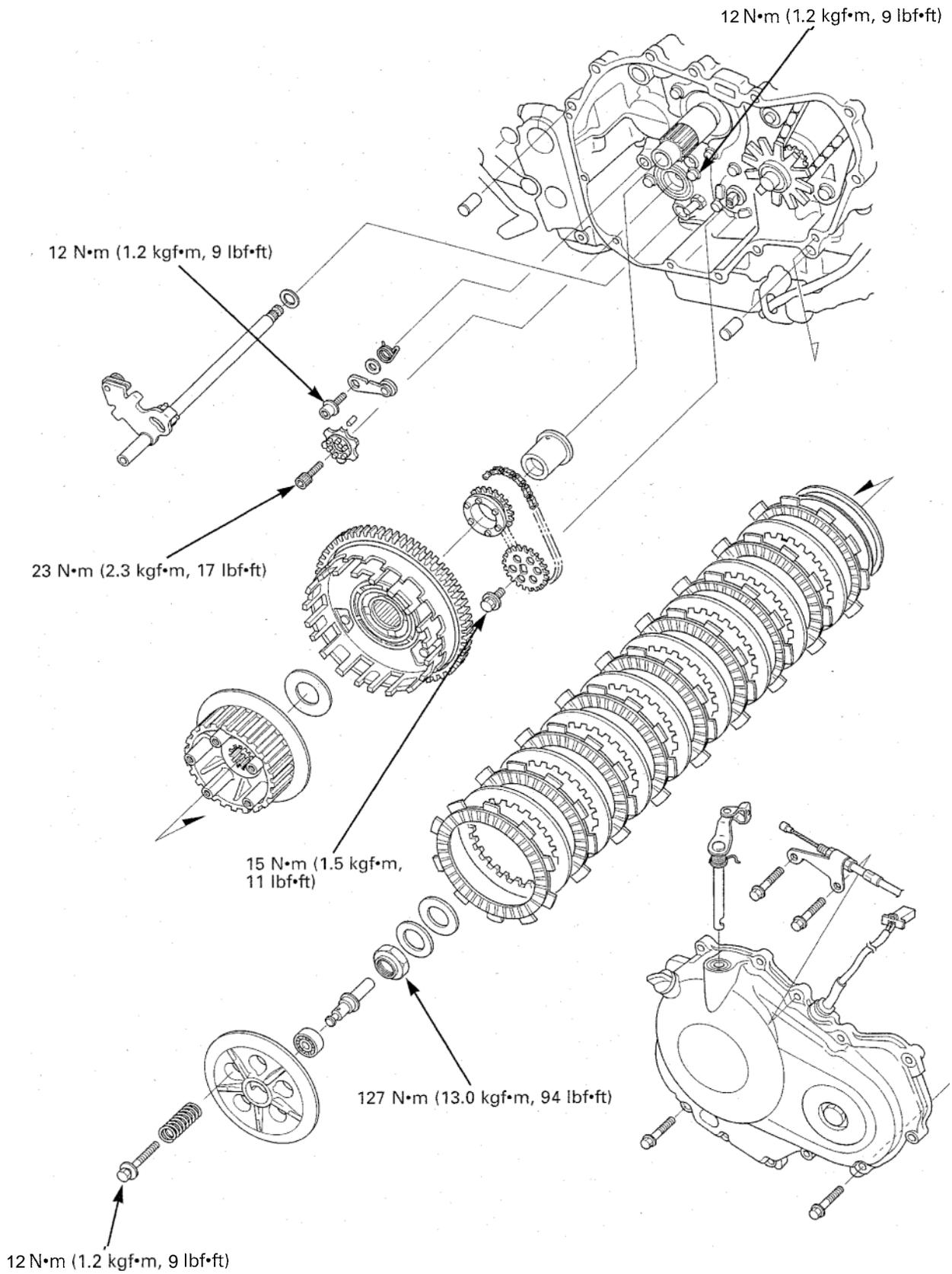


CLUTCH/GEARSHIFT LINKAGE



9. CLUTCH/GEARSHIFT LINKAGE

SERVICE INFORMATION	9-1	CLUTCH	9-4
TROUBLESHOOTING	9-2	GEARSHIFT LINKAGE	9-12
RIGHT CRANKCASE COVER REMOVAL	9-3	RIGHT CRANKCASE COVER INSTALLATION	9-17

SERVICE INFORMATION

GENERAL

- This section covers service of the clutch, gearshift linkage, shift drum and shift forks. All service can be done with the engine installed in the frame.
- Engine oil viscosity and level have an effect on clutch disengagement. When the clutch does not disengage or the motorcycle creeps with clutch disengaged, inspect the engine oil level before servicing the clutch system.

ITEM		STANDARD	SERVICE LIMIT
Clutch lever free play		10 - 20 (3/16 - 13/16)	—
Clutch spring free length		48.8 (1.92)	47.4 (1.87)
Clutch disc thickness		2.92 - 3.08 (0.114 - 0.121)	2.6 (0.10)
Clutch plate warpage		—	0.30 (0.012)
Clutch outer guide	I.D.	25.000 - 25.021 (0.9843 - 0.9851)	25.03 (0.985)
	O.D.	34.975 - 34.991 (1.3770 - 1.3776)	34.97 (1.377)
Mainshaft O.D. at clutch outer guide		24.980 - 24.993 (0.9835 - 0.9840)	24.96 (0.983)
Shift fork, fork shaft	Fork	I.D.	12.000 - 12.018 (0.4724 - 0.4731)
		Claw thickness	5.93 - 6.00 (0.233 - 0.236)
	Fork shaft O.D.		11.957 - 11.968 (0.4707 - 0.4712)

9

TORQUE VALUES

Clutch center lock nut	127 N•m (13.0 kgf•m, 94 lbf•ft)	Apply oil to the threads. Stake the nut.
Clutch spring bolt	12 N•m (1.2 kgf•m, 9 lbf•ft)	
Shift drum center socket bolt	23 N•m (2.3 kgf•m, 17 lbf•ft)	Apply a locking agent to the threads.
Shift drum stopper arm pivot bolt	12 N•m (1.2 kgf•m, 9 lbf•ft)	
Gearshift return spring pin	23 N•m (2.3 kgf•m, 17 lbf•ft)	
Gearshift drum bearing/shift fork shaft retaining bolt	12 N•m (1.2 kgf•m, 9 lbf•ft)	Apply a locking agent to the threads.
Gearshift pedal link pinch bolt	10 N•m (1.0 kgf•m, 7 lbf•ft)	
Oil pump driven sprocket bolt	15 N•m (1.5 kgf•m, 11 lbf•ft)	Apply a locking agent to the threads.

CLUTCH/GEARSHIFT LINKAGE

TOOLS

Clutch center holder	07724-0050002	or equivalent commercially available in U.S.A.
Driver	07749-0010000	
Attachment, 42 x 47 mm	07746-0010300	
Pilot, 35 mm	07746-0040800	

TROUBLESHOOTING

Clutch lever too hard to pull in

- Damaged clutch lifter mechanism
- Faulty clutch lifter bearing
- Clutch lifter piece installed improperly

Clutch slips when accelerating

- Worn clutch disc
- Weak clutch springs
- Transmission oil mixed with molybdenum or graphite additive

Clutch will not disengage or motorcycle creeps with clutch disengaged

- Clutch plate warped
- Loose clutch lock nut
- Oil level too high
- Improper oil viscosity
- Damaged clutch lifter mechanism
- Clutch lifter piece installed improperly

Hard to shift

- Improper clutch operation
- Improper oil viscosity
- Bent shift fork
- Bent shift fork shaft
- Bent fork claw
- Damaged shift drum cam groove
- Loose stopper plate bolt
- Damaged stopper plate and pin
- Damaged gearshift spindle

Transmission jumps out of gear

- Worn shift drum stopper arm
- Weak or broken shift arm return spring
- Loose stopper plate bolt
- Bent shift fork shaft
- Damaged shift drum cam groove
- Damaged or bent shift forks
- Worn gear engagement dogs or slots

