

**SUZUKI**

**DR**

**750S**  
**800S**

**SERVICE MANUAL**



99500-47010-01E

## FOREWORD

The SUZUKI DR750S was designed to offer superior performance through lightweight design, four stroke-power, engine counter-balancers, Suzuki Advanced Cooling System (SACS) and full-floating suspension.

This service manual has been produced primarily for experienced mechanics whose job is to inspect, adjust, repair and service Suzuki Motorcycles. Apprentice mechanics and do-it-yourself mechanics, will also find this manual an extremely useful repair guide. This manual contains up-to-date information at the time of publication. The rights are reserved to update or make corrections to this manual at any time.

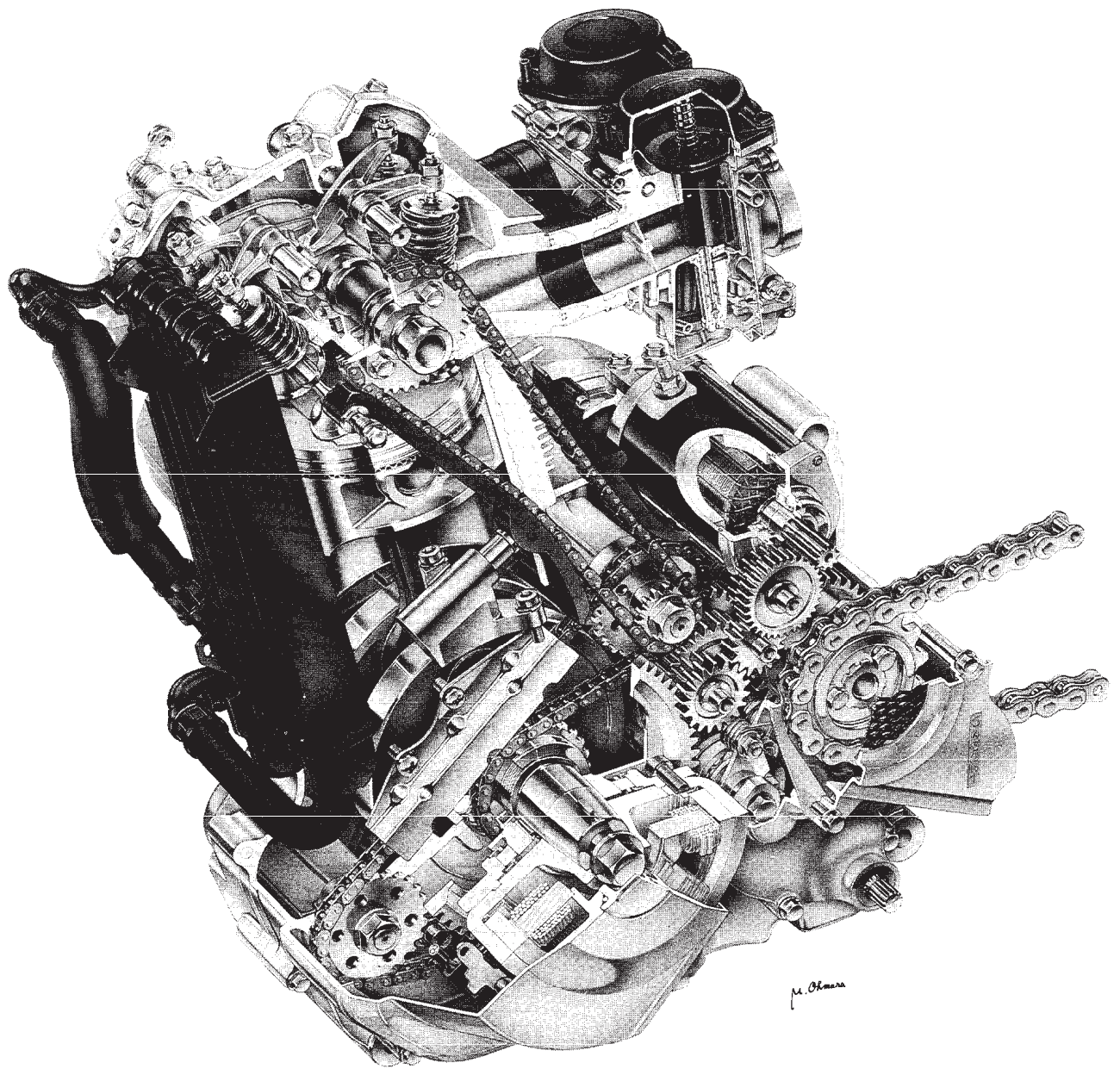
### SUZUKI MOTOR CORPORATION

Motorcycle Service Department

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## GROUP INDEX

<b>GENERAL INFORMATION</b>	<b>1</b>
<b>PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES</b>	<b>2</b>
<b>ENGINE</b>	<b>3</b>
<b>FUEL AND LUBRICATION SYSTEM</b>	<b>4</b>
<b>ELECTRICAL SYSTEM</b>	<b>5</b>
<b>CHASSIS</b>	<b>6</b>
<b>SERVICING INFORMATION</b>	<b>7</b>
<b>APPENDIX</b>	<b>APP.</b>
<b>DR750SK ('89-MODEL)</b>	<b>8</b>
<b>DR800SL ('90-MODEL)</b>	<b>9</b>
<b>DR800SM ('91-MODEL)</b>	<b>10</b>
<b>DR800SN ('92-MODEL)</b>	<b>11</b>
<b>DR800SP ('93-MODEL)</b>	<b>12</b>
<b>DR800SR ('94-MODEL)</b>	<b>13</b>
<b>DR800SS ('95-MODEL)</b>	<b>14</b>
<b>DR800ST ('96-MODEL)</b>	<b>15</b>
<b>DR800SV ('97-MODEL)</b>	<b>16</b>



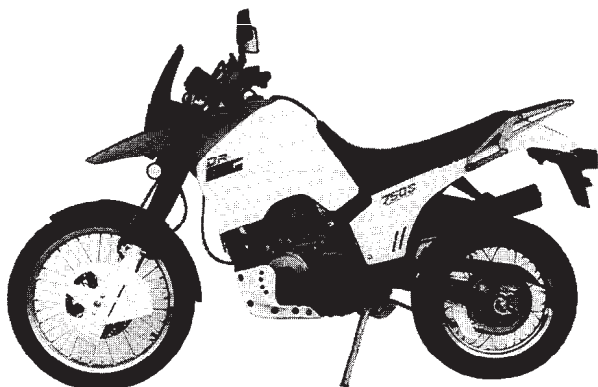
# GENERAL INFORMATION

## CONTENTS

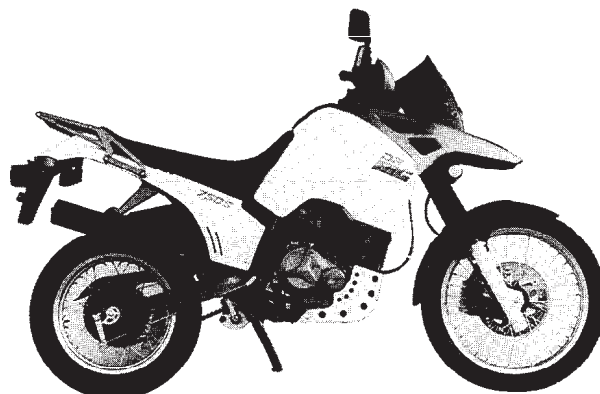
<i>VIEW OF SUZUKI DR750SJ ('88-MODEL)</i> .....	1- 1
<i>SERIAL NUMBER LOCATIONS</i> .....	1- 1
<i>FUEL AND OIL RECOMMENDATIONS</i> .....	1- 1
<i>BREAK-IN PROCEDURES</i> .....	1- 2
<i>SPECIAL MATERIALS</i> .....	1- 3
<i>PRECAUTIONS AND GENERAL INSTRUCTIONS</i> .....	1- 5
<i>SPECIFICATIONS</i> .....	1- 7
<i>COUNTRY OR AREA</i> .....	1- 9



## VIEW OF SUZUKI DR750SJ ('88-MODEL)



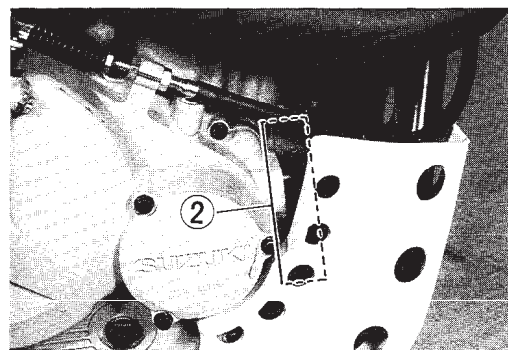
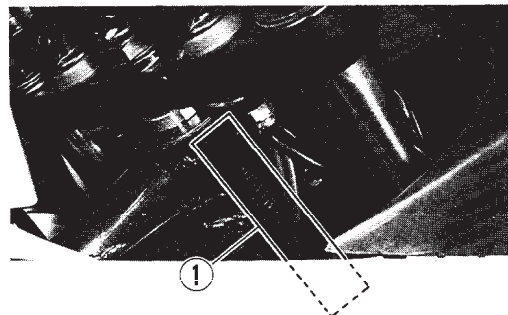
LEFT SIDE



RIGHT SIDE

## SERIAL NUMBER LOCATIONS

The frame serial number or V.I.N. (Vehicle Identification Number) ① is stamped on the steering head pipe. The engine serial number ② is located on the crankcase. These numbers are required especially for registering the machine and ordering spare parts.



## FUEL AND OIL RECOMMENDATIONS

### FUEL

(For Canadian model)

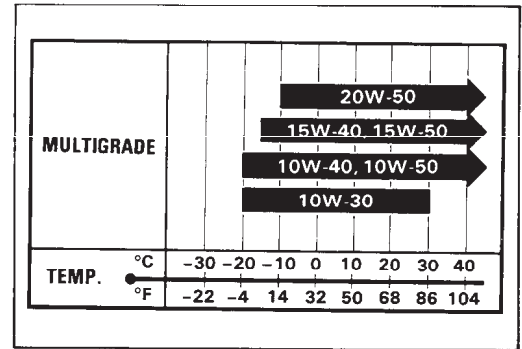
Use only unleaded or low-lead type gasoline of at least 85 – 95 pump octane ( $\frac{R+M}{2}$ ) method or 89 octane or higher rated by the Research Method.

(For the Other models)

Gasoline used should be graded 85 – 95 octane (Research Method) or higher. An unleaded or low-lead type gasoline is recommended.

## ENGINE OIL

Be sure that the engine oil you use comes under API classification of SE or SF and that its viscosity rating is SAE 10W-40. If SAE 10W-40 motor oil is not available, select the oil viscosity according to the chart at right.



## FRONT FORK OIL

Use fork oil # 10. (99000-99044-10G)

## BRAKE FLUID

Specification and classification: SAE J1703, DOT3 or DOT4

### WARNING:

- \* Since the brake system of this motorcycle is filled with a glycol-based brake fluid by the manufacturer, do not use or mix different types of fluid such as silicone-based and petroleum-based fluid for refilling the system, otherwise serious damage will result.
- \* Do not use any brake fluid taken from old or used or unsealed containers.
- \* Never re-use brake fluid left over from the previous servicing and stored for a long period.

## BREAK-IN PROCEDURES

During manufacture only the best possible materials are used and all machined parts are finished to a very high standard but it is still necessary to allow the moving parts to "BREAK-IN" before subjecting the engine to maximum stresses. The future performance and reliability of the engine depends on the care and restraint exercised during its early life. The general rules are as follows:



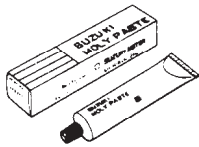


1. Keep to this break-in throttle position.






**Up to 1 600 km (1 000 miles): Below 4/5 throttle**

2. After the engine has been operated for 1 600 km (1 000 miles) the motorcycle can be subjected to full throttle operation for short periods of time.

## SPECIAL MATERIALS

The materials listed below are needed for maintenance work on the DR750S, and should be kept on hand for ready use. They supplement such standard materials as cleaning fluids, lubricants, emery cloth and the like. How to use them and where to use them are described in the text of this manual.

Material	Part	Page	Part	Page
 <p>SUZUKI SUPER GREASE "A" 99000-25010</p>	<ul style="list-style-type: none"> <li>● Oil seals</li> <li>● Throttle grip</li> <li>● Brake pedal shaft</li> <li>● Gearshift lever and shaft</li> <li>● Speedometer gearbox and dust seal</li> <li>● Wheel bearings</li> <li>● Steering stem bearings</li> <li>● Sprocket drum bearing</li> </ul>	<p>3-42 2- 2 2- 2 2- 2 2- 2 6- 5 6-4, 23 2- 2 6-24</p>	<ul style="list-style-type: none"> <li>● Brake camshaft and O-ring</li> <li>● Brake cam and pin</li> <li>● Shock absorber dust seals</li> <li>● Cusion lever dust seals, spacers and bearings</li> <li>● Swingarm dust seals, spacers and bearings</li> </ul>	<p>6-24 6-24 6-30 6-29 6-29</p>
 <p>SUZUKI SILICONE GREASE 99000-25100</p>	<ul style="list-style-type: none"> <li>● Caliper axle</li> </ul>	<p>6- 8 6-10</p>		
 <p>SUZUKI MOLY PASTE 99000-25140</p>	<ul style="list-style-type: none"> <li>● Valve stems</li> <li>● De-comp. shaft</li> <li>● Countershaft and driveshaft gears</li> <li>● Piston pin</li> <li>● Camshaft journals and cams</li> <li>● Rocker arm shafts</li> </ul>	<p>3-28 3-22 3-38  3-56 3-60 3-21</p>		
 <p>SUZUKI BOND NO. 1216 99000-31160</p>	<ul style="list-style-type: none"> <li>● Mating surfaces of left and right halves of crankcase</li> <li>● Magneto lead wire grommet</li> <li>● Cylinder head cover</li> <li>● Neutral lead wire grommet</li> </ul>	<p>3-46  3-52 5- 7 3-60 3-49</p>		
 <p>THREAD LOCK SUPER "1303" 99000-32030</p>	<ul style="list-style-type: none"> <li>● Gearshift arm stopper</li> <li>● Cam sprocket bolts</li> <li>● Starter clutch securing bolts</li> </ul>	<p>3-48 3-60 3-35</p>		

Material	Part	Page	Part	Page
 THREAD LOCK "1342" 99000-32050	<ul style="list-style-type: none"> <li>● Engine sprocket mounting bolts</li> <li>● Rear brake pedal pivot bolt</li> <li>● Crankcase bearing retainer screws</li> <li>● Gearshift cam stopper bolt</li> <li>● Gearshift cam guide/pawl lifter screws and nuts</li> <li>● Engine oil pump securing screws</li> </ul>	3- 9 3- 9 3-41 3-47 3-48 3-43	<ul style="list-style-type: none"> <li>● Neutral switch lead protector screws</li> <li>● Balancer chain guide screws</li> <li>● Carburetor upper/lower set plate screws</li> <li>● Magneto stator coil securing screws</li> <li>● Front fork damper rod bolts</li> <li>● Starter motor housing screws</li> </ul>	3-49 3-51 4- 7 5- 7 6-15 5-12
 THREAD LOCK SUPER "1305" 99000-32100	<ul style="list-style-type: none"> <li>● Magneto rotor bolt</li> </ul>	3-51		
 THREAD LOCK SUPER "1360" 99000-32130	<ul style="list-style-type: none"> <li>● Disc mounting bolts</li> </ul>	6-10		
 SUZUKI BRAKE FLUID 99000-23110	<ul style="list-style-type: none"> <li>● Front brake</li> </ul>	2-12 6-11		
 SUZUKI FORK OIL # 10 99000-99044-10G	<ul style="list-style-type: none"> <li>● Front fork</li> </ul>	6-15		

## PRECAUTIONS AND GENERAL INSTRUCTIONS

Observe the following items without fail when disassembling and reassembling motorcycles.

- Be sure to replace packings, gaskets, circlips, O-rings and cotter pins with new ones.

### CAUTION:

**Never reuse a circlip. After a circlip has been removed from a shaft, it should be discarded and a new circlip must be installed.**

**When installing a new circlip, care must be taken not to expand the end gap larger than required to slip the circlip over the shaft.**

**After installing a circlip, always insure that it is completely seated in its groove and securely fitted.**

- Tighten bolts and nuts from the ones of larger diameter to those of smaller diameter, and from inside to outside diagonally, with specified tightening torque.
- Use special tools where specified.
- Use specified genuine parts and recommended oils.
- When more than 2 persons perform work in cooperation, pay attention to the safety of each other.
- After the reassembly, check parts for tightening condition and operation.
- Treat gasoline, which is extremely flammable and highly explosive, with greatest care. Never use gasoline as cleaning solvent.

Warning, Caution and Note are included in this manual occasionally, describing the following contents.

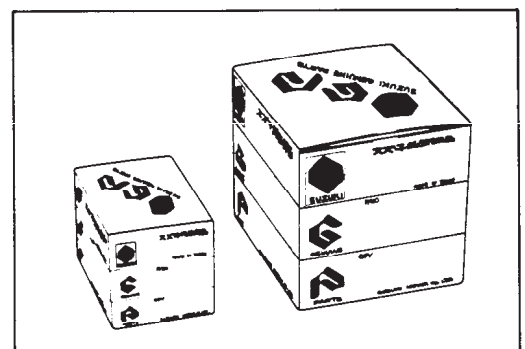
**WARNING** . . . . . Personal safety of the rider is involved, and disregard of the information could result in injury.

**CAUTION** . . . . . For the protection of the motorcycle, the instruction or rule must be strictly adhered to.

**NOTE** . . . . . Advice calculated to facilitate the repair of the motorcycle is given under this heading.

## USE OF SUZUKI GENUINE PARTS

To replace any part of the machine, use a genuine SUZUKI replacement part. Imitation parts or parts supplied from any other source than SUZUKI, if used to replace SUZUKI parts, can reduce the machine's performance and, even worse, could induce costly mechanical troubles.

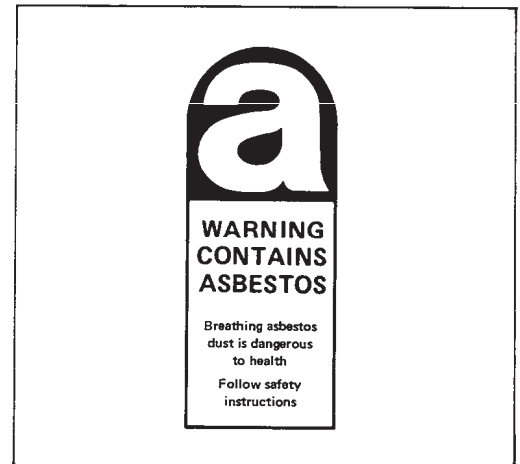


## ASBESTOS INFORMATION

Note the following when handling a supply part with the above WARNING LABEL or any part in the parts list in this section which contains asbestos.

- Operate if possible out of doors in a well ventilated place.
- Preferably use hand tools or low speed tools equipped, if necessary, with an appropriate dust extractor facility. If high speed tools are used, they should always be so equipped.
- If possible, dampen before cutting or drilling.
- Dampen dust and place it in a properly closed receptacle and dispose of it safely.

Any domestic asbestos product to which the above does not apply, but which is likely to release fibres during use should be replaced by new one when worn.



Item	Part Name
1.	Clutch cover gasket
2.	Magneto cover gasket
3.	Gearshift cover gasket
4.	Muffler cover gasket
5.	Exhaust pipe cover gasket



## SPECIFICATIONS

### DIMENSIONS AND DRY MASS

Overall length .....	2 255 mm (88.8 in)
Overall width .....	945 mm (37.2 in)
Overall height .....	1 295 mm (51.0 in)
Wheelbase .....	1 510 mm (59.4 in)
Ground clearance .....	255 mm (10.0 in)
Dry mass .....	179 kg (395 lbs)

### ENGINE

Type .....	Four-stroke, air-cooled with SACS, OHC
Number of cylinders .....	1
Bore .....	105 mm (4.134 in)
Stroke .....	84 mm (3.307 in)
Piston displacement .....	727 cm <sup>3</sup> (44.4 cu. in)
Compression ratio .....	9.5 : 1
Carburetor .....	MIKUNI BST33SS, two
Air cleaner .....	Polyester fiber element
Starter system .....	Electric starter
Lubrication system .....	Wet sump

### TRANSMISSION

Clutch .....	Wet multi-plate type
Transmission .....	5-speed constant mesh
Gearshift pattern .....	1-down, 4-up
Primary reduction .....	1.937 (62/32)
Final reduction .....	3.200 (48/15)
Gear ratios, Low .....	2.461 (32/13)
2nd .....	1.578 (30/19)
3rd .....	1.200 (24/20)
4th .....	0.956 (22/23)
Top .....	0.800 (20/25)
Drive chain .....	DAIDO D.I.D. 520VL. 2, 116 links

**ELECTRICAL**

Ignition type .....	SUZUKI CDI
Ignition timing .....	5° B.T.D.C. Below 2 200 r/min and 28° B.T.D.C. Above 4 300 r/min
Spark plug .....	NGK DP9EA-9 ..... (For E-34) NGK DPR9EA-9 . . . (For the others)
Battery .....	12V 50.4 kC (14 Ah)/10 HR
Generator .....	Three-phase A.C. generator
Fuse .....	15A

**CHASSIS**

Front suspension .....	Telescopic, coil spring, oil dampened
Rear suspension .....	Full-floating suspension system, gas/oil dampened, spring pre-load fully adjustable
Steering angle .....	43° (Right & Left)
Caster .....	61° 40'
Trail .....	136 mm (5.35 in)
Turning radius .....	2.3 m (7.5 ft)
Front brake .....	Disc brake, hydraulically operated
Rear brake .....	Internal expanding
Front tire size .....	90/90-21 54S
Rear tire size .....	130/80-17 65S

**CAPACITIES**

Fuel tank, including reserve .....	29 L (7.7/6.4 US/Imp gal)
reserve .....	7.0 L (7.4/6.2 US/Imp qt)
Engine oil, oil change .....	2.6 L (2.7/2.3 US/Imp qt)
oil change with filter change .....	2.7 L (2.9/2.4 US/Imp qt)
Front fork oil .....	467 ml (15.8/16.4 US/Imp oz)

These specifications are subject to change without notice.

## COUNTRY OR AREA

The series of symbols on the left stand for the countries and areas on the right.

<b>SYMBOL</b>	<b>COUNTRY or AREA</b>
E-04	France
E-18	Switzerland
E-22	W. Germany
E-28	Canada
E-34	Italy
E-75	England, S. Africa and Australia
E-77	Finland, Norway, Sweden, Belgium, Netherlands, Austria and Spain

# PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

## CONTENTS

<b>PERIODIC MAINTENANCE SCHEDULE</b> .....	2- 1
<b>MAINTENANCE AND TUNE-UP PROCEDURES</b> .....	2- 3
<b>BATTERY</b> .....	2- 3
<b>CYLINDER HEAD NUTS, EXHAUST PIPE BOLTS     AND MUFFLER CONNECTIONS</b> .....	2- 3
<b>AIR CLEANER ELEMENT</b> .....	2- 5
<b>DE-COMPRESSION LEVER</b> .....	2- 5
<b>VALVE CLEARANCE</b> .....	2- 6
<b>SPARK PLUGS</b> .....	2- 7
<b>FUEL LINE</b> .....	2- 8
<b>FUEL FILTER</b> .....	2- 8
<b>ENGINE OIL AND OIL FILTER</b> .....	2- 8
<b>CARBURETOR</b> .....	2- 9
<b>BALANCER CHAIN</b> .....	2-10
<b>CLUTCH</b> .....	2-10
<b>DRIVE CHAIN</b> .....	2-11
<b>BRAKES</b> .....	2-12
<b>TIRES</b> .....	2-15
<b>STEERING</b> .....	2-16
<b>FRONT FORKS</b> .....	2-16
<b>REAR SUSPENSION</b> .....	2-16
<b>CHASSIS BOLTS AND NUTS</b> .....	2-17

## 2-1 PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

### PERIODIC MAINTENANCE SCHEDULE

The chart below lists the recommended intervals for all the required periodic service work necessary to keep the motorcycle operating at peak performance and economy. Mileages are expressed in terms of kilometers, miles and time for your convenience.

**NOTE:**

*More frequent servicing may be performed on motorcycles that are used under severe conditions.*

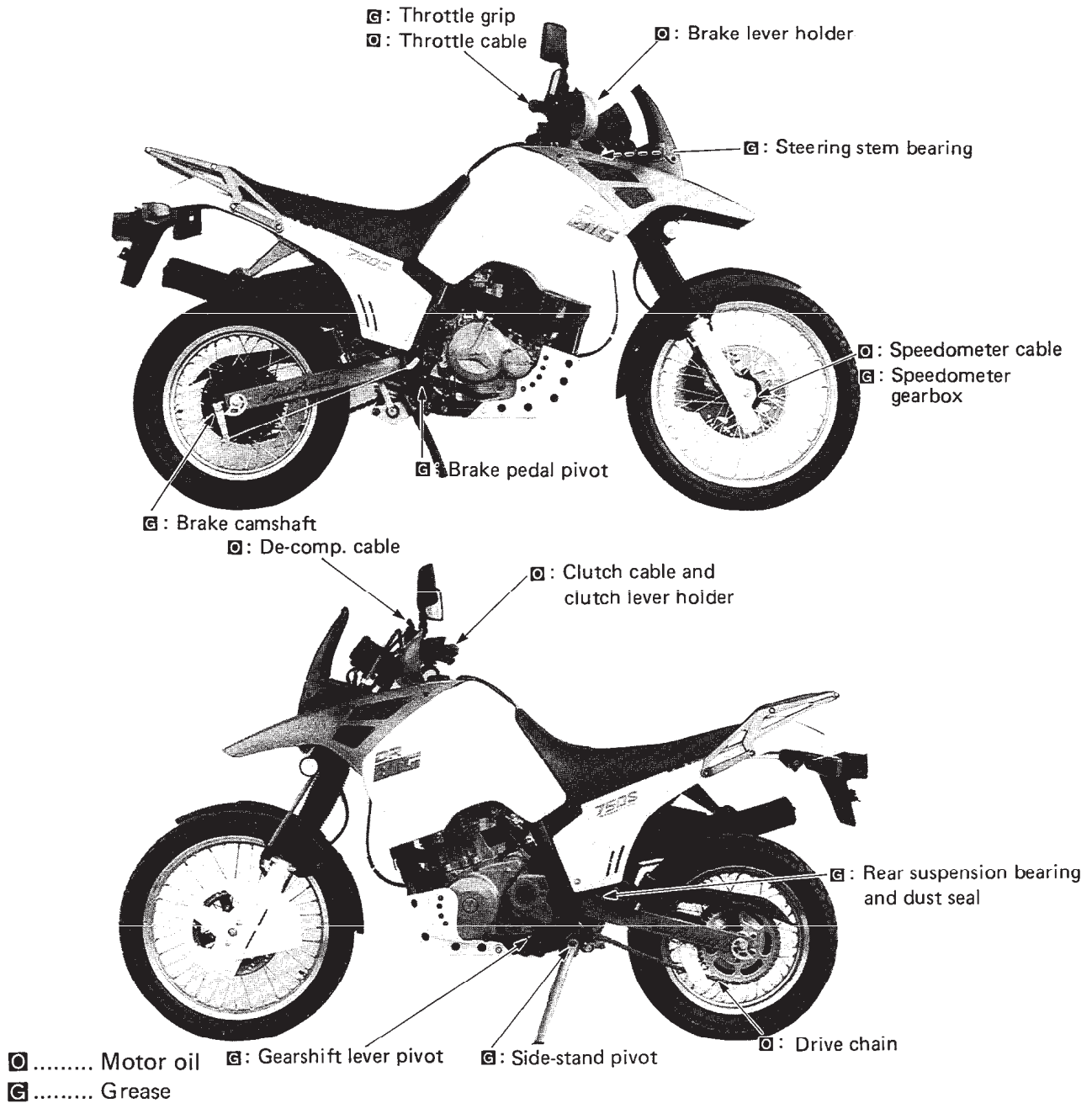
### PERIODIC MAINTENANCE CHART

INTERVAL: THIS INTERVAL SHOULD BE JUDGED BY ODOMETER READING OR MONTHS WHICHEVER COMES FIRST	mile	600	4 000	7 500	11 000	15 000
	km	1 000	6 000	12 000	18 000	24 000
	month	2	12	24	36	48
Battery (Specific gravity of electrolyte)		—	I	I	I	I
Cylinder head nuts, exhaust pipe bolts and muffler connections		T	T	T	T	T
Air cleaner element		Clean every 3 000 km (2 000 miles) and replace every 12 000 km (7 500 miles).				
De-compression lever		I	I	I	I	I
Valve clearance		I	I	I	I	I
Spark plugs		—	I	R	I	R
Fuel line		I	I	I	I	I
		Replace every four years.				
Fuel filter		Inspect every 3 months and replace every 6 000 km (4 000 miles).				
Engine oil and oil filter		R	R	R	R	R
Carburetor idle rpm		I	I	I	I	I
Balancer chain		—	—	I	—	I
Clutch		I	I	I	I	I
Drive chain		I	I	I	I	I
		Clean and lubricate every 1 000 km (600 miles).				
Brakes		I	I	I	I	I
Brake hose		I	I	I	I	I
		Replace every four years.				
Brake fluid		I	I	I	I	I
		Change every two years.				
Tires		I	I	I	I	I
Steering		I	I	I	I	I
Front forks		I	—	I	—	I
Rear suspension		I	—	I	—	I
Chassis bolts and nuts		T	T	T	T	T

NOTE: T = Tighten, I = Inspect, R = Replace

## OILING POINTS

Proper lubrication is important for smooth operation and long life of each working part. Major oiling points are indicated below.



### NOTE:

\* Lubricate exposed parts which are subject to rust, with a rust preventative spray whenever the motorcycle has been operated under wet or rainy conditions. If the spray is unavailable, use either motor oil or grease.

\* Before lubricating each part, clean off any rusty spots and wipe off any grease, oil, dirt or grime.

### WARNING:

Be careful not to apply too much grease to the brake cam shaft. If grease gets on the linings, brake slippage will result.



## MAINTENANCE AND TUNE-UP PROCEDURES

This section describes the servicing procedures for each item of the Periodic Maintenance requirements.

### BATTERY

Inspect Every 6 000 km (4 000 miles)

- Remove the frame covers and seat. (Refer to page 3-3.)
- Remove the battery  $\ominus$  and  $\oplus$  lead wires from the battery terminals.
- Remove the battery from its case.
- Check electrolyte for level and specific gravity. Add distilled water, as necessary to keep the surface of the electrolyte above the MIN. level line but not above the MAX. level line.
- For checking specific gravity, use a hydrometer to determine the charged condition.

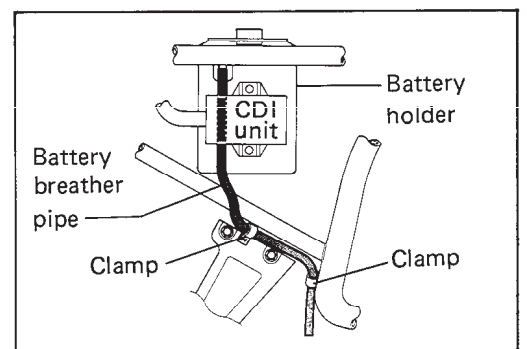
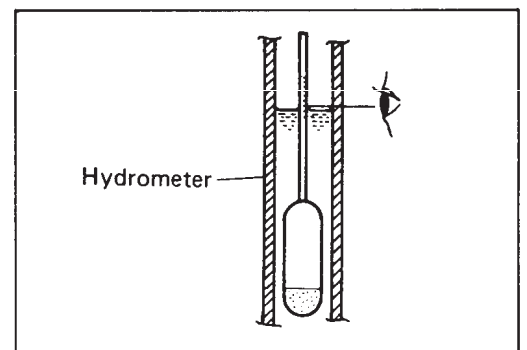
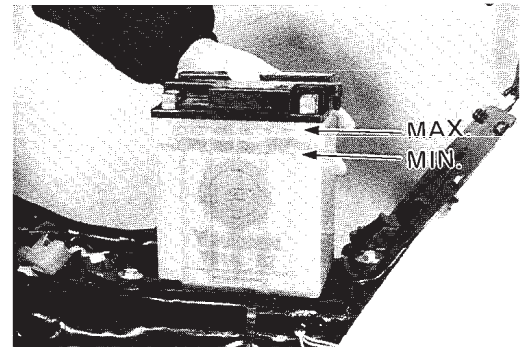
#### 09900-28403: Hydrometer

Standard specific gravity: 1.28 at 20° C (68° F)

An S.G. reading of 1.22 (at 20° C) or under means that the battery needs recharging. Remove the battery from the motorcycle and charge it with a battery charger.

#### CAUTION:

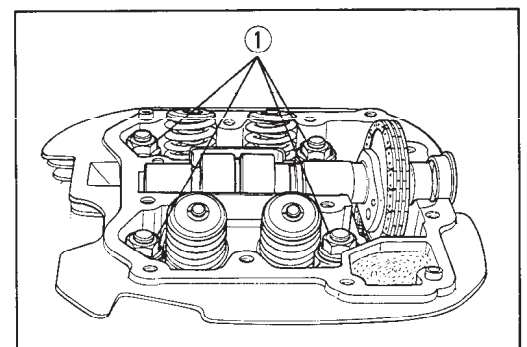
- \* When removing the battery from the motorcycle, be sure to disconnect the  $\ominus$  lead wire first.
  - \* Never charge a battery while still in the motorcycle as damage may result to the battery or regulator/rectifier.
  - \* Be careful not to bend, obstruct, or change the routing of the breather pipe from the battery, make certain that the breather pipe is attached to the battery vent fitting and that the opposite end is always open.
  - \* When installing the battery lead wires, fix the  $\oplus$  lead first and  $\ominus$  lead last.
- Make sure that the breather pipe is tightly secured and undamaged, and is routed as shown in the figure.



### CYLINDER HEAD NUTS, EXHAUST PIPE BOLTS AND MUFFLER CONNECTIONS

Tighten Initial 1 000 km (600 miles) and  
Every 6 000 km (4 000 miles)

(Continued on next page.)



### CYLINDER HEAD

- Remove the frame covers, seat and fuel tank. (Refer to page 3-3.)
- Disconnect the spark plug caps.
- Disconnect the de-comp. cable and breather hose from the cylinder head cover. (Refer to page 3-5.)
- Remove the upper side of engine mounting bolts and cylinder head cover. (Refer to pages 3-7, 11 and 12.)
- First loosen and retighten the four 10-mm nuts ①, one 8-mm bolt ② and two 8-mm nuts ③ to the specified torque with a torque wrench sequentially in diagonally with the engine cold.

#### Tightening torque

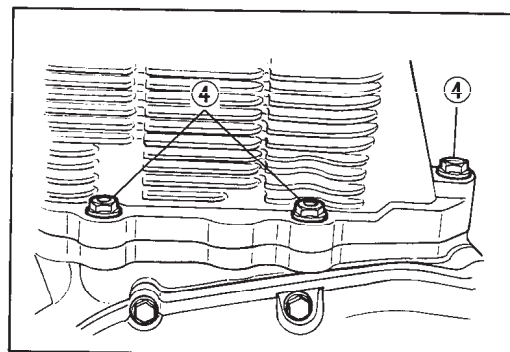
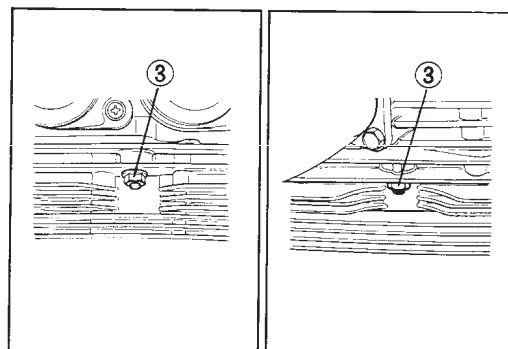
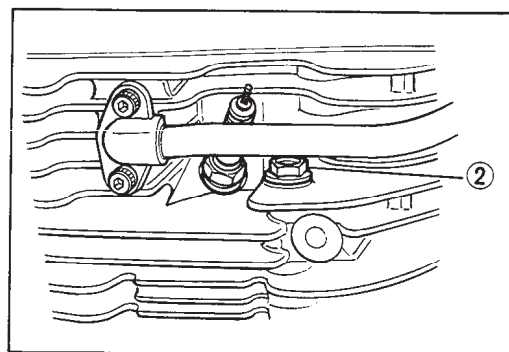
10 mm Diam. ① : 35 – 40 N·m  
(3.5 – 4.0 kg·m, 25.5 – 29.0 lb·ft)

8 mm Diam. : 18 – 22 N·m  
② and ③ (1.8 – 2.2 kg·m, 13.0 – 16.0 lb·ft)

- After firmly tightening the cylinder head nuts and bolt, tighten the two 6-mm nuts and one 6-mm bolt (indicated as ④) to the torque value below:

Tightening torque ④ : 8 – 12 N·m  
(0.8 – 1.2 kg·m, 6.0 – 8.5 lb·ft)

- When installing the cylinder head cover, apply SUZUKI Bond No. 1216 to the mating surface. (Refer to page 3-60.)



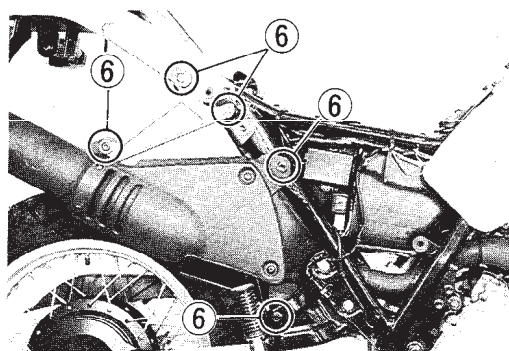
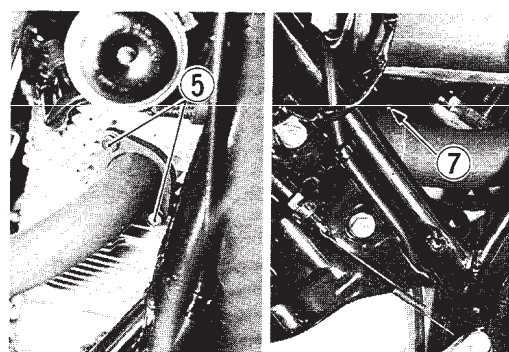
### EXHAUST PIPE AND MUFFLER

- Tighten the exhaust pipe bolts, muffler connection bolt and muffler mounting bolts to the specified torque with a torque wrench.

#### Tightening torque

Exhaust pipe bolts ⑤ and  
muffler mounting bolts ⑥ : 23 – 28 N·m  
(2.3 – 2.8 kg·m, 16.5 – 20.0 lb·ft)

Muffler connection bolt ⑦ : 12 – 18 N·m  
(1.2 – 1.8 kg·m, 8.5 – 13.5 lb·ft)



### AIR CLEANER ELEMENT

Clean Every 3 000 km (2 000 miles) and  
Replace Every 12 000 km (7 500 miles)

If the air cleaner is clogged with dust, intake resistance will be increased with a resultant decrease in power output and an increase in fuel consumption.

Check and clean the element in the following manner:

- Remove the frame covers, seat and fuel tank. (Refer to page 3-3.)
- Remove the air cleaner element by removing screws ①.
- Carefully use air hose to blow the dust from the cleaner element.

#### CAUTION:

Always use air pressure on the outside of the cleaner element. If air pressure is used on the inside, dirt will be forced into the pores of the cleaner element thus restricting air flow through the cleaner element.

- Reinstall the cleaned or new cleaner element in the reverse order of removal.

#### CAUTION:

If driving under dusty conditions, clean the air cleaner element more frequently. The surest way to accelerate engine wear is to use the engine without the element or to use a ruptured element. Make sure that the air cleaner is in good condition at all times. Life the engine depends largely on this component!

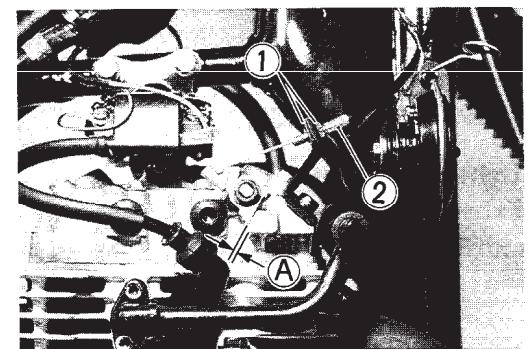
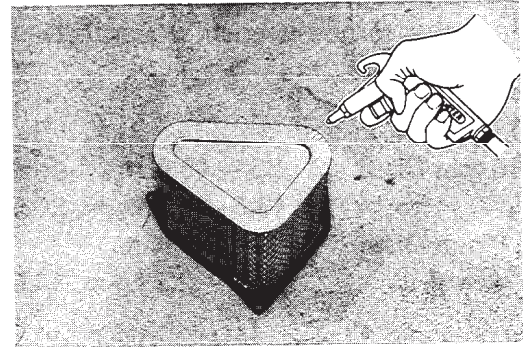
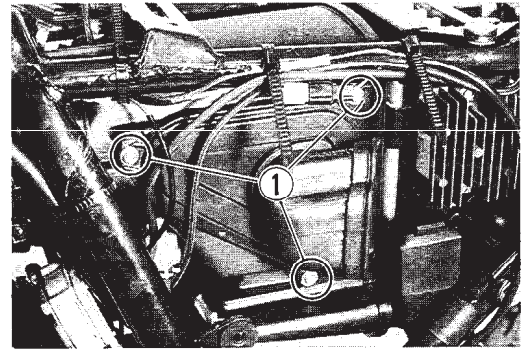
### DE-COMPRESSION LEVER

Inspect Initial 1 000 km (600 miles) and  
Every 6 000 km (4 000 miles)

Incorrect adjustment of the lever clearance may result in starting difficulties or engine damage. Check the lever clearance and if necessary, adjust as follows:

- Remove the frame covers, seat and fuel tank. (Refer to page 3-3.)
- Loosen both lock nuts ① on the cable adjuster ②.
- Locate the adjuster ② to provide the specified clearance ③.
- Tighten both lock nuts ①.

De-compression lever clearance ③ : 1 – 2 mm  
(0.04 – 0.08 in)



## VALVE CLEARANCE

Inspect Initial 1 000 km (600 miles) and  
Every 6 000 km (4 000 miles)

Excessive valve clearance results in valve noise and insufficient valve clearance results in valve damage and reduced power. At the distances indicated above, check and adjust the clearance to the specification.

The procedure for adjusting the valve clearance is as follows:

**NOTE:**

*Valve clearance is to be checked when the engine is cold. Both intake and exhaust valves must be checked and adjusted when the piston is at Top-Dead-Center (TDC) on the compression stroke.*

- Remove the seat, frame covers and fuel tank. (Refer to page 3-3.)
- Remove the spark plug and valve inspection caps, intake and exhaust. (Refer to page 3-11.)

**NOTE:**

*Before adjusting the valve clearance, check or adjust the de-compression lever clearance.*

**Valve clearance specifications**

IN. and EX.: 0.05 – 0.10 mm (0.002 – 0.004 in)

- Remove the cam timing inspection cap on the magneto cover.
- Turn the crankshaft counterclockwise with the box wrench to set the piston at T.D.C. on the compression stroke. (Turn the crankshaft until the engraved line on the magneto rotor is aligned with the slit of hole on the magneto cover.)
- Insert the thickness gauge into the clearance between the valve stem end and the adjusting screw on the rocker arm.

**09900-20803: Thickness gauge**

- If clearance is off the specification, bring it into the specified range by using screwdriver.
- Securely tighten the lock nut after adjustment is completed.

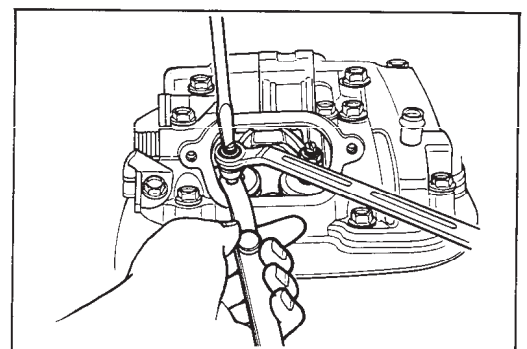
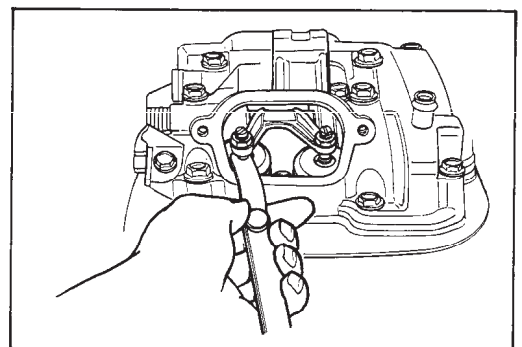
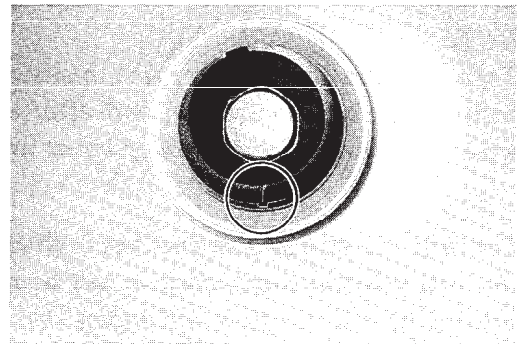
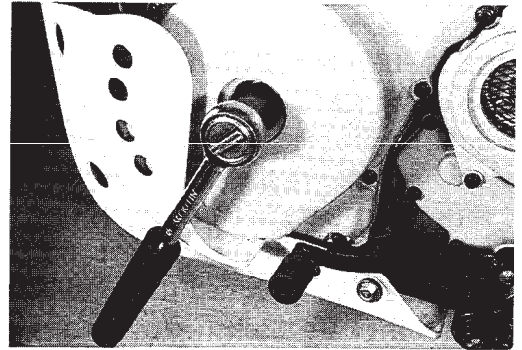
**CAUTION:**

**Both right and left valve clearances, should be as closely set as possible.**

**NOTE:**

*Make sure to re-check the de-compression lever play, after valve clearance adjustment is made.*

- Reinstall the spark plug, valve inspection caps, cam timing inspection cap.





## SPARK PLUGS

Inspect 6 000 km, 18 000 km (4 000 miles, 11 000 miles) and Replace Every 12 000 km (7 500 miles)

The plug gap is adjusted to 0.8 – 0.9 mm (0.03 – 0.04 in). The gap is correctly adjusted by using a thickness gauge. When carbon is deposited on the spark plug, remove the carbon with a tool with a pointed end. If the electrodes are extremely worn or burnt, replace the plug. Also replace the plug if it has a broken insulator, damaged thread, etc.

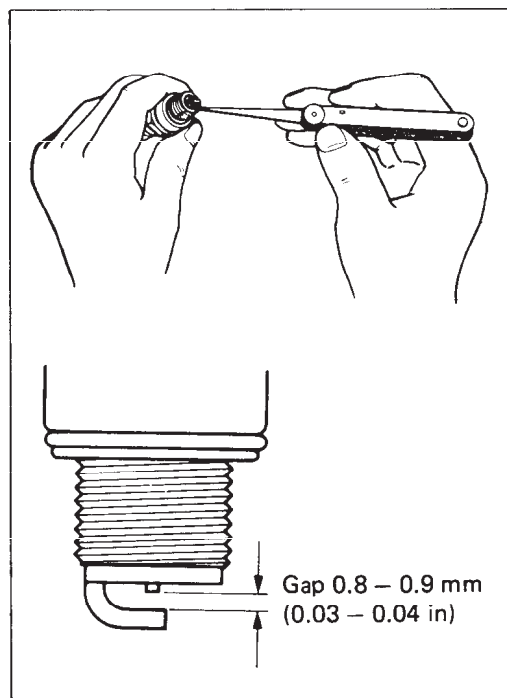
NGK DP9EA-9 or DPR9EA-9 as listed in the table should be used as the standard plug. However, the heat range of the plug should be selected to meet the requirements of speed, actual load, fuel, etc. If the plugs need to be replaced, it is recommended that the standard plugs listed in the table be selected. Remove the plugs and inspect the insulators. Proper heat range would be indicated if all insulators were light brown in color. If they are blackened by carbon, they should be replaced by a hot type NGK DP8EA-9 or DPR8EA-9.

**NOTE:**

To check the spark plugs, first make sure that the fuel tank contains unleaded gasoline, and after a test ride if the plugs are either sooty with carbon or burnt white, replace them.

**NOTE:**

Confirm the thread size and reach when replacing the plug. If the reach is too short, carbon will be deposited on the screw portion of the plug hole and engine damage may result.



NGK	REMARKS
DP8EA-9	If the standard plug is apt to get wet, replace it with this hot type plug.
DP9EA-9	Standard

**“R” type spark plug**

NGK	REMARKS
DPR8EA-9	If the standard plug is apt to get wet, replace it with this hot type plug.
DPR9EA-9	Standard

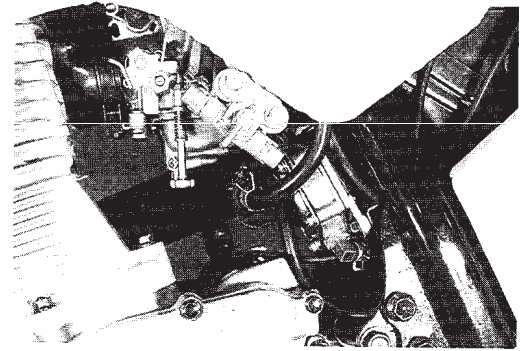
**NOTE:**

“R” type spark plug is installed for some specifications. “R” type spark plug has a resistor located at the center electrode to prevent radio noise.

## FUEL LINE

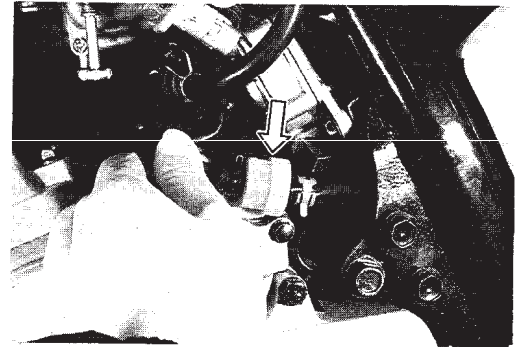
Inspect Initial 1 000 km (600 miles) and  
Every 6 000 km (4 000 miles)  
Replace Every 4 years

Inspect the fuel lines for damage and fuel leakage.  
If any defects are found, the fuel lines must be replaced.



## FUEL FILTER

Inspect Every 3 months and  
Replace Every 6 000 km (4 000 miles)



## ENGINE OIL AND OIL FILTER

Replace (Change)  
Initial 1 000 km (600 miles) and  
Every 6 000 km (4 000 miles)

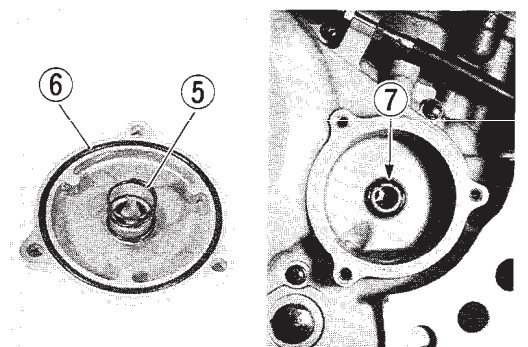
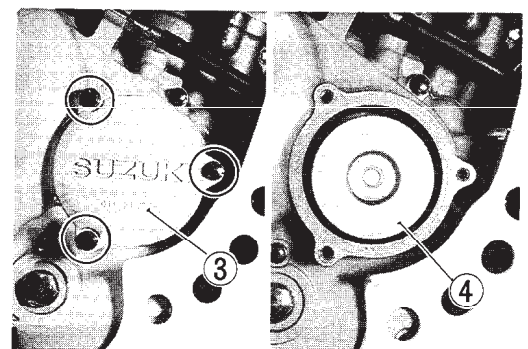
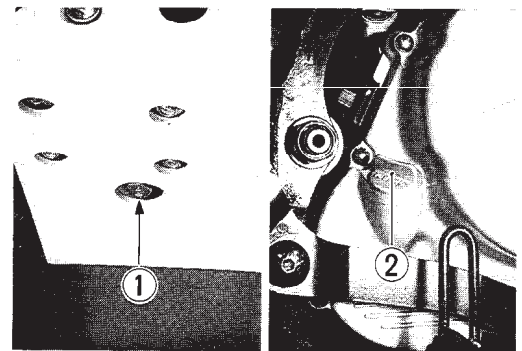
The oil should be changed while the engine is hot. Oil filter replacement at the above intervals should be done together with engine oil change.

- Keep the motorcycle upright, supported by jack.
- Place an oil pan below the engine and remove the engine oil drain plug ① and oil filler cap ② to drain engine oil.
- Remove the oil filter cap ③ by removing the three bolts.
- Pull out the old filter ④ and install the new one.
- Replace the filter cap ③ and tighten the bolts securely.

### NOTE:

*Before installing the oil filter and filter cap, check to be sure that the spring ⑤ and new O-rings ( ⑥ and ⑦ ) are installed correctly.*

- Tighten the oil drain plug ① securely, and add fresh oil through the oil filler. The engine will hold about 2 700 ml of oil.  
Use API classification of SE or SF oil with SAE 10W/40 viscosity.
- Install the filler cap ②.
- Start up the engine and allow it to run for several minutes at idling speed. (Continued on next page.)





## 2-9 PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

- Turn off the engine and wait about five minutes, then check the oil level by removing the filler cap ②. If the level is below mark "F", add oil to that level.

### NECESSARY AMOUNT OF ENGINE OIL

Oil change: 2 600 ml (2.7 US qt)

Filter change: 2 700 ml (2.8 US qt)

Overhaul engine: 3 400 ml (3.6 US qt)

## CARBURETOR

### IDLE RPM (Idling adjustment)

Inspect Initial 1 000 km (600 miles) and  
Every 6 000 km (4 000 miles)

#### NOTE:

*Make this adjustment when the engine is hot.*

- Start up the engine and set its speed at anywhere between 1 200 and 1 400 r/min by turning the throttle stop screw ①.
- Turn in or out the pilot screws (right and left carburetors) within 1/2 turn from the standard setting, and set it when the engine speed is at the highest possible level.
- After this adjustment, recheck the idling speed and adjust to between 1 200 and 1 400 r/min with throttle stop screw if necessary.

### THROTTLE CABLE PLAY

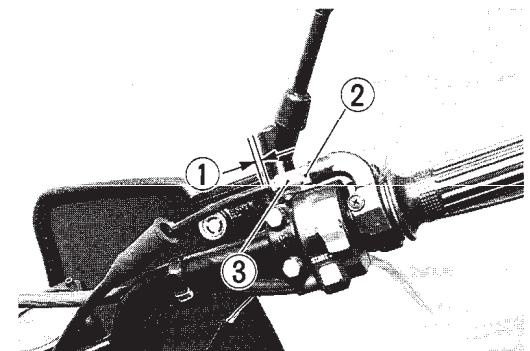
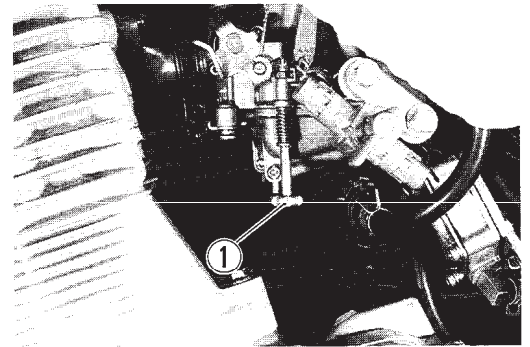
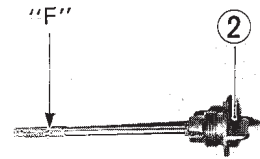
The throttle cable should be adjusted to have a play ① of 0.5 – 1.0 mm (0.02 – 0.04 in).

If the adjustment is necessary, adjust the play in the following way:

- Loosen the lock nut ② and turn the adjuster ③ in or out to obtain the correct play ① 0.5 – 1.0 mm (0.02 – 0.04 in).
- After adjusting the play, tighten the lock nut ②.

#### WARNING:

After the adjustment is completed, check that handlebars movement does not raise the engine idle speed and that the throttle grip returns smoothly and automatically.



## BALANCER CHAIN

Inspect Every 12 000 km (7 500 miles)

The balancer chain is maintained at the proper tension by a manually adjusted tension adjuster. To prevent chain noise, the tension adjuster must be adjusted at the intervals listed above. The procedure for adjusting the balancer chain tension adjuster is as follows:

- Drain engine oil.
- Remove the engine under guard.
- Remove the magneto cover.
- Loosen the lock nut ① and stopper bolt ②, and then loosen on the chain tension adjuster allen bolts ③. This will allow a spring to pull the chain tension adjuster, taking up any slack that may have existed.
- Tighten the allen bolts ③ to the specified torque, and then tighten the stopper bolt ② and lock nut ①.

### NOTE:

When adjusting the balancer chain tension adjuster, change the oil at the same time.

### CAUTION:

To prevent oil leakage, do not use the old magneto cover gasket.

### Tightening torque

Allen bolt ③: 15 – 20 N·m  
(1.5 – 2.0 kg·m, 11.0 – 14.5 lb·ft)

## CLUTCH

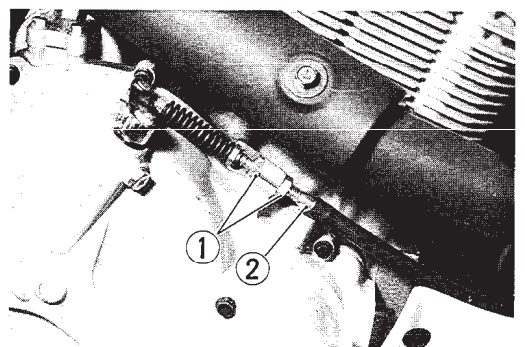
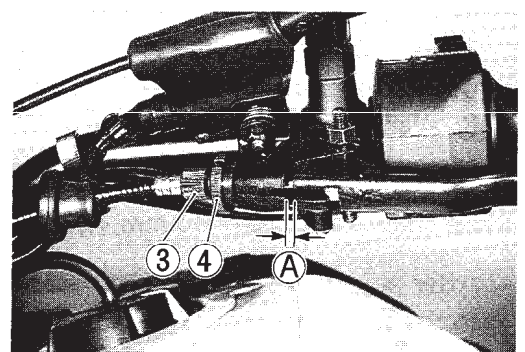
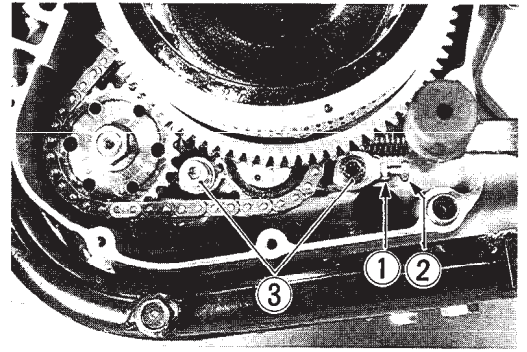
Inspect Initial 1 000 km (600 miles) and  
Every 6 000 km (4 000 miles)

- Remove the left knuckle guard.
- Clutch play **A** should be 2 – 3 mm as measured at the clutch lever holder before the clutch begins to disengage. If the play in the clutch is incorrect, adjust it in the following way:
- Loosen the clutch cable adjuster lock nuts ① and slide the clutch cable adjuster ② left or right to acquire the specified play.
  - Tighten the lock nuts while holding the adjuster in position.

Clutch cable play **A**: 2 – 3 mm (0.08 – 0.12 in)

### NOTE:

Minor adjustment can be made by the adjuster ③ after loosening the lock nut ④. At the same intervals, lubricate the clutch cable with motor oil.



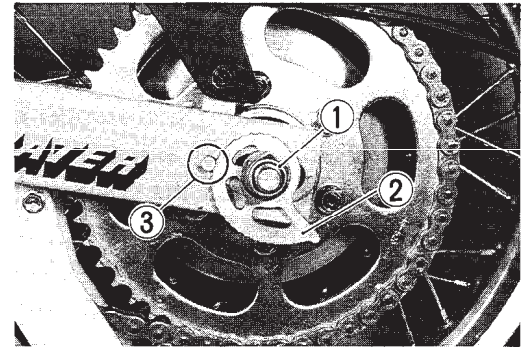
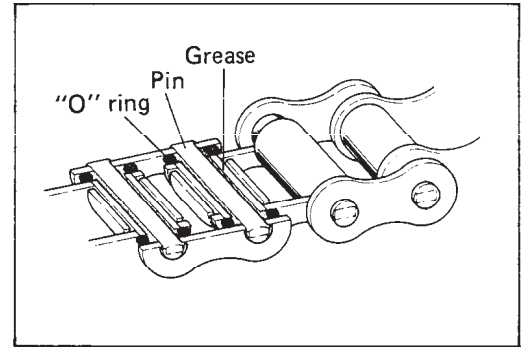
## DRIVE CHAIN

Inspect Initial 1 000 km (600 miles) and  
Every 6 000 km (4 000 miles)  
Clean and Lubricate Every 1 000 km (600 miles)

Visually inspect the drive chain for the listed below possible defects. (Lift the rear wheel and place a jack or block under the engine, and turn the rear wheel slowly by hand with the transmission in NEUTRAL.)

- \* Loose pins
- \* Damaged rollers
- \* Dry or rusted links
- \* Kinked or binding links
- \* Excessive wear
- \* Missing O-rings

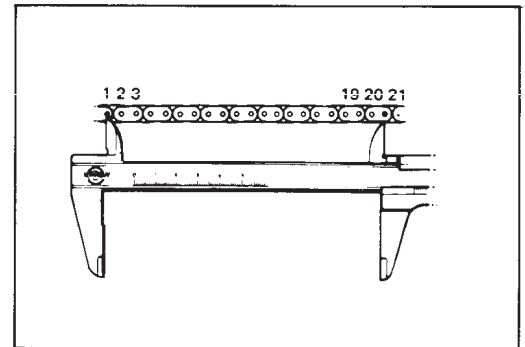
If any defects are found, the drive chain must be replaced.



### CHECKING

- Loosen the axle nut ①.
- Tension the drive chain fully by turning the right and left chain adjusters ②.
- Count out 21 pins (20 pitches) on the chain and measure the distance between the two points. If the distance exceeds following limit, the chain must be replaced.

**Service Limit: 319.4 mm (12.57 in)**

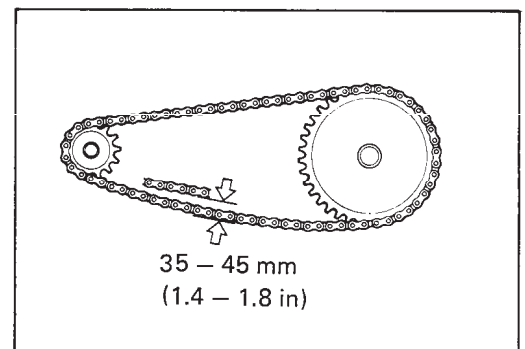


### ADJUSTING

- Turn both chain adjusters ② until the chain has 35 – 45 mm of slack at the middle between engine and rear sprockets. The number ③ on both chain adjusters must be at the same position to ensure that the front and rear wheels are correctly aligned. Lift the rear wheel and place a jack under the engine for accurate adjustment.

**Drive chain slack: 35 – 45 mm (1.4 – 1.8 in)**

- After adjusting the drive chain slack, tighten the axle nut ① to the specified torque.



### Tightening torque

Rear axle nut: 55 – 88 N·m  
(5.5 – 8.8 kg·m, 40.0 – 63.5 lb-ft)

(Continued on next page.)

### CLEANING AND LUBRICATING

- Wash the chain with kerosene. If the chain tends to rust faster, the intervals must be shortened.

#### CAUTION:

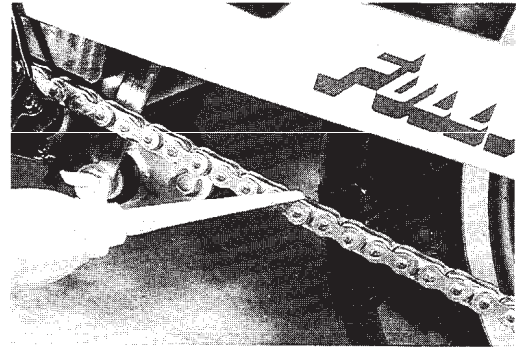
Do not use trichlene, gasoline or any similar fluids: These fluids have too great a dissolving power for this chain and, what is more important, can damage the "O" rings (or seals) confining the grease in the bush-to-pin clearance. Remember, high durability comes from the presence of grease in that clearance.

- After washing and drying the chain, oil it with a heavy-weight motor oil.

#### CAUTION:

Do not use any oil sold commercially as "drive chain oil". Such oil can damage the "O" rings (or seals).

The standard drive chain is DAIDO D.I.D.520 VL-2. SUZUKI recommends that the above-mentioned standard drive chain be used for the replacement.



### BRAKES

Inspect Initial 1 000 km (600 miles) and  
Every 6 000 km (4 000 miles)  
Replace hose Every 4 years  
Change fluid Every 2 years

#### FRONT BRAKE

##### Brake fluid level

- Support the motorcycle by jack or block, and place the handlebars straight.
- Check the brake fluid level by observing the lower limit mark on the brake fluid reservoir.
- When the level is below the lower limit mark, replenish with brake fluid that meets the following specification.

Specification and classification: SAE J1703, DOT3 or DOT4

#### WARNING:

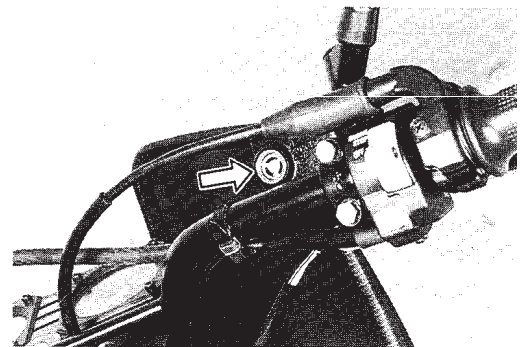
The brake system of this motorcycle is filled with a glycol-based brake fluid. Do not use or mix different types of fluid such as silicone-based and petroleum-based. Do not use any brake fluid taken from old, used or unsealed containers. Never re-use brake fluid left over from the last servicing or stored for long periods.

#### WARNING

Brake fluid, if it leaks, will interfere with safe running and immediately discolor painted surfaces.

Check the brake hose for cracks and hose joints for oil leakage before riding.

(Continued on next page.)





### Brake pads

The extent of brake pad wear can be checked by observing the limit line ① marked on the pad. When the wear exceeds the limit line, replace the pads with new ones. (see page 6-9.)

### Bleeding air from the brake fluid circuit

Air trapped in the fluid circuit acts like a cushion to absorb a large proportion of the pressure developed by the master cylinder and thus interferes with the full braking performance of the brake caliper. The presence of air is indicated by "sponginess" of the brake lever and also by lack of braking force. Considering the danger to which such trapped air exposes the machine and rider, it is essential that, after remounting the brake and restoring the brake system to the normal condition, the brake fluid circuit be purged of air in the following manner:

- Fill up the master cylinder reservoir to the upper end of the inspection window. Replace the reservoir cap to prevent entry of dirt.
- Attach a pipe to the caliper bleeder valve, and insert the free end of the pipe into a receptacle.
- Squeeze and release the brake lever several times in rapid succession, and squeeze the lever fully without releasing it. Loosen the bleeder valve by turning it a quarter of a turn so that the brake fluid runs into the receptacle; this will remove the tension of the brake lever causing it to touch the handlebars grip. Then, close the valve, pump and squeeze the lever, and open the valve. Repeat this process until the fluid flowing into the receptacle no longer contains air bubbles.
- Close the bleeder valve, and disconnect the pipe. Fill the reservoir to the upper line in inspection window.

### Bleeder valve

Tightening torque: 6 – 9 N·m

(0.6 – 0.9 kg·m, 4.5 – 6.5 lb·ft)

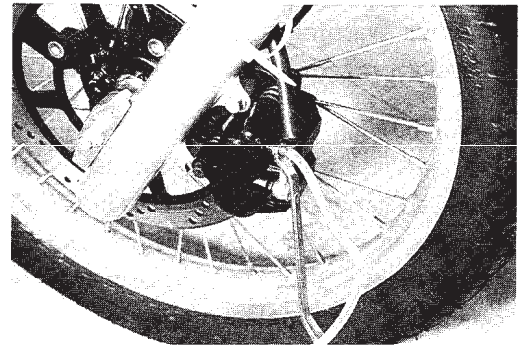
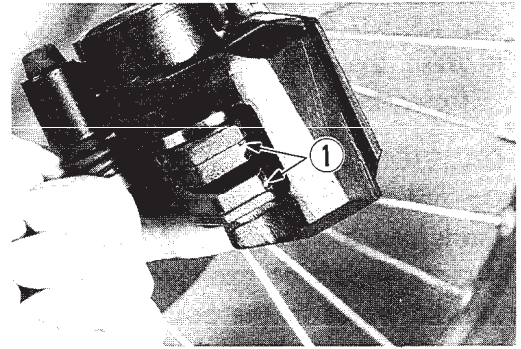
### NOTE

*Replenish the brake fluid reservoir as necessary while bleeding the brake system.*

*Make sure that there is always some fluid visible in the reservoir.*

### CAUTION:

**Handle brake fluid with care: the fluid reacts chemically with paint, plastics, rubber materials, etc.**



## REAR BRAKE

### Brake pedal height and free travel

Bring the brake pedal to a position about 10 mm (A) below the footrest as shown in photo.

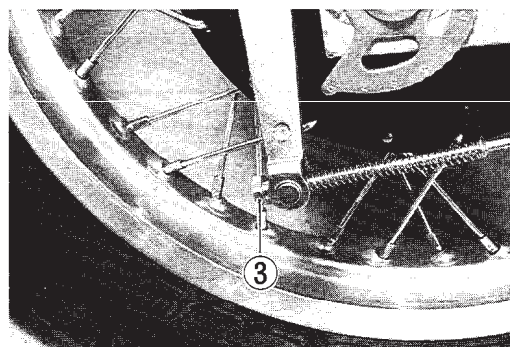
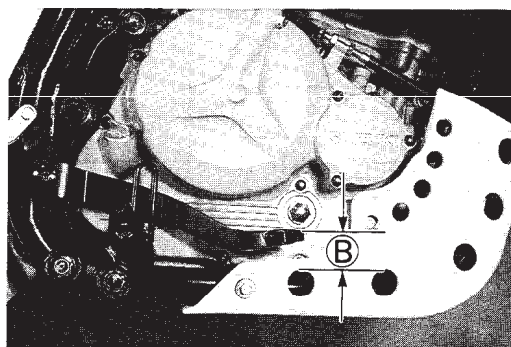
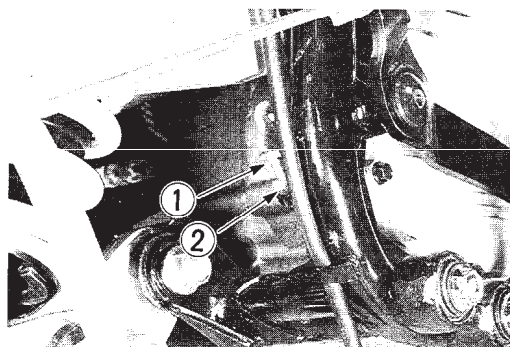
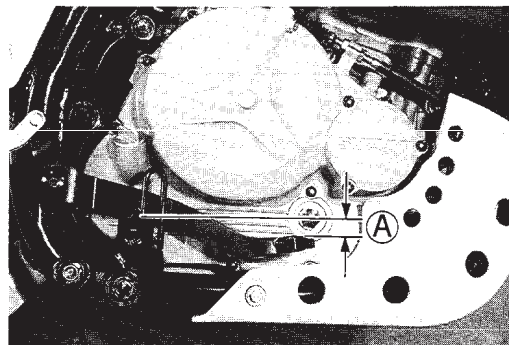
This is effected by turning the adjusting bolt (1).

Be sure to tighten the lock nut (2) securely after setting the bolt.

By repositioning the adjusting nut (3) on the brake rod, set the pedal play to between 20 and 30 mm (B) as measured at pedal tip.

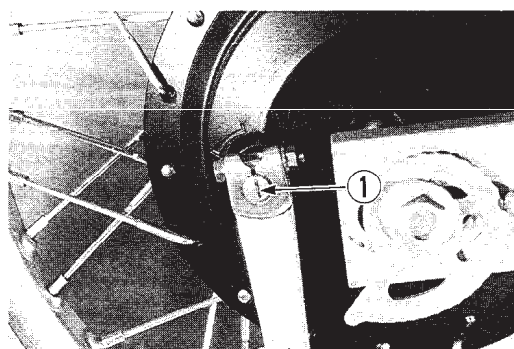
Brake pedal height (A) : 10 mm (0.4 in)

Brake pedal free travel (B) : 20 – 30 mm (0.8 – 1.2 in)



### Brake shoe wear

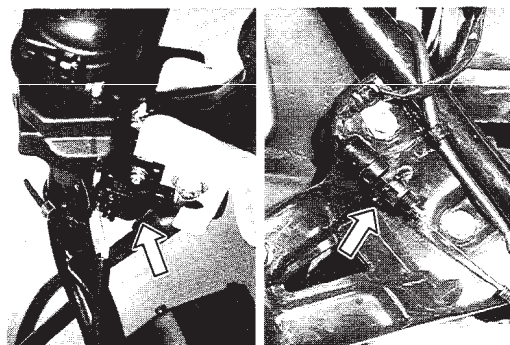
This motorcycle is equipped with brake lining wear limit indicator on the rear brake panel as shown in Fig. At the condition of normal lining wear, the extension line of the index mark (1) on the brake cam shaft should be within the range embossed on the brake panel with brake on.



The extension line of the index mark is within the range.

## BRAKE LIGHT SWITCHES

Adjust both brake light switches, front and rear, so that the brake light will come on just before a pressure is felt when the brake lever is squeezed, or the brake pedal is depressed.





## TIRES

Inspect Initial 1 000 km (600 miles) and  
Every 6 000 km (4 000 miles)

### TIRE TREAD CONDITION

Operating the motorcycle with excessively worn tires will decrease riding stability and consequently invite a dangerous situation. It is highly recommended to replace a tire when the remaining depth of tire tread reaches the following specification.

#### Tire tread depth limit

Front & Rear: 3.0 mm (0.12 in)

### TIRE PRESSURE

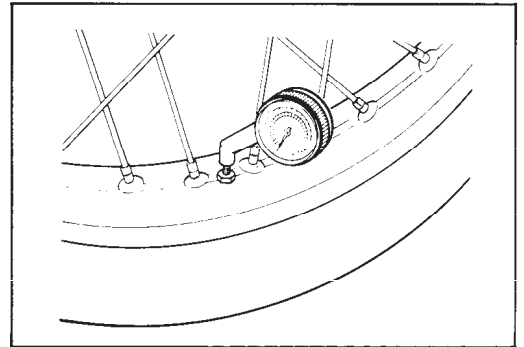
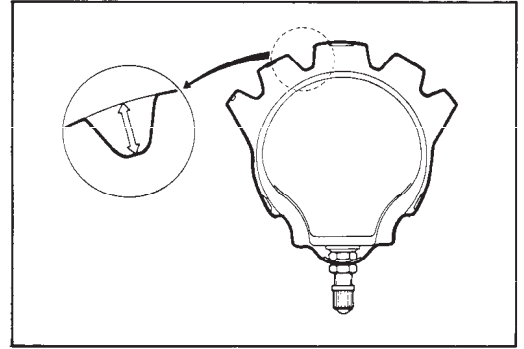
If the tire pressure is too high or too low, steering will be adversely affected and tire wear increased. Therefore, maintain the correct tire pressure for good roadability or shorter tire life will result.

Cold inflation tire pressure is as follows.

	FRONT			REAR		
	kPa	kg/cm <sup>2</sup>	psi	kPa	kg/cm <sup>2</sup>	psi
Solo riding	175	1.75	25	200	2.00	2.9
Dual riding	200	2.00	29	250	2.50	36

#### CAUTION:

The standard tire fitted on this motorcycle is 90/90-21 54S for front and 130/80-17 65S for rear. The use of tires other than the those specified may cause instability. It is highly recommended to use a SUZUKI Genuine Tire.

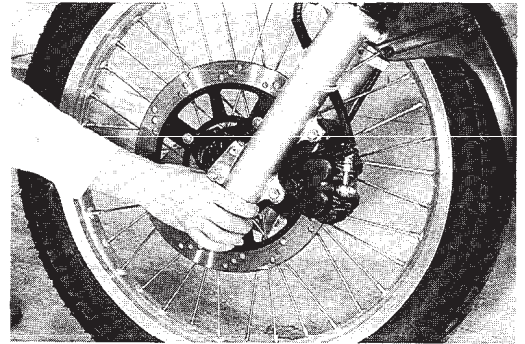


## STEERING

**Inspect Initial 1 000 km (600 miles) and  
Every 6 000 km (4 000 miles)**

Steering should be adjusted properly for smooth turning of handlebars and safe running. Overtight steering prevents smooth turning of the handlebars and too loose steering will cause the handlebars to vibrate.

Check that there is no play in the front fork assembly by supporting the motorcycle so that the front wheel is off the ground, with the wheel straight ahead, grasp the lower fork tubes near the axle and pull forward. If play is found, perform steering bearing adjustment as described in page 6-19 of this manual.



## FRONT FORKS

**Inspect Initial 1 000 km (600 miles) and  
Every 6 000 km (4 000 miles)**

Inspect the front forks for oil leakage, scoring or scratches on the outer surface of the inner tubes.

Replace any defective parts, if necessary.

## REAR SUSPENSION

**Inspect Initial 1 000 km (600 miles) and  
Every 6 000 km (4 000 miles)**

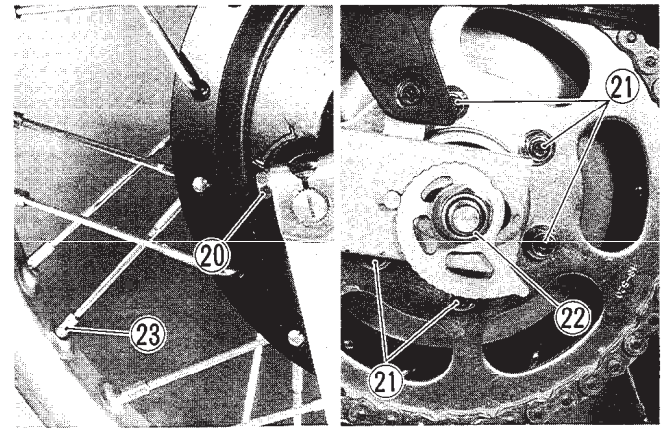
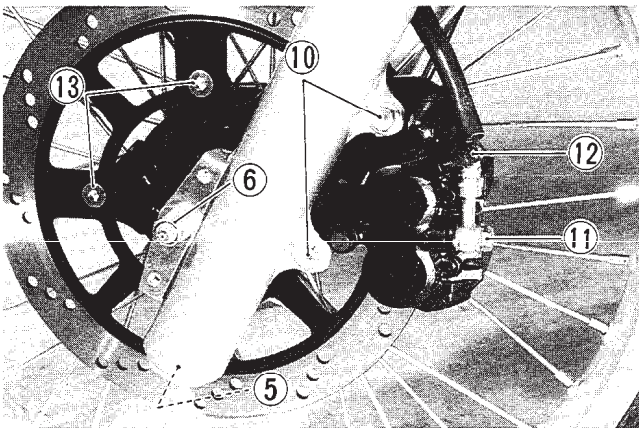
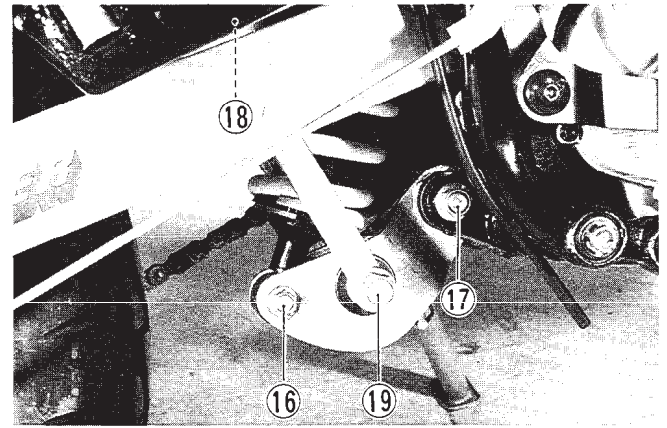
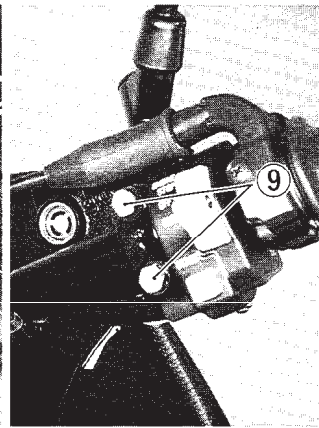
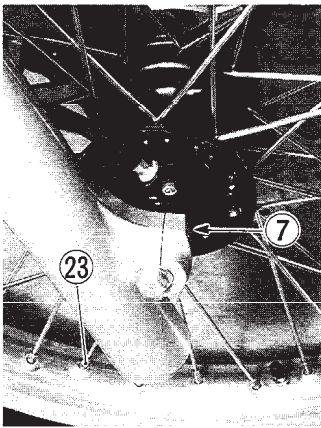
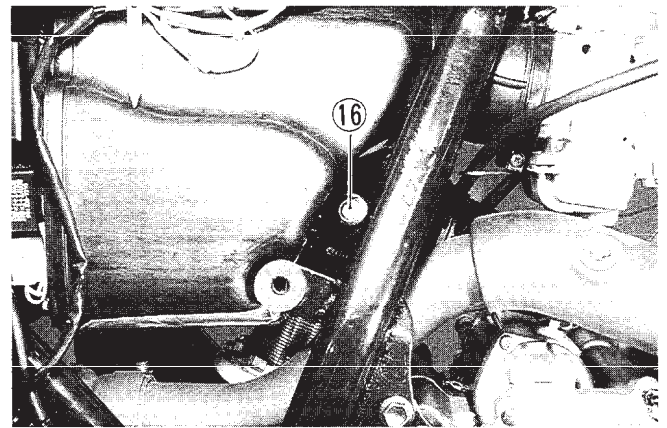
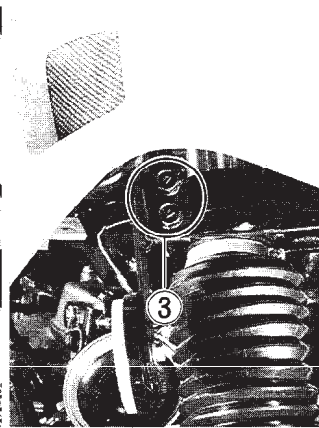
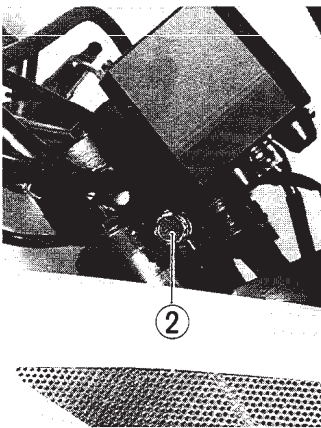
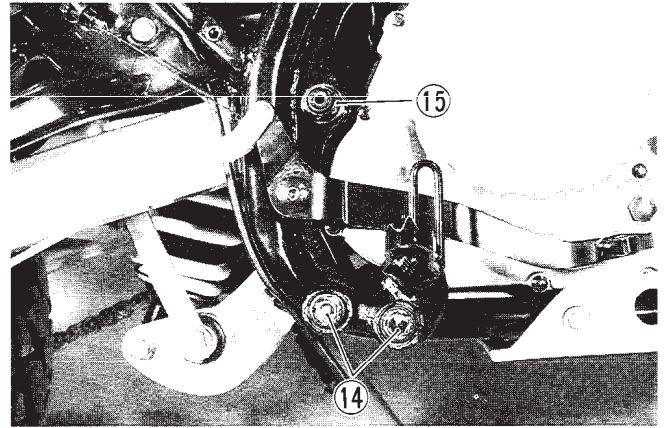
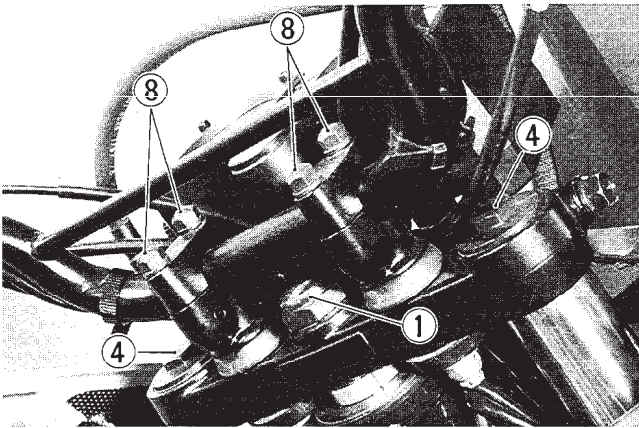
Inspect the shock absorber for oil leakage and check that there is no play in the swingarm assembly.

**CHASSIS BOLTS AND NUTS**

**Tighten Initial 1 000 km (600 miles) and  
Every 6 000 km (4 000 miles)**

The nuts and bolts listed below are important safety parts. They must be retightened when necessary to the specified torque with a torque wrench. (Refer to page 2-18 for the locations of the following nuts and bolts on the motorcycle.)

Item	N-m	kg-m	lb-ft
① Steering stem head nut	60 – 100	6.0 – 10.0	43.5 – 72.5
② Front fork upper clamp bolt	20 – 30	2.0 – 3.0	14.5 – 21.5
③ Front fork lower clamp bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
④ Front fork cap bolt	15 – 30	1.5 – 3.0	11.0 – 21.5
⑤ Front fork damper rod bolt	34 – 46	3.4 – 4.6	24.5 – 33.5
⑥ Front axle nut	40 – 58	4.0 – 5.8	29.0 – 42.0
⑦ Front axle pinch bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
⑧ Handlebar clamp bolt	12 – 20	1.2 – 2.0	8.5 – 14.5
⑨ Front brake master cylinder mounting bolt	5 – 8	0.5 – 0.8	3.5 – 6.0
⑩ Front brake caliper mounting bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
⑪ Brake hose union bolt	20 – 25	2.0 – 2.5	14.5 – 18.0
⑫ Air bleeder valve	6 – 9	0.6 – 0.9	4.5 – 6.5
⑬ Front disc mounting bolt	18 – 28	1.8 – 2.8	13.0 – 20.0
⑭ Front footrest bolt	50 – 70	5.0 – 7.0	36.0 – 50.5
⑮ Swingarm pivot nut	55 – 85	5.5 – 8.5	40.0 – 61.5
⑯ Shock absorber mounting nut (Upper & Lower)	40 – 60	4.0 – 6.0	29.0 – 43.5
⑰ Rear cushion lever mounting nut	60 – 100	6.0 – 10.0	43.5 – 72.5
⑱ Rear cushion rod nut (Upper)	100 – 120	10.0 – 12.0	72.5 – 87.0
⑲ Rear cushion rod nut (Lower)	80 – 120	8.0 – 12.0	58.0 – 87.0
⑳ Rear brake cam lever bolt	5 – 8	0.5 – 0.8	3.5 – 6.0
㉑ Rear sprocket mounting nut	50 – 70	5.0 – 7.0	36.0 – 50.5
㉒ Rear axle nut	55 – 88	5.5 – 8.8	40.0 – 63.5
㉓ Spoke nipple	4 – 5	0.4 – 0.5	3.0 – 3.5





# ENGINE

## CONTENTS

<b>COMPRESSION PRESSURE AND OIL PRESSURE</b> .....	<b>3- 1</b>
<b>ENGINE COMPONENTS REMOVABLE WITH ENGINE IN PLACE</b> .....	<b>3- 2</b>
<b>ENGINE REMOVAL AND REINSTALLATION</b> .....	<b>3- 3</b>
<b>ENGINE DISASSEMBLY</b> .....	<b>3-11</b>
<b>ENGINE COMPONENTS INSPECTION AND SERVICING</b> .....	<b>3-20</b>
<b>CYLINDER HEAD</b> .....	<b>3-20</b>
<b>ROCKER ARM</b> .....	<b>3-21</b>
<b>VALVE</b> .....	<b>3-23</b>
<b>CAMSHAFT</b> .....	<b>3-28</b>
<b>CAM DRIVE CHAIN AND BALANCER DRIVE CHAIN</b> ...	<b>3-30</b>
<b>CYLINDER</b> .....	<b>3-30</b>
<b>PISTON</b> .....	<b>3-30</b>
<b>PISTON RING</b> .....	<b>3-31</b>
<b>CONROD</b> .....	<b>3-33</b>
<b>CRANKSHAFT</b> .....	<b>3-33</b>
<b>CLUTCH</b> .....	<b>3-34</b>
<b>TRANSMISSION</b> .....	<b>3-37</b>
<b>CRANKCASE BEARINGS</b> .....	<b>3-41</b>
<b>ENGINE REASSEMBLY</b> .....	<b>3-42</b>
<b>OIL SEALS</b> .....	<b>3-42</b>
<b>CRANKSHAFT</b> .....	<b>3-43</b>
<b>BALANCERSHAFT</b> .....	<b>3-44</b>
<b>TRANSMISSION</b> .....	<b>3-45</b>
<b>GEARSHIFT</b> .....	<b>3-47</b>
<b>BALANCER</b> .....	<b>3-49</b>
<b>MAGNETO</b> .....	<b>3-51</b>
<b>OIL PUMP</b> .....	<b>3-52</b>
<b>CLUTCH</b> .....	<b>3-53</b>
<b>OIL FILTER</b> .....	<b>3-54</b>
<b>OIL SUMP FILTER</b> .....	<b>3-55</b>
<b>RING AND PISTON</b> .....	<b>3-55</b>
<b>CYLINDER AND CYLINDER HEAD</b> .....	<b>3-56</b>
<b>CAMSHAFT</b> .....	<b>3-59</b>
<b>CYLINDER HEAD COVER</b> .....	<b>3-60</b>
<b>CAM CHAIN TENSION ADJUSTER</b> .....	<b>3-61</b>

# COMPRESSION PRESSURE AND OIL PRESSURE

## COMPRESSION PRESSURE

**NOTE:**

Before testing the compression pressure of the engine, make sure that the cylinder head nuts and bolts are tightened to specified torque values and valves are properly adjusted.

