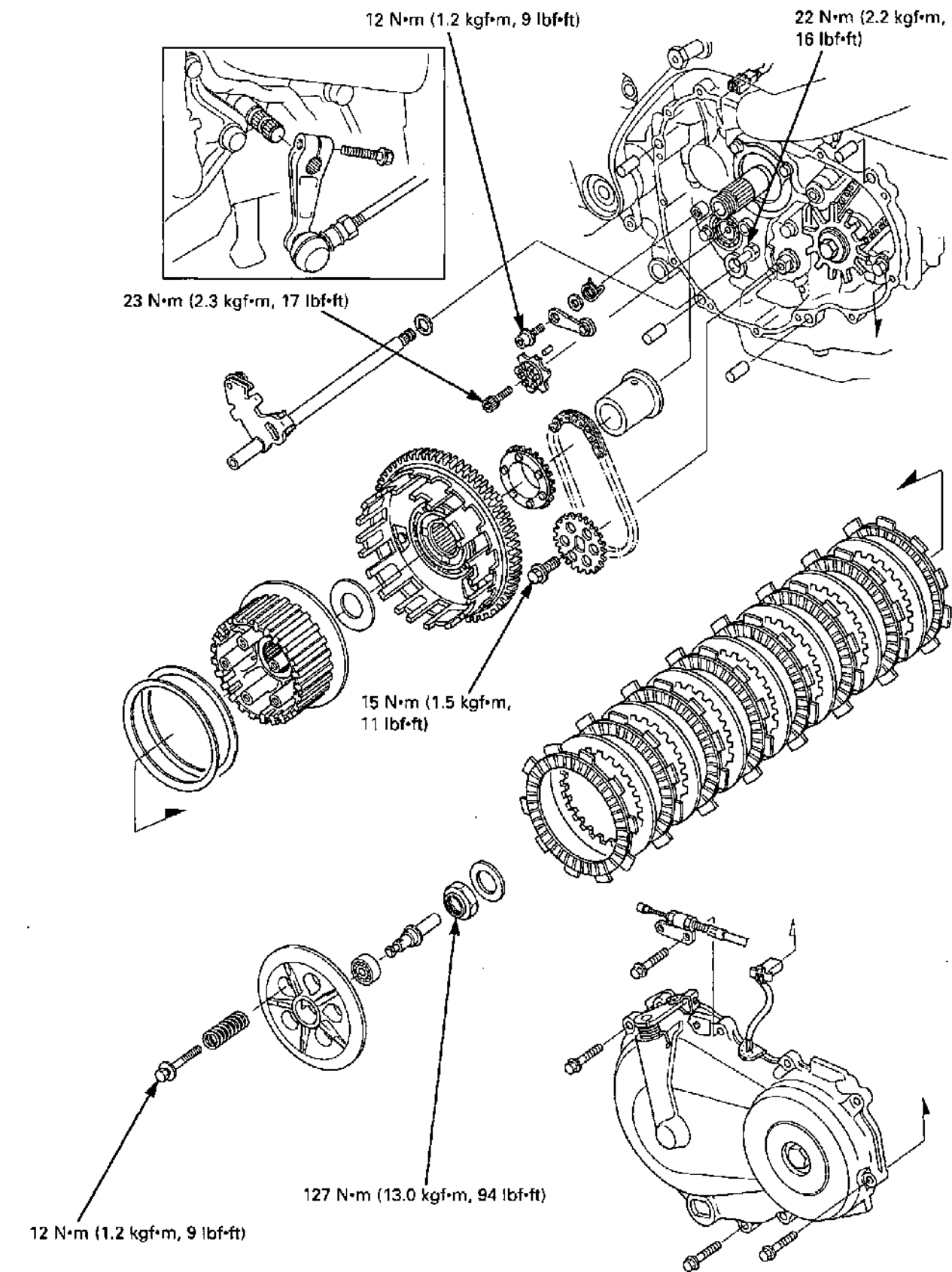


CLUTCH/GEARSHIFT LINKAGE



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	9-15

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.
- Transmission 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 transmission oil level before servicing the clutch system.

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Clutch lever free play		10 – 20 (3/8 – 13/16)	—
Clutch	Spring free length	44.7 (1.76)	43.4 (1.71)
	Disc thickness	2.92 – 3.08 (0.115 – 0.121)	2.6 (0.10)
	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)

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/washer	12 N•m (1.2 kgf•m, 9 lbf•ft)	
Oil pump driven sprocket bolt	15 N•m (1.5 kgf•m, 11 lbf•ft)	Apply a locking agent to the threads.
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 spindle return spring pin	22 N•m (2.2 kgf•m, 16 lbf•ft)	
CKP sensor wire guide bolt/washer	12 N•m (1.2 kgf•m, 9 lbf•ft)	

TOOLS

Clutch center holder	07724-0050002	Equivalent commercially available in U.S.A.
Driver	07749-0010000	
Attachment, 32 x 35 mm	07746-0010100	
Attachment, 37 x 40 mm	07746-0010200	
Pilot, 17 mm	07746-0040400	
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

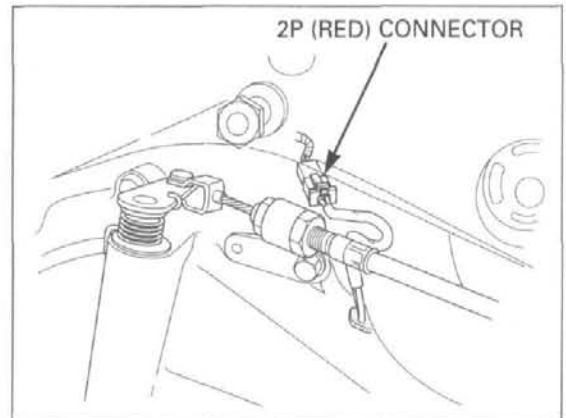
Gearshift pedal will not return

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

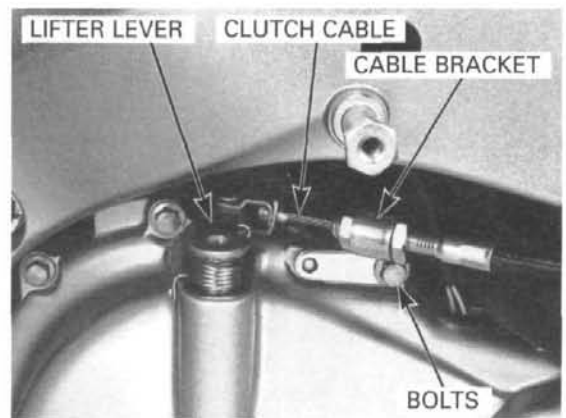
RIGHT CRANKCASE COVER REMOVAL

Drain the engine oil (page 3-15).
Remove the lower cowl (page 2-6).