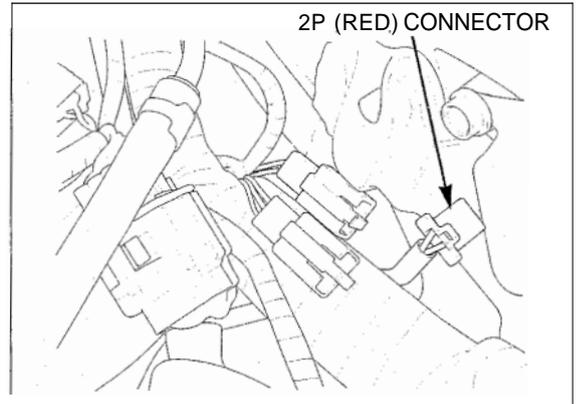
Gearshift pedal will not return

- Weak or broken gearshift spindle return spring
- Bent gearshift spindle

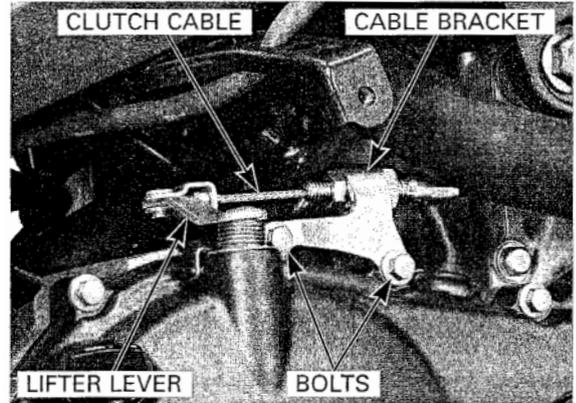
RIGHT CRANKCASE COVER REMOVAL

Drain the engine oil (page 3-15).
 Remove the lower cowl (page 2-7).
 Open and support the front end of the fuel tank (page 3-4).

Disconnect the ignition pulse generator 2P (Red) connector.

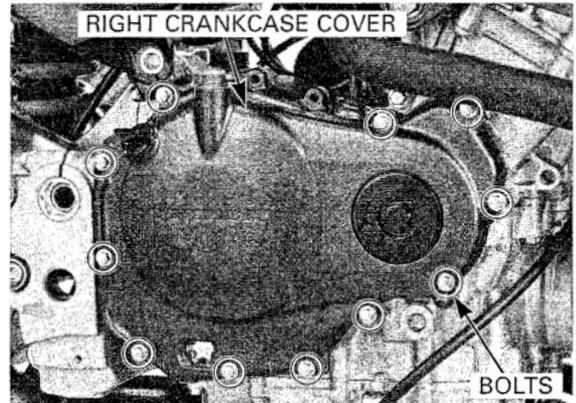


Remove the bolts and clutch cable bracket, then disconnect the clutch cable end from the clutch lifter lever.



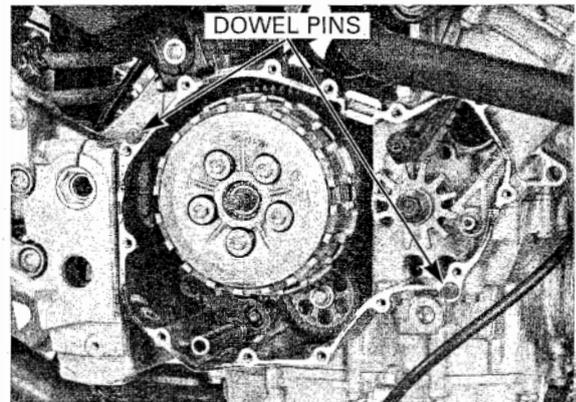
The lifter arm spindle is engaged with the clutch lifter piece inside the right crankcase cover

Remove the right crankcase cover SH bolts. Remove the right crankcase cover while turning the clutch lifter arm counterclockwise to disengage the lifter arm spindle from the lifter piece.



Remove the two dowel pins.

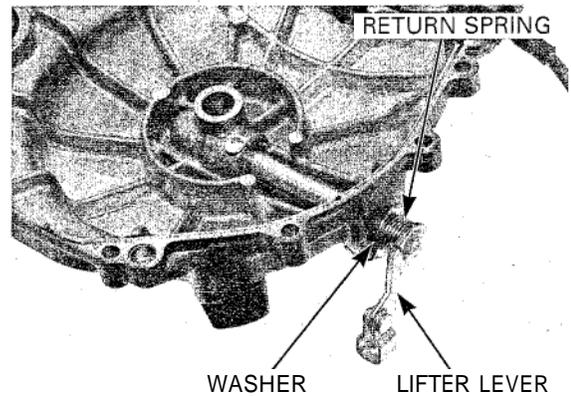
Clean any sealant off from the right crankcase cover mating surfaces.



CLUTCH LIFTER LEVER

Remove the clutch lifter lever, return spring and washer from the right crankcase cover.

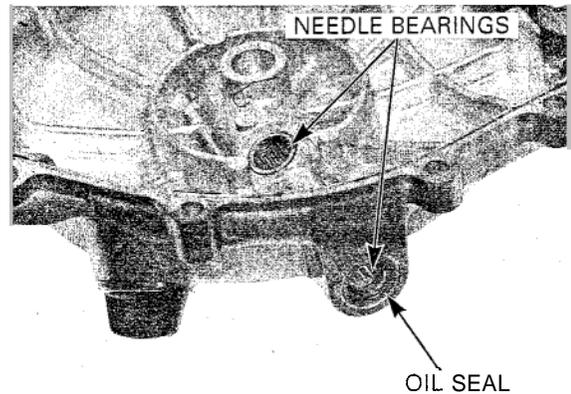
Check the lifter lever spindle for wear or damage.
Check the return spring for fatigue or damage.



Check the lifter lever oil seal and needle bearings for wear or damage.

Install the clutch lifter lever with the washer and spring in the reverse order of removal.

Install the hooks of the return spring to the right crankcase cover and clutch lifter lever.



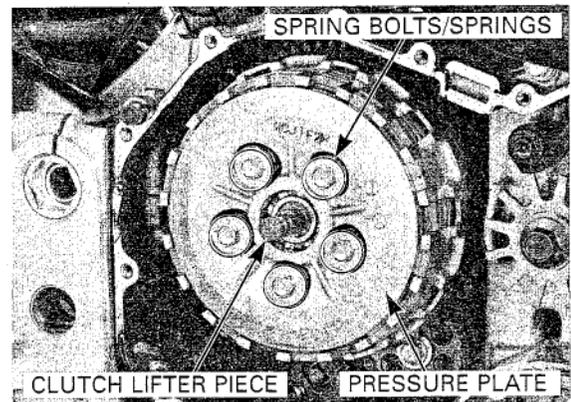
CLUTCH

REMOVAL

Remove the right crankcase cover (page 9-3).

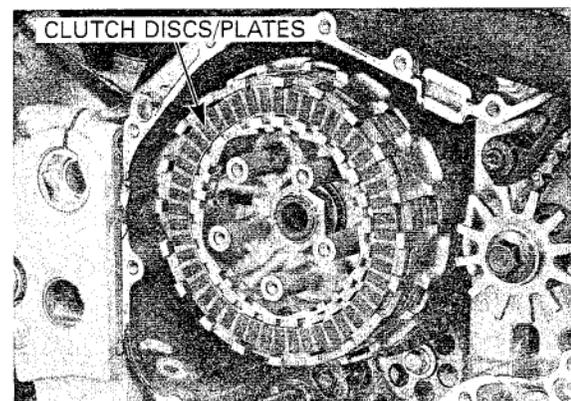
Remove the clutch spring bolts, springs and pressure plate.

Remove the clutch lifter piece from the lifter bearing.

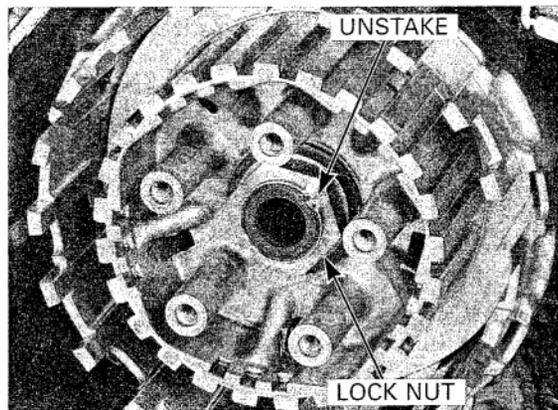


Remove the following:

- Nine clutch discs
- Eight clutch plates
- Judder spring
- Judder spring seat



Unstake the clutch center lock nut.



