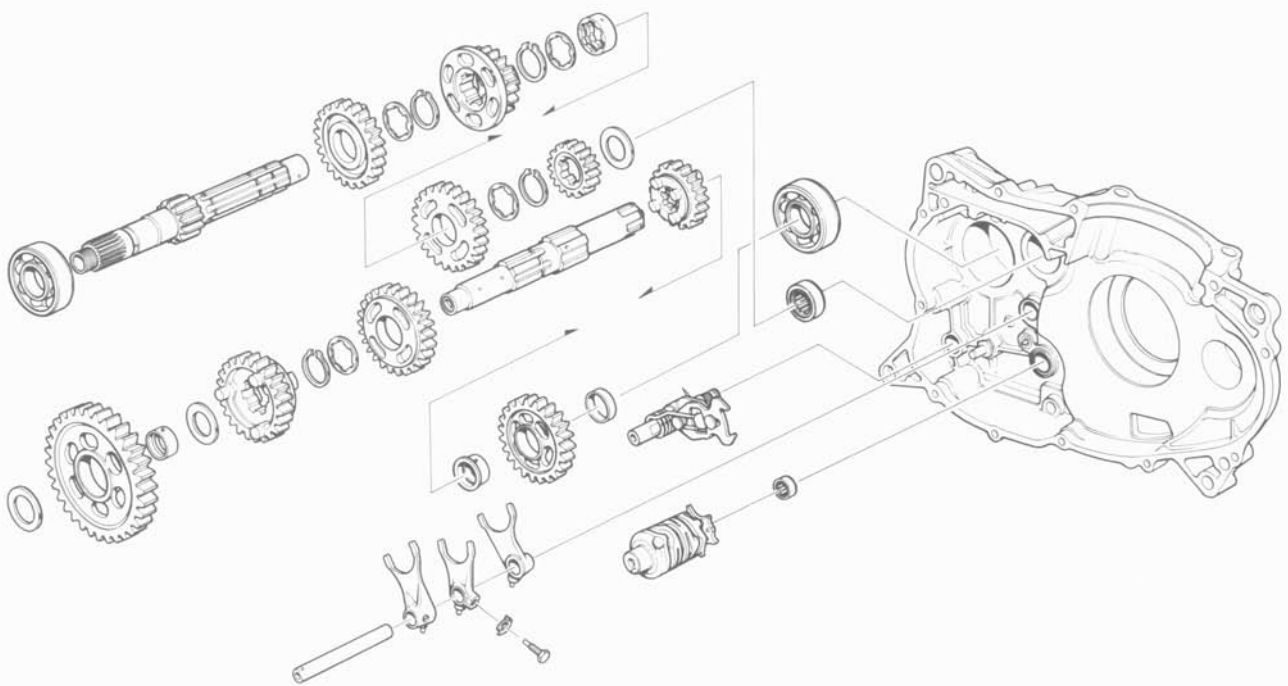




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SERVICE INFORMATION

GENERAL INSTRUCTIONS

- The crankcase must be separated to service the transmission.
- The gear shift cam can be serviced with the engine installed in the frame.

SPECIFICATIONS

ITEM	STANDARD	SERVICE LIMIT	
Gear side clearance	M4	0.06–0.41 mm (0.002–0.016 in)	0.50 mm (0.020 in)
	M5	0.05–0.58 mm (0.002–0.023 in)	0.65 mm (0.026 in)
	C3	0.06–0.41 mm (0.002–0.016 in)	0.50 mm (0.020 in)
Gear I.D.	M4	25.020–25.041 mm (0.9850–0.9859 in)	25.10 mm (0.988 in)
	M5	28.000–28.021 mm (1.1024–1.1032 in)	28.08 mm (1.106 in)
	C1	25.020–25.041 mm (0.9850–0.9859 in)	25.10 mm (0.988 in)
	C3	25.021–25.041 mm (0.9850–0.9859 in)	25.10 mm (0.988 in)
	C2	28.020–28.041 mm (1.1031–1.1040 in)	28.10 mm (1.106 in)
	C2	28.020–28.041 mm (1.1031–1.1040 in)	28.10 mm (1.106 in)
Gear bushing	M5 O.D.	27.949–27.980 mm (1.1004–1.1016 in)	27.90 mm (1.098 in)
	C1 O.D.	24.984–25.005 mm (0.9836–0.9844 in)	24.93 mm (0.981 in)
	C1 I.D.	20.02–20.041 mm (0.7880–0.7890 in)	20.01 mm (0.791 in)
	C2 O.D.	27.979–28.000 mm (1.1015–1.1024 in)	27.93 mm (1.100 in)
	C2 I.D.	25.020–25.041 mm (0.9850–0.9859 in)	25.10 mm (0.988 in)
Gear-to-bushing clearance	M5	0.020–0.072 mm (0.0008–0.0028 in)	0.10 mm (0.004 in)
	C1	0.015–0.057 mm (0.0006–0.0022 in)	0.10 mm (0.004 in)
	C2	0.020–0.062 mm (0.0008–0.0024 in)	0.10 mm (0.004 in)
	C2	0.020–0.062 mm (0.0008–0.0024 in)	0.10 mm (0.004 in)
Mainshaft O.D.	M4	24.972–24.993 mm (0.9831–0.9840 in)	24.92 mm (0.981 in)
Countershaft O.D.	Starter idler	15.966–15.984 mm (0.6286–0.6293 in)	15.93 mm (0.627 in)
	C1	19.980–19.993 mm (0.7866–0.7871 in)	19.94 mm (0.785 in)
	C2	24.972–24.993 mm (0.9831–0.9840 in)	24.92 mm (0.981 in)
	C3	24.959–24.980 mm (0.9826–0.9835 in)	24.92 mm (0.981 in)
Shaft-to-gear clearance	M4	0.027–0.068 mm (0.0011–0.0027 in)	0.10 mm (0.004 in)
	C3	0.041–0.082 mm (0.0016–0.0032 in)	0.15 mm (0.006 in)
Shaft-to-bushing clearance	C1	0.027–0.061 mm (0.0011–0.0024 in)	0.10 mm (0.004 in)
	C2	0.027–0.069 mm (0.0011–0.0027 in)	0.10 mm (0.004 in)
Shift fork I.D.		14.000–14.018 mm (0.5512–0.5519 in)	14.05 mm (0.553 in)
Shift fork claw thickness		4.93–5.00 mm (0.194–0.197 in)	4.5 mm (0.18 in)
Shift fork shaft O.D.		13.966–13.984 mm (0.5498–0.5506 in)	13.90 mm (0.547 in)



