

CONNECTING ROD ASSEMBLY

Install the bearing inserts on the rods and caps.

NOTE

- Align the boss on the bearing with the groove in the rod or cap.
- Apply molybdenum disulfide grease to the bearing.

Install the connecting rods and caps on the crankpin. Be sure each part is installed in its original position, as noted during removal.

Tighten the bearing cap nuts.

NOTE

- Align the I.D. code on the cap and rod.
- Tighten the nuts in two or more steps. After tightening, check that the rods move freely without binding.

TORQUE: 34 N·m (3.4 kg·m, 25 ft·lb)

Install the crankshaft in the left crankcase.
Install the dowel pins and assemble the crankcase (page 11-16).

TRANSMISSION

REMOVAL

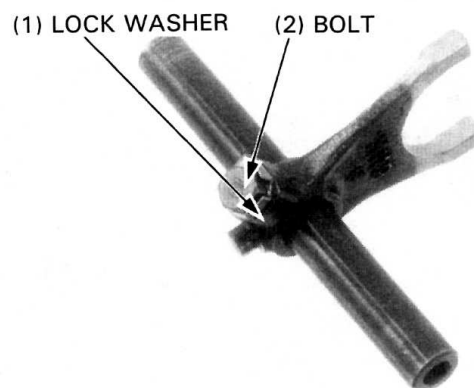
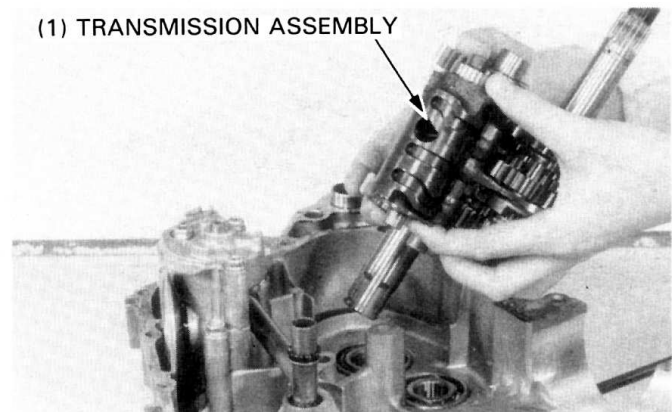
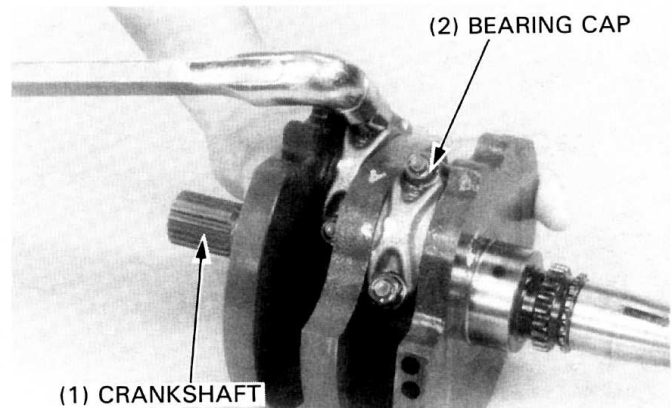
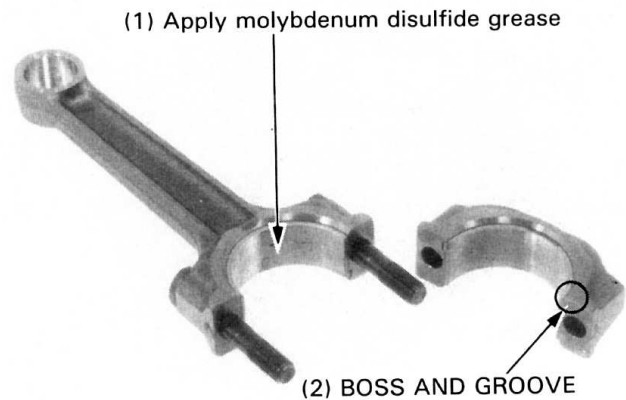
Remove the mainshaft, countershaft, shift fork shaft and shift drum as an assembly.

Separate the shift forks/shaft, mainshaft and countershaft assemblies from each other.

DISASSEMBLY/INSPECTION

Bend down the lock washer tabs and remove the bolt and lock washer from the center shift fork.
Remove the shift fork shaft.

Disassemble the mainshaft and countershaft.



