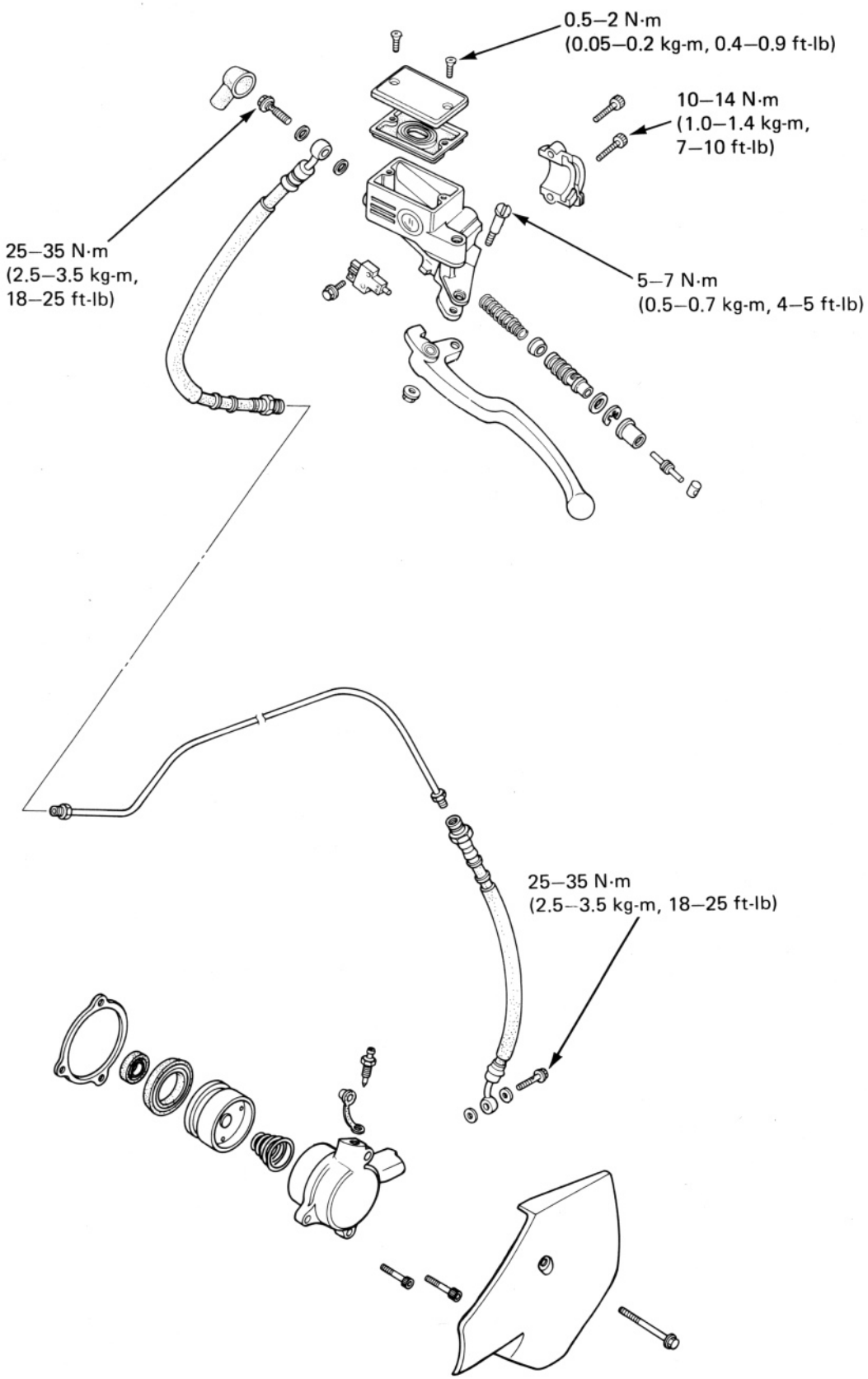
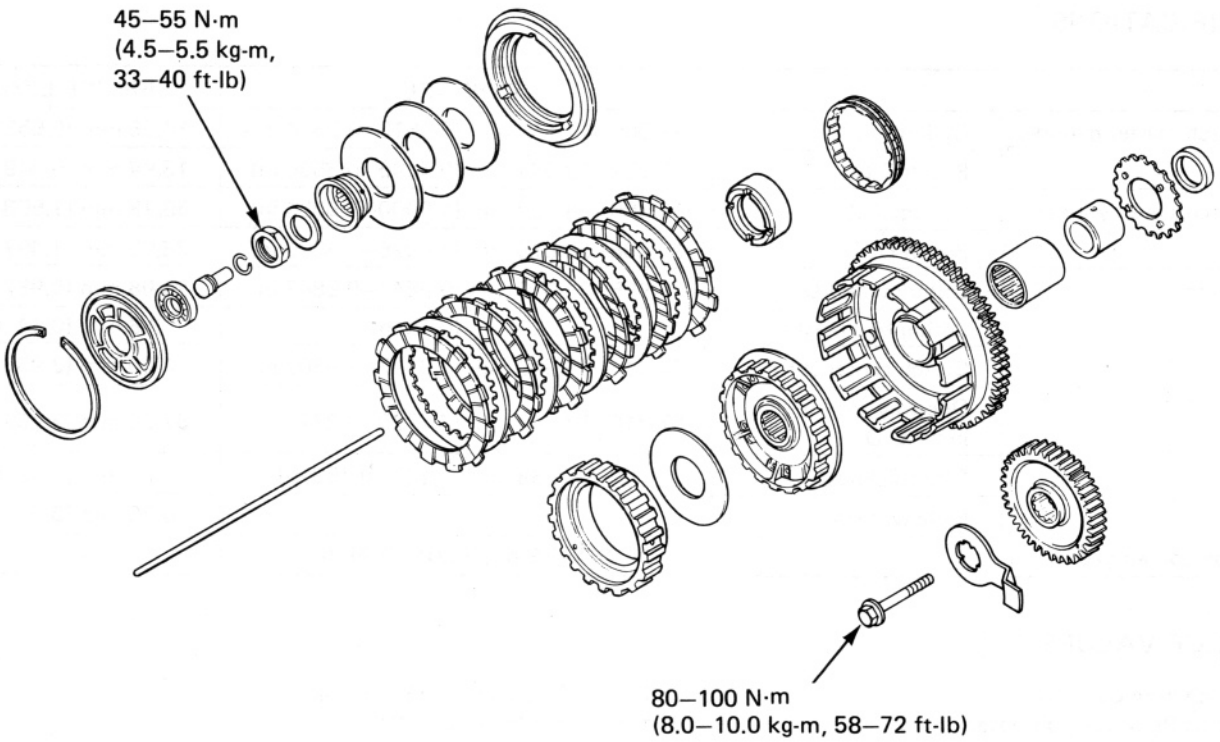
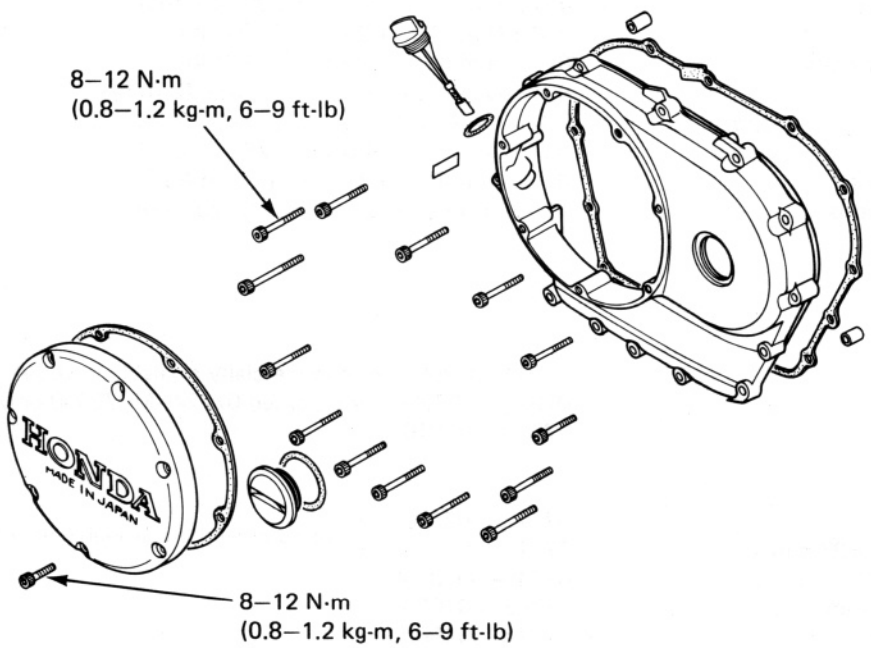

0.5–2 N·m
(0.05–0.2 kg-m, 0.4–0.9 ft-lb)
10–14 N·m
(1.0–1.4 kg-m,
7–10 ft-lb)
25–35 N·m
(2.5–3.5 kg-m,
18–25 ft-lb)
5–7 N·m
(0.5–0.7 kg-m, 4–5 ft-lb)
25–35 N·m
(2.5–3.5 kg-m, 18–25 ft-lb)

7. CLUTCH





SERVICE INFORMATION

GENERAL

- This section covers removal and installation of the clutch hydraulic system, clutch and primary driver gear.
- DOT-3 brake fluid is used for the hydraulic clutch and is referred to as clutch fluid in this section. Do not use other types of fluid as they are not compatible.
- Clutch maintenance can be done with the engine in the frame.

SPECIFICATIONS

		STANDARD	SERVICE LIMIT
Clutch master cylinder	Cylinder I.D.	14.000–14.043 mm (0.5512–0.5524 in)	14.06 mm (0.553 in)
	Piston O.D.	13.957–13.984 mm (0.5495–0.5506 in)	13.94 mm (0.549 in)
Clutch slave cylinder	Cylinder I.D.	38.100–38.162 mm (1.5000–1.5024 in)	38.18 mm (1.503 in)
	Piston O.D.	38.036–38.075 mm (1.4975–1.4990 in)	38.02 mm (1.497 in)
Clutch	Outer guide I.D.	24.995–25.012 mm (0.9841–0.9847 in)	25.08 mm (0.987 in)
	Spring free height	3.9 mm (0.15 in)	3.6 mm (0.14 in)
	Clutch center B I.D.	74.414–74.440 mm (2.9297–2.9307 in)	74.50 mm (2.933 in)
	One way clutch inner O.D.	57.710–57.840 mm (2.2720–2.2772 in)	57.60 mm (2.268 in)
	Disc thickness	3.72–3.88 mm (0.147–0.153 in)	3.1 mm (0.12 in)
	Plate warpage	–	0.30 mm (0.012 in)
Pulse coil air gap		0.3–0.9 mm (0.01–0.04 in)	–

TORQUE VALUES

Clutch hose oil bolts		25–35 N·m (2.5–3.5 kg-m, 18–25 ft-lb)
Clutch fluid reservoir cover		1–2 N·m (0.1–0.2 kg-m, 0.7–0.9 ft-lb)
Clutch lever pivot nut		5–7 N·m (0.5–0.7 kg-m, 4–5 ft-lb)
Clutch center lock nut		45–55 N·m (4.5–5.5 kg-m, 33–40 ft-lb)
Clutch cover bolts		8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)
Right crankcase cover bolts		8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)
Primary gear bolt		80–100 N·m (8.0–10.0 kg-m, 58–72 ft-lb)
Sub-frame bolts	Upper	70–80 N·m (7.0–8.0 kg-m, 51–58 ft-lb)
	Lower	35–45 N·m (3.5–4.5 kg-m, 25–33 ft-lb)
Exhaust pipe joint nuts		8–14 N·m (0.8–1.4 kg-m, 6–10 ft-lb)
Exhaust pipe clamp bolts		18–28 N·m (1.8–2.8 kg-m, 13–20 ft-lb)

TOOLS

Special

Snap ring pliers	07914–3230001 or commercially available in U.S.A.
Gear holder	07924–MC70001 or modified 07924–MC70000 or 07924–4150000
Shaft holder	07923–6890101

Common

Extension bar	07716–0020500 ┐
Lock nut wrench, 17 x 27 mm	07716–0020300 ┘ or commercially available in U.S.A.
Driver	07749–0010000
Attachment, 37 x 40 mm	07746–0010200
Pilot, 35 mm	07746–0040800

TROUBLESHOOTING

Clutch lever soft or spongy
1. Air bubbles in hydraulic system.
2. Low fluid level.
3. Hydraulic system leaking.

