# GENERAL SAFETY

**⚠ WARNING**

*If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains posisonous carbon monoxide gas that can cause the loss of consciousness and may lead to death.*

**⚠ WARNING**

*The battery generates hydrogen gas which can be highly explosive. Do not smoke or allow flames or sparks near the battery, especially while charging it.*

**⚠ WARNING**

- *Gasoline is extremely flammable and is explosive under certain conditions so work in a well ventilated area with the engine stopped. Do not smoke or allow flames or sparks in the work area or where gasoline is stored.*

**⚠ WARNING**

- *The battery gives off explosive gases; keep sparks, flames and cigarettes away. Provide adequate ventilation when charging.*
- *The battery contains sulfuric acid (electrolyte). Contact with skin or eyes may cause severe burns. Wear protective clothing and a face shield.*
  - *—If electrolyte gets on your skin, flush with water.*
  - *—If electrolyte gets in your eyes, flush with water for at least 15 minutes and call a physican.*
- *Electrolyte is poisonous.*
  - *—If swallowed, drink large quantities of water or milk and follow with milk of magnesia or vegetable oil and call a physician.*

**CAUTION**

*Used engine oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still adviseable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.*

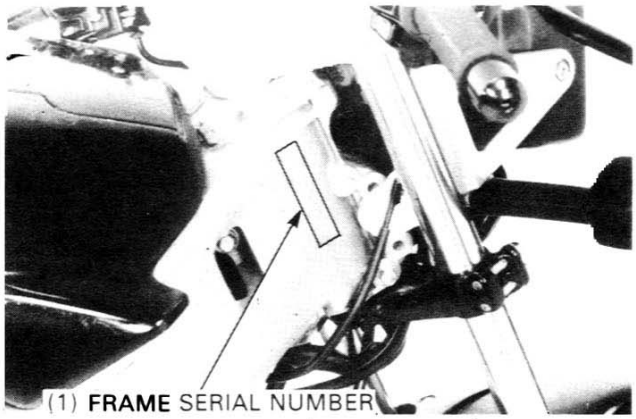
# SERVICE RULES

1) Use genuine HONDA or HONDA-recommended parts and lubricants or their equivalents. Parts that don't meet HONDA's design specifications may damage to the vehicle.
2) Use the special tools designed for this product to avoid damage and incorrect assembly.
3) Use only metric tools when servicing the vehicle. Metric bolts, nuts, and screws are not interchangeable with English fasteners.
4) Install new gaskets, O-rings, cotter pins, and lock plates when reassembling.
5) When tightening bolts or nuts, begin with the larger-diameter or inner bolts first. Then tighten to the specified torque diagonally in 1-5 steps, unless a particular sequence is specified.
6) Clean parts in non-flammable or high flash point solvent upon disassembly.
7) Lubricate any sliding surfaces before reassembly.
8) After reassembly, check all parts for proper installation and operation.

# MODEL IDENTIFICATION

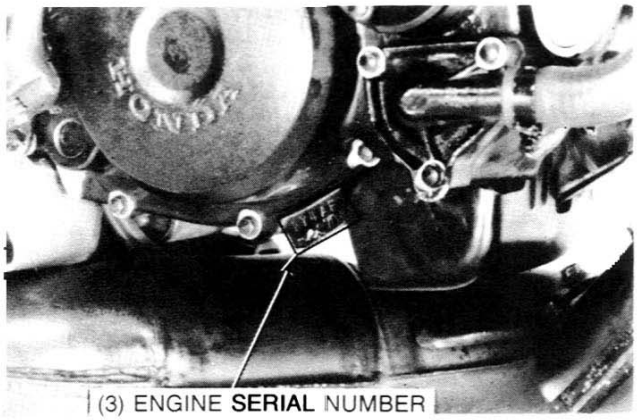

NSR 125 F


NSR 125 R



(1) FRAME SERIAL NUMBER

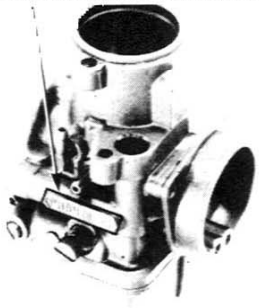
The frame serial number is stamped on the right side of the steering head.




(3) ENGINE SERIAL NUMBER

The engine serial number is stamped on the crankcase lower right side.

(2) CARBURETOR IDENTIFICATION NUMBER



The carburetor identification number is stamped on the carburetor body left side.

# SPECIFICATIONS

[R-Type] {R-Type Code}

| ITEM | | | | SPECIFICATIONS |
|---|---|---|---|---|
| DIMENSIONS | Overall length | | | 2,010 mm (79.1 in) [2,060 mm (81.1 in) SW-FI-SD] {2,015 mm (79.3 in) F-BH} |
| | Overall width | | | 680 mm (26.7 in) [690 mm (27.1 in)] |
| | Overall height | | | 1,035 mm (40.7 in) [1,080 mm (42.5 in)] |
| | Wheelbase | | | 1,350 mm (53.1 in) |
| | Seat height | | | 780 mm (30.7 in) |
| | Footpeg height | | | 345 mm (13.6 in) |
| | Ground clearance | | | 135 mm (5.3 in) |
| | Dry weight | | | 121 kg (266 lb) [127 kg (279,4 lb)] |
| | Curb weight | | | 132 kg (290 lb) [138 kg (304 lb)] |
| FRAME | Type | | | Almi cast bolt on |
| | Front suspension, travel | | | Telescopic fork, 135 mm (5.3 in) |
| | Rear suspension, travel (at rear axle) | | | Pro link, 110 mm (4.3 in) |
| | Front tire size | | | 100/80-17 52S |
| | Rear tire size | | | 130/70-18 63S |
| | Cold tire pressure | Rider only | Front | 200 kPa (2.00 kg/cm², 29 psi) |
| | | | Rear | 225 kPa (2.25 kg/cm², 33 psi) |
| | | Rider and one passenger | Front | 200 kPa (2.00 kg/cm², 29 psi) |
| | | | Rear | 250 kPa (2.50 kg/cm², 36 psi) |
| | Front brake, lining swept area | | | Hydraulic single disc, 61.4 cm² (9.5 sq in) |
| | Rear brake lining swept area | | | Hydraulic single disc, 48.9 cm² (7.6 sq in) |
| | Fuel capacity | | | 10.0 lt. (2.6 US gal, 2,19 Imp gal) |
| | Fuel reserve capacity | | | 2.0 lt. (0,52 US gal, 0,43 Imp gal) |
| | Caster angle | | | 25°30' |
| | Trail lenght | | | 97 mm (3.8 in) |
| | Fork oil capacity | | | 280 cc (9.4 US oz, 7.8 Imp oz) |
| ENGINE | Type | | | Water cooled 2-stroke |
| | Cylinder arrengement | | | Single cylinder 18.5° inclined from vertical |
| | Bore and stroke | | | 54.0 x 54.5 mm (2.13 x 2.15 in) |
| | Displacement | | | 124.8 cm² (7.62 cu in) |
| | Compression ratio | | | 7.0:1 |
| | Transmission oil capacity | | | 0,75 liters (0.79 US qt, 0.66 Imp qt) after disassembly |
| | | | | 0,70 liters (0.74 US qt, 0.62 Imp qt) after draining |
| | Engine oil tank capacity | | | 1.0 liters (1.06 US qt, 0.88 Imp qt) |
| | Coolant capacity | | | 1.1 liters (1,16 US qt, 0,96 Imp qt) |
| | Lubrication system | | | Separate lubrication |
| | Air filtration | | | Oiled urethane foam |
| | Cylindercompression | | | 1,000 ± 20 kPa (10 ± 2 kg/cm², 142 ± 28 psi) |
| | Port timing | Intake | Open | Reed valve controlled |
| | | | Close | Reed valve controlled |
| | | Exhaust | Open | 75°-95° BBDC |
| | | | Close | 73°-93° ABDC |
| | | Scavenge | Open | 64° BBDC |
| | | | Close | 62° ABDC |
| | Engine dry weight | | | 22 kg (49 lb) |
| | Idle speed | | | 1.400 ± 100 min⁻¹ (rpm) |
| CARBURETOR | Type | | | Throttle valve |
| | Identification number | | | PHBH 28 FS |
| | Venturi diameter | | | 28 mm |
| | Pilot screw initial opening | | | 2.5 turns out {2 turns out SW} |
| | Float level | | | 24 ± 0.5 mm (0.94 ± 0.02 in) |

# SPECIFICATIONS

[R-Type] {R-Type Code}

| ITEM | | SPECIFICATIONS |
|---|---|---|
| DRIVE TRAIN | Clutch | Wet multi plate |
| | Transmission | 6-speed constant mesh |
| | Primary reduction | 3,250 (65/20) |
| | Gear ratios I | 3,090 (34/11) |
| | II | 2.000 (30/15) |
| | III | 1.470 (25/17) |
| | IV | 1.210 (23/19) |
| | V | 1.043 (24/23) |
| | VI | 0.916 (22/24) |
| | Final reduction | 2.692 (35/13) |
| | Gearshift pattern | 1—N—2—3—4—5—6 |
| ELECTRICAL | Ignition | CDI |
| | Ignition timing F mark | 24.3° ± 2°/3,000 min$^{-1}$ (rpm) |
| | Alternator | 168W/5,000 min$^{-1}$ (rpm) [276W/5,000 min$^{-1}$ (rpm)] |
| | Spark plug | |
| | Spark plug gap | 0.7-0.8 mm (0.028—0.031 in) |
| | Fuse | 15A |
| LIGHTS | Headlight (high/low beam) | 12V 35W/35W [12V 25W/25W × 2] {12V60W/55W-SW} |
| | Position light | 12V 5W [12V 5W × 2] |
| | Brake/taillight | 12V 21W/5W |
| | Turn signal light | 12V 10W × 4 |
| | Instrument light | 12V 1.7W × 4 |
| | Neutral indicator light | 12V 3W |
| | Turn signal indicator light | 12V 3W × 2 |
| | High beam indicator light | 12V 1.7W |

| | NGK | ND |
|---|---|---|
| Standard | BR9ECS | W27ESR-U |
| For extended high speed riding | BR10ES | W31ESR-U |

# TORQUE VALUES

## ENGINE

| ITEM | Q' ty | THREAD DIA. (mm) | TORQUE N·m (kg-m, ft-lb) | REMARKS |
|---|---|---|---|---|
| Water pump impeller | 1 | 7 | 12 (1.2, 9) | |
| Cylinder head nut | 6 | 7 | 16 (1.6, 12) | |
| Cylinder nut | 4 | 8 | 23 (2.3, 17) | |
| Clutch center lock nut | 1 | 14 | 65 (6.5, 47) | |
| Primary drive gear | 1 | 12 | 65 (6.5, 47) | |
| Shift drum center pin | 1 | 8 | 22 (2.2, 16) | Allpy a locking agent to the threads |
| Shift drum stopper bolt | 1 | 6 | 12 (1.2, 9) | |
| Flywheel nut | 1 | 12 | 65 (6.5, 47) | |
| Balancer driven gear nut | 1 | 14 | 60-70 (6.0-7.0, 43-51) | |
| Crankcase bolt | 11 | 6 | 9 (0.9, 6.5) | |
| Transmission oil drain bolt | 1 | 8 | 27 (2.7, 20) | |
| Starter motor bolt | 2 | 8 | 27 (2.7, 20) | |

## FRAME

| ITEM | Q' ty | THREAD DIA. (mm) | TORQUE N·m (kg-m, ft-lb) | REMARKS |
|---|---|---|---|---|
| Fuel valve lock nut | 1 | | 10 (1.0, 7) | Apply a locking agent to the threads. |
| Engine mounting nut | 3 | 10 | 37 (3.7, 27) | |
| Expansion chamber/silencer mounting nut | 2 | 8 | 22 (2.2, 16) | |
| Expansion chamber joint nut | 2 | 6 | 10 (1.0, 7) | |
| Front master cylinder holder bolt | 2 | 6 | 10 (1.0, 7) | |
| Clutch lever bracket holder bolt | 2 | 6 | 10 (1.0, 7) | |
| Front brake disc bolt | 6 | 6 | 15 (1.5, 11) | |
| Front axle | 1 | 12 | 55 (5.5, 40) | |
| Front axle pinch bolt | 1 | 8 | 22 (2.2, 16) | |
| Fork slider socket bolt | 2 | 10 | 28 (2.8, 20) | Apply a locking agent to the threads. |
| Lower fork pinch bolt | 4 | 8 | 27 (2.7, 20) | |
| Upper fork pinch bolt | 2 | 7 | 11 (1.1, 8) | |
| Fork tube cap | 2 | – | 18 (1.8, 13) | |
| Front caliper bracket bolt | 2 | 8 | 27 (2.7, 20) | |
| Steering adjustment nut | 1 | 22 | 2 (0.2, 1.4) | |
| Steering stem nut | 1 | 22 | 70 (7.0, 51) | |

| ITEM | Q'ty | THREAD DIA. (mm) | TORQUE N·m (kg-m, ft-lb) | REMARKS |
|---|---|---|---|---|
| Wheel flange bolt | 10 | 6 | 15 (1.5, 11) | |
| Brake disc bolt (REAR) | 3 | 10 | 33 (3.3, 24) | |
| (FRONT) | 6 | 6 | 1.5 (1.5, 11) | |
| Driven sprocket bolt | 5 | 10 | 45 (4.5, 33) | |
| Rear axle nut | 1 | 16 | 90 (9.0, 65) | |
| Shock absorber upper mounting bolt | 1 | 14 | 15 (1.5, 11) | |
| Shock absorber upper mounting bolt lock nut | 1 | 22 | 35 (3.5, 25) | |
| Shock absorber upper mounting nut | 1 | 8 | 35 (3.5, 25) | |
| Shock absorber lower mounting bolt | 1 | 8 | 35 (3.5, 25) | |
| Shock arm-to-swing arm nut | 1 | 10 | 45 (4.5, 33) | |
| Shock link-to-frame nut | 1 | 10 | 45 (4.5, 33) | |
| Shock arm-to-shock link nut | 1 | 10 | 45 (4.5, 33) | |
| Drive chain slider screw | 2 | — | 9 (0.9, 6.5) | |
| Swing arm pivot bolt lock nut | 1 | 22 | 70 (7.0, 51) | |
| Swing arm pivot nut | 1 | 14 | 70 (7.0, 51) | |
| Bleed valve | 2 | 6 | 6 (0.6, 4.3) | |
| Master cylinder reservoir cap screw | 4 | 4 | 1.5 (0.15, 1.1) | |
| Brake hose bolt | 2 | 10 | 30 (3.0, 22) | |
| Caliper bracket pin bolt A | 1 | 8 | 18 (1.8, 13) | |
| Caliper bracket pin bolt B | 1 | 8 | 23 (2.3, 17) | |
| Brake lever pivot nut | 1 | 6 | 10 (1.0, 7) | |
| Caliper inner plate bolt | 2 | 10 | 55 (5.5, 40) | |
| Rear caliper bolt | 2 | 8 | 30 (3.0, 22) | |

Torque specifications listed on previous page are for important fasteners. Others should be tightened to standard torque values listed below.

## STANDARD TORQUE VALUES

| ITEM | TORQUE VALUES N·m (kg-m, ft-lb) | ITEM | TORQUE VALUES N·m (kg-m, ft-lb) |
|---|---|---|---|
| 5 mm bolt and nut | 5 (0.5, 3.6) | 5 mm screw | 4 (0.4, 2.9) |
| 6 mm bolt and nut | 10 (1.0, 7) | 6 mm screw | 9 (0.9, 6.5) |
| 8 mm bolt and nut | 22 (2.2, 16) | 6 mm flange bolt and nut | 12 (1.2, 9) |
| 10 mm bolt and nut | 35 (3.5, 25) | 8 mm flange bolt and nut | 27 (2.7, 20) |
| 12 mm bolt and nut | 55 (5.5, 40) | 10 mm flange bolt and nut | 40 (4.0, 29) |

# TOOLS

## NEWLY PROVIDED

| DESCRIPTION | NUMBER | REF. SECT. |
|---|---|---|
| Rotor puller | 07JMC−KY40100 | 9 |
| Lock nut wrench | 07JMA−KY40100 | 12 |

## SPECIAL

| DESCRIPTION | NUMBER | REF. SECT. |
|---|---|---|
| Bearing remover set, 12 mm | | 5 |
| −Remover handle | | 5 |
| −Bearing remover | | 5 |
| Mechanical seal driver attachment | | 5 |
| Attachment, 28×30 mm | | 5 |
| Clutch center holder | | 8 |
| Crankcase puller | | 10 |
| Universal bearing puller | | 10 |
| Bearing remover | | 10 |
| Remover handle | | 10 |
| Crankshaft assembly collar A | | 10 |
| Crankshaft assmbly shaft A | | 10 |
| Crankcase assembly tool | | 10 |
| −Cankcase assembly collar B | | 10 |
| −Crankcase assembly shaft B | | 10 |
| Ball race remover | | 11 |
| Fork seal driver attachment | | 11 |
| Steering stem driver | | 11 |
| Steering stem socket | | 11 |
| Shock absorber spring compressor | | 12 |
| Bearing remover, 20 mm | | 12 |
| Remover sliding weight | | 12 |

## COMMON

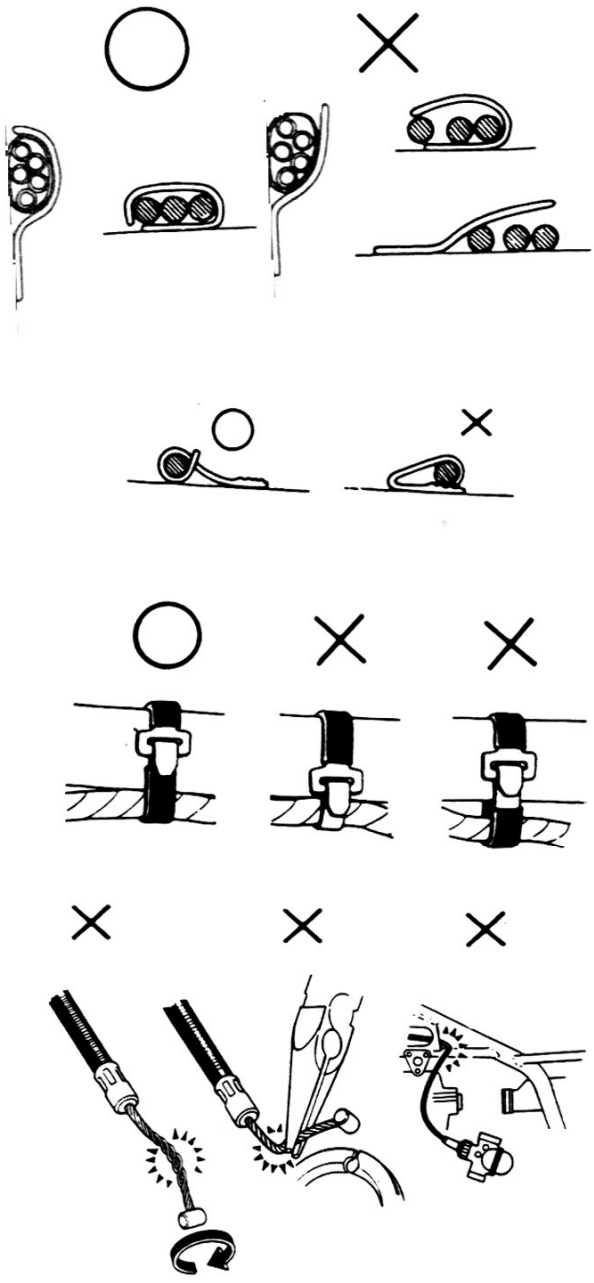
| DESCRIPTION | NUMBER | REF. SECT. |
|---|---|---|
| Float level gauge | 07401−0010000 | 4 |
| Driver | 07749−0010000 | 5, 10, 11, 12 |
| Pilot, 12 mm | 07746−0040200 | 5 |
| Lock nut wrench, 20×24 mm | 07716−0020100 | 8, 9 |
| Extension bar | 07716−0020500 | 8, 9 |
| Flywheel holder | 07725−0040000 | 8, 9 |
| Attachment, 37×40 mm | 07746−0010200 | 10, 11, 12 |
| Attachment, 42×47 mm | 07746−0010300 | 10 |
| Attachment, 52×55 mm | 07746−0010400 | 10 |
| Attachment, 62×68 mm | 07746−0010500 | 10 |

| DESCRIPTION | NUMBER | REF. SECT. |
|---|---|---|
| Pilot, 15 mm | 07746–0040300 | 10, 11 |
| Pilot, 17 mm | 07746–0040400 | 10, 12 |
| Pilot, 20 mm | 07746–0040500 | 10, 12 |
| Pilot, 25 mm | 07746–0040600 | 10, 12 |
| Pilot, 22 mm | 07746–0041000 | 10 |
| Bearing remover shaft | 07746–0050100 | 11, 12 |
| Bearing remover head, 12 mm | 07746–0050300 | 11 |
| Bearing remover head, 17 mm | 07746–0050500 | 12 |
| Attachment, 32×35mm | 07746–0010100 | 11, 12 |
| Fork seal driver | 07747–0010100 | 11 |
| Digital multitester (KOWA) | 07411–0020000 | 15, 19 |
| Circuit tester (SANWA) or | 07308–0020000 | 15, 16, 17, 18, 19 |
| Circuit tester (KOWA) | TH5H | |

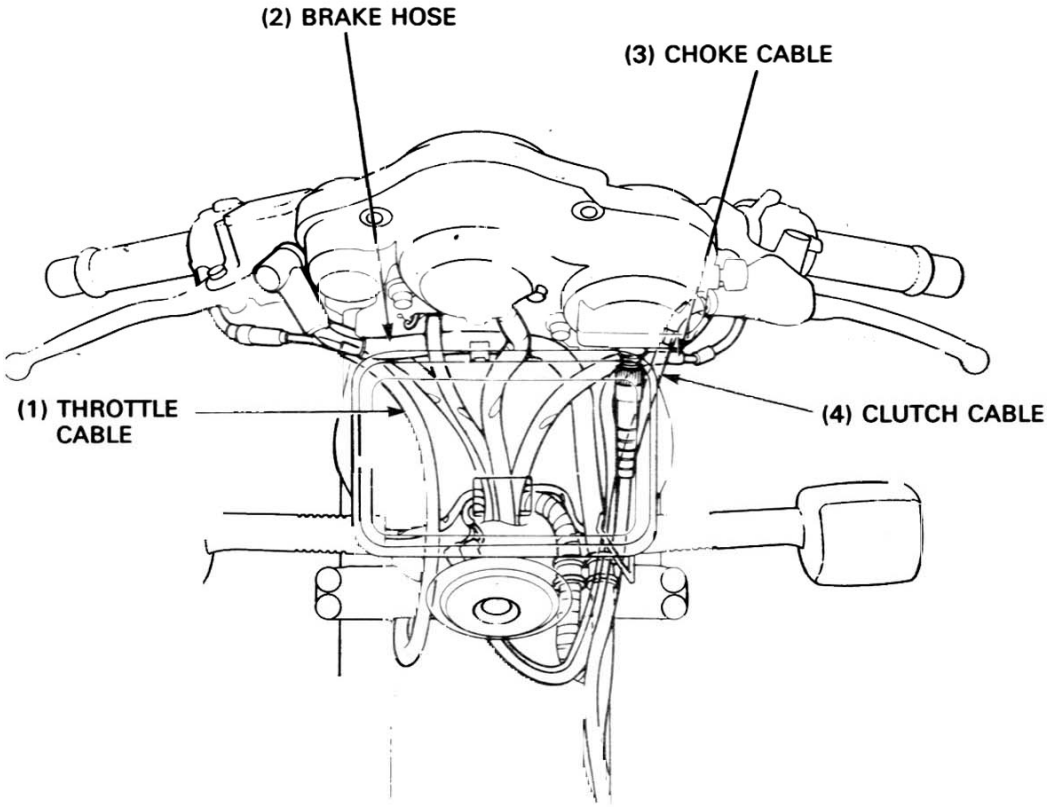
# CABLE & HARNESS ROUTING

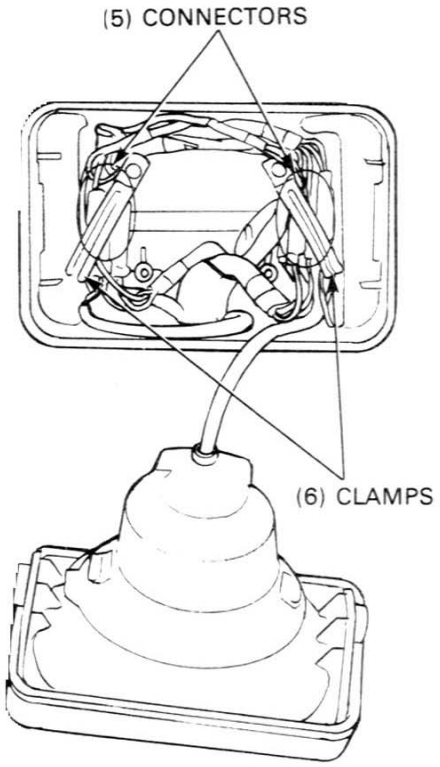
Note the following when routing cables and wire harnesses:

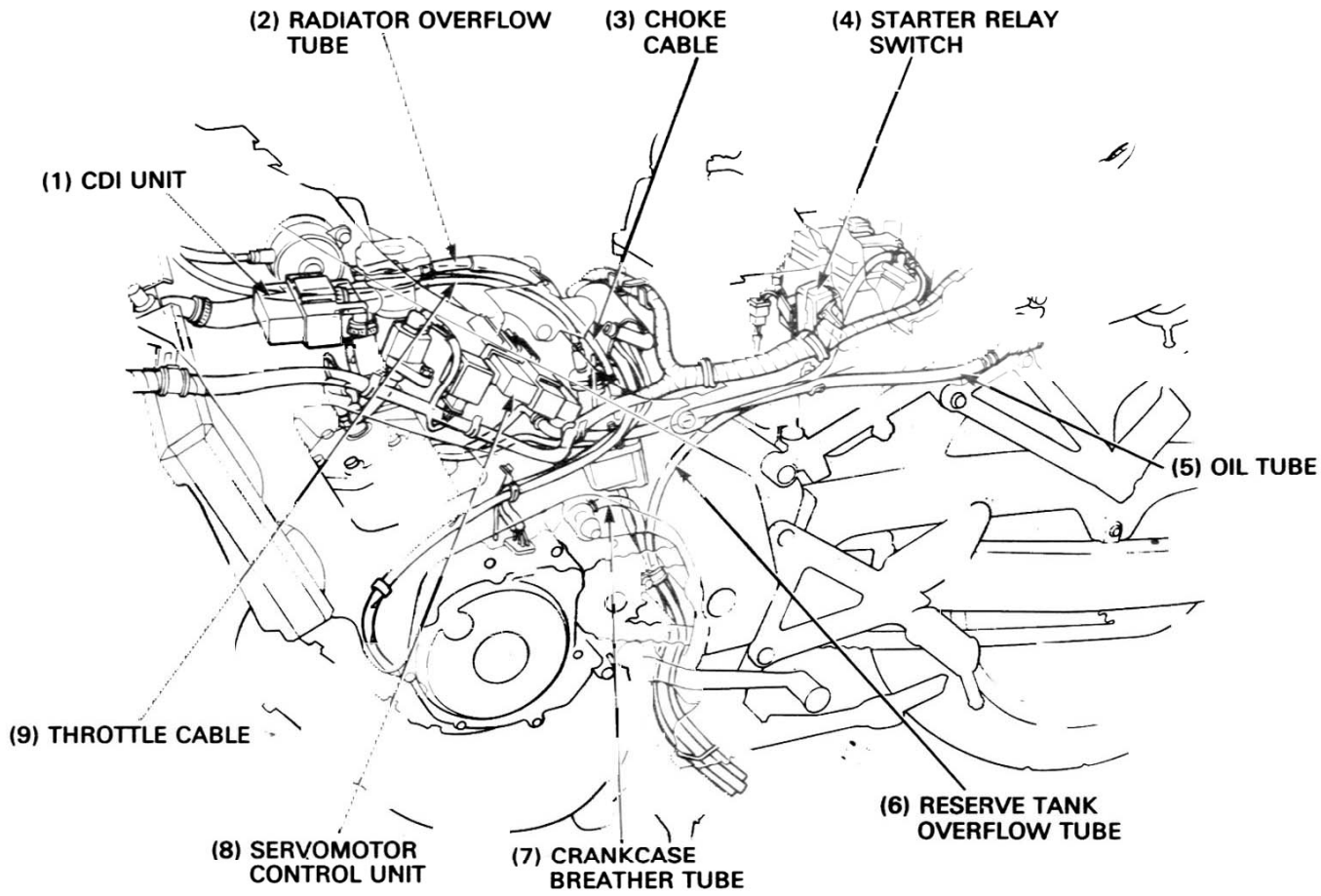
- A loose wire, harness of cable can be a safety hazard. After clamping, check each wire to be sure it is secure.
- Do not squeeze a wire against a weld or end of its clamp when a weld-on clamp is used.
- Secure wires and wire harnesses to the frame with their respective wire bands at the designated locations. Tighten the bands so that only the insulased surfaces contact the wires or wire harnesses.
- Route harnesses so they are not pulled taut or have excessive slack.
- Protect wires and harnesses with electrical tape or tubes if they contact a sharp edge or corner.
  Clean the attaching surface thoroughly before applying tape.
- Do not use a wire or harness with a broken insulator. Repair by wrapping them with protective tape or replace them.
- Route wire harnesses to avoid sharp edges or corners. Also avoid the projected ends of bolts and screws.
- Keep wire harnesses away from the exhaust pipe and other parts that get hot.
- Be sure grommets are seated in their grooves properly.
- After clamping, chek each harness to be certain that it is not interfering with any moving or sliding parts.
- Wire harnesses routed along the handlebars should not be pulled taut, have excessive slack, be pinched by, or interfere with adjacent or surrounding parts in all steering positions.
- After routing, check that the wire harnesses are not twisted or kinked.
- Do not bend or twist control cables. Damaged control cables will not operate smoothly and may stick or bind.

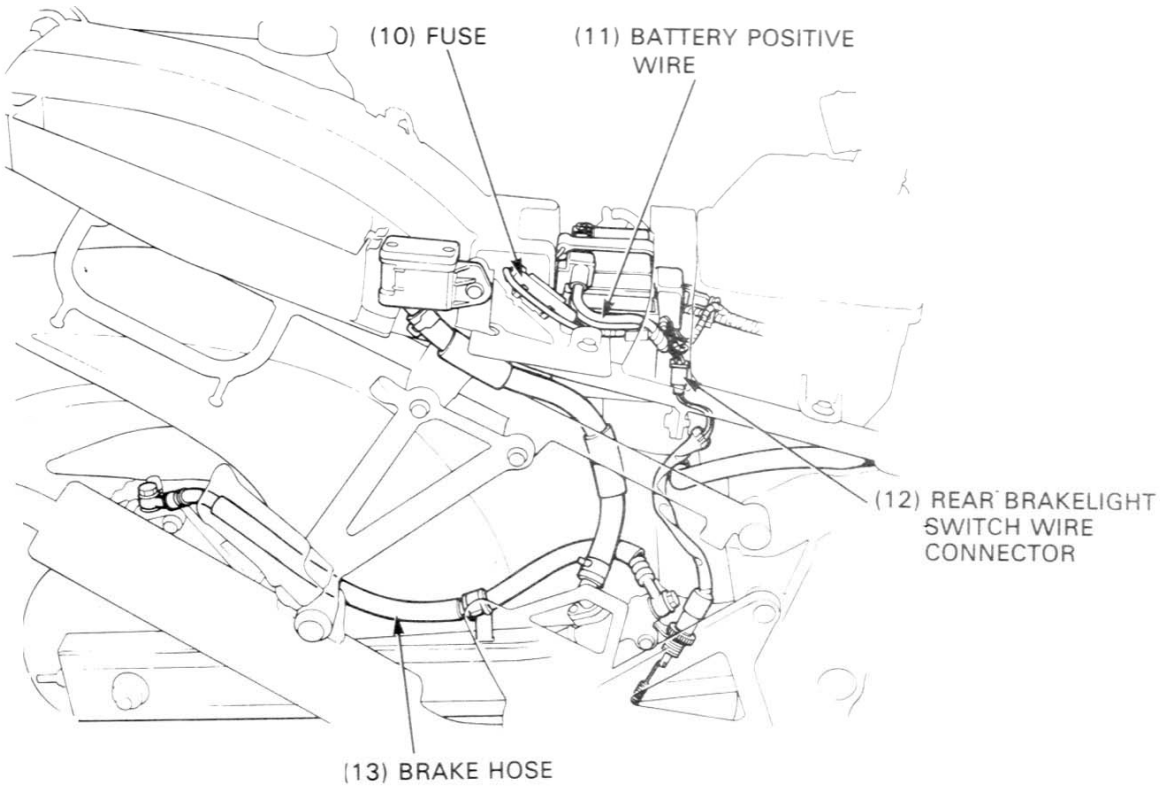


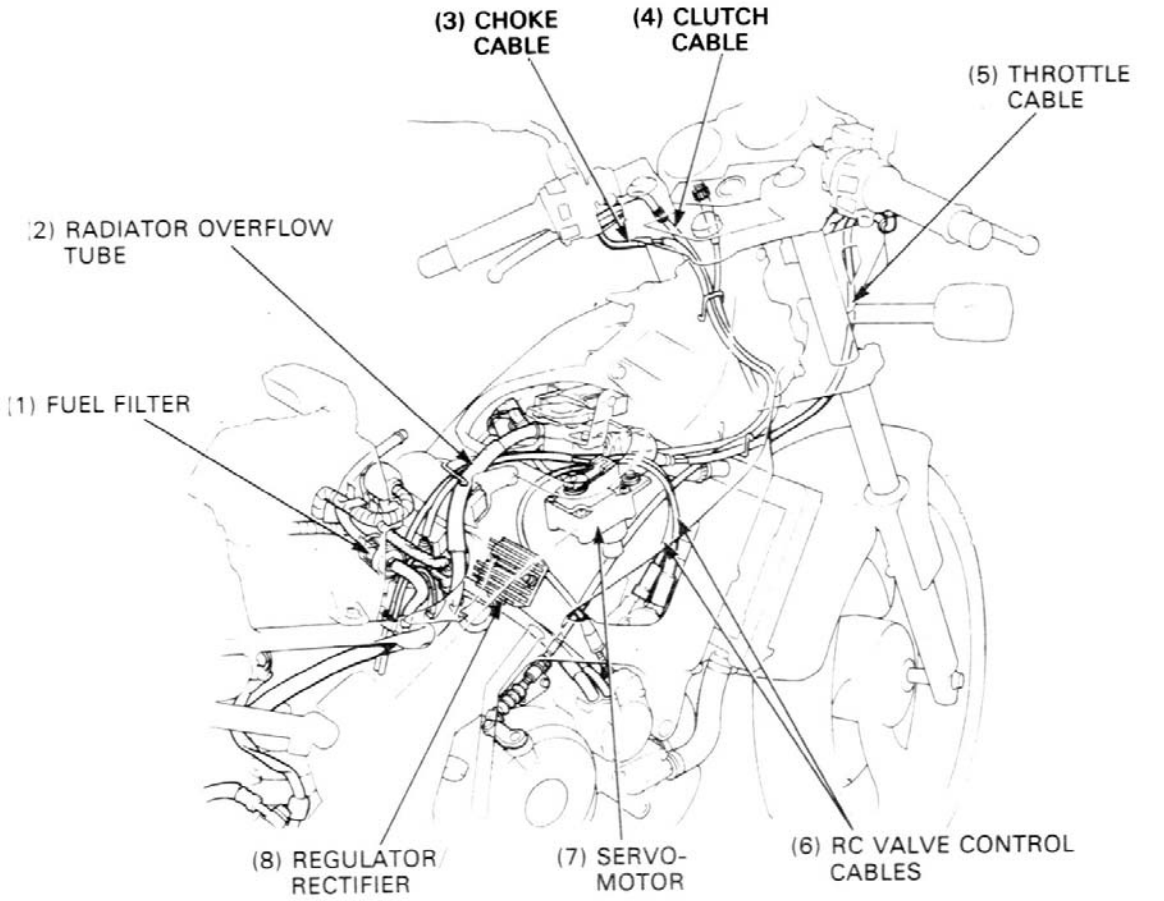
O: CORRECT
×: INCORRECT

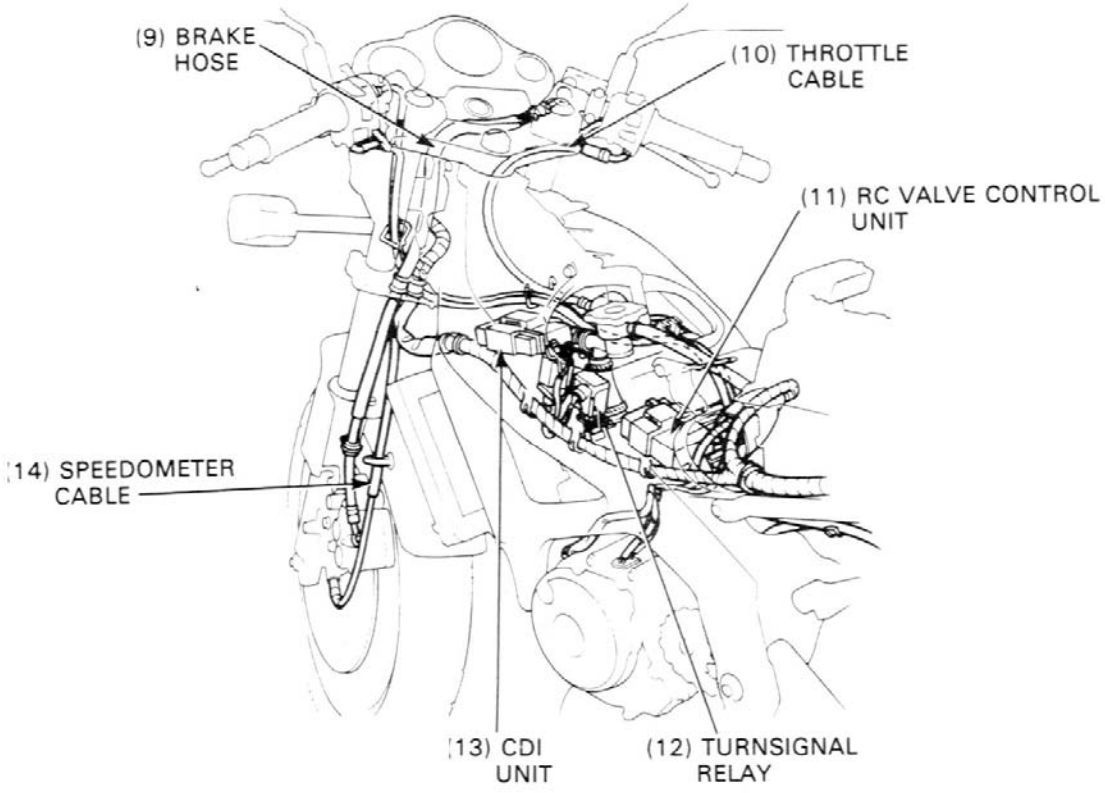

(2) BRAKE HOSE
(3) CHOKE CABLE
(1) THROTTLE CABLE
(4) CLUTCH CABLE

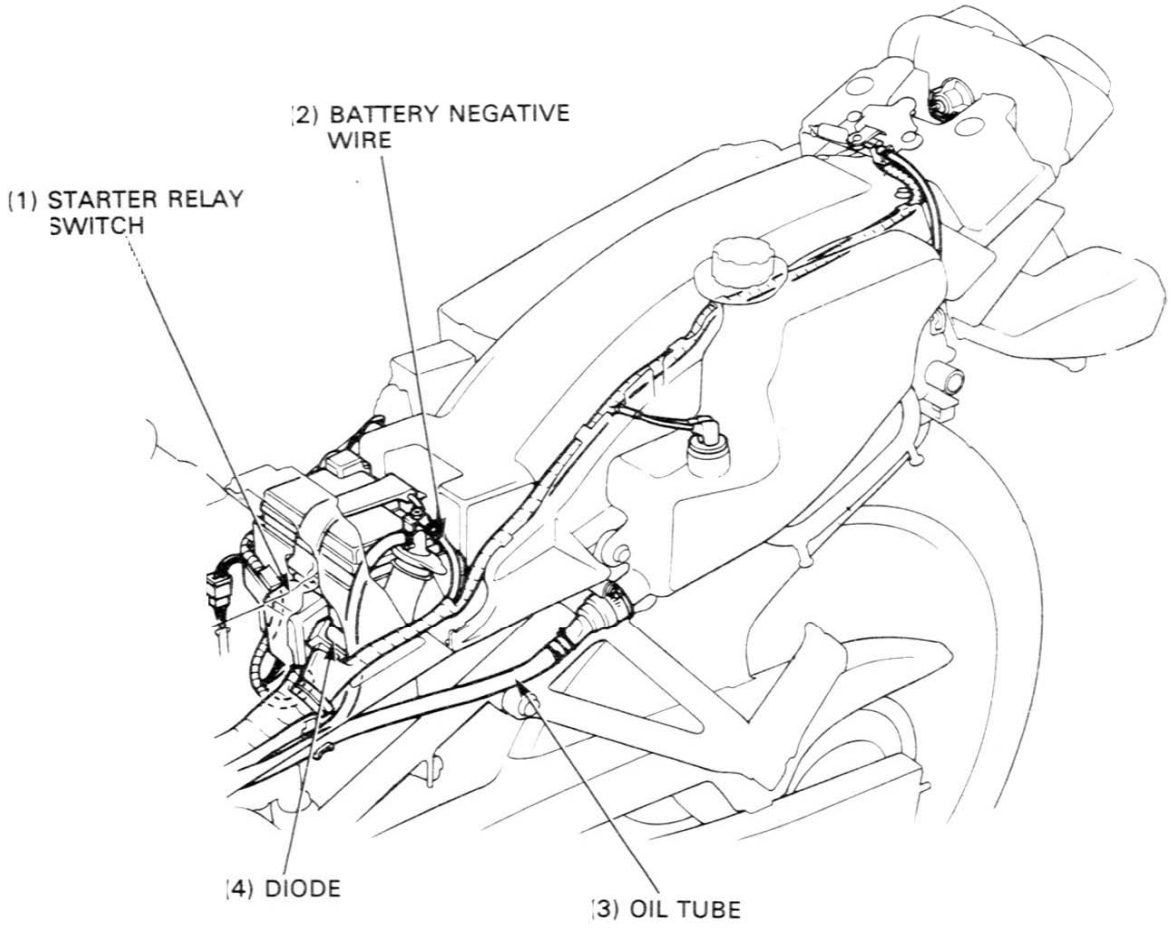

(5) CONNECTORS
(6) CLAMPS

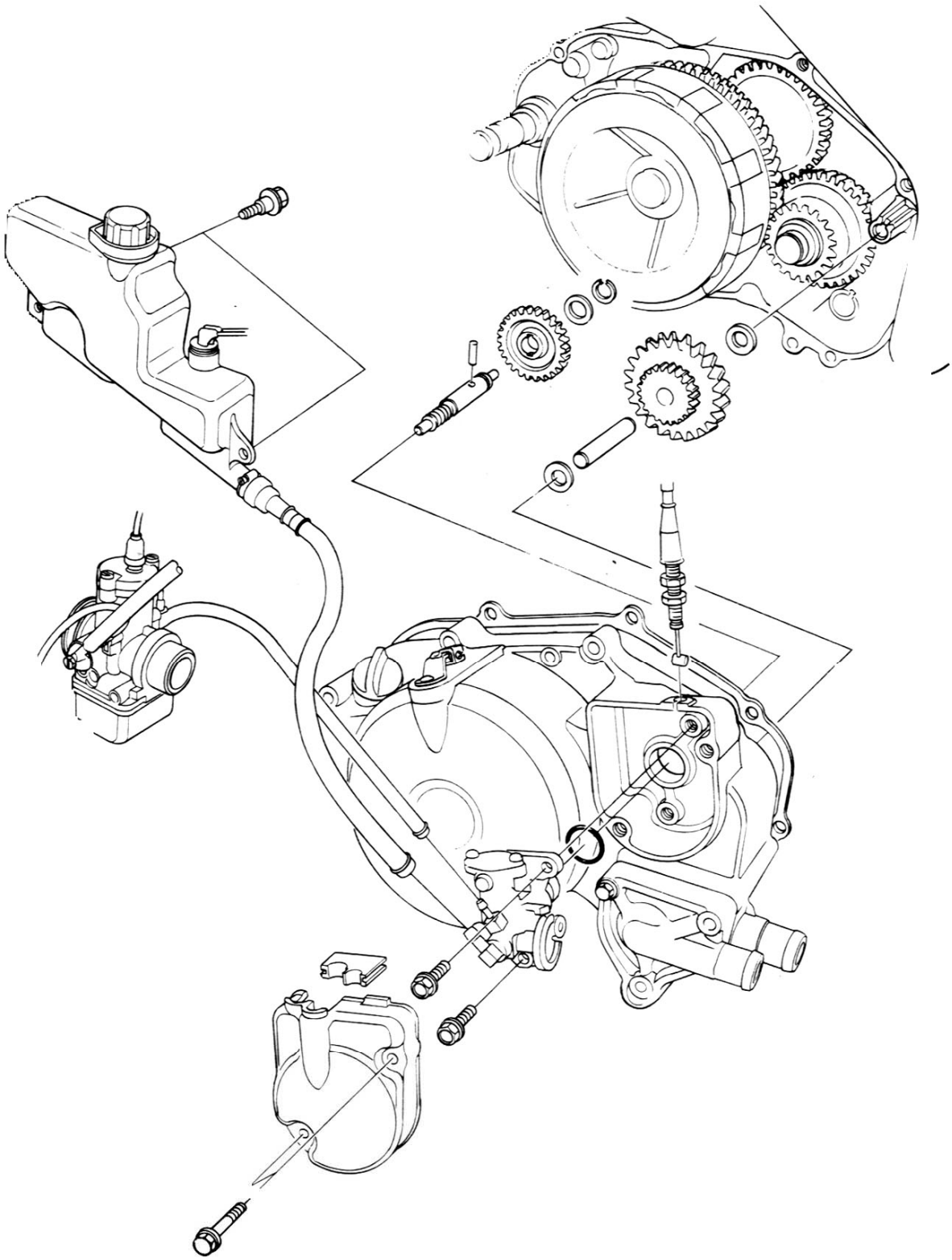

(2) RADIATOR OVERFLOW TUBE
(3) CHOKE CABLE
(4) STARTER RELAY SWITCH
(1) CDI UNIT
(5) OIL TUBE
(9) THROTTLE CABLE
(6) RESERVE TANK OVERFLOW TUBE
(8) SERVOMOTOR CONTROL UNIT
(7) CRANKCASE BREATHER TUBE


(10) FUSE
(11) BATTERY POSITIVE WIRE
(12) REAR BRAKELIGHT SWITCH WIRE CONNECTOR
(13) BRAKE HOSE


(3) CHOKE CABLE
(4) CLUTCH CABLE
(5) THROTTLE CABLE
(2) RADIATOR OVERFLOW TUBE
(1) FUEL FILTER
(8) REGULATOR RECTIFIER
(7) SERVO-MOTOR
(6) RC VALVE CONTROL CABLES


(9) BRAKE HOSE
(10) THROTTLE CABLE
(11) RC VALVE CONTROL UNIT
(14) SPEEDOMETER CABLE
(13) CDI UNIT
(12) TURNSIGNAL RELAY


(2) BATTERY NEGATIVE WIRE
(1) STARTER RELAY SWITCH
(4) DIODE
(3) OIL TUBE



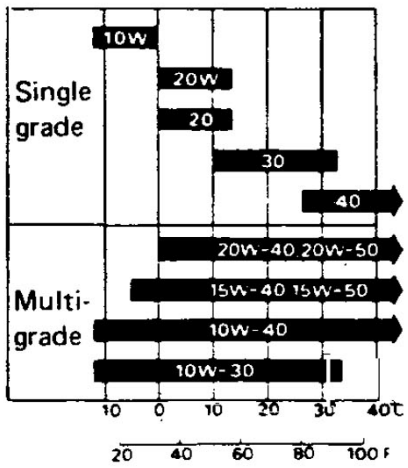
# SERVICE INFORMATION

## GENERAL

- Lubrication system service can be porformed with the engine in the frame.
- When removing and installing the oil pump, use care not to allow dust or dirt to enter the oil lines.
- Do not attempt to disassemble the oil pump.
- Bleed air from the oil pump if there is air in the oil tube (from the oil tank to the oil pump) or whenever the oil tube has been disconnected.
- Bleed air from the oil pass tube (from the oil pump to the carburetor) whenever oil lines have been disconnected.
- Refer to page 3-6 for the engine oil strainer cleaning.

## SPECIFICATIONS

| | |
|---|---|
| Engine oil recommendation: | Honda 2-stroke oil or equivalent |
| Engine oil tank capacity: | 1.0 liters (1.06 US qt, 0.88 Imp qt) |
| Transmission oil capacity: | 0.70 liters (0.74 US qt, 0.62 Imp qt) after draining |
| Transmission oil recommendation: | Honda 4-stroke oil or equivalent<br>Viscosity: SAE 10W-40<br>API Service classification: SE or SF<br>Other viscosities shown in the chart may be used when the average temperature in your riding area is within the indicated range. |




# TROUBLESHOOTING

**Excessive smoke and or carbon on spark plug**
- Pump not properly adjusted (excessive oil)
- Low quality engine oil
- Incorrect engine oil

**Overheating**
- Oil pump not adjusted properly (insufficient oiling)
- Low quality oil
- Incorrect engine oil

**Seized piston**
- No oil in tank or clogged oil line
- Pump not properly adjusted (insufficient oiling)
- Air in oil lines
- Faulty oil pump

**Oil not flowing out of tank**
- Clogged oil tank cap breather hole
- Clogged oil strainer

# OIL PUMP

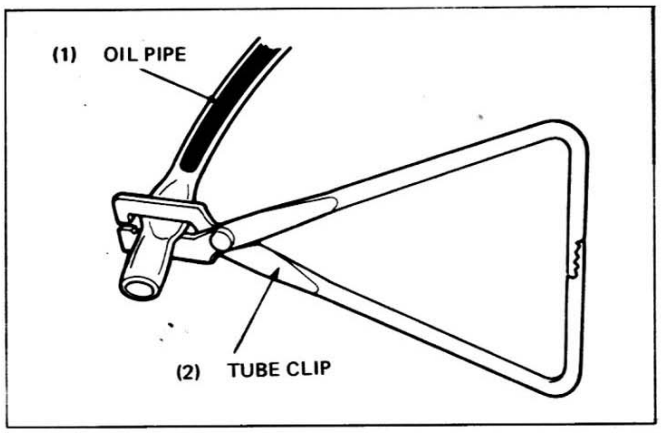
## REMOVAL

NOTE

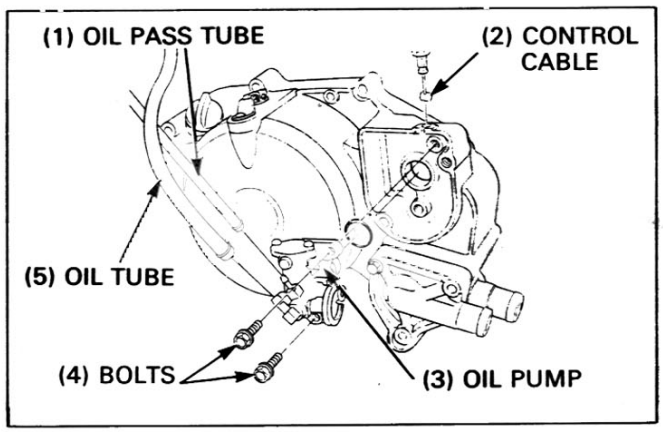
- Clean the oil pump and the crankcase before removing the oil pump.

Remove the oil pump cover.

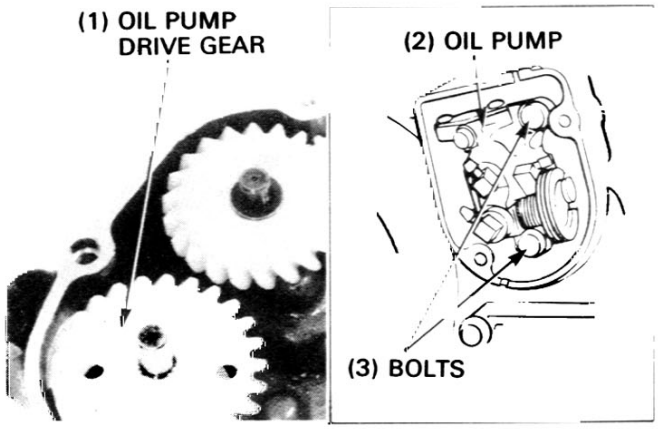

Clamp the oil tube and pass tube to prevent oil from flowing out.




Disconnect the oil control cable from the oil pump drum.
Disconnect the oil tube and pass tube from the oil pump.
Remove the right crankcase cover (page8-3).

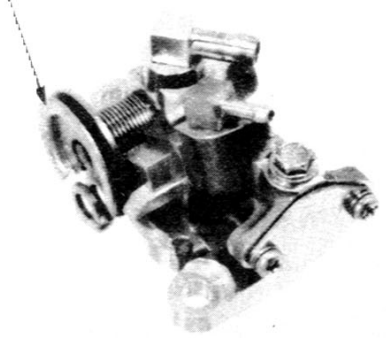



Remove the oil pump drive gear.
Remove the oil pump mounting bolts and oil pump from the right crankcase cover.



## INSPECTION

(1) OIL PUMP DRUM



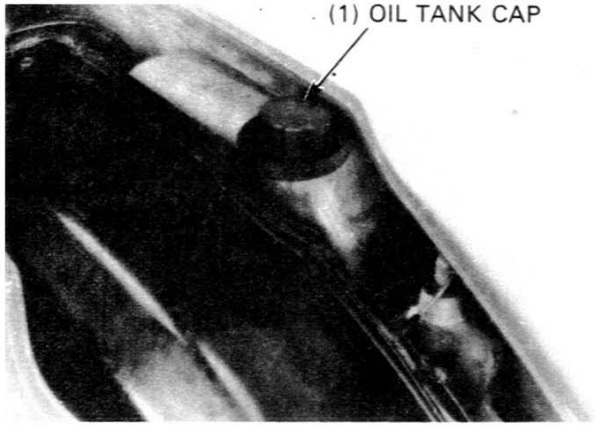
**CAUTION**

- *Do not disassemble the oil pump.*

Check the oil pump body for damage.
Check the oil pump drum for smooth operation.

## AIR BLEEDING/INSTALLATION

(1) OIL TANK CAP



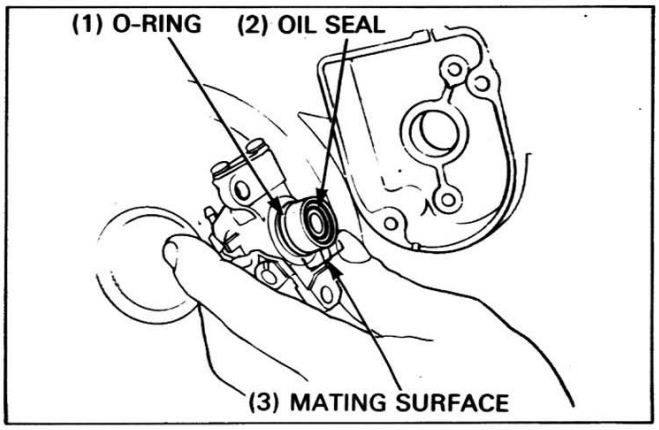
**CAUTION**

- *Air in the oil system will block or restrict oil flow and may result in severe engine damage.*
- *Bleed air from the system whenever the oil lines have been disconnected or there is air in the line.*

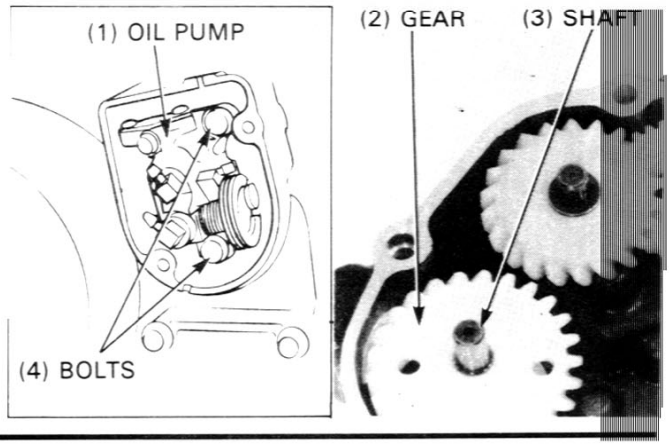
Remove the seat and oil tank cap, and fill the tank with the recommended engine oil.

**RECOMMENDED OIL: HONDA 2-stroke oil or equivalent**

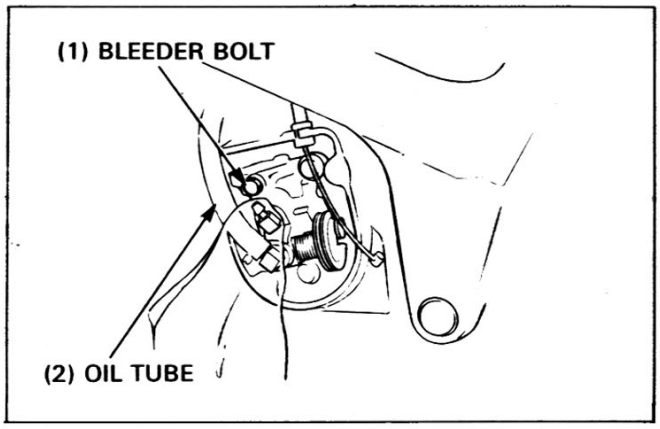
Check the oil seal and O-ring for damage or deterioration.
Check the right crankcase cover mating surface of the oil pump for damage.
Coat the O-ring with clean engine oil, and install the oil pump onto the right crankcase cover




Secure the oil pump with two mounting bolts.
Install the oil pump drive shaft into the oil pump and install the gear onto the shaft.
Install the right crankcase cover (page 8-16).



Make sure that the oil tube is filled with the oil and connect it to the oil pump.
Place a shop towel around the oil pump.
Loosen the bleeder bolt on the oil pump and allow the oil to flow out until air bubbles do not appear in the oil.
Tighten the bleeder bolt.



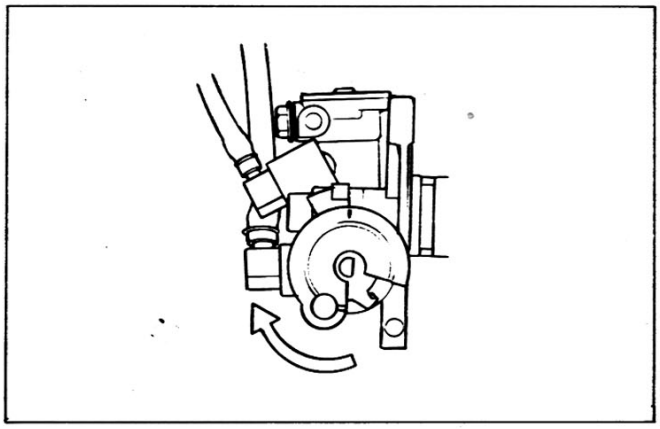

Drain the fuel from the carburetor.
Turn the fuel valve OFF and disconnect the fuel line from the fuel valve.
Connect the fuel line to the container filled with fuel-oil mixture (25-50 parts fuel to 1 part oil).
Remove the air cleaner case (page 4-5).
Start the engine and run for about 10 minutes with the oil pump drum turned to fully open position to force air out of the oil pass tube with oil.

**⚠ WARNING**

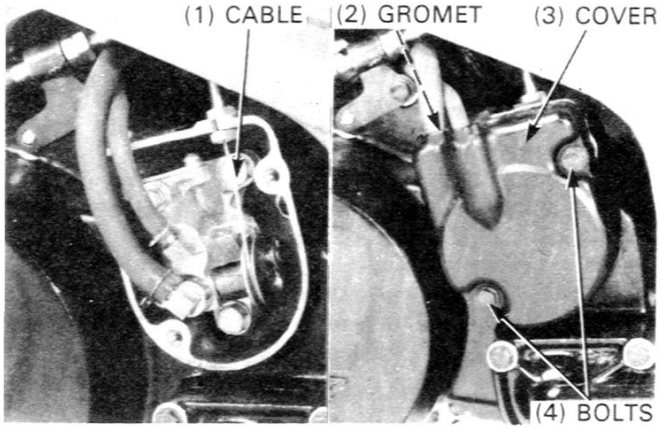
- ***If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that can cause the loss of consciousness and may lead to death.***

**CAUTION**

- *Use only the recommended engine oil (page 2-1).*
- *Do not race the engine.*



Connect the fuel line to the fuel valve.
Connect the oil control cable to the oil pump drum.
Adjust the oil control cable and install the oil pump cover with the grommet.
Secure the oil pump cover with the bolts.

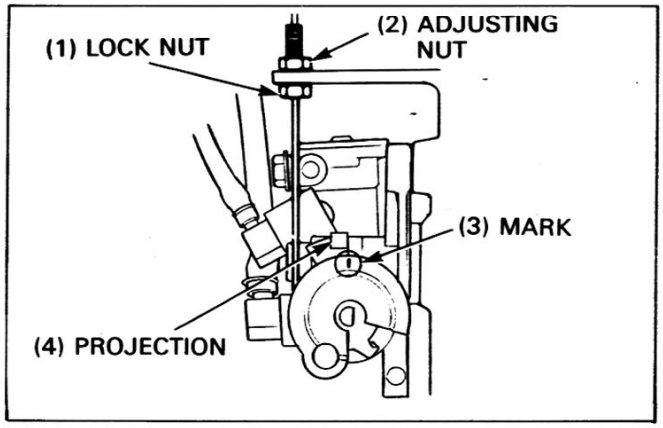



# OIL PUMP CONTROL CABLE ADJUSTMENT

NOTE

- The oil pump control cable should be adjusted after the throttle grip free play adjustment.

Remove the oil pump cover.
Loosen the oil control cable lock nut and open the throttle fully.
Check that the aligning mark on the oil pump control drum is aligned with the index mark projection on the pump body.
Adjust if necessary by turning the adujusting nut.



**CAUTION**

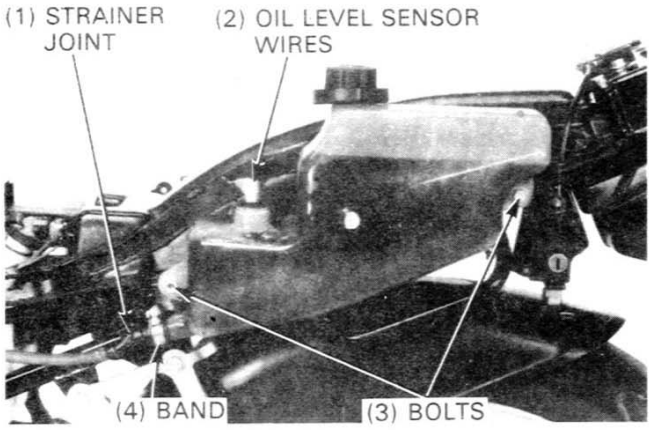
- *An adjustment within 1 mm (0.04 in) of index mark on the open side is acceptable. However, the aligning mark must never be on the closed side on the index mark, otherwise engine damage will occur because of insufficient lubrication.*

Tighten the control cable lock nut and install the oil pump cover.

# OIL TANK

## REMOVAL/INSTALLATION

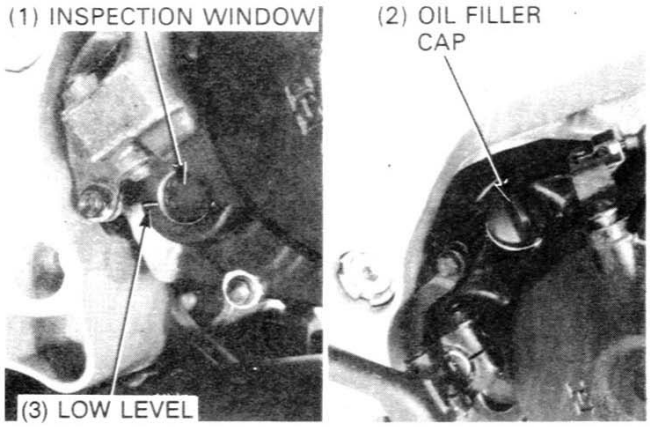
Remove the left fairing (page 4-3).
Disconnect the oil level sensor wires.
Loosen the oil strainer joint band, remove the strainer joint at the bottom of the oil tank and allow the oil to drain into a clean container.
Remove the two mounting bolts and oil tank.
Install the oil tank in the reverse order of removal.
After installation, fill the oil tank with the recommended engine oil and bleed air from system.




# TRANSMISSION OIL

## CHECK

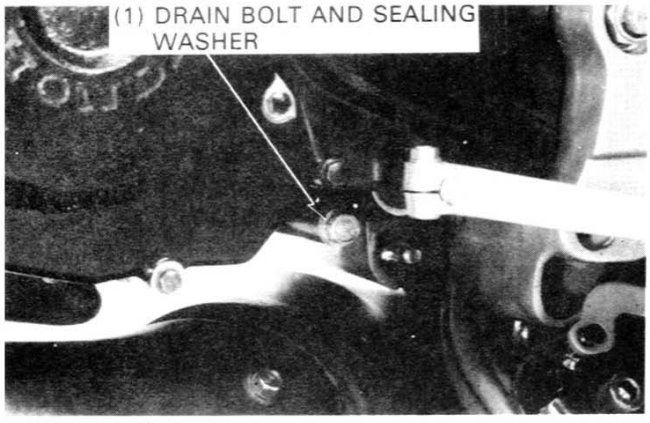
Place the motorcycle on firm, level ground and support it on its center stand.
Start the engine and let it idle for a few minutes, then stop the engine.
Check the oil level through the inspection window.
If the oil level is under the low level, remove the oil filler cap and fill the recommended transmission oil (see page 2-1) since to reached the upper part of the inspection window.




## CHANGE

Remove the transmission oil filler cap.
Place the oil drain pan under the engine to catch the oil, and remove the oil drain bolt to drain the oil.
After the oil has been completely drained, check that the sealing washer on the drain bolt is in good condition and install the drain bolt.
Fill the crankcase with the recommended transmission oil up to the upper part of the ispection window.

**OIL CAPACITY: 0.70 liter (0.74 US qt, 0.62 Imp qt) after draining**

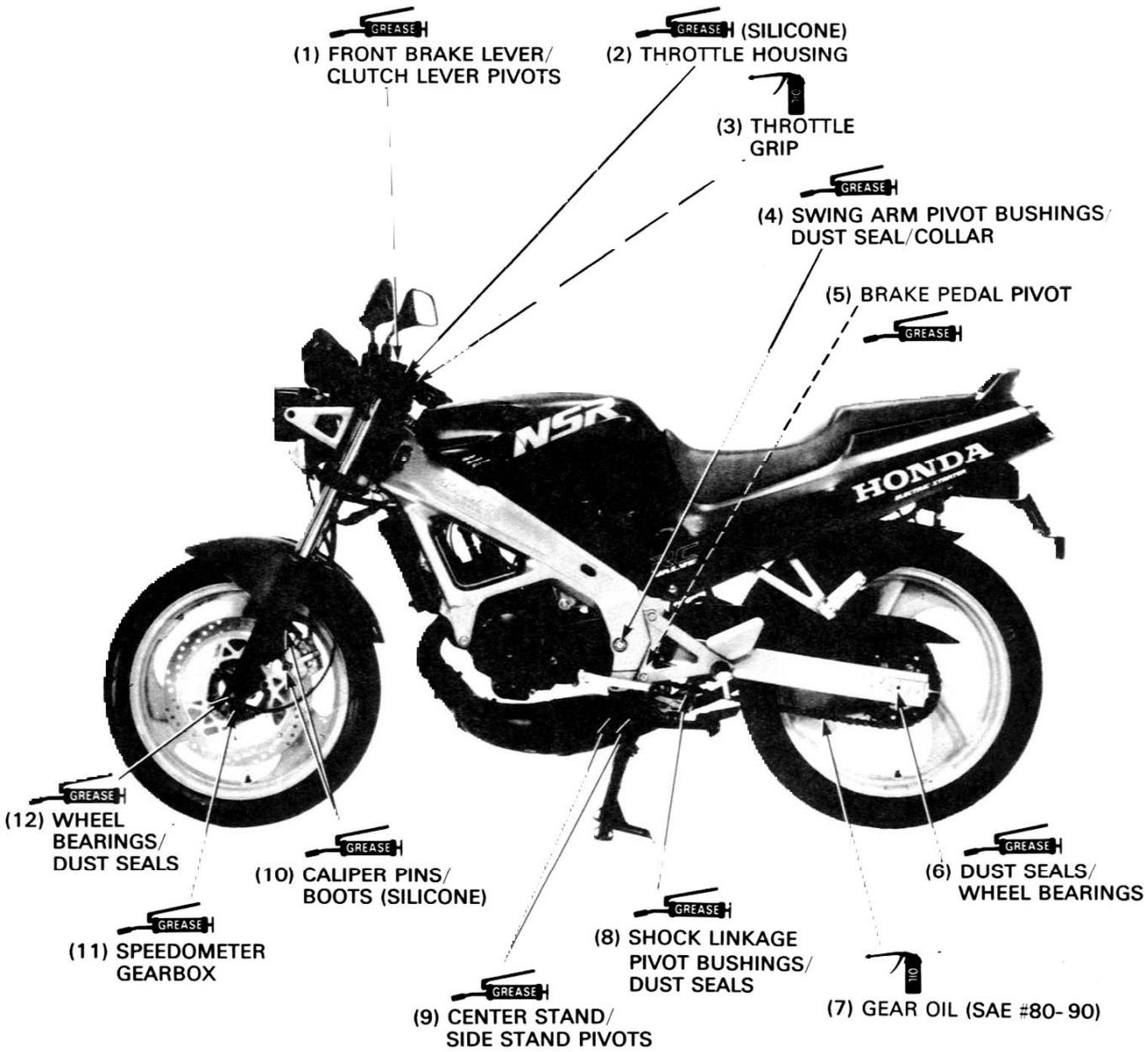


# LUBRICATION POINTS

Use general purpose grease when no other specification is given. Apply oil or grease to any 2 sliding surfaces and cables not shown here.

## CONTROL CABLE LUBRICATION

Periodically disconnect the throttle, oil control, choke and clutch cables at their upper ends. Thoroughly lubricate the cables and their pivot points with a commercially avaliable cable lubricant.



# SERVICE INFORMATION

## GENERAL

**⚠ WARNING**

***If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in an enclosed area. The exhaust contain poisonous carbon monxide gas that can cause the loss of consciousness and may lead to death.***

***Gasoline is extreamely flammable and explosive under certain conditions. Work in a well ventilated area with the engine stopped. Do not smoke or allow flames or sparks in the work area or where gasoline is stored.***

## SPECIFICATIONS

**Engine**

| | |
|---|---|
| Throttle grip free play | 2–6 mm (1/8–1/4 in) |
| Bystarter valve stroke | 10–11 mm (0.39–0.43 in) |
| Spark plug gap | 0.7–0.8 mm (0.028–0.031 in) |
| Spark plugs: | |

| | NGK | ND |
|---|---|---|
| Standard | BR9ECS | W27ESR–U |
| For extended high speed riding | BR10ES | W31ESR–U |

| | | |
|---|---|---|
| Idle speed | | 1,400 ± 100 $min^{-1}$ (rpm) |
| Cylinder compression | | 1,000 ± 200 kPa (10 ± 2 $kg/cm^2$, 142 ± 2 8 psi) |
| Ignition timing | F mark | 24.3° ± 2°/3,000 $min^{-1}$ (rpm) |

**Frame**

| | |
|---|---|
| Drive chain slack | 25–35 mm (1–1–3/8 in) |
| Clutch lever free play | 10–20 mm (3/8–3/4 in) |
| Tires : | |

| | | FRONT | REAR |
|---|---|---|---|
| Cold tire pressure kPa ($kg/cm^2$, psi) | Rider only | 200 (2.00, 29) | 225 (2.25, 33) |
| | Rider and one passenger | 200 (2.00, 29) | 250 (2.50, 36) |
| Tire size | | 100/80–17 52S | 130/70–18 63S |

| | | |
|---|---|---|
| Minimum tire thread depth | Front: | 1.5 mm (1/16 in) |
| | Rear: | 2.0 mm (3/32 in) |

## TORQUE VALUES

| | |
|---|---|
| Rear axle nut | 90 N·m (9.0 kg-m, 65 ft-lb) |

# MAINTENANCE SCHEDULE

Pereform the Pre-ride Insepction at each scheduled maintenance period.
I : INSPECT AND CLEAN, ADJUST, LUBRICATE OR REPLACE IF NECESSARY.
C : CLEAN R : REPLACE A : ADJUST L : LUBRICATE

| | FREQUENCY / ITEM | WHICHEVER COMES FIRST ↓ NOTES | ×1,000 km ×1,000 mi MONTHS | ODOMETER READING (NOTE 2) 1 / 0.6 | 4 / 2.5 / 6 | 8 / 5 / 12 | 12 / 7.5 / 18 | REFER TO PAGE |
|---|---|---|---|---|---|---|---|---|
| * | FUEL LINE | | | | I | I | I | 3-3 |
| * | FUEL FILTER | | | | | I | | 3-3 |
| * | THROTTLE OPERATION | | | I | I | I | I | 3-3 |
| * | CARBURETOR CHOKE | | | | I | I | I | 3-4 |
| | AIR CLEANER | NOTE 1 | | | C | C | C | 3-5 |
| | SPARK PLUG | | | I : EVERY 2,000 km (1,250 mi) R : EVERY 4,000 km (2,500 mi) | | | | 3-6 |
| | TRANSMISSION OIL | | 2YEARS * R | | | | | 2-5 |
| * | ENGINE OIL LINES | | | | I | I | I | 3-6 |
| * | ENGINE OIL STRAINER SCREEN | | | | | | C | 3-6 |
| * * | OIL PUMP | | | I | I | I | I | 2-4 |
| * | CARBURETOR IDLE SPEED | | | I | I | I | I | 3-7 |
| | RADIATOR COOLANT | | | | | I | | 3-7 |
| | RADIATOR CORE | | | | | I | | 3-7 |
| | COOLING SYSTEM | | | I | | I | | 3-8 |
| * * | CYLINDER HEAD DECARBONIZATION | | | | | C | | 7-2 |
| * * | CYLINDER EXHAUST PORT DECARBONIZATION | | | | | C | | 7-5 |
| * * | MUFFLER DECARBONIZATION | | | | | | C | |
| | DRIVE CHAIN | | | I, L EVERY 1,000 km (600 mi) | | | | 3-9 |
| | BRAKE FLUID | | MONTH : I 2 YEARS : R | I | I | I | I | 3-10 |
| | BRAKE PAD WEAR | | | | I | I | I | 3-10 |
| | BRAKE SYSTEM | | | I | I | | | 3-11 |
| * | BRAKELIGHT SWITCH | | | I | I | I | I | 3-11 |
| * | HEADLIGHT AIM | | | I | I | I | I | 3-11 |
| | CLUTCH SYSTEM | | | I | | I | | 3-11 |
| | SIDE STAND | | | | I | I | I | 3-12 |
| * | SUSPENSION | | | I | | I | | 3-13 |
| * | NUTS, BOLTS, FASTENERS | | | I | I | I | I | 3-13 |
| * * | WHEELS/TIRES | | | I | I | I | I | 3-14 |
| | STEERING HEAD BEARINGS | | | I | | I | | 3-14 |

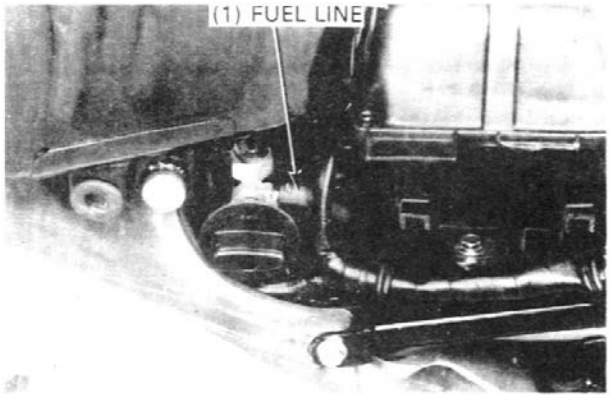
* : SHOULD BE SERVICED BY AN AUTHORIZED HONDA DEALER, UNLESS THE OWNER HAS PROPER TOOLS AND SERVICE DATA AND IS MECHANICALLY QUALIFIED.

* * : IN THE INTEREST OF SAFETY, WE RECOMMEND THESE ITEMS BE SERVICED ONLY BY AN AUTHORIZED HONDA DEALER.

NOTE : (1) Service more frequently when riding in dusty areas.
(2) For higher odometer reading, repeat at the frequency interval established here.

## FUEL LINE

Remove the left faireing (page 4-3).
Check the fuel line for leakage or deterioration, and replace if necessary.

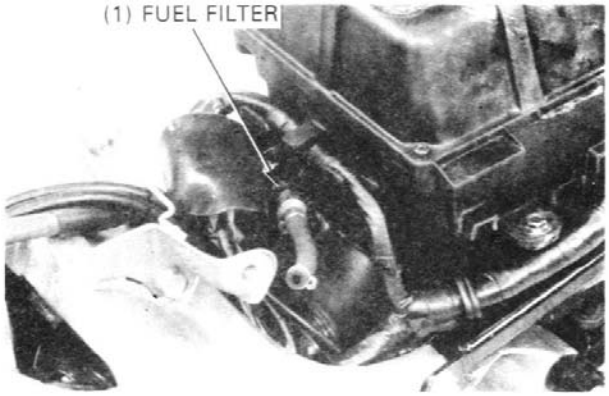



## FUEL FILTER

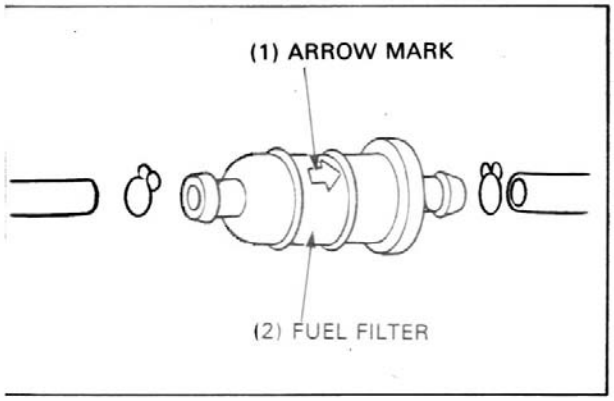
⚠ WARNING

- *Gasoline is flammable and explosive under certain conditions. Do not smoke or allow flames or sparks in your working area.*

Remove the fuel tank (page 4-3).
Check the fuel filter for clogging or being dirty, and replace with a new one if necessary.



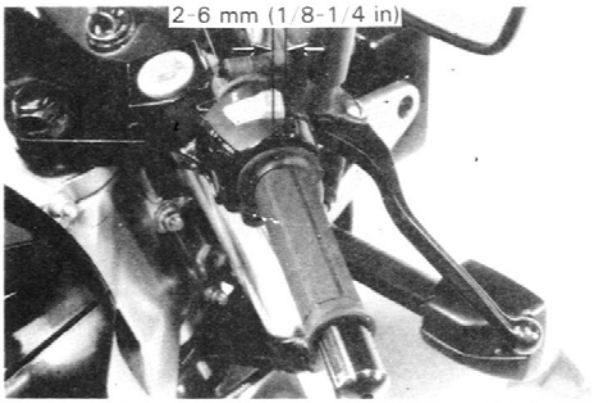

Install a new fuel filter with the arrow mark on the fiter pointing the carburetor side.
After installation, check for fuel free flow by turning the fuel valve ON.



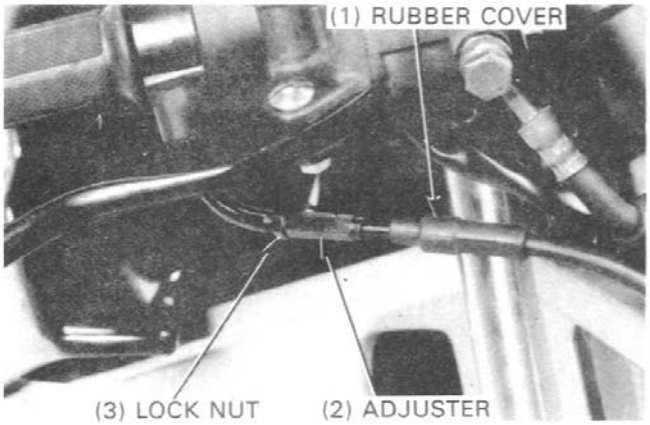

## THROTTLE OPERATION

Check the throttle grip for smooth operation, complete opening and automatic closing in all steering positions.
Make sure there is no deterioration, damage or kinking in the throttle cables. Replace any damaged parts.
Lubricate the trottle cables (page 2-6) if throttle operation is not smooth.
Measure throttle grip free play at the throttle grip flange.

**FREE PLAY: 2-6 mm (1/8-1/4 in)**

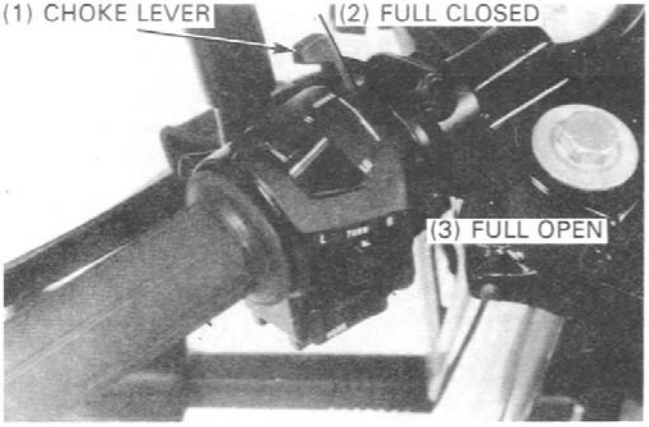


Adjust as follows:
Pull the rubber caver off the adjuster.
Loosen the lock nut and turn the adjuster as required.
Tighten the lock nut.
Recheck the throttle operration.



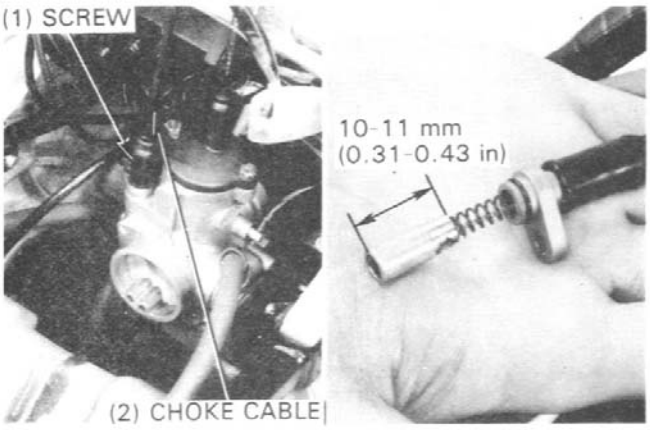

# CARBURETOR CHOKE

This model choke system uses a fuel enrichening circuit controlled by a bystater valve. The bystarter valve opens the enrichening circuit when the choke lever on the handlebar is pulled back.




Remove the air cleaner case (page 4-5) and disconnect the choke cable by removing the screw.
Measure the bystarter valve stroke when the choke lever is pulled back all the way from the full closed position.

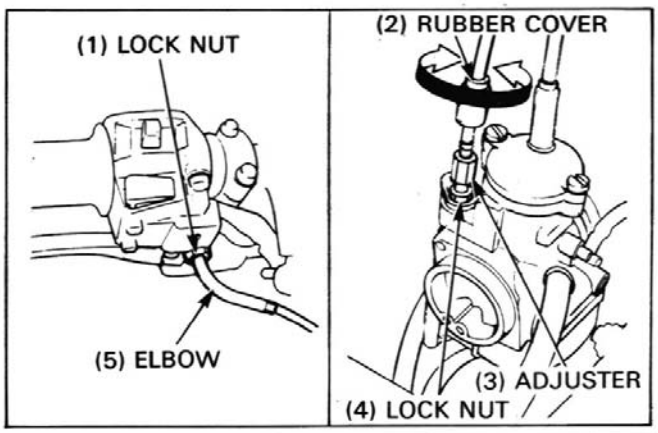
**BYSTARTER VALVE STROKE: 10-11mm (0.39-0.43in)**




If the valve stroke is out of specification, adjust following procedure below:
Minor adjustment is made with the cable's elbow at the left handle switch housing.
Loosen the lock nut and turn the elbow as requiered.
Tighten the lock nut.

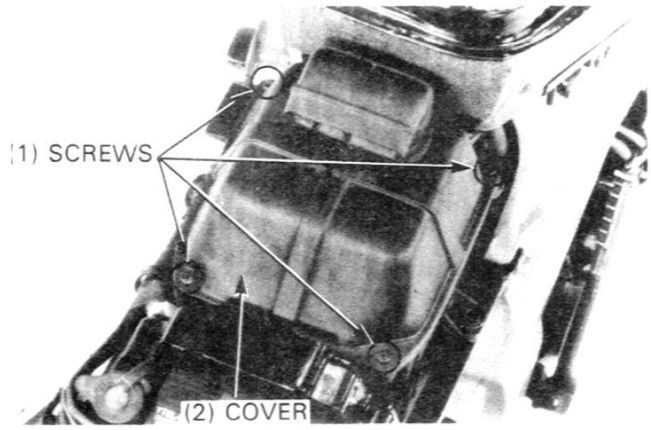
Majour adjustment is made with the lower adjuster.
Slide the rubber cover up, loosen the adjuster lock nut and turn the lower adjuster as required. Tighten the lock nut securely and recheck the valve stroke.

Install the air cleaner (page 4-5) and fuel tank (page 4-4).

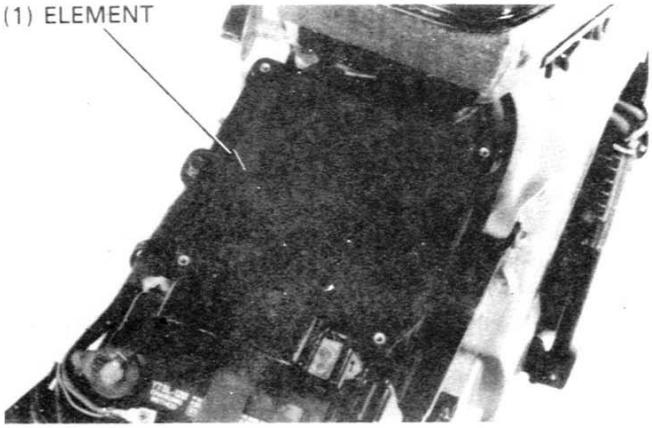


# AIR CLEANER

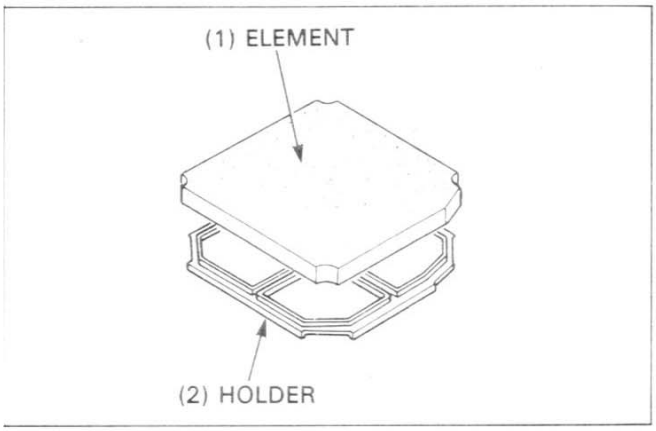
Remove the right and left fairings (page 4-3).
Remove the four air cleaner case cover attaching screws and the cover.




Remove the air cleaner element from the case.




Remove the element holder from the element.

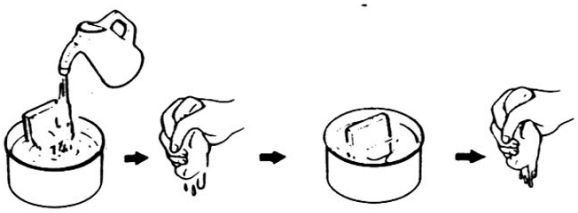



Wash the element in non-flammable or high flash point solvent.
squeeze out the solvent thoroughly, and allow to dry.

**⚠ WARNING**

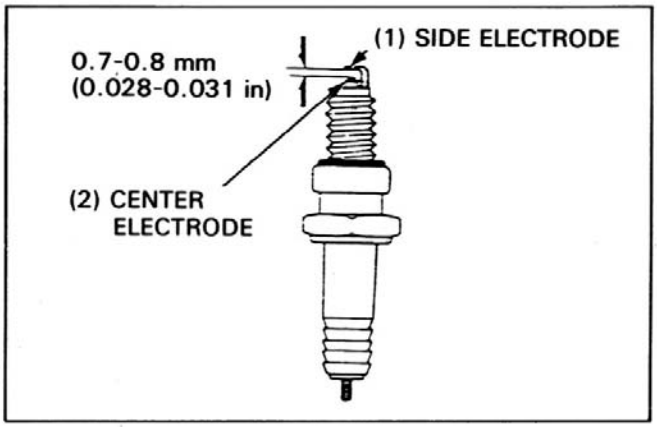
- ***Never use the gasoline or low flash point solvents for cleaning the air cleaner element. A fire or explosion could result.***

Soak the element in gear oil (SAE # 80-90) and squeeze out oil.
Install the element holders onto the element holder.
Install the air cleaner element into the air cleaner case.
Install the air cleaner case cover and secure it with the four screws.
Install the right and left fairings (page 4-3).



# SPARK PLUG

Disconnect the spark plug cap and remove the spark plug. Visually inspect the spark plug electrodes for wear. The center electrode should have square edges and the side electrode should have a constant thickness. Discard the spark plug if there is apparent wear or if the insulator is cracked or chipped. Measure the gap with a wire-type feeler gauge and adjust if necessary by carefully bending the side electrode.




**SPARK PLUG GAP : 0.7-0.8 mm (0.028-0.031 in)**

SPARK PLUG :

| | NGK | ND |
|---|---|---|
| Standard | BR9ECS | W27ESR-U |
| For extended high Speed riding | BR10ES | W31ESR-U |

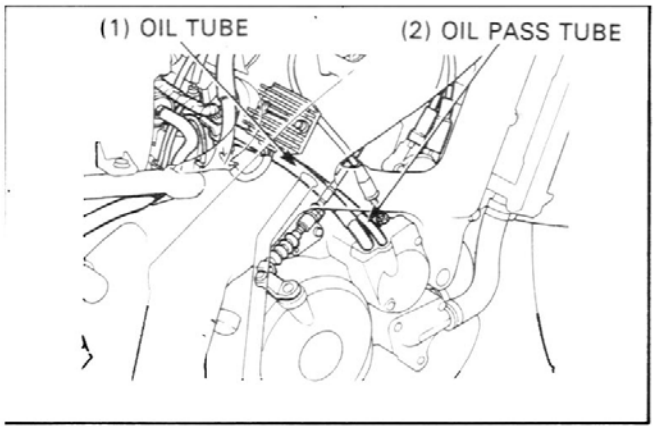
With the plug washer attached, thread the spark plug in by hand to prevent cross threading. Tighten the spark plug another 1/2 turn with a spark plug wrench to compress the plug washer.

Connect the spark plug cap to the plug.

# ENGINE OIL LINE

Check the engine oil line and replace any parts which show deterioration, damage or leakage.

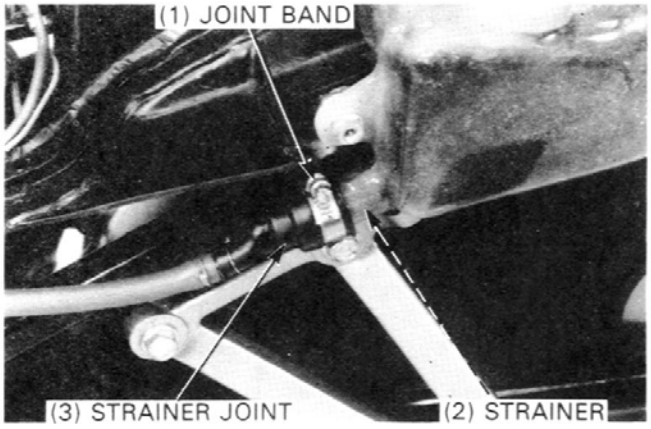
Bleed the oil pump and oil lines, if they have air bubbles in them (page 2-3)




# ENGINE OIL STRAINER SCREEN

Loosen the oil strainer joint band, remove the strainer joint at the bottom of the oil tank and allow the oil to drain into a clean container.

Remove the oil strainer from the strainer joint.




Clean the oil strainer with compressed air. Replace the oil strainer if necessary.

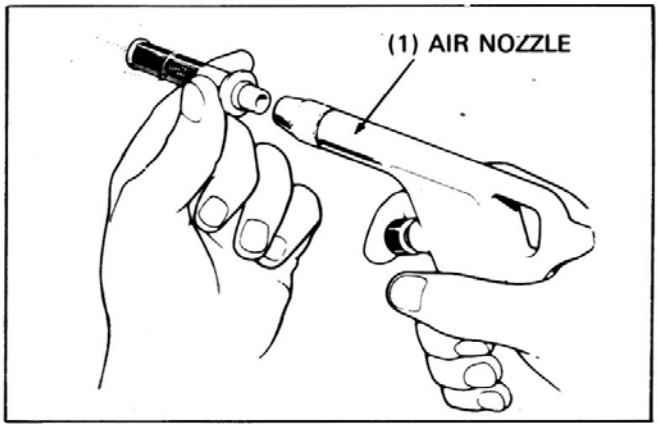
Reinstall the strainer into the strainer joint.

Install the joint onto the oil tank and tighten the joint band securely.

Fill the oil tank with the recommended oil and bleed air from the oil pump and oil lines (page 2-3).

**OIL TANK CAPACITY: 1.0 lit (1.06 US qt, 0.88 Imp qt)**

**RECOMMENDED ENGINE OIL: Honda 2-stroke oil or equivalent**




**NOTE**

- Connect the oil line securely and check for the oil leakage.

# CARBURETOR IDLE SPEED

**⚠ WARNING**

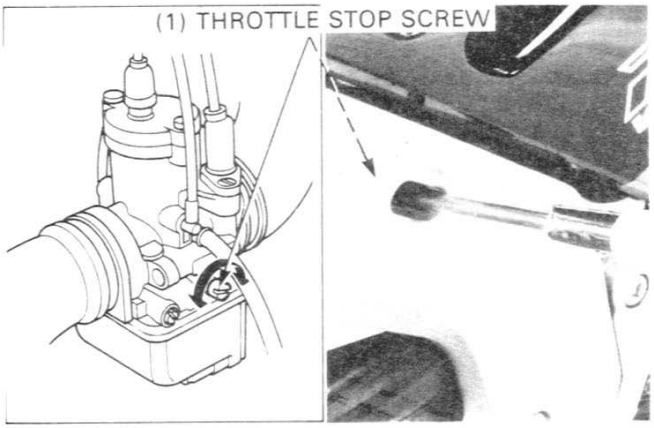
- ***If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that can cause the loss of consciousness and may lead to death.***

NOTE

- Inspect and adjust idle speed after all other engine adjustments are within specifications.
- The engine must be warm for accurate adjustment. Ten minutes of stop-and-go riding is sufficient.

Warm up the engine.
Place the motorcycle on its center stand and shift the transmission into neutral.
Check the idle speed and adjust by turning the throttle stop screw if necessary.

**IDLE SPEED: 1,400 ± 100 min$^{-1}$ (rpm)**

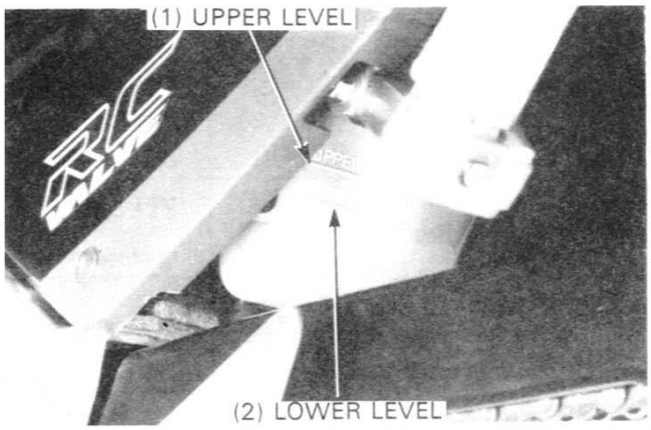



# RADIATOR COOLANT

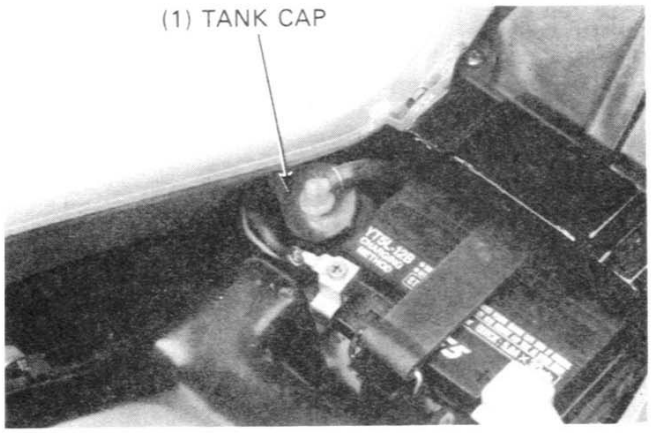
**⚠ WARNING**

***If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that can cause the loss of consciousness and may lead to death.***

Remove the right fairing (page 4-3).
Check the coolant level of the reserve tank with the engine running at normal operating temperature. The level should be between the "UPPER" and "LOWER" level lines.

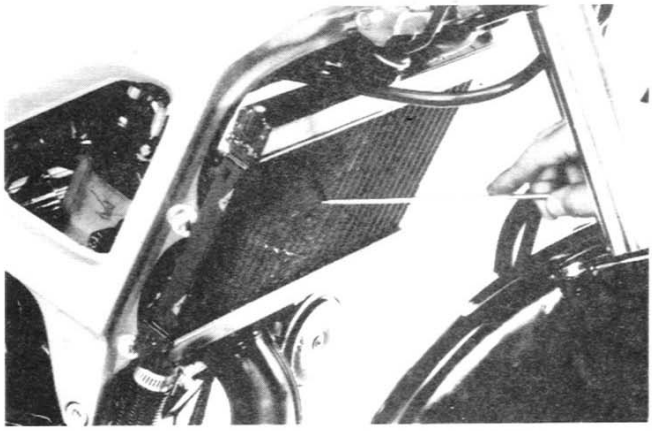



If necessary, remove the seat and reserve tank cap and fill to the "UPPER" level line with 50/50 mixture of distilled water and antifreeze.
Reinstall the reserve tank cap and seat.

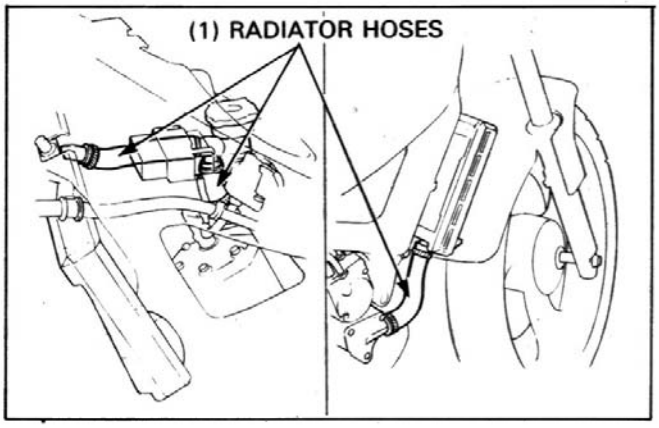



# COOLING SYSTEM

Check the radiator core for clogging or damage.
Straighten the bent fins and collapsed tubes.
Remove the insects, mud or any obstructions with compressed air or low water pressure.
Replace the radiator if the air flow is restricted over more than 20% of the radiating surface.
For radiator replacement, refer to the page 5-7.



Check the cooling system hoses for cracks, deterioration or other demage, and replace if necessary.
Check that all hose clamps are secure.




# CYLINDER COMPRESSION

Warm the engine up to the normal operating temperature.

**⚠ WARNING**

- ***If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that can cause the loss of consciousness and may lead to death.***

Remove the spark plug cap and spark plug.
Install the compression gauge to the spark plug hole.
Turn the engine stop switch "OFF".

Open the throttle all the way and crank the engine with the starter motor or by operating the kickstarter pedal several times.

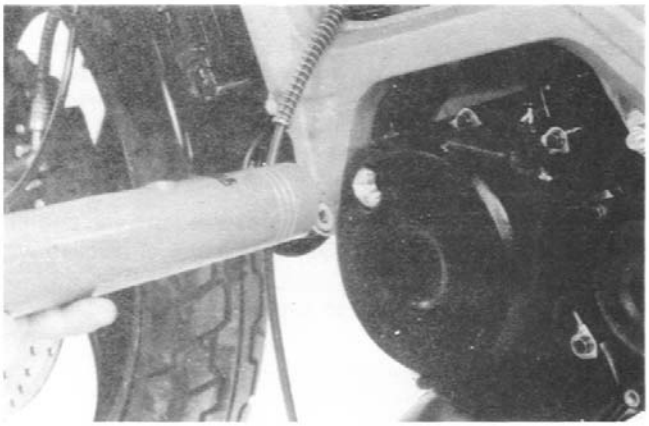
NOTE

- Be sure compression is not leaking at the gauge connection.
- Crank the engine until the gauge reading stops rising.

**COMPRESSION PRESSURE;**
**1,000 ± 200 (10 ± 2 kg/cm², 142 ± 28 psi)**

**Low compression can be caused by:**
- Faulty reed valve.
- Leaking cylinder head gasket.
- Worn piston rings and cylinder
- Worn cylinder.
- Damaged crankshaft oil seal.

**High compression can be caused by:**
- Carbon deposits in combustion chamber or on top of the piston.

# IGNITION TIMING

NOTE

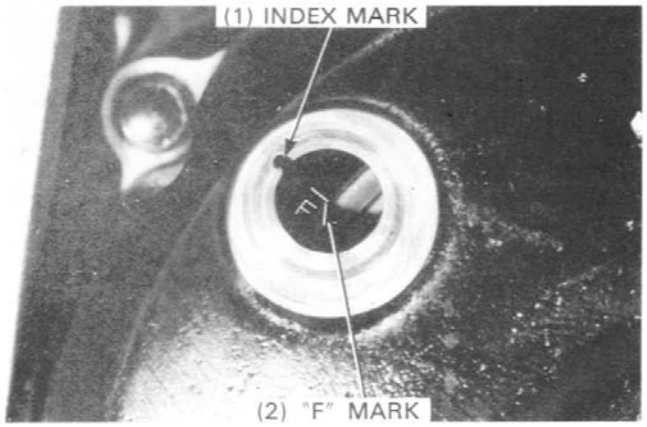
- The Capacitive Discharge Ignition system is factory pre-set and can not be adjusted. Ignition timing inspection procedures are given as follows.

Warm the engine up to the operating temperature.

**⚠ WARNING**

***If the enigne must be running to do some work, make sure the area is well ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that can cause the loss of conciousness and may lead to death.***

Start the engine and raise the engine speed to 3,000 $min^{-1}$ (rpm) by turning the throttle stop screw in.
Remove the timing hole cap.
Connect a timing light.
Inspect the ignition timing.
Timing is correct if the "F" mark on the alternator rotor is aligned with the index mark on the left crankcase cover at 3,000 $min^{-1}$ (rpm).
If the ignition timing is incorrect, perform the system inspection (page 16-3).



# DRIVE CHAIN

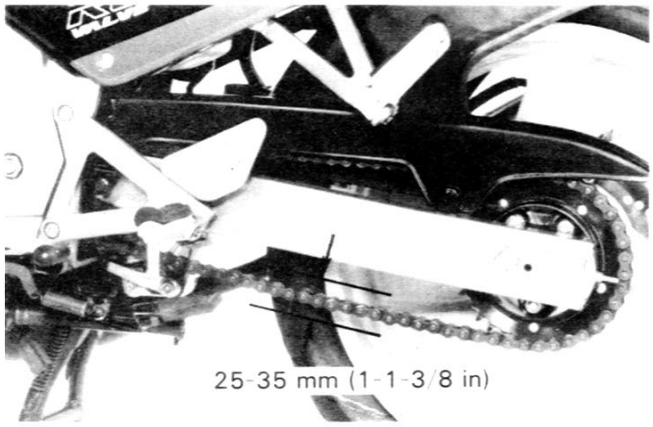
**⚠ WARNING**

- ***Never inspect or lubricate the drive chain while the engine is running.***

## INSPECTION

Stop the engine and shift the transmission into neutral.
Measure the drive chain slack midway between the sprokets.