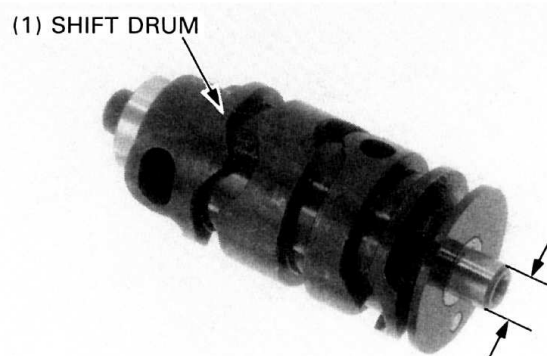
CRANKSHAFT/TRANSMISSION

Inspect the shift drum end for scoring, scratches, or evidence of insufficient lubrication. Check the shift drum grooves for damage.

Measure the shift drum shaft O.D. at the left side journal.

SERVICE LIMIT: 11.96 mm (0.471 in)

Check the bearing inner and outer races for damage.
The bearing should turn smoothly and quietly.



Check the shift fork shaft for scratches, scoring or evidence of insufficient lubrication.

Measure the shift fork shaft O.D.

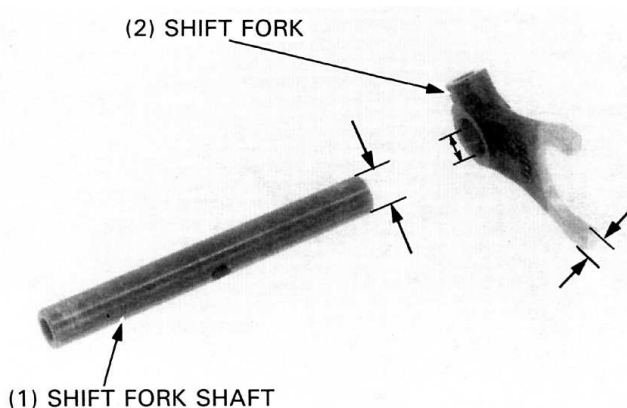
SERVICE LIMIT: 12.96 mm (0.510 in)

Measure the I.D. of each shift fork and the fork claw thickness.

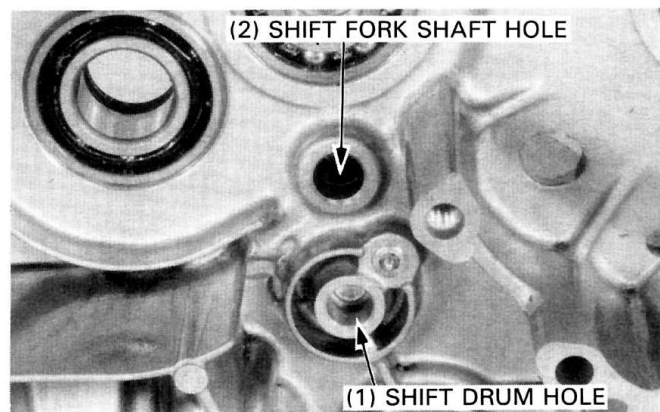
SERVICE LIMITS:

I.D.: 13.03 mm (0.513 in)

CLAW THICKNESS: 5.83 mm (0.230 in)



Inspect the shift drum and shift fork shaft journals for excessive wear or damage.



Measure the O.D. of mainshaft and countershaft.

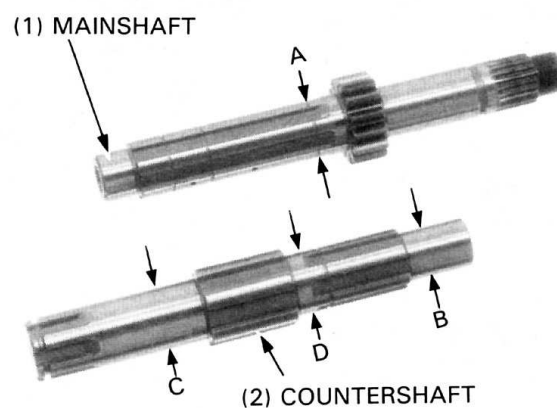
SERVICE LIMITS:

A: M4 bushing 24.95 mm (0.982 in)

B: C1 bushing 19.97 mm (0.786 in)

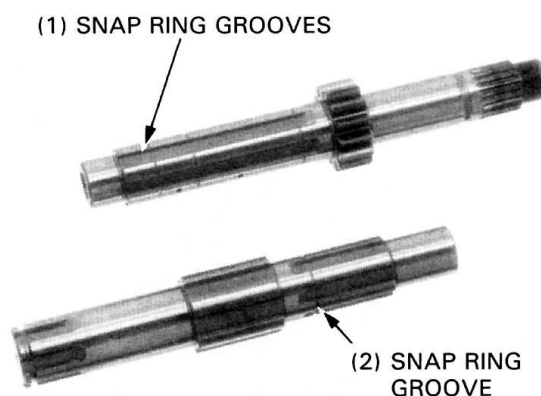
C: C2 bushing 24.96 mm (0.983 in)

D: C3 bushing 24.95 mm (0.982 in)



Check each shaft's grooves for damage.