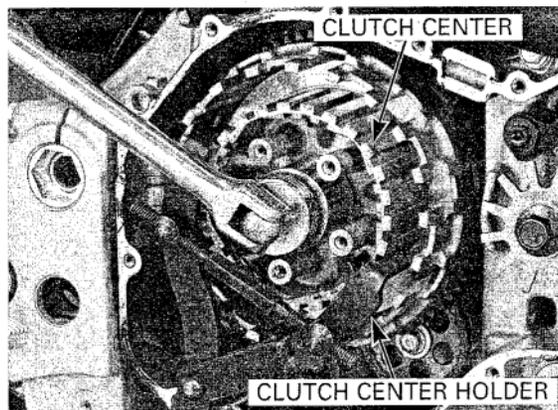
Hold the clutch center with the clutch center holder, then remove the lock nut.

TOOL:

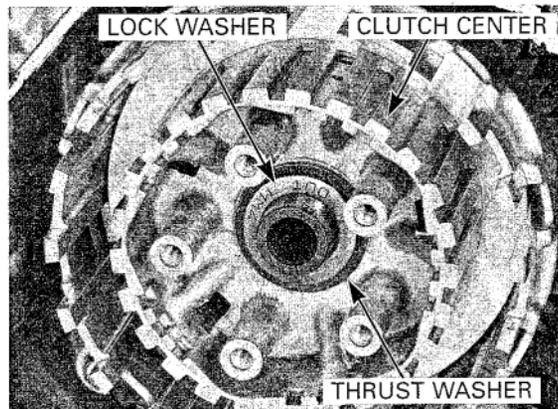
Clutch center holder

07724-0050002
(Equivalent commercially available in U.S.A.)

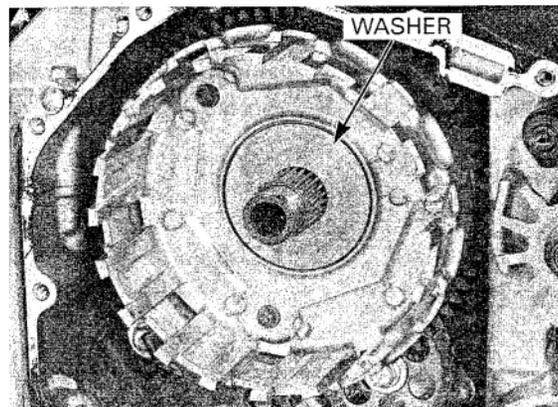
Discard the lock nut.



Remove the lock washer, thrust washer and clutch center.

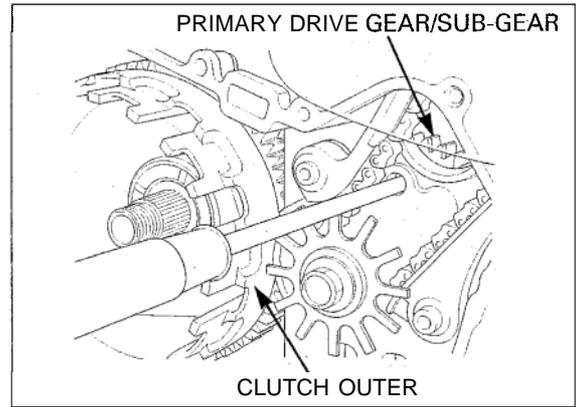


Remove the washer.



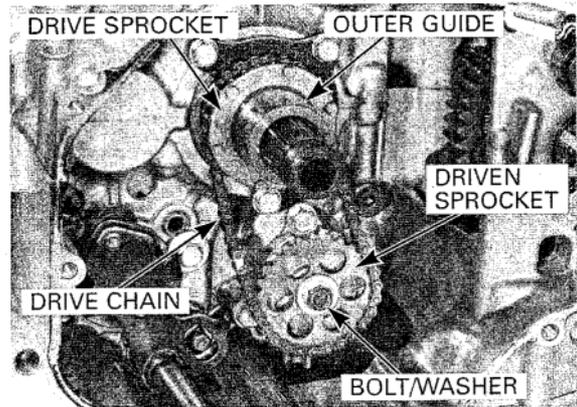
CLUTCH/GEARSHIFT LINKAGE

Align the primary drive gear and sub-gear teeth with a screwdriver as shown.
Pull out the clutch outer.



Remove the oil pump driven sprocket bolt/washer.
Remove the oil pump drive/driven sprocket and drive chain as an assembly.

Remove the clutch outer guide.



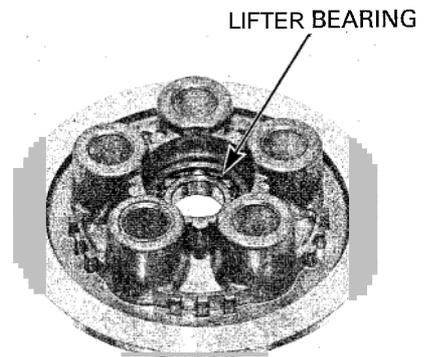
INSPECTION

Clutch lifter bearing

Turn the inner race of the lifter bearing with your finger.

The bearing should turn smoothly and freely without excessive play.

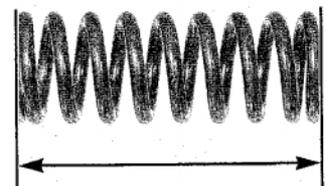
If necessary replace the bearing.



Clutch spring

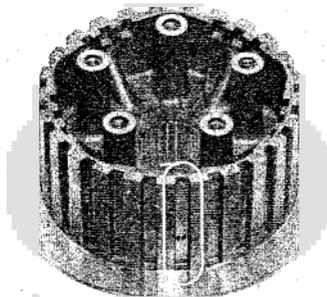
Measure the clutch spring free length.

SERVICE LIMIT: 47.4 mm (1.87 in)



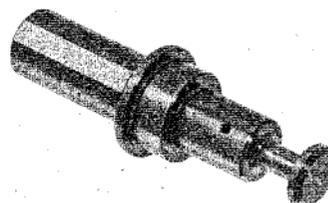
Clutch center

Check the grooves of the clutch center for damage or wear caused by the clutch plates.
Replace if necessary.



Clutch lifter piece

Check the clutch lifter piece for damage or abnormal wear.

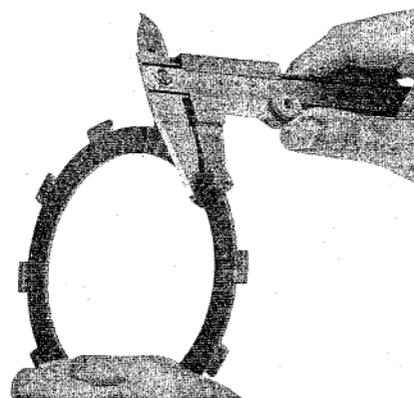


Clutch disc

Replace the clutch discs if they show signs of scoring or discoloration.

Measure the disc thickness of each disc.

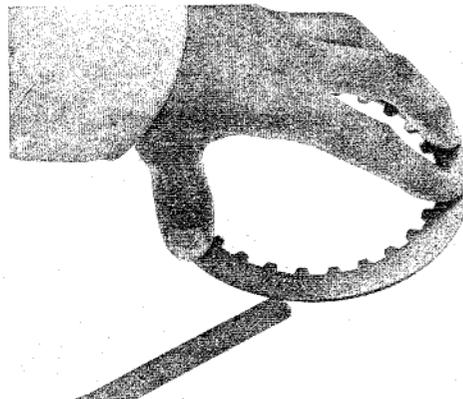
SERVICE LIMIT: 2.6 mm (0.10 in)



Clutch plate

Check each disc plate for warpage on a surface plate using a feeler gauge.