**DRIVE CHAIN SLACK:25-35mm (1-1-3/8in)**

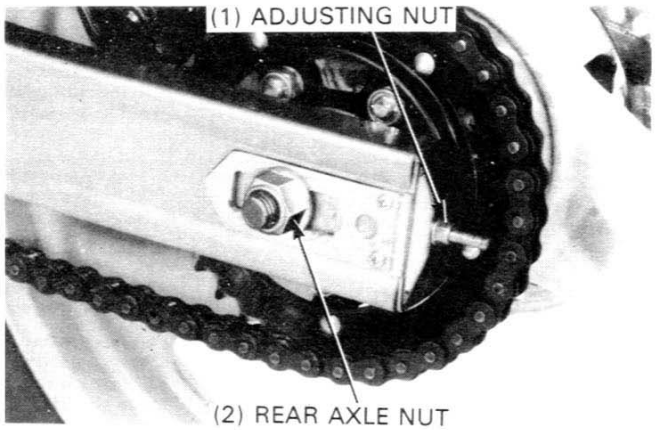



## ADJUSTMENT

Loosen the rear axle nut and turn the both adjusting nuts in equal number of turns untill the correct drive chain slack is obtained.
Make sure that the same graduation scale on the both adjusters align with the rear ends of the slot in the adjuster plate.
Tighten the rear axle nut.

**TORQUE:90N·m (9.0kg-m, 65ft-lb)**

Tighten the adjusting nuts securely.

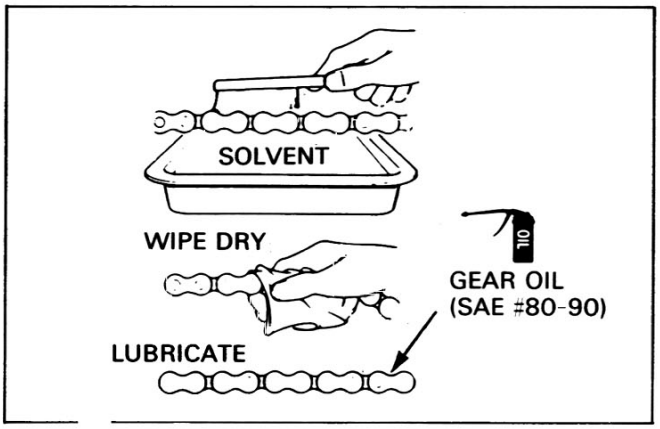



NOTE

- Drive chain and sproket must be replaced as a set with new ones if the specified chain slack can not be obtained with the chain adjusting nuts.

## LUBRICATION AND CLEANING

If the drive chain extreamely dirty, clean the drive chain with kerosene.
Wipe dry and lubricate only with SAE # 80 or # 90 gear oil.

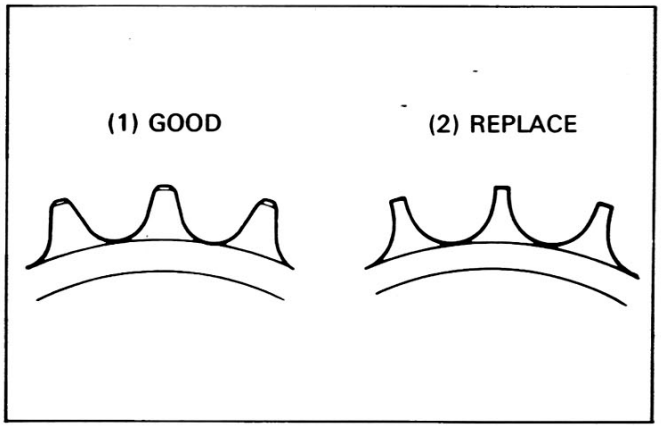



# DRIVE SPROCKET

Inspect the drive chain and sprockets for damage or wear.
A drive chain with damaged rollers or loose pins must be replaced. Replace the sprocket which is damaged or excessively worn.

NOTE

- Never install a new drive chain on worn sprockets or a worn chain on new sprockets. Both chain and sprocket must be replaced as a set, or the new replacement chain or sprockets will wear rapidly.



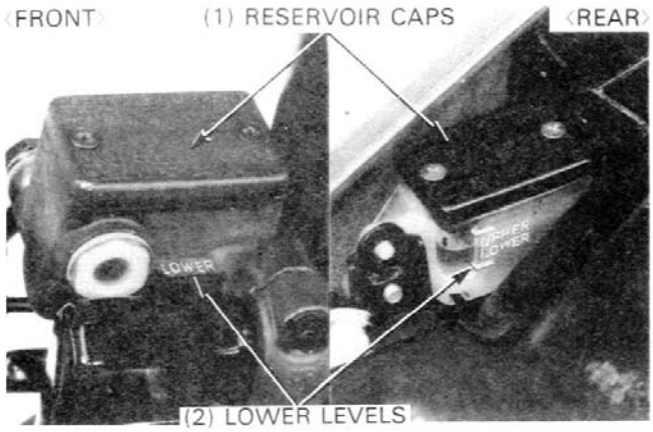
# BRAKE FLUID

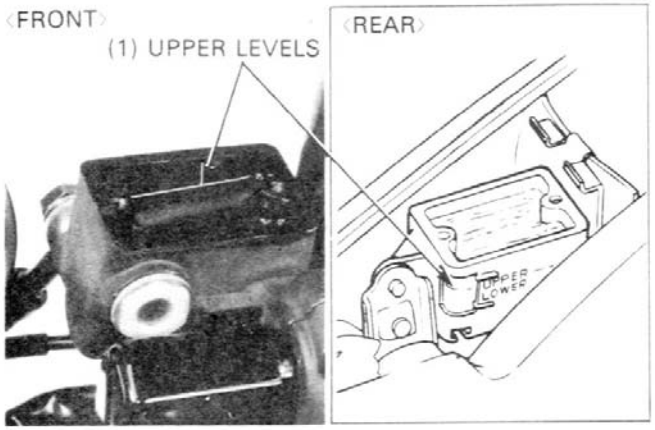
Check the brake fluid level if the level nears the lower level, remove the reservoir cap, set plate and diaphgram. Fill the reservoir to the upper level with DOT 4 brake fluid from a sealed container. Check the system for leaks.

**CAUTION**

- *Do not remove the reservoir cap until the handlebar has been turned so that the reservoir is level.*
- *Do not mix different type of fluid, as they are not compatible with each other.*
- *Do not allow foreign material to enter the system when filling the reservoir.*
- *Avoid spilling the fluid on painted, plastic or rubber parts.*

Refer to section 13 for brake breeding procedures.



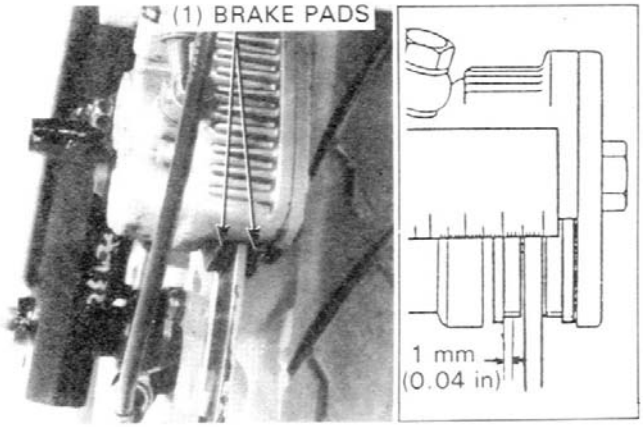




# BRAKE PAD WEAR

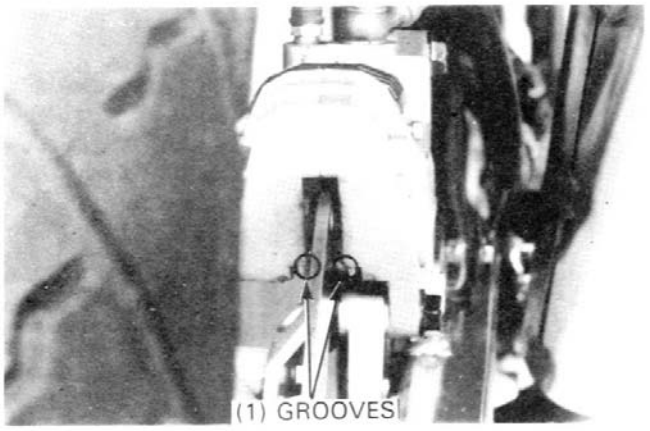
**CAUTION**

- *Always replace the pads in pairs to assure even disc pressure.*

**Front:**
Check the brake pads for wear by measuring their thickness. Replace the pads if their thickness are less than 1mm (0.04in) (page 13-5).




**Rear:**
Check the rear brake pads for wear.
Replace the brake pads if the wear grooves in the brake pads reach the brake disc.
Refer to page 13-7 for replacement.



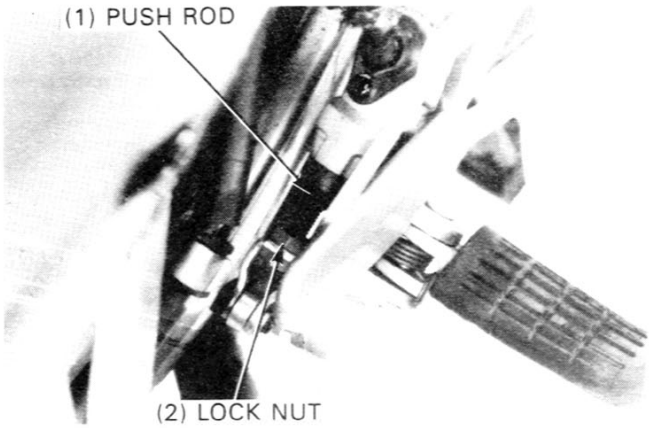
# BRAKE SYSTEM

Inspect the brake hoses and fittings for deterioration, cracks and signs of leakage. Tighten any loose fittings.
Replace hoses and fittings if necessary.

BRAKE PEDAL HEIGHT

To adjust the brake pedal height, loosen the lock nut and turn the rear master cylinder push rod as regired.
After adjustment, tighten the lock nut securely.

**TORQUE : 18 N·m (1.8 kg-m, 13 ft-lb)**

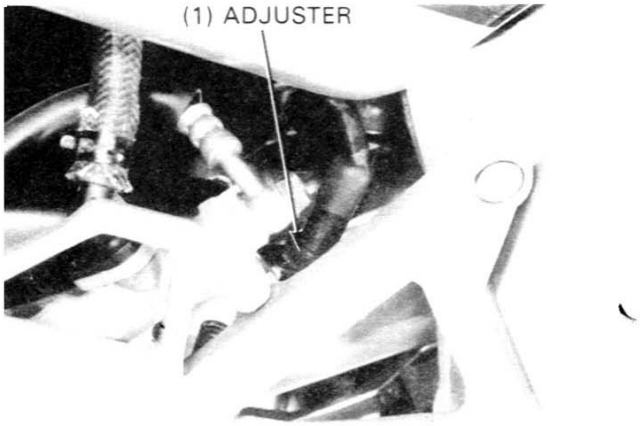



# BRAKELIGHT SWITCH

NOTE

- Perform rear brakelight swich adjustment after adjusting the brake pedal height.
- The front brakelight switch does not require adjustment.

Adjust the brakelight switch so that the brakelight will come on just before the brake engagement begins.
Hold the switch body and turn the adjusting nut. Do not turn the switch body.



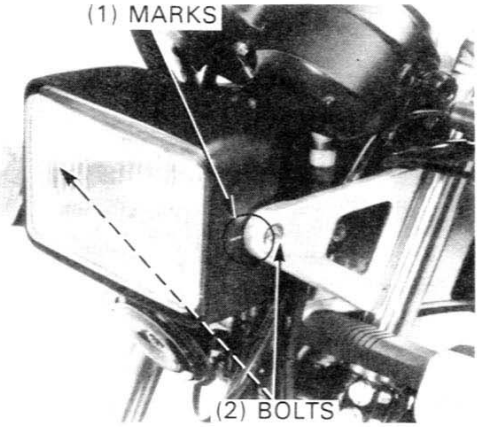

# HEADLIGHT AIM

Loosen the headlight mounting bolts and align the marks on the headlight and headlight case bracket.
Tighten the headlight mounting bolts.

For "R-Type" adjust headlight using the registred screw, located under the front center cowl.

⚠ **WARNING**

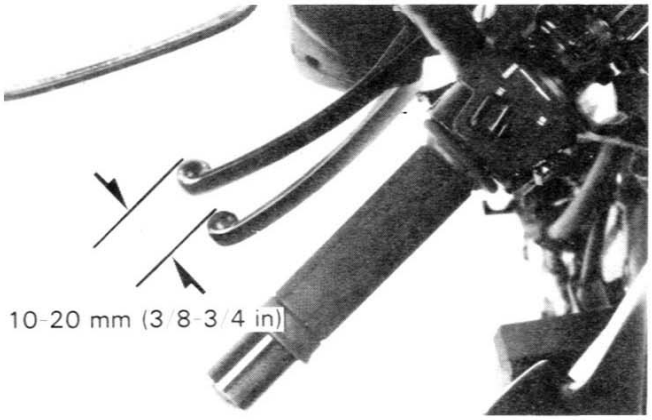
- ***An improperly adjusted headlight may blind oncoming drivers, or it may fail to light the road for a sate distance.***



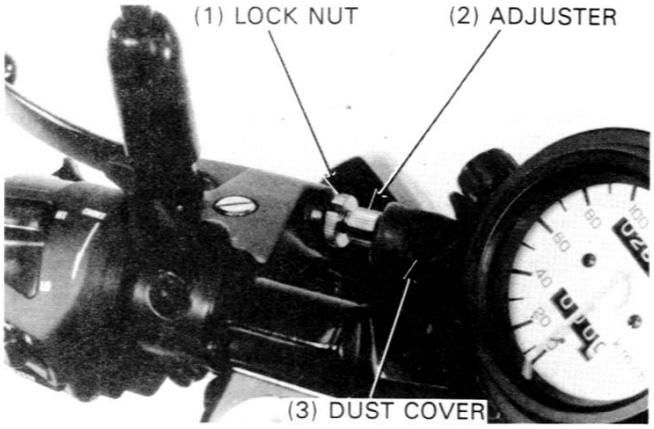

# CLUTCH SYSTEM

Measure the clutch lever free play at the lever end.

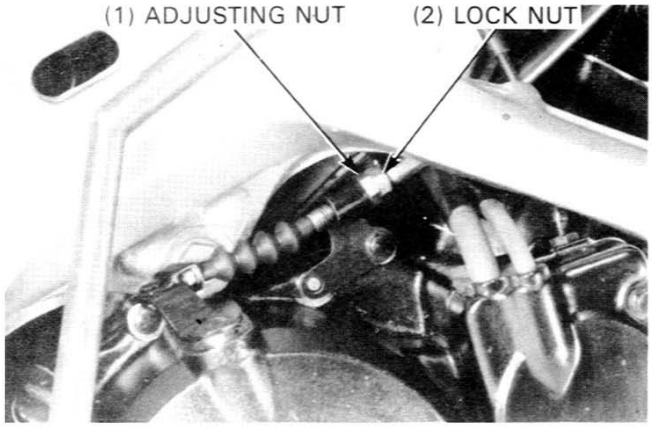
**FREE PLAY: 10-20mm (3/8-3/4 in)**



Adjust as follows:
Minor adjustmets are made at the upper adjuster.
Slide the dust cover off, loosen the lock nut and turn the adjuster.
Tighten the lock nut and install the dust cover.

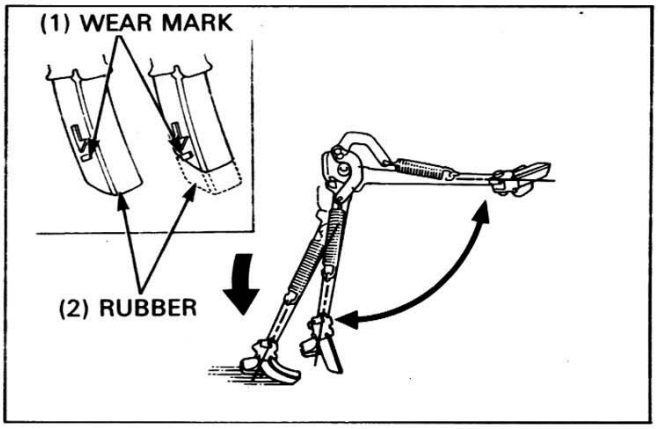



Major adjustments are made with the lower adjuster.
Loosen the lock nut and turn the adjusting nut.
Tighten the lcok nut.
Check the clutch operation and lever free play.



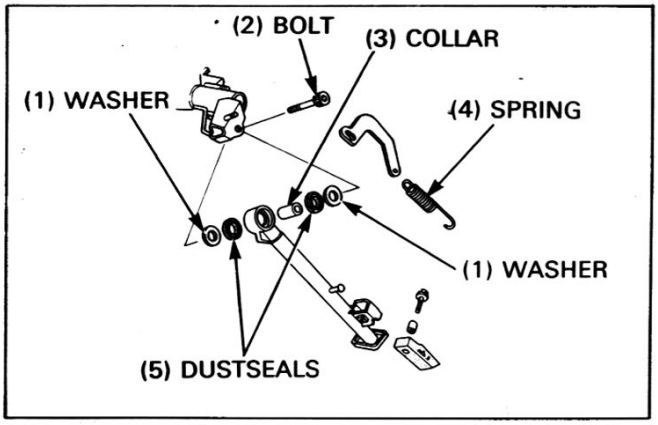

# SIDE STAND

Check the rubber pad for wear or damage.
Replace the rubber pad if wear extends to the wear line.
Check the side stand operation.
The side stand should lower easily to its first stop, then lock to support the motorcycle as the rubber touches the ground.
When the motorcycle is lifted upright, the stand should automatically move to the first clic, and retract when kicked up.
If the side stand does not move freely, disassemble it;
Remove the return spring at the retracted position.
Remove the pivot bolt and remove the side stand assembly from the frame.
Check the following parts for wear or damage:
– inside of the pivot and pivot collar
– pivot dust seal
Lubricate the pivot area with clean grease and reassemble the side stand.




CAUTION

*Install the dust seal with its mark side facing in.*
*Make sure that the dust seal spring is seated on the outside of the seal lips after installing the pivot collar.*



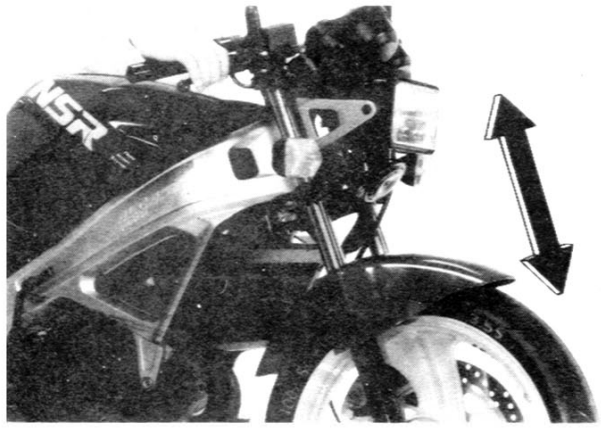

**TORQUE:**
**Side stand pivot bolt: 35 N·m (3.5 kg-m, 25 ft-lb)**

Recheck the side stand movement.

# SUSPENSION

⚠ WARNING

- ***Do not ride a vehicle with faulty suspension. Loose, worn or damaged suspension parts impair vehicle stability and control.***



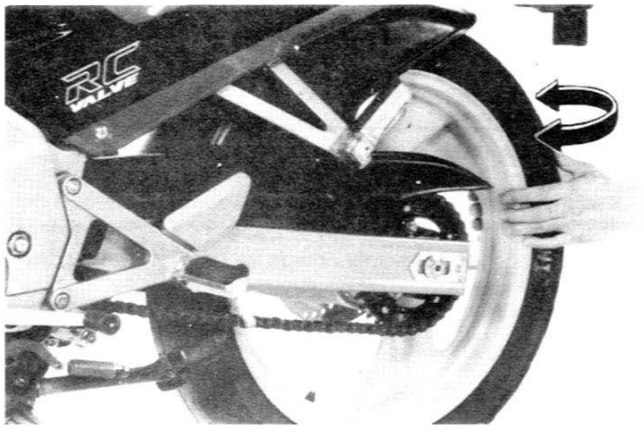
## FRONT

Check the action of the front suspension by compressing it several times with the brake lever pulled in.
Check entire fork assmbly for leaks or damage.
Replace damaged components which can not be repaired.
Tighten all nuts and bolts.

## REAR

Check the action of the shock absorber by compressing it several times as shown.
Replace any damaged components which can not be repaired.
Tighten all nuts and bolts.

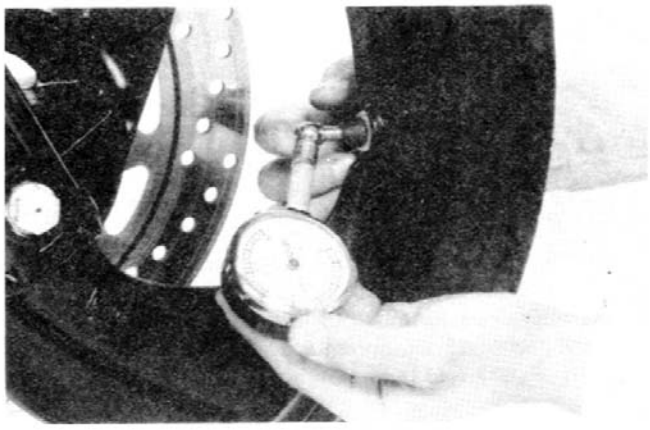

Place the motorcycle on its center stand.
Check for worn swing arm bushings by grabbing the rear wheel as shown, and attempting to move the wheel side to side. Replace the bushings if any looseness is noted (page 12 -13).



# NUTS, BOLTS, FASTENERS

Check that all chassis nuts and bolts are tightened to correct torque values (page 1-5).
Check that all cotter pins, safety clips, hose clamps and cable stays are in place.

# WHEELS



NOTE

- Tire pressure should be checked when tires are COLD.

Check the tire for cuts, imbedded nails, or other damage.

Recommended tire pressures and tire sizes:

| | | Front | Rear |
|---|---|---|---|
| Cold tire pressure kPa (kg/cm², psi) | Rider only | 200 (2.00, 29) | 225 (2.25, 33) |
| | Rider and one passenger | 200 (2.00, 29) | 250 (2.50, 36) |
| Tire size | | 100/80-17 52S | 130/70-18 63S |

Check the front and rear wheels for trueness (Refer to sections 12 and 13).
Measure the tread depth at the center of the tires.
Replace the tires when the tread depth reaches the following limits:
**Minimun tread depth:**
**Front: 1.5 mm (1/16 in)**
**Rear: 2.0 mm (3/32 in)**

# STEERING HEAD BEARINGS

NOTE

- Check that the control cables do not interfere with handlebar rotation.

Raise the front wheel off the ground.
Check that the handlebar moves freely from side to side. If the handlebar moves unevenly, binds or has vertical movement, inspect the steering head bearings (Section 11).

# RC VALVE

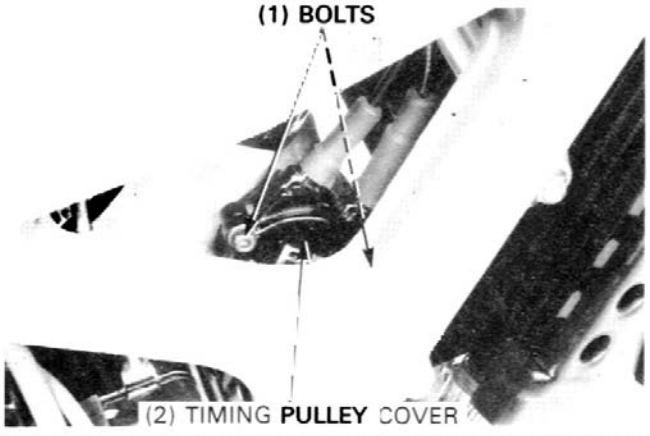
## CONTROL CABLE ADJUSTMENT

Turn the ignition switch ON and start the engine. During idling, stop the engine by turning the ignition switch OFF.

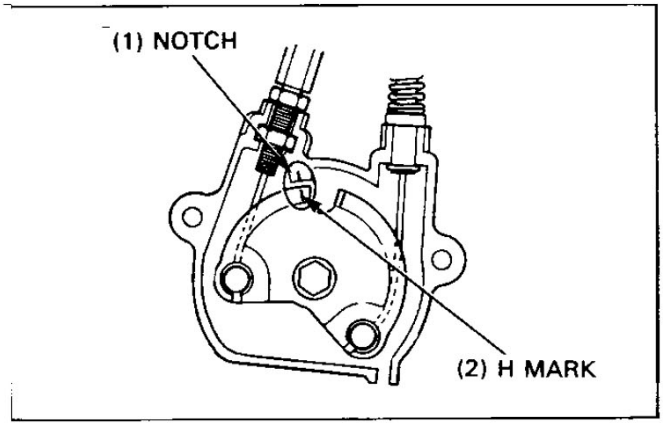
NOTE

- Do not stop the engine with the engine stop switch.

Loosen the front cover bolt and remove the rear cover bolt and timing pulley cover.



Check the gap between the notch on the cable guide base and the H mark on the RC valve timing pulley should be within 0.3mm (0.01in).
If the gap exceeds 0.3mm (0.01in), adjust the valve timing as following;

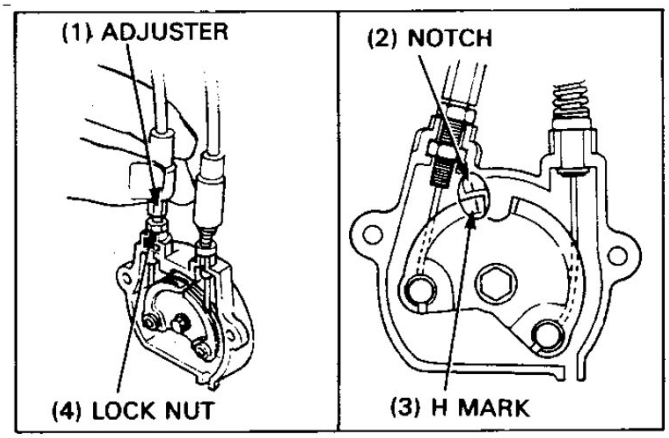


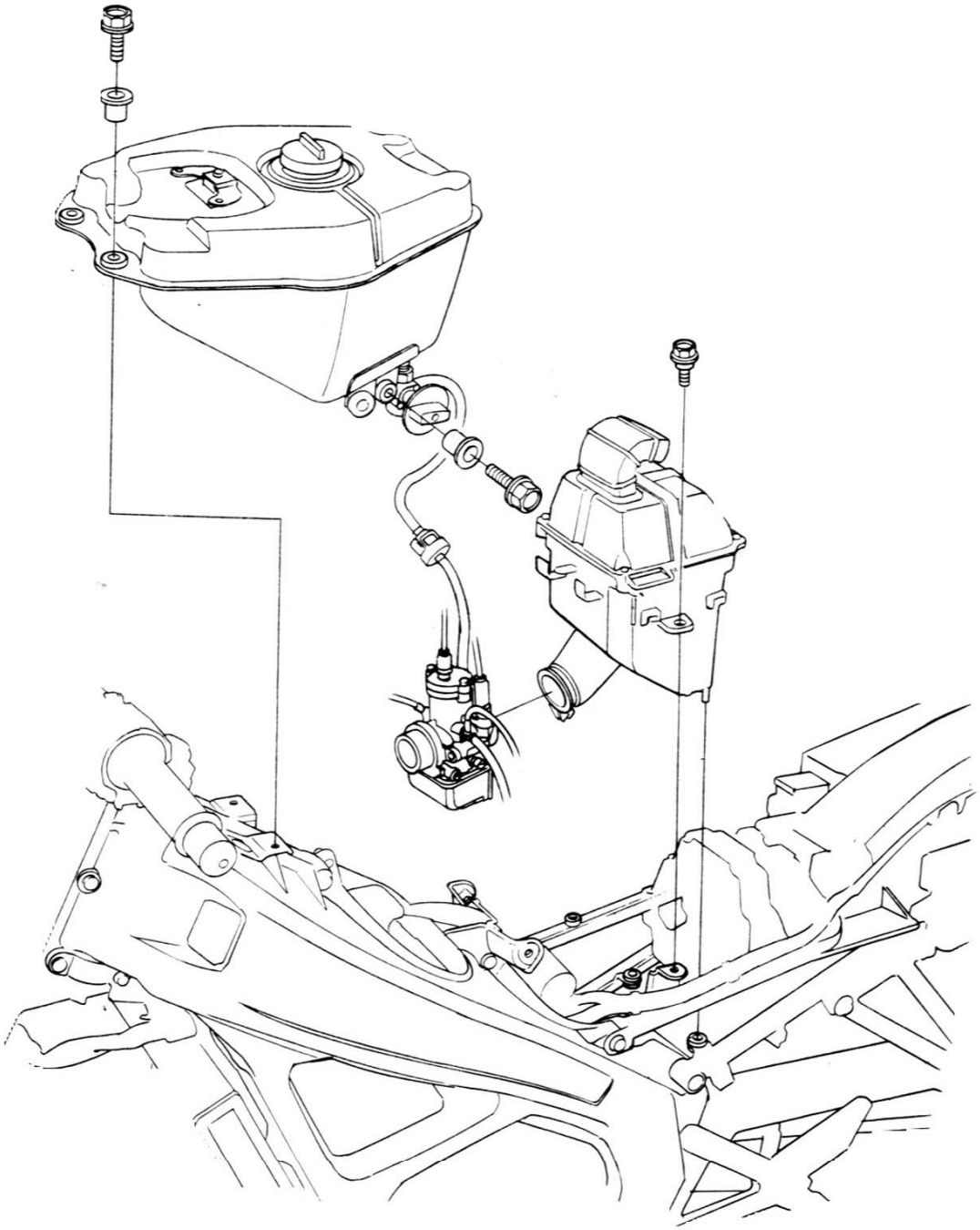

Loosen the lock nut and adjust the gap by turning the adjuster.

NOTE

- While turning the adjuster, hold the cable tube to prevent tube from being twisted.

Tighten the lock nut securely.
After adjustment, start the engine and make sure that the gap is within 0.3mm (0.01in).
Install the timing pulley cover in the reverse order of removal.





# SERVICE INFORMATION

## GENERAL

**⚠ WARNING**

- *Gasoline is extreamely flammable and explosive under certain conditions. Work in a well ventilated area with the engine stopped. Do not smoke or allow flames or sparks in the work area or where gasoline is stored.*
- *If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that can cause the loss of consiousness and may lead to death.*

**CAUTION**

- *Do not bend or twist control cables. Damaged control cables will not operate smoothly and may stick or bind.*

NOTE

If the vehicle is stored for more than one month, drain the float chamber. Fuel left in the float chamber may cause clogged jets resulting in hard starting or poor driveability.

- When disassembling the fuel system parts, note the location of the O-rings. Replace them with new anes on reassembly.
- Bleed air from the oil pass tube whenever it is disconnected.

## SPECIFICATIONS

| | |
|---|---|
| Fuel tank capacity | 10.0 liters (2.6 US gal, 2.19 Imp gal) |
| Fuel reserve capacity | 2.0 liters (0.52 US gal, 0.43 Imp gal) |

### Carburetor

{R-Type - SW}

| | |
|---|---|
| Identification number | PHBH28FS |
| Type | Piston valve |
| Venturi diameter | 28 mm(1.10 in) |
| Pilot screw opening | 2.5 turns out {2 turns out - SW} |
| Idle speed | 1,400±100 $min^{-1}$ (rpm) |
| Main jet | # 132 |
| Slow jet | # 52 |
| Throttle lever free play | 2–6 mm (1/8–1/4 in) |
| Jet needle setting | 3nd groove |
| Float level | 24±0.5 mm (0.94±0.02 in) |

## TORQUE VALUE

| | |
|---|---|
| Fuel valve lock nut | 10N·m (1.0 kg-m, 7 ft-lb) Apply a locking agent to the threads |

## TOOL

**Common**

| | |
|---|---|
| Float level gauge | 07401–0010000 |

# TROUBLESHOOTING

**Engine cranks but won't start**
- No fuel in tank.
- No fuel to carburetor.
- Engine flooded with fuel.
- No spark at plug (faulty ignition system).
- Clogged air cleaner.
- Intake air leak.
- Improper choke operation.
- Improper throttle operation.

**Hard starting or stalling after starting**
- Improper choke operation.
- Ignition malfunction.
- Faulty carburetor.
- Contaminated fuel.
- Intake air leak.
- Incorrect idle speed.

**Rough idle**
- Faulty ignition system.
- Incorrect idle speed.
- Faulty carburetor.
- Contaminated fuel.

**Misfiring during acceleration**
- Faulty ignition system.

**Backfiring**
- Fautly ignition system.
- Fautly carburetor.
- Faulty reed ualve.

**Poor performance (driveability) and poor fuel economy**
- Clogged fuel system.
- Faulty ignition system.

**Lean mixture**
- Clogged fuel jets.
- Faulty float valve.
- Low float level.
- Blocked fuel cap vent.
- Clogged fuel strainer screen.
- Restricted fuel line.
- Intake air leak.

**Rich mixture**
- Clogged air jets.
- Faulty float valve.
- Float level too high.
- Carburetor choke stuck closed.
- Dirty air cleaner.

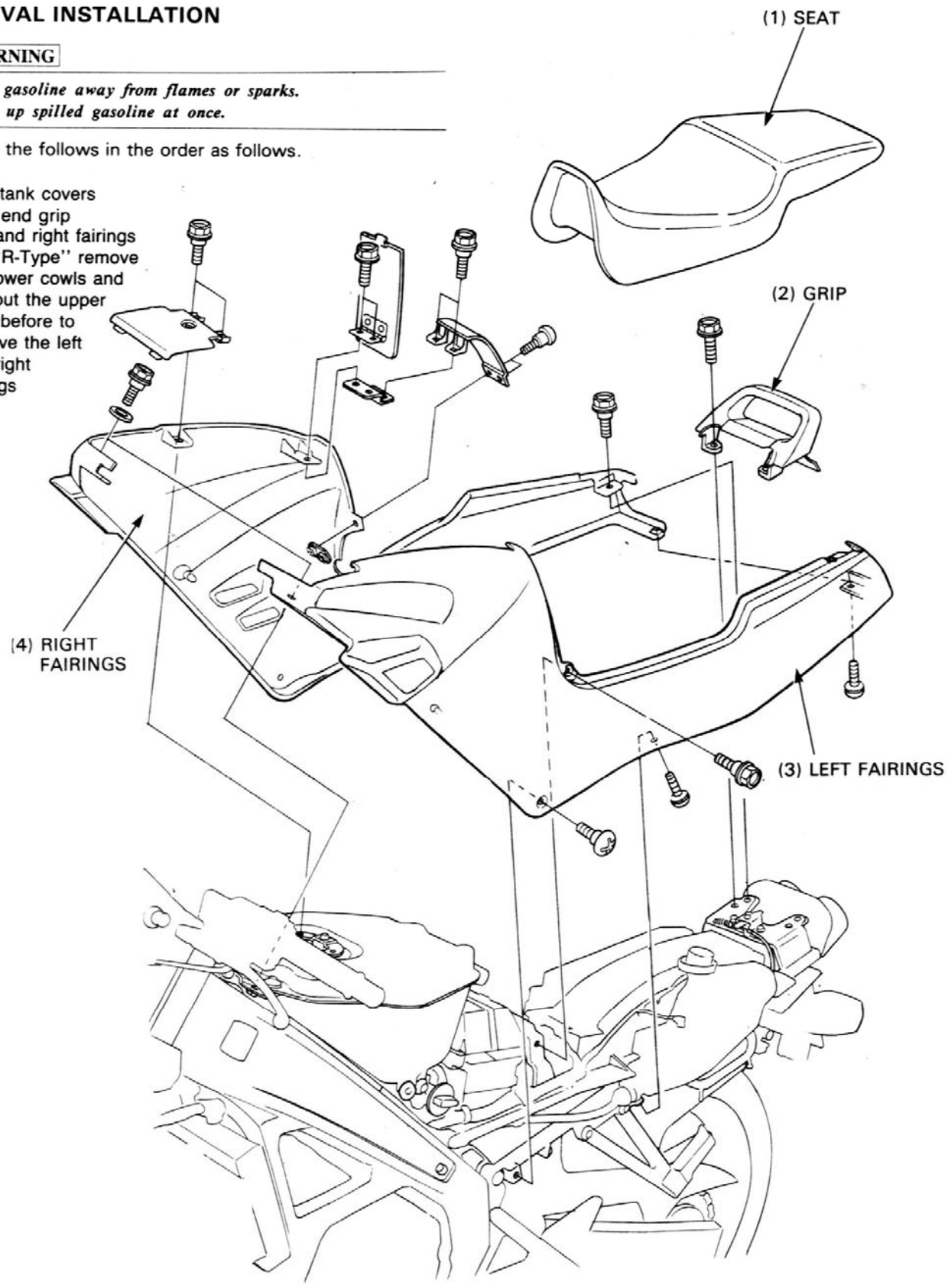
# FUEL TANK

## REMOVAL INSTALLATION

⚠ WARNING

- *Keep gasoline away from flames or sparks.*
- *Wipe up spilled gasoline at once.*

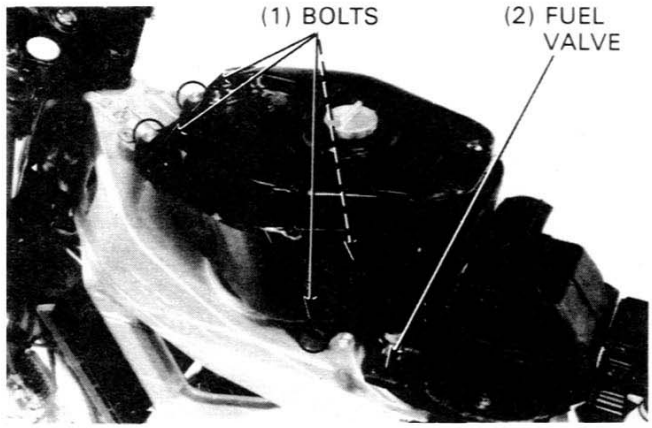
Remove the follows in the order as follows.
— Seat
— Fuel tank covers
— Seat end grip
— Left and right fairings
— For "R-Type" remove the lower cowls and pull out the upper cowl before to remove the left and right fairings



Turn the fuel valve OFF and disconnect the fuel tube from the fuel valve.
Remove the four fuel tank mounting bolts and fuel tank.

**⚠ WARNING**

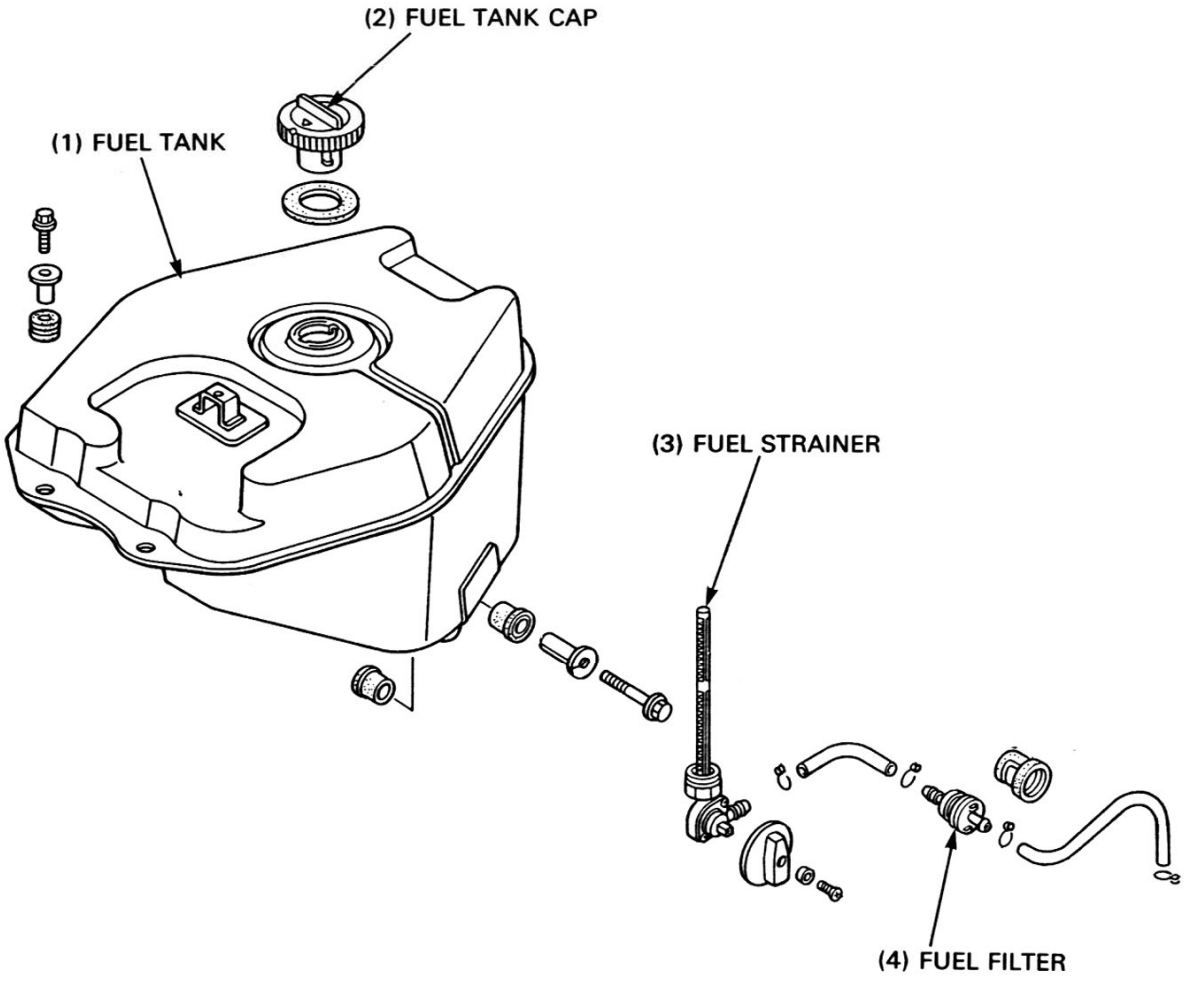
- ***Keep gasoline away from flames or sparks. Wipe up spilled gasoline at once.***




Install the fuel tank in the reverse order of removal.

NOTE

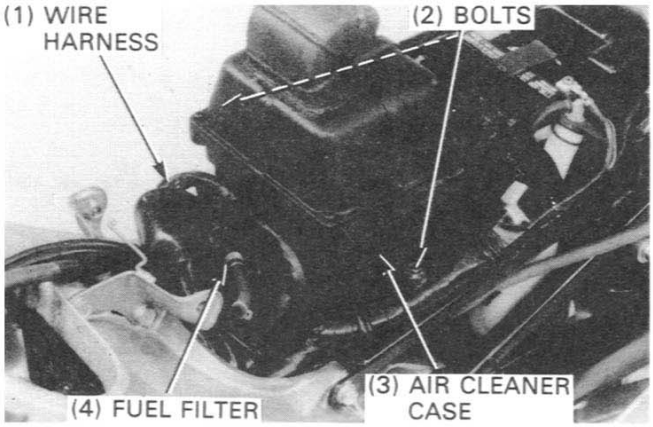
- After installation, make sure there are no fuel leaks.



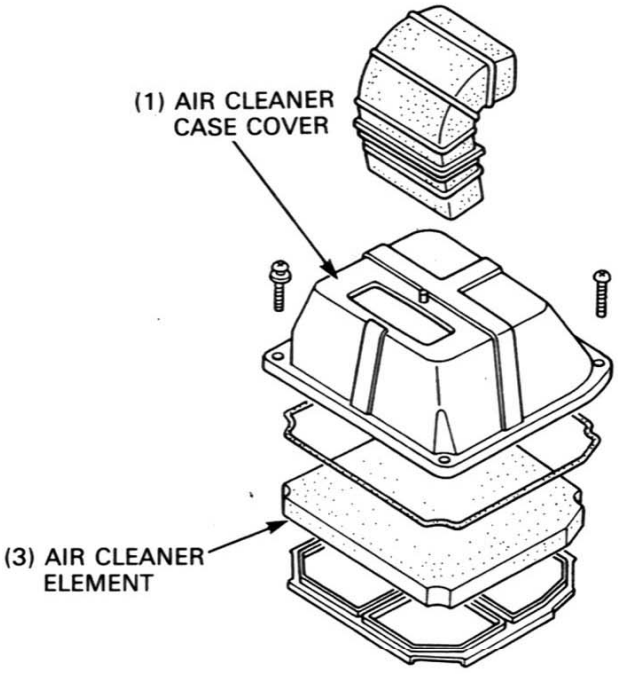
# AIR CLEANER CASE

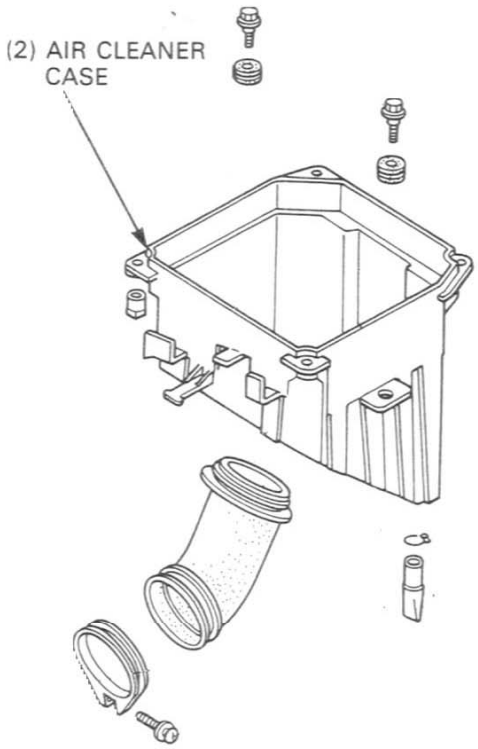
## REMOVAL INSTALLATION

Remove the fuel tank (page 3-4).
Remove the fuel filter and main wire harness from the air cleaner case.
Loosen the connecting tube band, and remove the air cleaner case mounting bolts and air cleaner case.
Check the air cleaner case for cracks.




Install the air cleaner case in the reverse order of removal.

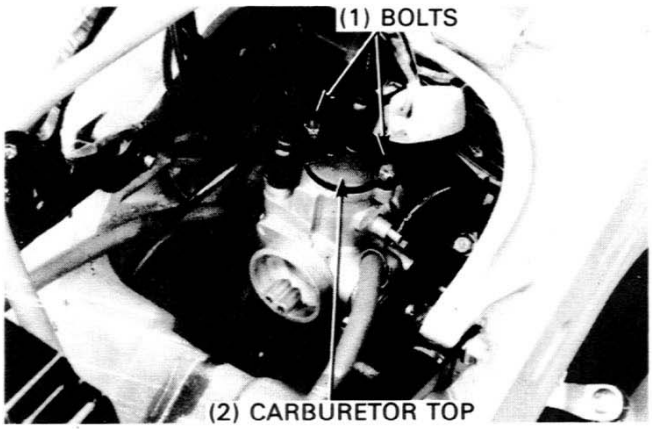


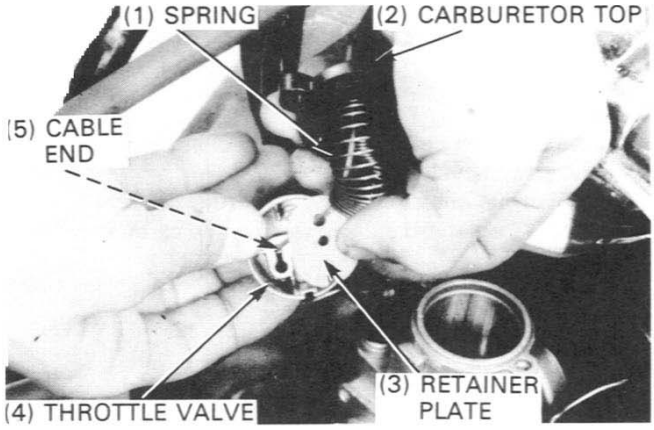
# THROTTLE VALVE

## DISASSEMBLY

Remove the air cleaner case (page 4-5).
Remove the two carburetor top attaching bolts.
Remove the carburetor top and throttle valve from the carburetor.




Compress the throttle valve spring against the carburetor top, slide the throttle cable end sideways and remove the throttle valve, retainer plate, throttle valve spring and carburetor top from the throttle cable.



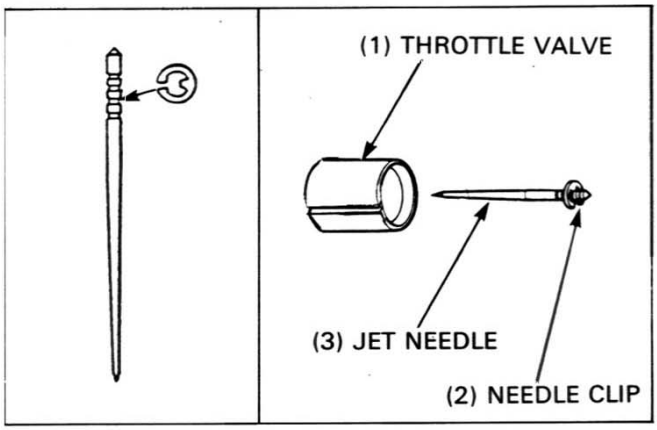

Remove the jet needle and needle clip from the throttle valve.
Inspect the throttle valve and jet needle surfaces for dirt, scratches or wear.

## INSTALLATION

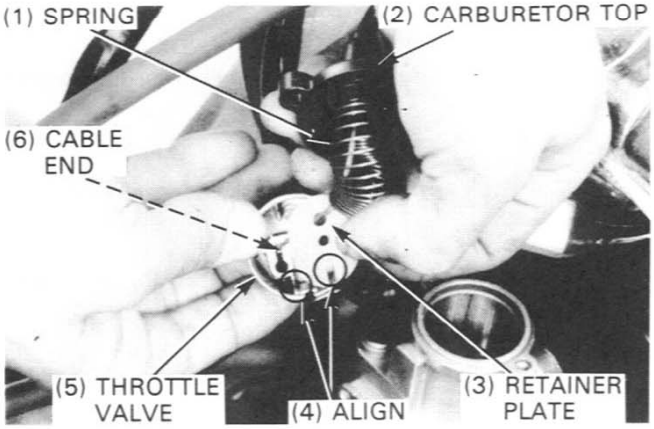
Install the needle clip on the jet needle.

**STANDARTD SETTING: 3rd groove**

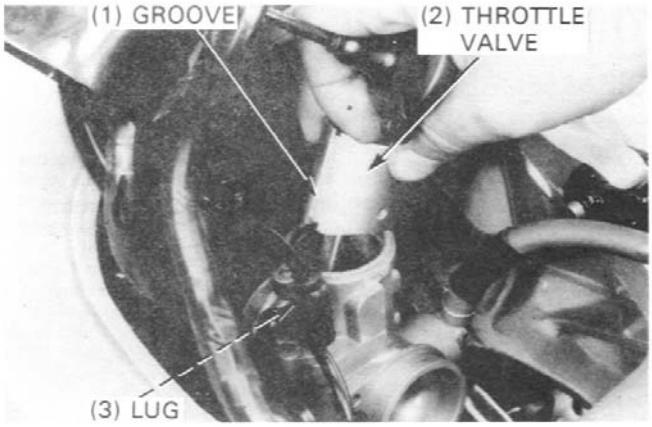
Install the jet needle into the throttle valve.




Assemble the throttle cable, carburetor top, throttle valve spring and retainer plate.
Compress the throttle valve spring against the carburetor top, insert the throttle cable end into the throttle valve and slide it sideways.
Set the retaining plate in the throttle valve, aligning the slit in the plate with the rib of the throttle valve.



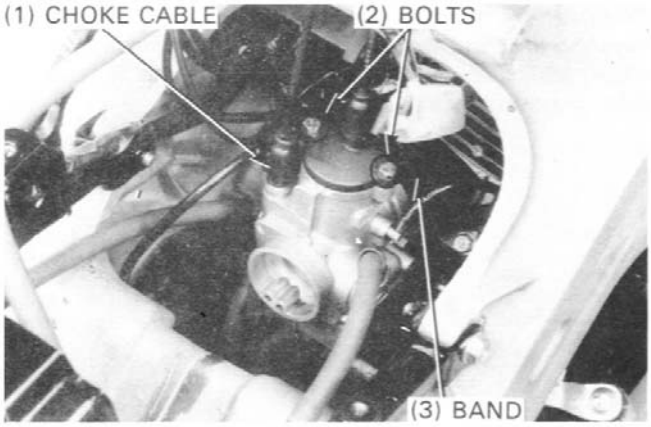
Align the throttle valve groove with the lug in the carburetor, and install the throttle valve into the carburetor.
Install the carburetor top and tighten the bolts securely.
Check the throttle lever free play and adjust if necessary (page 3-3).
Install the air cleaner case (page 4-5).
Install the fuel tank (page 4-3).




# CARBURETOR

## REMOVAL

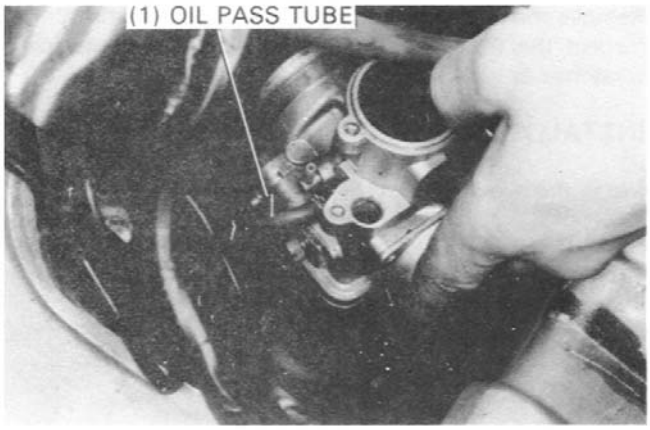
Remove the two carburetor top attaching bolts, carburetor top and throttle valve.
Disconnect the choke cable by removing the screw.
Loosen the insulator band and remove the carburetor from the insulator.




Disconnect the oil pass tube from the carburetor.

NOTE

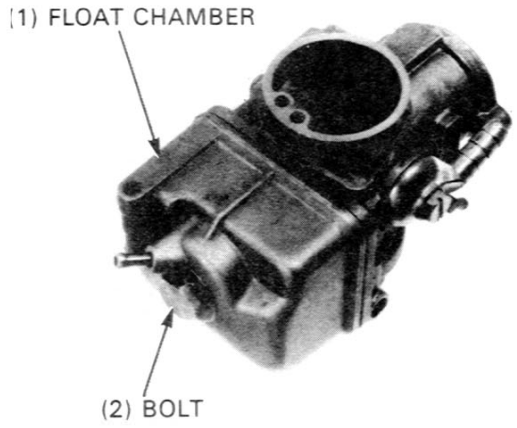
- Hold the disconnected oil pass tube upper than oil pump prevent oil from flowing out from the oil pass tube.



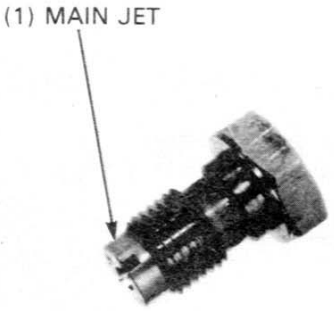

## DISASSEMBLY

Disconnect the overflow and fuel tubes from the carburetor body.

Remove the float chamber bolt, float chamber and o-ring.




Blow the main jet on the float chamber bolt with compressed air and make sure there is no clogging.
Replace the main jet if necessary.

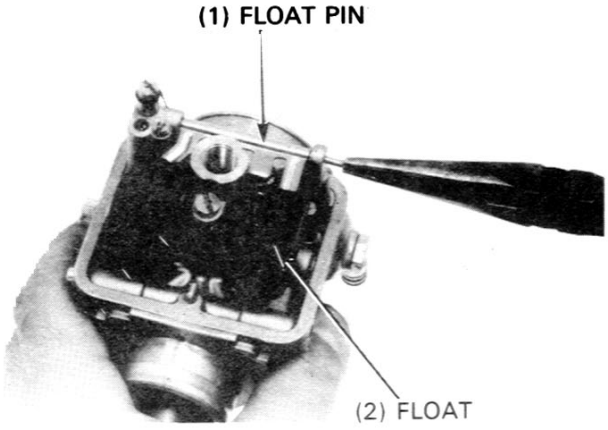



Remove the float pin and float.

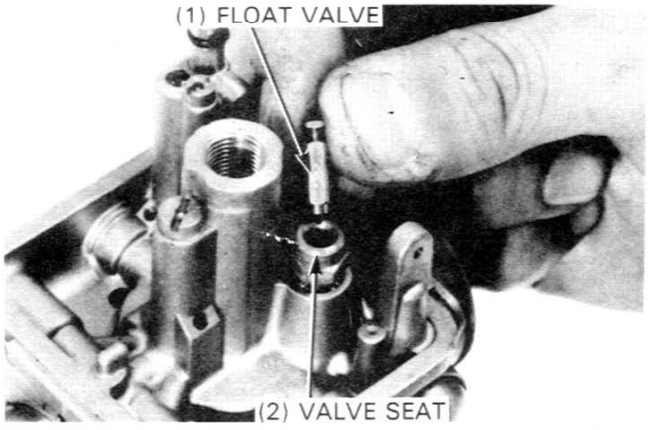
NOTE

- When removing the float pin, pinch its notched part.

Inspect the float pin for scores.
Inspect the float for cracks.
Replace the damaged parts with a new one if necessary.




Remove the float valve and check the valve for wear or deterioration of the rubber tip.
Inspect the valve seat for scores or other damage.
Replace the damaged part with a new one if necessary.

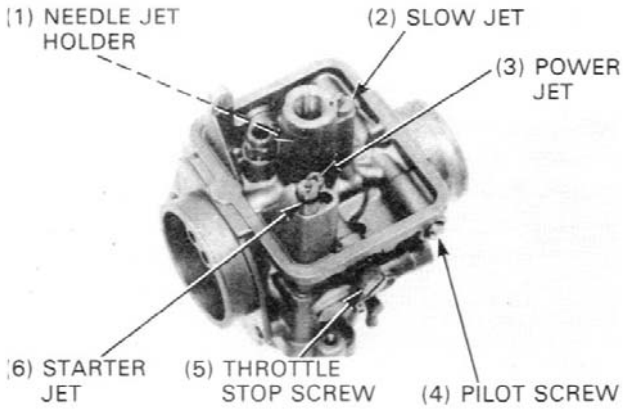


Remove the slow jet, needle jet holder, starter jet and power jet from the carburetor.
Turn the pilot screw in and record the number of turns until it seats lightly. Use this as a reference of reinstallation.

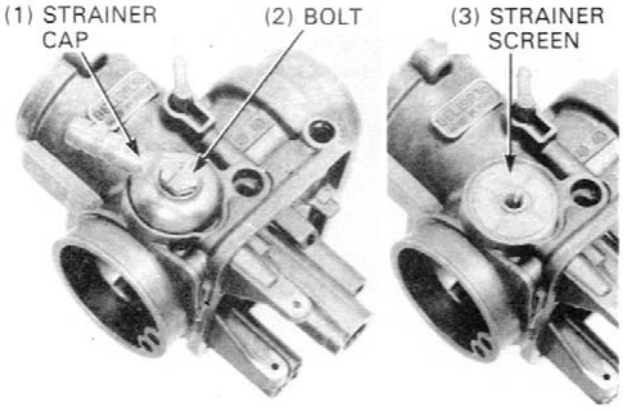
**CAUTION**

- *Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.*

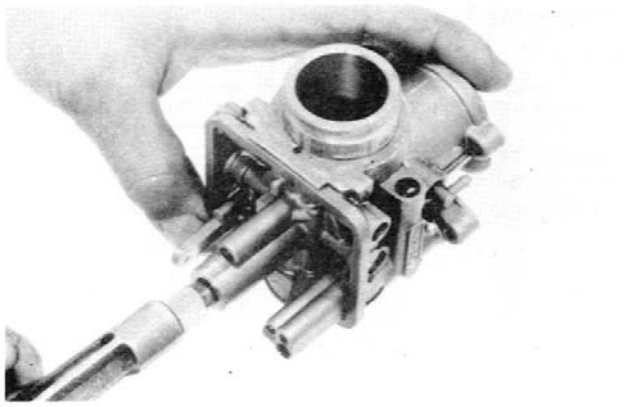
Remove the pilot screw and throttle stop screw.




Inspect each jet for clogging and damage.
If necessary, replace them with new ones.
Blow open all jets with compressed air and make sure there is no clogging.
Remove the strainer cap and screen.
If the screen is dirty, clean it in the clean gasoline.

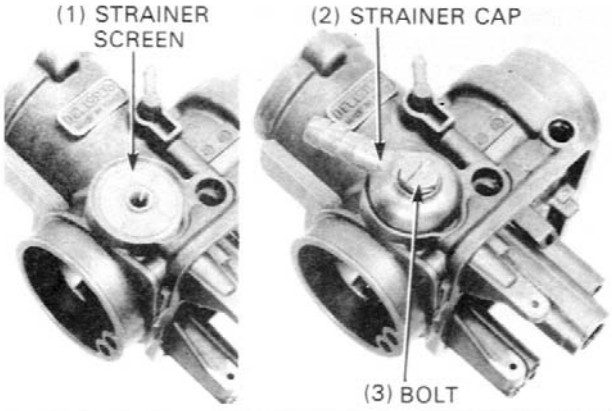



Blow open all carburetor body openings with compressed air.



## ASSEMBLY

Install the strainer screen and strainer cap, and secure the cap with the bolt.



Install all jets, needle jet holder, throttle stop and pilot screws.

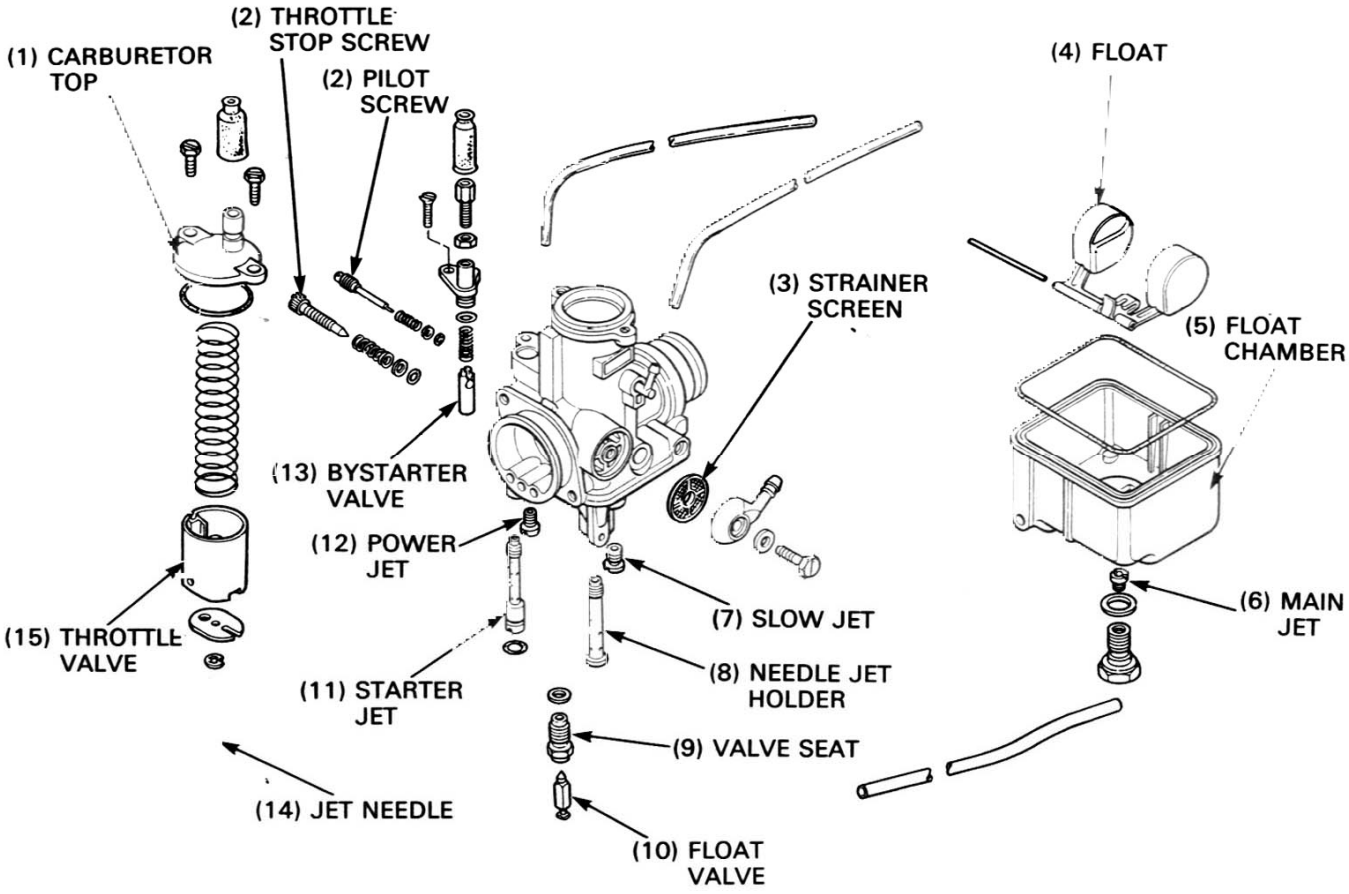
NOTE

- When installing the pilot screw, screw it in until it seats lightly and return it to its original position as noted during removal.
- Perform pilot screw adjustment if a new screw is installed (page 4-13).

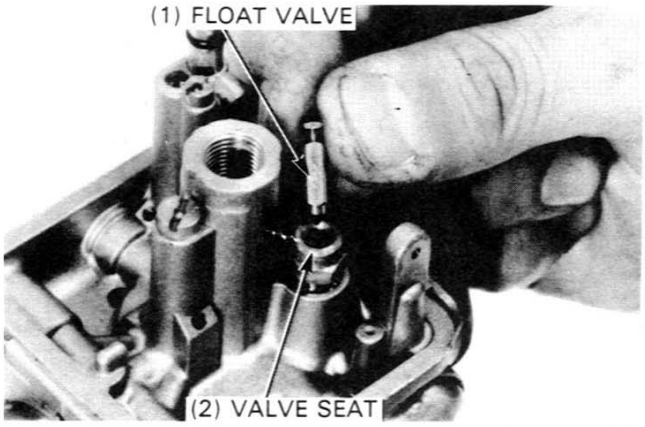
**CAUTION**

*Handle all jets with care. They can easily be scored of scratched.*

Install the float valve into the valve seat.




Install the float valve into the valve seat.

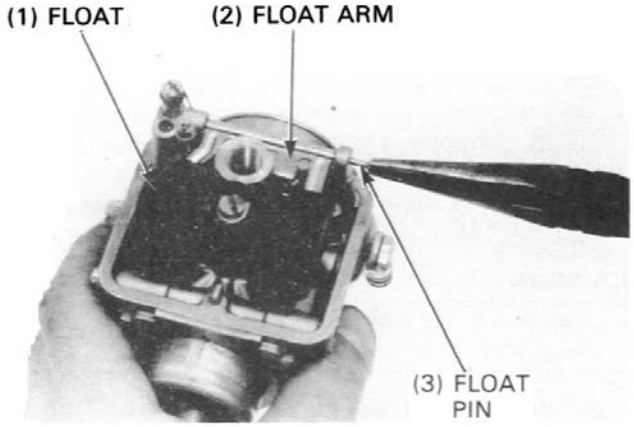


Install the float on the carburetor body.
Insert the float pin through the carburetor and float.

NOTE

- When installing the float pin, pinch its notched part.

Check the valve and float for smooth operation.



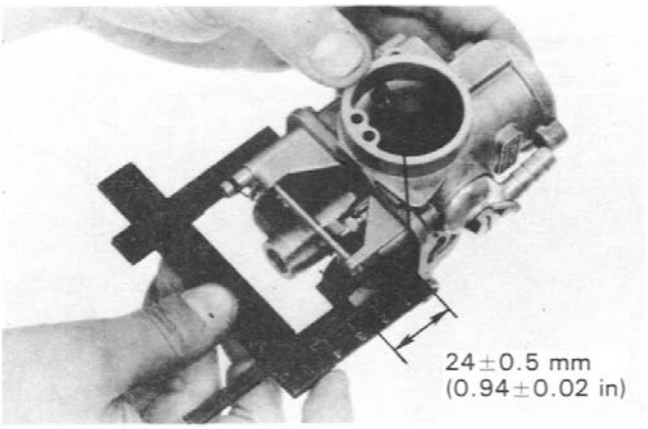

## FLOAT LEVEL INSPECTION

With the float valve seated and the float arm just touching the valve, measure the float level with the float level gauge as shown.

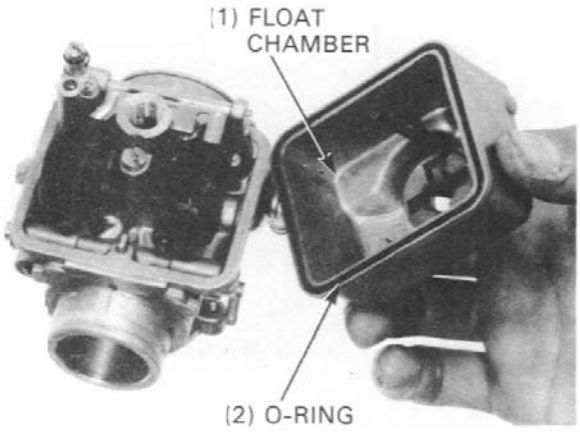
**FLOAT LEVEL: 24±0.5 mm (0.94±0.02 in)**

**TOOL**
**Float level gauge 07401-0010000**

Adjust the float level by carefully bending the float arm.

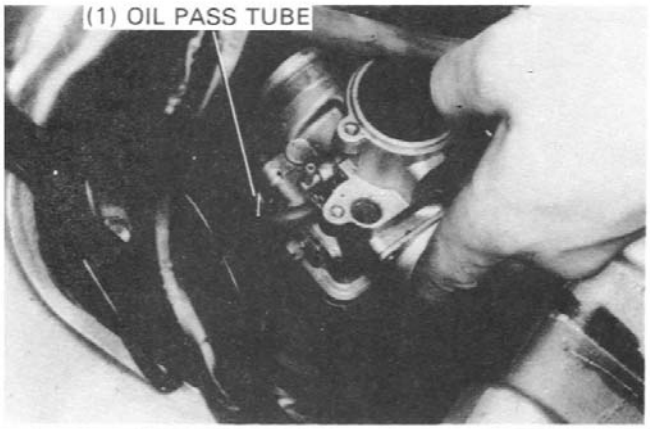



Install a new O-ring in the float chamber groove.
Install the float chamber and tighten the float chamber bolt securely.

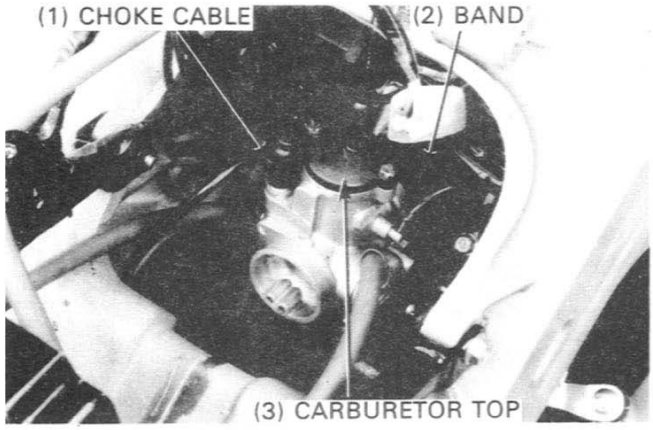



## INSTALLATION

Connect the oil pass tube to the carburetor.



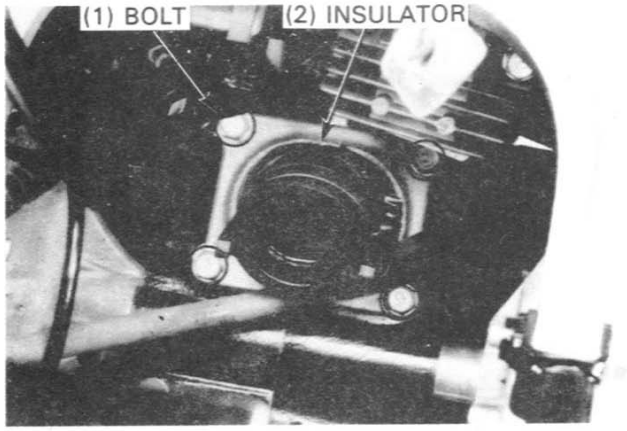
Install the carburetor to the carburetor insulator and tighten the insulator band.
Connect the choke cable to the carburetor and secure it with the screw.
Install the throttle valve and carburetor top (page 4-6).



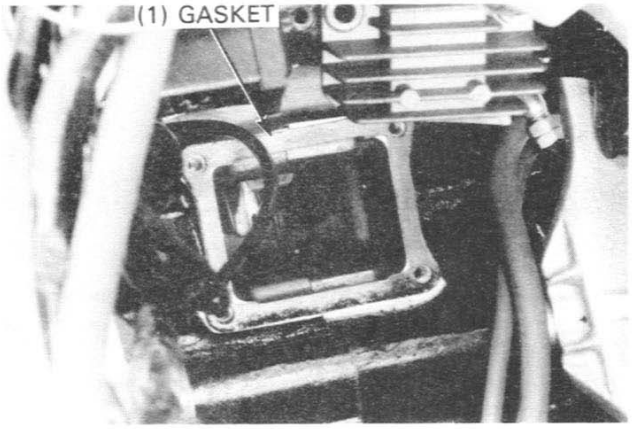

# REED VALVE

## REMOVAL

Remove the carburetor (page 4-7).
Remove the four attaching bolts and carburetor insulator from the crankcase.



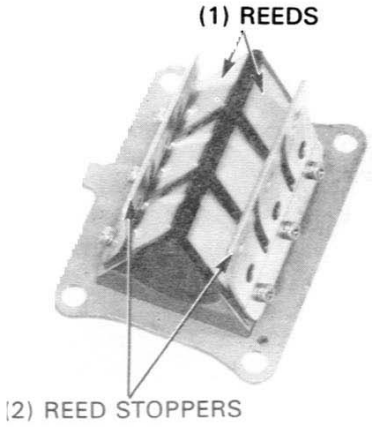

Remove the gasket from the crankcase.




## INSPECTION

Inspect the carburetor insulator for damage or deterioration
Replace it with a new one if necessary.

Inspect the reed valve for damaged or weak reeds.
Inspect the valve seat for cracks, damage or clearance between the seat and reed. Replace the valve if necessary.

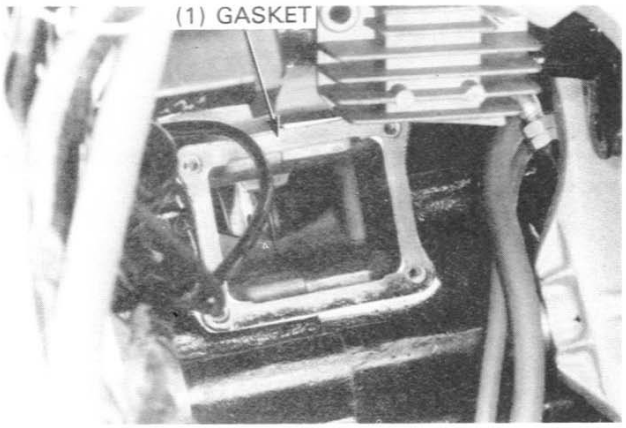



**CAUTION**

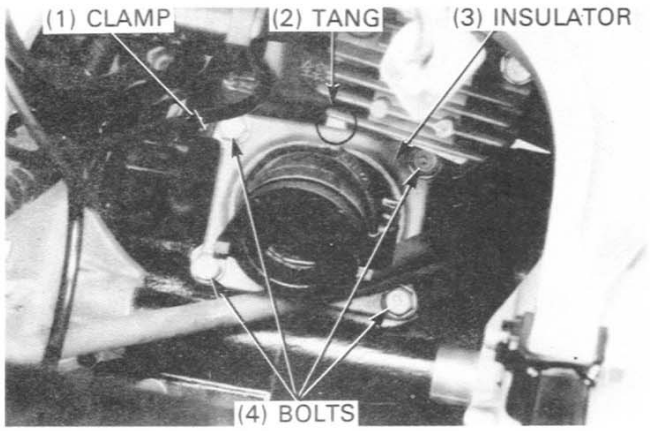
*Do not disassemble or bend the reed stopper. To do so can cause loss of power and engine damage. If the stopper, reed or valve seat is faulty, replace them as a unit.*

### INSTALLATION

Install a new gasket on the crankcase.




Install the reed valve with its tang facing up.
Install the carburetor insulator and tighten the four attaching bolts with the clamp.
Install the carburetor (page 4-11).




# PILOT SCREW ADJUSTMENT

NOTE

- The pilot screw is factory pre-set. Adjustment is not necessary unless the carburetor is overhauled or a new pilot screw is installed.
- Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.

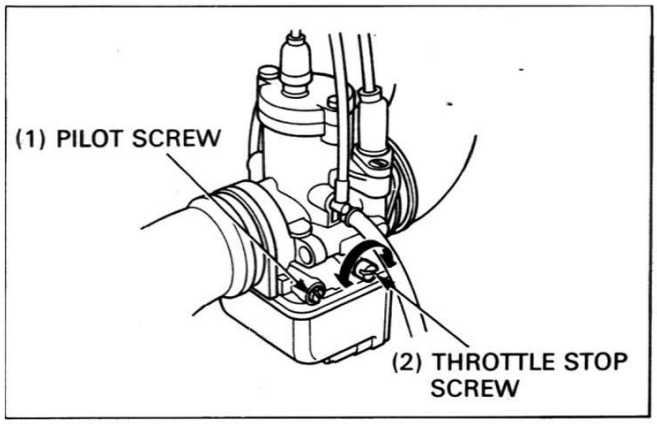
Turn the pilot screw clockwise until it seats lightly and back it out 2.5 turns (2 turns for "R-Type" SW).
Warm the engine up to operating temperature.

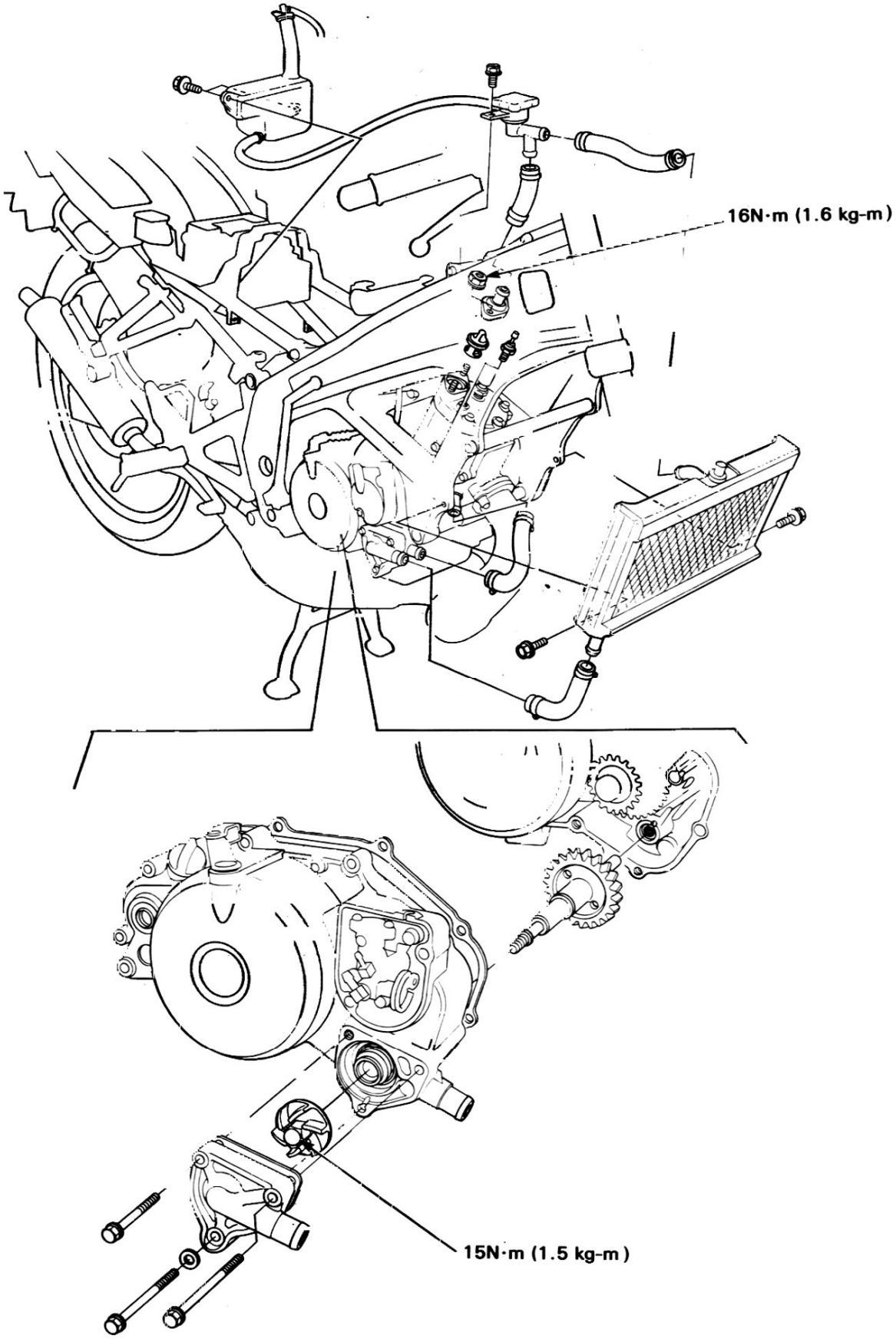
**⚠ WARNING**

- ***If the engine must be running to do some work, make sure the area is well ventilated, Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that can cause the loss of conciousness and may lead to death.***

Start the engine and adjust the idle speed with the throttle stop screw.

**IDLE SPEED: 1,400 ± 100 min$^{-1}$ (rpm)**




16N·m (1.6 kg-m)
15N·m (1.5 kg-m)

# SERVICE INFORMATION

## GENERAL

**⚠ WARNING**

- ***Do not remove the radiator cap when the engine is hot. The coolant is under pressure and severe scalding could result.***
- ***The engine must be cool before servicing the cooling system.***
- ***If engine must be running to do some work, make sure the area is well ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that can cause the loss of consiousness and may lead to death.***

- Use only distilled water and ethylene glycol in the cooling system. A 50-50 mixture is recommended for maximum corrosion protection. Do not use alcohol-based antifreeze.
- Add coolant at the reserve tank. Do not remove the radiator cap except to refill or drain the system.
- To service the water pump mechanical seal, remove the right crankcase cover.
- All cooling system service can be done with the engine in the frame.
- Radiator and thermostat services can be made with the engine in the frame.
- Avoid spilling coolant on painted surfaces.
- After servicing the system, check for leaks with a cooling system tester.
- Refer to section 17 for temperature sensor inspection.

## SPECIFICATIONS

| | |
|---|---|
| Radiator cap relief pressure | 75–105 kPa (0.75-1.05 kg/cm², 10.7-14.9 psi) |
| Freezing point (Hydrometer test): | 55% Distilled water + 45% ethylene glycol: –32°C (–25°F)<br>50% Distilled water + 50% ethylene glycol: –37°C (–34°F)<br>45% Distilled water + 55% ethylene glycol: –44.5°C (–48°F) |
| Coolant capacity:<br>Radiator and engine<br>Reserve tank<br>Total system | <br>0.9 liter (0.95 US qt, 0.79 Imp qt)<br>0.2 liter (0.21 US qt, 0.18 Imp qt)<br>1.1 liter (1.16 US qt, 0.97 Imp qt) |
| Thermostat | Begins to open: 69.5° to 72.5°C (157° to 163°F)<br>Valve lift: Minimum of 3.5 mm at 80°C (0.14 in at 176°F) |
| Boiling point (with 50-50 mixture): | Unpressurized: 107.7°C (226°F)<br>Cap on, pressurized: 125.6°C (258°F) |

## TORQUE VALUES

| | |
|---|---|
| Water purp impeller | 15 N·m (1.5 kg-m, 11 ft-lb) |

## TOOLS

**Special**

| | |
|---|---|
| Mechanical | |
| Mechanical seal driver attachment | 07945–4150400 |
| Attachment, 28 × 30 mm | 07946–1870100 |

**Common**

| | |
|---|---|
| Driver | 07749–0010000 |
| Pilot, 12 mm | 07746–0040200 |

# TROUBLESHOOTING

**Engine temperature too high**
- Faulty temperature gauge or gauge sensor
- Thermostat stuck closed
- Faulty radiator cap
- Insufficient coolant or coolant level too low
- Passages blocked in radiator, hoses, or water jacket
- Faulty water pump
- Air bubbles in cooling system

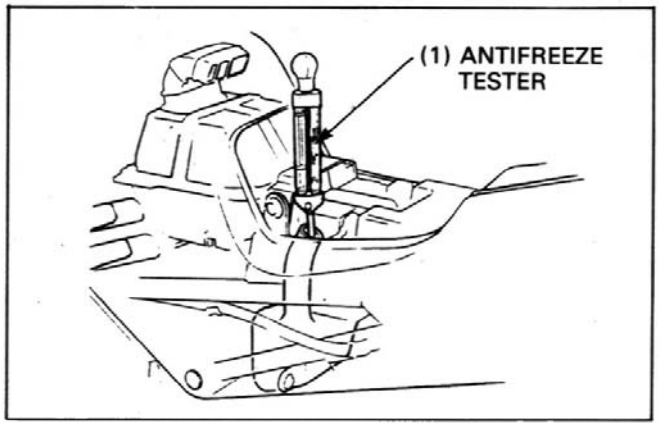
**Engine temperature too low**
- Faulty temperature or gauge sensor
- Thermostat stuck open

**Coolant leaks**
- Faulty pump mechanical seal
- Loose water hose connections
- Damaged or diteriorated water hoses

# SYSTEM TESTING

## COOLANT

Remove the seat and coolant reserve tank cap.
Test the coolant mixture with an antifreeze tester.
For maximum corrosion protection, a 50-50% solution of ethylene glycol and distilled water is recommended.

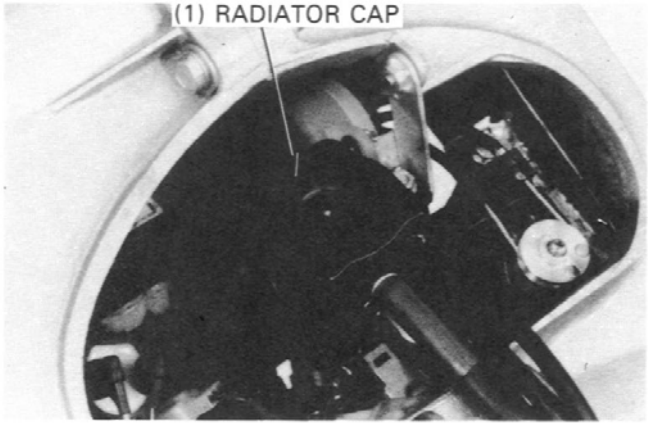



## RADIATOR CAP INSPECTION

Remove the fuel tank (page 4-3) and radiator cap.

**⚠ WARNING**

- ***Be sure the engine is cold before removing the cap.***



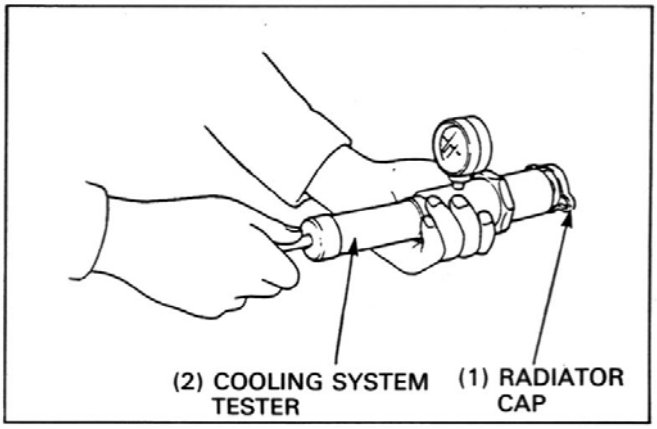

Pressure test the radiator cap. Replace the radiator cap if it does not hold pressure, or if its relief pressure is too high or too low. It must hold the specified pressure for at least six seconds.

NOTE

- Before installing the cap on the tester, wet the sealing surfaces with water.

**RADIATOR CAP RELIEF PRESSURE:**

**75-105KPa(7.5-10.5kg/cm², 10.7-14.9psi)**



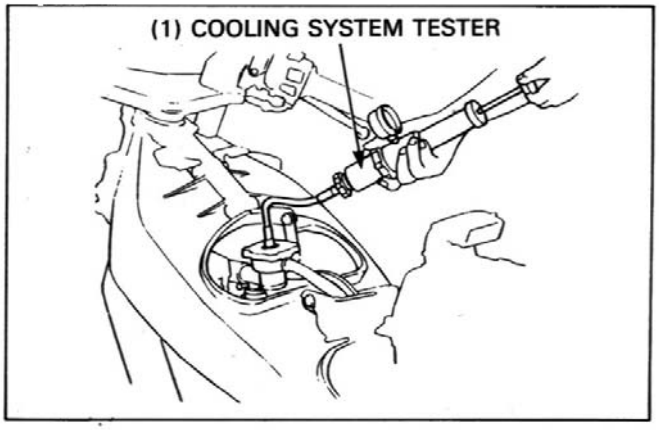

## SYSTEM PRESSURE TEST

Remove the radiator cap.
Pressurize the cooling system and check for coolant leaks.

**CAUTION**

*Excessive pressure can damage the radiator. Do not exceed 105 KPa(1.05 kg/cm², 14.9 psi)*

Repair or replace components if the system will not hold the specified pressure for at least six seconds.



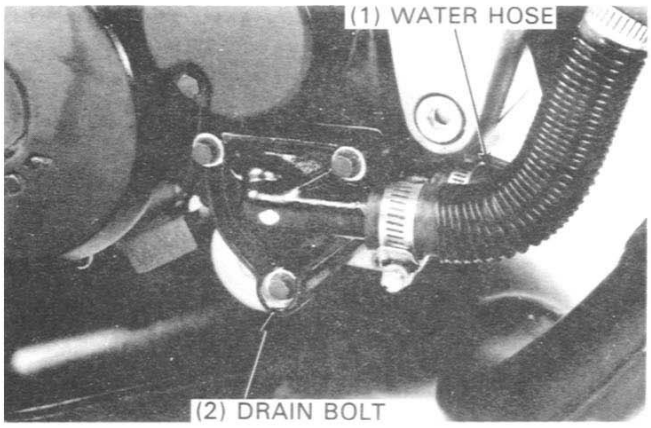
# COOLANT REPLACEMENT

⚠ WARNING

- ***The engine must be cool before servicing the cooling system, or severe scalding may result.***

Remove the fuel tank (page 4-3) and radiator cap.

Drain the coolant from the cylinder head and cylinder by disconnecting the cylinder-to water pump water hose.
Drain the coolant from the radiator and water pump by removing the drain bolt.
Make sure the sealing washer is in good condition, and retighten the drain bolt with the sealing washer.



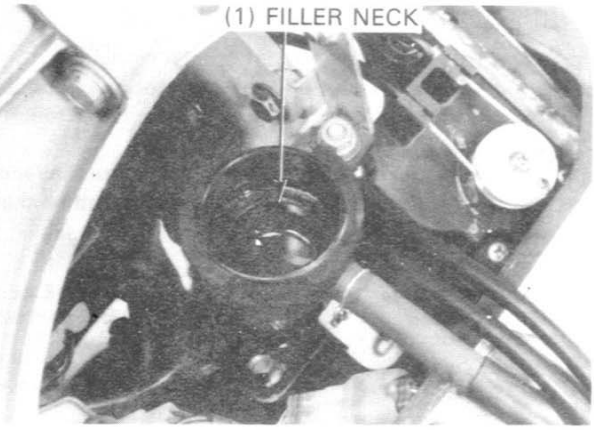

Fill the system with 50-50 mixture of distilled water and entylene glycol.
Bleed the air from the cooling system as follows:

- Support the motorcycle on its center stand and shift the transmission into neutral.
- Connect the fuel tube to the carburetor, start that engine and snap the throttle 3-4 times at 4,000-5,000 $min^{-1}$ (rpm). Then add coolant up to the filler neck.

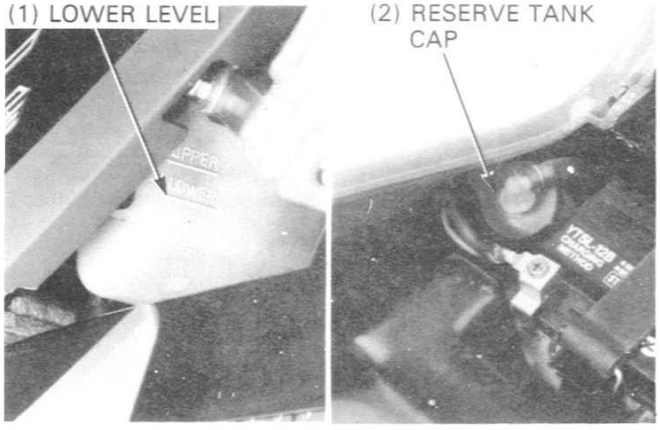
⚠ WARNING

- ***If the engine must be running to do some work, make sure the area is well ventilated, Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that can cause the loss of conciousness and may lead to death.***

- Install the radiator cap.
- Check the level of coolant in the reserve tank and fill to the "UPPER" level if it is low.



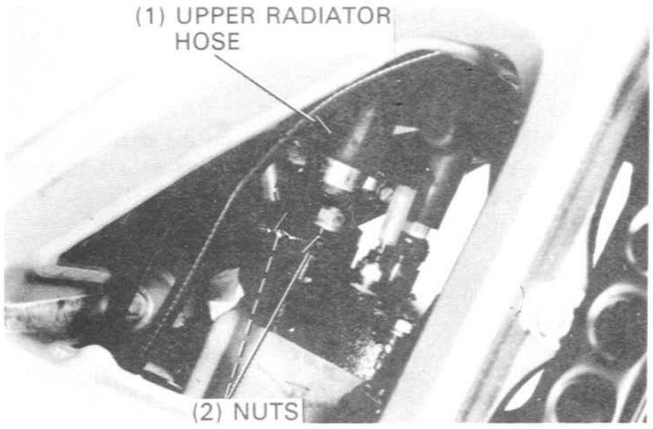

Install the removed parts in the reverse order of removal.



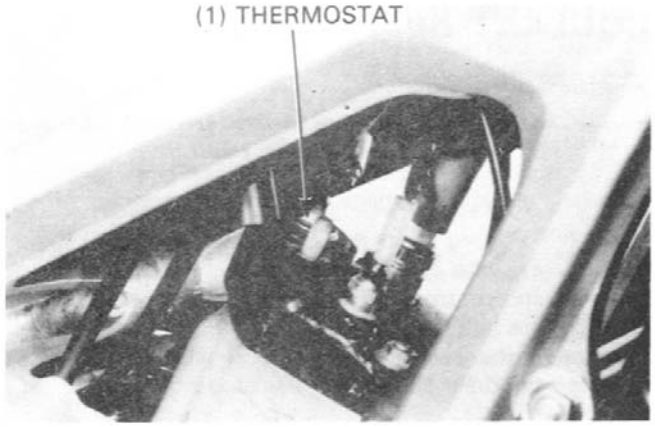

# THERMOSTAT

## REMOVAL

Drain the coolant.
Loosen the hose band screw and disconnect the upper radiator hose from the thermostat cover.
Remove the thermostat cover nuts and cover.



Remeve the thermostat from the cylinder head.

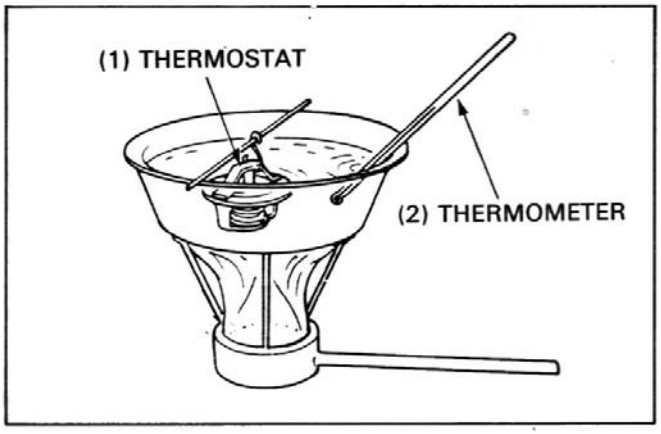



## INSPECTION

Visually inspect the thermostat for damage.
Suspend the thermostat in heated water to check its operation. Do not let the thermostat or thermometer touch the pan or false readings will result.
Replace the thermostat if the valve stays open at room temperature, or if it responds at temperatures other than those specified.

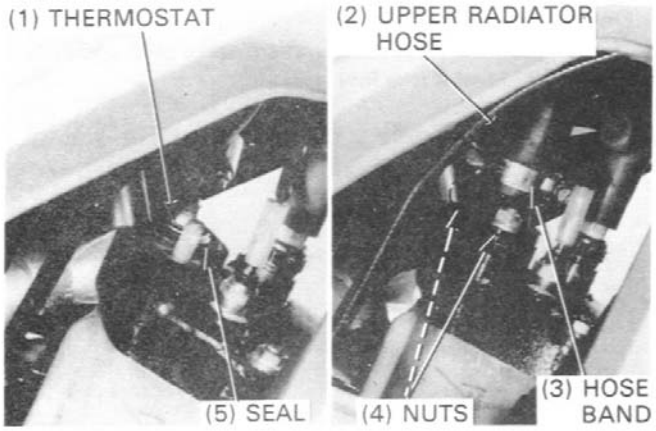
**Technical Data**

| | |
|---|---|
| Starts to open | 69.5° to 72.5°C (157° to 163°F) |
| Valve lift | 3.5 mm minimum (0.14 in) when heated to 80°C (176°F) for five minutes. |




## INSTALLATION

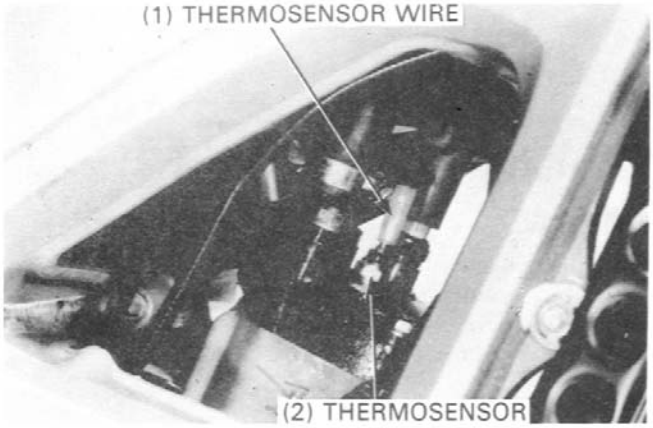
Install the thermostat into the cylinder head.
Install the thermostat cover and tighten the nuts securely.
Connect the upper radiator hose to the thermostat cover and tighten the hose band securely.
Fill and bleed the cooling system (page 5-4).




# THERMOSENSOR

## INSPECTION

Disconnect the thermosensor wire from the thermosensor.
Check for continuity between the thermosensor and ground. There should be continuity.
Remove the thrmosensor from the cylinder head.



Suspend the sensor in oil over a burner and measure the resistance through the sensor as the oil heats up.

| Temperature | 60°C | 85°C | 110°C | 120°C |
|---|---|---|---|---|
| | 140°F | 185°F | 230°F | 248°F |
| Resistance | 104.0Ω | 43.9Ω | 20.3Ω | 16.1Ω |

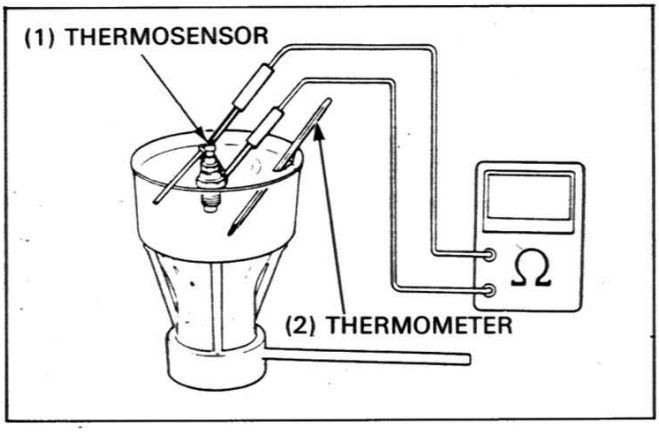
**⚠ WARNING**

- ***Wear gloves and eye protection.***
- ***Heated oil is highty flammable. Keep it away from open flames.***

NOTE

- Oil must be used as the heated liquid to check the function above 100°C (212°F)
- You will get false readings if either the sensor or thermometer touch the pan.

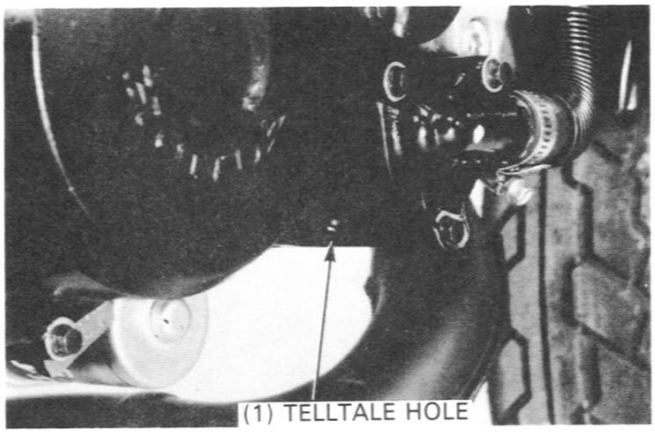
Apply sealant to the threads, tighten and reconnect the thermosensor.




# WATER PUMP

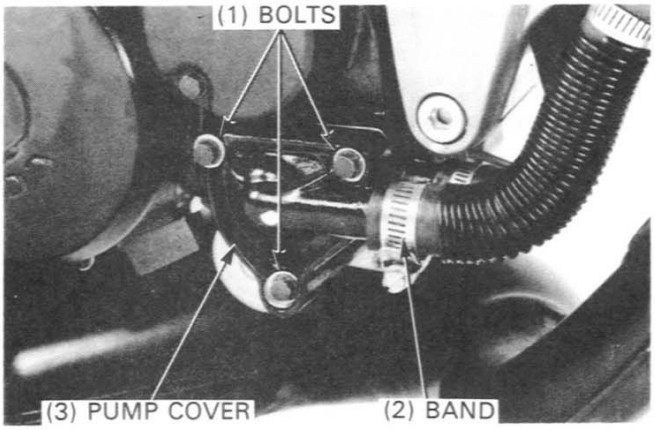
## MECHANICAL SEAL INSPECTION

Inspect the telltale hole for signs of coolant leakage.
Replace the mechanical seal if there is leaking.

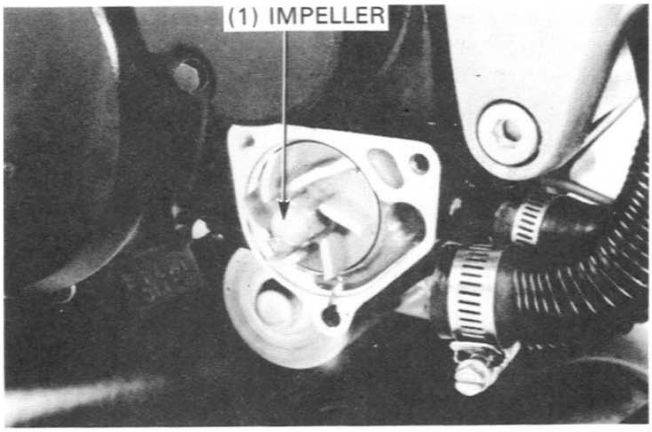



## REMOVAL

Drain the coolant (page 5-4).
Loosen the radiator hose band and disconnect the radiator hose from the water pump cover.
Remove the three water pump cover attaching bolts and cover.
Remove the gasket.




Remove the impeller and washer by turning the nut on the impeller counterclockwise.
Inspect the impeller for damage.