Replace if necessary.



Check the gear dogs, holes and teeth for excessive or abnormal wear, or evidence of insufficient lubrication. Measure the I.D. of each gear.

SERVICE LIMITS:

M4, M5, C2, C3 gears: 28.03 mm (1.103 in)
C1 gear: 24.03 mm (0.946 in)

Measure the I.D. and O.D. of each gear bushing.

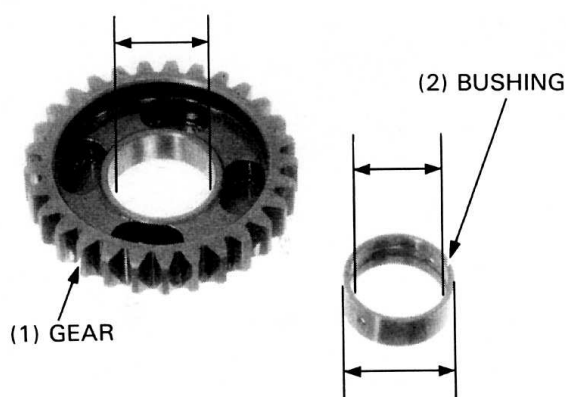
SERVICE LIMITS:

M4, M5, C2, C3 bushings O.D.: 27.95 mm (1.100 in)
C1 bushing O.D.: 24.95 mm (0.982 in)
M4, C2, C3 bushing I.D.: 25.03 mm (0.985 in)
C1 bushing I.D.: 20.05 mm (0.789 in)

Calculate the bushing to shaft clearances and gear to bushing clearance.

SERVICE LIMITS:

bushing-to-shaft (M4, C3):
0.08 mm (0.003 in)
(C2):
0.07 mm (0.03 in)
gear-to-bushing (M4, M5, C1, C2, C3):
0.08 mm (0.003 in)

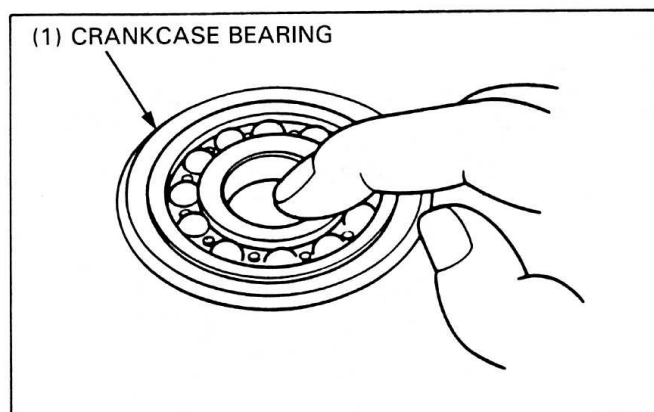


CRANKCASE

BEARING REPLACEMENT

Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the crankcase.

Remove and discard the bearings if the races do not turn smoothly, quietly, or if they fit loosely in the crankcase.



CRANKSHAFT/TRANSMISSION

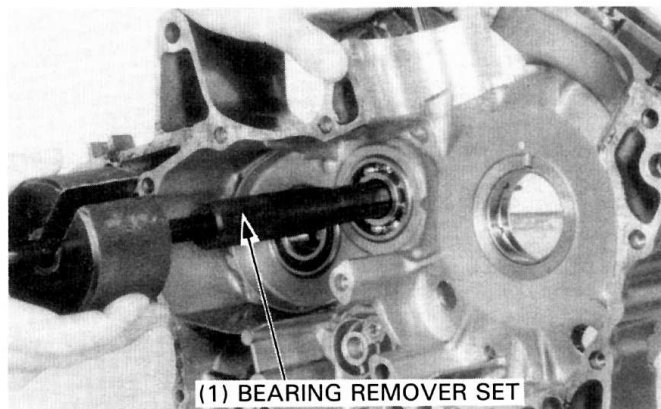
Left crankcase

Remove the left mainshaft bearing using the special tools.

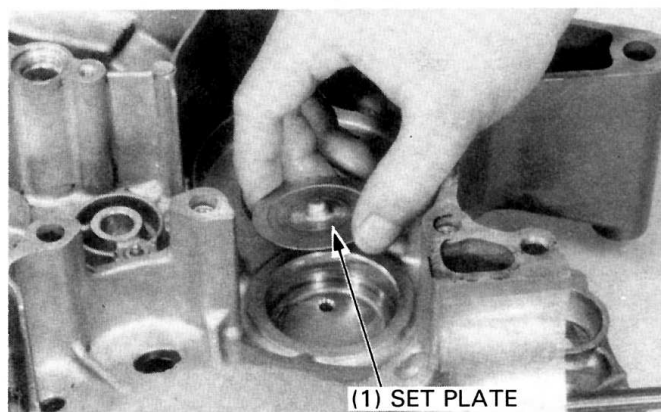
TOOLS:

Bearing remover set	07936-3710001
— remover handle	07936-3710100
— bearing remover set	07936-3710600
— remover weight	07741-0010201 or 07936-3710200 U.S.A. only

Drive the countershaft bearing and oil seal out of the crankcase.



