

# SUZUKI

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# *DR 125SE*

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# SERVICE MANUAL

## FOREWORD

*This manual contains an introductory description on SUZUKI DR125SE and procedures for its inspection/service and overhaul of its main components.*

*Other information considered as generally known is not included.*

*Read GENERAL INFORMATION section to familiarize yourself with outline of the vehicle and MAINTENANCE and other sections to use as a guide for proper inspection and service.*

*This manual will help you know the vehicle better so that you can assure your customers of your optimum and quick service.*

*\* This manual has been prepared on the basis of the latest specification at the time of publication.*

*If modification has been made since then, difference may exist between the content of this manual and the actual vehicle.*

*\* Illustrations in this manual are used to show the basic principles of operation and work procedures.*

*\* They may not represent the actual vehicle exactly in detail.*

*\* This manual is intended for those who have enough knowledge and skills for servicing SUZUKI vehicles. Without such knowledge and skills, you should not attempt servicing by relying on this manual only.*

*Instead, please contact your nearby authorized SUZUKI motorcycle dealer.*

## IMPORTANT

*All street-legal Suzuki motorcycles with engine displacement of 50cc or greater are subject to Environmental Protection agency emission regulations. These regulations set specific standards for exhaust emission output levels as well as particular servicing requirements. This manual includes specific information required to properly inspect and service DR125SE in accordance with all EPA regulations. It is strongly recommended that the chapter on Emission Control, Periodic Servicing and Carburetion be thoroughly reviewed before any type of service work is performed.*

*Further information concerning the EPA emission regulations and U.S. Suzuki's emission control program can be found in the U.S. SUZUKI EMISSION CONTROL PROGRAM MANUAL/SERVICE BULLETIN.*

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**SUZUKI MOTOR CORPORATION**

*Motorcycle Service Department*

# GENERAL INFORMATION

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## SUZUKI DR125SE ('94-MODEL)



RIGHT SIDE

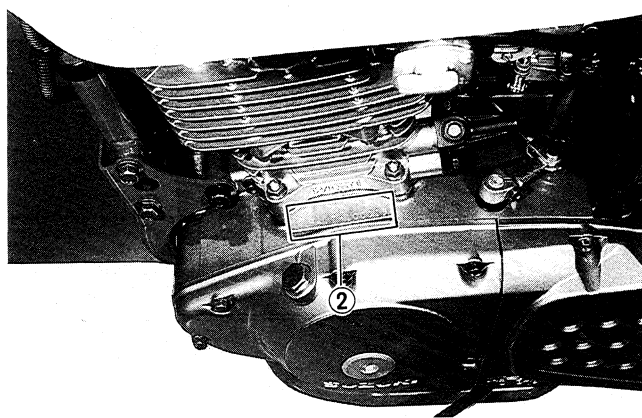
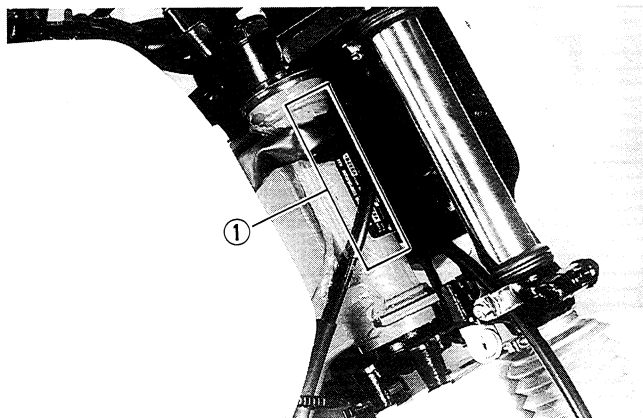


LEFT SIDE

\*Difference between photographs and actual motorcycles depends on the markets.

## SERIAL NUMBER LOCATION

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



## FUEL AND OIL RECOMMENDATIONS

### FUEL (For U.S.A. model)

1. Use only unleaded gasoline of at least 87 pump octane ( $\frac{R+M}{2}$ ) method or 91 octane or higher rated by the research method.
2. Suzuki recommends that customers use alcohol free, unleaded gasoline whenever possible.
3. Use of blended gasoline containing MTBE (Methyl Tertiary Butyl Ether) is permitted.
4. Use of blended gasoline/alcohol fuel is permitted provided that it contains not more than 10% ethanol. Gasoline/alcohol fuel may contain up to 5% methanol if appropriate cosolvents and corrosion inhibitors are present.
5. If the performance of the vehicle is unsatisfactory while using blended gasoline/alcohol fuel, you should switch to alcohol free unleaded gasoline.
6. Failure to follow these guideline could possibly void applicable warranty coverage. Check with you fuel supplier to be sure that the fuel you intend to use meets the requirements listed above.

### FUEL (For Canadian model)

Use only unleaded gasoline of at least 87 pump octane ( $\frac{R+M}{2}$ ) method or 91 octane or higher rated by the research method.

### FUEL (For the other models)

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

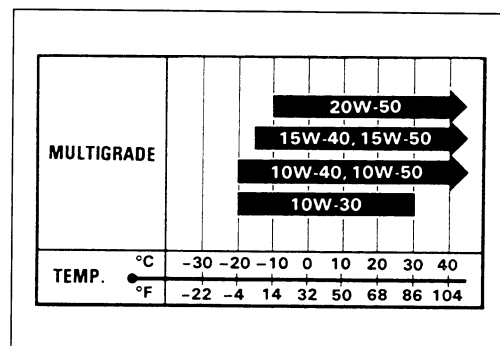


## ENGINE OIL (For U.S.A. model)

SUZUKI recommends the use of SUZUKI PERFORMANCE 4 MOTOR OIL or an oil which is rated SE or SF under the API (American Petroleum Institute) classification system. The viscosity rating is SAE 10W/40. If an SAE 10W/40 motor oil is not available, select an alternate according to the right chart.

## ENGINE OIL (For the other models)

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 an SAE 10W/40 motor oil is not available, select an alternate according to the right chart.



## BRAKE FLUID

Specification and classification: 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 a previous servicing, which has been stored for a long period.

## FRONT FORK OIL

Use fork oil #10

## 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.

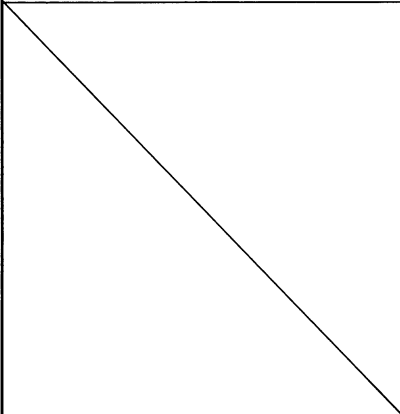




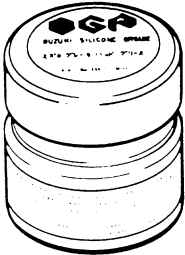
- Keep to this break-in throttle position.

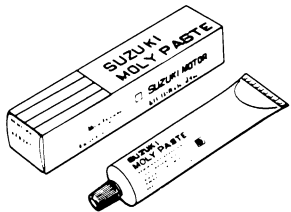
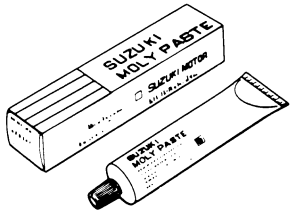
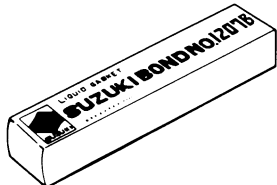





**Up to 1600 km (1000 miles): Less than 3/4 throttle**

- Upon reaching an odometer reading of 1600 km (1000 miles) you can subject the motorcycle to full throttle operation for short periods of time.





## SPECIAL MATERIALS

The materials listed below are needed for maintenance work on the DR125SE, 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
For U.S.A.	For other countries		
	 <p>SUZUKI BRAKE FLUID DOT3 &amp; DOT4 99000-23110</p>	<ul style="list-style-type: none"> <li>• Brakes</li> </ul>	2- 10 6- 10 6- 13
 <p>SUZUKI SUPER GREASE "A" 99000-25030</p>	 <p>SUZUKI SUPER GREASE "A" 99000-25010</p>	<ul style="list-style-type: none"> <li>• Brake pedal pivot</li> <li>• Footrest pivot</li> <li>• Side-stand pivot and spring hook</li> <li>• Driveshaft oil seal</li> <li>• Gearshift shaft oil seal</li> <li>• Starter motor oil seal</li> <li>• Wheel bearing</li> <li>• Speedometer gear box dust seal</li> <li>• Steering stem bearing and dust seat</li> <li>• Swingarm spacer, washer, bearing and dust seal</li> <li>• Cushion lever/rod bearing</li> <li>• Rear brake camshaft</li> <li>• Rear shock absorber spherical ball</li> </ul>	2- 2 2- 2 2- 2 3- 36 3- 36 5- 11 6- 2, 27 6- 2 6- 21 6- 33 6- 33 6- 27 6- 33
 <p>SUZUKI SILICONE GREASE 99000-25100</p>	 <p>SUZUKI SILICONE GREASE 99000-25100</p>	<ul style="list-style-type: none"> <li>• Front brake caliper axle</li> </ul>	6- 7

MATERIAL		PART	PAGE
For U.S.A.	For other countries		
 <p>SUZUKI MOLY PASTE 99000-25140</p>	 <p>SUZUKI MOLY PASTE 99000-25140</p>	<ul style="list-style-type: none"> <li>• Rocker arm shaft</li> <li>• Valve stem</li> <li>• Countershaft and driveshaft</li> <li>• Piston pin</li> <li>• Camshaft journal and cam face</li> <li>• Starter motor armature end</li> </ul>	<p>3-18 3-24 3-33 3-48 3-51 5-11</p>
 <p>SUZUKI BOND NO.1207B 99104-31140</p>	 <p>SUZUKI BOND NO.1207B 99000-31140</p>	<ul style="list-style-type: none"> <li>• Mating surface of left and right crankcases</li> <li>• Generator lead wire grommet</li> <li>• Mating surfaces of cylinder head and cover</li> </ul>	<p>3-40 3-47, 5- 2 3-51</p>
 <p>THREAD LOCK SUPER "1303" 99000-32030</p>	 <p>THREAD LOCK SUPER "1303" 99000-32030</p>	<ul style="list-style-type: none"> <li>• Engine mounting bolt</li> <li>• Muffler mounting bolt</li> <li>• Starter clutch bolt</li> <li>• 2nd drive gear</li> <li>• Generator rotor nut</li> <li>• Cam sprocket bolt</li> <li>• Rear sprocket bolt</li> <li>• Drive chain guide bolt</li> </ul>	<p>3- 5 3- 7 3-31 3-33 3-47 3-50 6-27 6-33</p>
 <p>THREAD LOCK "1342" 99000-32050</p>	 <p>THREAD LOCK SUPER "1322" 99000-32110</p>	<ul style="list-style-type: none"> <li>• Muffler cover fitting screw</li> <li>• Crankcase bearing retainer screw</li> <li>• Gearshift cam stopper bolt</li> <li>• Gearshift cam guide screw and pawl lifter screw</li> <li>• Gearshift arm stopper</li> <li>• Oil pump mounting screw</li> <li>• Generator stator screw</li> <li>• Starter motor housing bolt</li> <li>• Throttle valve screw</li> </ul>	<p>3- 7 3-36 3-39 3-41 3-41 3-42 5- 2 5-11 4- 5</p>

## 1-5 GENERAL INFORMATION

MATERIAL		PART	PAGE
For U.S.A.	For other countries		
 <p>THREAD LOCK SUPER "1360" 99000-32130</p>	 <p>THREAD LOCK SUPER "1360" 99000-32130</p>	<ul style="list-style-type: none"> <li>• Brake disc mounting bolt</li> </ul>	6- 2
 <p>SUZUKI FORK OIL # 10 99000-99044-10G</p>	 <p>SUZUKI FORK OIL # 10 99000-99044-10G</p>	<ul style="list-style-type: none"> <li>• Front fork</li> </ul>	6-19

## PRECAUTIONS AND GENERAL INSTRUCTIONS

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

- ☐ Do not run engine indoors with little or no ventilation.
- ☐ Be sure to replace packing, 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 cylinder head and case bolts and nuts beginning with larger diameter and engine with smaller diameter, and from inside to out-side diagonally, to the specified tightening torque.
- ☐ Use special tools where specified.
- ☐ Use genuine parts and recommended oils.
- ☐ When 2 or more persons work together, pay attention to safety of each other.
- ☐ After the reassembly, check parts for tightness 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** ..... The personal safety of the rider may be involved. Disregarding this information could result in injury to the rider.

**CAUTION** ..... These instructions point out special service procedures or precautions that must be followed to avoid damaging the machine.

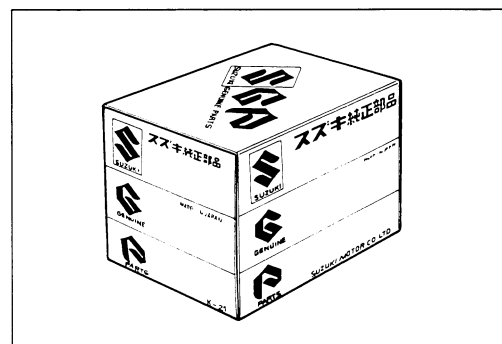
**NOTE** ..... This provides special information to make maintenance easier or important instructions clearer.

## REPLACEMENT PARTS

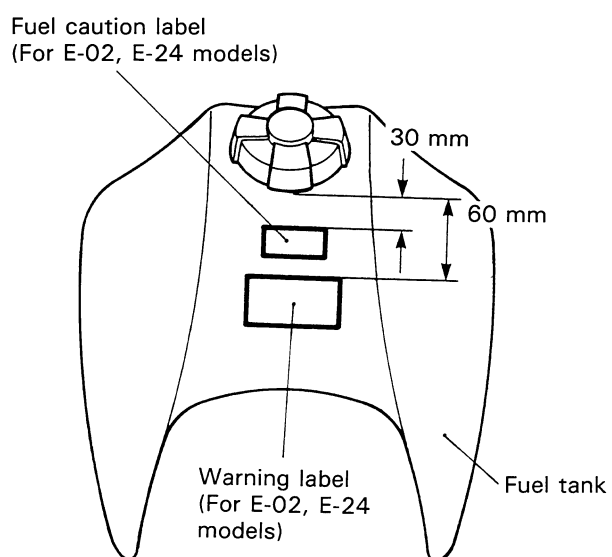
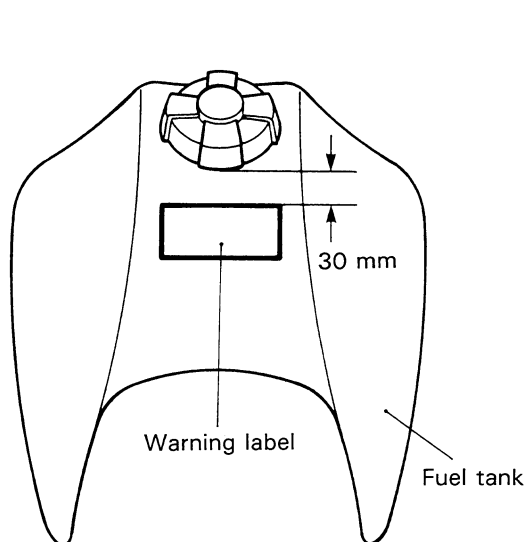
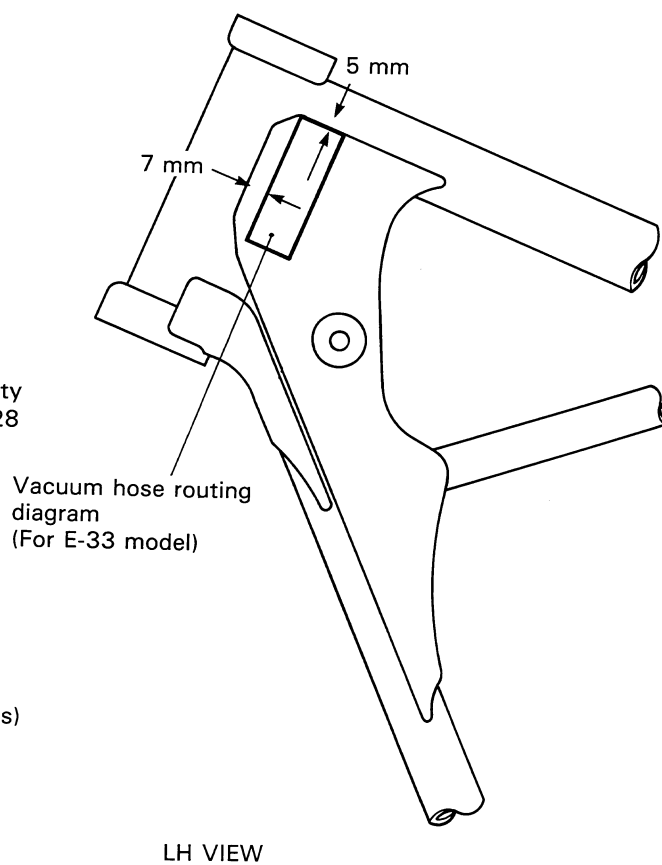
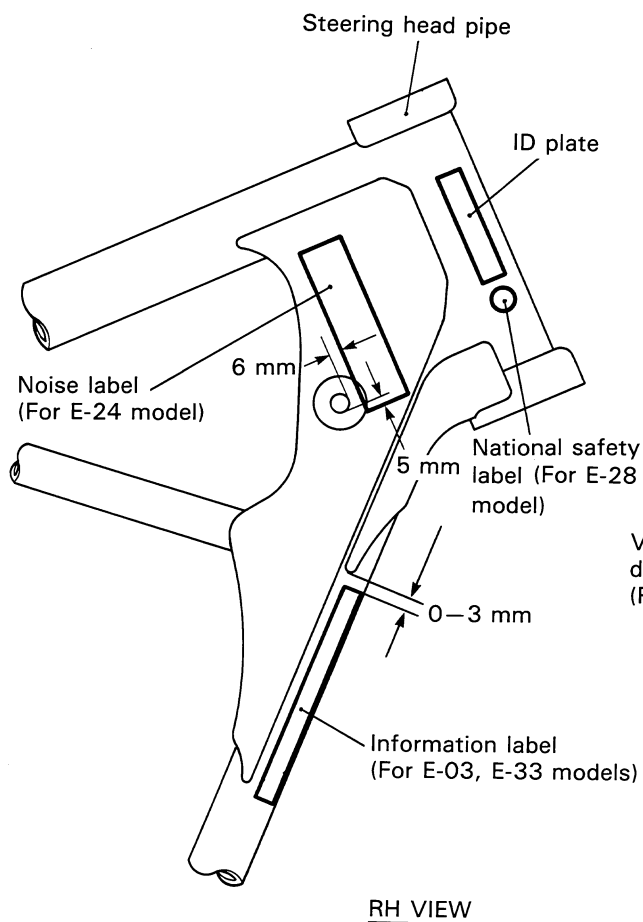
When you replace any parts, use only genuine SUZUKI replacement parts, or their equivalent. Genuine SUZUKI parts are high quality parts which are designed and built specifically for SUZUKI vehicles.

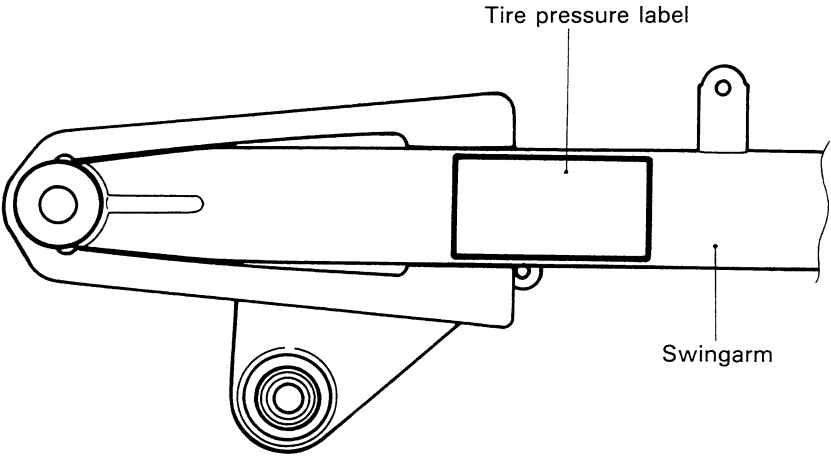
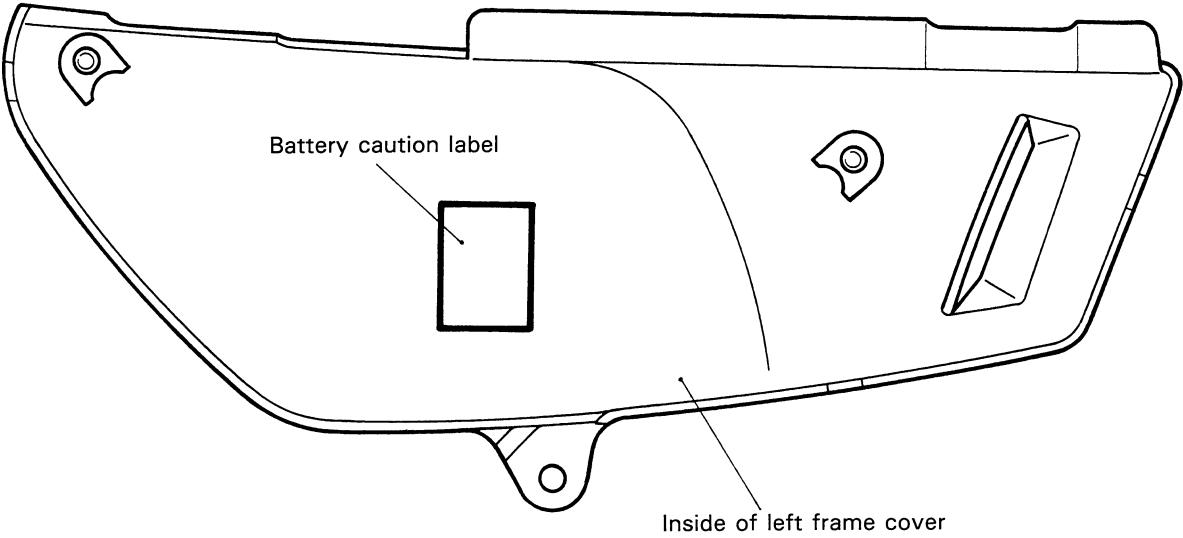
### CAUTION:

**Use of replacement parts which are not equivalent in quality to genuine SUZUKI parts can lead to performance problems and damage.**



## INFORMATION LABELS





## SPECIFICATIONS

### DIMENSIONS AND DRY MASS

Overall length .....	2 150 mm (84.6 in)
Overall width .....	805 mm (31.7 in)
Overall height .....	1 170 mm (46.1 in)
Wheelbase .....	1 385 mm (54.5 in)
Ground clearance .....	240 mm ( 9.4 in)
Dry mass .....	114 kg (251 lbs)

### ENGINE

Type .....	Four-stroke, air-cooled, OHC
Number of cylinders .....	1
Bore .....	57.0 mm (2.224 in)
Stroke .....	48.8 mm (1.927 in)
Piston displacement .....	124 cm <sup>3</sup> (7.6 cu. in)
Carburetor .....	MIKUNI BST31, single
Air cleaner .....	Polyurethane foam element
Starter system .....	Electric starter
Lubrication system .....	Wet sump

### TRANSMISSION

Clutch .....	Wet multi-plate type
Transmission .....	6-speed constant mesh
Gearshift pattern .....	1-down, 5-up
Primary reduction ratio .....	3.470 (59/17)
Final reduction ratio .....	3.312 (53/16)
Gear ratios, Low .....	3.000 (33/11)
2nd .....	1.857 (26/14)
3rd .....	1.368 (26/19)
4th .....	1.095 (23/21)
5th .....	0.923 (24/26)
Top .....	0.833 (20/24)
Drive chain .....	RK428HM, 134 links or DID 428HG, 134 links



## CHASSIS

Front suspension .....	Telescopic, coil spring, oil damped
Rear suspension .....	Link type system, oil damped, coil spring
Steering angle .....	43° (right & left)
Caster .....	61°
Trail .....	112 mm (4.4 in)
Turning radius .....	2.3 m (7.5 ft)
Front brake .....	Disc brake
Rear brake .....	Internal expanding
Front tire size .....	70/100-21 44P
Rear tire size .....	90/90-18 51P
Front fork stroke .....	205 mm (8.1 in)
Rear wheel travel .....	200 mm (7.9 in)

## ELECTRICAL

Ignition type .....	Electronic Ignition (Fully Transistorized)
Ignition timing .....	13° B.T.D.C. at 1950/rmin and 39° B.T.D.C. at 3800 r/min
Spark plug .....	DR8EA or X24ESR-U
Battery .....	12V 21.6 kC (6 Ah)/10 HR
Generator .....	Three-phase A.C. Generator
Fuse .....	20A
Headlight .....	12V 60/55W
Turn signal light .....	12V 21W
Parking or position light .....	12V 4W ..... Except for E-03, 28, 33 models
Taillight/Brake light .....	12V 5/21W
License plate light .....	12V 5W
Speedometer light .....	12V 3.4W
Neutral indicator light .....	12V 3.4W
High beam indicator light .....	12V 1.7W
Turn signal indicator light .....	12V 3.4W

## CAPACITIES

Fuel tank, including reserve .....	12.5 L (3.3/2.7 US/Imp gal) ..... E-33 model
..... reserve .....	13.0 L (3.4/2.9 US/Imp gal) ..... Others
..... reserve .....	2.5 L (0.7/0.5 US/Imp gal)
Engine oil, oil change .....	850 ml (0.90/0.75 US/Imp qt)
..... with filter change .....	950 ml (1.00/0.84 US/Imp qt)
..... overhaul .....	1 300 ml (1.37/1.14 US/Imp qt)
Front fork oil .....	309 ml (10.4/10.9 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 or area on the right.

SYMBOL	COUNTRY or AREA
E-01	General
E-03	U.S.A.
E-04	France
E-28	Canada
E-33	California (U.S.A.)
E-34	Italy

# PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

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## PERIODIC MAINTENANCE SCHEDULE

**IMPORTANT:** The periodic maintenance intervals and service requirements have been established in accordance with EPA regulations. Following these instructions will ensure that the motorcycle will not exceed emission standards and it will also ensure the reliability and performance of the motorcycle.

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 kilometer, miles and time for your convenience.

**NOTE:**

*More frequent servicing may be performed on motorcycles that are used under severe conditions however, it is not necessary for ensuring emission level compliance.*

### PERIODIC MAINTENANCE CHART

Interval Item	km	1000	4000	8000
	miles	600	2500	5000
	months	3	20	40
Exhaust pipe bolts	—	T	T	
Air cleaner	—	C	C	
Valve clearance	I	I	I	
Cam drive chain tension adjuster	I	I	I	
Spark plug	—	I	R	
Spark arrester	—	C	C	
Fuel line (EVAP hose ..... California model only)	—	I	I	
	Replace every 4 years			
Engine idle rpm (Carburetor)	I	I	I	
Throttle cable play (Carburetor)	I	I	I	
Clutch	I	I	I	
Engine oil	R	R	R	
Engine oil filter	R	—	R	
Drive chain	I	I	I	
	Clean and lubricate every 1000 km			
Brake	I	I	I	
Brake hose	—	I	I	
	Replace every 4 years			
Brake fluid	—	I	I	
	Replace every 2 years			
Tire	—	I	I	
Steering	I	—	I	
Front fork	—	I	I	
Rear suspension	—	I	I	
Chassis bolts and nuts	T	T	T	

*I = Inspect and adjust, clean, lubricate or replace as necessary*

*C = Clean*

*R = Replace*

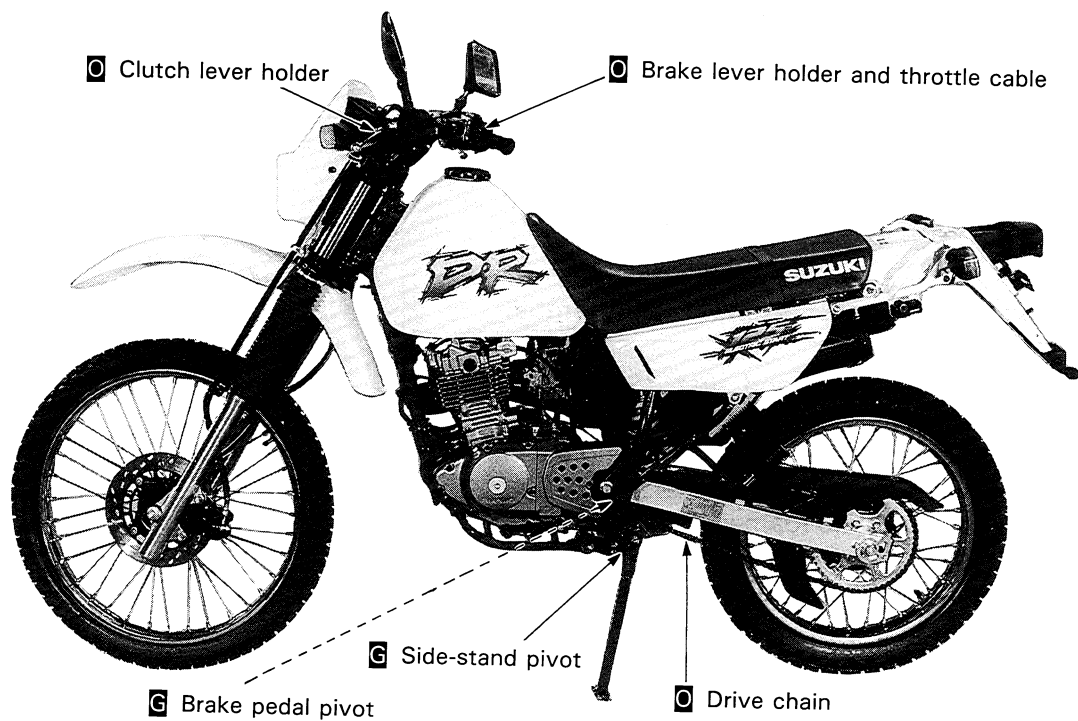
*T = Tighten*

## LUBRICATION POINTS

Proper lubrication is important for smooth operation and long life of each working part of the motorcycle.

Major lubrication points are indicated below.

- O** Oil
- G** Grease



### NOTE:

- \* Before lubricating each part, clean off any rusty spots and wipe off any grease, oil, dirt or grime.
- \* Lubricate exposed parts which are subject to rust, with a rust preventative spray whenever the motorcycle has been operated under wet or rainy conditions.

## MAINTENANCE AND TUNE-UP PROCEDURES

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

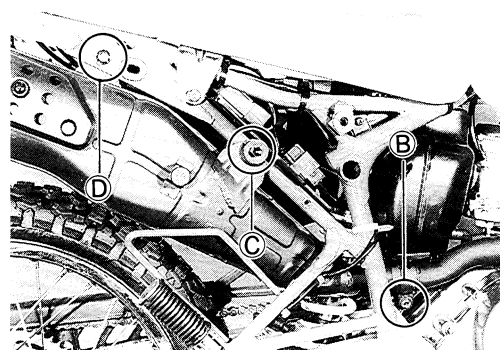
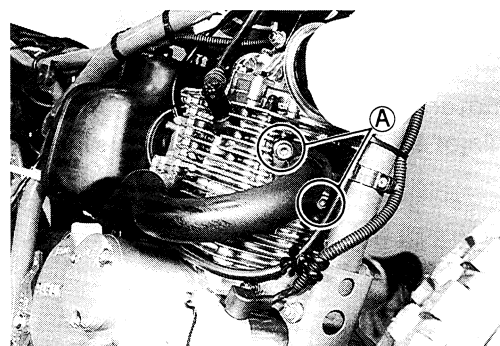
### EXHAUST PIPE BOLTS

**Tighten Every 4000 km (2500 miles, 20 months).**

- Remove the right frame cover. (See page 6-1.)
- Tighten the exhaust pipe bolts, muffler connection bolt and muffler mounting bolts to the specified torque with a torque wrench.

#### Tightening torque

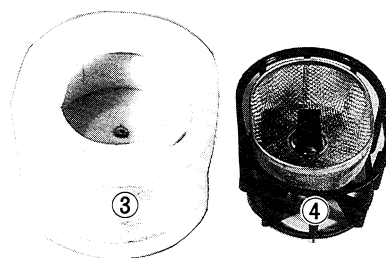
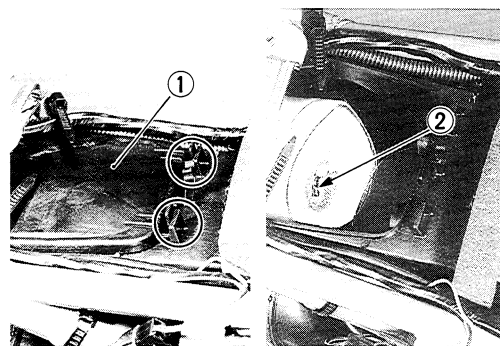
Ⓐ	Exhaust pipe bolt	23 N·m (2.3 kg-m)
Ⓑ	Muffler connection bolt	
Ⓒ	Muffler mounting bolt	
Ⓓ	Muffler mounting bolt	44 N·m (4.4 kg-m)



### AIR CLEANER

**Clean Every 4000 km (2500 miles, 20 months).**

- Remove the frame covers and seat. (See page 6-1.)
- Remove the air cleaner case lid ①.
- Remove the air cleaner element by removing the wing bolt ②.
- Remove the polyurethane foam element ③ from its frame ④.
- Fill a washing pan of a proper size with non-flammable cleaning solvent. Immerse the element in the cleaning solvent and wash it clean.
- Squeeze the cleaning solvent out of the washed element by pressing it between the palms of both hands.
- Immerse the element in motor oil, and squeeze the oil out of the element leaving it slightly wet with oil.



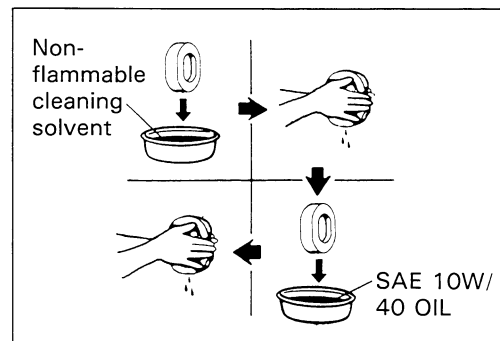
#### NOTE:

*Do not twist or wring the element because it will tear or the individual cells of the element will be damaged.*

#### CAUTION:

**Inspect the element carefully for rips, torn seams, etc. If any damage is noted, replace the element.**

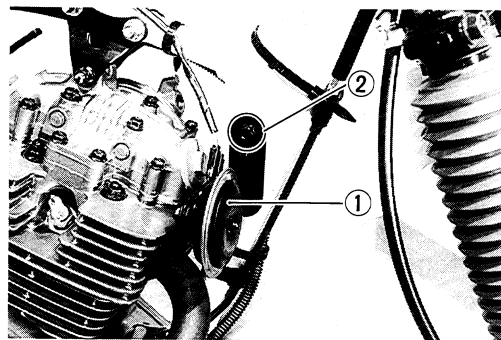
**If driving under dusty condition, clean the air cleaner element more frequently. The surest way to accelerate engine wear is to use the engine without the element or to use a ruptured element. Make sure that the air cleaner is in good condition at all times. Life of the engine depends largely on this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



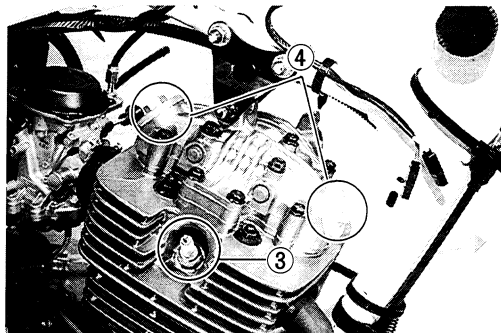
## VALVE CLEARANCE

**Inspect Initially at 1000 km (600 miles, 3 months) and Every 4000 km (2500 miles, 20 months) thereafter.**

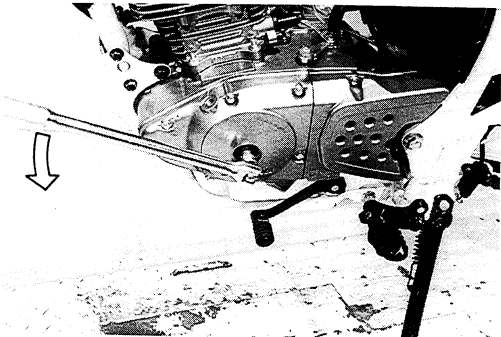
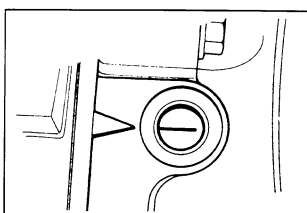
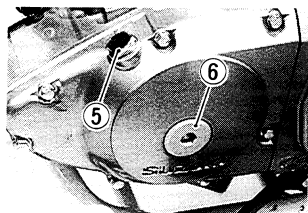
- Remove the frame covers, seat and fuel tank. (See pages 6-1 and 4-2.)
- Remove the horn ① by removing its mounting bolt ②.



- Remove the spark plug ③.
- Remove the valve inspection caps ④.



- Remove the cam timing inspection cap ⑤ and generator cover cap ⑥.
- Rotate the generator rotor with a 17 mm box wrench to set the piston at (TDC) on the compression stroke. (Align "Top" line on the generator rotor with the index mark on the generator cover.)



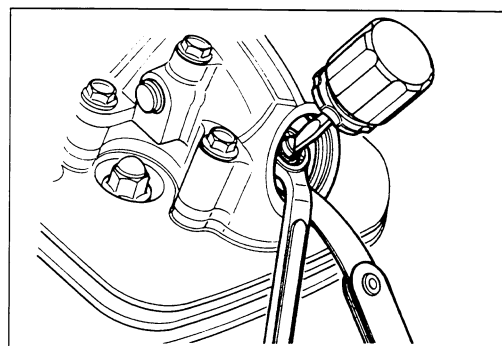
The valve clearance specification is the same for both intake and exhaust valves.

Valve clearance adjustment must be checked and adjusted, 1) at the time of periodic inspection, 2) when the valve mechanism is serviced, and 3) when the camshaft is disturbed by removing it for servicing.

### Valve clearance (when cold):

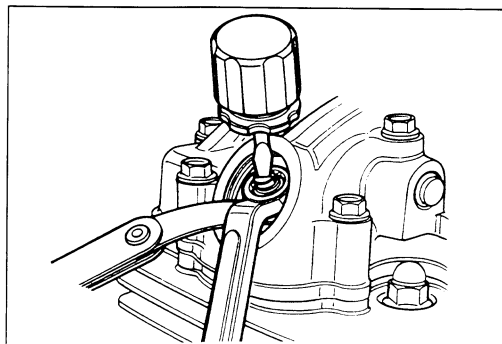
**IN. & EX.: 0.08—0.13 mm (0.003—0.005 in)**

- Insert the thickness gauge to the clearance between the valve stem end and the adjusting screw on the rocker arm.



### 09900-20803: Thickness gauge

- If clearance is out the specification, bring it into the specified range by using a screw driver and offset wrench.
- Securely tighten the lock nut after adjustment is completed.
- Reinstall the spark plug, valve inspection caps, cam timing inspection cap and generator cover cap.



## CAM DRIVE CHAIN TENSION ADJUSTER

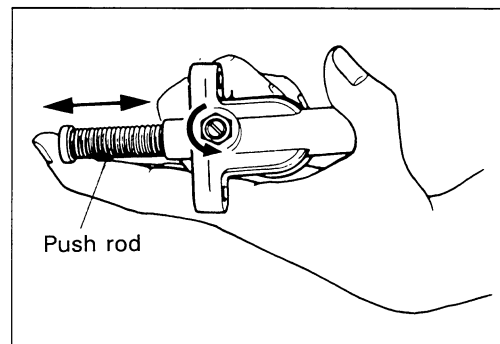
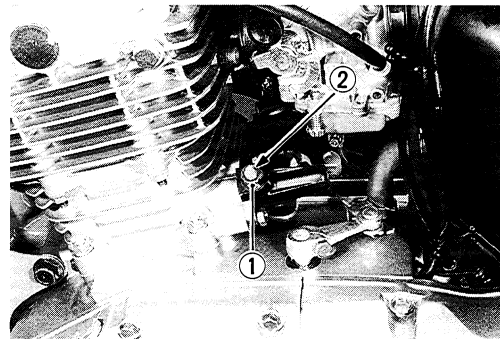
**Inspect Initially at 1000 km (600 miles, 3 months) and Every 4000 km (2500 miles, 20 months) thereafter.**

The cam drive 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 cam drive chain tension adjuster is as follows:

- Loosen the lock nut ① on the chain tension adjuster and back out set screw ② one turn. This will allow a spring to push the push rod firmly onto the cam chain tensioner, and provide proper operating chain tension.
- Tighten the set screw ② to lock the push rod in position and tighten the lock nut ① to secure the set screw ②.

### NOTE:

*If the cam drive chain is noisy after having been adjusted, the push rod is probably sticking. Remove the cam drive chain tension adjuster, and clean and lubricate the push rod to obtain smooth movement and proper tensioning action.*



## SPARK PLUG

**Inspect Every 4000 km (2500 miles, 20 months) and Replace Every 8000 km (5000 miles, 40 months).**

- Remove the spark plug.

**09930-10121: Spark plug socket wrench set**

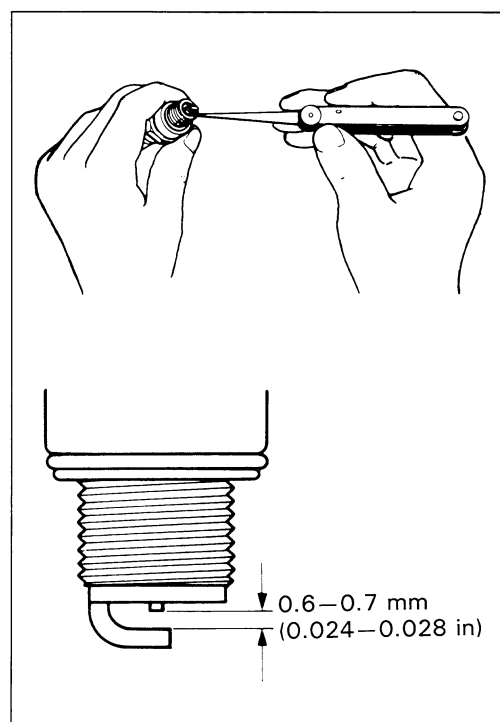
**09900-20803: Thickness gauge**

Standard	Cold type	Hot type
DR8EA	DR9EA	DR7EA
X24ESR-U	X27ESR-U	X22ESR-U

### CARBON DEPOSIT

Check to see the carbon deposit on the plug.

If the carbon is deposited, removed it with a spark plug cleaner machine or carefully using a tool with a pointed end.





**SPARK PLUG GAP**

Measure the plug gap with a thickness gauge if it is correct. If not, adjust it to the following gap.

Spark plug gap	Standard
	0.6—0.7 mm (0.024—0.028 in)

**ELECTRODE'S CONDITION**

Check to see the worn or burnt condition of the electrodes. If it is extremely worn or burnt, replace the plug. And also replace the plug if it has a broken insulator, damaged thread, etc.

**CAUTION:**

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.

**SPARK ARRESTER**

Clean Every 4 000 km (2 500 miles, 20 months)

- Remove the drain bolt.
- Start the engine and rev it to blow out the accumulated carbon particles.
- Stop the engine, and install the drain bolt securely.

**WARNING:**

Only clean the spark arrester in an open area away from combustible materials. Exhausted hot carbon particles can start a fire.

**FUEL LINE (EVAP HOSE ..... California model only)**

Inspect Every 4000 km (2500 miles, 20 months).  
Replace Every 4 years.

**CARBURETOR****IDLE RPM (Idling adjustment)**

Inspect Initially at 1000 km (600 miles, 3 months) and Every 4000 km (2500 miles, 20 months) thereafter.

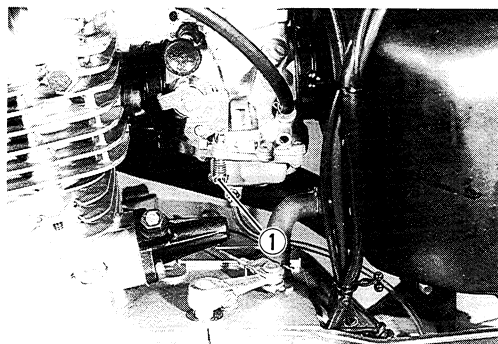
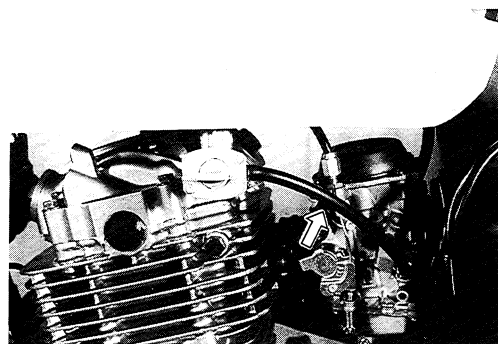
**NOTE:**

*Make this adjustment when the engine is hot.*

- Connect a tachometer.
- Start up the engine and set its speed at anywhere between 1300 and 1500 r/min by turning throttle stop screw ①.

**Engine idle speed:**

1400 ± 100 r/min



### THROTTLE CABLE PLAY

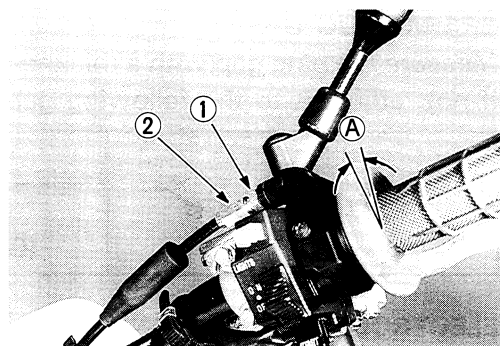
Throttle cable play **A** should be 3–6 mm as measured at throttle grip when turning the throttle grip lightly. If the play **A** in the throttle cable is incorrect, adjust it in the following way:

- Loosen the lock nut **①** and turn the adjuster **②** in or out until the specified play is obtained.
- Tighten the lock nut **①** while holding the adjuster **②**.

Throttle cable play **A**: 3–6 mm (0.1–0.2 in)

#### WARNING:

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



### CLUTCH

Inspect Initially at 1000 km (600 miles, 3 months) and Every 4000 km (2500 miles, 20 months) thereafter.

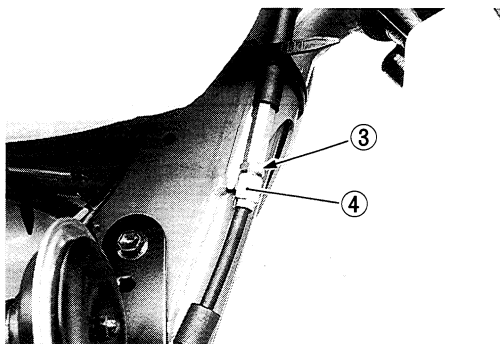
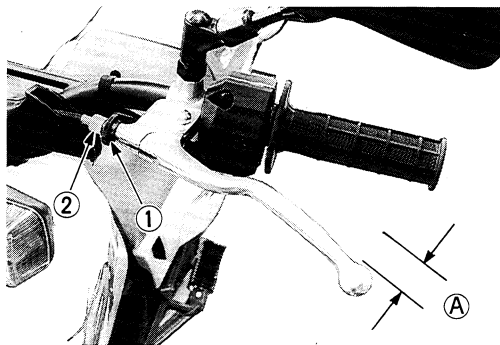
Clutch lever play **A** should be 10–15 mm as measured at the clutch lever end when the clutch begins to disengage. If the play in the clutch is incorrect, adjust it in the following way:

- Loosen the cable adjuster lock nut **①** and screw in the cable adjuster **②**.
- Loosen the cable adjuster lock nut **③**.
- Turn the cable adjuster **④** in or out to acquire the specified play.
- Tighten the cable adjuster lock nut **③** while holding the cable adjuster **④** in position.

Clutch lever play **A**: 10–15 mm (0.4–0.6 in)

- After adjusting the play, tighten the cable adjuster lock nut **①**.

The clutch cable should be lubricated with a light weight oil whenever it is adjusted.



## ENGINE OIL AND OIL FILTER

### (ENGINE OIL)

Replace Initially at 1000 km (600 miles, 3 months) and Every 4000 km (2500 miles, 20 months) thereafter.

### OIL FILTER

Replace Initially at 1000 km (600 miles, 3 months) and Every 8000 km (5000 miles, 40 months) thereafter.

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

- Keep the motorcycle upright, supported by jack.
- Place an oil pan below the engine, and drain the oil by removing the drain plug ① and filler cap ②.
- Remove the oil filter cap ③ by removing the three nuts.
- Remove the oil filter ④ and install the new oil filter.
- Apply engine oil lightly to the O-ring ⑥ of the oil filter cap ③ before installation.
- Install the oil filter cap ③ and tighten the three nuts securely.

#### NOTE:

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

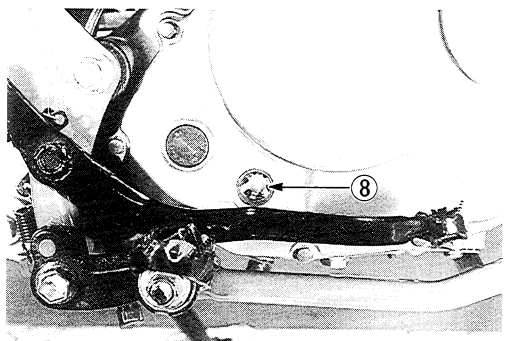
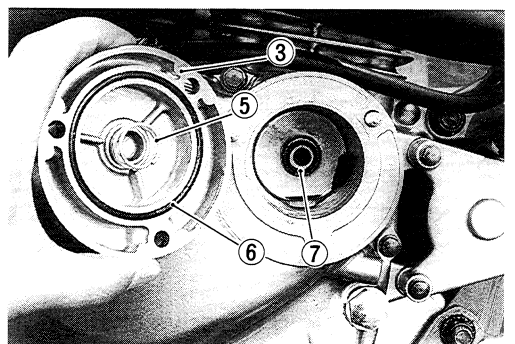
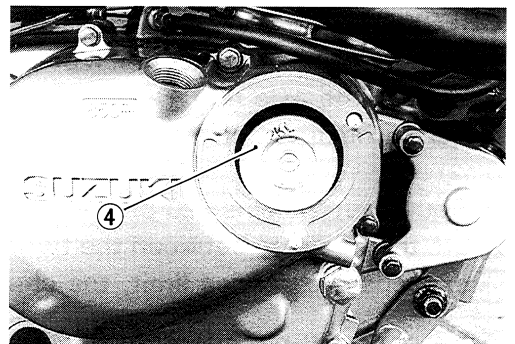
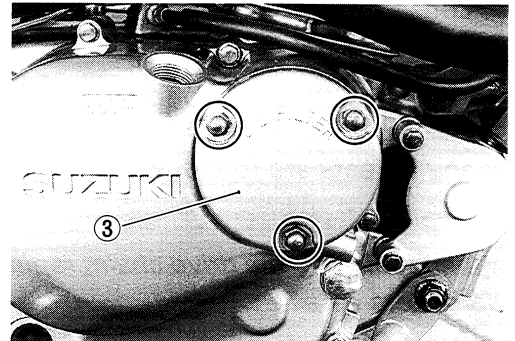
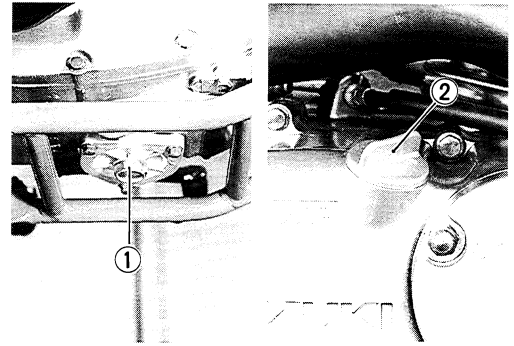
- Tighten the oil drain plug ① securely, and pour fresh oil through the oil filler. The engine will hold about 950 ml of oil.  
Use an API classification of SE or SF oil with SAE 10W/40 viscosity.
- Install the filler cap ②.
- Start up the engine and allow it to run for several seconds at idling speed.
- Turn off the engine and wait about one minute, then check the oil level through the inspection window ⑧. If the level is below mark "F", add oil to that level.

#### NECESSARY AMOUNT OF ENGINE OIL

Oil change : 0.85 L (0.90/0.75 US/lmp qt)

Filter change : 0.95 L (1.00/0.84 US/lmp qt)

Overhaul engine: 1.3 L (1.37/1.14 US/lmp qt)



### DRIVE CHAIN

**Inspect Initially at 1000 km (600 miles, 3 months) and Every 4000 km (2500 miles, 20 months) thereafter. Lubricate Every 1000 km (600 miles).**

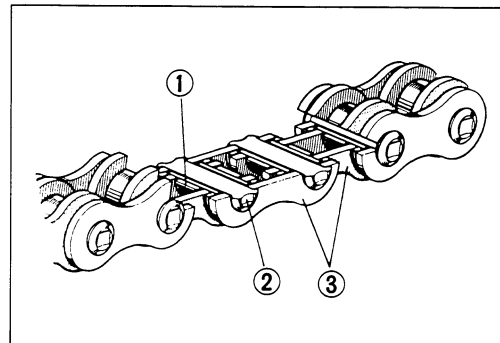
Visually check the drive chain for the possible defects listed below. (Support the motorcycle by a jack and a wooden block, turn the rear wheel slowly by hand with the transmission shifted to Neutral.)

- |                           |                             |
|---------------------------|-----------------------------|
| * Loose pins              | * Excessive wear            |
| * Damaged rollers         | * Improper chain adjustment |
| * Dry or rusted links     |                             |
| * Kinked or binding links |                             |

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

#### NOTE:

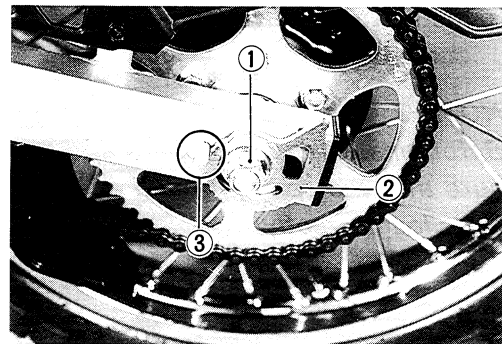
*When replacing the drive chain, replace the drive chain and sprockets as a set.*



① : Roller    ② : Pin    ③ : Link plate

#### CHECKING

- Remove the axle cotter pin. (For E-03, 28 and 33 models)
- Loosen the axle nut ① .
- Tense the drive chain fully by turning both chain adjusters ② .
- Count out 21 pins (20 pitches) on the chain and measure the distance between the two points. If the distance exceeds the service limit, the chain must be replaced.

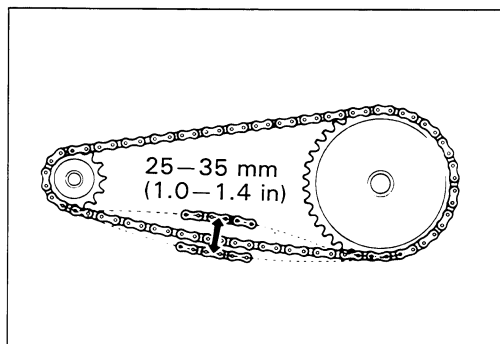
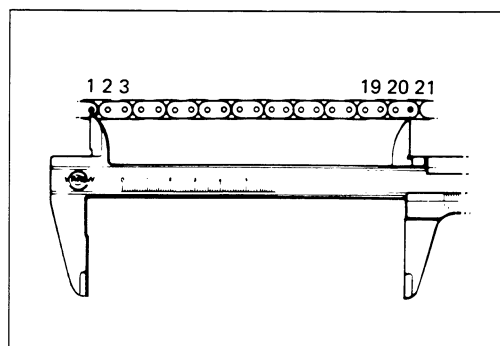


**Drive chain 20-pitch length: 259.0 mm (10.20 in)**

#### ADJUSTING

- Turn both chain adjusters ② until the chain has 25–35 mm (1.0–1.4 in) of slack in the middle between engine and rear sprockets. The mark ③ on both chain adjusters must be at the same position on the scale to ensure that the front and rear wheels are correctly aligned.
- Place the motorcycle on its side-stand for accurate adjustment.
- After adjusting the drive chain, tighten the axle nut ① securely.

**Rear axle nut: 65 N·m (6.5 kg-m)**



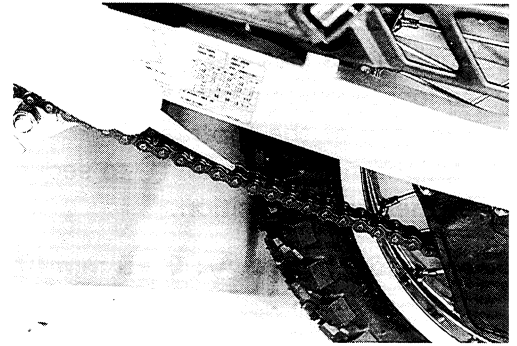
**CLEANING AND LUBRICATING**

- Wash the chain with kerosene. If the chain tends to rust quickly, the intervals must be shortened.
- After washing and drying the chain, oil it with a heavy-weight motor oil.

**CAUTION:**

The standard drive chain TAKASAGO RK428HM or DAIDO DID428HG.

SUZUKI recommends that this standard drive chain should be used for the replacement.

**BRAKE****(BRAKE)**

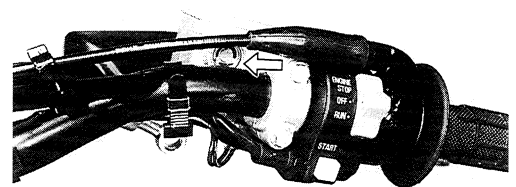
Inspect Initially at 1000 km (600 miles, 3 months) and Every 4000 km (2500 miles, 20 months) thereafter.

**(BRAKE HOSE AND BRAKE FLUID)**

Inspect Every 4000 km (2500 miles, 20 months). Replace hoses Every 4 years. Replace fluid Every 2 years.

**BRAKE FLUID LEVEL**

- Keep the motorcycle upright and place the handlebars straight.
- Check the brake fluid level by observing the lower limit line on the front brake fluid reservoir.
- When the level is below the lower limit line, replenish with brake fluid that meets the following specification.



Specification and Classification: 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 or 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 a long period.

**WARNING:**

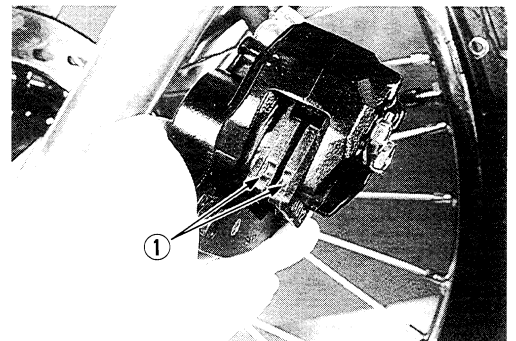
Brake fluid, if it leaks, will interfere with safe running and immediately discolor painted surfaces. Check the brake hoses and hose joints for cracks and oil leakage before riding.

**BRAKE PADS**

The extent of brake pad wear can be checked by observing the grooved limit line ① on the pad. When the wear exceeds the grooved limit line, replace the pads with new ones. (Refer to page 6-8.)

**CAUTION:**

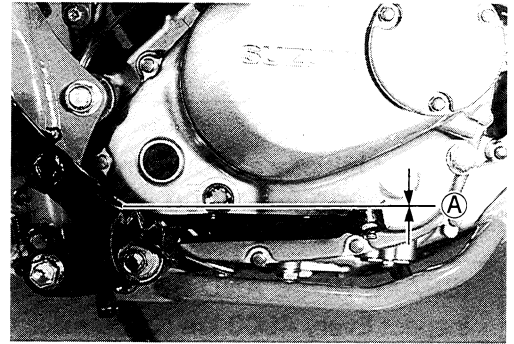
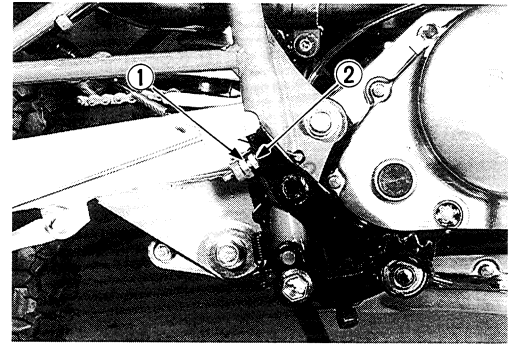
Replace the brake pad as a set, otherwise braking performance will be adversely affected.



### BRAKE PEDAL HEIGHT AND FREE TRAVEL

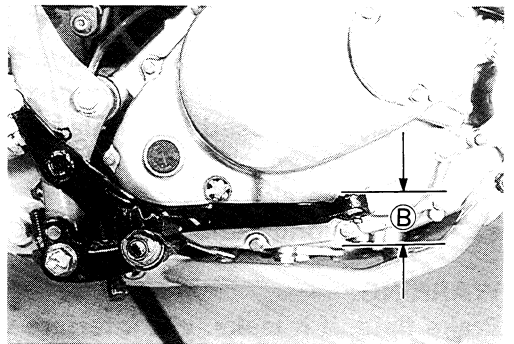
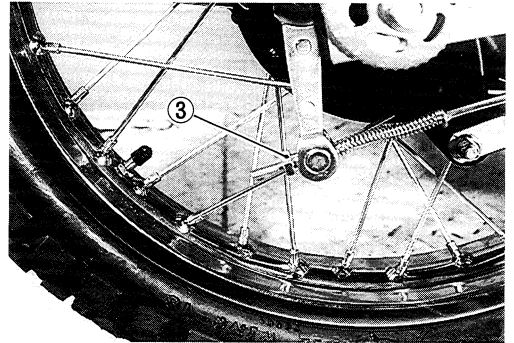
- Loosen the lock nut ① and rotate the adjusting bolt ② to locate brake pedal 0–5 mm (0–0.2 in) ③ below the top face of the footrest.
- Retighten the lock nut ① to secure the adjusting bolt ② in the proper position.

Brake pedal height ③ : 0–5 mm (0–0.2 in)



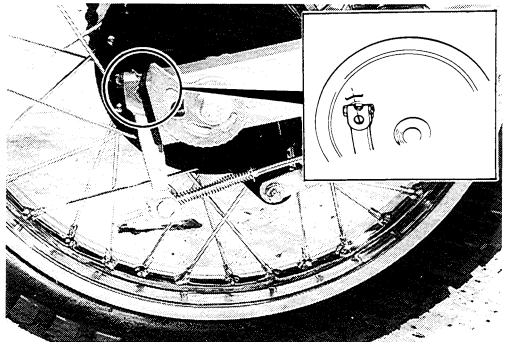
- By repositioning the adjusting nut ④ on the brake rod, set the pedal play to between 20 and 30 mm ⑤ as measured at pedal tip.

Brake pedal free travel ⑤ : 20–30 mm (0.8–1.2 in)



### BRAKE SHOE WEAR

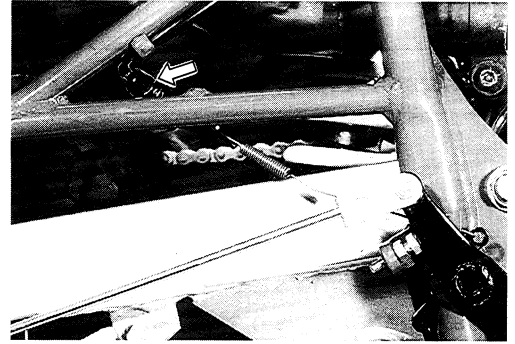
This motorcycle is equipped with brake lining wear limit indicator on the rear brake panel as shown in Fig. At the condition of normal lining wear, the extension line of the index mark ① on the brake cam shaft should be within the range embossed on the brake panel with brake on.



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

**BRAKE LIGHT SWITCH**

Adjust the rear brake light switch so that the brake light will come on just before pressure is felt when the brake pedal is depressed.

**AIR BLEEDING THE BRAKE FLUID CIRCUIT**

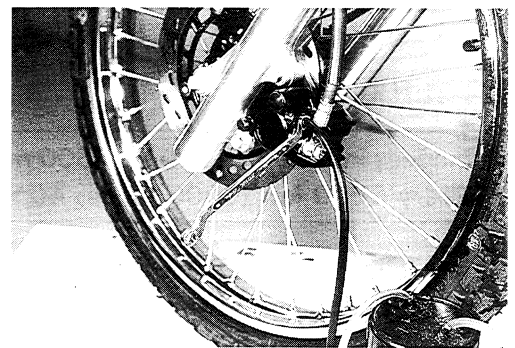
Air trapped in the fluid circuit acts like a cushion to absorb a large proportion of the pressure developed by the master cylinder and thus interferes with the full braking performance of the brake caliper. The presence of air is indicated by "sponginess" of the brake lever and also by lack of braking force. Considering the danger to which such trapped air exposes the machine and rider, it is essential that, after re-mounting 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" level. 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.

**Bleeder valve**

tightening torque: 6—9 N·m (0.6—0.9 kg·m)

- Front brake: Bleed the air from the air bleeder valve.
- 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 handlebar 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.

**NOTE:**

*Replenish the brake fluid in the reservoir as necessary while bleeding the brake system. Make sure that there is always some fluid visible in the reservoir.*

- Close the bleeder valve, and disconnect the pipe. Fill the reservoir to the "UPPER" level.