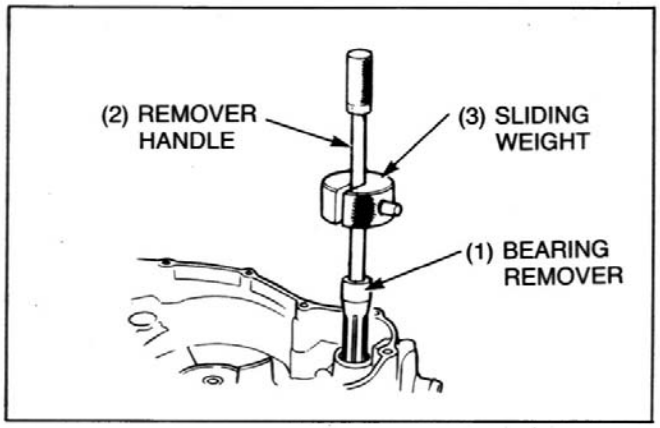


## MECHANICAL SEAL REPLACEMENT

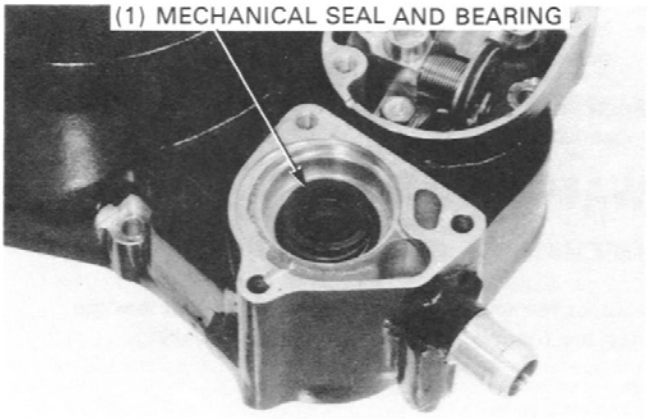
Remove the right crankcase cover (page 8-3).
Remove the water pump shaft inner bearing from the right crankcase cover.

**TOOLS:**

| | |
|---|---|
| **Bearing remover set, 12mm** | **07936-1660001** |
| **-Bearing remover** | **07936-1660110** |
| **-Remover handle** | **07936-1660120** |
| **-Remover sliding weight** | **07741-0010201** |




Remove the water pump shaft outer bearing and mechanical seal from the right crankcase cover.




Drive a new mechanical seal into the right crankcase cover.

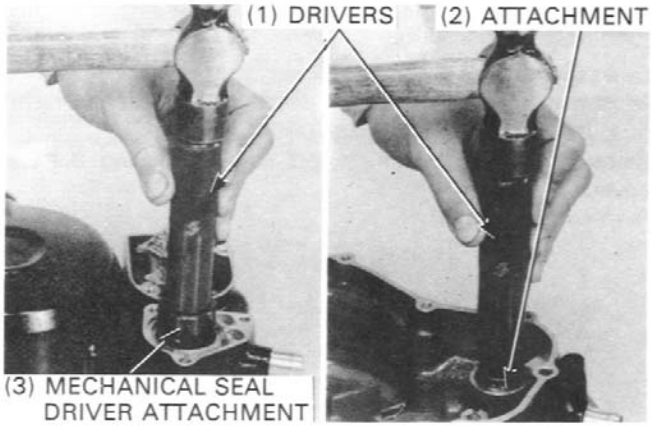
**TOOLS:**

| | |
|---|---|
| **Driver** | **07749-0010000** |
| **Mechanical seal driver attachment** | **07945-4150400** |

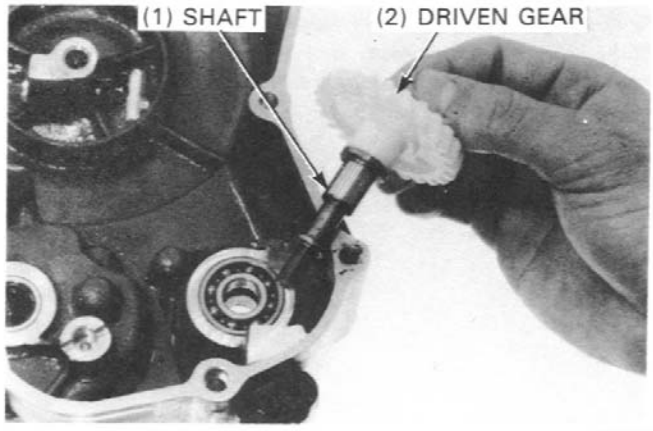
Drive new water pump shaft bearings into the right crankcase cover.

**TOOLS:**

| | |
|---|---|
| **Driver** | **07749-0010000** |
| **Attachment, 28×30mm** | **07946-1870100** |
| **Pilot, 12mm** | **07746-0040200** |



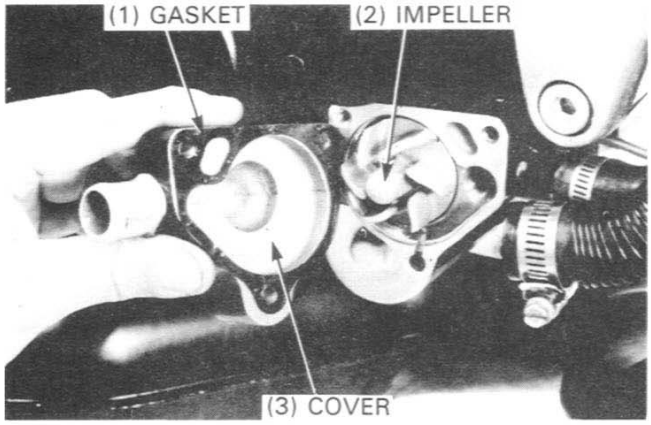

Inspect the water pump driven gear and water pump shaft for wear or damage.
Install water pump shaft into the water pump shaft bearings.



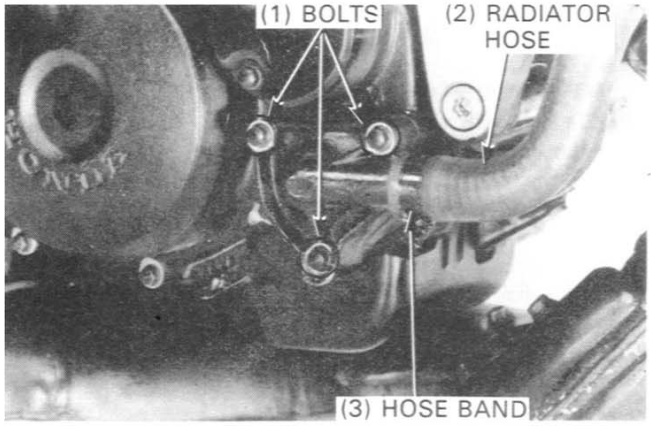
Install the washer and impeller and tighten the impeller to the specified torque.

**TORQUE:15N·m (1.5kg-m, 11ft-lb)**

Install a new gasket and water pump cover.




Secure the water pump cover with three attaching bolts.
Connect the radiator hose and secure it with the hose band.
Fill and bleed the cooling system (page 5-4).

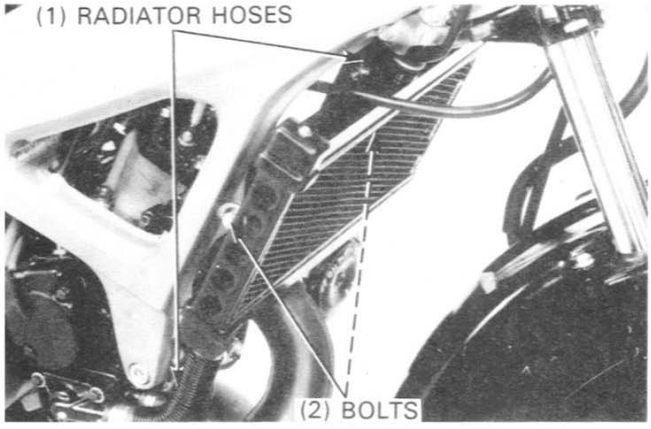



# RADIATOR

## REMOVAL/INSTALLATION

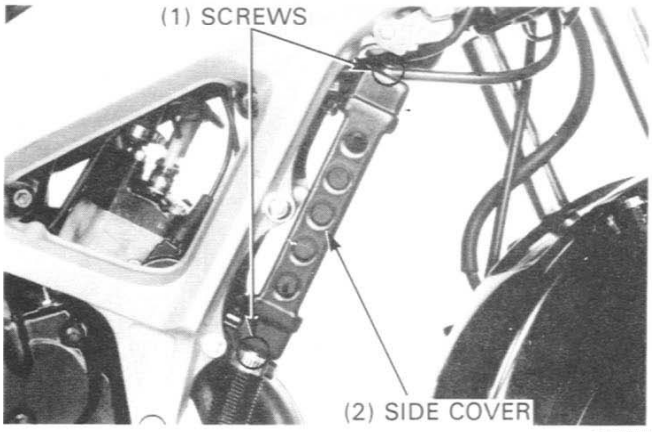
Drain the coolant (page 5-4).
Disconnect the radiator hoses from the radiator.
Remove the radiator mounting bolts and radiator.

Install the radiator in the reverse order of removal.
Fill and bleed the cooling system (page 5-4).

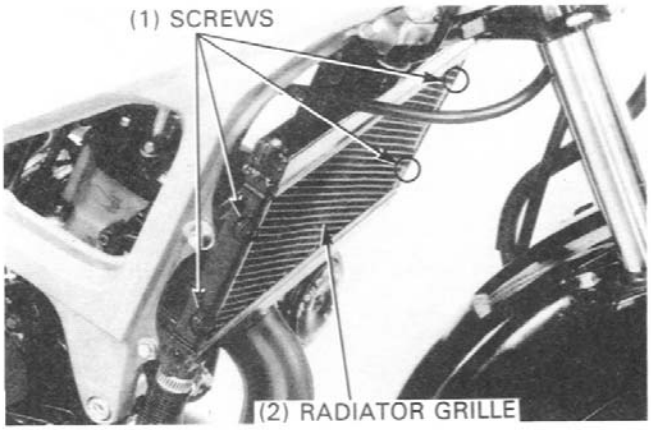



## RADIATOR GRILLE REMOVAL/INSTALLATION

Remove the radiator side covers by removing the screws.



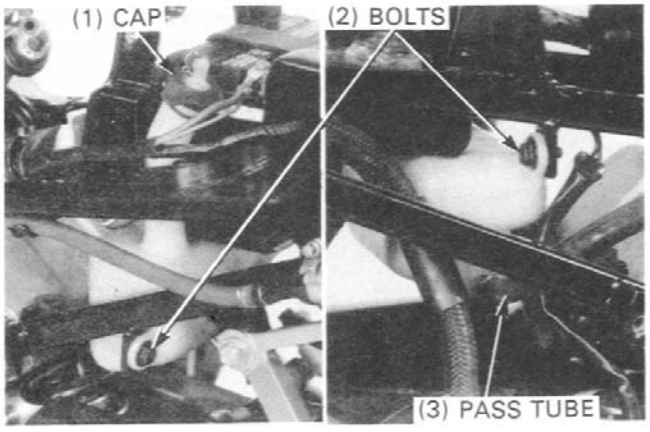
Remove the radiator grille by removing the four tapping screws.
Install the radiator grille in the reverse order of removal.

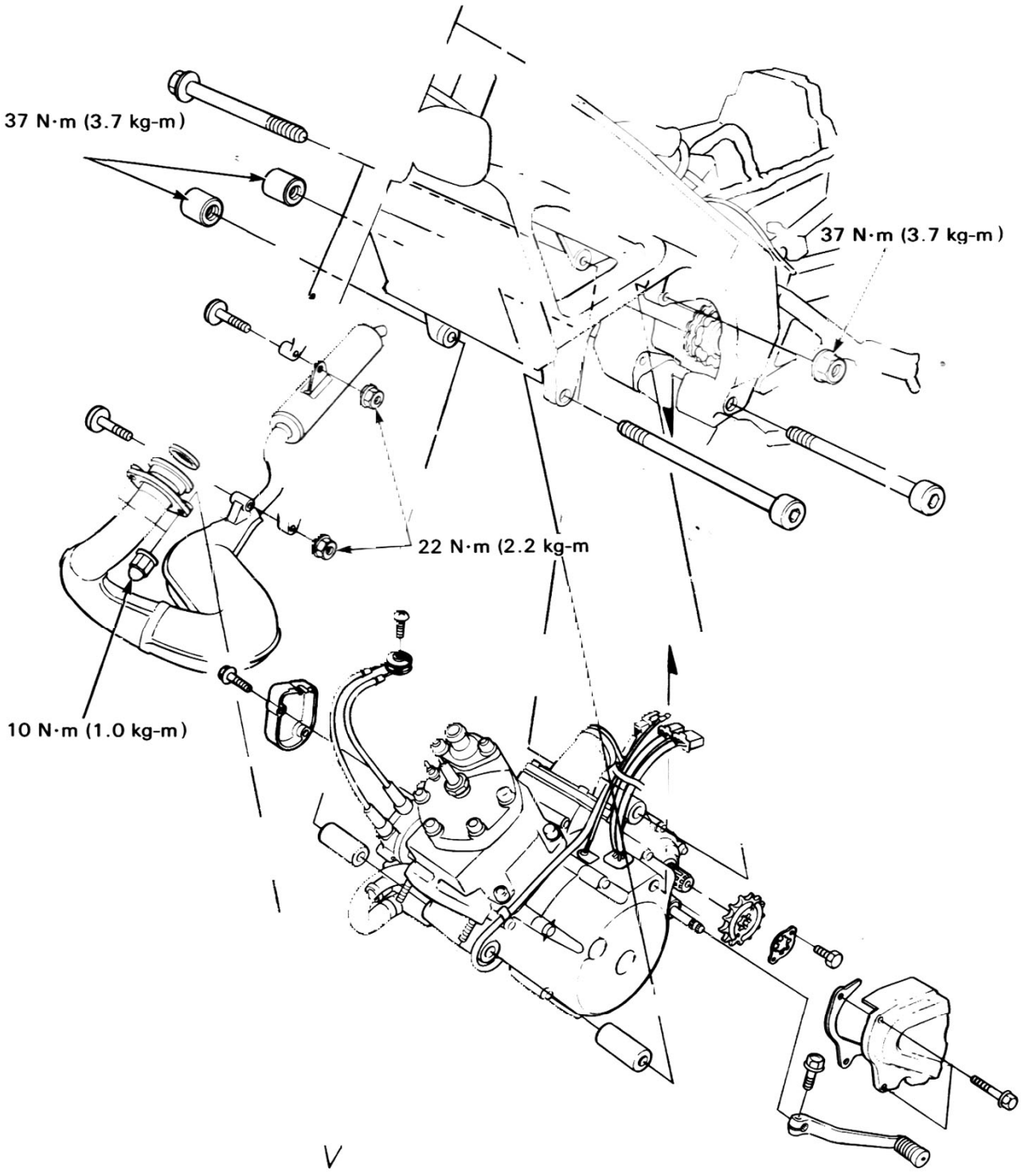



# RESERVE TANK

## REMOVAL/INSTALLATION

Remove the air cleaner case (page 4-5).
Drain the coolant (page 5-4).
Remove the reserve tank cap and disconnect the coolant pass tube.
Remove the reserve tank mounting bolts and reserve tank from the air cleaner side.
Install the reserve tank in the reverse order of removal.
Fill and bleed the cooling system (page 5-4).




37 N·m (3.7 kg-m)
37 N·m (3.7 kg-m)
22 N·m (2.2 kg-m
10 N·m (1.0 kg-m)

# SERVICE INFORMATION

## GENERAL

- The engine must be removed from the frame to service the tramsmission and crankshaft.

## SPECIFICATIONS

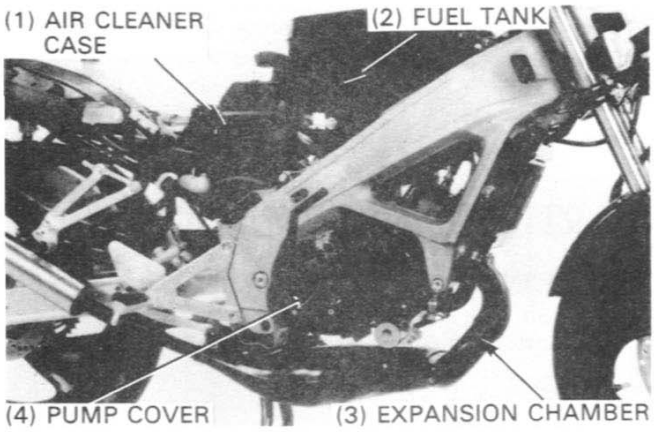
| | | |
|---|---|---|
| Transmission oil capacity | | 0.70 lit.(0.74 US gal. 0.62 Imp gal) after draining<br>0.75 lit.(0.79 US gal. 0.66 Imp gal) after disassembly |
| Coolant capacity | Engine and radiator | 0.9 lit.(0.95 US qt. 0.79 Imp qt ) |
| | Reserve tank | 0.2 lit.(0.21 US qt. 0.18 Imp qt ) |

## TORQUE VALUES

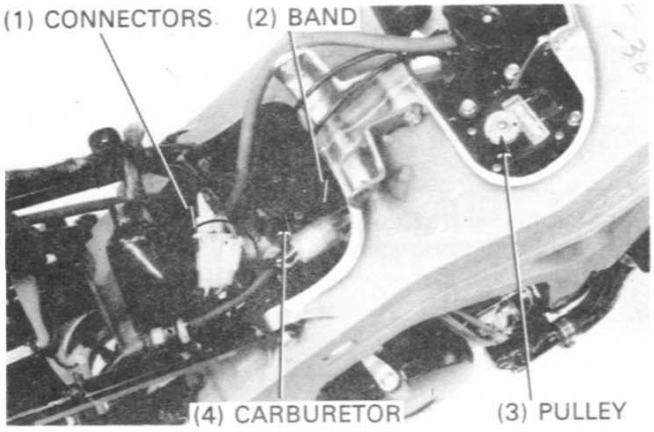
| | |
|---|---|
| Engine mounting nut | 37N · m (3.7kg-m, 27ft-lb) |
| Expansion chamber/silencer mounting bolt | 22N · m (2.2kg-m, 16ft-lb) |
| Expansion chamber joint nut | 10N · m (1.0kg-m, 7ft-lb) |

# ENGINE REMOVAL

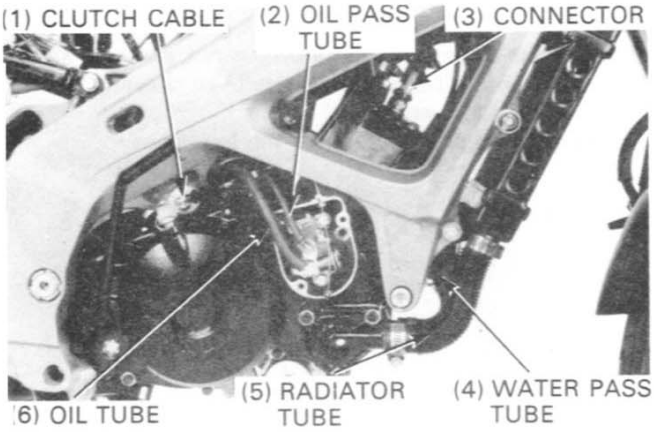
Drain the coolant (page 5-4).
Remove the following components:
-Remove the lower cowl on the "R-Type"
-Right and left fairings (page 4-3)
-Fuel tank and air cleaner case (page 4-4, 5)
-Expansion chamber
-Oil pump cover



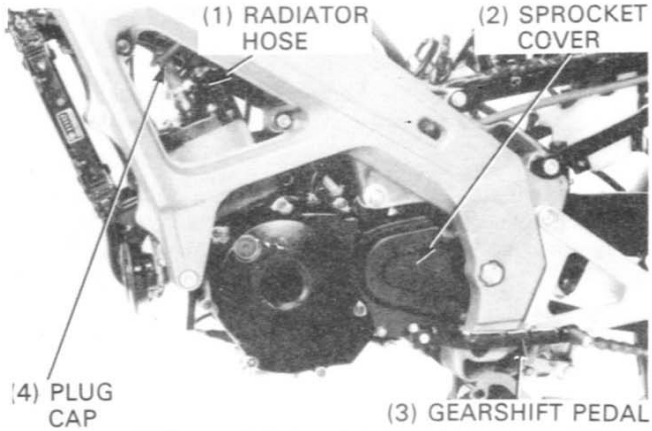

Remove the RC valve motor pulley by removing the screw.
Loosen the carburetor insulator band and remove the carburetor from the insulator.
Disconnect the follows:
-Alternators connectors
-Pulse generator connector
-Starter motor connector
-Neutral switch wire connector



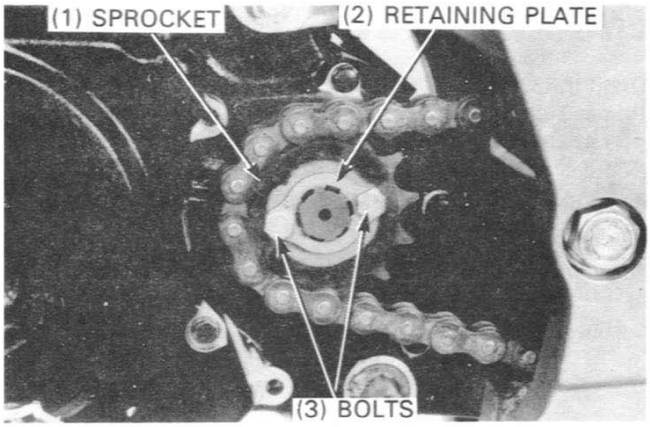

Disconnect the follows:
-Clutch cable
-Oil tube and oil pass tube
-Radiator hose and water pass hose
-Thermosensor wire connector



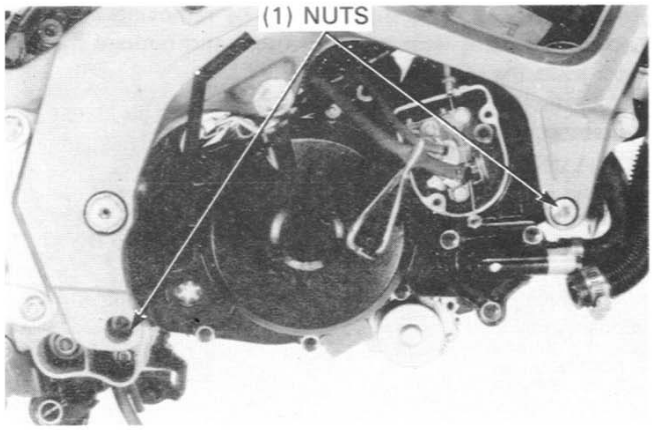

Remove the drive sprocket cover.
Remove the gearshift pedal.
Disconnect the follows:
-Upper radiator hose
-Spark plug cap



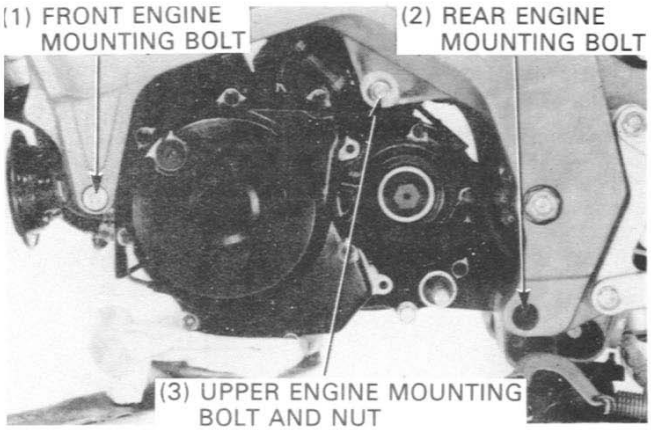
Loosen the drive chain adjuster all the way (page 3-9).
Remove the two bolts, retaining plate and drive sprocket.




Remove the front and rear engine mounting nuts.




Support the engine with a floor jack under the engine.
Remove the upper engine mounting nut and pull all of the engine mounting bolts, being careful to prevent the engine from inclining forward.
Remove the engine by lowering the jack slowly.

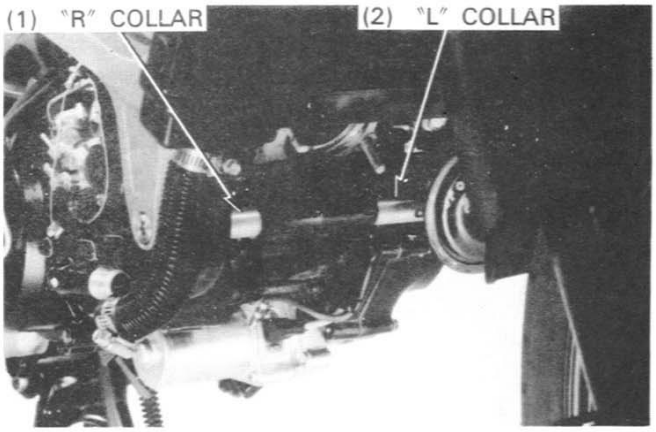



# ENGINE INSTALLATION

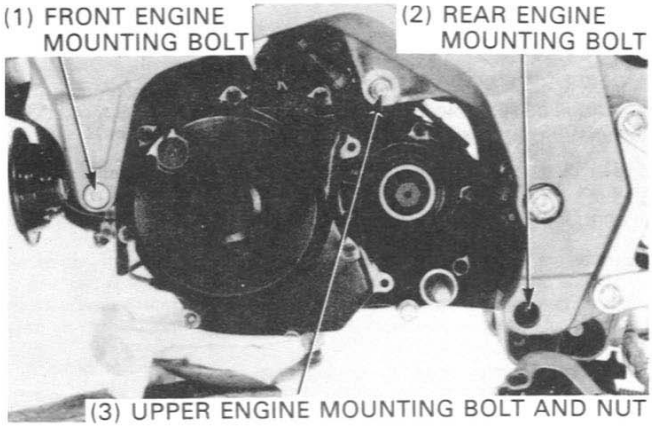
Install the engine to the frame using a floor jack.
Install the collars between the engine and frame.

NOTE

- Each collar is stamped an identification mark. Install the "R" collar to the right side and the "L" to the left.

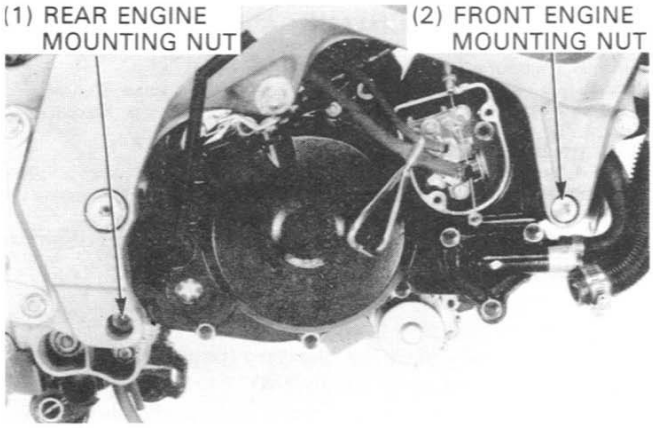


Insert the front and rear engine mounting bolts from the left side.
Insert the upper engine mounting bolt from the right side and tighten the nut loosely.

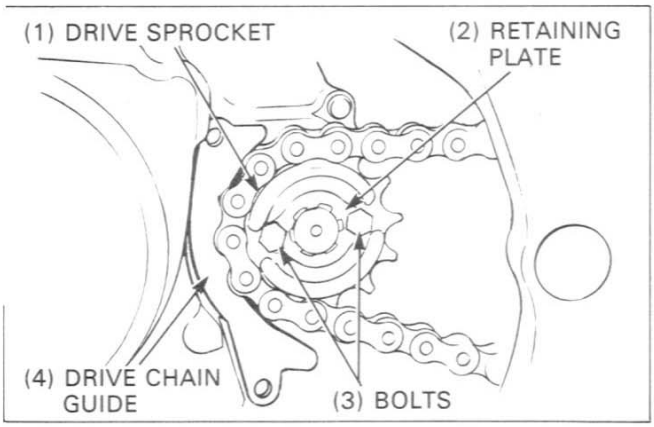



Install the front and rear engine mounting nuts.
Tighten each nut to the specified torgue.

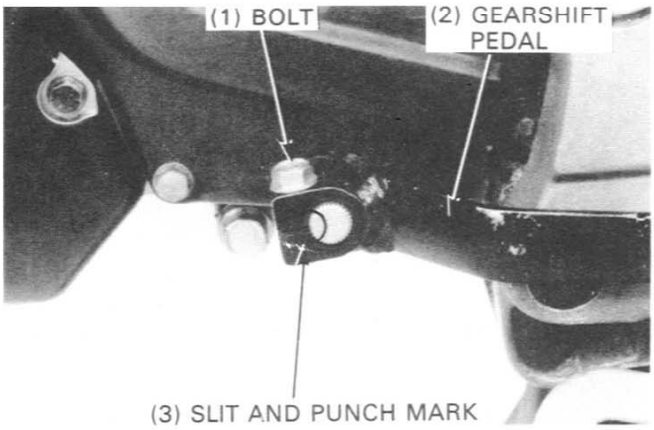
**TORQUE:37N · m (3.7kg-m, 27ft-lb)**



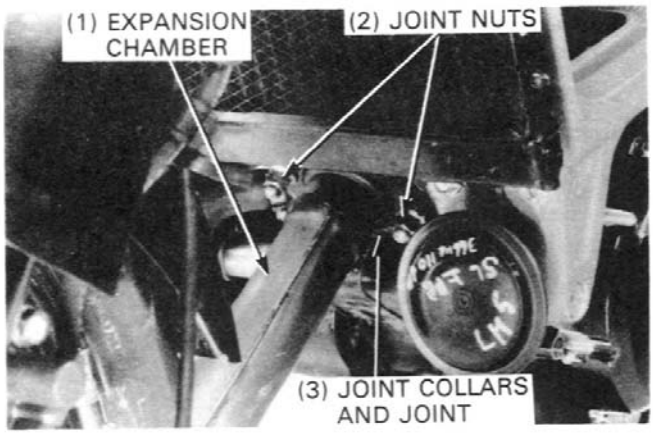

Rail the drive chain over the drive sprocket, and install the sprocket onto the countershaft.
Install the retaining plate and secure it with the two bolts.
Install the drive chain quide.
Install the drive sprocket cover and secure it with the two bolts.




Install the gearshift pedal, aligning the punch mark on the gearshift spindle with the slit in the gearshift pedal.
Tighten the gearshift pedal bolt.



Install the follows:
-A new gasket
-Expansion chamber joint collars
-Expansion chamber
-Expansion chamber joint
Temporally tighten the expansion chamber joint nuts.

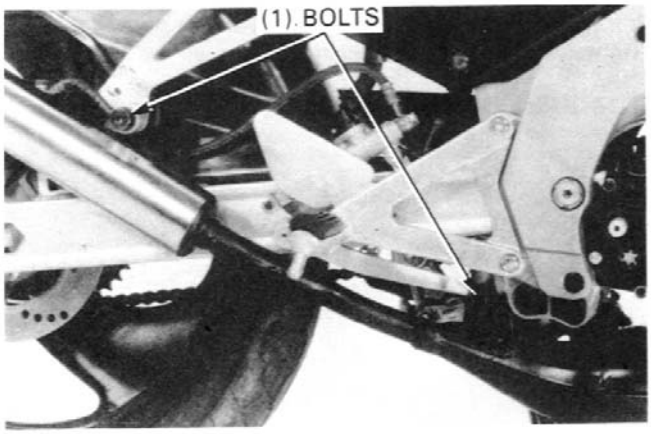



Install and tighten the expansion chamber/silencer mounting bolts.

**TORQUE:22N · m (2.2kg-m, 16ft-lb)**

Tighten the expansion chamber joint nuts.

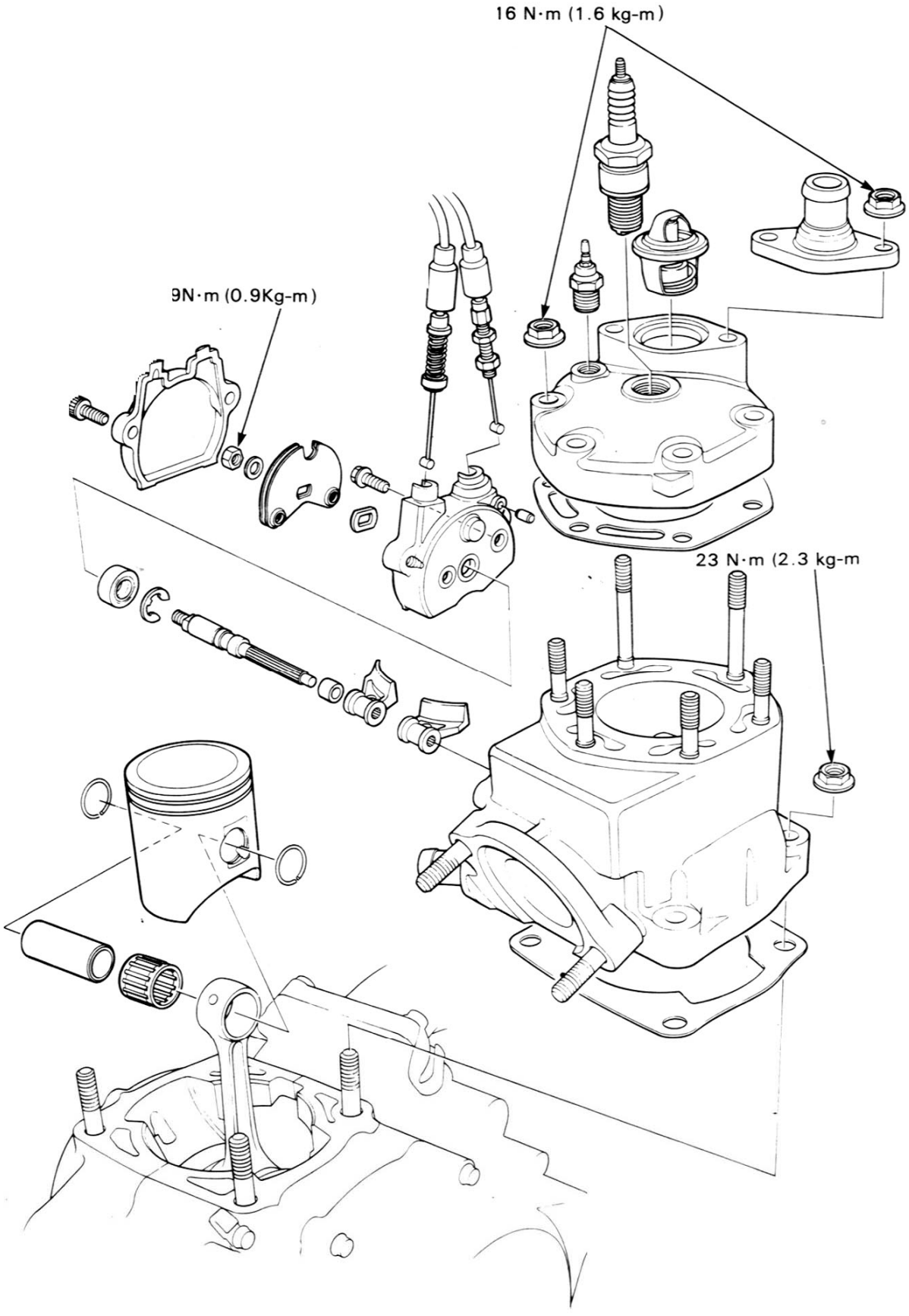
**TORQUE:10N · m (1.0kg-m, 7ft-lb)**




Install the other removed parts in the reverse order of removal.
After installation, check and adjust the follos:
-Drive lever free play (page 3-9)
-Clutch lever free play (page 3-11)
-Oil tube and oil pass tube bleeding (page 2-3)
-Oil pump control cable (page 2-4)

Fill the engine with the recommended transmission oil (page 2-5).

Fill the coolant (page 5-4).
Start the engine and check for expansion chamber for leakage.
Check the cooling system for leakage.


16 N·m (1.6 kg-m)
9N·m (0.9Kg-m)
23 N·m (2.3 kg-m

# SERVICE INFORMATION

## GENERAL

- All cylinder head, cylinder and piston maintenance and inspection can be done with the engine installed.
- Before disassembly, clean the engine to prevent dirt and dust from entering the cylinder and crankcase.
- Remove all gasket material from the mating surfaces of the cylinder and crankcase.
- Clean all disassembled parts throughly before inspction. Coat all sliding surfaces with clean 2-stroke oil before assembly.

## SPECIFICATIONS

| ITEM | | | STANDARD mm (in) | SERVICE LIMIT mm (in) |
|---|---|---|---|---|
| Cylinder head warpage | | | – | 0.10 (0.004) |
| Cylinder I.D. | | Code A | 54.020–54.025 (2.1268–2.1270) | 54.095 (2.1297) |
| | | Code B | 54.015–54.020 (2.1266–2.1268) | 54.090 (2.1295) |
| | | Code C | 54.010–54.015 (2.1264–2.1266) | 54.085 (2.1293) |
| | | Code D | 54.005–54.015 (2.1262–2.1264) | 54.080 (2.1291) |
| | | | 54.000–54.005 (2.1260–2.1262) | 54.075 (2.1289) |
| Piston, piston pin, piston ring | Piston O.D. 15 mm (0.6 in) from piston skirt bottom | Code A | 53.976–53.980 (2.1250–2.1252) | 53.906 (2.1223) |
| | | Code B | 53.971–53.975 (2.1248–2.1250) | 53.901 (2.1221) |
| | | Code C | 53.966–53.970 (2.1246–2.1248) | 53.896 (2.1219) |
| | | Code D | 53.961–53.965 (2.1244–2.1246) | 53.891 (2.1217) |
| | | Code E | 53.956–53.960 (2.1243–2.1244) | 53.886 (2.1215) |
| | Piston pin bore | | 16.002–16.008 (0.6300–0.6302) | 16.03 (0.631) |
| | | | 15.994–16.000 (0.6279–0.6299) | 15.98 (0.629) |
| | Piston pin-to-bore clearance | | 0.002–0.014 (0.0001–0.0006) | 0.04 (0.0016) |
| | Piston ring end gap | | 0.30–0.45 (0.012–0.018) | 0.50 (0.020) |
| Cylinder-to-piston clearance | | | 0 040–0.049 (0.0016–0.0019) | 0.080 (0.0031) |
| Connecting rod small end I.D. | | | 20.002–20.014 (0.7875–0.7880) | 20.03 (0.789) |

TORQUE VALUES

| | |
|---|---|
| Cylinder head nut | 16 N·m (1.6 kg-m, 12 ft-lb) |
| Cylinder nut | 23 N·m (2.3 kg-m, 17 ft-lb) |

# TROUBLESHOOTING

Compression too low, hard starting or poor performance at low speed
- Leaking cylinder head gasket
- Loose spark plug
- Worn, stuck or broken piston rings
- Faulty reed valve
- Leaking crankcase gasket

Conpression too high overheating or knocking
- Excessive carbon busit-up in cylinder or piston top

Abnormal noise-piston
- Worn cylinder and piston
- Worn piston pin or piston pin bore
- Worn connecting rod small end bearing

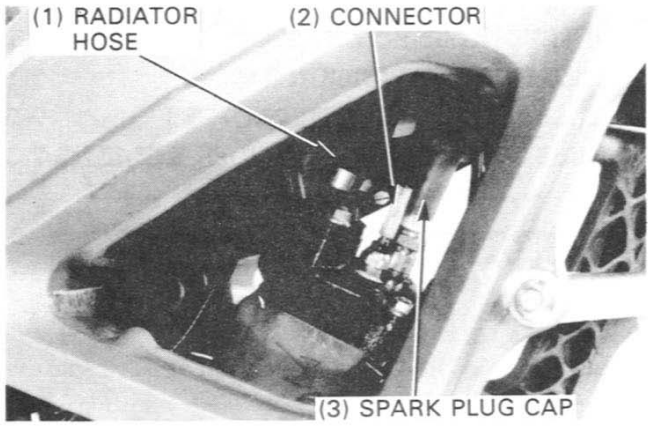
Abnormal noise-piston rings
- Worn, stuck or broken piston rings
- Worn or damaged cylinder

Contaminated coolant
- Leaking cylinder head gasket

# CYLINDER HEAD REMOVAL

## REMOVAL

Drain coolant (page 5-4).
Disconnect the follows:
-Upper radiator hose
-Thermosensor wire connector
-Spark plug cap

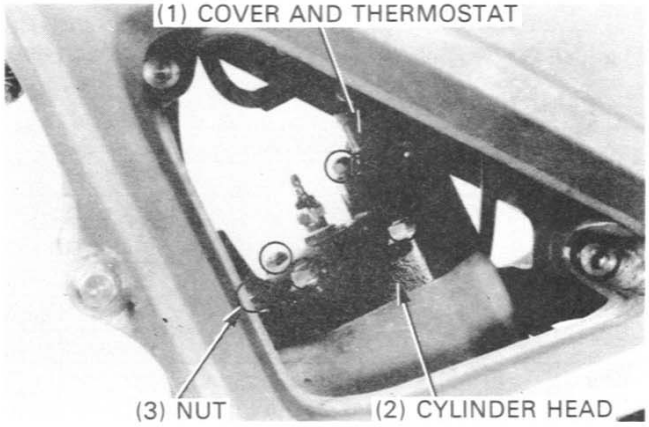



Remove the follows:
-Spark plug
-Six cylinder head nuts

NOTE

- Loosen the nuts in a crisscross pattern in several steps.

-Thermostat cover and thermostat
-Cylinder head and gasket




## INSPECTION

Remove carbon deposits from the combustion chamber.

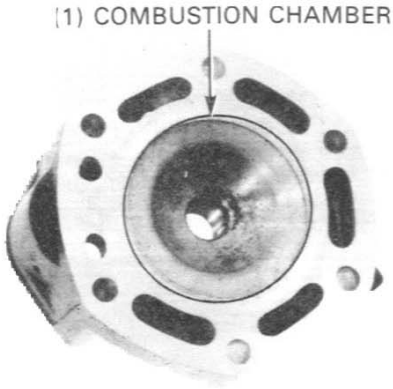
**CAUTION**

- *Be careful not to damage the combustion chamber wall.*

Clean the head gasket surface off any gasket material.

**CAUTION**

*Be careful not to damage the gasket surface.*

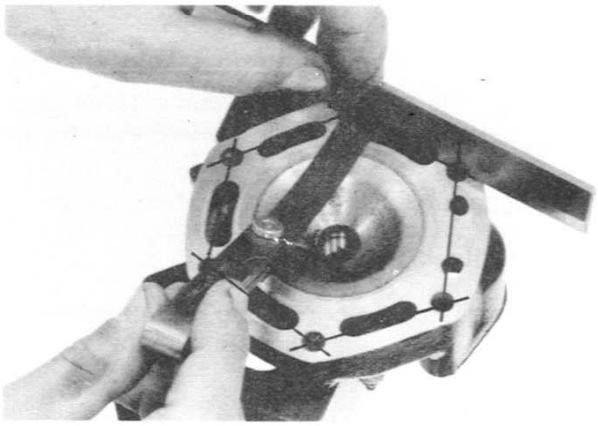



Check for cracks around the spark plug and stud bolt holes.
Check the cylinder head for warpage with a straight edge and a feeler gauge in the directions shown.

**SERVICE LIMIT: 0.10 mm (0.004 in)**

NOTE

- If the cylinder head must be replaced, remove the temperature sensor from the head.



# CYLINDER/PISTON REMOVAL

## CYLINDER REMOVAL

Remove the two socket bolts and RC valve cover.

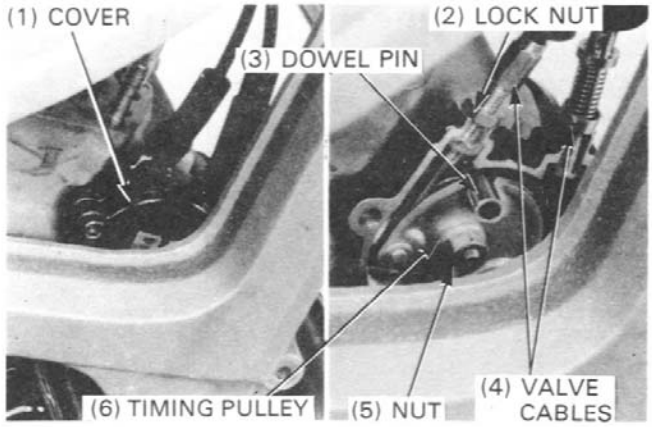
Loosen the lock nut and disconnect the valve cables from the valve timing pulley.

Align the hole in the cable guide base with the cut-out in the timing pulley and secure the timing pulley with a dowel pin (6mm O.D.).

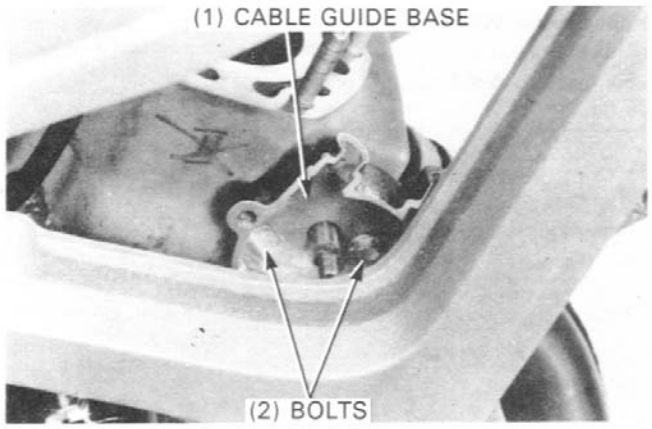
Remove the nut and timing pulley.

NOTE

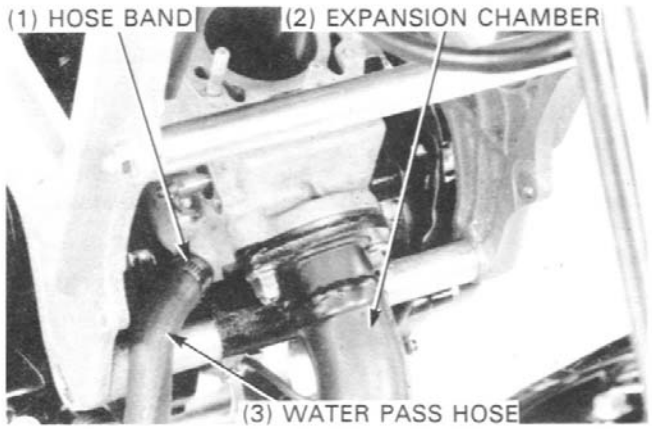
- The timing pulley nut has left hand threads.




Remove the two bolts and cable guide base from the cylinder.



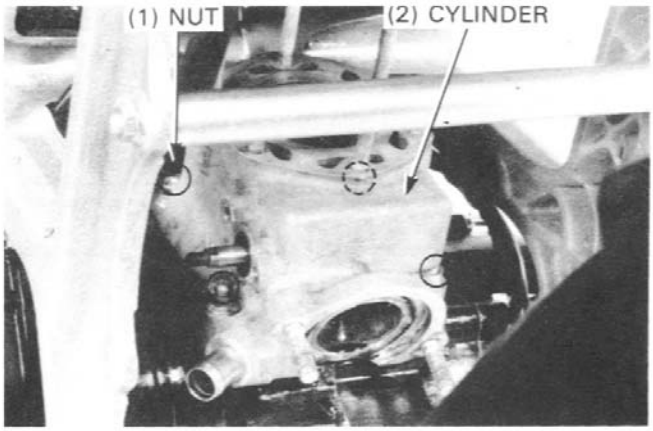

Disconnect the water pass hose and remove the expansion chamver (page 6-2).



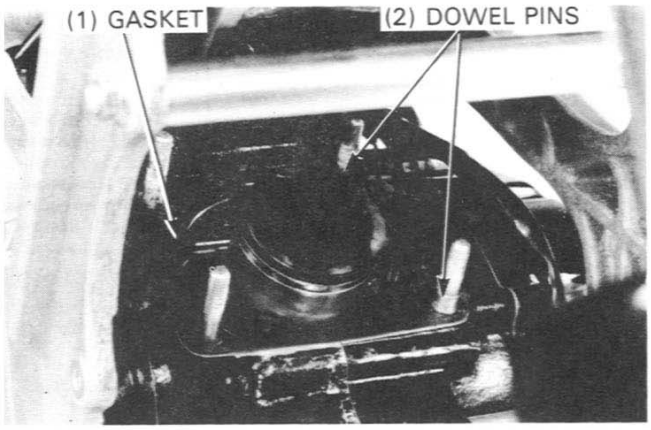

Remove the four cylinder nuts and cylinder.

NOTE

- Loosen the nuts in a crisscross pattern in several steps.
- Do not pry the cylinder base mating surface with a screw driver.



Remove the cylinder base gasket and dowel pins.




## PISTON REMOVAL

Cover the crankcase opening with a shop towel.
Remove and discard the piston pin clips.

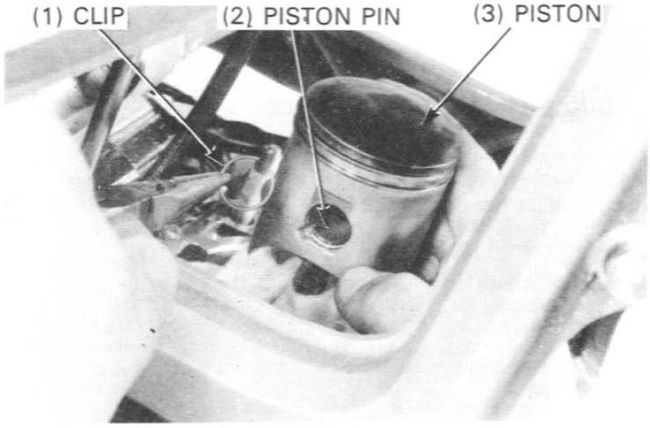
NOTE

- Do not let the clips fall into the crankcase.

Push the piston pin out and remove the piston.

**CAUTION**

- *Do not apply side force to the connecting rod.*

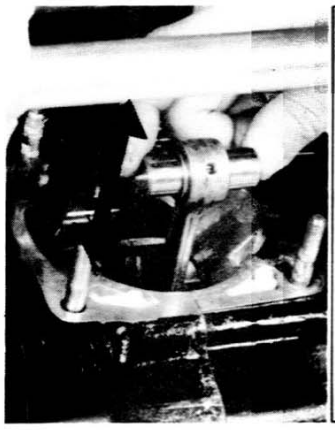


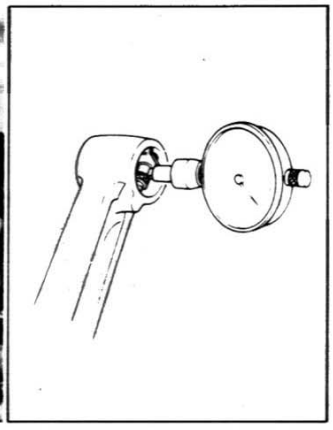

## CONNECTING ROD SMALL END INSPECTION

Install the bearing and piston pin in the connecting rod small end and check for excessive play. If it feels loose, measure the small end I.D.

**SERVICE LIMIT: 20.03 mm (0.789 in)**

If not over the service limit, replace the piston pin and small end bearing.
If over the service limit, replace the crankshaft assembly.
Refer to section 10 for crankshaft replacement.





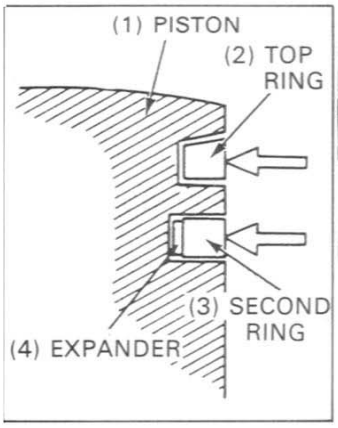

## PISTON RING REMOVAL

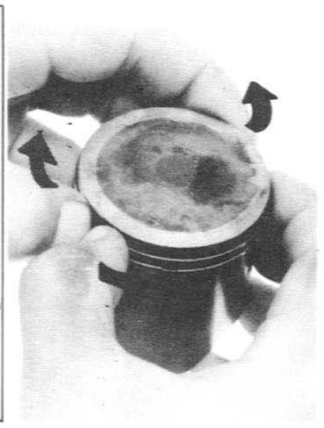
Check that the piston rings are flush with the piston sliding surface when the rings are compressed in the piston ring grooves.
If not so, remove the piston rings and expander.
Remove the carbon deposits from the piston rings and ring grooves.

Spread each piston ring and remove by lifting it up at a point just opposite the gap.

**CAUTION**

*Do not damage the piston rings by spreading the ends too far.*



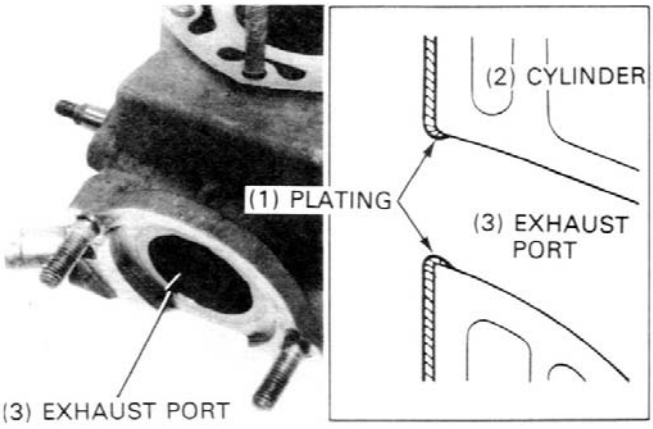



## CYLINDER INSPECTION

Inspect the cylinder bore for wear or damage.
Remove the carbon deposits from the exhaust port.

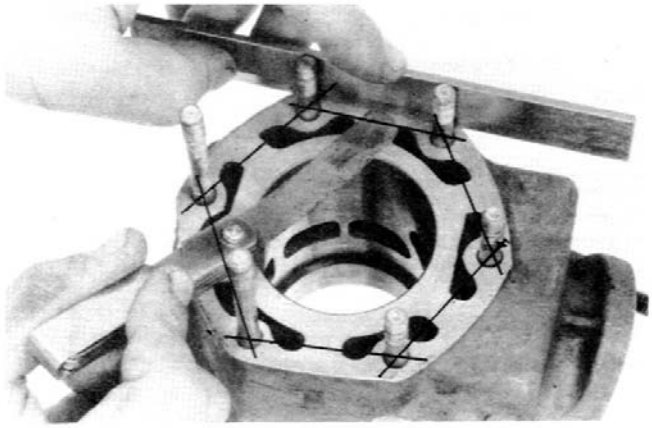
NOTE

- Be careful not to damage the plating on the cylinder wall.




Check the cylinder for warpage with a straight edge and feeler gauge in the derections as shown.

**SERVICE LIMIT: 0.05mm (0.002 in)**



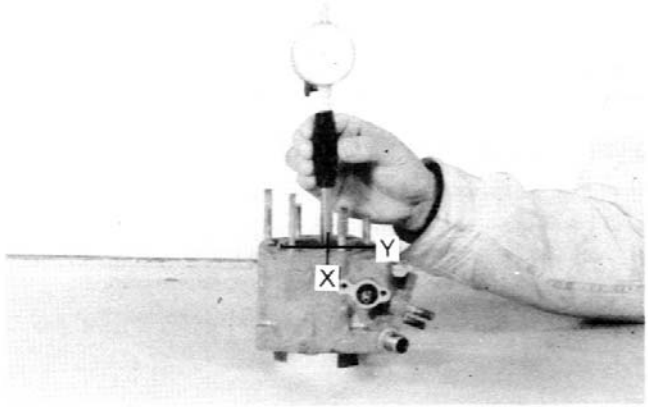
Inspect the cylinder bore for wear at three levels in X and Y directions. Take the maximum figure measured to determine the cylinder wear.

**SERVICE LIMITS:**

| | |
|---|---|
| **CODE A:** | **54.095 mm (2.1297 in)** |
| **CODE B:** | **54.090 mm (2.1295 in)** |
| **CODE C:** | **54.085 mm (2.1293 in)** |
| **CODE D:** | **54.080 mm (2.1291 in)** |
| **CODE E:** | **54.075 mm (2.1289 in)** |

NOTE

- Select fit cylinder and piston when replacing.



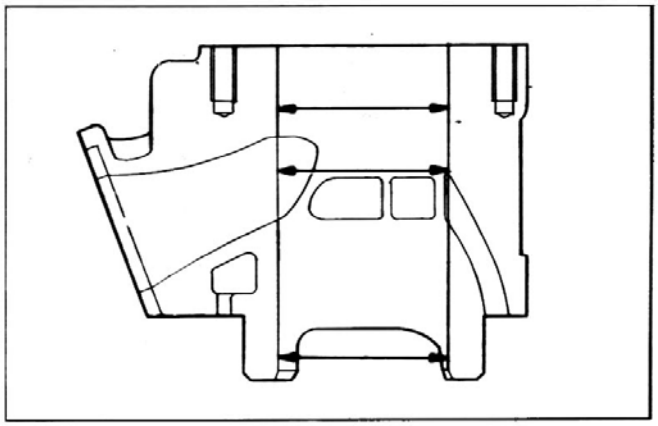

Calculate the cylinder-to-piston clearance.
Take the maximum reading to determine the clearance.

**SERVICE LIMIT: 0.080mm (0.0031 in)**

Calculate the taper (in X and Y directions) and out of round (at three levels), and take the maximum reading to determine the service limit.

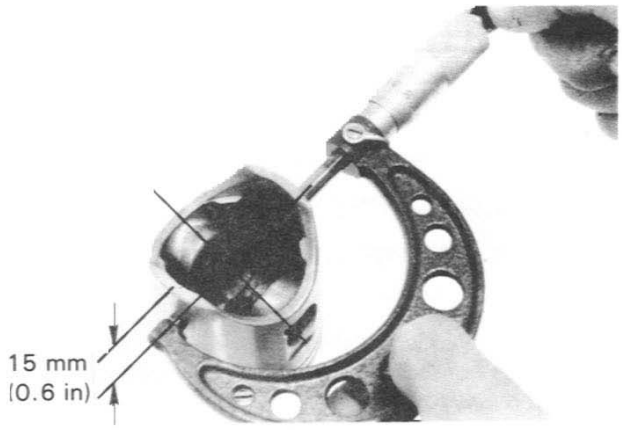
**SERVICE LIMIT:**

| | |
|---|---|
| **Taper** | **:0.05mm (0.002 in)** |
| **Out of round** | **:0.05mm (0.002 in)** |



## PISTON INSPECTION

Check the piston for scoring, cracks and ring groove wear.
Measure the O.D. of the piston at the position 15mm (0.6 in) from the bottom and at 90° to the piston pin bore.




**SERVICE LIMITS:**

**CODE A: 53.906 mm (2.1223 in)**
**CODE B: 53.901 mm (2.1221 in)**
**CODE C: 53.896 mm (2.1219 in)**
**CODE D: 53.891 mm (2.1217 in)**
**CODE E: 53.886 mm (2.1215 in)**

NOTE

- The same code is stamped on the cylinder and piston. If you can not identify the code on the piston head, refer to it on the cylinder.

Measure the piston pin bore I.D.

**SERVICE LIMIT: 16.03 mm (0.631 in)**

See page 7-7 for piston selection.

Check the piston pin for wear and excessive discoloration.
Measure the piston pin O.D.

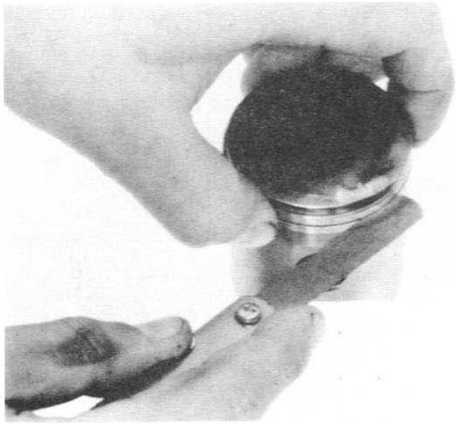
**SERVICE LIMIT: 15.98 mm (0.629 in)**

Calculate the piston pin-to-piston clearance.

**SERVICE LIMIT: 0.04 mm (0.0016 in)**

## PISTON RING INSPECTION

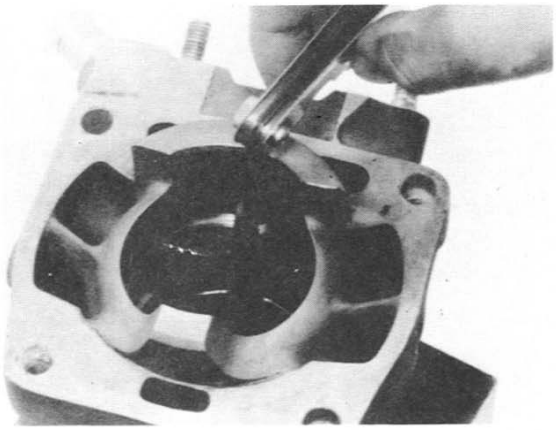
Install the expander and piston rings in the piston ring grooves (refer to page 7-8).



Measure the piston ring-to-piston clearance while compressing the rings so that they are flush with the piston sliding surface.

**SERVICE LIMIT: 0.12mm (0.005 in)**

Insert the piston ring squarely into the cylinder and measure the ring end gap.



NOTE

Push the piston rings into the cylider using the piston head to be sure that it is square in the cylinder.

**SERVICE LIMIT: 0.50 mm (0.0197 in)**

# CYLINDER AND PISTON SELECTION

The cylinder and piston should be selected correctly to fit the piston in the cylinder. Select the proper piston and/or cylinder as follows.

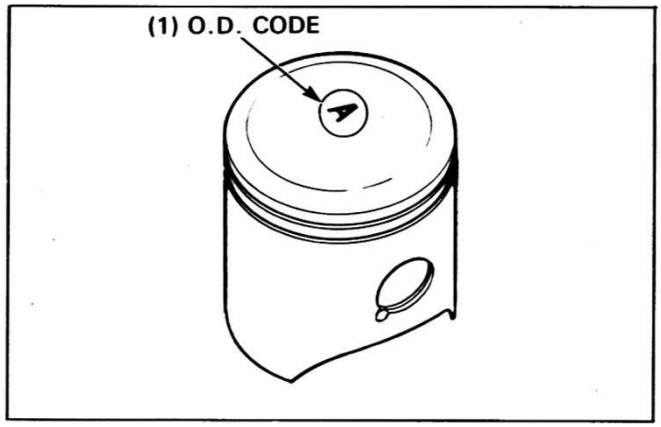
## PISTON SELECTION

Record the O.D. code on the piston head.

NOTE

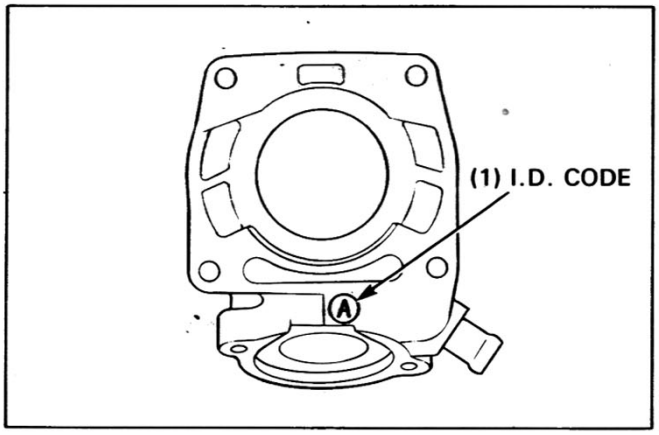
The same code is stamped on the cylinder and piston. If you can not identify the code on the piston head, refer to it on the cylinder.

Use a new piston with the same O.D. code as the old one.




## CYLINDER SELECTION

Record the cylinder I.D. code located on the cylinder base.
Use a new cylinder with the same I.D. code as the old one.

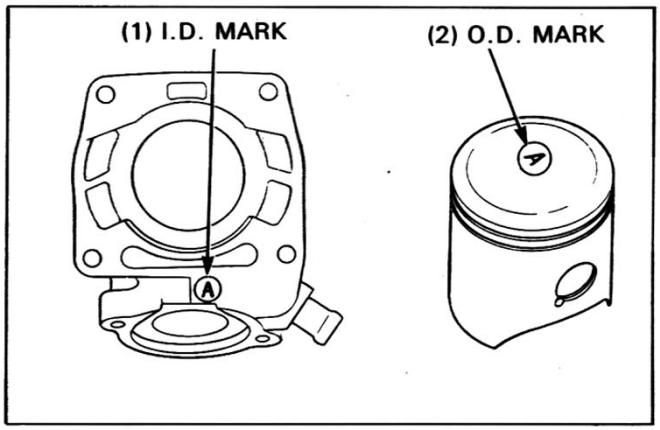



## CYLINDER AND PISTON SELECTION

Use a new cylinder and piston with the same I.D. and O.D. codes when replacing the cylinder and piston as a set.

| CYLINDER I.D. CODE / PISTON I.D. CODE | | A | B | C | D | E |
|---|---|---|---|---|---|---|
| | A | ○ | × | × | × | × |
| | B | × | ○ | × | × | × |
| | C | × | × | ○ | × | × |
| | D | × | × | × | ○ | × |
| | E | × | × | × | × | ○ |

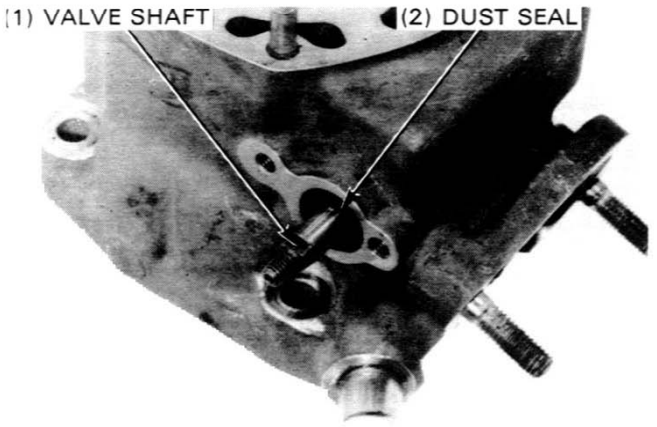
○ : available
× : not available




# RC VALVE

## DISASSEMBLY

Remove the dust seal, RC valve shaft, collar and RC valves from the cylinder.
Discard the removed dust seal.

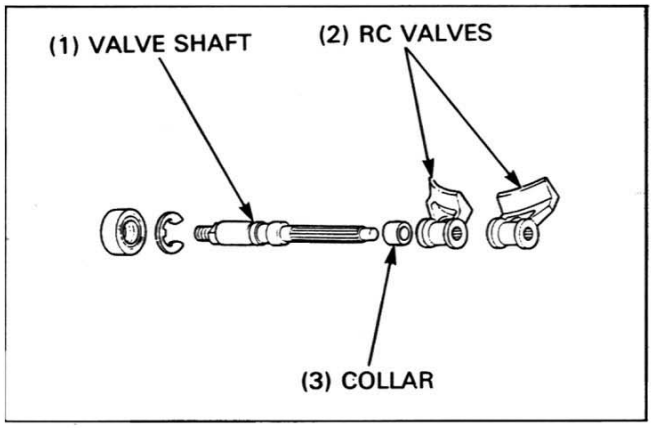


### INSPECTION

Clean the carbon deposits off on the RC valves and valve shaft.

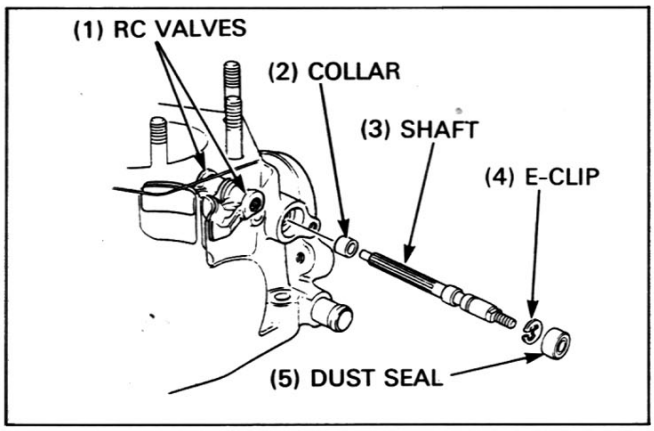
Check the RC valves for scores or other damage.
Check the RC valve shaft for bend or other damage.

Install the RC valves and collar onto the shaft, and measure the movement of the valves on axis at the tip of the valve. If the movement is more than 1mm (0.04in), replace the valves and shaft with new ones.

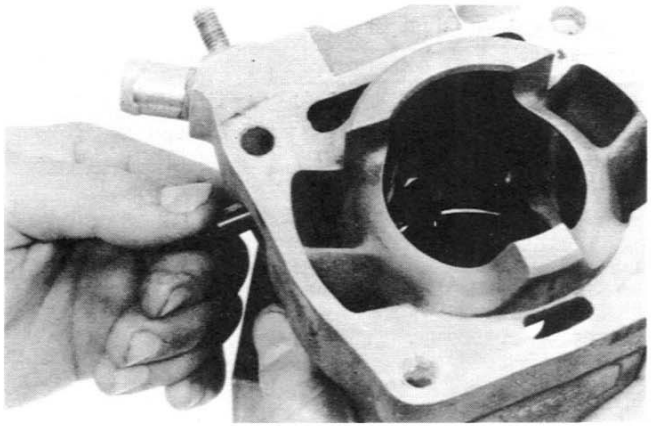



### ASSEMBLY

Set the RC valevs in the cylinder.
Install the collar and valve shaft, aligning the wide tooth on the valve shaft with the ones in the RC valves.
Install a new dust seal securely.




After assembly, check for smooth operation for RC valves by turning the valve shaft.



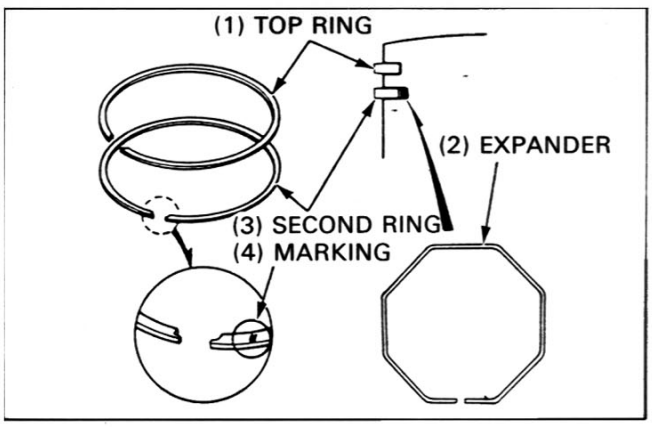
# CYLINDER/PISTON INSTALLATION

### PISION RING INSTALLATION

Install the expander and piston rings.

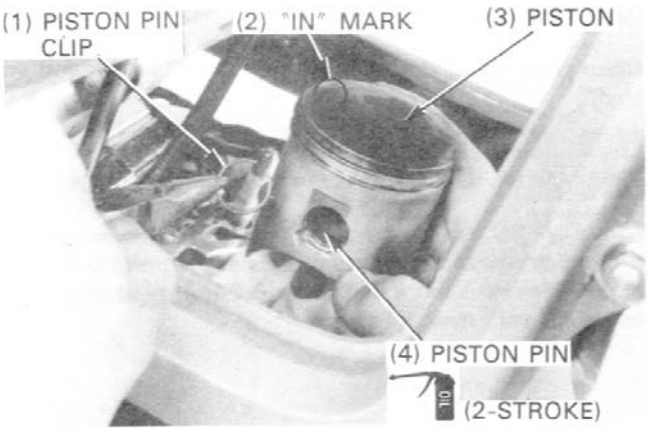
NOTE

- Avoid piston and piston ring damaging during installation.
- Use the top and second rings with the same markings.
- Install the piston ring with the mark facing up.
- Do not interchange the top and second rings.



## PISTON INSTALLATION

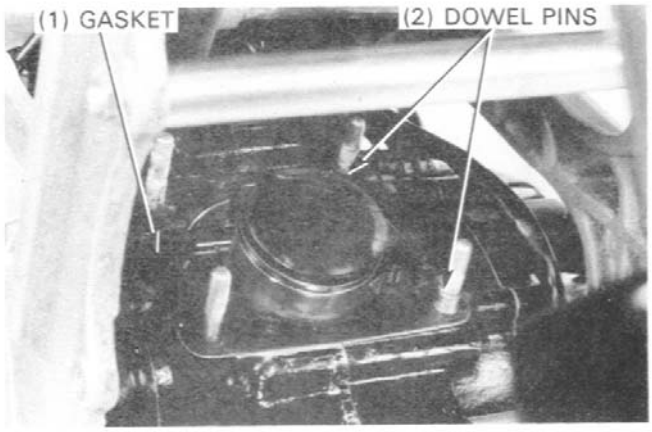
Place a shop towel over the crankcase opening to prevent piston pin clips from falling into the crankcase.
Coat the needle bearing and piston pin with 2-stroke oil.
Install the needle bearing in the connecting rod, and install the piston with the "IN" mark facing the intake side.
Install the piston pin.
Instal new piston pin clips with the end gap away from the cut out of the piston.



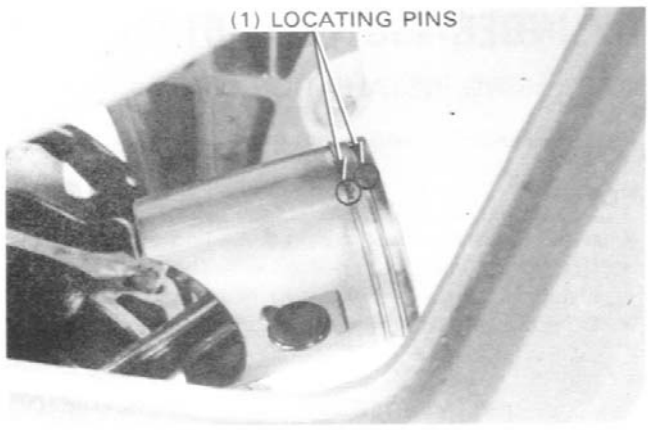

## CYLINDER INSTALLATION

Cover the crankcase opening with a shop towel and remove all the gasket material from the cylinder and crankcase mating surfaces.

Install the dowel pins and a new cylinder base gasket on the crankcase.



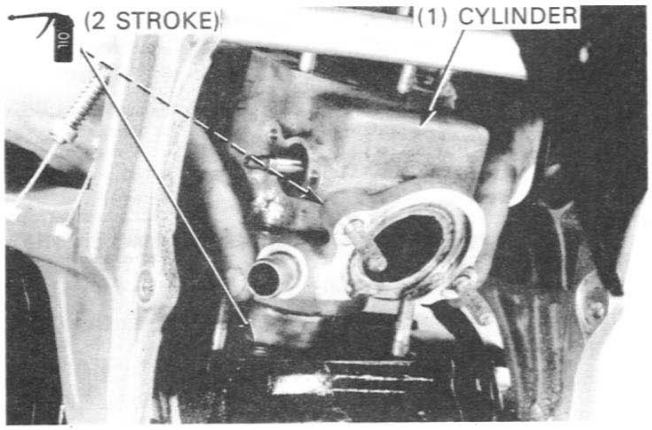

Align each ring end gap with the locating pin in the piston ring groove.



Lubricate the cylinder and piston with 2-stroke oil and install the cylinder over the piston while compressing the piston rings.

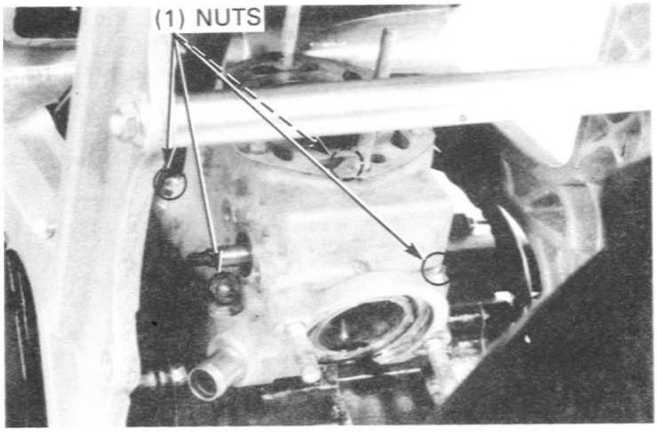
**CAUTION**

- *Do not rotate the cylinder, since this may cause the piston rings to snag a cylinder port and break.*
- *Be careful not to damage the sliding surfaces of the piston and cylinder.*

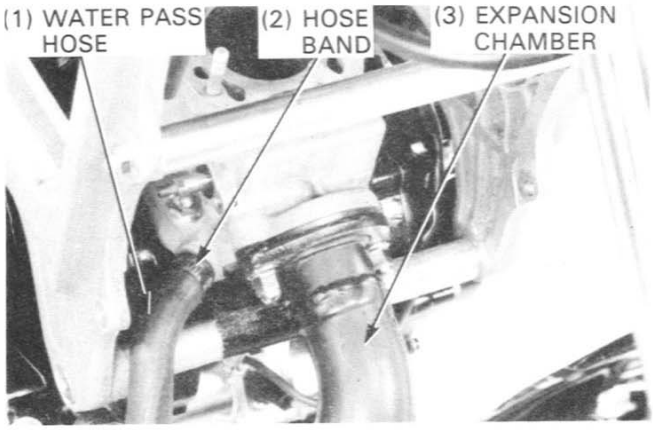



Install the four cylinder nuts and tighten them in a crisscross pattern in several steps.

**TORUQE:23N·m (2.3kg-m, 17lb)**

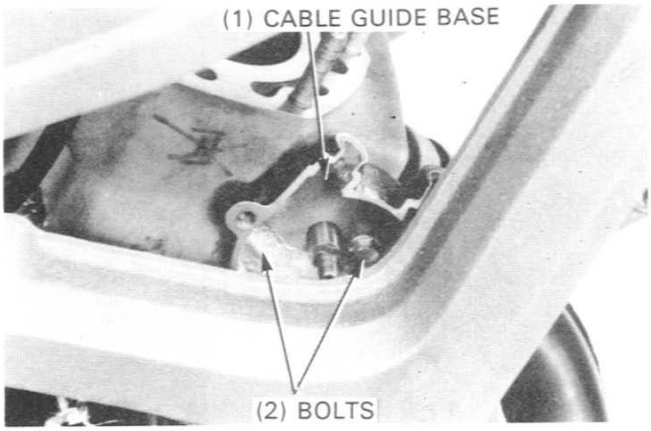



Connect the water pass hose to the cylinder and tighten the hose band.
Install the expansion chamber (page 6-5).




## RC VALVE INSTALLATION

Install the RC valve cable quide base and secure it with the two bolts.
Install the washer onto the RC valve shaft.

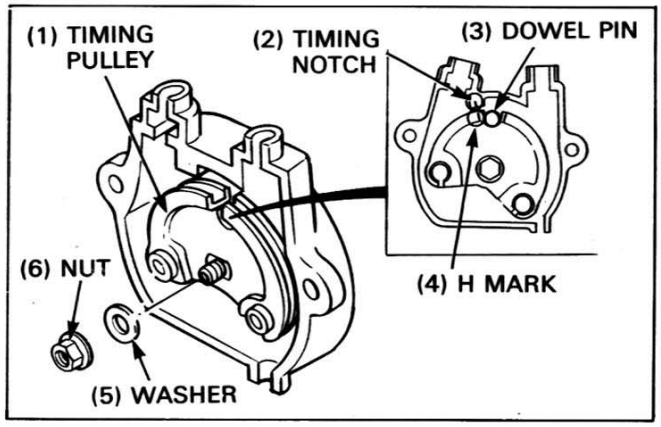


Align the hole in the cable guide with the cut out in the valve timing pulley, and secure the timing pulley with the dowel pin (6mm O.D.).
With the timing plate secured, install the washer and tighten the nut.

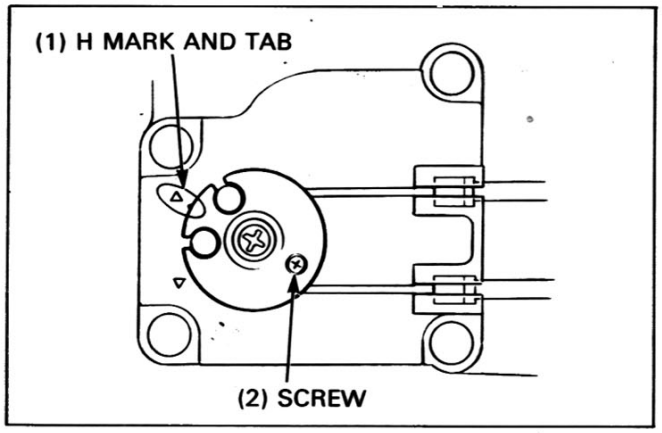
NOTE

- The RC valve timing pulley nut has left-hand threads.

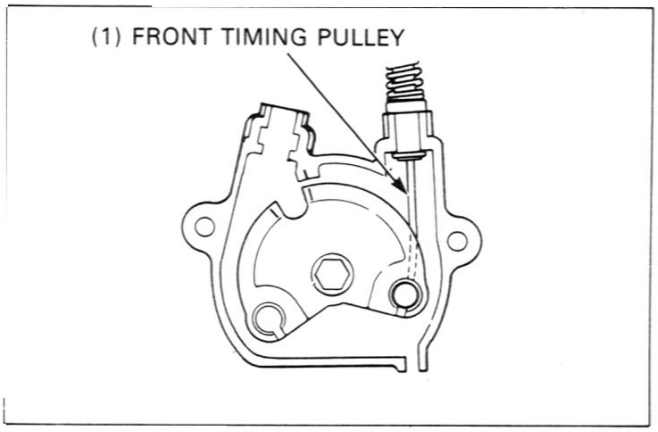
Remove the dowel pin and measure the gap from the timing notch on the cable quide to the H mark is less than 0.3mm (0.01in) with the valves high position.



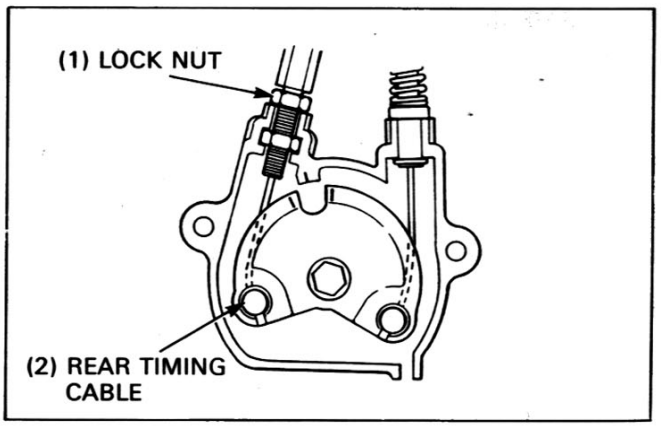

Align the tab on the RC valve motor pulley with the H mark on the motor cover by turning the pulley.
Lock the pulley by inserting a screw into the holes in the pulley and motor cover. (∅3 mm)




Route the timing cables correctly and connect the front timing cable to the valve timing pulley.



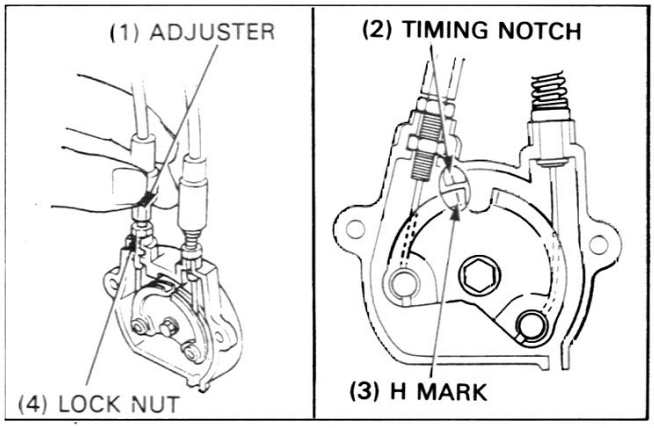

Loosen the lock nut all the way, connect the rear timing cable to the valve timing pulley.



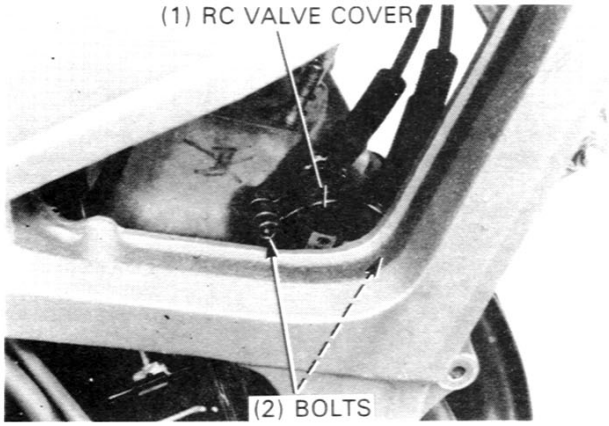
Align the timing notch on the cable guide base with the H mark on the valve timing pulley by turning the adjuster, holding the outer tube to prevent it from being twisted.
Tighten the lock nut securely.

Remove the screw locked the valve servomotor pulley.

To sung the cables, turn the timing pulley 5° to 10° several times and make sure the timing notch on the cable guide base aligns with the H mark on the timing pulley when the tab on the servomotor pulley aligns with the arrow on the motor cover.
If not so, readjust the valve timing.
Check the valves for proper operation (page 3-14).

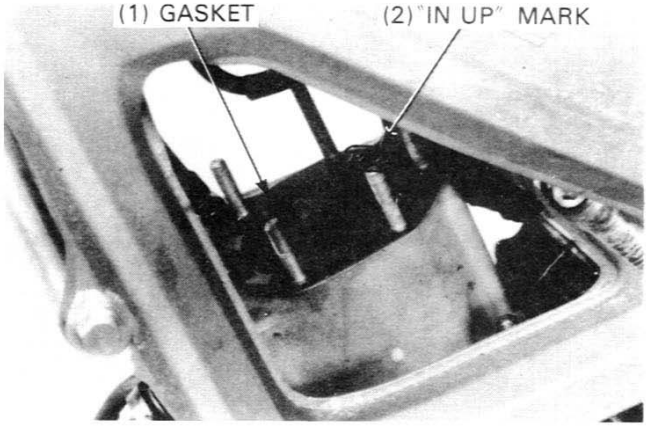



Install the RC valve cover and secure it with the two bolts.

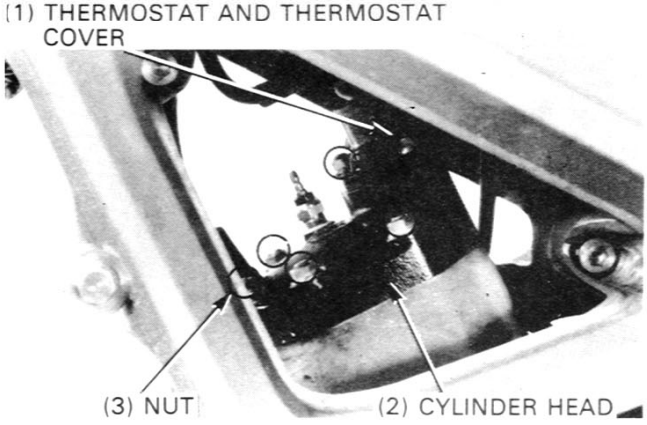



# CYINDER HEAD INSTALLATION

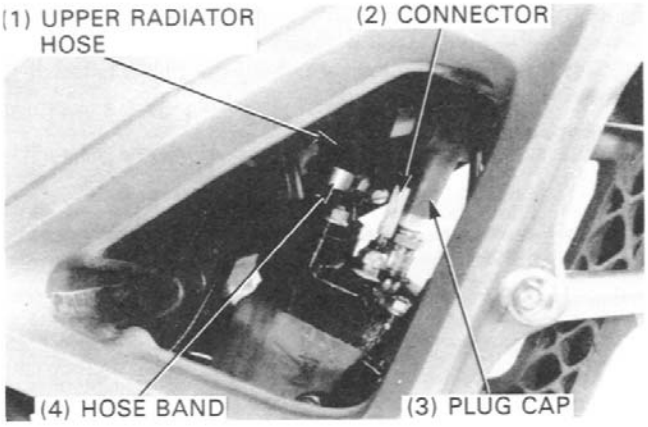
Install a new cylinder head gasket with the "IN UP" mark facing intake side and up.

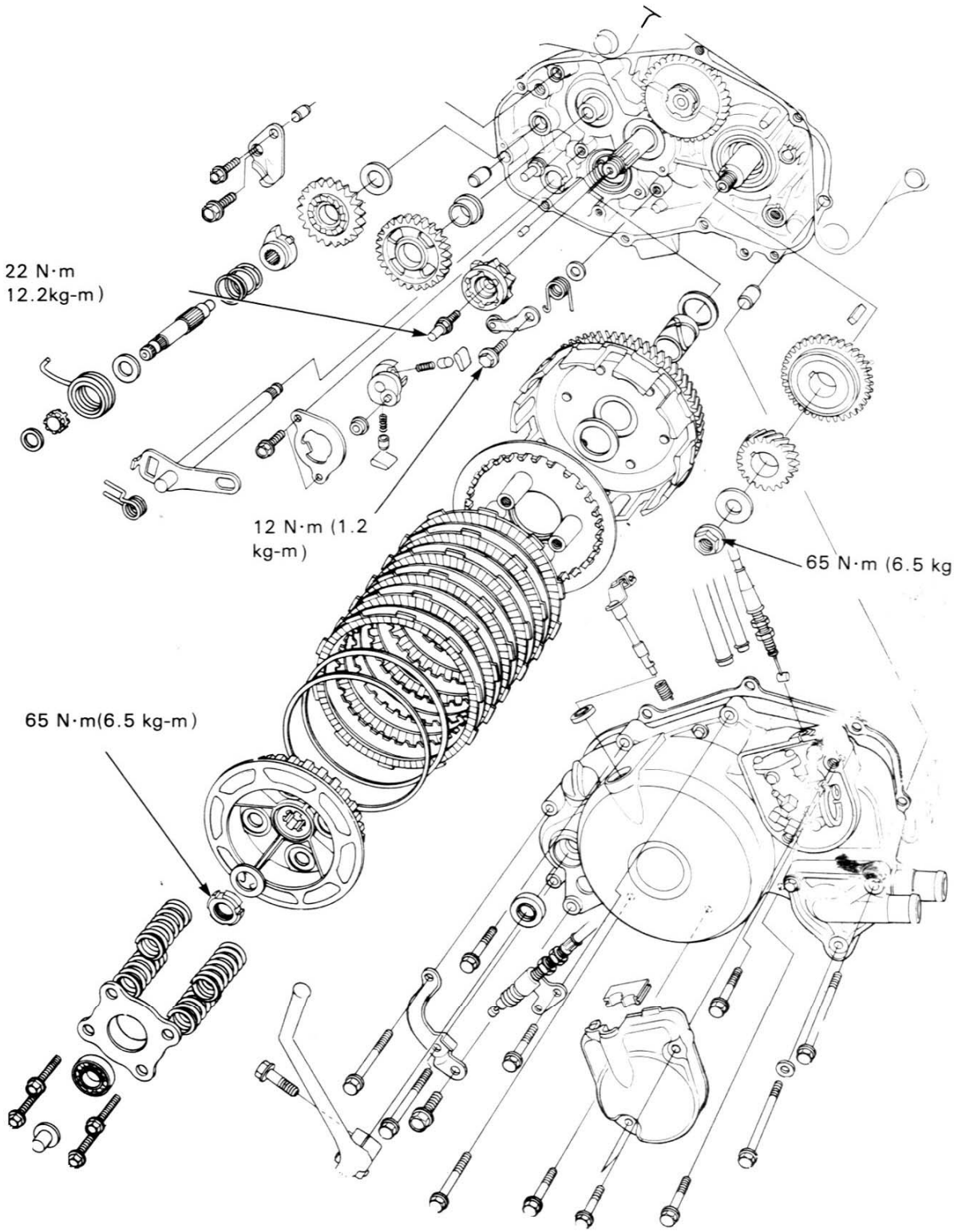



Install the cylinder head, thermostat and thermostat cover, and tighten the cylinder head nuts in a crisscross pattern in several steps.



Connect the upper radiator hose and tighten the hose band.
Connect the thermosensor wire connector and spark plug cap.
Fill the cooling system with the recommended coolant (page 5-4).




22 N·m
12.2kg-m)
12 N·m (1.2
kg-m)
65 N·m (6.5 kg
65 N·m(6.5 kg-m)

# SERVICE INFORMATION

## GENERAL

- This section covers the clutch, kickstarter and gearshift linkage service. These parts can be serviced with the engine in the frame.
- Remove any gasket material from the crankcase and cover mating surfaces.
- Clean all parts before installing. Coat all contact surfaces with clean transmission oil before assembly.
- The cooling system must be drained to remove the right crankase cover when servicing the clutch, gearshift linkage and kickstarter.

## SPECIFICATIONS

UNIT : mm (in)

| ITEM | | | STANDARD | SERVICE LIMIT |
|---|---|---|---|---|
| Clutch | Spring free length | | 35.4 (1.39) | 33.6 (1.323) |
| | Disc thickness | Disc A | 2.62–2.78 (0.103–0.109) | 2.2 (0.086) |
| | | Disc B | 2.92–3.08 (0.115–0.121) | 2.5 (0.098) |
| | Plate warpage | | – | 0.20 (0.001) |
| Clutch outer guide | O.D. | | 22.930–22.950 (0.9028–0.9035) | 22.80 (0.898) |
| | I.D. | | 16.988–17.010 (0.6688–0.6697) | 17.04 (0.671) |
| Clutch outer I.D. | | | 23.000–23.021 (0.9055–0.9063) | 23.06 (0.908) |
| Pinion gear I.D. | | | 16.016–16.034 (0.6305–0.6313) | 16.07 (0.633) |
| Kickstarter | Spindle O.D. | | 15.966–15.984 (0.6286–0.6293) | 15.94 (0.628) |
| | Idle gear I.D. | | 20.020–20.041 (0.7882–0.7890) | 20.10 (0.791) |
| Idle gear bushing | O.D. | | 19.984–19.995 (0.7868–0.7872) | 19.90 (0.783) |
| | I.D. | | 17.010–17.035 (0.6697–0.6707) | 17.10 (0.673) |

## TORQUE VALUES

| | |
|---|---|
| Clutch center lock nut | 65 N·m (6.5 kg-m, 47ft-lb) |
| Primary drive gear nut | 65 N·m (6.5 kg-m, 47 ft-lb) |
| Shift drum center pin | 22 N·m (2.2 kg-m, 16 ft-lb) |
| Stopper arm bolt | 12 N·m (1.2 kg-m, 9 ft-lb) |

## TOOLS

**Special**

| | |
|---|---|
| Clutch center holder | 07923–KE10000 |

**Common**

| | |
|---|---|
| Lock nut wrench, 20×24 mm | 07716–0020100 |
| Extension bar | 07716–0020500 |

# TROUBLESHOOTING

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

**Clutch slips when accelerating**
- No free play
- Worn discs
- Weak clutch springs

**Clutch will not disengage**
- Too much free play
- Warped plates

**Clutch operation feels rough**
- Rough clutch outer slots

**Hard to shift**
- Bent gearshift spindle
- Bent or damaged gearshift plate
- Damaged gearshift cam

**Transmission jumps out of gear**
- Weak or broken stopper arm return spring
- Damaged stopper arm
- Worn of damaged gearshift cam
- Damaged gearshift plate spring

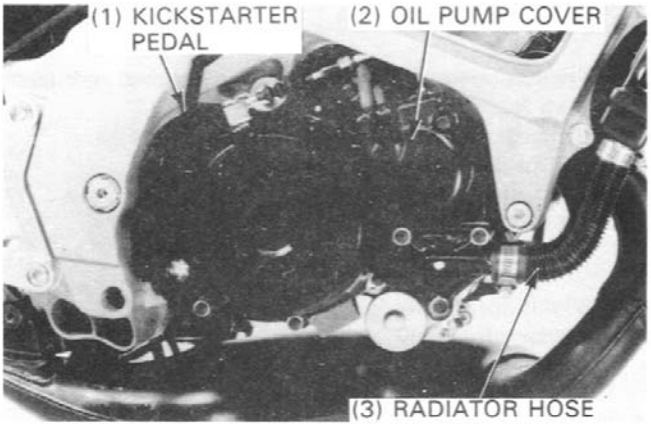
**Gearshift pedal will not return**
- Weak or broken gearshift spindle return spring
- Bent gearshift spindle

**Kickstarter slips**
- Worn or damaged ratchet teeth of the starter ratchet and/or starter pinion
- Broken ratchet spring

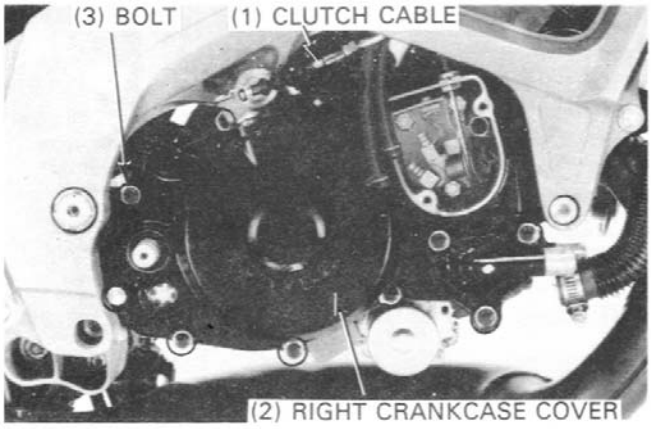
**Kickstarter pedal does not return**
- Weak or damaged kickstarter return spring
- Return spring hook out of place

# RIGHT CRANKCASE COVER REMOVAL

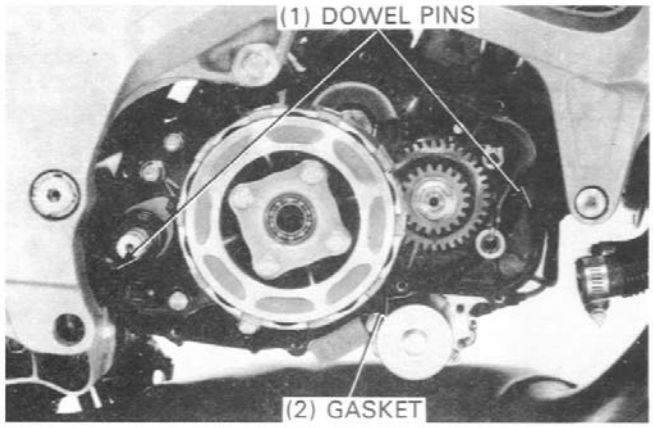
Drain the transmission oil (page 2-5).
Drain the radiator coolant (page 5-4).
Remove the kickstarter pedal.
Remove the oil pump cover.
Disconnect the radiator hose from the water pump cover.




Clamp the oil tube and oil pass tube and disconnect them from the oil pump.
Disconnect the oil control cable from the oil pump and remove the adjuster from the right crankcase.
Disconnect the clutch cable from the clutch lifter arm.
Remove the right crankcase cover bolts and right crankcase cover.

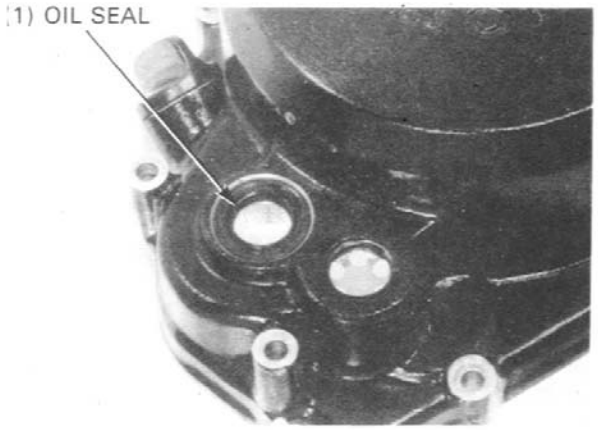



Remove the dowel pins and gasket.

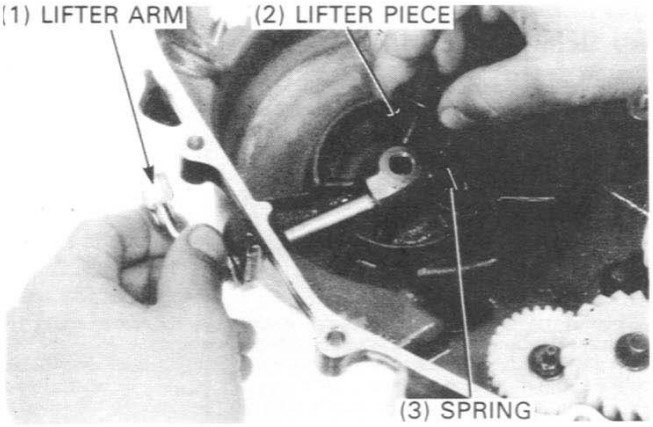



## DISASSEMBLY/INSPECTION

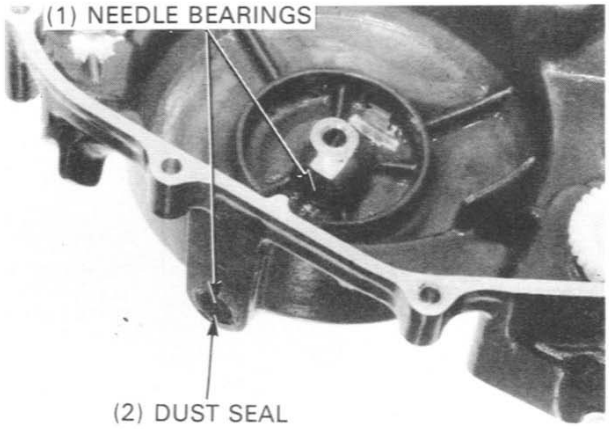
Check the kickstarter spindle oil seal for damage or deterioration.
If necessary, replace with a new one.



Remove the follows from the right crankcase cover.
-Clutch lifter piece
-Clutch lifter arm
-Spring
Check the lifter arm for bend or other damage.

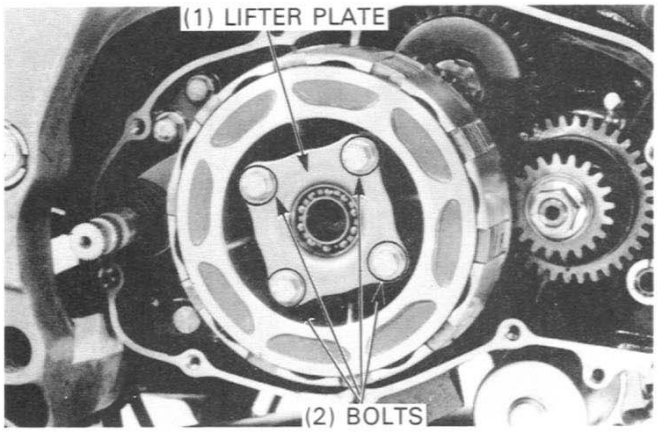



Check the dust seal and needle bearings for wear, damage or deterioration.




# CLUTCH REMOVAL

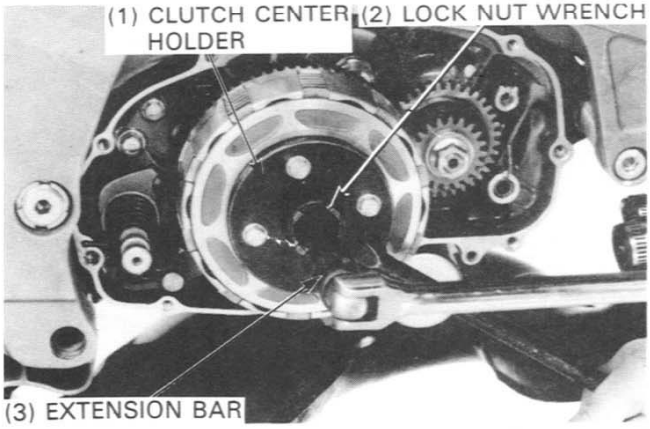
Remove the clutch bolts, lifter bearing, lifter plate and clutch springs.



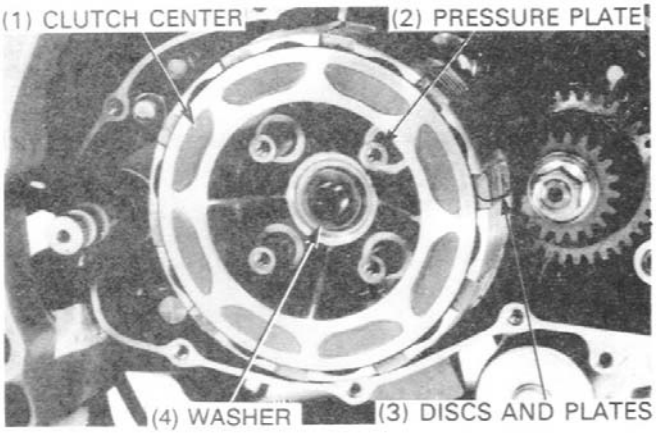

Install the clutch center holder as shown, and remove the lock nut.

