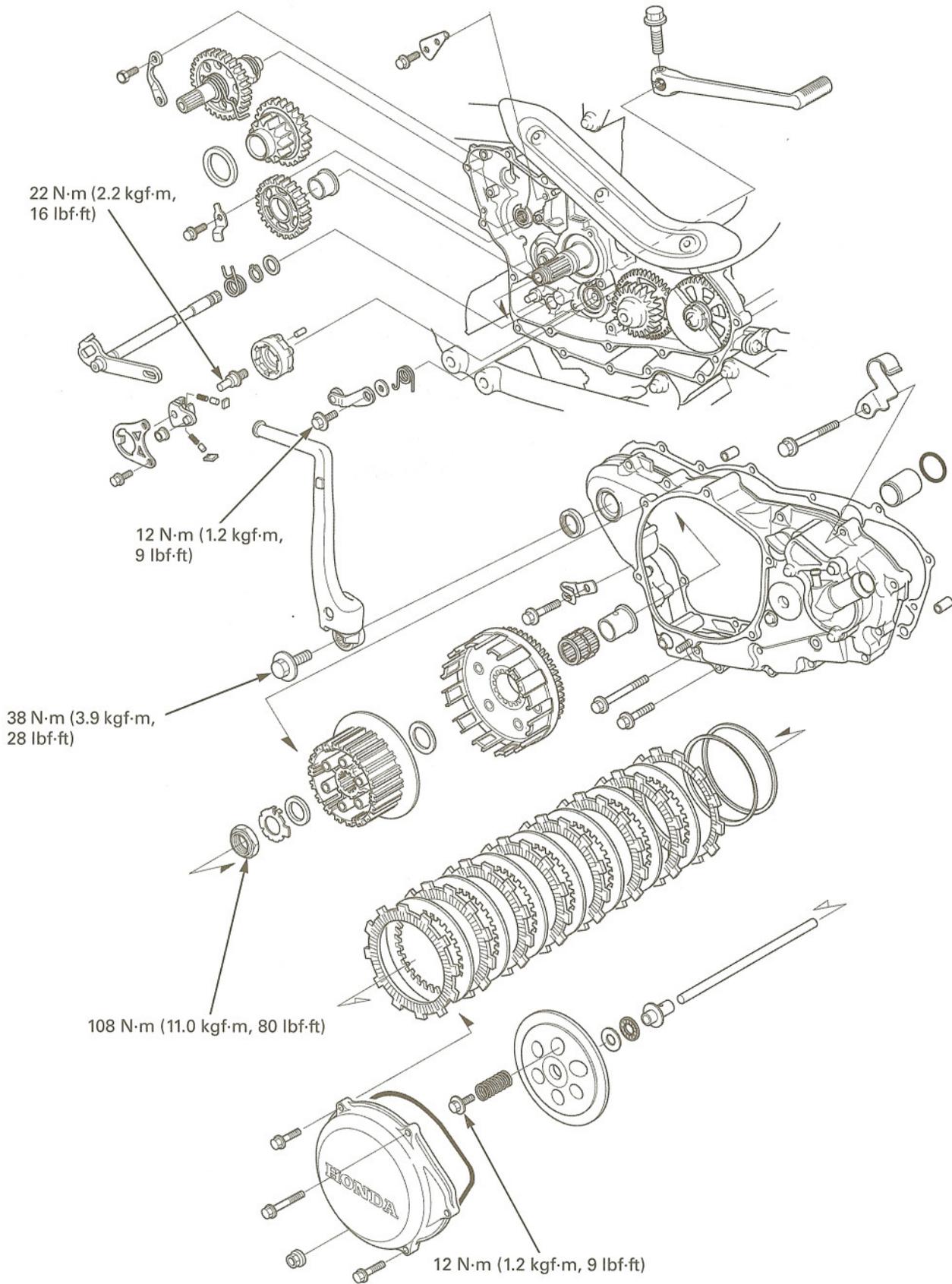


11. CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

| | | | |
|-----------------------------------|------|--|-------|
| SYSTEM COMPONENTS | 11-2 | CLUTCH..... | 11-5 |
| SERVICE INFORMATION | 11-3 | KICKSTARTER | 11-15 |
| TROUBLESHOOTING | 11-4 | GEARSHIFT LINKAGE | 11-18 |
| RIGHT CRANKCASE COVER REMOVAL.... | 11-5 | RIGHT CRANKCASE COVER INSTALLATION..... | 11-22 |

CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

SYSTEM COMPONENTS



SERVICE INFORMATION

GENERAL

- This section covers service of the clutch, kickstarter and gearshift linkage. These services can be performed with the engine installed in the frame.
- Transmission oil viscosity and level and the use of oil additives have an effect on clutch disengagement. Oil additives of any kind are specifically not recommended. When the clutch does not disengage or the vehicle creeps with the clutch disengaged, inspect the transmission oil viscosity and level before servicing the clutch system.

SPECIFICATIONS

| ITEM | | STANDARD | SERVICE LIMIT |
|--|--------------------|-----------------------------------|-----------------------------------|
| Clutch | Lever free play | 10 – 20 (3/8 – 3/4) | – |
| | Spring free length | 45.7 (1.80) | 44.7 (1.76) |
| | Disc A thickness | 2.92 – 3.08 (0.115 – 0.121) | 2.85 (0.112) |
| | Disc B thickness | 3.22 – 3.38 (0.127 – 0.133) | 3.15 (0.124) |
| | Plate warpage | – | 0.15 (0.006) |
| Kickstarter | Pinion gear I.D. | 22.007 – 22.028 (0.8664 – 0.8672) | 22.05 (0.868) |
| | Spindle I.D. | 21.959 – 21.980 (0.8645 – 0.8654) | 21.95 (0.864) |
| | Idle gear I.D. | 21.020 – 21.041 (0.8276 – 0.8284) | 21.07 (0.830) |
| | Idle gear bushing | I.D. | 17.000 – 17.018 (0.6693 – 0.6700) |
| O.D. | | 20.979 – 21.000 (0.8259 – 0.8268) | 20.96 (0.825) |
| Countershaft O.D. at kickstarter idle gear | | 16.966 – 16.984 (0.6680 – 0.6687) | 16.95 (0.667) |

Unit: mm (in)

TORQUE VALUES

| | | |
|---------------------------------|---------------------------------|--|
| Clutch spring bolt | 12 N·m (1.2 kgf·m, 9 lbf·ft) | Apply oil to the threads and seating surface. Apply locking agent to the threads. |
| Clutch center lock nut | 108 N·m (11.0 kgf·m, 80 lbf·ft) | |
| Gearshift drum center pin bolt | 22 N·m (2.2 kgf·m, 16 lbf·ft) | |
| Gearshift drum stopper arm bolt | 12 N·m (1.2 kgf·m, 9 lbf·ft) | |
| Kickstarter pedal bolt | 38 N·m (3.9 kgf·m, 28 lbf·ft) | |

TOOLS



CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

TROUBLESHOOTING

Faulty clutch operation can usually be corrected by adjusting the free play.

Clutch lever difficult to pull in

- Damaged, kinked or dirty clutch cable
- Improperly routed clutch cable
- Damaged clutch lifter arm/shaft

Clutch will not disengage or vehicle creeps with clutch disengaged

- Excessive clutch lever free play
- Warped clutch plate
- Transmission oil level too high, improper oil viscosity, or additive used

Clutch slips

- Worn clutch discs
- Weak clutch springs
- No clutch lever free play
- Transmission oil additive used

Hard to shift

- Misadjusted clutch lever free play
- Damaged or bent shift fork
- Bent shift fork shaft
- Incorrect transmission oil viscosity
- Damaged gearshift spindle assembly
- Damaged shift drum guide grooves

Transmission jumps out of gear

- Worn shift drum stopper arm
- Worn or broken gearshift spindle return spring
- Bent shift fork shaft
- Damaged shift drum guide grooves
- Worn gear dogs or dog holes