TRANSMISSION

COMMON TOOL (for counter shaft and main shaft bearings installation)

Attachment, 42 x 47 mm	07746-0010300
Pilot, 20 mm	07746-0040500
Driver	07749-0010000
Attachment, 52 x 55 mm	07746-0010400
Pilot, 25 mm	07746-0040600
Attachment, 62 x 68 mm	07746-0010500

TROUBLESHOOTING

Hard to Shift

1. Improper clutch adjustment; too much free play
2. Shift forks bent
3. Shift shaft bent
4. Shift drum cam groove damaged

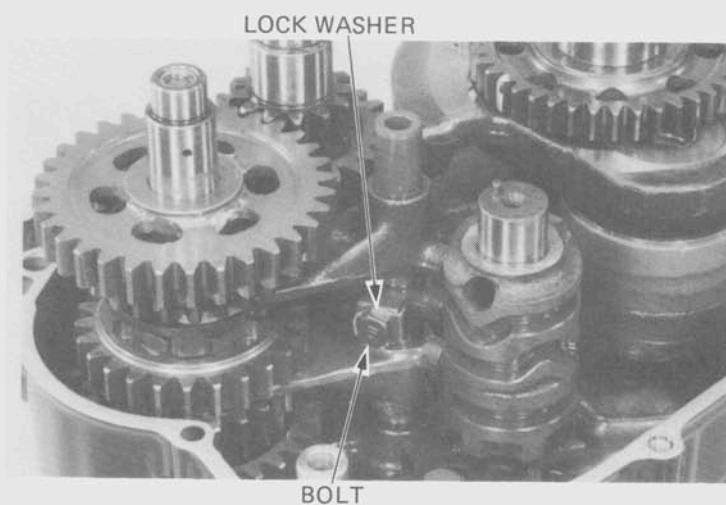
Transmission Jumps Out of Gear

1. Gear dogs worn
2. Shift shaft bent
3. Shift drum stopper broken
4. Shift forks bent

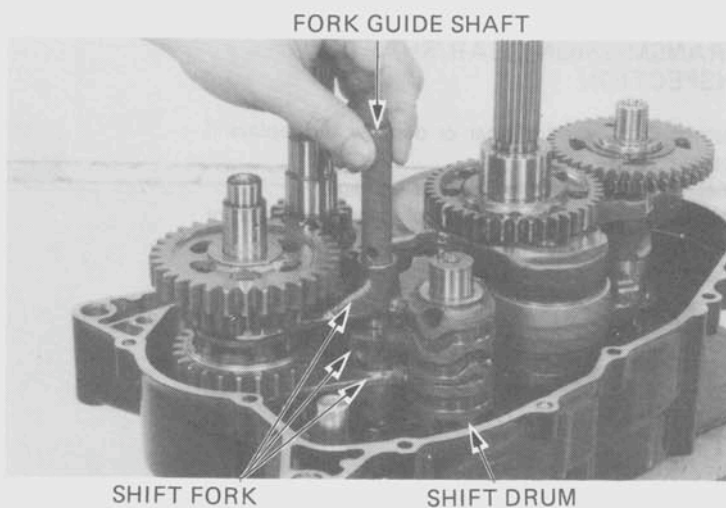


TRANSMISSION DISASSEMBLY

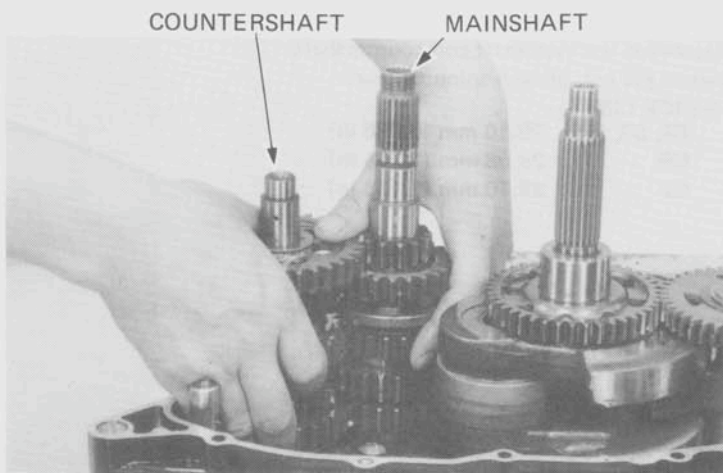