Clutch lever too hard
1. Sticking piston(s).
2. Clogged hydraulic system.

Clutch slips
1. Hydraulic system sticking.
2. Discs worn.
3. Spring weak.

Clutch will not disengage
1. Air bubbles in hydraulic system.
2. Low fluid level.
3. Hydraulic system leaking.
4. Hydraulic system sticking.
5. Plates warped.

Motorcycle creeps with clutch disengaged
1. Air bubbles in hydraulic system.
2. Low fluid level.
3. Hydraulic system leaking.
4. Hydraulic system sticking.
5. Plates warped.

Excessive lever pressure
1. Hydraulic system sticking.
2. Lifter mechanism damaged.

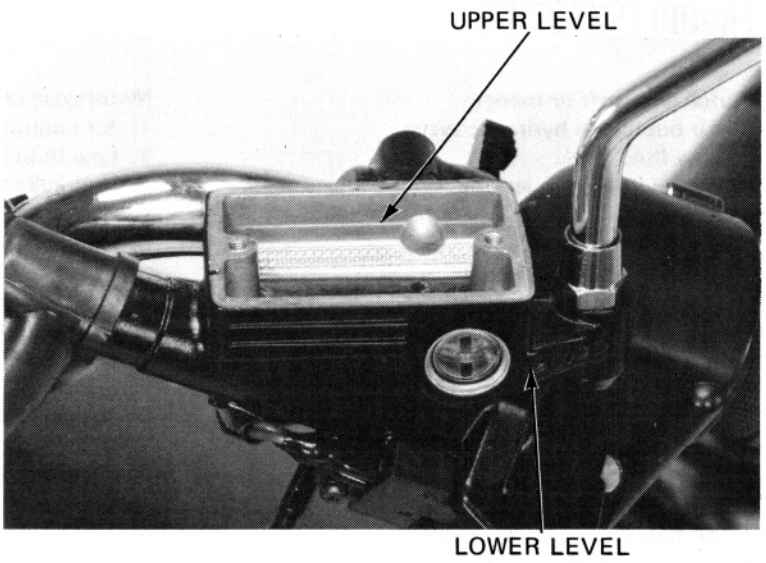
Clutch operation feels rough
1. Outer drum slots rough.
2. Sticking piston(s).

CLUTCH FLUID REPLACEMENT/ AIR BLEEDING

Check the fluid level with the fluid reservoir parallel to the ground.

CAUTION:

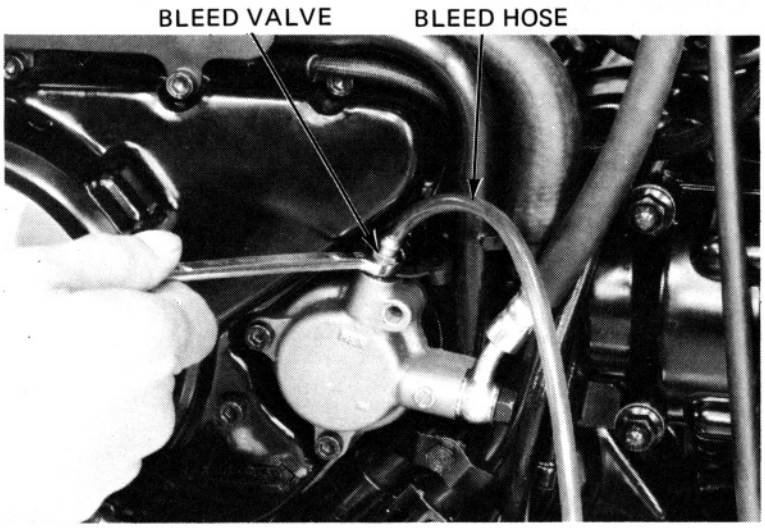
- *Install the diaphragm on the reservoir when operating the clutch lever. Failure to do so will allow clutch fluid to squirt out of the reservoir during clutch operation.*
- *Avoid spilling fluid on painted surfaces. Place a rag over the fuel tank whenever the system is serviced.*



CLUTCH FLUID DRAINING

Connect a bleed hose to the bleed valve.

Loosen the slave cylinder bleed valve and pump the clutch lever. Stop operating the lever when no more fluid flows out of the bleed valve.



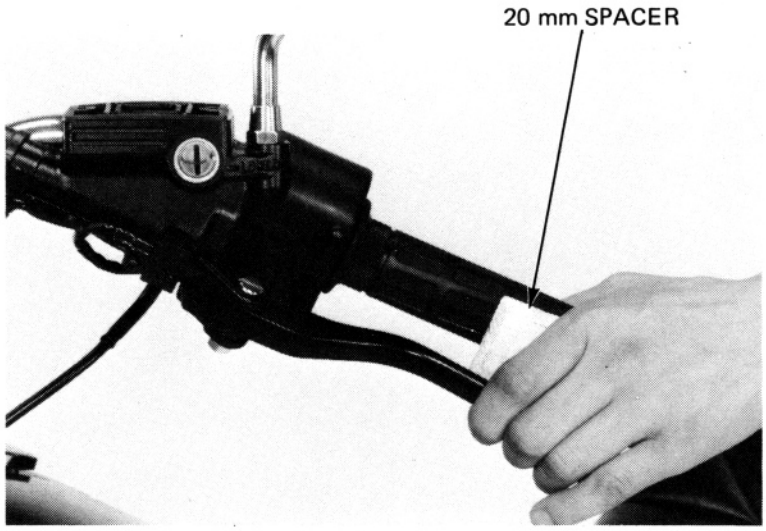
CLUTCH FLUID FILLING

NOTE:

Do not mix different types of fluid since they are not compatible.

Close the bleed valve, fill the reservoir, and install the diaphragm.

To prevent piston overtravel and clutch fluid seepage, keep a 20 mm (3/4 in) spacer between the handlebar grip and lever when bleeding the clutch system. Pump up the system pressure with the lever until there are no air bubbles in the fluid flowing out of the reservoir small hole and lever resistance is felt. Then bleed the system.



AIR BLEEDING

NOTE:

- Check the fluid level often while bleeding the clutch to prevent air from being pumped into the system.
- Use only DOT 3 brake fluid from a sealed container.
- Do not mix brake fluid types and never reuse the fluid which has been pumped out during bleeding, or the efficiency of the clutch system will be impaired.

1) Squeeze the clutch lever, open the bleed valve 1/2 turn, then close the valve

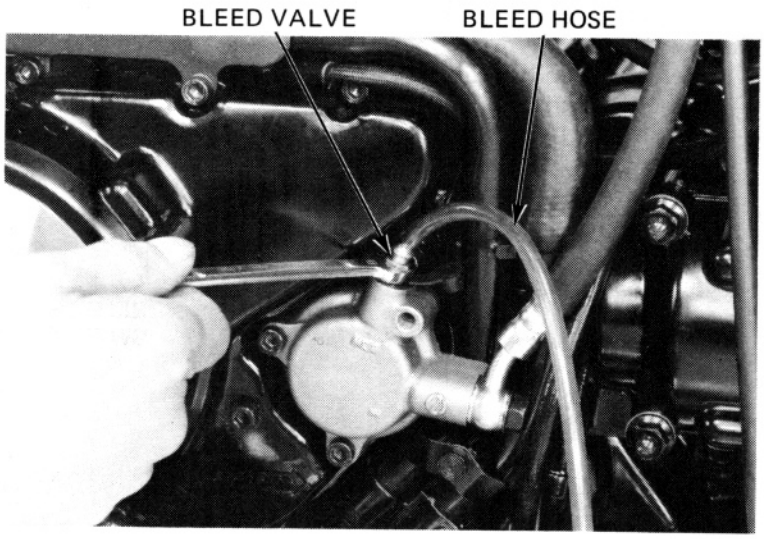
NOTE:

> Do not release the clutch lever until the bleed valve has been closed again.

2) Release the clutch lever slowly and wait several seconds after it reaches the end of its travel.

Repeat the above steps until bubbles cease to appear in the fluid at the end of the hose.

Fill the fluid reservoir up to between the upper and the lower levels.



CLUTCH MASTER CYLINDER

DISASSEMBLY

Drain clutch fluid from the hydraulic system.

Remove the rear view mirror and clutch lever.

Disconnect the clutch switch wires and remove the clutch hose.

CAUTION:

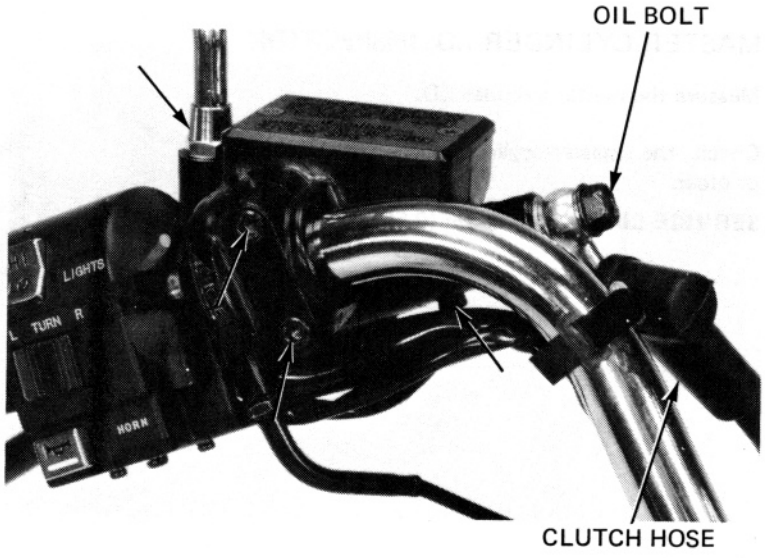
> *Avoid spilling clutch fluid on painted surfaces. Place a rag over the fuel tank whenever the clutch system is serviced.*

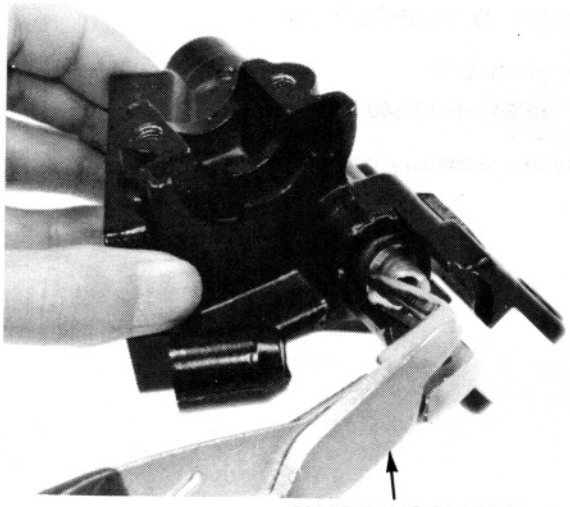
NOTE:

> When removing the oil bolt, cover the end of the hose to prevent contamination and secure the hose.

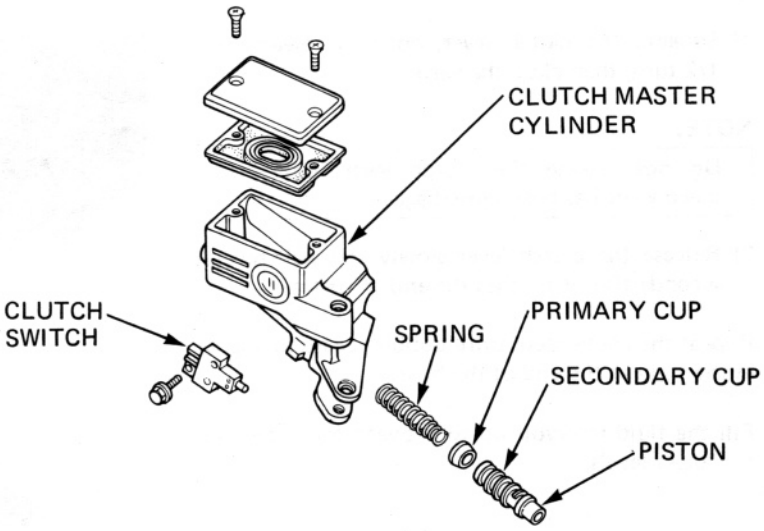
Remove the master cylinder.