**TOOLS:**

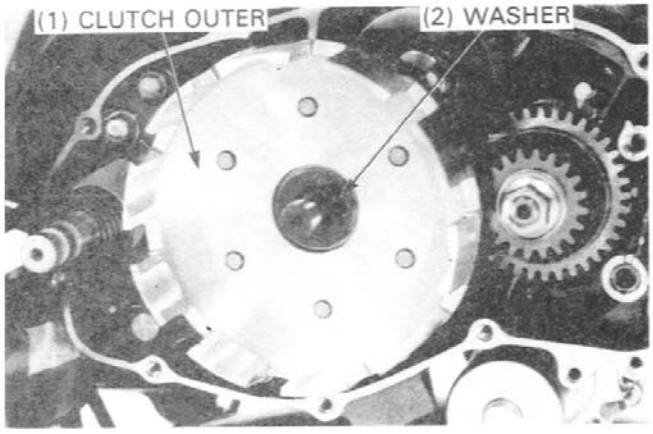
| | |
|---|---|
| **Clutch center holder** | **07923-KE10000** |
| **Lock nut wrench, 20 × 24 mm** | **07716-0020100** |
| **Extension bar** | **07716-0020500** |



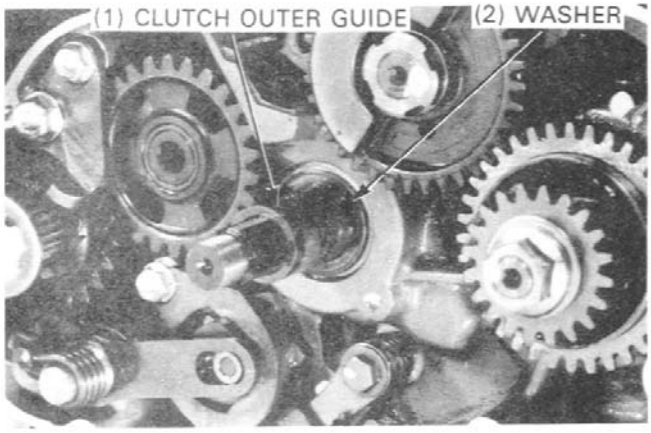
Remove the follows:
-Washer
-Clutch center
-Spring seat and judder spring
-Clutch discs and plates
-Clutch pressure plate




Remove the washer and clutch outer.



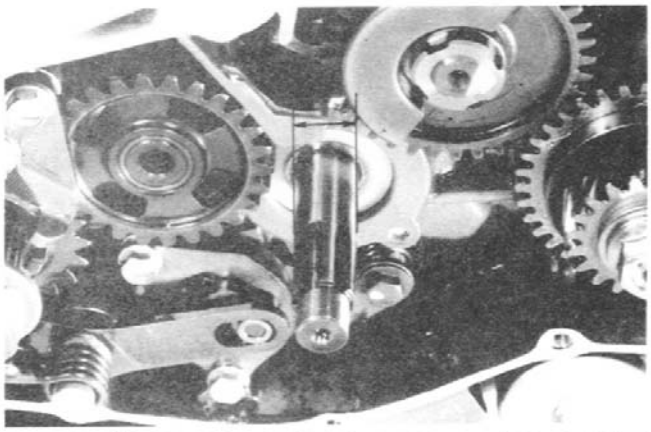

Remove the clutch outer guide and washer.




Inspect the mainshaft for discoloration or scores.
Measure the mainshaft O.D. on the sliding surface.

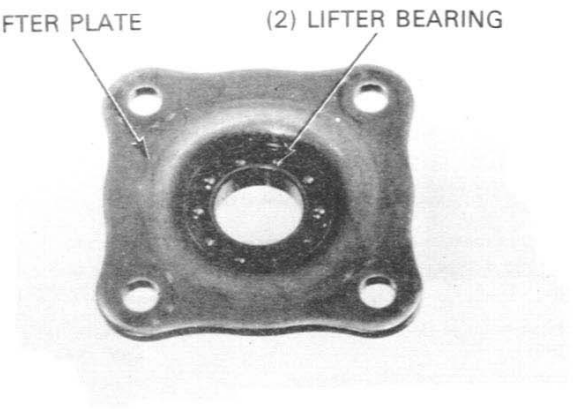
**SERVICE LIMIT: 16.94 mm (0.667 in)**

Refer to the section 10 for mainshaft replacement.

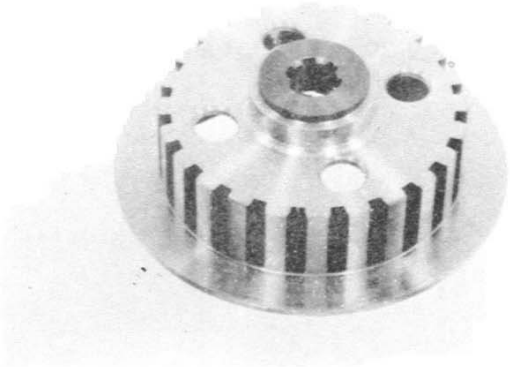


## INSPECTION

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




Inspect the clutch center for excessive wear, score or damage.
Replace with a new one if necessary.

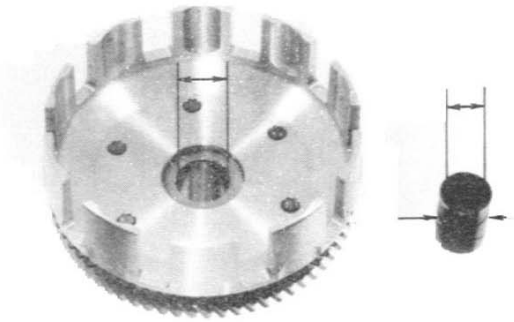


Check the slots of the clutch outer for damage or wear caused by the clutch discs. Replace if necessary.
Measure the clutch outer I.D.

**SERVICE LIMIT: 23.06 mm (0.908 in).**

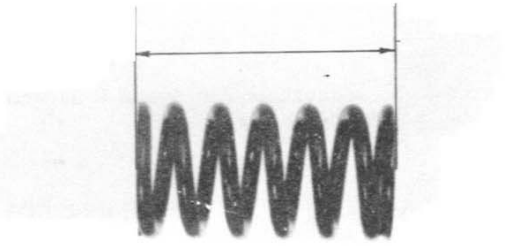
Check the clutch outer guide for excessive wear or score.
Measure the clutch outer guide O.D. and I.D.

**SERVICE LIMIT:**
**O.D.: 22.80 mm (0.898 in)**
**I.D.: 17.04 mm (0.671 in)**



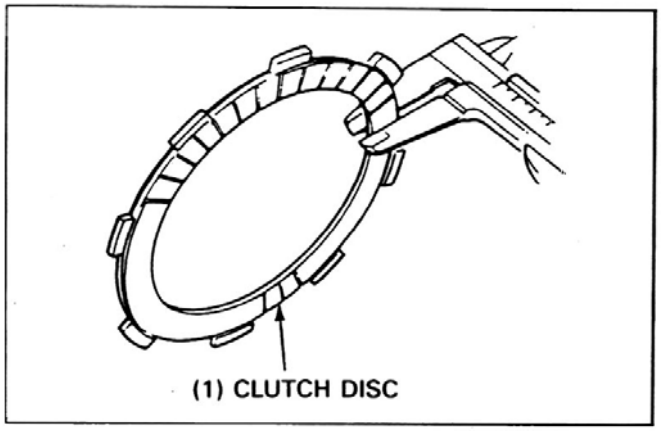
Measure the spring free length.

**SERVICE LIMIT: 33.6 mm (1.323 in)**



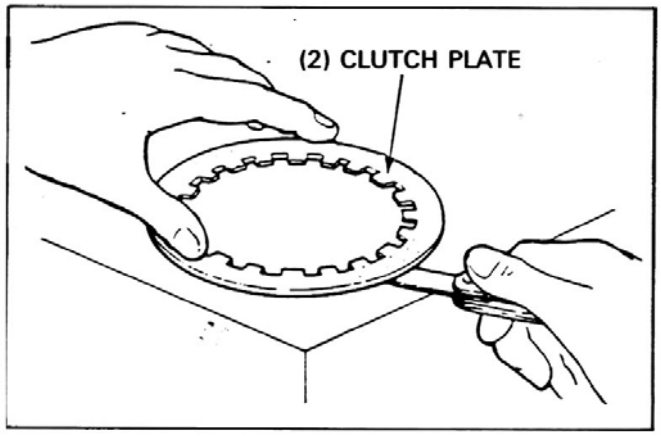
Replace the clutch discs if they show signs of scoring or discoloration.
Measure the disc thickness.

**SERVICE LIMIT:**
**DISC A: 2.2 mm (0.086 in)**
**DISC B: 2.5 mm (0.098 in)**

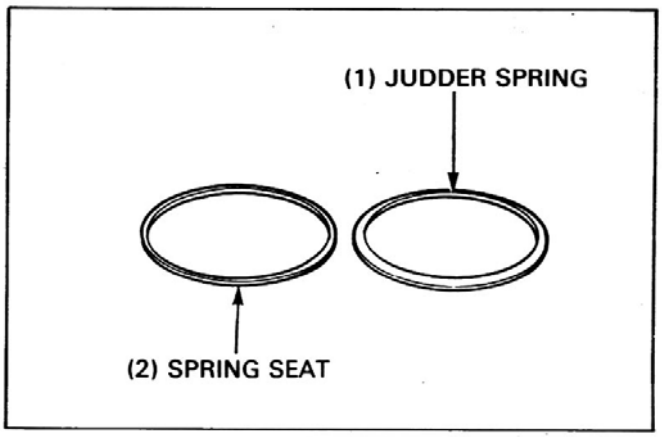



Check for plate warpage on a surface plate using a feeler gauge.

**SERVICE LIMIT: 0.20 mm (0.001 in)**




Check the judder spring for deformation, wear or damage.
Check the spring seat for wear or damage.

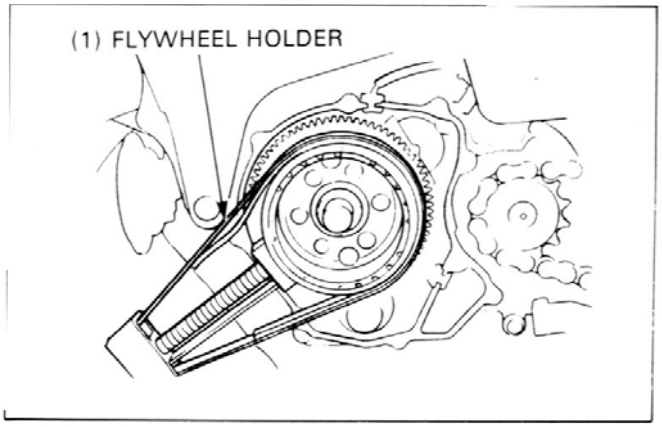



# PRIMARY DRIVE GEAR

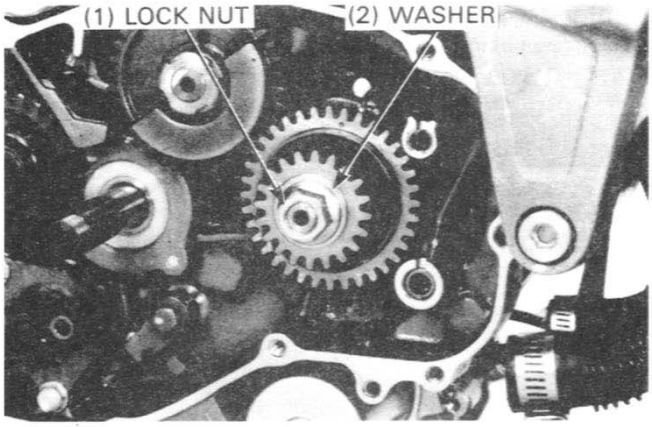
## REMOVAL

Remove the left crankcase cover (page 9-2) and hold the flywheel using a flywheel holder.

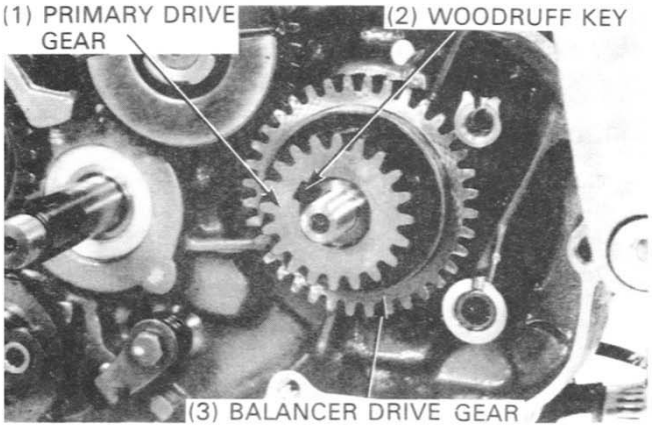
**TOOL:**
**Flywheel holder** **07725-0040000**



Remove the lock nut and washer.

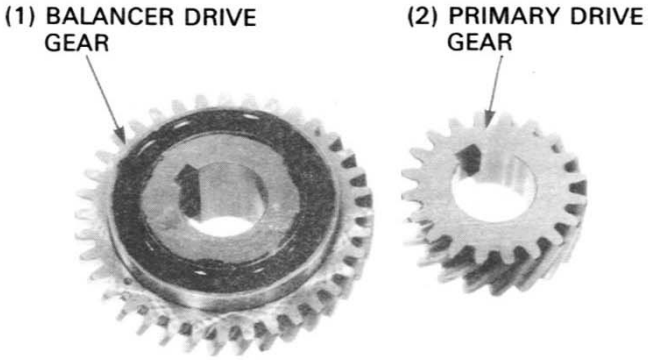



Remove the primary drive gear, woodruff key and balancer drive gear from the crankshaft.



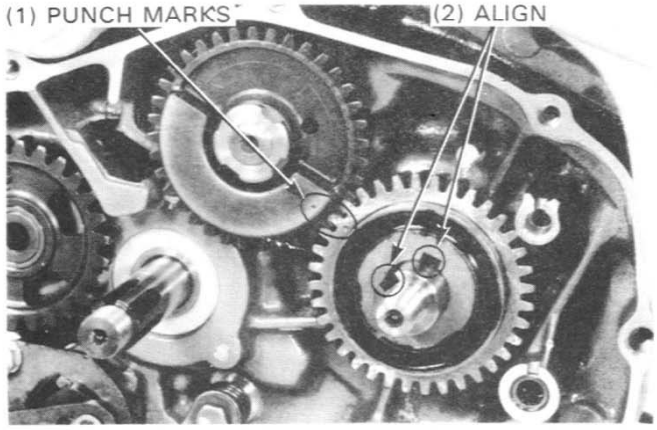

## INSPECTION

Check the teeth of the primary drive gear and balancer drive gear for damage.
Replace with a new one if necessary.

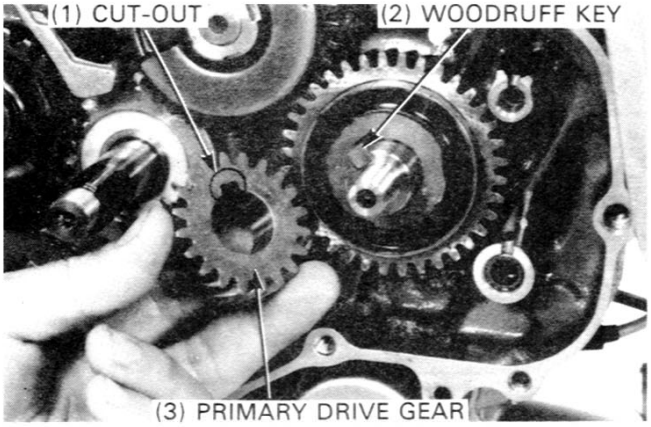



## INSTALLATION

Install the balancer drive gear onto the crankshaft with aligning the punch marks on the balancer drive gear and driven gear.
Align the cut-outs of the balancer drive gear and crankshaft by turning the flywheel.



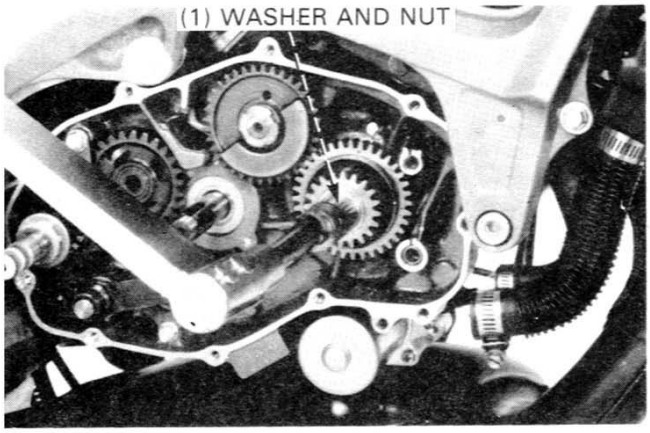
Install the woodruff key, and install the primary drive gear, aligning its cut-out with the woodruff key.




Install the washer onto the crankshaft.
While holding the flywheel with a flywheel holder, tighten the primary drive gear nut to the specified torrque.

**TORQUE: 65N·m (6.5kg-m, 47ft-lb)**

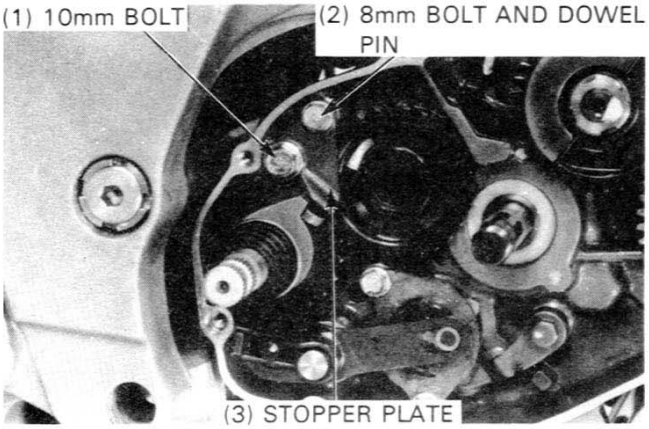
Install the left crankcase cover (page 9-5).



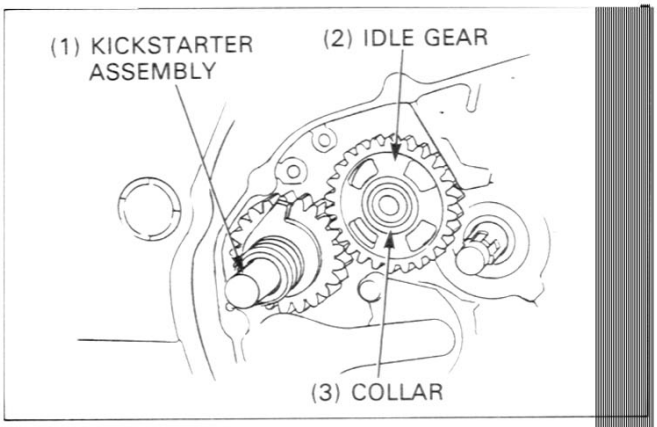

# KICKSTARTER

## REMOVAL/ASSEMBLY

Remove the stopper plate 10mm bolt and loosen the stopper plate 8mm bolt.
Remove the 8mm bolt, stopper plate and dowel pin.



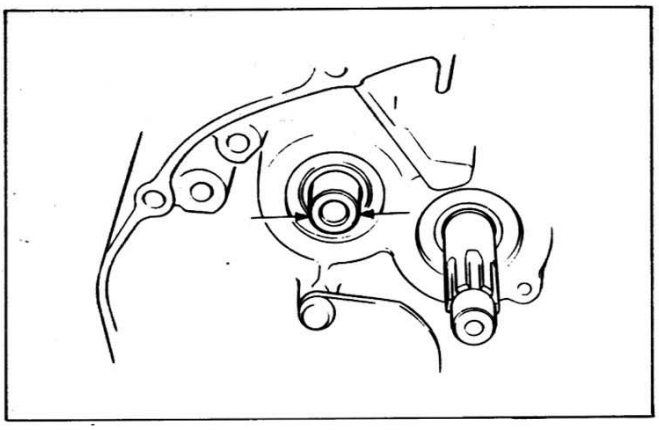

Remove the kickstarter assembly, kikstarter idle gear and idle gear collar.



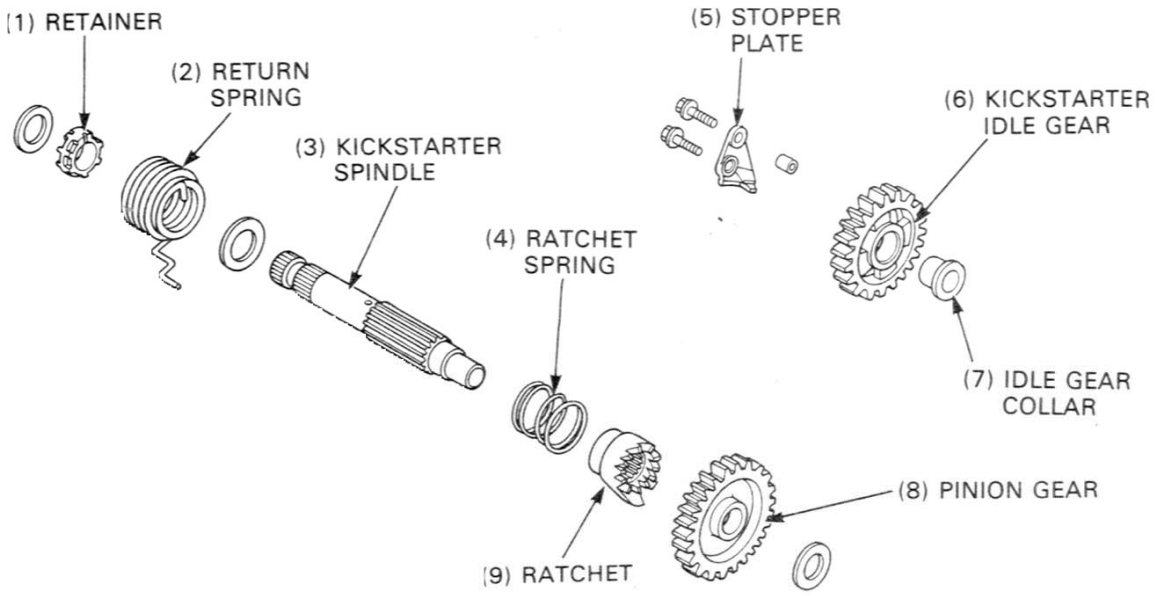
Measure the countershaft O.D. at the surface sliding in the kickstarter idle gear collar.

**SERVICE LIMIT: 16.95 mm (0.667 in)**

Refer to section 10 for countershaft replacement.



Disassemble the kickstarter assembly.




## INSPECTION

Check the return spring and ratchet spring for wear of damage.
Check the ratchet teeth on the starter ratchet and starter pinion for wear or damage.
Measure the starter pinion I.D.

**SERVICE LIMIT: 16.07 mm (0.633 in)**

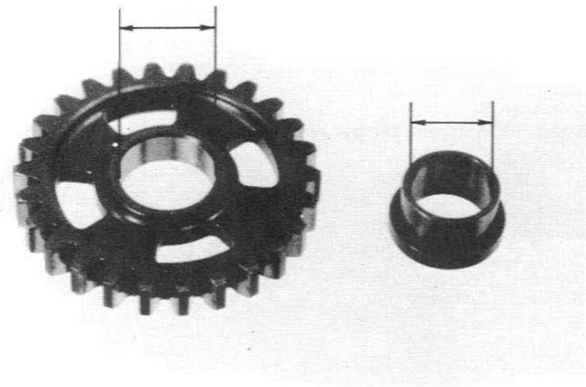
Check the splines on the spindle for wear or damage.
Measure the spindle O.D.

**SERVICE LIMIT: 15.94 mm (0.628 in).**

Check the idle gear teeth for wear or damage.
Measure the idle gear I.D.
**SERVICE LIMIT: 20.10 mm (0.791 in).**

Measure the O.D. and I.D. of the idle gear collar.

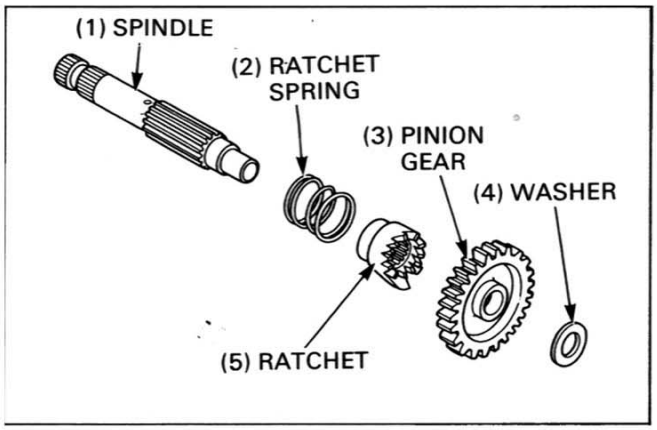
**SERVICE LIMIT: O.D.: 19.90 mm (0.783 in)**
**I.D.: 17.10 mm (0.673 in)**



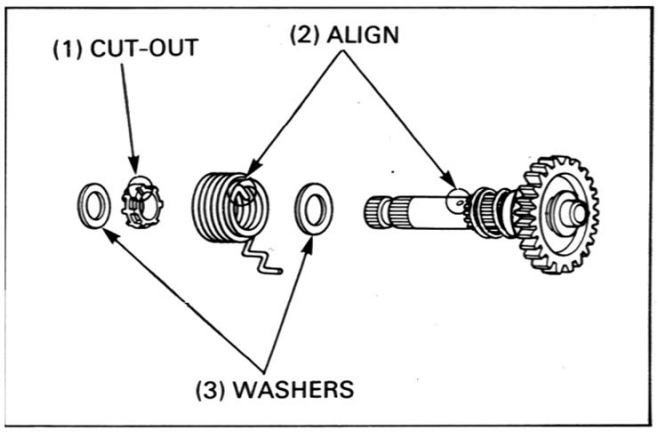
## ASSEMBLY/INSTALLATION

Install the ratchet spring over the spindle.
Install the starter ratchet onto the spindle, aligning the wide grove in the rachet with the punch mark on the spindle.

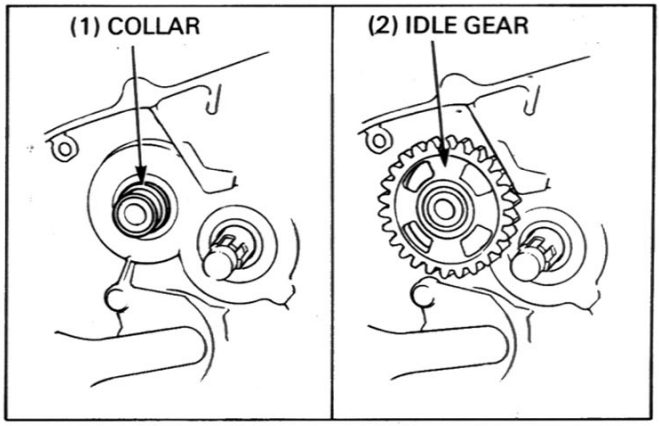
Install the pinion gear and washer onto the spindle.



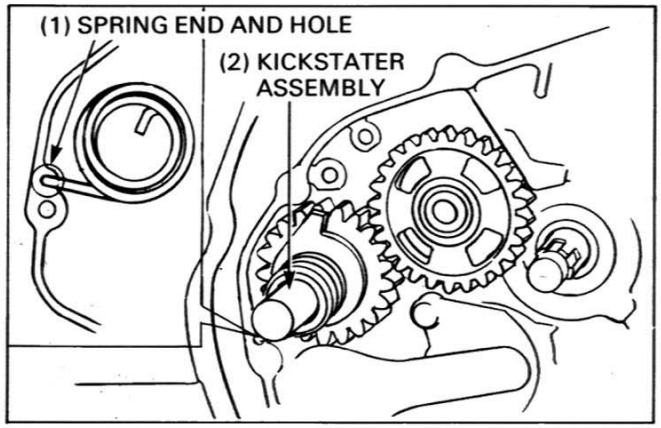

Install the washer and return spring, and insert the spring end into the hole in the spindle.
Install the spring retainer, aligning the cut-out in the retainer with the spring end.



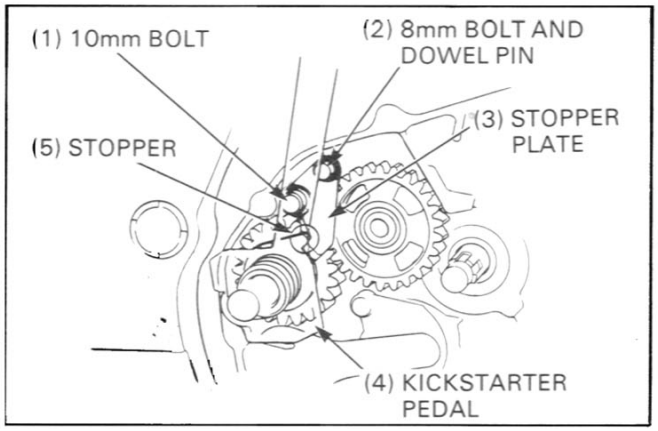

Install the idle gear collar onto the countershaft.
Then install the idle gear onto the collar.



Install the kickstarter assembly, inserting the end of the return spring into the hole in the right crankcase.



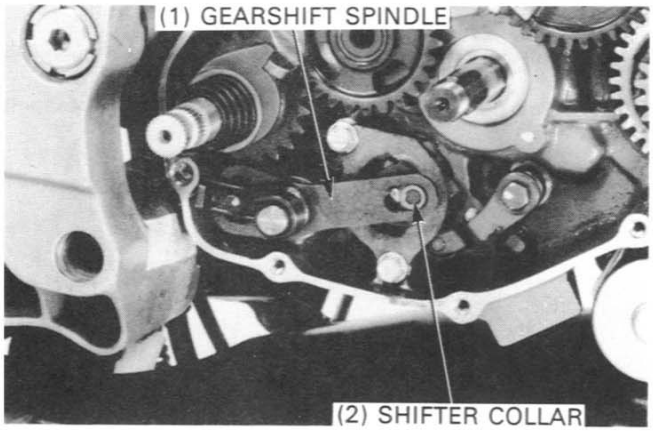

Install the dowel pin, stopper plate and 8mm bolt and tighten the 8mm bolt loosely.
Temporally install the kickstarter pedal onto the kickstarter spindle and turn the kickstarter counter clockwise until the stopper of the ratchet goes over the stopper plate.
Install the 10mm bolt and temporally tighten it while holding the kick starter pedal.
Release the kickstarter pedal and tighten the stopper plate bolts securely.
Remove the kick starter pedal and install the right carnkcase cover (page 8-16).




# GEARSHIFT LINKAGE

## REMOVAL

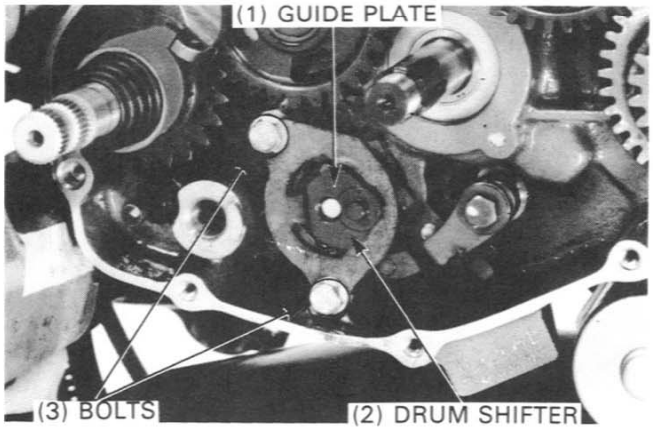
Remove the gearshift spindle and shifter collar.



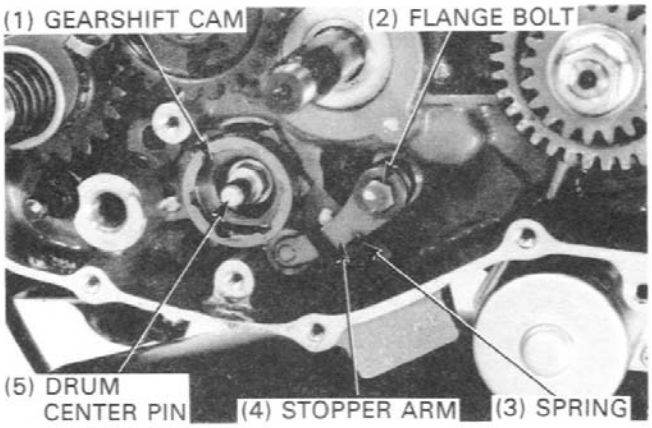

Remove the two bolts, guide plate and drum shifter assembly.

NOTE

Do not let the ratchet pawls, plungers or springs jump out when removing.

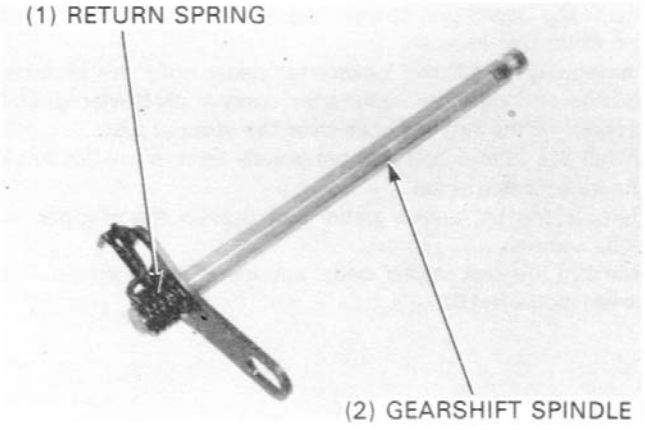


Remove the follows:
-Flange bolt
-Stopper arm
-Stopper arm spring
-Drum center pin
-Gearshift cam
-Dowel pin



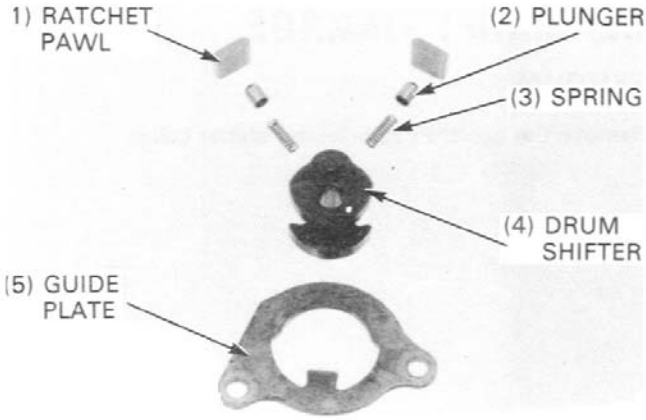

## INSPECTION

Check the gearshift spindle for bent or other damages.
Check the gershift spindle return spring for wear or damage.
If necessary, replace the damaged parts with new ones.




Check each part for wear or damage.
Replace the damaged parts with the new ones, if necessary.

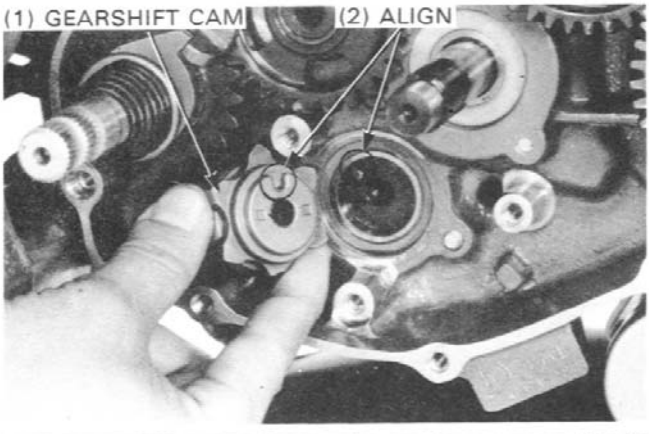
Lubricate all parts with clean transmission oil and assemble them.




## INSTALLATION

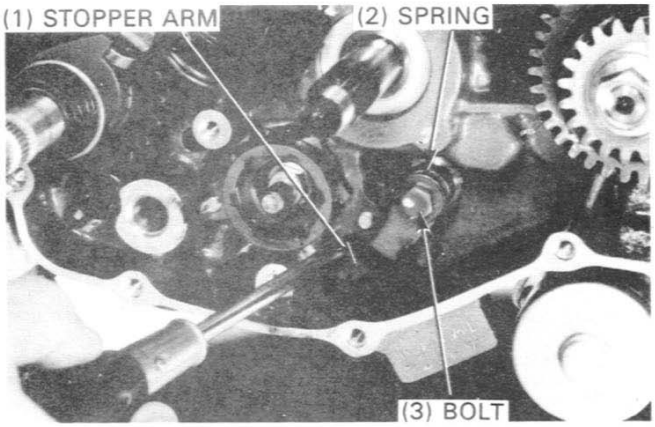
Install the dowel pin into the hole in the shift drum, and install the gearshift cam by aligning the cut-out in the cam with the dowel pin.
Apply a locking agent to the threads of the shift drum center pin, and tighten it to the specified torque.

**TORQUE: 22 N·m (2.2 kg-m, 16 ft-lb)**



Install the stopper arm spring and stopper arm and secure them with the flange bolt while prying the stopper arm with a screw driver as shown.

**TORQUE: 12 N·m (1.2 kg-m, 9 ft-lb)**

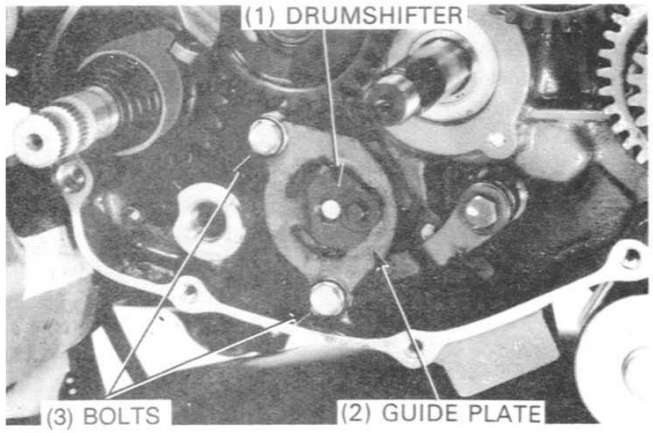



Install the drum shifter and guide plate onto the gearshift cam as an assembly.

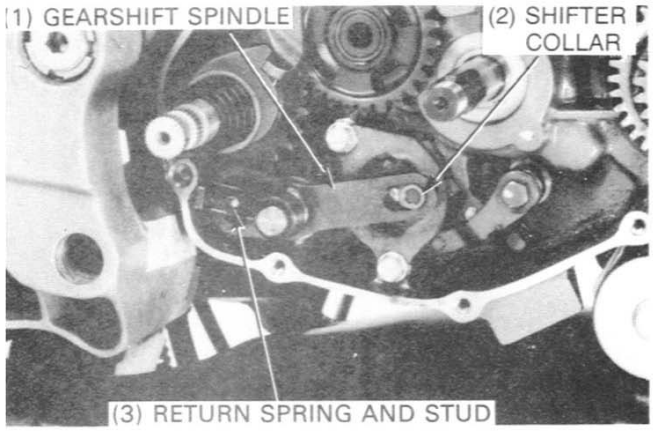
NOTE

- Do not let the ratchet pawls, plungers or springs jump out when installing.

Secure the guide plate with the two bolts.

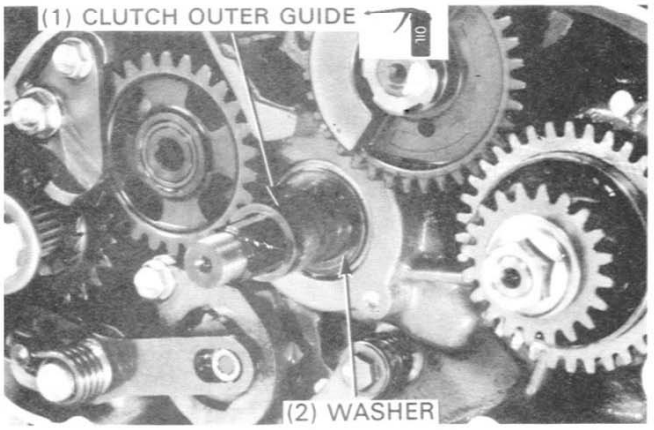



Install the shifter collar onto the drum shifter, and install the gearshift spindle aligning the hole of the spindle with the shifter collar and the return spring with the stud.

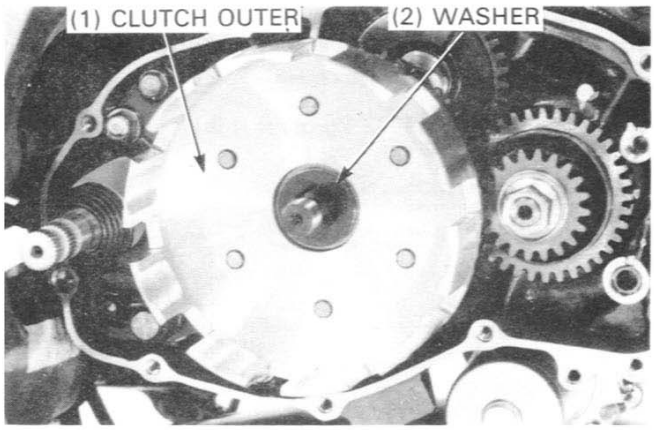



# CLUTCH INSTALLATION

Apply transmission oil to the clutch outer guide sliding surface, and install the thrust washer and clutch outer guide onto the mainshaft.



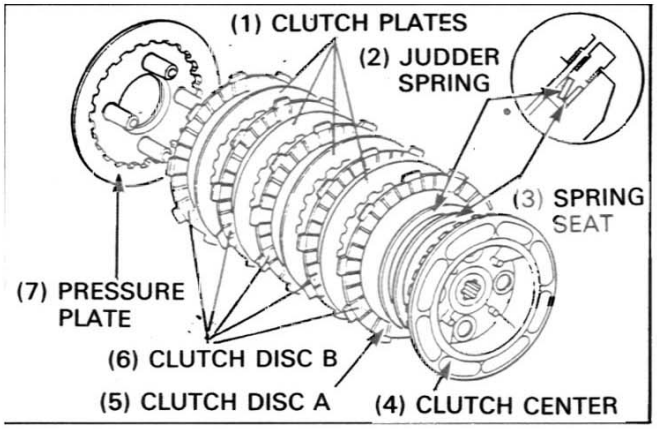
Install the clutch outer and washer.



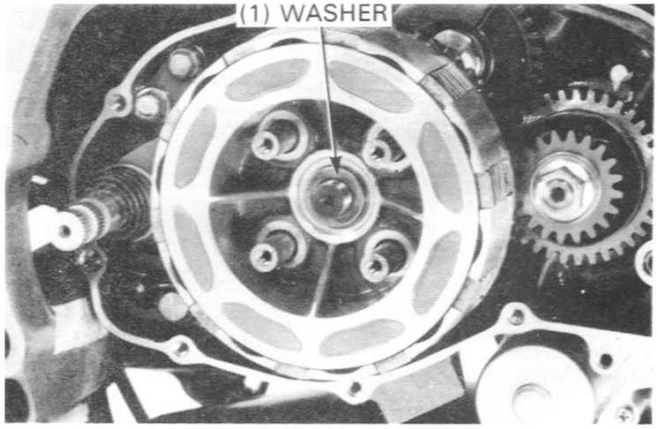

Install the judder spring seat and judder spring onto the clutch center as shown.
Coat the clutch discs and plates with clean transmission oil.
Assemble the clutch pressure plate, discs, plates and clutch center.

NOTE

- Note the installation direction of the judder spring.




Install the lock washer.

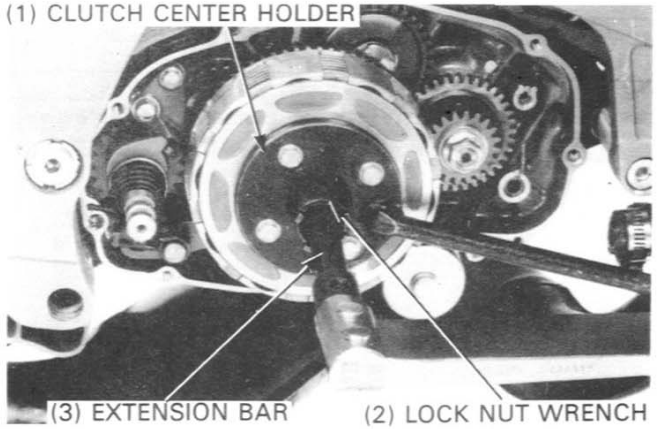



Install and tighten a new clutch center lock nut.

**TORQUE:65N·m (6.5kg-m, 47ft-lb)**

**TOOLS:**

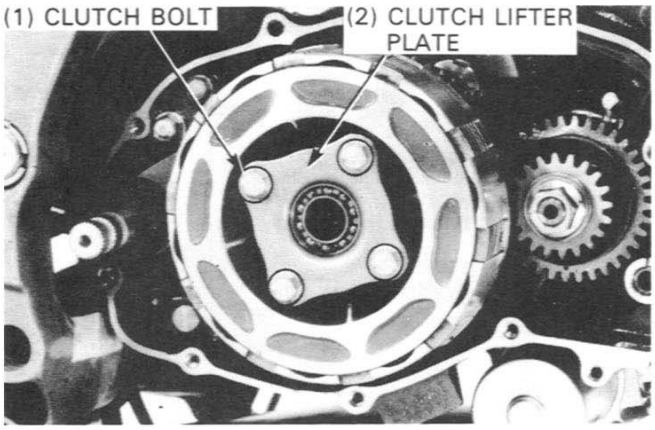
| | |
|---|---|
| **Clutch center holder** | **07923-KE10000** |
| **Lock nut wrench, 20 × 24 mm** | **07716-0020100** |
| **Extension bar** | **07716-0020500** |



Install the clutch springs and clutch lifter plate, and secure the plate with the four clutch bolts.

NOTE

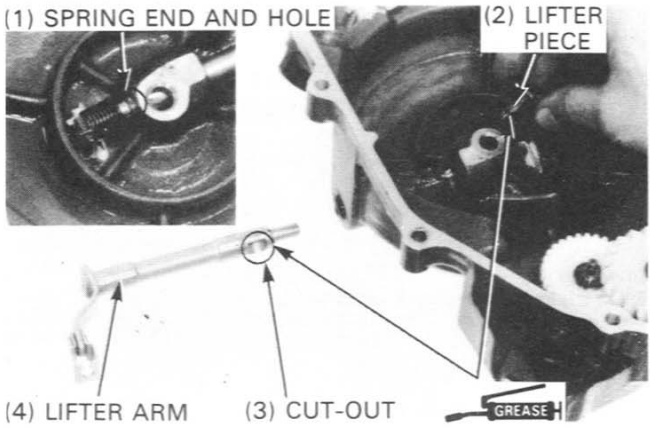
Tighten the clutch bolts in a crisscross pattern in several steps.



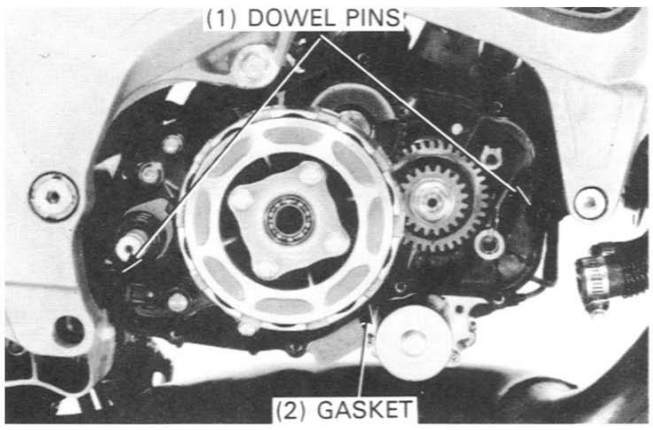

## RIGHT CRANKCASE COVER INSTALLATION

Apply multpurpose grease to the sliding surfaces in the clutch lifter arm and clutch lifter piece.

Install the lifter arm and spring with the upper end of the spring in the hole in the lifter arm.
Install the clutch lifter piece, aligning its end with the cut-out in the lifter arm.




Install the dowel pins and a new gasket.

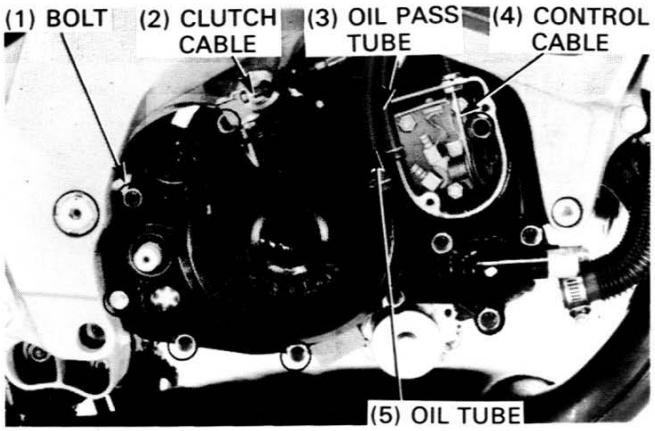



Connect the clutch cable to the clutch lifter arm, and install the right crankcase cover.
Tighten the right crankcase cover bolts in a crisscross pattern in several steps.

NOTE

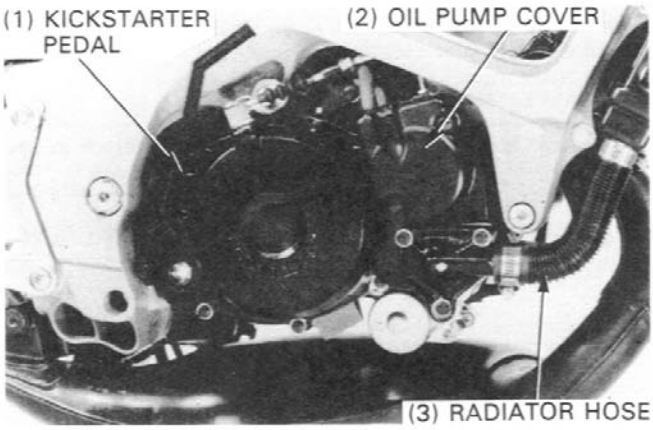
- Install the clutch cable holder with the right crankcase cover bolt.

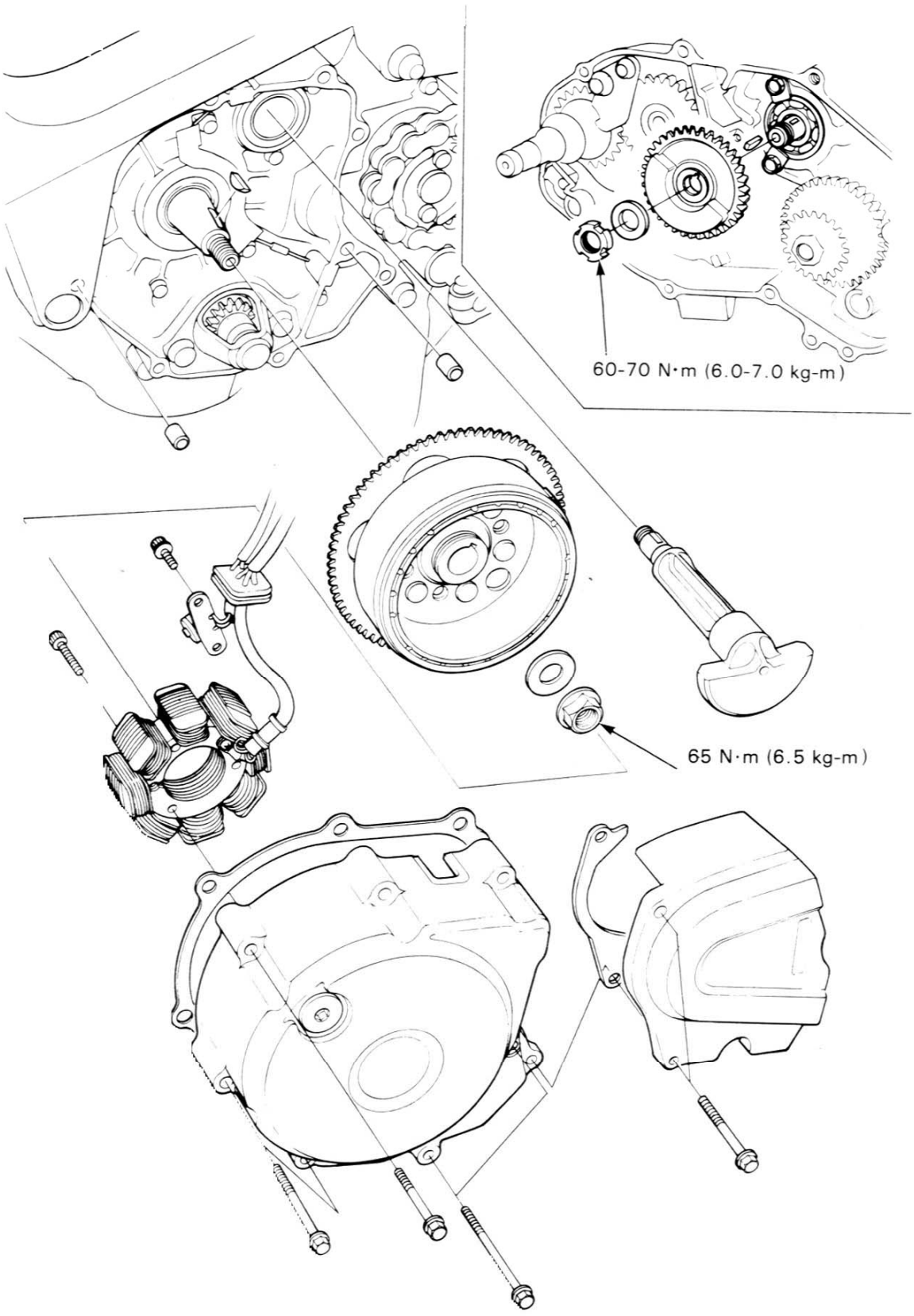
Connect and bleed out the oil tube and oil pass tube (page 2-3).
Connect the oil control cable (page 2-4).



Install the oil pump cover and secure it with the two bolts.
Connect the radiator hose to the water pump cover and tighten the hose band.
Install the kickstarter pedal and secure it with the bolt.

Fill the engine with the recommended transmission oil (page 2-5).
Fill the cooling system (page 5-4).




60-70 N·m (6.0-7.0 kg-m)
65 N·m (6.5 kg-m)

# SERVICE INFORMATION

## GENERAL

- This section covers removal and installation of the flywheel, alternator, pulse generator and balancer.
- See Section 15 for alternator inspection and 16 for pulse generator inspection.

## TORQUE VALUES

| | |
|---|---|
| Flywheel nut | 65N·m (6.5kg-m, 47ft-lb) |
| Balancer driven gear nut | 60-70N·m (6.0-7.0kg-m, 43-51ft-lb) |

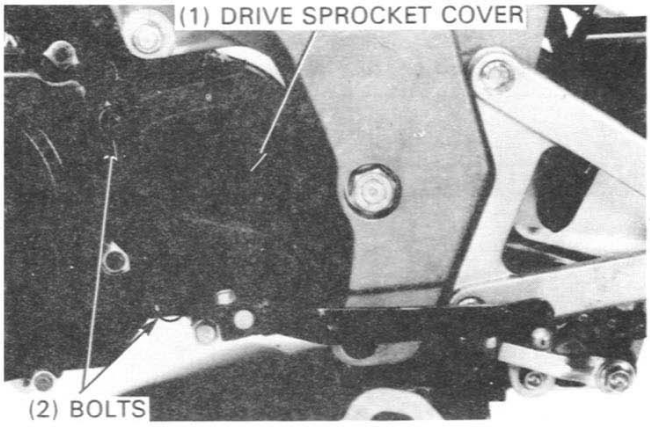
## TOOLS

**Common**

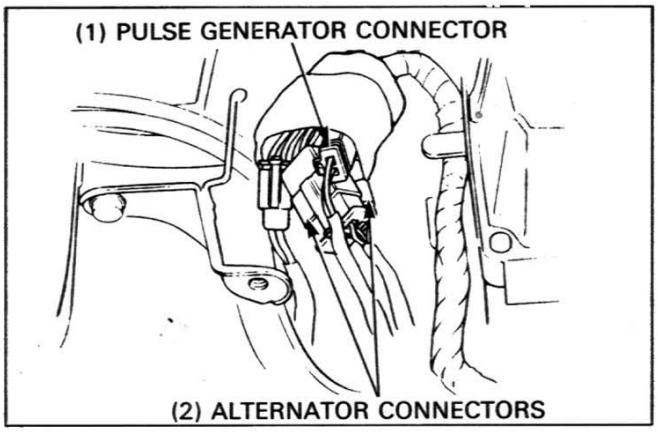
| | |
|---|---|
| Flyweel holder | 07725-0040000 |
| Lock nut wrench, 20 × 24 mm | 07716-0020100 |
| Extension bar | 07716-0020500 |

# FLYWHEEL REMOVAL

Remove the two bolts and drive sprocket cover.



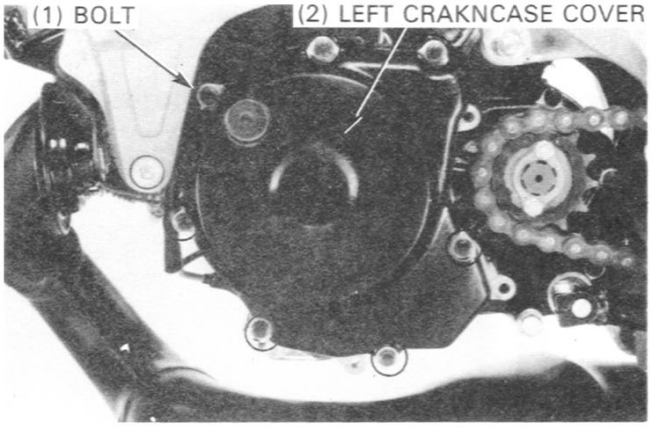

Remove the seat and disconnect the alternator and pulse generator connectors.



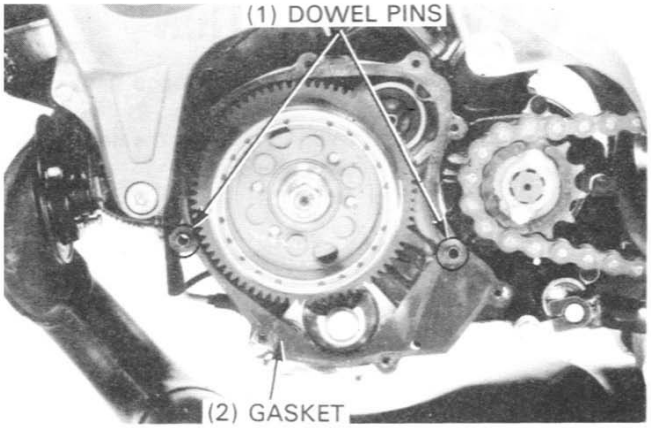

Remove the left crankcase cover bolts and left crankcase cover.

NOTE

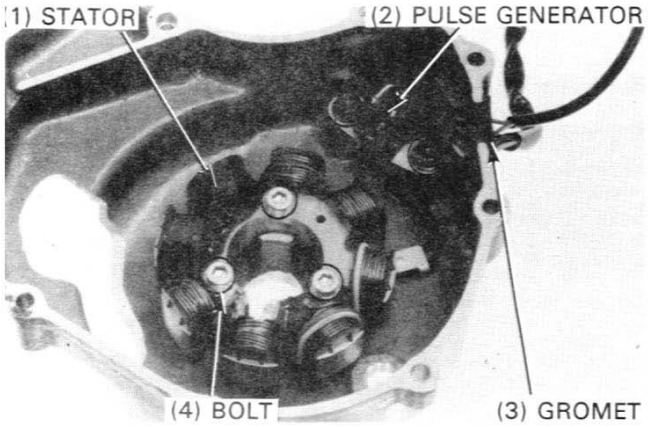
- Loosen the left crankcase cover bolts in a crisscross pattern in several steps.




Remove the dowel pins and a gasket.

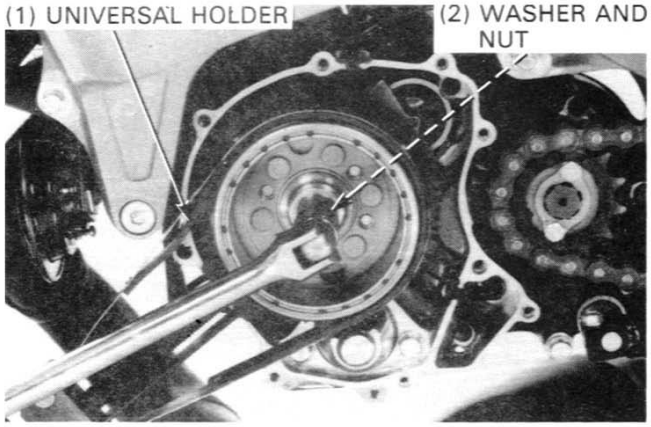


Remove the gromet from the left crankcase cover.
Remove the two bolts and pulse generator.
Remove the three bolts and stator.



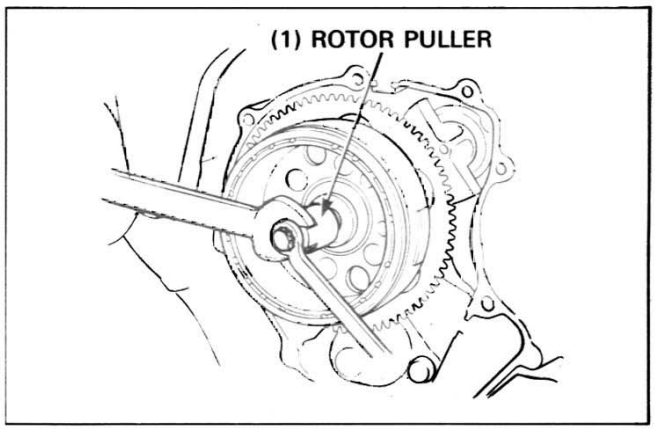

Remove the flywheel nut and washer while holding the flywheel with a universal holder.

**TOOL:**
**Flywheel holder** **07725-0040000**



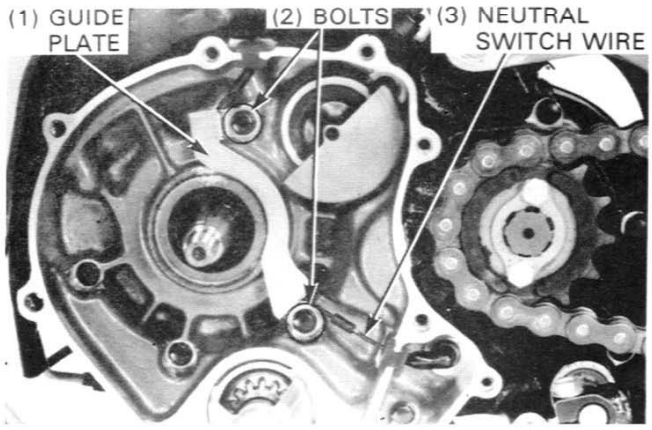

Remove the flywheel with a rotor puller.

**TOOL:**
**Rotor puller** **07JMC-KY40100**

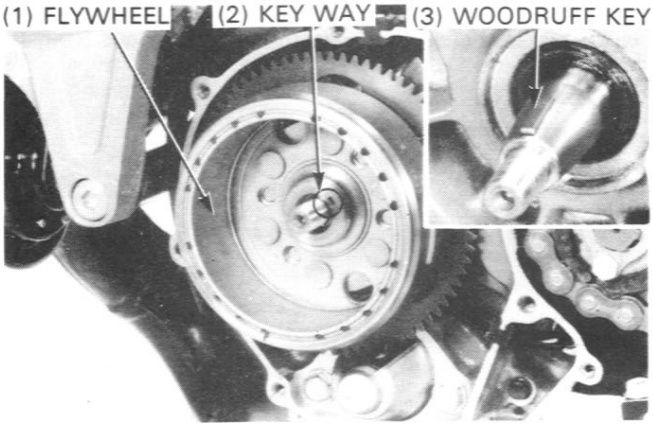



# FLYWHEEL INSTALLATION

Make sure the neutral switch wire is clamped with the wire guide plate.
If not so, remove the guide plate and clamp the neutral switch wire securely.
Tighten the two attaching bolts.



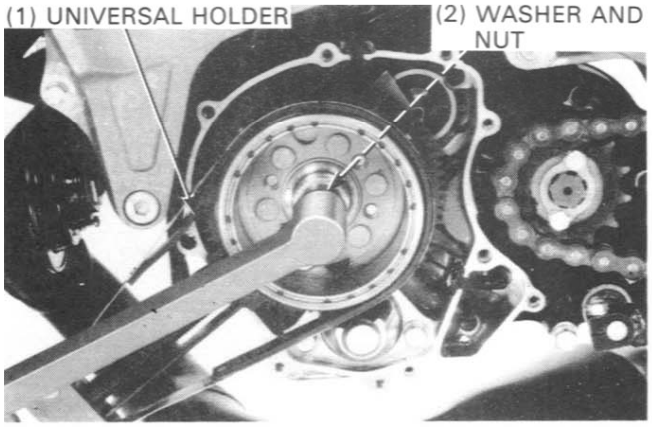
Make sure the woodruff key is installed in the crankshaft key way.
Wipe any oil off the crankshaft and from whthin the tapered hole in the flywheel.
Install the removed parts and the flywheel onto the crankshaft, aligning the key way in the flywheel with the woodruff key.



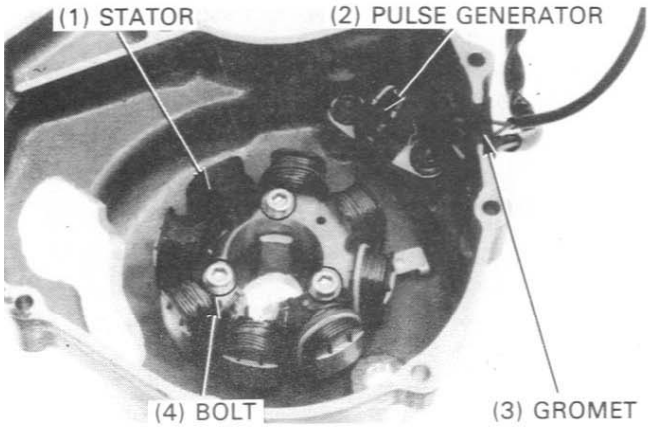

Tighten the flywheel nut while holding the flywheel with a universal holder.

**TOOL:**
**Flywheel holder** **07725-0040000**

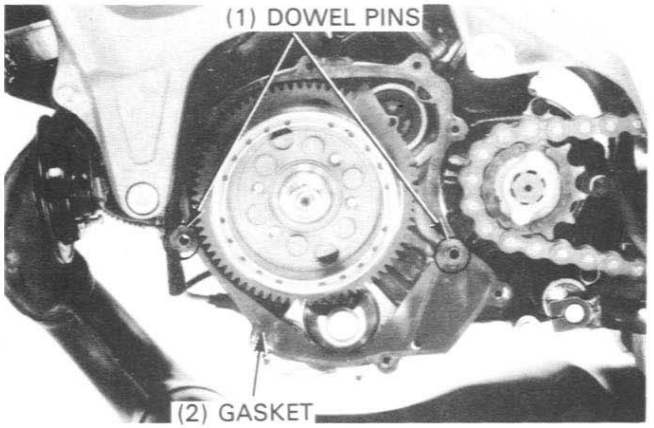
**TORQUE:65N·m (6.5kg-m, 47ft-lb)**



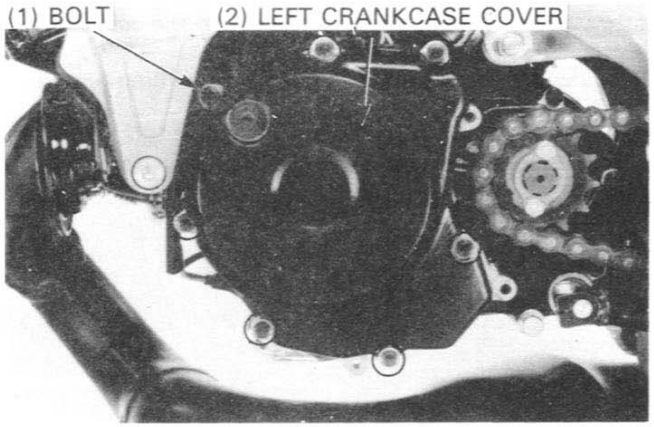

Install the stator and pulse generator and secure them with bolts.
Install the gromet into the groove in the left crankcase cover.



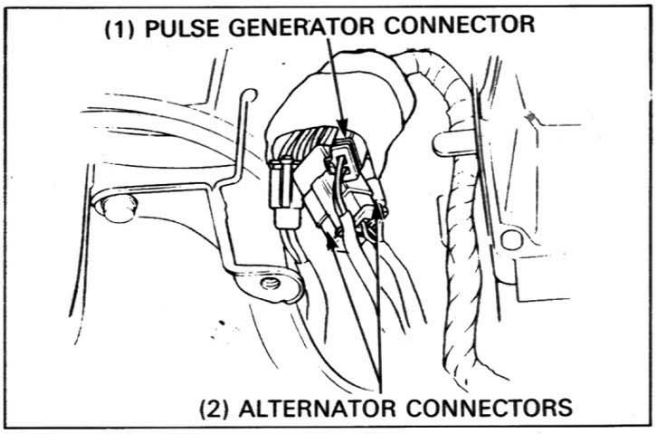

Install the dowel pins and a new gasket.



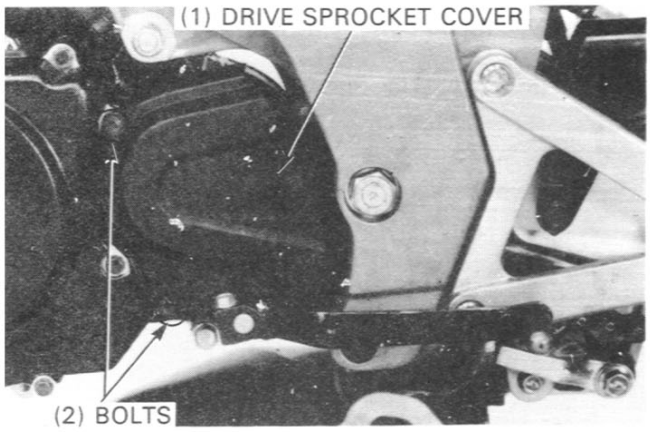
Install the left crankcase cover and tighten the left crankcase cover bolts in a crisscross pattern in several steps.




Connect the pulse generator and alternator connectors.
Install the seat.




Install the drive sprocket cover and secure it with the two bolts.

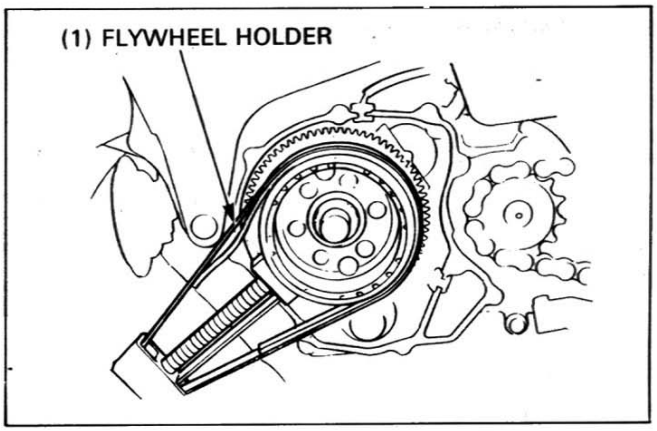



# BALANCER

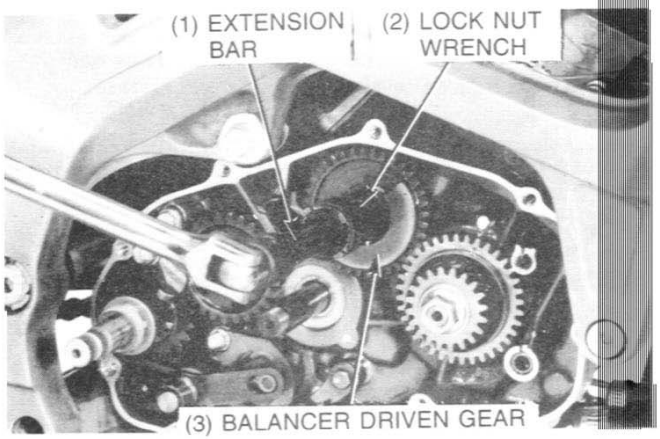
## REMOVAL

Remove the right crankcase cover (page 8-3).
Remove the left crankcase cover (page 9-2).
Hold the flywheel with a universal holder.

**TOOL:**
**Flywheel holder** **07725-0040000**



While holding the flywheel, remove the balancer driven gear nut, lock nut and washer.

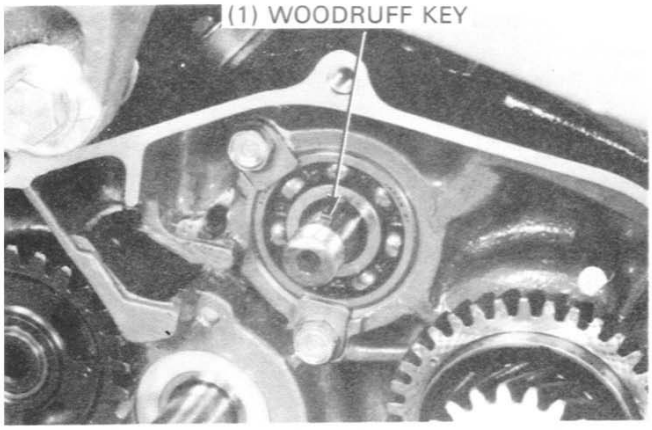



**TOOLS:**

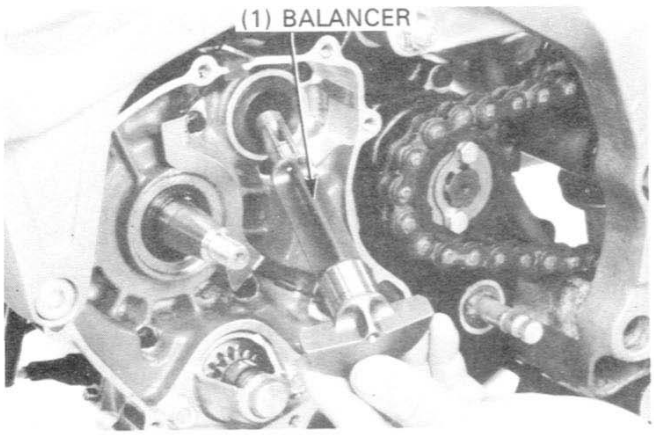
**Lock nut wrench, 20 × 24 mm 07716-0020100**
**Extension bar 07716-0020500**

Remove the balancer driven gear.
Remove the flywheel (page 9-2).

Remove the woodruff key from the balancer.

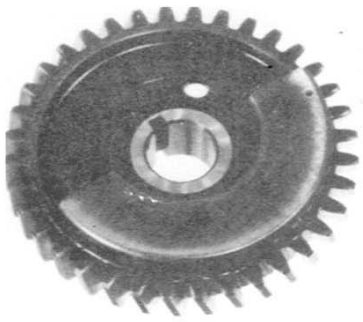



Remove the balancer from the left crankcase.

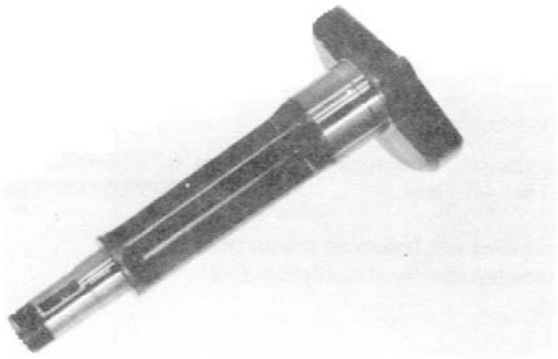



## INSPECTION

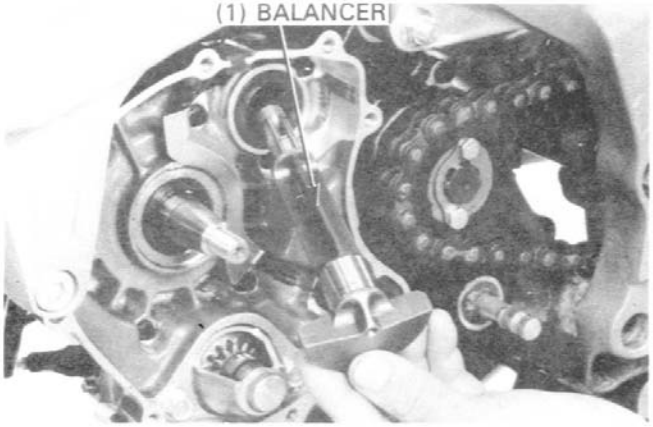
Inspect the teeth of the balancer driven gear for wear or damage.
If necessary, replace with a new one.



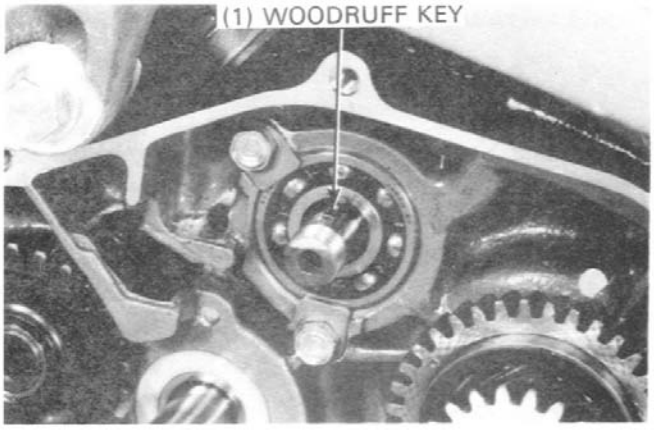
Inspect the balancer for bend or damage.
Inspect the sliding surfaces of the balancer for wear.
If necessary, replace with a new one.



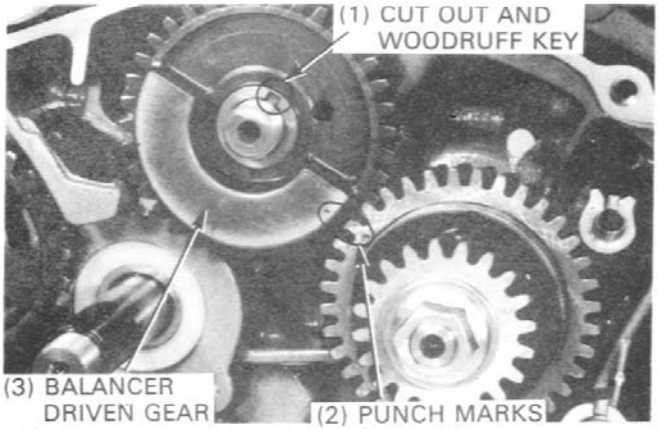
Install the balancer through the left and right crankcase halves.



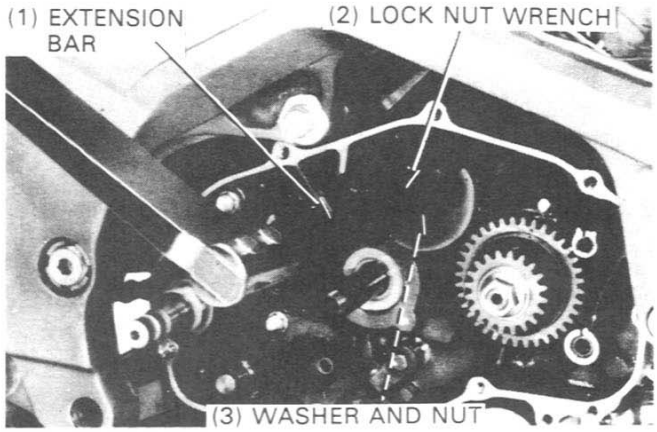

Install the woodruff key in the groove in the balancer.




Install the balancer driven gear onto the balancer, aligning the cut-out in the gear with the woodruff key and aligning the punch marks on the balancer drive and driven gear.
Install the flywheel (page 9-3).



Install the washer and balancer driven gear nut; tighten to specified torque.

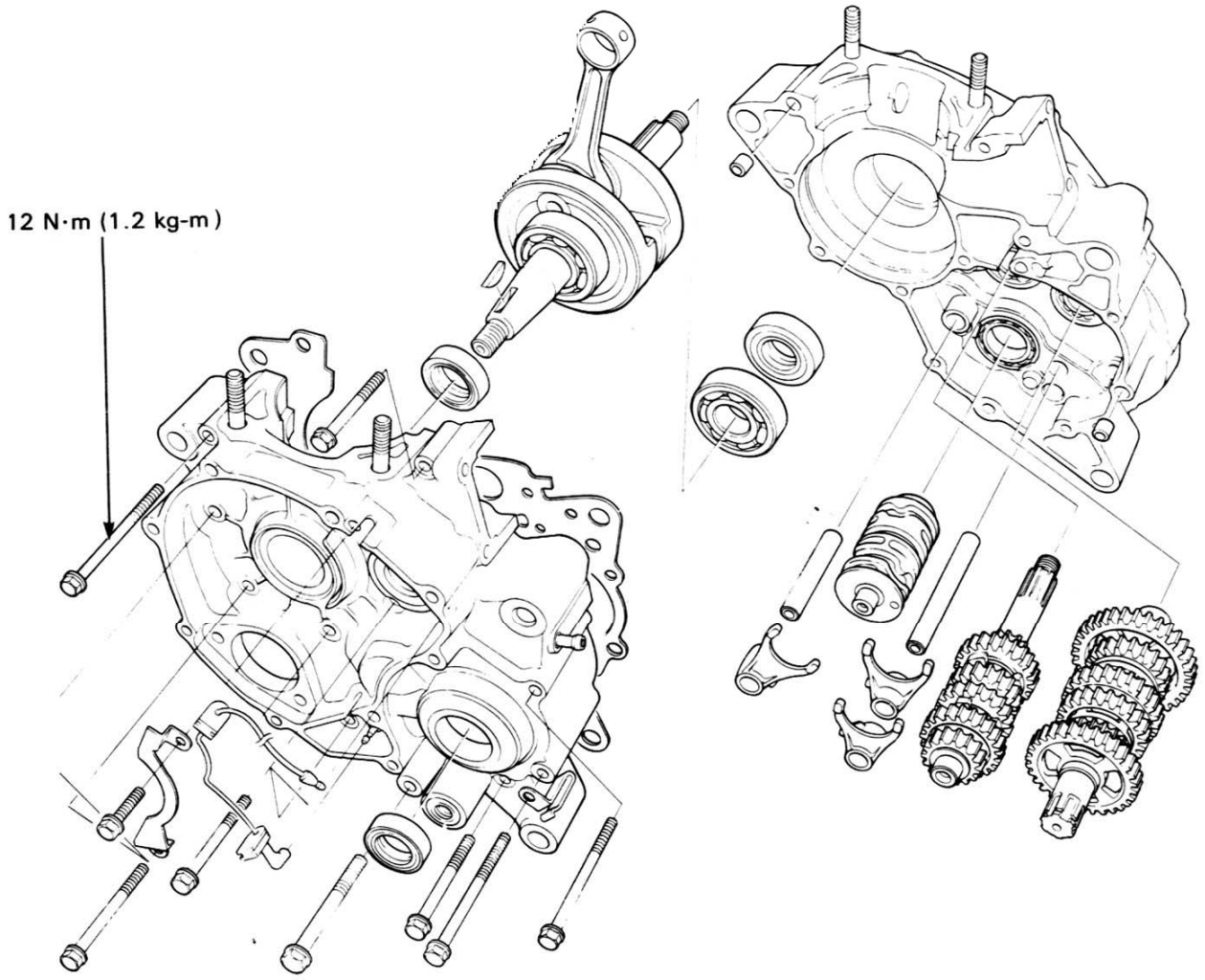



**TOOLS:**

| | |
|---|---|
| Flywheel holder | 07725-0040000 |
| Lock nutwrench, 20 × 24 mm | 07716-0020100 |
| Extension bar | 07716-0020500 |

**TORQUE: 60-70N·m (6.0-7.0kg-m, 43-51ft-lb)**

Install the follows:
-Clutch (page 8-14)
-Right crankcase cover (page 8-16)
-Left crankcase cover and drive sprocket cover (page 9-4)


12 N·m (1.2 kg-m)

# SERVICE INFORMATION

## GENERAL

- For crankshaft and transmission repair, the carnkcase must be separated.
- Remove the following parts before separating the crankcase.
- Cylinder head, cylinder and piston (section 7)
- Clutch, gearshift linkage and kickstarter (section 8)
- Alternator and balancer (section 9)

## SPECIFICATIONS

UNIT : mm (in)

| ITEM | | | | STANDARD | SERVICE LIMIT |
|---|---|---|---|---|---|
| Shift fork | I.D. | | | 12.041–12.056 (0.4741–0.4746) | 12.065 (0.475) |
| | Claw thickness | | | 4.93–5.00 (0.194–0.197) | 4.80 (0.189) |
| Shift fork shaft O.D. | | | | 11.983–11.994 (0.4718–0.4722) | 11.973 (0.4714) |
| Transmission | Gear I.D. | | M5, M6 | 22.020–22.041 (0.8669–0.8678) | 22.10 (0.870) |
| | | | | 20.020–20.041 (0.7882–0.7890) | 20.10 (0.791) |
| | | | | 22.020–22.041 (0.8669–0.8678) | 22.10 (0.870) |
| | | | | 25.020–25.041 (0.9850–0.9859) | 25.10 (0.988) |
| | Bushing | I.D. | | 20.000–20.021 (0.7874–0.7882) | 20.10 (0.791) |
| | | | | 17.016–17.034 (0.6699–0.6706) | 17.10 (0.673) |
| | | | | 20.020–20.041 (0.7882–0.7890) | 20.10 (0.791) |
| | | | | 22.020–22.041 (0.8669–0.8678) | 22.10 (0.870) |
| | | O.D. | | 21.979–22.000 (0.8653–0.8661) | 21.90 (0.862) |
| | | | | 19.984–19.995 (0.7878–0.7872) | 19.90 (0.783) |
| | | | | 21.979–22.000 (0.8653–0.8661) | 21.90 (0.862) |
| | | | C3 | 24.984–24.993 (0.9836–0.9840) | 24. |
| | Gear-to-bushing clearance | | M5, M6 | 0.020–0.062 (0.0008–0.0024) | 0. |
| | | | C1 | 0.025–0.057 (0.0010–0.0022) | |
| | | | C2 | 0.015–0.057(0.0006–0.0022) | 0.10 (0.004) |
| | | | C3 | 0.027–0.057 (0.0011–0.0022) | 0.10 (0.004) |
| | Shaft O.D. | | M5, M6 | 19.959–19.980 (0.7858–0.7866) | 19.92 (0.784) |
| | | | C1 | 16.975–16.984 (0.6683–0.6687) | 16.95 (0.667) |
| | | | C2 | 19.974–19.987 (0.7864–0.7869) | 19.94 (0.785) |
| | | | C3, C4 | 21.959–21.980 (0.8645–0.8654) | 21.92 (0.863) |
| | Gear-to-shaft clearance | | C4 | 0.040–0.082 (0.0016–0.0032) | 0.10 (0.004) |
| | Bushing-to-shaft clearance | | M5, M6 | 0.040–0.082 (0.0016–0.0032) | 0.10 (0.004) |
| | | | C1 | 0.032–0.059 (0.0013–0.0023) | 0.10 (0.004) |
| | | | | 0.033–0.067 (0.0013–0.0026) | |
| | | | | 0.040–0.082(0.0016–0.0032) | |
| Crankshaft | Runout | | | | |
| | | | B | | |
| | Connecting rod big end side clearance | | | 0.20–0.60 (0.008–0.024) | |
| | Connecting rod big end radial clearance | | | – | 0.05 (0.002) |

## TOOLS

**Special**

| | |
|---|---|
| Rotor puller | 07JMC-KY40100 |
| Universal bearing puller | 07631-0010000 |
| Bearing remover | 07936-3710300 |
| Remover handle | 07936-3710100 |
| Remover sliding weight | 07741-0010201 |
| Crankshaft assembly collar A | 07965-VM00200 |
| Crankshaft assembly shaft A | 07964-MB00200 |
| Crankcase assembly tool | 07965-1660100 |
| -Crankcase assembly collar B | 07965-1660300 |
| -Crankcase assembly shaft B | 07965-1660200 |
| Crankcase puller | 07HAC-PK40100 |

**Common**

| | |
|---|---|
| Driver | 07749-0010000 |
| Attachment, 37×40 mm | 07746-0010200 |
| Attachment, 42×47 mm | 07746-0010300 |
| Attachment, 52×55 mm | 07746-0010400 |
| Attachment, 62×68 mm | 07746-0010500 |
| Pilot, 15 mm | 07746-0040300 |
| Pilot, 17 mm | 07746-0040400 |
| Pilot, 20 mm | 07746-0040500 |
| Pilot, 25 mm | 07746-0040600 |
| Pilot, 22 mm | 07746-0041000 |

## TORQUE VALUES

| | |
|---|---|
| Crankcase bolt | 9 N·m (0.9 kg-m, 6.5 ft-lb) |
| Transmission oil drain bolt | 27 N·m (2.7 kg-m, 20 ft-lb) |

# TROUBLESHOOTING

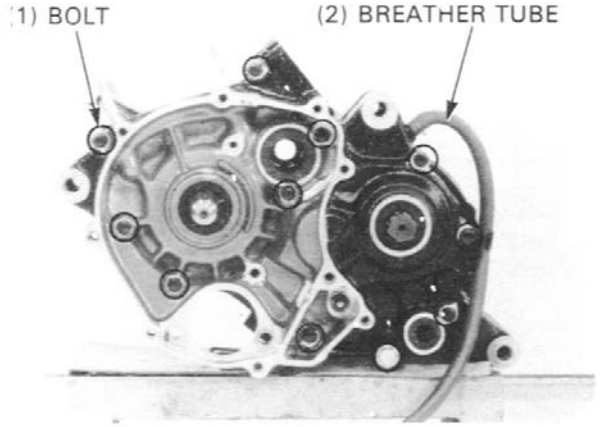
**Crankshaft noisy**
- Worn connecting rod big end bearing
- Bent connecting rod
- Worn crankshaft main journal bearing

**Transmission jumps out of gear**
- Shift fork bent or damaged
- Shift fork shaft bent
- Shift fork claw bent
- Shift fork guide pin worn or damaged
- Gear engage dogs or holes worn
- Shift drum grooves worn or damaged

**Hard to shift**
- Incorrect clutch adjustment
- Shift fork bent or damaged
- Shift fork shaft bent

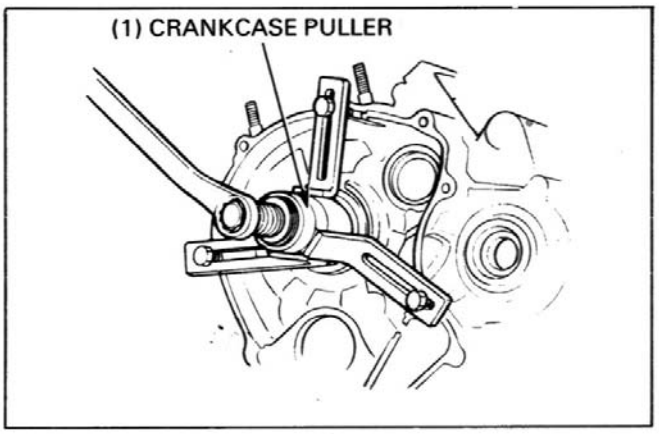
# CRANKCASE SEPARATION

Refer to Service Information (page 10-1) for removal of necessary parts before separating the crankcase.
Disconnect the crankcase breather tube.
Loosen the crankcase bolts and oil drain bolt in a crisscross pattern in several steps, and remove the bolts.
Place the crankcase with the right side down.
Separate the left crankcase from the right crankcase.

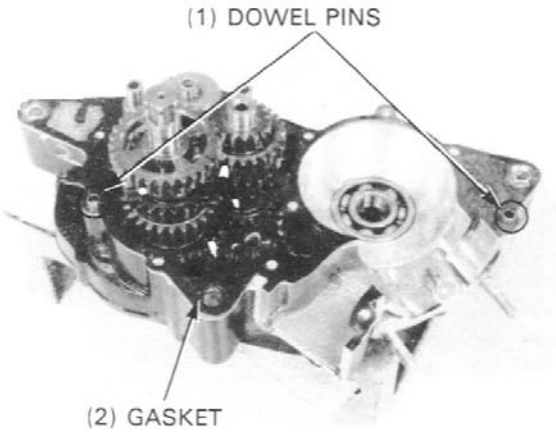



If it is hard to separate the crankcase, use the special tool.

**TOOL:**
**Crankcase puller** **07HAC-PK40100**



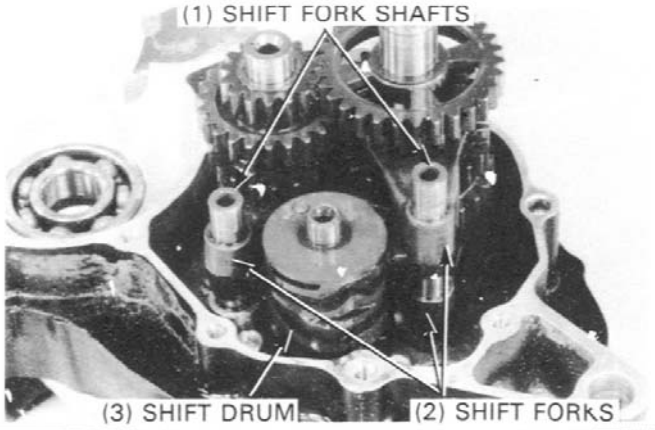

Remove the dowel pins and gasket.



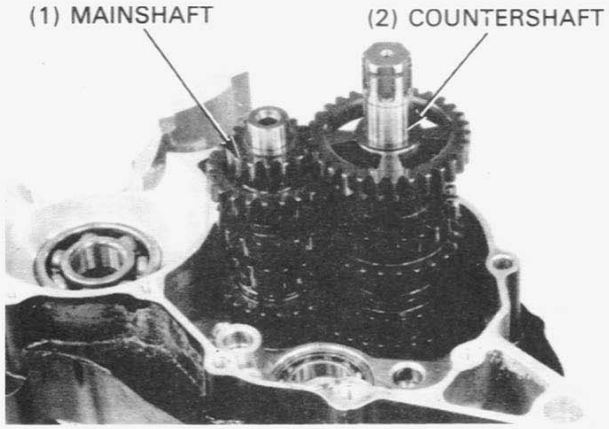

# TRANSMISSION

DISASSEMBLY

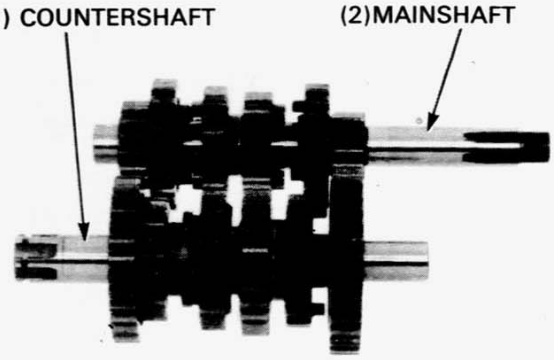
Pull the gearshift fork shaft out and remove the gearshift forks and drum.



Remove the mainshaft and countershaft as an assembly.




Disassemble the mainshaft and countershaft.




## INSPECTION

Check the shift fork and shaft for wear or damage.
Measure the I.D. of the shift fork hole.

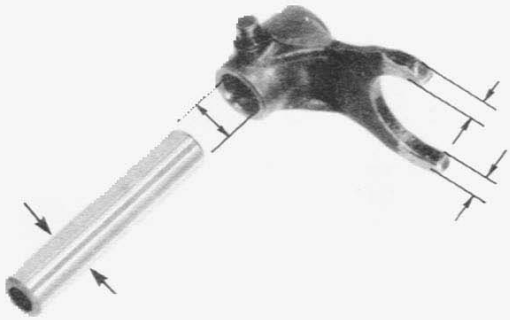
**SERVICE LIMIT: 12.065 mm (0.475 in)**

Measure the shift fork claw thickness.

**SERVICE LIMIT: 4.80 mm (0.189 in)**

Measure the shift fork shaft O.D.

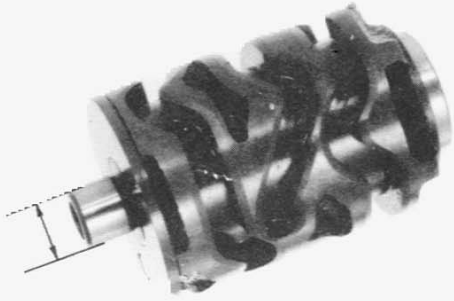
**SERVICE LIMIT: 11.973 mm (0.4713 in)**



Check the shift drum grooves for damage.
Inspect the shift drum journal for scoring, scratches or lack of lubrication.

Measure the shift drum journal O.D.

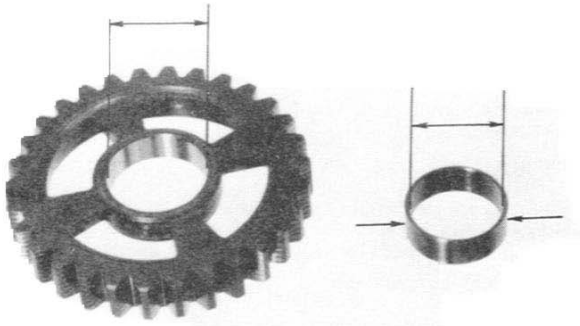
**SERVICE LIMIT: 11.93 mm (0.470 in)**



Check the gear dogs, dog holes, and teeth for abnormal wear or lack of lubrication.
Measure the I.D. of each gear .

**SERVICE LIMITS:**

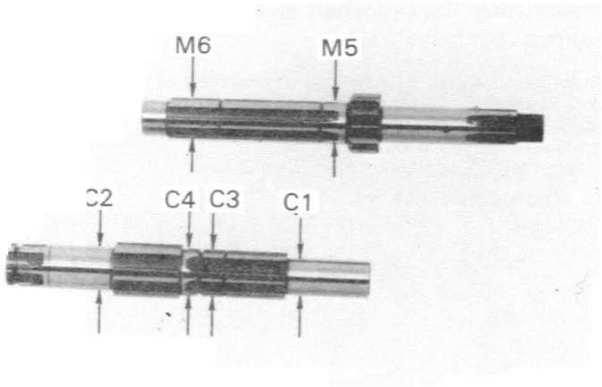
**M5, M6: 22.10 mm (0.870 in)**
**C1: 20.10 mm (0.791 in)**
**C2, C4: 22.10 mm (0.870 in)**
**C3: 25.10 mm (0.988 in)**



Check each bushing for scores or lack of lubrication.
Measure the I.D. and O.D. of each gear bushing.

**SERVICE LIMITS:**

**M5, M6 busing:**
**M5, M6 bushing:**
**I.D.: 20.10 mm (0.791 in)**
**O.D.: 21.90 mm (0.862 in)**
**C1 bushing:**
**I.D.: 17.10 mm (0.673 in)**
**O.D.: 19.90 mm (0.783 in)**
**C2 bushing**
**I.D.: 20.10 mm (0.791 in)**
**O.D.: 21.90 mm (0.862 in)**
**C3 bushing:**
**I.D.: 22.10 mm (0.870 in)**
**O.D.: 24.90 mm (0.980 in)**




Calculate the gear-to-bushing clearance.

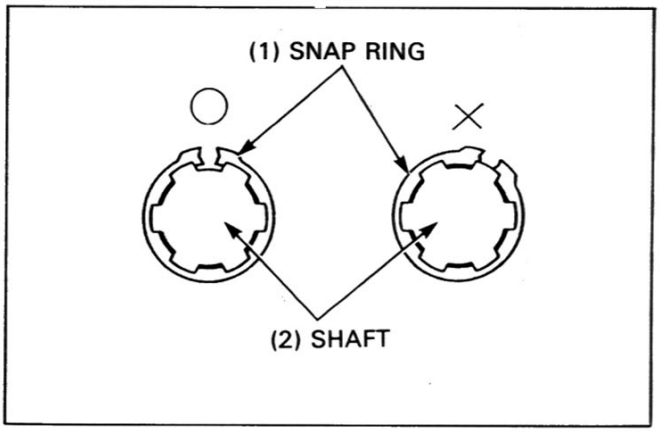
**SERVICE LIMITS:**

**M5, M6: 0.10 mm (0.004 in)**
**C1: 0.10 mm (0.004 in)**
**C2: 0.10 mm (0.004 in)**
**C3: 0.10 mm (0.004 in)**

Measure the O.D. of mainshaft and countershaft.

**SERVICE LIMITS:**

**M5, M6: 19.92 mm (0.784 in)**
**C1: 16.95 mm (0.667 in)**
**C2: 19.94 mm (0.785 in)**
**C3, C4: 21.92 mm (0.863 in)**




Calculate the gear-to- shaft clearance.

**SERVICE LIMIT:**

**C4: 0.10 mm (0.004 in)**

Calculate the gear bushing-to-shaft clearance.

**SERVICE LIMITS:**

**M5, M6: 0.10 mm (0.004 in)**
**C1: 0.10 mm (0.004 in)**
**C2: 0.10 mm (0.004 in)**
**C3: 0.10 mm (0.004 in)**

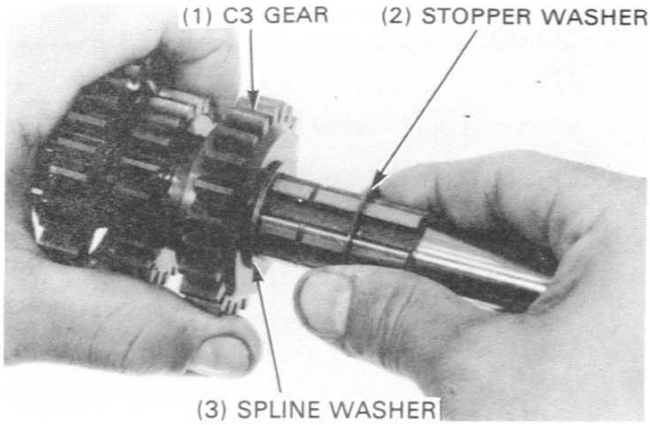
## ASSEMBLY

Assemble the mainshaft and countershaft.
Coat each gear and bushing with clean transmission oil, and check for smooth movement.

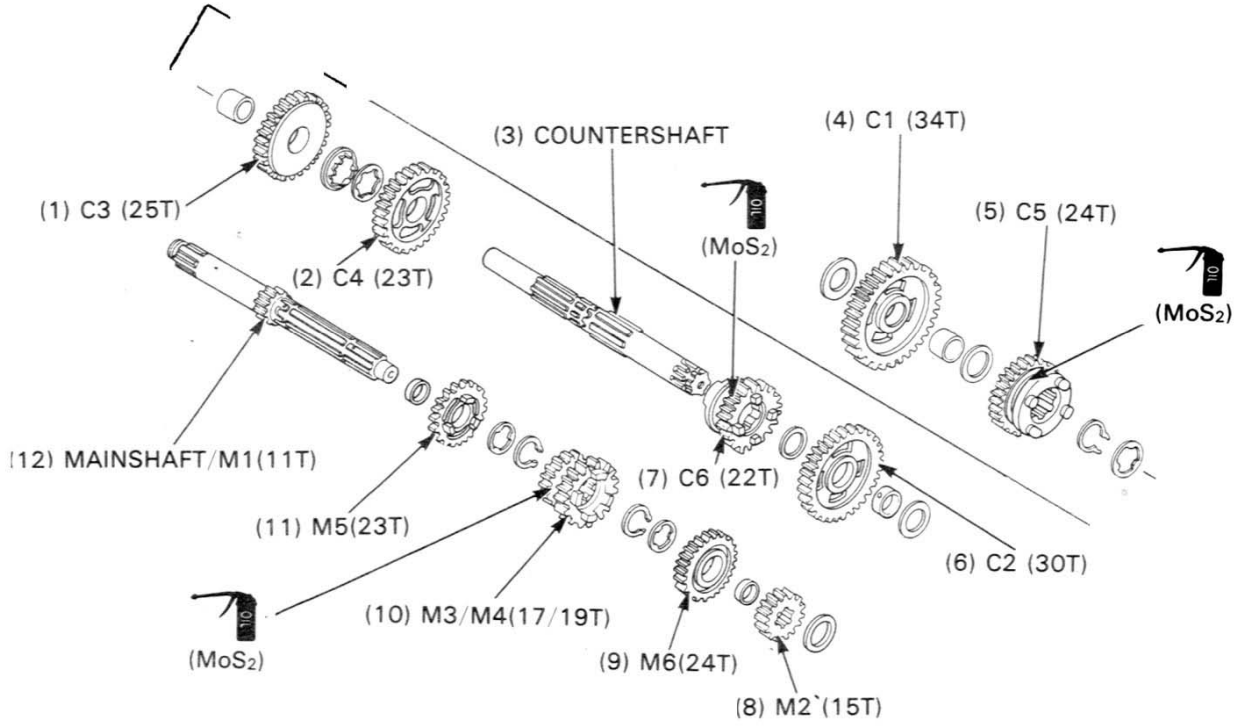
NOTE

- Install the snap rings with their end gaps between the teeth of the shafts.
- Make sure the snap rings are seated in the grooves in the each shaft.

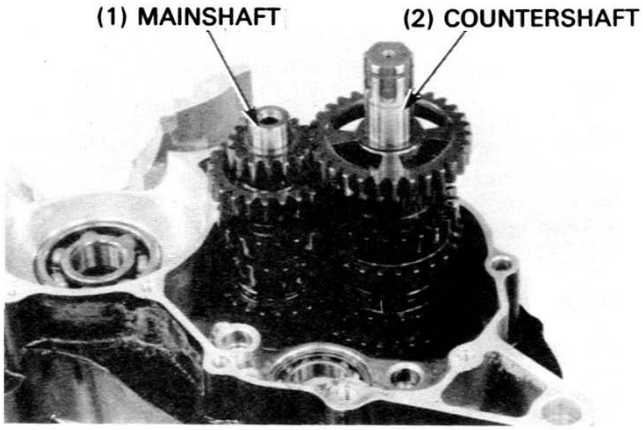
Install the stopper washer aligning its tabs with the grooves in the spline washer.



