

Important Safety Notice

▲ WARNING Indicates a strong possibility of severe personal injury or death if instructions are not followed.

CAUTION: Indicates a possibility of equipment damage if instructions are not followed.

NOTE: Gives helpful information.

Detailed descriptions of standard workshop procedures, safety principles and service operations are not included. It is important to note that this manual contains *some* warnings and cautions against some specific service methods which could cause **PERSONAL INJURY** to service personnel or could damage a vehicle or render it unsafe. Please understand that those warnings could not cover all conceivable ways in which service, whether or not recommended by Honda, might be done or of the possibly hazardous consequences of each conceivable way, nor could Honda investigate all such ways. Anyone using service procedures or tools, whether or not recommended by Honda, *must satisfy himself thoroughly that neither personal safety nor vehicle safety will be jeopardized by the service methods or tools selected.*

Type Codes

- Throughout this addendum, the following abbreviations are used to identify individual model.
- The asterisk (*) indicates that this addendum is applicable for the corresponding area type.

| Code | Available | Area Type |
|-------------------|-----------|------------------------------------|
| ED | * | European direct sales |
| E | * | U.K. |
| F | * | France |
| G (G I /GII/GIII) | * | Germany (Full power/Limited power) |
| U | * | Australia |
| SA | | South Africa |
| ND | | North Europe |
| SW | * | Switzerland |
| SD | | Sweden |
| FI | | Finland |
| N | | Norway |
| IT | | Italy |
| B | | Belgium |
| H | | Netherland |
| AR | * | Austria |
| D (DK, DM) | | General export (km/h, mph) |
| SP | * | Spain |

Introduction

This service manual describes the service procedures of the CB750F2.

This Model Specific Manual includes every service procedure that is of a specific nature to this particular model. Basic service procedures that are common to other Honda Motorcycle/Motor Scooter/ATV are covered in the Common Service Manual. This Model Specific Service Manual should be used together with the Common Service Manual in order to provide complete service information on all aspects of this motorcycle.

Performing the first scheduled maintenance is very important.

It compensates for the initial wear that occurs during the break-in period.

Section 1 and 3 apply to the whole motorcycle, Section 2 illustrates procedures for removal/installation of components that may be required to perform service described in the following sections. Sections 4 through 17 described in the following sections. Sections 4 through 17 describe parts of the motorcycle, grouped according to location.

Find the section you want on this page, then turn the table of contents on the first page of the section.

Most sections describe the service procedure through system illustration. Refer to the next page for details on how to use this manual.

If you don't know the source of the trouble, go to section 18 Troubleshooting.

ALL INFORMATION, ILLUSTRATION, DIRECTIONS AND SPECIFICATIONS INCLUDED IN THIS PUBLICATION ARE BASED ON THE LATEST PRODUCT INFORMATION AVAILABLE AT THE TIME OF APPROVAL FOR PRINTING. HONDA MOTOR CO., LTD. RESERVES THE RIGHT TO MAKE CHANGES AT ANY TIME WITHOUT INCURRING ANY OBRIGATION WHATEVER. NO PART OF THIS PUBLICATION MAY BE REPRODUCED WITHOUT WRITTEN PERMISSION. THIS MANUAL IS WRITTEN FOR PERSONS WHO HAVE ACQUIRED BASIC KNOWLEDGE OF MAINTENANCE ON HONDA MOTORCYCLES, MOTOR SCOOTERS OR ATVS.

**HONDA MOTOR CO., LTD.
SERVICE PUBLICATION OFFICE**

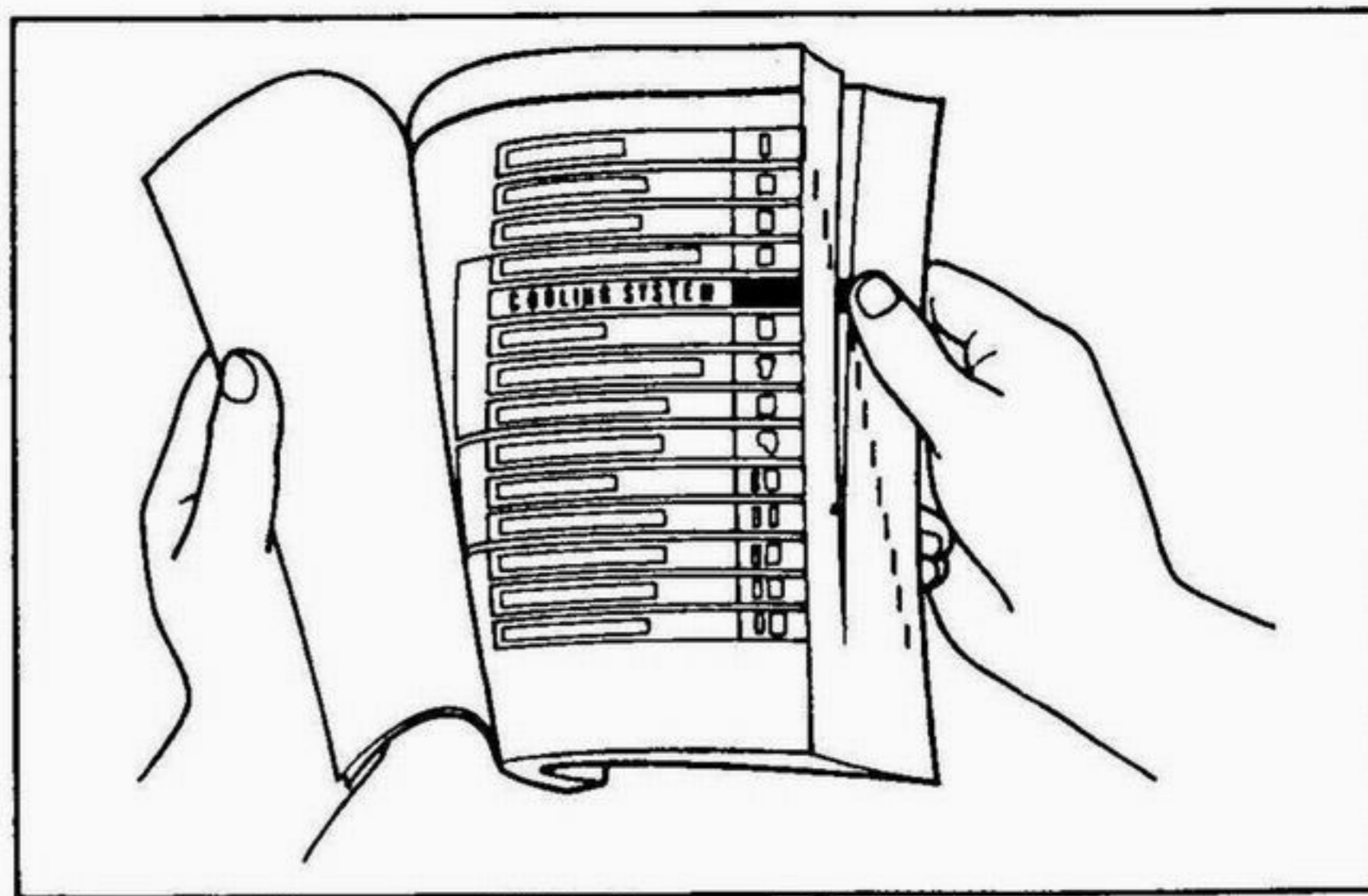
Contents

| | | |
|-------------------------------|---|-----------|
| | General Information | 1 |
| | Frame/Body Panels/Exhaust System | 2 |
| | Maintenance | 3 |
| Engine and Drive Train | Lubrication System | 4 |
| | Fuel System | 5 |
| | Engine Removal/Installation | 6 |
| | Cylinder Head/Cylinder/Piston | 7 |
| | Clutch/Gearshift Linkage | 8 |
| | Crankshaft/Transmission | 9 |
| Chassis | Front Wheel/Suspension/Steering | 10 |
| | Rear Wheel/Suspension | 11 |
| | Brake System | 12 |
| Electrical | Charging System/Alternator | 13 |
| | Ignition System | 14 |
| | Electric Starter/Starter Clutch | 15 |
| | Lights/Meters/Switches | 16 |
| | Wiring Diagram | 17 |
| | Toubleshooting | 18 |

How To Use This Manual

Finding The Information You Need

- This manual is divided into sections which cover each of the major components of the motorcycle. To quickly find the section you are interested in, the first page of each section is marked with a black tab that lines up with one of the thumb index tabs before this page. The first page of each section lists the table of contents within the section. Read the service information and troubleshooting related to the section before you begin working.
- An index of the entire book is provided in the last chapter to directly locate the information you need.



Understanding The Instructions

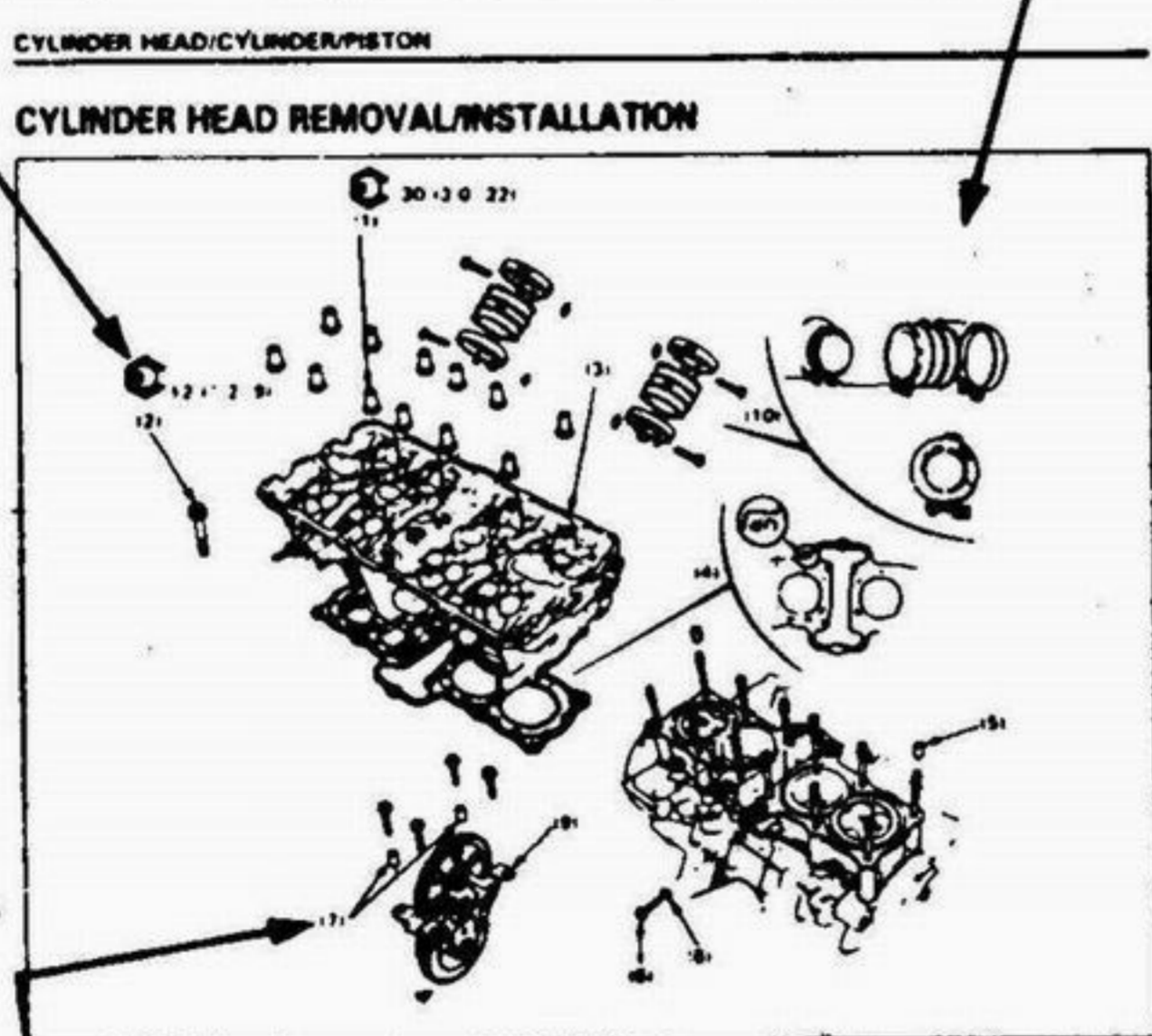
- The removal and installation of parts are for the most part illustrated by large and clear illustrations that should provide the reader with visual aid in understanding the major point for servicing.
- The system illustrations are augmented by callouts whose numbers or letters indicate the order in which the parts should be removed or installed.
- The sequence of steps represented numerically are differentiated from the ones represented alphabetically to notify the reader that they must perform these steps separately. For example, if the steps prior and up to camshaft removal are performed with the engine installed, but the subsequent steps like cylinder head removal require engine removal, the callouts are grouped in numerical and alphabetical orders.
- The illustrations may contain symbols to indicate necessary service procedures and precautions that need to be taken. Refer to the next page for the meaning of each symbol.
- Also in the illustration is a chart that lists information such as the order in which the part is removed/installed, the name of the part, and some extra notes that may be needed.
- Step by step instructions are provided to supplement the illustrations when detailed explanation of the procedure is necessary or illustrations alone would not suffice.
- Service procedures required before or after the procedure are described on that particular page, or inspection/adjustment procedures required following the installation of parts, are described under the title Requisite Service.
- Standard workshop procedures and knowledge covered in the Common Service Manual are abbreviated in this manual.

Symbols

System illustration

Detailed description of the procedure

Step sequence (numerals or letters)



| REMOVAL ORDER | QTY | REMARKS |
|---------------------------------------|-----|--|
| 11) Cylinder head special nut | 12 | Installation is in the reverse order of removal. Installation page 8-5. |
| 12) Cylinder head mounting bolt | 2 | |
| 13) Cylinder head assembly | 2 | Install with the UP mark facing up and rearward. |
| 14) Gasket | 2 | Installation page 8-5. |
| 15) Dowel pin | 2 | |
| 16) Camshaft idle gear case bolt | 2 | |
| 17) Camshaft idle gear case dowel pin | 2 | |
| 18) Sealing washer | 2 | |
| 19) Camshaft idle gear case | 2 | |
| 110) Carburetor insulator | 4 | At installation, align the insulator groove with the engine lug with the UP mark facing upwards carburetor side. |

8-4

Part name

Number of parts

Extra notes or precautions related to the service procedure

CAMSHAFT IDLE GEAR CASE INSTALLATION
Install the camshaft idle gear case dowel pins properly.

NOTE
Without the dowel pins installed properly, the camshaft idle gear may not be able to be installed onto the crank shaft timing gear.

Install the camshaft idle gear case onto the cylinder. While moving the idle gear lightly with the gear case hold the gear case should be fitted up slightly from the cylinder.

Install a new sealing washer and mounting bolts. Tighten bolts in a gradual as shown.

CYLINDER HEAD NUT/BOLT INSTALLATION
Install the cylinder head special nuts as shown. Do not tighten them yet.


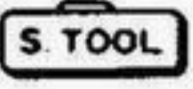
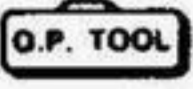











Install the cylinder head mounting bolts. Tighten the special nuts and mounting bolts in a gradual crisscross pattern.

TORQUE
Special nut 30 N-m (13.0 kg-m, 22 ft-lb)
Mounting bolt 12 N-m (1.2 kg-m, 9 ft-lb)

8-5

Symbols

The symbols used throughout this manual show specific service procedures. If supplementary information is required pertaining to these symbols, it would be explained specifically in the text without the use of the symbols.

| | |
|--|--|
|  | <p>Replace the part(s) with new one(s) before assembly.</p> |
|  | <p>Use special tool.</p> |
|  | <p>Use optional tool. Use the same procedure you use to order parts.</p> |
|  10 (1.0, 7.2) | <p>Torque specification 10 N·m (1.0 kg-m, 7.2 ft-lb).</p> |
|  | <p>Use recommended engine oil, unless otherwise specified.</p> |
|  | <p>Use molybdenum oil solution (mixture of engine oil and molybdenum grease in a ratio of 1:1).</p> |
|  | <p>Use multi-purpose grease (Lithium based multi-purpose grease NLGI #2 or equivalent).</p> |
|  | <p>Use molybdenum disulfide grease (containing more than 3% molybdenum disulfide, NLGI #2 or equivalent). Example: Molykote® BR-2 plus manufactured by Dow Corning, U.S.A. Multi-purpose M-2 manufactured by Mitsubishi Oil Japan</p> |
|  | <p>Use molybdenum disulfide paste (containing more than 40% molybdenum disulfide, NLGI #2 or equivalent). Example: Molykote® G-n Paste manufactured by Dow Corning, U.S.A. Honda Moly 60 (U.S.A. only) Rocol ASP manufactured by Rocol Limited, U.K. Rocol Paste manufactured by Sumico Lubricant, Japan</p> |
|  | <p>Use silicone grease.</p> |
|  | <p>Apply a locking agent. Use a middle strength locking agent unless otherwise specified.</p> |
|  | <p>Apply sealant.</p> |
|  | <p>Use brake fluid, DOT 3 or DOT 4. Use the recommended brake fluid, unless otherwise specified.</p> |
|  | <p>Use Fork or Suspension Fluid.</p> |

1. General Information

1

| | | | |
|----------------------|------|---------------------------|------|
| General Safety | 1-1 | Tools | 1-17 |
| Model Identification | 1-3 | Lubrication & Seal Points | 1-19 |
| Specifications | 1-4 | Cable & Harness Routing | 1-21 |
| Torque Values | 1-14 | | |

General Safety

Carbon Monoxide

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.

⚠ WARNING

- The exhaust contains poisonous carbon monoxide gas that can cause loss of consciousness and may lead to death.

Run the engine in an open area or with an exhaust evacuation system in an enclosed area.

Gasoline

Work in a well ventilated area. Keep cigarettes, flames or sparks away from the work area or where gasoline is stored.

⚠ WARNING

- Gasoline is extremely flammable and is explosive under certain conditions. KEEP OUT OF REACH OF CHILDREN.

Hot Components

⚠ WARNING

- Engine and exhaust system parts become very hot and remain hot for some time after the engine is run. Wear insulated gloves or wait until the engine and exhaust system have cooled before handling these parts.

Used Engine/Transmission Oil

⚠ WARNING

- Used engine oil (or transmission oil in two-strokes) 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 advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil. KEEP OUT OF REACH OF CHILDREN.

Brake Dust

Never use an air hose or dry brush to clean brake assemblies.

⚠ WARNING

- Inhaled asbestos fibers have been found to cause respiratory disease and cancer.

Brake Fluid

CAUTION

- Spilling fluid on painted, plastic or rubber parts will damage them. Place a clean shop towel over these parts whenever the system is serviced. KEEP OUT OF REACH OF CHILDREN.

MEMO

Coolant

Under some conditions, the ethylene glycol in engine coolant is combustible and its flame is not visible. If the ethylene glycol does ignite, you will not see any flame, but you can be burned.

⚠ WARNING

- **Avoid spilling engine coolant on the exhaust system or engine parts.** They may be hot enough to cause the coolant to ignite and burn without a visible flame.
- **Coolant (ethylene glycol) can cause some skin irritation and is poisonous if swallowed. KEEP OUT OF REACH OF CHILDREN.**
- **Do not remove the radiator cap when the engine is hot.** The coolant is under pressure and could scald you.
- **Keep hands and clothing away from the cooling fan, as it starts automatically.**

If it contacts your skin, wash the affected areas immediately with soap and water. If it contacts your eyes, flush them thoroughly with fresh water and get immediate medical attention. If it is swallowed, the victim must be forced to vomit then rinse mouth and throat with fresh water before obtaining medical attention. Because of these dangers, always store coolant in a safe place, away from the reach of children.

Nitrogen Pressure

For shock absorbers with a gas-filled reservoir:

⚠ WARNING

- **Use only nitrogen to pressurize the shock absorber.** The use of an unstable gas can cause a fire or explosion resulting in serious injury.
- **The shock absorber contains nitrogen under high pressure.** Allowing fire or heat near the shock absorber could lead to an explosion that could result in serious injury.
- **Failure to release the pressure from a shock absorber before disposing of it may lead to a possible explosion and serious injury if it is heated or pierced.**

To prevent the possibility of an explosion, release the nitrogen by pressing the valve core. Then remove the valve stem from the shock absorber reservoir.

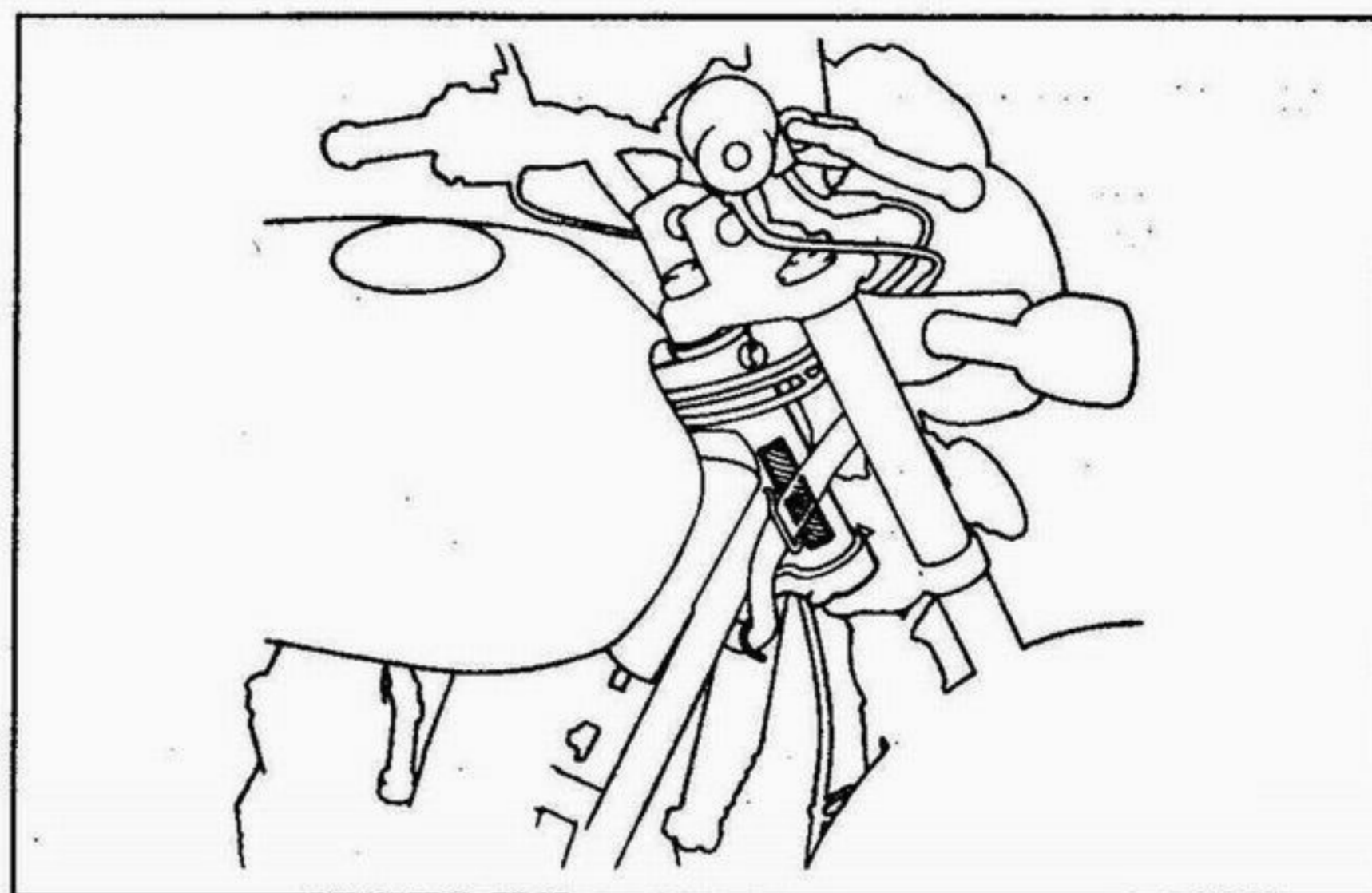
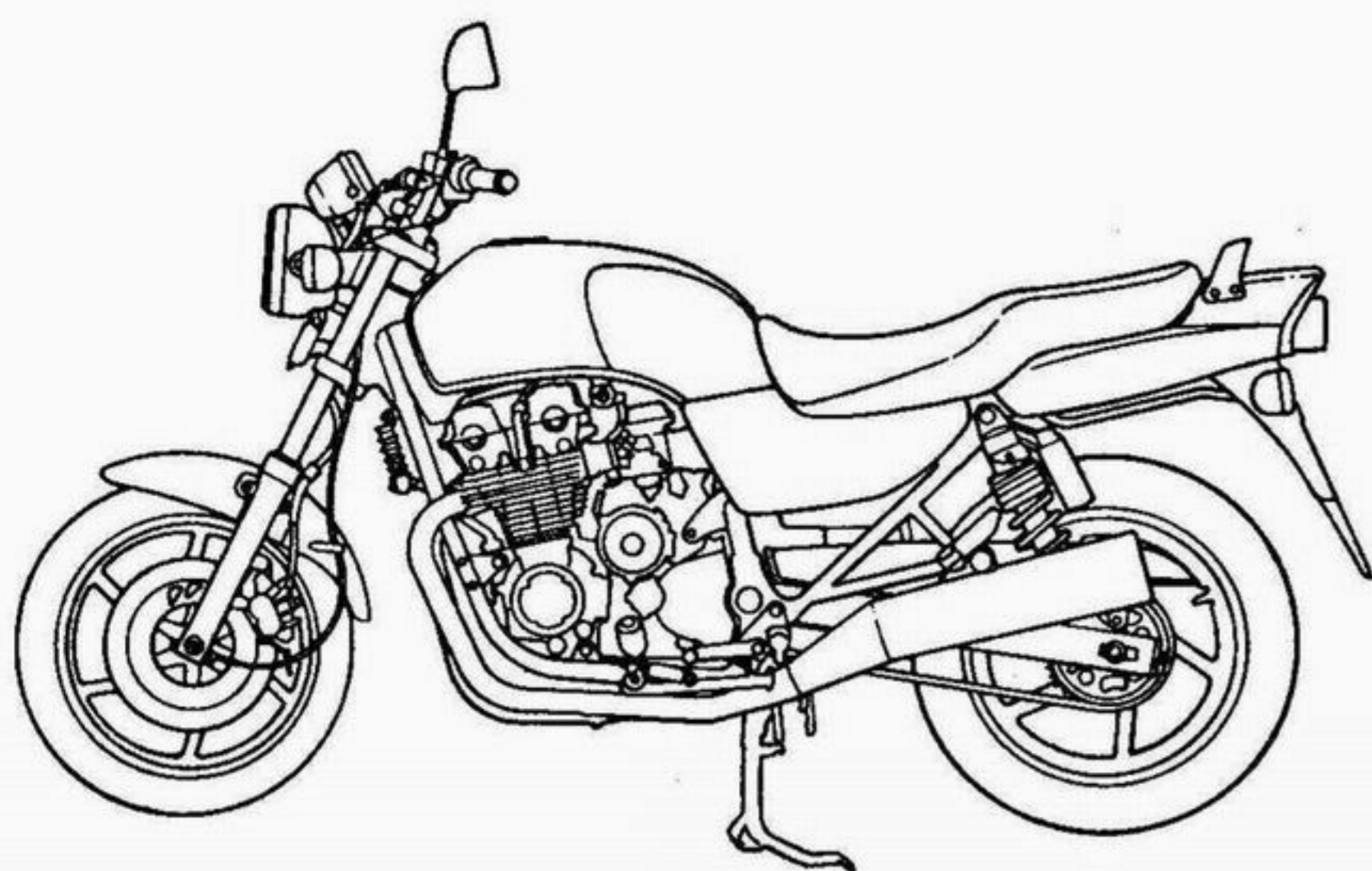
Before disposal of the shock absorber, release the nitrogen by pressing the valve core. Then remove the valve stem from the shock absorber.

Battery Hydrogen Gas & Electrolyte

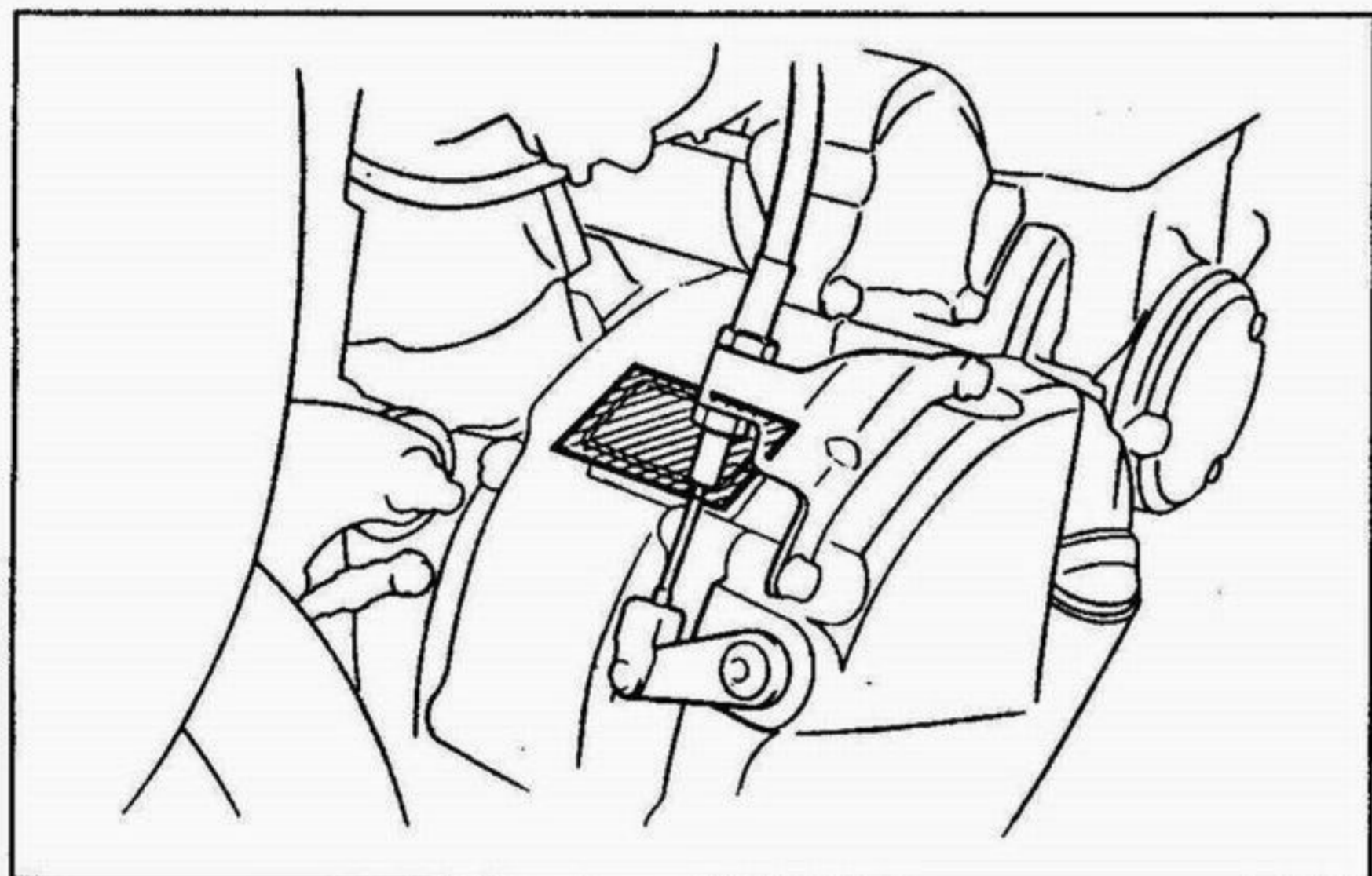
⚠ WARNING

- **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 follow with milk of magnesia or vegetable oil and call a physician. KEEP OUT OF REACH OF CHILDREN.**

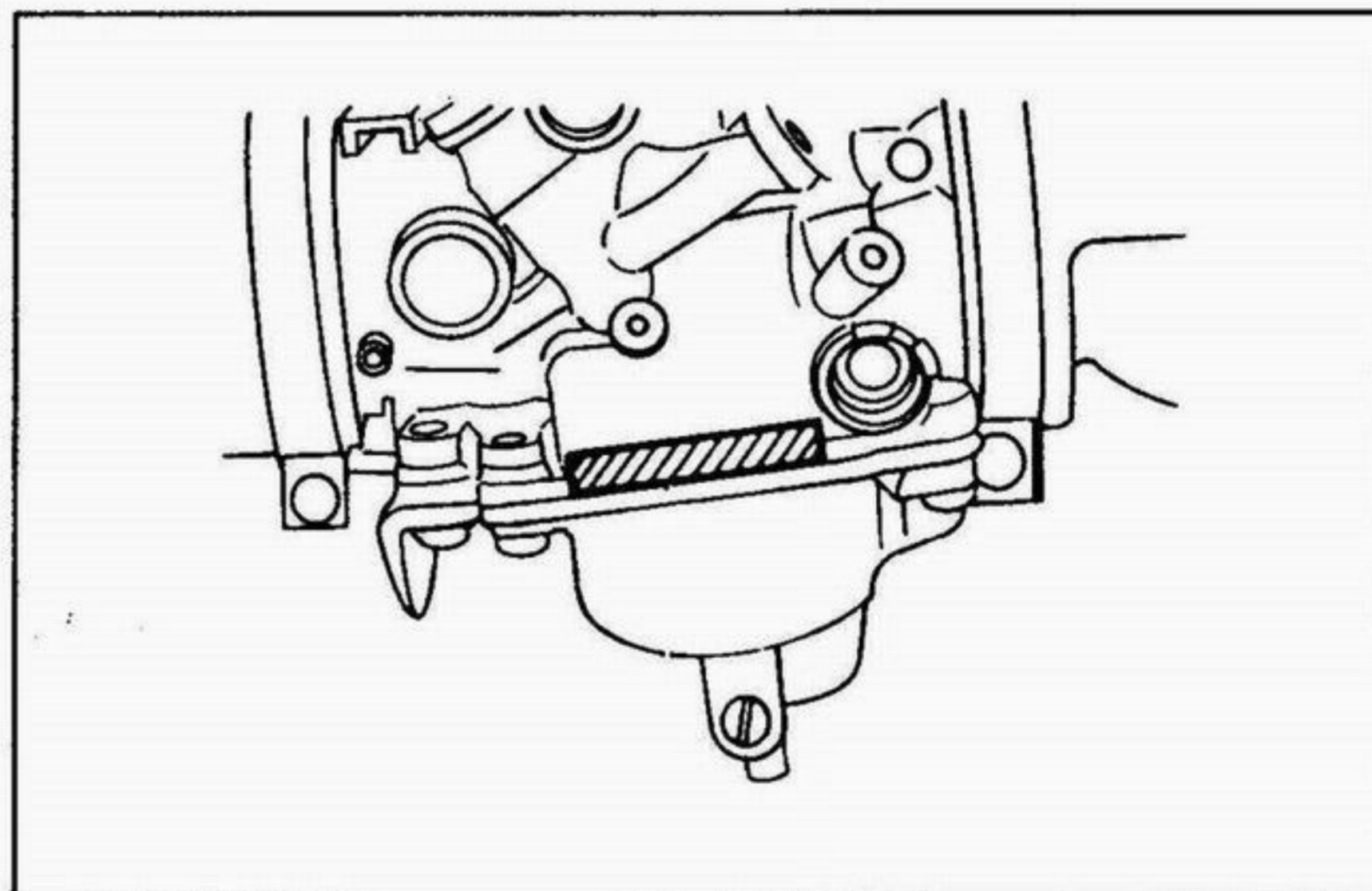
Model Identification



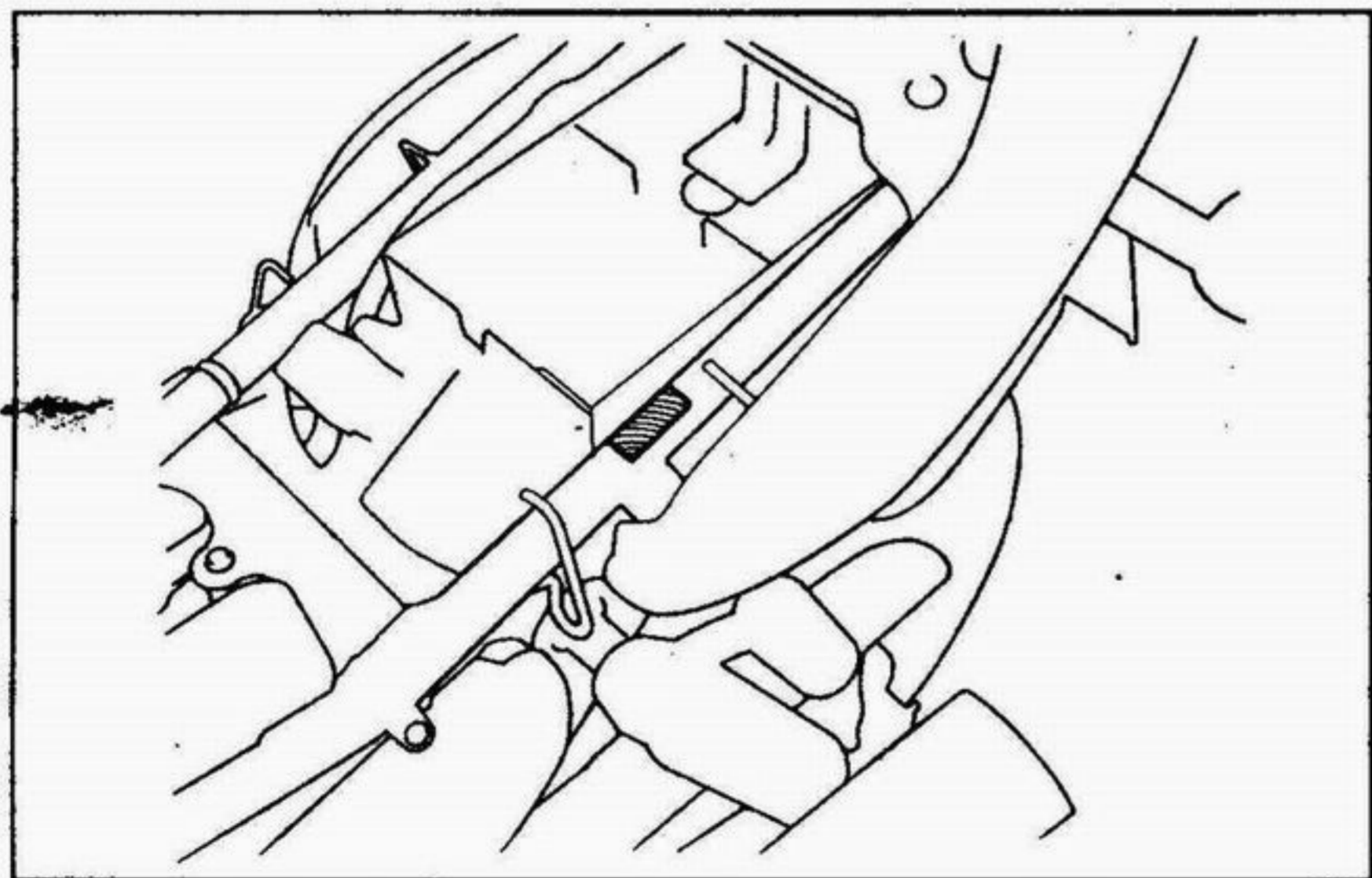
(1) The frame serial number is stamped on the right side of the steering head.



(2) The engine serial number is stamped on the upper right of the crankcase.

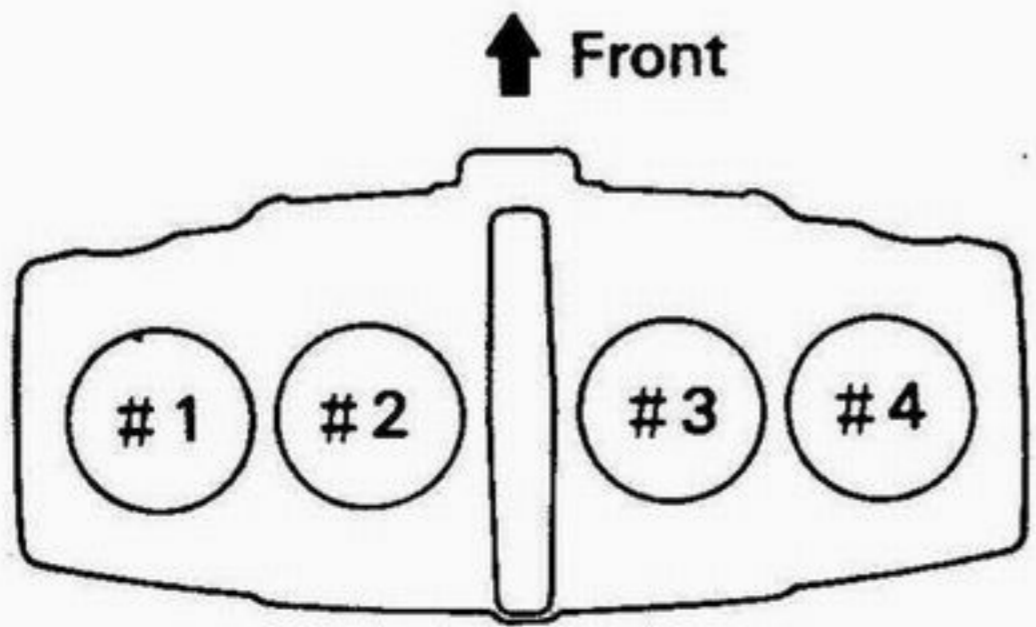


(3) The carburetor identification number is stamped on the left side of the carburetor body.

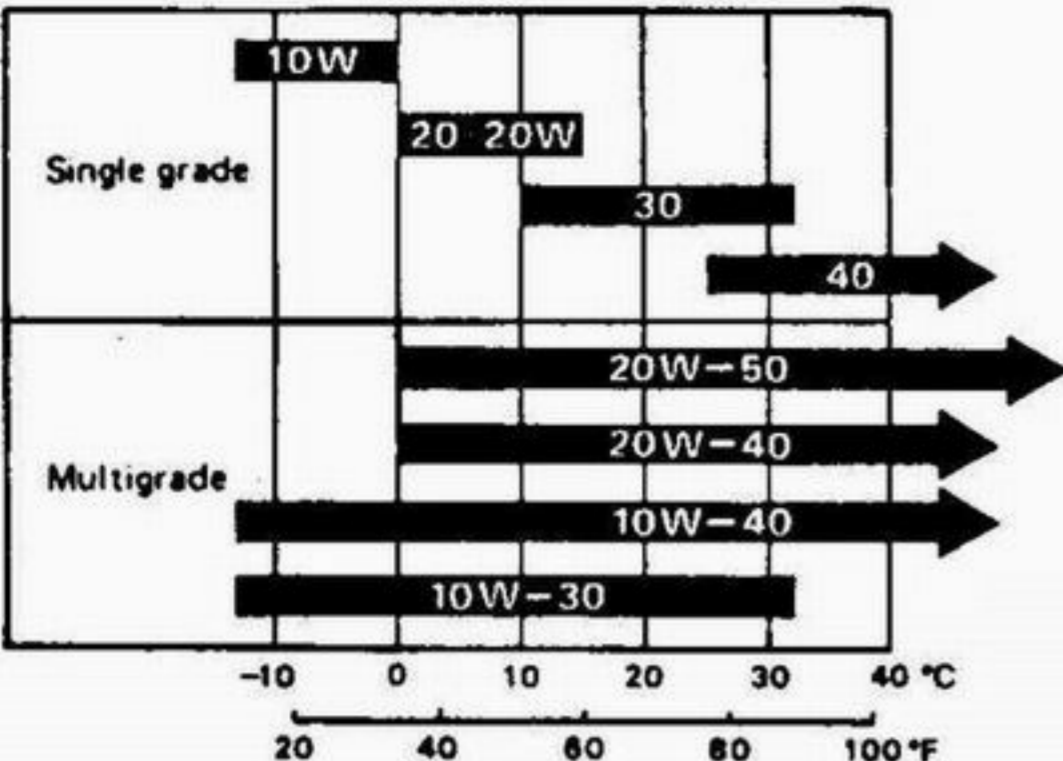
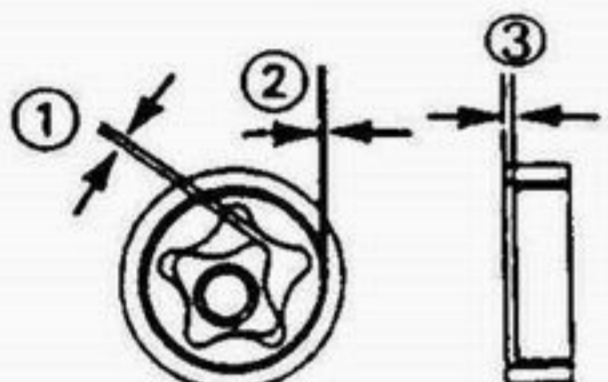


(4) The color label is attached as shown. When ordering color-coded parts, always specify the designated color code.

Specifications

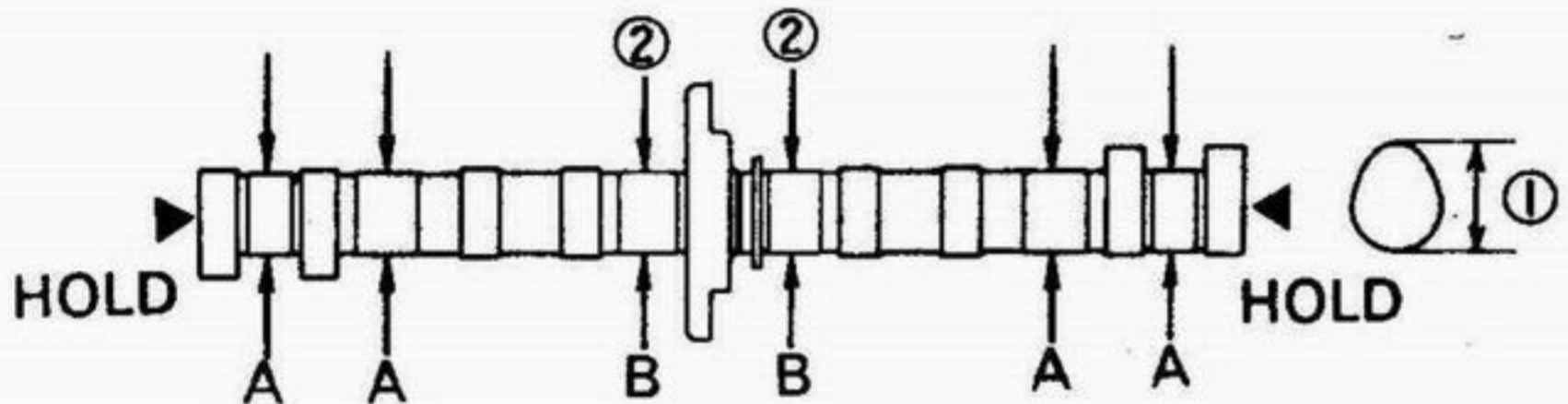
| General | | Item | Specifications |
|---|-------------------------------------|-----------------------------------|--|
| Dimensions | Overall length | G, AR, SW E, F, ED, SP, U | 2,220 mm (87.4 in) |
| | Overall width | | 2,155 mm (84.8 in) |
| | Overall height | | 780 mm (30.7 in) |
| | Wheelbase | | 1,100 mm (43.3 in) |
| | Seat height | | 1,495 mm (58.9 in) |
| | Footpeg height | | 795 mm (31.3 in) |
| | Ground clearance | | 338 mm (13.3 in) |
| | Dry weight | | 130 mm (5.1 in) |
| | Curb weight | | 215 kg (474 lbs) |
| | Maximum weight capacity | | 235 kg (518 lbs) |
| | | | 190 kg (419 lbs) |
| Frame | Frame type | | Double cradle |
| | Front suspension | | Telescopic fork |
| | Front wheel travel | | 130 mm (5.1 in) |
| | Rear suspension | | Swingarm |
| | Rear wheel travel | | 110 mm (4.3 in) |
| | Rear damper | | Reserve-tank type |
| | Front tire size | | 120/70ZR17, 120/70R17 58V |
| | Rear tire size | | 150/70ZR17, 150/70R17 69V |
| | Tire brand (Bridgestone) FR/RR | | — |
| | Tire brand (Dunlop) FR/RR | | D202F/D202 |
| | Tire brand (Yokohama) FR/RR | | — |
| | Tire brand (Michelin) FR/RR | | A89X/M89X |
| | Front brake | | Hydraulic disc brake |
| | Rear brake | | Hydraulic disc brake |
| | Caster angle | | 26° |
| Trail length | | 91 mm (3.6 in) | |
| Fuel tank capacity | | 20 lit. (5.3 US gal, 4.4 Imp gal) | |
| Fuel tank reserve capacity | | 3 lit. (3.2 US qt, 2.6 Imp qt) | |
| Engine | Bore and stroke | | 67.0×53.0 mm (2.6×2.1 in) |
| | Displacement | | 747 cc (45.6 cu-in) |
| | Compression ratio | | 9.3:1 |
| | Valve train | | Silent multi-link chain drive and DOHC with rocker arm |
| | Intake valve opens (at 1 mm lift) | | 0°BTDC |
| | Intake valve closes (at 1 mm lift) | | 35°ABDC |
| | Exhaust valve opens (at 1 mm lift) | | 30°BBDC |
| | Exhaust valve closes (at 1 mm lift) | | -5°ATDC |
| | Lubrication system | | Forced pressure and wet sump |
| | Oil pump type | | Trochoid |
| | Cooling system | | Air cooled |
| | Air filtration | | Paper filter |
| | Crankshaft type | | Unit-type |
| | Engine dry weight | | 82 kg (181 lbs) |
| | Firing order | | 1-2-4-3 |
| Cylinder arrangement | | In-line four | |
| Cylinder number | | | |
|  | | | |

| General (cont'd) | | |
|------------------|---|--|
| | Item | Specifications |
| Carburetor | Carburetor type Throttle bore | Constant vacuum 4 carburetors 34 mm (1.3 in) |
| Drive Train | Clutch system Clutch operation system Transmission Primary reduction Secondary reduction Third reduction Final reduction Gear ratio 1st Gear ratio 2nd Gear ratio 3rd Gear ratio 4th Gear ratio 5th Gear ratio 6th Gear ratio reverse Gearshift pattern | Multi-plate, wet Mechanical type 5 speeds 1.780 (73/41) — — 2.667 (40/15) 3.000 (42/14) 2.056 (37/18) 1.545 (34/22) 1.240 (31/25) 1.074 (29/27) — — Left foot operated return system 1-N-2-3-4-5 |
| Electrical | Ignition system Starting system Charging system Regulator/rectifier type Lighting system AC regulator type | Full transistor ignition Starter motor Triple phase output alternator Field control/triple phase full-wave rectification Battery — |

| Lubrication | | Standard | Service Limit |
|---|--|--|---------------|
| <p>Engne oil capacity at draining at disassembly at oil filter change</p> <p>Recommended engine oil</p> <p>OIL VISCOSITIES</p>  | <p>2.8 lit. (2.9 US qt, 2.5 Imp qt) 3.8 lit. (4.0 US qt, 3.3 Imp qt) 3.0 lit. (3.2 US qt, 2.6 Imp qt)</p> <p>Use Honda 4-stroke Oil or equivalent API Service Classification: SE, SF or SG Viscosity: SAE 10W-40</p> <p>Other viscosities shown in the chart may be used when the average temperature in your riding area is within the indicated range.</p> | <p>— — —</p> | |
| Oil pressure (80°C/176°F) | 630 kPa (6.3 kg/cm ² , 90 psi) at 6,000 min ⁻¹ (rpm) | — | |
| Oil pump rotor tip clearance ① body clearance ② end clearance ③ | 0.10 (0.004) 0.15-0.22 (0.006-0.009) 0.02-0.07 (0.001-0.003) | 0.20 (0.008) 0.35 (0.014) 0.10 (0.004) | |
|  | | | |

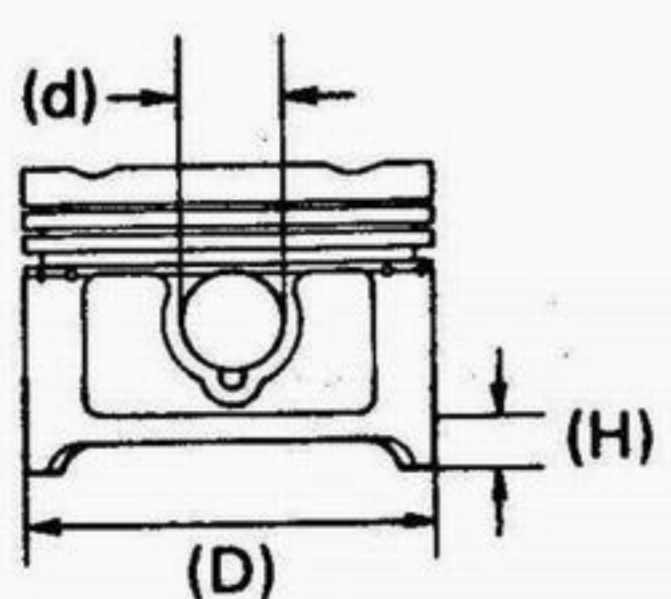
| Fuel System | | Standard | Service Limit |
|--|--|--|--------------------------------------|
| Carburetor identification number | E, F, ED, SP, U AR G I G II G III SW | VE66E VE66G VE66H VE66J VE66L VE66K | — — — — — — |
| Main jet | (High altitude) (2, 3) E, F, ED, SP, U, AR, G G II, G III (1, 4) E, F, ED, SP, U, AR, G G II, G III (Front) (Rear) | — — #112 #110 #110 #108 — — | — — — — — — — — |
| Slow jet | | #35 | — |
| Jet needle clip position | | — | — |
| Pilot screw initial opening | E, F, ED, SP, U, G AR SW | 2 turns out 2-1/4 turns out 2-3/4 turns out | — — — |
| Pilot screw high altitude adjustment | | — | — |
| Air screw initial opening | | — | — |
| Air screw high altitude adjustment | | — | — |
| Float level | | 18.5 (0.73) | — |
| Carburetor vacuum difference | | Within 30 mmHg (1.3 inHg) | — |
| Base carburetor (For carburetor synchronization) | | No.2 carburetor | — |
| Idle speed | SW | 1,200±100 min ⁻¹ (rpm) 1,200± 50 min ⁻¹ (rpm) | — — |
| Throttle grip free play | | 2-6 (1/8-1/4) | — |
| Accelerator pump clearance | | — | — |
| Secondary air supply system (SW and AR type) | | Reed valves and AICV | — |
| Air injection control valve vacuum pressure | SW AR | 350 mmHg (13.8 inHg) 300 mmHg (11.8 inHg) | — — |

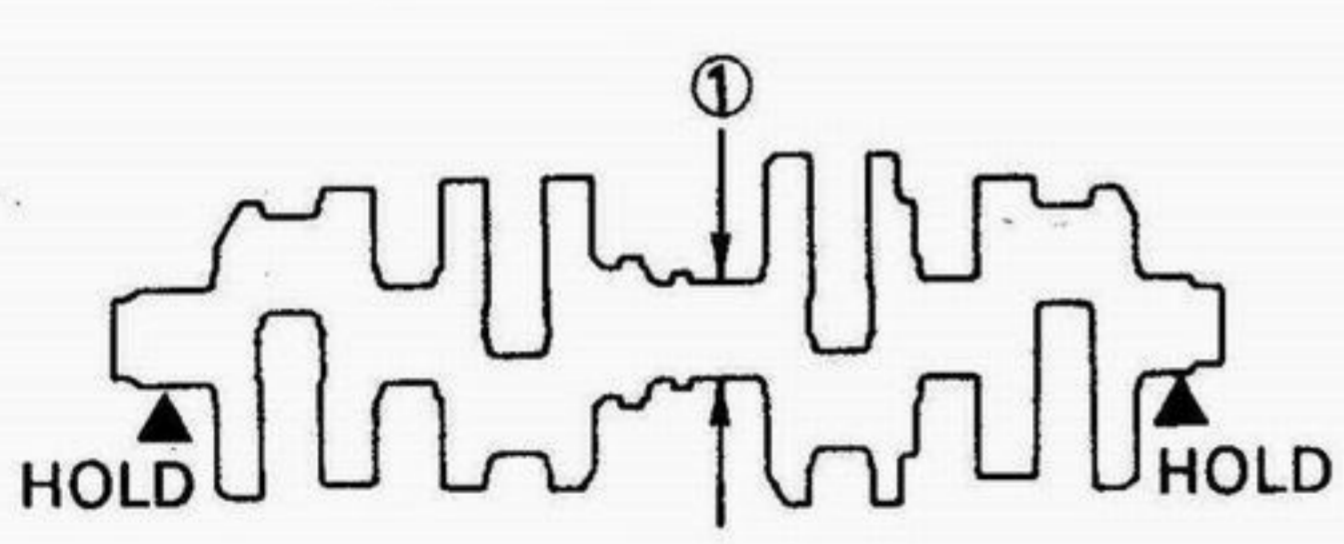
Unit: mm (in)

| Cylinder Head | Item | Standard | Service Limit |
|---------------|---|---|--|
| | Cylinder compression | 981-1373 kPa (10.0-14.0 kg/cm ² , 142-199 psi)/250 min ⁻¹ (rpm) | — |
| | Cylinder compression synchronization difference | — | 392kPa (4.0kg/cm ² , 57psi) |
| | Valve clearance IN | — | — |
| | EX | — | — |
| | Cylinder head warpage | — | 0.10 (0.004) |
| | Cam lobe height ① IN | 32.252-32.412 (1.2697-1.2760) | 32.17 (1.266) |
| | IN (California model) | 32.252-32.412 (1.2697-1.2760) | 32.17 (1.266) |
| | EX | 32.136-32.296 (1.2651-1.2714) | 3.05 (0.907) |
| | EX (California model) | 32.136-32.296 (1.2651-1.2714) | 32.05 (0.907) |
| | Camshaft runout ② | — | 0.10 (0.004) |
| | Camshaft oil clearance A | 0.020-0.062 (0.0007-0.0024) | 0.09 (0.003) |
| | B | 0.055-0.097 (0.0021-0.0038) | 0.12 (0.004) |
| |  | | |
| | Camshaft journal O.D. (A) | 25.959-25.980 (1.0220-1.0228) | — |
| | (B) | 25.929-25.950 (1.0208-1.0216) | — |
| | Camshaft holder I.D. (A) | 26.000-26.033 (1.0236-1.0249) | — |
| | (B) | 26.010-26.031 (1.0240-1.0248) | — |
| | Valve stem O.D. IN | 4.975-4.990 (0.1959-0.1965) | 4.97 (0.195) |
| | EX | 4.955-4.970 (0.1951-0.1957) | 4.94 (0.194) |
| | Valve guide I.D. IN | 5.000-5.012 (0.1969-0.1973) | 5.04 (0.198) |
| | EX | 5.000-5.012 (0.1969-0.1973) | 5.04 (0.198) |
| | Stem-to-guide clearance IN | 0.010-0.037 (0.0006-0.0017) | 0.07 (0.003) |
| | EX | 0.030-0.057 (0.0012-0.0022) | 0.09 (0.004) |
| | Valve guide projection above cylinder head IN | — | — |
| | EX | — | — |
| | Before guide installation: | | |
| | 1. Chill the valve guides in the freezer section of a refrigerator for about an hour. | | |
| | 2. Heat the cylinder head to 100-150°C (212-300°F) | | |
| | Valve seat width | 0.9-1.1 | 1.5 (0.06) |
| | Valve spring free length IN | 43.7 (1.720) | 42.2 (1.66) |
| | EX | 43.7 (1.720) | 42.2 (1.66) |
| | inner IN | — | — |
| | inner EX | — | — |
| | outer IN | — | — |
| | outer EX | — | — |
| | Rocker arm I.D. IN | — | — |
| | EX | — | — |
| | Sub-rocker arm I.D. IN | — | — |
| | EX | — | — |
| | Rocker arm shaft O.D. IN | — | — |
| | EX | — | — |
| | Sub-rocker arm shaft O.D. IN | — | — |
| | EX | — | — |
| | Rocker arm-to-rocker arm shaft clearance | — | — |
| | Sub-rocker arm-to-rocker arm shaft clearance | — | — |
| | Valve lifter O.D. | — | — |
| | Valve lifter bore I.D. | — | — |
| | Hydraulic lash adjuster assist spring free length | — | — |
| | Hydraulic lash adjuster compression stroke with kerosene | 0-0.2 (0-0.008) | — |

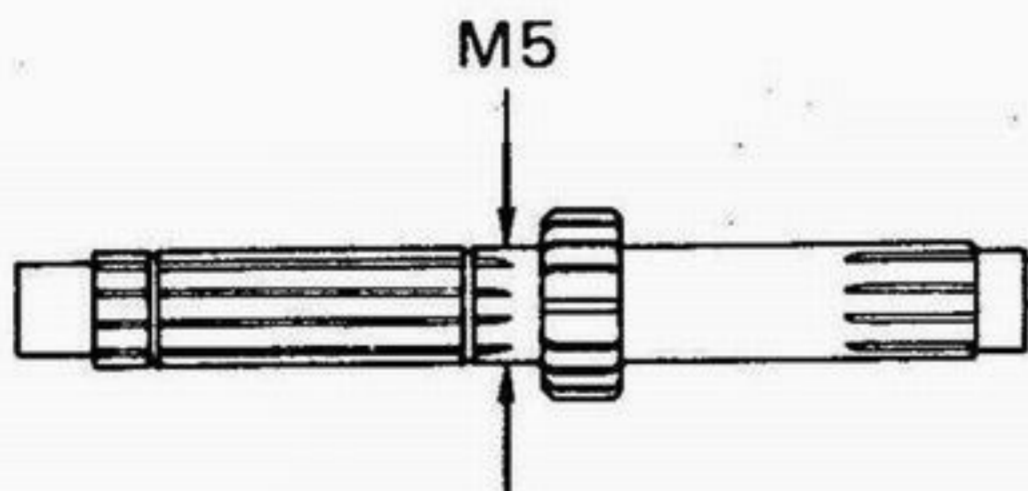
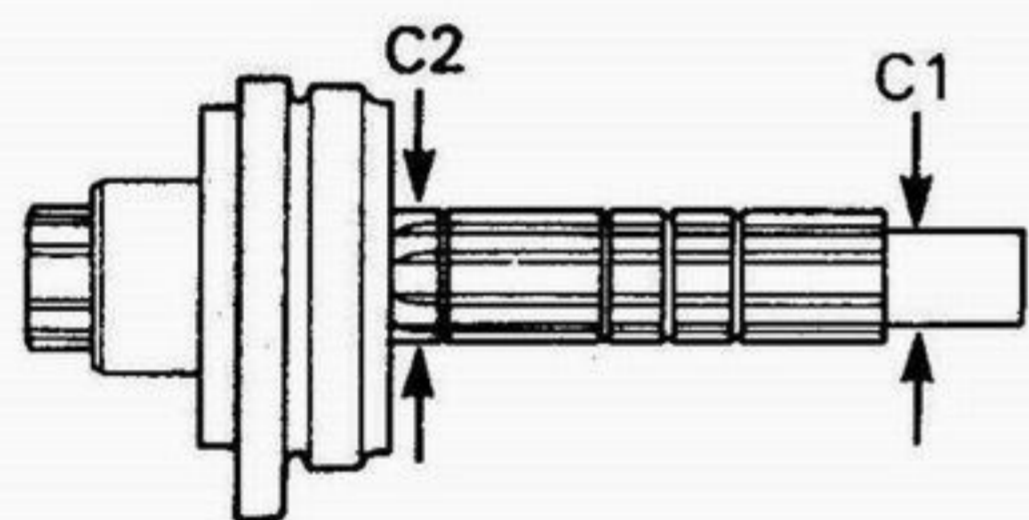
General Information

Unit: mm (in)

| Cylinder/Piston | Item | Standard | Service Limit |
|-----------------|---|---|---------------|
| | Cylinder I.D. | 67.000-67.010 (2.6378-2.6381) | 67.10 (2.641) |
| | Cylinder out of round | — | 0.05 (0.002) |
| | Cylinder taper | — | 0.05 (0.002) |
| | Cylinder warp | — | 0.10 (0.004) |
| | Piston mark direction | "IN" mark facing (toward the intake side) | — |
| | Piston O.D. (D) | 66.960-66.990 (2.636-2.637) | 66.90 (2.634) |
| | Piston O.D. measurement point (H) | 14 mm (0.55 in) from the bottom | — |
| | Piston pin hole I.D. (d) | 17.002-17.008 (0.6694-0.6696) | 17.05 (0.671) |
| |  | | |
| | Cylinder-to-piston clearance | 0.010-0.050 (0.0003-0.0019) | 0.10 (0.004) |
| | Piston pin O.D. | 16.994-17.000 (0.6691-0.6693) | 16.98 (0.669) |
| | Piston-to-piston pin clearance | 0.002-0.014 (0.0001-0.0006) | 0.04 (0.002) |
| | Connecting rod-to-piston pin clearance | 0.016-0.040 (0.0004-0.0020) | 0.06 (0.002) |
| | Top ring-to-ring groove clearance | 0.015-0.045 (0.0006-0.0018) | 0.06 (0.002) |
| | Second ring-to-ring groove clearance | 0.015-0.045 (0.0006-0.0018) | 0.06 (0.002) |
| | Top ring end gap | 0.15-0.30 (0.006-0.012) | 0.5 (0.019) |
| | Second ring end gap | 0.30-0.45 (0.012-0.018) | 0.65 (0.025) |
| | Oil ring (side rail) end gap | 0.20-0.70 (0.008-0.028) | 0.9 (0.035) |
| | Top ring mark | "M" Mark side facing up | — |
| | Second ring mark | "RN" Mark side facing up | — |

| Crankshaft | Item | Standard | Service Limit |
|------------|---|-------------------------------|---------------|
| | Connecting rod small end I.D. | 17.016-17.034 (0.6699-0.6706) | 17.07 (0.672) |
| | Connecting rod big end side clearance | 0.05-0.20 (0.002-0.008) | 0.3 (0.01) |
| | radial clearance | — | — |
| | Crankshaft runout ① | — | 0.05 (0.002) |
| |  | | |
| | Crankpin oil clearance | 0.024-0.057 (0.0009-0.0022) | 0.06 (0.002) |
| | Connecting rod bearing selection | See page 9-15 | — |
| | Main journal oil clearance | 0.020-0.054 (0.0007-0.0021) | 0.06 (0.002) |
| | Main journal bearing selection | See page 9-14 | — |

Unit: mm (in)

| Transmission | Item | Standard | Service Limit |
|--------------|---|-------------------------------|---------------|
| | Transmission gear I.D. M5 | 28.000-28.021 (1.1024-1.1032) | 28.04 (1.104) |
| | C1 | 24.000-24.021 (0.9449-0.9457) | 24.04 (0.946) |
| | C2, 3, 4 | 31.000-31.025 (1.2205-1.2215) | 31.04 (1.222) |
| | Transmission gear bushing O.D. M5 | 27.959-27.980 (1.1007-1.1016) | 27.94 (1.100) |
| | C2, 3, 4 | 30.950-30.975 (1.2185-1.2195) | 30.93 (1.222) |
| | Transmission gear bushing I.D. M5 | 24.985-25.006 (0.9837-0.9845) | 25.03 (0.985) |
| | C2 | 27.985-28.006 (1.1018-1.1026) | 28.03 (1.104) |
| | Gear-to-bushing clearance at M5 gear | 0.020-0.062 (0.0008-0.0024) | 0.10 (0.004) |
| | C2, 3, 4 | 0.025-0.075 (0.0010-0.0030) | 0.11 (0.004) |
| | Mainshaft O.D. at M5 gear | 24.959-24.980 (0.9826-0.9835) | 24.94 (0.982) |
| |  | | |
| | Countershaft O.D. at C1 gear | 19.987-20.000 (0.7869-0.7874) | 19.97 (0.786) |
| | C2 gear | 27.967-27.980 (1.1011-1.1016) | 27.94 (1.100) |
| |  | | |
| | Gear-to-shaft clearance | — | — |
| | Gear bushing-to-shaft clearance at M5 gear | 0.005-0.047 (0.0002-0.0019) | 0.08 (0.003) |
| | C2 | 0.005-0.039 (0.0002-0.0015) | 0.08 (0.003) |
| | Shift fork claw thickness (L) | 6.43-6.50 (0.253-0.256) | 6.1 (0.24) |
| | (C) | 6.43-6.50 (0.253-0.256) | 6.1 (0.24) |
| | (R) | 6.43-6.50 (0.253-0.256) | 6.1 (0.24) |
| | Shift fork I.D. (L) | 14.000-14.021 (0.5512-0.5520) | 14.04 (0.553) |
| | (C) | — | — |
| | (R) | 14.000-14.021 (0.5512-0.5520) | 14.04 (0.553) |
| | Shift fork shaft O.D. | 13.966-13.984 (0.5498-0.5505) | 13.90 (0.547) |

General Information

Unit: mm (in)

| Clutch System | | |
|---|-------------------------------|---------------|
| Item | Standard | Service Limit |
| Clutch lever free play | 10-20 (3/8-3/4) | _____ |
| Recommended clutch fluid | _____ | _____ |
| Clutch master cylinder I.D. | _____ | _____ |
| Clutch master piston O.D. | _____ | _____ |
| Clutch outer I.D. | _____ | _____ |
| Clutch outer guide O.D. | _____ | _____ |
| I.D. | 24.995-25.012 (0.9841-0.9847) | 25.08 (0.987) |
| Mainshaft O.D. at clutch outer guide | _____ | _____ |
| Clutch spring free height | _____ | _____ |
| Clutch spring free length | _____ | _____ |
| Clutch disc thickness | _____ | _____ |
| Clutch disc thickness (A) | 3.22-3.38 (0.127-0.133) | 2.90 (0.11) |
| (B) | 3.22-3.38 (0.127-0.133) | 2.90 (0.11) |
| (C) | 3.42-3.58 (0.135-0.141) | 3.20 (0.12) |
| Clutch plate warpage | _____ | 0.3 (0.01) |
| Centrifugal clutch drum I.D. | _____ | _____ |
| bushing O.D. | _____ | _____ |
| Centrifugal clutch center guide I.D. | _____ | _____ |
| O.D. | _____ | _____ |
| Centrifugal clutch center guide collar height | _____ | _____ |
| Centrifugal clutch weight lining thickness | _____ | _____ |
| Centrifugal clutch spring free length | _____ | _____ |
| Clutch lining thickness | _____ | _____ |
| Crankshaft O.D. at clutch center | _____ | _____ |

| Cooling System | | |
|--|-------|-------|
| Coolant capacity (Radiator and engine) | _____ | _____ |
| (Reserve tank) | _____ | _____ |
| Radiator cap relief pressure | _____ | _____ |
| Thermostat begins to open | _____ | _____ |
| Thermostat fully open | _____ | _____ |
| Thermostat valve lift | _____ | _____ |

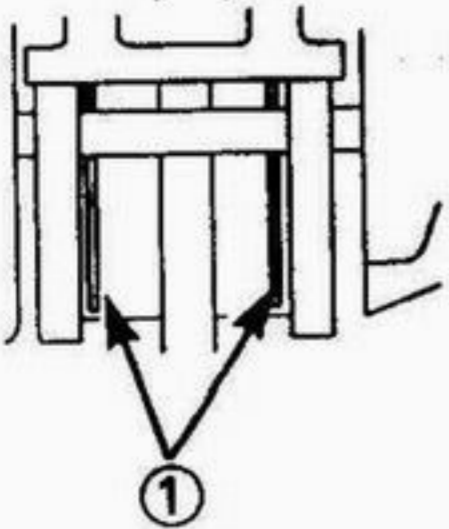
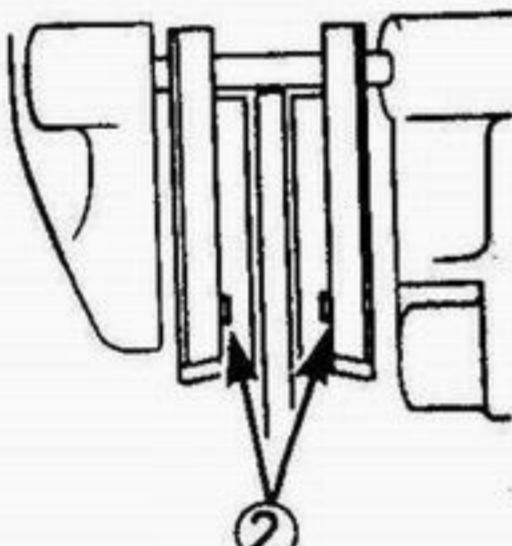
| Drive Train | | |
|--|-------|-------|
| Recommended final drive oil | _____ | _____ |
| Final drive gear oil capacity at disassembly | _____ | _____ |
| at draining | _____ | _____ |
| Final drive gear backlash | _____ | _____ |
| Final drive gear backlash difference between measurement | _____ | _____ |
| Ring gear-to-stop pin clearance (A) | _____ | _____ |
| Stop pin shim | _____ | _____ |
| Ring gear spacer | _____ | _____ |
| Pinion spacer | _____ | _____ |
| Final drive gear assembly preload | _____ | _____ |
| Output gear backlash | _____ | _____ |
| Output gear I.D. | _____ | _____ |
| Output gear bushing O.D. | _____ | _____ |
| I.D. | _____ | _____ |
| Output drive shaft O.D. | _____ | _____ |
| Output gear damper spring free length | _____ | _____ |
| Output shaft adjustment shim | _____ | _____ |
| Countershaft drive shaft adjustment shim | _____ | _____ |

Unit: mm (in)

| Wheels/Tires | | Standard | Service Limit |
|----------------------------------|---------------------------|--|---------------|
| Item | | | |
| Minimum tire tread depth (FR) | | _____ | 1.5 (0.06) |
| | (RR) | _____ | 2.0 (0.08) |
| Cold tire pressure | Driver only (FR) | 250 kPa (2.50 kg/cm ² , 36 psi) | _____ |
| | Driver only (RR) | 250 kPa (2.50 kg/cm ² , 36 psi) | _____ |
| | Driver and passenger (FR) | 250 kPa (2.50 kg/cm ² , 36 psi) | _____ |
| | Driver and passenger (RR) | 290 kPa (2.90 kg/cm ² , 42 psi) | _____ |
| Front and rear axle runout | | _____ | 0.2 (0.008) |
| Front and rear wheel rim runout | (Radial) | _____ | 2.0 (0.08) |
| | (Axial) | _____ | 2.0 (0.08) |
| Front wheel hub-to-rim distance | | _____ | _____ |
| Front wheel hub standard surface | | _____ | _____ |
| Rear wheel hub-to-rim distance | | _____ | _____ |
| Rear wheel hub standard surface | | _____ | _____ |
| Wheel balance weight (Front) | | _____ | 60 g (2.1 oz) |
| | (Rear) | _____ | 60 g (2.1 oz) |
| Drive chain slack | | 30-40 (1.18-1.57) | _____ |
| Drive chain size/link (DID) | | DID 525 V9/112 | _____ |
| | (RK) | RK 525 SM4/112 | _____ |

| Front Suspension | | Standard | Service Limit |
|---------------------------|-----|--|---------------|
| Fork spring free length | | 270.8 (10.66) | 265.4 (10.45) |
| Fork spring free length A | | _____ | _____ |
| | B | _____ | _____ |
| Fork spring direction | | Tapered coil end facing down | _____ |
| Fork tube runout | | _____ | 0.2 (0.01) |
| Recommended fork oil | | Fork fluid | _____ |
| Fork oil level | | 110 (4.33) | _____ |
| Fork oil level (R) | | _____ | _____ |
| | (L) | _____ | _____ |
| Fork oil capacity | | 482cm ³ (16.30 US oz, 16.91 Imp oz) | _____ |
| Fork oil capacity (R) | | _____ | _____ |
| | (L) | _____ | _____ |
| Fork air pressure | | _____ | _____ |
| Steering bearing preload | | 1.0-1.5 kg (2.2-3.3 lb) | _____ |

| Rear Suspension | | Standard | Service Limit |
|---|--------------------|---|---------------|
| Shock absorber spring free length | | 252.7 (9.95) | 247.7 (9.75) |
| Shock absorber spring free length (A) | | _____ | _____ |
| | (B) | _____ | _____ |
| Damper gas pressure | | 490 kPa (5 kg/cm ² , 71.1 psi) | _____ |
| Damper compressed gas | | Nitrogen | _____ |
| Damper rod compressed force at 10 mm compressed | | 6.5-10 kg | _____ |
| Damper drilling point | | see page 11-9 | _____ |
| Shock absorber spring installed length (Standard) | | _____ | _____ |
| | (Adjustable range) | _____ | _____ |
| Shock absorber spring adjuster standard position | | 2nd groove | _____ |
| Shock absorber spring direction | | Tapered coil facing down | _____ |
| Recommended shock absorber oil | | _____ | _____ |
| Shock absorber oil capacity | | _____ | _____ |
| air pressure | | _____ | _____ |

| Brakes | | Standard | Service Limit |
|-------------------------------|---|-------------------------------|---------------|
| Item | | | |
| Front brake fluid | | DOT 4 | _____ |
| brake lever free play | | _____ | _____ |
| brake pad wear indicator ① | | _____ | To the groove |
| |  | | |
| brake disc thickness | | 5.0 (0.20) | 4.0 (0.16) |
| brake disc runout | | _____ | 0.25 (0.012) |
| master cylinder I.D. | | 12.700-12.743 (0.5000-0.5017) | 12.76 (0.502) |
| master piston O.D. | | 12.657-12.684 (0.4983-0.4994) | 12.65 (0.498) |
| caliper cylinder I.D. | | 25.400-25.450 (1.0000-1.0020) | 25.46 (1.002) |
| caliper cylinder I.D. (Upper) | | _____ | _____ |
| (Lower) | | _____ | _____ |
| caliper piston O.D. | | 25.335-25.368 (0.9974-0.9987) | 25.33 (0.997) |
| caliper piston O.D. (Upper) | | _____ | _____ |
| (Lower) | | _____ | _____ |
| brake drum I.D. | | _____ | _____ |
| brake lining thickness | | _____ | _____ |
| Rear brake fluid | | DOT 4 | _____ |
| brake pedal height | | _____ | _____ |
| brake pedal free play | | _____ | _____ |
| brake pad wear indicator ② | | _____ | To the groove |
| |  | | |
| brake disc thickness | | 5.0 (0.20) | 4.0 (0.16) |
| runout | | _____ | 0.25 (0.01) |
| master cylinder I.D. | | 12.700-12.743 (0.5000-0.5017) | 12.76 (0.502) |
| master piston O.D. | | 12.657-12.684 (0.4983-0.4994) | 12.65 (0.498) |
| caliper cylinder I.D. | | 38.180-38.230 (1.5031-1.5051) | 38.24 (1.506) |
| caliper piston O.D. | | 38.115-38.148 (1.5006-1.5019) | 38.11 (1.500) |
| brake drum I.D. | | _____ | _____ |
| brake lining thickness | | _____ | _____ |

| Battery/Charging System | | |
|---|-----------------------------------|-------|
| Alternator/charging coil resistance (At 20°C/68°F) | 0.4-0.6 Ω | _____ |
| Regulator/rectifier regulated voltage/amperage | 13.0-15.0 V/below 0.5 A/2,000 rpm | _____ |
| Battery capacity | 12V-14Ah | _____ |
| Battery specific gravity (Fully charging) | 1.270-1.290 | _____ |
| (Needs charging) | Below 1.260 | _____ |
| Battery charging rate (Normal) | 1.4 A/10h | _____ |
| (Quick) | _____ | _____ |
| Battery voltage (Fully charged 20°C/68°F) | _____ | _____ |
| (Needs charging 20°C/68°F) | _____ | _____ |
| Alternator field coil resistance (At 20°C/68°F) | 2.1-2.6 Ω | _____ |
| AC regulator regulated voltage (With analogue type) | _____ | _____ |
| (With digital type) | _____ | _____ |

| Ignition System | | Standard | Service Limit |
|---|--|-----------------------------|---------------|
| Item | | | |
| Spark plug (Standard NGK) | | DPR8EA-9 | — |
| (Standard NIPPONDENSO) | | X24EPR-U9 | — |
| (For extended high speed riding NGK) | | DPR9EA-9 | — |
| (For extended high speed riding NIPPONDENSO) | | X27EPR-U9 | — |
| Spark plug gap | | 0.8-0.9 mm (0.031-0.035 in) | — |
| Ignition timing "F" mark | | 10° BTDC | — |
| Advance start | | 10°/1,500 rpm | — |
| stop | | 33°/4,000 rpm | — |
| Full advance | | 33°/4,000 rpm | — |
| Alternator exciter coil resistance (At 20° C/68° F) | | — | — |
| Ignition coil resistance (Primary: at 20° C/68° F) | | 2.6-3.2 Ω | — |
| (Secondary with plug cap) | | 18-22 kΩ | — |
| (Secondary without plug cap) | | 13-17 kΩ | — |
| Pulse generator resistance (At 20° C/68° F) | | 297-363 Ω | — |

| Lights/Meters/Switches | | Standard | Service Limit |
|---|-------------------------|----------------|---------------|
| Main fuse | | 30A | — |
| Fuse | E, F, ED, SP, U, AR, SW | 10A×2, 15A×1 | — |
| | G | 10A×3, 15A×1 | — |
| Headlight (High/low beam) | | 12V60/55W (H4) | — |
| Tail/brake light | | 12V21/5W×2 | — |
| License light | | — | — |
| Position light bulb | E, F, ED, SP, AR, SW, G | 12V 4W | — |
| Front turn signal/running light | | — | — |
| Front turn signal light | | 12V 21W×2 | — |
| Rear turn signal light | | 12V 21W×2 | — |
| Instrument lights | | 12V 3.4W×2 | — |
| Oil pressure warning indicator | | 12V 1.7W | — |
| Tail/brake light warning indicator | | — | — |
| Side stand warning indicator | | 12V 1.7W | — |
| Lom fuel indicator | | — | — |
| Coolant temperature indicator | | — | — |
| Oil temperature indicator | | — | — |
| High beam indicator | | 12V 1.7W | — |
| Turn signal indicator | | 12V 1.7W | — |
| Neutral indicator | | 12V 1.7W | — |
| Reverse indicator | | — | — |
| Overdrive indicator | | — | — |
| Oil temperature sensor resistance | | — | — |
| Fuel unit resistance (At full level) | | — | — |
| (At low level) | | — | — |
| Fuel pump flow capacity (min./minute) | | — | — |
| Coolant temperature sensor resistance (At 50° C/122° F) | | — | — |
| (At 100° C/212° F) | | — | — |

| Starting System | | Standard | Service Limit |
|------------------------------------|--|-------------------------------|---------------|
| Starter driven gear O.D. | | 42.175-42.200 (1.6604-1.6614) | — |
| Starter clutch outer I.D. | | — | — |
| Starter motor brush spring tension | | 920 g | — |
| brush length | | 12.5 | 8.5 (0.33) |

Torque Values

| Standard | | | |
|------------------------|-----------------------------|--------------------------------------|-----------------------------|
| Item | Torque N·m (kg-m, ft-lb) | Item | Torque N·m (kg-m, ft-lb) |
| 5 mm hex bolt and nut | 5 (0.5, 3.5) | 5 mm screw | 4 (0.4, 3) |
| 6 mm hex bolt and nut | 10 (1.0, 7.2) | 6 mm screw | 9 (0.9, 7) |
| 8 mm hex bolt and nut | 22 (2.2, 16) | 6mm flange bolt (8 mm head) | 10 (1.0, 7.2) |
| 10 mm hex bolt and nut | 35 (3.5, 25) | 6mm flange bolt (10 mm head) and nut | 12 (1.2, 9) |
| 12 mm hex bolt and nut | 55 (5.5, 40) | 8 mm flange bolt and nut | 27 (2.7, 20) |
| | | 10 mm flange bolt and nut | 40 (4.0, 29) |

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

- Notes:
1. Apply sealant to the threads.
 2. Apply a locking agent to the threads.
 3. Apply molybdenum disulfide oil to the threads and flange surface.
 4. Left hand threads.
 5. Stake.
 6. Apply oil to the threads and flange surface.
 7. Apply clean engine oil to the O-ring.
 8. Torque wrench scale reading using a special tool.
 9. Apply grease to the threads and flange surface.
 10. UBS bolt.
 11. U-nut.
 12. ALOC bolt; Replace with a new one.

| Engine | | | | |
|-----------------------------------|------|---------------------|-----------------------------|------------|
| Item | Q'ty | Thread dia. (mm) | Torque N·m (kg-m, ft-lb) | Remarks |
| Lubrication: | | | | |
| Oil drain bolt | 1 | 12 | 35 (3.5, 25) | |
| Oil filter | 1 | 20 | 10 (1.0, 7.2) | Note 7 |
| Oil pump driven sprocket bolt | 1 | 6 | 12 (1.2, 9) | |
| Oil pipe bolt | 2 | 8 | 13 (1.3, 9) | |
| Oil pipe bolt | 2 | 10 | 22 (2.2, 16) | |
| Oil chamber cover bolt | 2 | 10 | 12 (1.2, 9) | Note 2 |
| Sealing bolt | 6 | 20 | 30 (3.0, 22) | Note 1 |
| Air separator cover bolt | 1 | 9 | 28 (2.8, 20) | |
| Oil pressure switch | 1 | PT 1/8 | 12 (1.2, 9) | Note 1 |
| Cylinder Head/Cylinder: | | | | |
| Cam sprocket bolt | 4 | 7 | 19 (1.9, 14) | Note 2, 10 |
| Cylinder head cap nut | 12 | 9 | 2 (2.8, 20) | Note 3 |
| Camshaft holder bolt | 20 | 6 | 14 (1.4, 10) | |
| Cylinder head cover bolt | 8 | 6 | 10 (1.0, 7.2) | |
| Head cover breather plate bolt | 3 | 5 | 6 (0.6, 4.3) | Note 2 |
| Cam chain tensioner mounting bolt | 4 | 6 | 12 (1.2, 9) | |
| Spark plug | 4 | 12 | 15 (1.5, 11) | |
| De-foaming chamber cover bolt | 4 | 6 | 12 (1.2, 9) | Note 2 |
| Clutch/Gearshift Linkage | | | | |
| Change cover cap | 1 | 24 | 8 (0.8, 5.8) | |
| Clutch center lock nut | 1 | 22 | 110 (11.0, 80) | Note 5 |
| Shift drum stopper arm bolt | 1 | 6 | 12 (1.2, 9) | |
| Shift return spring pin bolt | 1 | 8 | 23 (2.3, 17) | |
| Gearshift spindle joint bolt | 1 | 6 | 14 (1.4, 10) | |
| Gearshift pedal mounting bolt | 1 | 8 | 27 (2.7, 20) | |

| Engine | | | | |
|---|------|------------------|--------------------------|---------|
| Item | Q'ty | Thread dia. (mm) | Torque N·m (kg-m, ft-lb) | Remarks |
| Crankcase/Crankshaft | | | | |
| Crankcase bolt | 14 | 8 | 23 (2.3, 17) | |
| Crankcase bolt | 16 | 6 | 12 (1.2, 9) | |
| Alternator rotor bolt | 1 | 10 | 34 (3.4, 25) | |
| Alternator cover bolt | 3 | 6 | 11 (1.1, 8) | |
| Crankcase breather plate bolt | 3 | 6 | 12 (1.2, 9) | Note 2 |
| Connecting rod nut | 8 | 8 | 32 (3.2, 23) | Note 3 |
| Countershaft bearing cover bolt | 3 | 8 | 23 (2.3, 17) | Note 2 |
| Shift fork bolt (M) | 1 | 7 | 18 (1.8, 13) | |
| Alternator shaft nut | 1 | 10 | 34 (3.4, 25) | |
| Pulse rotor bolt | 1 | 10 | 35 (3.5, 25) | |
| Alternator drive chain tensioner bolt | 3 | 6 | 12 (1.2, 9) | Note 2 |
| Alternator drive chain slipper bolt | 1 | 6 | 12 (1.2, 9) | Note 2 |
| Alternator drive chain slipper pin bolt | 1 | 6 | 12 (1.2, 9) | Note 2 |
| Drive sprocket bolt | 1 | 10 | 40 (40, 29) | |

| Frame | | | | |
|-------------------------------------|------|------------------|--------------------------|------------|
| Item | Q'ty | Thread dia. (mm) | Torque N·m (kg-m, ft-lb) | Remarks |
| Lubrication: | | | | |
| Oil cooler mounting bolt | 2 | 6 | 7 (0.7, 5.1) | |
| Fuel Systems: | | | | |
| Tank cap screw | 2 | 4 | 0.03 (0.3, 2.2) | |
| Fuel valve nut | 1 | 20 | 23 (2.3, 17) | |
| Fuel tank mounting bolt | 1 | 8 | 27 (2.7, 20) | |
| Air cleaner case mounting bolt | 4 | 6 | 12 (1.2, 9) | |
| Breather tank mounting bolt | 2 | 6 | 12 (1.2, 9) | |
| Front Suspension: | | | | |
| Steering stem nut | 1 | 24 | 105 (10.5, 76) | |
| Steering head bearing adjusting nut | 1 | 26 | 28 (2.8, 20) | Note 6 |
| Fork pinch bolt (upper) | 2 | 8 | 22 (2.2, 16) | |
| Fork pinch bolt (lower) | 2 | 10 | 50 (5.0, 36) | |
| Fork cap bolt | 2 | 37 | 23 (2.3, 17) | |
| Fork socket bolt | 2 | 8 | 20 (2.0, 14) | Note 2 |
| Handlebar holder bolt | 4 | 8 | 25 (2.5, 18) | |
| Fork drain bolt | 2 | 6 | 7.5 (0.75, 5.4) | |
| Handlebar weight mounting screw | 2 | 6 | 9 (0.9, 6.5) | |
| Clutch lever holder bolt | 2 | 6 | 9 (0.9, 6.5) | |
| Clutch lever pivot nut | 1 | 6 | 6 (0.6, 4.3) | |
| Rear Suspension: | | | | |
| Swingarm pivot nut | 1 | 14 | 89 (8.9, 65) | Note 9, 11 |
| Absorber mounting bolt (upper) | 2 | 8 | 27 (2.7, 20) | |
| Absorber mounting bolt (lower) | 2 | 10 | 35 (3.5, 25) | |
| Drive chain adjuster lock nut | 2 | 8 | 21 (2.1, 15) | |
| Wheels: | | | | |
| Front axle bolt | 1 | 14 | 59 (5.9, 43) | |
| Front axle pinch bolt | 4 | 8 | 21 (2.1, 15) | |
| Rear axle nut | 1 | 16 | 89 (8.9, 65) | Note 11 |
| Driven sprocket nut | 5 | 12 | 98 (9.8, 72) | Note 6, 11 |

General Information

| Frame | Item | Q'ty | Thread dia. (mm) | Torque N·m (kg-m, ft-lb) | Remarks |
|-------------------------------|-------------------------------------|------|------------------|--------------------------|---------|
| Brake: | | | | | |
| | Brake pedal pinch bolt | 1 | 8 | 27 (2.7, 20) | Note 12 |
| | Front caliper bracket bolt | 4 | 8 | 31 (3.1, 22) | Note 12 |
| | Rear caliper bracket bolt | 1 | 8 | 23 (2.3, 17) | |
| | Brake hose bolt | 7 | 10 | 35 (3.5, 25) | |
| | Rear brake hose mounting bolt | 2 | 6 | 9 (0.9, 6.5) | Note 2 |
| | Brake lever pivot nut | 1 | 6 | 6 (0.6, 4.3) | |
| | Brake caliper bleed valve | 3 | 8 | 5.5 (0.55, 4.0) | |
| | Pad pin plug | 3 | 10 | 2.5 (0.25, 1.8) | |
| | Pad pin | 3 | 10 | 18 (1.8, 13) | |
| | Front caliper pin bolt | 2 | 8 | 23 (2.3, 17) | Note 2 |
| | Front caliper bracket pin bolt | 2 | 8 | 13 (1.3, 9) | Note 2 |
| | Rear caliper pin bolt | 1 | 12 | 28 (2.8, 20) | |
| | Front master cylinder holder bolt | 2 | 6 | 12 (1.2, 9) | |
| | Rear master cylinder mounting bolt | 2 | 6 | 9 (0.9, 6.5) | |
| | Rear reservoir tank mounting bolt | 2 | 6 | 12 (1.2, 9) | |
| | Reservoir hose joint mounting screw | 1 | 4 | 1.5 (0.15, 1.1) | Note 2 |
| | Master cylinder push rod lock nut | 1 | 8 | 18 (1.8, 13) | |
| | Front brake disc bolt | 12 | 8 | 42 (4.2, 30) | Note 12 |
| | Rear brake disc bolt | 4 | 8 | 42 (4.2, 30) | Note 12 |
| Frame/Exhaust Systems: | | | | | |
| | Ignition switch mounting bolt | 2 | 8 | 25 (2.5, 18) | |
| | Exhaust pipe joint nut | 8 | 7 | 20 (2.0, 14) | |
| | Exhaust pipe band bolt | 2 | 8 | 27 (2.7, 20) | |
| | Muffler center mounting bolt | 1 | 8 | 27 (2.7, 20) | |
| | Muffler center stay mounting bolt | 2 | 10 | 40 (4.0, 29) | |
| | Muffler mounting bolt | 2 | 10 | 40 (4.0, 29) | |
| | Exhaust pipe cover mounting bolt | 6 | 6 | 9 (0.9, 6.5) | |
| | Side stand pivot bolt | 1 | 10 | 10 (1.0, 7.2) | |
| | Side stand pivot nut | 1 | 10 | 40 (4.0, 29) | Note 11 |
| | Center stand pivot bolt | 2 | 10 | 40 (4.0, 29) | |
| | Side stand switch mounting bolt | 1 | 6 | 10 (1.0, 7.2) | Note 12 |
| | Front fender mounting bolt | 4 | 2 | 12 (1.2, 9) | |
| | Rear fender mounting bolt | 2 | 2 | 12 (1.2, 9) | |
| | Turn signal mounting nut | 4 | 12 | 55 (5.5, 40) | |
| | Grab rail mounting bolt | 4 | 8 | 27 (2.7, 20) | |
| | Grab rail stay mounting bot | 4 | 8 | 27 (2.7, 20) | |
| | Seat lock mounting bolt | 1 | 6 | 12 (1.2, 9) | |
| | Headlight mounting bolt | 2 | 8 | 27 (2.7, 20) | |
| | Horn mounting bolt | 1 | 8 | 27 (2.7, 20) | |
| | Footpeg rubber mounting bolt | 4 | 5 | 5 (0.5, 3.6) | |
| | Footpeg mounting bolt | 4 | 8 | 27 (2.7, 20) | |
| | Engine front mounting bolt | 1 | 10 | 50 (5.0, 36) | |
| | Engine front bracket bolt | 4 | 8 | 40 (4.0, 29) | |
| | Right engine lower bracket bolt | 2 | 8 | 40 (4.0, 29) | |
| | Engine lower mounting bolt (Left) | 1 | 10 | 60 (6.0, 43) | |
| | Engine lower mounting bolt (Right) | 1 | 10 | 50 (5.0, 36) | |
| | Engine rear mounting bolt | 1 | 10 | 50 (5.0, 36) | |
| | Engine rear bracket bolt | 2 | 8 | 40 (4.0, 29) | |

Tools

| Description | Tool Number | Applicability |
|---|---------------|---------------|
| Maintenance: | | |
| Pilot screw wrench (Except SW type) | 07908-4730001 | |
| Pilot screw wrench (SW type) | 07KMA-MN90000 | |
| Oil filter wrench | 07HAA-PJ70100 | |
| Lubrication: | | |
| Oil pressure gauge | 07506-3000000 | |
| Oil pressure gauge attachment | 07510-MJ10100 | |
| Fuel System: | | |
| Float level gauge | 07401-0010000 | |
| Cylinder Head/Cylinder/Piston: | | |
| Valve spring compressor | 07757-0010000 | |
| Valve spring compressor attachment | 07959-KM30101 | |
| Valve guide driver | 07942-MA60000 | |
| Valve guide reamer | 07984-MA60001 | |
| Valve seat cutter | | |
| seat cutter, 24.5 mm (45° EX) | 07780-0010100 | |
| 27.5 mm (45° IN) | 07780-0010200 | |
| flat cutter, 25 mm (32° EX) | 07780-0012000 | |
| 28 mm (32° IN) | 07780-0012100 | |
| interior cutter, 22 mm (60° EX) | 07780-0014202 | |
| 26 mm (60° IN) | 07780-0014500 | |
| cutter holder, 5 mm | 07781-0010400 | |
| Piston ring compressor | 07954-3690000 | |
| Piston base | 07958-3000000 | |
| Hydraulic tappet bleeder | 07973-MJ00000 | |
| Clutch/Gearshift Linkage: | | |
| Clutch center holder | 07JMB-MN50300 | |
| Lock nut wrench, 26 × 30 mm | 07716-0020203 | |
| Extension bar | 07716-0020500 | |
| Crankshaft/Transmission: | | |
| Universal holder | 07725-0030000 | |
| Bearing remover | 07936-3710300 | |
| Remover handle | 07936-3710100 | |
| Sliding weight | 07741-0010201 | |
| Attachment, 37 × 40 mm | 07746-0010200 | |
| Attachment, 42 × 47 mm | 07746-0010300 | |
| Pilot, 20 mm | 07746-0040500 | |
| Driver | 07749-0010000 | |
| Inner driver B | 07746-0020100 | |
| Inner driver C | 07746-0030100 | |
| Attachment, I.D. 20 mm | 07746-0020400 | |
| Attachment, I.D. 25 mm | 07746-0030200 | |
| Attachment, I.D. 30 mm | 07746-0030300 | |
| Front Wheel/Suspension/Steering: | | |
| Ball race remover | 07946-3710500 | |
| Ball race remover | 07953-MJ10000 | |
| – attachment | 07953-MJ10100 | |
| – driver handle | 07953-MJ10200 | |
| Steering stem driver | 07946-MB00000 | |
| Driver | 07749-0010000 | |
| Attachment, 42 × 47 mm | 07746-0010300 | |
| Attachment, 52 × 55 mm | 07746-0010400 | |
| Steering stem socket wrench | 07916-3710100 | |
| Lock nut wrench, 30 × 32 mm | 07716-0020400 | |
| Bearing remover head, 20 mm | 07746-0050600 | |
| Bearing remover shaft | 07746-0050100 | |
| Pilot, 20 mm | 07746-0040500 | |
| Fork seal driver | 07947-KA50100 | |
| Fork seal driver attachment | 07947-KF00100 | |

General Information

| Description | Tool Number | Applicability |
|------------------------------------|---|---------------|
| Rear Wheel/Suspension: | | |
| Shock absorber compressor | 07GME-0010000 | |
| Spring compressor attachment | 07959-MB10000 | |
| Spring compressor attachment | 07967-KC10100 | |
| Driver | 07749-0010000 | |
| Attachment, 28×30 mm | 07946-1870100 | |
| Attachment, 42×47 mm | 07746-0010300 | |
| Pilot, 17 mm | 07746-0040400 | |
| Attachment, 32×35 mm | 07746-0010100 | |
| Pilot, 15 mm | 07746-0040300 | |
| Pilot, 20 mm | 07746-0040500 | |
| Pilot, 22 mm | 07746-0041000 | |
| Bearing remover head, 17 mm | 07746-0050500 | |
| Bearing remover shaft | 07746-0050100 | |
| Driver shaft | 07946-MJ00100 | |
| Needle bearing remover attachment | 07GMD-KT70200 | |
| Bearing remover, 15 mm | 07936-KC10000 | |
| – remover shaft, 15 mm | 07936-KC10100 | |
| – remover head, 15 mm | 07936-KC10200 | |
| – sliding weight | 07741-0010201 | |
| Brake System: | | |
| Snap ring pliers | 07914-3230001 | |
| Charging System/Alternator: | | |
| Flywheel puller | 07933-2160000 | |
| Electrical Equipment: | | |
| Peak voltage adaptor | 07HGJ-0020100 | |
| or Imrie diagnostic tester | Model 625 | |
| Digital multimeter (KOWA) | 07411-0020000 | |
| Analogue tester | 07308-0020001 (SANWA) or TH-5H (KOWA) | |

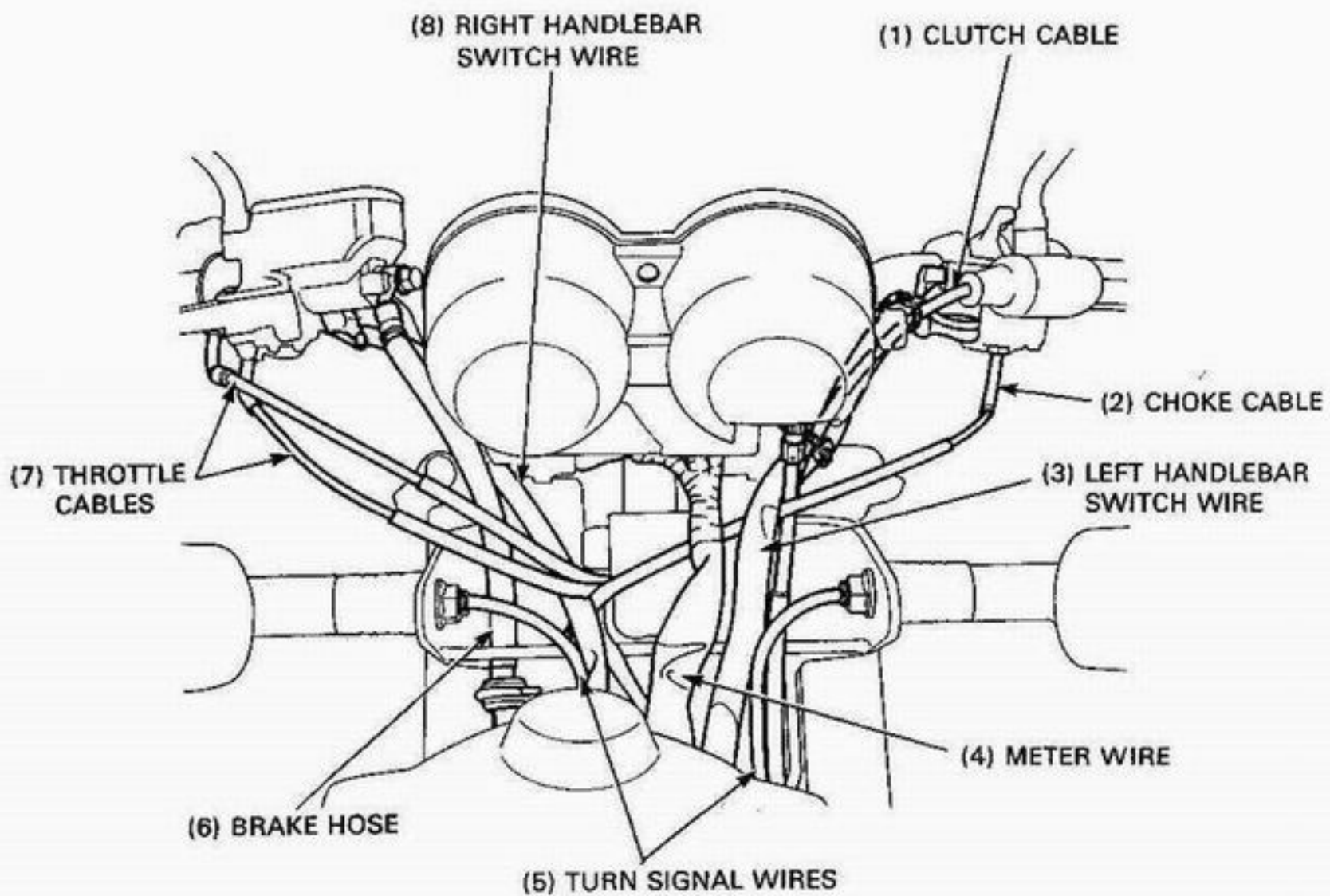
Lubrication & Seal Points

| Engine | Location | Material | Remarks |
|--------|---|---|--|
| | Hydraulic tappet hole Camshaft holder de-foaming chamber Cam chain/alternator chain Transmission gear teeth and bushings Piston pin hole and outer surface Piston pin outer surface Each bearings Piston ring sliding surface Piston ring and ring groove Cylinder sliding surface Alternator shaft damper cam Clutch lifter Shift fork claw and pivot inner surface Shift drum O-rings Clutch discs | Engine oil | |
| | Rocker arm slipper surface and pivot inner surface Camshaft lobe and journal Connecting rod small end Valve stem (valve guide sliding surface) Valve guide (valve stem sliding surface) Transmission gear shift fork grooves Crankshaft bearing sliding surface Connecting rod bearing sliding surface Crankshaft thrust sliding surface Primary driven gear | Molybdenum disulfide oil (a mixture of 1/2 engine oil and 1/2 molybdenum disulfide grease) | |
| | Hydraulic tappet | Kerosene | |
| | Upper crankcase mating surface – countershaft bearing cover mating surface – clutch cover mating surface Cylinder head/cylinder head cover gasket surface | Liquid sealant | Do not apply sealant to the main journal bearings. |

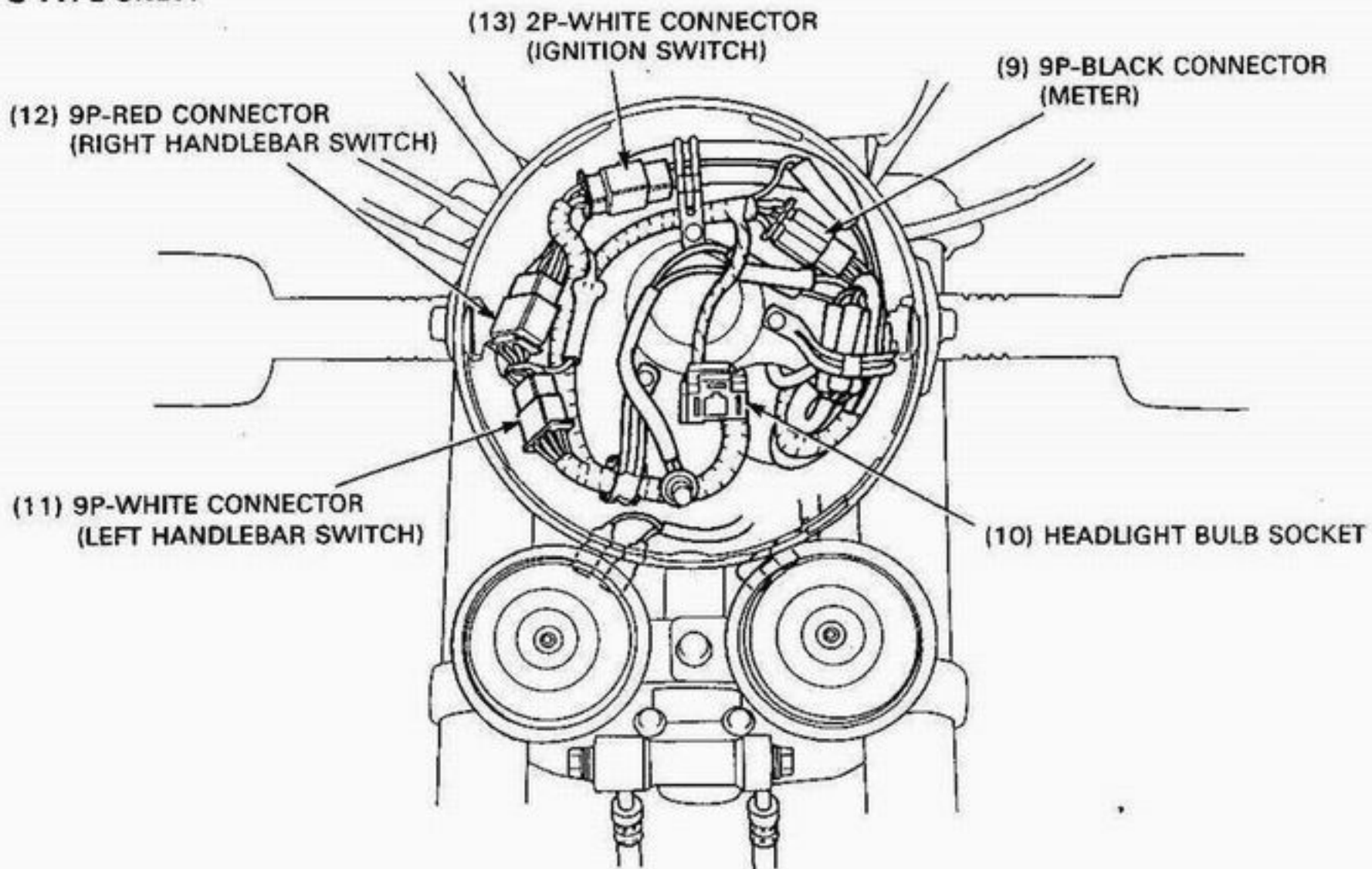
General Information

| Frame | Location | Material | Remarks |
|--------------|--|----------------------------|---------------------------|
| | Steering stem bearing Wheel bearing dust seal lips Wheel axle outer surface Rear wheel and driven flange mating surface Handlebar (throttle grip sliding surface) Throttle cable ends Brake pedal pivot shaft Side stand pivot bolt outer surface Dust seal lips Speedometer gear Seat locking tab Swingarm pivot bearings Swingarm pivot bearing dust seal lips Swingarm pivot nut threads | Multi-purpose grease | Apply thin coat of grease |
| | Side reflector threads Caliper bracket pin bolt threads Caliper pin bolt threads | Locking agent | |
| | Fork cap O-ring Fork oil seal lips | Fork fluid | |
| | Handlebar grip | Honda Bond A or equivalent | |
| | Brake caliper seals Caliper-piston sliding surface Master cylinder piston caps Master cylinder-piston sliding surface | DOT 4 Brake fluid | |
| | Driven sprocket nuts threads Steering head bearing adjustment nut | Engine oil | |
| | Brake caliper pin bolts sliding surface Front brake master cylinder piston: lever contact area and boot inside Rear brake master cylinder piston: push rod contact area and boot inside | Silicone grease | |

