CLUTCH/GEARSHIFT LINKAGE
COMPONENT LOCATION

- 17 N·m (1.7 kgf-m, 13 lbf-ft)
- 10 N·m (1.0 kgf-m, 7 lbf-ft)
- 54 N·m (5.5 kgf-m, 40 lbf-ft)
- 5 N·m (0.5 kgf-m, 3.7 lbf-ft)
SERVICE INFORMATION

GENERAL

- This section covers service of the clutch (centrifugal clutch and change clutch) and gearshift linkage. These service can be done with the engine installed in the frame.
- Engine oil viscosity, oil level and the use of oil additives have an effect on clutch operation. Oil additives of any kind are specifically not recommended. When the clutch does not disengage or the motorcycle creeps with clutch disengaged, inspect the engine oil and oil level before servicing the clutch system.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>STANDARD</th>
<th>SERVICE LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disc thickness</td>
<td>2.00 – 2.20 (0.079 – 0.087)</td>
<td>1.82 (0.072)</td>
</tr>
<tr>
<td>Plate warpage</td>
<td>–</td>
<td>0.20 (0.008)</td>
</tr>
<tr>
<td>Clutch spring free height</td>
<td>5.01 (0.197)</td>
<td>4.63 (0.182)</td>
</tr>
<tr>
<td>Primary driven gear I.D.</td>
<td>23.000 – 23.021 (0.9055 – 0.9063)</td>
<td>23.07 (0.908)</td>
</tr>
<tr>
<td>Clutch outer guide I.D.</td>
<td>16.991 – 17.009 (0.6689 – 0.6696)</td>
<td>17.049 (0.6712)</td>
</tr>
<tr>
<td>Centrifugal clutch</td>
<td>22.959 – 22.980 (0.9039 – 0.9047)</td>
<td>22.940 (0.9031)</td>
</tr>
<tr>
<td>Mainshaft O.D. at clutch outer guide</td>
<td>16.966 – 16.984 (0.6680 – 0.6687)</td>
<td>16.87 (0.664)</td>
</tr>
<tr>
<td>Clutch drum I.D.</td>
<td>104.0 – 104.2 (4.09 – 4.10)</td>
<td>104.3 (4.11)</td>
</tr>
<tr>
<td>Clutch weight lining thickness</td>
<td>1.5 (0.06)</td>
<td>1.0 (0.04)</td>
</tr>
<tr>
<td>One-way clutch drum I.D.</td>
<td>42.000 – 42.020 (1.6535 – 1.6543)</td>
<td>42.04 (1.655)</td>
</tr>
<tr>
<td>One-way clutch roller O.D.</td>
<td>4.990 – 5.000 (0.1965 – 0.1969)</td>
<td>4.97 (0.196)</td>
</tr>
<tr>
<td>Primary drive gear I.D.</td>
<td>19.030 – 19.058 (0.7492 – 0.7503)</td>
<td>19.11 (0.752)</td>
</tr>
<tr>
<td>Crankshaft O.D. at primary drive gear</td>
<td>18.967 – 18.980 (0.7467 – 0.7472)</td>
<td>18.92 (0.745)</td>
</tr>
</tbody>
</table>