**CAUTION:**

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

## TIRE

**Inspect Every 4000 km (2500 miles, 20 months).**

### 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.

COLD INFLATION TIRE PRESSURE	SOLO RIDING		DUAL RIDING	
	kPa	kg/cm <sup>2</sup>	kPa	kg/cm <sup>2</sup>
FRONT	150	1.50	150	1.50
REAR	175	1.75	225	2.25

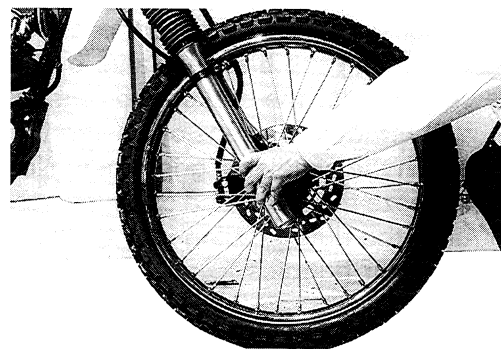
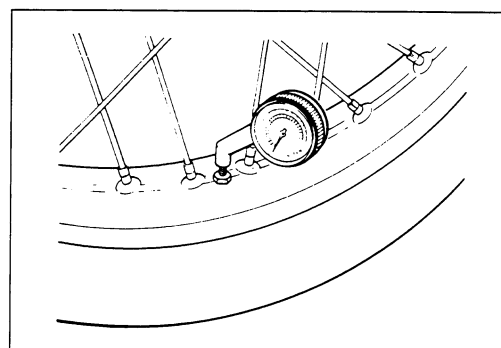
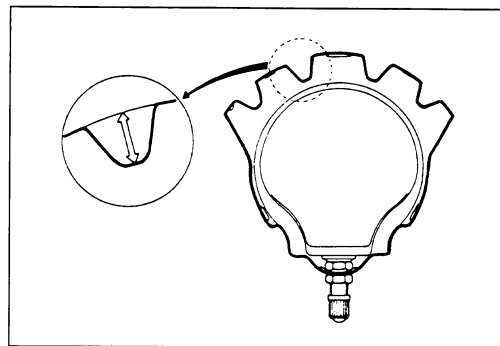
#### CAUTION:

The standard tire fitted on this motorcycle is 70/100-21 44P for front and 90/90-18 51P for rear. The use of tires other than those specified may cause instability. It is highly recommended to use a SUZUKI Genuine Tire.

## STEERING

**Inspect Initially at 1000 km (600 miles, 3 months) and Every 8000 km (5000 miles, 40 months) thereafter.**

Taper roller type bearings are used on the steering system for better handling. 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 poor stability. Check that there is no play in the front fork assembly by supporting the machine 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 6-25 of this manual.





## FRONT FORK

**Inspect Every 4000 km (2500 miles, 20 months).**

Inspect the front forks for oil leakage, scoring or scratches on the outer surface of the inner tubes. Replace any defective parts, if necessary. (Refer to page 6-15.)

## REAR SUSPENSION

**Inspect Every 4000 km (2500 miles, 20 months).**

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

## CHASSIS BOLTS AND NUTS

**Tighten Initially at 1000 km (600 miles, 3 months) and Every 4000 km (2500 miles, 20 months) thereafter.**

The nuts and bolts listed below are important safety related parts. They must be retightened when necessary to the specified torque with a torque wrench. (Refer to page 2-16 for the locations of the following nuts and bolts on the motorcycle.)

Item	N·m	kg-m	lb-ft
① Steering stem head nut	90	9.0	65.0
② Front fork upper clamp bolt	29	2.9	21.0
③ Front fork lower clamp bolt	29	2.9	21.0
④ Front fork damper rod bolt	20	2.0	14.5
⑤ Front axle nut	48	4.8	34.5
⑥ Handlebar holder nut	45	4.5	32.5
⑦ Handlebar clamp bolt	25	2.5	18.0
⑧ Front brake master cylinder mounting bolt	10	1.0	7.0
⑨ Front brake caliper mounting bolt	25	2.5	18.0
⑩ Front brake caliper axle bolt	23	2.3	16.5
⑪ Front brake pad mounting bolt	18	1.8	13.0
⑫ Brake hose union bolt	23	2.3	16.5
⑬ Air bleeder valve	8	0.8	6.0
⑭ Front disc mounting bolt	23	2.3	16.5
⑮ Front footrest bolt	94	9.4	68.0
⑯ Front footrest nut	42	4.2	30.5
⑰ Swingarm pivot nut	65	6.5	47.0
⑱ Shock absorber mounting nut (Upper & Lower)	60	6.0	43.5
⑲ Rear cushion lever mounting nut	78	7.8	56.5
⑳ Rear cushion lever center nut	72	7.2	52.0
㉑ Rear torque link nut	13	1.3	9.5
㉒ Rear brake cam lever bolt	11	1.1	8.0
㉓ Rear sprocket mounting nut	27	2.7	19.5
㉔ Rear axle nut	65	6.5	47.0
㉕ Spoke nipple	4.5	0.45	3.0



## COMPRESSION PRESSURE CHECK

The compression of a cylinder is a good indicator of its internal condition.

The decision to overhaul the cylinder is often based on the results of a compression test. Periodic maintenance records kept at your dealership should include compression readings for each maintenance service.

### COMPRESSION PRESSURE SPECIFICATION

Standard	Limit
1400 kPa (14 kg/cm <sup>2</sup> , 199 psi)	980 kPa (9.8 kg/cm <sup>2</sup> , 139 psi)

**Low compression pressure can indicate any of the following conditions:**

- \* Excessively worn cylinder wall
- \* Worn-down piston or piston rings
- \* Piston rings stuck in grooves
- \* Poor seating of valves
- \* Ruptured or otherwise defective cylinder head gasket

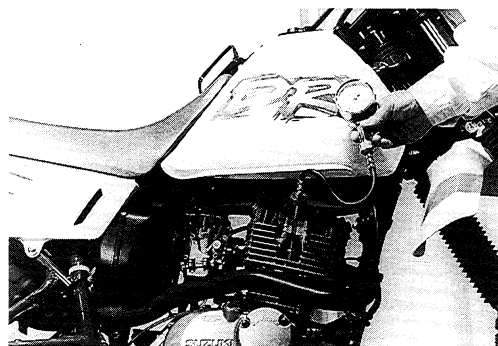
## COMPRESSION TEST PROCEDURE

### NOTE:

- \* *Before testing the engine for compression pressure, make sure that the cylinder head nuts are tightened to the specified torque values and valves are properly adjusted.*
- \* *Have the engine warmed up by idling before testing.*
- \* *Be sure that the battery used is in fully-charged condition.*

Remove the parts concerned and test the compression pressure in the following manner.

- Remove the spark plug.
- Fit the compression gauge in the plug hole, while taking care that the connection tight.
- Keep the throttle grip in full-open position.
- While cranking the engine a few seconds with the starter, and record the maximum gauge reading as the compression of that cylinder.



**09915-64510: Compression gauge**

**09915-63210: Adaptor**

## OIL PRESSURE CHECK

Check periodically the oil pressure in the engine to judge roughly the condition of the moving parts.

### OIL PRESSURE SPECIFICATION

<b>Above 15 kPa (0.15 kg/cm<sup>2</sup>, 2.1 psi)</b> <b>Below 35 kPa (0.35 kg/cm<sup>2</sup>, 4.9 psi)</b>	<b>at 3000 r/min., Oil temp. at 60°C</b>
--	--

If the oil pressure is lower or higher than the specification, the following causes may be considered.

#### LOW OIL PRESSURE

- \* Clogged oil filter
- \* Oil leakage from the oil passage way
- \* Damaged O-ring
- \* Defective oil pump
- \* Combination of above items

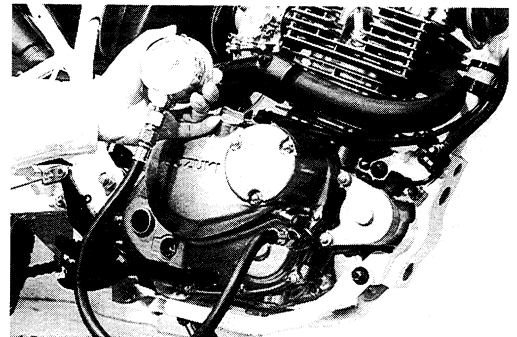
#### HIGH OIL PRESSURE

- \* Used a engine oil which is too heavy a weight
- \* Clogged oil passage way
- \* Combination of above items

## OIL PRESSURE TEST PROCEDURE

Check the oil pressure in the following manner.

- Connect a tachometer.
- Remove the main oil gallery plug.
- Install the oil pressure gauge in the position shown in the figure.
- Warm up the engine as follows:  
Summer 10 min. at 2000 r/min.  
Winter 20 min. at 2000 r/min.
- After warming up, increase the engine speed to 3000 r/min. (with a tachometer), and read the oil pressure gauge.



**09915-74510: Oil pressure gauge**

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**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 and reinstallation instructions.

**ENGINE CENTER**

	See page
Spark plug .....	3- 8
Exhaust pipe .....	3- 2
Starter motor .....	3- 3
Carburetor .....	3- 4
Clutch release cam .....	3-13
Cylinder head cover .....	3- 6
Camshaft .....	3- 9
Cylinder head .....	3- 9
Cylinder .....	3- 9
Piston .....	3-10
Cam drive chain tension adjuster .....	3- 8
Cam drive chain .....	3-11
Oil sump filter .....	3-11

**ENGINE LEFT SIDE**

	See page
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Generator rotor .....	3-10
Starter clutch .....	3-10, 31
Starter idle gear .....	3-10
Neutral switch .....	3-11
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**ENGINE RIGHT SIDE**

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Clutch cover .....	3-11
Clutch assembly .....	3-12
Primary driven gear assembly .....	3-12
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Oil pump driven gear .....	3-13
Oil pump assembly .....	3-13
Gearshift .....	3-13

## ENGINE REMOVAL AND REINSTALLATION

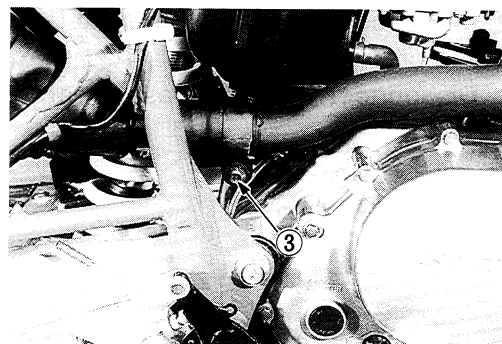
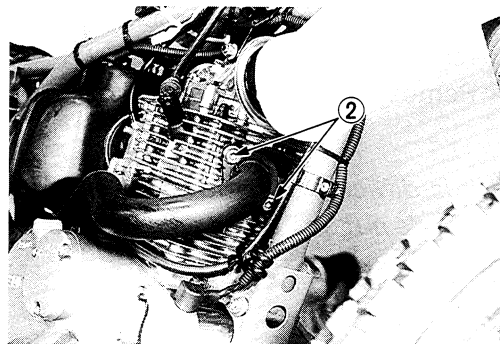
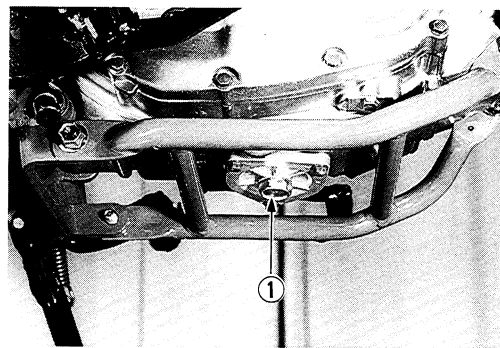
### ENGINE REMOVAL

Before taking the engine out of the frame, wash the engine with a steam cleaner. The procedure of engine removal is sequentially explained in the following steps:

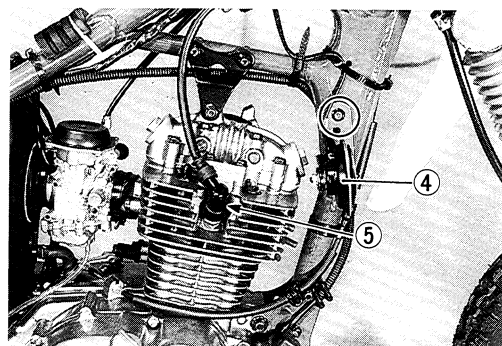
- Remove the left and right frame covers.
- Remove the seat. (See page 6-1.)
- Remove the fuel tank. (See page 4-2.)
- Drain out the engine oil by removing the oil drain plug ①.
- Remove the exhaust pipe by removing its clamp bolts ② and connector bolt ③.

09930-11920: Trox bit

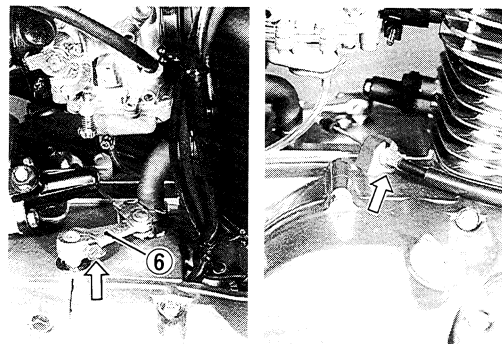
09930-11940: Bit holder



- Remove the horn ④ by removing its mounting bolt.
- Disconnect the spark plug cap ⑤.



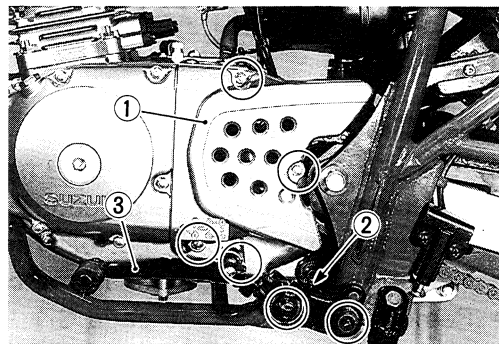
- Remove the clutch release lever ⑥ and disconnect the clutch cable.





### 3-3 ENGINE

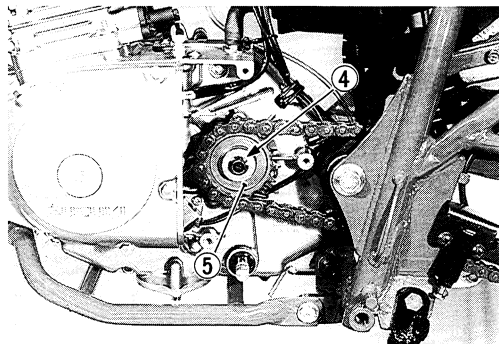
- Remove the engine sprocket cover ① .
- Remove the left footrest ② .
- Remove the gearshift lever ③ .



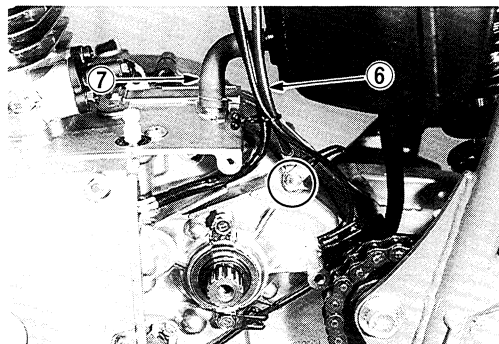
- Remove the engine sprocket bolt ④ while depressing the rear brake pedal.
- Remove the engine sprocket ⑤ .

**NOTE:**

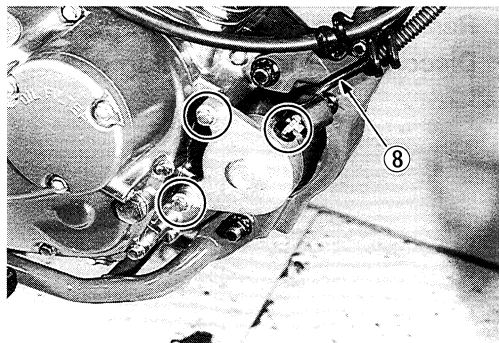
*If it is difficult to remove the engine sprocket, loosen the rear axle nut and chain adjusters to provide additional chain slack.*



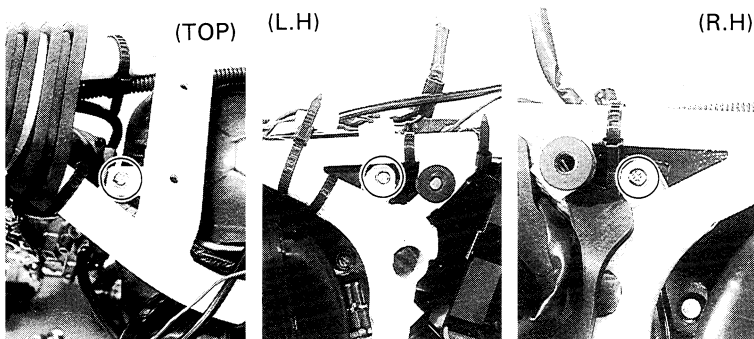
- Disconnect the engine ground lead wire ⑥ by removing the crankcase bolt.
- Disconnect the crankcase breather hose ⑦ .



- Disconnect the starter motor (+) lead wire ⑧ .
- Remove the starter motor.



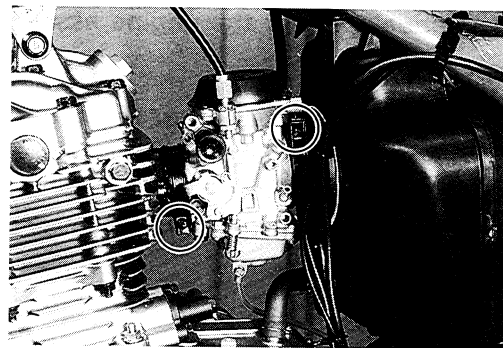
- Remove the air cleaner box mounting screws.



- Loosen the carburetor clamp screws and remove the carburetor.

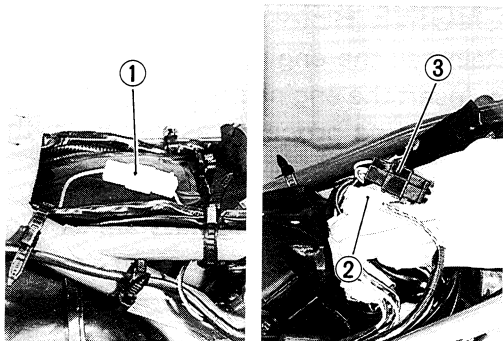
**NOTE:**

*When removing the carburetor, shift the air cleaner box backwards.*

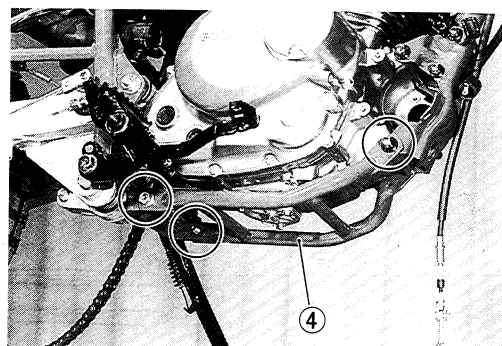


- Disconnect the various lead wires.

- ① Neutral switch lead wire
- ② Signal generator lead wires
- ③ Generator lead wires

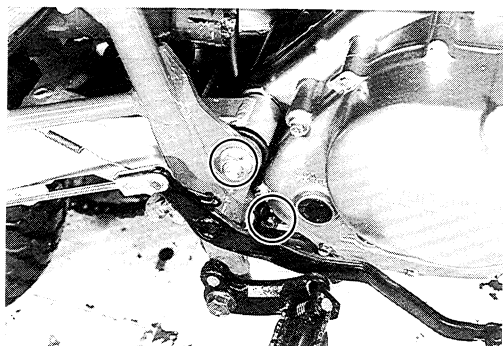
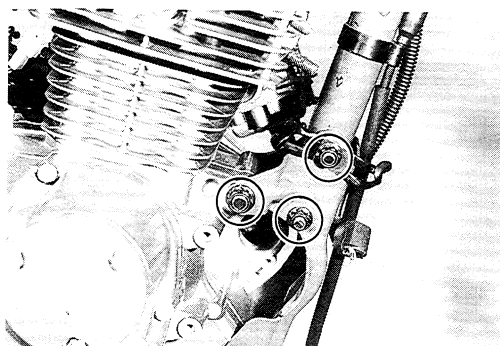
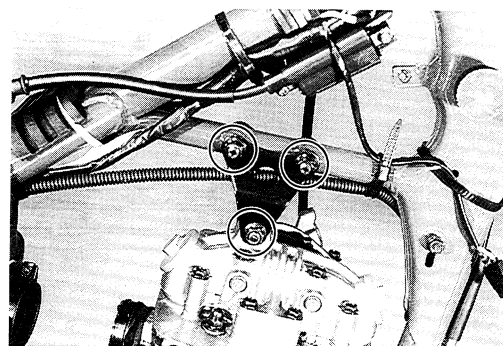


- Remove the engine under guard ④ .



- Support the engine with a proper engine jack.
- Remove the engine mounting bolts, nuts and brackets.
- Remove the swingarm pivot nut and pull out the swingarm pivot shaft.

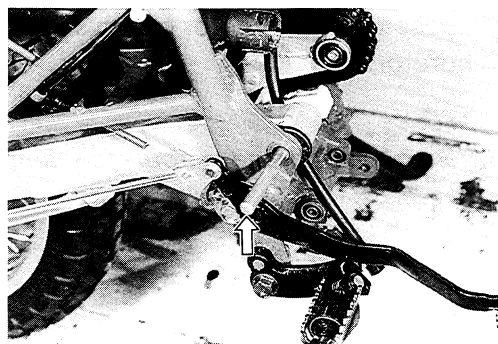
(Continued on next page.)



- Gradually lower the engine assembly on the left side.

## NOTE:

Be careful not to draw out the swingarm pivot shaft completely from the left side swingarm pivot hole. Insert the shaft or rod into the right side pivot hole from right side of the frame holes and swingarm pivot holes.



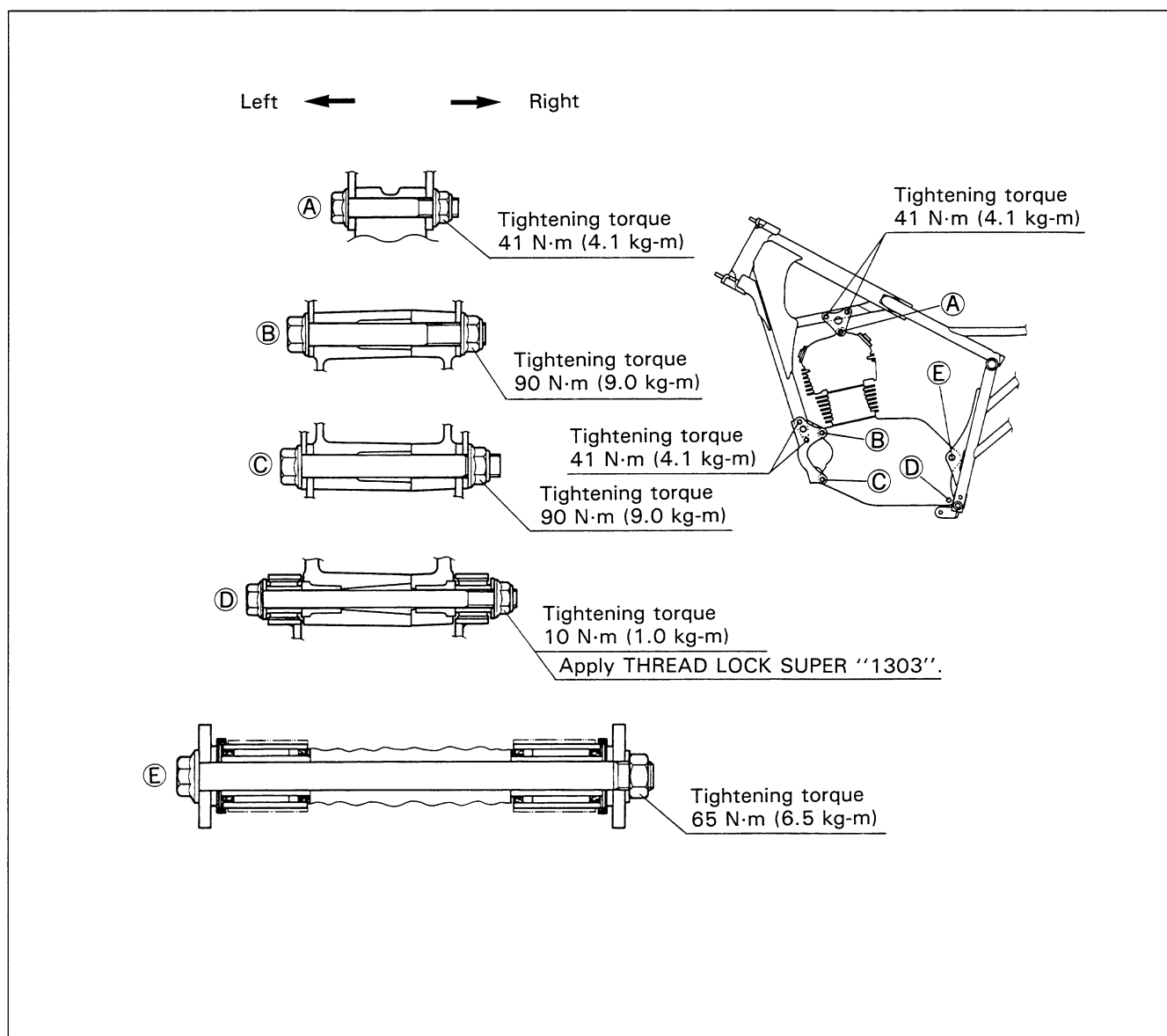
## ENGINE REINSTALLATION

Reinstall the engine in the reverse order of engine removal.

- Insert the engine mounting bolts and swingarm pivot shaft from left side. Install the brackets, bolts and nuts properly, as shown in the following illustration.

## NOTE:

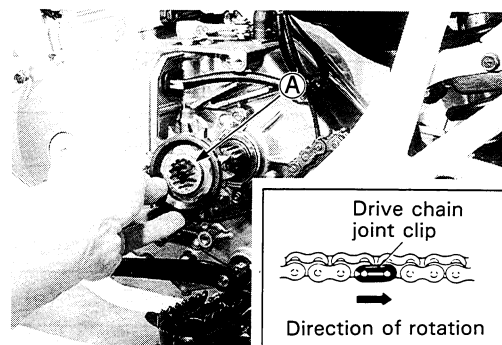
The engine mounting nuts are self-locking. Once the nut has been removed, it is no longer of any use. Be sure to use new nuts and tighten them to the specified torque.



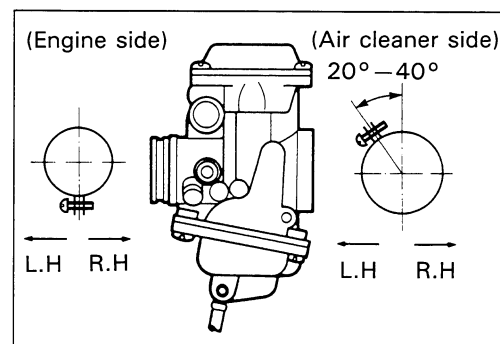
- When installing the engine sprocket, be sure to face the flange side **A** on the engine sprocket to the outside.

**WARNING:**

The slit end of the drive chain joint clip should be faced in the opposite direction of rotation.



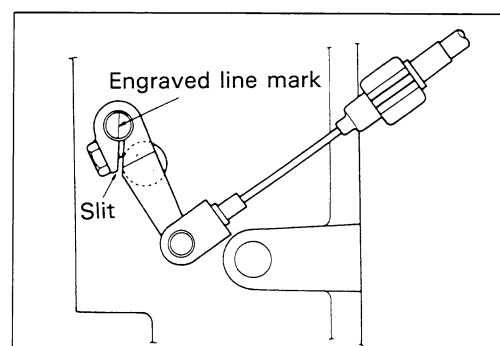
- Locate the carburetor clamps, as shown in the illustration.



- After remounting the engine, route wiring harness, cables and hoses properly by referring to the sections, for wire routing, cable routing and hose routing. (See pages 7-9 through 13.)
- Adjust the following items to the specification.

	Page
* Clutch cable play .....	2-7
* Throttle cable play .....	2-7
* Idling adjustment .....	2-6
* Drive chain .....	2-9

- When installing the clutch release arm, be sure to align the slit surface with the engraved line mark.



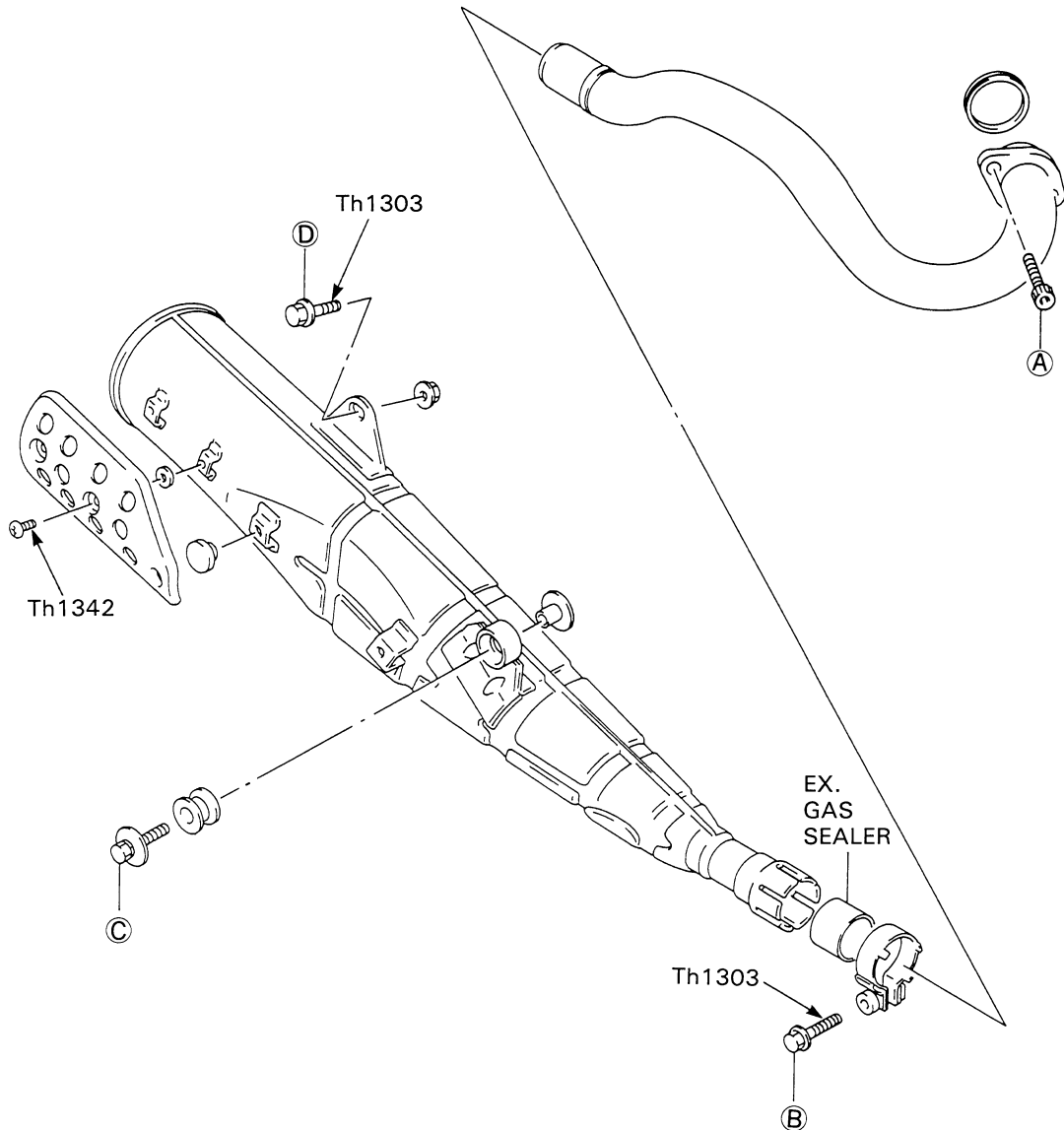
- Pour 1.3 L (1.37/1.14 US/Imp qt) of engine oil SAE 10W/40 graded SE or SF into the engine after overhauling engine.
- Start up the engine and allow it run for 3 minutes at idle speed. About one minute after stopping engine, check that oil level remains between the marks of oil level inspection window.

If the level is below the "F" mark, add oil until the level reaches the "F" mark.

Change	850 ml (0.90/0.75 US/Imp qt)
Filter change	950 ml (1.00/0.84 US/Imp qt)
Overhaul	1 300 ml (1.37/1.14 US/Imp qt)

# TIGHTENING TORQUE

ITEM	N·m	kg-m
Exhaust pipe bolt ①	23	2.3
Muffler connection bolt ②	23	2.3
Muffler mounting bolt (Front side) ③	23	2.3
Muffler mounting bolt (Rear side) ④	44	4.4



## NOTE:

When installing a new exhaust pipe/muffler connector, clean any old dried sealer from the exhaust pipe and from inside the muffler and the exhaust gas sealer should be applied to both the inside and outside of the exhaust pipe/muffler connector.

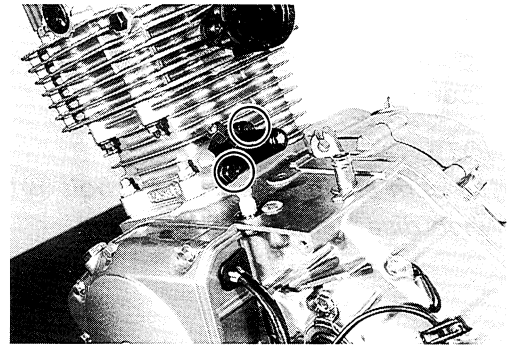
## EXHAUST GAS SEALER: PERMATEX 1372

Th1303: Apply THREAD LOCK SUPER "1303".  
Th1342: Apply THREAD LOCK "1342".

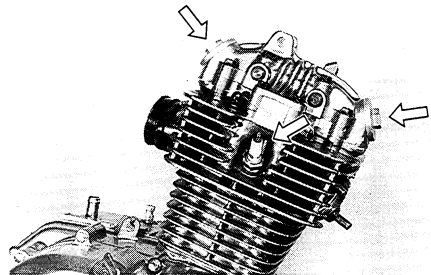
## ENGINE DISASSEMBLY

### CYLINDER HEAD

- Remove the cam chain tension adjuster.

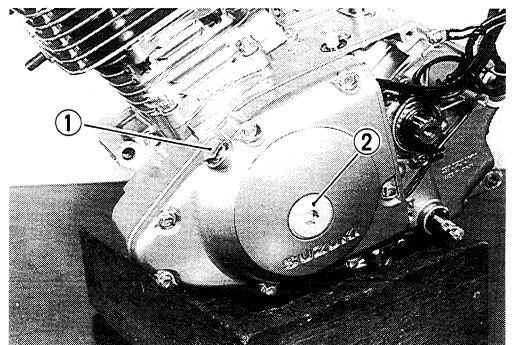


- Remove the valve inspection caps (Intake and Exhaust).
- Remove the spark plug.



- Remove the cam timing inspection cap ① and generator cover cap ② .

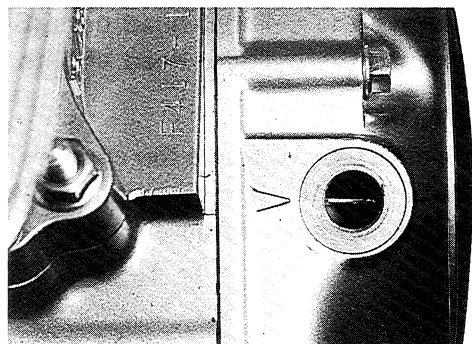
**09900-00401: Hexagon wrench set**



**NOTE:**

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

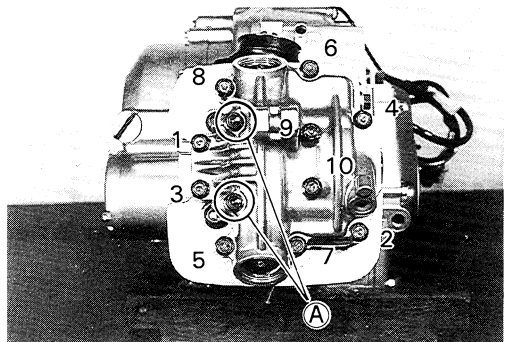
*Align "Top" line on the generator rotor with the index mark on the generator cover.*



- Loosen the cylinder head cover bolts in the ascending order numbers and detach the cylinder head cover.

**NOTE:**

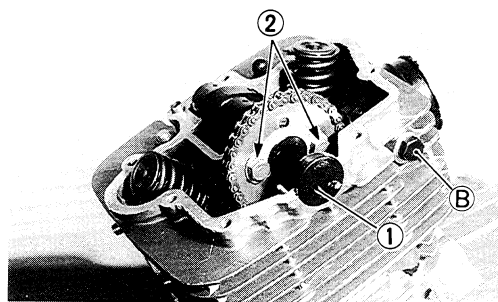
*When removing the cylinder head cover, do not remove the conically recessed top bolts (A).*



- Remove the camshaft end cap ① .
- Flatten the lock portion of washer and remove the cam sprocket bolts ② .

**NOTE:**

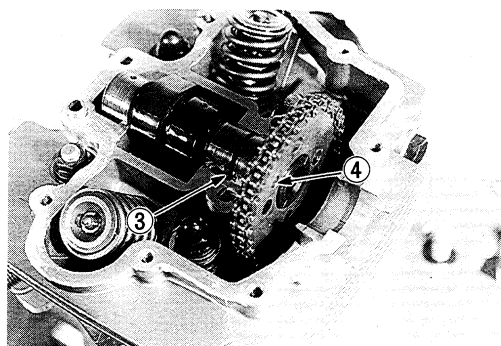
*The cam chain tensioner set bolt ⑤ is to be removed only when disassembling the engine.*



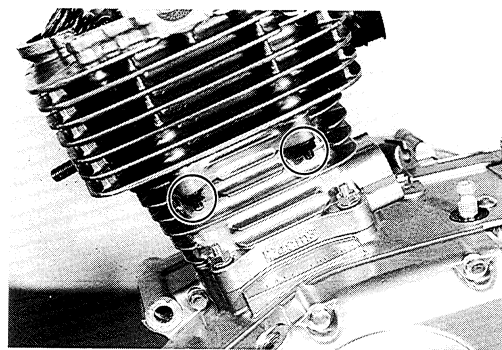
- Remove the camshaft and sprocket.
- Remove the C-ring ③ .

**CAUTION:**

**Do not drop cam sprocket locating pin ④ or C-ring ③ into the crankcase.**



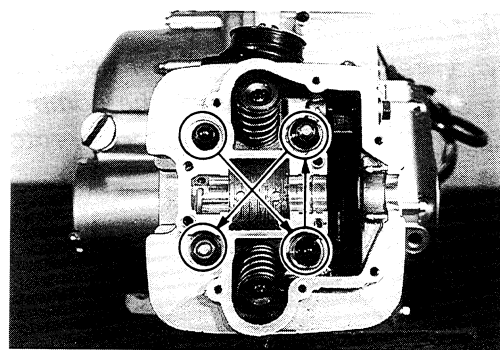
- Remove the cylinder head nuts (6-mm).



- Remove the cylinder head nuts (8-mm) diagonally.
- Remove the cylinder head and its gasket.

**CAUTION:**

**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.**

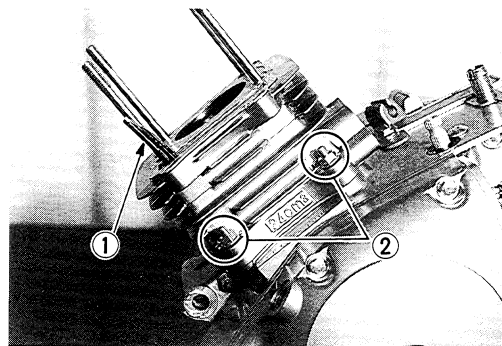


## CYLINDER

- Remove the cam chain guide ① .
- Remove the cylinder base nuts ② .
- Remove the cylinder and its gasket.

**CAUTION:**

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



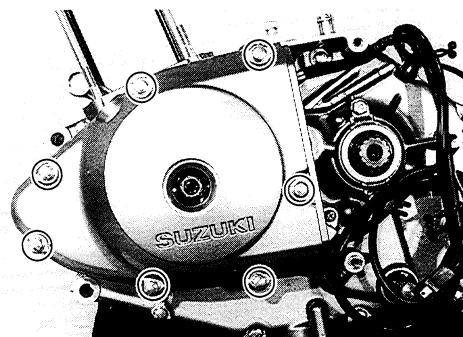
## PISTON

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



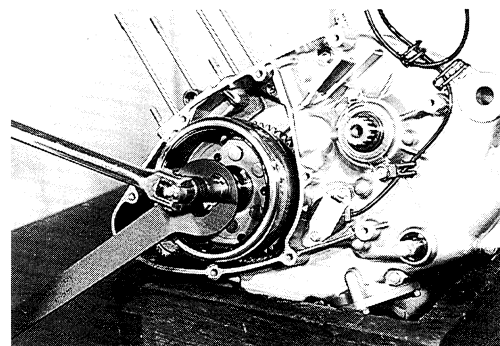
## GENERATOR AND STARTER GEARS

- Remove the generator cover.



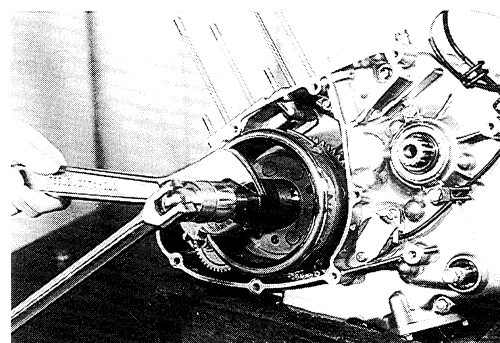
- Remove the generator rotor nut by using the special tool.

**09930-44511: Rotor holder**

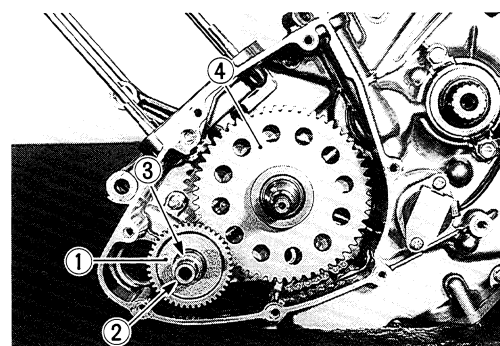


- Remove the generator rotor by using the special tool.

**09930-34932: Rotor remover**

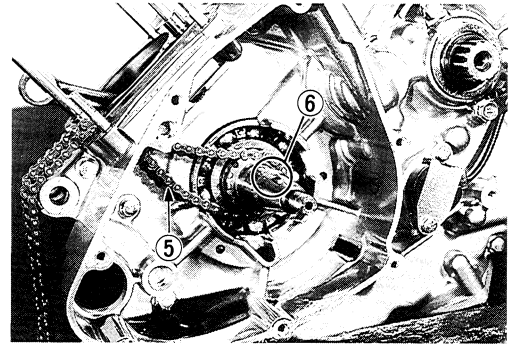


- Remove the starter idle gear ① and its shaft ② and spacer ③ .
- Remove the starter driven gear ④ .



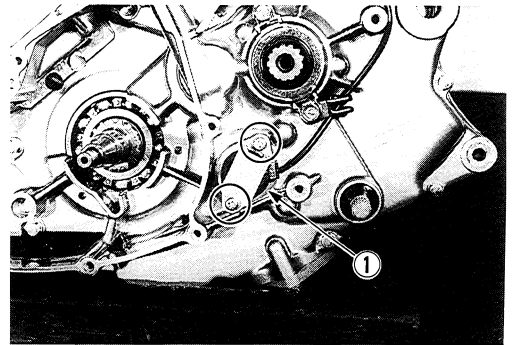


- Remove the cam drive chain ⑤ .
- Remove the key ⑥ .

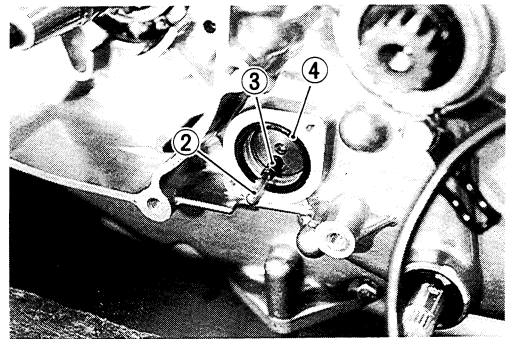


### NEUTRAL SWITCH

- Remove the neutral switch ① .

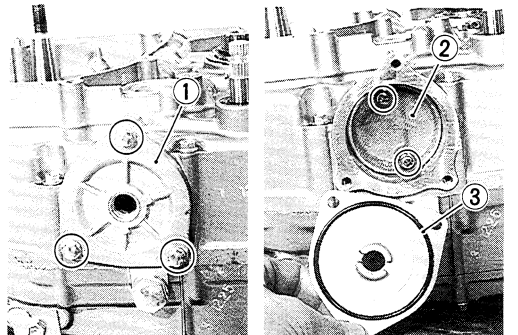


- Remove the neutral switch contact ② and its spring ③ .
- Remove the O-ring ④ .



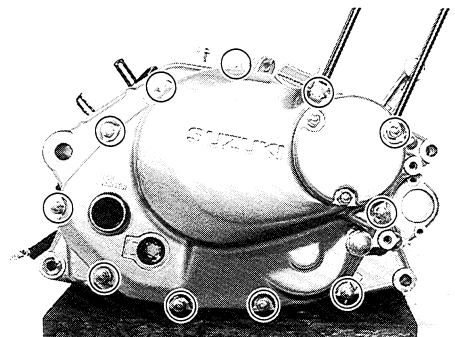
### OIL SUMP FILTER

- Remove the oil sump filter cap ① and oil sump filter ② .
- Remove the O-ring ③ .



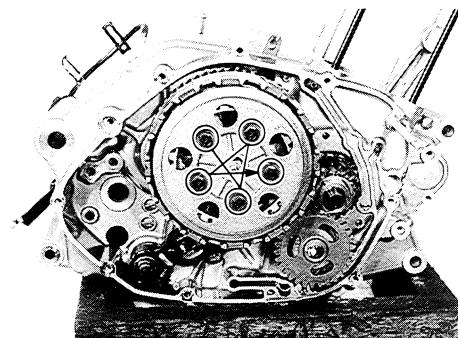
### CLUTCH COVER

- Remove the clutch cover and its gasket.

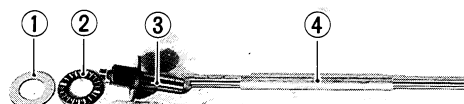
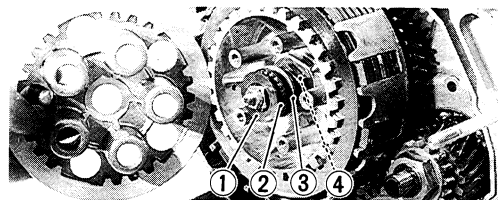


## CLUTCH

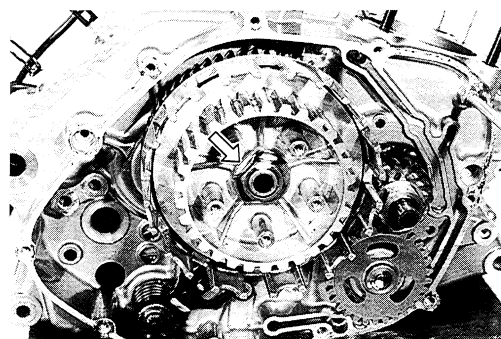
- Remove the clutch spring bolts diagonally.



- Remove the pressure plate.
- Remove the thrust washer ①, bearing ②, clutch push piece ③ and clutch push rod ④.
- Remove the clutch drive and driven plates.



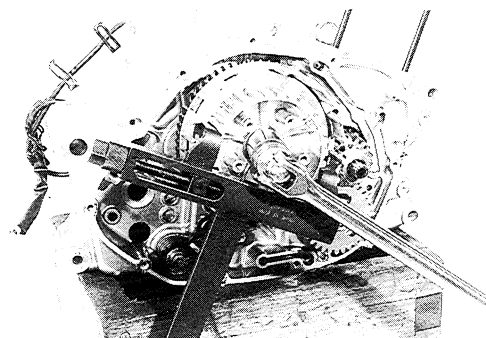
- Flatten the lock washer of the clutch sleeve nut.



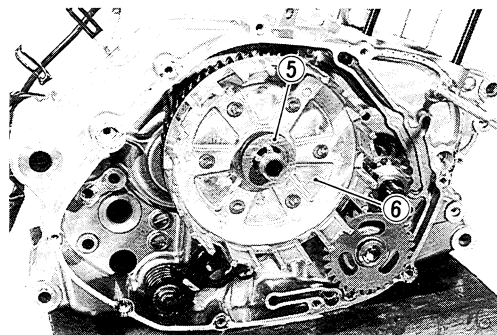
- Remove the clutch sleeve hub nut by using the special tool.

### 09920-53740: Clutch sleeve hub holder

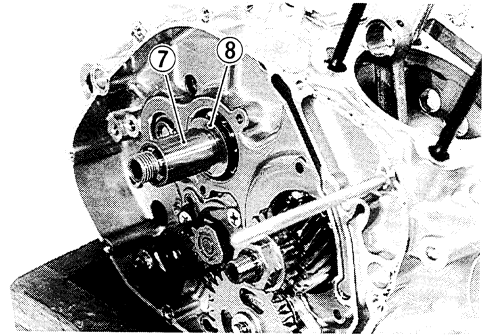
- Remove the clutch sleeve hub.



- Remove the thrust washer ⑤.
- Remove the primary driven gear assembly ⑥.

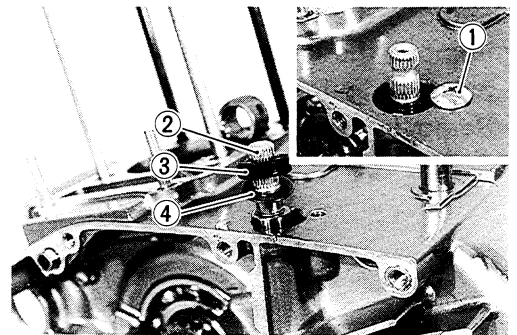


- Remove the spacer ⑦ and thrust washer ⑧ .



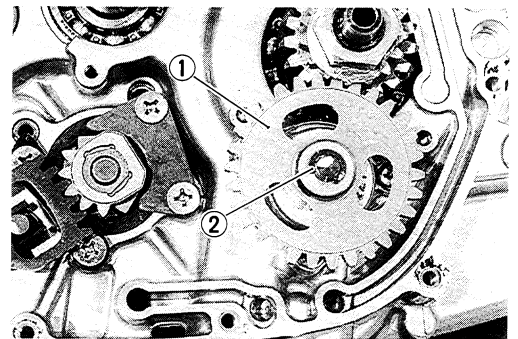
## CLUTCH RELEASE CAMSHAFT

- Remove the oil seal retainer screw ① .
- Remove the clutch release camshaft ② , oil seal ③ and washer ④ .



## OIL PUMP

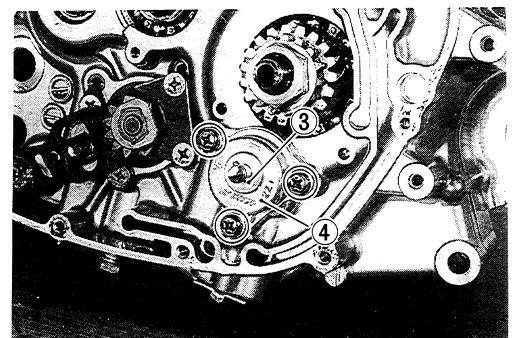
- Remove the oil pump driven gear ① by removing the circlip ② .



- Remove the pin ③ .
- Remove the oil pump ④ .

### CAUTION:

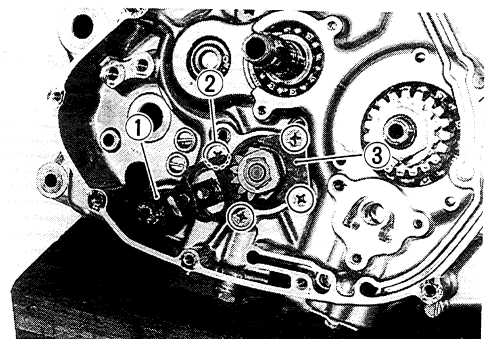
Do not attempt to disassemble the oil pump assembly.



## GEARSHIFT

- Remove the gearshift shaft ① .
- Remove the cam guide ② and pawl lifter ③ by removing the screws.

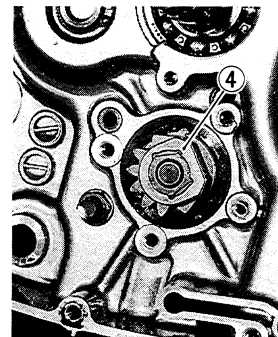
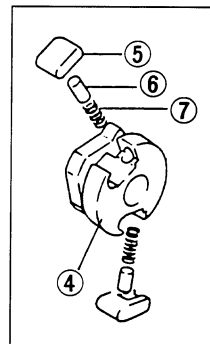
09900-09003: Impact driver set



- Remove the cam driven gear ④ .

**NOTE:**

When removing the cam driven gear ④ , do not lose the pawl ⑤ , pin ⑥ and spring ⑦ .



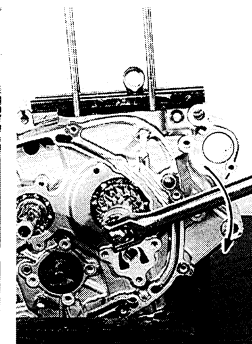
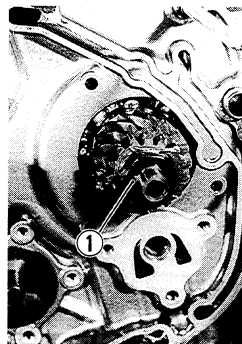
## PRIMARY DRIVE GEAR

- Flatten the lock washer of the primary drive gear nut.
- Remove the primary drive gear nut ① while holding the conrod with the conrod holder.

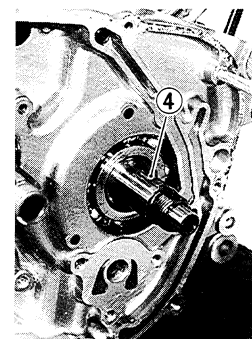
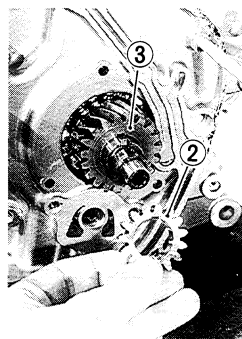
### 09910-20116: Conrod holder

**NOTE:**

This is a left-hand thread nut.

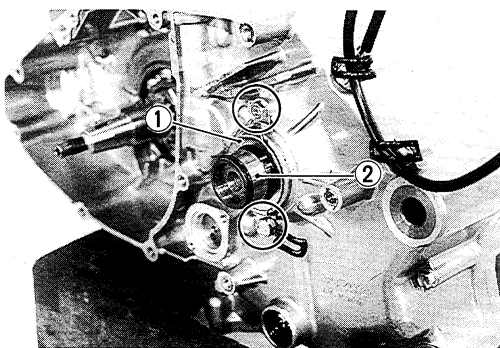


- Remove the oil pump drive gear ② and primary drive gear ③ .
- Remove the key ④ .

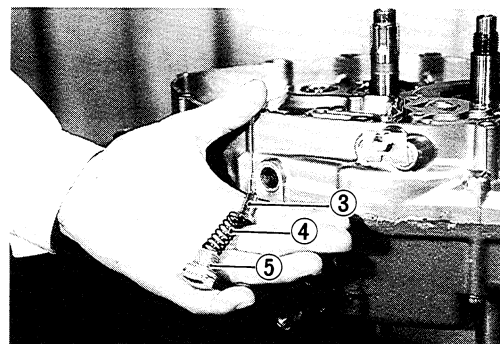


## CRANKCASE

- Flatten the lock portions of the oil seal retainer ① and remove it by removing the bolts.
- Remove the engine sprocket spacer ② .



- Remove the neutral cam stopper ③ and spring ④ by removing the bolt ⑤ .



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

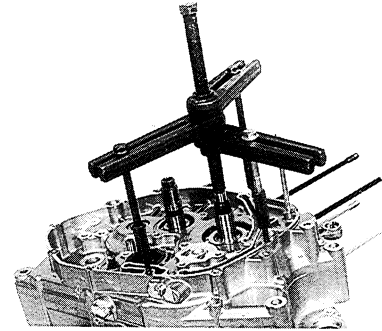
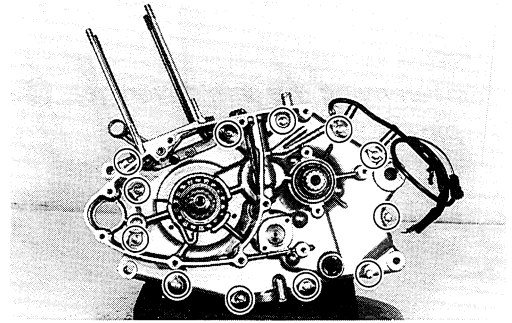
### 09920-13120: Crankcase separator

#### NOTE:

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

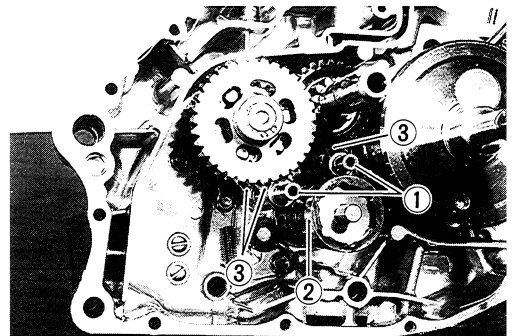
#### CAUTION:

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

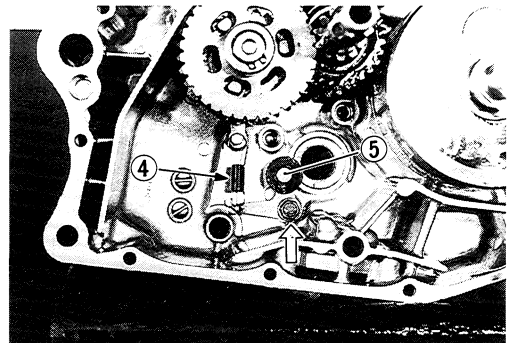


## GEARSHIFT CAM

- Remove the gearshift fork shafts ① .
- Remove the gearshift cam ② .
- Remove the gearshift forks ③ .

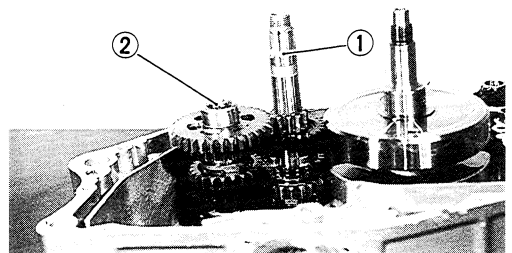


- Remove the spring ④ .
- Remove the gearshift cam stopper ⑤ by removing the bolt.



## TRANSMISSION

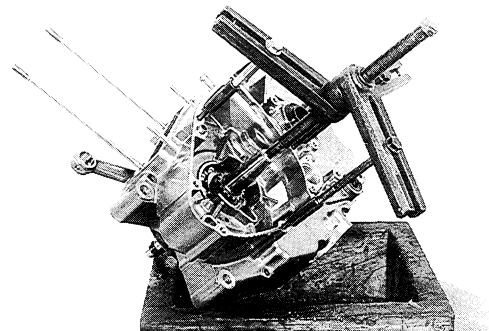
- Remove the countershaft assembly ① and driveshaft assembly ② .



## CRANKSHAFT

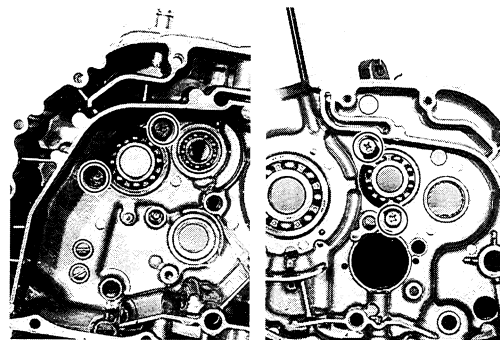
- Remove the crankshaft by using the special tool.

09920-13120: Crankcase/crankshaft separator



## CRANKCASE BEARING/OIL SEAL

- Remove the bearing retainers.



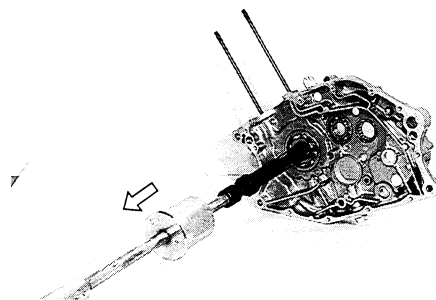
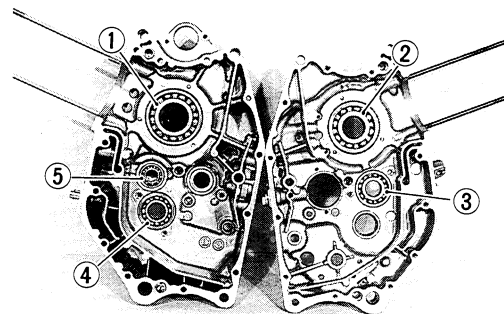
- Drive out the crankcase bearings by using the special tools.

09941-64511: Bearing remover (Bearing: ① )

09923-74510: Bearing remover (Bearing: ② ③ ④ )

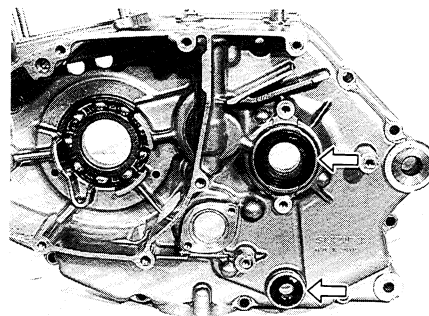
09921-20210: Bearing remover (Bearing: ⑤)

09930-30102: Sliding shaft



- Remove the oil seals by using the special tool.

09913-50121: Oil seal remover



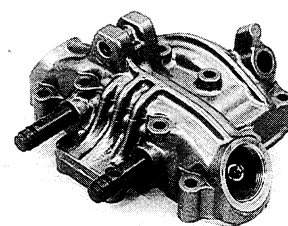
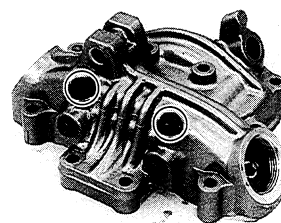
## ENGINE COMPONENTS INSPECTION AND SERVICE

### 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.

### CYLINDER HEAD COVER SERVICE

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

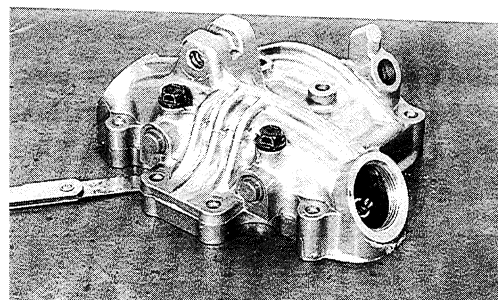


### CYLINDER HEAD COVER DISTORTION

After removing sealant 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.

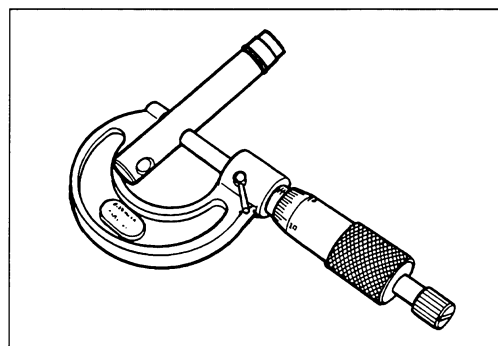


### ROCKER ARM SHAFT O.D.

Measure the diameter of rocker arm shaft with a micrometer.

**Standard: 11.977–11.985 mm (0.4715–0.4718 in)**

**09900-20205: Micrometer (0–25 mm)**

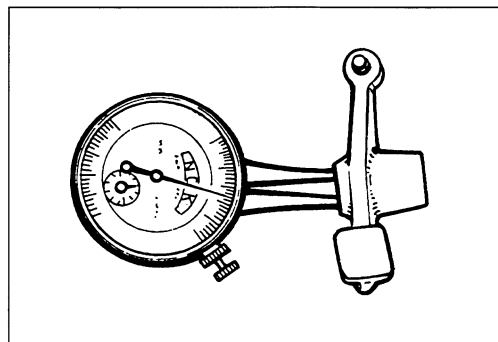


### ROCKER ARM I.D.

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.

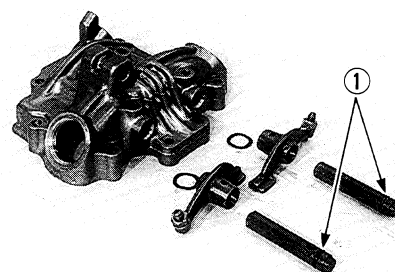
99000-25140: SUZUKI MOLY PASTE



- Install the rocker arms and shafts.

### CAUTION:

Use a new O-ring ① on the rocker arm shafts to prevent oil leakage.

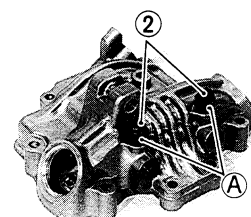


- Tighten each rocker arm shaft set bolt ② to the specified torque.

Set bolt ② : 10 N·m (1.0 kg-m)

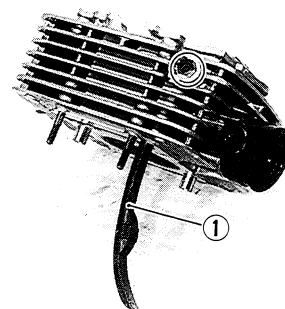
### CAUTION:

Use a new gasket A on the set bolts ② to prevent oil leakage.



## CYLINDER HEAD SERVICE

- Remove the cam chain tensioner ① .