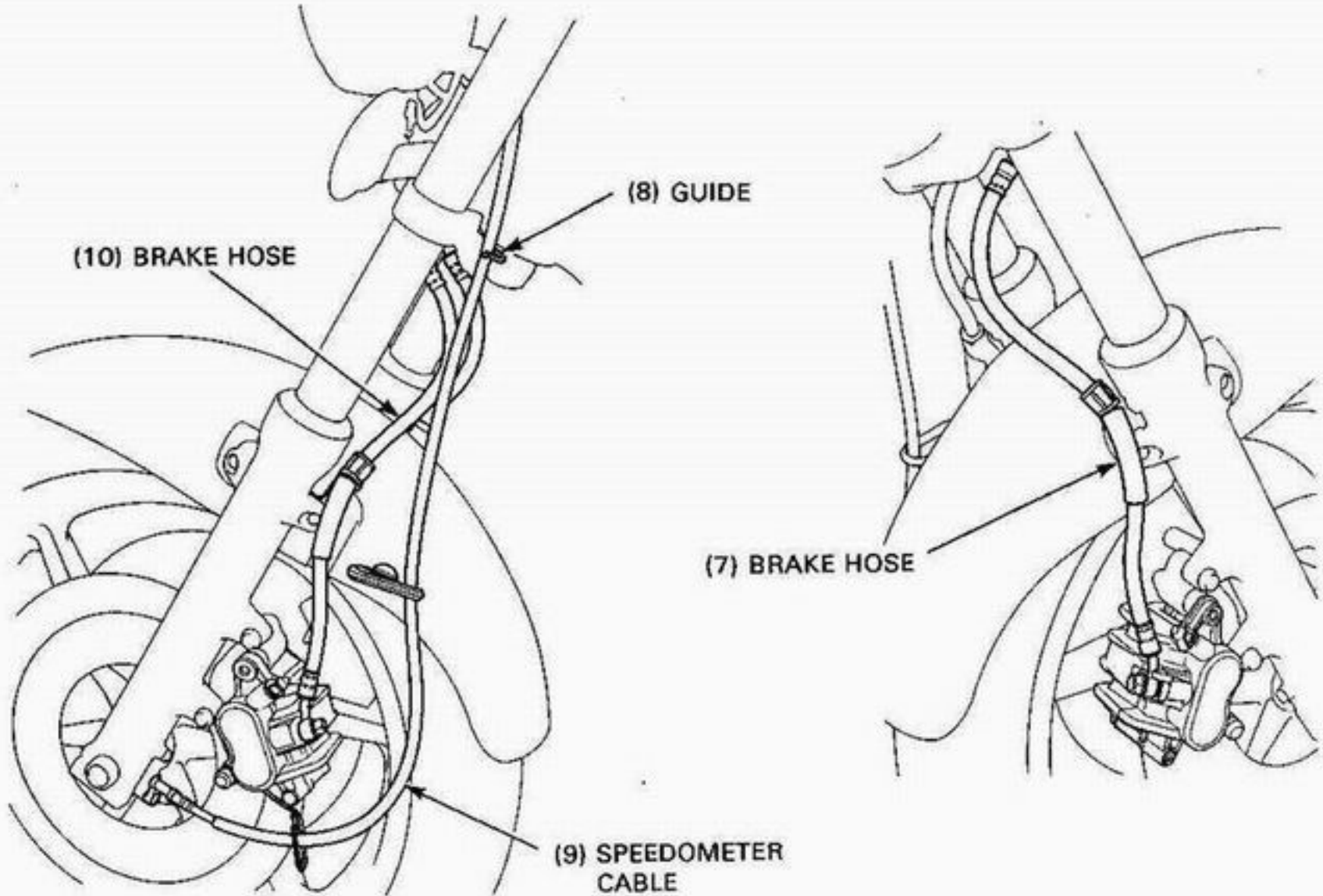
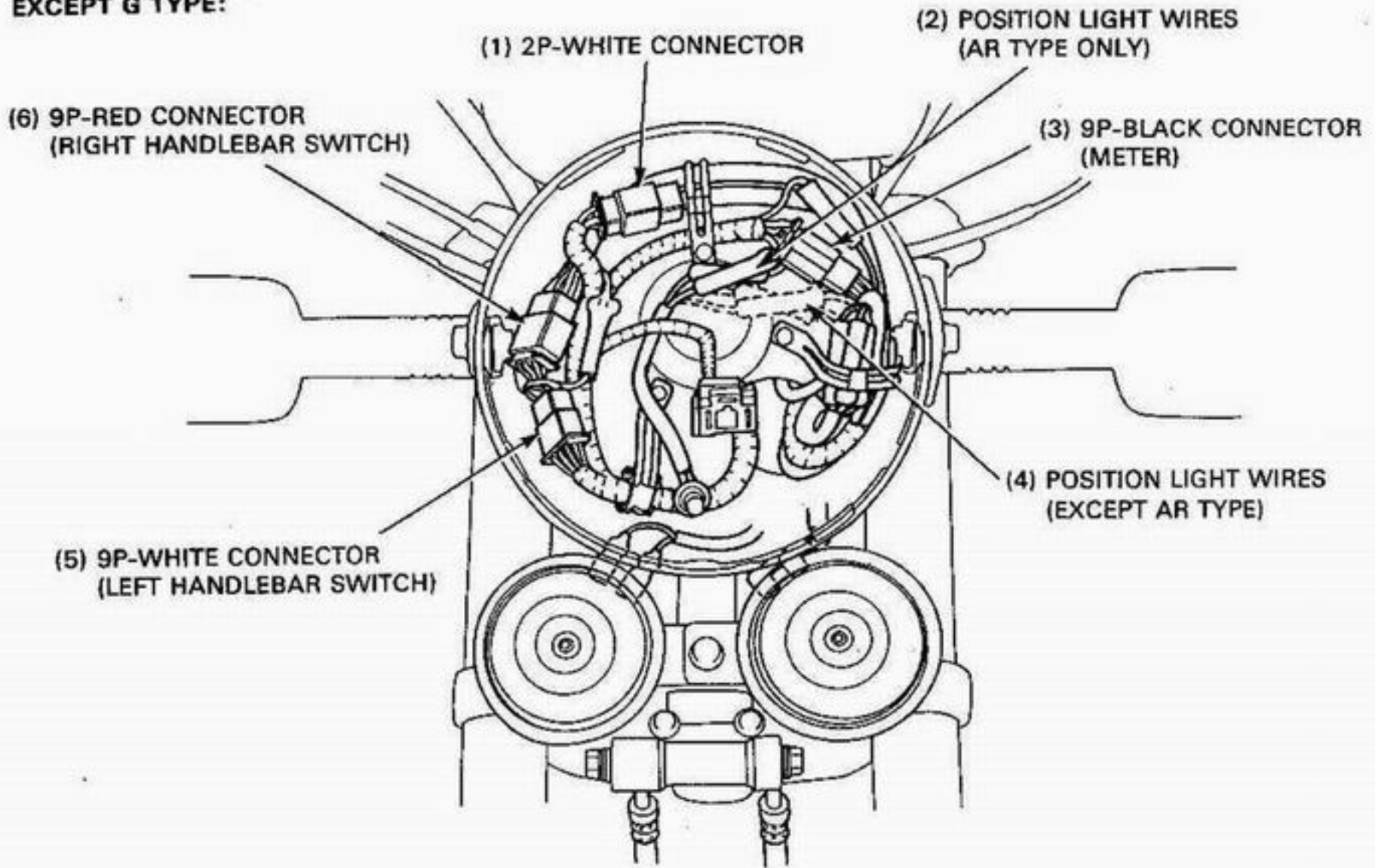
Cable & Harness Routing

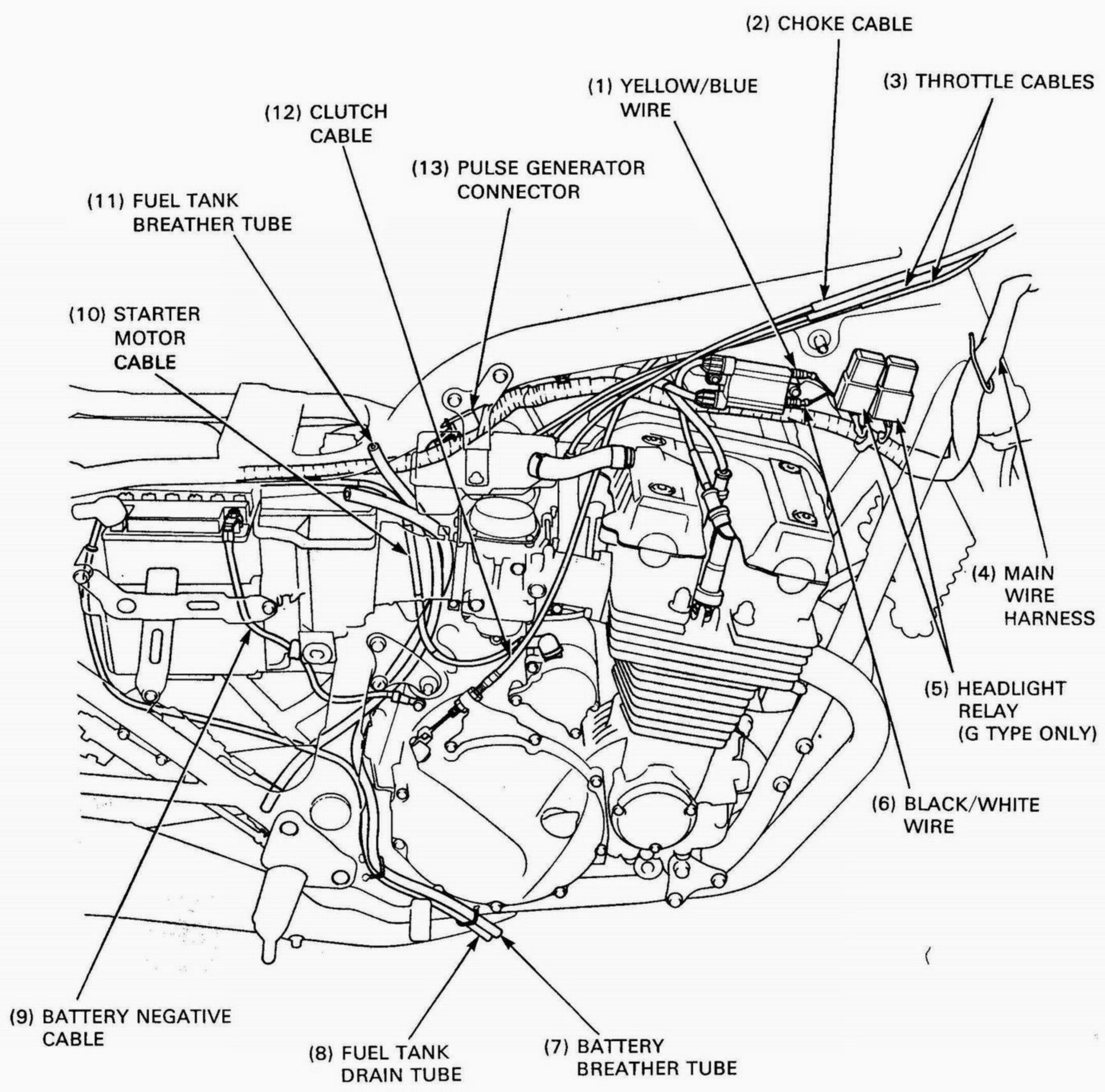


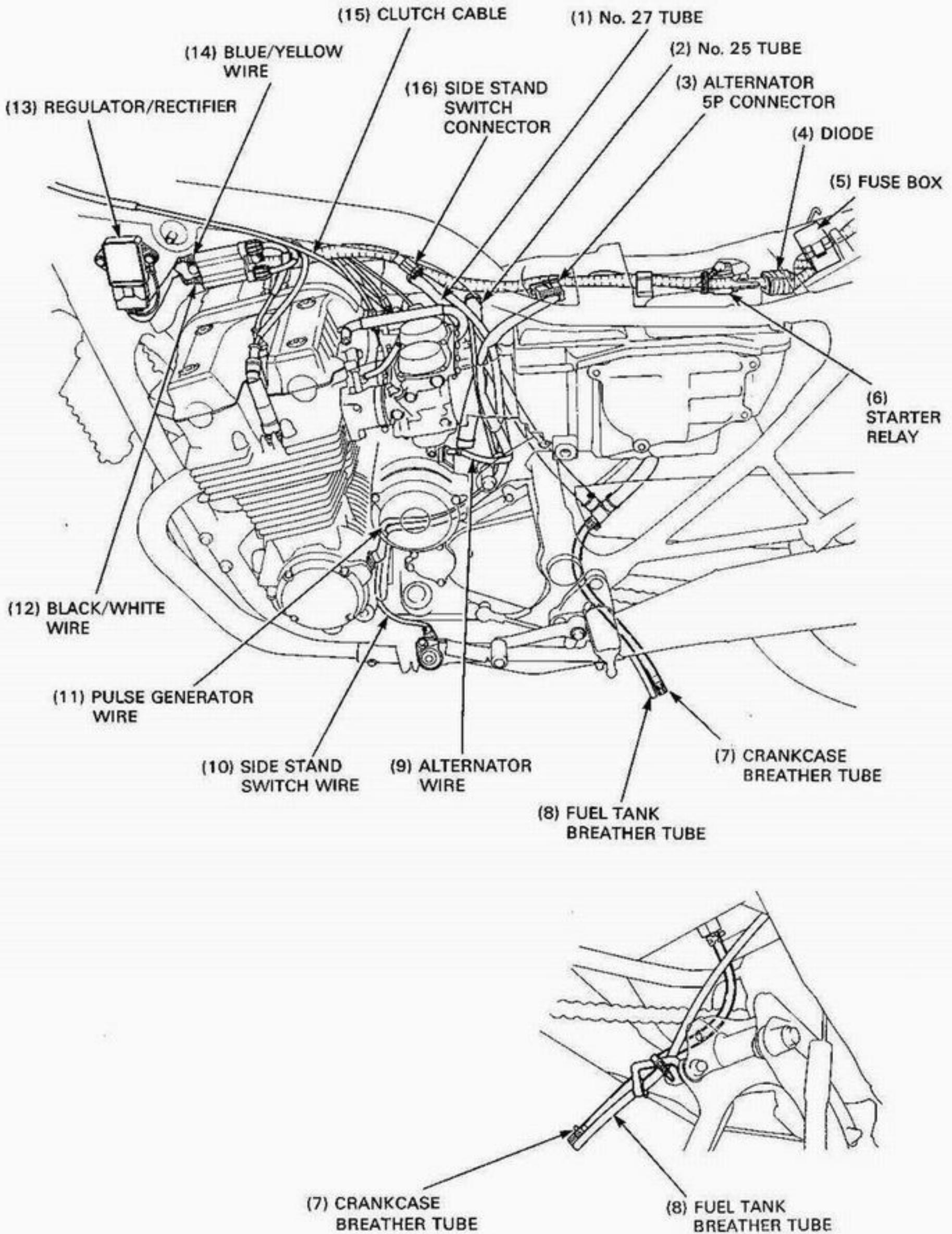
G TYPE ONLY:

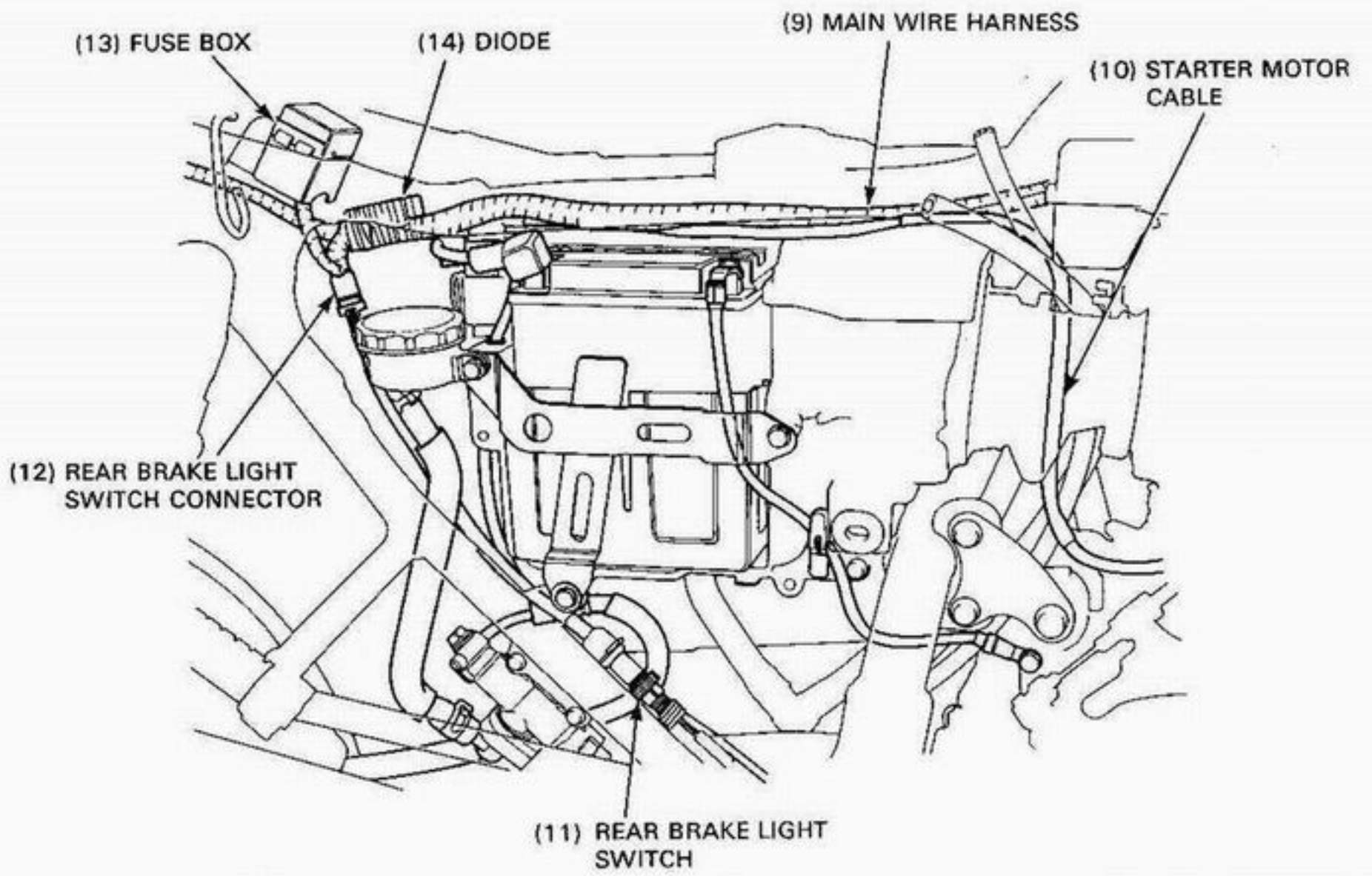
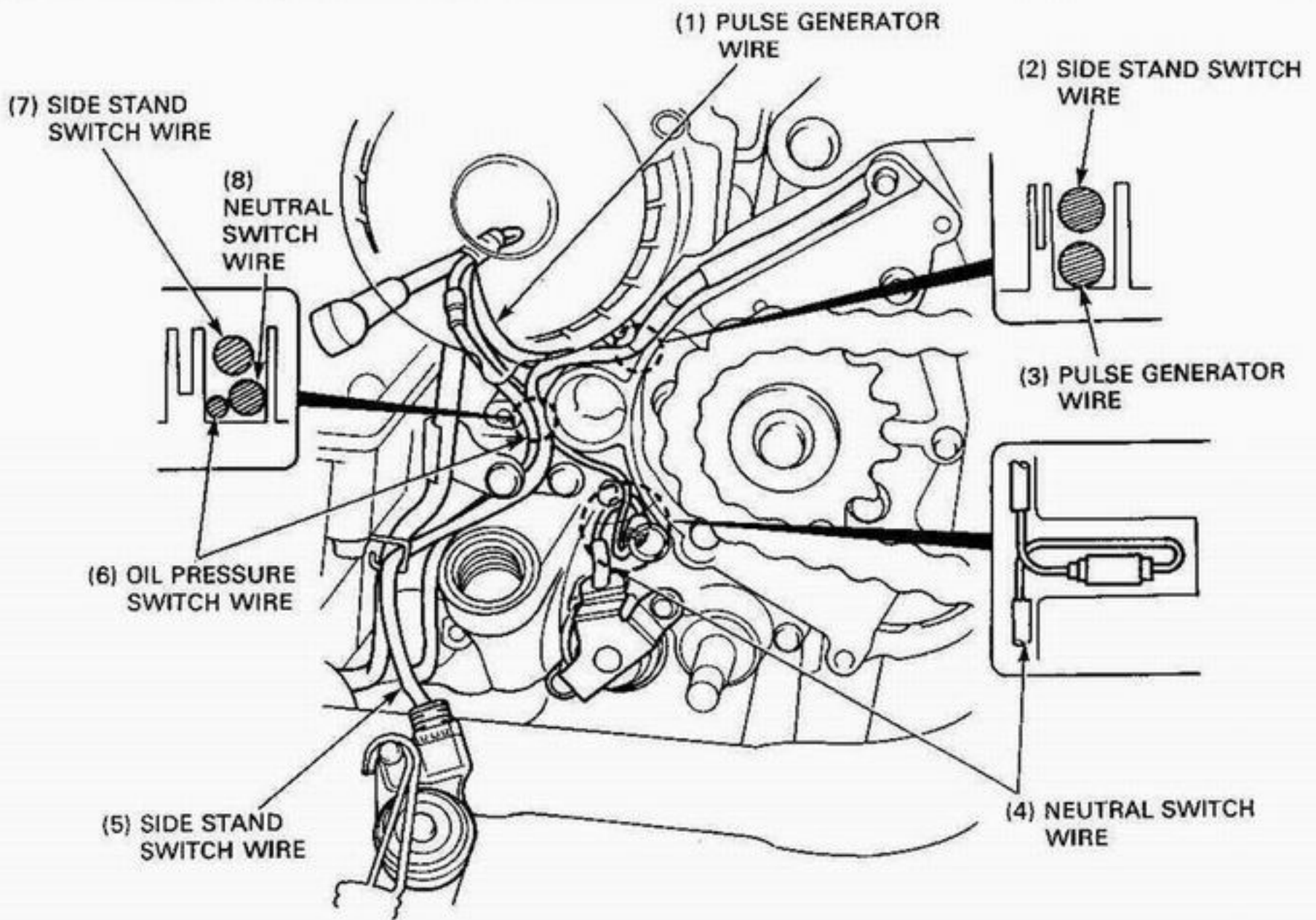


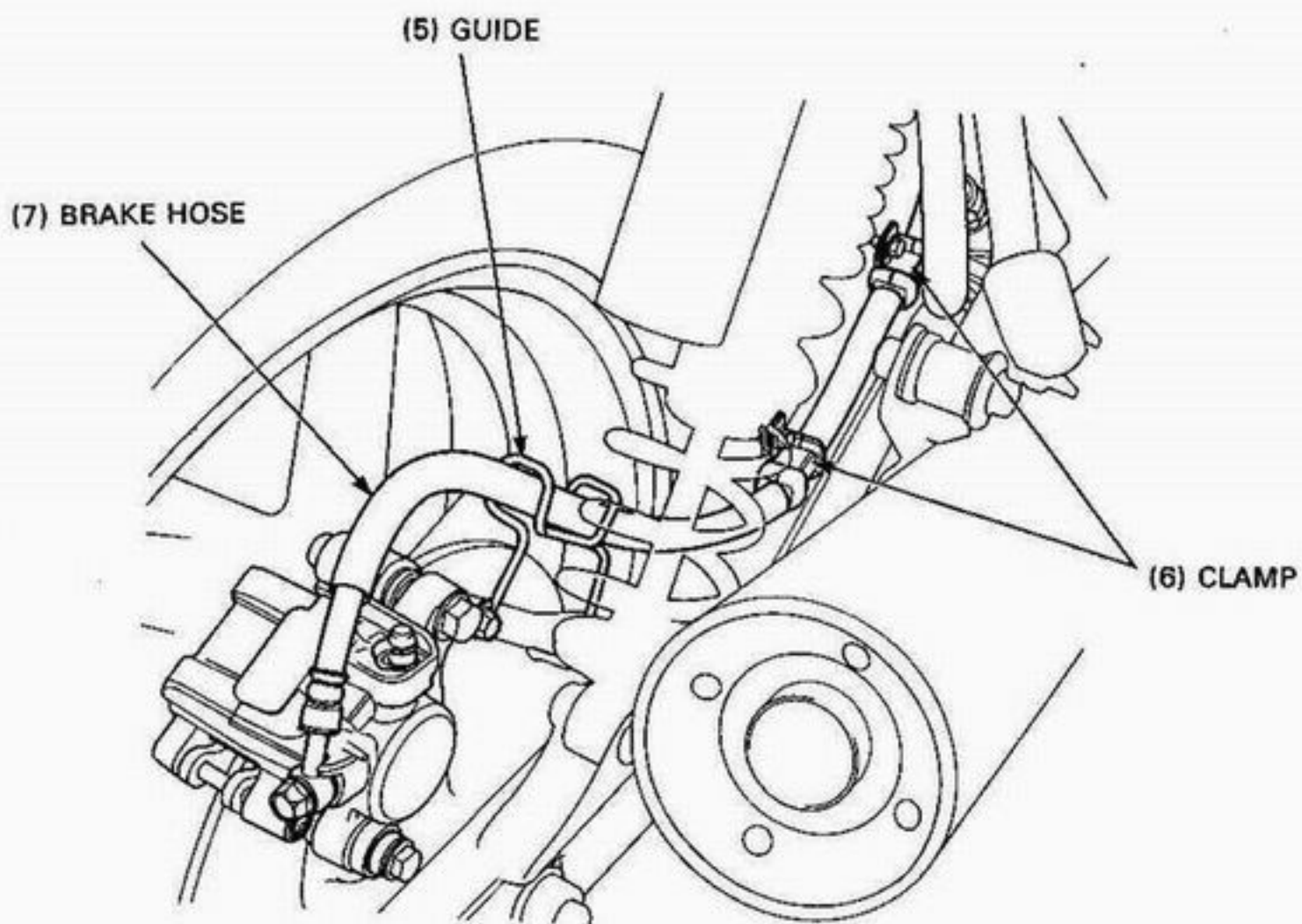
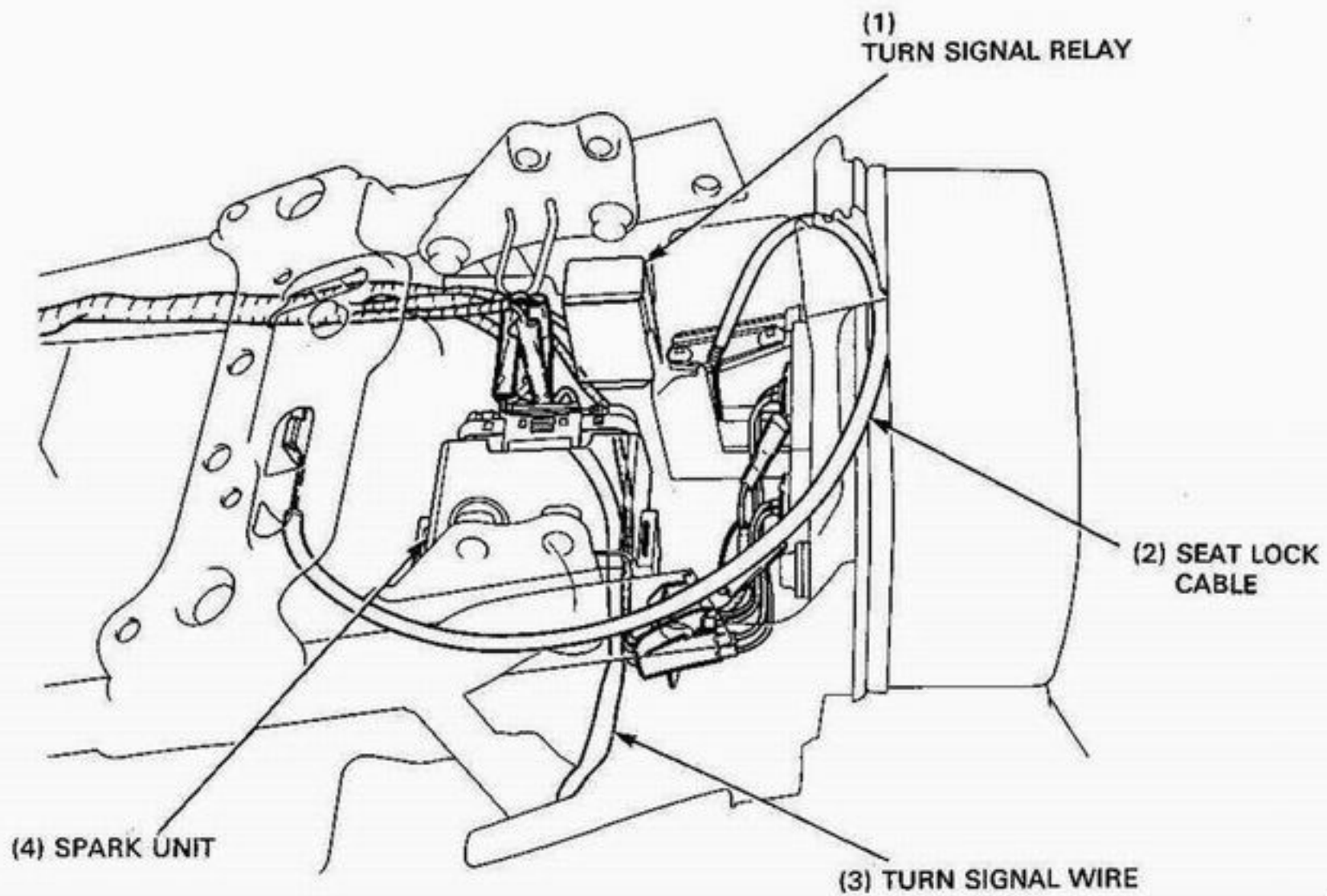
EXCEPT G TYPE:



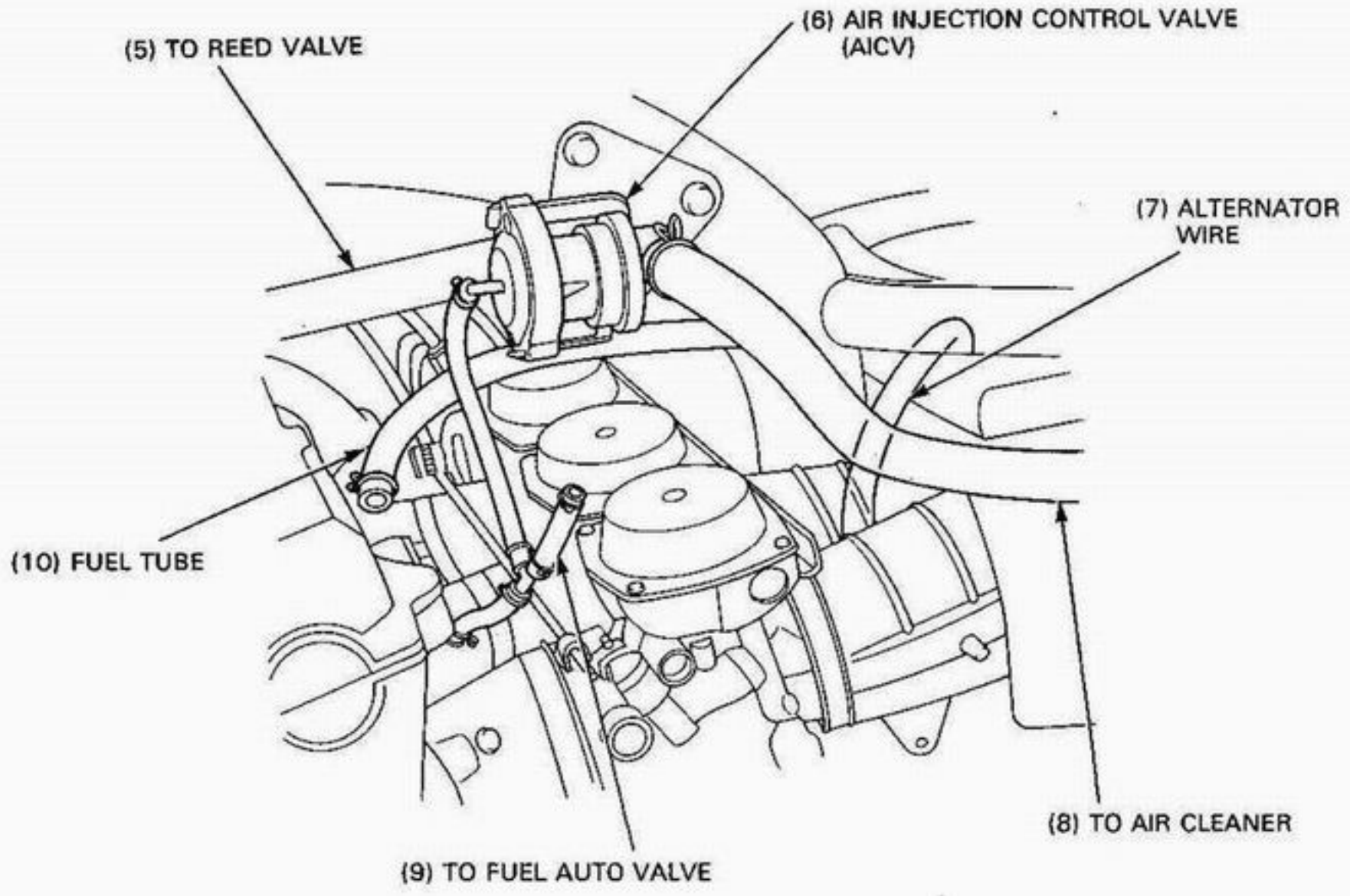
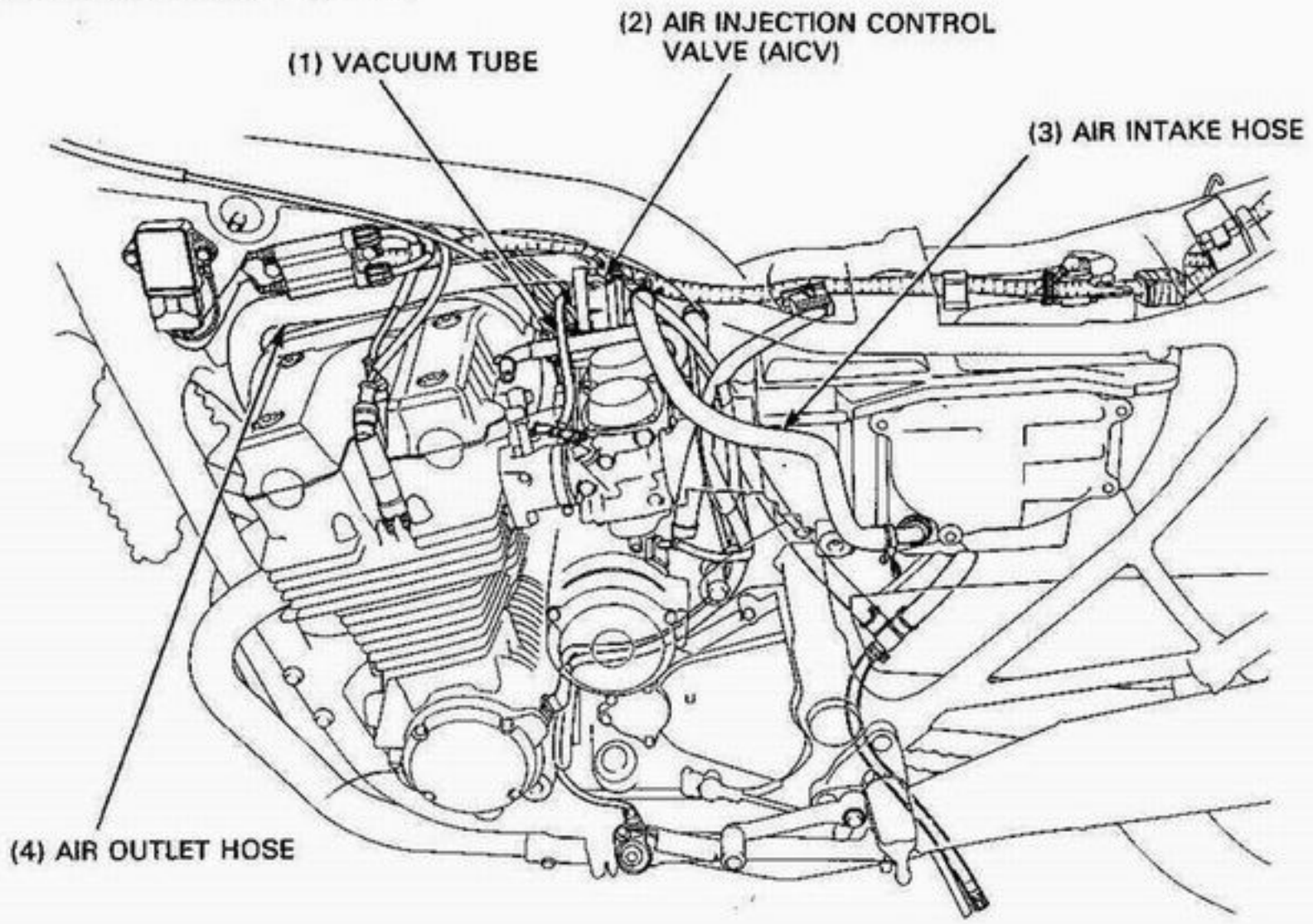








• Switzerland and Austria type only



MEMO

2. Frame/Body Panels/Exhaust System

2

| | | | |
|--|------------|--|------------|
| Service Information | 2-1 | Rear Fairing Removal/Installation | 2-3 |
| Troubleshooting | 2-1 | Fuel Tank Removal/Installation | 2-3 |
| Seat Removal/Installation | 2-2 | Rear Fender Removal/Installation | 2-4 |
| Side Cover Removal/Installation | 2-2 | Exhaust System Removal/Installation | 2-6 |

Service Information

⚠ WARNING

- Gasoline is extremely flammable and is explosive under certain conditions. KEEP OUT OF REACH OF CHILDREN.
- Serious burns may result if the exhaust system is not allowed to cool before components are removed or serviced.

- Work in a well ventilated area. Smoking or allowing flames or sparks in the working area or where gasoline is stored can cause a fire or explosion.
- This section covers removal and installation of the frame body panels, fuel tank and exhaust system.
- Always replace the exhaust pipe gaskets when removing the exhaust pipe from the engine.
- When installing the exhaust pipe, first install all the fasteners loosely. Next, tighten the exhaust clamps first, then tighten the mounting fasteners. If you tighten the mounting fasteners first, the exhaust pipe will not seat properly.
- Always inspect the exhaust system for leaks after installation.

Troubleshooting

Excessive Exhaust Noise

- Broken exhaust system
- Exhaust gas leak

Poor Performance

- Deformed exhaust system
- Exhaust gas leak
- Clogged muffler

Seat Removal/Installation

Removal

Insert the ignition key into the seat lock.
Turn the ignition key clockwise until it stops then remove the seat by sliding it backward.

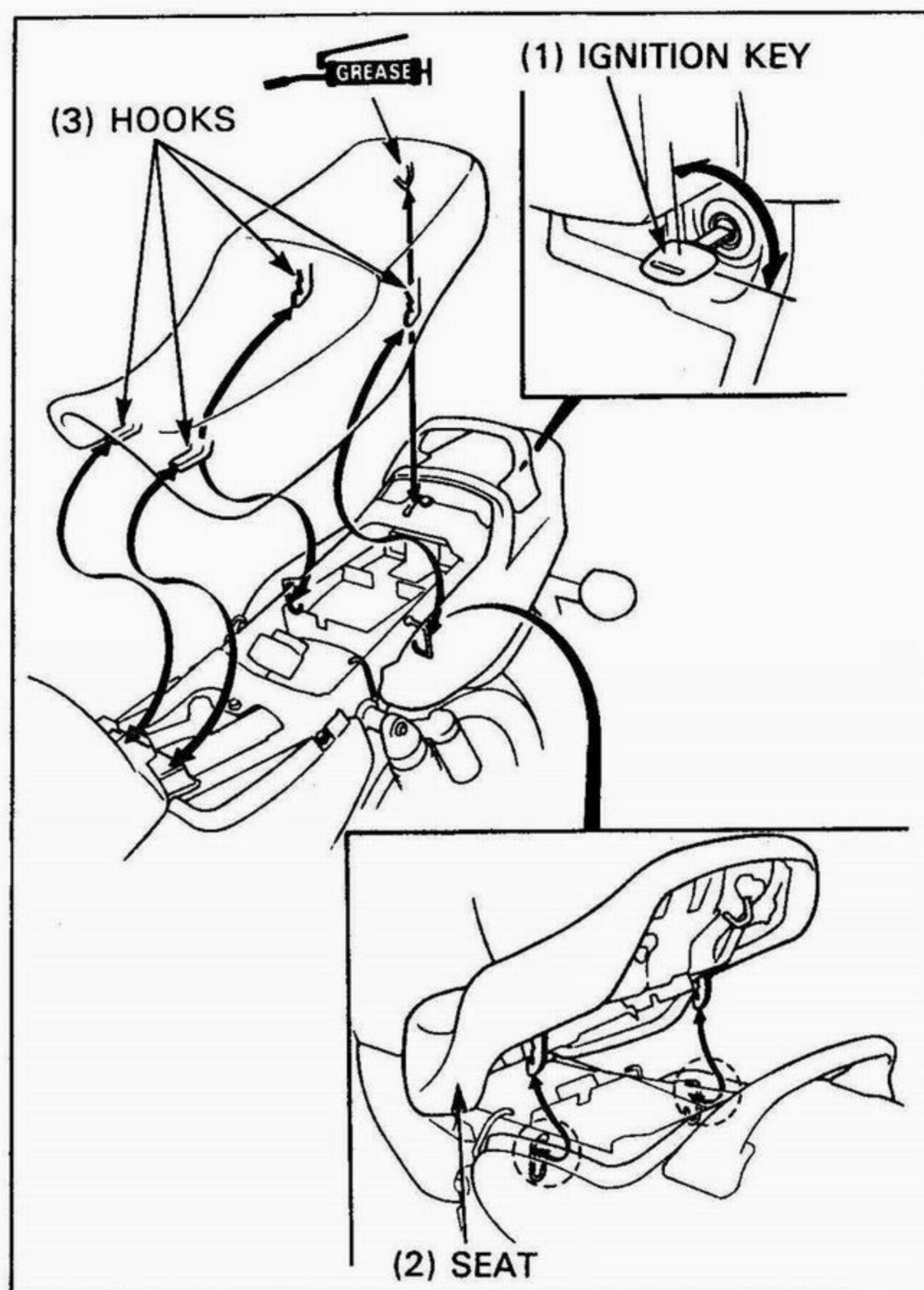
Installation

Apply grease to the hook of the seat.
Align the seat hooks with the frame hooks and push the seat forward.

Push the seat down until it locks.

CAUTION

- Be careful not to pinch the wire harness between the seat and the frame.
- Be careful not to damage the rear fairing.

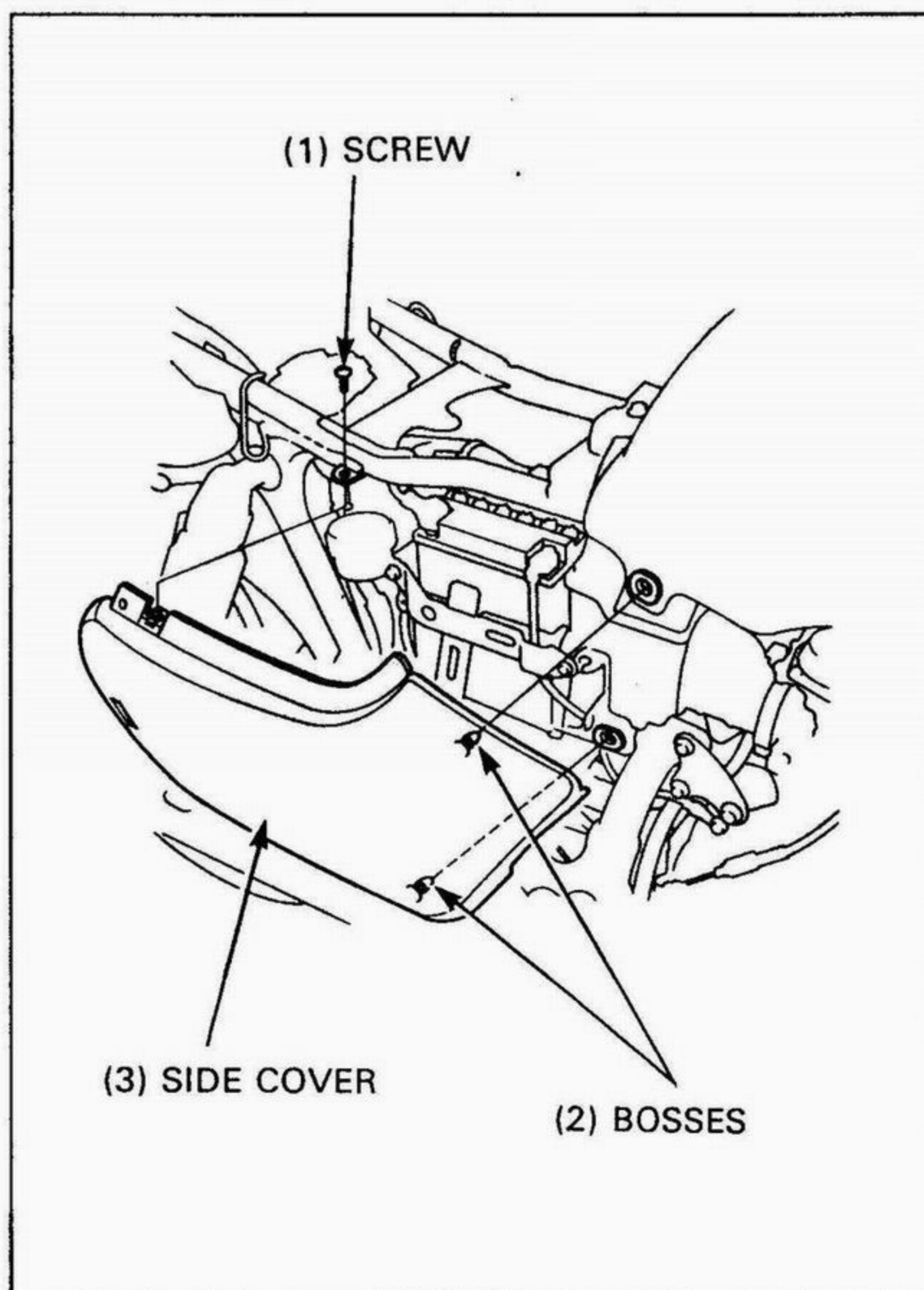


Side Cover Removal/Installation

Remove the seat (see above).

Remove the mounting screw.
Release the cover front bosses from the grommets and remove the side cover.

Install the side cover in the reverse order of removal.



Rear Fairing Removal/Installation

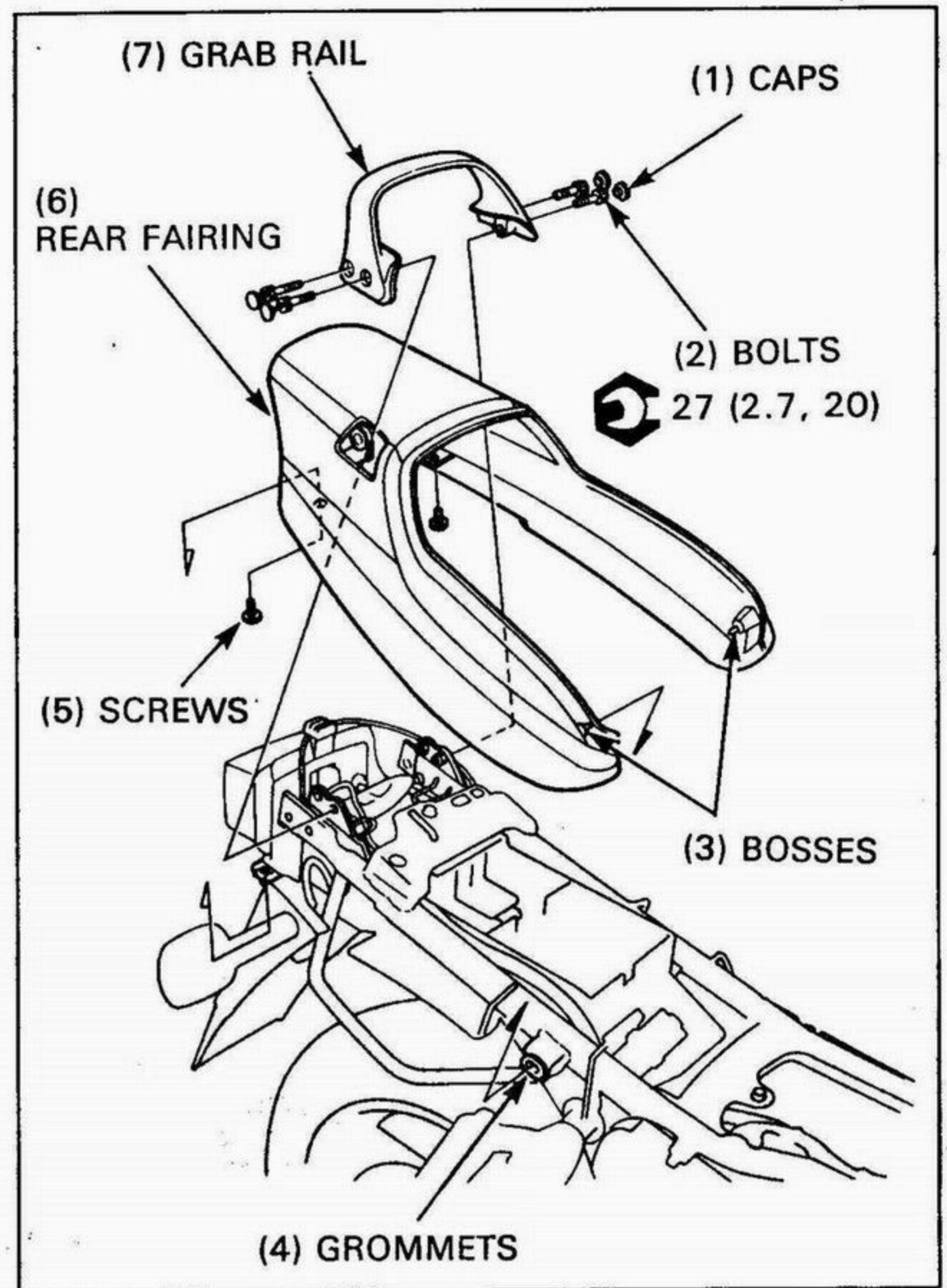
Remove the seat (page 2-2).

Remove the caps and grab rail mounting bolts.
 Remove the grab rail.
 Remove the screws.
 Release the fairing front bosses from grommets and remove the rear fairing.

Install the rear fairing in the reverse order of removal.

Torque:
 Grab rail mounting bolt: 27 N·m (2.7 kg-m, 20 ft-lb)

Install the seat (page 2-2).



Fuel Tank Removal/Installation

⚠ WARNING

- Gasoline is extremely flammable and is explosive under certain condition.

Remove the seat (page 2-2).
 Remove the side cover (page 2-2).

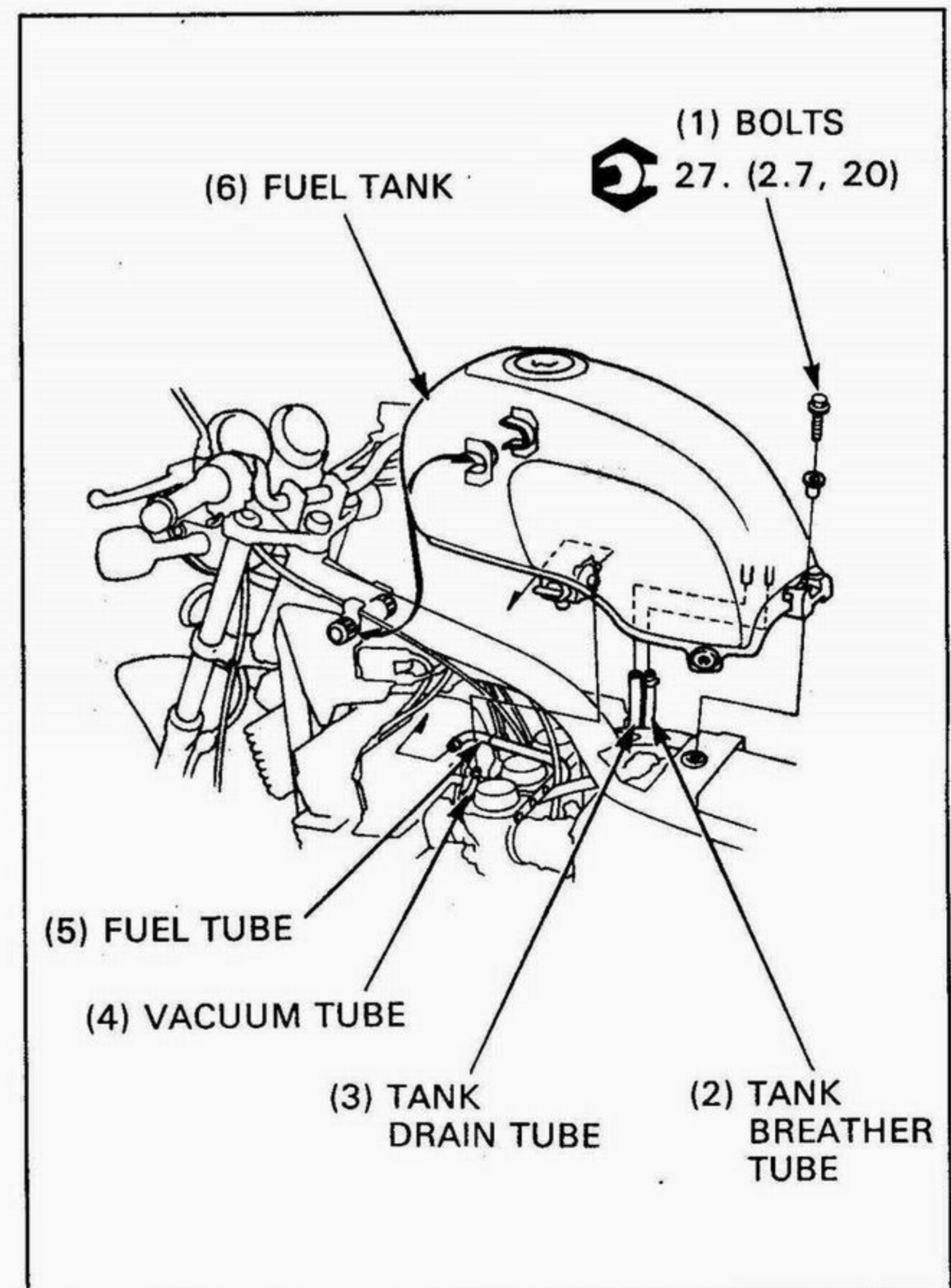
Turn the fuel valve OFF.
 Remove the fuel tank mounting bolt and lift the fuel tank up.
 Disconnect the tubes, and remove the fuel tank.

Install the fuel tank in the reverse order of removal.

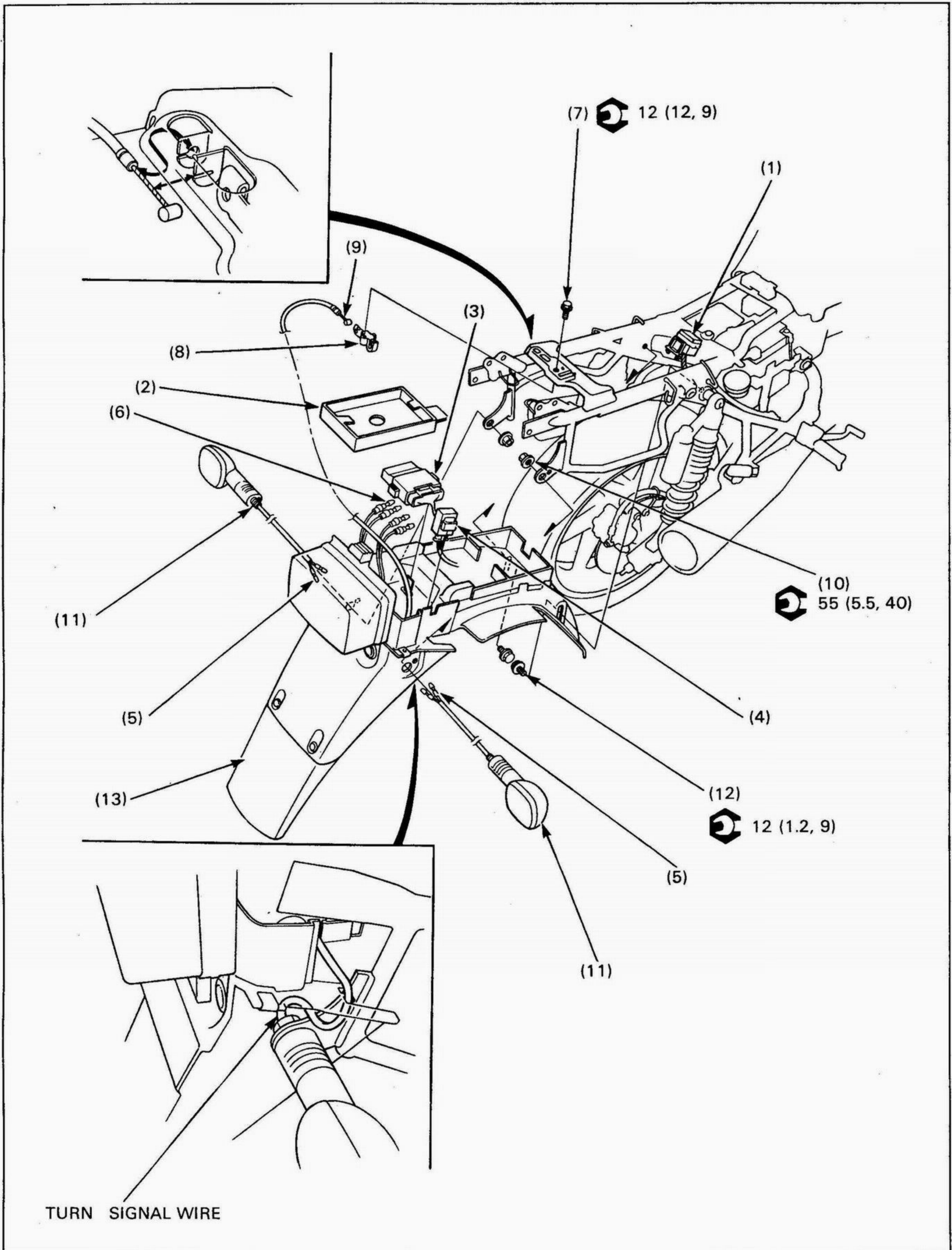
Torque:
 Fuel tank mounting bolt: 27 N·m (2.7 kg-m, 20 ft-lb)

After installation, turn the fuel valve ON and check the fuel line for leakage.

Install the side cover (page 2-2).
 Install the seat (page 2-2).



Rear Fender Removal/Installation



CAUTION

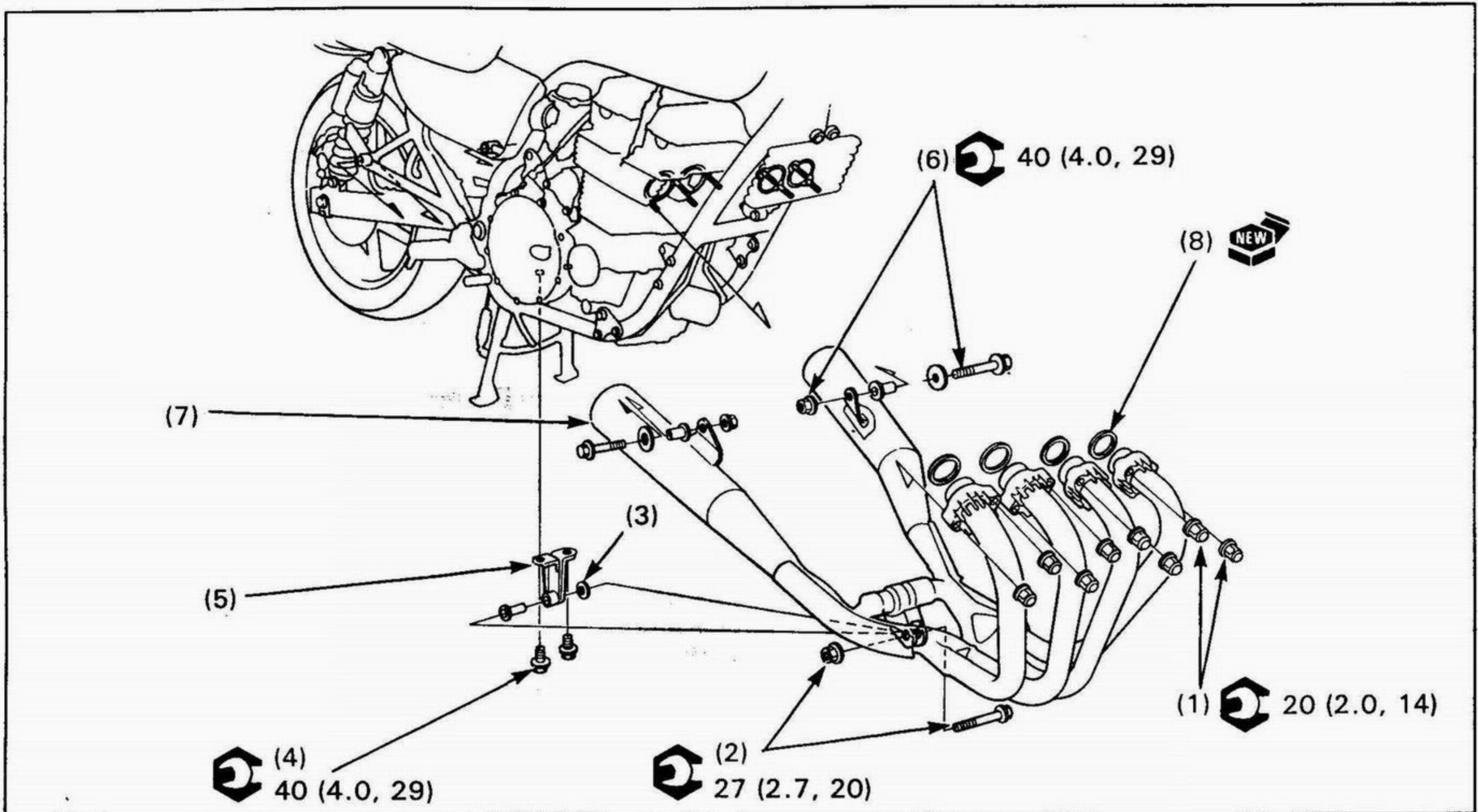
- Be careful not to bind the wire harness when installing the rear fender.
- Route the wire harness, cable, etc (page 1-21).

Requisite Service

- Seat removal/installation (page 2-2)
- Rear fairing removal/installation (page 2-3)
- Side cover removal/installation (page 2-2)

| Procedure | | Q'ty | Remarks |
|-----------|---------------------------|------|--|
| | Removal Order | | Installation is in the reverse orde of removal. |
| (1) | Fuse box | 1 | |
| (2) | Tray | 1 | |
| (3) | Spark unit | 1 | |
| (4) | Turn signal relay | 1 | |
| (5) | Turn signal connector | 4 | |
| (6) | Tail/stop light connector | 4 | |
| (7) | Seat lock mounting bolt | 1 | |
| (8) | Seat lock | 1 | |
| (9) | Seat lock cable end | 1 | |
| (10) | Turn signal mounting nut | 2 | |
| (11) | Turn signal assembly | 2 | At installation, route the turn signal wires as shown. |
| (12) | Rear fender mounting bolt | 2 | |
| (13) | Rear fender assembly | 1 | |

Exhaust System Removal/Installation



⚠ WARNING

- Do not service the exhaust system while it is hot.

NOTE

- When installing the exhaust pipe/muffler, install all the fasteners loosely. Always tighten the exhaust pipe joint nuts first, then tighten the mounting fasteners.

| Procedure | Q'ty | Remarks |
|---------------------------------------|------|---|
| Removal Order | | Installation is in the reverse order of removal. |
| (1) Exhaust pipe joint nut | 8 | At installation, install all fasteners loosely and tighten the exhaust pipe joint nuts first. |
| (2) Muffler center mounting nut/bolt | 1/1 | |
| (3) Washer | 1 | |
| (4) Muffler center stay mounting bolt | 2 | |
| (5) Muffler center stay | 1 | |
| (6) Muffler mounting nut/bolt | 2 | |
| (7) Muffler assembly | 1 | |
| (8) Gasket | 4 | |

3. Maintenance

| | | | |
|-----------------------------|------------|-----------------------------------|------------|
| Service Information | 3-1 | Air Cleaner | 3-5 |
| Service Access Guide | 3-2 | Carburetor Synchronization | 3-5 |
| Maintenance Schedule | 3-4 | Drive Chain Slider | 3-6 |

3

Service Information

- Refer to Common Service Manual for items not included in this manual.
- Refer to Specifications (Section 1) for maintenance data.

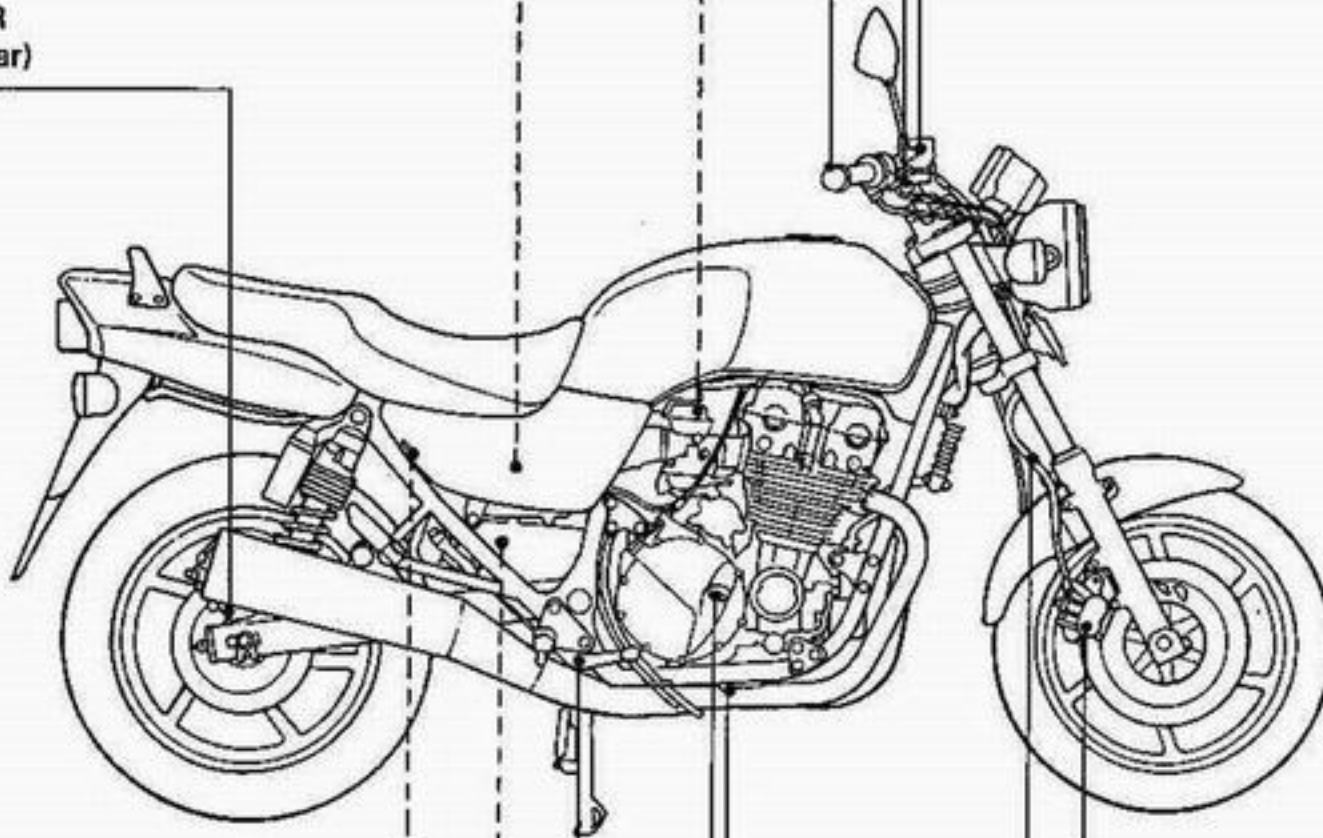
Service Access Guide

- The following shows the locations of the parts that must be removed for the maintenance items listed below. Refer to the Common Service Manual for items not included in this manual.
- Refer to section 2 (Frame/Body Panels/Exhaust System), for the parts that must be removed for service.
For example: AIR CLEANER (Contamination, clogging, replacement): Parts
 - Side cover ————— The part required to be removed for service.

(13) SYNCHRONIZATION ADJUSTING SCREW (Synchronization, page 3-5)
• Fuel tank

(12) BATTERY (Level check, terminal connections)
• Side cover

(11) CALIPER (Pad wear)



(1) THROTTLE GRIP (Operation, free play)

(2) BRAKE LEVER (Air bubbles in system)

(3) BRAKE MASTER CYLINDER (Level check, fluid replacement)

(4) CALIPER (Pad wear)

(5) BRAKE HOSE (Leakage, degradation, damage)

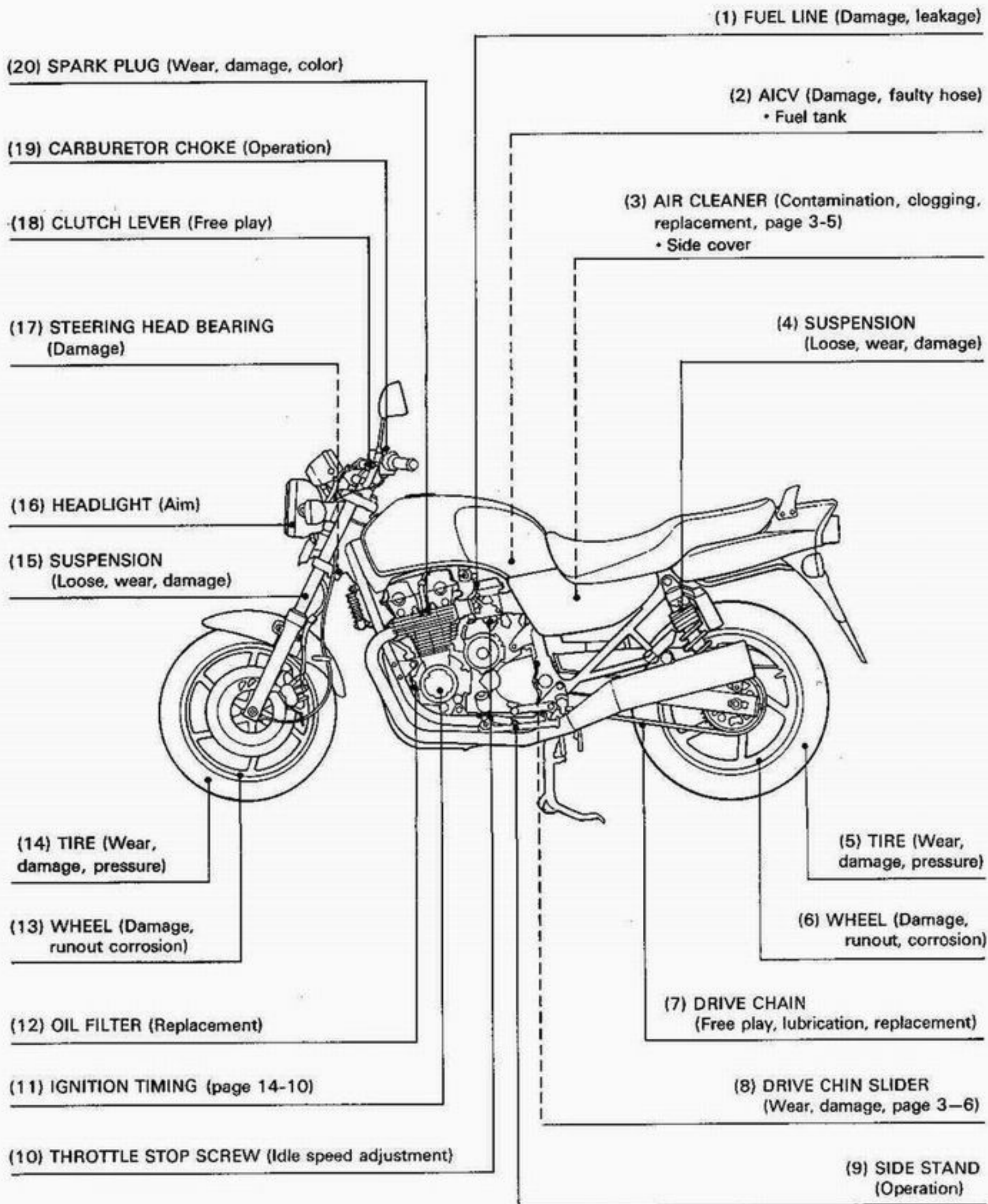
(6) ENGINE OIL DRAIN BOLT (Replacement)

(7) LEVEL GAUGE (Level check, replacement)

(10) BRAKE RESERVOIR (Level check, fluid replacement)
• Side cover

(9) BRAKE LIGHT SWITCH (Operation)

(8) BRAKE PEDAL (Air bubbles in system, height)



Maintenance Schedule

Perform the PRE-RIDE INSPECTION in the Owner's Manual at each scheduled maintenance period.

I: Inspect and clean, Adjust, Lubricate or Replace if necessary.

R: Replace, C: Clean, L: Lubricate, A: Adjust

The following items require some mechanical knowledge. Certain Items (particularly those marked *and**) may require more technical information and tools. Consult your authorized Honda dealer.

| Item | Frequency | Whichever comes first Note | Odometer Reading (Note 1) | | | | | | | Refer To Page | |
|-------------------------------|-----------|-------------------------------|------------------------------|-----|---|----|----|----|----|---------------|----|
| | | | × 1,000 km | 1 | 6 | 12 | 18 | 24 | 30 | | 36 |
| | | | × 1,000 mi | 0.6 | 4 | 8 | 12 | 16 | 20 | | 24 |
| | | | Months | | 6 | 12 | 18 | 24 | 30 | | 36 |
| * Fuel Line | | | | | I | | I | | I | Note 6 | |
| * Fuel Strainer Screen | | | | C | C | C | C | C | C | Note 6 | |
| * Throttle Operation | | | | | I | | I | | I | Note 6 | |
| * Carburetor Choke | | | | | I | | I | | I | Note 6 | |
| Air Cleaner | | Note 2 | | | | | R | | R | 3-5 | |
| Crankcase Breather | | Note 3 | | C | C | C | C | C | C | Note 6 | |
| Spark Plug | | | | I | R | I | R | I | R | Note 7 | |
| Engine Oil | | | R | R | R | R | R | R | R | Note 7 | |
| Engine Oil Filter | | | R | | R | | R | | R | Note 6 | |
| * Carburetor Synchronization | | | | | I | | I | | I | 3-5 | |
| * Carburetor Idle Speed | | | I | I | I | I | I | I | I | Note 7 | |
| * Secondary Air Supply System | | Note 4 | | | I | | I | | I | Note 6 | |
| Drive Chain | | | Every 1,000 km (600 mi) I, L | | | | | | | Note 6 | |
| Drive Chain Slider | | | | | I | | I | | I | 3-6 | |
| Battery | | | | I | I | I | I | I | I | Note 6 | |
| Brake Fluid | | Note 5 | | I | I | R | I | I | R | Note 7 | |
| Brake Pad Wear | | | | I | I | I | I | I | I | Note 6 | |
| Brake System | | | I | | I | | I | | I | Note 6 | |
| * Brake Light Switch | | | | | I | | I | | I | Note 6 | |
| * Headlight Aim | | | | | I | | I | | I | Note 6 | |
| Clutch System | | | I | I | I | I | I | I | I | Note 6 | |
| Side Stand | | | | | I | | I | | I | Note 6 | |
| * Suspension | | | | | I | | I | | I | Note 6 | |
| * Nuts, Bolts, Fasteners | | | I | | I | | I | | I | 1-14 | |
| ** Wheels/Tires | | | | | I | | I | | I | Note 6 | |
| ** Steering Head Bearings | | | I | | I | | I | | I | Note 6 | |

- * Should be serviced by an authorized Honda dealer, unless the owner has the proper tools and service data, and is mechanically qualified. Refer to the official Honda service Manual.
- ** In the interest of safety, we recommended these items be serviced only by an authorized Honda dealer.

- Notes:
1. At higher odometer readings, repeat at the frequency interval established here.
 2. Service more frequently when riding in unusually wet or dusty areas.
 3. Service more frequently when riding in rain or at full throttle.
 4. Switzerland and Austria type only.
 5. Replace every 2 years, or at indicated odometer interval, whichever comes first. Replacement requires mechanical skill.
 6. Refer to the Common Service Manual.
 7. Use the specifications in section one and refer to the Common Service Manual.

Air Cleaner

Remove the left side cover (page 2-2).

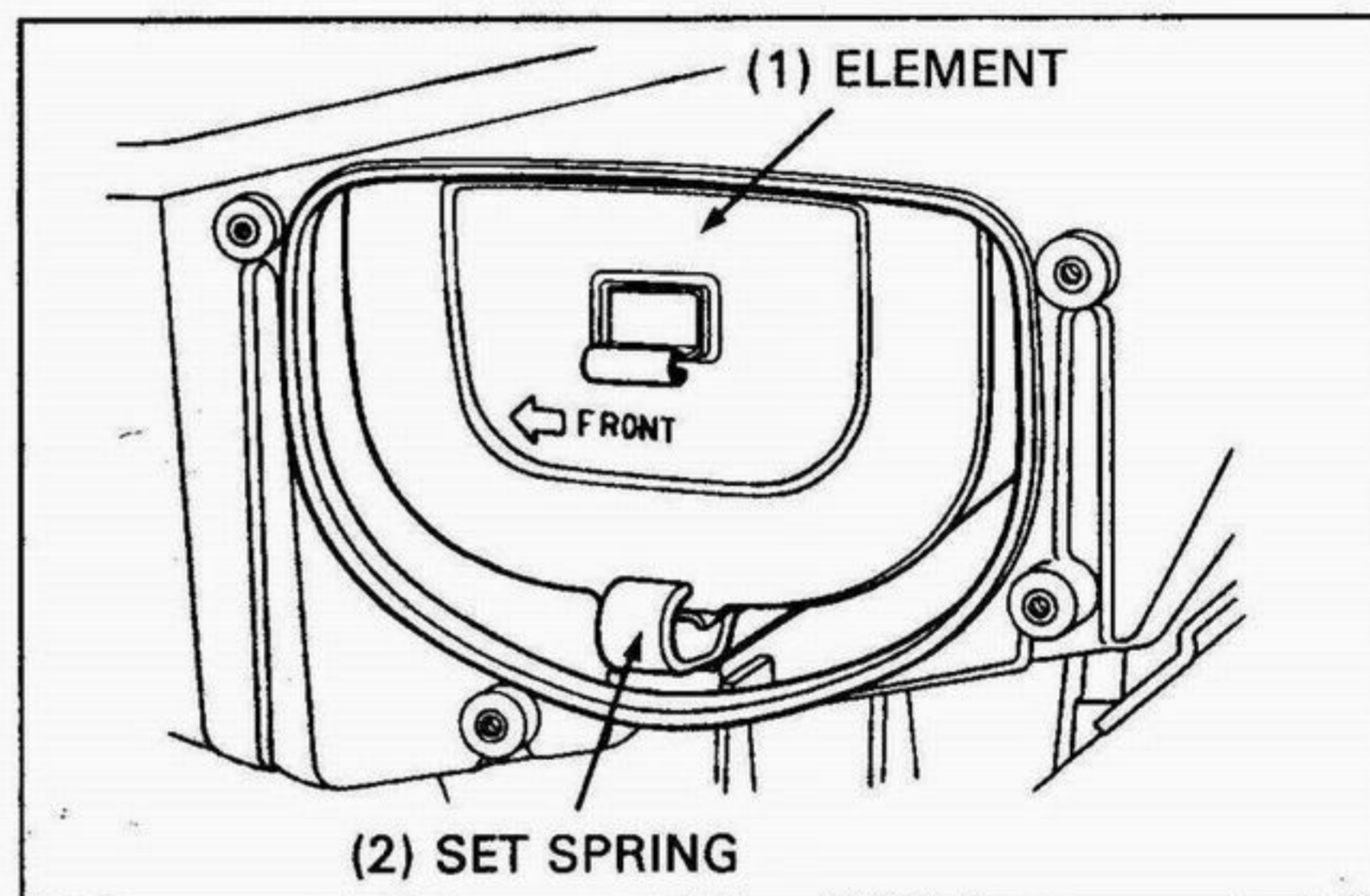
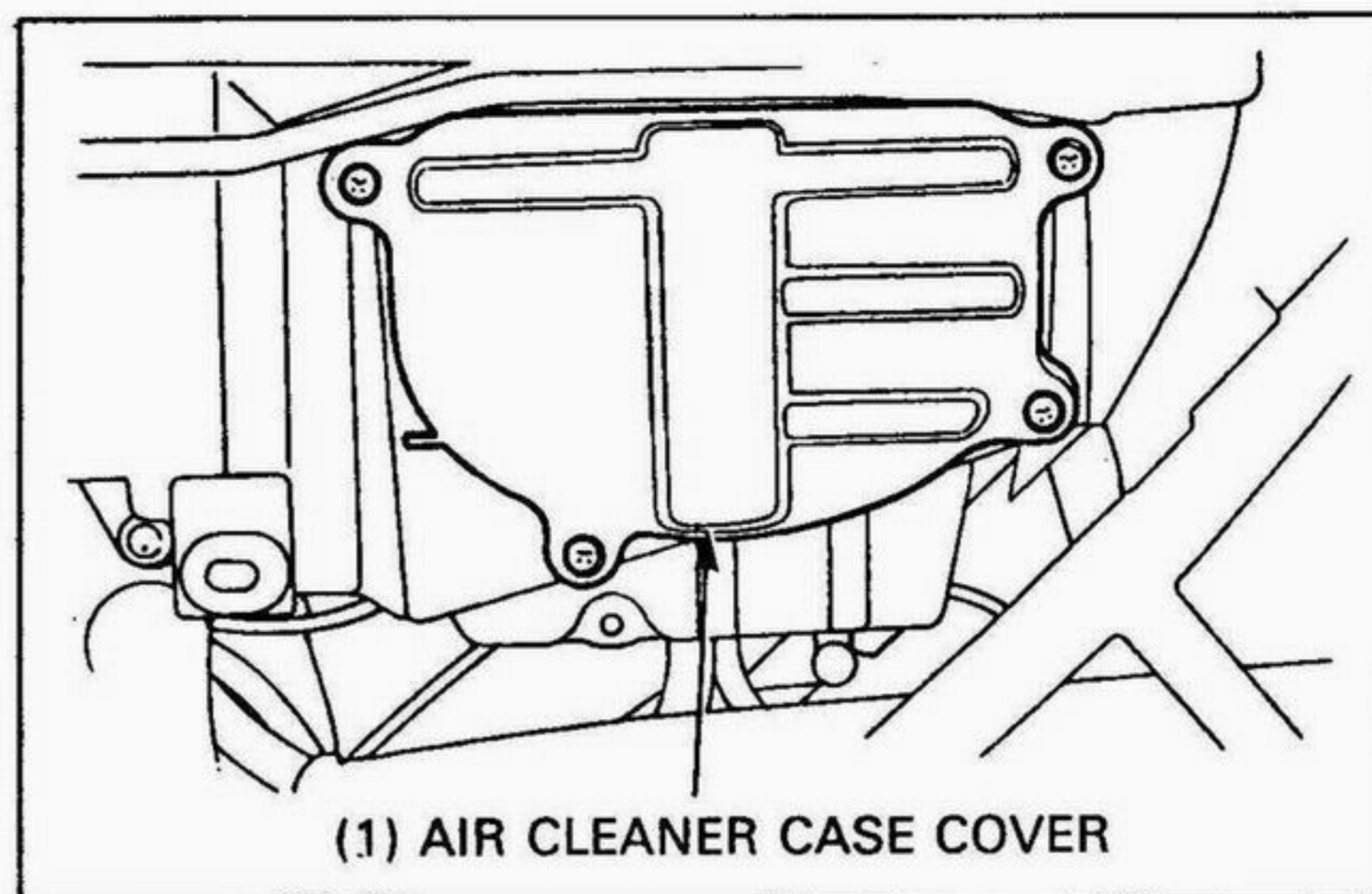
Remove the air cleaner case cover.

Pull the air cleaner element set spring out and remove the element.

Discard the air cleaner element in accordance with the maintenance schedule.

Install the air cleaner element with the ← mark forward.
Install the set spring.

Install the removed parts in the reverse order of removal.



Carburetor Synchronization

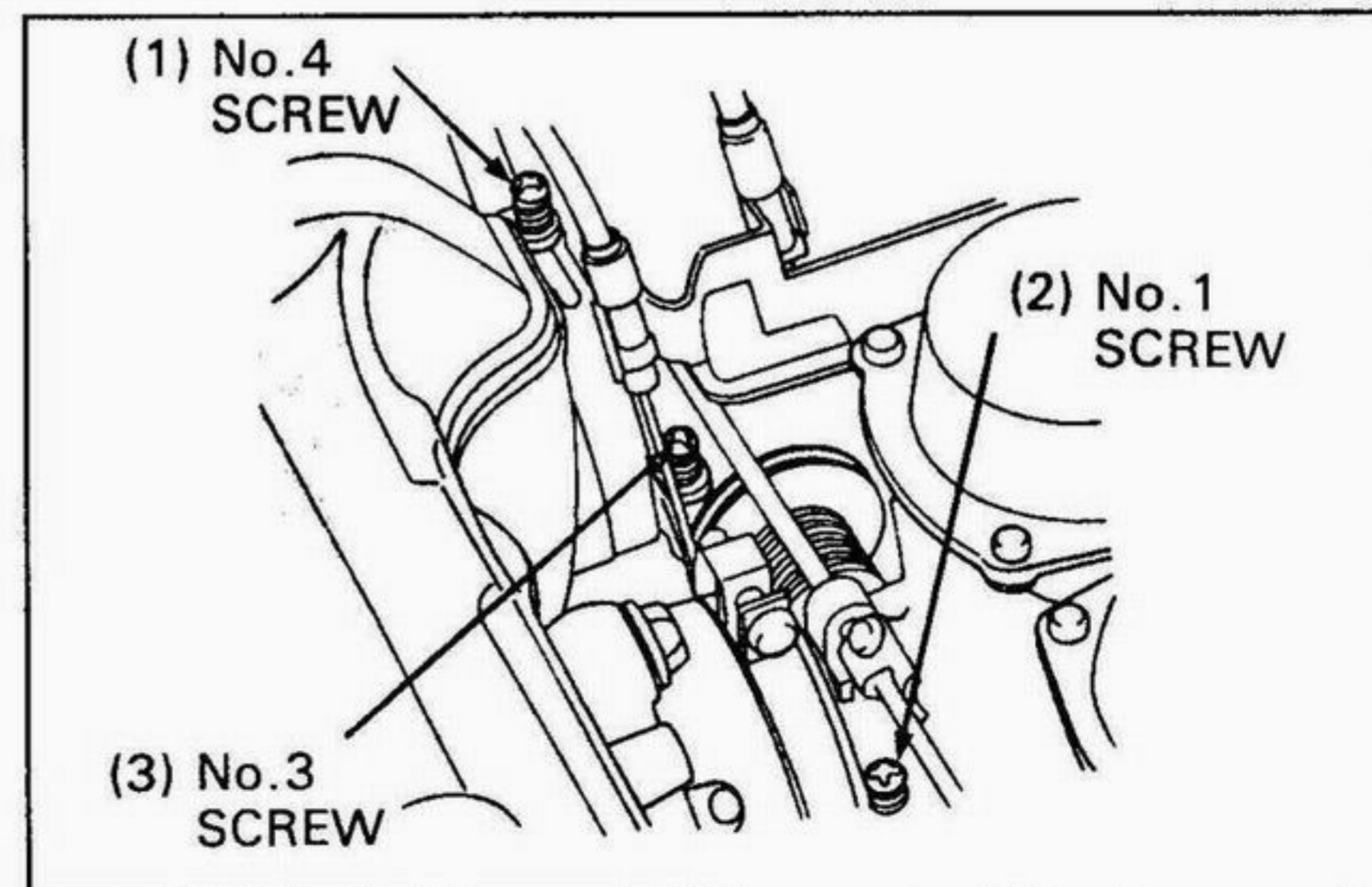
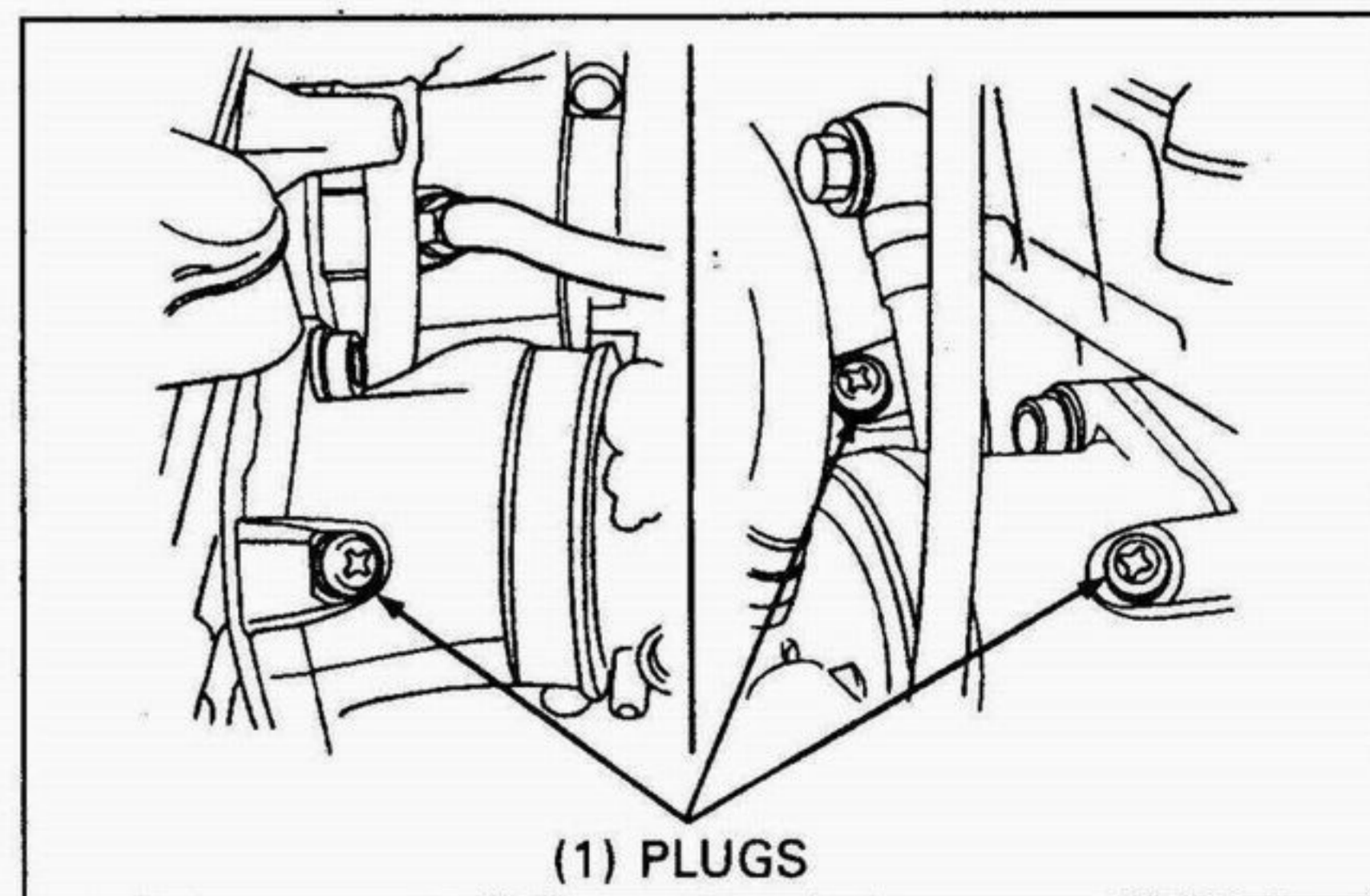
NOTE

- For detailed instructions, refer to section 2 of the Common Service Manual. The information here only indicates locations of the plugs for the adapters and the synchronization adjusting screws.
- Before inspection, remove the fuel tank mounting bolts (page 2-3) and move the tank rearward without disconnecting the fuel tube.

Carburetor Vacuum Difference:

Within 30 mm Hg (1.2 inHg)

Base Carburetor: No.2 Carburetor



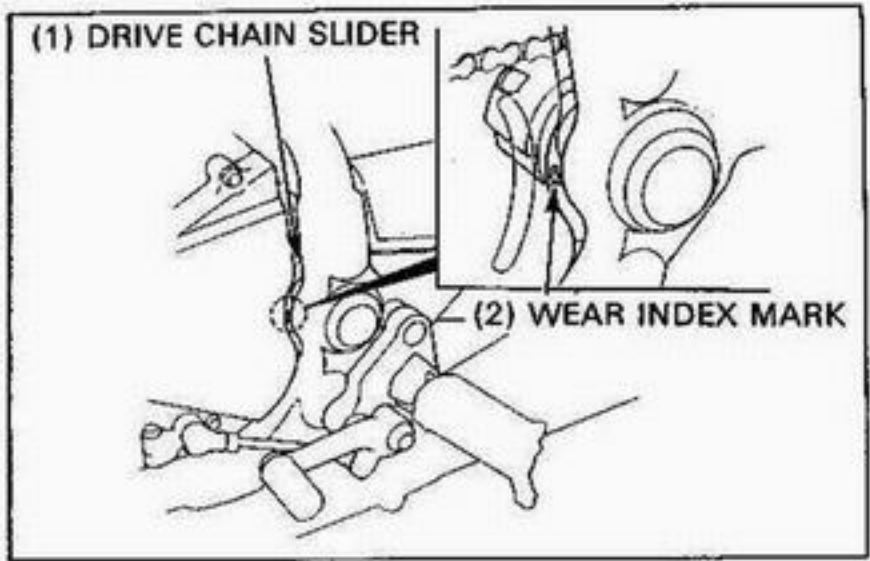
Drive Chain Slider

Check the drive chain slider for wear.
Replace the drive chain slider if it is worn to wear index mark.

CAUTION

- If the chain slider becomes worn through to the swingarm, the chain will begin to wear against the swingarm.

Remove the swingarm and replace the drive chain slider (page 11-11).



4. Lubrication System

| | | | |
|-------------------------------|-----|---------------------------------|-----|
| Service Information | 4-1 | Oil Pump Disassembly/Assembly | 4-4 |
| Troubleshooting | 4-1 | Oil Cooler Removal/Installation | 4-5 |
| Lubrication System Diagram | 4-2 | Oil Pressure Check | 4-6 |
| Oil Pump Removal/Installation | 4-3 | | |

Service Information

⚠ WARNING

- If the engine must be running to do some work, make sure the area is well ventilated. Never run engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that can cause loss of consciousness and may lead to death. Run the engine in an open area or with an exhaust evacuation system in an enclosed area.
- 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 advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.

- The oil pump can be serviced with the engine installed in the frame.
- The service procedures in this section should be performed after the engine oil is drained.
- When removing and installing the oil pump, use care not to allow dust or dirt to enter the engine.
- If any portion of the oil pump is worn beyond the specified service limits, replace the oil pump as an assembly.
- After the oil pump has been installed, check that there are no oil leaks and that oil pressure is correct.

Troubleshooting

Oil Level Low

- Oil consumption
- External oil leak
- Worn piston ring or incorrect piston ring installation
- Worn valve guide or seal

Low Or No Oil Pressure

- Clogged oil orifice
- Incorrect oil being used

No Oil Pressure

- Oil level too low
- Oil pump drive sprocket broken
- Oil pump damaged (pump shaft)
- Internal oil leaks

Low Oil Pressure

- Clogged oil strainer screen
- Oil pump worn or damaged
- Internal oil leak
- Incorrect oil being used
- Low oil level

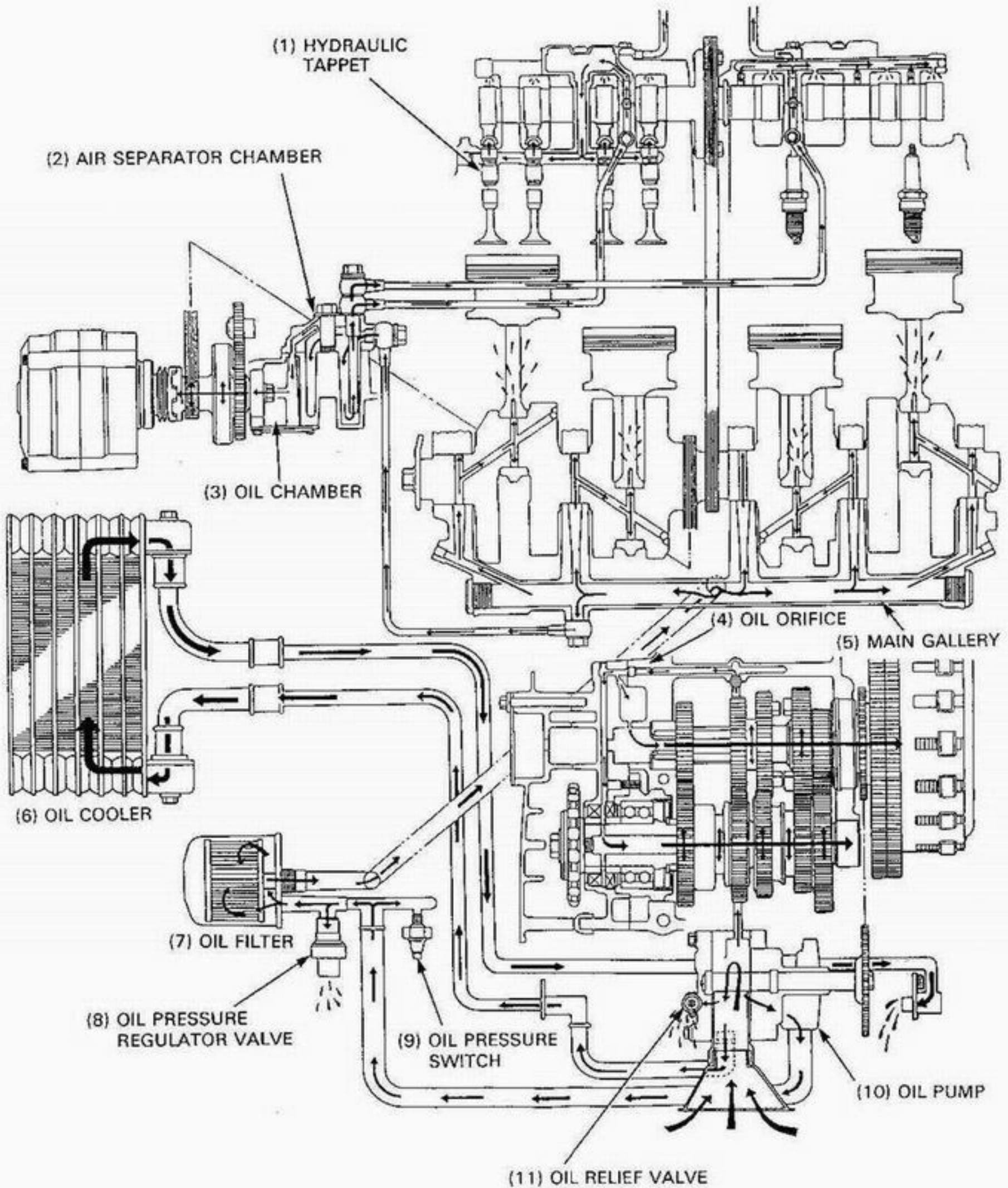
High Oil Pressure

- Pressure relief valve stuck closed
- Plugged oil filter, gallery, or metering orifice
- Incorrect oil being used

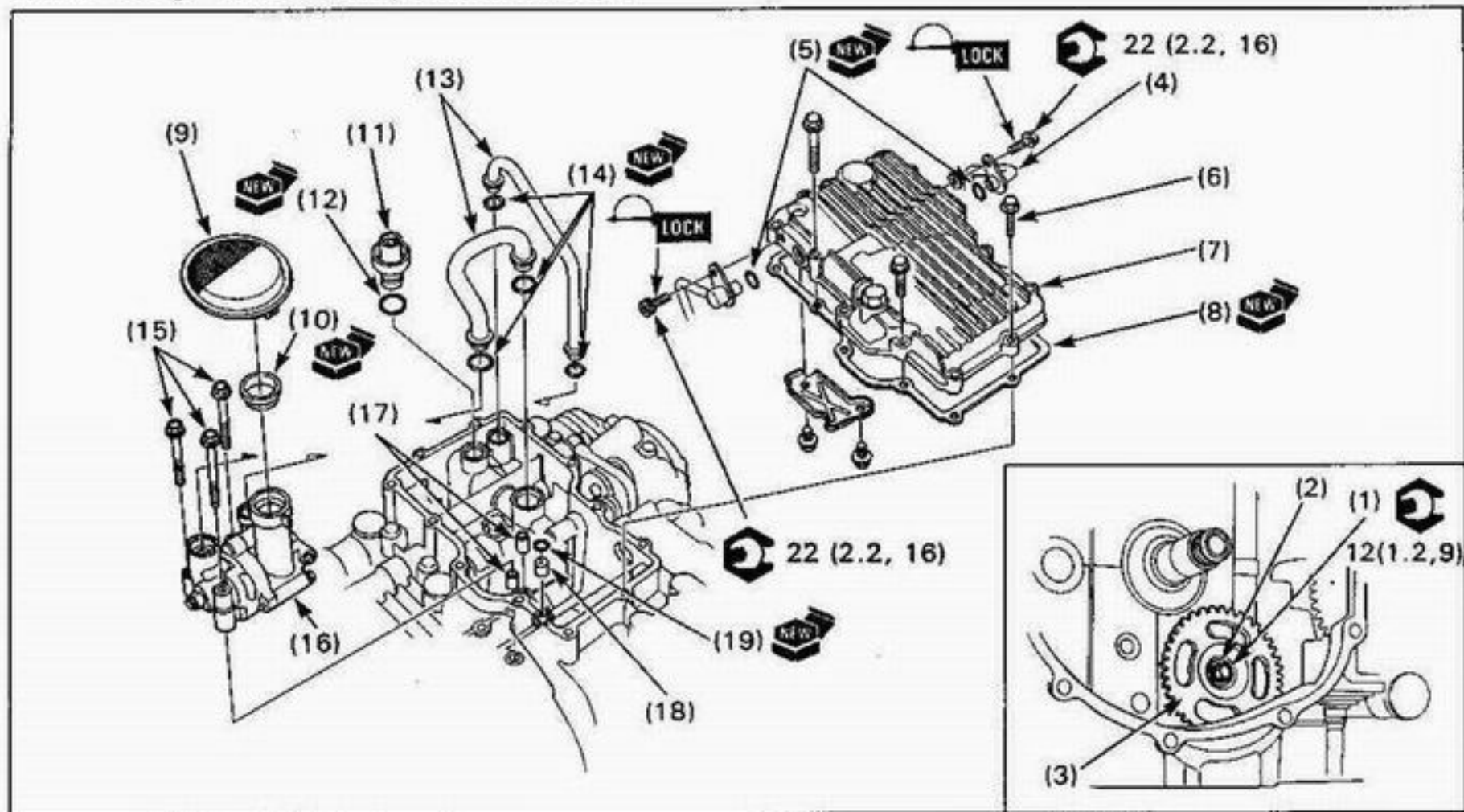
Oil Pressure Warning Light Does Not Work Well

- Refer to section 25 of the Common Service Manual

Lubrication System Diagram



Oil Pump Removal/Installation



NOTE

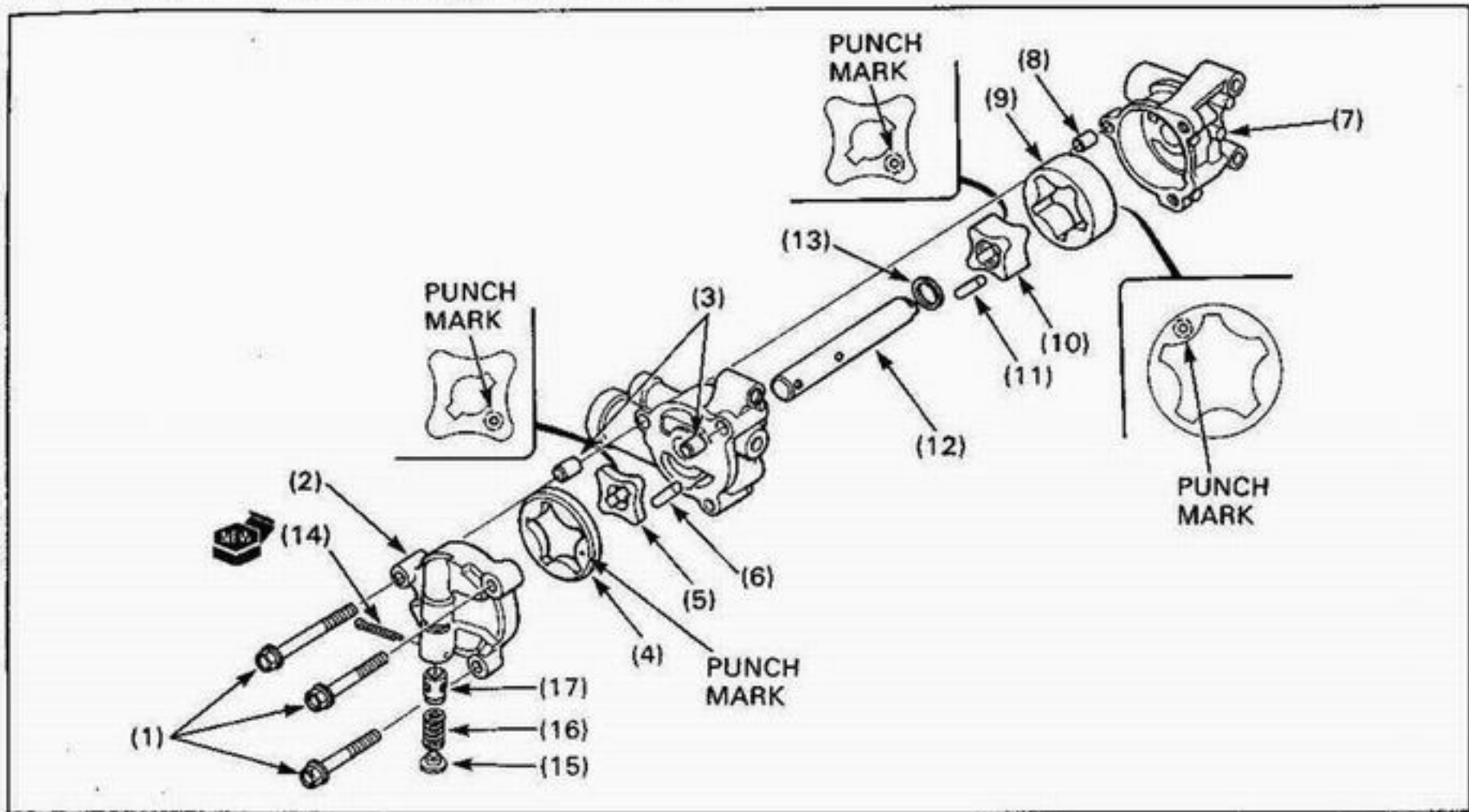
- Use care to prevent dust and dirt from entering the engine.
- After installation, check that there are no oil leaks.