TORQUE VALUES

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Q'TY</th>
<th>THREAD DIA. (mm)</th>
<th>TORQUE N·m (kgf·m, lbf·ft)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clutch lifter plate bolt</td>
<td>4</td>
<td>6</td>
<td>12 (1.2, 9)</td>
<td>Apply oil to the threads and seating surface.</td>
</tr>
<tr>
<td>Clutch center lock nut</td>
<td>1</td>
<td>14</td>
<td>54 (5.5, 40)</td>
<td>Apply oil to the threads and seating surface.</td>
</tr>
<tr>
<td>Centrifugal clutch lock nut</td>
<td>1</td>
<td>14</td>
<td>54 (5.5, 40)</td>
<td>Apply oil to the threads and seating surface.</td>
</tr>
<tr>
<td>Gearshift cam plate bolt</td>
<td>1</td>
<td>6</td>
<td>17 (1.7, 13)</td>
<td>Apply locking agent to the threads: See page 10-29</td>
</tr>
<tr>
<td>Shift drum stopper arm bolt</td>
<td>1</td>
<td>6</td>
<td>10 (1.0, 7)</td>
<td>Apply locking agent to the threads: See page 10-29</td>
</tr>
<tr>
<td>Gearshift pedal pinch bolt</td>
<td>1</td>
<td>6</td>
<td>12 (1.2, 9)</td>
<td></td>
</tr>
<tr>
<td>Shift return spring pin</td>
<td>1</td>
<td>8</td>
<td>30 (3.1, 22)</td>
<td></td>
</tr>
</tbody>
</table>
CLUTCH/GEARSHIFT LINKAGE

TOOLS

<table>
<thead>
<tr>
<th>Tool Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clutch center holder</td>
<td>07HMB-HB70100</td>
</tr>
<tr>
<td>or 07923-HB3000B (U.S.A. only)</td>
<td></td>
</tr>
<tr>
<td>Universal Holder</td>
<td>07725-0030000</td>
</tr>
<tr>
<td>Lock nut wrench 20 x 24 mm</td>
<td>07716-0020100</td>
</tr>
<tr>
<td>Extension bar</td>
<td>07716-0020500</td>
</tr>
<tr>
<td>or equivalent commercially available in U.S.A.</td>
<td></td>
</tr>
</tbody>
</table>

TROUBLESHOOTING

Faulty clutch operation can usually be corrected by adjusting the clutch system.

**Clutch slips when accelerating**
- Incorrect clutch adjustment
- Worn clutch disc
- Weak clutch spring
- Faulty clutch weight
- Molybdenum or graphite additive

**Motorcycle creeps with clutch disengaged**
- Incorrect clutch adjustment
- Clutch plate warped
- Faulty clutch lifter
- Faulty clutch weight

**Hard to shift**
- Damaged gearshift spindle
- Damaged stopper plate and pin
- Loose stopper plate bolt
- Incorrect clutch adjustment
- Loose gearshift cam plate bolt

**Transmission jumps out of gear**
- Damaged stopper arm
- Damaged gearshift cam plate
- Loose gearshift cam plate bolt

**Gearshift pedal will not return**
- Weak or broken gearshift spindle return spring
- Bent gearshift spindle
RIGHT CRANKCASE COVER

REMOVAL

Drain the engine oil (page 3-10).

Support the motorcycle securely with a hoist or equivalent.

Remove the main step (page 2-6).

When removing the kickstarter pedal, mark the pedal position to ensure the original location.

Remove the bolt [1] and kickstarter pedal [2].

Remove the bolts [1] in a crisscross pattern in several steps.

Be careful not to damage the mating surface.

Remove the right crankcase cover [2].

Remove the following:
- Clutch lever [1]
- Clutch lifter cam plate [2]
- Gasket [3]
- Dowel pins [4]

DISASSEMBLY

Remove the following:
- Clutch adjuster lock nut [1]
- Washer [2]
- O-ring [3]
- Clutch adjuster/lifter boss [4]
CLUTCH/GEARSHIFT LINKAGE

Remove the clutch adjuster bolt [1].

Remove the following:
- Snap ring [1]
- Clutch lifter boss [2]
- Spring [3]

KICKSTARTER SPINDLE OIL SEAL
Check that the kickstarter spindle oil seal [1] is in good condition, replace it if necessary.
If replacing the oil seal, install it until it is fully seated.

OIL PASSAGES
Blow open the oil passage of the right crankcase cover with compressed air.
Check the oil passage for any clogs.
ASSEMBLY

Make sure that the snap ring is firmly seated in the groove.