Remove the push rod boot and circlip from the master cylinder body.





Remove the following:
- piston and secondary cup.
- primary cup and spring.
- clutch switch, if necessary.

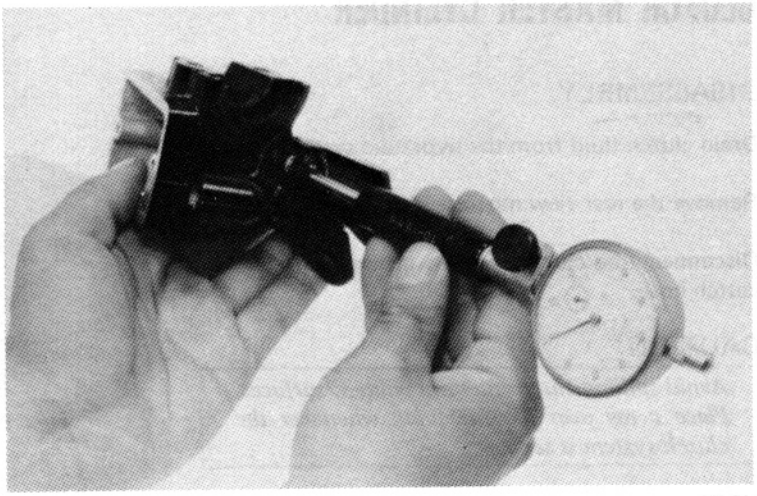


MASTER CYLINDER I.D. INSPECTION

Measure the master cylinder I.D.

Check the master cylinder for scores, scratches or nicks.

SERVICE LIMIT: 14.06 mm (0.553 in)

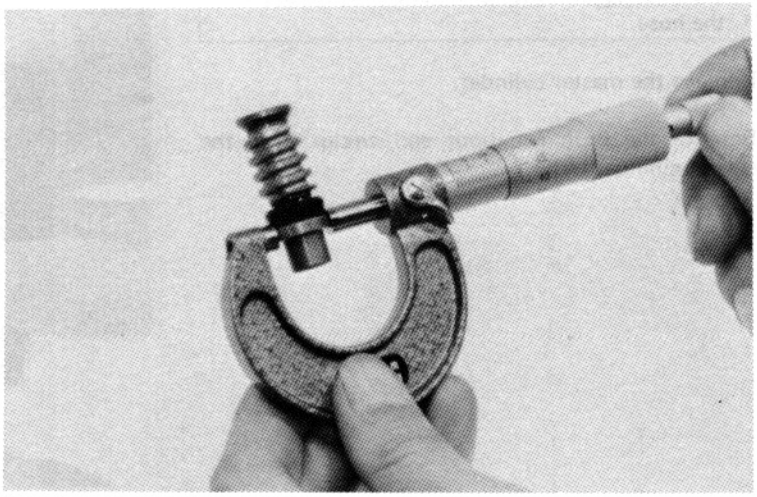


MASTER PISTON O.D. INSPECTION

Measure the master piston O.D.

SERVICE LIMIT: 13.94 mm (0.549 in)

Check the primary and secondary cups for damage before assembly.



ASSEMBLY

CAUTION:

Handle the master piston, spring, primary cup and secondary cup as a set.

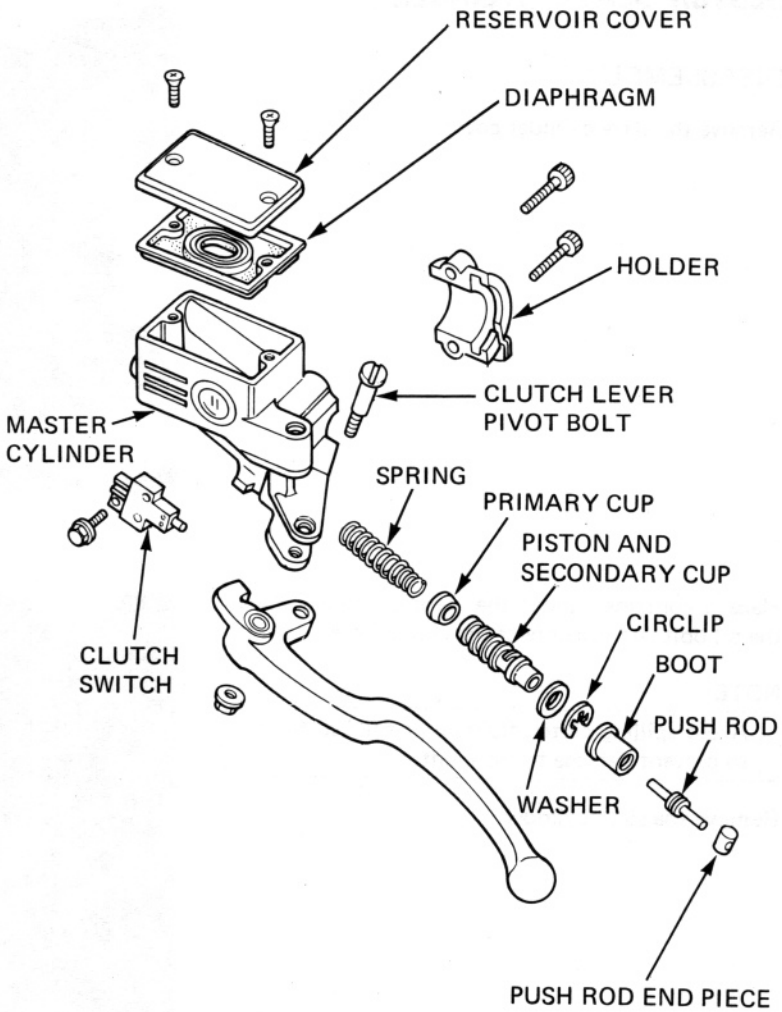
Coat all parts with clean brake fluid before assembly.

Install the spring, primary cup and piston.

CAUTION:

When installing the cups, do not allow the lips to turn inside out.

Install the circlip making sure it is seated firmly in the groove Then install the boot and push rod.
Install the clutch switch, if it was removed.

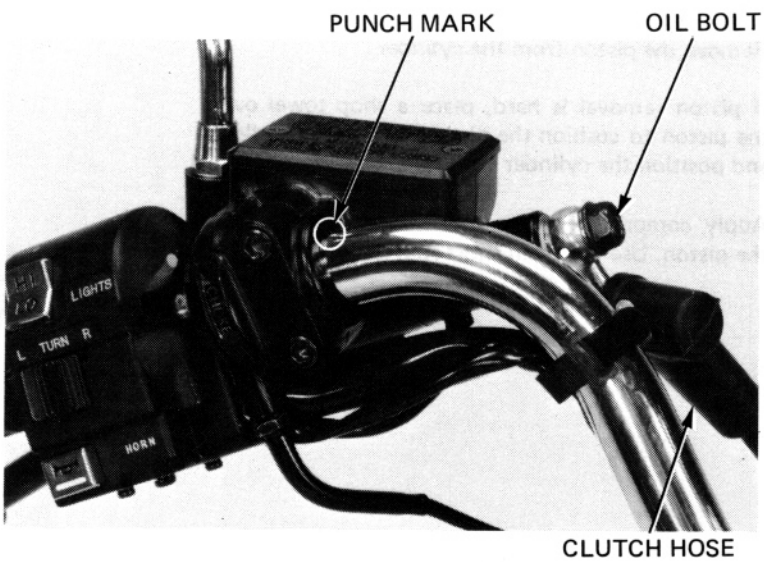


Place the master cylinder on the handlebar and install the holder and the two mounting bolts.
Align the end of the holder with the handlebar punch mark.
Tighten the top bolt first, then the bottom bolt.

Install the oil hose with the bolt and its two sealing washers.

Install the push rod end piece into the clutch lever hole and install the clutch lever.

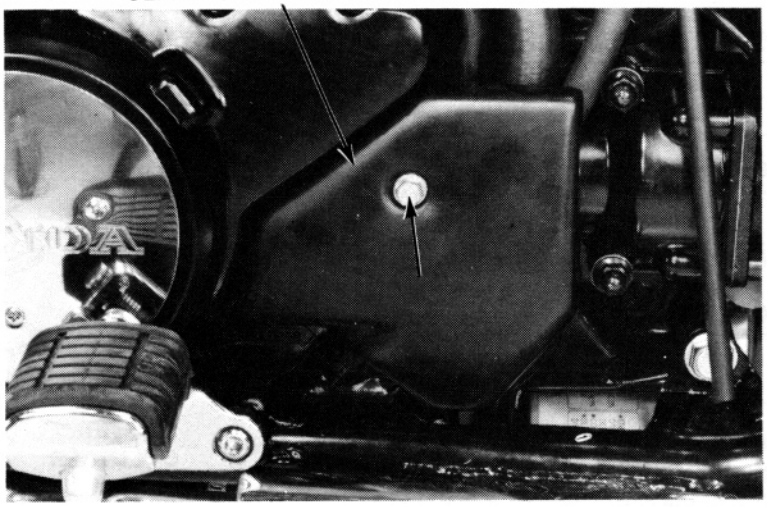
Connect the clutch switch wires to the switch terminals. Fill the reservoir and bleed the clutch system (page 7-4).



CLUTCH SLAVE CYLINDER

DISASSEMBLY

Remove the slave cylinder cover.

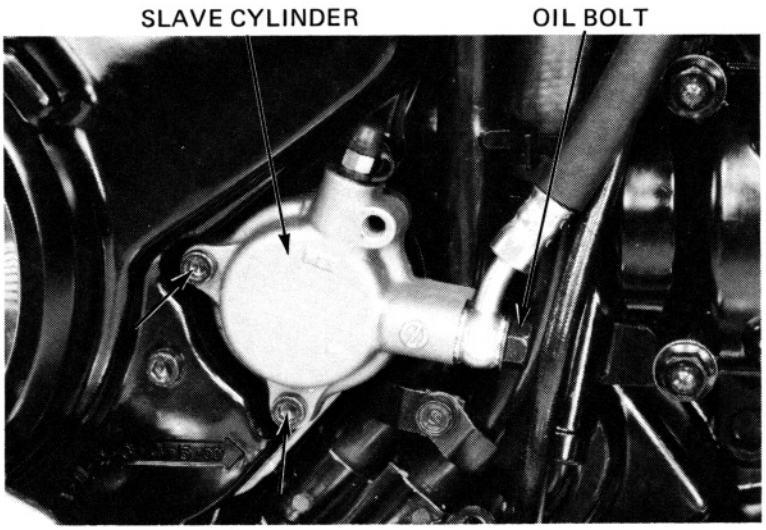


Place a container under the slave cylinder, remove the oil bolt and disconnect the clutch hose.

NOTE:

> Avoid spilling clutch fluid on painted surfaces to prevent damage to the paint.

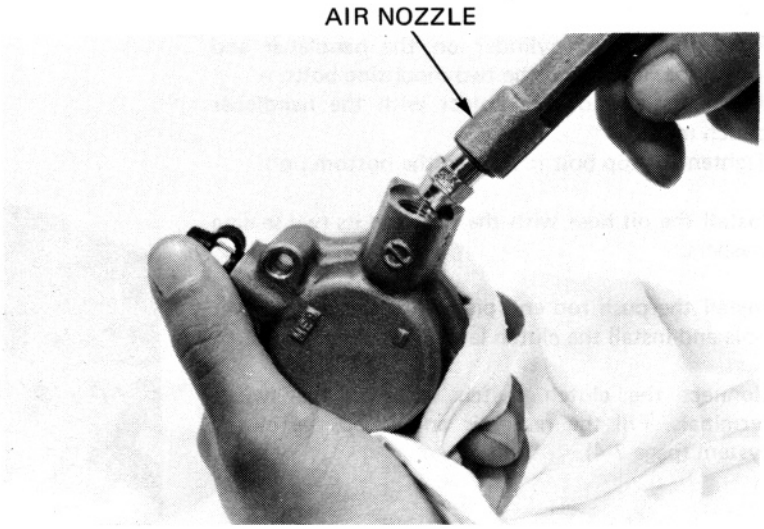
Remove the slave cylinder.