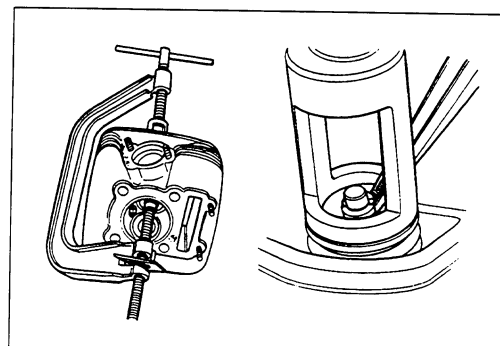


- Compress the valve springs with the valve spring compressor.
- Remove the valve cotters from the valve stem.

09916-14510: Valve spring compressor

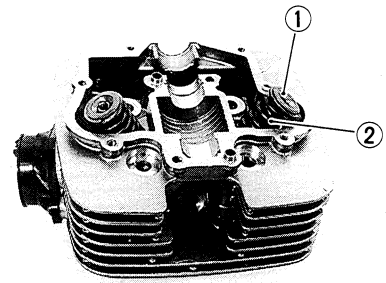
09916-14910: Attachment

09916-84511: Tweezers

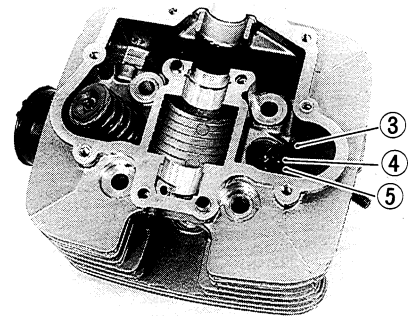




- Remove the valve spring retainer ① .
- Remove the valve springs ② (Inner and outer).



- Remove the valve ③ from the other side.
- Remove the valve stem seal ④ by using a long-nose pliers.
- Remove the valve spring seat ⑤ .



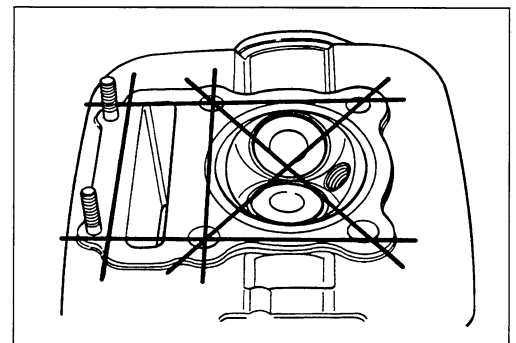
## CYLINDER HEAD DISTORTION

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)**

**09900-20803: Thickness gauge**



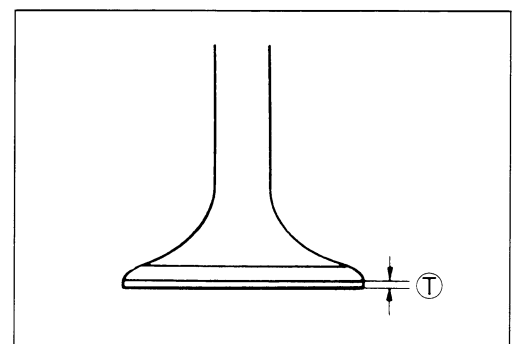
## VALVE FACE WEAR

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)**



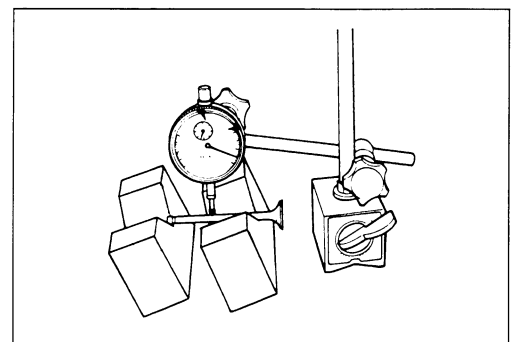
## VALVE STEM RUNOUT

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.

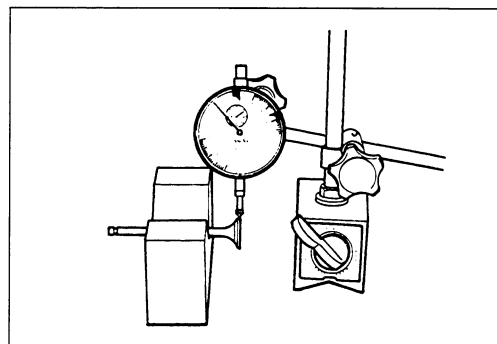
If it measures more than limit, replace the valve.

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

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

**09900-20701: Magnetic stand**

**09900-21304: V-block (100 mm)**



## VALVE STEM DEFLECTION

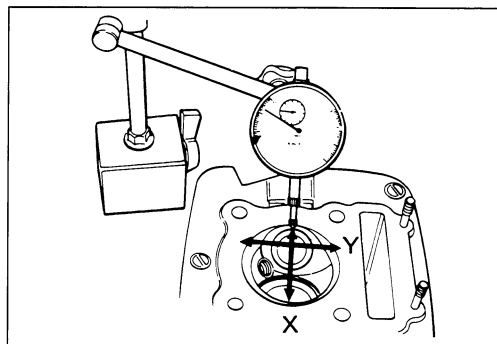
Lift the valve about 10 mm (0.39 in) from the valve seat. Measure the valve stem deflection in two directions, "X" and "Y", perpendicular to each other, by positioning the dial gauge as shown. If the deflection measured exceeds the limit, (see below) then determine whether the valve or the guide should be replaced with a new one.

**Service Limit**

**Intake and exhaust valves: 0.35 mm (0.014 in)**

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

**09900-20701: Magnetic stand**



## VALVE STEM WEAR

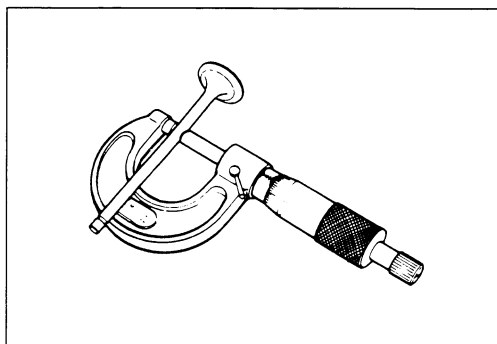
If the valve stem is worn down to the limit, when measured with a micrometer, and the clearance is found to be in excess of the limit indicated previously, replace the valve, if the stem is within the limit, then replace the guide. After replacing valve or guide, be sure to re-check the clearance.

**Valve stem O.D.**

**Standard IN. : 5.460–5.475 mm (0.2149–0.2156 in)**

**EX.: 5.445–5.460 mm (0.2143–0.2149 in)**

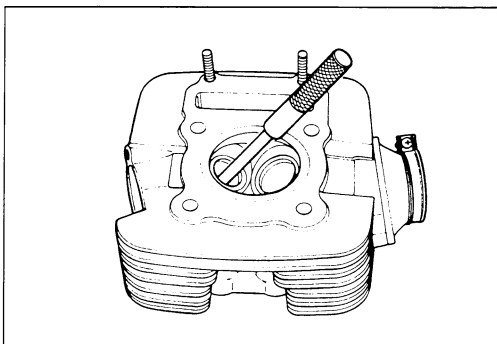
**09900-20205: Micrometer (0–25 mm)**



## VALVE GUIDE SERVICE

- Remove the valve guide with the valve guide remover.

**09916-44910: Valve guide remover**

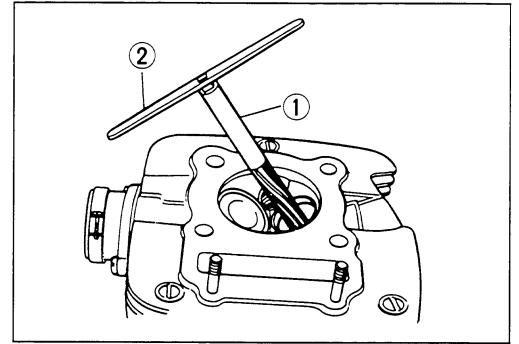


- Re-finish the valve guide holes in cylinder head with a 11.3 mm reamer ① and handle ② .

**09916-34561: 11.3 mm reamer**

**09916-34541: Handle**

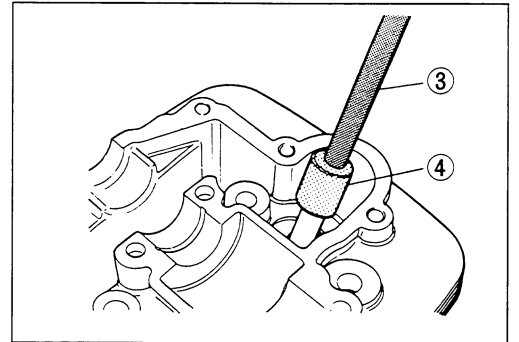
- Fit a ring to each valve guide. Be sure to use new rings and valve guides. Rings and valve guides removed in disassembly must be discarded.



- 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 .

**09916-44910: Valve guide installer handle**

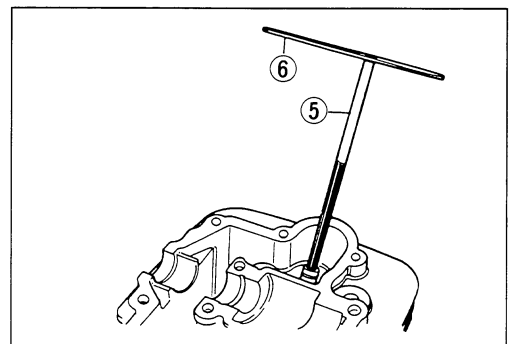
**09916-44920: Attachment**



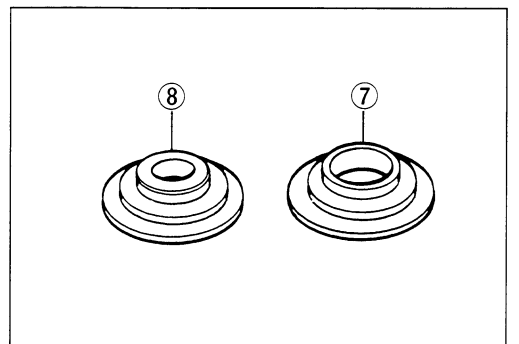
- After fitting the valve guides, re-finish their guiding bores with the 5.5 mm reamer ⑤ and handle ⑥ . Be sure to clean and oil the guides after reaming.

**09916-34550: 5.5 mm reamer**

**09916-34541: Handle**



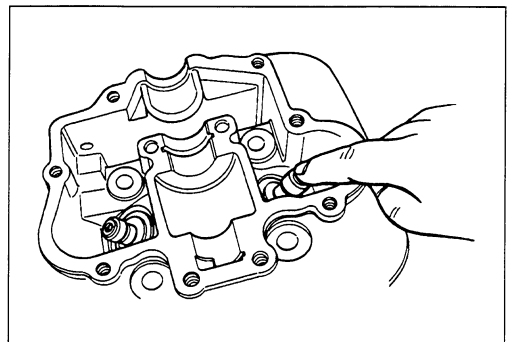
- Install the valve spring seat ⑦ . Be careful not to confuse the lower seat with the spring retainer ⑧ .



- Lubricate valve stem seal with oil, and press-fit the seal into position with the finger tip.

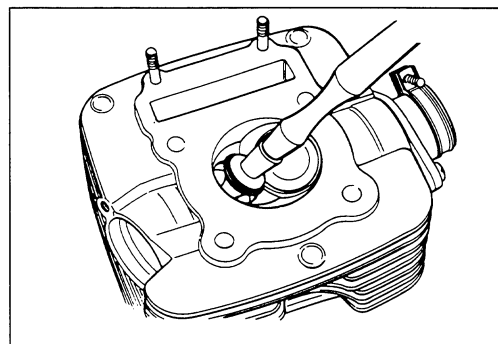
#### CAUTION:

**Do not reuse the oil seals.**



## VALVE SEAT WIDTH

Coat the valve seat uniformly with prussian blue. 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.

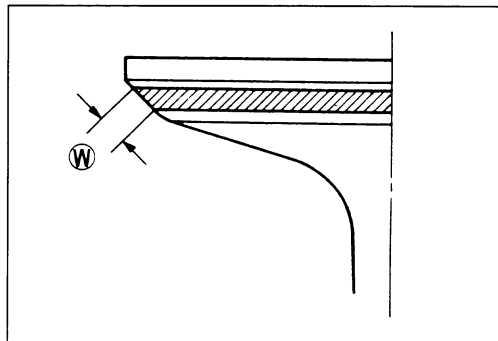


The ring-like dye impression left on the valve face must be continuous-without any break. In addition, the width of the dye ring, which is the visualized seat "width", must be within the specification.

### Valve seat width

**STD. (W) : 0.9—1.1 mm (0.04—0.05 in)**

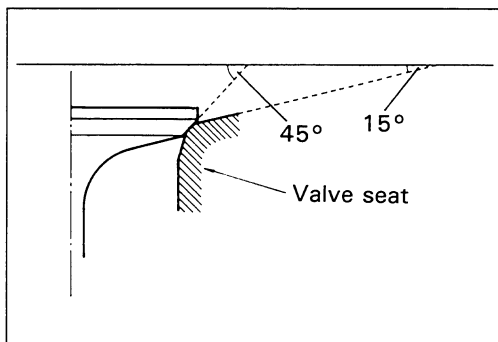
If either requirement is not met, correct the seat by servicing it as follows.



## VALVE SEAT SERVICE

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

	INTAKE SIDE	EXHAUST SIDE
45°	N-615	N-116 or 122
15°	N-615	N-116 or 121



**09916-21110: Valve seat cutter set**

**09916-20610: Cutter N-121**

**09916-20620: Cutter N-122**

**09916-24210: Cutter N-615**

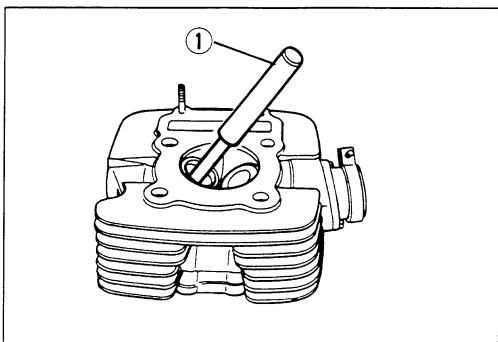
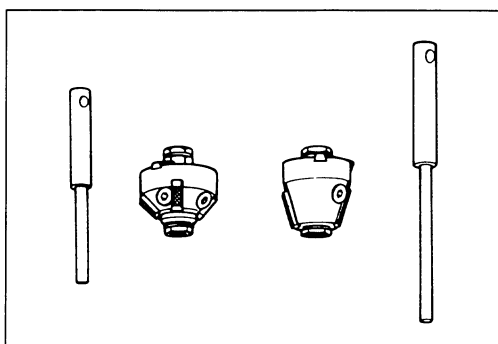
**09916-24480: Solid pilot N-140-5.5**

### NOTE:

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

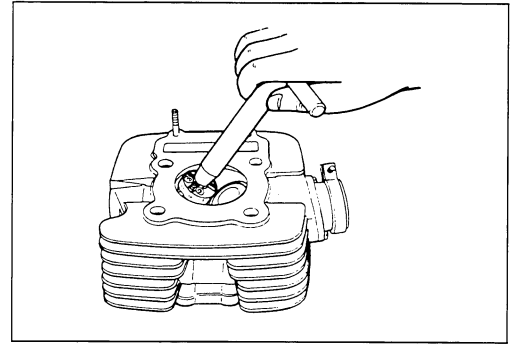
1. Insert the solid pilot ① with a slight rotation. Seat the solid pilot snugly. Install the 45° cutter, attachment and T-handle.
2. Using the 45° cutter, descale and clean up the seat with one or two turns.
3. Inspect the seat by the previously described seat width measurement procedure. If the seat is pitted or burned, additional seat conditioning with the 45° cutter is required.

(Continued on next page.)



**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.



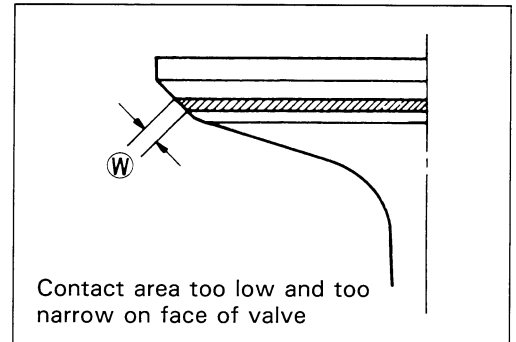
4. After the desired seat position and width is achieved, use the 45° cutter very lightly to clean up any burrs caused by the previous cutting operations. DO NOT use lapping compound after the final cut is made. The finished valve seat should have a velvety smooth finish and not a highly polished or 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:**

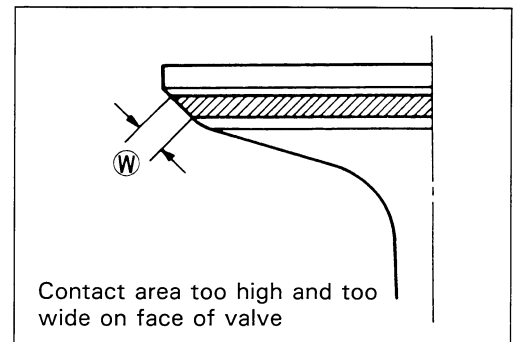
Always use extreme caution when handling gasoline.

**NOTE:**

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



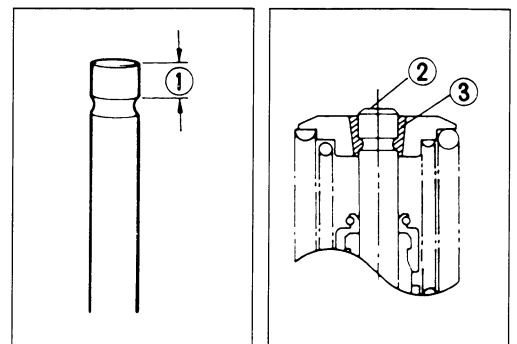
If the contact area is too low or too narrow, use the 45° cutter to raise and widen the contact area.



If the contact area is too high or too wide, use the 15° cutter 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 2.6 mm (0.1 in). If this length becomes less than 2.6 mm (0.1 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 SPRING

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.

### Valve spring free length

#### Service Limit

**INNER : 36.0 mm (1.42 in)**

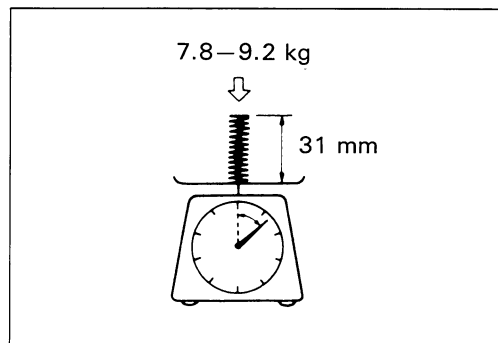
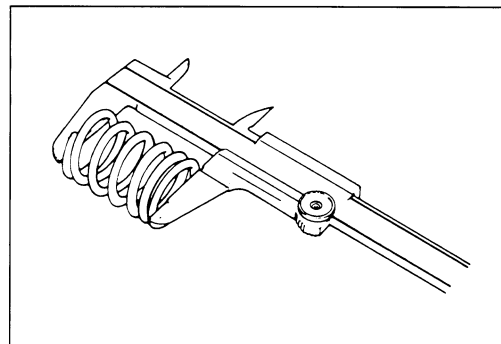
**OUTER: 39.3 mm (1.55 in)**

### Valve spring tension

#### Standard

**INNER : 7.8—9.2 kg/32.5 mm (17.2—20.3 lbs/1.28 in)**

**OUTER: 18.9—22.3 kg/36.0 mm (41.7—49.2 lbs/1.42 in)**



## VALVE AND VALVE SPRING REASSEMBLY

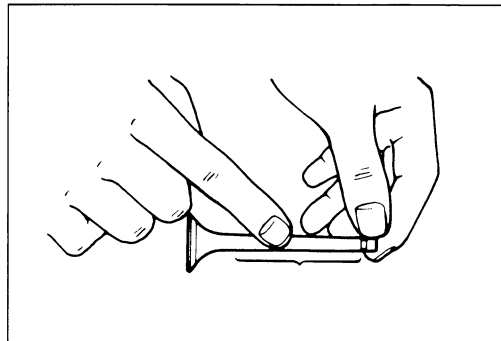
- Insert the valves, with their stems coated with (SUZUKI MOLY PASTE) all around and along the full stem length without any break.

Similarly oil the lip of the stem seal.

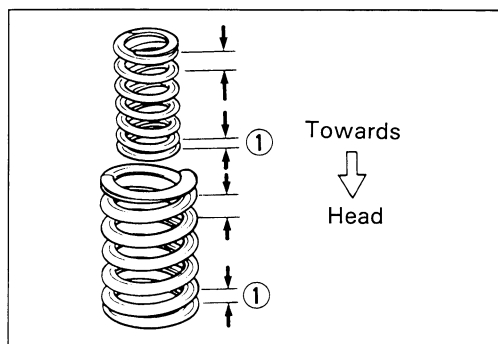
**99000-25140: SUZUKI MOLY PASTE**

### 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.

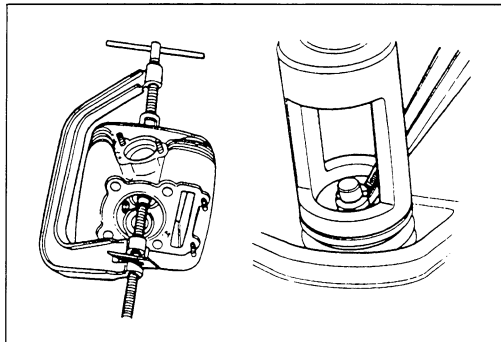


- Fit a valve spring retainer, compress the springs with a valve spring compressor and fit the cotter halves to the stem end.

**09916-14510: Valve spring compressor**

**09916-14910: Attachment**

**09916-84511: Tweezers**



## 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  $\textcircled{H}$ , which is to be measured with a micrometer.

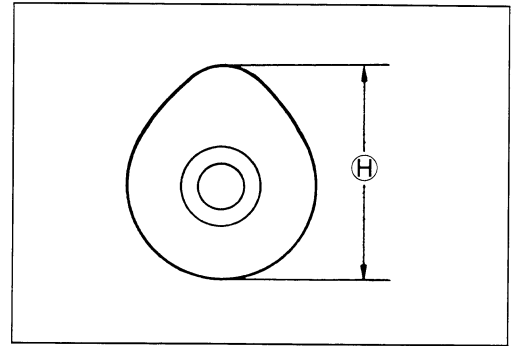
Replace the camshaft if found it worn down to the limit.

**Cam height  $\textcircled{H}$**

**Service Limit** Intake cam : 33.880 mm (1.3339 in)

Exhaust cam: 33.030 mm (1.3004 in)

09900-20202: Micrometer (25–50 mm)



## 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: 10 N·m (1.0 kg-m)**

09900-22301: Plastigauge

**NOTE:**

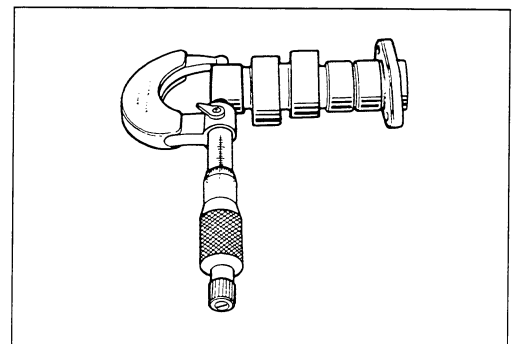
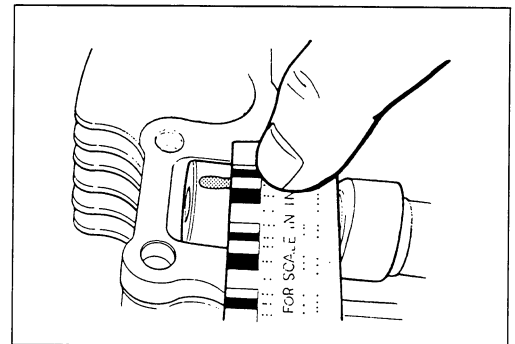
*To properly measure the oil clearance with plastigauge, all gasket material must be removed from fitting surfaces of cylinder head and cover. Do not apply SUZUKI BOND No. 1207B until after the oil clearance has been determined.*

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.

**Camshaft journal O.D.: 21.959–21.980 mm  
(0.8645–0.8654 in)**

09900-20205: Micrometer (0–25 mm)



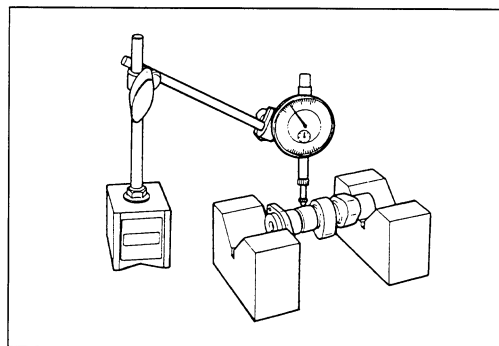
## CAMSHAFT RUNOUT

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)**

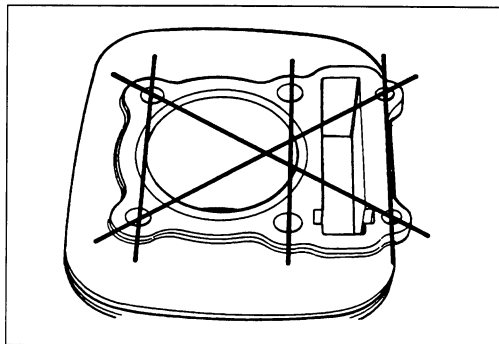


## CYLINDER DISTORTION

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)**

**09900-20803: Thickness gauge**



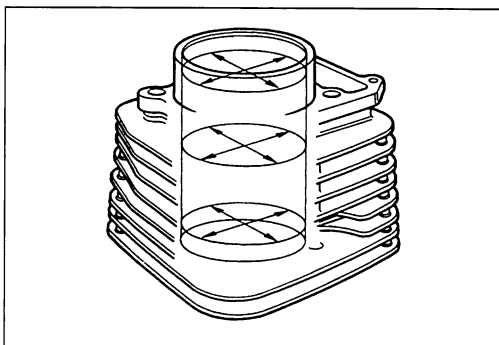
## CYLINDER BORE

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: 57.110 mm (2.2484 in)**

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



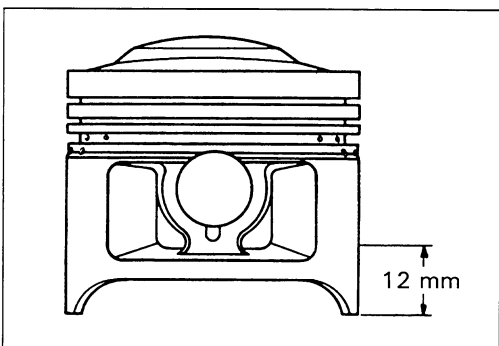
## PISTON DIAMETER

Using a micrometer, measure the piston outside diameter at the place 12 mm (0.47 in) from the skirt end as shown in Fig. If the measurement is less than the limit, replace the piston.

**Service Limit: 56.880 mm (2.2394 in)**

**Piston oversize: 0.5, 1.0 mm**

**09900-20203: Micrometer (50 – 75 mm)**



## PISTON-CYLINDER CLEARANCE

As a result of the above measurement, if the piston to cylinder clearance exceeds the following limit, 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.

### 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 : 1.21—1.23 mm (0.047—0.048 in)

2nd: 1.21—1.23 mm (0.047—0.048 in)

Oil : 2.51—2.53 mm (0.099—0.100 in)

### Piston ring thickness

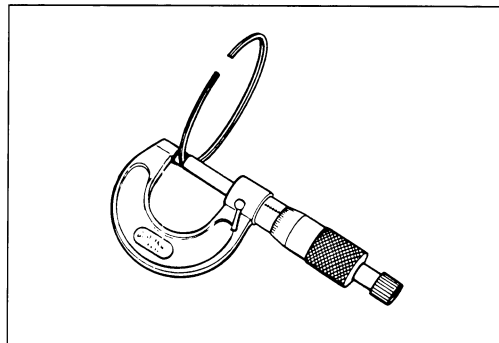
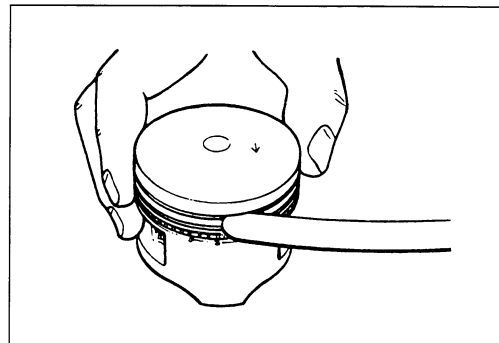
#### Standard

1st and 2nd: 1.175—1.190 mm (0.046—0.047 in)

09900-20803: Thickness gauge

#### NOTE:

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



## PISTON RING END GAP

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

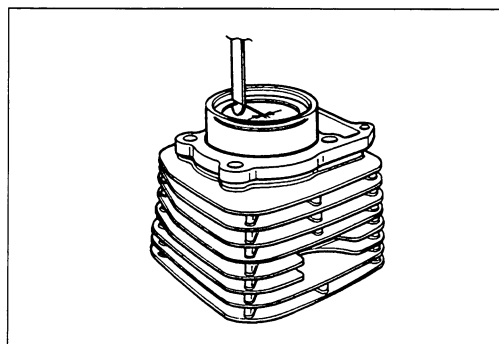
If any ring has an excess end gap, replace the ring.

### Piston ring end gap

#### Service Limit

1st and 2nd: 0.50 mm (0.02 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.

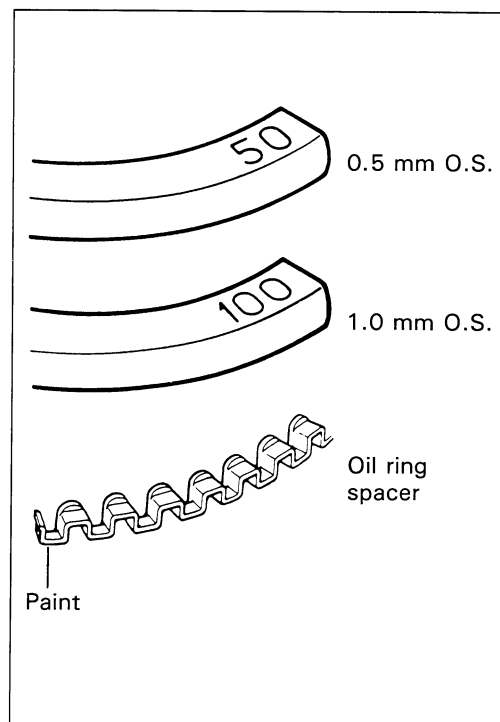
### Oil ring

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.

### Piston pin bore

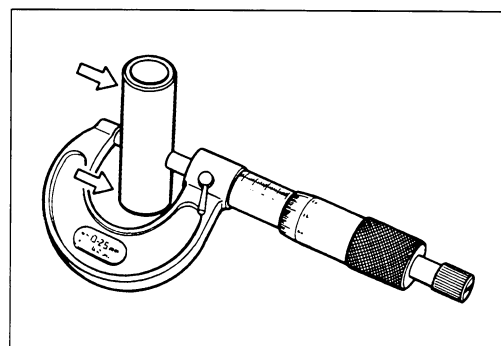
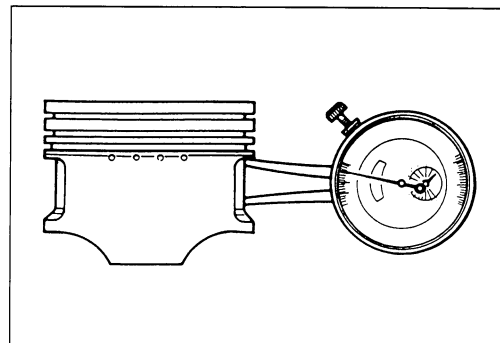
Service Limit: 14.030 mm (0.5524 in)

### Piston pin O.D.

Service Limit: 13.980 mm (0.5504 in)

09900-20605: Dial calipers

09900-20205: Micrometer (0–25 mm)



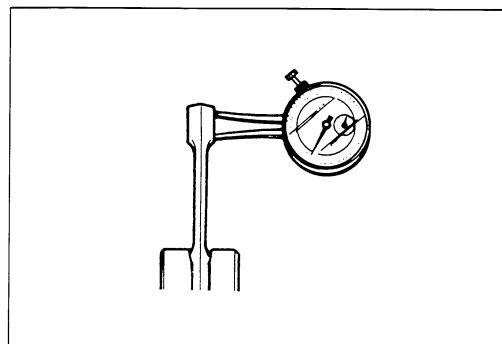
## CONROD SMALL END I.D.

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

Service Limit: 14.040 mm (0.5528 in)

09900-20605: Dial calipers

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



## 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.

**Standard: 0.10–0.45 mm (0.004–0.018 in)**

**Service Limit: 1.00 mm (0.039 in)**

**09900-20803: Thickness gauge**

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: 0.08 mm (0.003 in)**

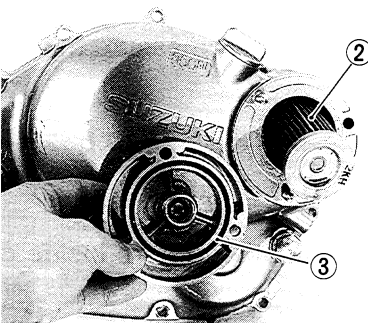
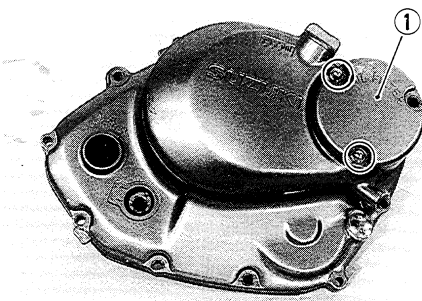
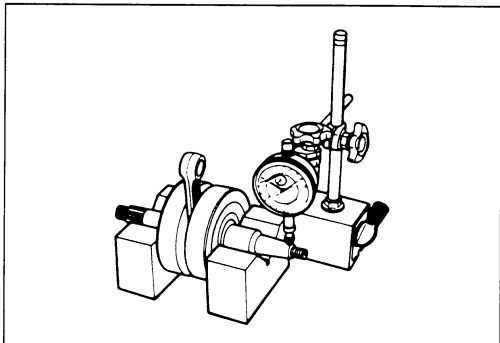
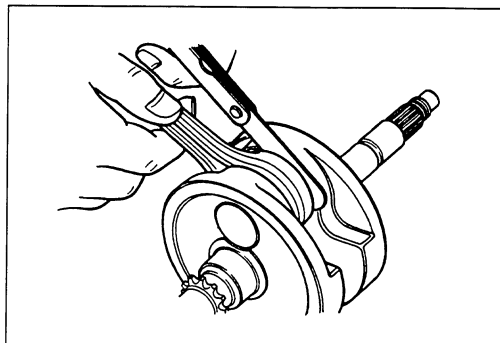
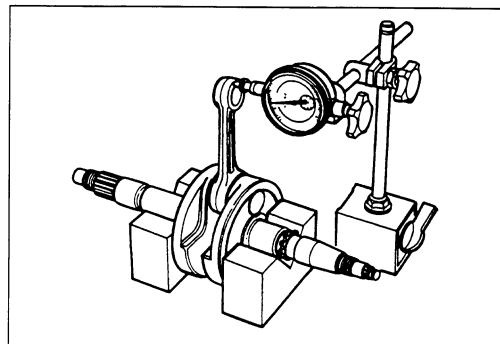
## OIL FILTER

- Remove the oil filter cap ① .

- Remove the oil filter ② .

### NOTE:

When installing the oil filter cap, apply engine oil lightly to the O-ring ③ .



## CLUTCH DRIVE PLATE

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

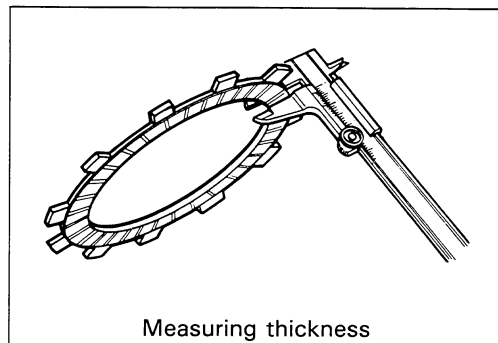
### Standard

Thickness: 2.95–3.15 mm (0.116–0.124 in)

### Service Limit

Thickness: 2.6 mm (0.10 in)

09900-20102: Vernier calipers

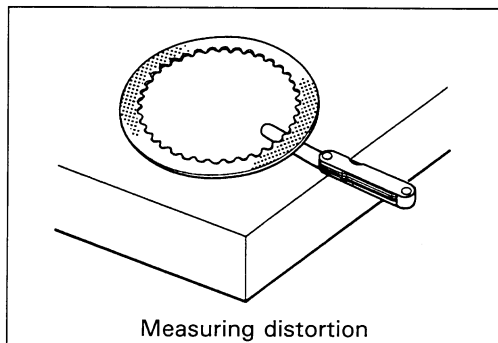


## CLUTCH DRIVEN PLATE

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

Service Limit: 0.1 mm (0.004 in)

09900-20803: Thickness gauge

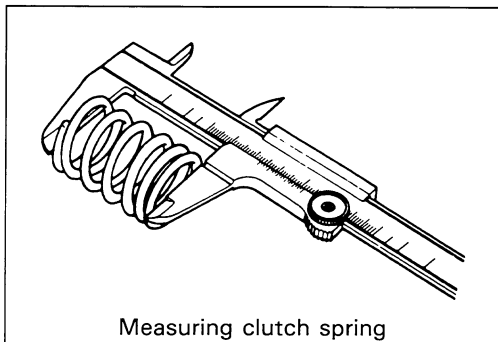


## CLUTCH SPRING FREE LENGTH

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.

Service Limit: 31.0 mm (1.22 in)

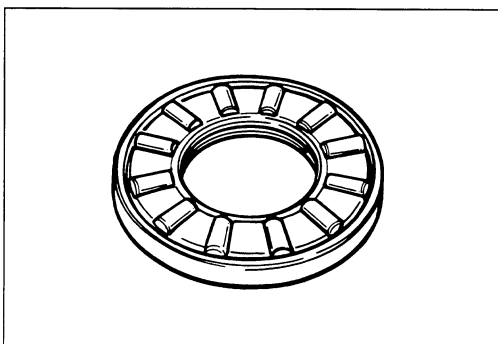
09900-20102: Vernier calipers



## 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.



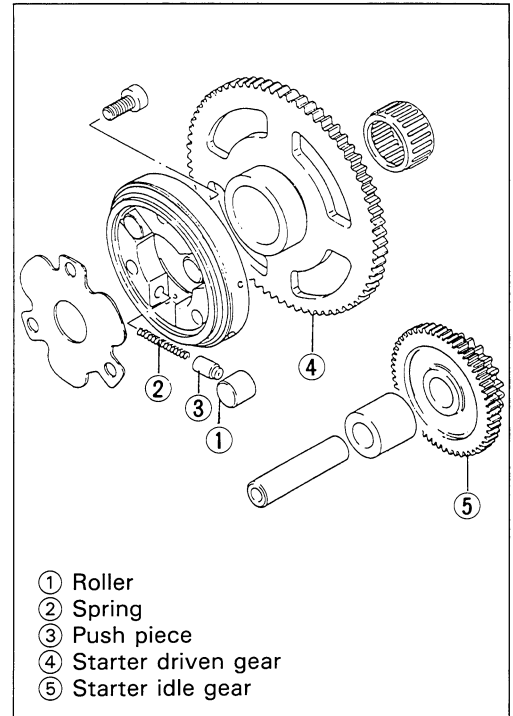
## STARTER CLUTCH AND STARTER DRIVEN GEAR BEARING

### 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.

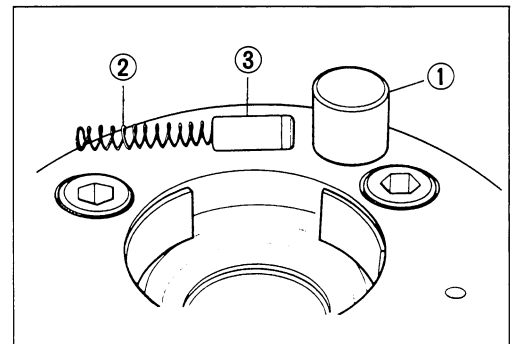
### STARTER DRIVEN GEAR BEARING

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.



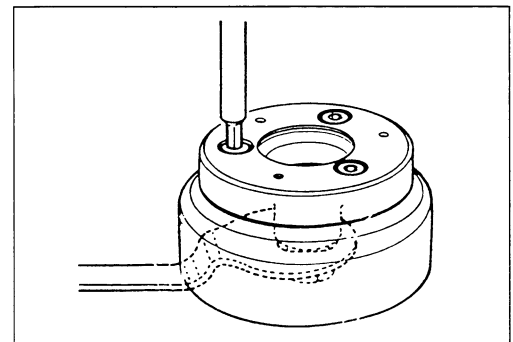
### DISASSEMBLY

- Remove the starter driven gear.
- Remove the roller ① , spring ② and push piece ③ .



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

**09930-44511: Rotor holder**

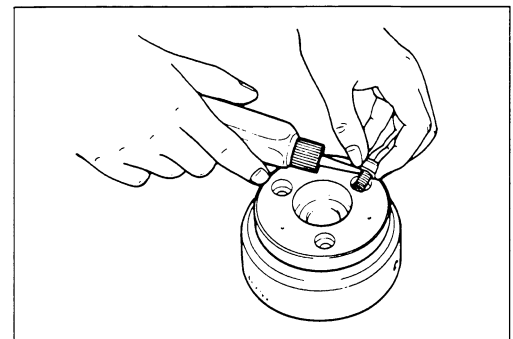


### REASSEMBLY

- Apply a small quantity of THREAD LOCK SUPER "1303" to the starter clutch securing bolts and tighten them to the specified torque by holding the rotor holder.

**99000-32030: THREAD LOCK SUPER "1303"**

**Tightening torque: 18 N·m (1.8 kg-m)**



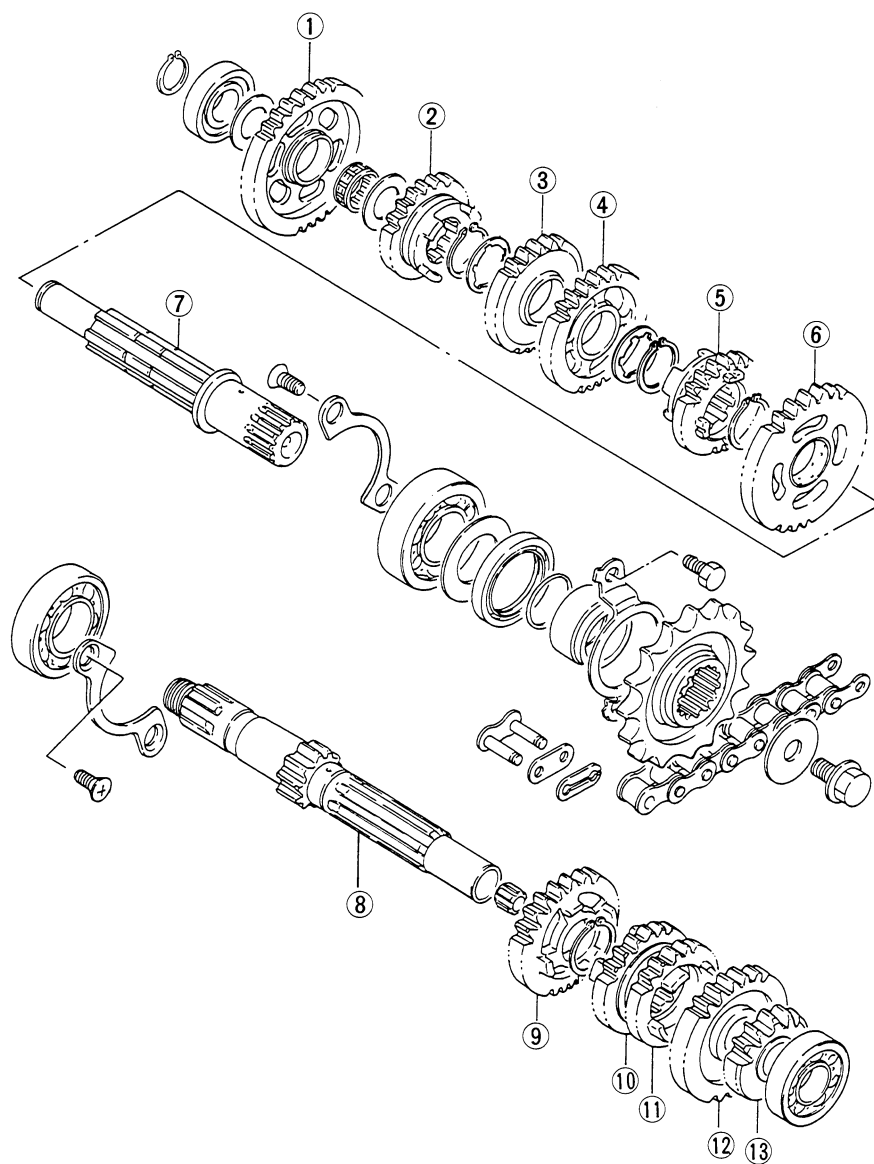
## TRANSMISSION

### DISASSEMBLY

- Disassemble the transmission gears as shown in the illustration.

#### NOTE:

*When removing the 2nd drive gear, use a gear puller and a proper attachment.*



- ① Low driven gear
- ② 5th driven gear
- ③ 4th driven gear
- ④ 3rd driven gear
- ⑤ To driven gear
- ⑥ 2nd driven gear
- ⑦ Driveshaft
- ⑧ Countershaft/Low drive gear
- ⑨ 5th drive gear
- ⑩ 4th drive gear
- ⑪ 3rd drive gear
- ⑫ Top drive gear
- ⑬ 2nd drive gear

## 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.*

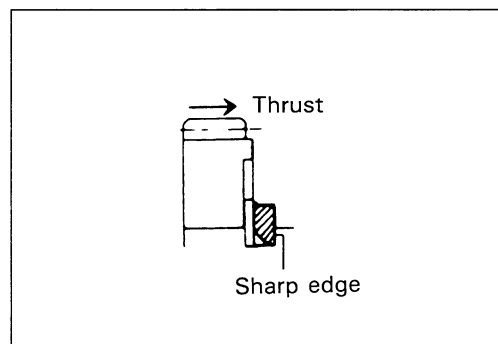
#### NOTE:

*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 the figure.



#### 2nd drive gear

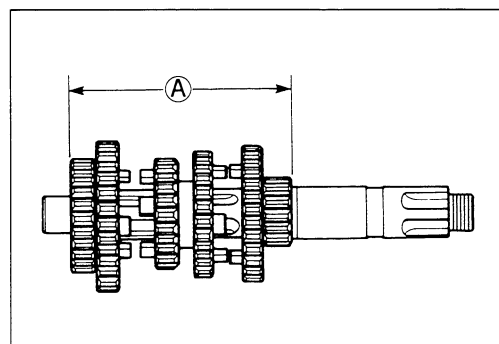
- Press fitted 2nd drive gear onto the countershaft. Before reassembling, coat the internal face of the 2nd drive gear with THREAD LOCK SUPER "1303" and install it so that the length ① is as shown in the illustration.

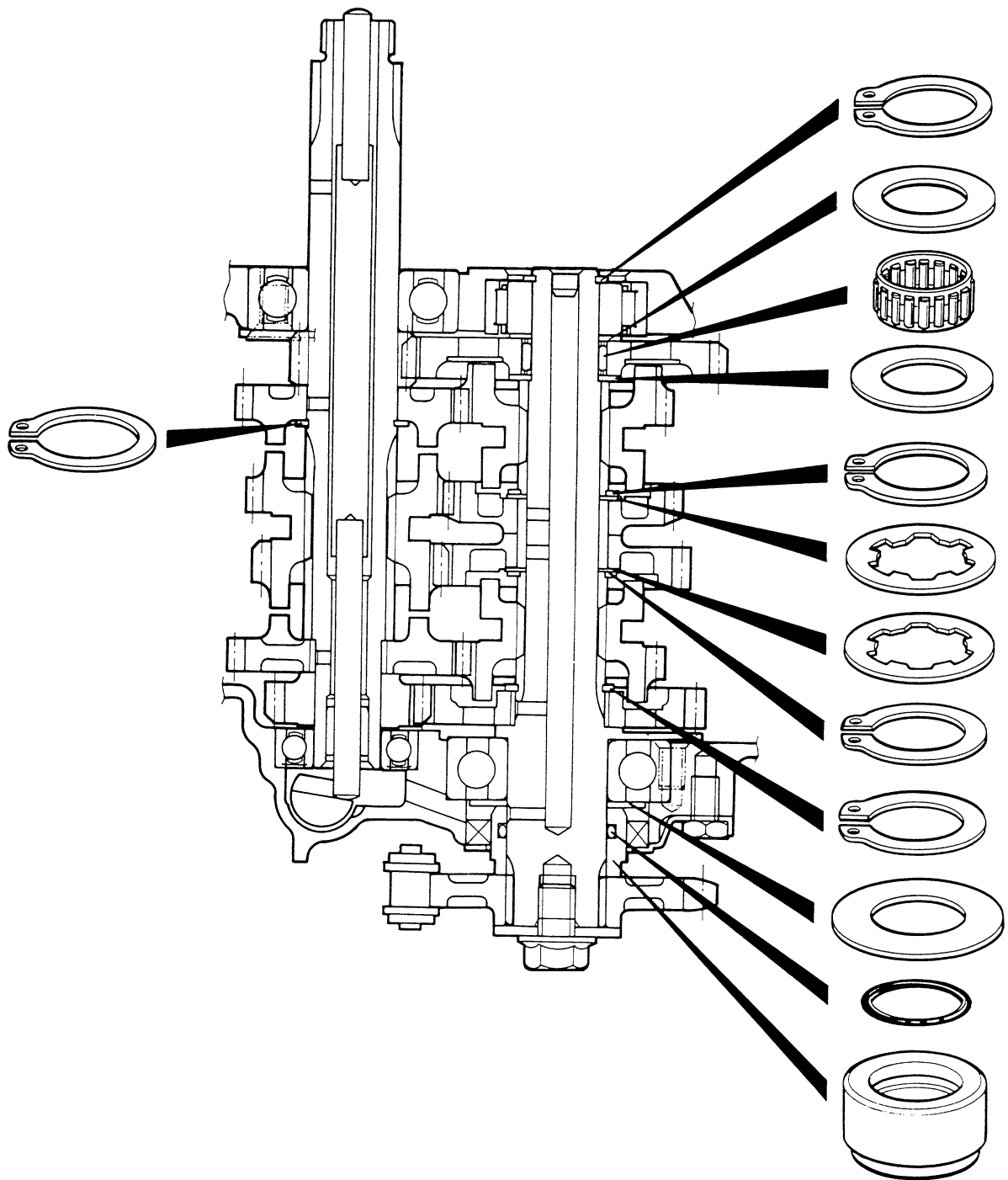
Countershaft length ①:  $88.0 \pm 0.1$  mm  
 (Low to 2nd)  $(3.46 \pm 0.004)$  in

### 99000-32030: THREAD LOCK SUPER "1303"

#### NOTE:

- \* Take care not to smear TOP drive gear with THREAD LOCK SUPER "1303".
- \* After installing the 2nd drive gear, check that TOP drive gear spins smoothly by moving it with your fingers.
- \* This procedure may be performed only twice before shaft replacement is required.







## 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.

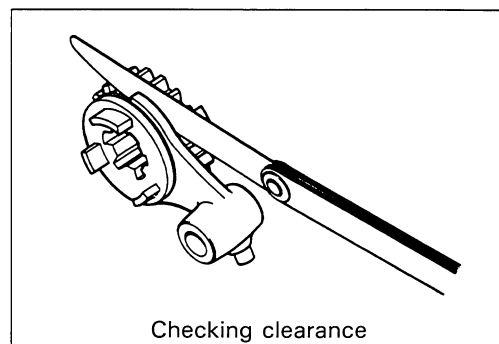
### Shift fork-Groove clearance

**Standard:** 0.10—0.30 mm (0.004—0.012 in)

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

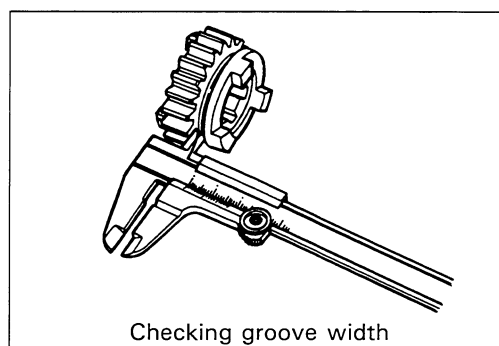
**09900-20803:** Thickness gauge

**09900-20102:** Vernier calipers



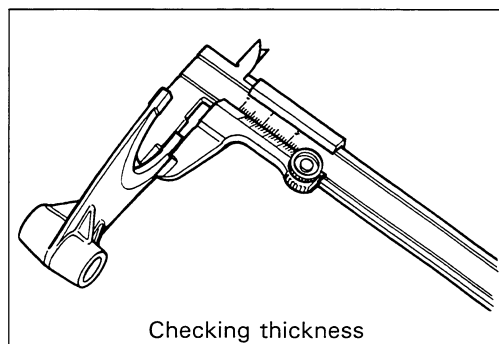
### Shift fork groove width

**Standard** (No.1&No.2): 5.0—5.1 mm (0.20—0.21 in)  
 (No.3) : 5.5—5.6 mm (0.22—0.23 in)



### Shift fork thickness

**Standard** (No.1&No.2): 4.8—4.9 mm (0.18—0.19 in)  
 (No.3) : 5.3—5.4 mm (0.20—0.21 in)

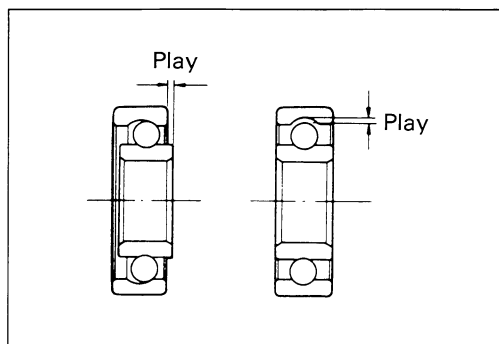


## CRANKCASE BEARING

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

The engine is reassembled by carrying out the steps of disassembly in the reversed order, but there are a number of steps which demand special descriptions or precautionary measures.

**NOTE:**

*Apply engine oil to each running and sliding part before reassembling.*

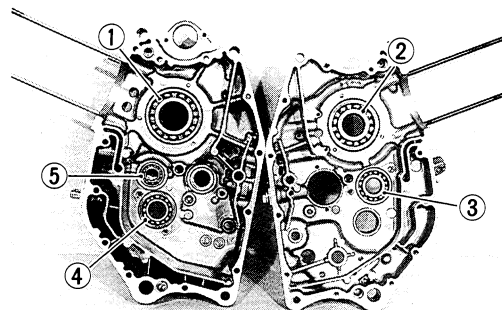
### CRANKCASE BEARING

- Install the bearings to the crankcase by using the special tools.

**09913-75510: Bearing installer (① ②)**

**09913-76010: Bearing installer (③ ④)**

**09913-75821: Bearing installer (⑤)**

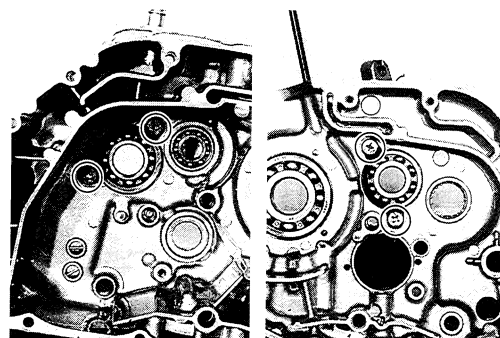


- Install the bearing retainers.

**NOTE:**

*Apply a small quantity of THREAD LOCK "1342" to the bearing retainer screws.*

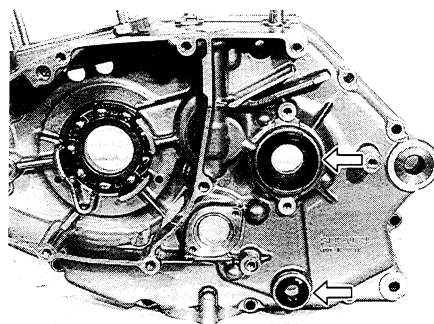
**99000-32050: THREAD LOCK "1342"**



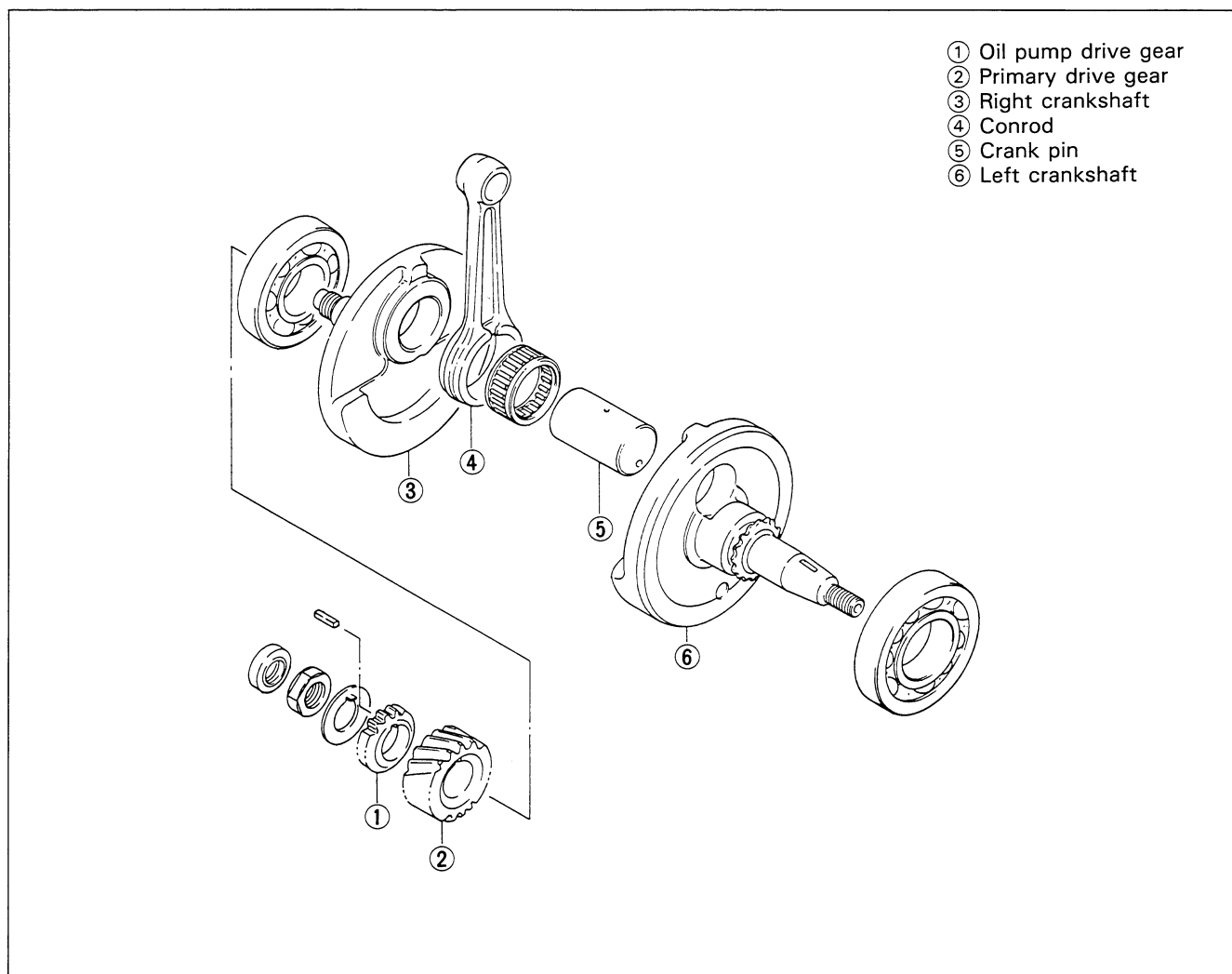
### OIL SEAL

- Install the oil seals to the crankcase with a proper drift.
- Apply SUZUKI SUPER GREASE "A" to the oil seal lip.

**99000-25030: SUZUKI SUPER GREASE "A"**

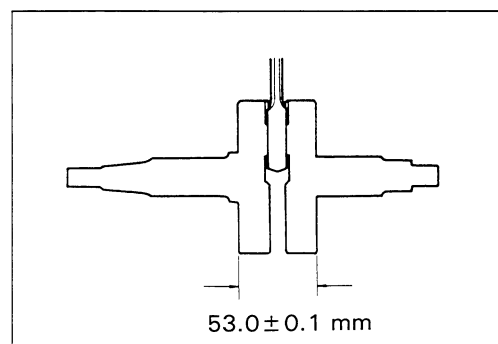


## CRANKSHAFT



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

**STD width between webs:  $53.0 \pm 0.1$  mm**  
**( $2.09 \pm 0.004$  in)**

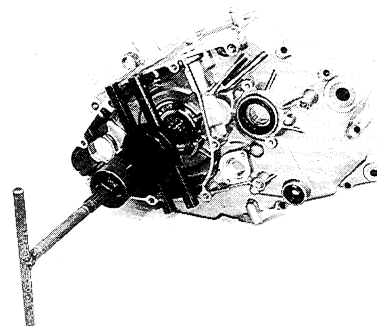


- When installing the crankshaft in the crankcase, it is necessary to pull its left end into the left crankcase by using the special tools.

**09910-32812: Crankshaft installer**  
**09910-20116: Conrod holder**

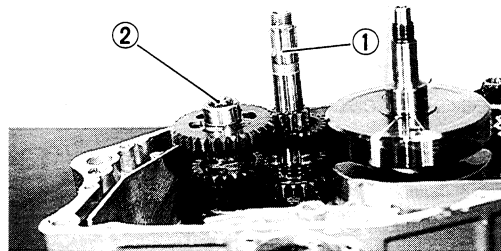
### CAUTION:

Never install the crankshaft into the crankcase by striking it with a plastic hammer. Always use the special tool, otherwise crankshaft alignment accuracy will be affected.



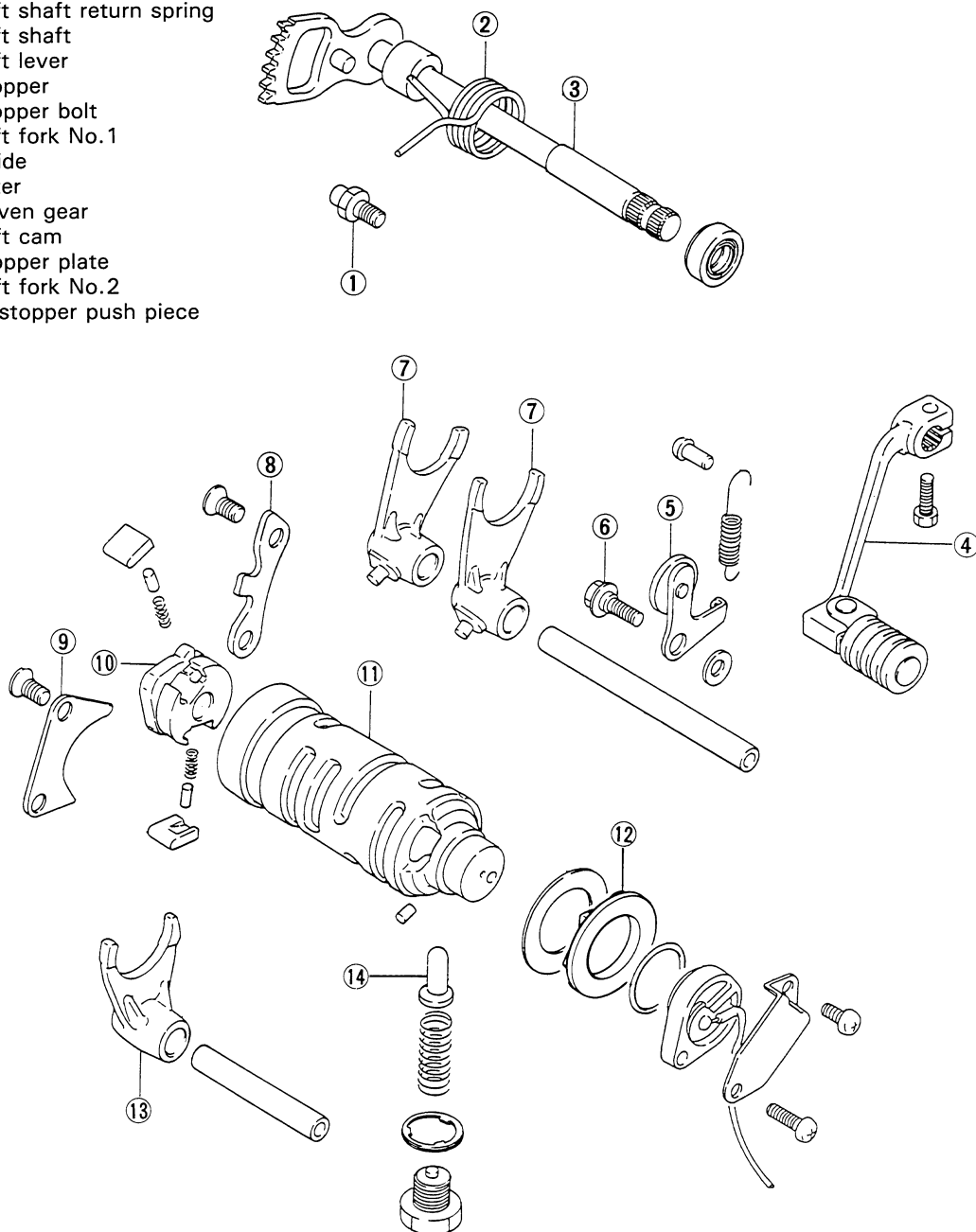
## TRANSMISSION

- Install the countershaft assembly ① and driveshaft assembly ② into the left crankcase.