Have the engine warmed up by idling before testing it.

When making this test, be sure that the battery is fully-charged condition.

- Remove the spark plug.
- Fit the compression gauge set to the plug hole, taking care to make the connection absolutely tight.
- Twist the throttle grip full-open position.
- Crank the engine several times with the starter motor, and read the highest gauge indication as the compression of the cylinder.

**09915-64510: Compression gauge**

**09915-63210: Adapter**

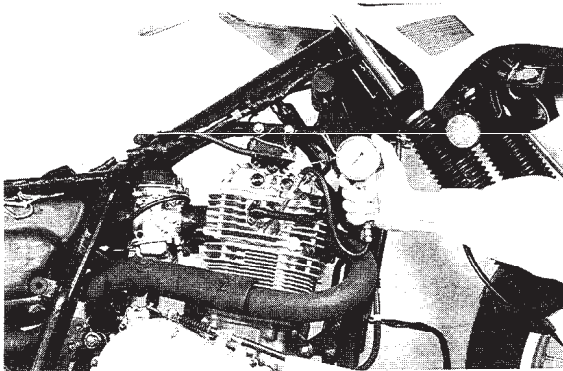
**Compression pressure**

Standard	Limit
1 200 – 1 600 kPa (12.0 – 16.0 kg/cm <sup>2</sup> ) (170 – 227 psi)	1 000 kPa (10 kg/cm <sup>2</sup> ) (142 psi)

A low compression pressure may indicate any of the following malfunctions:

- \* Excessively worn cylinder wall
- \* Worn piston or piston rings
- \* Piston rings stuck in the grooves
- \* Poor seating contact of valves
- \* Defective cylinder head gasket

When the compression pressure noted is down to or below the limit indicated above, the engine must be disassembled, inspected and repaired as required, with these five malconditions in mind.



## OIL PRESSURE

- Connect an electric tachometer to the engine.
- Install the oil pressure gauge in the position shown in the Fig.
- Warm up the engine as follows.  
Summer approx. 10 min. at 2 000 r/min.  
Winter approx. 20 min. at 2 000 r/min.
- After the warming up operation, increase the engine speed to 3 000 r/min, and read the oil pressure gauge.

**NOTE:**

Engine oil must be warmed up to 60° C (140° F) when checking the oil pressure.

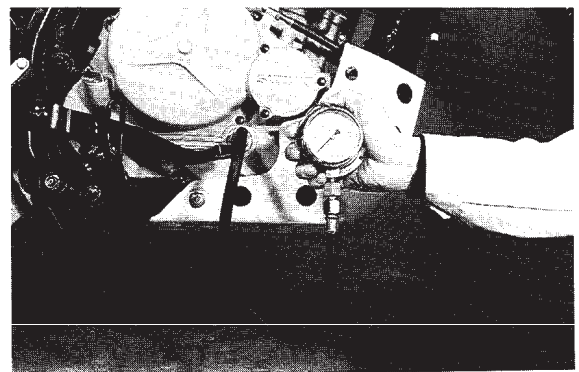
**09915-74510: Oil pressure gauge**

### Oil pressure

Above 80 kPa (0.8 kg/cm<sup>2</sup>, 11.4 psi),  
Below 200 kPa (2.0 kg/cm<sup>2</sup>, 28.4 psi)  
at 3 000 r/min. Oil temp. at 60° C (140° F)

If the oil pressure is lower or higher than the specifications, several causes may be considered.

- \* Low oil pressure is usually the result of a clogged oil filter, oil leakage from the oil passageway, damaged oil seal, a defective oil pump or a combination of these items.
- \* High oil pressure is usually caused by a engine oil which is too heavy a weight, a clogged oil passage, improper installation of the oil filter or a combination of these items.



## ENGINE COMPONENTS REMOVABLE WITH THE ENGINE IN PLACE

The parts listed below can be removed and reinstalled without removing the engine from the frame. Refer to the page listed in this section for removal instruction.

### ENGINE LEFT SIDE

	See page
Engine sprocket .....	3- 6
Magneto cover .....	3-11
Magneto coil .....	5- 7
Magneto rotor .....	3-14
Starter clutch .....	3-35
Balancer chain tension adjuster .....	3-15
Balancer drive and driven sprockets .....	3-15
Gearshifter .....	3-16

### ENGINE CENTER

	See page
Starter motor .....	3-11
Cylinder head cover .....	3-11
Camshaft .....	3-12
Cam drive chain .....	3-14
Oil sump filter .....	3-18

### ENGINE RIGHT SIDE

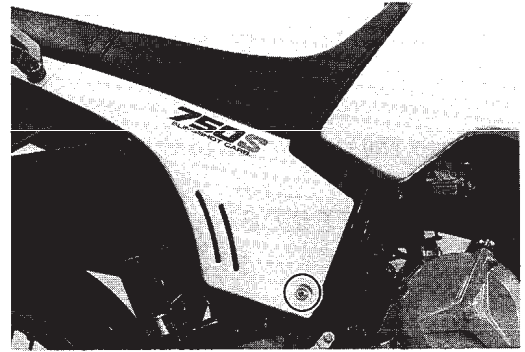
	See page
Oil filter .....	3-54
Clutch cover .....	3-17
Clutch assembly .....	3-53
Primary driven gear assembly .....	3-54
Primary drive gear .....	3-52
Oil pump driven gear .....	3-17
Neutral switch .....	3-18

## ENGINE REMOVAL AND REINSTALLATION

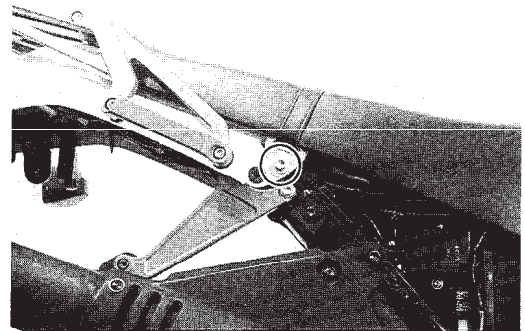
### ENGINE REMOVAL

Before taking the engine out of the frame, thoroughly clean the engine with a suitable cleaner. The procedure of engine removal is sequentially explained in the following steps.

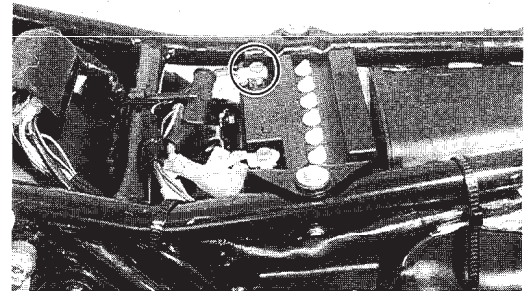
- Remove the left and right frame covers by removing the screws.



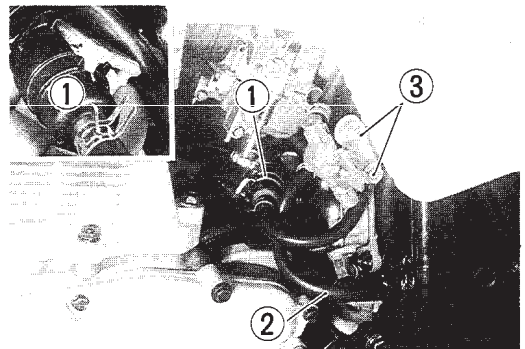
- Remove the seat by removing the bolts from both sides.



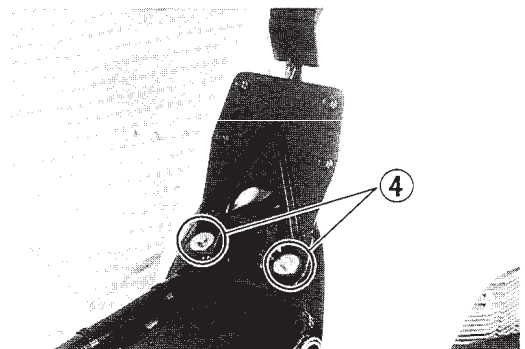
- Disconnect the battery  $\ominus$  lead wire from the battery terminal.



- Turn the fuel cock to "OFF" position.
- Disconnect the fuel hose connector ①.
- Disconnect the fuel outlet hose ② from the fuel filter.
- Remove the fuel cock mounting bolts ③.

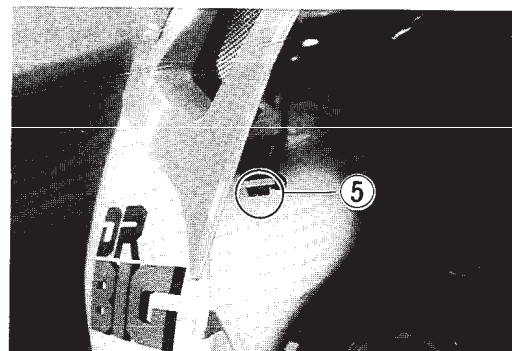


- Remove the fuel tank mounting bolts ④.

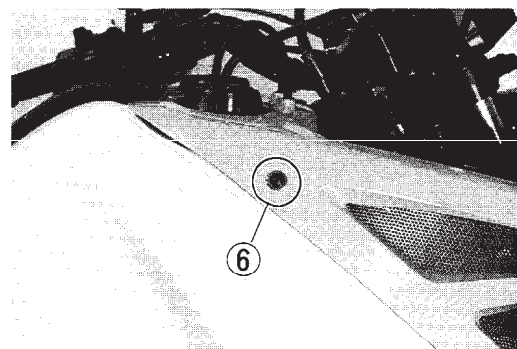




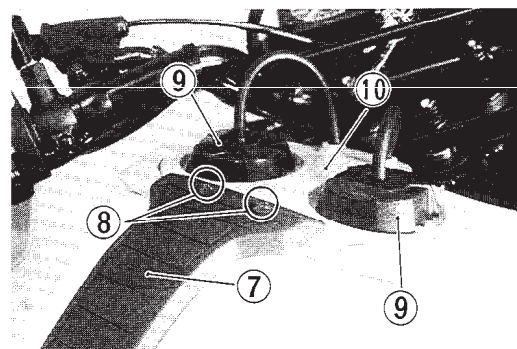
- Remove the fuel tank mounting bolts ⑤, left and right.



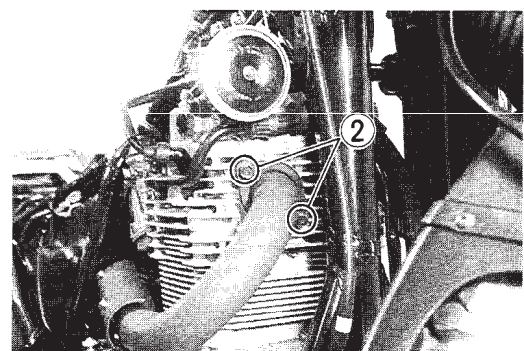
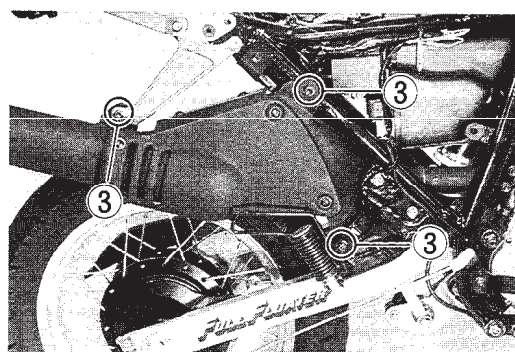
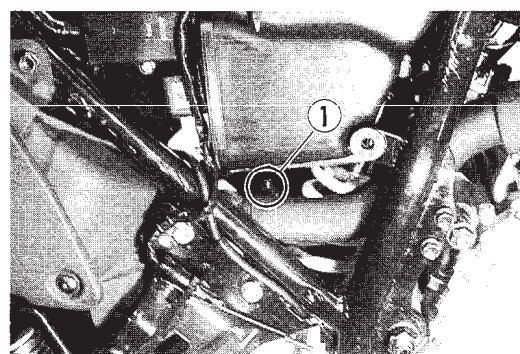
- Remove the cowling screws ⑥, left and right.



- Remove the fuel tank cover ⑦ by removing the screws ⑧.
- Remove the fuel tank caps ⑨.
- Remove the cowling ⑩ by disconnecting the fasteners.
- Remove the fuel tank backward.

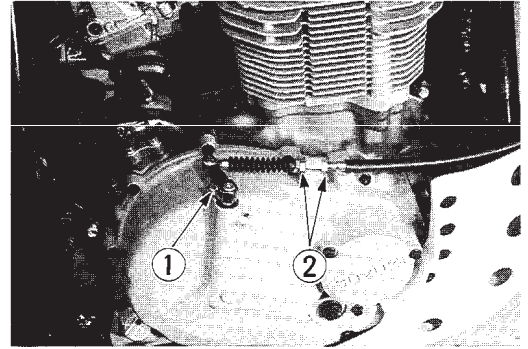


- Loosen the muffler connection bolt ①.
- Remove the exhaust pipe bolts ② and muffler mounting bolts ③, then remove the muffler and exhaust pipe.

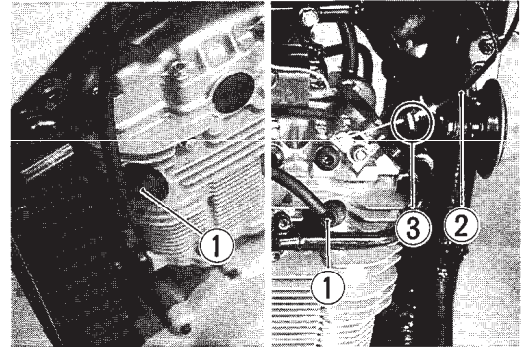


### 3-5 ENGINE

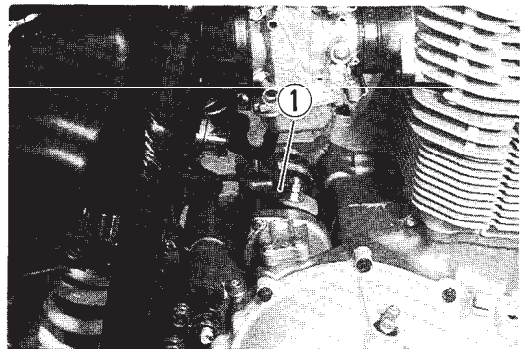
- Disconnect the clutch cable by removing the release arm bolt ① and loosening the adjuster lock nuts ②.



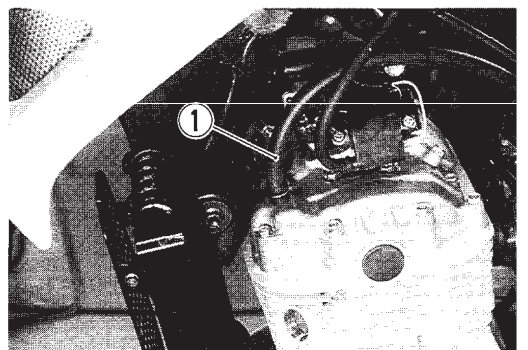
- Disconnect the spark plug caps ① from the spark plugs.
- Disconnect the de-comp. cable ② by loosening the adjuster lock nuts ③.



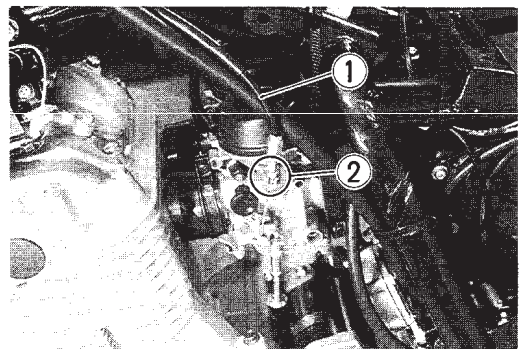
- Disconnect the starter motor lead wire ① from the starter motor terminal.



- Disconnect the breather hose ① from the cylinder head cover.

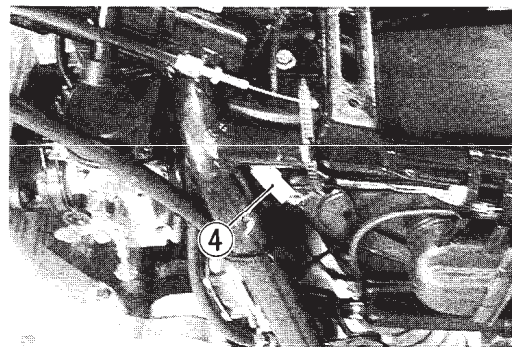
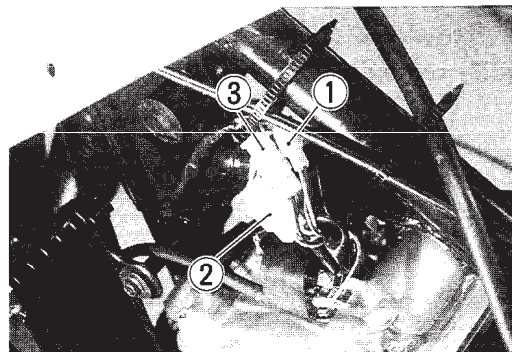


- Disconnect the throttle cable ① by loosening the adjuster lock nuts ②.

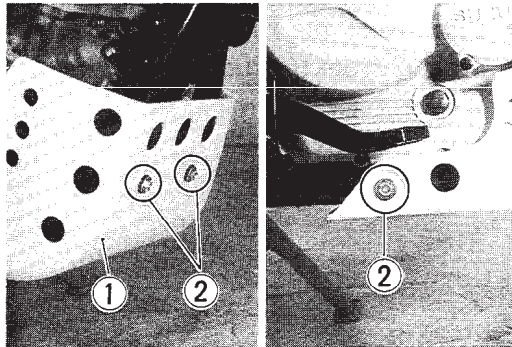


- Disconnect the various lead wires.

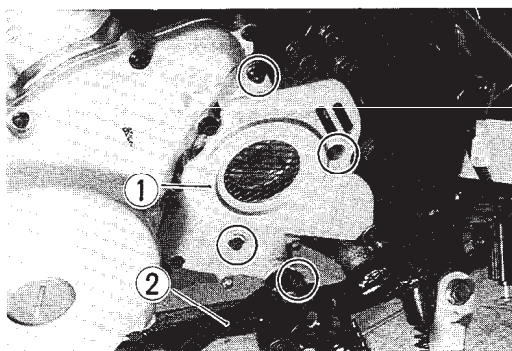
- ① For Pick-up coil
- ② For Generator coil
- ③ For Power source coil
- ④ For Neutral switch



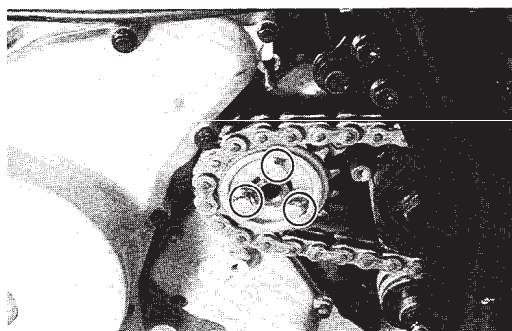
- Remove the engine under guard ① by removing the four bolts ②.



- Remove the engine sprocket cover ① by removing the nut and bolts.
- Remove the gearshift pedal ② by removing bolt.



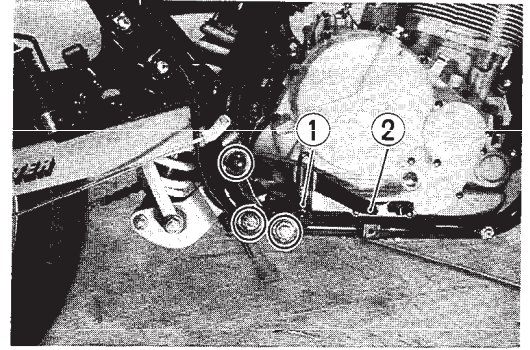
- Remove the engine sprocket mounting bolts while depressing the rear brake pedal.
- Loosen the axle nut and push the rear wheel forward and disengage the drive chain and engine sprocket from the driveshaft.



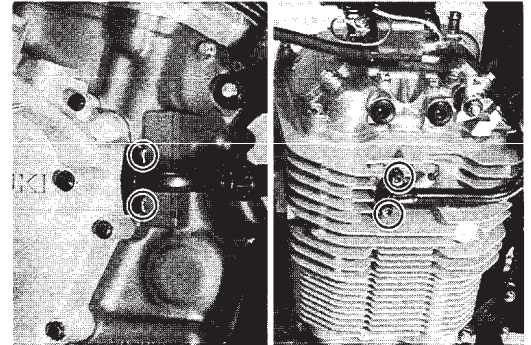


### 3-7 ENGINE

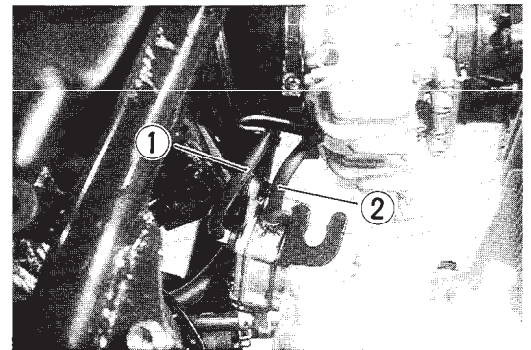
- Remove the right side footrest ① and rear brake pedal ② by removing the respective bolts.



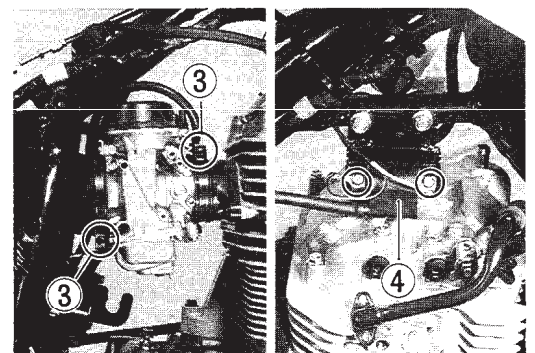
- Disconnect the two oil cooler hoses from the clutch cover and cylinder head by removing the respective securing bolts.



- Disconnect the fuel pump vacuum hose ① and fuel outlet hose ② from the fuel pump.



- Loosen each carburetor clamp screw ③.
- Remove the left and right carburetors.
- Remove the ignition coil ④ by removing the screws.

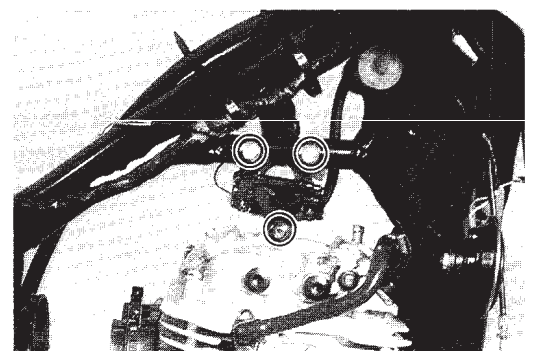


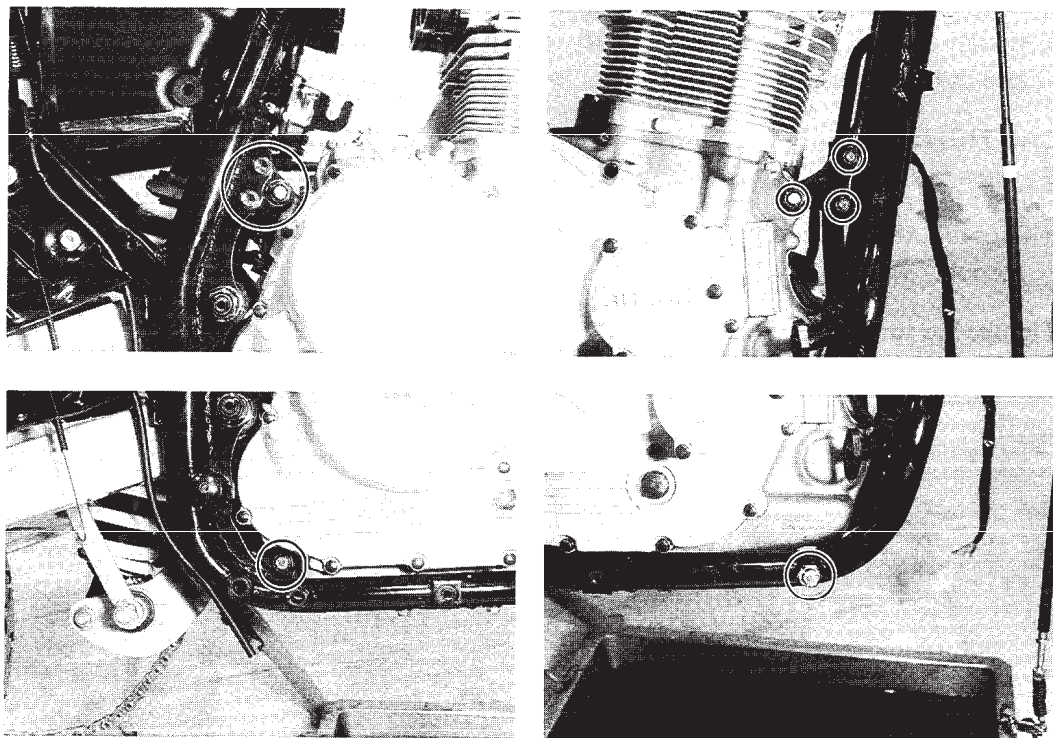
- Place an oil pan under the engine and remove the oil drain plug to drain out engine oil.
- Remove the engine mounting bolts, nuts, spacers and brackets.
- Use both hands, and lift the engine from the frame.

**NOTE:**

*The engine must be taken out from the right side.*

(Continued on next page.)

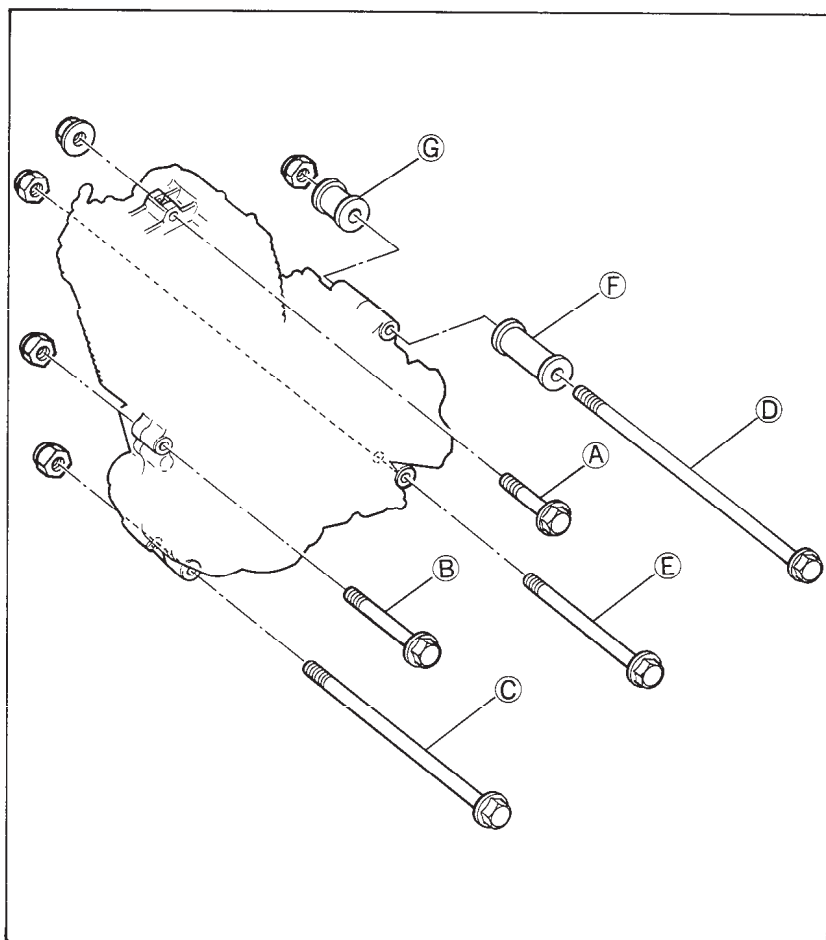




## ENGINE REINSTALLATION

Reinstall the engine in the reverse order of engine removal.

- Install the brackets, spacers, bolts and nuts properly.



### NOTE:

*Insert the engine mounting bolts from left side.*

*The engine mounting nuts are self-locking nut. Once the nut has been removed, it is no longer of any use. Be sure to use new nuts and tighten them to the specified torque.*

### TIGHTENING TORQUE

8 mm Diam. **A** :

37 – 45 N·m

(3.7 – 4.5 kg-m, 27.0 – 32.5 lb-ft)

10 mm Diam. **B**, **C**, **D** and **E** :

70 – 88 N·m

(7.0 – 8.8 kg-m, 50.5 – 63.5 lb-ft)

### LENGTH

**A** BOLT : 50 mm (2.0 in)

**B** BOLT : 70 mm (2.8 in)

**C** BOLT : 215 mm (8.5 in)

**D** BOLT : 235 mm (9.3 in)

**E** BOLT : 130 mm (5.1 in)

**F** SPACER: 60 mm (2.4 in)

**G** SPACER: 32 mm (1.3 in)

### 3-9 ENGINE

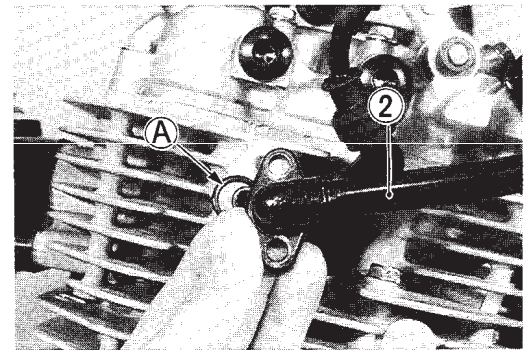
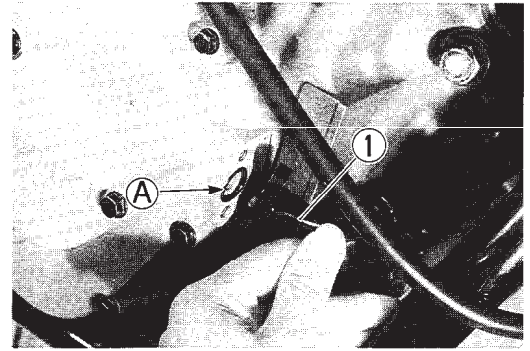
- Install the oil cooler hoses, ① and ②, to the clutch cover and cylinder head correctly.

**CAUTION:**

Replace the O-rings (A) with new ones to prevent oil leakage.

- Tighten the oil cooler hose securing bolts to the specified torque.

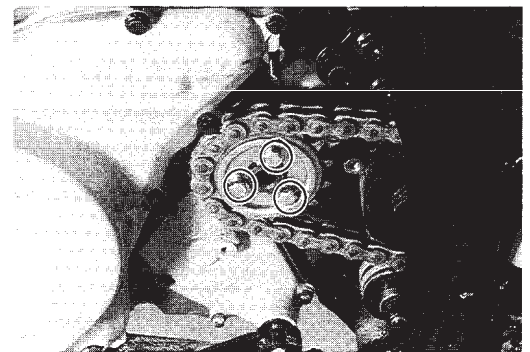
**Tightening torque: 8 – 12 N·m**  
(0.8 – 1.2 kg·m, 6.0 – 8.5 lb·ft)



- Apply THREAD LOCK "1342" to the engine sprocket mounting bolts and tighten them to the specified torque.

**99000-32050: Thread lock "1342"**

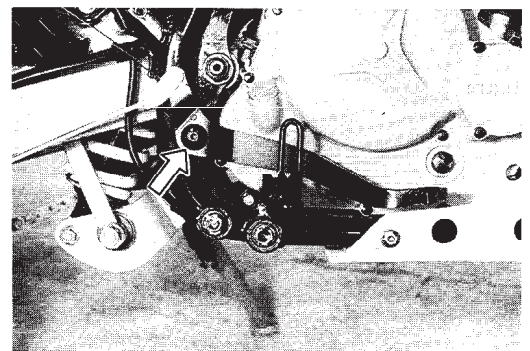
**Tightening torque: 10 – 12 N·m**  
(1.0 – 1.2 kg·m, 7.0 – 8.5 lb·ft)



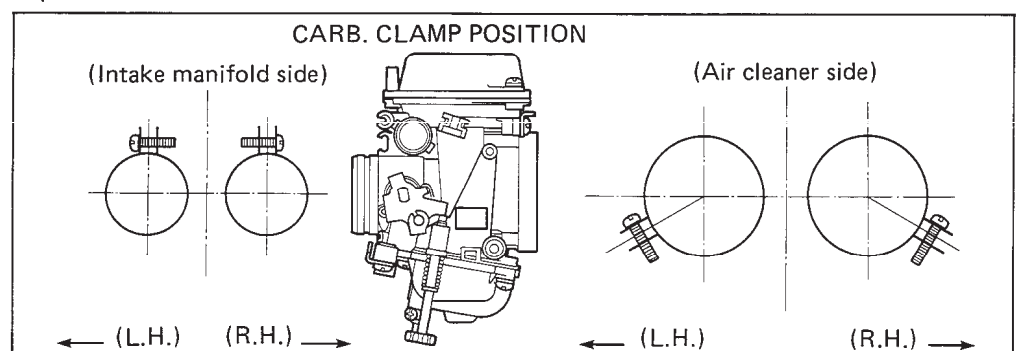
- Apply THREAD LOCK "1342" to the rear brake pedal pivot bolt and tighten it to the specified torque.

**99000-32050: Thread lock "1342"**

**Tightening torque: 18 – 28 N·m**  
(1.8 – 2.8 kg·m, 13.5 – 20.0 lb·ft)



- Locate the carburetor clamps as shown in the illustration.



- After remounting the engine, following adjustments are necessary.
  - \* De-comp. cable play (Page 2-5)
  - \* Clutch cable play (Page 2-10)
  - \* Drive chain slack (Page 2-11)
  - \* Rear brake pedal play (Page 2-14)
  - \* Idling speed (Page 2-9)
  - \* Throttle cable play (Page 2-9)

### TIGHTENING TORQUE

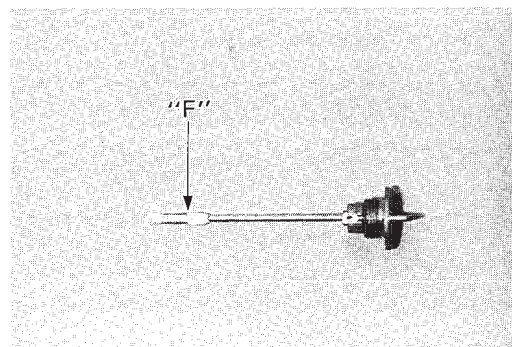
ITEM	N-m	kg-m	lb-ft
Rear brake pedal pivot bolt	18 – 28	1.8 – 2.8	13.5 – 20.0
Engine sprocket mounting bolt	10 – 12	1.0 – 1.2	7.0 – 8.5
Rear axle nut	55 – 88	5.5 – 8.8	40.0 – 63.5
Front footrest bolt	50 – 70	5.0 – 7.0	36.0 – 50.5
Exhaust pipe bolt and muffler mounting bolt	23 – 28	2.3 – 2.8	16.5 – 20.0
Muffler connection bolt	12 – 18	1.2 – 1.8	8.5 – 13.5
Engine oil drain plug	18 – 23	1.8 – 2.3	13.5 – 16.5

- Pour 3.4 L (3.6/3.0 US/Imp qt) of engine oil SAE 10W/40 graded SE or SF into the engine after overhauling engine.
- Start up the engine and allow it to run for several minutes at idle speed. About five minutes after stopping engine, check oil level with filler gauge.  
If the level is below the "F" mark, add oil until the level reaches the "F" mark.

**Change** : 2 600 ml (2.7/2.3 US/Imp qt)

**Filter change** : 2 700 ml (2.9/2.4 US/Imp qt)

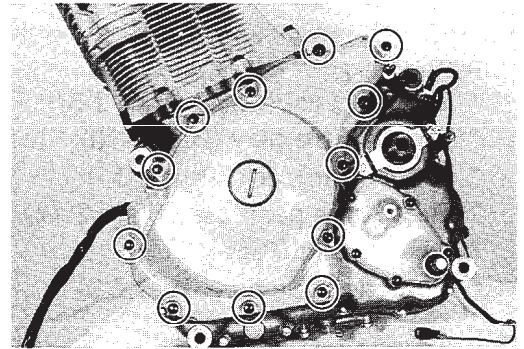
**Overhaul** : 3 400 ml (3.6/3.0 US/Imp qt)



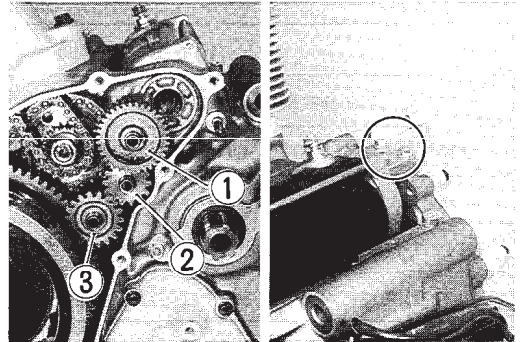


## ENGINE DISASSEMBLY

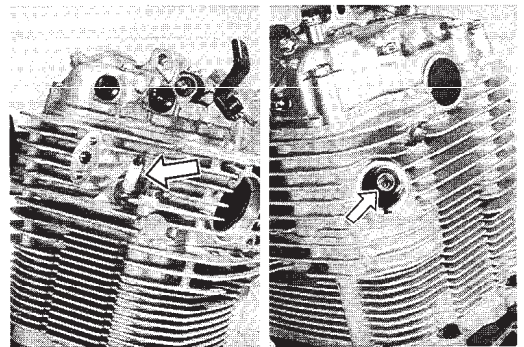
- After removing the magneto cover bolts, remove the magneto cover by tapping with a plastic hammer.



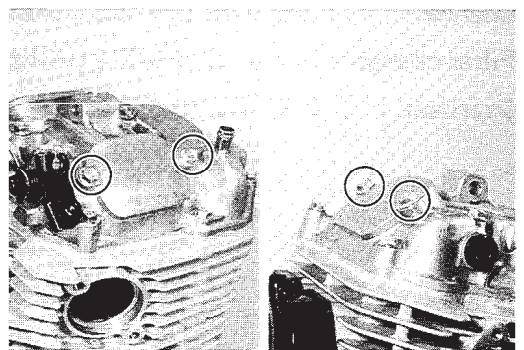
- Remove the starter reduction gear train ①, ② and ③.
- Remove the starter motor by removing the two bolts.



- Remove the two spark plugs.



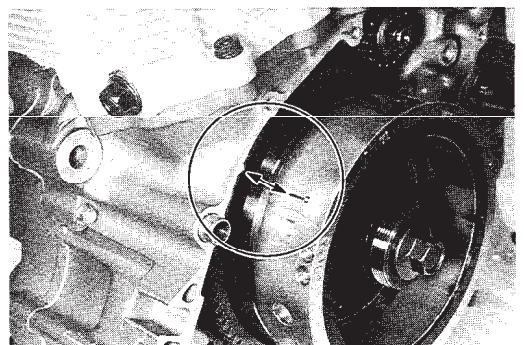
- Remove the valve inspection caps (Intake and Exhaust) by removing the bolts.



### NOTE:

*When removing the cylinder head cover, the piston must be at top dead center on the compression stroke.*

*Align "TOP" line on the magneto rotor with the index mark on the crankcase.*

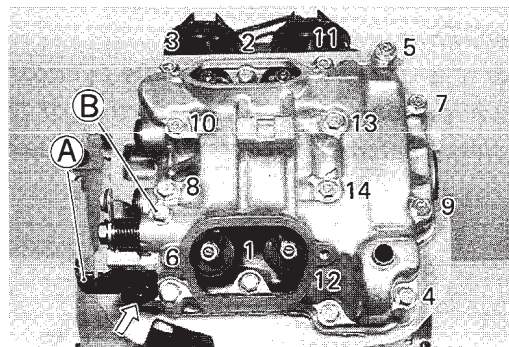




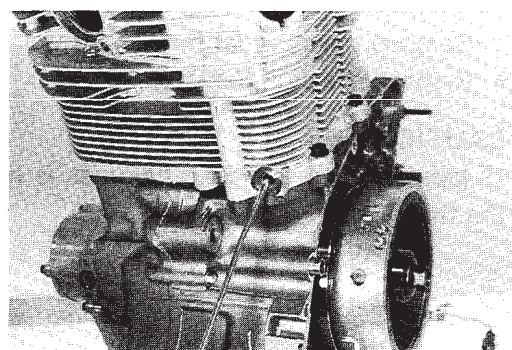
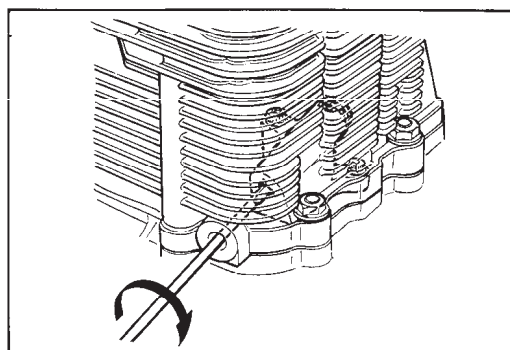
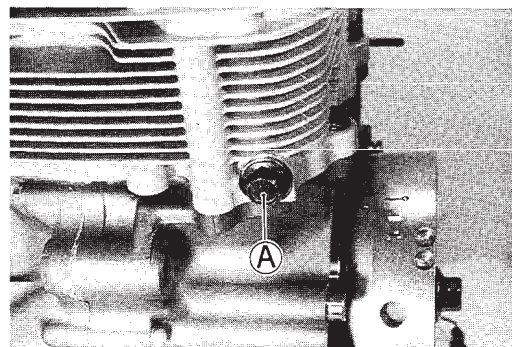
- Remove the de-comp. cable stay (A) by removing the bolt.
- Loosen the cylinder head cover bolts in the ascending order numbers and detach the cylinder head cover.

**NOTE:**

When removing the cylinder head cover, do not remove the de-comp. shaft set bolt (B).



- Remove the service hole plug (A).
- Insert the ⊖ screwdriver into the slotted end of cam chain tension adjuster and turn the ⊖ screwdriver clockwise to lessen the tension from the cam chain.



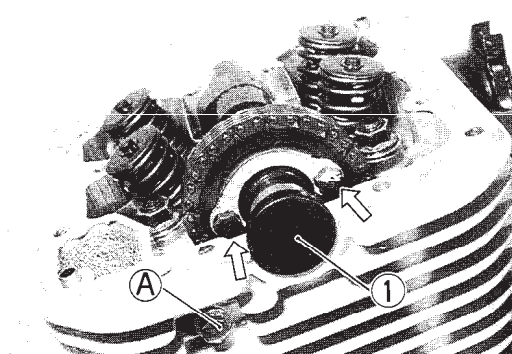
- Detach the camshaft end cap (1).
- Flatten the lock portion of washer.
- Remove the cam sprocket by removing the bolts, and then remove the camshaft.

**NOTE:**

The cam chain tensioner set bolt (A) is to be removed only when disassembling the engine.

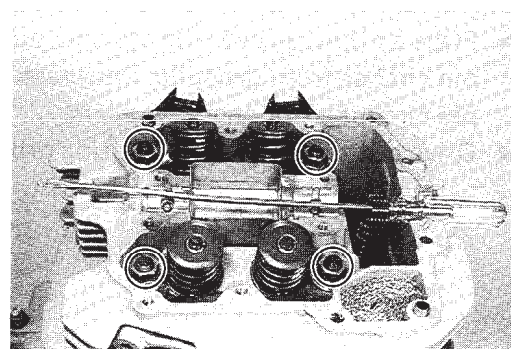
**CAUTION:**

Do not drop camshaft drive chain, pin or sprocket into the crankcase.



- Remove the cylinder head nuts and bolt diagonally, then detach the cylinder head.

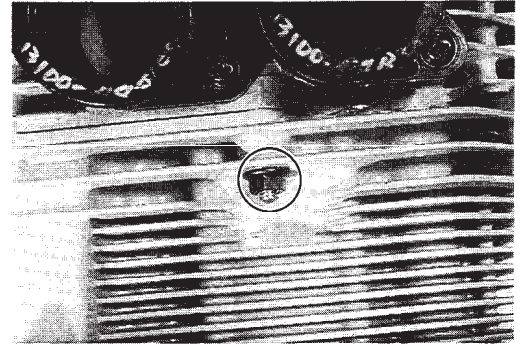
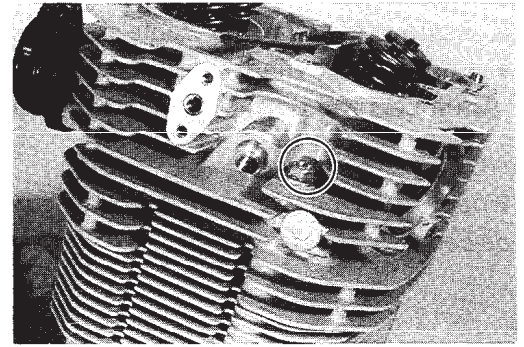
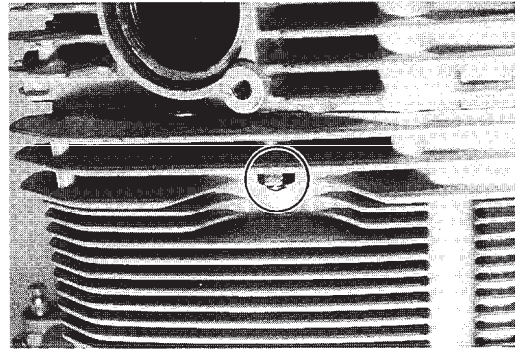
(Continued on next page.)



### 3-13 ENGINE

**NOTE:**

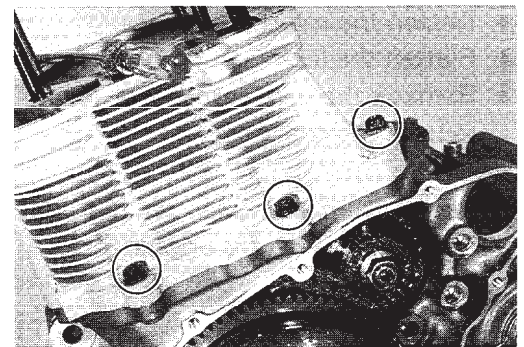
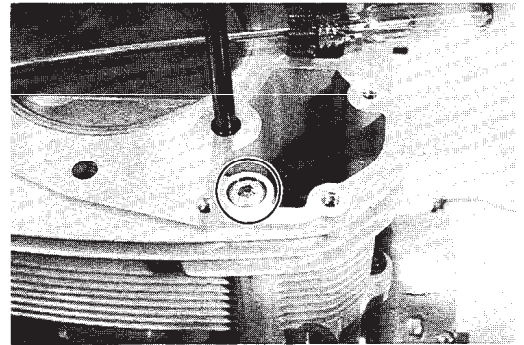
*If it is difficult to remove the cylinder head, gently pry it off while tapping the finless portion of the cylinder head with a plastic hammer. Be careful not to break the fins.*



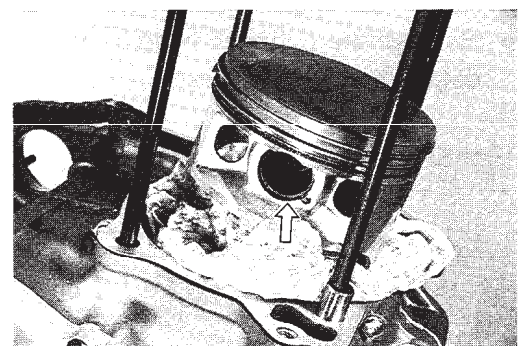
- Remove the cylinder nuts and bolts.
- Remove the cylinder.

**CAUTION:**

**If tapping with a plastic hammer is necessary, do not break the fins.**

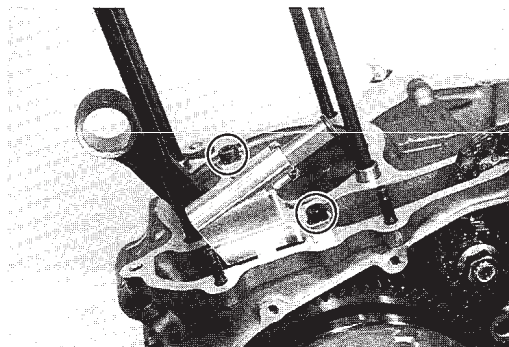


- Place a clean rag over the cylinder base to prevent the piston pin circlips from dropping into crankcase. Remove the piston pin circlips with long-nose pliers.
- Drive out the piston pin by using proper drift.

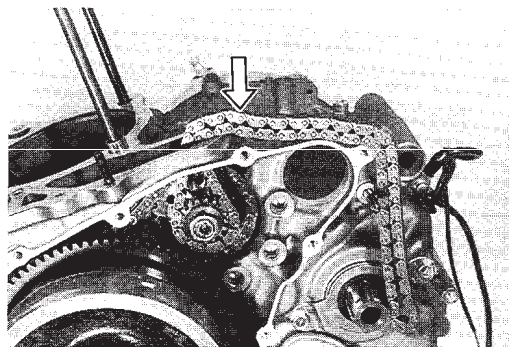




- Remove the cam chain tension adjuster by removing the two bolts.



- Remove the cam chain.

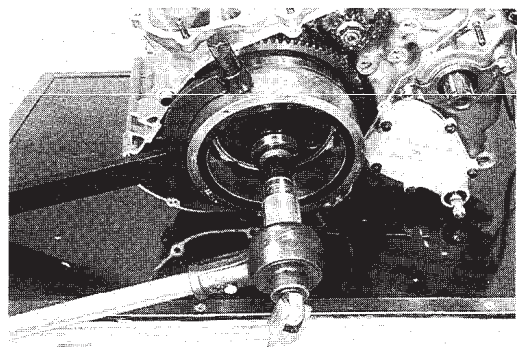


- Loosen the magneto rotor bolt by using the special tool.

**09930-44913: Rotor holder**

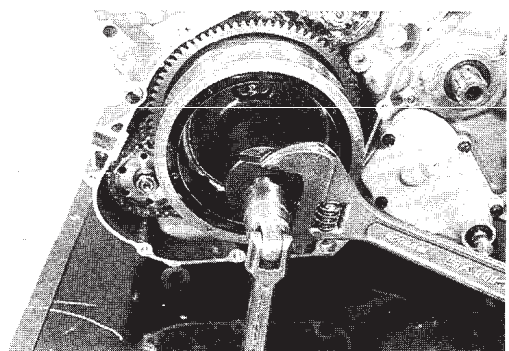
**NOTE:**

*When removing the magneto rotor, do not remove the magneto rotor bolt after loosening the bolt. The magneto rotor bolt is used in conjunction with the rotor remover.*

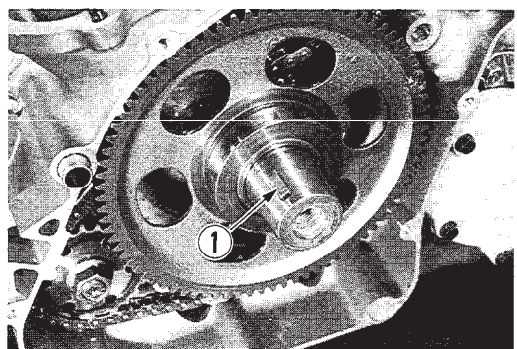


- Remove the magneto rotor by using the special tool.

**09930-33720: Rotor remover**

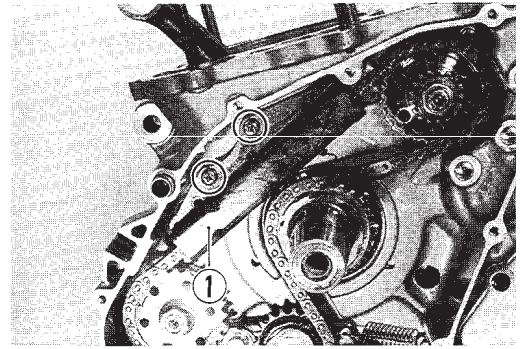


- Remove the key ① from the crankshaft.
- Remove the starter driven gear from the crankshaft.

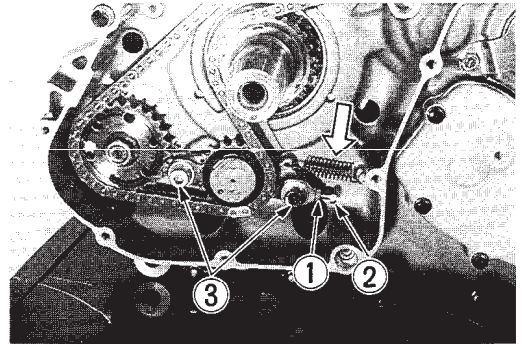


### 3-15 ENGINE

- Remove the balancer chain guide ① by removing the two screws.



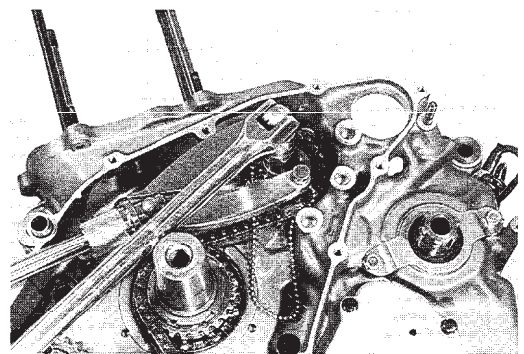
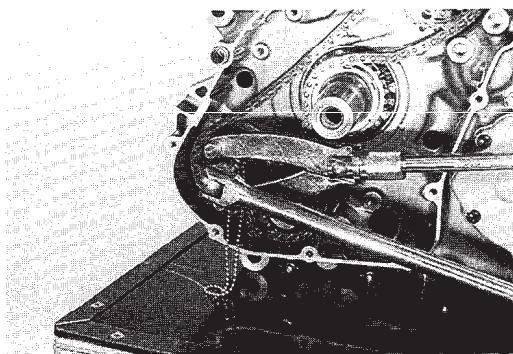
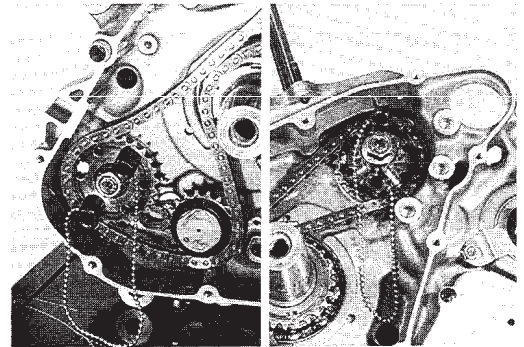
- Unhook the balancer chain tension adjuster spring.
- Loosen the lock nut ① and stopper bolt ②, then remove the bolts ③.



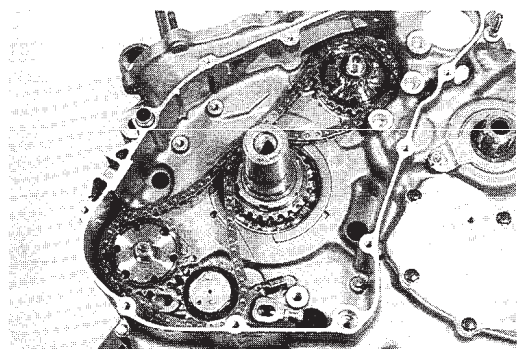
- Remove the front and rear balancer driven sprocket nuts by using the special tools.

09930-40130: Balancer driven sprocket holder

09930-40113: Rotor holder



- Remove the front and rear balancer driven sprockets and balancer chain tension adjuster along with the balancer chain.
- Remove the keys from each balancer shaft.

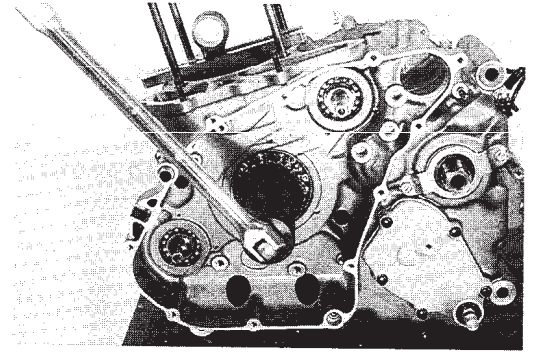




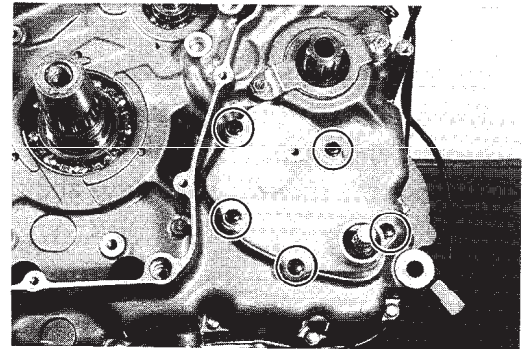
- Remove the ring nut by using the special tools, then remove the wave washer, balancer drive sprocket and key from the crankshaft.

09917-23711: Ring nut socket wrench

09910-20116: Conrod holder

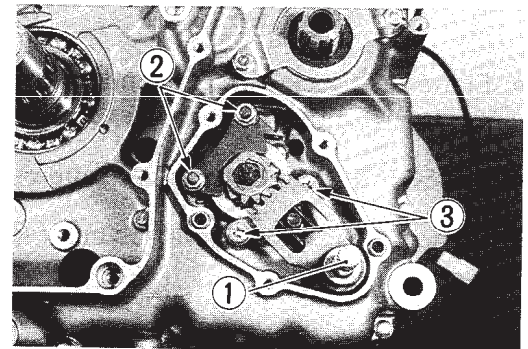


- Remove the gearshift cover by removing the bolts.



- Extract the gearshift shaft ①, and then remove the pawl lifter and cam guide by removing the nuts ② and screws ③.

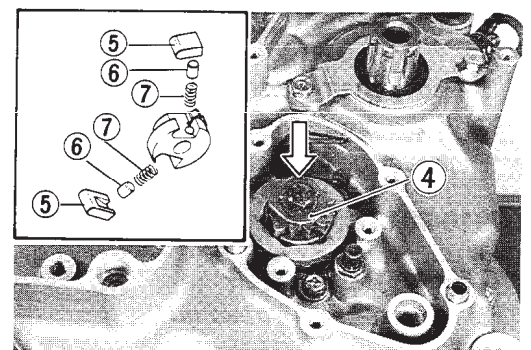
09900-09003: Impact driver set



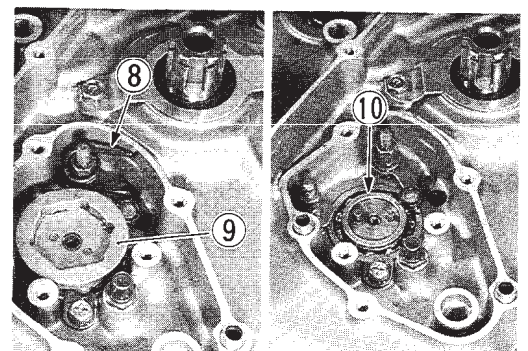
- Remove the cam driven gear ④ by removing its securing bolt.

**NOTE:**

When removing the cam driven gear, do not lose gearshift pawl ⑤, pin ⑥ and spring ⑦.



- Remove the gearshift cam stopper spring ⑧, gearshift cam stopper plate ⑨ and washer ⑩.

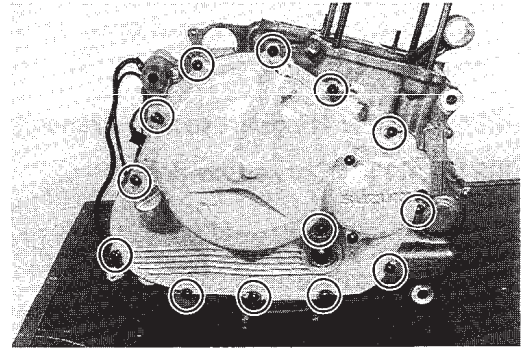


### 3-17 ENGINE

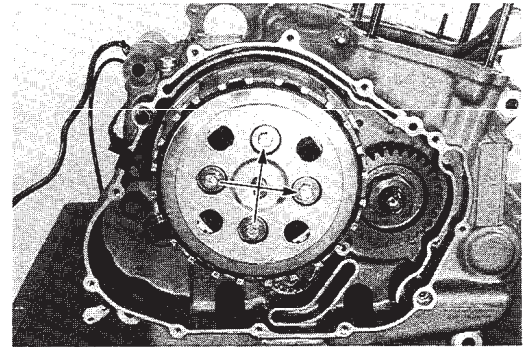
- After removing the clutch cover bolts, remove the clutch cover by tapping with a plastic hammer.

**NOTE:**

*Do not remove the oil filter cap at this point.*



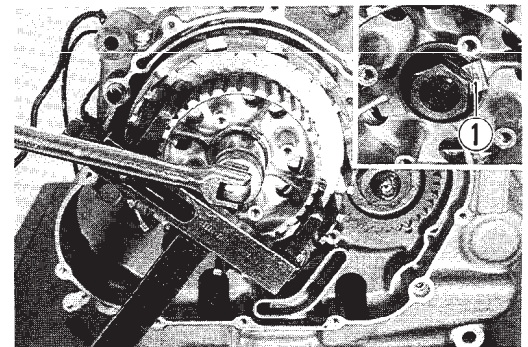
- Remove the clutch spring mounting bolts diagonally.
- Remove the pressure plate along with the clutch release bearing and rack.
- Remove the several clutch drive and driven plates.



- Flatten the lock washer ① and remove the clutch sleeve hub nut by using the special tool.

**09920-53710: Clutch sleeve hub holder**

- Remove the clutch sleeve hub along with the primary driven gear assembly.

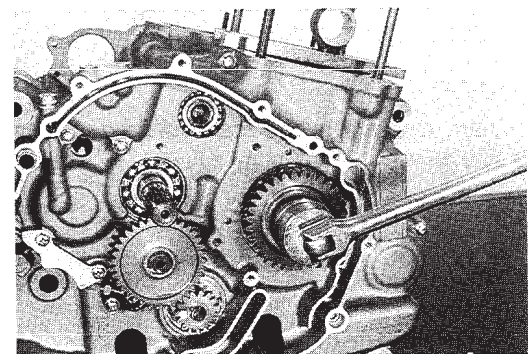


- Remove the primary drive gear nut while holding the conrod with the conrod holder.
- Remove the washer and primary drive gear.

**09910-20116: Conrod holder**

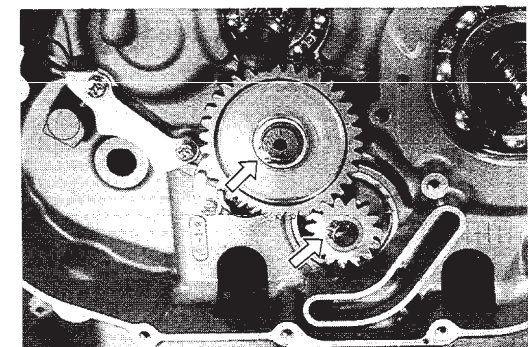
**NOTE:**

*This is a left-hand thread nut.*



- Remove the idle gear and oil pump driven gear by removing the respective circlips.

**09900-06107: Snap ring pliers**

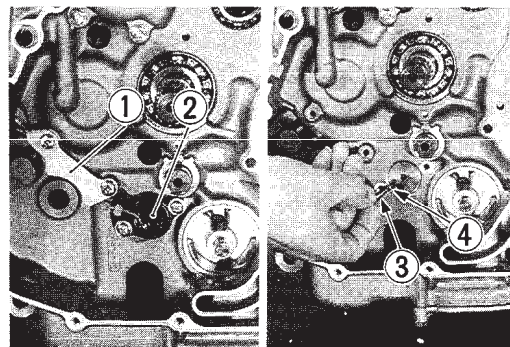




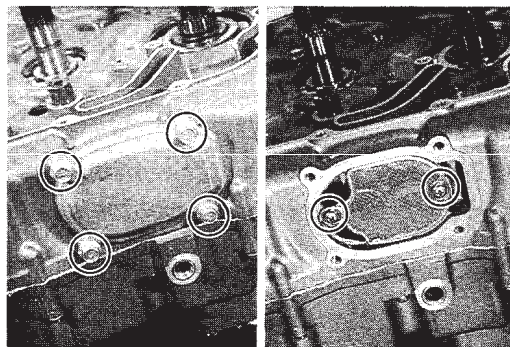
- Remove the neutral switch lead protector ① and neutral switch ② by removing the screws.

**NOTE:**

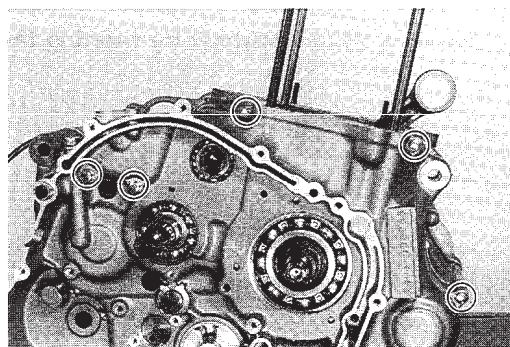
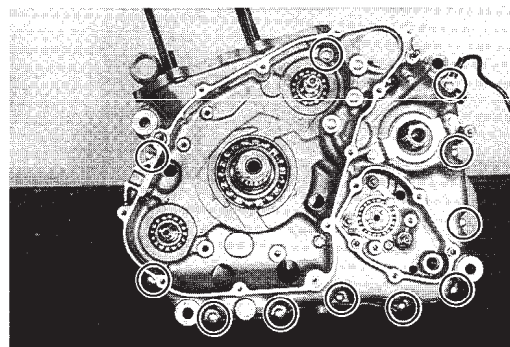
*Do not lose the neutral switch contact ③ and its spring ④.*



- Remove the oil sump filter cap and oil sump filter by removing the bolts and screws.



- Remove the crankcase securing bolts.

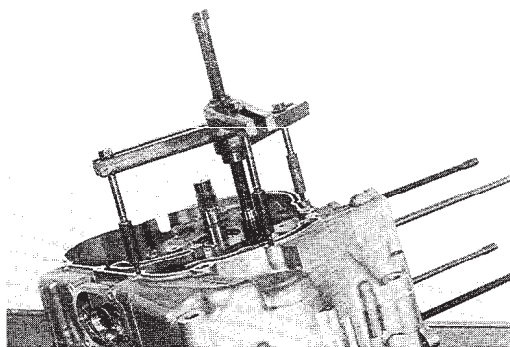


- Separate the crankcase into 2 parts, right and left with a crankcase separating tool.

**09920-13120: Crankcase separating tool****NOTE:**

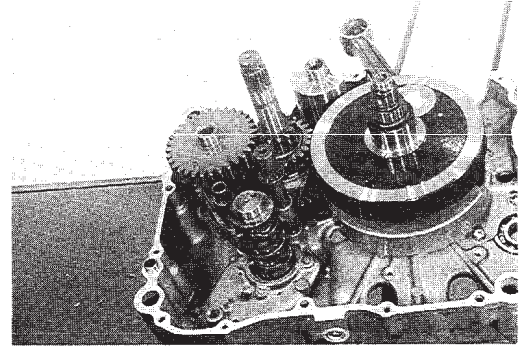
*Fit the crankcase separating tool, so that the tool plate is parallel with the end face of the crankcase.*

*The crankshaft and transmission components must remain in the left crankcase half.*



### 3-19 ENGINE

- Remove the gearshift fork shafts and gearshift forks.
- Remove the gearshift cam.
- Remove the driveshaft assembly and countershaft assembly.



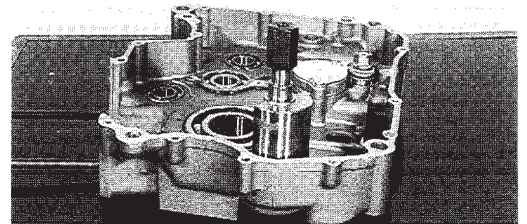
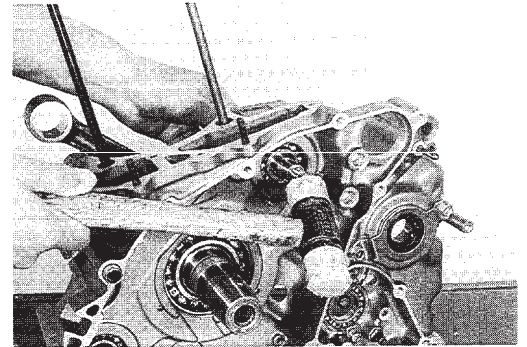
- Remove the front and rear balancershafts by tapping with a plastic hammer.

**NOTE:**

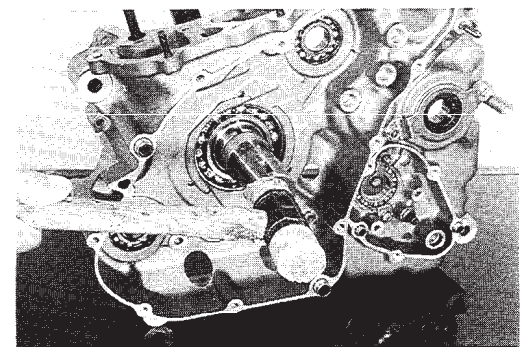
*If the front balancershaft remains in the right crankcase half, remove it by using the special tools.*

**09930-30250: Balancer remover**

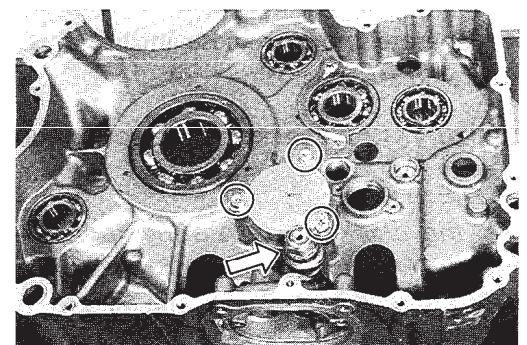
**09930-30102: Sliding shaft**



- Remove the crankshaft by tapping the plastic hammer.



- Remove the oil pump by removing the screws.
- Remove the oil pressure regulator.



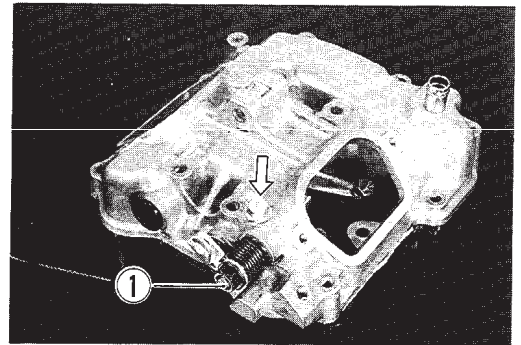
## ENGINE COMPONENTS INSPECTION AND SERVICING

### CYLINDER HEAD COVER SERVICING

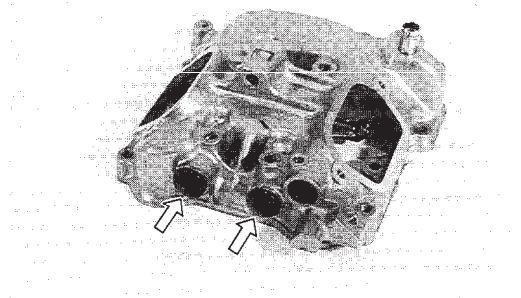
#### CAUTION:

Be sure to identify each removed part as to its location, and lay the parts out in groups designated as "Exhaust", "Inlet", so that each will be restored to the original location during assembly.

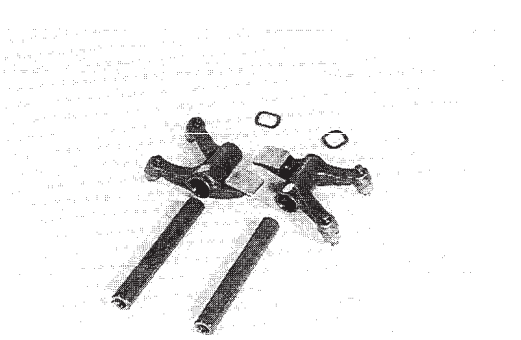
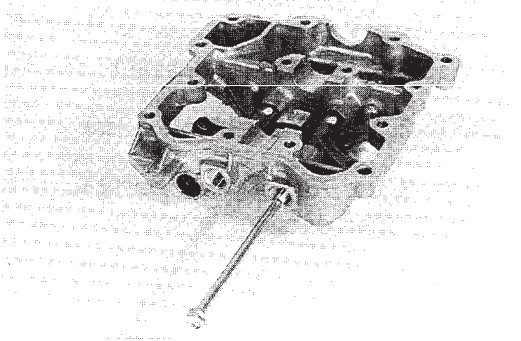
- Remove the de-comp. shaft ① by removing its set bolt.



- Remove the intake and exhaust rocker arm shaft set bolts.



- Pull out the intake and exhaust rocker arm shafts with a 6 mm bolt.



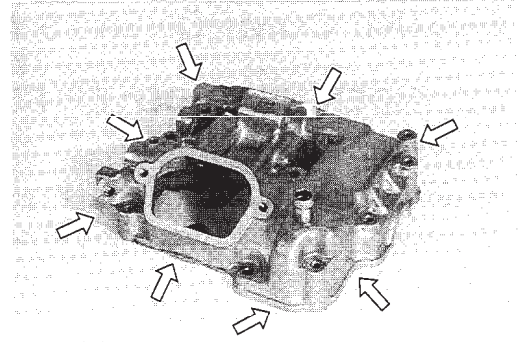


### CYLINDER HEAD COVER DISTORTION

After removing sealant (SUZUKI BOND No. 1216) from the fitting surface of the cylinder head cover, place the cylinder head cover on a surface plate and check for distortion with a thickness gauge. Check points are shown in Fig.

**Service Limit: 0.05 mm (0.002 in)**

If the distortion exceeds the limit, replace the cylinder head cover.

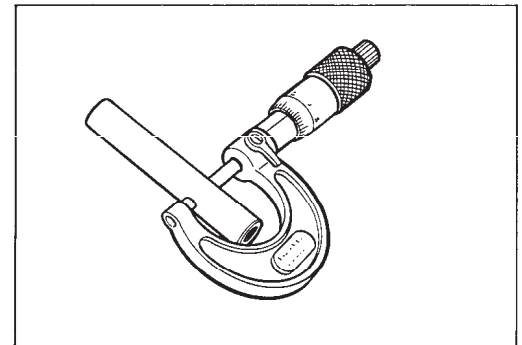


### ROCKER ARM SHAFT O.D.

Measure the diameter of rocker arm shaft with a micrometer.

**Standard: 11.973 – 11.984 mm (0.4714 – 0.4718 in)**

**09900-20205: Micrometer (0 – 25 mm)**

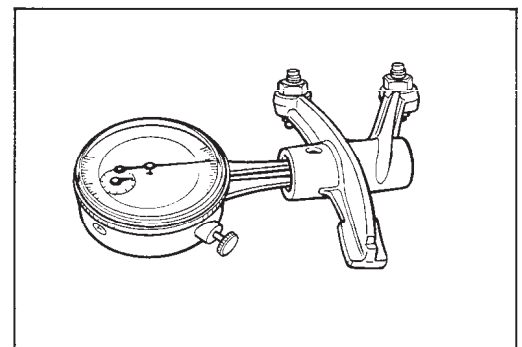


### ROCKER ARM I.D.

When checking the valve rocker arm, the inside diameter of the valve rocker arm and wear of the camshaft contacting surface should be checked.

**Standard: 12.000 – 12.018 mm (0.4724 – 0.4731 in)**

**09900-20605: Dial calipers**

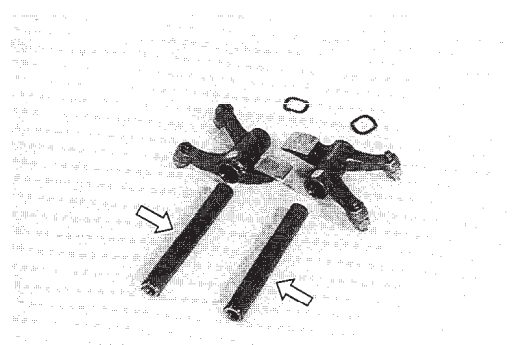


### ROCKER ARM AND SHAFT REASSEMBLY

- Apply SUZUKI Moly paste to the rocker arm shafts.

**99000-25140: Suzuki Moly paste**

- Insert the rocker arm shafts with their threaded hole end positioned outside.



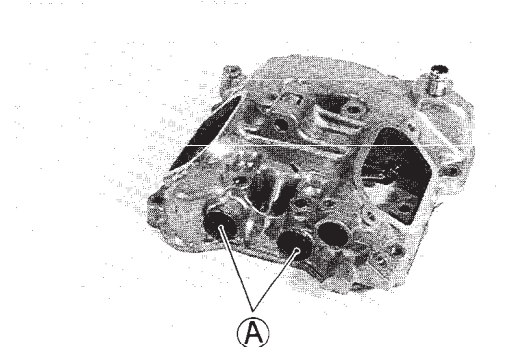
- Tighten each rocker arm shaft set bolt (A) to the specified torque.

**Set bolt (A) : 25 – 30 N·m**

**(2.5 – 3.0 kg·m, 18.0 – 21.5 lb·ft)**

**NOTE:**

Use new gasket on the set bolt (A).



## DE-COMP. SHAFT REASSEMBLY

- Apply SUZUKI Moly paste to the de-comp. shaft.

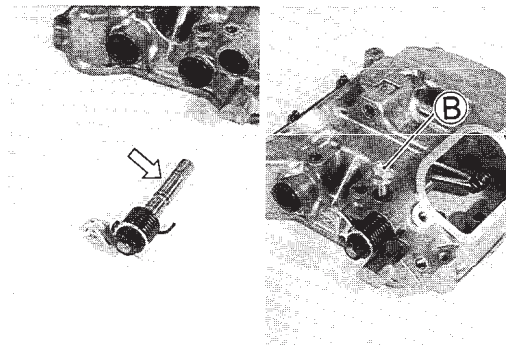
**99000-25140: Suzuki Moly paste**

- After inserting the de-comp. shaft, tighten its set bolt to the specified torque.

**Set bolt ② : 8 – 12 N·m**  
(0.8 – 1.2 kg-m, 6.0 – 8.5 lb-ft)

### NOTE:

*Use new gasket on the set bolt ②.*

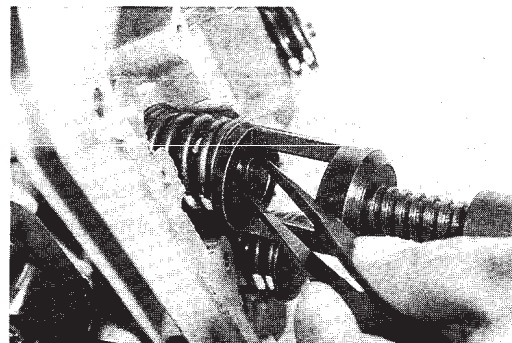


## CYLINDER HEAD SERVICING

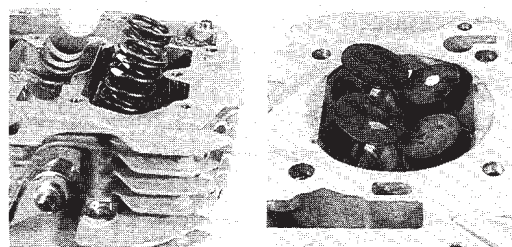
- Compress the valve springs with the valve spring compressor.
- Remove the valve cotter pins from the valve stem.

**09916-14510: Valve spring compressor**

**09916-84511: Tweezers**



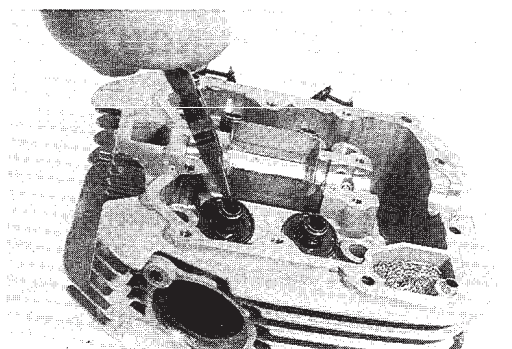
- Remove the valve spring retainer, inner spring and outer spring.
- Pull out the valve from the other side.



- Remove the oil seal by using a long-nose pliers.
- Remove the spring seat.

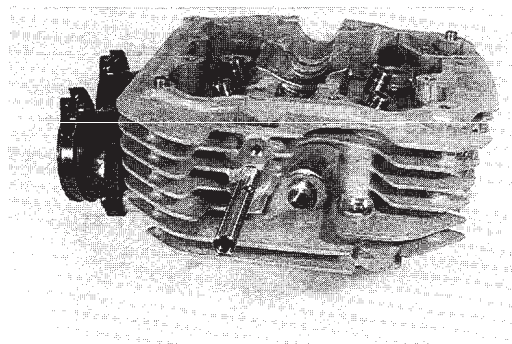
### NOTE:

*Removal of the valves completes ordinary disassembling work. If valve guides have to be removed for replacement after inspecting related parts, carry out the steps shown in valve guide servicing.*



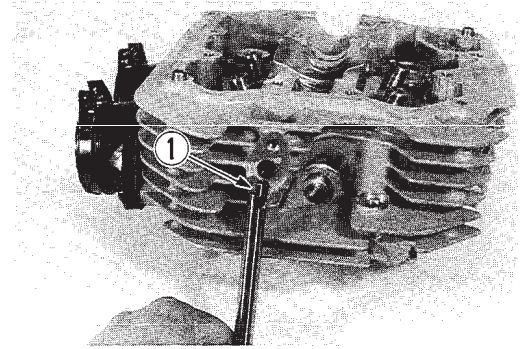
- Pull out the cylinder head oil pipe with a 8 mm bolt.

(Continued on next page.)



**NOTE:**

When inserting the cylinder head oil pipe, be sure to face the cutaway part ① to the intake side.

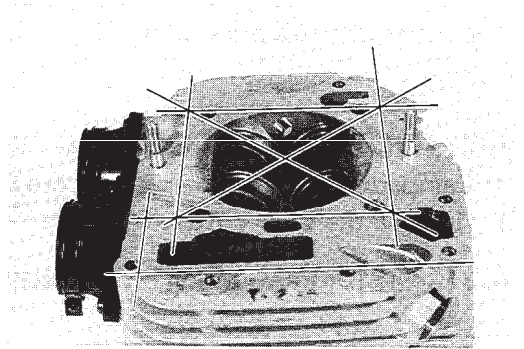


**CYLINDER HEAD DISTORTION**

Decarbon the combustion chamber.

Check the gasketed surface of the cylinder head for distortion with a straightedge and thickness gauge, taking a clearance reading at several places as indicated. If the largest reading at any position of the straightedge exceeds the limit, replace the cylinder head.

**Service Limit: 0.05 mm (0.002 in)**



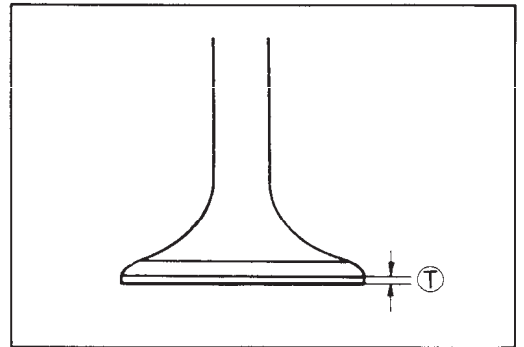
**VALVE FACE WEAR**

Measure the thickness ① and, if the thickness is found to have been reduced to the limit, replace the valve.

**NOTE:**

Visually inspect each valve for wear of its seating face. Replace any valve with an abnormally worn face.

**Service Limit: 0.5 mm (0.02 in)**



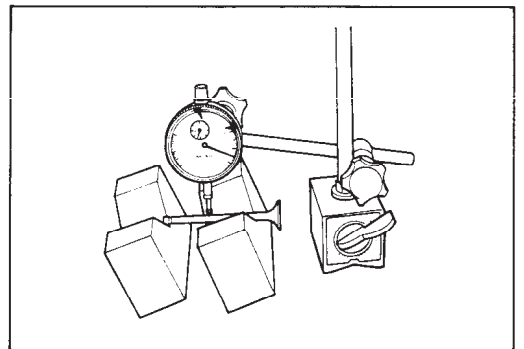
**VALVE STEM RUNOUT**

Support the valve with "V" blocks, as shown, and check its runout with a dial gauge. The valve must be replaced if the runout exceeds the limit.

**Service Limit: 0.05 mm (0.002 in)**

09900-20701: Magnetic stand

09900-20606: Dial gauge (1/100 mm)

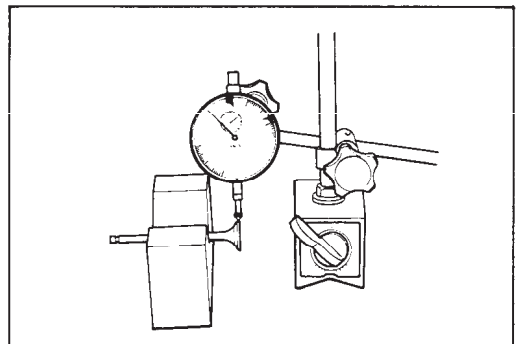


**VALVE HEAD RADIAL RUNOUT**

Place the dial gauge at right angles to the valve head, and measure the valve head radial runout.

If it measures more than limit, replace the valve.

**Service Limit: 0.03 mm (0.001 in)**



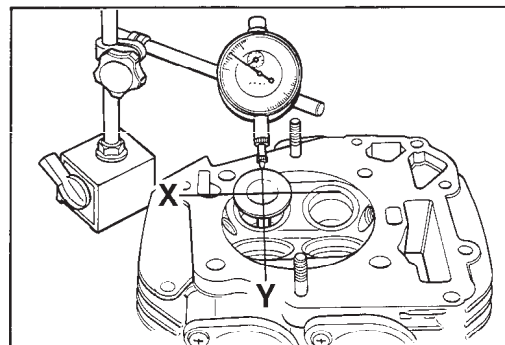


## VALVE GUIDE-VALVE STEM CLEARANCE

Measure the clearance in two directions, "X" and "Y" perpendicular to each other, by rigging up the dial gauge as shown. If the clearance measured exceeds the limit specified below, then determine whether the valve or the guide should be replaced to reduce the clearance to within the standard range:

**Standard** IN. : 0.025 – 0.055 mm (0.0010 – 0.0022 in)  
EX.: 0.040 – 0.070 mm (0.0016 – 0.0028 in)

**Service Limit** IN. : 0.35 mm (0.014 in)  
EX.: 0.35 mm (0.014 in)



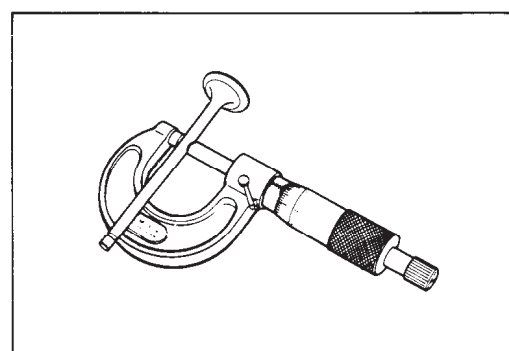
## VALVE STEM WEAR

If the valve stem is worn down to the limit, when measured with a micrometer, and the clearance is found to be in excess of the limit indicated previously, replace the valve, if the stem is within the limit, then replace the guide. After replacing valve or guide, be sure to re-check the clearance.

09900-20205: Micrometer (0 – 25 mm)

Valve stem O.D.