Remove the piston from the cylinder.

If piston removal is hard, place a shop towel over the piston to cushion the piston when it is expelled, and position the cylinder with the piston down.

Apply compressed air to the fluid inlet to remove the piston. Use the air in short spurts.

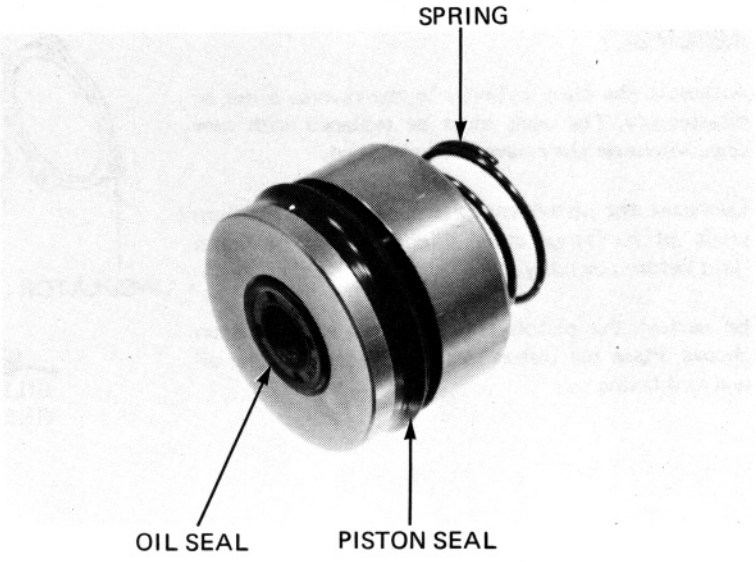


Remove the spring from the slave cylinder.

Remove the oil and piston seals.

Clean the piston groove with clutch fluid.

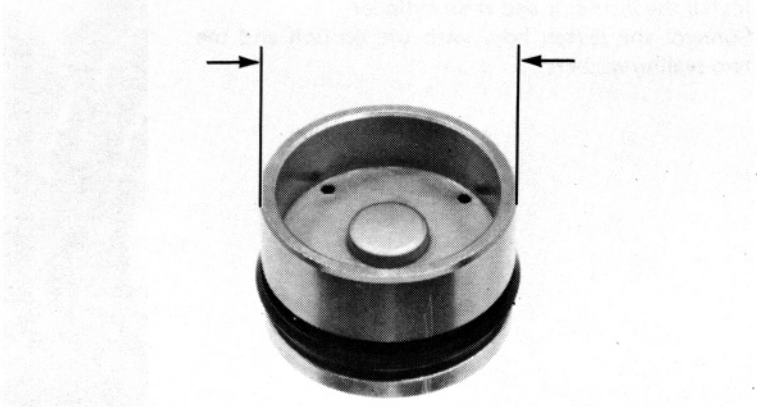
Check the piston spring for weakness or damage.



PISTON O.D. INSPECTION

Check the piston for scoring or scratches.
Measure the outside diameter of the piston with a micrometer.

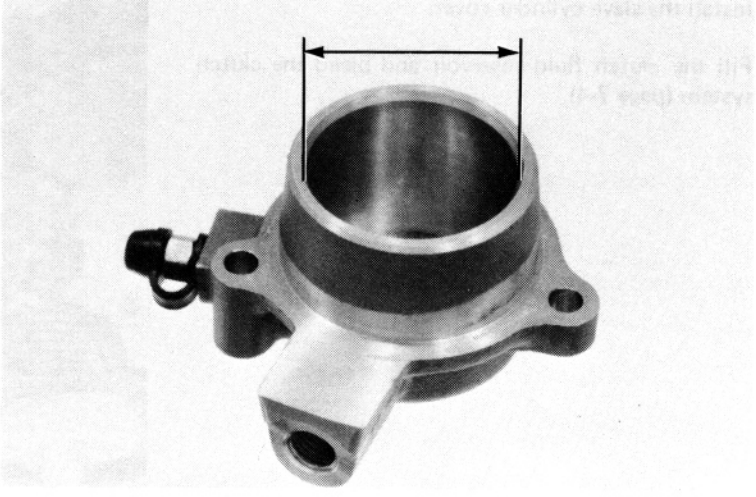
SERVICE LIMIT: 38.02 mm (1.497 in)



CYLINDER I.D. INSPECTION

Check the slave cylinder for scoring or scratches.
Measure the inside diameter of the cylinder bore.

SERVICE LIMIT: 38.18 mm (1.503 in)

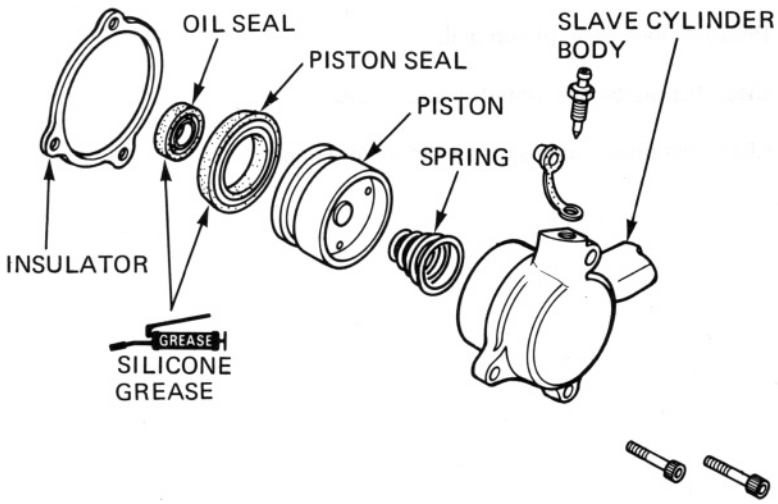


ASSEMBLY

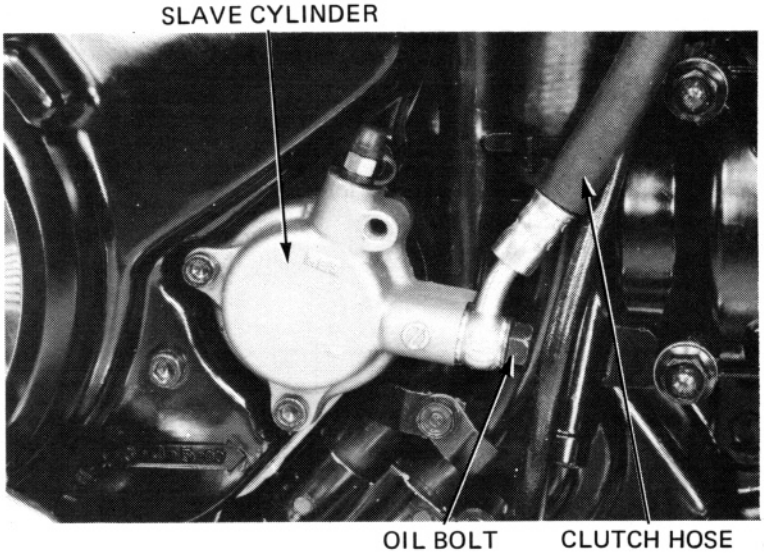
Assemble the slave cylinder in the reverse order of disassembly. The seals must be replaced with new ones whenever they have been removed.

Lubricate the piston and piston seal with a medium grade of Hi-Temperature silicone grease or brake fluid before assembly.

Be certain the piston seal is seated in the piston groove. Place the piston in the cylinder with the oil seal end facing out.

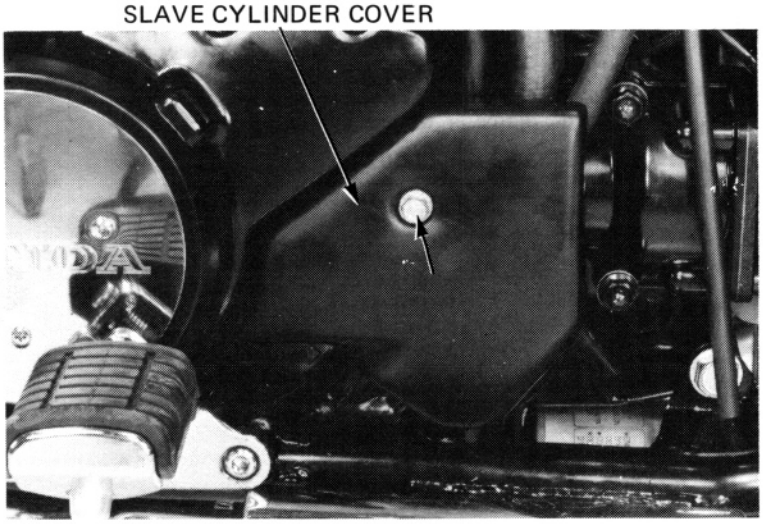


Install the insulator and slave cylinder.
Connect the clutch hose with the oil bolt and the two sealing washers.



Install the slave cylinder cover.

Fill the clutch fluid reservoir and bleed the clutch system (page 7-4).

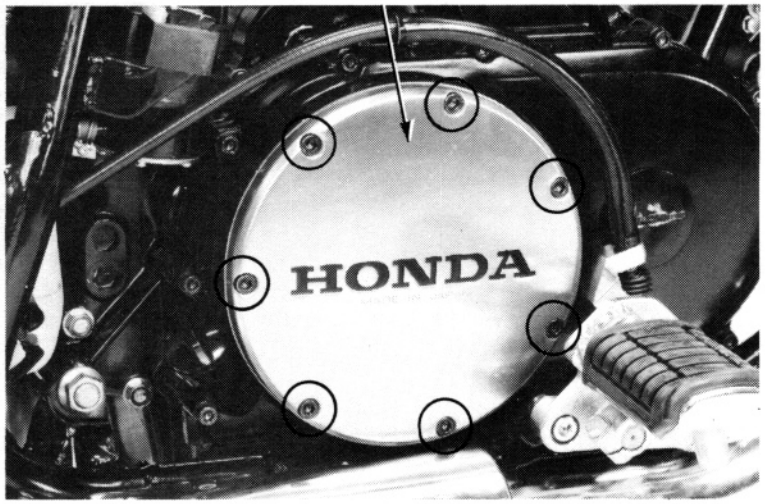


CLUTCH DISASSEMBLY

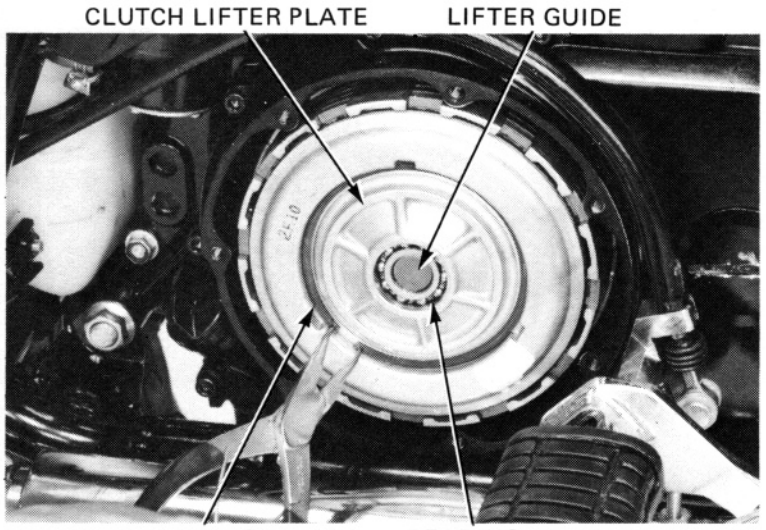
NOTE:

> All clutch components, except for the clutch outer, can be serviced by removing the clutch cover. The right crankcase cover does not need to be removed.

Drain the engine oil and remove the clutch cover and gasket.



Remove the snap ring, clutch lifter plate, bearing, lifter guide and lifter rod.