Requisite Service

- Engine oil draining/refill
- Clutch removal/installation (page 8-4, 6)
- Exhaust system removal/installation (page 2-6)

| Procedure | Q'ty | Remarks |
|-----------------------------------|------|---|
| Removal Order | | Installation is in the reverse order of removal. |
| (1) Oil pump driven sprocket bolt | 1 | |
| (2) Washer | 1 | |
| (3) Oil pump driven sprocket | 1 | |
| (4) Oil hose | 2 | |
| (5) O-ring | 2 | |
| (6) Oil pan bolt | 12 | |
| (7) Oil pan | 1 | |
| (8) Gasket | 1 | |
| (9) Oil strainer | 1 | Clean with a non-flammable or high flash point solvent. |
| (10) O-ring | 1 | |
| (11) Pressure relief valve | 1 | |
| (12) O-ring | 1 | |
| (13) Oil pipe | 2 | |
| (14) O-ring | 4 | |
| (15) Oil pump mounting bolt | 3 | |
| (16) Oil pump assembly | 1 | |
| (17) Dowel pin | 2 | |
| (18) Oil orifice | 1 | |
| (19) O-ring | 1 | |

Oil Pump Disassembly/Assembly



NOTE

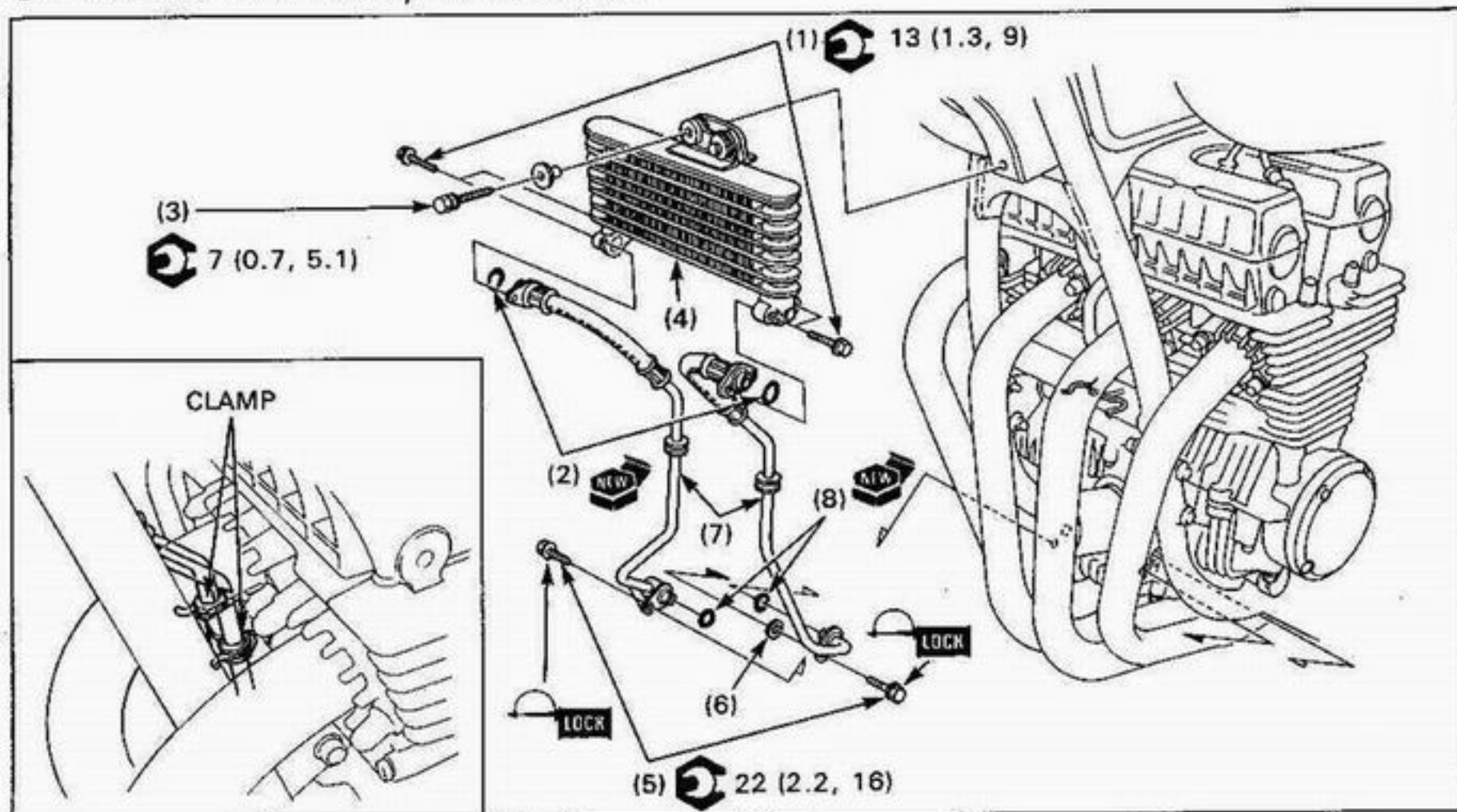
- If any portion of the oil pump is worn beyond the specified service limit, replace the oil pump as an assembly.
- Before assembling them, clean all disassembled parts thoroughly with clean engine oil.
- Refer to section 4 of the Common Service Manual for inspection information.
- Refer to page 1-6 for specifications.

Requisite Service

- Oil pump removal/installation (page 4-3)

| Procedure | Q'ty | Remarks |
|-----------------------------------|------|---|
| Disassembly Order | | Assembly is in the reverse order of disassembly. |
| (1) Oil pump cover attaching bolt | 3 | |
| (2) Oil pump cover | 1 | |
| (3) Dowel pin | 2 | |
| (4) Cooler pump outer rotor | 1 | Install with its punch mark facing the pump cover. |
| (5) Cooler pump inner rotor | 1 | • Install aligning the cut out with the drive pin. • Install with its punch mark facing the pump body. |
| (6) Drive pin | 1 | |
| (7) Feed pump cover | 1 | |
| (8) Dowel pin | 1 | |
| (9) Feed pump outer rotor | 1 | Install with its punch mark facing the pump body. |
| (10) Feed pump inner rotor | 1 | • Install aligning the cut out with the drive pin. • Install with its punch mark facing the pump body. |
| (11) Drive pin | 1 | |
| (12) Pump shaft | 1 | |
| (13) Washer | 1 | |
| (14) Cotter pin | 1 | |
| (15) Spring seat | 1 | |
| (16) Spring | 1 | |
| (17) Relief valve | 1 | |

Oil Cooler Removal/Installation



⚠ WARNING

- Do not service the exhaust system while it is hot.

NOTE

- Use care to prevent dust and dirt from entering the engine.
- After installation, check that there are no oil leaks.

Requisite Service

- Engine oil draining/refill

| Procedure | Q'ty | Remarks |
|---------------------------------|------|--|
| Removal Order | | Installation is in the reverse order of removal. |
| (1) Oil hose joint bolt (upper) | 4 | |
| (2) O-ring | 2 | |
| (3) Oil cooler mounting bolt | 1 | |
| (4) Oil cooler | 1 | |
| (5) Oil hose joint bolt (lower) | 2 | |
| (6) Washer | 1 | |
| (7) Oil hose | 2 | Be careful not bend the hose. |
| (8) O-ring | 2 | |

Oil Pressure Check

Warm the engine up to normal operating temperature (approximately 80°C/176°F).

Stop the engine.

Place the motorcycle on its side stand.

Remove the right sealing bolt and connect an oil pressure gauge to the plug hole with an attachment.

S. TOOL

Oil pressure gauge 07506-3000000

Oil pressure gauge attachment 07510-MJ10100

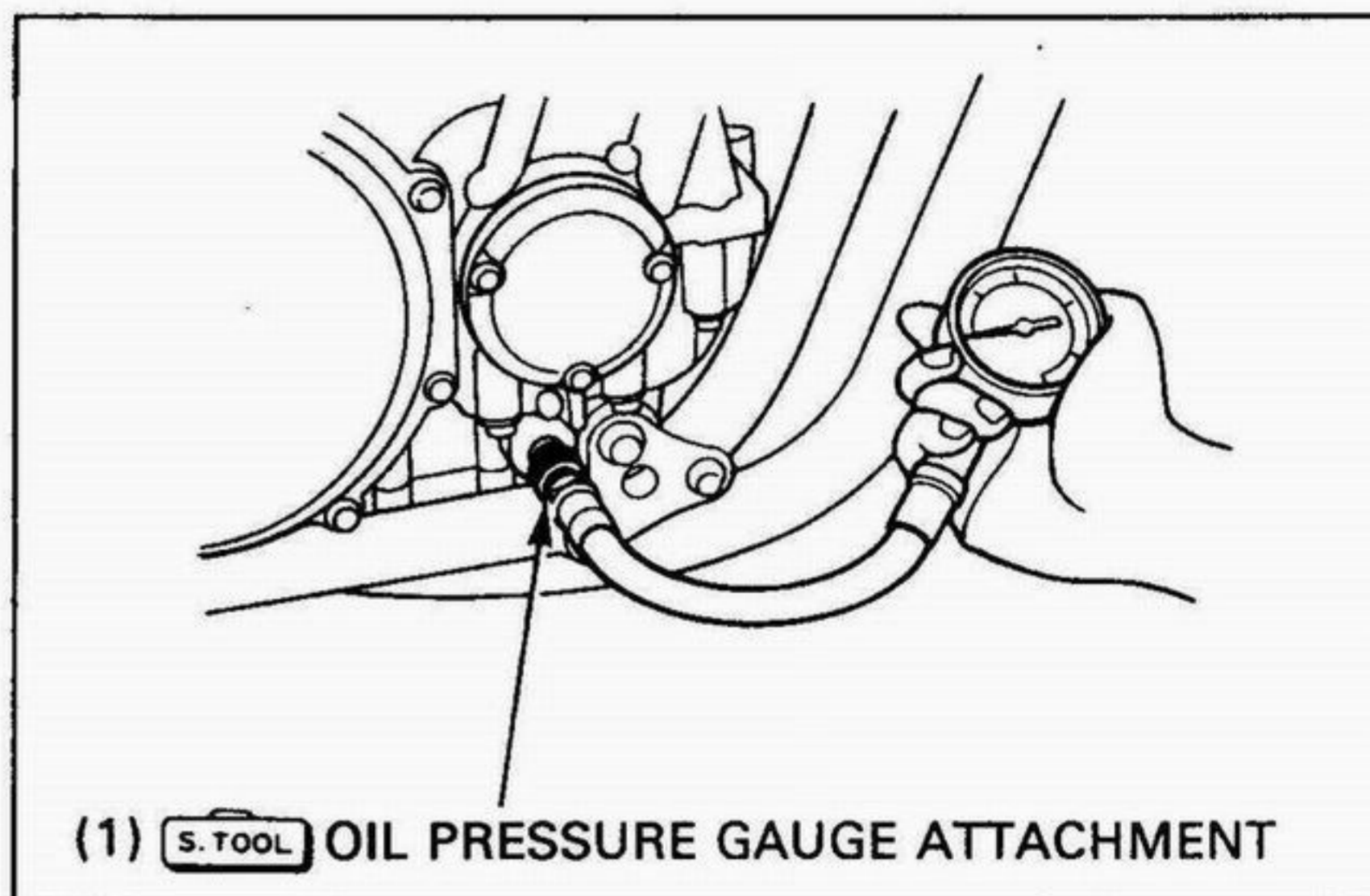
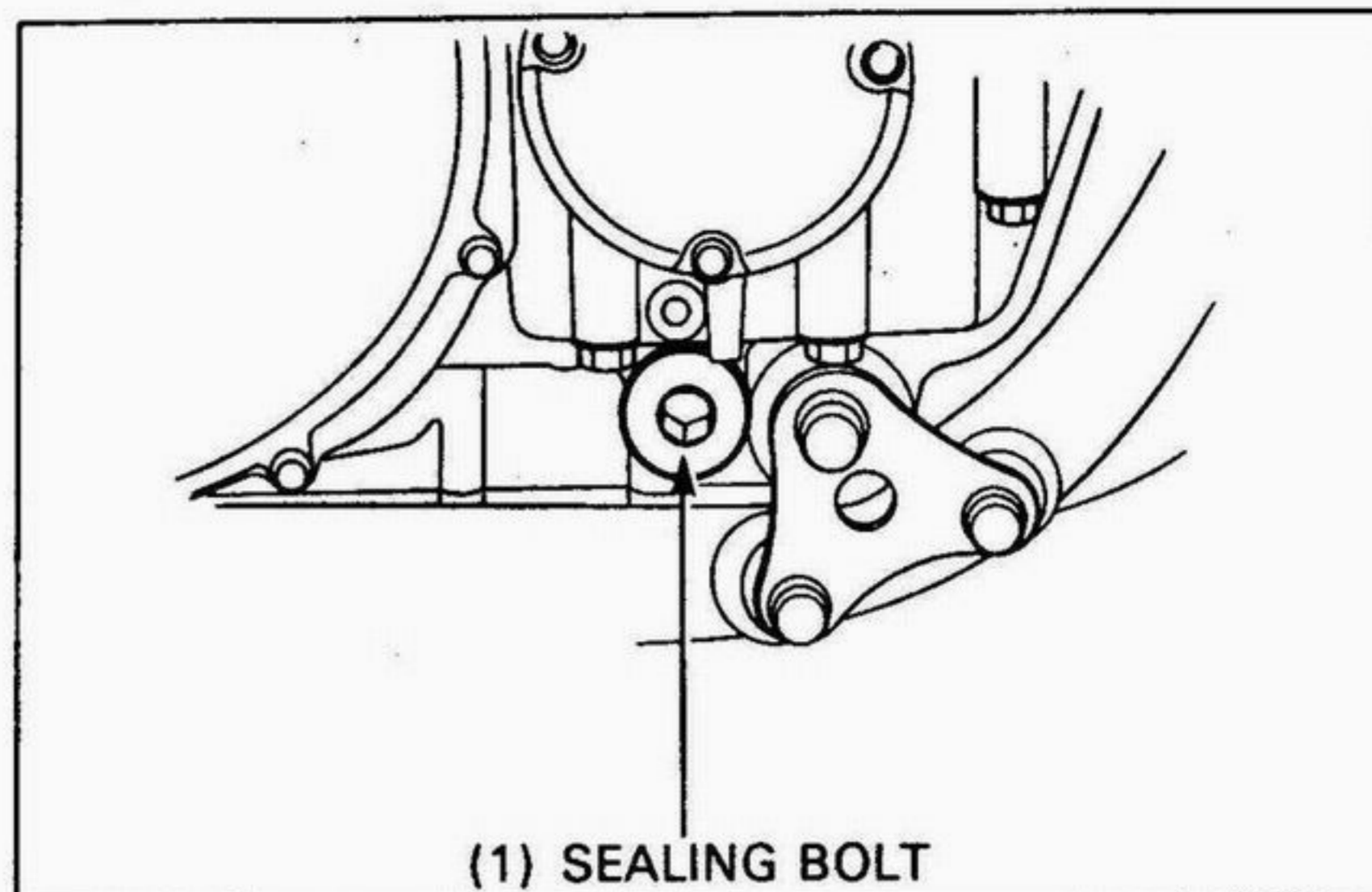
Place the motorcycle on its center stand.

Check the oil level.

Start the engine and check the oil pressure at 6,000 min⁻¹ (rpm).

OIL PRESSURE: 630 kPa (6.3 kg/cm², 90 psi) at (80°C/176°F) 6,000 min⁻¹(rpm)

Stop the engine and place the motorcycle on its side stand.



Remove the pressure gauge and attachment.

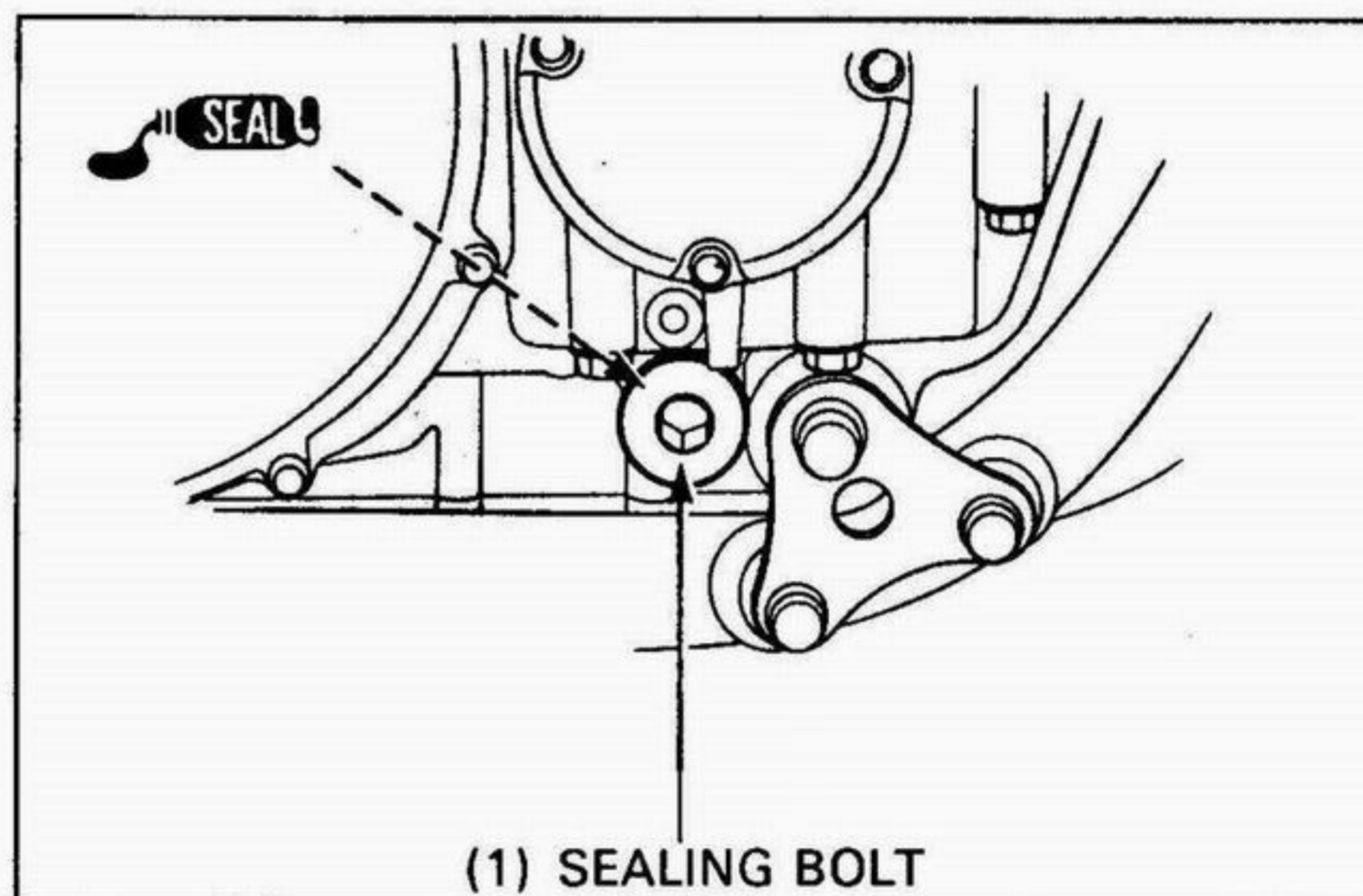
Apply sealant to the sealing bolt threads and install the bolt with new sealing washer.

Torque: 30 N·m (3.0 kg-m, 22 ft-lb)

Start the engine.

Check that the oil pressure warning indicator goes out after one or two seconds.

If the pressure warning indicator stays on, stop the engine immediately and determine the cause.



5. Fuel System

| | | | |
|--------------------------------------|-----|---------------------------------|------|
| Service Information | 5-1 | Carburetor Disassembly/Assembly | 5-8 |
| Troubleshooting | 5-2 | Carburetor Combination | 5-10 |
| Air Cleaer Case Removal/Installation | 5-3 | Pilot Screw Adjustment | 5-12 |
| Carburetor Removal/Installation | 5-4 | | |
| Carburetor Separation | 5-6 | | |

Service Information

▲ WARNING

- Gasoline is extremely flammable and is explosive under certain conditions. **KEEP OUT OF REACH OF CHILDREN.**
- Bending or twisting the control cables will impair smooth operation and could cause the cables to stick or bind, resulting in loss of vehicle control.

CAUTION

- **Be sure to remove the carburetor diaphragms before cleaning air and fuel passages with compressed air.**

- Work in a well ventilated area. Smoking or allowing flames or sparks in the work area or where gasoline is stored can cause a fire or explosion.
- Refer to section 2 for fuel tank removal and installation.
- When disassembling fuel system parts, note the locations of the O-rings. Replace them with new ones on reassembly.
- Before removing the carburetors, place an approved gasoline container under the carburetor drain tube, loosen the drain bolts and drain the carburetors.
- After removing the carburetor, wrap the intake port of the engine with a shop towel or cover it with pieces of tape to prevent any foreign material from dropping into the engine.
- The vacuum chamber and float chamber can be serviced with the carburetors assembled.
- Switzerland and Austria type Only:
All hoses used in the secondary air supply system are numbered for identification. When connecting one of these hoses, compare the hose number with the Cable & Harness Routing, page 1-27.

NOTE

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

Troubleshooting

Engine Won't Start

- Too much fuel getting to the engine
 - Air cleaner clogged
 - Flooded carburetor
- Intake air leak
- Fuel contaminated/deteriorated
- No fuel to carburetor
 - Fuel strainer clogged
 - Fuel tube clogged
 - Fuel valve stuck
 - Float level misadjusted
 - Fuel tank breather tube clogged

Lean Mixture

- Fuel jets clogged
- Float valve faulty
- Float level too low
- Fuel line restricted
- Carburetor air vent tube clogged
- Intake air leak
- Throttle valve faulty
- Vacuum piston faulty

Rich Mixture

- Bystarter valve in ON position
- Float valve faulty
- Float level too high
- Air jets clogged
- Air cleaner element contaminated
- Flooded carburetor

Engine Stalls, Hard To Start, Rough Idling

- Fuel line restricted
- Ignition malfunction
- Fuel mixture too lean/rich
- Fuel contaminated/deteriorated
- Intake air leak
- Idle speed misadjusted
- Float level misadjusted
- Fuel tank breather tube clogged
- Pilot screw misadjusted
- Slow circuit or bystarter circuit clogged
- Emission control system malfunction (SW and AR type only)
 - Air injection control valve (AICV) faulty
 - Loose, disconnected or deteriorated hoses of the emission control system

Afterburn When Engine Braking Is Used

- Lean mixture in slow circuit
- Emission control system malfunction (SW and AR type only)
 - Secondary air supply system faulty
 - Loose, disconnected or deteriorated hoses of the emission control system

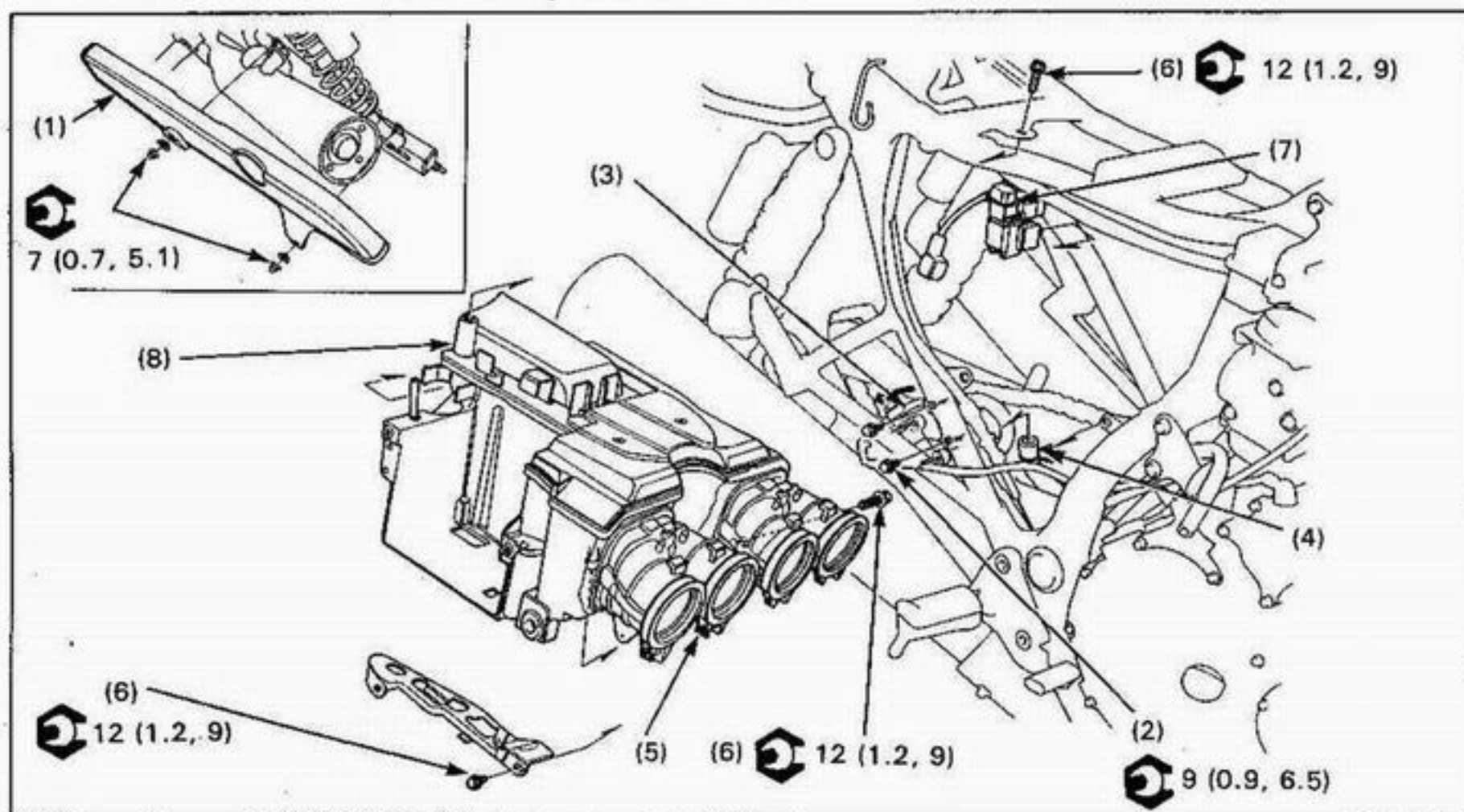
Afterburn Or Misfiring During Acceleration

- Ignition system faulty
- Fuel mixture too lean

Poor Performance (Driveability) And Poor Fuel Economy

- Fuel system clogged
- Ignition malfunction
- Emission control system malfunction (SW and AR type only)
 - Air injection control valve (AICV) faulty
 - Loose, disconnected or deteriorated hoses of the emission control system

Air Cleaner Case Removal/Installation

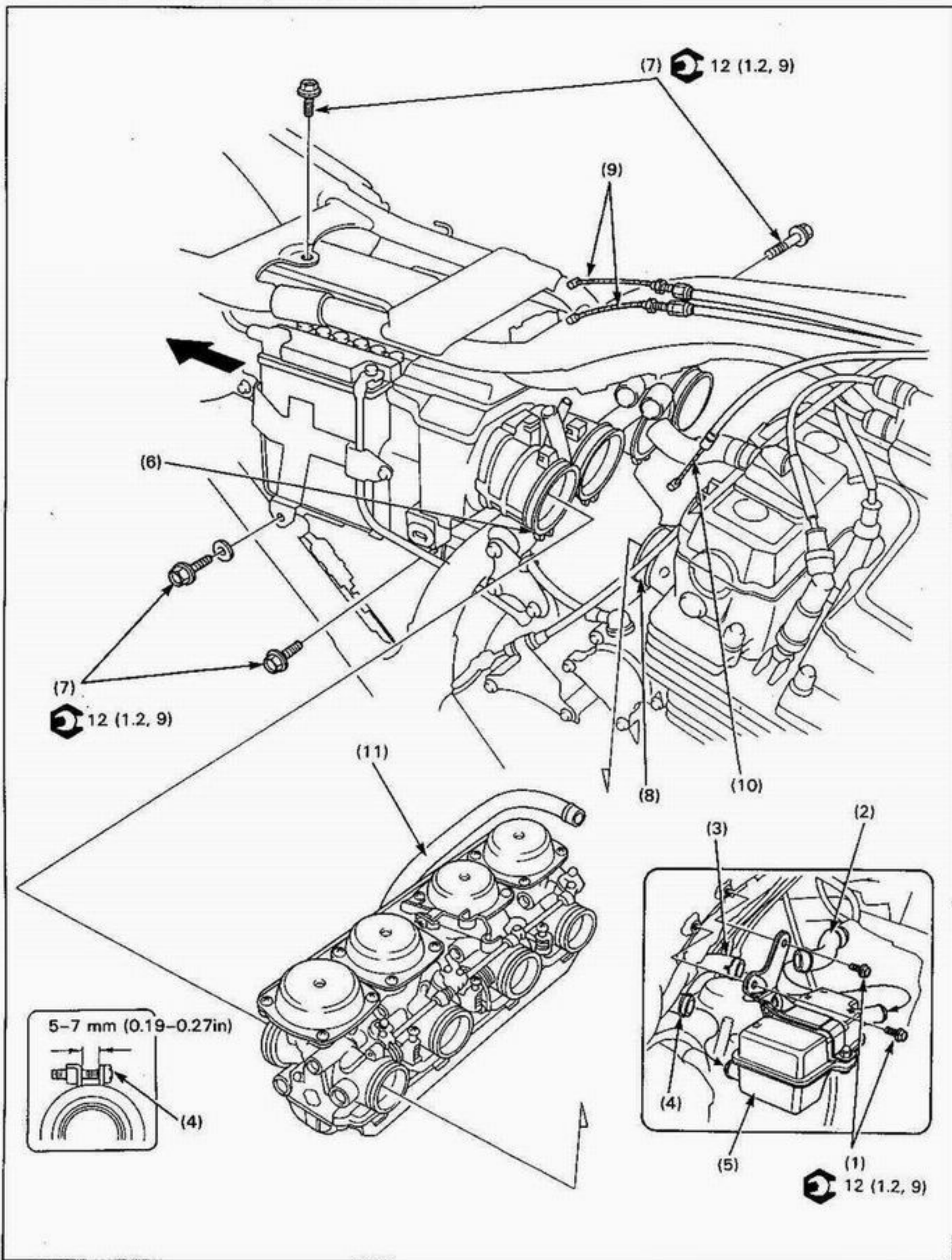


Requisite Service

- Rear fairing removal/installation (page 2-3)
- Battery removal/installation (page 13-4)
- Fuel tank removal/installation (page 2-3)
- Rear wheel removal/installation (page 11-2)
- Rear fender removal/installation (page 2-4)

| Procedure | Q'ty | Remarks |
|--|------|--|
| Removal Order | | Installation is in the reverse order of removal. |
| (1) Drive chain cover | 1 | |
| (2) Rear master cylinder mounting bolt | 2 | |
| (3) Rear master cylinder | 1 | |
| (4) Air cleaner case drain tube | 1 | |
| (5) Connecting tube band screw | 4 | Only loosening. |
| (6) Air cleaner case mounting bolt | 3 | |
| (7) Starter relay switch | 1 | |
| (8) Air cleaner case assembly | 1 | Remove the air cleaner case rearward. |

Carburetor Removal/Installation



▲ WARNING

• Gasoline is extremely flammable and is explosive under certain conditions. KEEP OUT OF REACH OF CHILDREN.

- Work in well ventilated area. Smoking or allowing flames or sparks in the working area or where gasoline is stored can cause a fire or explosion.

NOTE

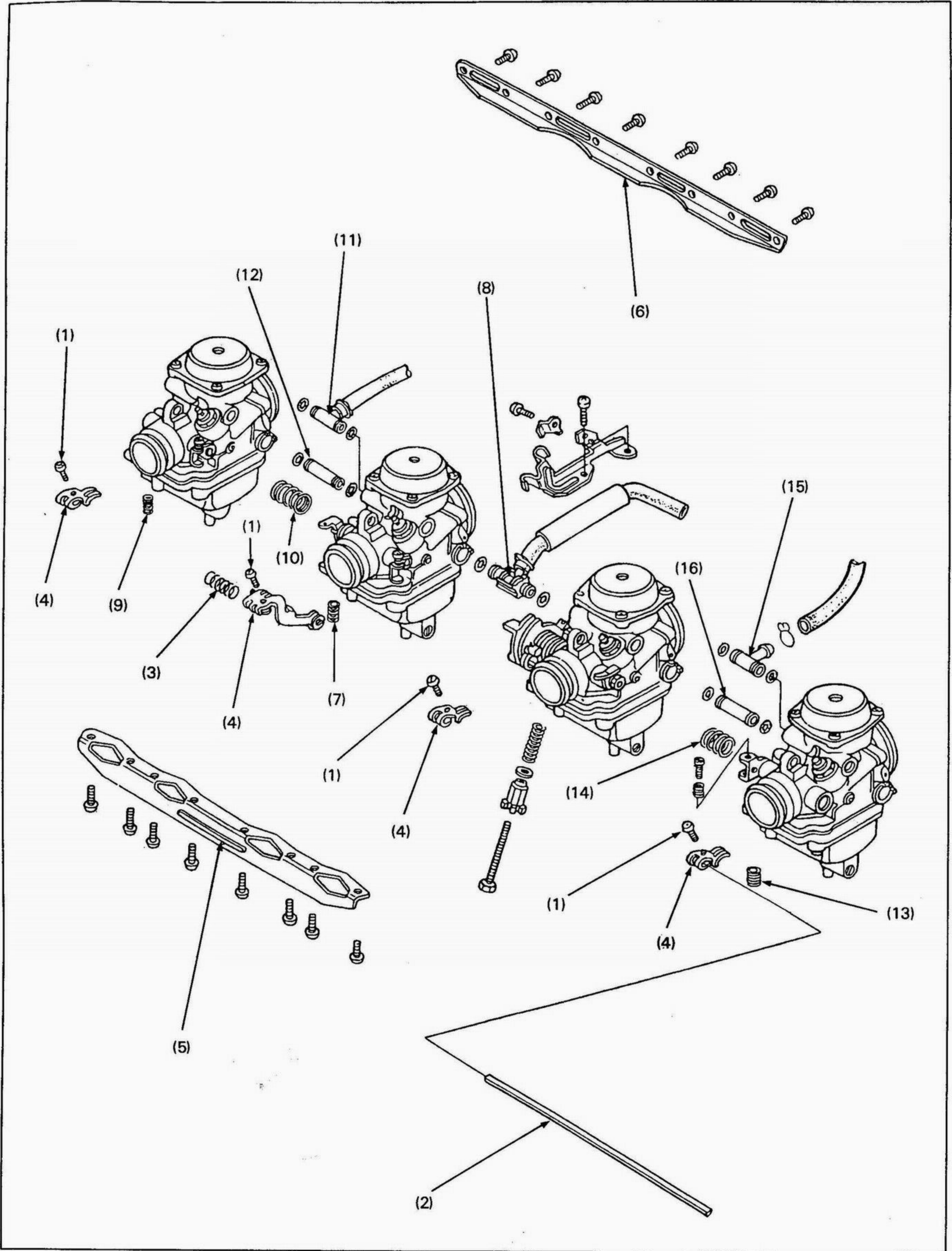
- Before removal, turn the fuel valve OFF.

Requisite Service

- Fuel tank removal/installation (page 2-3)
- Carburetor draining

| Procedure | | Qty | Remarks |
|-----------|--------------------------------|-----|--|
| | Removal Order | | Installation is in the reverse order of removal. |
| (1) | Beather tank mounting bolt | 2 | |
| (2) | No. 26 tube | 1 | |
| (3) | No. 27 tube | 1 | |
| (4) | No. 25 tube | 1 | |
| (5) | Breather tank | 1 | |
| (6) | Connecting tube band screw | 4 | Loosen only. |
| (7) | Air cleaner case mounting bolt | 4 | Move the air cleaner case rearward. |
| (8) | Insulator band screw | 4 | Loosen only. |
| (9) | Throttle cable | 2 | |
| (10) | Choke cable | 1 | |
| (11) | Carburetor assembly | 1 | |

Carburetor Separation

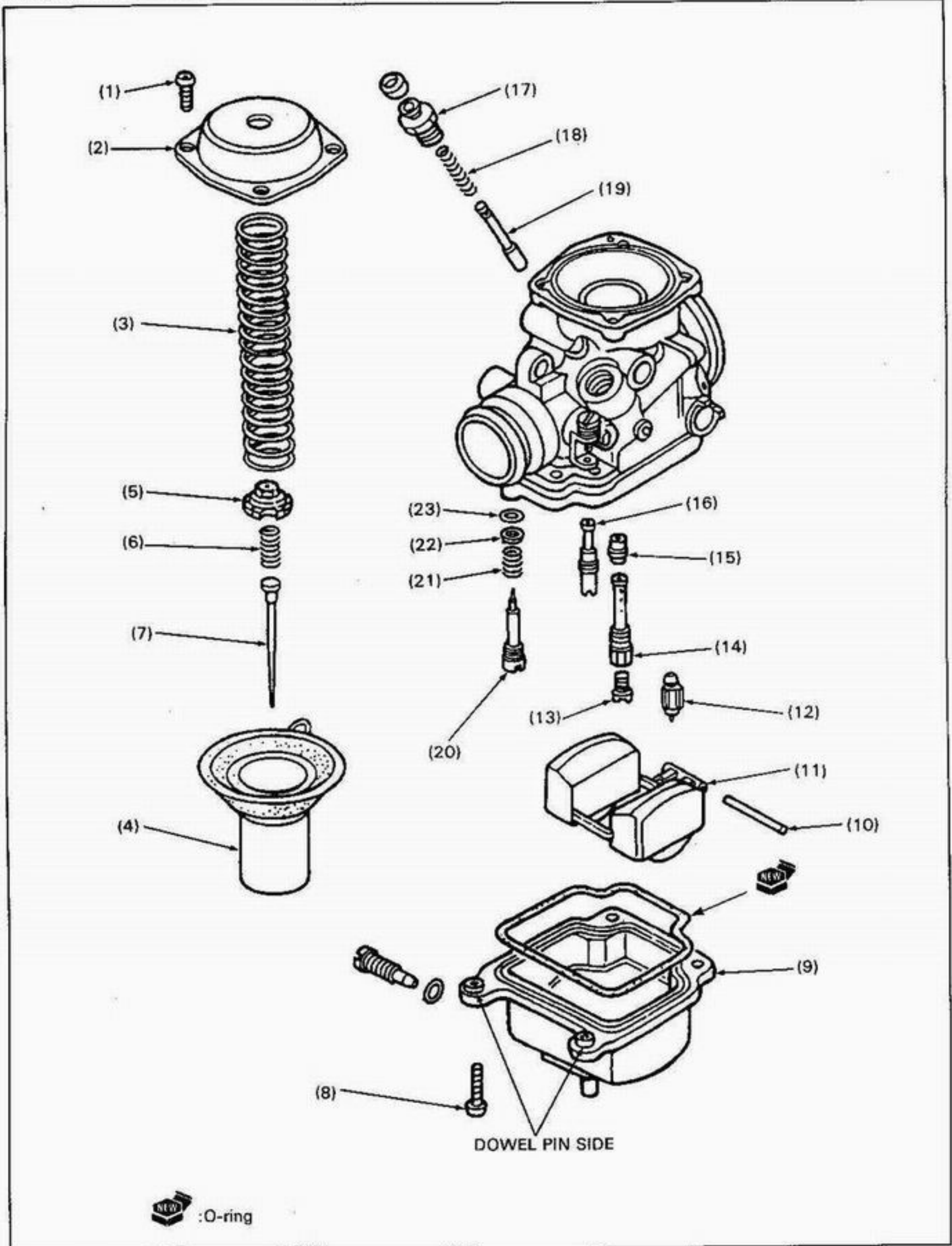


Requiste Service

- Carburetor removal/installation (page 5-4)

| Procedure | | Q'ty | Remarks |
|-----------|--|------|--------------|
| | Separate carburetors 3/4 from carburetors 1/2 | | |
| (1) | Bystarter arm screw | 4 | Loosen only. |
| (2) | Bystarter arm shaft | 1 | |
| (3) | Spring | 1 | |
| (4) | Bystarter arm | 4 | |
| (5) | Front bracket | 1 | |
| (6) | Rear bracket | 1 | |
| (7) | No. 3 carb. synchronization spring | 1 | |
| (8) | Fuel joint pipe (3-way)/O-ring | 1/2 | |
| | Separate No. 3 carb. from No. 4 carb. | | |
| (9) | No. 4 carb. synchronization spring | 1 | |
| (10) | Thrust spring | 1 | |
| (11) | Air vent pipe/O-ring | 1/2 | |
| (12) | Fuel joint pipe (2-way)/O-ring | 1/2 | |
| | Separate No. 1 carb. from No. 2 carb. | | |
| (13) | No. 1 carb. synchronization spring | 1 | |
| (14) | Thrust spring | 1 | |
| (15) | Air vent pipe/O-ring | 1/2 | |
| (16) | Fuel joint pipe (2-way)/O-ring | 1/2 | |

Carburetor Disassembly/Assembly



NOTE

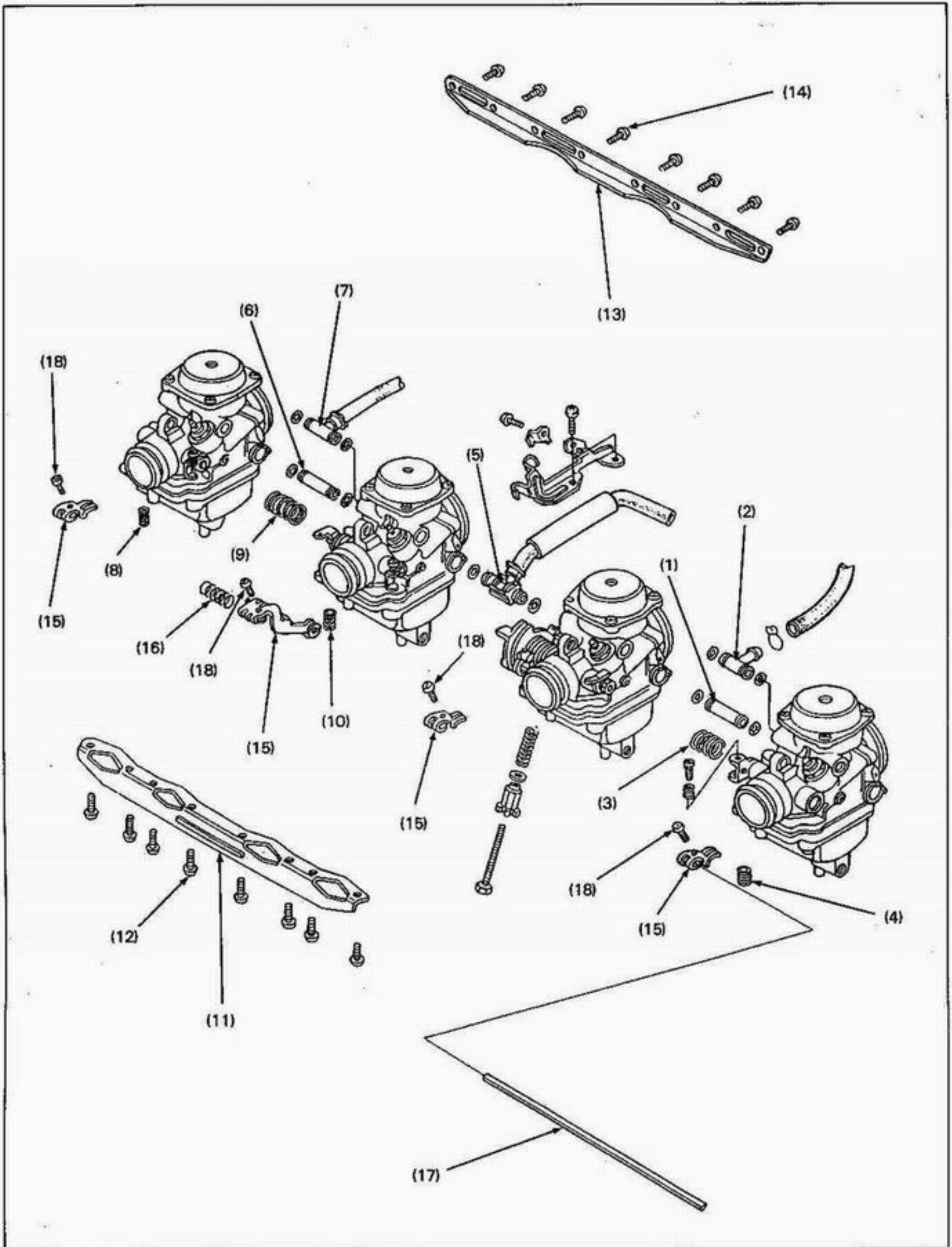
- The vacuum chamber and float chamber can be serviced with the carburetors assembled.
- The pilot screws are factory pre-set and should not be removed unless the carburetors are overhauled.
- Before disassembling the carburetors, turn each pilot screw in and carefully count the number of turns before it seats lightly. Make a note of this to use as a reference when reinstalling the screws. If new pilot screws are installed, turn each one out to the initial opening (page 1-6).

Requisite Service

- Carburetor removal/installation (page 5-4)
- Carburetor separation (page 5-6)

| Procedure | | Q'ty | Remarks |
|--|----------------------------|------|---|
| Vacuum Chamber Disassembly Order | | | Assembly is in the reverse order of disassembly. |
| (1) | Vacuum chamber cover screw | 4 | NOTE • At installation, hold the piston up to align the diaphragm and to avoid pinching it with the cover. |
| (2) | Vacuum chamber cover | 1 | |
| (3) | Spring | 1 | |
| (4) | Diaphragm/vacuum piston | 1 | |
| (5) | Jet needle holder | 1 | |
| (6) | Spring | 1 | |
| (7) | Jet needle | 1 | |
| Float Chamber Disassembly Order | | | Assembly is in the reverse order of disassembly. |
| (8) | Float chamber cover screw | 4 | At installation, first tighten the two screws on the dowel pin side. |
| (9) | Float chamber | 1 | For float level inspection, refer to section 8 of the Common Service Manual. |
| (10) | Float pin | 1 | |
| (11) | Float | 1 | |
| (12) | Float valve | 1 | |
| (13) | Main jet | 1 | |
| (14) | Needle jet holder | 1 | |
| (15) | Needle jet | 1 | |
| (16) | Slow jet | 1 | |
| Bystarter Valve Disassembly Order | | | Assembly is in the reverse order of disassembly. |
| (17) | Valve nut | 1 | |
| (18) | Spring | 1 | |
| (19) | Bystarter valve | 1 | |
| Pilot Screw Disassembly Order | | | Assembly is in the reverse order of disassembly. |
| (20) | Pilot screw | 1 | |
| (21) | Spring | 1 | |
| (22) | Washer | 1 | |
| (23) | O-ring | 1 | |

Carburetor Combination



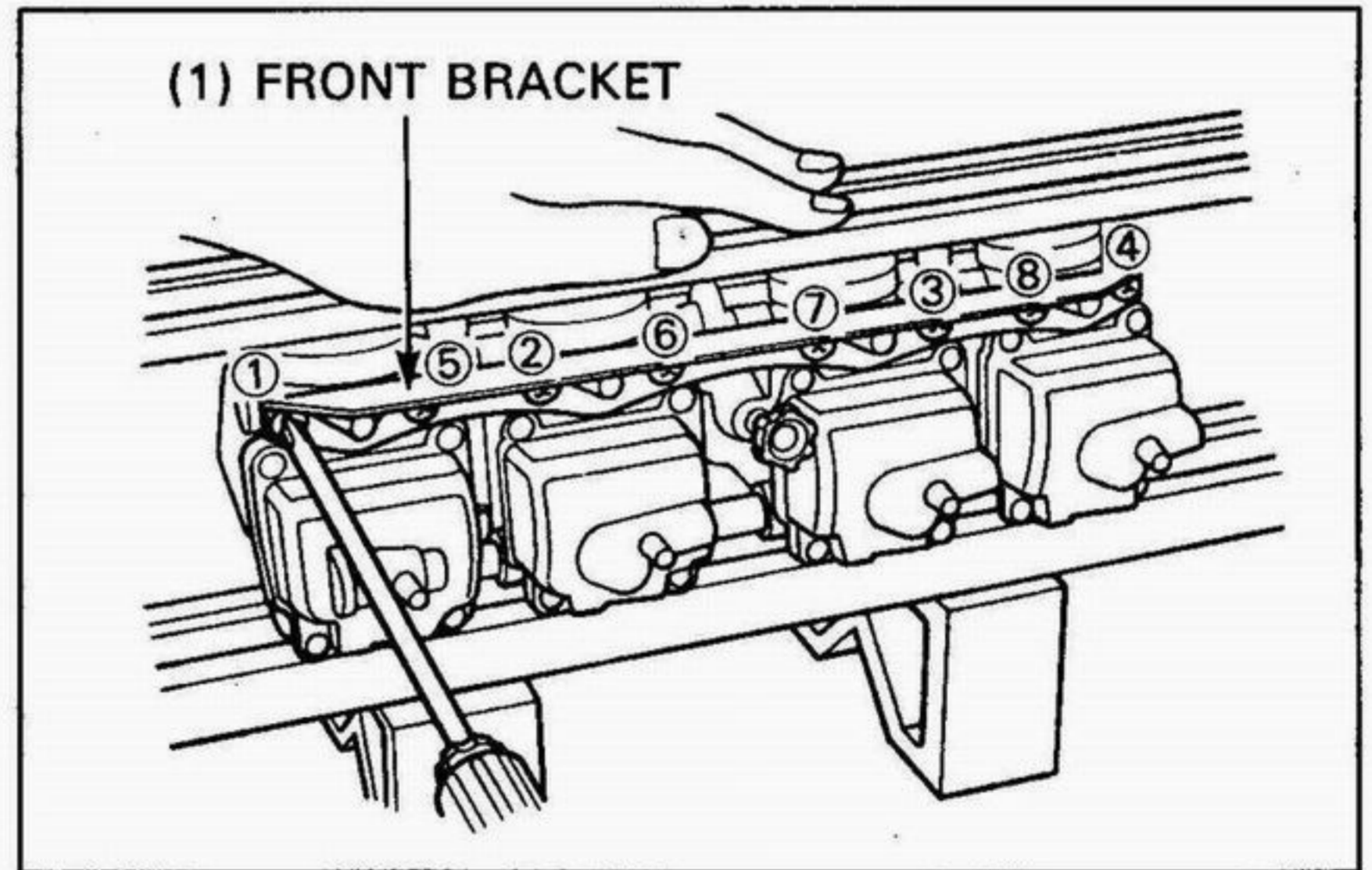
Requisite Service

- Carburetor assembly (page 5-8)

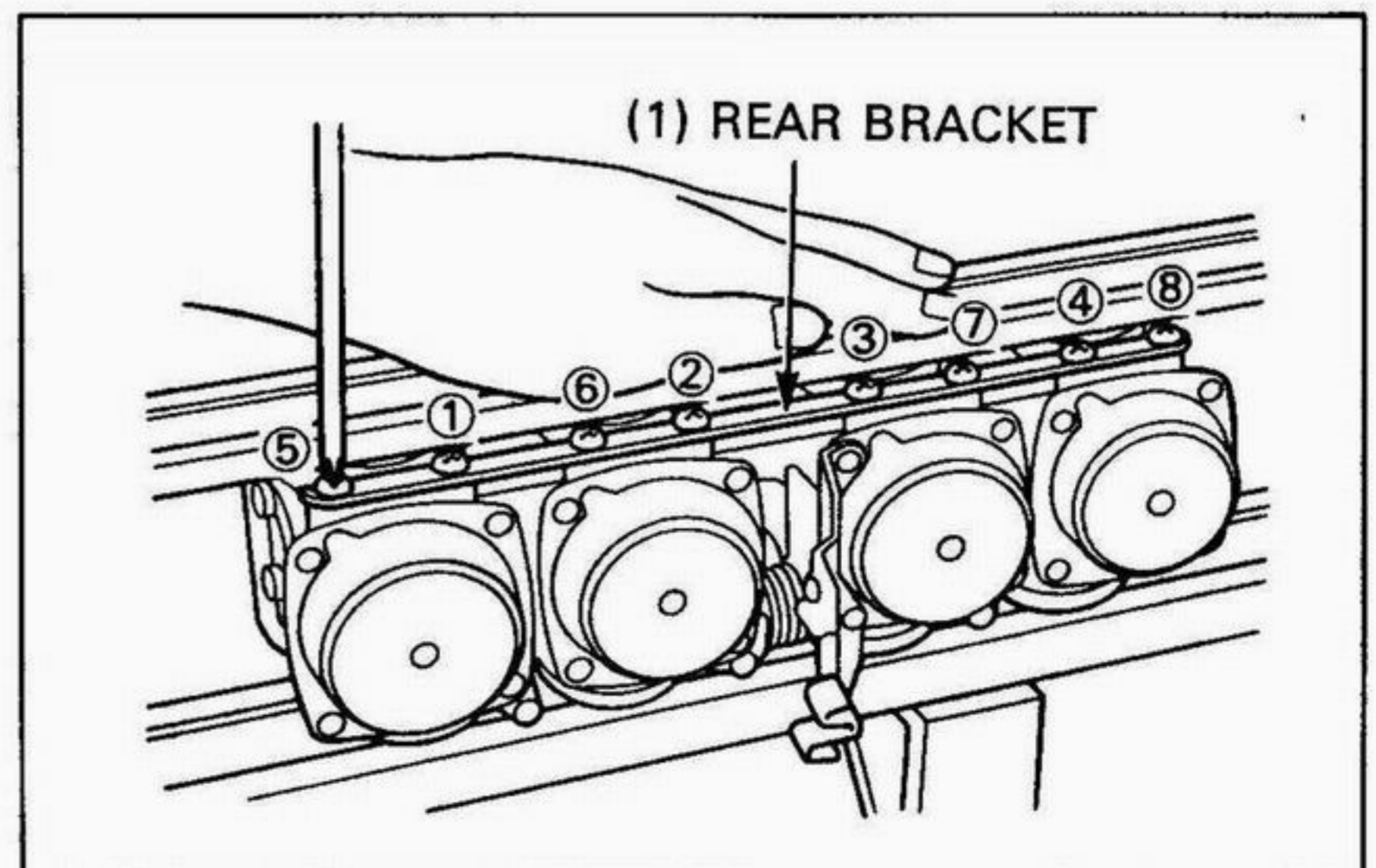
| Procedure | | Q'ty | Remarks |
|---|------------------------------------|------|--|
| Assemble the No. 1 and No. 2 carburetors | | | No. 2 carburetor is the base carburetor. |
| (1) | Fuel joint pipe (2-way)/O-ring | 1/2 | Install on No. 2 carburetor. |
| (2) | Air vent pipe/O-ring | 1/2 | |
| (3) | Thrust spring | 1 | |
| (4) | No. 1 carb. synchronization spring | 1 | |
| (5) | Fuel joint pipe (3-way)/O-ring | 1/2 | |
| Assemble the No. 3 and No. 4 carburetors | | | |
| (6) | Fuel joint pipe (2-way)/O-ring | 1/2 | |
| (7) | Air vent pipe/O-ring | 1/2 | |
| (8) | No. 4 carb. synchronization spring | 1 | |
| (9) | Thrust spring | 1 | |
| Assemble the carburetor pairs: | | | Installation (see below) |
| (10) | No. 3 carb. synchronization spring | 1 | |
| (11) | Front bracket | 1 | |
| (12) | Front bracket screw | 8 | |
| (13) | Rear bracket | 1 | |
| (14) | Rear bracket screw | 8 | |
| (15) | Bystarter arm | 4 | |
| (16) | Spring | 1 | |
| (17) | Bystarter arm shaft | 1 | |
| (18) | Bystarter arm screw | 4 | |

Front/Rear Bracket Installation

Install the front bracket and screws loosely.
 Place the carburetors on a flat surface with the front side facing up.
 Press the carburetors together carefully and tighten the front bracket screws in the sequence shown in two or three steps to prevent carburetor misalignment.



Install the rear bracket and screws using the sequence shown in two or three steps.



Pilot Screw Adjustment (SW type only)

Idle Drop Procedure

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 may cause loss of consciousness and lead to death.

NOTE

- Make sure the carburetor synchronization is within specification before pilot screw adjustment.
- The pilot screws are factory pre-set and no adjustment is necessary unless the pilot screws are replaced.
- Use a tachometer with graduations of 50 min⁻¹ (rpm) change.
- Insert the screwdriver from the direction as shown to turn each pilot screw.

1. Turn each pilot screw clockwise until it seats lightly, then back it out to the specification given. This is an initial setting prior to the final pilot screw adjustment.

Initial Opening: 2-3/4 Turns out

CAUTION

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

2. Warm up the engine to operating temperature. Stop and go riding for 10 minutes is sufficient.
3. Attach a tachometer according to its manufacturer's instructions.
4. Adjust the idle speed to the specified rpm with the throttle stop screw.

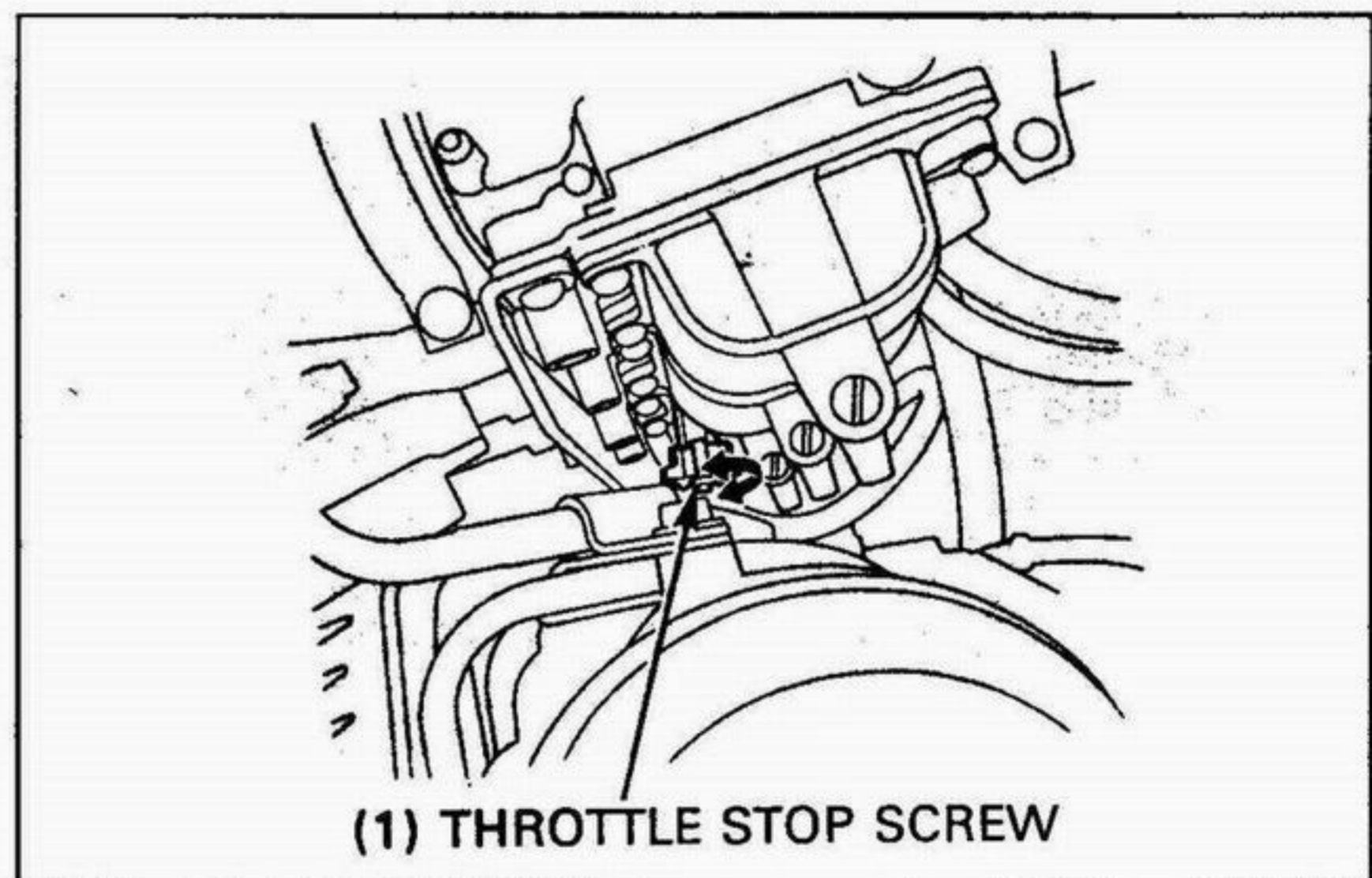
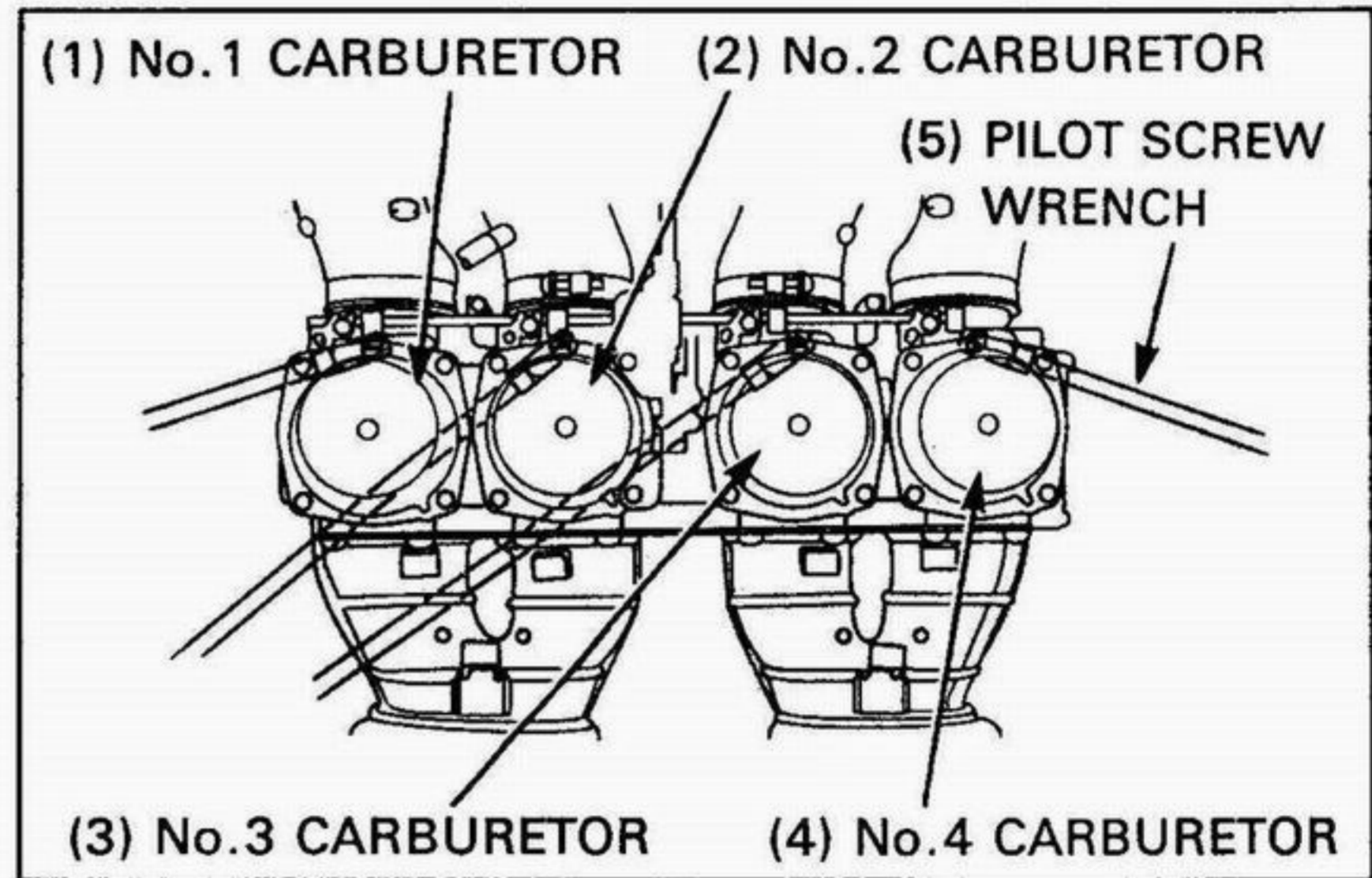
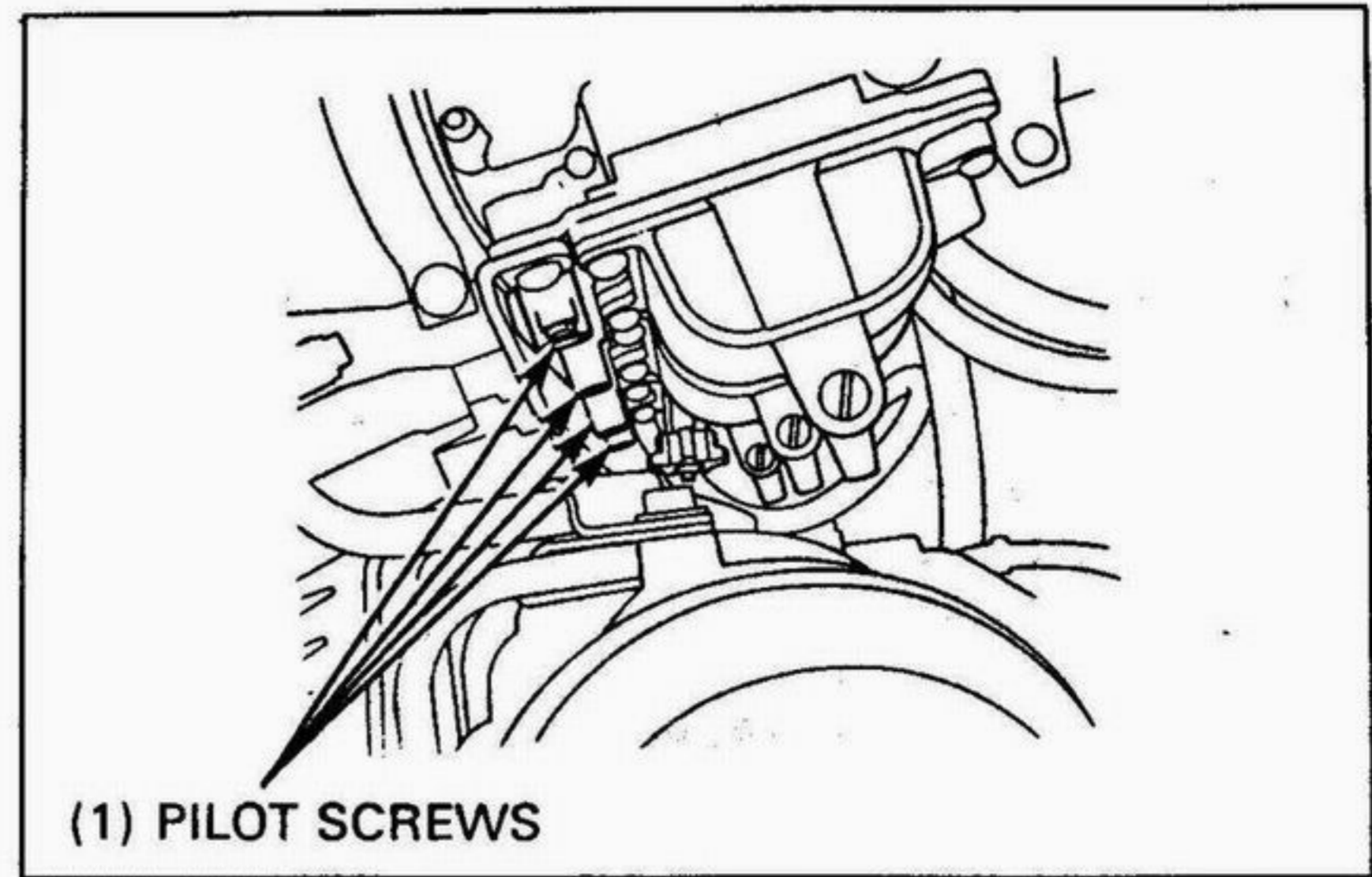
Idle Speed: 1,200 ± 50 min⁻¹(rpm)

5. Turn all pilot screws 1/2 turn counterclockwise from the initial setting.

S. TOOL

Pilot screw wrench **07KMA-MN90000**

6. If the engine speed increases by 50 min (rpm) or more, turn all pilot screws out by successive 1/2 turn increments until engine speed does not increase.
7. Adjust the idle speed with the throttle stop screw.
8. Turn the No.2 carburetor pilot screw in until the engine speed drops 50 min (rpm).
9. Then turn the No.2 carburetor pilot screw counterclockwise 1/2 turn from the position obtained in step 8.
10. Adjust the idle speed with the throttle stop screw.
11. Perform steps 8,9 and 10 for the No. 1,3 and 4 carburetor pilot screws.



6. Engine Removal/Installation

Service Information

6-1 Engine Removal/Installation

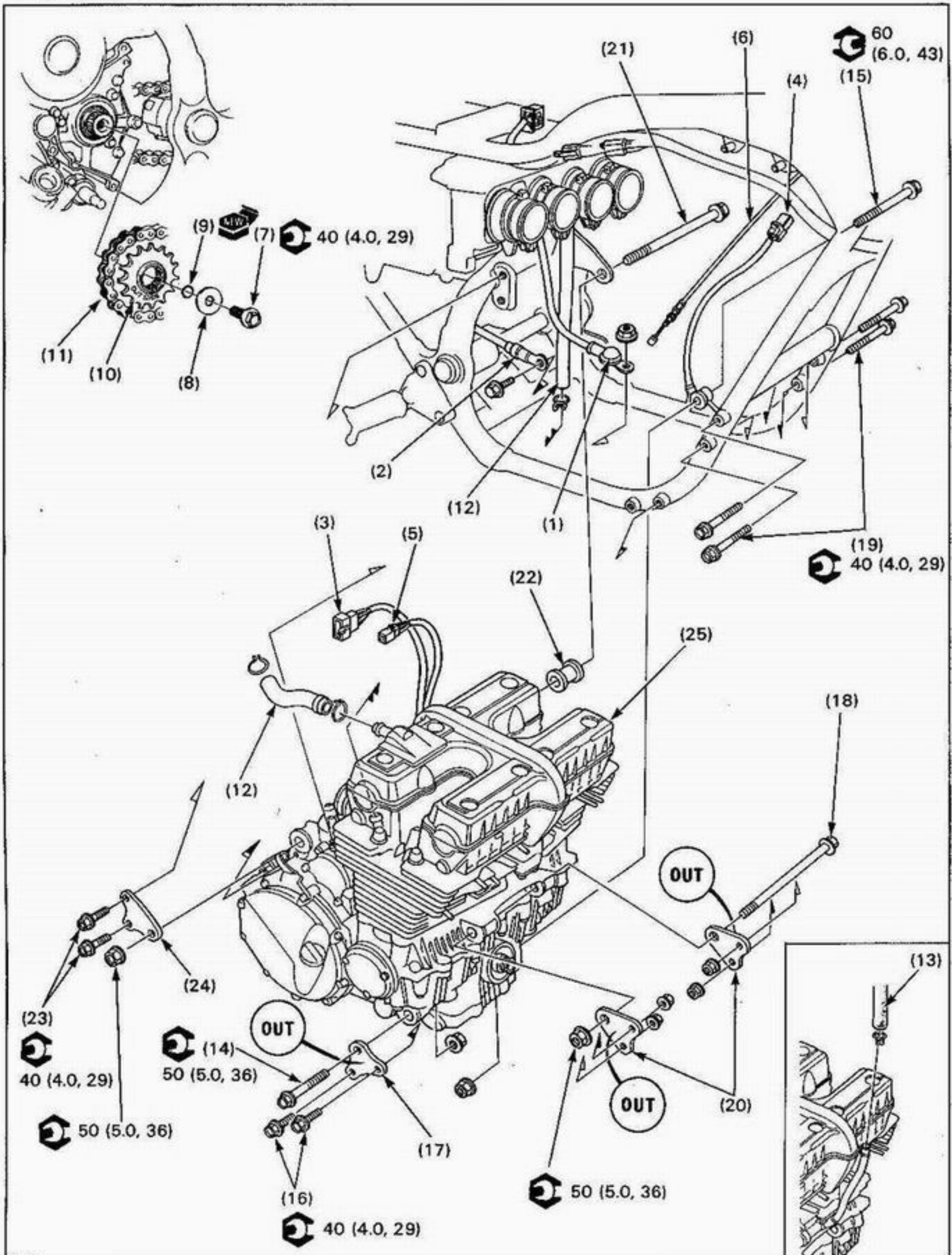
6-2

Service Information

- A floor jack or other adjustable support is required to support and maneuver the engine.
- The following components can be serviced with the engine installed in the frame:
 - Oil pump (Section 4)
 - Cylinder head/cylinder/piston (Section 7)
 - Clutch/gearshift linkage (Section 8)
 - Alternator (Section 13)
- The following components require engine removal for service:
 - Transmission/shift forks/shift drum (Section 9)
 - Crankshaft/connecting rod/starter clutch (Section 9)

6

Engine Removal/Installation



NOTE

- Support the motorcycle using a safety stand or a hoist.
- Turn the ignition switch OFF and disconnect the battery negative terminal.
- When removing the engine, be careful not to pinch the wire harnesses between the engine and frame.
- Note the direction of the engine mounting bolts.
- At installation, first install all engine mounting bolts and nuts loosely, then tighten the nuts to the specified torque.

Requisite Service

- Exhaust system removal/installation (page 2-6)
- Drive sprocket cover removal/installation (page 8-9)
- Fuel tank removal/installation (page 2-3)
- Ignition coil removal/installation (page 14-7)
- Carburetor removal/installation (page 5-4)
- Oil cooler removal/installation (page 4-5)
- Engine oil draining/refill
-
- Oil filter removal/installation

| Procedure | Q'ty | Remarks |
|---|------|--|
| Removal Order | | Installation is in the reverse order of removal. |
| (1) Starter motor cable | 1 | |
| (2) Engine ground (-) cable | 1 | |
| (3) Alternator wire connector | 1 | |
| (4) Side stand switch connector | 1 | |
| (5) Pulse generator/oil pressure/neutral switch connector | 1 | |
| (6) Clutch cable | 1 | |
| (7) Drive sprocket bolt | 1 | |
| (8) Washer | 1 | |
| (9) O-ring | 1 | |
| (10) Drive sprocket | 1 | Loosen the drive chain. |
| (11) Drive chain | 1 | |
| (12) Breather tube | 2 | |
| (13) No. 16 tube | 1 | Switzerland and Austria model only. |
| (14) Right engine lower mounting bolt/nut | 1/1 | |
| (15) Left engine lower mounting bolt/nut | 1/1 | |
| (16) Right engine lower bracket bolt | 2 | |
| (17) Right engine lower bracket | 1 | |
| (18) Engine front mounting bolt/nut | 1/1 | |
| (19) Engine front bracket bolt/nut | 4/4 | |
| (20) Engine front bracket | 2 | |
| (21) Engine rear mounting bolt/nut | 1/1 | |
| (22) Engine rear mounting collar | 1 | |
| (23) Engine rear bracket bolt | 2 | |
| (24) Engine rear bracket | 1 | |
| (25) Engine assembly | 1 | Move the engine out of the frame on the right. CAUTION • Carefully align mounting points with the jack to prevent damage to mounting bolt threads, wire harnesses and cables. |

MEMO

7. Cylinder Head/Cylinder/Piston

| | | | |
|--------------------------------------|------------|--|-------------|
| Service Information | 7-1 | Cylinder Head Removal/Installation | 7-8 |
| Troubleshooting | 7-1 | Cylinder Head Disassembly/Assembly | 7-10 |
| Camshaft Removal/Installation | 7-2 | Cylinder, Piston Removal/Installation | 7-12 |

Service Information

- Camshaft service can be done with the engine in the frame.
- The engine uses hydraulic tappets that eliminate manual valve adjustments. The hydraulic tappets have de-foaming chambers. Before assembling, fill the chambers with clean engine oil.
- When adjusting the valve timing, do not turn the camshaft before installing camshaft holders and filling the de-foaming chambers with engine oil.
- Whenever the camshaft is removed, bleed air from the tappets thoroughly (page 7-7).
- Camshaft lubricating oil is fed through oil passages in the cylinder head. Clean the oil passages before assembling the cylinder head.
- Clean all disassembled parts with clean, non-flammable or high flash-point solvent and dry them with compressed air before inspection.
- Before reassembly, lubricate the camshaft journals and cam lobes with a 50-50 solution of disulfide grease and engine oil.
- When disassembling, mark and store the disassembled parts to ensure that they are reinstalled in their original locations.

7

Troubleshooting

- Engine top-end problems usually affect engine performance. These can be diagnosed by a compression or leak down test, or by tracing noises in the top-end with a sounding rod or stethoscope.
- If performance is poor at low speeds, check for white smoke in crankcase breather tube. If the tube is smoky, check for a seized piston ring.

Compression Too Low, Hard Starting Or Poor Performance At Low Speed

- Valves
 - Faulty hydraulic tappet
 - Burned or bent valves
 - Incorrect valve timing
 - Broken valve spring
 - Uneven valve seating
- Cylinder head
 - Leaking or damaged head gasket
 - Warped or cracked cylinder head
- Cylinder, piston
 - Leaking cylinder headgasket
 - Loose spark plug
 - Worn, stuck or broken piston ring
 - Worn or damaged cylinder and piston
 - Worn or damaged cylinder and piston

Compression Too High, Overheating Or Knocking

- Excessive carbon build-up in cylinder head or on top of piston

Rough Idle

- Low cylinder compression

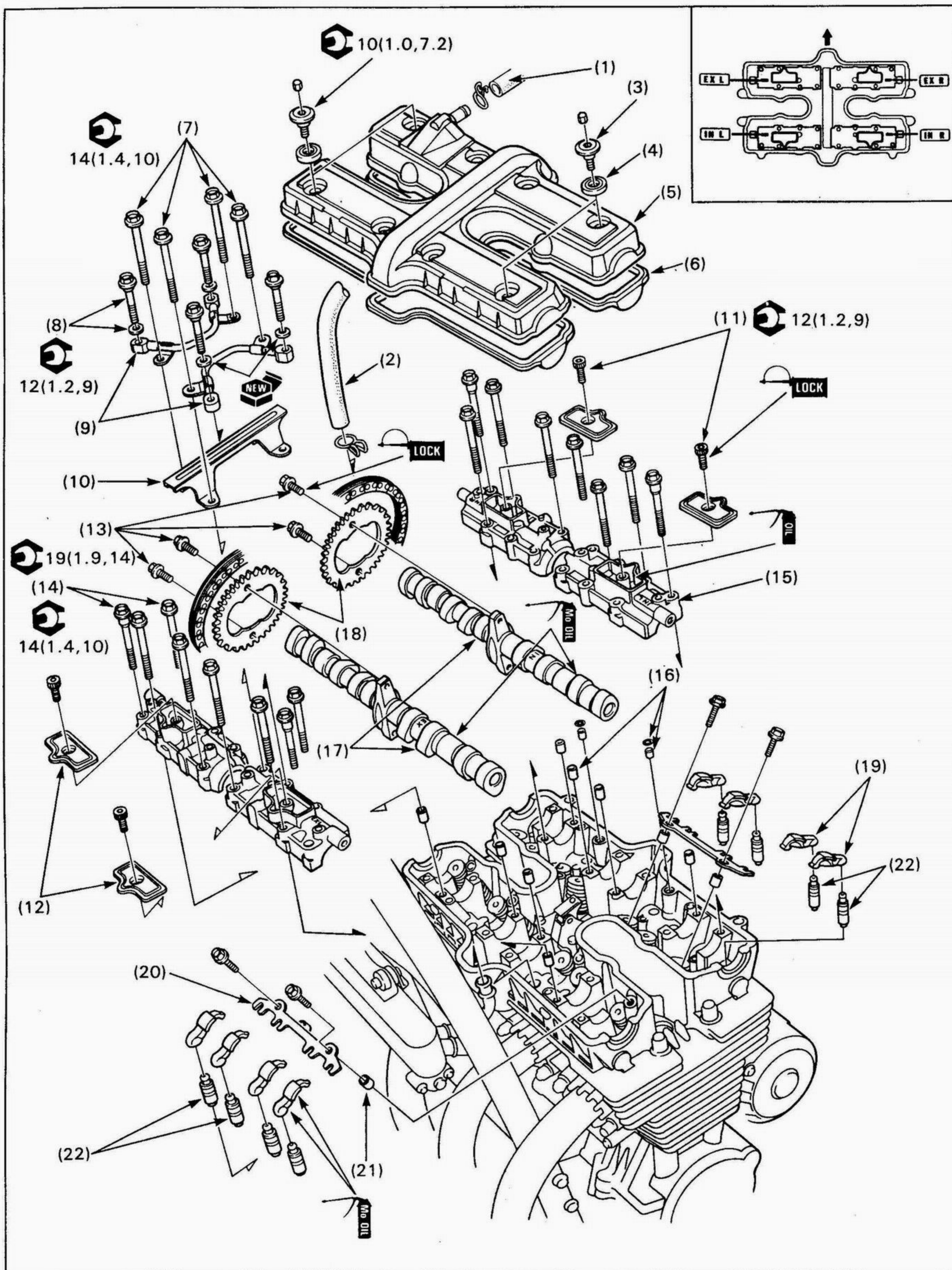
Excessive Noise

- Hydraulic valve tappet system
 - Low engine oil level
 - Contaminated oil
 - Low oil pressure
 - Damaged hydraulic tappet
- Cylinder head
 - Sticking valve or broken valve spring
 - Damaged or worn camshaft
 - Loose or worn cam chain
 - Worn or damaged cam chain
 - Worn or damaged cam chain tensioner
 - Worn cam sprocket teeth
 - Worn rocker arm and/or shaft
- Cylinder, piston
 - Worn cylinder and piston
 - Worn cylinder and piston
 - Worn piston pin and piston pin hole

Excessive Smoke

- Cylinder head
 - Worn valve stem or valve guide
 - Damaged stem seal
- Cylinder, piston
 - Worn cylinder, piston, or piston rings
 - Improper installation of piston rings
 - Scored or scratched piston or cylinder wall

Camshaft Removal/Installation



CAUTION

- Do not turn the camshaft before filling the de-foaming chamber.

NOTE

- Do not allow dust or dirt to enter the cylinder.

Requisite Service

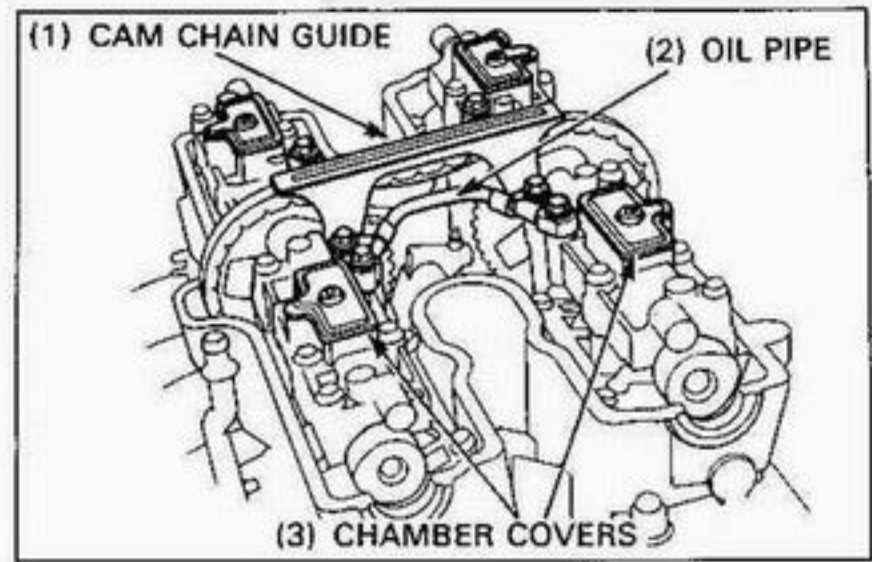
- Fuel tank removal/installation (page 2-3)
- Ignition coil removal/installation (page 14-7)

| Procedure | | Q'ty | Remarks |
|-----------|---------------------------------------|------|--|
| | Camshaft Removal Order | | Installation is in the reverse order of removal. |
| (1) | Crankcase breather tube | 1 | |
| (2) | No. 16 tube | 1 | Switzerland and Austria model only. |
| (3) | Cylinder head cover bolt | 8 | |
| (4) | Sealing washer | 8 | Install with the "UP" mark facing up. |
| (5) | Cylinder head cover | 1 | |
| (6) | Gasket | 1 | NOTE • To hold the gasket on the cylinder head cover, apply a small amount of adhesive to several points on the cover. |
| (7) | Cam chain guide bolt | 4 | |
| (8) | Oil pipe bolt/sealing washer | 8/4 | |
| (9) | Oil pipe | 2 | CAUTION • During removal and installation, do not bend the oil pipe. |
| (10) | Cam chain guide | 1 | |
| (11) | De-foaming chamber cover bolt | 4 | |
| (12) | De-foaming chamber cover | 4 | |
| (13) | Cam sprocket bolt | 4 | NOTE • Remove the two cam sprocket bolts first from both sprockets, turn the crankshaft clockwise, then remove the two other sprocket bolts. |
| (14) | Camshaft holder bolt | 16 | Camshaft removal (page 7-4)/Camshaft installation (page 7-5) |
| (15) | Camshaft holder | 4 | |
| (16) | Dowel pin/O-ring | 10/2 | |
| (17) | Camshaft | 2 | |
| (18) | Cam sprocket | 2 | |
| | Hydraulic Tappet Removal Order | | Installation is in the reverse order of removal. |
| (19) | Rocker arm | 16 | |
| (20) | Rocker arm holder | 4 | |
| (21) | Dowel pin | 8 | |
| (22) | Hydraulic Tappet | 16 | Inspection (page 7-7), Installation (page 7-7) |

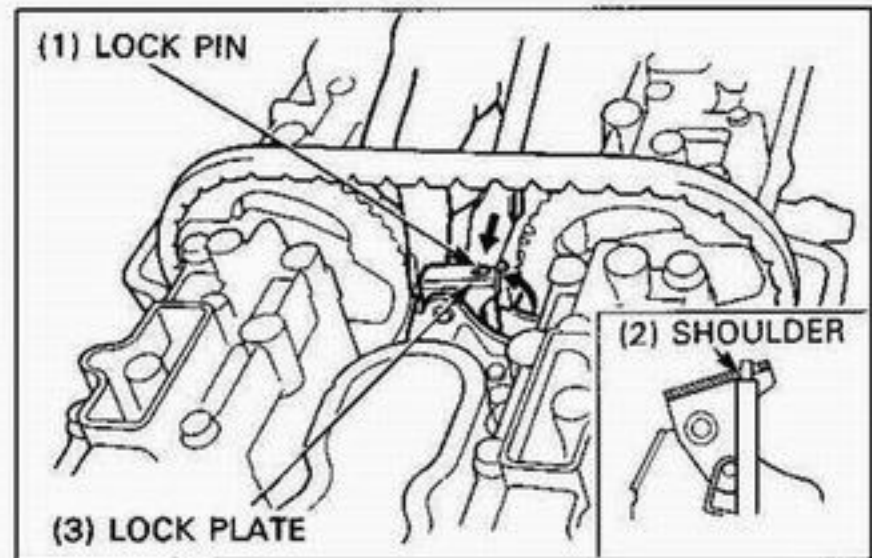
Camshaft Removal

Remove the cylinder head cover.

Remove the cam chain guide and oil pipes.
Remove the de-foaming chamber covers.



Loosen the cam chain by pushing the cam chain tensioner lock pin down and pulling the lock plate up until the lock plate resets on the lock pin shoulder as shown.



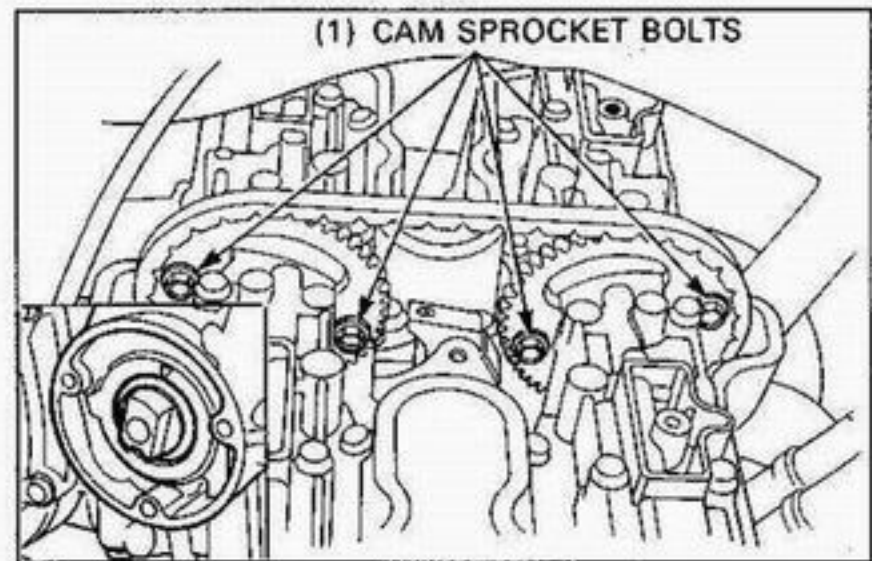
Remove the right crankcase cover.

Remove the two cam sprocket bolts first from both sprockets.

Rotate the crankshaft clockwise one turn (360°) and remove the two other sprocket bolts.

NOTE

- Be careful not to let the sprocket bolts fall into the crankcase.

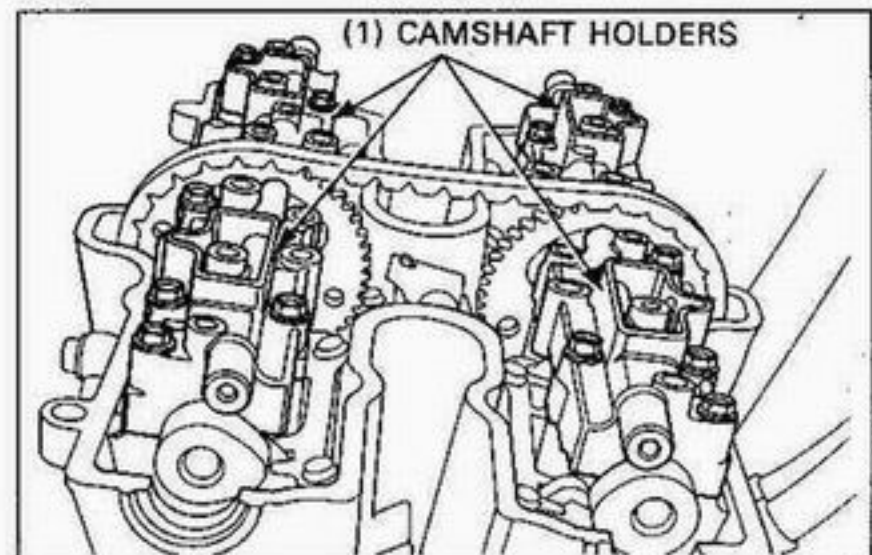


Remove the cam sprockets from camshaft flange with the cam chain.

Remove the camshaft holder bolts and holders.

NOTE

- Loosen the holder bolts in a crisscross pattern in 2 or 3 steps.

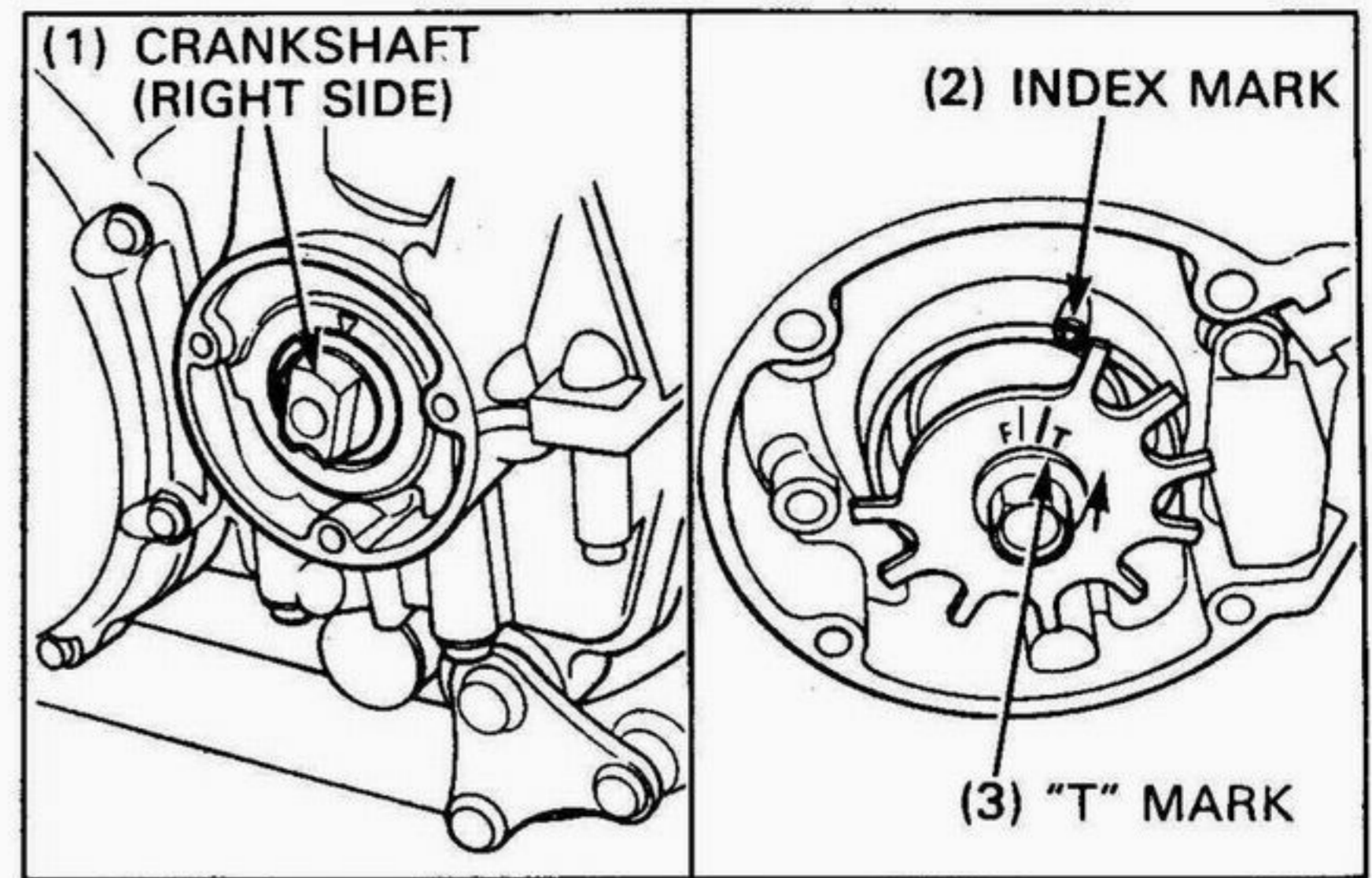


Remove the dowel pins and O-rings.

Remove the camshafts and cam sprockets.

Camshaft Installation

Turn the crankshaft clockwise and align the "T" mark on the pulse rotor with the index mark on the left crankcase.



Coat the cylinder head journal surfaces of the camshaft with molybdenum disulfide oil.

Install the intake and exhaust camshafts and sprockets through the cam chain with the timing marks facing the right side.

Install the cam chain over the sprockets.

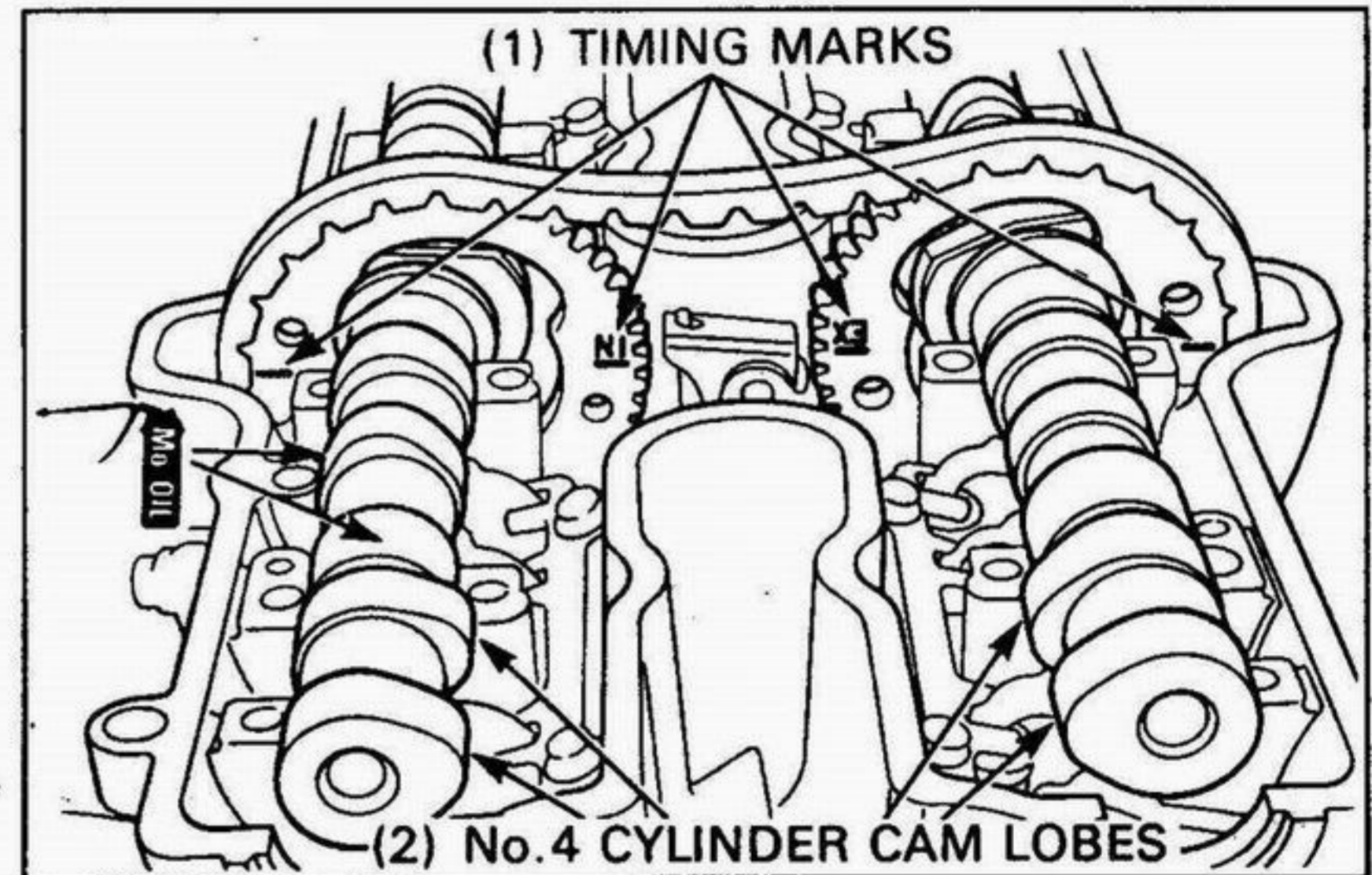
NOTE

- The camshafts are identified by marks:
 "IN": Intake camshaft
 "EX": Exhaust camshaft

Rotate the camshafts so the No. 4 cylinder cam lobes face each other.

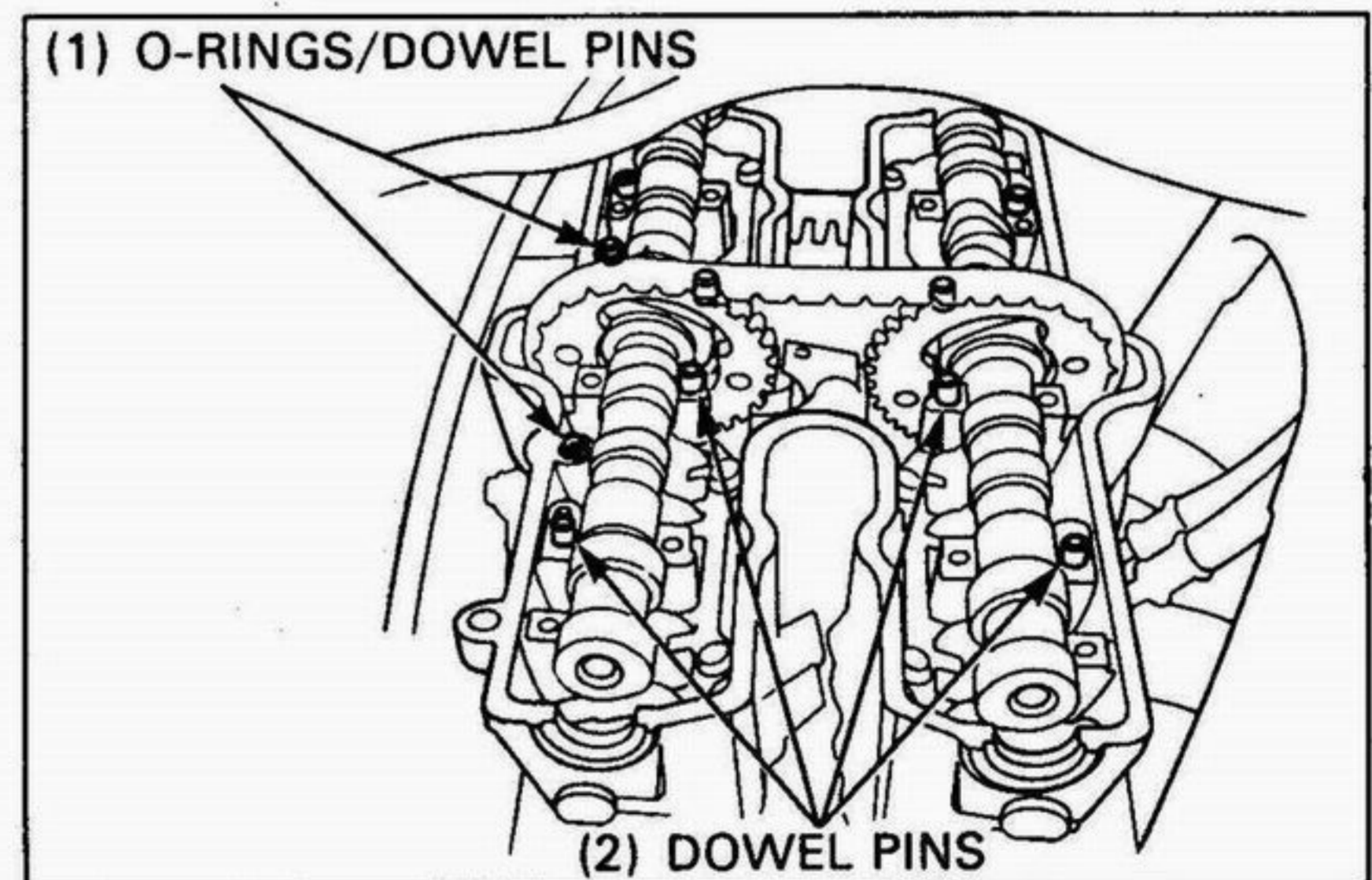
Install the two O-rings and dowel pins into the oil passage holes.

Install the eight dowel pins into the camshaft holder holes.



Install the two O-rings and dowel pins into the oil passage holes.

Install the eight dowel pins into the camshaft holder holes.



Install each camshaft holder in its original location.

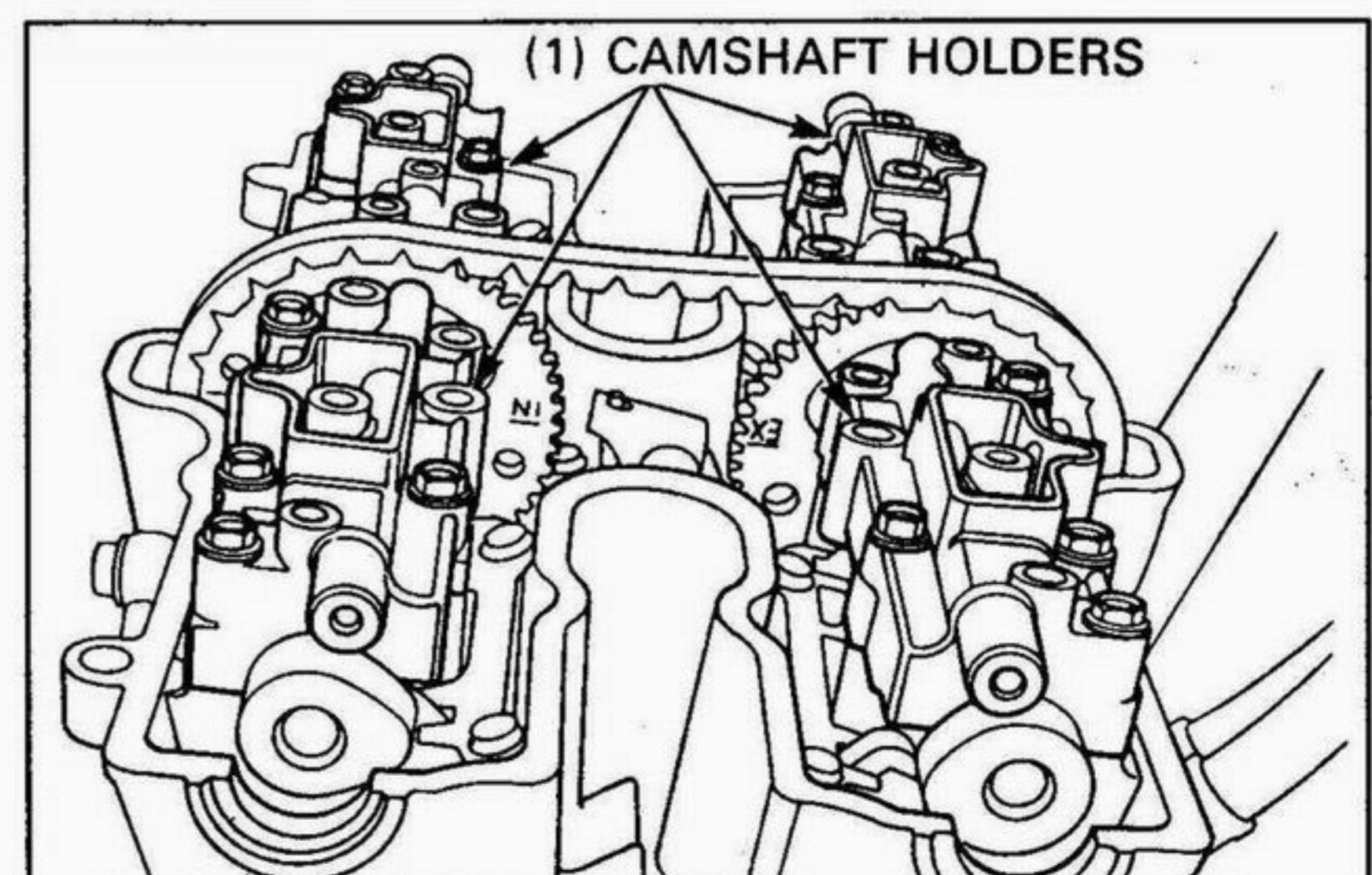
NOTE

- The holders are identified by marks:
- "IN R": Intake right
 - "IN L": Intake left
 - "EX R": Exhaust right
 - "EX L": Exhaust left

Temporarily tighten the camshaft holder bolts.

Align cam sprocket timing marks with the top of the cylinder head.

Install the cam sprockets on the camshaft flange and recheck that the timing marks align with the top of the cylinder head.



Fill the de-foaming chambers with clean engine oil.

CAUTION

- Do not turn the camshaft before filling the de-foaming chamber.

Apply a locking agent to the cam sprocket bolt threads, then install and tighten the cam sprocket bolts.

Torque: 19 N·m (1.9 kg-m, 14 ft-lb)

Turn the crankshaft clockwise (viewed from the right side of the engine) and re-align the "T" mark on the pulse rotor with the index on the crankcase.

Make sure that the "IN" and "EX" lines on the cam sprockets align with the cylinder head.

Push the cam chain tensioner lock pin forward to release it from the lock plate.

Install the cam chain guide.

Install the oil pipes with the oil bolts and new sealing washers.