Separate the crankcase (Section 10).
Bend down the lock washer tabs and remove the bolt and lock washer from the center shift fork.



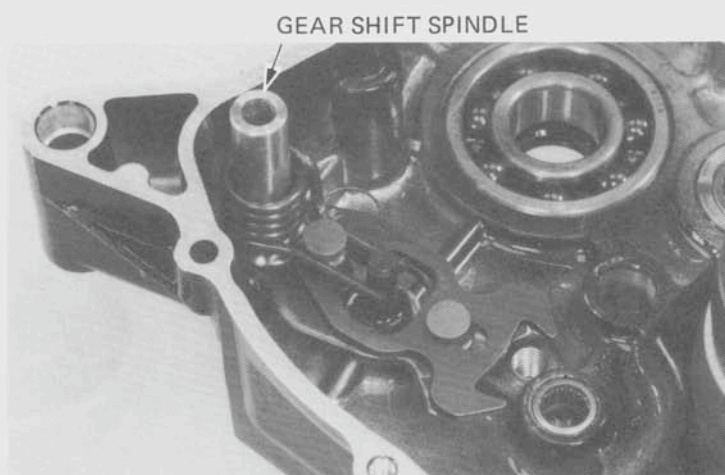
Remove the shift fork shaft, shift forks and shift drum.



Remove the mainshaft and countershaft as an assembly.



Remove the gear shift spindle.



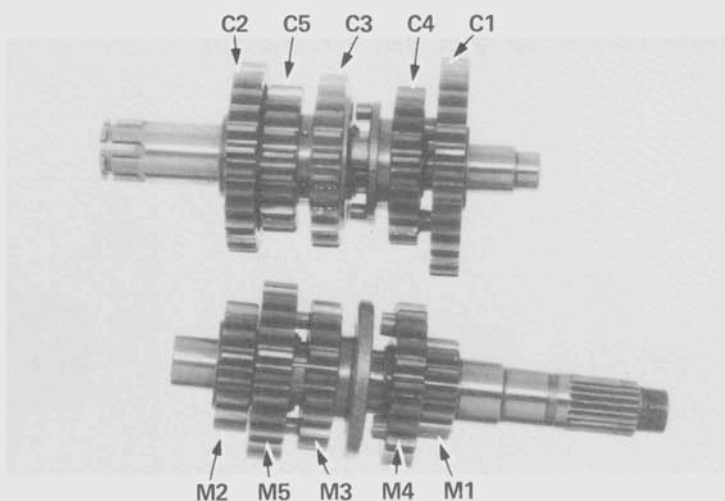
TRANSMISSION GEAR/SHAFT INSPECTION

Inspect each gear for wear or damage and replace if necessary.

Check the gear teeth for wear or damage.

Check the engagement dogs of gears for wear or damage.

Check the gear side clearance.



Disassemble the mainshaft and countershaft.

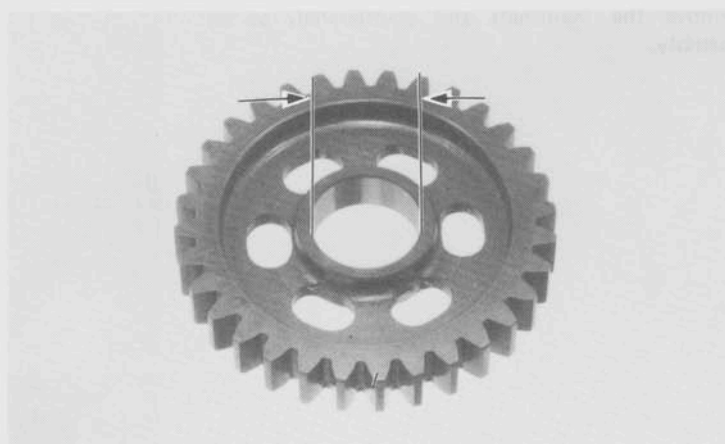
Measure the I.D. of each spinning gear.