## GEARSHIFT MECHANISM

- ① Gearshift arm stopper
- ② Gearshift shaft return spring
- ③ Gearshift shaft
- ④ Gearshift lever
- ⑤ Cam stopper
- ⑥ Cam stopper bolt
- ⑦ Gearshift fork No.1
- ⑧ Cam guide
- ⑨ Pawl lifter
- ⑩ Cam driven gear
- ⑪ Gearshift cam
- ⑫ Cam stopper plate
- ⑬ Gearshift fork No.2
- ⑭ Neutral stopper push piece



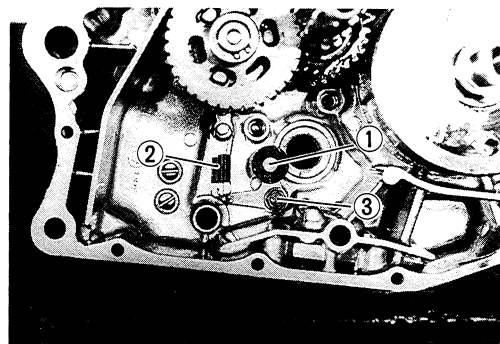
## GEARSHIFT CAM

- Install the gearshift cam stopper ① and its spring ② .

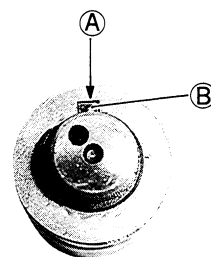
### NOTE:

Apply a small quantity of the **THREAD LOCK "1342"** to the gearshift cam stopper bolt ③ .

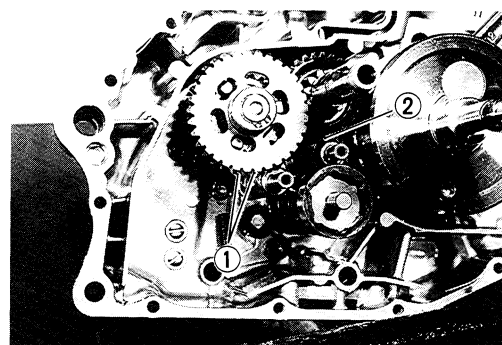
**99000-32050: THREAD LOCK "1342"**



- Align the pin groove ① of gearshift cam stopper plate with the pin ② on the gearshift cam.

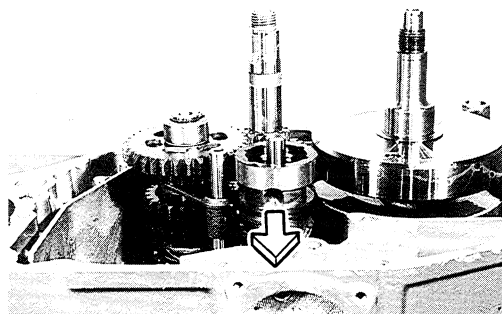


- Install the gearshift forks, ① and ② into the gearshift fork grooves.
- Install the gearshift cam.
- Install the gearshift fork shafts.



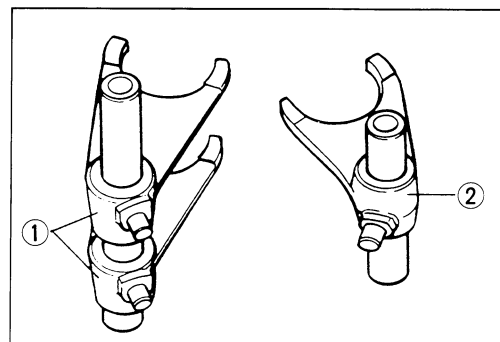
### NOTE:

Position the gearshift cam as shown in the fig. so that the gearshift fork shafts can be installed easily.



### NOTE:

Two kinds of gearshift forks, ① and ②, are used. They resemble each other very closely in external appearance and configuration. Carefully examine the illustration for correct installing positions and directions.

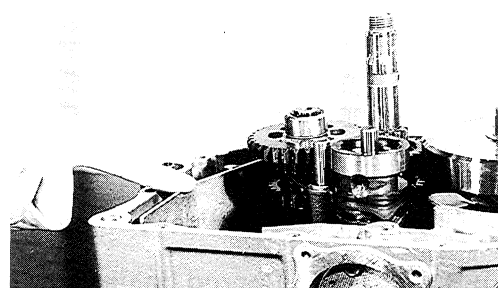
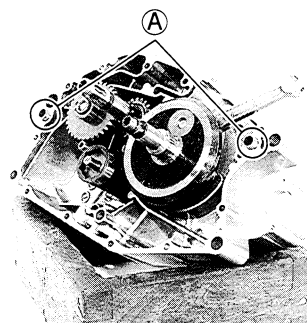


## CRANKCASE

When reassembling the crankcase, pay attention to the following.

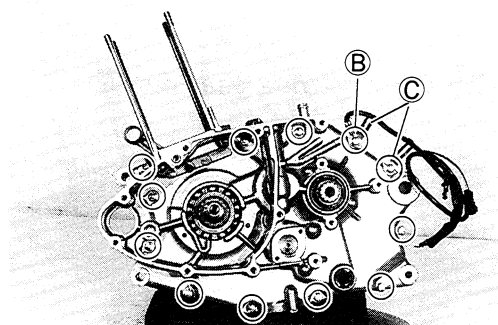
- Remove sealant material on the mating surfaces of right and left halves of crankcase and thoroughly remove oil stains.
- Fit the two dowel pins ① on the left half as shown in Fig.
- Apply engine oil to the conrod big end of the crankshaft and all parts of the transmission gears.
- Apply SUZUKI BOND No. 1207B uniformly to the mating surface of the left half of the crankcase, and assemble the cases within few minutes.

**99104-31140: SUZUKI BOND No. 1207B**

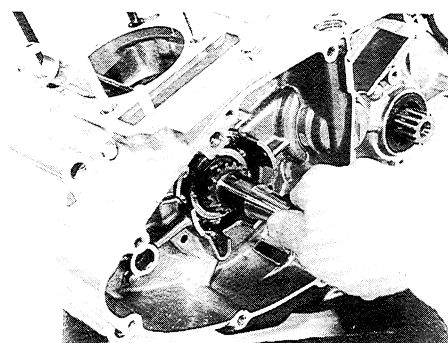


- Fit the engine ground wire ② and clamps ③ to the correct position.
- Tighten the crankcase bolts to the specified torque.

**Tightening torque: 11 N·m (1.1 kg-m)**

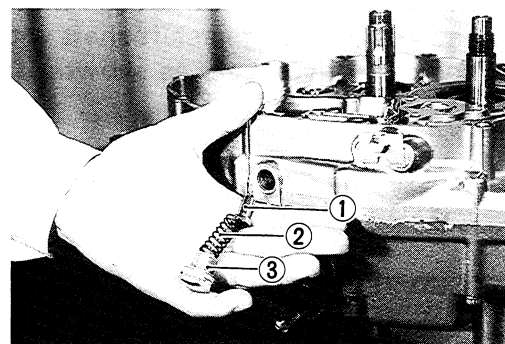


- After the crankcase bolts have been tightened, check if crankshaft, driveshaft and countershaft rotate smoothly.
- If a large resistance is felt to rotation, try to free the shafts by tapping the crankshaft, driveshaft or countershaft with a plastic hammer.

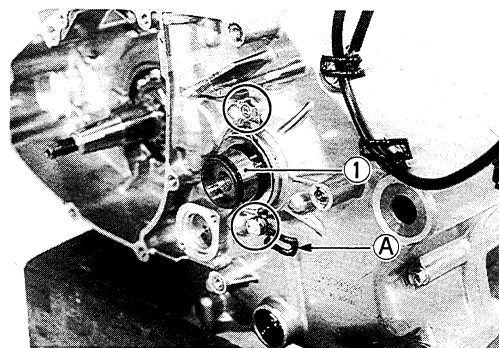


- Install the neutral cam stopper ① and its spring ②.
- Tighten the neutral cam stopper bolt ③ to the specified torque.

**Tightening Torque: 23 N·m (2.3 kg-m)**



- Install the oil seal retainer, and positively bend the lock portion of the retainer.
- Fit the wire clamp **A** to the correct position.
- Install the spacer **①** to the driveshaft in the correct direction.



## PRIMARY DRIVE GEAR

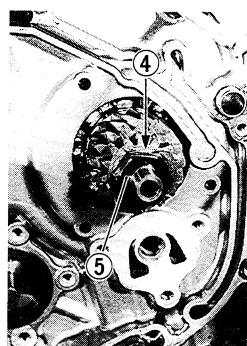
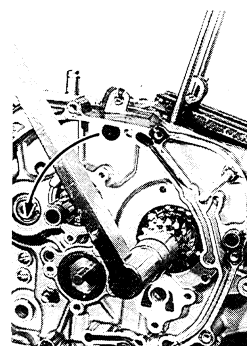
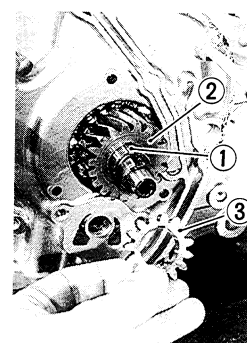
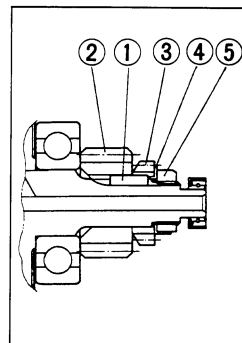
- Fit the key **①** in the key slot on the crankshaft, and install the primary drive gear **②**.
- Install the oil pump drive gear **③**.
- Install the lock washer **④** and nut **⑤**, then tighten the nut **⑤** to the specified torque by using the conrod holder and torque wrench.
- Bend up the lock washer **④** positively.

**09910-20116: Conrod holder**

**Tightening torque: 50 N·m (5.0 kg-m)**

### NOTE:

*The primary drive gear nut **⑤** is a left-hand thread nut.*



## GEARSHIFT

- Install each gear shifting pawl **①** into the cam driven gear **②**. The large shoulder **A** must face to the outside as shown in the illustration.
- Fit the cam guide **③** and pawl lifter **④** correctly.
- Apply a small quantity of THREAD LOCK "1342" to the screws **⑤** and tighten them.

**99000-32050: THREAD LOCK "1342"**

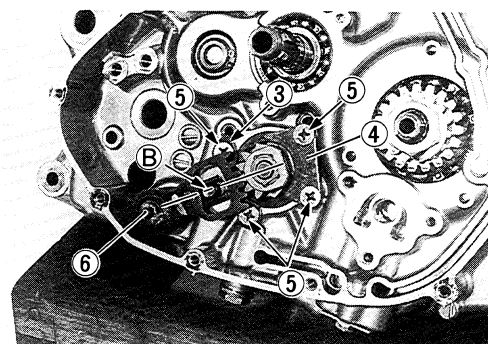
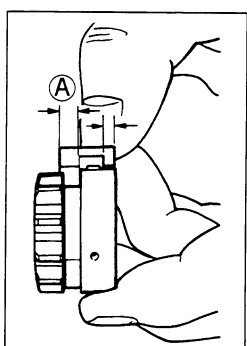
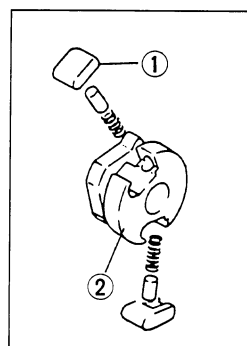
- Fit a spring to the gearshift shaft correctly.
- Install the gearshift shaft **⑥**. Match the center teeth of the gear on the gearshift shaft with the center teeth on the cam driven gear as shown.

### NOTE:

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

**99000-32030: THREAD LOCK SUPER "1303"**

**Tightening torque: 19 N·m (1.9 kg-m)**

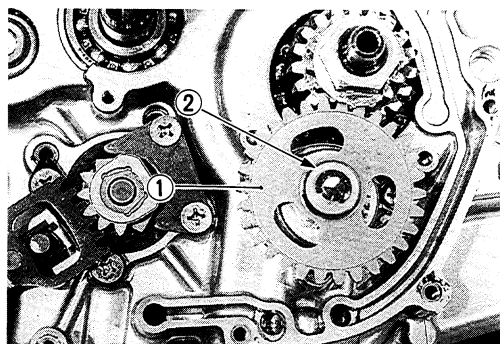
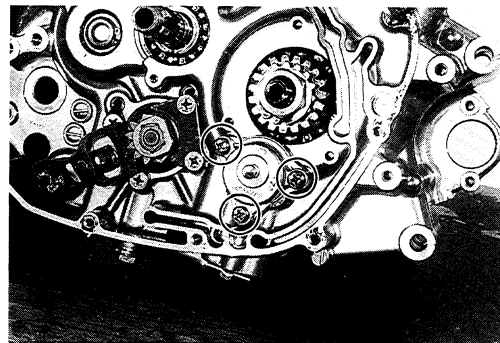


## OIL PUMP

- Before mounting the oil pump, apply engine oil to the sliding surfaces of the case, outer rotor, inner rotor and shaft.
- Apply a small quantity of THREAD LOCK "1342" to the oil pump mounting screws.

### 99000-32050: THREAD LOCK "1342"

- Tighten the oil pump mounting screws.
- Install the oil pump driven gear ① with the circlip ② .

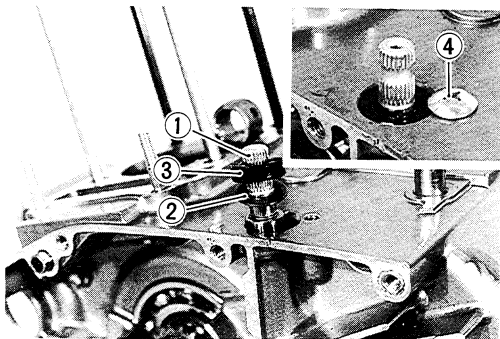


## CLUTCH RELEASE CAMSHAFT

- Install the clutch release camshaft ① , washer ② and oil seal ③ .
- Install the oil seal retainer screw ④ .

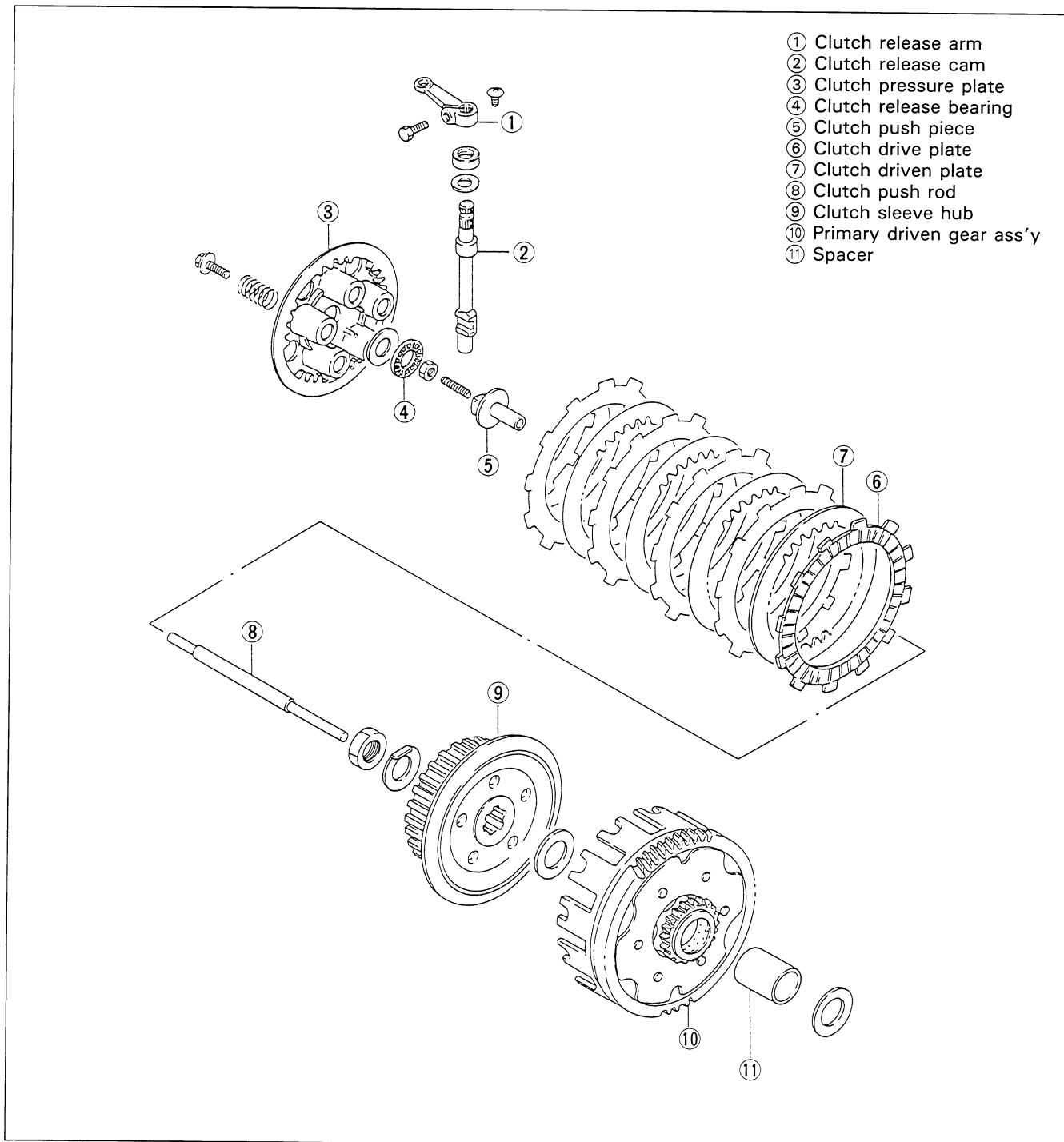
### CAUTION:

Use a new oil seal to prevent oil leakage.





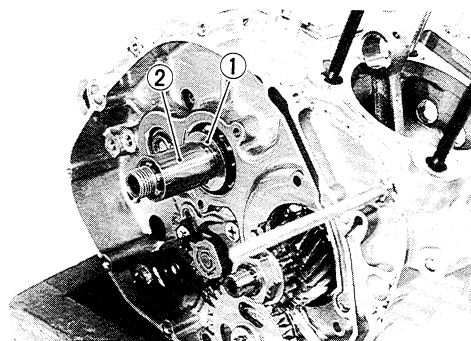
## CLUTCH



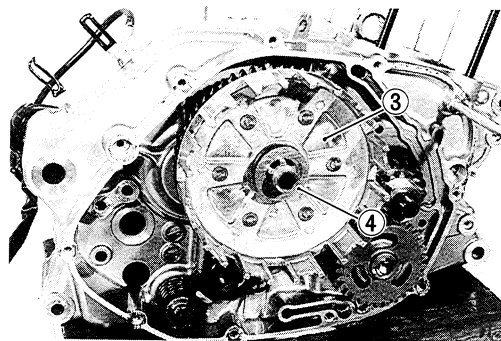
- Install the thrust washer ① and spacer ② .

**NOTE:**

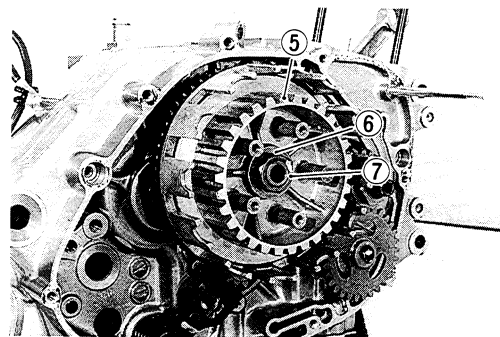
*Apply a small quantity of engine oil to inside and outside surfaces of the spacer.*



- Install the primary driven gear assembly ③ and thrust washer ④ .



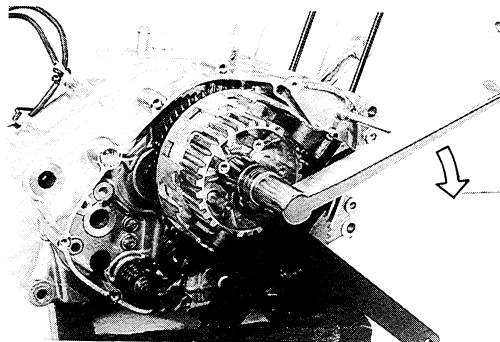
- Install the clutch sleeve hub ⑤ , lock washer ⑥ and nut ⑦ .



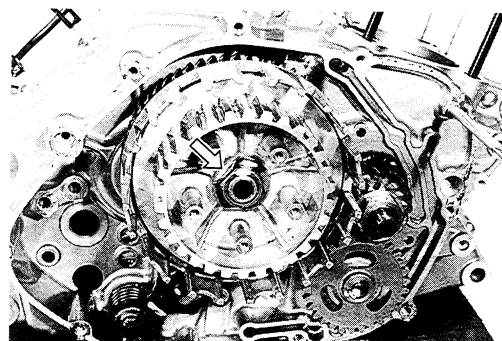
- Tighten the clutch sleeve hub nut ⑦ to the specified torque.

**09920-53740: Clutch sleeve hub holder**

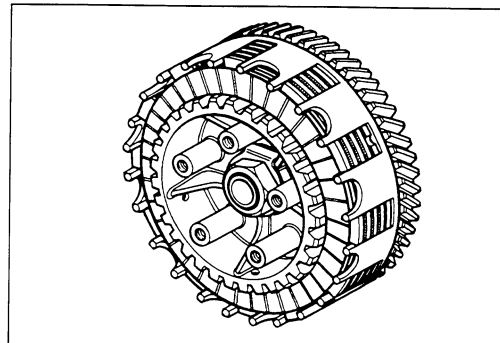
**Tightening torque: 50 N·m (5.0 kg-m)**



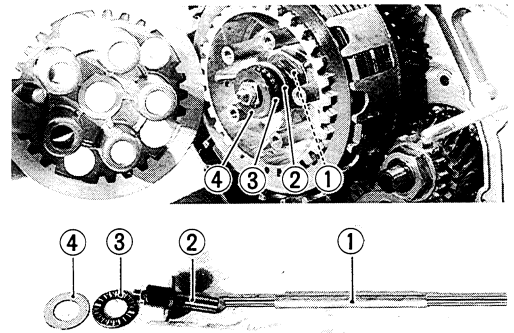
- Lock the clutch sleeve hub nut by firmly bending the tongue of the lock washer.



- Install the clutch drive plates and driven plates one by one into the clutch sleeve hub in the prescribed order, drive plate first. (Refer to page 3-43.)



- Insert the clutch push rod ① into the countershaft, then install the clutch push piece ②, release bearing ③ and thrust washer ④.
- Put the clutch pressure plate onto the clutch sleeve hub.

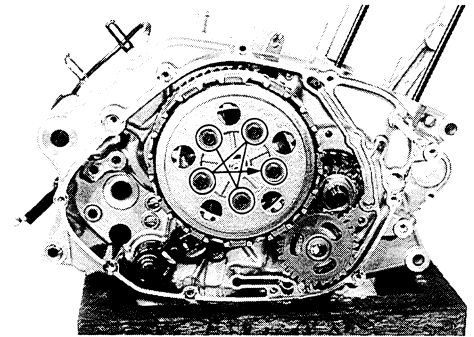


- Put the clutch springs and its set bolts onto the clutch pressure plate.
- Tighten the clutch spring set bolts in the order.

**Tightening torque: 4.0 N·m (0.4 kg-m)**

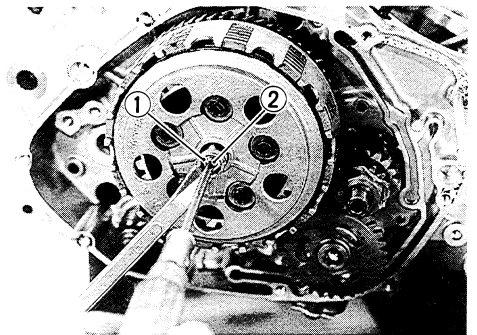
**NOTE:**

*Tighten the clutch spring set bolts in the manner indicated, tightening them by degrees until they attain a uniform tightness.*



**CLUTCH RELEASE SCREW ADJUSTMENT**

- Loosen the lock nut ①, and turn in the release screw ② to feel resistance.
- From that position, turn out the release screw ② 1/4 turn, and tighten the lock nut ①.



- Install the dowel pins, a new gasket and clutch cover to the crankcase.

**CAUTION:**

**Use a new gasket to prevent oil leakage.**

- Tighten the clutch cover bolts and nut to the specified torque.

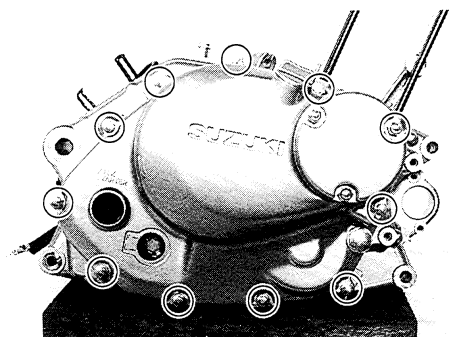
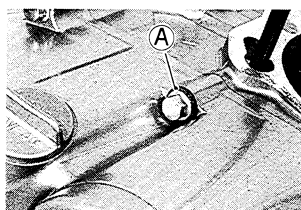
**Tightening torque: 10 N·m (1.0 kg-m)**

**NOTE:**

*Fit the gasket to the clutch cover bolt ① correctly.*

**CAUTION:**

**Use a new gasket to prevent oil leakage.**



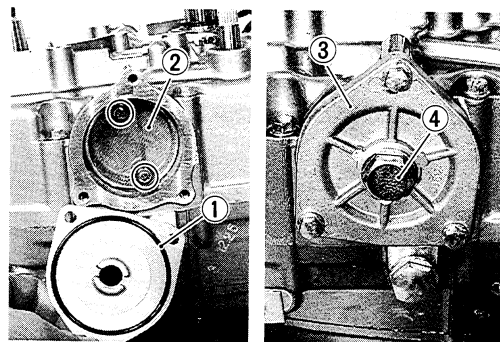
## OIL SUMP FILTER

- Apply engine oil lightly to the O-ring ① .
- Install the oil sump filter ② .
- Install the oil sump filter cap ③ .
- Tighten the engine oil drain plug ④ to the specified torque.

Tightening torque: 23 N·m (2.3 kg-m)

### CAUTION:

Use a new O-ring to prevent oil leakage.

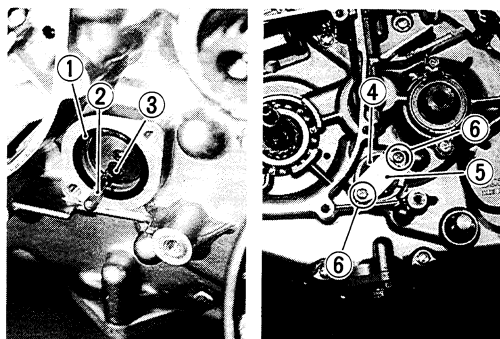


## NEUTRAL SWITCH

- Fit a new O-ring ① , switch contact ② and spring ③ .
- Install the neutral switch ④ and its retainer ⑤ with the screws ⑥ .

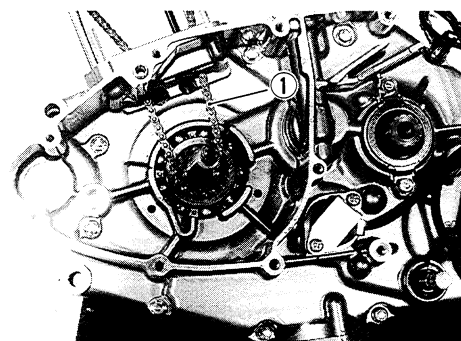
### CAUTION:

Use a new O-ring to prevent oil leakage.

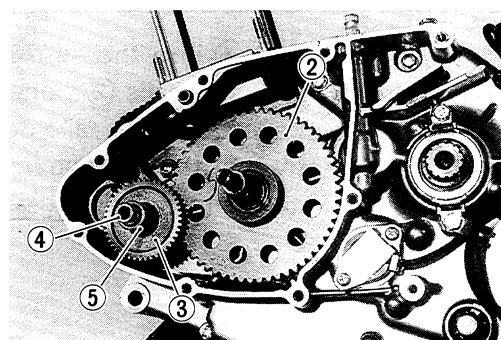


## CAM DRIVE CHAIN, STARTER GEARS AND GENERATOR

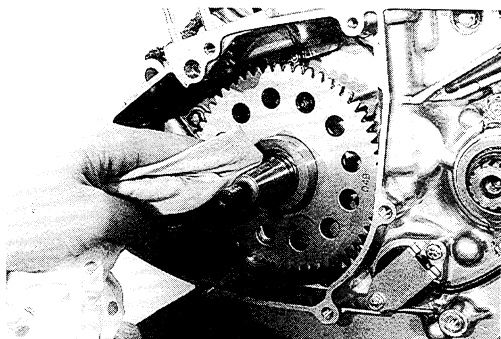
- Engage the cam drive chain ① onto the cam drive sprocket.



- Install the starter driven gear ② .
- Install the starter idle gear ③ , shaft ④ and spacer ⑤ .

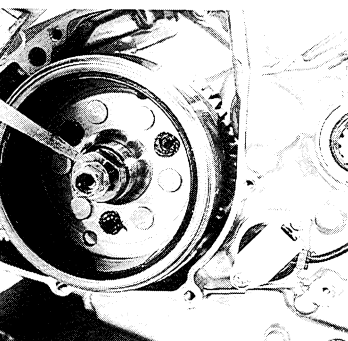


- Degrease the tapered portion of the crankshaft and also the generator rotor.
- Fit the key in the key slot on the crankshaft, then install the generator rotor.



- Apply a small quantity of THREAD LOCK SUPER "1303" to the threaded part of rotor nut.

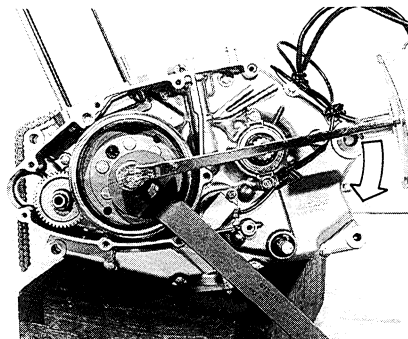
**99000-32030: THREAD LOCK SUPER "1303"**



- Tighten the generator rotor nut to the specified torque by using the special tool and torque wrench.

**09930-44511: Rotor holder**

**Tightening torque: 55 N·m (5.5 kg-m)**



- Install the dowel pin (A), a new gasket and generator cover.
- Tighten the generator cover bolts to the specified torque.

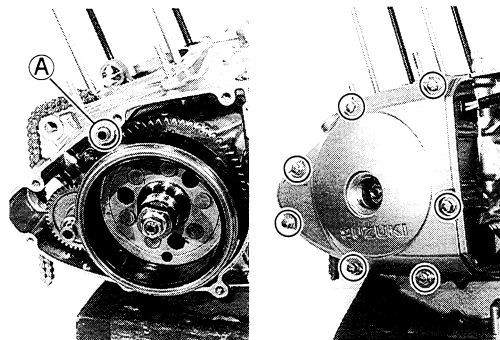
**Tightening torque: 10 N·m (1.0 kg-m)**

#### CAUTION:

Use a new gasket to prevent oil leakage.

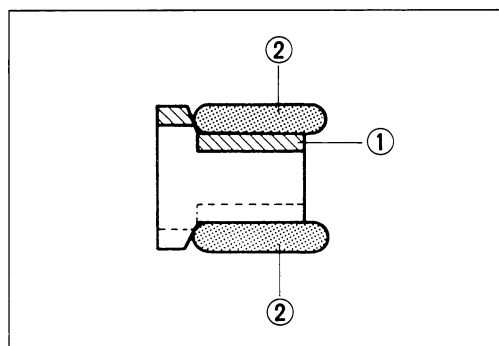
#### NOTE:

BOND No. 1207B should be applied to the groove of generator lead wire grommet.



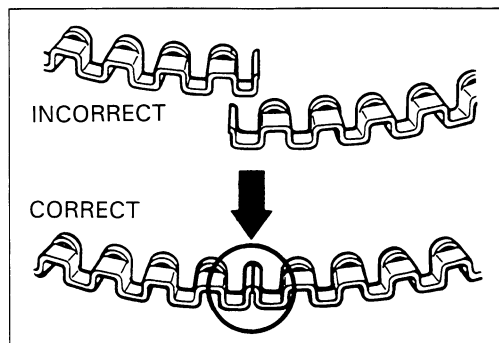
## OIL RING

- 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.



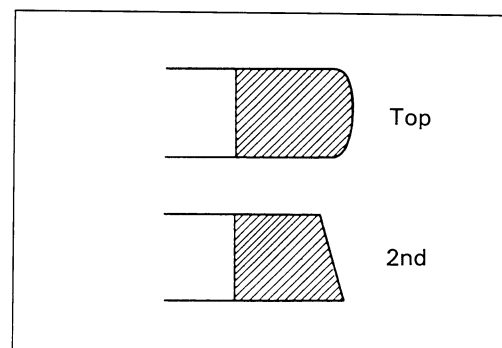
#### CAUTION:

When installing the spacer, be careful not to allow its two ends to overlap in the groove.

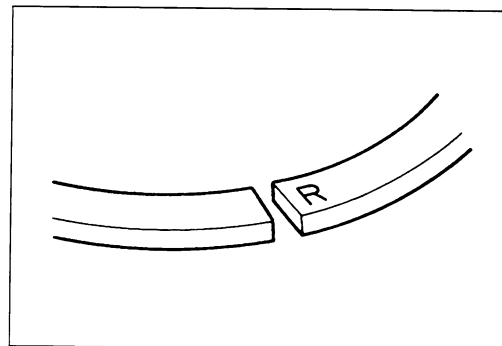


## TOP RING AND 2ND RING

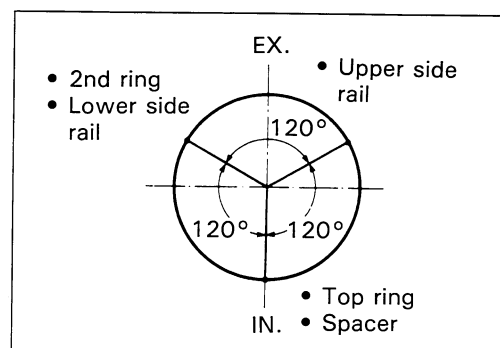
- Top ring and 2nd ring differ in the shape of ring face, and the face of top ring is chrome-plated whereas that of 2nd ring is not. The color of 2nd ring appears darker than that of the top one.



- Top and 2nd rings have the letter "R" marked on the top. Be sure to bring the marked side to the top when fitting them to the piston.



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



## PISTON

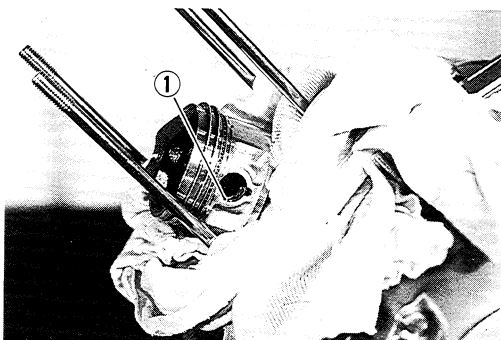
The following are reminders for piston installation:

- 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 ① with long-nose pliers.

### CAUTION:

Use a new piston pin circlip ① to prevent circlip failure which will occur with a bent one.

99000-25140: SUZUKI MOLY PASTE



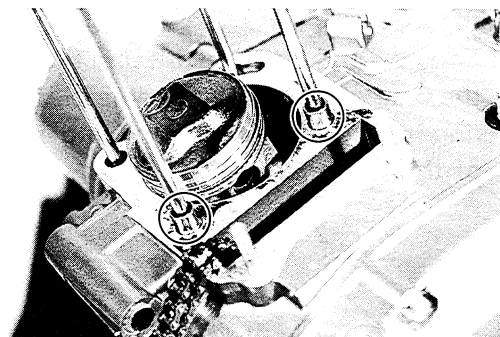
## CYLINDER

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

- Install the dowel pins and a new gasket.

### CAUTION:

Use a new gasket to prevent oil leakage.

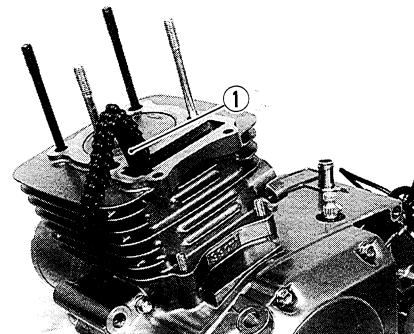


- Hold each piston ring with properly position, and insert the piston into the cylinder

### NOTE:

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

There is a holder for the bottom end of the cam chain guide cast in the crankcase. Be sure that the cam chain guide ① is inserted properly.

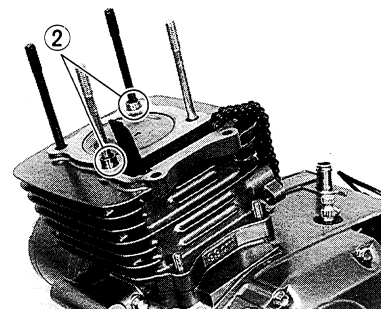


## CYLINDER HEAD

- Install the dowel pins ② and a new gasket.

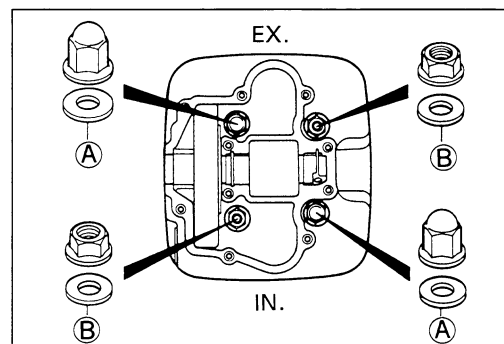
### CAUTION:

Use a new cylinder head gasket to prevent gas leakage.



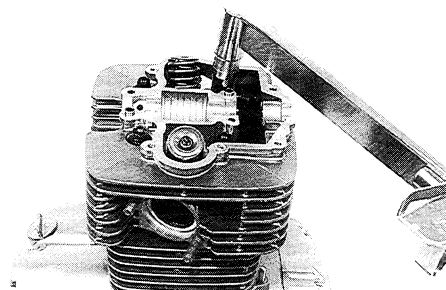
- Place the cylinder head on the cylinder.
- Cylinder head nuts and washers must be fitted in the correct position, as shown in the illustration.

- Ⓐ Copper washer
- Ⓑ Steel washer



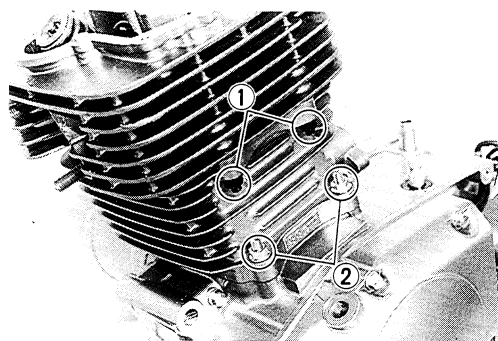
- Tighten the cylinder head nuts to the specified torque with a torque wrench diagonally.

Tightening torque: 23 N·m (2.3 kg-m)



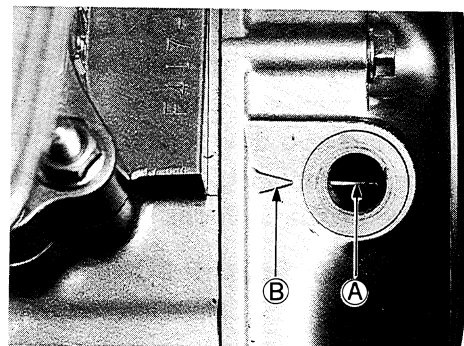
- After tightening the top side of the cylinder head nuts, tighten the bottom side of the cylinder head nuts ① and cylinder base nuts ② to the specified torque.

**Tightening torque: 10 N·m (1.0 kg-m)**



## CAMSHAFT

- Turn the crankshaft counterclockwise with the box wrench and align the "TOP" line A on the generator rotor with the index mark B on the generator cover keeping the camshaft drive chain pulled upward.



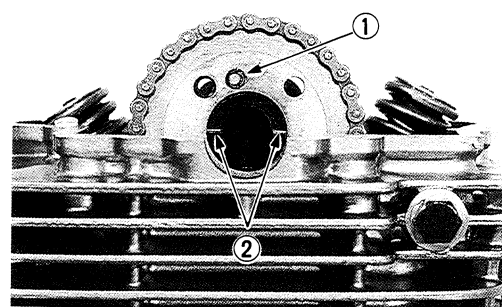
### CAUTION:

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

### NOTE:

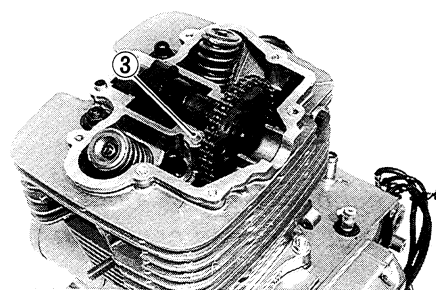
*Apply grease on the cam sprocket locating pin and install the pin into the camshaft.*

- Engage the chain on the cam sprocket with the locating pin hole ① at just past top position.
- Align the engraved line marks ② on the camshaft so it is parallel with the surface of the cylinder head.
- Install the C-ring ③ into the ring groove of the cylinder head.



### NOTE:

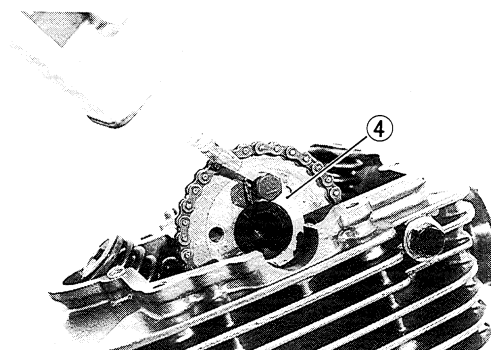
*Do not rotate the generator rotor while doing this. When the sprocket is not positioned correctly, turn the sprocket. When installing the camshaft into the cam sprocket, pay attention not to dislodge the locating pin or it may fall into the crankcase.*



- Fit the lock washer ④ so that it is covering the locating pin.
- Apply THREAD LOCK SUPER "1303" to the cam sprocket bolts and tighten them.

**Tightening torque: 11 N·m (1.1 kg-m)**

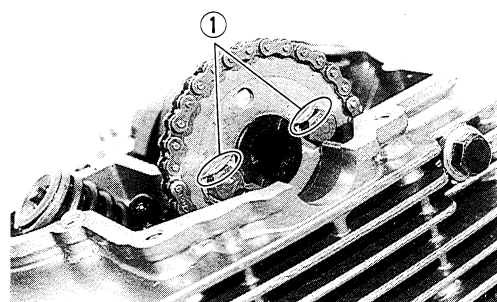
**99000-32030: THREAD LOCK SUPER "1303"**





- Bend up the washer tongue ① positively to lock the bolts.
- Apply SUZUKI MOLY PASTE to the camshaft journals and cam faces.

**99000-25140: SUZUKI MOLY PASTE**



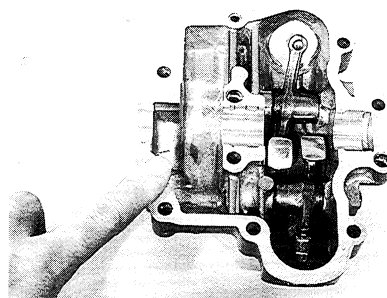
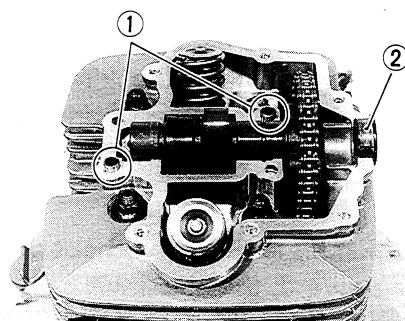
## CYLINDER HEAD COVER

- Thoroughly wipe off oil from the mating surfaces of cylinder head and cover.
- Install the two dowel pins ① to the cylinder head side.
- Uniformly apply SUZUKI BOND No.1207B to the mating surface of the cylinder head cover.

**99104-31140: SUZUKI BOND No.1207B**

**NOTE:**

*Do not apply SUZUKI BOND No.1207B to the camshaft end cap ② .*



- Fit the gasket ① to the head cover bolts correctly as shown in Fig.

## CAUTION:

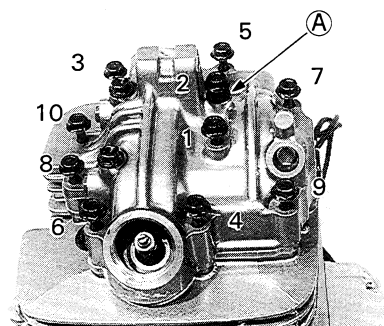
**Use a new gasket to prevent oil leakage.**

**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.

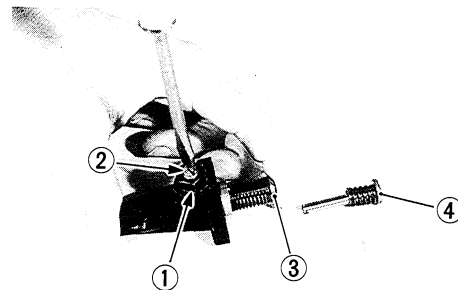
**Tightening torque: 10 N·m (1.0 kg·m)**



## CAM DRIVE CHAIN TENSION ADJUSTER

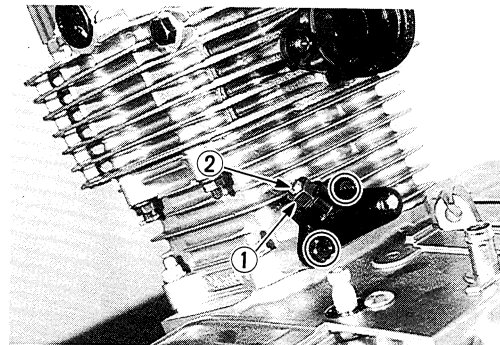
Install the cam drive chain tension adjuster following the procedure below:

- After loosening the lock nut ①, loosen the set screw ② one turn and fully insert the No.1 push rod ③ into the adjuster body. Lock the No.1 push rod ③ by tightening the set screw ②. Insert the No.2 push rod ④ into the No.1 push rod ③.
- Install the cam drive chain tension adjuster to the cylinder.



### Tightening torque: 7 N·m (0.7 kg-m)

- Turn the crankshaft clockwise to remove the cam chain slack between the crank sprocket and cam sprocket.
- Loosen the set screw ② one turn. This will allow a spring to push the push rod firmly onto the tensioner and provide proper operating chain tension.
- Tighten the set screw ② to lock the push rod in position and tighten the lock nut ① to secure the set screw.



## VALVE CLEARANCE

- Check and adjust the valve clearance. Refer to page 2-4 for procedures.

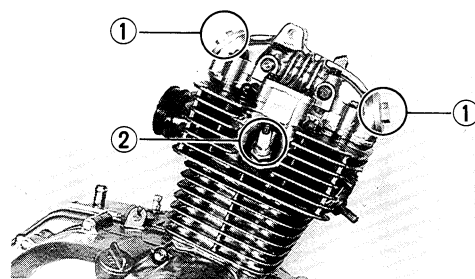
## VALVE INSPECTION CAP AND SPARK PLUG

- Install the valve inspection caps ①.

**NOTE:**

*Apply engine oil lightly to the O-rings.*

- Install the spark plug ②.

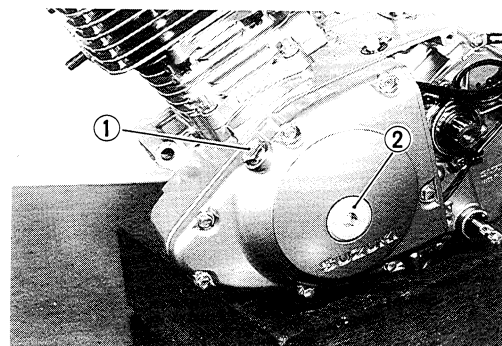


## CAM TIMING INSPECTION CAP AND GENERATOR COVER CAP

- Install the cam timing inspection cap ① and generator cover cap ②.

**NOTE:**

*Apply engine oil lightly to the O-ring.*



# FUEL AND LUBRICATION SYSTEM

## CONTENTS

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# FUEL TANK AND FUEL COCK

## FUEL TANK REMOVAL

- Remove the frame covers, left and right.
- Remove the seat. (Refer to page 6-1.)
- Turn the fuel cock to "ON" or "RES" position and disconnect the fuel hose and vacuum hose from the fuel cock. (For U.S.A. and Canadian markets)
- Turn the fuel cock to "OFF" position and disconnect the fuel hose from the fuel cock. (For the other markets)
- Remove the fuel tank by removing the bolts.

## FUEL COCK REMOVAL

- Remove the fuel tank.
- Drain the fuel into a proper receptacle.
- Remove the fuel cock by removing the bolts.

### WARNING:

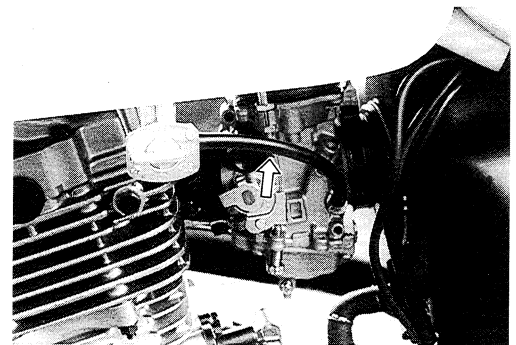
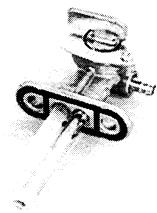
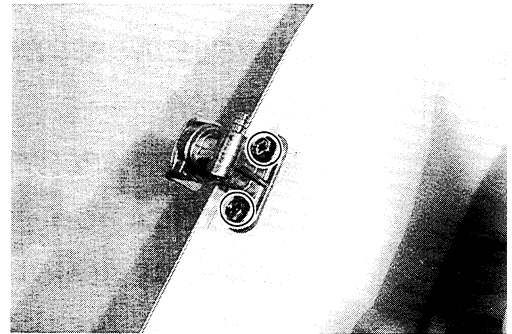
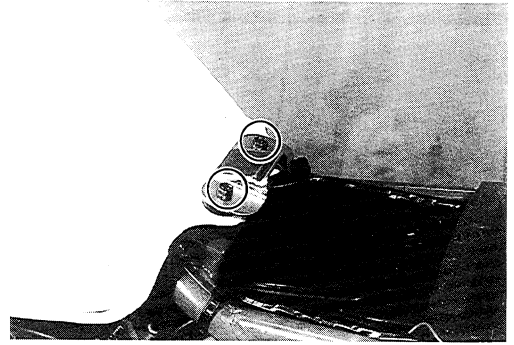
**Gasoline is very explosive. Extreme care must be taken. Gasket and O-ring must be replaced with new ones to prevent fuel leakage.**

## FUEL FILTER CLEANING

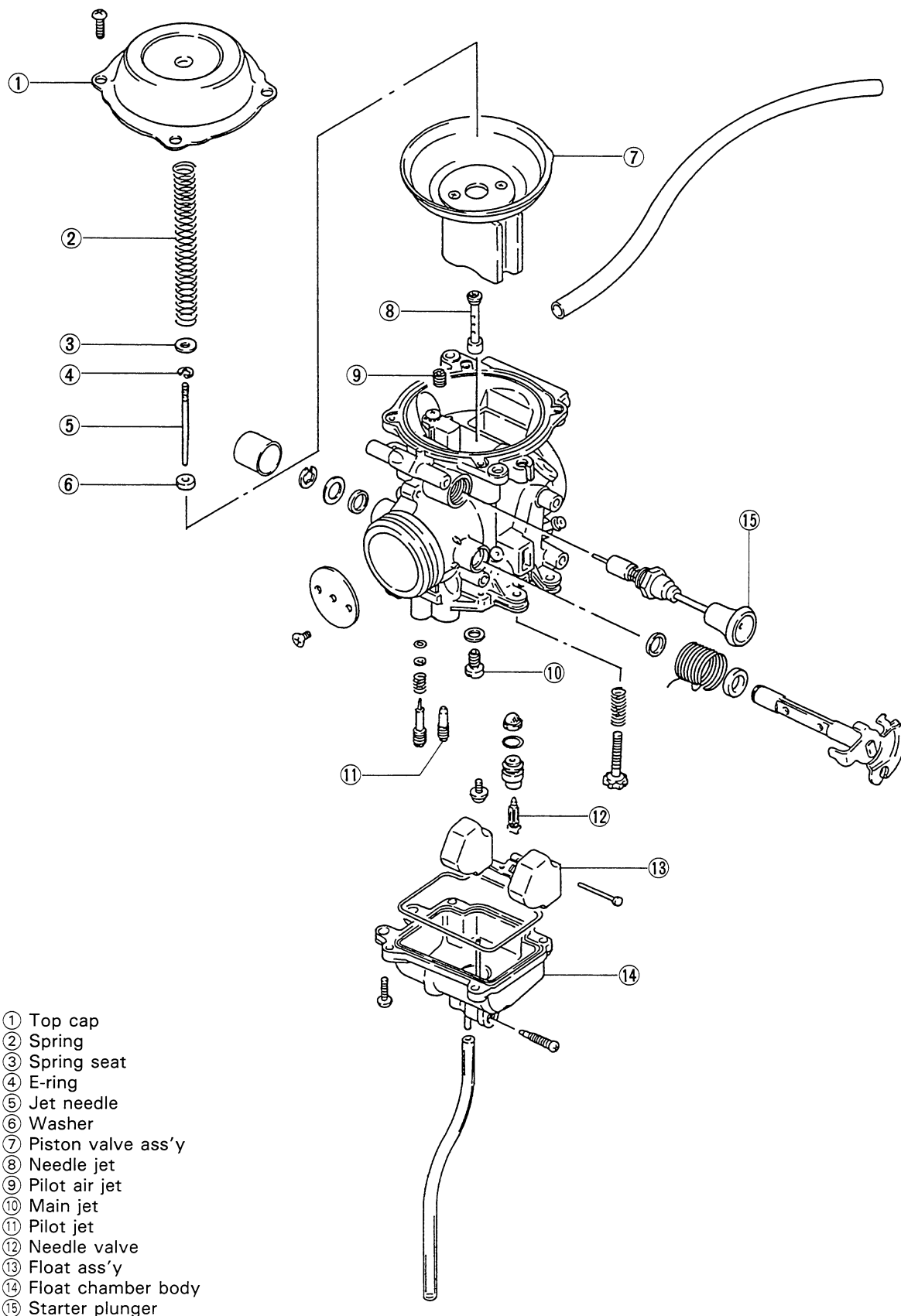
If the fuel filter is dirty with sediment or rust, fuel will not flow smoothly and loss in engine power may result. Clean the fuel filter with compressed air.

## FUEL HOSE INSPECTION

Visually inspect the fuel hose for damage and fuel leakage. If it is found to be damaged, replace it with a new one.



# CARBURETOR



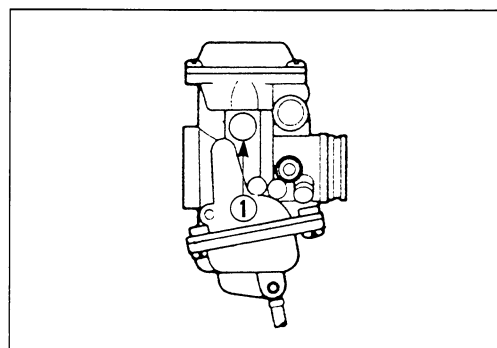
## CARBURETOR SPECIFICATIONS

ITEM	SPECIFICATION		
	E-01,04,34	E-03,28	E-33
Carburetor type	MIKUNI BST31SS	←	←
Bore size	31 mm	←	←
I.D. No	44AA	44AB	44AC
Idle r/min.	1400 ± 100 r/min.	←	←
Float height	13.0 ± 1.0 mm (0.51 ± 0.04 in)	←	←
Main jet (M.J.)	# 110	# 112.5	←
Main air jet (M.A.J.)	0.7 mm	←	←
Jet needle (J.N.)	5D26—3rd	5D65	←
Needle jet (N.J.)	P—5	P—5	←
Throttle valve (Th.V.)	# 125	←	←
Pilot jet (P.J.)	# 40	# 40	←
Starter jet (G.S.)	# 22.5	←	←
Pilot screw (P.S.)	PRE-SET (1-7/8 turns out)	PRE-SET	←
Throttle cable play	3—6 mm (0.1—0.2 in)	←	←

E-01: General, E-03: U.S.A., E-04: France, E-28: Canada, E-33: California (U.S.A.), E-34: Italy

### I.D. NO. LOCATION

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

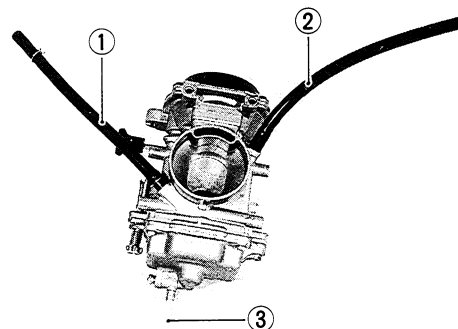


### CARBURETOR REMOVAL

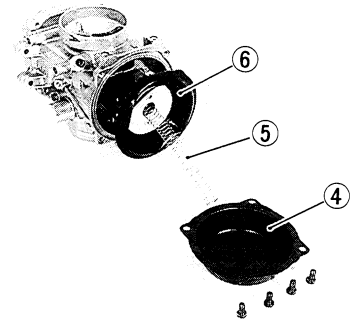
(Refer to page 3-3 and 3-4.)

### CARBURETOR DISASSEMBLY

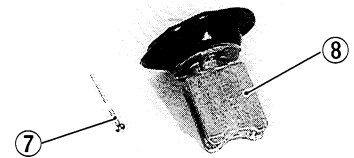
- Disconnect the fuel hose ①, air vent hose ② and fuel drain hose ③.



- Remove the carburetor top cap ④ .
- Remove the piston valve return spring ⑤ and piston valve with diaphragm ⑥ .



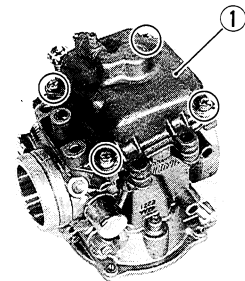
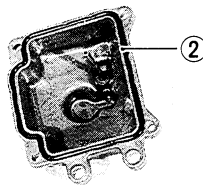
- Remove the jet needle ⑦ from the piston valve ⑧ .



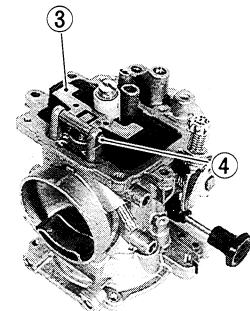
- Remove the float chamber body ① .

**09900-09003: Impact driver set**

- Remove the O-ring ② .

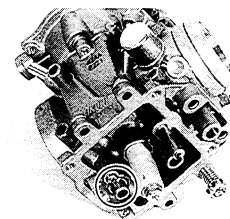
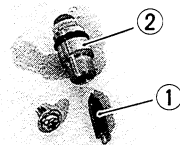


- Remove the float assembly ③ by removing the pin ④ .



- Remove the needle valve assembly.

- ① Needle valve
- ② Valve seat

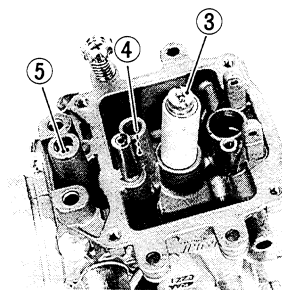


## 4-5 FUEL AND LUBRICATION SYSTEM

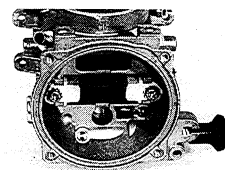
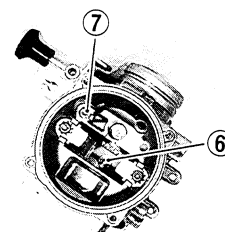
- Remove the main jet ③ and pilot jet ④ .

### CAUTION:

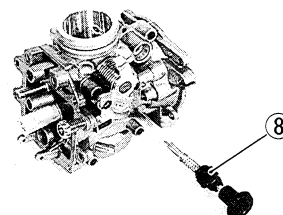
Do not remove the pilot screw ⑤. This component is **PRE-SET** at the factory by the very specialized equipment.



- Remove the needle jet ⑥ and pilot air jet ⑦ .



- Remove the starter plunger assembly ⑧ .



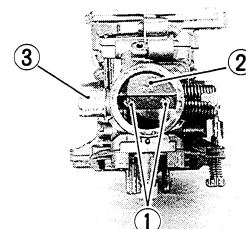
- Remove the throttle valve screws ① and pull out the throttle valve plate ② .
- Remove the throttle valve shaft end cap ③ .

### CAUTION:

These two screws are locked by punching these ends. Once removing the screws, they will be damaged.

### NOTE:

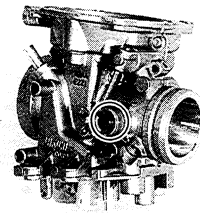
When reassembling the throttle valve, apply a small quantity of **THREAD LOCK "1342"** to its screws.



**99000-32050: THREAD LOCK "1342"**



- Remove the circlip and pull out the throttle valve shaft from the other side.



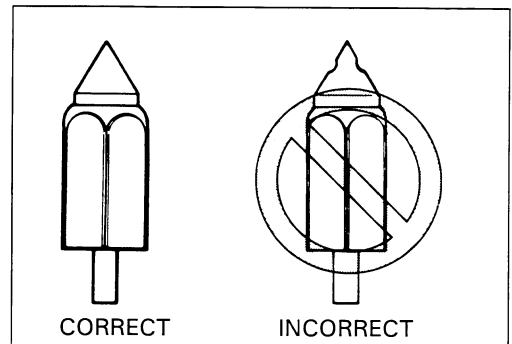
## CARBURETOR JET INSPECTION

Check following items for any damage or clogging.

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

## 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.

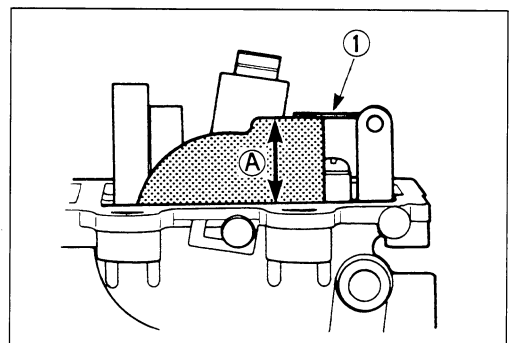


## FLOAT HEIGHT ADJUSTMENT

To check the float height, invert the carburetor body, with the float arm kept free, measure the height **A** while float arm is just in contact with needle valve by using calipers. Bend the tongue **①** as necessary to bring the height **A** to this value.

**Float height **A** :  $13.0 \pm 1.0$  mm ( $0.51 \pm 0.04$  in)**

**09900-20102: Vernier calipers**

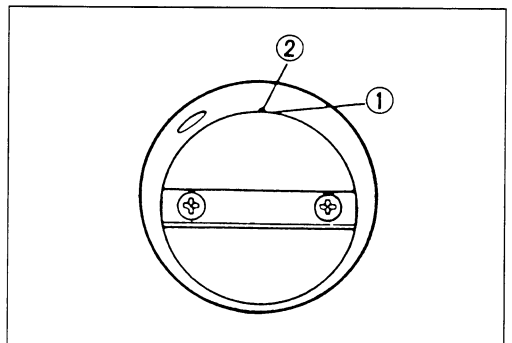


## REASSEMBLY AND REMOUNTING

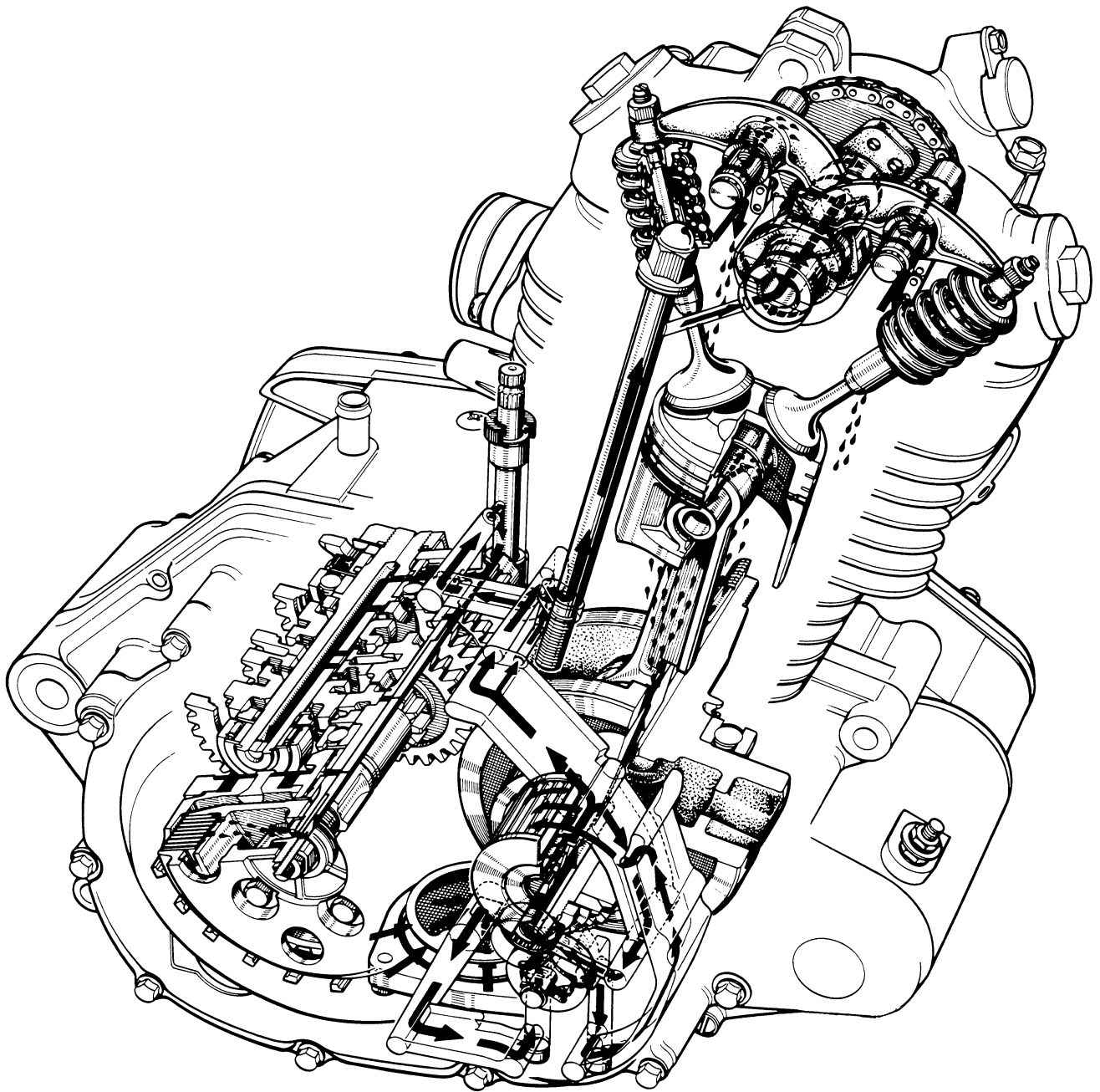
Reassemble and remount the carburetor assembly in the reverse order of disassembly and removal.