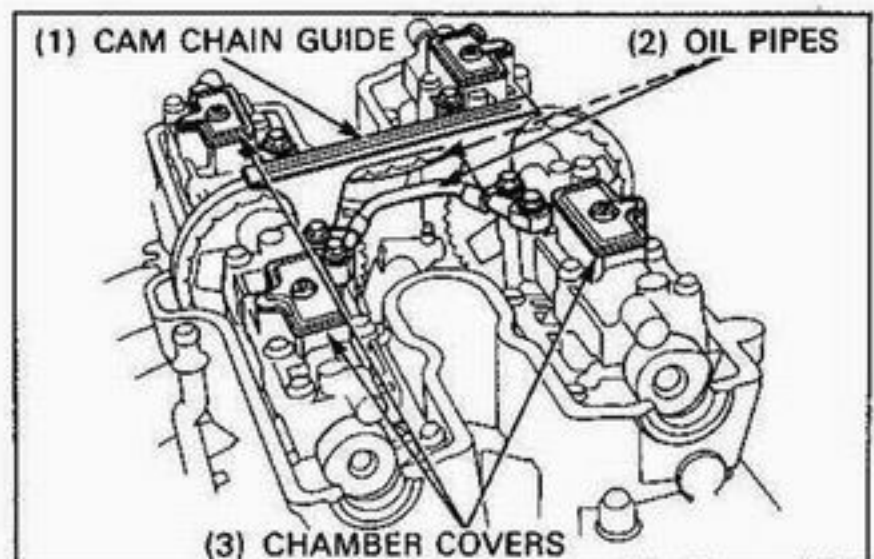
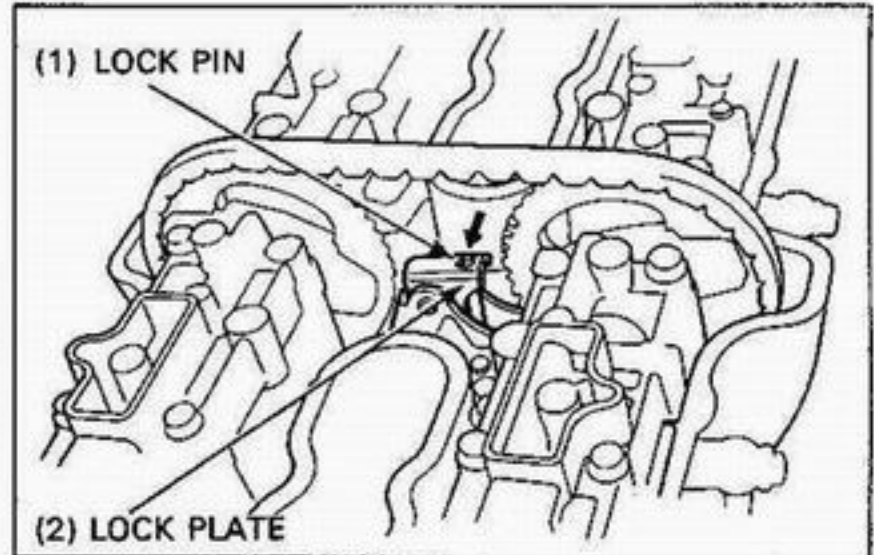
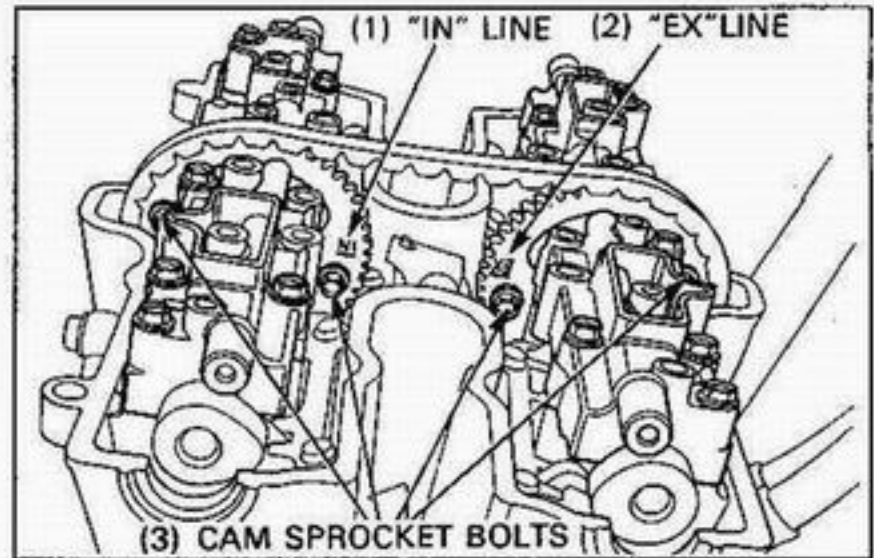
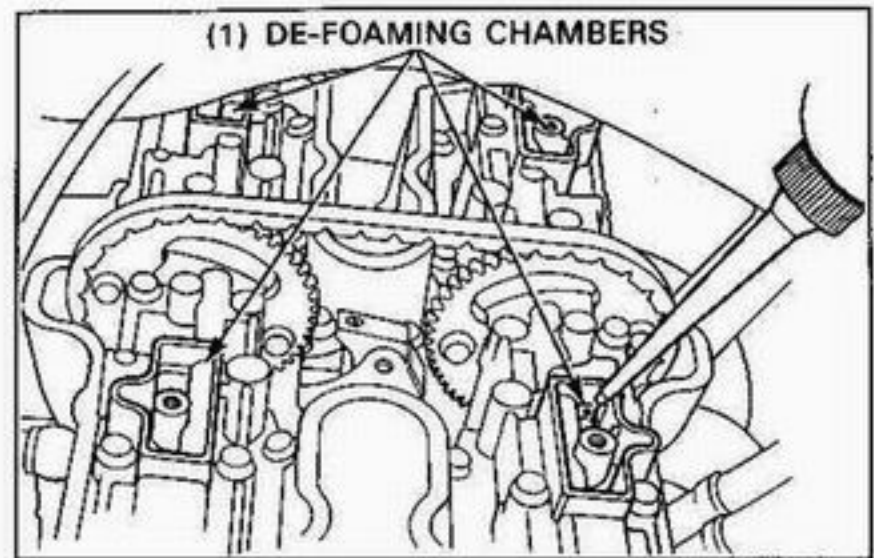
Tighten the camshaft holder bolts and the oil bolts to the specified torques in a crisscross pattern in 2 or 3 steps.

Torque:

Camshaft holder bolts: 14 N·m (1.4 kg-m, 10 ft-lb)

Oil bolts : 12 N·m (1.2 kg-m, 9ft-lb)

Install the de-foaming chamber covers with the socket bolts.



Hydraulic Tappet Inspection

Inspect the hydraulic tappets for wear, damage and clogged oil holes.

CAUTION

- Never attempt to disassemble the tappets.
- Always use the special tool when bleeding the tappets. Use of wire can damage them.

Measure the free length of each hydraulic tappet as follows:

Attach the Hydraulic Tappet Bleeder to the tappet and compress and extend the tappet slowly in a jar filled with kerosene.

NOTE

- Keep the hydraulic tappet below the surface of the kerosene.
- Hold the tappet upright while compressing and extending it.

Continue priming the hydraulic tappet until the air bubbles stop and the tappet no longer collapses.

S TOOL

Hydraulic tappet bleeder 07973-MJ00000

Quickly try to compress the tappet by hand. Measure the compression stroke with the dial gauge.

Compression stroke: 0-0.2 mm (0-0.008 in)

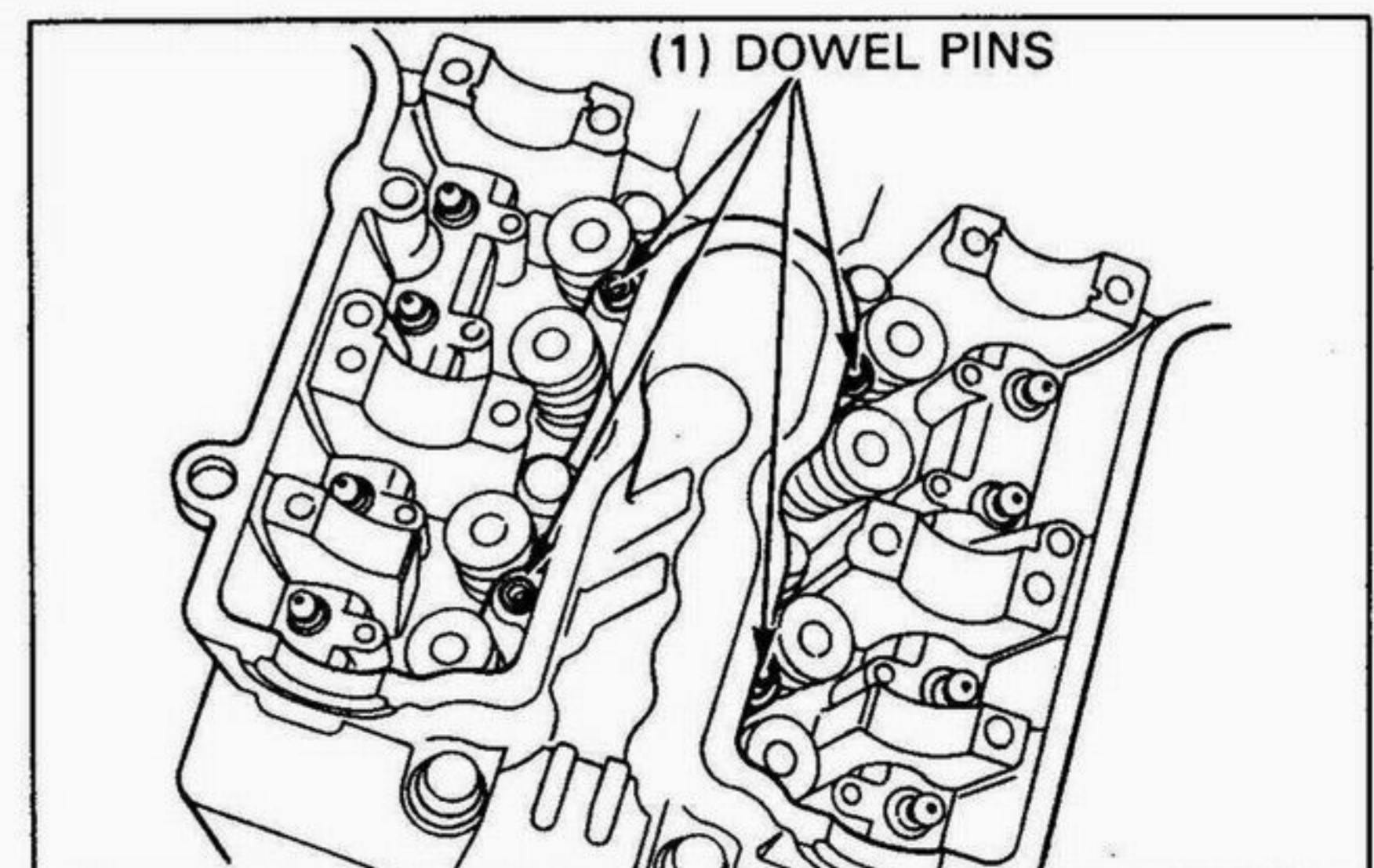
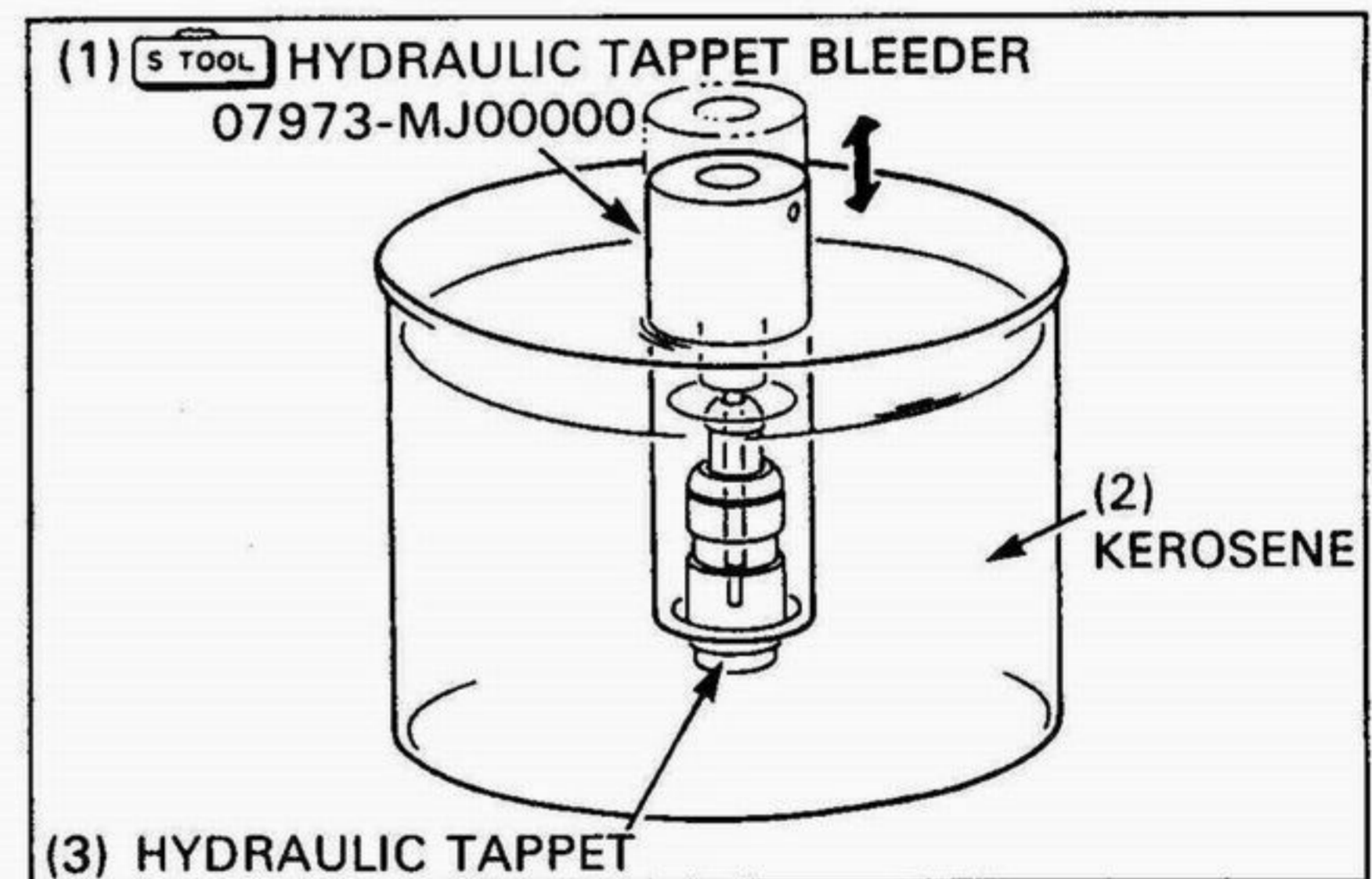
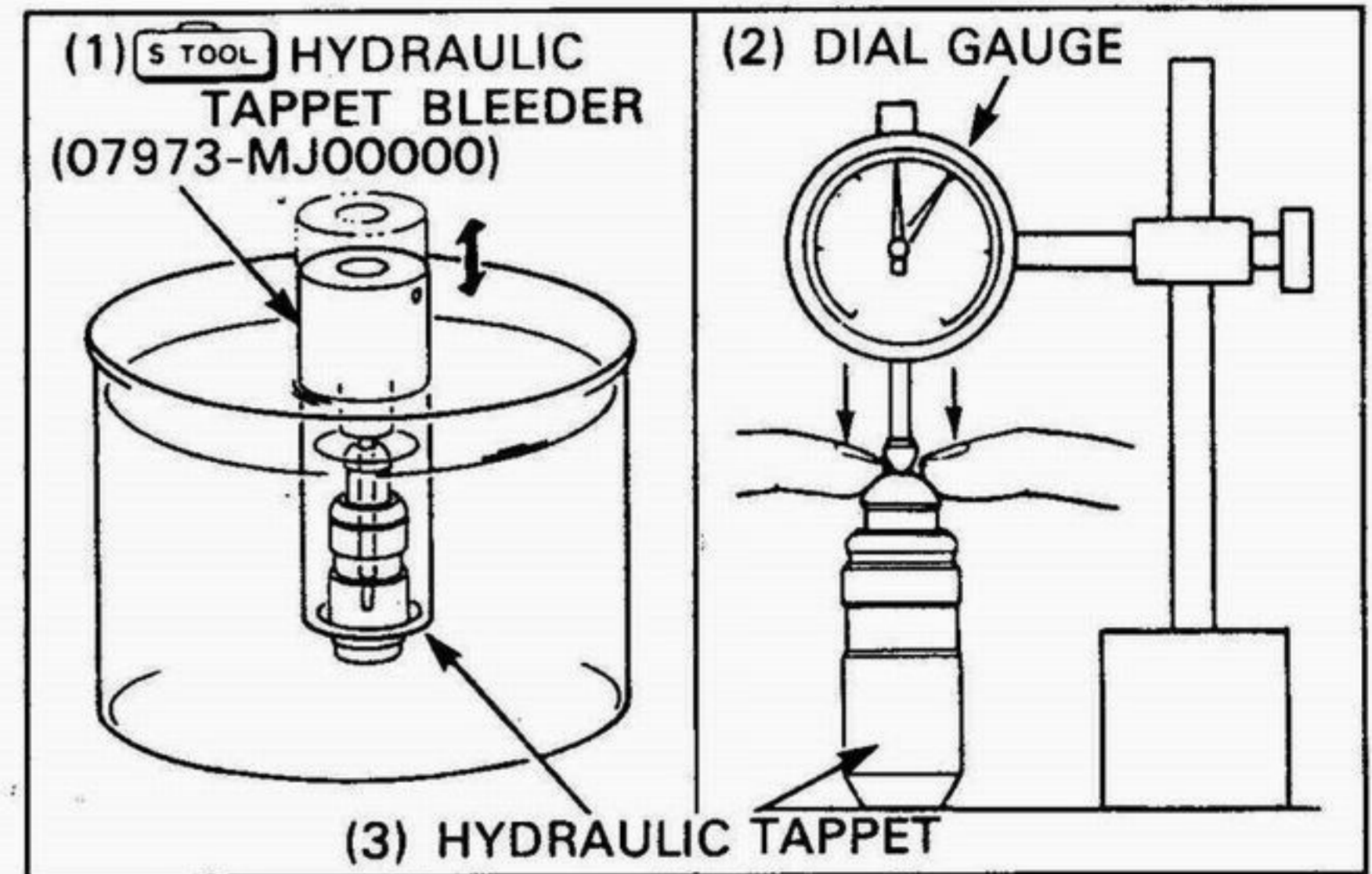
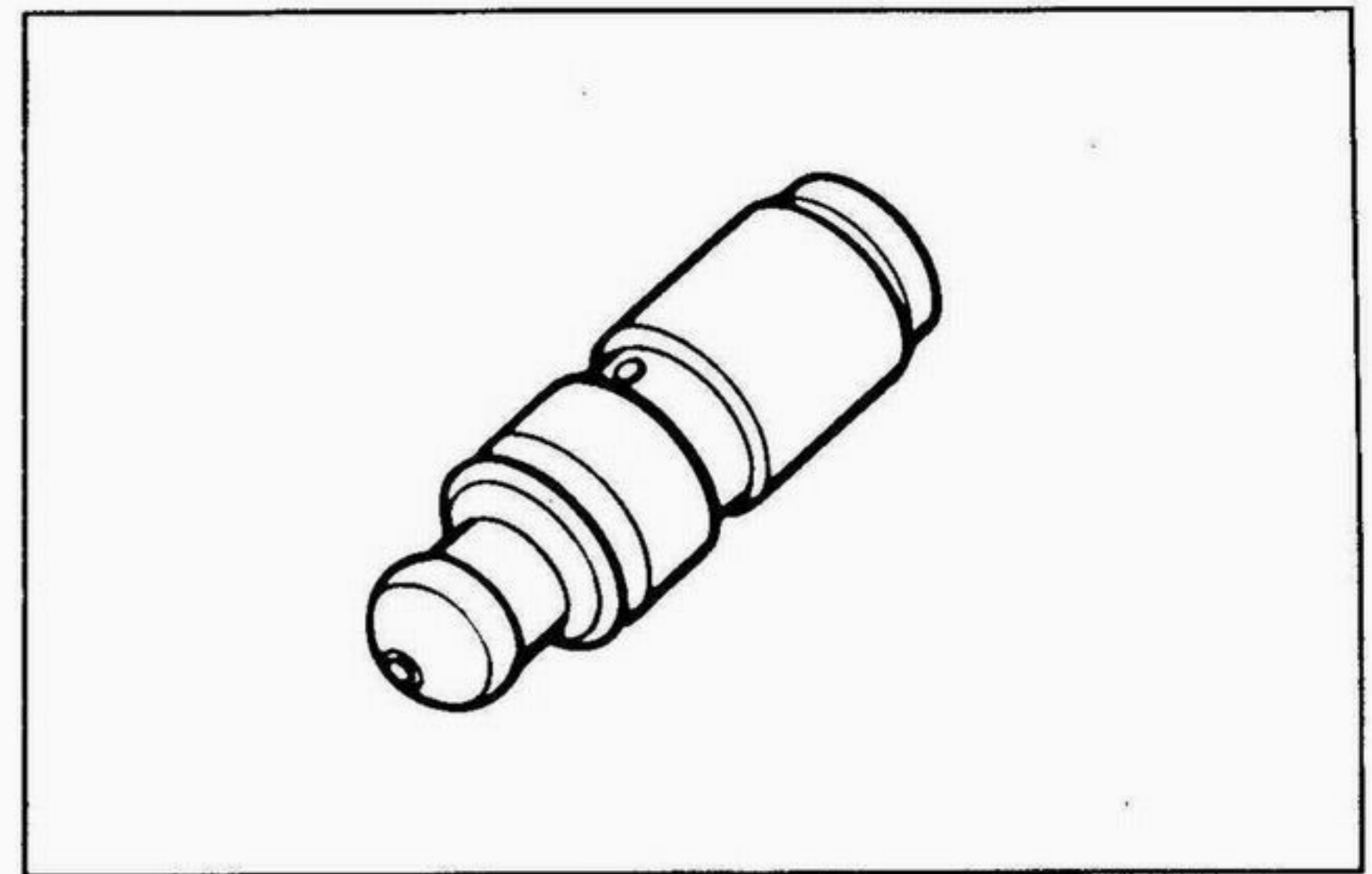
Hydraulic Tappet Installation

Place the tappet in a jar filled with kerosene. Place the tappet bleeder over the tappet. Hold the tappet upright and pump the tappet until air bubbles stop coming out. Remove the tool, and try to quickly compress the tappet by hand. You should not be able to compress it more than 0.2 mm (0.08 in). Remove the tappet from the fluid keeping it upright.

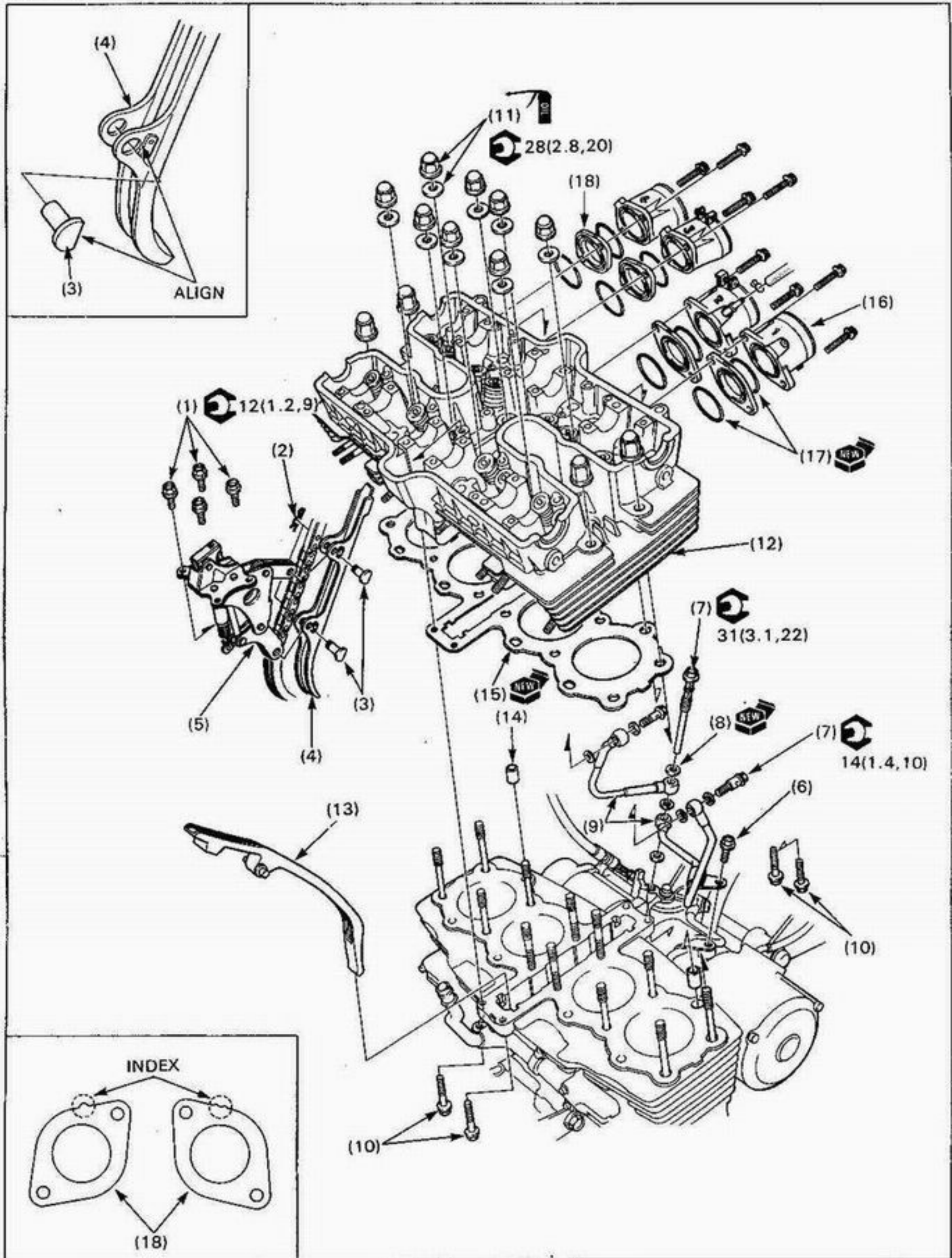
S TOOL

Hydraulic tappet bleeder 07973-MJ00000

Fill the tappet hole with clean engine oil. Install the hydraulic tappets in the cylinder head. Install the dowel pins into the cylinder head. Install the rocker arm holders and tighten the bolts. Install the rocker arms.



Cylinder Head Removal/Installation



NOTE

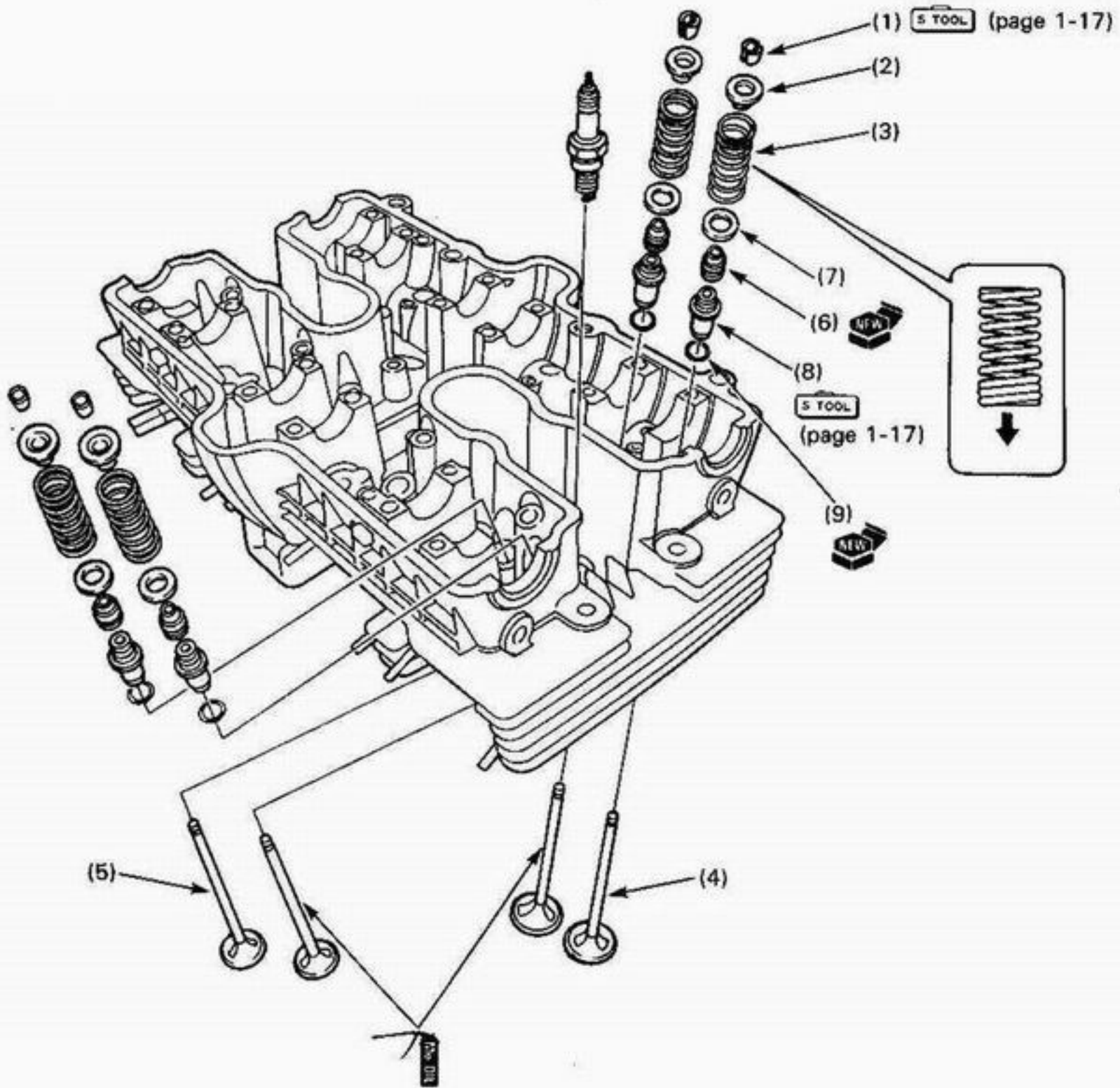
• Cylinder head service can be done with the engine in the frame.

Requisite Service

- Camshaft removal/installation (page 7-2)
- Exhaust system removal/installation (page 2-6)
- Carburetor removal/installation (page 5-4)

| Procedure | Q'ty | Remarks |
|---------------------------------------|------|---|
| Removal Order | | Installation is in the reverse order of removal. |
| (1) Cam chain tensioner mounting bolt | 4 | Be careful not to let the clips and pins fall into the crankcase. |
| (2) Clip | 2 | |
| (3) Pin | 2 | |
| (4) Cam chain tensioner slipper | 1 | Attach a piece of wire to the cam chain to prevent it from being dropped into the crankcase. then remove it. |
| (5) Cam chain tensioner body | 1 | |
| (6) Oil pipe mounting bolt | 1 | CAUTION • During removal and installation, do not bend the oil pipes. |
| (7) Oil pipe bolt | 3 | |
| (8) Sealing washer | 7 | |
| (9) Oil pipe | 2 | |
| (10) Cylinder head mounting bolt | 4 | |
| (11) Cylinder head cap nut/washer | 12/8 | Remove the nuts in a crisscross pattern in 2 or 3 steps. |
| (12) Cylinder head assembly | 1 | |
| (13) Cam chain guide | 1 | |
| (14) Dowel pin | 2 | |
| (15) Gasket | 1 | |
| (16) Carburetor insulator | 4 | Install them with the identification marks (1: No.1 cylinder, 2: No.2 cylinder, 3: No.3 cylinder, 4: No.4 cylinder) |
| (17) O-ring | 8 | Each insulator plate is indexed. Two index tabs: No. 1, 2 cylinder One index tab: No. 3, 4 cylinder |
| (18) Insulator plate | 4 | |

Cylinder Head Disassembly/Assembly



CAUTION

- Do not compress the valve springs more than necessary.

NOTE

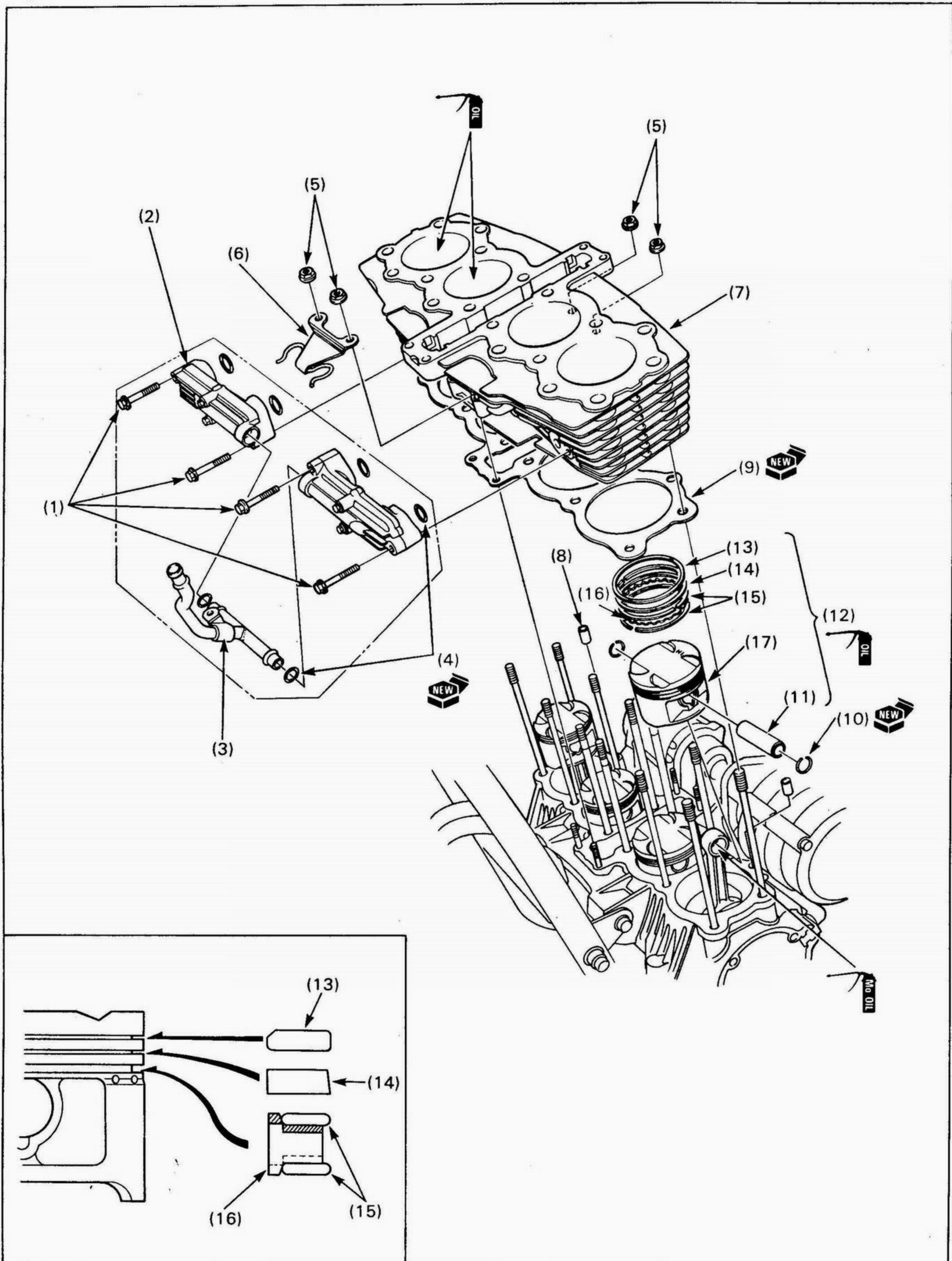
- Make all parts during disassembly so they can be reinstalled in their original positions.
- Remove carbon deposits from the combustion chamber and clean off the head gasket surface before assembly.
 - Avoid damaging the gasket surface.
 - Gaskets will come off easier if soaked in solvent.
- For valve guide replacement, see section 9 of the Common Service Manual.

Requisite Service

- Cylinder head removal/installation (page 7-8)

| Procedure | | Q'ty | Remarks |
|-----------|--------------------------|------|---|
| | Disassembly Order | | Assembly is in the reverse order of disassembly. |
| (1) | Valve spring cotter | 32 | To prevent loss of spring tension, do not compress the valve more than necessary. |
| (2) | Retainer | 16 | |
| (3) | Valve spring | 16 | Install them with the tightly wound coils facing down. |
| (4) | Inlet valve | 8 | |
| (5) | Exhaust valve | 8 | |
| (6) | Valve stem seal | 16 | To avoid damaging the stem seal, turn the valve slowly when inserting. |
| (7) | Valve spring seat | 16 | |
| (8) | Valve guide | 16 | |
| (9) | O-ring | 16 | |

Cylinder, Piston Removal/Installation



NOTE

- Do not damage the gasket surface.
- Do not let any material fall into the crankcase.

Requisite Service

- Cylinder head removal/installation (page 7-8)

| Procedure | | Q'ty | Remarks |
|----------------------------------|-------------------------------|------|--|
| Removal Order | | | Installation is in the reverse order of removal. |
| (1) | Reed valve case mounting bolt | 4 | Switzerland and Austria model only |
| (2) | Reed valve case | 2 | |
| (3) | Reed valve case joint pipe | 1 | |
| (4) | O-ring | 6 | |
| (5) | Cylinder holding nut | 4 | |
| (6) | Oil hose stay | 1 | |
| (7) | Cylinder | 1 | |
| (8) | Dowel pin | 2 | |
| (9) | Gasket | 1 | |
| (10) | Piston pin clip | 8 | Install new piston pin clips. |
| (11) | Piston pin | 4 | |
| (12) | Piston assembly | 4 | NOTE • At installation, install the piston with the "IN" mark facing towards the intake side. |
| Piston Ring Removal Order | | | Installation is in the reverse order of removal. |
| (13) | Top ring | 4 | NOTE • Use care when removing or installing the rings. • Insert the outside surface of the ring into the proper ring groove and roll the ring around the groove to make sure that the ring has a free fit around the piston's circumference. |
| (14) | Second ring | 4 | |
| (15) | Side rail | 8 | |
| (16) | Spacer | 4 | |
| (17) | Piston | 4 | |

MEMO

8. Clutch/Gearshift Linkage

| | | | |
|--|------------|--|-------------|
| Service Information | 8-1 | Clutch Installation | 8-6 |
| Troubleshooting | 8-1 | Drive Sprocket Cover Removal/Installation | 8-9 |
| Clutch Cover Removal/Installation | 8-2 | Gearshift Linkage Removal/Installation | 8-10 |
| Clutch Removal | 8-4 | | |

Service Information

NOTE

- The change cover cap must be removed for the drive sprocket cover removal.

- Clutch maintenance can be done with the engine in the frame.
- Transmission oil viscosity and level have an effect on clutch disengagement. When the clutch does not disengage or the vehicle creeps with the clutch disengaged, inspect the transmission oil level before servicing the clutch system.
- If the shift forks, drum and transmission require servicing, remove the engine and separate the crankcase (section 9)

8

Troubleshooting

Clutch Lever Too Hard

- Damaged, kinked or dirty clutch cable
- Improperly routed clutch cable
- Damaged clutch lifter mechanism
- Faulty clutch lifter plate bearing

Clutch Will Not Disengage Or Motorcycle Creeps With Clutch Disengaged

- Too much clutch lever free play
- Clutch plates warped
- Oil level too high, improper oil viscosity, or additive used

Clutch Slips

- Clutch lifter sticking
- Worn clutch discs
- Weak clutch springs
- No clutch lever free play

Hard To Shift

- Misadjusted clutch cable
- Damaged or bent shift fork
- Bent shift fork shaft
- Incorrect engine oil viscosity
- Incorrect gearshift spindle assembly
- Damaged shift drum cam grooves

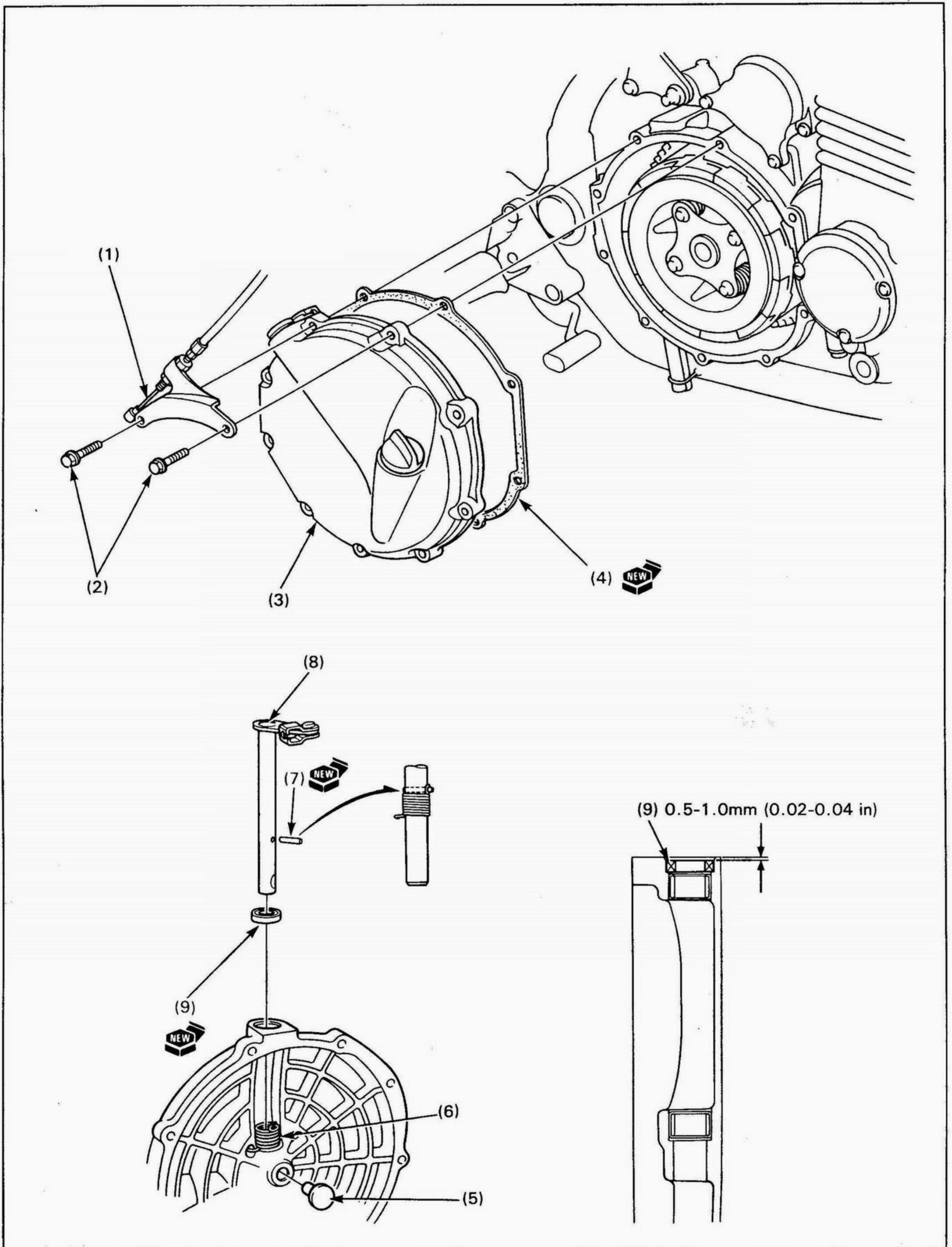
Transmission Jumps Out Of Gear

- Worn shift drum stopper arm
- Weak or broken gearshift spindle return spring
- Bent shift fork shaft
- Damaged shift drum cam grooves
- Worn gear dogs or slots

Gearshift Pedal Will Not Return

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

Clutch Cover Removal/Installation

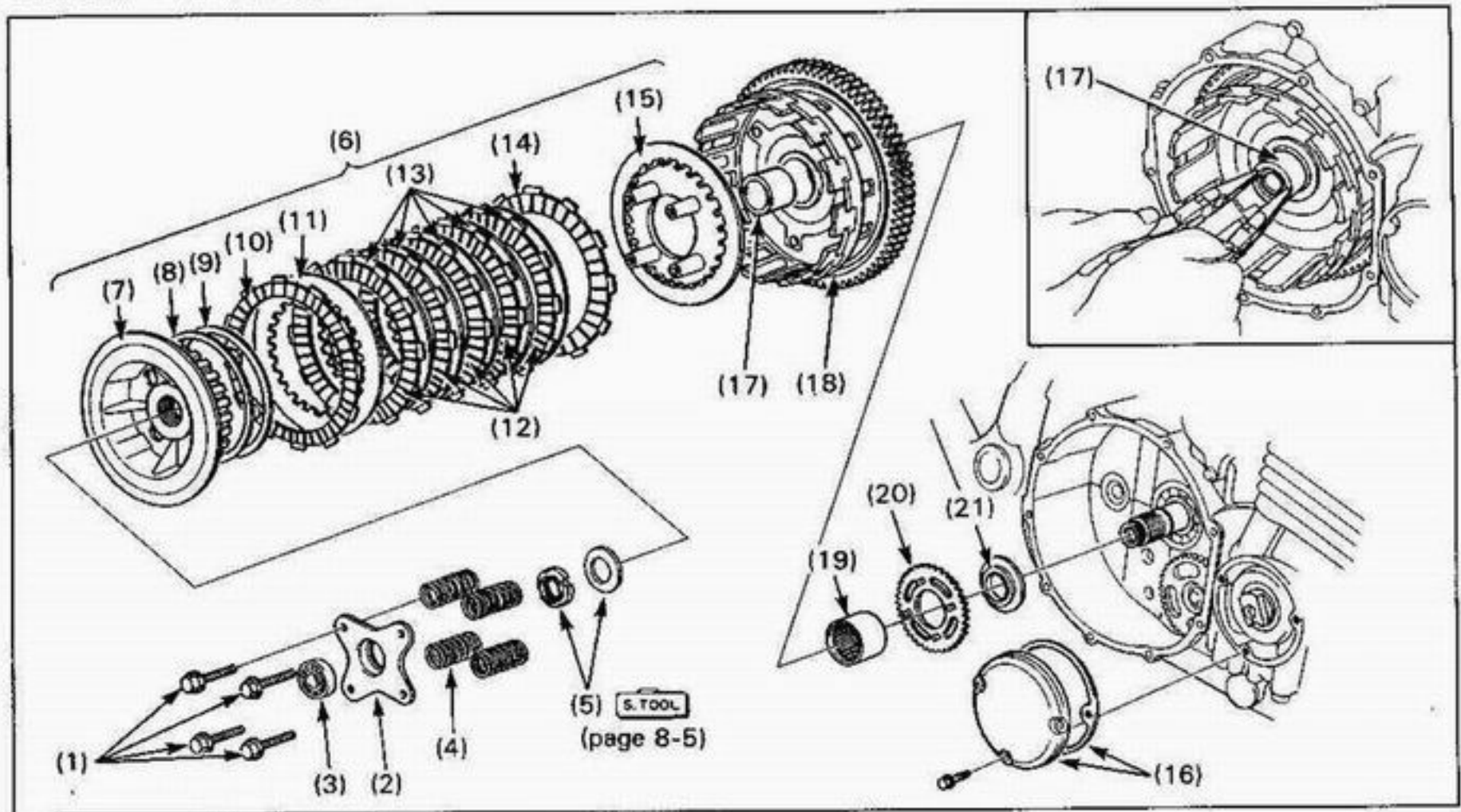


Requisite Service

- Engine oil draining/refill

| Procedure | | Q'ty | Remarks |
|-----------|--|------|---|
| | Removal Order | | Installation is in the reverse order of removal. |
| (1) | Clutch cable | 1 | |
| (2) | Clutch cover bolt | 9 | |
| (3) | Clutch cover | 1 | |
| (4) | Gasket | 1 | |
| | Clutch Lifter Disassembly Order | | Assembly is the reverse order of disassembly |
| (5) | Clutch lifter rod | 1 | |
| (6) | Return spring | 1 | Drive in a new spring pin using a pin driver until the pin does not interfere with the lifter arm as shown. |
| (7) | Spring pin | 1 | |
| (8) | Clutch lifter arm | 1 | |
| (9) | Oil seal | 1 | |

Clutch Removal



NOTE

- Turn the crankshaft clockwise until the No.4 crank weight is positioned at BTDC.

Requisite Service

- Clutch cover removal (page 8-2)

| Procedure | | Q'ty | Remarks |
|----------------------|------------------------------------|------|--|
| Removal Order | | | |
| (1) | Clutch lifter plate bolt | 4 | |
| (2) | Clutch lifter plate | 1 | |
| (3) | Clutch lifter plate bearing | 1 | |
| (4) | Clutch spring | 4 | |
| (5) | Clutch center lock nut/lock washer | 1 | Removal (page 8-5) |
| (6) | Clutch assembly | | |
| (7) | - clutch center | 1 | |
| (8) | - spring seat | 1 | |
| (9) | - judder spring | 1 | |
| (10) | - clutch friction disc C | 1 | Larger I.D. disc/Color: black |
| (11) | - clutch plate B | 1 | Color: gray |
| (12) | - clutch friction disc B | 5 | Smaller I.D. disc |
| (13) | - clutch plate A | 5 | Color: silver |
| (14) | - clutch friction disc A | 1 | Smaller I.D. disc/Color: black |
| (15) | - pressure plate | 1 | |
| (16) | Right crankshaft cover/gasket | 1 | |
| (17) | Clutch outer guide | 1 | Pull the clutch outer guide out with needle nose pliers. |
| (18) | Clutch outer | 1 | |
| (19) | Needle bearing | 1 | |
| (20) | Oil pump drive sprocket | 1 | |
| (21) | Collar | 1 | |

Clutch Center Lock Nut Removal

Unstake the nut.

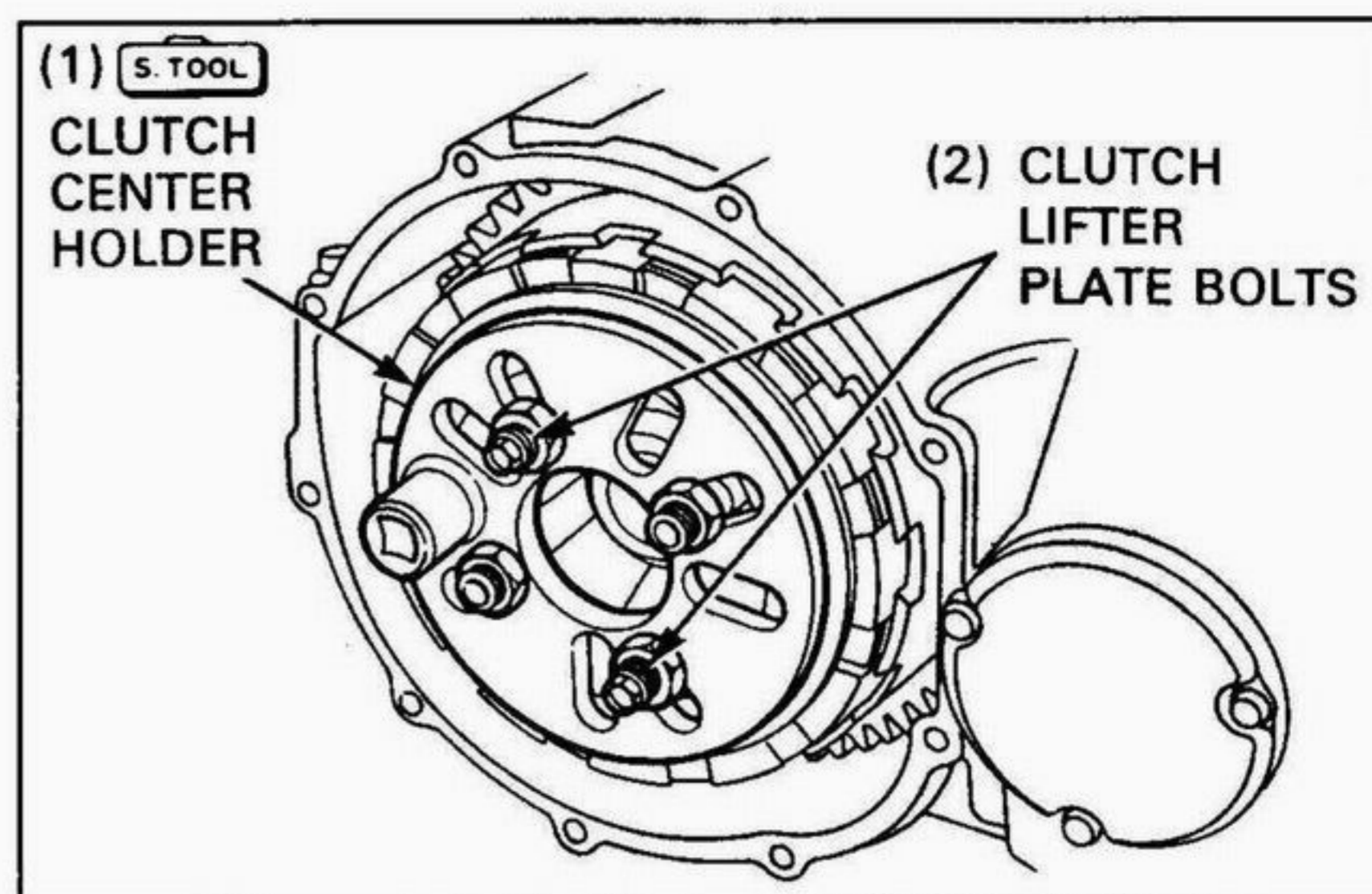
Set the clutch center holder to the pressure plate bosses and loosely install the nuts.

S TOOL

Clutch center holder

07JMB-MN50300

Temporarily remove the tool and tighten nuts; then reinstall the clutch center holder onto the bosses. Use at least two clutch lifter plate bolts to secure the tool to the clutch.



Hold the clutch center holder and remove the lock nut as shown.

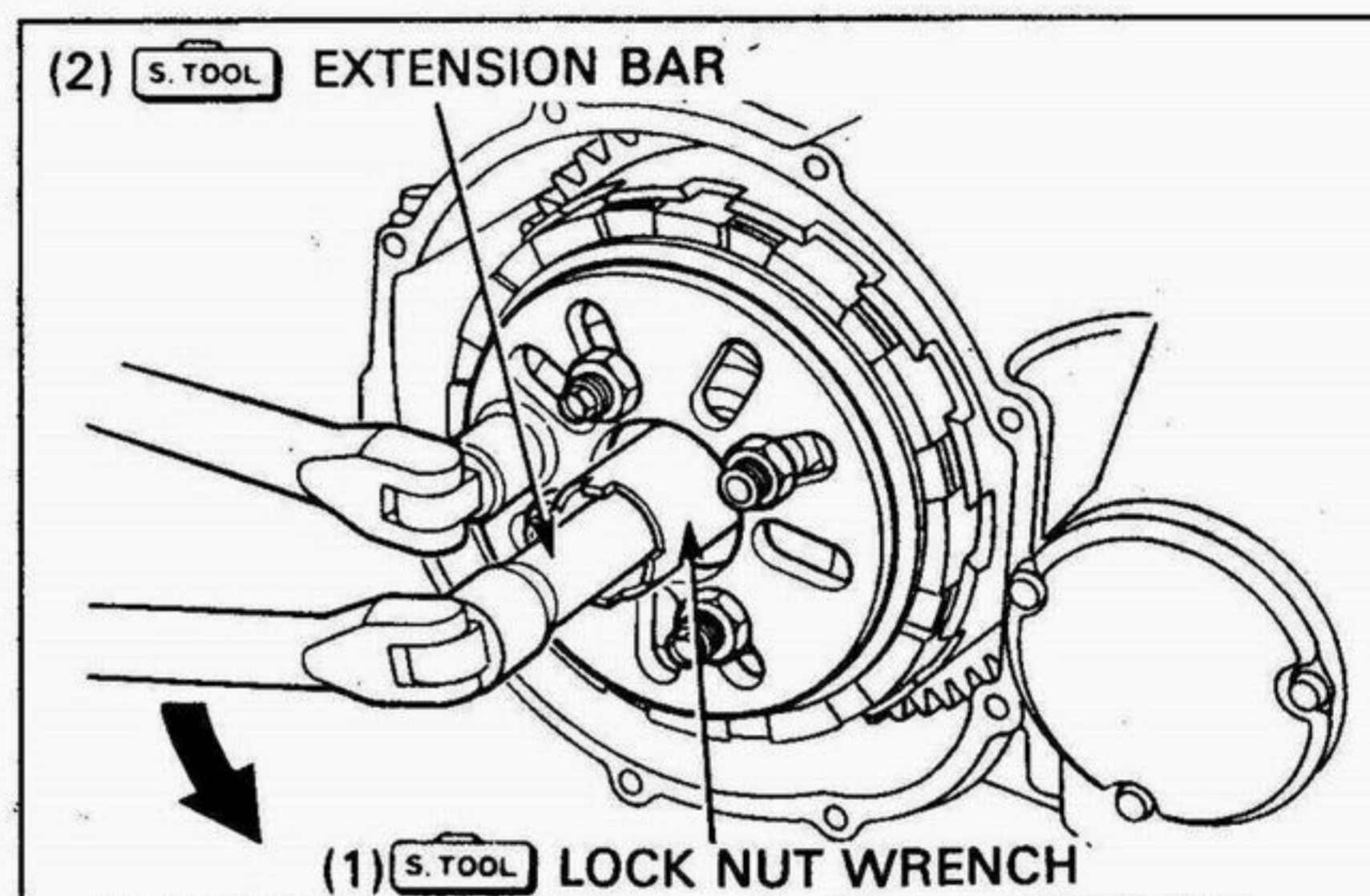
S TOOL

Lock nut wrench, 26 × 30 mm

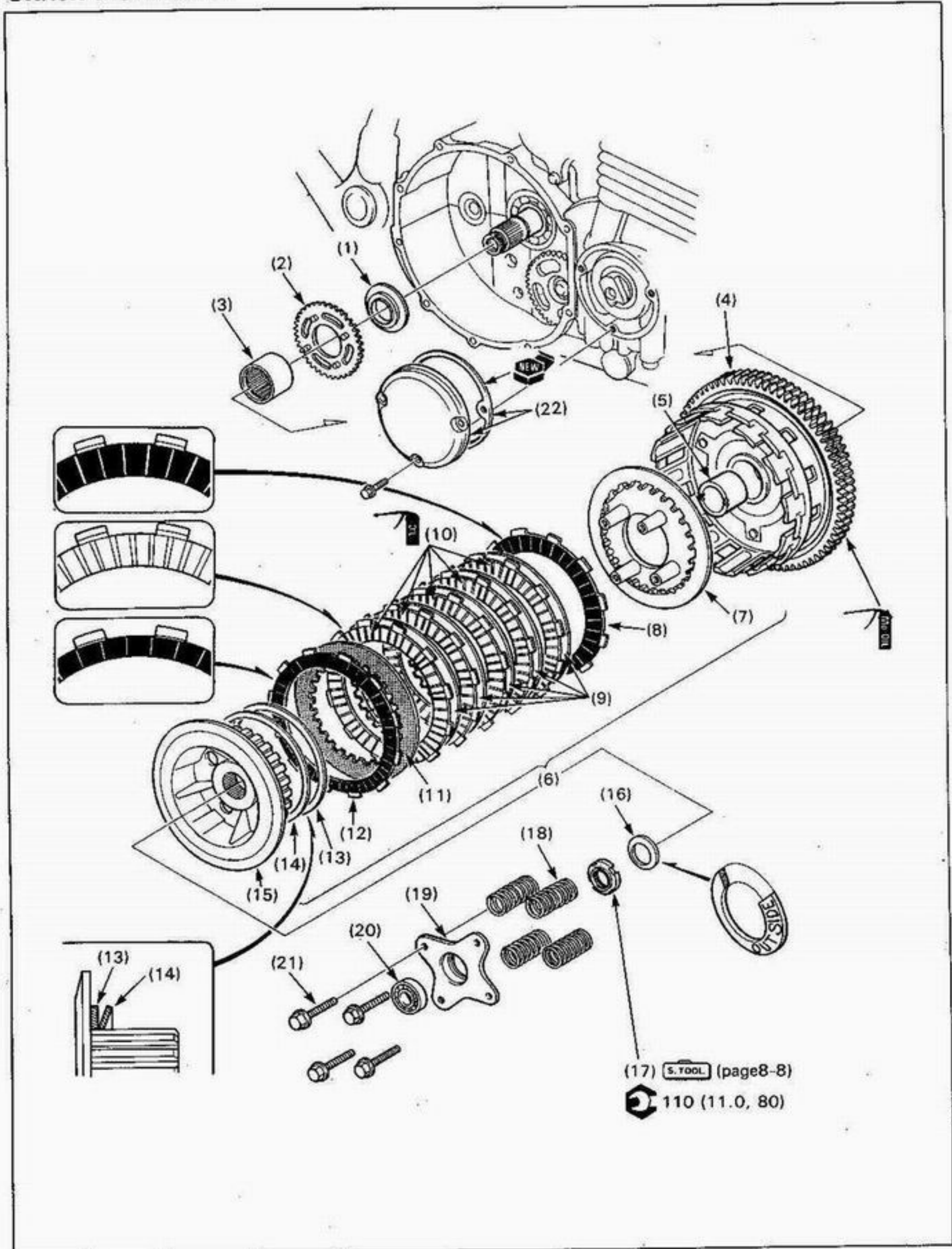
07716-0020203

Extension bar

07716-0020500



Clutch Installation



Requisite Service

Clutch removal (page 8-4)

• Clutch cover installation (page 8-2)

| Procedure | | Q'ty | Remarks |
|---------------------------|-------------------------------|------|---|
| Installation Order | | | |
| (1) | Collar | 1 | Installation (page 8-8) |
| (2) | Oil pump drive sprocket | 1 | |
| (3) | Needle bearing | 1 | |
| (4) | Clutch outer | 1 | |
| (5) | Clutch outer guide | 1 | |
| (6) | Clutch assembly | - | |
| (7) | -pressure plate | 1 | |
| (8) | -clutch friction disc A | 1 | Smaller I.D. disc/Color: black |
| (9) | -clutch plate A | 5 | Color: silver |
| (10) | -clutch friction disc B | 5 | Smaller I.D. disc |
| (11) | -clutch plate B | 1 | Color: gray |
| (12) | -clutch friction disc C | 1 | Larger I.D. disc/Color: black |
| (13) | -spring seat | 1 | |
| (14) | -judder spring | 1 | Face the dished side of the judder spring to the outside. |
| (15) | -clutch center | 1 | |
| (16) | Lock washer | 1 | Install with the "OUTSIDE" mark facing up. |
| (17) | Clutch center lock nut | 1 | Installation (page 8-8) |
| (18) | Clutch spring | 4 | |
| (19) | Clutch lifter plate | 1 | |
| (20) | Clutch lifter plate bearing | 1 | Install with the marked side facing out. |
| (21) | Clutch lifter plate bolt | 4 | Install in a gradual, crisscross pattern. |
| (22) | Right crankshaft cover/gasket | 1 | |

Clutch Outer Installation

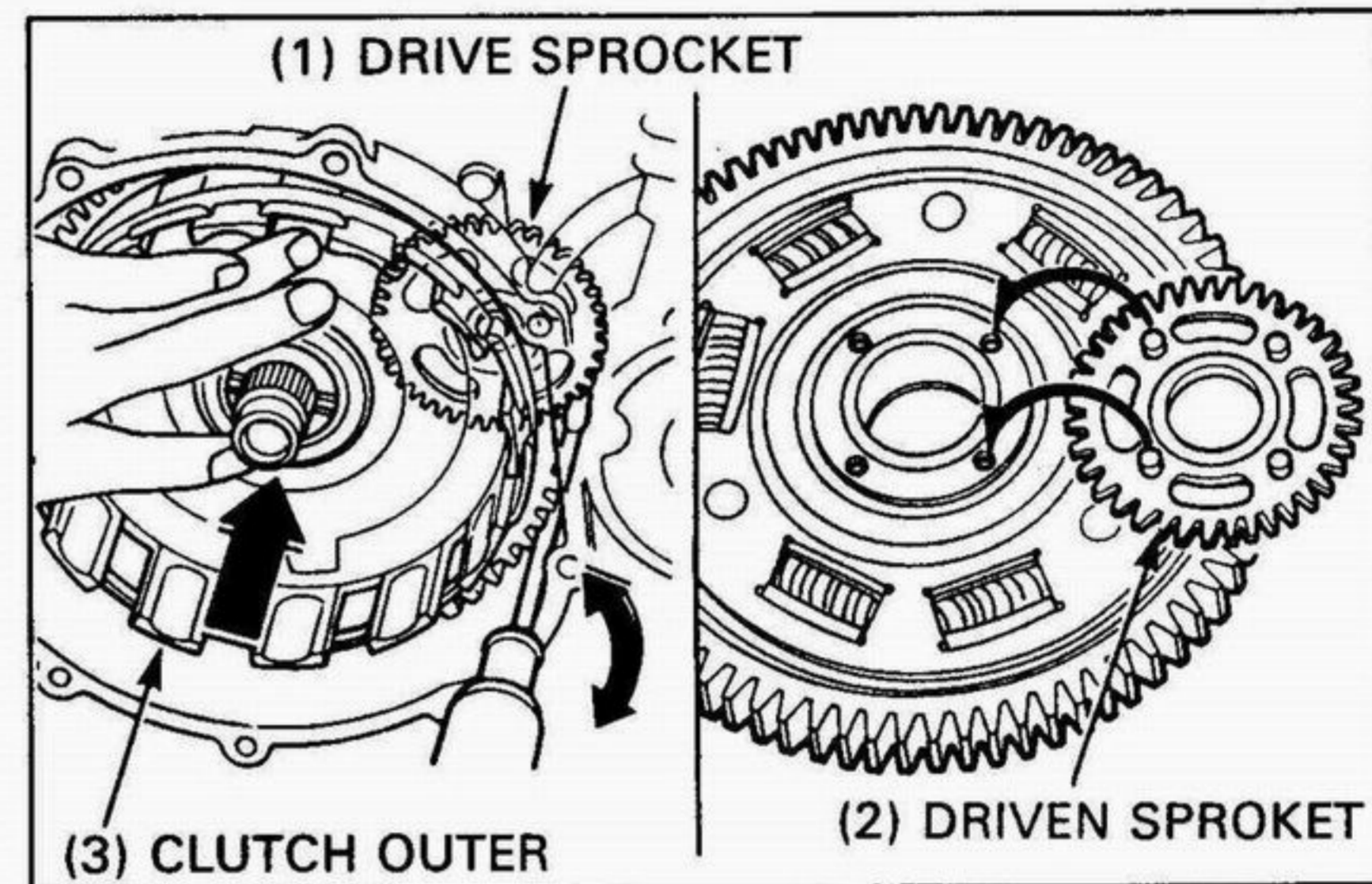
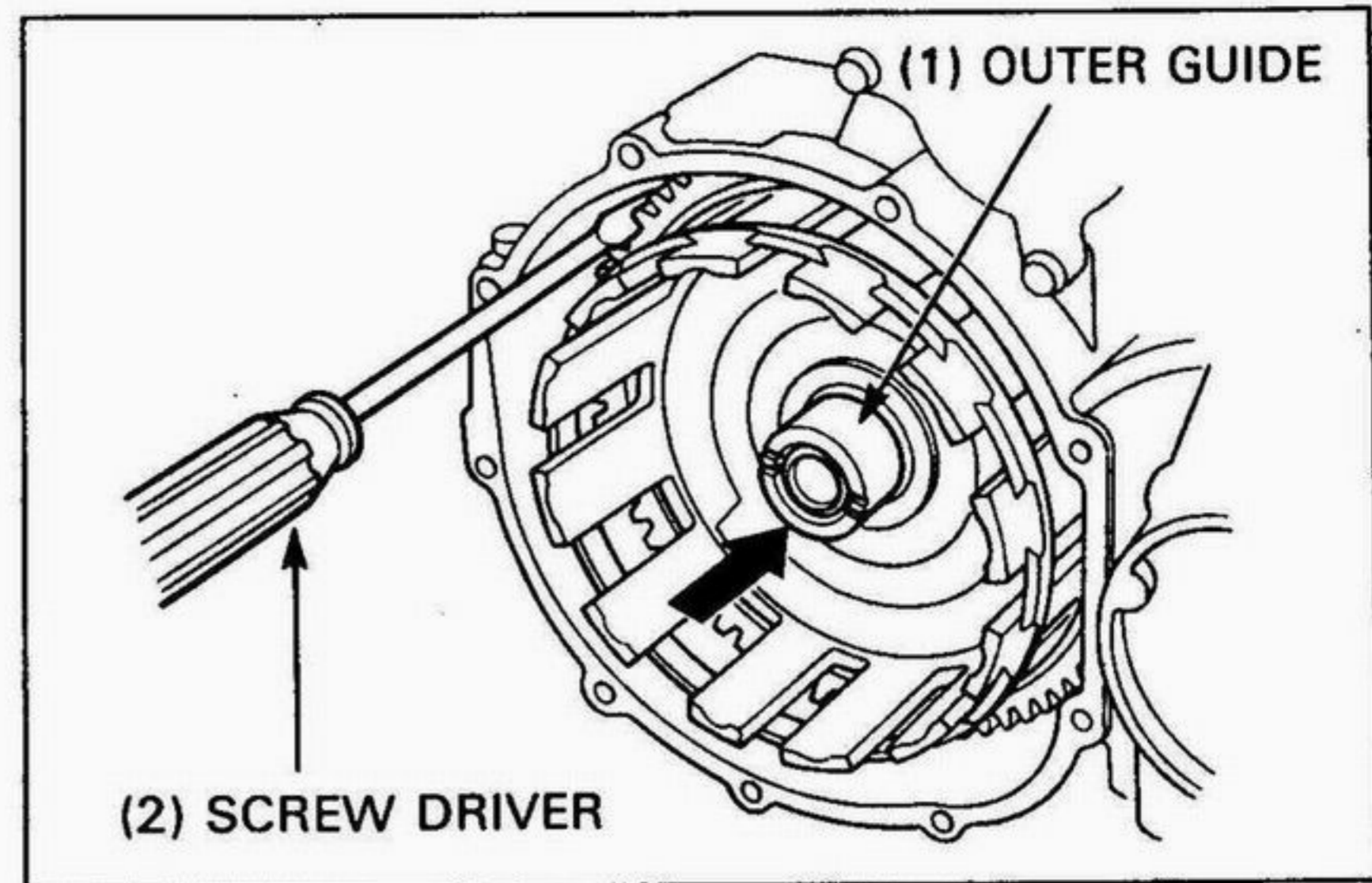
Turn the crankshaft clockwise until the No.4 crank weight is positioned at BTDC.

Install the clutch outer over the mainshaft.
Install the clutch outer guide between the mainshaft and clutch outer and push it in until it stops.

NOTE

- Install the clutch outer guide onto the mainshaft while moving the drive sub gear to align the two gear teeth using a screwdriver. Take care not to damage the gear teeth.

Push the clutch outer in while moving the primary driving gears with a screwdriver, then further push it in while moving the oil pump driven sprocket with the screwdriver to fit the pins on the drive sprocket into the holes in the clutch outer.



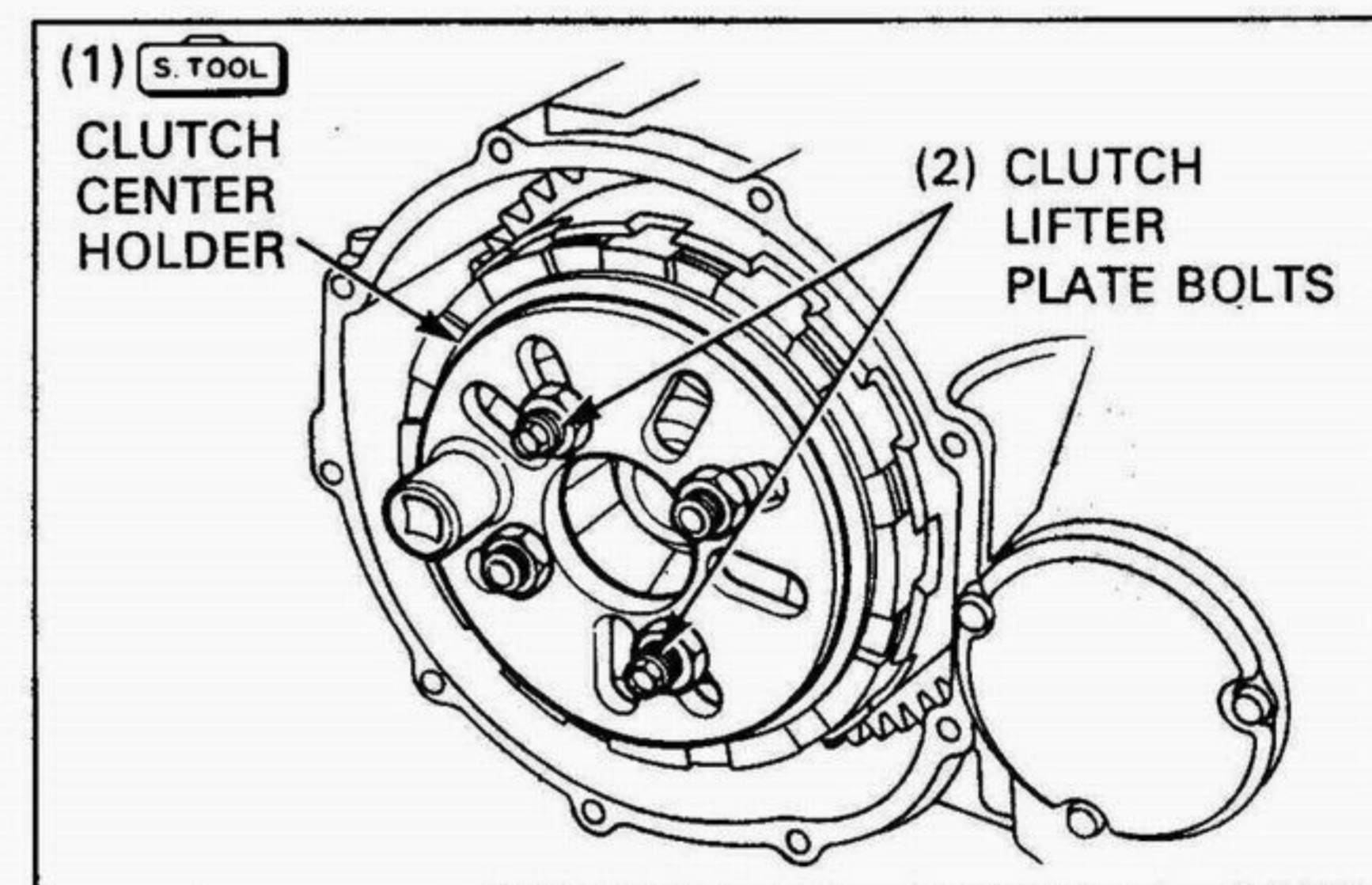
Clutch Center Lock Nut Installation

Position the tools as shown and use at least two clutch lifter plate bolts to secure the tool to the clutch.

S TOOL

Clutch center holder

07JMB-MN50300



Hold the clutch center holder and torque the clutch center lock nut as shown.

S TOOL

Lock nut wrench, 26×30 mm

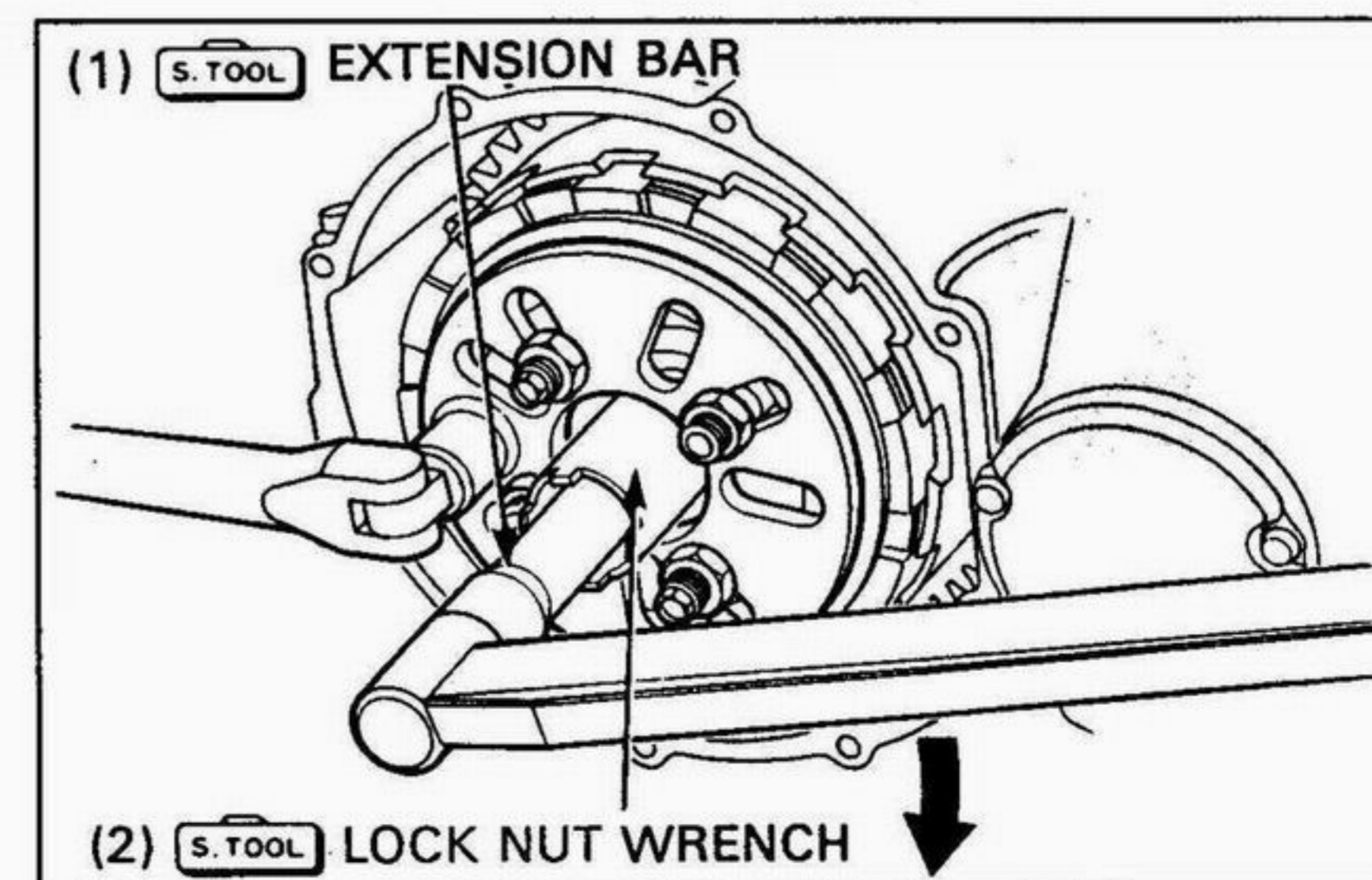
07716-0020203

Extension bar

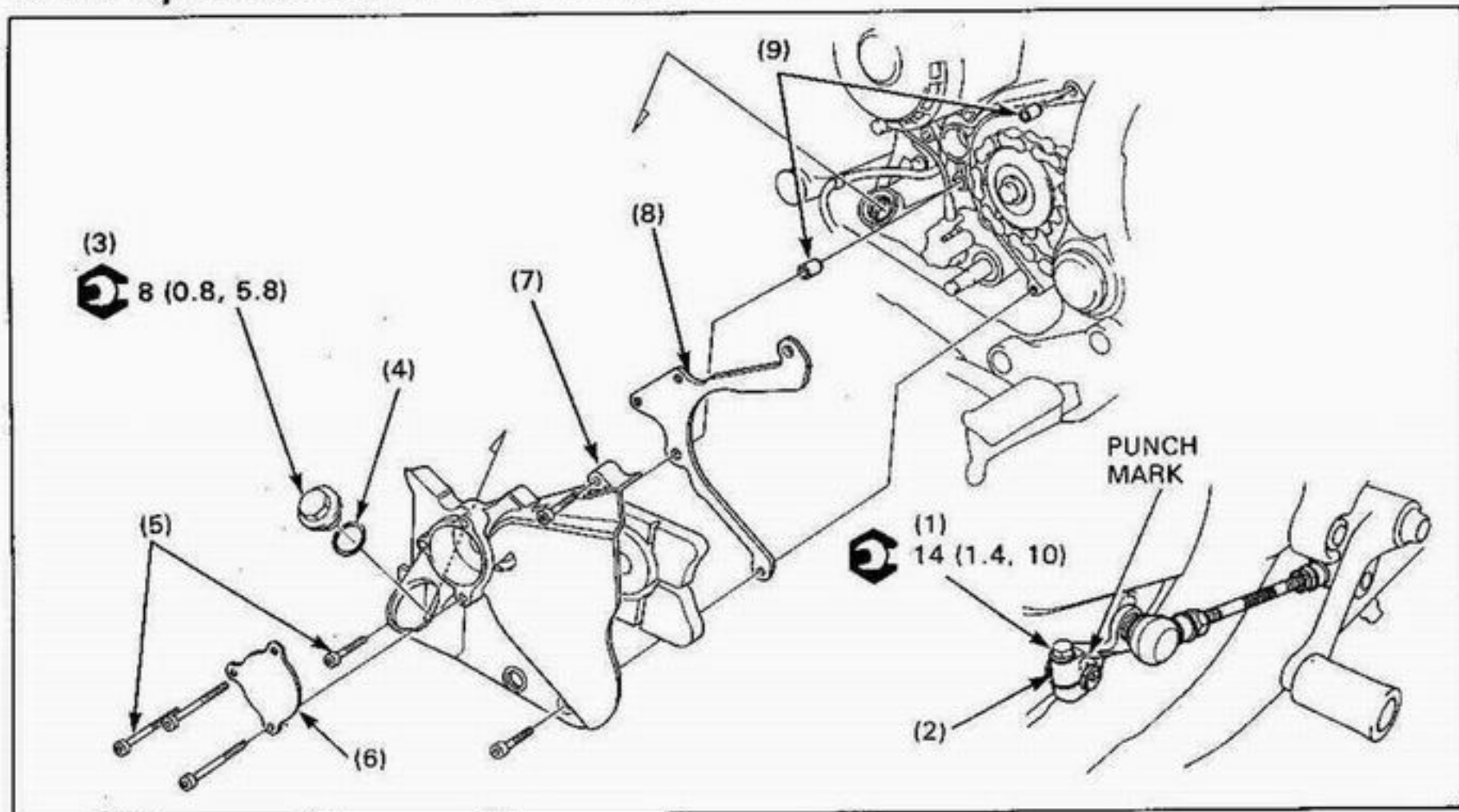
07716-0020500

Torque: 110 N·m (11.0 kg·m, 80 ft·lb)

Stake the lock nut onto the mainshaft.



Drive Sprocket Cover Removal/Installation



CAUTION

- Be careful not to damage the wire harnesses by pinching them between the sprocket cover and engine.

NOTE

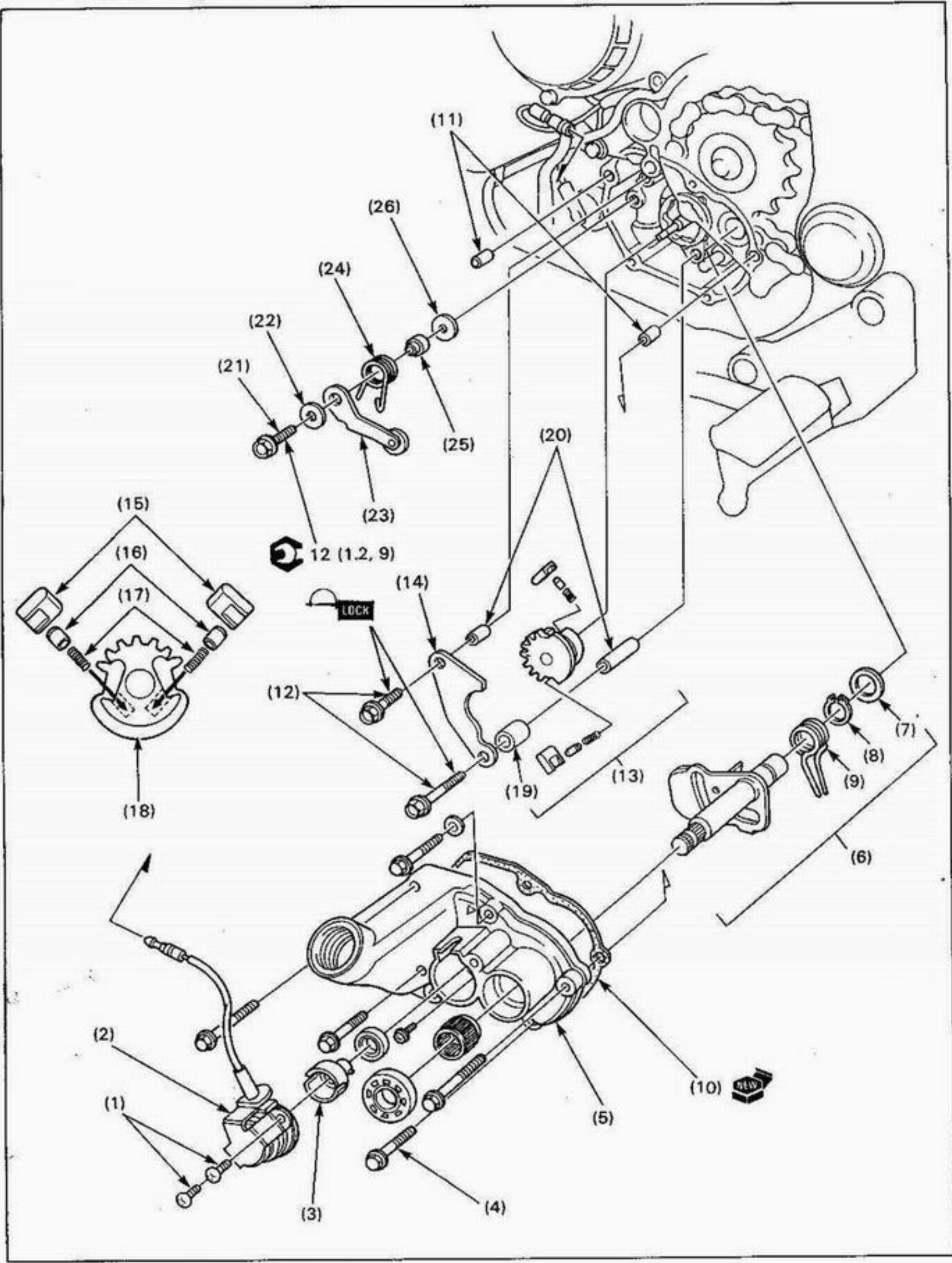
- The change cover cap must be removed for the drive sprocket cover removal.
- Route the wire harnesses properly (page 1-21).

Requisite Service

- Engine oil draining/refill
- Place the motorcycle on its center stand

| Procedure | Qty | Remarks |
|----------------------------------|-----|--|
| Removal Order | | Installation is in the reverse order of removal. |
| (1) Gearshift spindle joint bolt | 1 | At installation, align the punch marks on the joint and spindle. |
| (2) Gearshift spindle joint | 1 | |
| (3) Change cover cap | 1 | |
| (4) O-ring | 1 | |
| (5) Drive sprocket cover bolt | 6 | |
| (6) Drive sprocket cover plate | 1 | |
| (7) Drive sprocket cover | 1 | |
| (8) Drive chain guide | 1 | |
| (9) Dowel pin | 2 | |

Gearshift Linkage Removal/Installation



NOTE

- Shift the transmission into neutral before removing or installing the gearshift linkage.

Requisite Service

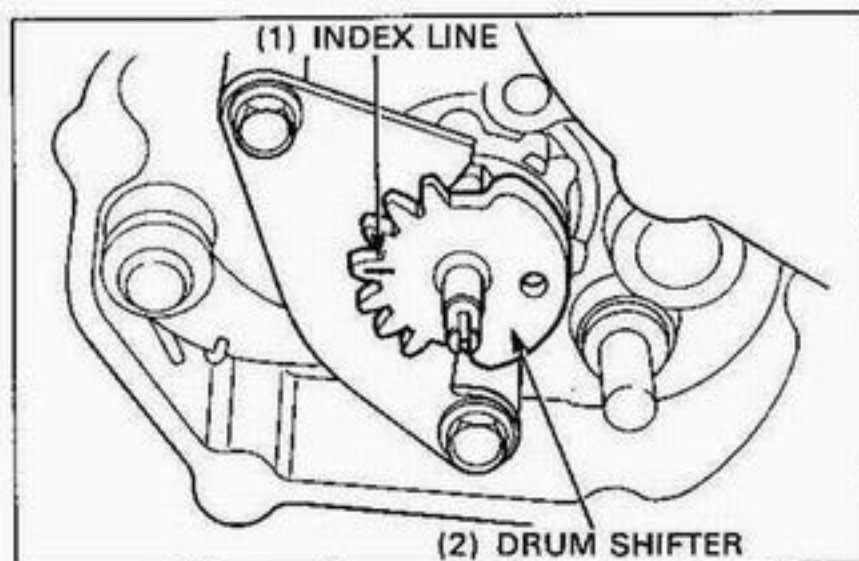
- Drive sprocket cover removal/installation (page 8-9)

| Procedure | | Qty | Remarks |
|-----------|-----------------------------------|-----|--|
| | Removal Order | | Installation is in the reverse order of removal. |
| (1) | Neutral switch mounting screw | 1 | |
| (2) | Neutral switch | 1 | <ul style="list-style-type: none"> • Disconnect the neutral switch connector. • Installation (page 8-12) |
| (3) | Neutral switch joint | 1 | |
| (4) | Gearshift linkage cover bolt | 5 | |
| (5) | Gearshift linkage cover | 1 | <ul style="list-style-type: none"> • Remove/install as an assembly. • Installation (page 8-12) |
| (6) | Gearshift spindle assembly | — | |
| (7) | — washer | 1 | |
| (8) | — snap ring | 1 | |
| (9) | — return spring | 1 | |
| (10) | Gasket | 1 | |
| (11) | Dowel pin | 2 | |
| (12) | Guide plate mounting bolt | 1 | |
| (13) | Guide plate/drum shifter assembly | — | Assembly: as illustrated |
| (14) | — guide plate | 1 | |
| (15) | — ratchet pawl | 2 | Pawl orientation as shown. |
| (16) | — plunger | 2 | |
| (17) | — spring | 2 | |
| (18) | — drum shifter | 1 | |
| (19) | Collar | 1 | |
| (20) | Dowel pin | 2 | |
| (21) | Stopper arm bolt | 1 | |
| (22) | Washer | 1 | |
| (23) | Stopper arm | 1 | |
| (24) | Spring | 1 | |
| (25) | Collar | 1 | |
| (26) | Washer | 1 | |

Gearshift Linkage Cover/Gearshift Spindle Assembly Installation

NOTE

- The transmission should be in neutral to install the linkage.
- With the transmission in neutral, the index line on the drum shifter teeth faces forward as shown.

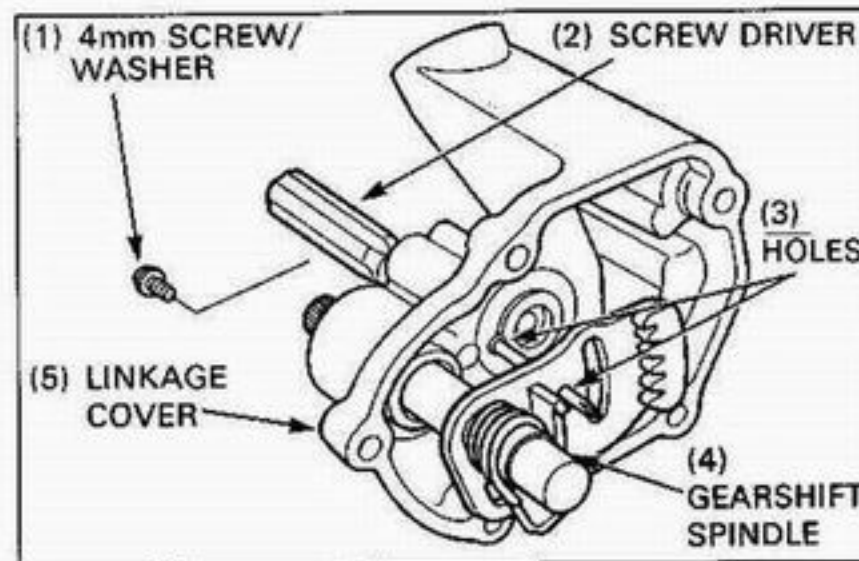


Remove the 4 mm screw and washer from gearshift linkage cover.

Install the gearshift spindle assembly in the gearshift linkage cover.

Align the holes in the gearshift spindle and linkage cover with a screwdriver. (Keep the screwdriver in place.)

Install the dowel pins and new gasket.

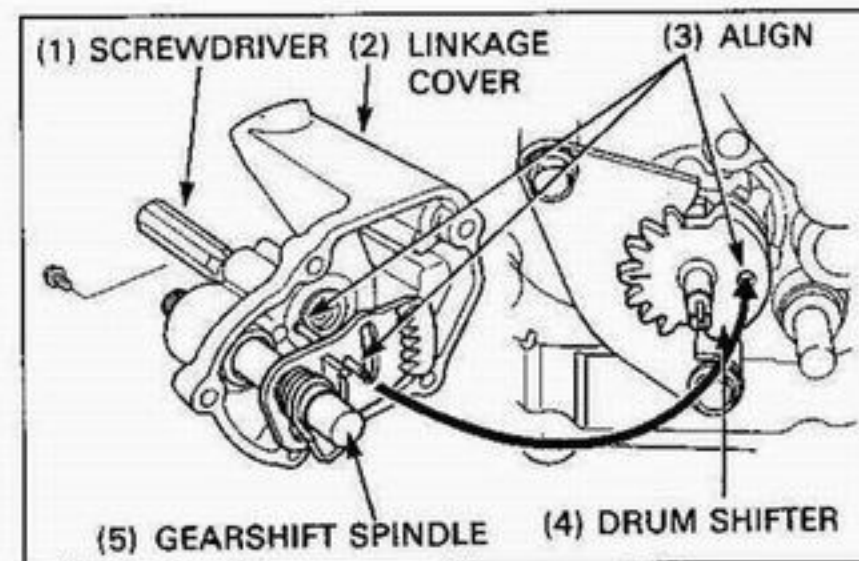


Install the linkage cover/gearshift spindle assembly with the screwdriver through the hole in the shifter.

Install and tighten the gearshift linkage cover bolts.

Torque: 12 N·m (1.2 kg·m, 9 ft·lb)

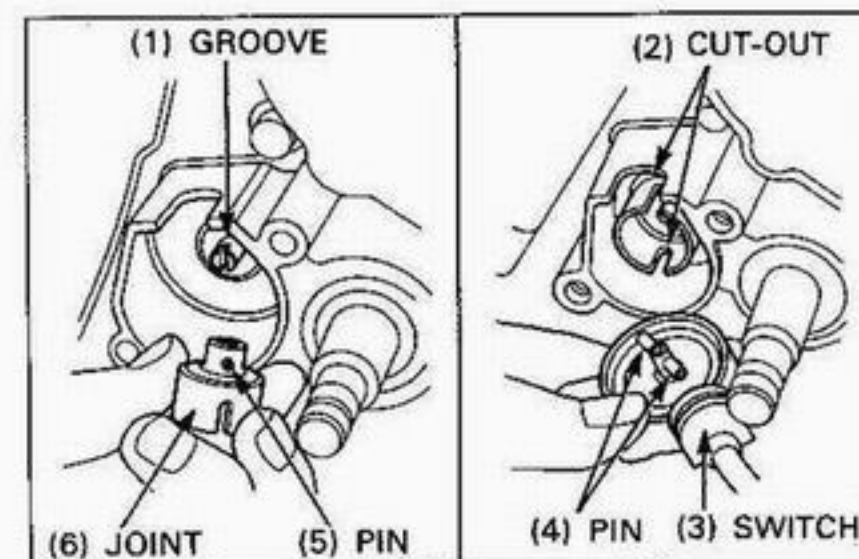
Remove the screwdriver, install the washer and 4 mm screw.



Neutral Switch Installation

Install the neutral switch joint, aligning the joint pin with the groove in the gearshift drum.

Install the neutral switch, aligning the switch pin of the switch with the cut-out in the switch joint.



9. Crankshaft/Transmission

| | | | |
|--|------------|--|-------------|
| Service Information | 9-1 | Crankshaft, Connecting Rod Removal | 9-10 |
| Troubleshooting | 9-1 | Alternator Shaft Disassembly/Assembly | 9-12 |
| Countershaft Bearing Cover Removal/Installation | 9-2 | Crankshaft Bearing Replacement | 9-14 |
| Crankcase Separation | 9-4 | Crankshaft, Connecting Rod Installation | 9-16 |
| Transmission Removal/Installation | 9-6 | Crankcase Assembly | 9-18 |
| Transmission Disassembly/Assembly | 9-8 | | |

Service Information

- This section covers crankcase separation in order to service the crankshaft, transmission and alternator shaft.
- The following parts must be removed before separating the crankcase.
 - Alternator (Section 13)
 - Clutch/gearshift linkage (Section 8)
 - Cylinder head/cylinder/piston (Section 7)
 - Engine (Section 6)
 - Oil pump (Section 4)
 - Starter motor (Section 15)
- Prior to assembling the crankcase halves, apply a sealant to their mating surfaces. Wipe off excess sealant thoroughly.
- Mark and store the bearing inserts to be sure of their correct locations for reassembly. If the inserts are improperly installed they will block the oil holes, causing insufficient lubrication and eventual engine seizure.

Troubleshooting

Excessive Noise

- Worn connecting rod big-end bearing
- Bent connecting rod
- Worn crankshaft main bearing
- Worn transmission bearing

Hard To Shift

- Improper clutch operation
- Incorrect engine oil viscosity
- Incorrect clutch adjustment
- Bent shift fork
- Bent fork shaft
- Bent fork claw
- Damaged shift drum cam grooves
- Bent shift spindle

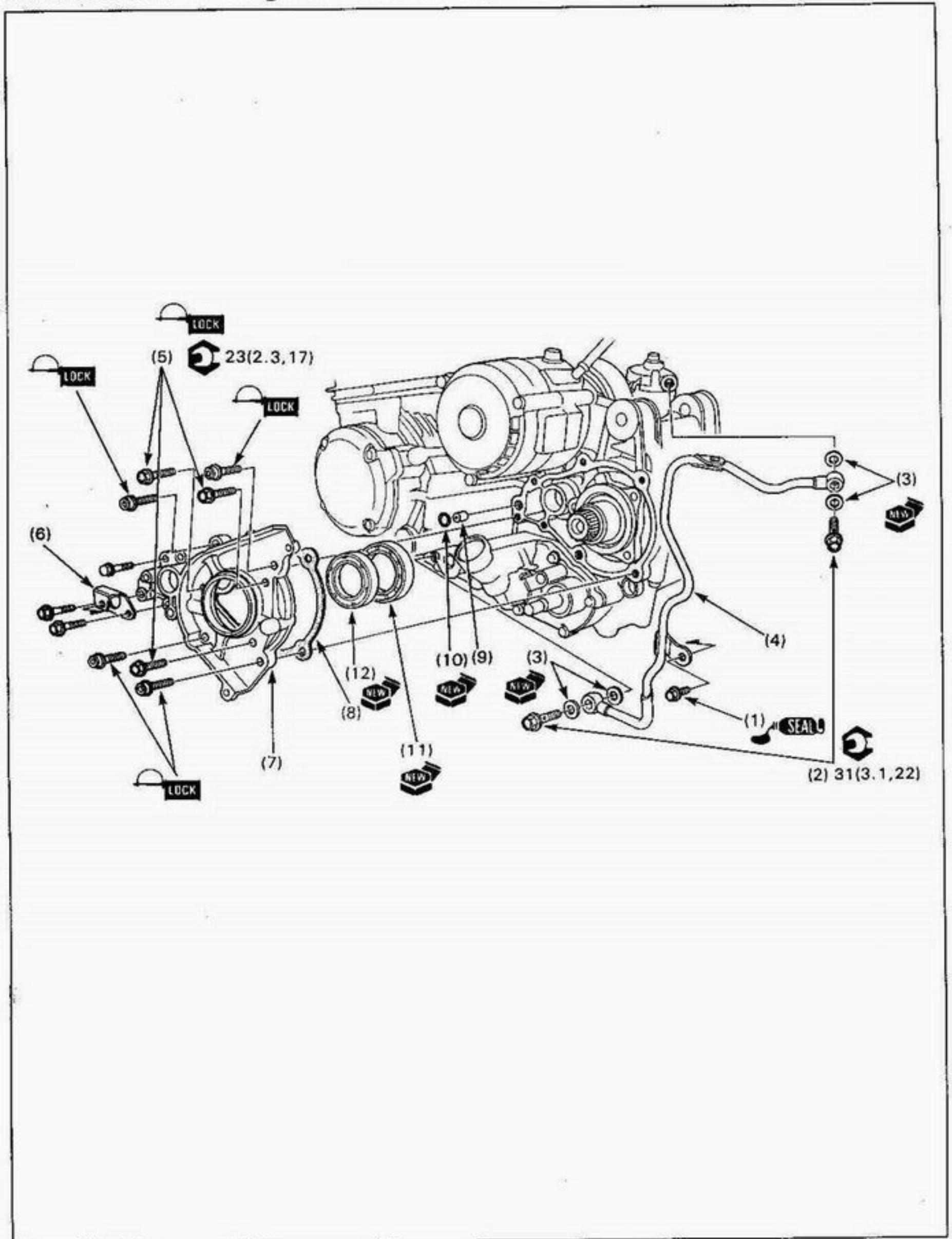
Transmission Jumps Out Of Gear

- Worn gear dogs or slots
- Bent fork shaft
- Broken shift drum stopper
- Worn or bent shift forks
- Broken shift linkage return spring

Engine Vibration

- Excessive crankshaft runout
- Loose engine mount bolts

Countershaft Bearing Cover Removal/Installation



NOTE

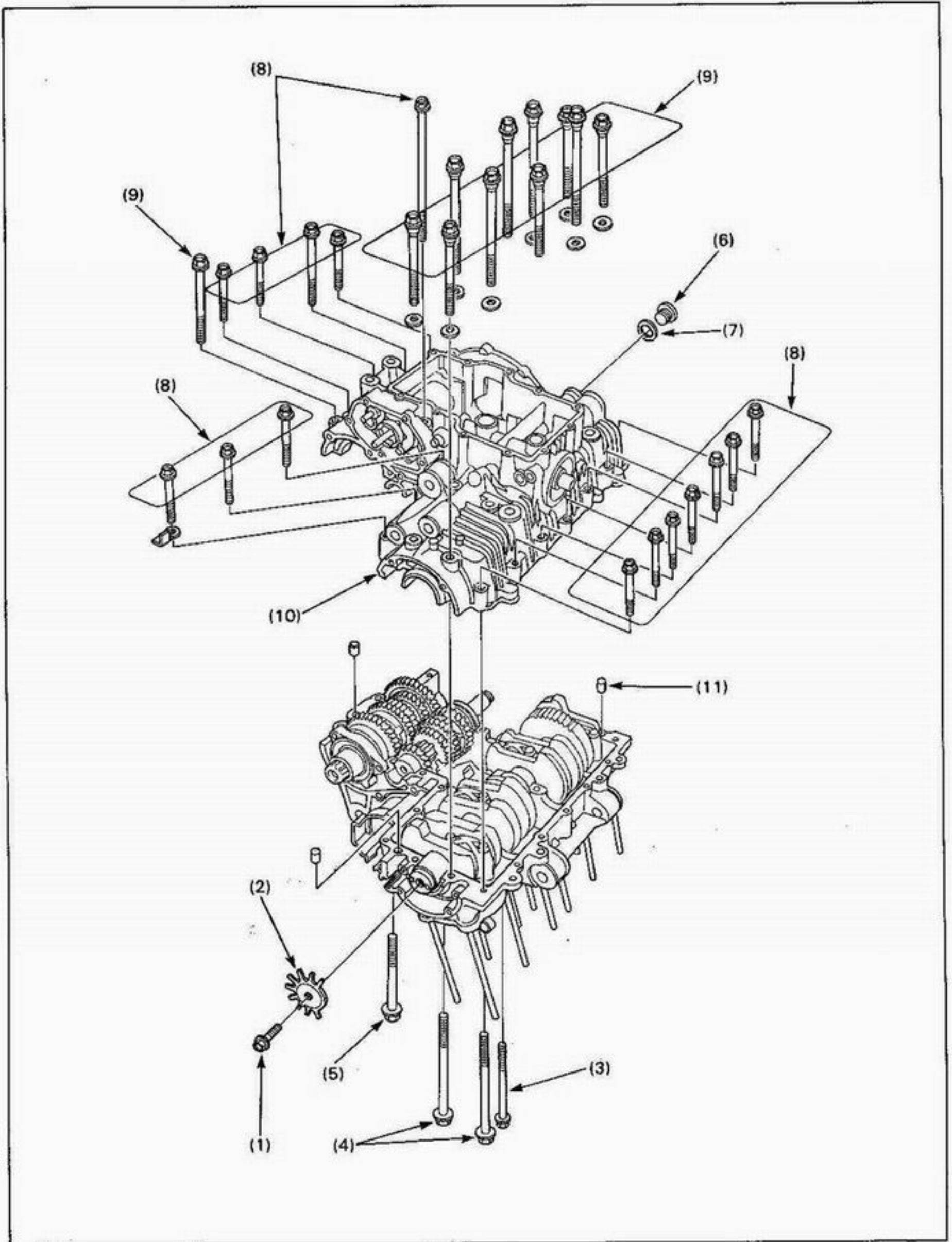
- After installation, check that there are no oil leaks.