Install the new mainshaft bearing set plate on the left crankcase.



NOTE

- Apply fresh engine oil to the new crankcase bearings before installation.

Install the new bearings with the following tools.

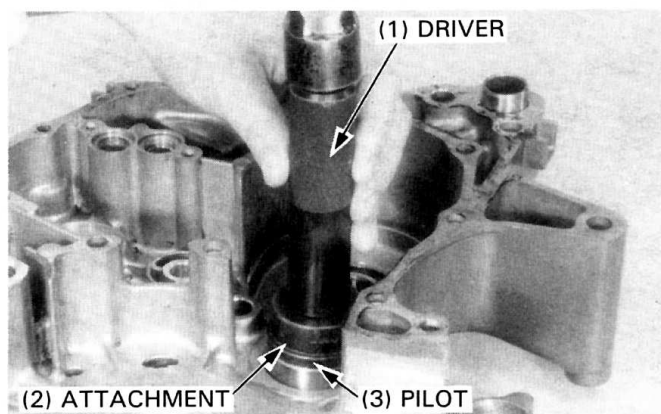
TOOLS:

Left mainshaft bearing:

Driver	07749-0010000
Attachment, 42 x 47 mm	07746-0010300

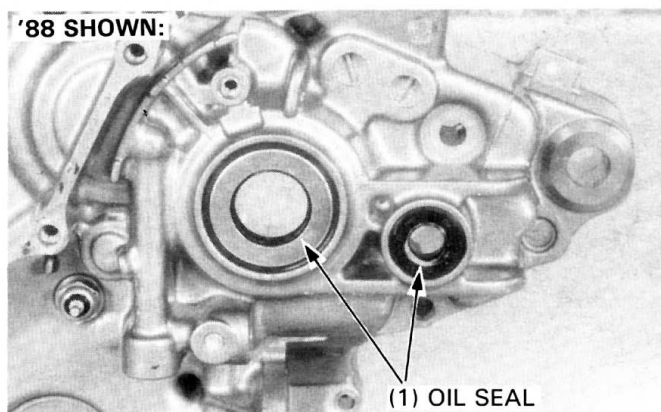
Left countershaft bearing:

Driver	07749-0010000
Attachment, 52 x 55 mm	07746-0010400
Pilot, 25 mm	07746-0040600



Install a new countershaft oil seal.

Check the gearshift spindle oil seal for wear or damage, replace if necessary.



Right crankcase

Remove the mainshaft bearing set plate and drive the countershaft bearing, mainshaft bearing and shift drum bearing out of the crankcase.

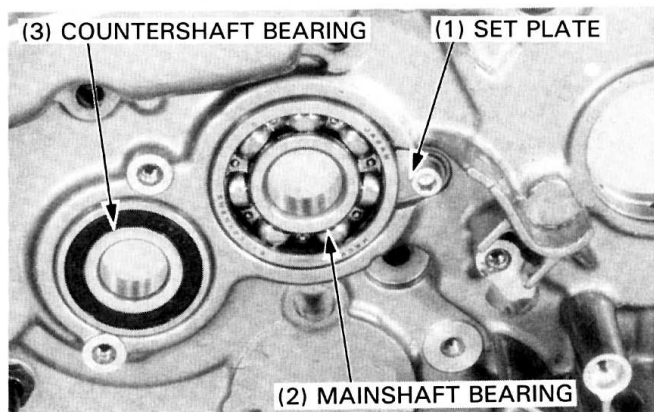
TOOLS:

Right mainshaft bearing

Driver	07749-0010000
Attachment, 52 x 55 mm	07746-0010400
Pilot, 22 mm	07746-0041000

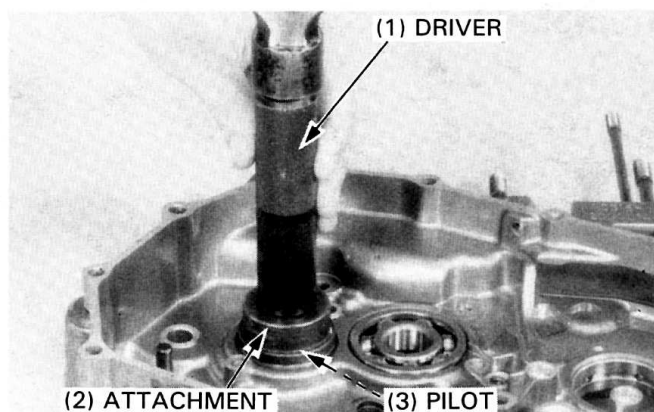
Right countershaft bearing

Driver	07749-0010000
Attachment, 42 x 47 mm	07746-0010300
Pilot, 20 mm	07746-0040500



Apply a locking agent to the threads of the mainshaft bearing set plate attaching bolt.