Gearshift pedal will not return

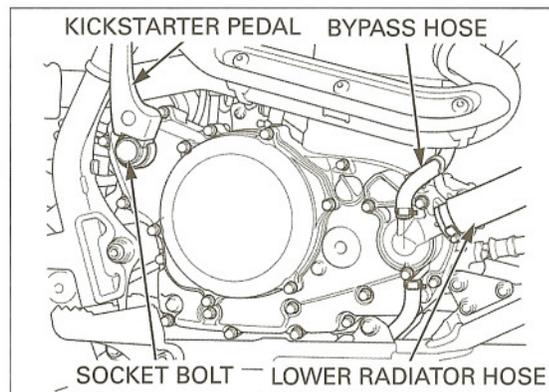
- Weak or broken gearshift spindle return spring
- Bent gearshift spindle

RIGHT CRANKCASE COVER REMOVAL

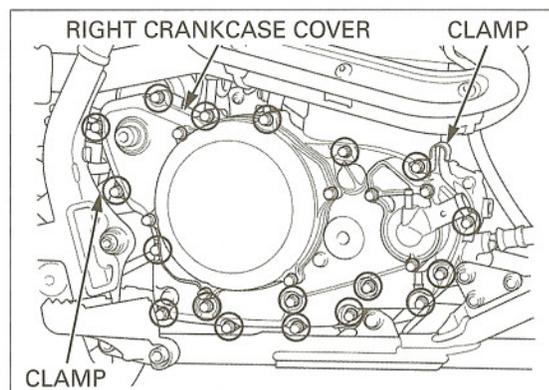
Drain the coolant (page 7-7).
 Drain the transmission oil (page 4-15).
 Remove the brake pedal (page 15-27).

Remove the socket bolt and kickstarter pedal.

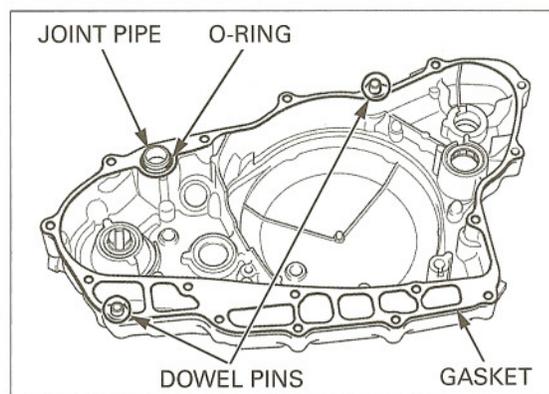
Loosen the hose band screws and disconnect the lower radiator hose and bypass hose from the water pump cover.



Loosen the eighteen bolts in a crisscross pattern in 2 or 3 steps, and remove the bolts, clamps and right crankcase cover.



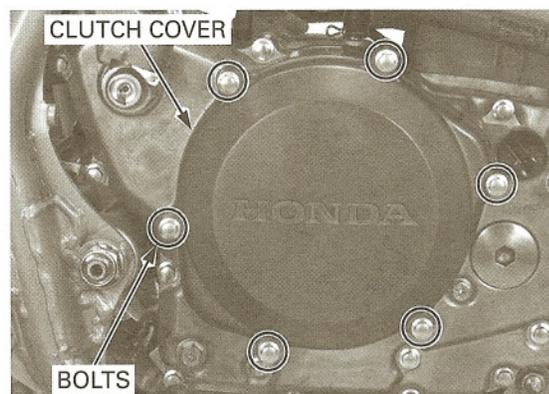
Remove the dowel pins, water joint pipe, O-ring and gasket.

**CLUTCH****DISASSEMBLY**

Drain the transmission oil (page 4-15).

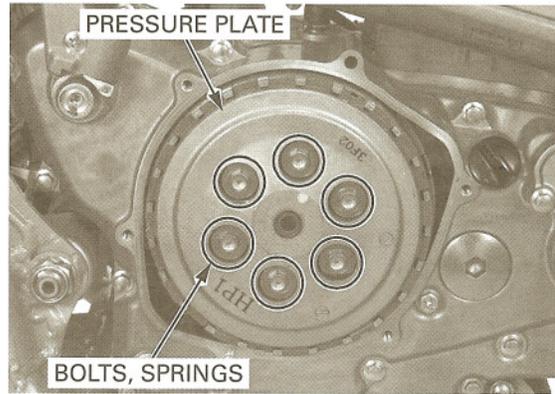
Remove the following:

- brake pedal (page 15-27)
- six bolts
- clutch cover
- O-ring

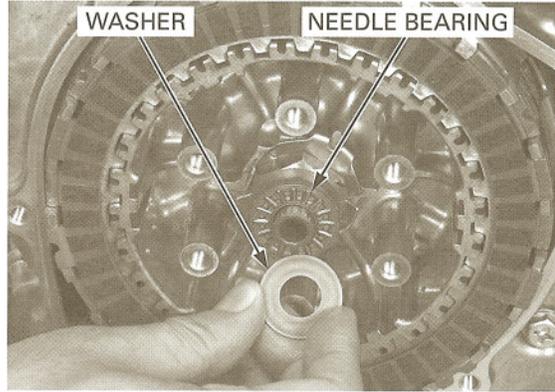


CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

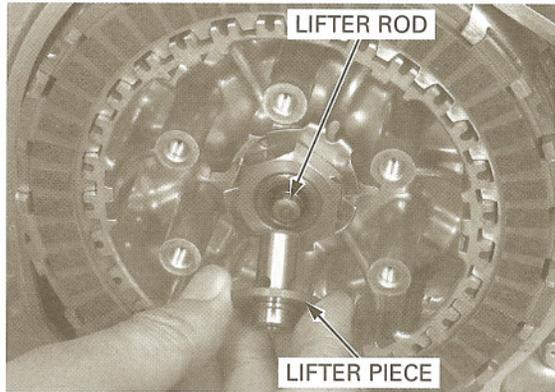
- six bolts and springs
- clutch pressure plate



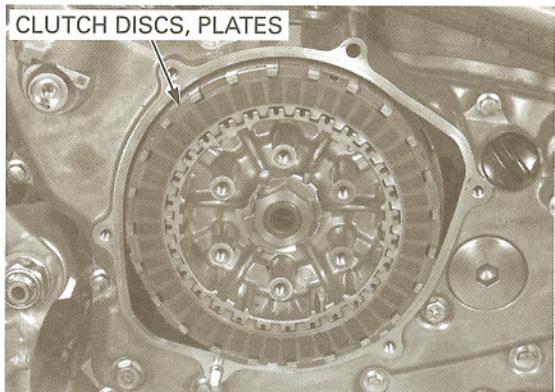
- washer
- needle bearing



- clutch lifter piece
- clutch lifter rod



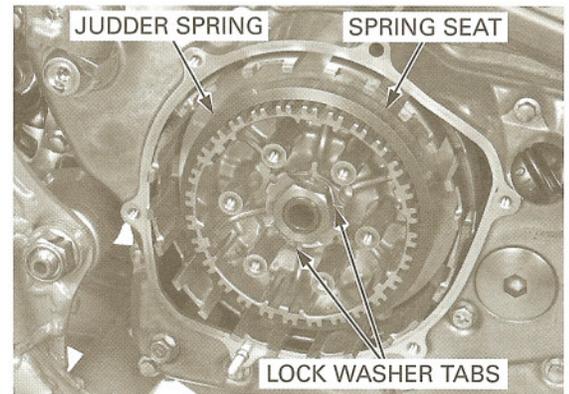
- seven clutch discs A and plates
- clutch disc B



CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

- judder spring
- spring seat

Straighten the lock washer tabs.



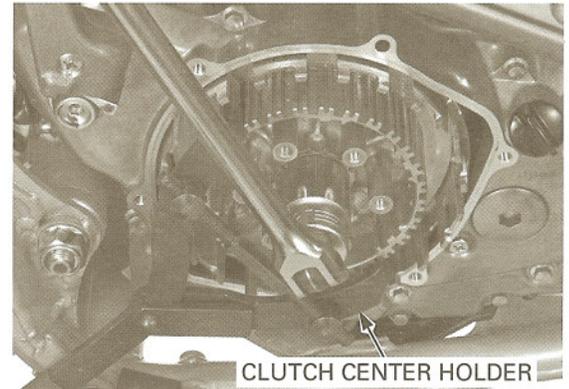
Hold the clutch center using the special tool and loosen the clutch center lock nut.