Requisite Service

- Engine removal/installation (page 6-2)

| Procedure | | Qty | Remarks |
|-----------|---------------------------------|-----|--|
| | Removal Order | | Installation is in the reverse order of removal. |
| (1) | Oil pipe mounting bolt | 1 | |
| (2) | Oil pipe bolt | 2 | |
| (3) | Sealing washer | 4 | |
| (4) | Oil pipe A | 1 | NOTE • Be careful not to bend oil pipe. |
| (5) | Countershaft bearing cover bolt | 10 | |
| (6) | Oil pipe stay | 1 | |
| (7) | Countershaft bearing cover | 1 | |
| (8) | Gasket | 1 | |
| (9) | Oil orifice | 1 | |
| (10) | O-ring | 1 | |
| (11) | Oil seal | 1 | |
| (12) | Oil seal | 1 | |

Crankcase Separation

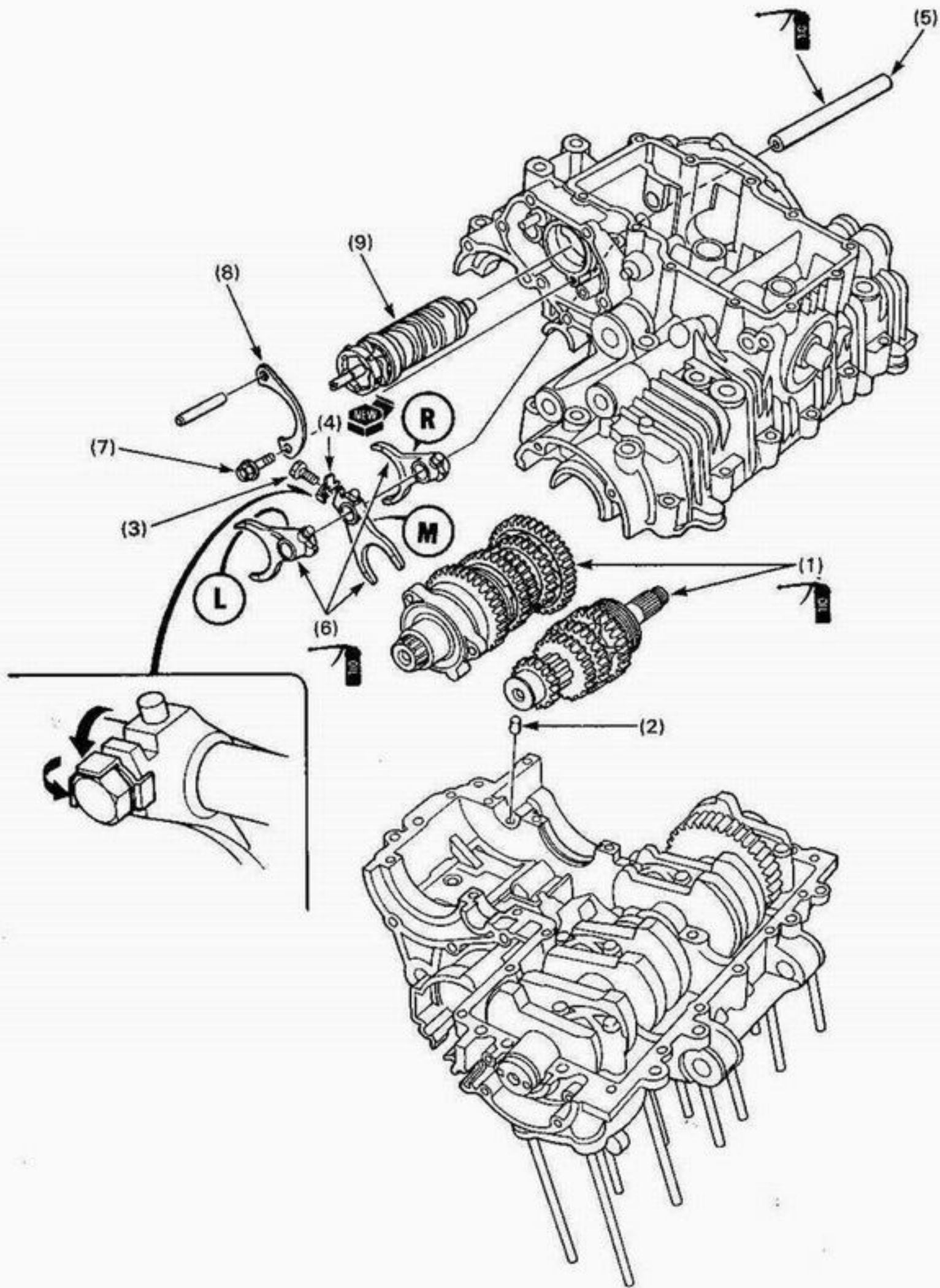


NOTE

Refer to Service Information (page 9-1) for list of parts which must be removed before separating the crankcase.

| Procedure | Q'ty | Remarks |
|---------------------------------|------|-------------------------------------|
| Removal Order | | |
| (1) Pulse rotor bolt | 1 | |
| (2) Pulse rotor | 1 | |
| (3) Upper crankcase bolt (6 mm) | 1 | |
| (4) Upper crankcase bolt (7 mm) | 2 | |
| (5) Upper crankcase bolt (8 mm) | 1 | |
| (6) Sealing bolt | 1 | |
| (7) Sealing washer | 1 | |
| (8) Lower crankcase bolt (6 mm) | 15 | |
| (9) Lower crankcase bolt (8 mm) | 11 | Bolts (8 pcs) have sealing washers. |
| (10) Lower crankcase | 1 | |
| (11) Dowel pin | 3 | |

Transmission Removal/Installation

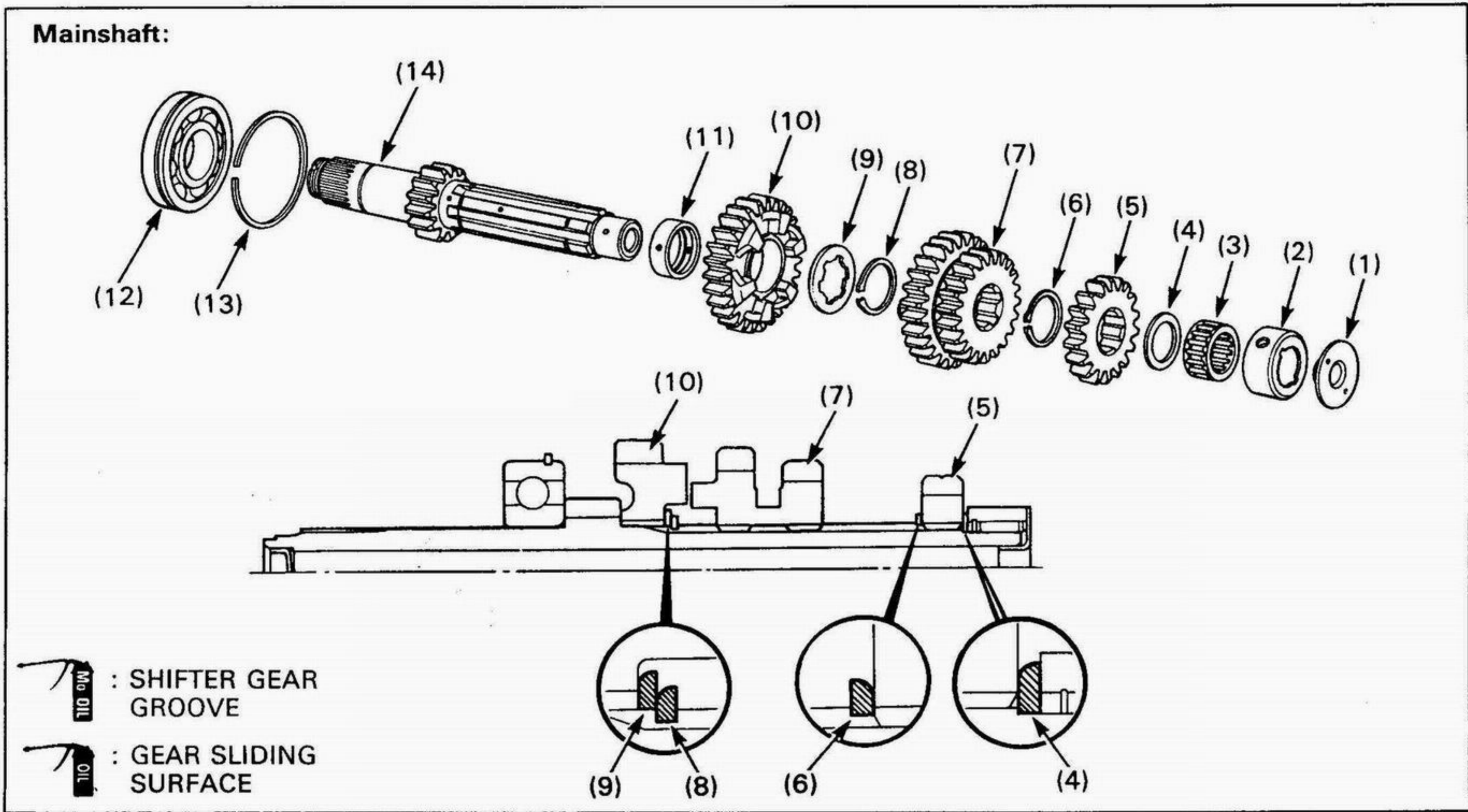


Requisite Service

- Crankcase separation (page 9-4)

| Procedure | | Qty | Remarks |
|-----------|---|-----|---|
| (1) | Removal Order Mainshaft/countershaft assembly | 1/1 | Installation is in the reverse order of removal. At installation, align the mainshaft bearing set ring with the case groove and align the countershaft bearing case hole with the dowel pin. |
| (2) | Dowel pin | 1 | |
| (3) | Center fork mounting bolt | 1 | Remove after bending down the lock washer tab. Bend new lock washer tabs as shown. |
| (4) | Lock washer | 1 | Install a new lock washer. |
| (5) | Shift fork shaft | 1 | |
| (6) | Shift fork | 3 | Install with the identification mark (R: Right, M: Center, L: Left) side facing the right side as shown. |
| (7) | Shift drum bearing stopper plate bolt | 1 | Install the dowel pin and then tighten the stopper plate bolt. |
| (8) | Shift drum bearing stopper plate | 1 | |
| (9) | Shift drum | 1 | |

Transmission Disassembly/Assembly



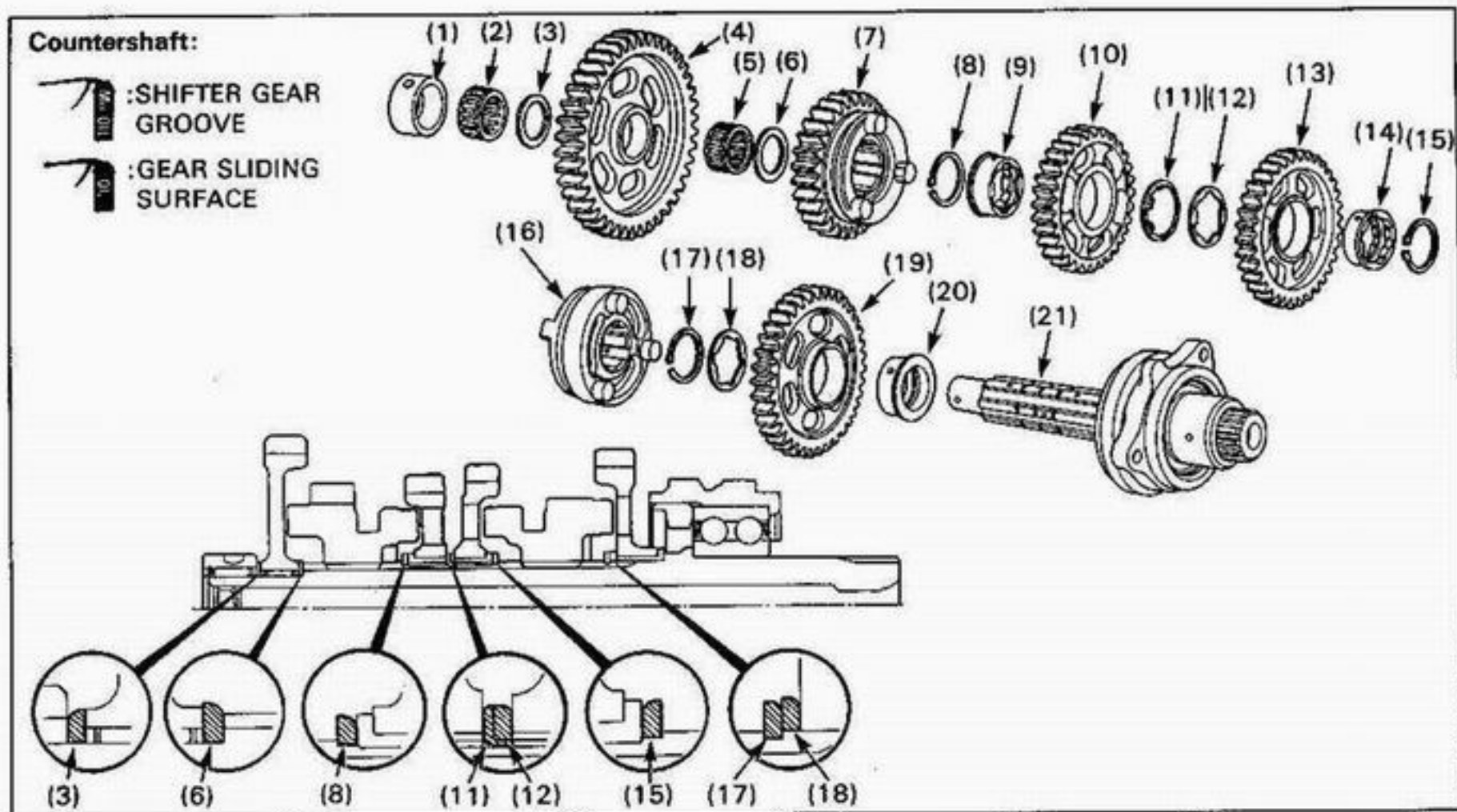
NOTE

- When assembling the transmission, apply molybdenum disulfide oil to M3/M4, C5 and shifter gear shift fork groove.
- Always install the thrust washers and snap rings with the chamfered (rolled) edge facing away from the thrust load.
- After installing a snap ring, slightly open the ring and rotate it in its groove to be sure it is fully seated.
- Do not use worn snap rings which could easily spin in the groove. They may be too loose to properly seat in the groove.
- Align the gap in the snap ring with the spline groove.

Requisite Service

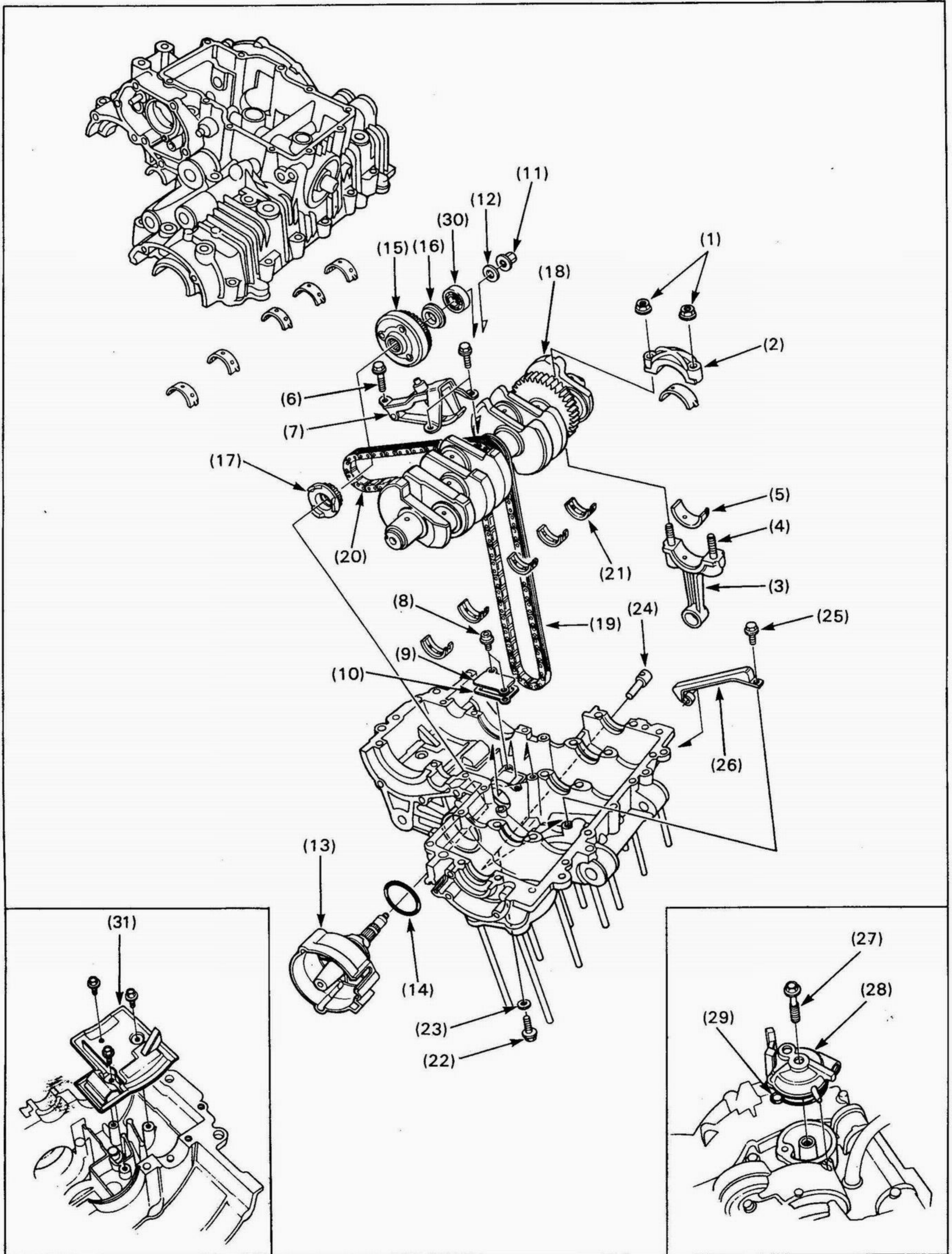
- Transmission removal/installation (page 9-6)

| Procedure | Q'ty | Remarks |
|------------------------------------|------|--|
| Mainshaft Disassembly Order | | Assembly is in the reverse order of disassembly. |
| (1) Orifice plate | 1 | |
| (2) Bearing case | 1 | |
| (3) Needle bearing | 1 | |
| (4) Thrust washer | 1 | |
| (5) M2 gear (18T) | 1 | |
| (6) Snap ring | 3 | |
| (7) M3/M4 gear (22/25T) | 1 | |
| (8) Snap ring | 1 | |
| (9) Spline washer | 1 | |
| (10) M5 gear (27T) | 1 | |
| (11) M5 bushing | 1 | |
| (12) Mainshaft bearing | 1 | |
| (13) Set ring | 1 | |
| (14) Mainshaft (M1 gear/14T) | 1 | |



| Procedure | Qty | Remarks |
|---------------------------------------|-----|--|
| Countershaft Disassembly Order | | Assembly is in the reverse order of disassembly. |
| (1) Bearing case | 1 | |
| (2) Needle bearing | 1 | |
| (3) Thrust washer | 1 | |
| (4) C1 gear (42T) | 1 | |
| (5) Needle bearing | 1 | |
| (6) Thrust washer | 3 | |
| (7) C5 gear (29T) | 1 | |
| (8) Snap ring | 1 | |
| (9) C4 spline bushing | 1 | |
| (10) C4 gear (31T) | 1 | |
| (11) Lock washer | 1 | |
| (12) Spline washer | 1 | |
| (13) C3 gear (34T) | 1 | |
| (14) C3 spline bushing | 1 | |
| (15) Snap ring | 1 | |
| (16) Shifter gear | 1 | |
| (17) Snap ring | 1 | |
| (18) Spline washer | 1 | |
| (19) C2 gear (37T) | 1 | |
| (20) C2 bushing | 1 | |
| (21) Countershaft | 1 | |

Crankshaft, Connecting Rod Removal



NOTE

- Determine the replacement bearing color code according to the main bearing selection table (page 9-14) or the connecting rod bearing selection table (page 9-15)
- Mark and store the bearing inserts to be sure of their correct locations for reassembly.
- Refer to page 1-8 for crankshaft and rod specification.
- Refer to section 14 of the Common Service Manual for bearing inspection.

Requisite Service

- Crankcase separation (page 9-4)
- Transmission removal/installation (page 9-6)

| Procedure | Q'ty | Remarks |
|--|------|---|
| Removal Order | | |
| (1) Connecting rod bearing cap nut | 8 | |
| (2) Bearing cap | 4 | |
| (3) Connecting rod | 4 | |
| (4) Connecting rod bolt | 8 | Do not remove unless necessary. |
| (5) Connecting rod bearing | 8 | |
| (6) Alternator drive chain tensioner bolt | 3 | |
| (7) Alternator drive chain tensioner | 1 | |
| (8) Oil chamber cover bolt | 2 | |
| (9) Oil chamber cover | 1 | |
| (10) Gasket | 1 | |
| (11) Alternator shaft nut | 1 | Removal (see below) |
| (12) Washer | 1 | |
| (13) Alternator shaft assembly | 1 | Disassembly and assembly (page 9-12) |
| (14) O-ring | 1 | |
| (15) Starter clutch assembly | 1 | Disassembly and assembly (page 15-8) |
| (16) Collar | 1 | |
| (17) Alternator driven sprocket | 1 | |
| (18) Crankshaft | 1 | |
| (19) Cam chain | 1 | |
| (20) Alternator drive chain | 1 | |
| (21) Crankshaft main journal bearing | 10 | |
| (22) Alternator drive chain slipper pin bolt | 1 | |
| (23) Washer | 1 | |
| (24) Alternator drive chain slipper pin | 1 | |
| (25) Alternator drive chain slipper bolt | 1 | |
| (26) Alternator drive chain slipper | 1 | |
| (27) Air separator bolt | 1 | |
| (28) Air separator cover | 1 | Blow the oil hole in the air separator cover with compressed air. |
| (29) O-ring | 1 | |
| (30) Alternator shaft bearing | 1 | |
| (31) Breather plate | 1 | Do not remove, without necessary. |

Alternator Shaft Nut Removal/Installation

Temporarily install the alternator rotors and hold the rotor with the universal holder.

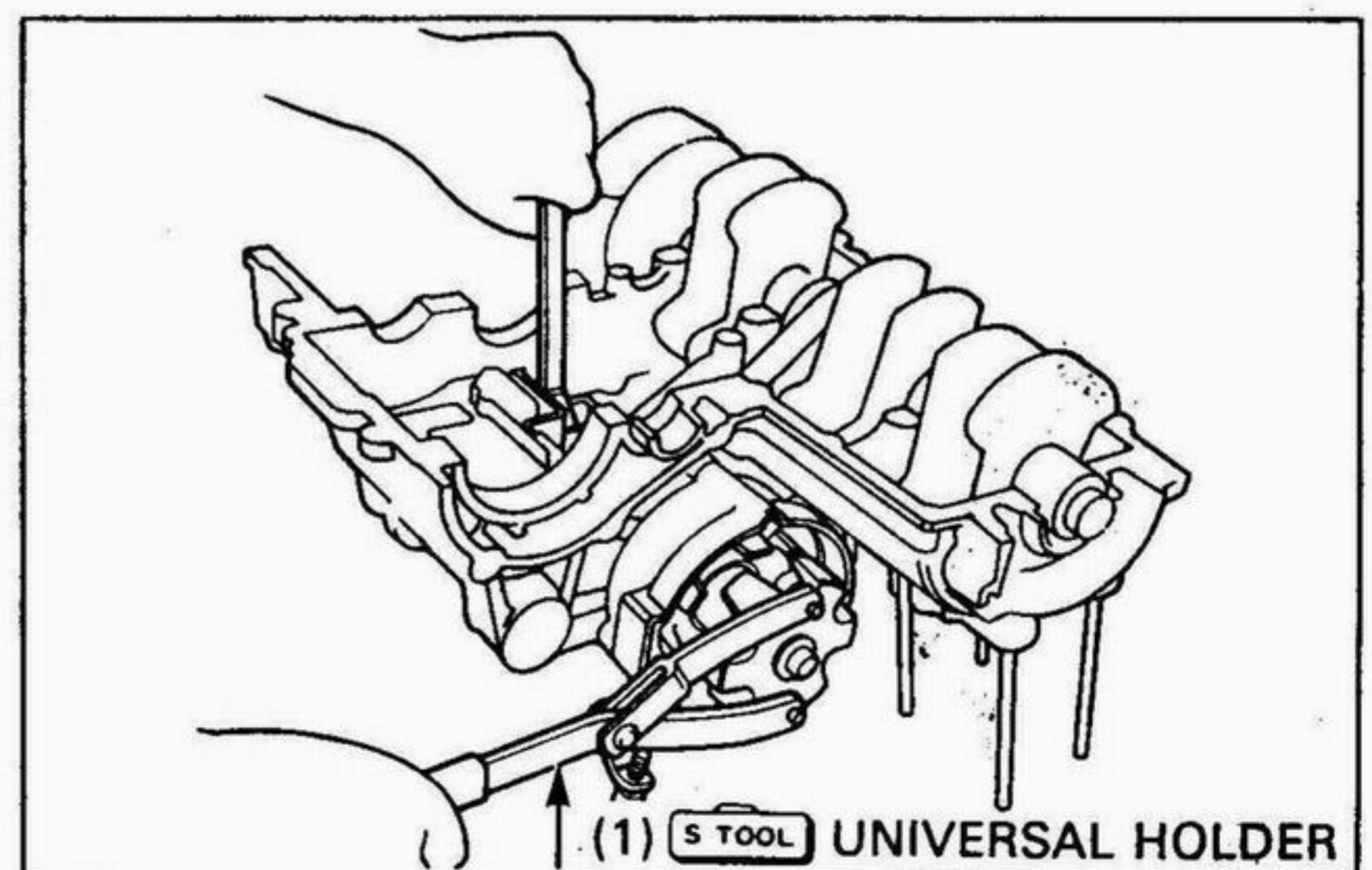
S TOOL

Universal holder 07725-0030000

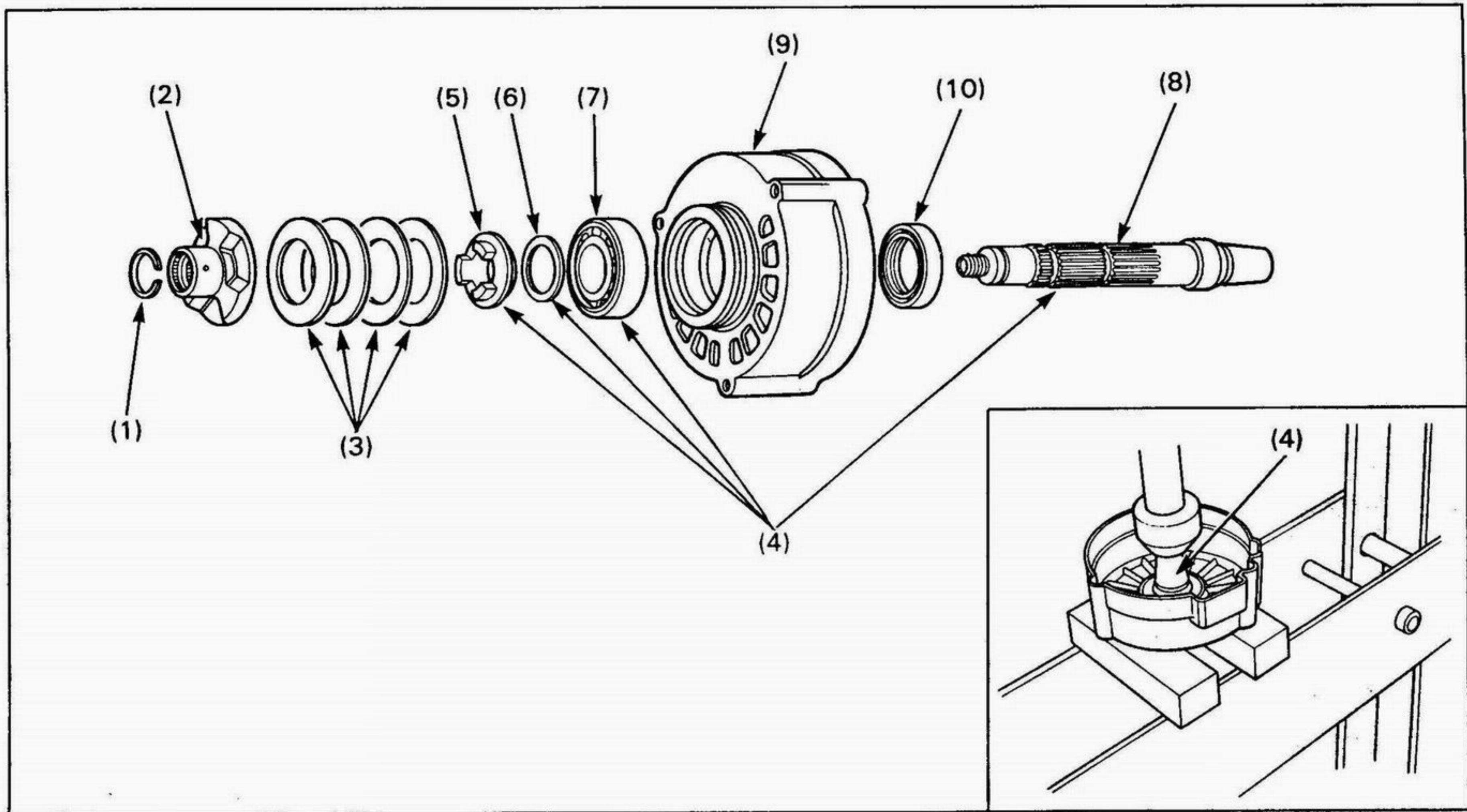
Remove the alternator shaft nut.

Installation is in the reverse order of removal.

Torque: 34 N·m (3.4 kg·m, 25 ft·lb)



Alternator Shaft Disassembly/Assembly



NOTE

- Never reinstall the old bearing; once the bearing is removed, it must be replaced with a new one.
- Blow the oil line in the alternator shaft with compressed air.

Requisite Service

- Crankshaft removal (page 9-10)

| Procedure | Q'ty | Remarks |
|-------------------------------|------|---|
| Disassembly Order | | |
| (1) Snap ring | 1 | |
| (2) Damper cam | 1 | |
| (3) Damper spring | 4 | |
| (4) Alternator shaft assembly | — | Press the alternator shaft assembly out of the alternator case. |
| (5) — Collar | 1 | |
| (6) — Washer | 1 | |
| (7) — Bearing | 1 | |
| (8) — Alternator shaft | 1 | |
| (9) Alternator case | 1 | |
| (10) Oil seal | 1 | |
| Assembly Order | | |
| (7) Bearing | 1 | — page 9-13. |
| (8) Alternator shaft | 1 | — |
| (6) Washer | 1 | — |
| (5) Collar | 1 | — |
| (3) Damper spring | 4 | — |
| (2) Damper cam | 1 | — |
| (1) Snap ring | 1 | — |
| (10) Oil seal | 1 | — |

Alternator Shaft Assembly

Drive a new bearing in the alternator case.

S TOOL

Attachment, 42×47 mm

07746-0010300

Pilot, 20 mm

07746-0040500

Driver

07749-0010000

Support the case bearing with special tools and press the alternator shaft into the bearing.

S TOOL

Attachment, I.D. 20 mm

07746-0020400

Inner Driver B

07746-0020100

Install the washer.

Support the collar with special tools and press the alternator shaft into the collar.

S TOOL

Attachment, I.D. 20 mm

07746-0020400

Inner Driver B

07746-0020100

Install the four damper springs with the dished faces facing each other as shown.

Install the damper cam onto the alternator shaft, aligning the oil holes in the damper cam and shaft.

Place the alternator shaft/case in the hydraulic press with the damper cam supported.

Compress the damper spring and secure the damper cam with the snap ring.

Support the case and press a new oil seal into the case using the special tool.

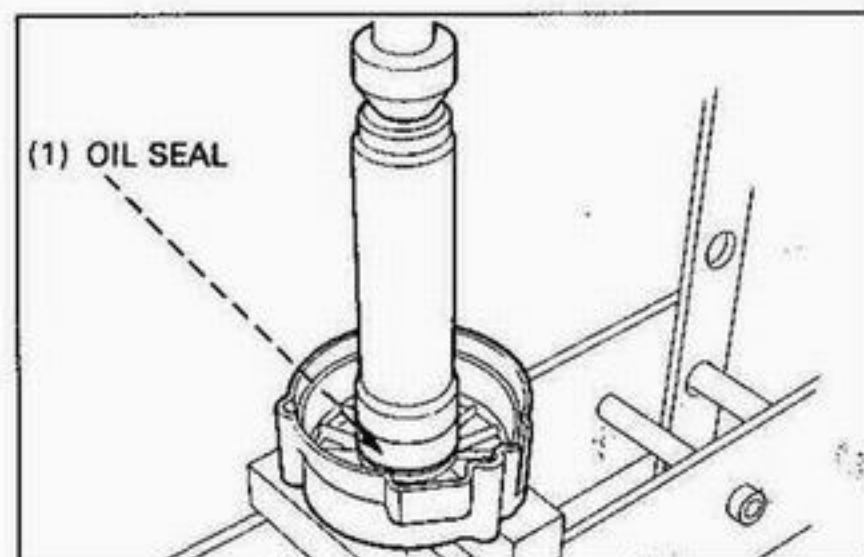
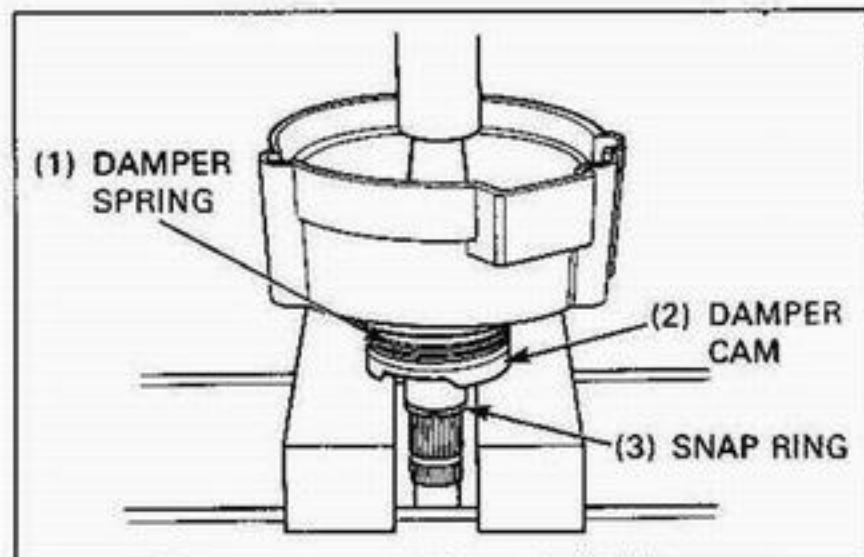
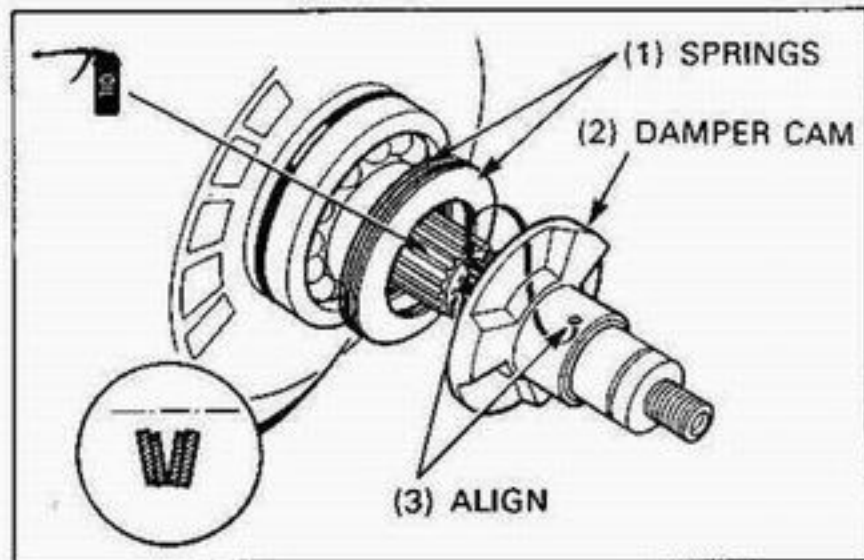
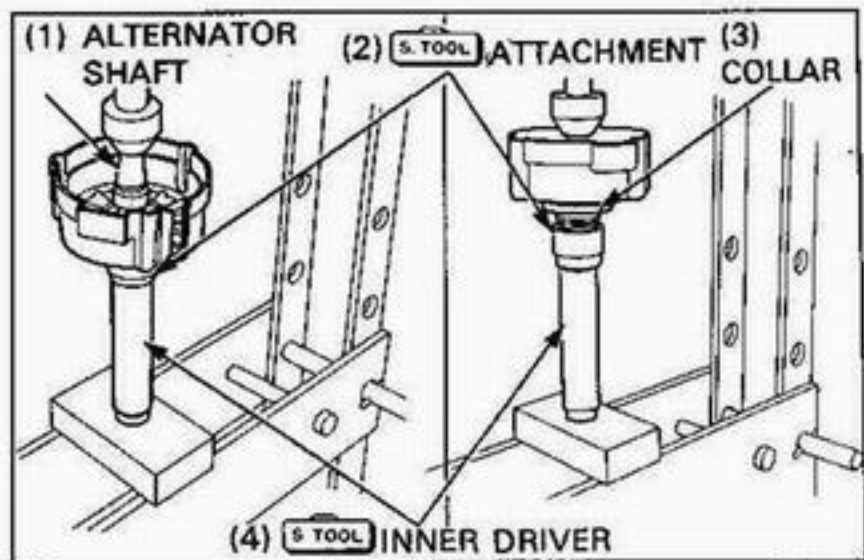
S TOOL

Attachment, I.D. 30 mm

07746-0030300

Inner Diver C

07746-0030100



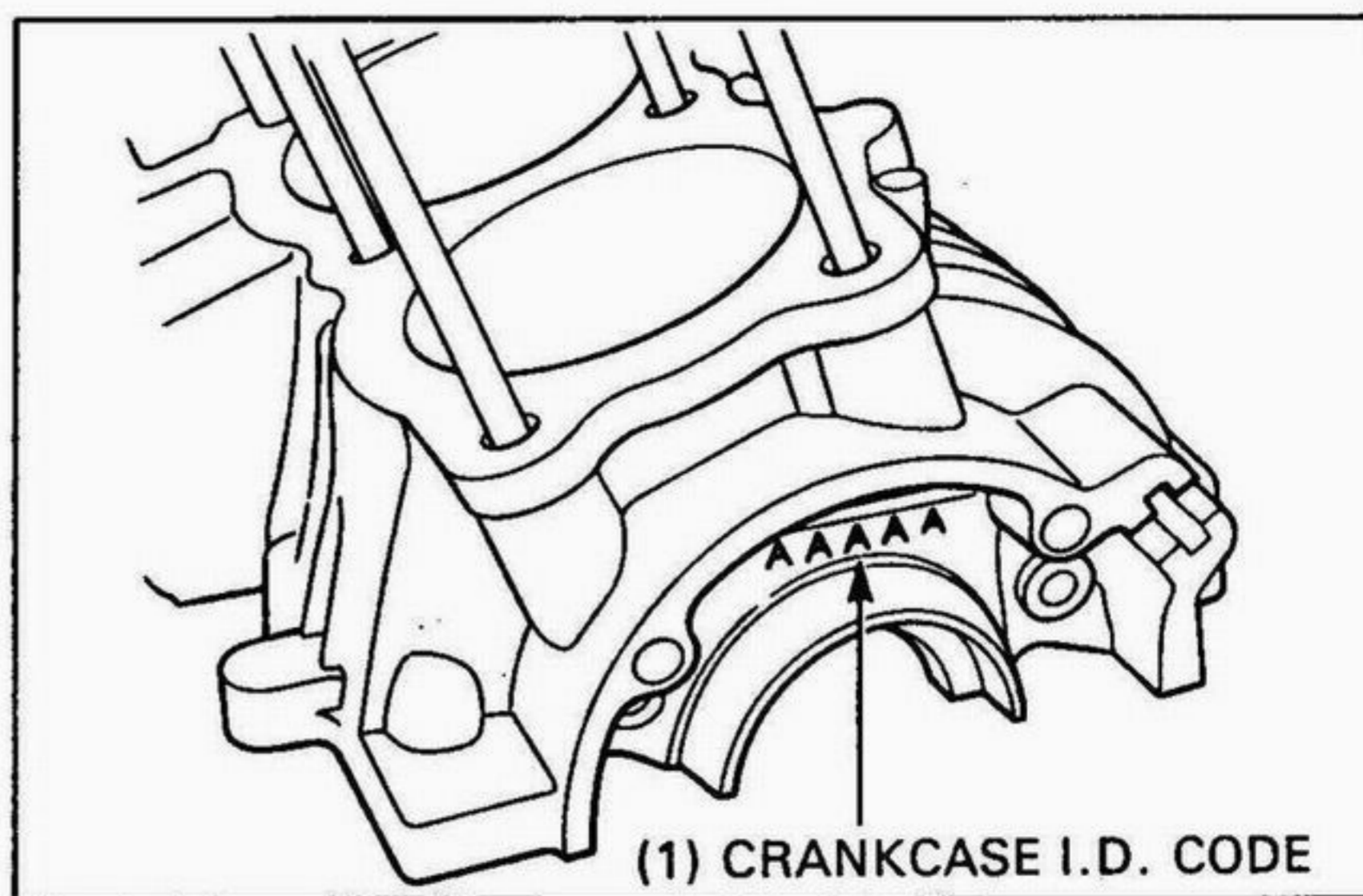
Crankshaft Bearing Replacement

Main Journal Bearing Selection

Record the crankcase I.D. code letters from the left side of the crankcase.

NOTE

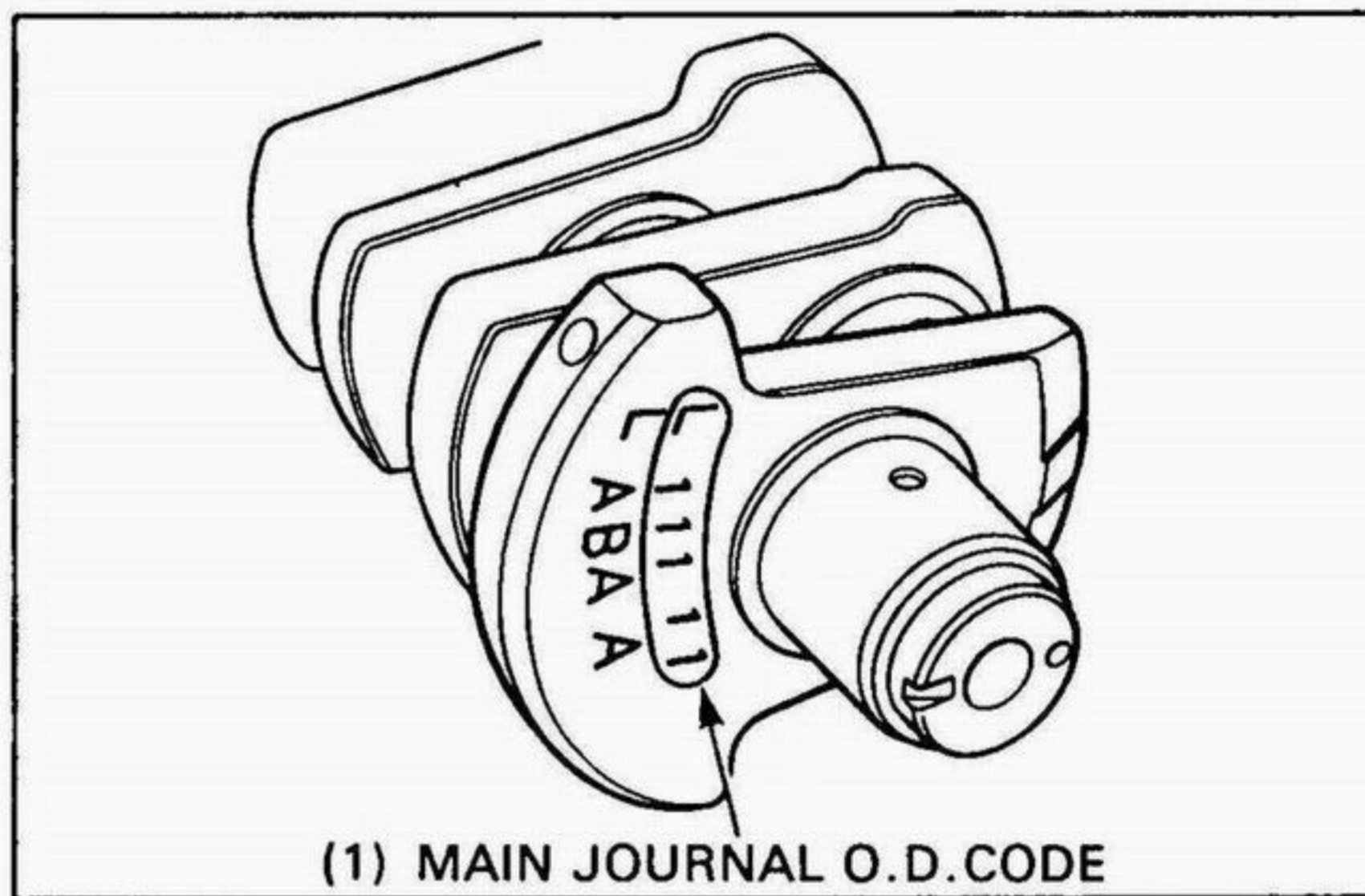
- The letters (A or B) on the upper crankcase are the codes for the main journal I.D. s, reading from the left.



Record the corresponding main journal O.D. code numbers from the crank weight.

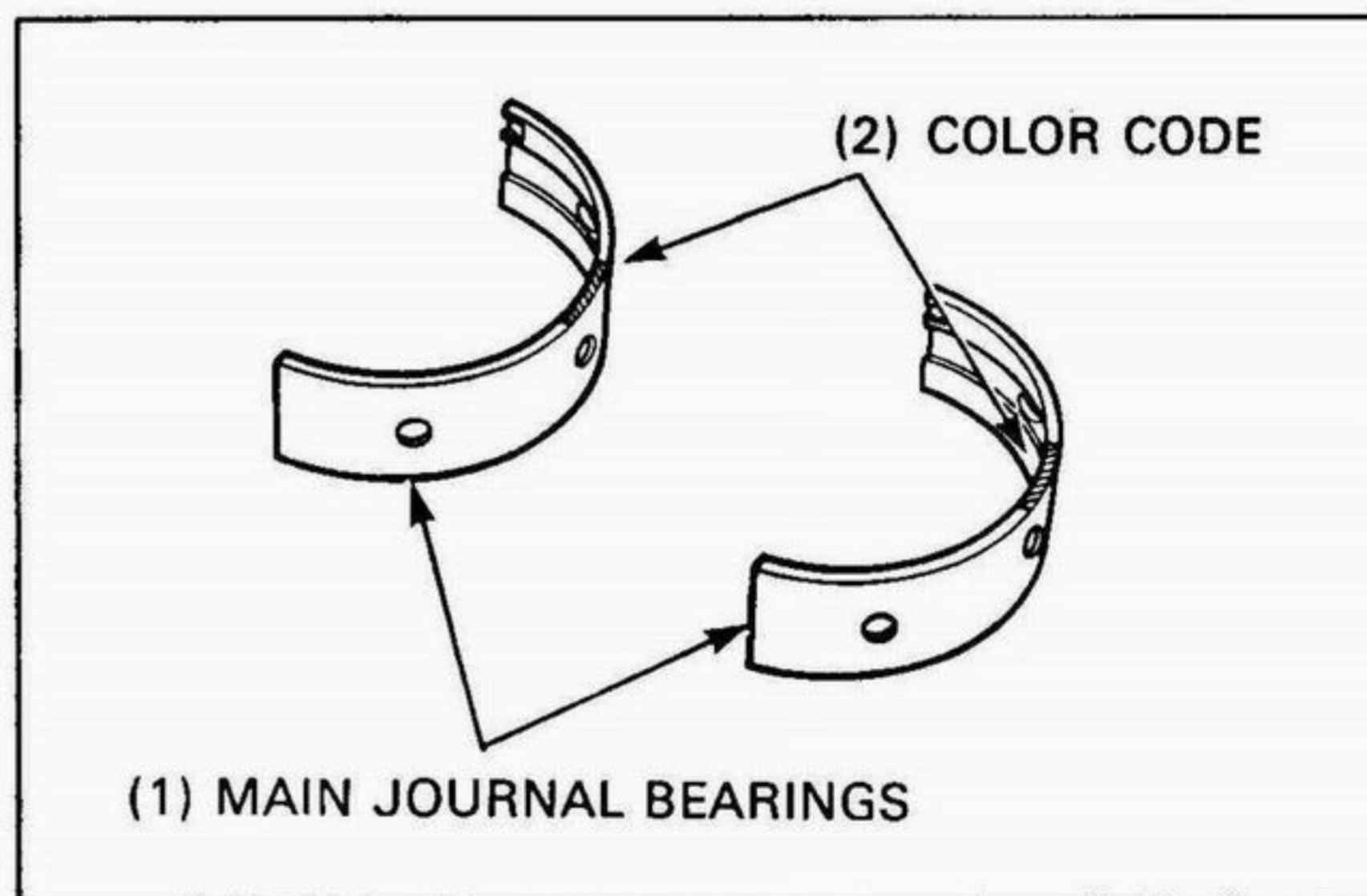
NOTE

- The numbers (1 or 2) on the crank weight are the codes for the main journal O.D. s, reading from the left.



Cross reference the case and journal codes to determine the replacement bearing color code.

| Main journal O.D. code | | 1 | 2 |
|------------------------|---|--|--|
| | | 35.992-36.000 mm (1.4170-1.4173 in) | 35.984-35.992 mm (1.4166-1.4170 in) |
| Crankcase I.D. code | A | Red | Pink |
| | B | Pink | Yellow |



Bearing thickness

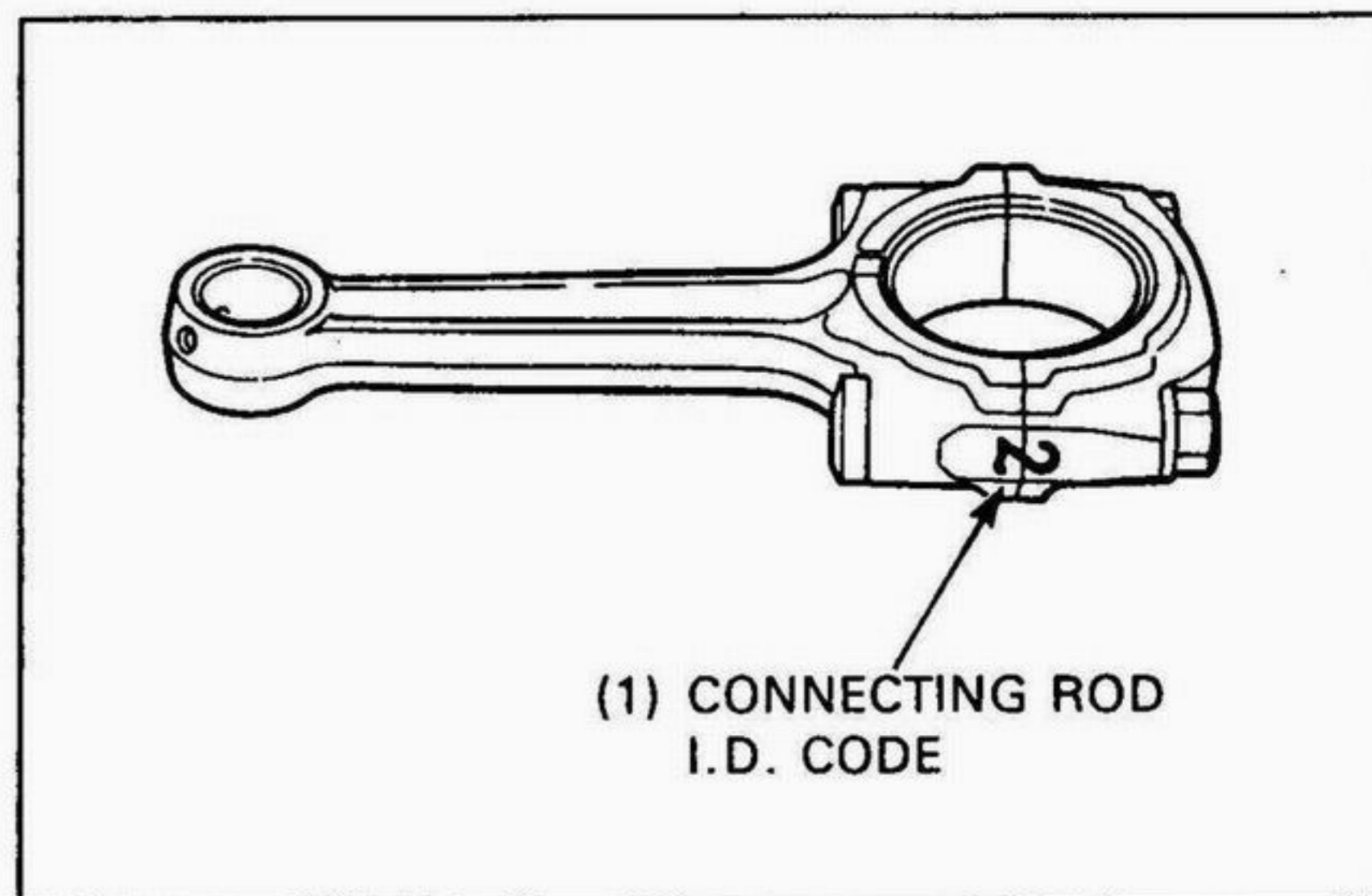
Yellow: Thick
 Pink: †
 Red Thin

Connecting Rod Bearing Selection

Record the connecting rod I.D. code numbers on the rod.

NOTE

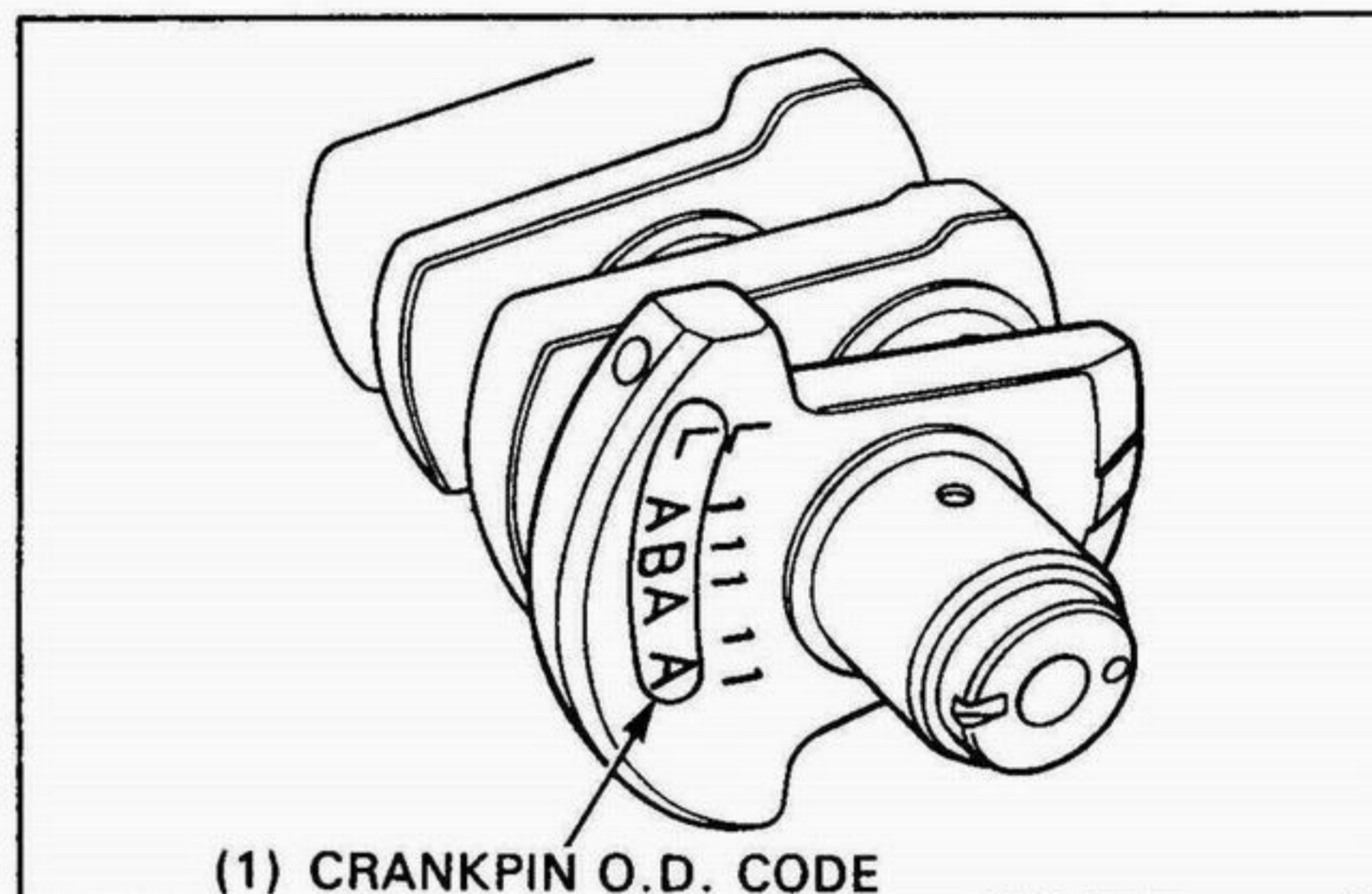
- The numbers (1 or 2) on the connecting rod are the codes for the connecting rod I.D.s.



Record the crankpin O.D. code letters from the crank weight.

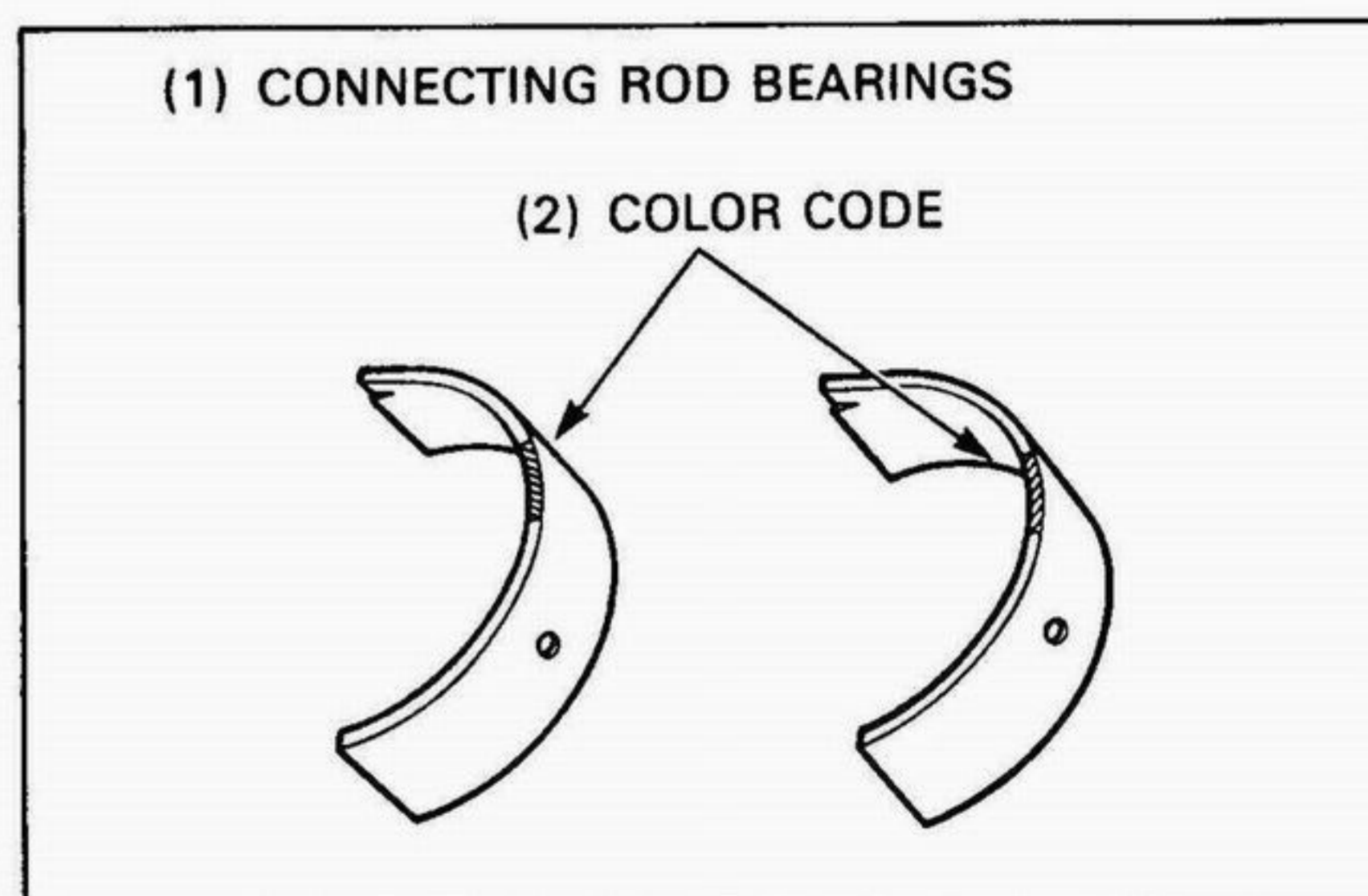
NOTE

- The letters (A or B) on the crank weight are the codes for the crankpin O.D.s, reading from the left.



Cross reference the crankpin and rod codes to determine the replacement bearing color code.

| Connecting rod I.D. code | | Crankpin O.D. code | |
|--------------------------|--|--|--|
| | | A | B |
| | | 35.992-36.000 mm (1.4170-1.4173 in) | 35.984-35.992 mm (1.4166-1.4170 in) |
| 1 | 39.000-39.008 mm (1.5354-1.5357 in) | Yellow | Green |
| 2 | 39.008-39.016 mm (1.5357-1.5360 in) | Green | Brown |



Bearing thickness

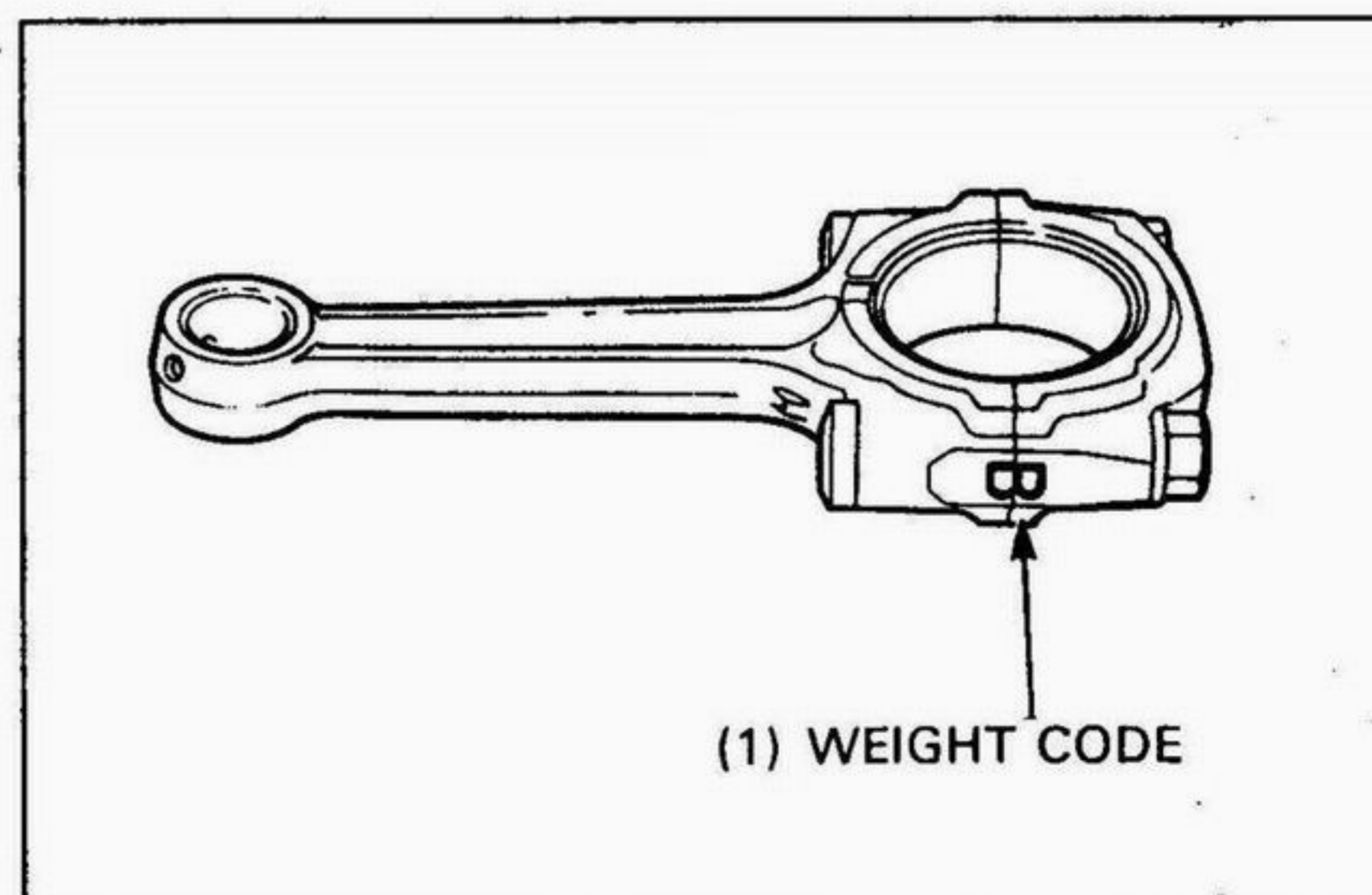
Brown: Thick
Green: †
Yellow: Thin

Connecting Rod Replacement

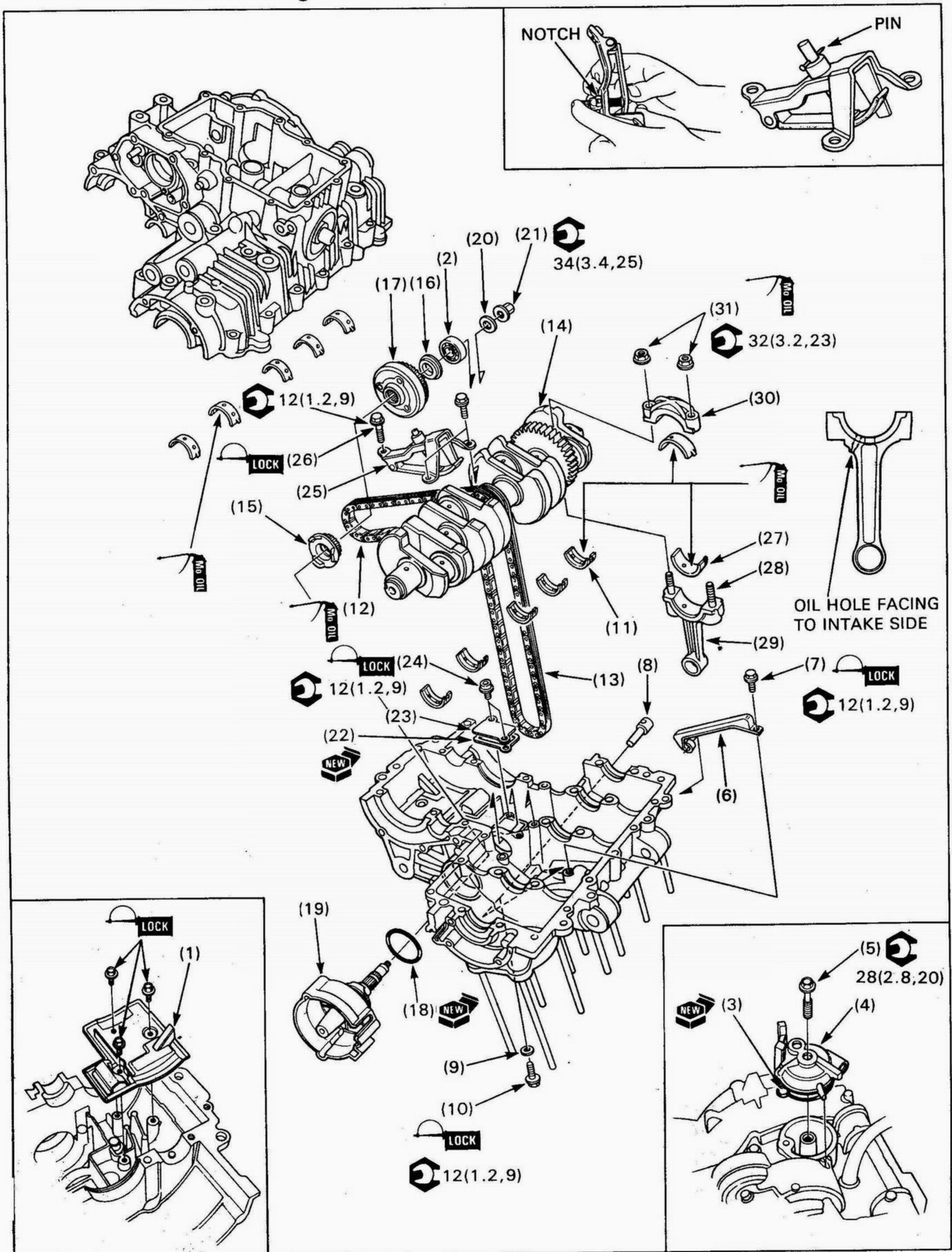
Be sure to use the connecting rods having the same weight code in an engine.

CAUTION

- If a connecting rod having the different weight code is to be used, be sure that the difference in weight (code) is held within a single weight rank.



Crankshaft, Connecting Rod Installation



NOTE

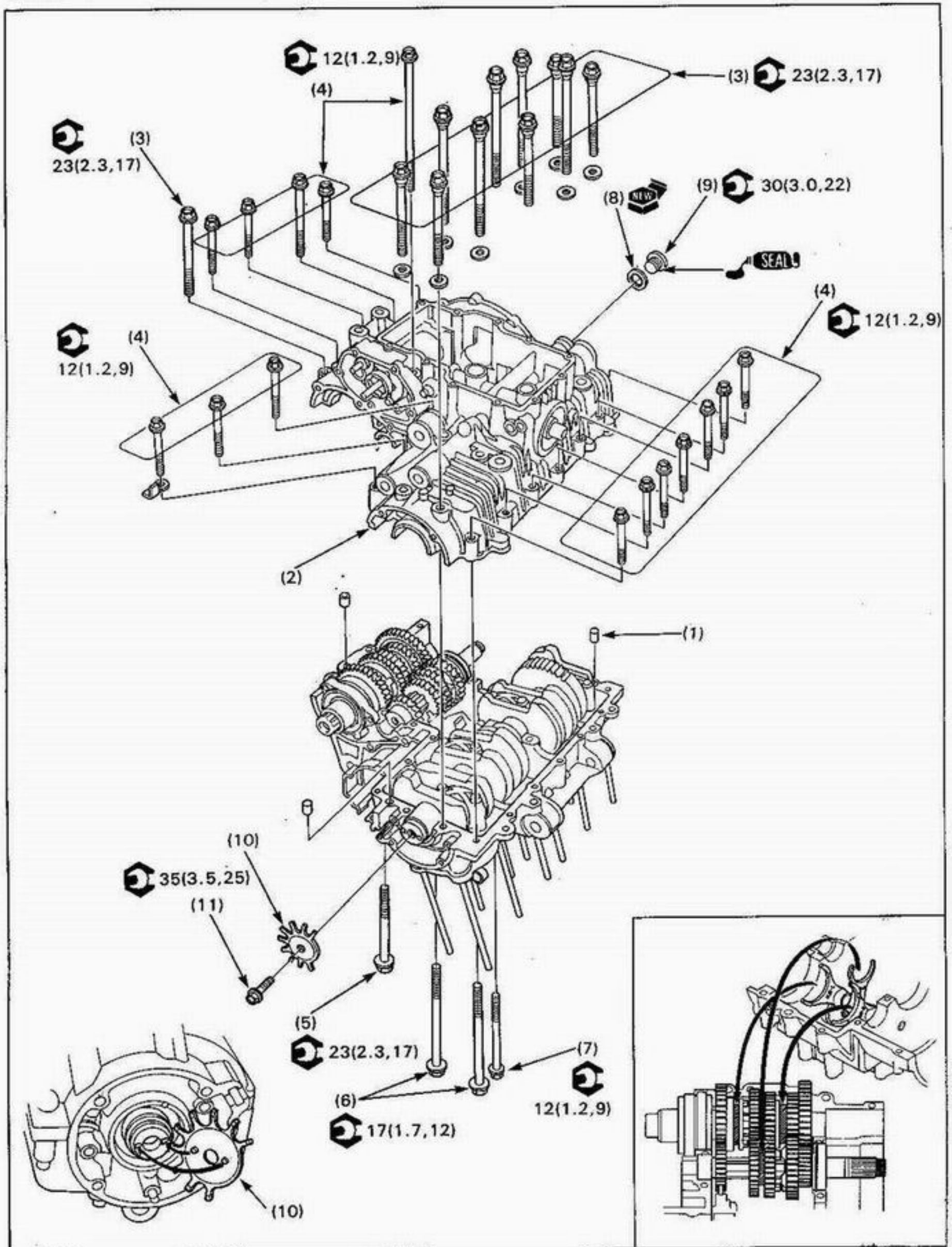
- At installation, apply molybdenum disulfide oil to the main journal bearing and connecting rod bearing surface.

Requisite Service

- Crankshaft, connecting rod removal (page 9-10)

| Procedure | | Qty | Remarks |
|---------------------------|---|-----|---|
| Installation Order | | | |
| (1) | Breather plate | 1 | |
| (2) | Alternator shaft bearing | 1 | |
| (3) | O-ring | 1 | |
| (4) | Air separator cover | 1 | Align the separator cover tang with the slot in the upper crankcase. |
| (5) | Air separator cover bolt | 1 | |
| (6) | Alternator drive chain slipper | 1 | |
| (7) | Alternator drive chain slipper bolt | 1 | |
| (8) | Alternator drive chain slipper pin | 1 | |
| (9) | Washer | 1 | |
| (10) | Alternator drive chain slipper pin bolt | 1 | |
| (11) | Crankshaft main journal bearing | 10 | <ul style="list-style-type: none"> • Wipe all oil from the bearing seating areas. • Align the bearing tabs with the groove in the crankcase. |
| (12) | Alternator drive chain | 1 | |
| (13) | Cam chain | 1 | |
| (14) | Crankshaft | 1 | |
| (15) | Alternator driven sprocket | 1 | |
| (16) | Collar | 1 | |
| (17) | Starter-clutch assembly | 1 | |
| (18) | O-ring | 1 | |
| (19) | Alternator shaft assembly | 1 | |
| (20) | Washer | 1 | |
| (21) | Alternator shaft nut | 1 | Installation (page 9-11) |
| (22) | Gasket | 1 | |
| (23) | Oil chamber cover | 1 | |
| (24) | Oil chamber cover bolt | 2 | |
| (25) | Alternator drive chain tensioner | 1 | Push the notch on the chain tensioner with a screwdriver and squeeze the tensioner until the hole in the rod appears. Insert a pin into the hole to lock the tensioner. |
| (26) | Alternator drive chain tensioner bolt | 3 | After tightening, remove the tensioner lock pin. |
| (27) | Connecting rod bearing | 8 | <ul style="list-style-type: none"> • Wipe all oil from the bearing seating areas. • Align the bearing oil hole with the oil hole in the connecting rod. |
| (28) | Connecting rod bolt | 8 | |
| (29) | Connecting rod | 4 | Face the oil holes to the intake side. |
| (30) | Bearing cap | 4 | Install then with the code letters read properly. |
| (31) | Connecting rod bearing cap nut | 8 | At installation, apply molybdenum disulfide oil to the threads and torque them in 2 or 3 steps. |

Crankcase Assembly



Requisite Service

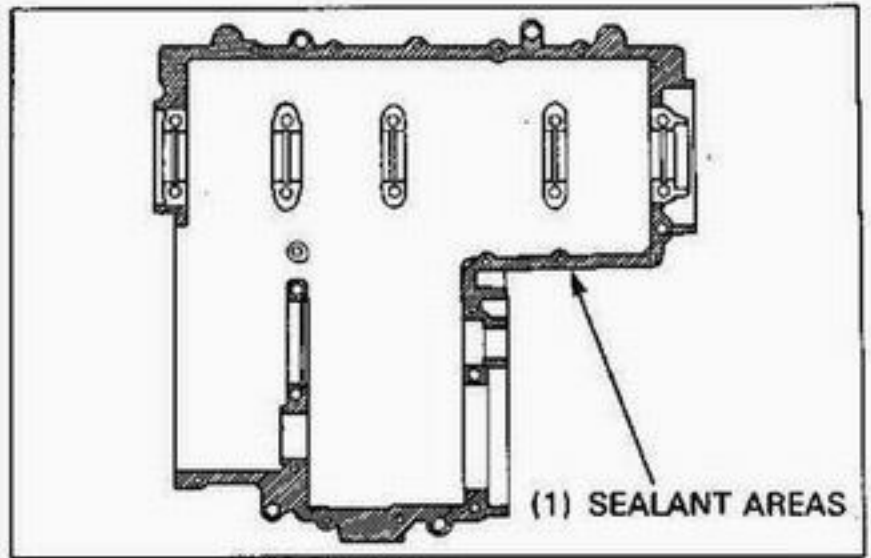
- Crankshaft, connecting rod installation (page 9-16)
- Transmission removal/installation (page 9-6)

| Procedure | | Q'ty | Remarks |
|-----------|-----------------------------|------|--|
| (1) | Dowel pin | 3 | Crankcase installation (see next page) |
| (2) | Lower crankcase | 1 | |
| (3) | Lower crankcase bolt (8 mm) | 11 | |
| (4) | Lower crankcase bolt (6 mm) | 15 | |
| (5) | Upper crankcase bolt (8 mm) | 1 | |
| (6) | Upper crankcase bolt (7 mm) | 2 | |
| (7) | Upper crankcase bolt (6 mm) | 1 | |
| (8) | Sealing washer | 1 | |
| (9) | Sealing bolt | 1 | |
| (10) | Pulse rotor | 1 | |
| (11) | Pulse rotor bolt | 1 | |

Crankcase Installation

Apply a light but thorough coating of sealant to the upper crankcase mating surface except to the main bearing journal bolt mating areas as shown.

Assemble the crankcase.



Install the crankcase bolts and sealing washers.

NOTE

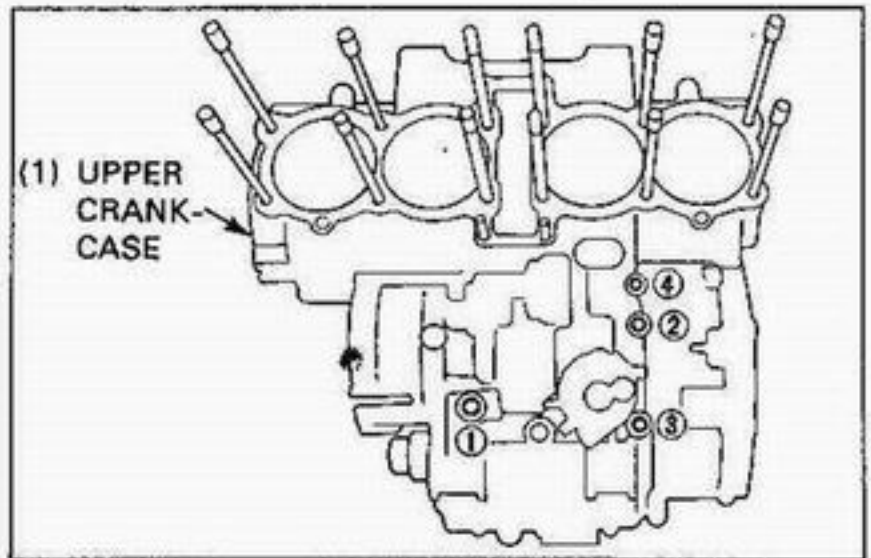
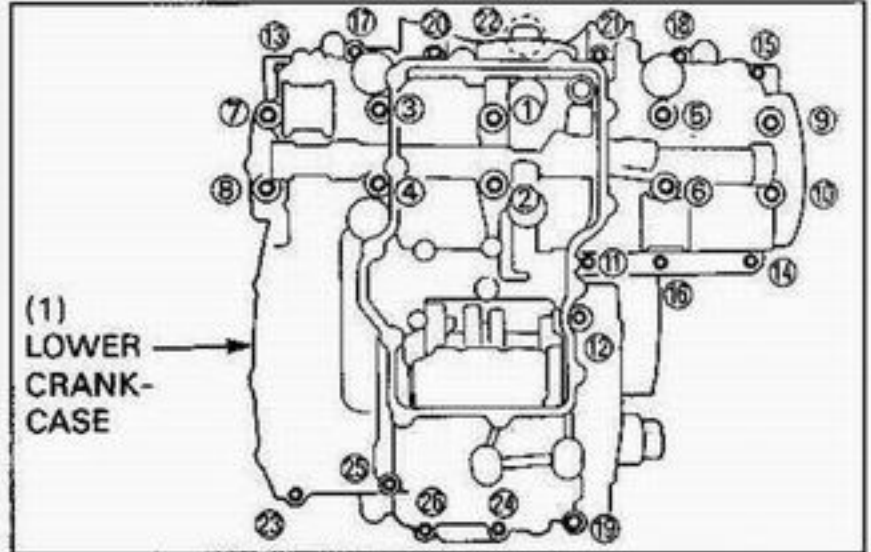
- Ten 8 mm bolts (for the crankshaft main journals) have sealing washers.

Tighten all crankcase bolts in a gradual, crisscross pattern, beginning with larger diameter bolts first as shows.

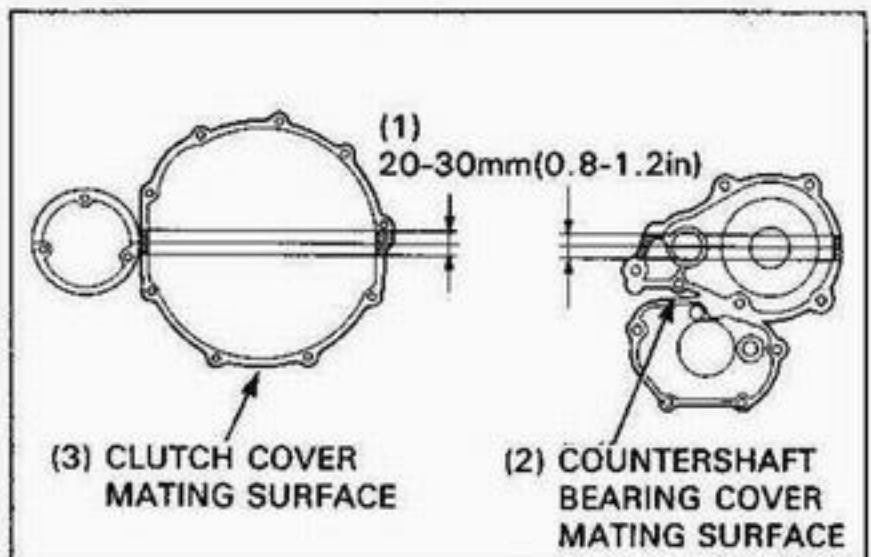
Torque:

8 mm crankcase bolt: 23 N·m (2.3 kg-m, 17 ft-lb)

6 mm crankcase bolt: 12N·m (1.2 kg-m, 9 ft-lb)



Apply a sealant to the countershaft bearing cover and clutch cover mating surfaces as shown.



10. Front Wheel/Suspension/Steering

| | | | |
|----------------------------------|------|------------------------------------|-------|
| Service Information | 10-1 | Fork Removal/Installation | 10-8 |
| Troubleshooting | 10-1 | Fork Disassembly | 10-10 |
| Handlebar Removal/Installation | 10-2 | Fork Assembly | 10-12 |
| Front Wheel Removal/Installation | 10-4 | Steering Stem Removal/Installation | 10-14 |
| Front Wheel Disassembly/Assembly | 10-6 | | |

Service Information

⚠ WARNING

- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.

- Refer to section 12 for brake system information.
- Refer to section 16 for light, meter and switch information.
- Tubeless tire removal, repair, and remounting procedures are covered in section 16 of the Common Service Manual.
- When servicing the front wheel, fork or steering stem, support the motorcycle securely with a jack or other support. Do not use the oil filter as a jack point.

10

Troubleshooting

Hard Steering

- Steering head bearing adjustment nut too tight
- Faulty steering head bearings
- Insufficient tire pressure
- Faulty tire

Steers To One Side Or Does Not Track Straight

- Bent fork
- Bent front axle
- Wheel installed incorrectly
- Faulty steering head bearings
- Bent frame
- Worn wheel bearing
- Worn swingarm pivot components

Front Wheel Wobbling

- Bent rim
- Worn front wheel bearings
- Faulty tire
- Unbalanced tire and wheel

Wheel Turns Hard

- Faulty wheel bearing
- Faulty speedometer gear
- Bent front axle

Soft Suspension

- Insufficient fluid in fork
- Weak springs
- Low fluid level in fork
- Low tire pressure

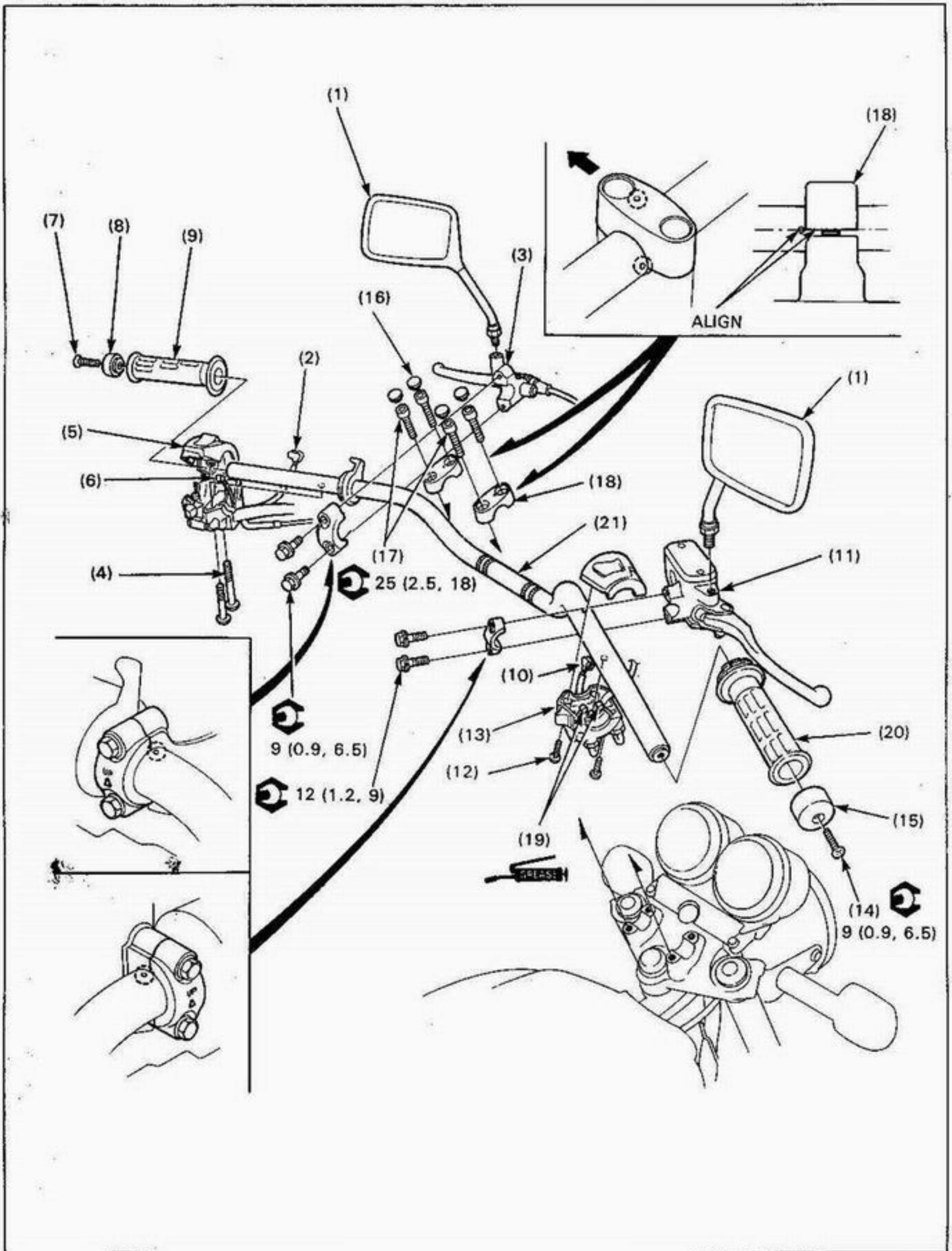
Hard Suspension

- Incorrect fluid weight
- Bent fork tubes
- Clogged fluid passage
- High tire pressure

Front Suspension Noisy

- Insufficient fluid in fork
- Loose fork fasteners
- Lack of grease in speedometer gear

Handlebar Removal/Installation



NOTE

- Using wires, hang the front brake master cylinder at least as high as the position it was originally installed to prevent air from getting into the master cylinder. Do not twist the brake hose.
- Route the cables and wire harnesses properly (page 1-21).
- After installing the handlebar, adjust-
 - the throttle cable
 - the clutch cable
 - the choke cable

| Procedure | | Q'ty | Remarks |
|-----------|--------------------------------------|------|---|
| | Removal Order | | Installation is in the reverse order of removal. |
| (1) | Rearview mirror | 2 | |
| (2) | Clutch switch connector | 2 | |
| (3) | Clutch lever assembly | 1 | Align the holder end with the punch mark on the handlebar and face the holder "UP" mark upward. Tighten the upper bolt first, then the lower bolt. |
| (4) | Left handlebar switch housing screw | 2 | Tighten the front screw first, then the rear screw. |
| (5) | Left handlebar switch housing | 1 | |
| (6) | Choke cable | 1 | |
| (7) | Handlebar weight mounting screw | 1 | |
| (8) | Handlebar weight | 1 | |
| (9) | Handle grip | 1 | Apply Honda Bond A or an equivalent to the inside surface of the grip. |
| (10) | Brake light switch connector | 2 | |
| (11) | Master cylinder | 1 | Align the holder end with the punch mark on the handlebar and face the holder "UP" mark upward. Tighten the upper bolt first, then the lower bolt. |
| (12) | Right handlebar switch housing screw | 2 | Tighten the front screw first, then the rear screw. |
| (13) | Right handlebar switch housing | 1 | |
| (14) | Handlebar weight mounting screw | 1 | |
| (15) | Handlebar weight | 1 | |
| (16) | Cap | 4 | |
| (17) | Handlebar holder bolt | 4 | Tighten the front bolts first, then the rear bolts. |
| (18) | Handlebar holder | 2 | Install the upper holder with its punch mark facing forward. |
| (19) | Throttle cable end | 2 | |
| (20) | Throttle pipe | 1 | |
| (21) | Handlebar | 1 | Place the handlebar onto the lower holder and align the punch marks on the handlebar with the lower surface of the handlebar holder. |

▲ WARNING

- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.

CAUTION

- Do not suspend the brake caliper from the brake hose. Do not twist the brake hose.

NOTE

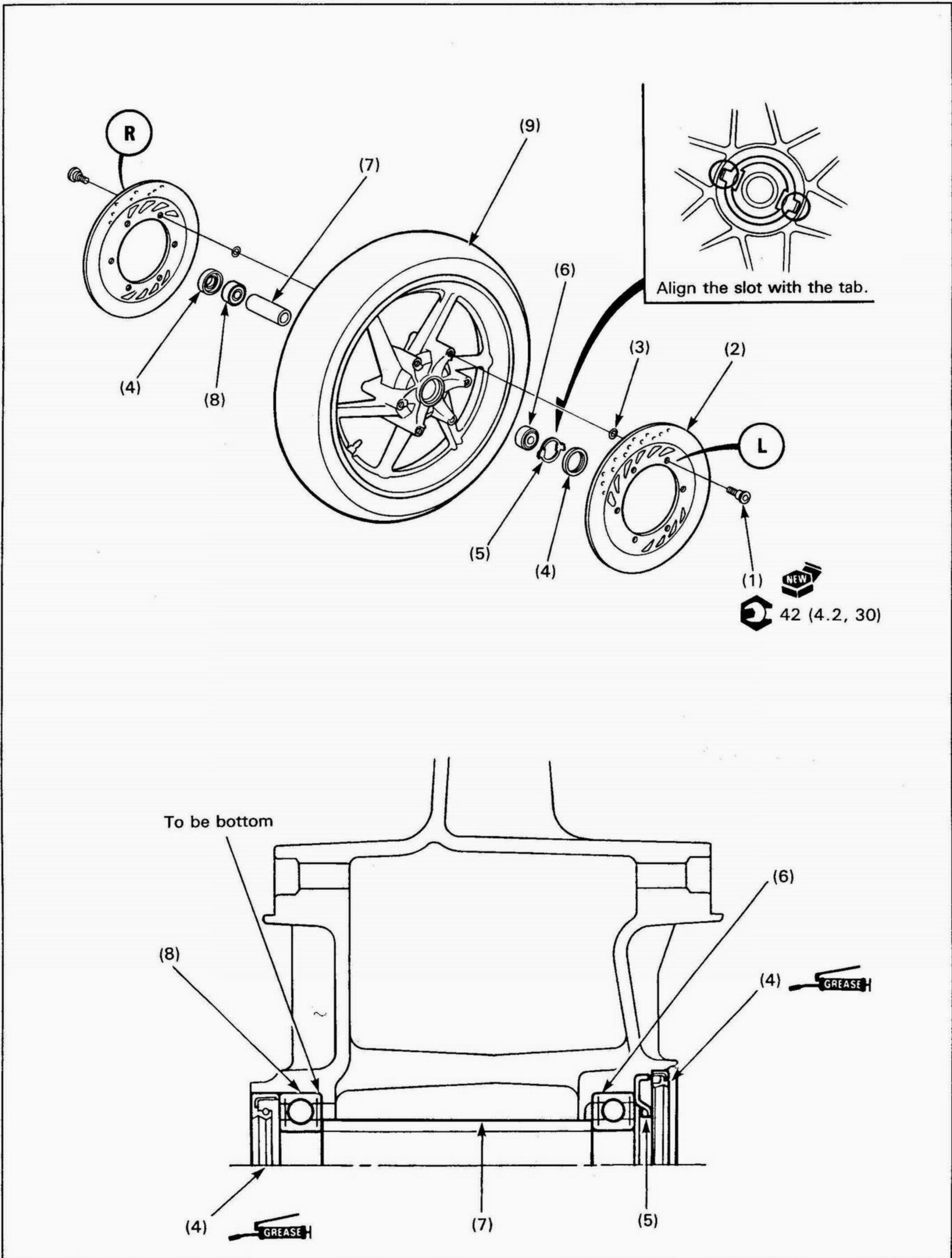
- Do not apply the brake lever after the front wheel is removed.
- Apply thin coat clean grease to the front axle before installation.
- Check the clearance between the brake disc and caliper bracket on each side installation. The clearance should be at least 0.7 mm (0.03 in).

Requisite Service

- Raise the front wheel off the ground.

| Procedure | | Q'ty | Remarks |
|-----------|------------------------------|------|--|
| | Removal Order | | Installation is in the reverse order of removal. |
| (1) | Caliper bracket bolt | 2 | |
| (2) | Left brake caliper assembly | 1 | |
| (3) | Speedometer cable | 1 | |
| (4) | Front axle pinch bolt | 4 | |
| (5) | Front axle bolt | 1 | |
| (6) | Front axle | 1 | |
| (7) | Front wheel assembly | 1 | NOTE |
| | | | <ul style="list-style-type: none"> • When installing or removing, slide the right brake caliper out so that the wheel rim clears. • When installing, align the stopper on the speedometer gear box with the tab on the left fork slider. |
| (8) | Right side collar | 1 | |
| (9) | Speedometer gearbox assembly | 1 | |

Front Wheel Disassembly/Assembly



▲ WARNING

- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.

NOTE

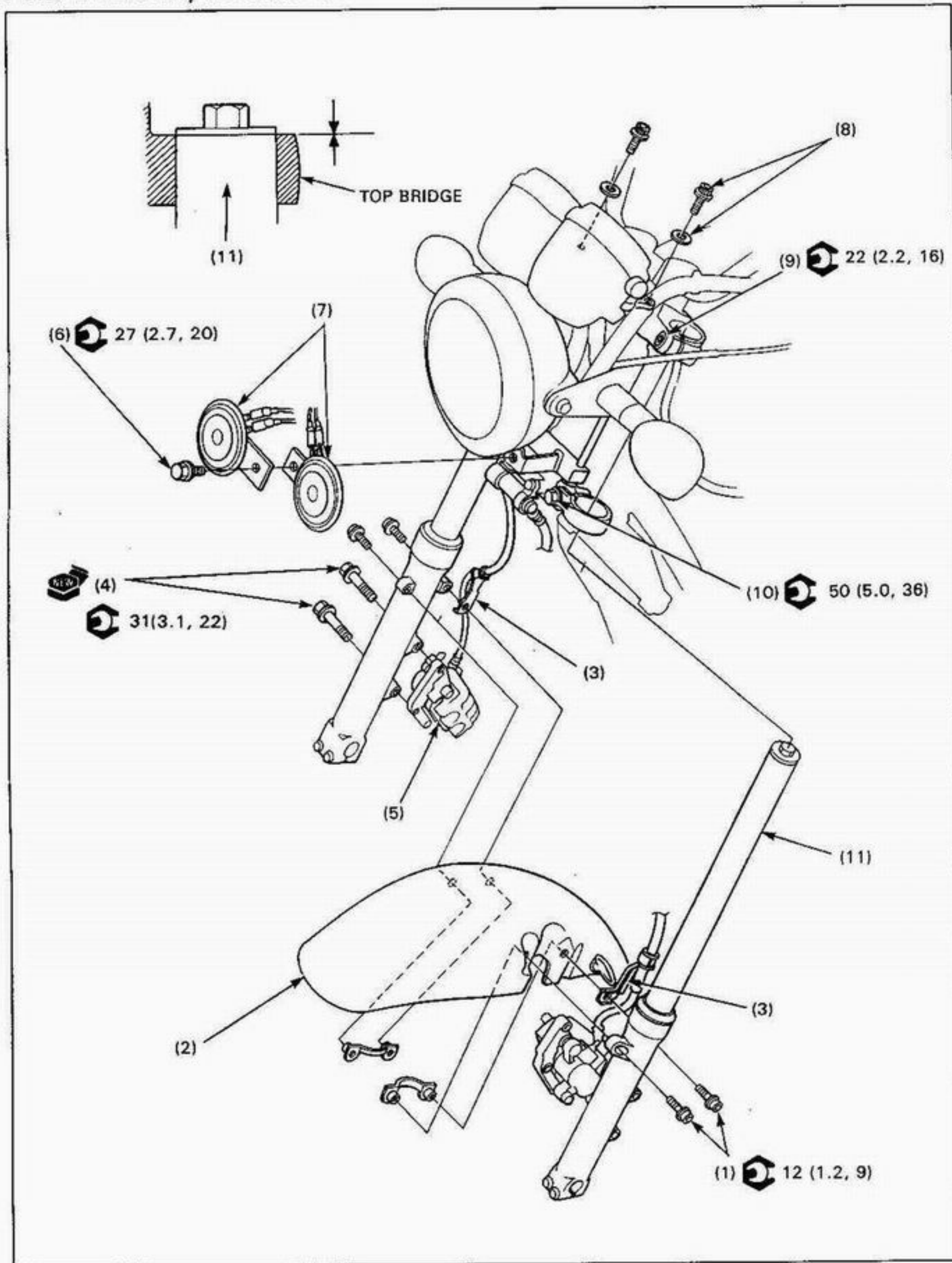
- Always replace wheel bearings as a set.
- For wheel bearing replacement, refer to section 1 of the Common Service Manual.

Requisite Service

- Front wheel removal/installation (page 10-4)

| Procedure | | Qty | Remarks |
|-----------|-------------------------------|-----|---|
| | Disassembly Order | | Assembly is in the reverse order of disassembly. |
| (1) | Brake disc bolt | 12 | |
| (2) | Brake disc | 2 | Install with the stamped side outward as shown. |
| (3) | Shim | 12 | |
| (4) | Dust seal | 2 | At installation, apply grease to the dust seal lips. |
| (5) | Speedometer gear retainer | 1 | |
| (6) | Left wheel bearing (6004 UU) | 1 | |
| (7) | Distance collar | 1 | |
| (8) | Right wheel bearing (6004 UU) | 1 | At assembly, drive in the right side bearing first, then the left side bearing. |
| (9) | Front wheel/tire | 1/1 | |

Fork Removal/Installation



CAUTION

- Support the removed caliper with a piece of wire so that it does not hang from the brake hose. Do not twist the brake hose.

NOTE

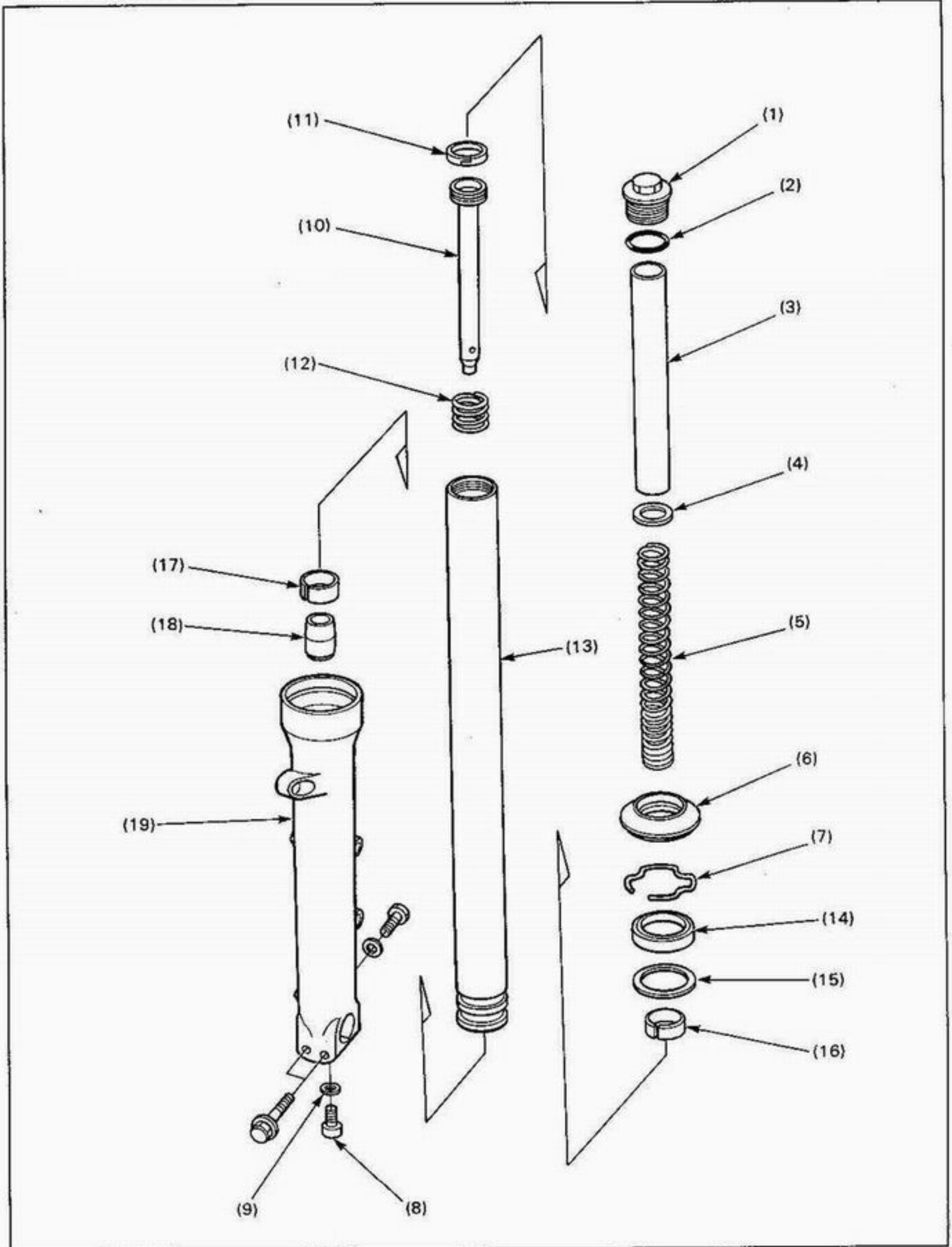
- Do not squeeze the brake lever when the caliper is removed, or it will be difficult to refit the disc between the brake pads.
- Before removing the fork, loosen the fork cap but do not remove it.

Requisite Service

- Front wheel removal/installation (page 10-4)

| Procedure | | Q'ty | Remarks |
|-----------|----------------------------|------|---|
| | Removal Order | | Installation is in the reverse order of removal. |
| (1) | Front fender bolt | 4 | |
| (2) | Front fender | 1 | |
| (3) | Brake hose clamp | 2 | |
| (4) | Caliper bracket bolt | 2 | |
| (5) | Caliper assembly | 1 | |
| (6) | Horn mounting bolt | 1 | |
| (7) | Horn | 2 | |
| (8) | Meter mounting bolt/washer | 2 | |
| (9) | Fork pinch bolt (upper) | 2 | Only loosen the bolts. |
| (10) | Fork pinch bolt (lower) | 2 | Only loosen the bolts. |
| | | | If the fork legs were disassembled, temporarily tighten the bottom pinch bolt and tighten the fork cap. |
| (11) | Fork assembly | 2 | |

Fork Disassembly



▲ WARNING

- The fork cap is under spring pressure. Use care when removing it and wear face protection.

NOTE

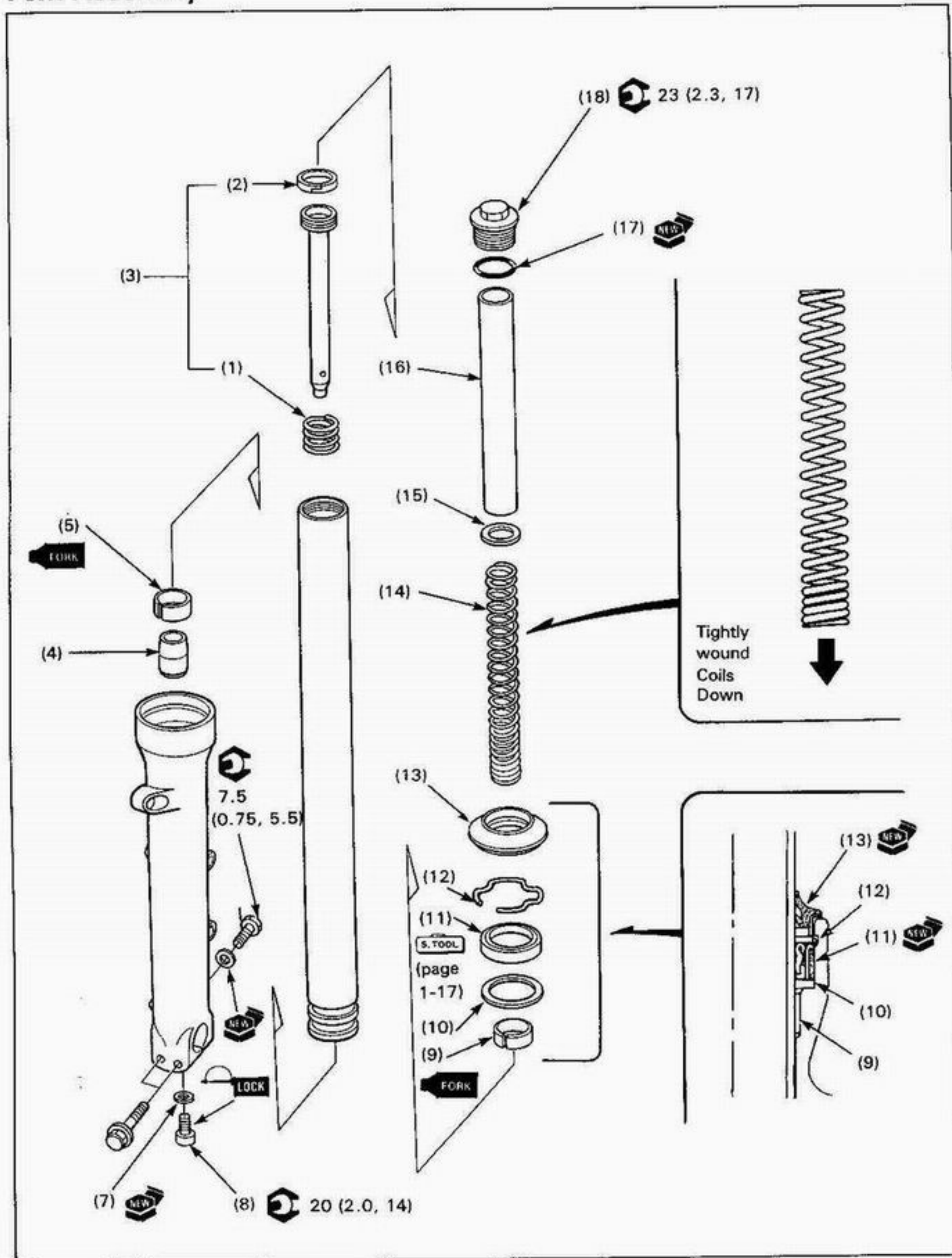
- Temporarily install the fork spring, spacer, and fork cap if the socket bolt turns with the fork piston, during socket bolt removal.
- Always replace oil seal with new one.

Requisite Service

- Fork removal (page 10-8)

| Procedure | Qty | Remarks |
|--------------------------|-----|---|
| Disassembly Order | | |
| (1) Fork cap | 1 | |
| (2) O-ring | 1 | |
| (3) Spacer | 1 | |
| (4) Spring seat | 1 | |
| (5) Fork spring | 1 | After removing, pour out any remaining fork oil. |
| (6) Dust seal | 1 | When removing, do not damage the fork tube. |
| (7) Stopper ring | 1 | |
| (8) Fork socket bolt | 1 | |
| (9) Sealing washer | 1 | |
| (10) Fork piston | 1 | |
| (11) Fork piston ring | 1 | Do not remove it unless replacement is necessary. |
| (12) Rebound spring | 1 | |
| (13) Fork tube | 1 | |
| (14) Oil seal | 1 | |
| (15) Back up ring | 1 | |
| (16) Slider bushing | 1 | |
| (17) Fork tube bushing | 1 | Do not remove it unless replacement is necessary. |
| (18) Oil lock piece | 1 | |
| (19) Fork slider | 1 | |

Fork Assembly



NOTE

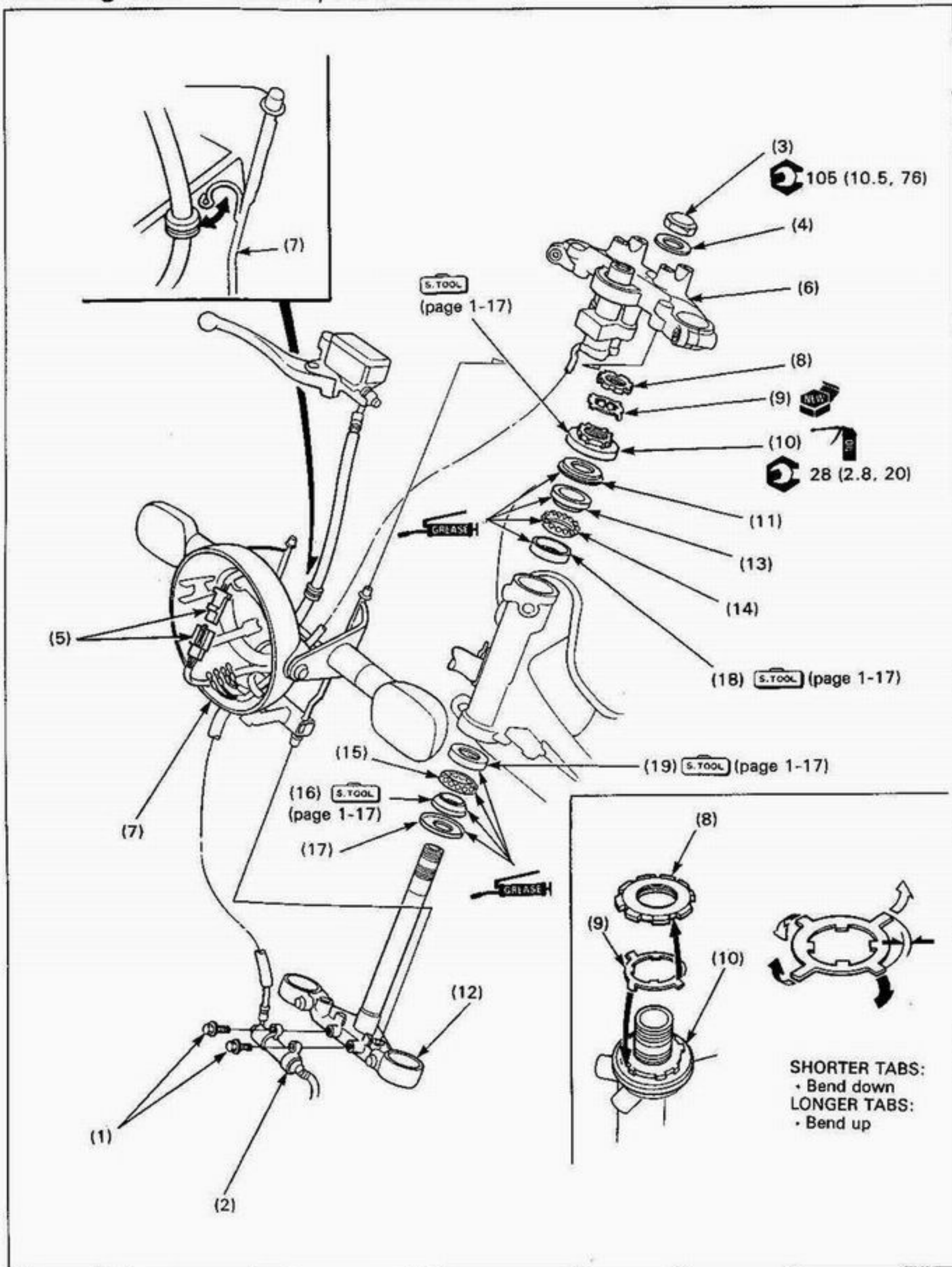
- Always replace the oil seal with a new one.
- Coat the new oil seal with the recommended fork oil and install it with the mark facing up.
- After assembling the fork legs, install each fork leg into the lower fork bridge first, then torque the fork cap.

