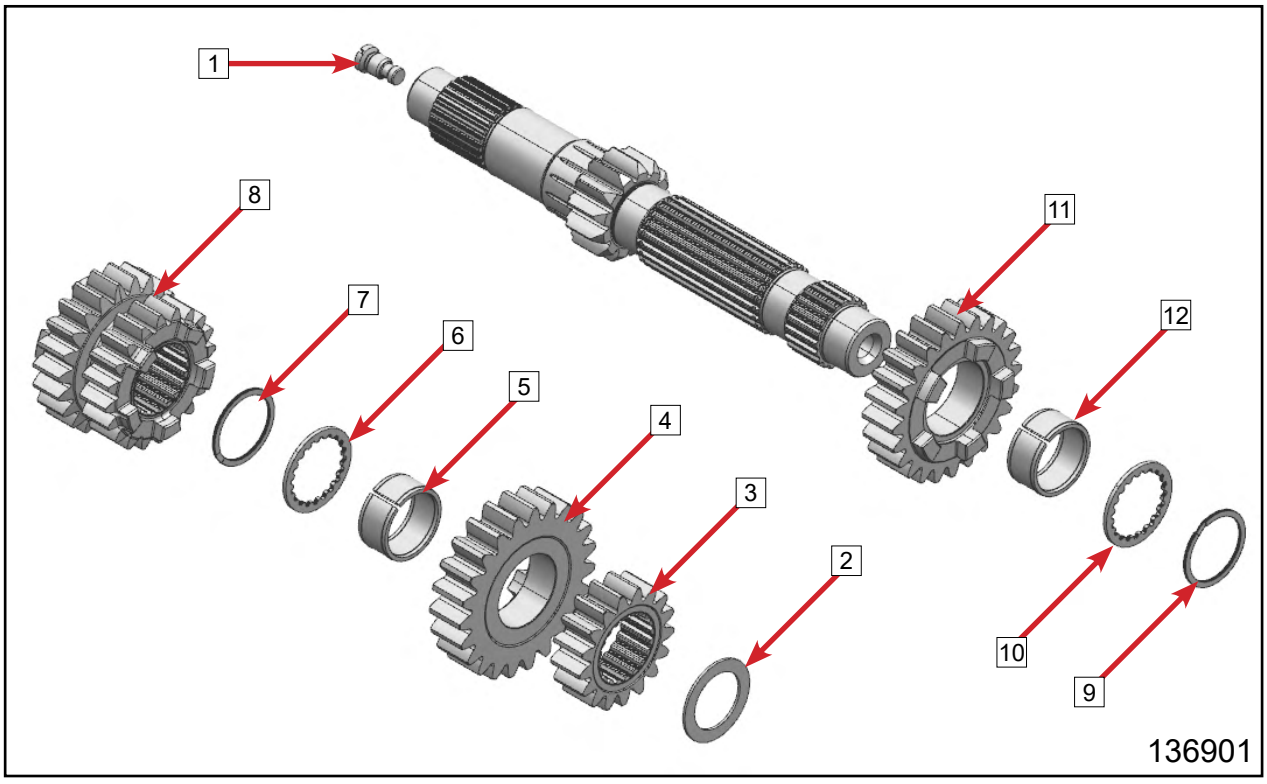
13.3.29 Disassembling the main shaft

Remove oil nozzle (1).
Secure the main shaft in the vise with the gear teeth facing downward.

Guideline

Use soft jaws.

Remove stop disk (2) and second-gear fixed gear (3).
Remove sixth-gear idler gear (4).
Remove needle bearing (5) and stop disk (6).
Remove lock ring (7).
Remove third/fourth-gear sliding gear (8).
Remove lock ring (9).
Remove stop disk (10) and fifth-gear idler gear (11).
Remove needle bearing (12).



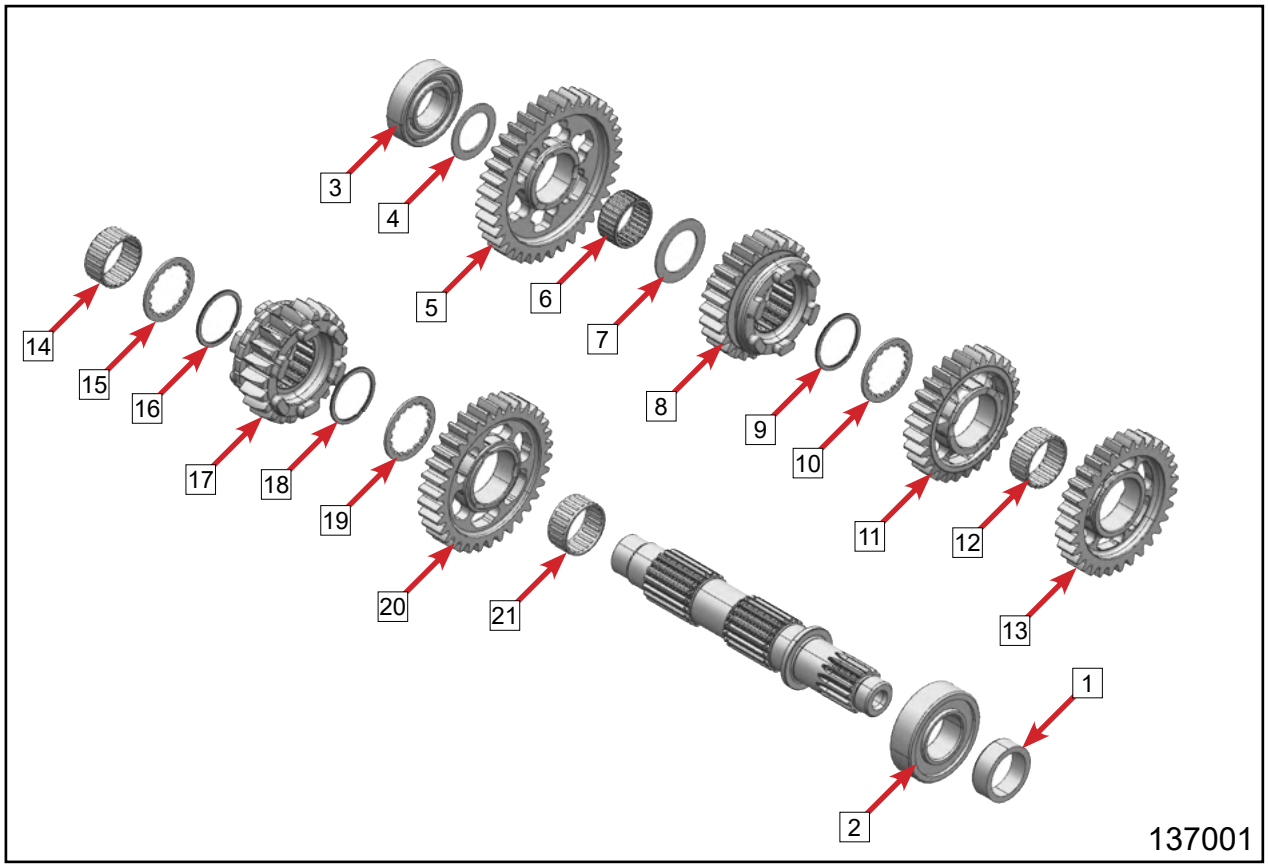
13.3.30 Disassembling the countershaft

Remove bearing (1) with distance sleeve (2).
Secure the countershaft in the bench vise with the toothed end facing downward.

Guideline

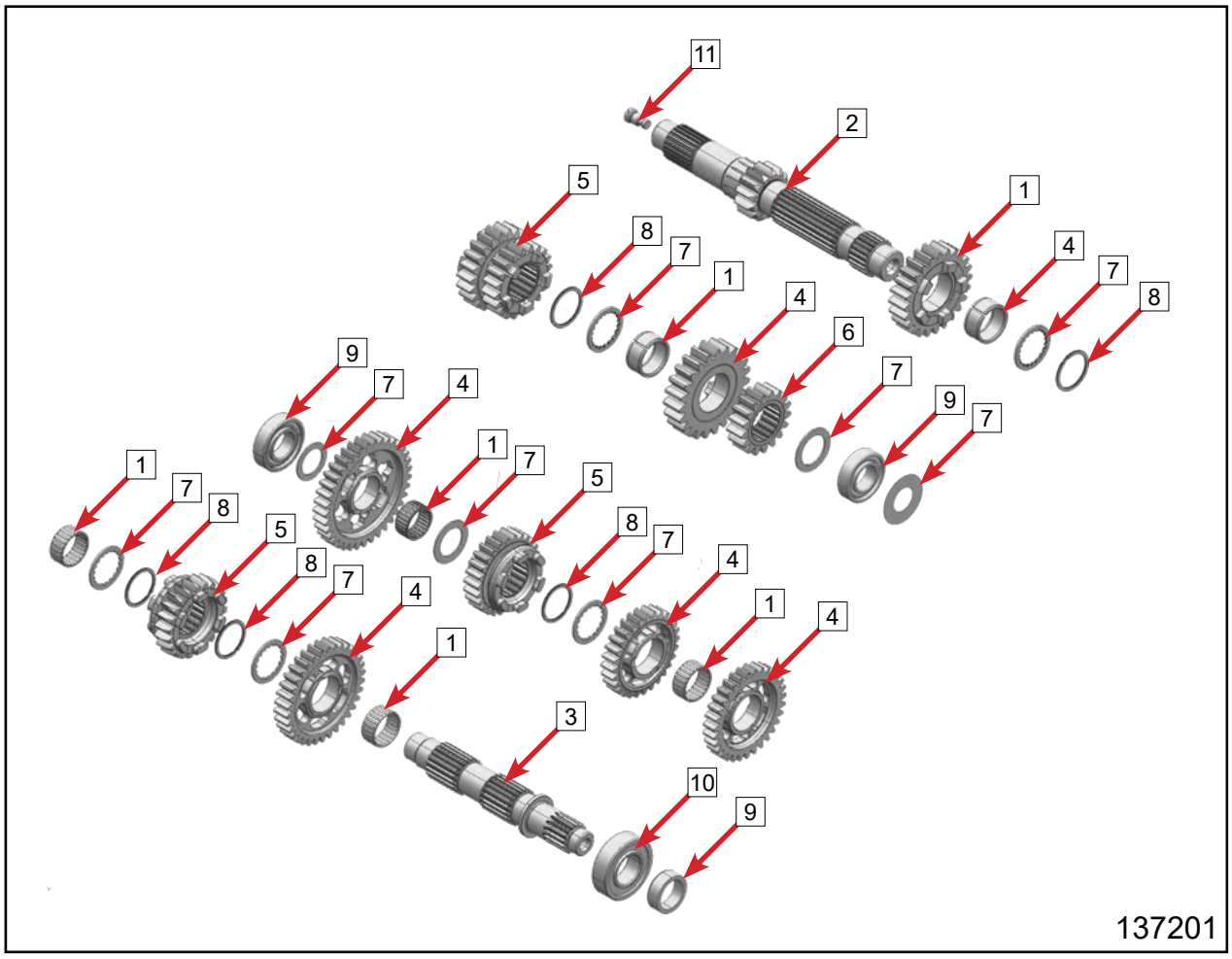
Use soft jaws.

Remove bearing (3).
Remove stop disk (4) and first-gear idler gear (5).
Remove needle bearing (6) and stop disk (7).
Remove the fifth-gear sliding gear (8) and lock ring (9).
Remove stop disk (10) and fourth-gear idler gear (11).
Remove needle bearing (12) and third-gear idler gear (13).
Remove needle bearing (14) and stop disk (15).
Remove lock ring (16) and sixth-gear sliding gear (17).
Remove lock ring (18) and stop disk (19).
Remove second-gear idler gear (20) and needle bearing (21).



13.3.31 Checking the transmission

Check needle bearings (1) for damage and wear.
If there is damage or wear:
Change the needle bearing.
Check the pivot points of main shaft (2) and countershaft (3) for damage and wear.
If there is damage or wear: Change the main shaft and/or countershaft.
Check the tooth profiles of main shaft (2) and countershaft (3) for damage and wear.
If there is damage or wear: Change the main shaft and/or countershaft.
Check the pivot points of idler gears (4) for damage and wear.
If there is damage or wear: Change the gear wheel pair.
Check the shift dogs of idler gears (4) and sliding gears (5) for damage and wear.
If there is damage or wear: Change the gear wheel pair.
Check the tooth faces of idler gears (4), sliding gears (5), and fixed gear (6) for damage and wear.
If there is damage or wear: Change the gear wheel pair.
Check the tooth profiles of sliding gears (5) for damage and wear.
If there is damage or wear: Change the gear wheel pair.
Check sliding gear (5) for smooth operation in the profile of main shaft (2).
If the fixed gear is stiff: Change the sliding gear or the main shaft.
Check sliding gears (5) for smooth operation in the profile of countershaft (3).
If the fixed gear is stiff: Change the sliding gear or the countershaft.
Check stop disks (7) for damage and wear.
If there is damage or wear: Change the stop disks.
Use new lock rings (8) with every repair.
Check bearings (9) for damage and wear.
If there is damage or wear: Change the bearings.
Check distance sleeve (10) for damage and wear.
If there is damage or wear: Change distance sleeve.
Check oil nozzle (11) to ensure that they are free.
If the oil nozzle is blocked: Clean the oil nozzle and change as necessary.


11
2
5
1
8
7
1
4
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7
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6
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5
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4
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4
1
3
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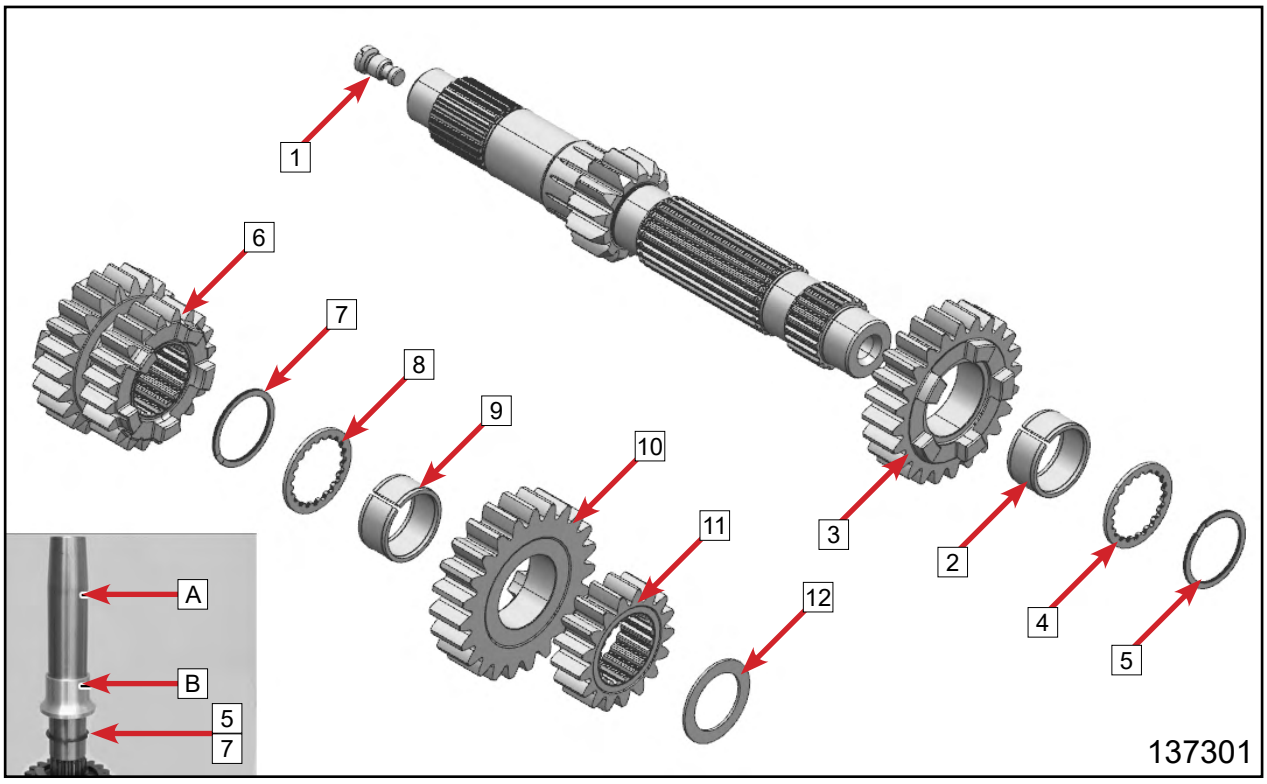
9
137201

13.3.32 Assembling the main shaft

Info
Use new lock rings with every repair.

Preparatory work
Carefully lubricate all parts before assembling.
Check the transmission.



Main work
Mount and tighten oil nozzle (1).
Guideline

Oil nozzle for clutch lubrication
M8
5 N•m 43 螺纹胶

Info
Ensure that there is no thread locker in the hole.

Secure the main shaft in the vise with the gear teeth facing downward.
Guideline

Use soft jaws.

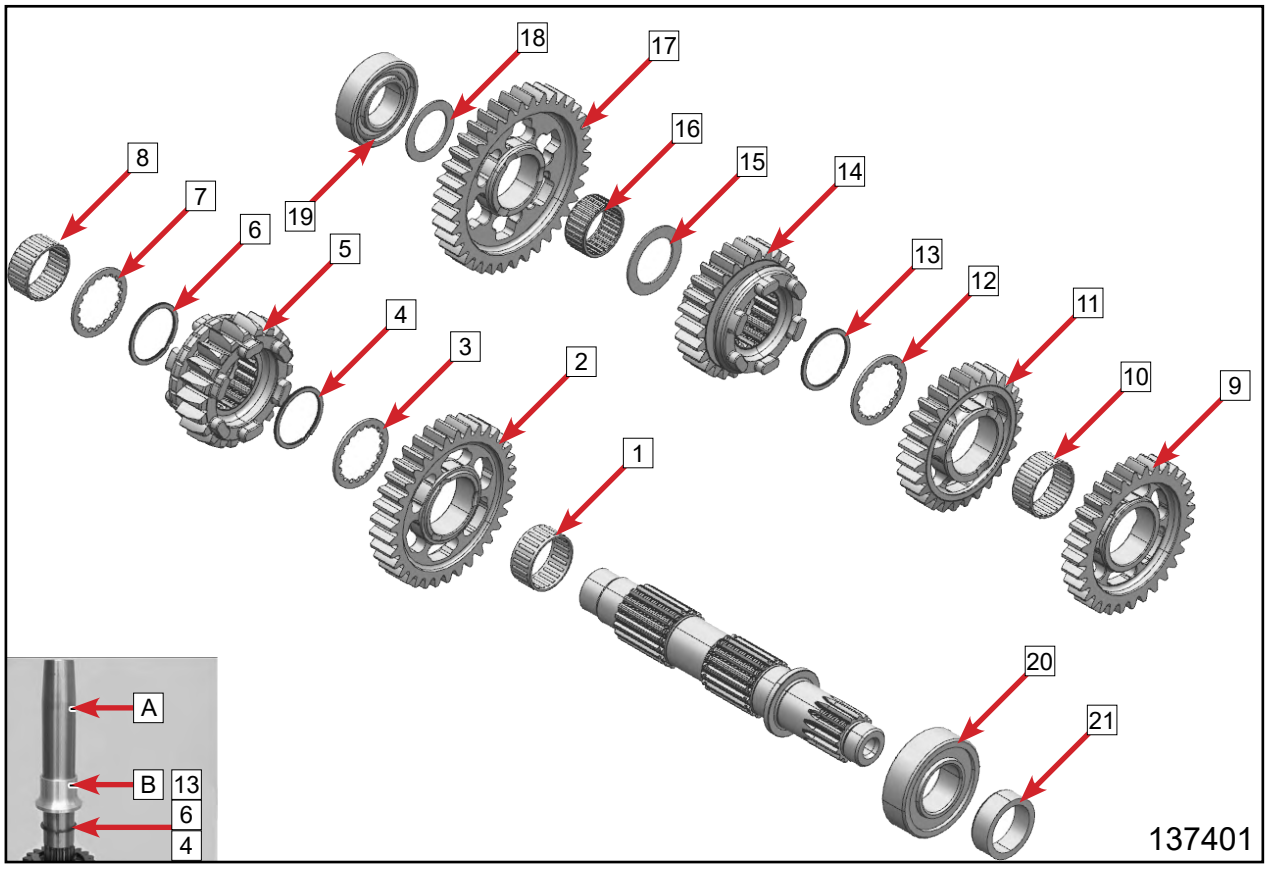
Mount needle bearing (2), and mount fifth-gear idler gear (3) with the shift dogs facing up.
Mount stop disk (4).
Position special tool (Mounting tool for lock ring) on the transmission shaft.
Position new lock ring (5) on special tool (A) and push down with sleeve (B).
The lock ring engages in the groove of the transmission shaft.
Attach third/fourth-gear sliding gear (6) with the small gear wheel facing up.
Position special tool (Mounting tool for lock ring) on the transmission shaft.
Position new lock ring (7) on special tool (A) and push down with sleeve (B).

The lock ring engages in the groove of the transmission shaft.
Mount stop disk (8) and needle bearing (9).
Mount sixth-gear idler gear (10) with the shift dogs facing downward.
Mount second-gear fixed gear (11) with the collar facing downward and mount stop disk (12).
Finally, check all the gear wheels for smooth operation.

13.3.33 Assembling the countershaft

Info
Use new lock rings with every repair.

Preparatory work
Carefully lubricate all parts before assembling.
Check the transmission.



Main work
Secure the countershaft in the bench vise with the toothed end facing downward.
Guideline

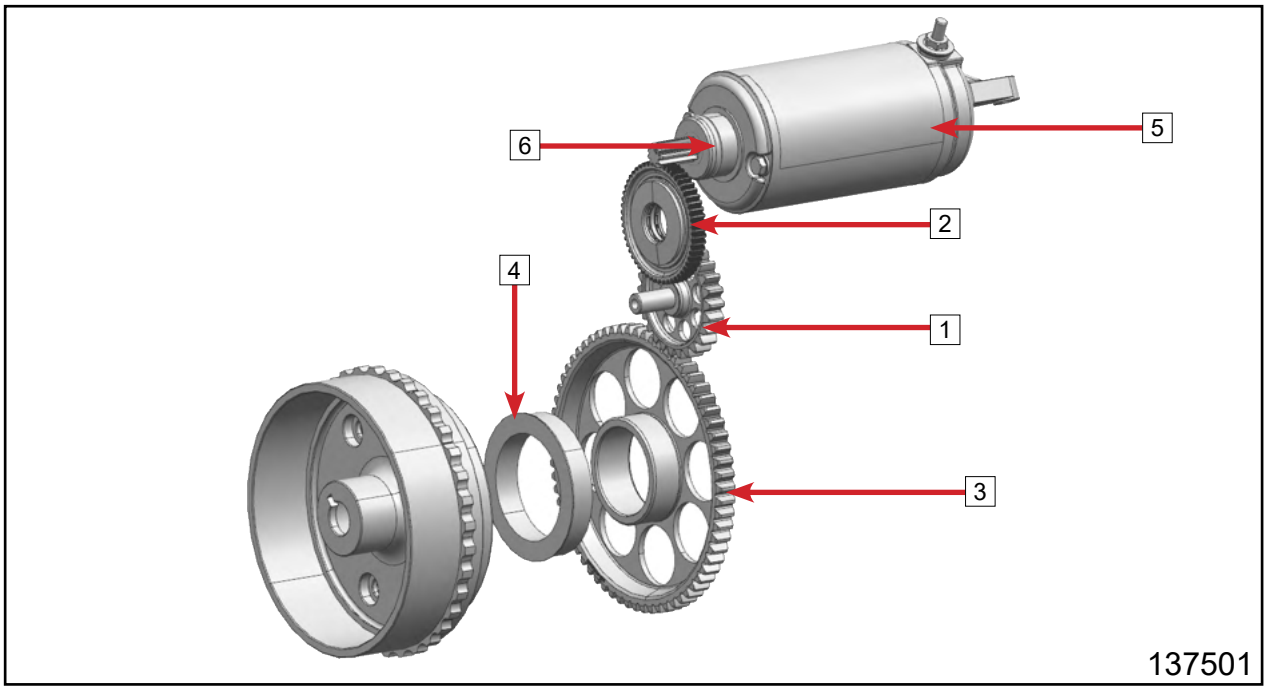
Use soft jaws.

