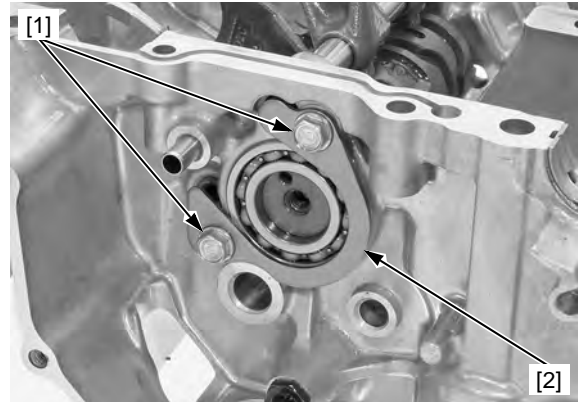


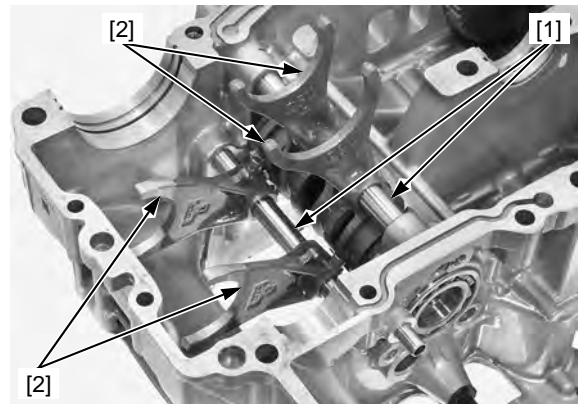
CRANKCASE/TRANSMISSION/BALANCER

SHIFT DRUM/SHIFT FORK

Remove the shift drum bearing set plate bolts [1] and set plate [2].



Remove the fork shafts [1] and shift forks [2].



Remove the shift drum [1] and shift drum bearing [2].



INSPECTION

SHIFT DRUM/SHIFT FORK

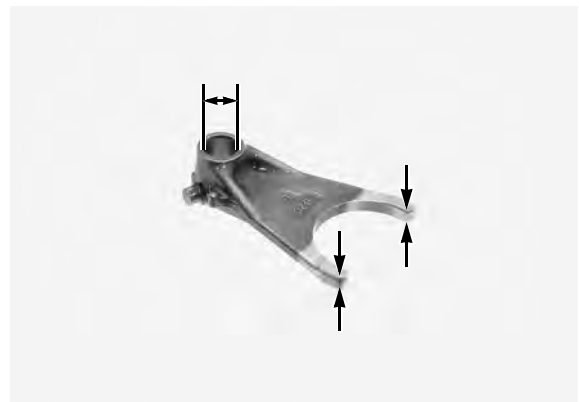
Check the shift fork guide pin for abnormal wear or damage.

Measure the shift fork I.D.

SERVICE LIMIT: 12.03 mm (0.474 in)

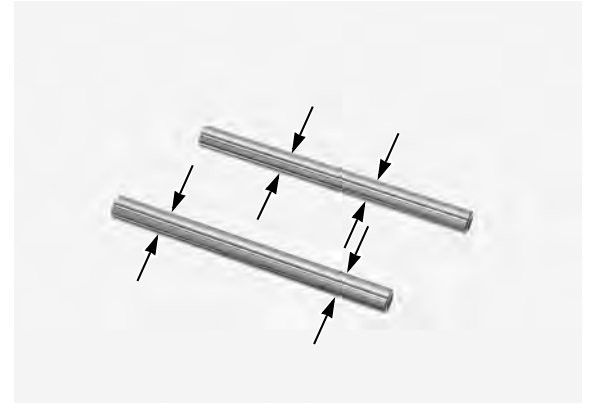
Measure the shift fork claw thickness.

SERVICE LIMIT: 5.9 mm (0.23 in)



Measure the shift fork shaft O.D.

SERVICE LIMIT: 11.95 mm (0.470 in)



Inspect the shift drum guide grooves for abnormal wear or damage.

Turn the outer race of the shift drum bearing with your finger.

The bearing should turn smoothly and quietly.

Replace the bearing if the outer race does not turn smoothly or quietly.



TRANSMISSION

Check the gear shifter groove and gear dogs for abnormal wear or damage.

Check the dog holes and gear teeth for abnormal wear or damage.



CRANKCASE/TRANSMISSION/BALANCER

Measure the I.D. of each gear.

SERVICE LIMITS:

M5:	33.04 mm (1.301 in)
M6:	43.04 mm (1.694 in)
C1:	31.06 mm (1.223 in)
C2:	25.03 mm (0.985 in)
C3, C4:	31.04 mm (1.222 in)

Measure the O.D. of each gear bushing.

SERVICE LIMITS:

M5:	32.93 mm (1.296 in)
M6:	42.93 mm (1.690 in)
C1:	30.94 mm (1.218 in)
C2:	24.94 mm (0.982 in)
C3, C4:	30.93 mm (1.218 in)

Calculate the gear-to-bushing clearance.

SERVICE LIMITS:

M5:	0.10 mm (0.004 in)
M6:	0.11 mm (0.004 in)
C1:	0.10 mm (0.004 in)
C2:	0.09 mm (0.004 in)
C3, C4:	0.11 mm (0.004 in)

Measure the I.D. of each gear bushing.