Requisite service

- Fork disassembly (page 10-10)
- Fork installation (page 10-8)

| Procedure | | Qty | Remarks |
|-----------------------|----------------------|-----|---|
| Assembly Order | | | |
| (1) | Rebound spring | 1 | |
| (2) | Fork piston ring | 1 | Replace with a new one if it was removed from the piston. |
| (3) | Fork piston assembly | 1 | Insert into the fork tube. |
| (4) | Oil lock piece | 1 | Insert onto the piston. |
| (5) | Fork tube bushing | 1 | Replace with a new one if it was removed from the fork tube. |
| (6) | Fork tube | 1 | |
| (7) | Sealing washer | 1 | |
| (8) | Fork socket bolt | 1 | If the socket bolt turns together with the fork piston, temporarily install the fork spring, spacer and fork cap, then tighten the socket bolt. |
| (9) | Slider bushing | 1 | |
| (10) | Back up ring | 1 | |
| (11) | Oil seal | 1 | <ul style="list-style-type: none"> • Wrap vinyl tape around the fork tube top end to avoid damaging the oil seal during installation. • Use fork seal driver (07947-KA50100) and attachment (07947-KF00100) for fork seal installation. |
| (12) | Stopper ring | 1 | |
| (13) | Dust seal | 1 | After installing, compress the fork tube fully and pour the specified amount of fork fluid (page 1-11) into the fork tube. |
| (14) | Fork spring | 1 | Wipe all oil off the spring thoroughly using a clean lint free cloth and install with tightly wound coil end facing down. |
| (15) | Spring seat | 1 | |
| (16) | Spacer | 1 | |
| (17) | O-ring | 1 | Apply oil to the new O-ring. |
| (18) | Fork cap | 1 | CAUTION <ul style="list-style-type: none"> • Be careful not to cross-thread the fork cap. • Screw in the cap, but do not tighten yet. |

Steering Stem Removal/Installation



NOTE

- Replace the bearings and races as a set.
- At installaion, apply grease to all bearing surfaces.
- Check the steering head bearing preload (page 1-11) after torquing the stem nut.

Requisite Service

- Fork removal/installation (page 10-6)
- Meter removal/installation (page 16-5)
- Handlebar removal/installation (page 10-2)

| Procedure | Qty | Remarks |
|---|-----|--|
| Removal Order | | |
| (1) Brake hose joint mounting bolt | 2 | |
| (2) Brake hose joint | 1 | |
| (3) Steering stem nut | 1 | After removing, remove the fork tubes. |
| (4) Thrust washer | 1 | |
| (5) Ignition switch connector | 1 | Disconnect inside the headlight case (page 1-21). |
| (6) Top bridge assembly | 1 | |
| (7) Headlight/stay assembly | 1 | Support with a piece of wire so it does not hang from the cable or wire harness. |
| (8) Lock nut | 1 | Remove, after straightening the lock washer tabs. |
| (9) Lock washer | 1 | |
| (10) Steering head bearing adjustment nut | 1 | |
| (11) Dust seal | 1 | |
| (12) Steering stem | 1 | |
| (13) Upper bearing inner race | 1 | |
| (14) Upper bearing | 1 | |
| (15) Lower bearing | 1 | |
| (16) Lower bearing inner race | 1 | Replace if removed. |
| (17) Dust seal | 1 | • Use race remover attachment (07953-MJ10100) with driver (07953-MJ10200) for upper outer race removal. |
| (18) Upper bearing outer race | 1 | • Use race remover (07946-3710500) for lower outer race removal. |
| (19) Lower bearing outer race | 1 | |
| Installation Order | | |
| (19) Lower bearing outer race | 1 | Replace as a set, if necessary. |
| (18) Upper bearing outer race | 1 | • Use attachment, 52 x 55 mm (07746-010400) and driver (07749-0010000) for lower outer race installation. |
| (17) Dust seal | 1 | |
| (16) Lower bearing inner race | 1 | • Use attachment, 42 x 47 mm (07746-0010300) and driver (07749-0010000) for upper outer race installation. |
| (15) Lower bearing | 1 | • Use steering stem driver (07946-MB00000) for lower inner race installation. |
| (14) Upper bearing | 1 | |
| (13) Upper bearing inner race | 1 | |
| (12) Steering stem | 1 | |
| (11) Dust seal | 1 | |
| (10) Steering head bearing adjustment nut | 1 | Installation: refer to section 18 of the Common Service Manual (Retainer-Type Ball Bearings). |
| (9) Lock washer | 1 | |
| (8) Lock nut | 1 | |
| (7) Headlight/Stay assembly | 1 | |
| (6) Top bridge assembly | 1 | |
| (5) Ignition switch connector | 1 | |
| (4) Thrust washer | 1 | |
| (3) Steering stem nut | 1 | Temporarily install fork and torque the nut. |
| (2) Brake hose joint | 1 | |
| (1) Brake hose joint mounting bolt | 2 | |

MEMO

11. Rear Wheel/Suspension

| | | | |
|---------------------------------|------|-------------------------------------|-------|
| Service Information | 11-1 | Shock Absorber Removal/Installation | 11-6 |
| Troubleshooting | 11-1 | Shock Absorber Disassembly/Assembly | 11-7 |
| Rear Wheel Removal/Installation | 11-2 | Swingarm Removal/Installation | 11-10 |
| Rear Wheel Disassembly/Assembly | 11-4 | Swingarm Disassembly/Assembly | 11-11 |

Service Information

⚠ WARNING

- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.
- Tubeless tire removal, repair, and remounting procedures are covered in section 16 of the Common Service Manual.
- For rear wheel, shock absorber or swingarm removal, a hoist or other support is required to support the motorcycle.
- Refer to section 12 for brake system information.

Troubleshooting

Soft Suspension

- Weak spring
- Oil leakage from damper unit
- Incorrect suspension adjustment
- Low tire pressure

Hard Suspension

- Incorrect suspension adjustment
- Bent swingarm pivot
- Damaged swingarm pivot bearings
- Bent damper rod
- High tire pressure

Steers To One Side Or Does Not Track Straight

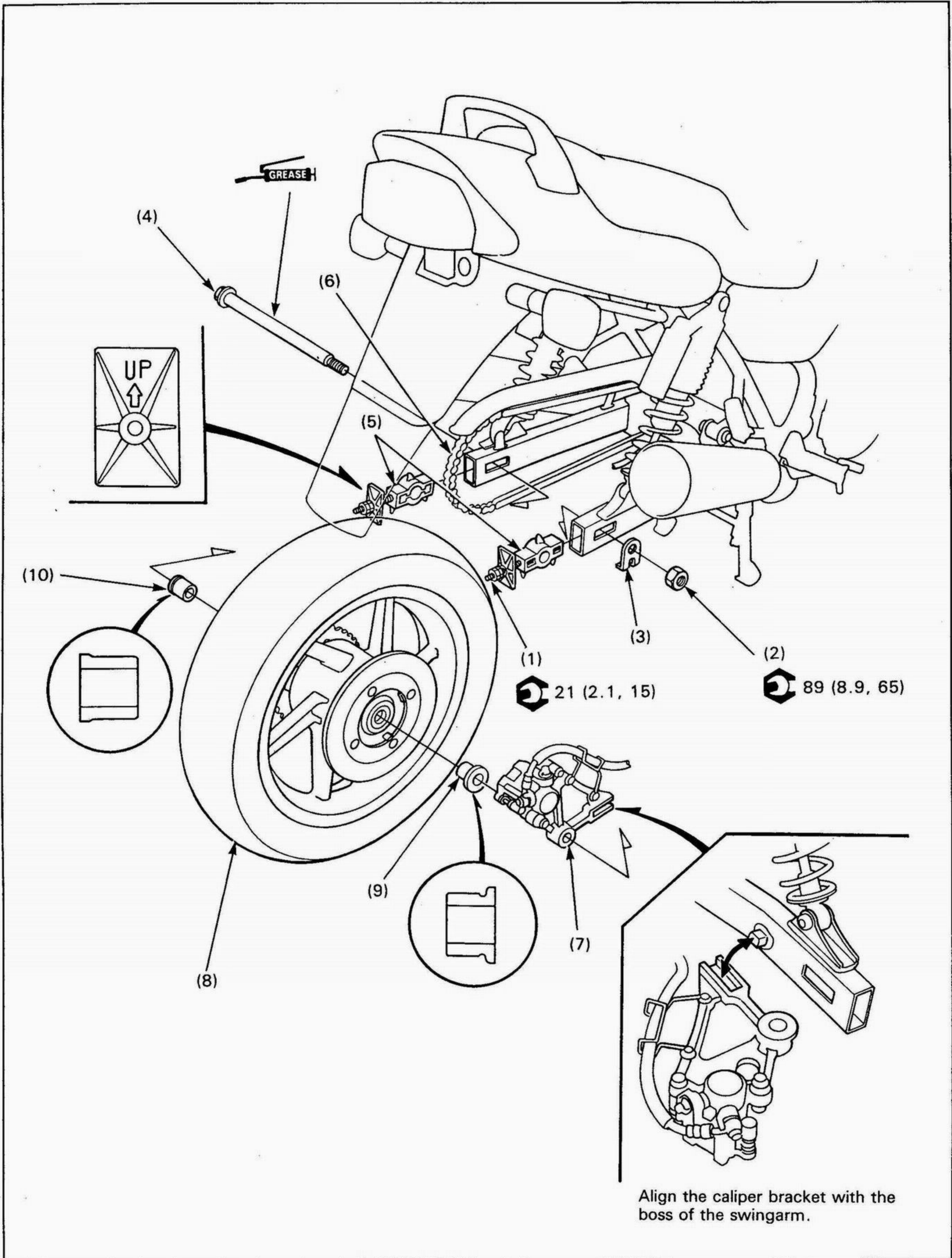
- Bent rear axle
- Axle alignment/chain adjustment not equal on both sides

Rear Wheel Wobbling

- Bent rim
- Worn rear wheel bearings
- Faulty tire
- Unbalanced tire and wheel
- Low tire pressure
- Faulty swingarm pivot bearings

11

Rear Wheel Removal/Installation



▲ WARNING

- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.

NOTE

- For rear wheel removal, a hoist or other support is required to support the motorcycle.
- Adjust the drive chain slack after installing the wheel.

| Procedure | | Q'ty | Remarks |
|-----------|------------------------------------|------|---|
| | Removal Order | | Installation is in the reverse order of removal. |
| (1) | Lock nut/drive chain adjusting nut | 2/2 | Loosen them fully. |
| (2) | Rear axle nut | 1 | |
| (3) | Washer | 1 | |
| (4) | Rear axle | 1 | |
| (5) | Drive chain adjuster | 1 | |
| (6) | Drive chain | 1 | Move the rear wheel forward, and derail the drive chain from the driven sprocket. |
| (7) | Rear brake caliper assembly | 1 | |
| (8) | Rear wheel assembly | 1 | |
| (9) | Right side collar | 1 | |
| (10) | Left side collar | 1 | |

▲ WARNING

- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.

NOTE

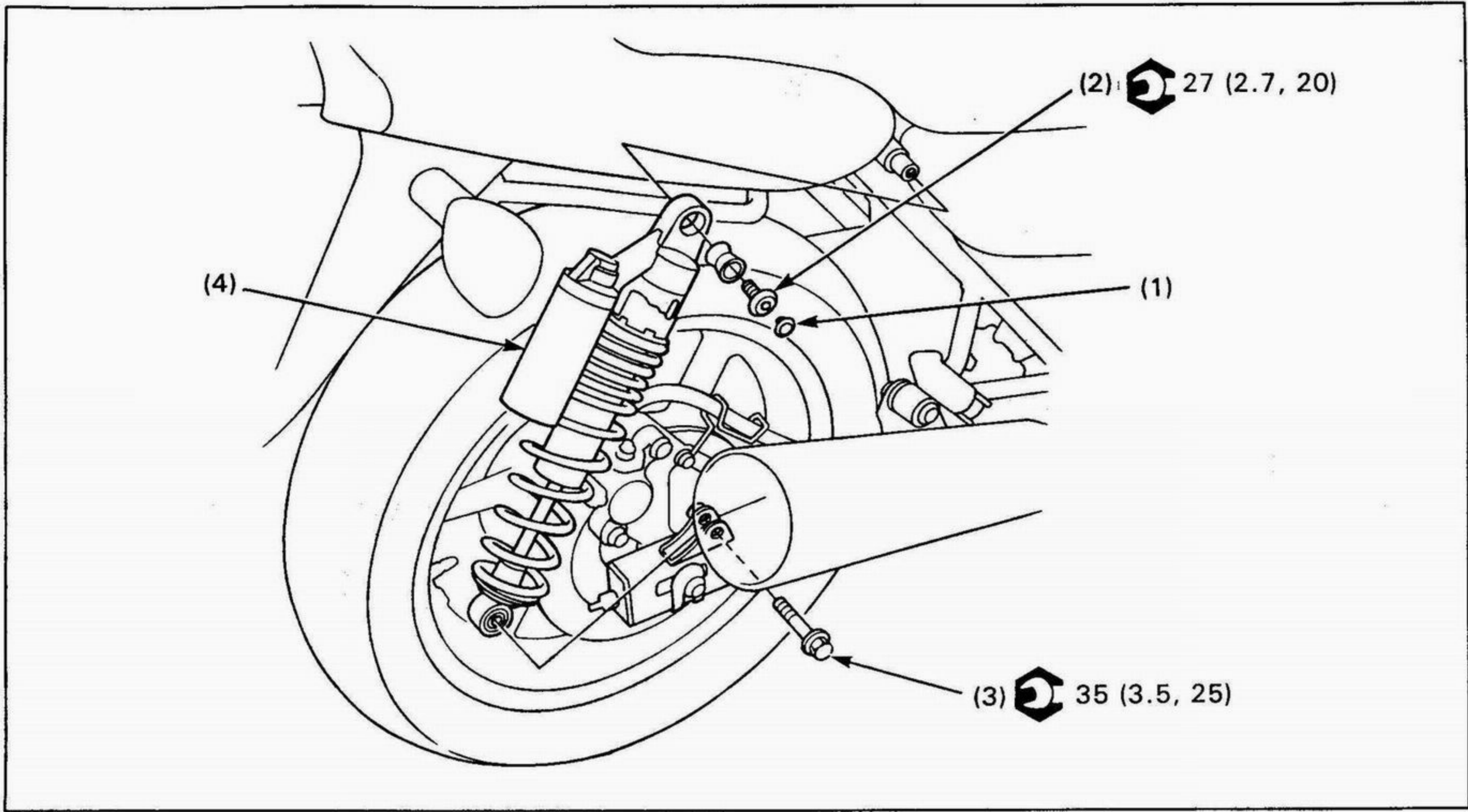
- For driven sprocket removal, loosen the sprocket nuts with the driven flange installed into the wheel hub.
- Replace wheel bearings as a set.
- For wheel bearing replacement, refer to section 1 of the Common Service Manual.

Requisite Service

- Rear wheel removal/installation (page 11-2)

| Procedure | | Q'ty | Remarks |
|-----------|------------------------------------|------|--|
| | Disassembly Order | | Assembly is in the reverse order of disassembly |
| (1) | Dust seal | 2 | At assembly, apply grease to the dust seal lips. |
| (2) | Brake disc mounting bolt | 4 | At assembly, install the " → " mark facing out. |
| (3) | Brake disc | 1 | |
| (4) | Driven sprocket nut | 5 | |
| (5) | Driven sprocket | 1 | |
| (6) | Driven flange assembly | 1 | |
| (7) | -- Driven flange collar | 1 | |
| (8) | -- Driven flange bearing (6204 UU) | 1 | |
| (9) | -- Driven flange | 1 | |
| (10) | O-ring | 1 | |
| (11) | Rear wheel damper | 5 | |
| (12) | Left wheel bearing (6303 UU) | 1 | |
| (13) | Distance collar | 1 | |
| (14) | Right wheel bearing (6303 UU) | 1 | Drive in the right side bearing first, then the left side bearing. |
| (15) | Rear wheel/tire | 1/1 | |

Shock Absorber Removal/Installation

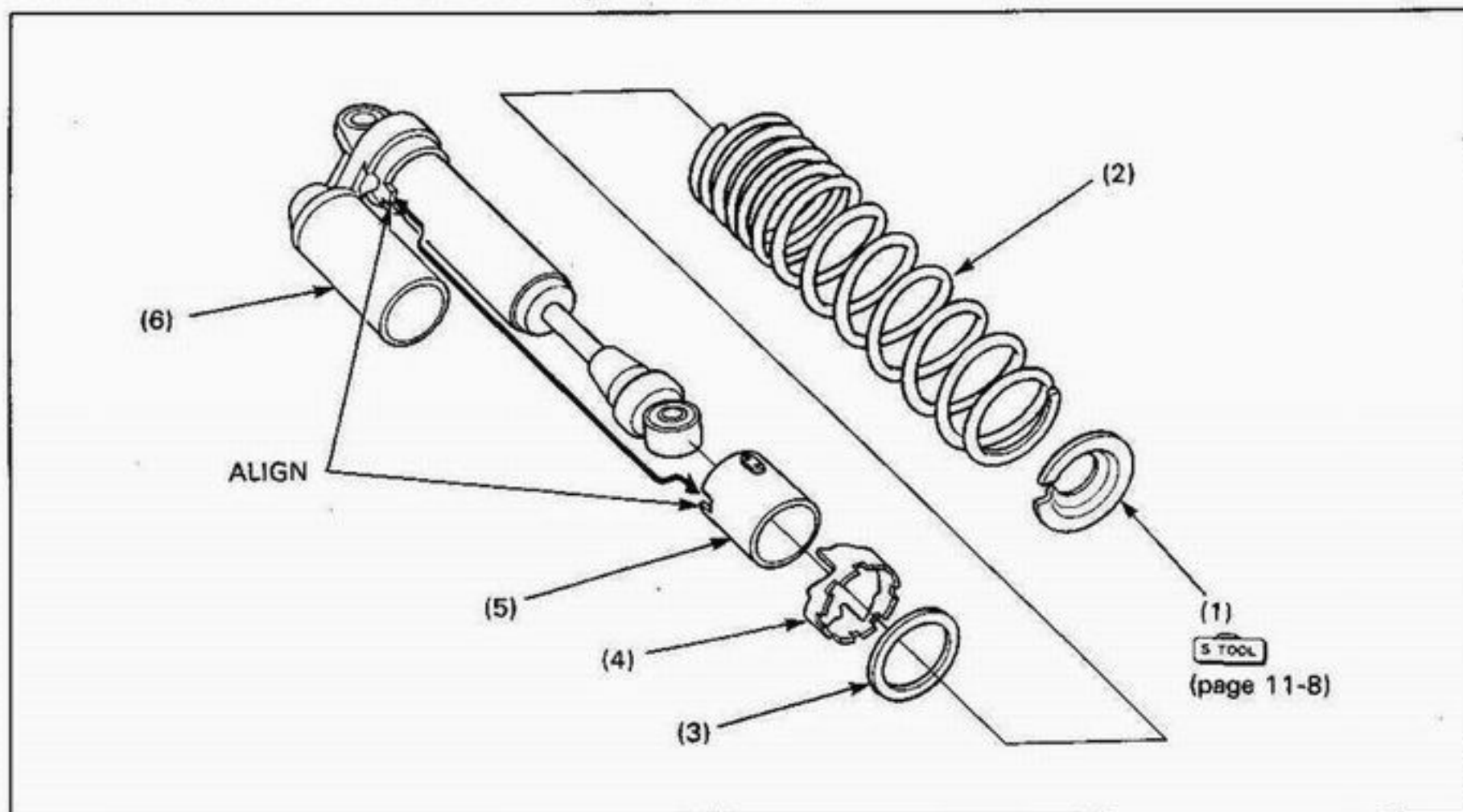


NOTE

- Put the motorcycle on its center stand.
- Adjust the shock absorber to the softest position for disassembly.

| Procedure | | Q'ty | Remarks |
|----------------------|--------------------------------------|------|--|
| Removal Order | | | Installation is in the reverse order of removal. |
| (1) | Cap | 1 | |
| (2) | Shock absorber mounting bolt (upper) | 1 | |
| (3) | Shock absorber mounting bolt (lower) | 1 | |
| (4) | Shock absorber assembly | 1 | |

Shock Absorber Disassembly/Assembly



Requisite Service

- Shock absorber removal/installation (page 11-6)

| Procedure | Q'ty | Remarks |
|----------------------------|------|--|
| Disassembly Order | | Assembly is in the reverse order of disassembly. See page 11-8. |
| (1) Lower seat | 1 | Install with tightly wound end facing up. |
| (2) Spring | 1 | |
| (3) Upper seat | 1 | |
| (4) Preload adjuster | 1 | |
| (5) Preload adjuster guide | 1 | |
| (6) Damper unit assembly | 1 | |

Spring, Lower Seat Removal/Installation

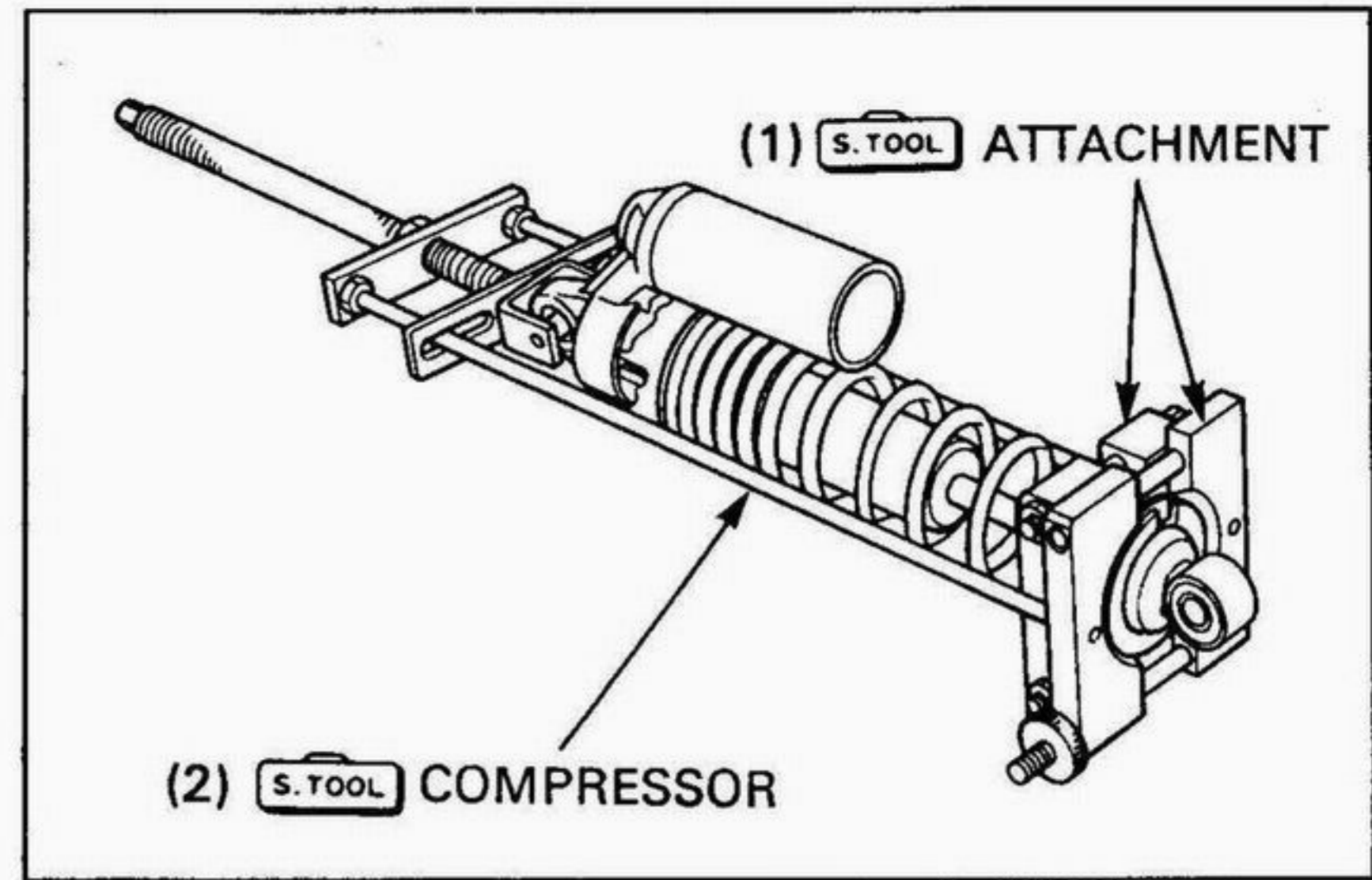
Install the shock absorber compressor and attachment on the shock absorber.

NOTE

- Install the compressor securely against the spring and tighten the nut securely.

S TOOL

| | |
|---------------------------|---------------|
| Shock absorber compressor | 07GME-0010000 |
| Compressor attachment | 07959-MB10000 |
| Compressor attachment | 07967-KC10100 |



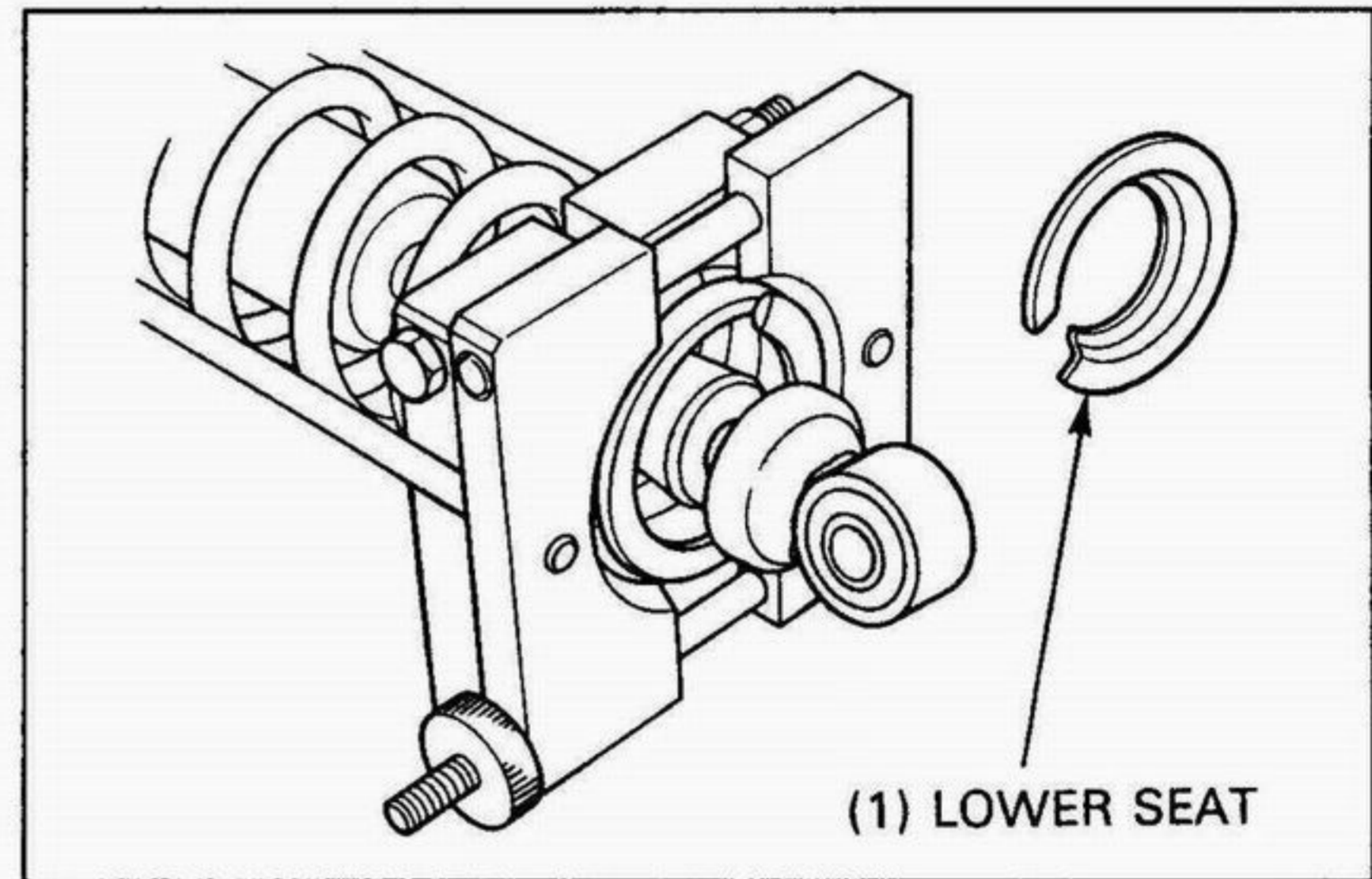
Compress the shock spring and remove the lower seat.

CAUTION

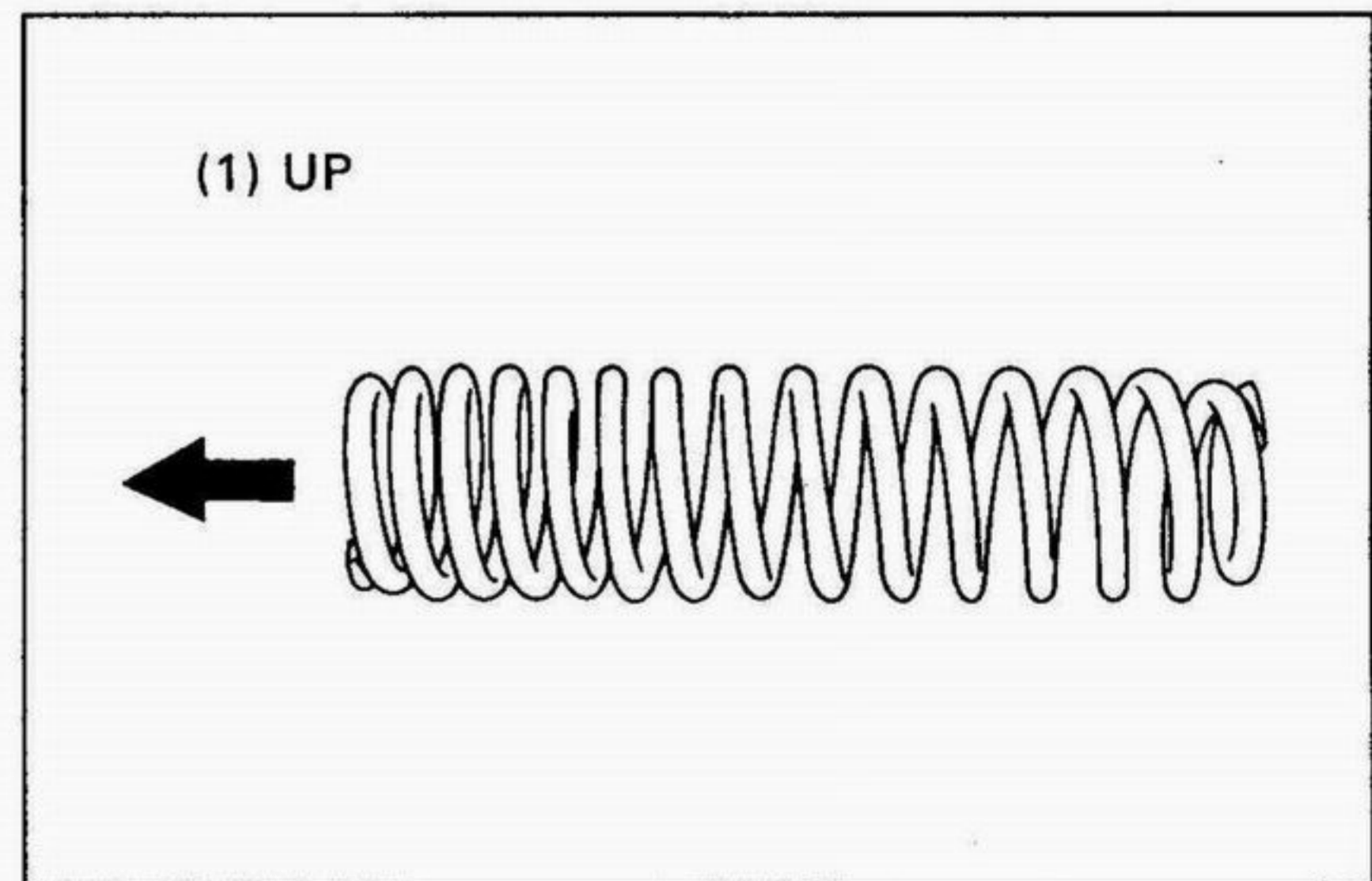
- Do not compress the spring more than necessary.

Loosen the shock absorber compressor slowly and remove the shock absorber and attachment.

Remove the shock absorber spring.



Install the shock absorber spring with tightly wound coil end facing up.



Install the special tools and compress the shock spring.
Install the lower seat securely.

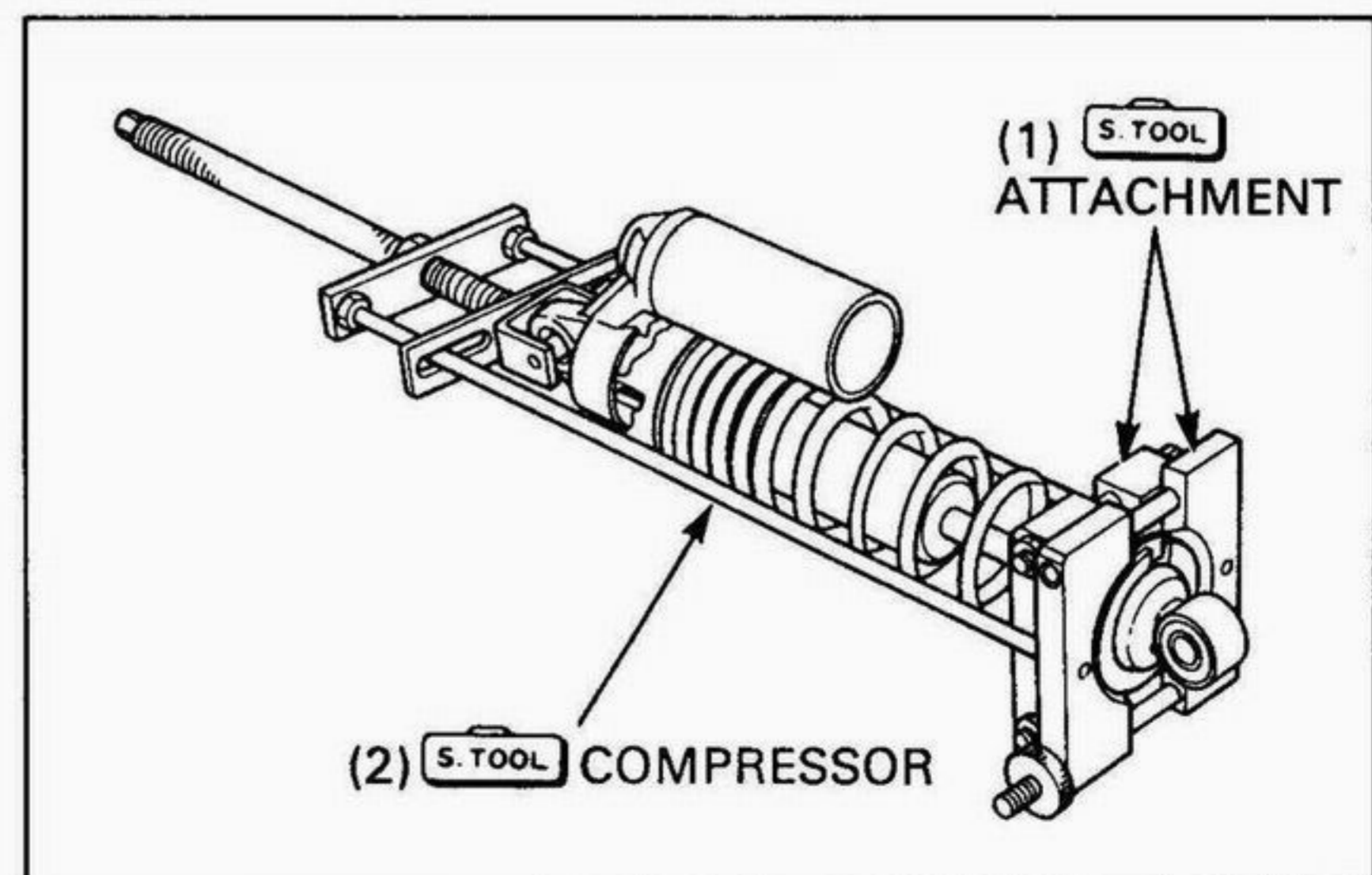
S TOOL

| | |
|---------------------------|---------------|
| Shock absorber compressor | 07GME-0010000 |
| Compressor attachment | 07959-MB10000 |
| Compressor attachment | 07967-KC10100 |

NOTE

- Install the compressor securely against the spring and tighten the nut securely.

Loosen the shock absorber compressor slowly and remove the shock absorber and attachment.

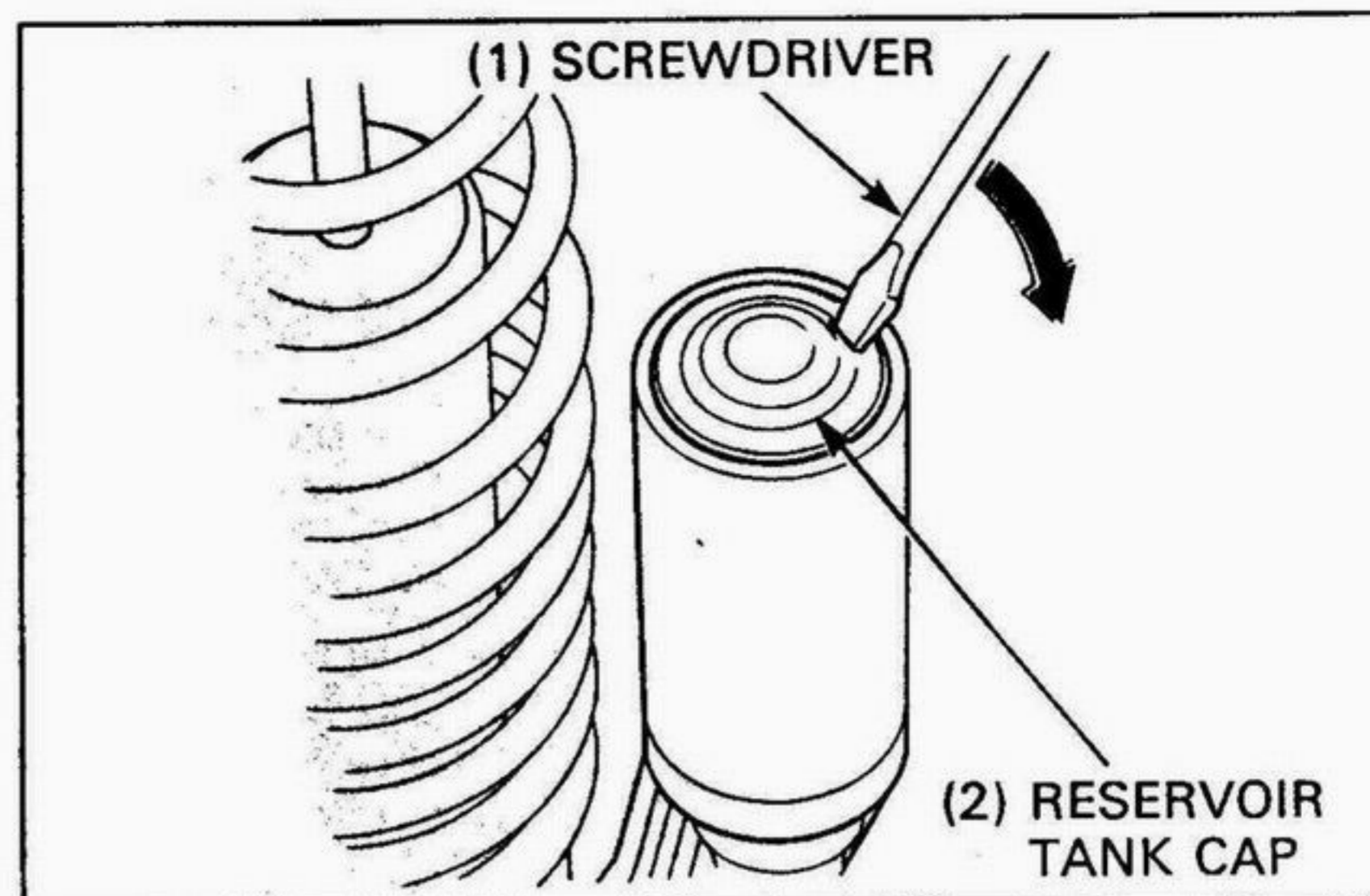


Shock Absorber Disposal Procedure

⚠ WARNING

- Failure to release the pressure from a shock absorber before disposing of it may lead to a possible explosion and serious injury if it is heated or pierced.

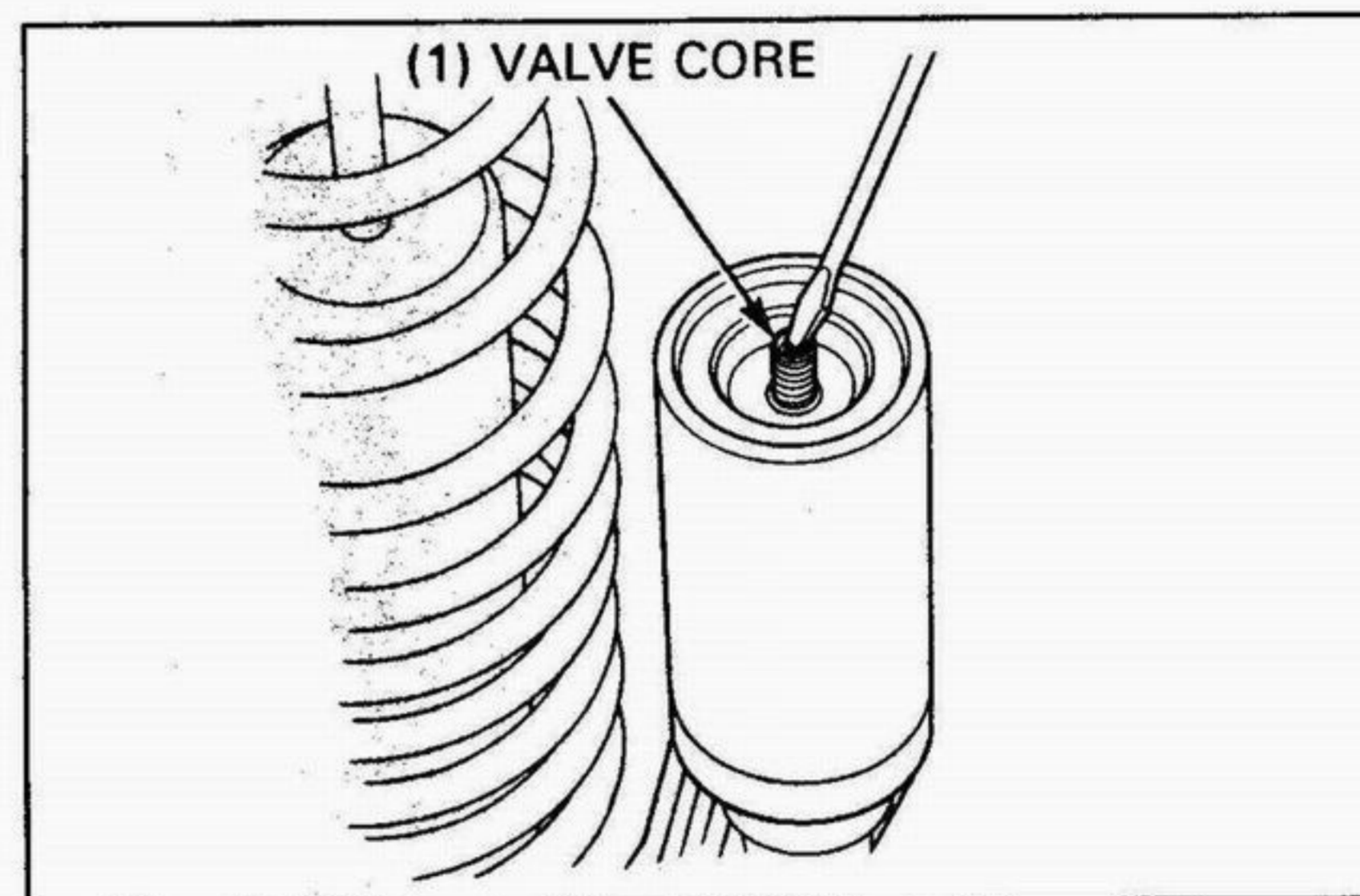
Support the shock absorber upper mount in a vise. Break and remove the reservoir tank cap with screwdriver as shown.



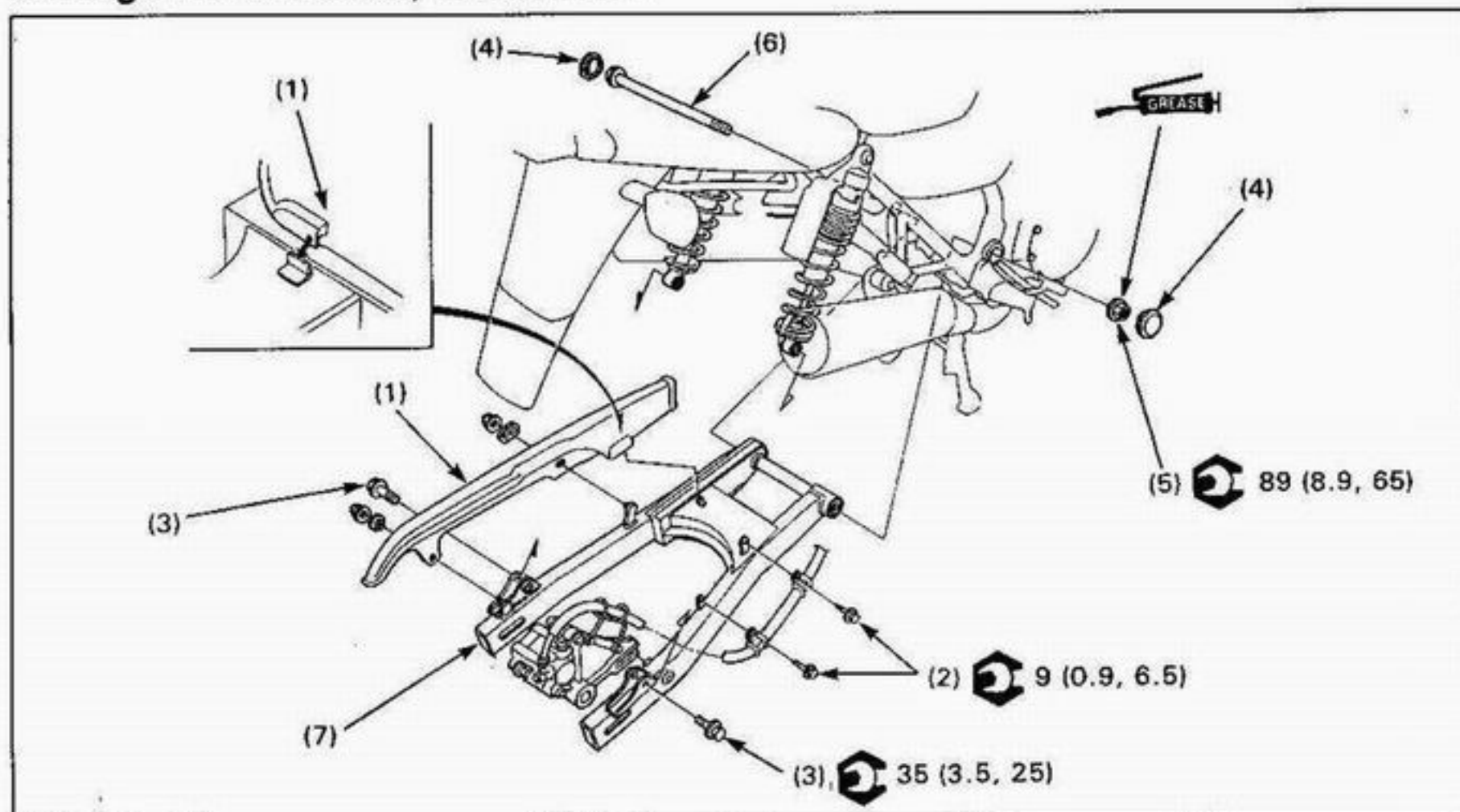
Depress the valve core to release the nitrogen from the reservoir and then remove the valve.

⚠ WARNING

- Point the valve away to prevent debris getting in your eyes.



Swingarm Removal/Installation



CAUTION

- Support the removed caliper with a piece of wire so that it does not hang from the brake hose. Do not twist the brake hose.

NOTE

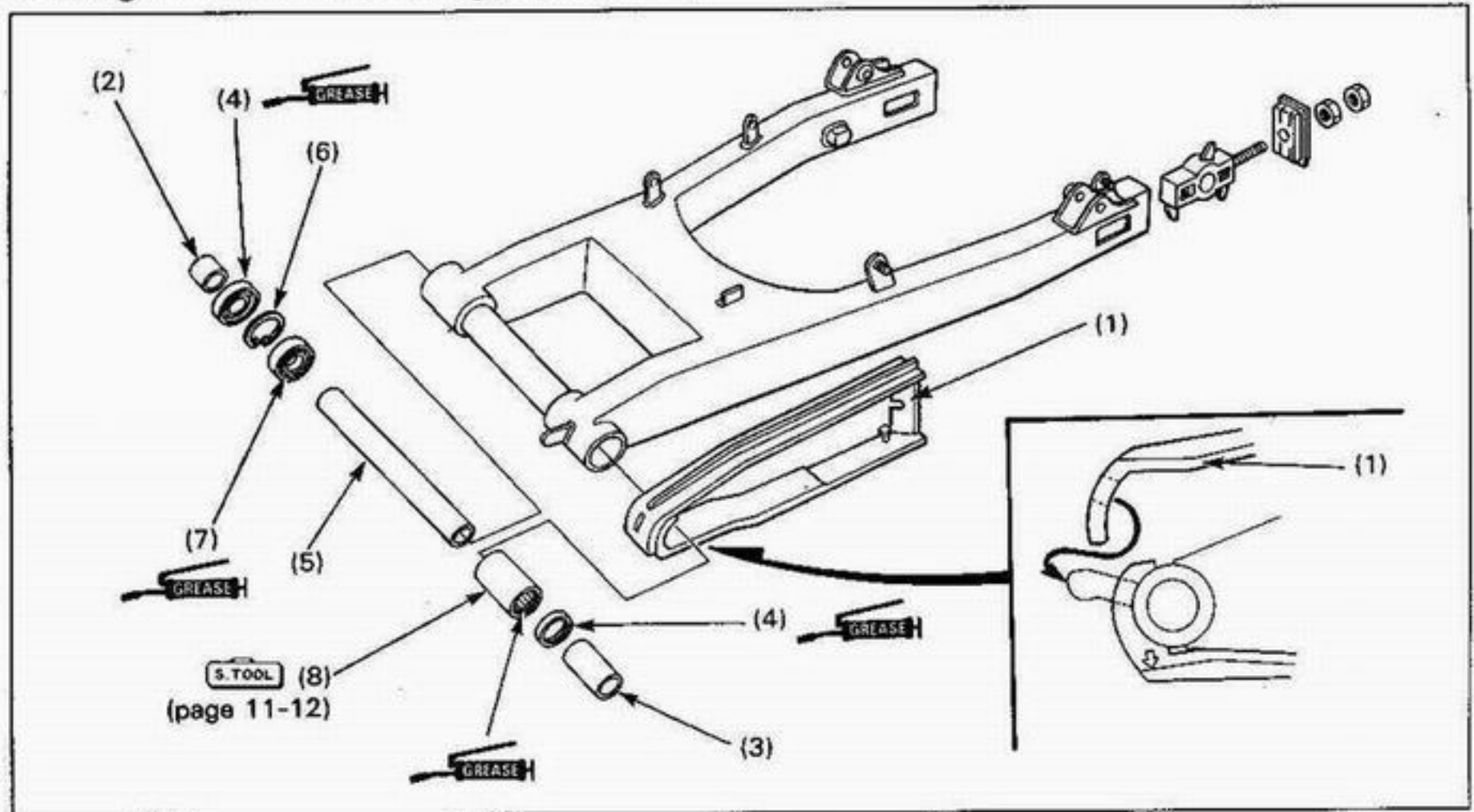
- Put the motorcycle on its center stand.
- Do not depress the pedal when the caliper is removed, or it will be difficult to refit the disc between the brake pads.

Requisite Service

- Rear wheel removal/installation (page 11-2)

| Procedure | Q'ty | Remarks |
|--|------|--|
| Removal Order | | Installation is in the reverse order of removal. |
| (1) Drive chain cover | 1 | |
| (2) Brake hose mounting bolt | 2 | |
| (3) Shock absorber lower mounting bolt | 2 | |
| (4) Cap | 2 | |
| (5) Swingarm pivot nut | 1 | |
| (6) Swingarm pivot bolt | 1 | |
| (7) Swingarm assembly | 1 | At installation, pass the drive chain over the swingarm. |

Swingarm Disassembly/Assembly



NOTE

- For pivot bearing replacement, see next page.

Requisite Service

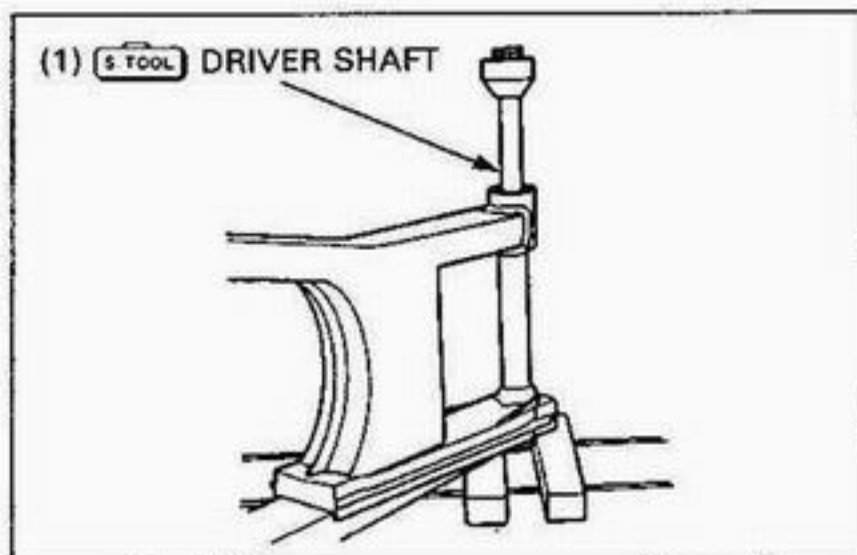
- Swingarm removal/installation (page 11-9)

| Procedure | Q'ty | Remarks |
|--------------------------|------|--|
| Disassembly Order | | Assembly is in the reverse order of disassembly. |
| (1) Drive chain slider | 1 | Install the drive chain slider as shown. |
| (2) Right pivot collar | 1 | |
| (3) Left pivot collar | 1 | |
| (4) Dust seal | 2 | Apply grease to the lip. |
| (5) Distance collar | 1 | |
| (6) Snap ring | 1 | Install into the groove securely. |
| (7) Ball bearing | 1 | |
| (8) Needle bearing | 1 | |

Swingarm Pivot Bearing Replacement

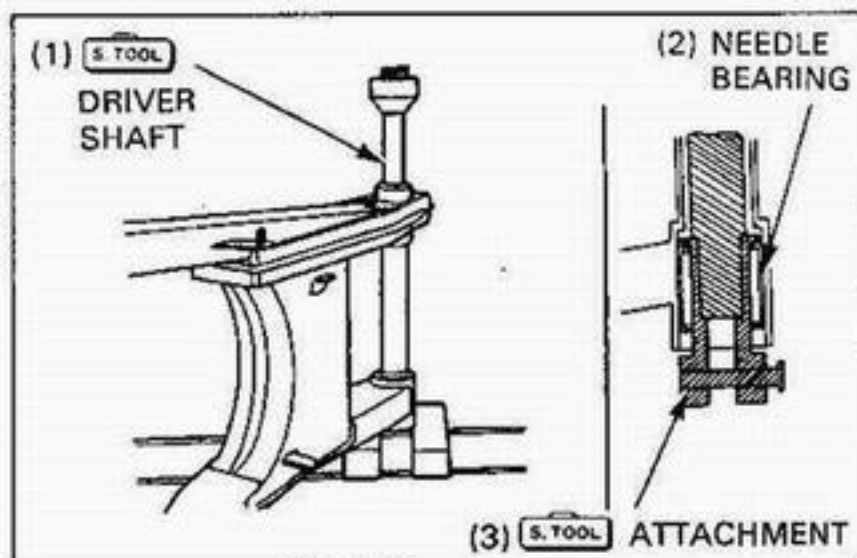
Press the right pivot bearing (ball bearing) out of swingarm.

S. TOOL
Driver shaft 07946-MJ00100 or
Driver 07949-3710001



Set the needle bearing remover onto the left pivot bearing (needle bearing) as shown.

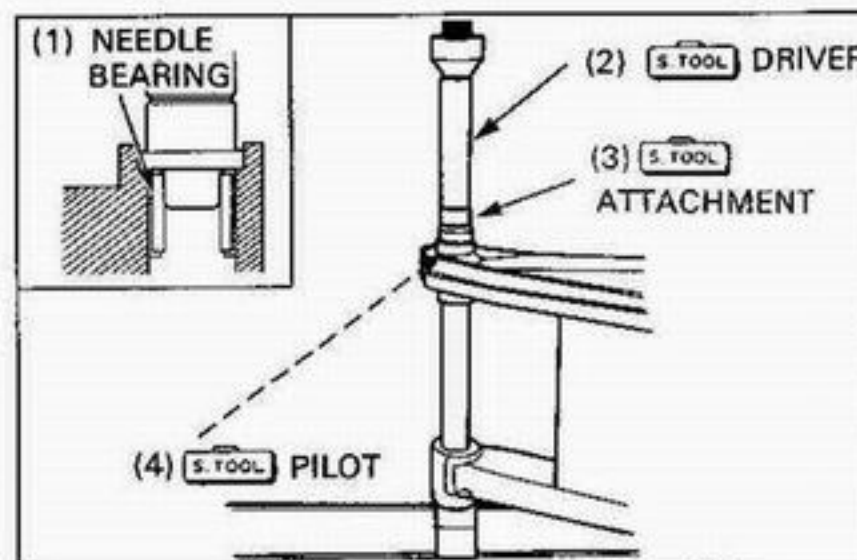
S. TOOL
Needle bearing remover attachment 07GMD-KT70200
Driver shaft 07946-MJ00100



Press the needle bearing into the swingarm with the marked side facing out.

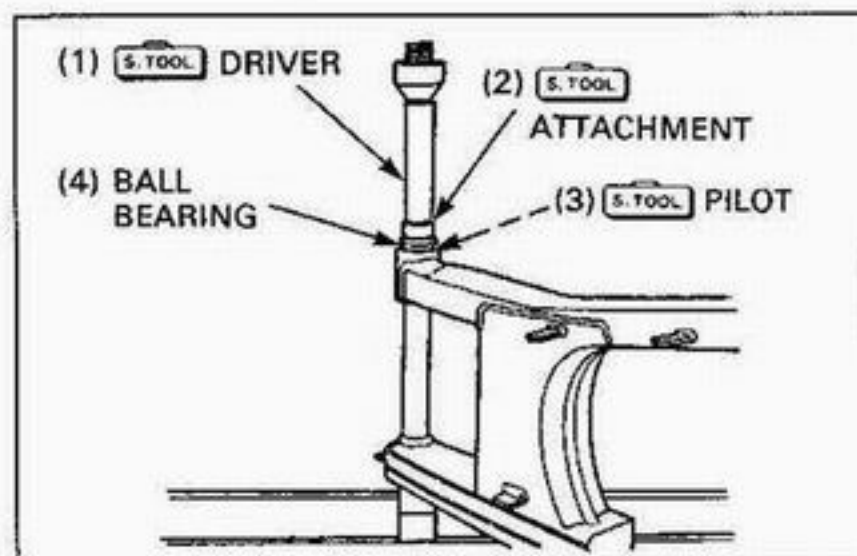
NOTE
• The bearing surface should be flush with the pivot inside surface as shown.

S. TOOL
Driver 07749-0010000
Attachment, 28 × 30 mm 07946-1870100
Pilot, 22 mm 07746-0041000



Press the ball bearing in until it bottoms in the swingarm.

S. TOOL
Driver 07749-0010000
Attachment, 32 × 35 mm 07746-0010100
Pilot, 15 mm 07746-0040300



12. Brake System

| | | | |
|---|-------------|--|--------------|
| Service Information | 12-1 | Rear Master Cylinder Disassembly/Assembly | 12-7 |
| Troubleshooting | 12-1 | Front Brake Caliper Removal/Installation | 12-8 |
| Front Brake Pad Replacement | 12-2 | Front Brake Caliper Disassembly/Assembly | 12-9 |
| Rear Brake Pad Replacement | 12-3 | Rear Brake Caliper Removal/Installation | 12-10 |
| Front Master Cylinder Removal/Installation | 12-4 | Rear Brake Caliper Disassembly/Assembly | 12-11 |
| Front Master Cylinder Disassembly/Assembly | 12-5 | Front Brake Hose Replacement | 12-12 |
| Rear Master Cylinder Removal/Installation | 12-6 | Brake Pedal Removal/Installation | 12-14 |

Service Information

⚠ WARNING

- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.

- Once the hydraulic system has been opened, or if the brakes feel spongy, the system must be bled.
- Never allow contaminants (dirt, water, etc) to get into an open reservoir.
- Avoid spilling brake fluid on painted, plastic or rubber parts. Place a rag or shop towel over these parts whenever the system is serviced.
- Always use fresh DOT 4 brake fluid from a sealed container when servicing the system. Do not mix different types of fluid as they may not be compatible.
- Always check the brake operation before riding the motorcycle.

12

Troubleshooting

Front Brake:

Brake Lever/Pedal Soft Or Spongy

- Air bubbles in the hydraulic system
- Leaking hydraulic system
- Contaminated brake pad/disc
- Worn caliper piston seal
- Worn master cylinder piston seal
- Worn brake pad/disc
- Contaminated caliper
- Caliper not sliding properly
- Low fluid level
- Clogged fluid passage
- Warped/deformed brake disc
- Sticking/worn caliper piston
- Sticking/worn master cylinder piston
- Contaminated master cylinder

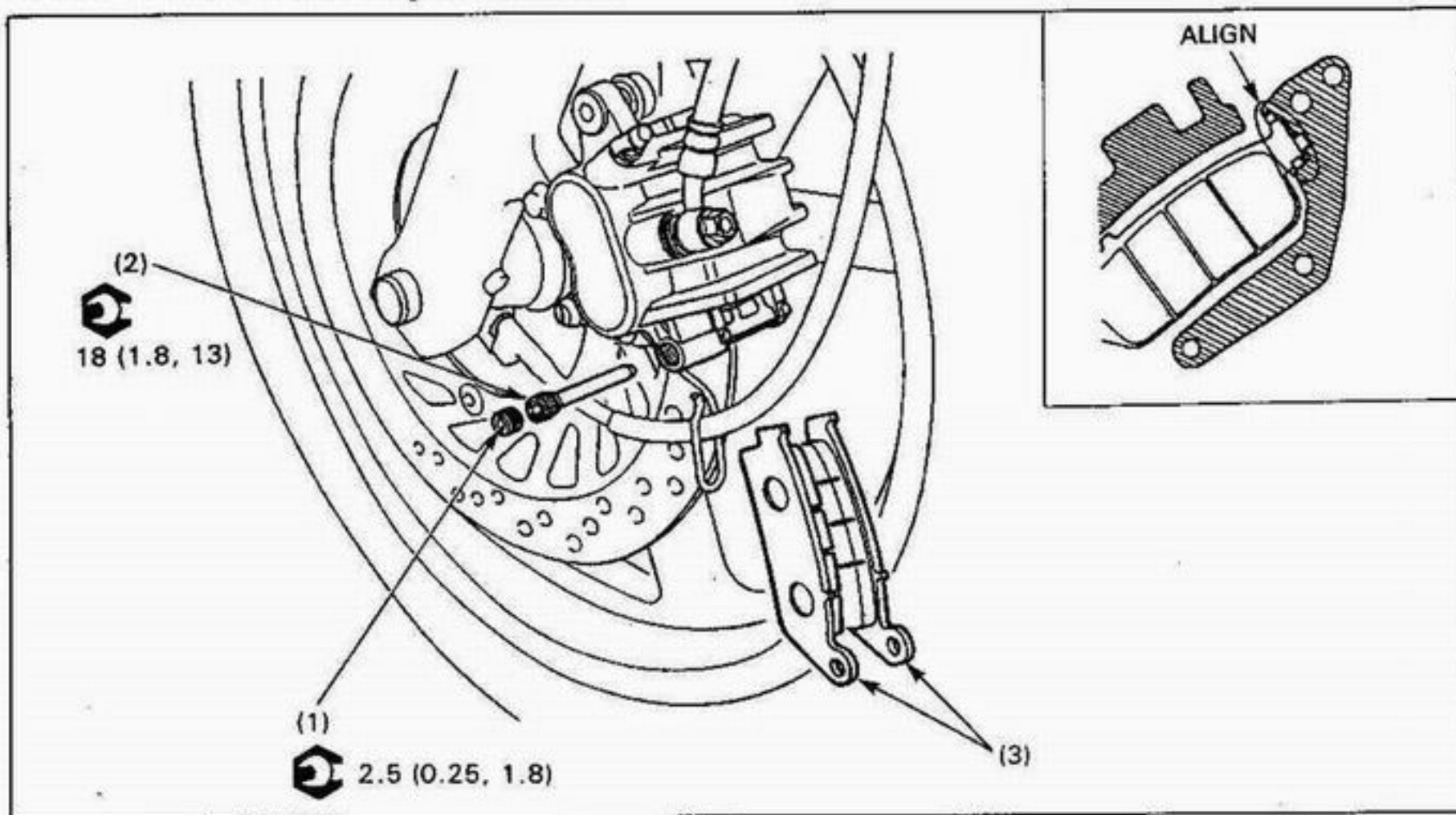
Brake Lever/Pedal Hard

- Clogged/restricted brake system
- Sticking/worn caliper piston
- Caliper not sliding properly
- Clogged/restricted fluid passage
- Worn caliper piston seal
- Sticking/worn master cylinder piston
- Bent brake lever/pedal

Brakes Drag

- Contaminated brake pad/disc
- Misaligned wheel
- Worn brake pad/disc
- Warped/deformed brake disc
- Caliper not sliding properly

Front Brake Pad Replacement



WARNING

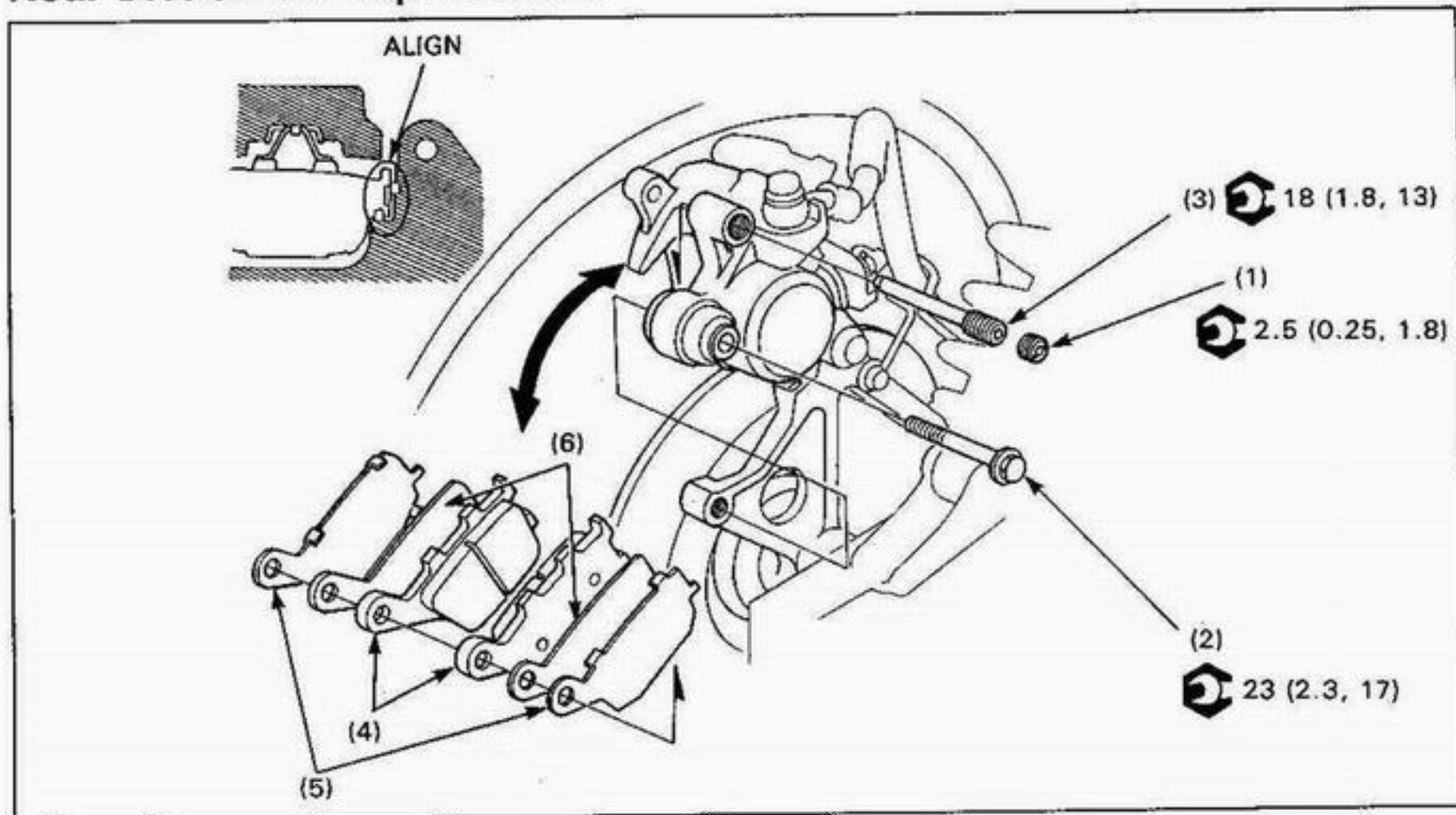
• A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.

NOTE

- Pushing the caliper against the disc, push the caliper pistons all the way in to allow the installation of new pads.
- Do not squeeze the brake lever when the brake pads are removed, or it will be difficult to refit the disc between the brake pads.
- Replace brake pads as a set.
- Apply a thin coating of silicone grease onto the pad pin as a rust preventative.
- After replacement, operate the brake lever to seat the caliper pistons against the pads.

| Procedure | Qty | Remarks |
|----------------------|-----|--|
| Removal Order | | Installation is in the reverse order of removal. |
| (1) Pad pin plug | 1 | |
| (2) Pad pin | 1 | Insert the pin, pushing the pads against the pad spring. |
| (3) Brake pad | 2 | Align the pad lug with the pad retainer as shown. |

Rear Brake Pad Replacement



⚠ WARNING

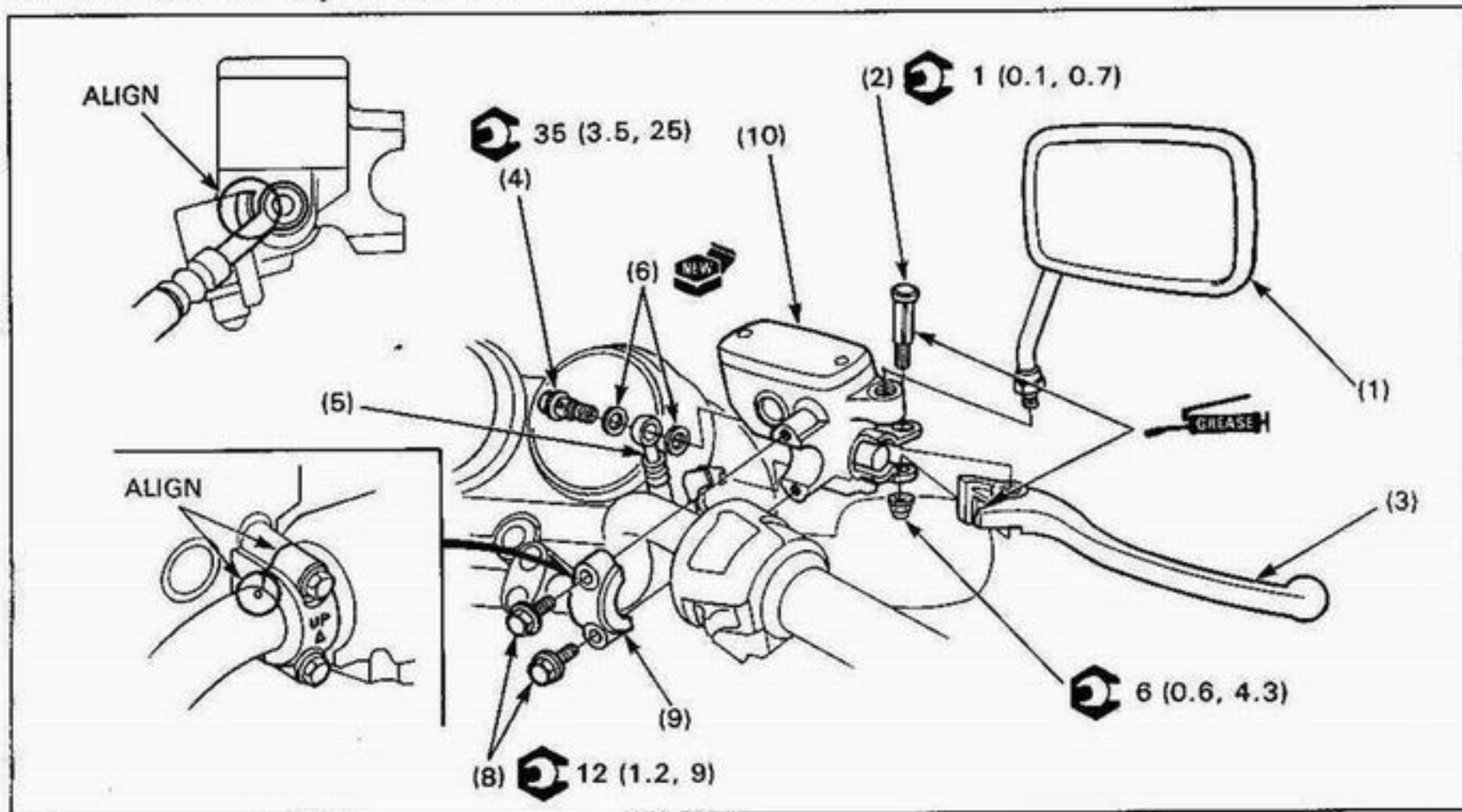
- A contaminated brake disc or pad reduces stopping power, Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.

NOTE

- Pushing the caliper against the disc, push the caliper pistons all the way in to allow the installation of new pads.
- Do not operate the brake pedal when the caliper is removed, or it will be difficult to refit the disc between the brake pads.
- Replace brake pads as a set.
- Apply a thin coating of silicone grease onto the pad pin as a rust preventative.
- After replacement, operate the brake pedal to seat the caliper pistons against the pads.

| Procedure | | Q'ty | Remarks |
|-----------|-------------------------------|------|--|
| (1) | Removal Order Pad pin plug | 1 | Installation is in the reverse order of removal. After removing the pad pin plug, loosen the pad pin. |
| (2) | Rear caliper bracket bolt | 1 | |
| (3) | Pad pin | 1 | At installation, install the caliper onto the brake disc so the disc is positioned between the pads, and tighten the mounting bolt. Position the pad onto the pad retainer in the caliper as shown. |
| (4) | Brake pad | 2 | |
| (5) | Brake pad shim | 2 | |
| (6) | Brake pad insulator | 2 | |

Front Master Cylinder Removal/Installation



CAUTION

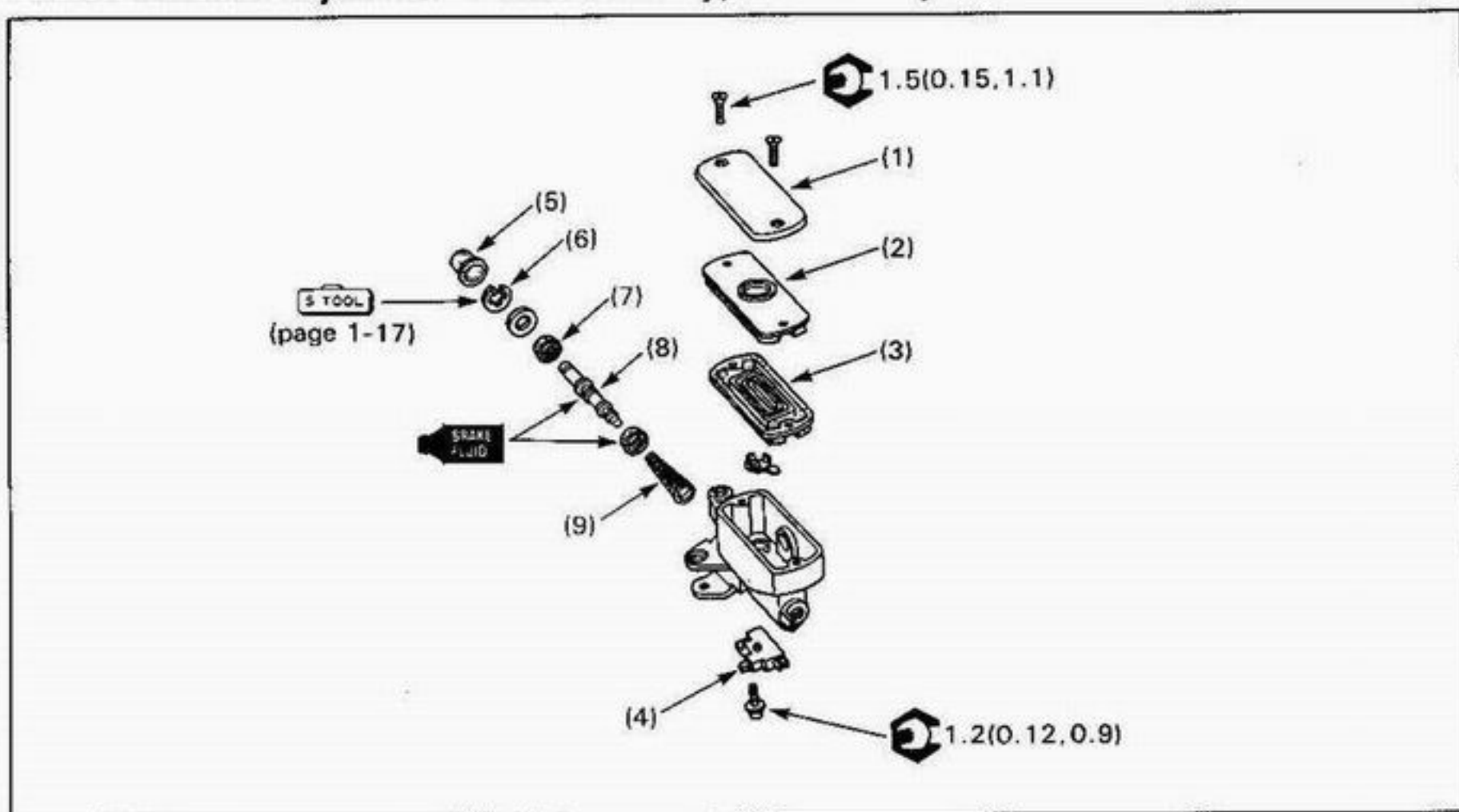
• Spilled brake fluid will damage painted, plastic or rubber parts. Cover these parts when servicing the brake system.

Requisite Service

- Brake fluid replacement/air bleeding (section 17 of the Common Service Manual)

| Procedure | Qty | Remarks |
|--|-----|---|
| Removal Order | | Installation is in the reverse order of removal. |
| (1) Right rearview mirror | 1 | |
| (2) Brake lever pivot bolt | 1 | |
| (3) Brake lever | 1 | |
| (4) Brake hose bolt | 1 | |
| (5) Brake hose | 1 | At installation, press the hose end against the stopper while tightening the hose bolt. |
| (6) Sealing washer | 2 | |
| (7) Front brake light switch connector | 2 | |
| (8) Master cylinder holder bolt | 2 | Tighten the upper bolt first, then the lower bolt. |
| (9) Master cylinder holder | 1 | Face the "UP" mark upward. |
| (10) Master cylinder assembly | 1 | Align the holder end with the punch mark on the handlebar. |

Front Master Cylinder Disassembly/Assembly



CAUTION

• Spilled brake fluid will damage painted, plastic or rubber parts. Cover these parts when servicing the brake system.

NOTE

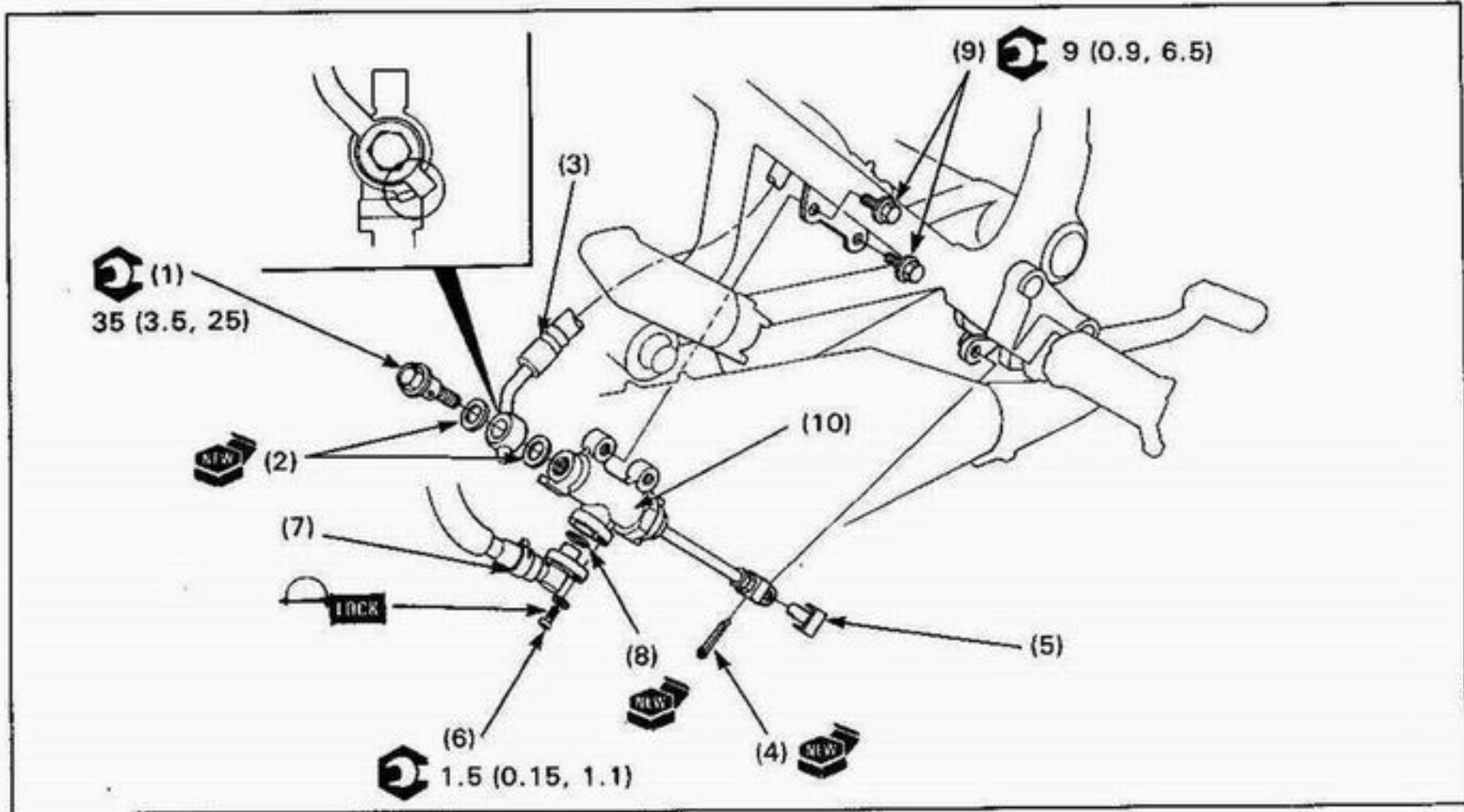
• Replace the master piston, spring, cups, stopper plate, snap ring and boot as a set.
 • The master piston, cups and spring must be installed as a set.

Requisite Service

- Brake fluid replacement/air bleeding (section 17 of the Common Service Manual)
- Front master cylinder removal/installation (page 12-4)

| Procedure | Qty | Remarks |
|------------------------------|-----|---|
| Disassembly Order | | Assembly is in the reverse order of disassembly. |
| (1) Reservoir cover | 1 | |
| (2) Diaphragm plate | 1 | |
| (3) Diaphragm | 1 | |
| (4) Front brake light switch | 1 | |
| (5) Boot | 1 | |
| (6) Snap ring | 1 | CAUTION • Be certain the snap ring is fully seated in the groove. |
| (7) Stopper plate | 1 | |
| (8) Master piston assembly | 1 | |
| (9) Spring | 1 | Install it with its small coil end toward the piston. |

Rear Master Cylinder Removal/Installation



CAUTION

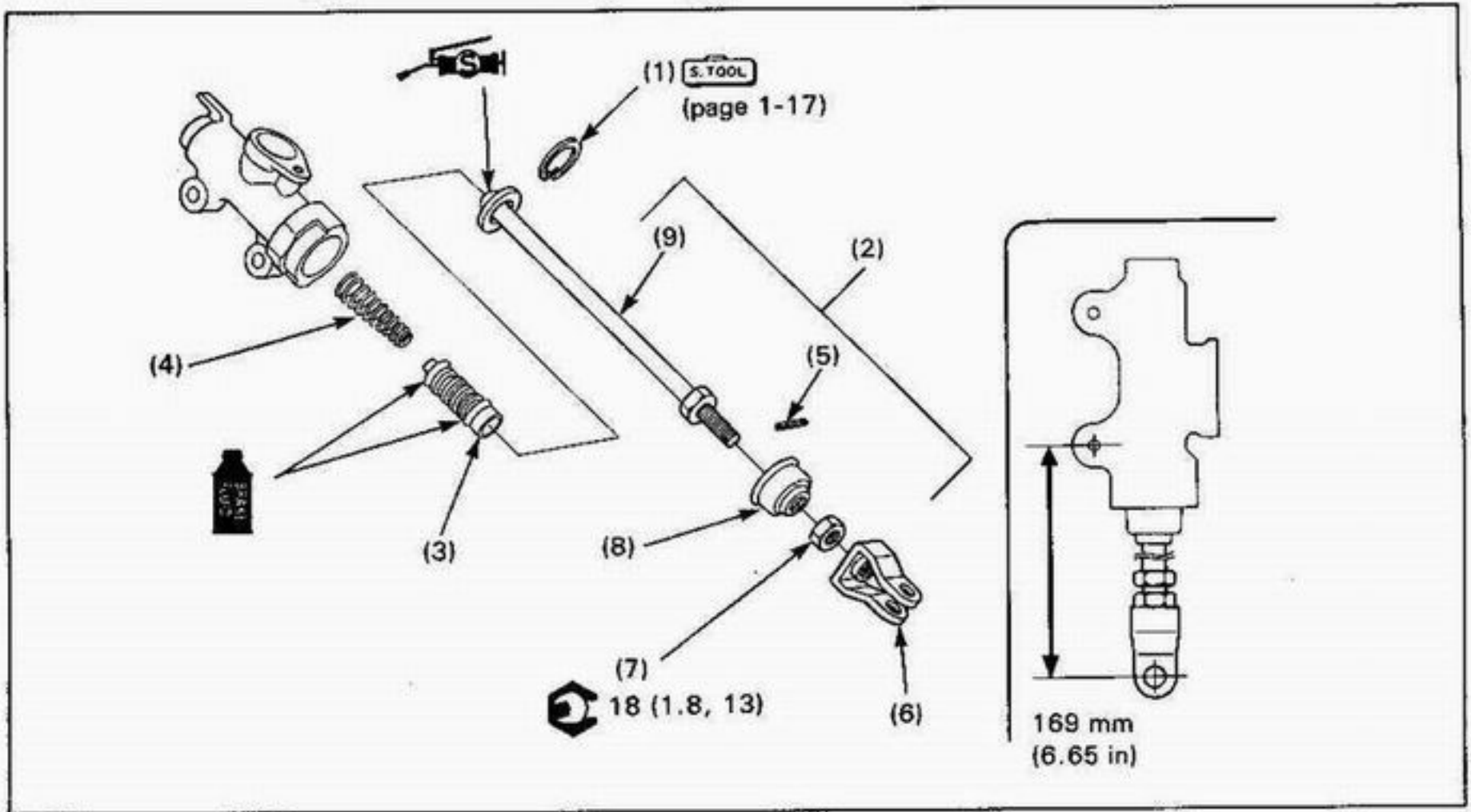
- Spilled brake fluid will damage painted, plastic or rubber parts. Cover these parts when servicing the brake system.

Requisite Service

- Brake fluid replacement/air bleeding (section 17 of the Common Service Manual)

| Procedure | Q'ty | Remarks |
|--|------|--|
| Removal Order | | Installation is in the reverse order of removal. |
| (1) Brake hose bolt | 1 | |
| (2) Sealing washer | 2 | |
| (3) Brake hose | 1 | |
| (4) Cotter pin | 1 | |
| (5) Joint pin | 1 | |
| (6) Screw | 1 | |
| (7) Reservoir hose joint | 1 | |
| (8) O-ring | 1 | |
| (9) Rear master cylinder mounting bolt | 2 | |
| (10) Rear master cylinder assembly | 1 | |

Rear Master Cylinder Disassembly/Assembly



CAUTION

• Spilled brake fluid will damage painted, plastic or rubber parts. Cover these parts when servicing the brake system.

NOTE

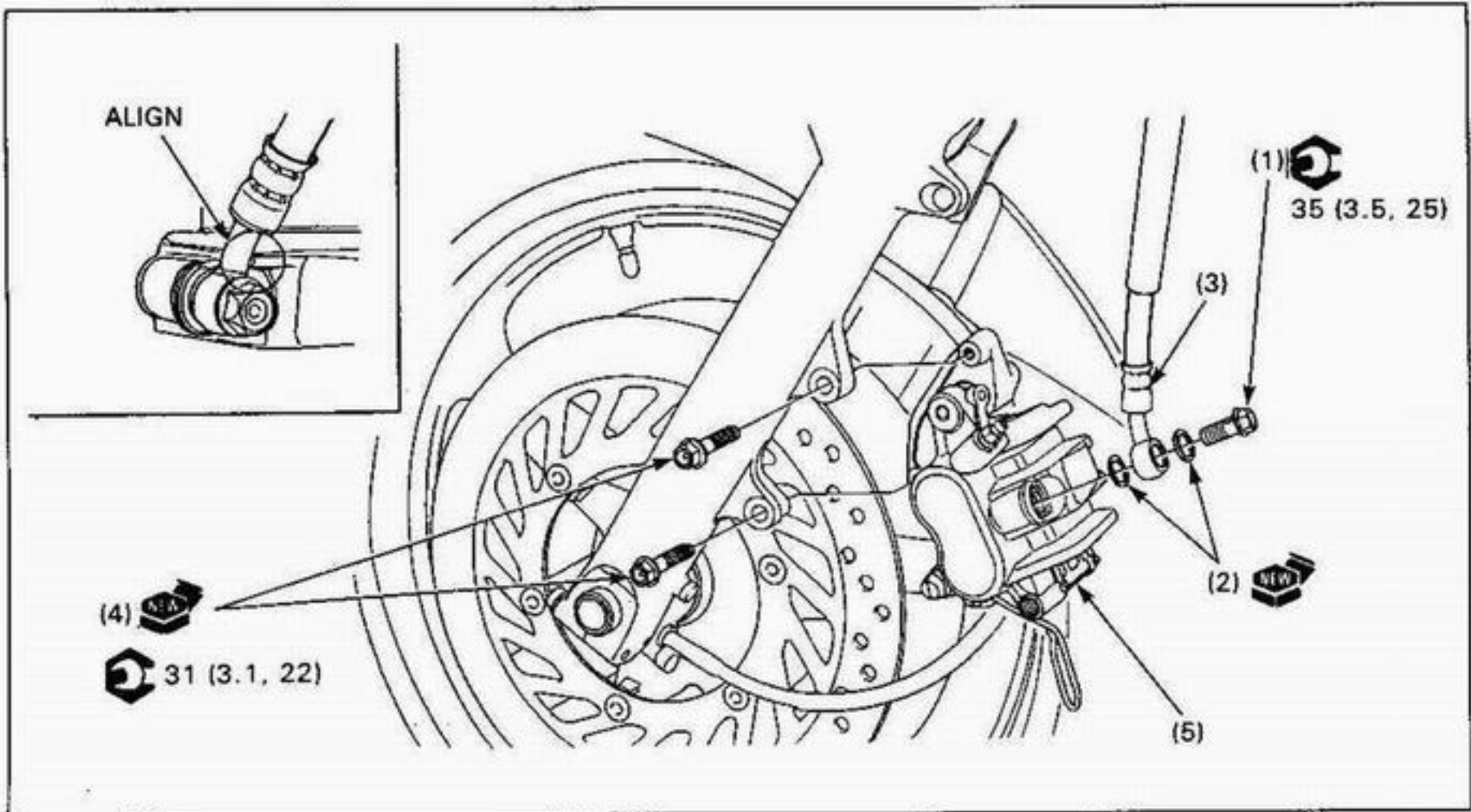
• Replace the master piston, spring, cups, snap ring and boot as a set.
 • The master piston, cups and spring must be installed as a set.

Requisite Service

- Brake fluid replacement/air bleeding (section 17 of the Common Service Manual)
- Rear master cylinder removal/installation (page 12-6)

| Procedure | Q'ty | Remarks |
|---|------|--|
| (1) Disassembly Order Snap ring | 1 | Assembly is in the reverse order of disassembly. CAUTION • Be certain the snap ring is fully seated in the groove. • Install the snap ring with the chamfered side facing the master piston. |
| (2) Push rod assembly | 1 | |
| (3) Master piston assembly | 1 | |
| (4) Spring | 1 | Install the spring with the tapered side facing the master piston. |
| (5) Spring pin | 1 | |
| (6) Push rod joint | 1 | |
| (7) Lock nut | 1 | |
| (8) Rubber boot | 1 | |
| (9) Push rod | 1 | |

Front Brake Caliper Removal/Installation



WARNING

• A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.

CAUTION

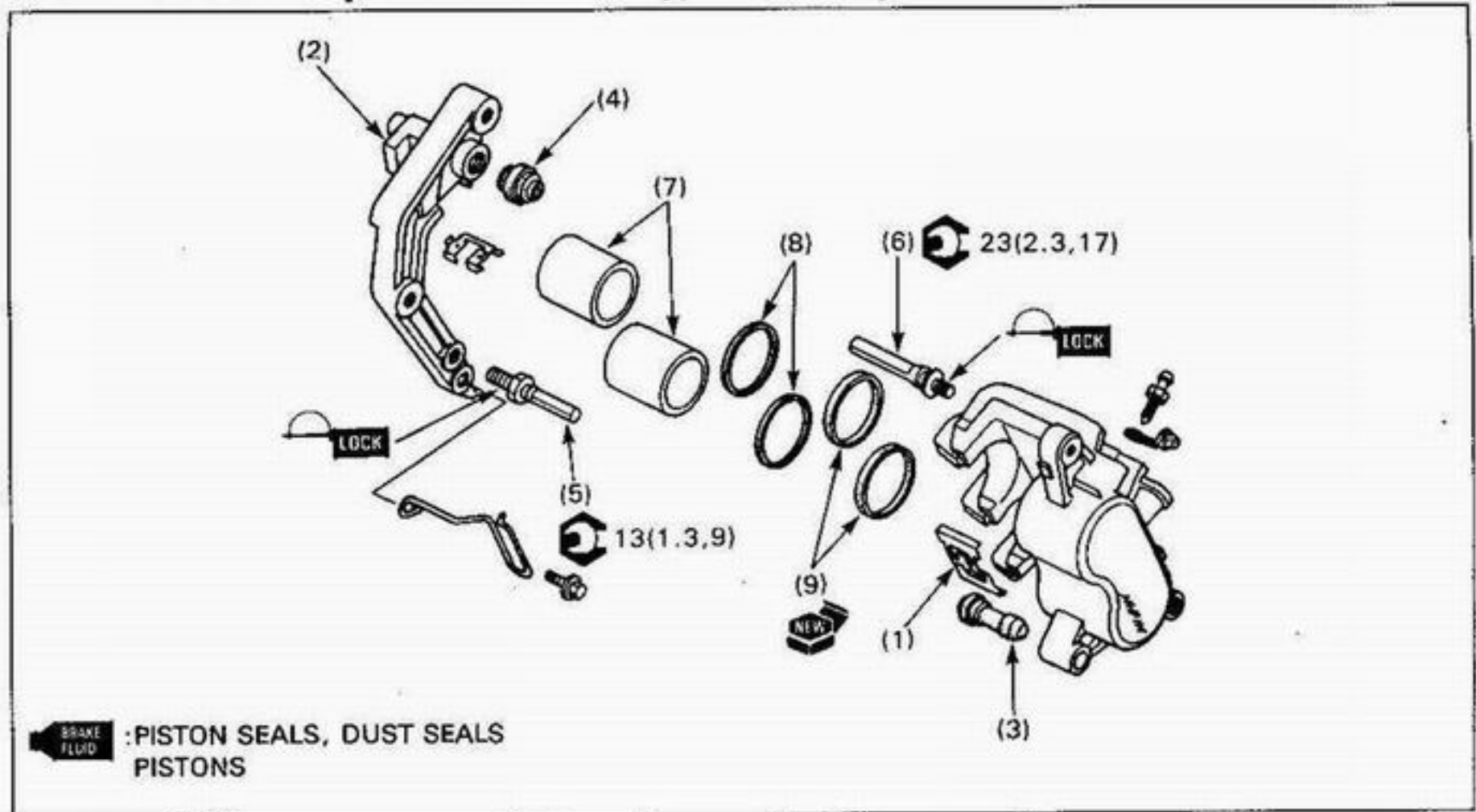
• Spilled brake fluid will damage painted, plastic or rubber parts. Cover these parts when servicing the brake system.

Requisite Service

- Brake pad removal/installation (page 12-2).
- Brake fluid replacement/air bleeding (section 17 of the Common Service Manual)

| Procedure | Qty | Remarks |
|----------------------------------|-----|---|
| Removal Order | | Installation is in the reverse order of removal. |
| (1) Brake hose bolt | 1 | |
| (2) Sealing washer | 2 | |
| (3) Brake hose | 1 | At installation, press the hose end against the stopper while tightening the hose bolt. |
| (4) Caliper bracket bolt | 2 | |
| (5) Front brake caliper assembly | 1 | |

Front Brake Caliper Disassembly/Assembly



WARNING

• A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.

CAUTION

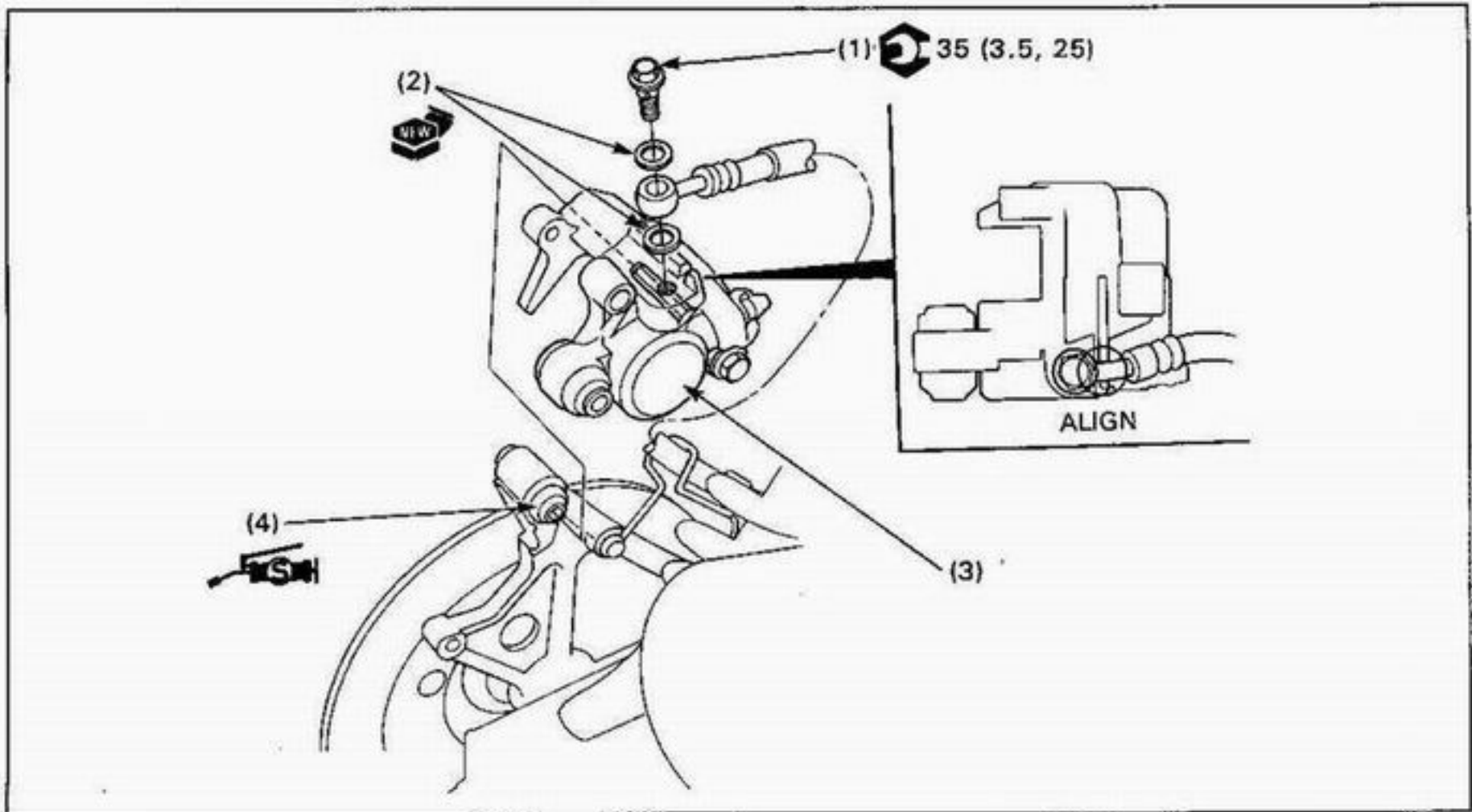
• Spilled brake fluid will damage painted, plastic or rubber parts. Cover these parts when servicing the brake system.

Requisite Service

- Brake pad removal/installation (page 12-2)
- Brake fluid replacement/air bleeding (section 17 of the Common Service Manual)
- Front brake caliper removal/installation (page 12-8)

| Procedure | Qty | Remarks |
|---------------------------|-----|--|
| Disassembly Order | | Assembly is in the reverse order of disassembly. Note the spring direction as shown. |
| (1) Pad spring | 1 | |
| (2) Caliper bracket | 1 | |
| (3) Bracket pin bolt boot | 1 | |
| (4) Caliper pin bolt boot | 1 | Install into the bracket groove securely. |
| (5) Bracket pin bolt | 1 | Apply a locking agent to the threads before torquing. Apply silicone grease to the pin. |
| (6) Caliper pin bolt | 1 | |
| (7) Caliper piston | 2 | Install them with the concaved side away from the pads. |
| (8) Dust seal | 2 | CAUTION • Be careful not to damage the piston sliding surface when removing seals. |
| (9) Piston seal | 2 | |

Rear Brake Caliper Removal/Installation



CAUTION

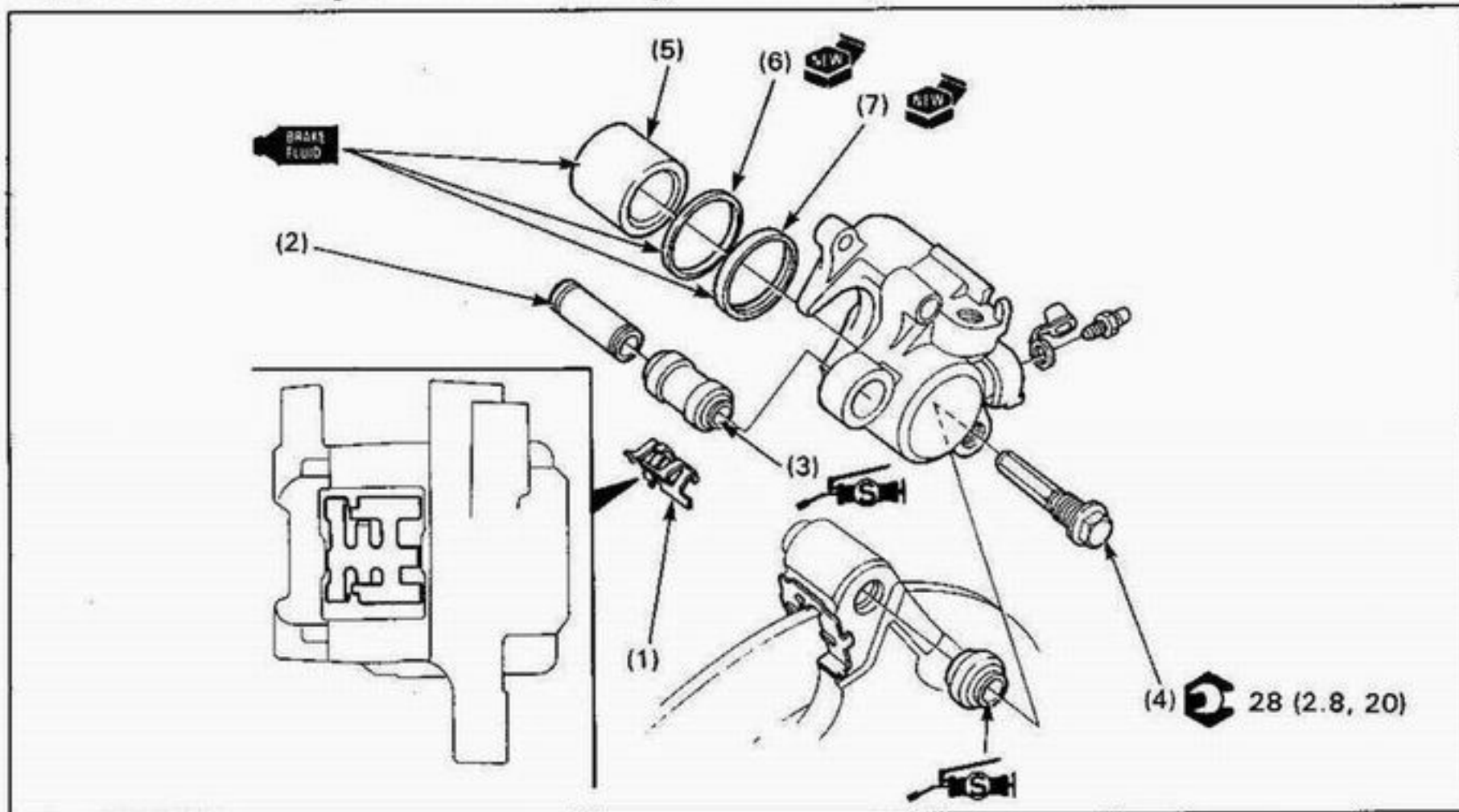
- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.
- Spilled brake fluid will damage painted, plastic or rubber parts. Cover these parts when servicing the brake system.