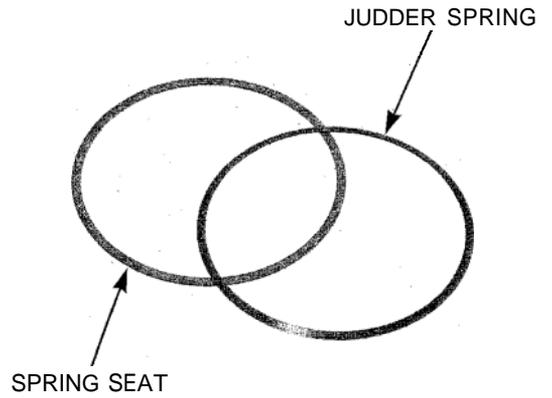
SERVICE LIMIT: 0.30 mm (0.012 in)



Judder spring/spring seat

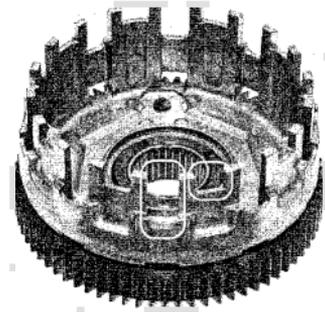
Check the judder spring and spring seat for deformation, warpage or damage; replace as necessary.

- A damaged or warped spring seat will cause the judder spring to be pressed unevenly.
- A damaged judder spring also causes the weak contact between the discs and plates or uneven disc/plate contact.



Clutch outer/clutch outer guide

Check the slots of the clutch outer for damage or wear caused by the clutch discs. Replace if necessary.

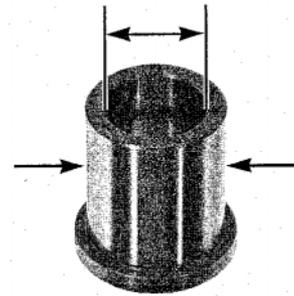


Measure the O.D. and I.D. of the clutch outer guide.

SERVICE LIMITS:

O.D.: 34.97 mm (1.377 in)

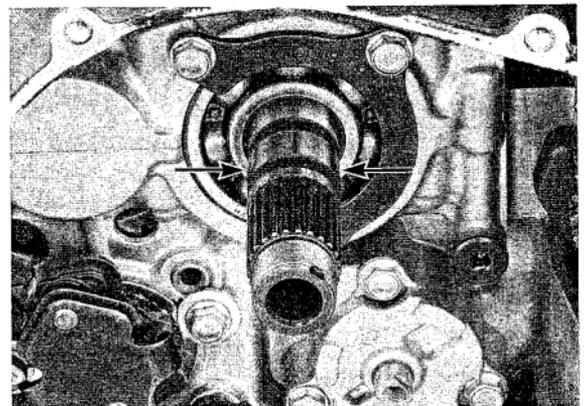
I.D.: 25.03 mm (0.985 in)



Mainshaft

Measure the mainshaft O.D. at clutch outer guide sliding surface.

SERVICE LIMIT: 24.96 mm (0.983 in)

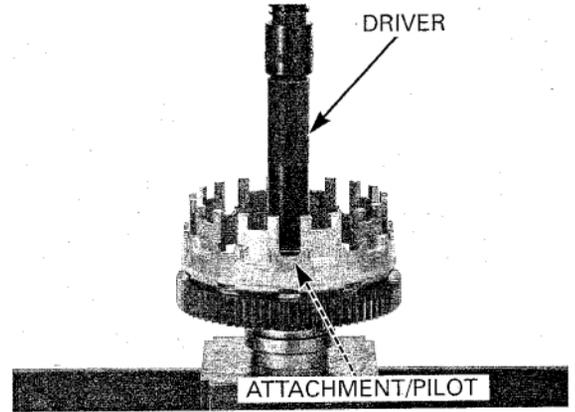


CLUTCH OUTER NEEDLE BEARING REPLACEMENT

Press the needle bearing out of the clutch outer using the special tools.

TOOLS:

Driver	07749-0010000
Attachment, 42 x 47 mm	07746-0010300
Pilot, 35 mm	07746-0040800

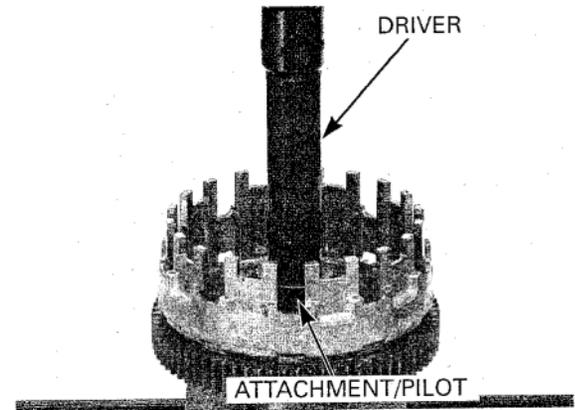


Press the needle bearing into the clutch outer with the marked side facing up

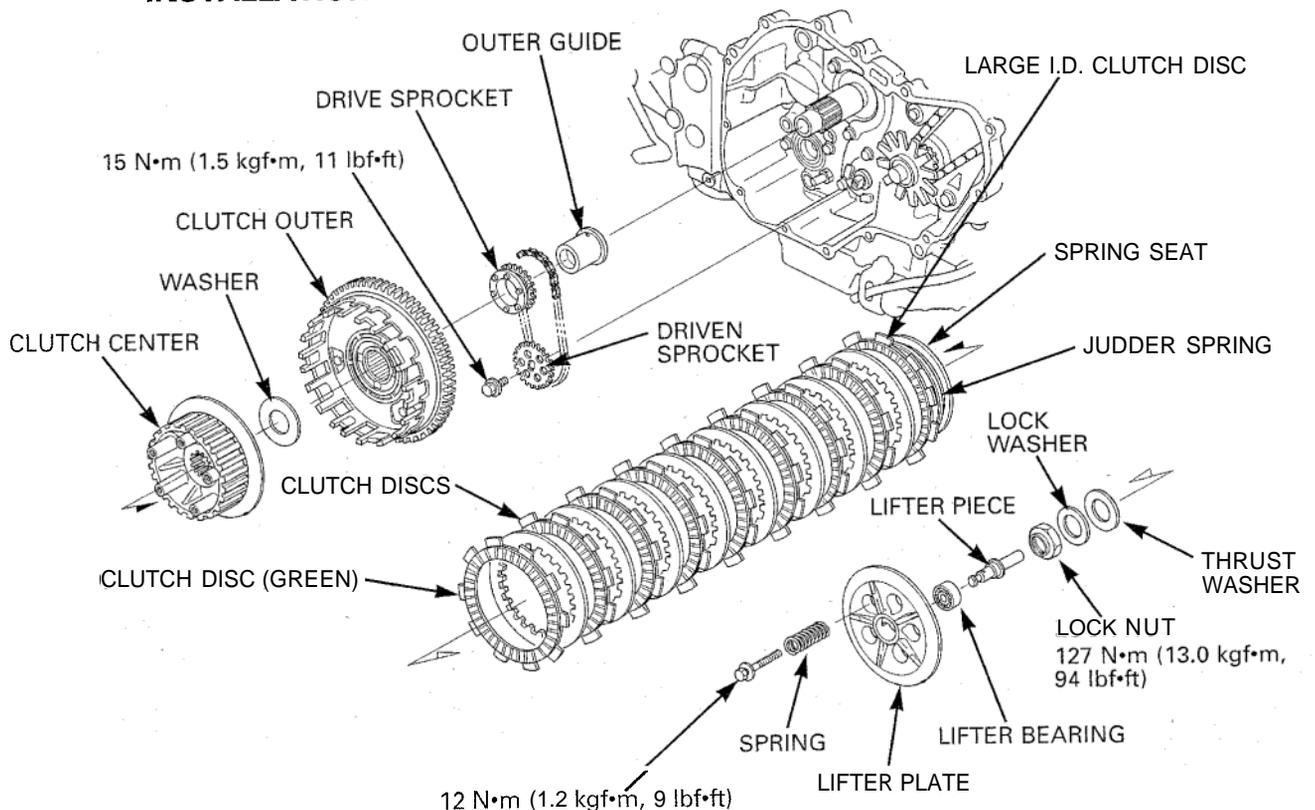
Press a new needle bearing into the clutch outer so that the casing of the needle bearing is flush with the clutch outer surface as shown.