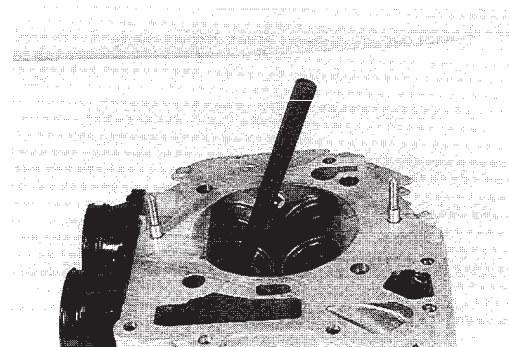
**Standard** IN. : 6.960 – 6.975 mm (0.2740 – 0.2746 in)  
EX.: 6.945 – 6.960 mm (0.2734 – 0.2740 in)



## VALVE GUIDE SERVICING

- Remove the valve guide with the valve guide remover.

09916-44511: Valve guide remover

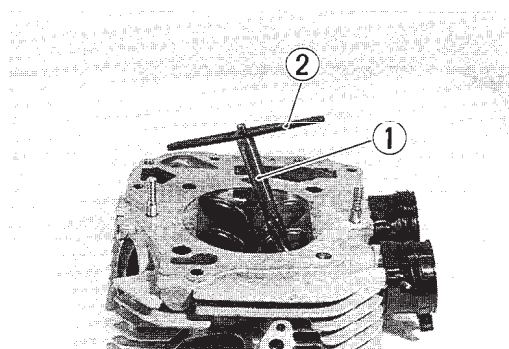


- Re-finish the valve guide holes in cylinder head with a 12.3 mm reamer ① and handle ②.

09916-34531: 12.3 mm reamer

09916-34542: Handle

- Fit a ring to each valve guide. Be sure to use new rings and valve guides. Rings and valve guides removed in disassembly must be discarded. (Continued on next page.)

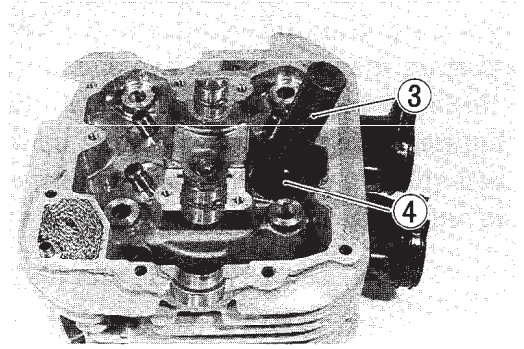


## 3-25 ENGINE

- Lubricate each valve guide with oil, and drive the guide into the guide hole using the valve guide installer handle ③ and valve guide installer attachment ④. (See page 3-64.)

09916-57321: Valve guide installer handle

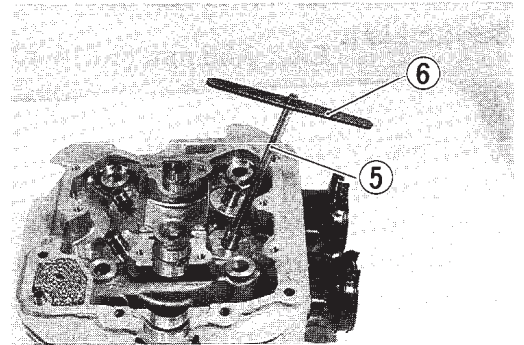
09916-57311: Attachment



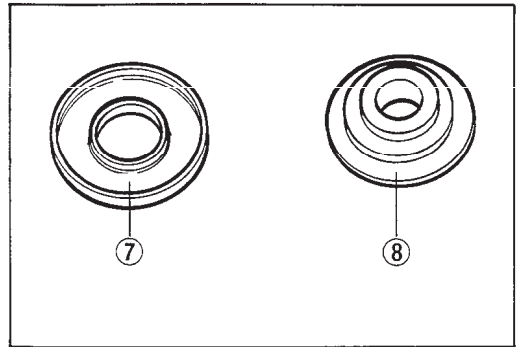
- After fitting the valve guides, re-finish their guiding bores with the 7 mm reamer ⑤ and handle ⑥. Be sure to clean and oil the guides after reaming.

09916-34520: 7 mm reamer

09916-34542: Handle



- Install the valve spring seat ⑦. Be careful not to confuse the lower seat with the spring retainer ⑧.



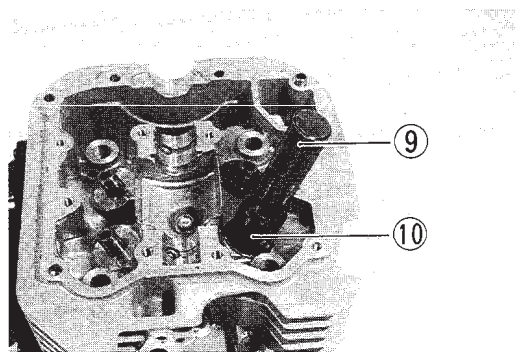
- Lubricate each seal with oil, and drive the seal into position with the valve guide installer handle ⑨ and stem seal installer attachment ⑩. (See page 3-64.)

### CAUTION:

Do not reuse the oil seals.

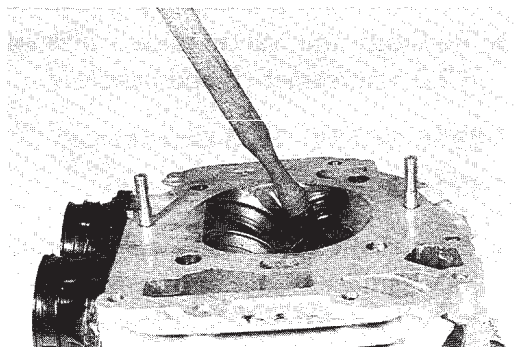
09916-57321: Valve guide installer handle

09911-93710: Attachment



## VALVE AND SEAT CONDITION VALVE SEAT WIDTH

Coat the valve seat with prussian blue uniformly. Fit the valve and tap the coated seat with the valve face in a rotating manner, in order to obtain a clear impression of the seating contact. In this operation, use the valve lapper to hold the valve head. (Continued on next page.)



The ring-like dye impression left on the valve face must be continuous-without any break. In addition, the width of the dye ring, which is the visualized seat "width", must be within the specification.

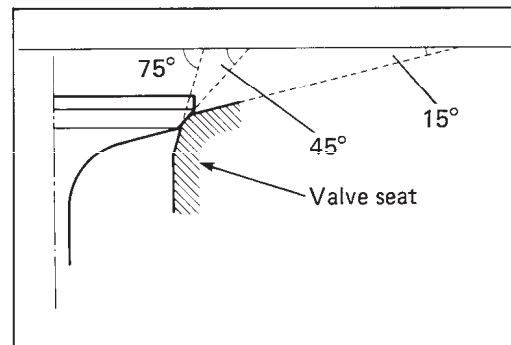
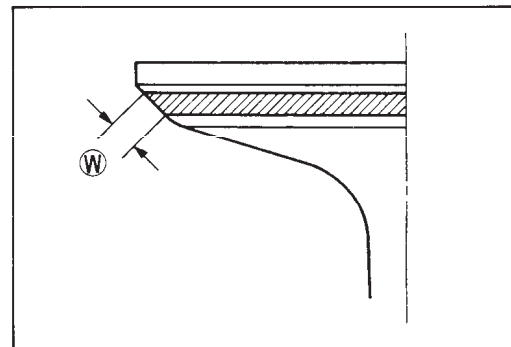
**Valve seat width**

STD.  $\text{\textcircled{W}}$  : 1.0 – 1.2 mm (0.04 – 0.05 in)

If either requirement is not met, correct the seat by servicing it as follows.

**VALVE SEAT SERVICING**

The valve seats for both intake and exhaust valves are angled to present three bevels, 15°, 45° and 75°.



	INTAKE SIDE	EXHAUST SIDE
45°	N-233	N-615
15°	N-233	N-615
75°	N-217	N-211

09916-24900: Valve seat cutter set

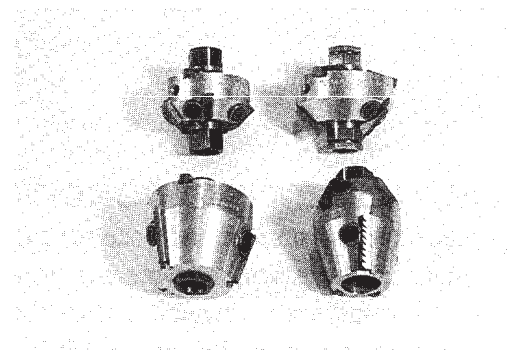
09916-24490: Cutter N-233

09916-24920: Cutter N-217

09916-24210: Cutter N-615

09916-27710: Cutter N-211

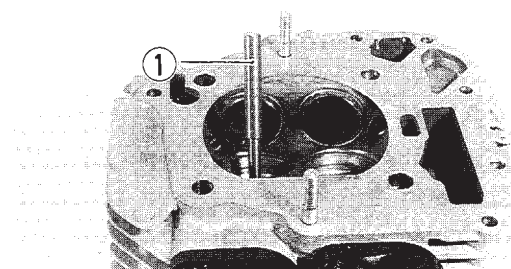
N-140 – 7.0 : Solid pilot



**NOTE:**

The valve seat contact area must be inspected after each cut.

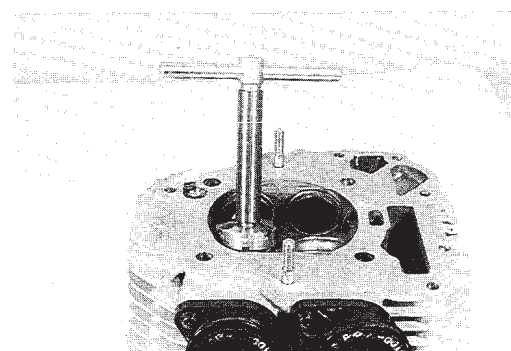
1. Insert the solid pilot ① with a slight rotation, the solid pilot that gives a snug fit.
2. Using the 45° cutter, descale and clean up the seat with one or two turns.
3. Inspect the seat by the previous seat width measurement procedure. If the seat is pitted or burned, additional seat conditioning with the 45° cutter is required.



**CAUTION:**

Cut the minimum amount necessary from the seat to prevent the possibility of the valve stem becoming too close to the rocker arm for correct valve contact angle.

(Continued on next page.)



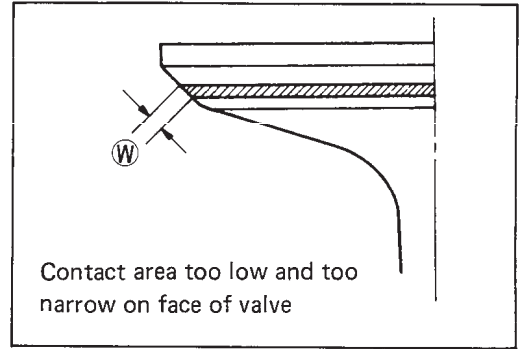
4. After the desired seat position and width is achieved, use the 45° cutter very lightly to clean up any burrs caused by the previous cutting operations. DO NOT use lapping compound after the final cut is made. The finished valve seat should have a velvety smooth finish and not a highly polished or shiny finish. This will provide a soft surface for the final seating of the valve which will occur during the first few seconds of engine operation.
5. Clean and assemble the head and valve components. Fill the intake and exhaust ports with gasoline to check for leaks. If any leaks occur, inspect the valve seat and face for burrs or other things that could prevent the valve from sealing.

**WARNING:**

Always use extreme caution when handling gasoline.

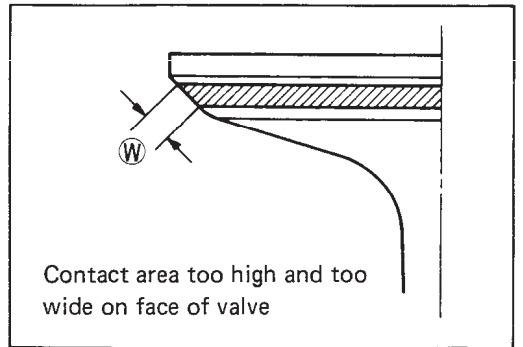
**NOTE:**

Be sure to adjust the valve clearance after reassembling the engine.



Contact area too low and too narrow on face of valve

If the contact area is too low or too narrow, use the 45° cutter to raise and widen the contact area.

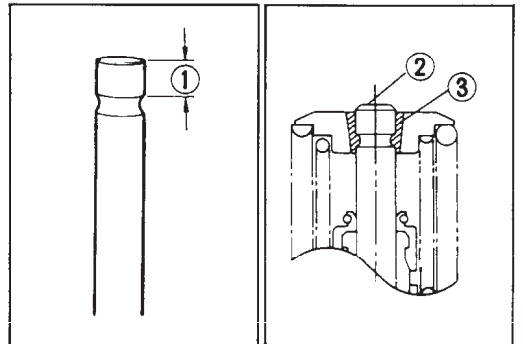


Contact area too high and too wide on face of valve

If the contact area is too high or too wide, use the 15°/75° cutters to lower and narrow the contact area.

**VALVE STEM END CONDITION**

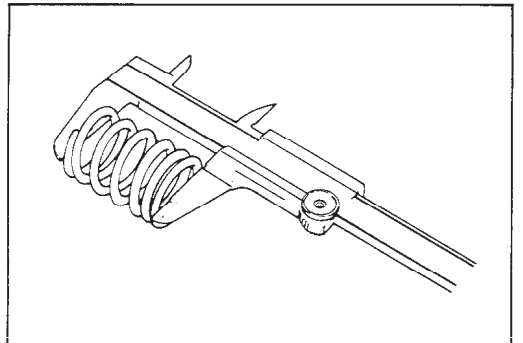
Inspect the valve stem end face for pitting and wear. If pitting or wear of the stem end face are present, the valve stem end may be resurfaced, providing that the length ① will not be reduced to less than 2.4 mm (0.09 in). If this length becomes less than 2.4 mm (0.09 in), the valve must be replaced. After installing a valve whose stem end has been ground off as above, check to ensure that the face ② of the valve stem end is above the cotters ③.



**VALVE SPRINGS**

Check the springs for strength by measuring their free lengths and also the force required to compress them. If the limit indicated below is exceeded by the free length reading or if the measured force does not fall within the range specified, replace both the inner and outer springs as a set.

(Continued on next page.)





**Valve spring free length**

**Service Limit**

**INNER : 34.4 mm (1.35 in)**

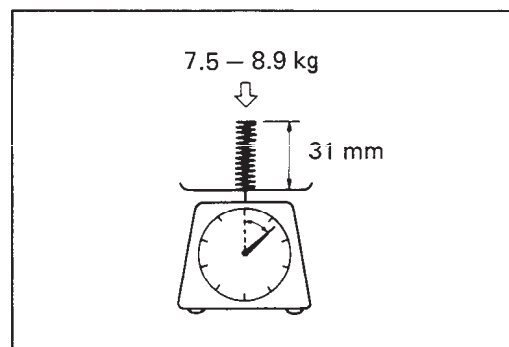
**OUTER: 40.1 mm (1.58 in)**

**Valve spring tension**

**Standard**

**INNER : 7.5 – 8.9 kg/31 mm (16.5 – 19.6 lbs/1.2 in)**

**OUTER: 17.3 – 20.3 kg/33 mm (38.1 – 44.8 lbs/1.3 in)**



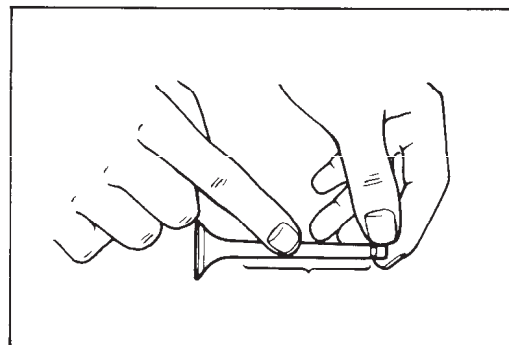
**VALVE AND VALVE SPRING REASSEMBLY**

- Insert the valves, with their stems coated with (SUZUKI MOLY PASTE) all around and along the full stem length without any break.  
Similarly oil the lip of the stem seal.

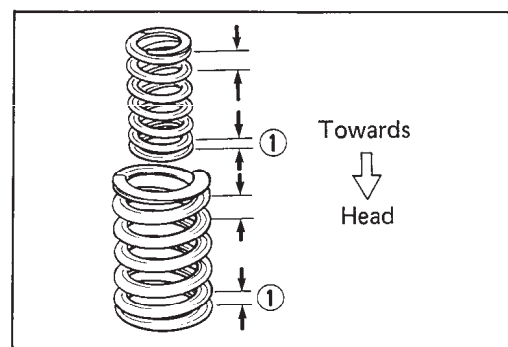
**99000-25140: Suzuki moly paste**

**CAUTION:**

**When inserting each valve, take care not to damage the lip of the stem seal.**



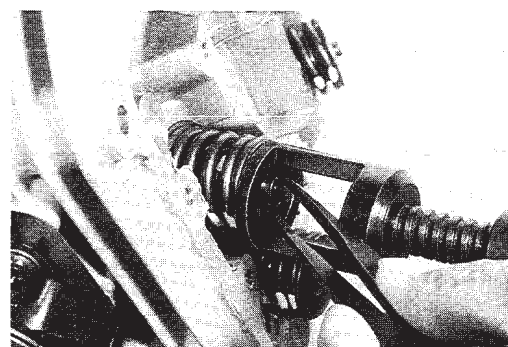
- Install the valve springs, making sure that the close-pitch end ① of each spring goes in first to rest on the head. The coil pitch of both inner and outer springs vary: the pitch decreases from top to bottom, as shown in the illustration.



- Fit a valve spring retainer, compress the springs with a valve spring compressor and fit the cotter halves to the stem end.

**09916-14510: Valve spring compressor**

**09916-84511: Tweezers**



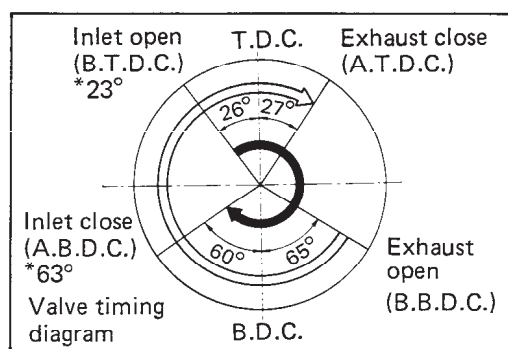
**CAMSHAFT**

The camshaft should be checked for runout and also for wear of cams and journals if the engine has been noted to produce abnormal noise or vibration or to lack output power. Any of these malconditions could be caused by a worn camshaft.

**NOTE:**

(\*) Asterisk mark indicates the W. Germany model specification.

(Continued on next page.)





### CAMSHAFT CAM WEAR

Worn-down cams are often the cause of mistimed valve operation resulting in reduced output power.

The limit of cam wear is specified for both intake and exhaust cams in terms of cam height  $\text{H}$ , which is to be measured with a micrometer.

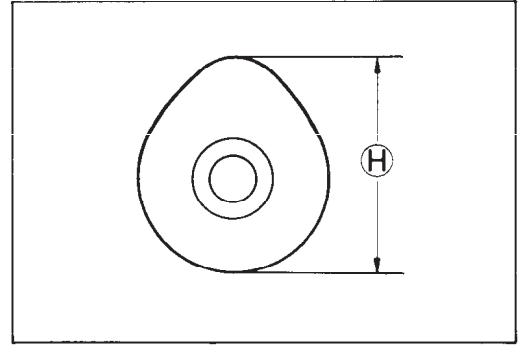
Replace the camshaft if found it worn down to the limit.

09900-20202: Micrometer (25 – 50 mm)

Cam height  $\text{H}$

Service Limit Intake cam : 35.790 mm (1.4091 in)

Exhaust cam: 35.680 mm (1.4047 in)



### CAMSHAFT JOURNAL WEAR

Determine whether each journal is worn down to the limit or not by measuring camshaft journal oil clearance with the camshaft installed. Use plastigauge to read the clearance, which is specified as follows:

Camshaft journal oil clearance

Service Limit: 0.150 mm (0.0059 in)

- Tighten the cylinder head cover bolts evenly and diagonally to the specified torque.

Cylinder head cover

Tightening torque: 8 – 12 N·m

(0.8 – 1.2 kg·m, 6.0 – 8.5 lb·ft)

09900-22301: Plastigauge

**NOTE:**

To properly measure the oil clearance with plasti-gauge, all gasket material must be removed from fitting surfaces of cylinder head and cover. Do not apply SUZUKI BOND No. 1216 until after the oil clearance has been determined.

If the camshaft journal oil clearance measured exceeds the limit, measure the outside diameter of camshaft.

Replace either the cylinder head set or the camshaft if the clearance is incorrect.

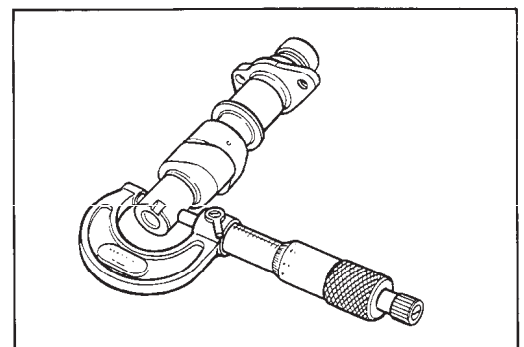
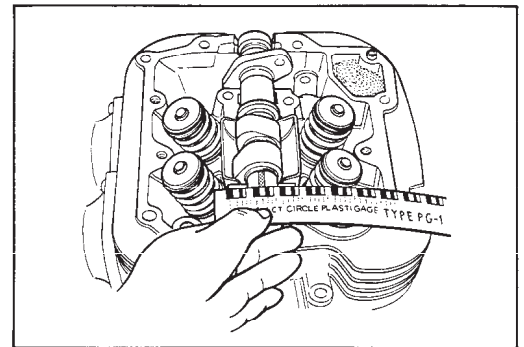
09900-20205: Micrometer (0 – 25 mm)

Camshaft journal O.D. 24.959 – 24.980 mm

(Left & Center): (0.9826 – 0.9835 in)

Camshaft journal O.D. 19.959 – 19.980 mm

(Right): (0.7858 – 0.7866 in)



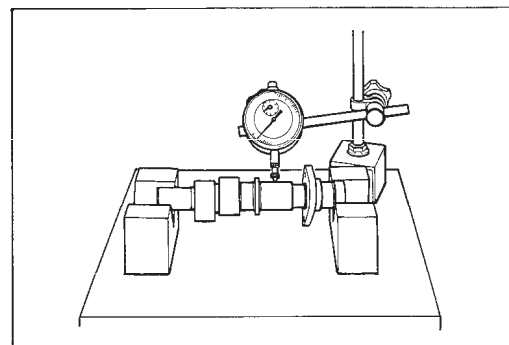
## CAMSHAFT RUNOUT

Measure the runout with a dial gauge. Replace the camshaft if the runout exceeds the limit.

**Service Limit: 0.10 mm (0.004 in)**

**09900-20701: Magnetic stand**

**09900-20606: Dial gauge (1/100 mm)**



## CAM DRIVE CHAIN AND BALANCER DRIVE CHAIN 20-PITCH LENGTH

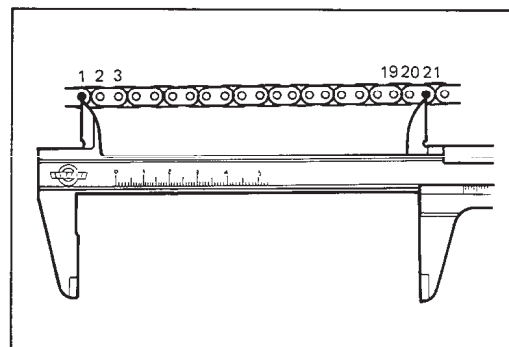
Pull the chain tight to remove any slack, then using vernier calipers, measure the 20 pitch (21 pins) length of chain. If it measures more than the limits, replace the chain.

**Cam drive chain**

**Service Limit: 129 mm (5.08 in)**

**Balancer drive chain**

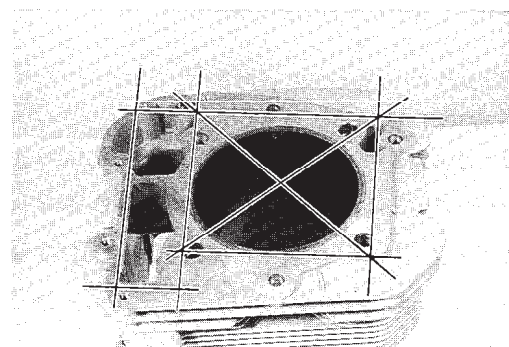
**Service Limit: 158 mm (6.22 in)**



## CYLINDER DISTORTION

Check the gasketed surface of the cylinder for distortion with a straightedge and thickness gauge, taking a clearance reading at several places as indicated. If the largest reading at any position of the straightedge exceeds the limit, replace the cylinder.

**Service Limit: 0.05 mm (0.002 in)**



## CYLINDER BORE

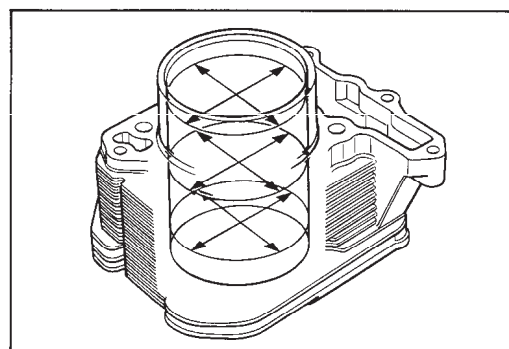
Measure the cylinder bore diameter at six places.

If any one of the measurements exceeds the limit, overhaul the cylinder and replace the piston with an oversize, or replace the cylinder.

**Service Limit: 105.090 mm (4.1373 in)**

**09900-20508: Cylinder bore gauge set**

**09900-20512: Gauge rod**

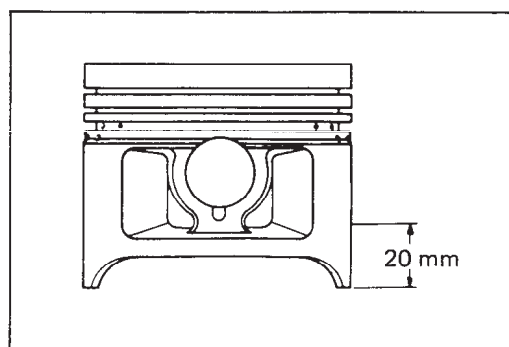


## PISTON DIAMETER

Using a micrometer, measure the piston outside diameter at the place 20 mm (0.79 in) from the skirt end as shown in Fig. If the measurement is less than the limit, replace the piston.

**Service Limit: 104.880 mm (4.1291 in)**

**Piston oversize: 0.5, 1.0 mm**



(Continued on next page.)

## PISTON-CYLINDER CLEARANCE

As a result of the previous measurement, if the piston to cylinder clearance exceeds the limit shown in the table below, overhaul the cylinder and use an oversize piston, or replace both cylinder and piston.

**Service Limit: 0.120 mm (0.0047 in)**

## PISTON RING-GROOVE CLEARANCE

Using a thickness gauge, measure the side clearance of the 1st and 2nd rings. If any of the clearances exceeds the limit, replace both piston and piston rings.

**09900-20803: Thickness gauge**

**Piston ring-groove clearance**

**Service Limit**

**1st : 0.180 mm (0.0071 in)**

**2nd: 0.150 mm (0.0059 in)**

**Piston ring groove width**

**Standard**

**1st : 1.23 – 1.25 mm (0.048 – 0.049 in)**

**2nd: 1.21 – 1.23 mm (0.047 – 0.048 in)**

**Oil : 2.81 – 2.83 mm (0.110 – 0.111 in)**

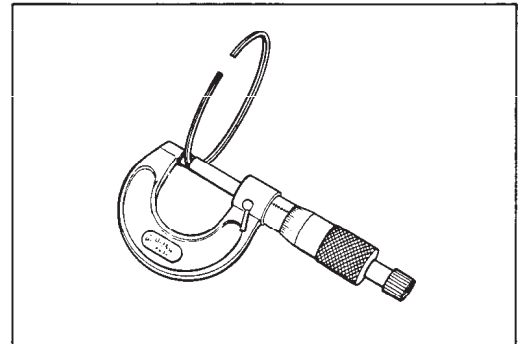
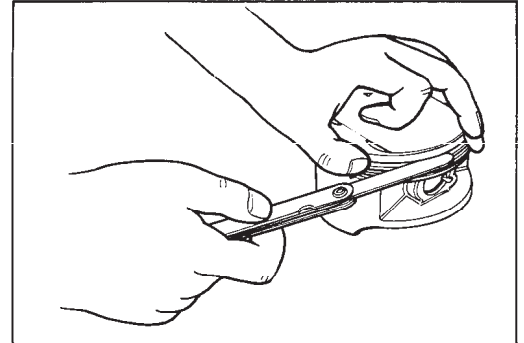
**Piston ring thickness**

**Standard**

**1st and 2nd: 1.17 – 1.19 mm (0.046 – 0.047 in)**

**NOTE:**

*Using a soft-metal scraper, decarbon the crown of the piston.  
Clean the ring grooves similarly.*



## PISTON RING FREE END GAP AND PISTON RING END GAP

Before installing piston rings, measure the free end gap of each ring using vernier calipers.

Next, fit the ring in the cylinder, and measure each ring end gap using a thickness gauge.

If any ring has an excess end gap, replace the ring.

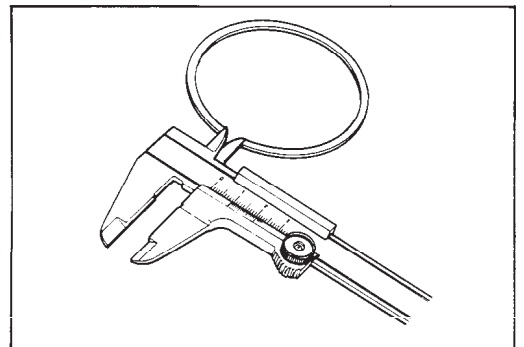
**Piston ring free end gap**

**Service Limit**

**1st : 10.0 mm (0.39 in)**

**2nd: 8.9 mm (0.35 in)**

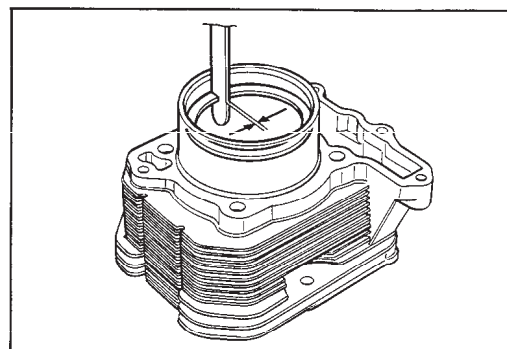
**09900-20102: Vernier calipers**



**Piston ring end gap****Service Limit**

1st and 2nd: 1.00 mm (0.04 in)

09900-20803: Thickness gauge

**OVERSIZE RINGS**

- **Oversize piston ring**

The following two types of oversize piston rings are used. They bear the following identification numbers.

**Piston ring 1st and 2nd**

0.5 mm: 50

1.0 mm: 100

- **Oversize oil ring**

The following two types of oversize oil rings are used. They bear the following identification marks.

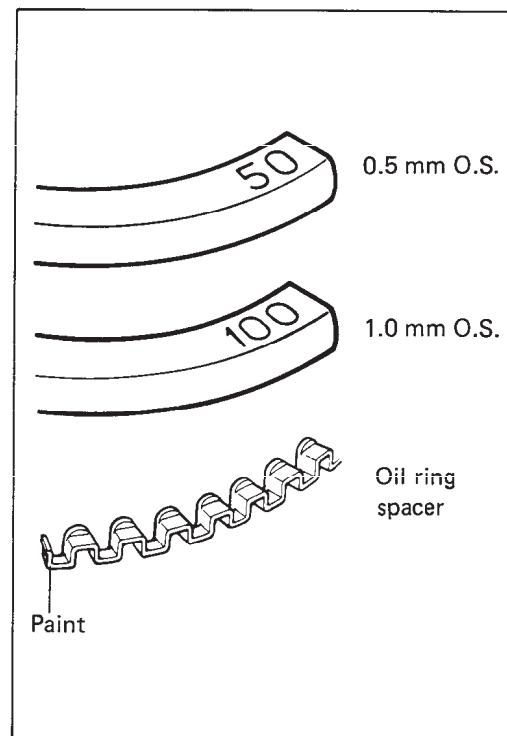
**Oil ring**

0.5 mm: Painted red

1.0 mm: Painted yellow

- **Oversize side rail**

Just measure outside diameter to identify the side rail as there is no mark or numbers on it.

**PISTON PIN AND PIN BORE**

Using a caliper gauge, measure the piston pin bore inside diameter, and using a micrometer measure the piston pin outside diameter. If the difference between these two measurements is more than the limits, replace both piston and piston pin.

09900-20605: Dial calipers

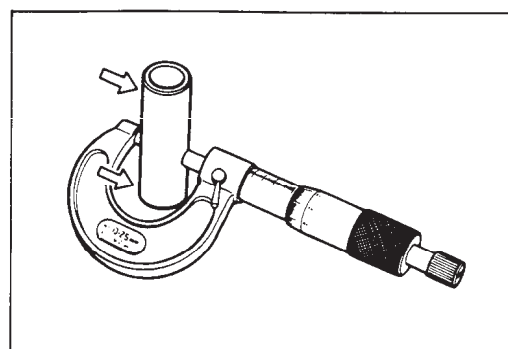
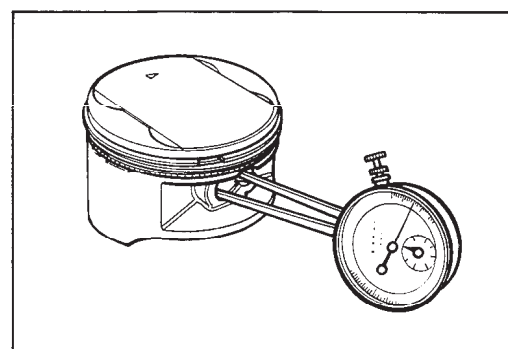
09900-20205: Micrometer

**Piston pin bore**

Service Limit: 26.030 mm (1.0248 in)

**Piston pin O.D.**

Service Limit: 25.980 mm (1.0228 in)



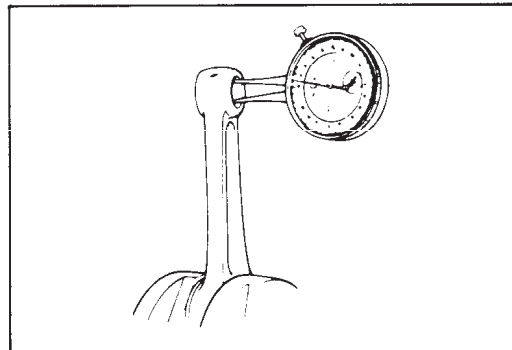
### CONROD SMALL END I.D.

Using a caliper gauge, measure the conrod small end inside diameter.

09900-20605: Dial calipers

Service Limit: 26.040 mm (1.0252 in)

If the conrod small end bore inside diameter exceeds the limit, replace conrod.



### CONROD DEFLECTION AND CONROD BIG END SIDE CLEARANCE

Wear on the big end of the conrod can be estimated by checking the movement of the small end of the rod. This method can also check the extent of wear on the parts of the conrod's big end.

Service Limit: 3.0 mm (0.12 in)

09900-20701: Magnetic stand

09900-20606: Dial gauge (1/100 mm)

09900-21304: V-block

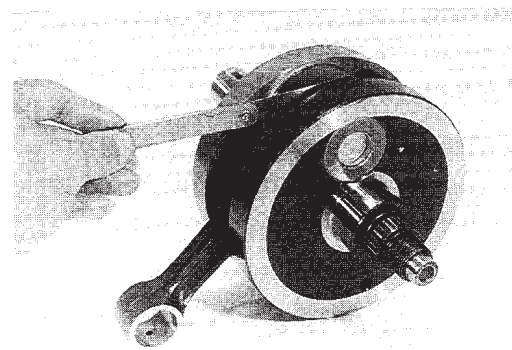
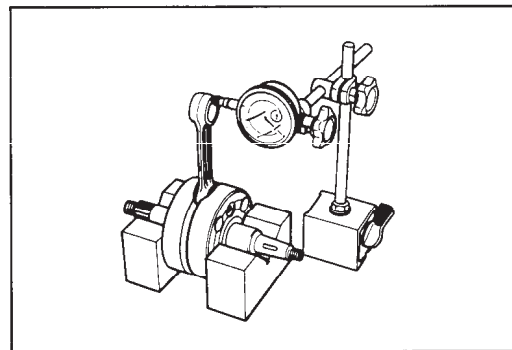
Push the big end of the conrod to one side and measure the side clearance with a thickness gauge.

09900-20803: Thickness gauge

Standard: 0.10 – 0.65 mm (0.004 – 0.026 in)

Service Limit: 1.00 mm (0.039 in)

Where the limit is exceeded, replace crankshaft assembly or reduce the deflection and the side clearance to within the limit by replacing the worn parts – conrod, big end bearing and crank pin etc.



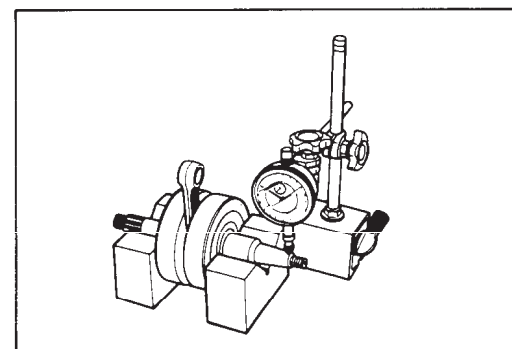
### CRANKSHAFT RUNOUT

Support the crankshaft with "V" blocks as shown, with the two end journals resting on the blocks.

Position the dial gauge, as shown, and rotate the crankshaft slowly to read the runout.

Correct or replace the crankshaft if the runout is greater than the limit.

Service Limit: 0.07 mm (0.003 in)





## CLUTCH DRIVE PLATE

Measure the thickness and claw width of each drive plate with vernier calipers. Replace drive plates found to have worn down to the limit.

**09900-20102: Vernier calipers**

### Standard

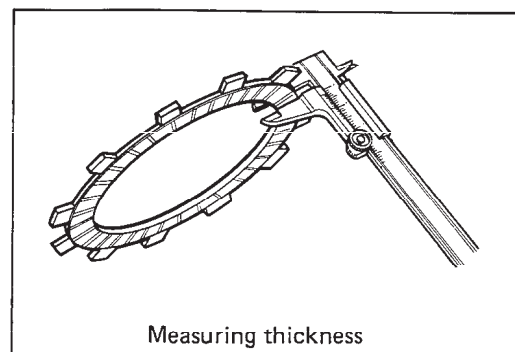
**Thickness : 2.70 – 3.00 mm (0.106 – 0.118 in)**

**Claw width: 15.6 – 15.8 mm (0.61 – 0.62 in)**

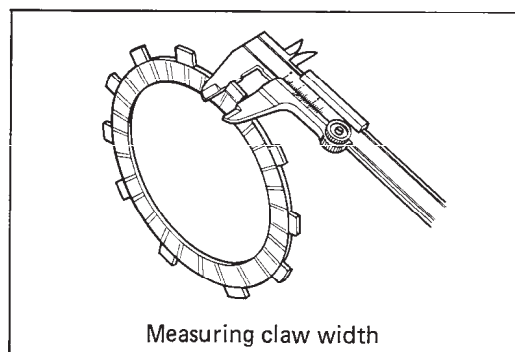
### Service Limit

**Thickness : 2.40 mm (0.094 in)**

**Claw width: 14.8 mm (0.58 in)**



Measuring thickness



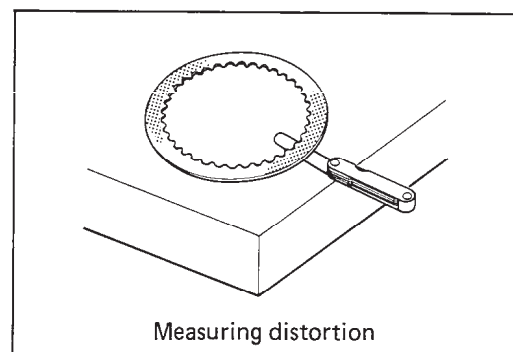
Measuring claw width

## CLUTCH DRIVEN PLATE

Measure each driven plate for distortion with a thickness gauge. Replace driven plates which exceed the limit.

**09900-20803: Thickness gauge**

**Service Limit: 0.1 mm (0.004 in)**



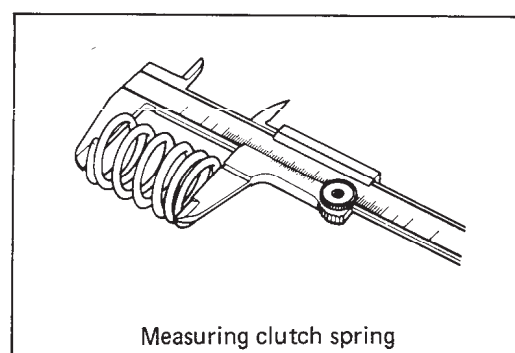
Measuring distortion

## CLUTCH SPRING FREE LENGTH

Measure the free length of each coil spring with a vernier calipers, and determine the elastic strength of each. Replace any spring not within the limit.

**09900-20102: Vernier calipers**

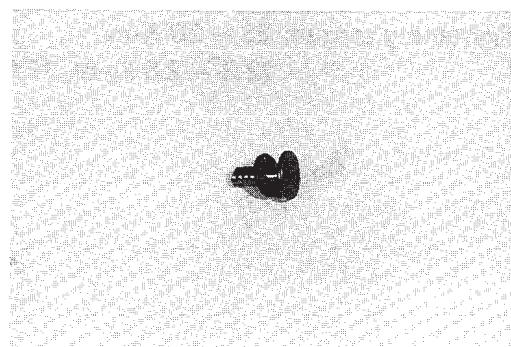
**Service Limit: 33.4 mm (1.31 in)**



Measuring clutch spring

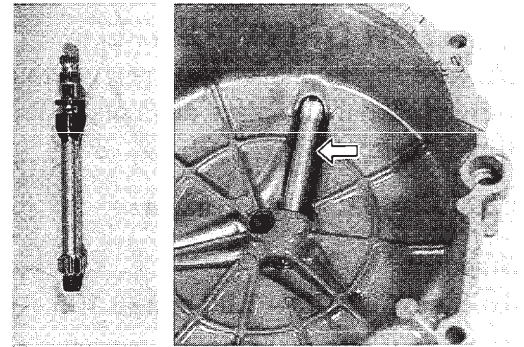
## CLUTCH RELEASE BEARING

Inspect the release bearing for any abnormality, particularly cracks, to decide whether it can be reused or should be replaced. Smooth engagement and disengagement of the clutch depends much on the condition of this bearing.



### CLUTCH RELEASE PINION AND RACK

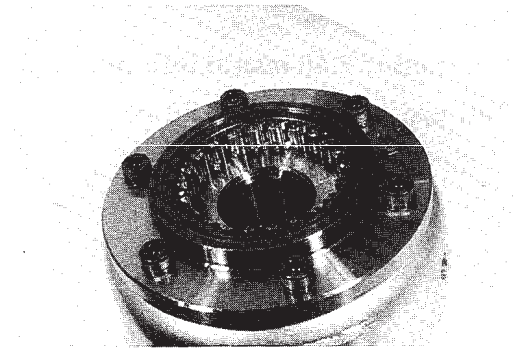
Rotate the clutch release pinion by hand to inspect for a smooth rotation. If a large resistance is felt to rotation, inspect the pinion and rack for damage or wear. If the defect is found, replace them as a set.



### STARTER CLUTCH AND STARTER DRIVEN GEAR BEARING

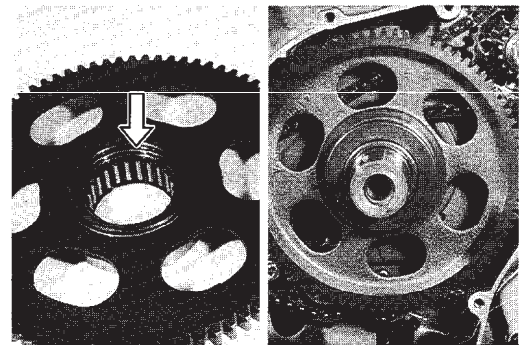
#### STARTER CLUTCH

Install the starter driven gear onto the starter clutch and turn the starter driven gear by hand to inspect the starter clutch for a smooth movement. The gear turns one direction only. If a large resistance is felt to rotation, inspect the starter clutch for damage or inspect the starter clutch contacting surface of the starter driven gear for wear or damage. If they are found to be damaged, replace them with new ones.



#### STARTER DRIVEN GEAR BEARING

Install the starter driven gear onto the crankshaft and turn the starter driven gear by hand to inspect the starter driven gear bearing for a smooth rotation and abnormal noise. If it is found to be damaged, replace it with new one.



- Hold the magneto rotor with the rotor holder and remove the starter clutch securing bolts.

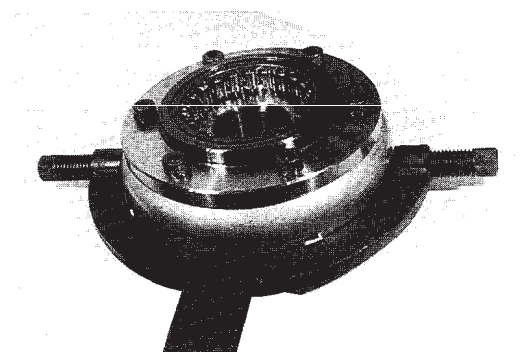
**NOTE:**

*When installing the starter clutch to the magneto rotor, apply **THREAD LOCK SUPER "1303"** to the securing bolts and tighten them to the specified torque.*

**09930-44913: Rotor holder**

**99000-32030: Thread lock super "1303"**

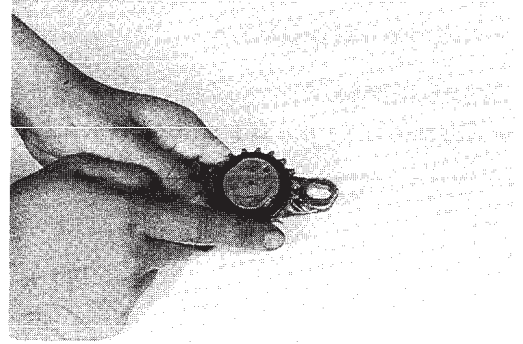
**Tightening torque: 23 – 28 N·m  
(2.3 – 2.8 kg·m, 16.5 – 20.0 lb·ft)**



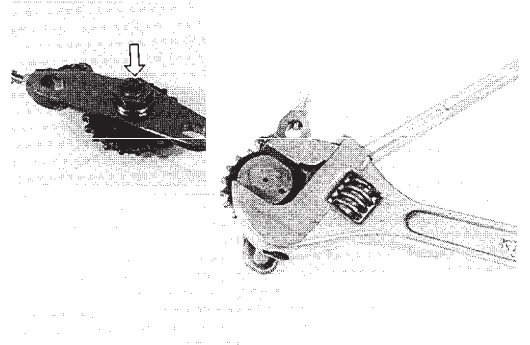
## BALANCER CHAIN TENSION ADJUSTER

Rotate the sprocket by hand to inspect the bearing for an abnormal noise and a smooth rotation.

Replace the bearing if there is anything unusual.



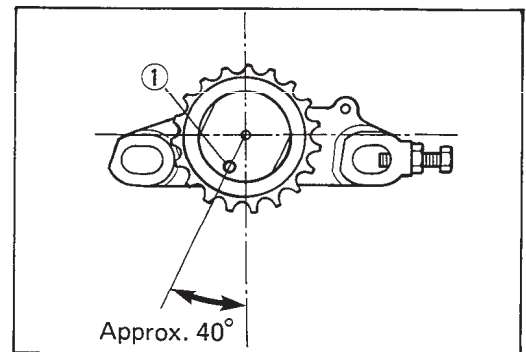
- Remove the nut by holding the shaft.



- Be sure to set the hole ① on the shaft with the specified angle, as shown in the illustration.

**Tightening torque: 45 – 70 N·m**

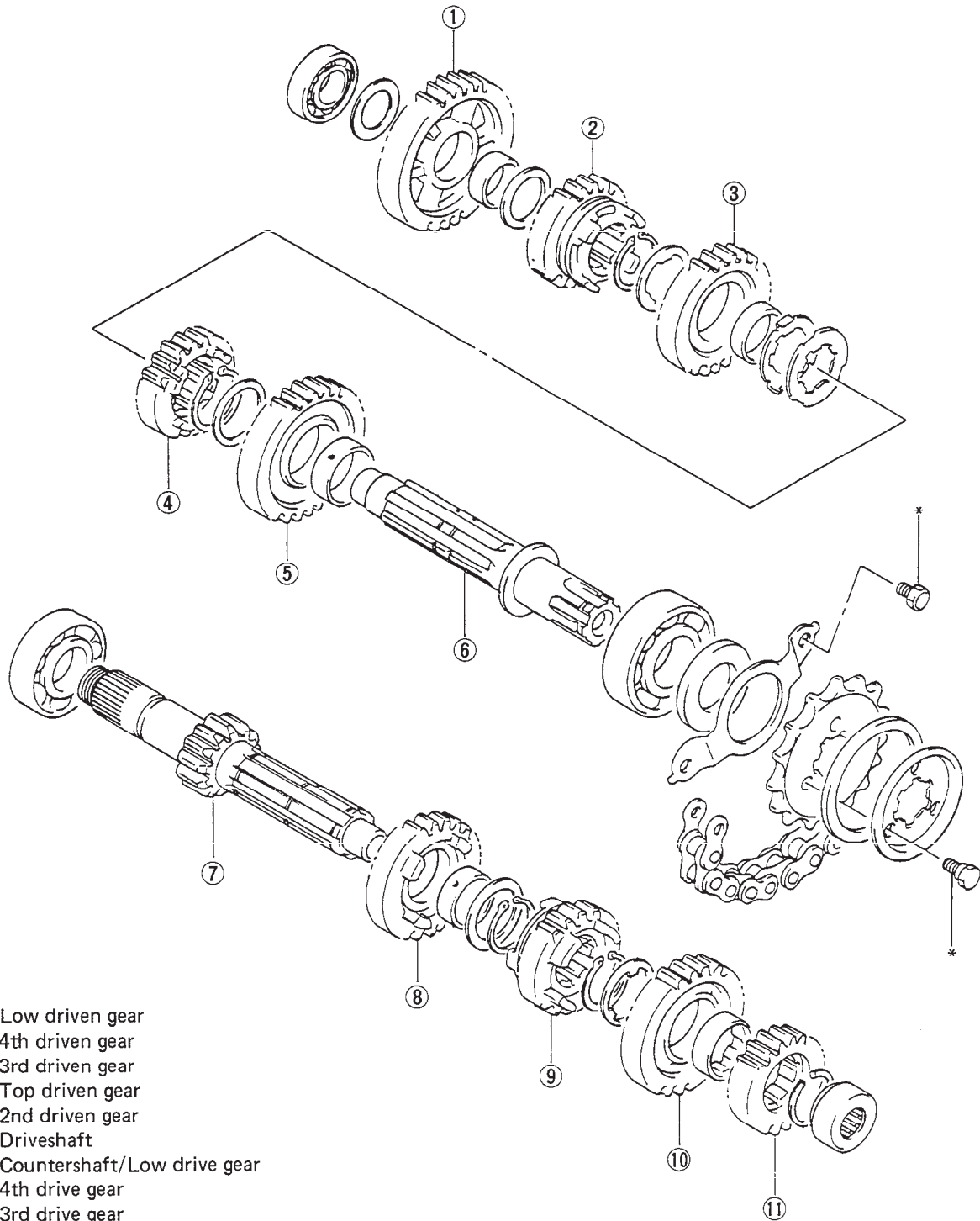
**(4.5 – 7.0 kg-m, 32.5 – 50.5 lb-ft)**



## TRANSMISSION

### DISASSEMBLY

- Disassemble the transmission gears as shown in the illustration.



\*: Apply Thread lock "1342"



## COUNTERSHAFT AND DRIVESHAFT

### REASSEMBLY

Assemble the countershaft and driveshaft, in the reverse order of disassembly. Pay attention to following points:

**NOTE:**

*Always use new circlips.*

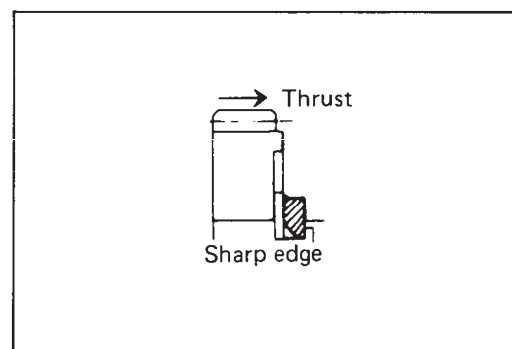
**NOTE:**

*Before installing the gears, coat lightly moly paste or engine oil to the driveshaft and countershaft.*

**99000-25140: Suzuki moly paste**

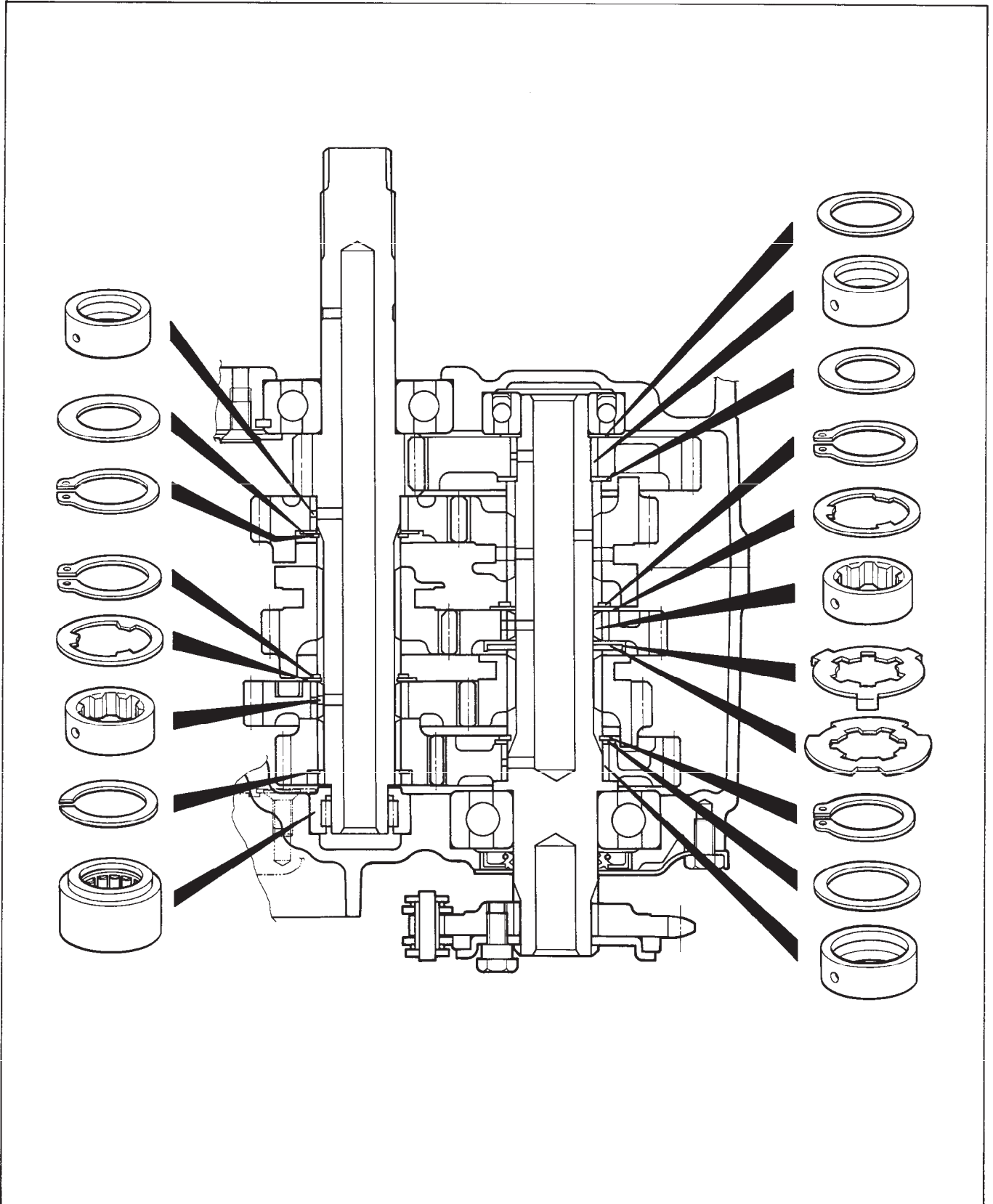
**CAUTION:**

- \* Never reuse a circlip. After a circlip has been removed from a shaft, it should be discarded and a new circlip must be installed.
  - \* When installing a new circlip, care must be taken not to expand the end gap larger than required to slip the circlip over the shaft.
  - \* After installing a circlip, always insure that it is completely seated in its groove and securely fitted.
- 
- When installing a new circlip, pay attention to the direction of the circlip. Fit it to the side where the thrust is as shown in figure.



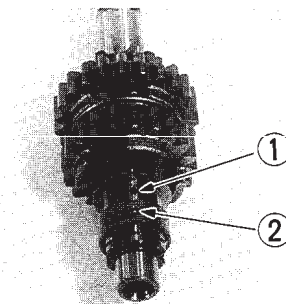
**NOTE:**

*In reassembling the transmission, attention must be given to the locations and positions of washers and circlips. The cross sectional view given here will serve as a reference for correctly mounting the gears, washers and circlips.*



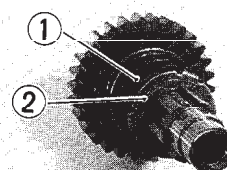
### TOP DRIVE GEAR BUSHING

- When installing the Top drive gear bushing onto the countershaft, align the oil hole ① of the countershaft with the bushing oil hole ②.



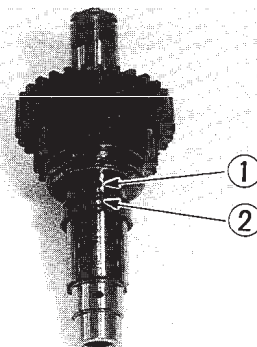
### 3RD DRIVEN GEAR LOCK WASHERS

- Before mounting the 3rd driven gear onto the driveshaft, set the pair of lock washers, ① and ②, onto the driveshaft.



### 3RD DRIVEN GEAR BUSHING

- When installing the 3rd driven gear bushing onto the driveshaft, align the oil hole ① of the driveshaft with the bushing oil hole ②.



### SHIFT FORK-GROOVE CLEARANCE

Using a thickness gauge, check the shifting fork clearance in the groove of its gear.

The clearance for each of the three shifting forks plays an important role in the smoothness and positiveness of shifting action.

#### Shift fork-Groove clearance

Standard : 0.10 – 0.30 mm (0.004 – 0.012 in)

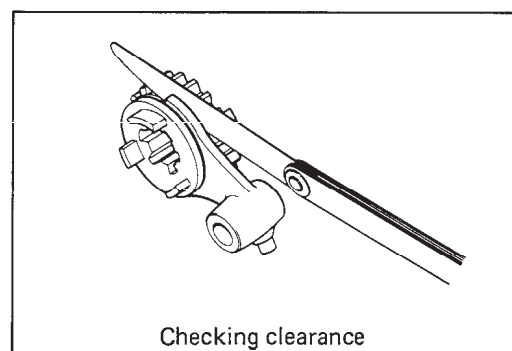
Service Limit: 0.50 mm (0.020 in)

If the clearance checked is noted to exceed the limit specified, replace the fork or its gear, or both.

09900-20803: Thickness gauge

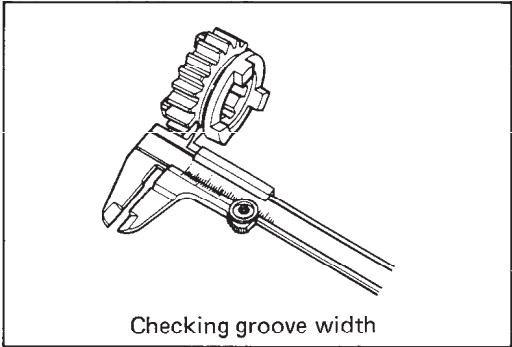
09900-20102: Vernier calipers

(Continued on next page.)



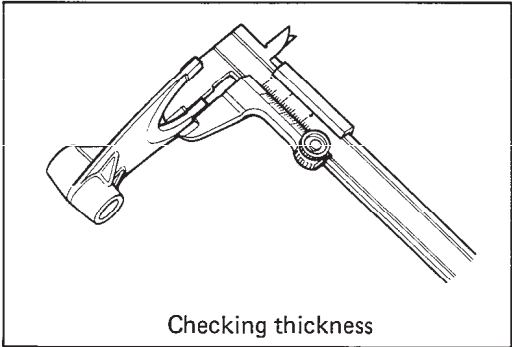
**Shift fork groove width**

Standard: 5.5 – 5.6 mm (0.22 – 0.23 in)



**Shift fork thickness**

Standard: 5.3 – 5.4 mm (0.20 – 0.21 in)

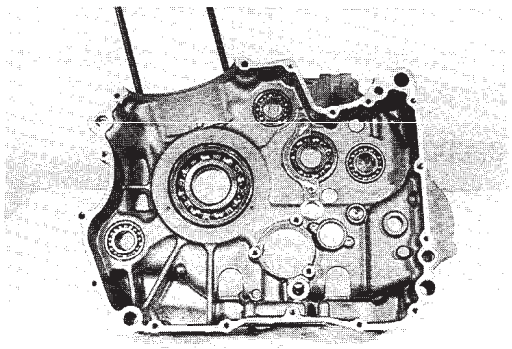
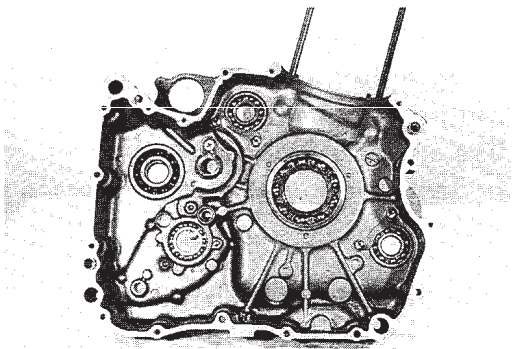
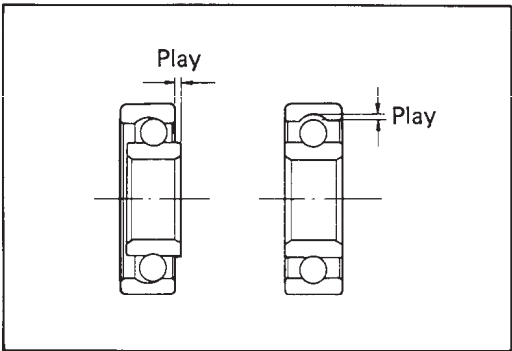


**CRANKCASE BEARINGS**

Inspect the play of the crankcase bearings by hand while they are in the right and left crankcases. Rotate each crankcase bearing inner race by hand to inspect for abnormal noise and smooth rotation. Replace the bearing if there is anything unusual.

**NOTE:**

*When reassembling the bearing retainer, apply a small quantity of THREAD LOCK "1342" to the bearing retainer screws.*





## ENGINE REASSEMBLY

Reassembly is generally performed in the reverse order to disassembly, but there are a number of reassembling steps that demand or deserve detailed explanation or emphasis. These steps will be taken up for respective parts and components.

### NOTE:

- \* *Apply engine oil to each running and sliding part before reassembling.*
- \* *Check the oil jets fitted on the cylinder head, clutch cover and crankcase for clogging. (Refer to pages 4-10 through 4-12.)*

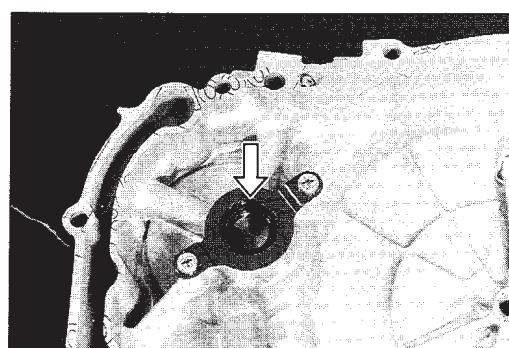
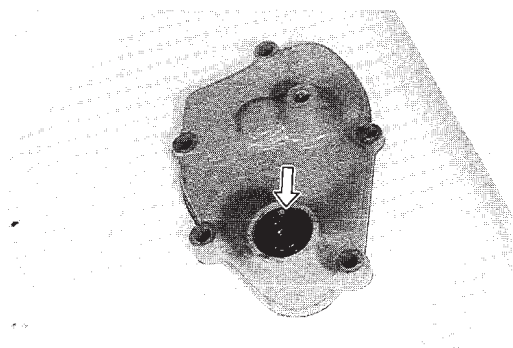
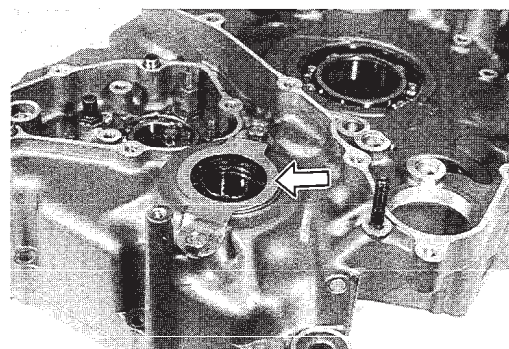
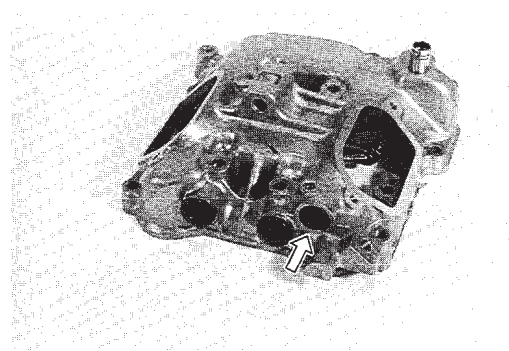
### OIL SEALS

- Fit the respective oil seals to the cylinder head cover, crankcase, clutch cover and gearshifter cover with proper wrench.
- Coat SUPER GREASE "A" to the lip of each oil seal.

99000-25010: Suzuki super grease "A"

### CAUTION:

Replace the oil seals with new ones every disassembly to prevent oil leakage.



## OIL PUMP AND OIL PRESSURE REGULATOR

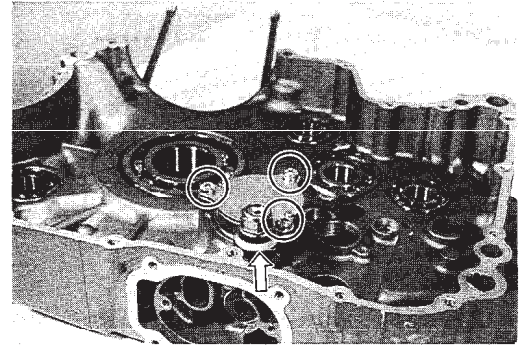
- Before installing the oil pump, apply a small quantity of THREAD LOCK "1342" to its securing screws.

99000-32050: Thread lock "1342"

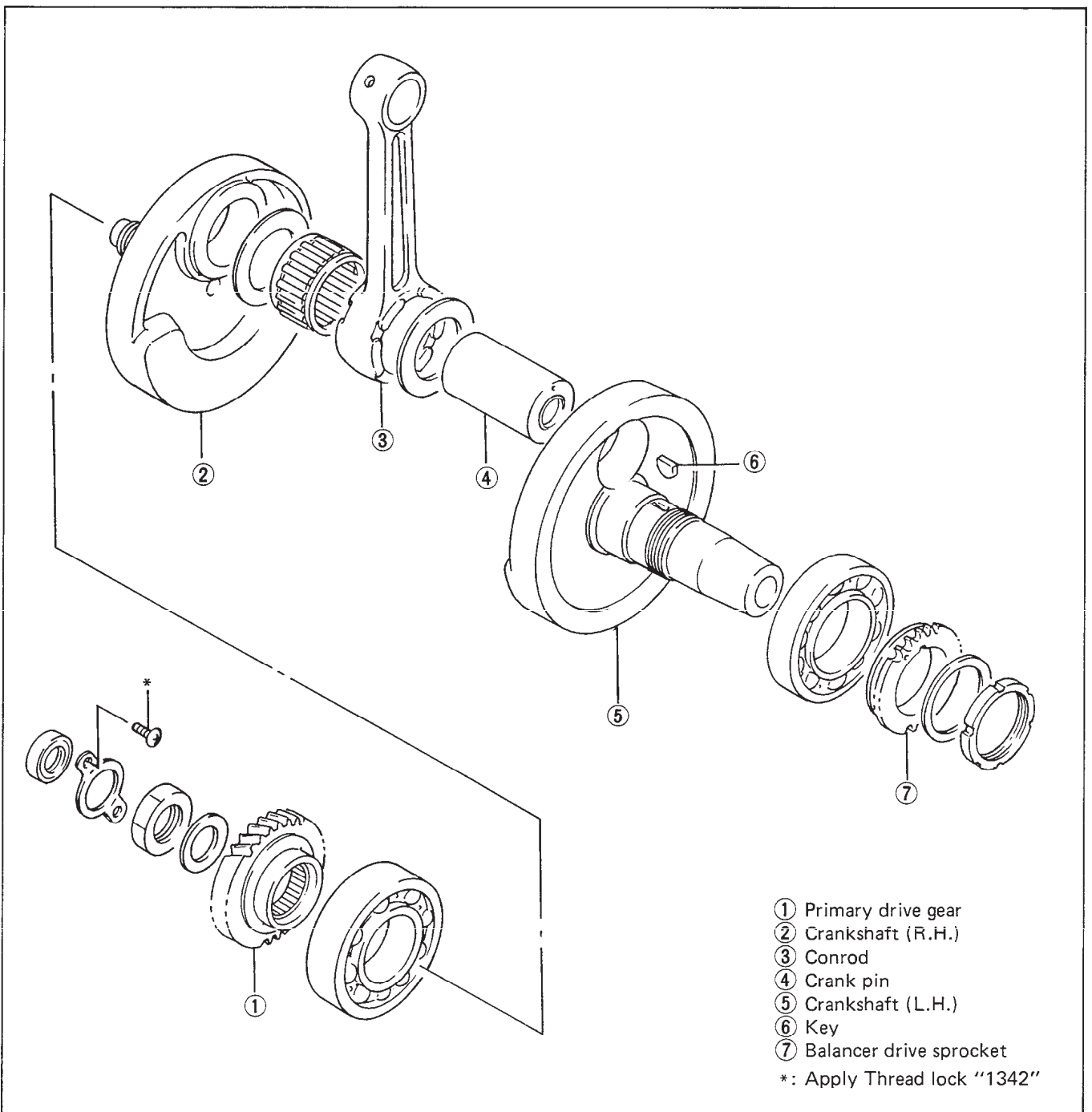
- Tighten the oil pressure regulator to the specified torque.

Tightening torque: 25 – 30 N·m

(2.5 – 3.0 kg-m, 18.0 – 21.5 lb-ft)

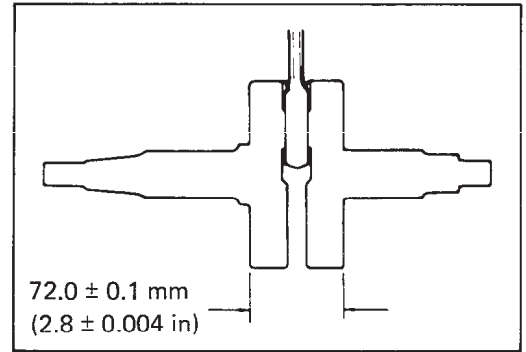


## CRANKSHAFT

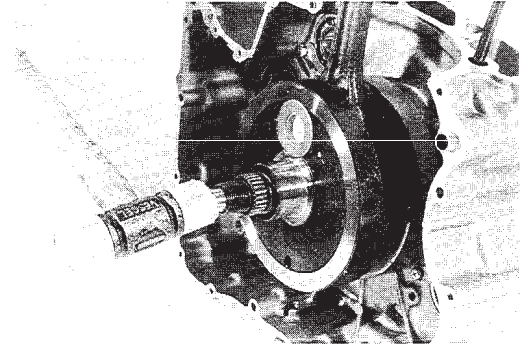


- Decide the width between the webs referring to the figure below when rebuilding the crankshaft.

STD width between webs:  $72.0 \pm 0.1$  mm ( $2.8 \pm 0.004$  in)



- Install the crankshaft into the left crankcase by striking it with a plastic hammer.

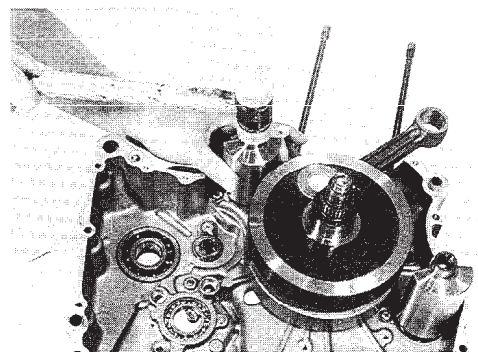
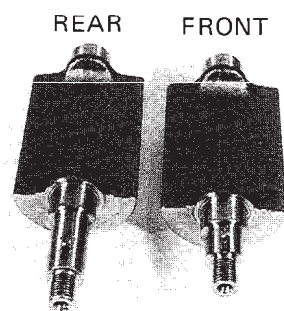
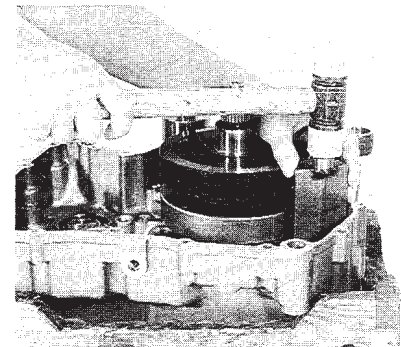


## BALANCERSHAFT

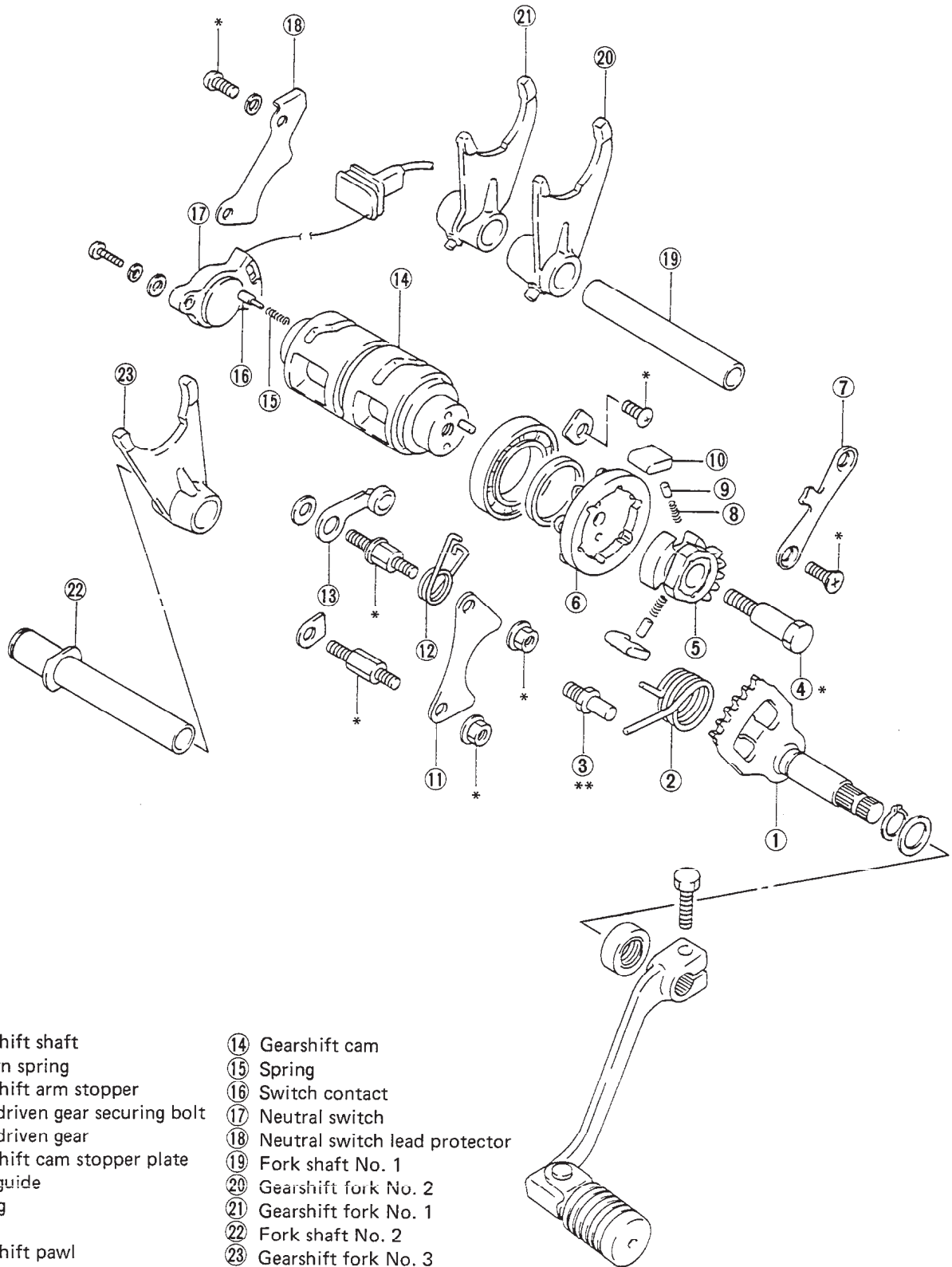
- Install the front and rear balancershafts into the left crankcase by striking them with a plastic hammer.

### NOTE:

*The rear balancershaft length is longer than the front one.*



GEARSHIFT MECHANISM



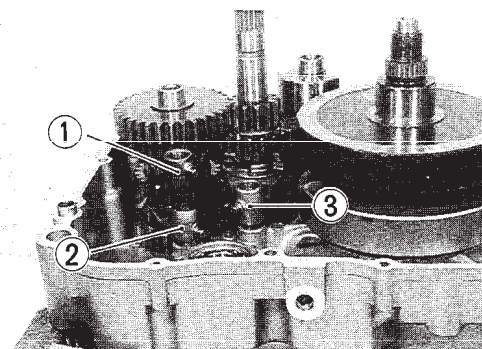
- ① Gearshift shaft
- ② Return spring
- ③ Gearshift arm stopper
- ④ Cam driven gear securing bolt
- ⑤ Cam driven gear
- ⑥ Gearshift cam stopper plate
- ⑦ Cam guide
- ⑧ Spring
- ⑨ Pin
- ⑩ Gearshift pawl
- ⑪ Pawl lifter
- ⑫ Gearshift cam stopper spring
- ⑬ Gearshift cam stopper

- ⑭ Gearshift cam
- ⑮ Spring
- ⑯ Spring
- ⑰ Switch contact
- ⑱ Neutral switch
- ⑲ Neutral switch lead protector
- ⑳ Fork shaft No. 1
- ㉑ Gearshift fork No. 2
- ㉒ Gearshift fork No. 1
- ㉓ Fork shaft No. 2
- ㉔ Gearshift fork No. 3

\*: Apply Thread lock "1342"  
 \*\*: Apply Thread lock super "1303"



- After installing the countershaft assembly and driveshaft assembly into the left crankcase, fit the gearshift forks ①, ② and ③ into the gearshift fork grooves.

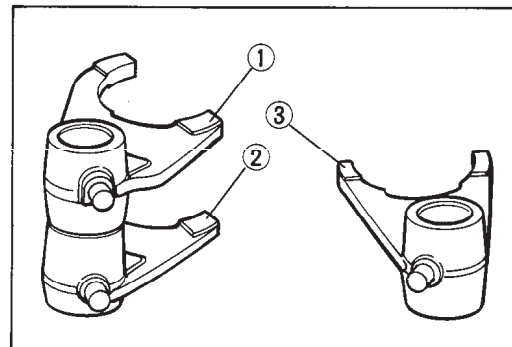


- ① For 4th driven gear (No. 1)
- ② For Top driven gear (No. 2)
- ③ For 3rd drive gear (No. 3)

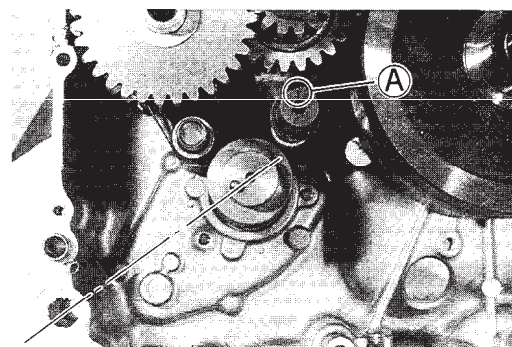
**NOTE:**

Three kinds of gearshift forks, ①, ② and ③ are used. They resemble each other very closely in external appearance and configuration.

Carefully examine the illustration for correct installing positions and directions.



- Position the gearshift cam as shown in Fig. so that the gearshift fork shafts can be installed easily.
- Be sure to face the engraved line (A) on the fork shaft No. 2 to the engine upper side.



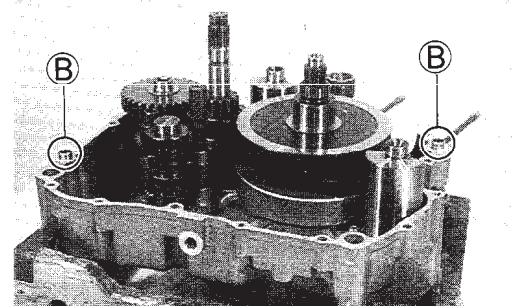
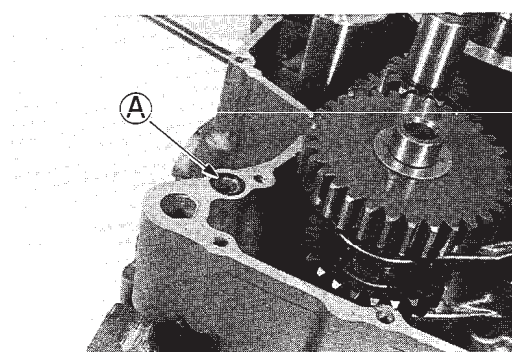
## CRANKCASE

When reassembling the crankcase pay attention to the following points:

- Remove sealant material on the mating surfaces of right and left halves of crankcase and thoroughly remove oil stains.
- Fit the new O-ring (A) and dowel pins (B) on the left half as shown in Fig.
- Apply engine oil to the conrod big end of the crankshaft and all parts of the transmission gears.
- Apply SUZUKI BOND No. 1216 uniformly to the mating surface of the left half of the crankcase, and assemble the cases within few minutes.

**99000-31160: Suzuki bond No. 1216**

(Continued on next page.)



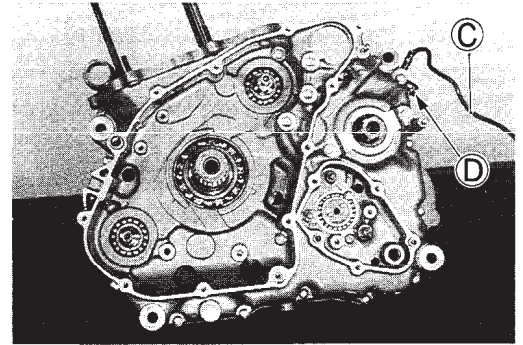
## 3-47 ENGINE

- Fit up the engine ground wire ③ and clamp ④ to the correct position as shown in Fig.
- Tighten the crankcase bolts to the specified torque.

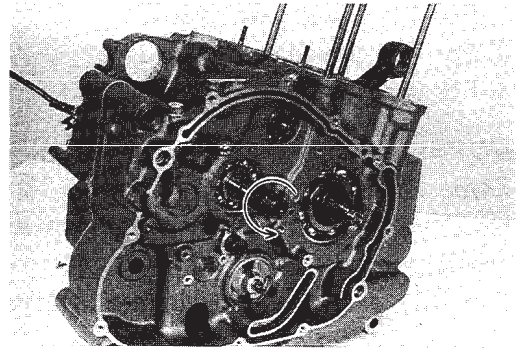
### Tightening torque

Crankcase bolt: 9 – 13 N·m

(0.9 – 1.3 kg·m, 6.5 – 9.5 lb·ft)

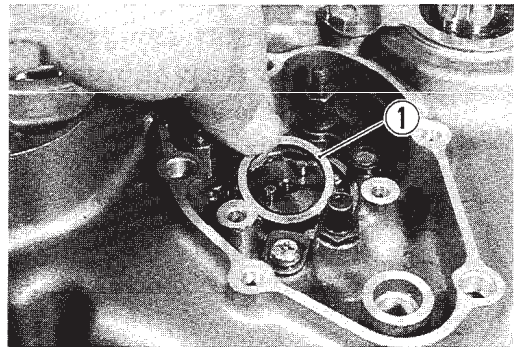


- After the crankcase bolts have been tightened, check if driveshaft and countershaft rotate smoothly.
- If a large resistance is felt to rotation, try to free the shafts by tapping the driveshaft or countershaft with a plastic hammer.



## CAM DRIVEN GEAR AND GEARSHIFT SHAFT

- Seat the washer ① onto the gearshift cam.

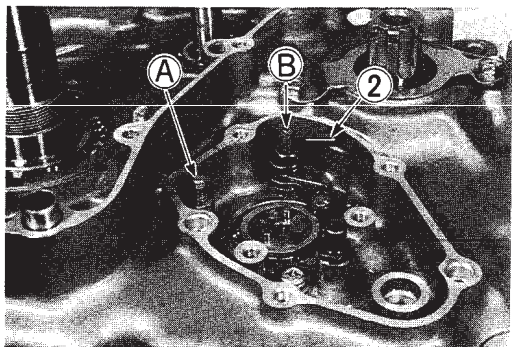


- Install the gearshift cam stopper spring ② as shown in Fig.

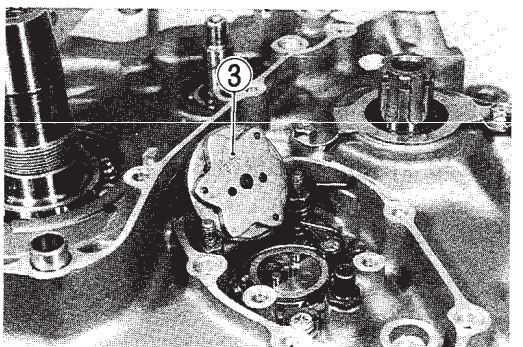
### NOTE:

When replacing the bolts, ① and ②, apply a small quantity of **THREAD LOCK "1342"** to the threaded of bolts.

99000-32050: Thread lock "1342"

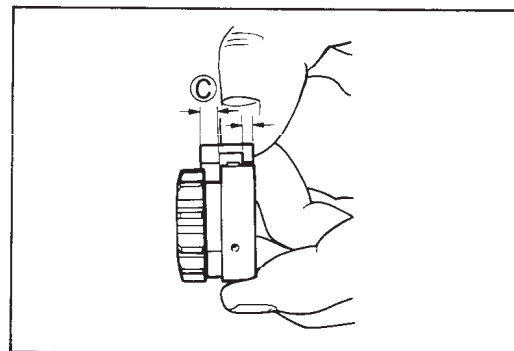


- Fit the gearshift cam stopper plate ③ onto the gearshift cam.





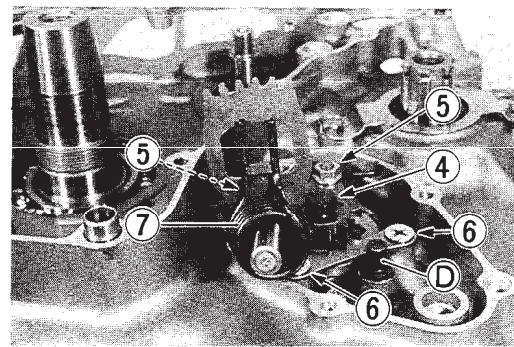
- Install the gearshift pawls into the cam driven gear. The large shoulder © must face to the outside as shown in the illustration.



- Apply a small quantity of THREAD LOCK "1342" to the cam driven gear securing bolt ④, pawl lifter securing nuts ⑤ and cam guide securing screws ⑥.

#### 99000-32050: Thread lock "1342"

- Install the gearshift shaft return spring ⑦ onto the gearshift shaft properly as shown in Fig.



#### NOTE:

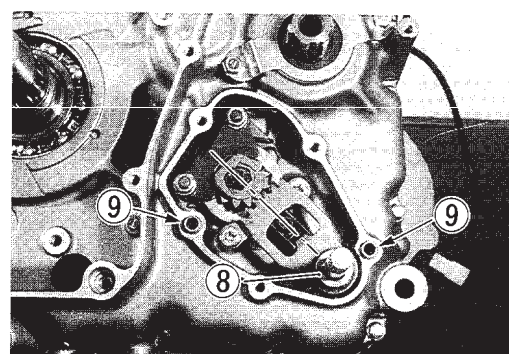
When replacing the gearshift arm stopper ©, apply a small quantity of THREAD LOCK SUPER "1303" to its threaded part and tighten it to the specified torque.