Pay attention to the following points:

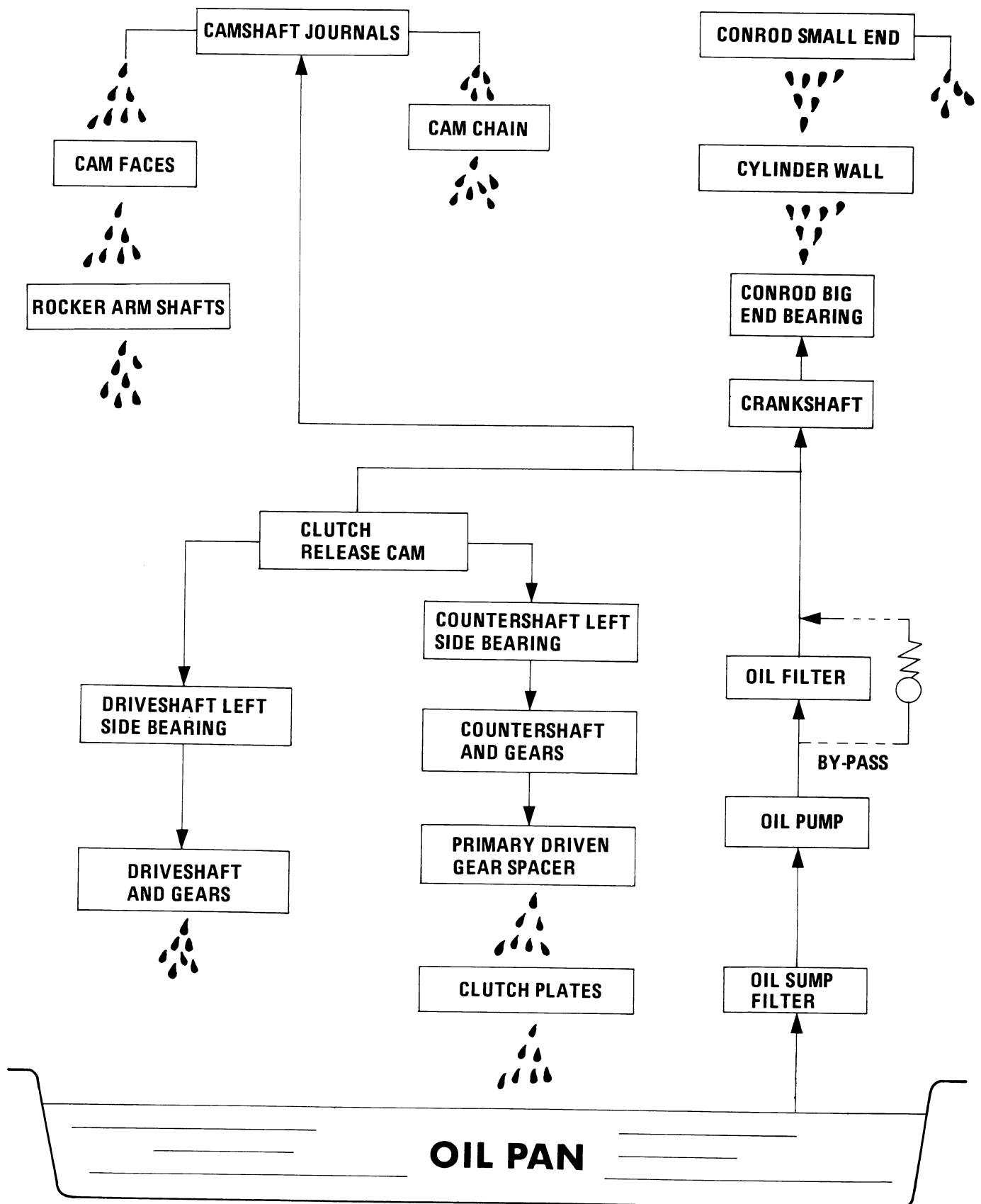
- Set the throttle valve in such a way that its top end **①** meets the foremost by-pass **②**. This is accomplished by turning the throttle stop screw.
- Adjust the following items to the specification.
  - \* Engine idle r/min ..... Page 2-6
  - \* Throttle cable play ..... Page 2-6



## LUBRICATION SYSTEM



## ENGINE LUBRICATION SYSTEM CHART



### **OIL PRESSURE**

(Refer to page 2-18.)

### **OIL FILTER**

(Refer to page 2-8.)

### **OIL SUMP FILTER**

Clean the oil sump filter in the following manner:

- 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 2-11.)
- Remove the oil sump filter by removing the screws. (Refer to page 3-11.)
- Wash the oil sump filter with cleaning solvent, and then blow compressed air through it to dry off solvent. (Refer to page 3-46.)

### **REASSEMBLY**

- Fit the O-ring to the O-ring groove.
- Apply engine oil lightly to the O-ring.

### **CAUTION:**

**Use a new O-ring to prevent oil leakage.**

- Fit the drain plug securely, and pour fresh oil through the filler. (Refer to page 2-8.)

# ELECTRICAL SYSTEM

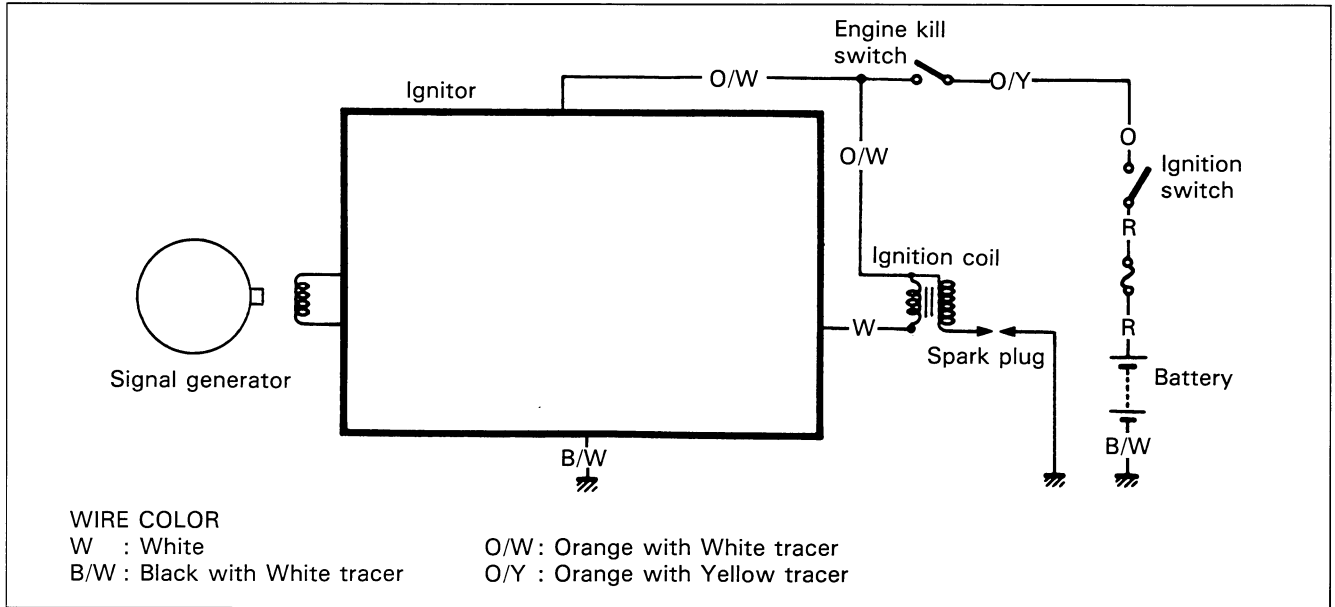
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## IGNITION SYSTEM

### DESCRIPTION

In the electric ignition system, the electrical energy on the signal generator generated by the generator rotor tip flows to the ignitor unit. 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 gaps.



### INSPECTION

#### SIGNAL GENERATOR COIL

- Remove the frame covers and seat. (Refer to page 6-1.)
- Disconnect the signal generator lead wire coupler.

Measure the resistance between the lead wires with a pocket tester.

09900-25002: Pocket tester

Signal generator coil resistance

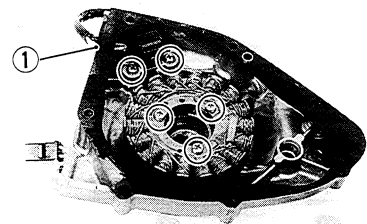
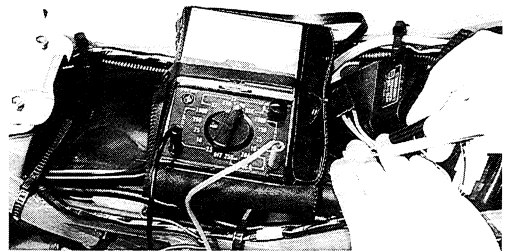
100—140Ω (G—BI)

(Range: X 100Ω)

#### CAUTION:

When replacing the generator coils, apply a small quantity of THREAD LOCK "1342" to the thread of screws.

99000-32050: THREAD LOCK "1342"



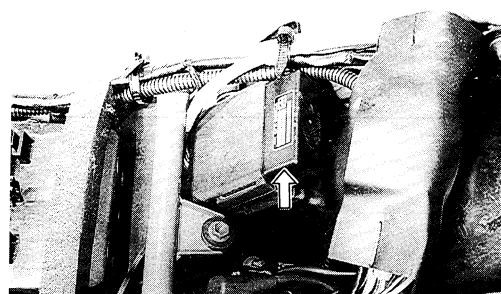
#### CAUTION:

BOND NO.1207B should be applied to the groove of generator lead wire grommet ①.

99000-31140: SUZUKI BOND NO.1207B

## IGNITOR

- Remove the frame covers and seat. (Refer to page 6-1.)
- Disconnect two ignitor lead wire couplers at the ignitor unit.
- Prepare the ignitor checker lead wires "MODE 4" and "MODE 4-B" which comes supplied with the ignitor checker and connect its end to the ignitor unit and another end to the checker.
- Connect the power source leads to the battery.  
(Refer to page 5-3.)



**09931-94490: Digital ignitor checker**

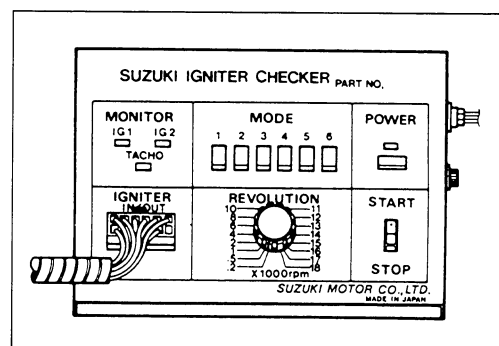
**09931-91710: MODE 4-B Extension Lead wire**

### CAUTION:

- \* Be sure that the **BLACK** lead is connected to the battery  $\ominus$  terminal and **RED** lead to the  $\oplus$  terminal.
- \* Before connecting the power source leads, make sure that both "POWER" button and "START" switch are in "off" position (POWER button not depressed).

### NOTE:

*Be sure that the battery used is in fully-charged condition.*

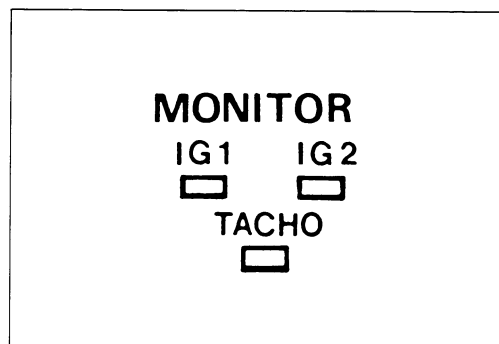


### CHECK PROCEDURE:

With all the lead wires properly connected, check the ignitor unit in the following four steps.

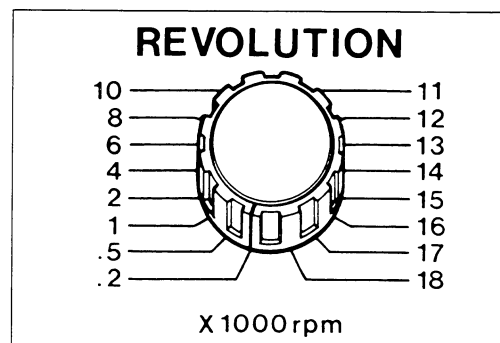
#### First Step:

Depress "MODE 4" button then "POWER" button. This time, "POWER" lamp should come on, if not, battery is undercharged.



#### Second Step:

Set "REVOLUTION" dial pointer to ".2" position in which the checker produces the ignition primary current pulses simulating 200 r/min of engine revolution when "START" switch is turned on. With "START" switch is turned to ON position, check "IG1" lamp of "MONITOR" turns on and off in slow frequency.

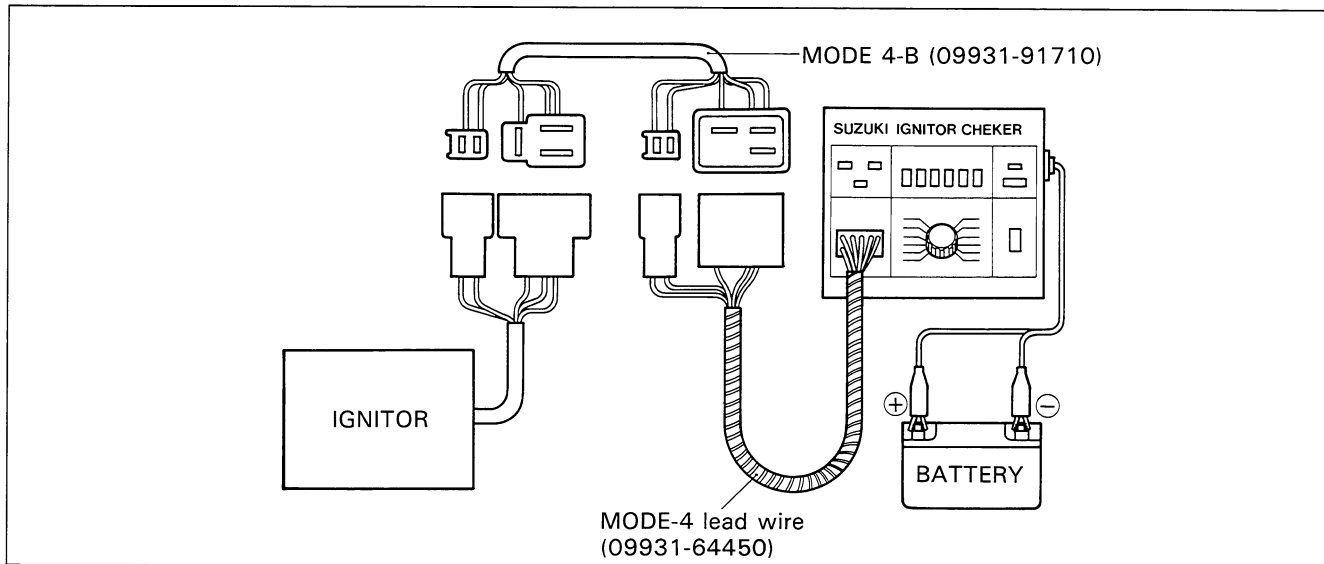


#### Third Step:

Turn "REVOLUTION" dial up gradually (assuming the engine gradually revved up) and check that the MONITOR lamp flash frequency as explained in the second step above increases. As the dial pointer passes beyond the graduation ".2" (2 000 r/min), the lamp should show continuously lighted.

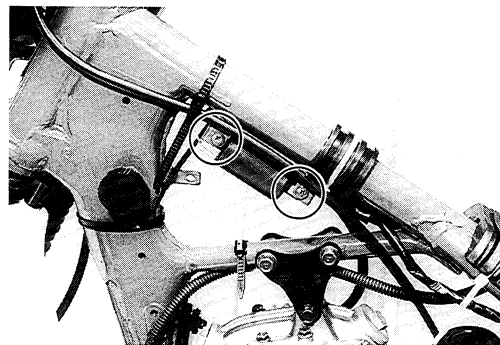
### Fourth Step:

Turn "START" switch to STOP position. If the "IG1" lamp remain light more than 1 second, the ignitor unit must be replaced.



### IGNITION COIL (Checking with Pocket Tester)

- Remove the frame covers and seat. (Refer to page 6-1.)
- Remove the fuel tank. (Refer to page 4-2.)
- Disconnect the spark plug cap and lead wires.
- Remove the ignition coil.

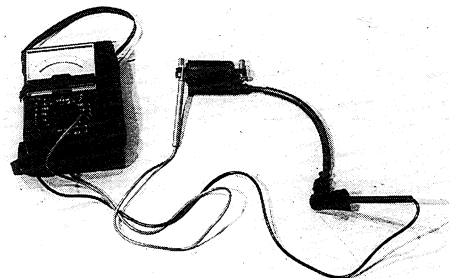


Measure the ignition coil resistance with a pocket tester.

### 09900-25002: Pocket tester

**Primary** : 2—6Ω (Terminal—Terminal)

**Secondary**: 20—30 kΩ (Plug cap—Terminal)



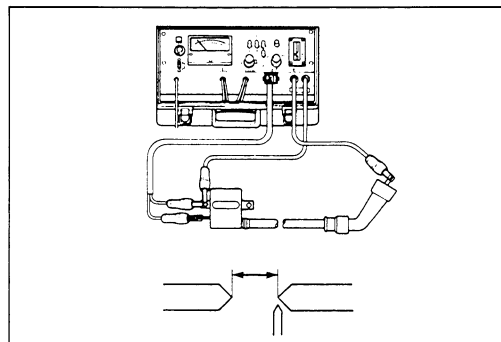
### IGNITION COIL (Checking with Electro Tester)

- Remove the ignition coil.

Test the ignition coil for sparking performance.  
Test connection is as indicated.

### NOTE:

*Make sure that the three-needle sparking distance of electro tester is set at 8 mm (0.3 in)*





If no sparking or orange color sparking occurs in the above condition, it may be caused by defective coil.

#### 09900-28106: Electro tester

**Spark performance: Over 8 mm (0.3 in)**

### SPARK PLUG

- Remove the spark plug.

#### Carbon Deposit

Check to see the carbon deposit on the plug.

If the carbon is deposited, remove it with a spark plug cleaner machine or carefully using a tool with a pointed end.

#### Spark Plug Gap

Measure the plug gap with a thickness gauge if it is correct. If not, adjust it to the following gap.

#### 09900-20803: Thickness gauge

**Spark plug gap (STD): 0.6–0.7 mm (0.024–0.028 in)**

#### Electrode's Condition

Check to see a worn or burnt condition of the electrode. If it is extremely worn or burnt, replace the plug. Also replace the plug if it has a broken insulator, damaged thread, etc.

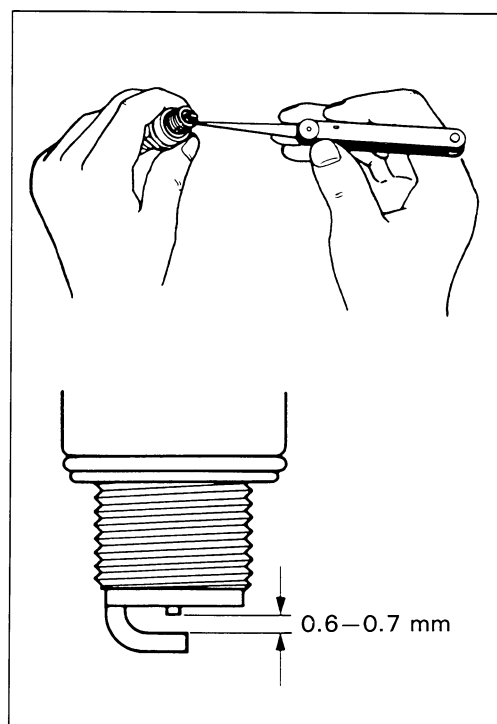
#### Heat Range

NGK or NIPPONDENSO should be used as the standard. However, the heat range of the spark plug should be selected to meet the requirements of speed, actual load, fuel and etc. Proper heat range would be indicated if insulator was LIGHT BROWN in color. If it is blacked white, it should be replaced by a cold type plug NGK DR9EA or NIPPONDENSO X27ESR-U and if blacked by carbon, by a hot type plug NGK DR7EA or NIPPONDENSO X22ESR-U.

	NGK	NIPPONDENSO
Hot type	DR7EA	X22ESR-U
<b>Standard</b>	<b>DR8EA</b>	<b>X24ESR-U</b>
Cold type	DR9EA	X27ESR-U

#### CAUTION:

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.

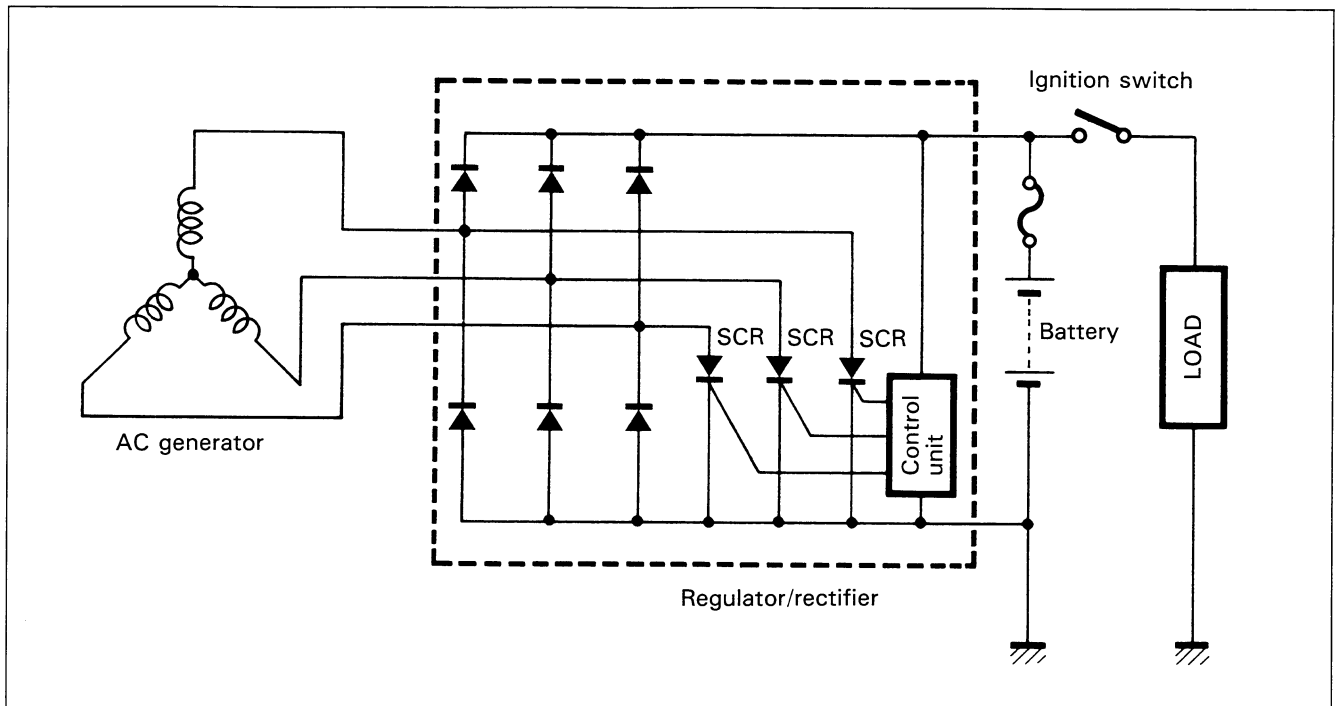


## CHARGING SYSTEM

### DESCRIPTION

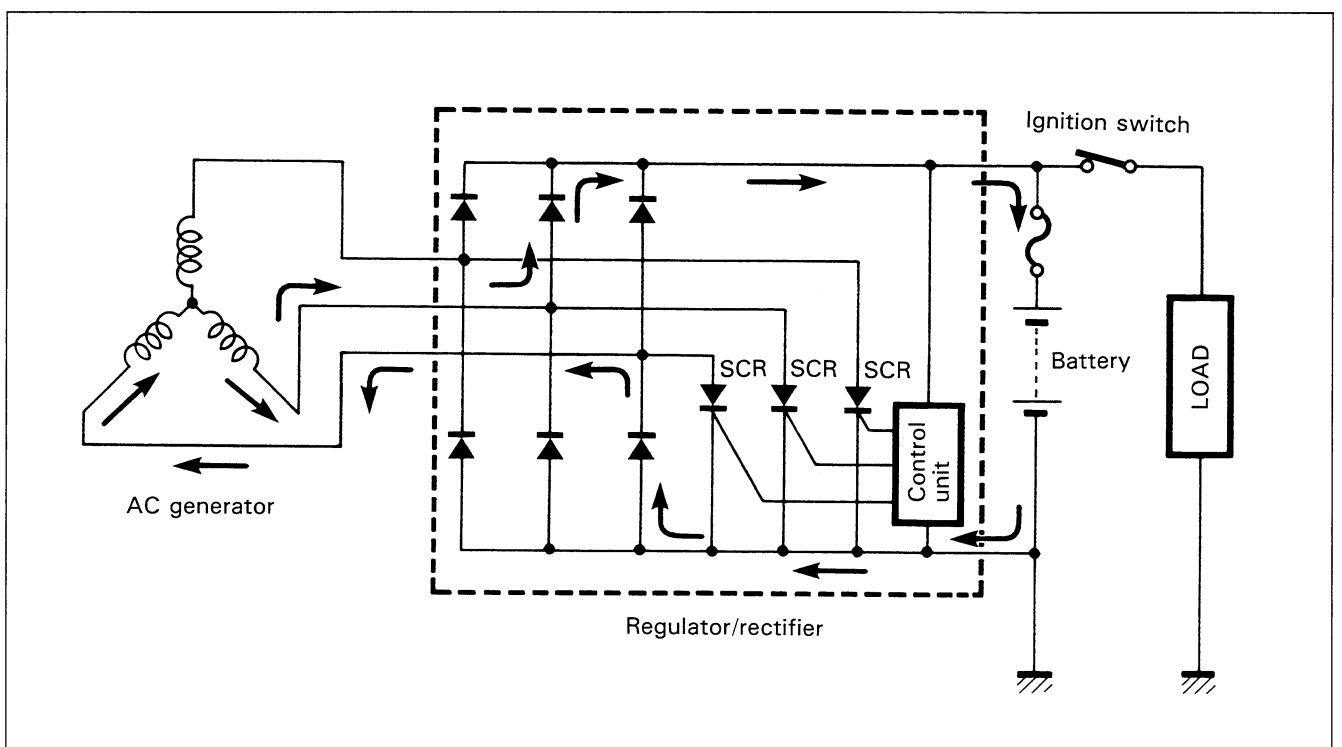
The circuit of the charging system is indicated in the figure, which is composed of an AC generator, regulator/rectifier unit and battery.

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



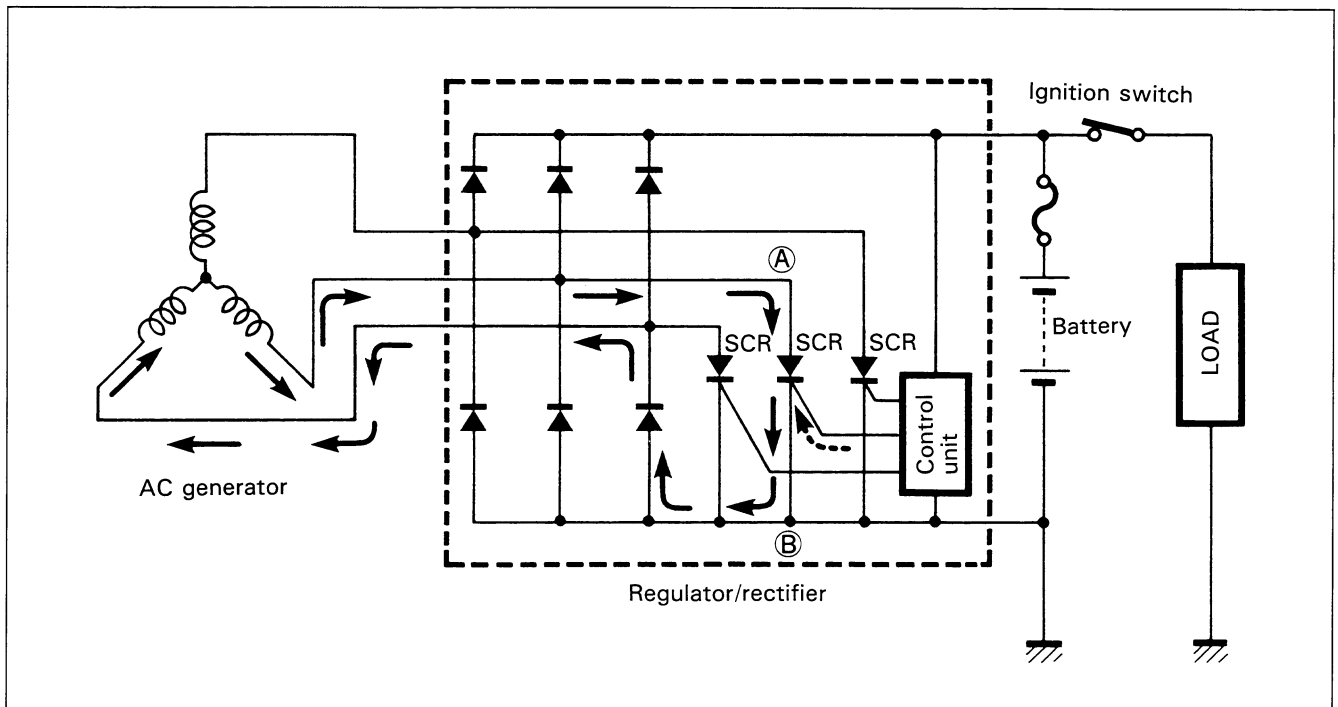
### FUNCTION OF REGULATOR

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, incidentally the generated current charges the battery directly.



When the engine r/min becomes higher, the generated voltage of AC generator also becomes higher and the voltage between battery terminals becomes high accordingly. When it reaches the adjusted voltage of control unit, control unit becomes "ON" condition consequently. On the "ON" condition of control unit, signal will be sent to the SCR (Thyristor) gate probe and SCR will become "ON" condition.

Then the SCR becomes conductive to the direction from point ① to point ②. Namely at the state of this, the current generated from the AC generator gets through SCR without charging the battery and returns to AC generator again. When the battery voltage falls, the signal to the SCR will be cut off, causing the SCR becomes "OFF". As a result, the generated voltage will start to charge the battery once again. Thus these repetitions maintain charging voltage to the battery constant and protect it from overcharging.



## INSPECTION

### CHARGING OUTPUT CHECK

- Remove the frame covers and seat. (Refer to page 6-1.)

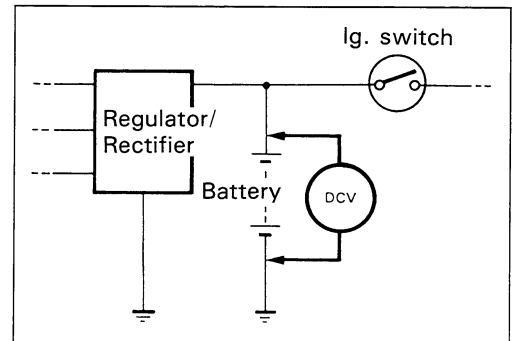
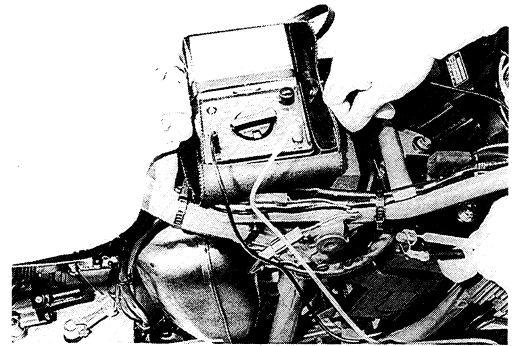
Start the engine and keep it running at 5 000 r/min. Measure the DC voltage between the battery terminal  $\oplus$  and  $\ominus$  with a pocket tester. If the tester reads under 13.0V or over 16.0V, check the AC generator no-load performance and regulator/rectifier.

#### NOTE:

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

**STD charging output: 13.0–16.0V (DC) at 5 000 r/min**

**09900-25002: Pocket tester**



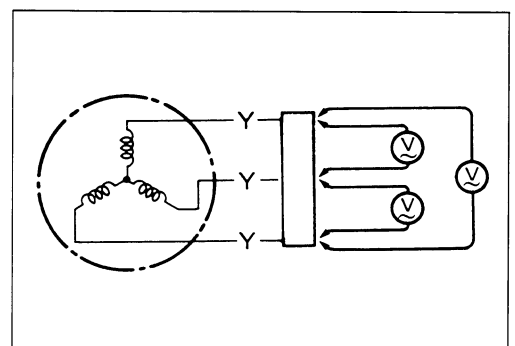
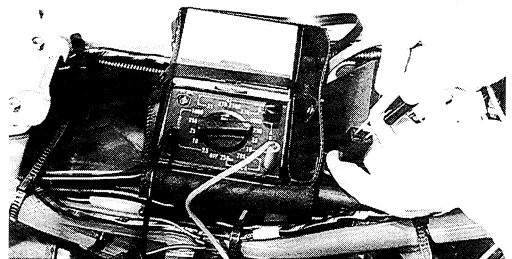
### AC GENERATOR NO-LOAD PERFORMANCE

- Remove the frame covers and seat.
- Disconnect the AC generator lead wire coupler.

Start the engine and keep it running at 5 000 r/min. Measure the AC voltage between the three yellow lead wires with a pocket tester. If the tester reads under 70V, the magneto is faulty.

**STD No-load performance: More than 70V (AC)  
at 5 000 r/min**

**09900-25002: Pocket tester**



### GENERATOR STATOR COIL

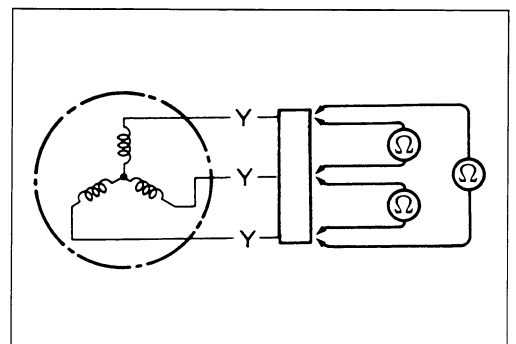
Check the continuity between the lead wires with a pocket tester. Also check that the stator core is insulated.

**STD resistance: 0.1–1.5Ω**

**09900-25002: Pocket tester**

#### NOTE:

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



**REGULATOR/RECTIFIER**

- Remove the frame covers and seat. (Refer to page 6-1.)
- Disconnect the regulator/rectifier couplers.

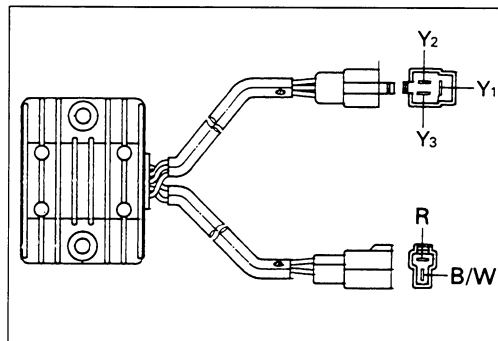
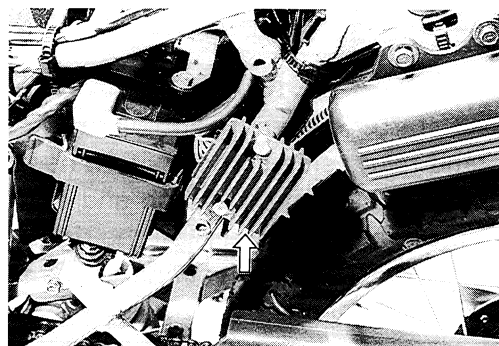
Measure the resistance between the lead wires in the following table with a pocket tester (X 1 k $\Omega$  range).

**09900-25002: Pocket tester**Unit: k $\Omega$ 

① Probe of tester to:	⊕ Probe of tester to:				
	R	B/W	Y <sub>1</sub>	Y <sub>2</sub>	Y <sub>3</sub>
R		10–60	20–100	20–100	20–100
B/W	2–10		1–6	1–6	1–6
Y <sub>1</sub>	1–6	20–100		30–150	30–150
Y <sub>2</sub>	1–6	20–100	30–150		30–150
Y <sub>3</sub>	1–6	20–100	30–150	30–150	

**CAUTION:**

As SCR and diodes are used inside this regulator/rectifier unit, the resistance values will differ when an ohmmeter other than SUZUKI pocket tester is used.

**WIRE COLOR**

R : Red

Y : Yellow

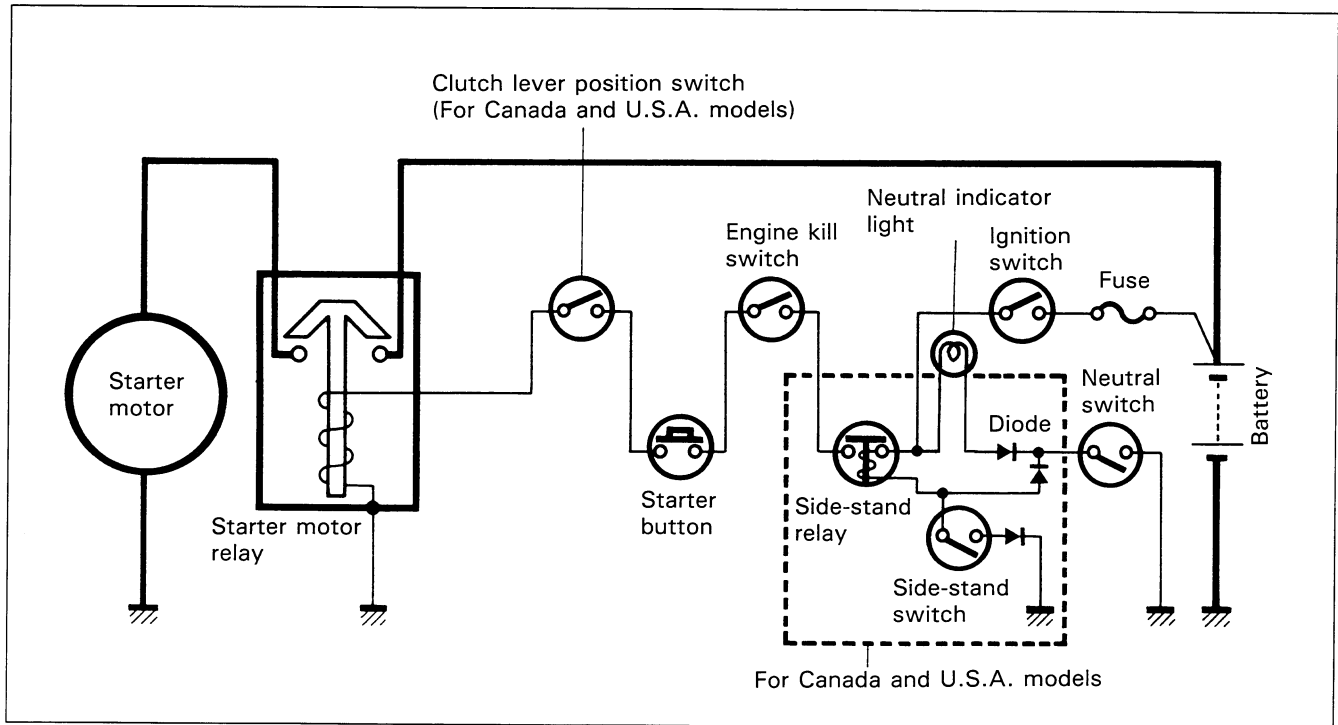
B/W : Black with White tracer

## STARTER SYSTEM

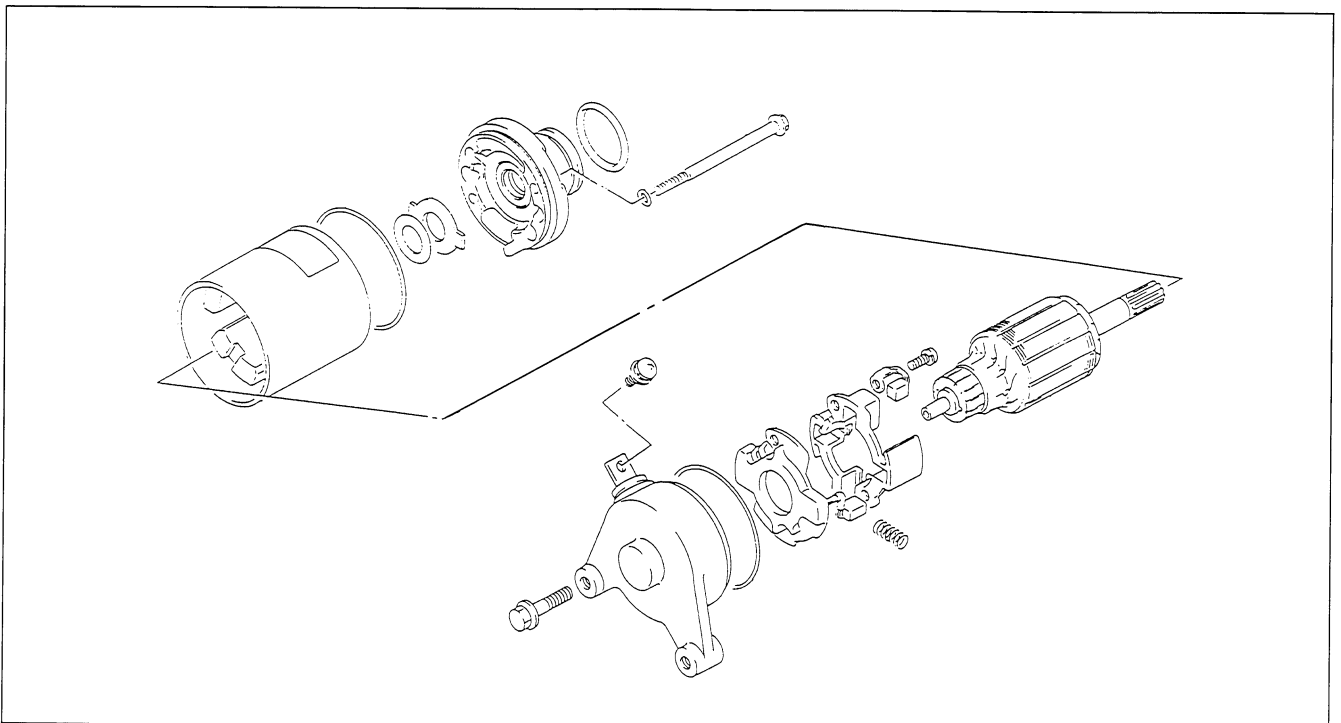
### DESCRIPTION

The starter system is shown in the diagram below: namely, the starter motor, starter relay, side-stand relay, side-stand switch, neutral switch, clutch lever position switch, starter button, engine kill switch, ignition switch and battery.

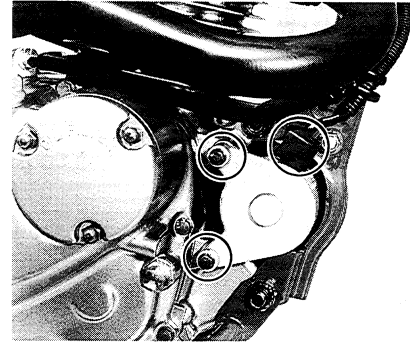
Depressing the starter (on the right handlebar switch box) energizes the relay, causing the contact points to close which connects the starter motor to the battery. The motor draws about 80 amperes to start the engine.



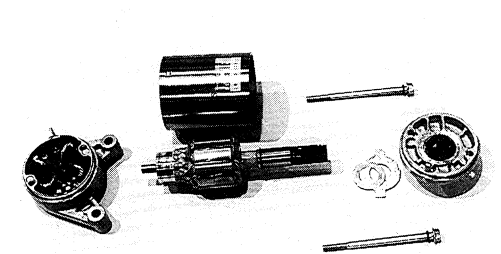
### STARTER MOTOR REMOVAL AND DISASSEMBLY



- Disconnect the starter motor lead wire and remove the starter motor by removing the mounting bolts.



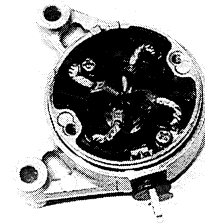
- Disassemble the starter motor.



## STARTER MOTOR INSPECTION

### CARBON BRUSH

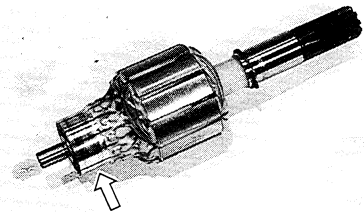
Inspect the brushes for damage or wear.  
If any damage is found, replace them.



### 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.

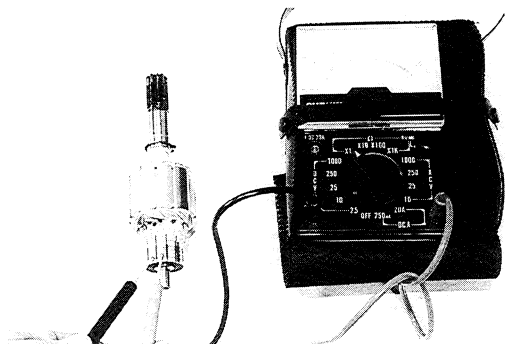


### ARMATURE COIL

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**

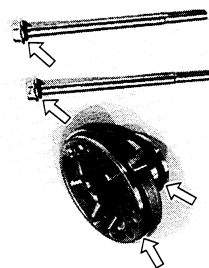


## STARTER MOTOR REASSEMBLY

### O-RING

#### CAUTION:

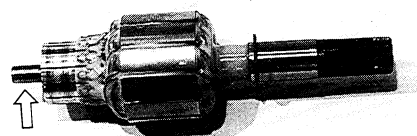
Replace the O-ring with new ones to prevent oil leakage and moisture.



### ARMATURE

- Apply a small quantity of moly paste to the armature end.

99000-25140: SUZUKI MOLY PASTE



- Apply grease to the lip of oil seal.

99000-25030: SUZUKI SUPER GREASE "A"

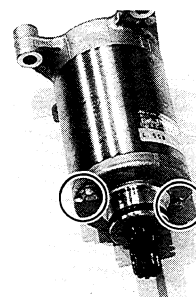


- When installing the starter motor housing to the brush holder, align the marks as shown in photo.



- Apply THREAD LOCK "1342" to the starter motor housing bolts and tighten them.

99000-32050: THREAD LOCK "1342"





## STARTER MOTOR RELAY INSPECTION

- Remove the seat. (Refer to page 6-1.)
- Disconnect the starter motor lead wire on the starter relay.

Turn on the ignition switch, inspect the continuity between the terminals, positive and negative, when pushing the starter button. If the starter motor relay is in sound condition, continuity is found.

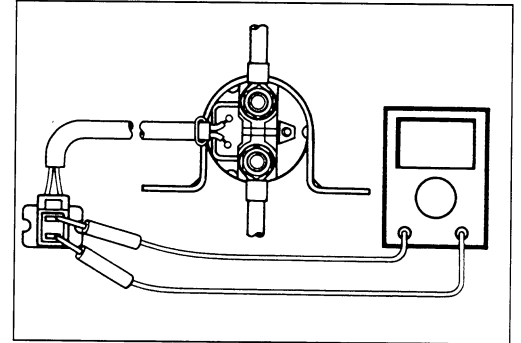
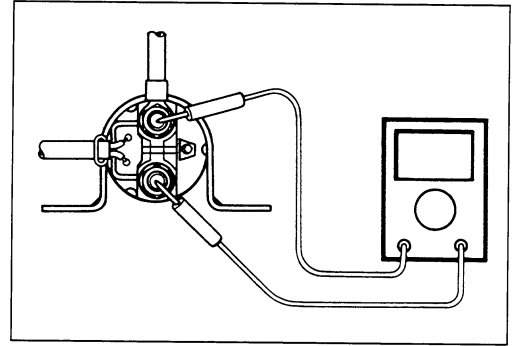
**09900-25002: Pocket tester**

- Disconnect the starter motor relay lead wire coupler.

Measure the starter motor relay coil resistance between the lead wires with a pocket tester.

**STD resistance: 2—6 $\Omega$**

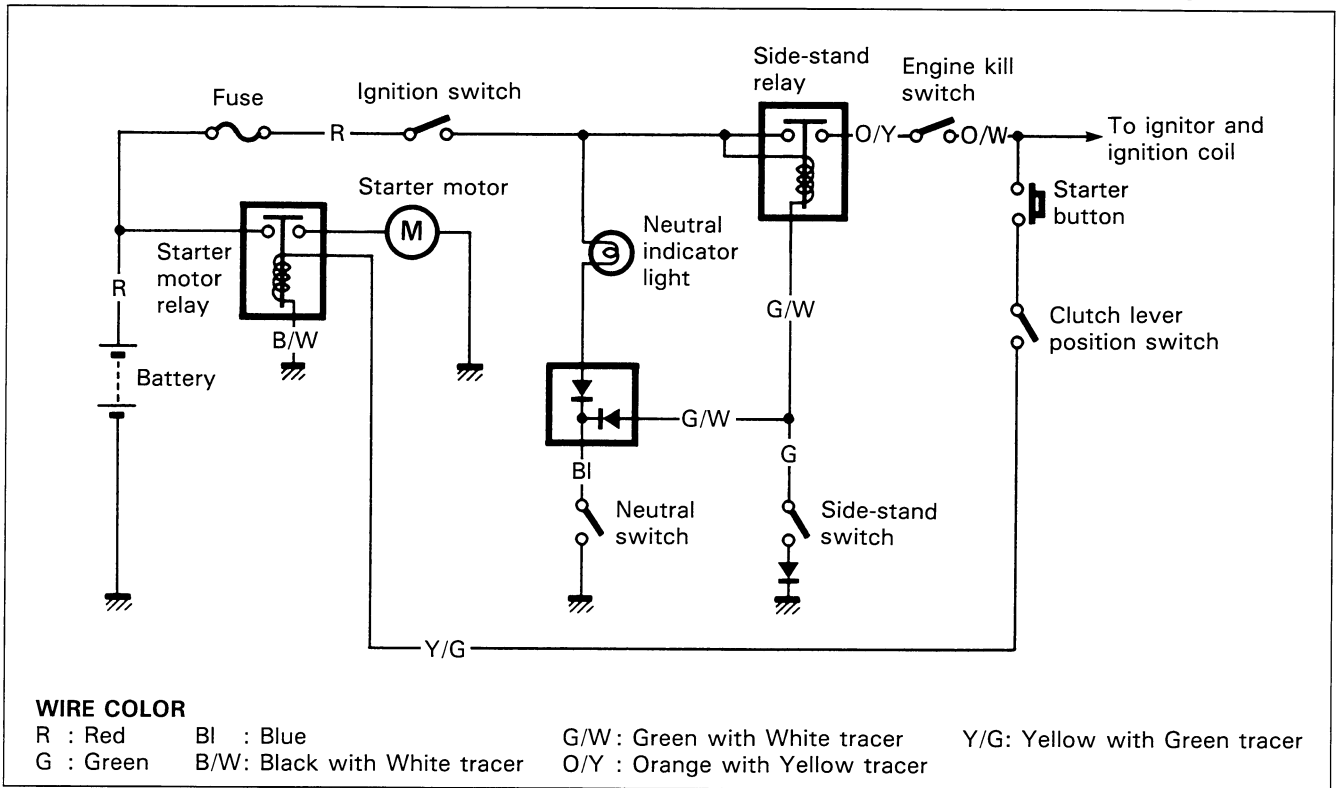
**09900-25002: Pocket tester**



## SIDE-STAND/IGNITION INTERLOCK SYSTEM (For Canada and U.S.A. models)

## DESCRIPTION

This side-stand/ignition interlock system is to prevent starting the motorcycle with the side-stand left down. The system is operated by an electric circuit provided between the battery and ignition coil.

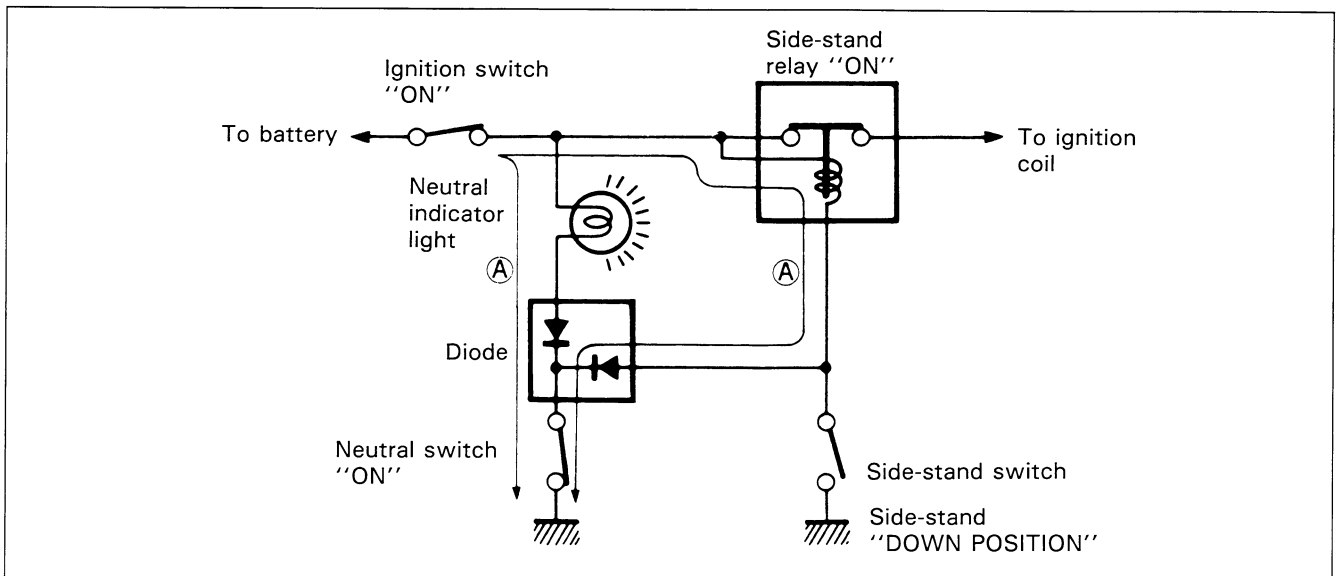


The circuit consists of relay, lamp, diode and switches and decides to live the ignition coil depending on the position of the TRANSMISSION and SIDE-STAND with the neutral and side-stand switches working mutually.

The ignition coil lives only in two situations as follows.

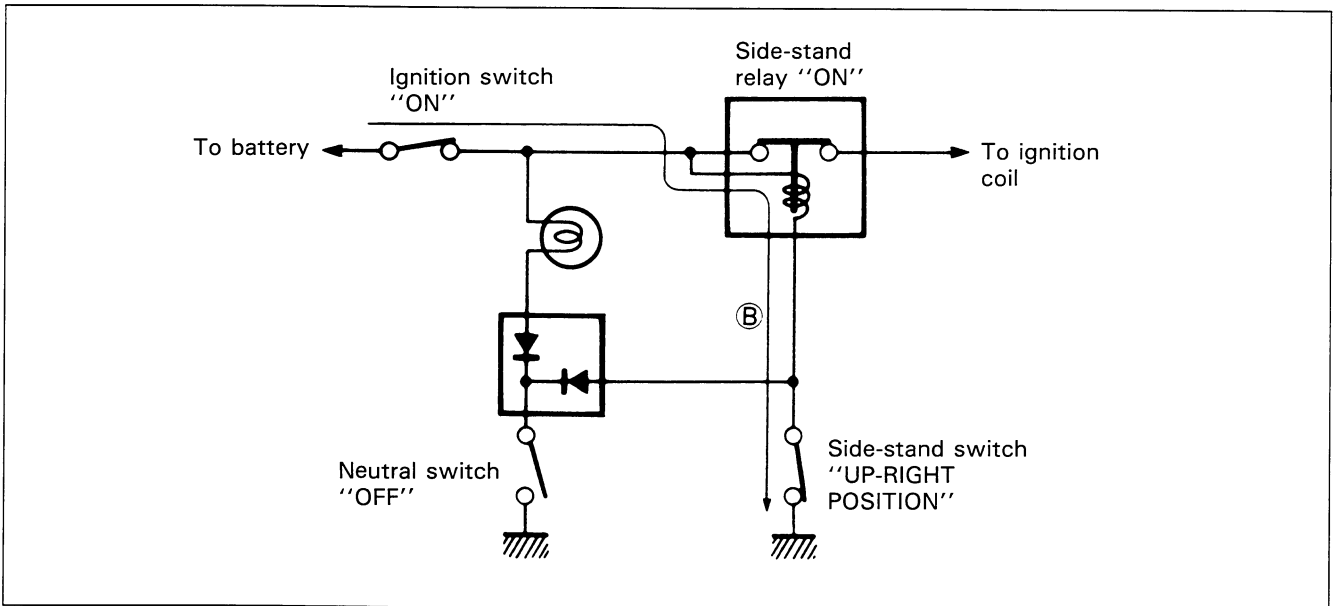
1. Transmission: "NEUTRAL (ON)" Side-stand: "DOWN (OFF)"

The current flow ④ turns "ON" the relay and the ignition coil lives even the side-stand is kept down. This is for warming up the engine.



## 2. Side-stand: "UP-RIGHT (ON)"

The current flow ⑥ turns "ON" the relay and the ignition coil lives. The engine can be easily started at any transmission position.



## INSPECTION

If the interlock system does not operate properly, check each component. If any abnormality is found, replace the component with a new one.

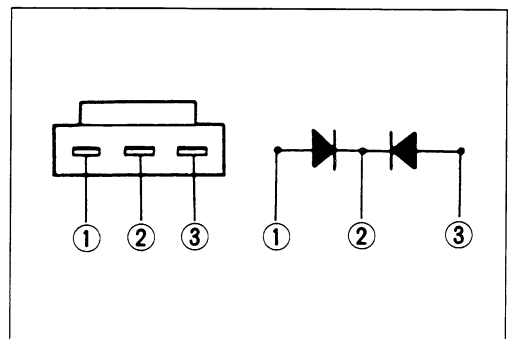
**09900-25002: Pocket tester**

## Diode

The diode is located under the seat.

The diode can pass current only in one direction.

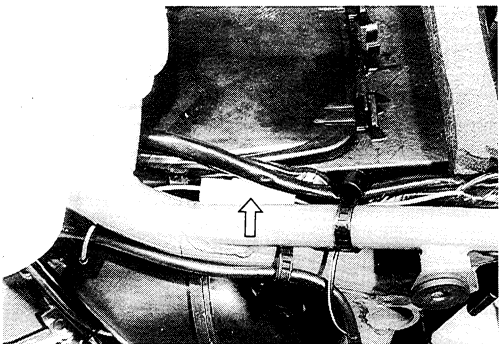
- Check the continuity between ① and ②. If one way continuity the diode is in good condition.
- Also check the continuity between ② and ③ as required.



Neutral switch

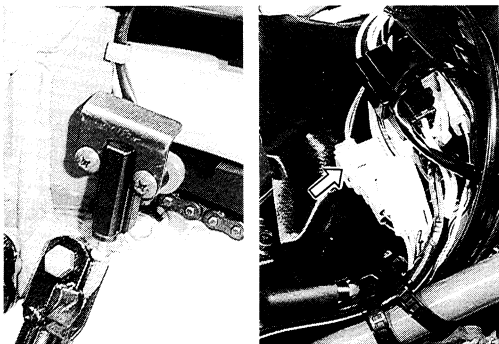
The neutral lead wire coupler is located under the seat.

- Remove the seat.
- Disconnect the neutral switch lead wire coupler, and check the continuity between Blue lead wire and Ground with the transmission in "NEUTRAL".



Side-stand switch

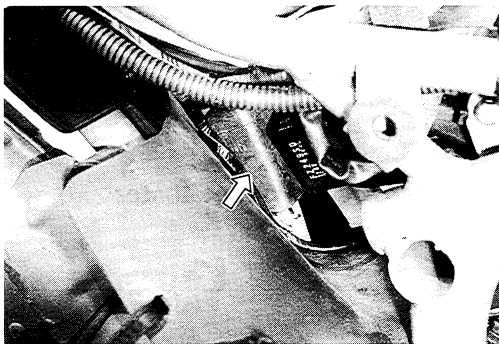
	Green	Black/White
ON (UP-right position)		
OFF (Down position)		



Side-stand/ignition interlock key

The side-stand/ignition interlock relay is located behind the right frame cover.

- Remove frame covers.

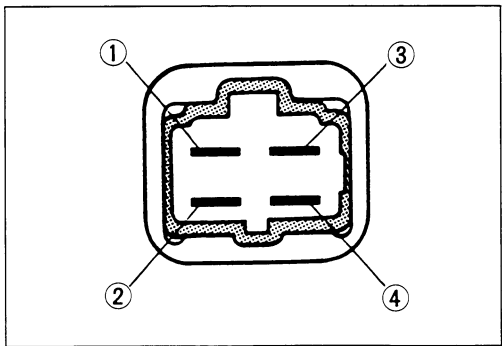


First, check the insulation between ① and ② terminals with pocket tester. Then apply 12 volts to ③ and ④ terminals, ⊕ to ③ and ⊖ to ④ , and check the continuity between ① and ② .

If there is no continuity, replace it with a new one.

09900-25002: Pocket tester

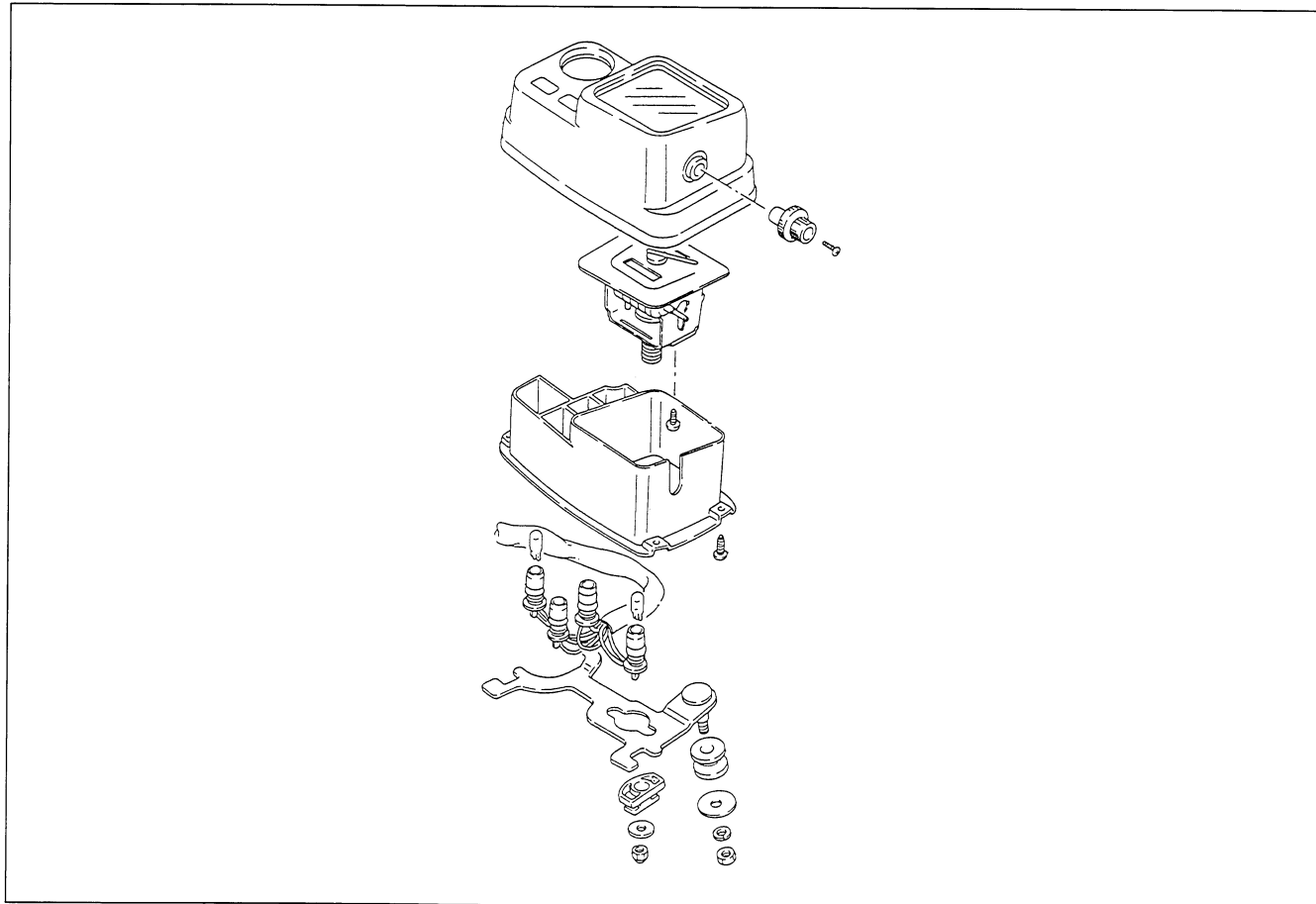
Tester knob indication: X 1Ω range



## SPEEDOMETER AND INDICATOR LIGHT

### REMOVAL AND DISASSEMBLY

- Remove the speedometer. (Refer to page 6-22.)
- Disassemble the speedometer as follows.