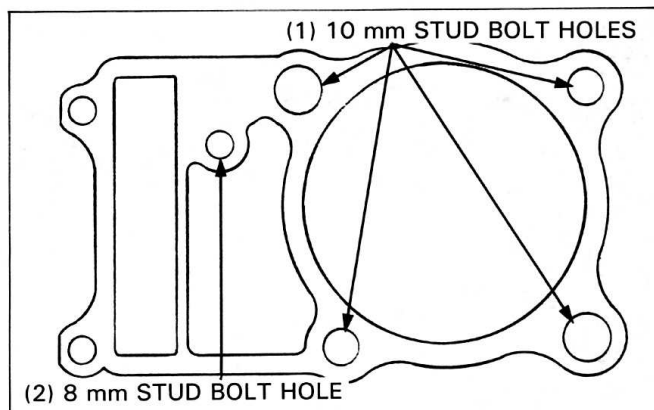
Install the set plate aligning the edge of the set plate with the slot on the bearing outer and tighten the bolt securely.



INSPECTION

Crankcase studs

Check that the studs are tight. If any are loose, remove them, clean their threads with contact cleaner, then reinstall them using Honda Anaerobic Thread Lock, or equivalent.



After installing, be sure to measure the distance from the top of each stud to the crankcase surface.

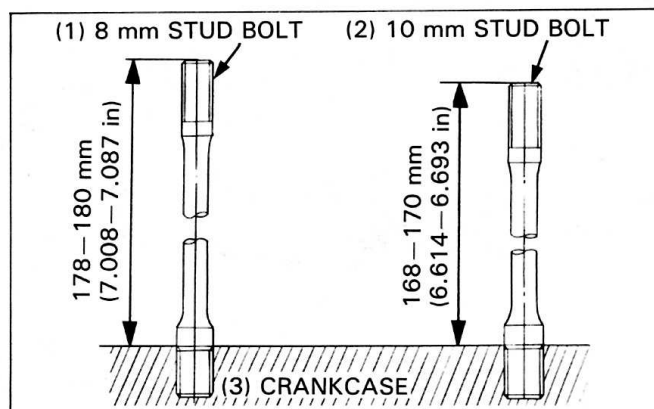
Tighten the stud bolts to the specified torque.

TORQUE: 8 mm stud bolt:

20-30 N·m (2.0-3.0 kg-m, 14-22 ft-lb)

10 mm stud bolt:

30-50 N·m (3.0-5.0 kg-m, 22-36 ft-lb)



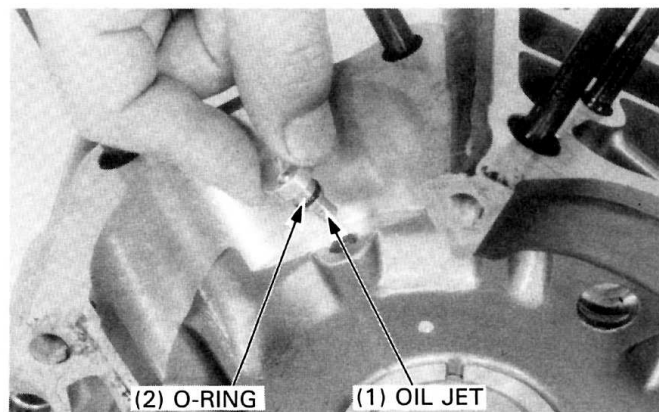
CRANKSHAFT/TRANSMISSION

Oil jet

Remove the oil jets from the front cylinder bore of the right and left crankcase.

Check the O-ring for fatigue and damage.

Check the oil jet orifice for clogging.



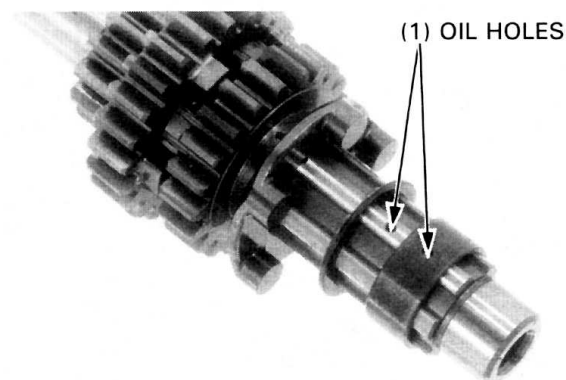
TRANSMISSION ASSEMBLY/ INSTALLATION

Apply MoS₂ grease to the shift fork journals of M3, C4 and C5 gears.