SERVICE LIMITS:

M5:	30.03 mm (1.182 in)
M6:	40.038 mm (1.5763 in)
C1:	28.04 mm (1.104 in)
C2:	22.02 mm (0.867 in)

Check the mainshafts and countershaft for abnormal wear or damage.

Measure the inner mainshaft O.D. at the M5 bushing.

SERVICE LIMIT: 29.93 mm (1.178 in)

Measure the outer mainshaft O.D. at the M6 bushing.

SERVICE LIMIT: 39.965 mm (1.5734 in)

Measure the countershaft O.D. at the C1 and C2 bushing.

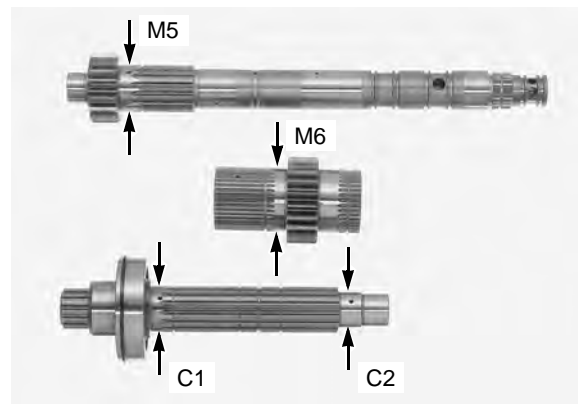
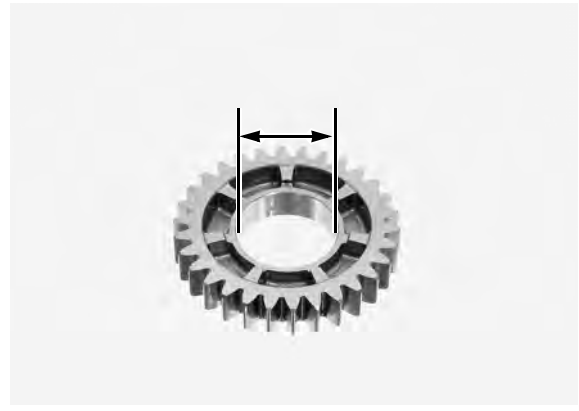
SERVICE LIMITS:

C1:	27.95 mm (1.100 in)
C2:	21.94 mm (0.864 in)

Calculate the gear bushing-to-shaft clearance.

SERVICE LIMITS:

M5:	0.09 mm (0.004 in)
M6:	0.10 mm (0.004 in)
C1:	0.08 mm (0.003 in)
C2:	0.08 mm (0.003 in)



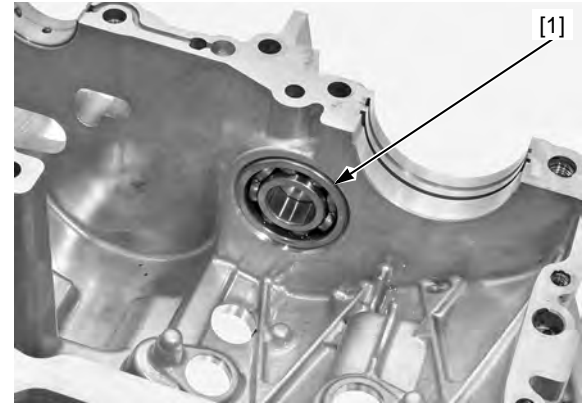
MAINSHAFT BEARING

Turn the inner race of the left mainshaft bearing [1] with your finger.

The bearing should turn smoothly and quietly.

Also check that the outer race of the bearing fits tightly in the upper crankcase.

Replace the bearing (page 14-21) if the inner race does not turn smoothly, quietly, or if the outer race fits loosely in the crankcase.



COUNTERSHAFT BEARING

Turn the outer race of countershaft bearing [1] with your finger.

The bearing should turn smoothly and quietly.

Also check that the bearing inner race fits tightly on the countershaft.

Replace the countershaft, collar, and bearing as an assembly, if the outer race does not turn smoothly, quietly, or if the inner race fits loosely on the countershaft.



LEFT MAINSHAFT BEARING REPLACEMENT

Remove the following:

- Crankshaft (page 15-5)
- Pistons/connecting rods (page 15-14)

To avoid burns, wear heavy gloves when handling the heated upper crankcase.

Do not use a torch to heat the upper crankcase; it may cause warping.

Heat the upper crankcase to 80°C (176°F) evenly using a heat gun.

Tap the upper crankcase lightly and remove the left mainshaft bearing [1].



Apply engine oil to a new left mainshaft bearing [1].

Drive in a new bearing squarely with the marking side facing toward the inside of the crankcase.

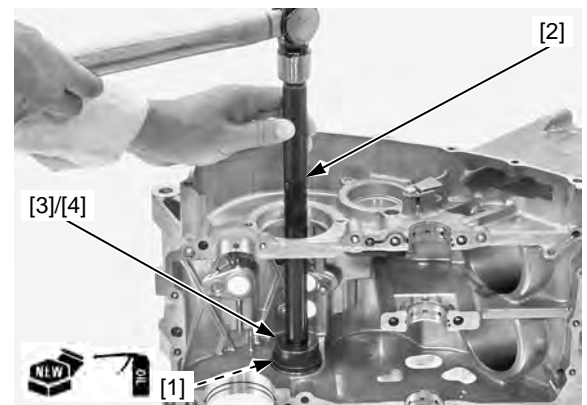
Drive the left mainshaft bearing into the upper crankcase until it is fully seated using the special tools.