Install the following:
- Spring [1]
- Clutch lifter boss [2]
- Snap ring [3]

Install the clutch adjuster bolt [1].

Install the clutch adjuster/lifter boss [1] into the right crankcase cover aligning its boss with the hole in the crankcase cover. Apply oil to a new O-ring [2]. Install the O-ring onto the clutch adjuster/lifter boss.

Install the washer [1] and clutch adjuster lock nut [2]. Adjust the clutch system (page 3-17) after installing the right crankcase cover.
CLUTCH/GEARSHIFT LINKAGE

INSTALLATION

Apply grease to the kickstarter spindle oil seal [1] lips.

Clean the gasket mating surface of the crankcase and right crankcase cover, being careful not to damage them.


Install the clutch lifter cam plate [3] onto the clutch lifter bearing.

Install the clutch lever [4] onto the gearshift spindle while aligning the punch mark of the lever with index line of the gearshift spindle.

Apply engine oil to the gearshift spindle journal area.

Install the right crankcase cover [1] and tighten the right crankcase cover bolts [2] in a crisscross pattern in several steps.

Install the kickstarter pedal [1] to its original position as marked during removal.

Install and tighten the bolt [2].

Install the main step (page 2-6).

Fill the engine with recommended engine oil (page 3-10).

Make sure there are no oil leaks.

Check the clutch system adjustment (page 3-17).
CLUTCH

REMOVAL

NOTE:
• Clutch system can be serviced with the engine installed on the frame.

Remove the following:
  - Right crankcase cover (page 10-5)
  - Engine oil centrifugal filter cover (page 3-11)

Bend up the tab [1] of the lock washer to clear the lock nut [2] groove.

Install the special tool using proper bolts or screws.

TOOL:
[1] Clutch center holder 07HMB·HB70100 or 07923·HB3000B (U.S.A. only)

Remove the centrifugal clutch lock nut [2] using the special tools.

TOOLS:
[3] Lock nut wrench, 20 x 24 mm 07716-0020100
[4] Extension bar 07716-0020500
  or equivalent commercially available in U.S.A.

Remove the washer [1] and lock washer [2].

Remove the clutch weight assembly [1].
Remove the clutch lifter bearing [1].

Hold the clutch lifter plate [1] and remove the clutch center lock nut [2] using the special tools.

TOOLS:
[3] Universal holder 07725-0030000
[4] Lock nut wrench, 20 x 24 mm 07716-0020100
[5] Extension bar 07716-0020500
or equivalent commercially available in U.S.A.

Remove the washer [1].
Loosen the clutch lifter plate bolts [2].

Remove the two oil separator plate mounting bolts [1].
Remove the centrifugal clutch outer [1], change clutch [2] and oil separator plate [3] as an assembly.

Remove the collar [1] from the crankshaft.

CENTRIFUGAL CLUTCH
DISASSEMBLY/INSPECTION
ONE-WAY CLUTCH
Temporarily install the centrifugal clutch outer to the crankshaft.
Hold the crankshaft and turn the centrifugal clutch outer by hand.
Make sure that the centrifugal clutch outer only turns counterclockwise as shown and does not turn clockwise.
Remove the centrifugal clutch outer from the crankshaft.

Remove the snap ring [1] and retainer [2].
CLUTCH/GEARSHIFT LINKAGE

Be careful not to
lose the clutch
rollers and clutch
springs.

Remove the following:
- Rollers [1]
- Springs [2]
- One-way clutch inner [3]
- Washer [4]

Replace the clutch
rollers as a set.

Check the rollers [1] for excessive wear or damage.
Measure the one-way clutch roller O.D.

SERVICE LIMIT: 4.97 mm (0.196 in)

Replace the clutch
springs as a set.

Check the springs [2] for fatigue or damage.

Check the one-way clutch inner [1] for wear or damage.