SERVICE LIMIT:

C1, C3, M4 : 25.10 mm (0.988 in)

M5 : 28.08 mm (1.106 in)

C2 : 28.10 mm (1.108 in)



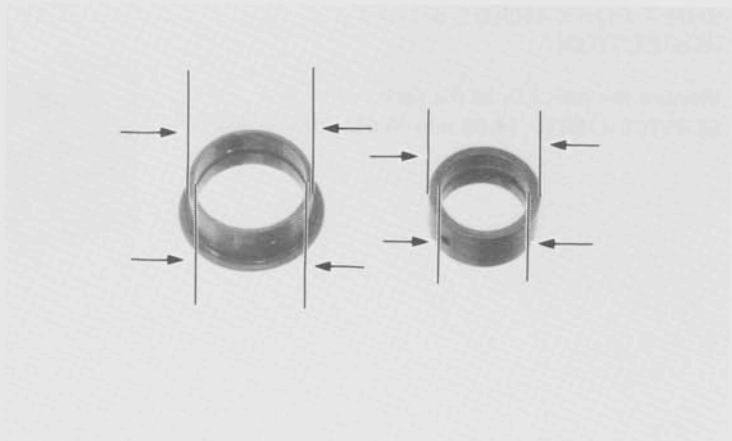


Measure the I.D. and O.D. of the countershaft bushings.

Calculate the clearance between the gear and bushing.

SERVICE LIMIT: 0.10 mm (0.004 in)

M5, OD	: 27.90 mm (1.098 in)
C1, OD	: 24.93 mm (0.981 in)
C1, ID	: 20.01 mm (0.791 in)
C2, OD	: 27.93 mm (1.100 in)
C2, ID	: 25.10 mm (0.988 in)



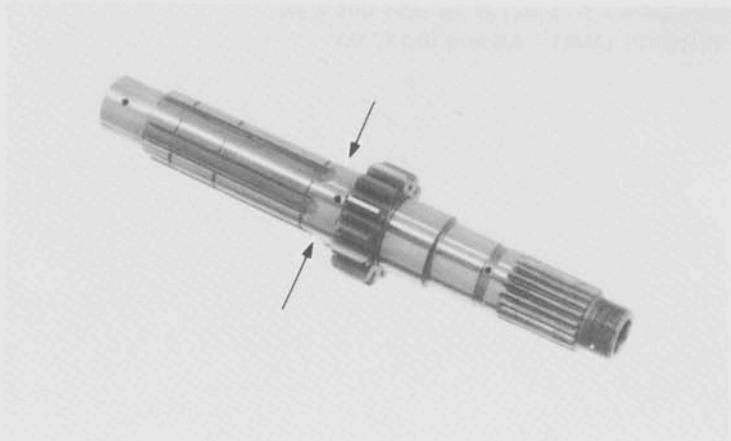
Measure the mainshaft O.D.

SERVICE LIMIT:

M4	: 24.92 mm (0.981 in)
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Calculate the clearance between the mainshaft and gear or bushing.

SERVICE LIMIT: 0.15 mm (0.006 in)



Measure the countershaft O.D.

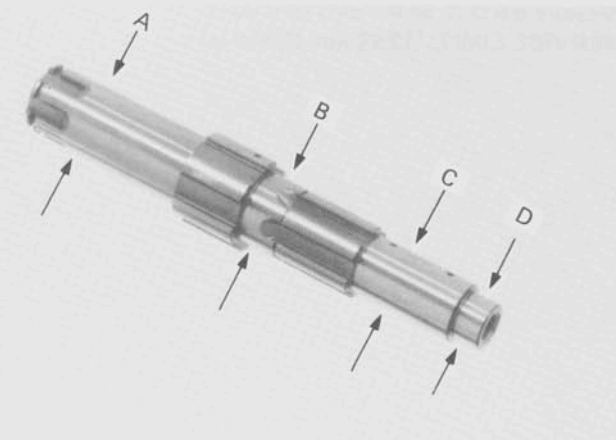
SERVICE LIMIT:

A (C2)	: 24.92 mm (0.981 in)
B (C3)	: 24.92 mm (0.981 in)
C (C1)	: 19.94 mm (0.785 in)
D (Starter idler)	: 15.93 mm (0.627 in)

Calculate the clearance between the gear and countershaft.