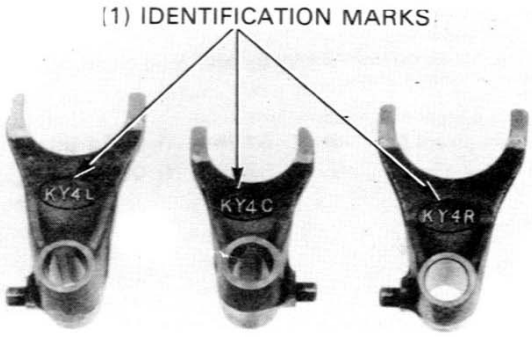
Apply $MoS_2$ oil to the surfaces of the gears (M3/M4, C5, C6), Sliding with the shift forks.



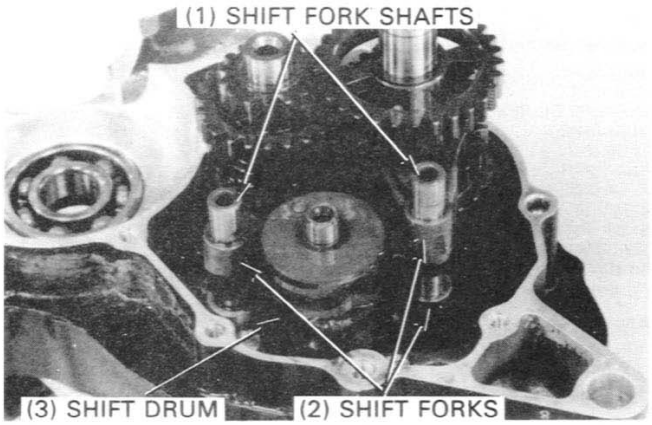

Install the mainshaft and contershaft in the right crankcase.




Each shift fork has an identification mark: "KY4L" for the left, "KY4C" for the center, "KY4R" for the right.
Install each shift fork properly.



Lubricate each part with clean transmission oil.
Install the shift drum.
Install the shift forks with their identification marks facing up.
Insert the shift fork shafts through the shift forks and into the right crankcase.

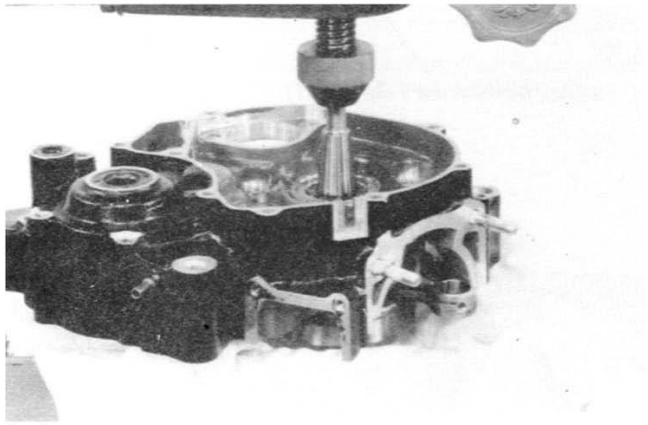



# CRANKSHAFT

## REMOVAL

Remove the transmission (page 10-3).
Remove the crankshaft from the left crankcase using a hydraulic press.
If the bearing remains on the crankshaft, remove it with bearing puller.

**TOOL:**
**Universal bearing puller** **07631-0010000**



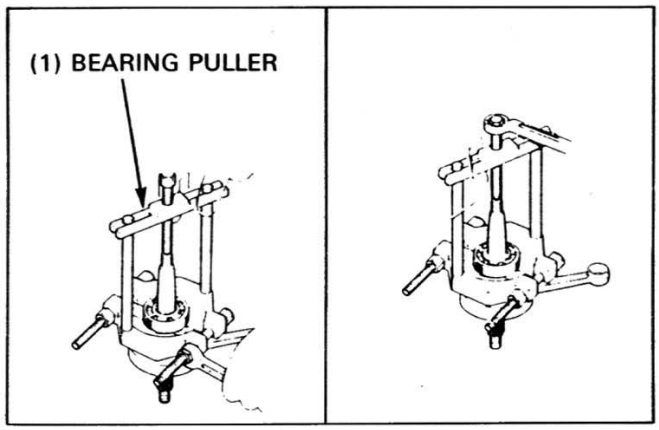
Discard the left crankshaft bearing.

NOTE

- Always replace the right crankshaft bearing with a new one whenever the crankshaft removed from the right crankcase.

Remove the right crankshaft bearing with the bearing puller.

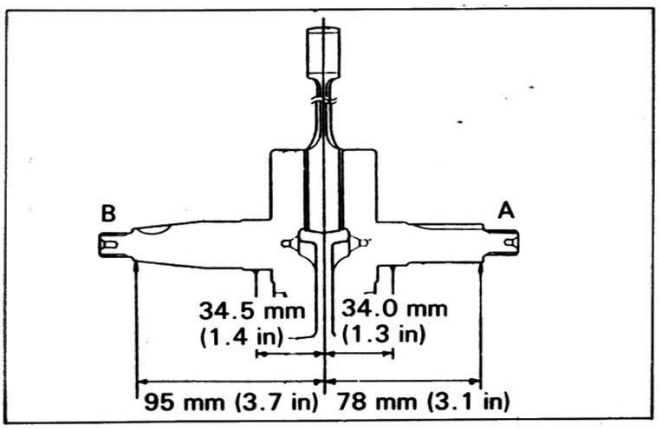
**TOOL:**
**Universal bearing puller** **07631-0010000**




## INSPECTION

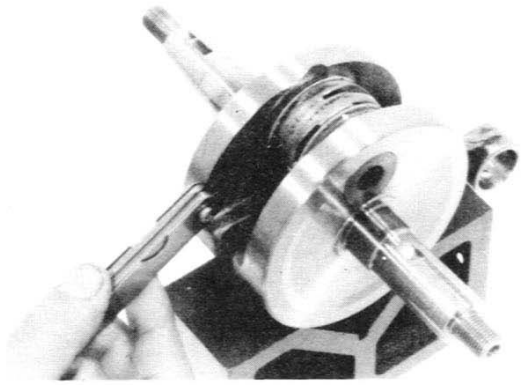
Set the crankshaft on V-blocks and read the runout using dial indicators.

**SERVICE LIMITS:** **A: 0.01 mm (0.0004 in)**
**B: 0.03 mm (0.0012 in)**



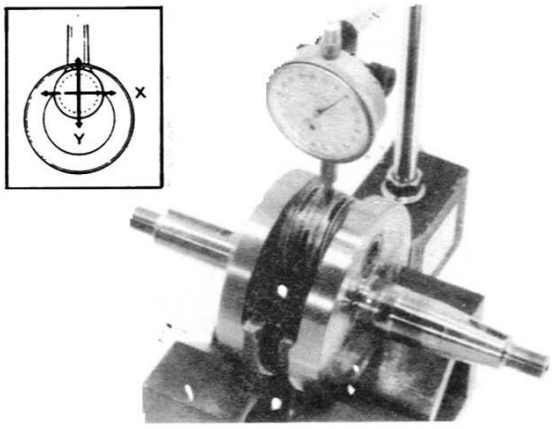
Measure the side clearance between the connecting rod big end and crankweight with a feeler gauge.

**SERVICE LIMIT: 0.85 mm (0.033 in)**



Measure the radial clearance at the connecting rod big end, at two points in the X and Y directions.

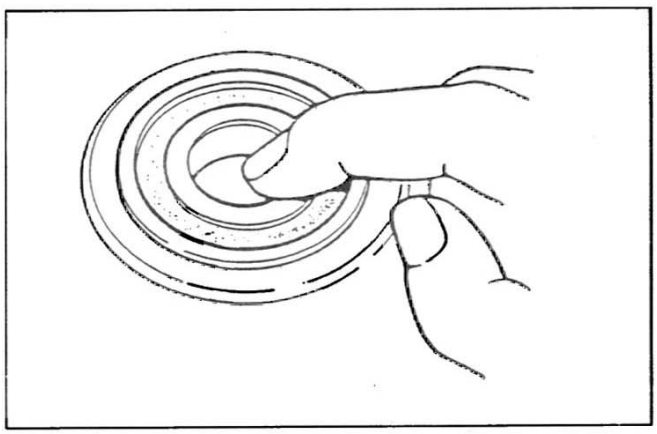
**SERVICE LIMIT: 0.05 mm (0.002 in)**




# CRANKCASE BEARING REPLACEMENT

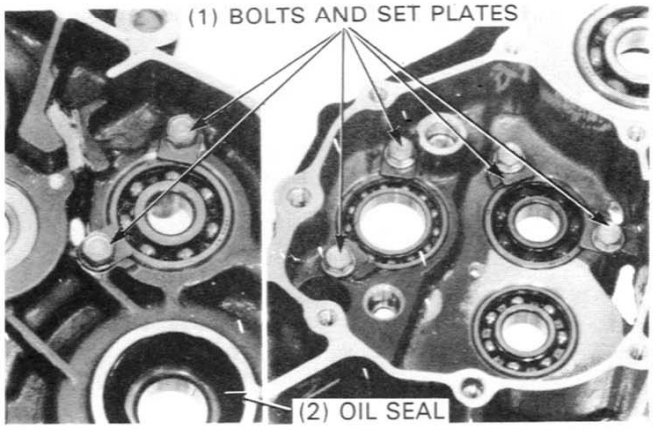
## INSPECTION

Turn the inner race of each bearing with your finger.
The bearing should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the crankcase.
Remove and discard the bearings if the races do not turn smoothly, quiety, or if they fit in the crankcase loosely (page 10-9).

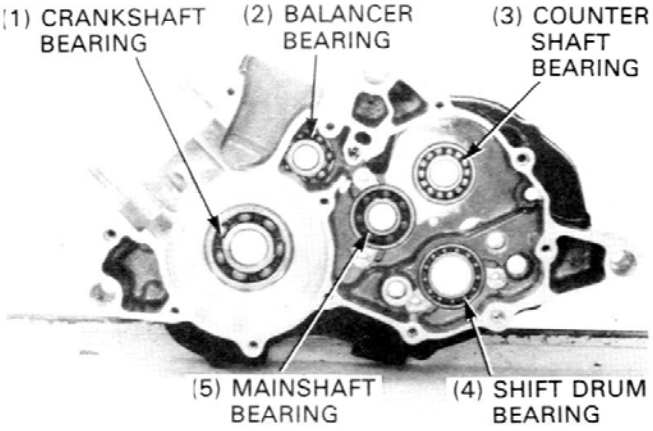


## RIGHT CRANKCASE

Remove each bearing set plate from the right crankcase.
Remove and discard the right crankshaft oil seal.

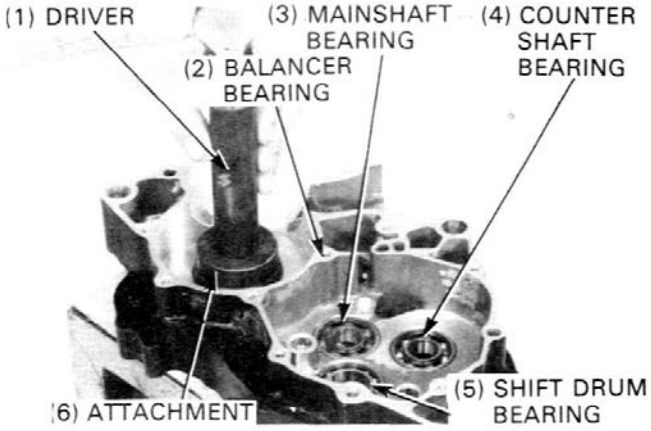


After inspection (page 10-8), drive the damaged bearings out of the right crankcase and discard them.

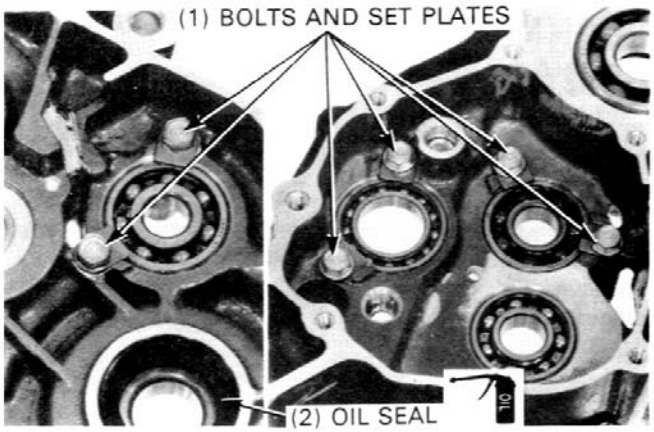



Drive the new bearings into the right crankcase with the following tools:

| | |
|---|---|
| **Crankshaft bearing** | |
| **Driver** | **07749-0010000** |
| **Attachment, 52 × 55 mm** | **07746-0010400** |
| **Pilot, 22 mm** | **07746-0041000** |
| **Mainshaft bearing** | |
| **Driver** | **07749-0010000** |
| **Attachment, 42 × 47 mm** | **07746-0010300** |
| **Pilot, 17 mm** | **07746-0040400** |
| **Countershaft bearing** | |
| **Driver** | **07749-0010000** |
| **Attachment, 37 × 40 mm** | **07746-0010200** |
| **Pilot, 17 mm** | **07746-0040400** |
| **Shift drum bearing** | |
| **Driver** | **07749-0010000** |
| **Attachment, 42 × 47 mm** | **07746-0010300** |
| **Pilot, 25 mm** | **07746-0040600** |
| **Balancer bearing** | |
| **Driver** | **07749-0010000** |
| **Attachment, 42 × 47 mm** | **07746-0010300** |
| **Pilot, 15 mm** | **07746-0040300** |

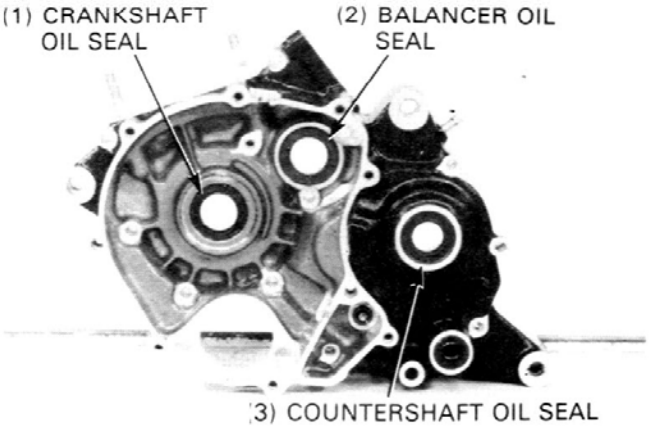



Apply a locking agent to the threads of each bearing set plate bolt.
Install each bearing set palte and secure them with the attaching bolts.
Apply clean transmission oil to the lip of the new right crankshaft oil seal, and install it into the right crankcase.

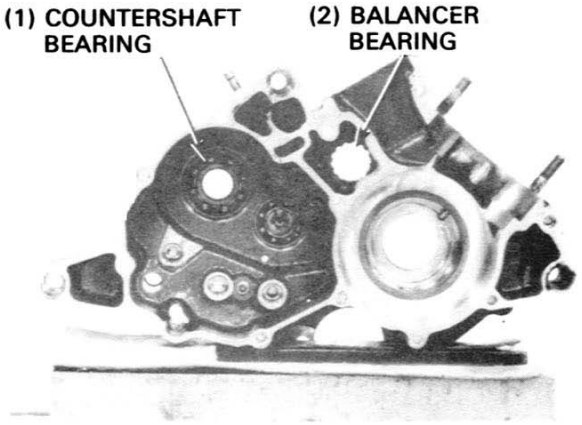



## LEFT CRANKCASE

Remove the following parts from the left crankcase:
-Crankshaft oil seal
-Balancer oil seal
-Countershaft oil seal



After inspection (page 10-8), drive the damaged bearing out of the left crankcase and discard them.

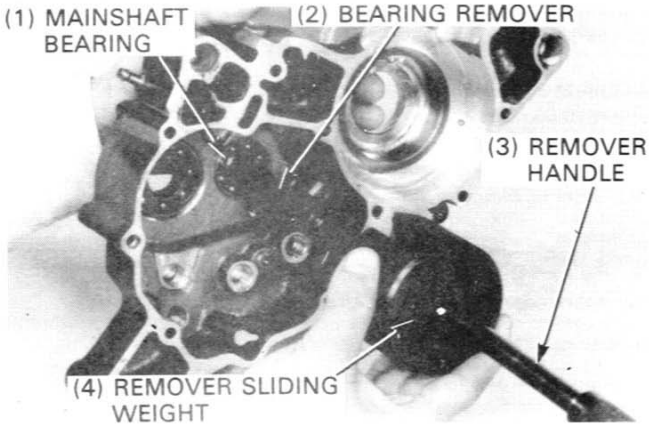



Remove the mainshaft bearing from the left crankcase using the following tools:

**TOOLS:**

| | |
|---|---|
| **Bearing remover** | **07936-3710300** |
| **Remover handle** | **07936-3710100** |
| **Remover sliding weight** | **07741-0010201** |

Discard the removed bearing.

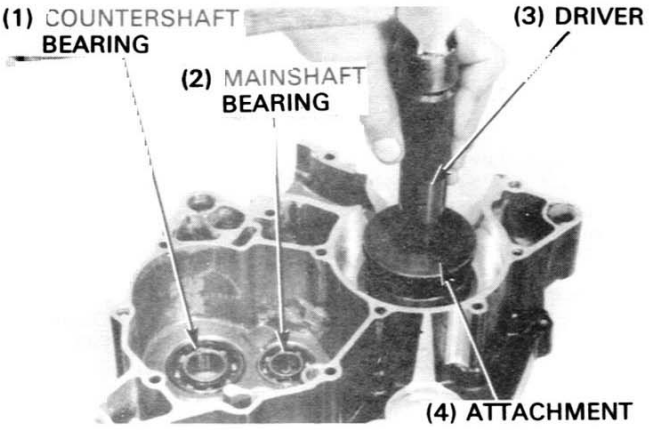


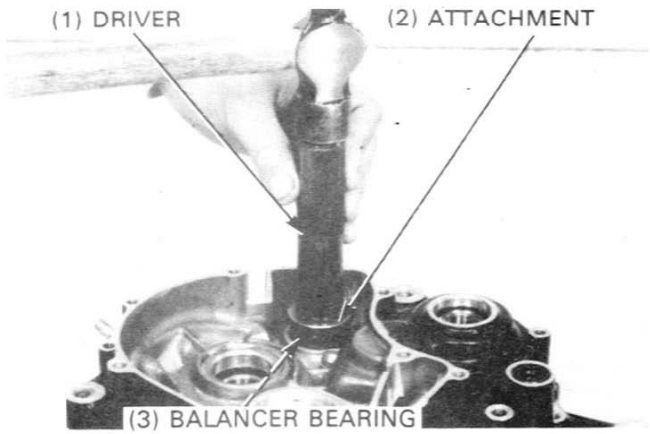

Drive the new bearings into the left crankcase with the following tools.

NOTE

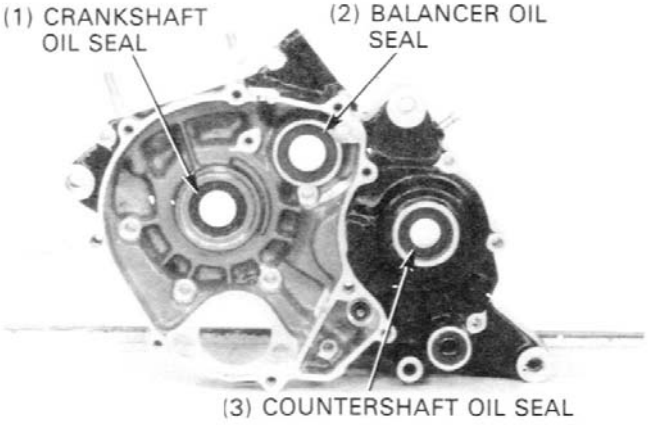
When driving in the bearings, drive in the bearings squarely.

| | |
|---|---|
| **Crankshaft bearing** | |
| **Driver** | **07749-0010000** |
| **Attachment, 62 × 68 mm** | **07746-0010500** |
| **Pilot, 25 mm** | **07746-0040600** |
| **Mainshaft bearing** | |
| **Driver** | **07749-0010000** |
| **Attachment, 37 × 40 mm** | **07746-0010200** |
| **Countershaft bearing** | |
| **Driver** | **07749-0010000** |
| **Attachment, 42 × 47 mm** | **07746-0010300** |
| **Pilot, 20 mm** | **07746-0040500** |
| **Shift drum bearing** | |
| **Driver** | **07749-0010000** |
| **Attachment, 32 × 35 mm** | **07746-0010100** |



Install the new crankshaft oil seal, balancer oil seal and countershaft oil seal into the left crankcase.
Apply clean transmission oil to the lips of the oil seals.




# CRANKCASE ASSEMBLY

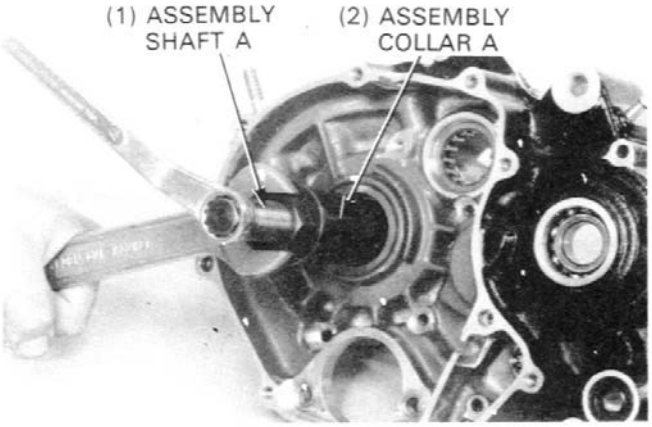
Install the crankshaft to the left crankcase and set the crankshaft assembly collar and shaft.
Draw the crankshaft in the left crankshaft bearing by tightening the nut while holding the assembly shaft.

NOTE

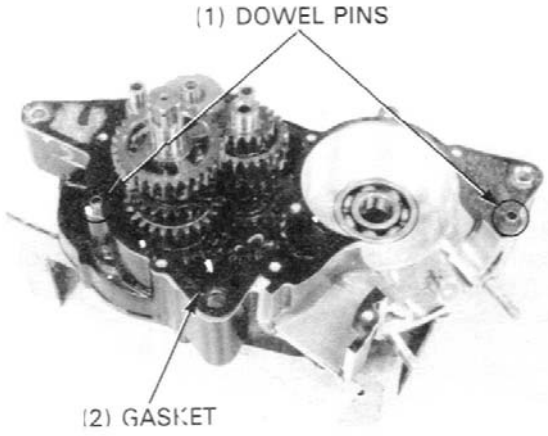
- Be careful not to press the connecting rod against the left crankcase edge when drawing in the crankshaft.

**TOOLS:**

| | |
|---|---|
| **Crankshaft assembly collar A** | **07964-MB00200** |
| **Crankshaft assembly shaft A** | **07965-VM00200** |




Install the dowel pins and a new gasket.




Assemble the crankcase halves with the right crankcase down.

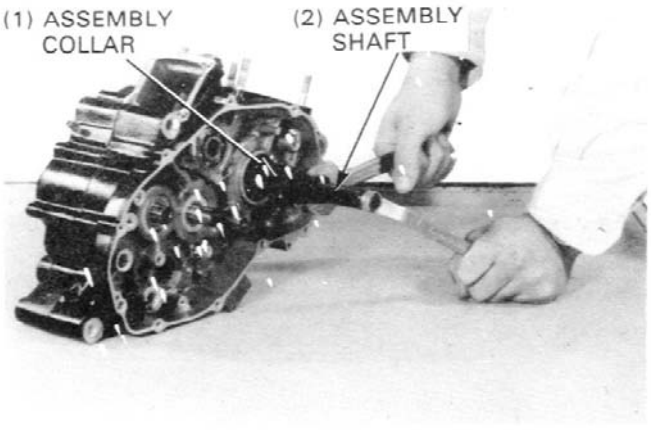
Set the crankcase assembly collar and shaft, and draw the crankshaft into the right crankshaft bearing by tightenisg the nut while holding the shaft.

NOTE

- Do not force the crankcase halves together, if there is excessive force required, something is wrong. Draw in the crankshaft gradually patting the right crankcase lightly with a soft hammer.

**TOOLS:**

| | |
|---|---|
| **Crankcase assembly tool** | **07965-1660100** |
| **-Crankcase assembly collar B** | **07965-1661300** |
| **-Crankcase assembly shaft B** | **07965-1660200** |



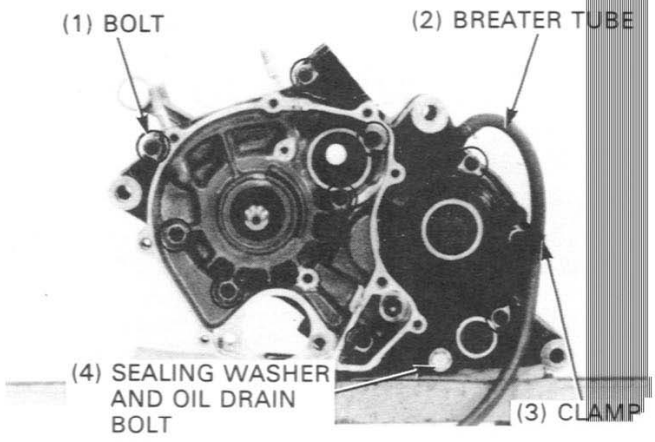
Install the clamp and tighten the crankcase bolts in a criss-cross pattern in several steps.

**TORQUE:12N·m (1.2kg-m, 9ft-lb)**

Tighten the transmission oil drain bolt with the sealing washer.

**TORQUE: 27 N·m (2.7kg-m, 20ft-lb)**

Connect the crankcase breather tube and pass it through the calmp.
Install the removed parts in the reverse order of removal.

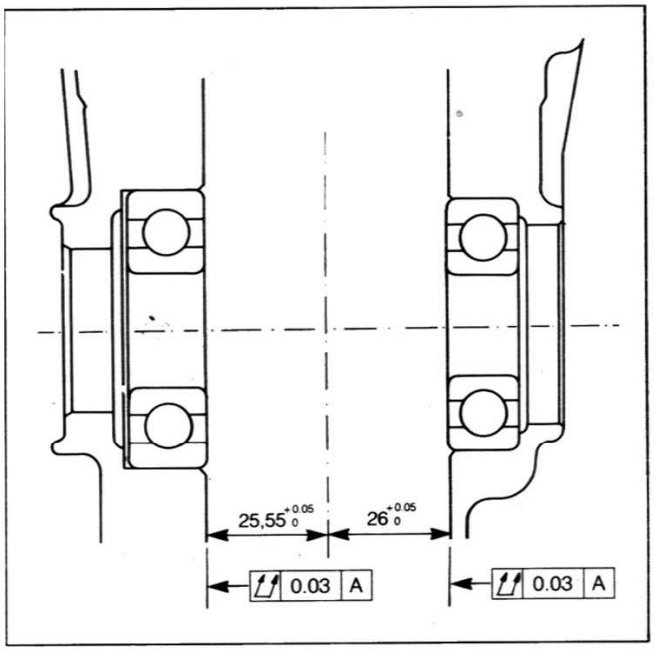


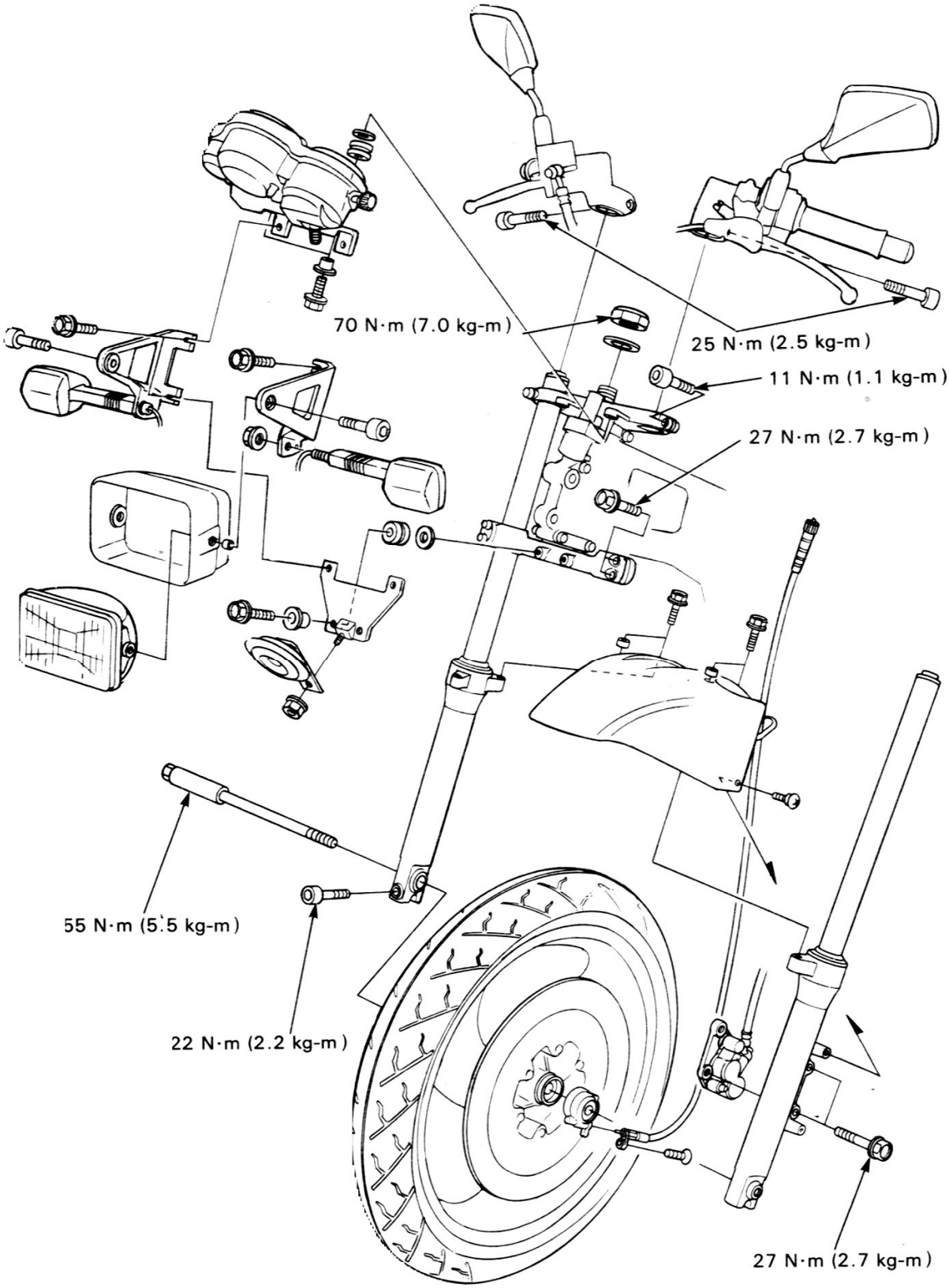

**⚠ WARNING**

- ***After driving main shaft bearings, in the crankcase, using special tools, check the exact position of main shaft bearings and the distance between the mating surface and each bearings.***

Depth-Mating surface to left bearing: $25{,}55^{+0.05}_{0}$

Depth-Mating surface to right bearing: $26^{+0.05}_{0}$




70 N·m (7.0 kg-m)
25 N·m (2.5 kg-m)
11 N·m (1.1 kg-m)
27 N·m (2.7 kg-m)
55 N·m (5.5 kg-m)
22 N·m (2.2 kg-m)
27 N·m (2.7 kg-m)

# SERVICE INFORMATION

## GENERAL

- A jack or other support is required to support the motorcycle when servicing front wheel, fork and steering stem.
- For front brake service, refer to section 13.
- For headlight, instrument and ignition switch services and inspections, refer to section 18.

## SPECIFICATIONS

unit : mm (in)

| ITEM | | STANDARD | SERVICE LIMIT |
|---|---|---|---|
| Axle runout | | – | 0.2 (0.008) |
| Front wheel rim runout | Radial | – | 2.0 (0.08) |
| | Axial | – | 2.0 (0.08) |
| Fork spring free length | | 320 (12,5) | |
| Fork tube runout | | – | 0.2 (0.008) |
| Fork fluid capacity | | 280 cc (9,4 US oz, 7,8 Imp oz) | – |
| Fork fluid level | | 130 (5,1) | – |
| Steering bearing preload | | 1.1–1.6 kg (2.4–3.5 lb) | – |

## TORQUE VALUES

| | |
|---|---|
| Master cylinder holder bolt | 10 N·m (1.0 kg-m, 7 ft-lb) |
| Handlebar pinch bolt | 25 N·m (2.5 kg-m, 18 ft-lb) |
| Clutch lever bracket holder bolt | 10 N·m (1.0 kg-m, 7 ft-lb) |
| Front brake disc bolt | 15 N·m (1.5 kg-m, 11 ft-lb) Apply a locking agent to the theads |
| Front axle | 55 N·m (5.5 kg-m, 40 ft-lb) |
| Front axle pinch bolt | 22N·m (2.2 kg-m,16 ft-lb) |
| Fork slider socket bolt | 28 N·m (2.8 kg-m, 20 ft-lb) |
| Lower fork pinch bolt | 27 N·m (2.7 kg-m, 20 ft-lb) |
| Upper fork pinch bolt | 11 N·m (1.1 kg-m, 8 ft-lb) |
| Fork tube cap | 18 N·m (1.8 kg-m, 13 ft-lb) |
| Front caliper bracket bolt | 27 N·m (2.7 kg-m, 20 ft-lb) |
| Steering adjustment nut | 2 N·m (0.2 kg-m, 1.4ft-lb) |
| Steering stem nut | 70 N·m (7.0 kg-m, 51 ft-lb) |

## TOOLS

**Special**

| | |
|---|---|
| Fork seal driver attachment | 07947–KA20200 |
| Steering stem driver | 07946–GC40000 |
| Steering stem socket | 07916–3710100 |
| Ball race remover | 07944–1150001 |

**Common**

| | |
|---|---|
| Bearing remover shaft | 07746–0050100 |
| Bearing remover head, 15 mm | 07746–0050400 |
| Driver | 07749–0010000 |
| Attachment, 32×35 mm | 07746–0010100 |
| Attachment, 37×40 mm | 07746–0010200 |
| Pilot, 15 mm | 07746–0040300 |
| Fork seal driver | 07747–0010100 |

# TROUBLESHOOTING

**Hard steering**
- Steering adjustment nut too tight
- Dameged steering stem bearings
- Insufficient tire pressure

**Steers to one side or does not track straight**
- Bent fork legs
- Bent front axle
- Wheel installed incorrectly

**Front wheel wobbling**
- Bent rim
- Worn front wheel bearings
- Faulty tire
- Loose axle
- Wheel out of balance

**Soft suspension**
- Weak fork springs
- Insufficient fluid in fork legs

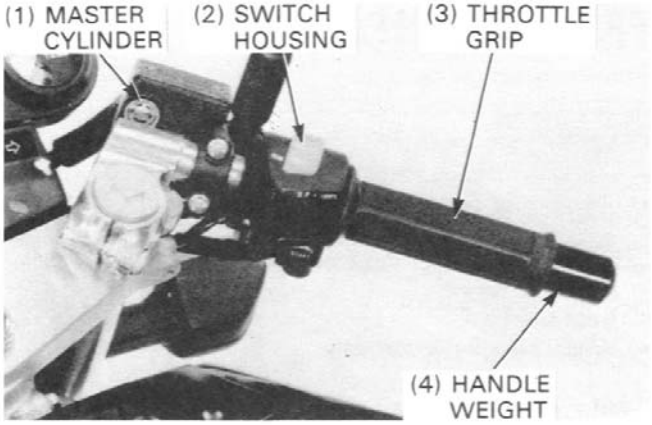
**Hard suspension**
- Incorrect weight fluid in fork legs
- Bent fork tubes
- Clogged fork fluid passage

**Front suspension noise**
- Fork slider binding
- Insufficient fluid in fork legs
- Loose front suspension fasteners
- Worn or damaged wheel bearings
- Insufficient grease in speedometer gear box

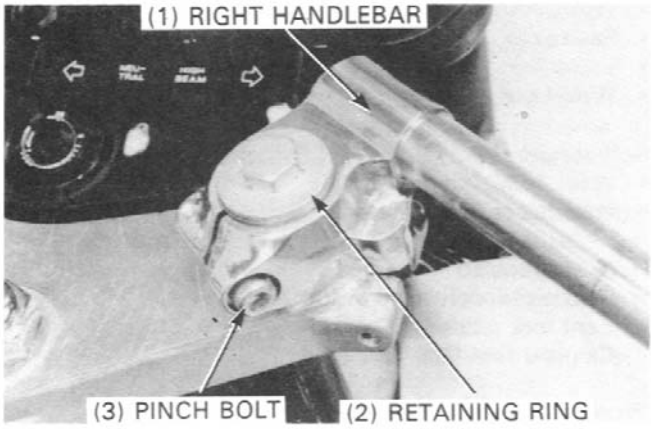
# HANDLEBARS

## RIGHT HANDLEBAR REMOVAL

Disconnect the front brake switch wire connectors.
Remove the following components from the right handlebar:
-front master cylinder
-right handle switch housing
-throttle grip
-handle weight
Disconnect the throttle cable from the throttle grip.

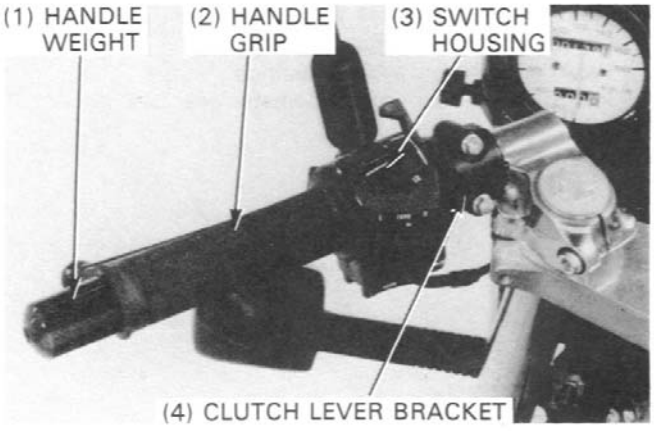



Remove the retaining ring from the groove in the fork tube.
Loosen the handlebar pinch bolt and remove the right handlebar from the fork tube.

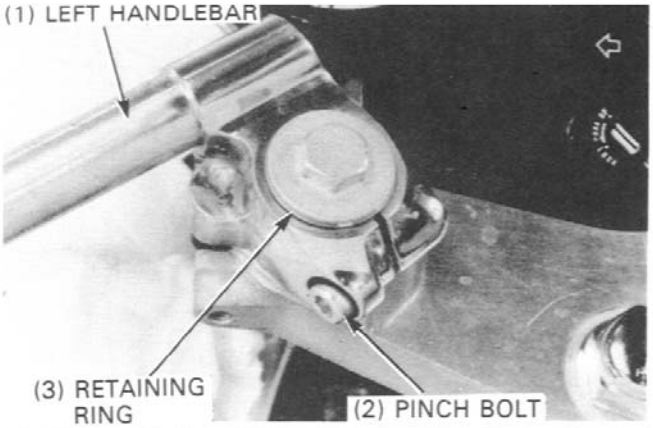



## LEFT HANDLEBAR REMOVAL

Disconnect the clutch switch wire connectors.
Remove the following components form the left handleber:
-clutch lever bracket
-left handle switch housing
-handle weight
-handle grip
Disconnect the choke cable from the choke lever.

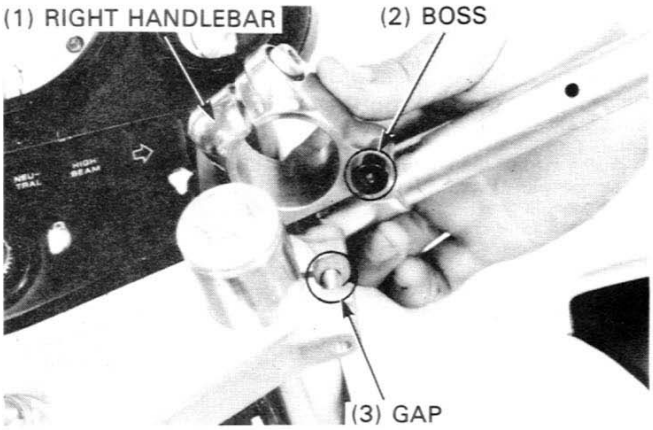



Remove the retaining ring from the groove in the fork tube.
Loosen the handlebar pinch bolt and remove the left handlebar from the fork tube.



## RIGHT HANDLEBAR INSTALLATION

Install the right handlebar onto the fork tube, aligning the boss on the handlebar with the gap of the steering top bridge.



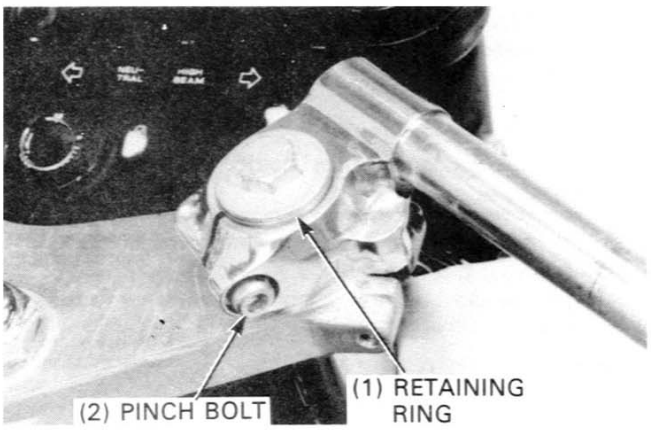

Tighten the handlebar pinch bolt without any clearance between the handlebar and steering top bridge.

**TORQUE: 25N·m (2.5kg-m, 18ft-lb)**

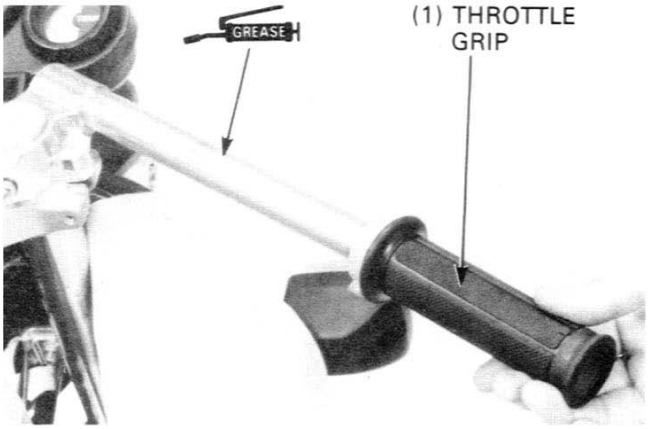
Install the retaining ring in the groove in the fork tube

NOTE

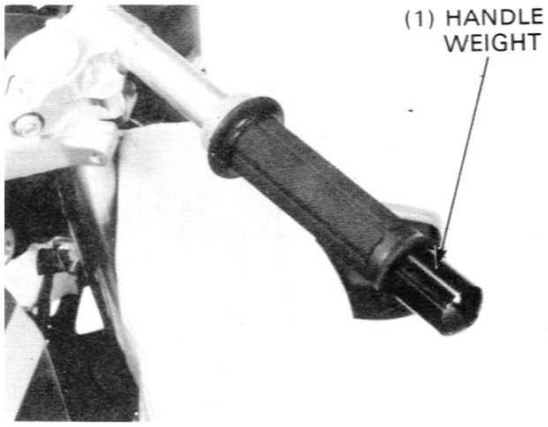
- Make sure the retaining ring is seated in the groove in the fork tube.




Apply multipurpose grease to the sliding surface of the right handlebar and install the throttle grip onto the right handlebar.

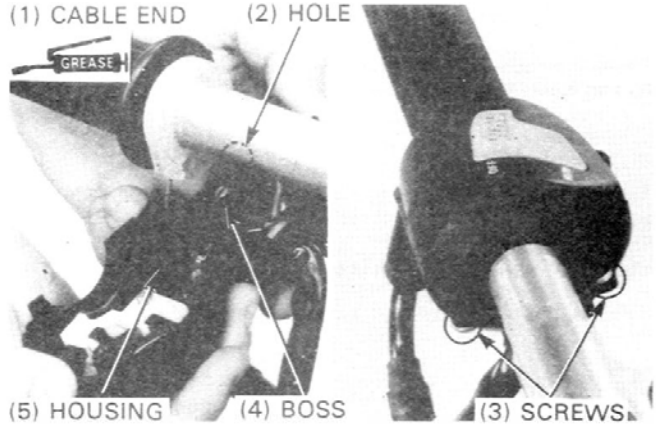



Apply a locking agent to the threads of the handle weight and tighten it in the right handlebar.



Apply multipurpose grease to the throttle cable end and connect the cable to the throttle grip.
Install the right switch housing halves onto the right handlebar, aligning the boss on the lower housing with the hole in the handlebar.
Tighten the front housing screw first, then the rear one.

Check the throttle grip for smooth operation.




Install the front master cylinder and master cylinder holder on the right handlebar and temporarily tighten the two attaching bolts.

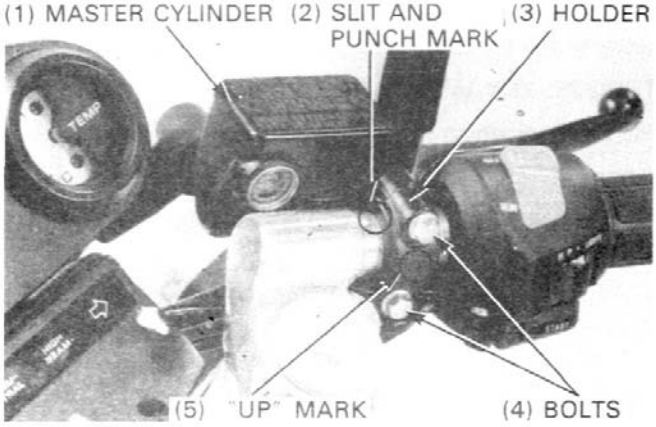
NOTE

- Install the master cylinder holder with the "UP" mark facing up.

Align the slit between the mastercylinder and holder with the punch mark on the handlebar.
Tighten the upper bolt first, then the lower one to the specified torque.

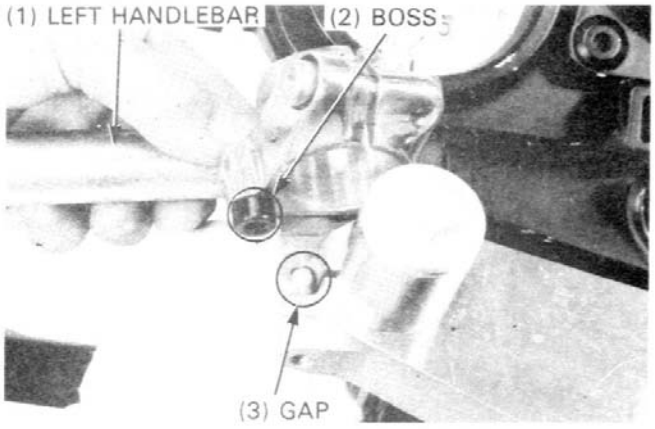
**TORQUE: 10N·m (1.0kg-m, 7ft-lb)**

Connect the front brake light switch wire connectors.




## LEFT HANDLEBAR INSTALLATION

Install the left handleber onto the fork tube, aligning the boss on the handlebar with the gap of the steering top bridge.



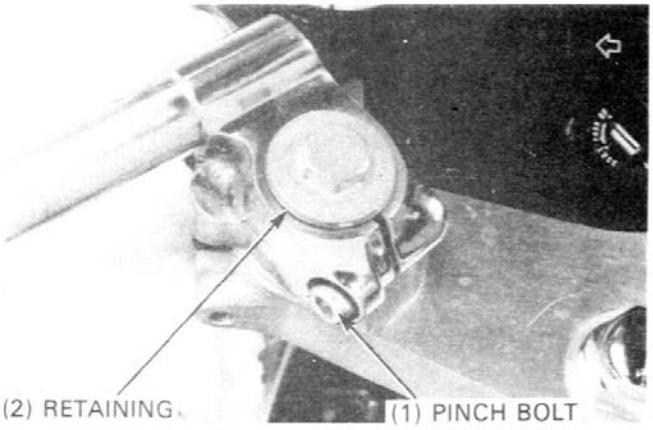

Tighten the handlebar pinch bolt without any clearance between the handlebar and steering top bridge.

**TORQUE: 25N·m (2.5 kg-m, 18ft-lb)**

Install the retaining ring in the groove in the fork tube.

NOTE

- Make sure the retaining ring is seated in the groove in the fork tube.

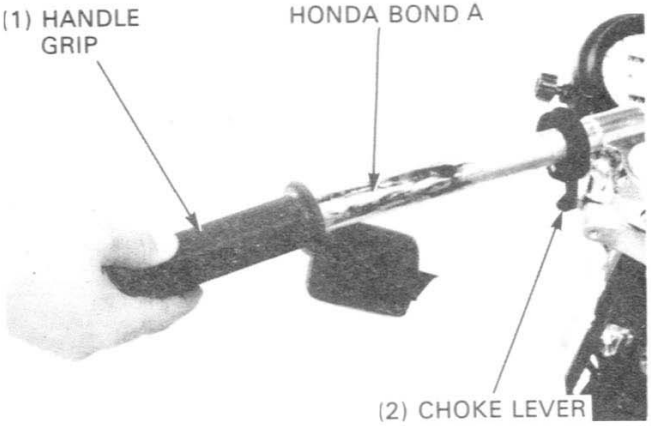


Install the choke lever onto the left handlebar.
Apply Honda Bond A to the inside surface of grip and to the clean surface of the handlebar. Wait 3-5 minutes and install the grip. Rotate the grip for even application of the adhesive.

NOTE

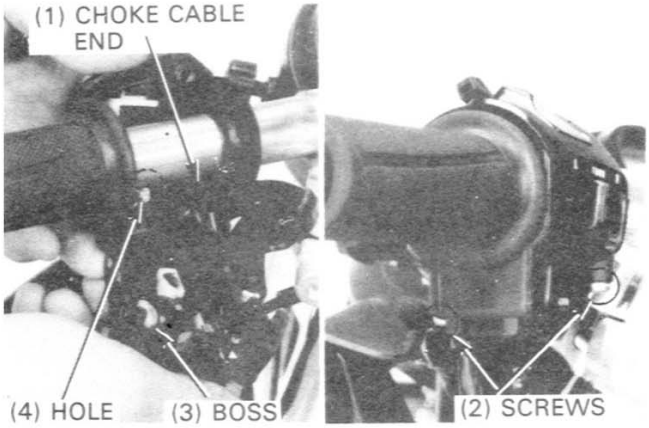
- Allow the adhesive to dry for an hour before using.

Apply a locking agent to the threads of the handle weight, and tighten it in the left handlebar.




Apply grease to the choke cable end.
Connect the choke cable to the choke lever, and install the left handlebar switch housing halves on the left handlebar, aligning the boss on the lower housing with the hole in the handlebar.
Tighten the front housing screw first, then the rear one.

Check the choke cable for smooth operation.




Install the clutch lever bracket and bracket holder on the left handlebar and temporarily tighten the two attaching bolts.

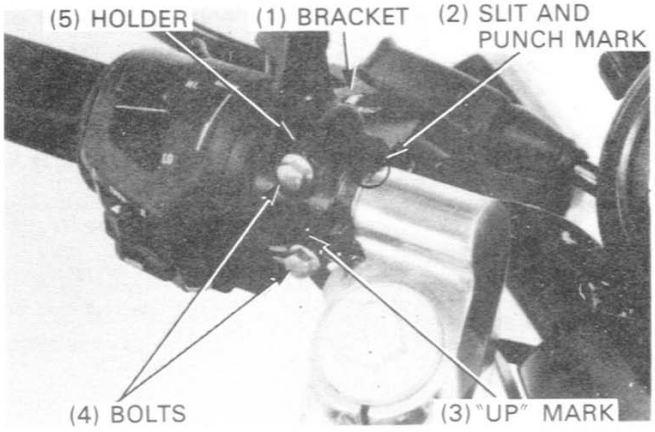
NOTE

- Install the bracket holder with the "UP" mark facing up.

Align the slit between the bracket and holder with the punch mark on the left handlebar.
Tighten the upper bolt first, then the lower one to the specified torque.

**TORQUE: 10N·m (1.0kg-m, 7ft-lb)**

Connect the clutch switch wire connectors.




# FRONT WHEEL

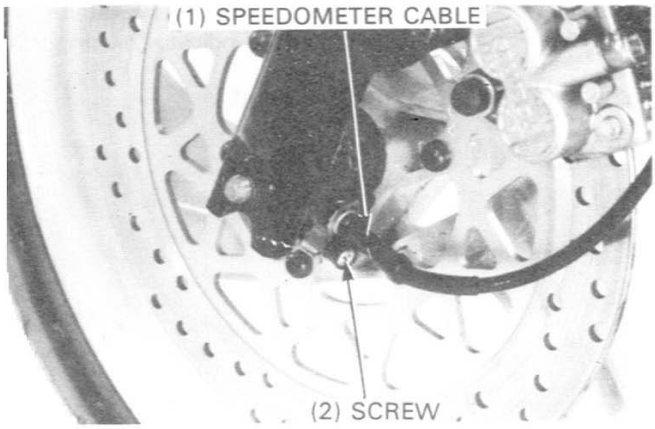
## REMOVAL

Support the motorcycle on its center stand on level ground.

**⚠ WARNING**

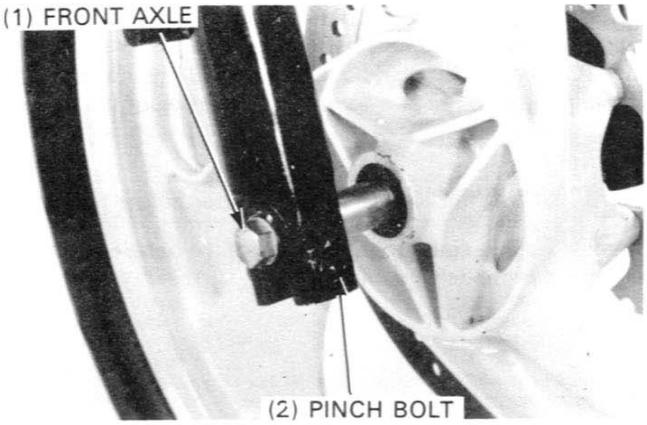
***Be careful not to turn over the motorcycle while servicing.***

Remove the speedometer cable set screw and disconnect the speedometer cable.



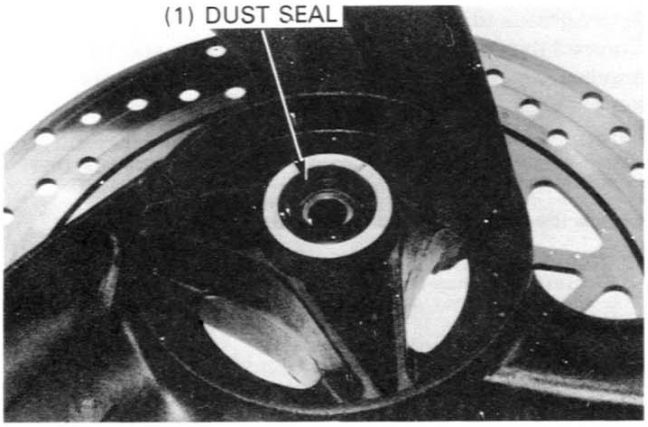
Loosen the front axle pinch bolt, and remove the front axle and wheel.

NOTE

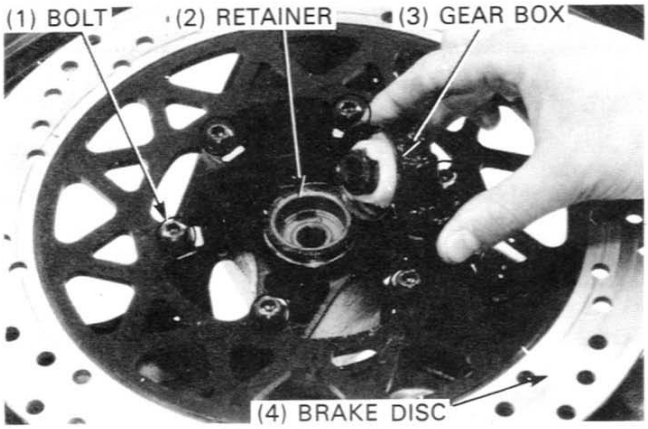



## DISASSEMBLY/INSPECTION

Remove the dust seal from the wheel hub.

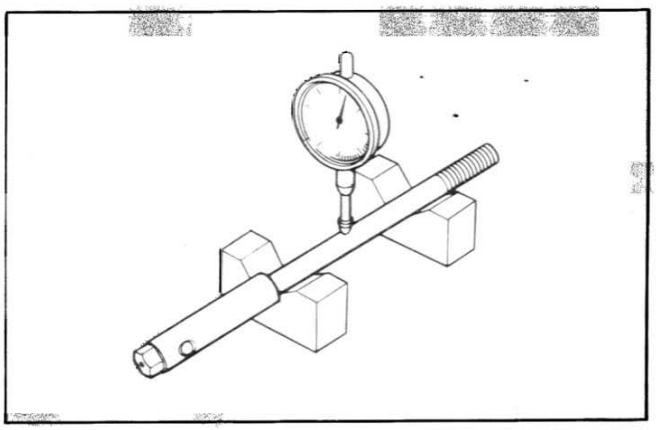



Remove the speedometer gear box and speedometer gear retainer.
If necessary, remove the front brake disc bolts and brake disc.

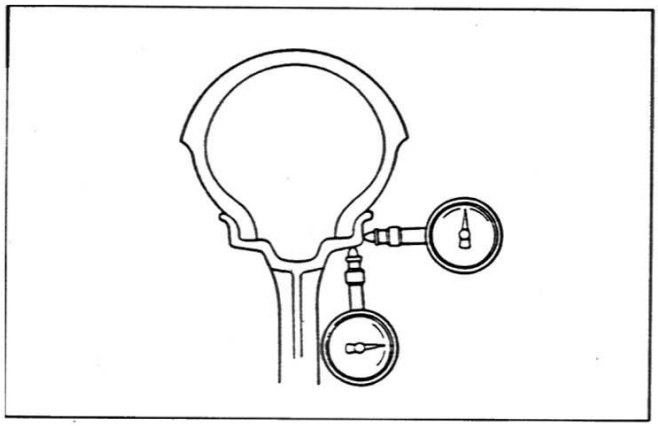



Set the front axle on V-blocks and measure the runout.
The actual runout is 1/2 of the total indicator reading.

**SERVICE LIMIT: 0.2mm (0.008 in)**



Check the rim runout by placing the wheel in a truing stand. Spin the wheel slowly and read the runout using a dial indicator.

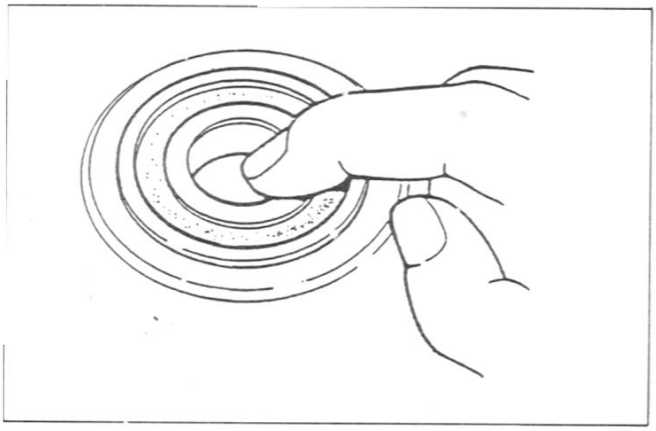


**SERVICE LIMITS:**
**Radial: 2.0mm (0.08 in)**
**Axial: 2.0mm (0.08 in)**

NOTE

- The wheel can not be repaired and must be replaced with a new one if the service limits are exceeded.

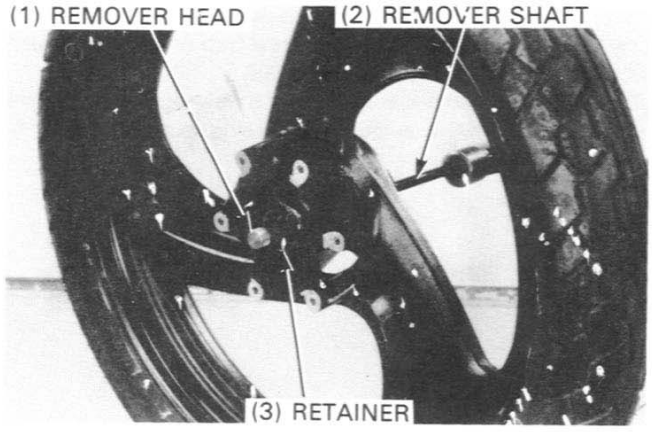
Turn the inner race of each bearing with your finger. The bearing should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the hub.
Remove and discard the bearing if the races do not turn smoothly, quietly, or if they fit loosely in the hub.



NOTE

- Replace hub bearing in pairs.

Remove the speedometer gear retainer, wheel bearing and distance collar from the wheel hub.




NOTE

- Whenever the wheel bearing and retainer are removed, they must be replaced with new ones.

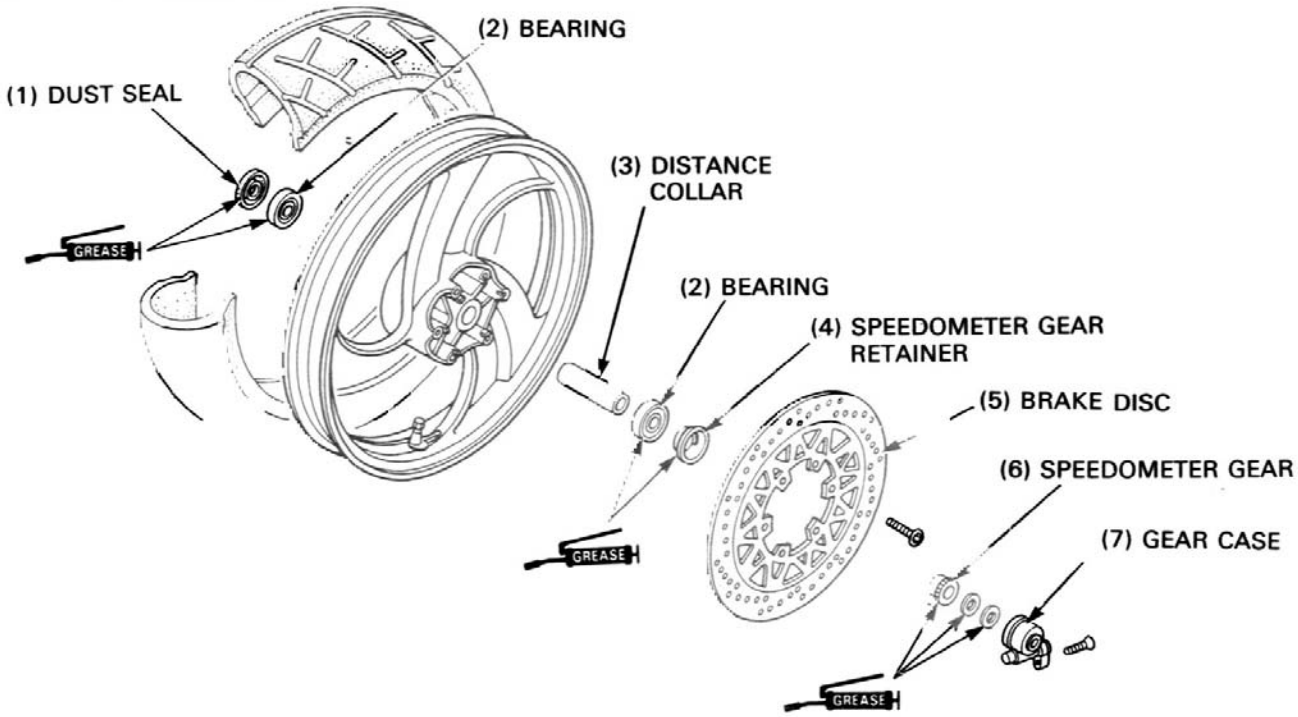
**TOOLS:**

| | |
|---|---|
| **Bearing remover shaft** | **07746-0050100** |
| **Bearing remover head, 15 mm** | **07746-0050400** |

## ASSEMBLY

**⚠ WARNING**

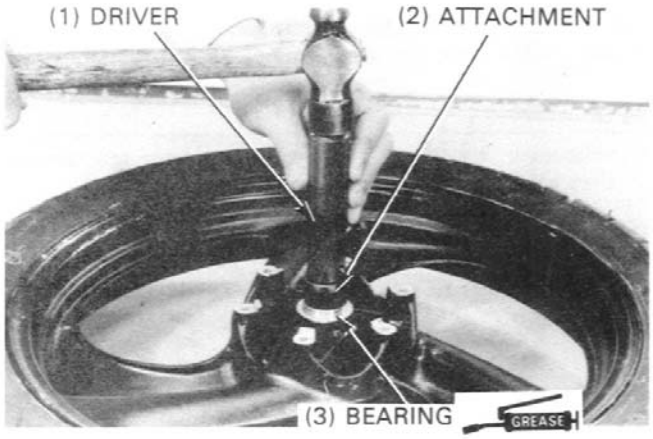
- ***Do not get grease on the brake disc or stopping power will be reduced.***




Pack all bearing cavities with grease.
Drive a new left bearing in the wheel hub first with the sealed side facing out until it is fully seated.
Install the distance collar and drive a new right bearing in the wheel hub with the sealed side facing out untill it is fully seated.

**TOOLS:**

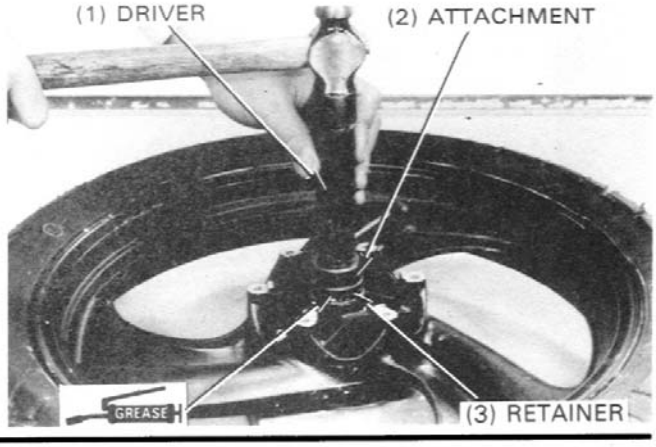
| | |
|---|---|
| **Driver** | **07749-0010000** |
| **Attachment, 32×35mm** | **07746-0010100** |
| **Pilot, 15mm** | **07746-0040300** |



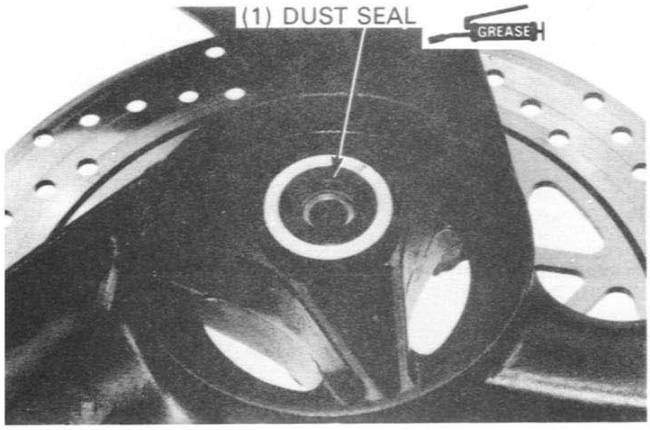

Apply grease to the dust seal on a new speedometer gear retainer, and drive the retainer in the wheel nub.

**TOOLS:**

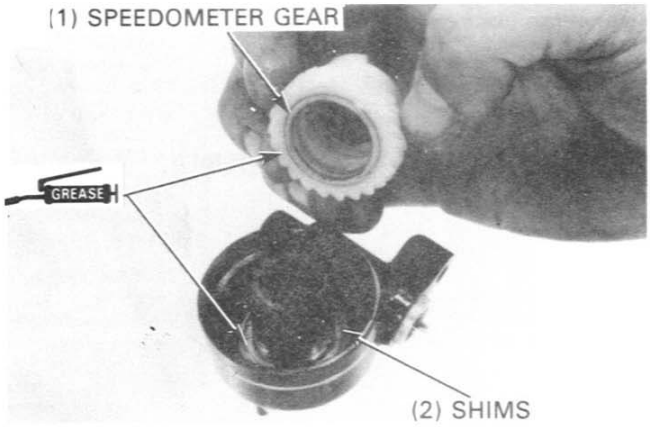
| | |
|---|---|
| **Driver** | **07749-0010000** |
| **Attachment, 37×40 mm** | **07746-0010200** |



Install a new dust seal in the front wheel hub, and apply grease to the dust seal lip.

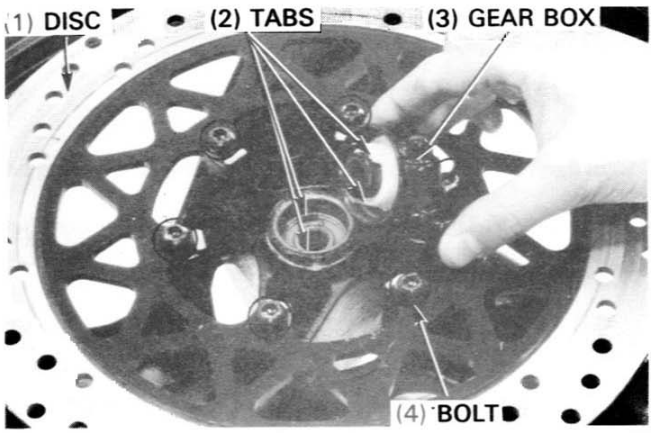



Coat the two shims and pack the teeth of the speedometer gear retainer with grease.
Install the shims and gear into the speedometer gear box.




Install the speedometer gear box with the tabs of the speedometer gear and retainer engaged.
If the brake disc was removed, install the brake disc with the stamp "MIN.TH.3.0MM" facing outside. Clean the hub and disc bolt threads. Apply locking agent to the disc bolt theads. Tighten the disc bolts in a crisscross pattern in several steps.

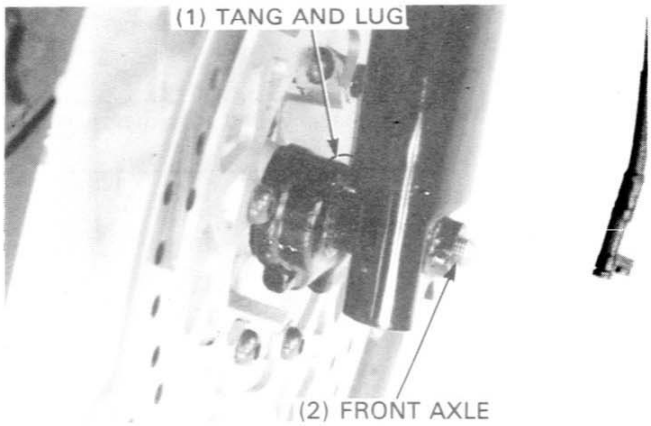
**TORQUE: 15N·m (1.5kg-m, 11ft-lb)**



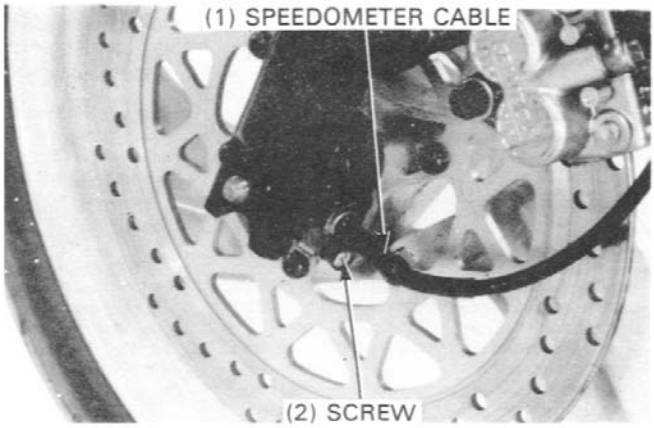

## INSTALLATION

Position the front wheel between the fork legs, putting the brake disc between the brake pads.

NOTE



Connect the speedometer cable to the gearbox and secure it with the set screw.

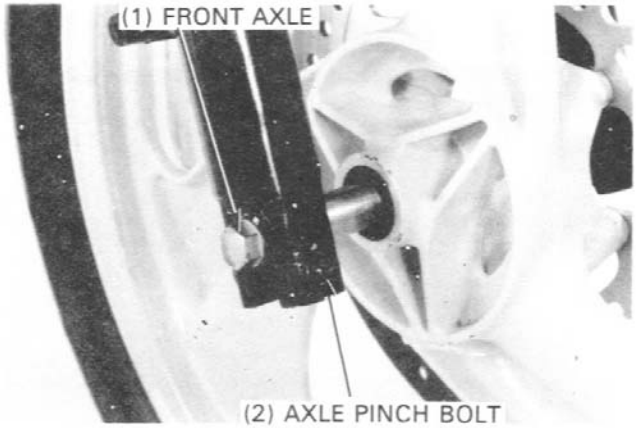



Tighten the front axle.

**TORQUE:55N·m (5.5kg-m, 40ft-lb)**

Tighten the front axle pinch bolt.

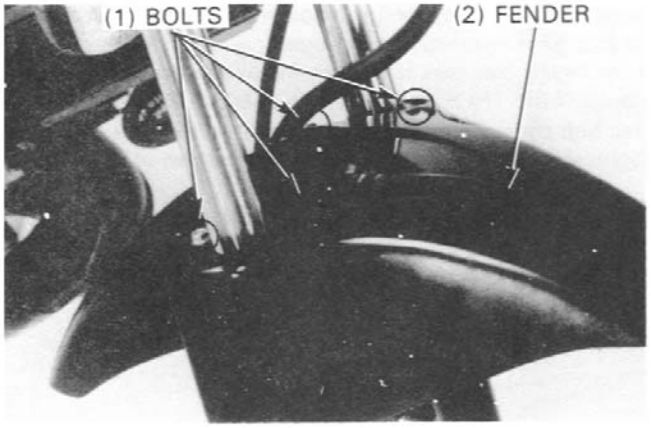
**TORQUE: 22 N·m (2.2 kg-m, 16 ft-lb)**




# FORK

## REMOVAL

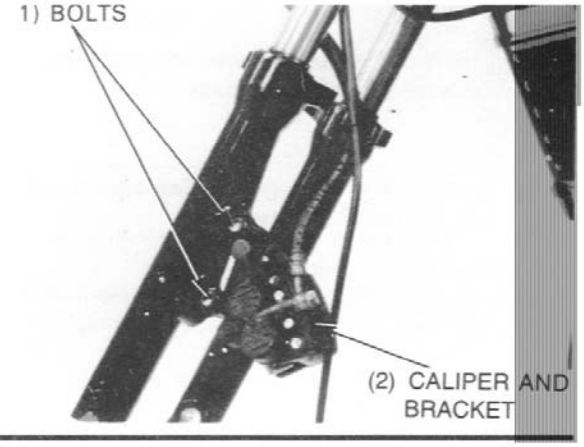
Remove the front wheel (page 11-6).
Remove the four attaching bolts, two attaching screws and front fender.
Front fender "R-Type" is divided into two parts. For disassembly, remove the four attaching bolts, four attaching screws and the lower stay.




Remove the two bolts, caliper bracket and caliper.

NOTE

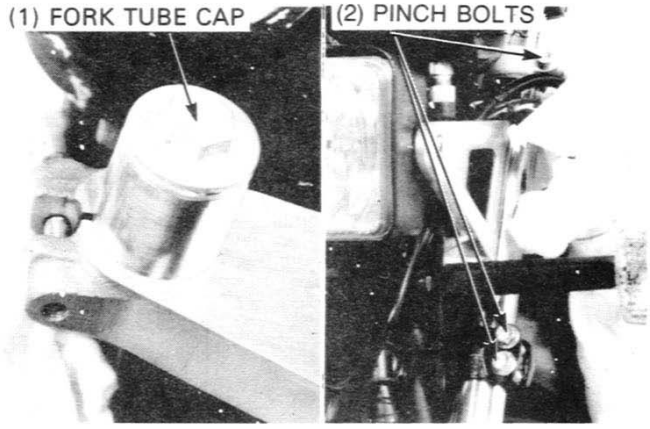
- Do not hang the brake caliper with the brake hose but with a proper string or wire.



Remove the handlebars from the fork tubes (page 11-3).

If the fork legs should be disassembled, loosen the fork tube cap with the fork legs installed.

Loosen the fork tube pinch bolts and remove the fork tubes from the steering top bridge and steering stem.




## DISASSEMBLY

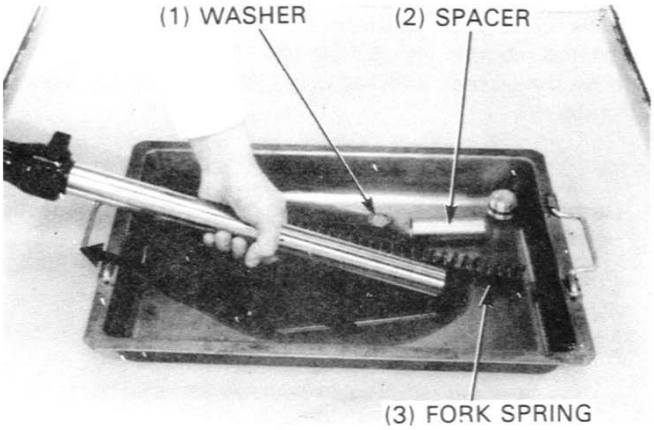
Remove the fork tube cap from the fork tube.

**⚠ WARNING**

***The cap is under spring pressure. Use care when removing and wear eye and face protection.***

**(1) FORK TUBE CAP**

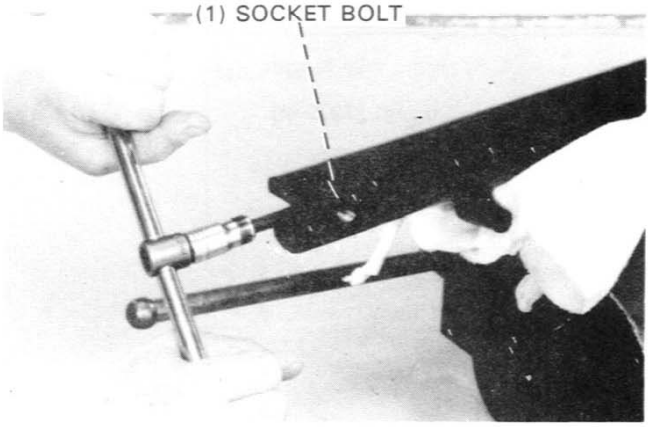
Remove the spacer, washer and fork spring.
Pour out the fork fluid by pumping the fork up and down several times.




Hold the fork slider in a vise with soft jaws or protected by a shop towel.
Remove the socket bolt.

NOTE

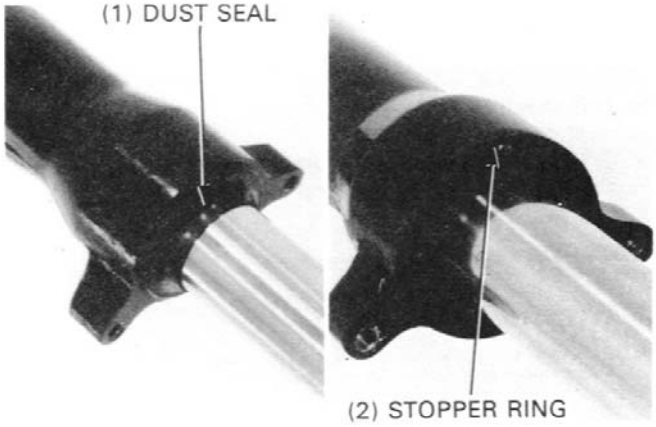
- Temporarily install the fork spring and spacer if it is difficult to remove the socket bolt.



Remove the dust seal and stopper ring from the fork slider.

NOTE

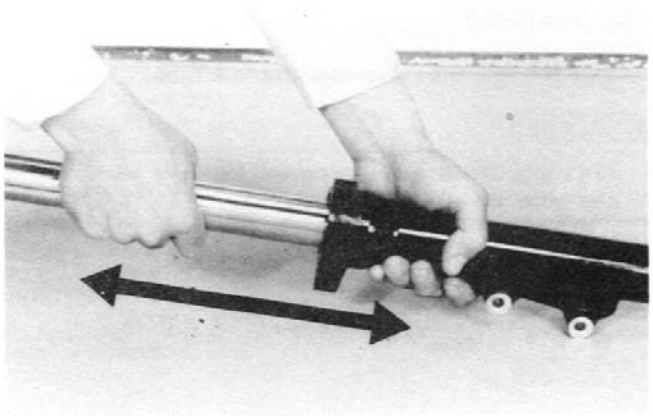
- Be careful not to damage the sliding surface of the fork tube.




In quick successive motions pull the fork tube out of the slider.

NOTE

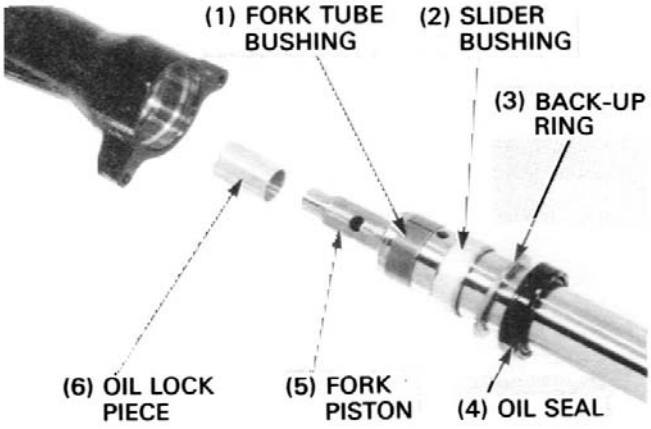
- The slider bushing is pressed into the slider and the fork tube bushing, on the end of the fork tube, must force it out.



Remove the oil lock piece from the fork piston and remove the piston and rebound spring from the fork tube.
Remove the oil seal, back-up ring and slider bushing from the fork tube.

NOTE

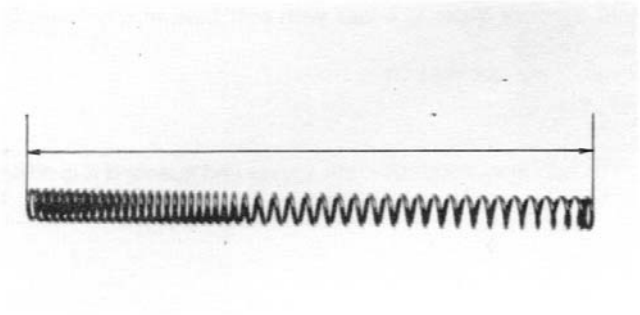
Do not remove the fork tube bushing until the inspection determines it is necessary (page 11-14).



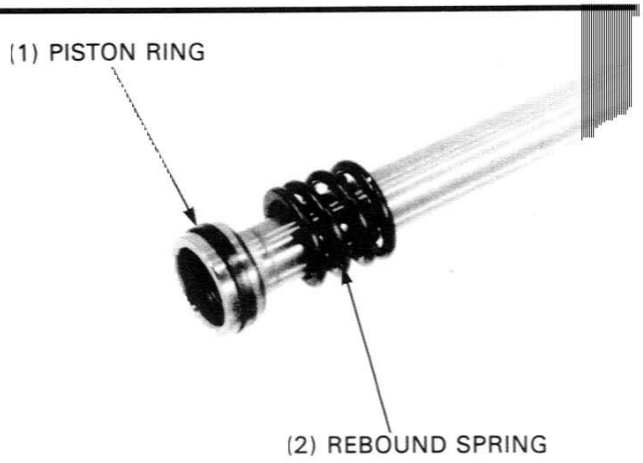

## INSPECTION

Measure the fork spring free length

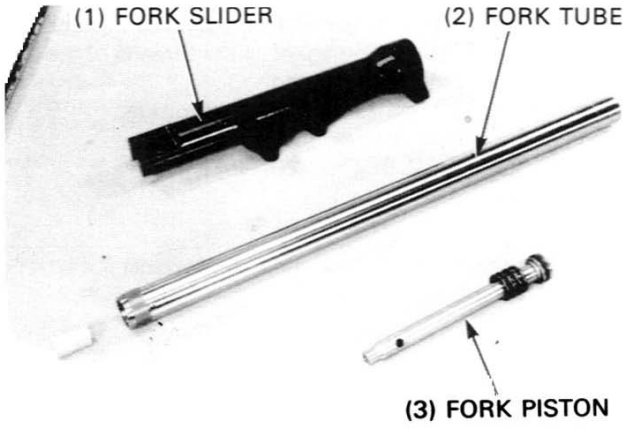
**SERVICE LIMIT: 320 mm (12,5 in)**



Inspect the piston ring for wear, damage or deterioration.
Check the rebound spring for damage or fatigue.

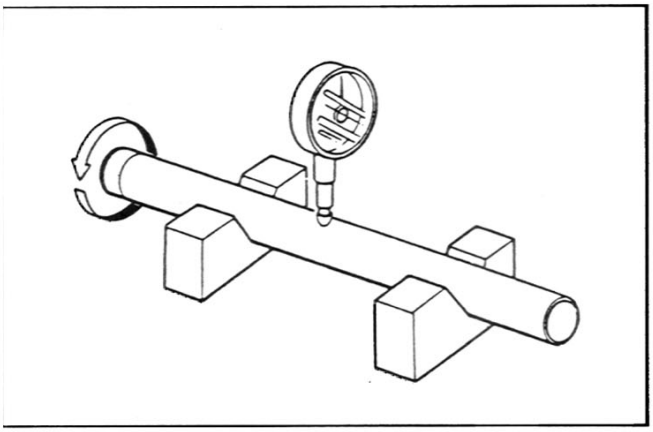



Check the fork tube, fork slider and piston for scores, excessive or abnormal wear.
Replace any components which are worn or damaged.

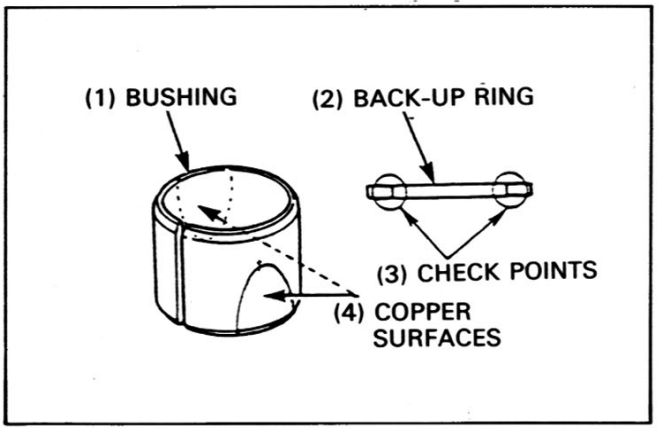



Set the fork tube on V blocks and read the runout.
Use 1/2 the total indicator reading to determine the actual runout.

**SERVICE LIMIT: 0.2mm (0.008 in)**



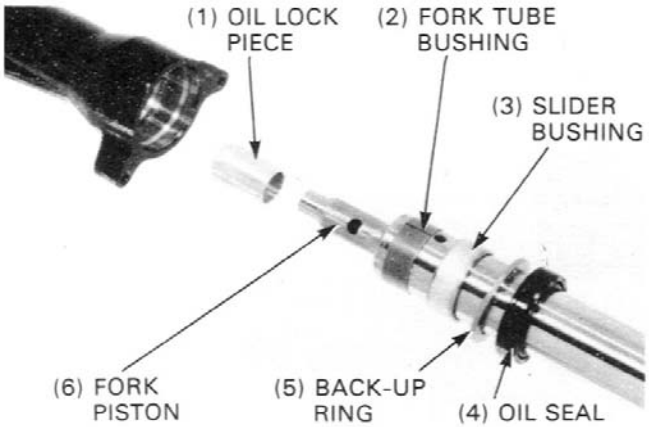
Visually inspect the slider and fork tube bushings.
Replace the bushings if there is excessive scoring or scratching, or if the teflon is worn so that the copper surface appears on more than 3/4 of the entire surface.
Check the back-up ring and replace it if there is any distortion at the points shown.



## ASSEMBLY

Before assembly, wash all parts with a high flash point or non-flammable solvent and wipe them off completely.
Insert the fork piston into the fork tube and install the oil lock piece onto the end of the fork piston.

coat the oil seal lips with ATF.
Install the slider bushing, back-up ring and oil seal onto the fork tube.

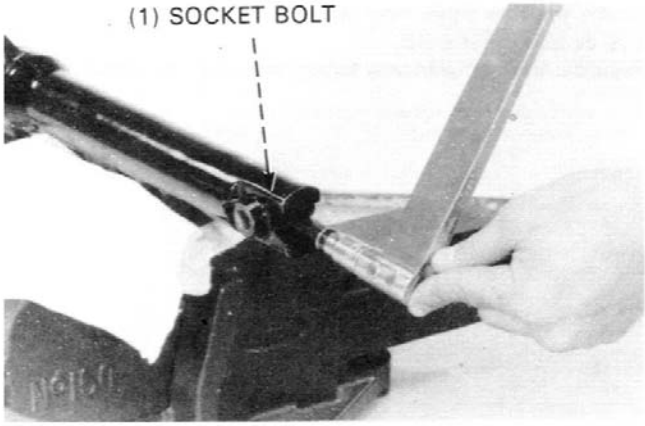



NOTE

- Be careful not to damage the oil seal lip when installing.

Place the fork slider in a vise with soft jaws or protected by a shop towel. Apply a locking agent to the threads of the socket bolt and screw it in the fork piston.
Tighten the socket bolt to the specified torque.

**TORQUE: 28N·m (2.8kg-m, 20ft-lb)**



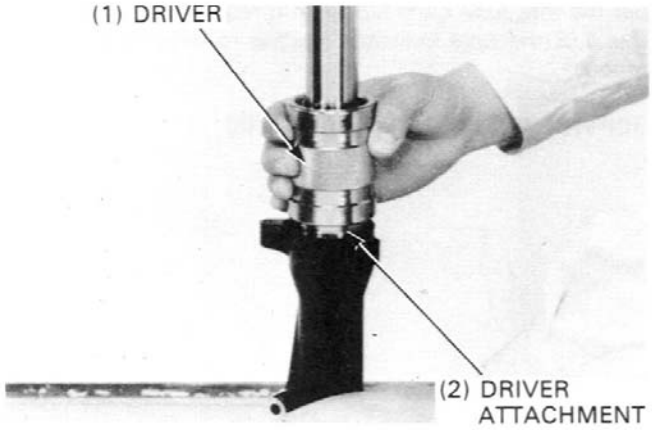

NOTE

- Temporarily install the fork spring and spacer if it is difficult to tighten the socket bolt.

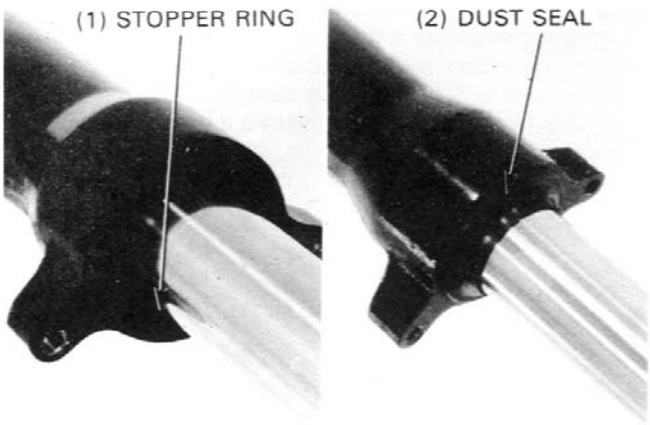
Drive the oil seal into the fork slider with the following tools.

**TOOLS:**

| | |
|---|---|
| Fork seal driver | 07747-0010100 |
| Fork seal driver attachment | 07947-KA20200 |




Install the stopper ring and dust seal.




NOTE

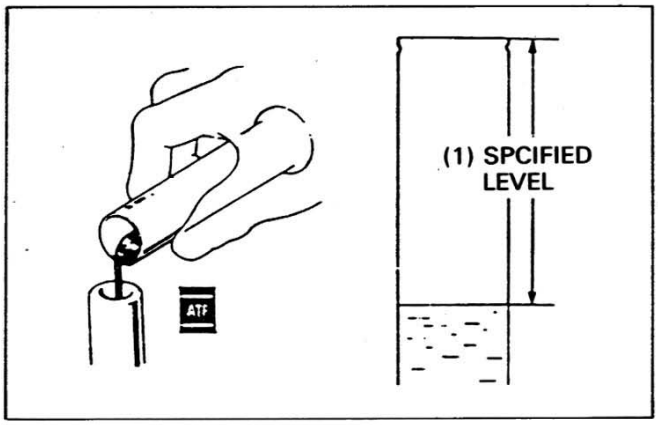
Be careful not to damage the sliding surface of the fork tube.

Fill the fork with ATF.

**CAPACITY: 280 cc (9,4 US oz, 7,8 Imp oz)**

Pump the fork several times.
Compress the fork and measure the ATF level from the top of the tube after the level stabillzed.

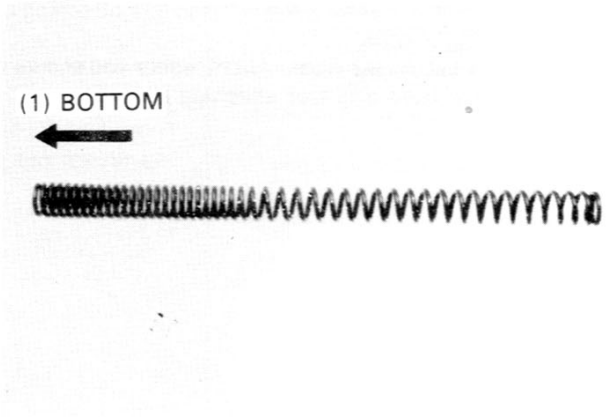
**SPECIFIED LEVEL: 130 mm (5,1 in)**




Install the fork spring and spacer into the fork tube

NOTE

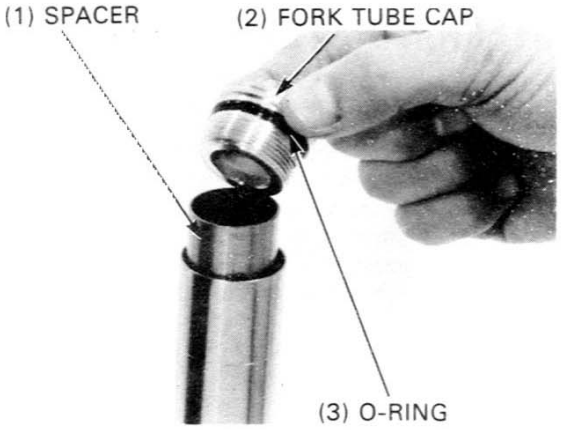
- Noto the spring direction, the closely wound coils must face toward the bottom.




Install the washer and spacer in the fork tube.
Coat a new O-ring with ATF and install it onto the fork tube cap then screw the fork tube cap in the fork tube.

NOTE

- Tighten the fork tube cap after installing the fork legs.




## INSTALLATION

Install the fork legs through the steering stem and steering top bridge and align the groove in the fork tube with the upper sruface of the top bridge.
Tighten the lower fork tube pinch bolts.

**TORQUE:27N·m (2.7kg-m, 20ft-lb)**

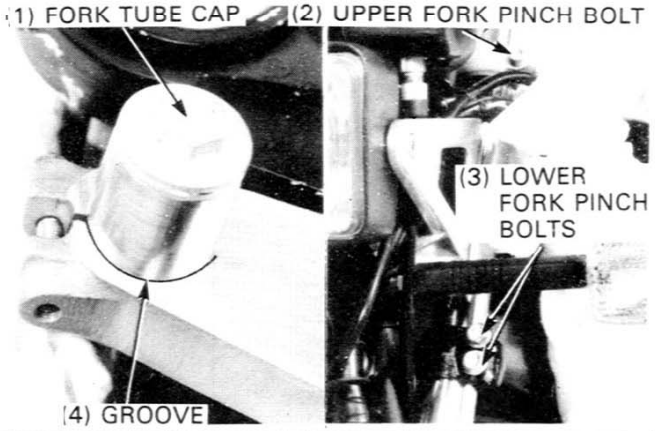
Tighten the upper fork pinch bolts.

**TORQUE:11N·m (1.1kg-m, 8ft-lb)**

Tighten the fork tube cap.

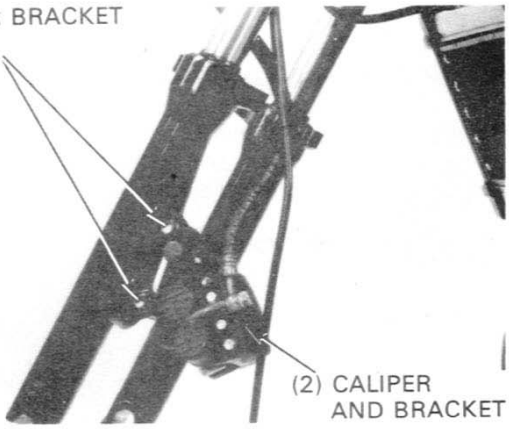
**TORQUE:18N·m (1.8kg-m, 13ft-lb)**

Install the handlebars to the fork tubes (page 11-4).

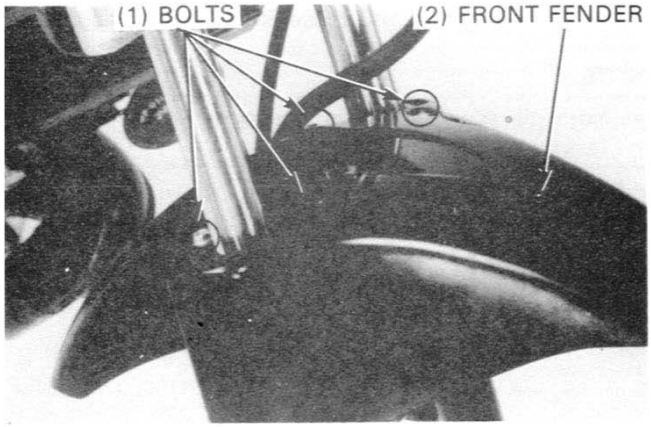


Install the front brake caliber and caliper bracket onto the left fork slider and secure the bracket with the two bolts.

**TORQUE:27N·m (2.7kg-m, 20ft-lb)**



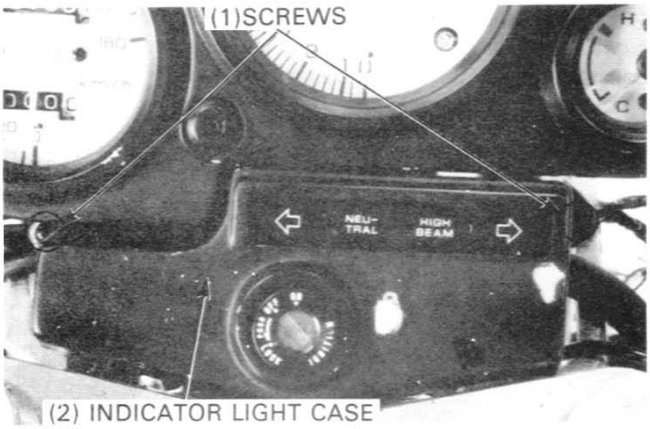

Install the front fender and secure it with the four attaching bolts and two attaching screws.
For "R-Type" install the two parts of front fender and secure with the four attaching bolts and four attaching screws.



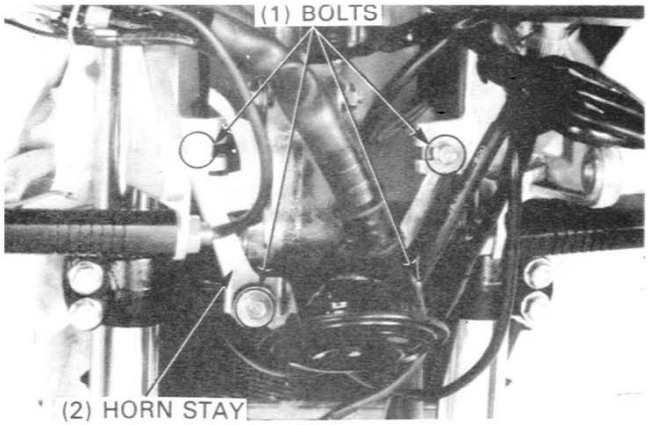

# STEERING STEM

## REMOVAL

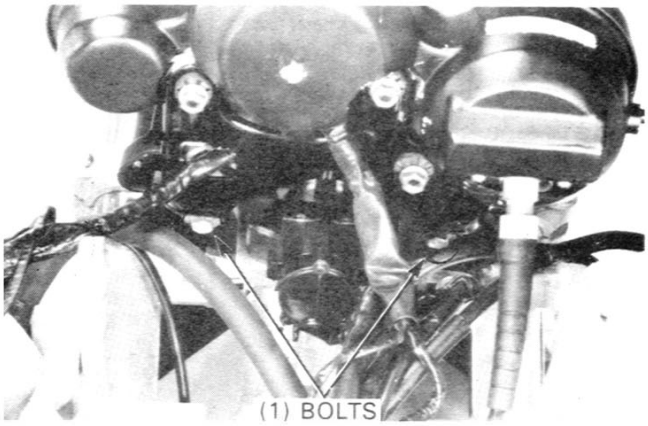
Remove the following:
-for "R-Type" remove the cowls
-headlight case (page 18-2)
-front wheel (page 11-6)
-handlebars (page 11-3)
Remove the two screws and indicator light case.



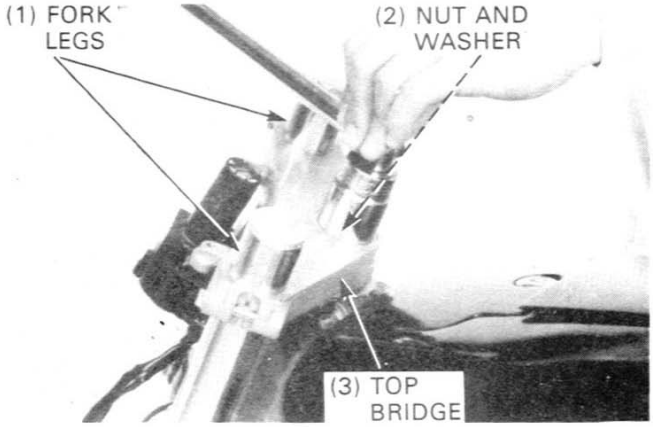

Remove the four bolts and horn stay.



Remove the instruments stay and instruments as an assembly by removing the two bolts.
For "R-Type" remove the stay fairing.

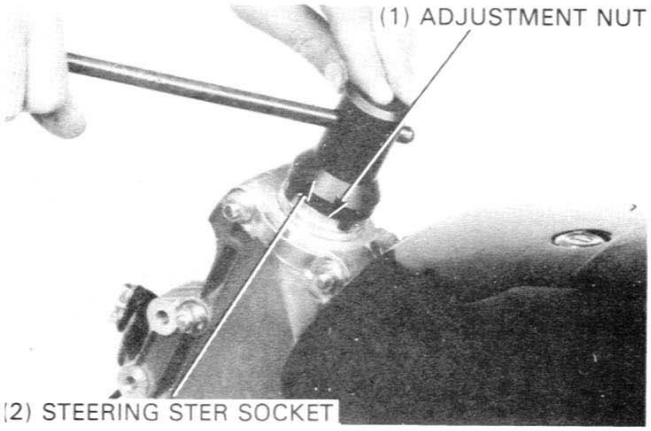



Remove the steering stem nut and washer.
Remove the fork legs (page 11-11) and steering top bridge.




Remove the steering stem nut, holding the steering stem to prevent the stem from falling down.

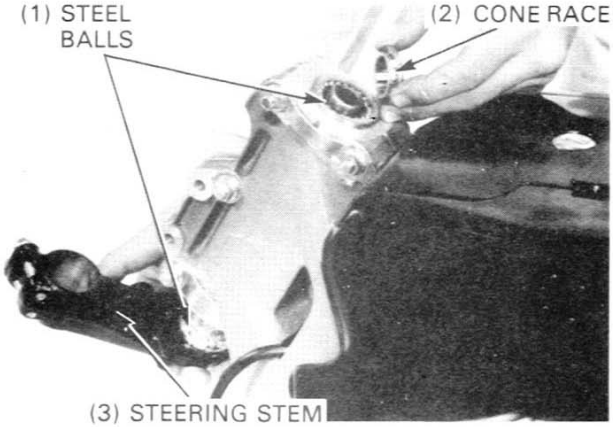
**TOOL:**
**Steering stem socket** **07916-3710100**




Remove the upper beardng inner race, steel balls and steering stem from the head pipe.

**NOTE**

Be careful not to fall down the steel balls.