TOOL:

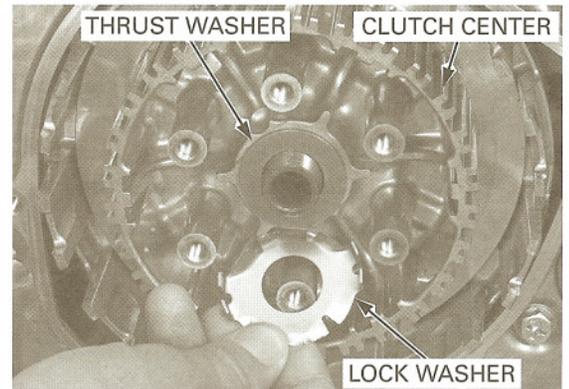
Clutch center holder 07724-0050002 or
07724-0050001 or
equivalent commercially
available in U.S.A.

Remove the following:

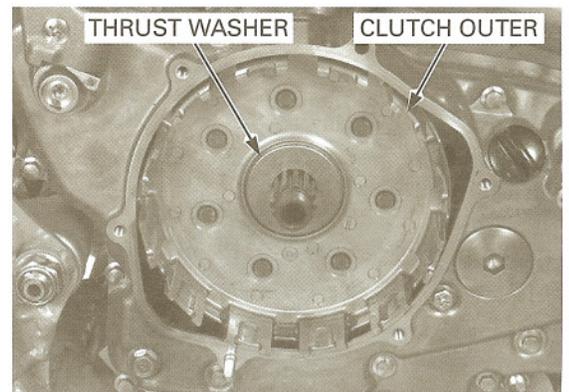
- lock nut



- lock washer
- thrust washer
- clutch center

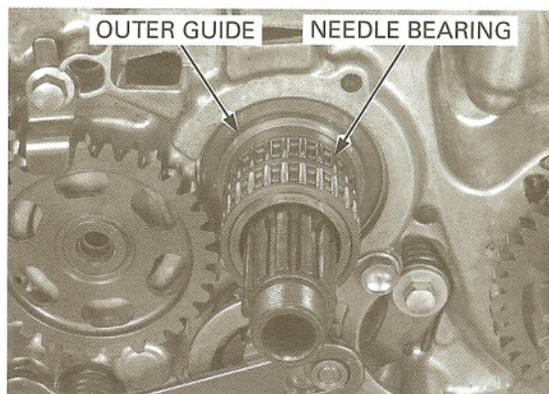


- thrust washer
- right crankcase cover (page 11-5)
- clutch outer



CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

- needle bearing
- clutch outer guide



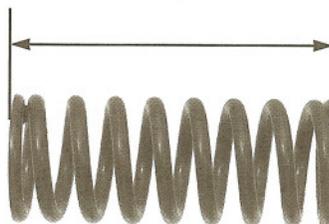
INSPECTION

Clutch spring

Replace the clutch springs as a set.

Measure the clutch spring free length.

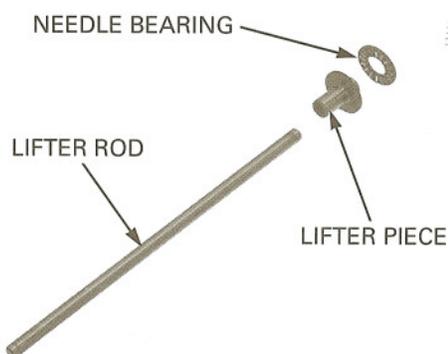
SERVICE LIMIT: 44.7 mm (1.76 in)



Clutch lifter piece/bearing/rod

Check the clutch lifter piece and needle bearing for wear or damage.

Check the clutch lifter rod for bends or damage.



Clutch disc

Replace the clutch discs and plates as a set.

Check the clutch discs for signs of scoring or discoloration.

Measure the thickness of each disc.

SERVICE LIMITS: Disc A: 2.85 mm (0.112 in)

Disc B: 3.15 mm (0.124 in)

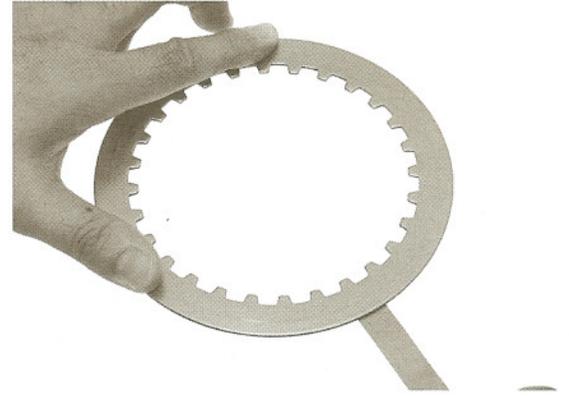


Clutch plate

Replace the clutch discs and plates as a set.

Check the plate for discoloration. Check the clutch plate for warpage on a surface plate using a feeler gauge.

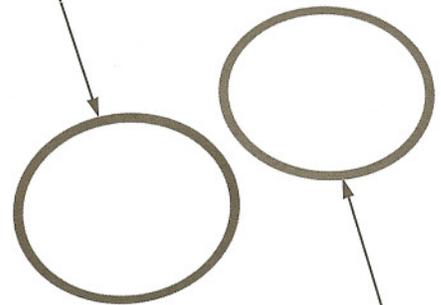
SERVICE LIMIT: 0.15 mm (0.006 in)



Judder spring/spring seat

Check the judder spring and seat for damage or warpage.

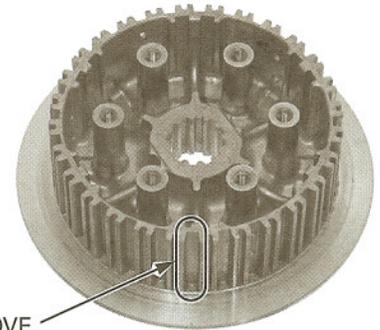
JUDDER SPRING



SPRING SEAT

Clutch center

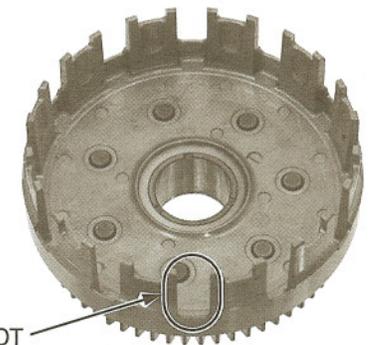
Check the grooves of the clutch center for damage or wear caused by the clutch plates. Replace if necessary.



GROOVE

Clutch outer

Check the slots in the clutch outer for nicks, cuts or indentations made by the clutch discs. Check the primary driven gear teeth for wear or damage.

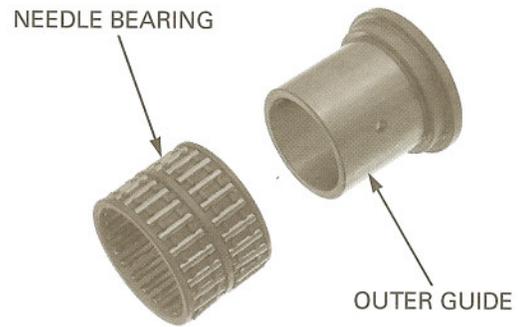


SLOT

CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Clutch outer guide/bearing

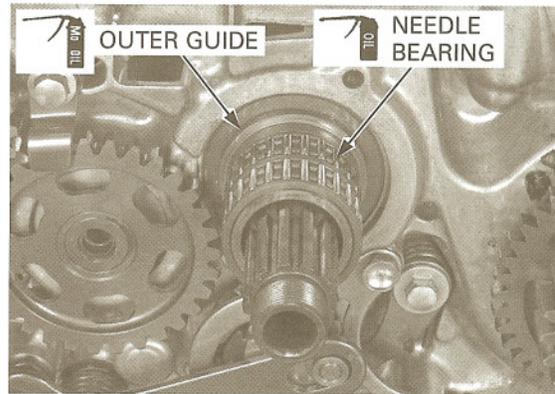
Check the clutch outer guide and needle bearing for wear or damage.



ASSEMBLY

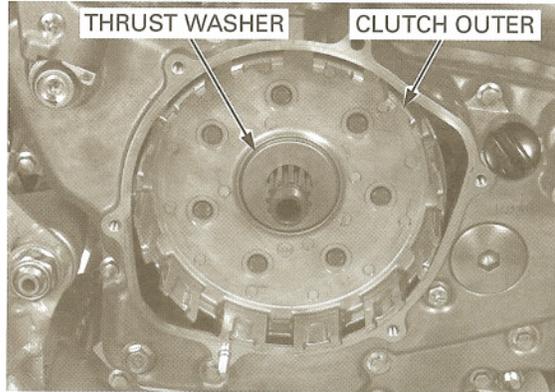
Apply molybdenum oil solution to the sliding surface of the clutch outer guide and install it onto the mainshaft.