Mount needle bearing (1) and second-gear idler gear (2) onto the countershaft with the protruding collar facing downward.
Mount stop disk (3).
Position special tool (Mounting tool for lock ring) on the transmission shaft.
Position new lock ring (4) on special tool (A) and push down with sleeve (B).
The lock ring engages in the groove of the transmission shaft.
Mount the sixth-gear sliding gear (5) with the shift groove facing up.
Position special tool (Mounting tool for lock ring) on the transmission shaft.
Position new lock ring (6) on special tool (A) and push down with sleeve (B).

The lock ring engages in the groove of the transmission shaft.
Mount stop disk (7).
Mount needle bearing (8) and the third-gear idler gear (9) with the collar facing up.
Mount needle bearing (10) and the fourth-gear idler gear (11) with the collar facing down.
Mount stop disk (12).
Position special tool (Mounting tool for lock ring) on the transmission shaft.
Position new lock ring (13) on special tool (A) and push down with sleeve (B).
The lock ring engages in the groove of the transmission shaft.
Mount the fifth-gear sliding gear (14) with the shift groove facing down and stop disk (15).
Mount needle bearing (16) and first-gear idler gear (17) with the recess facing down, and stop disk (18).
Mount bearing (19).
Take the countershaft out of the vise.
Mount distance sleeve (20) with bearing (21).
Finally, check all the gear wheels for smooth operation.

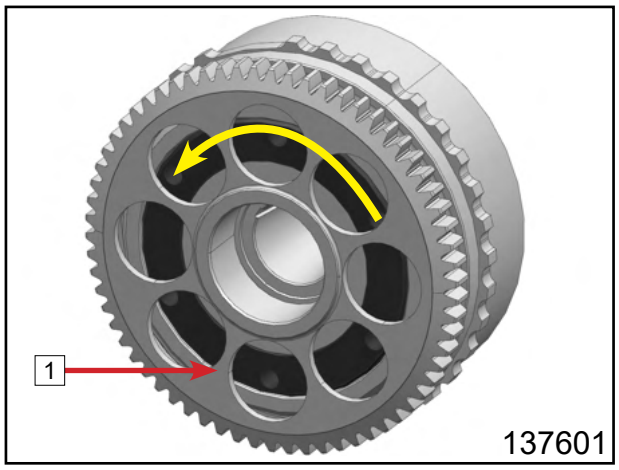
13.3.34 Checking the electric starter drive

Check the gear teeth and bearing of starter intermediate gear (1) for damage and wear.
If there is damage or wear:
Change the starter intermediate gear.
Check the gear teeth and bearing of torque limiter (2) for damage and wear.
If there is damage or wear: Change torque limiter.
Check gear mesh and bearing of freewheel gear (3) for damage and wear.
If there is damage or wear: Change freewheel gear or bearing.
Check freewheel (4) for damage and wear.
If there is damage or wear: Change the freewheel.
Check the gear teeth of the starter motor (5) for damage and wear.
If there is damage or wear: Change starter motor.
Change O-ring (6) of the starter motor.
Connect negative cable of a 12-volt power supply to the housing of the starter motor.
Connect positive cable of the power supply briefly with the connector of the starter motor.
If the starter motor does not turn when the circuit is closed: Change starter motor.



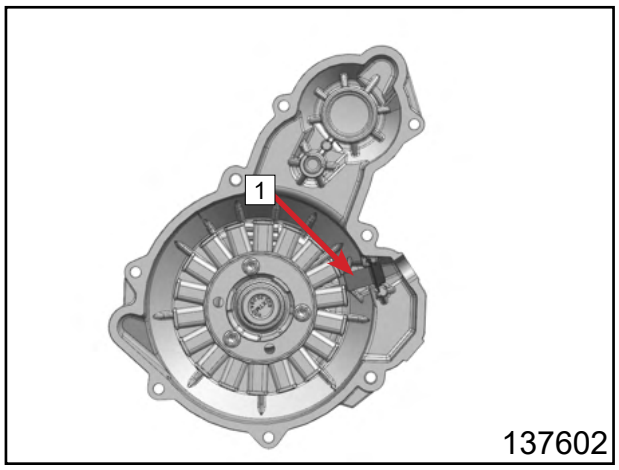
13.3.35 Checking the freewheel

Insert freewheel gear (1) into the freewheel hub while turning the freewheel gear counterclockwise; do not wedge it.
Check the locking action of freewheel gear (1).
The freewheel gear cannot be turned counterclockwise and does not block clockwise:
Change the freewheel.

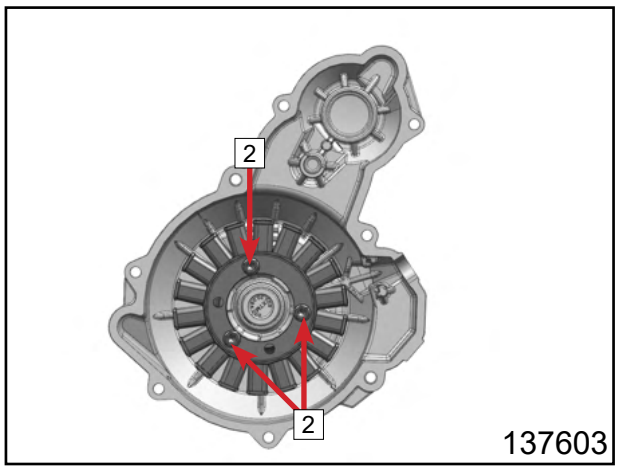


13.3.36 Working on the alternator cover

Remove the cable retainer (1).
Pull the rubber grommet out of the engine case.

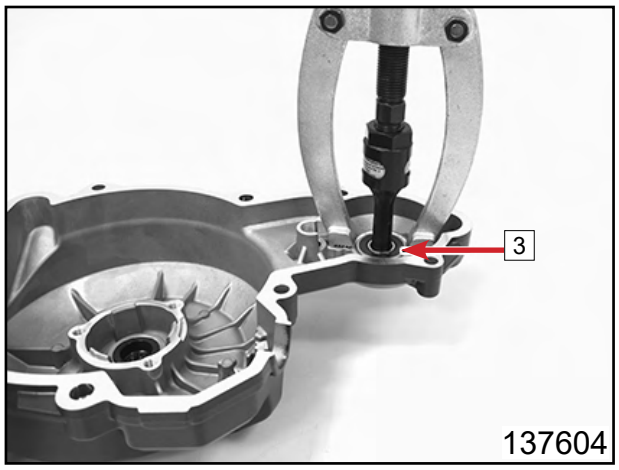


Remove screws (2).
Remove the stator.



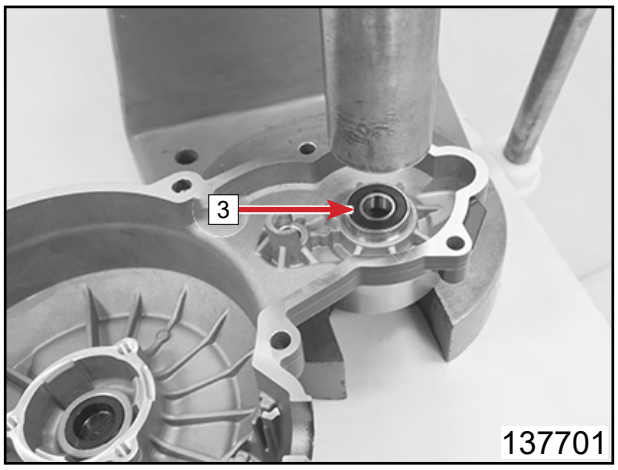
Remove bearing (3) using the special tool.

Bearing puller
Internal bearing puller



Press in new bearing (3) all the way using a suitable tool.

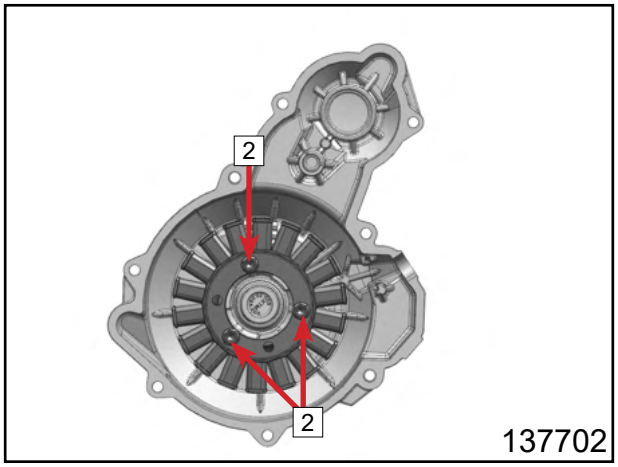
Info
Provide suitable support for the alternator cover while pressing in.



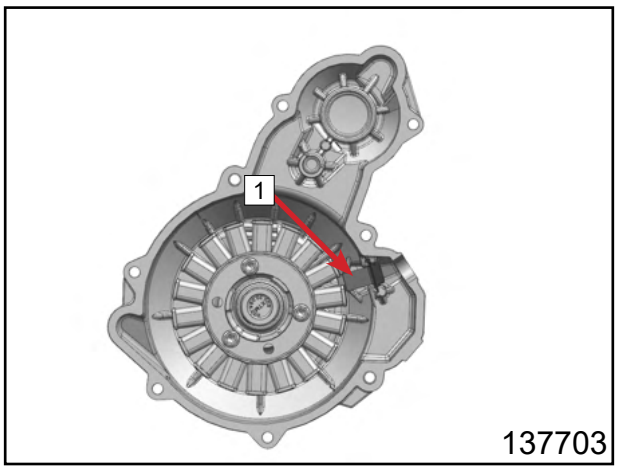
Position the stator.
Mount and tighten screws (2).

Guideline

Screw, stator
M6
10 N•m 243 螺纹胶



Apply sealing compound lightly in the area of the rubber grommet.
Position the rubber grommet in the alternator cover.
Position the cable retainer (1).
The retaining bracket engages in the attachment (A).



13.4 Engine assembly

13.4.1 Installing the piston

Info
The operations are the same for both pistons.

Clamp connecting rod in the vise.

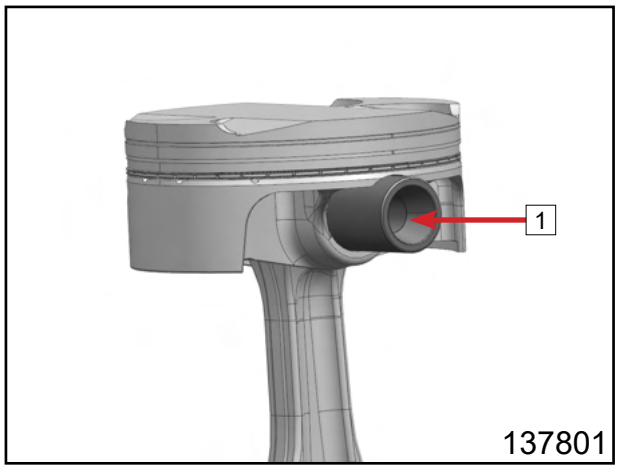
Guideline

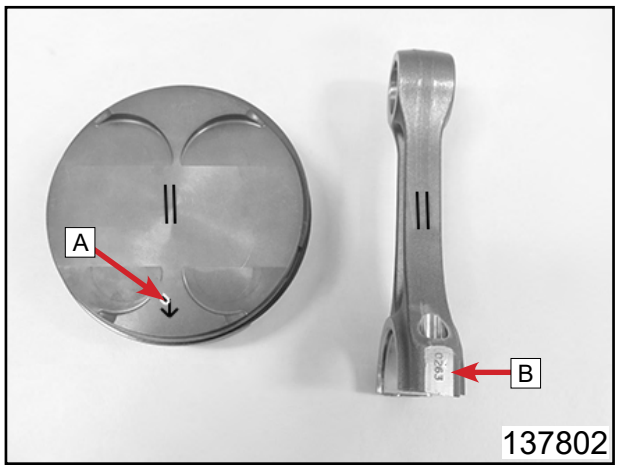
Use soft jaws.

Position piston on the associated connecting rod.

Mount piston pin (1).

The piston marking (A) and lettering (B) of the connecting rod point forward after assembly.





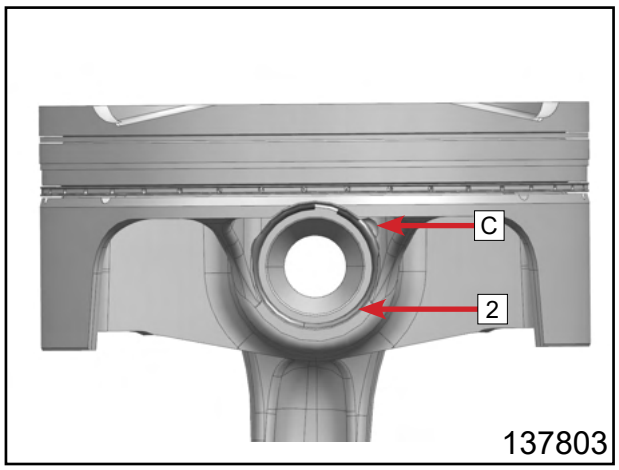
Position the new piston ring lock (2).

Insert the special tool and press it with force towards the piston.

Turn the special tool (Insertion for piston ring lock) clockwise, thereby pushing the piston ring lock into the groove.

Ensure that the piston ring lock is in the correct position on both sides.

The open side (C) of the piston ring lock faces upwards.

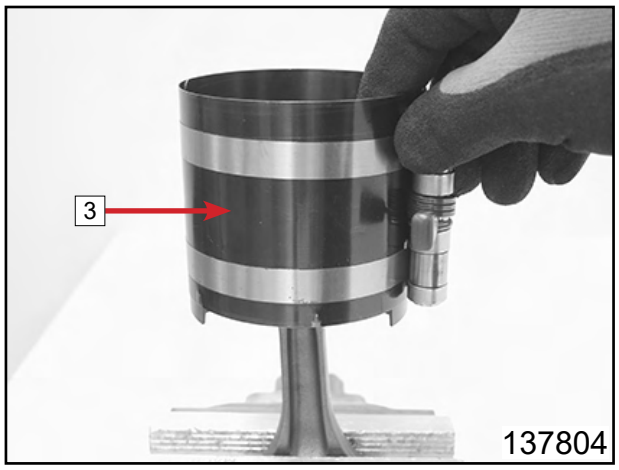


Oil the cylinder and piston.

Shift the gap of the piston rings by 120°.

Mount special tool (Piston ring compressor3) on the piston.

Clamp the piston rings together using the special tool.

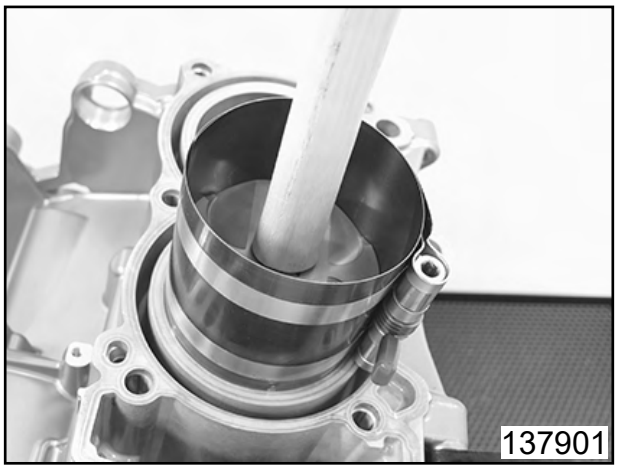


Position the piston with the special tool on the cylinder.
Tap lightly on the piston ring compressor from the top with a plastic hammer so that it lies flush with the cylinder.

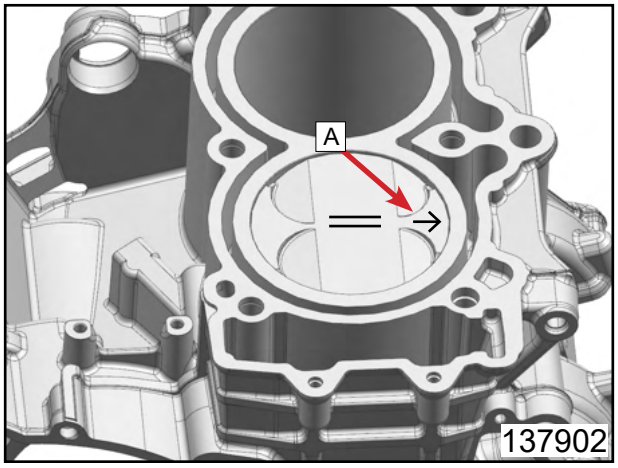
Info
The special tool must press the piston rings together properly and lie flush with the cylinder.

Drive the piston into the cylinder by striking it carefully with the hammer handle.

Info
The piston rings should not catch or they will be damaged.

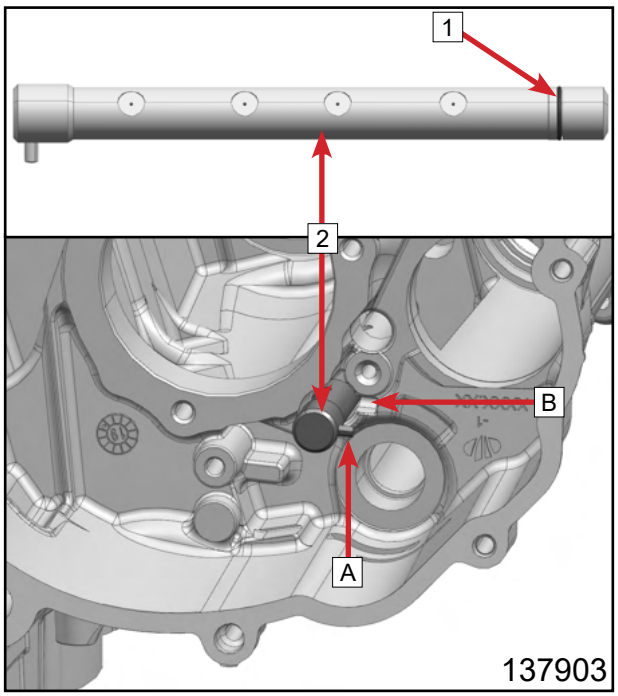


Ensure that piston marking (A) faces the exhaust side.



13.4.2 Installing the oil spray tube

Mount the new O-ring (1) on the oil spray tube (2).
Mount the oil spray tube.
The pin (A) engages in the recess (B).



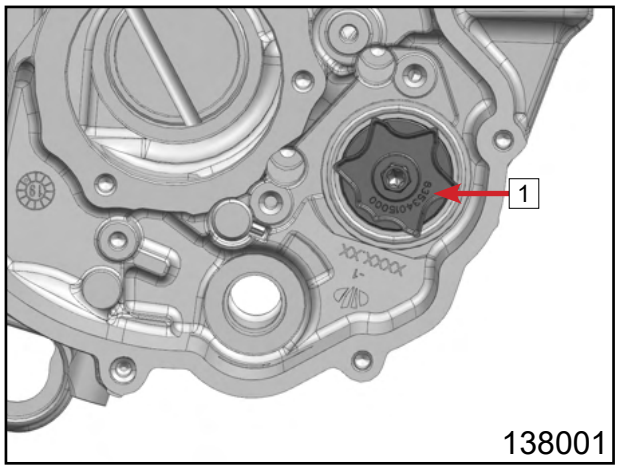
13.4.3 Installing the transmission shafts

Preparatory work

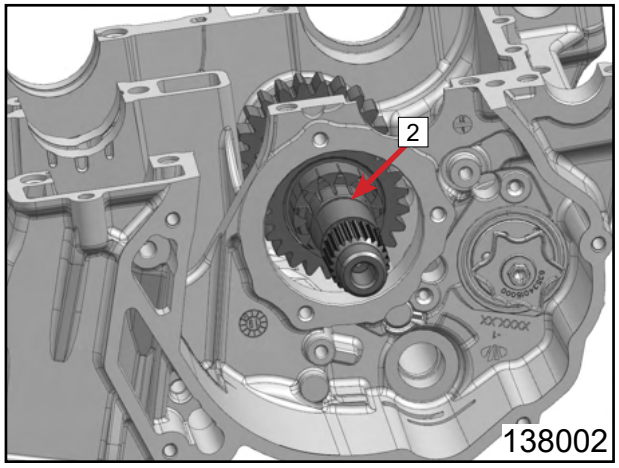
Oil all bearings.

Main work

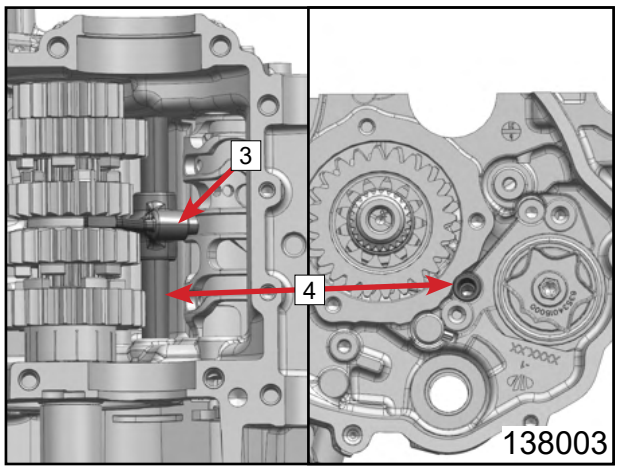
Mount shift drum (1).



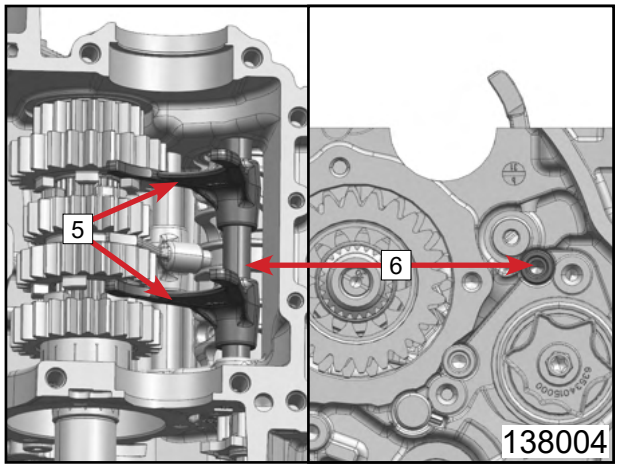
Mount main shaft (2).



Position shift fork (3).
Mount shift rail (4).



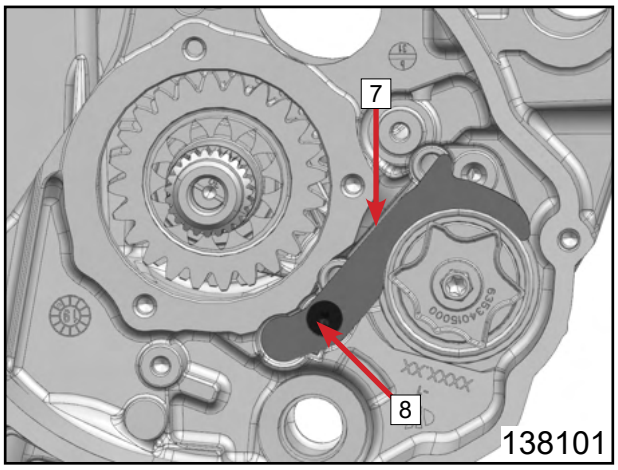
Position shift forks (5).
Mount shift rail (6).



Position retaining bracket (7).
Mount and tighten screw (8).