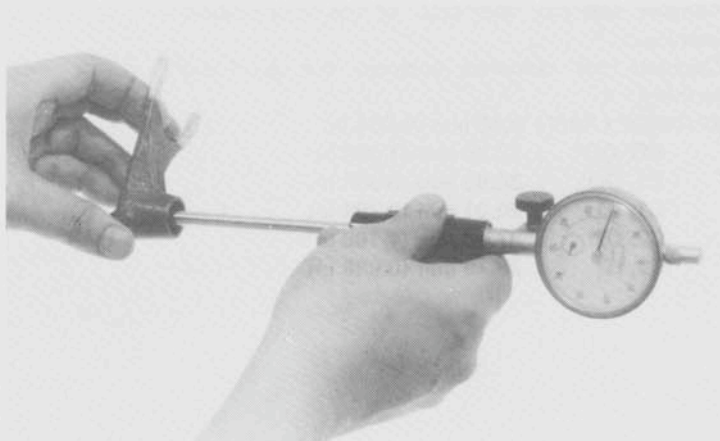
SERVICE LIMIT:

C1	: 0.10 mm (0.004 in)
C2	: 0.10 mm (0.004 in)
C3	: 0.15 mm (0.006 in)

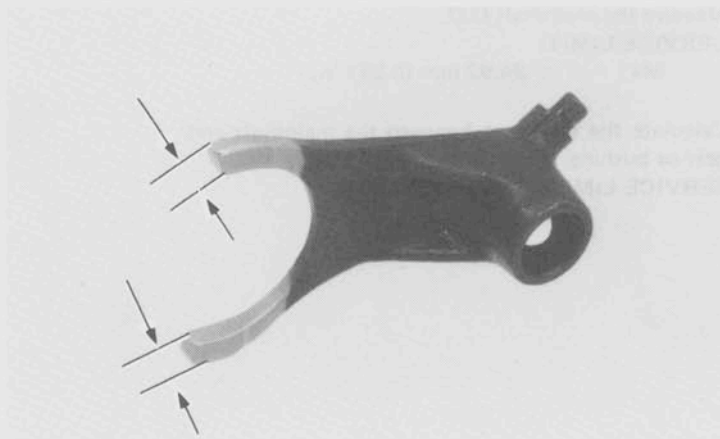


**SHIFT FORK/GUIDE SHAFT
INSPECTION**

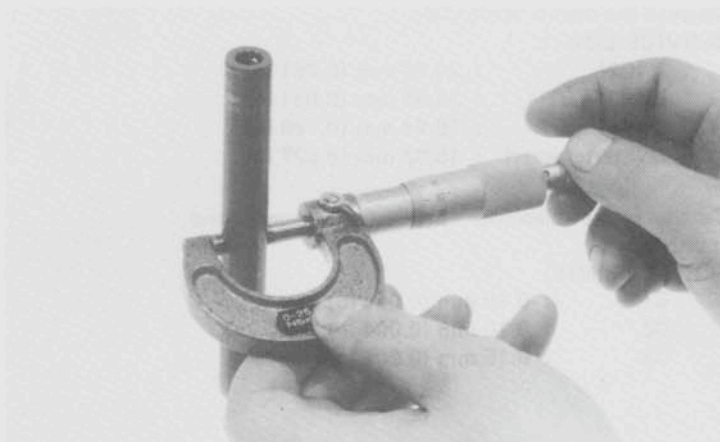
Measure the shift I.D. of the fork.
SERVICE LIMIT: 14.05 mm (0.553 in)



Measure the thickness of the shift fork claw.
SERVICE LIMIT: 4.5 mm (0.177 in)



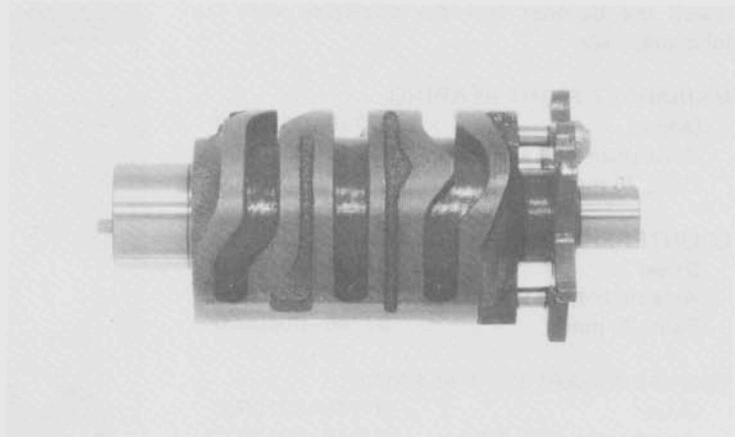
Measure the O.D. of the shift fork shaft.
SERVICE LIMIT: 13.90 mm (0.550 in)





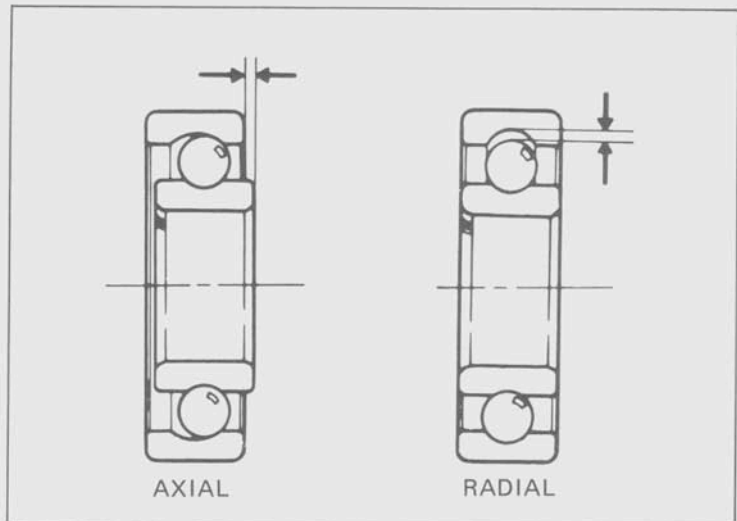
GEARSHIFT DRUM INSPECTION

Inspect the drum grooves and replace the drum if it is damaged or shows excessive wear.