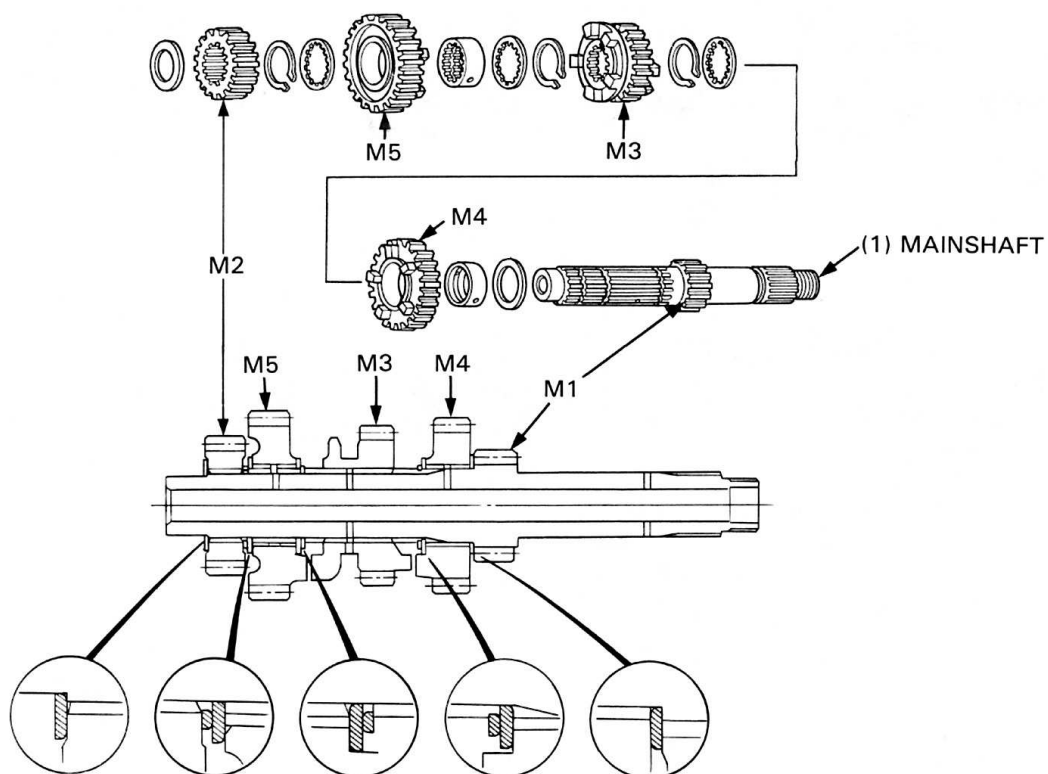
Clean all parts in solvent and dip them in clean engine oil.

CAUTION

- *Align the oil holes in the bushings and gears with the oil holes in the shaft.*



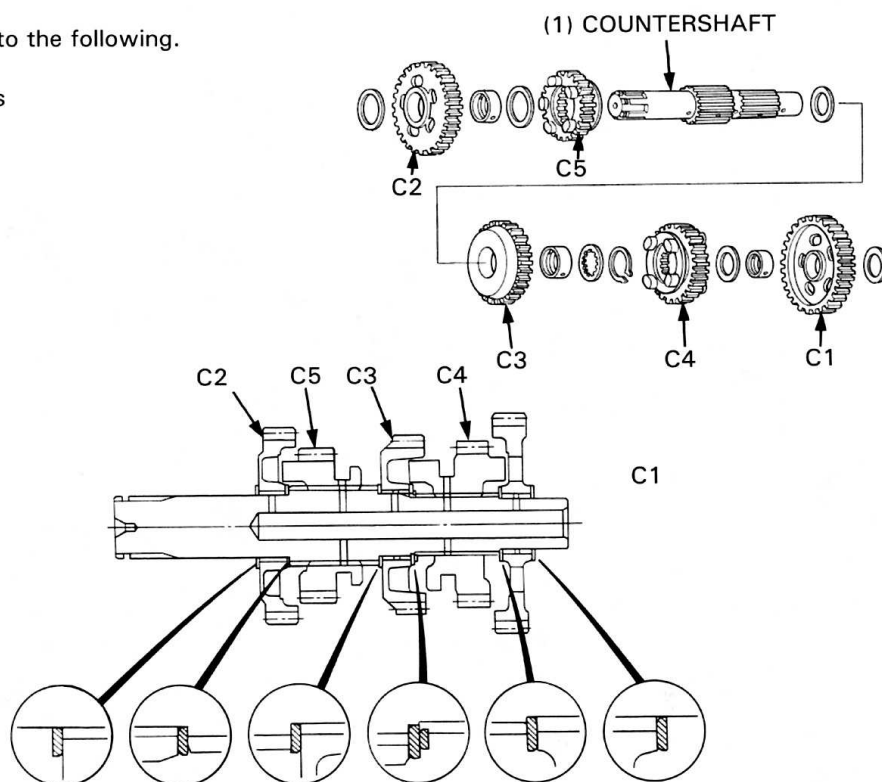
Mainshaft



Countershaft

Apply molybdenum disulfide grease to the following.