### INSPECTION

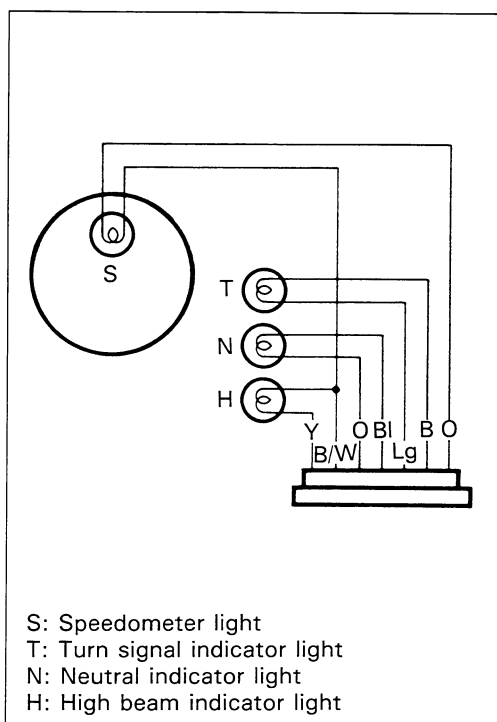
Check the continuity between lead wires in the diagram with a pocket tester. If the continuity measured is incorrect, replace the respective parts.

**09900-25002: Pocket tester**

**Tester knob indication: X 1Ω range**

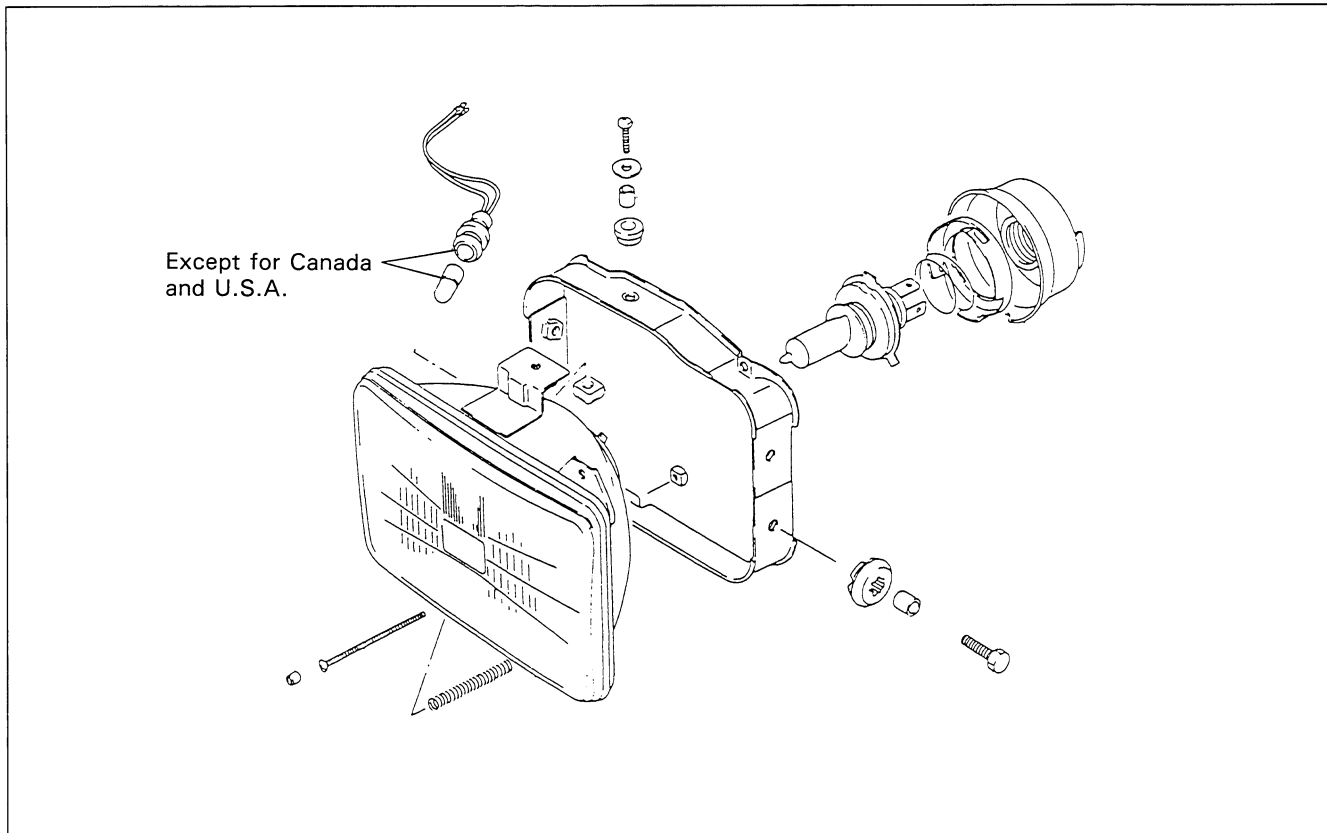
**NOTE:**

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

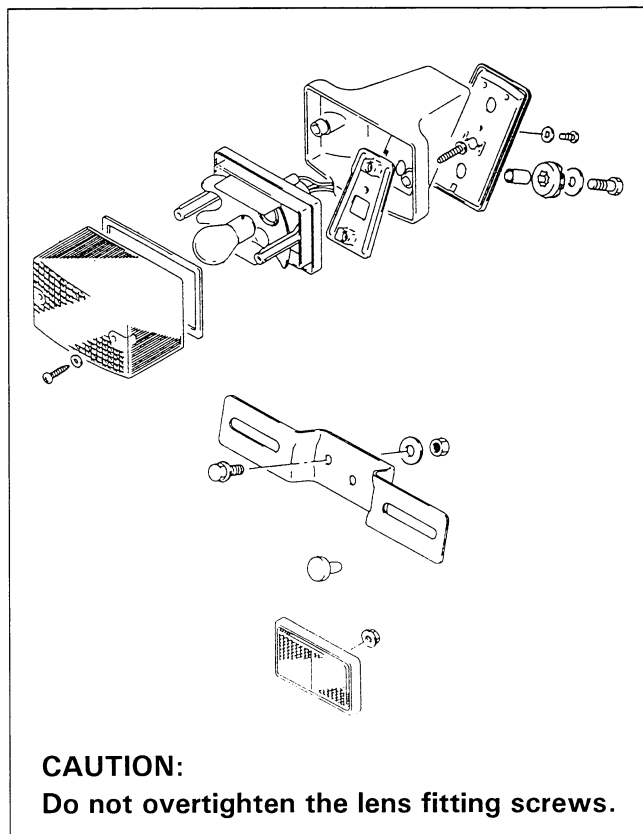


## LAMPS

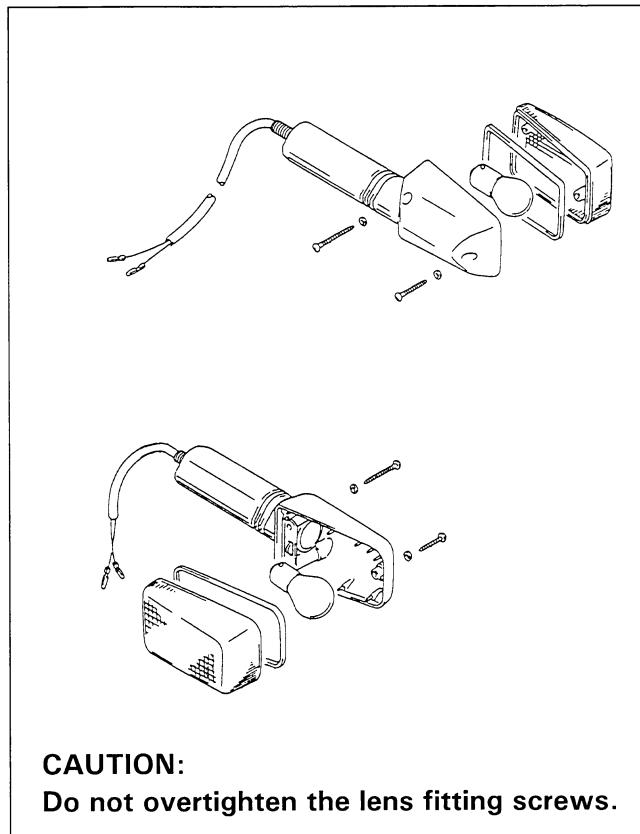
### HEADLIGHT



### TAIL/BRAKE LIGHT



### TURN SIGNAL LIGHT



## SWITCHES

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

**09900-25002: Pocket tester**

Tester knob indication: X 1Ω range

### IGNITION SWITCH

	R	O	Gr	Br
OFF				
ON	○	○	○	○
P	○			○

### LIGHTING SWITCH

(Except for Canada and U.S.A.)

	O	Gr	Y/W
OFF			
S	○	○	
ON	○		○

### DIMMER SWITCH

	Y/W	W	Y
HI	○		○
LO	○	○	

### TURN SIGNAL LIGHT SWITCH

	B	Lbl	Lg
L	○	○	
OFF (Push)			
R		○	○

### ENGINE KILL SWITCH

	O	O/W
OFF		
RUN	○	○

### STARTER BUTTON

	O/W	Y/G
OFF		
ON (Push)	○	○

### CLUTCH LEVER POSITION SWITCH

(For Canada and U.S.A.)

	Y/G	Y/G
OFF		
ON	○	○

### FRONT BRAKE LIGHT SWITCH

	O	B
OFF		
ON	○	○

### REAR BRAKE LIGHT SWITCH

	O	W/B
OFF		
ON	○	○

### NEUTRAL INDICATOR LIGHT SWITCH

	Bl	Ground
OFF		
ON	○	○

### SIDE-STAND SWITCH

(For Canada and U.S.A.)

	G	B/W
OFF		
ON	○	○

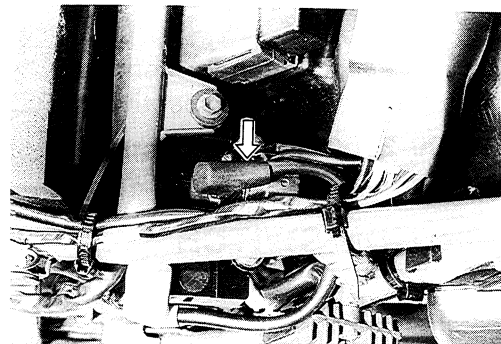
### WIRE COLOR

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

## RELAY

### STARTER MOTOR RELAY

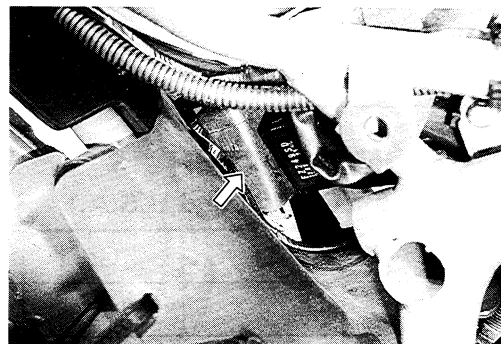
The starter motor relay is located under the seat.  
Refer to page 5-12.



### SIDE-STAND/IGNITION INTERLOCK RELAY

(For Canada and U.S.A.)

The side-stand/ignition interlock relay is located behind the right frame cover.  
Refer to page 5-15.

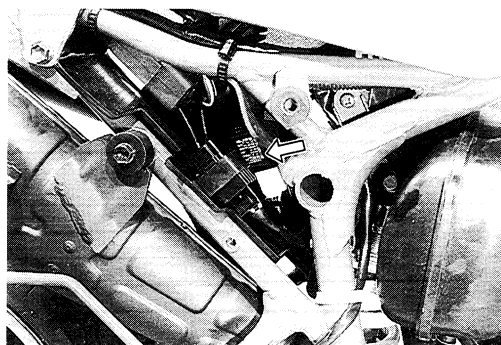


### TURN SIGNAL RELAY

The turn signal relay is located behind the right frame cover.  
If the turn signal light does not light, inspect the bulb or repair the circuit connection.  
If the bulb and circuit connection checked are correct, the turn signal relay may be faulty, replace it with a new one.

**NOTE:**

*Be sure that the battery used is in full-charged condition.*

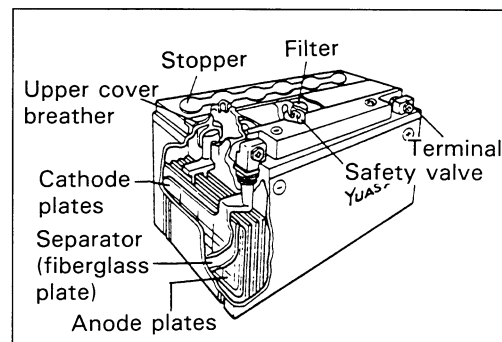




# BATTERY

## SPECIFICATIONS

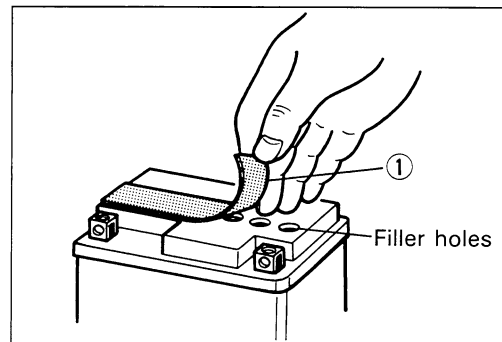
Type designation	YTX7L-BS
Capacity	12V, 21.6 kC (6 Ah)/10HR
Standard electrolyte S.G.	1.320 at 20°C (68°F)



## INITIAL CHARGING

### Filling electrolyte

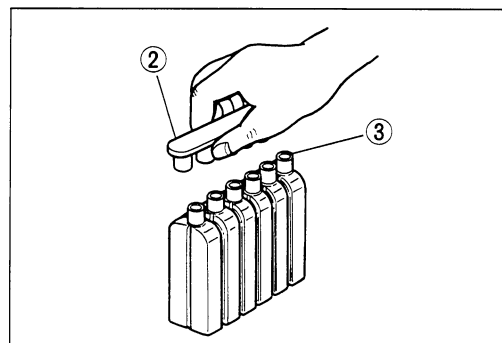
- Remove the aluminum tape ① sealing the battery electrolyte filler holes.



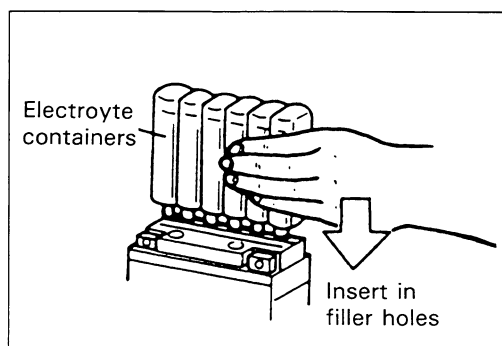
- Remove the caps ②.

### NOTE:

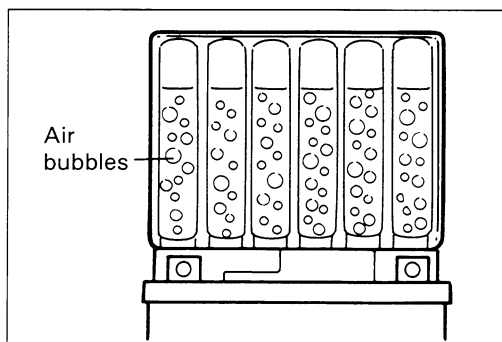
- \* After filling the electrolyte completely, use the removed cap ② as the sealed caps of battery-filler holes.
- \* Do not remove or pierce the sealed areas ③ of the electrolyte container.



- Insert the nozzle of the electrolyte container into the battery's electrolyte filler holes, holding the container firmly so that it does not fall. Take precaution not to allow any of the fluid to spill.

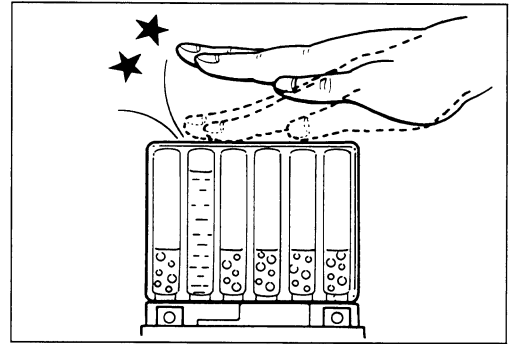


- Make sure air bubbles are coming up each electrolyte container, and leave in this position for about more than 20 minutes.



**NOTE:**

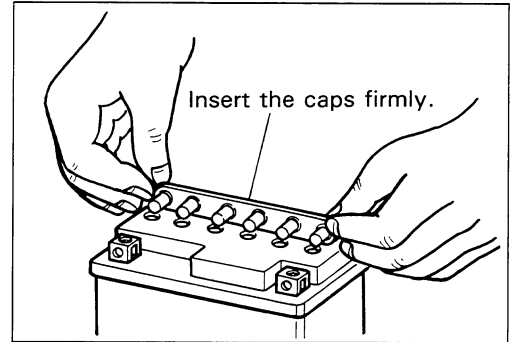
*If no air bubbles are coming up from a filler port, tap the bottom of the container two or three times.  
Never remove the container from the battery.*



- After confirming that the electrolyte has entered the battery completely, remove the electrolyte containers from the battery. Wait for around 20 minutes.
- Insert the caps into the filler holes, pressing in firmly so that the top of the caps do not protrude above the upper surface of the battery's top cover.

**CAUTION:**

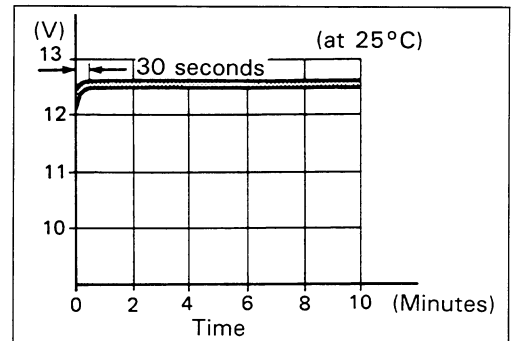
- \* **Never use anything except the specified battery.**
- \* **Once install the caps to the battery; do not remove the caps.**



- Using SUZUKI pocket tester, measure the battery voltage. The tester should indicate more than 12.5V (DC) as shown in the Fig. If the battery voltage is lower than the specification, charge the battery with a battery charger. (Refer to the recharging operation on page 5-22.)

**NOTE:**

*Initial charging for a new battery is recommended if two years have elapsed since the date of manufacture.*

**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.

## RECHARGING OPERATION

- Using the pocket tester, check the battery voltage. If the voltage reading is less than the 12.0V (DC), recharge the battery with a battery charger.

### CAUTION:

When recharging the battery, remove the battery from the motorcycle.

### NOTE:

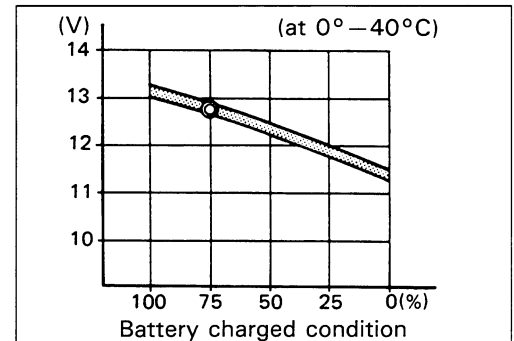
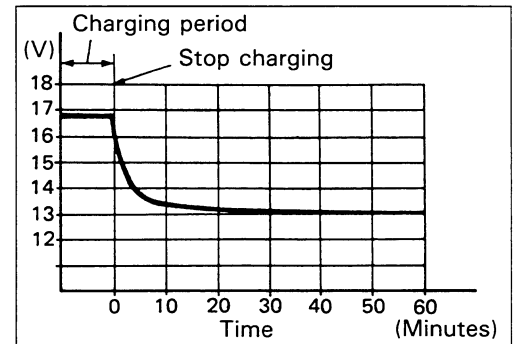
Do not remove the stoppers on the battery top while recharging.

Recharging time: 0.7A for 5 hours or 3A for one hour

### CAUTION:

Be careful not to permit the charging current to exceed 3A at any time.

- After recharging, wait for more than 30 minutes and check the battery voltage with a pocket tester.
- If the battery voltage is less than the 12.5V recharge the battery again.
- If battery voltage is still less than 12.5V after recharging, replace the battery with a new one.
- When a battery is left for a long term without using, it is subject to discharge. When the motorcycle is not used for more than 1 month (especially during the winter season), check the battery voltage once a month at least.



# CHASSIS

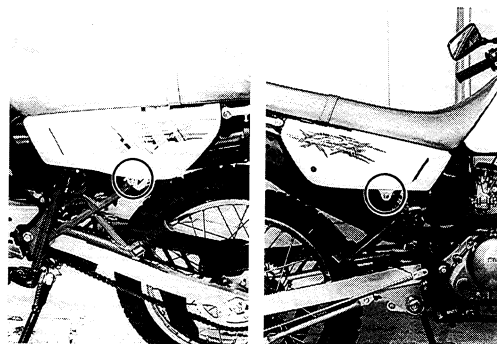
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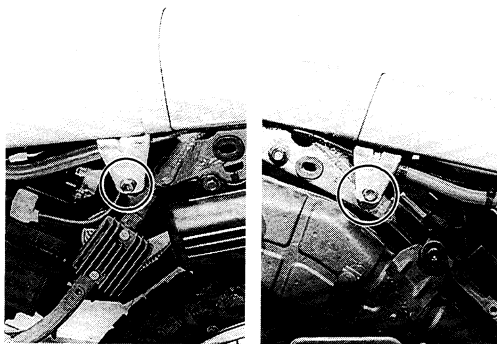
## FRAME COVER AND SEAT

### REMOVAL

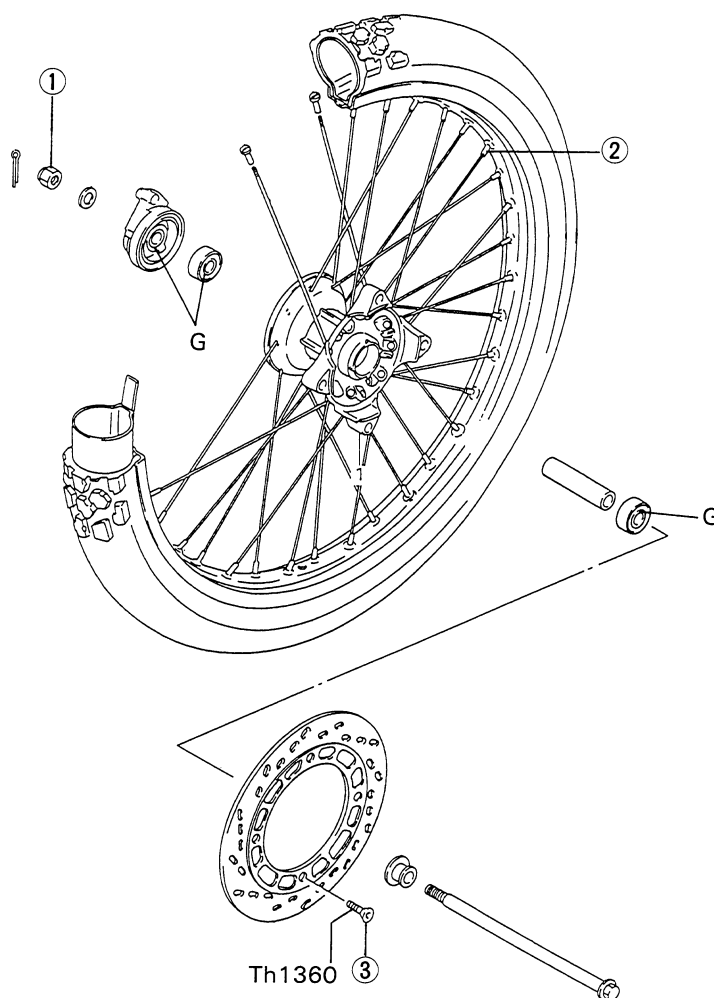
- Remove the right and left frame covers by removing the mounting screws.



- Remove the seat by removing the mounting bolts.



## FRONT WHEEL



Th1360: Apply THREAD LOCK  
SUPER "1360"  
(99000-32130)

G : Apply SUZUKI SUPER  
GREASE "A"  
(99000-25030)

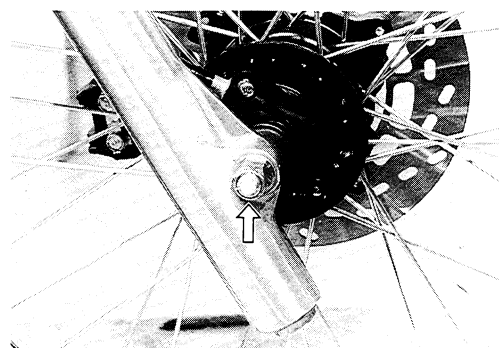
### Tightening Torque

Item	N·m	kg-m
①	48	4.8
②	4.5	0.45
③	23	2.3

Th1360 ③

## REMOVAL

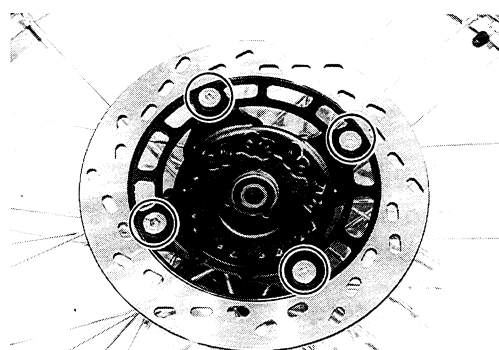
- Remove the cotter pin (For Canada and U.S.A. models).
- Remove the axle nut.
- Support the motorcycle with jack or wooden block.
- Remove the axle shaft and front wheel.



### NOTE:

*Do not operate the brake lever while dismounting the front wheel.*

- Remove the disc by removing the mounting bolts.



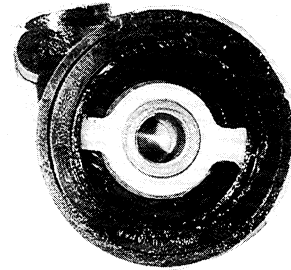
## INSPECTION AND DISASSEMBLY

### SPEEDOMETER GEARBOX DUST SEAL

Inspect the lip of dust seal for damage.

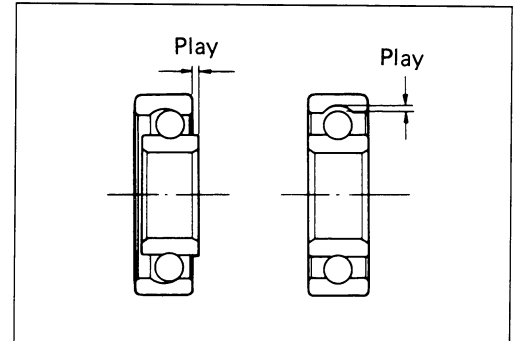
### TIRE

Refer to page 2-13.



### WHEEL BEARINGS

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



### AXLE SHAFT

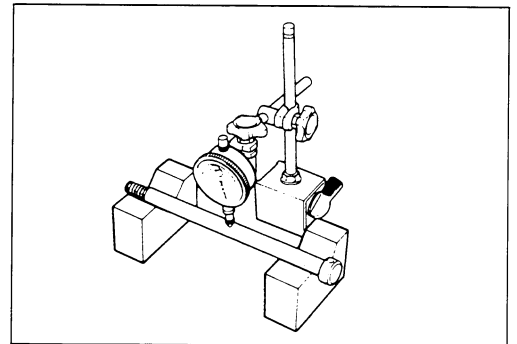
Using a dial gauge, check the axle shaft for runout and replace it if the runout exceeds the limit.

**Service Limit: 0.25 mm (0.010 in.)**

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

**09900-20701: Magnetic stand**

**09900-21304: V-block set (100 mm)**



### WHEEL RIM

Make sure that the wheel rim runout does not exceed the service limit when checked as shown.

An excessive amount of runout is usually due to loose spokes or bent rim.

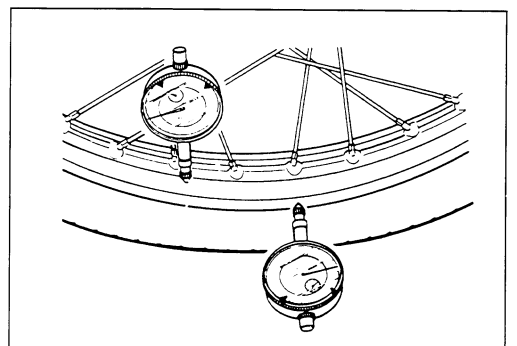
If properly tightening the spokes will not correct the runout, replace the wheel rim.

#### NOTE:

*Worn or loose wheel bearings must be replaced before attempting to true a wheel rim.*

**Service Limit: 2.0 mm (0.08 in)**

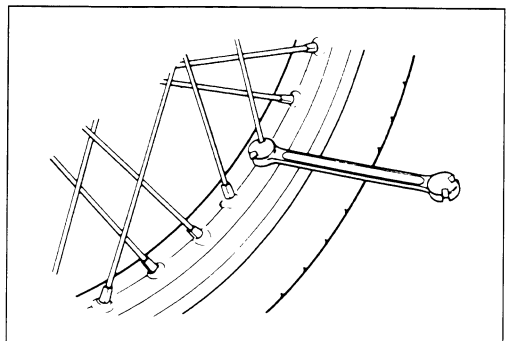
**(Axle and Radial)**



### SPOKE NIPPLE

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

**Tightening torque: 4.5 N·m (0.45 kg·m)**



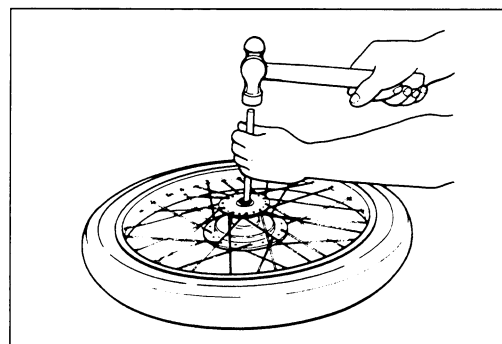
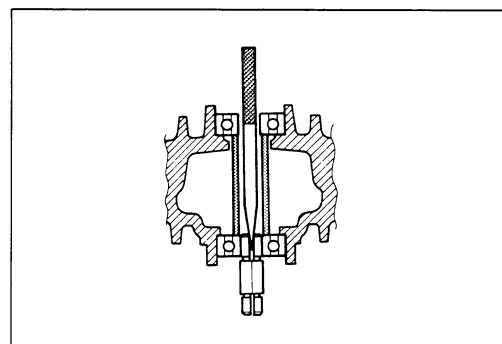
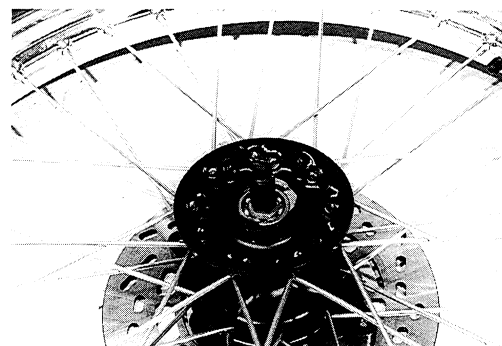
- Drive out the wheel hub bearings with the special tool in the following procedures.

#### 09941-50111: Bearing remover

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

#### CAUTION:

The removed bearings should be replaced with new ones.



## REASSEMBLY AND REMOUNTING

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

#### WHEEL HUB BEARING

- Apply grease to the bearing before installing.

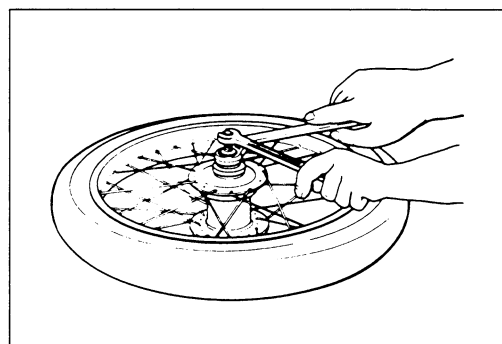
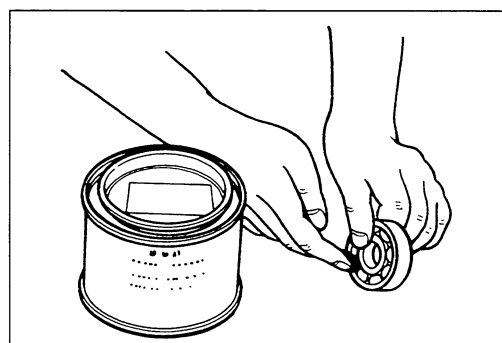
#### 99000-25030: SUZUKI SUPER GREASE "A"

- Install the bearings as follows with the special tool.

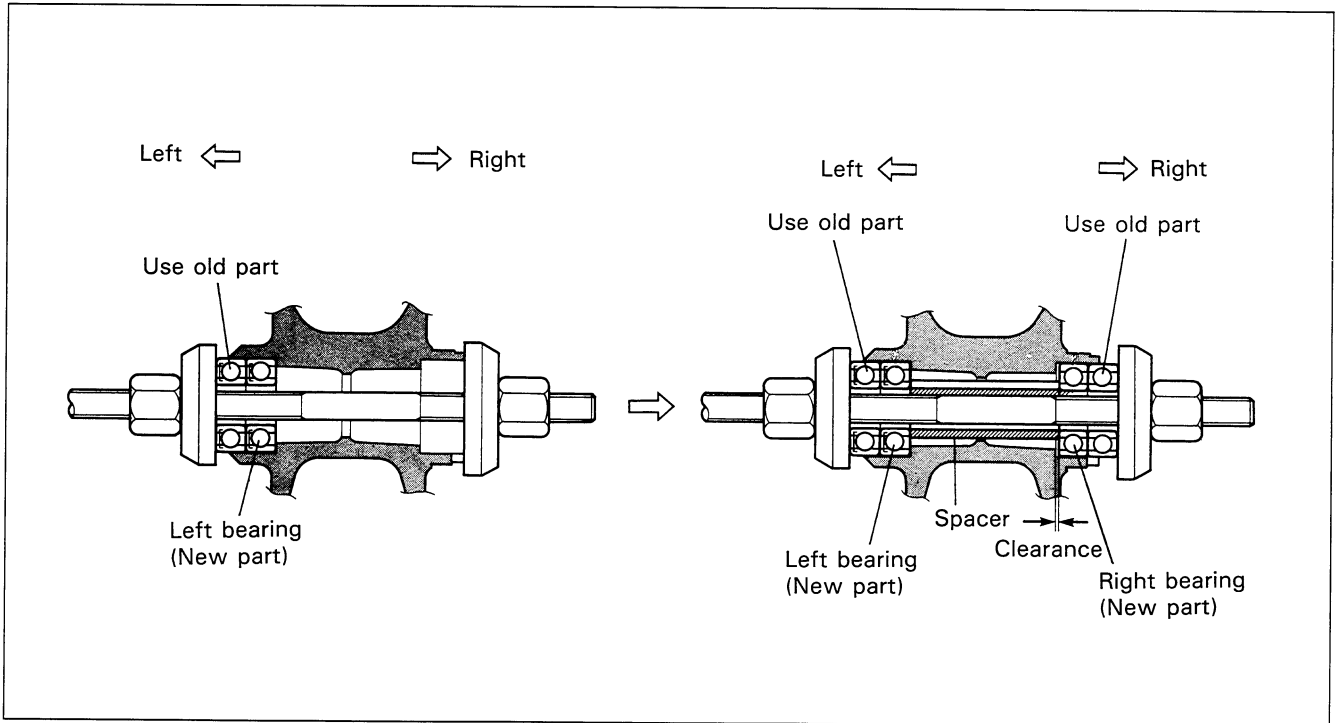
#### 09924-84521: Bearing installer

#### NOTE:

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





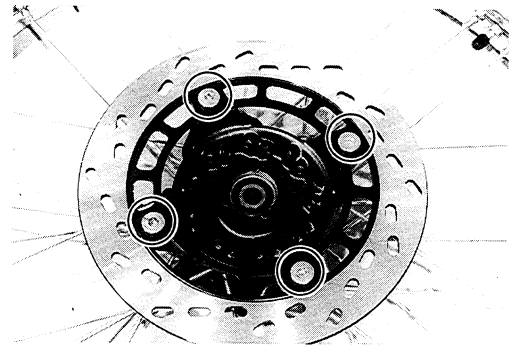


### BRAKE DISC

- 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"**

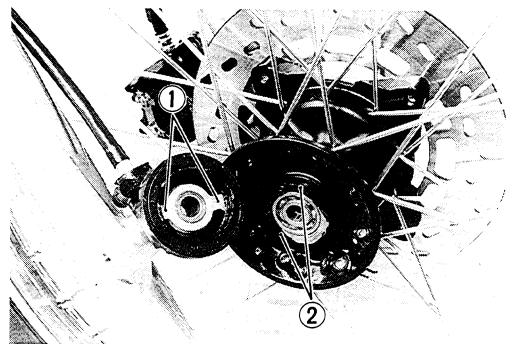
**Tightening torque: 23 N·m (2.3 kg-m)**



### SPEEDOMETER GEARBOX

- Before installing the speedometer gearbox, apply grease to its gear and align the drive lugs ① to the recesses ② of the wheel hub and attach the speedometer gearbox to the wheel hub.

**99000-25030: SUZUKI SUPER GREASE "A"**



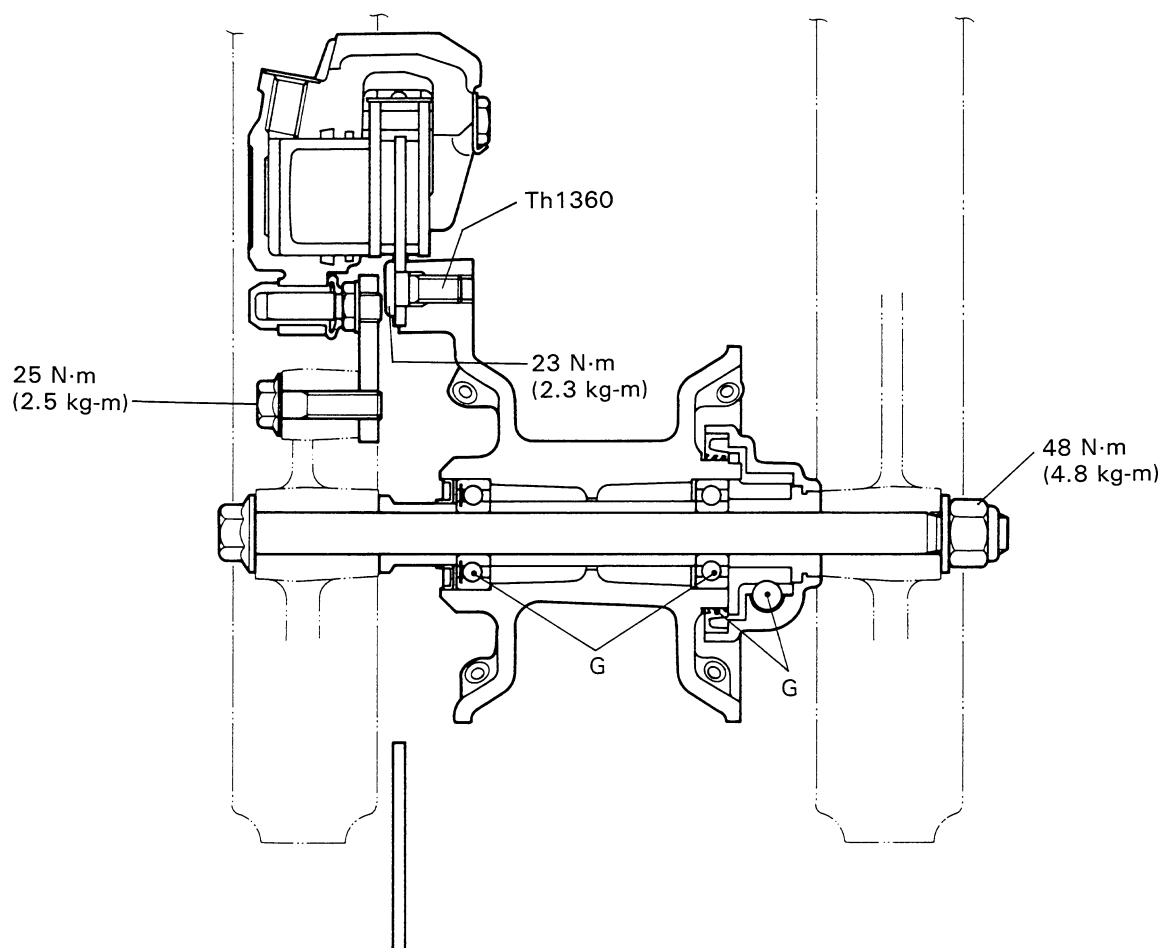
### AXLE SHAFT NUT

- Tighten the axle shaft nut to the specified torque.

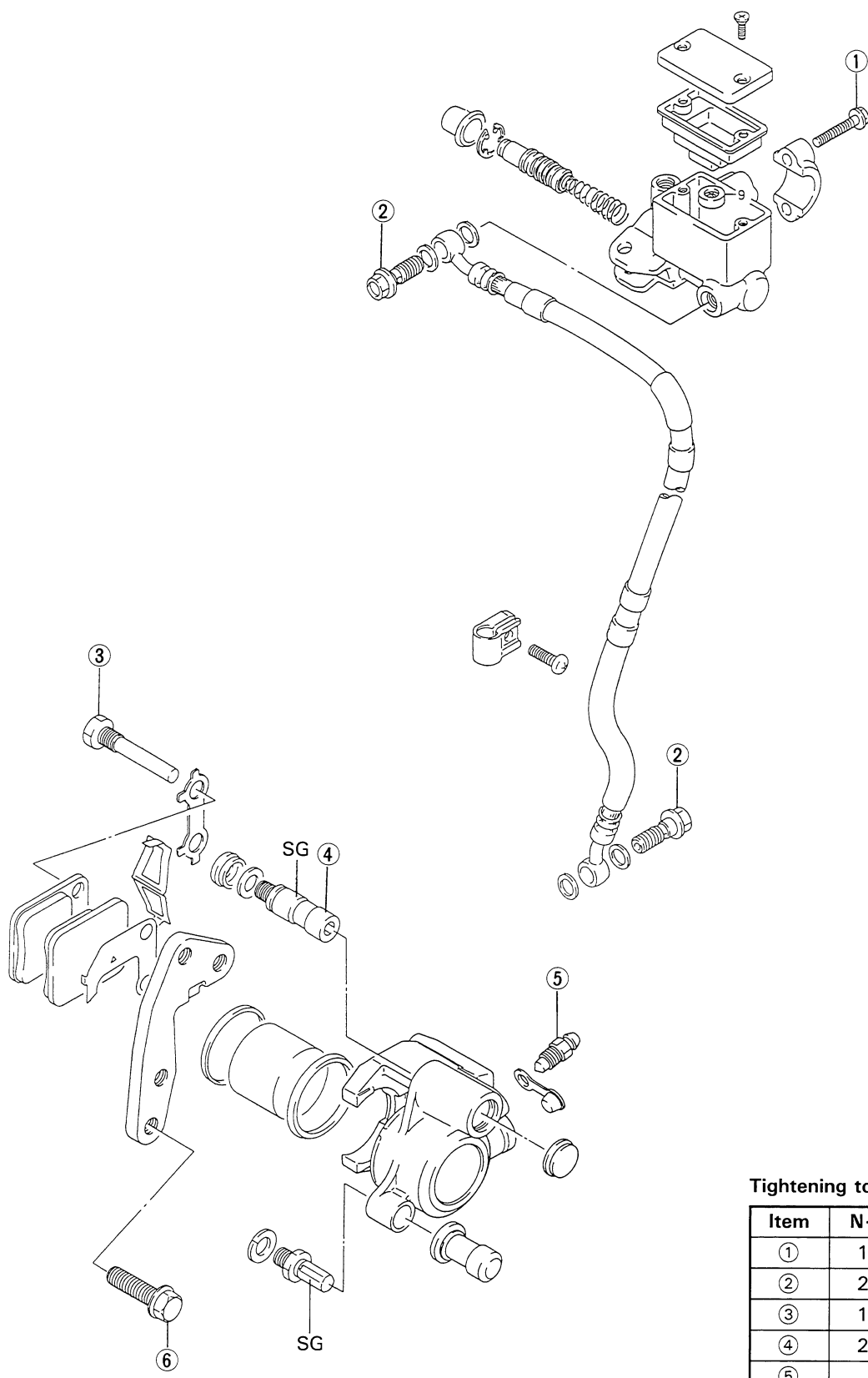
**Tightening torque: 48 N·m (4.8 kg-m)**

Th1360: Apply THREAD LOCK SUPER "1360" (99000-32130)

G : Apply SUZUKI SUPER GREASE "A" (99000-25030)



FRONT BRAKE



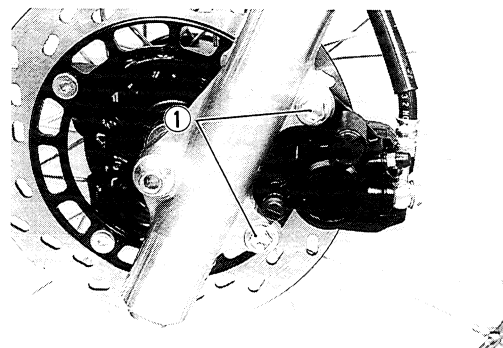
Tightening torque

Item	N·m	kg-m
①	10	1.0
②	23	2.3
③	18	1.8
④	23	2.3
⑤	8	0.8
⑥	25	2.5

SG: Apply SUZUKI SILICONE GREASE (99000-25100)

## BRAKE PAD REPLACEMENT

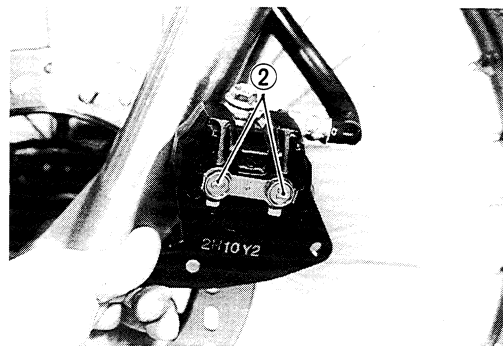
- Remove the caliper by removing the caliper mounting bolts ① .



- Flatten the lock portion of the lock washer and remove the pad mounting bolts ② and take out the pads with pad shim.

### CAUTION:

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



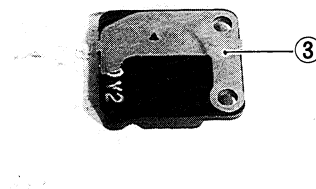
### NOTE:

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

- When installing the pad shim ③ , attach it to the piston side pad as shown in photo.
- Tighten the pad mounting bolts ② to the specified torque.

**Tightenint torque: 18 N·m (1.8 kg-m)**

- Bend the lock washer.



- Tighten the caliper mounting bolts ① to the specified torque.

**Tightening torque: 25 N·m (2.5 kg-m)**

## CALIPER REMOVAL AND DISASSEMBLY

- Disconnect the brake hose by removing the union bolt and catch the brake fluid in a suitable receptacle.
- Remove the caliper by removing the caliper mounting bolts.

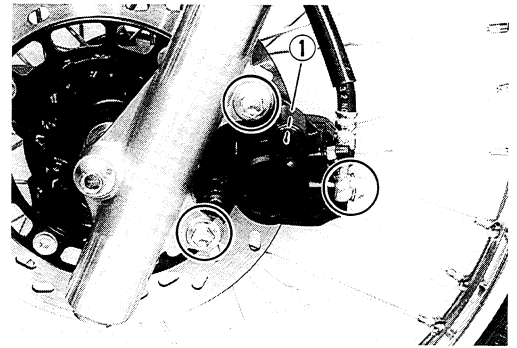
### CAUTION:

Never reuse the brake fluid left over from previous servicing and stored for long periods.

### WARNING:

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

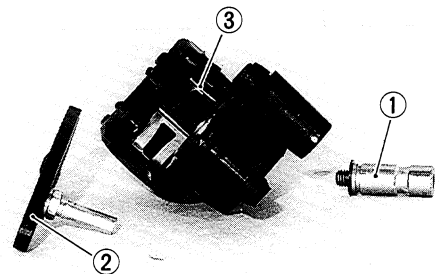
Check the brake hose and hose joints for cracks and oil leakage.



### NOTE:

Slightly loosen the caliper axle bolt (1) to facilitate later disassembly.

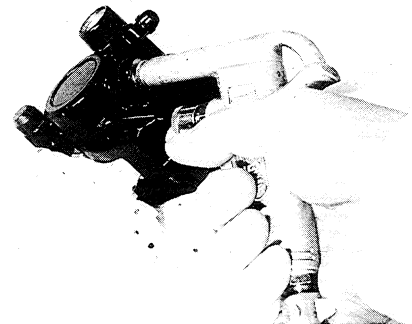
- Remove the pads. (Refer to page 6-8.)
- Remove the caliper axle bolt (1).
- Remove the caliper holder (2).
- Remove the spring (3).



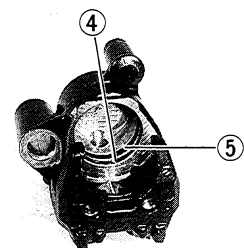
- Place a rag over the piston to prevent its popping out and push out the piston with an air gun.

### CAUTION:

Do not use high pressure air to prevent piston damage.



- Remove the dust seal (4) and piston seal (5).



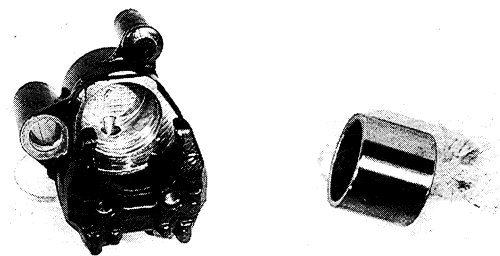
## CALIPER INSPECTION

### CALIPER

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

### PISTON

Inspect the piston surface for any scratches or other damage.



### RUBBER PARTS

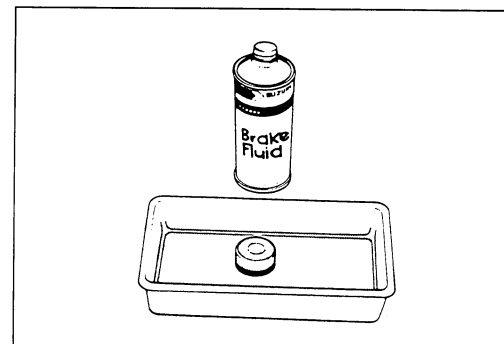
The removed rubber parts should be replaced with new ones.

## CALIPER REASSEMBLY AND REMOUNTING

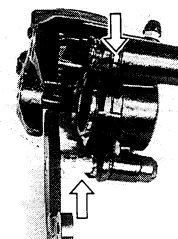
Reassemble the caliper in the reverse order of removal and disassembly. Pay attention to the following points.

### 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.



99000-25100: SUZUKI SILICONE GREASE



- Tighten each bolt to the specified torque.

### Tightening torque

Caliper axle bolt	: 23 N·m (2.3 kg-m)
Brake pad mounting bolt	: 18 N·m (1.8 kg-m)
Caliper mounting bolt	: 25 N·m (2.5 kg-m)
Brake hose union bolt	: 23 N·m (2.3 kg-m)

**NOTE:**

*Before remounting the caliper, push the piston all the way into the caliper.*

**WARNING:**

**Bleed air from the system after reassembling the caliper.**  
(Refer to page 2-12.)

### DISC SERVICING

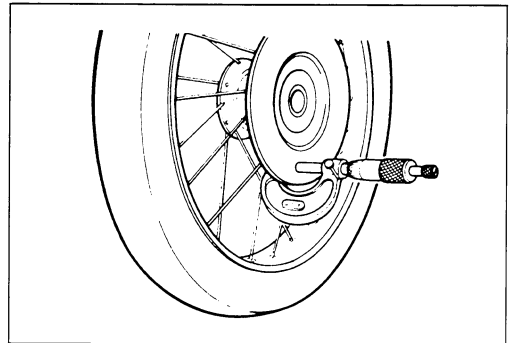
- Remove the front wheel. (Refer to page 6-2.)
- Remove the disc. (Refer to page 6-2.)
- Install the disc. (Refer to page 6-5.)

### DISC INSPECTION

Using a micrometer, check the disc for wear, its thickness can be checked with disc and wheel in place. The service limit for the thickness of the disc is shown below.

**Service Limit: 3.0 mm (0.12 in)**

**09900-20205: Micrometer (0—25 mm)**

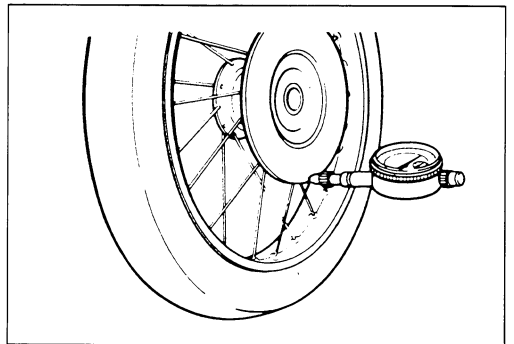


With the disc mounted on the wheel, check the disc for face runout with a dial gauge, as shown.

**Service Limit: 0.30 mm (0.012 in)**

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

**09900-20701: Magnetic stand**



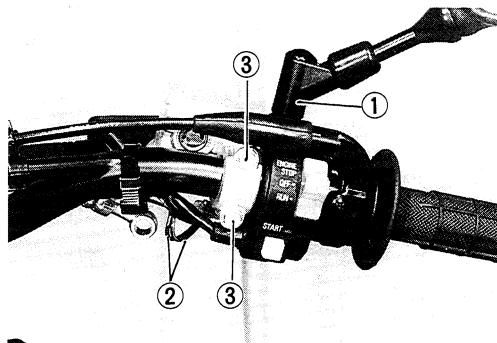
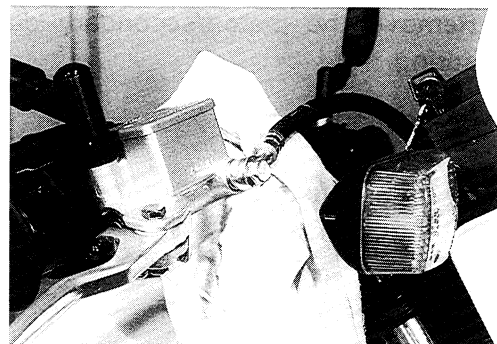
## MASTER CYLINDER REMOVAL AND DISASSEMBLY

Place a rag underneath the union bolt on the master cylinder to catch any spilled drops of brake fluid. Remove the union bolt and disconnect the brake hose/master cylinder joint.

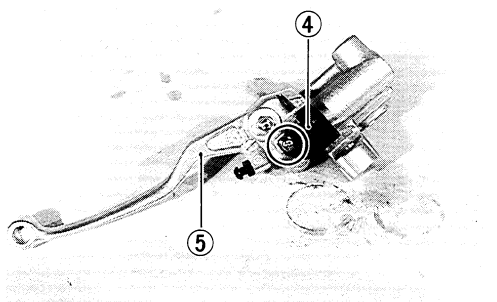
### CAUTION:

Immediately and completely wipe off any brake fluid contacting any part of the motorcycle. The fluid reacts chemically with paint, plastics and rubber materials, etc. and will damage them severely.

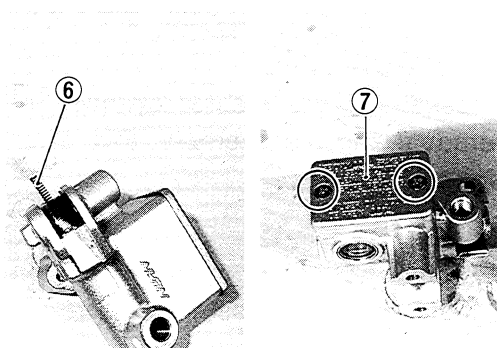
- Remove the rear view mirror ① .
- Disconnect the front brake light switch lead wires ② .
- Remove the master cylinder assembly by removing the clamp bolts ③ .



- Remove the brake light switch ④ .
- Remove the brake lever ⑤ .

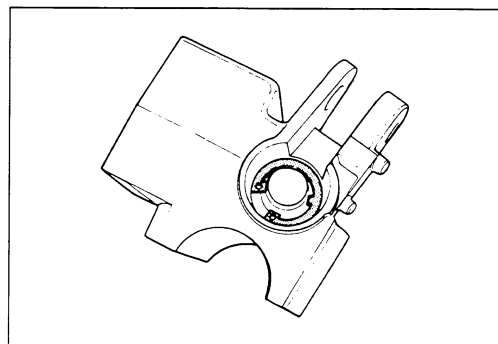


- Remove the spring ⑥ .
- Remove the reservoir cap ⑦ and diaphragm.
- Drain brake fluid.



- Remove the dust seal, then remove the circlip by using the special tool.

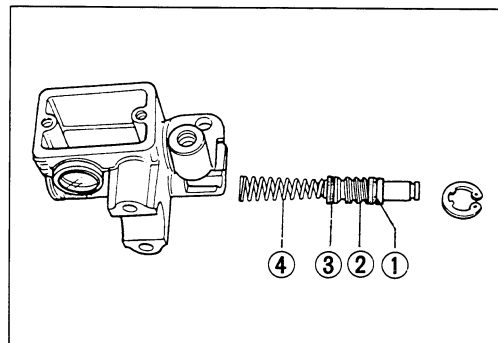
**09900-06108: Snap ring pliers**





- Remove the piston/secondary cup, primary cup and spring.

- ① Secondary cup
- ② Piston
- ③ Primary cup
- ④ Return spring

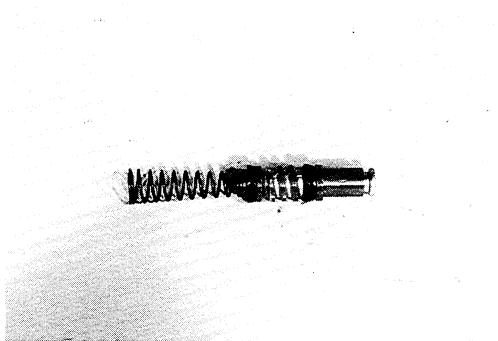
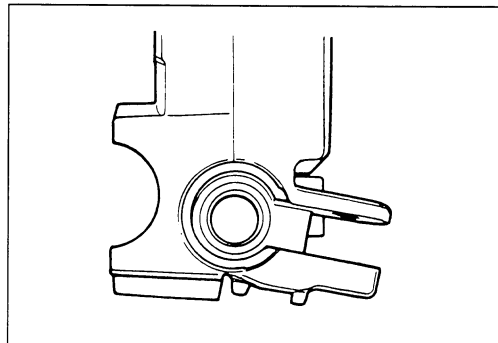


### MASTER CYLINDER INSPECTION

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

Inspect the piston surface for any scratches or other damage.

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

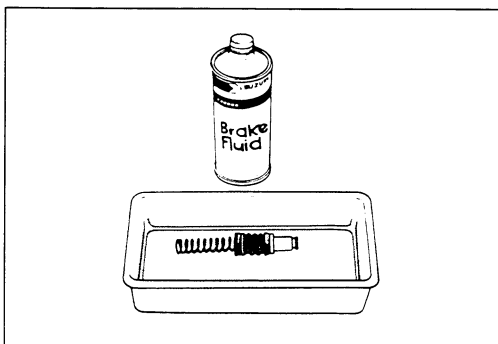


### MASTER CYLINDER REASSEMBLY AND REMOUNTING

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

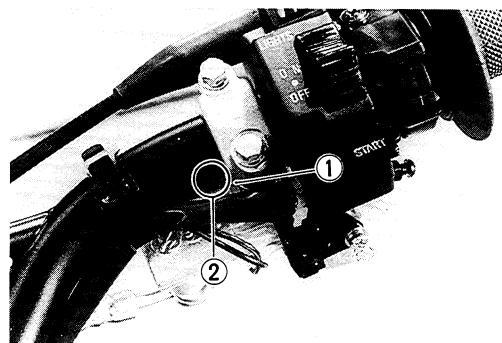
#### CAUTION:

- \* 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 component to be inserted into the bore.



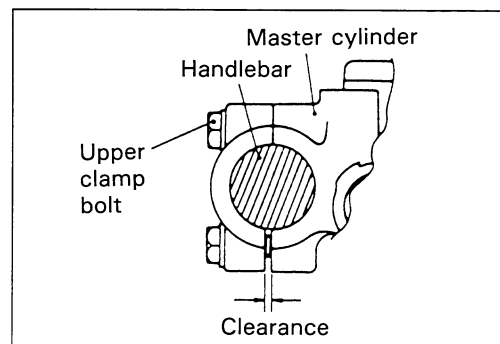
- When remounting the master cylinder on the handlebar, align the master cylinder holder's mating surface ① with punched mark ② on the handlebar and tighten the upper clamp bolt first as shown.

**Tightening torque: 10 N·m (1.0 kg-m)**

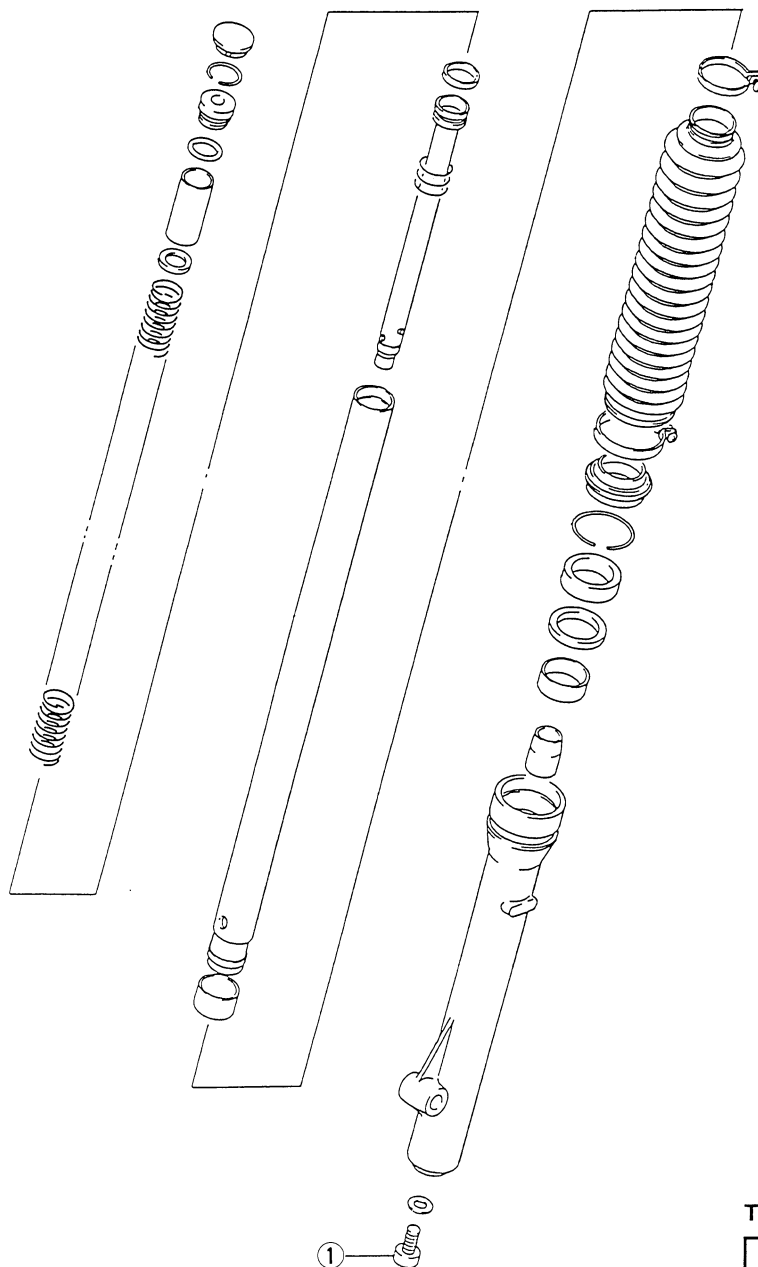


**CAUTION:**

**Bleed air from the system after reassembling master cylinder.  
(Refer to page 2-12.)**



## FRONT FORK



Tightening torque

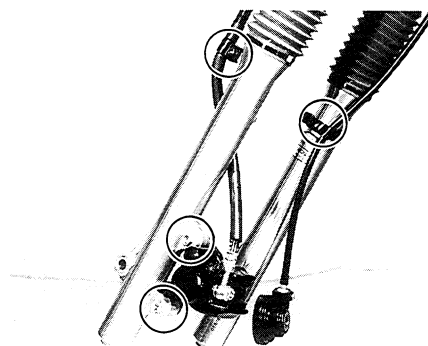
Item	N·m	kg-m
①	20	2.0

### REMOVAL AND DISASSEMBLY

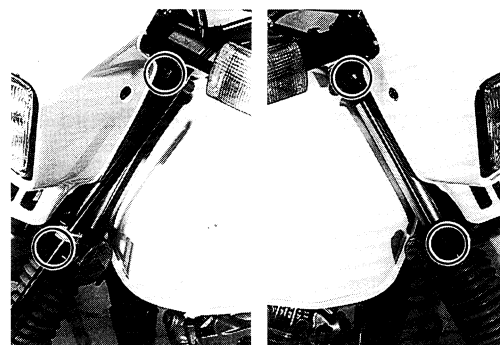
- Remove the front wheel. (Refer to page 6-2.)
- Remove the front brake caliper.
- Remove the front brake hose clamp and speedometer cable clamp by removing the screws.