TRANSMISSION BEARING INSPECTION

The bearing must be replaced if it is noisy or has excessive play.



AXIAL

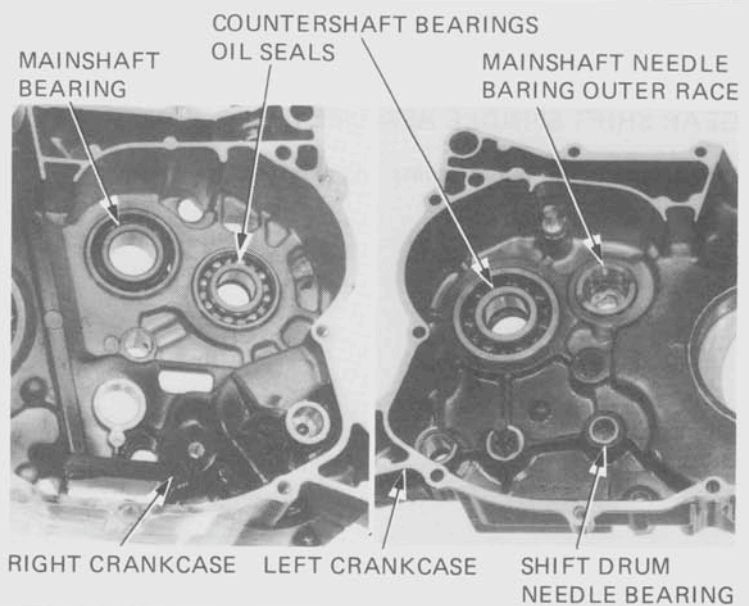
RADIAL

BEARING REPLACEMENT

Remove the countershaft oil seals.

Remove the countershaft and mainshaft bearings from the right crankcase.

Remove the countershaft bearing from the left crankshaft.





TRANSMISSION

Install the bearings into the crankcase with the following tools.

MAINSHAFT RIGHT BEARING:

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

COUNTERSHAFT RIGHT BEARING:

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

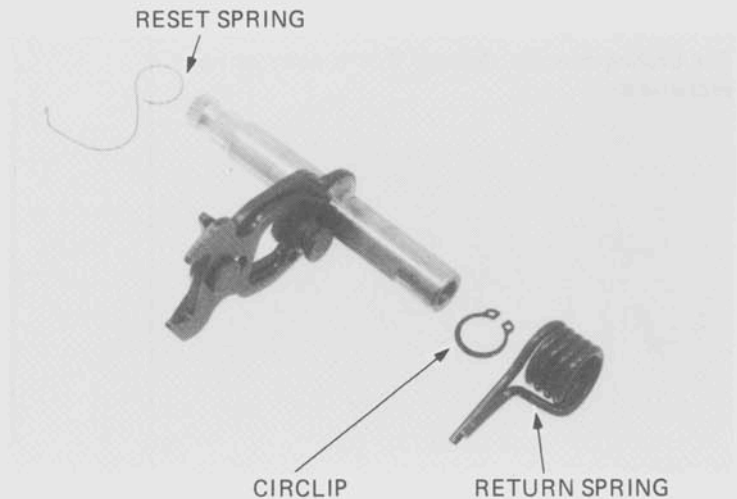
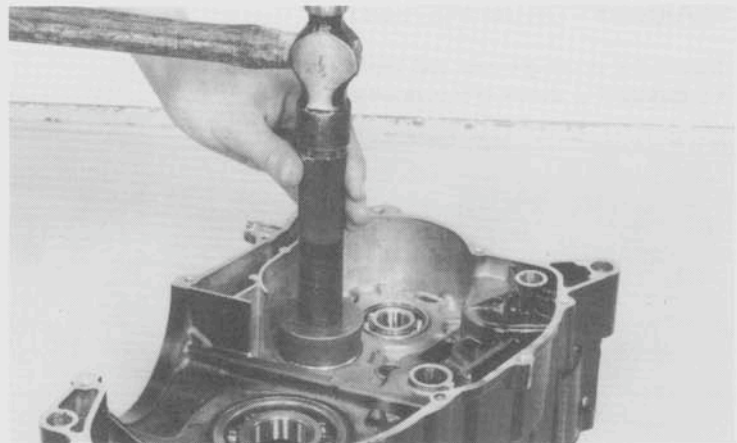
COUNTERSHAFT LEFT BEARING:

Driver	07749-0010000
Attachment, 62 x 68 mm	07746-0010500
Pilot, 25 mm	07746-0040600

Install new countershaft oil seals.