CLUTCH OUTER/SUB-GEAR

Remove the spring retainer [1] and spring [2] by
carefully prying up on the retainer.
- Be careful not to lose the pin [3].
Remove the pin [1], snap ring [2] and sub-gear [3].
Check the sub-gear for wear or damage.

Check the sliding surfaces of the centrifugal clutch outer for excessive wear or damage.
Measure the one-way clutch drum I.D.
SERVICE LIMIT: 42.04 mm (1.655 in)
Check the inside of the centrifugal clutch drum for scratches or excessive wear.
Measure the centrifugal clutch drum I.D.
SERVICE LIMIT: 104.3 mm (4.11 in)

CLUTCH WEIGHT
Check the clutch weight assembly for damage.
Measure the clutch weight lining thickness.
SERVICE LIMIT: 1.0 mm (0.04 in)

Remove the E-clips [1].
CLUTCH/GEARSHIFT LINKAGE

Remove the side plate [1], friction spring [2] and spring seal [3].

Alternately lift the clutch weights [1], then remove the clutch weights and springs [2].

Remove the damper rubbers [1] from the drive plate [2].

Check the drive plate bosses [1] for wear or damage. Check each clutch weight [2] for wear or damage.
PRIMARY DRIVE GEAR
Measure the primary drive gear [1] I.D.
SERVICE LIMIT: 19.11 mm (0.752 in)

CRANKSHAFT
Measure the crankshaft [1] O.D.
SERVICE LIMIT: 18.92 mm (0.745 in)

CENTRIFUGAL CLUTCH ASSEMBLY

- DAMPER RUBBER
- DRIVE PLATE
- SPRING
- CLUTCH WEIGHT
- SPRING SEAT
- E-CLIP SPRING SEAT
- SIDE PLATE
- SPRING RETAINER
- SPRING RETAINER
- SPRING RETAINER
- SPRING
- SPRING
- SPRING
- SNAP RING
- SNAP RING
- CLUTCH ROLLER
- CLUTCH INNER
- CENTRIFUGAL CLUTCH OUTER
- SUB-GEAR
- FRICTION SPRING
- WASHER
CLUTCH/GEARSIFT LINKAGE

CLUTCH WEIGHT
Install the damper rubbers [1] to the drive plate [2].

Hook the springs [1] to the clutch weights [2] so that their open ends facing the drive plate side.
Install the clutch weights and springs onto the drive plate as shown.


Install the new E-clips [1] while compressing the side plate [2].
CLUTCH OUTER/SUB-GEAR

Install the sub-gear [1] by aligning its hole and primary drive gear cut-out.

Check that the snap ring is seated in the groove.

Be careful not to lose the pin.

Install the snap ring [2].

Install the pin [3].

Insert the bent end of the spring [1] into the hole on the spring retainer [2].

Coil the spring into the spring retainer, making sure that the spring is set between the retainer and tab [3].

Install the spring retainer/spring [1] to the clutch outer while aligning the straight end of spring into the hole on the sub-gear [2] and aligning the retainer groove with the pin.

Check the sub-gear [1] operation by moving it and make sure that it returns without binding.
ONE-WAY CLUTCH

Install the washer [1] and one-way clutch inner [2] into the centrifugal clutch outer.

Install the springs [1] and rollers [2] as shown.

Install the retainer [1].

Check that the snap ring is seated in the groove.

Install the snap ring [2] into the groove of the one-way clutch outer securely.

Temporarily install the centrifugal clutch outer to the crankshaft.

Hold the crankshaft and turn the centrifugal clutch outer by hand.

Make sure that the centrifugal clutch outer only turns counterclockwise as shown and does not turn clockwise.

Remove the centrifugal clutch outer from the crankshaft.
CHANGE CLUTCH DISASSEMBLY

Remove the clutch lifter plate assembly [1] and washer [2] from the clutch outer [3].