TOOLS:

- | | |
|-----------------------------------|----------------------|
| Driver, 15 x 280L [2] | 07949-3710001 |
| Attachment, 42 x 47 mm [3] | 07746-0010300 |
| Pilot, 20 mm [4] | 07746-0040500 |

Install the following:

- Pistons/connecting rods (page 15-20)
- Crankshaft (page 15-6)



CRANKCASE/TRANSMISSION/BALANCER

TRANSMISSION ASSEMBLY

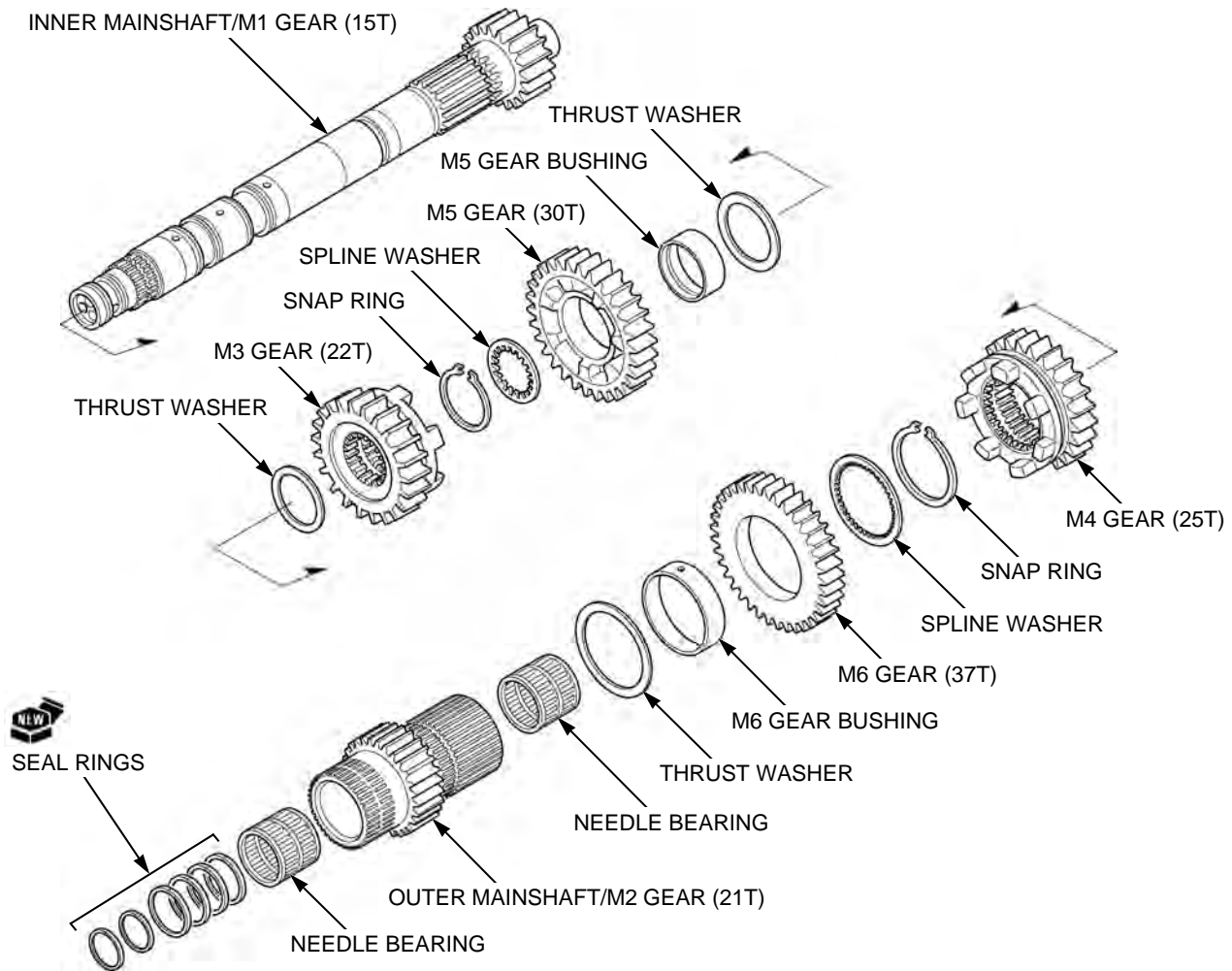
Clean all parts in solvent, and dry them thoroughly.


Apply engine oil to the gear teeth, rotating surface and bearing.


Apply molybdenum oil solution to the spline bushing outer surfaces, bushing inner and outer surfaces, and gear shifter grooves.