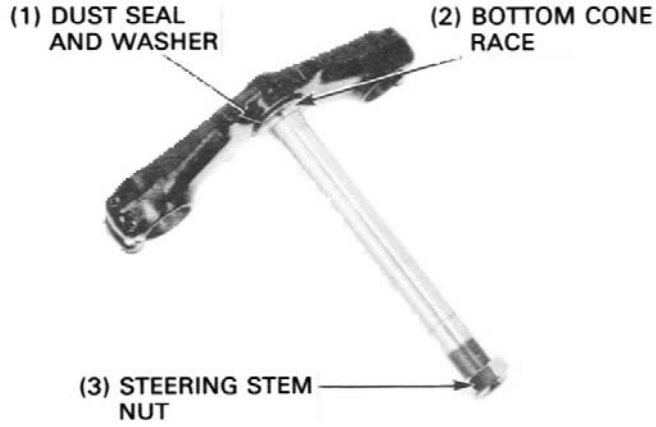


## BEARING RACE REPLACEMENT

NOTE

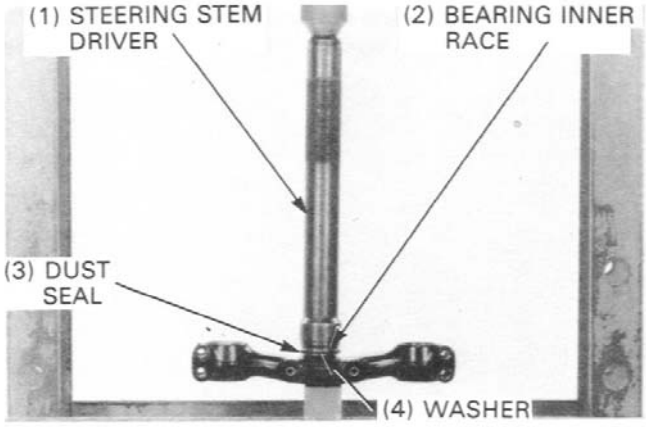
- Always replace the steel balls and races as a set.

Install the stem nut onto the stem to prevent the threads from being damaged when removing the lower beardng inner race from the stem.
Remove the lower learing inner race with a chisel or equivalent tool, being careful not to damage the stem.
Remove the dust seal and washer.



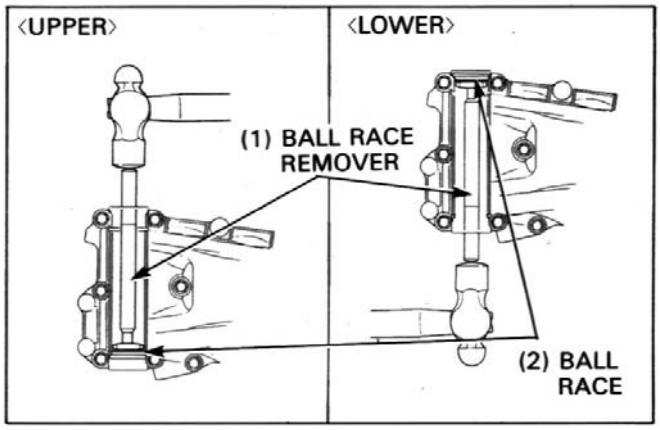

Install the washer and a new dust seal onto the stem.
Press a new lower bearing inner race onto the stem.

**TOOL:**
**Steering setm driver** **07946-GC40000**



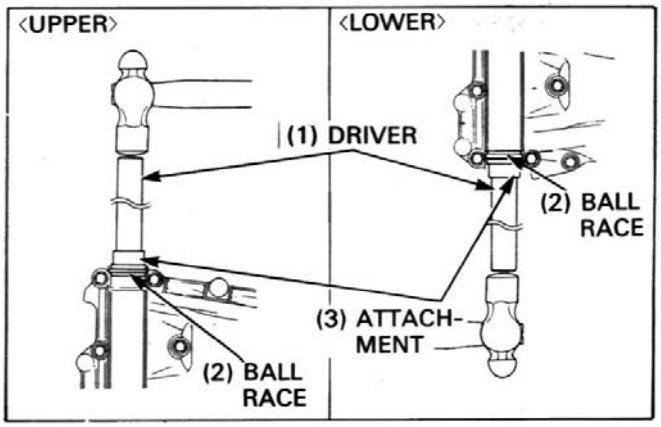

Remove the upper and lower bearing outer races with the ball race remover.

**TOOL:**
**Ball race remover** **07944-1150001**



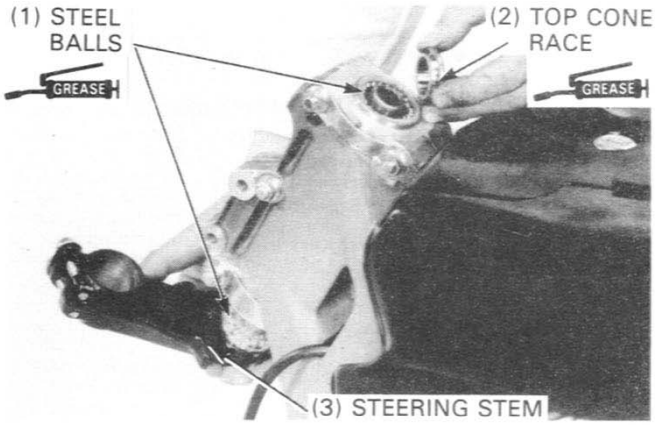

Drive upper and lower bearing outer races into the steering head pipe.

**TOOL:**
**Driver** **07749-0010000**
**Attachment, 37×40 mm** **07746-0010200**



## INSTALLATION

Grease the top and bottom ball races and install the 18 steel balls on each ball race.
Coat the top and bottom cone races with grease.
Insert the steering stem into the steering head pipe and install the top cone race and steering bearing adjustment nut.




Tighten the steering adjustment nut to the first torque.

**TORQUE: 2N·m (0.2kg-m, 1.4ft-lb)**

**TOOL:**

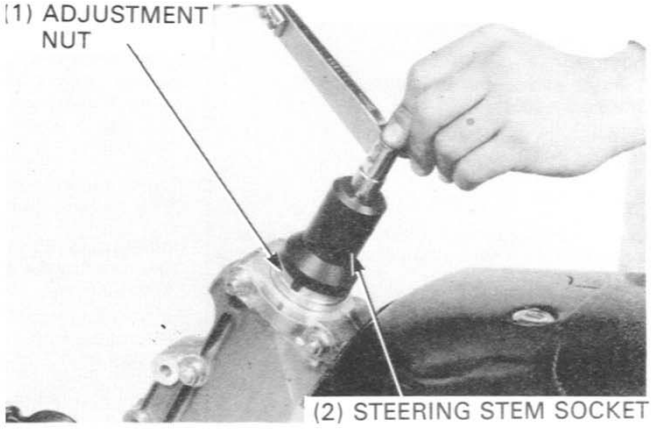
| | |
|---|---|
| **Steering stem socket** | **07916-3710100** |

Rotate the steering stem lock to lock five times to seat the bearings, then loosen the steering bearing adjustment nut.
Retighten the steering bearing adjustment nut to the specified torque.

**TORQUE: 2N·m (0.2kg-m, 1.4ft-lb)**
Check that the steering stem rotates freely and there is no vertical play.

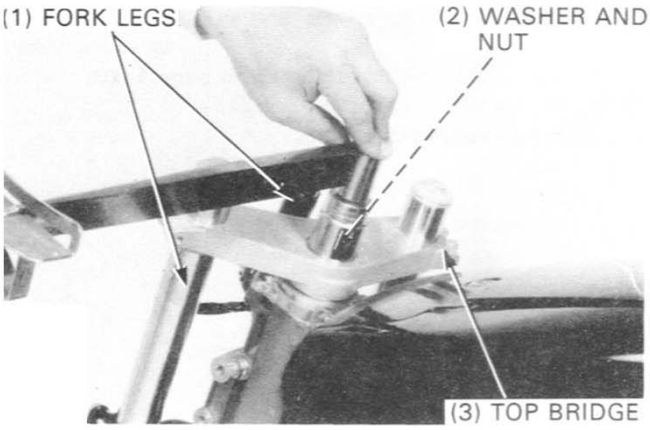
**TOOL:**

| | |
|---|---|
| **Steering stem scoket** | **07916-3710100** |




Install the steering top bridge, washer and stem nut.
Temporarily install the fork legs.
Tighten the steering stem nut.

**TORQUE:70N·m (7.0kg-m, 51ft-lb)**



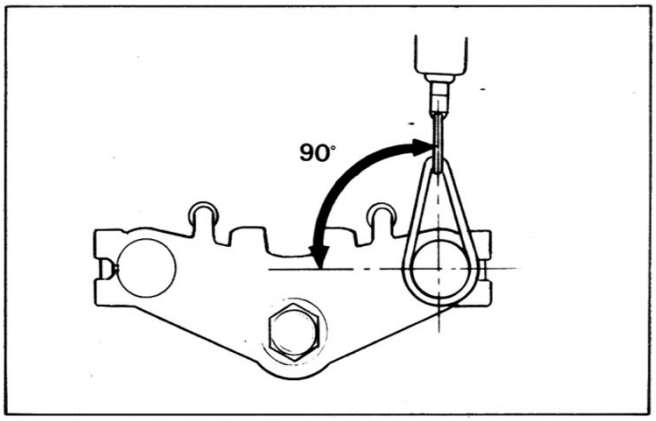

## STEERING HEAD BEARING PRELOAD

Install the fork (page 11-16).
Install the front wheel (page 11-10).
Hold the motorcycle upright and raise the front wheel off the ground.
Position the steering stem to the straight ahead position.
Hook a spring scale to the fork tube and measure the steering head bearing preload.

NOTE

- Make sure that there is no cable or wire harness interfernce.

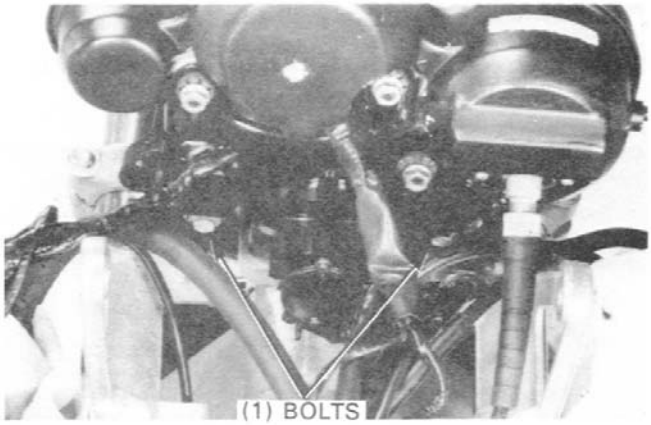
The preload should be within 1.1-1.6kg (2.4-3.5lb) for right and left turns.
If the readings do not fall within the limits, lower the front wheel on the ground and adjust the steering adjustment nut.



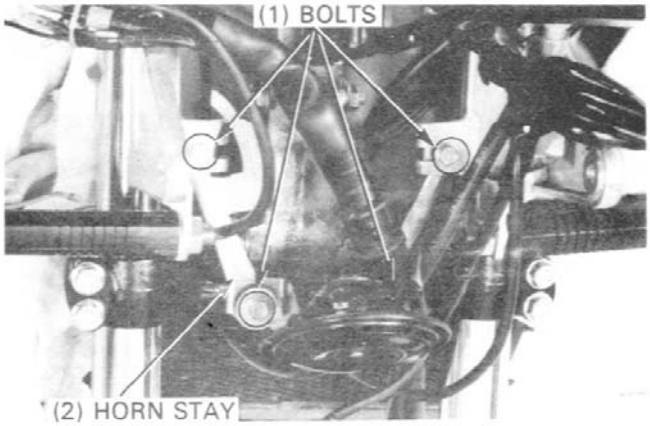
NOTE

- Route the cables and wires properly (page 1-10).

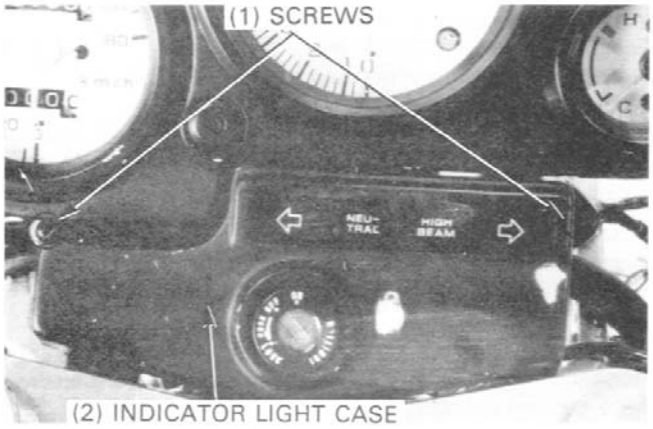
Install the instruments and instruments stay as an assembly and secure the stay with the two bolts.
For "R-Type" install the stay fairing.

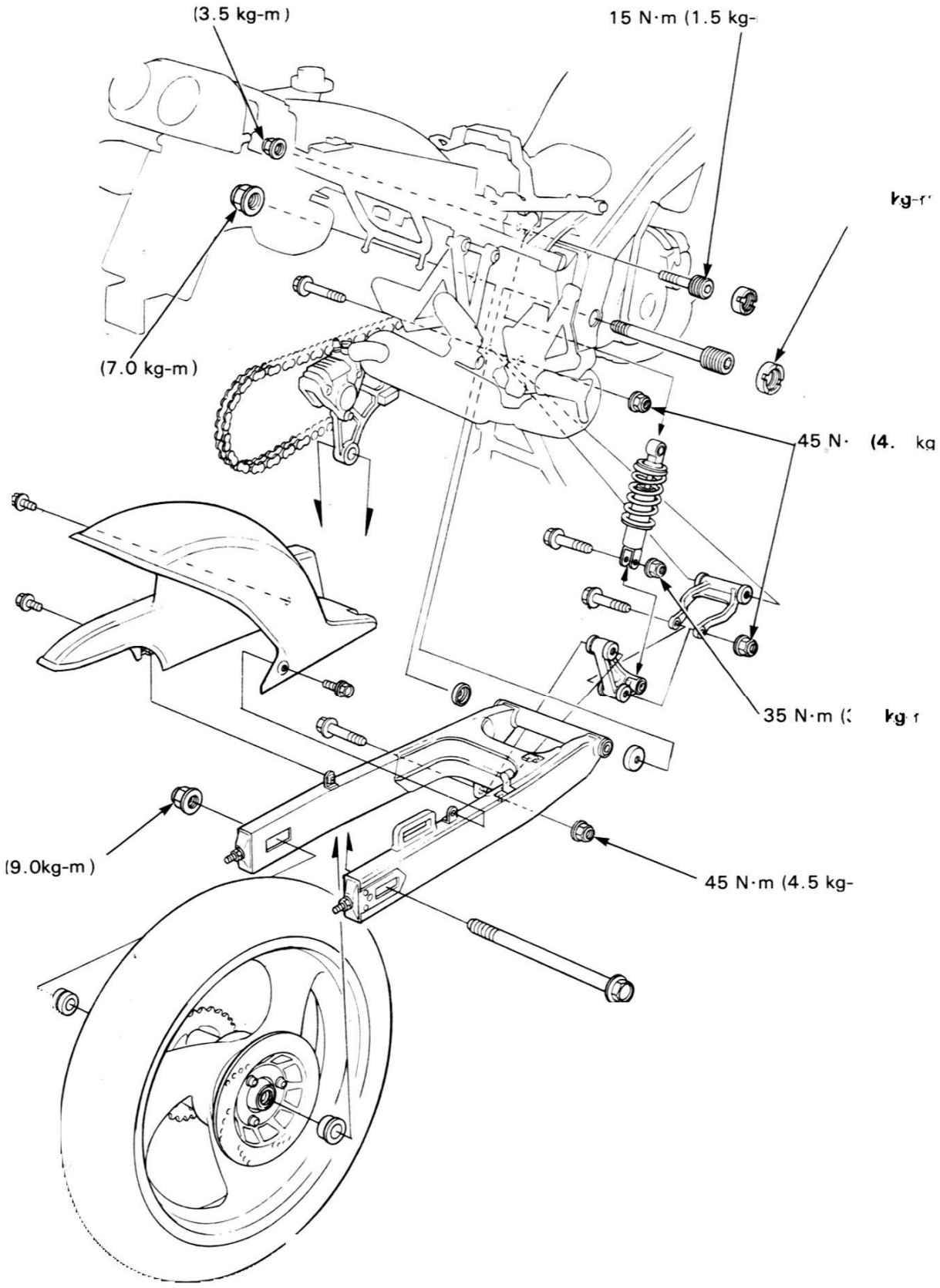



Install the horn stay and secure it with the four bolts.




Install the indicator light case and secure it with the two screws.
Route each cable correctly referring to page 1-10.
Install the headlight case (page 18-2).
For "R-Type" install the cowls.






12

# SERVICE INFORMATION

## GENERAL

⚠ WARNING

*The rear shock absorber contains nitrogen gas under high pressure. Do not allow flames or heat near the shock absorber.*
*Before disposal of the shock absorber, release the nitrogen gas (see page 12-9).*

## SPECIFICATIONS

unit : mm (in)

| ITEM | | STANDARD | SERVICE LIMIT |
|---|---|---|---|
| Axle runout | | – | 0.2 (0.008) |
| Rear wheel rim runout | Radial | – | 2.0 (0.08) |
| | Axial | – | 2.0 (0.08) |
| Shock absorber spring free length | | 145 (5,7) | |
| Rear suspension dumper compression | | 34 kg (74,8 lb) | |

## TORQUE VALUES

| | | |
|---|---|---|
| Wheel flange bolt | 15 N·m (1.5 kg-m, 11 ft-lb) | Apply a locking agent to the threads |
| Brake disc bolt | 33 N·m (3.3 kg-m, 24 ft-lb) | |
| Driven sprocket nut | 45 N·m (4.5 kg-m, 33 ft-lb) | |
| Rear axle nut | 90 N·m (9.0 kg-m, 65 ft-lb) | |
| Shock absorber upper mounting bolt | 15 N·m (1.5 kg-m, 11 ft-lb) | |
| Shock absorber upper mounting bolt lock nut | 35 N·m (3.5 kg-m, 25 ft-lb) | |
| Shock absorber upper mounting nut | 35 N·m (3.5 kg-m, 25 ft-lb) | |
| Shock absorber lower mounting bolt | 35 N·m (3.5 kg-m, 25 ft-lb) | |
| Shock arm-to-swing arm nut | 45 N·m (4.5 kg-m, 33 ft-lb) | |
| Shock link-to-frame nut | 45 N·m (4.5 kg-m, 33 ft-lb) | |
| Shock arm-to-shock link nut | 45 N·m (4.5 kg-m, 33 ft-lb) | |
| Drive chain slider screw | 9 N·m (0.9 kg-m, 6.5 ft-lb) | |
| Swing arm pivot bolt lock nut | 70 N·m (7.0 kg-m, 51 ft-lb) | |
| Swing arm pivot nut | 70 N·m (7.0 kg-m, 51 ft-lb) | |
| Swing arm pirot bolt | 15 N·m (1.5 kg-m, 11 ft-lb) | |

## TOOLS

**Special**

| | |
|---|---|
| Shock absorber spring compressor | 07967–KC10000 |
| Lock nut wrench | 07JMA–KY40100 |
| Bearing remover, 20 mm | 07936–3710001 |
| Remover handle | 07936–3710100 |
| Remover sliding weight | 07741–0010201 |

**Common**

| | |
|---|---|
| Driver | 07749–0010000 |
| Attachment, 32×35 mm | 07746–0010100 |
| Attachment, 37×40 mm | 07746–0010200 |
| Pilot, 17 mm | 07746–0040400 |
| Pilot, 20 mm | 07746–0040500 |

# TROUBLESHOOTING

**Oscillation**
- Bent rim
- Loose wheel bearings
- Faulty tire
- Loose axle
- Incorrect fire pressure
- Worn swing arm pivot bushings
- Incorrect tire pressure

**Soft suspension**
- Weak shock absorber spring
- Faulty damper

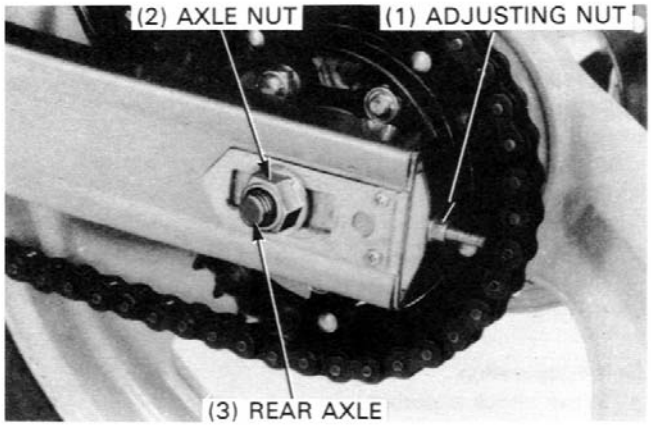
**Hard suspension**
- Faulty damper
- Bent damper rod

**Suspension noise**
- Binding shock case
- Loose fasteners

# REAR WHEEL

## REMOVAL

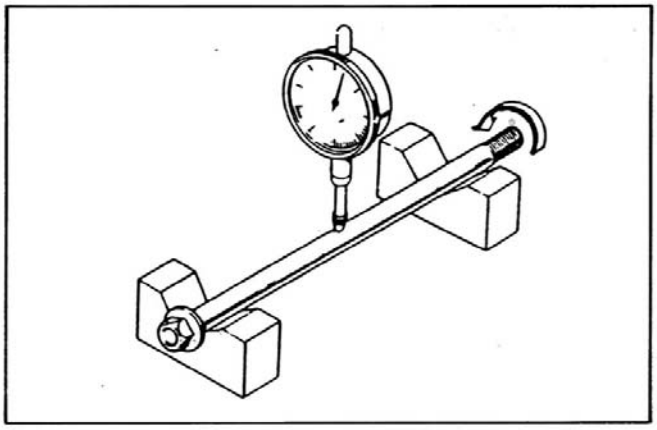
Support the motorcycle on its center stand on level ground
Loosen the drive chain adjusting nuts all the way.
Detach the drive chain from the driven sprocket by pushing the rear wheel forward after loosening the rear axle nut.
Remove the axle nut, axle and rear wheel.




## INSPECTION

Set the axle on V-blocks and read the axle runout with a dial indicator. The actual axle runout is 1/2 of the total indicator reading.

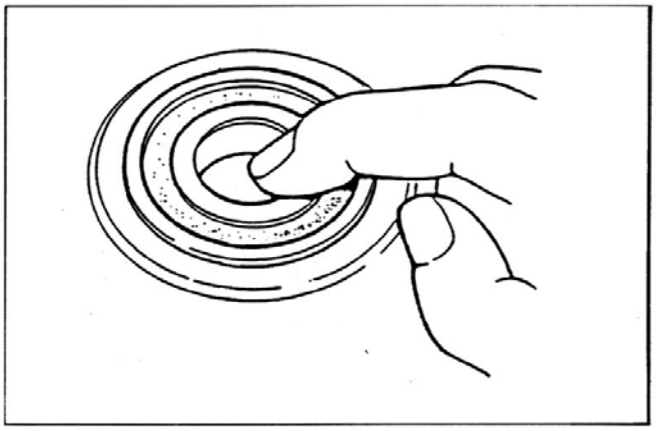
**SERVICE LIMIT: 0.2mm (0.008 in)**



Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the hub.
Remove and discard the bearings if the races do not turn smoothly, quietly, or if they fit loosely in the hub.

NOTE

- Replace nub bearings in pairs.

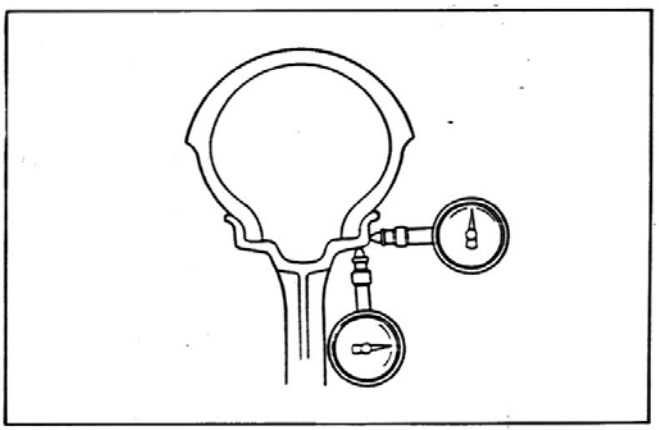


Check the rim for runout by placing the wheel in a truing stand.
Spin the wheel slowly, and read the runout using a dial indicator.

**SERVICE LIMITS:**

| | |
|---|---|
| **Radial:** | **2.0 mm (0.08 in)** |
| **Axial:** | **2.0 mm (0.08 in)** |

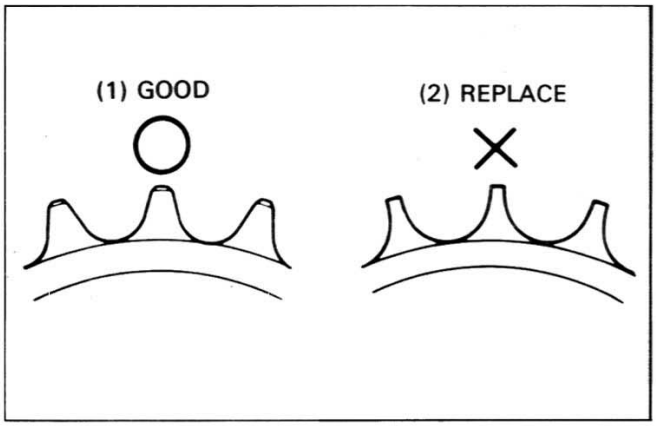
The wheel cannot be serviced and must be replaced if the above limits are exceeded.



Check the condition of the final driven sprocket teeth. Replace the sprocket if it is worn or damaged.

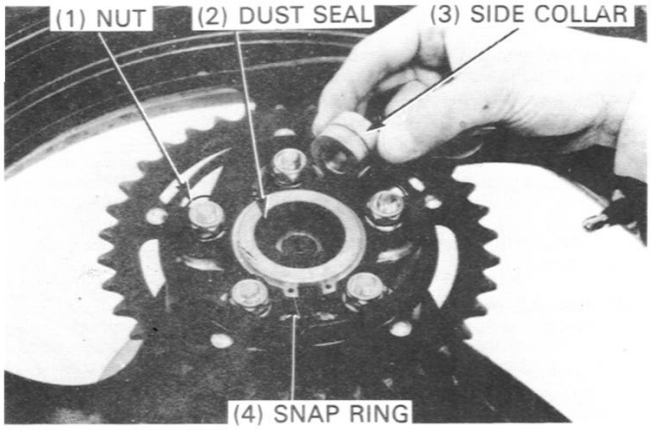
NOTE

If the final driven sprocket requires replacement, inspect the drive chain and drive sprocket.

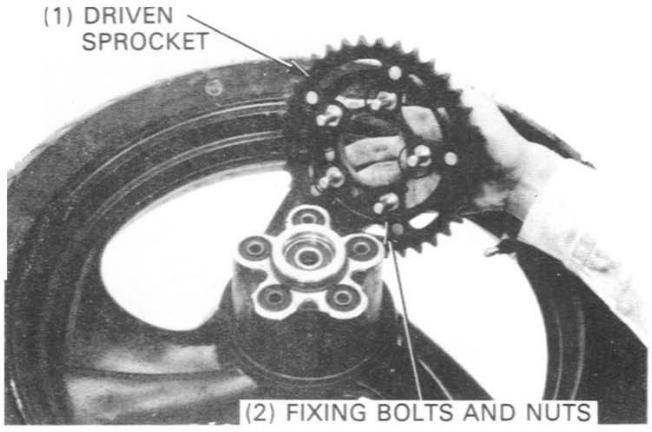



## DISASSEMBLY

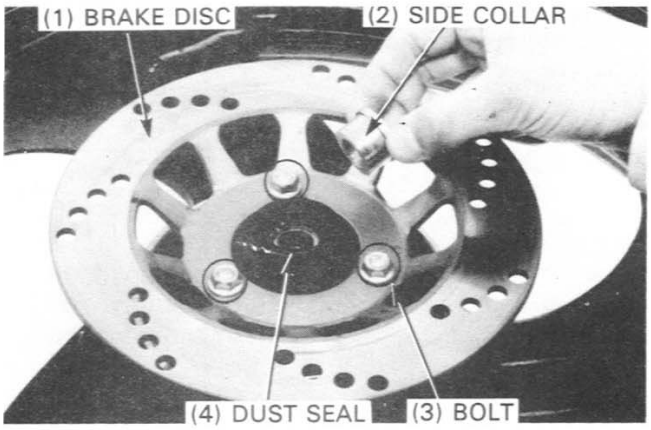
Remove the left side collar and dust seal.
When replacing the driven sprocket, loosen the driven sprocket nuts and remove the snap ring.



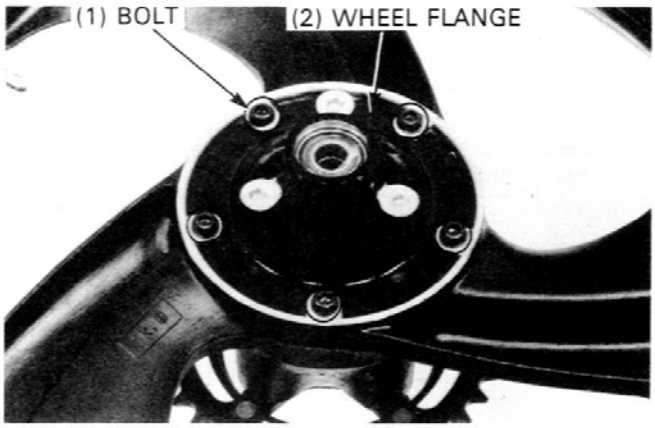

Remove the driven sprocket and remove the driven sprocket fixing bolts and nuts from the driven sprocket.




Remove the right side collar and dust seal.
Remove the three bolts and rear brake disc.



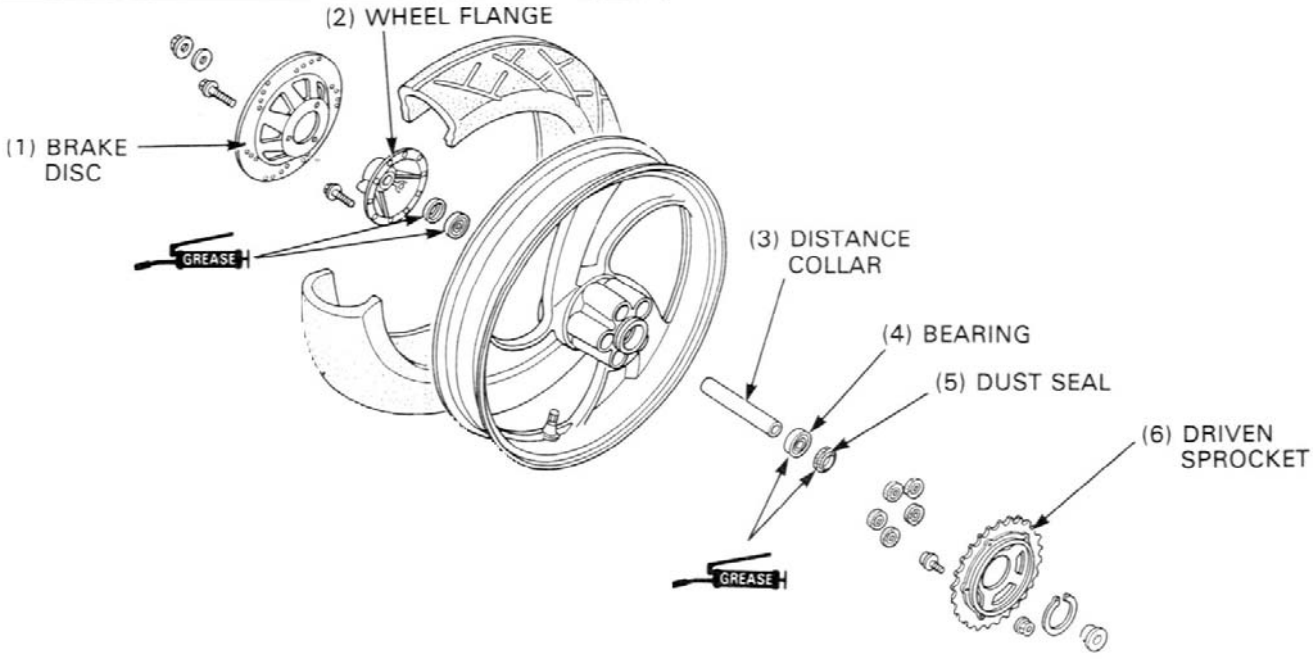
Remove the five bolts, rear wheel flange and distance collar. Drive out the wheel bearings if necessary.




## ASSEMBLY

**⚠ WARNING**

- ***Do not get grease on the brake disc or stopping power will be reduced.***



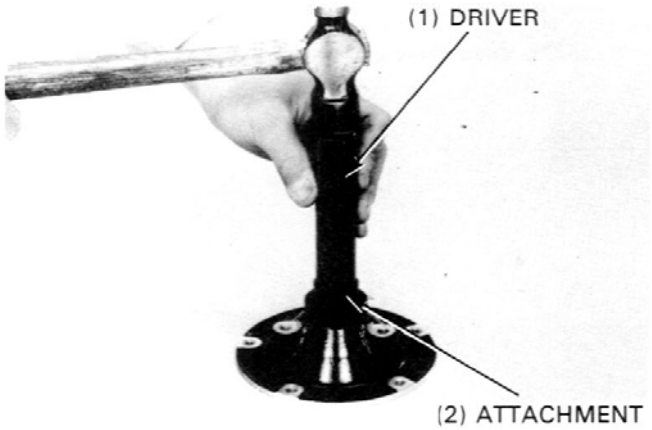

Pack all bearing cavities of a new wheel bearing with grease. Drive a new bearing into the wheel flange with the sealed end facing out.

NOTE

- Drive in the bearing sguarely to the wheel flange.

**TOOLS:**

| | |
|---|---|
| **Driver** | **07749-0010000** |
| **Attachment, 32×35mm** | **07746-0010100** |
| **Pilot, 17mm** | **07746-0040400** |



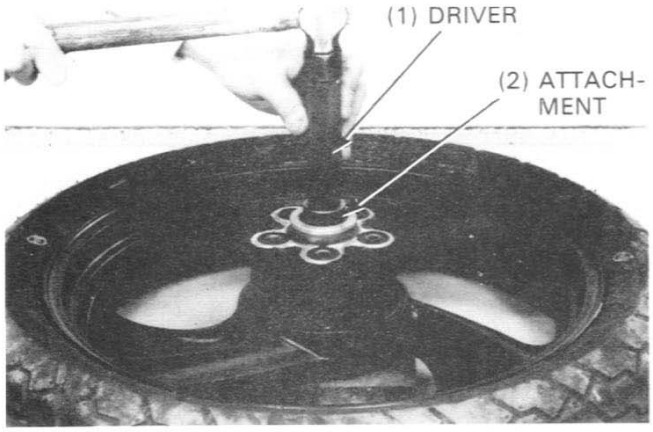
Place the rear wheel on a wooden block as shown.
Pack all cavities of a new wheel bearing with grease.
Drive a new wheel bearing into the wheel hub with the sealed and facing out.

NOTE

- Drive in the bearing squarely to the wheel hub.

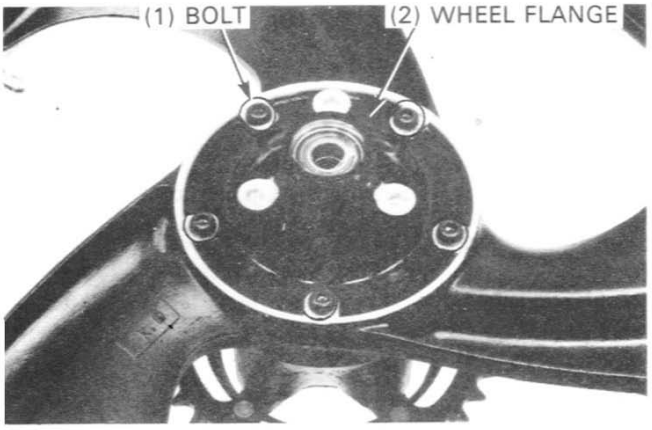
**TOOLS:**

| | |
|---|---|
| **Driver** | **07749-0010000** |
| **Attachment, 37×40mm** | **07746-0010200** |
| **Pilot, 17mm** | **07746-0040400** |




Set the distance collar on the left wheel bearing inner race.
Clean the hub and wheel flange bolt threads. Apply locking agent to the bolt threads.
Install the wheel flange and secure it with the five bolts.

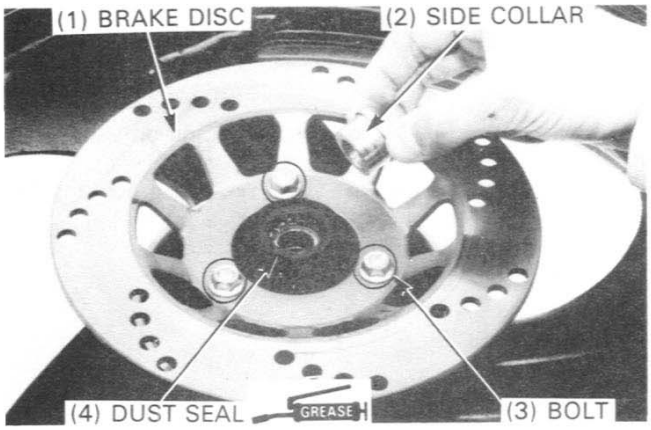
**TORQUE: 15N·m (1.5kg-m, 11ft-lb)**



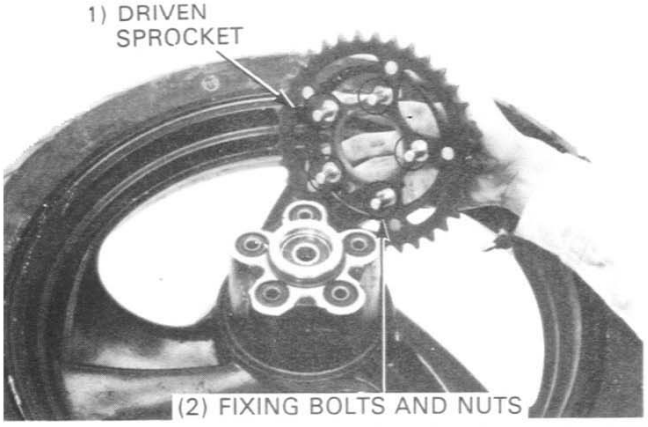

Install the brake disc and secure it with the three bolts.

**TORQUE: 33N·m (3.3kg-m, 24ft-lb)**

Apply grease to a new dust seal lip and install the dust seal and right side collar.



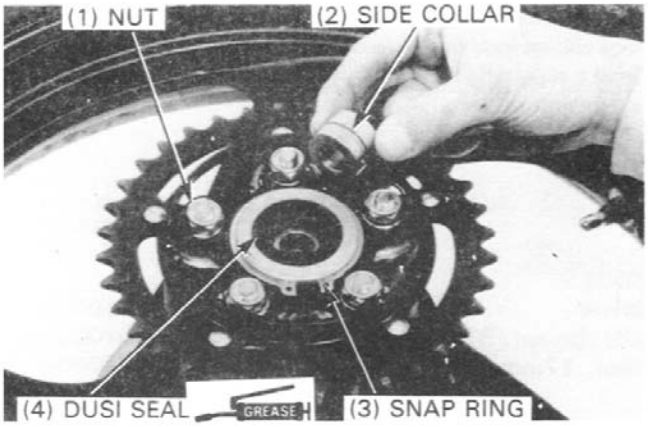

If the driven sprocket was removed, temporally install the driven sprocket fixing bolts and nuts to the sprocket.
Install the driven sprocket by inserting the fixing bolts in the wheel rubber bushing.



Install the snap ring in the groove in the wheel hub with its chamfered surface side facing outside.
Tighten the driven sprocket nuts.

**TORQUE:45N·m (4.5kg-m, 33ft-lb)**

Apply grease to a new dust seal lip and install the dust seal and left side collar to the wheel hub.




### INSTALLATION

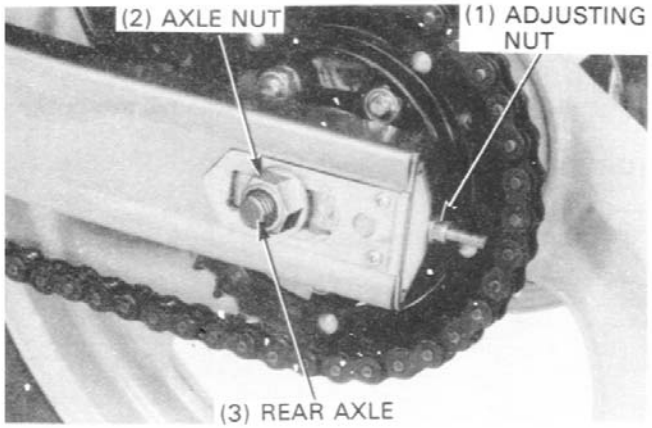
Position the rear wheel between the swing arm inserting the brake disc between the brake pads.

NOTE

- Be careful not to damage the brake pads with the disc.

Rail the drive chain over the driven sprocket.
From the left side, insert the rear axle through the swing arm and wheel and adjust the drive chain slack by turning the adjusting nuts (page 3-9).
Install and tighten the rear axle nut.

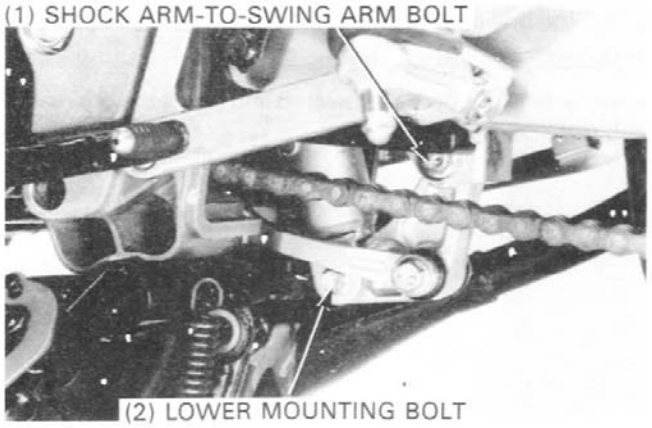
**TORQUE:90N·m (9.0kg-m, 65ft-lb)**




# SHOCK ABSORBER

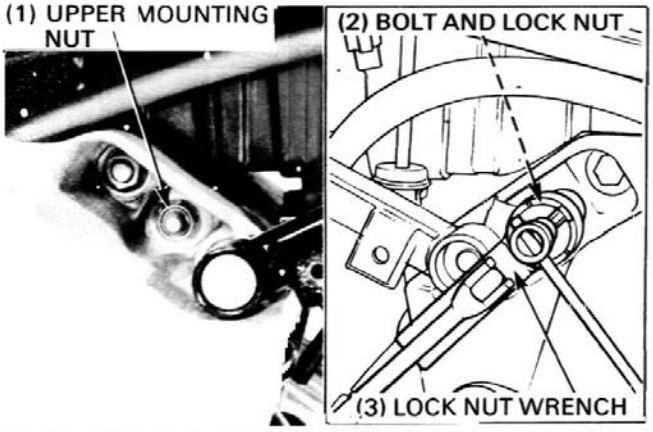
### REMOVAL

Support the motorcycle on its center stand on level ground
Remove the right and left fairings (page 4-3).
Remove the shock absorber lower mounting bolt and shock arm-to-swing arm bolt.




Remove the shock absorber upper mounting nut.
Remove the shock absorber upper mounting bolt lock nut and bolt.

**TOOL:**
**Lock nut wrench** **07JMA-KY40100**

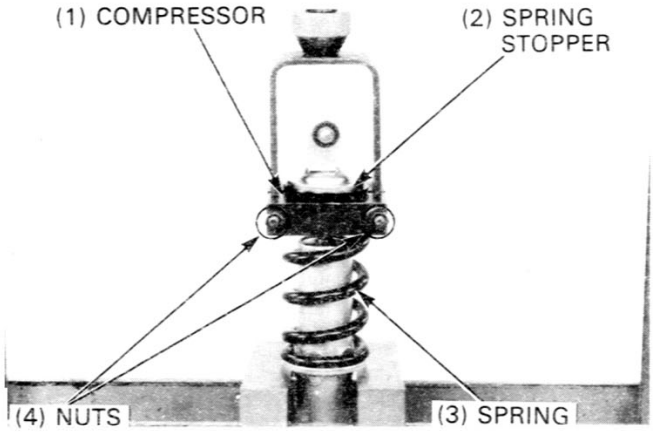


## DISASSEMBLY

Set the shock absorber compressor onto the shock absorber spring and tighten the setting nuts.

**TOOL:**
**Shock absorber compressor 07967-KC10000**

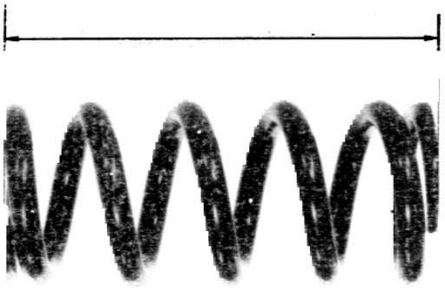
Remove the spring stopper and spring by compressing the shock absober spring with a hydraulic press.




## INSPECTION

Measure the shock absorber spring free length.

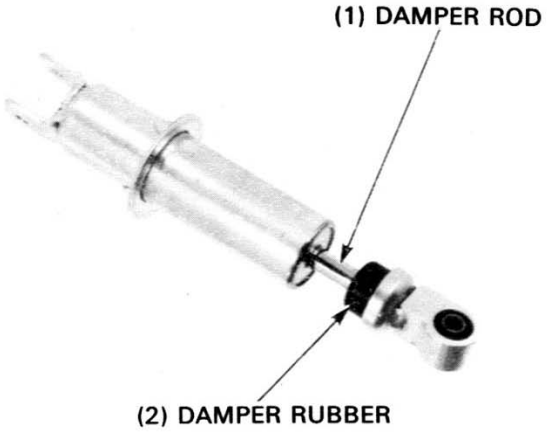
**STANDARD: 145 mm (5,7 in)**



Inspect the shock absorber for damage or fluid leakage. Check the damper rod and rubber for bend, scores or damage.

NOTE

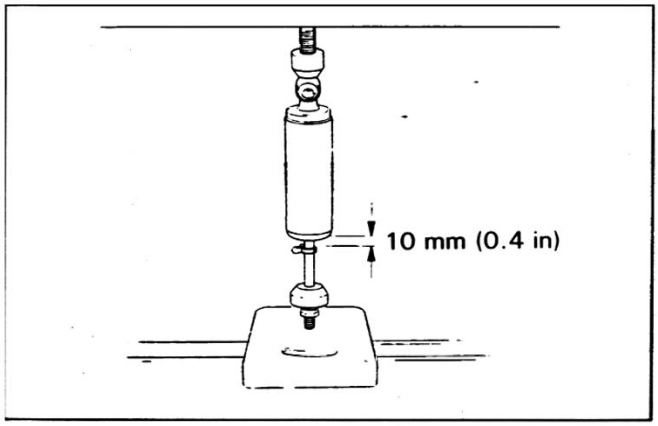
- Do not disassemble the shock absorber.




Mark the damper rod at 10mm below the case as shown. Place the damper rod on a scale and measure the force required to compress the damper to the mark.

**COMPRESSION FORCE: 34 kg (74,8 lb)**

If the force required is less than 34 kg (74,8 lb), gas is leaking. Examine the damper rod and replace the damper unit if it is bent or scored.



## SHOCK ABSORBER DISPOSAL PROCEDURE

**⚠ WARNING**

- ***The shock absorber contains nitrogen gas and oil under high pressure. Be attention during the following operation.***
- ***Do not smoke or allow flames or sparks; do not drill or punch the shock absorber.***
- ***Always wear eye protection to avoid getting metal shavings in your eyes when the gas pressure is released.***

Remove the shock absorber spring (page 12-8).
Put the shock absorber into a vice.
Remove the screw for to allow gas pressure released.

**⚠ WARNING**

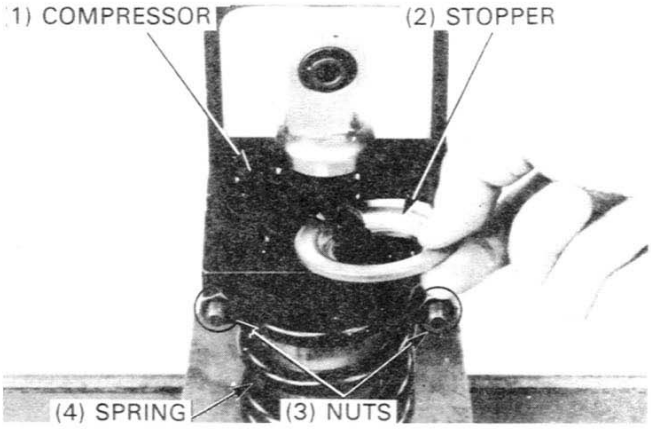
- ***Cover the screw and the screw driver with a shop towel during this operation.***

## ASSEMBLY

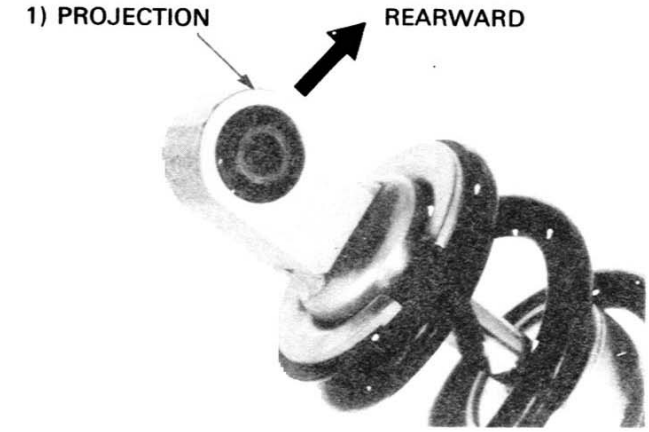
Install the shock absorber spring over the damper.
Install the shock absorber spring compressor onto the spring and tighten the setting bolts.

**TOOL:**
**Shock absorber spring compressor 07967-KC10000**

Compress the spring with a hydralulic press and install the spring stopper.
Release the hydraulic press gradually so that the upper mount seats on the spring stopper.




Install the shock absorber to the frame so the side or the upper mount with the projection faces rearward.




Install the shock absorber upper mounting bolt from the right side and tighten it.

**TORQUE: 15 N·m (1.5kg-m, 11ft-lb)**

Install and tighten the shock absorber upper mounting bolt lock nut using the lock nut wrench while holding the bolt as shown.

**TOOL:**
**Lock nut wrench 07JMA-KY40100**

**TORQUE: 35N·m (3.5kg-m, 25ft-lb)**

Install and tighten the shock absorber upper mounting nut.

**TORQUE: 35N·m (3.5kg-m, 25ft-lb)**

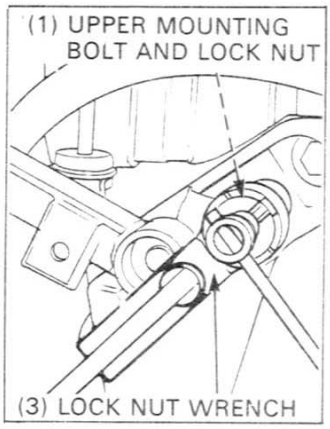
Install and tighten the shock absorber lower mounting bolt.

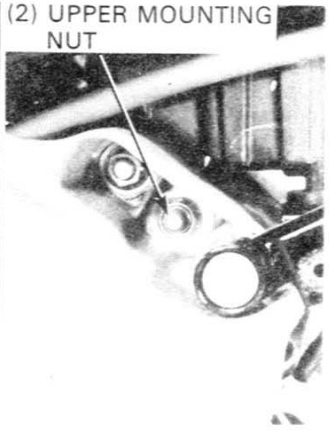
**TORQUE:35N·m (3.5kg-m, 25ft-lb)**

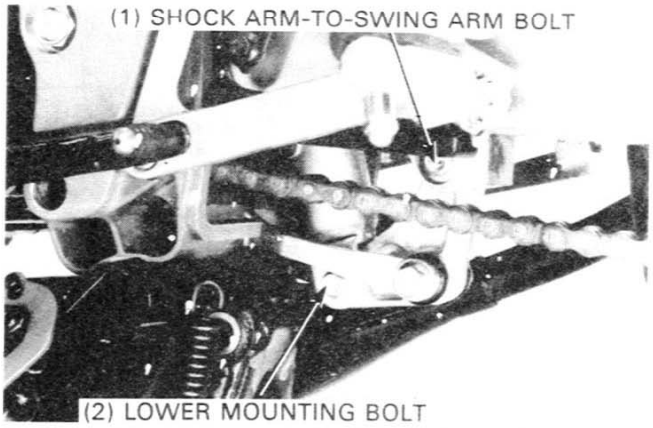
Install the shock arm-to-swing arm bolt and tighten the nut.

**TORQUE:45N·m (4.5kg-m, 33ft-lb)**

Install the right and left fairings (page 4-3).

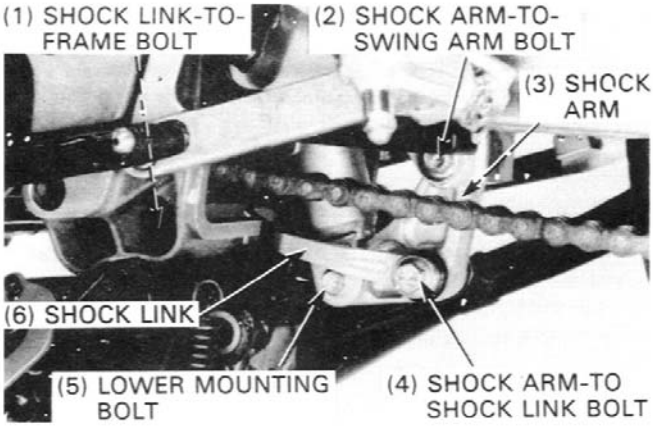


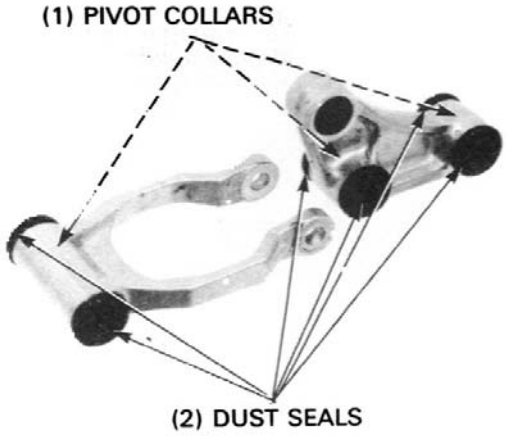



# SHOCK LINKAGE

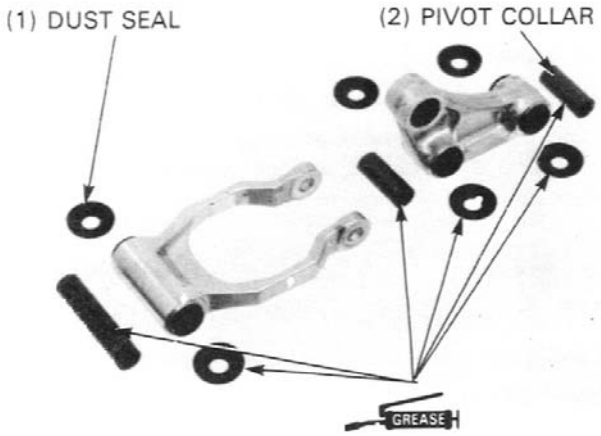
Support the motorcycle on its center stand on level ground.
Remove the follows:
- shock link-to-frame bolt
- shock arm-to-shock link bolt
- shock link
- shock absorber lower mounting bolt
- shock arm-to-swing arm bolt
- shock arm




Remove the dust seals and pivot collars from the shock link and arm.




Check the pivot bushings for wear or damage and replace if necessary.
Grease the pivot collars and dust seal lips.
Install the pivot collars into the shock link and arm pivots and install the dust seals onto the pivots.



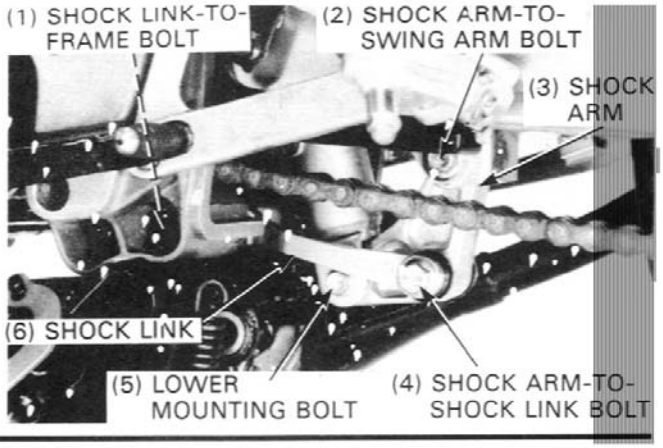

Install the shock arm, shock link and each bolt.

NOTE

- Insert all the shock linkage bolts from the left side.

Tighten the follows to specified torque:

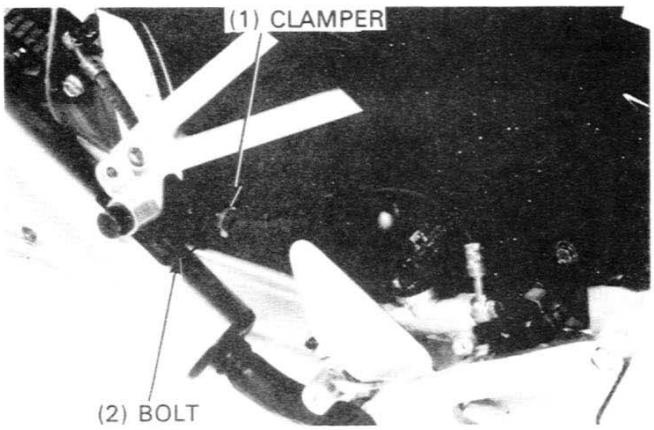
| | |
|---|---|
| shock link-to-frame nut: | 45N·m (4.5kg-m, 33ft-lb) |
| shock arm-to-shock link nut: | 45N·m (4.5kg-m, 33ft-lb) |
| shock arm-to-swing arm nut: | 45N·m (4.5kg-m, 33ft-lb) |
| shock absorber lower mounting bolt: | 35N·m (3.5kg-m, 25ft-lb) |



# SWING ARM

## REMOVAL

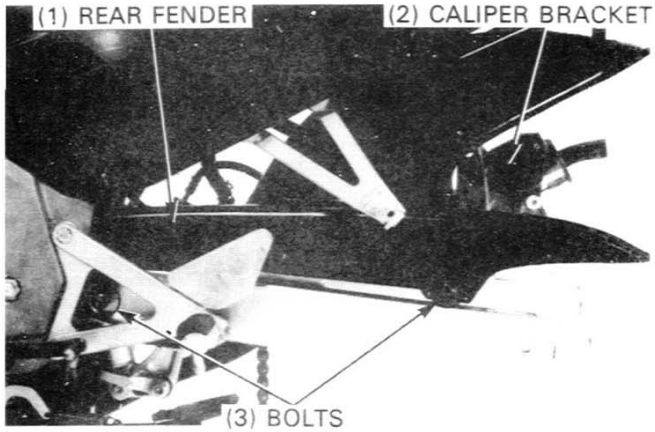
Remove the rear wheel (page 2-3).
Release the brake hose from the clamper on the rear fender.
Remove the rear fender bolt.



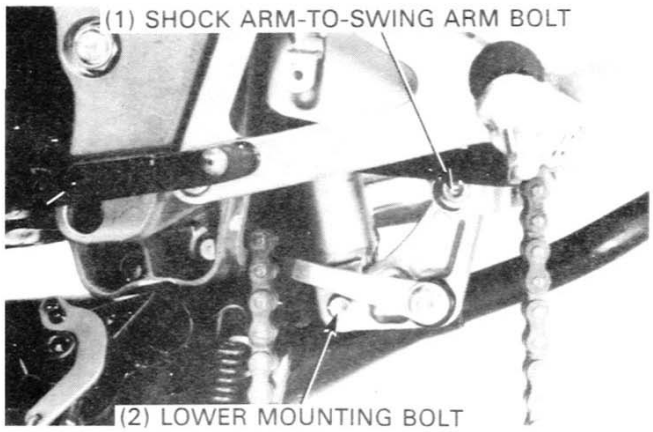

Remove the remaining two rear fender bolts and rear fender.
Detach the rear brake caliper bracket and hang it to the sub frame with a string.

NOTE

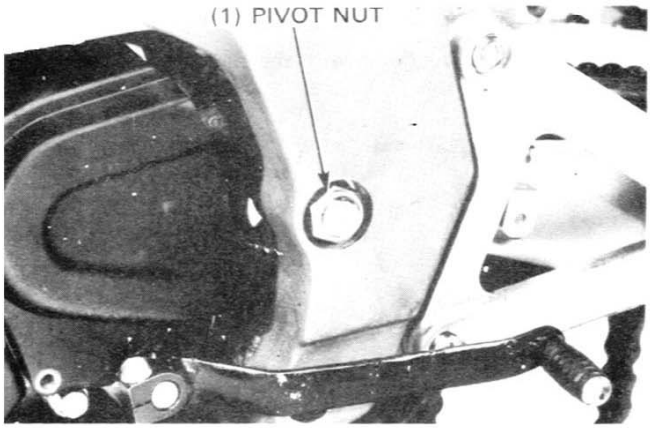
- Do not hang the brake caliper with the brake hose.




Remove the shock arm-to-swing arm bolt and shock absorber lower mounting bolt.

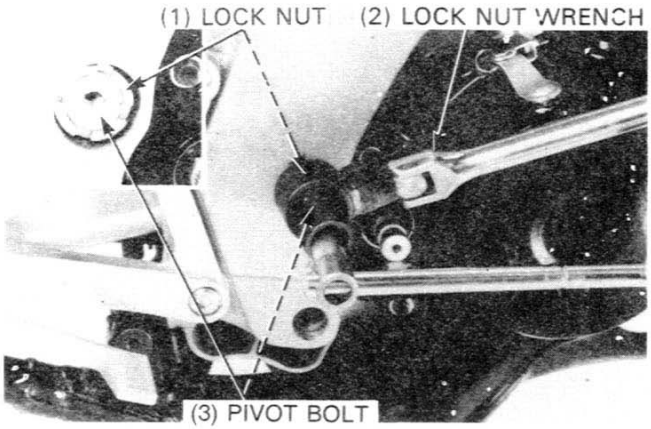



Remove the swing arm pivot nut.

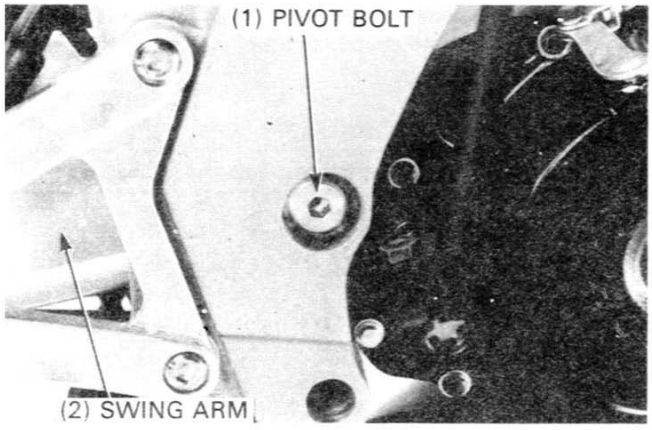


Remove the lock nut while holding the swing arm pivot bolt as shown.

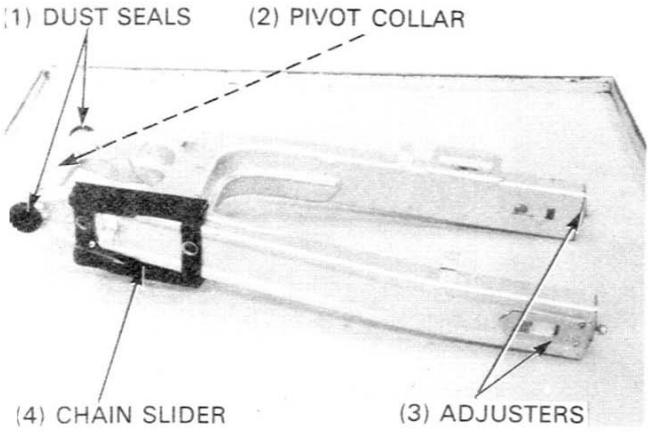
**TOOL:**
**Lock nut wrench** **07JMA-KY40100**




Remove the pivot bolt and swing arm.




Remove the following parts from the swing arm:
- dust seals
- pivot collar
- drive chain slider
- drive chain adjusters

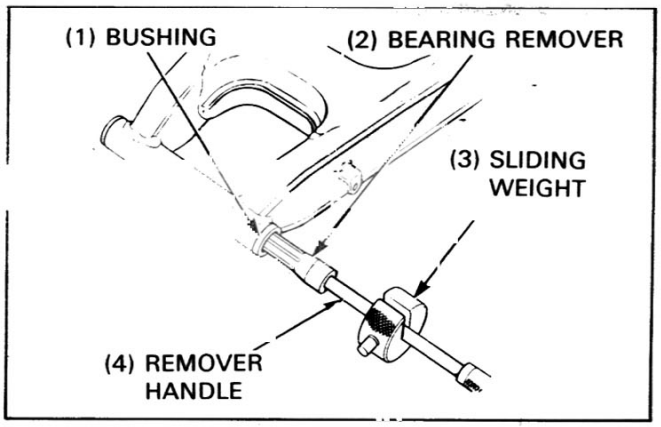



## PIVOT BUSHING REPLACEMENT

Remove the pivot bushings with the bearing remover.

**TOOLS:**

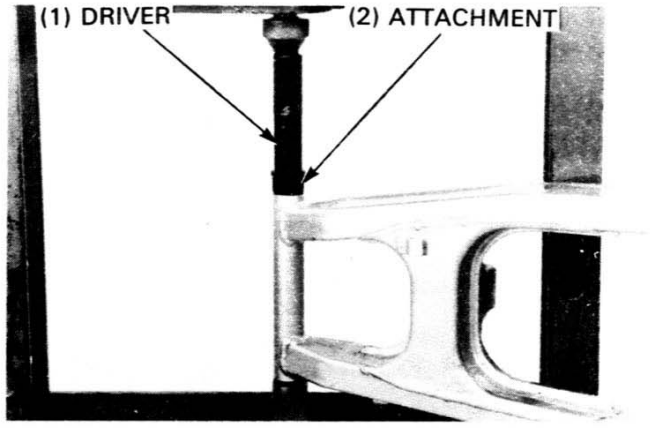
| | |
|---|---|
| **Bearing remover, 20mm** | **07936-3710001** |
| **Remover handle** | **07936-3710100** |
| **Remover sliding weight** | **07741-0010201** |



Press new pivot bushings in the swing arm pivot with a hydraulic press.

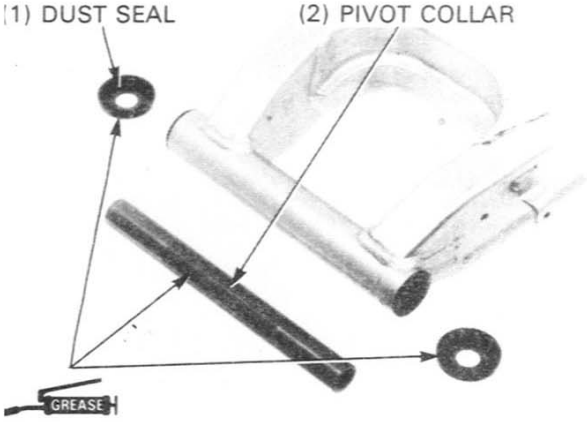
**TOOLS:**

| | |
|---|---|
| **Driver** | **07749-0010000** |
| **Attachment, 32×35mm** | **07746-0010100** |
| **Pilot, 20mm** | **07746-0040500** |




## INSTALLATION

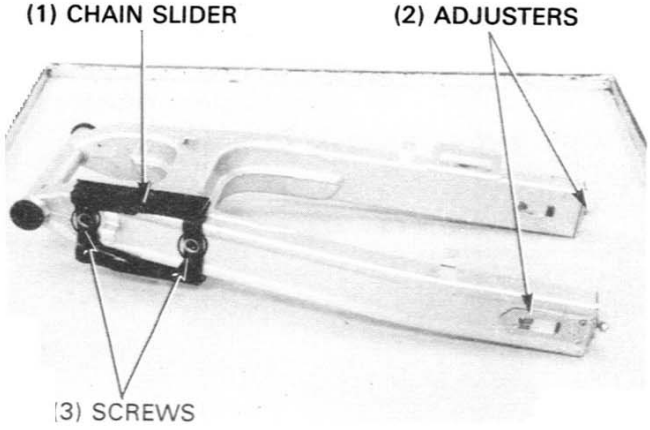
Apply grease to the pivot bushings, collar and dust seal lips. Install the pivot collar into the swing arm pivot and install the dust seals onto the pivot bushings.




Check the drive chain slider for wear or damage and replace it with a new one if necessary.
Install the chain slider onto the swing arm and tighten the screws.

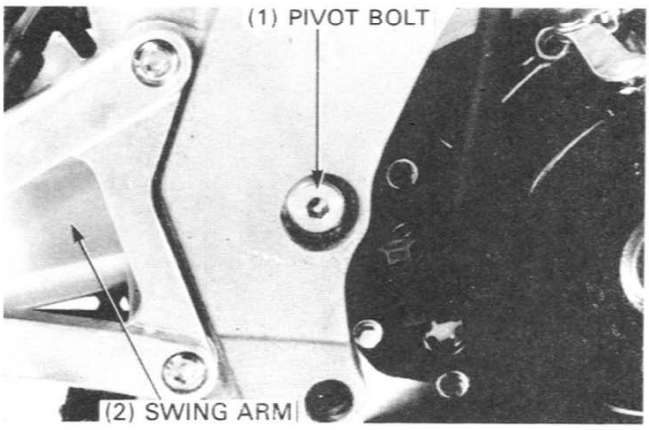
**TORQUE: 9 N·m (0.9 kg-m, 6.5ft-lb)**

Install the drive chain adjusters and secure them with screws.




Install the swing arm to the frame and insert the swing arm pivot bolt through the frame and swing arm from the right-side.
Tighten the pivot bolt.

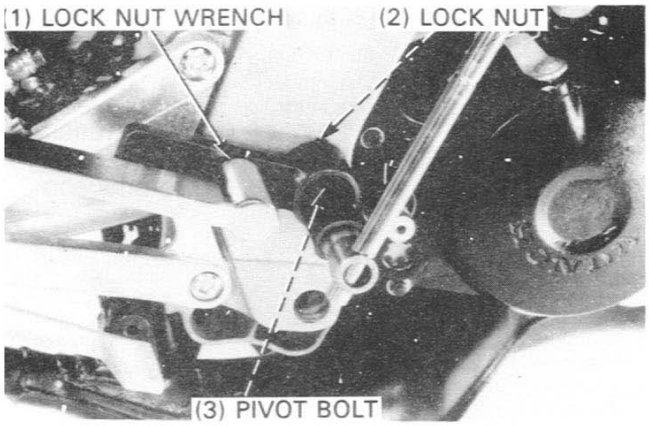
**TORQUE: 15 N·m (1.5 kg-m, 11ft-lb)**



Install and tighten the swing arm pivot lock nut while holding the pivot bolt as shown.

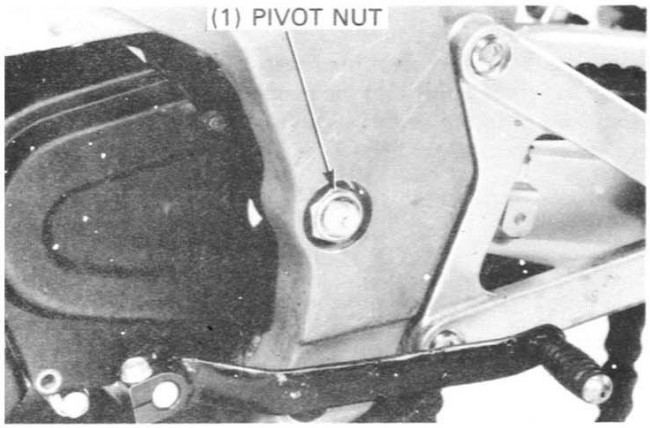
**TORQUE:70N·m (7.0kg-m, 51ft-lb)**

**TOOL:**
**Lock nut wrench** **07JMA-KY40100**




Install and tighten the swing arm pivot nut.

**TORQUE:70N·m (7.0kg-m, 51ft-lb)**

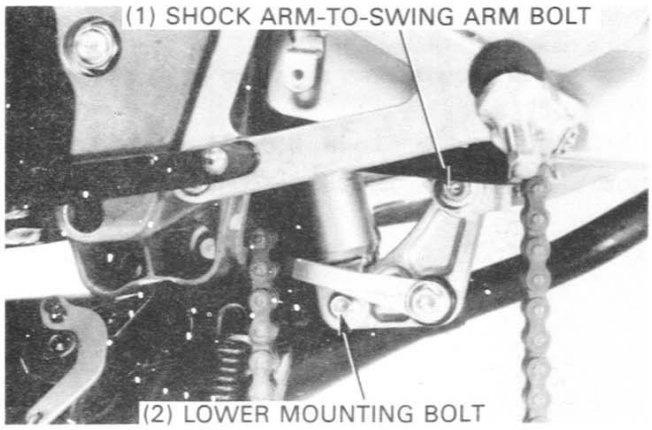



Install the shock arm-to-swing arm bolt and tighten the nut.

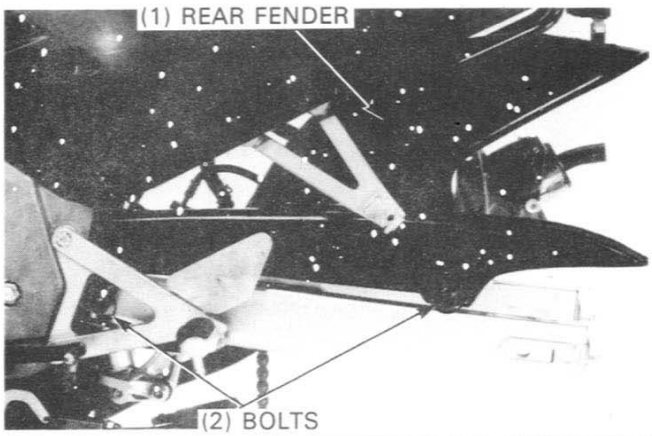
**TORQUE:45N·m (4.5 kg-m, 33 ft-lb)**

Install and tighten the shock absorber lower mounting bolt.

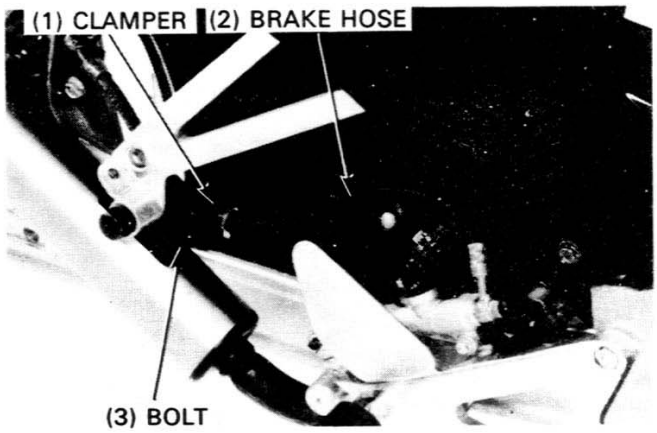
**TORQUE: 35N·m (3.5 kg-m, 25 ft-lb)**




Install the rear fender and tighten the two bolts.

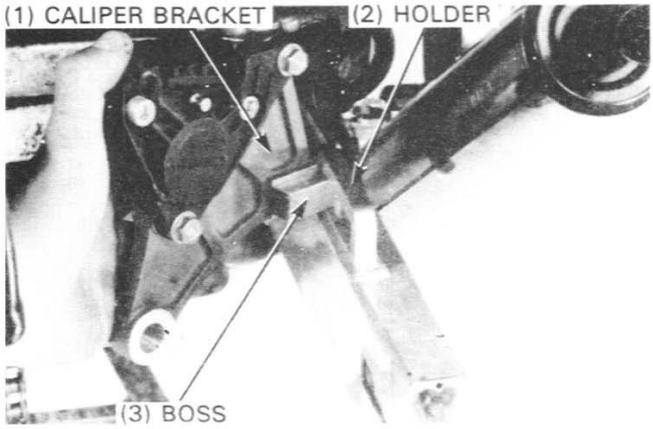


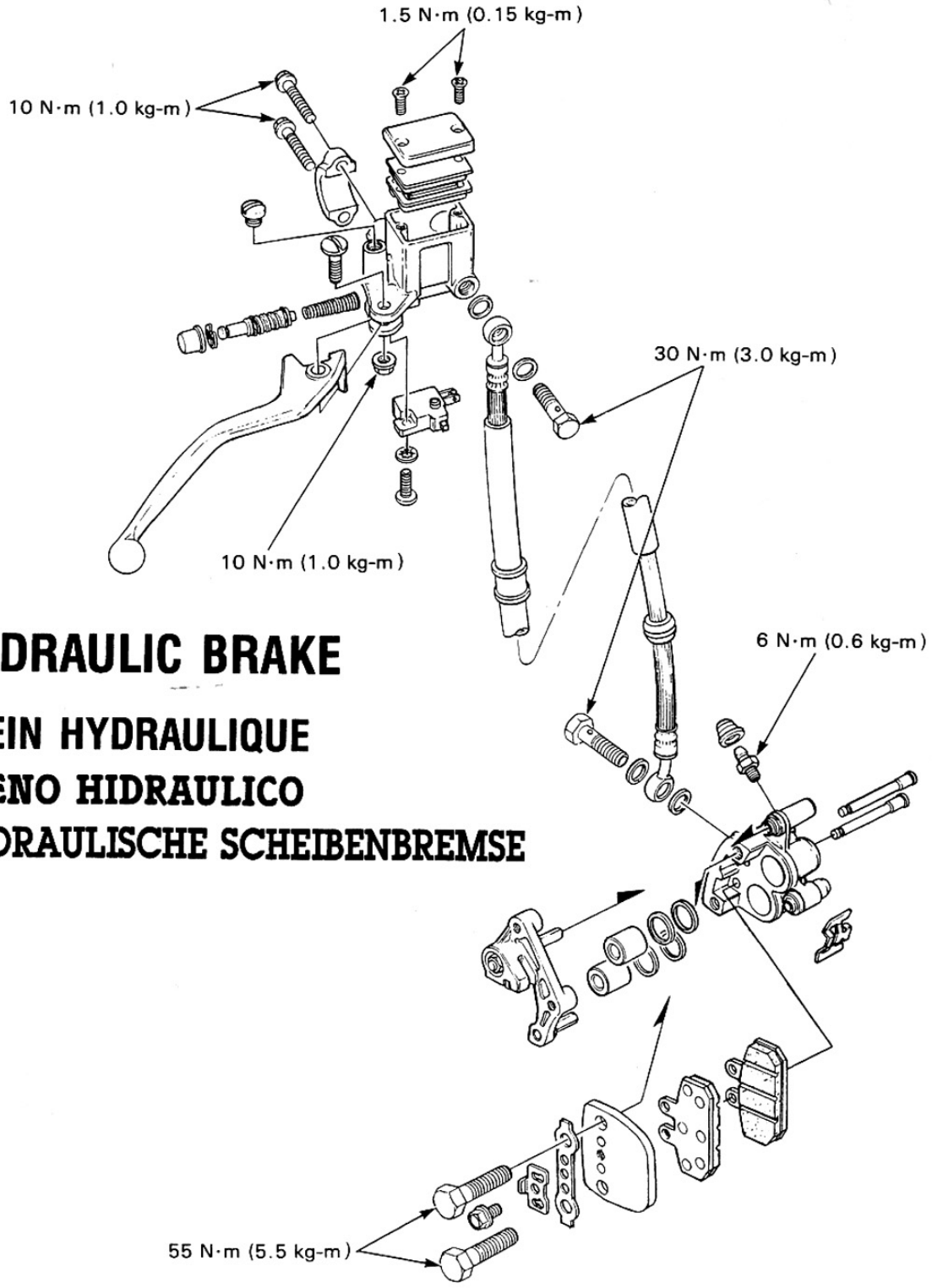
Tighten the remaining fender bolt and clamp the brake hose securely.




Install the rear brake caliper bracket by aligining the boss on the bracket with the holder of the swing arm.

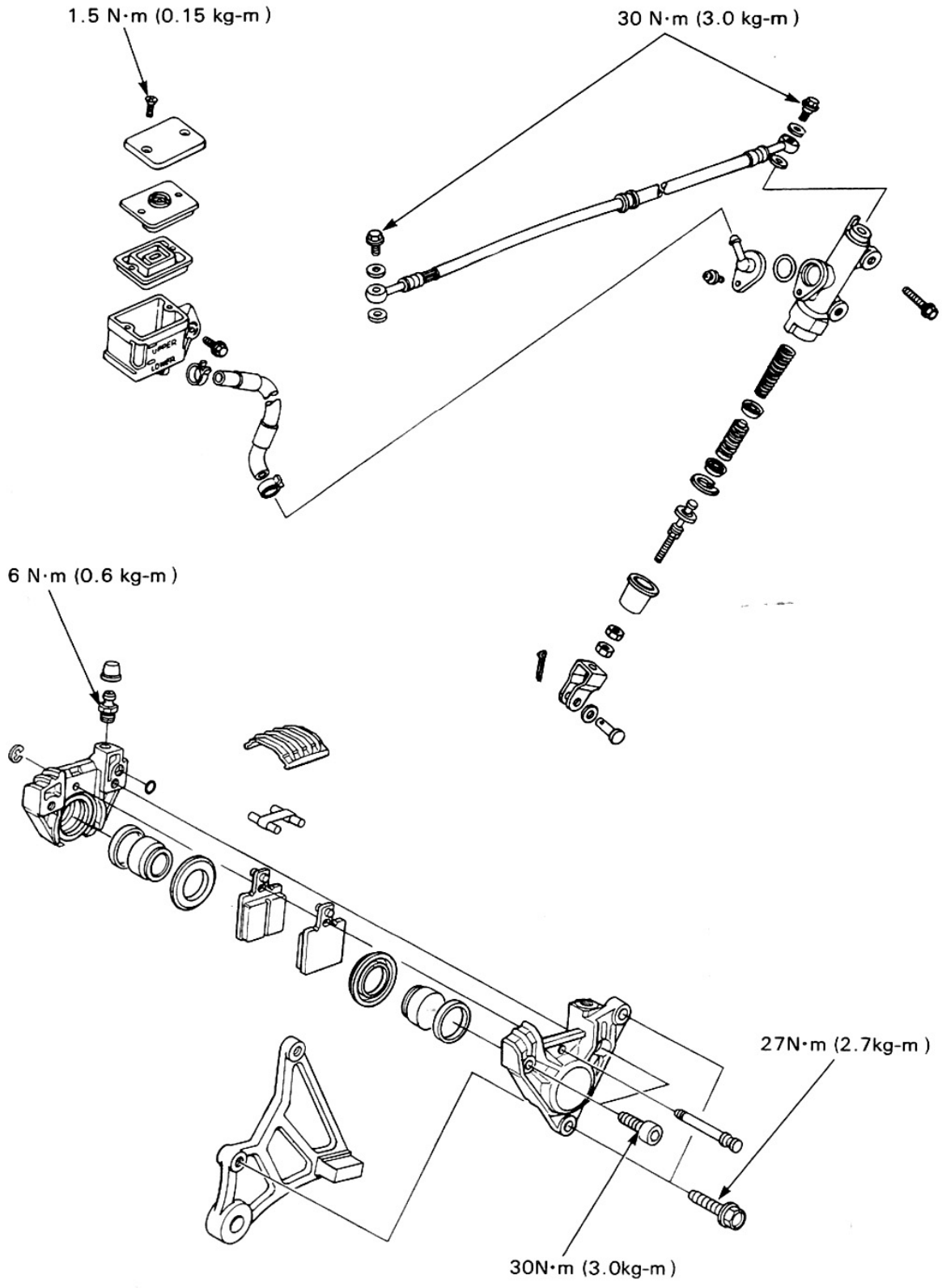
Install the rear wheel (page 12-7).






# HYDRAULIC BRAKE

## FREIN HYDRAULIQUE
## FRENO HIDRAULICO
## HYDRAULISCHE SCHEIBENBREMSE


1.5 N·m (0.15 kg-m )
30 N·m (3.0 kg-m )
6 N·m (0.6 kg-m )
27N·m (2.7kg-m )
30N·m (3.0kg-m )

# INFORMATIONS D'ENTRETIEN

PARTIE GENERALE

⚠ **ATTENTION**

- ***Des disques ou plaquettes de frein sales reduisent le pouvoir de freinage. Eliminez les plaquettes sales et nettoyez les disques avec un dégraissant pour freins de bonne qualité.***

- Utilisez le liquide pour freins DOT 4.
- Si le circuit hydraulique a eté ouvert ou si la reponse des freins est mauvaise, purgez le circuit.
- Evitez que tout corps étranger pénètre dans le système pendant le remplissage du réservoir.
- Le fluide des freins abime toute pièce en plastique, caoutchouc ou peinte. En l'utilisant, protegez ces pièces avec un chiffon. Si du liquide tache ces pièces, il faut les nettoyer immédiatement avec un chiffon propre.
- Controlez toujours le fonctionnement des freins avant de conduire la motocyclette.

SPECIFICATIONS

| PIECE | | | VALEUR STANDARD mm | LIMITE DE SERVICE mm |
|---|---|---|---|---|
| Disque de frein | Epaisseur | Avant | 3,8-4,2 | 3,0 |
| | | Arrière | 3,8-4,2 | 3,0 |
| | Voilage | Avant | — | 0,4 |
| | | Arrière | — | 0,4 |
| D.I. du maitre-cylindre | | Avant | 12,700-12,743 | 12,755 |
| | | Arriere | 12,700-12,743 | 12,755 |
| D.E. du piston principal | | Avant | 12,657-12,684 | 12,645 |
| | | Arrière | 12,657-12,684 | 12,645 |
| D.I. du cylindre de pince | | Avant | 25,020-25,050 | 25,06 |
| | | Arrière | 32,030-32,080 | 32,09 |
| D.E. piston de pince | | Avant | 24,960-24,980 | 24,95 |
| | | Arrière | 31,948-31,998 | 31,94 |
| Liquide freins | | Avant | DOT 4 | — |
| | | Arrière | DOT4 | — |

COUPLES DE SERRAGE

| | |
|---|---|
| Purgeur | 6 N•m (0,6 kg•m) |
| Vis de couvercle de reservoir de maitre-cylindre | 1,5 N•m (0,15 kg•m) |
| Ecrou de pivot de levier de frein | 10 N•m (1,0 kg•m) |
| Boulon de support de maitre-cylindre | 10 N•m (1,0 kg•m) |
| Boulon de flexible de frein | 30 N•m (3,0 kg•m) |
| Boulon de tenon de support de pince A | 18 N•m (1,8 kg•m) |
| B | 23 N•m (2,3 kg•m) |
| Boulon de support de pince avant | 27 N•m (2,7 kg•m) |
| Boulon de plaque intérieure de pince | 55 N•m (5,5 kg•m) |
| Boulon de fixage de pince arrière | 30 N•m (3,0 kg•m) |
| Boulon de pince arrière | 27 N•m (2,7 kg•m) |
| Vis de joint de flexible de frein | 15 N•m (1,5 kg•m) Appliquez un agent de blocage aux filets |

| | |
|---|---|
| Tenon d'arret de pince arrière | 18 N•m (1,8 kg•m) |
| Pivot de tenon d'arret de pince arrière | 25 N•m (2,5 kg•m) |

OUTIL

| | |
|---|---|
| Pinces à jonc | 07914-3230001 |

# DEPANNAGE

**Levier de frein doux ou spongieux**
- Bulles d'air dans le circuit hydraulique
- Bas niveau du liquide
- Fuites dans le circuit hydraulique

**Levier de frein trop dur**
- Piston(s) coincé(s)
- Circuit hydraulique engorgé
- Plaquettes lisses ou usées

**Le frein traine**
- Circuit hydraulique coincé
- Piston(s) coincés

**Freins bloqués ou tirant d'un coté**
- Plaquettes sales
- Mauvais alignement du disque ou de la roue

**Broutement ou grincement des freins**
- Plaquettes sales
- Voilage excessif des disques
- Mauvaise mise en place de la pince
- Mauvais alignement du disque ou de la roue

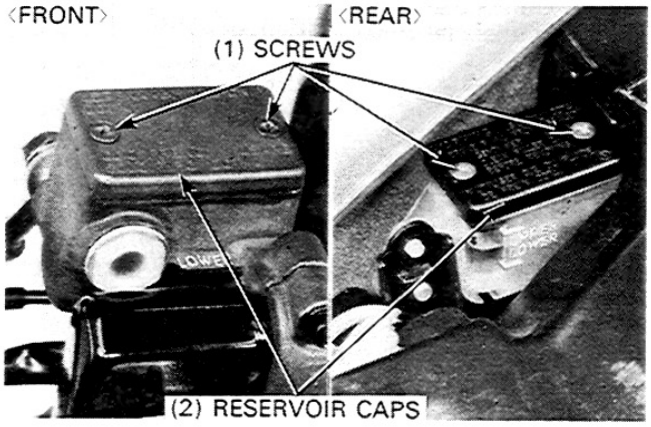
# BRAKE FLUID REPLACEMENT/AIR BLEEDING

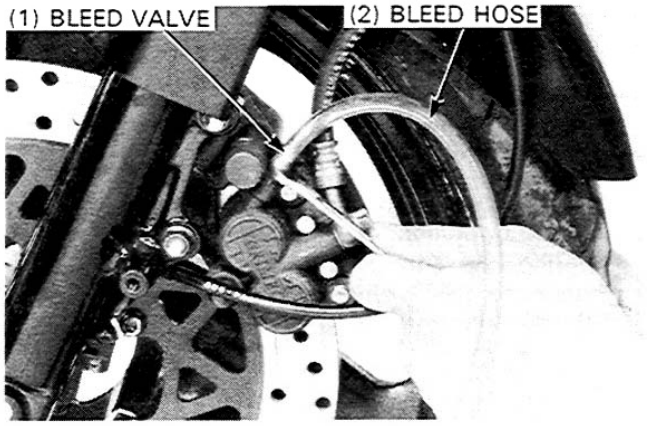
**CAUTION**

- *Be careful not to enter dust or water into the brake system when filling the reservoir.*
- *Do not mix different types of fluid since they are not compatible.*
- *Avoid spilling fluid on rubber, plastic or painted surfaces. Placec a rag over the fuel tank whenever the system is serviced.*

## BRAKE FLUID DRAINING

With the fluid reservoir parallel to the ground, remove the reservoir cap, set plate and diaphragm.
Connect a bleed hose to the caliper bleed vale.
Loosen the bleed valve and pump the brake lever until no more fluid flows out the bleed valve.




## BRAKE FLUID FILLING/BLEEDING

Fill the master cylinder reservoir with DOT 4 brake fluid from a sealed container.

**CAUTION**

- *Do not mix different types of fluid. They are not compatible.*

Connent a commercially available brake bleeder to the bleed valve.
Pump the brake bleeder and loosen the bleed valve.
Add fluid when the fluid level in the master cylinder reservoir is low.

NOTE

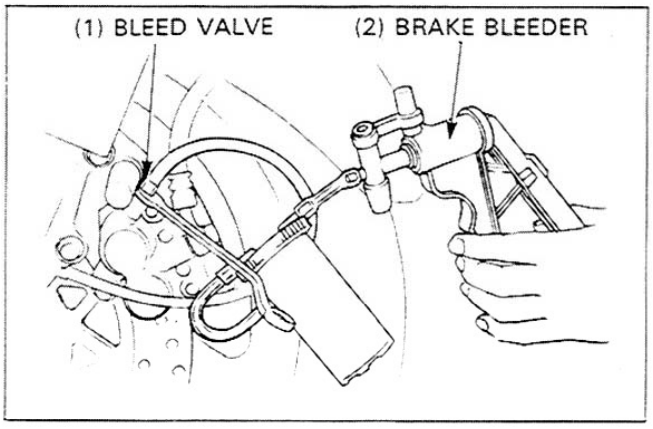
- Check the fluid level often while bleeding the brake to prevent air from being pumped into the system.
- Use only DOT 4 brake fluid from a sealed container.
- When using a brake bleeding tool, follow the manufacturer's operating instructions.

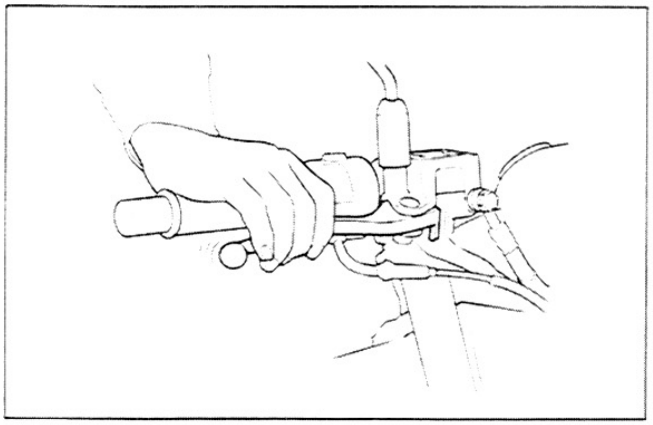
Repeat the above procedures untill air bubbles do not appear in the plastic hose.

NOTE

- If air entering the bleeder from around the bleed valve threads, seal the threads with teflon tape.

Close the bleed valve and operate the brake lever. If it still feels spongy, repeat the above procedure.



If a brake bleeder is not available, use the following procedure.
Pump up the system pressure with the brake lever or pedal until there are no air bubbles in the fluid flowing out of the reservoir small hole.
Connect the bleed hose to the bleed valve and bleed the system as follows:

1. Operate the brake lever or brake pedal, open the bleed valve 1/2 turn and close the bleed valve.

NOTE

- Do not release the brake lever or pedal untill the bleed valve has been closed.

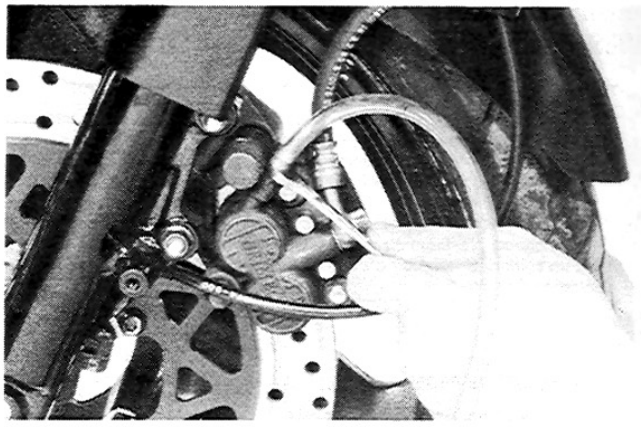
2. Release the brake lever or pedal slowly and wait several seconds after it reaches the end of its travel.

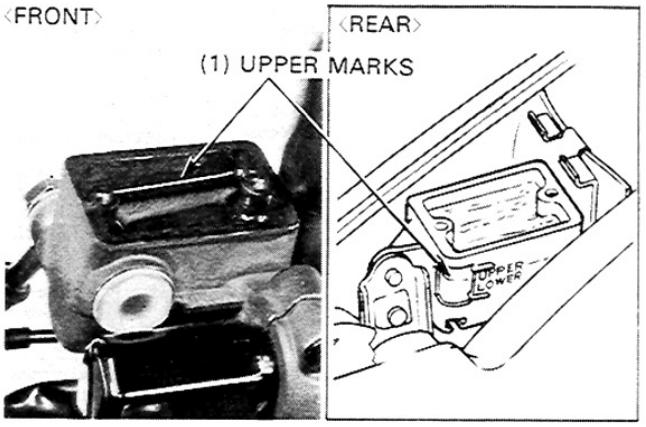
Repeat steps 1 and 2 until air bubbles cease to appear in the fluid coming out the bleed valve.

**TORQUE: 6N·m (0.6kg-m, 4.3ft-lb)**

Fill the master cylinder reservoir to the upper level mark with DOT 4 brake fluid from a sealed container.
Install the diaphragm, set plate and reservoir cap, and tighten the reservoir cap screws.

**TORQUE: 1.5N·m (0.15kg-m, 1.1ft-lb)**





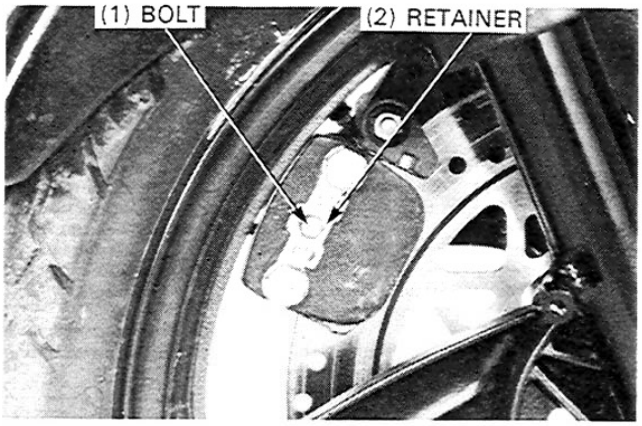

# BRAKE PAD/DISC

## FRONT BRAKE PAD REPLACEMENT

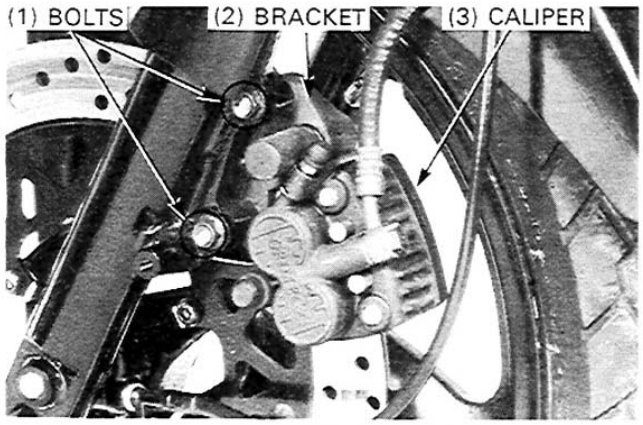
NOTE

- it is unnecessary to disconnect the brake system for replacing the pads.
- For "R-Type" remove the rear part of front fender.
- Always replace the brake pads in pairs to assure even disc pressure.

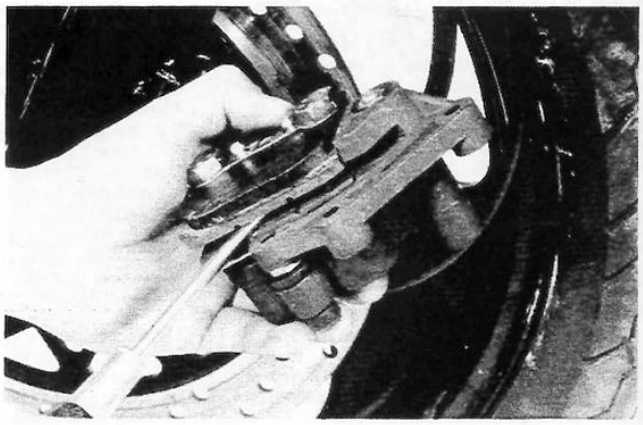
Remove the bolt and retainer.



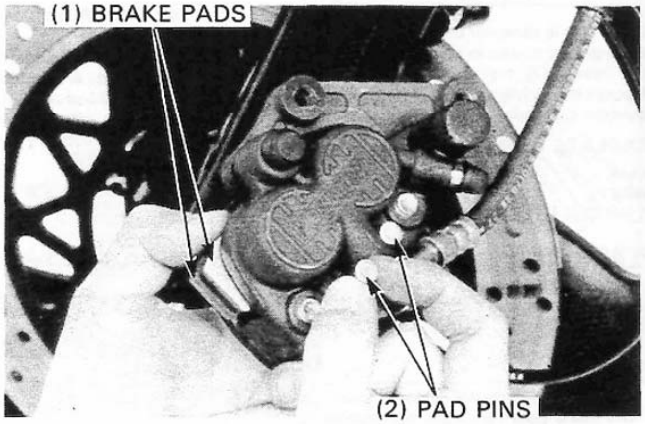

Remove the two bolts and front brake caliper and caliper bracket as an assembly.



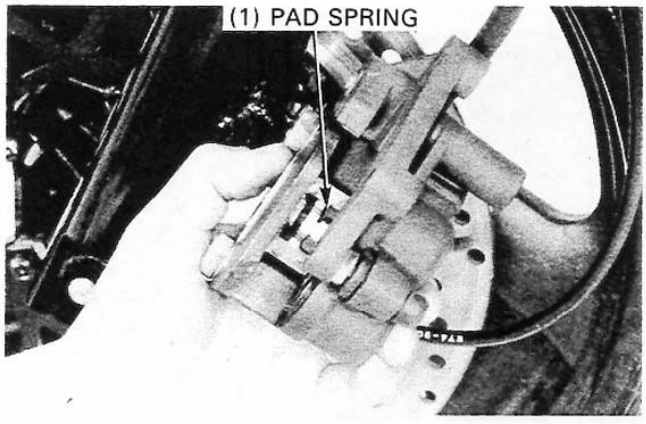
Pry an old pad against the caliper with a screwdriver to push the pistons into the caliper.



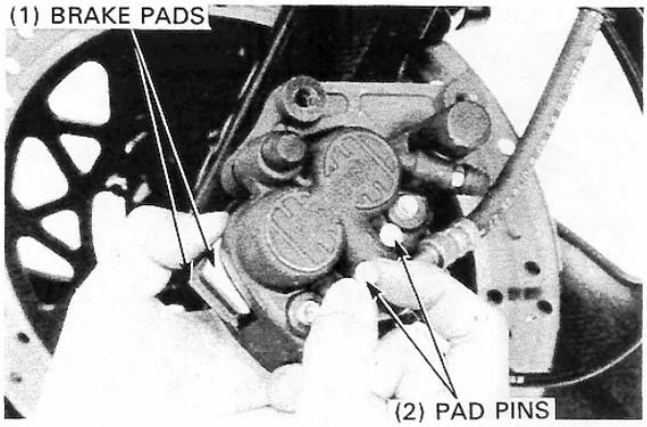
Pull the pad pins out of the brake caliper and remove the old brake pads.




Make sure that the pad spring is installed in the position shown.




Install new pads in the caliper.
Install one pad pin first, then install the other pin by pushing the pads against the caliper to depress the pad spring.



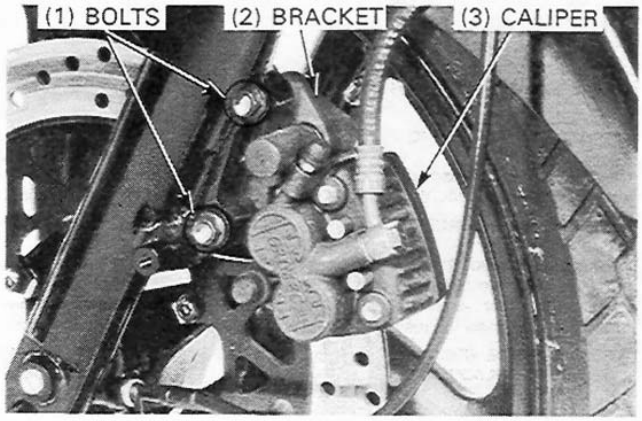
Install the brake caliper and caliper bracket positioning the brake disc between the brake pads.

NOTE

- Be careful not to damage the brake pads with the brake disc when installing the caliper.

Secure the caliper bracket with the two bolts.

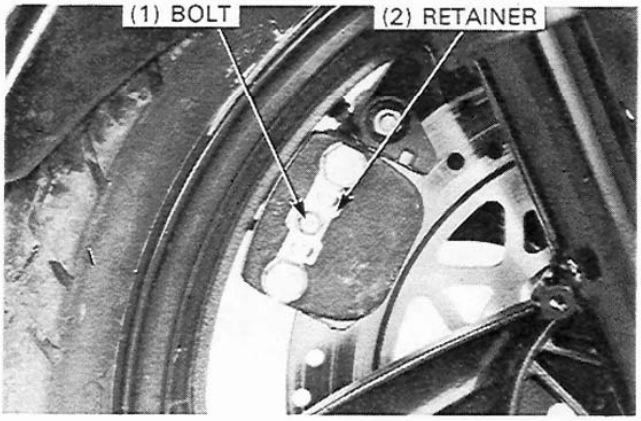
**TORQUE:27N·m (2.7kg-m, 20ft-lb)**




Install the retainer and secure it with the bolt.