Disconnect the CKP sensor 2P (Red) connector.

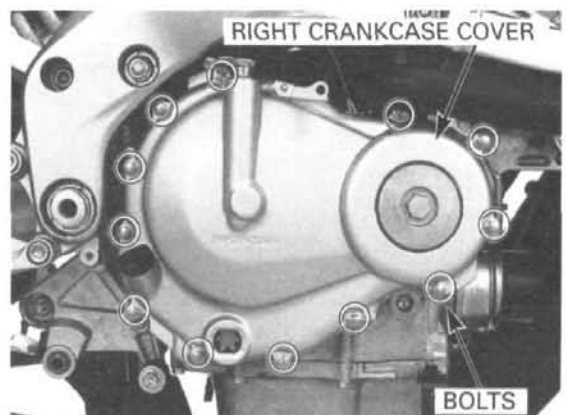


Remove the bolts and clutch cable guide, then disconnect the clutch cable end from the clutch lifter lever.



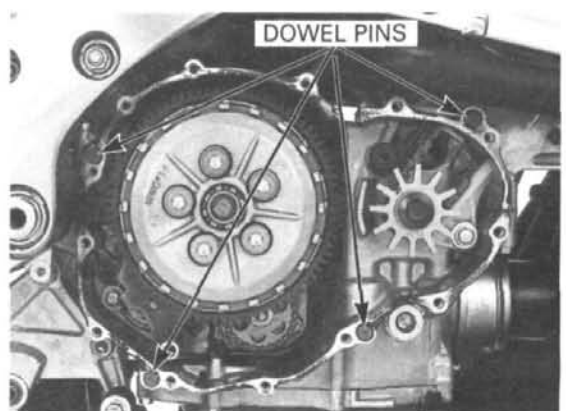
The lifter arm spindle is engaged with the clutch lifter piece inside the right crankcase cover.

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 off any sealant from the right crankcase cover mating surfaces.

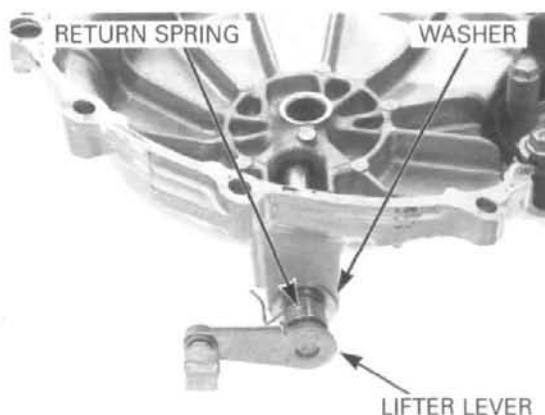


CLUTCH/GEARSHIFT LINKAGE

CLUTCH LIFTER LEVER

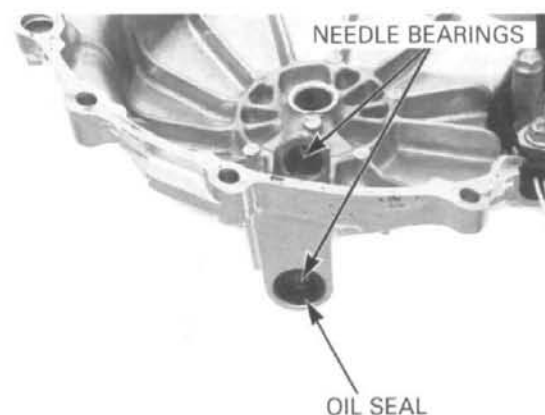
Remove the clutch lifter lever, return spring and washer from the right crankcase cover.

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.



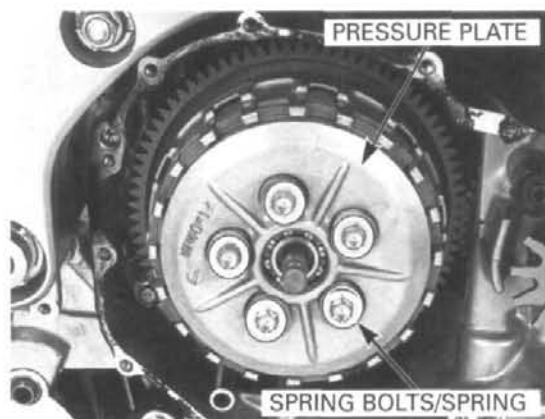
CLUTCH

REMOVAL

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

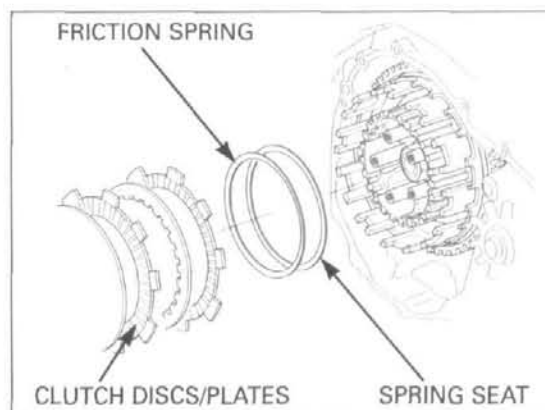
Remove the clutch spring bolts, springs and pressure plate.

Remove the clutch lifter piece from the lifter bearing.