TOOLS:

Driver	07749-0010000
Attachment, 42 x 47 mm	07746-0010300
Pilot, 35 mm	07746-0040800



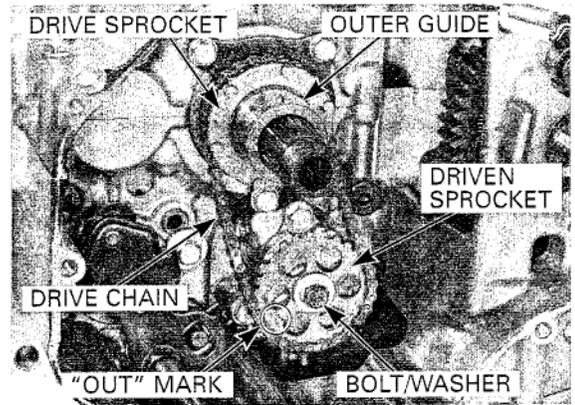
INSTALLATION



CLUTCH/GEARSHIFT LINKAGE

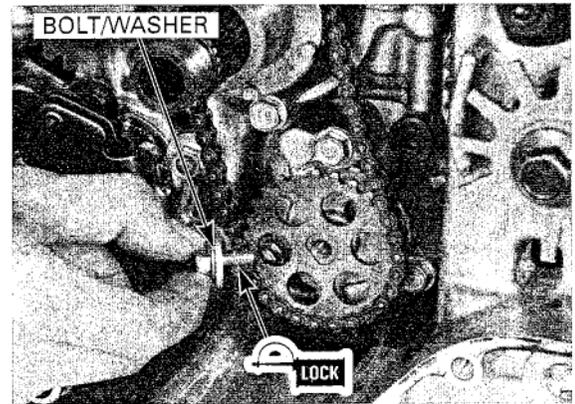
install the oil pump driven sprocket with its "OUT" mark facing out

Install the clutch outer guide, and then install the oil pump drive/driven sprocket and drive chain as an assembly.



Apply a locking agent to the threads of the oil pump driven sprocket bolt. Tighten the driven sprocket bolt to the specified torque.

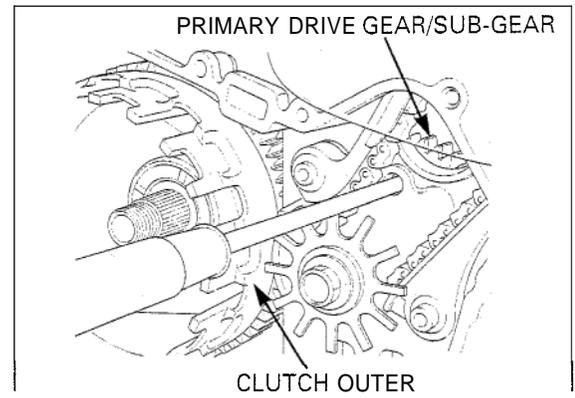
TORQUE: 15 N•m (1.5 kgf•m, 11 lbf•ft)



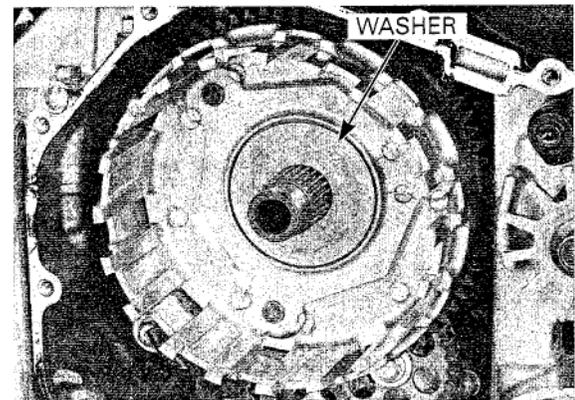
Be sure the clutch outer sits securely onto the positioning tabs of the oil pump drive sprocket. Rotate the oil pump drive chain while installing the clutch outer to properly seat it.

Align the primary drive gear and sub-gear teeth with a screwdriver as shown.

Install the clutch outer.



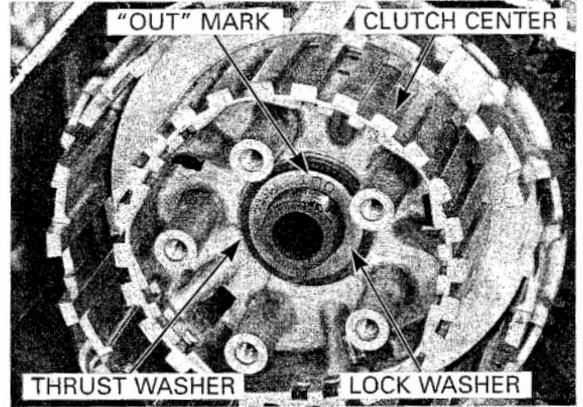
Install the washer onto the clutch outer.



Install the clutch center.

Install the thrust washer.

Install the lock washer with its "OUT" mark facing out.



Apply oil to the new lock nut threads, then install it.

Hold the clutch center with the clutch center holder, then tighten the lock nut to the specified torque.

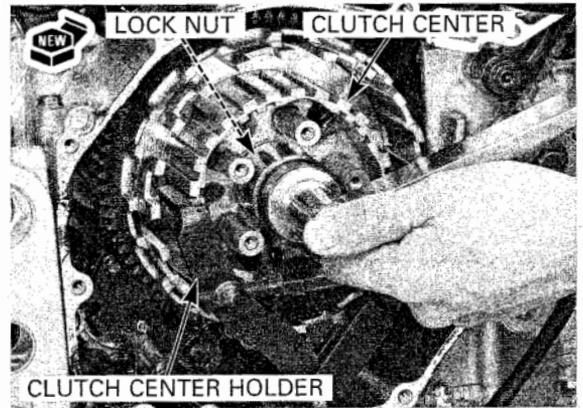
TOOL:

Clutch center holder

07724-0050002

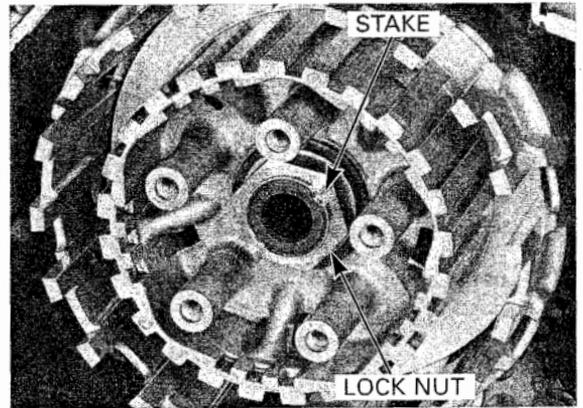
(Equivalent commercially available in U.S.A.)

TORQUE: 127 N·m (13.0 kgf·m, 94 lbf·ft)



Be careful not to damage the mainshaft threads.

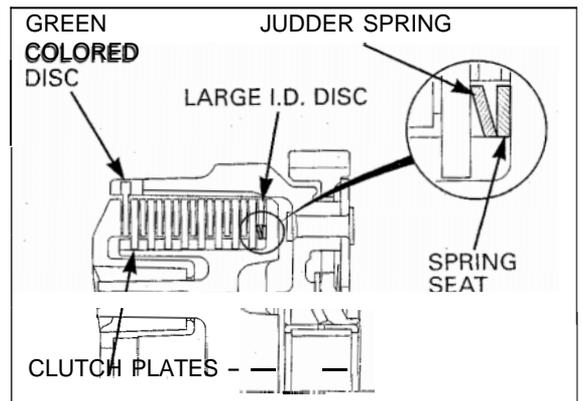
Stake the lock nut into the mainshaft groove with a punch.



Install the judder spring seat and judder spring.