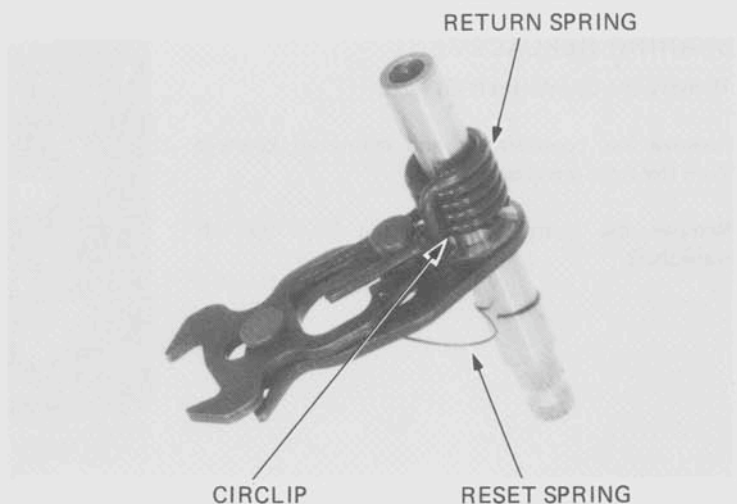
GEAR SHIFT SPINDLE DISASSEMBLY

Remove the return spring, circlip and reset spring.



GEAR SHIFT SPINDLE ASSEMBLY

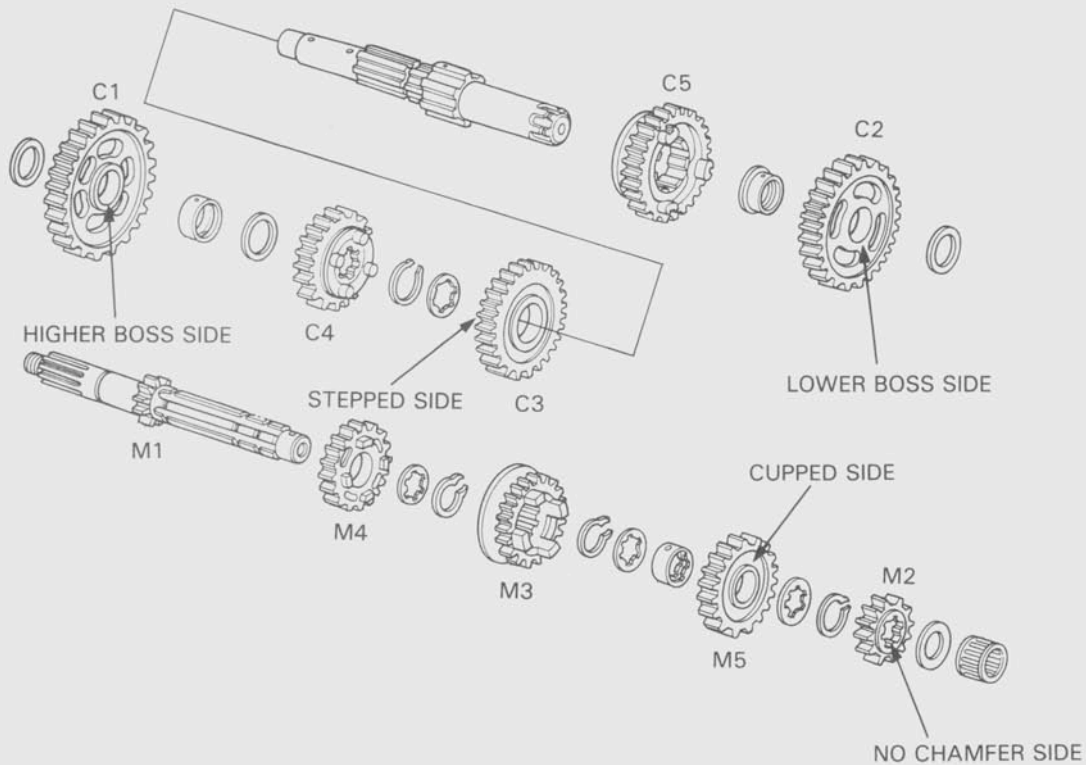
Install the circlip, return spring and reset spring.