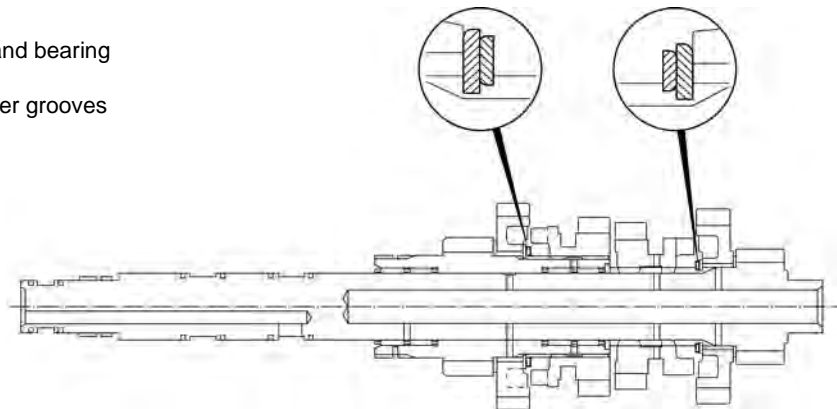
Assemble the mainshaft and countershaft.

MAINSHAFT

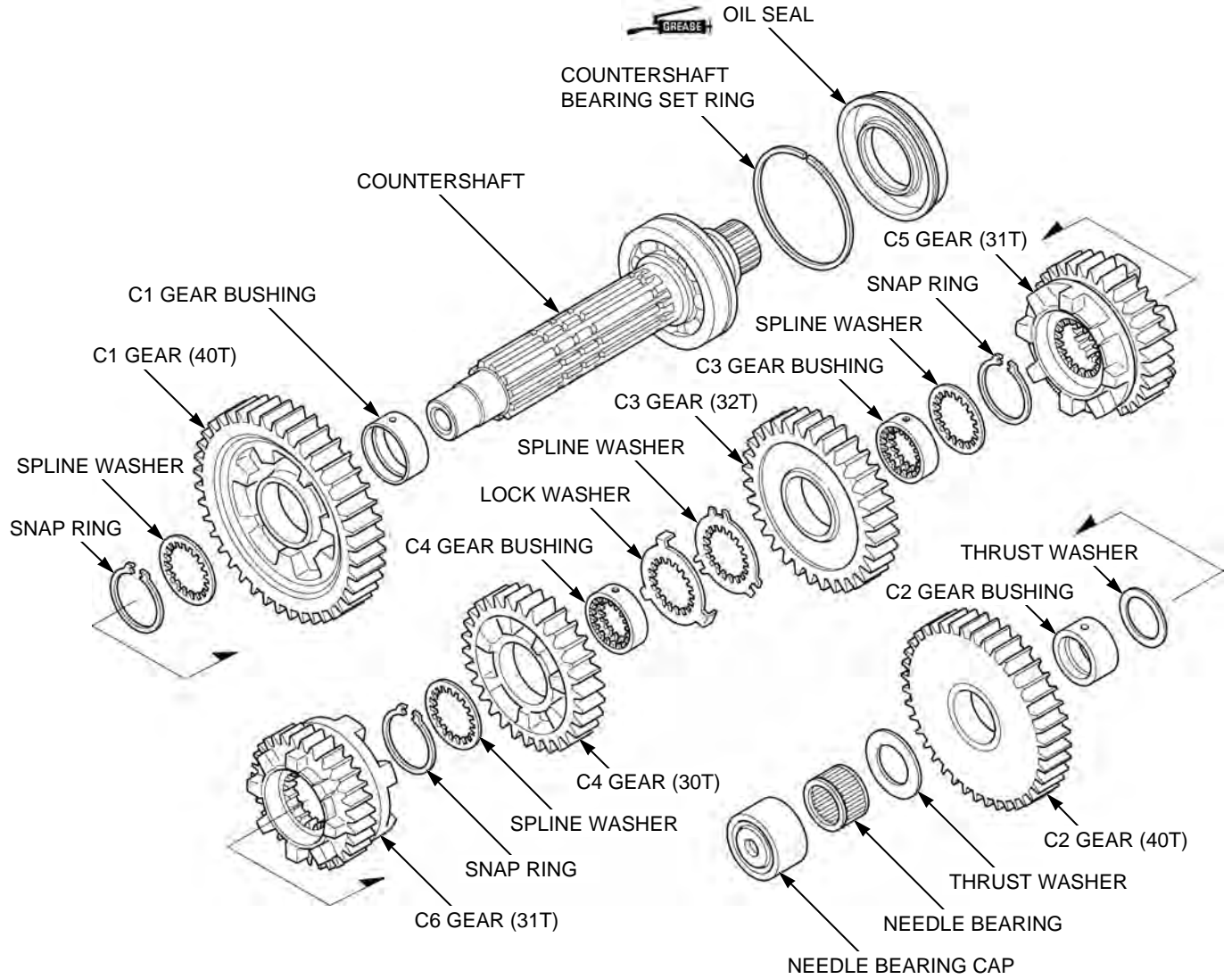




 : Gear teethe, rotating surfaces and bearing

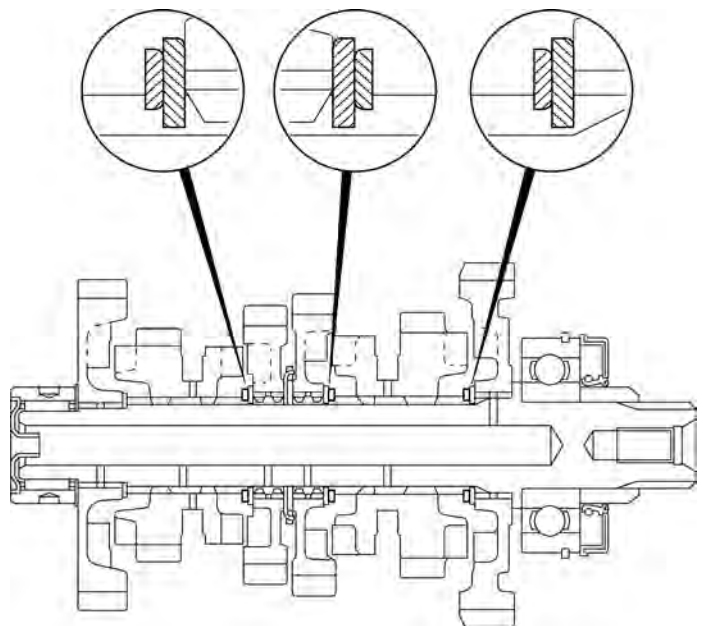
 : Bushing surfaces and gear shifter grooves