Requisite Service

- Brake pad removal/installation (page 12-3).
- Brake fluid replacement/air bleeding (section 17 of the Common Service Manual)

| Procedure | Qty | Remarks |
|---------------------------------|-----|--|
| Removal Order | | Installation is in the reverse order of removal. |
| (1) Brake hose bolt | 1 | |
| (2) Sealing washer | 2 | |
| (3) Rear brake caliper assembly | 1 | |
| (4) Rubber boot | 1 | Install the boot into the bracket groove securely. |

Rear Brake Caliper Disassembly/Assembly



CAUTION

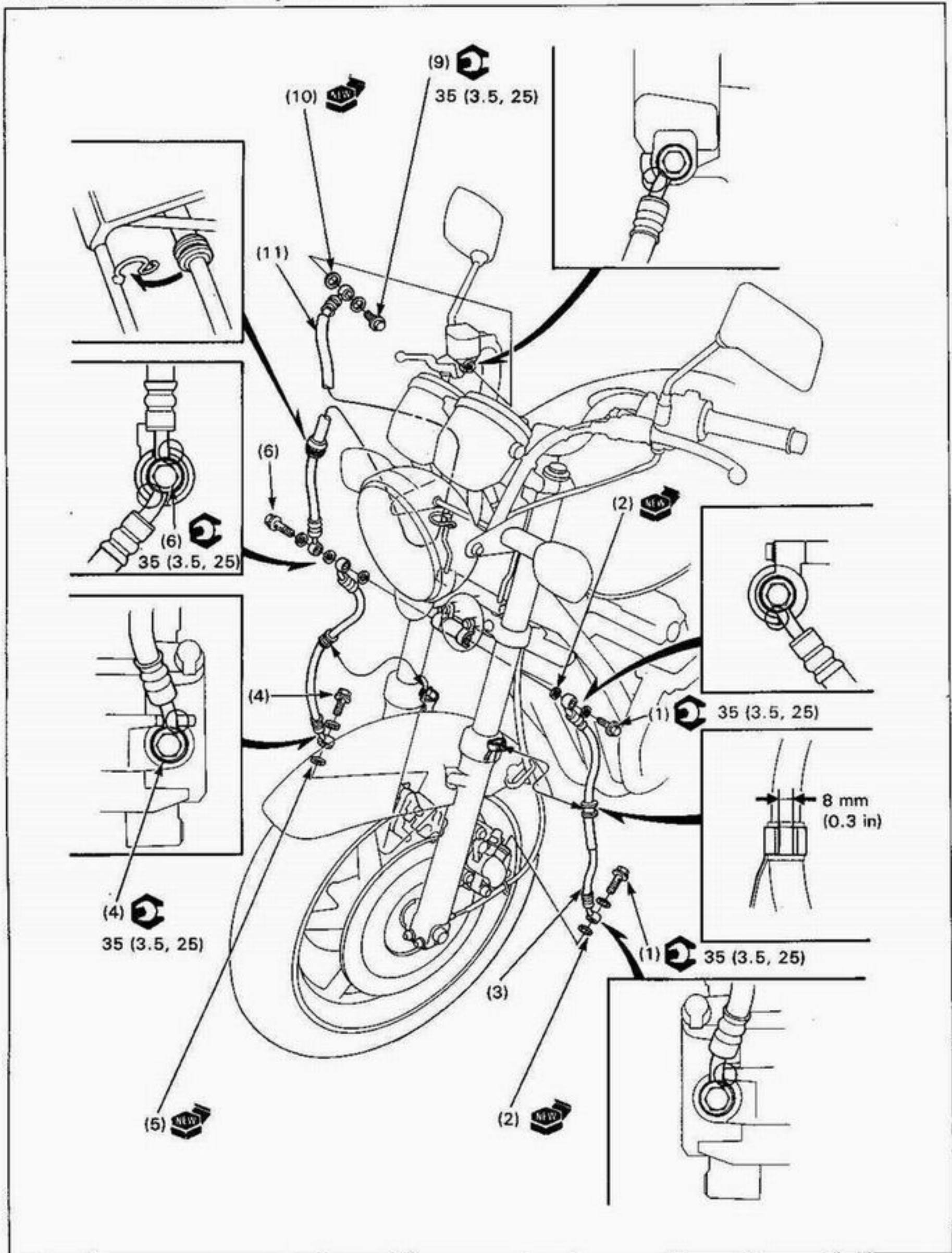
- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.
- Spilled brake fluid will damage painted, plastic or rubber parts. Cover these parts when servicing the brake system.

Requisite Service

- Brake pad removal/installation (page 12-3)
- Brake fluid replacement/air bleeding (section 17 of the Common Service Manual)
- Rear brake caliper removal/installation (page 12-10)

| Procedure | Q'ty | Remarks |
|--------------------------|------|--|
| Disassembly Order | | Assembly is in the reverse order of disassembly. |
| (1) Pad spring | 1 | |
| (2) Pivot collar | 1 | |
| (3) Pivot boot | 1 | |
| (4) Caliper pin bolt | 1 | Apply a locking agent to the threads and torque it. Apply silicone grease to the sliding surface of the pin. |
| (5) Caliper piston | 1 | Install the piston with the opening toward the pads. |
| (6) Dust seal | 1 | CAUTION • Be careful not to damage the piston sliding surface when removing the seals. |
| (7) Piston seal | 1 | |

Front Brake Hose Replacement



CAUTION

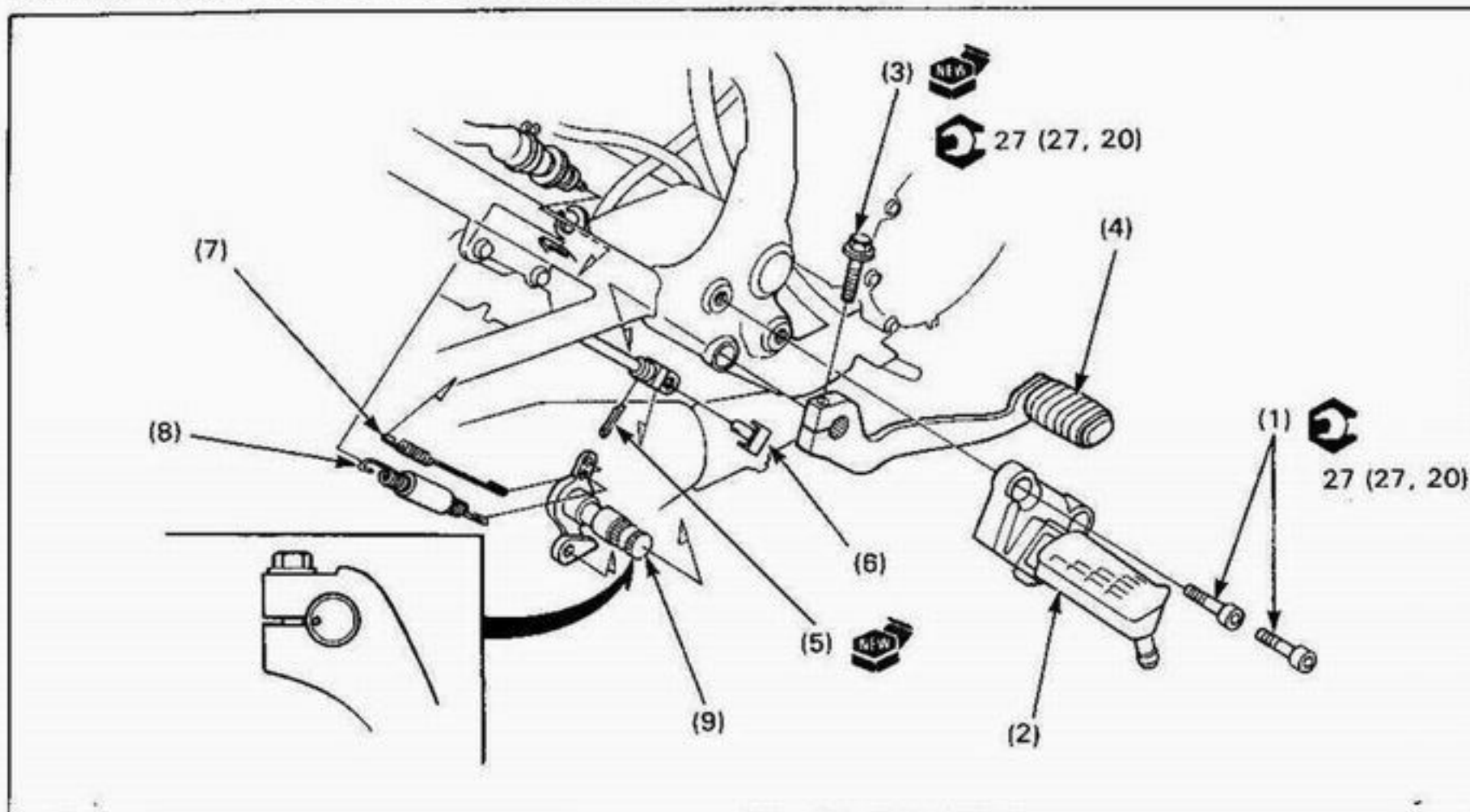
- Spilled brake fluid will damage painted, plastic or rubber parts. Cover these parts when servicing the brake system.

Requisite Service

- Brake fluid replacement/air bleeding (section 17 of Common Service Manual)

| Procedure | | Q'ty | Remarks |
|-----------|---|------|--|
| (1) | Removal Order Brake hose bolt | 2 | Install is in the reverse order of removal. At installation, press the hose end against the stopper while tightening the hose bolt. |
| (2) | Sealing washer | 4 | |
| (3) | Left brake hose | 1 | |
| (4) | Brake hose bolt | 1 | At installation, press the hose end against the stopper while tightening the hose bolt. |
| (5) | Sealing washer | 2 | |
| (6) | Brake hose bolt | 1 | At installation, press the hose end against the stopper while tightening the hose bolt. |
| (7) | Sealing washer | 3 | |
| (8) | Right brake hose | 1 | |
| (9) | Brake hose bolt | 1 | At installation, press the hose end against the stopper while tightening the hose bolt. |
| (10) | Sealing washer | 2 | |
| (11) | Brake hose | 1 | |

Brake Pedal Removal/Installation



| Procedure | Q'ty | Remarks |
|---------------------------------|------|--|
| Removal Order | | Installation is in the reverse order of removal. |
| (1) Right footpeg mounting bolt | 2 | |
| (2) Right footpeg | 1 | |
| (3) Brake pedal pinch bolt | 1 | |
| (4) Brake pedal | 1 | Align the punch mark on the shaft with the brake pedal slot. |
| (5) Cotter pin | 1 | |
| (6) Joint pin | 1 | |
| (7) Brake switch spring | 1 | |
| (8) Brake pedal return spring | 1 | |
| (9) Brake linkage | 1 | Apply clean grease to the sliding surface of the shaft. |

13. Charging System/Alternator

| | | | |
|------------------------------|------|---------------------------------|------|
| Service Information | 13-1 | Charging System Inspection | 13-5 |
| System Location | 13-2 | Regulator/Rectifier | 13-6 |
| Troubleshooting | 13-3 | Alternator | 13-7 |
| Battery Removal/Installation | 13-4 | Alternator Removal/Installation | 13-8 |

Service Information

⚠ WARNING

- The battery gives off explosive gases; keep sparks, flames, and cigarettes away. Provide adequate ventilation when charging or using the battery in an enclosed space.
- 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 immediately.
- 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.
- **KEEP OUT OF REACH OF CHILDREN.**

- For alternator shaft assembly removal/installation, refer to section 9.
- Always turn off the ignition switch before disconnecting any electrical component.

CAUTION

- **Some electrical components may be damaged if terminals or connectors are connected or disconnected while the ignition switch is ON and current is present.**

13

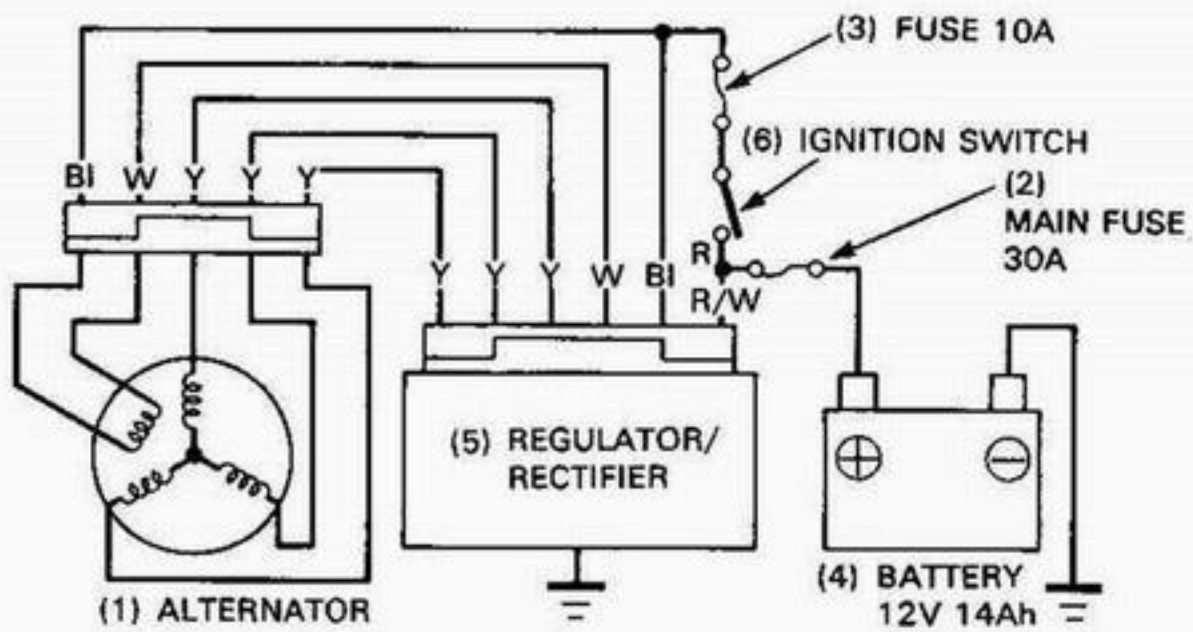
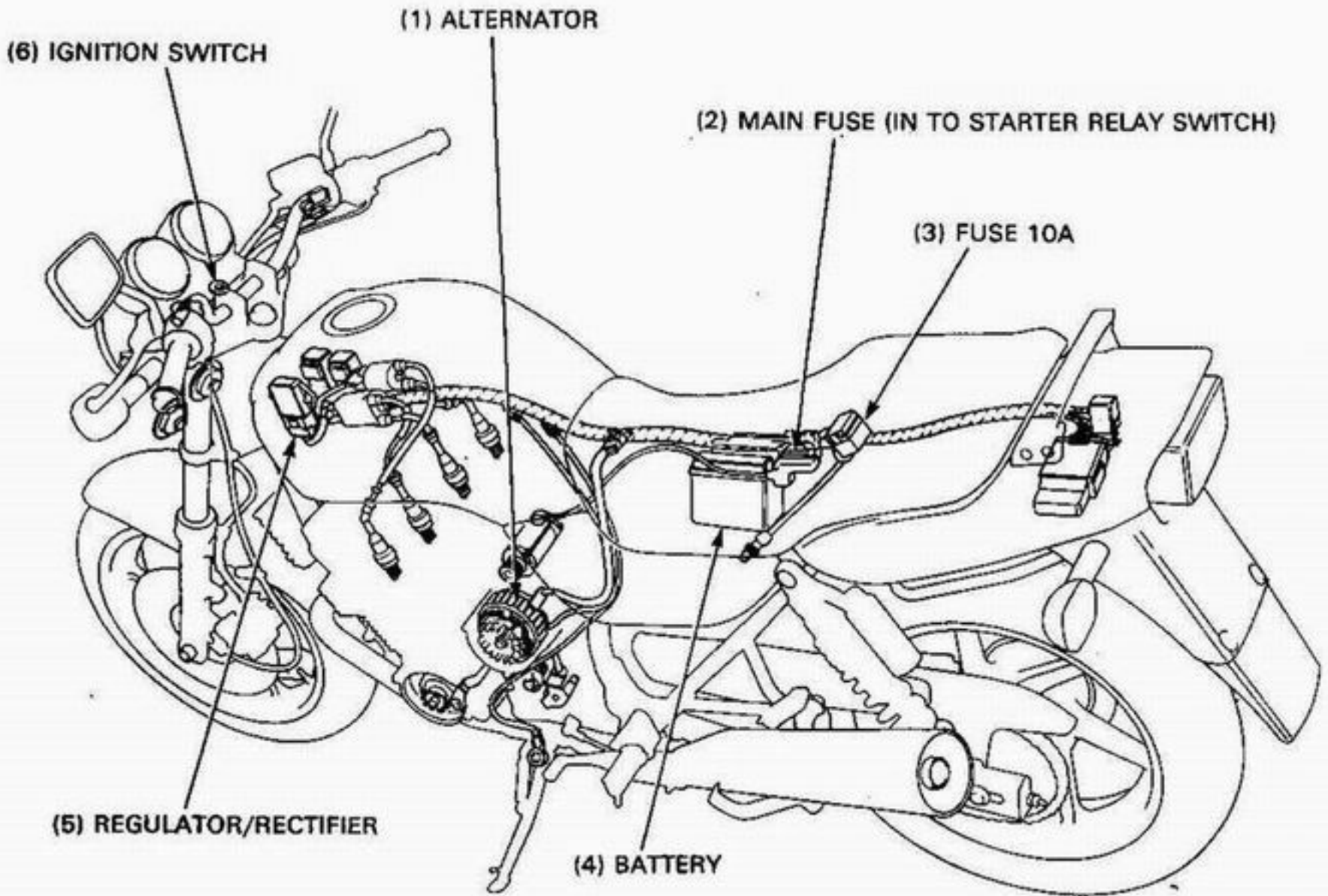
- For extended storage, remove the battery, give it a full charge, and store it in a cool, dry space. For maximum service life, charge the stored battery every two weeks.
- For a battery remaining in a stored motorcycle, disconnect the negative battery cable from the battery terminal.

NOTE

- Refer to Section 22 of the Common Service Manual and the instructions in the Operation Manual for the HONDA Battery Tester for detailed battery charging steps.

- The battery can be damaged if overcharged or undercharged, or if left to discharge for long periods. These same conditions contribute to shortening the "life span" of the battery. Even under normal use, the performance of the battery deteriorates after 2-3 years.
- Battery voltage may recover after battery charging, but under heavy load, battery voltage will drop quickly and eventually die out. For this reason, the charging system is often suspected to be the problem. Battery overcharge often results from problems in the battery itself, which may appear to be an overcharge symptom. If one of the battery cells is shorted and battery voltage does not increase, the regulator/rectifier supplies excess voltage to the battery. Under these conditions, the electrolyte level goes down quickly.
- Before troubleshooting the charging system, check for proper use and maintenance of the battery. Check if the battery is frequently under heavy load, such as having the headlight and taillight ON for long periods of time without riding the motorcycle.
- The battery will self-discharge when the motorcycle is not in use. For this reason, charge the battery every two weeks to prevent sulfation from forming.
- Filling a new battery with electrolyte will produce some voltage, but in order to achieve its maximum performance, always charge the battery. Also, the battery life is lengthened when it is initial-charged.
- When checking the charging system, always follow the steps in the troubleshooting flow chart (page 13-3).
- For battery testing/charging, refer to section 22 of the Common Service Manual.
- For charging system component locations, see page 13-2.

System Location



R : Red
 W : White
 Y : Yellow
 BI : Black

Troubleshooting

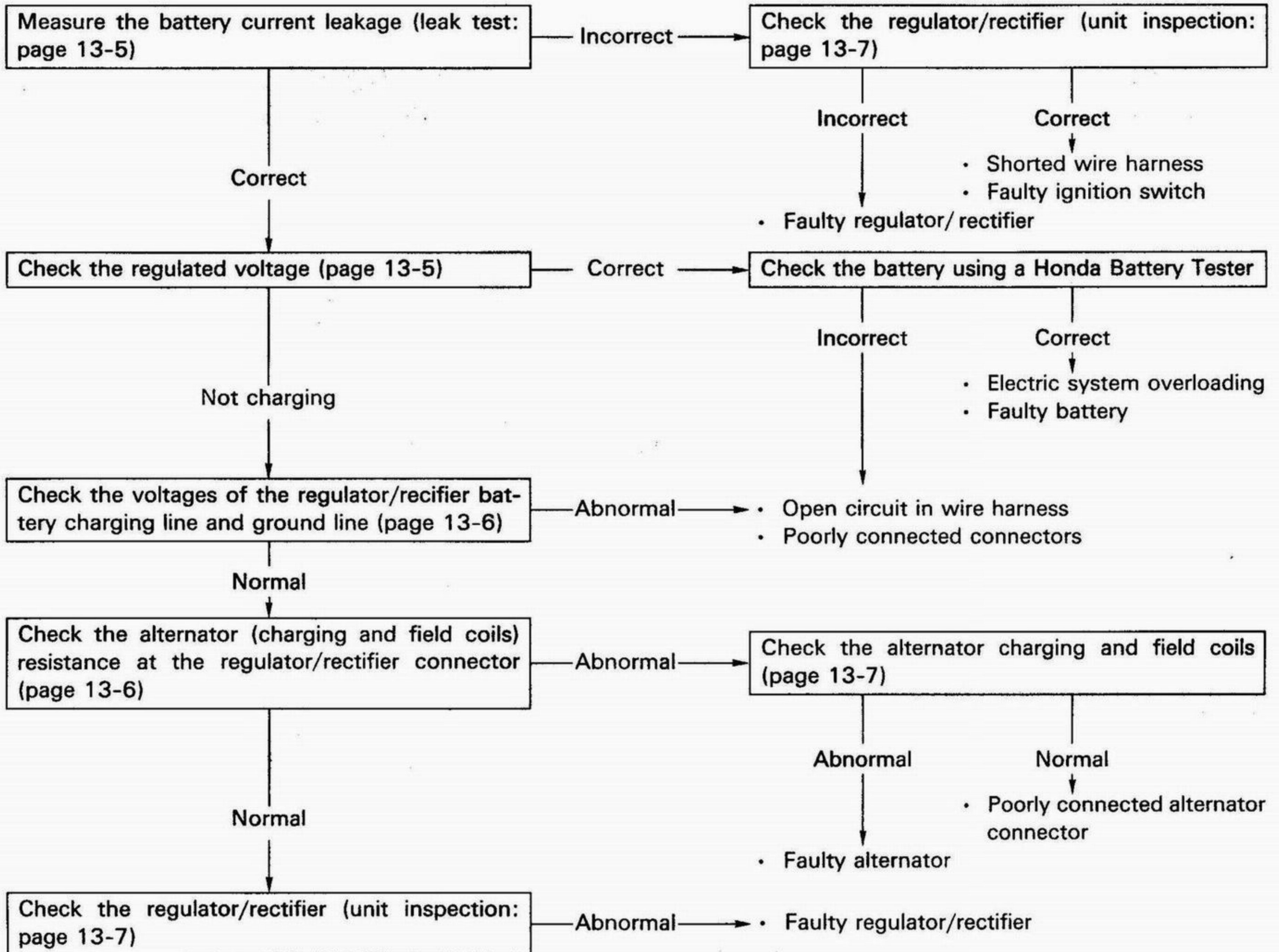
Battery Overcharging

- faulty regulator/rectifier

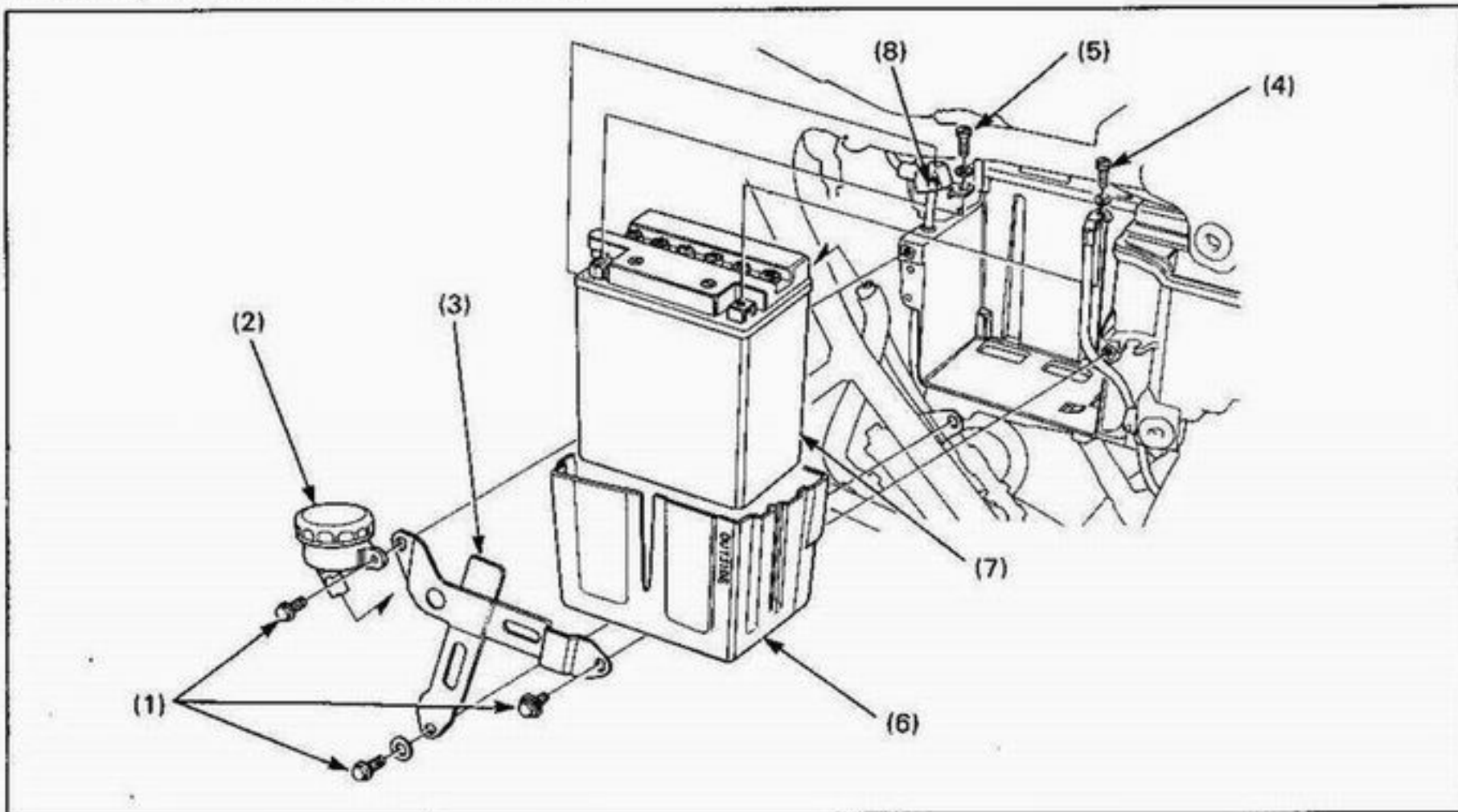
Battery Undercharging

NOTE

- In order to obtain accurate test readings, the battery must be fully charged and in good condition. Refer to the Common Service Manual, section 22, for instructions on checking the battery condition.



Battery Removal/Installation



NOTE

- With the ignition switch OFF, remove the negative terminal at the battery first, then remove the positive terminal.

Requisite Service

- Right side cover removal/installation (page 2-2)

| Procedure | Q'ty | Remarks |
|-------------------------|------|--|
| Removal Order | | Installation is in the reverse order of removal. |
| (1) Battery holder bolt | 3 | |
| (2) Reservoir | 1 | |
| (3) Battery holder | 1 | |
| (4) Negative terminal | 1 | |
| (5) Positive terminal | 1 | |
| (6) Battery case | 1 | With the "OUTSIDE" mark facing up. |
| (7) Battery | 1 | |
| (8) Breather tube | 1 | |

Charging System Inspection

Leakage Test

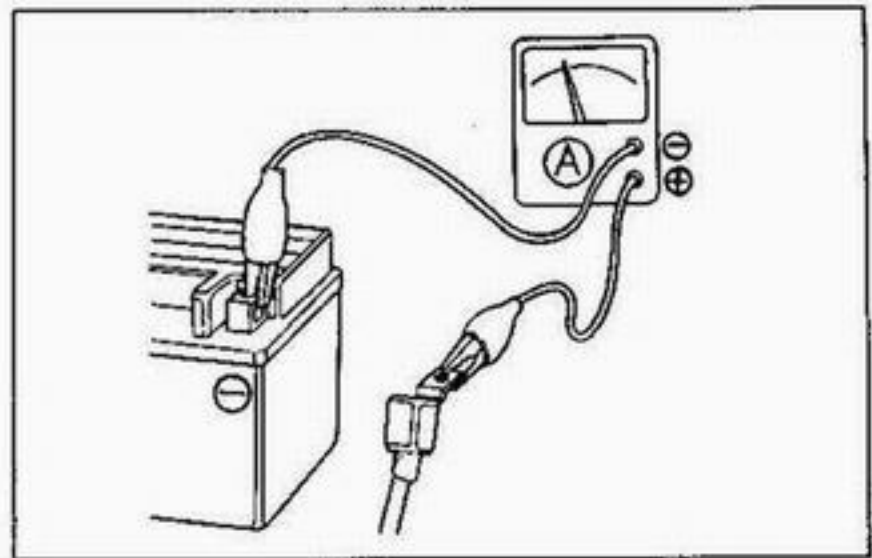
Turn the ignition switch off, and disconnect the ground (-) cable from the battery.

Connect the ammeter (+) probe to the ground cable and the ammeter (-) probe to the battery (-) terminal.

With the ignition switch off, check for current leakage.

NOTE

- When measuring the current using a tester, set it to a high range, and then bring the range down to an appropriate level. Current flow larger than the range selected may blow out the fuse in the tester.
- While measuring current, do not turn the ignition switch ON. A sudden surge of current may blow out the fuse in the tester.



Specified Current Leakage: 0.01 mA max.

If current leakage exceeds the specified value, a shorted circuit is likely.

Locate the short by disconnecting connectors one by one and measuring the current.

Regulated Voltage/Amperage Inspection

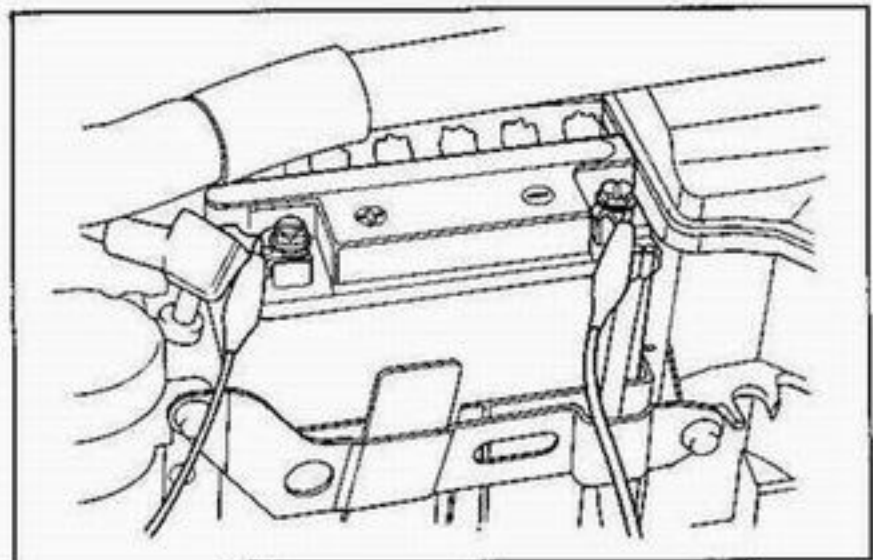
NOTE

- Before performing this test, be sure the battery is fully charged and that the specific gravity is greater than 1.27 (20°C/68°F)

Start the engine and warm it up to operating temperature, then turn the ignition switch OFF.

[Battery Regulated Voltage]

Connect the multimeter between the battery terminals.



5 TOOL

Digital multimeter

Analogue tester

07411-0020000 or

07308-0020001

Charging System/Alternator

⚠ 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 may cause loss of consciousness and lead to death.

Disconnect the starter relay switch connector and remove the main fuse (30A). Reconnect the connector onto the relay switch.

Connect the ammeter as shown.

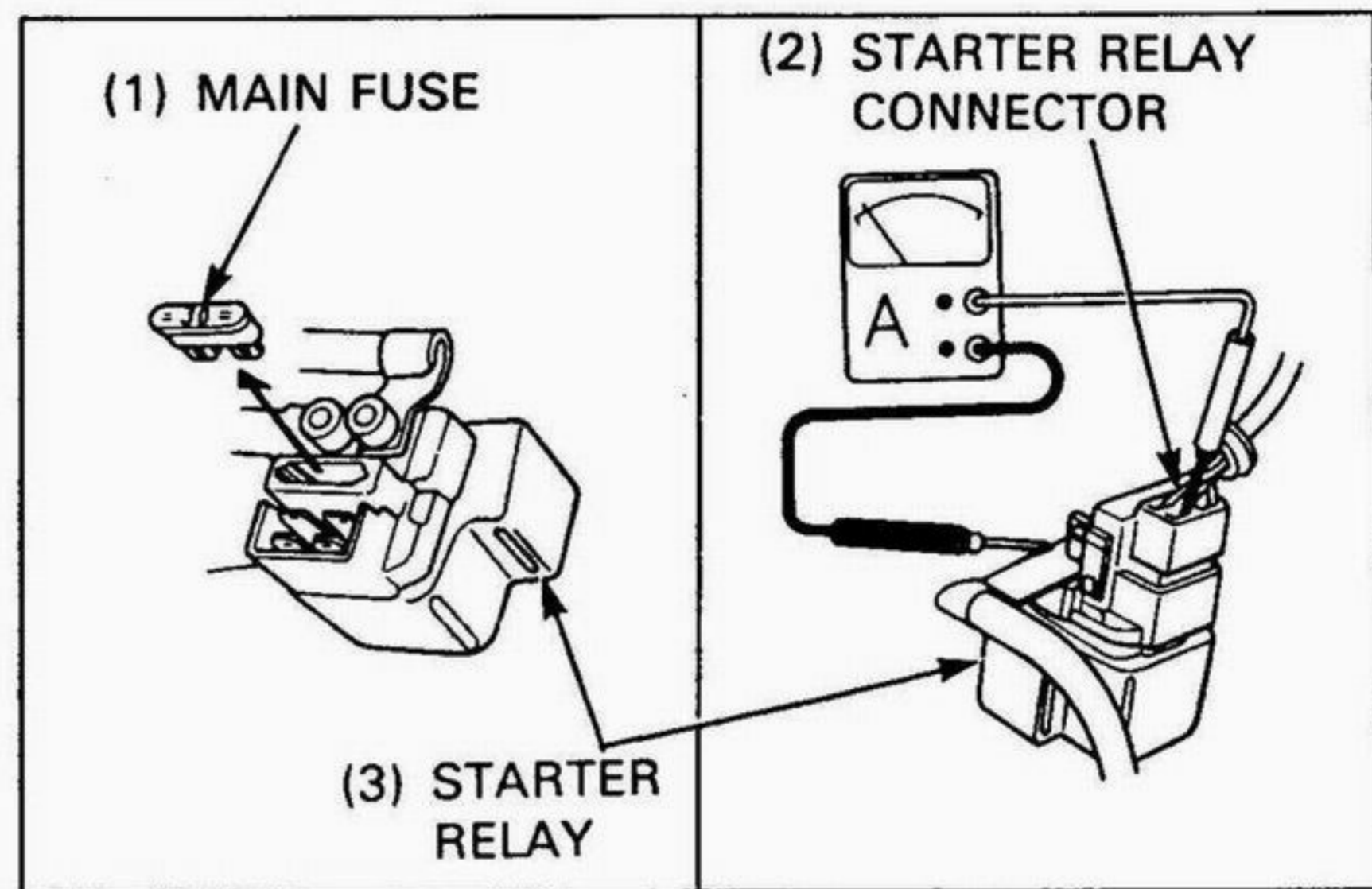
Start the engine and increase the engine speed gradually.

CAUTION

- Be careful not to short the tester probes.
- Although the current could be measured when the ammeter is connected between the battery positive terminal and the positive cable, a sudden surge of current to the starter motor could damage the ammeter.
- Always turn the ignition OFF when conducting the test. Disconnecting the ammeter or wires when current is flowing may damage the ammeter.

Regulated Voltage: 13.0-15.0V/2,000 min⁻¹(rpm)

Charging current : Below 0.5 A



Regulator/Rectifier

System Inspection

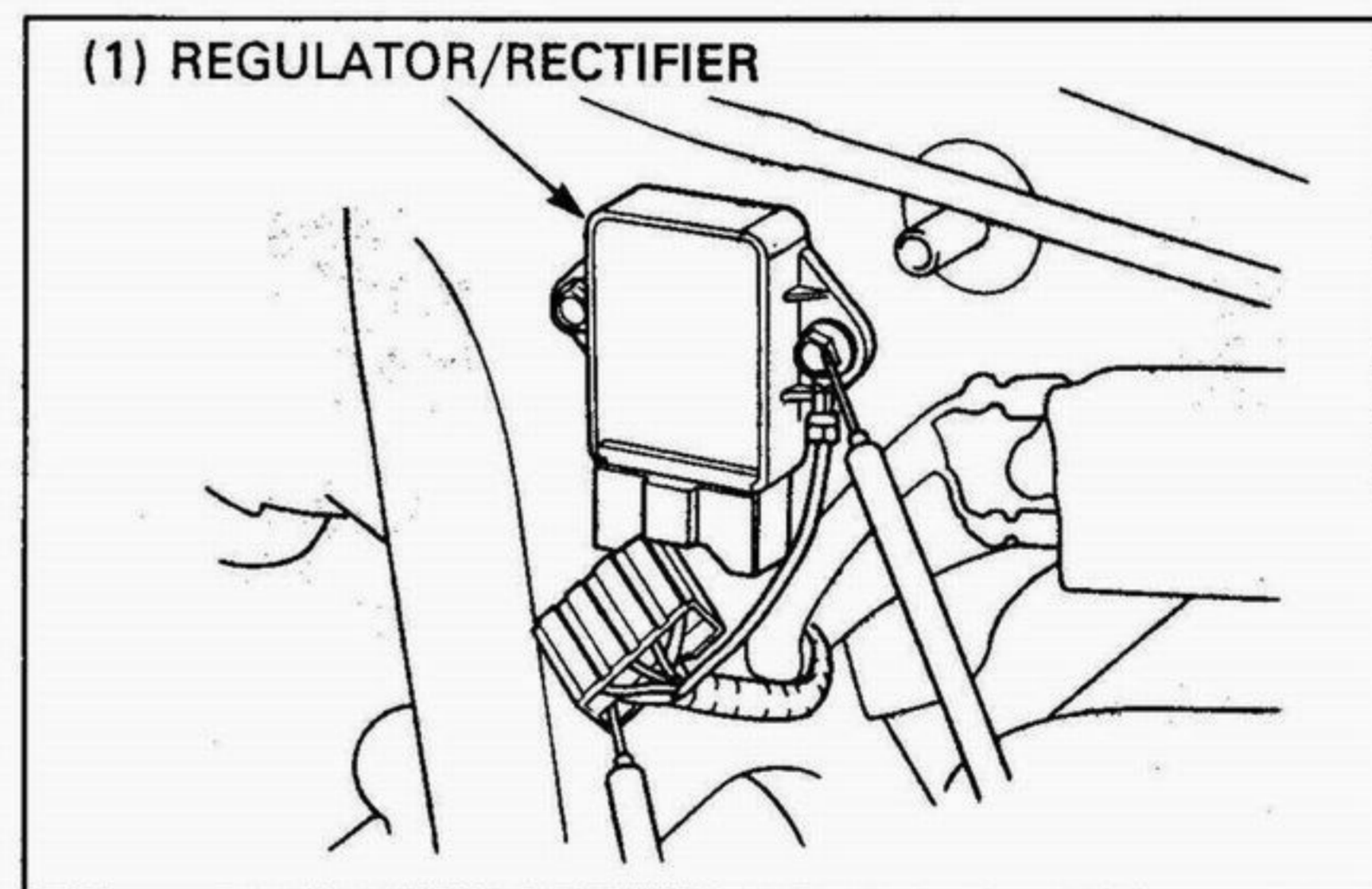
Disconnect the regulator/rectifier 6P connector.

Check the connectors for loose or corroded terminals.

Measure the following between the connector terminals of the wire harness side.

| Item | Terminals | Specification |
|------------------------|------------------------------|--|
| Battery charging line | Red/white (+) and ground (-) | Battery voltage should register. |
| Voltage detection line | Black (+) and ground (-) | When the ignition switch is ON, battery voltage should register. |
| Charging coil line | Yellow and Yellow | 0.4-0.6 Ω (20°C/68°F) |
| Field coil line | White and Black | 2.1-2.7 Ω (20°C/68°F) |

If the charging coil line reading is out of specification, check the alternator (page 13-7).



Unit Inspection

Provided the circuit on the wire harness side is normal and there are no loose connections at the connector, inspect the regulator/rectifier unit by measuring the resistance between the terminals.

NOTE

- You'll get false readings if the probes touch your fingers.
 - Use the specified multimeters. Using other equipment may not allow you to obtain the correct results. This is due to the characteristic of semiconductors, which have different values depending on the applied voltage.
- Specific Multimeter:**
- 07411-0020000 (KOWA Digital type)
 - 07308-0020001 (SANWA Analogue type)
 - TH-5H (KOWA Analogue type)
- **Select the following range:**
SANWA: ×kΩ
KOWA: ×100Ω
 - An old battery stored in the multimeter could cause inaccurate readings. Check the battery if the test results are not as expected.
 - When using the KOWA multimeter, remember value that all readings should be multiplied by 100.

Replace the regulator/rectifier unit if the resistance value between the terminals is abnormal.

Removal/Installation

- Remove the fuel tank (page 2-3).
- Remove the fuel tank front cushion and left front side cover.
- Disconnect the regulator/rectifier connector.
- Remove the mounting bolt and regulator/rectifier unit.

Installation is in the reverse order of removal.

Alternator

NOTE

- It is not necessary to remove the stator to make this test.

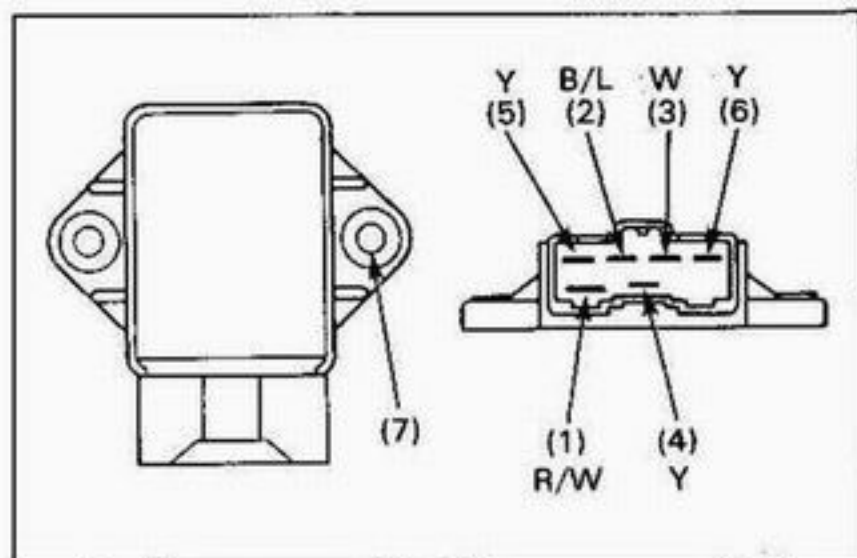
Disconnect the alternator 4P connector.

Measure the resistance between the two Yellow wire terminals, and between the White and Black wire terminals.

Standard:

- Yellow-Yellow: 0.4-0.6Ω (20°C/68°F)**
- White-Black : 2.1-2.6Ω (20°C/68°F)**

Replace the stator if the resistance is out of specification or if there is continuity between the Yellow or White wire terminal and ground.



RECTIFIER PORTION

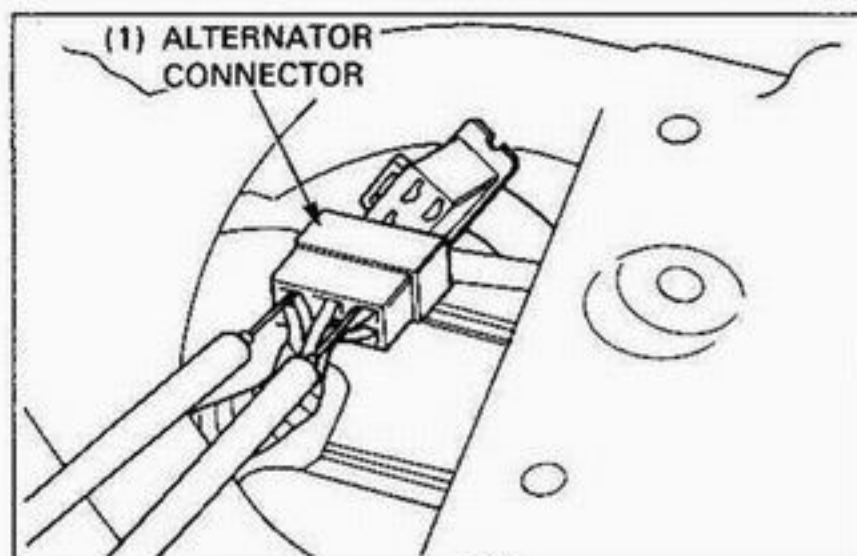
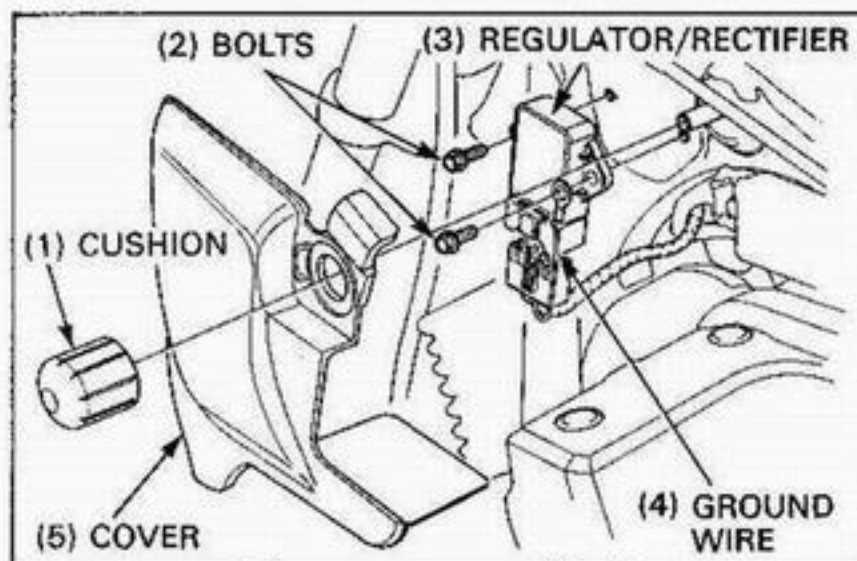
Unit: kΩ

| Probe⊕ / Probe⊖ | 1 | 4 | 5 | 6 | 7 |
|-----------------|--------|--------|--------|--------|---|
| 1 | | ∞ | ∞ | ∞ | ∞ |
| 4 | 0.5-50 | | ∞ | ∞ | ∞ |
| 5 | 0.5-50 | ∞ | | ∞ | ∞ |
| 6 | 0.5-50 | ∞ | ∞ | | ∞ |
| 7 | 0.5-50 | 0.5-50 | 0.5-50 | 0.5-50 | |

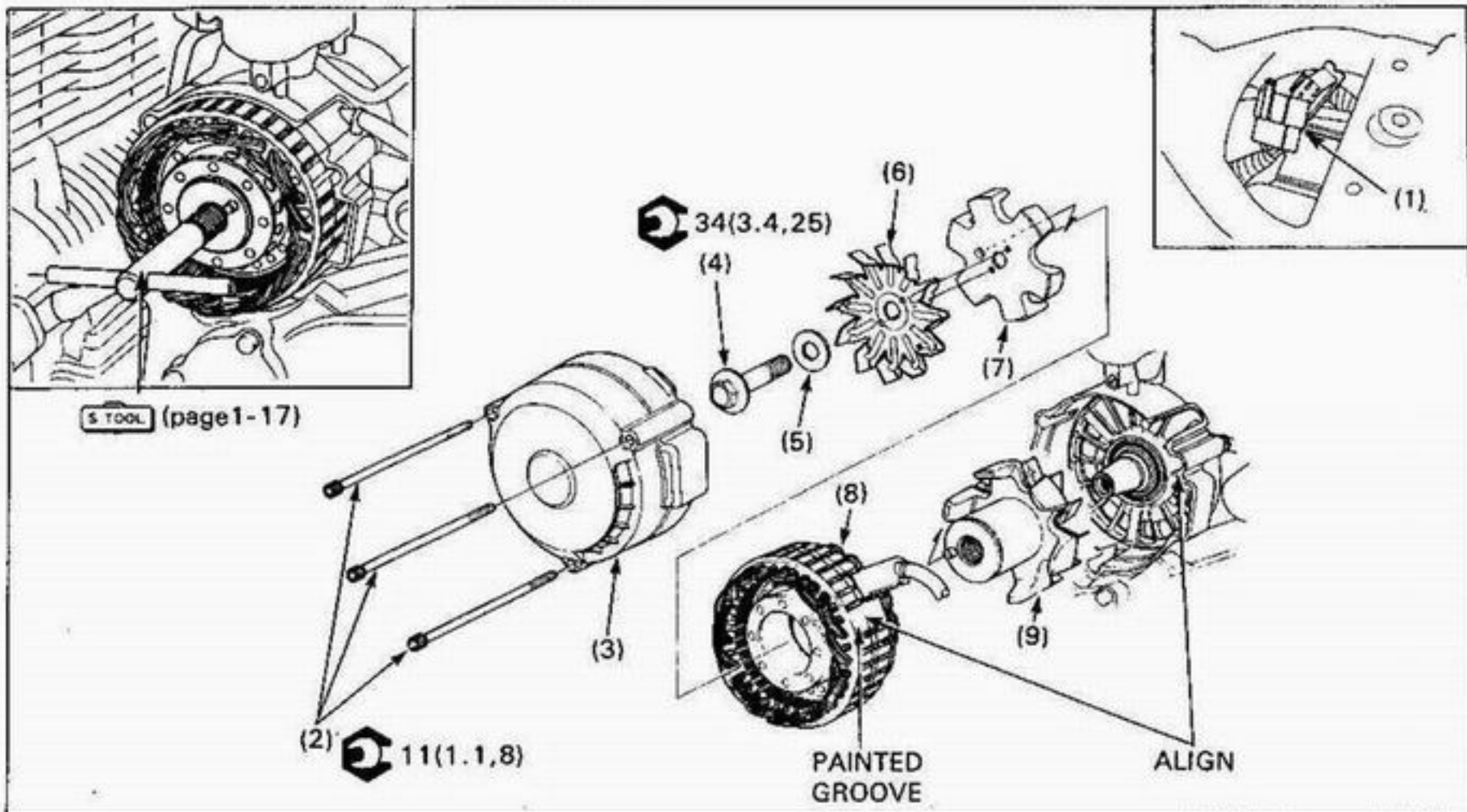
REGULATOR PORTION

Unit: kΩ

| Probe⊕ / Probe⊖ | 2 | 3 | 7 |
|-----------------|--------|--------|--------|
| 2 | | 1-30 | 0.5-20 |
| 3 | 0.5-30 | | 1-50 |
| 7 | 0.5-20 | 0.5-30 | |



Alternator Removal/Installation



NOTE

- For alternator shaft/shaft bearing replacement, see page 9-12.

Requisite Service

- Fuel tank removal/installation (page 2-3)

| Procedure | Qty | Remarks |
|-------------------------------|-----|---|
| Removal Order | | Installation is in the reverse order of removal. |
| (1) Alternator wire connector | 1 | |
| (2) Alternator cover bolt | 3 | |
| (3) Alternator cover | 1 | |
| (4) Alternator rotor bolt | 1 | When removing and installing, shift the transmission into gear and apply the rear brake. |
| (5) Washer | 1 | |
| (6) Fan B | 1 | To install, align the holes with the holes in rotor B. |
| (7) Rotor B | 1 | Install with the hole aligned with the boss on rotor A. |
| (8) Stator assembly | 1 | At installation, align the painted groove with upper right groove for the alternator cover mounting bolt. |
| (9) Rotor A/fan A. | 1 | |

14. Ignition System

| | | | |
|----------------------------|------|--------------------------------------|-------|
| Service Information | 14-1 | Ignition Coil | 14-7 |
| System Location | 14-2 | Pulse Generator | 14-8 |
| Troubleshooting | 14-3 | Pulse Generator Removal/Installation | 14-9 |
| Ignition System Inspection | 14-6 | Ignition Timing | 14-10 |

Service Information

⚠ WARNING

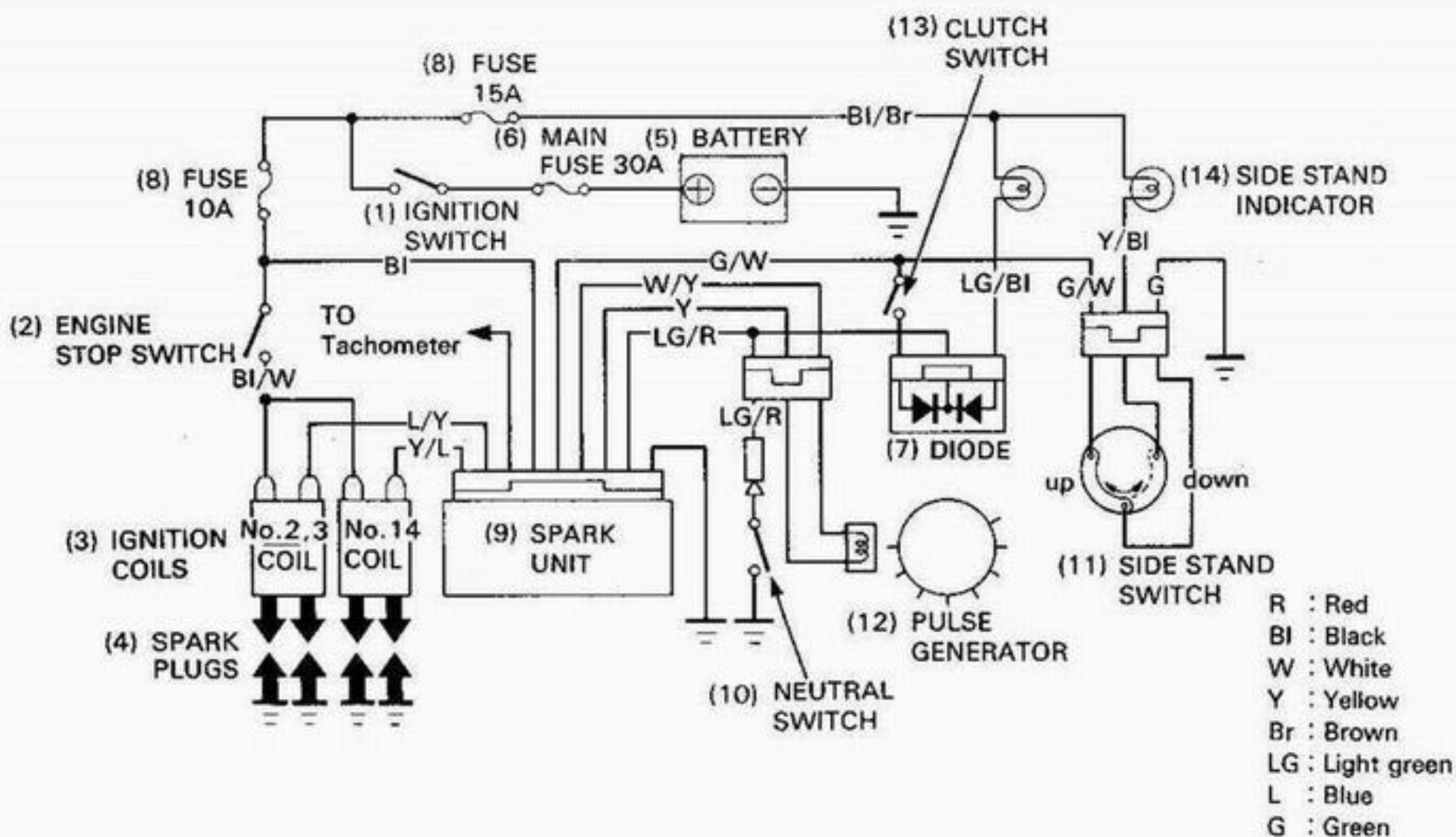
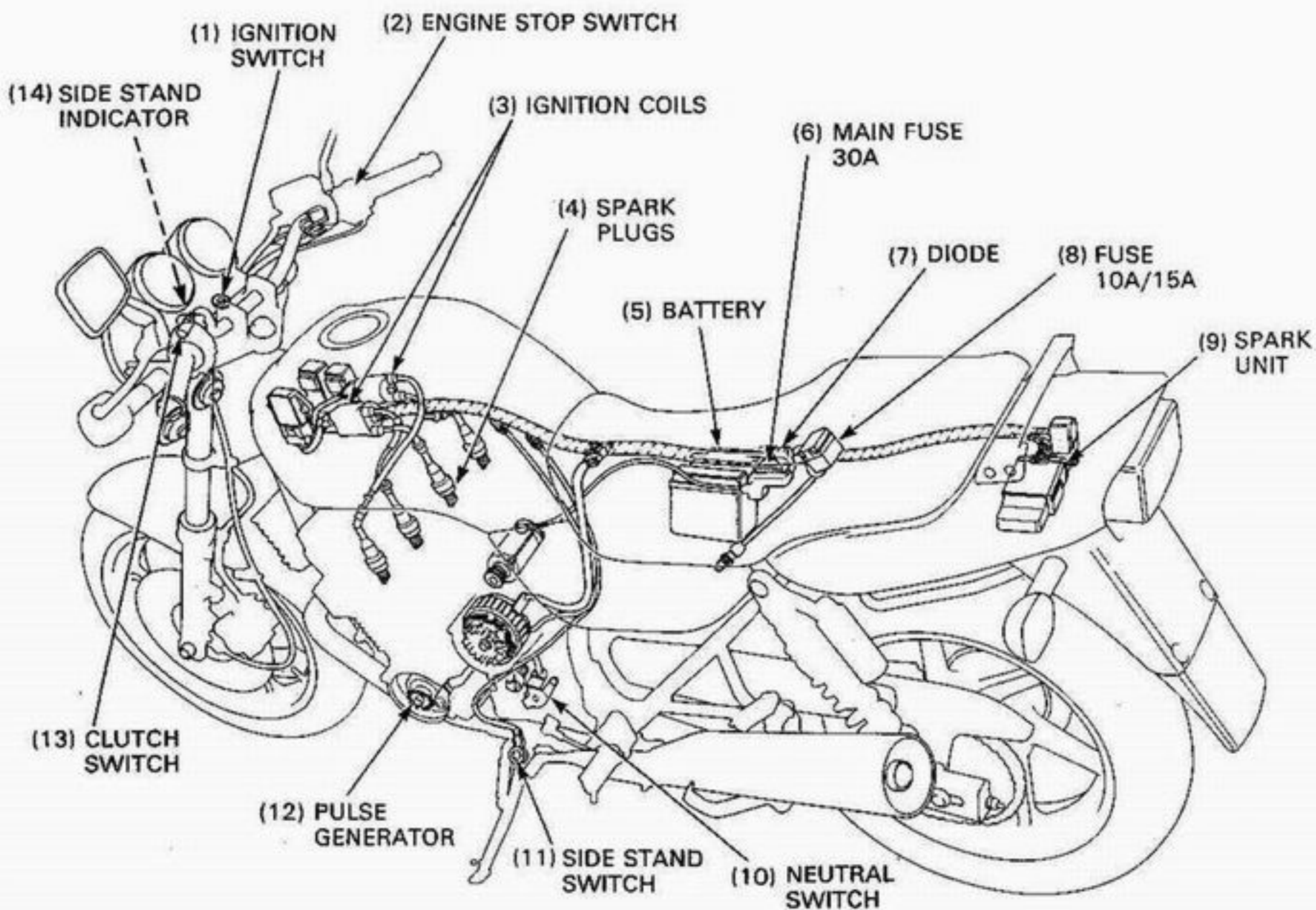
- If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death.

CAUTION

- Some electrical components may be damaged if terminals or connectors are connected or disconnected while the ignition switch is ON and current is present.

- When checking the ignition system, always follow the steps in the troubleshooting flow chart (page 14-3).
- The spark unit may be damaged if dropped. Also, if the connector is disconnected when current is present, the excessive voltage may damage the unit. Always turn off the ignition switch before servicing.
- The transistorized ignition uses an electrically controlled ignition timing system. No adjustments can be made to the ignition timing.
- A rough diagnosis can be made by identifying the cylinder whose spark timing is incorrect.
- A faulty ignition system is often related to poorly connected or corroded connectors. Check those connections before proceeding.
- Use spark plugs of the correct heat range. Using the wrong spark plugs can damage the engine. Refer to section 2 of the Common Service Manual.
- Make sure the battery is adequately charged. Using the starter motor with a weak battery results in a slower engine cranking speed as well as no spark at the spark plugs.
- For side stand inspection, refer to section 25 of the Common Service Manual.
- For neutral switch inspection, refer to page 16-9.
- For the ignition switch and engine stop switch inspection, check for continuity using the chart on the Wiring Diagram, page 17-1. Disconnect each switch connector inside the headlight case (page 1-21) and check it.

System Location



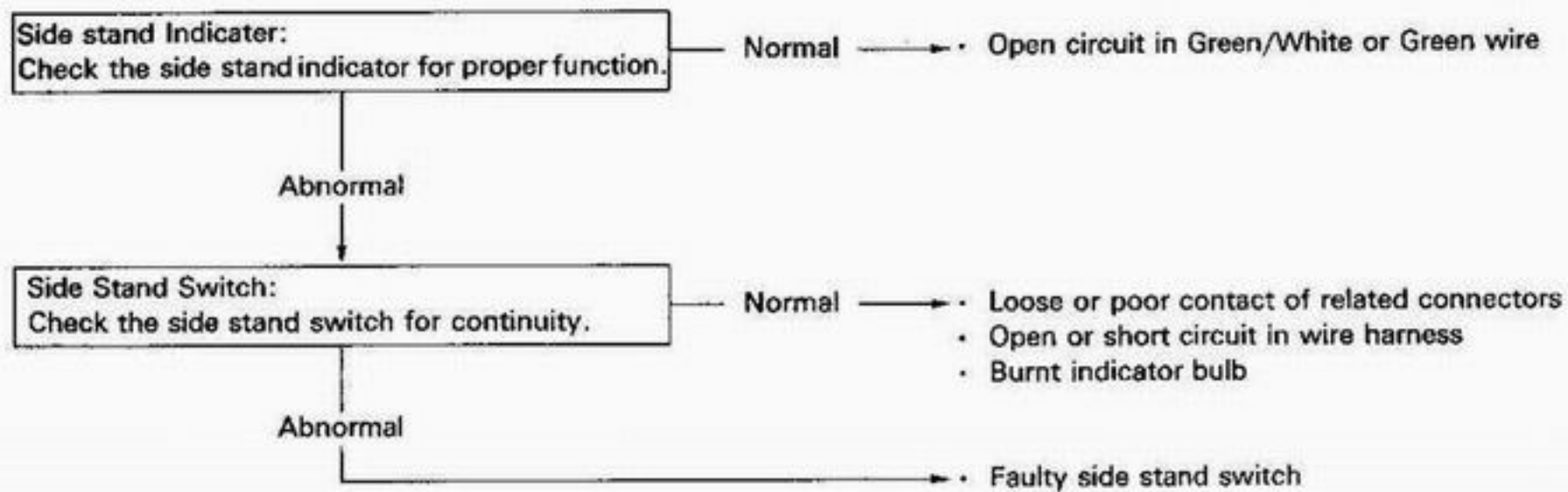
Troubleshooting

- Inspect the followings before diagnosing the system.
 - Faulty spark plug.
 - Loose spark plug cap or spark plug wire connections.
 - Water got into the spark plug cap (Leaking the ignition coil secondary voltage).
- Temporarily exchange the ignition coil with the other good one and perform the spark test. If there is spark, the exchanged ignition coil is faulty.
- "Initial voltage" of the ignition primary coil is the battery voltage with the ignition switch ON and engine stop switch at RUN. (The engine is not cranked by the starter motor.)

No spark at all plugs

| Unusual Condition | | Probable Cause (Check in numerical order) |
|-------------------------------|--|--|
| Ignition coil primary voltage | No initial voltage with ignition and engine stop switches ON. (Other electrical components are normal.) | 1. Faulty engine stop switch. 2. An open circuit in BI/W wire between the ignition coil and engine stop switch. 3. Loose primary terminal or an open circuit in primary coil. 4. Faulty spark unit: in case when the initial voltage is normal while disconnecting spark unit connectors. |
| | Initial voltage is normal, but it drops down to 2-4 V while cranking the engine. | 1. Incorrect peak voltage adaptor connections. 2. Undercharged battery. 3. No voltage between the BI (+) and Body ground (-) at the spark unit 6P-Black connector or loose spark unit connection. 4. An open circuit or loose connection in G wire. 5. Open circuits or loose connections in L/Y and Y/L wires between the ignition coils and spark unit. 6. Short circuit in ignition primary coil. 7. Faulty side stand switch or neutral switch. 8. An open circuit or loose connection in No.7 related circuit wires. <ul style="list-style-type: none"> • Side stand switch line: G/W wire • Neutral switch line: Lg/R wire 9. Faulty pulse generator (Measure the peak voltage). 10. Faulty spark unit (in case when above No.1-9 are normal). |
| | Initial voltage is normal, but no peak voltage while cranking the engine. | 1. Incorrect peak voltage adaptor connections. 2. Faulty peak voltage adaptor. 3. Faulty spark unit (in case when above No.1, 2 are normal). |
| | Initial voltage is normal, but peak voltage is lower than standard value. | 1. The multimeter impedance is too low; below 10 MΩ/DCV. 2. Cranking speed is too slow (battery is undercharged). 3. The sample timing of the tester and measured pulse were not synchronized (System is normal if measured voltage is over the standard voltage at least once.) 4. Faulty spark unit (in case that above No. 1-3 are normal). |
| | Initial and voltage are normal, but does not spark. | 1. Faulty spark plug or leaking ignition coil secondary current ampere. 2. Faulty ignition coils. |
| Pulse generator | Peak voltage is lower than standard value. | 1. The multimeter impedance is too low; below 10 MΩ/DCV. 2. Cranking speed is too slow (battery is undercharged). 3. The sample timing of the tester and measured pulse were not synchronized (System is normal if measured voltage is over the standard voltage at least once). 4. Faulty spark unit (in case when above No. 1-3 are normal). |
| | No peak voltage. | 1. Faulty peak voltage adaptor. 2. Faulty pulse generator. |

Side Stand switch does not function at all.



Ignition System Inspection

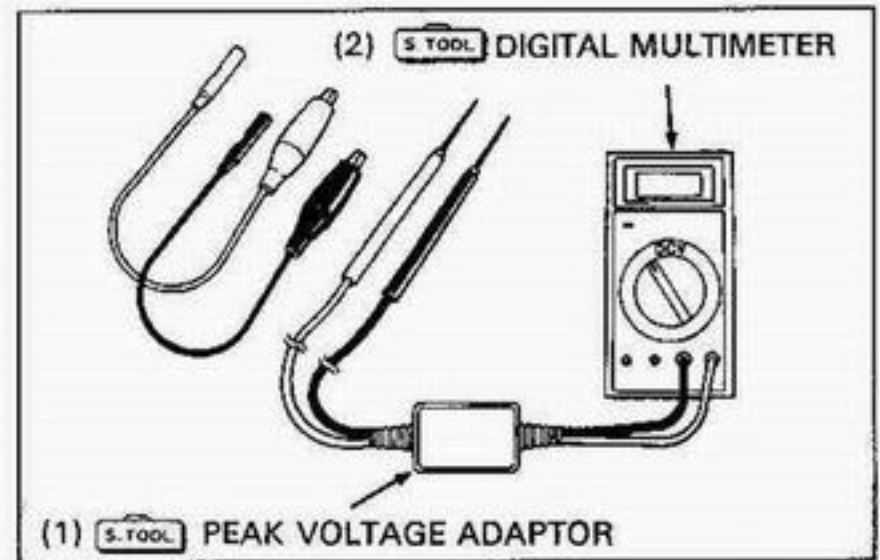
NOTE

- If no spark at all plugs, check all connections for loose or poor contact before measuring each peak voltage.
- Use genuine digital tester or commercially available digital multimeter or commercially available digital multimeter (impedance: 10M Ω /DCV minimum).
- The display value differs depending upon the internal impedance of the multimeter.
- If using Imrie diagnostic tester (model 625), follow the manufacturer's instructions.

Connect the peak voltage adaptor to the digital multimeter.

S. TOOL

Imrie diagnostic tester (model 625) made in Austria or
 Peak voltage adaptor 07HGJ-0020100 with
 Digital multimeter 07411-0020000



Ignition Coil Primary Voltage Inspection

NOTE

- Check all system connections before this inspection. If the system is disconnected, incorrect peak voltage might be measured.
- Make sure that all cylinder compressions are normal and check that the spark plugs are installed correctly in all cylinders.

Place the motorcycle on its center stand and shift into neutral.

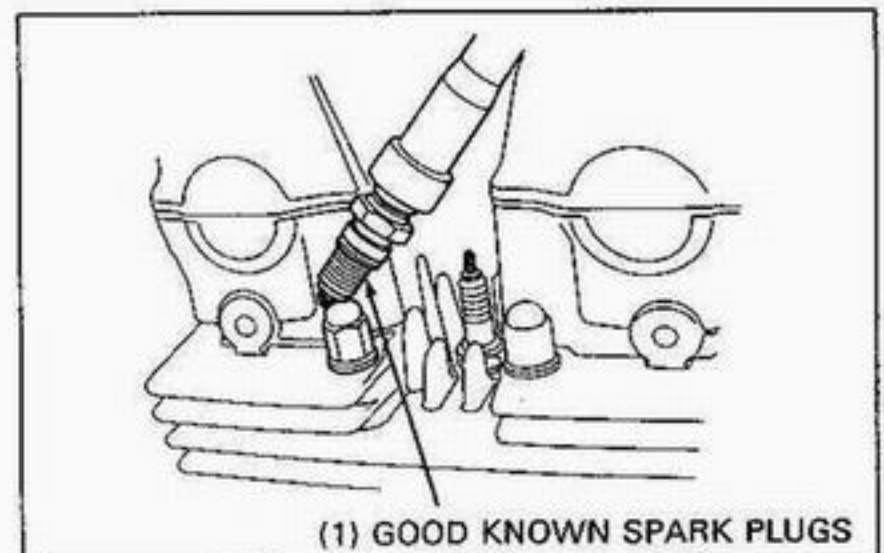
Remove the fuel tank (page 2-3).

Disconnect all spark plug caps from the spark plugs.

Connect a good known spark plugs to all spark plug caps and ground the spark plugs to the cylinder as done in a spark test.

NOTE

- Measure the peak voltage with the cylinder compression applied and closed circuit of ignition coil secondary circuit.



Ignition System

Connect the peak voltage adaptor probes between the primary ignition coil terminal and body ground with the connectors remained connected.

Connection

No. 1, 4 ignition coil (Right)

Yellow/Blue terminal(+) – Body ground(–)

No. 2, 3 ignition coil (Left)

Blue/Yellow terminal(+) – Body ground(–)

Turn the ignition switch ON and engine stop switch to RUN. Check for the initial voltage at this time. The battery voltage should be measured.

If the initial voltage is not measured, check the probable cause described in troubleshooting.

Crank the engine with the starter motor and read each ignition coil primary peak voltage.

Peak voltage: 100 V minimum

⚠ WARNING

- Avoid touching the spark plugs and tester probes to prevent electric shock.

NOTE

- Although measured values are different for each ignition coil, they are normal as long as each voltage is higher than the specified voltage.

Pulse Generator Peak Voltage Inspection

NOTE

- Measure the peak voltage with the cylinder compression is applied. Leave all spark plugs in the cylinder head.

Remove the rear fairing (page 2-3).

Disconnect the spark unit connector.

Connect the peak voltage adaptor on the harness side connector.

Measure the pulse generator peak voltage while cranking the engine with the starter motor.

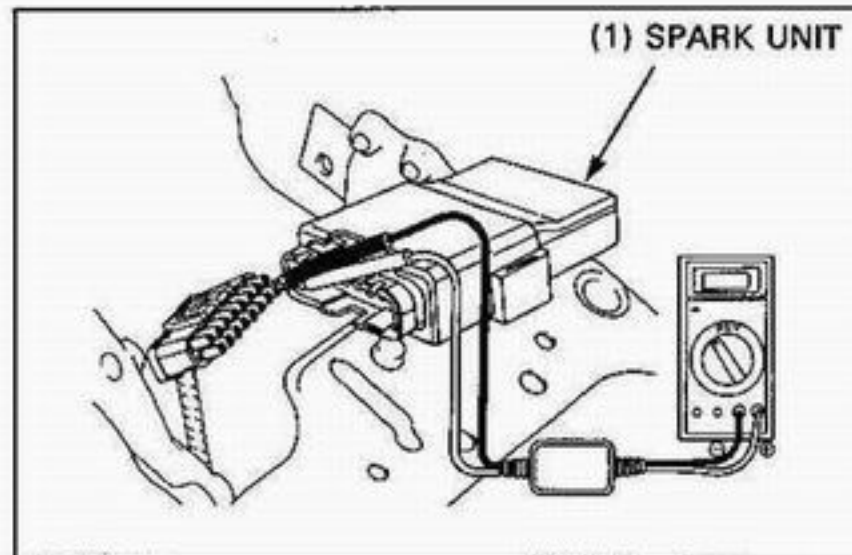
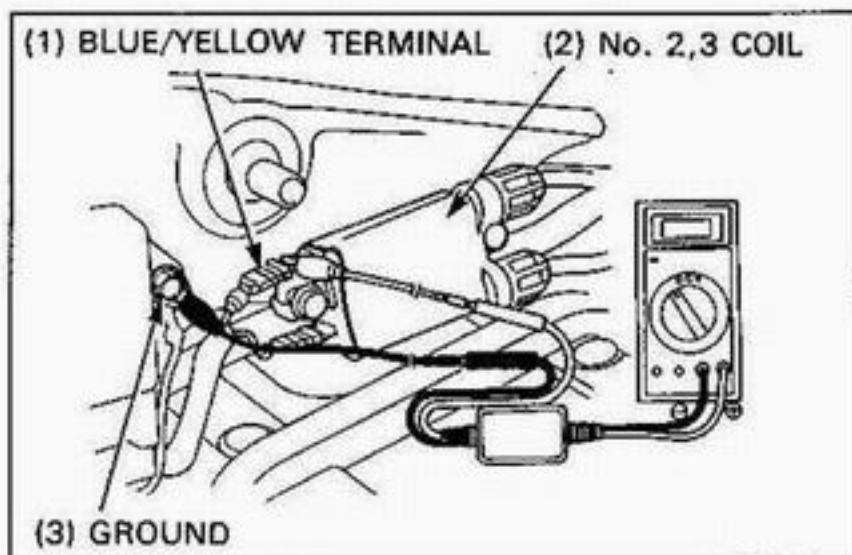
Connection

Yellow terminal(+) – White/Yellow terminal(–)

Peak voltage: 0.7 V minimum

⚠ WARNING

- Avoid touching the tester probes while measuring the voltage to prevent electric shock.



If the measurement is out of the specification, perform the following procedures:

- Remove the fuel tank (page 2-3).
- Remove the breather tank (page 5-4).
- Disconnect the pulse generator 4P mini connector.
- Measure the peak voltage at the pulse generator side connector and record it.

Connection:
 Yellow terminal(+) – White/Yellow terminal(-)

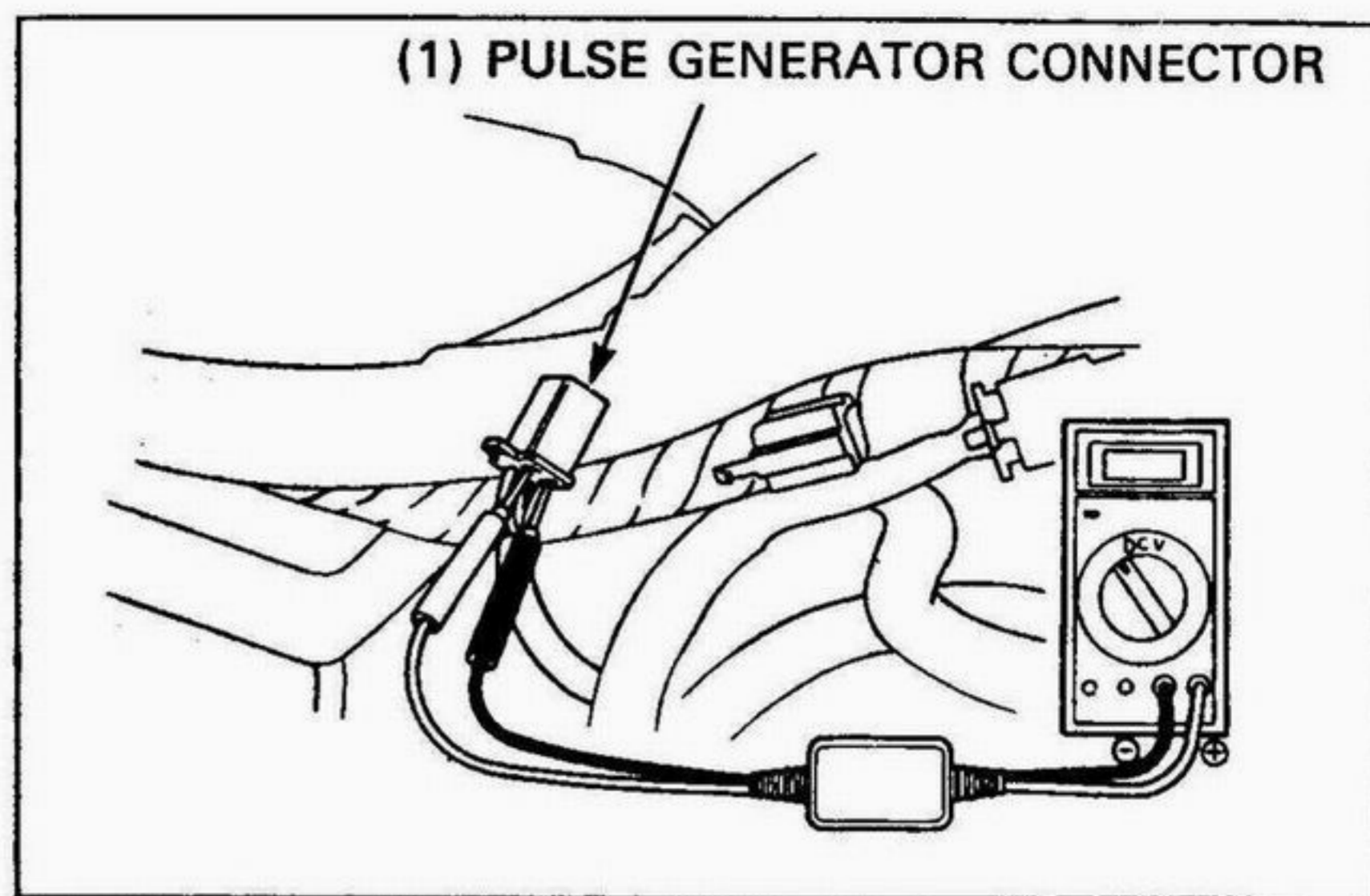
Peak voltage: 0.7V minimum

Compare their values (at the spark unit connector and at the pulse generator 4P mini connector (black)).
 If the voltage at the pulse generator is normal, but at the spark unit is abnormal:

- An open circuit in Y or W/Y wires.
- Loose connection in pulse generator side connector.

Both values are abnormal:

- Pulse generator is likely to be fault. Check each items referring to the troubleshooting (page 14-3).



Ignition Coil

Removal/Installation

- Remove the fuel tank (page 2-3).
- Remove the fuel tank front cushions and front side covers (page 13-7).

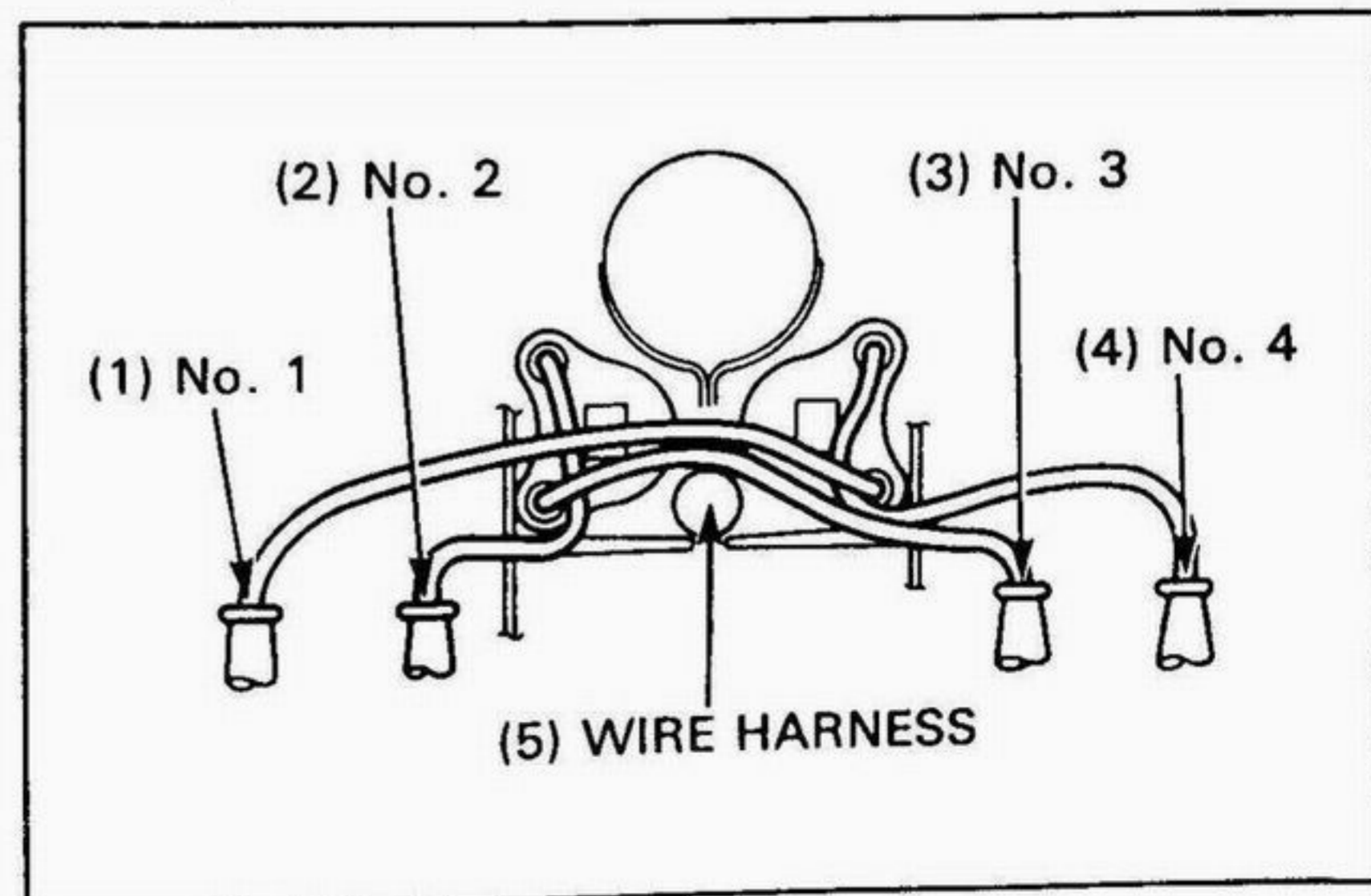
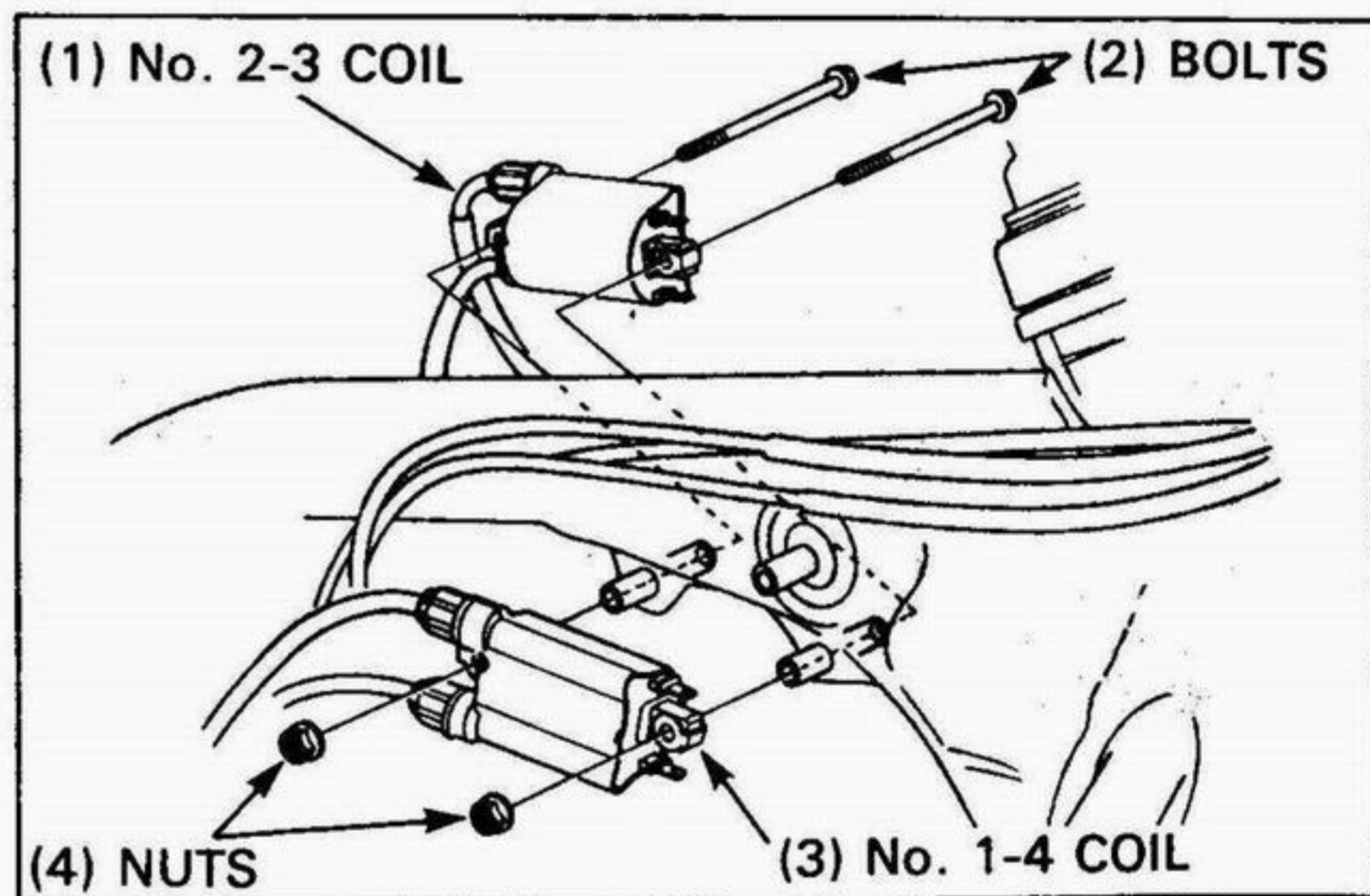
- Disconnect the spark plug caps from the spark plugs.
- Disconnect the ignition primary terminals from the coils and remove the mounting bolts and nuts.

Remove the ignition coils.

Install the ignition coils in the reverse order of removal.

NOTE

- Route the spark plug wires properly as shown.

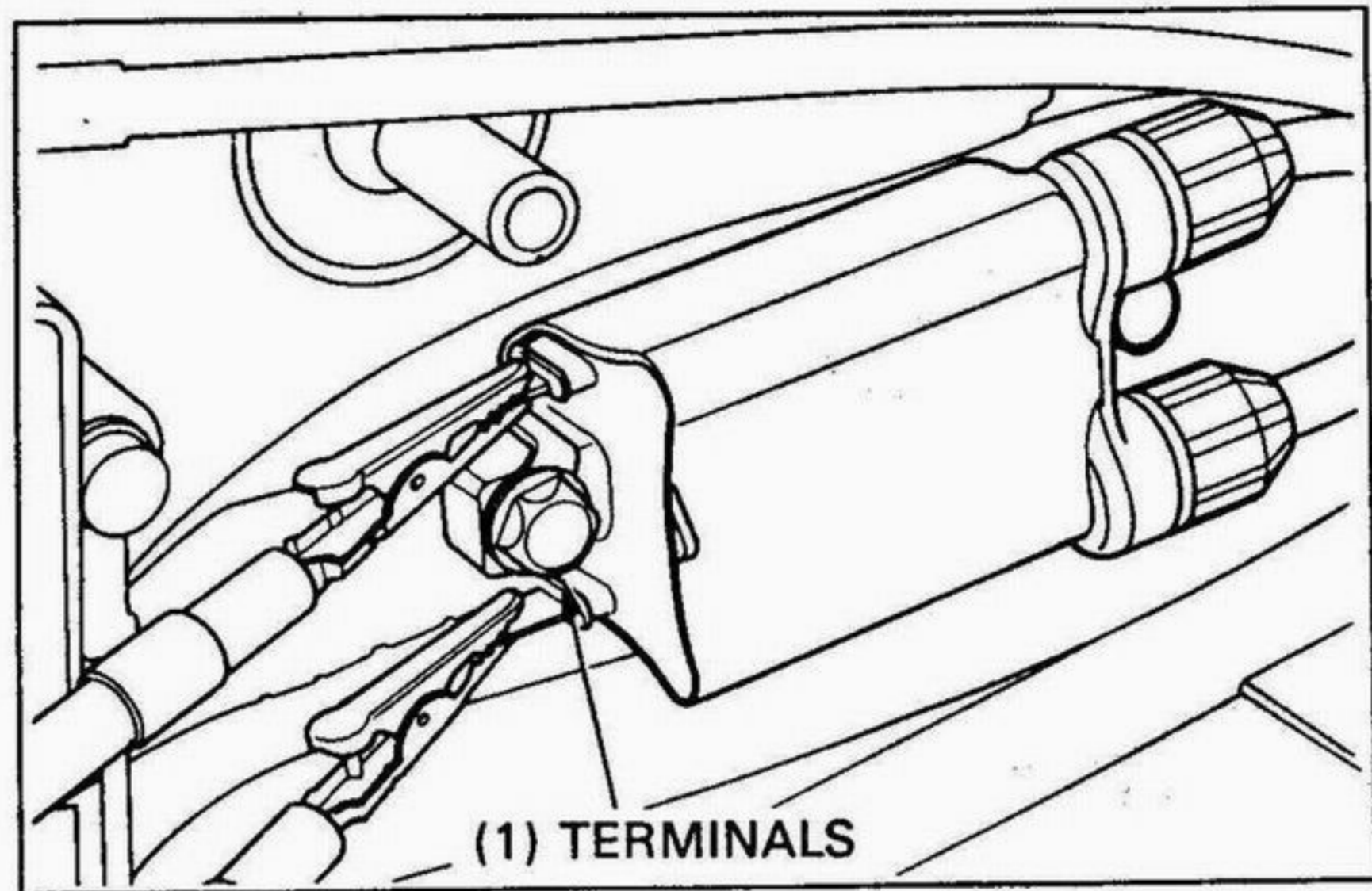


Ignition System

Inspection

Remove the fuel tank (page 2-3).
Disconnect the ignition coil primary terminals and measure the primary coil resistance of the ignition coil.

Standard: 2.6–3.2 Ω (20°C/68°F)

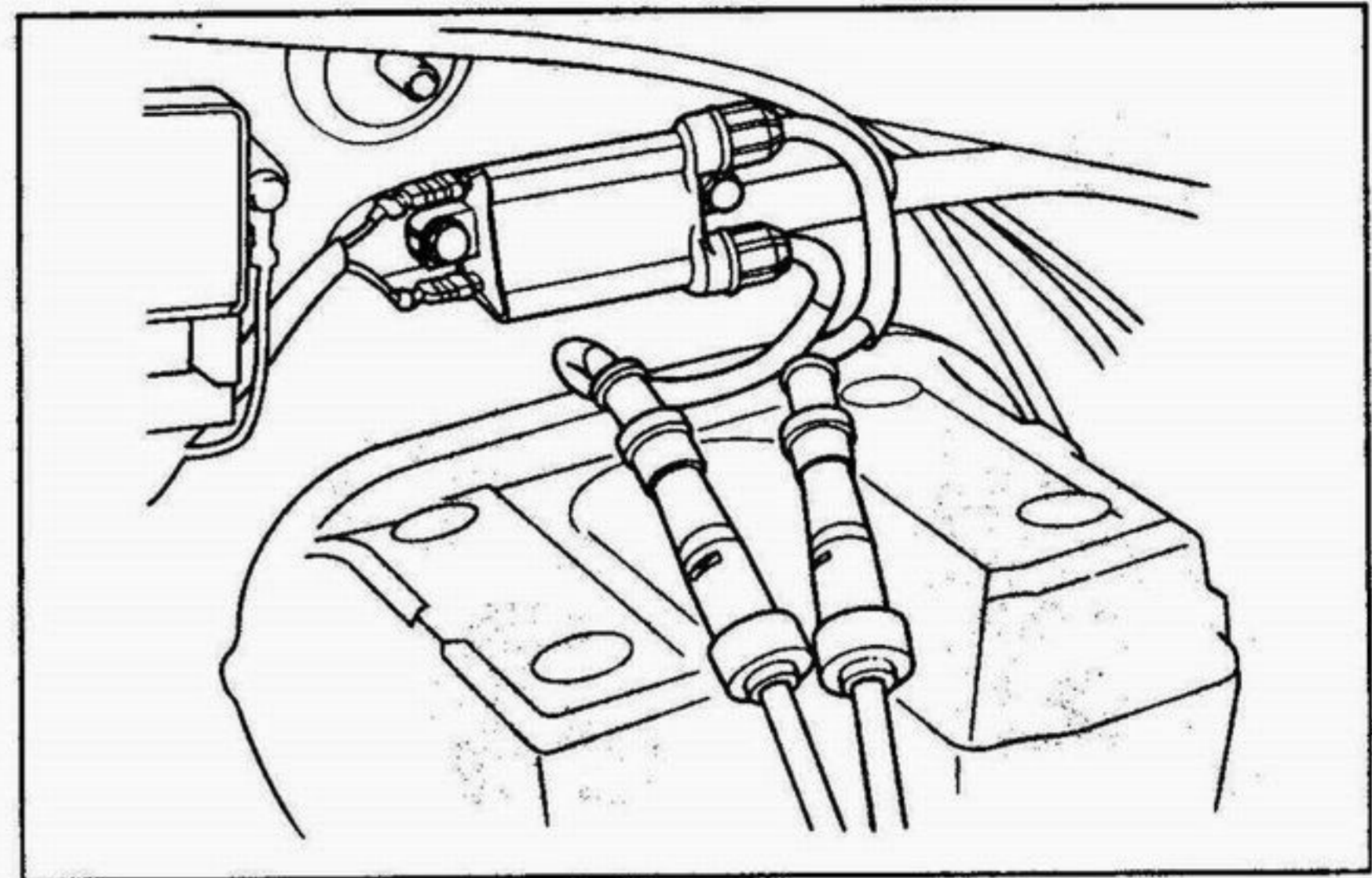


Disconnect the spark plug caps from the spark plug and measure the secondary coil resistance with the spark plug wire at each ignition pair:

No.1/4 secondary coil: between cylinders 1 and 4 wire

No.2/3 secondary coil: between cylinders 2 and 3 wire

Standard: 18–22 k Ω (20°C/68°F)

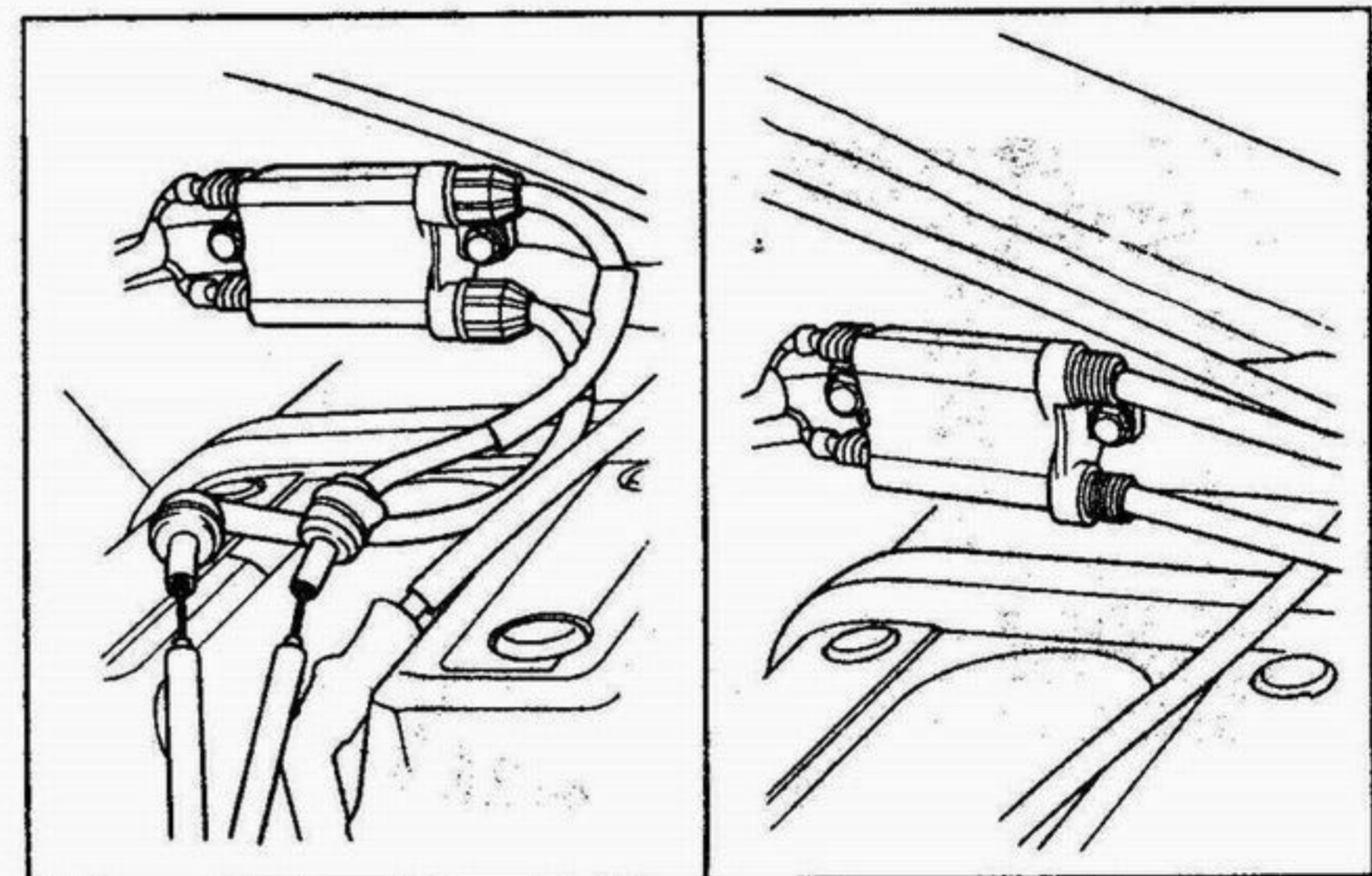


If the resistance is ∞ (open wire), disconnect the spark plug cap and measure the secondary coil resistance as shown.

Standard: 13–17 k Ω (20°C/68°F)

If the resistance is ∞ (open wire), disconnect the spark plug wire and measure the secondary coil resistance as shown.

Standard: 13–17 k Ω (20°C/68°F)



Pulse Generator

Inspection

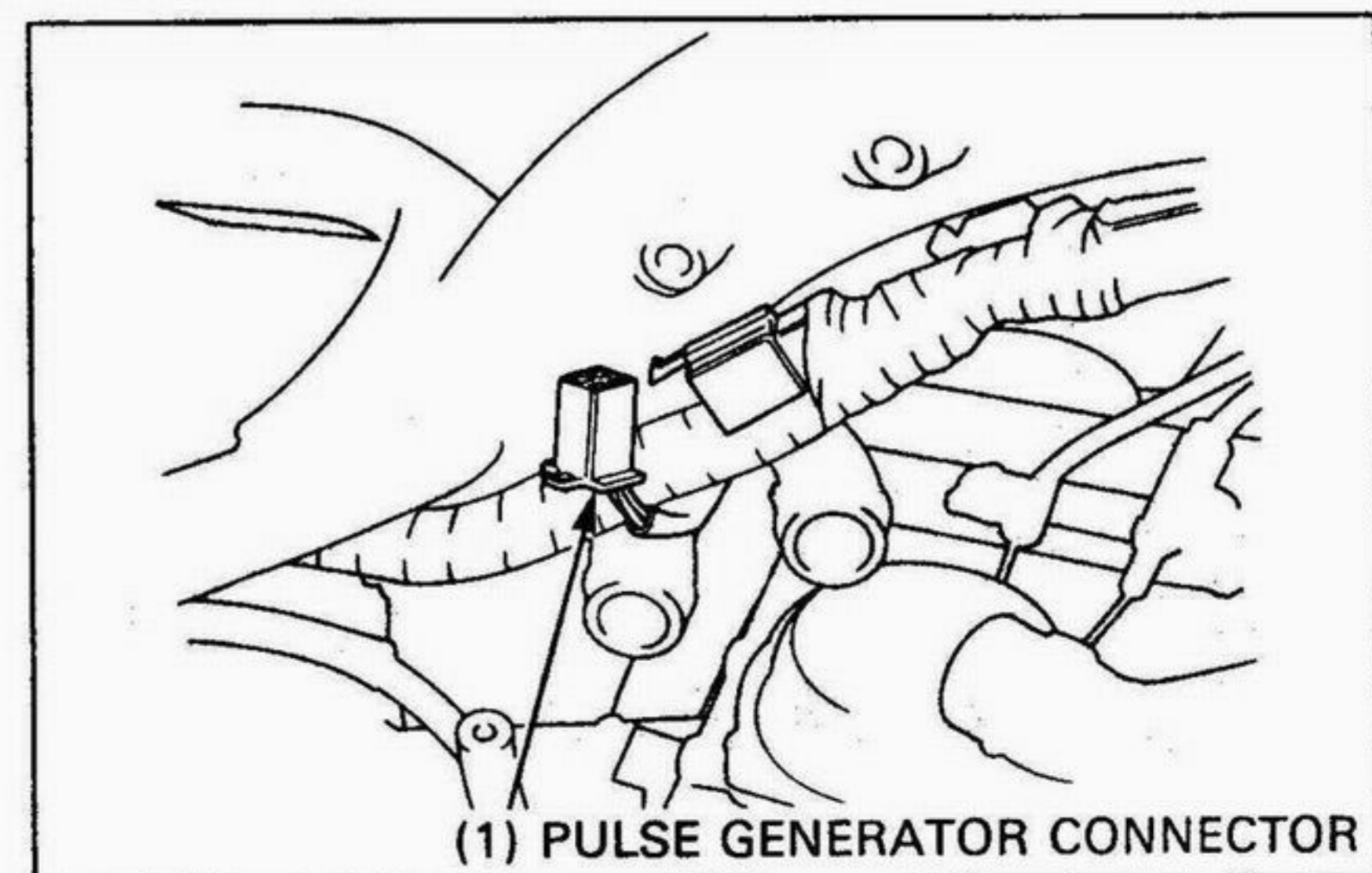
NOTE

- It is not necessary to remove the pulse generator from the engine.

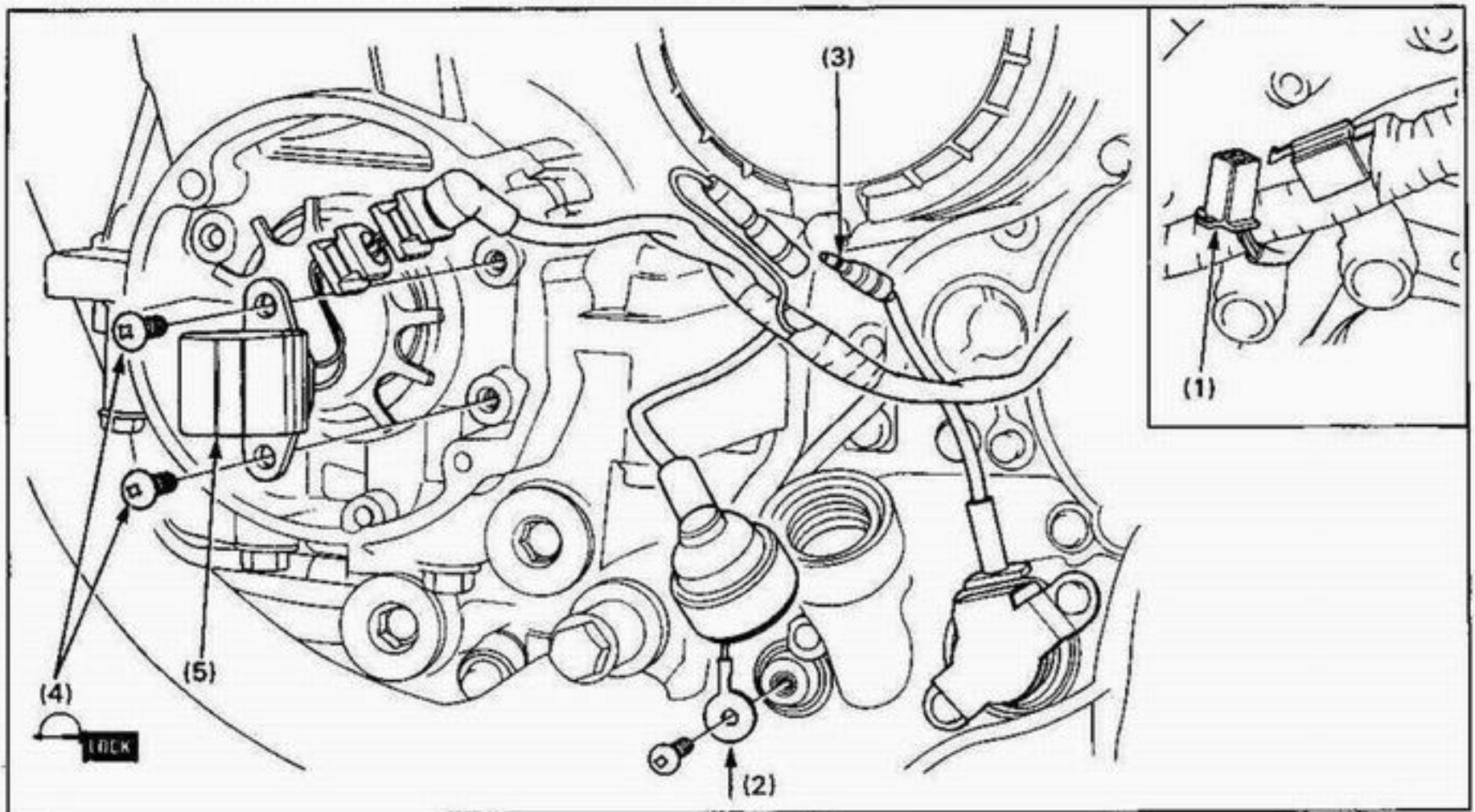
Remove the fuel tank (page 2-3).
Remove the breather tank (page 5-4).
Disconnect the pulse generator 4P mini connector.

Measure the resistance between the Yellow and White/Yellow terminals.