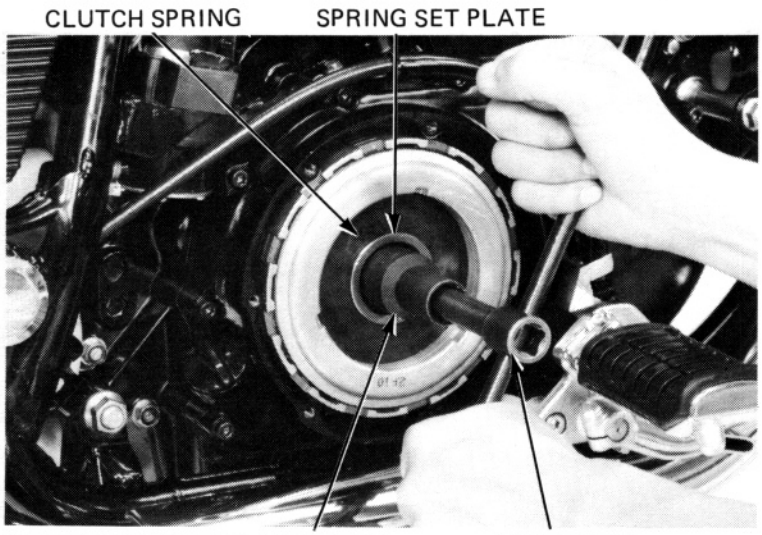
Shift the transmission into high gear and apply the rear brake.

NOTE:

> When the engine is not in the frame, shift the transmission into gear and use the MAINSHAFT HOLDER, P/N 07923–6890100, to hold the final shaft.

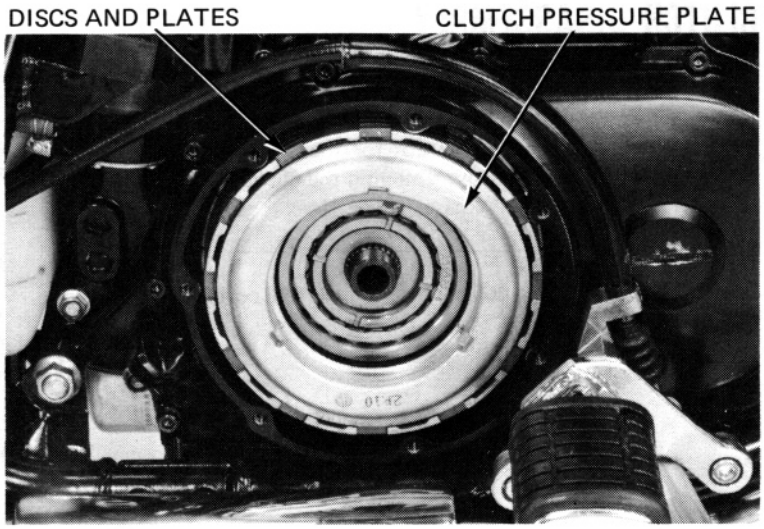
Remove the lock nut and lock washer.

Remove the clutch spring set plate, clutch spring and two washers.

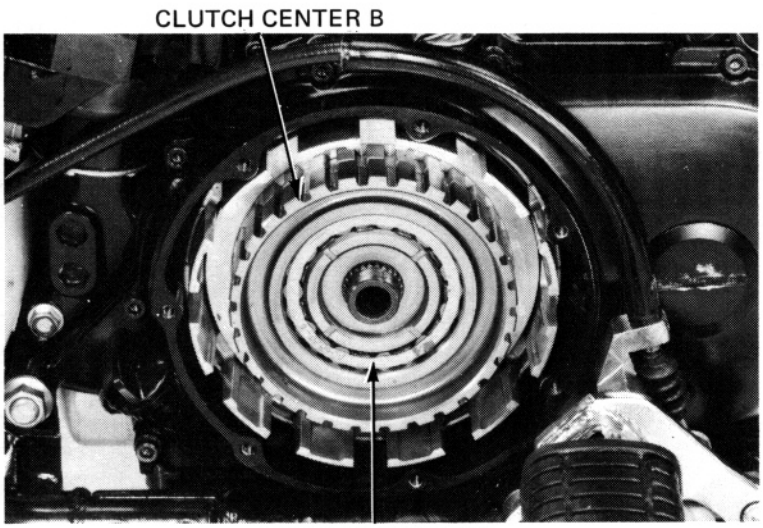


Remove the clutch pressure plate.

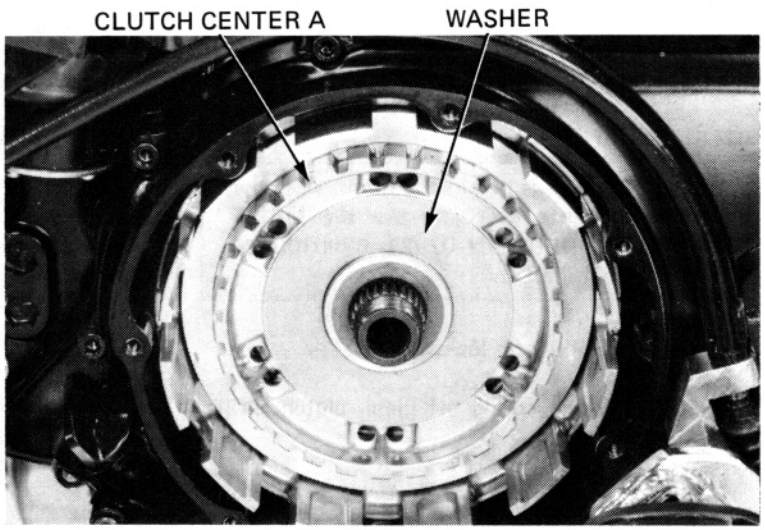
Remove the clutch plates and discs.



Remove clutch center B and the one-way clutch as an assembly.



Remove clutch center A and washer.



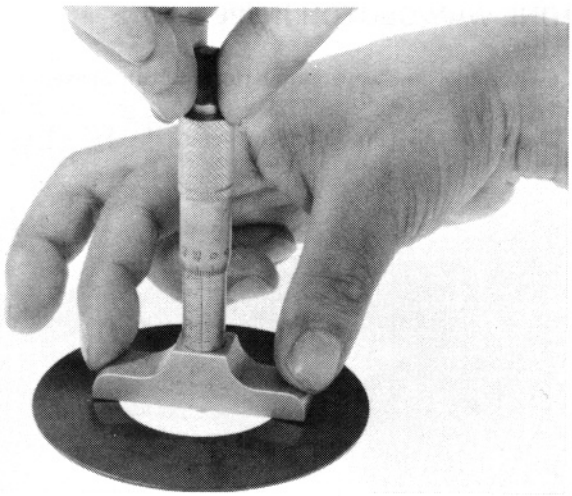
INSPECTION

CLUTCH SPRING

Measure the height of the clutch spring.

SERVICE LIMIT: 3.6 mm (0.14 in)

Replace the spring if it is shorter than the service limit.

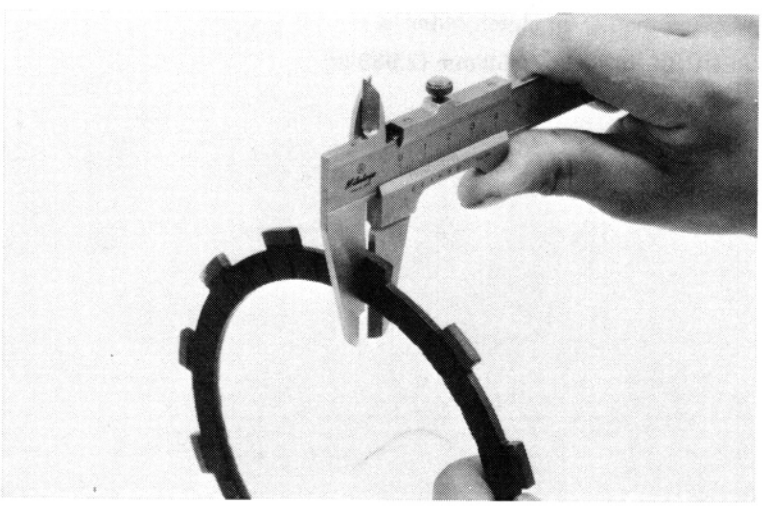


CLUTCH DISC

Replace the clutch discs if they show signs of scoring or discoloration. Measure the thickness of each disc.

SERVICE LIMIT: 3.1 mm (0.12 in)

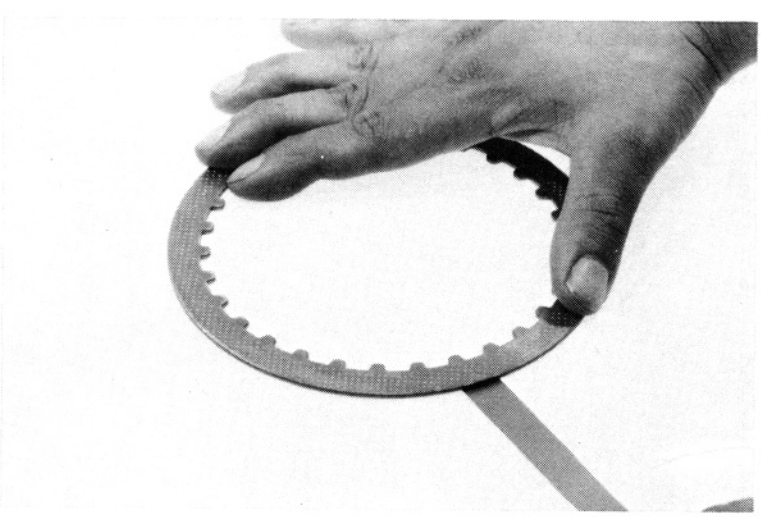
Replace any discs that are thinner than the service limit.



CLUTCH PLATE

Check for plate warpage on a surface plate, using a feeler gauge.

SERVICE LIMIT: 0.30 mm (0.012 in)



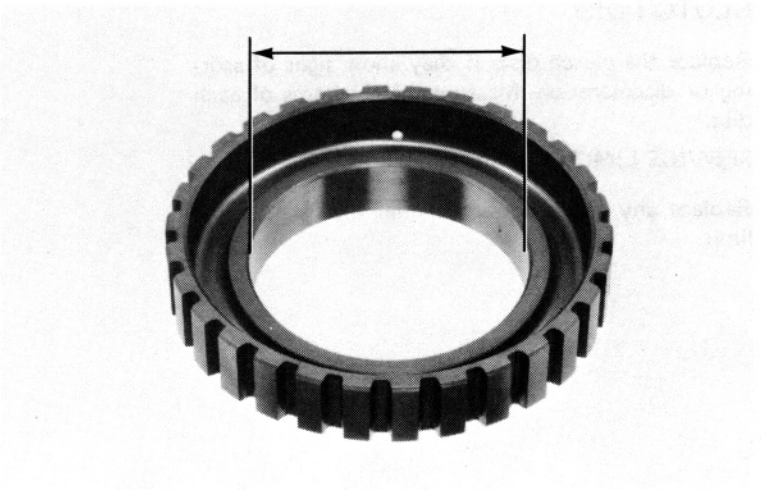
ONE WAY CLUTCH INSPECTION

Inspect the one way clutch for smooth operation.

Check the rollers for excessive wear.

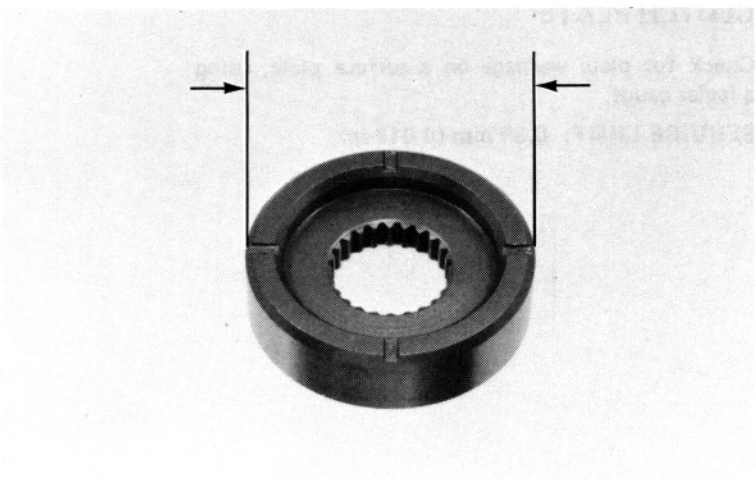
Measure the I.D. of clutch center B.