Remove the following:
- Four bolts [1]
- Clutch lifter plate [2]
- Spring [3]
- Clutch center [4]
- Clutch discs [5]
- Clutch plates [6]

Turn the clutch spring seat [1] until its tabs [2] are aligned with the slots [3] on the clutch lifter plate [4], then remove it.

CHANGE CLUTCH INSPECTION

CLUTCH LIFTER BEARING

Temporarily install the clutch lifter bearing [1] to the clutch lifter plate [2].

Turn the inner race of the clutch lifter bearing with your finger.
The bearing should turn smoothly and quietly.
Also check that the bearing outer race of the bearing fits tightly in the clutch lifter plate.
Replace the bearing if the inner race does not turn smoothly, quietly, or if the outer race fits loosely in the clutch lifter plate.
CLUTCH/GEARSHIFT LINKAGE

CLUTCH SPRING
Check the grooves and tabs of clutch spring [1] for damage.
Check the spring for fatigue or other damage.
Measure the clutch spring free height.
SERVICE LIMIT: 4.63 mm (0.182 in)

CLUTCH CENTER
Check the grooves [1] of the clutch center [2] for damage or wear caused by the clutch plates.
Replace if necessary.

CLUTCH DISC
Replace the clutch discs if they show signs of scoring or discoloration.
Measure the thickness of each clutch disc.
SERVICE LIMIT: 1.82 mm (0.072 in)

CLUTCH PLATE
Check each clutch plate for warpage on a surface plate using a feeler gauge.
SERVICE LIMIT: 0.20 mm (0.008 in)
CLUTCH OUTER/CLUTCH OUTER GUIDE
Check the primary driven gear teeth for wear or damage.
Check the slots of the clutch outer for damage or wear caused by the clutch discs.
Measure the primary driven gear I.D.
SERVICE LIMIT: 23.07 mm (0.908 in)
Measure the clutch outer guide I.D. and O.D.
SERVICE LIMITS:
   I.D.:  17.049 mm (0.6712 in)
   O.D.:  22.940 mm (0.9031 in)

MAINSHAFT
Measure the mainshaft [1] O.D. at clutch outer guide.
SERVICE LIMIT: 16.87 mm (0.664 in)
CLUTCH/GEARSHIFT LINKAGE

CHANGE CLUTCH ASSEMBLY

Replace the clutch discs and plates as a set.
Do not confuse the disc A with disc B.

Coat the clutch discs with oil.

Install the items in the following sequence:
- Clutch spring
- Clutch center
- Clutch disc A
- Clutch plate
- Clutch disc B (ID mark: Blue paint on a tab)
- Clutch plate
- Clutch disc A
- Pressure plate

Set the spring seat [1] with its chamfered edge [2] facing the clutch lifter plate [3] as shown while aligning its tab with the slot on the plate.

Turn the clutch spring seat about 45°.
Install the clutch lifter plate [1].
Loosely install the four bolts [2].
Align the tabs of the clutch discs.

Install the washer [1] onto the clutch outer [2].
Install the clutch center assembly [3] into the clutch outer.

**INSTALLATION**

Install the collar [1] onto the mainshaft.
Install the clutch outer guide onto the mainshaft.
Install the collar [3] onto the crankshaft.

Apply molybdenum disulfide oil to the primary drive gear inner surface.
CLUTCH/GEARSHIFT LINKAGE

Align the cut-outs of the primary drive gear and sub-gear as shown, then engage the primary drive/driven gears.

Install the change clutch [1], centrifugal clutch outer [2] and oil separator plate [3] as assembly.

Install and tighten the two oil separator plate mounting bolts [1].

Install the washer [1] onto the mainshaft.
Tighten the clutch lifter plate bolts [2] to the specified torque.
TORQUE: 12 N·m (1.2 kgf·m, 9 lb·ft)

Apply oil to the clutch center lock nut [1] threads and seating surface.
Install the clutch center lock nut.
Hold the clutch lifter plate and tighten the clutch center lock nut to the specified torque using the special tools.