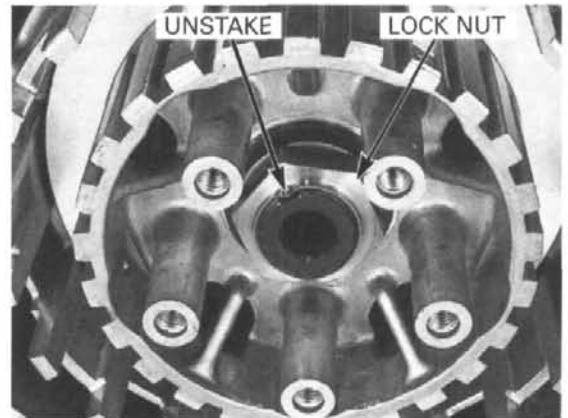


Remove the following:

- Eight clutch discs
- Seven clutch plates
- Spring seat
- Friction spring



Unstake the clutch center lock nut.



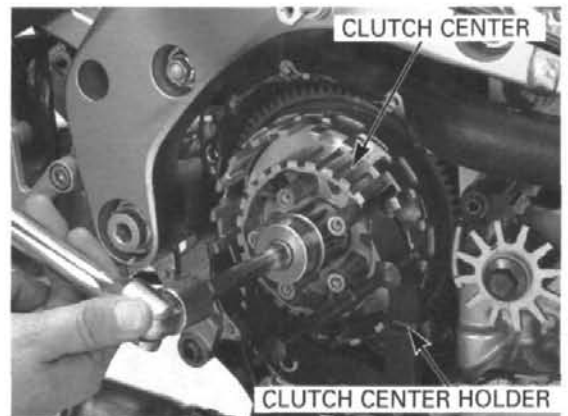
Hold the clutch center with the clutch center holder, then remove the lock nut.

TOOL:

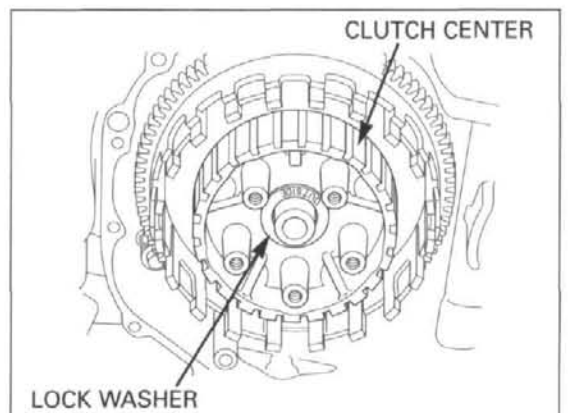
Clutch center holder

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

Discard the lock nut.



Remove the lock washer and clutch center.



Remove the washer.

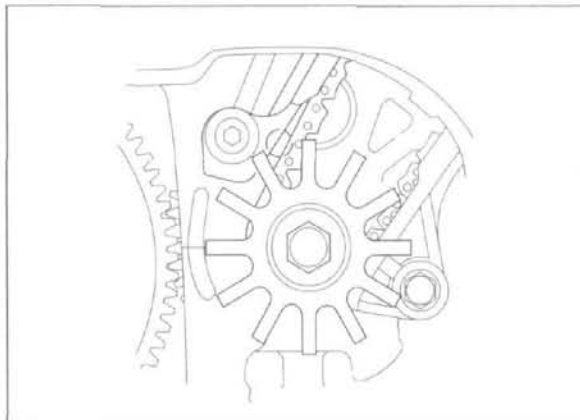


CLUTCH/GEARSHIFT LINKAGE

Remove the throttle body (page 5-62).
Loosen the cam chain tensioner (page 8-29).

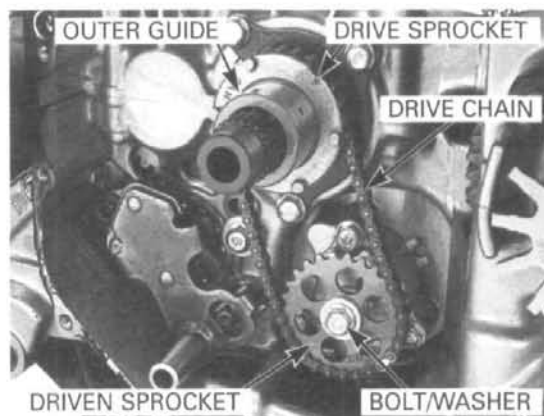
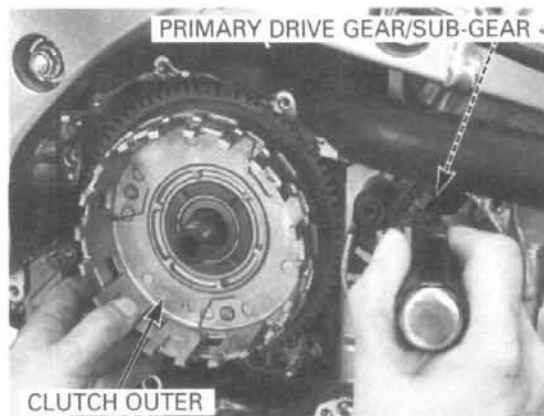
Be careful not to bend the ignition pulse generator rotor tangs.

Align the gear teeth of the scissor gears (primary drive gear and sub-gear) by inserting a 5-mm pin or screwdriver into the gear hole indicated by the punch mark on the sub-gear through the hole in the crankcase, and remove the clutch outer. Gear hole position is shown below.



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 quietly.

Also check that the outer race of the bearing fits tightly in the pressure plate.

Replace the bearing if the inner race does not turn smoothly, quietly, or if the outer race fit loosely in the pressure plate.

Drive the bearing out of the pressure plate.

Drive a new bearing into the pressure plate with the marked side facing out.

TOOLS:

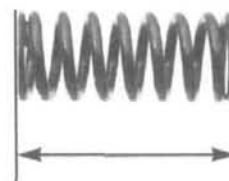
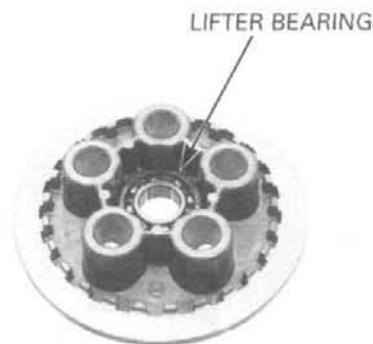
Driver	07749-0010000
Attachment, 32 X 35 mm	07746-0010100
Pilot, 17 mm	07746-0040400

Clutch spring

Measure the clutch spring free length.