SERVICE LIMIT: 74.50 mm (2.933 in)



Measure the O.D. of the one way clutch inner.

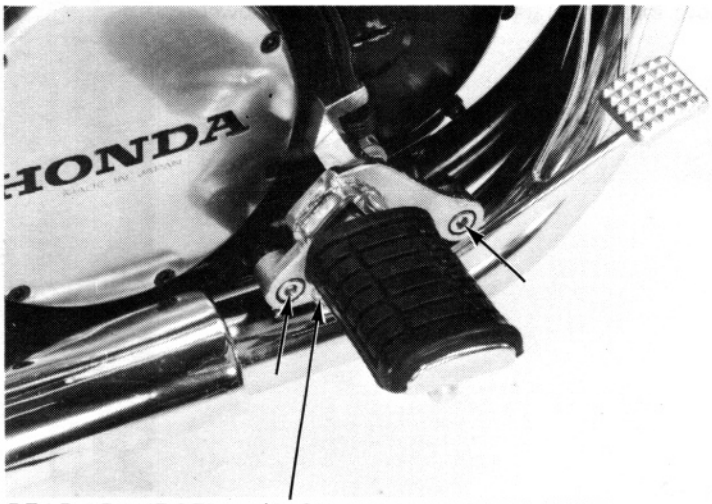
SERVICE LIMIT: 57.60 mm (2.268 in)



CLUTCH OUTER REMOVAL

Drain the engine oil.

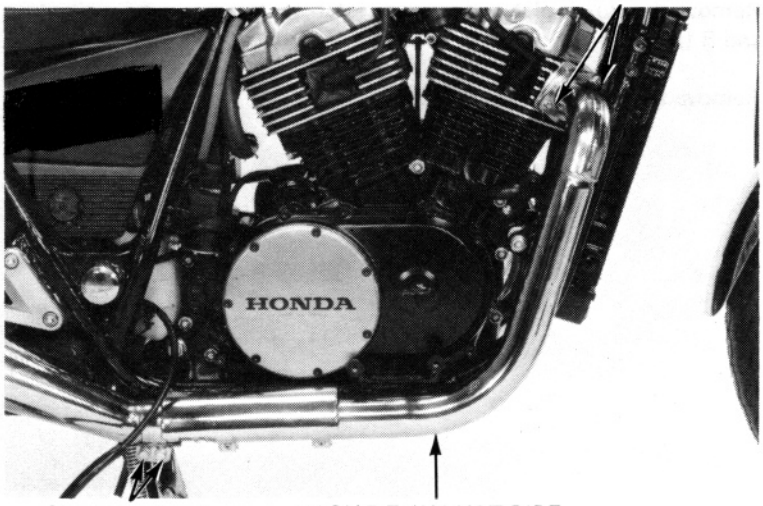
Remove the rear brake pedal/right foot peg bracket.



REAR BRAKE PEDAL/RIGHT FOOT PEG BRACKET

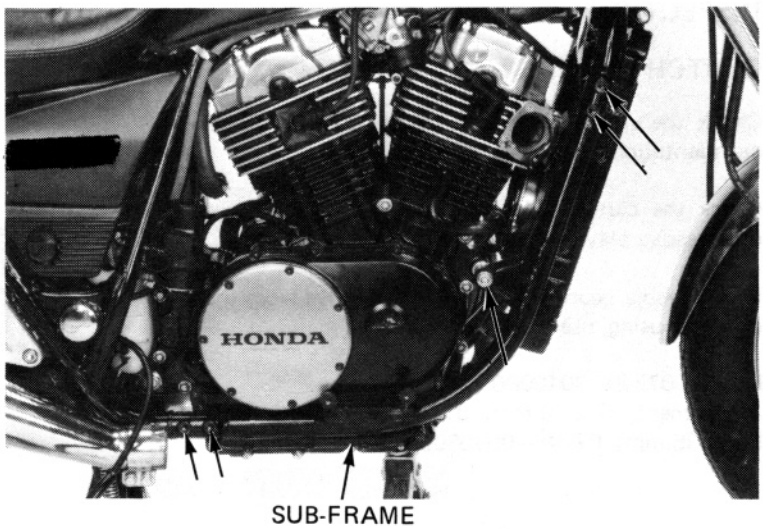
Loosen the two right exhaust pipe clamp bolts.

Remove the exhaust pipe joint nuts and remove the right exhaust pipe.

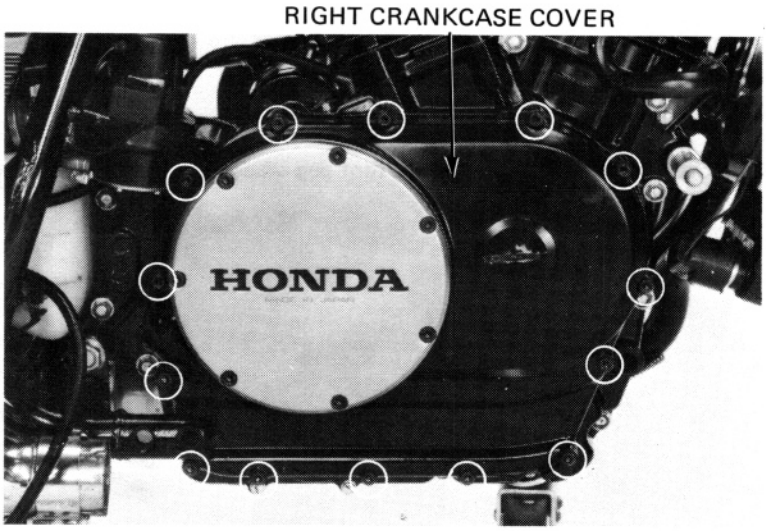


Place a jack or other adjustable support under the engine to support the engine.

Remove the four sub-frame bolts, engine mount nut and sub-frame.

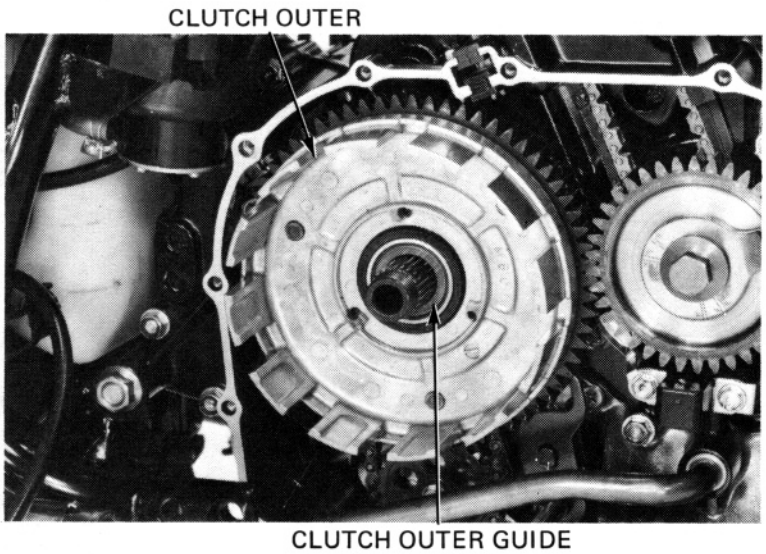


Remove the right crankcase cover, gasket and dowel pins.



Remove the clutch plates, discs and clutch centers A and B (page 7-11).

Remove the clutch outer and outer gauide.



INSPECTION

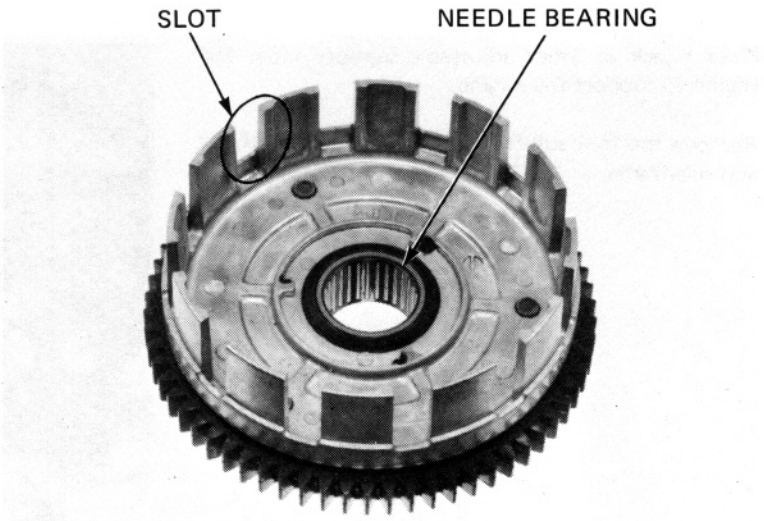
CLUTCH OUTER

Check the slots in the clutch outer for nicks, cuts or indentations made by the friction discs.

Check the clutch outer needle bearing for damage or excessive play.

If the needle bearing is difficult to remove from the clutch housing, use the following tools:

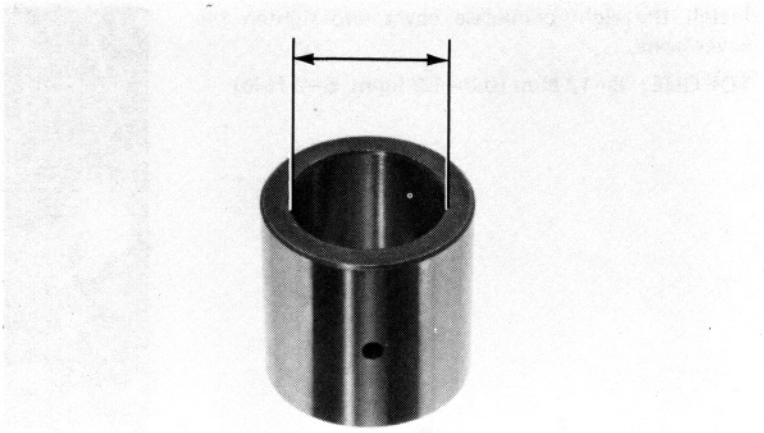
Driver: 07749–0010000
Attachment, 37 x 40 mm: 07746–0010200
Pilot, 35 mm: 07746–0040800



CLUTCH OUTER GUIDE

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

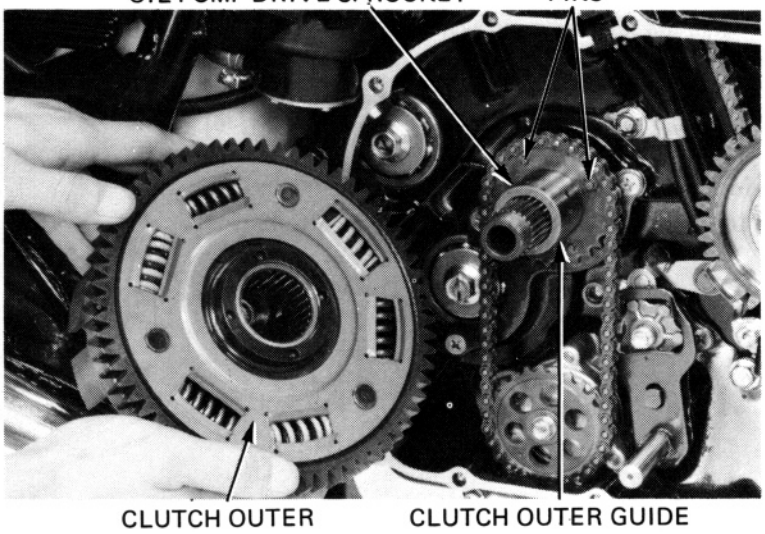
SERVICE LIMIT: 25.08 mm (0.987 in)



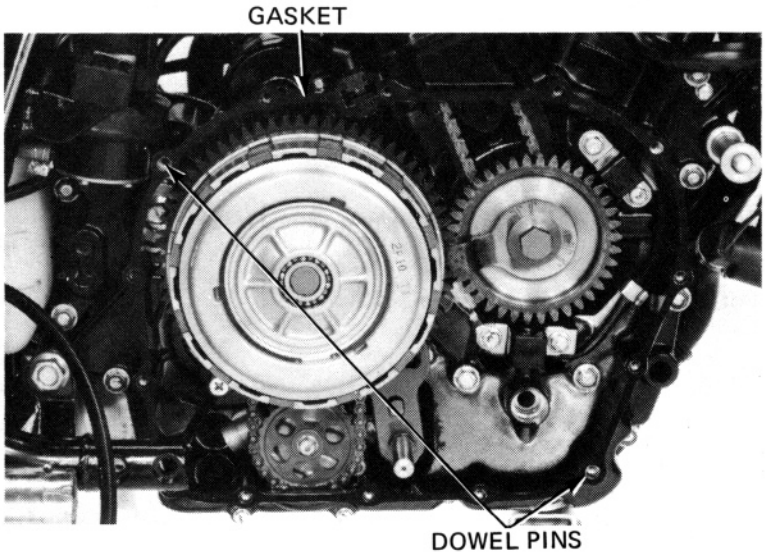
CLUTCH ASSEMBLY

Install the clutch outer guide over the mainshaft. Install the needle bearing into the clutch outer.