Guideline

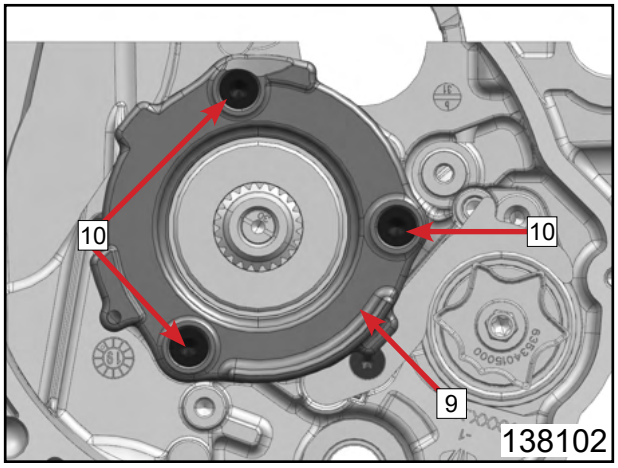
Screw, shift drum retaining bracket
M5
6 N•m 243 螺纹胶



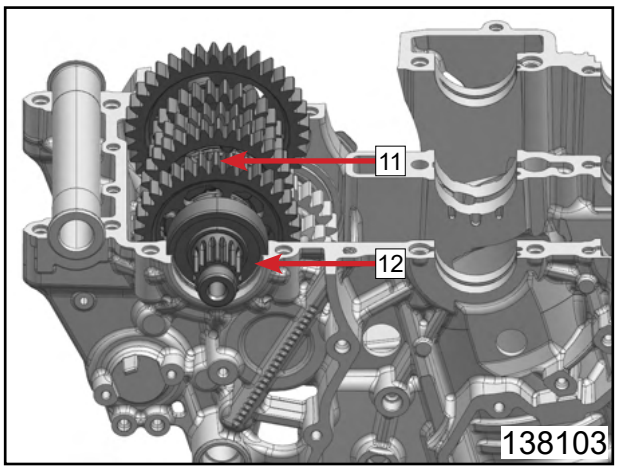
Position bearing support (9) with bearing.
Mount and tighten screws (10).

Guideline

Screw, main shaft bearing support
M6
10 N•m 243 螺纹胶

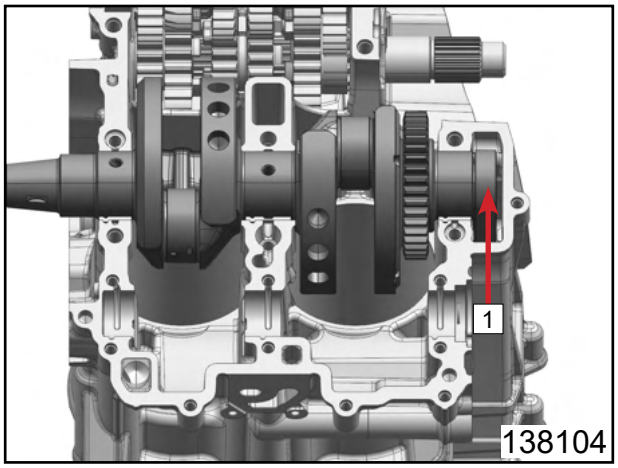


Position countershaft (11)
Mount radial shaft seal ring (12).



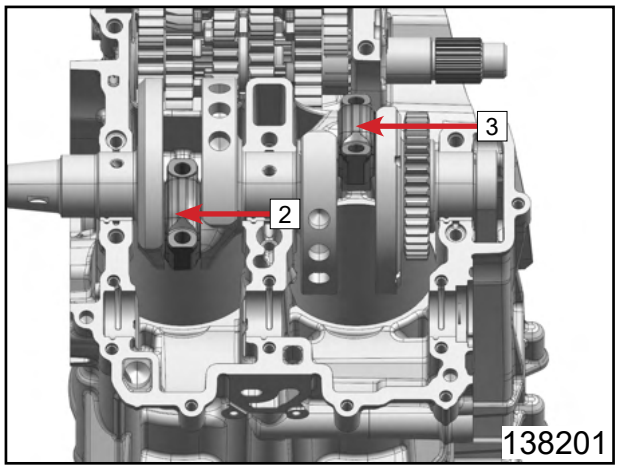
13.4.4 Installing the lower engine case

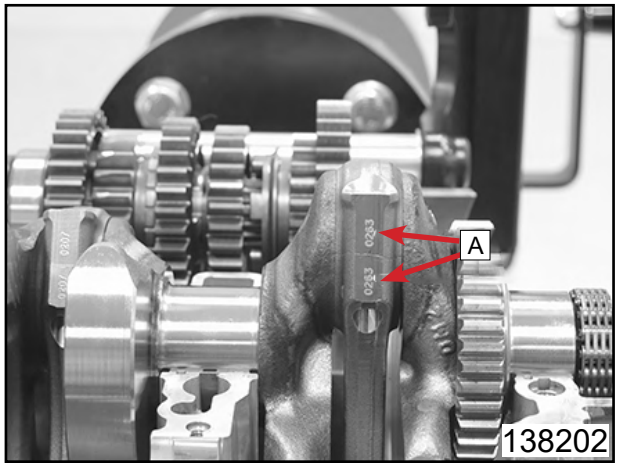
Oil the bearing shells.
Position crankshaft with timing chain (1).



Oil the bearing shells.
There is no oil or grease on the connecting rod joint face.
Position conrod bearing covers (2) and (3) on the associated connecting rod.

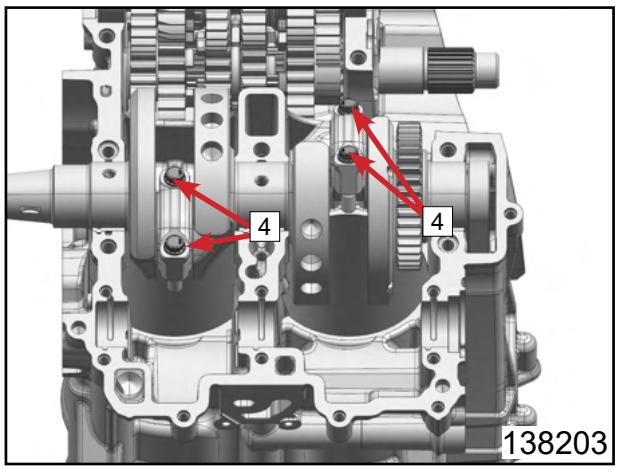
Info
The markings (A) on the connecting rod and conrod bearing cover must be identical and legible from the front.





Mount and tighten new screws (4).
Guideline

Screw, conrod bearing
M8
1st stage 5 N•m 2nd stage 15 N•m 3rd stage 90° Collar and thread oiled

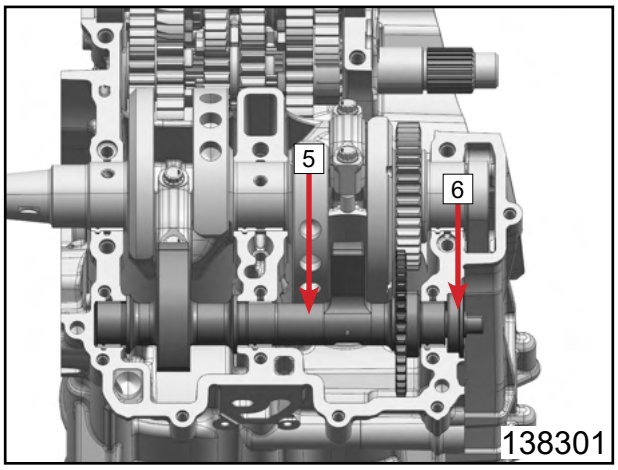


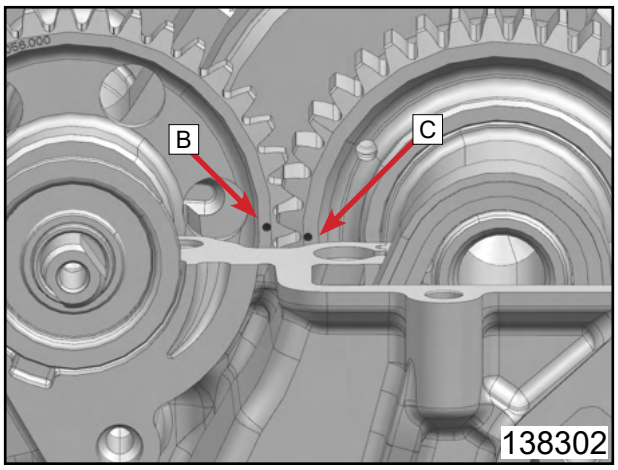
Special tool:
Multi-tooth wrench socket
Angle disc

Oil the bearing shells.
Position balancer shaft (5) with new greased radial shaft seal ring (6).

Long-life grease

Align markings (B) and (C).

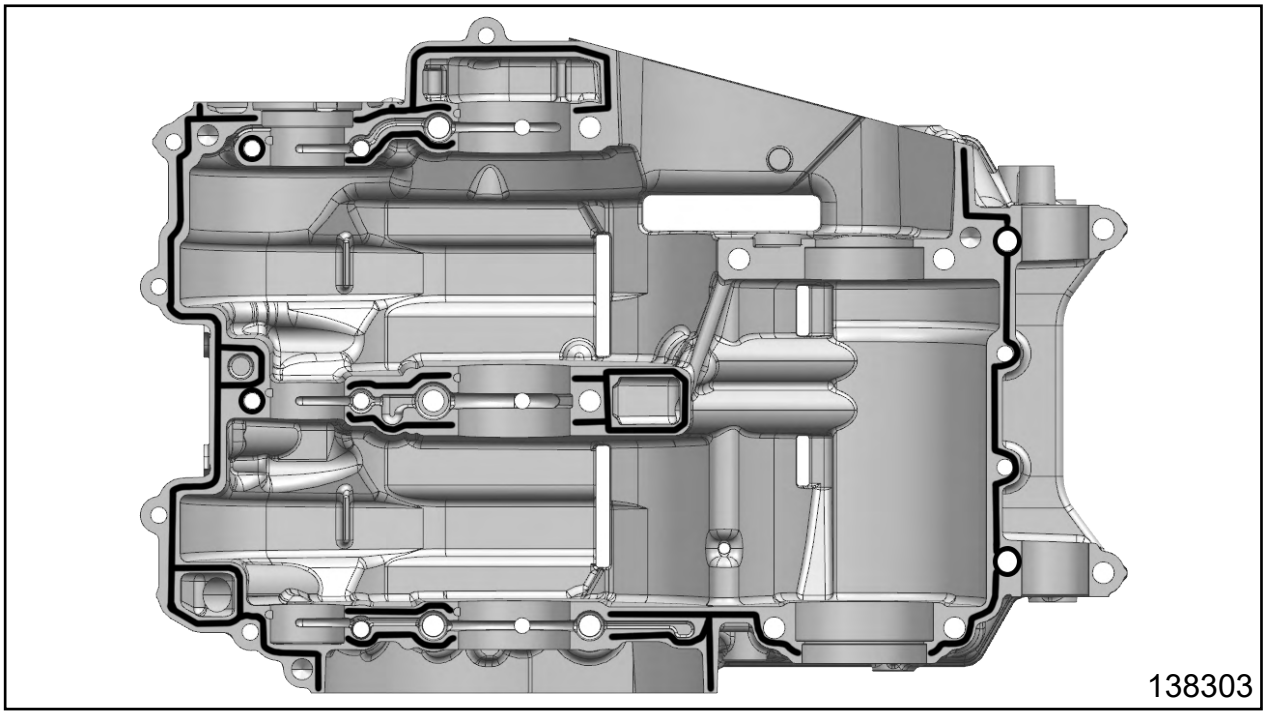




Degrease the sealing surface. Apply sealing compound to the lower section of the engine case.

Loctite® 5910

Info
Ensure that the dowels are seated properly.



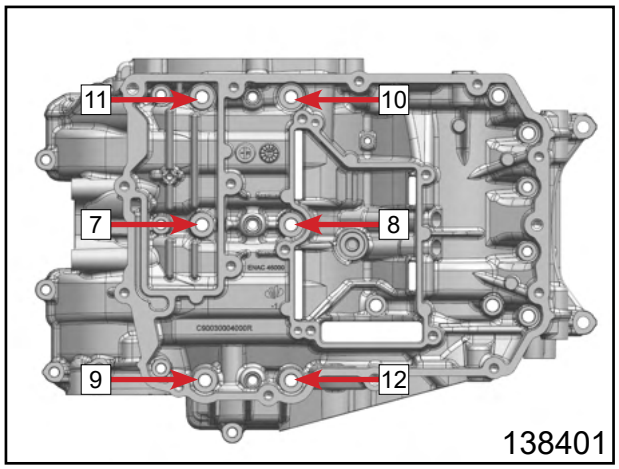
Mount lower engine case. If necessary, strike lightly again with a rubber mallet.

Info
Do not use the screws to pull the two sections of the engine case together.

Mount screws with washers and tighten in the order (7) to (12).

Guideline

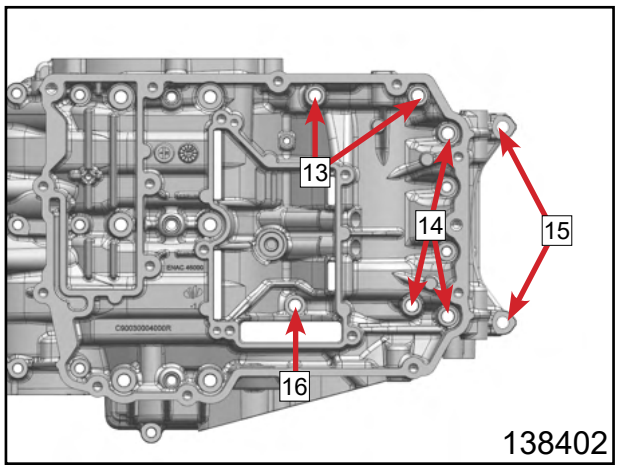
Screw, engine case
M8x90
25 N•m Screw support greased



Mount and tighten screws (13).

Guideline

Screw, engine case
M8x90
25 N•m Screw support greased



Mount and tighten screws (14).

Guideline

Screw, engine case
M8x65
25 N•m Screw support greased

Mount and tighten screws (15).

Guideline

Screw, engine case
M8x55
25 N•m Screw support greased

Mount and tighten screw (16).

Guideline

Screw, engine case
M8x45
25 N•m Screw support greased

Mount and tighten screws (17).

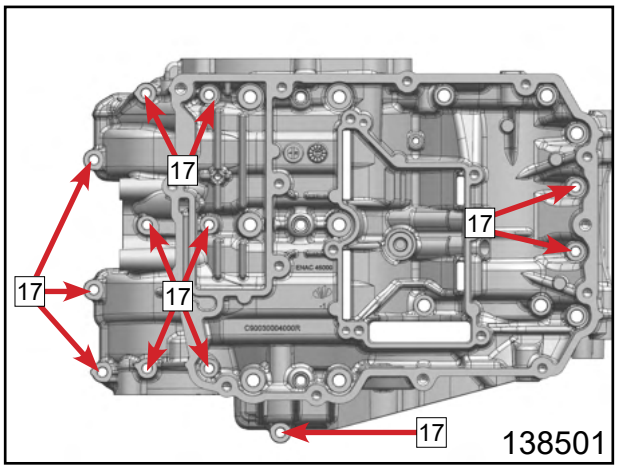
Guideline

Screw, engine case
M6×60
12 N•m

Mount and tighten screws (18).

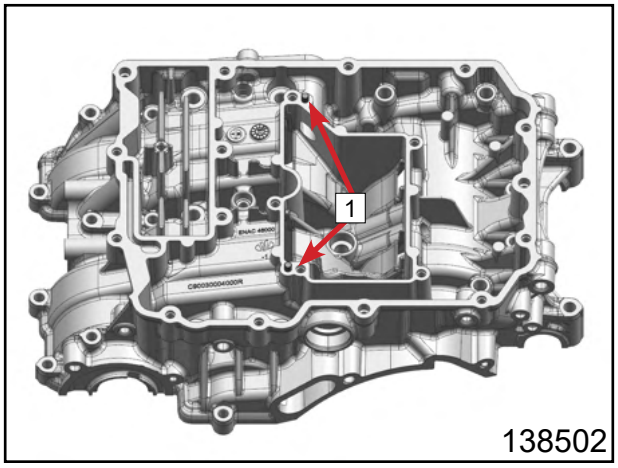
Guideline

Screw, engine case
M6×30
12 N•m



13.4.5 Installing the oil pump unit

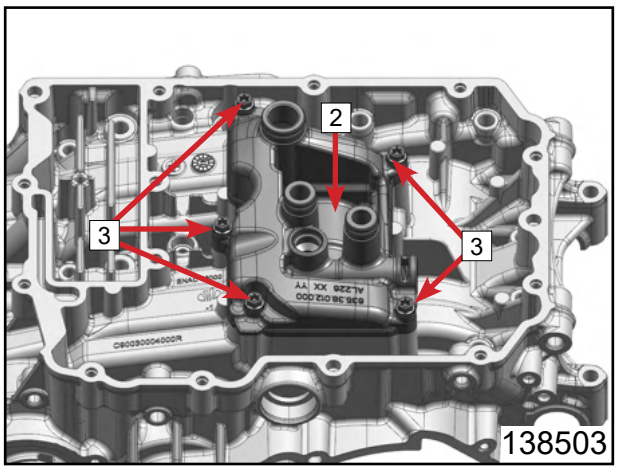
Mount locating pins (1).



Grease O-rings of the oil pump.
Position oil pump unit (2).
Mount and tighten screws (3).

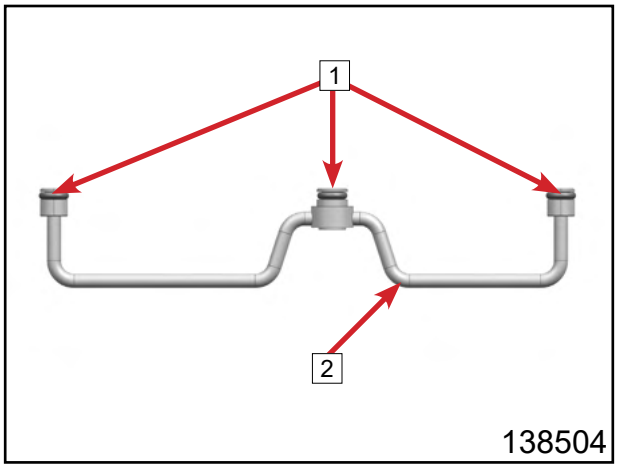
Guideline

Screw, oil pump unit
M6
10 N•m



13.4.6 Installing the oil pan

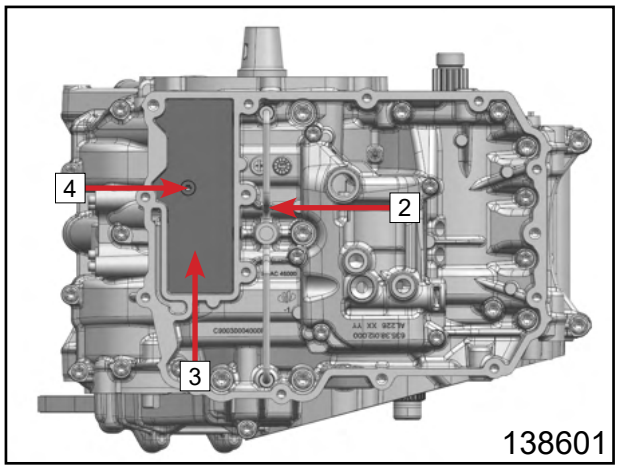
Grease the new O-rings (1) and mount on the oil line (2).
Mount oil line (2).



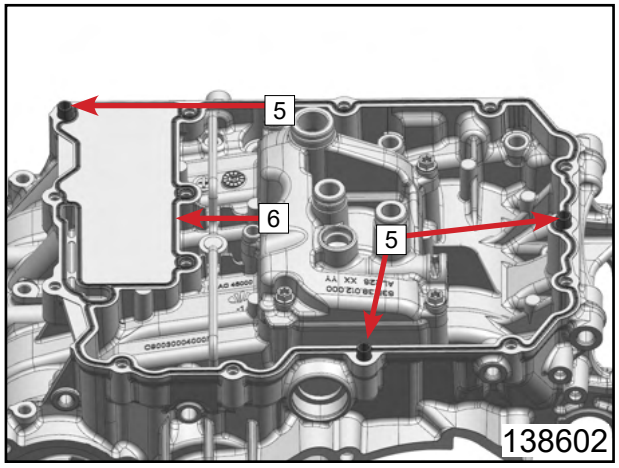
Position pressure plate (3).
Mount and tighten screw (4).

Guideline

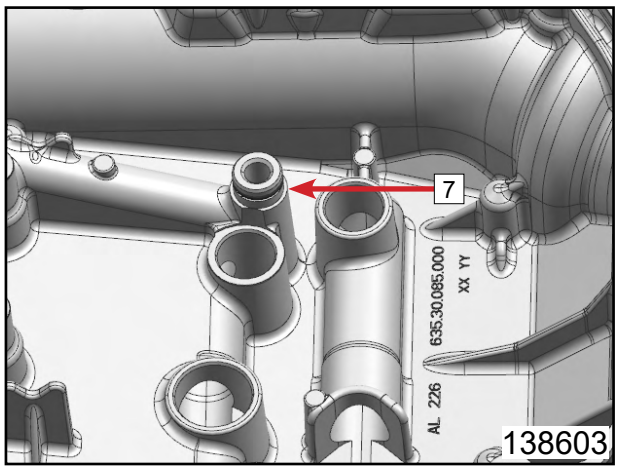
Screw, pressure plate
M5
3 N•m 243 螺纹胶



Mount dowels (5).
Mount gasket (6).



Grease and mount the new O-ring (7).



Position oil pan.
Mount screws (8) but do not tighten yet.

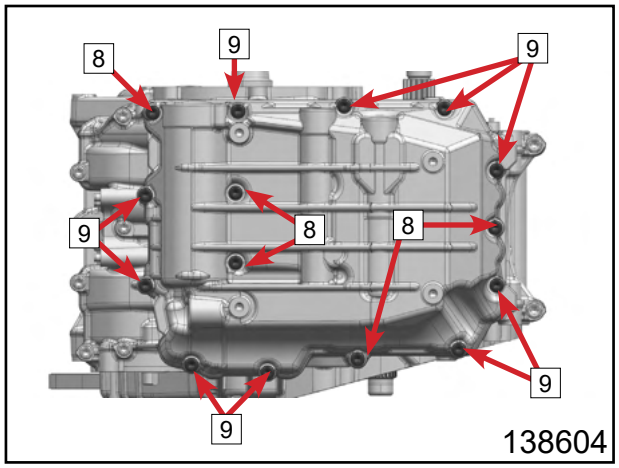
Guideline

Screw, oil pan
M6×35
10 N•m

Mount screws (9) and tighten all screws in a crisscross pattern.