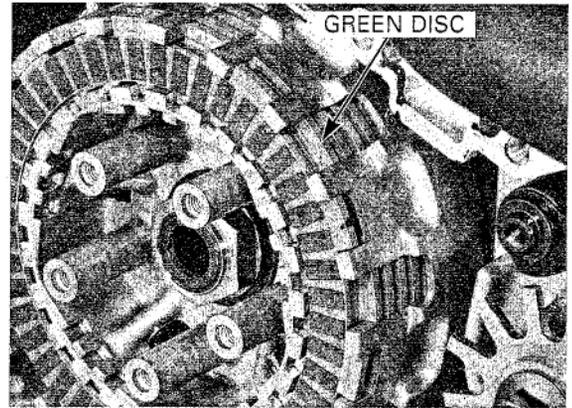
Coat the clutch discs and plates with clean engine oil. Install the large I.D. clutch disc.

Stack the clutch plates and discs alternately.

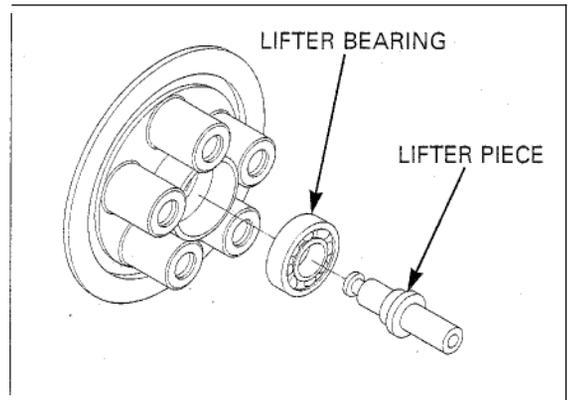


CLUTCH/GEARSHIFT LINKAGE

Install the green outer clutch disc in the shallow slot on the clutch outer.



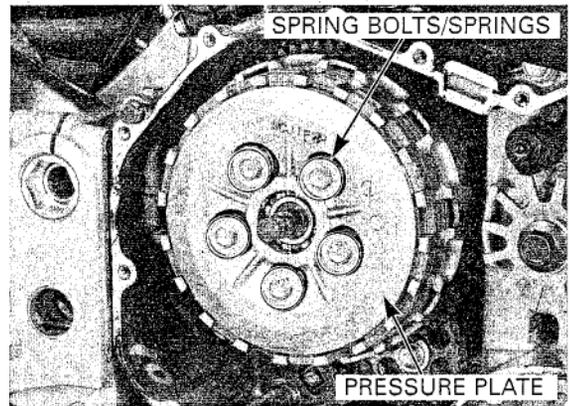
Install the lifter bearing into the pressure plate.
Install the clutch lifter piece into the lifter bearing.



Install the pressure plate.
Install the clutch springs and spring bolts.
Tighten the bolts in a crisscross pattern in two to three steps, then tighten the bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Install the right crankcase cover (page 9-17).



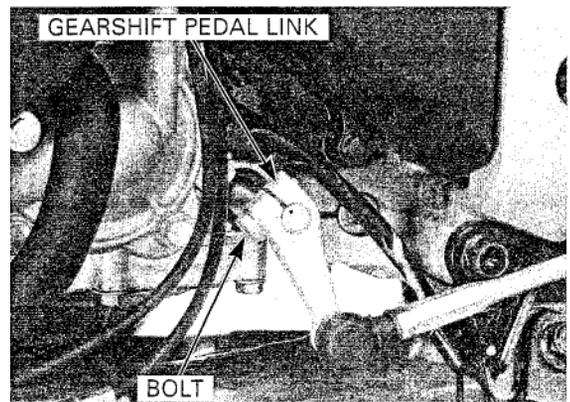
GEARSHIFT LINKAGE

GEARSHIFT LINKAGE REMOVAL

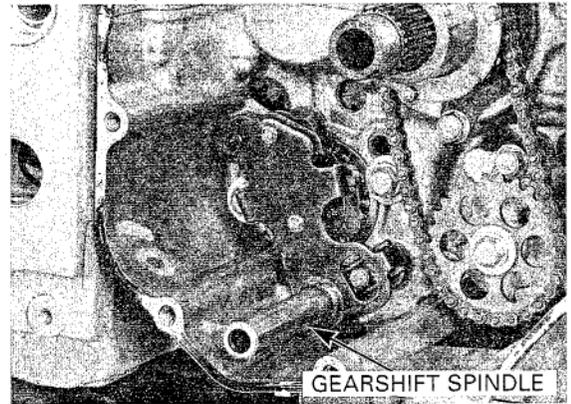
Remove the following:

- Right crankcase cover (page 9-3)
- Clutch assembly (page 9-4)

Remove the bolt and gearshift pedal link.

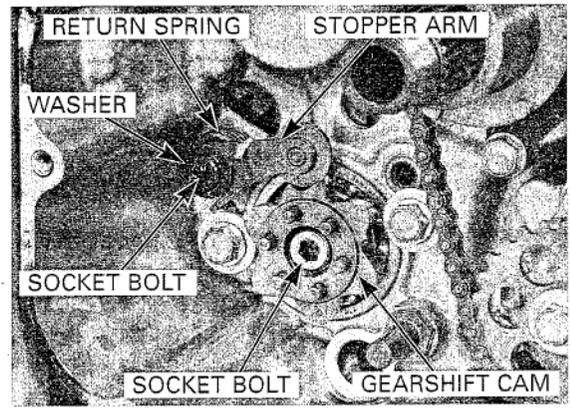


Pull the gearshift spindle assembly and thrust washer out of the crankcase.



Remove the following:

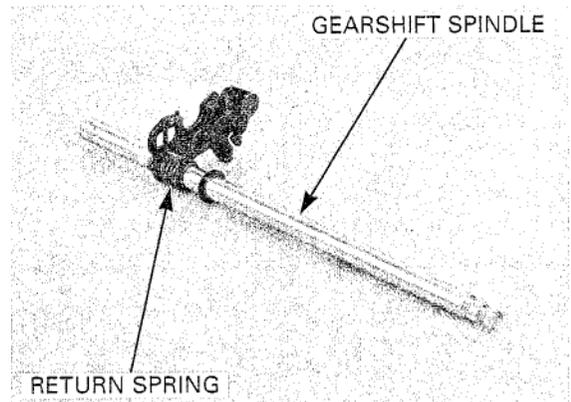
- Stopper arm socket bolt
- Stopper arm
- Return spring
- Washer
- Dowel pins
- Socket bolt
- Gearshift cam



GEARSHIFT LINKAGE INSPECTION

Check the gearshift spindle for wear, damage or bends.

Check the return spring for fatigue or damage.



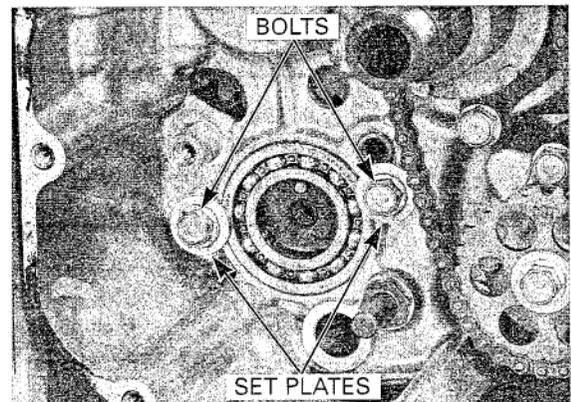
Shift drum/shift fork service can be done with the engine installed in the frame.

SHIFT DRUM/SHIFT FORK REMOVAL

Remove the following:

- Gearshift linkage (page 9-12)
- Oil pan (page 4-3)

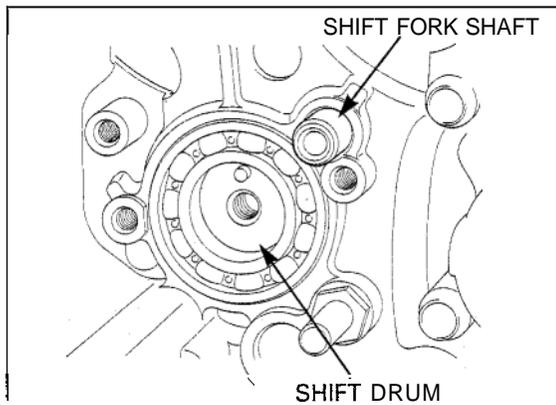
Remove the bolts and shift drum bearing set plates.