#### 99000-32030: Thread lock super "1303"

#### Tightening torque

Gearshift arm stopper: 15 – 23 N·m  
(1.5 – 2.3 kg·m, 11.0 – 16.5 lb-ft)

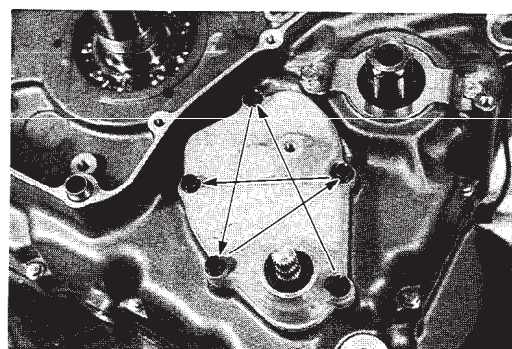
- Install the gearshift shaft. Match the center teeth of the gear on the gearshift shaft with the center teeth on the cam driven gear as shown in Fig.
- Fit the washer ⑧ and dowel pins ⑨.



- Fit the gearshift cover and tighten the bolts diagonally.

#### NOTE:

After the gearshift cover and gearshift lever have been fitted, confirm that gear change is normal while turning the countershaft and driveshaft. If gear change is not obtained, it means that assembly of gears or installation of gearshift fork is incorrect. If this is the case, disassemble and trace the mistake.



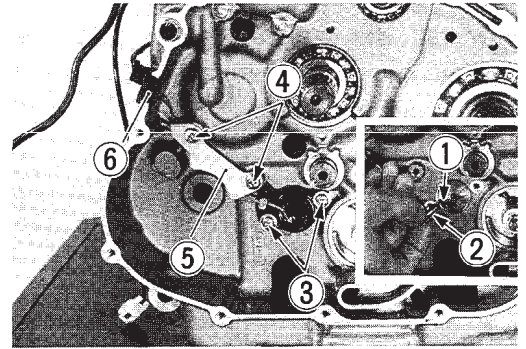
### NEUTRAL SWITCH

- Locate the spring ① and switch contact ② into the gear-shift cam end and install the neutral switch with screws ③.
- Apply a small quantity of THREAD LOCK "1342" to the screws ④ and install the neutral switch lead protector ⑤.

99000-32050: Thread lock "1342"

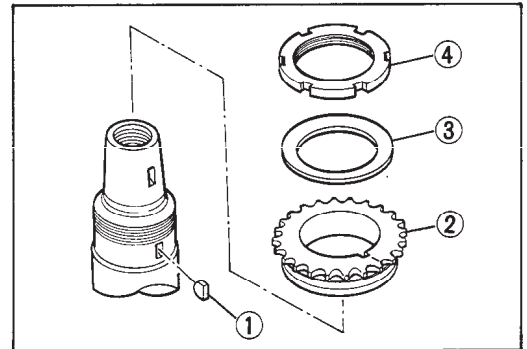
- Apply BOND No. 1216 to the groove of neutral lead grommet ⑥.

99000-31160: Suzuki bond No. 1216



### BALANCERSHAFT

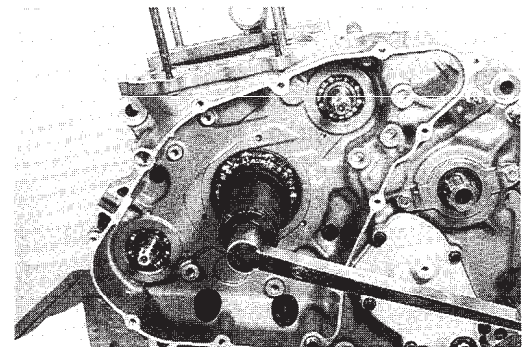
- Fit the key ① in the key slot on the crankshaft, then install the balancer drive sprocket ②, wave washer ③ and ring nut ④.
- Tighten the ring nut to the specified torque by using the special tools and torque wrench.



09917-23711: Ring nut socket wrench

09910-20116: Conrod holder

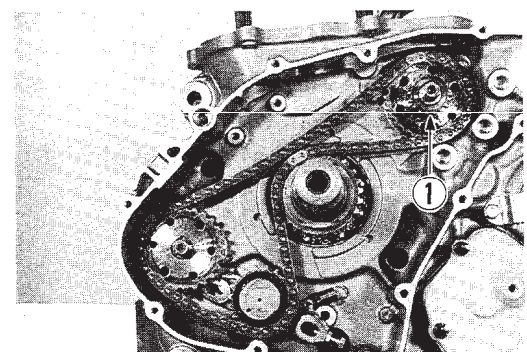
Tightening torque: 60 – 100 N·m  
(6.0 – 10.0 kg-m, 43.5 – 72.5 lb-ft)



- Fit the keys in each key slot on the front and rear balancer-shafts.
- Install the front and rear balancer driven sprockets and balancer chain tension adjuster along with the balancer chain. (Refer to page 3-50 for details.)

**NOTE:**

The rear balancer driven sprocket can be distinguished from that of the front one by the camshaft drive sprocket ①.

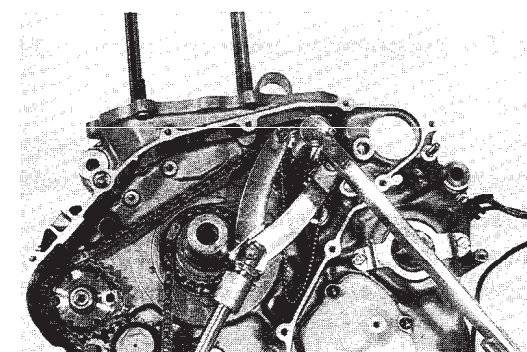


- Tighten the balancer driven sprocket nuts to the specified torque by using the special tools and torque wrench.

09930-40130: Balancer driven sprocket holder

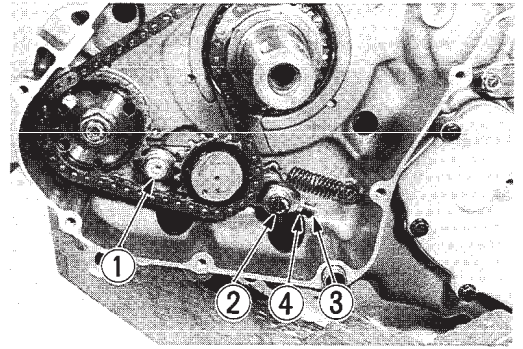
09930-40113: Rotor holder

Tightening torque: 35 – 43 N·m  
(3.5 – 4.3 kg-m, 25.5 – 31.0 lb-ft)





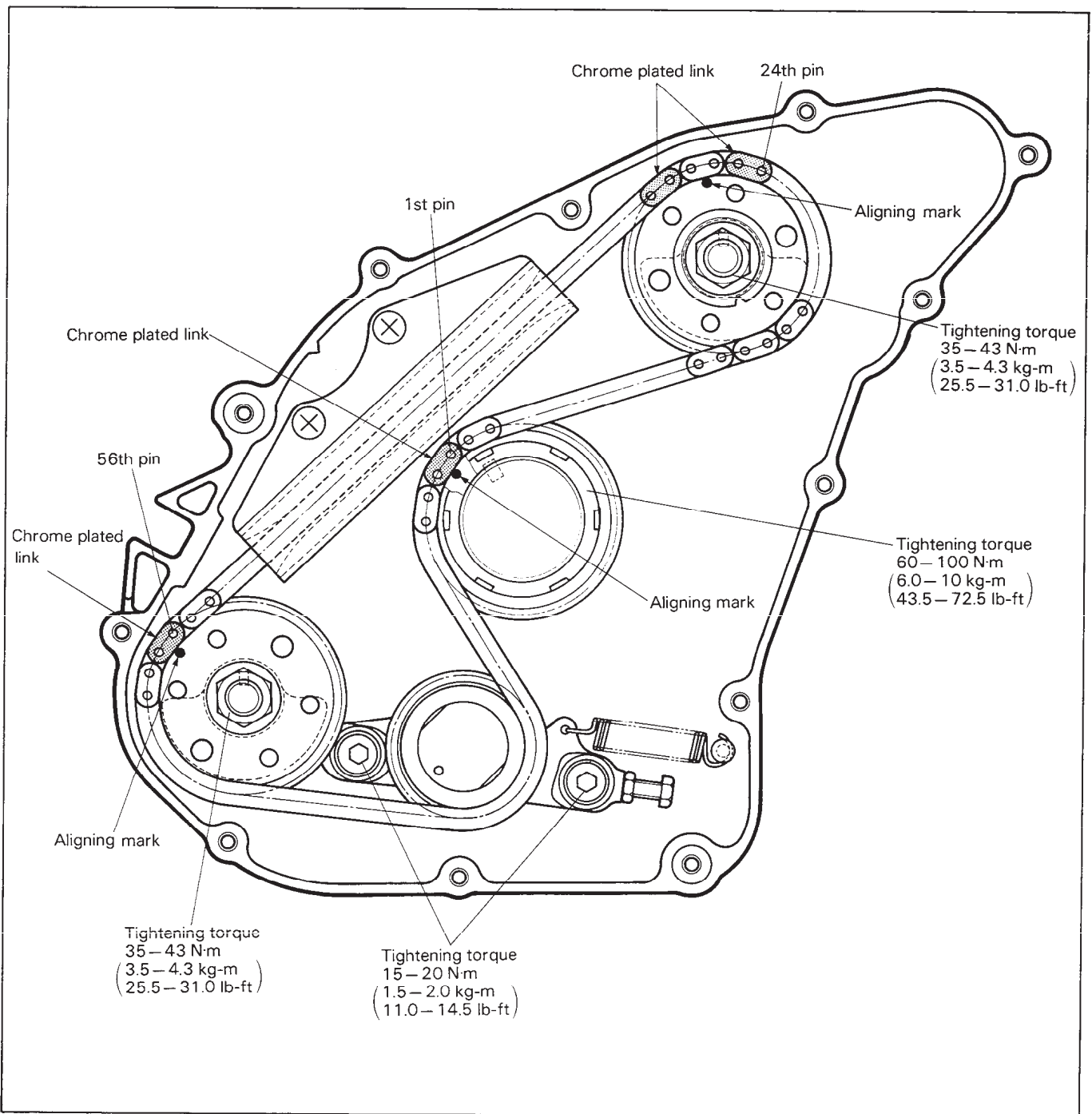
- Be sure to align the aligning marks on the drive and driven sprockets with the chrom plated links on the balancer chain as shown in the illustration.
- Hook the balancer chain tension adjuster spring onto the hooked part of crankcase.
- Tighten the two bolts (① and ②) to the specified torque, and then tighten the stopper bolt ③ and lock nut ④.



**Tightening torque: 15 – 20 N·m**  
**(Bolts ① and ②) (1.5 – 2.0 kg·m, 11.0 – 14.5 lb·ft)**

**NOTE:**

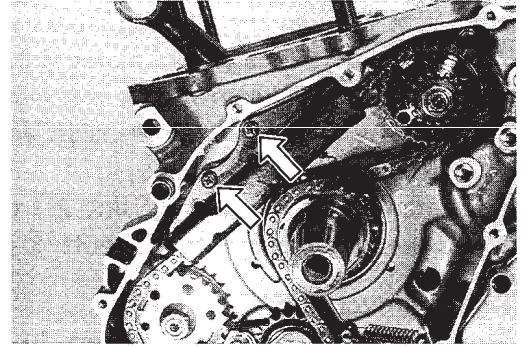
*The bolt ② is longer than the bolt ①.*



## 3-51 ENGINE

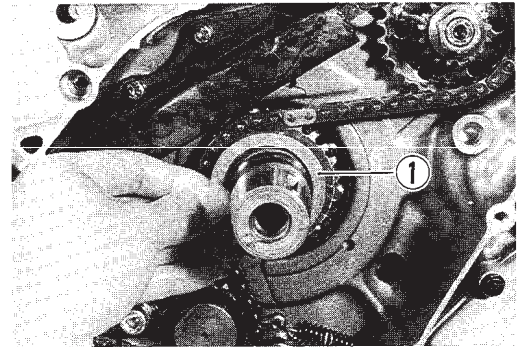
- Before installing the balancer chain guide, apply a small quantity of THREAD LOCK "1342" to its securing screws.

99000-32050: Thread lock "1342"



## STARTER DRIVEN GEAR AND MAGNETO

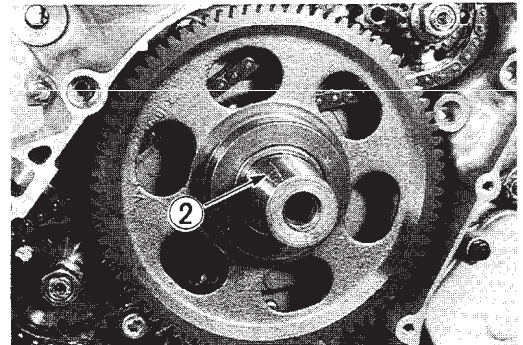
- Before installing the starter driven gear, install the thrust washer ①.



- Fit the key ② in the key slot on the crankshaft, then install the magneto rotor.

### NOTE:

*Degrease the tapered portion of the magneto rotor and also the crankshaft.*

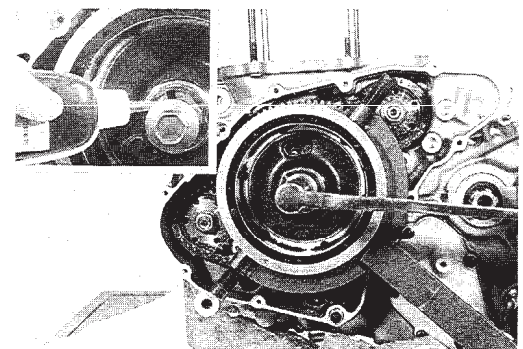


- Apply a small quantity of THREAD LOCK SUPER "1305" to the threaded part of rotor bolt.
- Tighten the magneto rotor bolt to the specified torque by using the special tool and torque wrench.

99000-32100: Thread lock super "1305"

09930-44913: Rotor holder

Tightening torque: 140 – 160 N·m  
(14.0 – 16.0 kg·m, 101.5 – 115.5 lb-ft)



- Install the starter reduction gear train ①, ② and ③.

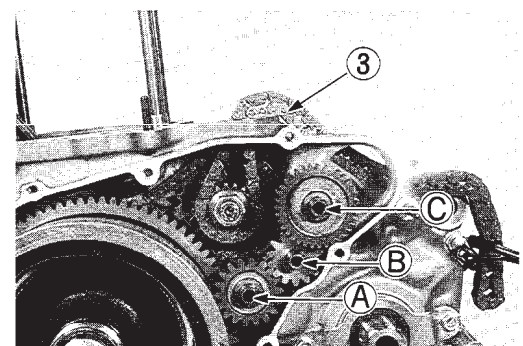
### GEAR SHAFT LENGTH

Gear shaft ① : 43 mm (1.69 in)

Gear shaft ② : 27 mm (1.06 in)

Gear shaft ③ : 36.5 mm (1.44 in)

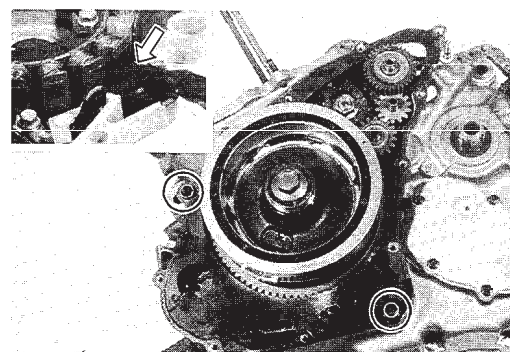
- Install the cam chain ④ onto the camshaft drive sprocket.



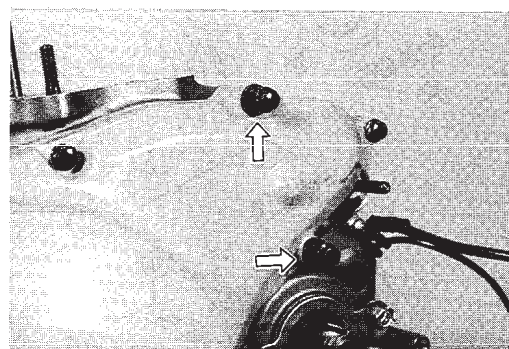


- Fit the two dowel pins and attach new gasket.
- Apply SUZUKI BOND No. 1216 to the groove of magneto lead wire grommet.

99000-31160: Suzuki bond No. 1216

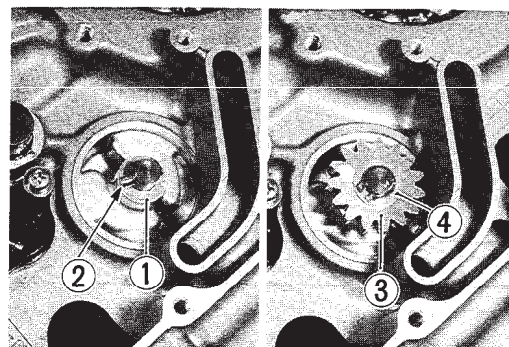


- Fit the gaskets to the magneto cover bolts correctly as shown in Fig.

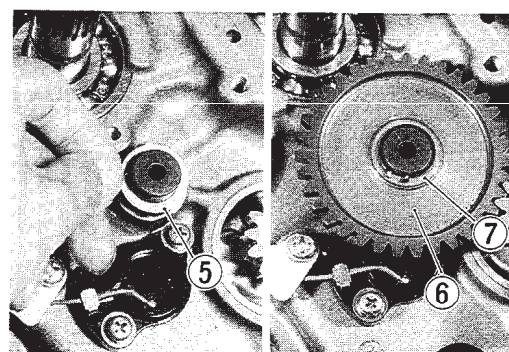


### OIL PUMP DRIVEN GEAR AND IDLE GEAR

- Install the washer ①, pin ②, oil pump driven gear ③ and washer ④.
- Fix the oil pump driven gear with the circlip.



- Install the washer ⑤, idle gear ⑥ and washer ⑦.
- Fix the idle gear with the circlip.



### PRIMARY DRIVE GEAR

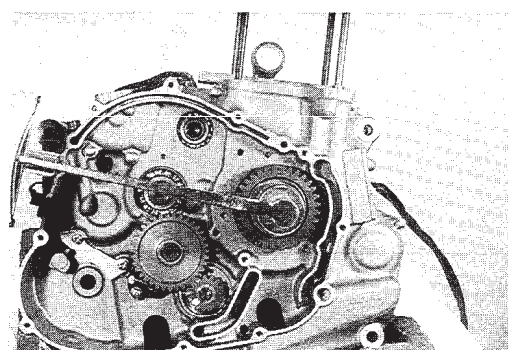
- Install the primary drive gear, lock washer and nut, then tighten the primary drive gear nut to the specified torque by using the special tool and torque wrench.

09910-20116: Conrod holder

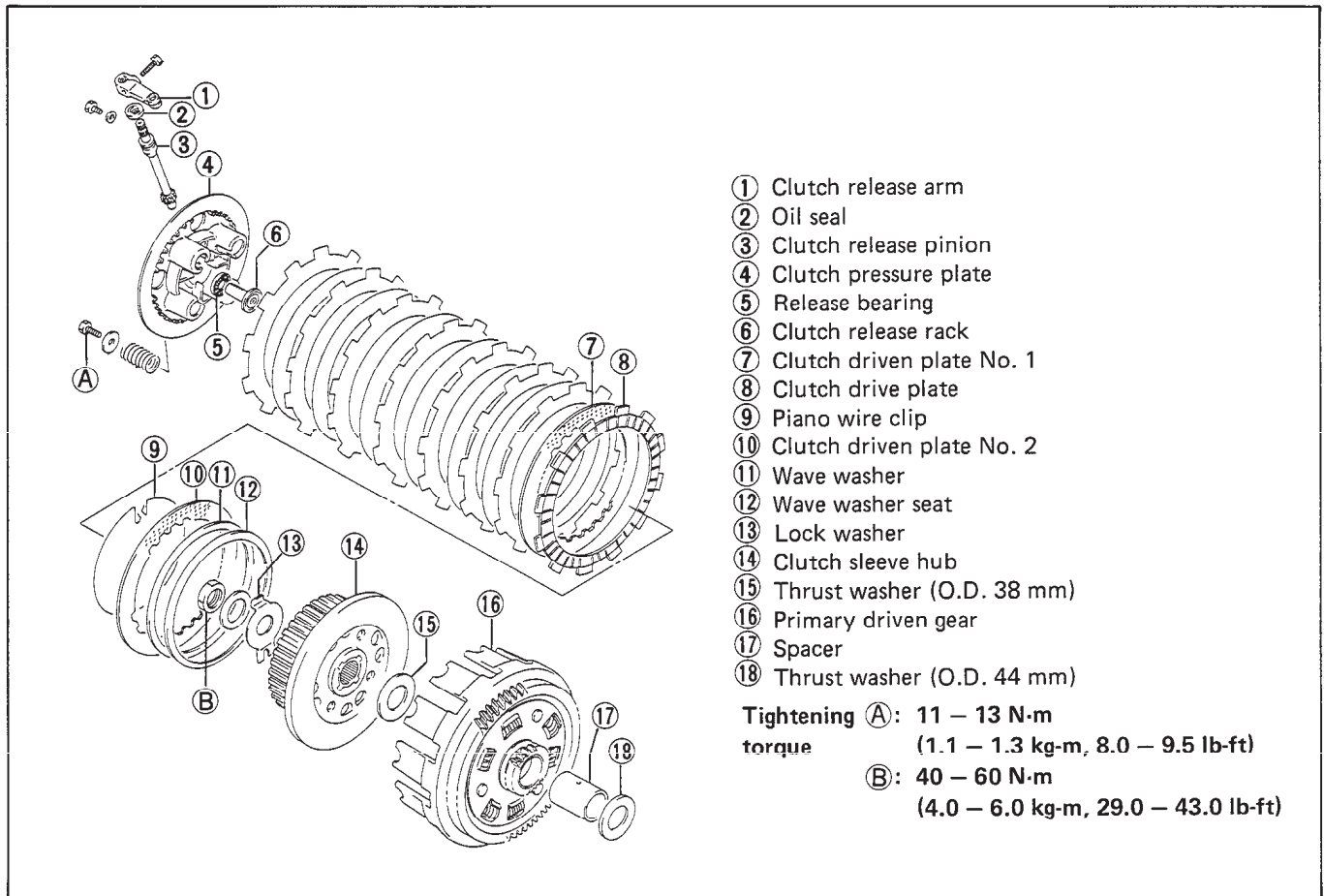
Tightening torque: 90 – 110 N·m  
(9.0 – 11.0 kg·m, 65.0 – 79.5 lb·ft)

#### NOTE:

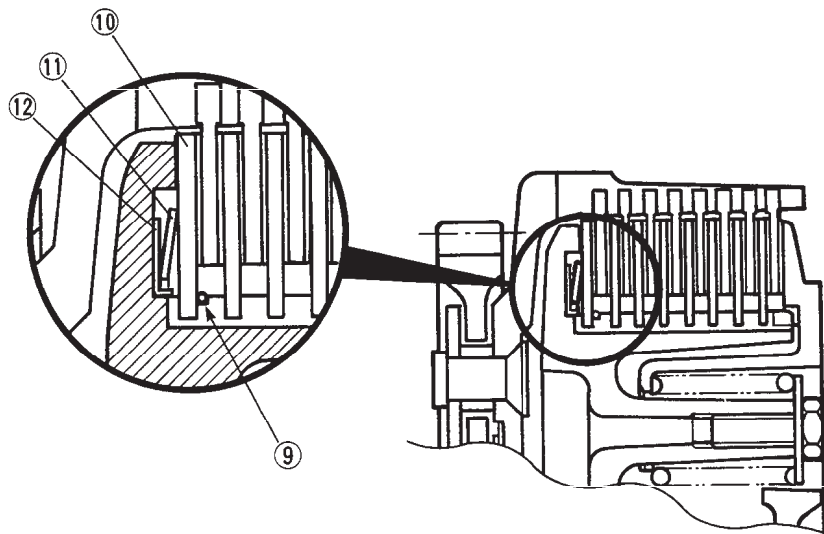
*The primary drive gear nut is a left-hand thread nut.*



CLUTCH



- Check to be sure that the wave washer seat ⑫, wave washer ⑪, clutch driven plate No. 2 ⑩ and piano wire clip ⑨ are properly installed.



**NOTE:**

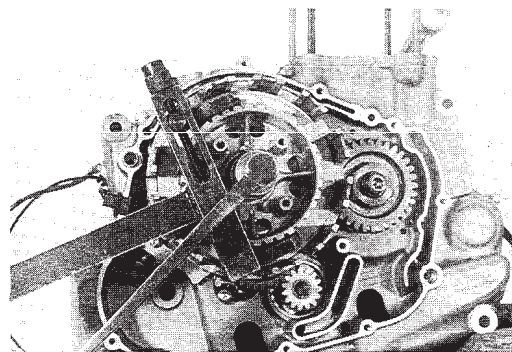
Before inserting the spacer into the primary driven gear, apply a small quantity of engine oil to both inside and outside of the spacer.



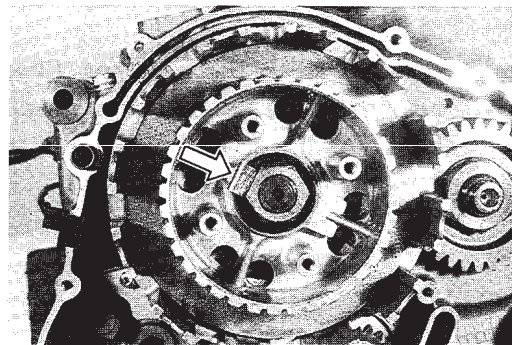
- After installing the primary driven gear assembly and clutch sleeve hub onto the countershaft, tighten the clutch sleeve hub nut to the specified torque by using the special tool and torque wrench.

**09920-53710: Clutch sleeve hub holder**

**Tightening torque: 40 – 60 N·m**  
(4.0 – 6.0 kg-m, 29.0 – 43.0 lb-ft)

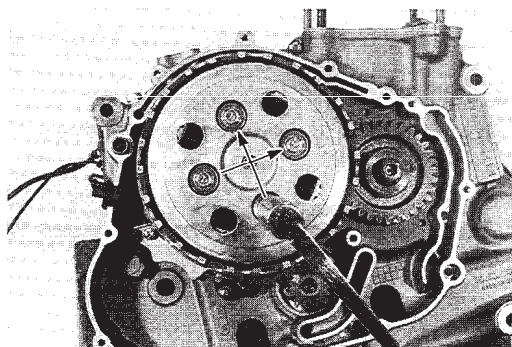


- After tightening the clutch sleeve hub nut, be sure to lock the nut by firmly bending the tongue of the lock washer.

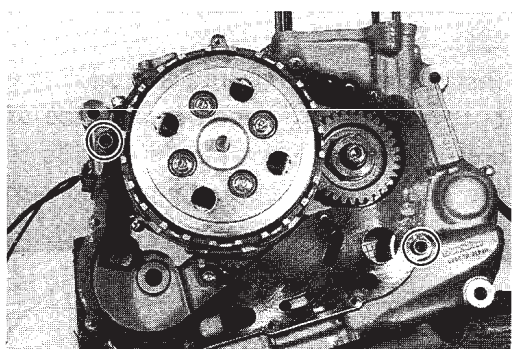


- Tighten the clutch spring mounting bolts diagonally to the specified torque by using the special tool and torque wrench.

**Tightening torque: 11 – 13 N·m**  
(1.1 – 1.3 kg-m, 8.0 – 9.5 lb-ft)



- Fit the two dowel pins to the crankcase and attach new gasket.



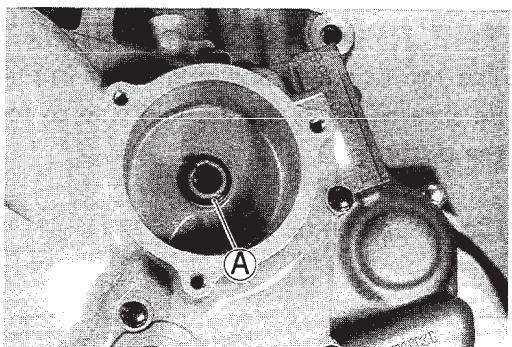
## OIL FILTER

- Before installing the oil filter, check to be sure that the O-rings, **A** and **B**, and spring **C** are installed correctly.

### CAUTION:

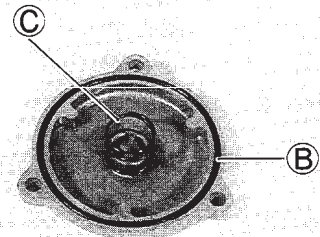
Replace the O-rings, **A** and **B**, with new ones to prevent oil leakage.

(Continued on next page.)



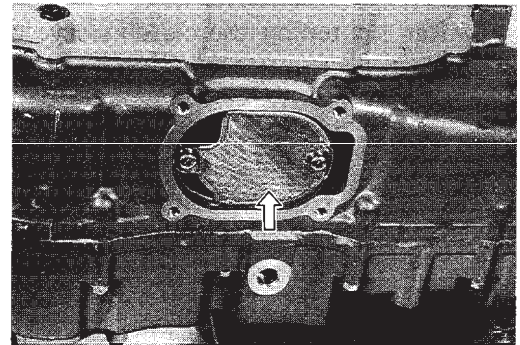
**NOTE:**

Coat the O-ring ⑥ of oil filter cap with grease.



**OIL SUMP FILTER**

- Before installing the oil sump filter, wash it with cleaning solvent, and then blow compressed air through it to dry off solvent.



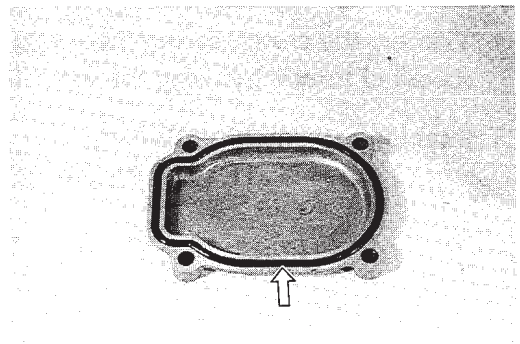
- Fit the O-ring to the O-ring groove as shown in Fig.

**CAUTION:**

Use new O-ring to prevent oil leakage.

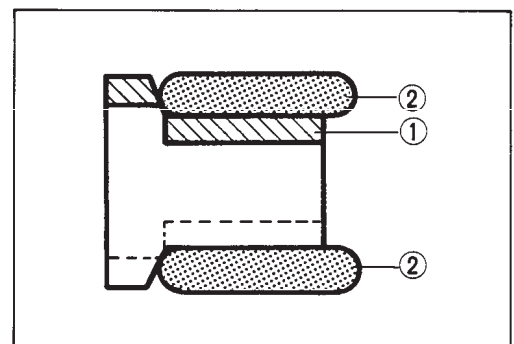
**NOTE:**

Coat the O-ring of oil sump filter cap with grease.



**OIL RING**

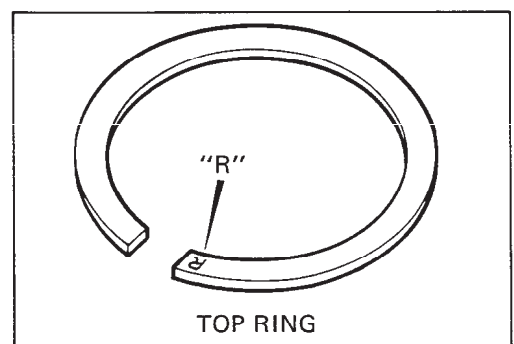
Install the spacer ① into the oil ring groove first. Then install both side rails ②, one on each side of the spacer. The spacer and side rails do not have a specific top or bottom when they are new. When reassembling used parts, install them in their original place and direction.

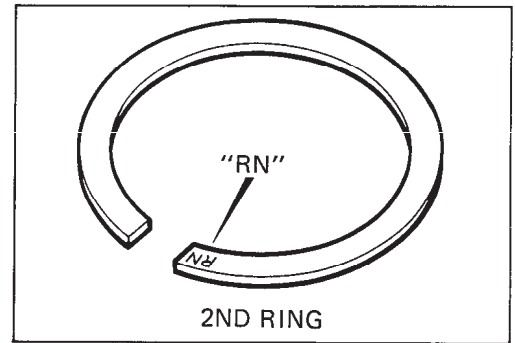


**TOP RING AND 2ND RING**

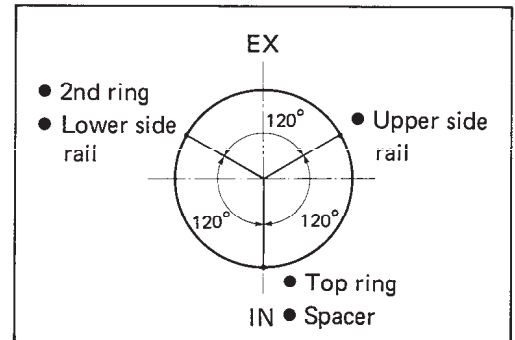
The top ring and 2nd ring differ in the letter of the top mark. Be sure to bring the marked side to top when fitting them to the piston.

(Continued on next page.)





Position the gaps of the three rings as shown.  
Before inserting piston into the cylinder, check that the gaps are so located.



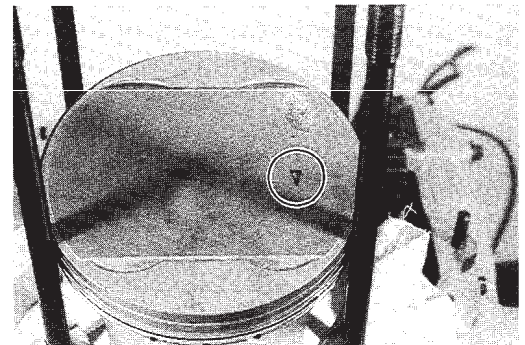
## PISTON

The following are reminders for piston installation:

- Rub a small quantity of SUZUKI MOLY PASTE onto the piston pin.
- Place a clean rag over the cylinder base to prevent the piston pin circlips from dropping into the crankcase.
- When fitting the piston, turn arrow mark on the piston head to exhaust side.
- Fit the piston pin circlips with long-nose pliers.

### CAUTION:

Use new piston pin circlip to prevent circlip failure which will occur with a bent one.



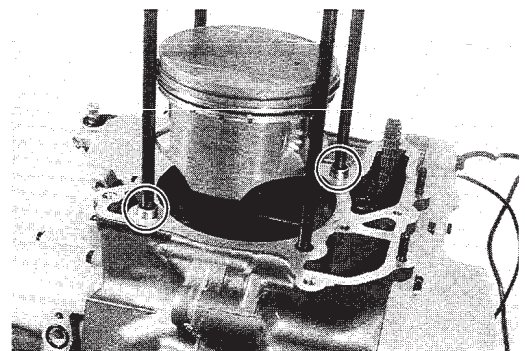
## CYLINDER

Before mounting the cylinder, oil the big end and small end of the conrod and also the sliding surface of the piston.

- Fit the dowel pins to the crankcase and attach new gasket.

### CAUTION:

To prevent oil leakage, do not use the old gasket again, always use new one.



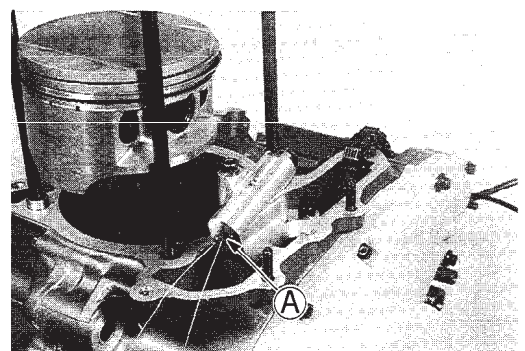
- Install the cam chain tension adjuster with two bolts.

**Tightening torque: 8 – 12 N·m**

(0.8 – 1.2 kg-m, 6.0 – 8.5 lb-ft)

- Turn the slotted end of cam chain tension adjuster with the locking tool (special tool **A**) in the clockwise direction and lock the spring with the locking tool (special tool **A**).

**09917-62420: Cam chain tension adjuster locking tool**



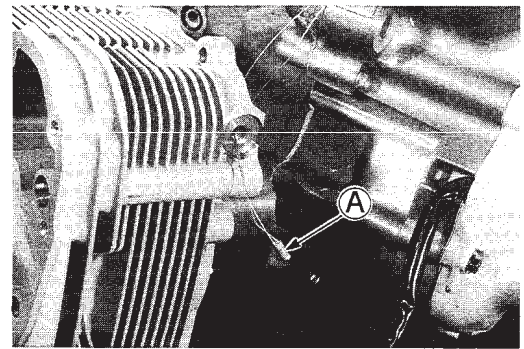
(Continued on next page.)



- Pass the locking tool (A) through the hole of cylinder.

**NOTE:**

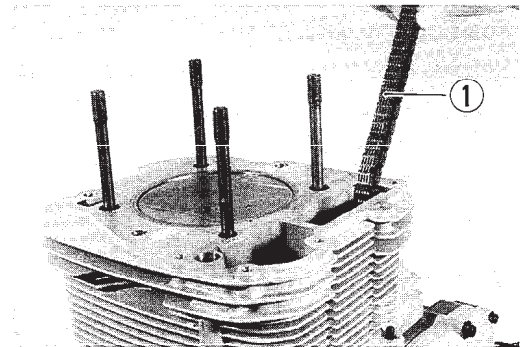
The cam chain tension adjuster is maintained at the proper tension by an automatically adjusted tension adjuster. Before installing the cam chain tension adjuster, inspect the smooth movement.



- Hold each piston ring with properly position, and insert the piston into the cylinder.

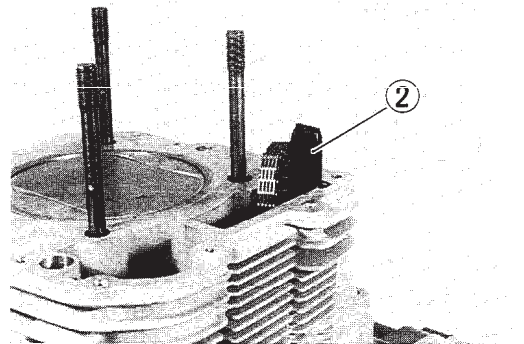
**NOTE:**

When mounting the cylinder, keep the camshaft drive chain (1) taut. The camshaft drive chain must not be caught between cam drive chain sprocket and crankcase when crankshaft is rotated.

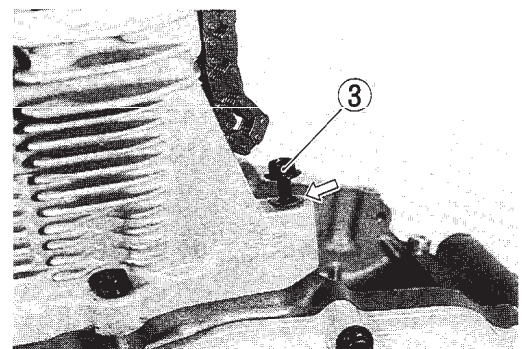


**NOTE:**

There is a holder for the bottom end of the cam chain guide cast in the crankcase. Be sure that the cam chain guide (2) is inserted properly.



- Fit the gasket to the cylinder base bolt (3) correctly as shown in Fig.

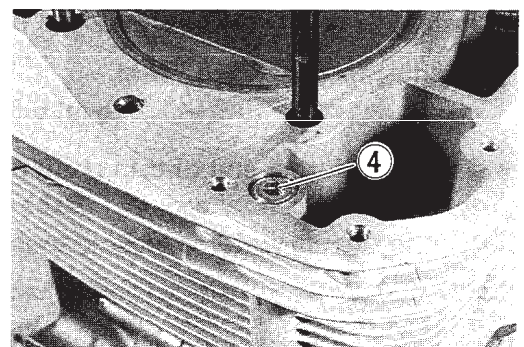


- Tighten the cylinder bolt (4) to the specified torque.

**Tightening torque: 12 – 16 N·m**

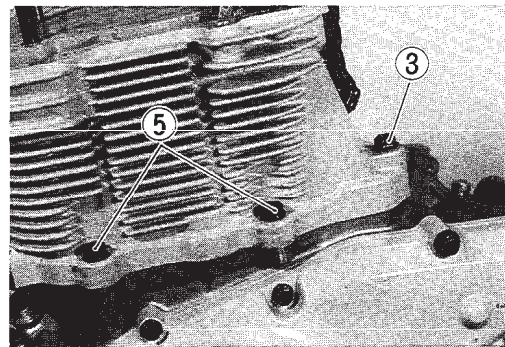
**(1.2 – 1.6 kg-m, 8.5 – 11.5 lb-ft)**

(Continued on next page.)





- Temporarily tighten the cylinder base bolt ③ and nuts ⑤.

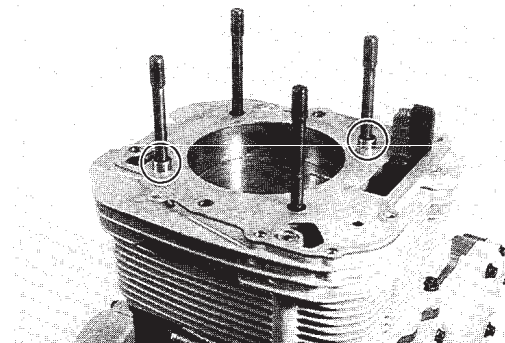


## CYLINDER HEAD

- Fit the dowel pins to the cylinder and attach new gasket.

### CAUTION:

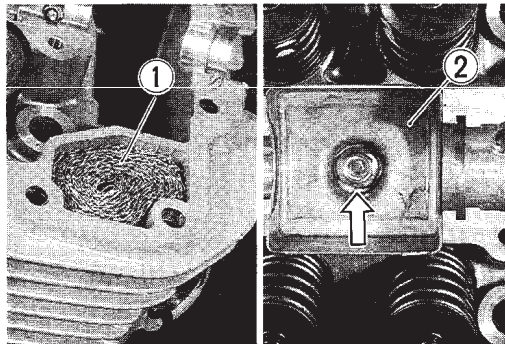
Use a new cylinder head gasket to prevent oil leakage. Do not use the old gasket.



- Install the oil separator ① to the cylinder head correctly.

### NOTE:

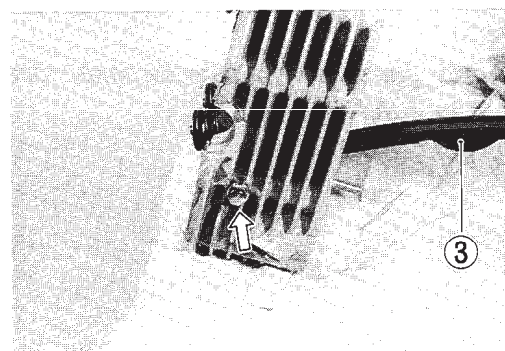
When replacing the oil pocket chamber ②, apply a small quantity of *THREAD LOCK "1342"* to its securing bolt and tighten it to the specified torque.



**Tightening torque: 8 – 12 N·m**  
(0.8 – 1.2 kg-m, 6.0 – 8.5 lb-ft)

- Install the cam chain tensioner ③ to the cylinder head.

**Tightening torque: 16 – 24 N·m**  
(1.6 – 2.4 kg-m, 11.5 – 17.5 lb-ft)

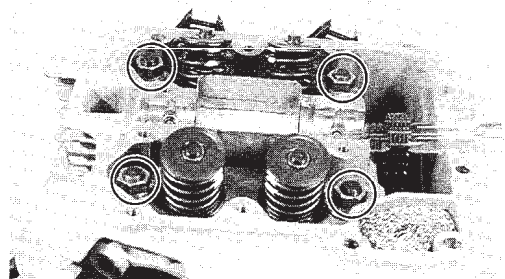


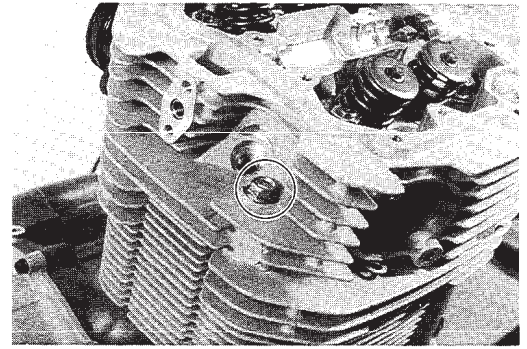
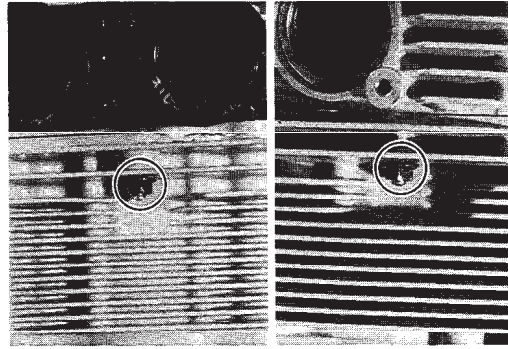
- With the head snugly seated on the cylinder, secure it by tightening the nuts and bolt diagonally.  
Tighten the nuts and bolt to the torque value specified below:

**Cylinder head nuts and bolt tightening torque**  
10 mm Diam.: 35 – 40 N·m  
Nut (3.5 – 4.0 kg-m, 25.5 – 29.0 lb-ft)

8 mm Diam.: 18 – 22 N·m  
Bolt and Nut (1.8 – 2.2 kg-m, 13.0 – 16.0 lb-ft)

(Continued on next page.)



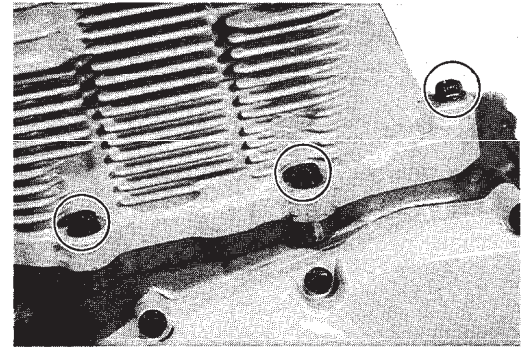


- After tightening the cylinder head nuts and bolt to the specified torque, tighten the cylinder base nuts and bolt to the specified torque.

**Cylinder base nuts**

Tightening torque: 8 – 12 N·m

(0.8 – 1.2 kg-m, 6.0 – 8.5 lb-ft)

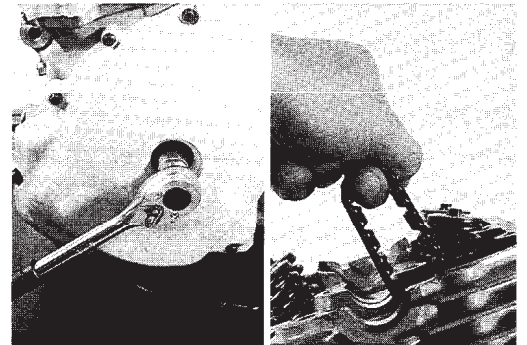


**CAMSHAFT**

- Turn the crankshaft counterclockwise with the box wrench and align the engraved line on the magneto rotor with the slit on the magneto cover keeping the camshaft drive chain pulled upward.

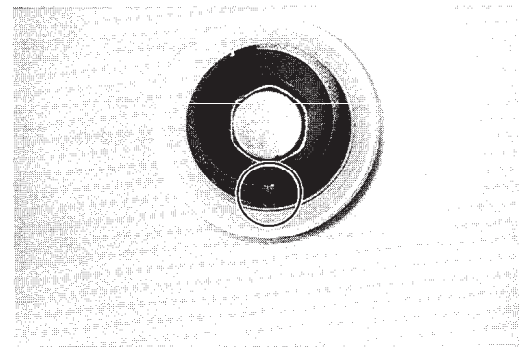
**CAUTION:**

If crankshaft is turned without drawing the camshaft drive chain upward, the chain will be caught between crankcase and cam chain drive sprocket.



**NOTE:**

Apply grease on the cam sprocket locating pin and install the pin into the camshaft.

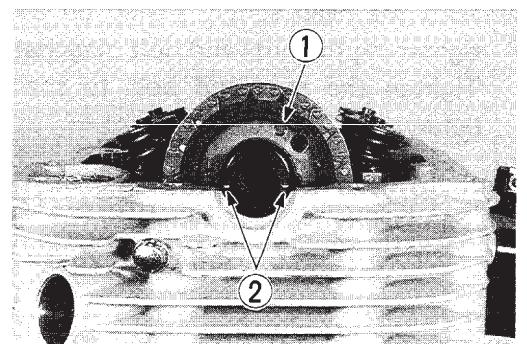


- Engage the chain on the cam sprocket with the locating pin hole ① at one o'clock position.

**NOTE:**

Do not rotate the magneto rotor while doing this. When the sprocket is not positioned correctly, turn the sprocket. When installing the camshaft into the cam sprocket, pay attention not to dislodge the locating pin or it may fall into the crankcase.

- Align the engraved line mark ② on the camshaft so it is parallel with the surface of the cylinder head.

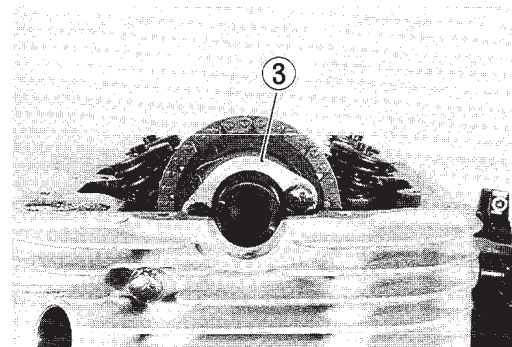




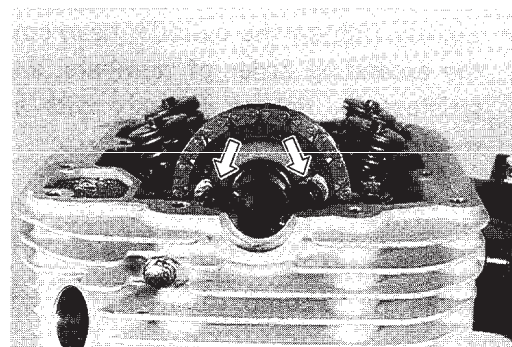
- Fit the lock washer ③ so that it is covering the locating pin.
- Apply THREAD LOCK SUPER "1303" to the cam sprocket bolts and tighten them.

**Tightening torque: 12 – 16 N·m**  
(1.2 – 1.6 kg·m, 8.5 – 11.5 lb-ft)

**99000-32030: Thread lock super "1303"**

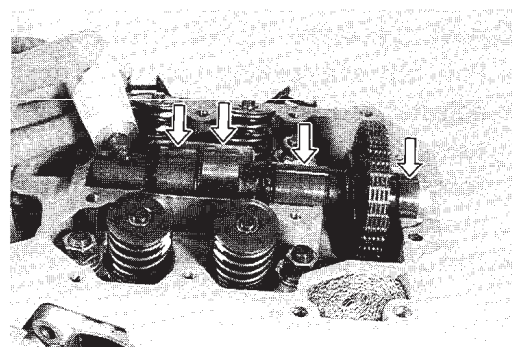


- Bend up the washer tongue positively to lock the bolts.



- Apply SUZUKI MOLY PASTE to the camshaft journals and cam faces.

**99000-25140: Suzuki moly paste**



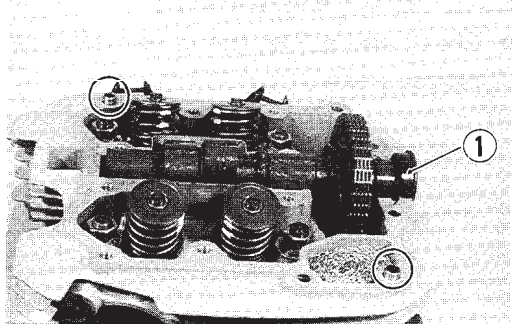
### **CYLINDER HEAD COVER** (See page 3-63.)

- Thoroughly wipe off oil from the fitting surfaces of cylinder head and cover.
- Fit the two dowel pins to the cylinder head side.
- Uniformly apply SUZUKI BOND No. 1216 to the cylinder head surface.

**99000-31160: Suzuki bond No. 1216**

#### **NOTE:**

*Do not apply SUZUKI BOND No. 1216 to the camshaft end cap ①.*



(Continued on next page.)

## 3-61 ENGINE

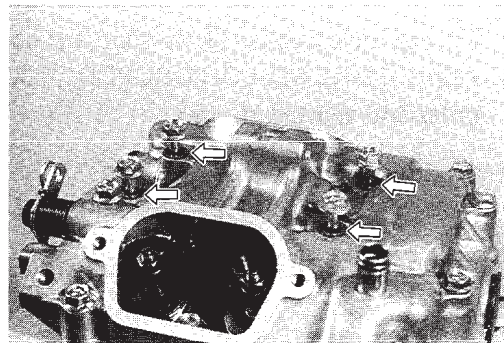
- Fit the four gaskets to the head cover bolts correctly as shown in Fig.

### CAUTION:

Use new gasket to prevent oil leakage.

### NOTE:

When tightening the cylinder head cover bolts, the piston must be at top dead center on the compression stroke.

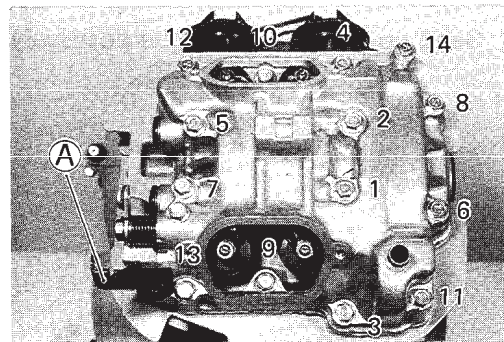


- Lightly tighten the cylinder head cover bolts sequentially in the ascending order of numbers, and then if everything is satisfactory, tighten securely with a torque wrench to the specified torque.

Tightening torque: 8 – 12 N·m

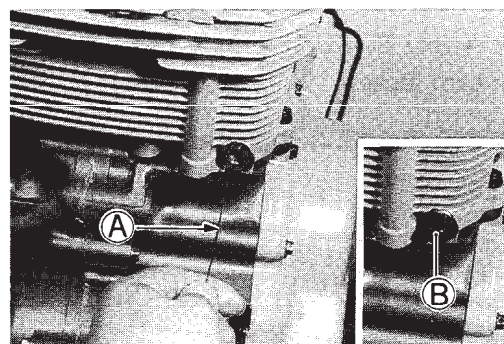
(0.8 – 1.2 kg-m, 6.0 – 8.5 lb-ft)

- Install the de-comp. cable stay (A) with the bolt.



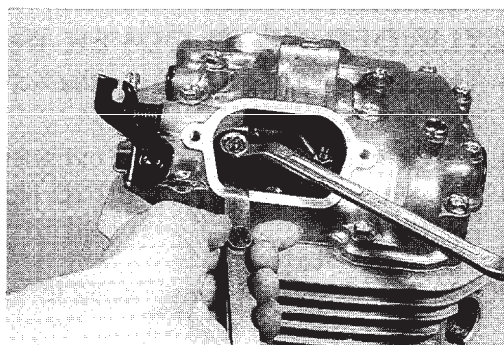
## CAM CHAIN TENSION ADJUSTER

- Pull out the locking tool (A) from the cam chain tension adjuster. As the slotted end of cam chain tension adjuster turns, the tension adjuster rod is advanced under spring force and pushes the cam chain tensioner against the cam chain.
- Install the plug (B).



## VALVE CLEARANCE

- Check and adjust the valve clearance. (Refer to page 2-6 for procedures.)

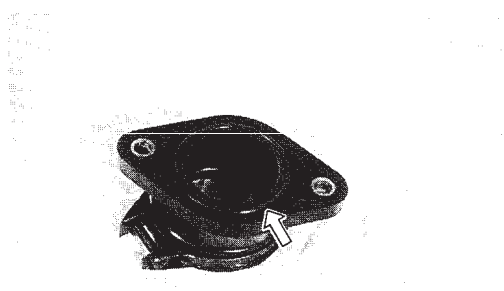


## INTAKE PIPE

### CAUTION:

When replacing the intake pipe, use a new O-ring to prevent sucking air from the joint.

- When installing the intake pipe, be sure to align the aligning mark on it with the aligning mark on the cylinder head. (See page 3-63.)
- Coat the O-ring with grease.





## STARTER MOTOR

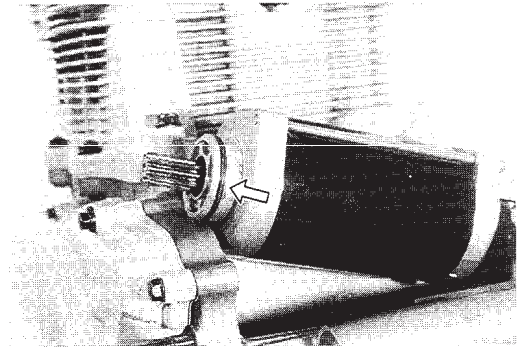
- Install the starter motor with the bolts.

### NOTE:

Coat the O-ring of starter motor with grease.

### CAUTION:

Replace the O-ring with new one.

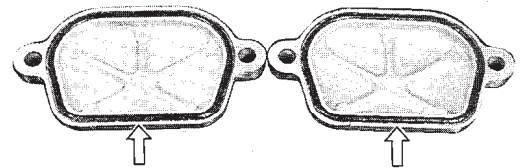
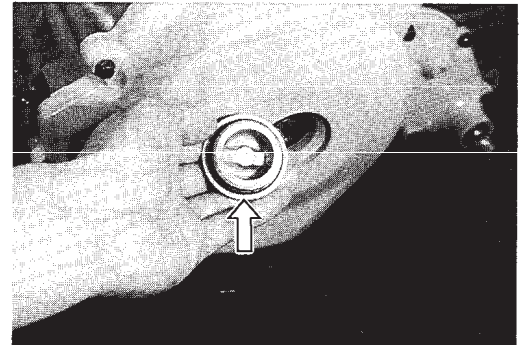


## VALVE INSPECTION CAP AND CAM TIMING INSPECTION CAP

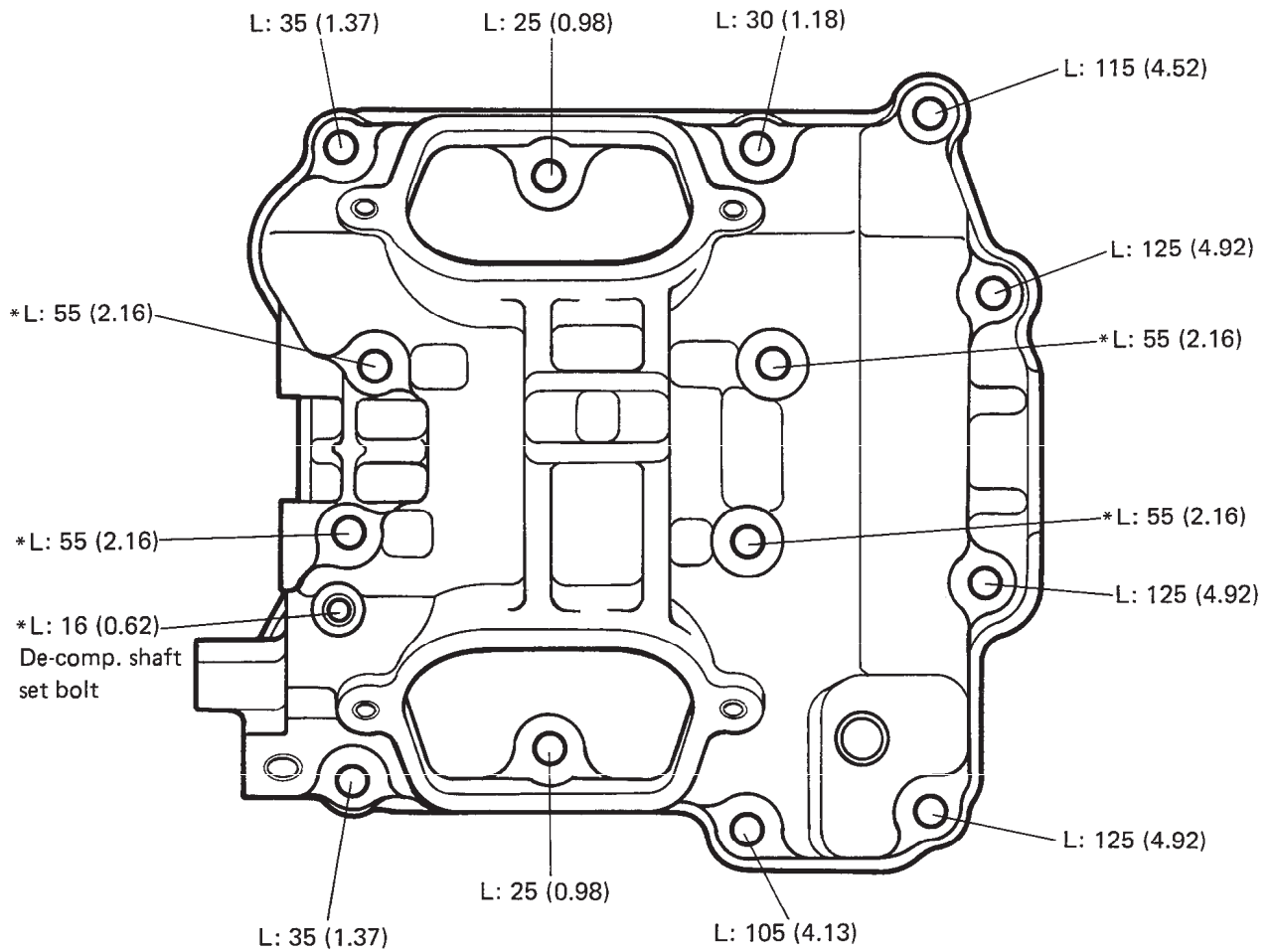
- Before installing the valve inspection caps and cam timing inspection cap, coat the respective O-rings with grease.

### CAUTION:

Replace the respective O-rings with new ones.



**CYLINDER HEAD COVER BOLT** Unit: mm (in)

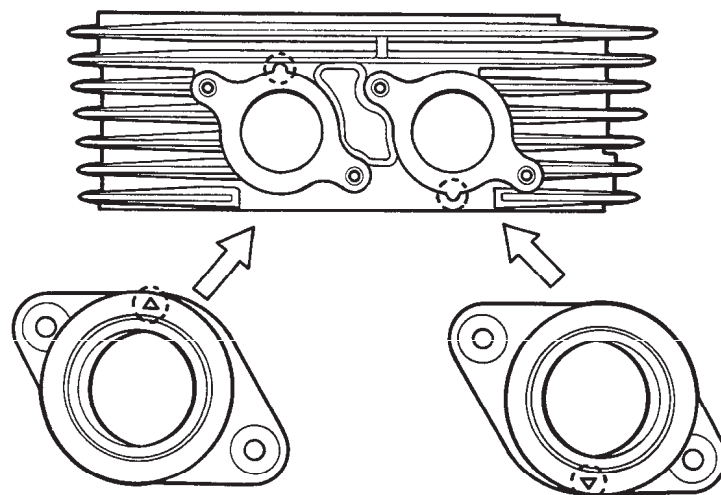


**L: Bolt Length (\*) Mark indicates the gasket position.**

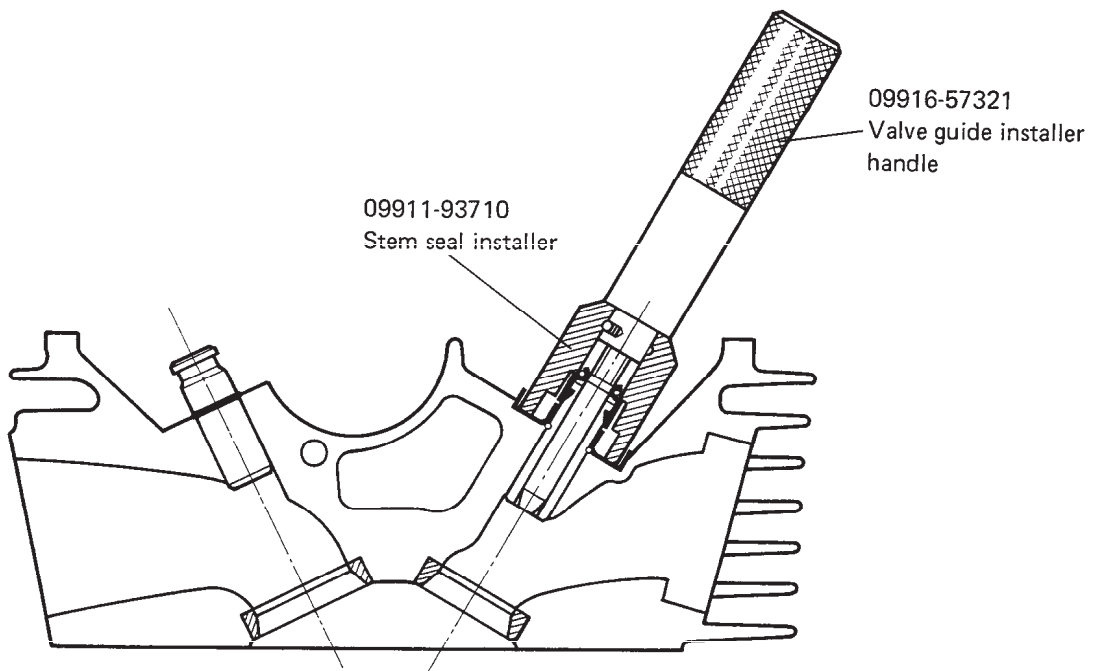
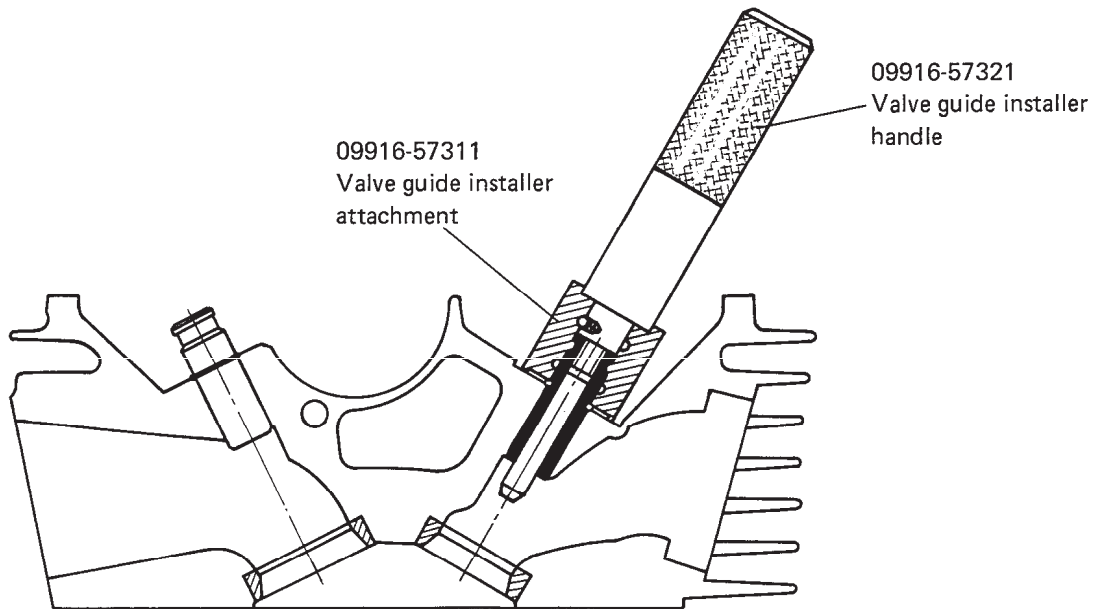
**TIGHTENING TORQUE**

8 – 12 N·m (0.8 – 1.2 kg·m, 6.0 – 8.5 lb·ft)

**INTAKE PIPE**



See page 3-25.



# FUEL AND LUBRICATION SYSTEM

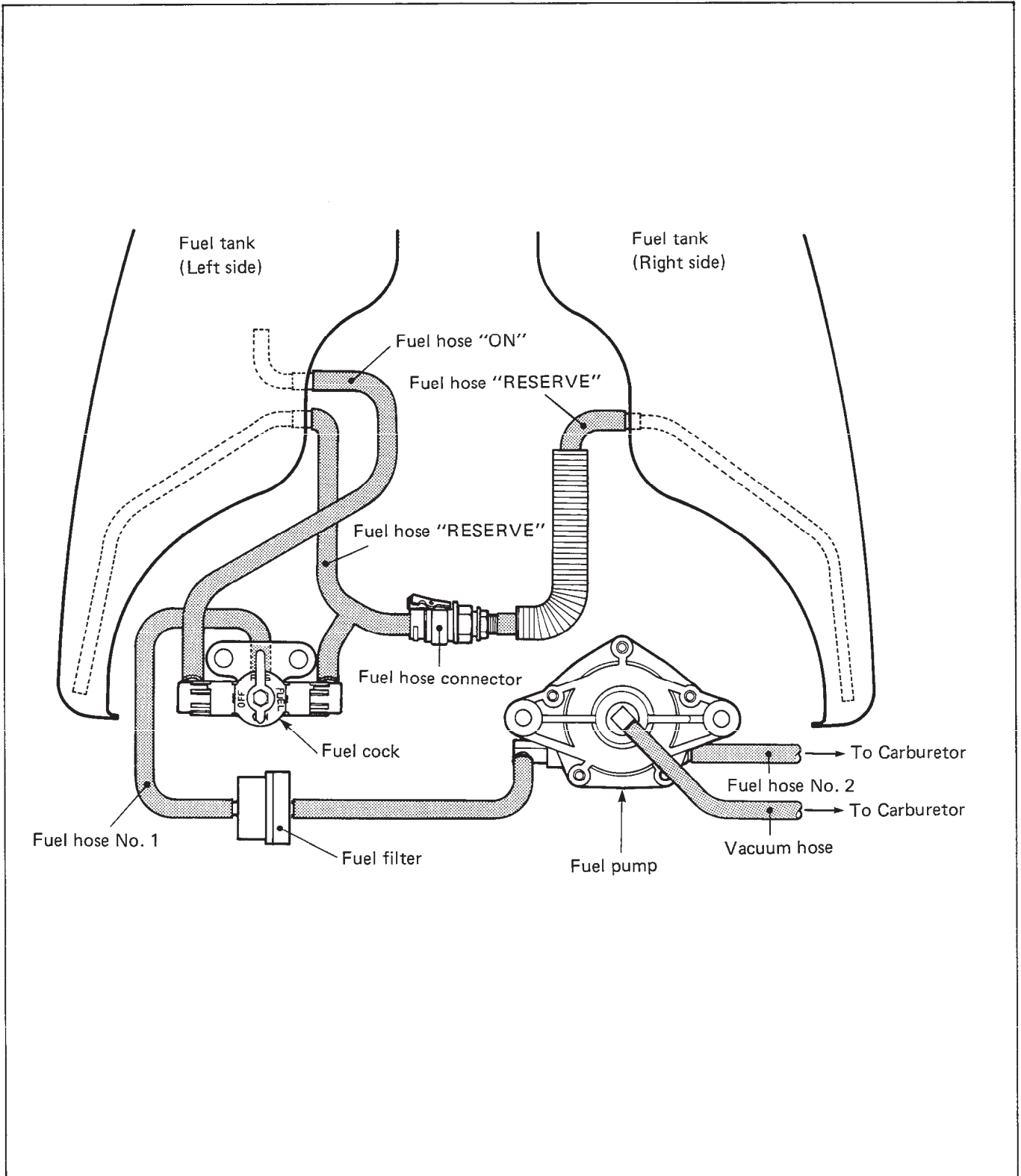
## CONTENTS

<b>FUEL SYSTEM</b> .....	4- 1
<b>FUEL COCK</b> .....	4- 2
<b>FUEL COCK MECHANISM</b> .....	4- 2
<b>FUEL PUMP</b> .....	4- 3
<b>FUEL PUMP MECHANISM</b> .....	4- 3
<b>CARBURETOR</b> .....	4- 4
<b>CONSTRUCTIONS</b> .....	4- 4
<b>CARBURETOR SPECIFICATIONS</b> .....	4- 5
<b>REMOVAL</b> .....	4- 6
<b>DISASSEMBLY</b> .....	4- 6
<b>INSPECTION</b> .....	4- 6
<b>NEEDLE VALVE INSPECTION</b> .....	4- 6
<b>FLOAT HEIGHT ADJUSTMENT</b> .....	4- 6
<b>REASSEMBLY AND REMOUNTING</b> .....	4- 6
<b>FUEL LINE, FUEL FILTER AND FUEL PUMP</b> .....	4- 7
<b>FUEL LINE INSPECTION</b> .....	4- 7
<b>FUEL FILTER INSPECTION</b> .....	4- 7
<b>FUEL PUMP INSPECTION</b> .....	4- 8
<b>LUBRICATION SYSTEM AND COOLING SYSTEM</b> .....	4- 8
<b>OIL PRESSURE</b> .....	4- 8
<b>OIL SUMP FILTER</b> .....	4- 9
<b>OIL FILTER</b> .....	4- 9
<b>OIL COOLER</b> .....	4- 9
<b>ENGINE LUBRICATION/CYLINDER HEAD     COOLING SYSTEM CHART</b> .....	4-10
<b>ENGINE LUBRICATION</b> .....	4-11
<b>CYLINDER HEAD COOLING</b> .....	4-12



## FUEL SYSTEM

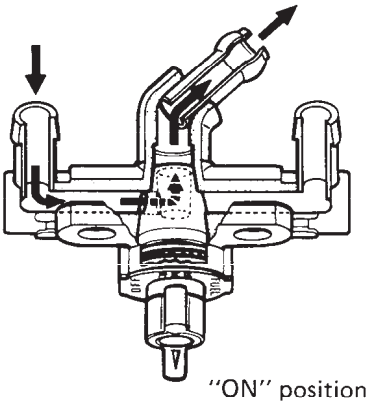
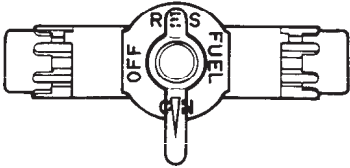
A vacuum operated fuel pump is used to supply fuel from the fuel tank to the carburetor. The pump is necessary when the fuel level in the fuel tank is lower than the carburetor fuel bowl. In addition, the pump assures an adequate supply of fuel to the engine under the steepest climbing conditions as well as while running across rough terrain.



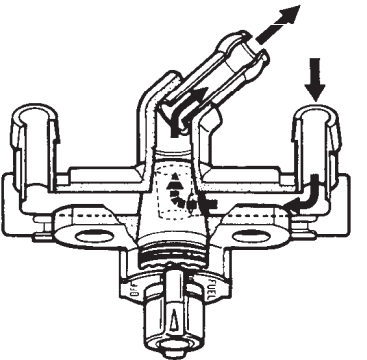
# FUEL COCK

## FUEL COCK MECHANISM

A valve is provided at the top of the fuel cock lever and can switch over to "OFF", "ON" and "RES". With the valve "ON" (normal), the main passage opens. With the valve "OFF", both holes close.



"ON" position

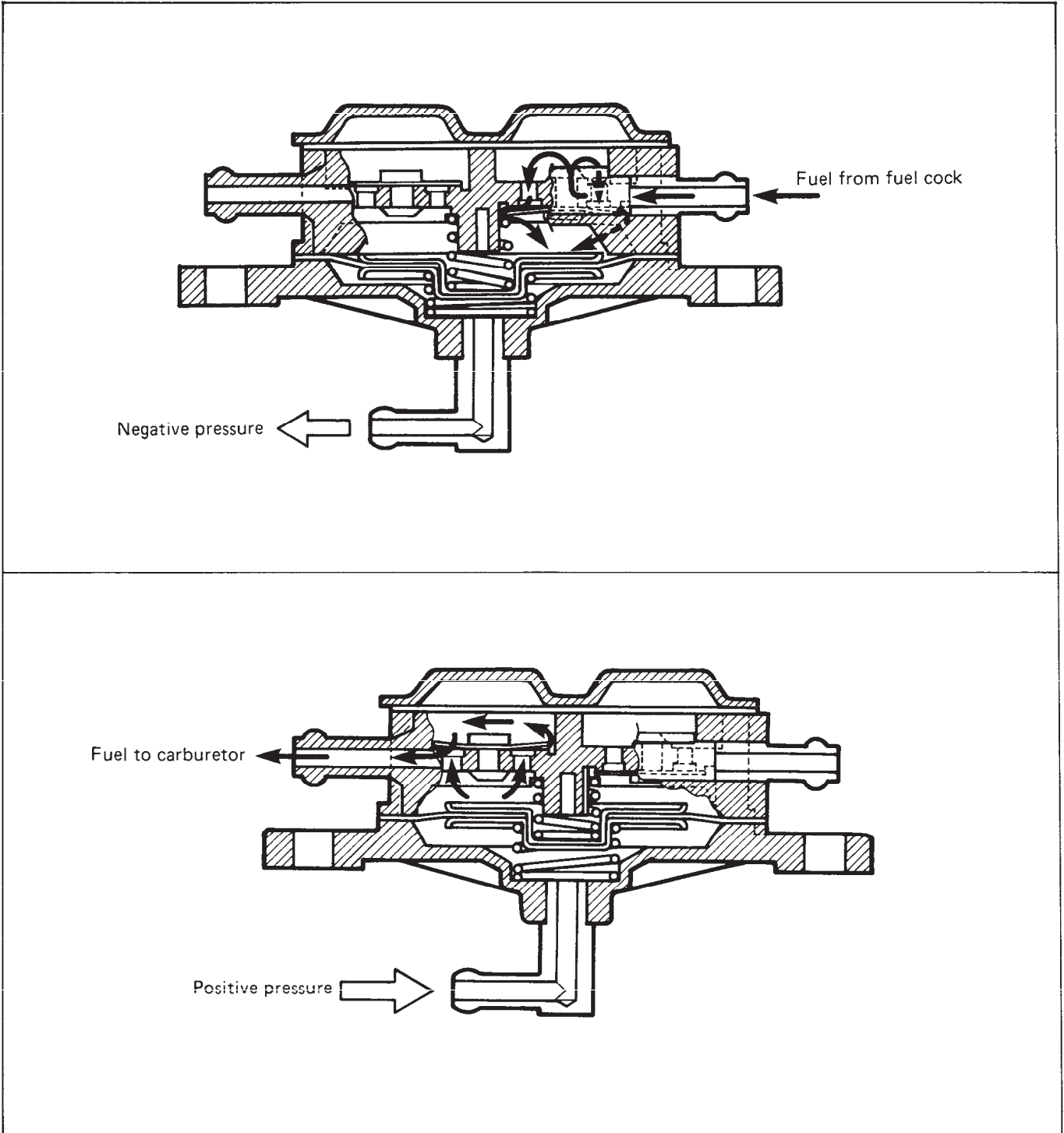


"RES" position

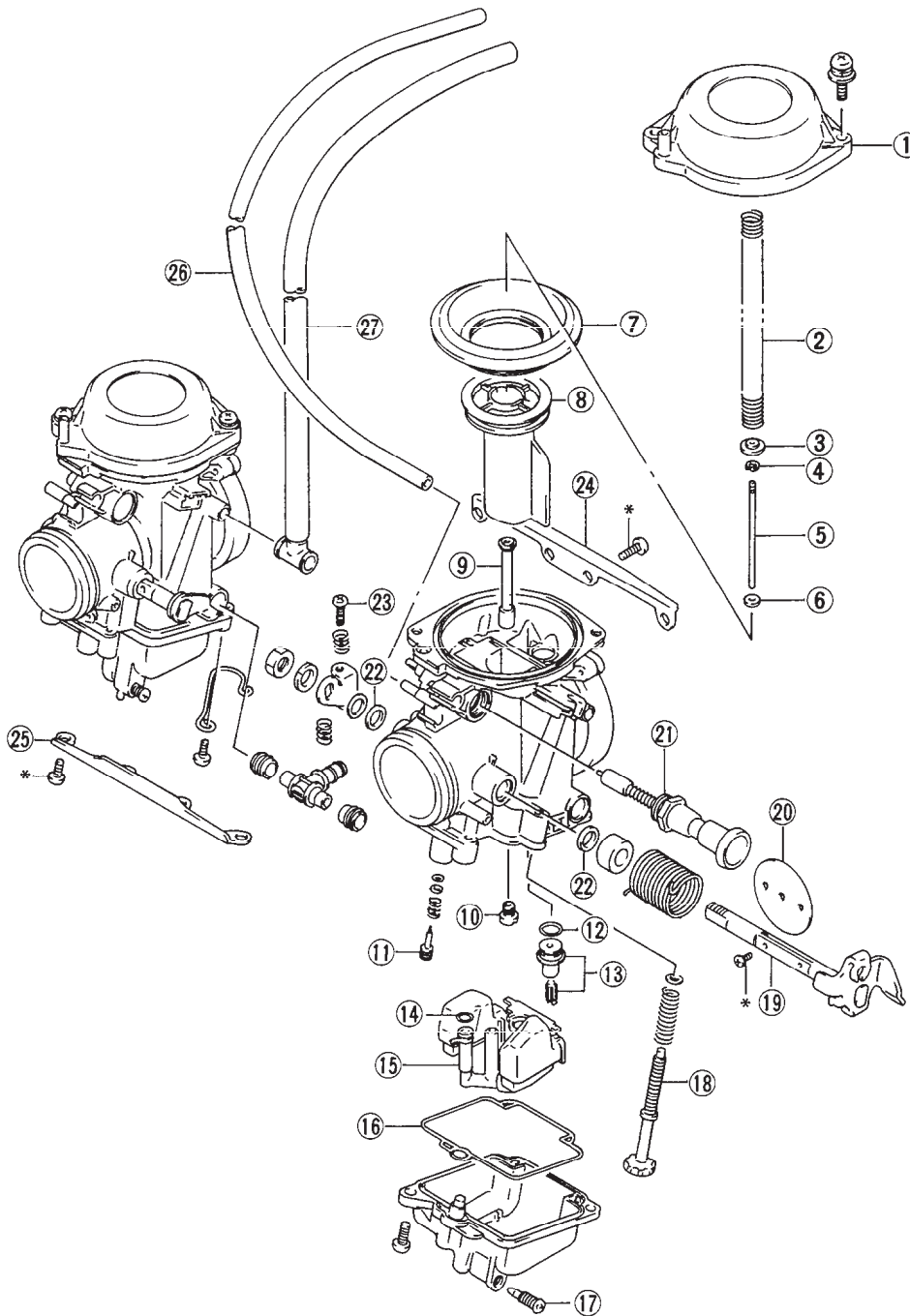
## FUEL PUMP

### FUEL PUMP MECHANISM

Vacuum pulsations from the carburetor intake tract are used to operate the pump diaphragm. When vacuum is applied to the diaphragm, fuel is drawn from the tank into the diaphragm's chamber. As positive pressure is applied, the spring forces the diaphragm back, pushing the fuel through the outlet to the carburetor. A series of check valves is used in the fuel flow route to allow the fuel to move in only one direction, through the pump body. The pump is mounted as near to the fuel tank as possible for the greatest efficiency.



# CARBURETOR CONSTRUCTIONS



- |               |                |                       |                         |                          |
|---------------|----------------|-----------------------|-------------------------|--------------------------|
| ① Top cap     | ⑦ Diaphragm    | ⑬ Needle valve        | ⑰ Throttle valve shaft  | ②⑤ Carb. set lower plate |
| ② Spring      | ⑧ Piston valve | ⑭ O-ring              | ⑲ Throttle valve        | ②⑥ Vacuum hose           |
| ③ Spring seat | ⑨ Needle jet   | ⑮ Float               | ⑳ Starter plunger       | ②⑦ Air vent hose         |
| ④ E-ring      | ⑩ Main jet     | ⑯ O-ring              | ㉑ Oil seal              |                          |
| ⑤ Jet needle  | ⑪ Pilot screw  | ⑰ Drain screw         | ㉒ Balance screw         |                          |
| ⑥ Washer      | ⑫ O-ring       | ⑱ Throttle stop screw | ㉓ Carb. set upper plate |                          |
- \*: Apply THREAD LOCK "1342"

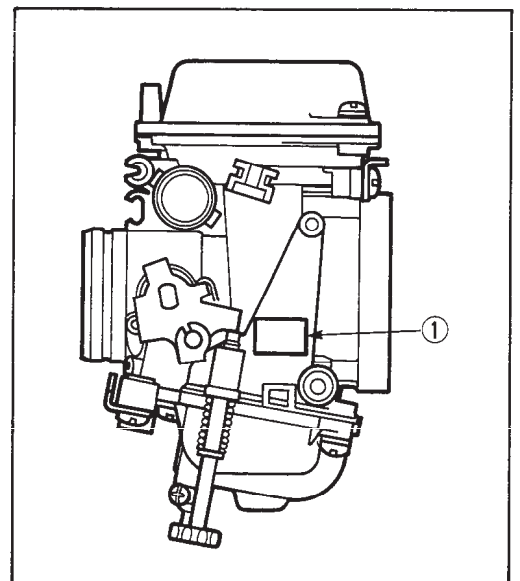


**CARBURETOR SPECIFICATIONS**

ITEM	SPECIFICATION		
	44B00	44B30	44B60
I.D. No.	44B00	44B30	44B60
Carburetor type	MIKUNI BST33SS	←	←
Bore size	33 mm (1.3 in)	←	←
Idle r/min.	1 300 ± 100 r/min.	←	←
Float height	14.6 ± 1.0 mm (0.57 ± 0.04 in)	←	←
Main jet (M.J.)	# 120	←	←
Main air jet (M.A.J.)	0.6 mm	←	←
Jet needle (J.N.)	5E53-3rd	←	←
Needle jet (N.J.)	0-4	←	←
Throttle valve (Th.V.)	# 100	←	←
Pilot jet (P.J.)	# 17.5	←	←
By-pass (B.P.)	# <sup>1</sup> 0.8, # <sup>2</sup> 0.8, # <sup>3</sup> 0.8 mm	←	←
Pilot outlet (P.O.)	0.8 mm	←	←
Valve seat (V.S.)	1.5 mm	←	←
Starter jet (G.S.)	# 65	←	←
Pilot screw (P.S.)	2½ turns out (PRE-SET)	2⅝ turns out (PRE-SET)	2½ turns out (PRE-SET)
Pilot air jet (P.A.J.)	1.3 mm	1.45 mm	1.3 mm
Throttle cable play	0.5 – 1.0 mm (0.02 – 0.04 in)	←	←

**I.D. NO. LOCATION**

Each carburetor has I.D. Number ① printed on the carburetor body according to its specification.



## REMOVAL

Refer to page 3-7.

## DISASSEMBLY

Disassemble the carburetor as shown in the illustration on page 4-4.

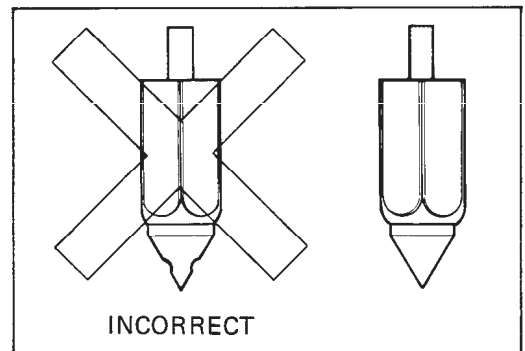
## INSPECTION

Check following items for any damage or clogging.

- |                                |                                  |
|--------------------------------|----------------------------------|
| * Pilot jet                    | * Starter jet                    |
| * Main jet                     | * Gasket                         |
| * Main air jet                 | * Throttle shaft oil seal        |
| * Pilot air jet                | * Diaphragm                      |
| * Needle jet air bleeding hole | * Pilot outlet and by-pass holes |
| * Float                        | * Accelerating nozzle            |
| * Needle valve                 |                                  |

## NEEDLE VALVE INSPECTION

If foreign matter is caught between the valve seat and the needle, the gasoline will continue flowing and cause it to overflow. If the seat and needle are worn beyond the permissible limits, similar trouble will occur. Conversely, if the needle sticks, the gasoline will not flow into the float chamber. Clean the float chamber and float parts with gasoline. If the needle is worn as shown in the illustration, replace it together with a valve seat. Clean the fuel passage of the mixing chamber with compressed air.



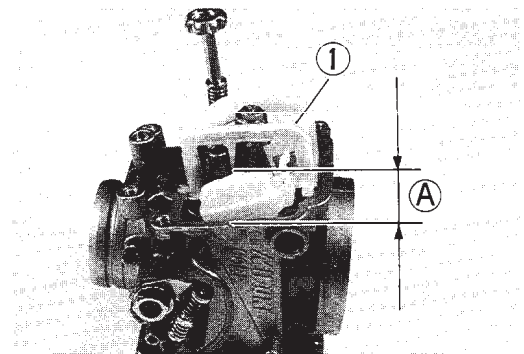
## FLOAT HEIGHT ADJUSTMENT

To check the float height, invert the carburetor body, with the float arm kept free, measure the height  $\text{\textcircled{A}}$  while float arm is just in contact with needle valve by using calipers.

Bend the tongue  $\text{\textcircled{1}}$  as necessary to bring the height  $\text{\textcircled{A}}$  to this value.