Apply transmission oil to the needle bearing and install it onto the clutch outer guide.



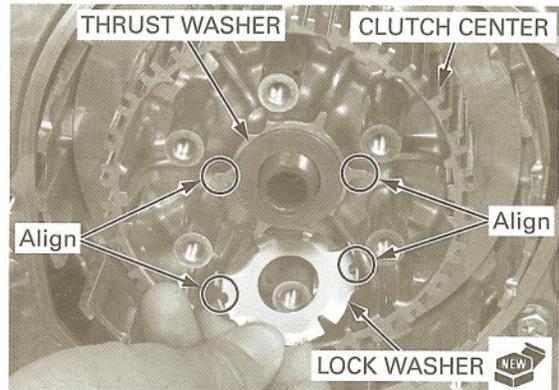
Install the clutch outer and thrust washer.

Install the right crankcase cover (page 11-22).



Install the clutch center and thrust washer onto the mainshaft.

Install a new lock washer by aligning the grooves with the ribs of the clutch center.



CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Install the clutch center lock nut.
Hold the clutch center using the special tool and tighten the lock nut.

TOOL:

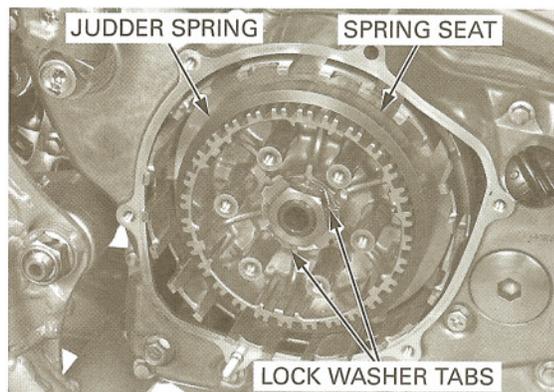
Clutch center holder 07724-0050002 or 07724-0050001 or equivalent commercially available in U.S.A.

TORQUE: 108 N·m (11.0 kgf·m, 80 lbf·ft)

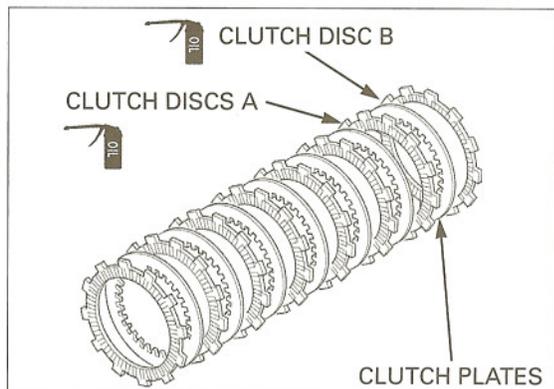


Bend the lock washer tabs against the clutch center lock nut.

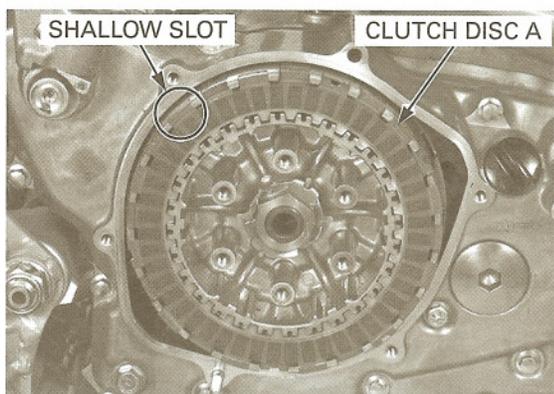
Install the spring seat.
Install the judder spring with the concaved side facing out.



Coat the clutch discs with transmission oil.
Install the clutch disc B.
Install the seven clutch plate and six clutch discs A alternately, starting with plate.

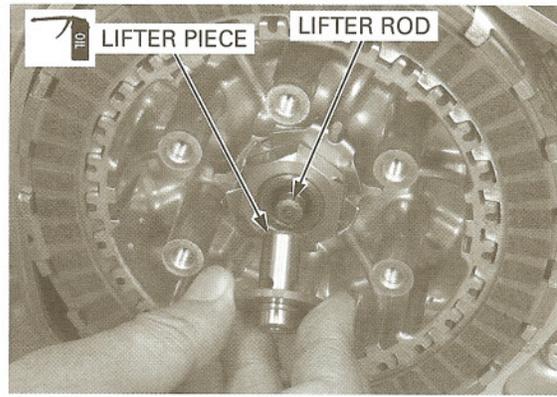


Install clutch disc A into the shallow slots in the clutch outer.

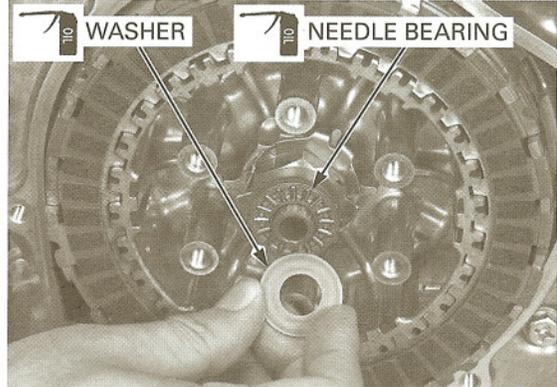


CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Install the clutch lifter rod into the mainshaft.
Coat the clutch lifter piece with transmission oil and install it into the mainshaft.

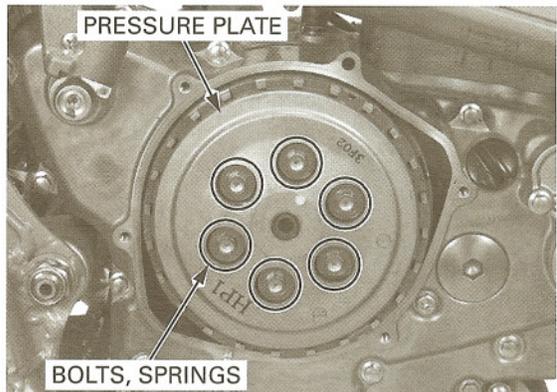


Coat the needle bearing and washer with transmission oil and install them onto the clutch lifter piece.

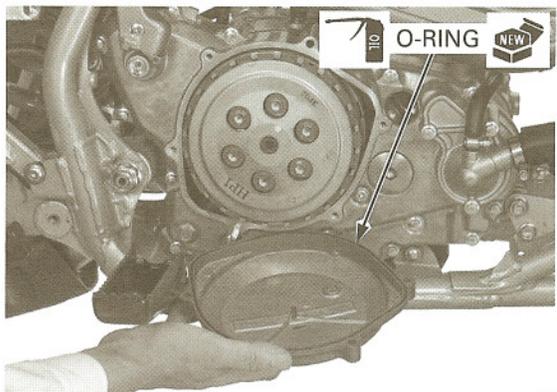


Install the clutch pressure plate.
Install the six clutch springs and bolts, and tighten the bolts.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

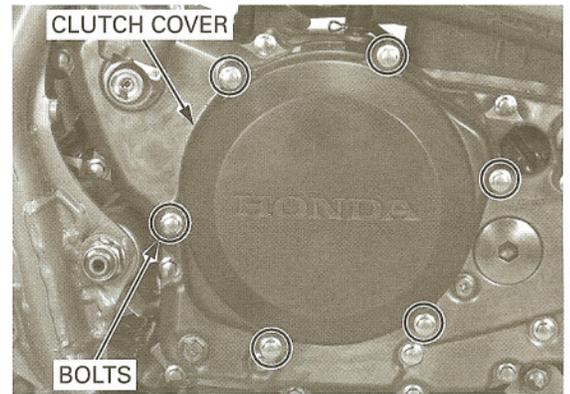


Coat a new O-ring with oil and install it into the clutch cover groove.



Install the clutch cover, and tighten the six bolts securely.