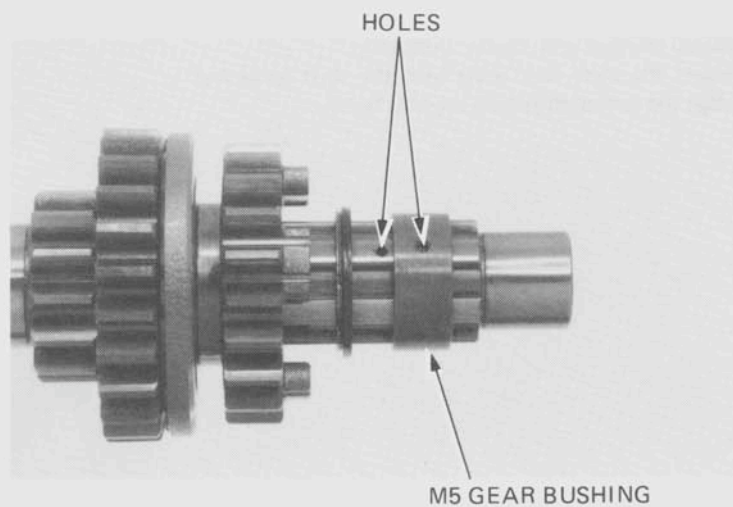


TRANSMISSION ASSEMBLY

Check the gears for freedom of movement or rotation on the shaft.
Check that the snap rings are seated in the grooves.



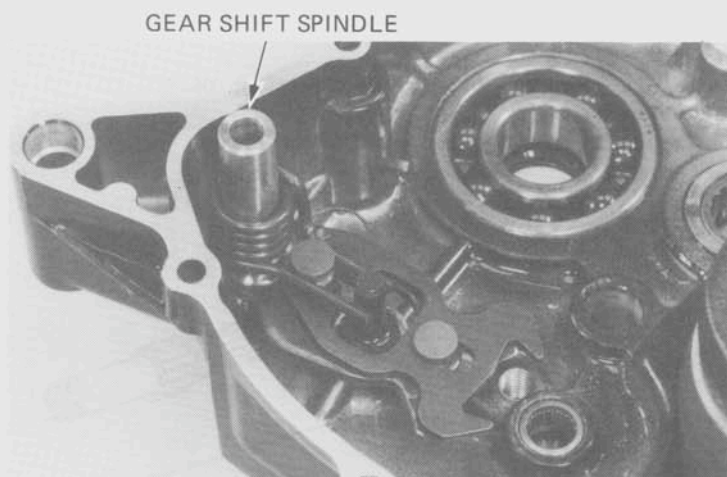
Align the hole in the M5 gear bushing with the hole in the mainshaft when installing.



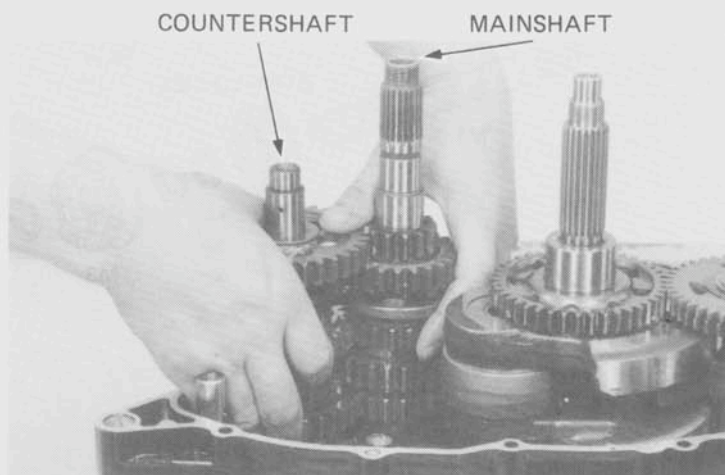


TRANSMISSION INSTALLATION

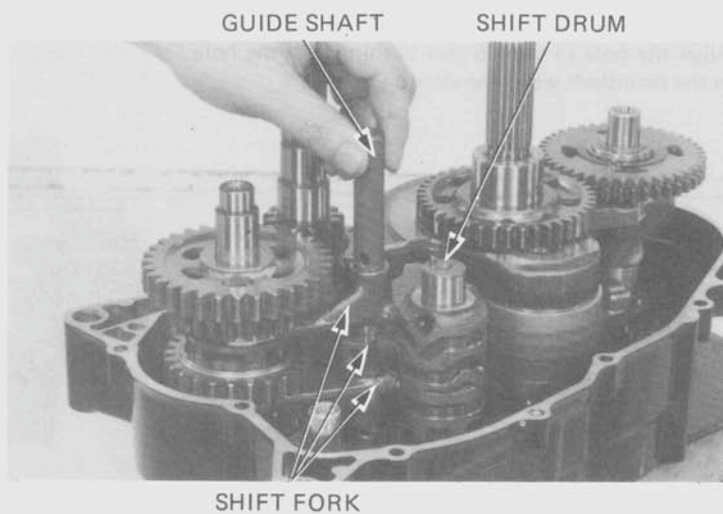
Install the gear shift spindle.



Install the mainshaft and countershaft assemblies.



Install the gear shift drum, shift fork.
Insert the shift fork shaft into the shift forks and align the center shift fork set bolt holes.





Install a new lock washer and set bolt.
Tighten set bolt and bend the lock washer.
TORQUE: 13–17 N·m (1.3–1.7 kg-m, 9–12 ft-lb)

Install the shift cam plate, stopper arm and gear shift pedal and check the transmission for smooth shifting.