Float height  $\text{\textcircled{A}}$  :  $14.6 \pm 1.0$  mm ( $0.57 \pm 0.04$  in)

09900-20102: Vernier calipers

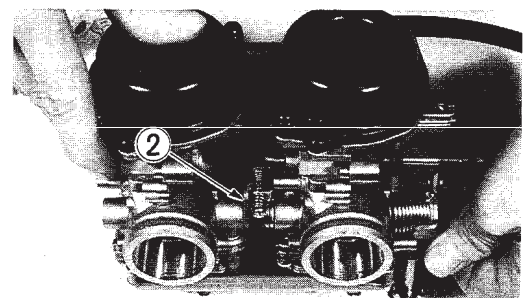


## REASSEMBLY AND REMOUNTING

Reassemble and remount the carburetor assembly in the reverse order of disassembly and removal.

Pay attention to the following points:

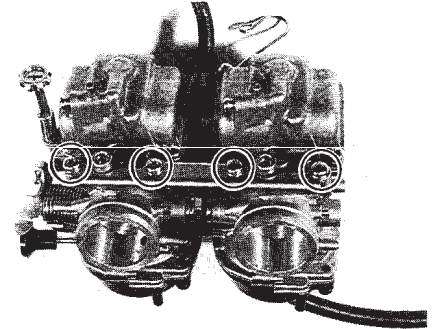
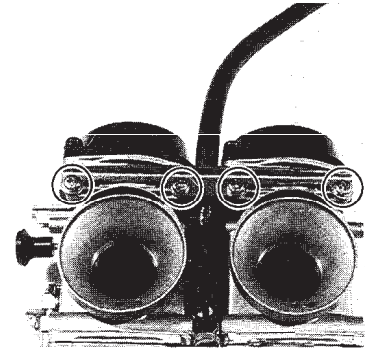
- When engaging two carburetors, position the throttle valve control lever  $\text{\textcircled{2}}$  correctly.



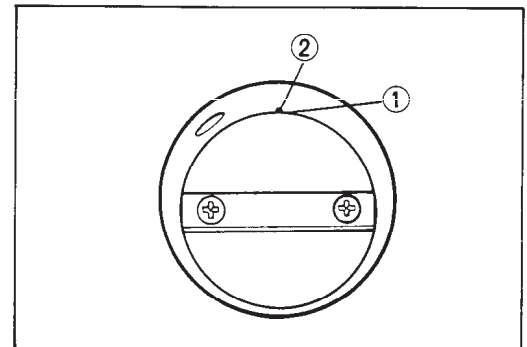
## 4-7 FUEL AND LUBRICATION SYSTEM

- Apply THREAD LOCK "1342" to the upper and lower plates' screws.

99000-32050: Thread lock "1342"



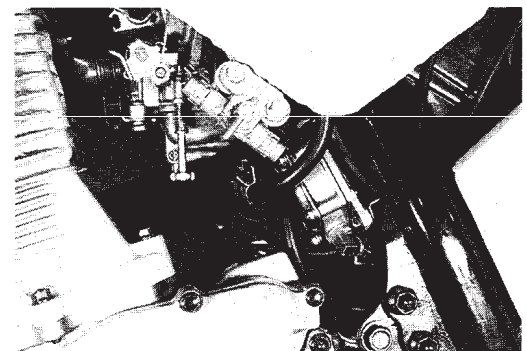
- Set each throttle valve in such a way that its top end ① meets the foremost by-pass ②. This is accomplished by turning the throttle stop screw and throttle valve balance screw.
- After all work is completed, mount the carburetors on the engine and the following adjustments are necessary.
  - \* Engine idle r/min . . . . . Page 2-9
  - \* Throttle cable play . . . . . Page 2-9



## FUEL LINE, FUEL FILTER AND FUEL PUMP

### FUEL LINE INSPECTION

Visually inspect the fuel lines for damage and fuel leakage. If they are found to be damaged, replace them with new ones.

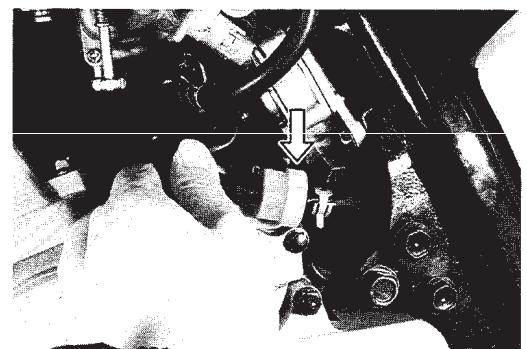


### FUEL FILTER INSPECTION

If the fuel filter is dirty with sediment or rust, fuel will not flow smoothly and loss in engine power may result. Replace it with a new one.

#### NOTE:

When installing the fuel filter, be sure to face the arrow mark on it to the fuel pump side.

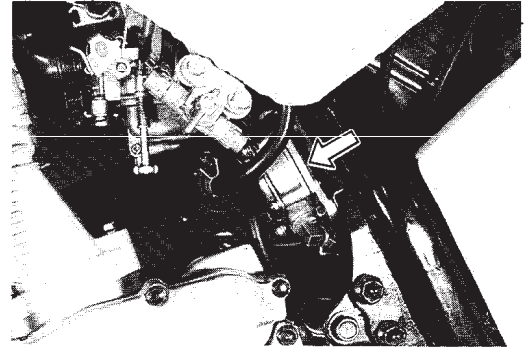


## FUEL PUMP INSPECTION

In case of fuel leak at fuel pump or air leak into the fuel line, check the following items:

- \* Broken diaphragm
- \* Malfunction of check valve
- \* Loose screws on fuel pump

If any defect is found, replace the fuel pump assembly with a new one.



## LUBRICATION SYSTEM AND COOLING SYSTEM

### OIL PRESSURE

Check the oil level with oil level gauge of the oil filler cap.

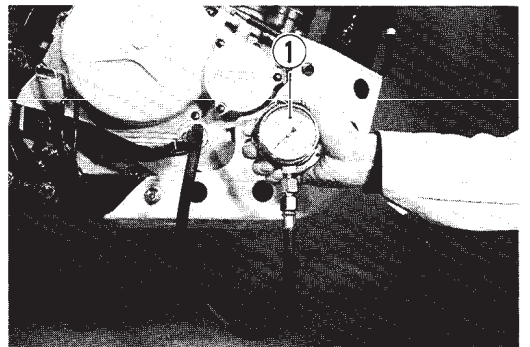
Check the oil pressure in the following manner:

- Remove the oil pressure inspection plug.
- Install the oil pressure gauge ① in the position shown in the Fig.
- Connect an electric tachometer to the engine.
- Warm up the engine as follows.  
 Summer approx. 10 min. at 2 000 r/min.  
 Winter approx. 20 min. at 2 000 r/min.
- After the warming up operation, increase the engine speed to 3 000 r/min, and read the oil pressure gauge.

**NOTE:**

*Engine oil must be warmed up to 60° C (140° F) when checking the oil pressure.*

**09915-74510: Oil pressure gauge**



### Oil pressure specification

Above 80 kPa, 0.80 kg/cm<sup>2</sup> (11.4 psi),  
 Below 200 kPa, 2.0 kg/cm<sup>2</sup> (28.4 psi)  
 at 3 000 r/min. Oil temp. at 60° C (140° F)

If the oil pressure is lower or higher than the specifications, several causes may be considered.

- \* Low oil pressure is usually the result of a clogged oil filter, oil leakage from the oil passageway, damaged oil seal, a defective oil pump or a combination of these items.
- \* High oil pressure is usually caused by a engine oil which is too heavy a weight, a clogged oil passage, improper installation of the oil filter or a combination of these items.



### OIL SUMP FILTER

Clean the oil sump filter in the following manner:

- Remove the engine under guard.
- Drain engine oil by removing the drain plug and filler cap. (Refer to page 2-8.)
- Remove the oil sump filter cap by removing the bolts. (Refer to page 3-18.)
- Remove the oil sump filter by removing the screws. (Refer to page 3-18.)
- Wash the oil sump filter with cleaning solvent, and then blow compressed air through it to dry off solvent.

### REASSEMBLY

- Fit the O-ring to the O-ring groove.
- Coat the O-ring with grease.

### CAUTION:

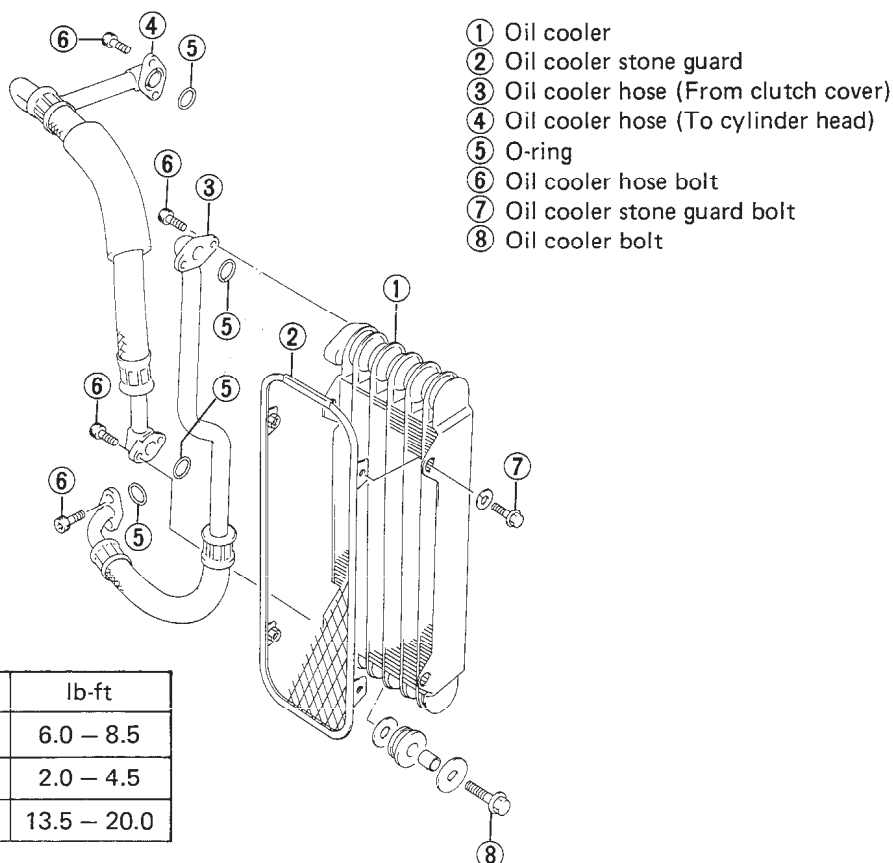
Use a new O-ring to prevent oil leakage.

- Fit the drain plug securely, and add fresh oil through the filler. (Refer to pages 2-8 and 9.)

### OIL FILTER

(Refer to pages 2-8 and 9.)

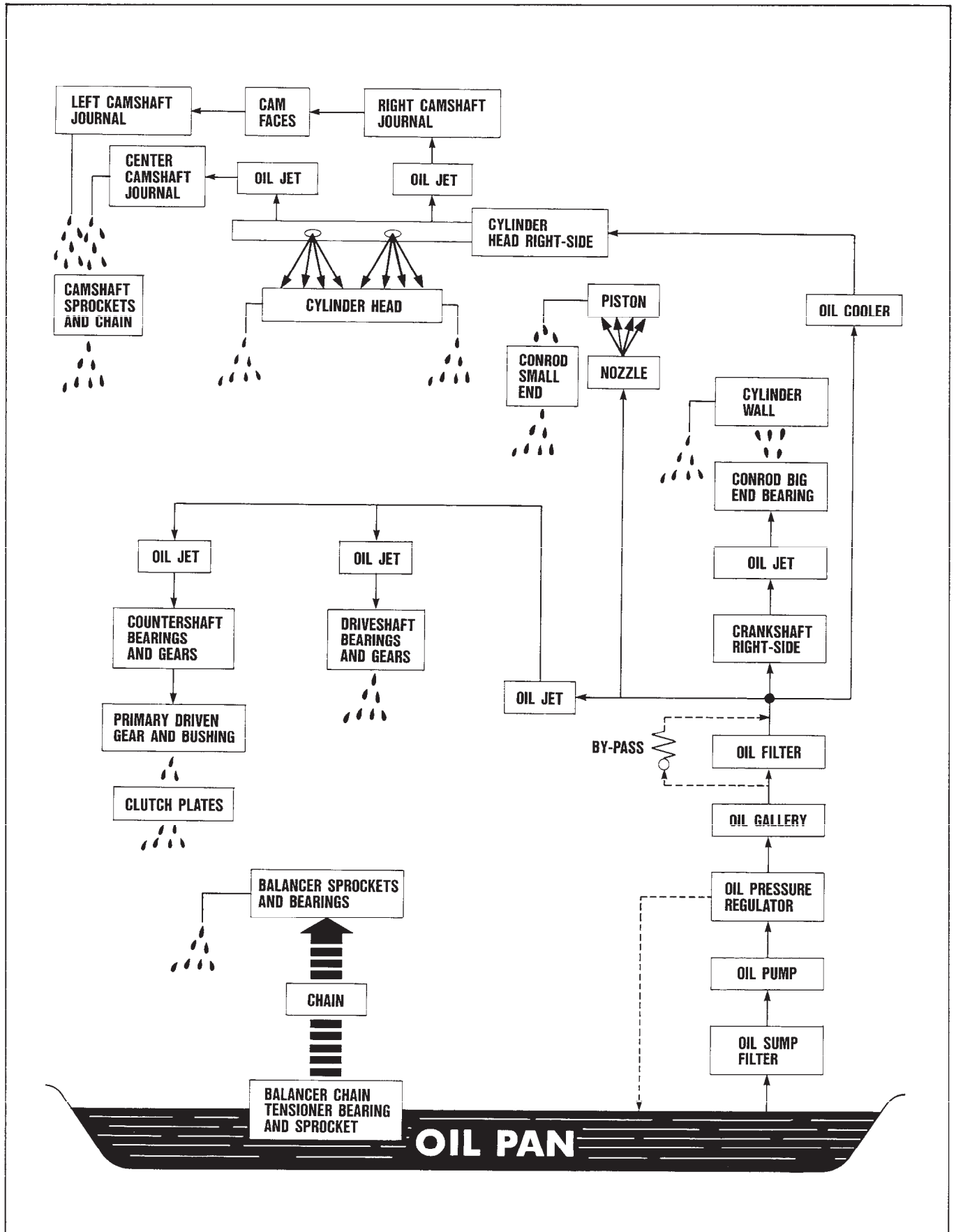
### OIL COOLER



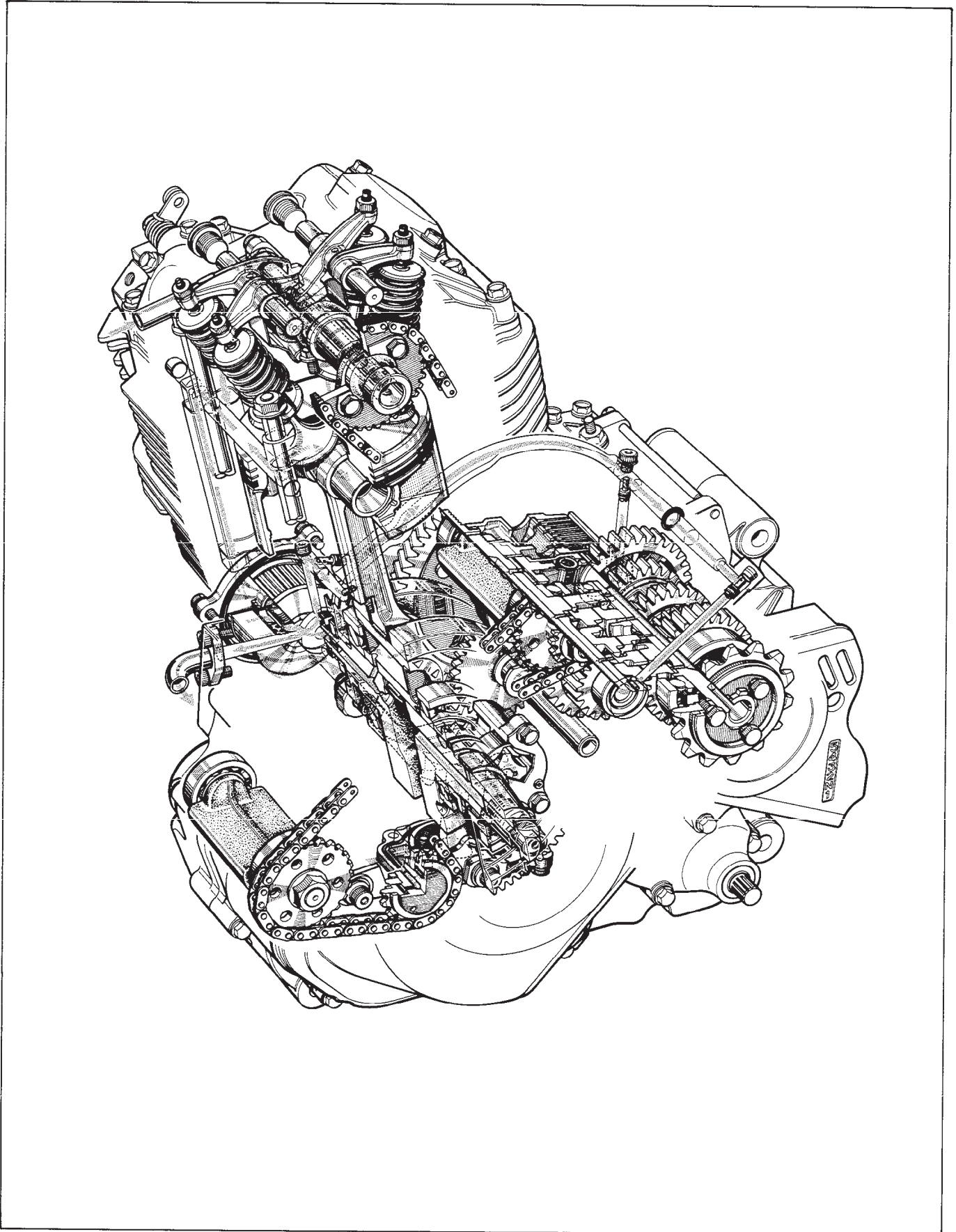
#### Tightening torque

Item	N·m	kg·m	lb·ft
⑥	8 – 12	0.8 – 1.2	6.0 – 8.5
⑦	3 – 6	0.3 – 0.6	2.0 – 4.5
⑧	18 – 28	1.8 – 2.8	13.5 – 20.0

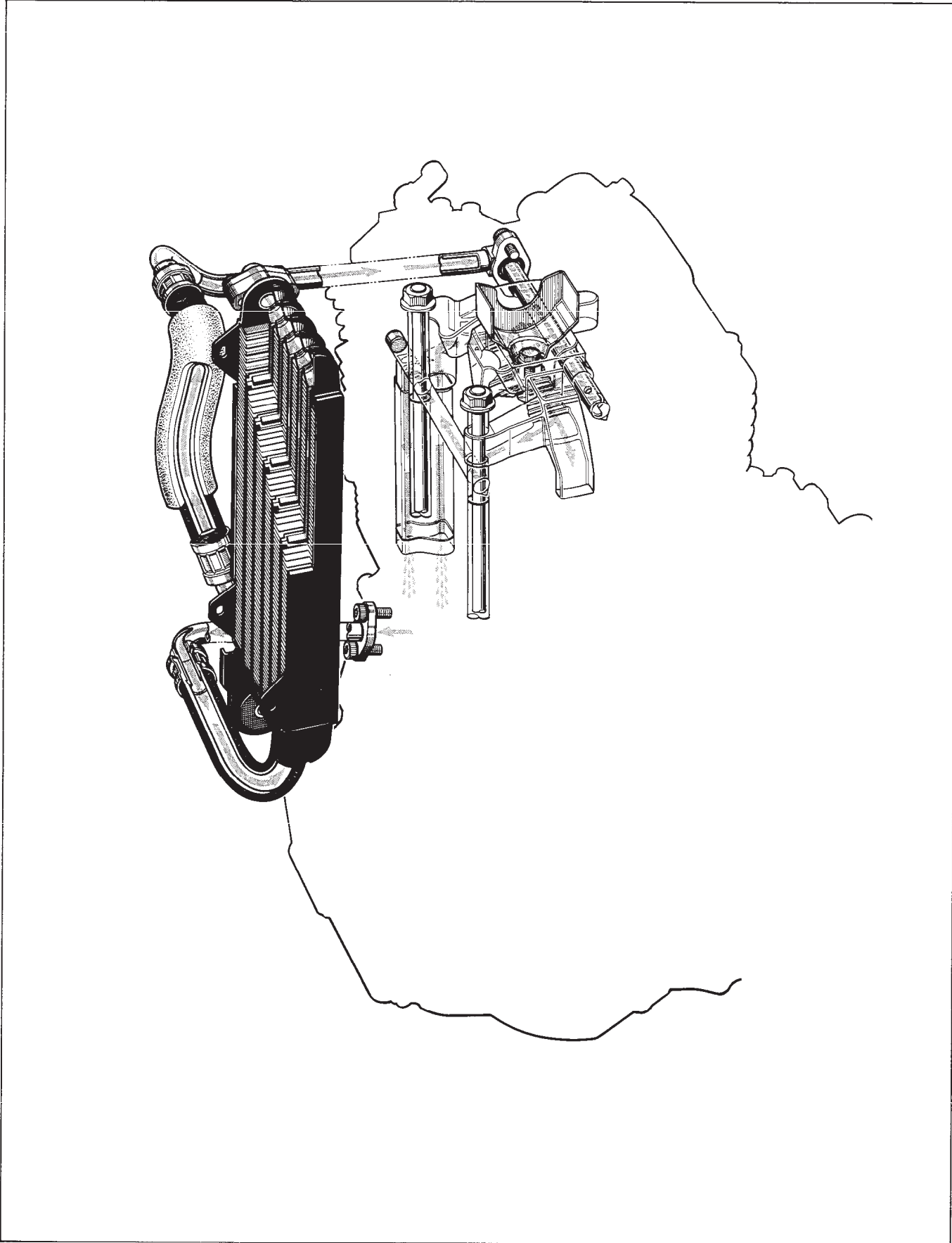
ENGINE LUBRICATION/CYLINDER HEAD COOLING SYSTEM CHART



ENGINE LUBRICATION



CYLINDER HEAD COOLING





# ELECTRICAL SYSTEM

## CONTENTS

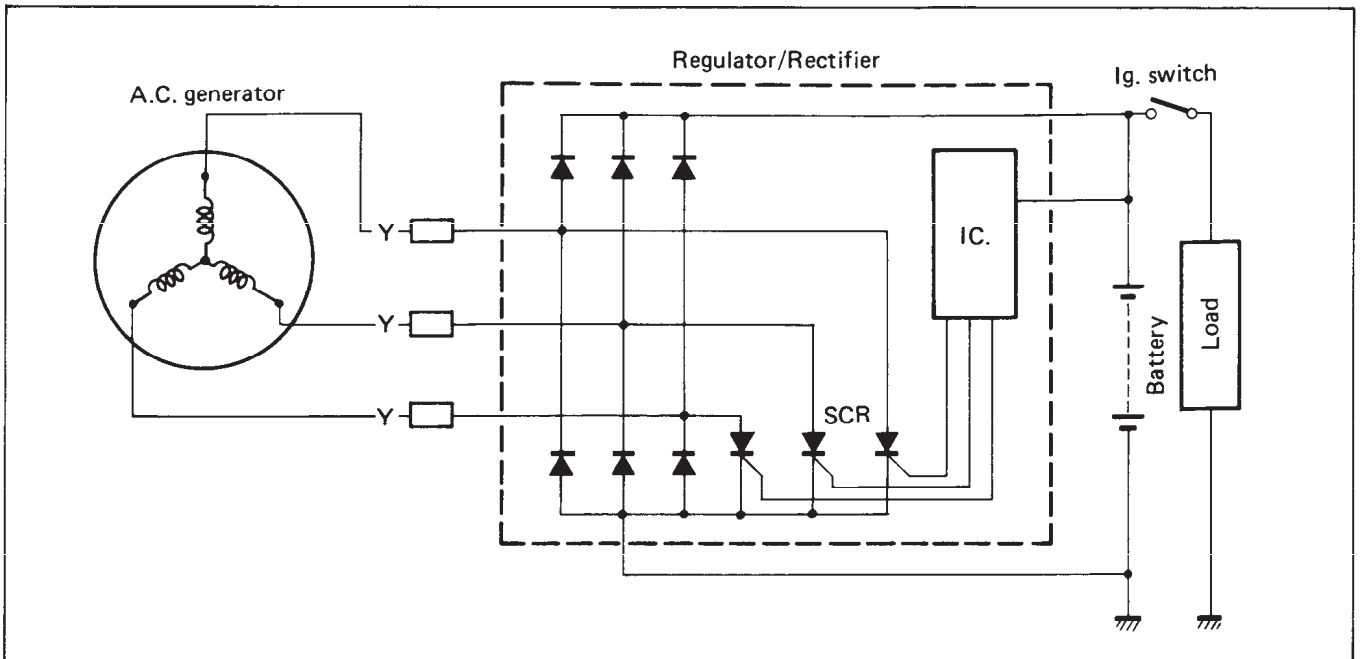
<b>CHARGING SYSTEM</b> .....	5- 1
<b>DESCRIPTION</b> .....	5- 1
<b>INSPECTION</b> .....	5- 3
<b>IGNITION AND STARTER SYSTEM</b> .....	5- 5
<b>DESCRIPTION</b> .....	5- 5
<b>IGNITION SYSTEM INSPECTION</b> .....	5- 6
<b>DE-COMP. CONTROL UNIT INSPECTION</b> .....	5- 9
<b>STARTER MOTOR REMOVAL AND DISASSEMBLY</b> .....	5-10
<b>STARTER MOTOR INSPECTION</b> .....	5-11
<b>STARTER MOTOR REASSEMBLY</b> .....	5-11
<b>STARTER RELAY INSPECTION</b> .....	5-12
<b>LAMPS</b> .....	5-13
<b>COMBINATION METER</b> .....	5-14
<b>INSPECTION</b> .....	5-15
<b>SWITCHES</b> .....	5-16
<b>BATTERY</b> .....	5-17
<b>SPECIFICATIONS</b> .....	5-17
<b>INITIAL CHARGING</b> .....	5-17
<b>SERVICING</b> .....	5-18
<b>RECHARGING OPERATION</b> .....	5-19
<b>SERVICE LIFE</b> .....	5-19

## CHARGING SYSTEM

### DESCRIPTION

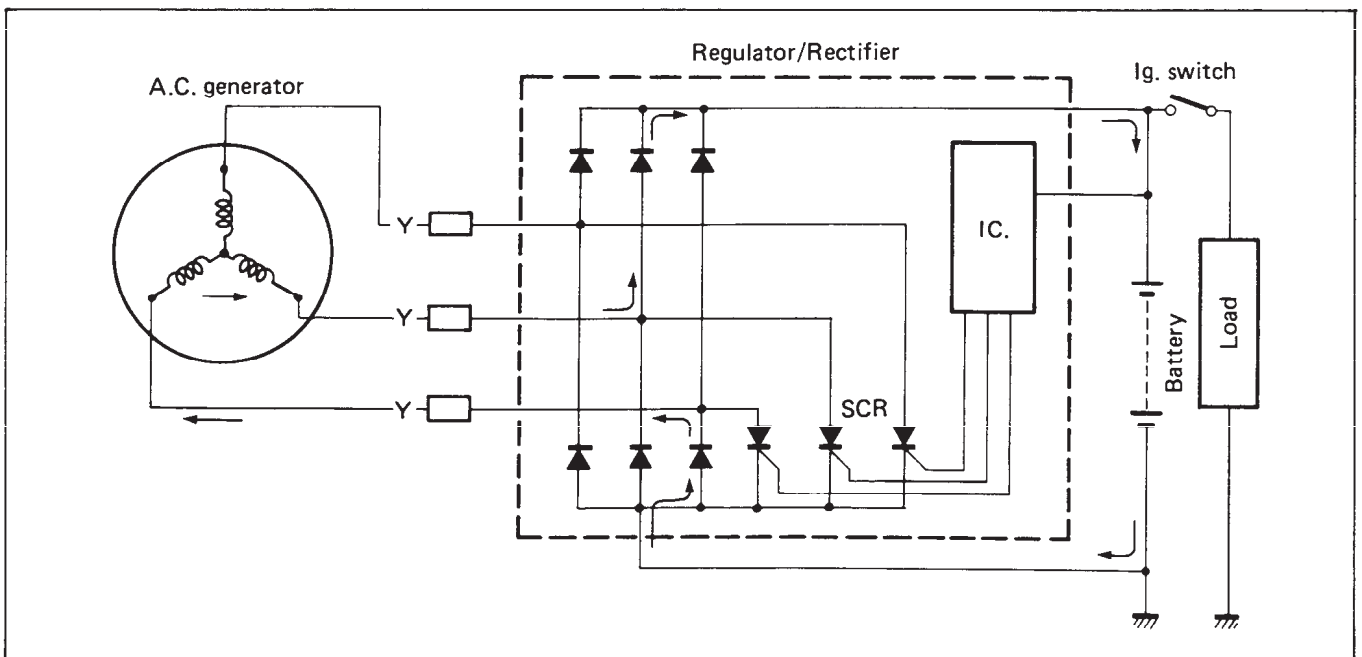
The circuit of the charging system is indicated in the figure, which is composed of an AC generator, regulator/rectifier unit and battery.

The AC current generated from the AC generator is rectified by the rectifier and is turned into DC current, then it charges the battery.



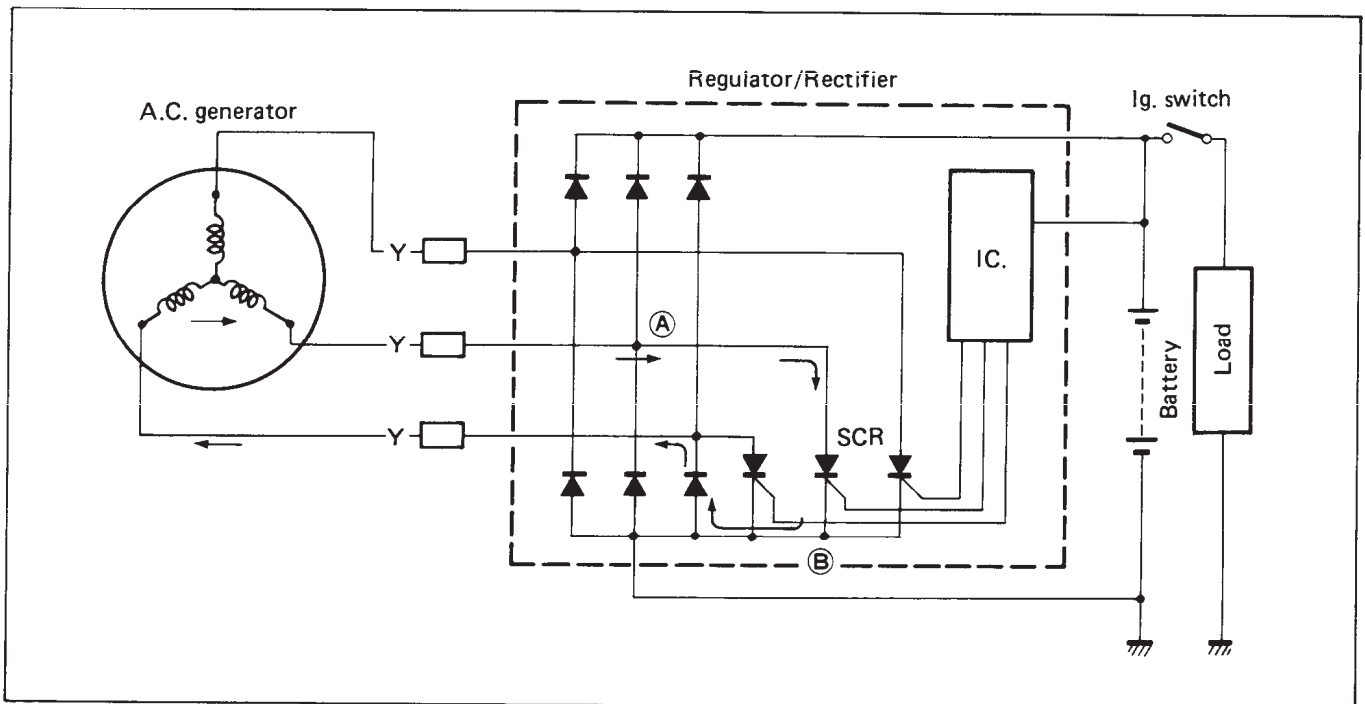
### FUNCTION OF REGULATOR

While the engine r/min is low and the generated voltage of the AC generator is lower than the adjusted voltage of regulator, the regulator does not function. However, the generated current charges the battery directly at this time.



When the engine  $r/min$  becomes higher, the generated voltage of the AC generator also becomes higher and the voltage between the battery terminals becomes high accordingly. When it reaches the adjusted voltage of the I.C., (Integrated Circuit) and it is turned "ON", a signal will be sent to the SCR (Thyristor) gate probe and the SCR will be turned "ON".

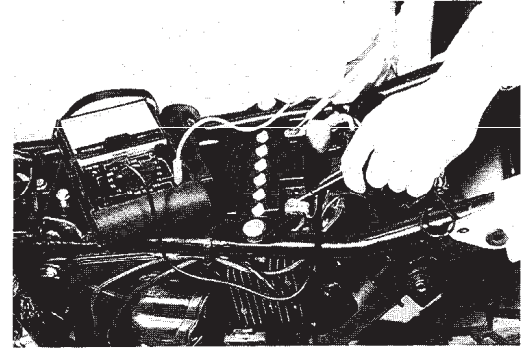
Then, the SCR becomes conductive in the direction from point (A) to point (B). At this time, the current generated from the AC generator gets through the SCR without charging the battery and returns to AC generator again. At the end of this state, since the AC current generated from AC generator flows to point (B), the reverse current tends to flow to SCR. Then, the circuit of SCR turns to the OFF mode and begins to charge the battery again. Thus these repetitions maintain charging voltage and current to the battery constant and protect it from overcharging.



**INSPECTION**

**CHARGING OUTPUT CHECK**

- Remove the frame covers and seat.
- Start the engine and keep it running at 5 000 r/min with lighting switch turned ON and dimmer switch turned HI position.
- Using the pocket tester, measure the DC voltage between the battery terminals, ⊕ and ⊖ .  
If the tester reads under 14.0V or over 15.5V, check the AC generator no-load performance and regulator/rectifier.

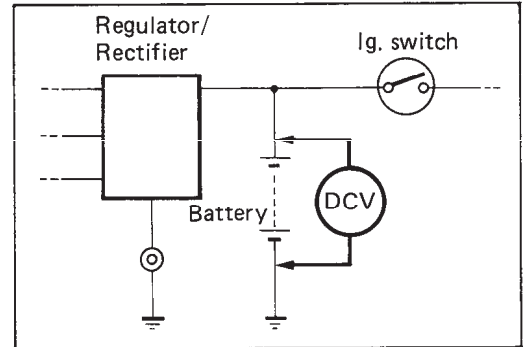


**NOTE:**

*When making this test, be sure that the battery is fully-charged condition.*

**STD charging output: 14.0 – 15.5V (DC) at 5 000 r/min**

**09900-25002: Pocket tester**

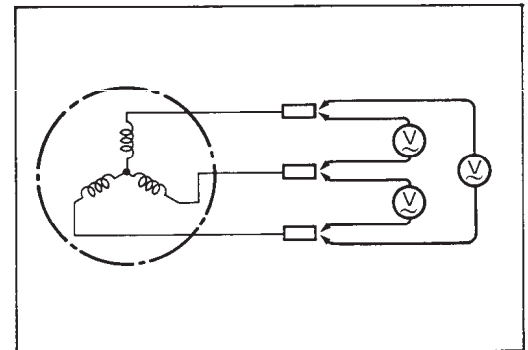


**AC GENERATOR NO-LOAD PERFORMANCE**

- Disconnect the AC generator lead wire coupler.
- Start the engine and keep it running at 5 000 r/min.
- Using the pocket tester, measure the AC voltage between the three yellow lead wires.  
If the tester reads under 75V, the AC generator is faulty.

**STD No-load performance: More than 75V (AC) at 5 000 r/min**

**09900-25002: Pocket tester**



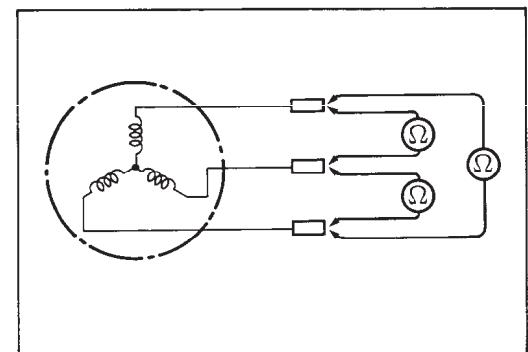
**AC GENERATOR CONTINUITY CHECK**

- Using the pocket tester, check the continuity between the three yellow lead wires.  
Check that there is no continuity between the yellow leads and ground.

**NOTE:**

*When making this test, it is not necessary to remove the AC generator.*

**09900-25002: Pocket tester**

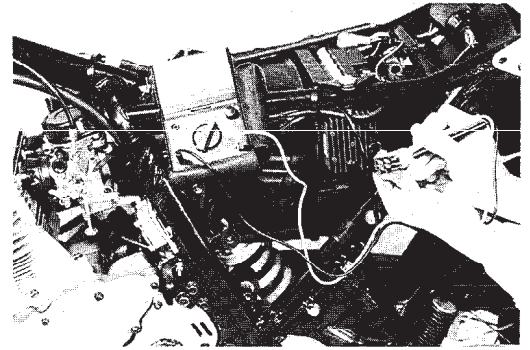




**REGULATOR/RECTIFIER**

- Remove the seat and left frame cover.
- Using the pocket tester ( $\times 1k\Omega$  range), measure the resistance between the lead wires in the following table.  
If the resistance checked is incorrect, replace the regulator/rectifier.

09900-25002: Pocket tester

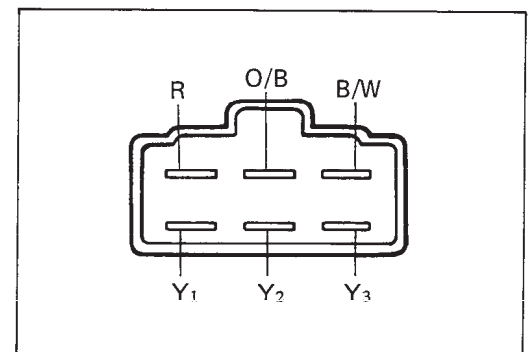
Unit: Approx.  $k\Omega$ 

⊖ Probe of tester to:	⊕ Probe of tester to:						
	Y <sub>1</sub>	Y <sub>2</sub>	Y <sub>3</sub>	R	O/B	B/W	
Y <sub>1</sub>		$\infty$	$\infty$	3.0	$\infty$	$\infty$	
Y <sub>2</sub>	$\infty$		$\infty$	3.0	$\infty$	$\infty$	
Y <sub>3</sub>	$\infty$	$\infty$		3.0	$\infty$	$\infty$	
R	$\infty$	$\infty$	$\infty$		$\infty$	$\infty$	
O/B	40	40	40	60		28	
B/W	3.0	3.0	3.0	7.5	4.5		

Y: Yellow, R: Red, O/B: Orange with Black tracer, B/W: Black with White tracer,  $\infty$  : Infinity

**NOTE:**

As transistors, capacitors, Zener diodes, etc. are used inside this regulator/rectifier, the resistance values will differ when an ohmmeter other than the SUZUKI pocket tester is used.

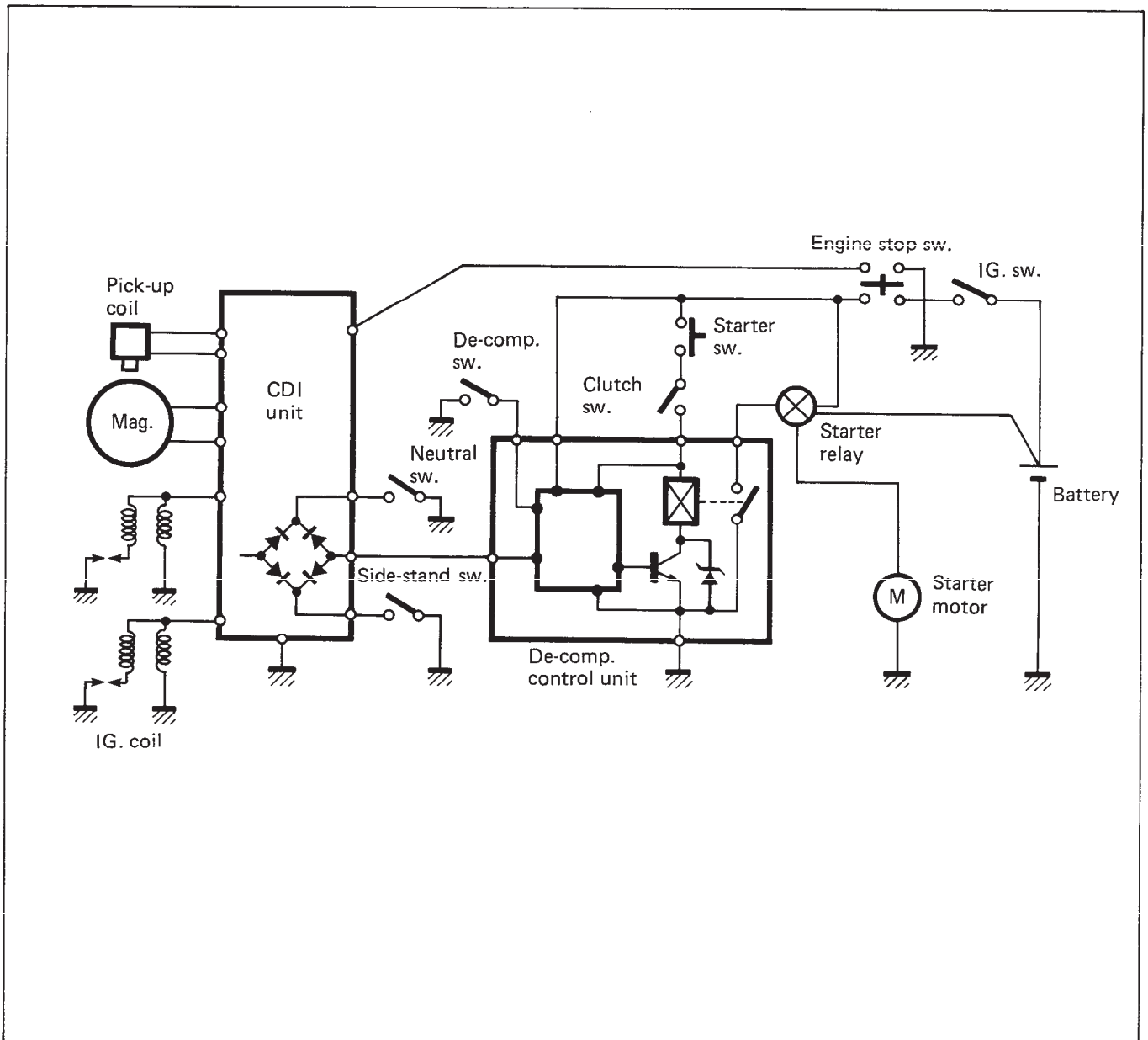


## IGNITION AND STARTER SYSTEM

### DESCRIPTION

The capacitor discharged ignition system consists of a magneto, CDI unit, ignition coils and spark plugs. The electrical energy generated by the magneto charges the capacitor. This energy is released in a single surge at the specified ignition timing point, and current flows through the primary side of the ignition coil. A high voltage current is induced in the secondary windings of the ignition coil resulting in strong spark between the spark plug gap. Ignition cut-off circuit is incorporated in the CDI unit. If the crankshaft turns in the reverse direction and reverse current is produced, this circuit works on the capacitor to cut off the primary current of the ignition coil. It causes no sparking between spark plug gap.

The starter system consists of a side-stand switch, neutral switch, de-comp. switch, clutch switch and de-comp. control unit. This function is to supply the current from the battery to the de-comp. control unit and starter relay only when the transmission gear is at the neutral position or when the side-stand is at the upright position and when the de-comp. switch is at the on position.



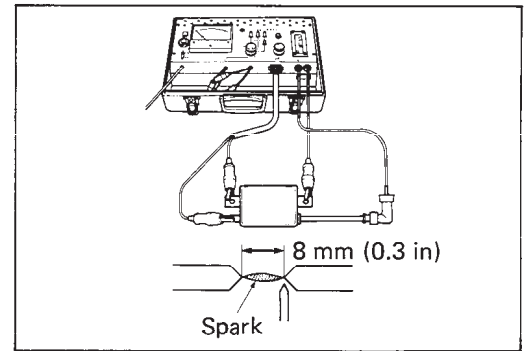
## IGNITION SYSTEM INSPECTION

### IGNITION COILS (Checking with Electro Tester)

- Remove the ignition coils from the frame.
  - Using the electro tester, test each ignition coil for sparking performance. The test connection is as indicated. Make sure that the three-needle sparking distance is at least 8 mm.
- If no sparking or orange color sparking occurs with this much gap, then it is defective and must be replaced.

09900-28106: Electro tester

STD Spark performance: 8 mm (0.3 in)



### IGNITION COIL (Checking with Pocket Tester)

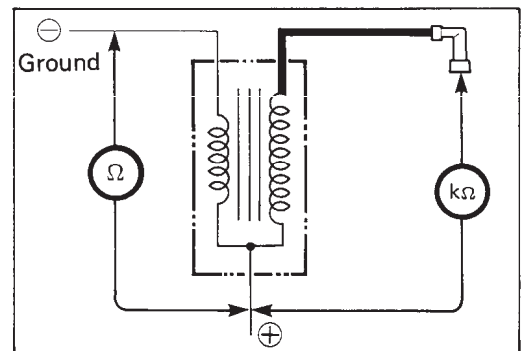
- A SUZUKI pocket tester or an ohmmeter may be used, instead of the electro tester. In either case, the ignition coil is to be checked for continuity in both primary and secondary windings.
- Exact ohmic readings are not necessary, but, if the windings are in sound condition, their continuity will be noted with these approximate ohmic values.

09900-25002: Pocket tester

#### Ignition coil resistance

Primary : ⊕ tap – Ground 0 – 1 Ω  
Tester range: (× 1 Ω)

Secondary: ⊕ tap – Plug cap 10 – 17 kΩ  
Tester range: (× 1 kΩ)



### PICK-UP COIL AND POWER SOURCE COIL (Checking with Pocket Tester)

- Measure the resistance between lead wires. If the resistance is infinity or less than the specification, the pick-up coil and power source coil must be replaced.

09900-25002: Pocket tester

#### Magneto coil resistance

Pick-up : O – G 175 – 265 Ω  
Tester range: (× 100 Ω)

Power source: B/R – R/B 230 – 355 Ω  
Tester range: (× 100 Ω)

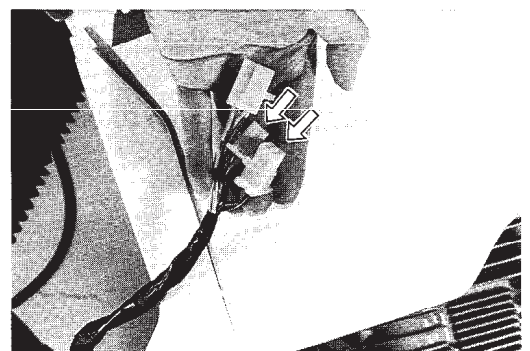
#### Wire color

O : Orange

G : Green

B/R : Black with Red tracer

R/B : Red with Black tracer

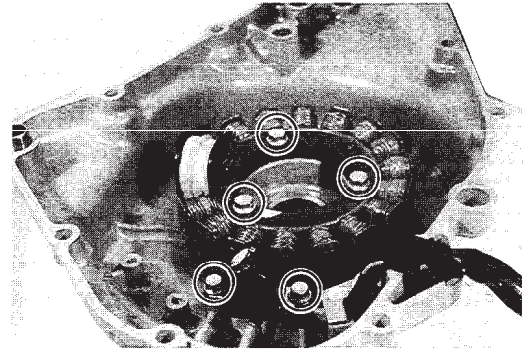


## 5-7 ELECTRICAL SYSTEM

### CAUTION:

When replacing the magneto coils, apply a small quantity of **THREAD LOCK "1342"** to the threaded of bolts.

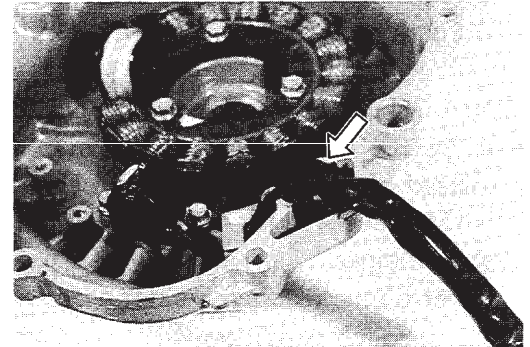
99000-32050: Thread lock "1342"



### CAUTION:

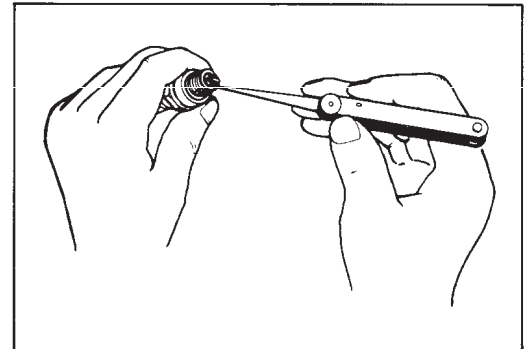
**BOND NO. 1216** should be applied to the groove of magneto lead wire grommet.

99000-31160: Suzuki Bond No. 1216



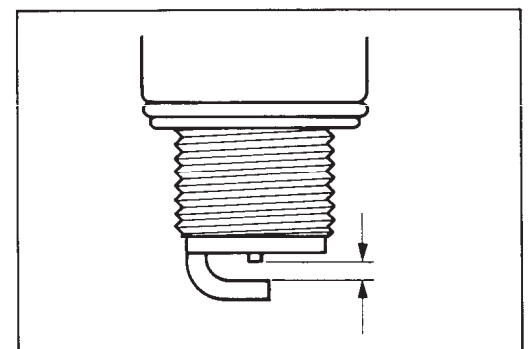
### SPARK PLUG

- Clean the plug with a wire brush and pin. Use the pin to remove carbon, taking care not to damage the porcelain.



- Check the gap with a thickness gauge.

Spark plug gap: 0.8 – 0.9 mm (0.031 – 0.035 in.)



### Recommended spark plug

NGK: DP9EA-9 . . . . . Standard

NGK: DP8EA-9 . . . . . Hot type plug

"R" type spark plug

NGK: DPR9EA-9 . . . . . Standard

NGK: DPR8EA-9 . . . . . Hot type plug

### NOTE:

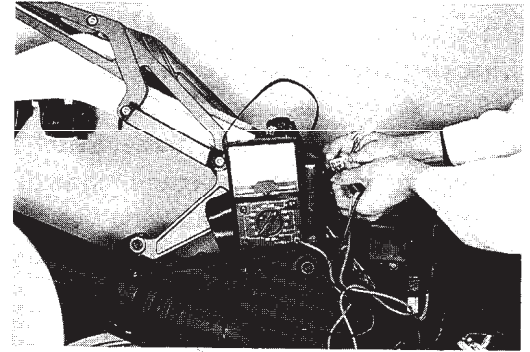
"R" type spark plug is installed for some specifications. "R" type spark plug has a resistor located at the center electrode to prevent radio noise.



**CDI UNIT (Checking with Pocket Tester)**

- Remove the right frame cover and seat.
- Disconnect the CDI unit couplers.
- Using the pocket tester, check the continuity and measure the resistance values.

The continuity and resistance values are as shown in the following table.



**09900-25002: Pocket tester**

**NOTE:**

*As capacitors, diodes, etc. are used inside this CDI unit, the resistance values will differ when an ohmmeter other than SUZUKI pocket tester is used.*

**NOTE:**

*Remove the spark plugs from the cylinder head and place the spark plugs on the cylinder head. Start the engine and check the sparks of respective spark plugs.*

*If no sparking at spark plug gap, replace the CDI unit or inspect the magneto coils, igniton coils and spark plugs. If the magneto coils, igniton coils and spark plugs checked are correct, the CDI unit may be faulty, replace the CDI unit with a new one.*

- B/R : Black with Red tracer
- R/B : Red with Black tracer
- B/Y : Black with Yellow tracer
- W/BI: White with Blue tracer
- B/W : Black with White tracer
- O : Orange
- G : Green
- BI : Blue
- BI/B: Blue with Black tracer
- G/W: Green with White tracer
- W : White
- ∞ : Infinity

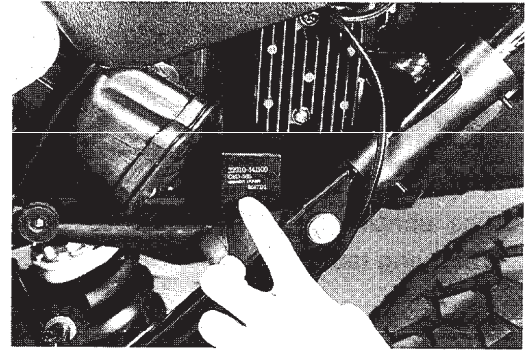
Unit: Approx. kΩ

		⊖ Probe of tester to:											
		B/R	R/B	B/Y	W/BI	W/BI	B/W	O	G	BI	BI/B	G/W	W
⊕ Probe of tester to:	B/R		35	500	60	60	35	35	50	∞	∞	∞	∞
	R/B	26		200	2.6	2.6	0	0	10	∞	∞	∞	∞
	B/Y	90	8.5		30	30	8.5	8.5	30	∞	∞	∞	∞
	W/BI	∞	∞	∞		∞	∞	∞	∞	∞	∞	∞	∞
	W/BI	∞	∞	∞	∞		∞	∞	∞	∞	∞	∞	∞
	B/W	26	0	200	2.6	2.6		0	9.5	∞	∞	∞	∞
	O	26	0	200	2.6	2.6	0		9.5	∞	∞	∞	∞
	G	45	9	200	15	15	9	9		∞	∞	∞	∞
	BI	500	200	500	500	500	300	300	300		2.6	2.6	∞
	BI/B	∞	∞	∞	∞	∞	∞	∞	∞	∞		∞	∞
	G/W	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞		∞
	W	1000	300	500	500	500	300	300	400	∞	∞	2.6	

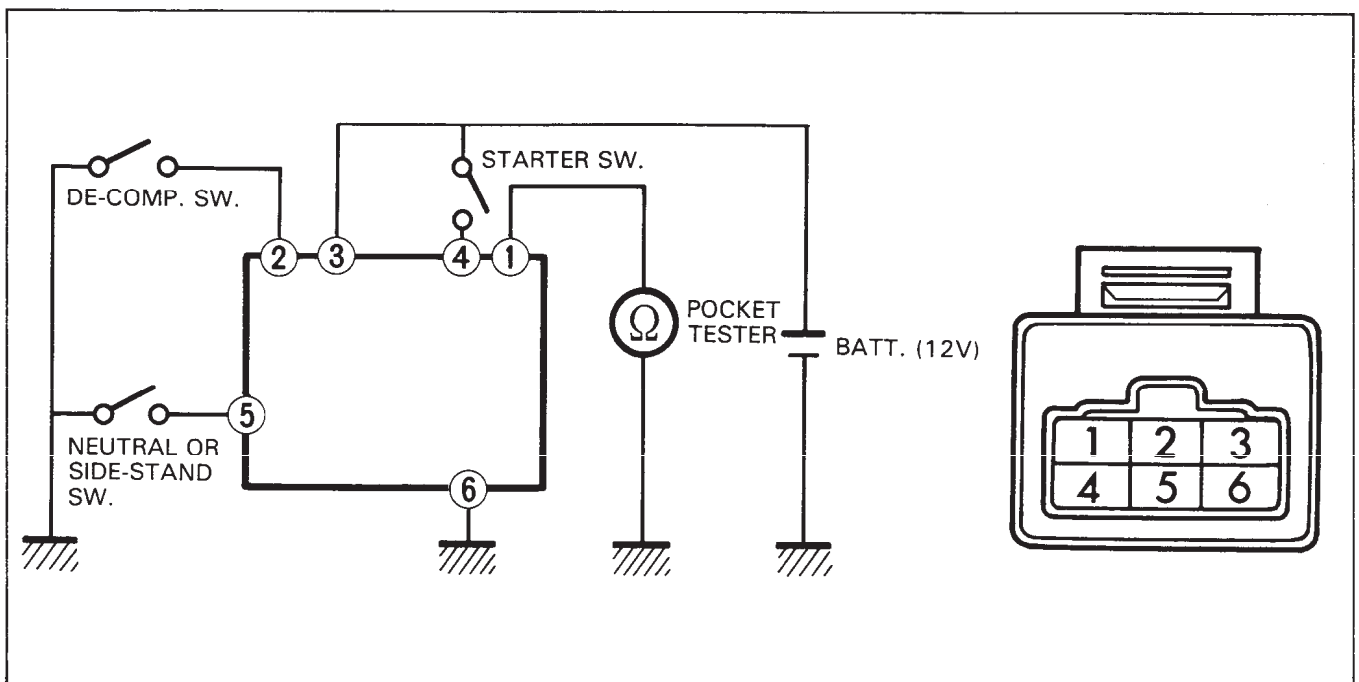
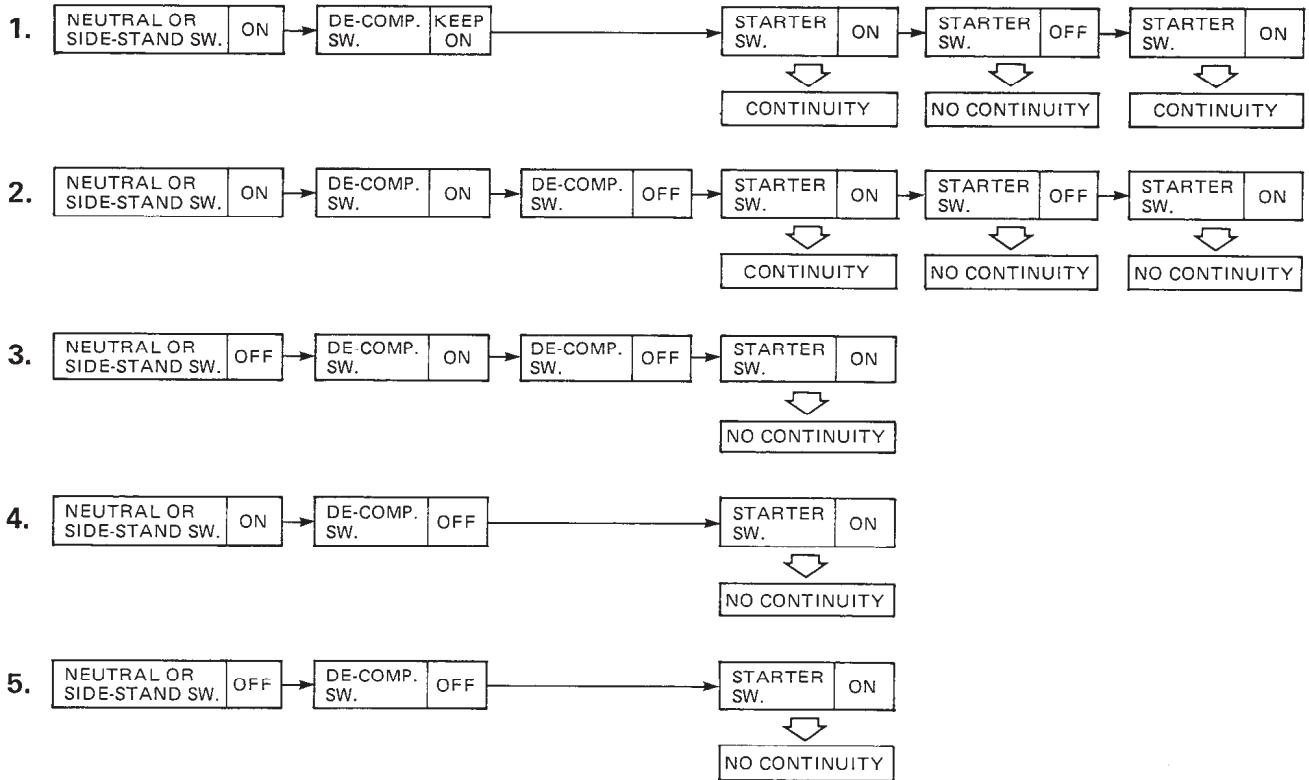
### DE-COMP. CONTROL UNIT INSPECTION

(Checking with Pocket Tester)

- Remove the de-comp. control unit.
- Use the pocket tester, three switches, battery and jumper wires to check the de-comp. control unit for continuity in accordance with the following five steps.
- Replace the control unit if it fails one of the following five inspection.

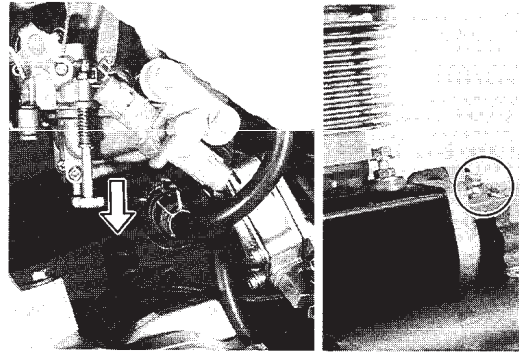


**09900-25002: Pocket tester**

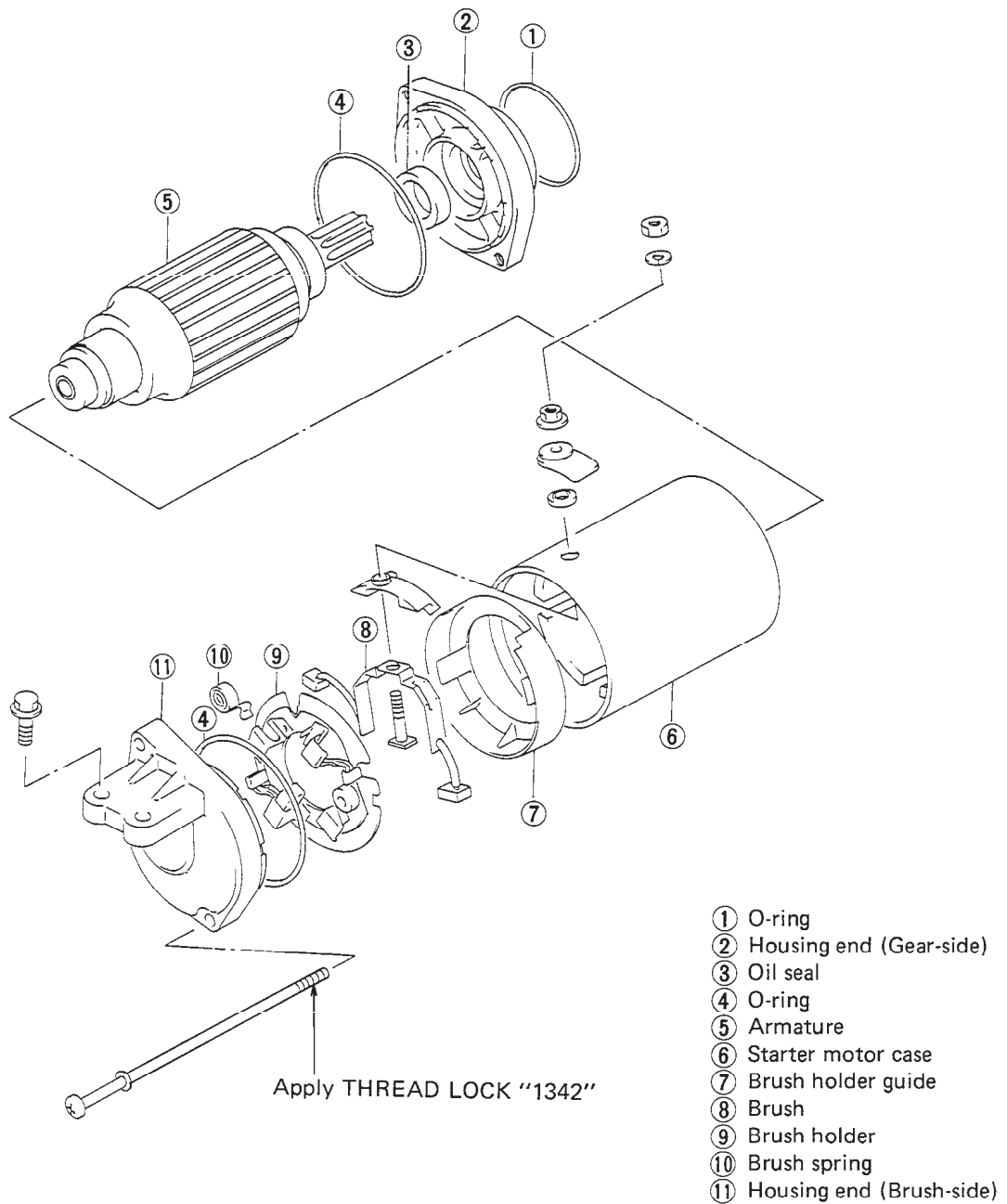


## STARTER MOTOR REMOVAL AND DISASSEMBLY

- Disconnect the starter motor lead wire.
- Remove the starter motor by removing the bolts.



- Disassemble the starter motor as shown in the following illustration.

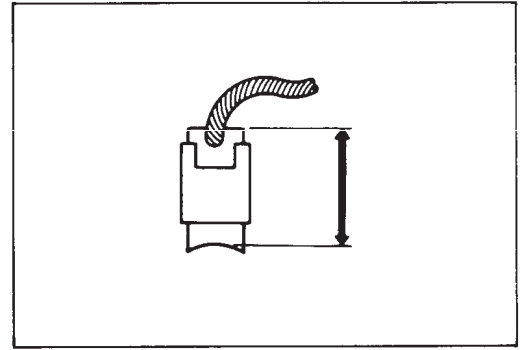


## STARTER MOTOR INSPECTION

### CARBON BRUSH

When the brushes are worn, the motor will be unable to produce sufficient torque, and the engine will be difficult to turn over. To prevent this, periodically, inspect the length of the brushes, replacing them when they are too short or chipping.

**Service Limit: 9 mm (0.35 in)**

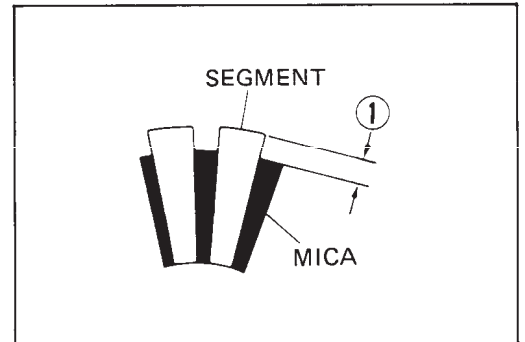


### COMMUTATOR

If the commutator surface is dirty, starting performance decreases. Polish the commutator with # 400 or similar fine emery paper when it is dirty.

After polishing it, wipe the commutator with a clean dry cloth. Measure the commutator under-cut ①.

**Service Limit: 0.2 mm (0.008 in)**



### BEARING

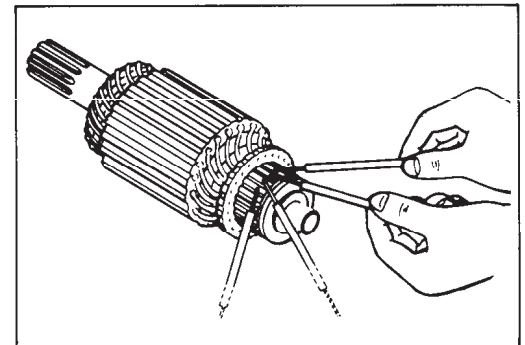
Inspect the play of the bearings by hand. Replace the bearing if there is anything unusual.

### ARMATURE COIL

Using a pocket tester, check the coil for open and ground by placing probe pins on each commutator segment and rotor core (to test for ground) and on any two segments at various places (to test for open), with the brushes lifted off the commutator surface.

If the coil is found to be open-circuited or grounded, replace the armature. Continuous use of a defective armature will cause the starter motor to suddenly fail.

**09900-25002: Pocket tester**



### OIL SEAL

Check the seal lip for damage, wear or sign of oil leakage. If any damage is found, replace it.

## STARTER MOTOR REASSEMBLY

### O-RING

#### CAUTION:

Replace the O-rings with new ones to prevent oil leakage.

### OIL SEAL

- Apply grease to the lip of oil seal.

**99000-25010: Suzuki super grease "A"**



**HOUSING SCREW**

- Apply a small quantity of THREAD LOCK "1342" to the starter motor housing screws and install both housing ends.

99000-32050: Thread lock "1342"

**STARTER RELAY INSPECTION**

- Remove the seat.
- Disconnect the lead wire of the starter motor at the starter relay.
- Turn on the ignition switch, inspect the continuity between the positive (from the battery) and negative terminals, when squeezing the de-comp. lever and clutch lever and pushing the starter button.

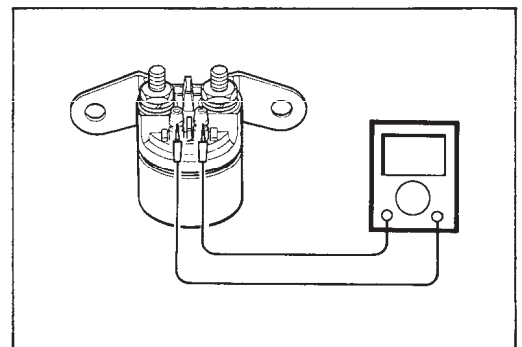
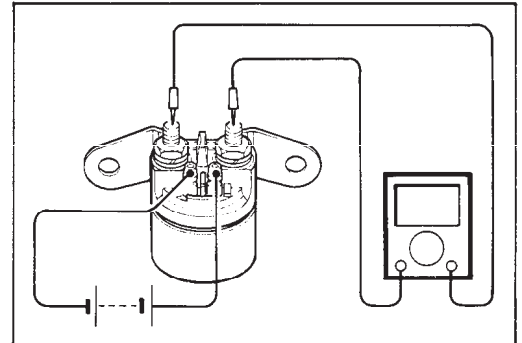
If the starter relay is in sound condition, continuity is found.

09900-25002: Pocket tester

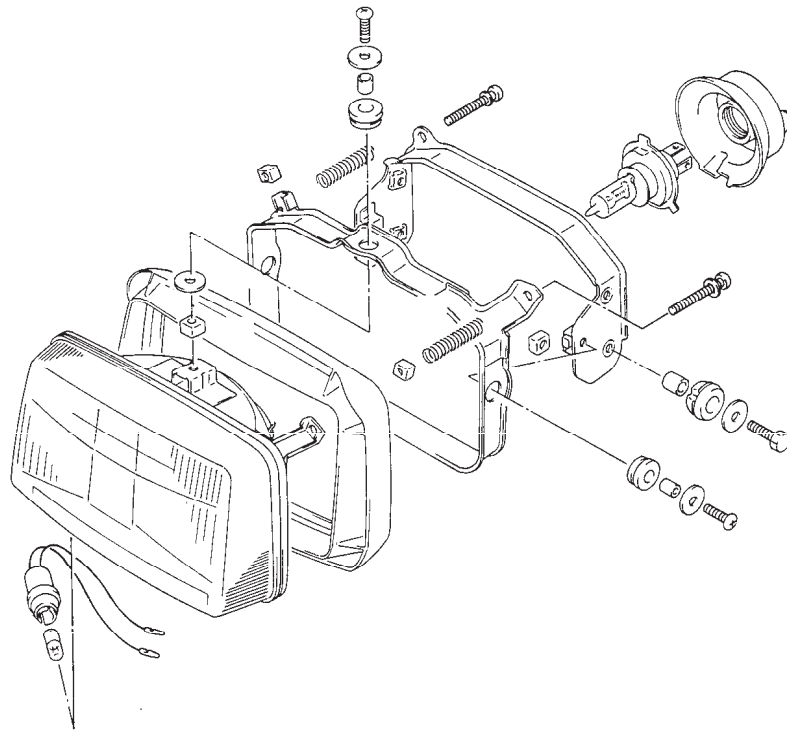
- Disconnect the lead wires from the starter relay.
- Check the coil for "open", "ground" and ohmic resistance. The coil is in good condition if the resistance is as follows.

09900-25002: Pocket tester

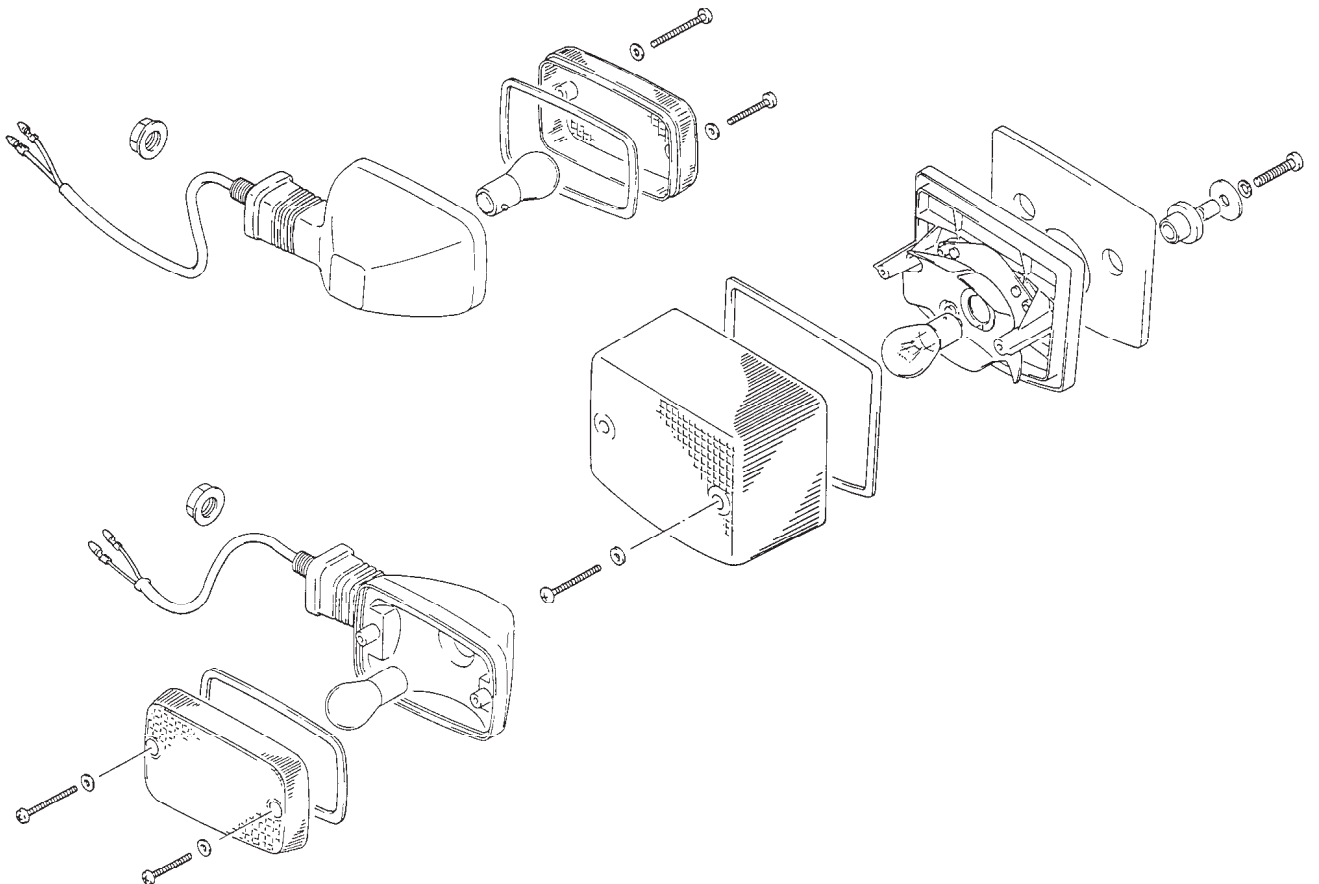
STD resistance: 2 – 6  $\Omega$



# LAMPS



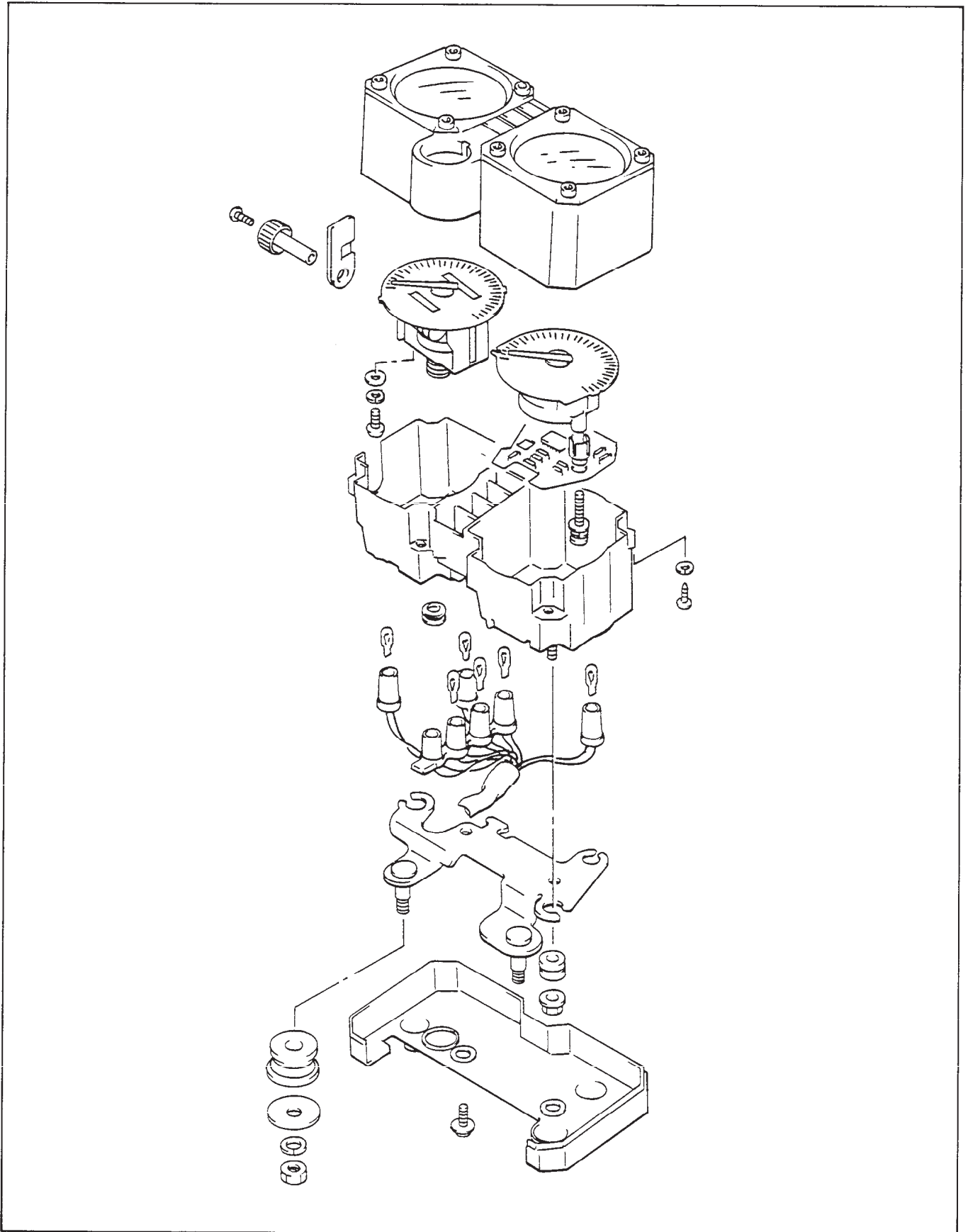
*NOTE: Adjust the headlight, both vertical and horizontal, after reassembling.*



**CAUTION: Do not overtighten the lens fitting screws.**

## COMBINATION METER

- Disassemble the combination meter as shown in the following illustration.



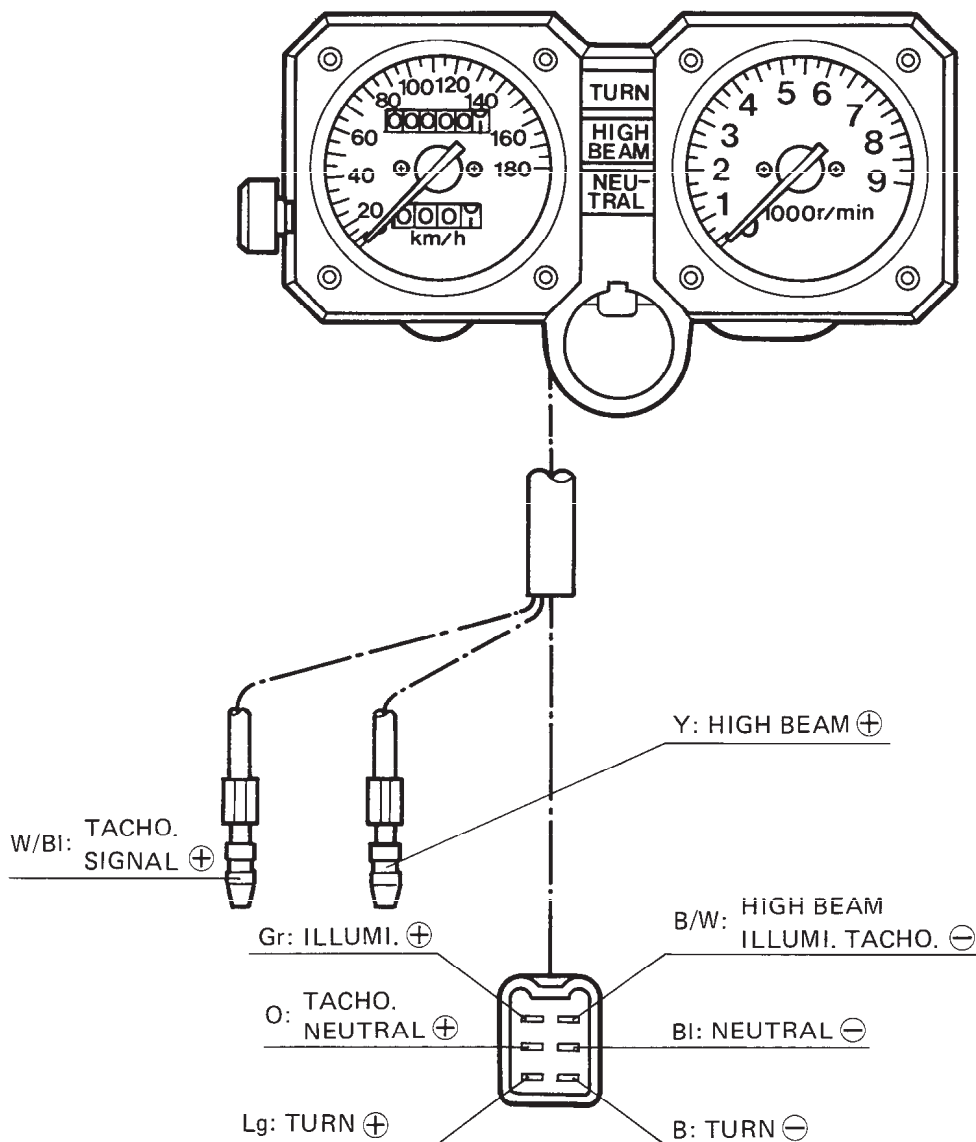
### INSPECTION

- Using the pocket tester, check the continuity between lead wires in the following diagram. If the continuity measured is incorrect, replace the respective parts.

09900-25002: Pocket tester

**NOTE:**

When making this test, it is not necessary to remove the combination meter.



ITEM	⊕ Probe of tester to:	⊖ Probe of tester to:
ILLUMI.	Gr	B/W
TACHO. NEUTRAL	O	BI
TURN SIGNAL	Lg	B
TACHO. SIGNAL	W/BI	B/W
HI BEAM	Y	B/W

**WIRE COLOR**

- Gr : Gray
- O : Orange
- Lg : Light green
- W/BI: White with Blue tracer
- Y : Yellow
- B/W: Black with White tracer
- BI : Blue
- B : Black



## SWITCHES

Inspect each switch for continuity with the pocket tester referring to the chart. If any abnormality is found, replace the respective switch assemblies with new ones.

09900-25002: Pocket tester

### IGNITION SWITCH

	B/Y	B/W	R	O	Gr	Br
OFF						
ON						
P						

### LIGHTING SWITCH

(For E-28 model)

	O	Gr	W/R	W/G
ON				

### DIMMER SWITCH

(For E-28 model)

	W	Y	Gr
HI			
LO			

### LIGHTING SWITCH

(For the other models)

	O/R	Gr	Y/W	Bl/W	W	W/R	W/G
OFF							
S							
ON							

### DIMMER SWITCH

(For the other models)

	W	Y	Y/W
HI			
LO			

### PASSING SWITCH

(Except for E-28 model)

	Bl/W	Y
ON (Push)		
OFF		

### TURN SIGNAL SWITCH

	B	Lbl	Lg
R			
L			

### HORN SWITCH

	G	B/W
ON (Push)		
OFF		

### SIDE-STAND SWITCH

	G	B/W
ON (Upright position)		
OFF (Down position)		

### CLUTCH SWITCH

	Y/G	Y/G
ON (Squeeze lever)		
OFF		

### ENGINE STOP SWITCH

	O	O/W	B/Y	B/W
OFF				
RUN				

### STARTER SWITCH

	Y/G	O/W
ON (Push)		
OFF		

**DE-COMP. SWITCH**

	B	B/W
ON (Squeeze lever)		
OFF		

**NEUTRAL INDICATOR SWITCH**

	Bl	Ground
ON (Neutral position)		
OFF		

**FRONT BRAKE SWITCH**

	O	W
ON (Squeeze lever)		
OFF		

**REAR BRAKE SWITCH**

	O	W
ON (Depress pedal)		
OFF		

**WIRE COLOR**

- B/Y . . . . . Black with Yellow tracer
- B/W . . . . . Black with White tracer
- R . . . . . Red
- O . . . . . Orange
- Gr . . . . . Gray
- Br . . . . . Brown
- W/R . . . . . White with Red tracer
- W/G . . . . . White with Green tracer
- W . . . . . White
- Y . . . . . Yellow
- O/R . . . . . Orange with Red tracer
- Y/W . . . . . Yellow with White tracer
- Bl/W . . . . . Blue with White tracer
- B . . . . . Black
- Y/G . . . . . Yellow with Green tracer
- O/W . . . . . Orange with White tracer
- G . . . . . Green
- Lbl . . . . . Light blue
- Lg . . . . . Light green
- Bl . . . . . Blue

**BATTERY**

**SPECIFICATIONS**

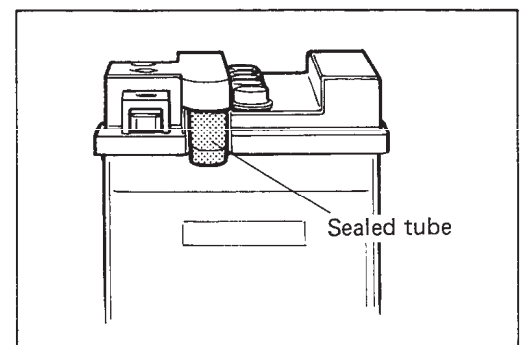
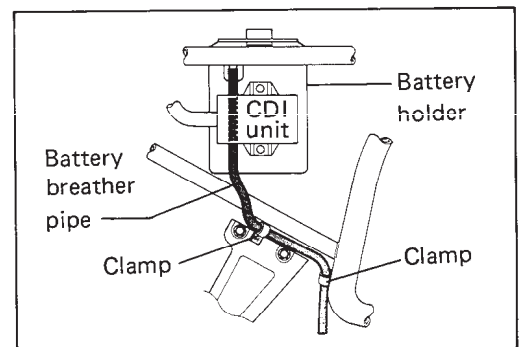
- Type designation : YB14L-B2 or FB14L-B2
- Capacity : 12V, 50.4 kC (14 Ah)/10HR
- Standard electrolyte S.G.: 1.28 at 20°C (68° F)

In fitting the battery to the motorcycle, connect the breather pipe to the battery vent.

**INITIAL CHARGING**

**Filling electrolyte**

Remove the short sealed tube before filling electrolyte. Fill the battery with electrolyte (dilute sulfuric acid solution with acid concentration of 35.0% by weight, having a specific gravity of 1.28 at 20° C (68° F)) up to indicated MAX. LEVEL. Electrolyte should be always cooled below 30° C (86° F) before filling into battery. Leave battery standing for half an hour after filling. Add additional electrolyte if necessary.



Charge battery with current as described in the tables shown below.