#### CAUTION:

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



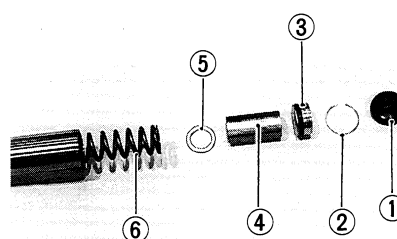
- Remove the front fork after loosening the front fork upper and lower clamp bolts.



- Remove the rubber cap ①, stopper ring ②, front fork cap ③, spacer ④, spring seat ⑤ and spring ⑥.

**NOTE:**

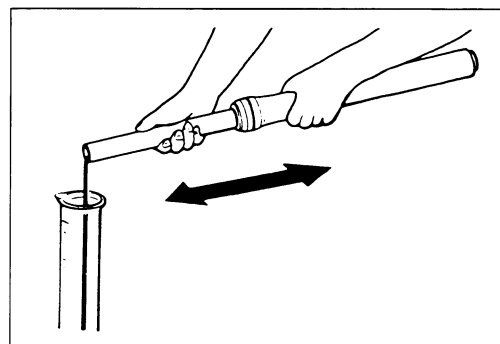
When removing the stopper ring ②, push the front fork cap ③ inward to remove spring pressure from the stopper ring ②.



**CAUTION:**

The removed stopper ring ② should be replaced with a new one.

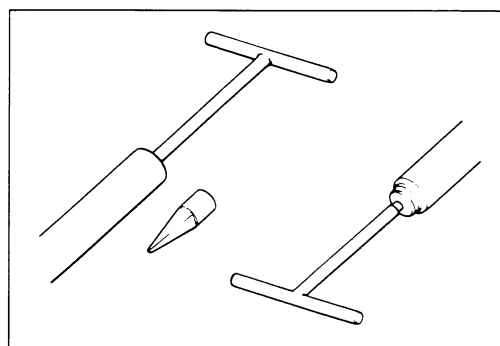
- Invert the front fork and stroke it several times to let out fork oil. Under the inverted condition of front fork, drain oil to hold it for few minutes.



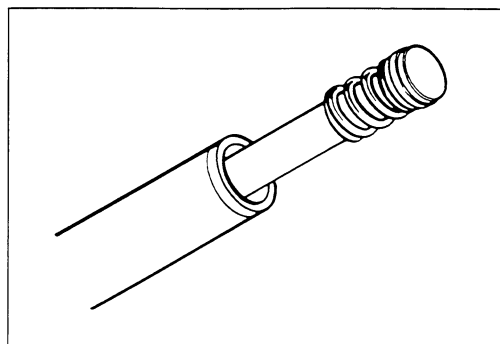
- Remove the damper rod bolt with the special tools and 6-mm hexagon wrench.

09940-34520: "T" handle

09940-34561: Attachment "D"



- Remove the damper rod with spring.



- Remove the boot by removing the clamps.

**CAUTION:**

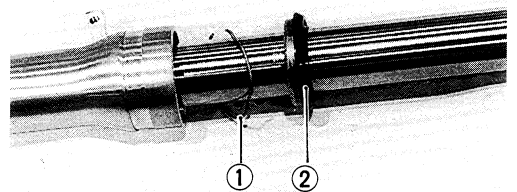
The removed lower clamp should be replaced with a new one.



- Remove the dust seal ① and oil seal stopper ring ② .

**CAUTION:**

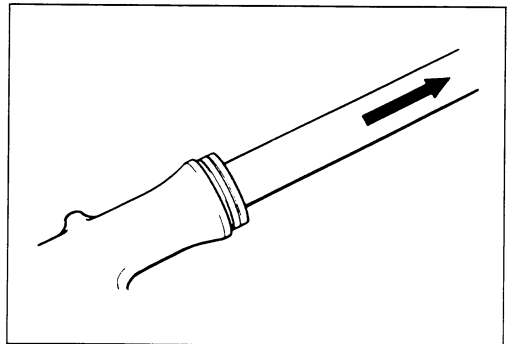
The removed dust seal should be replaced with a new one.



- Remove the inner tube.

**NOTE:**

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



- Remove the outer tube metal, oil seal retainer and oil seal with the special tools.

09913-60710: Remover

09930-30102: Sliding shaft

**CAUTION:**

The removed oil seal should be replaced with a new one.

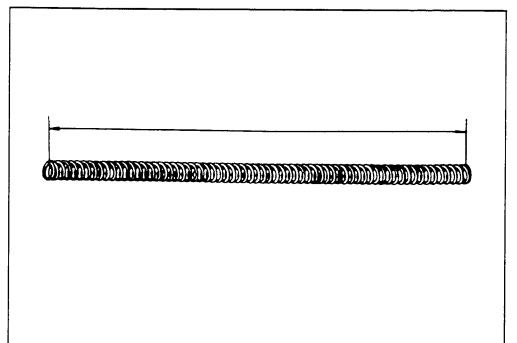


## INSPECTION

### FORK SPRING

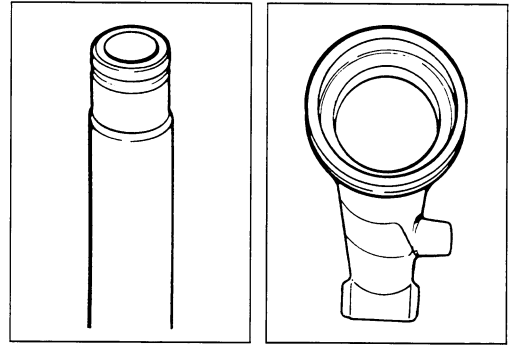
Measure the fork spring free length. If it is shorter than the service limit, replace it with a new one.

**Service Limit: 561 mm (22.1 in)**



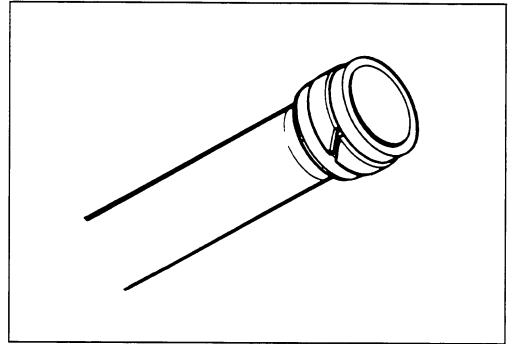
### INNER AND OUTER TUBES

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



### DAMPER ROD RING

Inspect the damper rod ring for wear or damage.

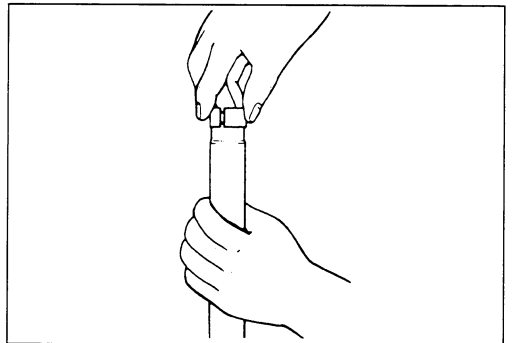


## REASSEMBLY AND REMOUNTING

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

### TUBE METALS AND SEALS

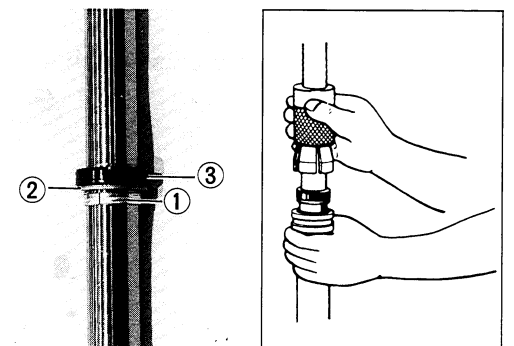
- Hold the inner tube vertically and clean the metal groove and install the ANTI-FRICTION metal by hand as shown.
- Install the outer tube metal ①, oil seal retainer ② and oil seal ③ to the inner tube, and then install them to the outer tube with the special tool.



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

#### CAUTION:

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

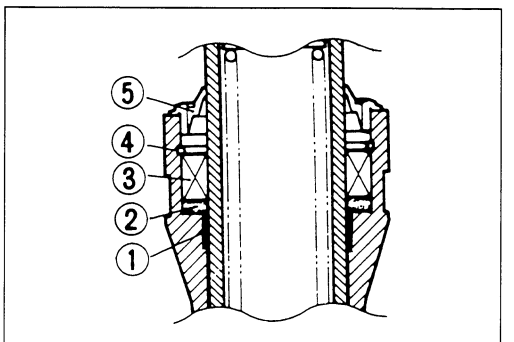


- Install the oil seal stopper ring ④.

#### CAUTION:

Make sure that the oil seal stopper ring fitted securely.

- Install the dust seal ⑤.



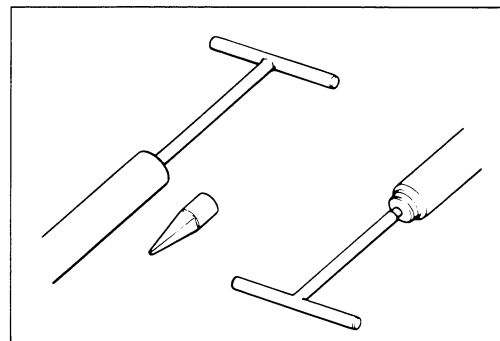
### DAMPER ROD BOLT

- Tighten the bolt to the specified torque with the special tools and 6-mm hexagon wrench.

**Tightening torque: 20 N·m (2.0 kg·m)**

**09940-34520: "T" handle**

**09940-34561: Attachment "D"**



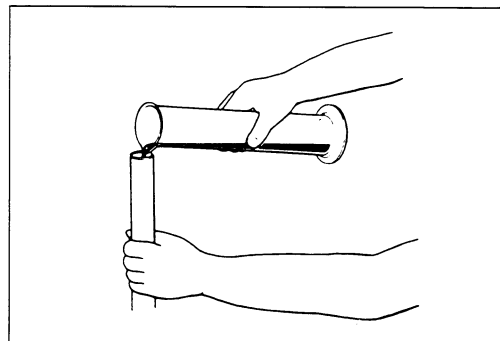
### FORK OIL

- Pour specified fork oil into the inner tube.

**Fork oil type: Fork oil #10**

**99000-99044-10G: SUZUKI FORK OIL #10**

**Capacity (each leg): 309 ml (10.4/10.9 US/Imp oz)**



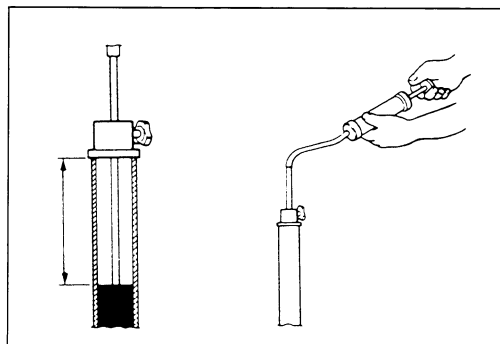
- Hold the front fork vertical and adjust fork oil level with the special tool.

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

**Oil level: 179.5 mm (7.07 in)**

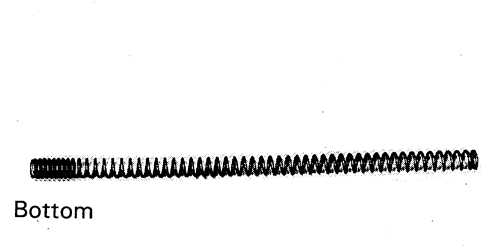
#### NOTE:

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



### FORK SPRING

- Install the fork spring close pitch side to bottom as shown.

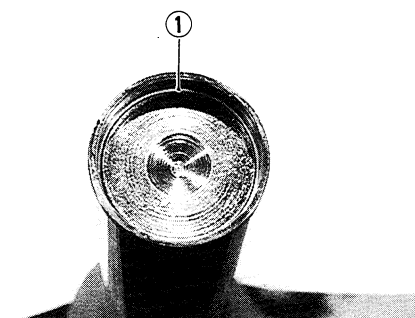


### STOPPER RING

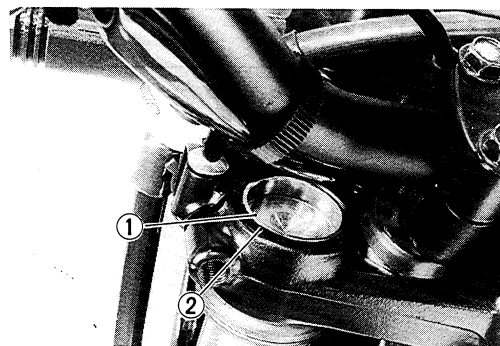
- Install the stopper ring ① into the ring groove.

#### CAUTION:

- \* Use a new stopper ring.
- \* After installing the stopper ring, always insure that it is completely seated in its groove and securely fitted.

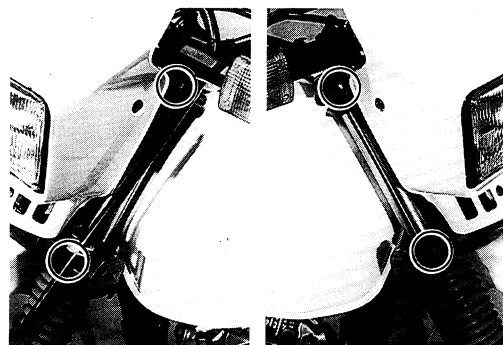


- When remounting the front fork assembly, align the upper surface ① of the inner tube with the upper surface ② of the steering stem upper bracket.

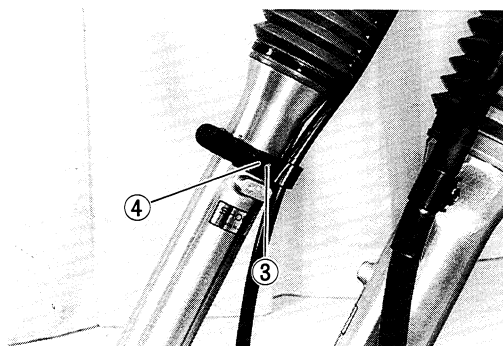


- Tighten the upper and lower fork clamp bolts to the specified torque.

**Tightening torque: 29 N·m (2.9 kg-m)**



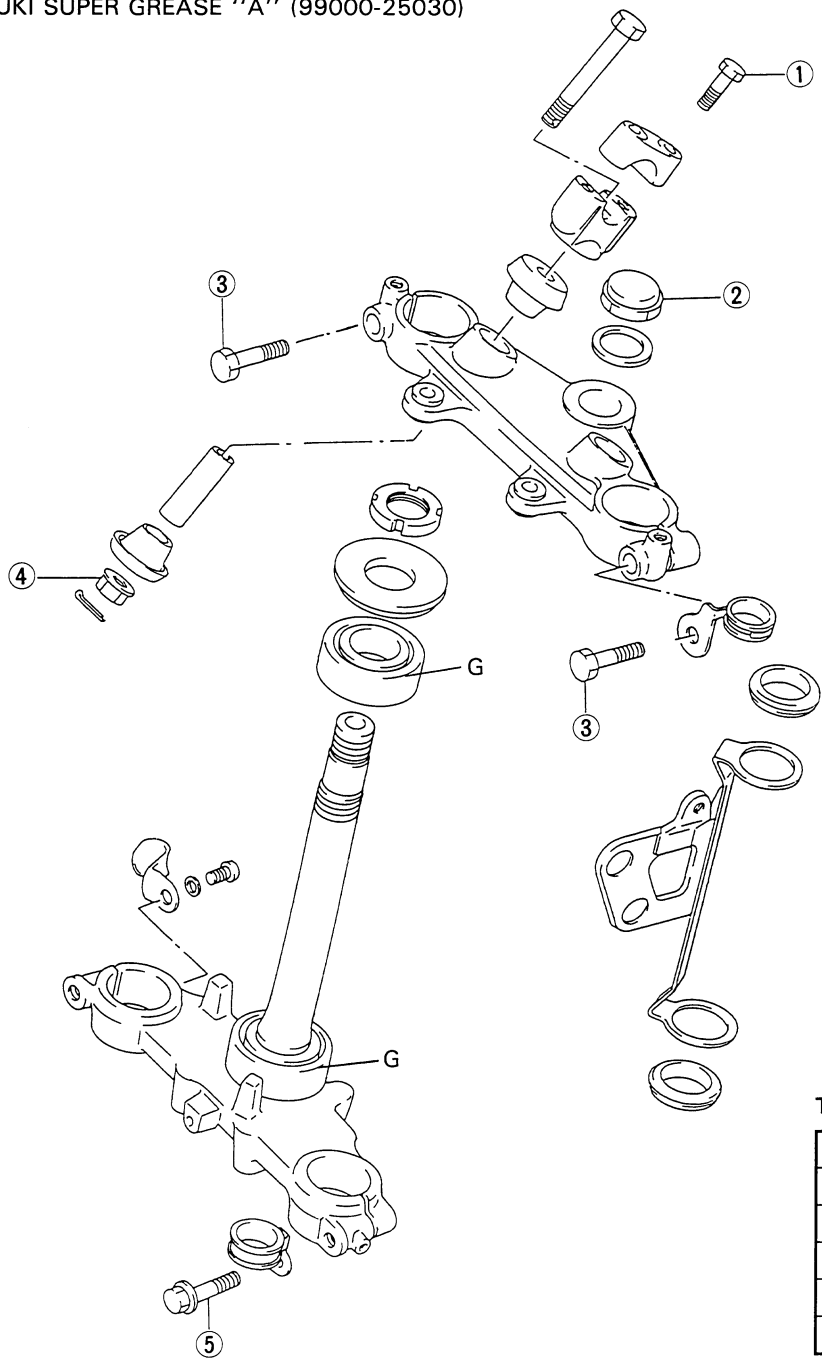
- When installing the speedometer cable clamp, align the protrusion ③ on the outer tube with the hole ④ of the clamp.
- Tighten the clamp screw.





# STEERING

G: Apply SUZUKI SUPER GREASE "A" (99000-25030)

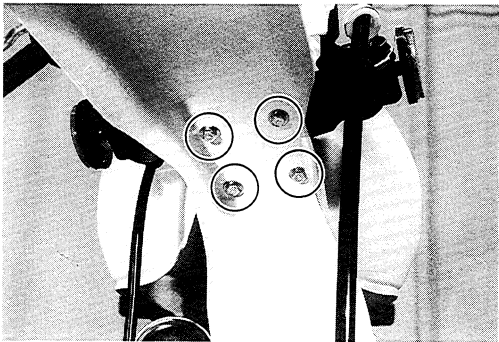


Tightening torque

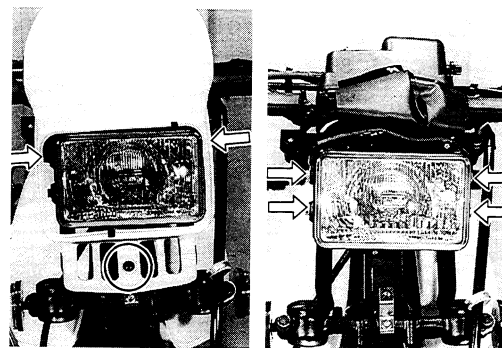
Item	N·m	kg·m
①	25	2.5
②	90	9.0
③	29	2.9
④	45	4.5
⑤	29	2.9

## REMOVAL AND DISASSEMBLY

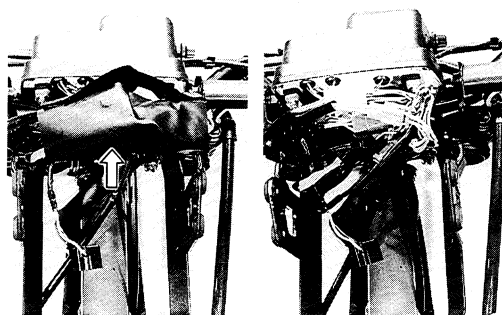
- Remove the front wheel. (Refer to page 6-2.)
- Remove the front fork. (Refer to page 6-15.)
- Remove the front fender.



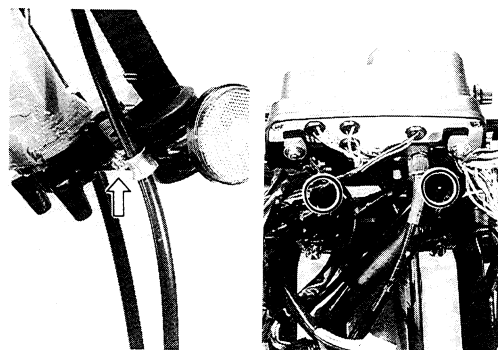
- Remove the headlight housing.
- Remove the headlight by removing the mounting bolts and disconnecting lead wire coupler.



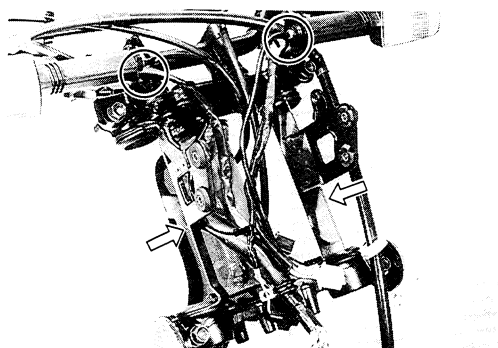
- Remove the lead wire cover.
- Disconnect the lead wires.



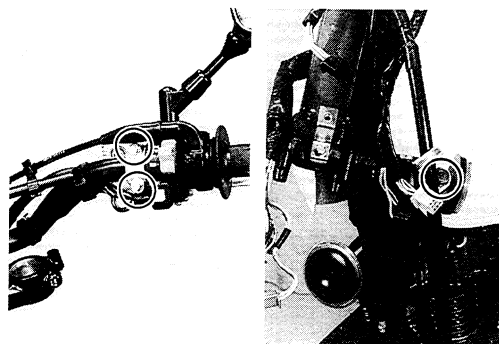
- Remove the speedometer cable guide.
- Remove the speedometer by removing its mounting nuts.



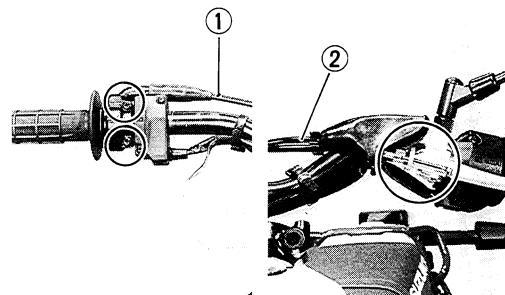
- Remove the headlight brackets.
- Remove the front turn signal lights.



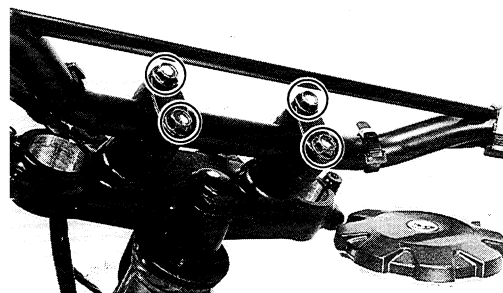
- Remove the front brake master cylinder with front brake caliper.



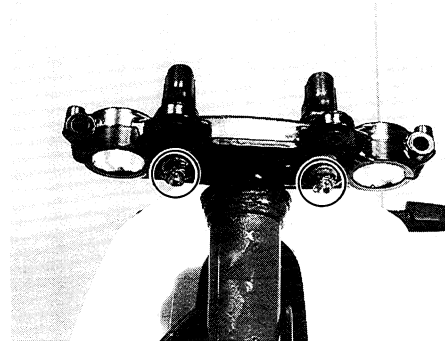
- Disconnect the throttle cable ① by removing the throttle grip case screws.
- Disconnect the clutch cable ② .



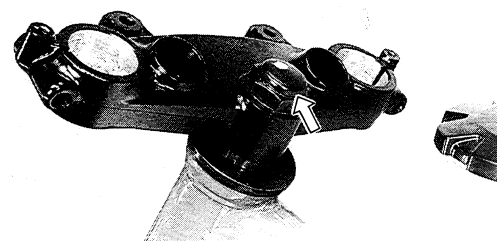
- Remove the handlebar by removing the clamp bolts.



- Remove the handlebar holder by removing the cotter pins and mounting nuts.



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



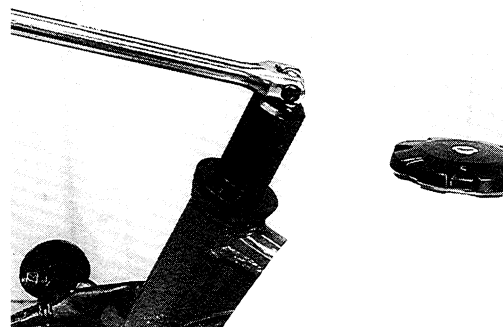
- Remove the steering stem nut with the special tool.

**09940-14920: Steering stem nut wrench**

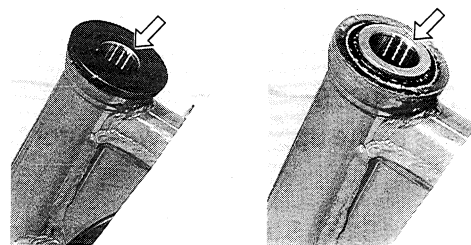
- Remove the steering stem lower bracket.

**NOTE:**

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



- Remove the dust seal.
- Remove the steering stem upper bearing.

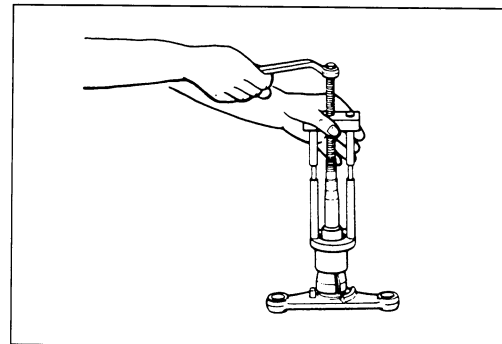


- Remove the steering stem lower bearing with the special tool.

**09941-84510: Bearing remover**

**CAUTION:**

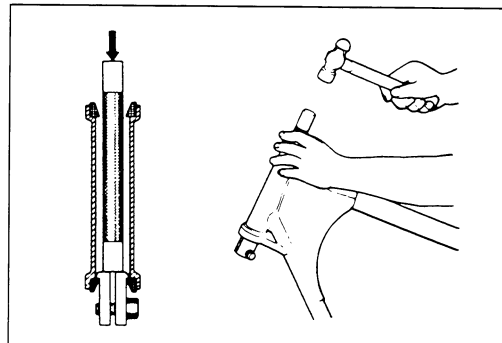
The removed bearing should be replaced with a new one.



- Drive out the steering stem bearing races, upper and lower, with the special tools.

**09941-54911: Bearing outer race remover**

**09941-74910: Steering bearing installer**

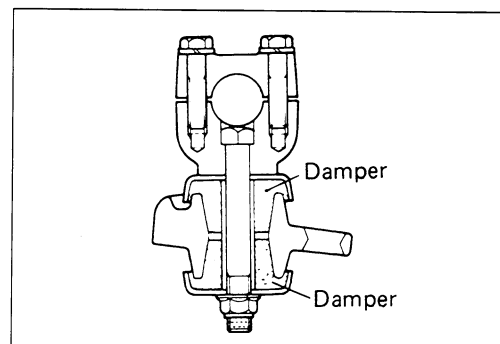


## INSPECTION

Inspect the removed parts for the following abnormalities.

- \* Handlebar distortion
- \* Handlebar clamp wear
- \* Race wear and brinelling
- \* Bearing wear or damage
- \* Abnormal noise of bearing
- \* Distortion of steering stem

Inspect the play of dampers by hands fixing it in the steering stem upper bracket. If the play can be found, replace the dampers.



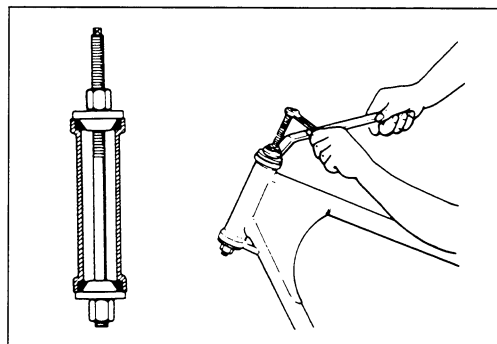
## REASSEMBLY AND REMOUNTING

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

### OUTER RACES

- Press in the upper and lower outer races with the special tool.

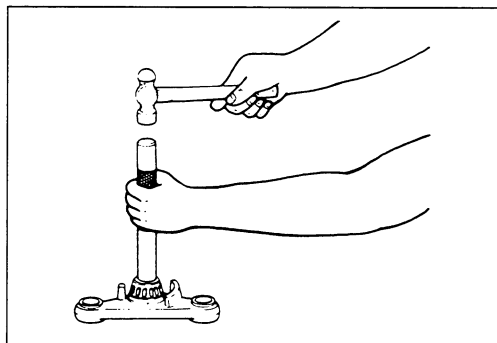
**09941-34513: Steering outer race installer**



### BEARING

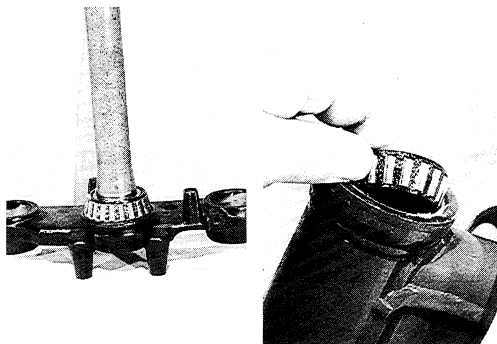
- Press in the lower bearing with the special tool.

**09941-74910: Steering bearing installer**



- Apply grease to the upper and lower bearings before remounting the steering stem.

**99000-25030: SUZUKI SUPER GREASE "A"**

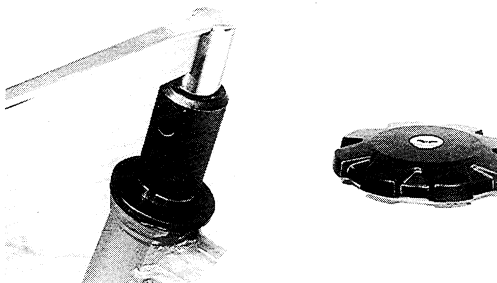


### STEERING STEM NUT

- Tighten the steering stem nut to the specified torque with the special tool.

**Tightening torque: 45 N·m (4.5 kg-m)**

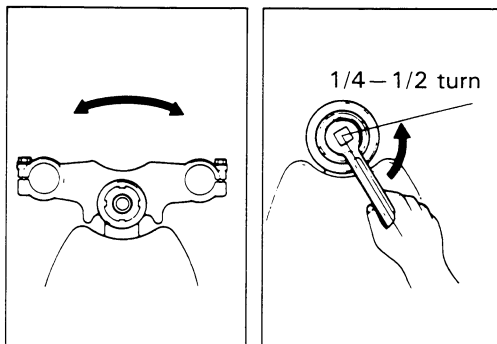
**09940-14920: Steering stem nut wrench**



- Turn the steering stem lower bracket about five or six times to the left and right so that the taper roller bearing will be seated properly.
- Turn back the stem nut by  $\frac{1}{4}$  –  $\frac{1}{2}$  turn.

### NOTE:

*This adjustment will vary from motorcycle to motorcycle.*

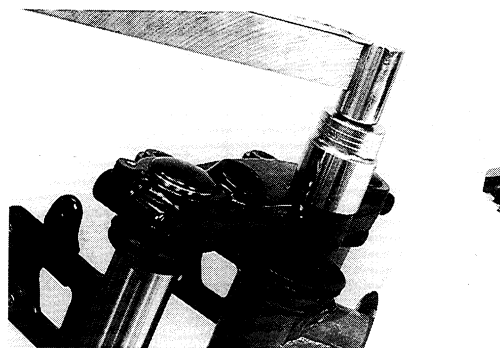


- Tighten the steering stem head nut to the specified torque.

**Tightening torque: 90 N·m (9.0 kg-m)**

**NOTE:**

*Before tightening the steering stem nut, install the front fork temporarily.*

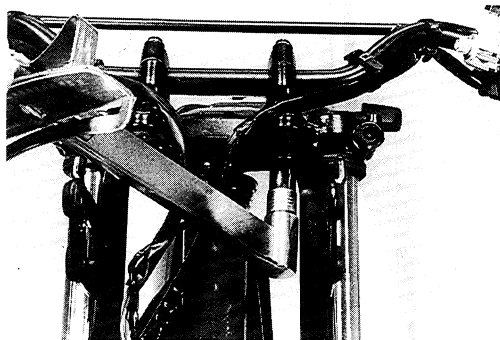


- Tighten the handlebar holder nuts to the specified torque.

**Tightening torque: 45 N·m (4.5 kg-m)**

**NOTE:**

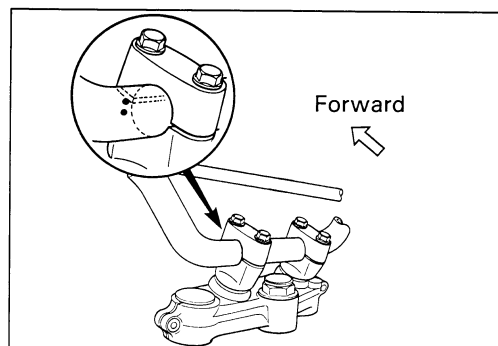
*Before tightening the handlebar holder nuts, install the handlebar temporarily.*



- Install the new cotter pins.

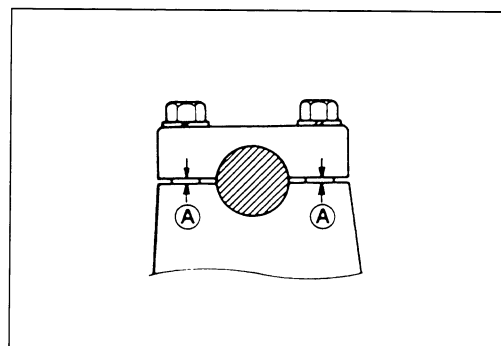
## HANDLEBAR

- Set the handlebar to match its upper punched mark to the mating face of the holder as shown in the illustration.



- Secure the each handlebar clamp in such a way that the clearances (A) ahead of and behind the handlebar are equalized.

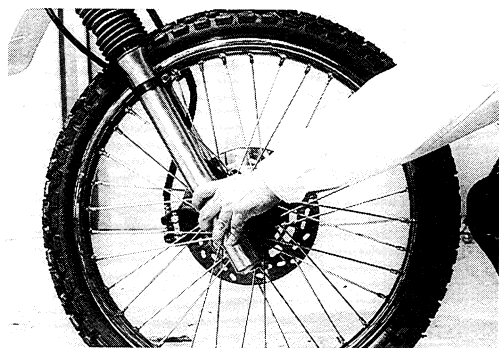
**Tightening torque: 25 N·m (2.5 kg-m)**



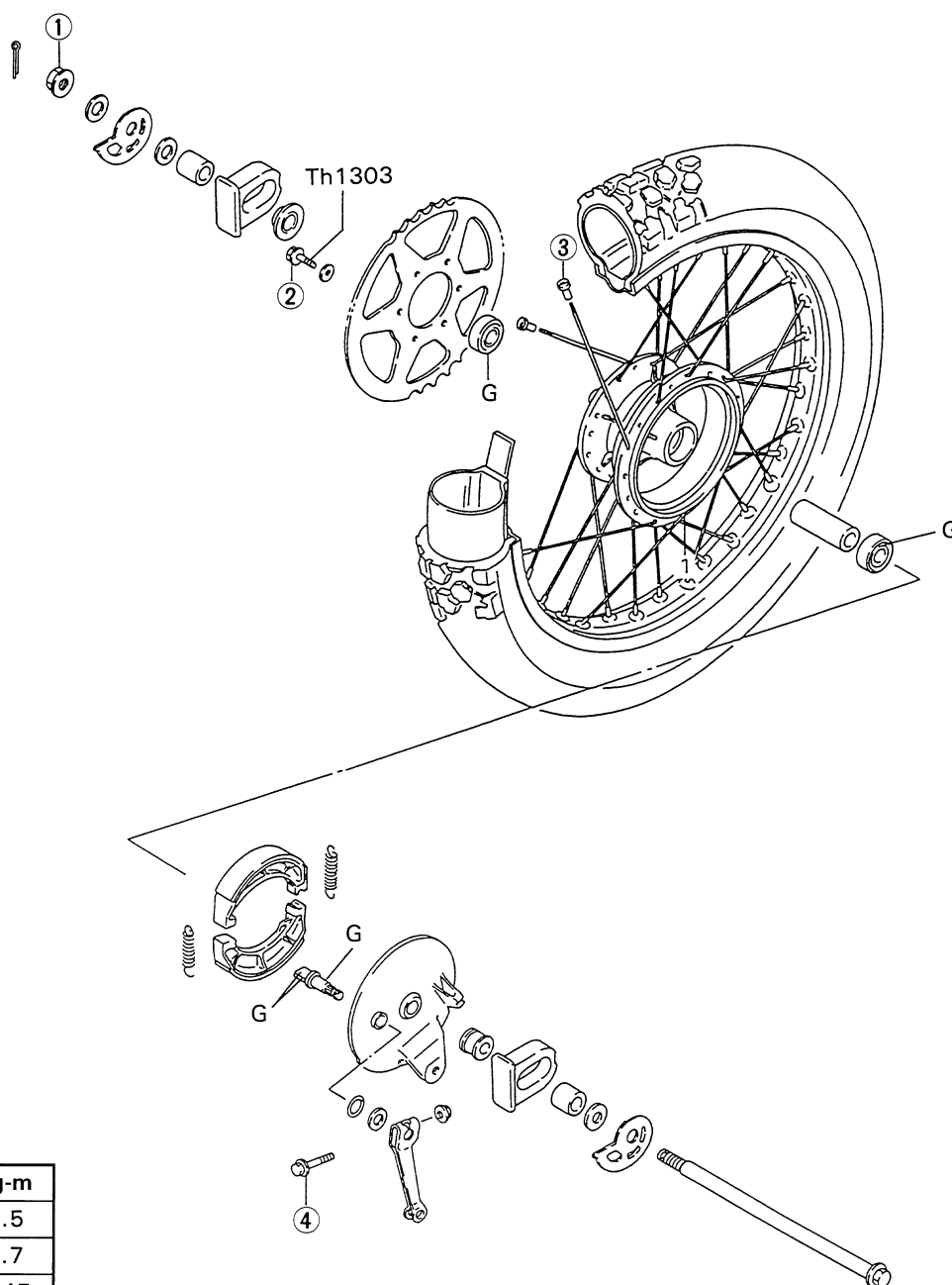
## CAUTION:

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



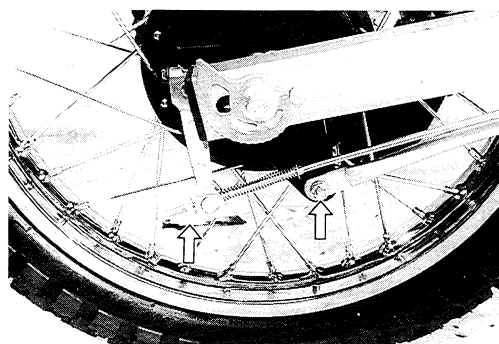
### Tightening torque

Item	N·m	kg·m
①	65	6.5
②	27	2.7
③	4.5	0.45
④	11	1.1

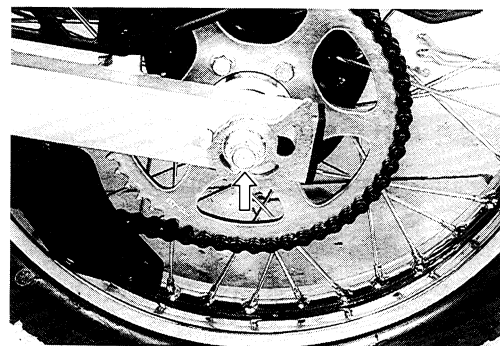
Th1303: Apply THREAD LOCK SUPER "1303" (99000-32030)  
 G : Apply SUZUKI SUPER GREASE "A" (99000-25030)

## REMOVAL

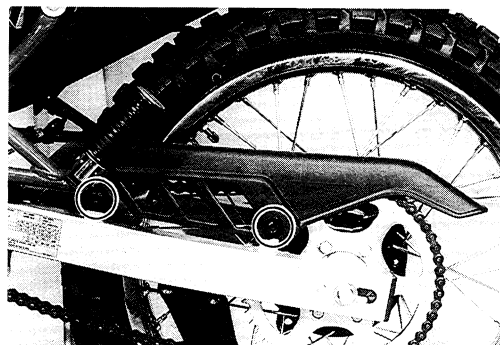
- Remove the rear brake adjusting nut.
- Remove the rear side of torque link by removing the cotter pin, nut and bolt.



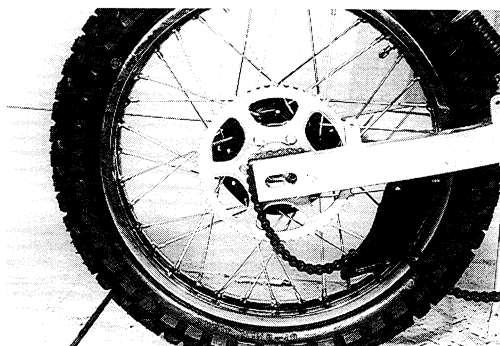
- Remove the rear axle shaft cotter pin. (For Canada and U.S.A.)
- Remove the rear axle nut.
- Support the motorcycle with a jack or wooden block.



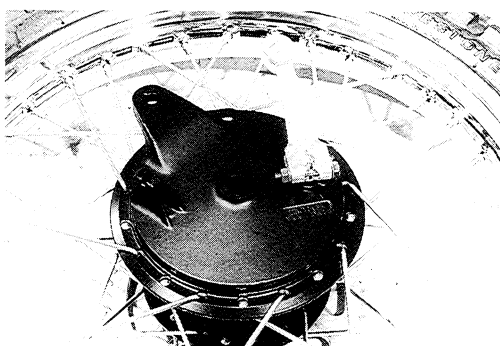
- Remove the drive chain case.



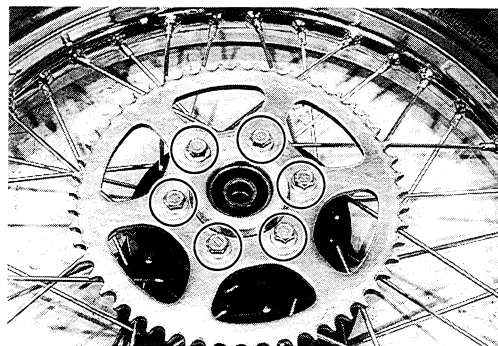
- Remove the rear axle shaft and disengage the drive chain from the rear sprocket.
- Remove the rear wheel with the rear brake panel.



- Remove the rear brake panel.



- Remove the rear sprocket by removing the mounting bolts.





## INSPECTION AND DISASSEMBLY

**WHEEL BEARINGS** ..... Refer to page 6- 3.

**REAR AXLE SHAFT** ..... Refer to page 6- 3.

**Service Limit: 0.25 mm (0.010 in)**

**WHEEL RIM** ..... Refer to page 6- 3.

**Service Limit: 2.0 mm (0.08 in)**

**(Axial and Radial)**

**REAR TIRE** ..... Refer to page 2-13.

**Service Limit: 3.0 mm (0.12 in)**

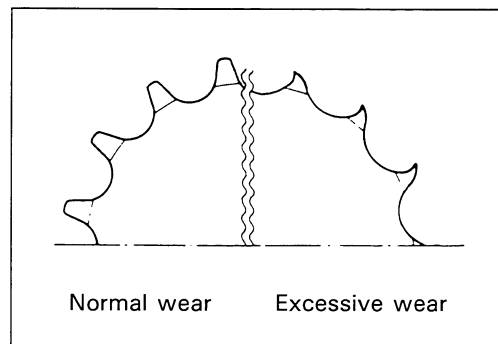
**SPOKE NIPPLE** ..... Refer to page 6- 3.

**Tightening torque: 4.5 N·m (0.45 kg-m)**

### REAR SPROCKET

Inspect the rear sprocket teeth for wear.

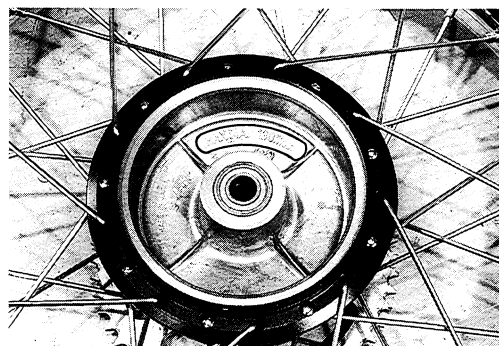
If they are worn as illustrated, replace the sprocket and drive chain.



### REAR 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: 130.7 mm (5.15 in)**



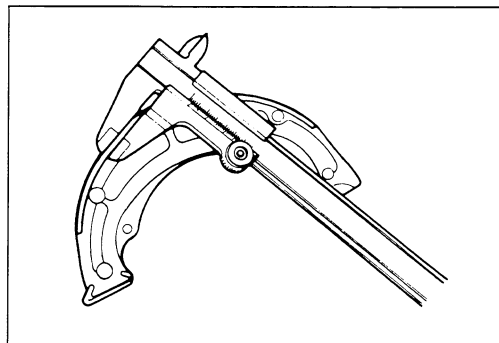
### BRAKE SHOE

Check the brake shoes and decide whether they should be replaced or not from the thickness of the brake shoe linings.

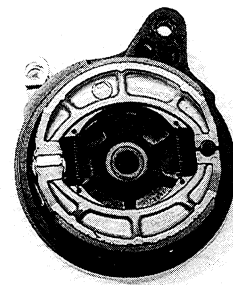
**Service Limit: 1.5 mm (0.06 in)**

#### CAUTION:

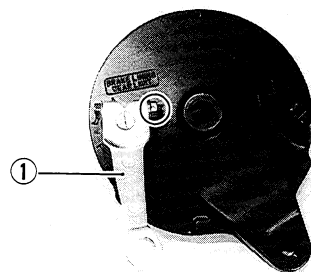
Replace the brake shoes as a set, otherwise braking performance will be adversely affected.



- Remove the brake shoes.



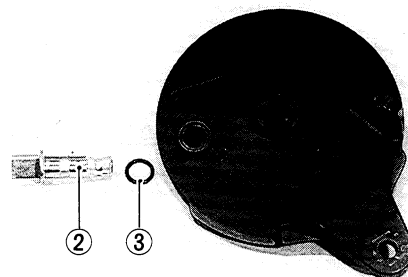
- Remove the brake cam lever ① by removing the nut and bolt.



- Remove brake camshaft ② and O-ring ③.

**CAUTION:**

The removed O-ring should be replaced with a new one.



## REASSEMBLY AND REMOUNTING

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

### WHEEL BEARING

- Apply grease to the bearings before installing.

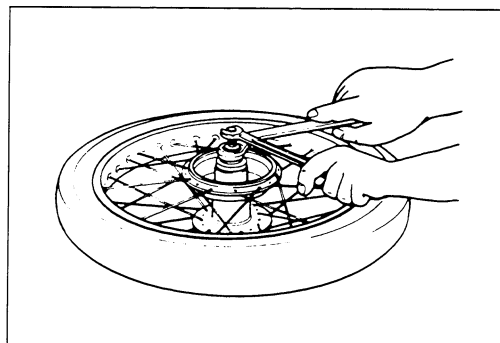
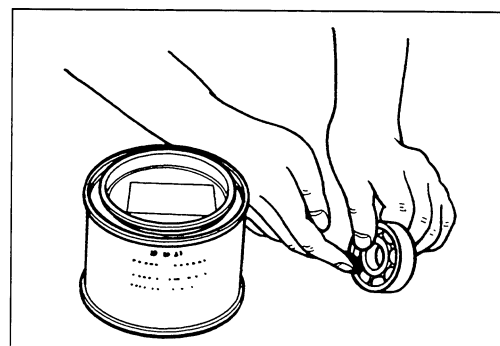
**99000-25030: SUZUKI SUPER GREASE "A"**

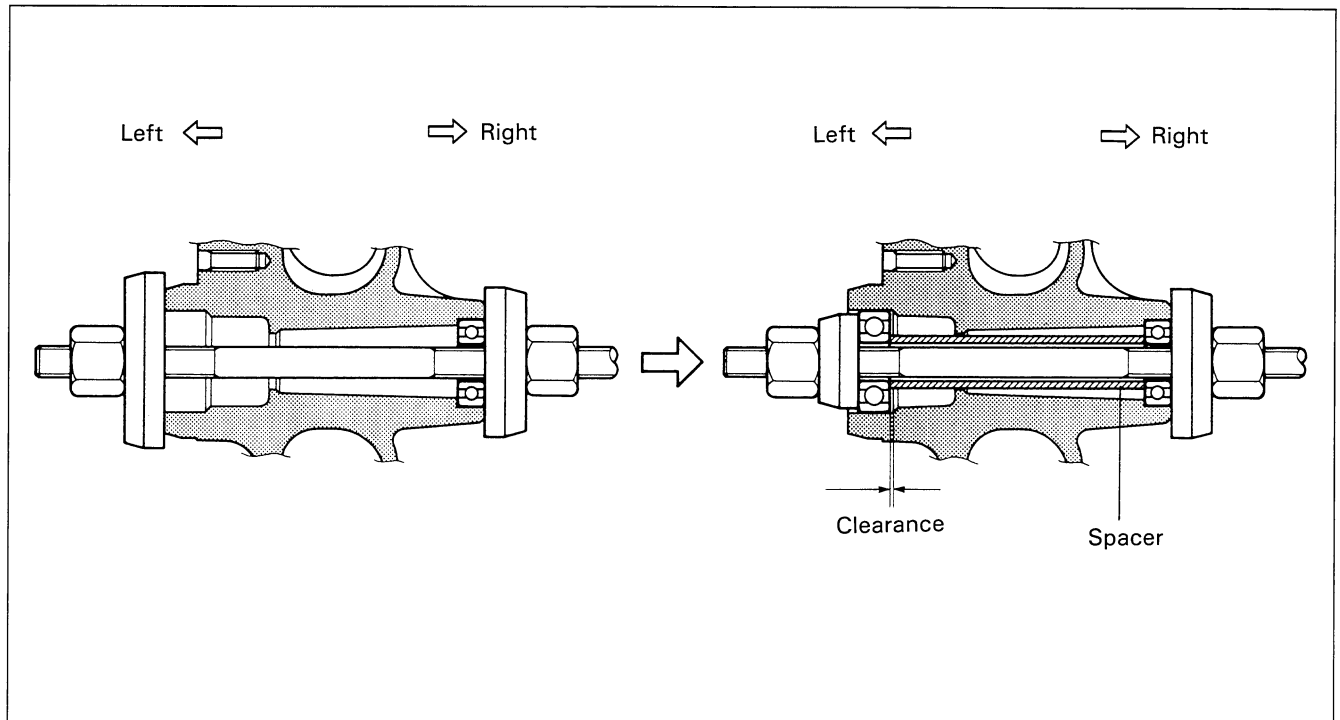
- Install the wheel hub bearings with the special tool.

**09941-34513: Bearing installer set**

**CAUTION:**

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



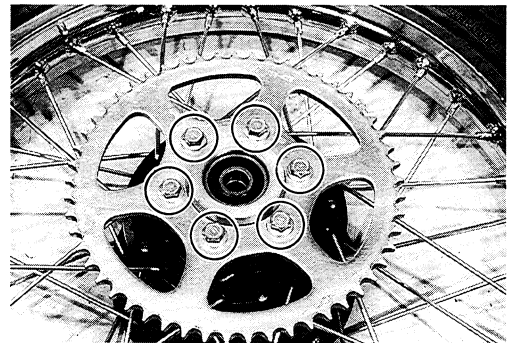


### REAR SPROCKET

- Apply THREAD LOCK SUPER "1303" to the rear sprocket mounting bolts, and tighten them to the specified torque.

**99000-32030: THREAD LOCK SUPER "1303"**

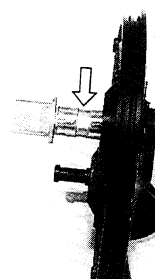
Tightening torque: 27 N·m (2.7 kg-m)



### REAR BRAKE

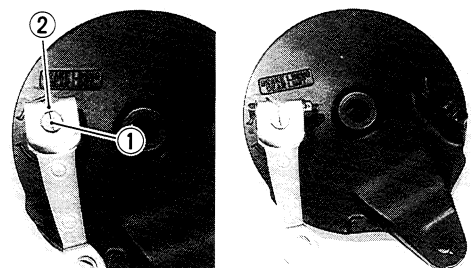
- When installing the brake camshaft, apply grease to the groove of camshaft.

**99000-25030: SUZUKI SUPER GREASE "A"**



- When installing the brake cam lever, align the groove ① of camshaft with slit ② of cam lever.
- Install the bolt and nut, and tighten the bolt to the specified torque.

Tightening torque: 11 N·m (1.1 kg-m)



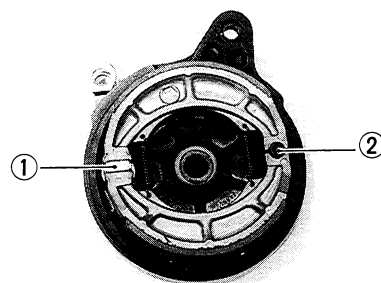
- Apply grease to the brake cam ① and pin ② .

### 99000-25030: SUZUKI SUPER GREASE "A"

- Install the brake shoes.

#### 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.



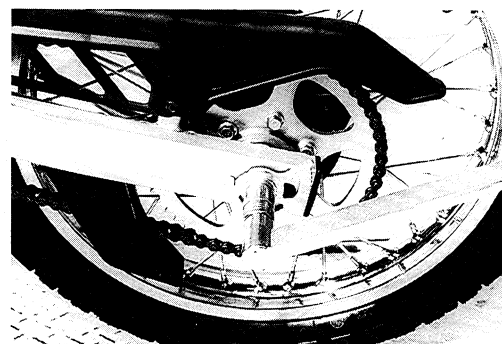
#### REAR AXLE SHAFT

- Adjust the chain slack. (Refer to page 2-9.)
- Tighten the rear axle nut to the specified torque.

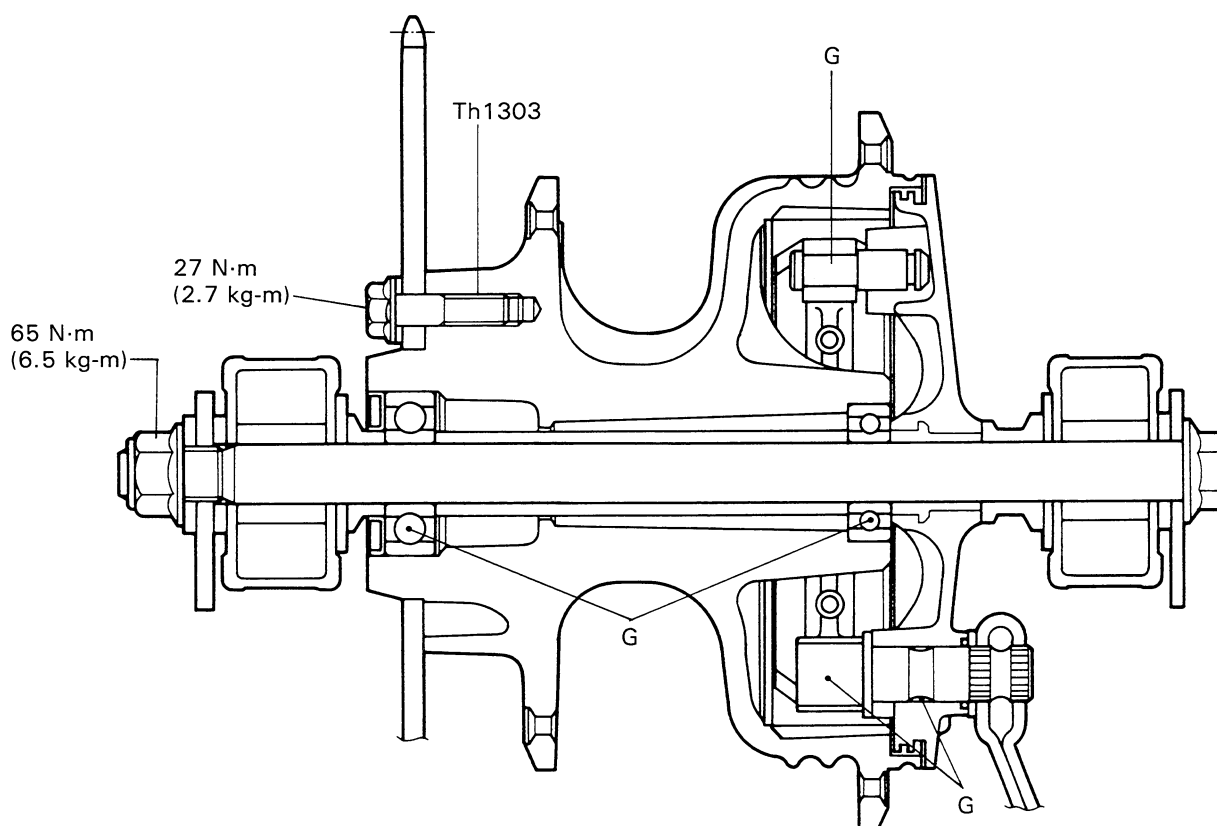
Tightening torque: 65 N·m (6.5 kg-m)

#### CAUTION:

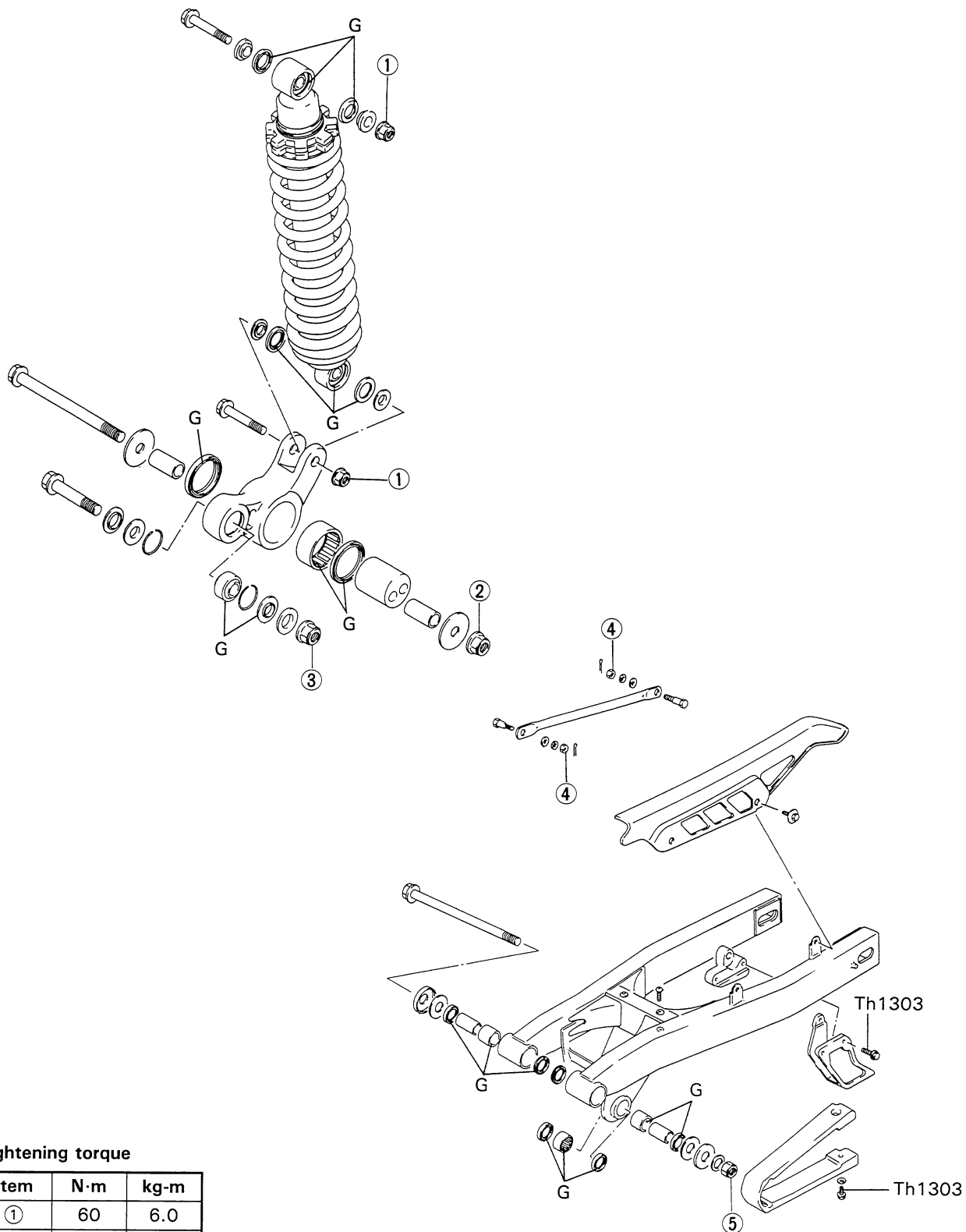
Adjust the rear brake pedal play after rear wheel installation. (Refer to page 2-11.)



Th1303: Apply THREAD LOCK SUPER "1303" (99000-32030)  
G : Apply SUZUKI SUPER GREASE "A" (99000-25030)



# REAR SUSPENSION



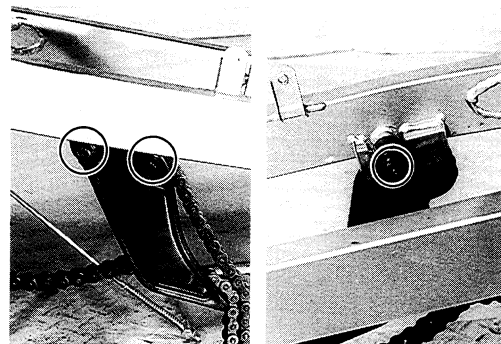
## Tightening torque

Item	N·m	kg-m
①	60	6.0
②	72	7.2
③	78	7.8
④	13	1.3
⑤	65	6.5

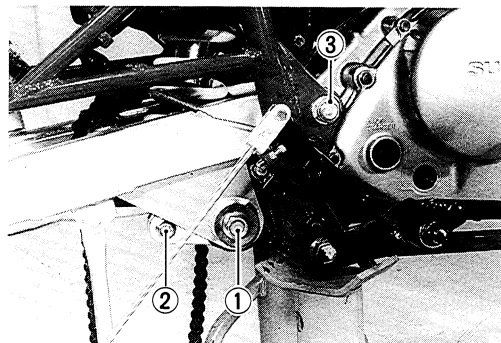
Th1303: Apply THREAD LOCK SUPER "1303" (99000-32030)  
 G : Apply SUZUKI SUPER GREASE "A" (99000-25030)

## REMOVAL

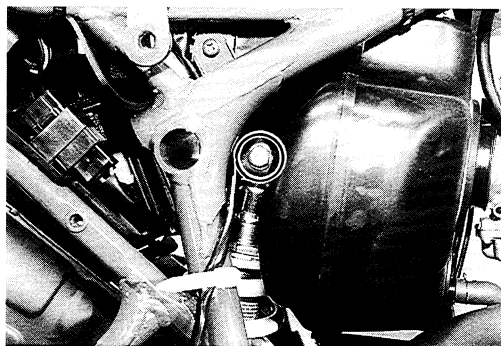
- Remove the rear wheel. (Refer to page 6-27.)
- Remove the right and left frame covers.
- Remove the drive chain guide by removing the bolts.



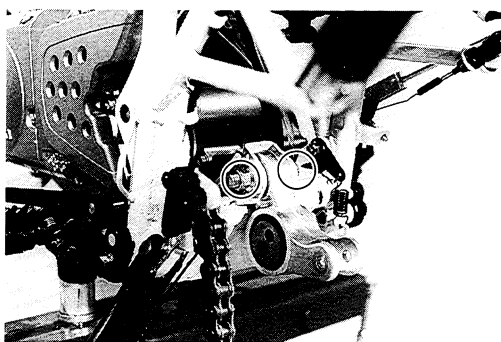
- Remove the cushion lever center nut and bolt ①.
- Remove the shock absorber lower nut and bolt ②.
- Remove the swingarm by removing the nut ③ and swingarm pivot shaft.



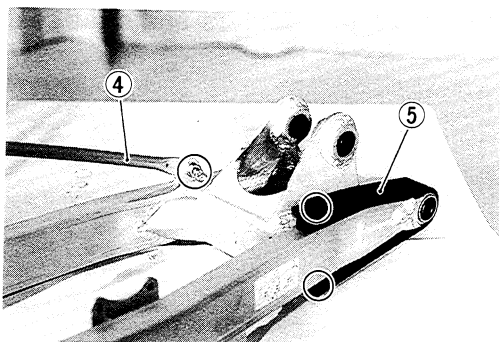
- Remove the rear shock absorber.



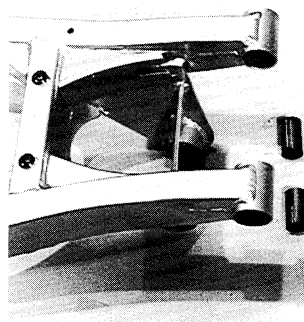
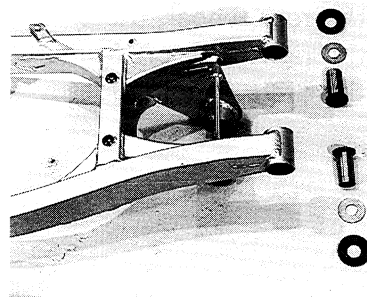
- Remove the cushion lever.



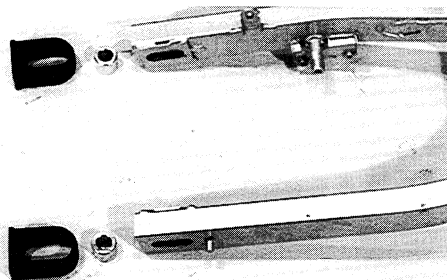
- Remove the rear torque link ④ and chain buffer ⑤.