COUNTERSHAFT



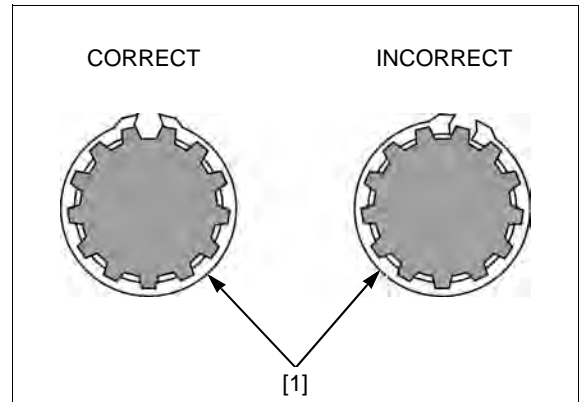
 : Gear teethe, rotating surfaces and bearing
 : Bushing surfaces and gear shifter grooves



CRANKCASE/TRANSMISSION/BALANCER

NOTE:

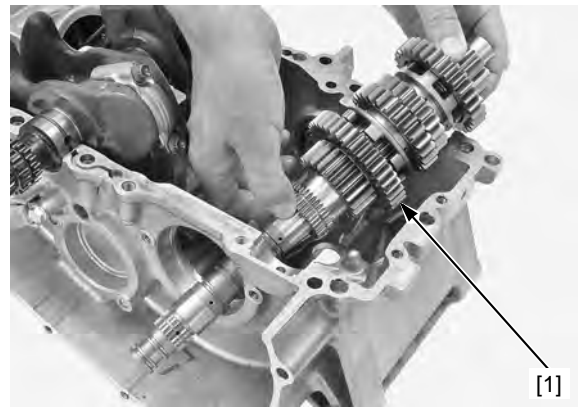
- Coat each gear with clean engine oil and check for smooth movement.
- Align the lock washer tabs with the spline washer grooves.
- Always install the thrust washers and snap rings with the chamfered (rolled) edge facing away from the thrust load.
- Install the snap rings [1] so that the end gap aligns with the groove of the splines.
- Make sure that the snap rings are fully seated in the shaft groove after installing them.



INSTALLATION

MAINSHAFT/COUNTERSHAFT

Install the mainshaft assembly [1] into the upper crankcase.

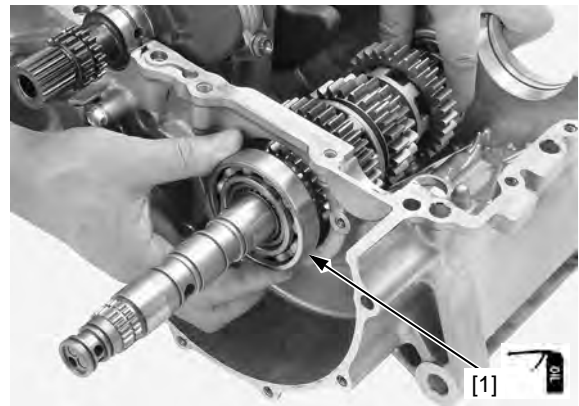


Apply engine oil to the right mainshaft bearing [1].

Install the right mainshaft bearing into the upper crankcase.

NOTE:

Install the bearing into the crankcase with the marked side facing out.

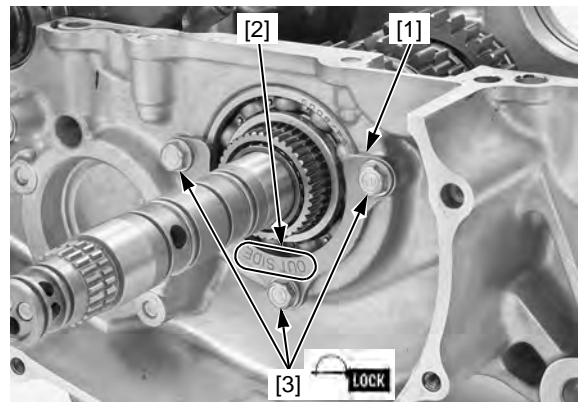


Apply locking agent to the mainshaft bearing set plate bolts threads (page 14-6).

Install the mainshaft bearing set plate [1] with its "OUT SIDE" mark [2] facing out.