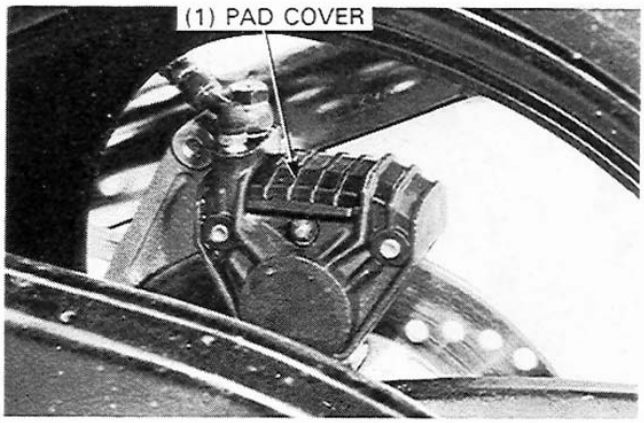
NOTE

- Operate the brake lever to seat the caliper pistons against the pads.




## REAR BRAKE PAD REPLACEMENT

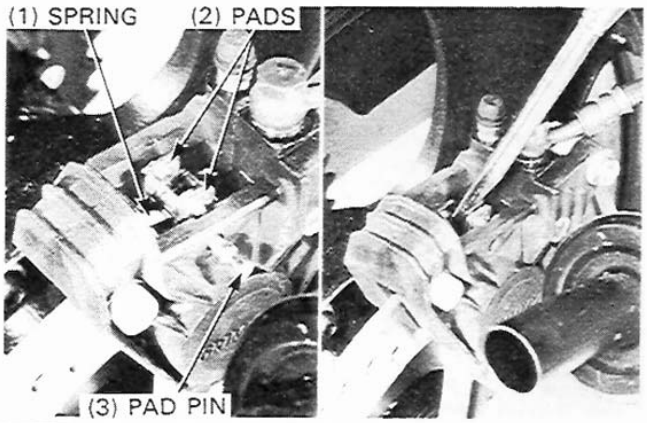
Remove the brake pad cover.



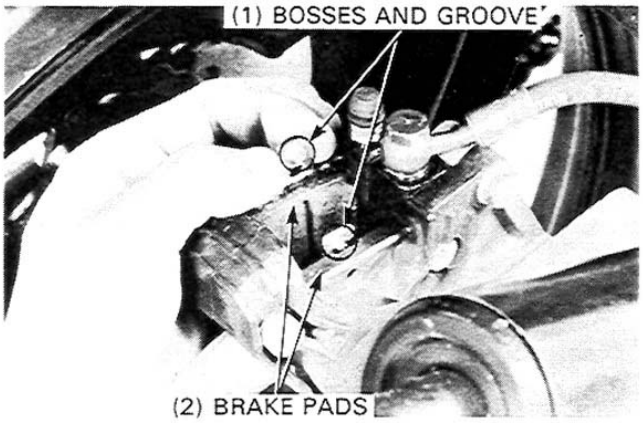

Pull out the brake pad pin and remove the brake pad retaining spring.
Ply old pads with a screw driver to push the caliper pistons into the brake caliper.

NOTE

- Be careful not to damage the rear brake disc.



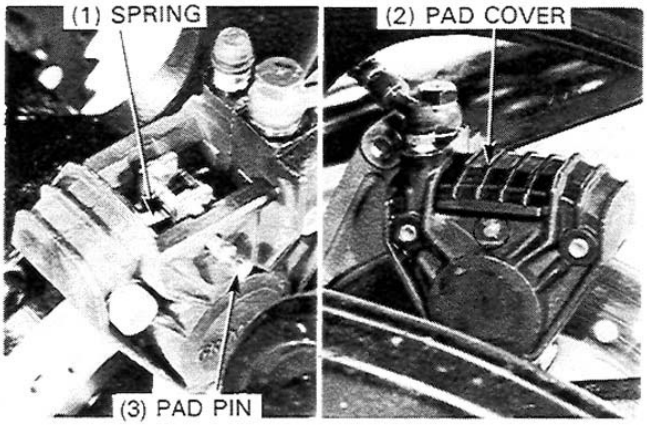
Install new brake pads aligning the bosses on the brake pad bases with the grooves in the rear brake caliper.




Install the brake pad retaining spring on the pads and insert the pad pin through the brake caliper and pads.
Install the brake pad cover onto the caliper.

NOTE

- Operate the brake pedal to seat the brake pistons against the pads.

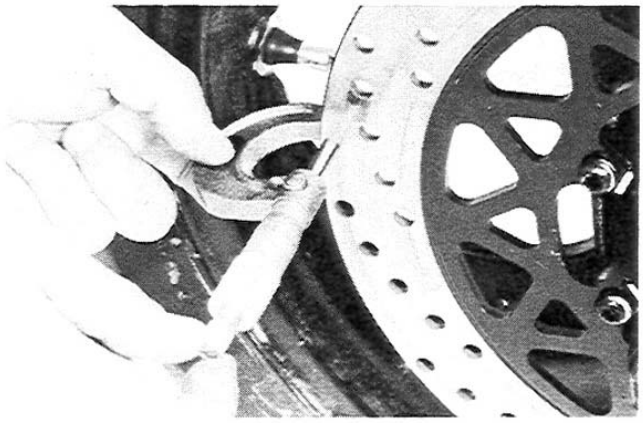



## DISC THICKNESS

Measure the thickness of each brake disc.

**SERVICE LIMITS:**

**Front: 3.0 mm (0.12 in)**
**Rear : 3.0 mm (0.12 in)**

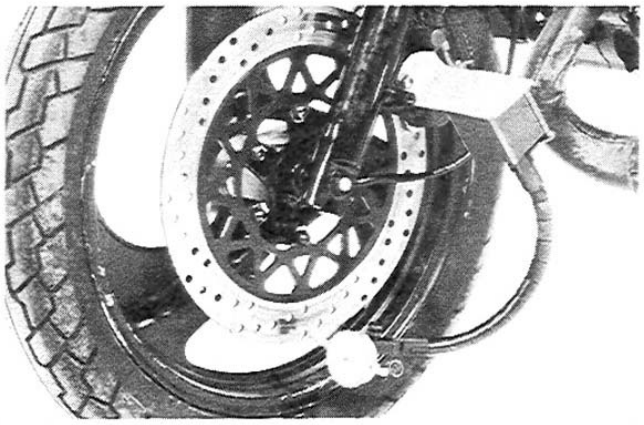


## BRAKE DISC WARPAGE

Measure the brake disc for warpage with a dial indicator as shown.

**SERVICE LIMITS:**

**Front: 0.4 mm (0.02 in)**
**Rear : 0.4 mm (0.02 in)**



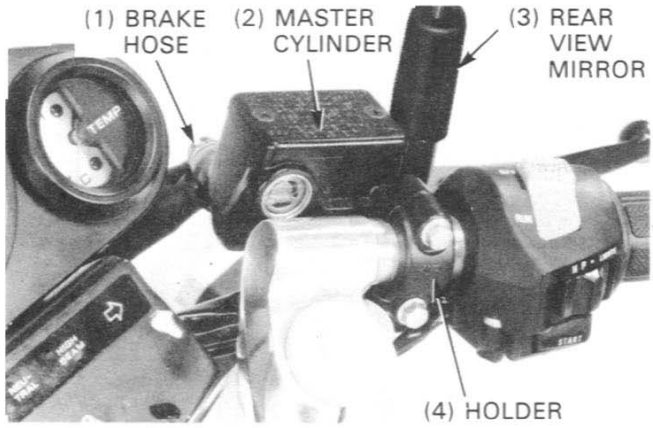
# FRONT MASTER CYLINDER

## REMOVAL

Drain the brake fluid from the front hydraulic system (page 13-4).
Disconnect the brake light switch connector from the switch.
Disconnect the brake hose from the master cylinder.

**CAUTION**

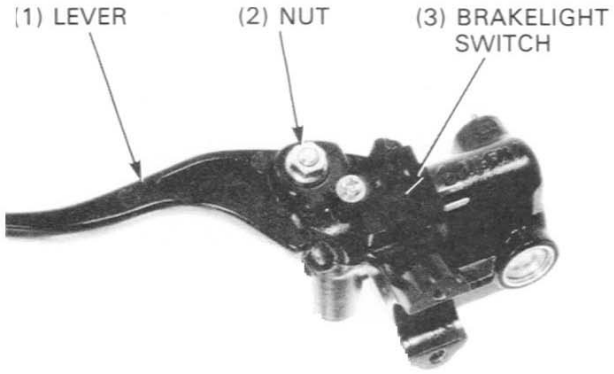
*Avoid spilling brake fluid on rubber, plastic or painted surfaces.*
*Place a rag over these parts whenever the system is serviced.*




NOTE

When removing the oil hose bolt, cover the end of the hose to prevent contamination. Secure the hose to prevent fluid from leaking out.

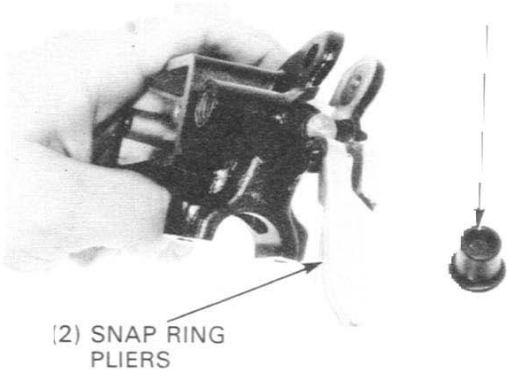
Remove the rear view mirror.
Remove the master cylinder and holder.
Remove the front brakelight switch and brake lever from the master cylinder.




Remove the piston boot and snap ring from the master cylinder body.

**TOOL:**
**Snap ring pliers** **07914-3230001**

Remove the master piston, piston cups and spring from the master cylinder.
Clean the master cylinder, reservoir and master piston in clean brake fluid.



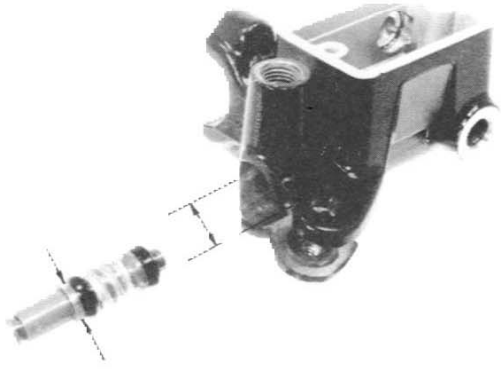

## INSPECTION

Check the primary and secondary cups for wear deterioration or damage.
Check the master cylinder and piston for scoring or other damage.
Mesasure the master cylinder inside diameter.

**SERVICE LIMIT: 12.755 mm (0.5022 in)**

Measure the master piston outside diameter at the secondary cup.

**SERVICE LIMIT: 12.645 mm (0.4978 in)**

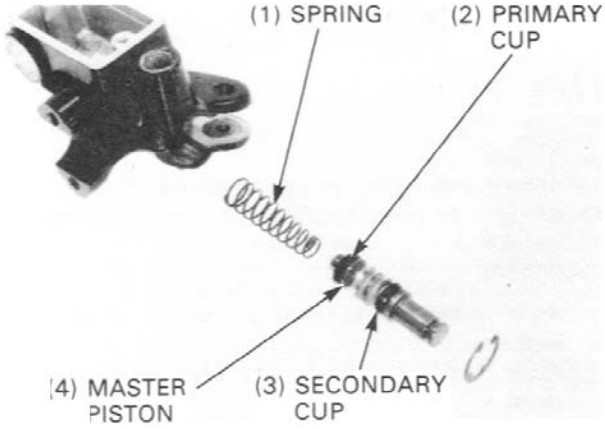


## ASSEMBLY

Coat the master piston, primary and secondary cups with clean brake fluid, then install the spring and master piston with the piston cups into the master cylinder.

**CAUTION**

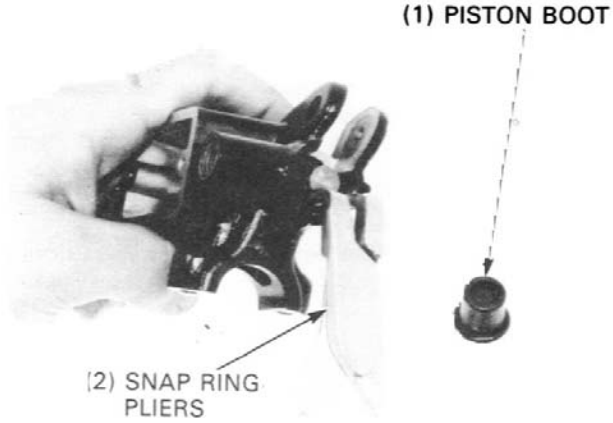
- *Do not allow the lips of the cups to turn inside out.*




Install the snap ring in the groove in the master cylinder.

**TOOL:**
**Snap ring pliers** **07914-3230001**

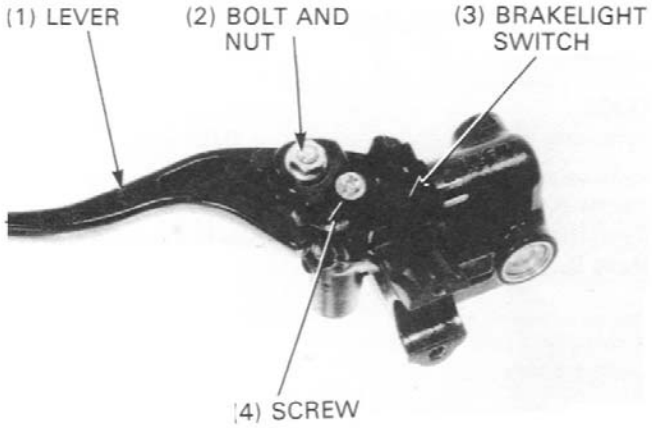
Install the piston boot.




Install the brake lever and tighten the pivot nut.

**TORQUE: 10N·m (1.0kg-m, 7ft-lb)**

Install the front btakelight switch.



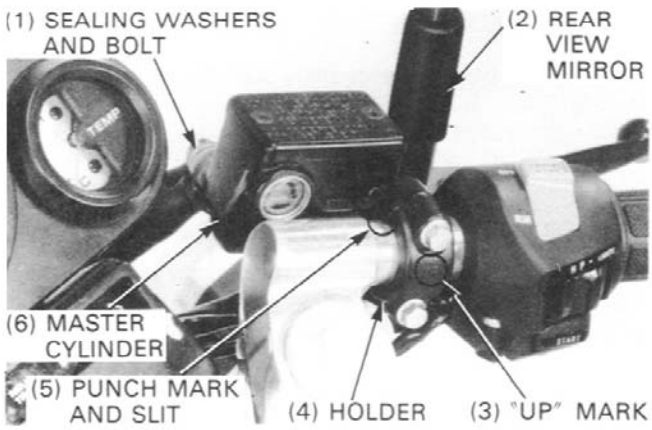

Install the master cylinder and master cylinder holder onto the right handlebar with the "UP" mark on the holder facing up.
Temporarily install the holder bolts and align the slit between the master cylinder and holder with the punch mark on the handlebar.
Tighten the upper bolt first then the lower one.

**TORQUE: 10N·m (1.0kg-m, 7ft-lb)**

With the two sealing washers, install the eyelet joint to the master cylinder and tighten the oil hose bolt.

**TORQUE: 30N·m (3.0kg-m, 22ft-lb)**

Connect the brakelight switch wires to the switch.
Install the rear view mirror.
Fill and bleed the brake hydraulic system (page 13-4).



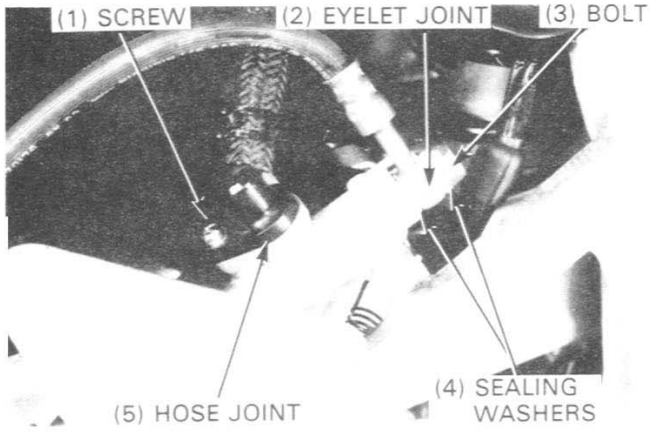
# REAR MASTER CYLINDER

## REMOVAL

Drain the brake fluid from the rear hydraulic system (page 13-4).

Disconnect the brake hose joint by removing the screw.

Remove the brake hose bolt, sealing washers and eyelet joint from the rear master cylinder.



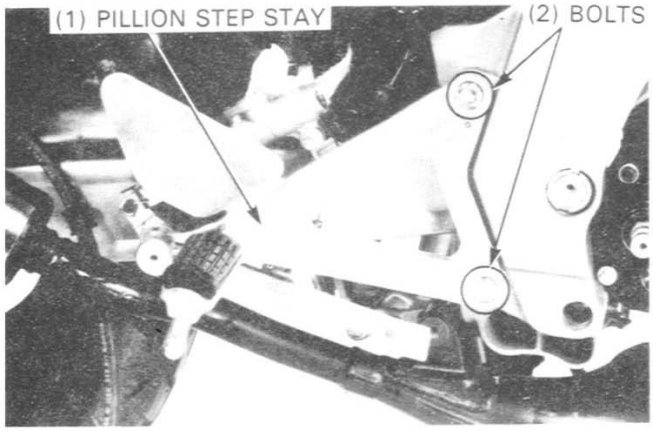

**CAUTION**

- *Avoid spilling brake fluid on rubber, plastic or painted surfaces. Place a rag over these parts whenever the system is serviced.*

NOTE

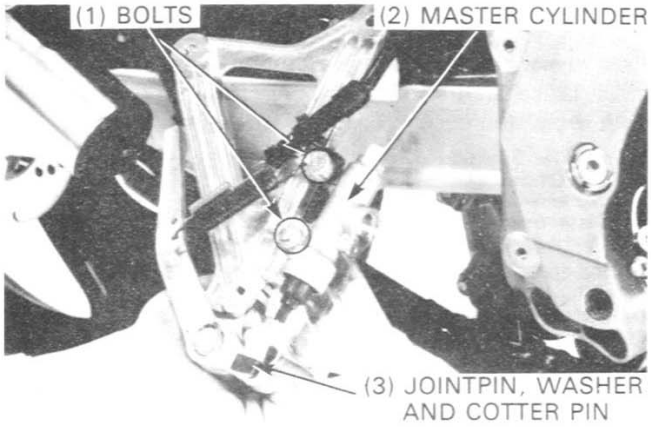
- When removing the brake hose bolt, cover the end of the hose to prevent contamination. Secure the hose to prevent fluid from leaking out.

Remove the right pillion step stay by removing the two bolts.



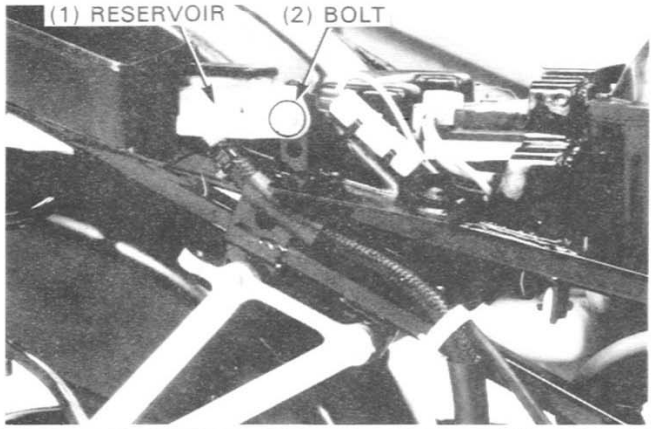

Disconnect the push rod from the brake pedal by removing the cotter pin, washer and joint pin from the push rod joint.

Remove the two bolts and rear master cylinder from the right pillion step stay.




Whenever removing the rear master cylinder reservoir, remove the right fairing (page 4-3).

Remove the clamper, bolt and reservoir from the subframe.

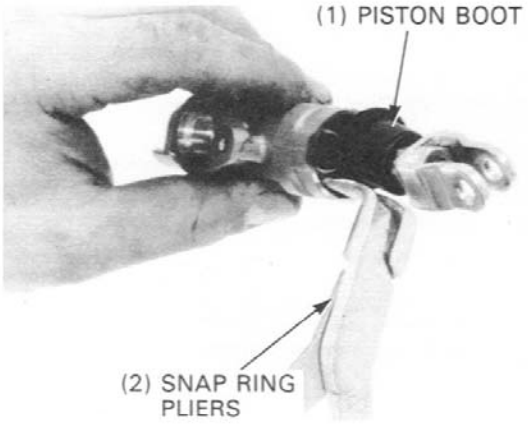


## DISASSEMBLY

Put off the piston boot and remove the snap ring.

**TOOL:**
**Snap ring pliers** **07914-3230001**

Remove the push rod, master piston and spring from the rear master cylinder.
Clean the master cylinder and master piston in clean brake fluid.




## INSPECTION

Check the primary and secondary cups for wear, deterioration or damage.
Check the master clyinder and piston for scoring or other damage.
Measure the master cylinder inside diameter.

**SERVICE LIMIT: 12.755 mm(0.5022 in)**

Measure the master piston outside diameter at the secondary cup.

**SERVICE LIMIT: 12.645 mm(0.4978 in)**

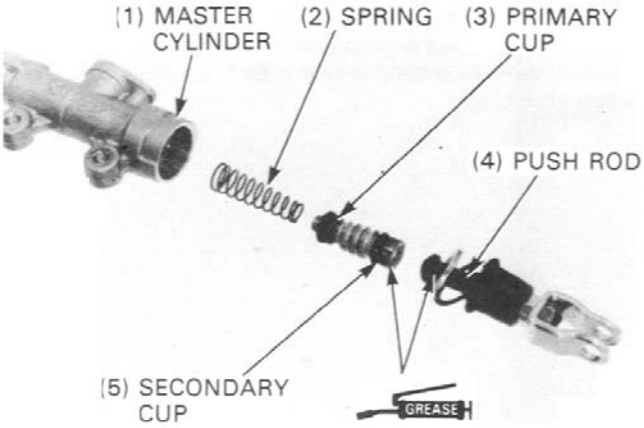
## ASSEMBLY

Coat the master piston, primary and secondary cups with clean brake fluid, then install the spring and master piston with the piston cups into the master cylinder.

**CAUTION**

- *Do not allow the lips of the cups to turn inside out.*

Apply grease to the push rod contact surface to the master piston and install the push rod in the master cylinder.

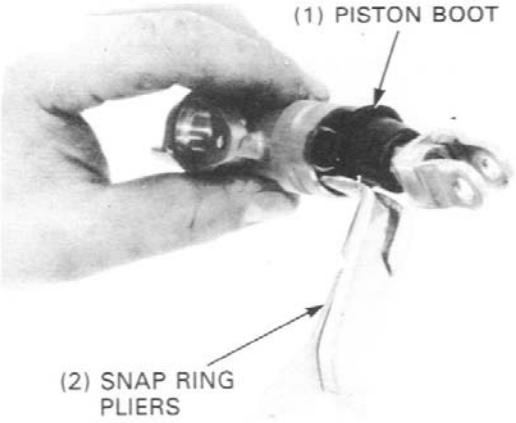



Install the snap ring and rubber boot.

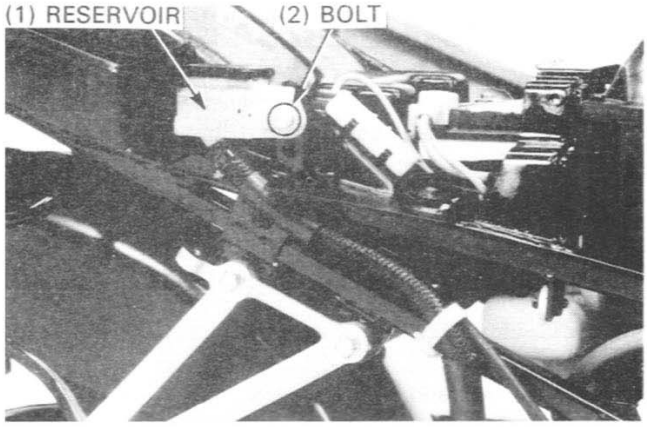
**TOOL:**
**Snap ring pliers** **07914-3230001**

NOTE

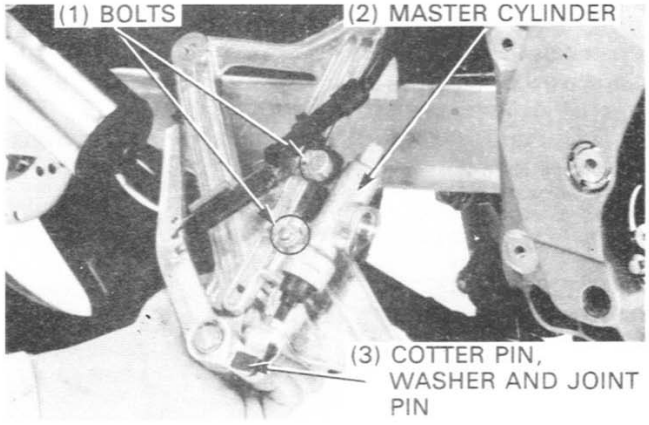
- Make sure the snap ring is seated in the groove in the master cylinder.



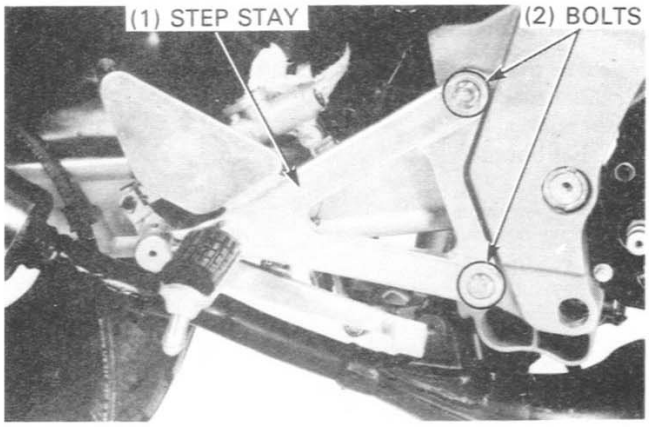
If you removed the rear master cylinder reservoir.
Install the reservoir to the sub frame and secure the reservoir with the bolt.
Secure the reservoir hose with a clamp.
Install the right fairing (page 4-3).




Install the rear master cylinder on the right pillion step and secure the master cylinder with the two bolts.
Connect the push rod joint to the brake pedal with the joint pin, washer and a new cotter pin.




Install the right pillion step stay and secure it with the two bolts.



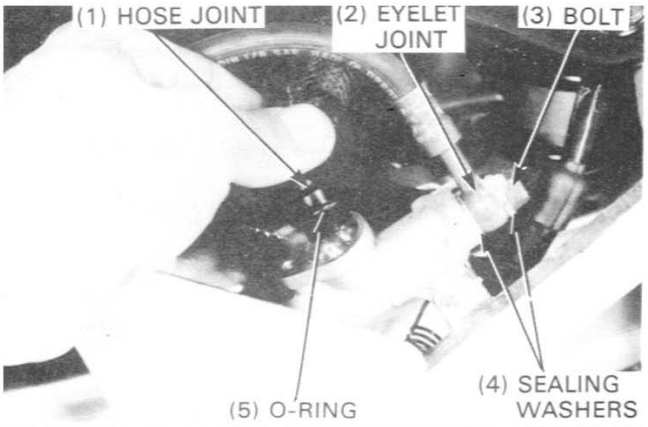

With the two sealing washers, install the eyelet joint to the master cylinder and temporarily install the brake hose bolt.
Turn the eyelet joint until it stops against the stopper on the master cylinder and tighten the brake hose bolt.

**TORQUE:30N·m (3.0kg-m, 22ft-lb)**

Install the brake hose joint with a O-ring.
Apply a locking agent to the threads of the brake hose joint screw and secure the joint with the screw.

**TORQUE: 1.5 N·m (0.15 kg-m. 1.1 ft-lb)**

Fill and bleed brake hybraulic system (page 13-4).



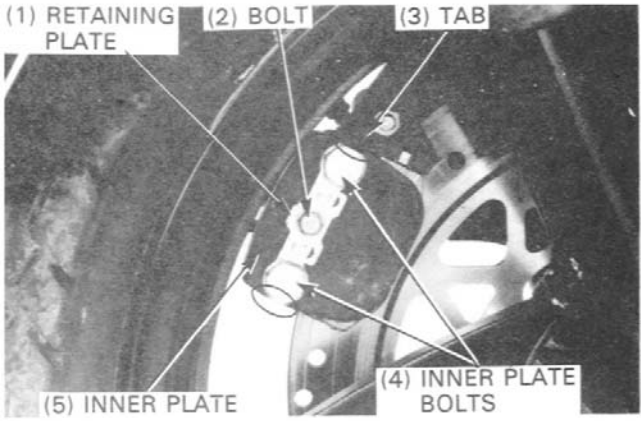
# FRONT BRAKE CALIPER

## REMOVAL

Drain the brake fluid from the front brake hydraulic system (page 13-4).

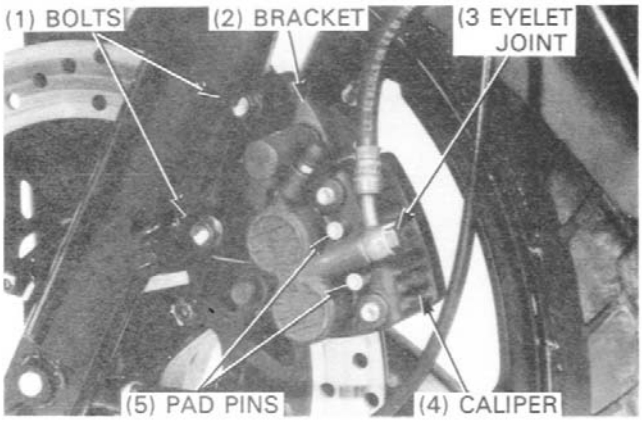
**CAUTION**

*Avoid spilling brake fluid on painted, plastic or rubber parts. Place a rag over these parts whenever the system is serviced.*



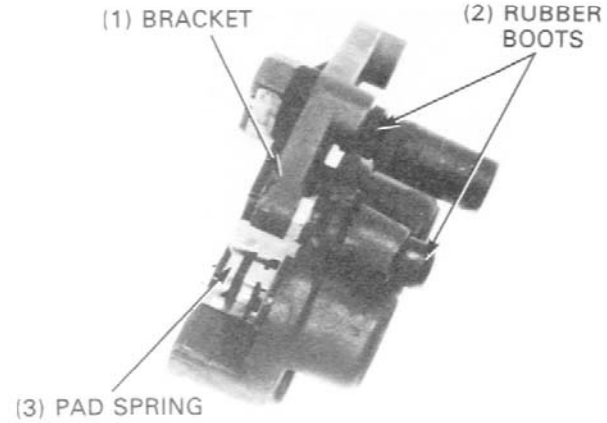

Remove the bolt and retaining plate.
Bend the tabs of the locking plate straight and remove the inner plate bolts, locking plate and caliper inner plate.
Remove the followings from the front brake caliper:
- pad pins
- brake pads
- eyelet joint and sealing washers

Remove the brake caliper and caliper bracket by removing the two bracket bolts.




## DISASSEMBLY

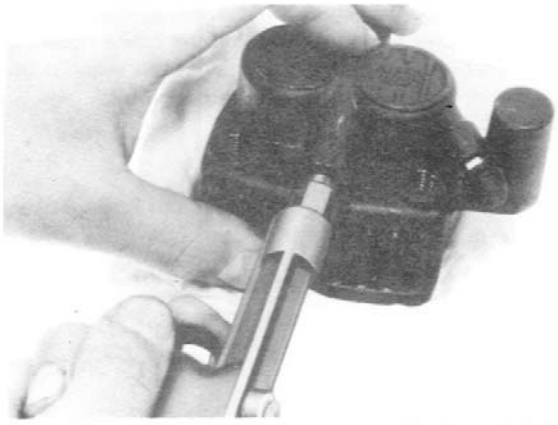
Remove the following from the brake caliper.
- caliper bracket
- pad spring
- rubber boots




Position the caliper with the pistons down and apply small squirts of air pressure to the fluid inlet to remove the pistons.

**⚠ WARNING**

- ***Do not use high pressure air or bring the nozzle too close to the inlet.***
- ***Place a shop towel over the pistons to prevent the pistons from becoming a projectile.***



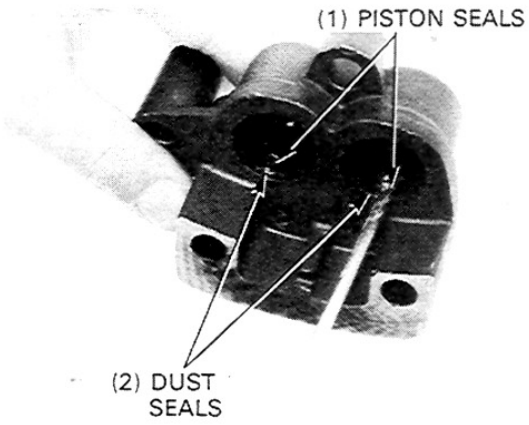
Push the dust and piston seals in and lift them out.
Clean the seal grooves with clean brake fluid.

**CAUTION**

- *Be careful not to damage the piston sliding surfaces.*

NOTE

- Discard the removed seals. If the piston and dust seals are removed once, they must be replaced with new ones.




## INSPECTION

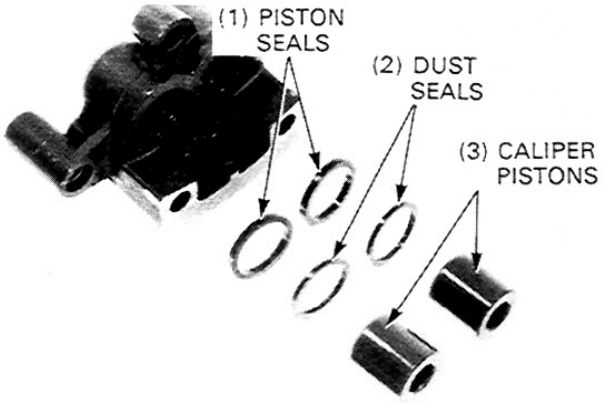
Check the caliper pistons for scoring or other damage.
Measure the caliper piston outside diameter.

**SERVICE LIMIT: 24.95 mm (0.982 in)**

Check the caliper cylinder bores for scoring or other damage.
Measure the caliper cylinder inside diameter.

**SERVICE LIMIT: 25.06 mm (0.987 in)**

Coat the piston and dust seals with clean brake fluid and install them into the caliper grooves.
Lubricate the caliper cylinders and pistons with clean brake fluid and install the pistons into the caliper cylinders with the piston hollowed ends facing outside.

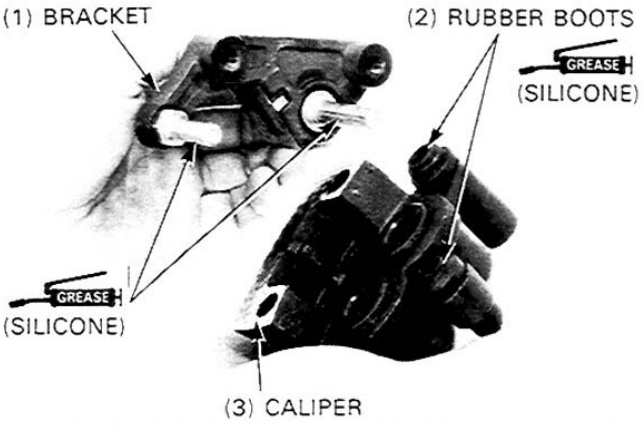



Pack the rubber boots with the silicone grease.
Install the rubber boots into the brake caliper.

NOTE

- Make sure the rubber boots are seated in the groove in the caliper.

Make sure the brake pad retaining plate is securely installed on the caliper bracket.
Apply silicone grease to the caliper bracket pin bolts and assemble the caliper and bracket.
Install the pad spring, pads and pad pins (page 13-4).



Install the brake caliper and caliper bracket, positioning the brake disc between the pads.

NOTE

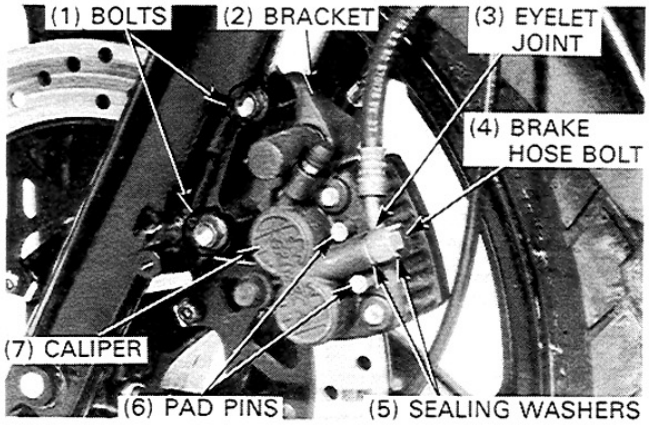
- Be careful not to damage the pads with the disc when installing the caliper assembly.

Tighten the caliper bracket bolts.

**TORQUE:27N·m (2.7kg-m, 20ft-lb)**

With the two sealing washers, install the eyelet joint to the caliper and secure the joint with the brake hose bolt.

**TORQUE:30N·m (3.0kg-m, 22ft-lb)**



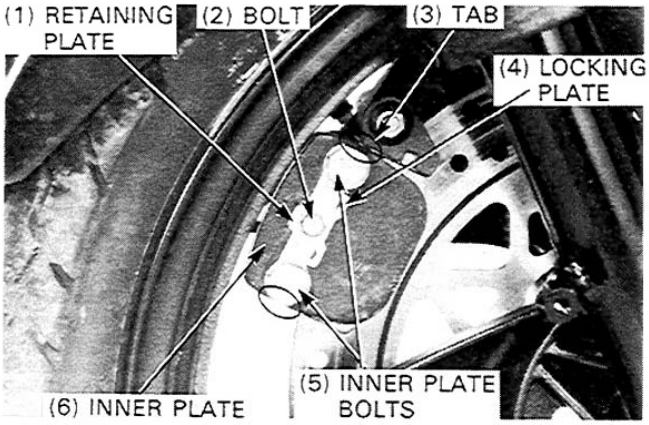

Install the caliper inner plate and a new locking plate and secure them with the inner plate bolts.

**TORQUE:55N·m (5.5kg-m, 40ft-lb)**

NOTE

- Operate the brake lever to seat the brake pistons against the pads.

Bend down the tabs of locking plate.
Fill and bleed front brake hydraulic system (page 13-4).




# REAR BRAKE CALIPER

## REMOVAL

Drain the brake fluid from the rear brake hydraulic system (page 13-4).

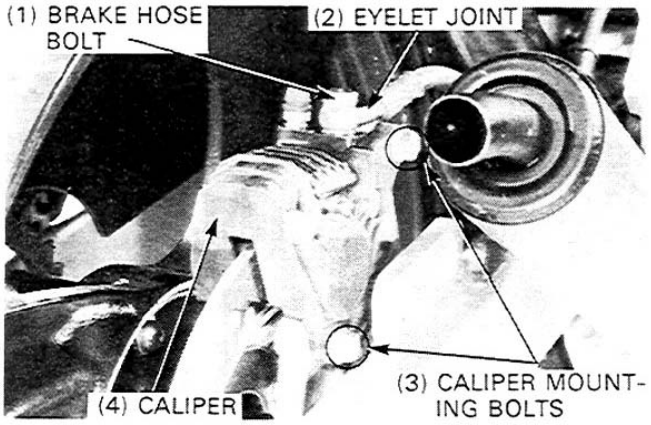
**CAUTION**

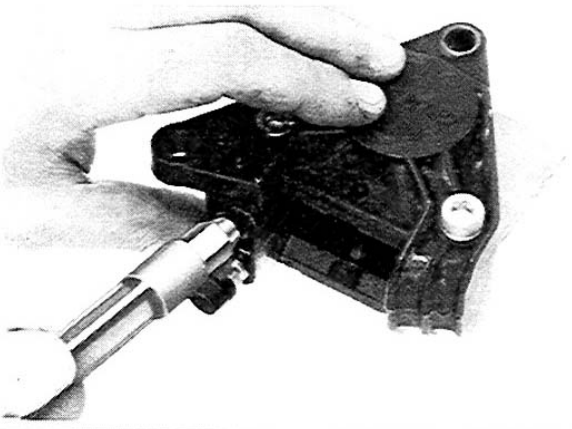
- *Avoid spiling brake fluid on painted, plastic or rubber parts. Place a rag over these parts whenever the system is serviced.*

Remove the brake pads (page 13-7).
Remove the brake hose bolt, sealing washers and brake hose bolt from the brake caliper.
Remove the brake caliper from the caliper bracket by removing the caliper mounting bolts.
Apply small squirts of air pressure to the fluid inlet to push out the caliper pistons with proper cushion, such as corrugated paper, being inserted between the caliper pistons to prevent the pistons from being damaged.

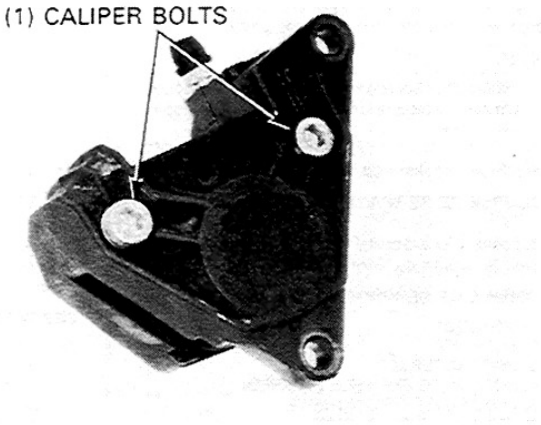
**⚠ WARNING**

- ***Do not use high pressure air or bring the nozzle too close to the inlet.***



Remove the caliper bolts and separate the rear brake caliper halves.



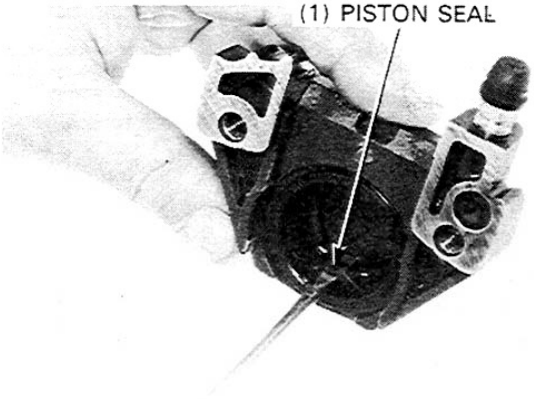

Push the piston seals in and lift them out.
Clean the seal grooves with clean brake fluid.

**CAUTION**

- *Be careful not to damage the piston sliding surfaces.*

NOTE

- Discard the removed seals. If the piston and dust seals are removed once, they must be replaced with new ones.



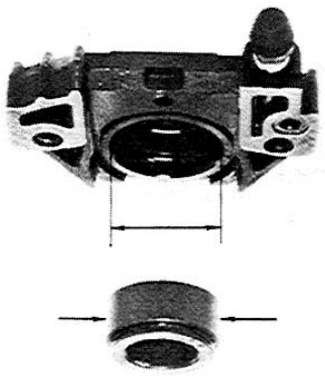

## INSPECTION

Check the caliper pistons for scoring or other damage.
Measure the caliper piston outside diameter.

**SERVICE LIMIT: 31.94 mm (1.257 in)**

Check the caliper cylinder bores for scoring or other damage.
Measure the caliper cylinder inside diameter.

**SERVICE LIMIT: 32.09 mm (1.263 in)**

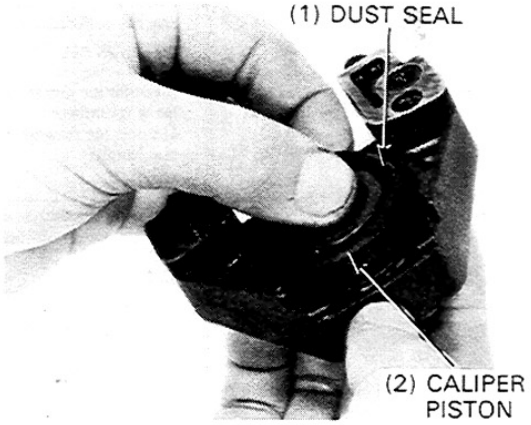


Coat the piston seals with clean brake fluid and install them in the caliper grooves.
Lubricate the caliper cylinders and pistons with clean brake fluid.

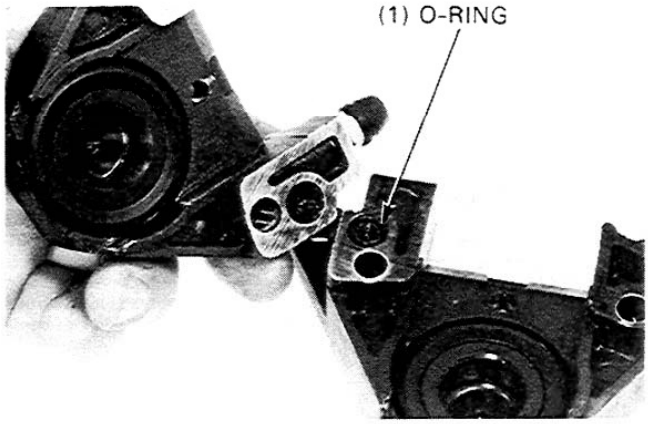
Install the dust seals into the piston groove.
Install the caliper pistons into the caliper cylinders with each piston's hollowed end facing outside.

NOTE

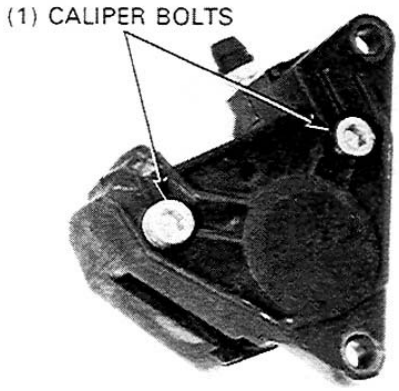
- After installing the pistons, make sure the brim of the dust seal is fit in the groove in the caliper.




Install a new O-ring onto the fluid pass hole and assemble the caliper halves.




Temporarily tighten the brake caliper bolts.




Install the brake caliper to the caliper bracket and secure the caliper with the two bolts.

**TORQUE:30N·m (3.0kg-m, 22ft-lb)**

Tighten the brake caliper bolts.

**TORQUE: 27 N·m (2.7 kg-m, 20 ft-lb)**

Install the eyelet joint with the two sealing washers and secure them with the brake hose bolt.

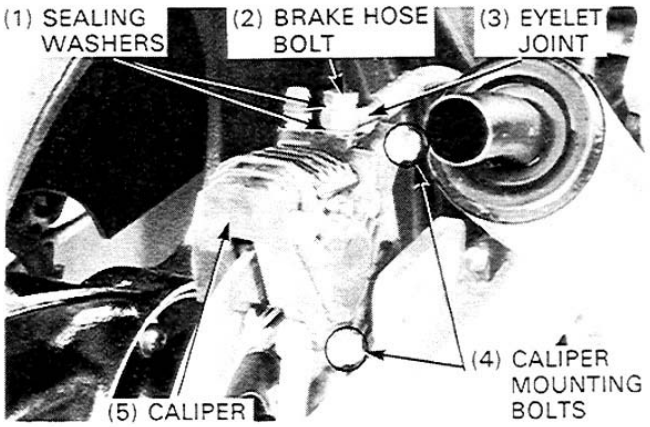
**TORQUE:30N·m (3.0kg-m, 22ft-lb)**

Install the brake pads (page 13-8).

Fill and bleed rear brake hydraulic system (page 13-4).

NOTE

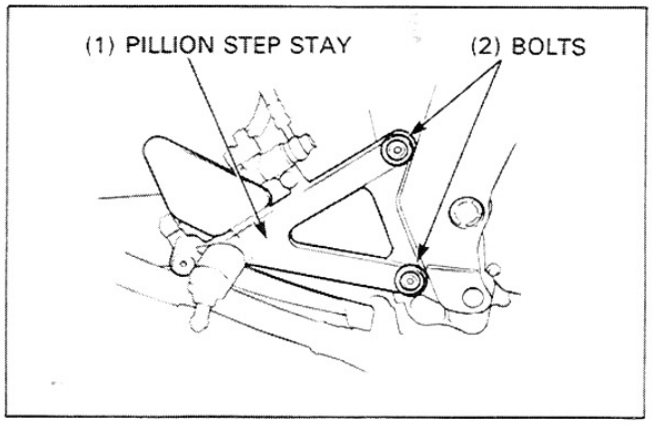
- Operate the brake pedal to seat the caliper pistons against the pads.



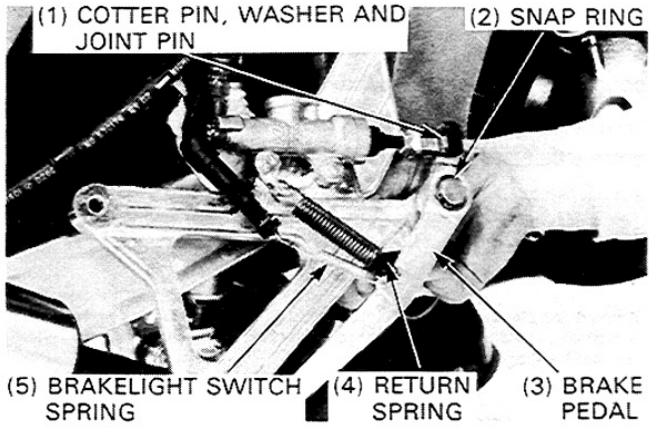
# BRAKE PEDAL

## REMOVAL

Remove the right pillion step stay by removing the two bolts.

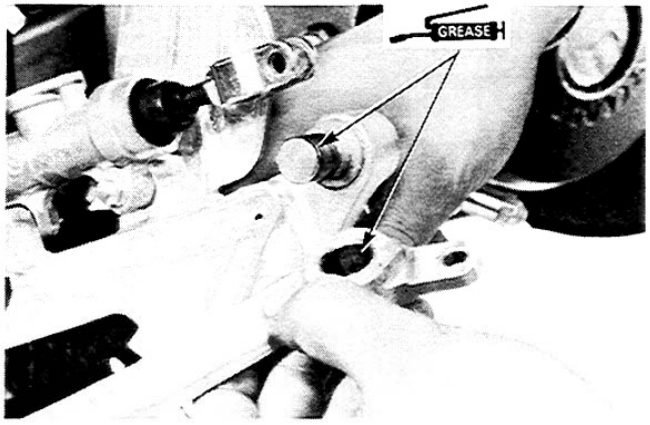



Disconnect the brake pedal from the push rod joint by removing the cotter pin, washer and joint pin.
Remove the brake pedal return spring and brakelight switch spring from the brake pedal.
Remove the snap ring and brake pedal from the pivot shaft.

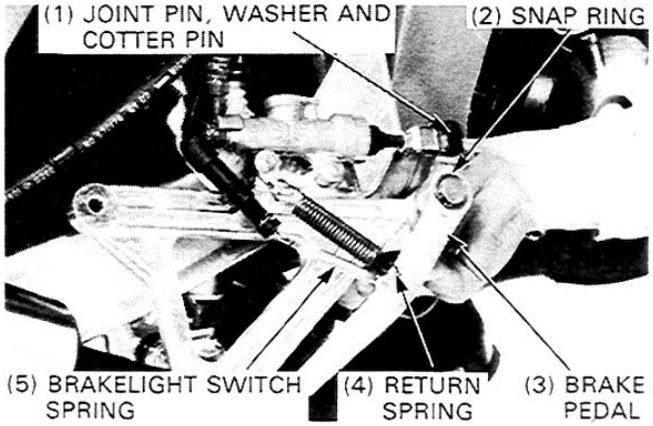



## INSTALLATION

Apply grease to the pivot shaft and the pivot bore.
Install the brake pedal onto the pivot shaft.




Secure the brake pedal with the snap ring.
Hook the brake pedal return spring and brakelight switch spring in the brake pedal.
Connect the push rod joint and brake pedal with the joint pin, washer and a new cotter pin.



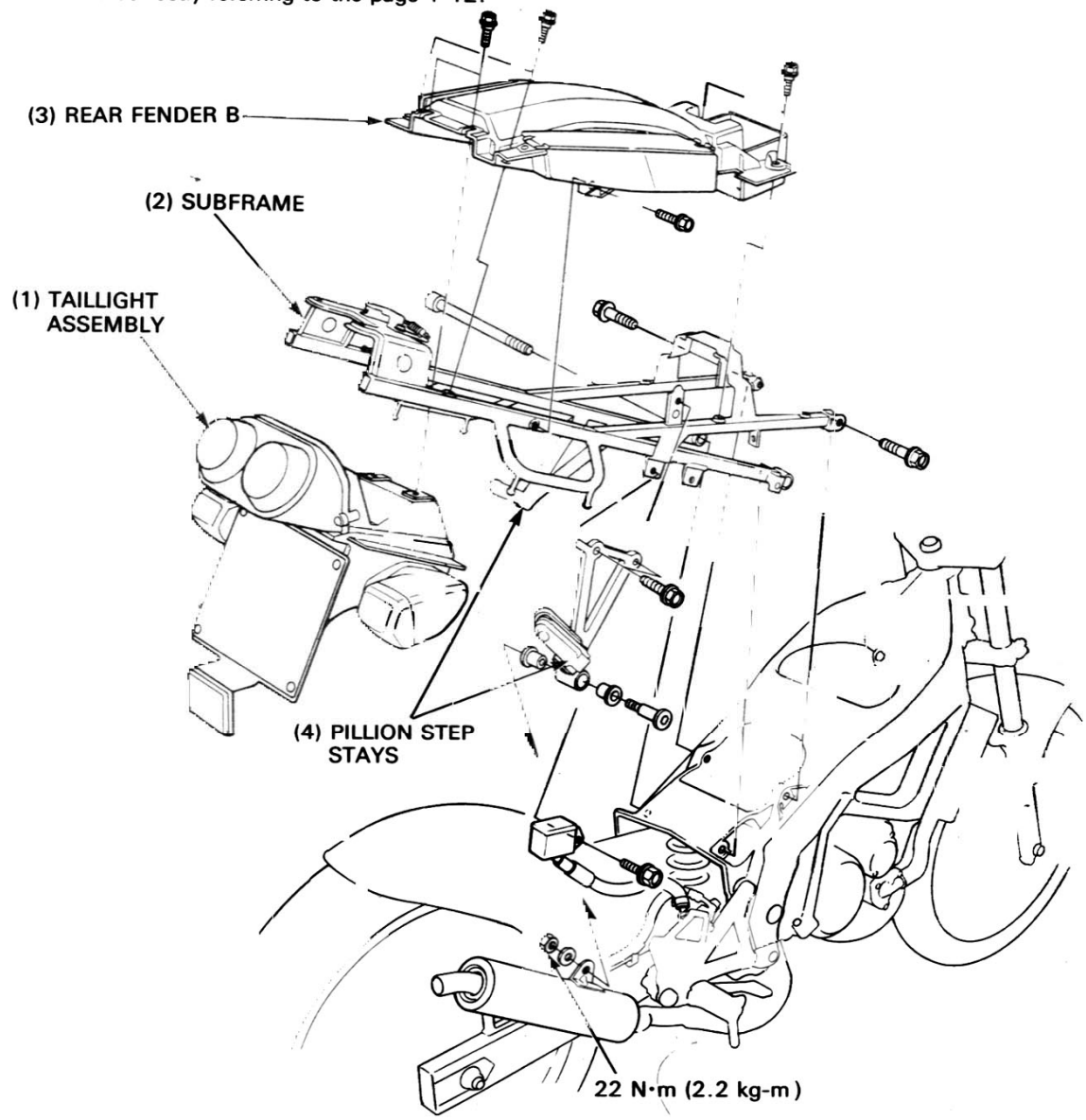
# SUBFRAME

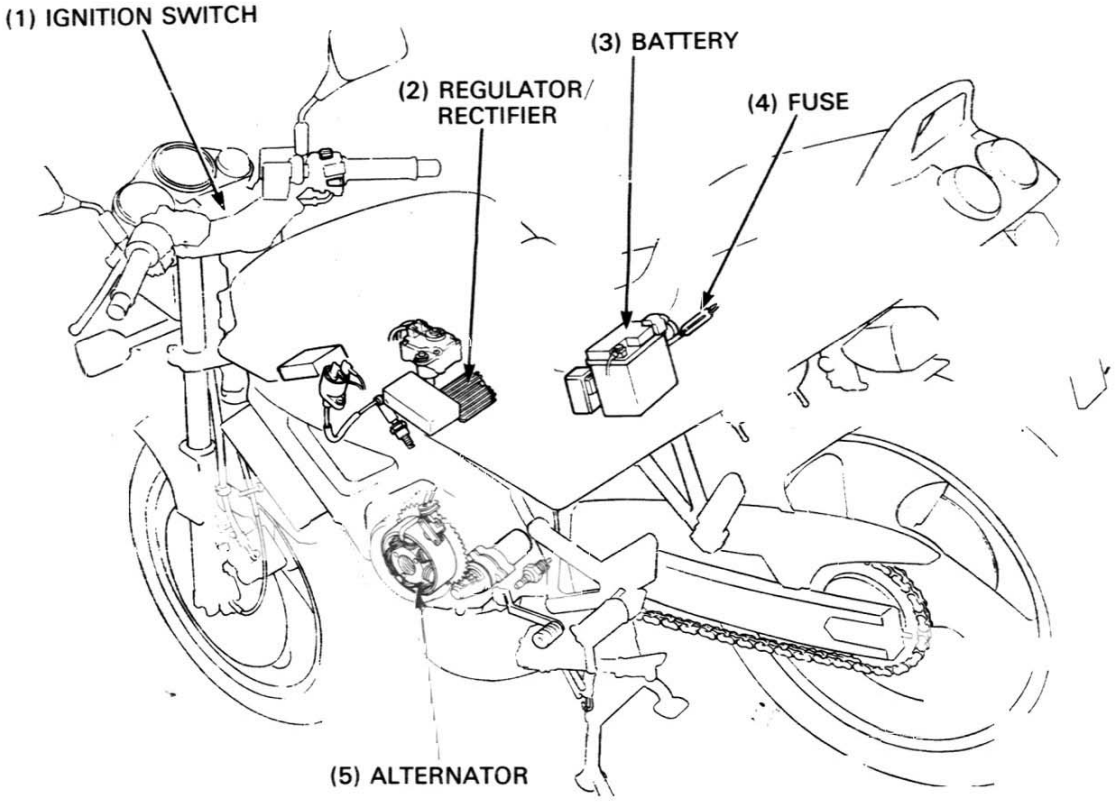
## REMOVAL/INSTALLATION

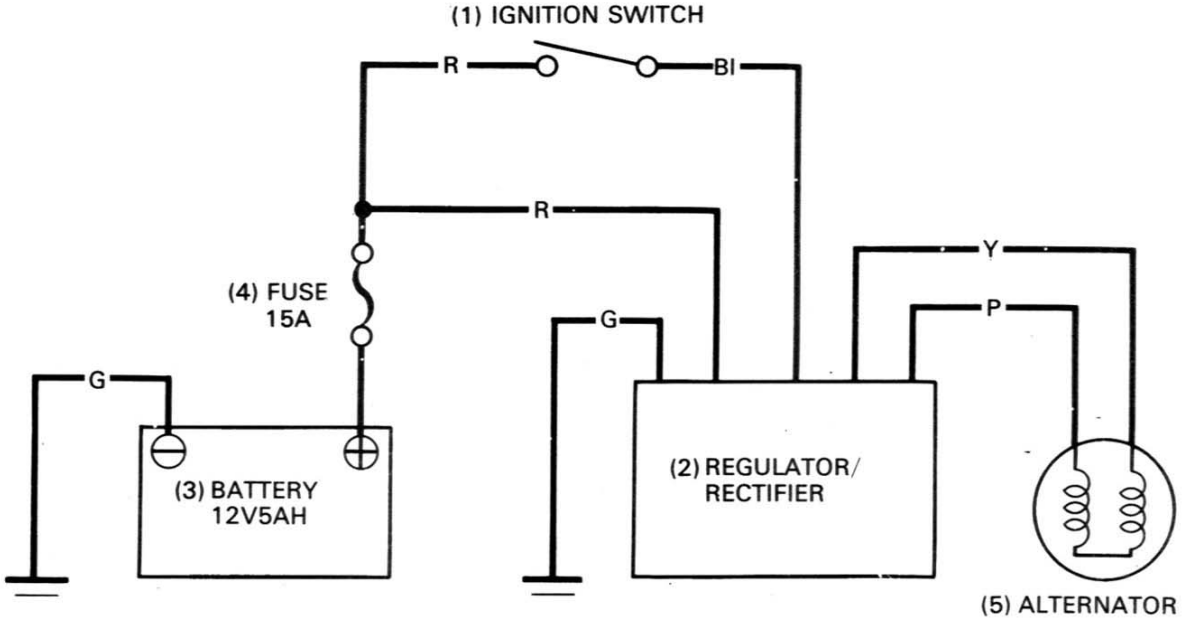
Remove the follows.
- ail cleaner case (page 4-5)
- radiator coolant reservoir tank (page 5-8)
- oil talk (page 2-4)
- battery case
- rear brake master cylinder reservoir bolt
- Maffler mounting bolt

Remove the four bolts and the pillion step stays.
Disconnect the stop/taillight and turn signal light connectors.
Remove the two bolts and taillight assembly.
Remove the five bolts and the rear fender B.
Remove the three bolts and the subframe.

Install the removed parts in the reverse order of removal.
Route the wires correctly referring to the page 1-12.




(1) IGNITION SWITCH
(2) REGULATOR/
RECTIFIER
(3) BATTERY
(4) FUSE
(5) ALTERNATOR


(1) IGNITION SWITCH
R
BI
R
(4) FUSE
15A
G
Y
P
G
G
(3) BATTERY
12V5AH
(2) REGULATOR/
RECTIFIER
(5) ALTERNATOR

# SERVICE INFORMATION

## GENERAL

**⚠ WARNING**

- *The battery gives off explosive gases; keep sparks, flames and cigarettes away. Provide adequate ventilation when charging.*
- *The battery contains sulfuric acid (electrolyte). Contact with skin or eyes may cause severe burns. Wear protective clothing and a face shield.*
  - *If electrolyte gets on your skin, flush with water.*
  - *If electrolyte gets in your eyes, flush with water for at least 15 minutes and call a physician.*
- *Electrolyte is poisonous.*
  - *If swallowed, drink large quantities of water or milk and allow with milk of magnesia or vegetable oil and call a physician.*
- *If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that can cause loss of conciousness and may lead to death.*

- The folowing color codes are used throughout the electrical sections.

| | | | |
|---|---|---|---|
| Bu = Blue | G = Green | Lg = Light Green | R = Red |
| Bl = Black | Gr = Gray | O = Orange | W = White |
| Br = Brown | Lb = Light Blue | P = Pink | Y = Yellow |

- Slow charge the battery whenever possible, quick charging should be an emergency procedure only.
- Remove the battery from the motorcycle for charging.
- The bettery on this motorcycle is a sealed type. Do not try to remove the filler hole caps even during charging. Do not use a non-sealed battery as a replacement.
- All charging system components can be checked on the motorcycle.
- When inspecting the charging system, check the system components and lines step-by-step according to the troubleshooting sequence on the next page.
- Alternator removal is described in section 9.

## SPECIFICATIONS

| ITEM | | | STANDARD NSR 125 F | STANDARD NSR 125 R |
|---|---|---|---|---|
| Battery | Capacity | | 12V - 4Ah | ← |
| | Voltage at 20°C (68°F) | Fully charged | 13.1V | ← |
| | | Needs charging | Below 12,8V | ← |
| | Charging current | | 0,4 amperes | ← |
| | Charging time | | 5-10 Hr | ← |
| Regulator/ rectifier | Type | | Single phase/full-wave battery voltage detected type | Three-phase/full wave battery voltage detected type |
| | Regulated voltage/ampere | | 13.5-15.5V/2,5A at 5,000 $min^{-1}$ (rpm) | ← |
| Alternator | Capacity | | 0.168 KW/5,000 $min^{-1}$ (rpm) | 0.276 kW/5,000 $min^{-1}$ (rpm) |
| | Charging coil resistance | | 0.3-0.7Ω (at 20°C/68°F) | 0.2-0.6Ω (at 20°C/68°F) |

## TOOLS

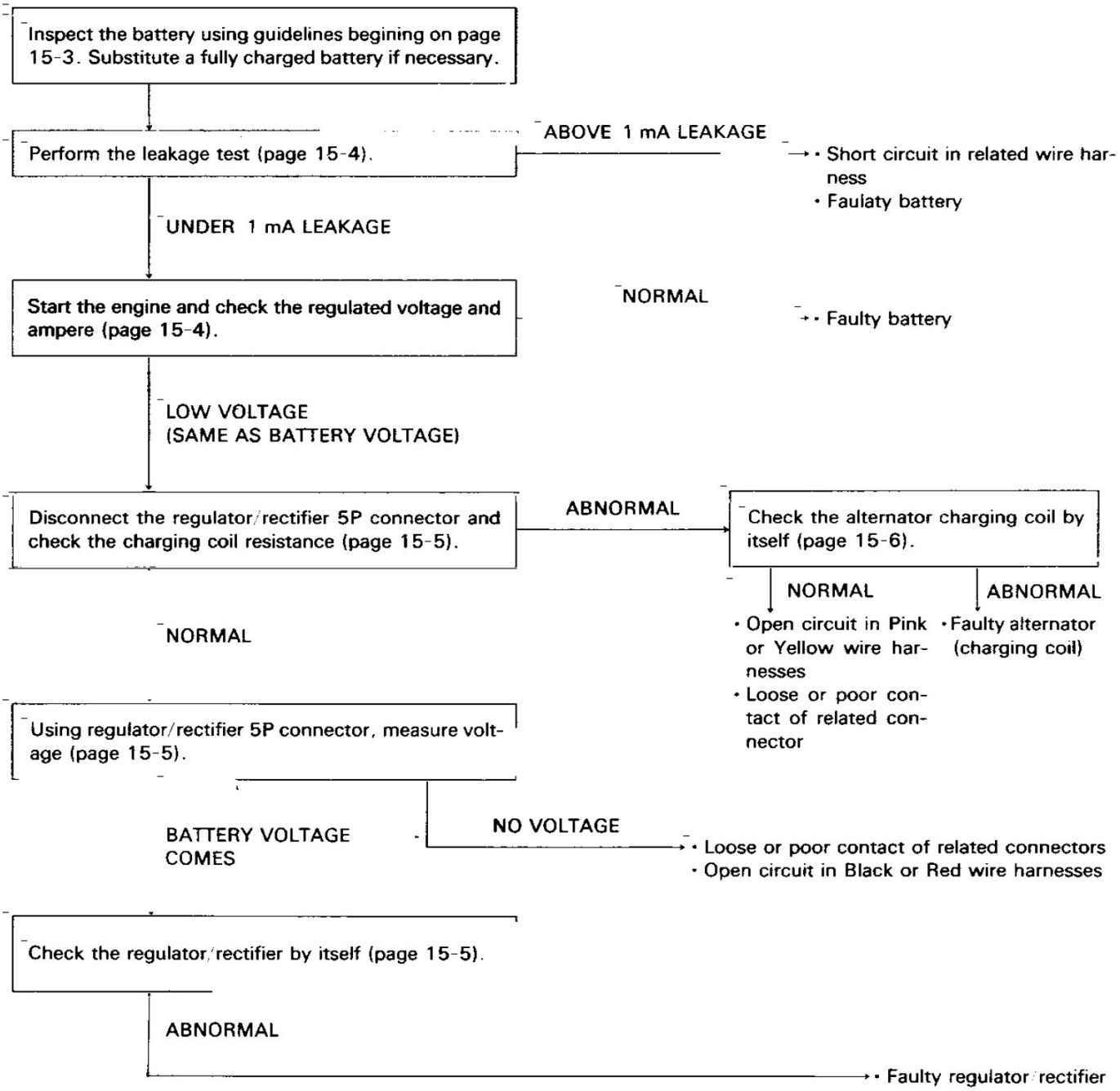
| | |
|---|---|
| Digital mutitester (KOWA) | 07411-0020000 |
| Circuit tester (SANWA) | 07308-0020001 |
| or | |
| Circuit tester (KOWA) | TH-5H |

# TROUBLESHOOTING

**Battery overcharged**

- Loose or poorly connected BI terminal of the regulator rectifier 5P Connector
- Open circuit in BI wire
- Faulty regulator/rectifier

**Battery undercharged**



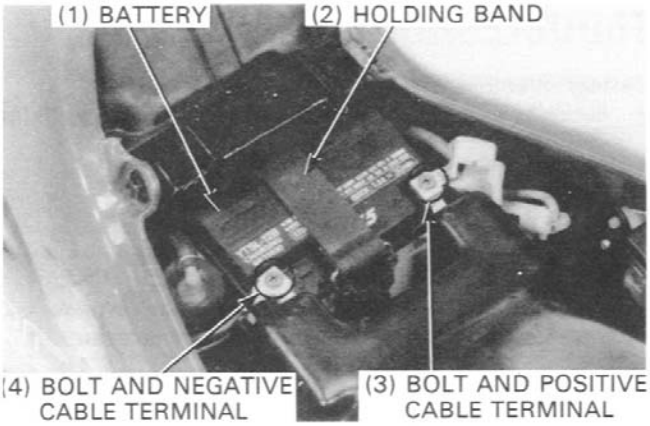
# BATTERY

## REMOVAL

Remove the seat (page 4-3).
Disconnect the battery negative cable first, then the positive cable from the battery.
Undo the battery holding band and remove the battery from the battery case.
Install the battery in the reverse order of removal.

NOTE

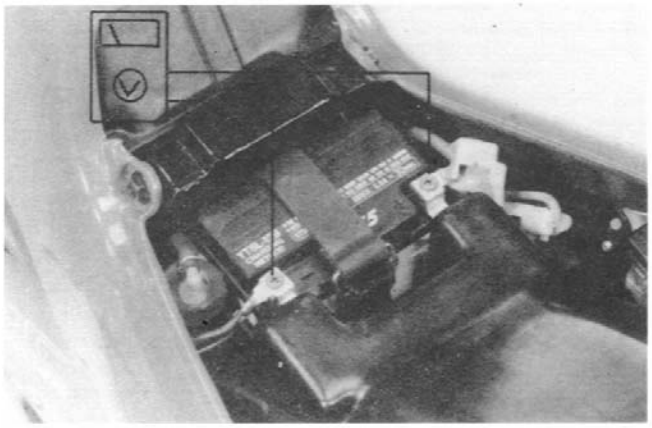
- **After installing the battery, coat the terminals with grease.**




## VOLTAGE INSPECTION

Measure the battery voltage using KOWA digital multimeter.

**VOLTAGE:**
**Fully charged: 13.1V**
**Under charged: Below 12.8V**

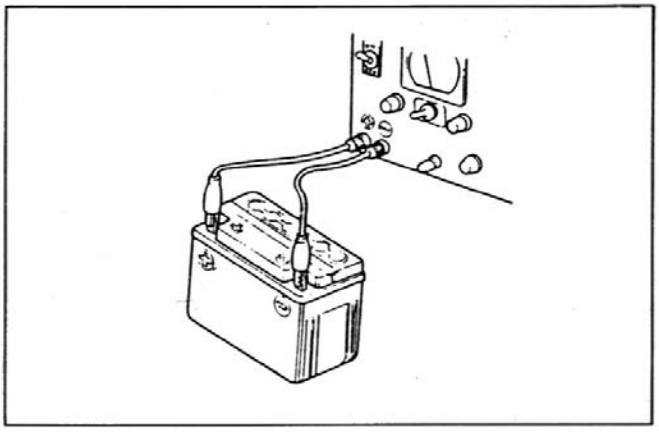


## CHARGING

Connect the charger positive (+) cable to the battery positive (+) terminal.

Connect the charger negative (−) cable to battery negative (−) terminal.

| | Standard | Maximun |
|---|---|---|
| Charging current | 0.4 A | 3.0 A |
| Charging time | 5−10 hours | 30 minutes |



**⚠ WARNING**

- ***Keep flames and sparks away prom a charging battery.***
- ***Turn power ON/OFF at the charger, not at the battery terminals.***

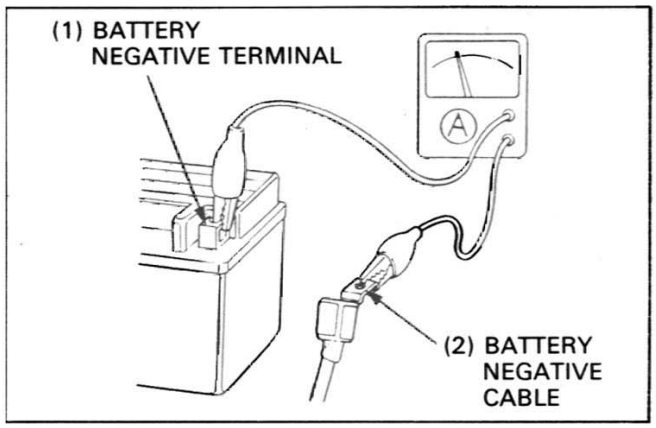
**CAUTION**

- *Quick-charging should only be done in an emegency; slow-charging is preferred.*
- *Be sure to charge the battry with the correct current and for the time indicated above.*
- *Charging with excessive current and or too fast may cause battery failure.*

# CHARGING SYSTEN

NOTE

With large capacity circuits that exceed the ratings of the fuse contained in the tester, measuring errors can be dangerous.
Before starting each test, set the tester at the high capacity range first, and it to small capacity circuits range in order that you have the correct range.




## LEAKAGE INSPECTION

**CAUTION**

- *When measuring small capacity circuits, keep the ignition switch off, if the switch is suddenly turned on during a test, the tester fuse may blow.*

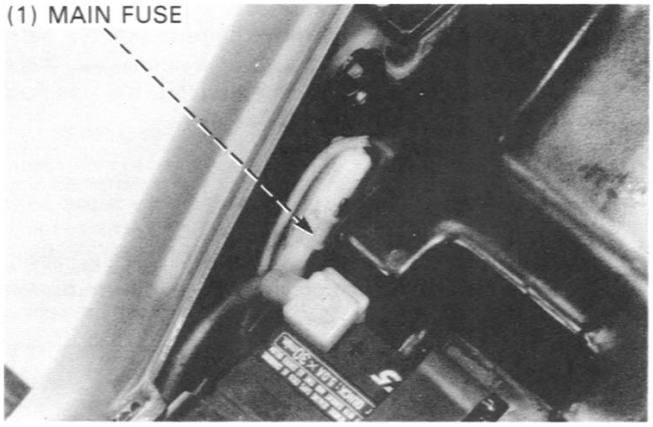
Check the battery ampere leakage before making the regulated ampere inspection.
Turn the ignition switch off and disconnect the battery negative cable from the battery.
Connect the tester between the negative cable and the negative battery terminal.
The ampere meter should indicate within lmA with the ignition switch OFF.
LEAKAGE AMPERE: lmA max

## CHARGING OUTPUT TEST

NOTE

- Be sure the battery is in good condition before performing this test.

Warm up the engine to normal operating temperature.
Stop the engine, and connect the voltmeter as shown.
Remove the seat and remove the main fuse from the main fuse case.
Connect the ampere meter as shown.




**⚠ WARNING**

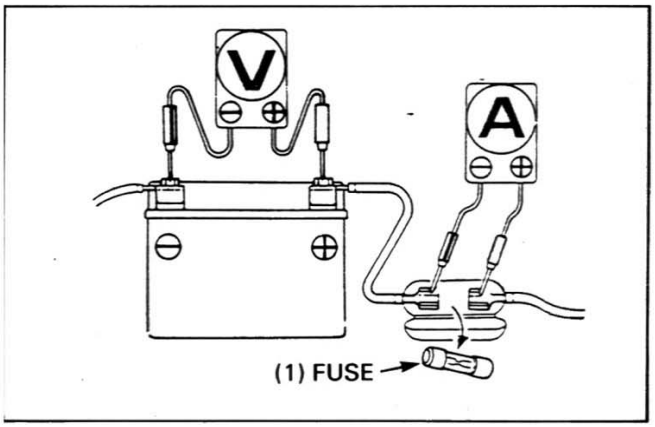
- ***If the engine must be running fo do some work, make sure the area is well ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that can cause loss of consciousness and may lead to death.***

**CAUTION**

- *Be careful not to shortthe circuit.*
- *Be careful not to let the battery positive cable contact the frame while testing.*

Restart the engine and alolw it to idle, then increase the engine speed gradually.
The voltage and ampere should be controlled to the specified data indicated below:

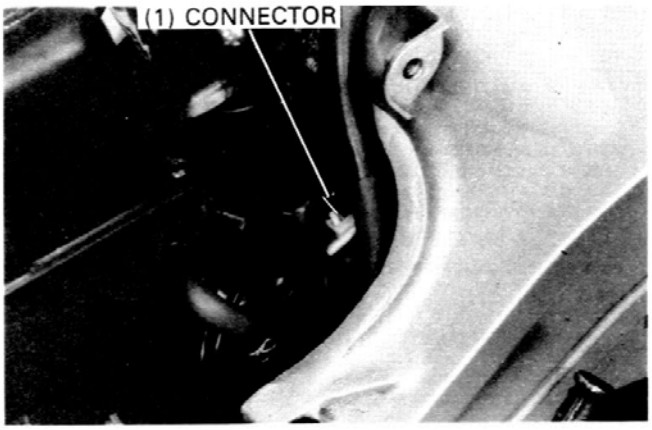
STANDARD: 2.5A at 5,000min$^{-1}$ (rpm)



# REGULATOR/RECTIFIER

## SYSTEM INSPECTION

**Remove the fuel tank (page 4-3).**
**Disconnect the regulator/rectifier 5P-mini connector and check it for loose connect or corroded terminal.**
**Measure the resistance and voltage between connector terminals of the wire harness side.**




**NOTE**

- **You'll get a false reading if your finger touches the tester probes.**
- **If the pointer of the tester fails to zero when the adjusting knob is turned fully clockwise or counterclockwise, replace the battery of the tester.**

| ITEM | TERMINAL (S) | CONDITION | SPECIFICATION |
|---|---|---|---|
| Altenator charging coil line | Pink and Yellow | at all times | 0.3–0.7Ω (20°C 168°F) |
| Bettery charging line | Red (+) and ground | at all times | Battery voltage should come on |
| Battery voltage feedback line | Black (+) and ground | Ignition switch ON | Battery voltage should come on |
| Ground line | Green and ground | at all times | Continuity should exist |

## UNIT INSPECTION

Provided that all inspect on the wire harness side are normal and there are no loose connections at the connector, inspect the regulator/rectifier unit by measureing the resistance between the termisals of the unit side.

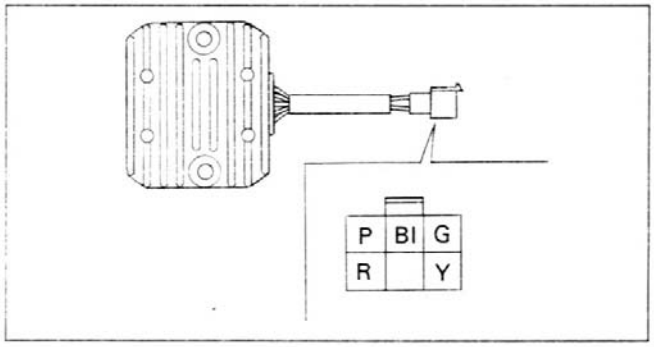
NOTE

- Resistance value will not measure correctly if the probes touch your fingers.
- Use the following specific multitester. Using another manufactured equipment may not allow you to obtained specified values.
  This is due to the characteristic of semiconductors, which have different resistance values depending on the applied voltage.

SPECIFIC MULTITESTER:
–07411–0020000 (KOWA Digital type)
–07308–0020001 (SANWA Analogue type)
–TH–5H (KOWA Analogue type)

- Select the following range:
  SANWA: kΩ
  KOWA: X100
- An old battery stored in the multitester could cause inaccurate readings. Check the battery if the multitester resisters incorrectly.
- When using the KOWA muntitester, remember that all reading should be multiplied by 100.

Replace the regulator/rectifier unit if the resintance value between the terminals is abnormal.




NSR 125 F unit: kΩ

| ⊕ Probe / ⊖ Probe | Black | Red | Yellow | Pink | Green |
|---|---|---|---|---|---|
| Black | | 1-30 | 0.5-20 | 0.5-20 | 0.2-1 |
| Red | ∞ | | ∞ | ∞ | ∞ |
| Yellow | ∞ | 0.5-10 | | ∞ | ∞ |
| Pink | ∞ | 0.5-10 | ∞ | | ∞ |
| Green | 0-1 | 1-30 | 0.5-10 | 0.5-10 | |

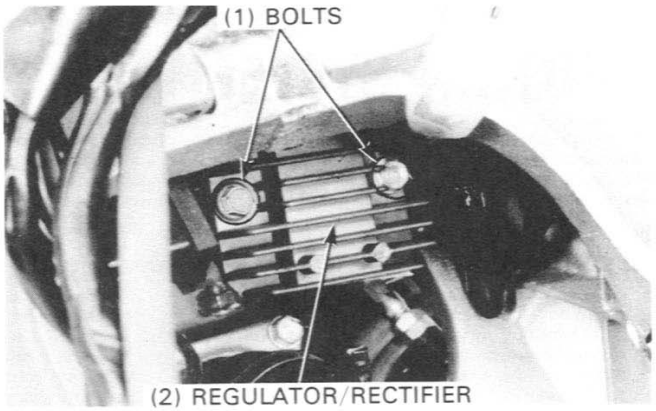
NSR 125 R unit: kΩ

| ⊕ Probe / ⊖ Probe | Red | Black | Green | Yellow |
|---|---|---|---|---|
| Red | | ∞ | ∞ | ∞ |
| Black | 20-100 | | 10-50 | 15-80 |
| Green | 1-20 | 1-20 | | 0.5-10 |
| Yellow | 0.5-10 | ∞ | ∞ | |

| Manufacture | Range |
|---|---|
| SANWA | kΩ |
| KOWA | RX100 |

### UNIT REPLACEMENT

Remove the seat (page 4-3).
Disconnect the regulator/rectifier connector and remove the bolts and regulator/rectifier.
Install a new regulator/rectifier in the reverse order of removal.




## ALTERNATOR CHARGING COIL

### INSPECTION

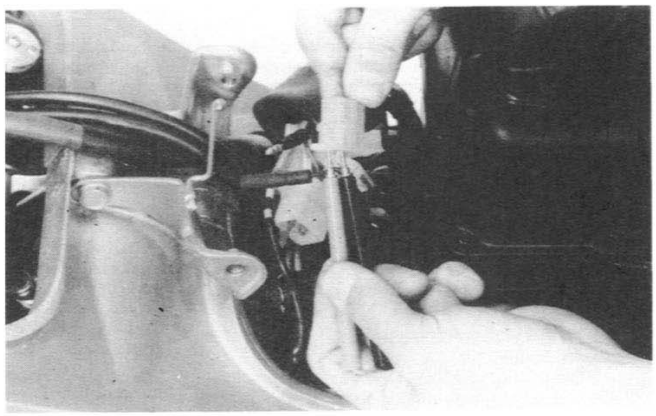
NOTE

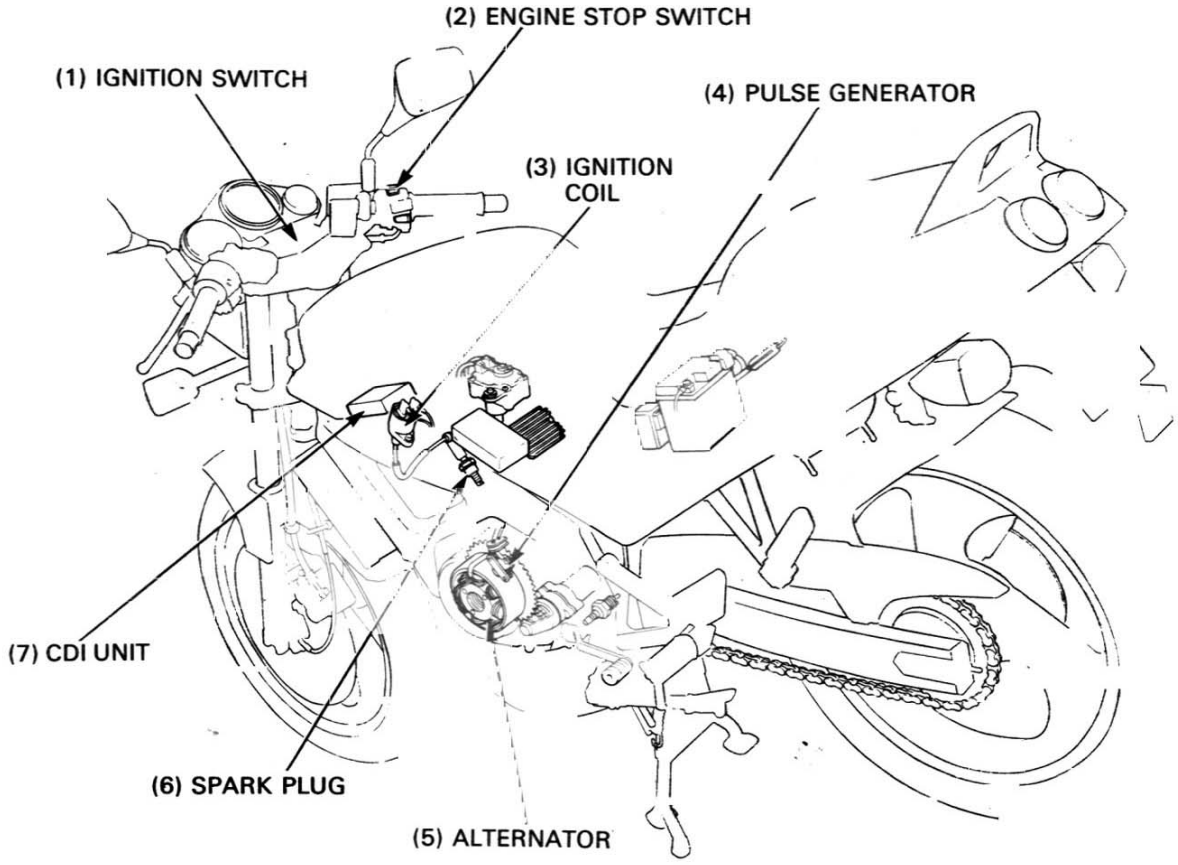
- It is not necessary to remove the stator coil to make this test.

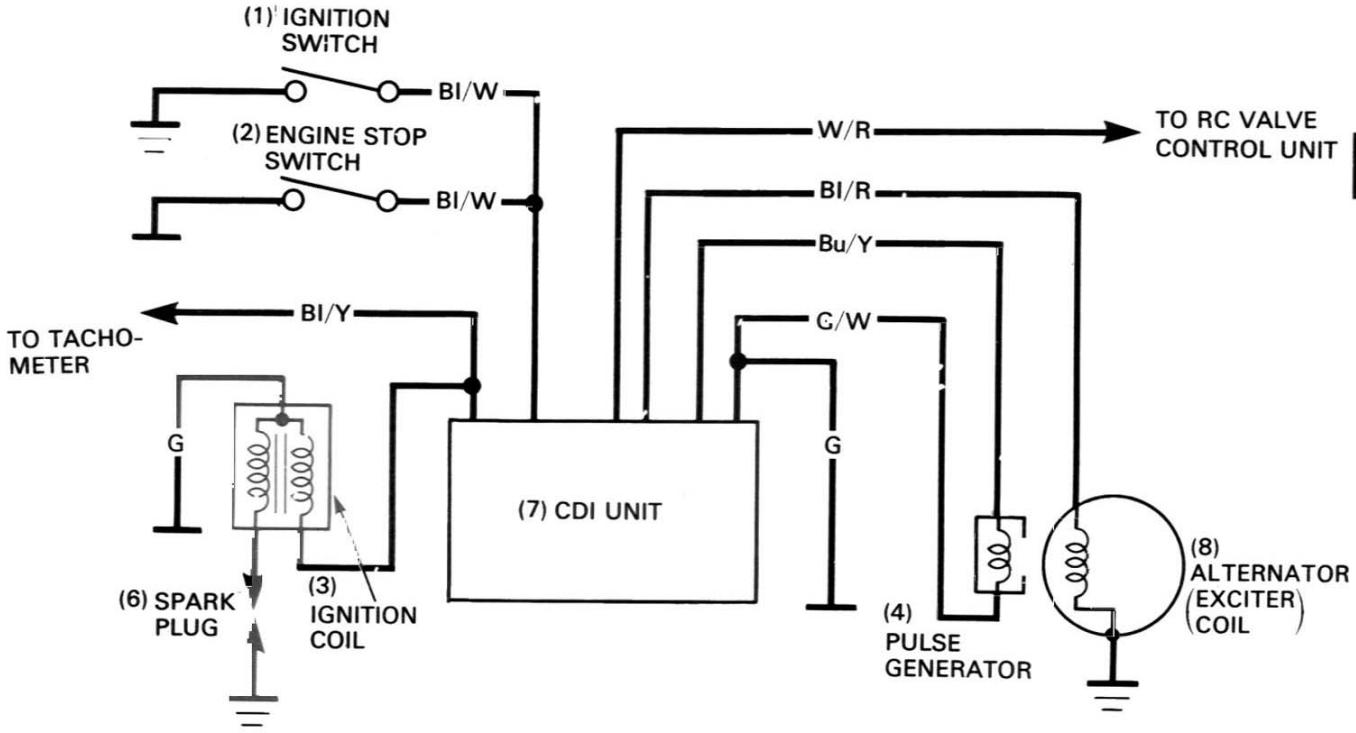
Remove the fuel tank (page 4-3).
Disconnect the alternator 3P-mini connector.
Measure the resistance between the yellow and pink wire terminals, and check for no continuity between each terminal and ground.

**STANDARD: 0.3—0.7 Ω (20°C/68°F) NSR 125 F**
**STANDARD: 0.2—0.6 Ω (20°C/68°F) NSR 125 R**

Replace the stator if the resistance is out of specification or if there is continuity between each terminal and ground.




(2) ENGINE STOP SWITCH
(1) IGNITION SWITCH
(4) PULSE GENERATOR
(3) IGNITION COIL
(7) CDI UNIT
(6) SPARK PLUG
(5) ALTERNATOR


(1) IGNITION SWITCH
BI/W
(2) ENGINE STOP SWITCH
BI/W
W/R
TO RC VALVE CONTROL UNIT
BI/R
Bu/Y
G/W
BI/Y
TO TACHO-METER
G
G
(7) CDI UNIT
(6) SPARK PLUG
(3) IGNITION COIL
(4) PULSE GENERATOR
(8) ALTERNATOR (EXCITER COIL)

# SERVICE INFORMATION

⚠ WARNING

***If the engine must be running to be some work, make sure the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas can cause loss of conciousness and may lead to death.***

## GENERAL

- Ignition timing does not normally need to be adjusted since the CDI (Capacitive Discharge Ignition) unit is factory Preset.
- For spark plug inspection, refer to page 3-6.
- For alternator or pluse generator removal/installation, see section 9.
- When inspecting the ignition system, check the system components and lines step-by-step according to the trouble-shooting sequence on the next page.

## SPECIFICATIONS

| ITEM | | | STANDARD |
|---|---|---|---|
| Spark plug | Standard | | BR9ECS (NGK) W27ESR-U (ND) |
| | For extended high speed riding | | BR10ES (NGK) W31ESR-U (ND) |
| Spark plug gap | | | 0.7-0.8 mm (0.028-0.031 in) |
| Ignition timing | F mark | | 24,3° ± 2 BTDC at 3,000 $min^{-1}$ (rpm) |
| Ignition coil (20°C/68°F) | Primary coil resistance | | 0.1-0.3Ω |
| | Secondary coil resistance | (Without spark plug cap) | 2.7-3.5 KΩ |
| | | (With spark plug cap) | 6.5-9.7 KΩ |
| Pulse generator resistance (20°C/68°F) | | | 180-280Ω |
| Alternator excitar coil resistance (20°C/68°F) | | | 95-155Ω (F-Type)<br>80-180Ω (R-Type) |

## TOOLS

| | |
|---|---|
| Digital multitester | 07411-0020000 |
| or | |
| Circuit tester (SANWA) | 07308-0020001 |
| Circuit tester (KOWA) | TH-5H |

# TROUBLESHOOTING

**Weak or no spark at plug**

**Try spark test with known good spark plug.**

→ GOOD SPARK → • Faulty spark plug

WEAK OR NO SPARK

**Check spark plug wire for loose or poor contact at the spark plug cap, then try spark test again.**

→ GOOD SPARK → • Loose or poor contact of spark plug cap.

WEAK OR NO SPARK

Check CDI unit connectors for loose or poor contact.

→ ABNORMAL → • Loose or poor contact of CDI unit connectors.

NORMAL

Check the resistance, continuity and voltage at the CDI unit connectors of the wire harness side (page 16-3).
Also check the ignition secondary coil resistance (page 16-3).

ABNORMAL

Check the related components in that part of the abnormal line. After checking, compare this measurement with above measurement (CDI unit connector inspection).

NORMAL (DIFFERENT MEASUREMENTS)

**Loose or poor contact of the related component connectors**
**Open or short circuit in the wire harness between the related component and CDI unit.**

ABNORMAL (SAME MEASUREMENTS)

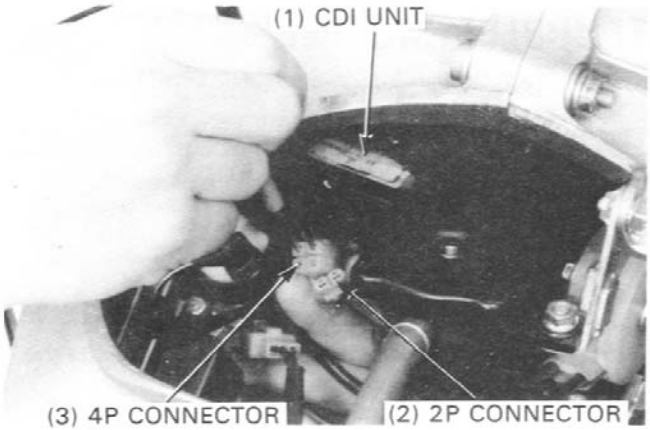
Faulty related components
- ignition coil (page 16-3)
- pulse generator (page 16-4)
- alternator exciter coil (page 16-4)
- ignition switch (page 18-5)
- engine stop switch (page 18-8)
- ground wire

ALL NORMAL

• Faulty CDI unit

# IGNITION SYSTEM INSPECTION

Remove the seat and fuel tank (page 4-3).
Disconect the CDI unit connectors.
Check them for loose or corroded terminals.
Measure resistance and continuity between connector terminals using the following chart.




(2P CONNECTOR)

| ITEM | TERMINAL | SPECIFICATION |
|---|---|---|
| Engine stop switch and ignition switch line | Black/White and ground | NO CONTINUITY with both switches in RUN and ON.<br>CONTINUITY with either switch in OFF. |
| Alternator exciter coil line | Black/Red and ground | 95–155 Ω (20°C/68°F) |

(4P CONNECTOR)

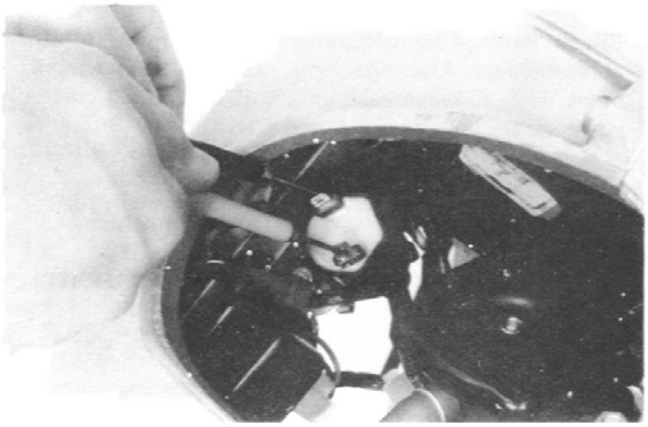
| ITEM | TERMINAL | SPECIFICATION |
|---|---|---|
| Pulse generator coil line | Blue/Yellow and ground | 180–280 Ω (20°C/68°F) |
| Ignition coil (primary) line | Black/Yellow and ground | 0.1–0.3 Ω (20°C/68°F) |
| Ground line | Green and ground | CONTINUITY at all times |

# IGNITION COIL

## INSPECTION

Remove the seat and fuel tank (page 4-3).
Disconneect the black/Yellow and green wire treminals from the ignition coil.
Measure the primary coil resistance between the primary terminals.

**STANDARD: 0.1–0.3 Ω (20°C/68°F)**

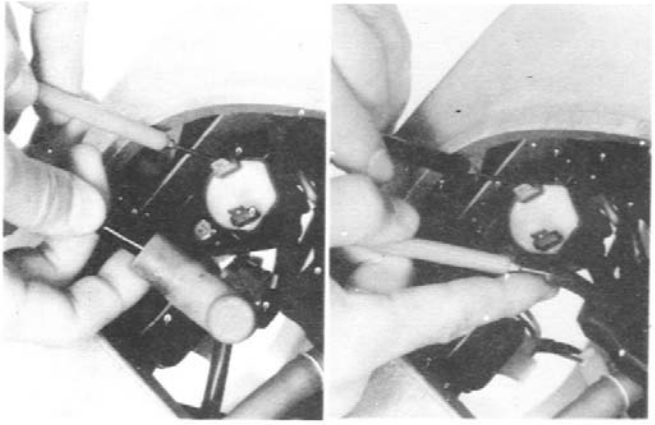


Disconnect the spark plug cap from the plug and measure the secondary coil resistance between the plug cap and coil green terminal.

**STANDARD: 6.5–9.7 kΩ (20°C/68°F)**

If the resistance is out of range, remove the spark plug cap and measure the resistance between the secondary coil terminals.

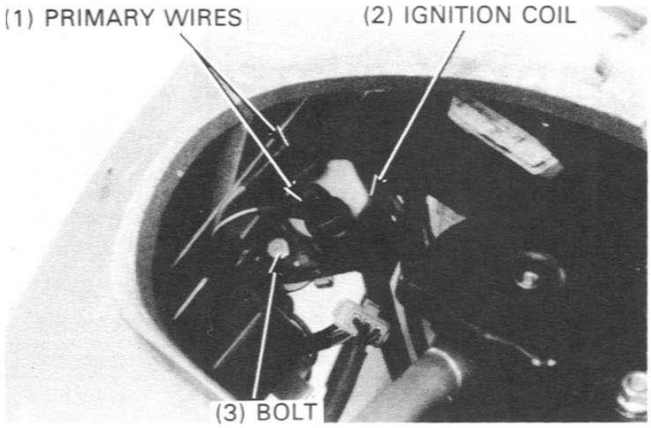
**STANDARD: 2.7–3.5 kΩ (20°C/68°F)**



### REMOVAL/INSTALLATION

Remove the seat and fuel tank (page 4-3).
Disconnect the primary wires from the spark plug.
Remove the ignition coil mounting bolt and ignition coil.

Install the ignition coil in the reverse order of removal.




# PULSE GENERATOR

### INSPECTION

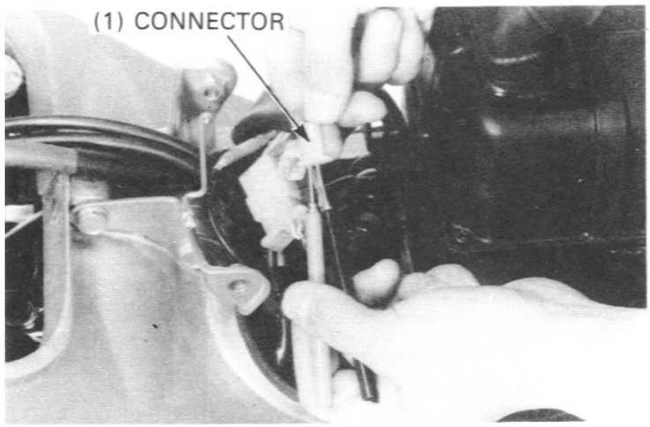
NOTE

It is not necessary to remove the pulse generator to make this inspection.

Remove the seat and fuel tand (page 4-3).
Disconnect the pulse generator connector (plastic connector; Blue/Yellow and Green/White wires).
Measure the resistance between the Blue/Yellow and Green/White wire terminals.

**STANDARD: 180–280 Ω (20°C/68°F)**

For pulse generator replacement, refer to section 9.




# ALTERNATOR EXCITER COIL

### INSPECTION

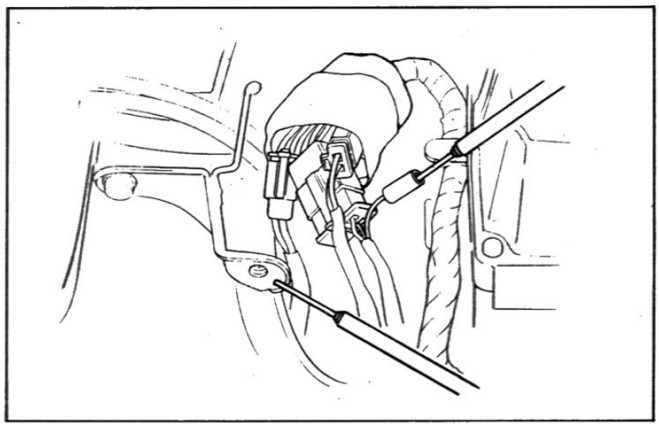
NOTE

It is not necessary to remove the stator coil to make this test.

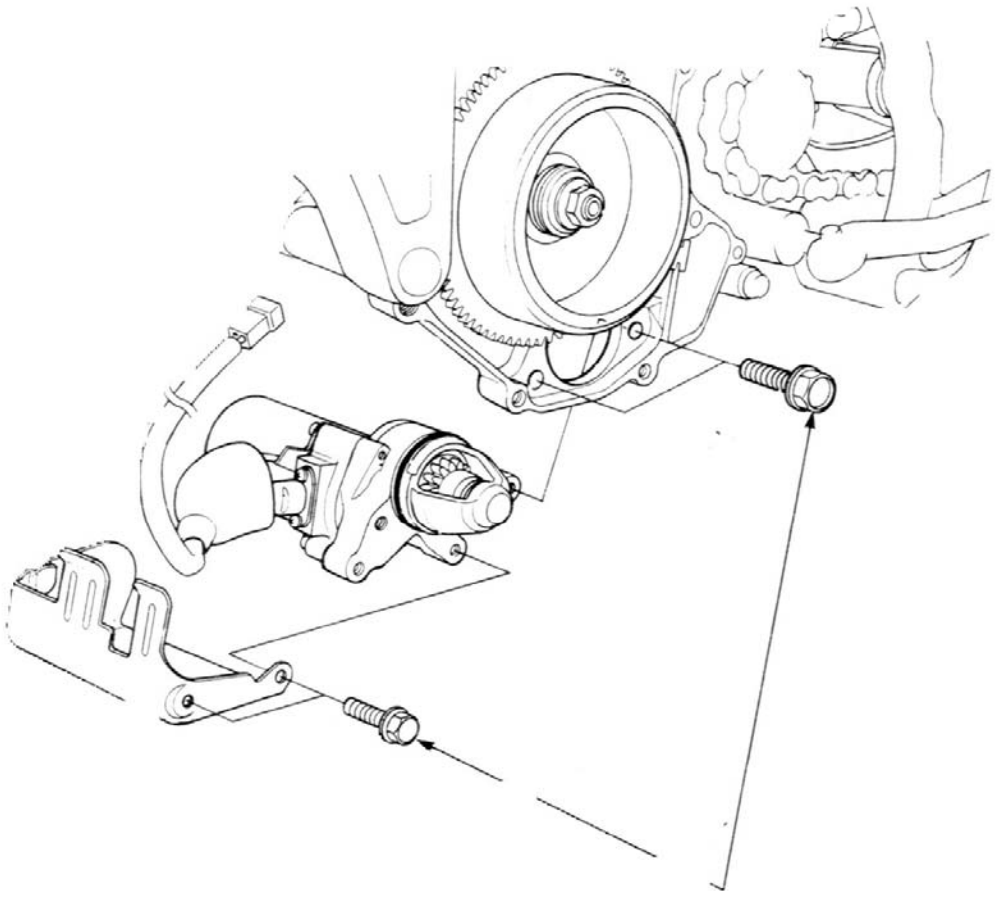
Disconnect the alternator exciter connector (Black/Red wire).
Measure the resistance between the Black/Red wire terminal and body ground.