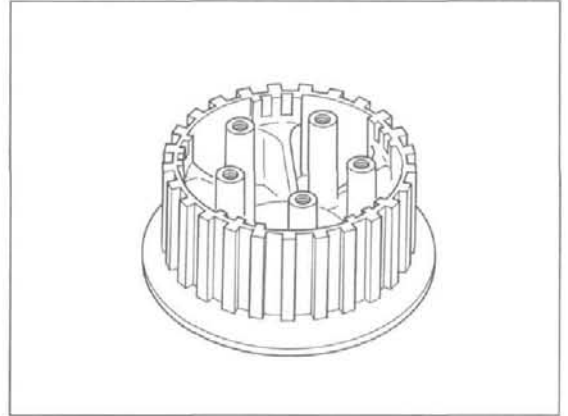
SERVICE LIMIT: 43.4 mm (1.78 in)

Replace the clutch spring as a set.



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.



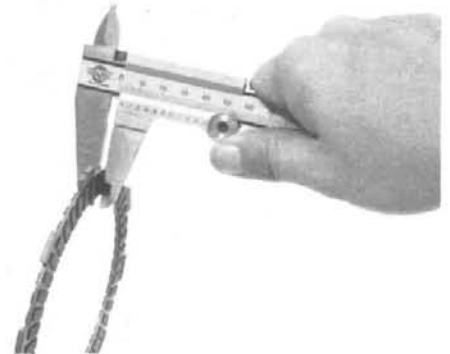
Clutch disc

Replace the clutch discs and plates as a set.

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)

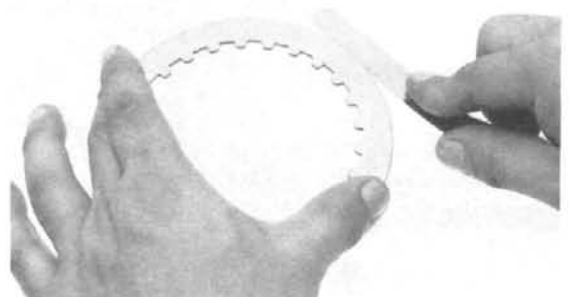


Clutch plate

Replace the clutch discs and plates as a set.

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

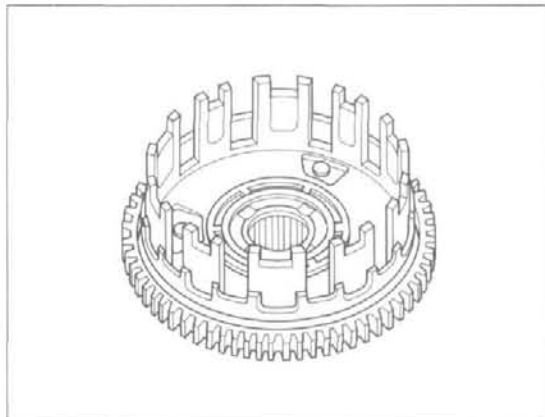
SERVICE LIMIT: 0.30 mm (0.012 in)



CLUTCH/GEARSHIFT LINKAGE

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)

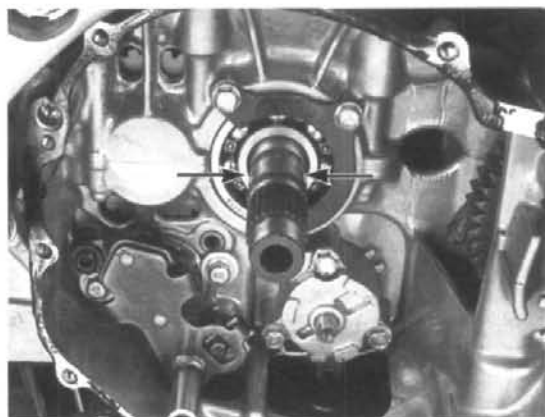
I.D.: 25.03 mm (0.985 in)



Mainshaft

Measure the mainshaft O.D. at the 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

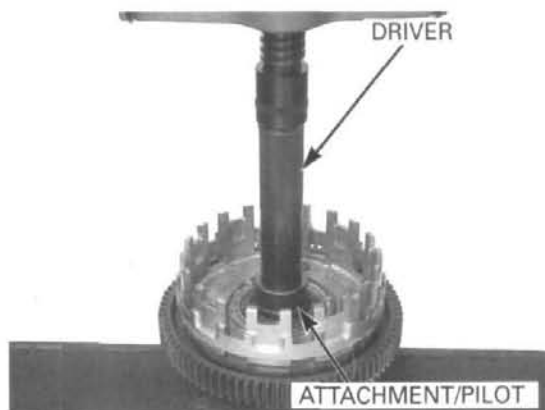
07749-0010000

Attachment, 37 X 40 mm

07746-0010200

Pilot, 35 mm

07746-0040800



Press a new needle bearing into the clutch outer so the casing of the needle bearing is below 0.4 – 0.6 mm (0.016 – 0.023 in) from the oil pump drive sprocket side of the clutch outer surface as shown.

TOOLS:

Driver

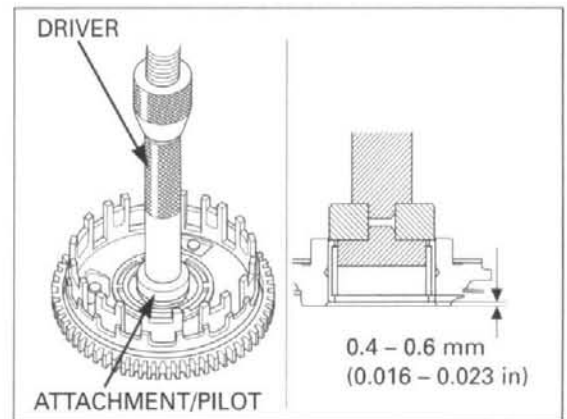
07749-0010000

Attachment, 37 x 40 mm

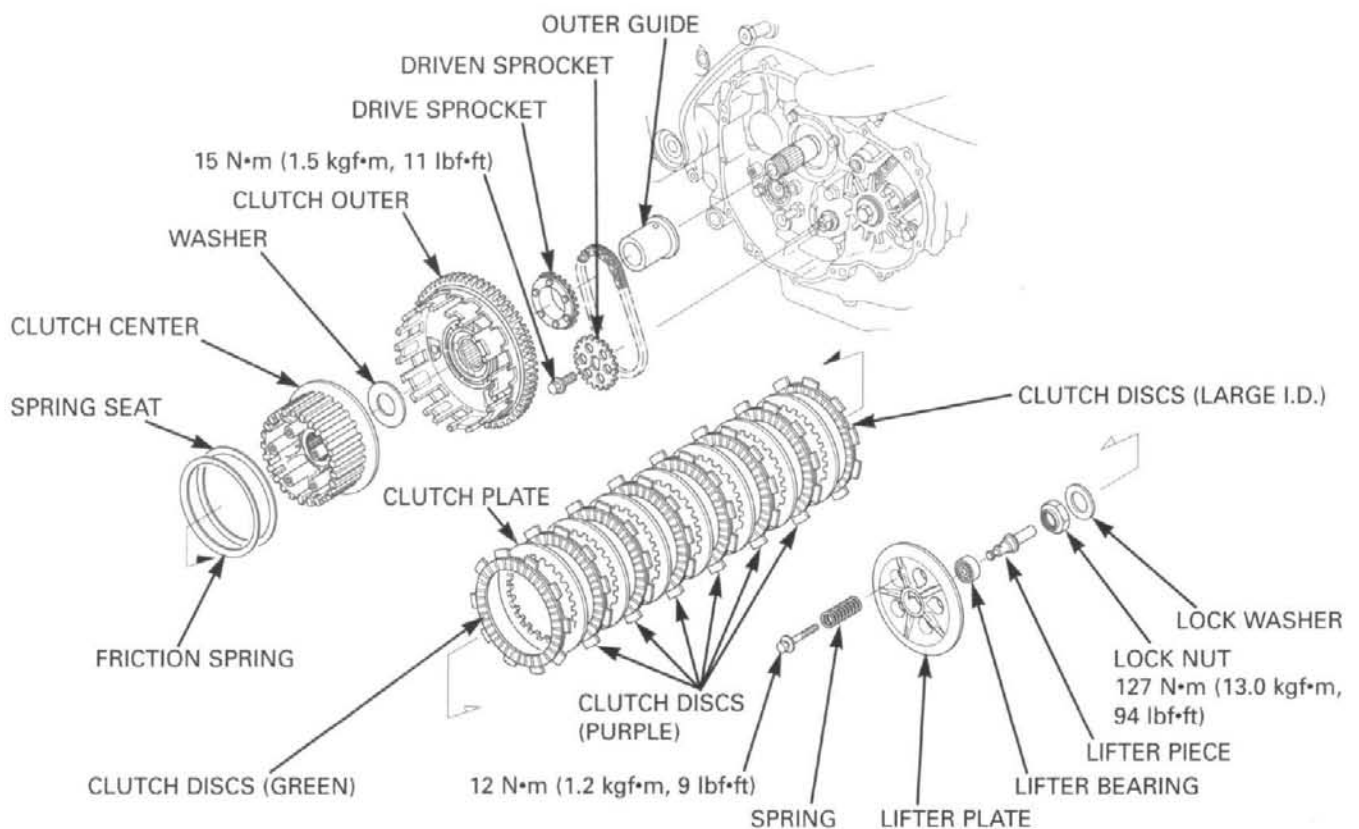
07746-0010200

Pilot, 35 mm

07746-0040800

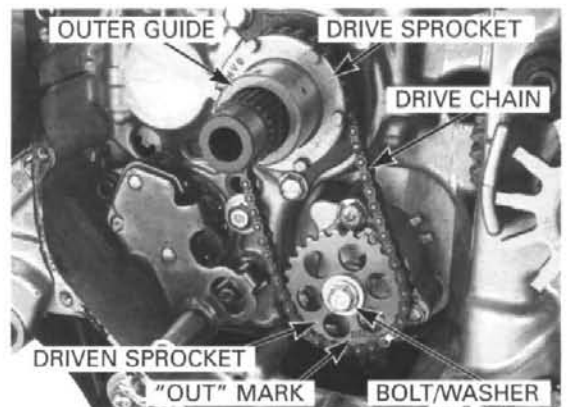


INSTALLATION



Install the oil pump driven sprocket with the "OUT" mark facing out.

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



CLUTCH/GEARSHIFT LINKAGE

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)



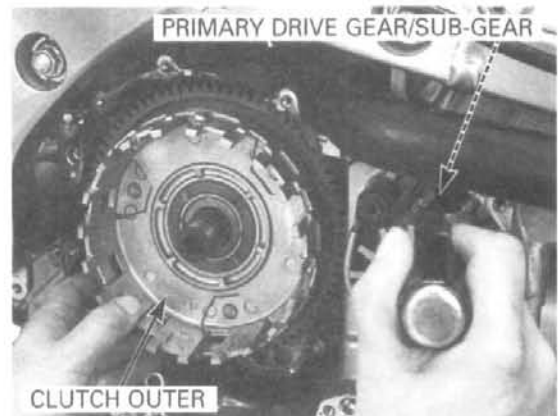
Be careful not to bend the ignition pulse generator rotor tangs.

Align the primary drive gear and sub-gear teeth with a 5-mm pin or screwdriver as shown.

Install the clutch outer.

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.

Make sure the primary driven gear of the clutch outer is flush with the primary drive sub-gear.
Release the cam chain tensioner (page 8-26).

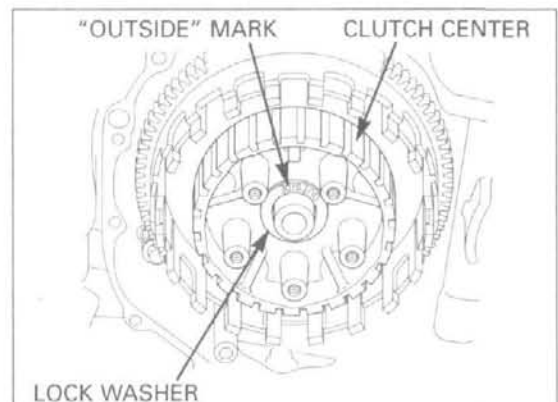


Install the washer onto the clutch outer.



Install the clutch center.

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



Install the new lock nut.