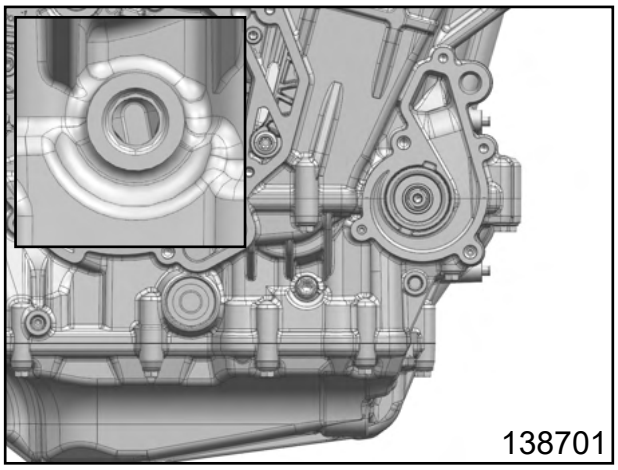
Guideline

Screw, oil pan
M6×30
10 N•m

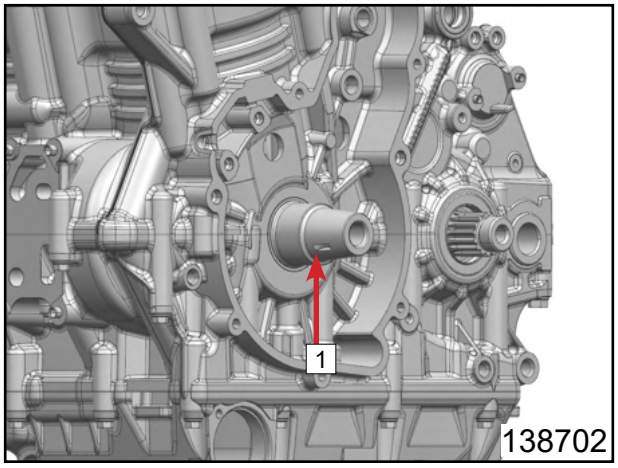


13.4.7 Installing the rotor

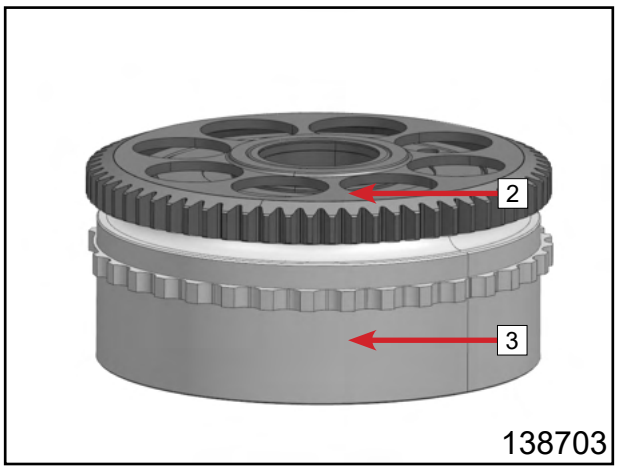
Position crankshaft to cylinder 1 TDC and lock with special tool (Locking screw).



Mount woodruff key (1).



Turn the freewheel gear (2) counterclockwise and mount in the rotor (3).



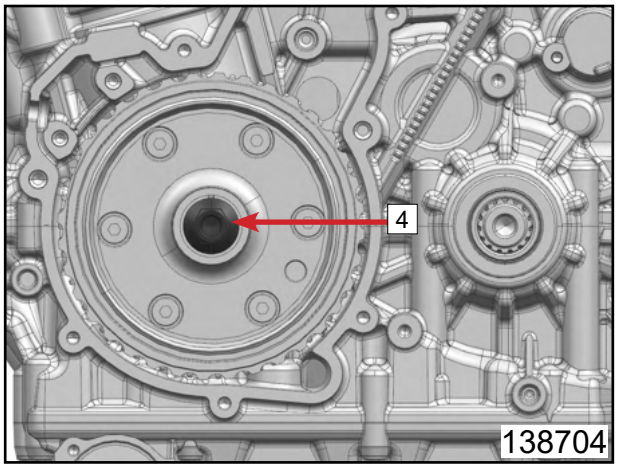
Mount the rotor with the freewheel gear.

Info
Ensure that the woodruff key is seated properly.

Mount and tighten screw (4).

Guideline

Screw, rotor
M12x1.5
90 N•m Thread greased



13.4.8 Installing the timing chain rails

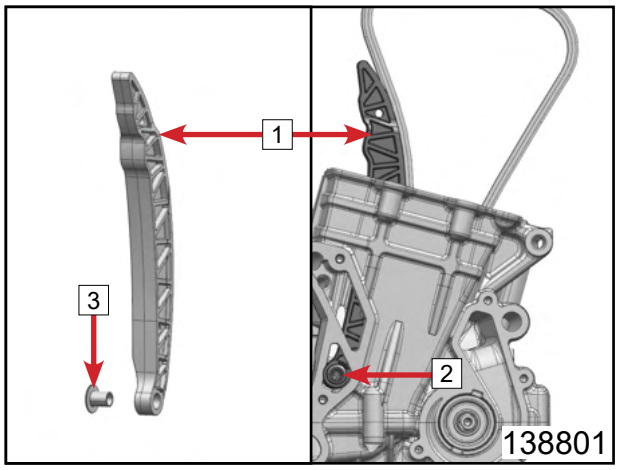
Position tensioning rail (1) with support bushing (2).
Mount and tighten screw (3).

Guideline

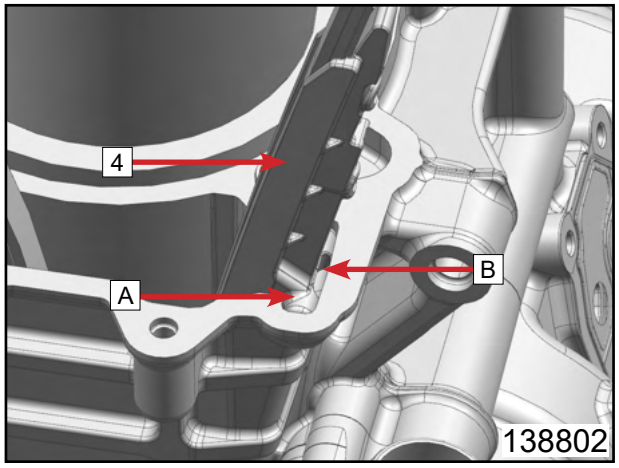
Screw, tensioning rail
M8
15 N•m 243 螺纹胶

Info
Ensure that there is no thread locker on the collar of the screw; otherwise, the tensioning rail may lock and break.

Check the tensioning rail for freedom of movement.



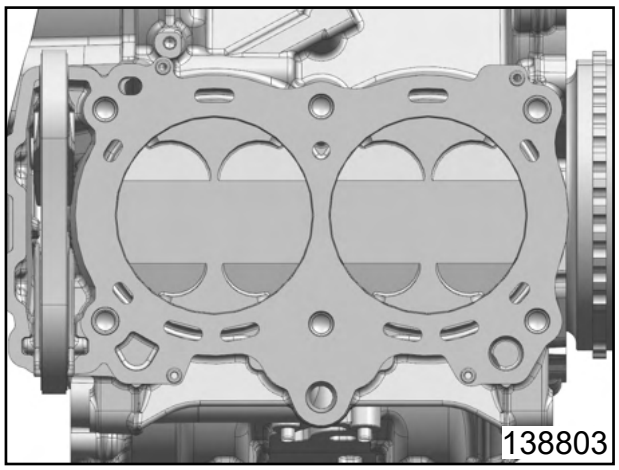
Position guide rail (4) from above in the engine case.
Holder (A) engages in the recess (B).



13.4.9 Installing the cylinder head

Put the new cylinder head gasket in place.

Info
Ensure that the dowels are seated properly.

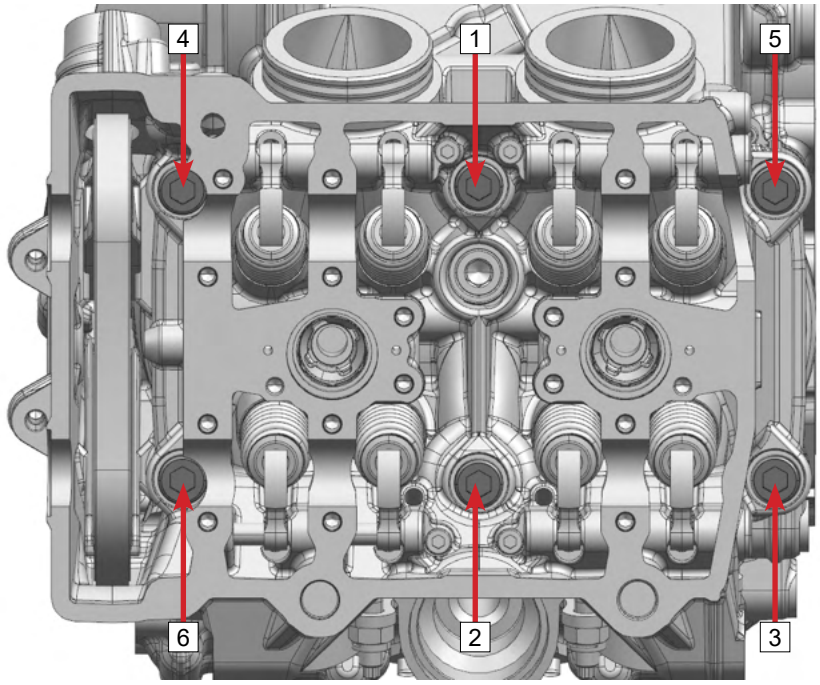


Position the cylinder head.
Mount cylinder head screws with washers and tighten step by step in the order from (1) to (6).

Guideline

Screw, cylinder head	M10x1.25	Tightening sequence: Observe tightening sequence. 1st stage 5 N•m 2nd stage 15 N•m 3rd stage 90° 4th stage 90° Collar greased / thread oiled

Info
Always use new cylinder head screws.



138901

Mount and tighten screws (7).

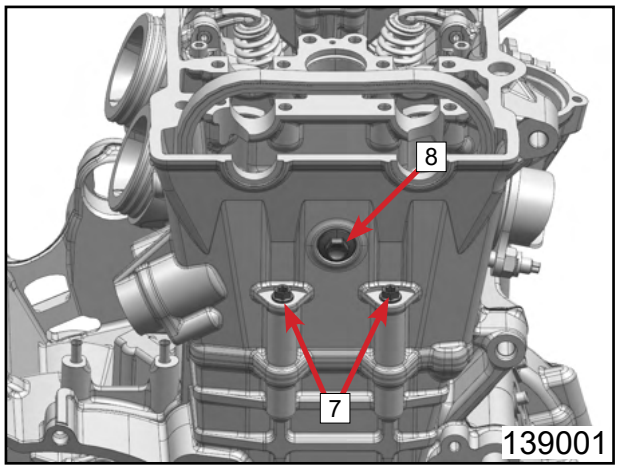
Guideline

Screw, cylinder head
M6
10 N•m

Mount and tighten screw (8) with gasket.

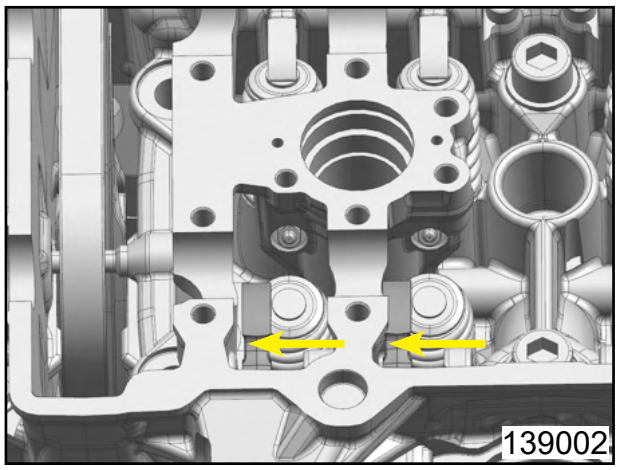
Guideline

Screw, timing chain shaft
M6
10 N•m



13.4.10 Installing the camshafts

Push exhaust cam lever (1) on cylinder 2 to the side.



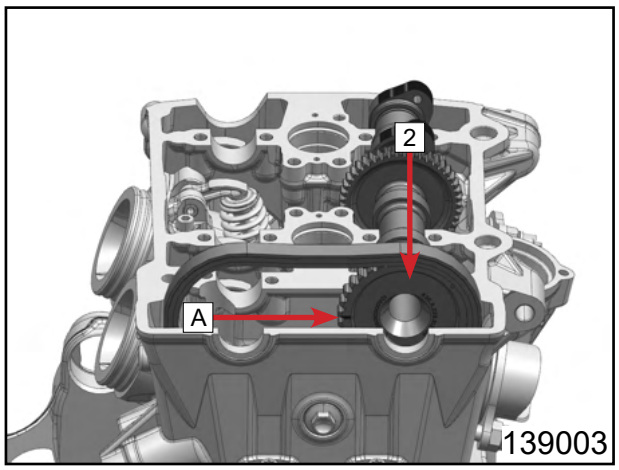
Pull up the timing chain and position the exhaust camshaft (2).

Info
The drive gear wheel for the balancer shaft is located in the exhaust camshaft.

Place timing chain over rear sprocket of the exhaust camshaft and keep taut.

The OT1 marking (A) is aligned with the sealing surface.

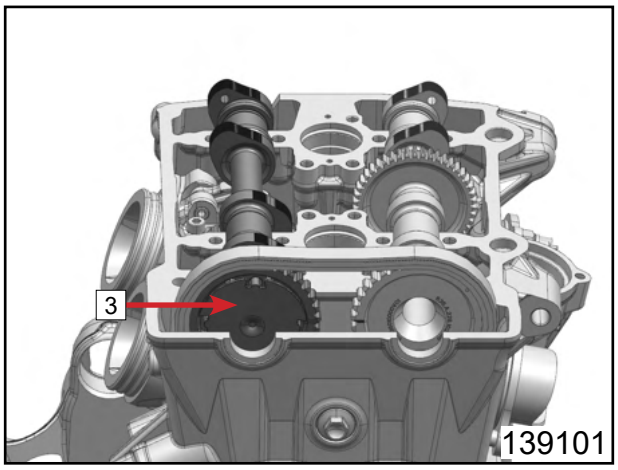
Info
The OT1 markings are line markings.



Slip in intake camshaft (3).

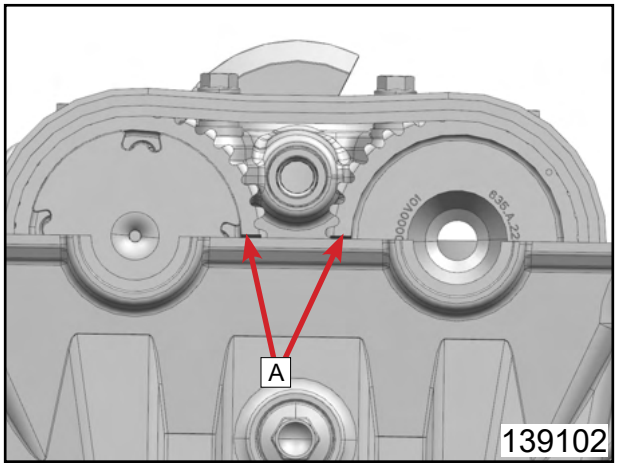
Info
The centrifuge of the engine vent is located on the intake camshaft.

Keep the timing chain taut.

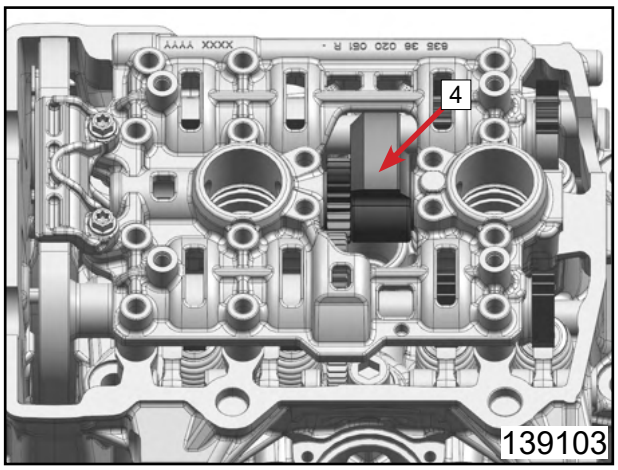


The OT1 markings (A) are aligned with the sealing surface.

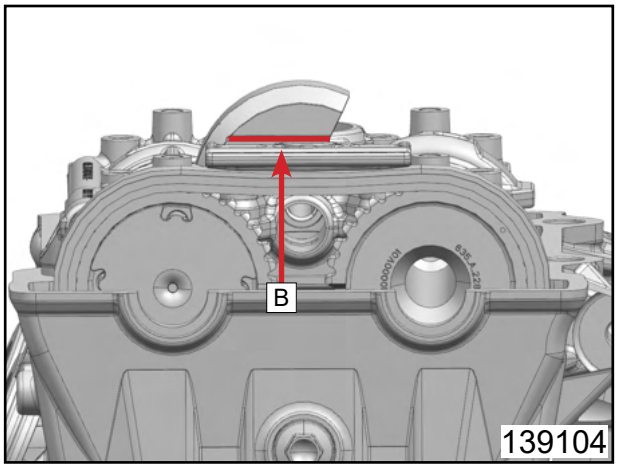
Info
The OT1 markings are line markings.



Mount camshaft bearing bridge with balancer shaft (4).



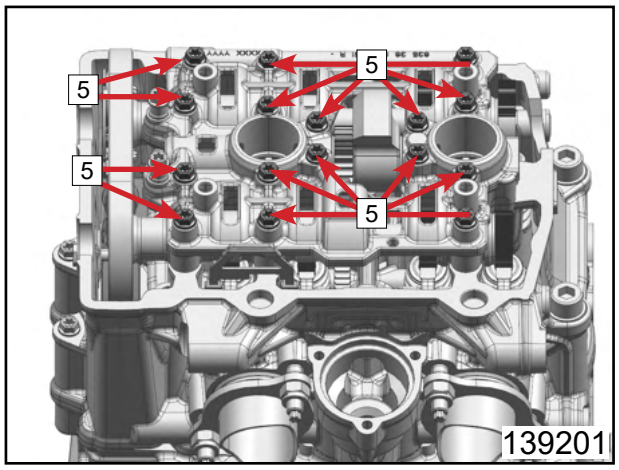
The marking (B) of the balancer shaft is aligned parallel to the sealing surface.



Mount screws (5) and tighten them from the inside to the outside.

Guideline

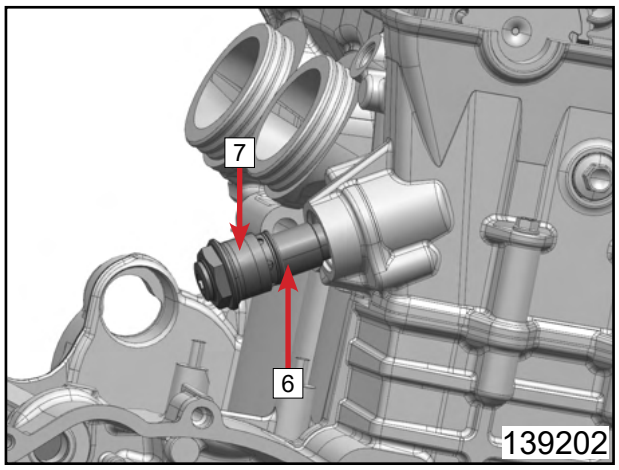
Screw, camshaft bearing bridge
M6
10 N•m



After it has been positioned in the installation location, insert timing chain tensioner (6) with a new O-ring.
Mount and tighten screw plug (7) with new O-ring.

Guideline

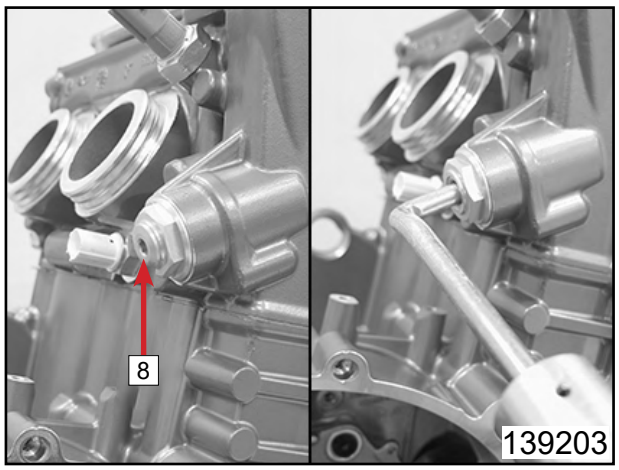
Plug, timing chain tensioner
M24×1.5
25 N•m



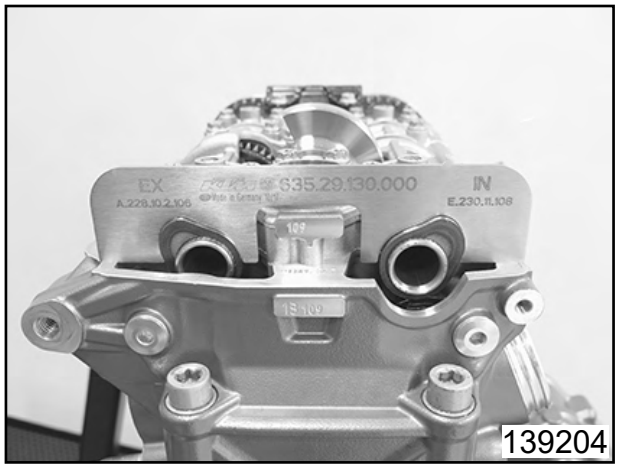
Remove screw (8) with the O-ring and use a special tool (Release device for timing chain tensioner) to push the timing chain tensioner toward the timing chain.
The timing chain tensioner unlocks.
Mount and tighten screw (8) with the O-ring.

Guideline

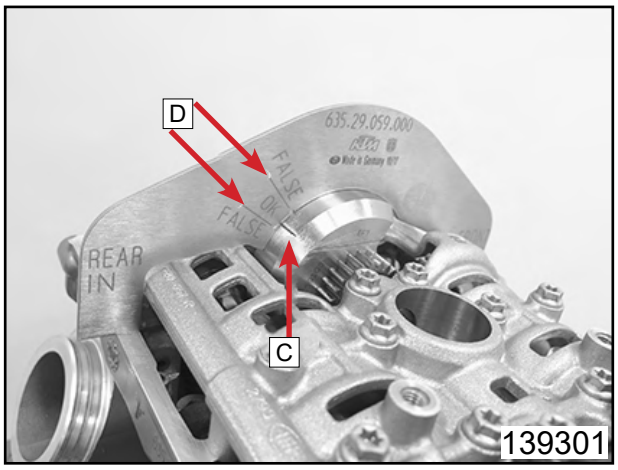
Screw, unlocking of timing chain tensioner
M10×1
10 N•m



Remove the special tool (Locking screw).
Crank the engine several times.
Turn the crankshaft counterclockwise to ignition top dead center of cylinder 1 and lock it using special tool. (Locking screw)
Check position of the camshafts with special tool (Setting gauge).



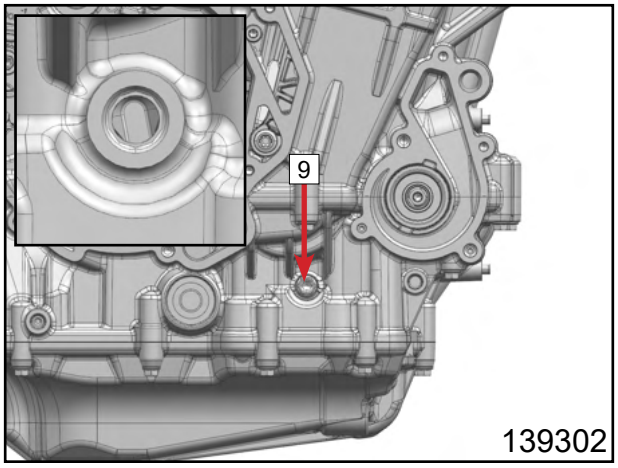
Check position of the balancer shaft with special tool (Setting gauge).
The marking (C) of the balancer shaft is located in the (D) area of the adjusting gauge.



Remove special tool (Locking screw).
Mount and tighten screw (9) with the washer.