Install and tighten the mainshaft bearing set plate bolts [3] to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

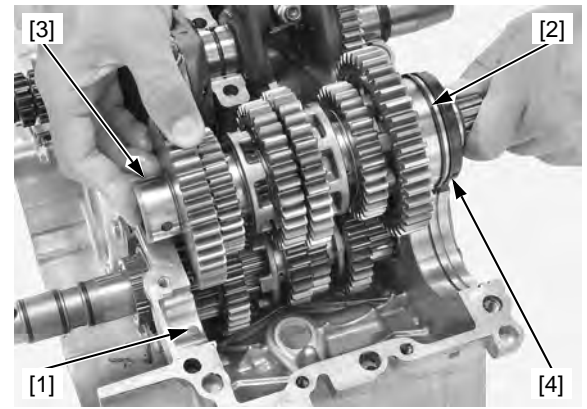


Install the dowel pin [1] onto the upper crankcase hole.
 Install the countershaft bearing set ring [2] into the countershaft bearing groove.
 Install the countershaft assembly [3].

NOTE:

- Align the needle bearing cap hole with the dowel pin.
- Align the set ring with the upper crankcase groove.
- Align the oil seal flange [4] with the upper crankcase groove.

Install the shift drum/shift fork (page 14-25).
 Assemble the crankcase (page 14-28).



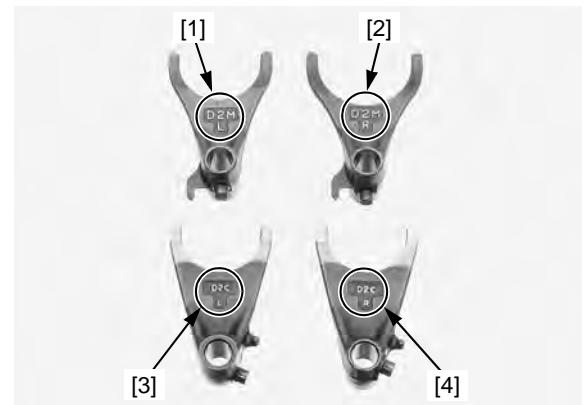
SHIFT DRUM/SHIFT FORK

Apply engine oil to the shift drum bearing [1].
 Install the shift drum [2] and shift drum bearing into the lower crankcase.



The shift forks have the following identification marks:

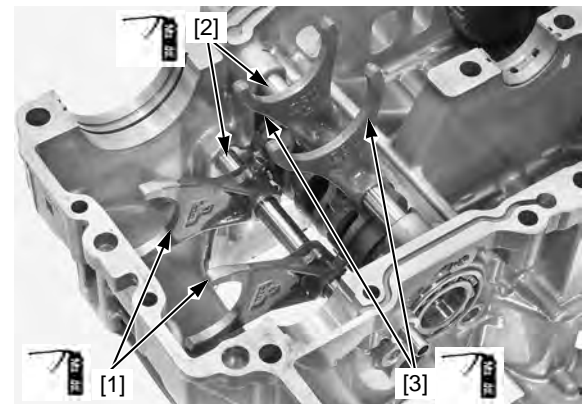
- "D2M L" mark [1]: Mainshaft left shift fork
- "D2M R" mark [2]: Mainshaft right shift fork
- "D2C L" mark [3]: Countershaft left shift fork
- "D2C R" mark [4]: Countershaft right shift fork



Apply molybdenum oil solution to the shift fork shaft outer surfaces, shift fork claws and guide pins.

Install the countershaft shift forks [1] into the shift drum outer guide grooves with the identification marks facing toward the right side of the engine and insert the shift fork shaft [2].

Install the mainshaft shift forks [3] into the shift drum inner guide grooves with the identification marks facing toward the right side of the engine and insert the shift fork shaft.



CRANKCASE/TRANSMISSION/BALANCER

Apply locking agent to the shift drum bearing set plate bolt threads (page 14-6).

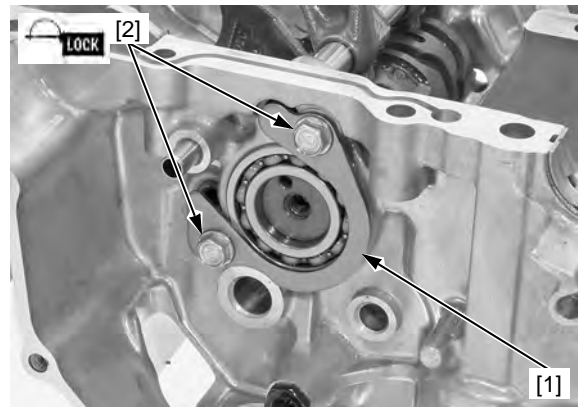
Install the shift drum bearing set plate [1] and bolts [2].

Tighten the bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Install the mainshaft/countershaft (page 14-24).

Assemble the crankcase (page 14-28).