Align the holes in the clutch outer with the pins on the oil pump drive sprocket and install the clutch outer over the guide.

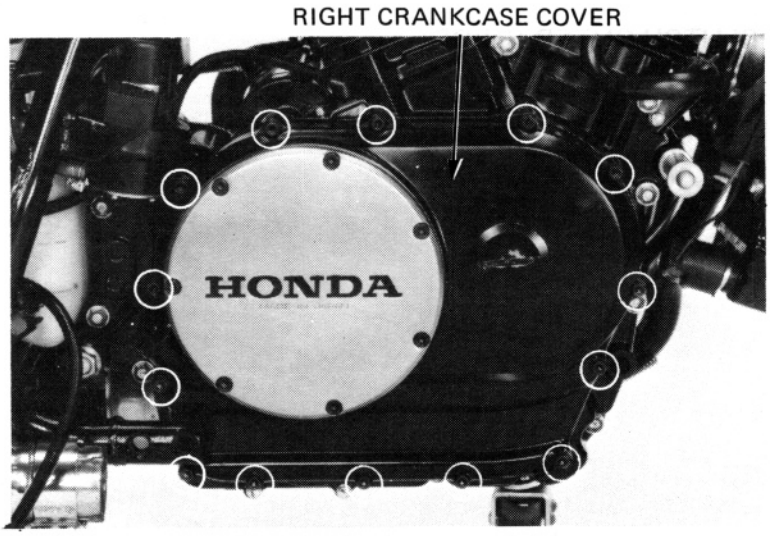


Install the dowel pins and a new gasket.



Install the right crankcase cover and tighten the cover bolts.

TORQUE: 8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)

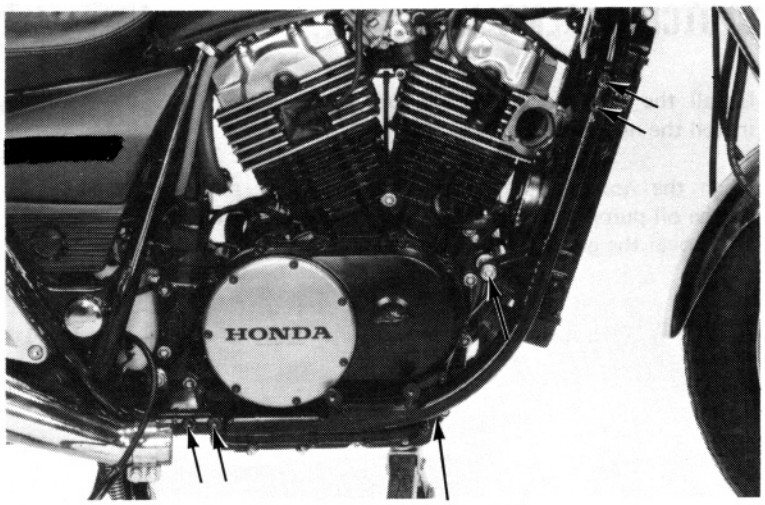


Install the sub-frame and tighten the bolts.

TORQUE:
Upper 70–80 N·m (7.0–8.0 kg-m, 51–58 ft-lb)
Lower 35–45 N·m (3.5–4.5 kg-m, 25–33 ft-lb)

Install and torque the engine mount 10 mm nut.

TORQUE: 45–60 N·m (4.5–6.0 kg-m, 33–43 ft-lb)



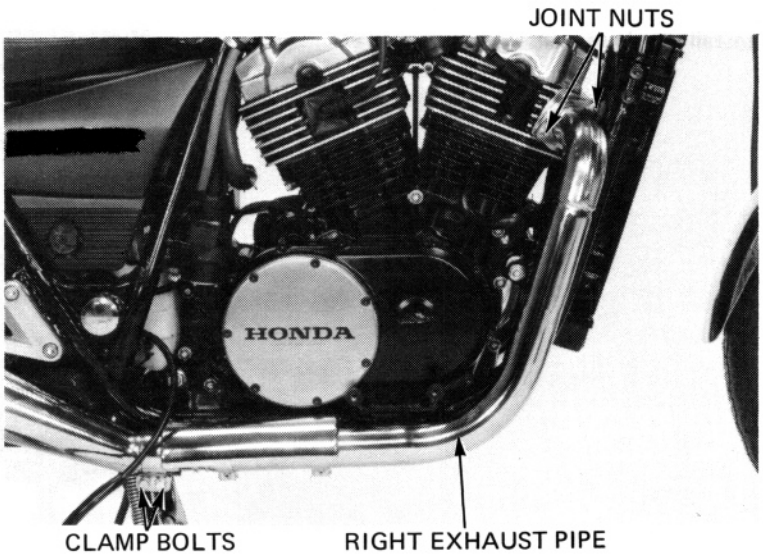
Install the right exhaust pipe and tighten the exhaust pipe joint nuts.

TORQUE: 8–14 N·m (0.8–1.4 kg-m, 6–10 ft-lb)

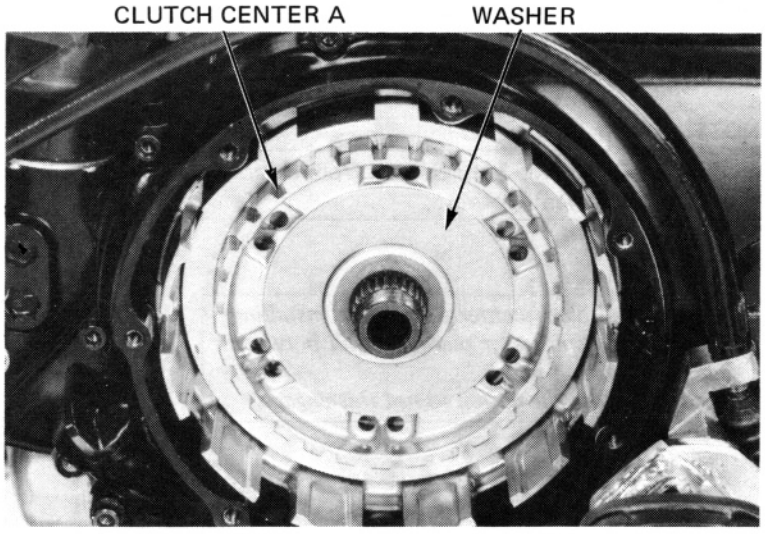
Tighten the exhaust pipe clamp bolts.

TORQUE: 18–28 N·m (1.8–2.8 kg-m, 13–20 ft-lb)

Fill the crankcase with oil (page 2-3).



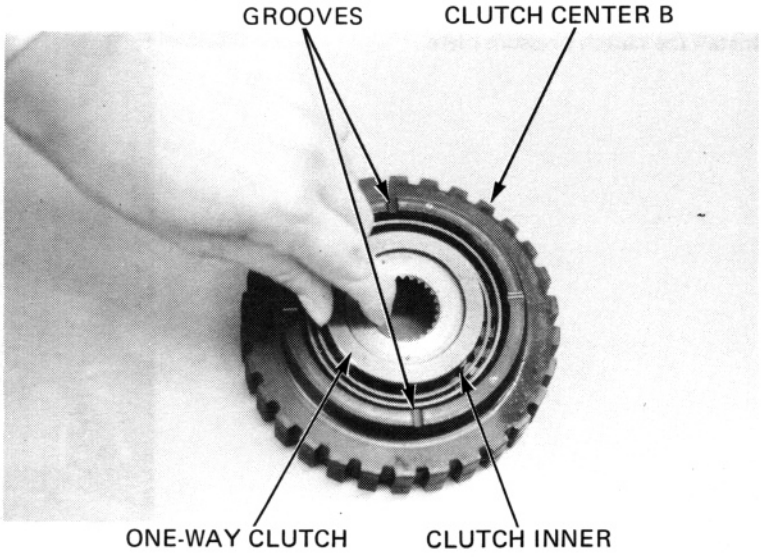
Install clutch center A and the washer.



Install the one-way clutch into clutch center B with its flanged cage facing out.

Place clutch center B with the grooved side facing up.

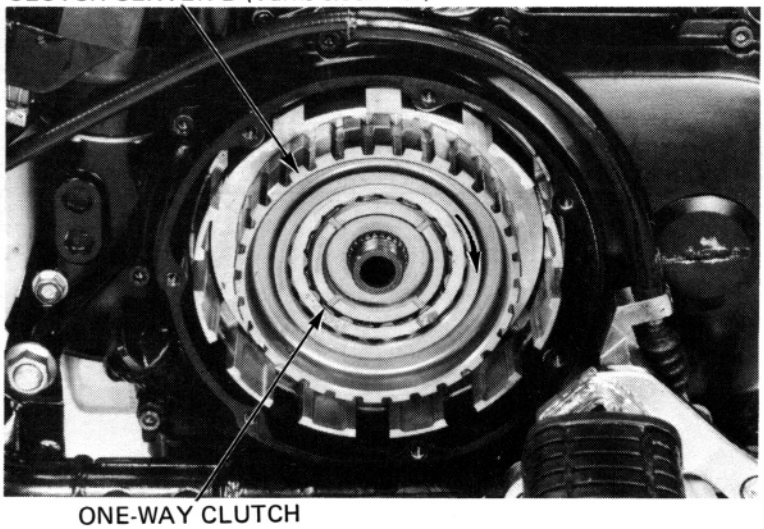
Install the clutch inner into the one-way clutch with its grooves facing down. Turn it clockwise as you install it.



Install the one-way clutch/clutch center B assembly over the mainshaft.

NOTE:

> Make sure the one way clutch assembly is installed correctly by turning the clutch center B. The clutch center should turn clockwise freely and should not turn counterclockwise.



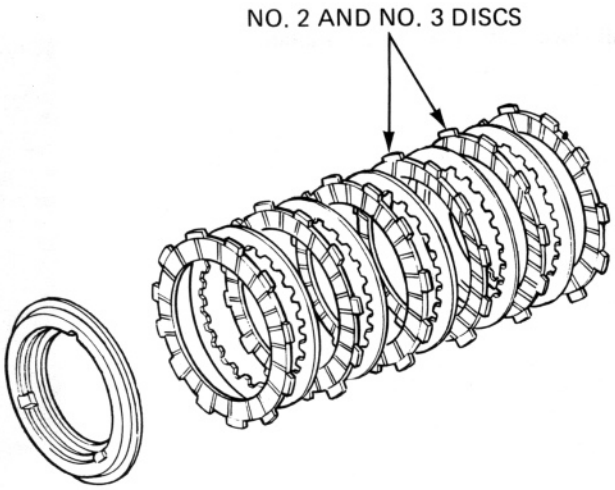
Coat the discs and plates with clean engine oil. Install the clutch discs and plates as shown.