Guideline

Screw plug, locking screw
M8
15 N•m



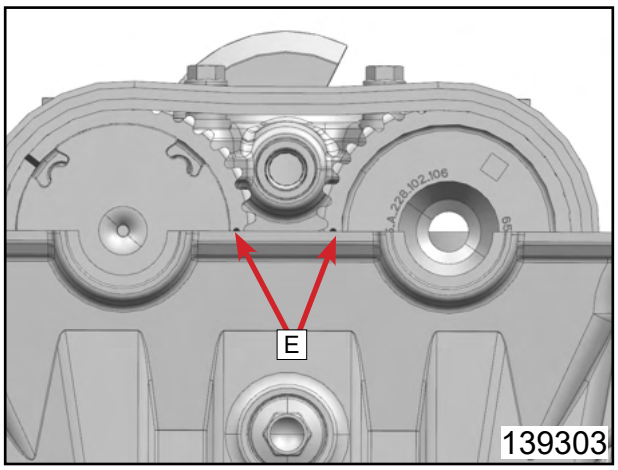
Turn the crankshaft counterclockwise by the specified value and set it to ignition top dead center of cylinder 2.

Guideline

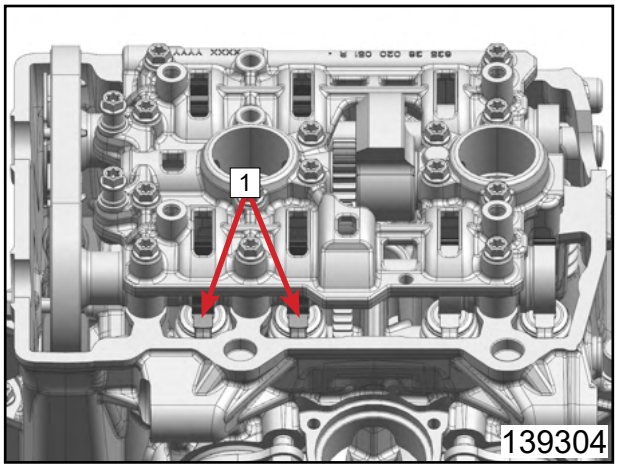
435°

The OT2 markings (E) are aligned with the sealing surface.

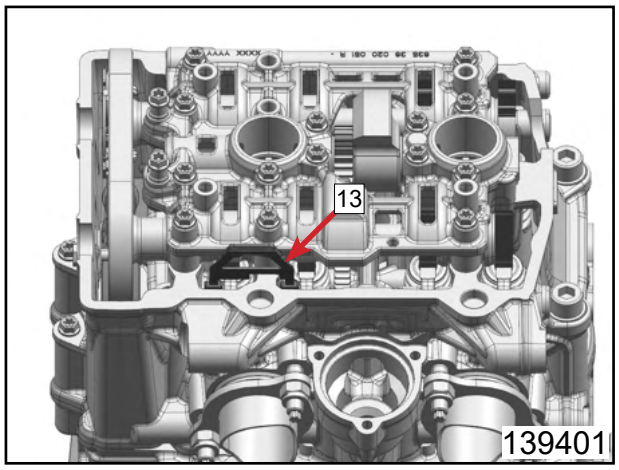
Info
The OT2 markings are dot markings.



Position exhaust cam lever (1) on cylinder 2.



Mount cam lever clip (13).



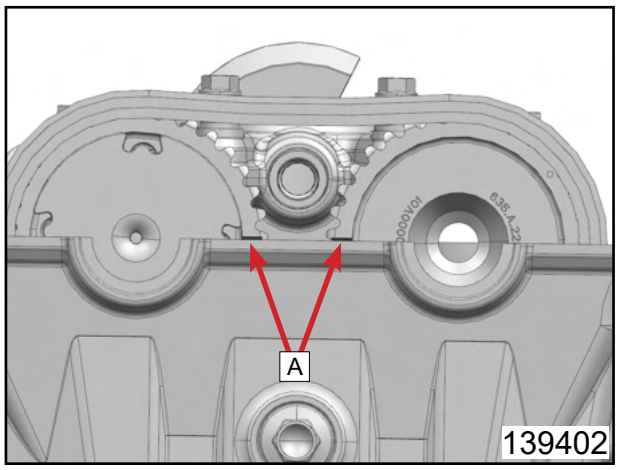
13.4.11 Checking the valve clearance

Crank the engine several times.

Turn the crankshaft counterclockwise and set it to ignition top dead center of cylinder 1.

The OT1 markings (A) are aligned with the sealing surface.

Info
The OT1 markings are line markings.



Check the valve clearance at the exhaust valves and the intake valves between the camshaft and cam lever using the special tool (1).

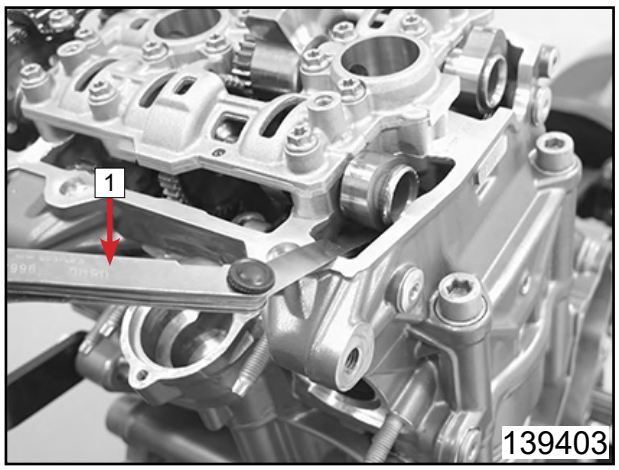
Guideline

Valve play, cold
Intake at: 20 °C 0.10mm~0.15 mm
Exhaust at: 20 °C 0.15mm~0.20 mm

Special tool: Feeler gauge

If the valve clearance does not meet specifications:

Adjust the valve clearance.



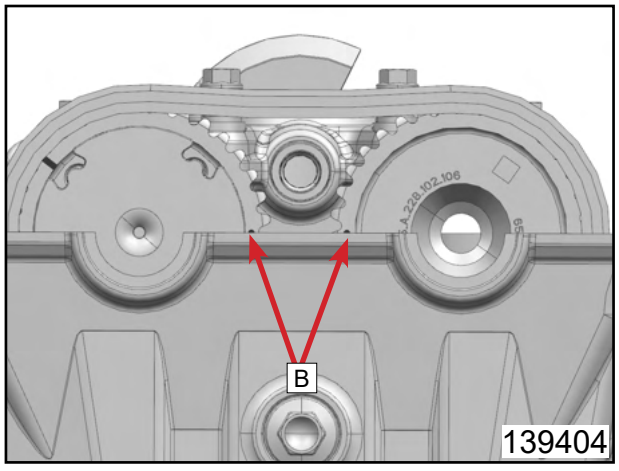
Turn the crankshaft counterclockwise by the specified value and set it to ignition top dead center of cylinder 2.

Guideline

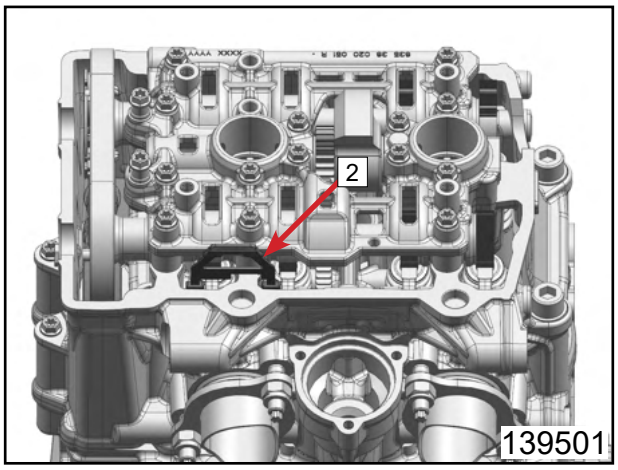
435°

The OT2 markings (B) are aligned with the sealing surface.

Info
The OT2 markings are dot markings.



Remove cam lever clip (2).



Check the valve clearance at the exhaust valves and the intake valves between the camshaft and cam lever using the special tool (1).

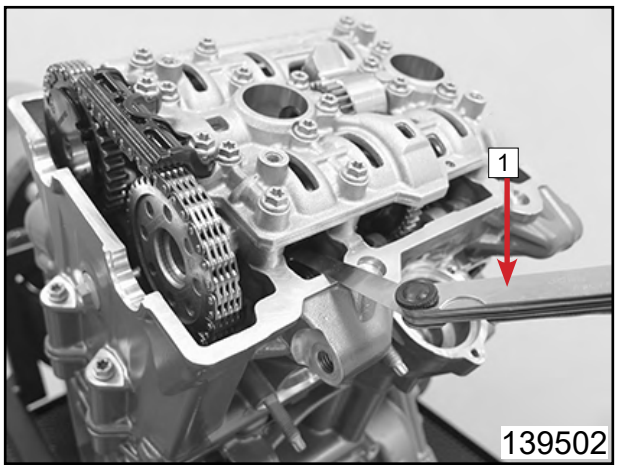
Guideline

Valve play, cold
Intake at: 20 °C 0.10mm~0.15 mm
Exhaust at: 20 °C 0.15mm~ 0.20 mm

Special tool: Feeler gauge

If the valve clearance does not meet specifications:

Adjust the valve clearance.



13.4.12 Adjusting the valve clearance and cleaning the oil screen

Preparatory work

Remove the camshafts.

Main work

Swing up cam lever (1).

Remove shims (2) and set them down according to the installation position.

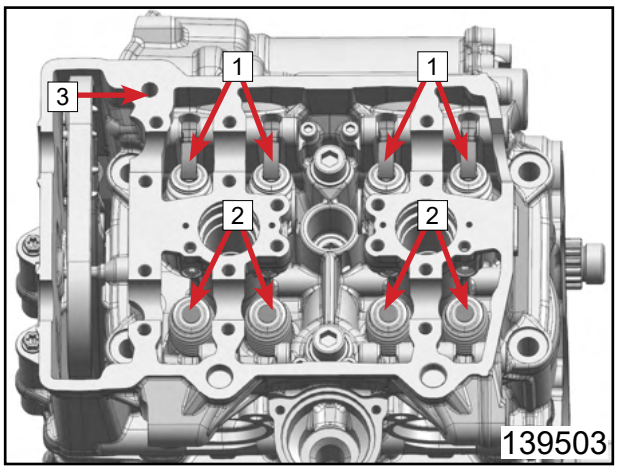
Correct the shims based on the results of the valve clearance check.

Insert suitable shims.

Clean oil screen (3).

Install the camshafts.

Check the valve clearance.

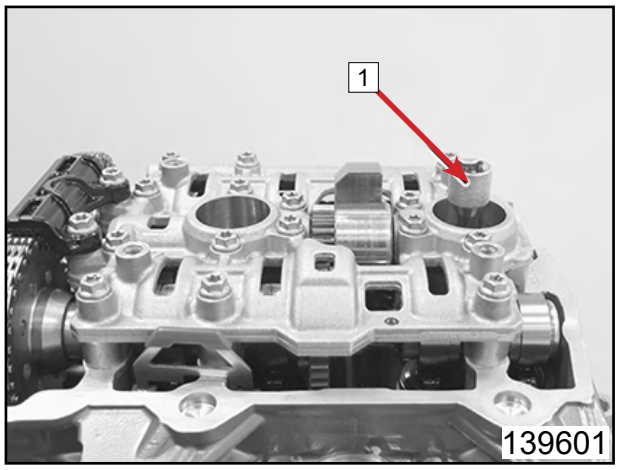


13.4.13 Installing the spark plugs

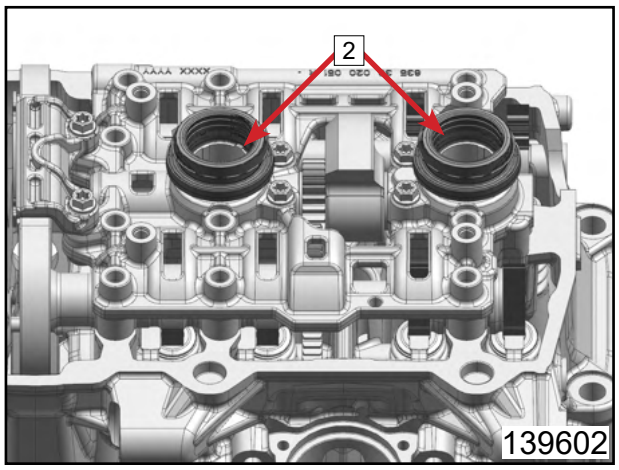
Mount and tighten the spark plugs using a special tool (Spark plug wrench with link).

Guideline

Spark plug
M10
11 N•m



Grease the O-rings and mount spark plug shaft inserts (2) with gasket.



13.4.14 Installing the shift shaft

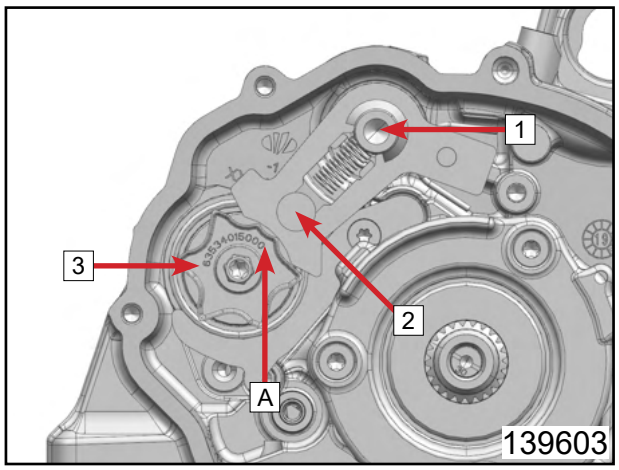
Slide shift shaft (1) with the washer into the bearing seat.

Push sliding plate (2) away from shift drum locating unit (3). Insert the shift shaft all the way.

Info
The neutral position (A) must be aligned with the sliding plate (2) for assembly.

Let the sliding plate engage in the shift drum locating unit.

Shift through the transmission.

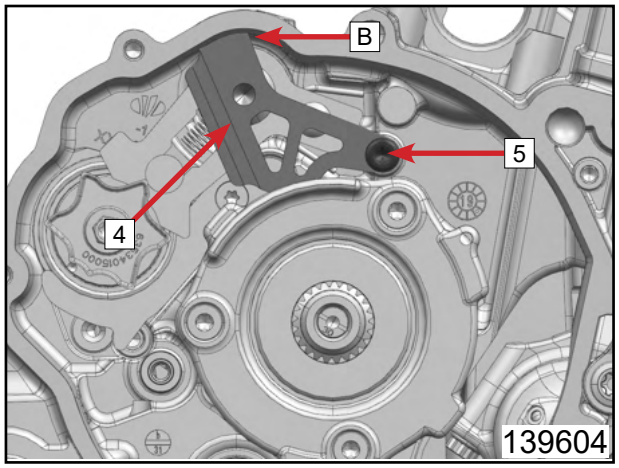


Position retaining bracket (4) in the groove (B).

Mount and tighten screw (5).

Guideline

Screw, shift shaft retaining bracket
M6
10 N•m 243 螺纹胶

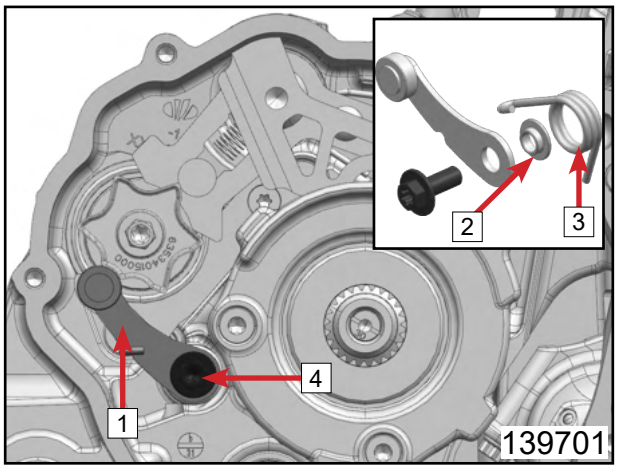


13.4.15 Installing the locking lever

Position locking lever (1) with sleeve (2) and spring (3).
Mount and tighten screw (4).

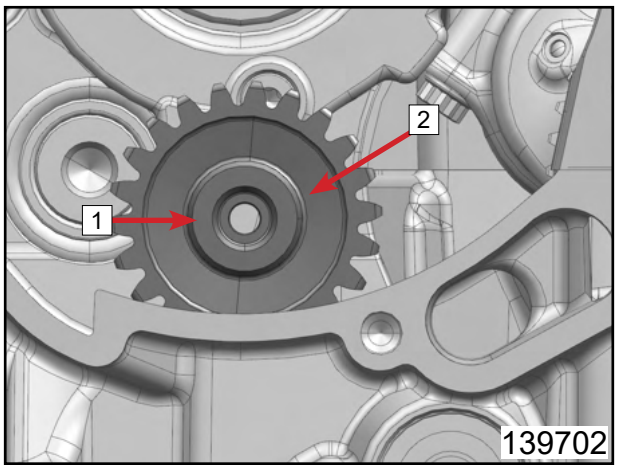
Guideline

Screw, locking lever
M6
10 N•m 243 螺纹胶



13.4.16 Installing the clutch basket

Oil collar bushing (1) thoroughly.
Position collar bushing (1) with oil pump idler gear (2).

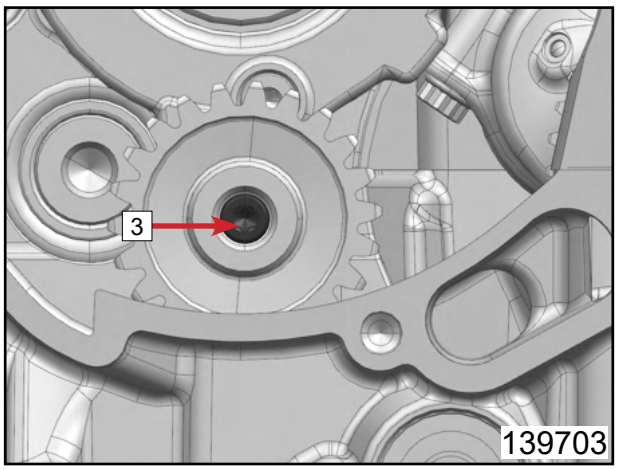


Mount and tighten screw (3).

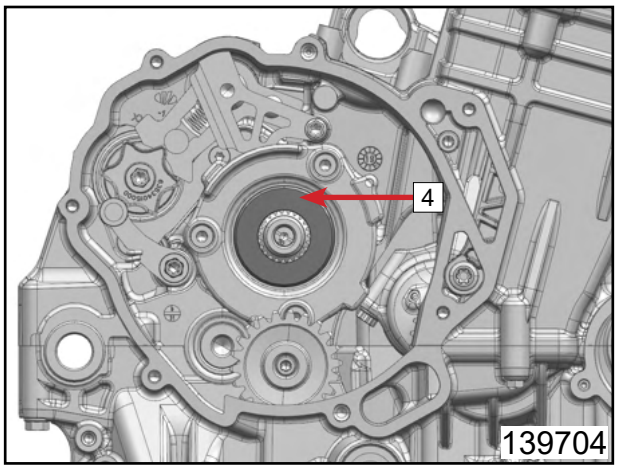
Guideline

Screw ,oil pump idler gear
M8
15 N•m 243 螺纹胶

Info
The screw (3) must always be replaced.



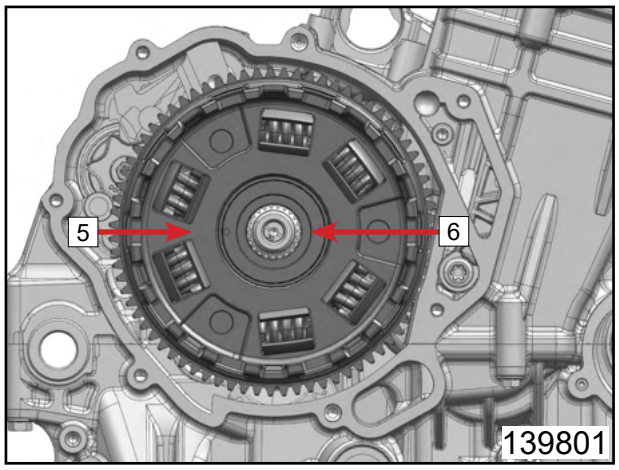
Mount washer (4).



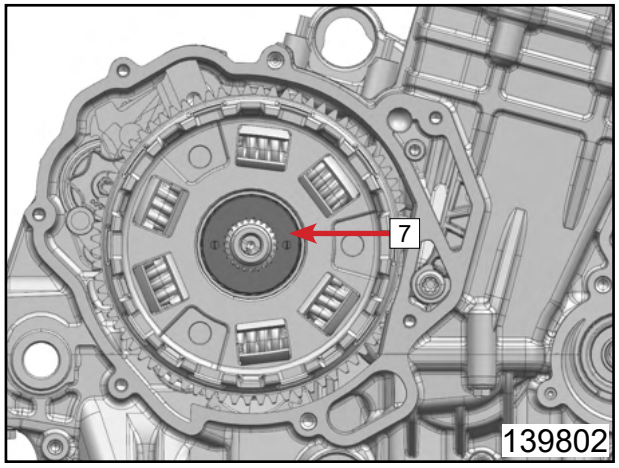
Position the clutch basket (5).

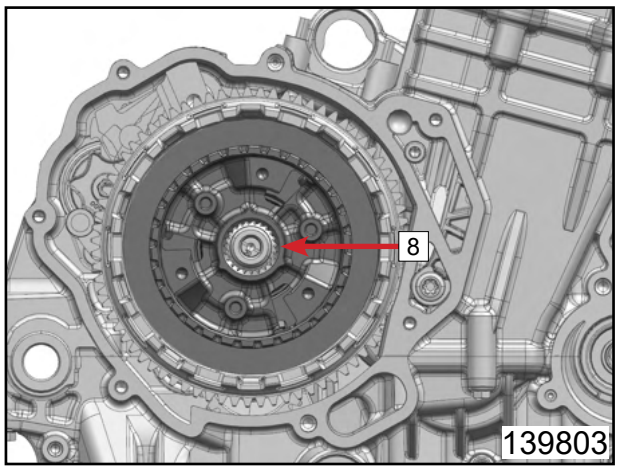
Info
Turn the clutch basket and oil pump idler gear backwards and forwards slightly to help them mesh more easily.

Mount needle bearing (6).



Mount washer (7) and inner clutch hub (8).

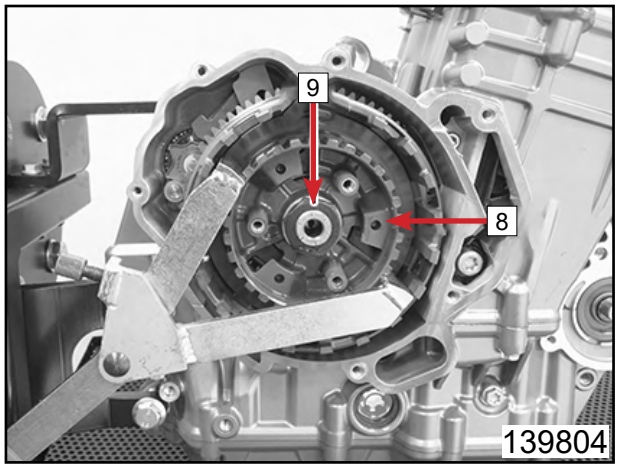




Mount nut (9) with the washer.
Use a special tool (Holding wrench) to hold the inner clutch hub (8) and tighten the nut (9).

Guideline

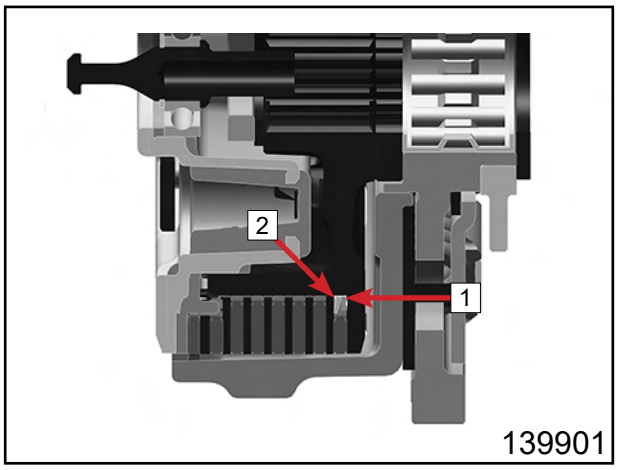
Nut, inner clutch hub
M20×1.5
120 N•m 243 螺纹胶



13.4.17 Installing the clutch discs

Mount support ring (1) and pretension ring (2).