TOOLS:
[2] Universal holder 07725-0030000
[3] Lock nut wrench, 20 x 24 mm 07716-0020100
[4] Extension bar 07716-0020500
or equivalent commercially available in U.S.A.

TORQUE: 54 N·m (5.5 kgf·m, 40 lb·ft)
Install the clutch lifter bearing [1].

Install the clutch weight assembly [1] into the clutch outer while aligning the splines of the clutch weight assembly and crankshaft.

Install a new lock washer [1] onto the crankshaft aligning its inner tab with the groove of the clutch weight assembly.

CLUTCH/GEARSHIFT LINKAGE

Apply oil to the centrifugal clutch lock nut [1] threads and seating surface.
Install the special tool using proper bolts or screws.

TOOL:
[2] Clutch center holder 07HMB-HB70100
or 07923-HB3000B (U.S.A. only)

Install and tighten the centrifugal clutch lock nut to the specified torque using the special tools.

TOOLS:
[3] Lock nut wrench, 20 x 24 mm 07716-0020100
[4] Extension bar 07716-0020500
or equivalent commercially available in U.S.A.

TORQUE: 54 N·m (5.5 kgf·m, 40 lbf·ft)

If any of the centrifugal clutch lock nut [1] groove is not aligned with the lock washer tab [2], further tighten the centrifugal clutch lock nut and align the centrifugal clutch lock nut groove with the lock washer tab.

Bend the lock washer tab against the centrifugal clutch lock nut groove.

Install the following:
- Engine oil centrifugal filter cover (page 3-11)
- Right crankcase cover (page 10-8)

GEARSHIFT LINKAGE

REMOVAL

Remove the clutch (page 10-9).

When removing the gearshift pedal, mark the pedal position to ensure the original position.

Remove the bolt [1] and gearshift pedal [2].

Clean the gearshift spindle [1] thoroughly to prevent the dirt or dust from entering the engine.
Remove the following:
- Shift drum stopper arm/bolt [1]
- Return spring [2]

Remove the bolt [1], gearshift cam plate [2] and shift drum side plate [3].

Remove the gearshift spindle [1] by holding down the gearshift arm [2] as shown.

Remove the side plate pins [1] and gearshift drum pins [2] from the gearshift drum [3].
CLUTCH/GEARSHIFT LINKAGE

INSPECTION
Check the gearshift spindle [1] for bend, wear or damage.
Check the gearshift arm spring [2] and return spring [3] for damage or fatigue.
Check the gearshift arm [4] for wear or damage.

Inspect the gearshift spindle oil seal [1] for deterioration or damage, replace if necessary.
If replacing the oil seal, install it until it is fully seated.

INSTALLATION
Apply grease to the gearshift spindle oil seal [1] lips.

Install the five gearshift drum pins [1] and two side plate pins [2] to the holes on the gearshift drum [3].
Install the gearshift spindle [1] so that the shift return spring pin [2] is located between both ends of the return spring [3] as shown.

Insert the gearshift spindle completely while holding down the gearshift arm [4] as shown.

Install the shift drum side plate [1] and gearshift cam plate [2] while aligning the holes on the plates with the side plate pins.

Apply locking agent (Three Bond 1322 or equivalent) to the gearshift cam plate bolt [3] as specified, then install and tighten it to the specified torque.

**TORQUE: 17 N·m (1.7 kgf·m, 13 lbf·ft)**

Apply locking agent (Three Bond 1322 or equivalent) to the shift drum stopper arm/bolt [1] as specified.

Set the return spring end [2] along the crankcase wall as shown.

Install the stopper arm/bolt, then tighten it to the specified torque.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**

Install the gearshift pedal [1] to its original position as marked during removal.

Install and tighten the bolt [2] to the specified torque.

**TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**

Install the clutch (page 10-23).