Install the brake pedal (page 15-27).
Fill the crankcase with the recommended transmission oil (page 4-15).



CLUTCH LIFTER ARM

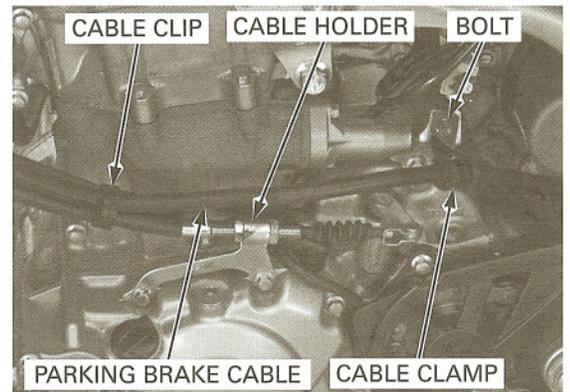
REMOVAL

Remove the clutch lifter rod (page 11-5).

Remove the bolt and parking brake cable clamp from the stay.

Remove the parking brake cable from the cable holder.

Remove the cable clip.



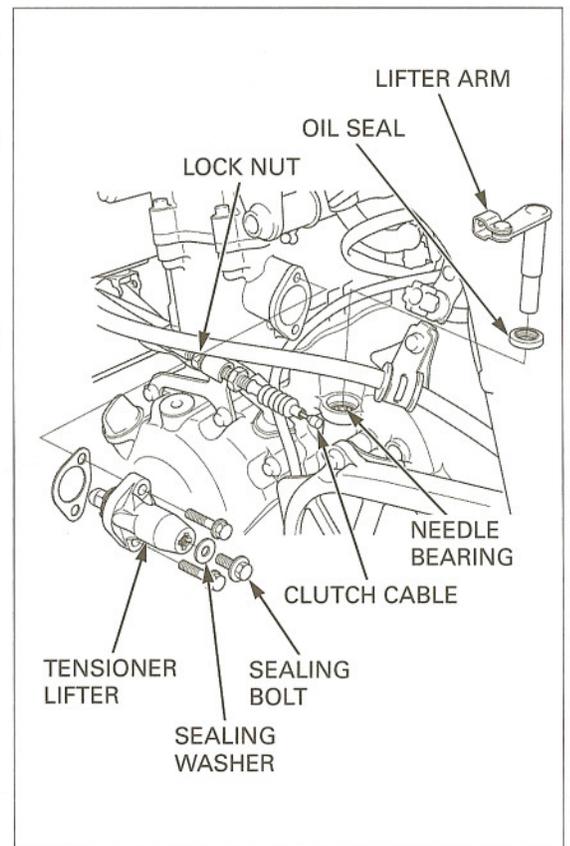
Remove the sealing bolt and washer.
Retract the cam chain tensioner lifter and hold it with a stopper tool.

Remove the two bolts, tensioner lifter and gasket.

Loosen the clutch cable lock nut and disconnect the cable from the clutch lifter arm.

Remove the clutch lifter arm.

Remove the oil seal.

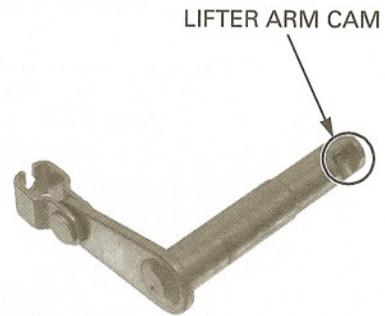


INSPECTION

Check the needle bearings for wear or damage and replace them if necessary.

CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Check the clutch lifter arm cam (rod contact area) for wear or damage.



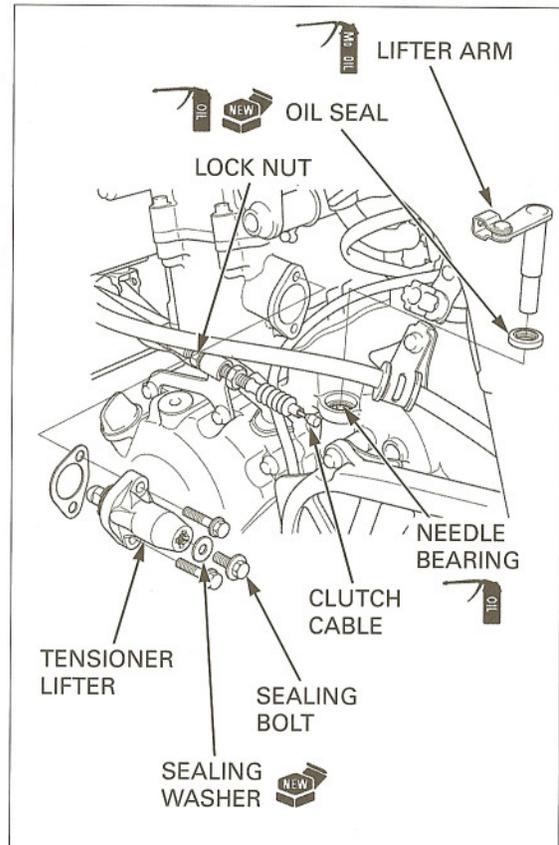
INSTALLATION

Apply oil to the needle bearings.
Apply oil to a new oil seal lip and install the seal.

Apply molybdenum oil solution to the clutch lifter arm cam (rod contact area) and install the lifter arm.

Connect the clutch cable to the clutch lifter arm and loosely tighten the lock nut.

Install the cam chain tensioner lifter with a new gasket and tighten the two bolts securely.
Remove the stopper tool, install the sealing bolt with a new sealing washer and tighten it securely.

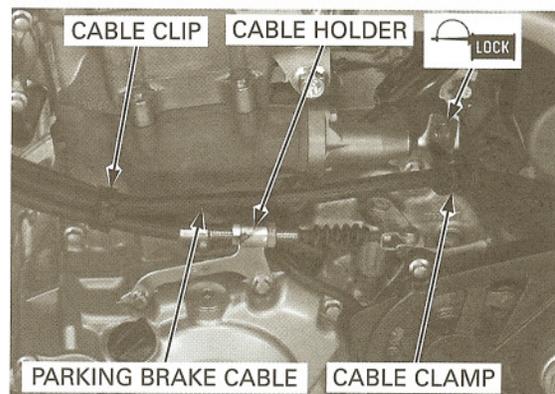


Install the parking brake cable into the cable holder.
Apply locking agent to the cable clamp bolt threads.
Install parking brake cable clamp onto the stay and tighten the bolt.

TORQUE: 9.8 N·m (1.0 kgf·m, 7 lbf·ft)

Install the cable clip.

Install the clutch lifter rod (page 11-10).
Adjust the clutch lever free play (page 4-26).



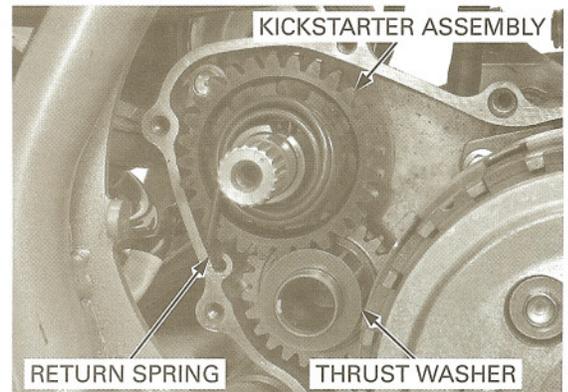
KICKSTARTER

REMOVAL

Remove the right crankcase cover (page 11-5).

Remove the thrust washer from the kickstarter first idle gear.

Unhook the kickstarter return spring end from the hole in the crankcase, and remove the kickstarter assembly.

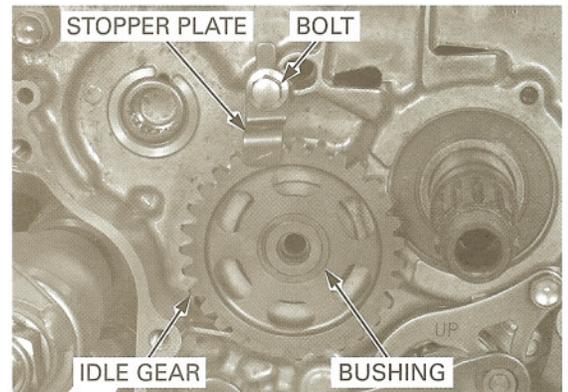


Remove the kickstarter first idle gear assembly.