The pretension ring rests against the support ring on the inside and the outside faces away from the support ring.



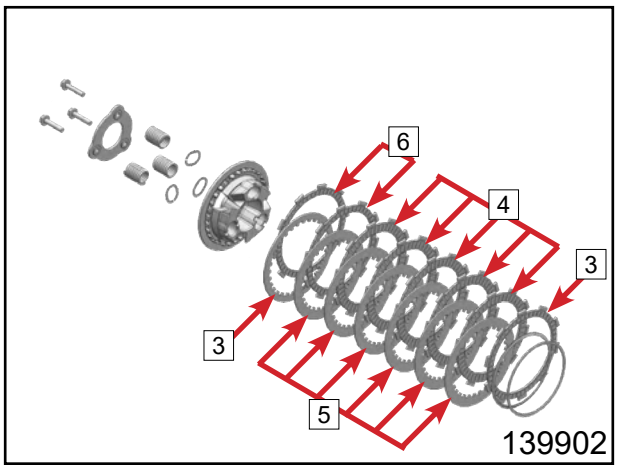
Thoroughly oil the clutch facing discs.

Mount a clutch facing disc (3) with a larger inside diameter.

Alternately mount 6 intermediate clutch discs (4) and 5 of the same clutch facing discs (5).

Alternately mount 2 clutch facing discs (3) and an intermediate clutch disc (6) with a larger inside diameter.

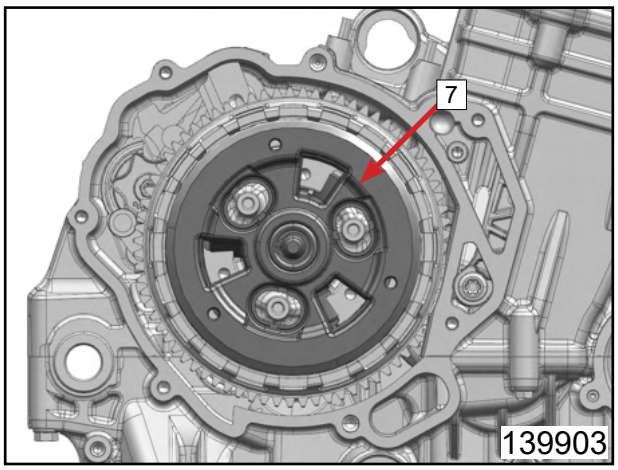
The outer clutch facing disc must be mounted offset by one mesh.



Position clutch pressure cap (7).

The gear teeth of the outer intermediate clutch disc engage in the clutch pressure cap.

The clutch pressure cap rests flush against the outer clutch facing disc.

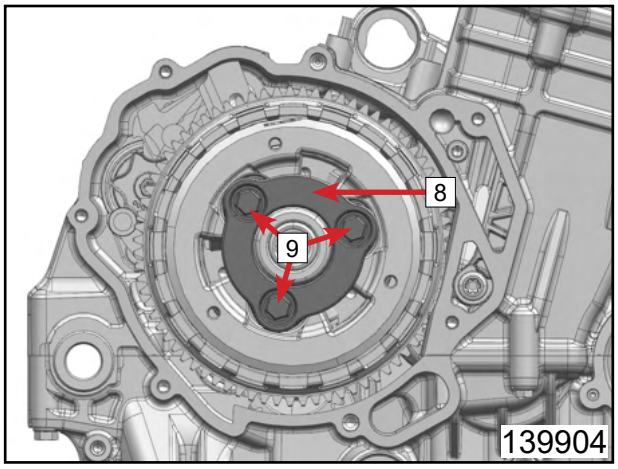


Position clutch center (8) and the springs.

Mount and tighten screws (9).

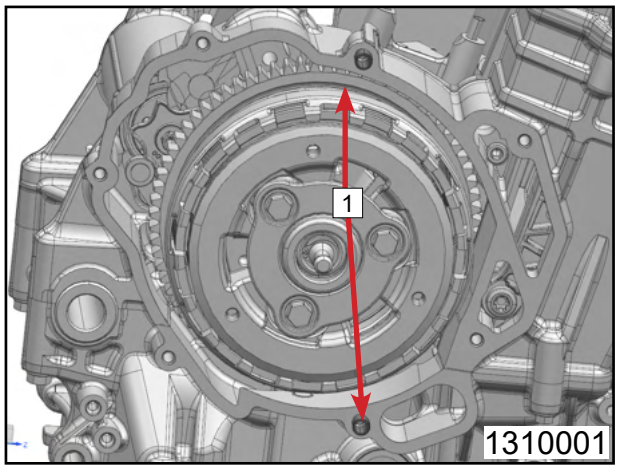
Guideline

Screw, clutch spring
M6
10 N•m



13.4.18 Installing the clutch cover

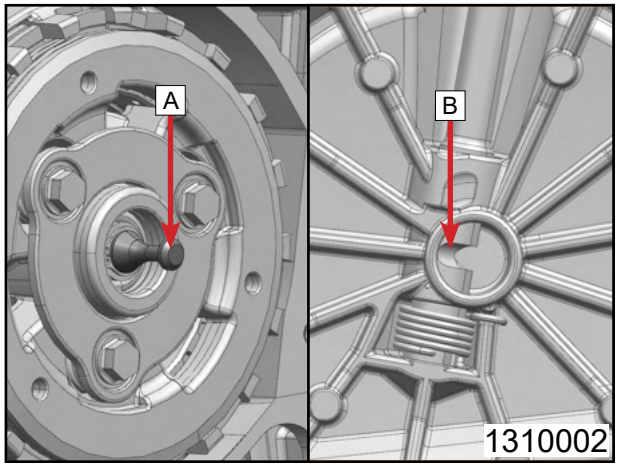
Mount dowels (1).

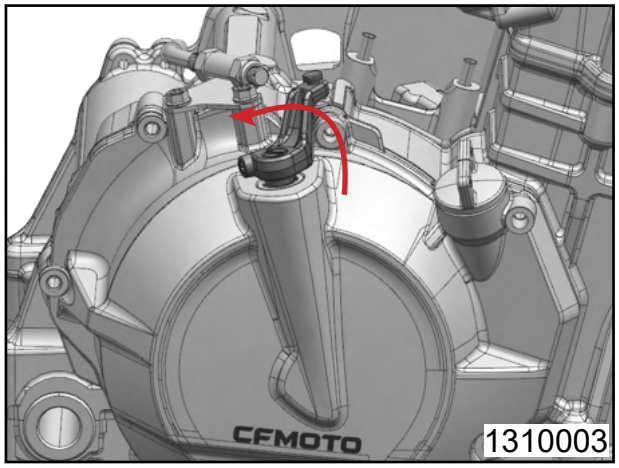


Position the clutch cover with the clutch cover gasket.

Clutch push rod (A) engages in groove (B).

Info
Swivel clutch release lever counterclockwise.





Mount screws (2), but do not tighten yet.

Guideline

Screw, clutch cover
M6x30
10 N•m

Mount screws (3), but do not tighten yet.

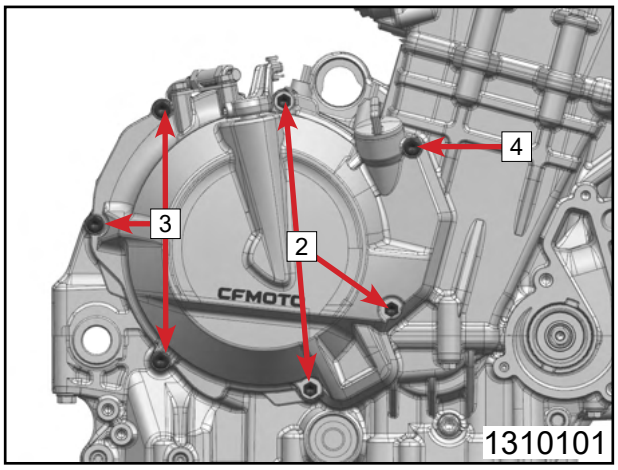
Guideline

Screw, clutch cover
M6x25
10 N•m

Mount screw (4) and tighten all screws in a crisscross pattern.

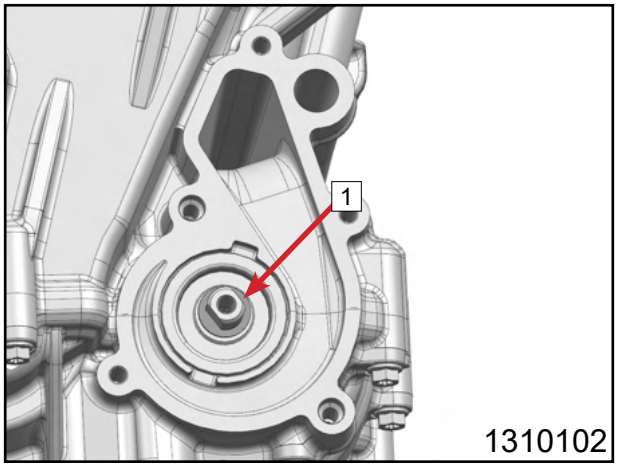
Guideline

Screw, clutch cover
M6x35
10 N•m



13.4.19 Mounting the water pump cover

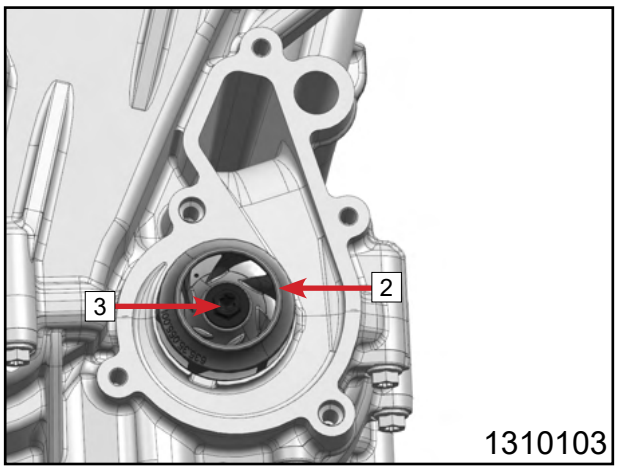
Mount form washer (1).



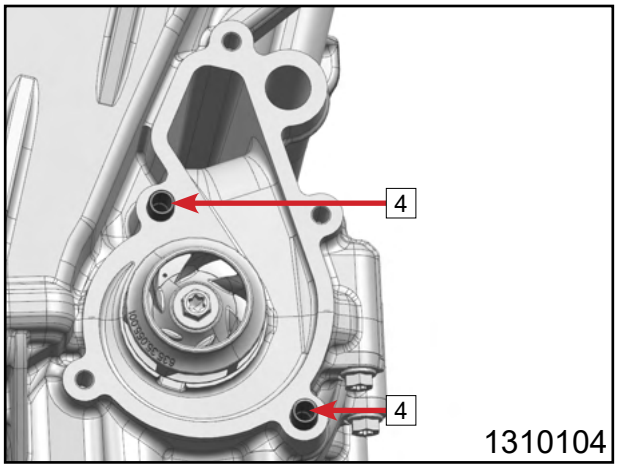
Mount water pump impeller (2).
Mount and tighten screw (3).

Guideline

Screw, water pump wheel
M6
10 N•m 243 螺纹胶



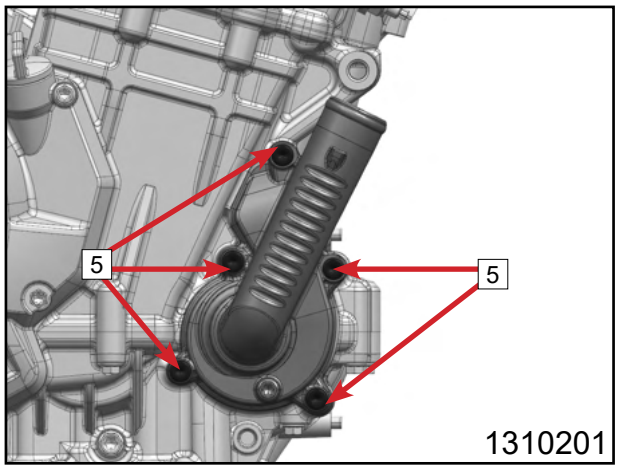
Mount dowels (4).



Position water pump cover with the gasket.
Mount and tighten screws (5).

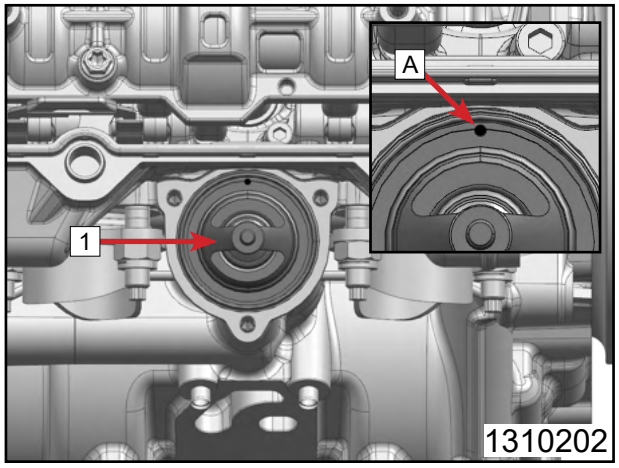
Guideline

Screw, water pump cover
M6
10 N•m 243 螺纹胶



13.4.20 Installing the thermostat

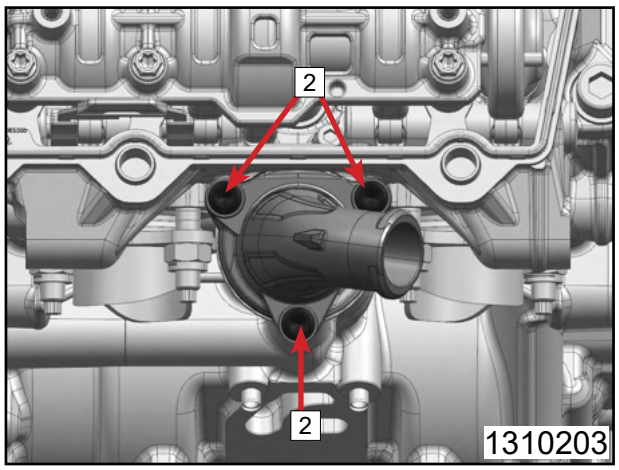
Position thermostat (1) with the gasket.
Drill hole (A) must face upward.



Position the thermostat case.
Mount and tighten screws (2).

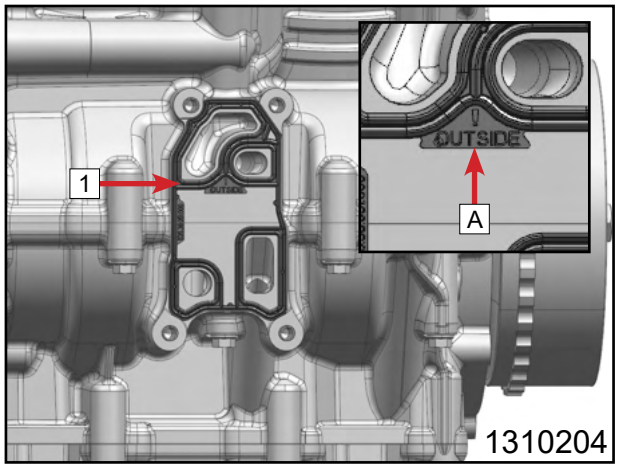
Guideline

Screw, thermostat case
M5
6 N•m 243 螺纹胶



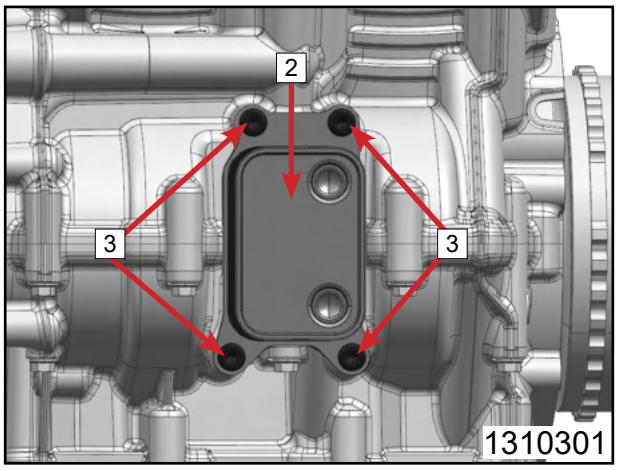
13.4.21 Installing the heat

Position gasket (1).
The **OUTSIDE** marking (A) is legible.



Position heat exchanger (2).
Mount and tighten screws (3).
Guideline

Screw, heat exchanger
M6
10 N•m
243 螺纹胶

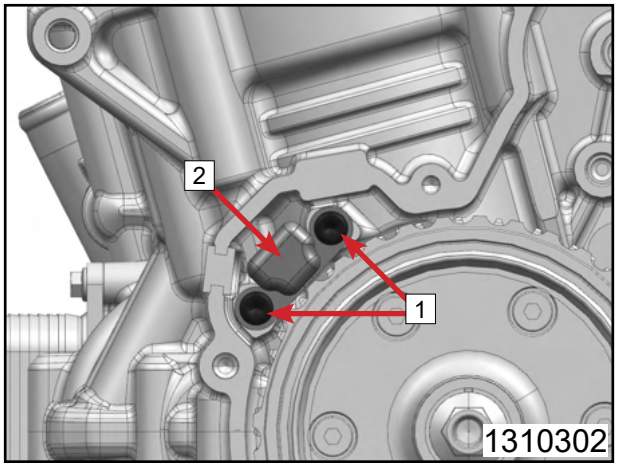


13.4.22 Installing the crankshaft speed sensor

Position the crankshaft speed sensor.
Mount and tighten screws (1).
Guideline

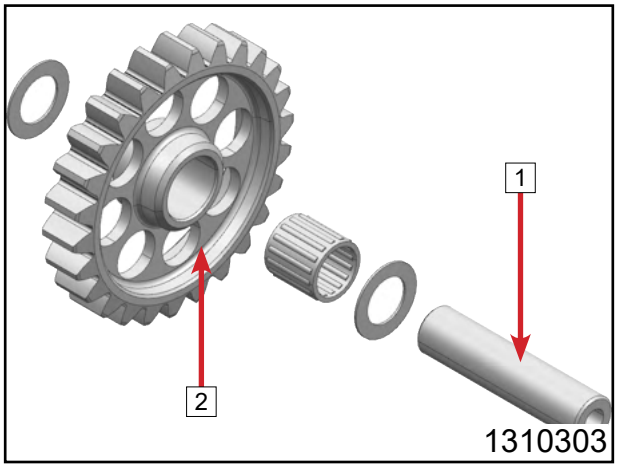
Screw, crankshaft speed sensor
M5
6 N•m 243 螺纹胶

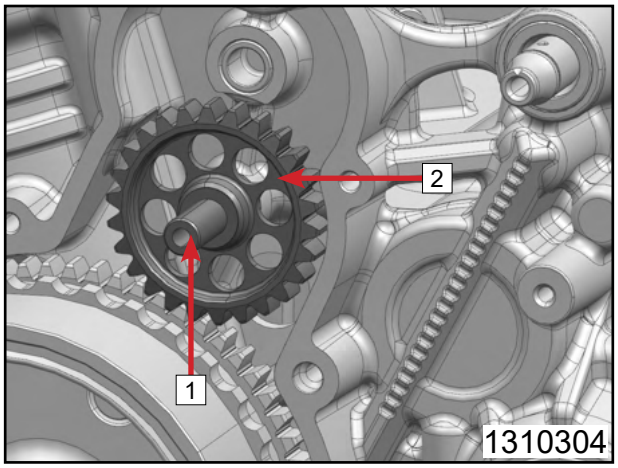
Position the cable and position rubber grommet (2) in the engine case.



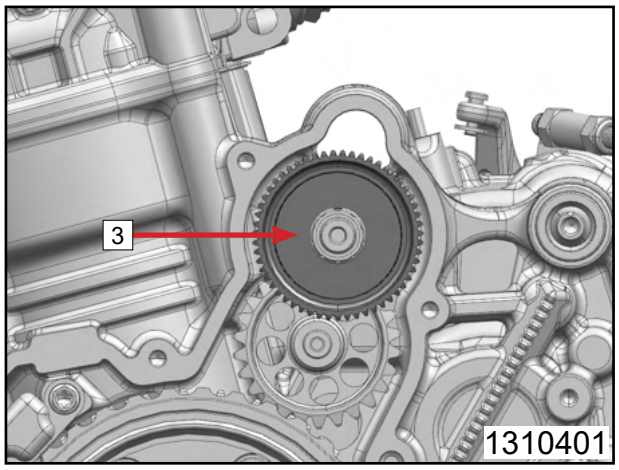
13.4.23 Installing the torque limiter and the starter intermediate gear

Mount shaft (1) and starter intermediate gear (2) with the needle bearing and the washers.





Mount torque limiter (3) with the rear washer.

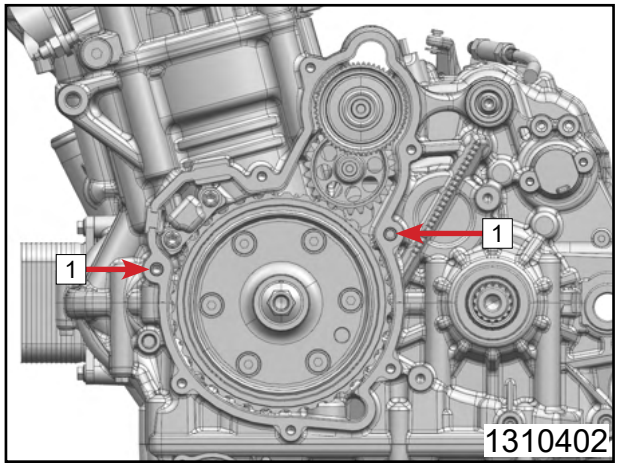


13.4.24 Installing the alternator cover

Apply sealing compound lightly in the area of the rubber grommet.

Loctite® 5910

Mount dowels (1)and put alternator cover gasket (2) in place.



Position the alternator cover.

Mount and tighten screws (3).

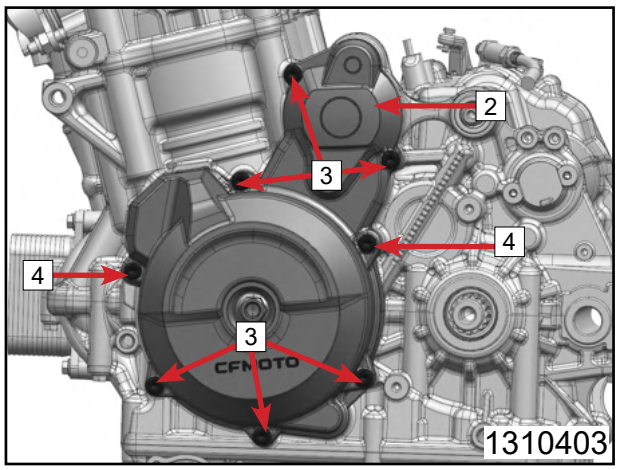
Guideline

Screw, alternator cover
M6x30
10 N•m

Mount and tighten screws (4).