CLUTCH/GEARSHIFT LINKAGE

Remove the shift fork shaft and shift forks.

Remove the shift drum bearing and shift drum.



SHIFT DRUM/SHIFT FORK INSPECTION

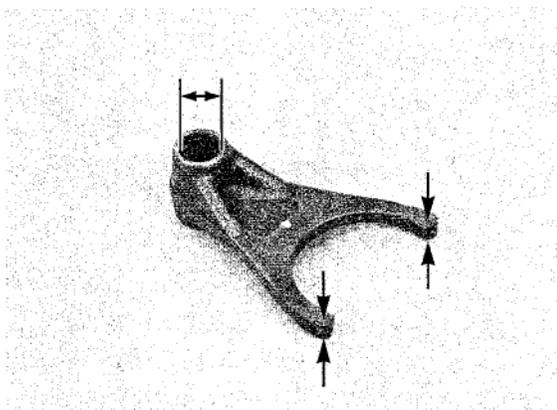
Check the shift fork and fork shaft for wear or damage.

Measure the I.D. of the shift fork.

SERVICE LIMIT: 12.03 mm (0.474 in)

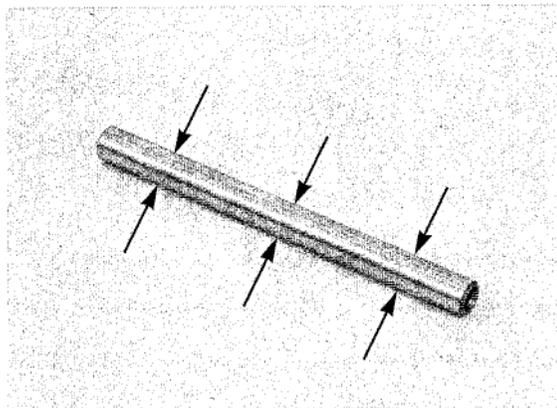
Measure the shift fork claw thickness.

SERVICE LIMIT: 5.9 mm (0.23in)

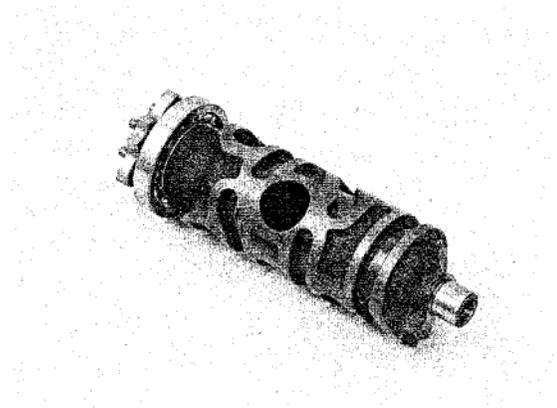


Measure the O.D. of the shift fork shaft.

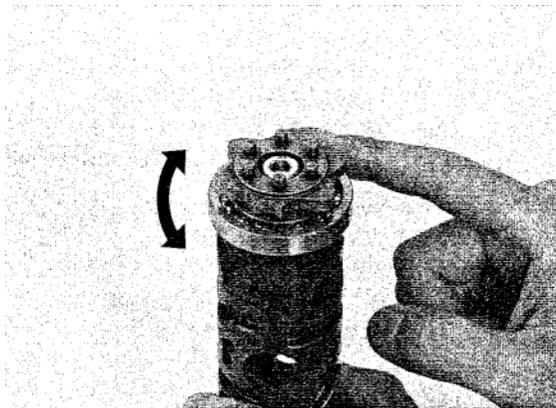
SERVICE LIMIT: 11.95 mm (0.470in)



Inspect the shift drum grooves for wear or damage.

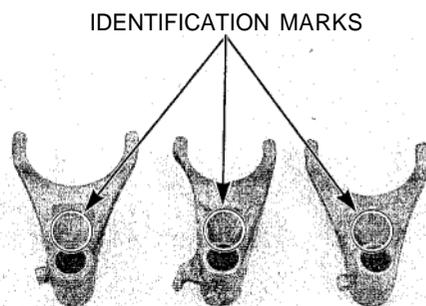


Turn the outer race of the shift drum bearing with your finger.
The bearing should turn smoothly and freely without excessive play.
If necessary replace the bearing.



SHIFT DRUM/SHIFT FORK INSTALLATION

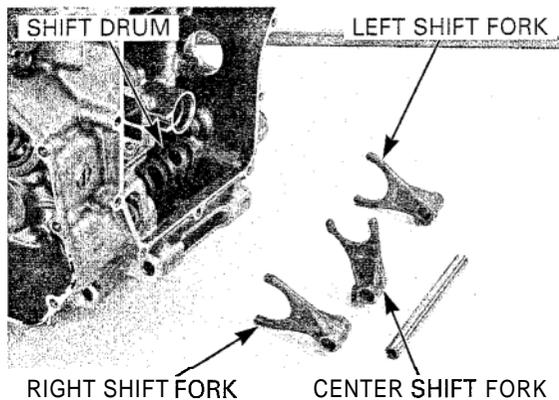
The shift forks have location marks.
"R" for right
"C" for center
"L" for left



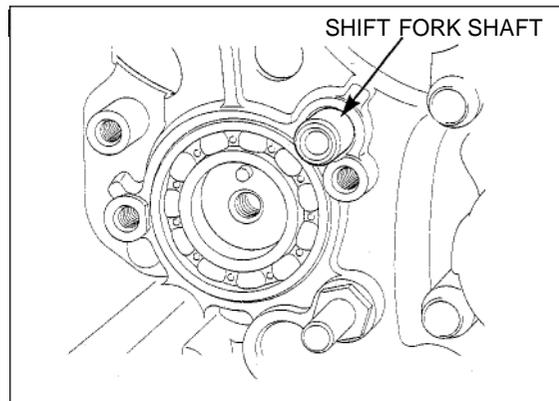
Install the shift drum/shift drum bearing into the crankcase.

Apply molybdenum disulfide oil to the shifter fork groove of the shift gears.

Install the shift forks on the transmission with their identification marks facing to the right.



Install the shift fork shaft.



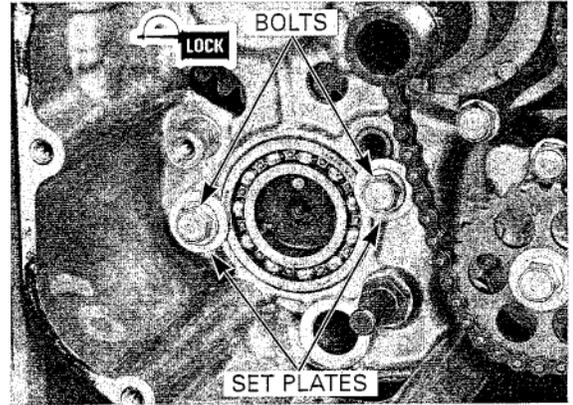
CLUTCH/GEARSHIFT LINKAGE

Apply a locking agent to the threads of the set plate bolts.

Install and set plates and bolts, tighten the bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Install the gearshift linkage (see following steps).



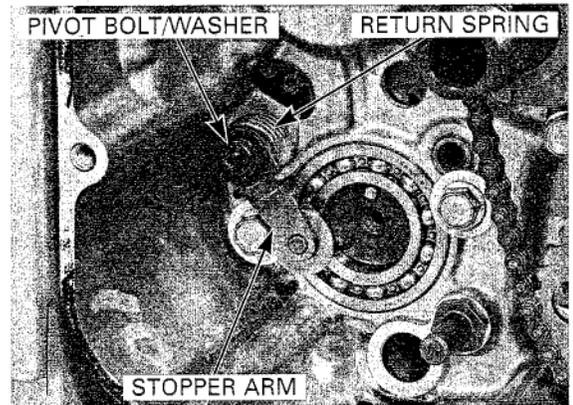
GEARSHIFT LINKAGE INSTALLATION

Install the following:

- Washer
- Return spring
- Stopper arm
- Socket bolt

Tighten the stopper arm socket bolt to the specified torque.