Standard: 297–363 Ω (20°C/68°F)



Pulse Generator Removal/Installation



CAUTION

- Be careful not to damage the wire harnesses by pinching them between the sprocket cover and engine.

NOTE

- Route the wire harnesses properly (page 1-25).

Requisite Service

- Left crankcase cover removal/installation (page 14-10)
- Fuel tank removal/installation (page 2-3)
- Drive sprocket cover removal/installation (page 8-9)

| Procedure | Qty | Remarks |
|----------------------------------|-----|--|
| Removal Order | | Installation is in the reverse order of removal. |
| (1) Pulse generator connector | 1 | |
| (2) Oil pressure switch terminal | 1 | |
| (3) Neutral switch connector | 1 | |
| (4) Pulse generator screw | 2 | |
| (5) Pulse generator | 1 | |

Ignition Timing

Warm up the engine.

Stop the engine and connect a timing light to the No.1 cylinder spark plug wire.

NOTE

- Read the instructions for timing light for operating.

Remove the left crankcase cover.

⚠ 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 may cause loss of consciousness and lead to death.

Start the engine and allow it to idle.

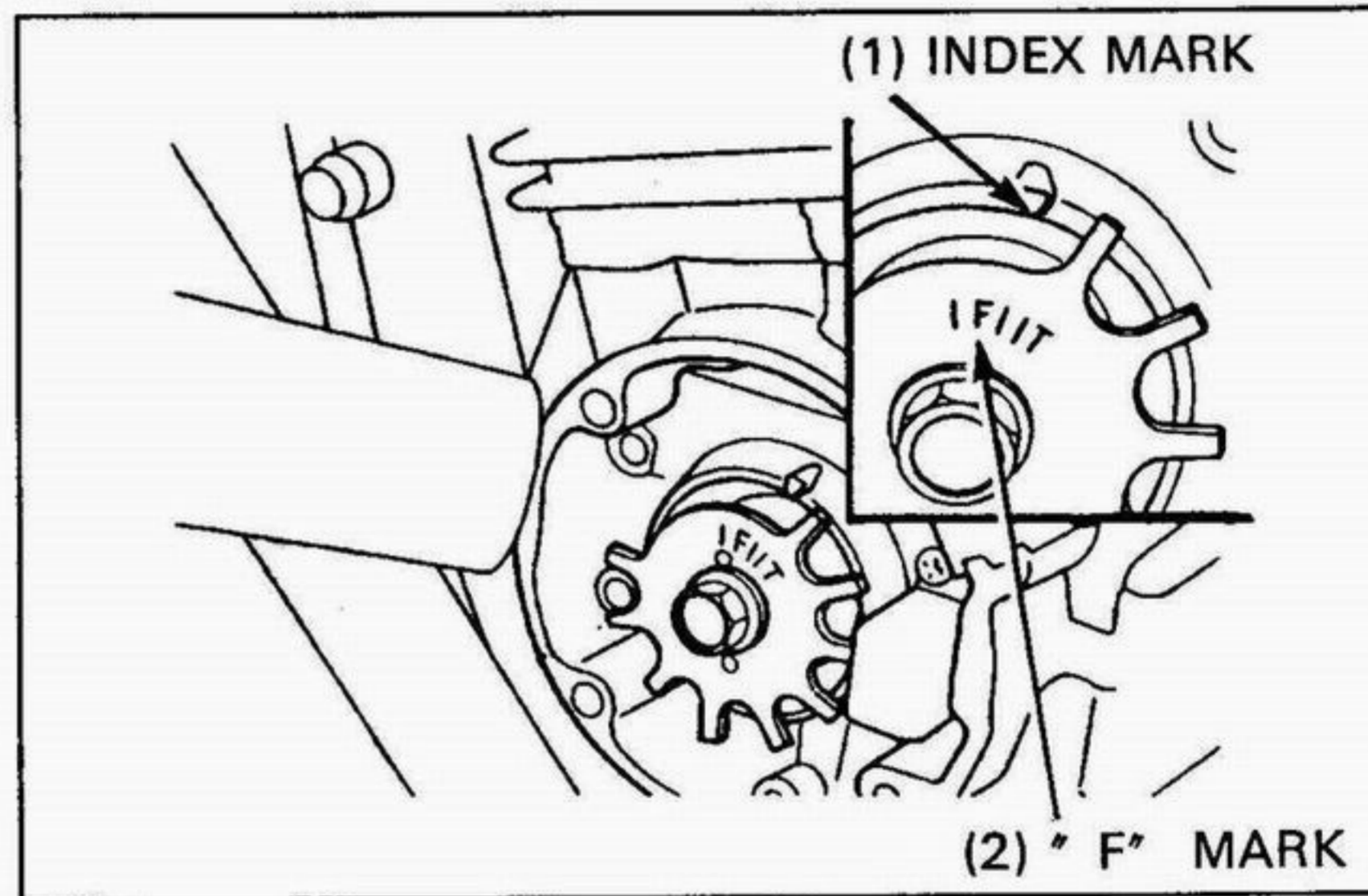
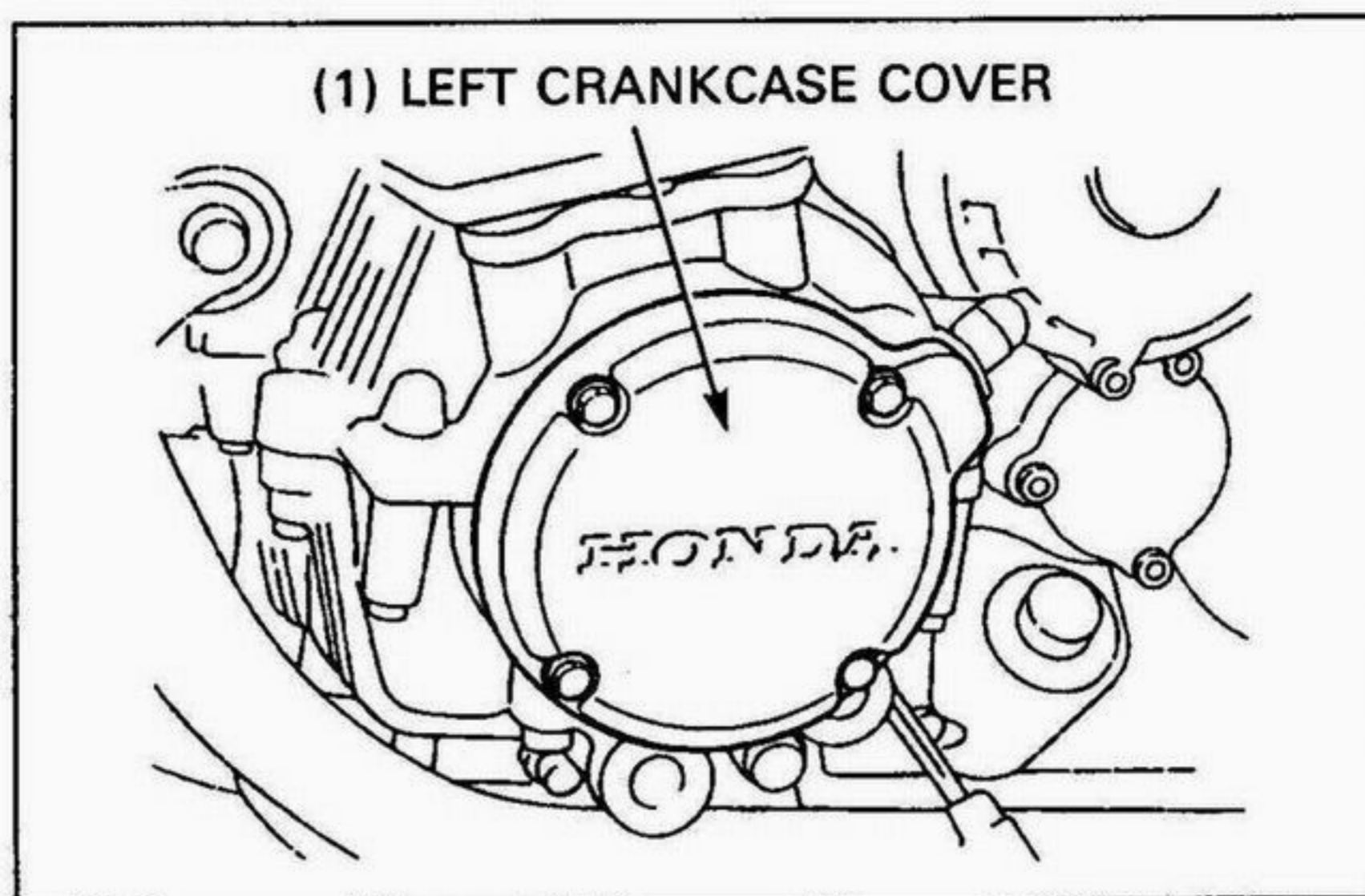
Inspect the ignition timing.

The timing is correct if the "F" mark aligns with the index mark on the crankcase at idle speed.

Idle Speed: Except SW type: $1,200 \pm 100$ rpm

SW type: $1,200 \pm 50$ rpm

Increase the engine speed, make sure the "F" mark begins to move counterclockwise at approximately $1,500 \text{ min}^{-1}(\text{rpm})$.



15. Electric Starter/Starter Clutch

| | | | |
|---------------------|------|-------------------------------------|------|
| Service Information | 15-1 | Starter Moter Removal/Installation | 15-5 |
| System Location | 15-2 | Starter Motor Disassembly/Assembly | 15-6 |
| Troubleshooting | 15-3 | Starter Clutch Disassembly/Assembly | 15-8 |

Service Information

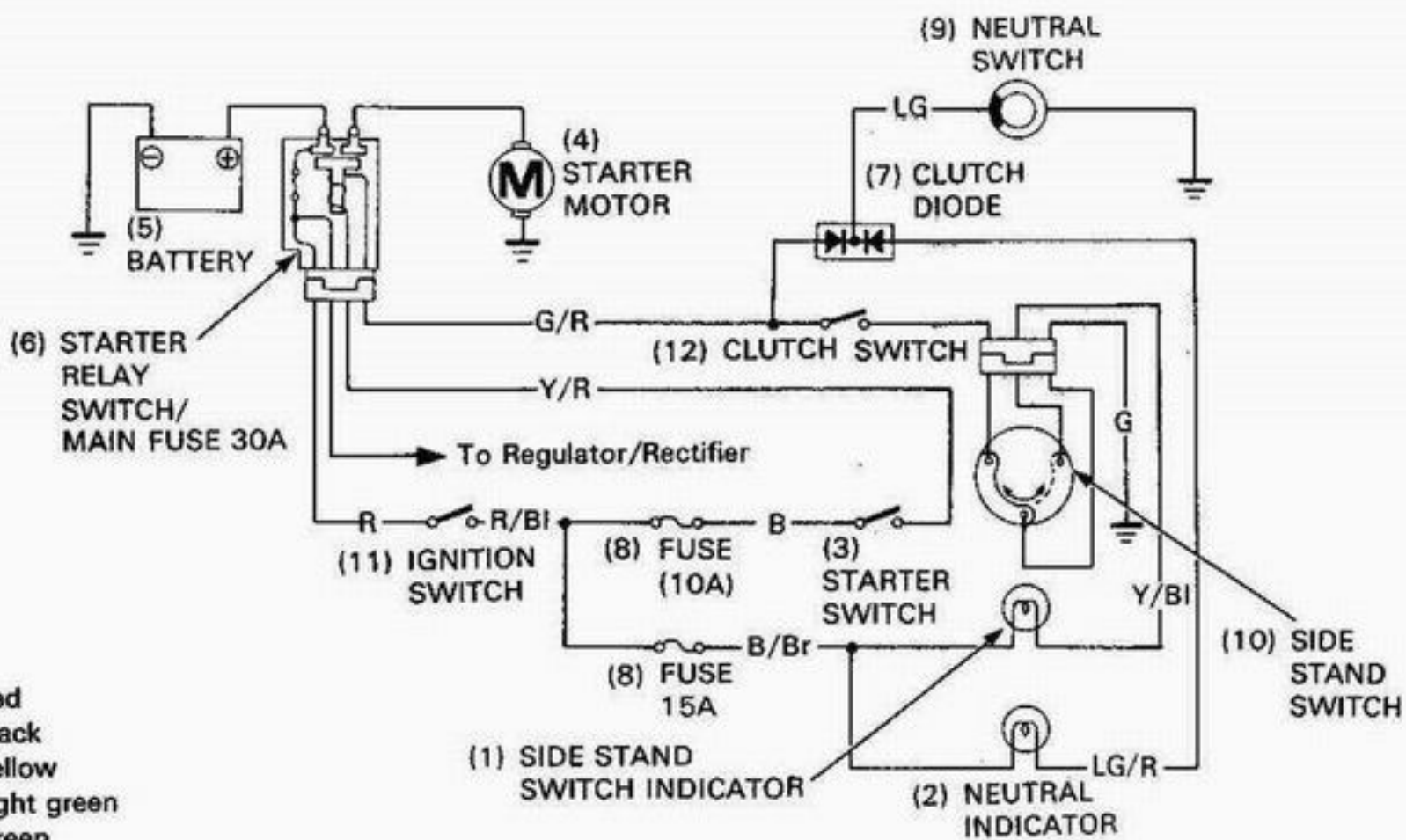
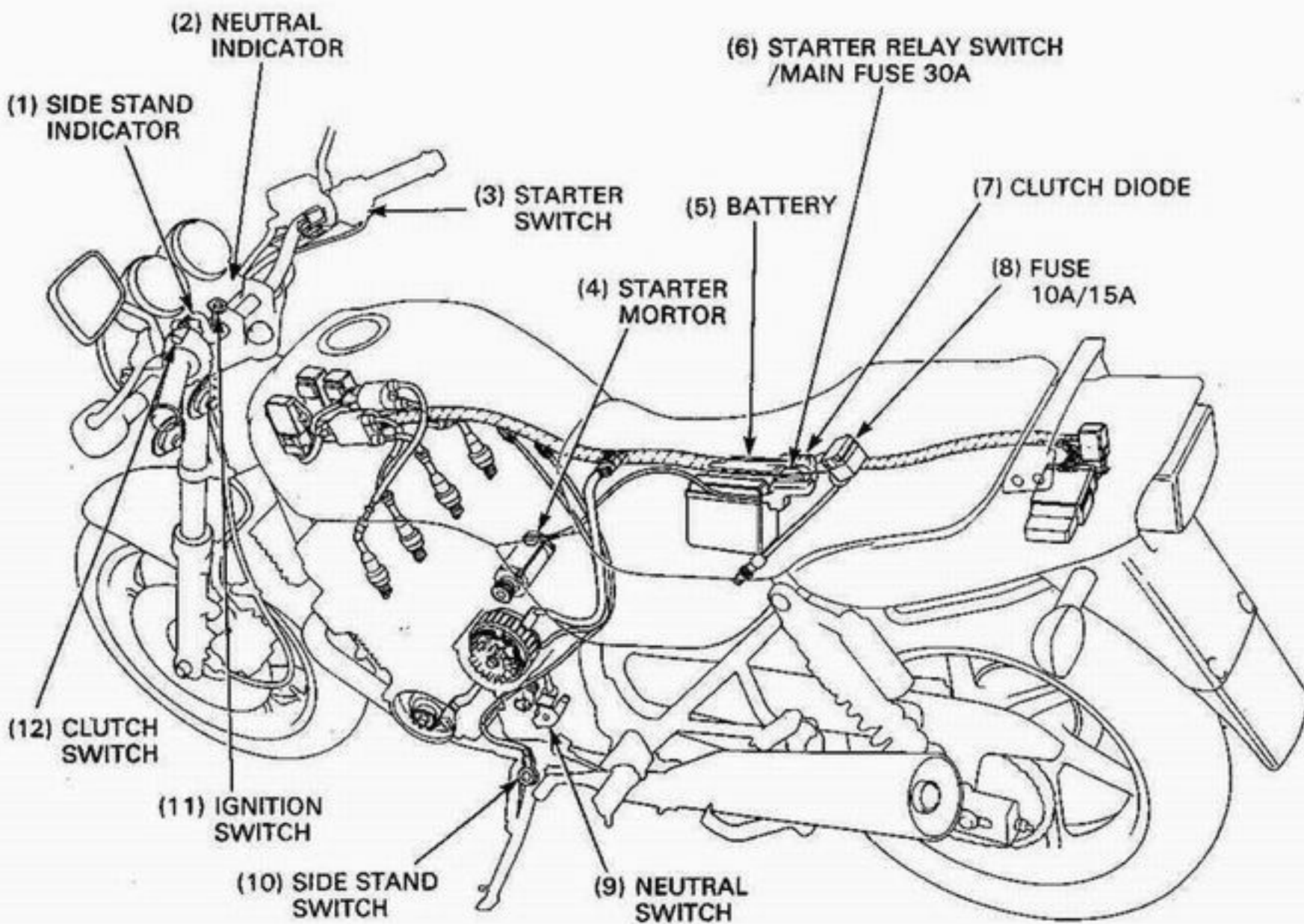
▲ WARNING

• Always turn the ignition switch "OFF" before servicing the starter motor. The motor could suddenly start, causing serious injury.

- A weak battery may be unable to turn the starter motor quickly enough, or supply adequate ignition current.
- If the current is kept flowing through the starter motor to turn it while the engine is not cranking over, the starter motor may be damaged.
- For the following component inspections, refer to the following pages; for the parts locations, see page 15-2 of this manual (System Location).

| | |
|----------------------|---|
| Clutch switch diode | Section 24 of the Common Service Manual |
| Starter motor | Section 24 of the Common Service Manual |
| Starter relay switch | Section 24 of the Common Service Manual ("A" circuit type) |
| Clutch switch | Section 24 of the Common Service Manual |
| Neutral switch | (page 16-9) |
| Ignition switch | Check for continuity on the continuity chart of the Wiring Diagram, page 17-1. Disconnect the switch connector inside the headlight case (page 1-21) and check it. |
| Side stand switch | Section 25 of the Common Service Manual |

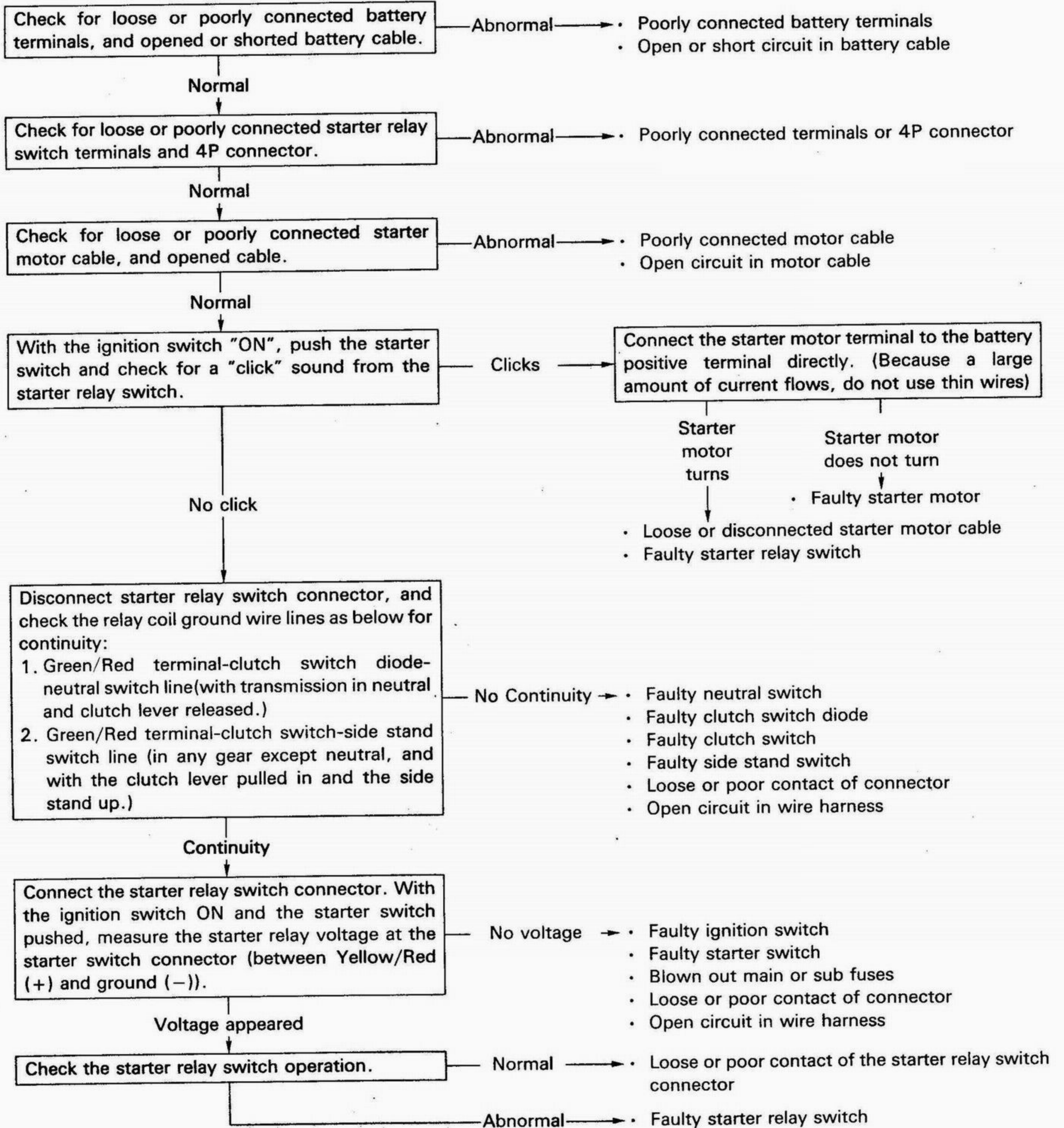
System Location



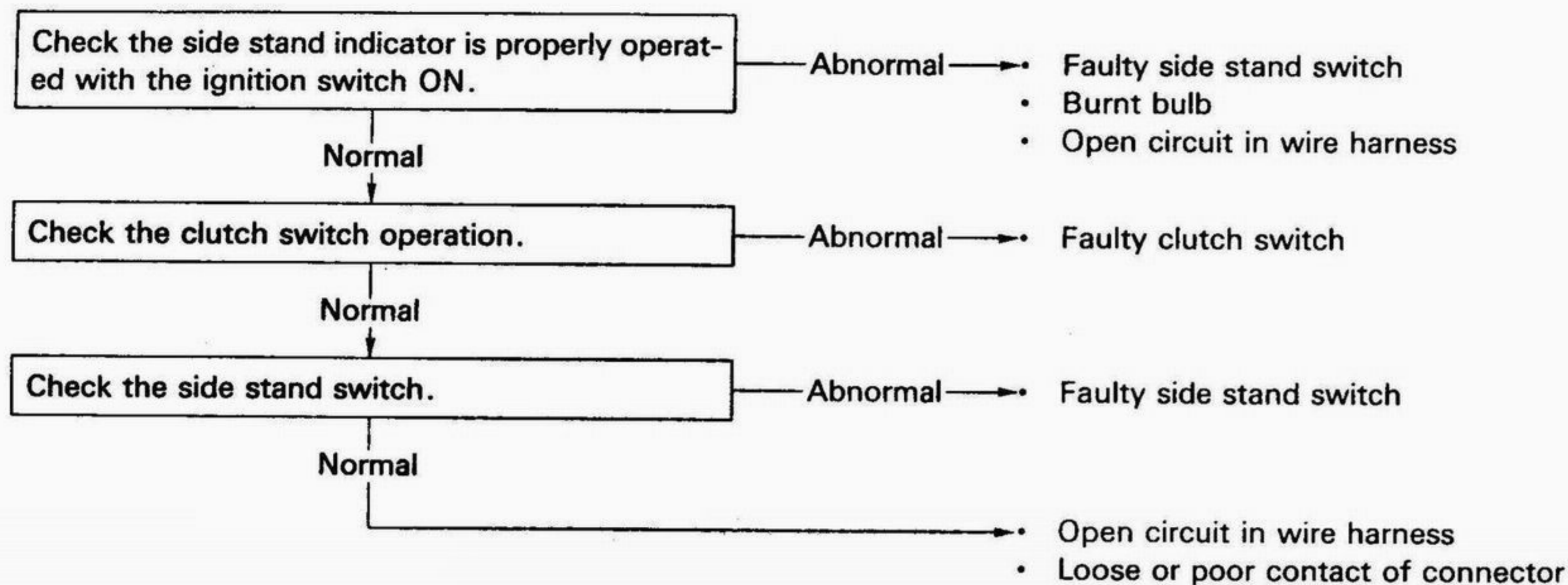
Troubleshooting

Starter Motor Will Not Turn

- Check for a blown out main or sub fuses before servicing.
- Make sure the battery is fully charged and in good condition.



The starter motor turns when the transmission is in neutral, but does not turn with the transmission in any position except neutral, with the side stand up and the clutch lever pulled in.



Starter Motor Turns Slowly

- Low specific gravity in battery (or dead battery)
- Poorly connected battery terminal cable
- Poorly connected starter motor cable
- Faulty starter motor
- Poorly connected battery ground cable

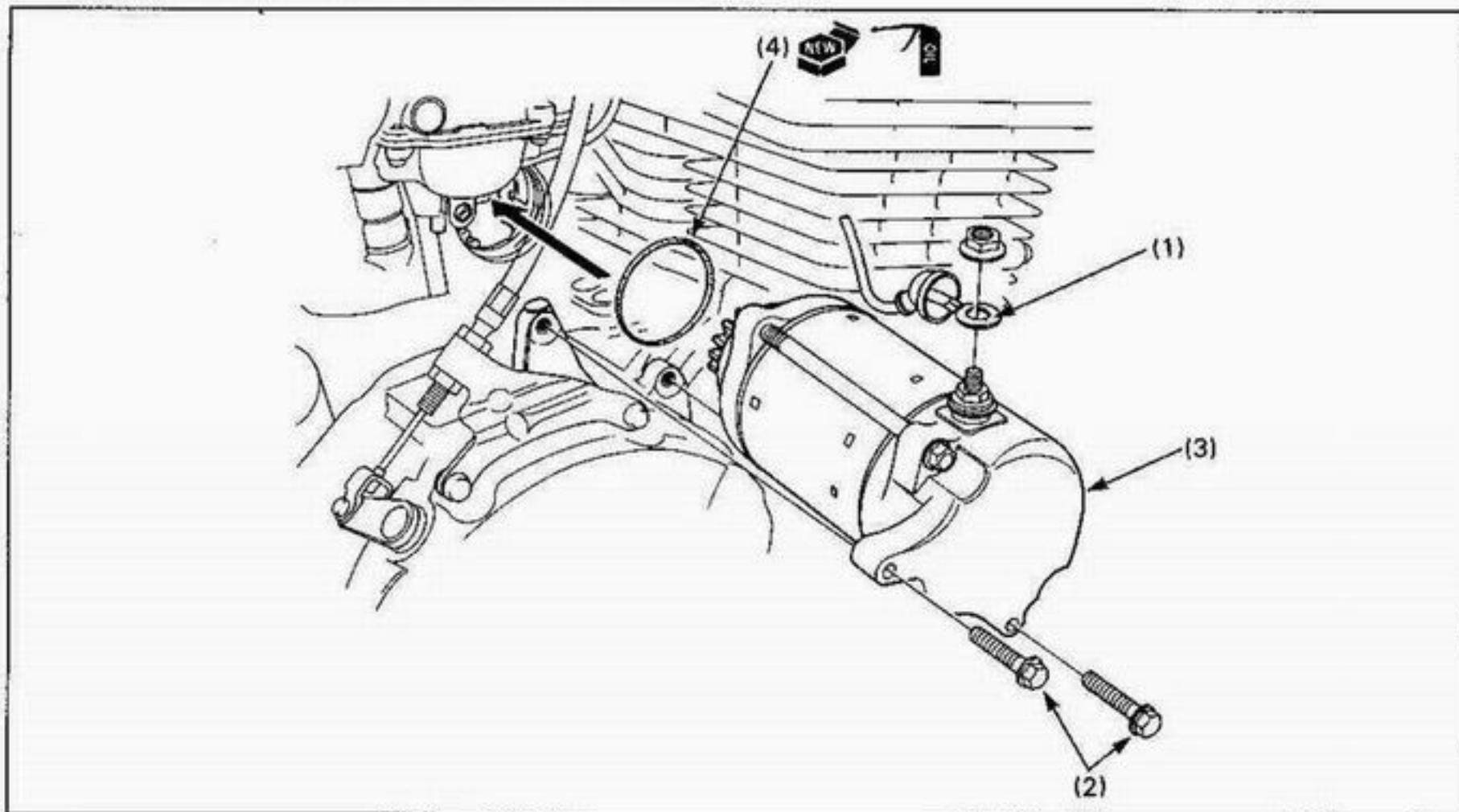
Starter Motor Turns, But Engine Does Not Turn

- Starter motor is running backwards
 - Case assembled improperly
 - Terminals connected improperly
- Faulty starter clutch
- Damaged or faulty starter pinion
- Damaged pinion gears

Starter Relay Switch "Clicks", But Engine Does Not Turn Over

- Crankshaft does not turn due to engine problems
- Excessive pinion gear friction

Starter Motor Removal/Installation

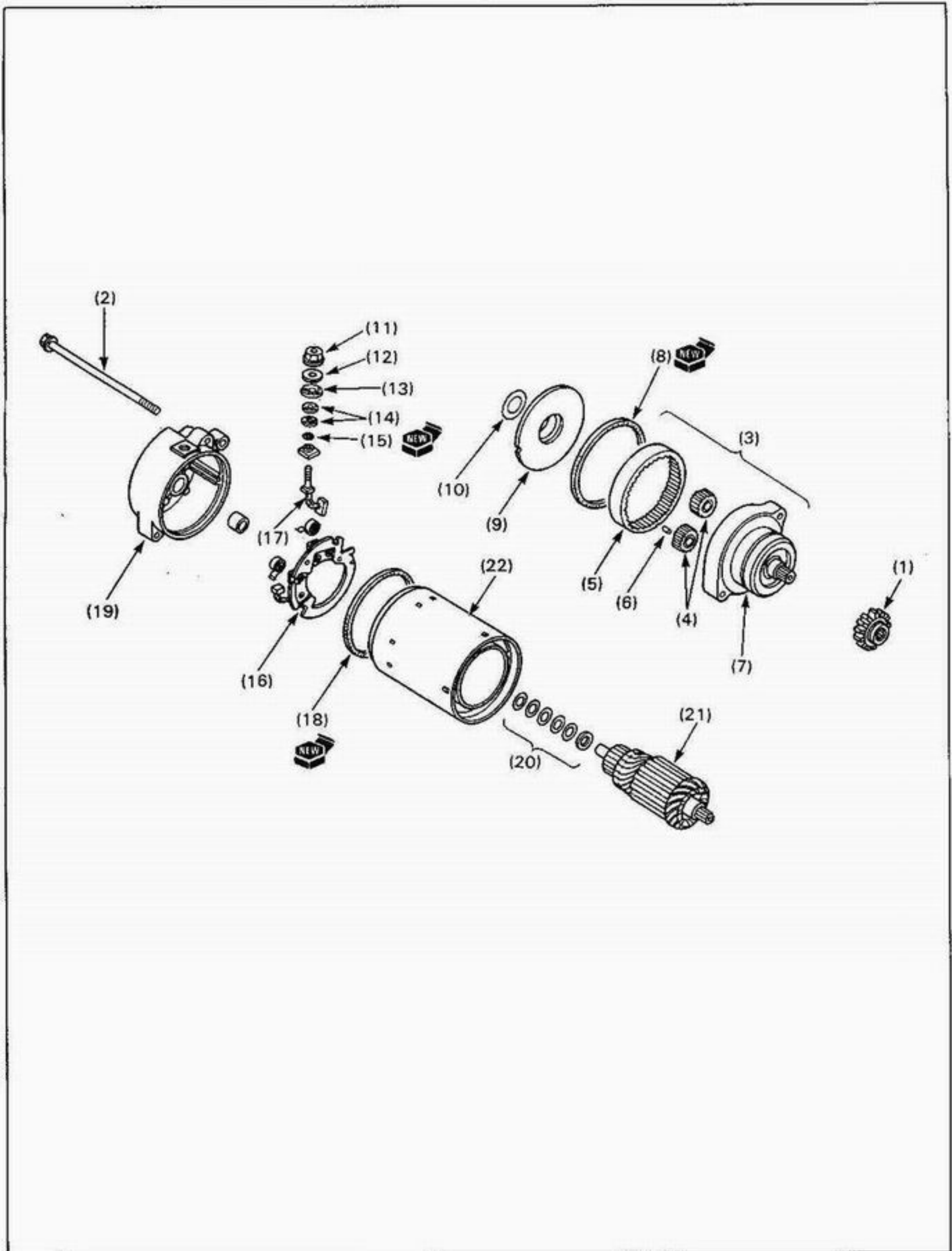


▲ WARNING

- Always turn the ignition switch OFF.

| Procedure | Q'ty | Remarks |
|---------------------------------|------|--|
| Removal Order | | Installation is in the reverse order of removal. |
| (1) Starter motor cable | 1 | |
| (2) Starter motor mounting bolt | 2 | |
| (3) Starter motor | 1 | |
| (4) O-ring | 1 | |

Starter Motor Disassembly/Assembly

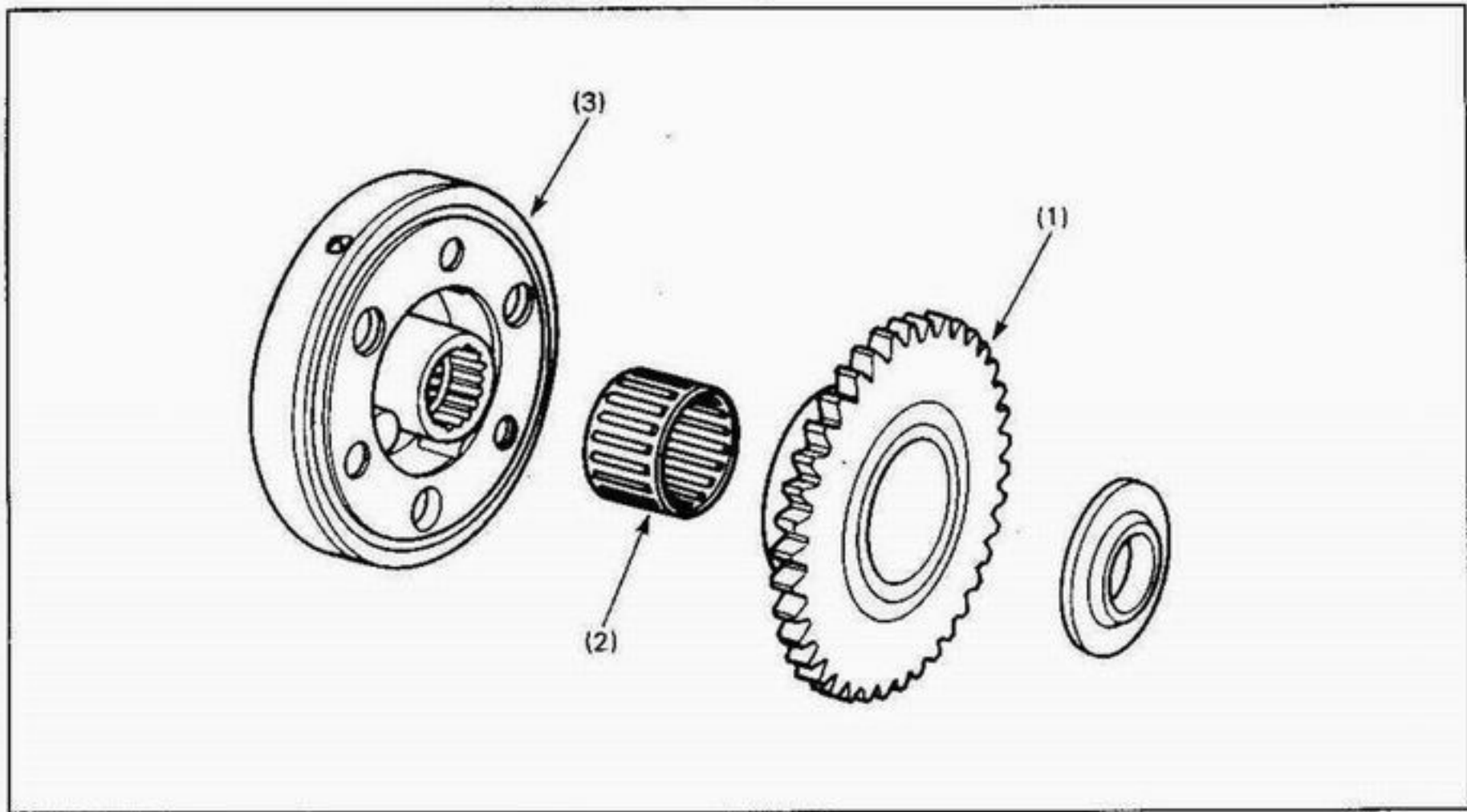


Requisite Service

- Starter motor removal/installation (page 15-5)

| Procedure | | Qty | Remarks |
|-----------|----------------------------|-----|---|
| | Disassembly Order | | Assembly is in the reverse order of disassembly. |
| (1) | Starter motor pinion gear | 1 | |
| (2) | Set bolt | 2 | |
| (3) | Front cover assembly | - | |
| (4) | - idle pinion | 2 | |
| (5) | - ring gear | 1 | |
| (6) | - pin | 1 | |
| (7) | - front cover | 1 | |
| (8) | O-ring | 1 | |
| (9) | Separator | 1 | |
| (10) | Washer | 1 | |
| (11) | Brush terminal holding nut | 1 | |
| (12) | Washer | 1 | |
| (13) | Insulated washer (larger) | 1 | |
| (14) | Insulated washer (smaller) | 2 | |
| (15) | O-ring | 1 | |
| (16) | Brush holder assembly | - | |
| (17) | Brush and terminal | 1 | Align the holder tab with the rear cover groove. |
| (18) | O-ring | 1 | |
| (19) | Rear cover | 1 | |
| (20) | Shims | - | Record and store the shims in the same order they were installed in the original positions. |
| (21) | Armature | 1 | |
| (22) | Motor case | 1 | |

Starter Clutch Disassembly/Assembly



Requisite Service

- Crankshaft, connecting rod removal/installation (page 9-10, 16)

| Procedure | | Qty | Remarks |
|-----------|--------------------------|-----|---|
| | Disassembly Order | | Assembly is in the reverse order of disassembly. |
| (1) | Starter driven gear | 1 | |
| (2) | Needle bearing | 1 | |
| (3) | Starter clutch | 1 | At installation, make sure the starter clutch roller is installed properly into the clutch housing. |

16. Lights/Meters/Switches

| | | | |
|--------------------------------|------|--------------------------------------|-------|
| Service Information | 16-1 | Meter Disassembly/Assembly | 16-6 |
| System Location | 16-2 | Tachometer Inspection | 16-8 |
| Headlight Removal/Installation | 16-3 | Side Stand Switch | 16-8 |
| Tail/Brake Light | 16-4 | Neutral Switch | 16-9 |
| Turn Signal Bulb | 16-4 | Ignition Switch Removal/Installation | 16-10 |
| Meter Removal/Installation | 16-5 | | |

Service Information

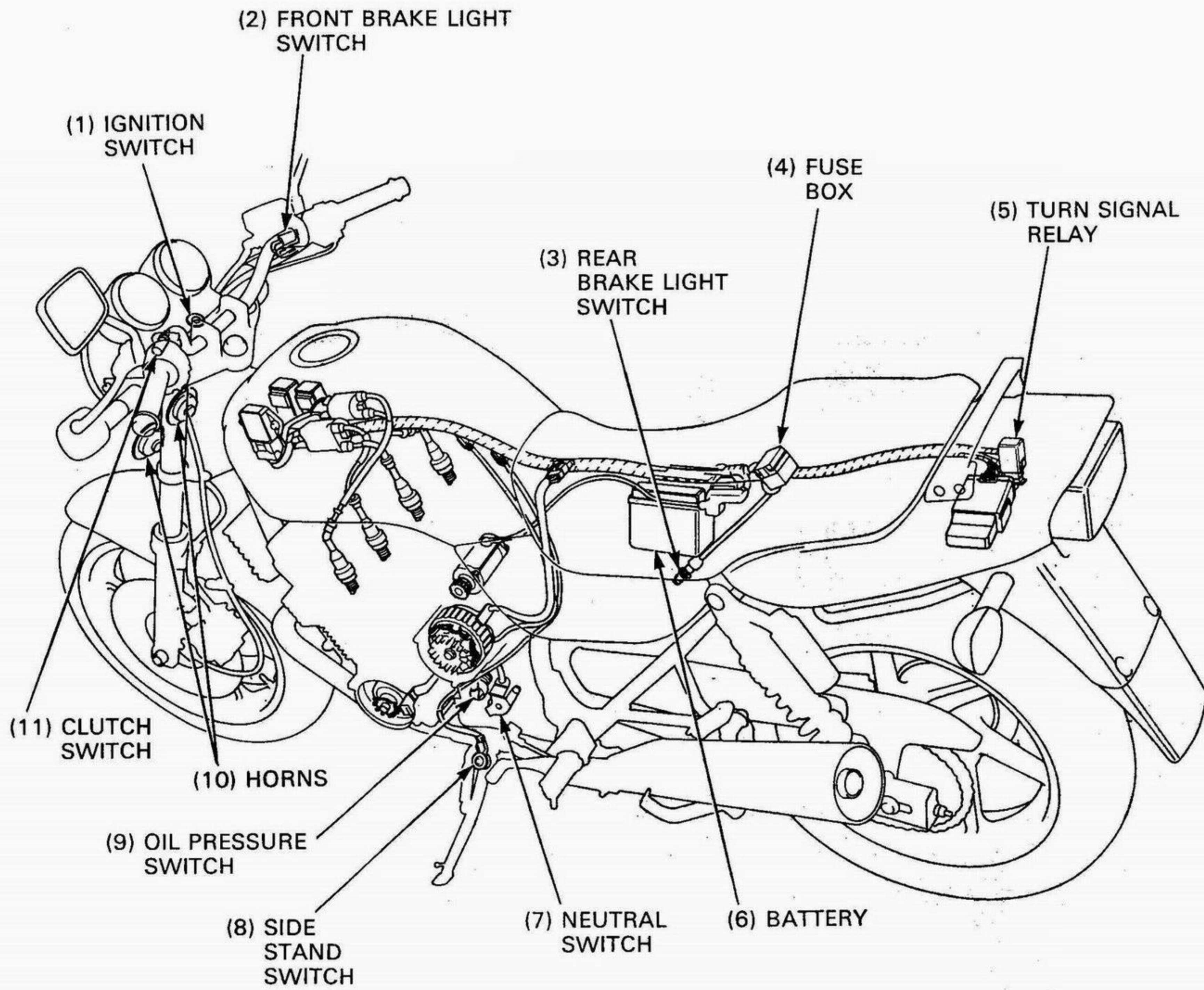
⚠ WARNING

- The halogen headlight bulb becomes very hot while the headlight is ON, and remains hot for a while after it is turned OFF. Be sure to let it cool down before servicing.

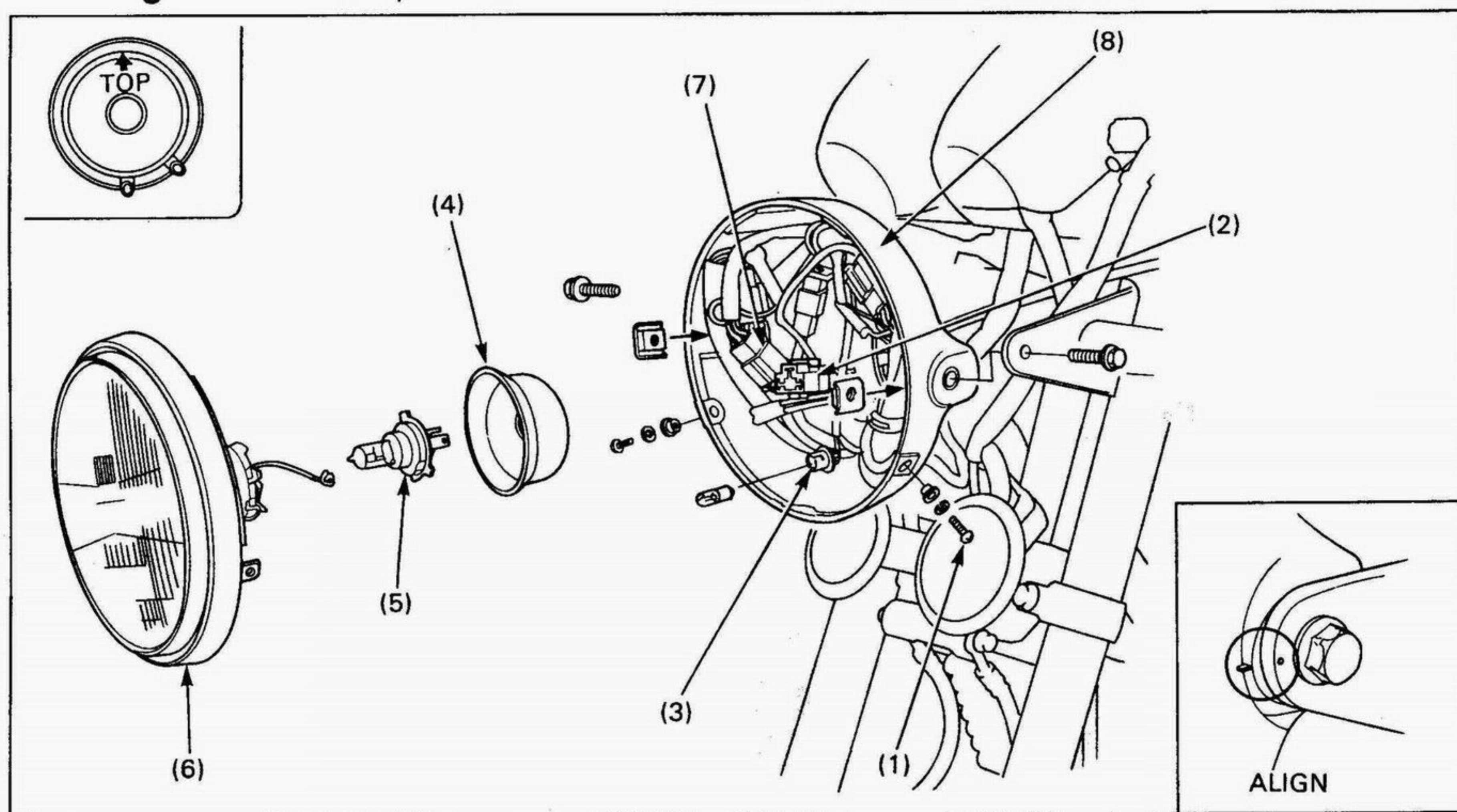
- Note the following when replacing the halogen headlight bulb.
 - Wear clean gloves while replacing the bulb. Do not put finger prints on the headlight bulb, as they may create hot spots on the bulb and cause it to break.
 - If you touch the bulb with your bare hands, clean it with a cloth moistened with alcohol to prevent its early failure.
 - Be sure to install the dust cover after replacing the bulb.
- Check the battery condition before performing any inspection that requires proper battery voltage.
- A continuity test can be made with the switches installed on the motorcycle.
For the following component locations, See page 16-2 of this manual (System Location); for inspections, refer to the applicable pages.

| Component | Inspection method | Remarks |
|-----------------------------------|--|---|
| Clutch switch | Section 25 of the Common Service Manual | |
| Front brake light switch | Section 25 of the Common Service Manual | |
| Horn | Section 25 of the Common Service Manual | |
| Handlebar switches | Check for continuity on the continuity chart of the Wiring Diagram, page 17-1. | Switch connectors are located inside the headlight case (page 1-21). |
| Ignition switch | | |
| Oil pressure switch/warning light | Section 25 of the Common Service Manual | Oil pressure check: Section 4 of the Common Service Manual Oil pressure switch torque: 12 N·m (1.2 kg-m, 9 ft-lb) |
| Rear brake light switch | Section 25 of the Common Service Manual | |
| Turn signal lights | Section 25 of the Common Service Manual | 3 terminal relay. |

System Location



Headlight Removal/Installation



⚠ WARNING

- The halogen headlight bulb becomes very hot while the headlight is ON, and remains hot for a while after it is turned OFF. Be sure to let it cool down before servicing.

CAUTION

- Wear clean gloves while replacing the bulb. Do not put finger prints on the headlight bulb, as they may create hot spots on the bulb and cause it to break.
- If you touch the bulb with your bare hands, clean it with a cloth moistened with alcohol to prevent its early failure.
- Be sure to install the dust cover after replacing the bulb.

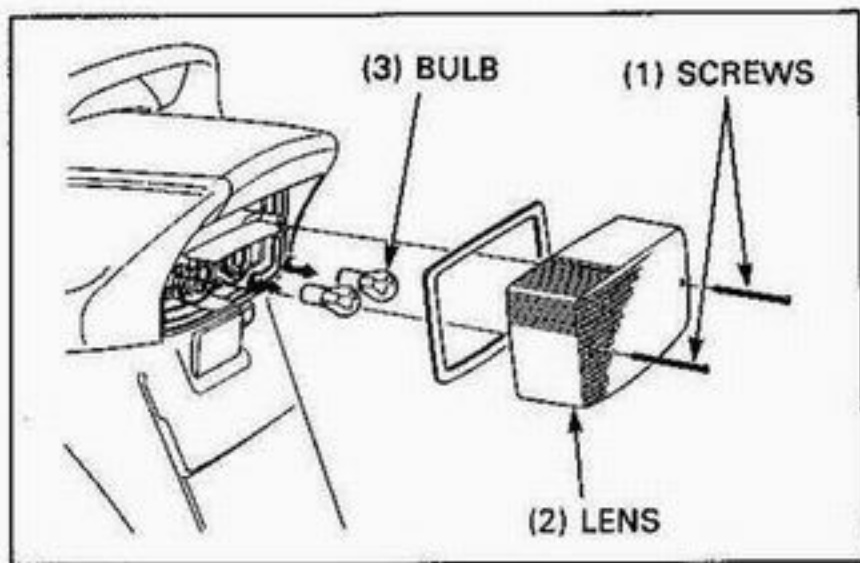
| Procedure | Q'ty | Remarks |
|--------------------------------|------|--|
| Removal Order | | Installation is in the reverse order of removal. |
| (1) Screw | 2 | |
| (2) Headlight bulb socket | 1 | |
| (3) Position light bulb socket | 1 | Except U type. |
| (4) Dust cover | 1 | Install with the "TOP" mark facing up. |
| (5) Headlight bulb | 1 | |
| (6) Headlight assembly | 1 | |
| (7) Connectors | — | Connection (page 1-21) |
| (8) Headlight case | 1 | Align the index marks on the case and bracket. |

Tail/Brake Light

Remove the mounting screws and tail/brake light lens.

Remove the bulb from the socket by turning it counterclockwise and replace with a new one.

Installation is in the reverse order of removal.

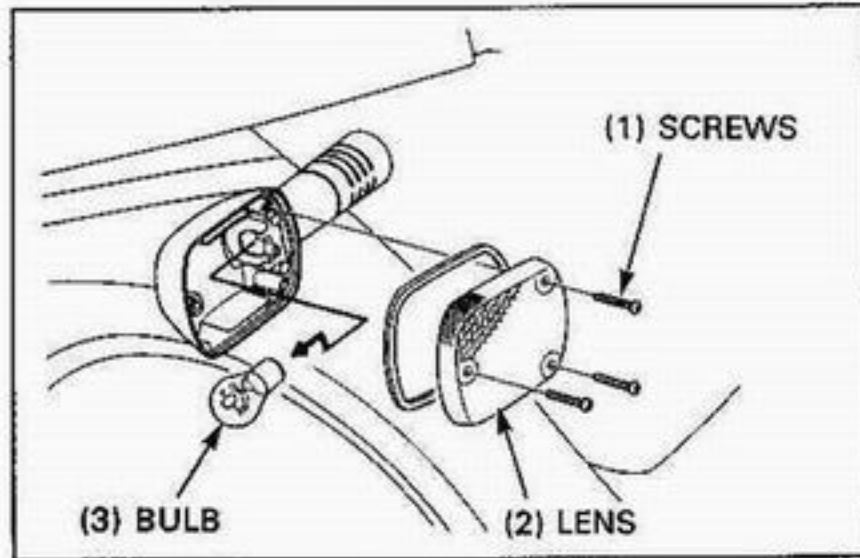


Turn Signal Bulb

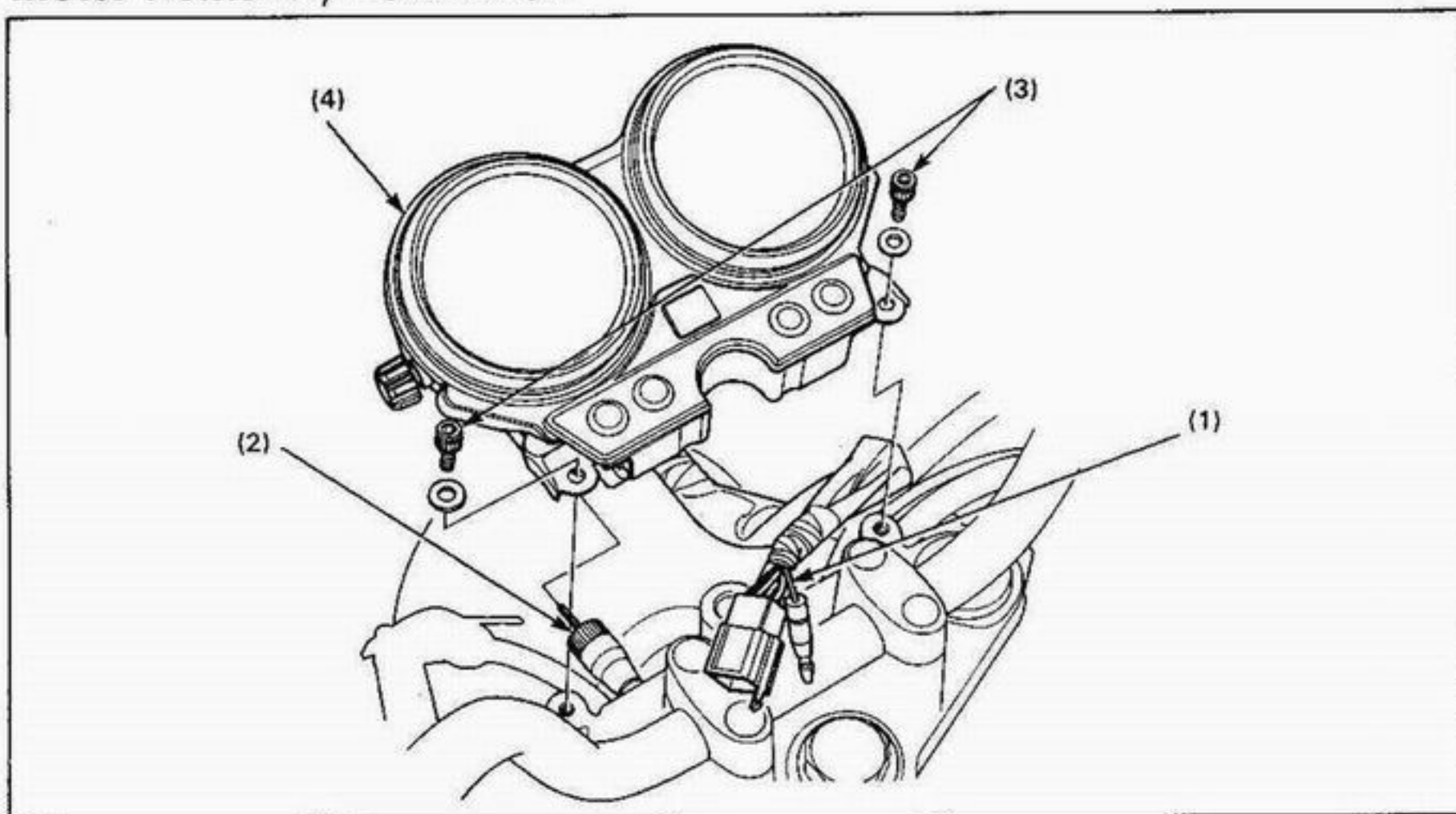
Remove the mounting screws and turn signal lens.

Remove the bulb from the socket by turning it counterclockwise and replace with a new one.

Installation is in the reverse order of removal.



Meter Removal/Installation

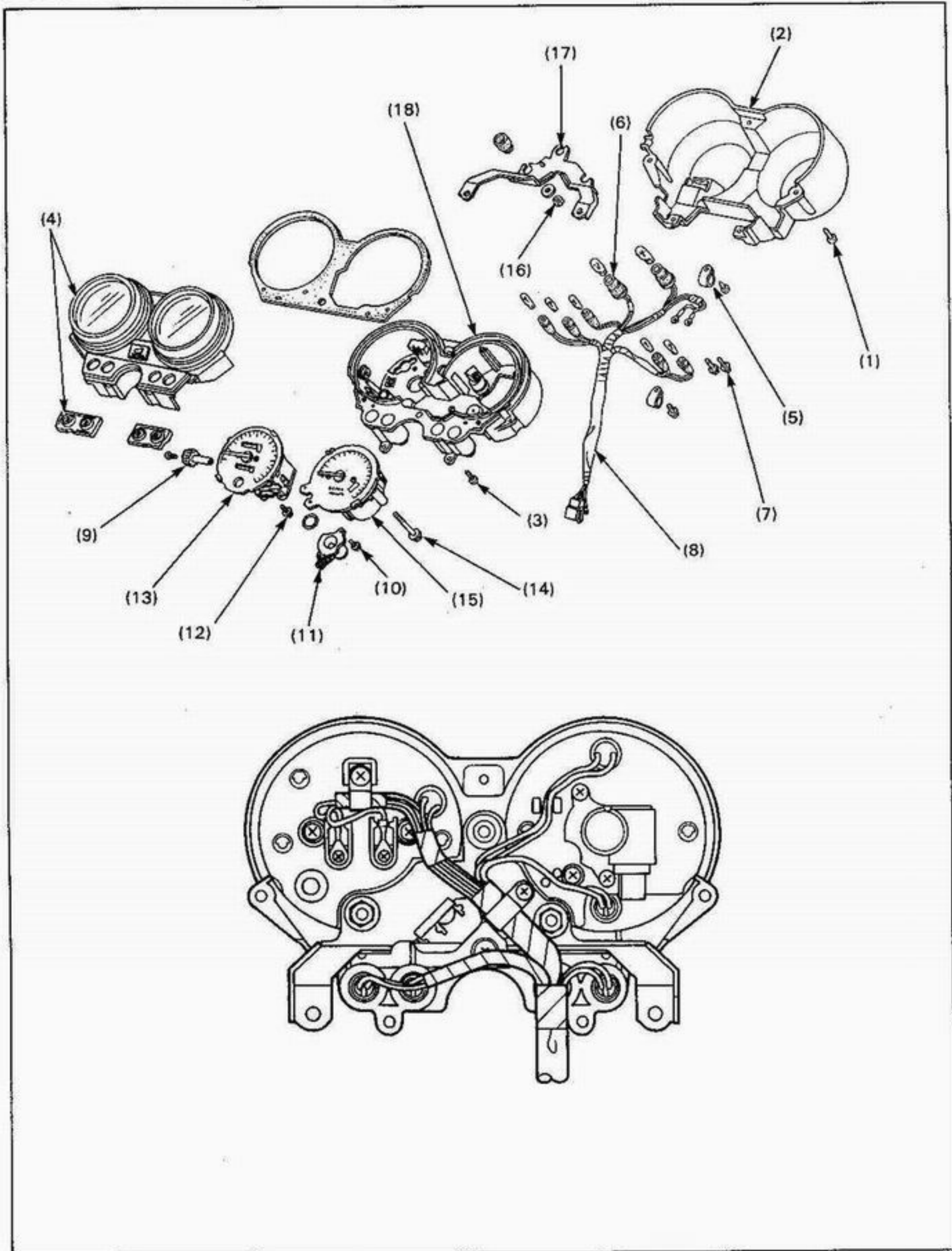


Requisite service

- Headlight removal/installation (page 16-3)

| Procedure | | Qty | Remarks |
|----------------------|---------------------------|-----|--|
| Removal Order | | | Installation is in the reverse order of removal. Connection (page 1-21) |
| (1) | Meter connector | 2 | |
| (2) | Speedometer cable | 1 | |
| (3) | Speedometer mounting bolt | 2 | |
| (4) | Speedometer assembly | 1 | |

Meter Disassembly/Assembly



NOTE

- Connect the terminals and install the sockets according to the color codes indicated on the inner case.
- Route the sub-harness as illustration shown.

Requisite Service

- Meter removal/installation (page 16-5)

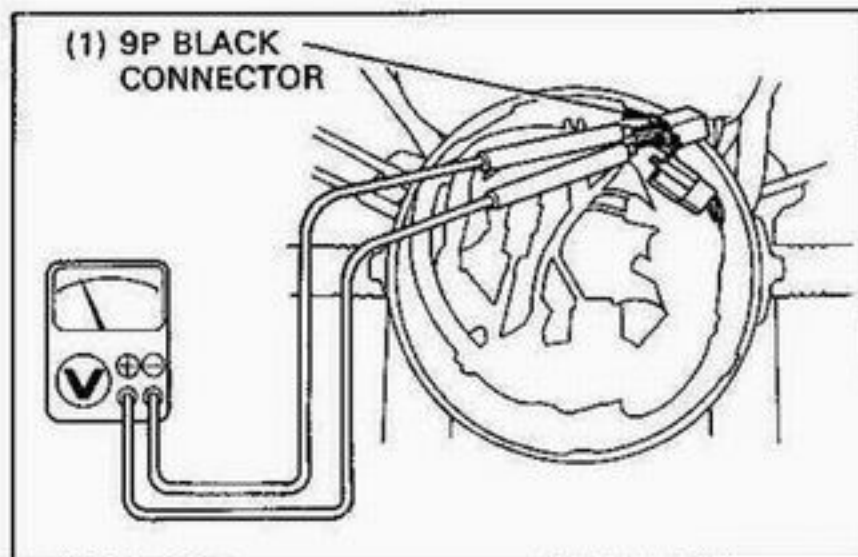
| Procedure | | Qty | Remarks |
|-----------|------------------------------------|-----|--|
| | Disassembly Order | | Assembly is in the reverse order of disassembly. |
| (1) | Rear cover mounting screw | 5 | |
| (2) | Rear cover | 1 | |
| (3) | Front cover mounting screw | 1 | |
| (4) | Front cover | 1 | |
| (5) | Wire clamp | 2 | |
| (6) | Indicator/meter light socket | 7 | |
| (7) | Wire eyelet screw | 2 | |
| (8) | Combination meter sub-harness | 1 | |
| (9) | Trip meter reset knob | 1 | |
| (10) | Speedometer gearbox mounting screw | 2 | |
| (11) | Speedometer gearbox | 1 | |
| (12) | Speedometer mounting screw | 2 | |
| (13) | Speedometer | 1 | |
| (14) | Tachometer mounting screw | 2 | |
| (15) | Tachometer | 1 | |
| (16) | Meter stay mounting nut | 3 | |
| (17) | Meter stay | 1 | |
| (18) | Inner case | 1 | |

Tachometer Inspection

Remove the headlight assembly (page 16-3), and disconnect the 9P mini Black connector.

Connect a voltmeter across the Yellow/Green(+) and Green(-) terminals of the main wire harness side.

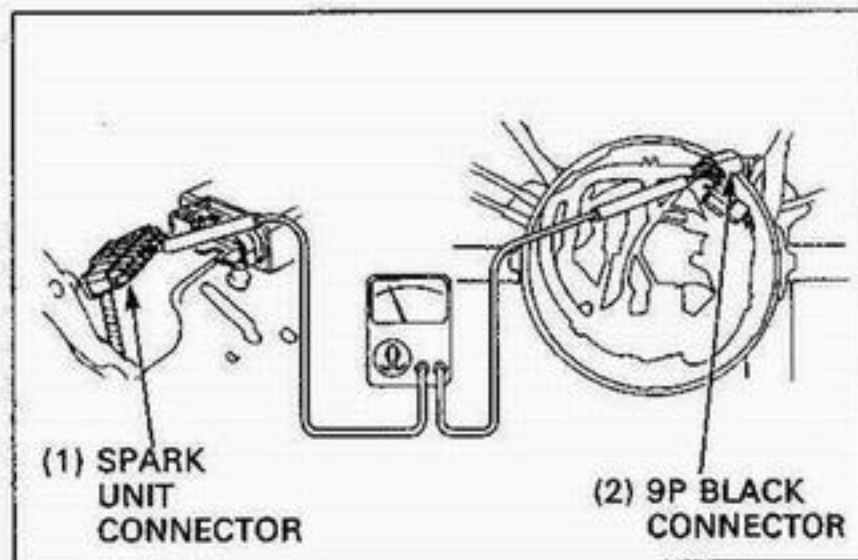
Turn the ignition switch ON; battery voltage should register. If battery voltage does not register, the electric tachometer is not getting power. Trace and repair the related wiring and/or connectors.



Disconnect the spark unit connector. Check for continuity between the Yellow/Green wire terminals of the 9P mini Black connector and the spark unit connector.

There should be continuity in all cases. If there is no continuity, replace the main wire harness.

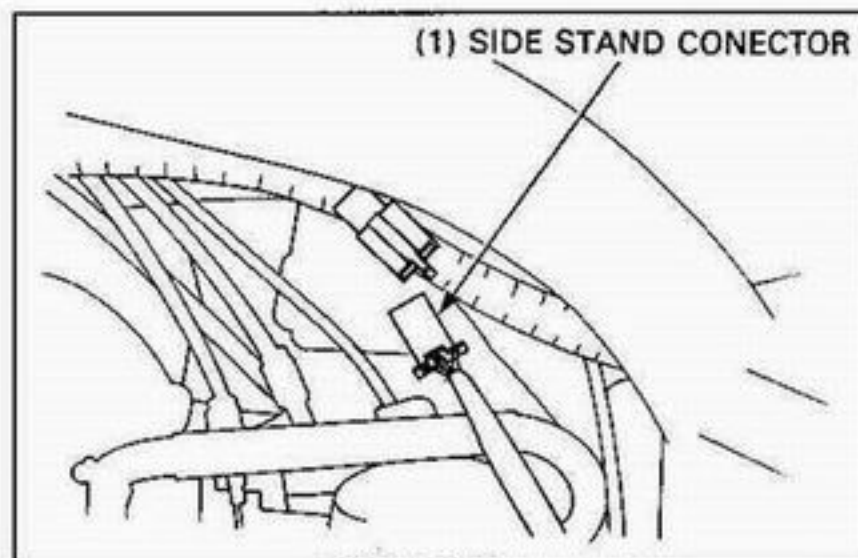
If all checks are O.K., replace the tachometer.



Side Stand Switch

Removal/Installation

Remove the fuel tank (page 2-3). Disconnect the side stand switch 3P mini Black connector.



Remove the side stand switch mounting bolt and the side stand switch.

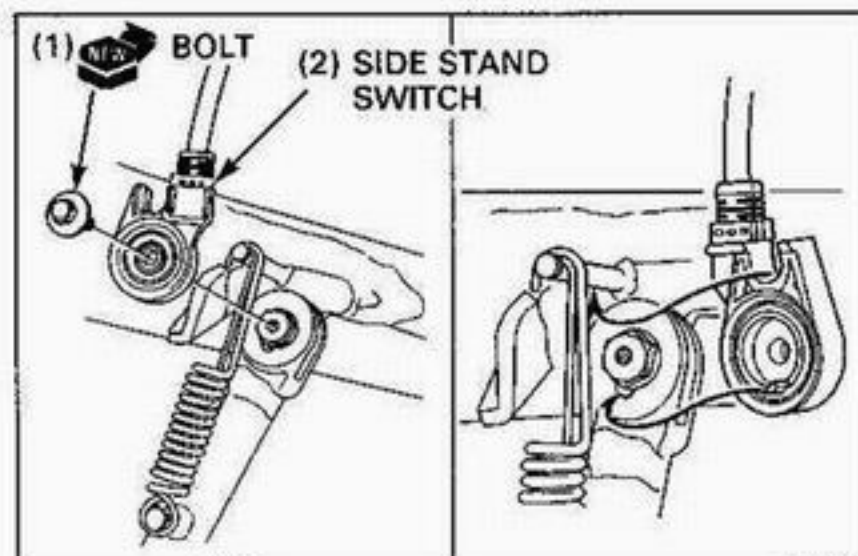
Install the switch in the reverse order of removal.

Torque: 10 N·m (1.0 kg·m, 7.2 ft·lb)

NOTE

- Align the switch pin with the side stand hole and align the switch groove with the side stand return spring holding pin.

Route the side stand switch wire harness properly (page 1-21).

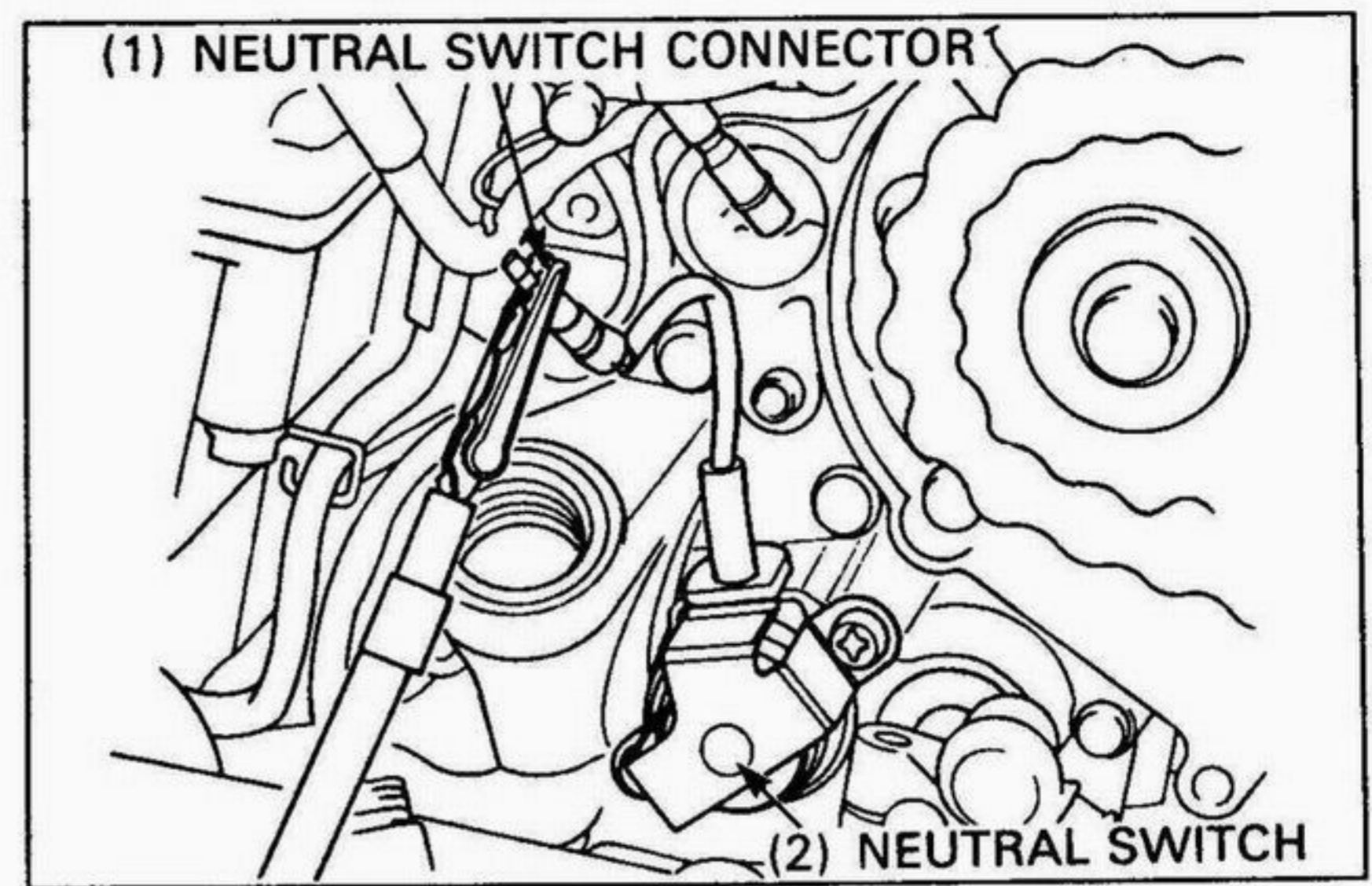


Neutral Switch

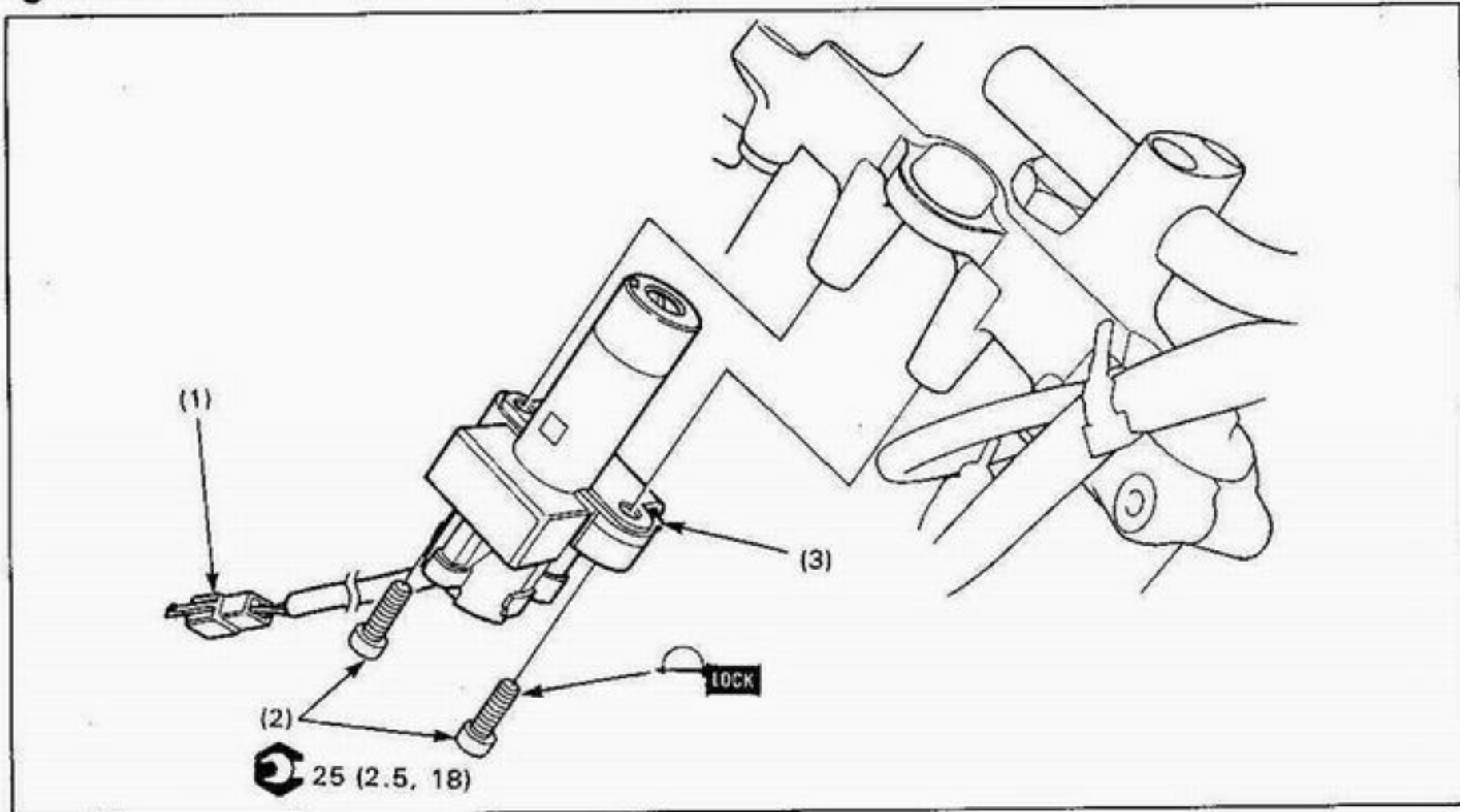
Remove the drive sprocket cover and disconnect the neutral switch connector.

Check the switch for continuity between the Light green/Red wire terminal and ground first with the transmission in neutral and then with the transmission in any gear.

For neutral switch replacement, refer to page 8-10, 12.



Ignition Switch Removal/Installation



Requisite Service

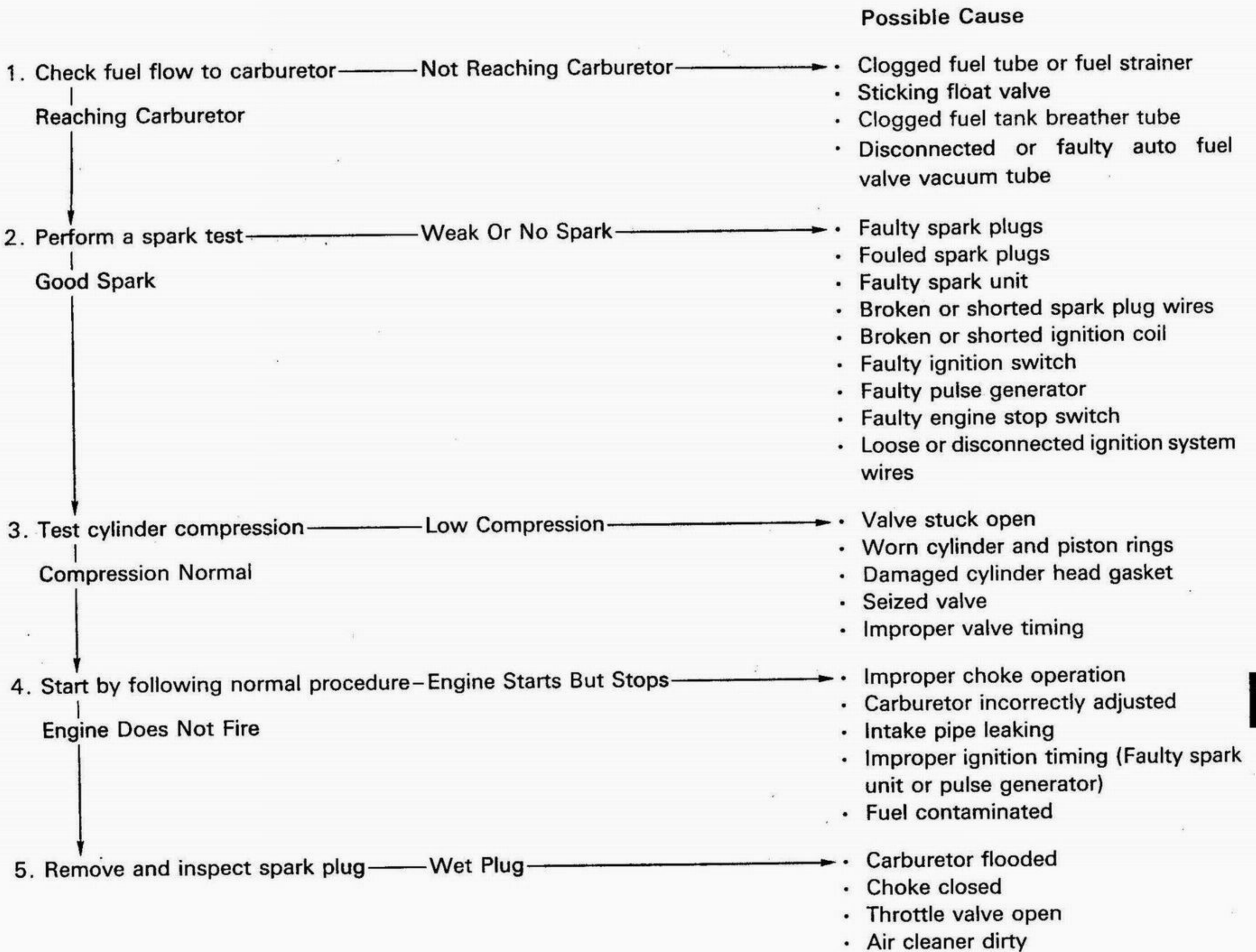
- Headlight removal/installation (page 16-3).
- Meter removal/installation (page 16-5)

| Procedure | Qty | Remarks |
|-----------------------------------|-----|--|
| Removal Order | | Installation is in the reverse order of removal. |
| (1) Ignition switch connector | 1 | • At installation, apply a locking agent to the threads. |
| (2) Ignition switch mounting bolt | 2 | |
| (3) Ignition switch | 1 | |

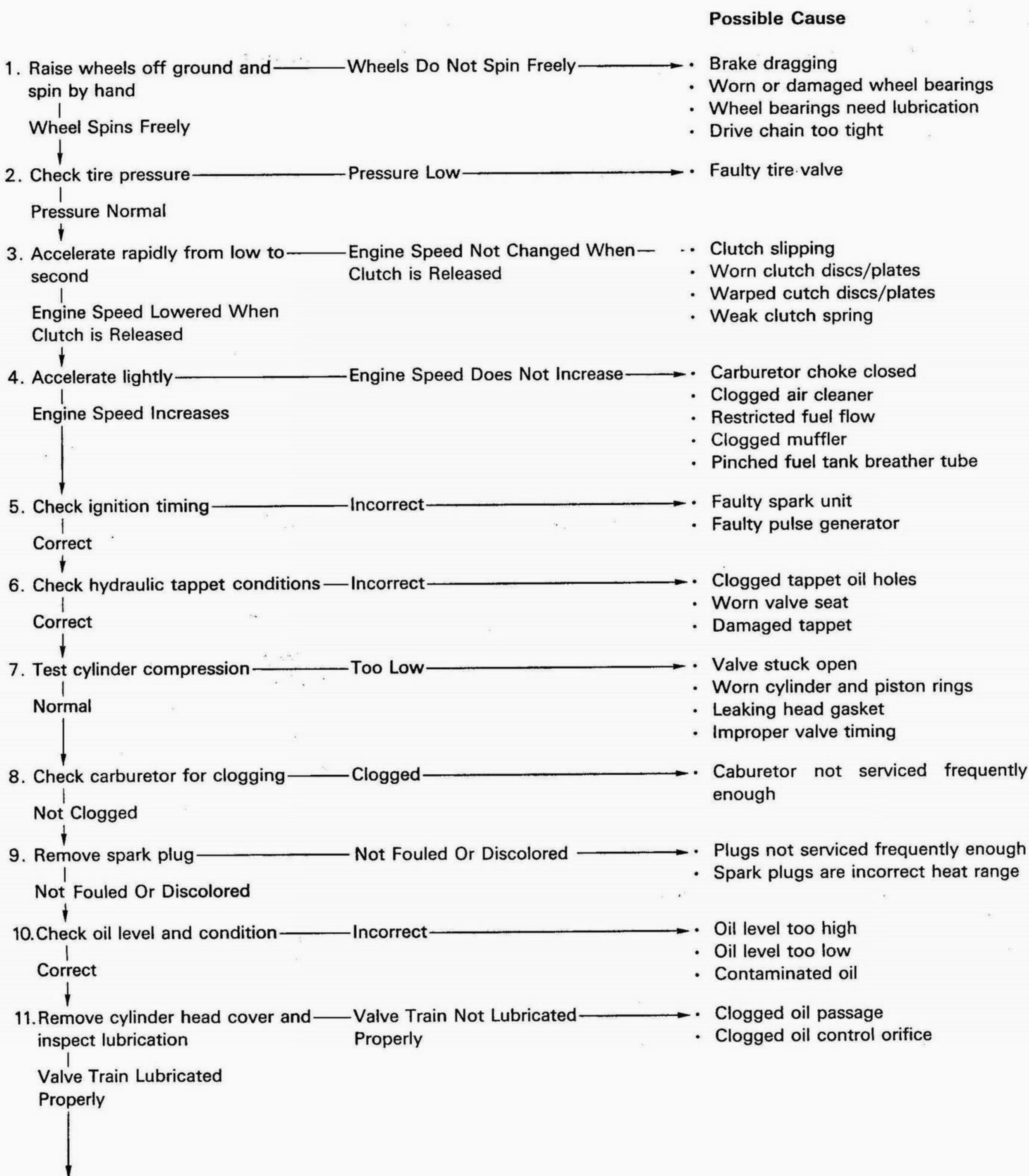
18. Troubleshooting

| | | | |
|---|------|--------------------------------|------|
| Engine Does Not Start or is Hard To start | 18-1 | Poor Performance at High Speed | 18-3 |
| Engine Lacks Power | 18-2 | Poor Handling | 18-4 |
| Poor Performance At Low and Idle Speeds | 18-3 | Hydraulic Tappet | 18-4 |

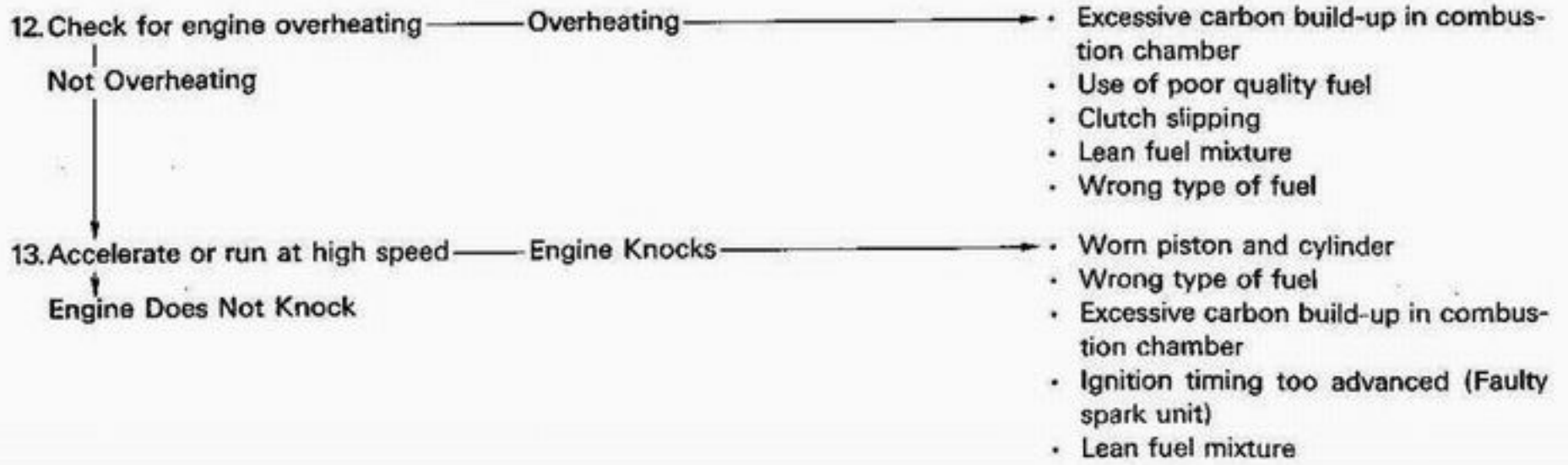
Engine Does Not Start Or Is Hard To Start



Engine Lacks Power

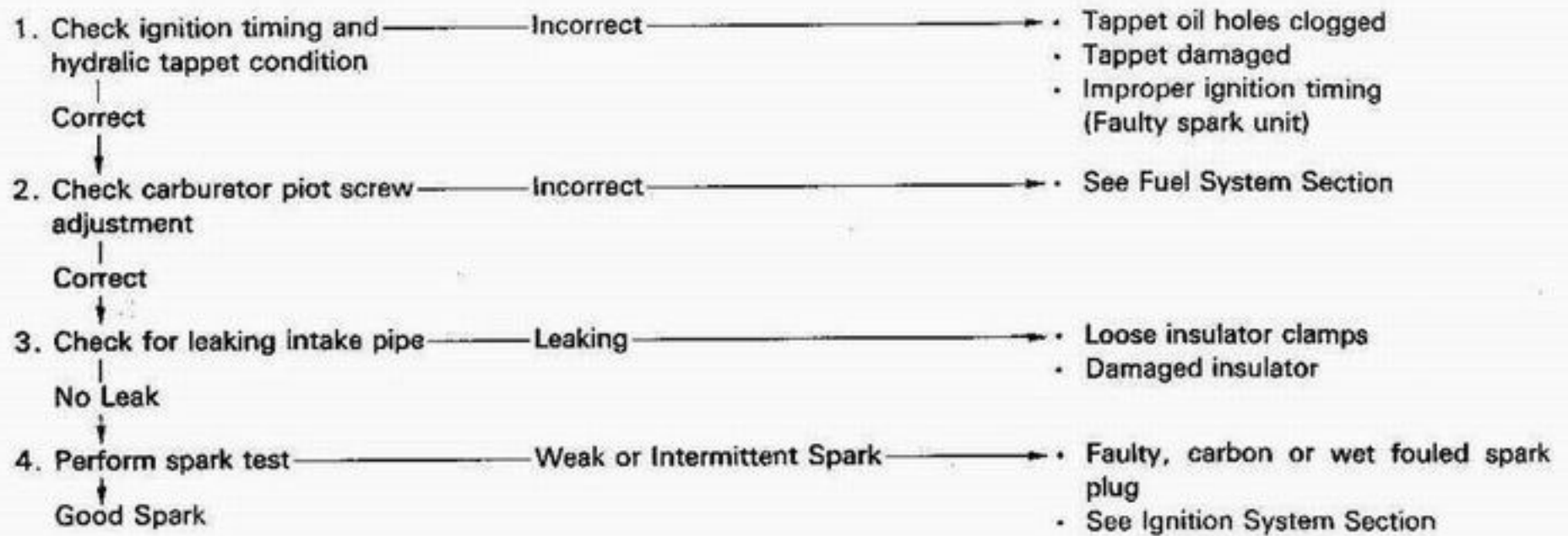


Possible Cause



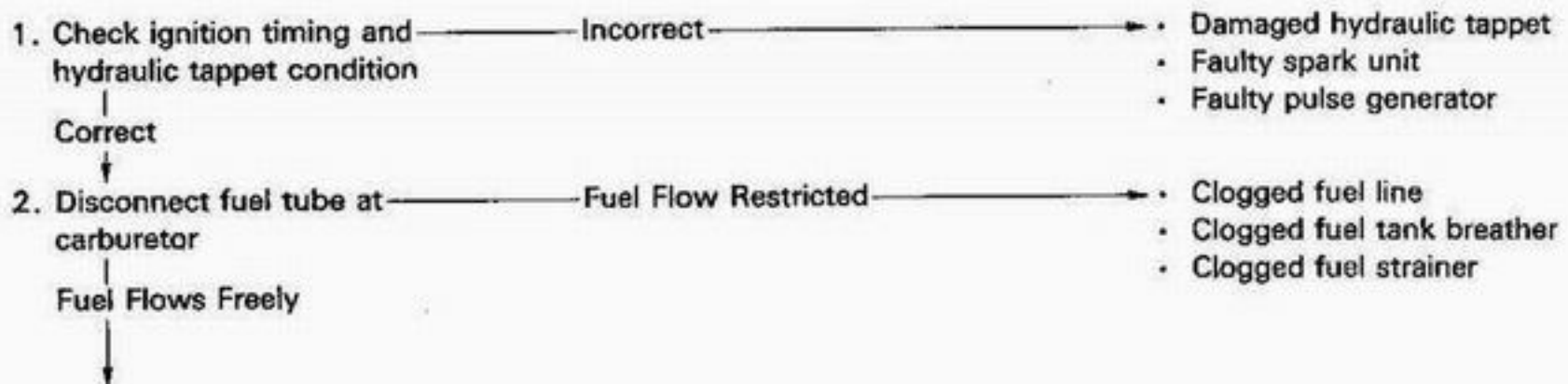
Poor Performance At Low And Idle Speeds

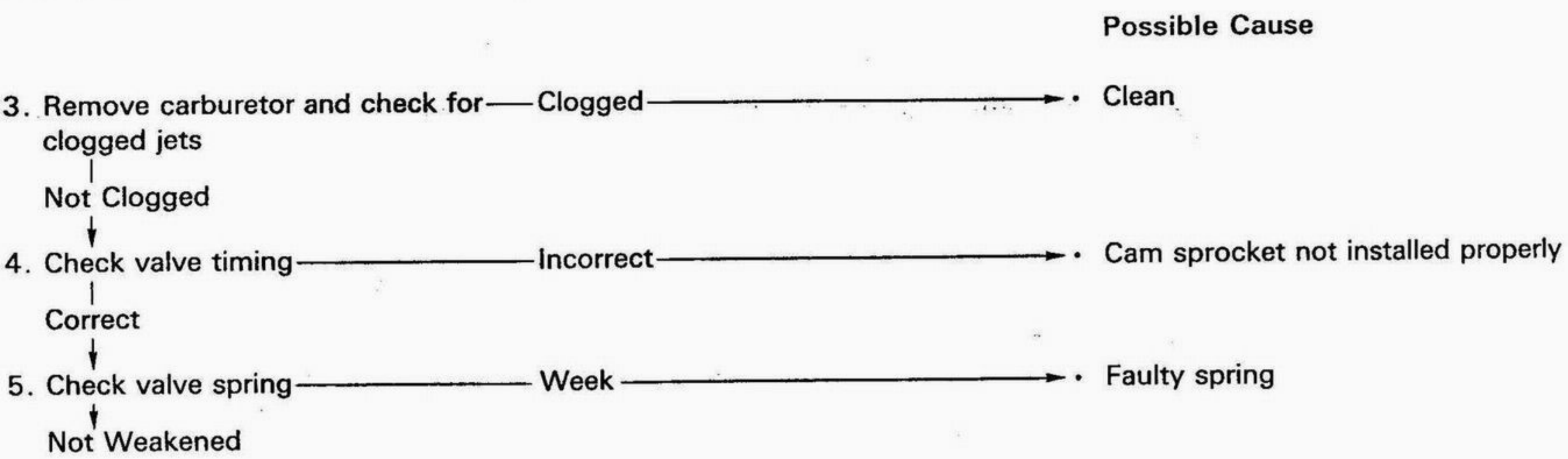
Possible Cause



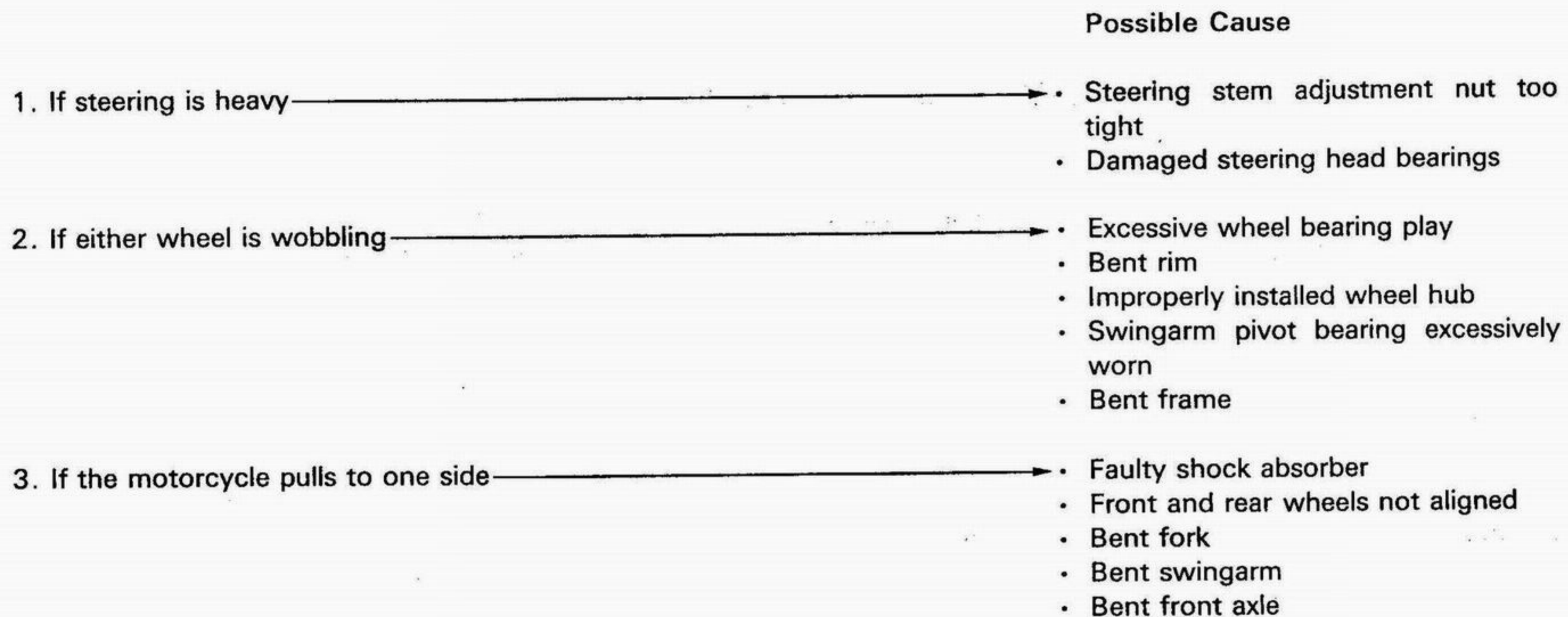
Poor Performance At High Speed

Possible Cause



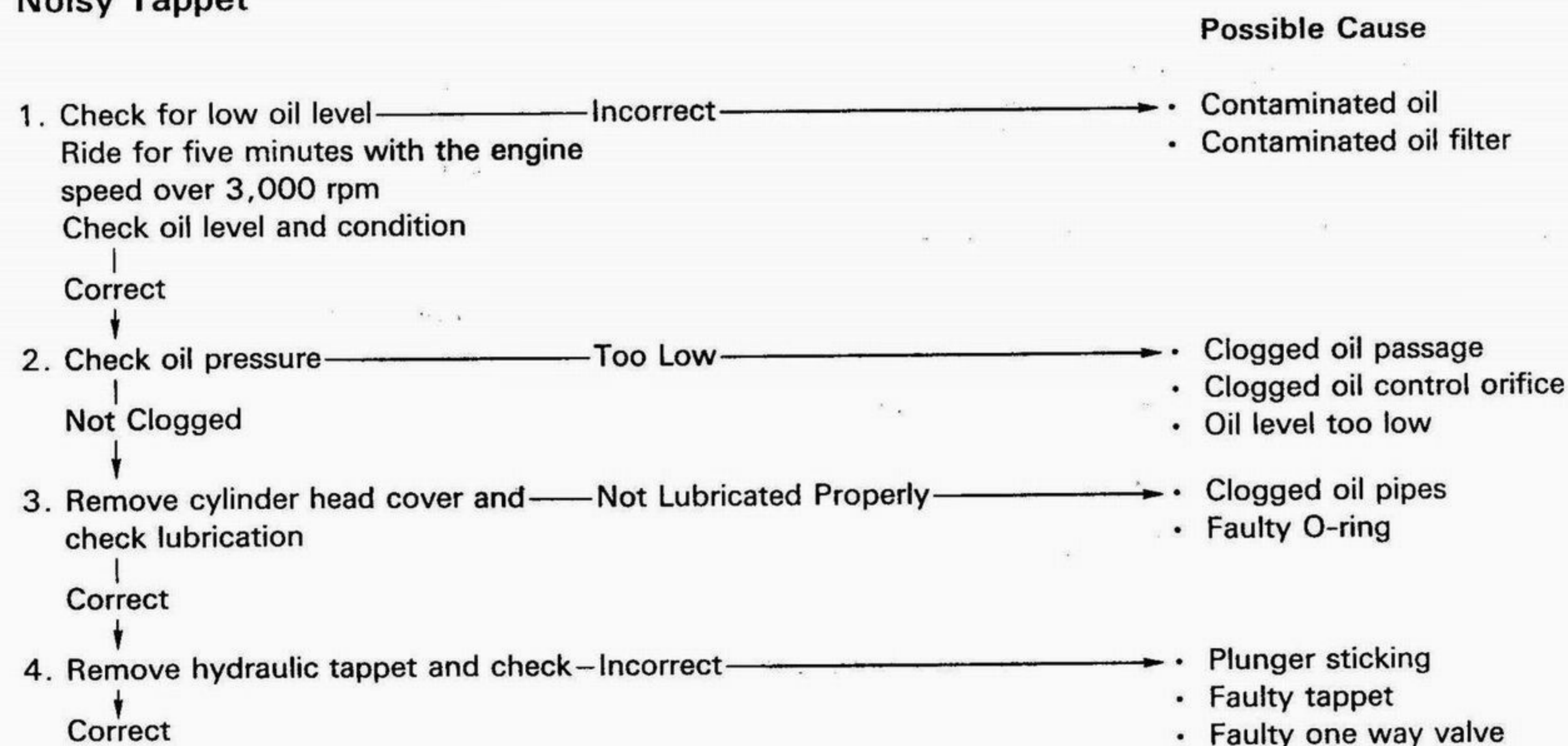


Poor Handling → Check tire pressure

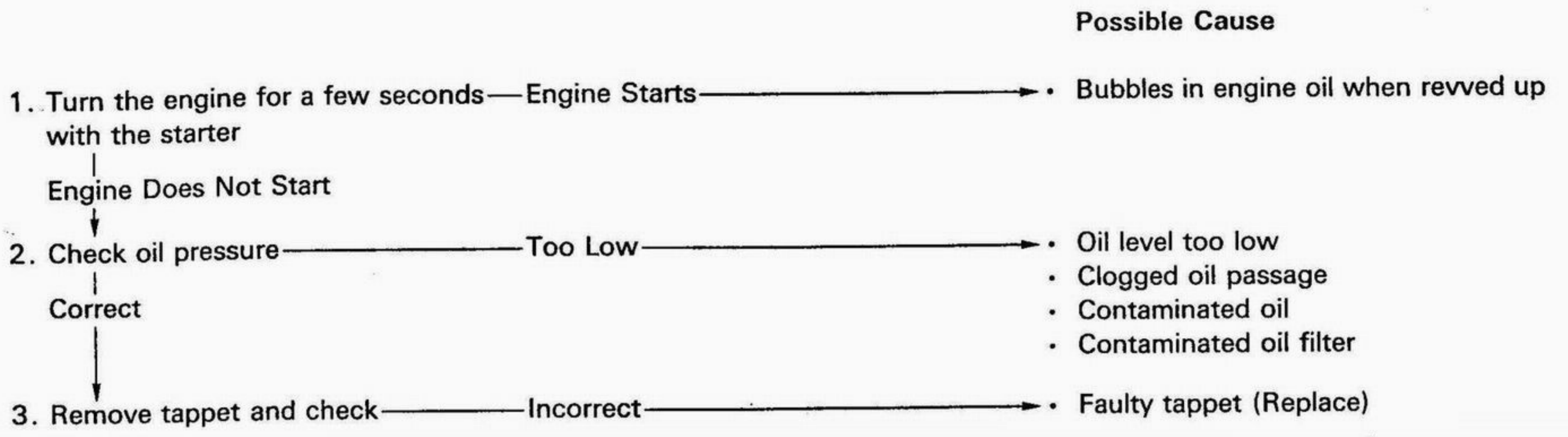


Hydraulic Tappet

Noisy Tappet



Engine Lacks Power



MEMO

Index

| | | | |
|--|-------|---|-------|
| Air Cleaner | 3-5 | Oil Cooler Removal/Installation | 4-5 |
| Case Removal/Installation | 5-3 | Oil Pressure Check | 4-6 |
| Alternator | 13-7 | Oil Pump Disassembly/Assembly | 4-4 |
| Removal/Installation | 13-8 | Removal/Installation | 4-3 |
| Shaft Disassembly/Assembly | 9-12 | Pilot Screw Adjustment | 5-12 |
| Battery Removal/Installation | 13-4 | Poor Handling | 18-4 |
| Brake Pedal Removal/Installation | 12-14 | Poor Performance At High Speed | 18-3 |
| Cable & Harness Routing | 1-21 | Poor Performance At Low And Idle Speeds | 18-3 |
| Camshaft Removal/Installation | 7-2 | Pulse Generator | 14-8 |
| Carburetor Combination | 5-10 | Pulse Generator Removal/Installation | 14-9 |
| Disassembly/Assembly | 5-8 | Rear Brake Caliper Disassembly/Assembly | 12-11 |
| Removal/Installation | 5-4 | Removal/Installation | 12-10 |
| Separation | 5-6 | Rear Brake Pad Replacement | 12-3 |
| synchronization | 3-5 | Rear Master Cylinder Disassembly/Assembly | 12-7 |
| Charging System Inspection | 13-5 | Removal/Installation | 12-6 |
| Clutch Cover Removal/Installation | 8-2 | Rear Fairing Removal/Installation | 2-3 |
| Clutch Installation | 8-6 | Rear Fender Removal/Installation | 2-4 |
| Removal | 8-4 | Rear Wheel Disassembly/Assembly | 11-4 |
| Countershaft Bearing Cover | | Removal/Installation | 11-2 |
| Removal/Installation | 9-2 | Regulator/Rectifier | 13-6 |
| Crankcase Assembly | 9-18 | Seat Removal/Installation | 2-3 |
| Separation | 9-4 | Service Access Guide | 3-2 |
| Crankshaft Bearing Replacement | 9-14 | Service Information | |
| Crankshaft, Connecting Rod Installation | 9-16 | Brake System | 12-1 |
| Removal | 9-10 | Charging System/Alternator | 13-1 |
| Cylinder Head Disassembly/Assembly | 7-10 | Electric Starter/Starter Clutch | 15-1 |
| Removal/Installation | 7-8 | Front Wheel/Suspension/Steering | 10-1 |
| Cylinder, Piston Removal/Installation | 7-12 | Rear Wheel/Suspension | 11-1 |
| Drive Chain Slider | 3-6 | Clutch/Gearshift Linkage | 8-1 |
| Drive Sprocket Cover Removal/Installation | 8-9 | Crankshaft/Transmission | 9-1 |
| Engine Does Not Start Or Is Hard To Start | 18-1 | Cylinder Head/Cylinder/Piston | 7-1 |
| Engine Lacks Power | 18-2 | Engine Removal/Installation | 6-1 |
| Engine Removal/Installation | 6-2 | Frame/Body Panels/Exhaust System | 2-1 |
| Exhaust System Removal/Installation | 2-6 | Fuel System | 5-1 |
| Fork Assembly | 10-12 | Lights/Meters/Switches | 16-1 |
| Disassembly | 10-10 | Lubrication System | 4-1 |
| Removal/Installation | 10-8 | Maintenance | 3-1 |
| Front Brake Pad Replacement | 12-2 | Ignition System | 14-1 |
| Front Brake Hose Replacement | 12-12 | Shock Absorber Disassembly/Assembly | 11-7 |
| Front Brake Caliper Disassembly/Assembly | 12-9 | Removal/Installation | 11-6 |
| Removal/Installation | 12-8 | Side Cover Removal/Installation | 2-2 |
| Front Master Cylinder Disassembly/Assembly | 12-5 | Side Stand Switch | 16-8 |
| Removal/Installation | 12-4 | Specification | 1-4 |
| Front Wheel Disassembly/Assembly | 10-6 | Starter Clutch Disassembly/Assembly | 15-8 |
| Removal/Installation | 10-4 | Starter Motor Disassembly/Assembly | 15-6 |
| Fuel Tank Removal/Installation | 2-3 | Removal/Installation | 15-5 |
| Gearshift Linkage Removal/Installation | 8-10 | Steering Stem Removal/Installation | 10-14 |
| General Safety | 1-1 | Swingarm Disassembly/Assembly | 11-11 |
| Handlebar Removal/Installation | 10-2 | Removal/Installation | 11-10 |
| Headlight Removal/Installation | 16-3 | System Location | |
| Hydraulic Tappet | 18-4 | Charging System/Alternator | 13-2 |
| Ignition Coil | 14-7 | Electric Starter/Starter Clutch | 15-2 |
| Ignition Switch Removal/Installation | 16-10 | Ignition System | 14-2 |
| Ignition System Inspection | 14-6 | Lights/Meters/Switches | 16-2 |
| Ignition Timing | 14-9 | Tachometer Inspection | 16-8 |
| Lubrication & Seal Point | 1-19 | Tail/Brake Light | 16-4 |
| Lubrication System Diagram | 4-2 | Tools | 1-17 |
| Maintenance Schedule | 3-4 | Torque Values | 1-14 |
| Meter Disassembly/Assembly | 16-6 | Transmission Disassembly/Assembly | 9-8 |
| Removal/Installation | 16-5 | Removal/Installation | 9-6 |
| Model Identification | 1-3 | Troubleshooting | |
| Neutral Switch | 16-9 | Brake System | 12-1 |
| | | Charging System/Alternator | 13-3 |

Troubleshooting

| | |
|--|------|
| Clutch/Gearshift Linkage | 8-1 |
| Crankshaft/Transmission | 9-1 |
| Cylinder Head/Cylinder/Piston | 7-1 |
| Electric Starter/Starter Clutch..... | 15-3 |
| Frame/Body Panels/Exhaust System | 2-1 |
| Front Wheel/Suspension/Steering..... | 10-1 |
| Fuel System..... | 5-2 |
| Ignition System | 14-3 |
| Lubrication System | 4-1 |
| Rear Wheel/Suspension..... | 11-1 |
| Turn Signal Bulb | 16-4 |
| Wiring Diagram..... | 17-1 |