**Maximum charging current: 1.4A**

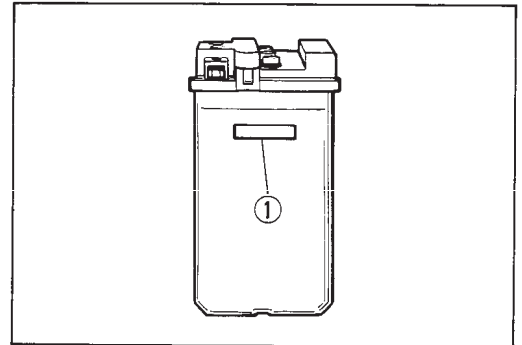
#### Charging time

The charging time for a new battery is determined by the number of months that have elapsed since the date of manufacture.

#### Confirmation for date of manufacture

Date of manufacture is indicated by a three-part number ①, as shown in the illustration, each indicating month, date and year.

Months after manufacturing	Within 6	Within 9	Within 12	Over 12
Necessary charging hours	20	30	40	60



Near the end of charging period, adjust the specific gravity of electrolyte to value specified. After charging, adjust the electrolyte level to the MAX. LEVEL with DISTILLED WATER.

## SERVICING

Visually inspect the surface of the battery container. If any signs of cracking or electrolyte leakage from the sides of the battery have occurred, replace the battery with a new one.

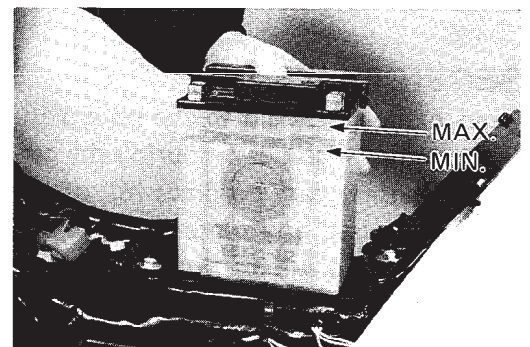
If the battery terminals are found to be coated with rust or an acidic white powdery substance, then this can be cleaned away with sandpaper.

Check the electrolyte level and add distilled water, as necessary to raise the electrolyte to each cell's MAX. level.

Check the battery for proper charge by taking an electrolyte S.G. reading. If the reading is 1.22 or less, as corrected to 20°C (68°F), it means that the battery is still in a run-down condition and needs recharging.

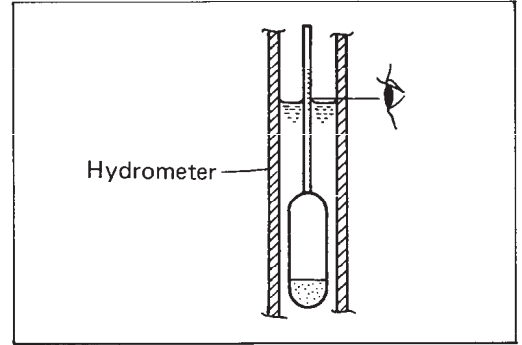
#### NOTE:

First, remove the ⊖ lead wire.



### RECHARGING OPERATION BASED ON S.G. READING

To read the S.G. on the hydrometer, bring the electrolyte in the hydrometer to eye level and read the graduations on the float scale bordering on the meniscus (curved-up portion of electrolyte surface), as shown in figure.



Check the reading (as corrected to 20°C) with chart to determine the recharging time in hour by constant-current charging at a charging rate of 1.4 amperes (which is tenth of the capacity of the present battery).

Be careful not to permit the electrolyte temperature to exceed 45°C (113°F), at any time, during the recharging operation. Interrupt the operation, as necessary, to let the electrolyte cool down. Recharge the battery to the specification.

**Electrolyte specific gravity: 1.28 at 20°C (68°F)**

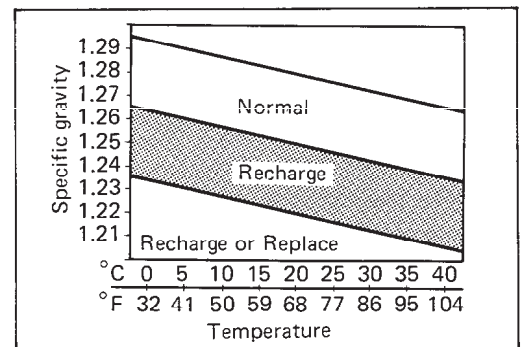
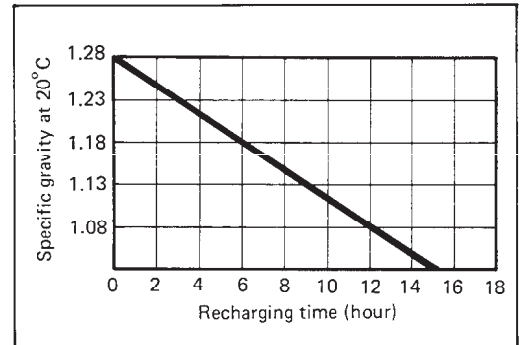
**CAUTION:**

Constant-voltage charging, otherwise called "quick" charging, is not recommendable for it could shorten the life of the battery.

09900-28403: Hydrometer

**WARNING:**

- \* Before charging a battery, remove the seal cap from each cell.
- \* Keep fire and sparks away from a battery being charged.
- \* When removing a battery from the motorcycle, be sure to remove the (-) terminal first.



### SERVICE LIFE

Lead oxide is applied to the pole plates of the battery which will come off gradually during the service. When the bottom of the battery case becomes full of the sediment, the battery cannot be used any more. If the battery is not charged for a long time, lead sulfate is generated on the surface of the pole plates and will deteriorate the performance (sulfation). Replace the battery with new one in such a case.

When a battery is left for a long term without using, it is apt to subject to sulfation. When the motorcycle is not used for more than 1 month (especially during the winter season), recharge the battery once a month at least.

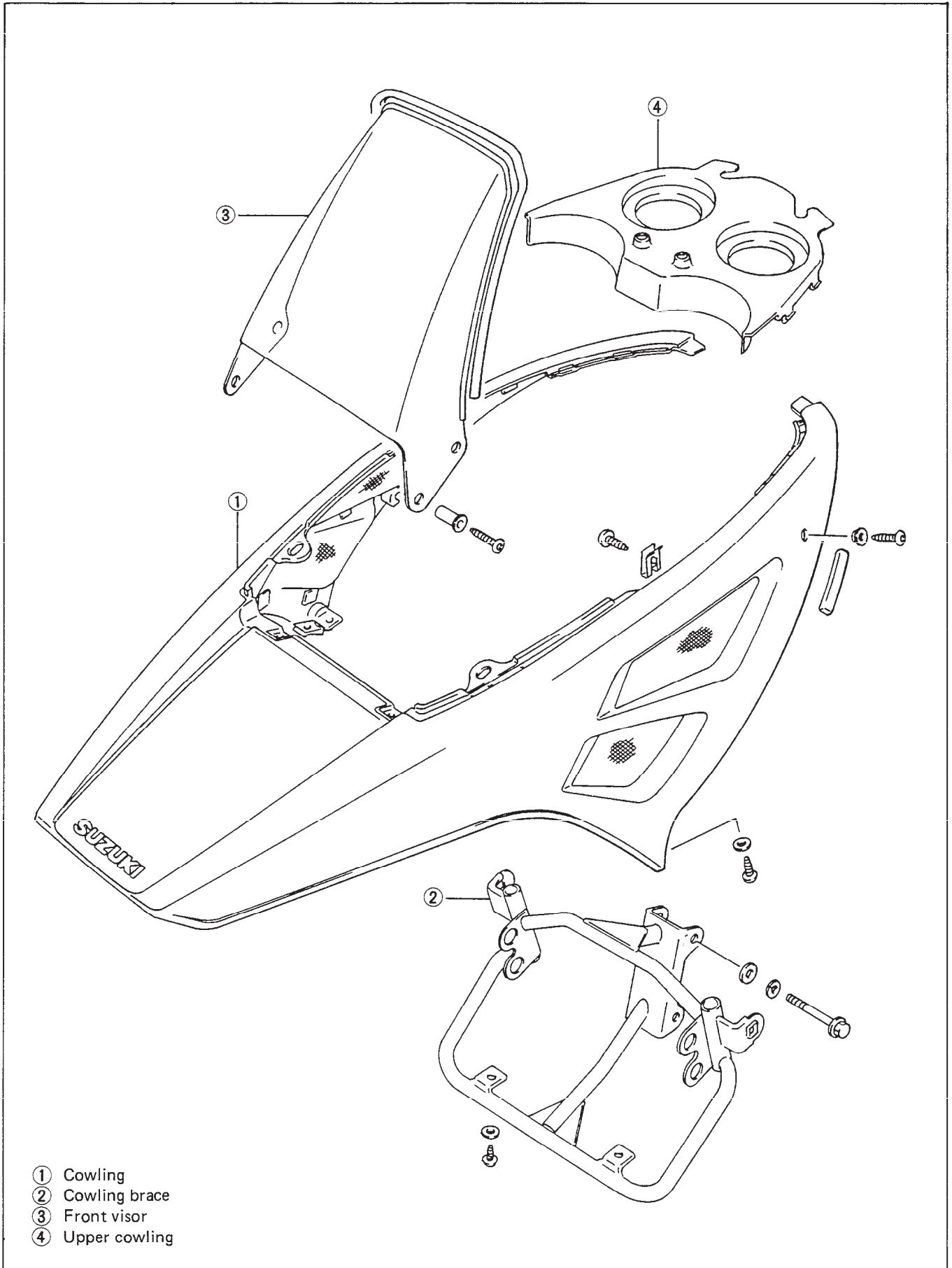


# CHASSIS

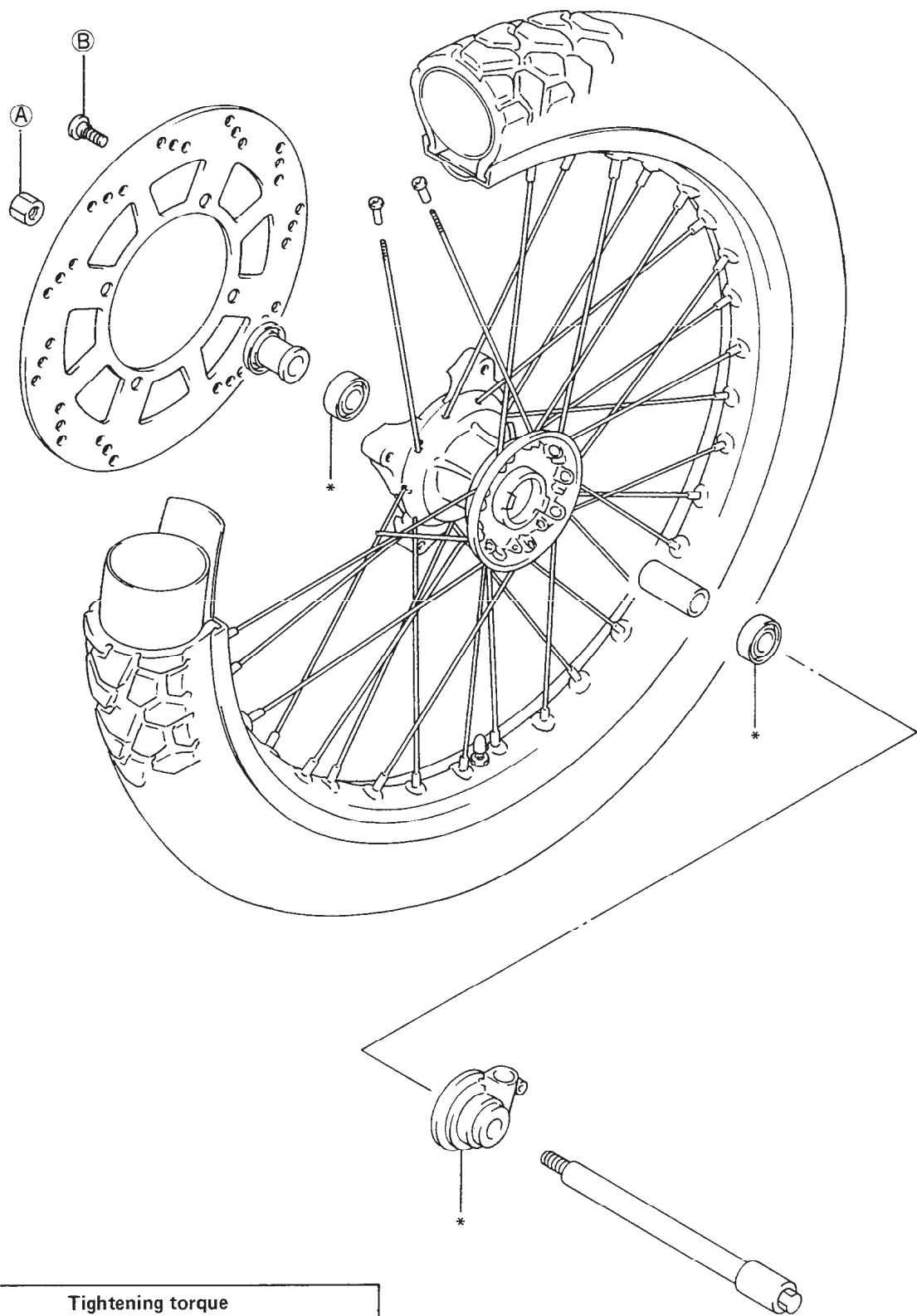
## CONTENTS

<b>COWLING</b> .....	6- 1
<b>FRONT WHEEL</b> .....	6- 2
<b>REMOVAL</b> .....	6- 3
<b>INSPECTION</b> .....	6- 3
<b>DISASSEMBLY</b> .....	6- 4
<b>REASSEMBLY AND REMOUNTING</b> .....	6- 4
<b>REASSEMBLING INFORMATION</b> .....	6- 6
<b>FRONT BRAKE</b> .....	6- 7
<b>BRAKE PAD REPLACEMENT</b> .....	6- 9
<b>BRAKE CALIPER REMOVAL</b> .....	6- 9
<b>BRAKE CALIPER DISASSEMBLY</b> .....	6- 9
<b>BRAKE CALIPER AND DISC INSPECTION</b> .....	6- 9
<b>DISC SERVICING</b> .....	6-10
<b>BRAKE CALIPER REASSEMBLY AND REMOUNTING</b> .....	6-10
<b>MASTER CYLINDER REMOVAL AND DISASSEMBLY</b> .....	6-11
<b>MASTER CYLINDER INSPECTION</b> .....	6-11
<b>MASTER CYLINDER REASSEMBLY AND REMOUNTING</b> .....	6-11
<b>FRONT FORK</b> .....	6-12
<b>REMOVAL AND DISASSEMBLY</b> .....	6-13
<b>INSPECTION</b> .....	6-14
<b>REASSEMBLY AND REMOUNTING</b> .....	6-14
<b>STEERING</b> .....	6-16
<b>REMOVAL AND DISASSEMBLY</b> .....	6-17
<b>INSPECTION</b> .....	6-18
<b>REASSEMBLY AND REMOUNTING</b> .....	6-18
<b>REAR WHEEL AND REAR BRAKE</b> .....	6-20
<b>REMOVAL</b> .....	6-21
<b>INSPECTION</b> .....	6-21
<b>DISASSEMBLY</b> .....	6-23
<b>REASSEMBLY AND REMOUNTING</b> .....	6-23
<b>REASSEMBLING INFORMATION</b> .....	6-25
<b>REAR SUSPENSION</b> .....	6-26
<b>REMOVAL</b> .....	6-28
<b>INSPECTION AND DISASSEMBLY</b> .....	6-28
<b>REASSEMBLY AND REMOUNTING</b> .....	6-29
<b>REASSEMBLING INFORMATION</b> .....	6-30
<b>SHOCK ABSORBER SPRING PRE-LOAD ADJUSTMENT</b> .....	6-31

# COWLING



# FRONT WHEEL



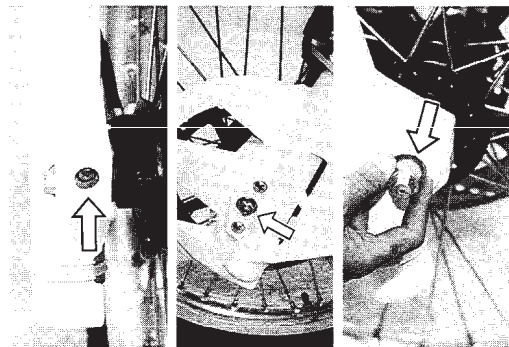
Tightening torque			
Item	N-m	kg-m	lb-ft
(A)	40 - 58	4.0 - 5.8	29.0 - 42.0
(B)	18 - 28	1.8 - 2.8	13.0 - 20.0

(B) : Apply THREAD LOCK SUPER "1360" to the disc mounting bolts when reassembling.

\* : Apply SUZUKI Super grease "A" when reassembling.

### REMOVAL

- Support the motorcycle by jack or block, and keep the front wheel off the ground.
- Loosen the axle pinch bolt and remove the axle nut.
- Remove the front wheel by removing the axle shaft.  
(Page 6-2)



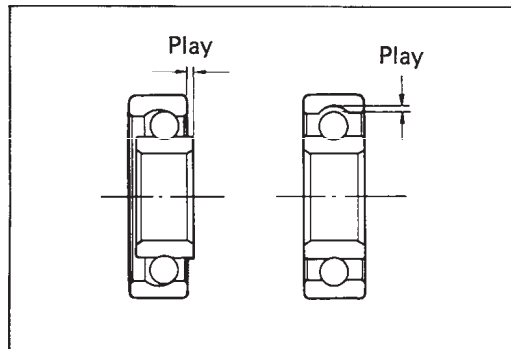
### INSPECTION

#### WHEEL HUB BEARING

Inspect the play of the wheel hub bearings by hand while they are in the wheel hub.

Rotate the inner race by hand to inspect for abnormal noise and smooth rotation.

Replace the bearing if there is anything unusual.



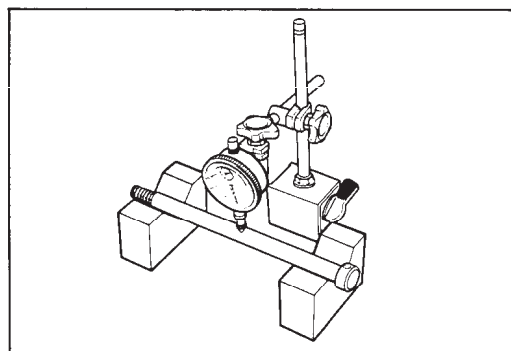
#### AXLE SHAFT

Using a dial gauge, check the axle shaft for runout and replace it if the runout exceeds the limit.

09900-20606: Dial gauge (1/100)

09900-20701: Magnetic stand

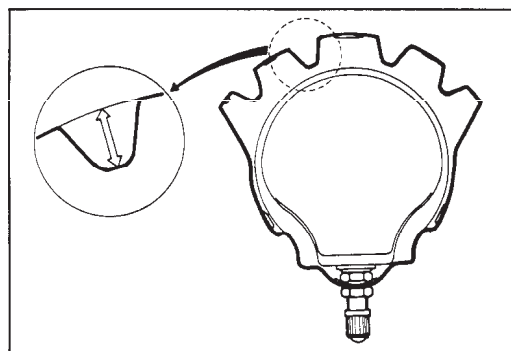
Service Limit: 0.25 mm (0.010 in)



#### TIRE

For proper braking and riding stability, the tire should have sufficient groove depth from the tread surface. If the groove depth, measured as shown in the figure, reaches the wear limit, replace the tire.

Service Limit: 3.0 mm (0.12 in)

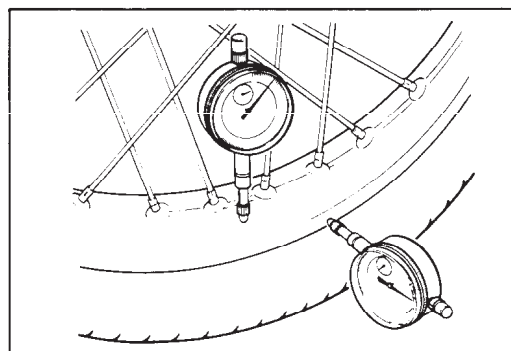


#### WHEEL RIM

Make sure that the wheel rim runout checked as shown, does not exceed the service limit. An excessive runout is usually due to worn or loose wheel hub bearings and can be reduced by replacing the bearings. If bearing replacement fails to reduce the runout, adjust the tension of the spokes and, if this proves to be of no effect, replace the wheel rim.

Service Limit

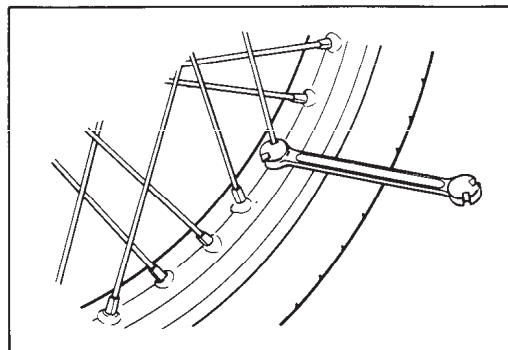
(Axial and Radial): 2.0 mm (0.08 in)



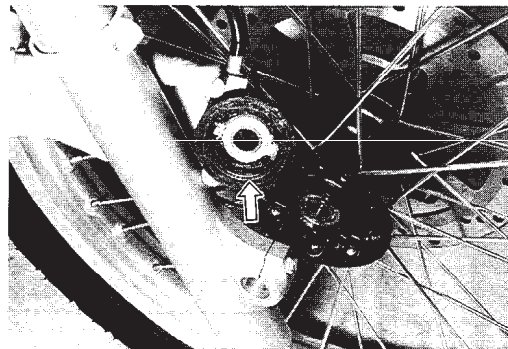
**SPOKE NIPPLE**

Check to be sure that all nipples are tight, and retighten them as necessary.

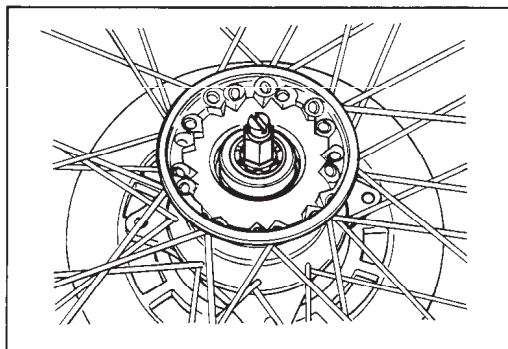
**Tightening torque: 4 – 5 N·m**  
(0.4 – 0.5 kg-m, 3.0 – 3.5 lb-ft)

**DUST SEAL OF SPEEDOMETER GEARBOX**

Inspect the lip of dust seal for damage. If any damage is found, replace it with a new one.

**DISASSEMBLY****WHEEL HUB BEARING**

- Drive out the wheel hub bearings by using the special tool in the following procedures.
- Insert the adapter into the wheel hub bearing.

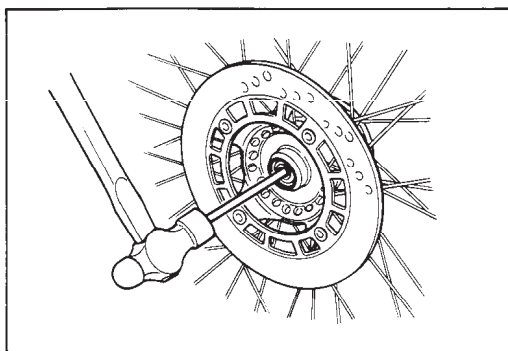


- After inserting the wedge bar from the opposite side, lock the wedge bar in the slit of the adapter.
- Drive out the wheel hub bearing by knocking the wedge bar.

**CAUTION:**

The removed bearing should be replaced.

**09941-50110: Bearing remover**

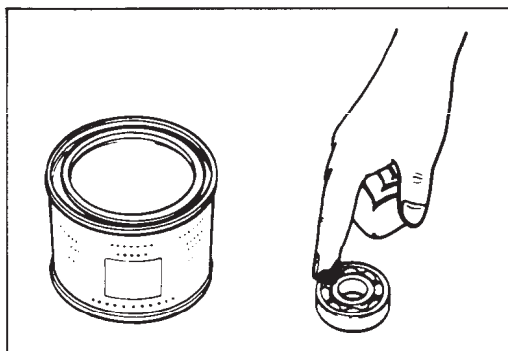
**REASSEMBLY AND REMOUNTING**

Reassemble and remount the wheel bearings and wheel in the reverse order of disassembly and removal.

Pay attention to the following points:

- Apply grease to the bearing before installing.

**99000-25010: Suzuki super grease "A"**





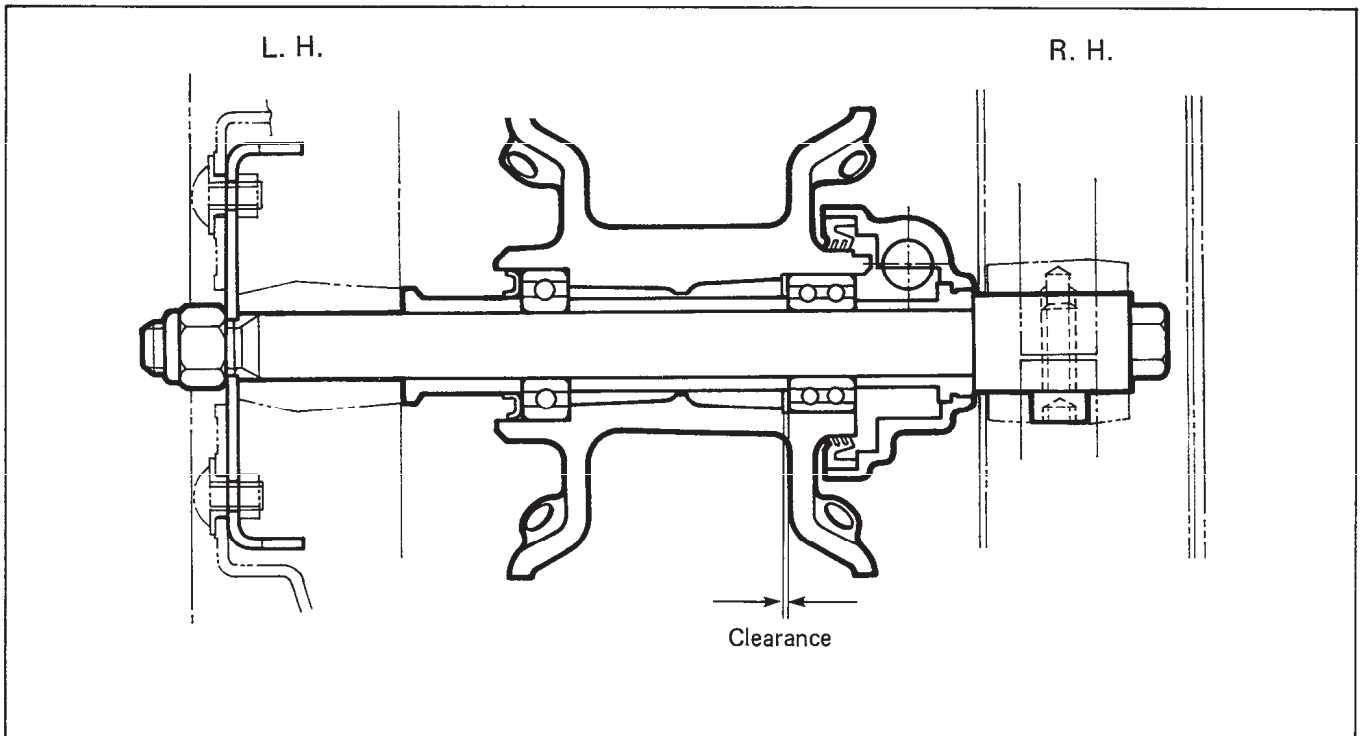
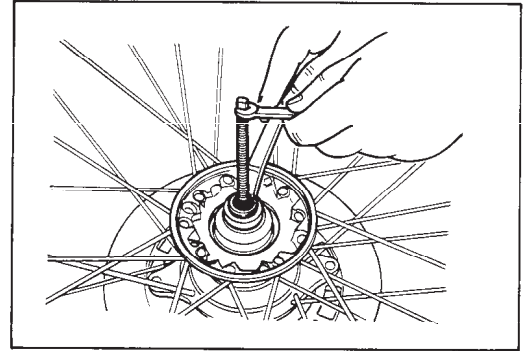
## 6-5 CHASSIS

- Install the wheel hub bearings by using a bearing installer.

**NOTE:**

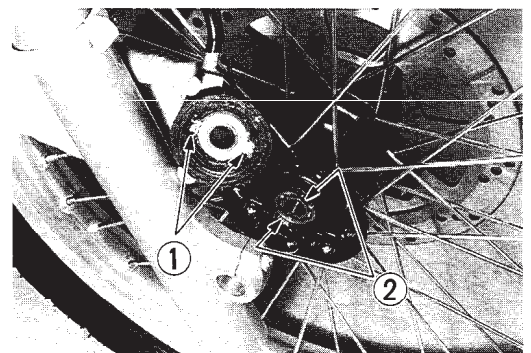
First install the left wheel bearing, then install the right wheel bearing. The sealed cover on the bearing is positioned outside.

**09924-84521: Bearing installer**

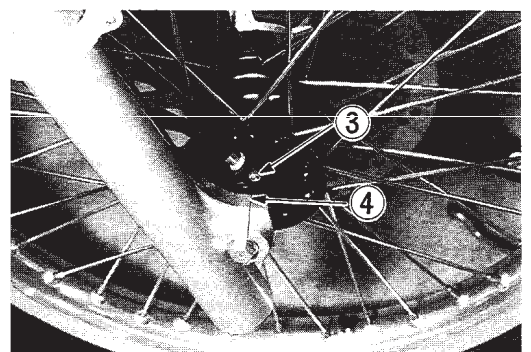


- Apply grease to the speedometer gear and lip of dust seal.
- Align the drive lugs ① to the recesses ② of the wheel hub.

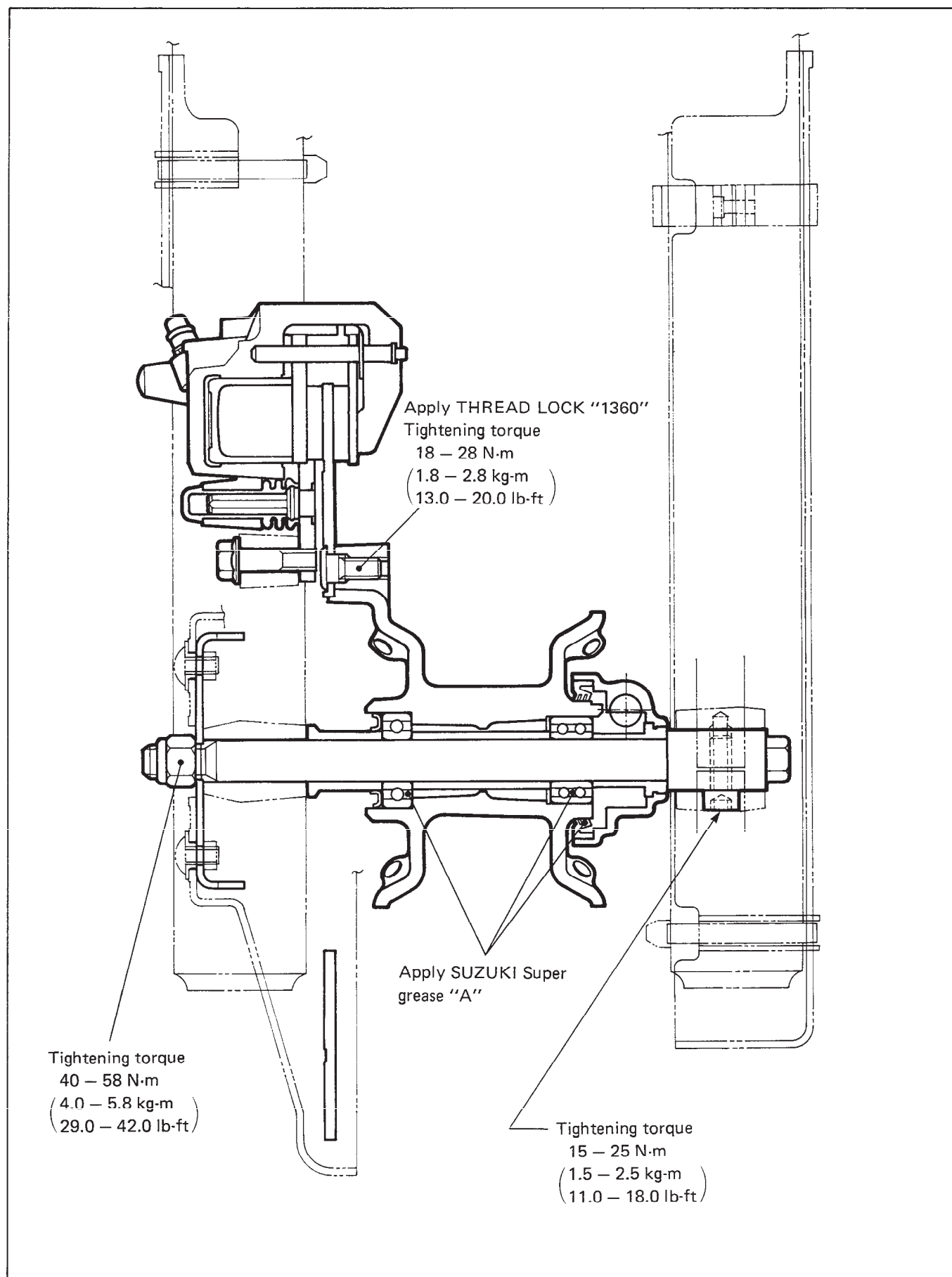
**99000-25010: Suzuki super grease "A"**



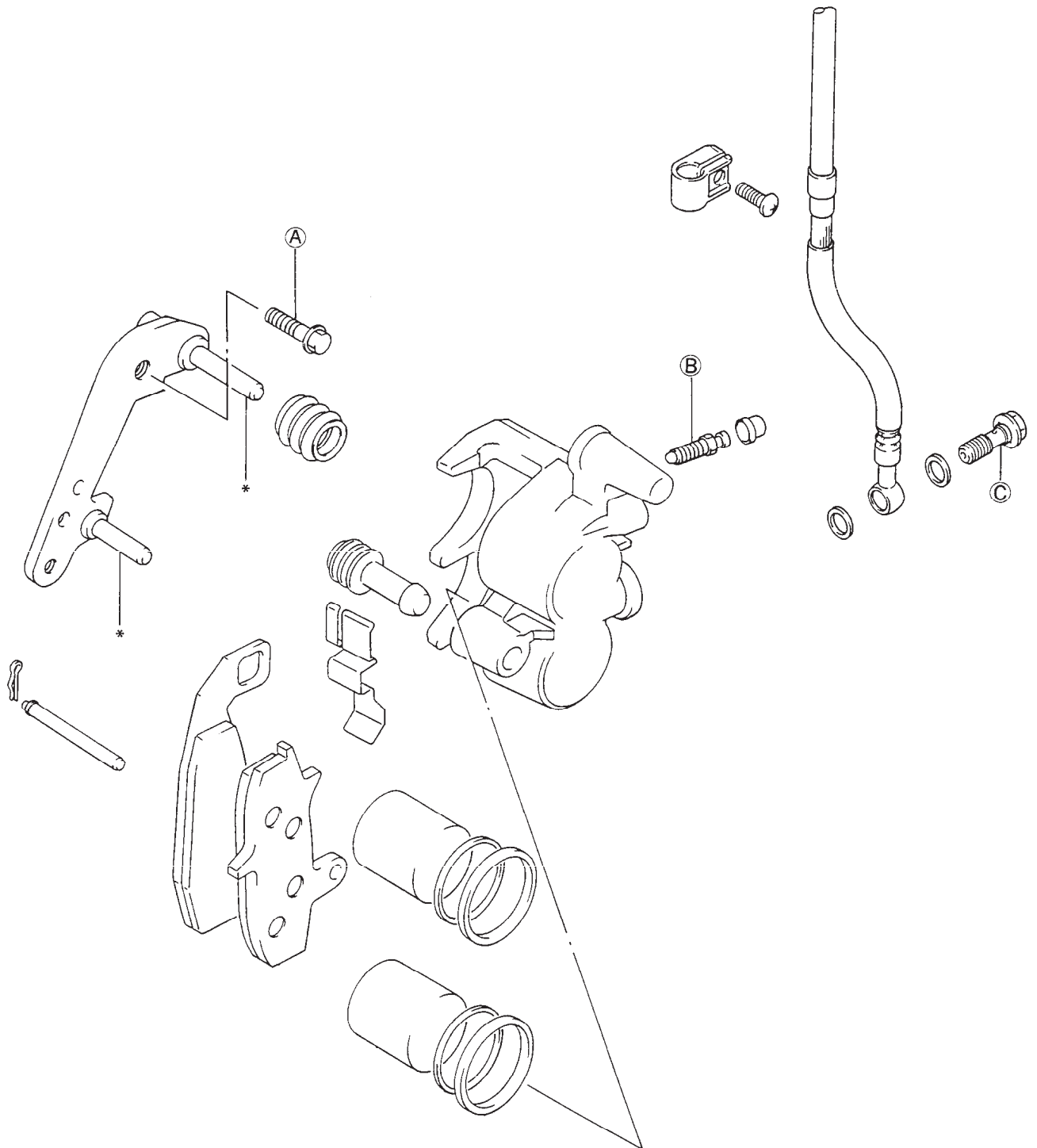
- Before tightening the axle nut, align the securing bolt ③ of the speedometer gear box to the slit ④ of the front fork.



REASSEMBLING INFORMATION

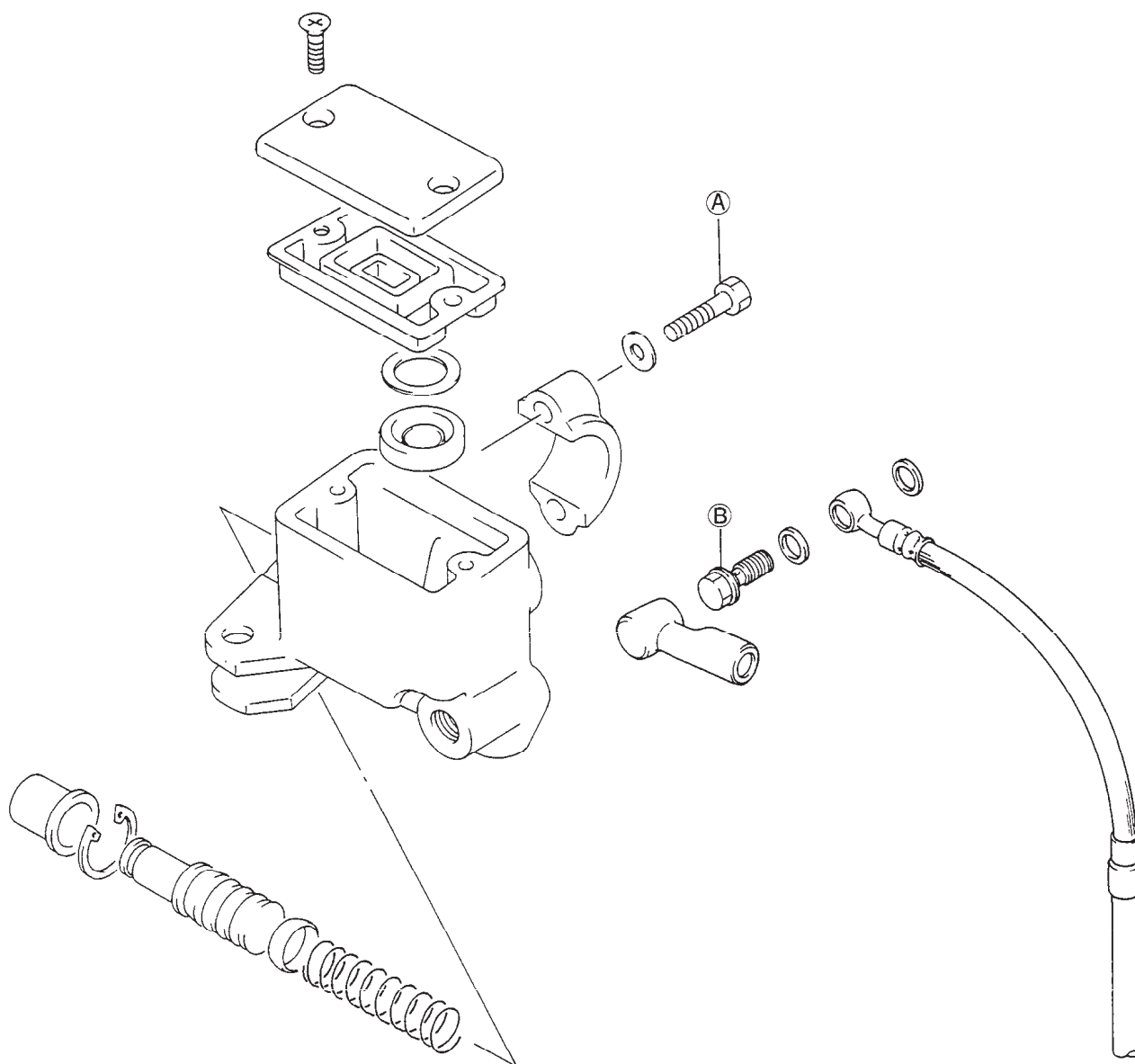


# FRONT BRAKE



Tightening torque			
Item	N-m	kg-m	lb-ft
(A)	15 - 25	1.5 - 2.5	11.0 - 18.0
(B)	6 - 9	0.6 - 0.9	4.5 - 6.5
(C)	20 - 25	2.0 - 2.5	14.5 - 18.0

\* : Apply SILICONE GREASE to the caliper axle when reassembling.



**Tightening torque**

Item	N·m	kg·m	lb·ft
Ⓐ	5 – 8	0.5 – 0.8	3.5 – 6.0
Ⓑ	20 – 25	2.0 – 2.5	14.5 – 18.0

## BRAKE PAD REPLACEMENT

- Remove the front fork/disc brake protector.
- Remove the brake caliper by removing the mounting bolts.

### TIGHTENING TORQUE

Brake caliper

mounting bolt: 15 – 25 N·m

(1.5 – 2.5 kg·m, 11.0 – 18.0 lb·ft)

- Remove the brake pads ① by removing the clip and pin.

### CAUTION:

- \* Do not operate the brake lever while dismantling the pads.
- \* Replace the brake pad as a set, otherwise braking performance will be adversely affected.

### NOTE:

Push in the piston all the way to the caliper when remounting the caliper.

## BRAKE CALIPER REMOVAL

- Remove the front fork/disc brake protector.
- Remove the brake caliper by removing the union bolt and mounting bolts.

## BRAKE CALIPER DISASSEMBLY

- Disassemble the brake caliper as shown in the illustration on page 6-7.

### NOTE:

When removing the pistons, place a rag over the pistons to prevent them from popping out.

### CAUTION:

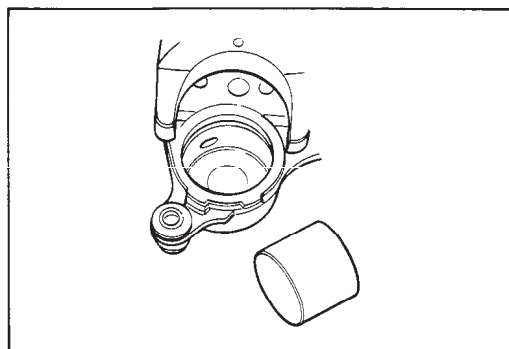
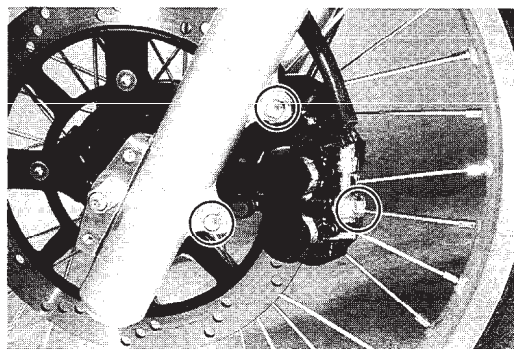
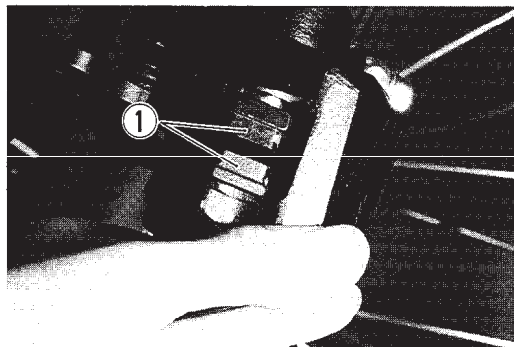
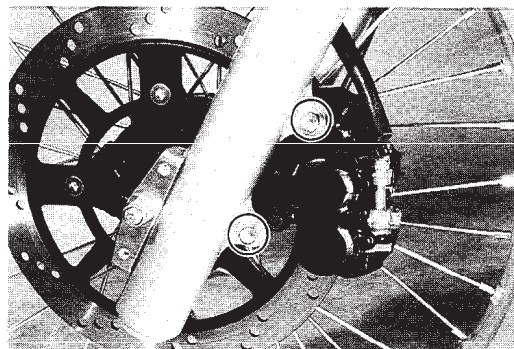
Do not use high pressure air to prevent piston damage.

## BRAKE CALIPER AND DISC INSPECTION

Inspect the caliper bore wall for nicks, scratches or other damage.

Inspect the rubber parts for damage and wear.

Inspect the piston surface for any scratches or other damage.

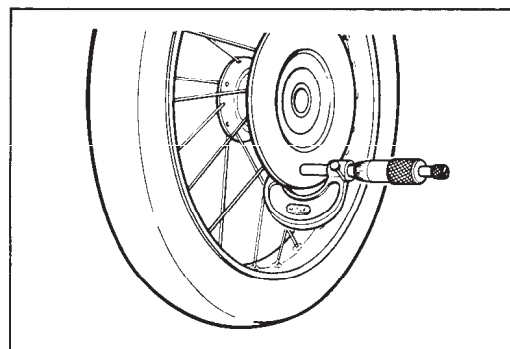




Check the disc for wear by using a micrometer. Its thickness can be checked with disc and wheel in place. Replace the disc if the thickness exceeds the service limit.

**09900-20205: Micrometer (0 – 25 mm)**

**Service Limit: 4.0 mm (0.16 in)**

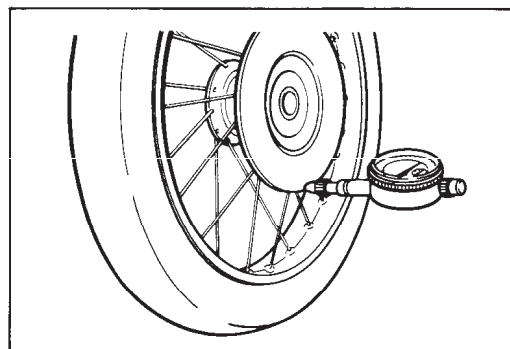


With the disc mounted on the wheel, check the disc for face runout with a dial gauge, as shown. Replace the disc if the runout exceeds the service limit.

**09900-20606: Dial gauge (1/100)**

**09900-20701: Magnetic stand**

**Service Limit: 0.3 mm (0.01 in)**

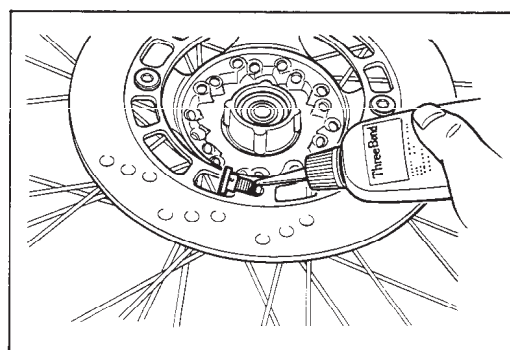


## DISC SERVICING

- Remove the front wheel. (Page 6-2)
- Remove the disc mounting bolts and separate the disc from the wheel hub.
- Make sure that the brake disc is clean and free of any greasy matter. Apply THREAD LOCK SUPER "1360" to the disc mounting bolts and tighten them to the specified torque.

**99000-32130: Thread lock super "1360"**

**Tightening torque: 18 – 28 N·m  
(1.8 – 2.8 kg-m, 13.0 – 20.0 lb-ft)**



## BRAKE CALIPER REASSEMBLY AND REMOUNTING

Reassemble and remount the brake caliper in the reverse order of disassembly and removal. Pay attention to the following points:

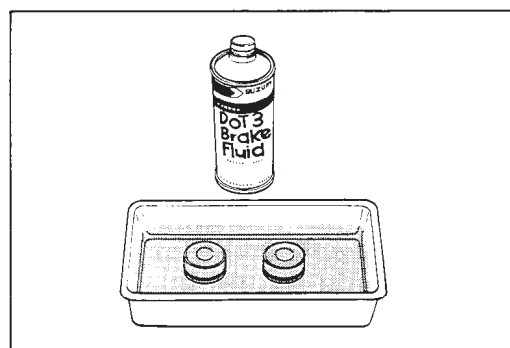
### CAUTION:

- \* Wash the caliper components with fresh brake fluid before reassembly.
- \* Never use cleaning solvent or gasoline to wash them.
- \* Apply brake fluid to the caliper bore and piston to be inserted into the bore.
- Apply SUZUKI SILICONE GREASE to the caliper axles.  
(See page 6-7.)

**99000-25100: Suzuki silicone grease**

### WARNING:

**Bleed the air after reassembling the caliper. (See page 2-13.)**



### MASTER CYLINDER REMOVAL AND DISASSEMBLY

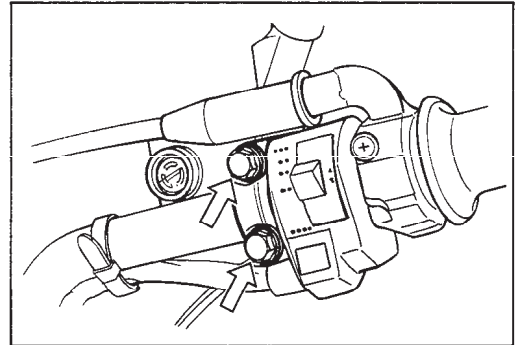
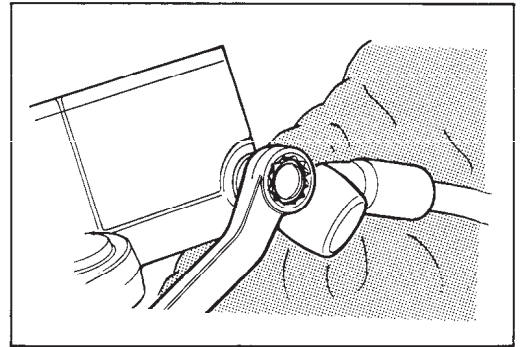
- After removing the knuckle guard, place a cloth underneath the union bolt on the master cylinder to catch spilled drops of brake fluid. Unscrew the union bolt and disconnect the brake hose/master cylinder joint.

**CAUTION:**

Completely wipe off any brake fluid adhering to any part of motorcycle. The fluid reacts chemically with paint, plastics, rubber materials, etc.

- Disconnect the brake light switch lead wire.
- Remove the master cylinder assembly by removing the two clamp bolts.
- Disassemble the master cylinder as shown in the illustration on page 6-8.

09900-06108: Snap ring pliers

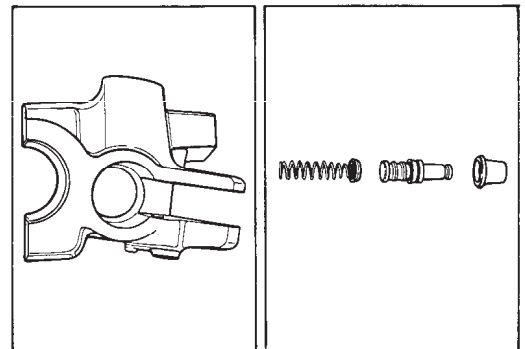


### MASTER CYLINDER INSPECTION

Inspect the master cylinder bore for any scratches or other damage.

Inspect the piston surface for scratches or other damage.

Inspect the primary cup, secondary cup and dust seal boot for wear or damage.



### MASTER CYLINDER REASSEMBLY AND REMOUNTING

Reassemble and remount the master cylinder in the reverse order of disassembly and removal. Pay attention to the following points:

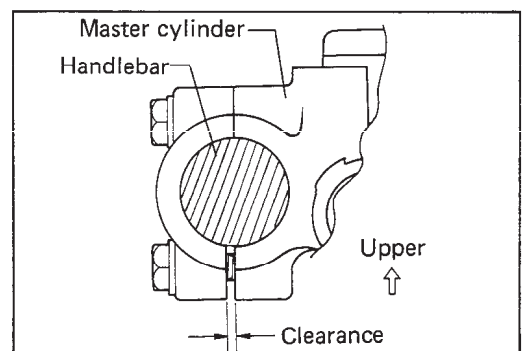
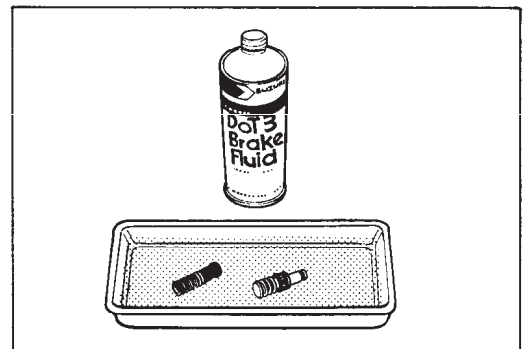
**CAUTION:**

- \* Wash the master cylinder components with fresh brake fluid before reassembly. Never use cleaning solvent or gasoline to wash them.
- \* Apply brake fluid to the cylinder bore and all the internals to be inserted into the bore.
- Remount the master cylinder on the handlebar as shown in the illustration.

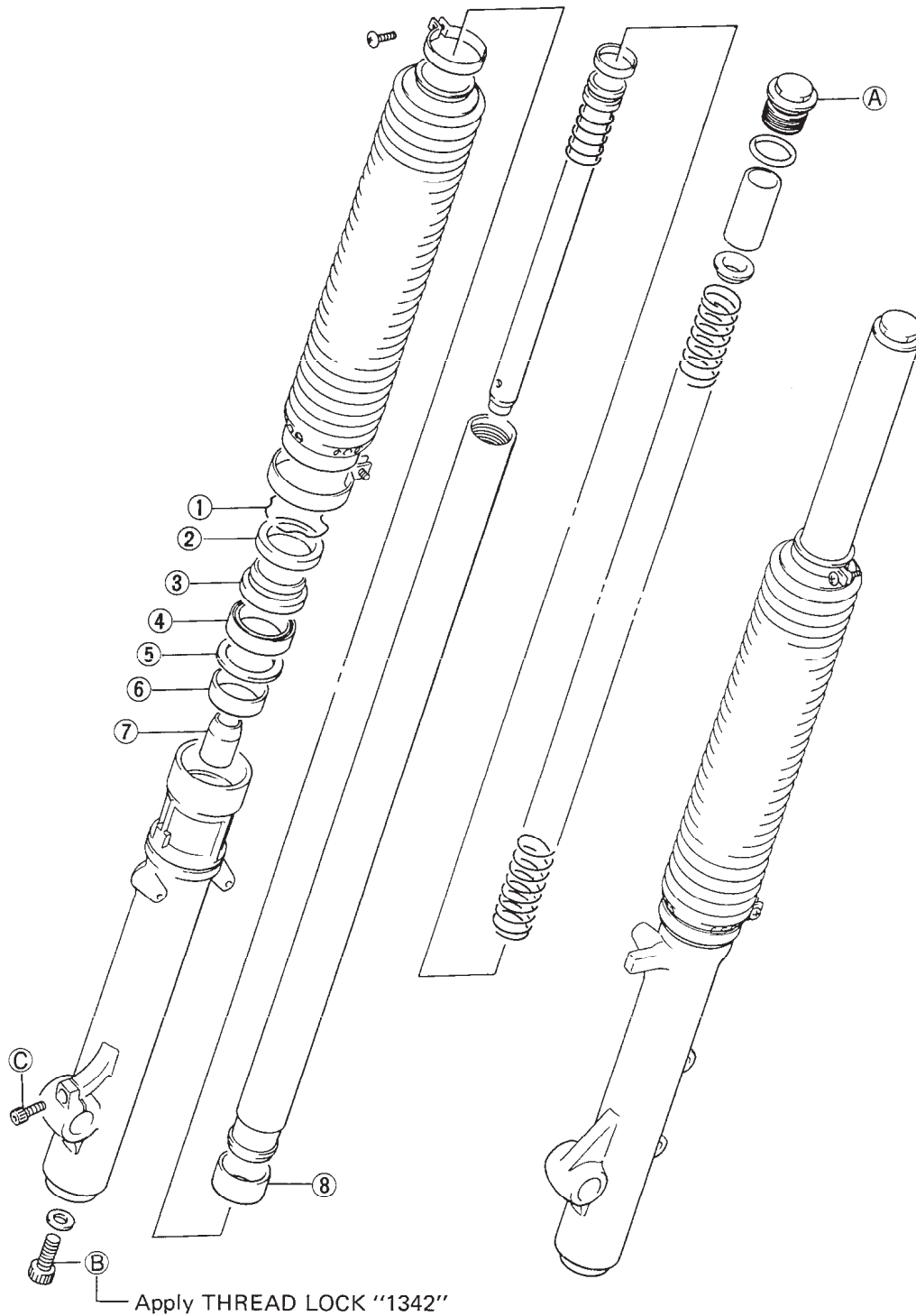
**WARNING:**

Bleed the air after reassembling the master cylinder. (See page 2-13.)

Inspect the front brake light switch after installation.



FRONT FORK



Apply THREAD LOCK "1342"

Tightening torque			
Item	N-m	kg-m	lb-ft
(A)	15 - 30	1.5 - 3.0	11.0 - 21.5
(B)	34 - 46	3.4 - 4.6	24.5 - 33.5
(C)	15 - 25	1.5 - 2.5	11.0 - 18.0

- (1) Stopper ring
- (2) Spacer
- (3) Dust seal
- (4) Oil seal
- (5) Oil seal retainer
- (6) Outer tube metal
- (7) Oil lock piece
- (8) Inner tube metal

## REMOVAL AND DISASSEMBLY

- Remove the front fork and disc brake protectors.
- Remove the front wheel. (Refer to page 6-2.)
- Remove the speedometer gearbox.
- Remove the brake hose clamps and speedometer cable clamp.
- Remove the brake caliper. (Refer to page 6-9.)
- Remove the front fender.

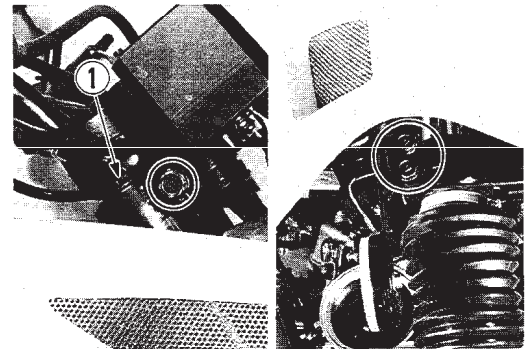
### CAUTION:

Hang the caliper from the motorcycle frame by using the string, etc., taking care not to bend the brake hose.

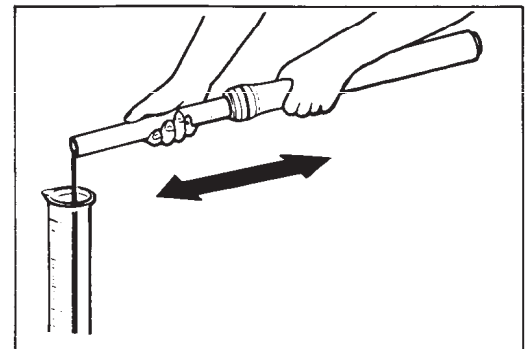
- Loosen the front fork upper and lower clamp bolts, left and right.
- Remove the left and right front forks.

### NOTE:

Slightly loosen the front fork cap bolt ① to facilitate later disassembly after loosening the upper clamp bolt.



- Disassemble the front fork assembly as shown in the illustration on page 6-12.
- Invert the fork and stroke it several times to let out fork oil.
- Under the condition (inverted condition), hold the fork for a few minutes.

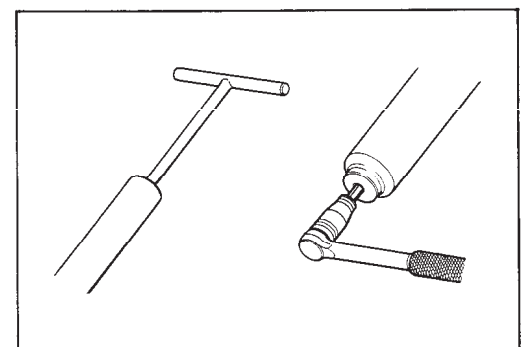


- Remove the damper rod securing bolt by using the special tools.
- Draw out the damper rod and rebound spring from the inner tube.

09940-34520: "T" handle

09940-34592: Attachment "G"

09900-00410: Hexagon wrench set



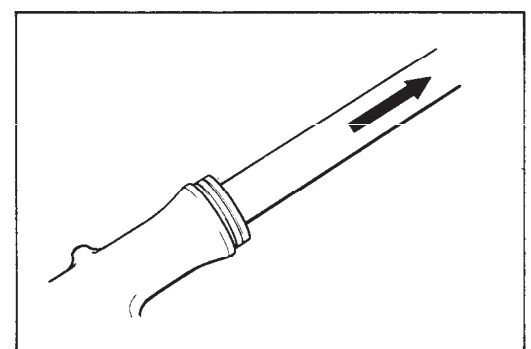
- Remove the stopper ring.
- Separate the inner tube from the outer tube.

### NOTE:

When separating the inner tube from the outer tube, both anti-friction metals may be damaged and must be replaced with new ones.

### CAUTION:

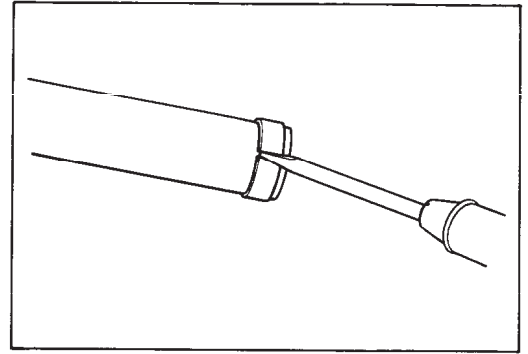
The removed dust seal and oil seal should be replaced.



- Remove the inner tube anti-friction metal.

**CAUTION:**

The removed metal should be replaced.

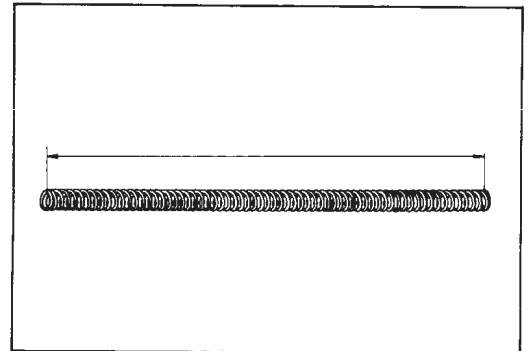
**INSPECTION****FORK SPRING**

Measure the fork spring free length. If it is shorter than service limit, replace it.

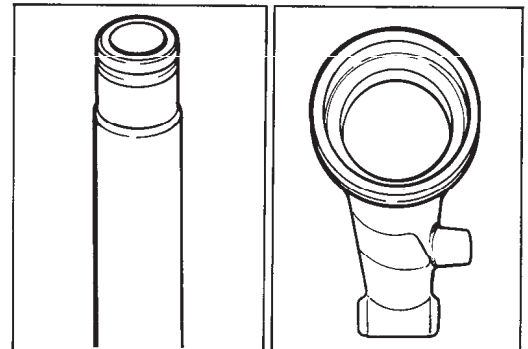
**Service Limit: 553 mm (21.8 in)**

**NOTE:**

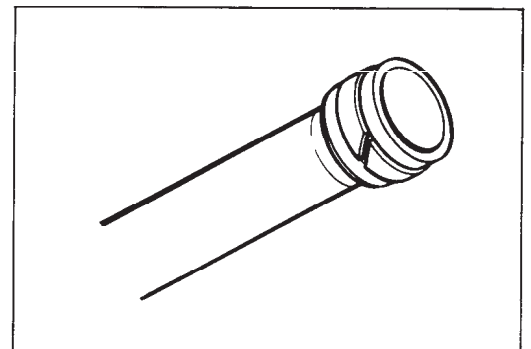
When installing the fork spring, insert it with the smaller pitch to the top.

**INNER TUBE AND OUTER TUBE**

Inspect the inner tube sliding surface for any scuffing and check for bend. Inspect the outer tube sliding surface for any scuffing.

**DAMPER ROD RING**

Inspect the damper rod ring for wear and damage.

**REASSEMBLY AND REMOUNTING**

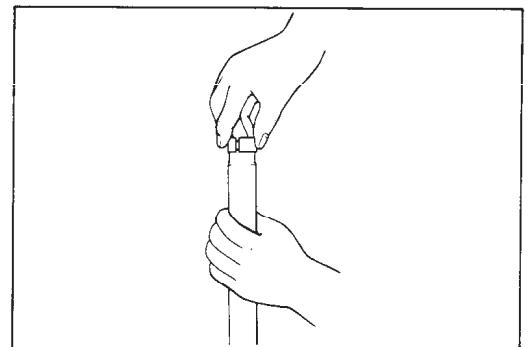
Reassemble and remount the front fork in the reverse order of disassembly and removal. Pay attention to the following points:

**INNER TUBE METAL**

- Hold the inner tube vertically and clean the metal groove.
- Clean the metal inner and outer surfaces and install it to the metal groove of the inner tube as shown.

**CAUTION:**

Use special care to prevent damage to the Teflon coated surface of the Anti-friction metal when mounting it.



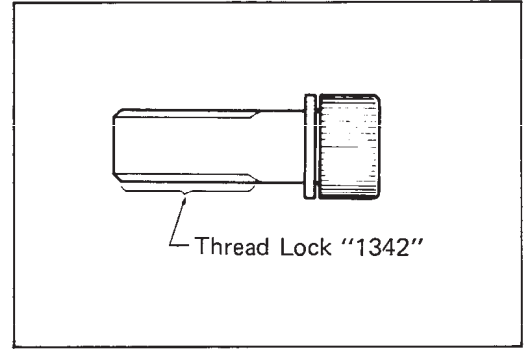


**DAMPER ROD BOLT**

- Apply THREAD LOCK "1342" to the damper rod bolt.
- Tighten the damper rod bolt to the specified torque.

**99000-32050: Thread lock "1342"**

**Tightening torque: 34 – 46 N·m**  
(3.4 – 4.6 kg·m, 24.5 – 33.5 lb-ft)



**OUTER TUBE METAL, OIL SEAL AND DUST SEAL**

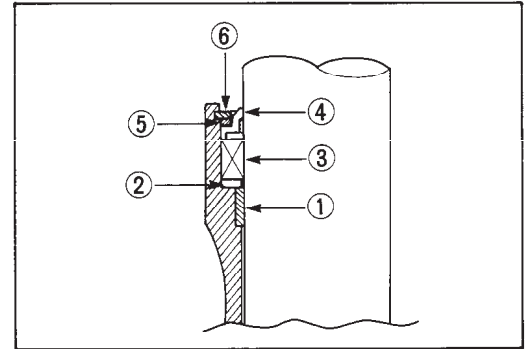
- Clean the metal groove of outer tube and metal outer surface.
- Install the outer tube metal ①, oil seal retainer ②, oil seal ③, dust seal ④ and spacer ⑤.

**CAUTION:**

Use special care to prevent damage to the Teflon coated surface of the Anti-friction metal when mounting it.

**09940-50113: Front fork oil seal installer**

- After installing the dust seal ④ and spacer ⑤, install the stopper ring ⑥.

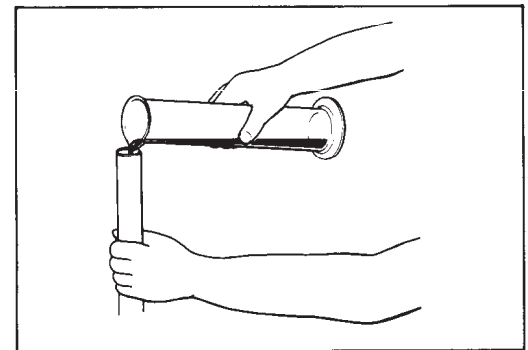


**FORK OIL**

- Be sure to use a front fork oil whose viscosity rating meets specifications below.

**Fork oil type: Fork oil # 10 (99000-99044-10G)**

**Fork oil capacity: 467 ml (15.8 US oz)**



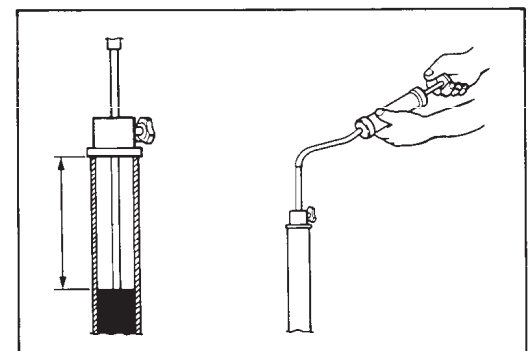
- Hold the front fork vertical and adjust the fork oil level with the special tool.

**NOTE:**

When adjusting oil level, remove the fork spring and compress the inner tube fully.

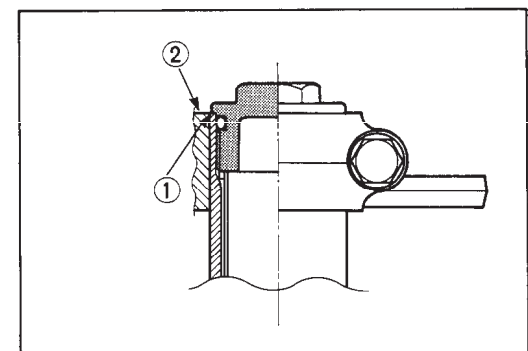
**09943-74111: Fork oil level gauge**

**STD oil level: 179 mm (7.0 in)**

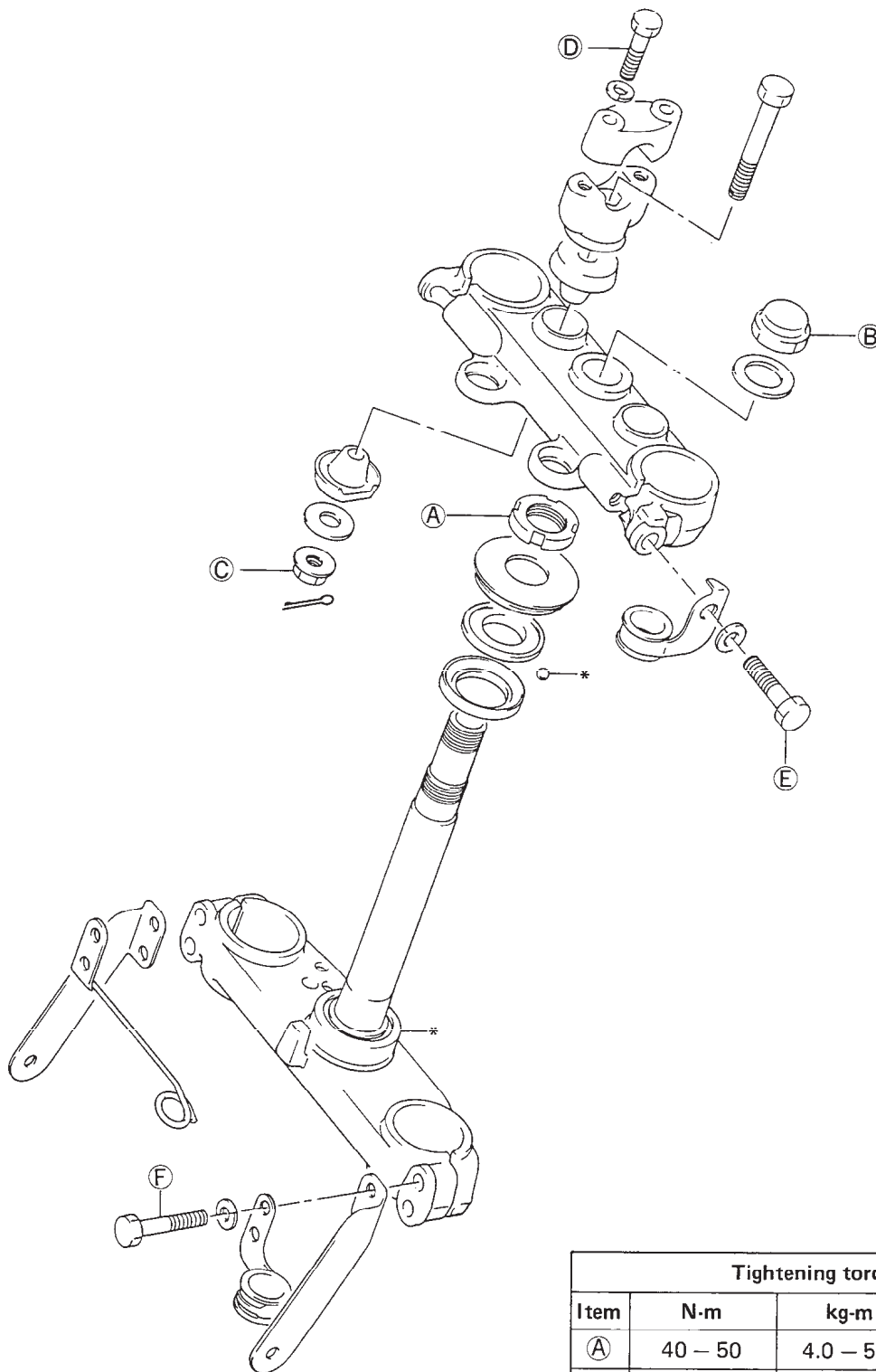


**FRONT FORK REMOUNTING**

- Align the top surface ① of the front fork inner tube to the top surface ② of the steering stem upper bracket.



STEERING

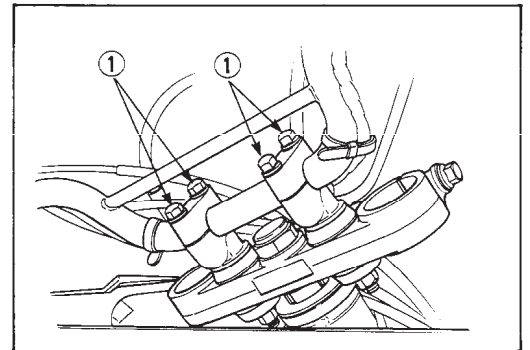


\* : Apply SUZUKI Super grease "A" to the bearings when reassembling.

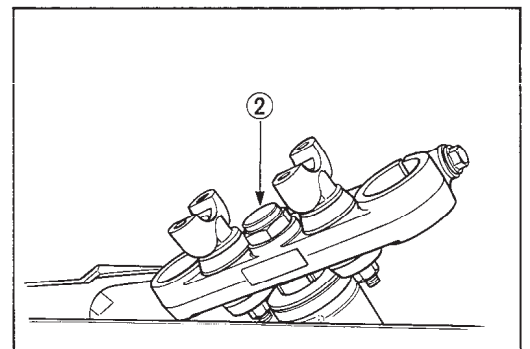
Tightening torque			
Item	N·m	kg·m	lb·ft
(A)	40 - 50	4.0 - 5.0	29.0 - 36.0
(B)	60 - 100	6.0 - 10.0	43.5 - 72.5
(C)	30 - 40	3.0 - 4.0	21.5 - 29.0
(D)	12 - 20	1.2 - 2.0	8.5 - 14.5
(E)	20 - 30	2.0 - 3.0	14.5 - 21.5
(F)	15 - 25	1.5 - 2.5	11.0 - 18.0

## REMOVAL AND DISASSEMBLY

- Remove the front fork and disc brake protectors.
- Remove the front wheel. (Page 6-2)
- Remove the speedometer gearbox.
- Remove the brake hose clamps and speedometer cable clamp.
- Remove the brake caliper. (Page 6-9)
- Remove the front fender.
- Remove the left and right front forks. (Page 6-13)
- Remove the combination meter and disconnect its lead wires.
- Remove the handlebars by removing the four clamp bolts ①.



- Remove the steering upper bracket by removing the stem head nut ②.



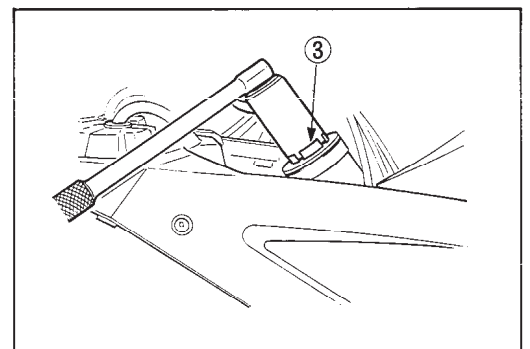
- Loosen the steering stem nut ③ by using the special tool.

### 09940-14920: Steering nut socket wrench

- Remove the steering stem nut, dust seal and upper race, and draw out the steering stem.

#### NOTE:

*Hold the steering stem lower bracket by hand to prevent from falling.*



- Remove the upper steering stem steel balls.

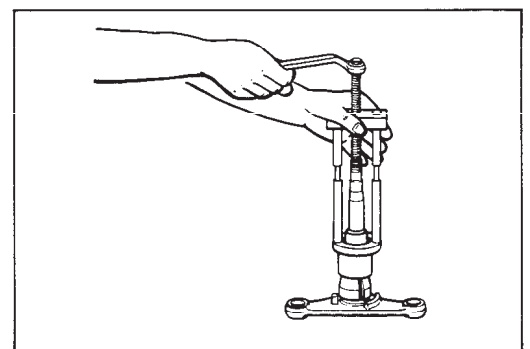
**Number of balls: 18 pcs**

- Draw out the lower steering stem bearing by using the special tool.

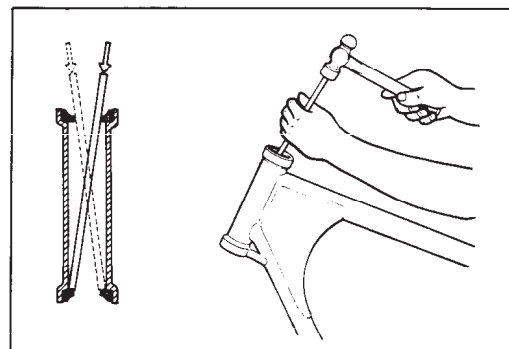
#### CAUTION:

**The removed bearing should be replaced.**

**09941-84510: Bearing inner race remover**



- Drive out the steering stem bearing races, upper and lower, by using a proper drift.

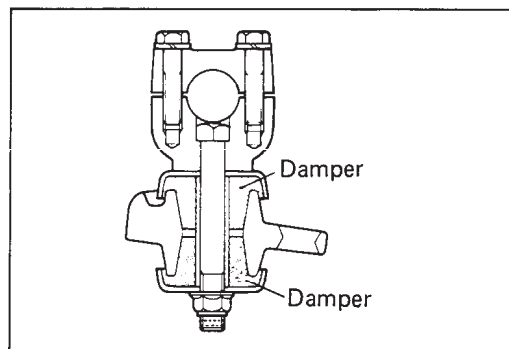


## INSPECTION

Inspect the removed parts for the following abnormalities.

- \* Handlebar distortion
- \* Handlebar clamp wear
- \* Race wear and brinelling
- \* Steel balls wear or damage
- \* Abnormal noise of bearing
- \* Distortion of steering stem

Inspect the play of dampers by hand while they are in the steering stem upper bracket. If the play can be found, replace the dampers.



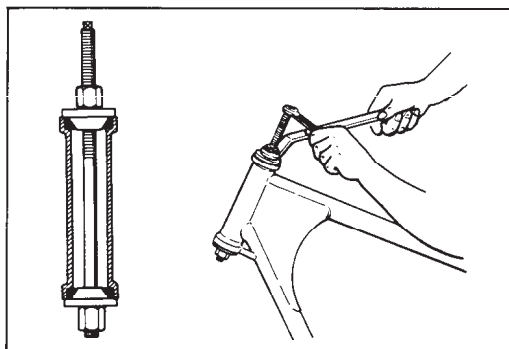
## REASSEMBLY AND REMOUNTING

Reassemble and remount the steering stem in the reverse order of disassembly and removal. Pay attention to the following points:

### BEARING RACES

- Press in the upper and lower bearing races by using the special tool.

**09941-34513: Steering outer race installer**



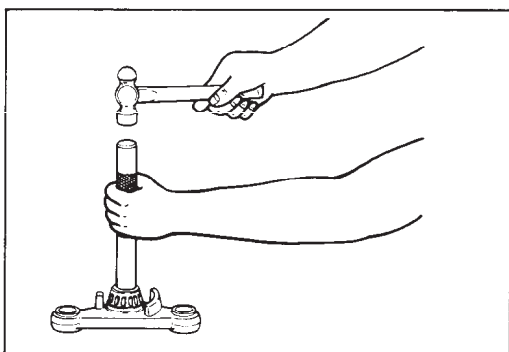
### BEARING

- Press in the lower bearing by using the special tool.

**09941-74910: Steering bearing installer**

- Apply grease to the steel balls and bearing before remounting the steering stem.

**99000-25010: Suzuki super grease "A"**

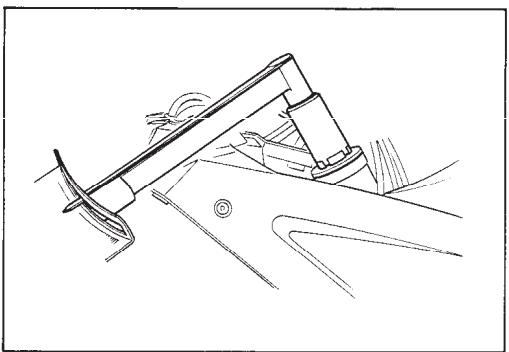


### STEERING STEM NUT

- Tighten the steering stem nut by using the special tool to the specified torque.

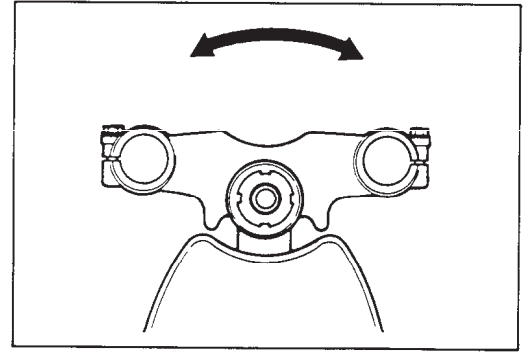
**09940-14920: Steering nut socket wrench**

Tightening torque: 40 – 50 N·m  
(4.0 – 5.0 kg·m, 29.0 – 36.0 lb·ft)



## 6-19 CHASSIS

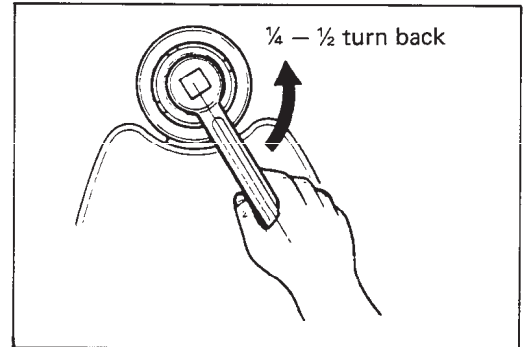
- Turn the steering stem right and left, lock-to-lock, five or six times to “seat” the steel balls and bearing.



- Turn back the stem nut by 1/4 – 1/2 turn.

**NOTE:**

*This adjustment will vary from motorcycle to motorcycle.*

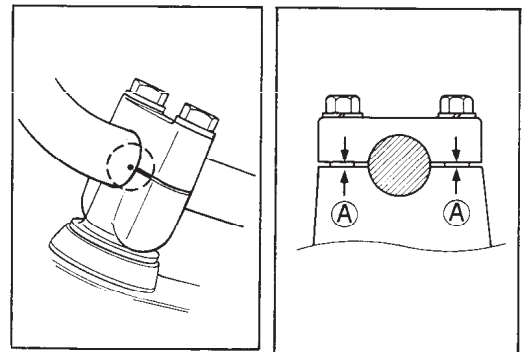


### HANDLEBAR

- Set the handlebar to match its punched mark to the mating face of the holder.
- Secure the each handlebar clamp in such a way that the clearances (A) ahead and behind the handlebar are equalized.

**Tightening torque: 12 – 20 N·m**

**(1.2 – 2.0 kg·m, 8.5 – 14.5 lb-ft)**



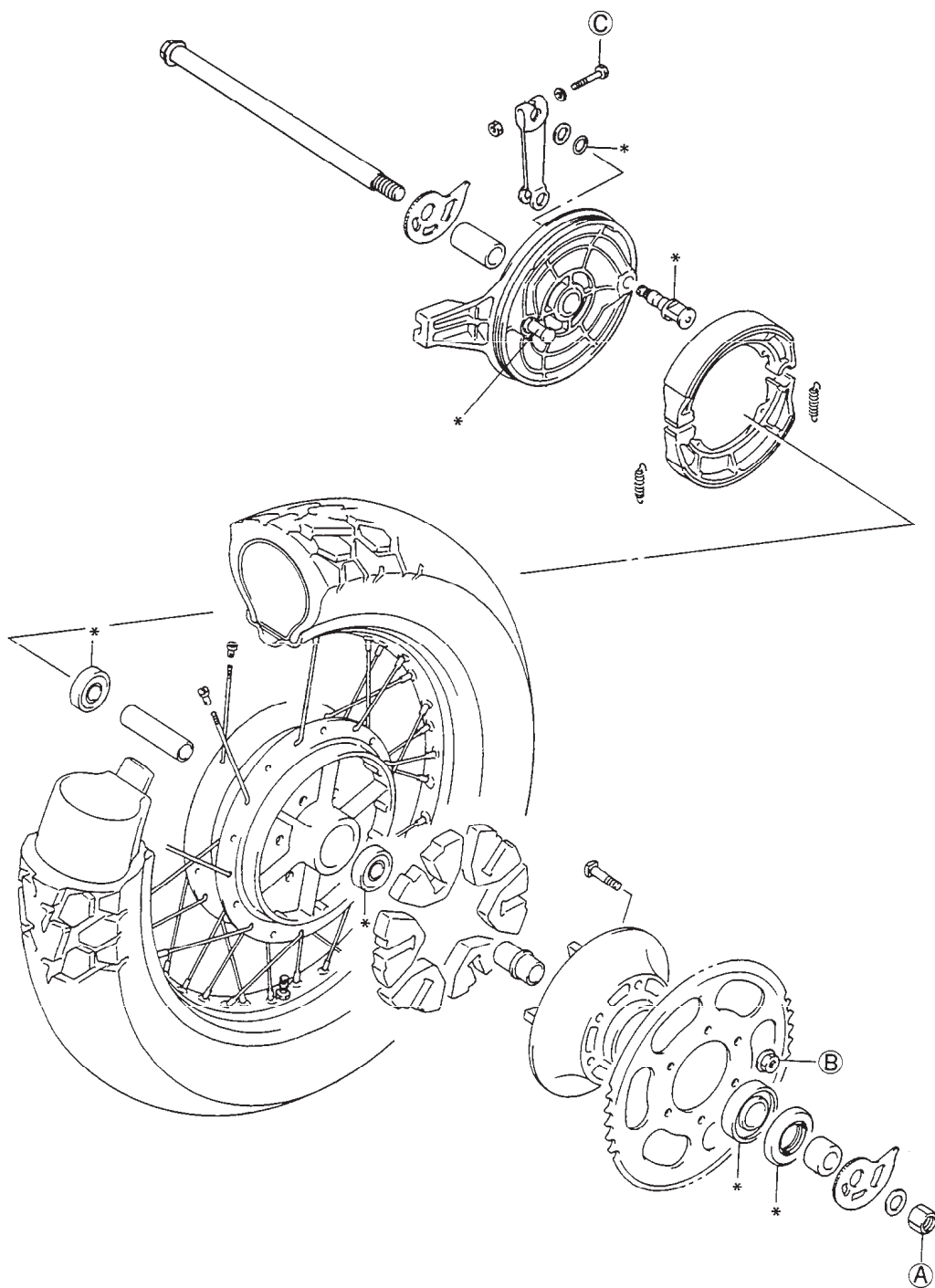
### CAUTION:

After performing the adjustment and installing the steering stem upper bracket, “rock” the front wheel assembly forward and backward to ensure that there is no play and that the procedure was accomplished correctly.

Finally check to be sure that the steering stem moves freely from left to right with its own weight. If play or stiffness is noticeable, readjust the steering stem nut.



# REAR WHEEL AND REAR BRAKE

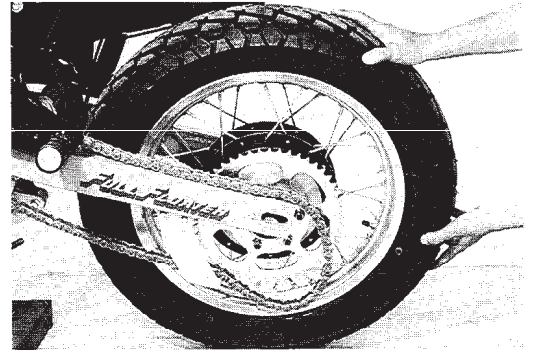


Tightening torque			
Item	N·m	kg·m	lb·ft
(A)	55 - 88	5.5 - 8.8	40.0 - 63.5
(B)	50 - 70	5.0 - 7.0	36.0 - 50.5
(C)	5 - 8	0.5 - 0.8	3.5 - 6.0

\* : Apply SUZUKI Super grease "A" when reassembling.