Remove the clutch outer (page 11-5).

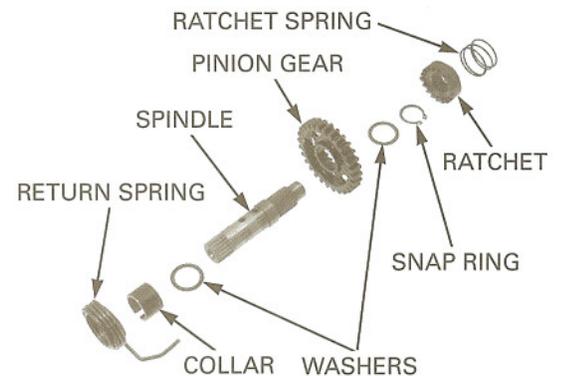
Remove the bolt and idle gear stopper plate.
Remove the kickstarter idle gear and bushing.



DISASSEMBLY

Remove the following from the kickstarter spindle:

- ratchet spring
- ratchet
- snap ring
- thrust washer
- pinion gear
- spring collar
- return spring
- thrust washer



INSPECTION

Check the ratchet spring and return spring for fatigue or damage.

Check the starter ratchet for wear or damage.

CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Check the kickstarter pinion gear and spindle for damage.

Measure the kickstarter pinion gear I.D.

SERVICE LIMIT: 22.05 mm (0.868 in)

Measure the kickstarter spindle O.D.

SERVICE LIMIT: 21.95 mm (0.864 in)



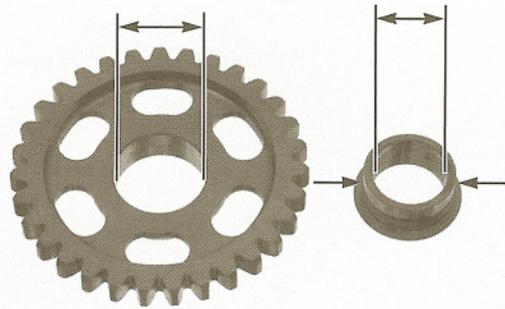
Check the kickstarter idle gear and bushing for damage.

Measure the starter idle gear I.D.

SERVICE LIMIT: 21.07 mm (0.830 in)

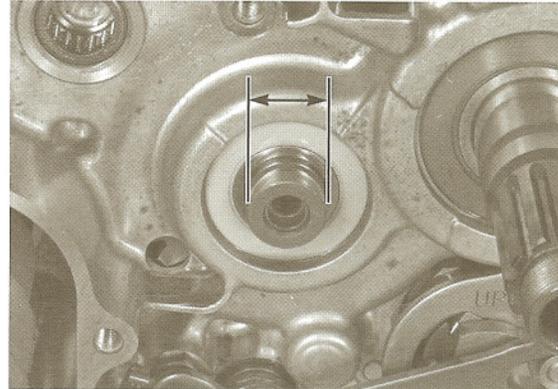
Measure the kickstarter idle gear bushing I.D. and O.D.

**SERVICE LIMITS: I.D.: 17.04 mm (0.671 in)
O.D.: 20.96 mm (0.825 in)**



Measure the countershaft O.D. at the kickstarter idle gear.

SERVICE LIMIT: 16.95 mm (0.667 in)

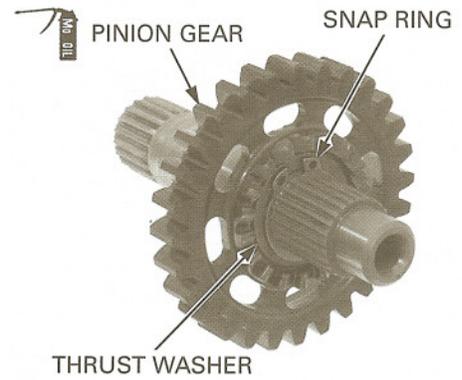


Check the kickstarter first idle gear assembly for wear or damage.

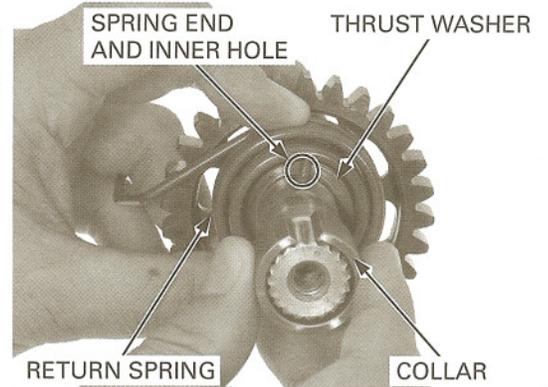


ASSEMBLY

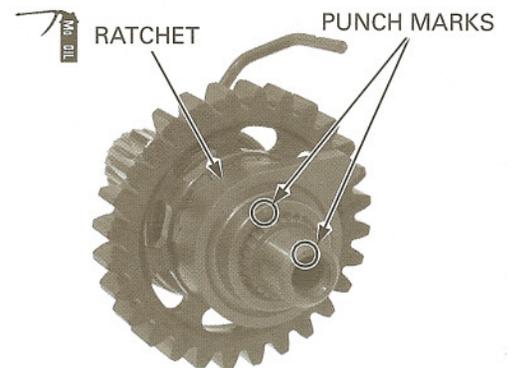
Apply molybdenum oil solution to the pinion gear inner surface.
Install the pinion gear and thrust washer onto the spindle.
Install the snap ring into the spindle groove with the chamfered (rolled) edge facing to the pinion gear.



Install the thrust washer onto the spindle.
Install the return spring and insert the spring end into the inner hole in the spindle.
Install the collar by aligning the groove with the return spring end.

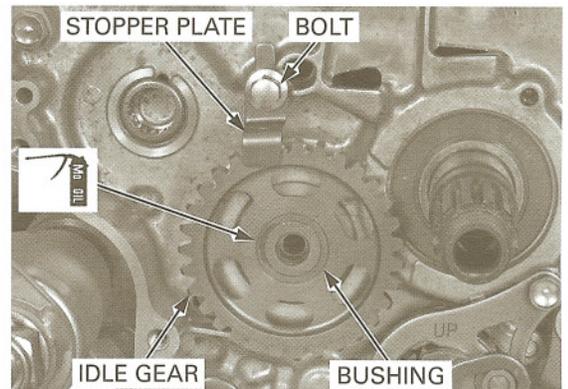


Apply molybdenum oil solution to the ratchet sliding surface.
Install the ratchet onto the spindle by aligning the punch marks on the ratchet and spindle.
Install the ratchet spring.



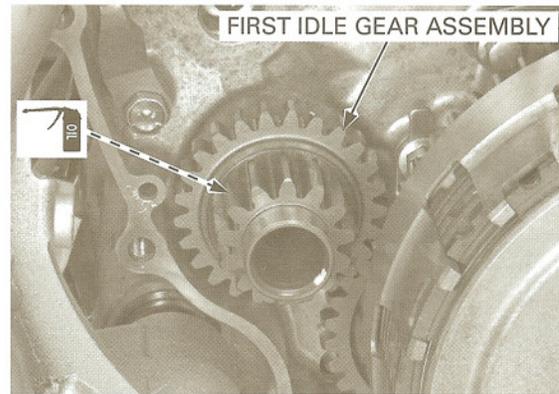
INSTALLATION

Apply molybdenum oil solution to the kickstarter idle gear inner surface and bushing whole surface.
Install the kickstarter idle gear bushing and gear.
Install idle gear stopper plate and tighten the bolt securely.
Install the clutch (page 11-10).

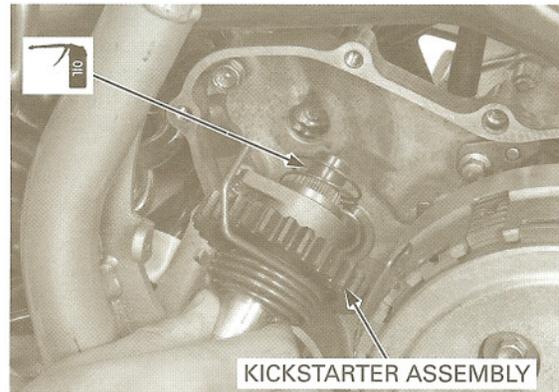


CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Apply oil to the kickstarter first idle gear bearing.
Install the kickstarter first idle gear assembly.