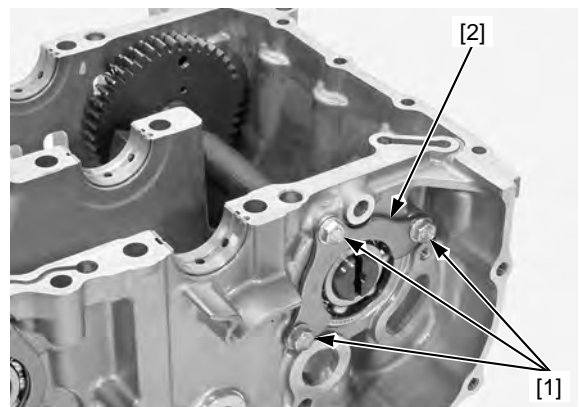


BALANCER

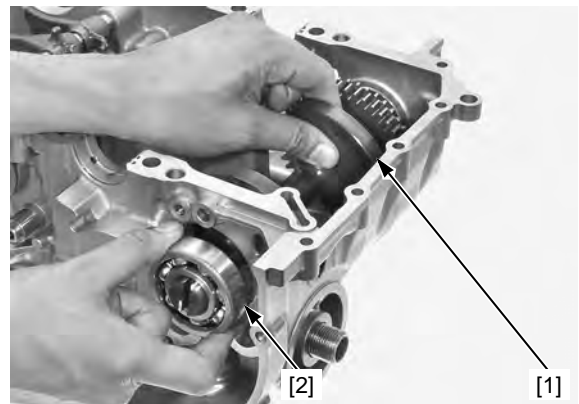
REMOVAL

Separate the crankcase halves (page 14-7).

Remove the balancer shaft bearing set plate bolts [1] and set plate [2].



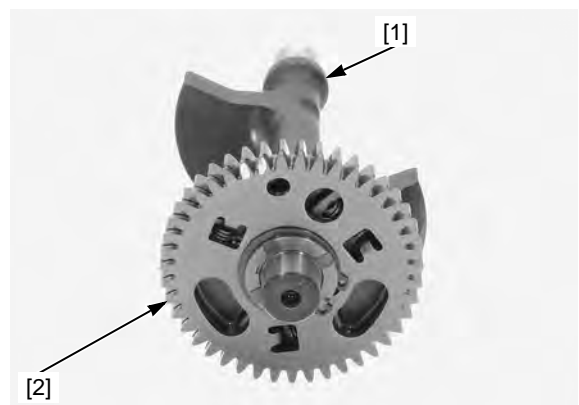
Remove the balancer shaft [1] and right balancer shaft bearing [2].



INSPECTION

Check the balancer shaft [1] and balancer driven gear [2] for excessive wear or damage.

Replace the balancer shaft if necessary.

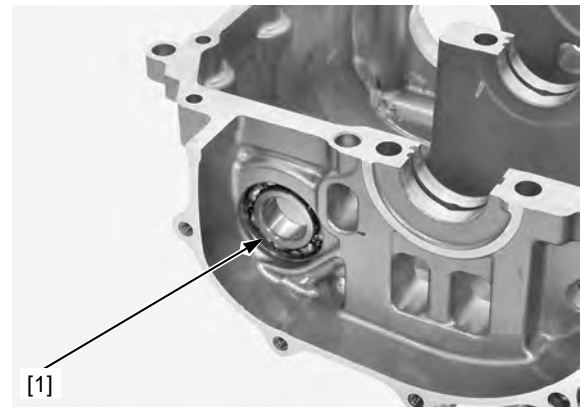


Turn the inner race of the left balancer shaft bearing [1] with your finger.

The bearing should turn smoothly and quietly.

Also check that the outer race of the bearing fits tightly in the lower crankcase.

Replace the bearing (page 14-27) if the inner race does not turn smoothly, quietly, or if the outer race fits loosely in the lower crankcase.



Temporarily install the right balancer shaft bearing onto the balancer shaft.

Turn the outer race of the right balancer shaft bearing with your finger.

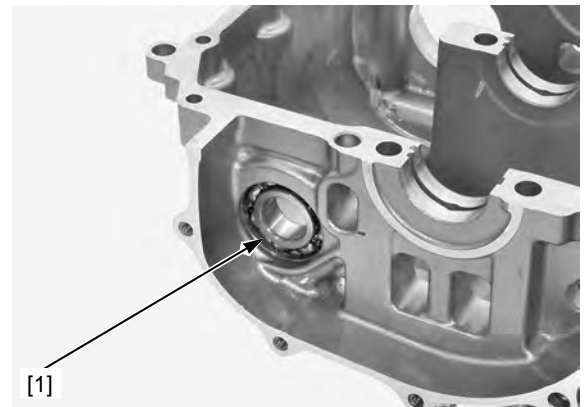
The bearing should turn smoothly and quietly.

Also check that the inner race of the bearing fits tightly on the balancer shaft.

Replace the bearing if the inner race does not turn smoothly, quietly, or if the inner race fits loosely on the balancer shaft.

LEFT BALANCER SHAFT BEARING REPLACEMENT

Drive out the left balancer shaft bearing [1] from the lower crankcase.

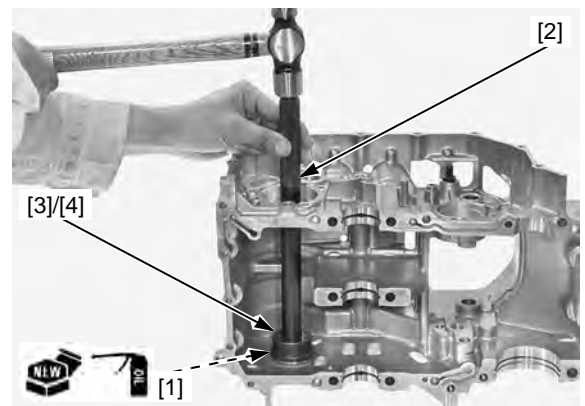


Drive in a new bearing squarely with the marking side facing toward the inside of the crankcase.

Apply engine oil to a new left balancer shaft bearing [1].