NOTE:

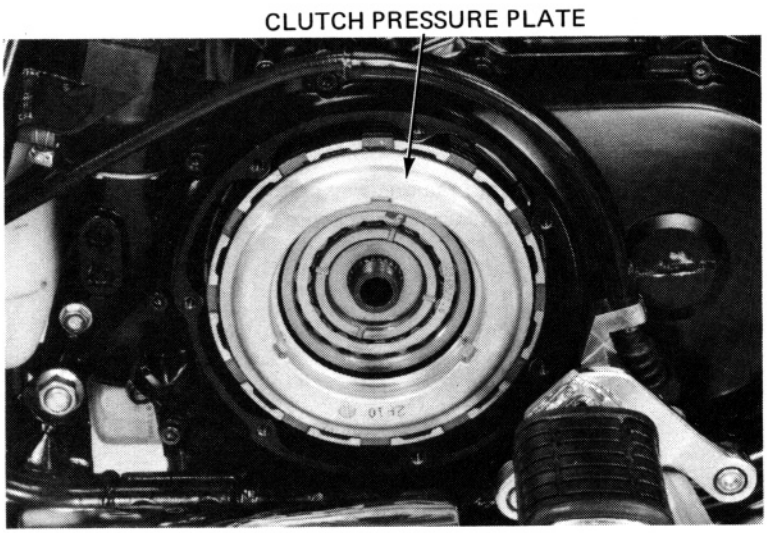
> The No. 2 and No. 3 clutch discs from the inside have different grooves.

CAUTION:

> *Do not pull cluth center B out after installing the discs and plates or plate will fall between clutch centers A and B.*
> *This will cause the clutch to not this engage.*



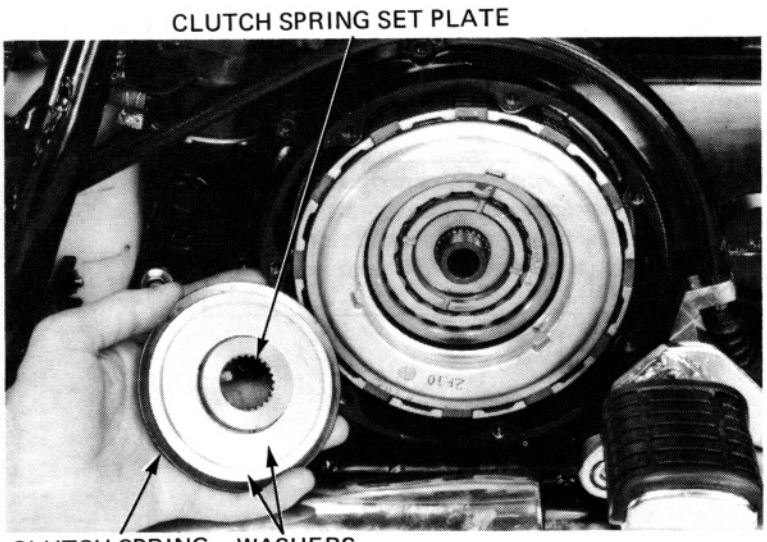
Install the clutch pressure plate.



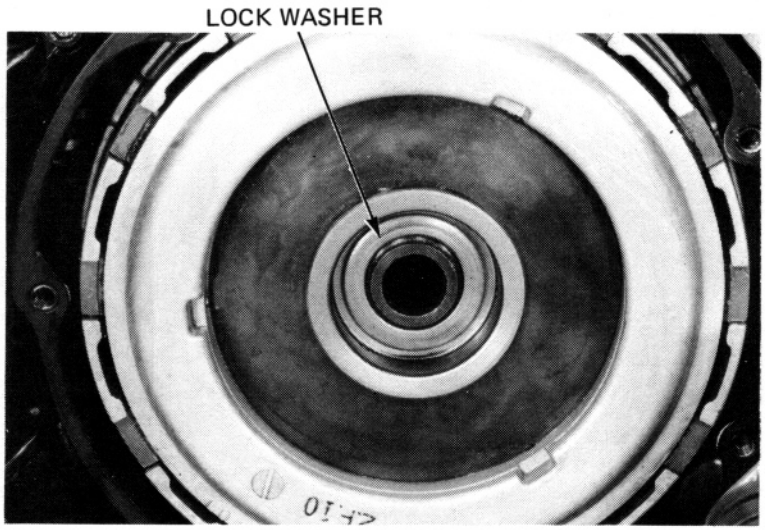
Install the clutch spring set plate, clutch spring, and washers.

NOTE:

> Install the clutch spring with the dished face towards the inside.



Install the lock washer with its dished face towards the inside.



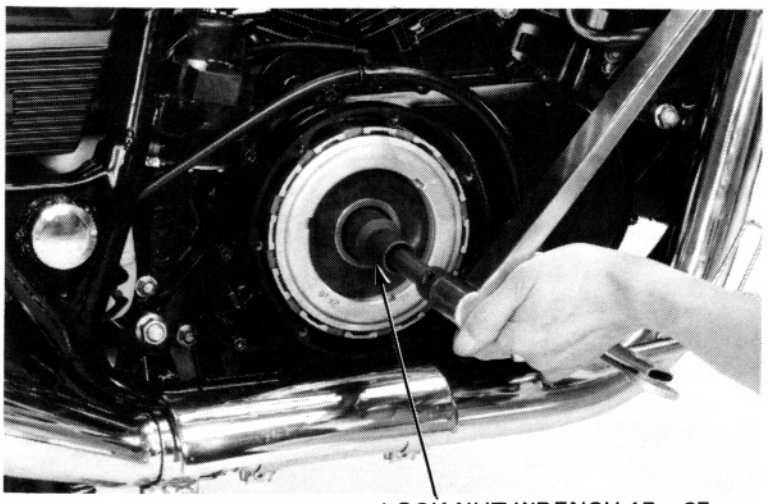
Place the transmission in 6th gear.

Apply the rear brake and tighten the lock nut.

NOTE:

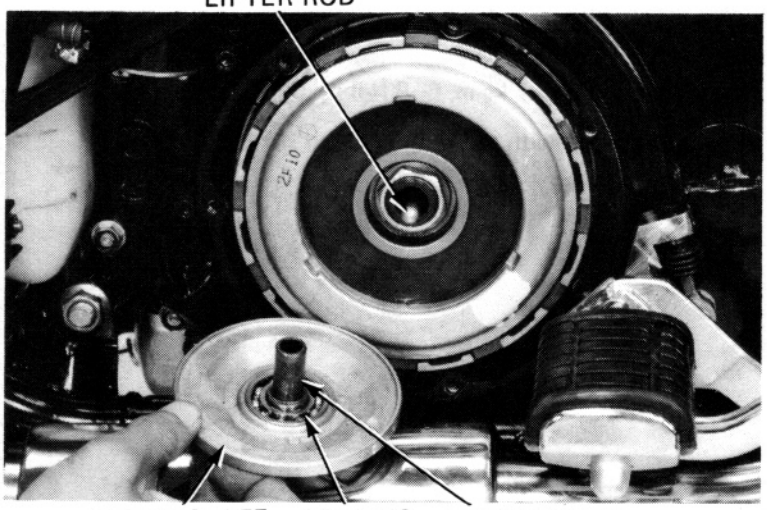
> When servicing the clutch with the engine out of the frame, shift the transmission into gear and hold the output shaft with the HOLDER 07923–6890101.

TORQUE:
45–55 N·m (4.5–5.5 kg-m, 33–40 ft-lb)

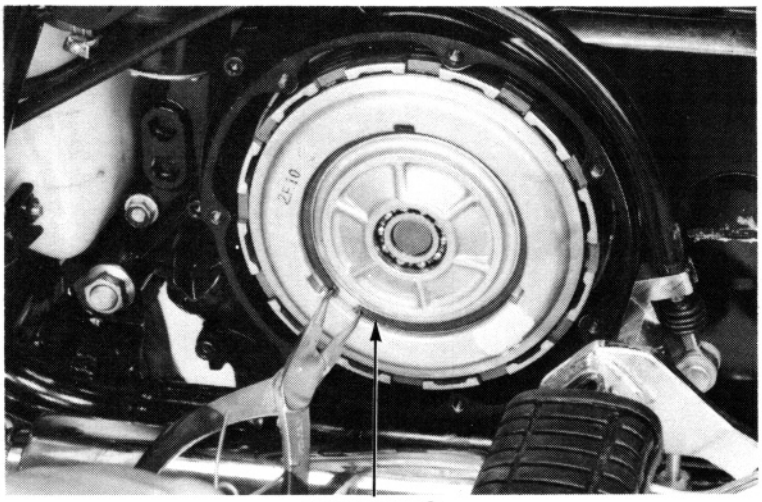


Install the clutch lifter rod.

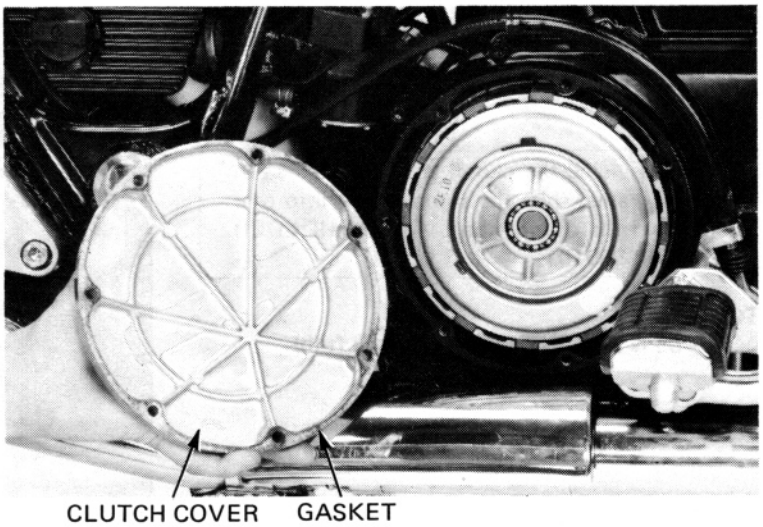
Install the clutch lifter plate, lifter guide and bearing.



Install the snap ring.



Install a new gasket onto the clutch cover.



Install the clutch cover and tighten the cover bolts.

TORQUE:
8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)

Fill the crankcase with the recommended oil (page 2-3).

PRIMARY GEAR

REMOVAL

Remove the right crankcase cover (page 7-15).

Hold the primary gear with the gear holder and remove the bolt.

Remove the pulse generator plate and primary gear from the crankshaft.

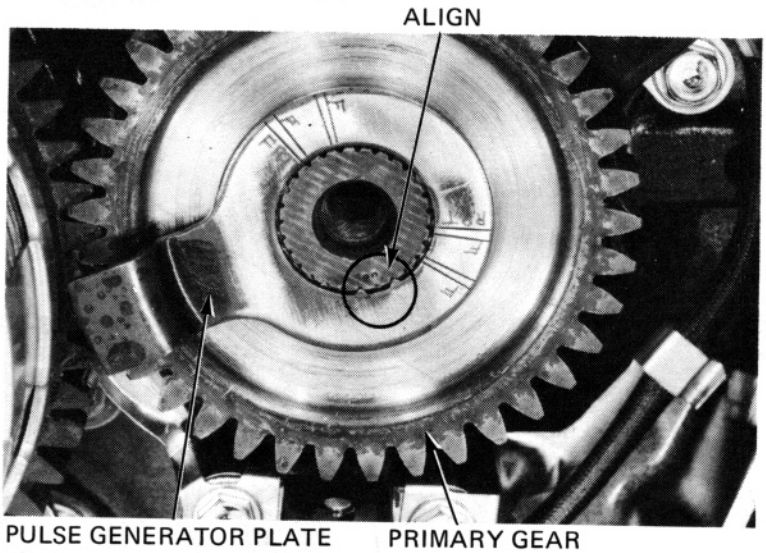
INSTALLATION

Install the primary gear.

Align the center of two pulse generator plate teeth with the flat of the crankshaft serrations and install the plate.

Measure the pulse coil air gap and adjust if necessary.

COIL AIR GAP: 0.3–0.9 mm (0.01–0.04 in)



Tighten the primary gear bolt.

TORQUE:
80–100 N·m (8.0–10.0 kg-m, 58–72 ft-lb)

Remove the gear holder tool and install the right crankcase cover.