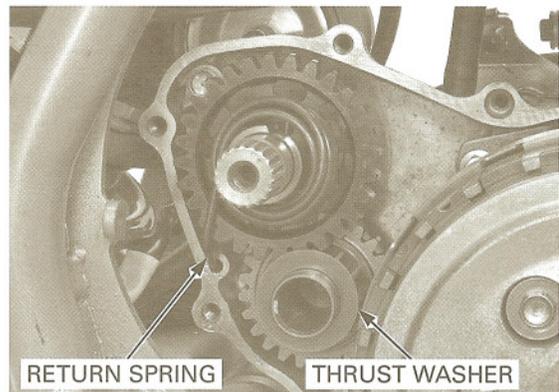


Apply oil to the kickstarter spindle bearing area.
Install the kickstarter assembly into the crankcase.



Hook the kickstarter return spring end to the hole in the crankcase as shown.
Install the thrust washer onto the kickstarter first idle gear.

Install the right crankcase cover (page 11-22).

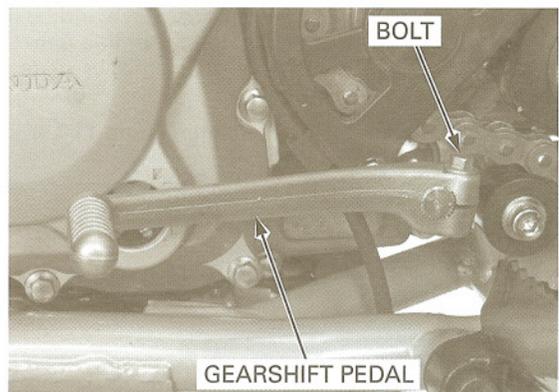


GEARSHIFT LINKAGE

REMOVAL

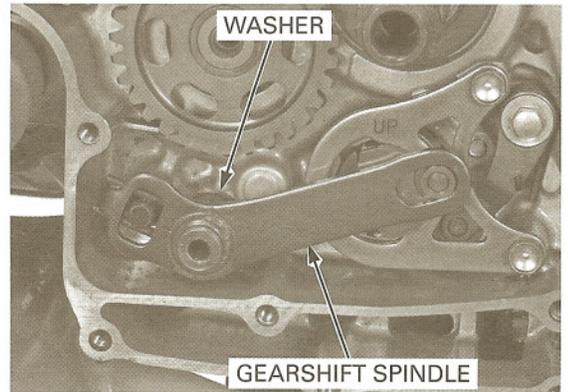
Remove the following:

- bolt and gearshift pedal
- right crankcase cover (page 11-5)
- clutch assembly (page 11-5)

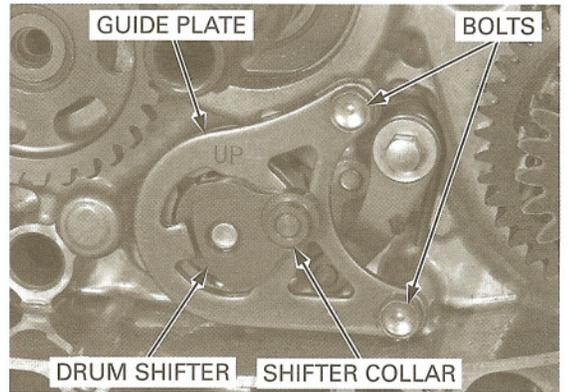


CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

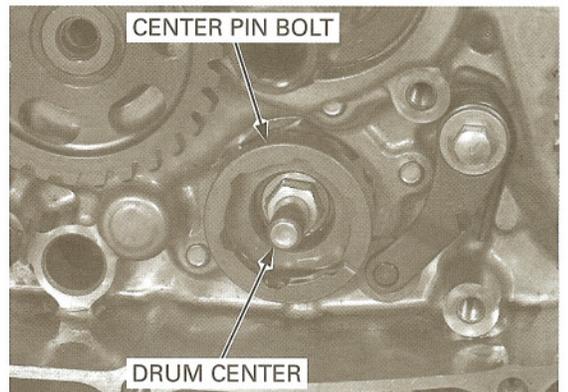
- gearshift spindle and thrust washer



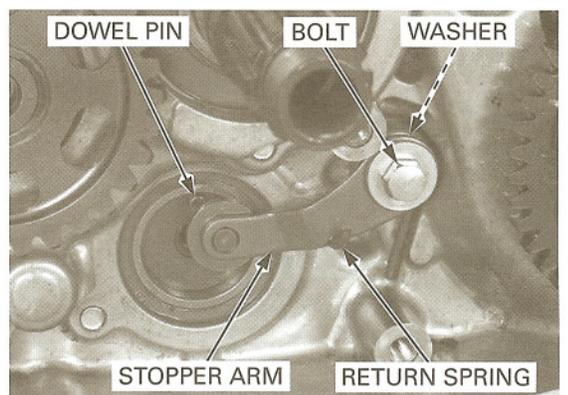
- shifter collar
- two bolts
- guide plate and drum shifter as an assembly



- center pin bolt
- gearshift drum center



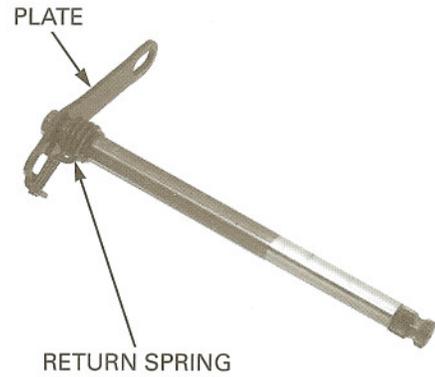
- bolt
- stopper arm
- washer
- return spring
- dowel pin



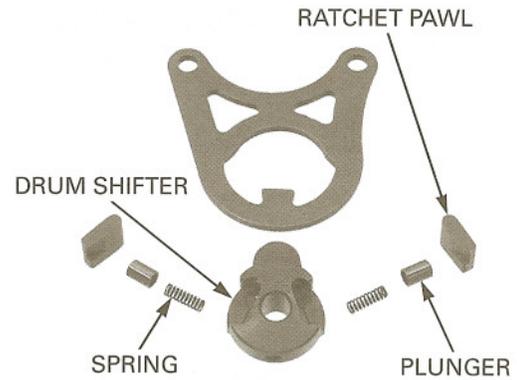
CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

INSPECTION

Check the gearshift spindle for wear or damage.
Check the spindle plate for wear, damage or deformation.
Check the return spring for fatigue or damage.



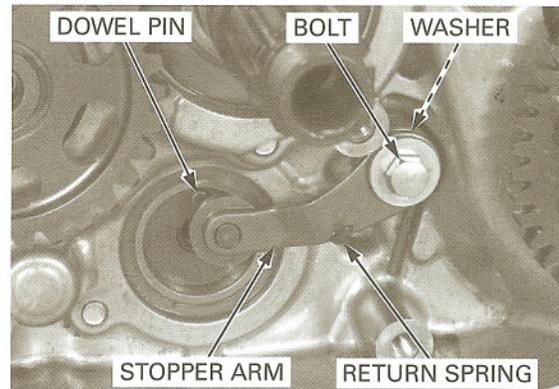
Check the ratchet pawls, plungers and drum shifter for wear or damage.
Check the plunger spring for fatigue or damage.