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

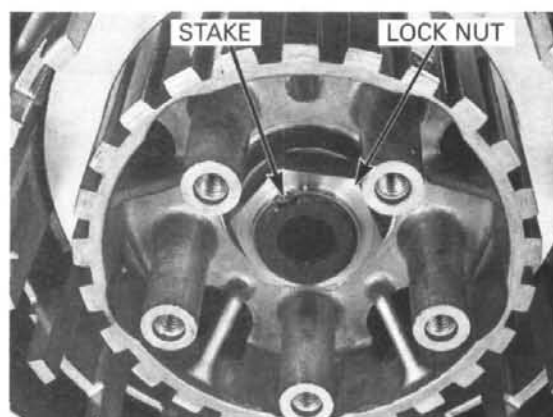
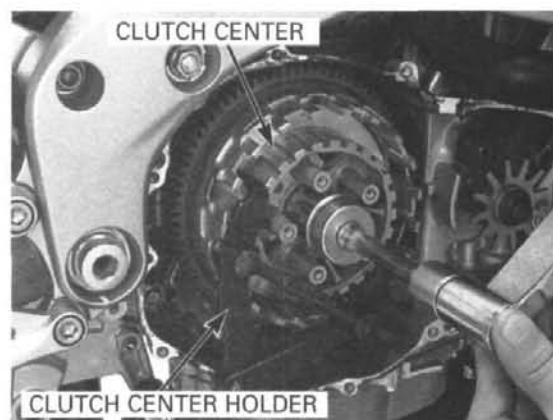
TOOL:

Clutch center holder 07724-0050002
(equivalent commercially available in U.S.A.)

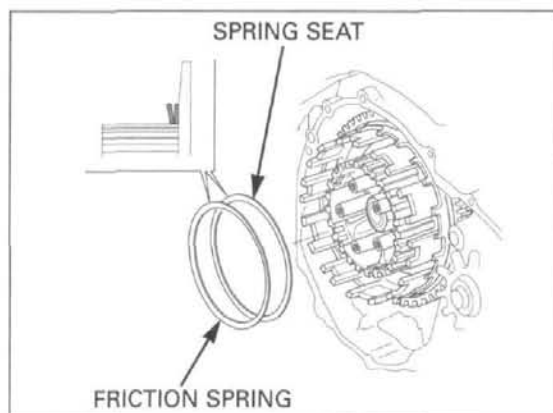
TORQUE: 127 N·m (13.0 kgf·m, 94 lbf·ft)

Be careful not to damage the mainshaft threads.

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

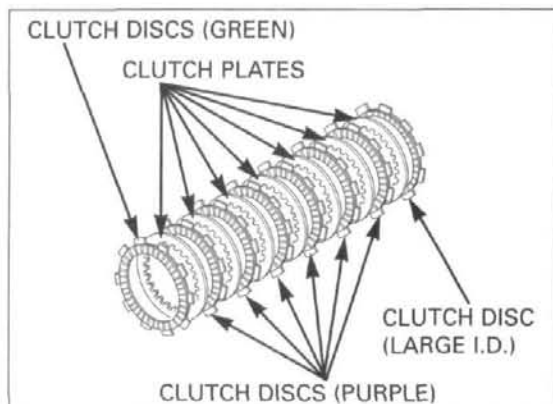


Install the spring seat and friction spring onto the clutch center.
Coat the clutch discs and plates with clean engine oil.



Install the green disc on the end of the clutch pack.

Install the large I.D. disc onto the clutch center as shown.
Stack the clutch discs and plates alternately.

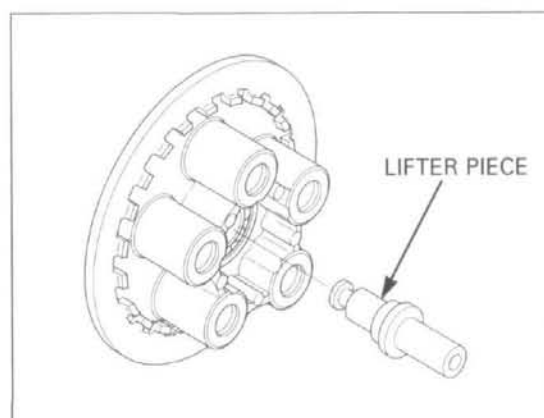


CLUTCH/GEARSHIFT LINKAGE

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



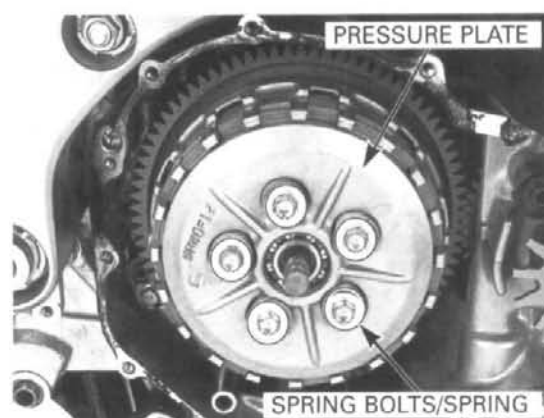
Install the clutch lifter piece into the lifter bearing.



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 9-14).



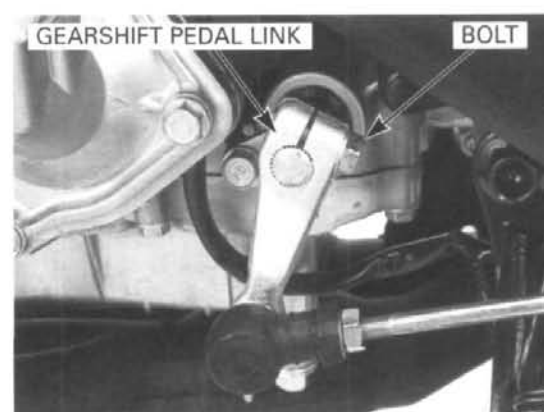
GEARSHIFT LINKAGE

GEARSHIFT LINKAGE REMOVAL

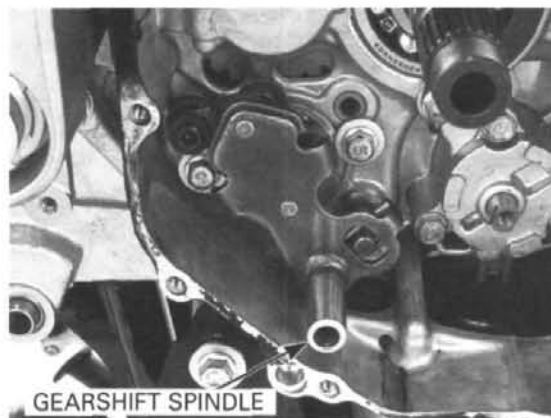
Remove the following:

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

Remove the bolt and gearshift pedal link.