- shift fork grooves
- inside and outside of the bushings
- outside of the spline bushings



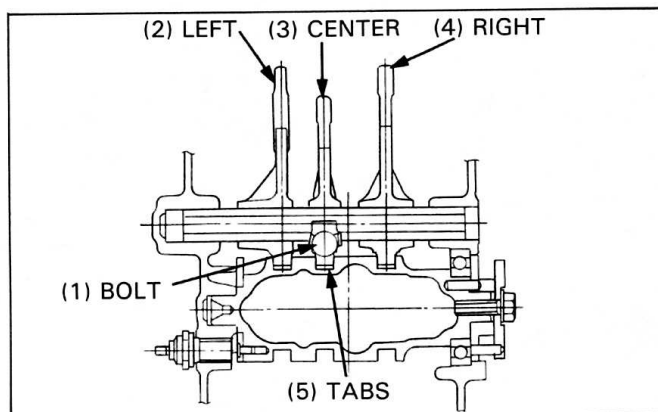
Install the shift forks onto the shaft as follows.

Left side: "MN8L" mark facing R. crankcase.

Center: "C" mark facing L. crankcase.

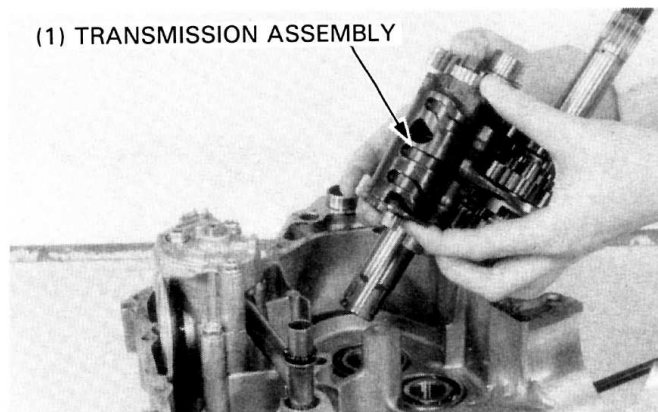
Right side: "MM9R" mark facing R. crankcase.

Tighten the bolt with the lock washer and bend up the tabs of the lock washer.



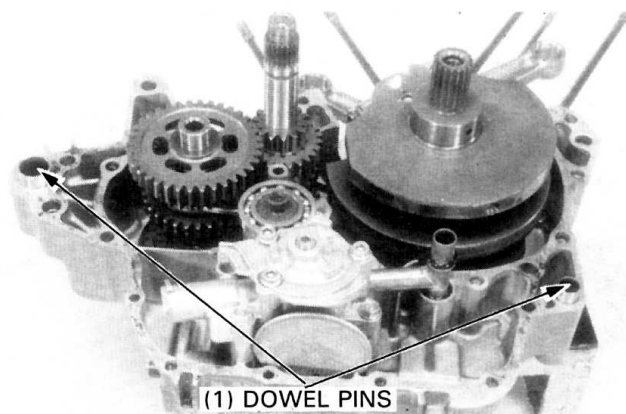
Assemble the mainshaft, countershaft, shift fork shaft and shift drum.

Install them into the left crankcase as an assembly.



CRANKCASE ASSEMBLY

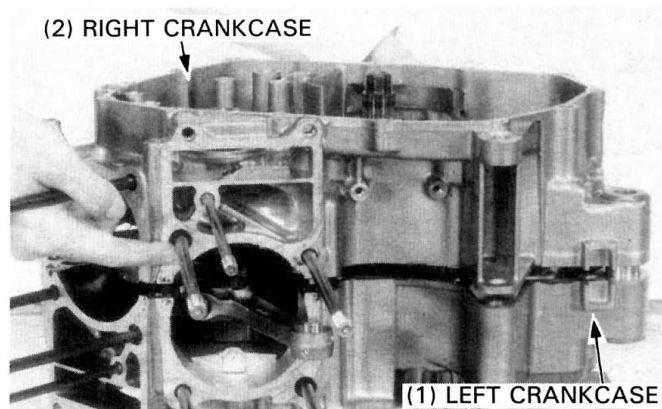
Apply sealant to the crankcase mating surfaces.
Install the dowel pins.



Assemble the right and left crankcases being careful to align the dowel pins and shafts.