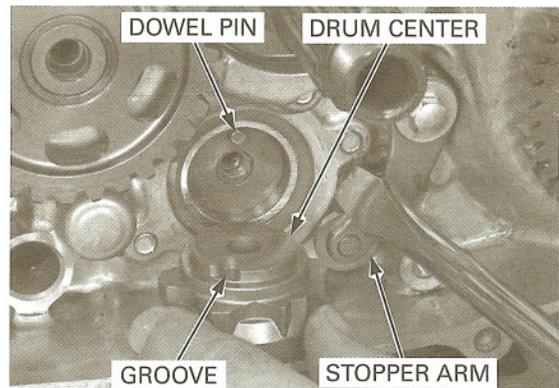
INSTALLATION

Install the dowel pin into the shift drum hole.
Install the return spring, washer, stopper arm and bolt, and tighten the bolt.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

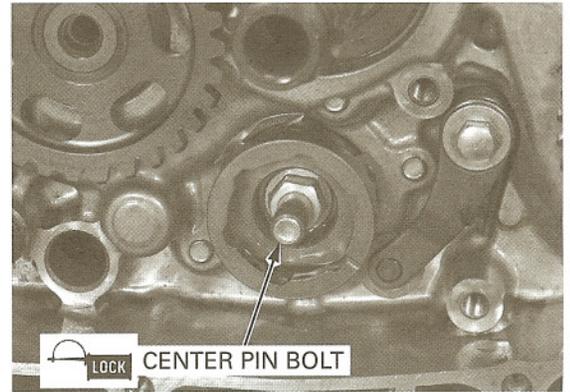


Hold the stopper arm using a screwdriver and install the gearshift drum center by aligning the pin groove with the dowel pin.

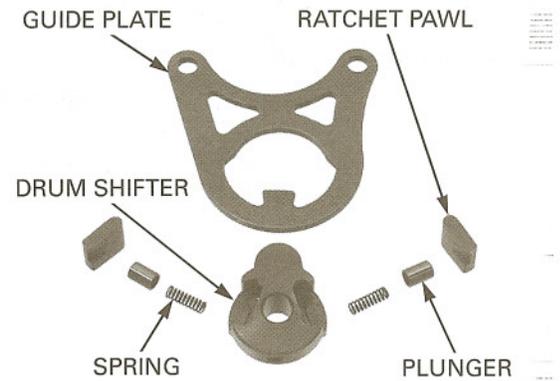


Apply locking agent to the center pin bolt threads.
Install the center pin bolt and tighten it.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)

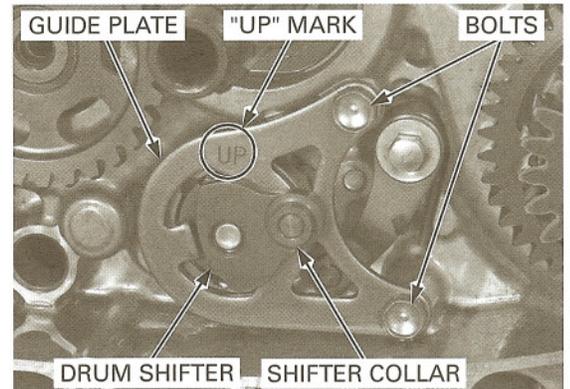


Install the plunger springs, plungers and ratchet pawls into the drum shifter, and set them into the guide plate.



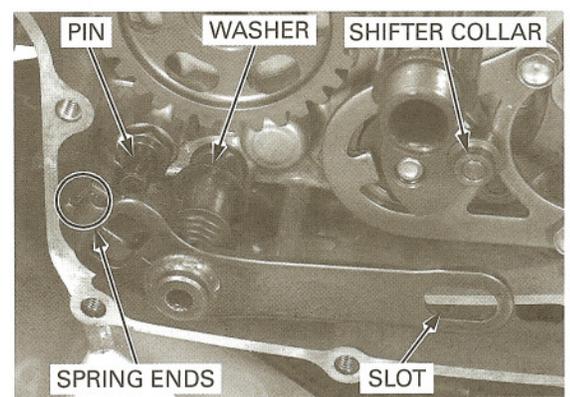
Install the guide plate/drum shifter assembly with the "UP" mark facing up and tighten the two bolts securely.

Install the shifter collar onto the drum shifter.



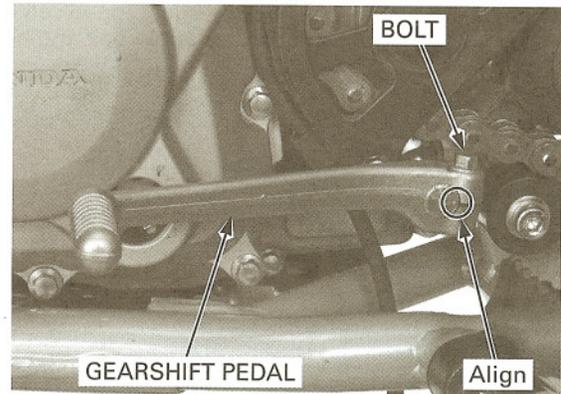
Install the thrust washer onto the gearshift spindle. Insert the spindle into the crankcase while aligning the return spring ends with the spring pin, and the slot with the shifter collar.

Install the clutch assembly (page 11-10).
Install the right crankcase cover (page 11-22).



CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Install the gearshift pedal by aligning the slit with the punch mark on the gearshift spindle.
Install the pedal pinch bolt and tighten it securely.

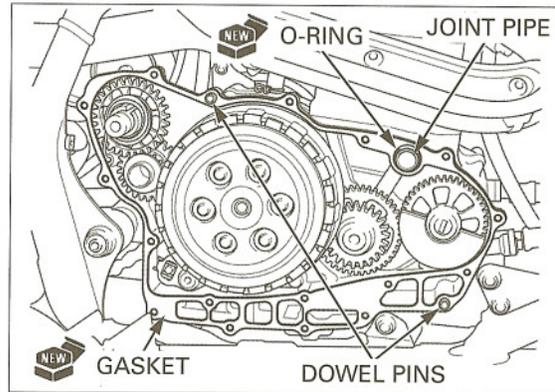


RIGHT CRANKCASE COVER INSTALLATION

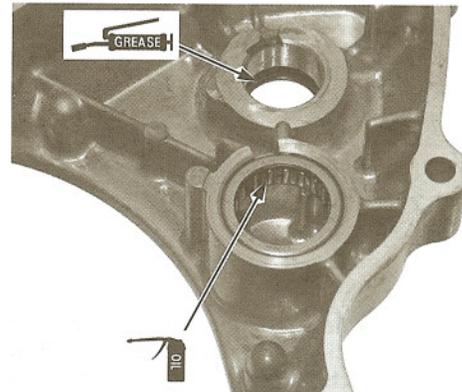
Be careful not to damage the mating surfaces.

Clean off any gasket material from the mating surfaces of the right crankcase and cover.

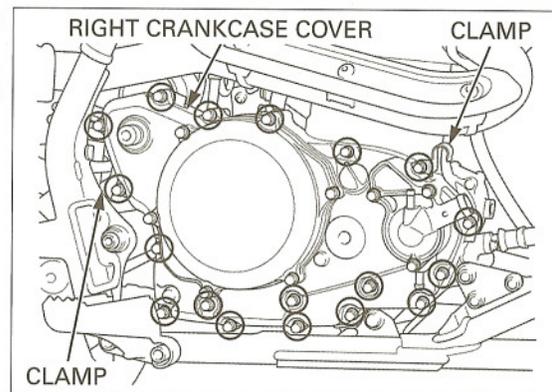
Install the water joint pipe, a new O-ring, dowel pins and a new gasket.



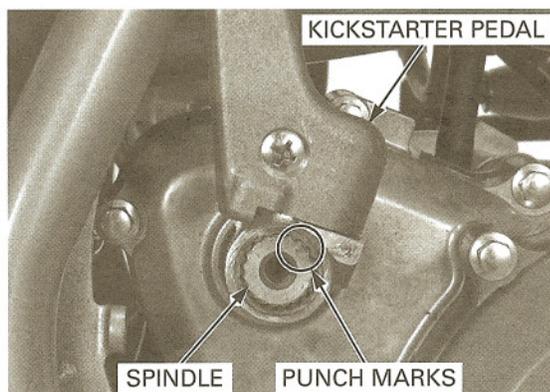
Apply grease to the kickstarter spindle oil seal lip.
Apply oil to the kickstarter first idle gear bearing.



Install the right crankcase cover while engaging the water pump shaft with the balancer shaft.
Install the wire clamp, hose clamp and eleven bolts, and tighten the bolts in a crisscross pattern in 2 or 3 steps.



Install the kickstarter pedal onto the kickstarter spindle by aligning the punch marks.



Install the socket bolt and tighten it.

TORQUE: 38 N·m (3.9 kgf·m, 28 lbf·ft)

Connect the brake rod to the brake arm.

Install the brake pedal (page 15-27).

Fill the crankcase with the recommended transmission oil (page 4-15).

Fill and bleed the cooling system (page 7-7).