## REMOVAL

- Support the motorcycle by jack or block, and keep the rear wheel off the ground.
- Remove the brake adjuster nut.
- Remove the axle nut.
- Remove the axle shaft and disengage the drive chain from the rear sprocket.
- Remove the rear wheel with the rear brake panel.
- Remove the rear brake panel from the rear wheel hub.
- Remove the rear sprocket from the rear wheel hub.



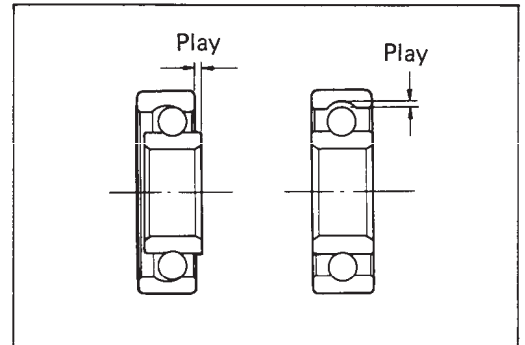
## INSPECTION

### WHEEL HUB BEARING

inspect the play of the wheel hub bearings by hand while they are in the wheel hub.

Rotate the inner race by hand to inspect for abnormal noise and smooth rotation.

Replace the bearing if there is anything unusual.



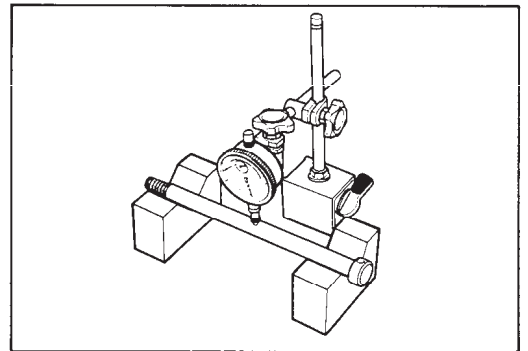
### AXLE SHAFT

Using a dial gauge, check the axle shaft for runout and replace it if the runout exceeds the limit.

09900-20606: Dial gauge (1/100)

09900-20701: Magnetic stand

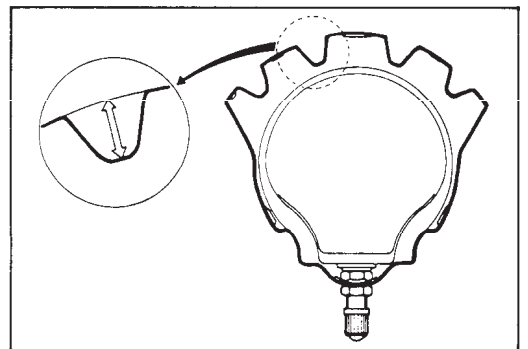
Service Limit: 0.25 mm (0.010 in)



### TIRE

For proper braking and riding stability, the tire should have sufficient groove depth from the tread surface. If the groove depth, measured as shown in the figure, reaches the wear limit, replace the tire.

Service Limit: 3.0 mm (0.12 in)

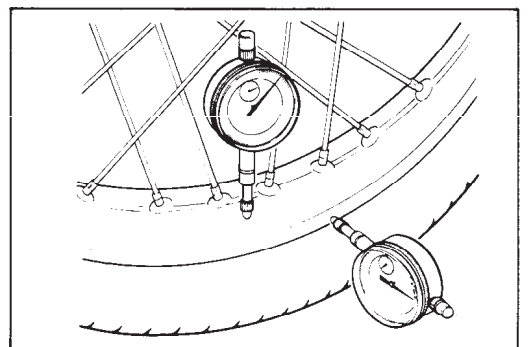


### WHEEL RIM

Make sure that the wheel rim runout checked as shown, does not exceed the service limit. An excessive runout is usually due to worn or loose wheel hub bearings and can be reduced by replacing the bearings. If bearing replacement fails to reduce the runout, adjust the tension of the spokes and, if this proves to be of no effect, replace the wheel rim.

Service Limit

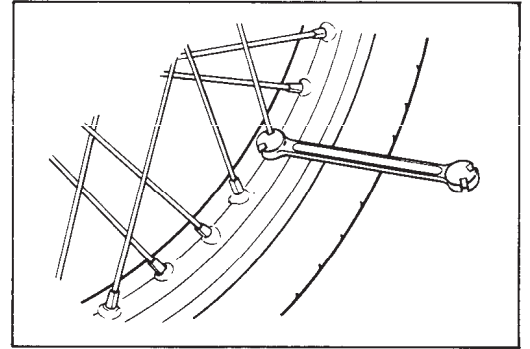
(Axial and Radial): 2.0 mm (0.08 in)



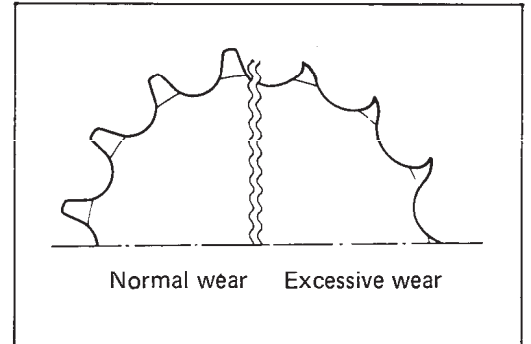
**SPOKE NIPPLE**

Check to be sure that all nipples are tight, and retighten them as necessary.

**Tightening torque: 4 – 5 N·m  
(0.4 – 0.5 kg-m, 3.0 – 3.5 lb-ft)**

**REAR SPROCKET**

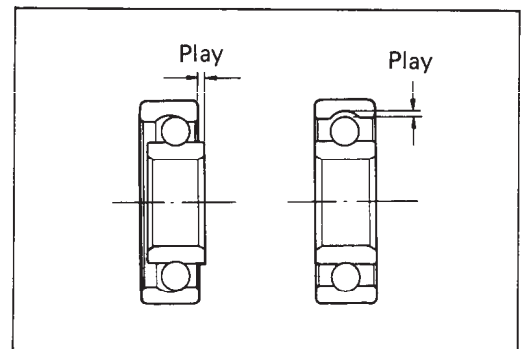
Inspect the sprocket teeth for wear. If they are worn as illustrated, replace the sprocket and drive chain.

**REAR SPROCKET DRUM BEARING**

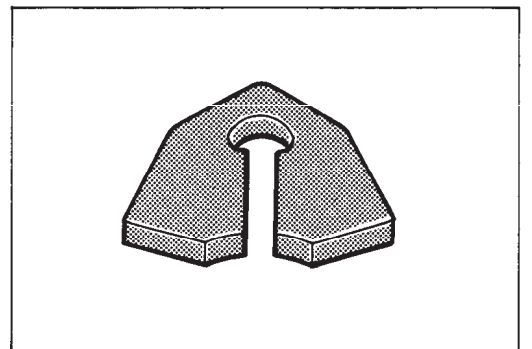
Inspect the play of the rear sprocket drum bearing by hand while it is in the sprocket drum.

Rotate the inner race by hand to inspect for abnormal noise and smooth rotation.

Replace the bearing if there is anything unusual.

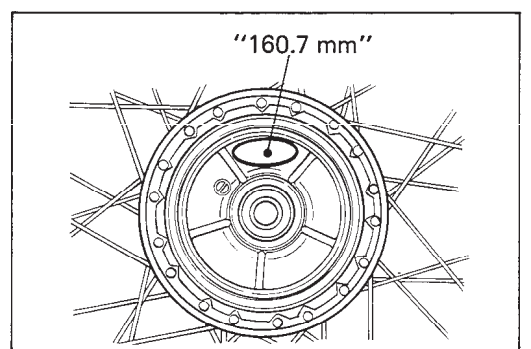
**REAR SPROCKET DAMPER**

Inspect the dampers for wear and damage. If any defects are found, replace the dampers as a set.

**BRAKE DRUM**

Measure the brake drum I.D. to determine the extent of wear. If the limit is exceeded by the wear noted, replace the drum. The value of this limit is indicated inside the drum.

**Service Limit: 160.7 mm (6.33 in)**



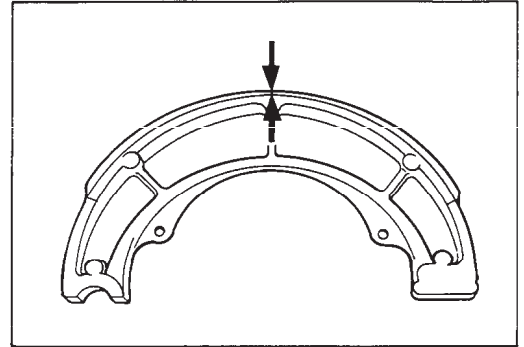
### BRAKE SHOE

Check the brake shoes and decide whether they should be replaced or not from the thickness of the brake shoe linings.

**Service Limit: 1.5 mm (0.06 in)**

#### CAUTION:

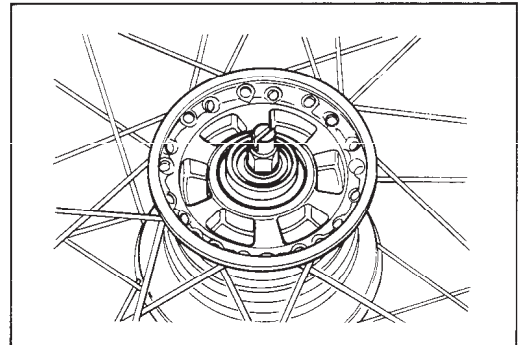
Replace the brake shoes as a set, otherwise braking performance will be adversely affected.



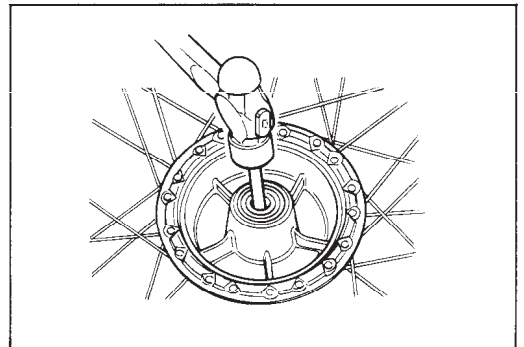
### DISASSEMBLY

#### WHEEL HUB BEARING

- Drive out the wheel hub bearings by using the special tool in the following procedures.
- Insert the adapter into the wheel hub bearing.



- After inserting the wedge bar from the opposite side, lock the wedge bar in the slit of the adapter.
- Drive out the wheel hub bearing by knocking the wedge bar.



#### CAUTION:

The removed bearing should be replaced.

**09941-50110: Bearing remover**

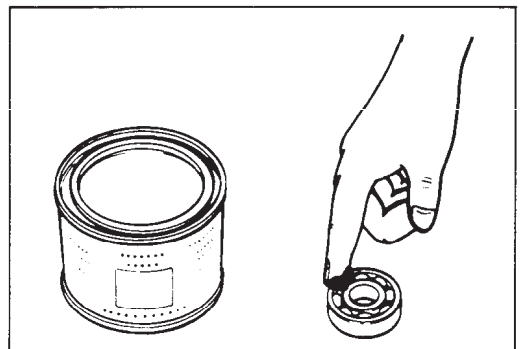
### REASSEMBLY AND REMOUNTING

Reassemble and remount the wheel bearing, rear sprocket and rear brake in the reverse order of disassembly and removal. Pay attention to the following points:

#### WHEEL HUB BEARING

- Apply grease to the bearing before installing.

**99000-25010: Suzuki super grease "A"**

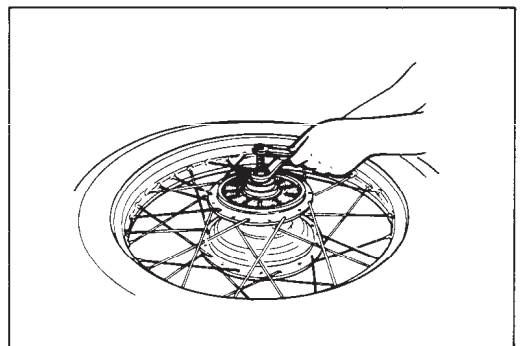


- Install the wheel hub bearings by using a bearing installer.

#### NOTE:

First install the right wheel bearing, then install the left wheel bearing. The sealed cover on the bearing is positioned outside. (See page 6-25.)

**09941-34513: Bearing installer**



**REAR SPROCKET**

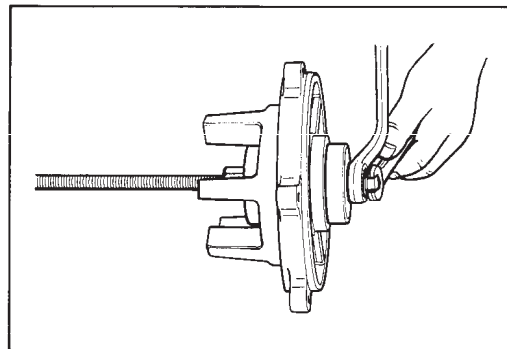
- Apply grease to the rear sprocket drum bearing and oil seal lip before installing.

**99000-25010: Suzuki super grease "A"**

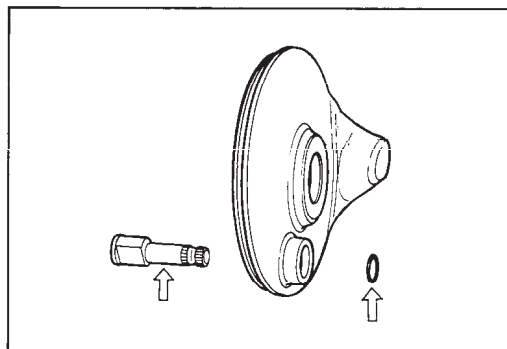
- Install the rear sprocket drum bearing by using a bearing installer.

**09941-34513: Bearing installer**

- Install the bearing spacer.

**REAR BRAKE**

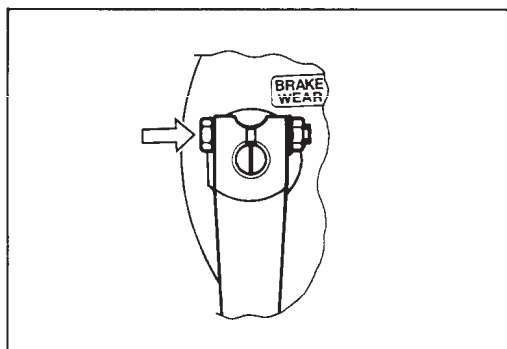
- Apply grease to the oil groove of brake camshaft and O-ring.

**99000-25010: Suzuki super grease "A"**

- Be sure to align the engraved line on the brake camshaft with the slit of the brake cam lever.
- Tighten the brake cam lever bolt to the specified torque.

**Tightening torque: 5 – 8 N·m**

**(0.5 – 0.8 kg-m, 3.5 – 6.0 lb-ft)**



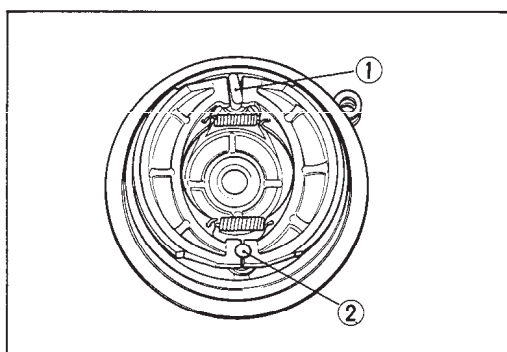
- Apply grease to the brake cam ① and pin ② before installing the brake shoes.

**99000-25010: Suzuki super grease "A"****WARNING:**

Be careful not to apply too much grease to the brake cam and pin. If grease gets on the lining, brake slippage will result.

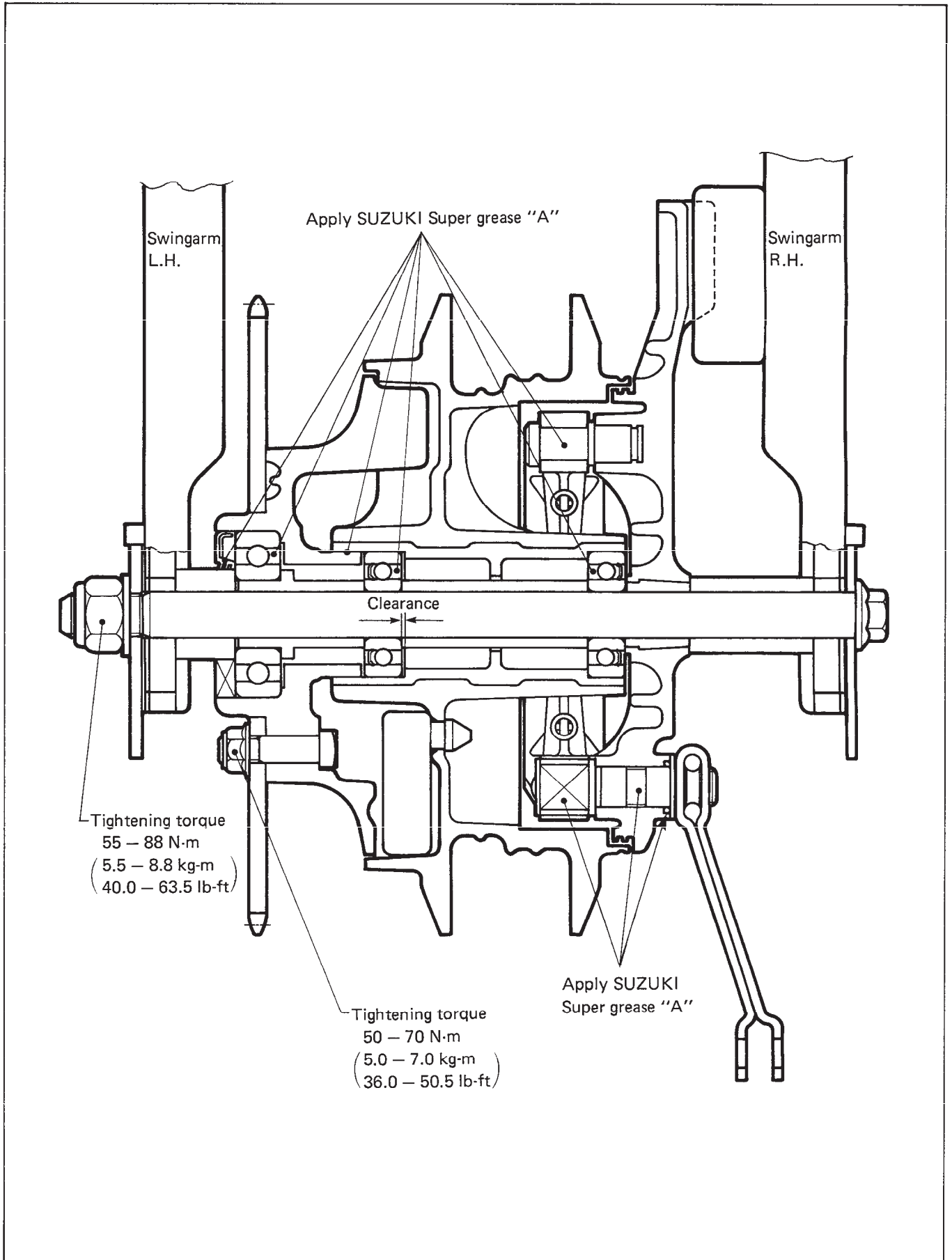
**CAUTION:**

Adjust the rear brake pedal play after installation of the rear wheel. (See page 2-14.)



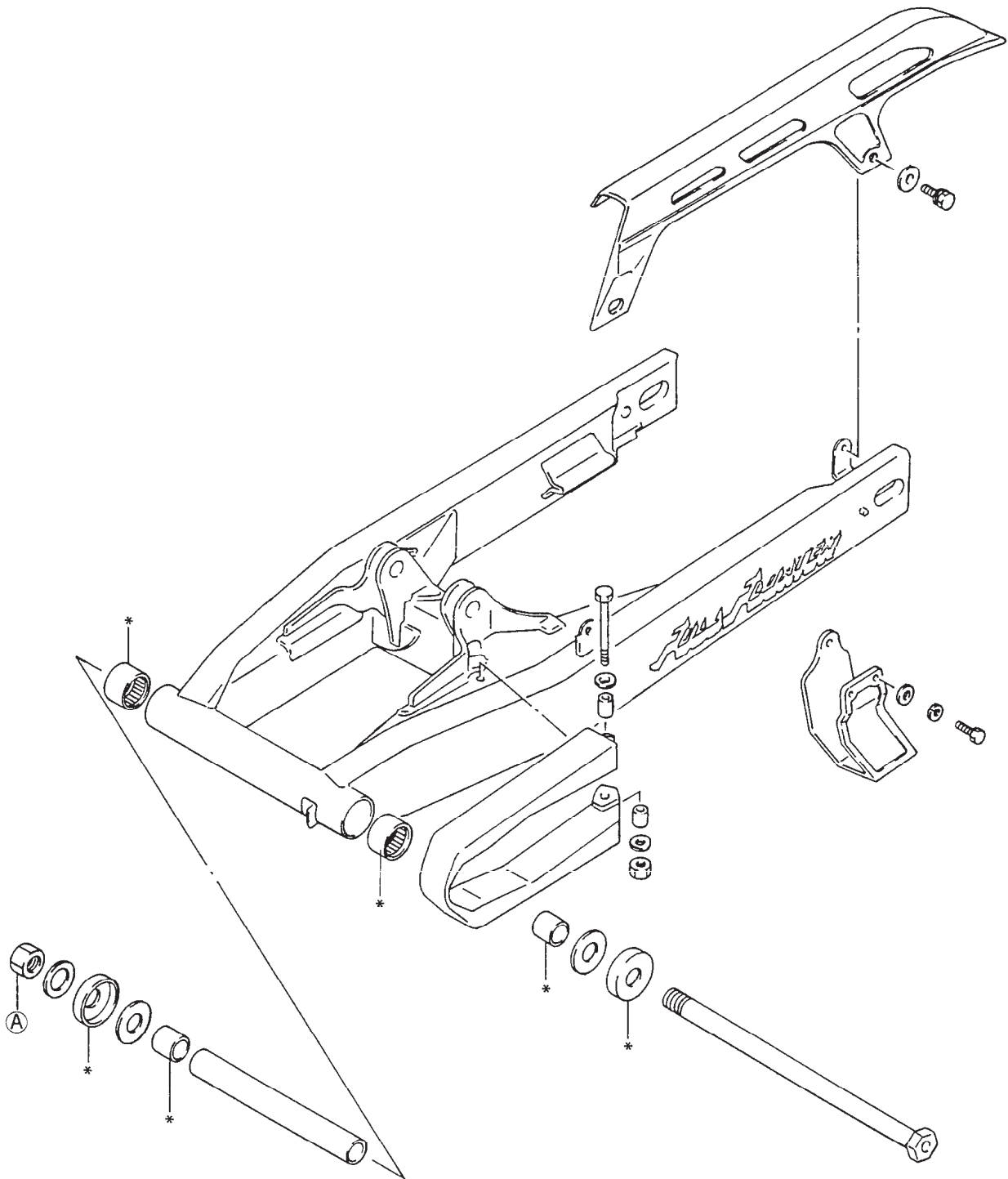


### REASSEMBLING INFORMATION



# REAR SUSPENSION

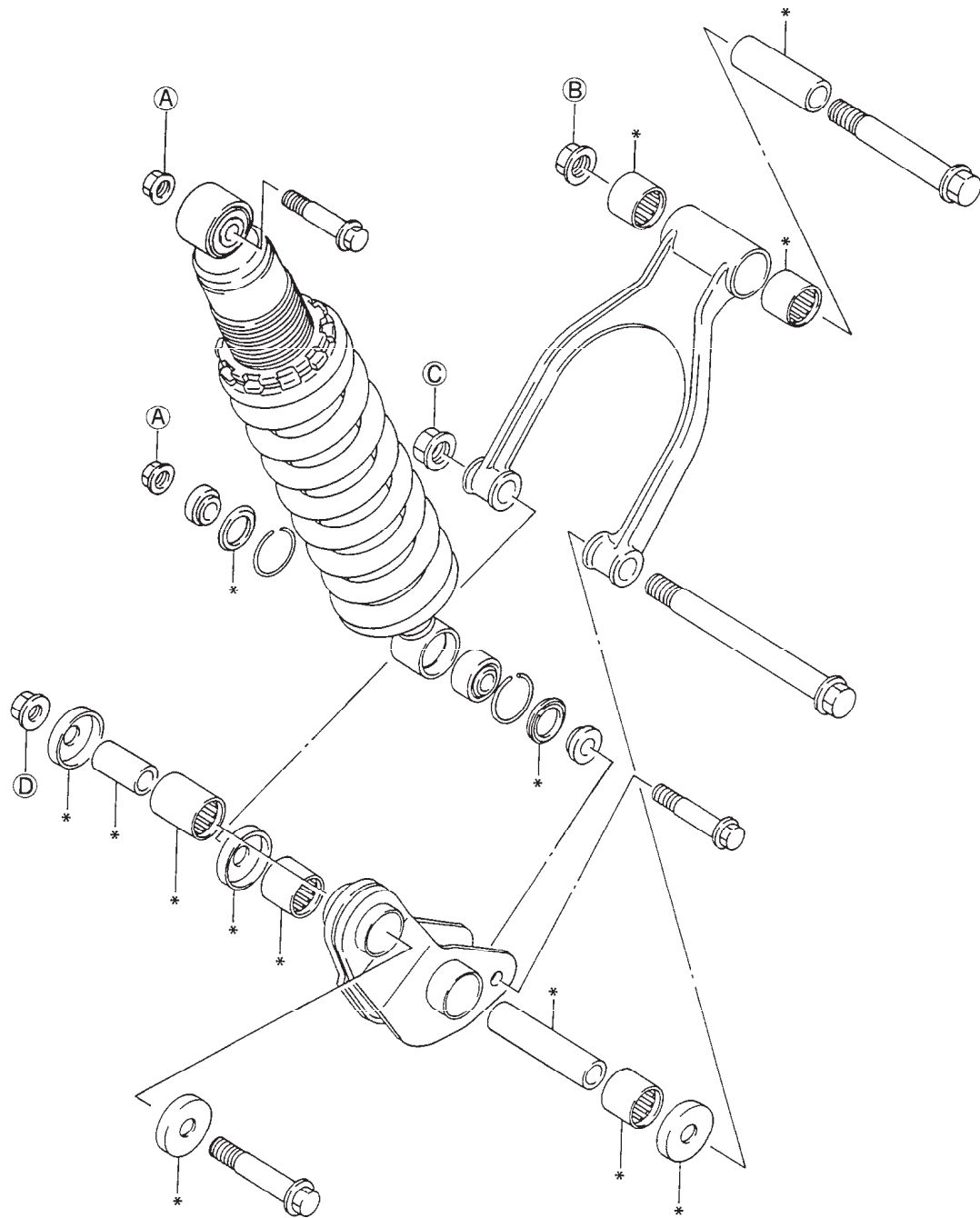
## SWINGARM



\* : Apply SUZUKI Super grease "A" when reassembling.

Tightening torque			
Item	N·m	kg·m	lb·ft
(A)	55 - 85	5.5 - 8.5	40.0 - 61.5

SHOCK ABSORBER AND CUSHION LEVER/ROD

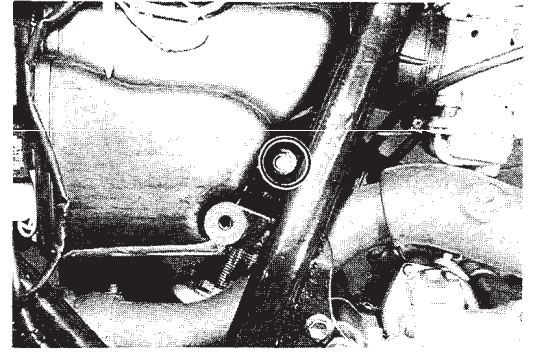


Tightening torque			
Item	N·m	kg·m	lb·ft
Ⓐ	40 – 60	4.0 – 6.0	29.0 – 43.5
Ⓑ	100 – 120	10.0 – 12.0	72.5 – 87.0
Ⓒ	80 – 120	8.0 – 12.0	58.0 – 87.0
Ⓓ	60 – 100	6.0 – 10.0	43.5 – 72.5

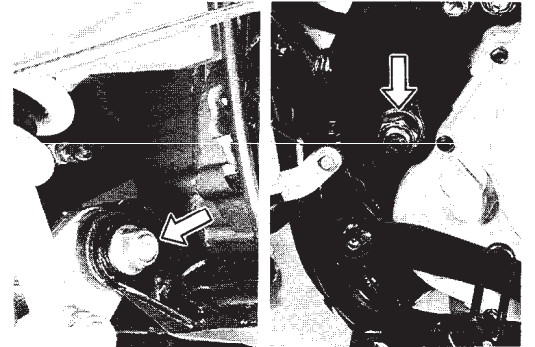
\* : Apply SUZUKI Super grease "A" when reassembling.

## REMOVAL

- Remove the left and right frame covers.
- Remove the rear wheel.
- Remove the shock absorber upper end bolt and nut.



- Remove the cushion lever mounting bolt and nut.
- Remove the swingarm pivot shaft and nut.
- Remove the shock absorber and cushion lever/rod along with the swingarm.
- Remove the shock absorber, cushion lever and cushion rod from the swingarm.



## INSPECTION AND DISASSEMBLY

### SHOCK ABSORBER

Inspect the shock absorber body for damage and oil leakage. If any defects are found, replace the shock absorber assembly with new one.

Inspect the shock absorber bearings by hand while they are in the absorber. Move the bearing by hand to inspect for abnormal noise and smooth movement. Replace the bearing if there is anything unusual.

Inspect the dust seals. If they are found to be damaged, replace them with new ones.

- Remove the stopper ring and drive out the bearing with proper socket wrench.

### CAUTION:

The removed dust seals, stopper rings and bearings should be replaced with new ones.

### CUSHION LEVER/ROD

Inspect the respective cushion lever and rod bearings by hand while they are in the cushion lever and rod. Rotate each bearing spacer to inspect for abnormal noise and smooth rotation. Replace the bearing if there is anything unusual. Inspect the dust seals. If they are found to be damaged, replace them with new ones.

- Remove the dust seals and spacers out of the cushion lever and rod.
- Drive out the respective bearings with proper socket wrench.

### CAUTION:

The removed dust seals and bearings should be replaced with new ones.

### SWINGARM

Inspect the swingarm pivot bearings by hand while they are in the swingarm. Rotate the bearing spacer to inspect for abnormal noise and smooth rotation. Replace the bearing if there is anything unusual.

Inspect the dust seals. If they are found to be damaged, replace them with new ones.

- Remove the dust seals and spacers.
- Remove the swingarm pivot bearings with the special tools.

**09941-44510: Swingarm pivot bearing remover**

### CAUTION:

The removed dust seals and bearings should be replaced with new ones.

## 6-29 CHASSIS

Inspect the swingarm pivot shaft runout with the dial gauge. The swingarm pivot shaft must be replaced if the runout exceeds the limit.

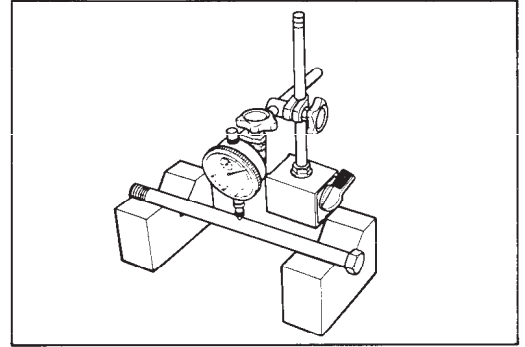
**09900-20606: Dial gauge (1/100)**

**09900-20701: Magnetic stand**

**09900-21304: V-block**

**Service Limit: 0.3 mm (0.01 in)**

Inspect the drive chain buffer for wear and damage.



## REASSEMBLY AND REMOUNTING

Reassemble and remount the rear suspension in the reverse order of disassembly and removal. Pay attention to the following points: (Refer to page 6-30 for details.)

### CUSHION LEVER/ROD

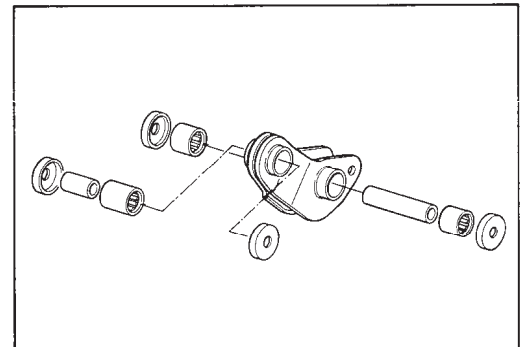
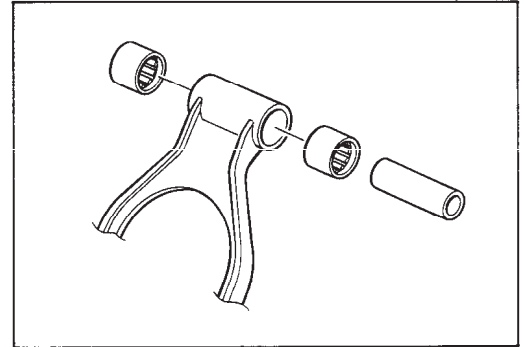
- Apply grease to the bearings and dust seals.

**99000-25010: Suzuki super grease "A"**

- Install the respective cushion lever and rod bearings with proper socket wrench.

#### NOTE:

*When installing the bearing, the stamped mark on the bearing is positioned outside.*



### SWINGARM

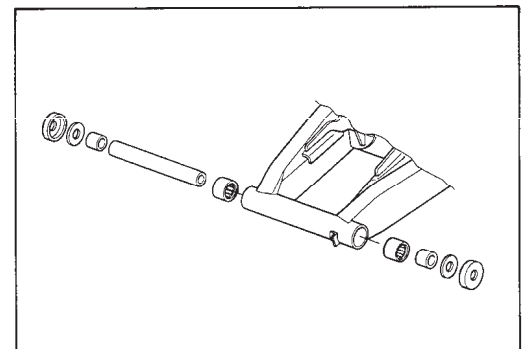
- Apply grease to the bearings and dust seals.

**99000-25010: Suzuki super grease "A"**

- Install the swingarm pivot bearings with proper socket wrench.

#### NOTE:

*When installing the bearing, the stamped mark on the bearing is positioned outside.*







**NOTE:**

After remounting the rear suspension and rear wheel, the following adjustments are necessary.

	<i>Page</i>
* Drive chain slack .....	2-11
* Rear brake pedal play .....	2-14
* Tire pressure .....	2-15
* Shock absorber .....	<i>This page</i>

**SHOCK ABSORBER SPRING PRE-LOAD ADJUSTMENT**

Using the universal clamp wrench, adjust the spring tension of the shock absorber by turning the spring pre-load adjuster ring as follows.

**Standard setting: 244 mm**

**09910-60611: Universal clamp wrench**

**CAUTION:**

After adjusting the pre-load, tighten the spring adjuster lock ring securely.

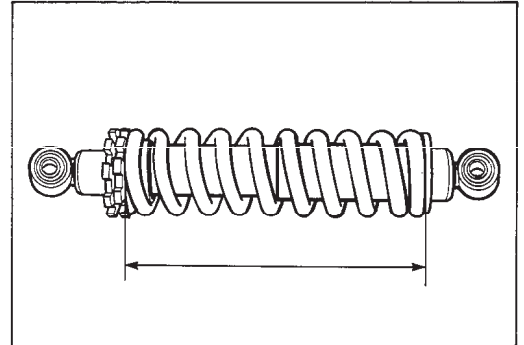
**SETTING TABLE**

Spring length

STD : 244 mm (9.6 in)

Softer : 252 mm (9.9 in)

Stiffer: 235 mm (9.3 in)



# SERVICING INFORMATION

## CONTENTS

<i>TROUBLESHOOTING</i> .....	7- 1
<i>WIRING DIAGRAM</i> .....	7- 9
<i>WIRE, CABLE AND HOSE ROUTING</i> .....	7-12
<i>SPECIAL TOOLS</i> .....	7-20
<i>TIGHTENING TORQUE</i> .....	7-22
<i>SERVICE DATA</i> .....	7-25

## TROUBLESHOOTING

## ENGINE

Complaint	Symptom and possible causes	Remedy
<p><b>Engine will not start, or is hard to start.</b></p>	<p><b>Compression too low</b></p> <ol style="list-style-type: none"> <li>1. Valve clearance out of adjustment.</li> <li>2. Worn valve guides or poor seating of valves.</li> <li>3. Valves mistiming.</li> <li>4. Piston rings excessively worn.</li> <li>5. Worn-down cylinder bore.</li> <li>6. Starter motor cranks too slowly.</li> <li>7. Improperly adjusted de-compression cable.</li> </ol> <p><b>Plugs not sparking</b></p> <ol style="list-style-type: none"> <li>1. Fouled spark plugs.</li> <li>2. Wet spark plug.</li> <li>3. Defective ignition coil.</li> <li>4. Open or short in high-tension cord.</li> <li>5. Defective pick-up coil or CDI unit.</li> <li>6. Defective side stand switch.</li> </ol> <p><b>No fuel reaching the carburetors</b></p> <ol style="list-style-type: none"> <li>1. Clogged hole in the fuel tank cap.</li> <li>2. Clogged or defective fuel cock.</li> <li>3. Defective fuel pump.</li> <li>4. Defective carburetor float valve.</li> <li>5. Clogged fuel hose or vacuum hose.</li> <li>6. Clogged fuel filter.</li> </ol>	<p>Adjust. Repair, or replace. Adjust. Replace. Replace, or rebore. Consult "electrical complaints". Replace.</p> <p>Clean. Clean and dry. Replace. Replace. Replace. Adjust or replace.</p> <p>Clean. Clean or replace. Replace. Replace. Clean. Replace.</p>
<p><b>Engine stalls easily.</b></p>	<ol style="list-style-type: none"> <li>1. Fouled spark plugs.</li> <li>2. Defective pick-up coil or CDI unit.</li> <li>3. Clogged fuel hose.</li> <li>4. Defective fuel pump.</li> <li>5. Clogged jets in carburetors.</li> <li>6. Valve clearance out of adjustment.</li> <li>7. Defective ignition coil.</li> </ol>	<p>Clean. Replace. Replace. Replace. Clean. Adjust. Replace.</p>
<p><b>Noisy engine.</b></p>	<p><b>Excessive valve chatter</b></p> <ol style="list-style-type: none"> <li>1. Valve clearance too large.</li> <li>2. Weakened or broken valve springs.</li> <li>3. Camshaft journal worn and burnt.</li> <li>4. De-compression cable play is maladjusted.</li> </ol> <p><b>Noise appears to come from piston</b></p> <ol style="list-style-type: none"> <li>1. Piston or cylinder worn down.</li> <li>2. Combustion chamber fouled with carbon.</li> <li>3. Piston pin or piston pin bore worn.</li> <li>4. Piston rings or ring groove worn.</li> </ol> <p><b>Noise seems to come from timing chain</b></p> <ol style="list-style-type: none"> <li>1. Stretched chain.</li> <li>2. Worn sprocket.</li> <li>3. Tension adjuster not working.</li> </ol>	<p>Adjust. Replace. Replace. Adjust.</p> <p>Replace. Clean. Replace. Replace.</p> <p>Replace. Replace. Replace.</p>

Complaint	Symptom and possible causes	Remedy
<p><b>Noisy engine.</b></p>	<p><b>Noise seems to come from clutch</b></p> <ol style="list-style-type: none"> <li>1. Worn splines of countershaft or hub.</li> <li>2. Worn teeth of clutch plates.</li> <li>3. Distorted clutch plates, driven and drive.</li> <li>4. Worn/Damaged clutch release bearing.</li> <li>5. Clutch dampers weakened.</li> </ol> <p><b>Noise seems to come from crankshaft</b></p> <ol style="list-style-type: none"> <li>1. Rattling thrust washer due to wear.</li> <li>2. Big-end bearings worn and burnt.</li> <li>3. Journal bearing worn and burnt.</li> <li>4. Thrust clearance too large.</li> </ol> <p><b>Noise seems to come from transmission</b></p> <ol style="list-style-type: none"> <li>1. Gears worn or rubbing.</li> <li>2. Badly worn splines.</li> <li>3. Primary gears worn or rubbing.</li> <li>4. Badly worn bearings.</li> </ol>	<p>Replace. Replace. Replace. Replace. Replace the primary driven gear.</p> <p>Replace. Replace. Replace. Replace the thrust washers or con-rod.</p> <p>Replace. Replace. Replace. Replace.</p>
<p><b>Slipping clutch.</b></p>	<ol style="list-style-type: none"> <li>1. Clutch control out of adjustment or loss of play.</li> <li>2. Weakened clutch springs.</li> <li>3. Worn or distorted pressure plate.</li> <li>4. Distorted clutch plates, driven and drive.</li> </ol>	<p>Adjust. Replace. Replace. Replace.</p>
<p><b>Dragging clutch.</b></p>	<ol style="list-style-type: none"> <li>1. Clutch control out of adjustment or too much play.</li> <li>2. Some clutch springs weakened while others are not.</li> <li>3. Distorted pressure plate or clutch plates.</li> </ol>	<p>Adjust. Replace. Replace.</p>
<p><b>Transmission will not shift.</b></p>	<ol style="list-style-type: none"> <li>1. Broken gearshift cam.</li> <li>2. Distorted gearshift forks.</li> <li>3. Worn gearshift pawl.</li> </ol>	<p>Replace. Replace. Replace.</p>
<p><b>Transmission will not shift back.</b></p>	<ol style="list-style-type: none"> <li>1. Broken return spring on shift shaft.</li> <li>2. Gearshift fork shafts are rubbing or sticky.</li> <li>3. Distorted or worn gearshift forks.</li> </ol>	<p>Replace. Repair. Replace.</p>
<p><b>Transmission jumps out of gear.</b></p>	<ol style="list-style-type: none"> <li>1. Worn shifting gears on driveshaft or countershaft.</li> <li>2. Distorted or worn gearshift forks.</li> <li>3. Weakened cam stopper spring of gearshift cam.</li> <li>4. Worn gearshift pawl.</li> </ol>	<p>Replace. Replace. Replace. Replace.</p>
<p><b>Engine idles poorly.</b></p>	<ol style="list-style-type: none"> <li>1. Valve clearance out of adjustment.</li> <li>2. Poor seating of valves.</li> <li>3. Defective valve guides.</li> <li>4. Spark plug gaps too wide.</li> <li>5. Defective ignition coil.</li> <li>6. Defective pick-up coil or CDI unit.</li> <li>7. Float-chamber fuel level out of adjustment in carburetors.</li> <li>8. Clogged jets in carburetors.</li> <li>9. Defective fuel pump.</li> </ol>	<p>Adjust. Repair or replace. Replace. Adjust or replace. Replace. Replace. Adjust. Clean or adjust. Replace.</p>



## 7-3 SERVICING INFORMATION

Complaint	Symptom and possible causes	Remedy
<b>Engine runs poorly in high-speed range.</b>	<ol style="list-style-type: none"> <li>1. Valve springs weakened.</li> <li>2. Valve timing out of adjustment.</li> <li>3. Spark plug gaps too narrow.</li> <li>4. Clogged jets in carburetors.</li> <li>5. Defective ignition coil.</li> <li>6. Defective pick-up coil or CDI unit.</li> <li>7. Float-chamber fuel level too low.</li> <li>8. Clogged air cleaner element.</li> <li>9. Clogged fuel hose, resulting in inadequate fuel supply to carburetors.</li> <li>10. Defective fuel pump.</li> </ol>	<p>Replace. Adjust. Adjust or replace. Clean or adjust. Replace. Replace. Adjust. Clean or replace. Clean and prime.</p> <p>Replace.</p>
<b>Dirty or heavy exhaust smoke.</b>	<ol style="list-style-type: none"> <li>1. Too much engine oil in the engine.</li> <li>2. Worn piston rings or cylinder.</li> <li>3. Worn valve guides.</li> <li>4. Cylinder walls scored or scuffed.</li> <li>5. Worn valve stems.</li> <li>6. Defective stem seal.</li> <li>7. Worn oil ring or side rail.</li> </ol>	<p>Check with level inspection gauge, drain out excess oil. Replace. Replace. Rebore or replace. Replace. Replace. Replace.</p>
<b>Engine lacks power.</b>	<ol style="list-style-type: none"> <li>1. Loss of valve clearance.</li> <li>2. Weakened valve springs.</li> <li>3. Valve timing out of adjustment.</li> <li>4. Worn piston rings or cylinder.</li> <li>5. Poor seating of valves.</li> <li>6. Spark plug gaps incorrect.</li> <li>7. Clogged jets in carburetors.</li> <li>8. Float-chamber fuel level out of adjustment.</li> <li>9. Clogged air cleaner element.</li> <li>10. Sucking air from intake pipe.</li> <li>11. Too much engine oil in the engine.</li> <li>12. Defective fuel pump.</li> <li>13. Defective pick-up coil/CDI unit/ignition coil.</li> </ol>	<p>Adjust. Replace. Adjust. Replace. Repair. Adjust or replace. Clean. Adjust. Clean. Retighten or replace. Drain out excess oil. Replace. Replace.</p>
<b>Engine overheats.</b>	<ol style="list-style-type: none"> <li>1. Heavy carbon deposit on piston crowns.</li> <li>2. Not enough oil in the engine.</li> <li>3. Defective oil pump or clogged oil circuit.</li> <li>4. Fuel level too low in float chambers.</li> <li>5. Suck air from intake pipes.</li> <li>6. Use incorrect engine oil.</li> </ol>	<p>Clean. Add oil. Replace or clean. Adjust. Retighten or replace. Change.</p>

**CARBURETOR**

Complaint	Symptom and possible causes	Remedy
<b>Trouble with starting.</b>	<ol style="list-style-type: none"> <li>1. Starter jet is clogged.</li> <li>2. Starter pipe is clogged.</li> <li>3. Air leaking from a joint between starter body and carburetor.</li> <li>4. Air leaking from carburetor's joint.</li> <li>5. Starter plunger is not operating properly.</li> </ol>	<p>Clean. Clean. Check starter body and carburetor for tightness, adjust and replace gasket. Check and adjust. Check and adjust.</p>
<b>Idling or low-speed trouble.</b>	<ol style="list-style-type: none"> <li>1. Pilot jet, pilot air jet are clogged or loose.</li> <li>2. Air leaking from carburetor's joint or starter body.</li> <li>3. Pilot outlet or by-pass is clogged.</li> <li>4. Starter plunger is not fully closed.</li> </ol>	<p>Check and clean. Check and adjust. Check and clean. Check and adjust.</p>
<b>Medium- or high-speed trouble.</b>	<ol style="list-style-type: none"> <li>1. Main jet or main air jet is clogged.</li> <li>2. Needle jet is clogged.</li> <li>3. Throttle valve is not operating properly.</li> <li>4. Filter is clogged.</li> </ol>	<p>Check and clean. Check and clean. Check throttle valve for operation. Check and clean.</p>
<b>Overflow and fuel level fluctuations.</b>	<ol style="list-style-type: none"> <li>1. Needle valve is worn or damaged.</li> <li>2. Spring in needle valve is broken.</li> <li>3. Float is not working properly.</li> <li>4. Foreign matter has adhered to needle valve.</li> <li>5. Fuel level is too high or low.</li> <li>6. Clogged carburetor air vent hose.</li> <li>7. Defective fuel pump.</li> </ol>	<p>Replace. Replace. Check and adjust. Clean. Adjust float height. Clean. Replace.</p>

## 7-5 SERVICING INFORMATION

### ELECTRICAL

Complaint	Symptom and possible causes	Remedy
No sparking or poor sparking.	<ol style="list-style-type: none"> <li>1. Defective ignition coil.</li> <li>2. Defective spark plugs.</li> <li>3. Defective pick-up coil or CDI unit.</li> <li>4. Defective magneto rotor.</li> </ol>	<p>Replace. Replace. Replace. Replace.</p>
Spark plugs soon become fouled with carbon.	<ol style="list-style-type: none"> <li>1. Mixture too rich.</li> <li>2. Idling speed set too high.</li> <li>3. Incorrect gasoline.</li> <li>4. Dirty element in air cleaner.</li> <li>5. Spark plugs too cold.</li> </ol>	<p>Adjust carburetors. Adjust carburetors. Change. Clean. Replace by hot type plugs.</p>
Spark plugs become fouled too soon.	<ol style="list-style-type: none"> <li>1. Worn piston rings.</li> <li>2. Piston or cylinder worn.</li> <li>3. Excessive clearance of valve stems in valve guides.</li> <li>4. Worn stem oil seals.</li> </ol>	<p>Replace. Replace. Replace. Replace.</p>
Spark plug electrodes overheat or burn.	<ol style="list-style-type: none"> <li>1. Spark plugs too hot.</li> <li>2. The engine overheats.</li> <li>3. Defective pick-up coil or CDI unit.</li> <li>4. Spark plugs loose.</li> <li>5. Mixture too lean.</li> </ol>	<p>Replace by cold type plugs. Tune up. Replace. Retighten. Adjust carburetors.</p>
Generator does not charge.	<ol style="list-style-type: none"> <li>1. Open or short in lead wires, or loose lead connections.</li> <li>2. Shorted, grounded or open generator coils.</li> <li>3. Shorted or punctured regulator/rectifier.</li> </ol>	<p>Repair or replace or retighten. Replace. Replace.</p>
Generator does charge, but charging rate is below the specification.	<ol style="list-style-type: none"> <li>1. Lead wires tend to get shorted or open-circuited or loosely connected at terminals.</li> <li>2. Grounded or open-circuited stator coils of generator.</li> <li>3. Defective regulator/rectifier.</li> <li>4. Not enough electrolyte in the battery.</li> <li>5. Defective cell plates in the battery.</li> </ol>	<p>Repair, or retighten.  Replace. Replace. Add distilled water between the level lines. Replace the battery.</p>
Generator overcharges.	<ol style="list-style-type: none"> <li>1. Internal short-circuit in the battery.</li> <li>2. Resistor element in the regulator/rectifier damaged or defective.</li> <li>3. Regulator/rectifier poorly grounded.</li> </ol>	<p>Replace the battery. Replace.  Clean and tighten ground connection.</p>
Unstable charging.	<ol style="list-style-type: none"> <li>1. Lead wire insulation frayed due to vibration, resulting in intermittent shorting.</li> <li>2. Generator internally shorted.</li> <li>3. Defective regulator/rectifier.</li> </ol>	<p>Repair or replace.  Replace. Replace.</p>
Starter button is not effective.	<ol style="list-style-type: none"> <li>1. Battery run down.</li> <li>2. Defective switch contacts.</li> <li>3. Brushes not seating properly on commutator in starter motor.</li> <li>4. Defective starter relay/starter interlock switch.</li> <li>5. Defective de-compression control unit.</li> <li>6. Defective side-stand switch.</li> <li>7. Defective neutral switch.</li> </ol>	<p>Recharge or replace. Replace. Repair or replace.  Replace. Replace. Replace. Replace.</p>

**BATTERY**

Complaint	Symptom and possible causes	Remedy
<p>“Sulfation” acidic white powdery substance or spots on surfaces of cell plates.</p>	<ol style="list-style-type: none"> <li>1. Not enough electrolyte.</li> <li>2. Battery case is cracked.</li> <li>3. Battery has been left in a run-down condition for a long time.</li> <li>4. Contaminated electrolyte (Foreign matter has entered the battery and become mixed with the electrolyte).</li> </ol>	<p>Add distilled water, if the battery has not been damaged and “sulfation” has not advanced too far, and recharge. Replace the battery.</p> <p>Replace the battery.</p> <p>If “sulfation” has not advanced too far, try to restore the battery by replacing the electrolyte, recharging it fully with the battery detached from the motorcycle and then adjusting electrolyte S.G.</p>
<p>Battery runs down quickly.</p>	<ol style="list-style-type: none"> <li>1. The charging method is not correct.</li> <li>2. Cell plates have lost much of their active materials as a result of over-charging.</li> <li>3. A short-circuit condition exists within the battery due to excessive accumulation of sediments caused by the high electrolyte S.G.</li> <li>4. Electrolyte S.G. is too low.</li> <li>5. Contaminated electrolyte.</li> <li>6. Battery is too old.</li> </ol>	<p>Check the generator, regulator/rectifier and circuit connections, and make necessary adjustments to obtain specified charging operation.</p> <p>Replace the battery and correct the charging system.</p> <p>Replace the battery.</p> <p>Recharge the battery fully and adjust electrolyte S.G.</p> <p>Replace the electrolyte, recharge the battery and then adjust S.G.</p> <p>Replace the battery.</p>
<p>Reversed battery polarity.</p>	<p>The battery has been connected the wrong way round in the system, so that it is being charged in the reverse direction.</p>	<p>Replace the battery and be sure to connect the battery properly.</p>
<p>Battery “sulfation”.</p>	<ol style="list-style-type: none"> <li>1. Charging rate too low or too high. (When not in use batteries should be recharged at least once a month to avoid sulfation.)</li> <li>2. Battery electrolyte excessive or insufficient, or its specific gravity too high or too low.</li> <li>3. The battery left unused for too long in cold climate.</li> </ol>	<p>Replace the battery.</p> <p>Keep the electrolyte up to the prescribed level, or adjust the S.G. by consulting the battery maker’s directions.</p> <p>Replace the battery, if badly sulfated.</p>
<p>Battery discharges too rapidly.</p>	<ol style="list-style-type: none"> <li>1. Dirty container top and sides.</li> <li>2. Impurities in the electrolyte or electrolyte S.G. is too high.</li> </ol>	<p>Clean.</p> <p>Change the electrolyte by consulting the battery maker’s directions.</p>

**CHASSIS**

Complaint	Symptom and possible causes	Remedy
<b>Handling feels too heavy.</b>	<ol style="list-style-type: none"> <li>1. Steering stem nut overtightened.</li> <li>2. Worn roller bearing or race in steering stem.</li> <li>3. Distorted steering stem.</li> <li>4. Not enough pressure in tires.</li> <li>5. Overtightened steering races.</li> </ol>	Adjust. Replace. Replace. Adjust. Adjust.
<b>Steering oscillation.</b>	<ol style="list-style-type: none"> <li>1. Loss of balance between right and left suspensions.</li> <li>2. Bent front fork.</li> <li>3. Bent front axle or crooked tire.</li> <li>4. Loose steering stem bearings.</li> <li>5. Worn or incorrect tires or wrong tire pressure.</li> </ol>	Adjust. Repair or replace. Replace. Adjust. Adjust or replace.
<b>Wobbly front wheel.</b>	<ol style="list-style-type: none"> <li>1. Distorted wheel.</li> <li>2. Worn front wheel bearings.</li> <li>3. Defective or incorrect tire.</li> <li>4. Loose nut on axle.</li> <li>5. Loose nuts on rear shock.</li> <li>6. Worn swingarm bearings.</li> </ol>	Replace. Replace. Replace. Retighten. Retighten. Replace.
<b>Front suspension too soft.</b>	<ol style="list-style-type: none"> <li>1. Weakened springs.</li> <li>2. Not enough fork oil.</li> <li>3. Wrong weight fork oil.</li> </ol>	Replace. Refill. Replace.
<b>Front suspension too stiff.</b>	<ol style="list-style-type: none"> <li>1. Fork oil too viscous.</li> <li>2. Too much fork oil.</li> <li>3. Front axle bent.</li> <li>4. Fork tubes not adjusted evenly in forks stem and steering stem head.</li> </ol>	Replace. Remove excess oil. Replace. Adjust.
<b>Noisy front suspension.</b>	<ol style="list-style-type: none"> <li>1. Not enough fork oil.</li> <li>2. Loose nuts on suspension.</li> </ol>	Refill. Retighten.
<b>Wobbly rear wheel.</b>	<ol style="list-style-type: none"> <li>1. Distorted wheel rim.</li> <li>2. Worn-down rear wheel bearings or swingarm bearings.</li> <li>3. Defective or incorrect tire.</li> <li>4. Worn swingarm bearings.</li> <li>5. Loose nuts on rear suspension.</li> <li>6. Loose nut on axle.</li> </ol>	Replace. Replace. Replace. Replace. Retighten. Retighten.
<b>Rear suspension too soft.</b>	<ol style="list-style-type: none"> <li>1. Weakened spring.</li> <li>2. Rear suspension adjuster improperly set.</li> <li>3. Oil leakage of rear shock absorber.</li> </ol>	Replace. Reset. Replace.
<b>Rear suspension too stiff.</b>	<ol style="list-style-type: none"> <li>1. Rear suspension adjuster improperly set.</li> <li>2. Shock absorber shaft bent.</li> <li>3. Swingarm bent.</li> <li>4. Worn swingarm bearings.</li> </ol>	Adjust. Replace. Replace. Replace.
<b>Noisy rear suspension.</b>	<ol style="list-style-type: none"> <li>1. Loose nut on rear suspension.</li> <li>2. Worn swingarm bearings.</li> </ol>	Retighten. Replace.

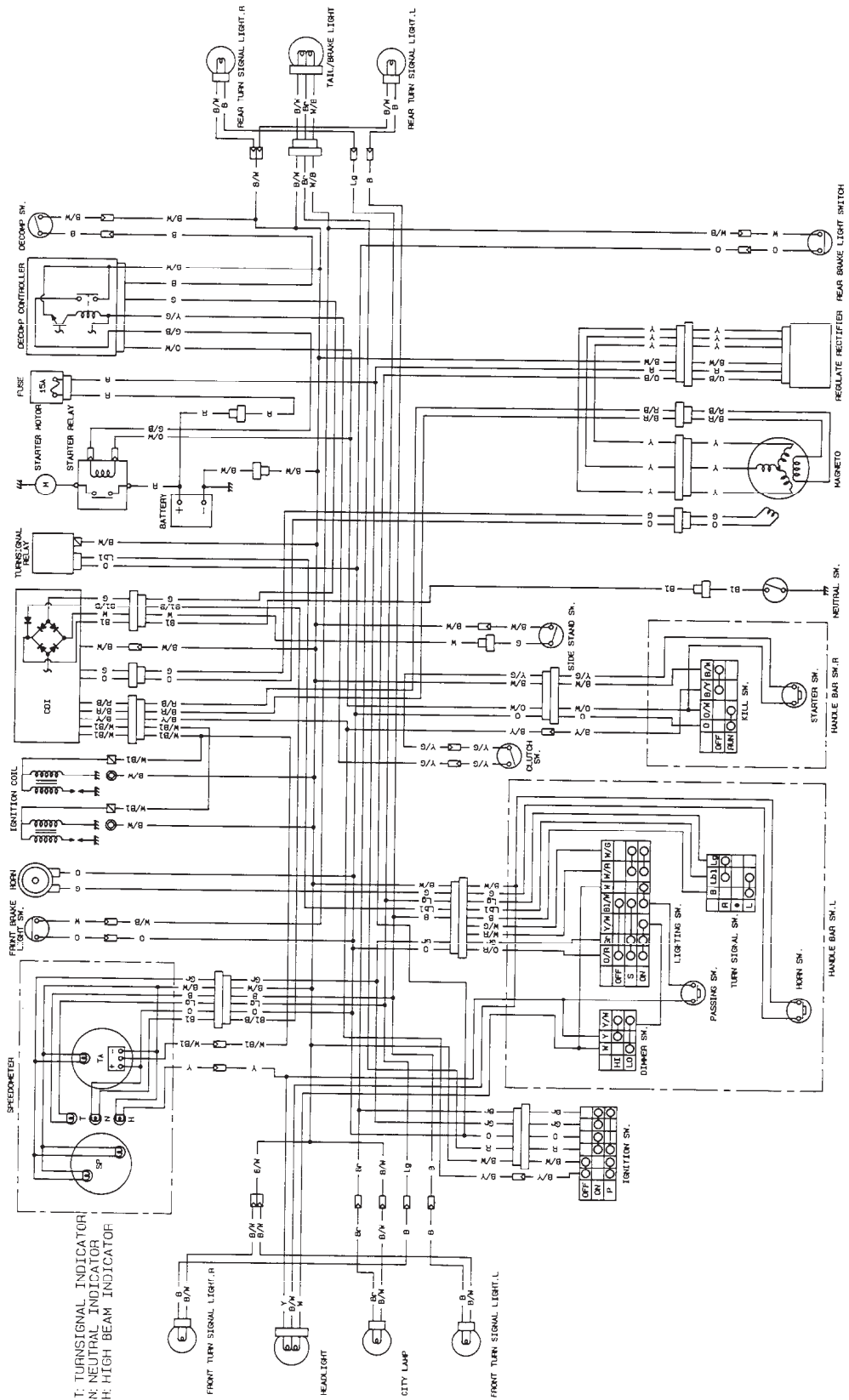


**BRAKES**

Complaint	Symptom and possible causes	Remedy
<b>Poor braking. (FRONT)</b>	<ol style="list-style-type: none"> <li>1. Not enough brake fluid in the reservoir.</li> <li>2. Air trapped in brake fluid circuit.</li> <li>3. Pads worn down.</li> <li>4. Too much play on brake lever.</li> </ol>	Refill to level mark. Bleed air out. Replace. Adjust.
<b>Poor braking. (REAR)</b>	<ol style="list-style-type: none"> <li>1. Linings worn down.</li> <li>2. Too much play on brake pedal.</li> </ol>	Replace. Adjust.
<b>Insufficient brake power.</b>	<ol style="list-style-type: none"> <li>1. Leakage of brake fluid from hydraulic system.</li> <li>2. Worn pads. Worn lining.</li> <li>3. Oil adhesion on engaging surface of pads.</li> <li>4. Worn disc. Worn brake drum.</li> <li>5. Air entered into hydraulic system.</li> </ol>	Repair or replace. Replace. Clean disc and pads. Replace. Bleed air.
<b>Brake squeaking.</b>	<ol style="list-style-type: none"> <li>1. Carbon adhesion on pad surface. Carbon adhesion on lining surface.</li> <li>2. Tilted pad.</li> <li>3. Damaged wheel bearings.</li> <li>4. Loose front wheel axle or rear wheel axle.</li> <li>5. Worn pads and linings.</li> <li>6. Foreign material in brake fluid.</li> <li>7. Clogged return port of master cylinder.</li> <li>8. Wrongly fixed pad shim, retainer or spring.</li> <li>9. Caliper binding on caliper axles.</li> </ol>	Repair surface with sandpaper. Modify pad fitting. Replace. Tighten to specified torque. Replace. Replace brake fluid. Disassemble and clean master cylinder. Set correctly. Clean and lubricate.
<b>Excessive brake lever stroke.</b>	<ol style="list-style-type: none"> <li>1. Air entered into hydraulic system.</li> <li>2. Worn brake lever cam.</li> <li>3. Insufficient brake fluid.</li> <li>4. Improper quality of brake fluid.</li> </ol>	Bleed air. Replace brake cam. Replenish fluid to specified level; bleed air. Replace with correct fluid.
<b>Leakage of brake fluid.</b>	<ol style="list-style-type: none"> <li>1. Insufficient tightening of connection joints.</li> <li>2. Cracked hose.</li> <li>3. Worn piston and/or cup.</li> </ol>	Tighten to specified torque. Replace. Replace piston and/or cup.

# WIRING DIAGRAM

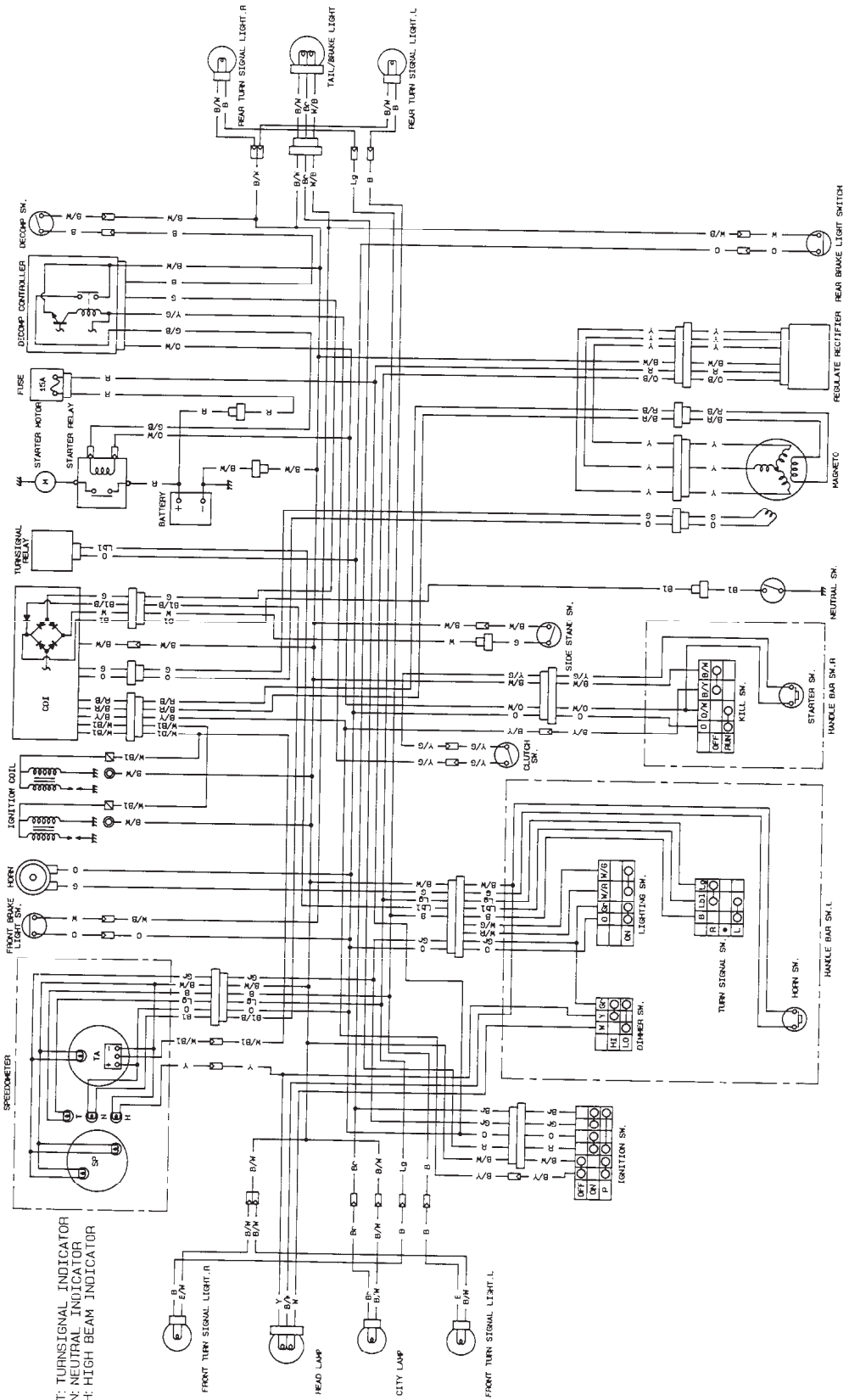
FOR E-22



T: TURN SIGNAL INDICATOR  
 N: NEUTRAL INDICATOR  
 H: HIGH BEAM INDICATOR

- WIRE COLOR**
- B.....Black
  - B1.....Blue
  - Bl.....Blue
  - Br.....Brown
  - G.....Green
  - Gr.....Green
  - Y.....Yellow
  - Y/G.....Yellow with Green tracer
  - W/G.....White with Green tracer
  - W/R.....White with Red tracer
  - W/B.....White with Black tracer
  - O.....Orange
  - R.....Red
  - W.....White
  - Y.....Yellow
  - B/R.....Black with Red tracer
  - B/W.....Black with White tracer
  - Bl1.....Light blue
  - lg.....Light green
  - B1/B.....Blue with Black tracer
  - G/G.....Green with Black tracer
  - O/B.....Orange with Black tracer
  - O/R.....Orange with Red tracer
  - R/W.....Red with White tracer
  - W/B.....White with Black tracer
  - B1/B1.....White with Blue tracer
  - W/G.....White with Green tracer
  - W/R.....White with Red tracer
  - Y/G.....Yellow with Green tracer

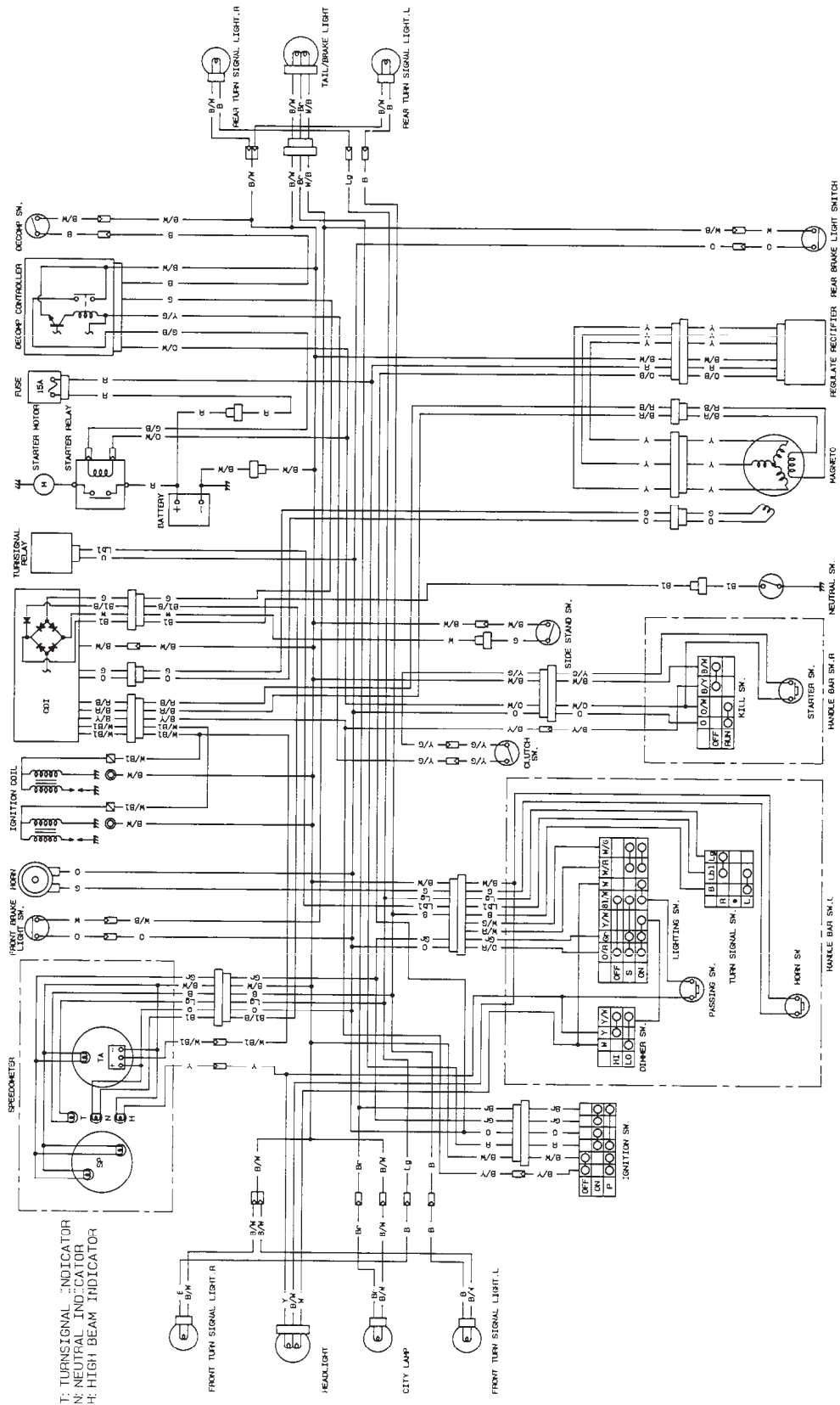
FOR E-28



T: TURN SIGNAL INDICATOR  
 N: NEUTRAL INDICATOR  
 H: HIGH BEAM INDICATOR

- WIRE COLOR**
- B ..... Black
  - B1 ..... Blue
  - B2 ..... Blue
  - B3 ..... Brown
  - C ..... Green
  - Gr ..... Gray
  - Lb1 ..... Light blue
  - Lg ..... Light green
  - O ..... Orange
  - R ..... Red
  - W ..... White
  - Y ..... Yellow
  - B/A ..... Black with Red tracer
  - B/W ..... Black with White tracer
  - B/Y ..... Black with Yellow tracer
  - B1/B ..... Blue with Black tracer
  - G/B ..... Green with Black tracer
  - O/B ..... Orange with Black tracer
  - O/R ..... Orange with Red tracer
  - O/W ..... Orange with White tracer
  - R/B ..... Red with Black tracer
  - W/B ..... White with Black tracer
  - W/B1 ..... White with Blue tracer
  - W/G ..... White with Green tracer
  - W/R ..... White with Red tracer
  - Y/G ..... Yellow with Green tracer

FOR THE OTHERS

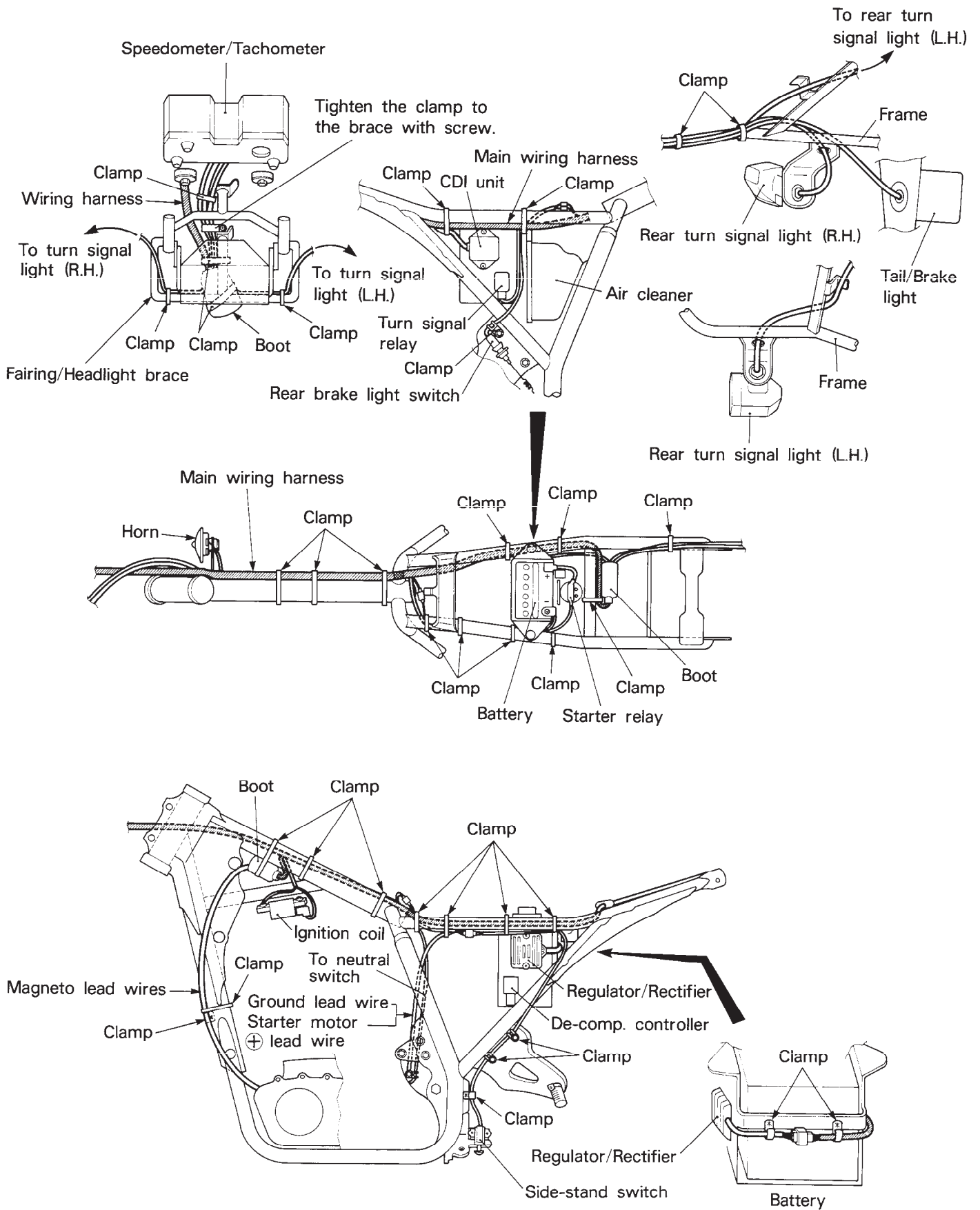


T: TURN SIGNAL INDICATOR  
 N: NEUTRAL INDICATOR  
 H: HIGH BEAM INDICATOR

- WIRE COLOR**
- B.....Black
  - Bl.....Blue
  - Br.....Brown
  - G.....Green
  - Gr.....Gray
  - Lb1.....Light blue
  - Lg.....Light green
  - O.....Orange
  - R.....Red
  - W.....White
  - Y.....Yellow
  - B/A.....Black with Red tracer
  - B/W.....Black with White tracer
  - B/Y.....Black with Yellow tracer
  - G/B.....Green with Black tracer
  - G/S.....Green with Silver tracer
  - O/B.....Orange with Black tracer
  - O/R.....Orange with Red tracer
  - P/W.....Black with White tracer
  - R/B.....Red with Black tracer
  - W/B.....White with Black tracer
  - W/Bl.....White with Blue tracer
  - W/G.....White with Green tracer
  - W/R.....White with Red tracer
  - Y/G.....Yellow with Green tracer

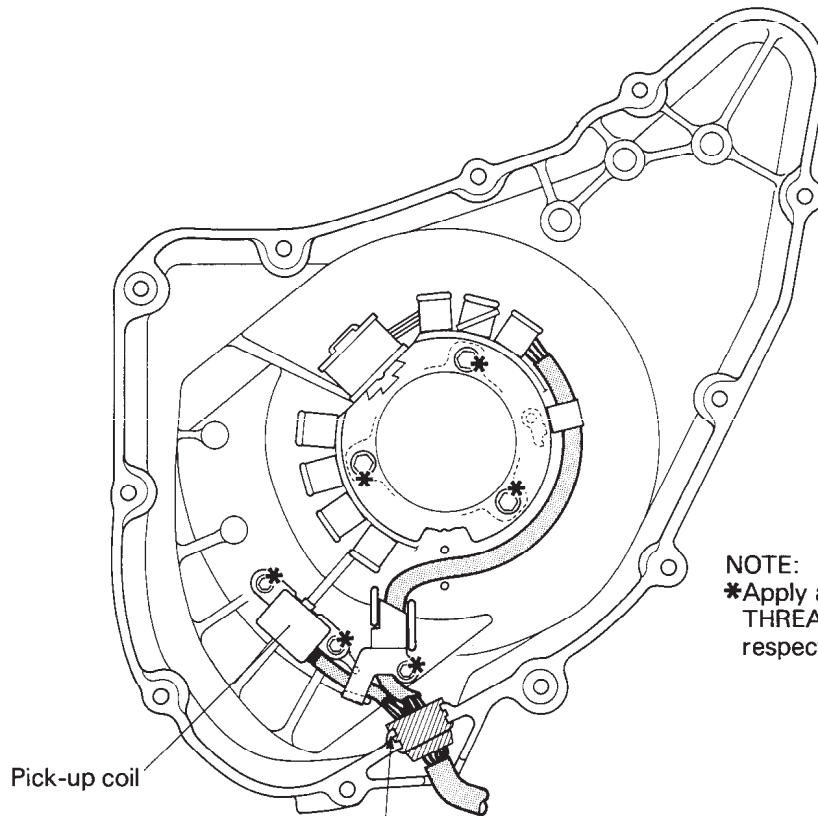
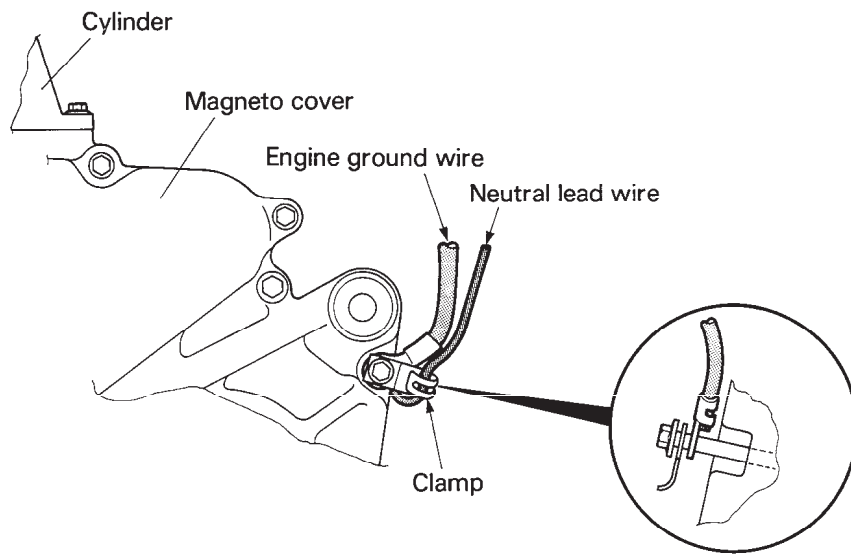
# WIRE, CABLE AND HOSE ROUTING

## WIRING HARNESS





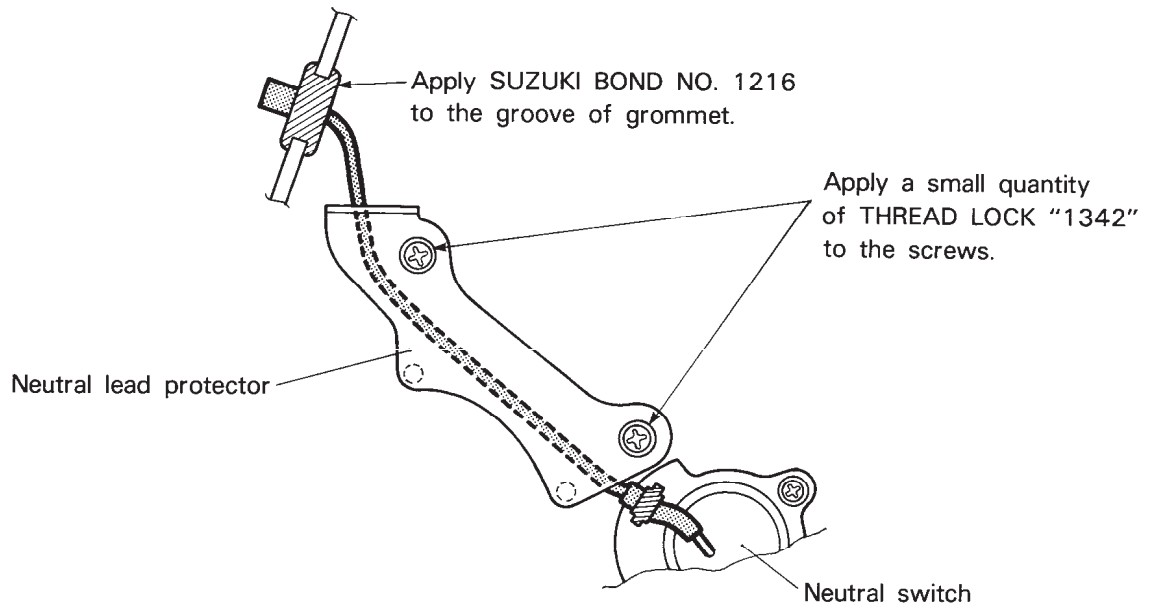
## MAGNETO LEAD WIRE



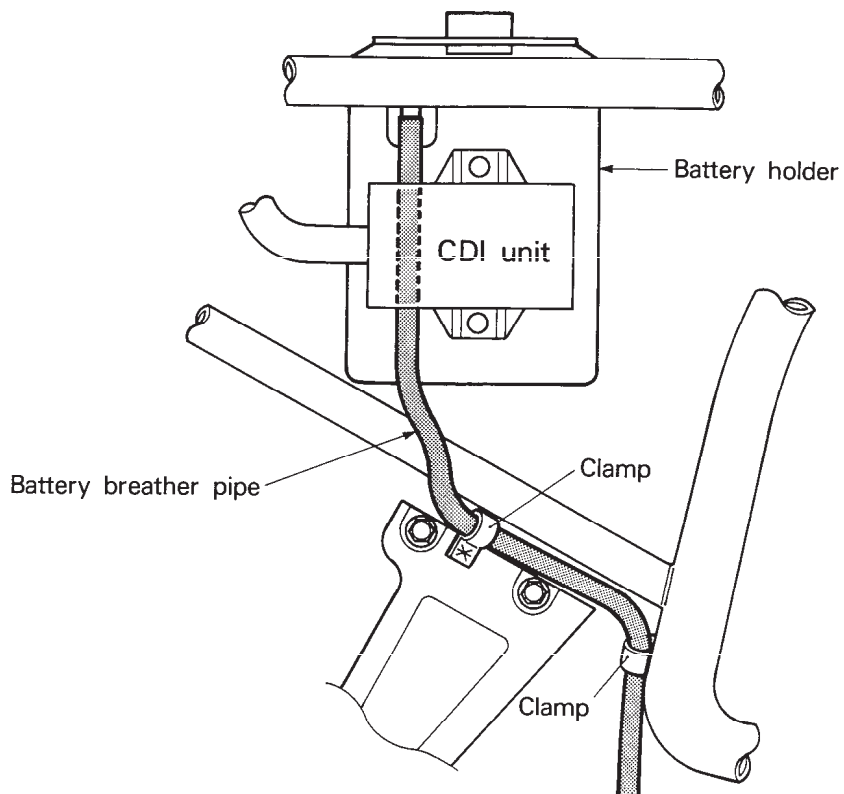
NOTE:  
\*Apply a small quantity of  
THREAD LOCK "1342" to the  
respective securing bolts.

Apply SUZUKI BOND No. 1216 to the groove  
of grommet.