CAUTION

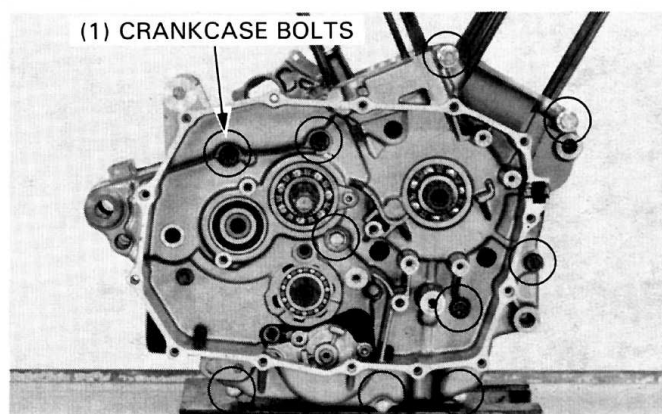
- *Do not force the crankcase halves together; if excessive force is required, something is wrong. Remove the right crankcase and check for misaligned parts.*



Apply oil to all crankcase bolts.
Install and tighten the right crankcase bolts in a crisscross pattern in 2 or 3 steps.

NOTE

- Tighten the 8 mm bolts first, then tighten the 6 mm bolts.



Install and tighten the left crankcase bolts in a crisscross pattern in 2 or 3 steps.

NOTE

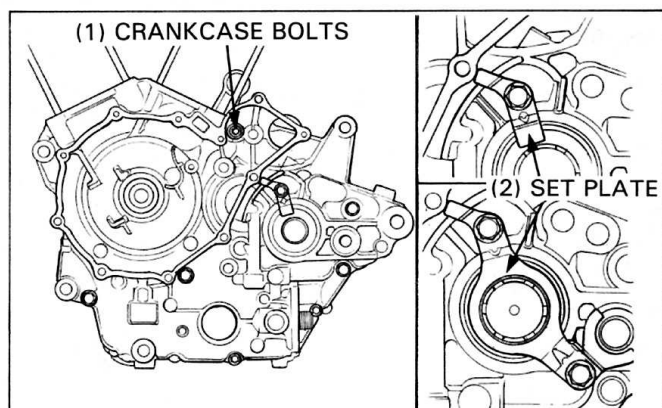
- Tighten the 8 mm bolts first, then tighten the 6 mm bolts.

'88 Only:

Install the countershaft set plate with the attaching bolt.

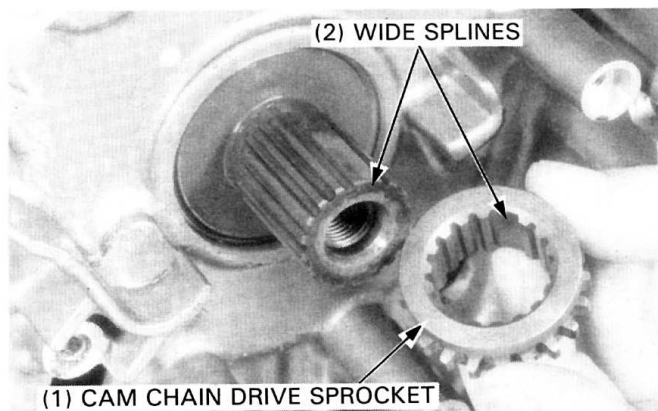
After '88:

Install the countershaft set plate with the attaching bolts (2 pcs).



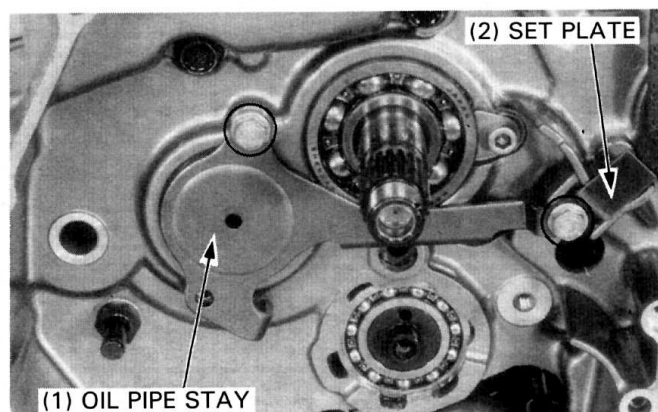
'88, After '88:

Install the rear cam chain drive sprocket over the crankshaft, aligning the extra-wide splines in the sprocket and crankshaft.



Install the rear cam chain over the drive sprocket.

Install the oil pipe stay and cam chain tensioner set plate. Tighten the bolt securely.



Install the front cam chain over the front cam chain drive sprocket.

Install the cam chain tensioner set plate and tighten the bolt securely.

Install the remaining parts in the reverse order of removal (page 11-3).