Guideline

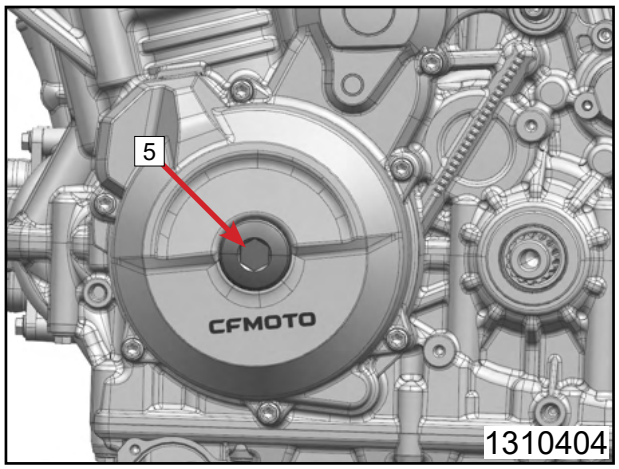
Screw, alternator cover
M6x35
10 N•m



Mount and tighten screw plug (5) with the O-ring.

Guideline

Screw plug, alternator cover
M24x1.5
8 N•m

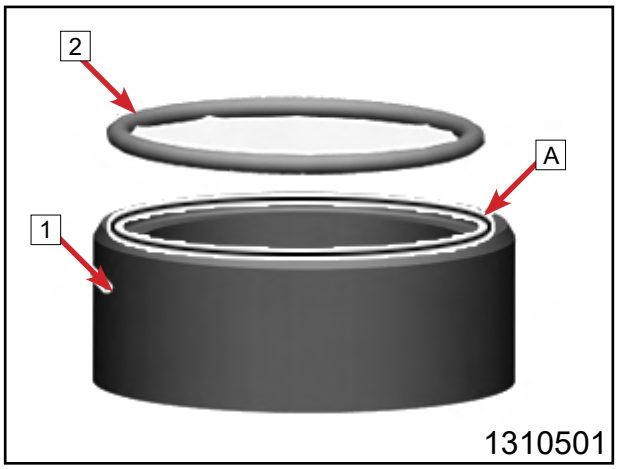


13.4.25 Installing the spacer

Before mounting, grease spacer (1) in area (A) and O-ring (2).

Long-life grease

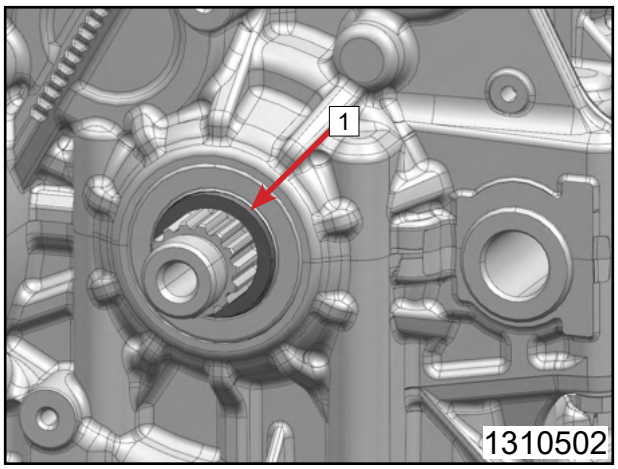
Position the O-ring in the recess of the spacer.



Grease the radial shaft seal ring.

Long-life grease

Push spacer (1) with the O-ring onto the countershaft with a twisting motion.
The recess with the O-ring faces inward.
The radial shaft seal ring rests against the spacer along its entire circumference.



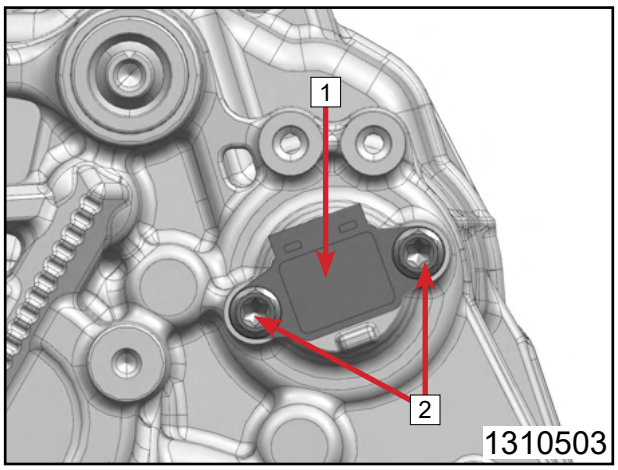
13.4.26 Installing the gear position sensor

Position gear position sensor (1).
Mount and tighten screws (2).

Guideline

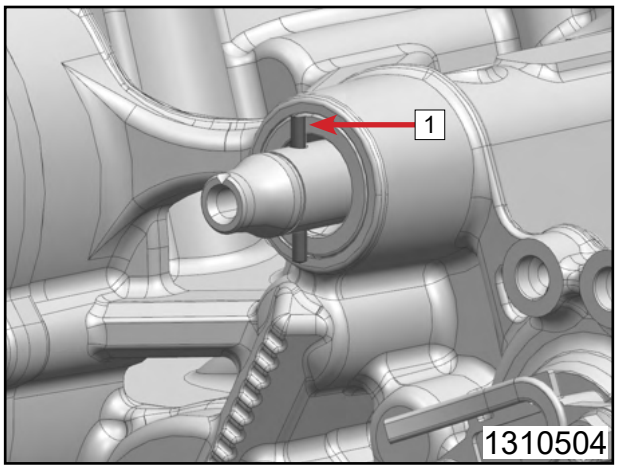
Screw, gear position sensor
M5
6 N•m (4.4 lbf ft) 243 螺纹胶

Secure the cable with a cable tie.

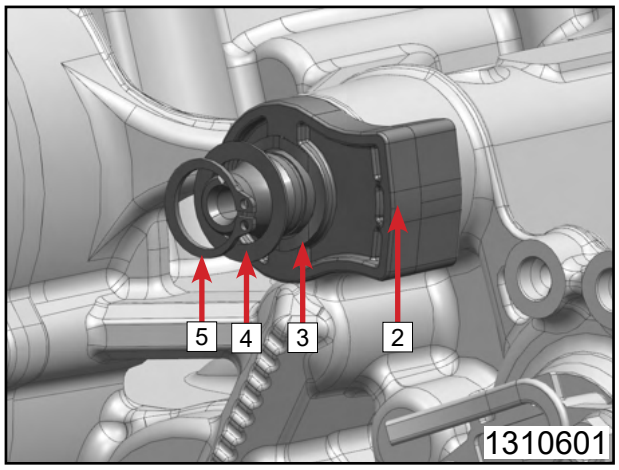


13.4.27 Installing the shift shaft sensor

Mount pin (1).

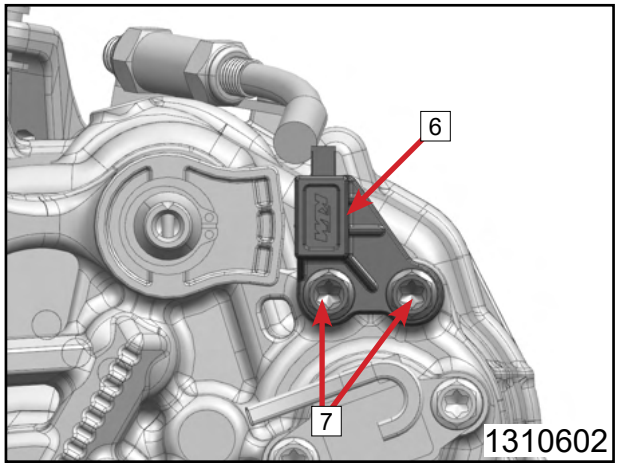


Mount magnetic holder (2).
Mount locating washer (3).
Mount washer (4).
Mount lock ring (5).



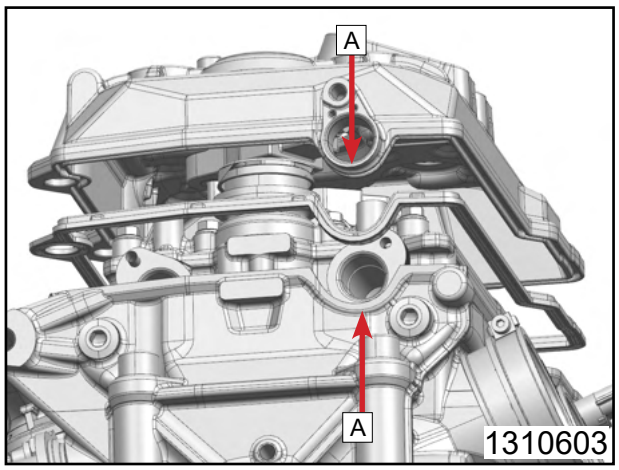
Position the shift shaft sensor (6).
Mount and tighten screws (7).
Guideline

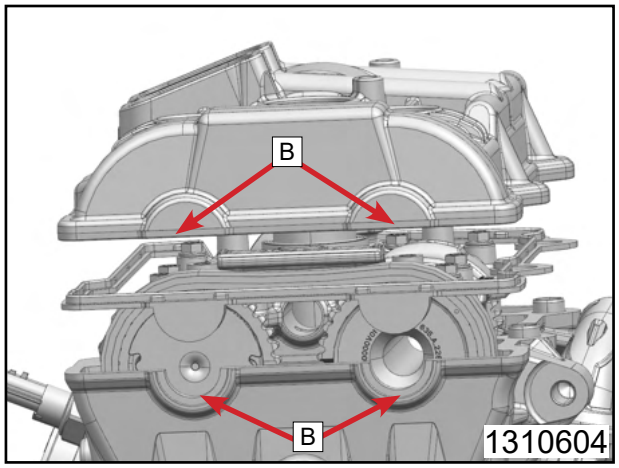
Screw, shift shaft sensor
M5
6 N•m 243 螺纹胶



13.4.28 Installing the valve cover

Clean and degrease the valve cover seal.
Apply a thin layer of sealing compound to area (A) and (B).

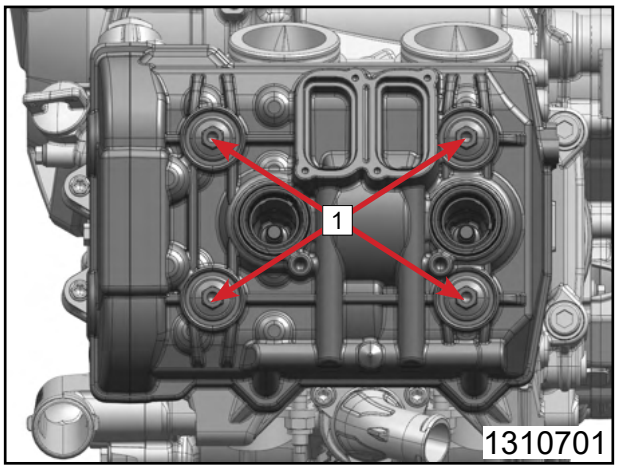




Position the valve cover with the valve cover seal.
Mount and tighten screws (1) with the gaskets.

Guideline

Screw, valve cover
M6
10 N•m



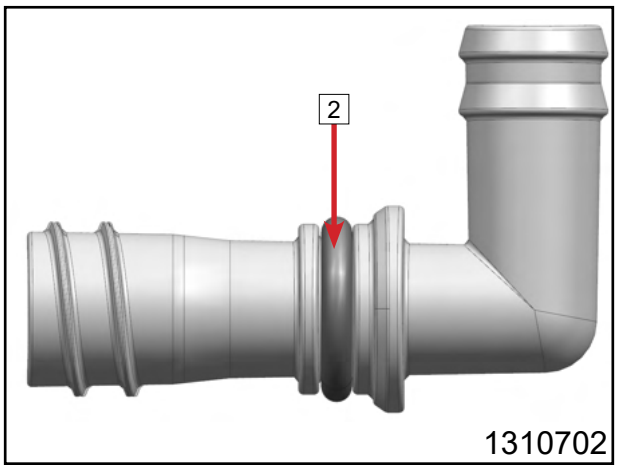
Grease O-ring (2).

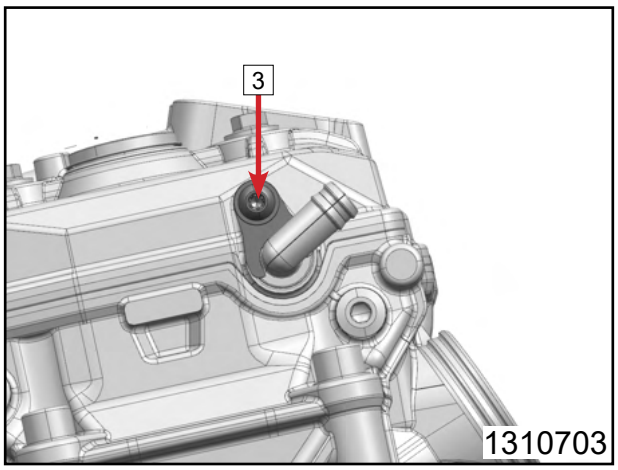
Long-life grease

Position the bleeder flange in the valve cover.
Mount and tighten screw (3) with retaining bracket.

Guideline

Screw, bleeder flange
M6×12
8 N•m 243 螺纹胶

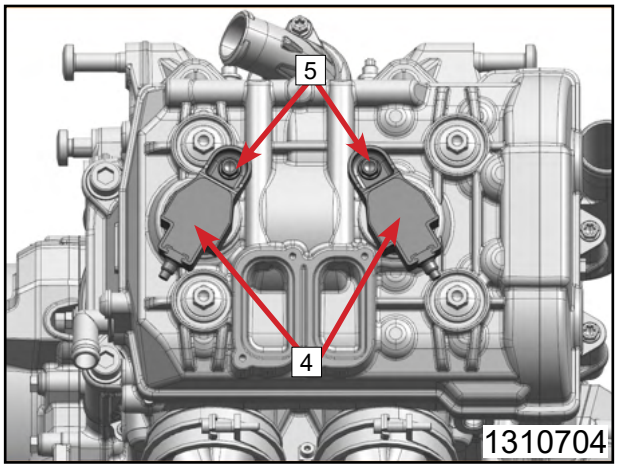




Mount ignition coils (4).
Mount and tighten screws (5).

Guideline

Screw, ignition coil
M6
8 N•m



13.4.29 Installing the starter motor

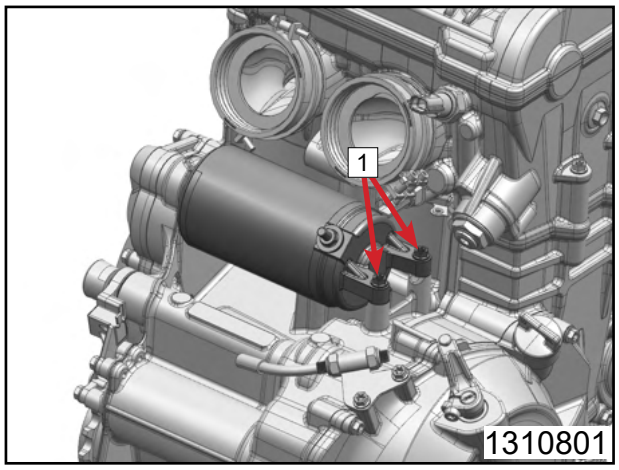
Grease the O-ring and mount the starter motor.

Long-life grease

Mount and tighten screw (1).

Guideline

Screw, starter motor
M6
10 N•m

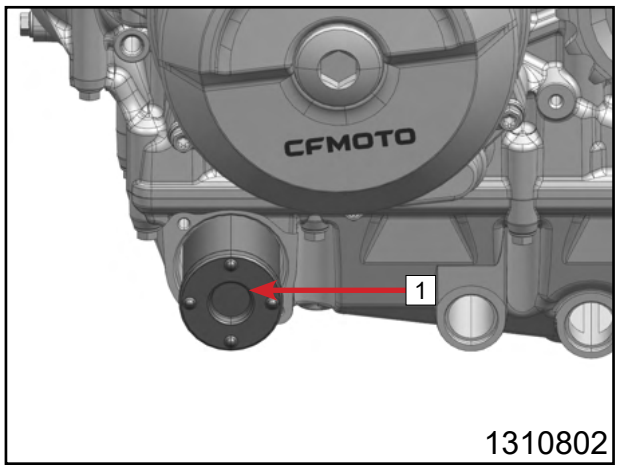


13.4.30 Installing the oil filter

Tilt the motorcycle to one side and fill the oil filter housing to about ⅓ full with engine oil.

Engine oil (SAE 10W/50)

Mount oil filter (1).

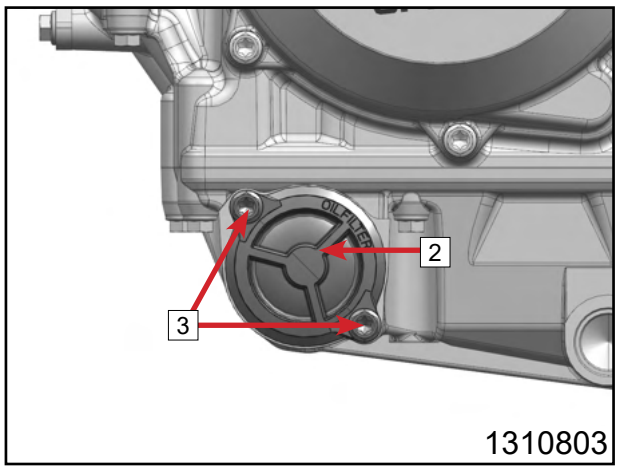


Oil the O-ring of oil filter cover (2). Mount the oil filter cover.

Mount and tighten screws (3).

Guideline

Screw, oil filter cover
M5
6 N•m



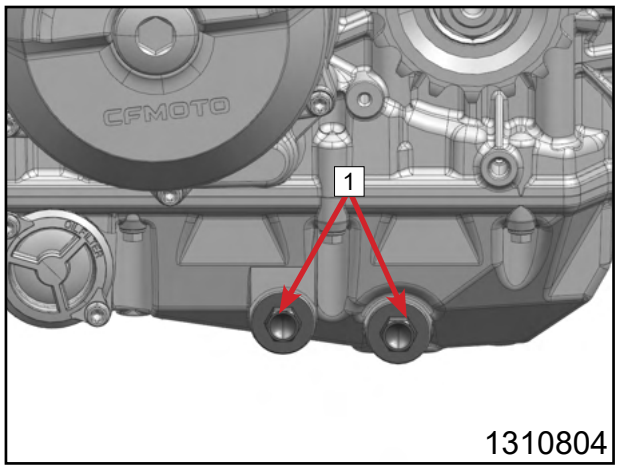
13.4.31 Installing the oil drain plug

Mount the new O-rings.

Mount and tighten the oil drain plugs (1) with the magnet, O-rings, and oil screen.

Guideline

Plug, oil screen
M20×1.5
20 N•m



HANDLEBAR AND TRIPLE CLAMPS

14.1 Handlebar

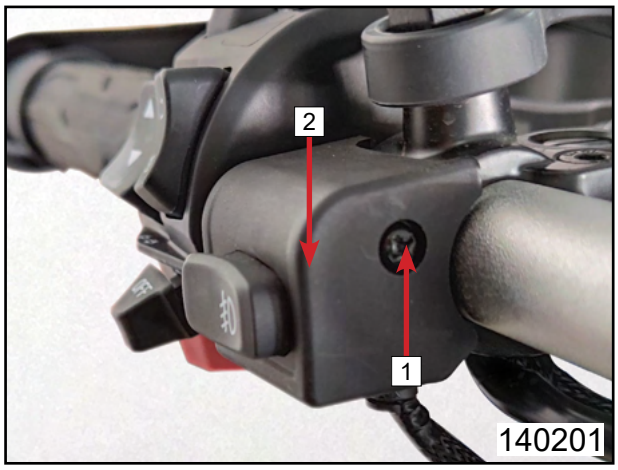
Handlebar removal refers to 12.1.

14.1.1 LH Handlebar Switch

Removal

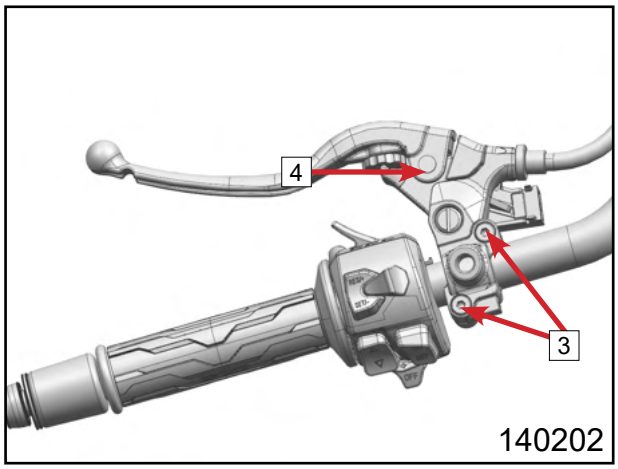
Remove screw.

Remove fog light switch.



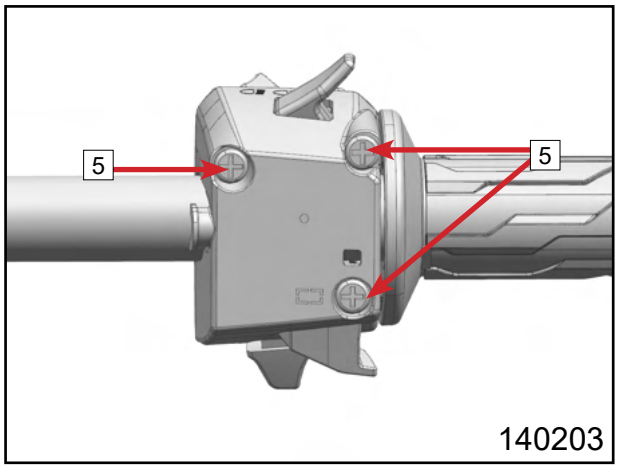
Remove inner hex bolt 3.

Remove clutch lever 4.

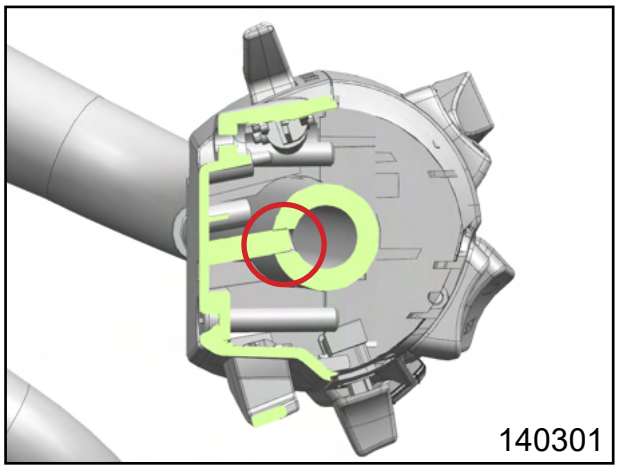


Remove screws 5.

Remove LH handlebar switch.

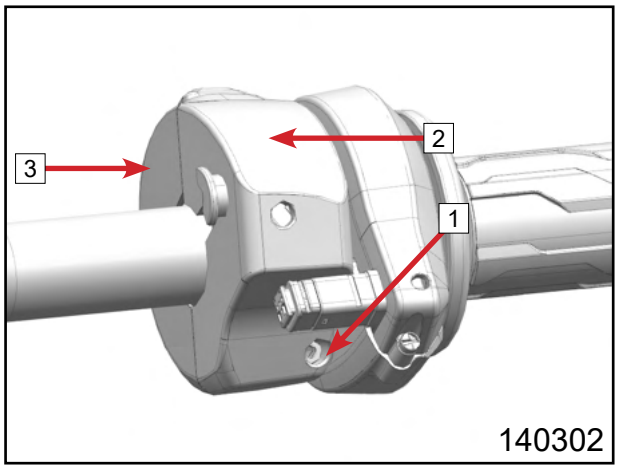


Installation
Align LH lower housing position pin with holes on LH handlebar switch.
Install LH upper cover.
Install three screws.



14.1.2 RH Handlebar Switch

Removal
Remove bolt 1.
Separate RH handlebar switch lower cover 2 and upper cover 3.



Installation
Reverse the removal procedures for installation.