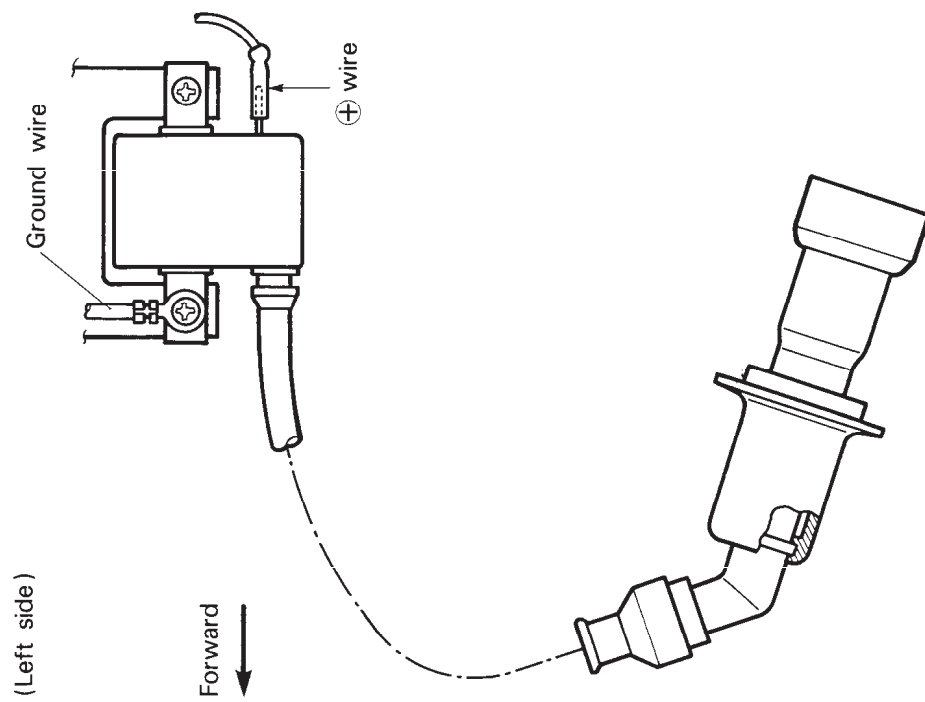
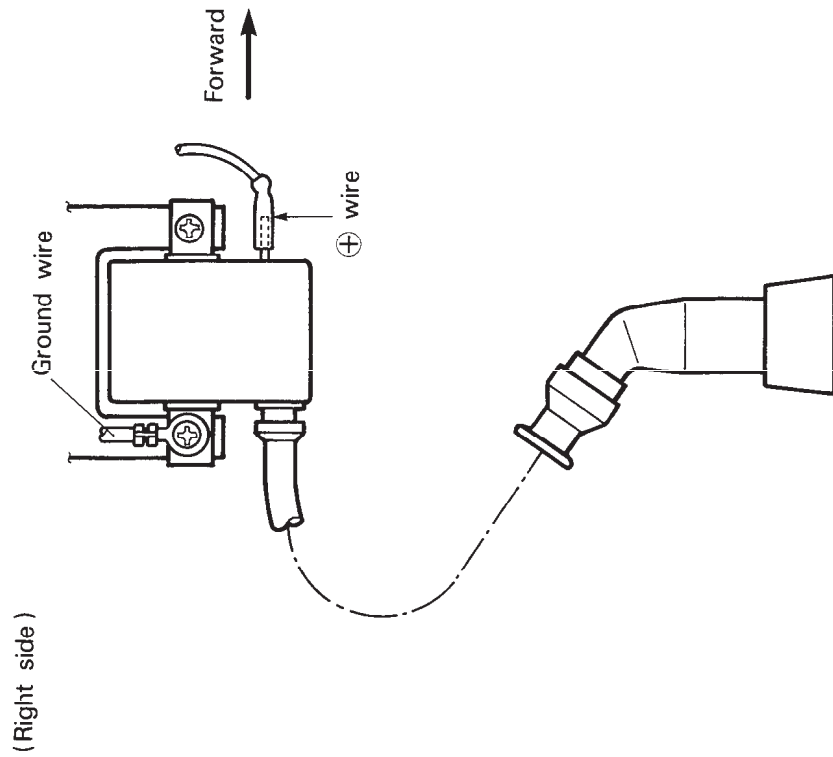
## NEUTRAL LEAD WIRE



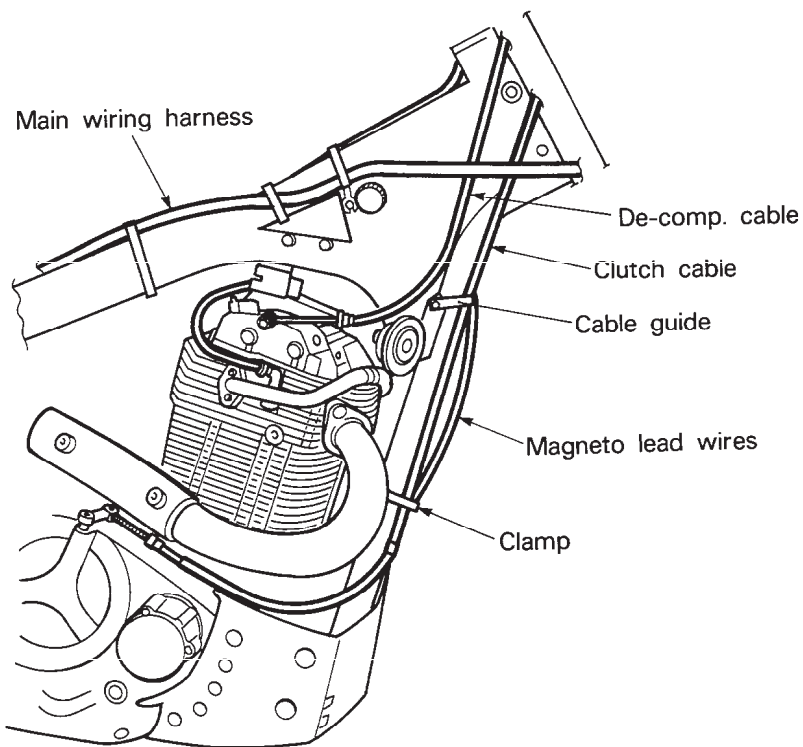
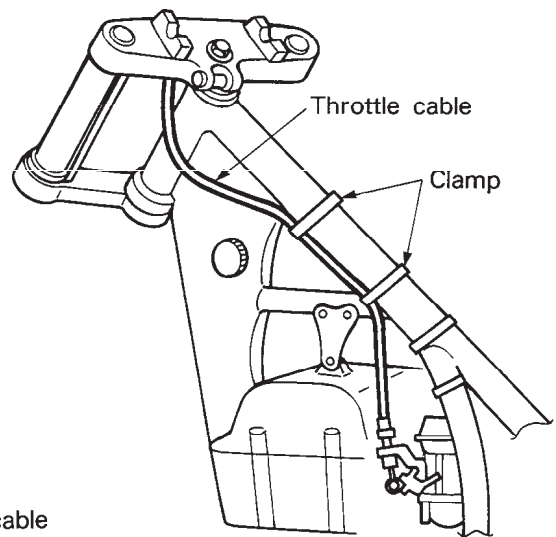
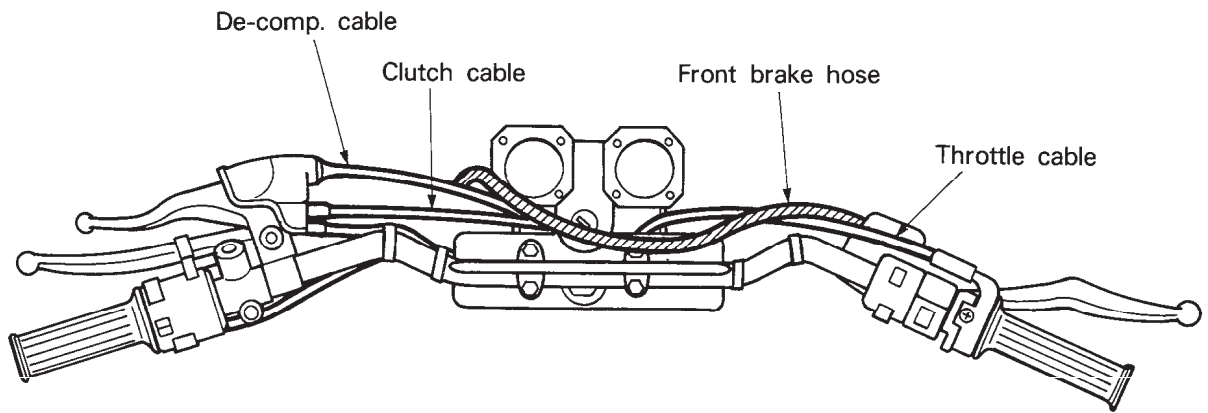
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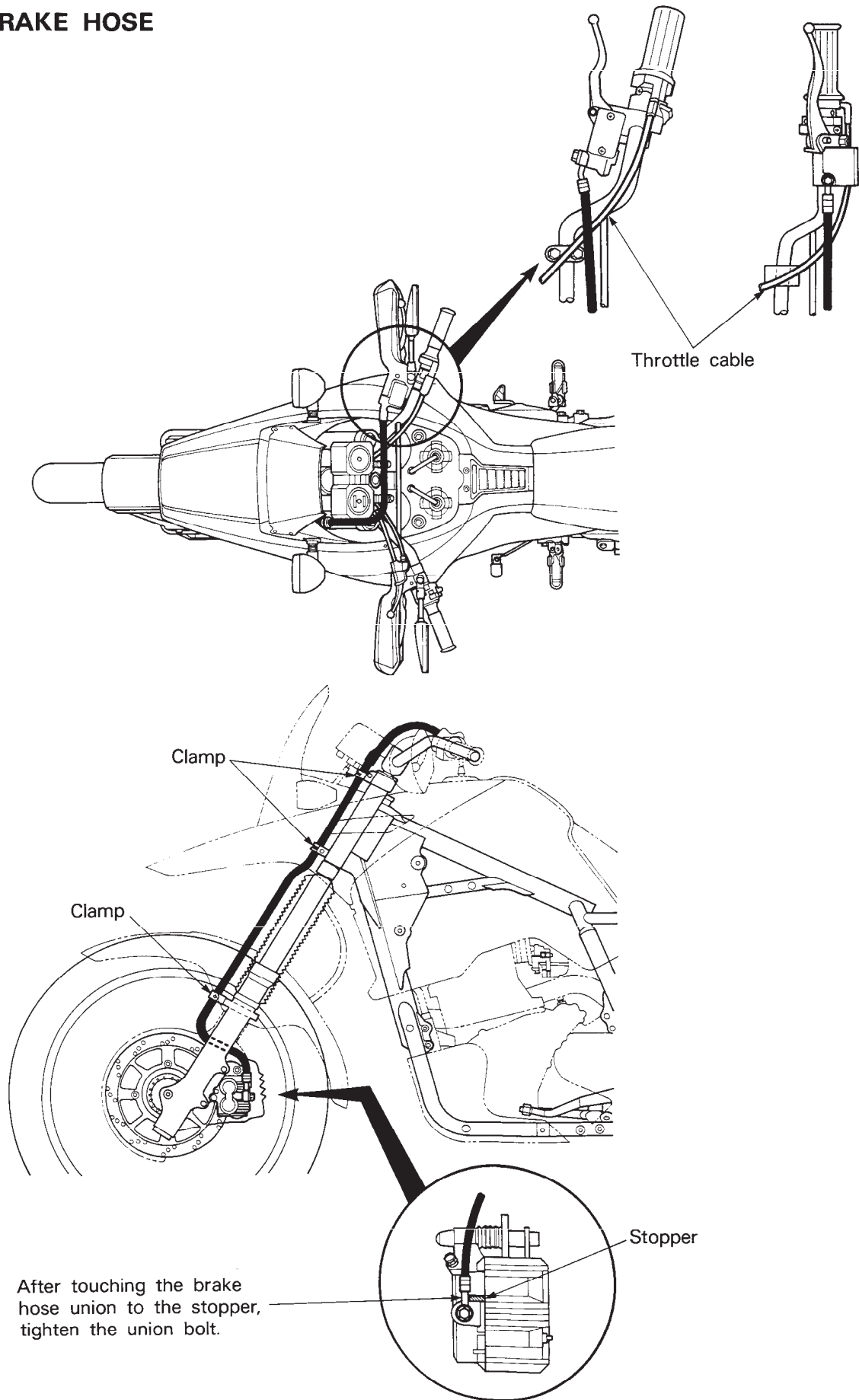
## IGNITION COIL LOCATION



CABLES

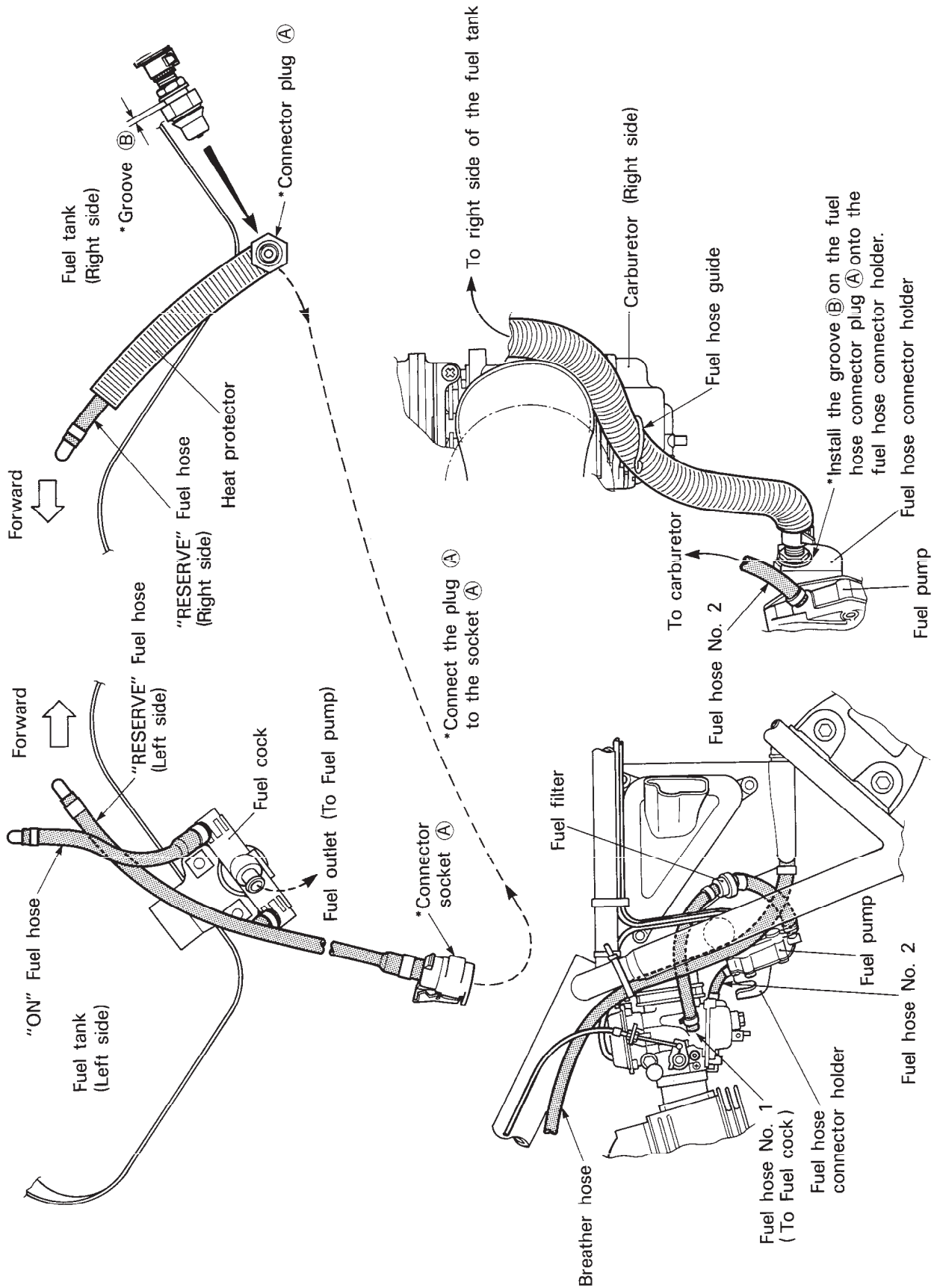


FRONT BRAKE HOSE

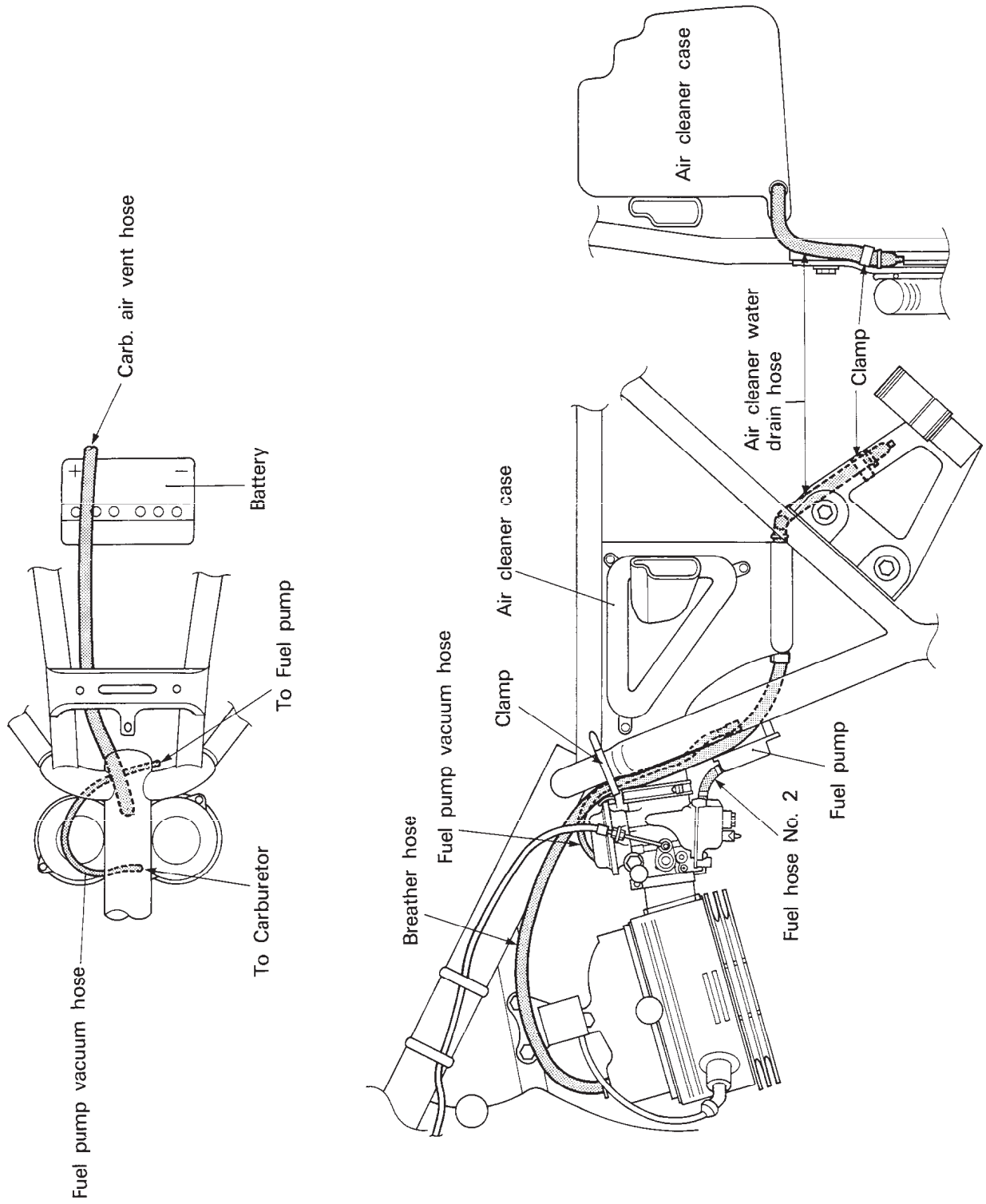




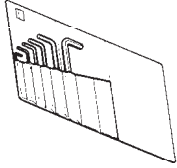
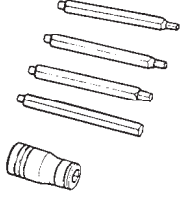
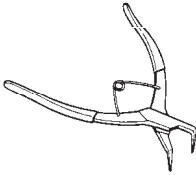
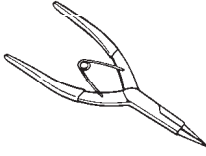
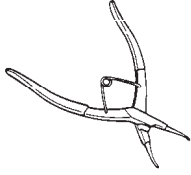
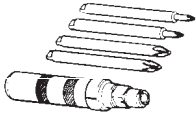
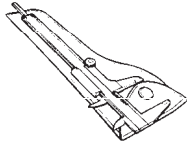
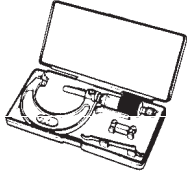
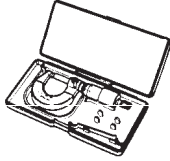

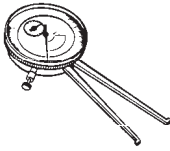
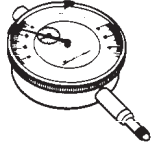
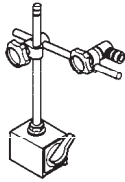
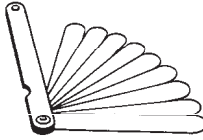
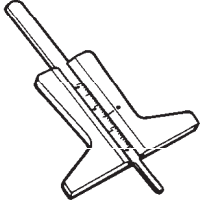
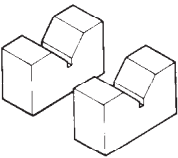

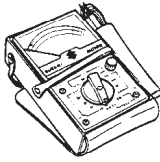
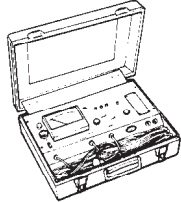
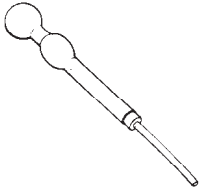
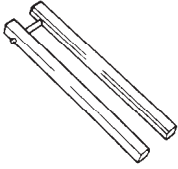
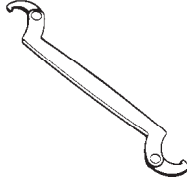

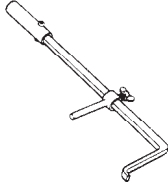
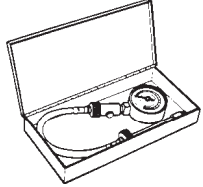

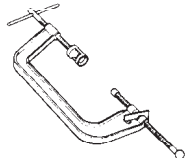
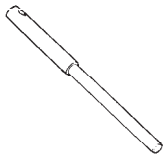
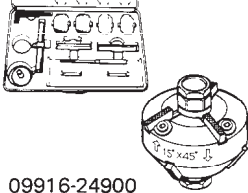

FUEL HOSE






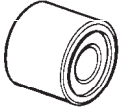
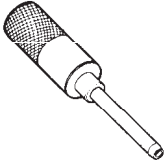

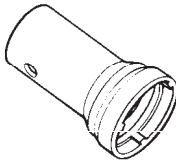
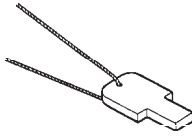
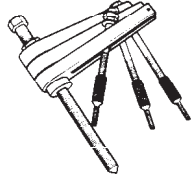
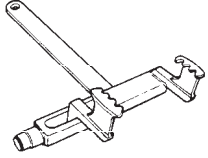

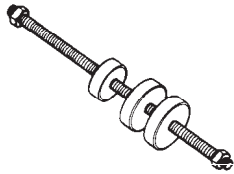
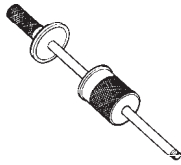
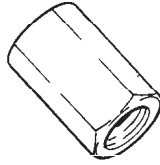
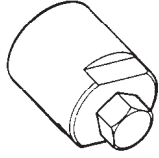
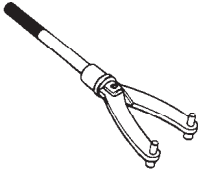
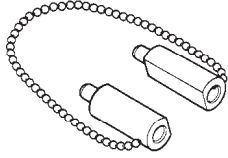
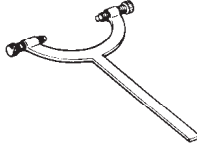
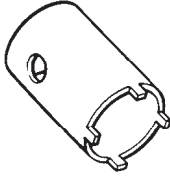
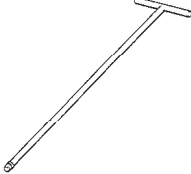
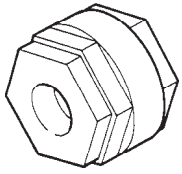
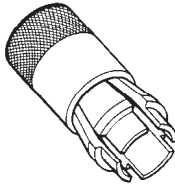
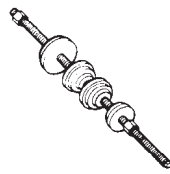
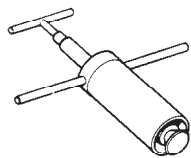
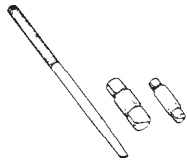

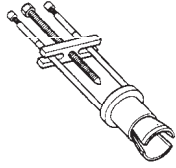
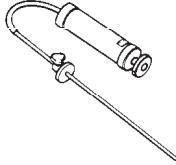
CARBURETOR AND AIR CLEANER HOSES



# SPECIAL TOOLS

 <p>09900-00401 "L" type hexagon wrench set</p>	 <p>09900-00410 Hexagon bit wrench set</p>	 <p>09900-06105 Snap ring pliers</p>	 <p>09900-06107 Snap ring pliers</p>	 <p>09900-06108 Snap ring pliers</p>
 <p>09900-09003 Impact driver set</p>	 <p>09900-20102 Vernier calipers</p>	 <p>09900-20202 Micrometer (25 - 50 mm)</p>	 <p>09900-20205 Micrometer (0 - 25 mm)</p>	 <p>09900-20508 Cylinder bore gauge set 09900-20512 Gauge rod 105 mm</p>
 <p>09900-20605 Dial calipers</p>	 <p>09900-20606 Dial gauge (1/100)</p>	 <p>09900-20701 Magnetic stand</p>	 <p>09900-20803 Thickness gauge</p>	 <p>09900-20805 Tire depth gauge</p>
 <p>09900-21304 V-block (100 mm)</p>	 <p>09900-22301 Plastigauge</p>	 <p>09900-25002 Pocket tester</p>	 <p>09900-28106 Electro tester</p>	 <p>09900-28403 Hydrometer</p>
 <p>09910-20116 Conrod holder</p>	 <p>09910-60611 Universal clamp wrench</p>	 <p>09911-93710 Stem seal installer attachment</p>	 <p>09913-50121 Oil seal remover</p>	 <p>09915-64510 Compression gauge</p>
 <p>09915-74510 Oil pressure gauge</p>	 <p>09916-14510 Valve spring compressor</p>	 <p>Solid pilot (N-140-7.0)</p>	 <p>09916-24900 Valve seat cutter set Valve seat cutter head N-233, N-217, N-615, N-211 *See page 3-26</p>	 <p>09916-34542 Reamer handle</p>

## 7-21 SERVICING INFORMATION

 <p>09916-34520 Valve guide reamer (7.0 mm)</p>	 <p>09916-34531 Valve guide reamer (12.3 mm)</p>	 <p>09916-44511 Valve guide remover/ installer</p>	 <p>09916-57311 Valve guide installer attachment</p>	 <p>09916-57321 Valve guide installer handle</p>
 <p>09916-84511 Tweezers</p>	 <p>09917-23711 Ring nut socket wrench</p>	 <p>09917-62420 Cam chain tension adjuster locking tool</p>	 <p>09920-13120 Crankcase separating tool</p>	 <p>09920-53710 Clutch sleeve hub holder</p>
 <p>09923-73210 Bearing puller</p>	 <p>09924-84521 Bearing installer</p>	 <p>09930-30102 Sliding shaft</p>	 <p>09930-30250 Balancer shaft remover</p>	 <p>09930-33720 Rotor remover</p>
 <p>09930-40113 Rotor holder</p>	 <p>09930-40130 Balancer driven sprocket holder</p>	 <p>09930-44913 Rotor holder</p>	 <p>09940-14920 Steering stem nut wrench</p>	 <p>09940-34520 "T" handle</p>
 <p>09940-34592 Attachment "G" (Front fork disassembling tool)</p>	 <p>09940-50113 Front fork oil seal installer</p>	 <p>09941-34513 Steering race installer</p>	 <p>09941-44510 Swingarm bearing remover</p>	 <p>09941-50110 Bearing remover</p>
 <p>09941-74910 Steering bearing installer</p>	 <p>09941-84510 Bearing remover</p>	 <p>09943-74111 Fork oil level gauge</p>		

## TIGHTENING TORQUE

### ENGINE

ITEM	N·m	kg-m	lb-ft
Cylinder head cover bolt	8 – 12	0.8 – 1.2	6.0 – 8.5
Camshaft sprocket bolt	12 – 16	1.2 – 1.6	8.5 – 11.5
Cylinder head nut 10 mm Diam.	35 – 40	3.5 – 4.0	25.5 – 29.0
Cylinder head nut and bolt 8 mm Diam.	18 – 22	1.8 – 2.2	13.0 – 16.0
Cylinder base nut and bolt	8 – 12	0.8 – 1.2	6.0 – 8.5
Cam chain tension adjuster fitting bolt	8 – 12	0.8 – 1.2	6.0 – 8.5
Magneto rotor bolt	140 – 160	14.0 – 16.0	101.5 – 115.5
Starter clutch allen bolt	23 – 28	2.3 – 2.8	16.5 – 20.0
Balancer drive sprocket ring nut	60 – 100	6.0 – 10.0	43.5 – 72.5
Balancer driven sprocket nut (Front and Rear)	35 – 43	3.5 – 4.3	25.5 – 31.0
Balancer chain tension adjuster shaft nut	45 – 70	4.5 – 7.0	32.5 – 50.5
Balancer chain tension adjuster allen bolt	15 – 20	1.5 – 2.0	11.0 – 14.5
Primary drive gear nut	90 – 110	9.0 – 11.0	65.0 – 79.5
Clutch spring mounting bolt	11 – 13	1.1 – 1.3	8.0 – 9.5
Clutch sleeve hub nut	40 – 60	4.0 – 6.0	29.0 – 43.0
Gearshift arm stopper	15 – 23	1.5 – 2.3	11.0 – 16.5
Engine oil drain plug	18 – 23	1.8 – 2.3	13.5 – 16.5
Oil filter cap bolt and oil sump filter cap bolt	6 – 8	0.6 – 0.8	4.5 – 6.0
Engine sprocket bolt	10 – 12	1.0 – 1.2	7.0 – 8.5
Engine mounting bolt 8 mm Diam.	37 – 45	3.7 – 4.5	27.0 – 32.5
Engine mounting bolt 10 mm Diam.	70 – 88	7.0 – 8.8	50.5 – 63.5
Exhaust pipe bolt and muffler mounting bolt	23 – 28	2.3 – 2.8	16.5 – 20.0
Muffler connection bolt	12 – 18	1.2 – 1.8	8.5 – 13.5



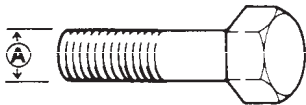
**CHASSIS**

ITEM	N·m	kg·m	lb·ft
Front axle nut	40 – 58	4.0 – 5.8	29.0 – 42.0
Front axle pinch bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
Front fork damper rod bolt	34 – 46	3.4 – 4.6	24.5 – 33.5
Front fork lower clamp bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
Front fork upper clamp bolt	20 – 30	2.0 – 3.0	14.5 – 21.5
Front fork cap bolt	15 – 30	1.5 – 3.0	11.0 – 21.5
Steering stem head nut	60 – 100	6.0 – 10.0	43.5 – 72.5
Handlebar clamp bolt	12 – 20	1.2 – 2.0	8.5 – 14.5
Front brake master cylinder mounting bolt	5 – 8	0.5 – 0.8	3.5 – 6.0
Front brake caliper mounting bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
Brake hose union bolt	20 – 25	2.0 – 2.5	14.5 – 18.0
Air bleeder valve	6 – 9	0.6 – 0.9	4.5 – 6.5
Front disc mounting bolt	18 – 28	1.8 – 2.8	13.0 – 20.0
Swingarm pivot nut	55 – 85	5.5 – 8.5	40.0 – 61.5
Front footrest bolt	50 – 70	5.0 – 7.0	36.0 – 50.5
Shock absorber mounting nut (Upper & Lower)	40 – 60	4.0 – 6.0	29.0 – 43.5
Rear cushion lever mounting nut	60 – 100	6.0 – 10.0	43.5 – 72.5
Rear cushion rod nut (Upper)	100 – 120	10.0 – 12.0	72.5 – 87.0
Rear cushion rod nut (Lower)	80 – 120	8.0 – 12.0	58.0 – 87.0
Rear axle nut	55 – 88	5.5 – 8.8	40.0 – 63.5
Rear sprocket mounting nut	50 – 70	5.0 – 7.0	36.0 – 50.5
Rear brake cam lever bolt	5 – 8	0.5 – 0.8	3.5 – 6.0
Spoke nipple	4 – 5	0.4 – 0.5	3.0 – 3.5

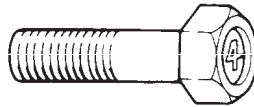
## TIGHTENING TORQUE CHART

For other bolts and nuts not listed prescribed, refer to this chart:

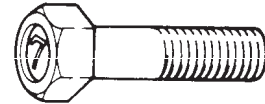
Bolt Diameter Ⓐ (mm)	Conventional or "4" marked bolt			"7" marked bolt		
	N.m	kg-m	lb-ft	N.m	kg-m	lb-ft
4	1.0 – 2.0	0.1 – 0.2	0.7 – 1.5	1.5 – 3.0	0.15 – 0.3	1.0 – 2.0
5	2.0 – 4.0	0.2 – 0.4	1.5 – 3.0	3.0 – 6.0	0.3 – 0.6	2.0 – 4.5
6	4.0 – 7.0	0.4 – 0.7	3.0 – 5.0	8.0 – 12.0	0.8 – 1.2	6.0 – 8.5
8	10.0 – 16.0	1.0 – 1.6	7.0 – 11.5	18.0 – 28.0	1.8 – 2.8	13.0 – 20.0
10	22.0 – 35.0	2.2 – 3.5	16.0 – 25.5	40.0 – 60.0	4.0 – 6.0	29.0 – 43.5
12	35.0 – 55.0	3.5 – 5.5	25.5 – 40.0	70.0 – 100.0	7.0 – 10.0	50.5 – 72.5
14	50.0 – 80.0	5.0 – 8.0	36.0 – 58.0	110.0 – 160.0	11.0 – 16.0	79.5 – 115.5
16	80.0 – 130.0	8.0 – 13.0	58.0 – 94.0	170.0 – 250.0	17.0 – 25.0	123.0 – 181.0
18	130.0 – 190.0	13.0 – 19.0	94.0 – 137.5	200.0 – 280.0	20.0 – 28.0	144.5 – 202.5



Conventional bolt



"4" marked bolt



"7" marked bolt

## SERVICE DATA

### VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	40 ( 1.6 )	—
	EX.	34 ( 1.3 )	—
Valve lift	IN.	8.7 ( 0.34 )	—
	EX.	8.5 ( 0.33 )	—
Valve clearance (when engine is cold)	IN. & EX.	0.05–0.10 ( 0.002–0.004 )	—
Valve guide to valve stem clearance	IN.	0.025–0.055 ( 0.0010–0.0022 )	0.35 ( 0.014 )
	EX.	0.040–0.070 ( 0.0016–0.0028 )	0.35 ( 0.014 )
Valve guide I.D.	IN. & EX.	7.000–7.015 ( 0.2756–0.2762 )	—
Valve stem O.D.	IN.	6.960–6.975 ( 0.2740–0.2746 )	—
	EX.	6.945–6.960 ( 0.2734–0.2740 )	—
Valve stem runout	IN. & EX.	—	0.05 ( 0.002 )
Valve head thickness	IN. & EX.	—	0.5 ( 0.02 )
Valve stem end length	IN. & EX.	—	2.4 ( 0.09 )
Valve seat width	IN. & EX.	1.0–1.2 ( 0.04–0.05 )	—
Valve head radial runout	IN. & EX.	—	0.03 ( 0.001 )
Valve spring free length (IN. & EX.)	INNER	—	34.4 ( 1.35 )
	OUTER	—	40.1 ( 1.58 )
Valve spring tension (IN. & EX.)	INNER	7.5–8.9 kg ( 16.5–19.6 lbs ) at length 31 mm ( 1.2 in )	—
	OUTER	17.3–20.3 kg ( 38.1–44.8 lbs ) at length 33 mm ( 1.3 in )	—

### CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	36.090–36.130 ( 1.4528–1.4224 )	35.790 ( 1.4091 )
	EX.	35.980–36.020 ( 1.4165–1.4181 )	35.680 ( 1.4047 )
Camshaft journal oil clearance	0.032–0.066 ( 0.0013–0.0026 )		0.150 ( 0.0059 )

ITEM	STANDARD		LIMIT
Camshaft journal holder I.D.	Left side & Center side	25.012–25.025 ( 0.9847–0.9852 )	—
	Right side	20.012–20.025 ( 0.7879–0.7884 )	—
Camshaft journal O.D.	Left side & Center side	24.959–24.980 ( 0.9826–0.9835 )	—
	Right side	19.959–19.980 ( 0.7858–0.7866 )	—
Camshaft runout	—		0.10 ( 0.004 )
Cam chain 20-pitch length	—		129 ( 5.08 )
Rocker arm I.D.	IN. & EX.	12.000–12.018 ( 0.4724–0.4731 )	—
Rocker arm shaft O.D.	IN. & EX.	11.973–11.984 ( 0.4714–0.4718 )	—
Cylinder head distortion	—		0.05 ( 0.002 )
De-compression lever play	1–2 ( 0.04–0.08 )		—

**CYLINDER + PISTON + PISTON RING**

Unit: mm (in)

ITEM	STANDARD		LIMIT
Compression pressure	1 200–1 600 kPa 12.0–16.0 kg/cm <sup>2</sup> 170–227 psi		1 000 kPa 10 kg/cm <sup>2</sup> 142 psi
Piston to cylinder clearance	0.037–0.057 ( 0.0015–0.0022 )		0.120 ( 0.0047 )
Cylinder bore	105.000–105.015 ( 4.1339–4.1344 )		105.090 ( 4.1373 )
Piston diam.	104.950–104.970 ( 4.1319–4.1327 ) Measure at 20mm (0.79in) from the skirt end.		104.880 ( 4.1291 )
Cylinder distortion	—		0.05 ( 0.002 )
Piston ring free end gap	1st	R Approx. 12.5 ( 0.49 )	10.0 ( 0.39 )
	2nd	RN Approx. 11.2 ( 0.44 )	8.9 ( 0.35 )
Piston ring end gap	1st	0.40–0.55 ( 0.016–0.022 )	1.00 ( 0.04 )
	2nd	0.40–0.55 ( 0.016–0.022 )	1.00 ( 0.04 )
Piston ring to groove clearance	1st	—	0.18 ( 0.007 )
	2nd	—	0.15 ( 0.006 )
Piston ring groove width	1st	1.23–1.25 ( 0.048–0.049 )	—
	2nd	1.21–1.23 ( 0.047–0.048 )	—

## 7-27 SERVICING INFORMATION

ITEM	STANDARD		LIMIT
Piston ring groove width	Oil	2.81–2.83 ( 0.110–0.111 )	—
Piston ring thickness	1st	1.17–1.19 ( 0.046–0.047 )	—
	2nd	1.17–1.19 ( 0.046–0.047 )	—
Piston pin bore	26.002–26.008 ( 1.0237–1.0239 )		26.030 ( 1.0248 )
Piston pin O.D.	25.996–26.000 ( 1.0235–1.0236 )		25.980 ( 1.0228 )

### CONROD + CRANKSHAFT + BALANCER

Unit: mm (in)

ITEM	STANDARD		LIMIT
Conrod small end I.D.	26.006–26.014 ( 1.0239–1.0242 )		26.040 ( 1.0252 )
Conrod deflection	—		3.0 ( 0.12 )
Conrod big end side clearance	0.10–0.65 ( 0.004–0.026 )		1.00 ( 0.039 )
Conrod big end width	24.95–25.00 ( 0.982–0.984 )		—
Crankshaft runout	—		0.07 ( 0.003 )
Crankshaft web to web width	72.0 ± 0.1 ( 2.8 ± 0.004 )		—
Balancer chain 20-pitch length	—		158 ( 6.2 )

### OIL PUMP

ITEM	STANDARD		LIMIT
Oil pump reduction ratio	1.453 ( 62/32 × 35/20 × 15/35 )		—
Oil pressure (at 60°C, 140°F)	Above 80 kPa ( 0.8 kg/cm <sup>2</sup> , 11.4 psi ) Below 200 kPa ( 2.0 kg/cm <sup>2</sup> , 28.4 psi ) at 3 000 r/min.		—

### CLUTCH

Unit: mm (in)

ITEM	STANDARD		LIMIT
Clutch cable play	2–3 ( 0.08–0.12 )		—
Drive plate thickness	2.70–3.00 ( 0.106–0.118 )		2.40 ( 0.094 )
Drive plate claw width	15.6–15.8 ( 0.61–0.62 )		14.8 ( 0.58 )
Driven plate thickness	No.1	1.6 ( 0.06 )	—
	No.2	2.0 ( 0.08 )	—
Driven plate distortion	—		0.1 ( 0.004 )



ITEM	STANDARD	LIMIT
Clutch spring free length	—	33.4 ( 1.31 )

### TRANSMISSION + DRIVE CHAIN

Unit: mm (in) Except ratio

ITEM	STANDARD	LIMIT
Primary reduction ratio	1.937 ( 62/32 )	—
Final reduction ratio	3.200 ( 48/15 )	—
Gear ratios	Low	2.461 ( 32/13 )
	2nd	1.578 ( 30/19 )
	3rd	1.200 ( 24/20 )
	4th	0.956 ( 22/23 )
	Top	0.800 ( 20/25 )
Shift fork to groove clearance	0.10–0.30 ( 0.004–0.012 )	0.50 ( 0.020 )
Shift fork groove width	5.5–5.6 ( 0.22–0.23 )	—
Shift fork thickness	5.3–5.4 ( 0.20–0.21 )	—
Drive chain	Type	DAIDO: D.I.D.520VL-2
	Links	116 links
	20-pitch length	—
		319.4 ( 12.57 )
Drive chain slack	35–45 ( 1.4–1.8 )	—

### CARBURETOR

ITEM	SPECIFICATION		
	44B00	44B30	44B60
I.D.No.	44B00	44B30	44B60
Carburetor type	MIKUNI BST33SS	←	←
Bore size	33 mm ( 1.3 in )	←	←
Idle r/min.	1 300 ± 100 r/min.	1300 <sup>+100</sup> / <sub>-50</sub> r/min.	1300 ± 100 r/min.
Float height	14.6 ± 1.0 mm ( 0.57 ± 0.04 in )	←	←
Main jet (M.J.)	#120	←	←
Main air jet (M.A.J.)	0.6 mm	←	←
Jet needle (J.N.)	5E53-3rd	←	←
Needle jet (N.J.)	O-4	←	←
Throttle valve (Th.V.)	#100	←	←
Pilot jet (P.J.)	#17.5	←	←
By-pass (B.P.)	#10.8, #20.8, #30.8 mm	←	←
Pilot outlet (P.O.)	0.8 mm	←	←
Valve seat (V.S.)	1.5 mm	←	←
Starter jet (G.S.)	#65	←	←

## 7-29 SERVICING INFORMATION

ITEM		SPECIFICATION		
Pilot screw	(P.S.)	2 <sup>1</sup> / <sub>2</sub> turns out (PRE-SET)	2 <sup>5</sup> / <sub>8</sub> turns out (PRE-SET)	2 <sup>1</sup> / <sub>2</sub> turns out (PRE-SET)
Pilot air jet	(P.A.J.)	1.3 mm	1.45 mm	1.3 mm
Throttle cable play		0.5–1.0 mm ( 0.02–0.04 in )	←	←

## ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Ignition timing		5° B.T.D.C. Below 2 200 r/min. and 28° B.T.D.C. Above 4 300 r/min.		
Spark plug	Type	NGK: DP9EA-9		E-34
		NGK: DPR9EA-9		E-04,18,22,28, 75 and 77.
	Gap	0.8–0.9 ( 0.031–0.035 )		
Spark performance		Over 8 (0.3) at 1 atm.		
Ignition coil resistance	Primary	⊕ tap–Ground 0–1 Ω		( × 1 Ω range )
	Secondary	⊕ tap–Plug cap 10–17 kΩ		( × 1 kΩ range )
Magneto coil resistance	Pick-up	O–G 175–265 Ω		(×100 Ω range )
	Power source	B/R–R/B 230–355 Ω		(×100 Ω range )
	Charging	Y–Y 0.5–0.85 Ω		( × 1 Ω range )
Generator no-load performance (when engine is cold)		More than 75 V (AC) at 5 000 r/min.		
Regulated voltage		Above 14.0–15.5 V at 5 000 r/min.		
Battery	Type designation	YB14L-B2 or FB14L-B2		
	Capacity	12 V 50.4 kC (14 Ah)/10 HR		
	Standard electrolyte S.G.	1.28 at 20°C (68°F)		
Fuse size	Main	15 A		

## WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	60
	LO	55
Tail/Brake light		5/21
Turn signal light		21
Tachometer light		3.4
Speedometer light		3.4
Turn signal indicator light		1.7
High beam indicator light		1.7
Neutral indicator light		1.7

**BRAKE + WHEEL**

Unit: mm (in)

ITEM	STANDARD		LIMIT
Master cylinder bore	11.000–11.043 ( 0.4331–0.4348 )		—
Master cylinder piston diam.	10.850–10.908 ( 0.4272–0.4294 )		—
Caliper cylinder bore	32.030–32.106 ( 1.2610–1.2640 )		—
Caliper piston diam.	31.995–32.000 ( 1.2596–1.2598 )		—
Brake disc thickness	4.3–4.7 ( 0.17–0.19 )		4.0 ( 0.16 )
Brake disc runout	—		0.3 ( 0.01 )
Rear brake pedal free travel	20–30 ( 0.8–1.2 )		—
Rear brake pedal height	10 ( 0.4 )		—
Brake drum I.D.	—		160.7 ( 6.33 )
Brake lining thickness	—		1.5 ( 0.06 )
Wheel rim runout	Axial	—	2.0 ( 0.08 )
	Radial	—	2.0 ( 0.08 )
Wheel axle runout	Front	—	0.25 ( 0.010 )
	Rear	—	0.25 ( 0.010 )
Tire size	Front	90/90-21 54S	—
	Rear	130/80-17 65S	—
Tire tread depth	Front	—	3.0 ( 0.12 )
	Rear	—	3.0 ( 0.12 )

**SUSPENSION**

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	240 ( 9.4 )	—	
Front fork spring free length	—	553 ( 21.8 )	
Front fork oil level	179 ( 7.0 )	—	
Rear wheel travel	220 ( 8.7 )	—	
Swingarm pivot shaft runout	—	0.3 ( 0.01 )	

**TIRE PRESSURE**

COLD INFLATION TIRE PRESSURE	SOLO RIDING			DUAL RIDING		
	kPa	kg/cm <sup>2</sup>	psi	kPa	kg/cm <sup>2</sup>	psi
FRONT	175	1.75	25	200	2.00	29
REAR	200	2.00	29	250	2.50	36

**FUEL + OIL**

ITEM	SPECIFICATION		NOTE
Fuel type	Use only unleaded or low-lead type gasoline of at least 85-95 pump octane ( $\frac{R+M}{2}$ method) or 89 octane or higher rated by the Research Method.		E-28
	Gasoline used should be graded 85–95 octane (Research method) or higher. An unleaded or low-lead type gasoline is recommended.		E-04,18,22,34,75 and 77
Fuel tank including reserve	29 L ( 7.7/6.4 US/Imp gal )		
reserve	7.0 L ( 7.4/6.2 US/Imp qt )		
Engine oil type	SAE 10W/40		
Engine oil capacity	Change	2 600 ml ( 2.7/2.3 US/Imp qt )	
	Filter change	2 700 ml ( 2.9/2.4 US/Imp qt )	
	Overhaul	3 400 ml ( 3.6/3.0 US/Imp qt )	
Front fork oil type	Fork oil #10		
Front fork oil capacity (each leg)	467 ml ( 15.8/16.4 US/Imp oz )		
Brake fluid type	SAE J1703, DOT3 or DOT4		

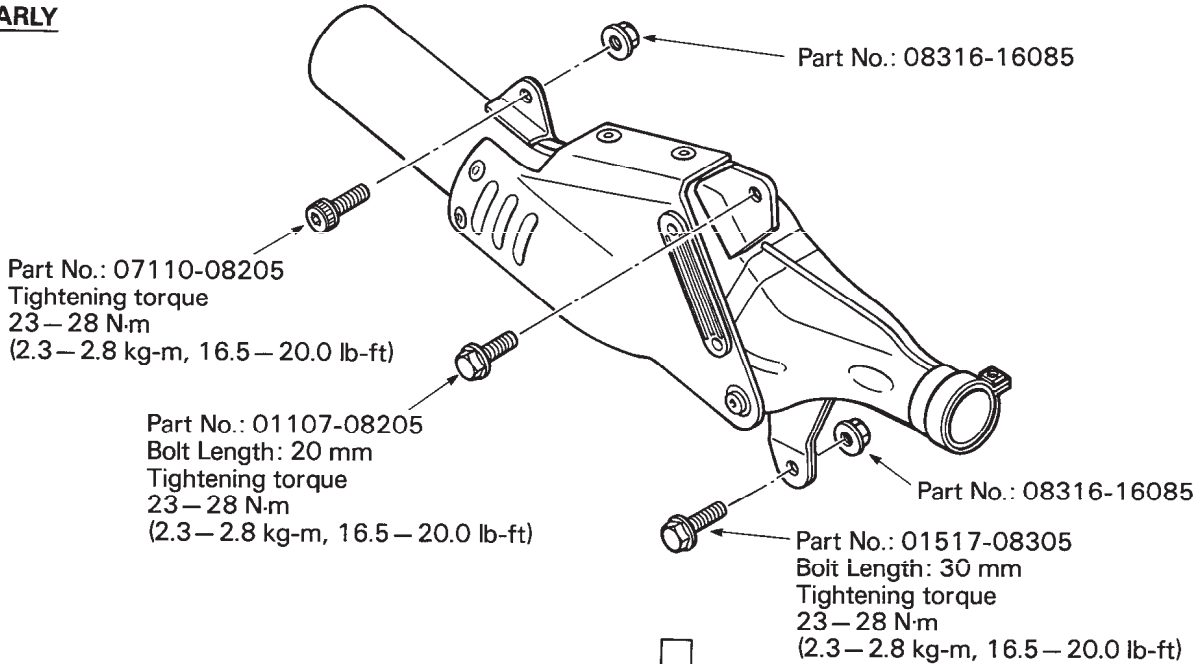
# APPENDIX (INFORMATION OF THE '88-MODEL)

## CHANGE OF THE MUFFLER MOUNTING BOLT

The length of muffler mounting bolts has been changed since the following frame number. In accordance with the above change their tightening torque and nuts have been changed as follows.

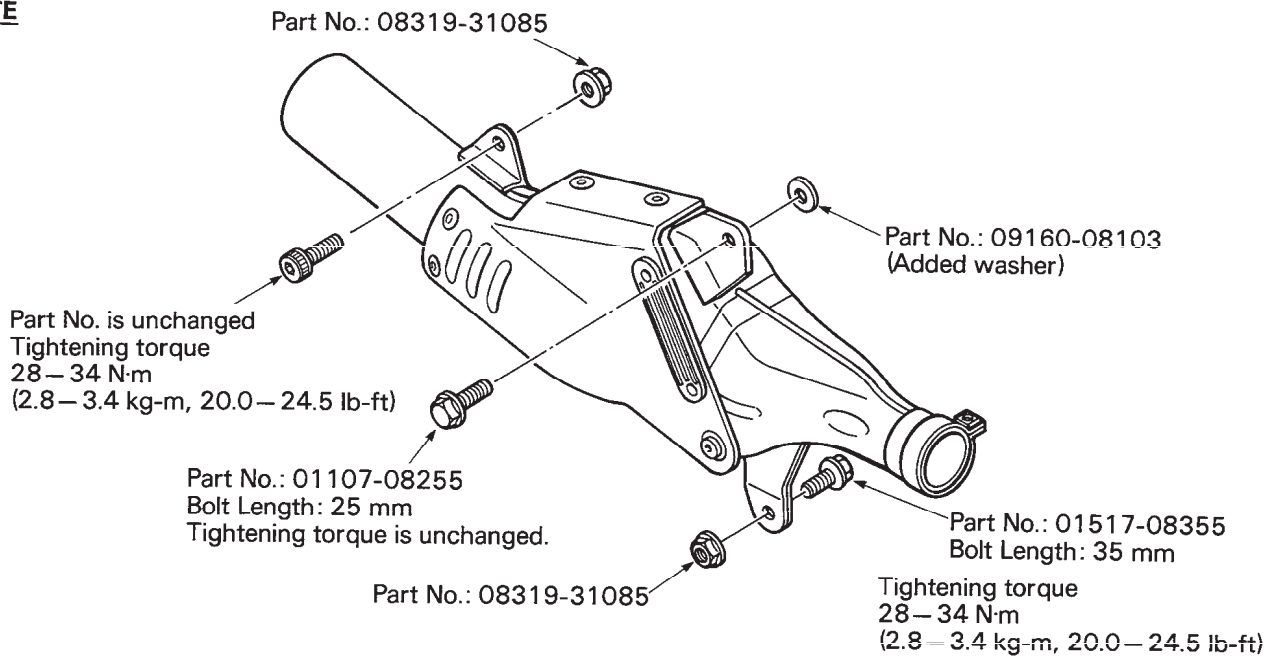
**FRAME NO.: VJ21A-100056 ~**

### EARLY



**APP.**

### LATE



The installing direction has been changed.

**PARTS AVAILABILITY :** Both EARLY and LATE type parts are available.

**INTERCHANGEABILITY :** EARLY  $\overset{\times}{\leftarrow \rightarrow}$  LATE  
 $\leftarrow \bigcirc \rightarrow$



# DR750SK ('89-MODEL)

*This chapter describes service data and service specifications which differ from those of the DR750SJ ('88-model).*

**NOTE:**

*Any differences between "J"('88-model) and "K"('89-model) in specifications and service data are clearly indicated with the asterisk mark (\*). Refer to the chapters 1 through 7 for details which are not given in this chapter.*

## CONTENTS

<b>SPECIFICATIONS</b> .....	<b>8- 1</b>
<b>SERVICE DATA</b> .....	<b>8- 3</b>
<b>TIGHTENING TORQUE</b> .....	<b>8-10</b>
<b>CHANGES</b> .....	<b>8-12</b>
<b>REAR WHEEL AND REAR BRAKE</b> .....	<b>8-12</b>
<b>STARTER MOTOR LEAD WIRE ROUTING</b> .....	<b>8-14</b>
<b>REAR BRAKE HOSE ROUTING</b> .....	<b>8-15</b>
<b>CARBURETOR AIR VENT HOSE ROUTING</b> .....	<b>8-16</b>

## SPECIFICATIONS

### DIMENSIONS AND DRY MASS

Overall length	2 255 mm (88.8 in)
Overall width	945 mm (37.2 in)
Overall height	1 295 mm (51.0 in)
Wheelbase	1 510 mm (59.4 in)
Ground clearance	255 mm (10.0 in)
Dry mass	*182 kg (401 lbs)

### ENGINE

Type	Four-stroke, air-cooled with SACS, OHC
Number of cylinders	1
Bore	105 mm (4.134 in)
Stroke	84 mm (3.307 in)
Piston displacement	727 cm <sup>3</sup> (44.4 cu. in)
Compression ratio	9.5 : 1
Carburetor	MIKUNI BST33SS, two
Air cleaner	Polyester fiber element
Starter system	Electric starter
Lubrication system	Wet sump

### TRANSMISSION

Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction	1.937 (62/32)
Final reduction	3.200 (48/15)
Gear ratios, Low	2.461 (32/13)
2nd	1.578 (30/19)
3rd	1.200 (24/20)
4th	0.956 (22/23)
Top	0.800 (20/25)
Drive chain	DAIDO D.I.D. 520VL. 2, 116 links

**ELECTRICAL**

Ignition type .....	SUZUKI CDI
Ignition timing .....	5° B.T.D.C. Below 2 200 r/min and 28° B.T.D.C. Above 4 300 r/min
Spark plug .....	NGK DPR9EA-9
Battery .....	12V 50.4 kC (14 Ah)/10 HR
Generator .....	Three-phase A.C. generator
Fuse .....	15A

**CHASSIS**

Front suspension .....	Telescopic, coil spring, oil dampened
Rear suspension .....	Full-floating suspension system, gas/oil dampened, spring pre-load fully adjustable
Steering angle .....	43° (Right & Left)
Caster .....	61° 40'
Trail .....	136 mm (5.35 in)
Turning radius .....	2.3 m (7.5 ft)
Front brake .....	Disc brake, hydraulically operated
Rear brake .....	*Disc brake, hydraulically operated
Front tire size .....	90/90-21 54S
Rear tire size .....	130/80-17 65S

**CAPACITIES**

Fuel tank, including reserve .....	29 L (7.7/6.4 US/Imp gal)
reserve .....	7.0 L (7.4/6.2 US/Imp qt)
Engine oil, oil change .....	2.6 L (2.7/2.3 US/Imp qt)
oil change with filter change .....	2.7 L (2.9/2.4 US/Imp qt)
Front fork oil .....	*466 ml (15.8/16.4 US/Imp oz)

Asterisk mark (\*) indicates the new "K" model specifications.  
These specifications are subject to change without notice.

**SERVICE DATA****VALVE + GUIDE**

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	40 (1.6)	—
	EX.	34 (1.3)	—
Valve lift	IN.	8.7 (0.34)	—
	EX.	8.5 (0.33)	—
Valve clearance (when engine is cold)	IN. & EX.	0.05 – 0.10 (0.002 – 0.004)	—
Valve guide to valve stem clearance	IN.	0.025 – 0.055 (0.0010 – 0.0022)	0.35 (0.014)
	EX.	0.040 – 0.070 (0.0016 – 0.0028)	0.35 (0.014)
Valve guide I.D.	IN. & EX.	7.000 – 7.015 (0.2756 – 0.2762)	—
Valve stem O.D.	IN.	6.960 – 6.975 (0.2740 – 0.2746)	—
	EX.	6.945 – 6.960 (0.2734 – 0.2740)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
Valve stem end length	IN. & EX.	—	2.4 (0.09)
Valve seat width	IN. & EX.	1.0 – 1.2 (0.04 – 0.05)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length (IN. & EX.)	INNER	—	34.4 (1.35)
	OUTER	—	40.1 (1.58)
Valve spring tension (IN. & EX.)	INNER	7.5 – 8.9 kg (16.5 – 19.6 lbs) at length 31 mm (1.2 in)	—
	OUTER	17.3 – 20.3 kg (38.1 – 44.8 lbs) at length 33 mm (1.3 in)	—

**CAMSHAFT + CYLINDER HEAD**

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	36.090–36.130 (1.4528–1.4224)	35.790 (1.4091)
	EX.	35.980–36.020 (1.4165–1.4181)	35.680 (1.4047)
Camshaft journal oil clearance	0.032–0.066 (0.0013–0.0026)		0.150 (0.0059)
Camshaft journal holder I.D.	Left side & Center side	25.012–25.025 (0.9847–0.9852)	—
	Right side	20.012–20.025 (0.7879–0.7884)	—
Camshaft journal O.D.	Left side & Center side	24.959–24.980 (0.9826–0.9835)	—
	Right side	19.959–19.980 (0.7858–0.7866)	—
Camshaft runout	—		0.10 (0.004)
Cam chain 20-pitch length	—		129 (5.08)
Rocker arm I.D.	IN. & EX.	12.000–12.018 (0.4724–0.4731)	—
Rocker arm shaft O.D.	IN. & EX.	11.973–11.984 (0.4714–0.4718)	—
Cylinder head distortion	—		0.05 (0.002)
De-compression lever play	1–2 (0.04–0.08)		—

**CYLINDER + PISTON + PISTON RING**

Unit: mm (in)

ITEM	STANDARD		LIMIT
Compression pressure	1 200–1 600 kPa 12–16 kg/cm <sup>2</sup> 170–227 psi		1 000 kPa 10 kg/cm <sup>2</sup> 142 psi
Piston to cylinder clearance	0.037–0.057 (0.0015–0.0022)		0.120 (0.0047)
Cylinder bore	105.000–105.015 (4.1339–4.1344)		105.090 (4.1373)
Piston diam.	104.950–104.970 (4.1319–4.1327) Measure at 20 mm (0.79 in) from the skirt end.		104.880 (4.1291)
Cylinder distortion	—		0.05 (0.002)
Piston ring free end gap	1st	R	Approx. 12.5 (0.49)
	2nd	R	Approx. 11.2 (0.44)
Piston ring end gap	1st	0.40–0.55 (0.016–0.022)	
	2nd	0.40–0.55 (0.016–0.022)	



ITEM	STANDARD		LIMIT
Piston ring to groove clearance	1st	—	0.18 (0.007)
	2nd	—	0.15 (0.006)
Piston ring groove width	1st	1.23 – 1.25 (0.048 – 0.049)	—
	2nd	1.21 – 1.23 (0.047 – 0.048)	—
	Oil	2.81 – 2.83 (0.110 – 0.111)	—
Piston ring thickness	1st	1.17 – 1.19 (0.046 – 0.047)	—
	2nd	1.17 – 1.19 (0.046 – 0.047)	—
Piston pin bore	26.002 – 26.008 (1.0237 – 1.0239)		26.030 (1.0248)
Piston pin O.D.	25.996 – 26.000 (1.0235 – 1.0236)		25.980 (1.0228)

**CONROD + CRANKSHAFT + BALANCER**

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	26.006 – 26.014 (1.0239 – 1.0242)	26.040 (1.0252)
Conrod deflection	—	3.0 (0.12)
Conrod big end side clearance	0.10 – 0.65 (0.004 – 0.026)	1.00 (0.039)
Conrod big end width	24.95 – 25.00 (0.982 – 0.984)	—
Crankshaft runout	—	0.07 (0.003)
Crankshaft web to web width	72.0 ± 0.1 (2.8 ± 0.004)	—
Balancer chain 20-pitch length	—	158 (6.2)

**OIL PUMP**

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.453 (62/32 x 35/20 x 15/35)	—
Oil pressure (at 60°C, 140°F)	Above 80 kPa (0.8 kg/cm <sup>2</sup> , 11.4 psi) Below 200 kPa (2.0 kg/cm <sup>2</sup> , 28.4 psi) at 3 000 r/min.	—

**CLUTCH**

Unit: mm (in)

ITEM	STANDARD	LIMIT
Clutch cable play	2 – 3 (0.08 – 0.12)	—
Drive plate thickness	2.70 – 3.00 (0.106 – 0.118)	2.40 (0.094)

		Unit: mm (in)	
ITEM	STANDARD		LIMIT
Drive plate claw width	15.6 – 15.8 (0.61 – 0.62)		14.8 (0.58)
Driven plate thickness	No. 1	1.6 (0.06)	—
	No. 2	2.0 (0.08)	—
Driven plate distortion	—		0.1 (0.004)
Clutch spring free length	—		33.4 (1.31)

**TRANSMISSION + DRIVE CHAIN**

Unit: mm (in) Except ratio

ITEM		STANDARD	LIMIT
Primary reduction ratio		1.937 (62/32)	—
Final reduction ratio		3.200 (48/15)	—
Gear ratios	Low	2.461 (32/13)	—
	2nd	1.578 (30/19)	—
	3rd	1.200 (24/20)	—
	4th	0.956 (22/23)	—
	Top	0.800 (20/25)	—
Shift fork to groove clearance		0.10 – 0.30 (0.004 – 0.012)	0.50 (0.020)
Shift fork groove width		5.5 – 5.6 (0.22 – 0.23)	—
Shift fork thickness		5.3 – 5.4 (0.20 – 0.21)	—
Drive chain	Type	DAIDO: D.I.D. 520VL.2	—
	Links	116 links	—
	20-pitch length	—	319.4 (12.57)
Drive chain slack		35 – 45 (1.4 – 1.8)	—

**CARBURETOR**

ITEM	SPECIFICATION				
	44B00	44B30	44B60	44B70	44B80
I.D. No.	44B00	44B30	44B60	44B70	44B80
Carburetor type	MIKUNI BST33SS	←	←	←	←
Bore size	33 mm (1.3 in)	←	←	←	←
Idle r/min.	1 300 ± 100 r/min	1 300 <sup>+100</sup> / <sub>-50</sub> r/min	1 300 ± 100 r/min	←	←
Float height	14.6 ± 1.0 mm (0.57 ± 0.04 in)	←	←	←	←
Main jet (M.J.)	#120	←	←	←	←
Main air jet (M.A.J.)	0.6 mm	←	←	←	←
Jet needle (J.N.)	5E53-3rd	←	←	←	←

8-7 DR750SK('89-MODEL)

ITEM		SPECIFICATION				
Needle jet	(N.J.)	0-4	←	←	←	←
Throttle valve	(Th.V.)	#100	←	←	←	←
Pilot jet	(P.J.)	#17.5	←	←	←	←
By-pass	(B.P.)	#1 0.8, #2 0.8, #3 0.8 mm	←	←	←	←
Pilot outlet	(P.O.)	0.8 mm	←	←	←	←
Valve seat	(V.S.)	1.5 mm	←	←	←	←
Starter jet	(G.S.)	#65	←	←	←	←
Pilot screw	(P.S.)	2½ turns out (PRE-SET)	2 5/8 turns out (PRE-SET)	2½ turns out (PRE-SET)	←	←
Pilot air jet	(P.A.J.)	1.3 mm	1.45 mm	1.3 mm	←	←
Throttle cable play		0.5 – 1.0 mm (0.02 – 0.04 in)	←	←	←	←

**ELECTRICAL**

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Ignition timing		5° B.T.D.C. Below 2 200 r/min. and 28° B.T.D.C. Above 4 300 r/min		
Spark plug	Type	NGK: DPR9EA-9		DPR8EA-9 (OPT. Hot type)
	Gap	0.8 – 0.9 (0.031 – 0.035)		
Spark performance		Over 8 (0.3) at 1 atm.		
Ignition coil resistance	Primary	⊕ tap – Ground 0 – 1 Ω		(x 1 Ω range)
	Secondary	⊕ tap – Plug cap 10 – 17 k Ω		(x 1k Ω range)
Magneto coil resistance	Pick-up	0 – G 175 – 265 Ω		(x 100 Ω range)
	Power source	B/R – R/B 230 – 355 Ω		(x 100 Ω range)
	Charging	Y – Y 0.5 – 0.85 Ω		(x 1 Ω range)
Generator no-load performance (when engine is cold)		More than 75V (AC) at 5 000 r/min.		
Regulated voltage		Above 14.0 – 15.5V at 5 000 r/min.		
Battery	Type designation	YB14L-B2 or FB14L-B2		
	Capacity	12V 50.4kC (14Ah)/10HR		
	Standard electrolyte S.G.	1.28 at 20°C (68°F)		
Fuse size	Main	15 A		

**WATTAGE**

Unit: W

ITEM		SPECIFICATION
Headlight	HI	60
	LO	55
Tail/Brake light		5/21

Unit: W

ITEM	SPECIFICATION
Turn signal light	21
Tachometer light	3.4
Speedometer light	3.4
Turn signal indicator light	1.7
High beam indicator light	1.7
Neutral indicator light	1.7

**BRAKE + WHEEL**

Unit: mm (in)

ITEM	STANDARD		LIMIT
Master cylinder bore	Front & Rear	14.000 – 14.043 (0.5512 – 0.5529)	—
Master cylinder piston diam.	Front & Rear	13.957 – 13.984 (0.5495 – 0.5506)	—
Caliper cylinder bore	Front	32.030 – 32.106 (1.2610 – 1.2640)	—
	* Rear	27.000 – 27.076 (1.0630 – 1.0660)	—
Caliper piston diam.	Front	31.995 – 32.000 (1.2596 – 1.2598)	—
	* Rear	26.920 – 26.970 (1.0598 – 1.0618)	—
Brake disc thickness	Front	4.3 – 4.7 (0.17 – 0.19)	4.0 (0.16)
	* Rear	5.8 – 6.2 (0.23 – 0.24)	5.5 (0.21)
Brake disc runout	—		0.3 (0.01)
Rear brake pedal height	10 (0.4)		—
Wheel rim runout (Front & Rear)	Axial	—	2.0 (0.08)
	Radial	—	2.0 (0.08)
Wheel axle runout	Front	—	0.25 (0.010)
	Rear	—	0.25 (0.010)
Tire size	Front	90/90-21 54S	—
	Rear	130/80-17 65S	—
Tire tread depth	Front	—	3.0 (0.12)
	Rear	—	3.0 (0.12)

Asterisk mark (\*) indicates the new "K" model specifications.

**SUSPENSION**

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	240 (9.4)	—	
Front fork spring free length	—	553 (21.8)	
Front fork oil level	* 175 (6.9)	—	Compress inner tube without spring
Rear wheel travel	220 (8.7)	—	
Swingarm pivot shaft runout	—	0.3 (0.01)	

**TIRE PRESSURE**

COLD INFLATION TIRE PRESSURE	SOLO RIDING			DUAL RIDING		
	kPa	kg/cm <sup>2</sup>	psi	kPa	kg/cm <sup>2</sup>	psi
FRONT	175	1.75	25	200	2.00	29
REAR	200	2.00	29	250	2.50	36

**FUEL + OIL**

ITEM	SPECIFICATION	NOTE
Fuel type	Use only unleaded or low-lead type gasoline of at least 85-95 pump octane ( $\frac{R+M}{2}$ method) or 89 octane or higher rated by the Research Method.	For E-28 model
	Gasoline used should be graded 85-95 octane (Research method) or higher. An unleaded or low-lead type gasoline is recommended.	For the other models
Fuel tank including reserve	29 L (7.7/6.4 US/Imp gal)	
reserve	7.0 L (7.4/6.2 US/Imp qt)	
Engine oil type	SAE 10W/40	
Engine oil capacity	Change	2 600 ml (2.7/2.3 US/Imp qt)
	Filter change	2 700 ml (2.9/2.4 US/Imp qt)
	Overhaul	3 400 ml (3.6/3.0 US/Imp qt)
Front fork oil type	Fork oil # 10	
Front fork oil capacity (each leg)	* 466 ml (15.8/16.4 US/Imp oz)	
Brake fluid type	* DOT 4	

Asterisk mark (\*) indicates the new "K" model specifications.



## TIGHTENING TORQUE

### ENGINE

ITEM	N·m	kg-m	lb-ft
Cylinder head cover bolt	8 – 12	0.8 – 1.2	6.0 – 8.5
Camshaft sprocket bolt	12 – 16	1.2 – 1.6	8.5 – 11.5
Cylinder head nut 10 mm Diam.	35 – 40	3.5 – 4.0	25.5 – 29.0
Cylinder head nut and bolt 8 mm Diam.	18 – 22	1.8 – 2.2	13.0 – 16.0
Cylinder base nut and bolt	8 – 12	0.8 – 1.2	6.0 – 8.5
Cam chain tension adjuster fitting bolt	8 – 12	0.8 – 1.2	6.0 – 8.5
Magneto rotor bolt	140 – 160	14.0 – 16.0	101.5 – 115.5
Starter clutch allen bolt	23 – 28	2.3 – 2.8	16.5 – 20.0
Balancer drive sprocket ring nut	60 – 100	6.0 – 10.0	43.5 – 72.5
Balancer driven sprocket nut (Front and Rear)	35 – 43	3.5 – 4.3	25.5 – 31.0
Balancer chain tension adjuster shaft nut	45 – 70	4.5 – 7.0	32.5 – 50.5
Balancer chain tension adjuster allen bolt	15 – 20	1.5 – 2.0	11.0 – 14.5
Primary drive gear nut	90 – 110	9.0 – 11.0	65.0 – 79.5
Clutch spring mounting bolt	11 – 13	1.1 – 1.3	8.0 – 9.5
Clutch sleeve hub nut	40 – 60	4.0 – 6.0	29.0 – 43.0
Gearshift arm stopper	15 – 23	1.5 – 2.3	11.0 – 16.5
Engine oil drain plug	18 – 23	1.8 – 2.3	13.5 – 16.5
Oil filter cap bolt and oil sump filter cap bolt	6 – 8	0.6 – 0.8	4.5 – 6.0
Engine sprocket bolt	10 – 12	1.0 – 1.2	7.0 – 8.5
Engine mounting bolt 8 mm Diam.	37 – 45	3.7 – 4.5	27.0 – 32.5
Engine mounting bolt 10 mm Diam.	70 – 88	7.0 – 8.8	50.5 – 63.5
Exhaust pipe bolt	23 – 28	2.3 – 2.8	16.5 – 20.0
Muffler connection bolt	12 – 18	1.2 – 1.8	8.5 – 13.5
Muffler mounting bolt (Front and Rear)	28 – 34	2.8 – 3.4	20.0 – 24.5
(Middle)	23 – 28	2.3 – 2.8	16.5 – 20.0

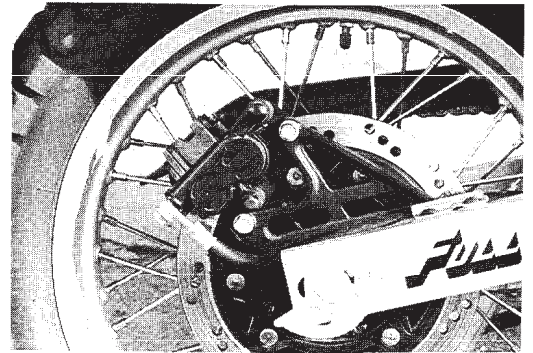
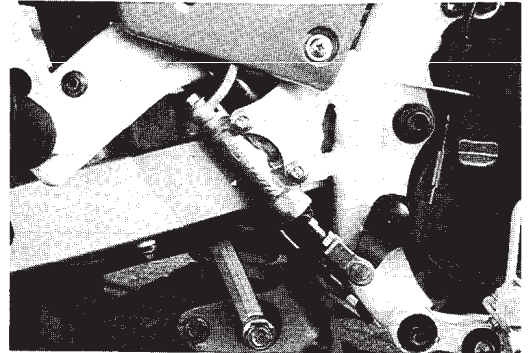
**CHASSIS**

ITEM	N·m	kg·m	lb·ft
Front axle nut	40 – 58	4.0 – 5.8	29.0 – 42.0
Front axle pinch bolt	*18 – 28	*1.8 – 2.8	*13.0 – 20.0
Front fork damper rod bolt	34 – 46	3.4 – 4.6	24.5 – 33.5
Front fork lower clamp bolt	*18 – 28	*1.8 – 2.8	*13.0 – 20.0
Front fork upper clamp bolt	*22 – 35	*2.2 – 3.5	*16.0 – 25.5
Front fork cap bolt	15 – 30	1.5 – 3.0	11.0 – 21.5
Steering stem head nut	60 – 100	6.0 – 10.0	43.5 – 72.5
Handlebar clamp bolt	12 – 20	1.2 – 2.0	8.5 – 14.5
Front brake master cylinder mounting bolt	5 – 8	0.5 – 0.8	3.5 – 6.0
Brake caliper mounting bolt	*18 – 28	*1.8 – 2.8	*13.0 – 20.0
Rear brake master cylinder mounting bolt	*8 – 12	*0.8 – 1.2	*6.0 – 8.5
Brake hose union bolt	*15 – 20	*1.5 – 2.0	*11.0 – 14.5
Air bleeder valve	6 – 9	0.6 – 0.9	4.5 – 6.5
Disc mounting bolt	18 – 28	1.8 – 2.8	13.0 – 20.0
Swingarm pivot nut	55 – 85	5.5 – 8.5	40.0 – 61.5
Front footrest bolt	50 – 70	5.0 – 7.0	36.0 – 50.5
Shock absorber mounting nut (Upper & Lower)	*48 – 72	*4.8 – 7.2	*34.5 – 52.0
Rear cushion lever mounting nut	60 – 100	6.0 – 10.0	43.5 – 72.5
Rear cushion rod nut (Upper)	100 – 120	10.0 – 12.0	72.5 – 87.0
Rear cushion rod nut (Lower)	80 – 120	8.0 – 12.0	58.0 – 87.0
Rear axle nut	55 – 88	5.5 – 8.8	40.0 – 63.5
Rear sprocket mounting nut	50 – 70	5.0 – 7.0	36.0 – 50.5
Rear brake rod lock nut	15 – 20	1.5 – 2.0	11.0 – 14.5
Spoke nipple	4 – 5	0.4 – 0.5	3.0 – 3.5

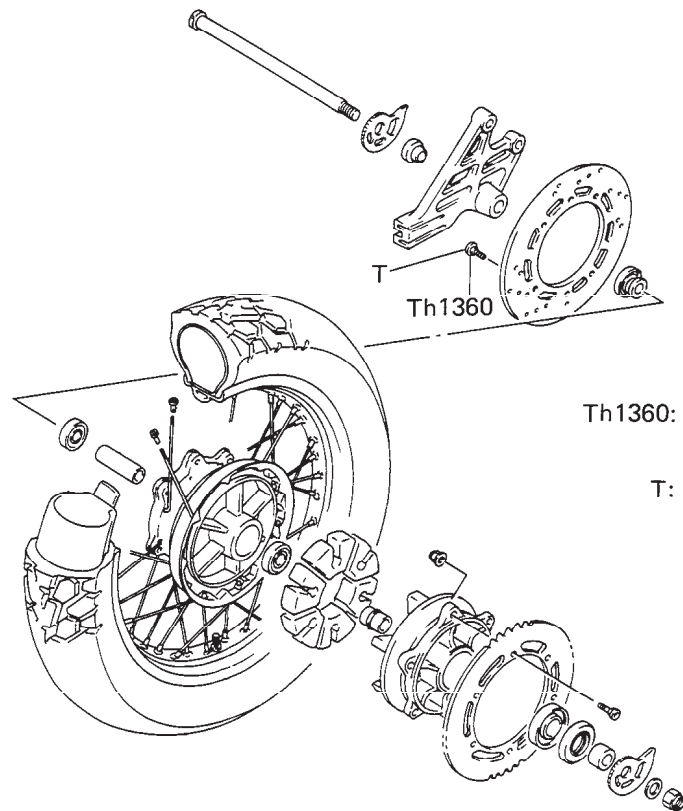
Asterisk mark (\*) indicates the new "K" model specifications.

## CHANGES

The rear brake system has been changed from drum brake type to disc brake type.



## REAR WHEEL AND REAR BRAKE

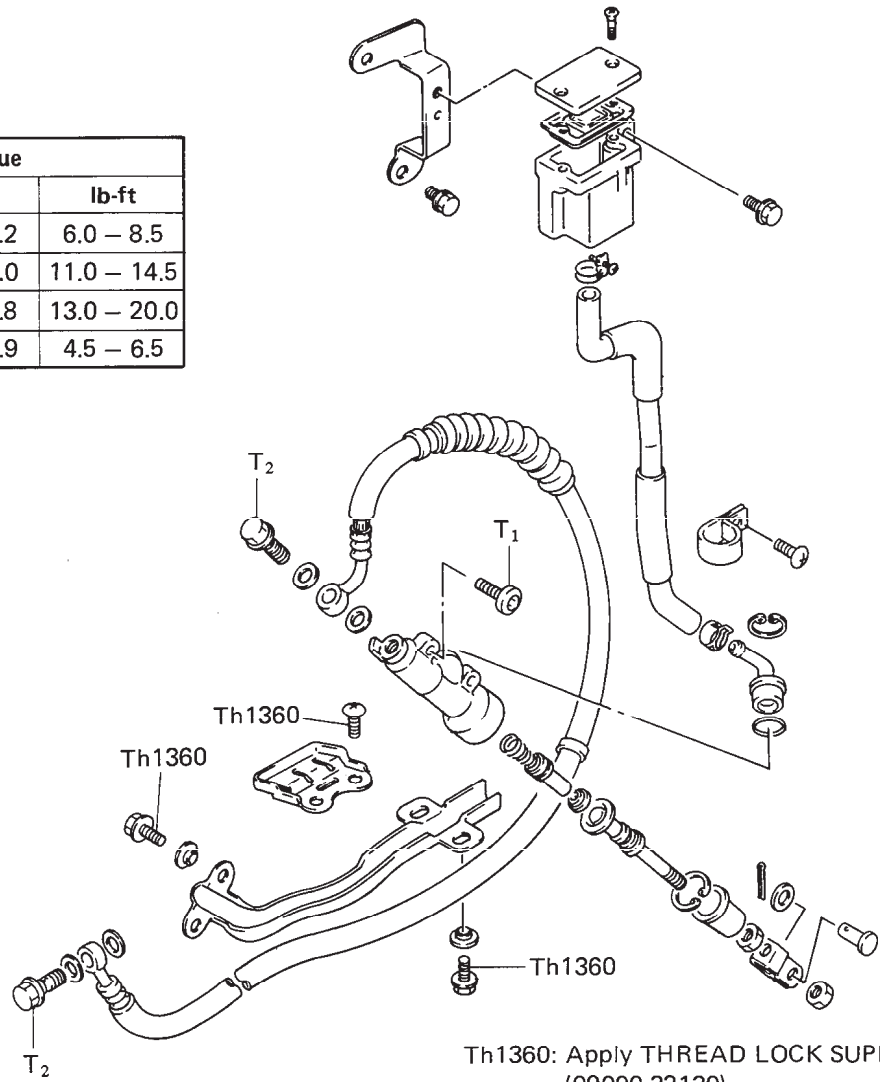


Th1360: Apply THREAD LOCK  
SUPER "1360" (99000-32130)

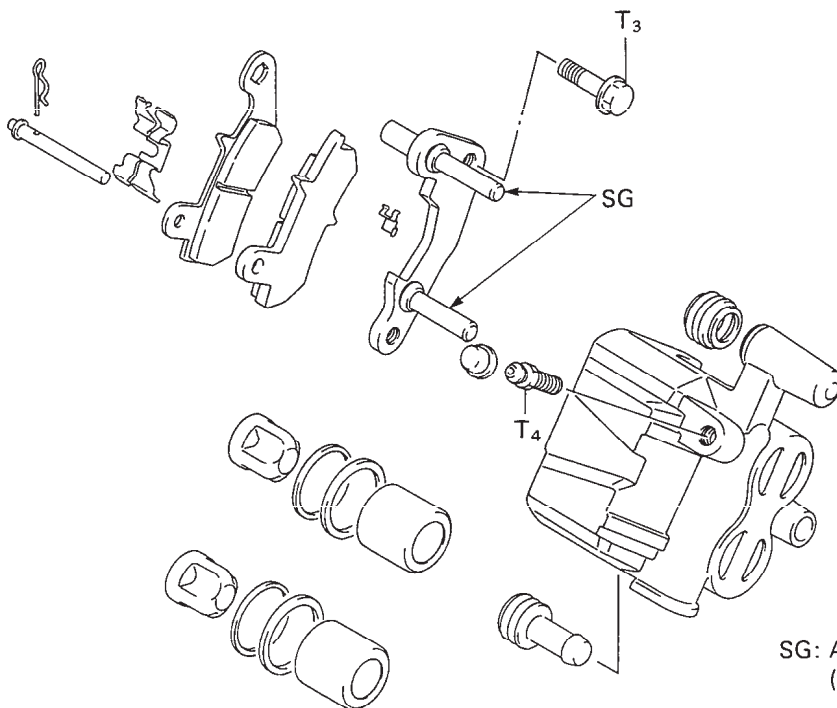
T: 18 – 28 N·m (1.8 – 2.8 kg-m,  
13.0 – 20.0 lb-ft)

8-13 DR750SK('89-MODEL)

Tightening torque			
ITEM	N-m	kg-m	lb-ft
T <sub>1</sub>	8 - 12	0.8 - 1.2	6.0 - 8.5
T <sub>2</sub>	15 - 20	1.5 - 2.0	11.0 - 14.5
T <sub>3</sub>	18 - 28	1.8 - 2.8	13.0 - 20.0
T <sub>4</sub>	6 - 9	0.6 - 0.9	4.5 - 6.5

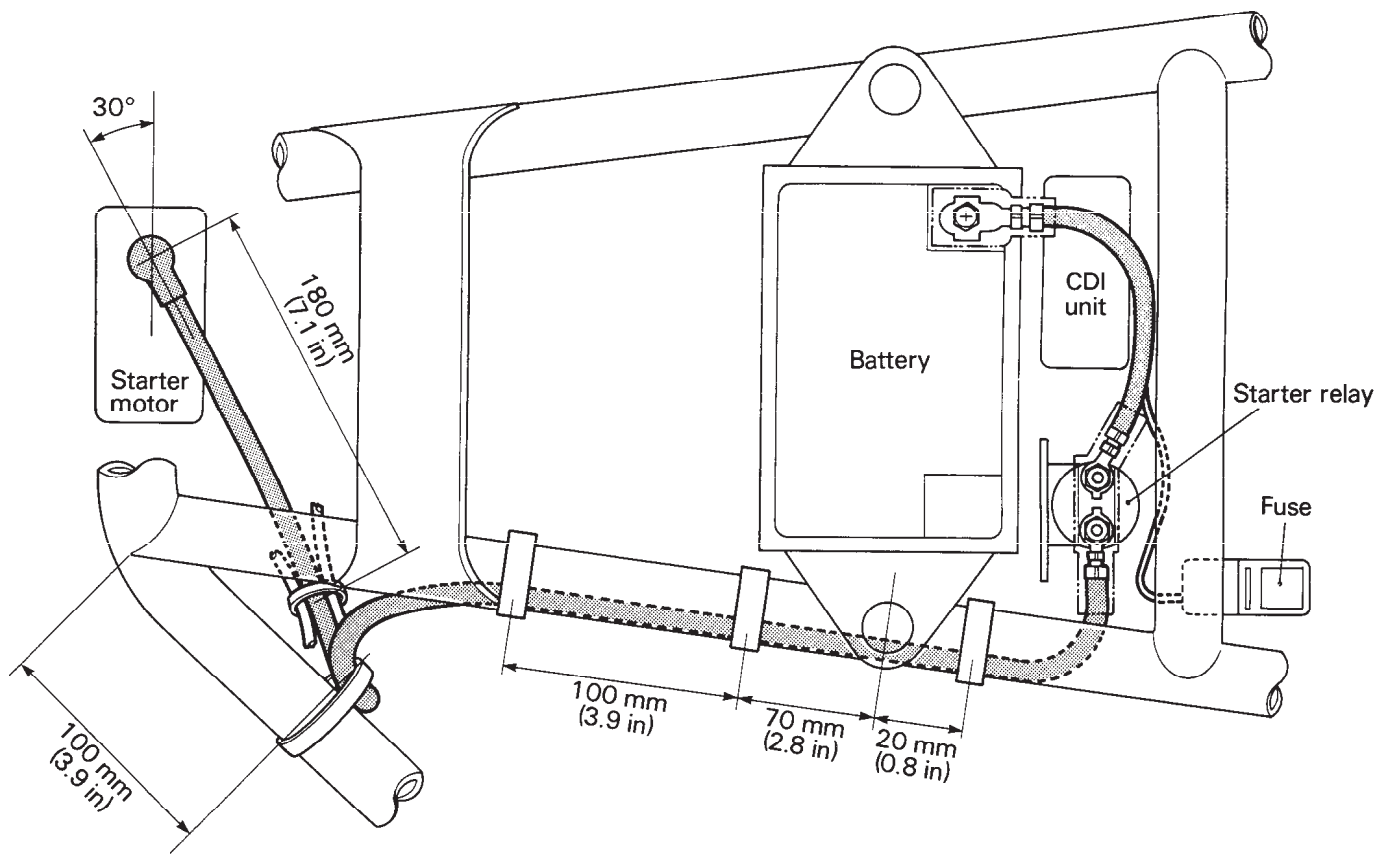


Th1360: Apply THREAD LOCK SUPER "1360".  
(99000-32130)

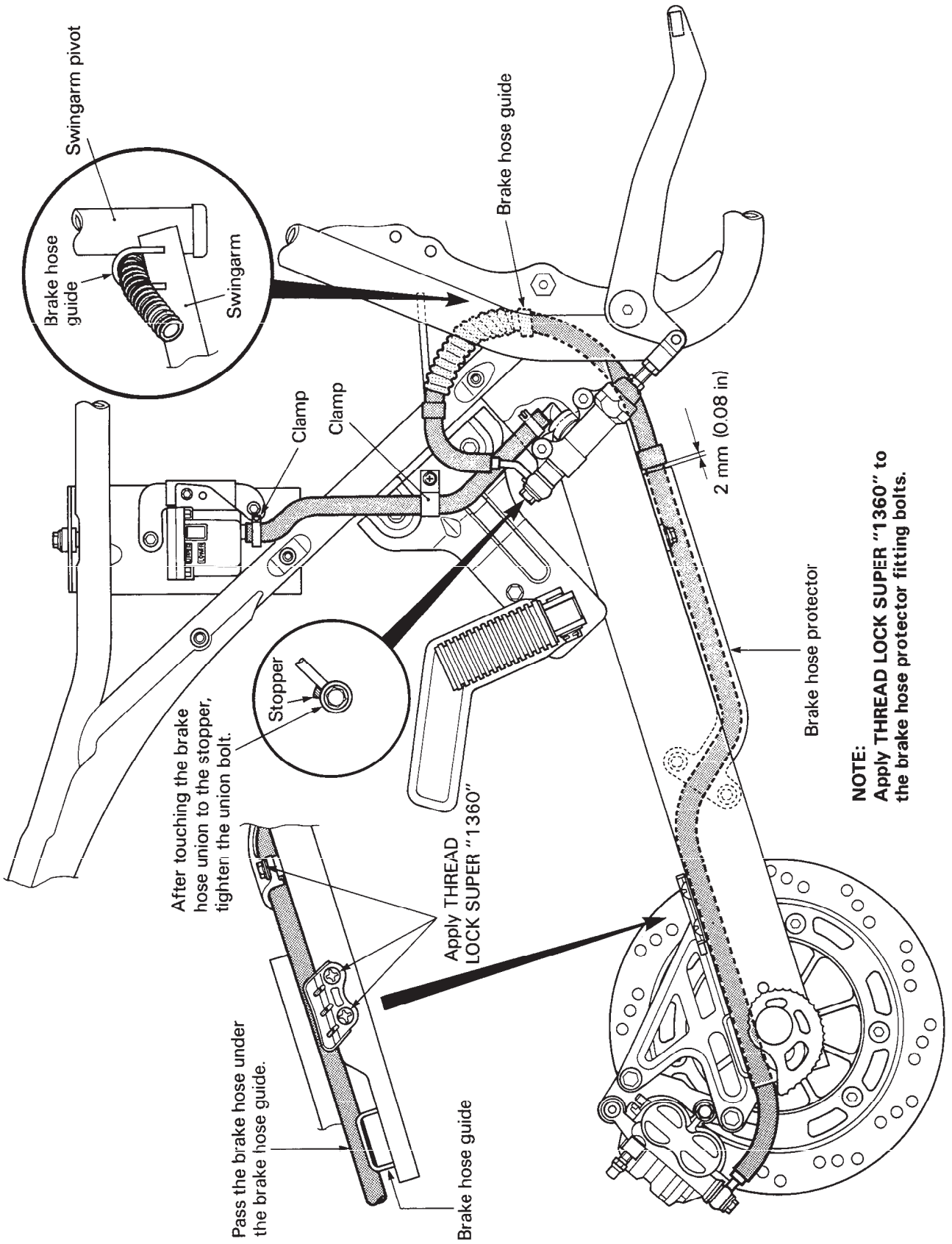


SG: Apply SILICONE GREASE.  
(99000-25100)

# STARTER MOTOR LEAD WIRE ROUTING (LOCATION OF CLAMPS)



# REAR BRAKE HOSE ROUTING





# CARBURETOR AIR VENT HOSE ROUTING