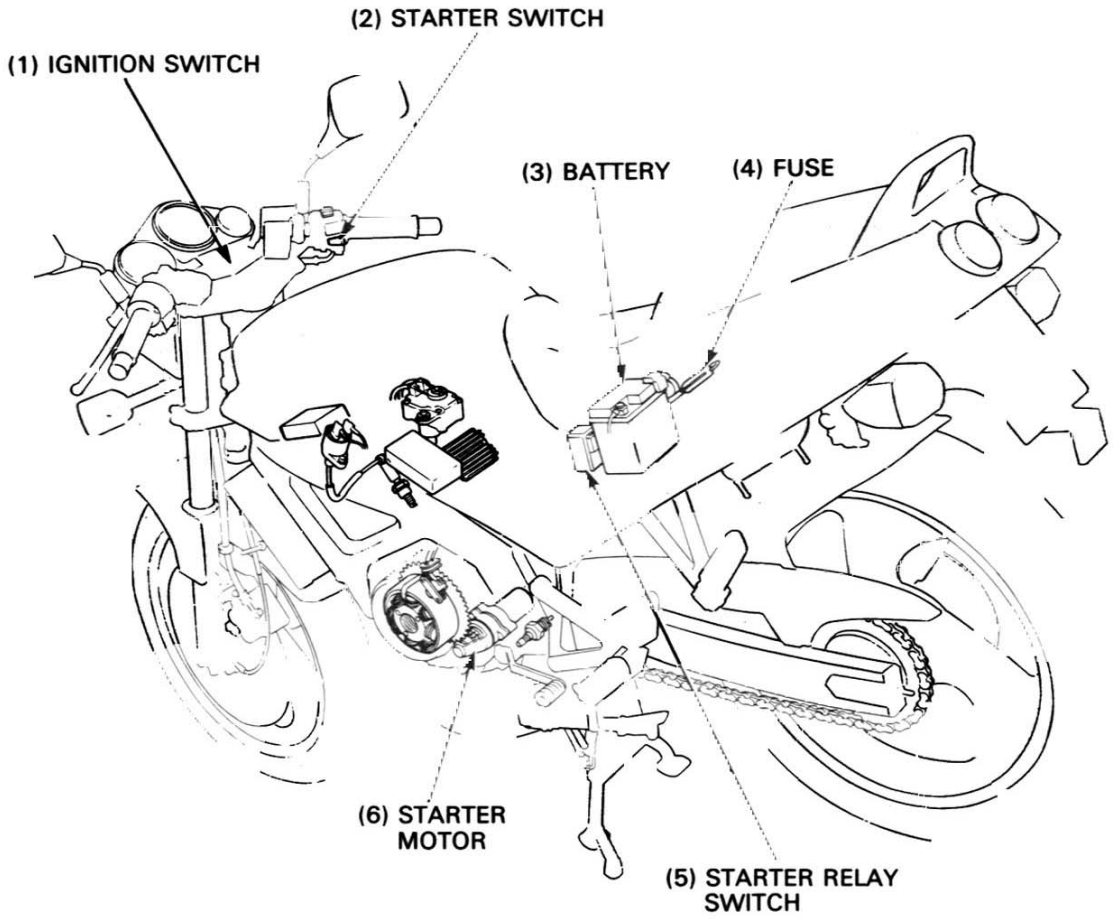
**STANDARD: 95—155 Ω (20°C/68°F) NSR 125 F**
**STANDARD: 80—180 Ω (20°C/68°F) NSR 125 R**

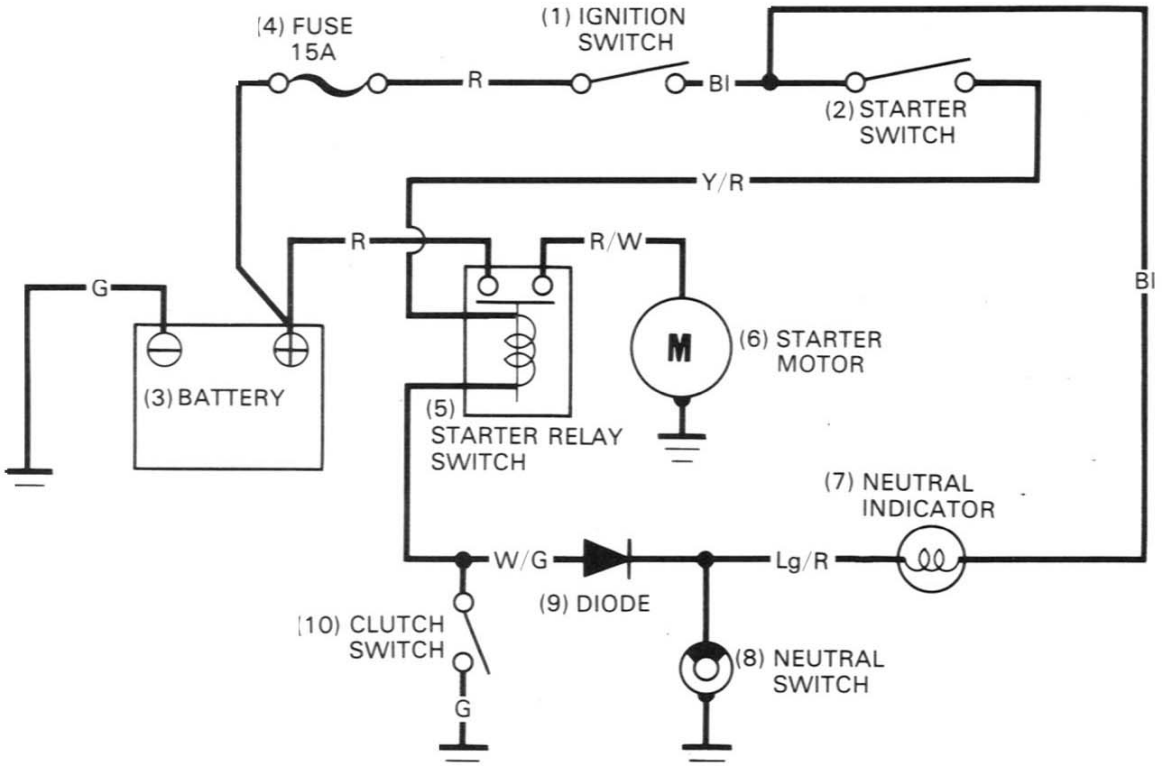
For alternator replacement, refer to section 9.



# STARTER SYSTEM




(2) STARTER SWITCH
(1) IGNITION SWITCH
(3) BATTERY
(4) FUSE
(6) STARTER MOTOR
(5) STARTER RELAY SWITCH


(4) FUSE 15A
(1) IGNITION SWITCH
R
Bl
(2) STARTER SWITCH
Y/R
R
R/W
G
Bl
(3) BATTERY
M
(6) STARTER MOTOR
(5) STARTER RELAY SWITCH
(7) NEUTRAL INDICATOR
W/G
Lg/R
(9) DIODE
(10) CLUTCH SWITCH
G
(8) NEUTRAL SWITCH

17

# SERVICE INFORMATION

## GENERAL

- The starter motor can be removed with the engine in the frame.
- When inspecting the starter system, check the system components and lines step-by-step according to the trouble-shooting sequence on the next page.

## SPECIFICATIONS

| ITEM | STANDARD | SERVICE LIMIT |
|---|---|---|
| Starter motor brush length | 9 mm (0.4in) | 4 mm (0.2 in) |

# TROUBLESHOOTING

NOTE

The starter motor could turn when the transmission is in neutral or the clutch disengaged.
Check the following items before troubleshooting the system:
- Burned fuse (15A).
- Battery and starter motor cables for loose connection.
- Battery discharged.

**Starter motor do not turn in neutral position**

Check the starter relay switch for operation. You should hear the relay 'CLICK' when the starter swich buttorn is depressed.

'CLICK' HEARD → Apply battery voltage to the starter motor directly and check the operation.

- TURN
  - Loose or poor contact cable
  - Faulty starter relay switch (page 17-8)
- DO NOT TURN
  - Faulty starter motor (page 17-4).

'CKICK' NOT HEARD → Check the neutral indicator for function.

ABNORMAL
- Faulty neutral switch (page 18-9)
- Loose or poor contact connector of the neutral swich
- Faulty ignition switch (page 18-5)
- Neutral indicator bulb burned

NORMAL → Check the starter relay switch for continuity (page 17-8)

ABNORMAL → Faulty starter relay switch

NORMAL
- Loose or poor contact connector of the clutch diode
- Faulty starter switch (page 18-8)
- Faulty clutch diode (page 17-9)
- Open or short circuit in wire harness
- Loose or poor contact conector of the starter relay swich

**Starter motor does not turn even if the clutch lever is depressed with the transmission in gear.**
- Faulty clutch switch (page 18-8)
- Loose or poor contact of white/Green or Green wire connectors
- Open circuit in white/Green or Green wire harness

**Starter motor turns engine slowly**
- Weak battery
- Excessive resistance in circuit
- Binding in starter motor

**Starter motor and engine turn, but engine does not start**
- Faulty ignition system (see section 16)
- Engine problems (see section 3)
  - Low compression
  - Fould spark plug

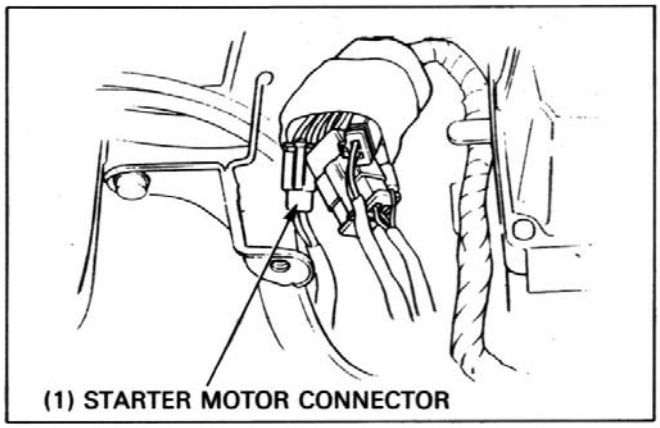
# STARTER MOTOR

## REMOVAL

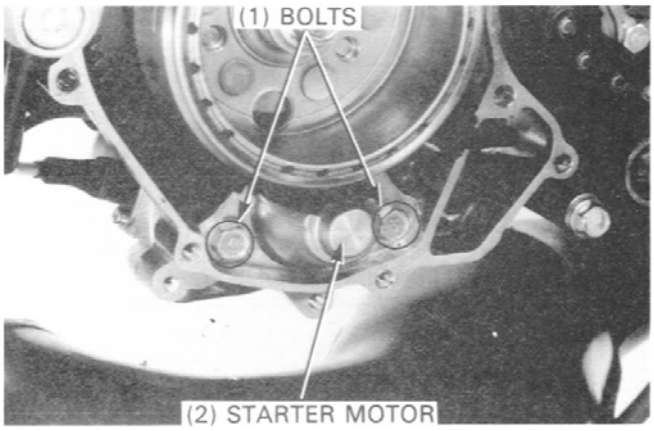
**⚠ WARNING**

***With the ignition switch OFF, remove the negative cable at the battery before servicing the starter motor.***

Remove the fuel tank (page 4-3).
Put the rubber cover off and disconnect the starter motor connector.

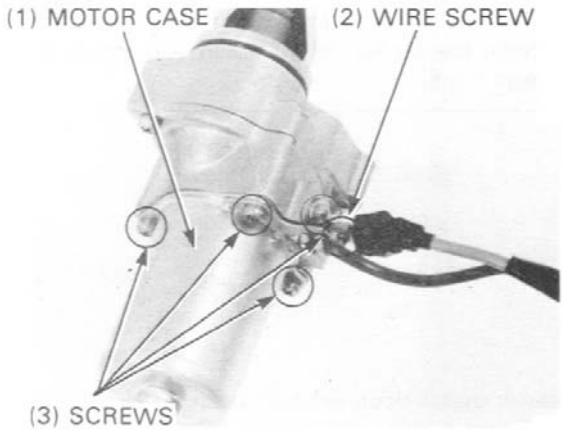



Remove the left crankcase cover (page 9-2) and remove the two bolts and starter moter from the left crankcase.




## DISASSEMBLY

Remove the three screws and starter motor case.
Disconnect the starter motor wire by removing the wire screw.

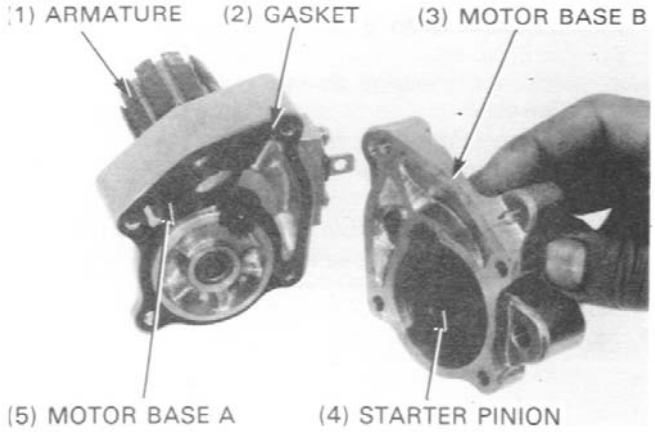



Remove the armature and gasket from the starter motor base A.

NOTE

- When removing the armature, be careful to prevent the motor brush springs from jumping out.

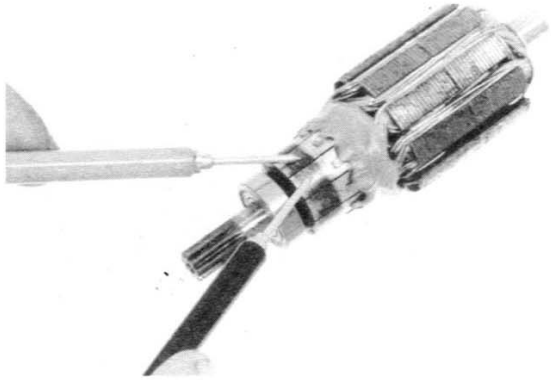
Remove the starter pinion from the starter motor base B.



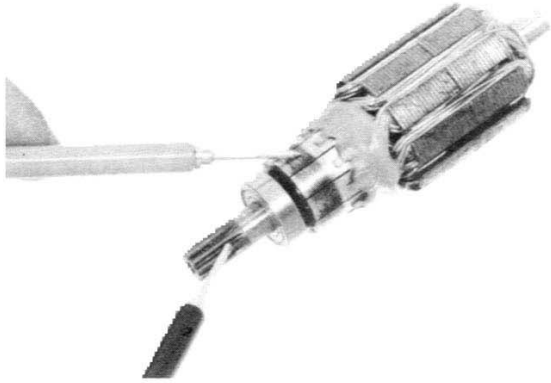
## INSPECTION

Inspect the commutator bars for discoloration. Bars discolored in pairs indicate grounded armature coils, in which case the starter motor must be replaced.

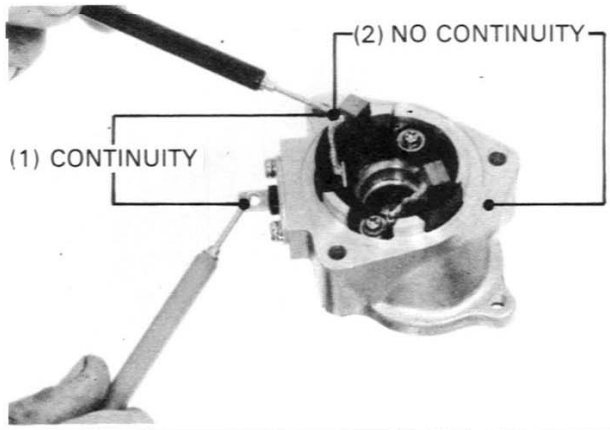

Check for continuity between pairs of commutator bars.
There should be continuity.



Check for continuty between individual commutator bar and the armature shaft.
There should be no continuity.

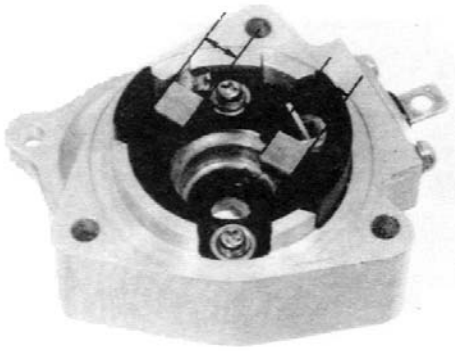


Check for continuity between the cable terminal and insulated brush wire.
There should be continuity.
Check for continuity between the cover and insulated brush wire.
There should be no continuity.

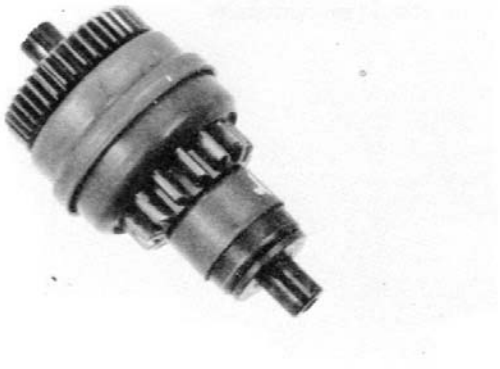


Inspect the brushes for damage and measure the brush length.

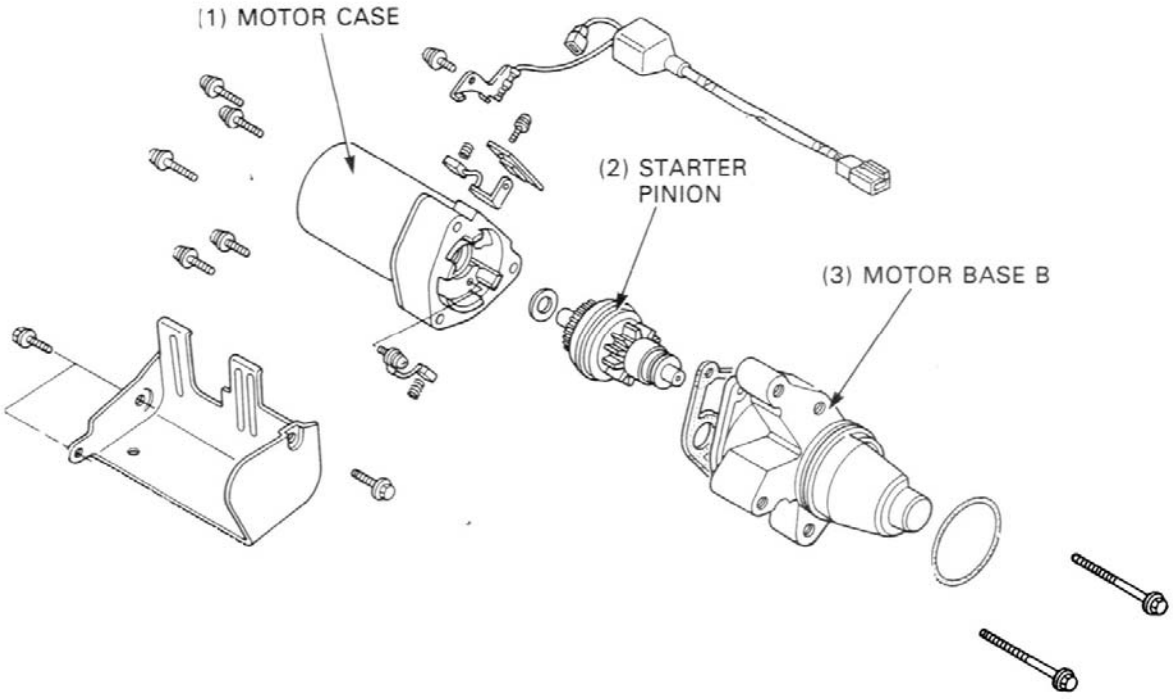
**SERVICE LIMIT: 4 mm (0.2 in)**



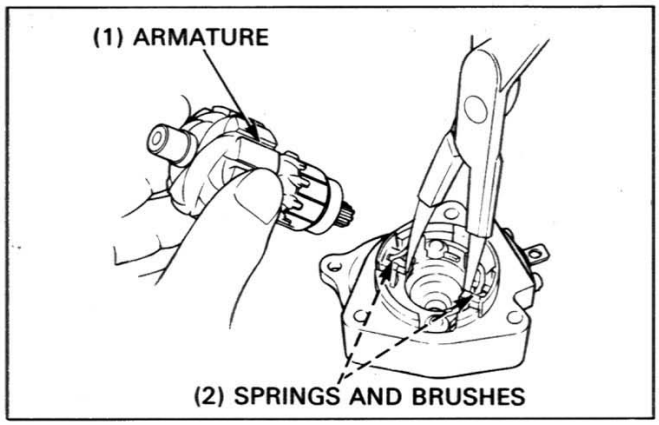
Check the starter pinion gear and sliding surfaces for wear or damage.
Check the starter pinion for smooth operation.
Apply grease to each sliding area.



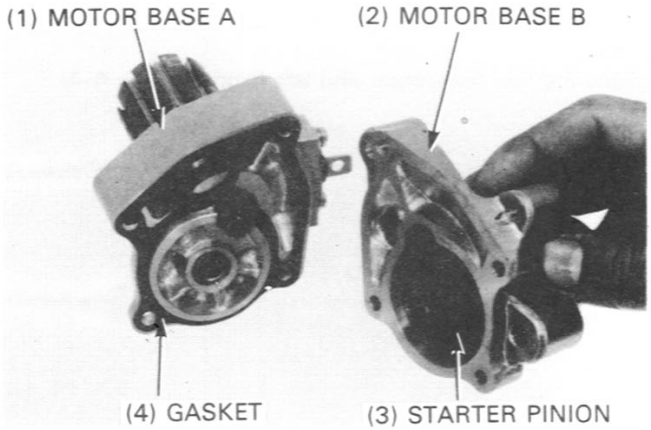
ASSEMBLY



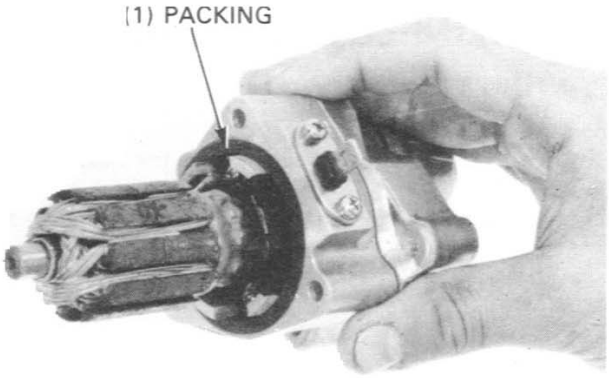
Install the brush springs and brushes into the brush holder.
Install the armature into the starter motor base A while pushing the motor brushes into the brush holder.



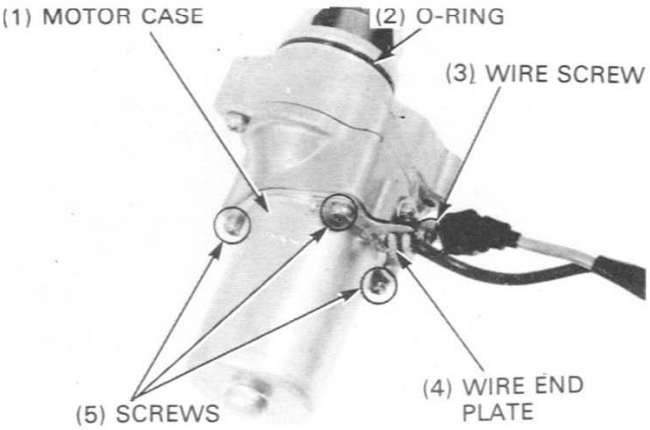

Set the gasket on the starter motor base A.
Install the starter pinion into the starter motor base B and assemble the motor base A and B.




Install a packing onto the motor base A.

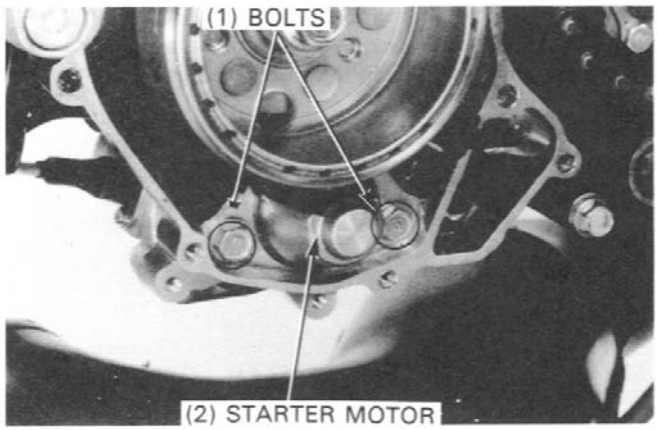



Make sure the O-ring is installed in the groove in the motor base B and it is in good condition.
Install the starter motor case with the motor ground wire end plate and secure the motor case with the three screws.
Connect the motor positive cable with the screw and cover the terminal with the rubber cover.

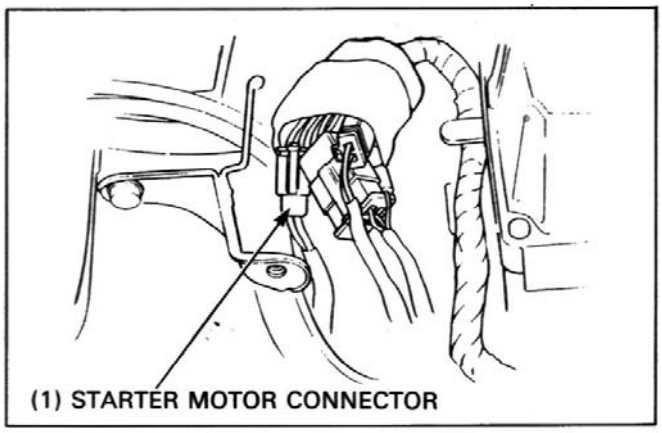


Install the starter motor into the left crankcase and secure it with the bolts.

install the left crankcase cover (page 9-4).



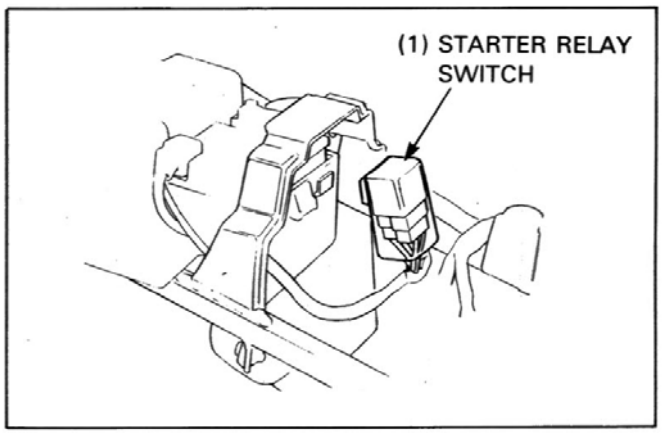

Connect the starter motor connector and battery negative cable.
Install the fuel tank, right and left fairings (page 4-4).



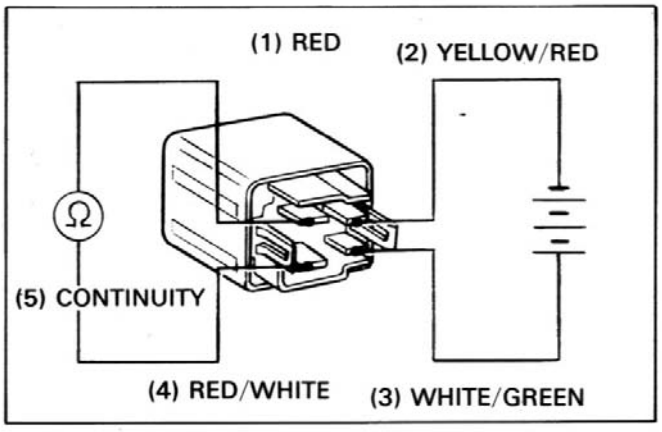

# STARTER RELAY SWITCH

## CONTINUITY INSPECTION

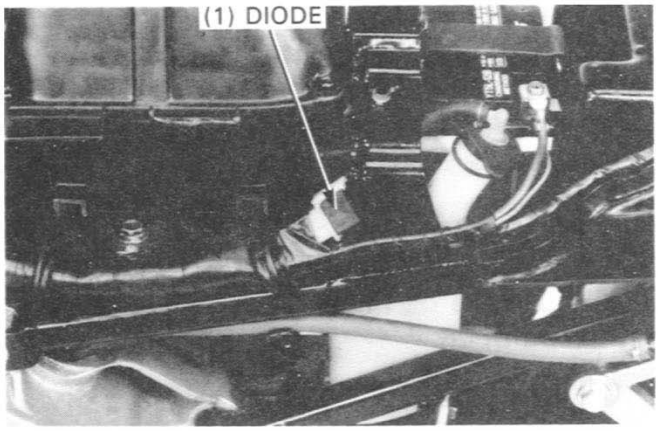
Remove the air cleaner case (page 4-5).
Remove the starter relay switch from the holder of the battery case.
Disconnect the connector from the starter relay switch.




There should be continuity between the red and red/white wire terminals when probe of a 12V battery is attached to the terminals white/green and red/yellow.
Replace the starter relay switch if necessary and install the starter relay switch in the reverse order of removal.



# DIODE




## REMOVAL

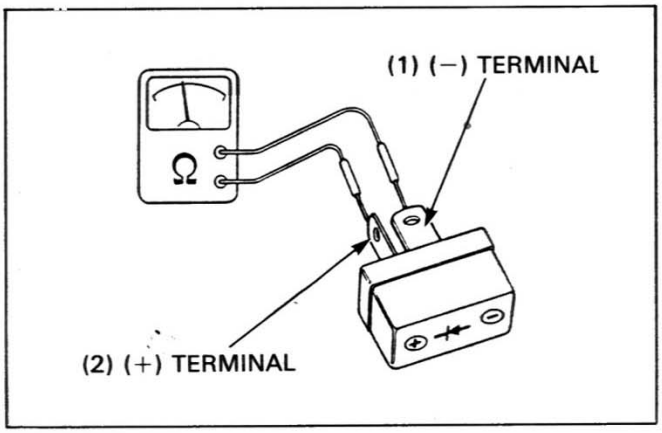
Remove the left fairing (page 4-3).
Remove the diode from the wire harness.

## INSPECTION

Check for continuity with an ohmmeter.
There should be continuity in one way.

NOTE

- The test chart is for a positive ground ohmmeter. The test results will be reversed if a negative ground ohmmenter is used




**Normal Direction: CONTINUITY**
+Probe: (+)terminal
−Prove: (−)terminal

**Reverse Direction: NO CONTINUITY**
+Probe: (−)terminal
−Prove: (+)terminal

## INSTALLATION

Install the diode in the reverse order of removal.
Install the fuel tank (page 4-3).

# SERVICE INFORMATION

GEANERAL

- All plastic components have locking tabs that must be released before disconnecting.
- To isolate an electrical failure, check the continuity of the electrical path through the part. A continuity check can usually be made without removing from the motorcycle. Simply disconnect the wires and connect the continuity tester or volt-ohmmeter to the terminals or connectors.
- A continuity tester is useful when checking to find out whether or not there is an electrical connection between the two points. An ohmmeter is needed to measure the resistance of a circuit, such as when there is a specific coil resistace involved, or when checking for high resistance caused by corroded connections.

| SPECIFICATIONS | F-Type | R-Type |
|---|---|---|
| Headlight | 12V 35/35W | 12V 25/25W x 2 |
| Brake and taillight | 12V 21/5W | 12V 5W x 2 |
| Instrument illumination | 12V 1.7W x 4 | ← |
| Turn signal light | 12V 10W x 4 | ← |
| Position light | 12v 5W | ← |
| Neutral indicator | 12V 3W | ← |
| Turn signal indicator | 12V 3W x 2 | ← |
| Hi-beam indicator | 12V 1.7W | ← |
| Fuse | 15A | ← |

TORQUE VALUES

Ignition switch bolt 10 N·m (1.0 kg-m, 7ft-lb) apply a locking agent to the threads

# TROUBLESHOOTING

**No lights come on when ignition switchis turned on:**

- Bulb at fault or burned out
- Faulty switch
- Fuse blown
- Wiring loose, broken, or at fault
- Battery dead or disconnected

**All lights come on, but dimly, when ignition switch is turned on:**

- Battery voltage low
- Wiring or switch has exessive resistance

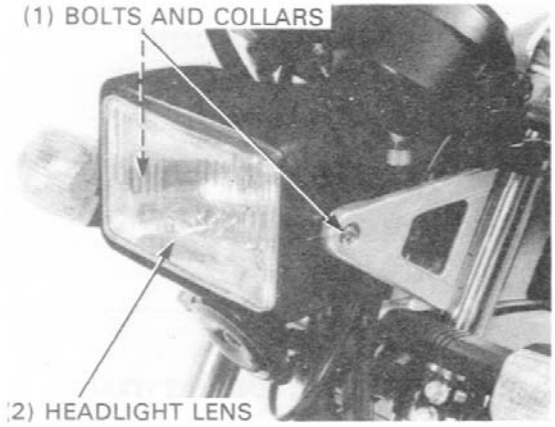
**Headlight beam does not shift when** HI-LO switch is operated:

- Beam filament burned out
- Faulty dimmer switch
- Wiring loose, broken or at fault

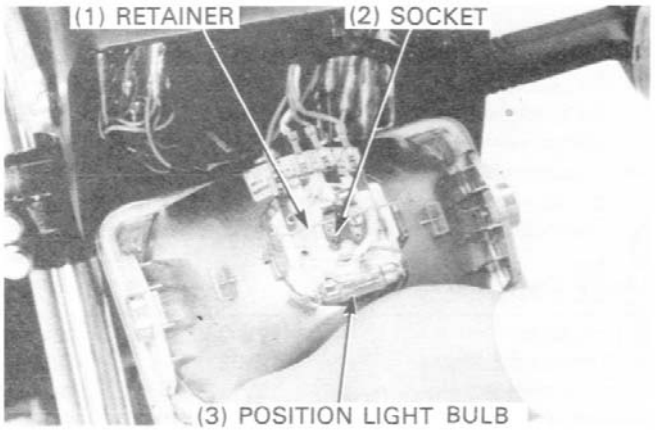
# HEADLIGHT

## BULB REPLACEMENT

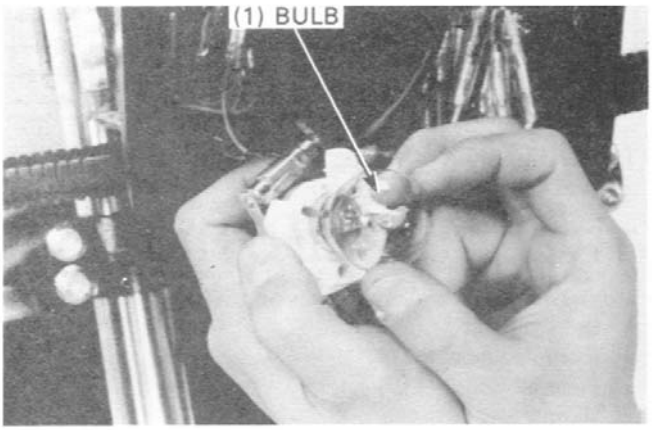
Remove the bolts, collars and headlight lens from the headlight case.




Release the bulb socket retainer and remove the socket from the headlight lens.
Replace the position light bulb if necessary.



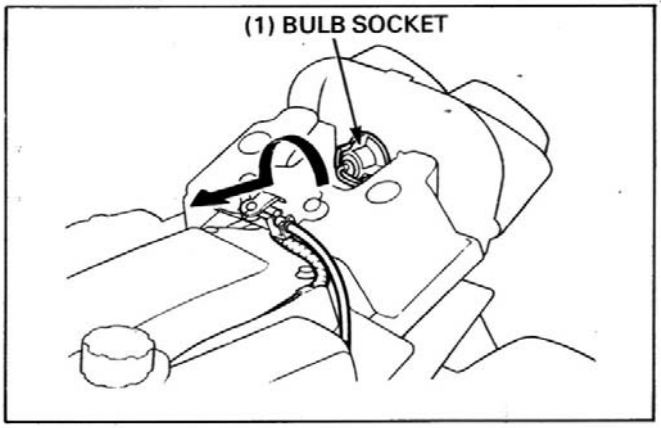

Remove the bulb by pushing in and turning it counterclockwise.
Install a new bulb in the reverse order of removal.
Install the removed parts in the reverse order of removal.




# BRAKE AND TAILLIGHT

## BULB REPLCACEMTNT

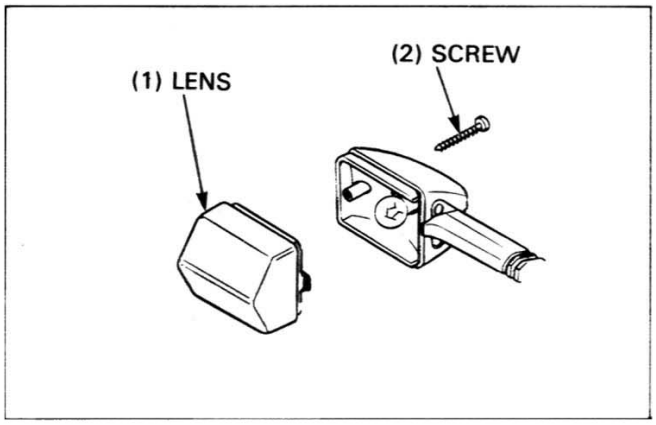
Remove the seat and brake/taillight socket by turning it counterclockwise.
Replace the bulb with a new one in the reverse order of removal.
Install the seat.



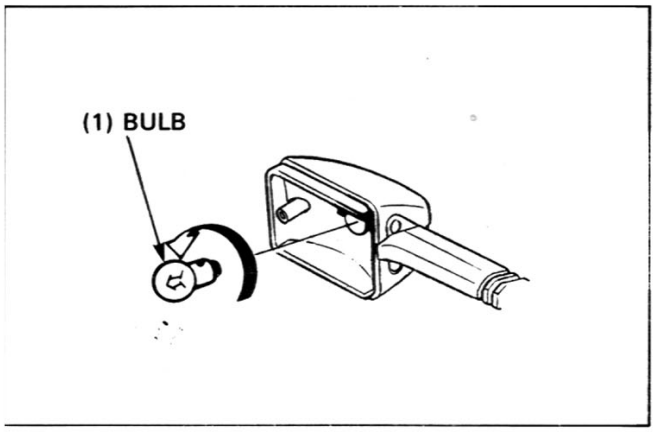
# TURN SIGNALS

## BULB REPLACEMENT

Remove the screw and turn signal lens.



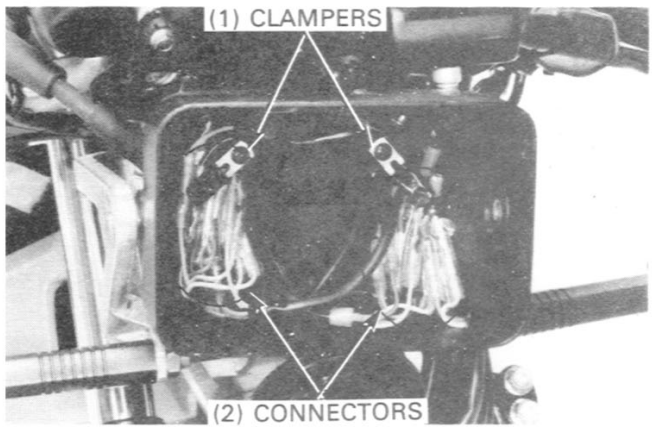

Replace the bulb with a new one and secure the turn signal lens with the screw.



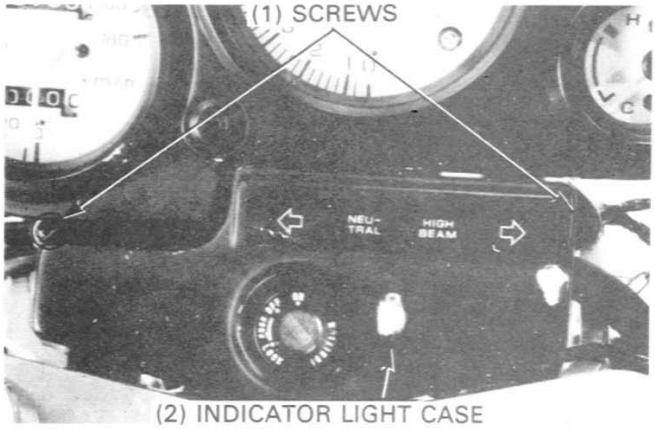

# INSTRUMENT

## BULB REPLACEMENT

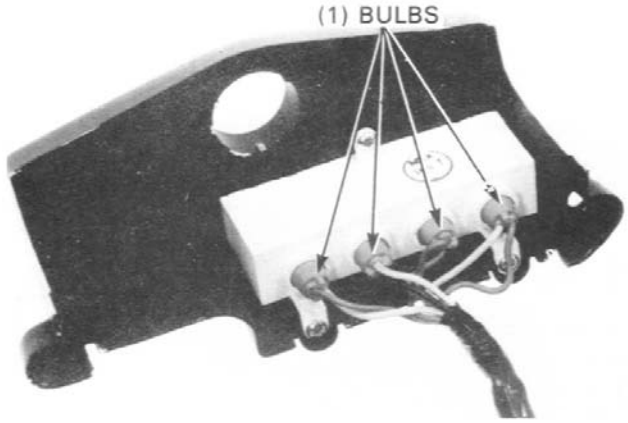
Remove the headlight lens from the headlight case (page 18-2).
Release the clampers and disconnect the connectors then remove the headlight case.



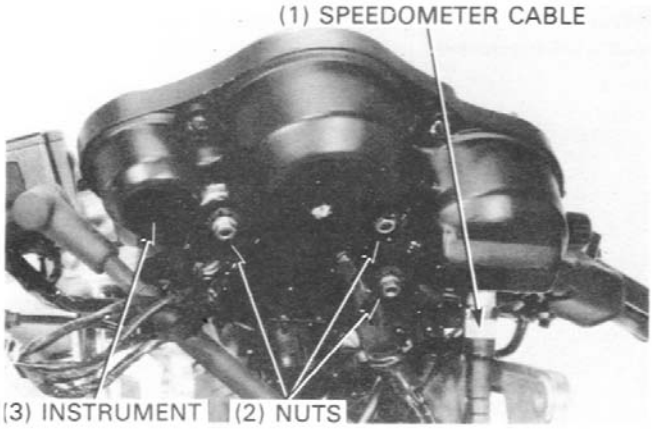

Remove the two screws and indicator light case.



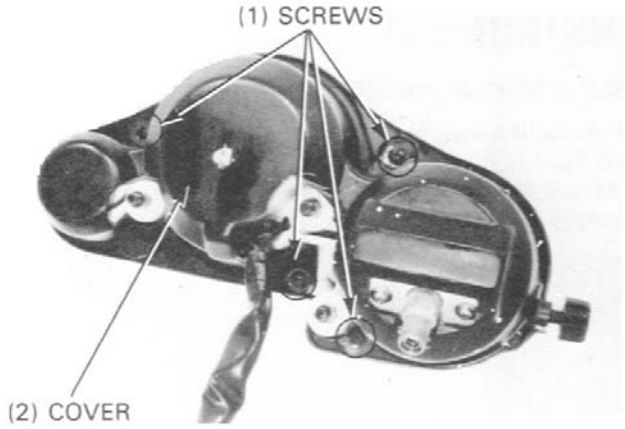
Pull the bulb socket out and replace the burned out bulb with a new one.



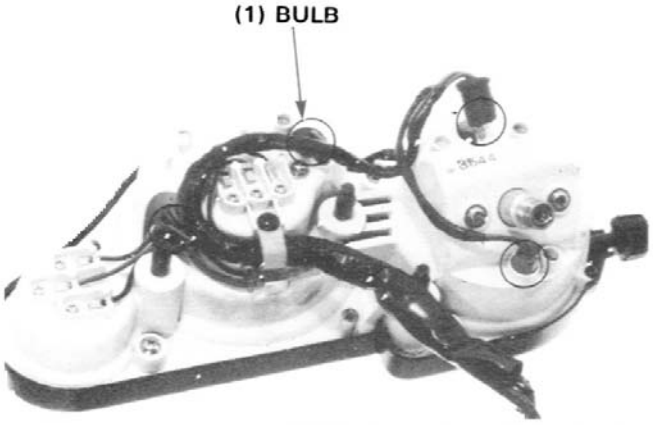

Disconnect the speedometer cable.
Remove the three nuts and instrument from the instrument stay.




Remove the four screws and instrument cover.

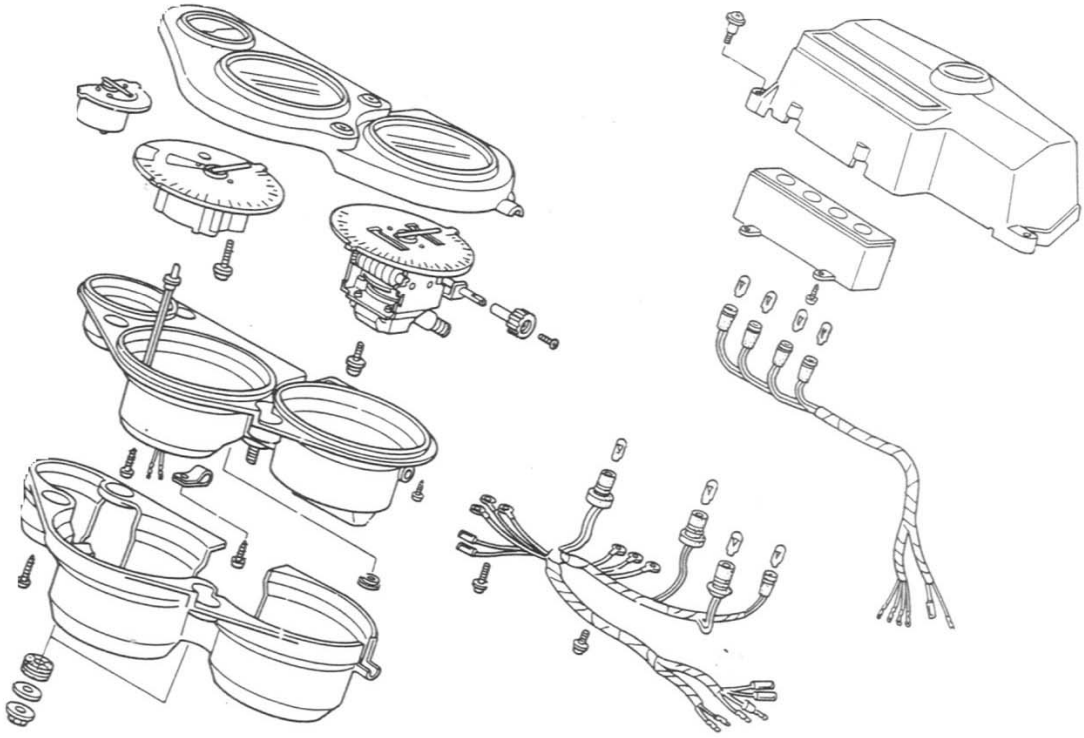



Pull the bulb socket and replace the burned out bulb with a new one.



## ASSEMBLY/INSTALLATION

Assemble and install the instrument in the reverse order of disassembly and installation.

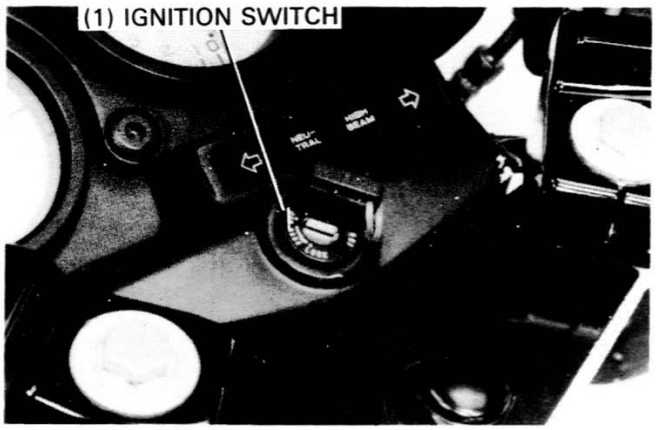


# IGNITION SWITCH

## CONTINUITY INSPECTION

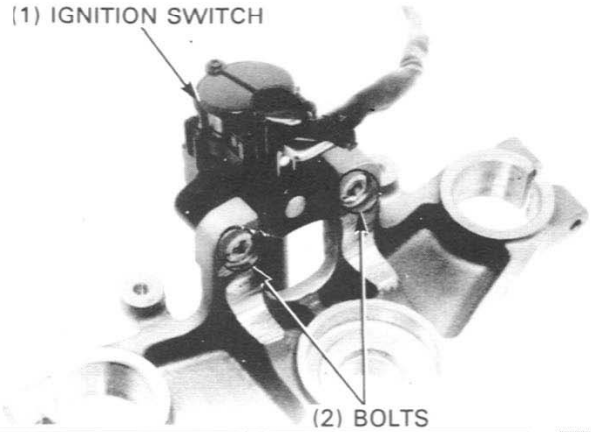
Remove the headlight lens and disconnect the ignition switch wire connectors (page 18-2, 3)
Check for continuity between the color coded wires in the chart below.

| | Black/ white | Green | Black | Red |
|---|---|---|---|---|
| OFF | ○ | ○ | | |
| ON | | | ○ | ○ |

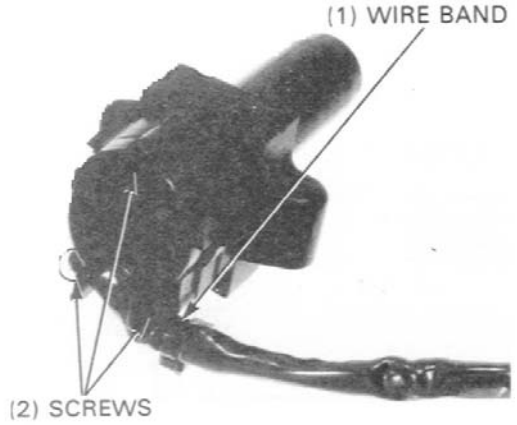



## REMOVAL

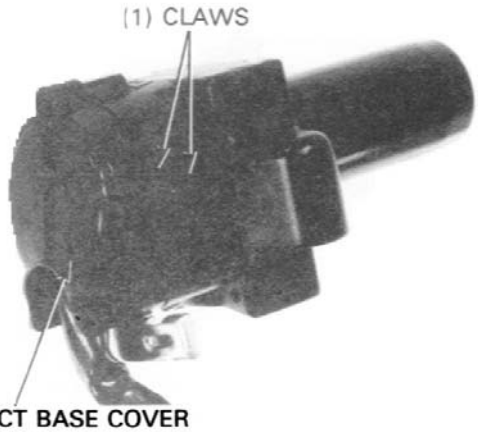
Remove the steering top bridge (page 11-18).
Remove the bolts and ignition switch.



Cut the wire band and remove the three screws.

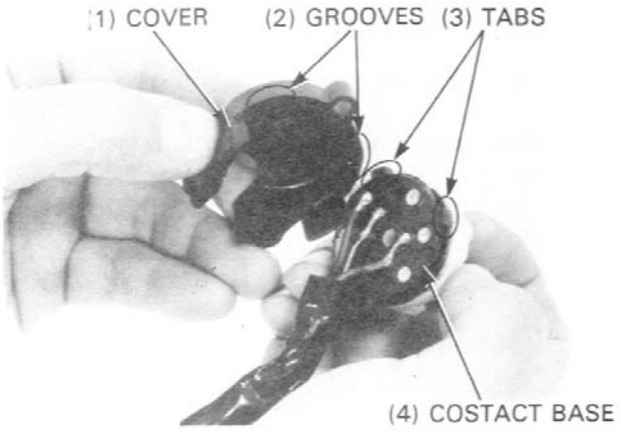



Push in the claws of the contact base cover and remove the cover and contact base.

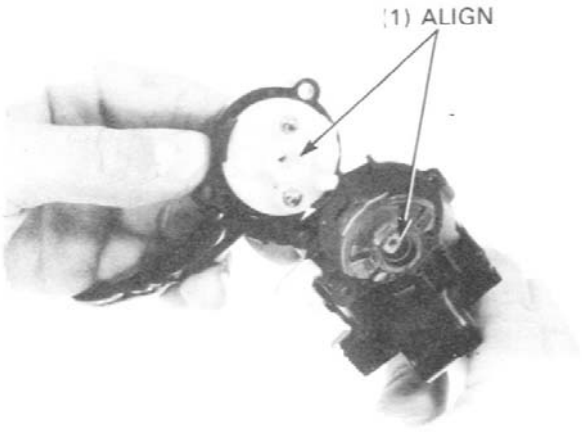



## ASSEMBLY/INSTALLATION

Assemble the contact base and base cover, aligining the base tabs with the cover grooves.

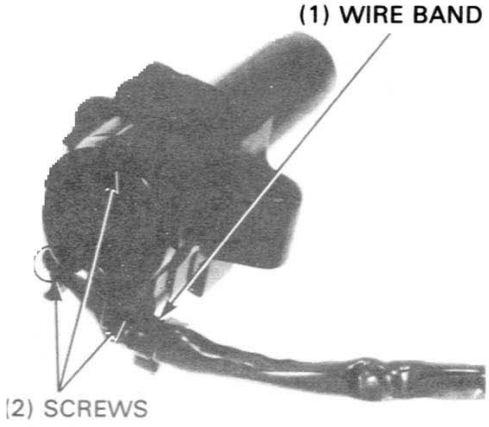



Install the contact base onto the cylinder, aligning the base hole with the cylinder shaft.



## ASSEMBLY/INSTALLATION

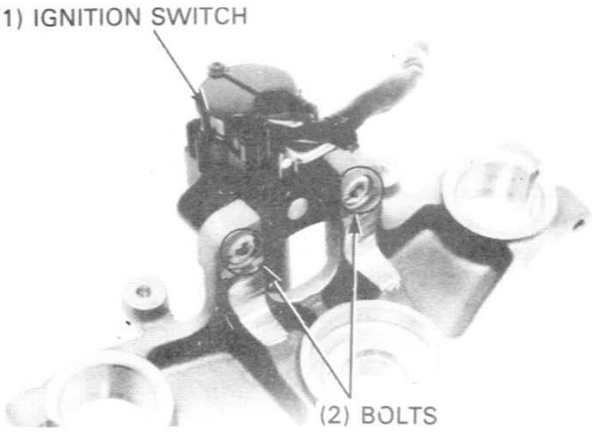
Install and tighten the three attaching screws.
Secure the switch wire with a new wire band.




Apply a locking agent to the threads of the two attaching bolts.
Install the ignition switch onto the steering top bridge and secure the switch with the two bolts.

**TORQUE: 10 N·m (1.0 kg-m, 7 ft-lb)**

Install the steering top bridge (page 11-20).

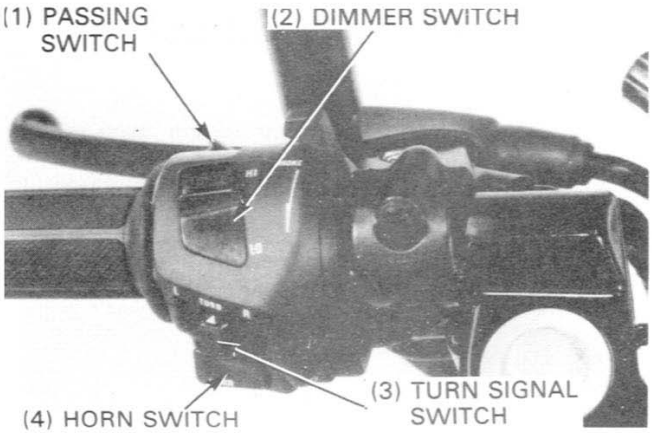



# HANDLE SWITCHS

## CONTINUTY INSPECTION

Remove the beadlight lens and disconnect the handle switch wire connectors (page 18-2, 3).

Continuity checks for the components of the handle switches are as follows.
Continuity should exist between the color coded wires in each chart below.




| LIGHTING SWITCH | | | |
|---|---|---|---|
| | Black | Brown | Bule/white |
| OFF | | | |
| P | ○ | ○ | |
| (N) | ○ | ○ | ○ |
| H | ○ | ○ | ○ |

| DIMMER SWITCH | | | |
|---|---|---|---|
| | Bule/white | white | Bule |
| LO | ○ | ○ | |
| (N) | ○ | ○ | |
| HI | ○ | | ○ |

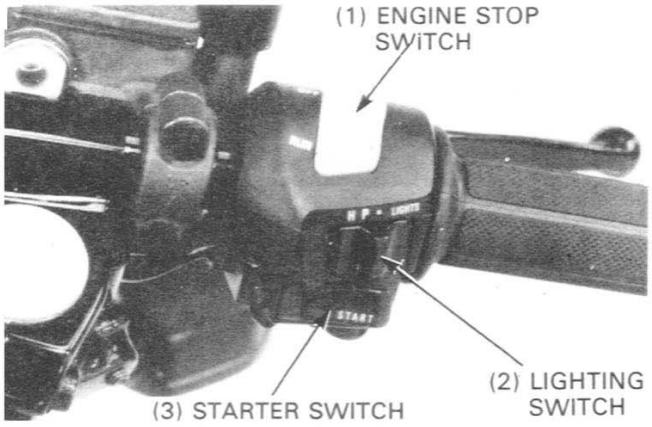
| TURN SIGNAL SWITCH | | | |
|---|---|---|---|
| | Gray | Light blue | Orange |
| R | ○ | ○ | |
| (N) | | | |
| L | ○ | ○ | ○ |

| HORN SWITCH | | |
|---|---|---|
| | | |
| FREE | | |
| SUSH | ○ | ○ |

| PASSING SWITCH | | |
|---|---|---|
| | Black | Bule |
| FREE | | |
| | ○——— | ———○ |

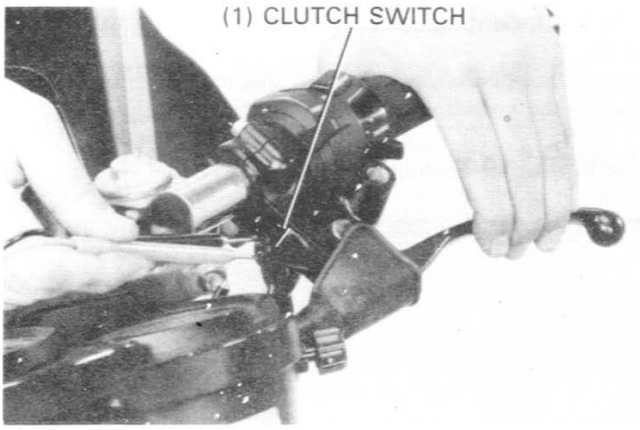
| ENGINE STOP SWITCH | | |
|---|---|---|
| | Black White | Green |
| OFF | ○——— | ———○ |
| PUSH | | |

| STARTER SWITCH | | |
|---|---|---|
| | Black | Yellow Red |
| FREE | | |
| PUSH | ○——— | ———○ |




## CLUTCH SWITCH

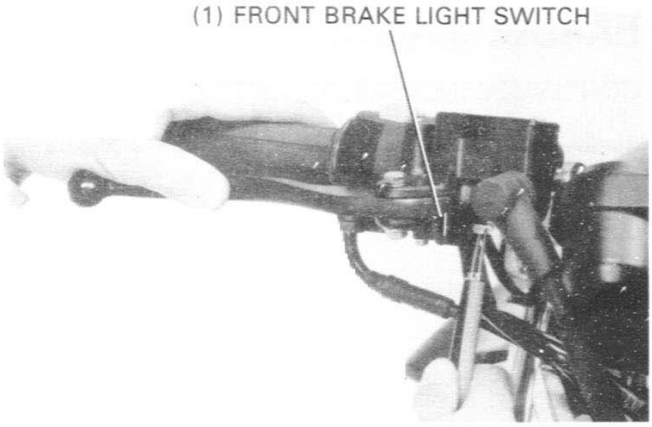
Disconnect the clutch switch wire connectors.
Check for continuity between the switch terminals.
There should be continuity with the clutch applied and should no continuity with the clutch released.
Replace the clutch switch with a new one if nesessary.




## BRAKE LIGHT SWITCHES

FRONT

Disconnect the front brake light switch connections and check for continuity between the switch terminals.
There should be continuity with the front brake applied, and should be no coutinuity when the brake released.
Replace the switch if necessary.

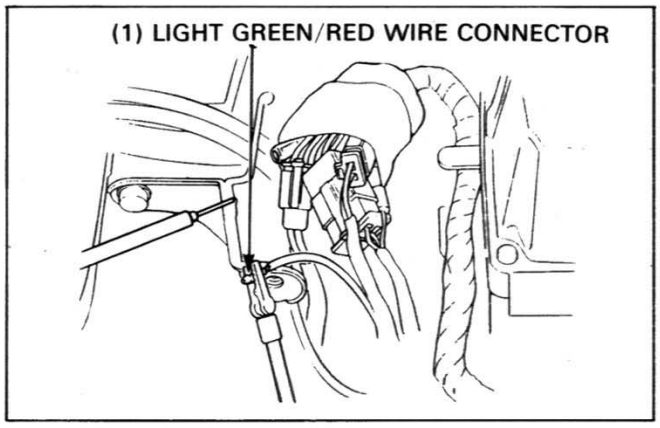



REAR

Remove the right fairing (page 4-3).
Disconnect the rear brake light switch connector and check for continuity between the terminals.
There should be continuity with the rear brake pedal applied and should be no continuity with the rear brake released.
Replace the rear brake light switch if necessary.

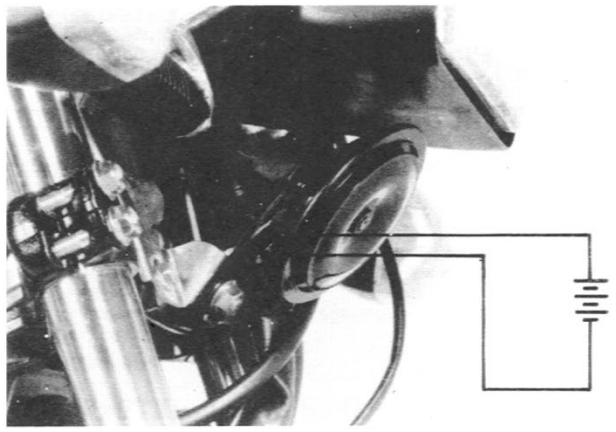
# NEUTRAL SWITCH

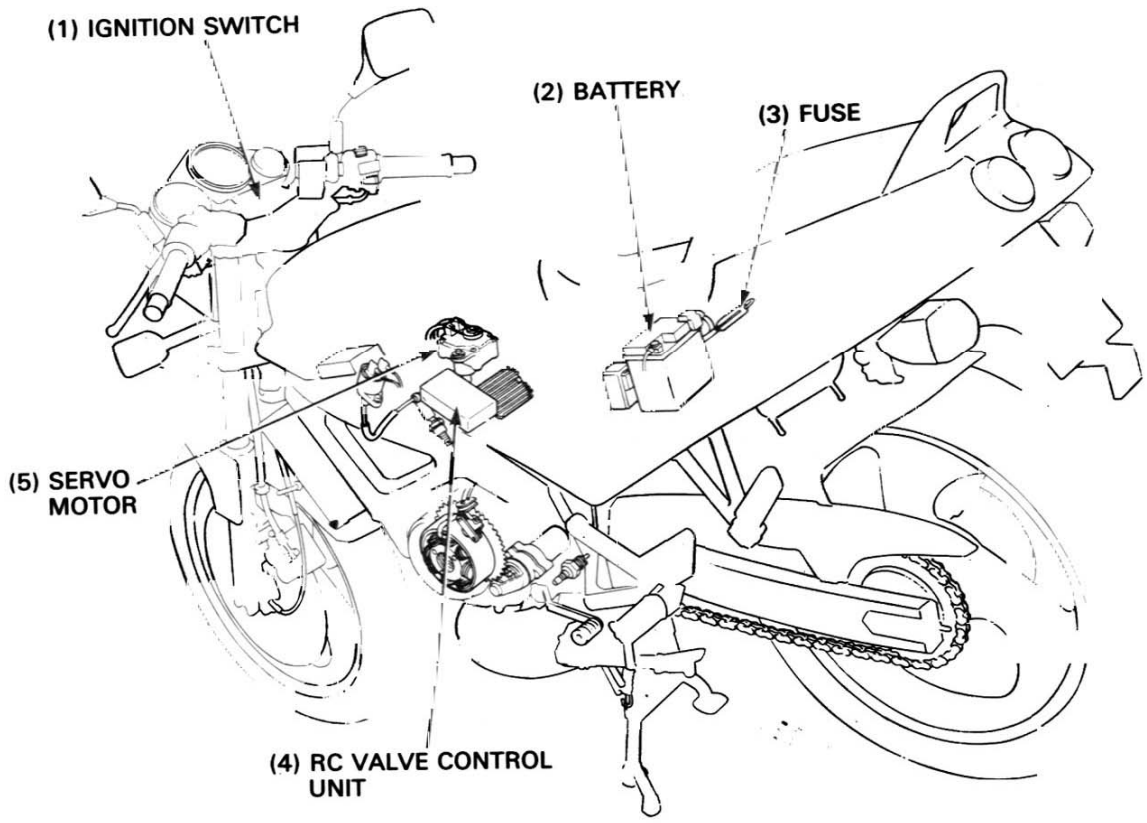
Remove the fuel tank (page 4-3).
Put the rubber cover off and disconnect the neutral switch wire (Light green/red).
Shift the transmission into neutral and check for countinuity between the light green/red wire and ground.
There should be continuity with the transmission in neutral and no continuity when engaged.
Install the removed parts in the reverse order of removal.

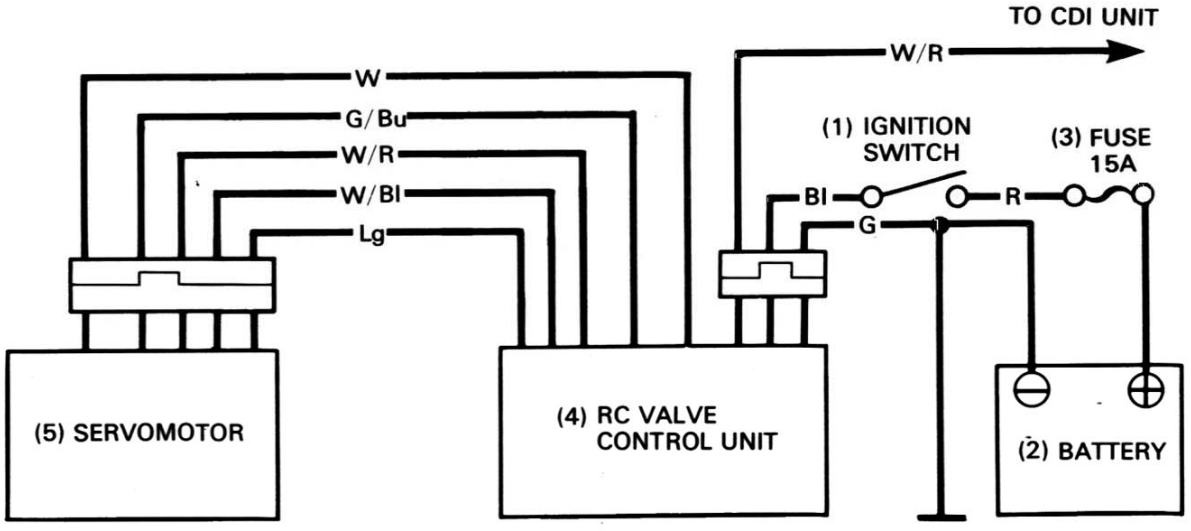



# HORN

Disconnect the horn wire connectors and connect a fully charged 12 V battery to the horn terminals.
The horn is normal if it sounds when the battery is connected across the terminals.




(1) IGNITION SWITCH
(2) BATTERY
(3) FUSE
(5) SERVO MOTOR
(4) RC VALVE CONTROL UNIT


TO CDI UNIT
W/R
W
G/Bu
W/R
W/Bl
Lg
(1) IGNITION SWITCH
(3) FUSE 15A
Bl
R
G
(5) SERVOMOTOR
(4) RC VALVE CONTROL UNIT
(2) BATTERY

# SERVICE INFORMATION

## GENERAL

**⚠ WARNING**

***If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that can cause the loss of consciousness and may lead to death.***

- Refer to page 3-14 for the RC valve cable adjustment.
- when inspecting the servomotor, check the servomotor and servomotor lines step-by-step according to the trouble-shooting sequence on the next page.

# TROUBLESHOOTING

**Engine durned, emits excessive smoke or lacks of power.**

Check the RC valve control unit and servo motor for operation (page 19-3).
- ABNORMAL →
  - Faulty RC valves
  - The RC valve control cables are adjusted incorrectly
  - Faulty RC valve control cable

NORMAL ↓

Check the RC valve control unit connectors for loose or poor contact and check that continuity exists between the White/red terminals of the CDI unit 4p connector and control unit 3p connector.
Make sure battery voltage comes when the ignition switch "ON" (page 19-3).
- ABNORMAL →
  - Short circuit in related wire harness
  - Loose or poor contact of related connector

NORMAL ↓

Check the servomotor gears for damage (page 19-4).
- DAMAGED →
  - Faulty servomotor gears (replace the servemotor as an assembly (page 19-5).

NORMAL ↓

Check the sevomotor by itself (page 19-4).
- ABNORMAL →
  - Faulty servomotor

NORMAL ↓

Check the servomotor variable resistance (page 19-5).
- ABNORMAL →
  - Faulty variable resister (replace the servomotor with a new one) (page 19-5).

NORMAL ↓

Check the CDI unit 4P connector for loose or poor contact.
Measure the resistance between the probes (W/R and L/Y) (page 19-5)
- ABNORMAL →
  - Faulty CDI unit

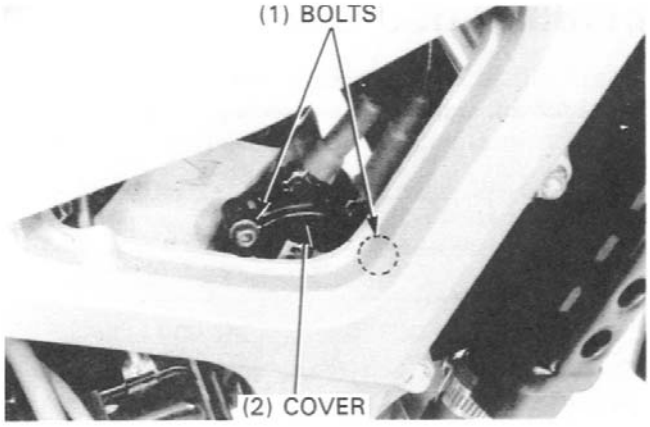
NORMAL ↓

Faulty servomotor control unit.
Replace the servomotor control unit with a new one (page 19-5).

# SERVOMOTOR

## RC VALVE OPERATION INSPECTION

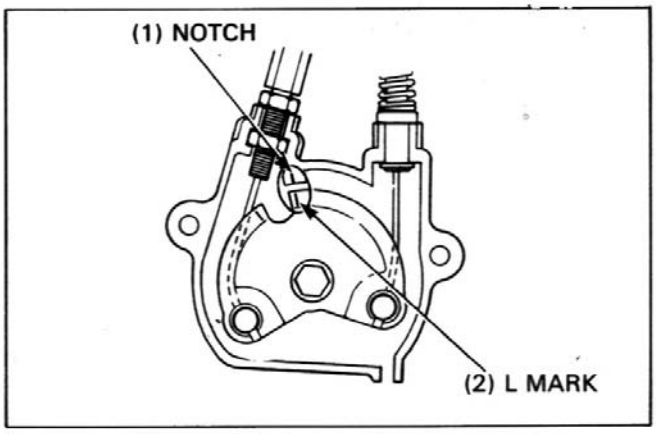
Before performing this inspection, adjust the RC valve control cables (page 3-14).
Remove the rear attaching bolt and loosen the front attaching bolt and remove the RC valve shaft plate cover.

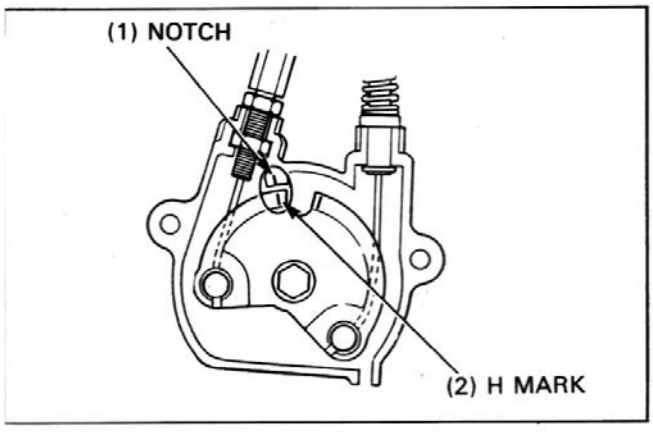



Make sure that the notch on the cable guide base aligns with the L make on the valve shaft plate within the error of 0.3 mm (0.1 in) when turning the ignition switch "ON".

Start the engine and check that the notch on the cable guide base aligns with the the H mark on the valve shaft plate within the error of 0.3 mm (0.1 in).
Gradually raise the engine rpm up to 2,700 $min^{-1}$ (rpm) and check that the notch on the cable guide base aligns with the L mark on the valve shaft plate within the error of 0.3 mm (0.01 in).

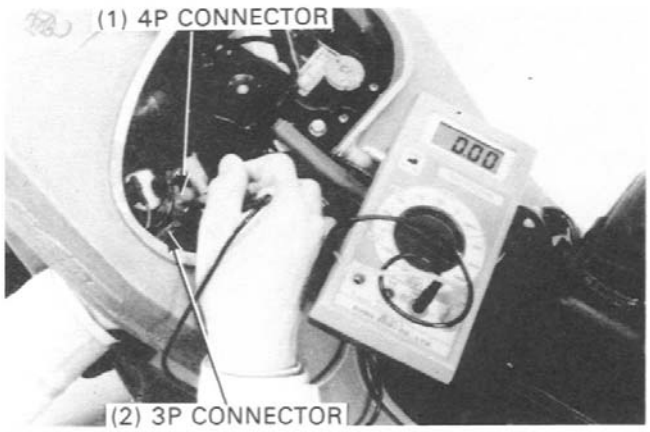
Gradually raise the engine speed further and check that the L mark on the valve shaft plate begins to turn clockwise away from the notch on the cable guide base at 6,800 $min^{-1}$ (rpm) then the H mark on the valve guide plate aligns with the notch on the cable guide base at 8,500 $min^{-1}$ (rpm).



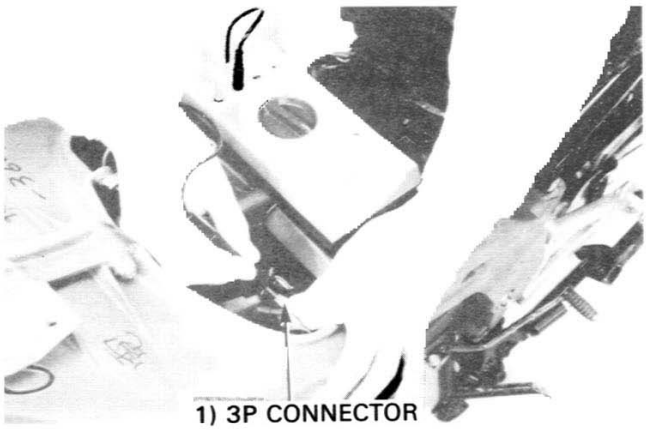




## SERVOMOTOR INSPECTION

Remove the fuel tank (page 4-3).
Check the RC valve 3p connector for loose or poor contact and disconnect the connector, then check the terminals of the connector for corrode.
Disconnect the CDI unit 4p connector and check that continuity exist between the White/Red terminals of thé 3p and 4p connectors.
Connect the CDI unit 4p connector.



Make sure the fuse is not burn-out.
Check the battery voltage comes between the Black and Green wires with the ignition switch "ON".
Connect the RC valve control unit 3p connector.

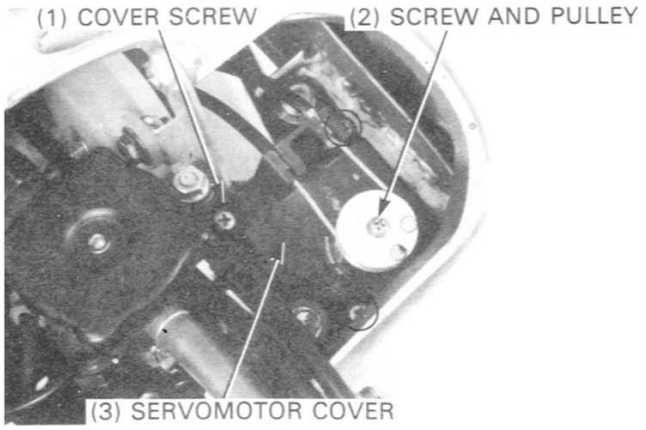



Remove the screw and pulley from the servomotor pulley shaft.

NOTE

- Do not disconnect the cables from the pulley to interchanging the cables.

Remove the three servomotor cover screws and servomotor cover.

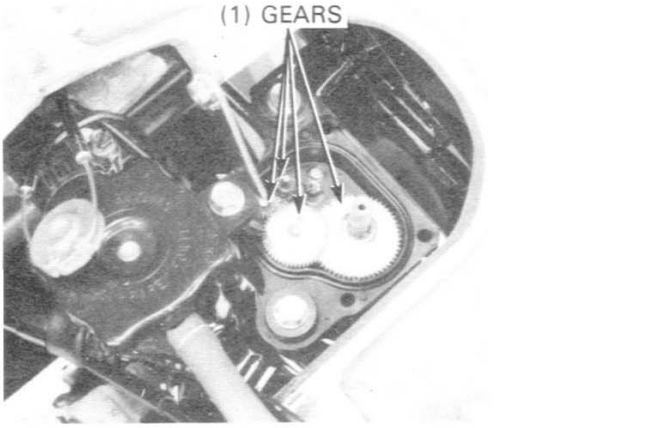



Check the gears for damage and correct installation.
If any gear is damaged, replace the servomotor as an assembly (page 19-5).

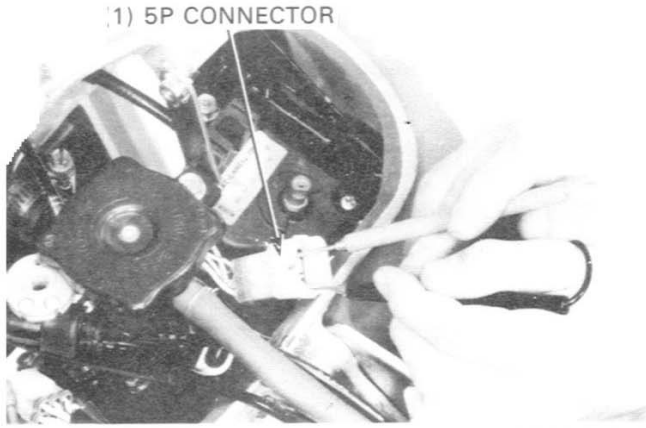
NOTE

- Do not remove the gears from the servomotor base.

Install the motor cover and pulley in the reverse order of removal.

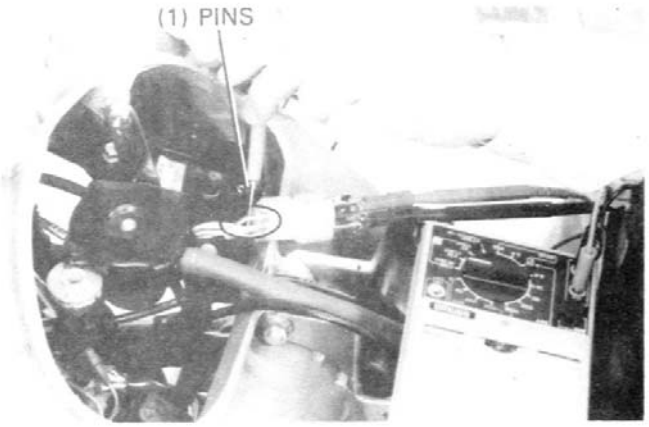



Disconnect the servomotor 5P connector and check that the pulley shaft turns clockwise when the positive terminal of a 12V battery is attached to the White wire and the negative terminal to the White/black wire.
Also check that the pulley shaft turns counterclockwise when the positive terminal of a 12V battery is attached to the White/black wire and the negative terminal to the White wire.



Insert the pins into the sealed side of the connector at red/White, green/blue, light green and red/White Wires. Measure the resistance between the wires as follows when turning the servomotor pulley.

| | |
|---|---|
| **Red/White−Green/Bule** | **3.5~6.5kΩ** |
| **Lightgreen−Red/White** | **0.9~4.6kΩ** |

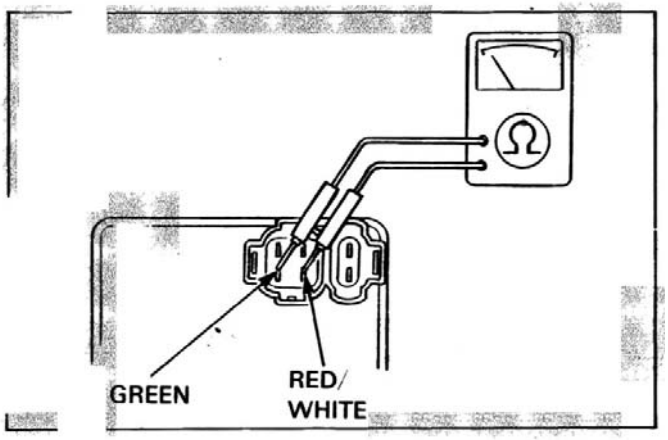



## CDI UNIT INSPECTION

Check the CDI unit 4P connector for loose or poor contact. Disconnect the 4P connector and measure the resistance between the probes of the unit (White/Red−Green).

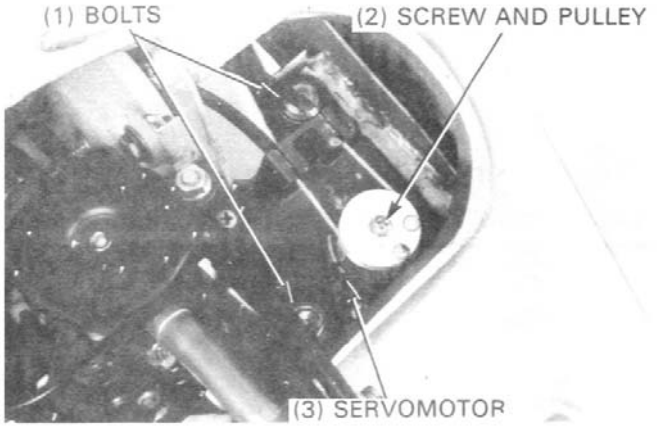
KOWA×100Ω
SANWA×KΩ

| + / − | White/Red | Green |
|---|---|---|
| White/Red | | ∞ |
| Green | 2~150 | |



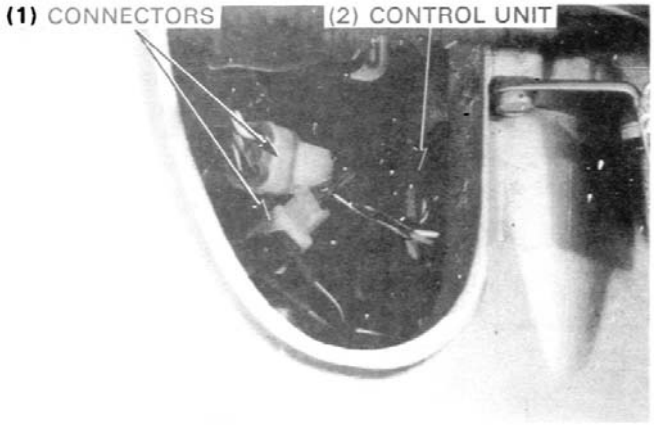

### SERVO MOTOR REPLACEMENT

Remove the fuel tank (page 4-3).
Remove the pulley from the pulley shaft by removing the screw.
Remove the two bolts and servomotor.
Install a new servomotor in the reverse order of removal.
Install the fuel tank, right and left fairings (page 4-3).




### RC VALVE CONTROL UNIT REPLACEMENT

Remove the fuel tank (page 4-3).
Disconnect the Light green wire connector, 3p and 4p connectors, then remove the control unit.
Install a new RC valve control unit in the reverse order of removal.
Install the fuel tank, right and left fairings (page 4-3).



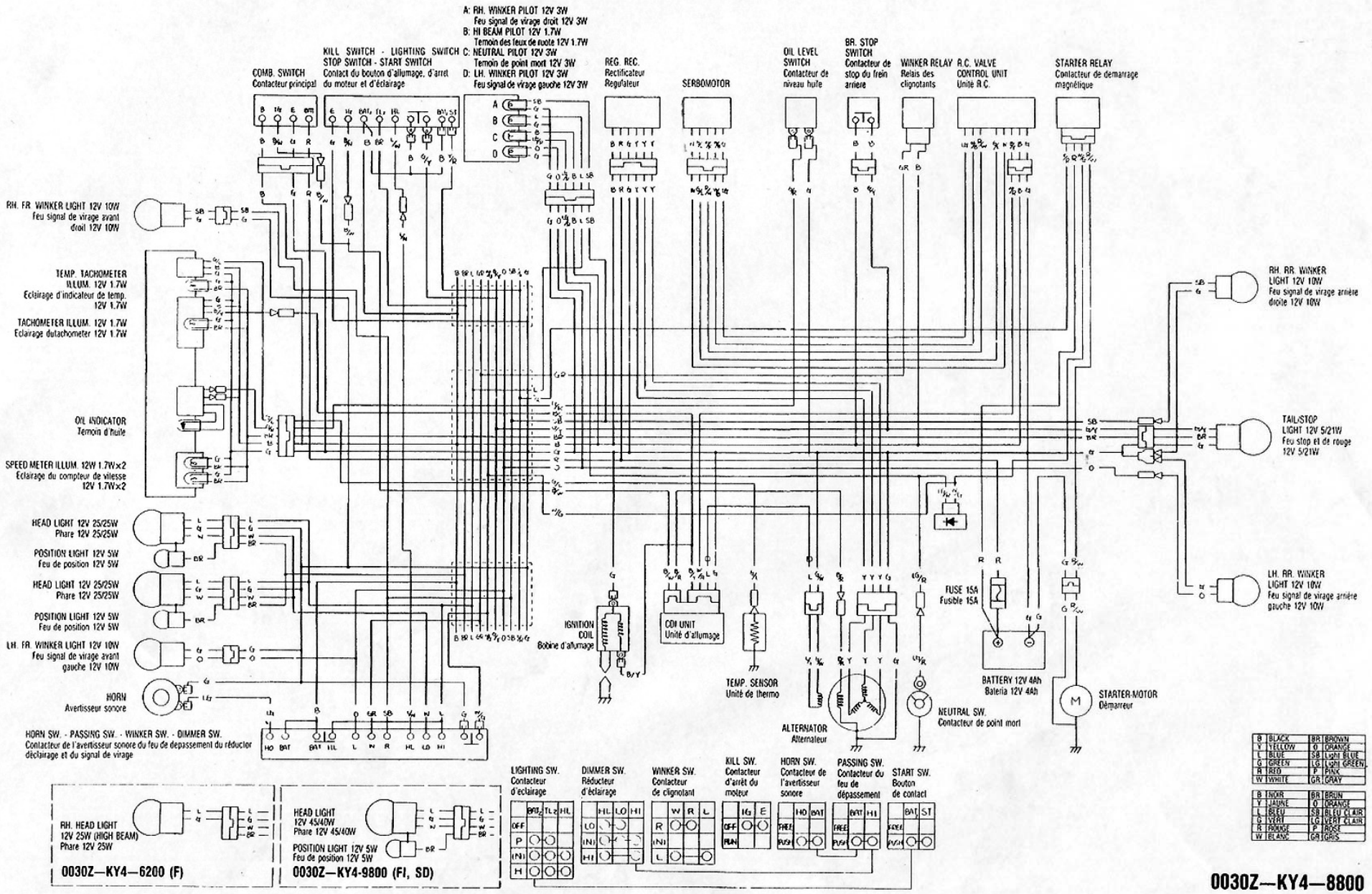
## WARNING

**These diagrams do not come from this original manual , but from French one . the purpose of this exchange is to be able to magnify The picture (under XP) because the wiring colors are difficult to Identify . i replace the original diagrams by “schema_R.jp & schema_F.jpg” It not secure that the colors will correspond to your’s . workshop manuals Has not been changed since 1989 in IT & UK , but possibly in europe**

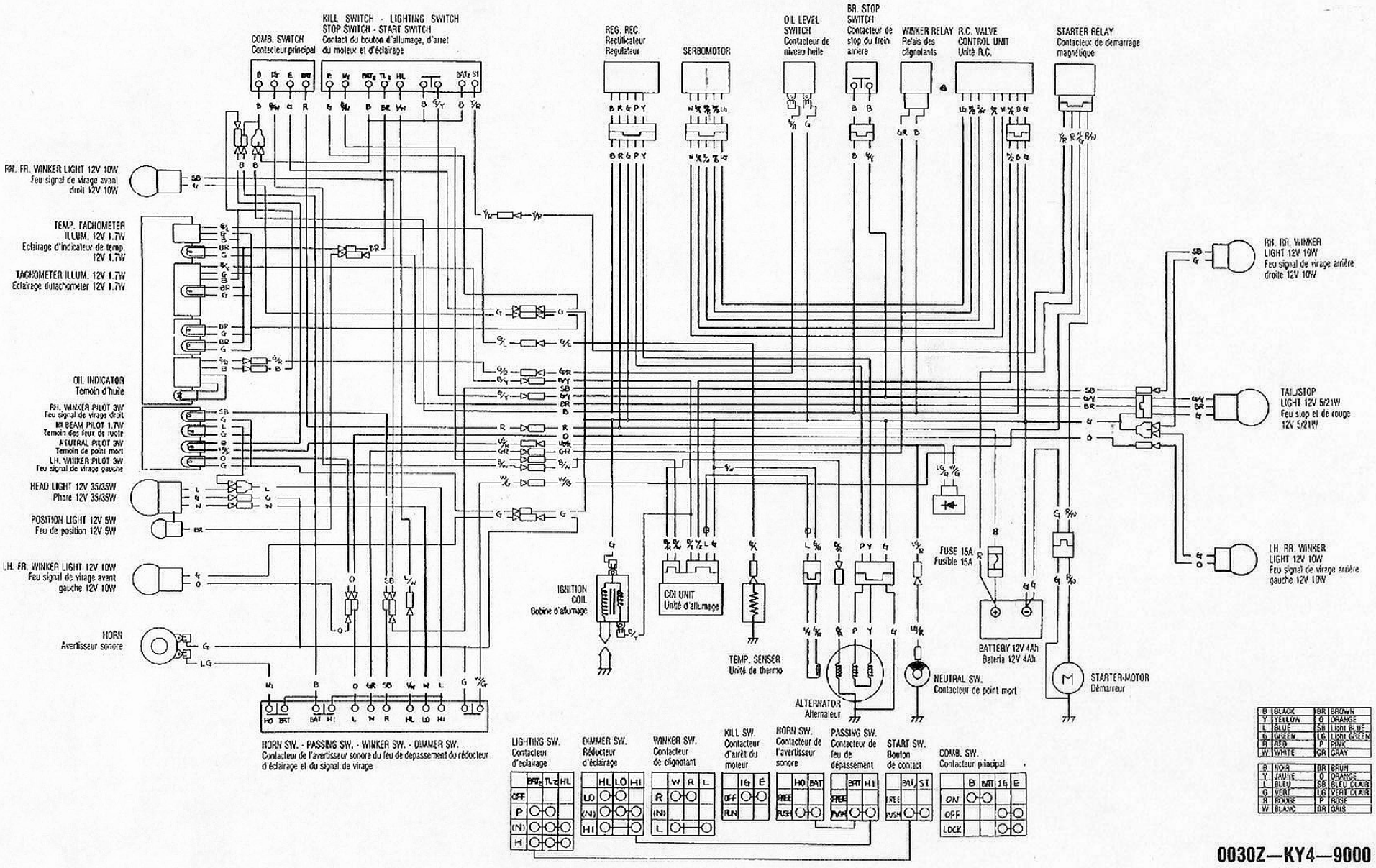
## ATTENTION

**Les schémas électriques ne proviennent pas de ce manuel mais Du manuel universel en ma possession . Le but étant de pouvoir A l’aide de XP , agrandir la vue de certaines connexions dont les Couleurs de fils ne sont pas faciles à identifier . Je vous engage à utiliser les fichiers « schema_r.jpg et schema_f.jpg » Suivant la version de votre NSR sans garantie que la couleur des Fils corresponde à votre machine . Les manuels en Italie et au Royaume-Uni n’ont pas évolué depuis 1989**

# NSR 125 R


A: RH. WINKER PILOT 12V 3W
Feu signal de virage droit 12V 3W
B: HI BEAM PILOT 12V 1.7W
Temoin des feux de route 12V 1.7W
C: NEUTRAL PILOT 12V 3W
Temoin de point mort 12V 3W
D: LH. WINKER PILOT 12V 3W
Feu signal de virage gauche 12V 3W
COMB. SWITCH
Contacteur principal
KILL SWITCH - LIGHTING SWITCH
STOP SWITCH - START SWITCH
Contact du bouton d'allumage, d'arret du moteur et d'éclairage
REG. REC.
Rectificateur Regulateur
SERBOMOTOR
OIL LEVEL SWITCH
Contacteur de niveau huile
BR. STOP SWITCH
Contacteur de stop du frein arriere
WINKER RELAY
Relais des clignotants
A.C. VALVE CONTROL UNIT
Unité A.C.
STARTER RELAY
Contacteur de demarrage magnétique
RH. FR. WINKER LIGHT 12V 10W
Feu signal de virage avant droit 12V 10W
TEMP. TACHOMETER ILLUM. 12V 1.7W
Eclairage d'indicateur de temp. 12V 1.7W
TACHOMETER ILLUM. 12V 1.7W
Eclairage dutachometer 12V 1.7W
OIL INDICATOR
Temoin d'huile
SPEED METER ILLUM. 12W 1.7W×2
Eclairage du compteur de vilesse 12V 1.7W×2
HEAD LIGHT 12V 25/25W
Phare 12V 25/25W
POSITION LIGHT 12V 5W
Feu de position 12V 5W
HEAD LIGHT 12V 25/25W
Phare 12V 25/25W
POSITION LIGHT 12V 5W
Feu de position 12V 5W
LH. FR. WINKER LIGHT 12V 10W
Feu signal de virage avant gauche 12V 10W
HORN
Avertisseur sonore
HORN SW. - PASSING SW. - WINKER SW. - DIMMER SW.
Contacteur de l'avertisseur sonore du feu de depassement du réducteur déclairage et du signal de virage
IGNITION COIL
Bobine d'allumage
CDI UNIT
Unité d'allumage
TEMP. SENSOR
Unité de thermo
ALTERNATOR
Alternateur
NEUTRAL SW.
Contacteur de point mort
FUSE 15A
Fusible 15A
BATTERY 12V 4Ah
Bateria 12V 4Ah
STARTER-MOTOR
Démarreur
RH. RR. WINKER LIGHT 12V 10W
Feu signal de virage arrière droite 12V 10W
TAIL/STOP LIGHT 12V 5/21W
Feu stop et de rouge 12V 5/21W
LH. RR. WINKER LIGHT 12V 10W
Feu signal de virage arrière gauche 12V 10W
LIGHTING SW.
Contacteur d'eclairage
DIMMER SW.
Réducteur d'éclairage
WINKER SW.
Contacteur de clignotant
KILL SW.
Contacteur d'arrêt du moteur
HORN SW.
Contacteur de l'avertisseur sonore
PASSING SW.
Contacteur du feu de dépassement
START SW.
Bouton de contact
RH. HEAD LIGHT
12V 25W (HIGH BEAM)
Phare 12V 25W
0030Z—KY4—6200 (F)
HEAD LIGHT
12V 45/40W
Phare 12V 45/40W
POSITION LIGHT 12V 5W
Feu de position 12V 5W
0030Z—KY4-9800 (FI, SD)
B BLACK
Y YELLOW
L BLUE
G GREEN
R RED
W WHITE
BR BROWN
O ORANGE
SB LIGHT BLUE
LG LIGHT GREEN
P PINK
GR GRAY
B NOIR
Y JAUNE
L BLEU
G VERT
R ROUGE
W BLANC
BR BRUN
O ORANGE
SB BLEU CLAIR
LG VERT CLAIR
P ROSE
GR GRIS
0030Z—KY4—8800

# NSR 125 F


COMB. SWITCH
Contacteur principal
KILL SWITCH - LIGHTING SWITCH
STOP SWITCH - START SWITCH
Contact du bouton d'allumage, d'arret du moteur et d'éclairage
REG. REC.
Rectificateur Regulateur
SERBOMOTOR
OIL LEVEL SWITCH
Contacteur de niveau huile
BR. STOP SWITCH
Contacteur de stop du frein arrière
WINKER RELAY
Relais des clignotants
R.C. VALVE CONTROL UNIT
Unité R.C.
STARTER RELAY
Contacteur de démarrage magnétique
RH. FR. WINKER LIGHT 12V 10W
Feu signal de virage avant droit 12V 10W
TEMP. TACHOMETER ILLUM. 12V 1.7W
Eclairage d'indicateur de temp. 12V 1.7W
TACHOMETER ILLUM. 12V 1.7W
Eclairage du tachometer 12V 1.7W
OIL INDICATOR
Temoin d'huile
RH. WINKER PILOT 3W
Feu signal de virage droit
HI BEAM PILOT 1.7W
Temoin des feux de route
NEUTRAL PILOT 3W
Temoin de point mort
LH. WINKER PILOT 3W
Feu signal de virage gauche
HEAD LIGHT 12V 35/35W
Phare 12V 35/35W
POSITION LIGHT 12V 5W
Feu de position 12V 5W
LH. FR. WINKER LIGHT 12V 10W
Feu signal de virage avant gauche 12V 10W
HORN
Avertisseur sonore
HORN SW. - PASSING SW. - WINKER SW. - DIMMER SW.
Contacteur de l'avertisseur sonore du feu de depassement du réducteur d'éclairage et du signal de virage
IGNITION COIL
Bobine d'allumage
CDI UNIT
Unité d'allumage
TEMP. SENSER
Unité de thermo
ALTERNATOR
Alternateur
FUSE 15A
Fusible 15A
BATTERY 12V 4Ah
Batería 12V 4Ah
NEUTRAL SW.
Contacteur de point mort
STARTER-MOTOR
Démarreur
RH. RR. WINKER LIGHT 12V 10W
Feu signal de virage arrière droite 12V 10W
TAIL/STOP LIGHT 12V 5/21W
Feu stop et de rouge 12V 5/21W
LH. RR. WINKER LIGHT 12V 10W
Feu signal de virage arrière gauche 12V 10W
LIGHTING SW.
Contacteur d'eclairage
DIMMER SW.
Réducteur d'éclairage
WINKER SW.
Contacteur de clignotant
KILL SW.
Contacteur d'arrêt du moteur
HORN SW.
Contacteur de l'avertisseur sonore
PASSING SW.
Contacteur de feu de dépassement
START SW.
Bouton de contact
COMB. SW.
Contacteur principal
B BLACK
Y YELLOW
L BLUE
G GREEN
R RED
W WHITE
BR BROWN
O ORANGE
SB Light BLUE
LG Light GREEN
P PINK
GR GRAY
0030Z—KY4—9000

# ENGINE WILL NOT START OR IS HARD TO START

| | | PROBABLE CAUSE |
|---|---|---|
| 1. Check if fuel reaches carburetor | FUEL DOES NOT REACH CARBURETOR | • Empty fuel tank<br>• Clogged fuel line between fuel tank and carburetor<br>• Clogged fuel valve<br>• Clogged fuel tank cap breather hole<br>• Clogged fuel strainer<br>• Clogged fuel filter |
| FUEL REACHES CARBURTOR | | |
| 2. Remove and inspect spark plug. | WET PLUG —— | • Flooded carburetor<br>• Excessive use of bystarter<br>• Fuel/air mixture too rich<br>• Dirty air cleaner<br>• Improperly adjusted pilot screw<br>• Cylinder flooded<br>• Spark plug not serviced frequently enough<br>• Use incorrect heat range spark plug |
| DRY PLUG | | |
| 3. Try spark test | WEAK OR NO SPARK | • GO TO PAGE 16-2 |
| GOOD SPARK | | |
| 4. Test cylinder compression | LOW COMPRESSION | • Stuck piston rings<br>• Faulty reed valve<br>• Worn cylinder and piston rings<br>• Blown cylinder head gasket<br>• Flaw in cylinder and cylinder head<br>• Leaky crankcase<br>• Faulty crankshaft oil seal |
| NORMAL COMPRESSION | | |
| 5. Start engine | ENGINE FIRES, BUT DOES NOT START —— | • Valve not opened fully when bystarter is pulled<br>• Bystarter not pulled fully<br>• Air leaking through intake pipe<br>• Incorrect ignition timing<br>• Fuel/air mixture too lean |
| ENGINE FIRES | | |
| 6. Remove spark plug, pour small amount of fuel into cylinder, install plug and try to start engine | ENGINE STARTS —— BUT STOPS SOON | • Clogged carburetor<br>• Faulty carburetor<br>• Restricted fuel line |
| | ENGINE DOES NOT START | • Incorrect ignition timing |

# ENGINE LACKS POWER

| | | PROBABLE CAUSE |
|---|---|---|
| Raise wheels off ground and spin by hand<br>WHEEL SPINS FREELY | WHEEL DOES NOT SPIN FREELY → | • Brake dragging<br>• Worn or damaged wheel bearing<br>• Wheel bearing meeds lubrication<br>• Incorrect drive chain adjustment |
| 2. Check tire pressure with a gauge<br>PRESSURE NORMAL | PRESSURE TOO LOW → | • Punctured tire<br>• Faulty tire valve |
| 3. Check for slipping clutch<br>NORMAL | CLUTCH SLIPS → | • Weak clutch spring<br>• Worn clutch disc/plate<br>• Warped clutch disc/plate<br>• Clutch cable misadjusted<br>• Faulty clutch lifter system |
| 4. Lightly accelerate<br>ENGINE SPEED INCREASED | ENGINE SPEED NOT INCREASED SUFFICIENTLY → | • Air/fuel mixture too rich or lean<br>• Clogged air cleaner<br>• Restricted fuel line<br>• Clogged fuel tank breathe hole<br>• Clogged muffler<br>• Stuck RC valve |
| 5. Remove spark plug<br>NOT FOULED OR DISCOLORED | FOULED OR DISCOLORED → | • Carburetor flooded<br>• Bystarter valve stuck opened<br>• Fuel/air mixture too rich<br>• Air cleaner dirty<br>• Improperly adjusted pilot screw<br>• Cylinder flooded<br>• Plug not serviced frequently enough<br>• Use of plug with improper heat range |
| 6. Accelerate or run at high speed<br>ENGINE DOES NOT KNOCK | ENGINE KNOCKS → | • Worn piston and cylinder<br>• Fuel-air mixture too lean<br>• Excessive carbon build-up in combustion chamber<br>• Ignition timing too advanced |
| 7. Check if engine overheats<br>NOT OVERHEATED | OVERHEATED → | • Excessive carbon build-up in combustion chamber<br>• Deteriorated fuel<br>• Fuel-air mixture too lean<br>• Faulty cooling system (page 5-2) |
| 8. Check ignition timing<br>CORRECT | INCORRECT → | • GO TO PAGE 16-2 |
| 9. Test cylinder compression<br>NORMAL | TOO LOW → | • Stuck piston rings<br>• Faulty reed valve<br>• Leaky crankcase<br>• Worm cylinder and piston rings<br>• Blown cylinder head gasket<br>• Faulty crankshaft oil seal<br>• Flaw in cylinder and cylinder head |
| | → | • Carburetor not serviced frequently enough |

# POOR PERFORMANCE AT IDEL AND LOW SPEED

| | | PROBABLE CAUSE |
|---|---|---|
| 1 Try spark test | WEAK OR INTERMITTENT SPARK → | • GO TO PAGE 15-2 |
| GOOD SPARK ↓ | | |
| 2. Check carburetor pilot screw adjustment | INCORRECT → | • Improperly adjusted pilot screw |
| CORRECT ↓ | | |
| 3. Check if air is leaking past carburetor insulator | LEAKING → | • Deteriorated insulator O-ring<br>• Loose carburetor<br>• Faulty gasket |
| NOT LEAKING ↓ | | |
| 4. Test cylinder compression | LOW COMPRESSION → | • Stuck piston rings<br>• Faulty reed valve<br>• Leak crankcase<br>• Worn cylinder and piston rings<br>• Blown cylinder head gasket<br>• Faulty crankshaft oil seal<br>• Flaw in cylinder and cylinder head |
| COMPRESSION NORMAL ↓ | | |
| 5. Check ignition timing | INCORRECT → | • GO TO PAGE 16-2 |
| CORRECT | | • Clogged carburetor |

# POOR HIGH SPEED PERFORMANCE

| | | PROBABLE CAUSE |
|---|---|---|
| 1 Check ignition timing | INCORRECT → | • GO TO PAGE 15-2 |
| CORRECT ↓ | | |
| 2. Remove spark plug and check condition | DISCOLORED OR DIRTY → | • Spark plug not serviced frequently enough<br>• Spark plug with incorrect heat range<br>• Rich or lean air/fuel mixture<br>• Clogged air cleaner<br>• Clogged fuel line<br>• Air coming in through insulator<br>• Clogged carburetor<br>• Clogged fuel tank cap beather bole |
| NORMAL ↓ | | |
| 3. Check for slipping clutch | CLUTCH SLIPS → | • Weak clutch springs<br>• Worn clutch disc/plates<br>• Warped clutch disc/plate<br>• Clutch cable misadiusted<br>• Faulty clutch lifter system |
| NORMAL ↓ | | |
| 4. Check carburetor jets for clogging | CLOGGED → (Clean them) | • Air cleaner dirty<br>• Faulty air cleaner<br>• Loose carburetor |
| | NORMAL → | Go to "ENGINE LACKS POWER" (page 21-2) |



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