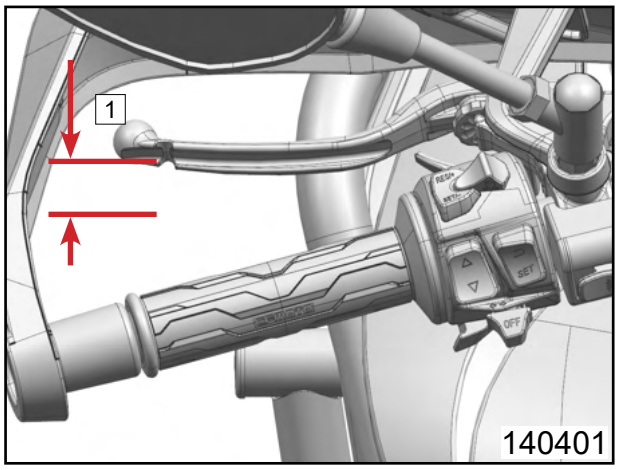
14.2 Throttle Grip

E-throttle refers to Electrical System.

14.3 Handlebar Inspection

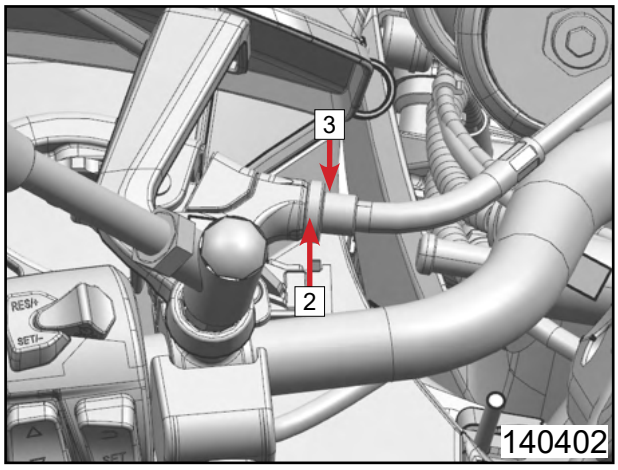
14.3.1 Clutch Lever Free Play Inspection

Inspect clutch lever if it is smooth to return.
Inspect clutch lever free play [1].
Free play standard: 3mm~6mm

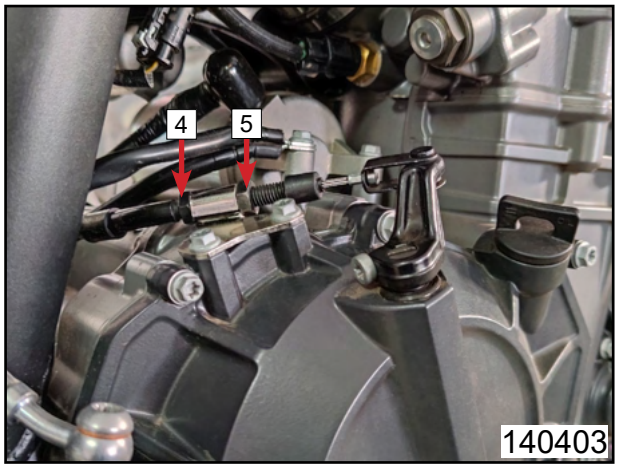


14.3.2 Clutch Cable Free Play Adjustment

Minor adjustment: Loosen lock nut [2] and rotate the adjusting nut [3] for adjustment. At last, tighten the lock nut [2].

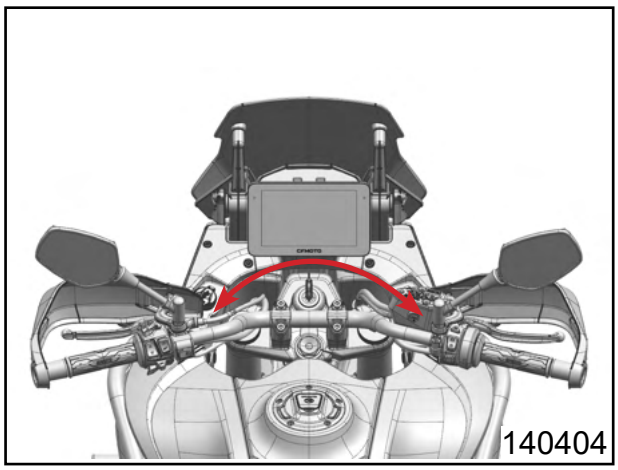


Major adjustment: Loosen lock nut [5] and rotate the adjusting nut [4] for adjustment. At last, tighten the lock nut [5].



14.3.3 Handlebar Interference Inspection

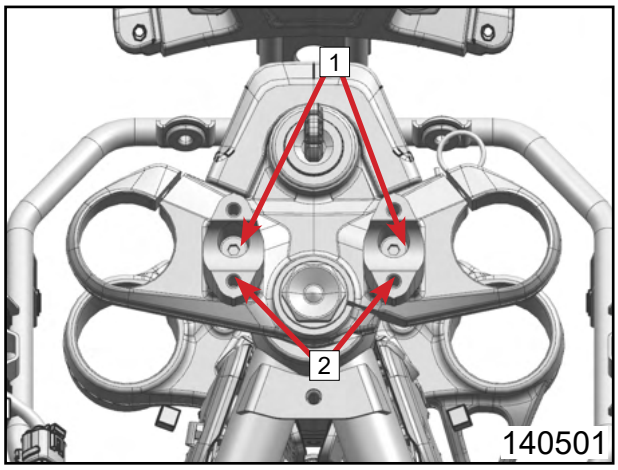
Turn the handlebar left and right to check whether cables interfere front wheel.
When the turning angle is the maximum, check if the handlebar interferes the fuel tank.



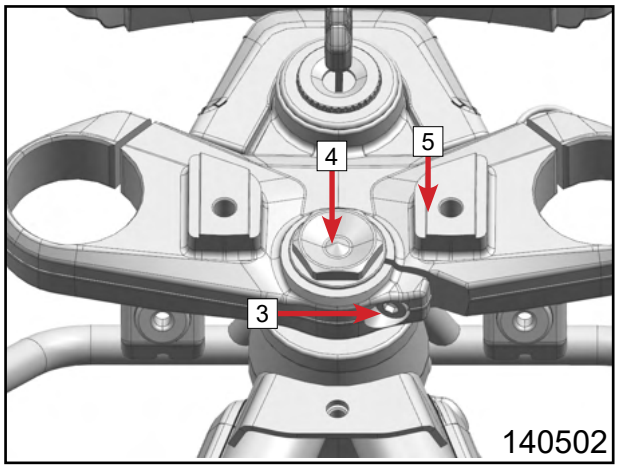
14.4 Triple Clamps and Front Forks

Removal

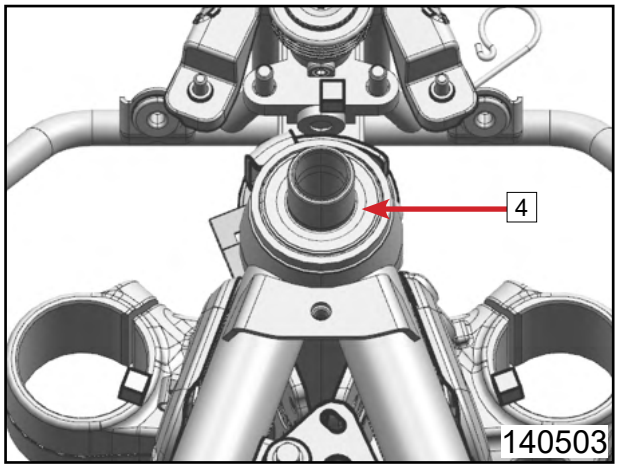
Remove two inner hex bolts [1].
Remove handlebar seat [2].



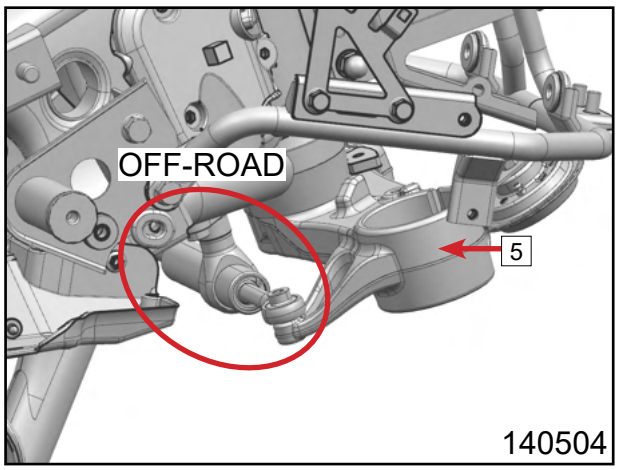
Remove inner hex bolts [3].
Remove upper triple clamp screw and washer [4].
Remove upper triple clamp [5].



Remove dust-proof cover and washer kit [4].



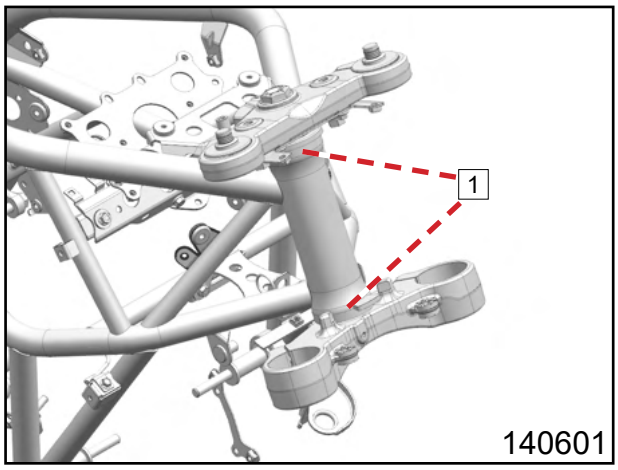
Remove inner hex bolts. Separate steering damper and lower triple clamp (OFF-ROAD).
Remove lower triple clamp [5].



Inspection

Inspect steel ball assy 1 for wear or missing. Replace if any defect is found.

Inspect bearing cage for cracks or abnormal wear. Replace if any defect is found.



Installation

Reverse the removal procedures for installation.

Steering column nut torque: 25 N•m

Upper triple clamp lock screw torque: 110 N•m

NOTE: Apply enough grease to bearing cage during installation and replacement.

CLEAN AND CONSERVATION

Clean and Conservation

15.1 Motorcycle Clean

⚠CAUTION: Clean the motorcycle periodically, to help it keep value and appearance. Avoid direct sunlight on the motorcycle while cleaning.

Seal air exhaust system to prevent water into the system.
Clean chunks of dirt with gentle water-jet in advance.
Use common motorcycle cleaner to clean serious smudges and wipe it with hairbrush.

⚠CAUTION:
Use the hot water with specialized cleaner for motorcycle and a piece of sponge.
It is not allowed to use the cleaner directly on dry vehicle body. Flush the vehicle with water in advance.
If the vehicle has been used in snow-melting salt, clean it with cold water. Otherwise, the hot water will exacerbate erosion.

Dry the car completely after washing the motorcycle with gentle water-jet.
Remove the seal plug for exhaust system.

⚠WARNING: The dirty or damp braking system will reduce the braking performance. Pay attention to keep the brake system clean and dry.

After cleaning, run the vehicle for some distance until the engine reaches certain temperature.
Push the guard upwards from the handlebar, in order to let the water evaporate.
After the motorcycle cools down, lubricate all sliding parts and bearing parts.
Clean the chain.
Use anti-rusting agent on exposed metal parts (except brake discs and exhaust system).
Use gentle curing agent on all painting parts.

⚠CAUTION: Do not polish the plastic parts which is in delivery. Otherwise, it will serious effects on the quality.

Use gentle cleaning agent and curing agent on all plastic parts and powder-coated parts.
Lubricate ignition switch lock/steering lock with engine oil.

15.2 Inspection and Maintenance in Winter

⚠CAUTION:
If the motorcycle is used in winter, it must be taken into consideration that the street is covered with snow-melting salt. Therefore, protective measures must be taken against erosion.
If the vehicle has been used in snow-melting salt, clean it with cold water. Otherwise, the hot water will exacerbate erosion.

Clean the motorcycle.
Clean brake system.

⚠CAUTION:
If the vehicle has been used in snow-melting salt, clean it with cold water after the brake calipers and brake pads cool down. Dry all the parts after cleaning. Do not remove brake parts when cleaning.

Use waxy preservative liquid for engine, swing arms and other exposed or galvanized parts (except brake pad).

⚠CAUTION:
The preservative liquid is not allowed to get into the brake pads. Otherwise, it will reduce the braking effect seriously.

Clean the chain.

STORAGE

Storage

16.1 Parking

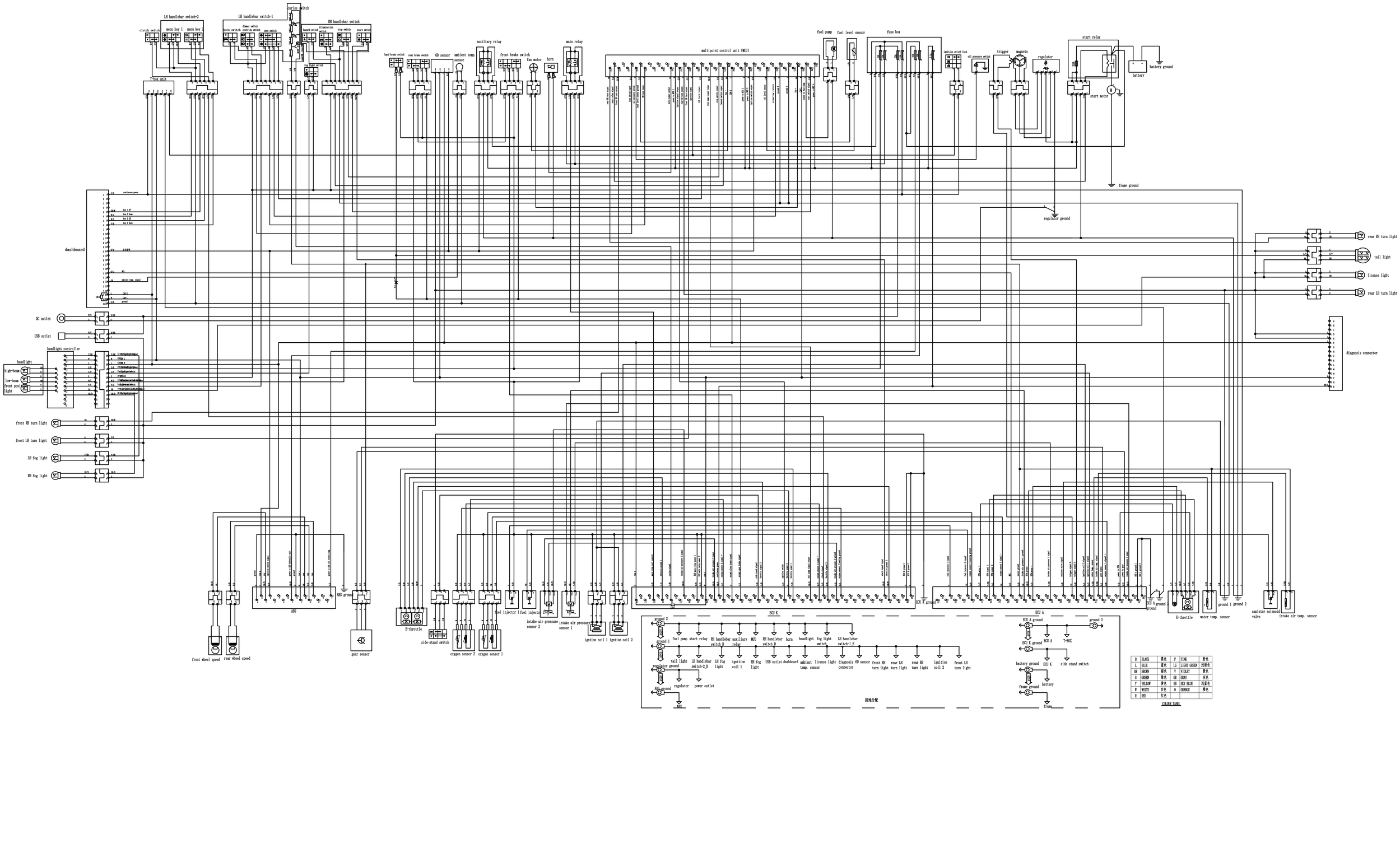
⚠CAUTION:
If parking for a long time, please execute the following measures.
Before parking the motorcycle, please check its functions and wear condition. If the bike needs maintenance, service or adjustment, operate it during parking (when service station has less work), which prevents long wait at the service station before peak season arrives.

•Add fuel additives for the last refueling before parking the motorcycle.
•Add fuel.
•Clean the motorcycle.
•Replace engine oil, oil filter and clean oil strainer.
•Check coolant and coolant level.
•Check tire pressure.
•Remove battery.
•Charge the battery.
Without direct sunlight condition, battery storage temperature: 0~35°C
Place the vehicle at a dry place without obvious temperature fluctuation.
Advice to use wheel bracket to lift the motorcycle.
Cover the motorcycle with breathable canvas or cover.

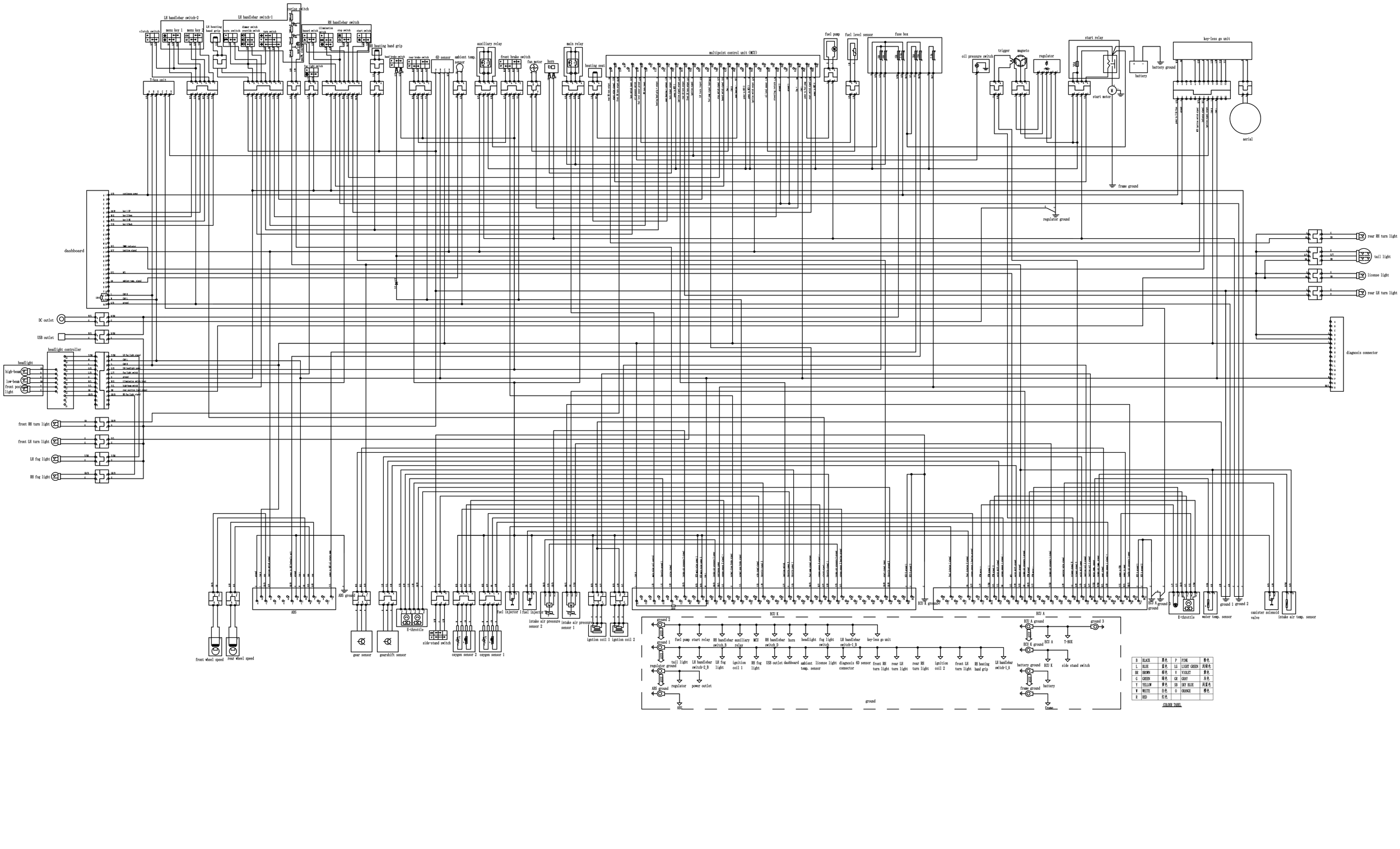
⚠CAUTION:
It is not allowed to use air-proof material to cover the motorcycle. Otherwise, the moisture can not get out which causes erosion.
The short-time running of the engine will cause severe damage if the motorcycle has parked. The temperature of the engine is not high enough after short-time running. The moisture that comes into being during combustion condenses after the engine cools down, which causes valve body and exhaust pipes erosion.

16.2 Motorcycle Use after Storage

Remove the motorcycle from front wheel bracket.
Remove the motorcycle from rear wheel bracket.
Install battery.
Inspect and maintain the motorcycle before use every time.
Drive the motorcycle to test it.


LH handlebar switch-2
clutch switch
menu key 1
menu key 2
LH handlebar switch-1
cruise switch
dimmer switch
horn switch
override switch
turn switch
RH handlebar switch
illumination switch
hazard switch
stop switch
start switch
T-box unit
fog light switch
hand brake switch
rear brake switch
6D sensor
ambient temp. sensor
auxiliary relay
front brake switch
fan motor
born
main relay
multipoint control unit (MCU)
fuel pump
fuel level sensor
fuse box
ignition switch lock
oil pressure switch
trigger
magneto
regulator
start relay
battery
battery ground
start motor
frame ground
regulator ground
dashboard
DC outlet
USB outlet
headlight controller
headlight
high-beam
low-beam
front position light
front RH turn light
front LH turn light
LH fog light
RH fog light
rear RH turn light
tail light
license light
rear LH turn light
diagnosis connector
ABS
front wheel speed
rear wheel speed
gear sensor
side-stand switch
oxygen sensor 2
oxygen sensor 1
E-throttle
fuel injector 1
fuel injector 2
intake air pressure sensor 2
intake air pressure sensor 1
ignition coil 1
ignition coil 2
ECU K
ECU K ground
ECU A
ECU A ground
water temp. sensor
canister solenoid valve
intake air temp. sensor
ground 1
ground 2
ground 3
fuel pump
start relay
RH handlebar switch_B
auxiliary relay
MCU
RH handlebar switch_D
horn
headlight
fog light switch
LH handlebar switch-1_B
tail light
LH handlebar switch-2_B
LH fog light
ignition coil 1
RH fog light
USB outlet
dashboard
ambient temp. sensor
license light
diagnosis 6D sensor connector
front RH turn light
rear LH turn light
rear RH turn light
ignition coil 2
front LH turn light
regulator
power outlet
接地分配
T-BOX
battery
frame
COLOUR TABEL
B BLACK 黑色
L BLUE 蓝色
BR BROWN 棕色
G GREEN 绿色
Y YELLOW 黄色
W WHITE 白色
R RED 红色
P PINK 粉色
LG LIGHT GREEN 浅绿色
V VIOLET 紫色
GR GRAY 灰色
SB SKY BLUE 浅蓝色
O ORANGE 橙色

800-5A



B	BLACK	黑色	P	PINK	粉色
L	BLUE	蓝色	LG	LIGHT GREEN	浅绿色
BR	BROWN	棕色	V	VIOLET	紫色
G	GREEN	绿色	GR	GRAY	灰色
Y	YELLOW	黄色	SB	SKY BLUE	浅蓝色
W	WHITE	白色	O	ORANGE	橙色
R	RED	红色			

COLOUR TABEL