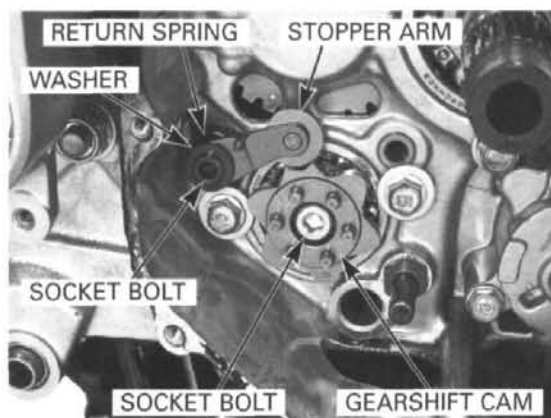


Pull the gearshift spindle assembly and thrust washer out of the crankcase.



Remove the following:

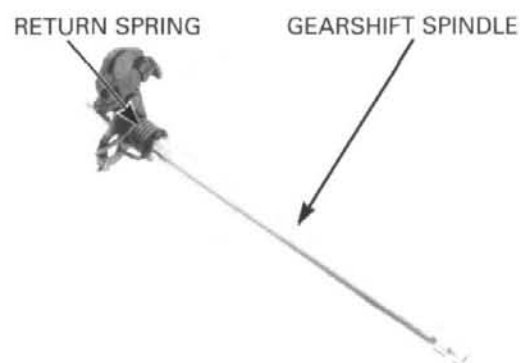
- Stopper arm socket bolt
- Stopper arm
- Return spring
- Washer
- Dowel pins
- Socket bolt
- Gearshift cam



GEARSHIFT LINKAGE INSPECTION

Check the gearshift spindle for wear, damage or bends.

Check the return spring for fatigue or damage.



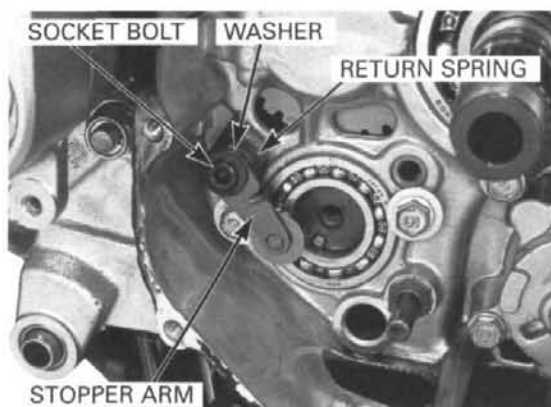
GEARSHIFT LINKAGE INSTALLATION

Install the following:

- Washer
- Return spring
- Stopper arm
- Socket bolt

Tighten the stopper arm socket bolt to the specified torque.

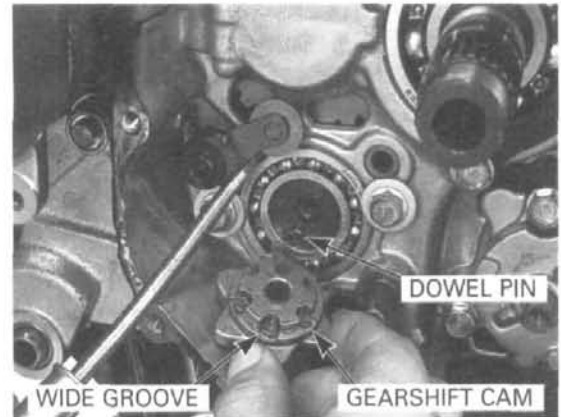
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



CLUTCH/GEARSHIFT LINKAGE

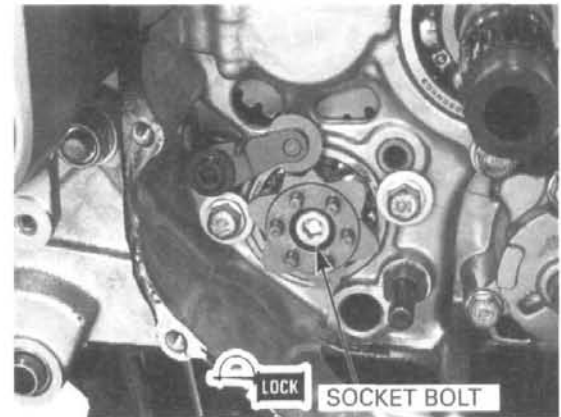
Align the dowel pin on the shift drum center with the wide groove on the gearshift cam.

Install the dowel pin onto the shift drum.
Install the gearshift cam while holding the stopper arm using a screwdriver as shown.

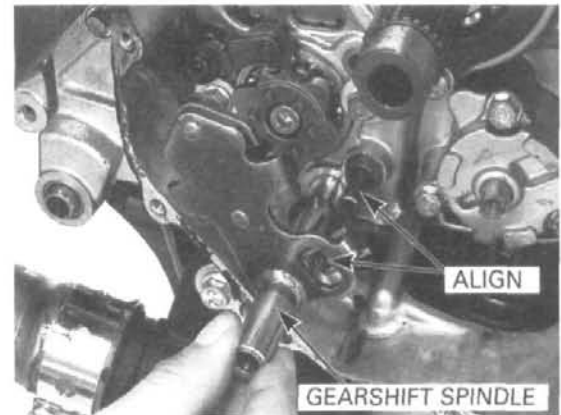


Apply a locking agent to the gearshift cam socket bolt threads.
Install and tighten the socket bolt to the specified torque.

TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)



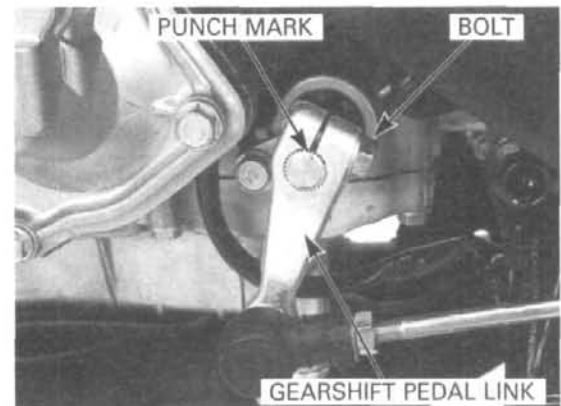
Install the thrust washer and gearshift spindle assembly into the crankcase while aligning the spring ends with the crankcase stopper pin.



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.

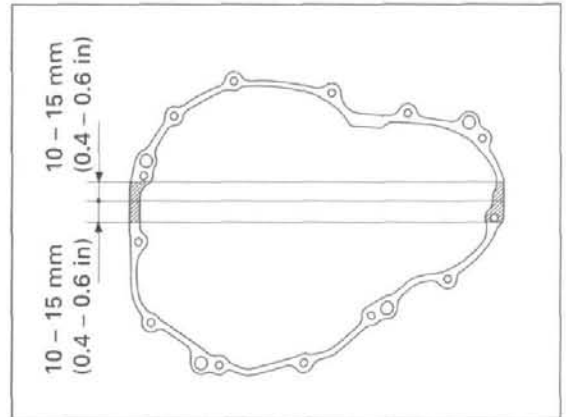
TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Install the clutch assembly (page 9-9).

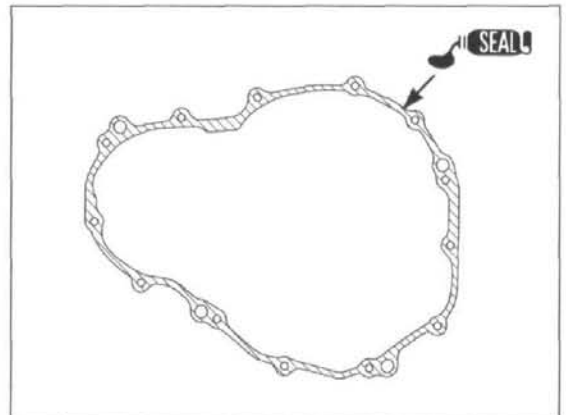


RIGHT CRANKCASE COVER INSTALLATION

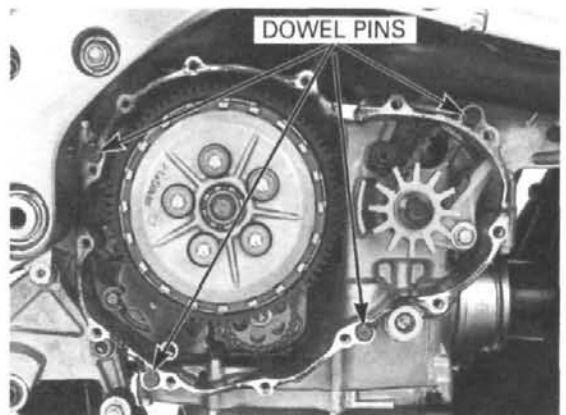
Apply a sealant to the mating surfaces of the crankcase as shown.



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



Install the two dowel pins.

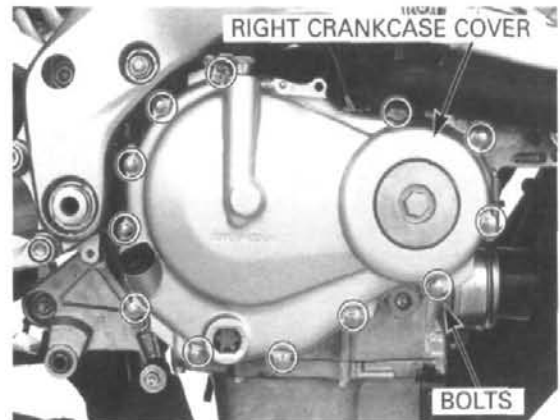


Install the right crankcase cover while turning the lifter arm clockwise to engage the lifter arm groove with the lifter piece flange.

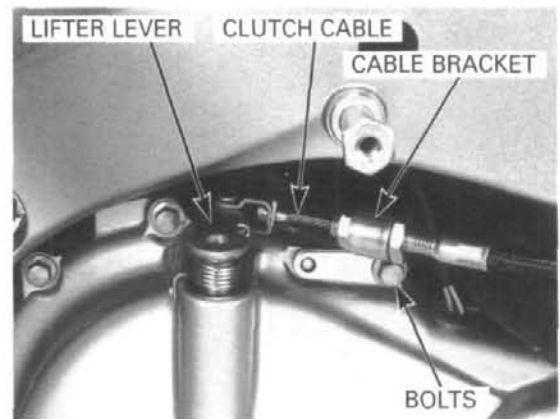


CLUTCH/GEARSHIFT LINKAGE

Install and temporarily tighten the right crankcase cover SH bolts.

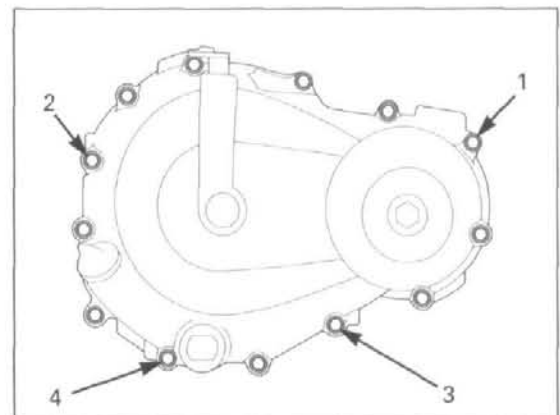


Connect the clutch cable end to the clutch lifter lever, then install the clutch cable bracket with the two bolts.



Tighten the four bolts first in the numerical order cast on the right crankcase cover in two or three steps.

Tighten the the other cover bolts crisscross pattern in two to three steps.



Connect the CKP sensor 2P (Red) connector.

Pour the recommended engine oil (page 3-14).

Install the removed parts in the reverse order of removal.