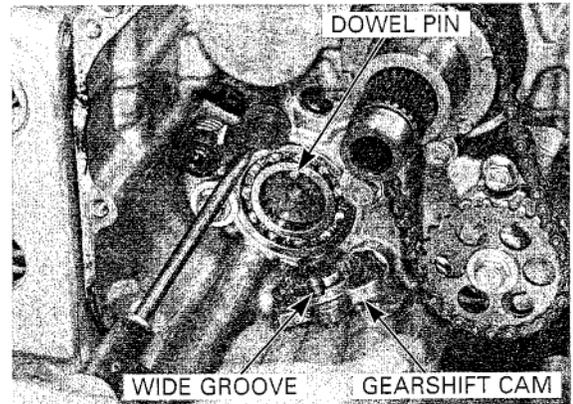
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



Install the dowel pin onto the shift drum.

Install the gearshift cam while holding the stopper arm using a screwdriver as shown.

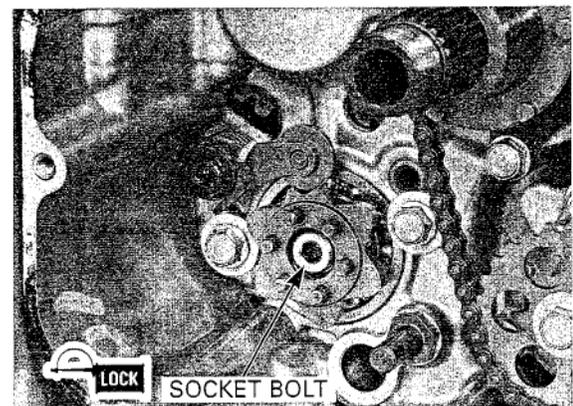
Align the dowel pin on the shift drum center with the wide groove on the gearshift cam



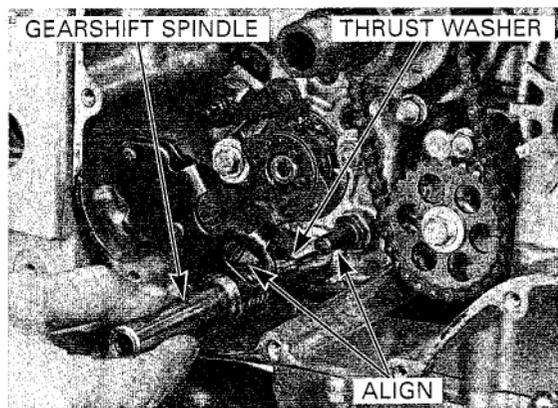
Apply a locking agent to the gearshift cam socket bolt threads.

Install and tighten the socket bolt to the specified torque.

TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)



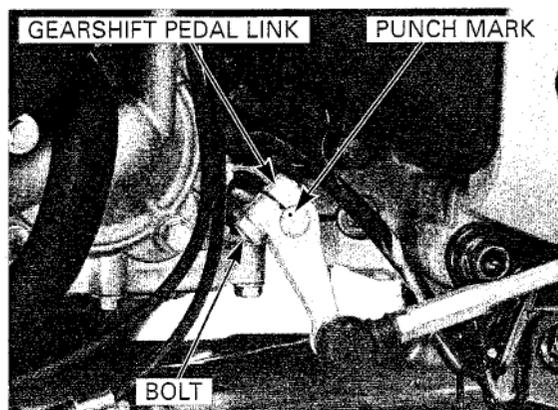
Install the thrust washer and gearshift spindle assembly into the crankcase while aligning the spring ends with the crankcase stopper pin.



Install the gearshift pedal link aligning its slit with the punch mark on the gearshift spindle. Install and tighten the pinch bolt to the specified torque.

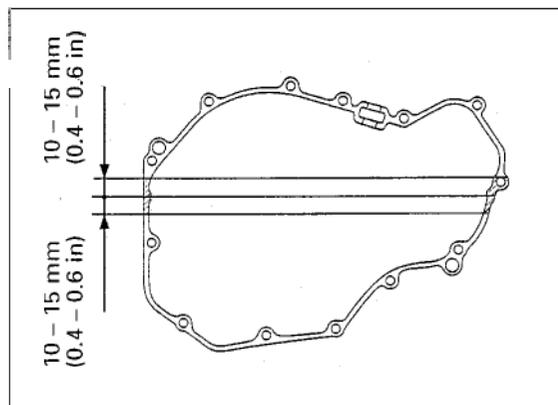
TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Install the clutch assembly (page 9-9).

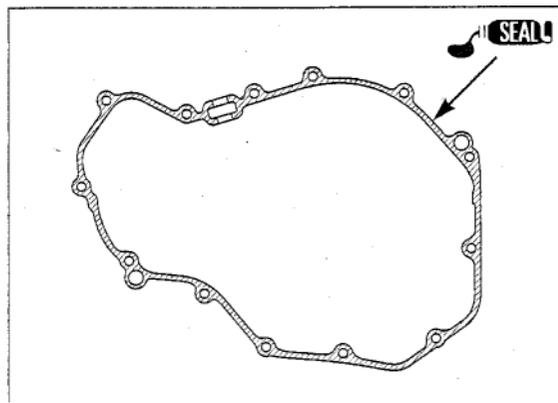


RIGHT CRANKCASE COVER INSTALLATION

Apply sealant to the mating surfaces of the crankcase as shown.

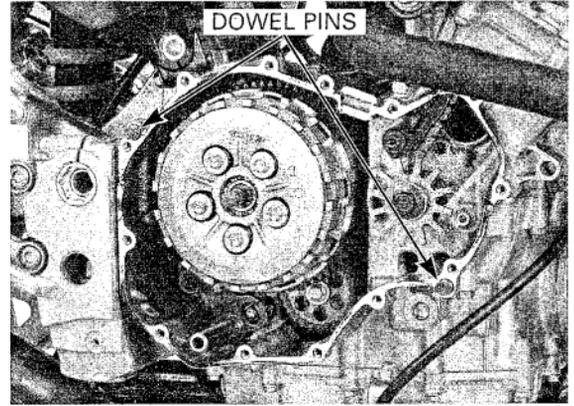


Apply sealant to the mating surface of the right crankcase cover.

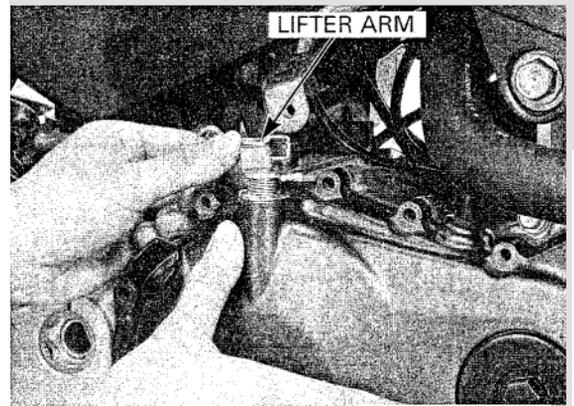


CLUTCH/GEARSHIFT LINKAGE

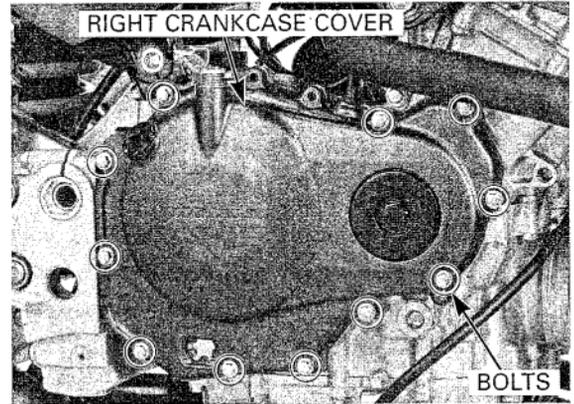
Install the two dowel pins.



Install the right crankcase cover while turning the lifter arm clockwise to engage the lifter arm groove with the lifter piece flange.



Install the right crankcase cover bolts. Tighten the bolts crisscross pattern in two to three steps securely.



Connect the clutch cable end to the clutch lifter lever, then install the clutch cable bracket with the two bolts. Tighten the bolts securely.