Drive the left balancer shaft bearing into the lower crankcase until it is fully seated using the special tools.

- TOOLS:**
- Driver, 15 x 280L [2] 07949-3710001**
 - Attachment, 42 x 47 mm [3] 07746-0010300**
 - Pilot, 20 mm [4] 07746-0040500**



CRANKCASE/TRANSMISSION/BALANCER

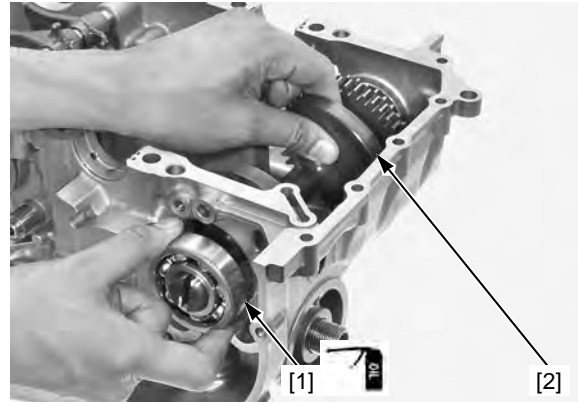
INSTALLATION

Apply engine oil to the right balancer shaft bearing [1].

Install the balancer shaft [2] and right balancer shaft bearing into the lower crankcase.

NOTE:

Install the bearing into the crankcase with the marked side facing out.

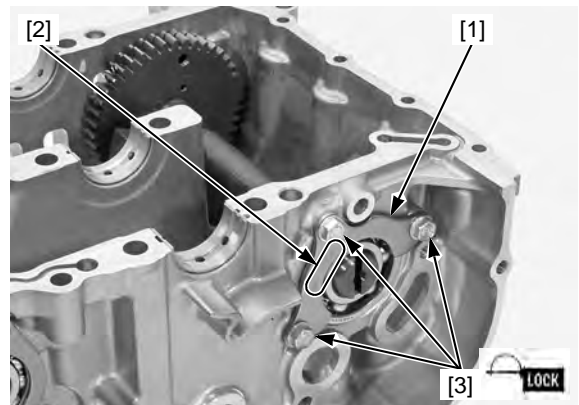


Apply locking agent to the balancer shaft bearing set plate bolts threads (page 14-6).

Install the balancer shaft bearing set plate [1] with its "OUT SIDE" mark [2] facing out.

Install and tighten the balancer shaft bearing set plate bolts [3] to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

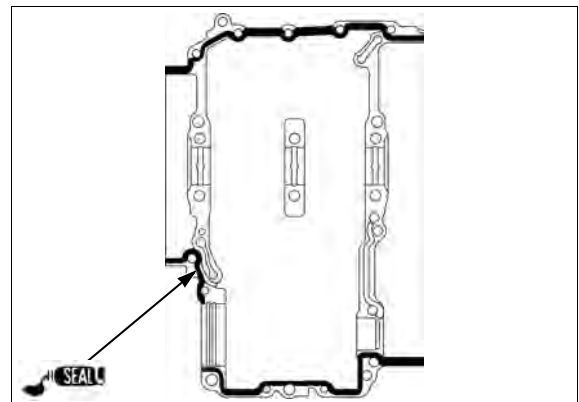


CRANKCASE ASSEMBLY

Apply liquid sealant (Three Bond 1207B or equivalent) to the crankcase mating surface as shown.

NOTE:

- Do not apply more liquid sealant than necessary.
- Do not apply liquid sealant to the crankcase main journal bolts area and the oil passage area as shown.

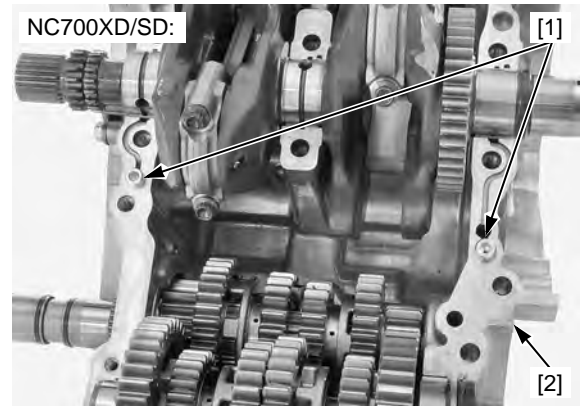
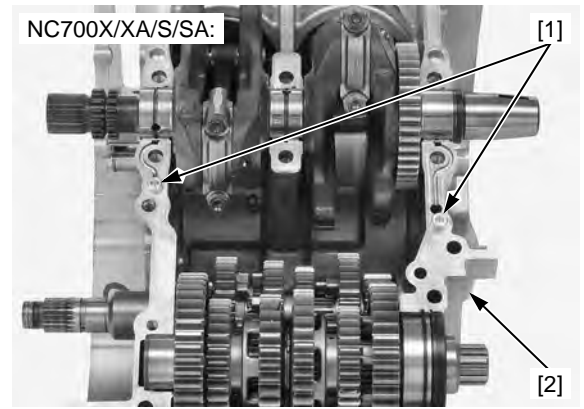


CRANKCASE/TRANSMISSION/BALANCER

Install the oil orifices [1] onto the upper crankcase [2].

NOTE:

Install the oil orifices with its narrow hole side facing upper crankcase.



Install the dowel pins [1] onto the upper crankcase [2].