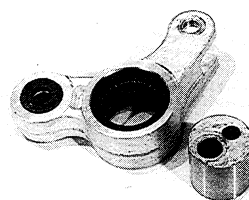
- Remove the dust seal, washers and spacers.



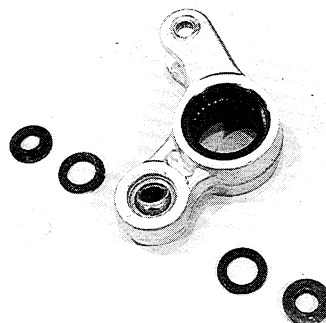
- Remove the dampers and spacers.



- Remove the eccentric spacer.



- Remove the spacers and dust seals.



## INSPECTION AND DISASSEMBLY

### SWINGARM

Inspect the swingarm for wear or damage.

Inspect the spacer for any flaws or other damage.

Insert the spacer into the bearing and bushing, and check the play to move the spacer up and down.

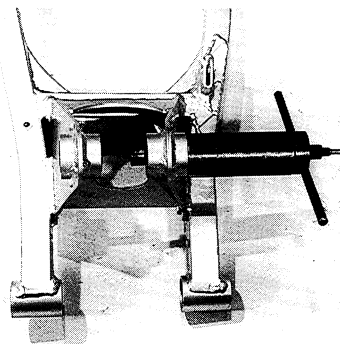
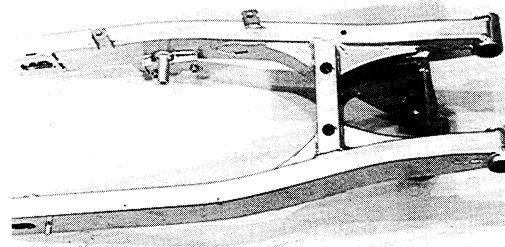
If excessive play is noted, replace the bearing or bushing with a new one.

- Remove the swingarm bearings with the special tool.

**09941-44510: Swingarm bearing remover**

#### CAUTION:

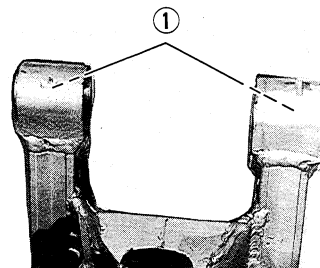
The removed bearing should be replaced with new ones.



- Remove the bushings ① with an appropriate steel bar.

#### CAUTION:

The removed bearings should be replaced with new ones.



### CUSHION LEVER

Inspect the eccentric spacer for any flaws or other damage.

Insert the eccentric spacer into the bearing, and check the play to move the spacer up and down.

If excessive play is noted, replace the bearing with new one.

- Remove the dust seals with the special tool.

**09913-50121: Dust seal remover**

#### CAUTION:

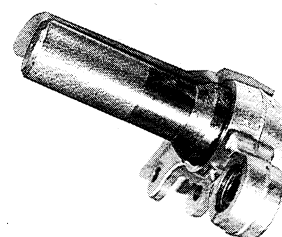
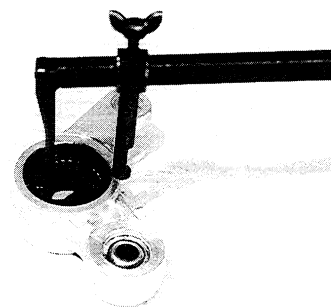
The removed dust seals should be replaced with new ones.

- Remove the bearing with the special tool.

**09913-76010: Bearing remover and installer**

#### CAUTION:

The removed bearing should be replaced with a new one.





Inspect the spherical ball bearing while it is in the absorber. Move the bearing by hand to inspect for abnormal noise and smooth movement. Replace the bearing if there is anything unusual.

- Remove the stopper rings ① .
- Remove the spherical ball bearing ② with an appropriate socket wrench.

# CAUTION:

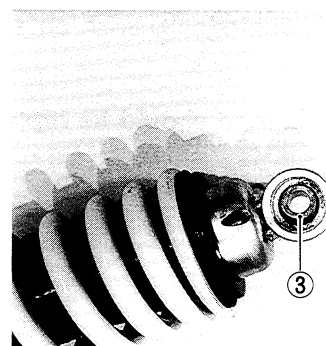
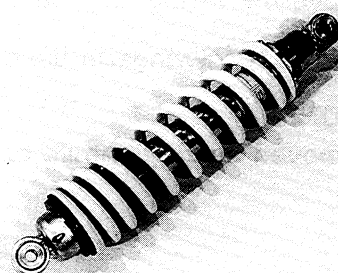
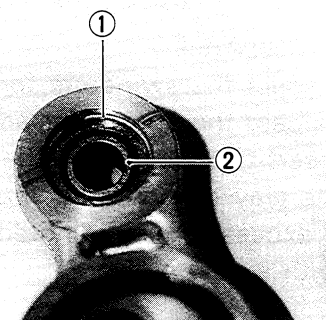
The removed stopper rings and bearing should be replaced with new ones.

# SHOCK ABSORBER

Inspect the shock absorber body for damage and oil leakage. If any defects are found, replace the shock absorber with new one.

- Remove the spacers and dust seals.

Inspect the spherical ball bearings ③ while it is in the absorber. Move the bearing by hand to inspect for abnormal noise and smooth movement. Replace the shock absorber if there is anything unusual.



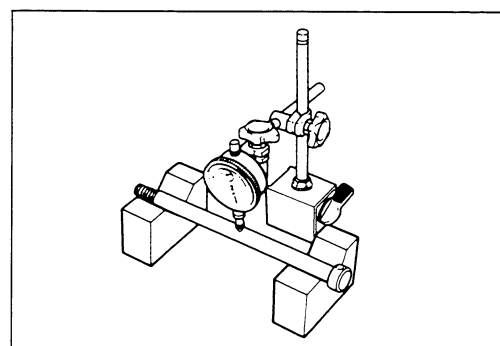
# SWINGARM PIVOT SHAFT

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

**Service Limit: 0.6 mm (0.02 in)**

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

**09900-20701: Magnetic stand**



## REASSEMBLY AND REMOUNTING

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

### CUSHION LEVER

- Install the cushion lever center bearing with the special tool.

#### 09941-34513: Steering outer race installer

#### NOTE:

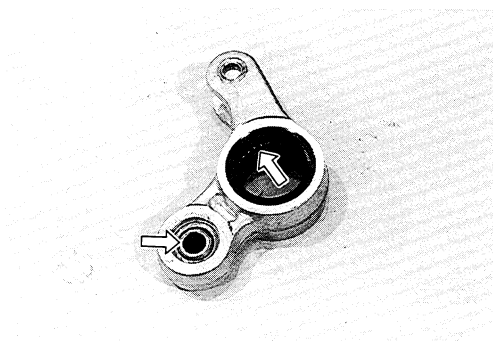
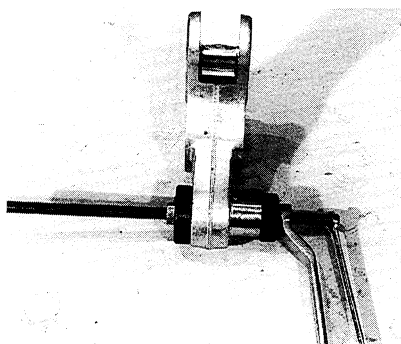
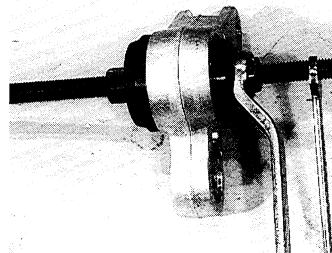
*Install the center bearing at 7 mm depth from the cushion lever surface.*

- Install the spherical ball bearing with an appropriate socket wrench.
- Install the new stopper rings into the ring groove.

- Apply grease to the center bearing and spherical ball bearing.

#### 99000-25030: SUZUKI SUPER GREASE "A"

- Install the new dust seals.



### SWINGARM

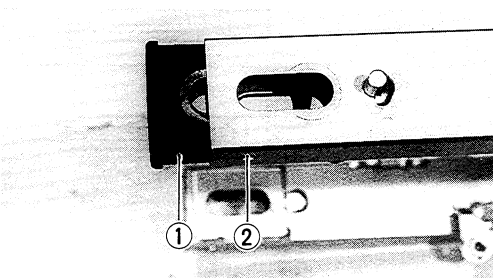
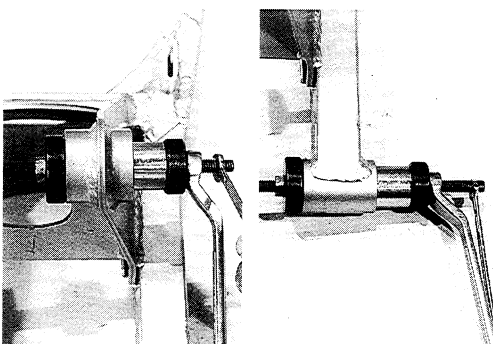
- Install the swingarm bearings and bushings with the special tool and appropriate socket wrench.

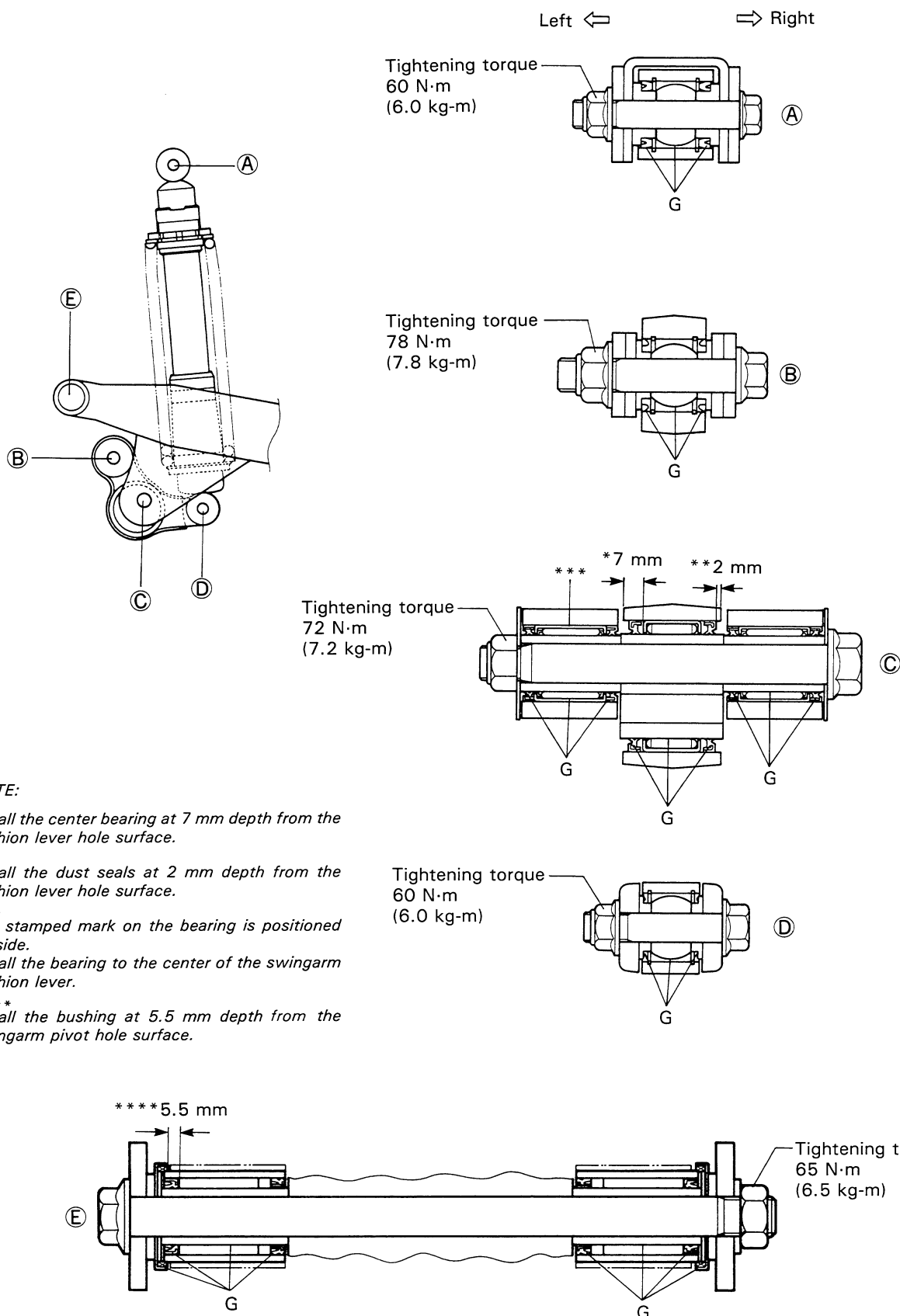
#### 09924-84521: Bearing installer

- Apply grease to the bearings, bushings and dust seals.

#### 99000-25030: SUZUKI SUPER GREASE "A"

- When installing the rear axle dampers, align the protrusion ① on the damper with the hole ② of the swingarm.





**NOTE:**

\* Install the center bearing at 7 mm depth from the cushion lever hole surface.

\*\* Install the dust seals at 2 mm depth from the cushion lever hole surface.

\*\*\* The stamped mark on the bearing is positioned outside.

Install the bearing to the center of the swingarm cushion lever.

\*\*\*\* Install the bushing at 5.5 mm depth from the swingarm pivot hole surface.

G: Apply SUZUKI SUPER GREASE "A" (99000-25030)

## FINAL INSPECTION AND ADJUSTMENT

After installing the rear suspension and wheel, the following adjustments are required before driving.

- \* Drive chain ..... Page 2- 9.
- \* Rear brake ..... Page 2-11.
- \* Tire pressure ..... Page 2-13.

### SHOCK ABSORBER SPRING PRE-LOAD ADJUSTMENT

Spring pre-load is adjustable by changing the spring adjuster ring position after removing the shock absorber. Turning the spring adjuster ring counterclockwise or clockwise as viewed from for increase or decrease the spring pre-load after loosening the adjuster lock ring. The standard set length is 231 mm.

After adjusting the pre-load, tighten the spring adjuster lock ring securely.

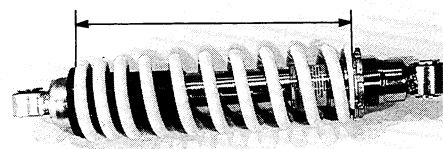
**09910-60611: Universal clamp wrench**

#### CAUTION:

Do not set the spring to the length less than 226 mm (8.9 in).

#### SPRING SETTING TABLE

	Spring pre-set length
Softest	236 mm (9.3 in)
<b>Standard</b>	<b>231 mm (9.1 in)</b>
Stiffest	226 mm (8.9 in)



# ***SERVICING INFORMATION***

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## TROUBLESHOOTING

## ENGINE

Complaint	Symptom and possible causes	Remedy
Engine will not start, or is hard to start.	<p><b>Compression too low</b></p> <ol style="list-style-type: none"> <li>1. Out of adjustment valve clearance.</li> <li>2. Worn valve guides or poor seating of valves.</li> <li>3. Mistiming valves.</li> <li>4. Excessively worn piston rings.</li> <li>5. Worn-down cylinder bore.</li> <li>6. Too slowly starter motor cranks.</li> <li>7. Poor seating or spark plug.</li> </ol> <p><b>Plug not sparking</b></p> <ol style="list-style-type: none"> <li>1. Fouled spark plug.</li> <li>2. Wet spark plug.</li> <li>3. Defective signal generator or ignitor unit.</li> <li>4. Defective ignition coil.</li> <li>5. Open or short in high-tension cord.</li> </ol> <p><b>No fuel reaching the carburetor</b></p> <ol style="list-style-type: none"> <li>1. Clogged fuel tank vent hose.</li> <li>2. Clogged or defective fuel cock.</li> <li>3. Defective carburetor needle valve.</li> <li>4. Clogged fuel hose or fuel filter.</li> </ol>	<p>Adjust. Repair or replace. Adjust. Replace. Replace or rebore. See electrical section. Retighten.</p> <p>Clean or replace. Clean and dry. Replace. Replace. Replace.</p> <p>Clean. Clean or replace. Replace. Clean or replace.</p>
Engine stalls easily.	<ol style="list-style-type: none"> <li>1. Fouled spark plug.</li> <li>2. Defective signal generator or ignitor unit.</li> <li>3. Clogged fuel hose.</li> <li>4. Clogged jets in carburetor.</li> <li>5. Out of adjustment valve clearance.</li> </ol>	<p>Clean. Replace. Clean. Clean. Adjust.</p>
Noisy engine.	<p><b>Excessive valve chatter</b></p> <ol style="list-style-type: none"> <li>1. Too large valve clearance.</li> <li>2. Weakened or broken valve springs.</li> <li>3. Worn down rocker arm or rocker arm shaft.</li> </ol> <p><b>Noise seems to come from piston</b></p> <ol style="list-style-type: none"> <li>1. Worn down piston or cylinder.</li> <li>2. Fouled with carbon combustion chamber.</li> <li>3. Worn piston or piston pin bore.</li> <li>4. Worn piston rings or ring groove.</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 sprockets.</li> <li>3. Not working tension adjuster.</li> </ol> <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 clutch release bearing.</li> <li>5. Weakened clutch dampers.</li> </ol> <p><b>Noise seems to come from crankshaft</b></p> <ol style="list-style-type: none"> <li>1. Worn or burnt bearings.</li> <li>2. Worn or burnt big-end bearing.</li> <li>3. Too large thrust clearance.</li> </ol>	<p>Adjust. Replace. Replace.</p> <p>Replace. Clean. Replace. Replace.</p> <p>Replace. Replace. Repair or replace.</p> <p>Replace. Replace. Replace. Replace. Replace the primary driven gear.</p> <p>Replace. Replace. Replace.</p>

Complaint	Symptom and possible causes	Remedy
Noisy engine.	<b>Noise seems to come from transmission</b> <ol style="list-style-type: none"> <li>1. Worn or rubbing gears.</li> <li>2. Badly worn splines.</li> <li>3. Worn or rubbing primary gears.</li> <li>4. Badly worn bearings.</li> </ol>	Replace. Replace. Replace. Replace.
Slipping clutch.	<ol style="list-style-type: none"> <li>1. Out of adjustment or loss of play clutch control.</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>	Adjust. Replace. Replace. Replace.
Dragging clutch.	<ol style="list-style-type: none"> <li>1. Out of adjustment or too much play clutch control.</li> <li>2. Some clutch springs weakened.</li> <li>3. Distorted pressure plate or clutch plates.</li> </ol>	Adjust. Replace. Replace.
Transmission will not shift	<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>	Replace. Replace. Replace.
Transmission will not shift back.	<ol style="list-style-type: none"> <li>1. Broken return spring on shift shaft.</li> <li>2. Rubbing or sticky shift shaft.</li> <li>3. Distorted or worn gearshift forks.</li> </ol>	Replace. Repair. Replace.
Transmission jumps out of gear.	<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>	Replace. Replace. Replace. Replace.
Engine idles poorly.	<ol style="list-style-type: none"> <li>1. Out of adjustment valve clearance.</li> <li>2. Poor seating of valves.</li> <li>3. Defective valve guides.</li> <li>4. Worn rocker arms or arm shafts.</li> <li>5. Defective ignition coil.</li> <li>6. Defective signal generator or ignitor unit.</li> <li>7. Too wide spark plug gap.</li> <li>8. Defective ignition coil resulting in weak sparking.</li> <li>9. Out of adjustment in carburetor float chamber fuel level.</li> <li>10. Clogged jets in carburetor.</li> </ol>	Adjust. Replace. Replace. Replace. Replace. Replace. Adjust or replace. Replace. Adjust.  Clean.
Engine runs poorly in high speed range.	<ol style="list-style-type: none"> <li>1. Weakened valve springs.</li> <li>2. Out of adjustment valve timing.</li> <li>3. Worn cams or rocker arms.</li> <li>4. Too narrow spark plug gap</li> <li>5. Defective ignition coil.</li> <li>6. Defective signal generator or ignitor unit.</li> <li>7. Ignition not advanced sufficiently due to poorly working timing advance circuit.</li> <li>8. Too low float chamber fuel level.</li> <li>9. Clogged air cleaner element.</li> <li>10. Clogged fuel hose, resulting in inadequate fuel supply to carburetor.</li> </ol>	Replace. Adjust. Replace. Adjust or replace. Replace. Replace. Replace ignitor unit.  Adjust. Clean or replace. Clean and prime.

Complaint	Symptom and possible causes	Remedy
<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. Scored or scuffed cylinder wall.</li> <li>5. Worn valve stems.</li> <li>6. Defective stem seals.</li> <li>7. Worn oil ring or side rails.</li> </ol>	Check with inspection window, drain out excess oil. Replace. Replace. Rebore or replace. Replace. Replace. Replace.
<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. Out of adjustment valve timing.</li> <li>4. Worn piston rings or cylinder.</li> <li>5. Poor seating of valves.</li> <li>6. Fouled spark plug.</li> <li>7. Worn rocker arms or shafts.</li> <li>8. Spark plug gap incorrect.</li> <li>9. Clogged jets in carburetor.</li> <li>10. Out of adjustment float-chamber fuel level.</li> <li>11. Clogged air cleaner element.</li> <li>12. Too much engine oil in the engine.</li> <li>13. Sucking air from intake pipe.</li> </ol>	Adjust. Replace. Adjust. Replace. Repair. Clean or replace. Replace. Adjust or replace. Clean. Adjust. Clean. Drain out excess oil. Retighten or replace.
<b>Engine overheats.</b>	<ol style="list-style-type: none"> <li>1. Heavy carbon deposit on piston crown.</li> <li>2. Not enough oil in the engine.</li> <li>3. Defective oil pump or clogged oil circuit.</li> <li>4. Too low in float chamber fuel level.</li> <li>5. Sucking air from intake pipe.</li> <li>6. Use of incorrect engine oil.</li> </ol>	Clean. Add oil. Repair or clean. Adjust. Retighten or replace. Change.

## CARBURETOR

Complaint	Symptom and possible causes	Remedy
<b>Trouble with starting.</b>	<ol style="list-style-type: none"> <li>1. Clogged starter jet.</li> <li>2. Clogged starter pipe.</li> <li>3. Air leaking from a joint between starter body and carburetor.</li> <li>4. Not operating properly starter plunger.</li> </ol>	Clean. Clean. Check starter body and carburetor for tightness, adjust and replace gasket. Check and adjust.
<b>Idling or low-speed trouble.</b>	<ol style="list-style-type: none"> <li>1. Clogged or loose pilot jet, pilot air jet.</li> <li>2. Clogged pilot outlet or by-pass.</li> <li>3. Not fully closed starter plunger.</li> </ol>	Check and clean. Check and clean. Check and adjust.
<b>Medium- or high-speed trouble.</b>	<ol style="list-style-type: none"> <li>1. Clogged main jet or main air jet.</li> <li>2. Clogged needle jet.</li> <li>3. Not operating properly throttle valve.</li> <li>4. Clogged fuel filter.</li> </ol>	Check and clean. Check and clean. Check throttle valve for operation. Check and clean.
<b>Overflow and fuel level fluctuations.</b>	<ol style="list-style-type: none"> <li>1. Worn or damaged needle valve.</li> <li>2. Broken spring in needle valve.</li> <li>3. Not working properly float.</li> <li>4. Foreign matter has adhered to needle valve.</li> <li>5. Too high or low fuel level.</li> </ol>	Replace. Replace. Check and adjust. Clean. Adjust float height.



## ELECTRICAL

Complaint	Symptom and possible causes	Remedy
<b>No sparking or poor sparking.</b>	<ol style="list-style-type: none"> <li>1. Defective ignition coil.</li> <li>2. Defective spark plug.</li> <li>3. Defective signal generator or ignitor unit.</li> </ol>	Replace. Replace. Replace.
<b>Spark plug soon becomes fouled with carbon.</b>	<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. Too cold spark plug.</li> </ol>	Adjust carburetor. Adjust carburetor. Change. Clean. Replace by hot type plug.
<b>Spark plug becomes fouled with oil.</b>	<ol style="list-style-type: none"> <li>1. Worn piston rings.</li> <li>2. Worn piston or cylinder.</li> <li>3. Excessive clearance of valve stems in valve guides.</li> <li>4. Worn stem oil seals.</li> </ol>	Replace. Replace. Replace. Replace.
<b>Spark plug electrodes overheat or burn.</b>	<ol style="list-style-type: none"> <li>1. Too hot spark plug.</li> <li>2. Overheated engine.</li> <li>3. Loose spark plug.</li> <li>4. Too lean mixture.</li> </ol>	Replace with cold type plug. Tune up. Retighten. Adjust carburetor.
<b>Generator does not charge.</b>	<ol style="list-style-type: none"> <li>1. Open or short 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>	Repair, replace or retighten. Replace. Replace.
<b>Generator does charge, but charging rate is below the specification.</b>	<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.</li> <li>3. Defective regulator/rectifier.</li> <li>4. Defective cell plates in the battery.</li> </ol>	Repair or retighten.  Replace. Replace. Replace the battery.
<b>Generator over-charges.</b>	<ol style="list-style-type: none"> <li>1. Internal short-circuit in the battery.</li> <li>2. Damaged or defective resistor element in the regulator/rectifier.</li> <li>3. Poorly grounded regulator/rectifier.</li> </ol>	Replace the battery. Replace the regulator/rectifier. Clean and tighten grounded connection.
<b>Unstable charging.</b>	<ol style="list-style-type: none"> <li>1. Lead wire insulation frayed due to vibration, resulting in intermittent shorting.</li> <li>2. Internally shorted generator.</li> <li>3. Defective regulator/rectifier.</li> </ol>	Repair or replace.  Replace. Replace.
<b>Starter button is not effective.</b>	<ol style="list-style-type: none"> <li>1. Run down battery.</li> <li>2. Defective switch contacts.</li> <li>3. Not seating properly brushes on commutator in starter motor.</li> <li>4. Defective starter relay/starter interlock switch.</li> </ol>	Repair or replace. Replace. Repair or replace. Replace.

## BATTERY

Complaint	Symptom and possible causes	Remedy
<b>“Sulfation”, acidic while powdery substance or spots on surfaces of cell plates.</b>	<ol style="list-style-type: none"> <li>1. Cracked battery case.</li> <li>2. Battery has been left in a run-down condition for a long time.</li> </ol>	<p>Replace the battery.</p> <p>Replace the battery.</p>
<b>Battery run down quickly.</b>	<ol style="list-style-type: none"> <li>1. Not correct the charging system.</li> <li>2. Cell plates have lost much of their active material as a result of overcharging.</li> <li>3. A short-circuit condition exists within the battery.</li> <li>4. Too low battery voltage.</li> <li>5. Too old battery.</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.</p> <p>Replace the battery.</p>
<b>Battery “sulfation”.</b>	<ol style="list-style-type: none"> <li>1. Too low or too high charging rate. (When not in use batteries should be checked at least once a month to avoid sulfation.)</li> <li>2. Left unused the battery for too long in cold climate.</li> </ol>	<p>Replace the battery.</p> <p>Replace the battery, if badly sulfated.</p>
<b>Battery discharges too rapidly.</b>	Dirty container top and sides.	Clean.

## CHASSIS

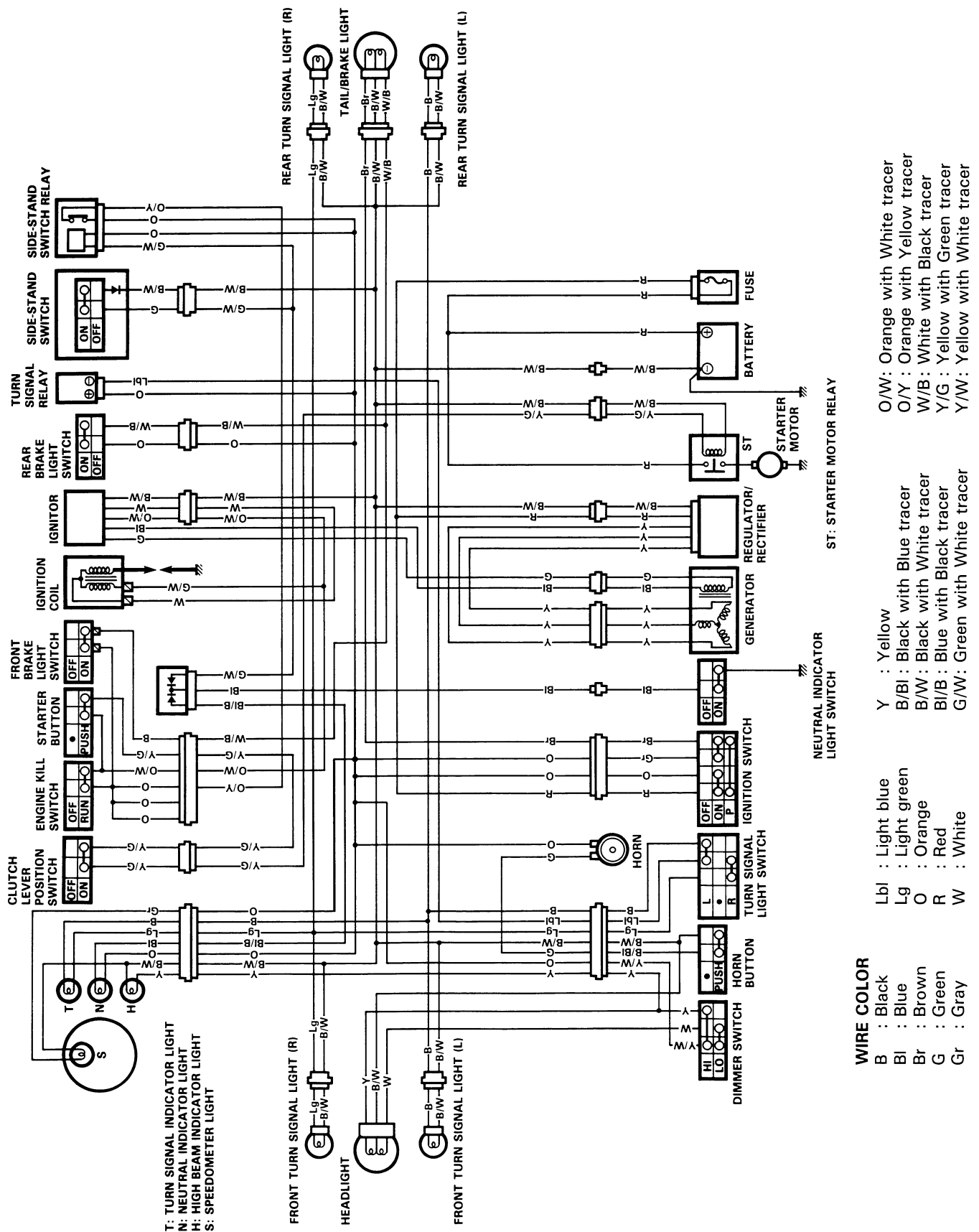
Complaint	Symptom and possible causes	Remedy
<b>Heavy steering.</b>	<ol style="list-style-type: none"> <li>1. Overtightened steering stem nut.</li> <li>2. Broken bearing in steering stem.</li> <li>3. Distorted steering stem.</li> <li>4. Not enough pressure in tires.</li> </ol>	<p>Adjust.</p> <p>Replace.</p> <p>Replace.</p> <p>Adjust.</p>
<b>Wobbly handlebar.</b>	<ol style="list-style-type: none"> <li>1. Loss of balance between right and left front forks.</li> <li>2. Distorted front fork.</li> <li>3. Distorted front axle or crooked tire.</li> </ol>	<p>Replace.</p> <p>Repair or replace.</p> <p>Replace.</p>
<b>Wobbly front wheel.</b>	<ol style="list-style-type: none"> <li>1. Distorted wheel rim.</li> <li>2. Worn-down front wheel bearings.</li> <li>3. Defective or incorrect tire.</li> <li>4. Loose axle nut</li> <li>5. Incorrect front fork oil level.</li> </ol>	<p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Retighten.</p> <p>Adjust.</p>
<b>Front suspension too soft.</b>	<ol style="list-style-type: none"> <li>1. Weakened springs.</li> <li>2. Not enough fork oil.</li> </ol>	<p>Replace.</p> <p>Replenish.</p>
<b>Front suspension too stiff.</b>	<ol style="list-style-type: none"> <li>1. Too viscous fork oil.</li> <li>2. Too much fork oil.</li> </ol>	<p>Replace.</p> <p>Drain excess oil.</p>
<b>Noisy front suspension.</b>	<ol style="list-style-type: none"> <li>1. Not enough fork oil.</li> <li>2. Loose bolts or nuts on suspension.</li> </ol>	<p>Replenish.</p> <p>Retighten.</p>
<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 bushings.</li> <li>3. Defective or incorrect tire.</li> <li>4. Worn swingarm and rear cushion related bearings.</li> <li>5. Loose nuts or bolts on rear suspension.</li> <li>6. Loosen axle nut.</li> </ol>	<p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Retighten.</p> <p>Retighten.</p>

Complaint	Symptom and possible causes	Remedy
<b>Rear suspension too soft.</b>	<ol style="list-style-type: none"> <li>1. Weakened shock absorber spring.</li> <li>2. Improperly set shock absorber spring length.</li> <li>3. Leakage oil of shock absorber.</li> </ol>	Replace the shock absorber. Adjust. Replace.
<b>Rear suspension too stiff.</b>	<ol style="list-style-type: none"> <li>1. Improperly set shock absorber spring length.</li> <li>2. Bent shock absorber shaft</li> <li>3. Bent swingarm.</li> <li>4. Worn swingarm and rear cushion related bearings.</li> </ol>	Adjust. Replace. Replace. Replace.
<b>Noisy rear suspension.</b>	<ol style="list-style-type: none"> <li>1. Loose nuts or bolts on rear suspension.</li> <li>2. Worn swingarm and rear cushion related bearings.</li> </ol>	Retighten. Replace.

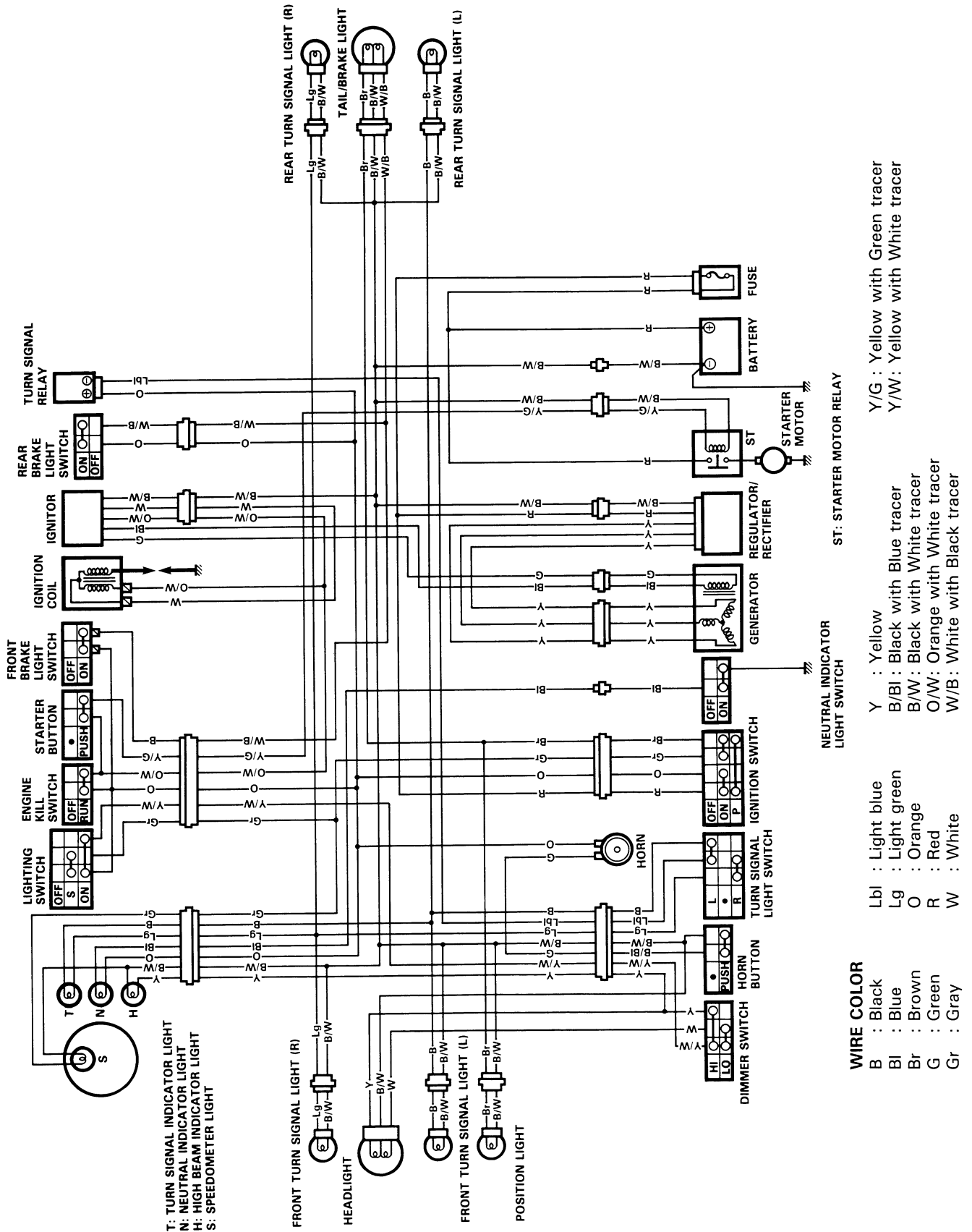
## BRAKES

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> </ol>	Refill to level mark. Bleed air out. Replace.
<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 emery paper. 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 CANADA AND U.S.A.

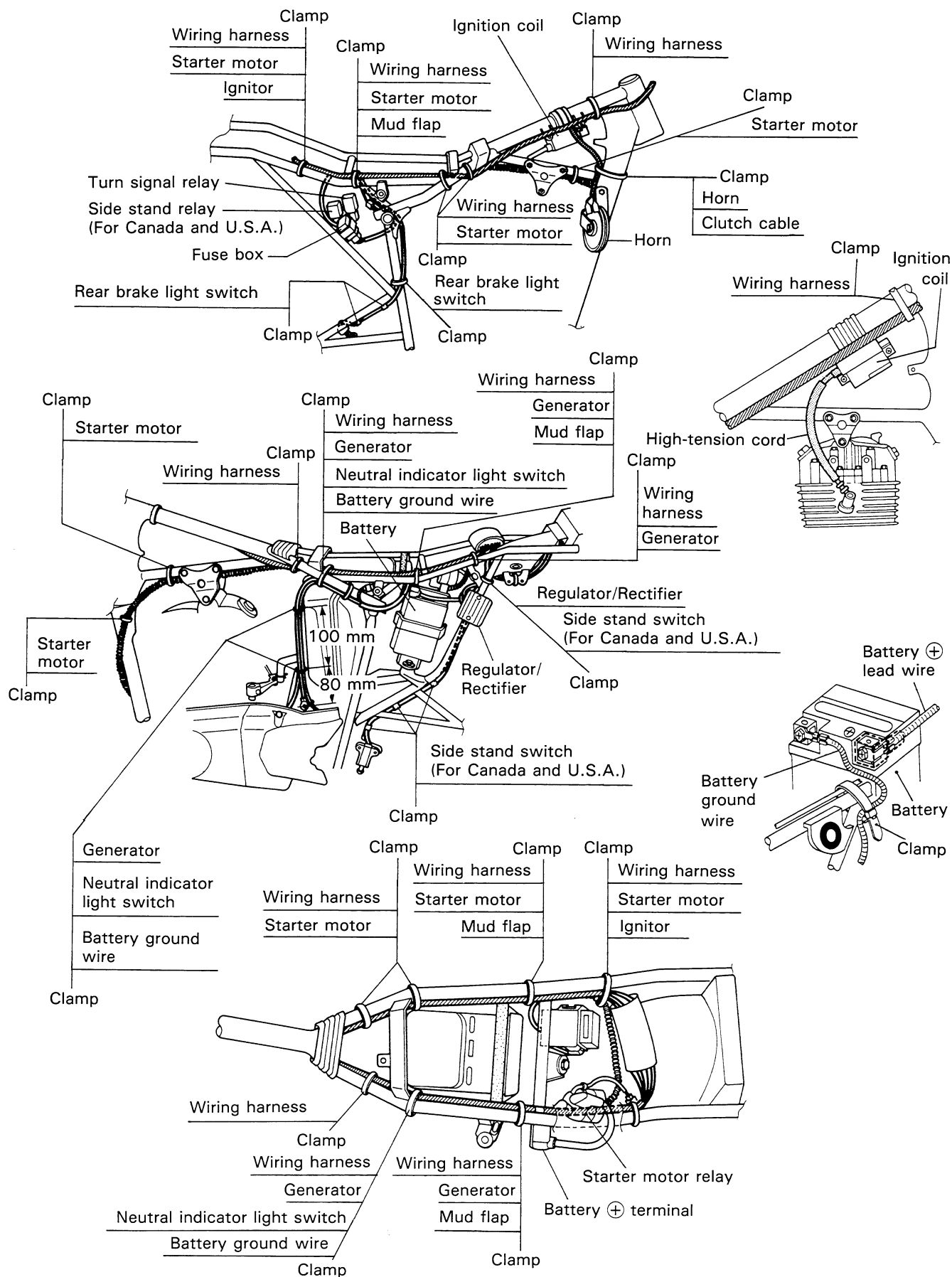


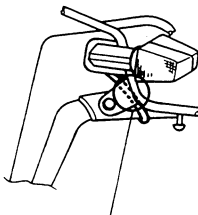
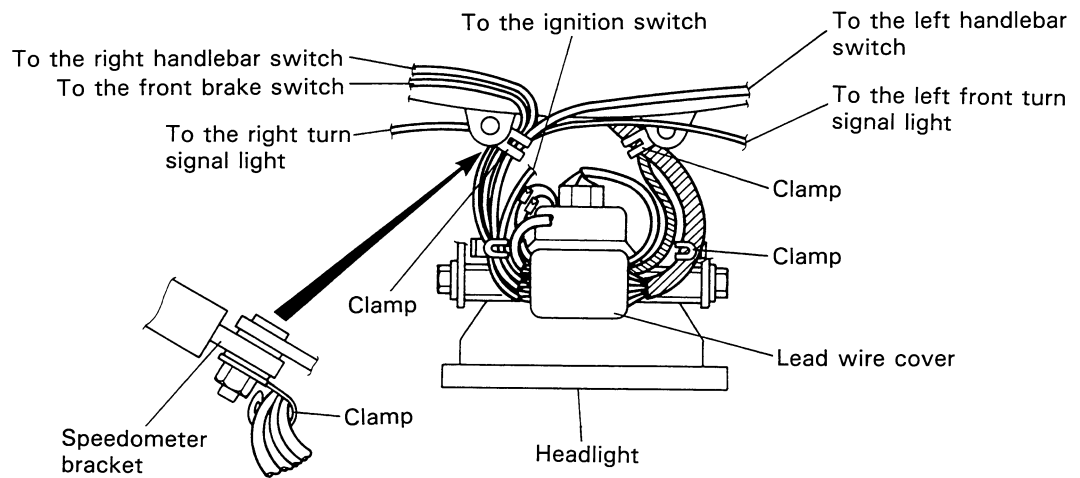
# FOR THE OTHERS



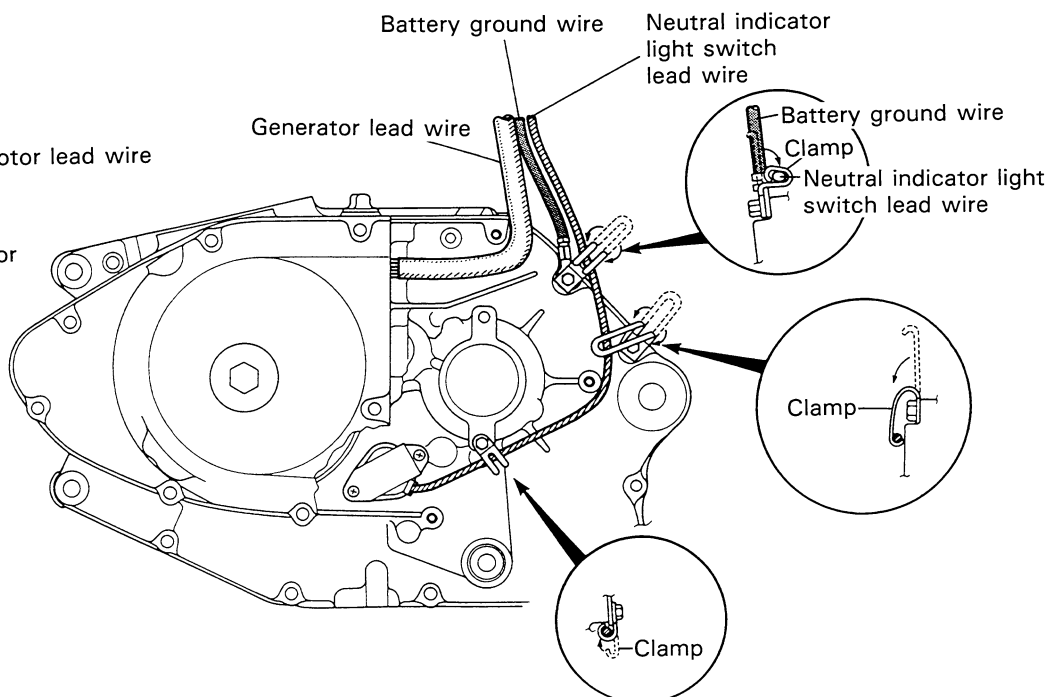
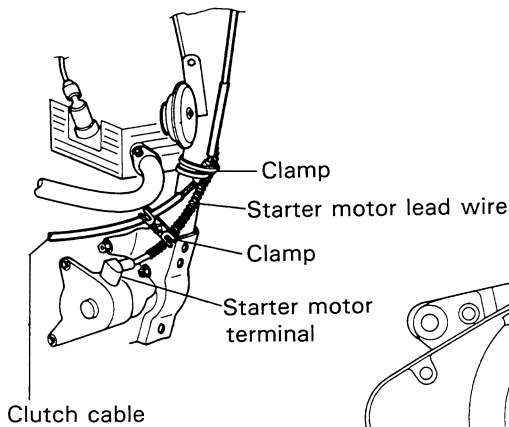
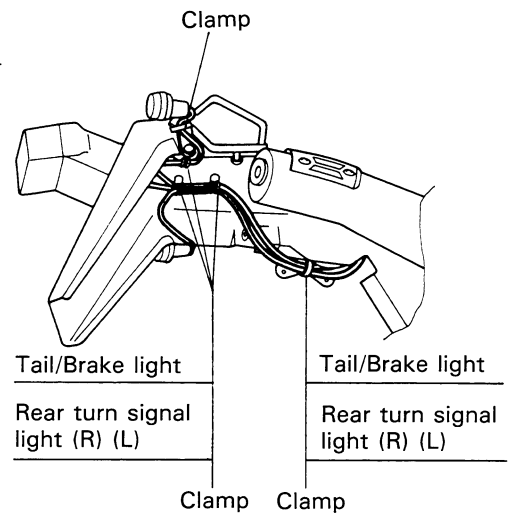
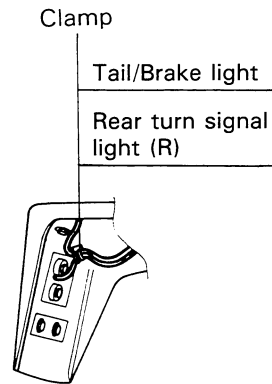
# WIRE, CABLE AND HOSE ROUTING

## WIRE ROUTING

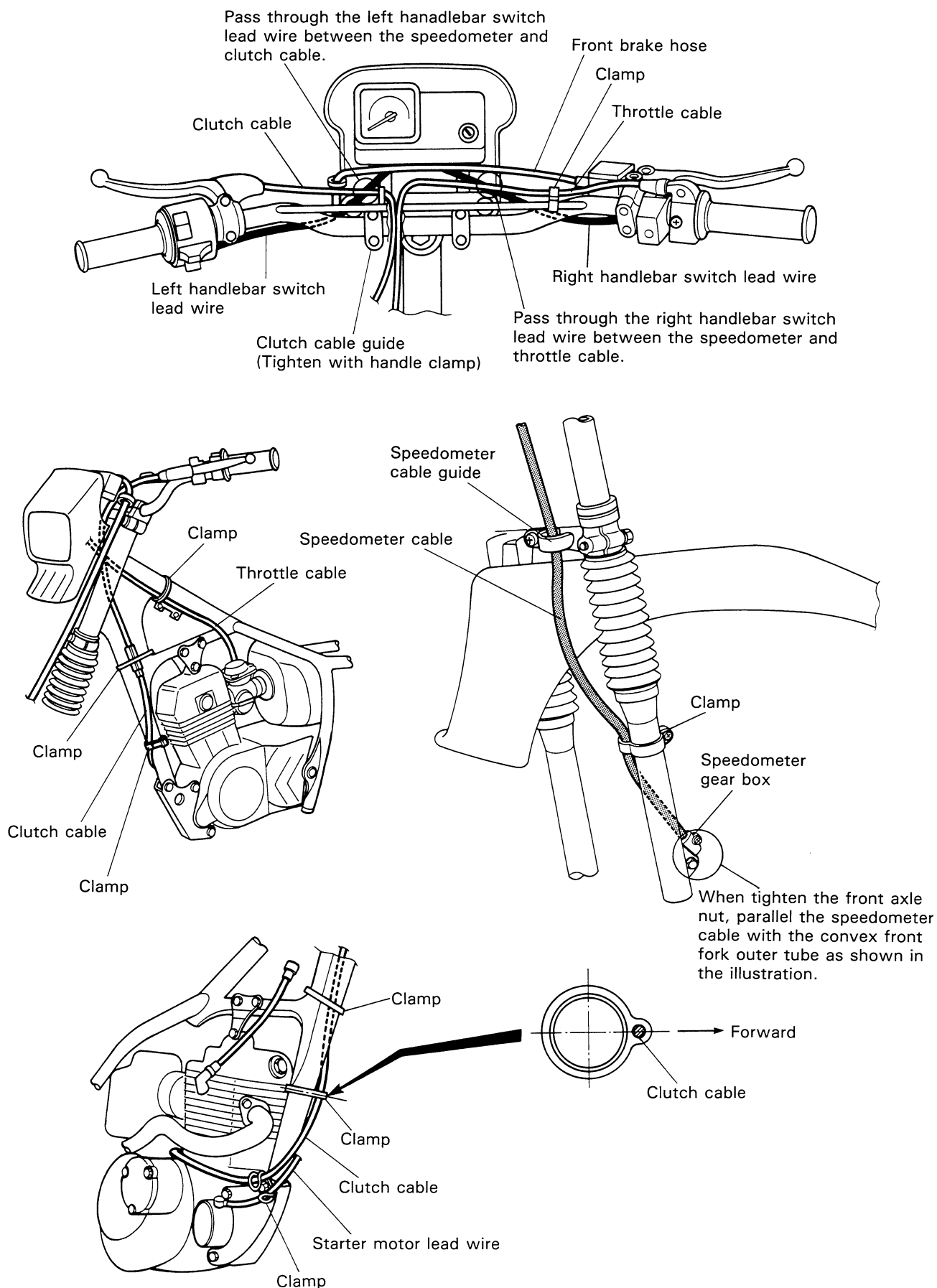




Pass through the rear turn signal light lead wire right and left between the rear fender and fender mounting bracket.

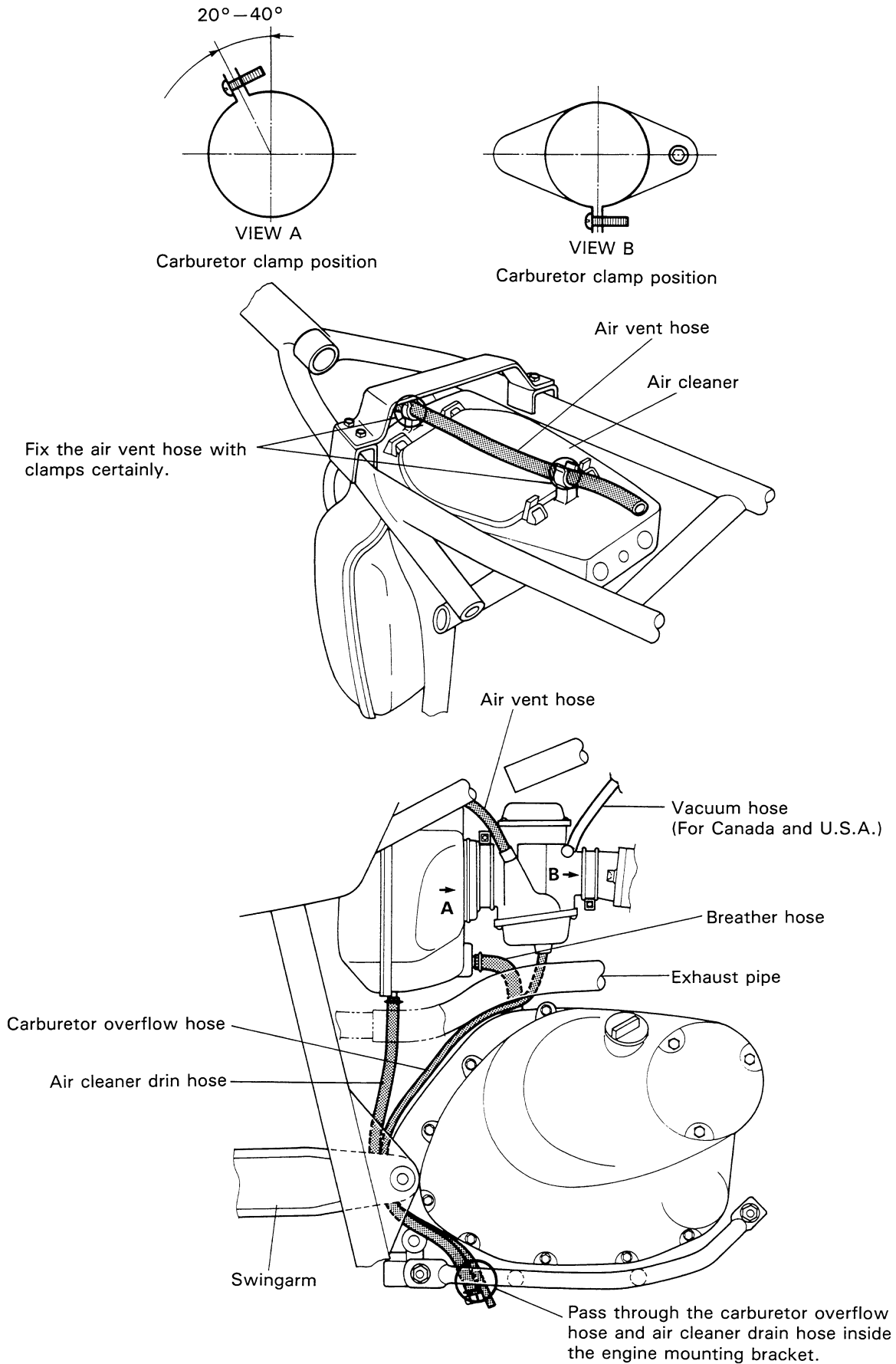


## CABLE ROUTING

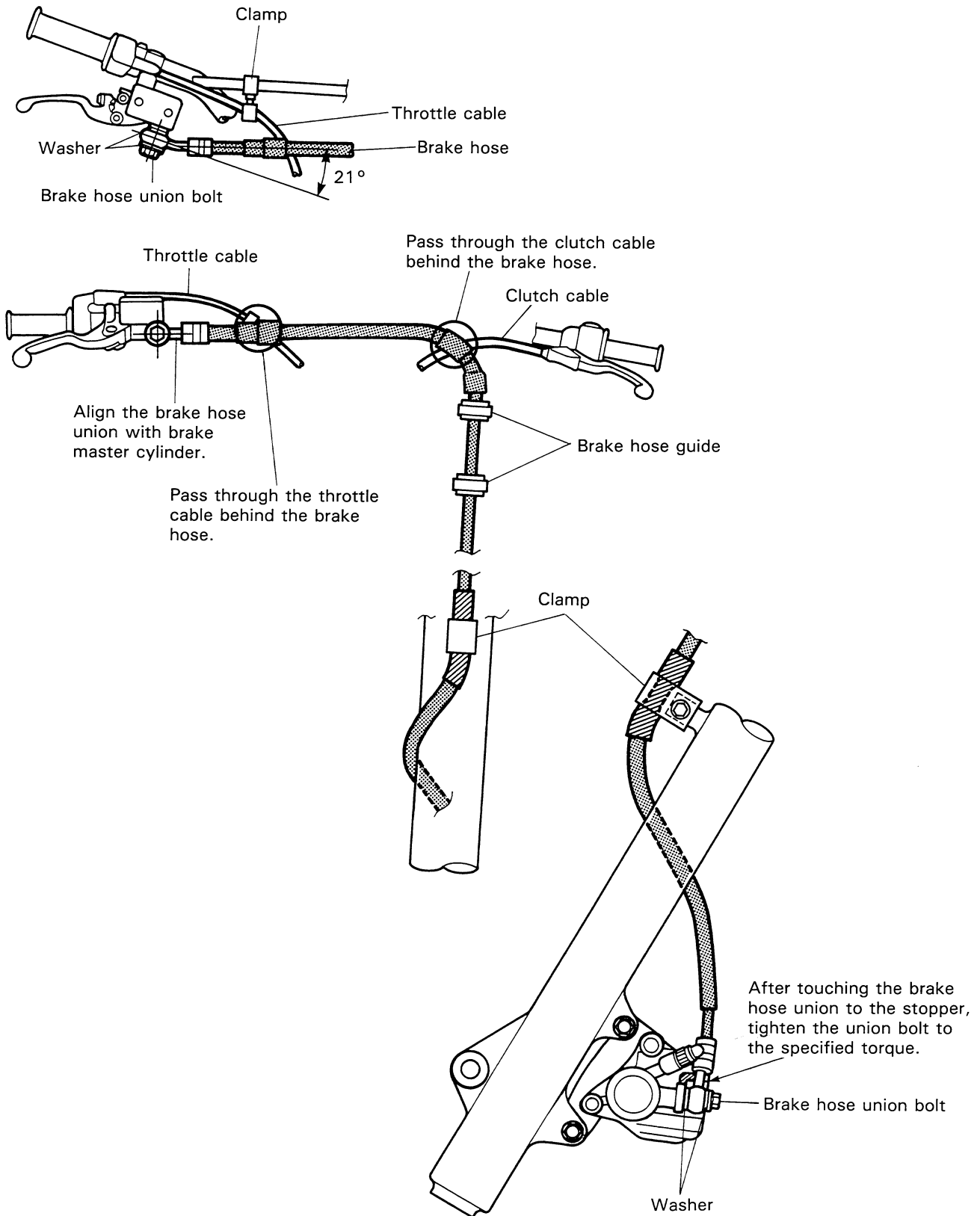




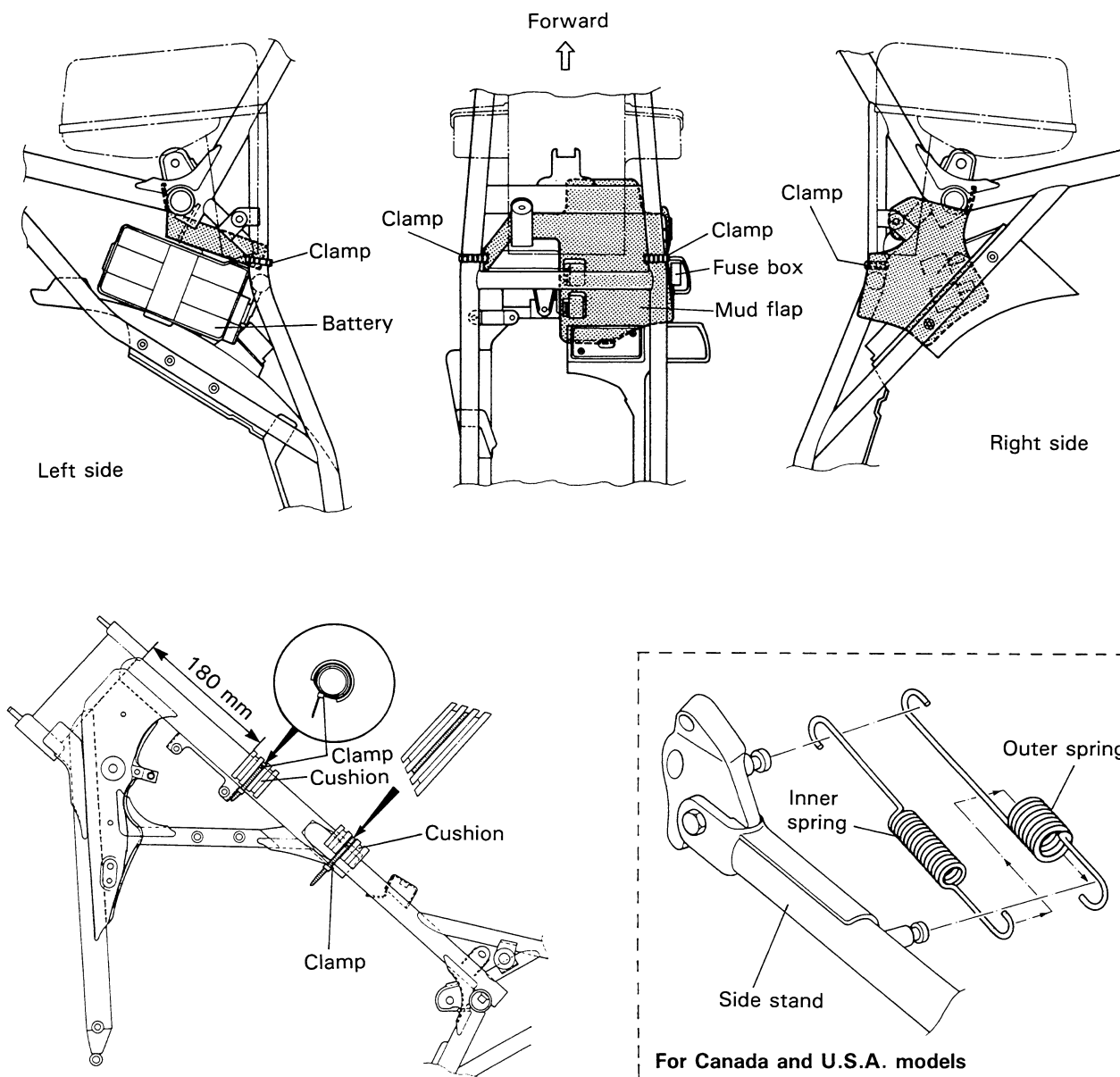
## CARBURETOR AND AIR CLEANER HOSE ROUTING



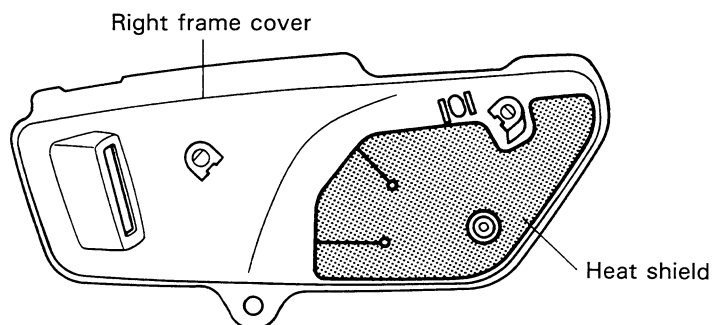
## FRONT BRAKE HOSE ROUTING



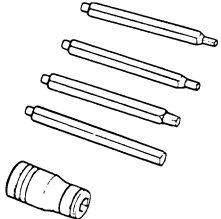
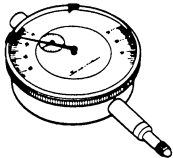
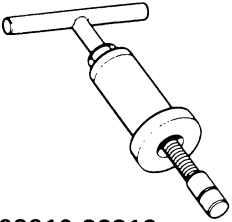

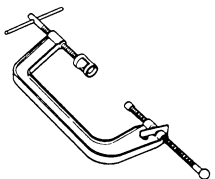
## MUD FLAP, FUEL TANK CUSHION AND SIDE-STAND SPRING SET-UP

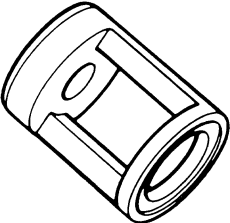
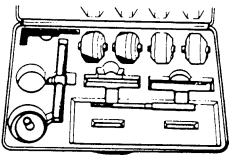
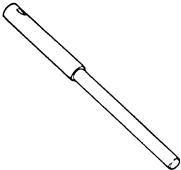



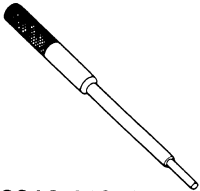
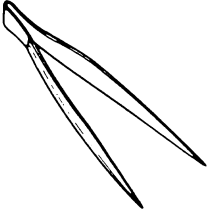
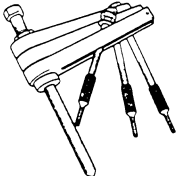
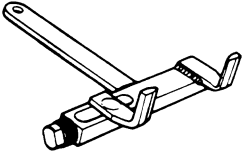
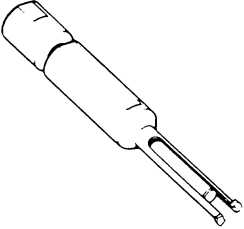
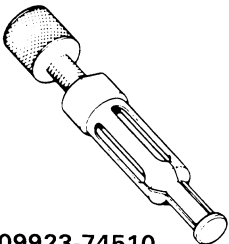
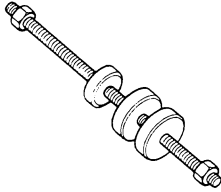

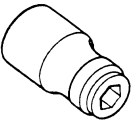
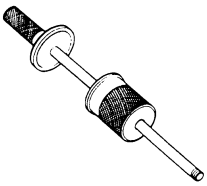
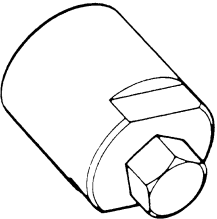

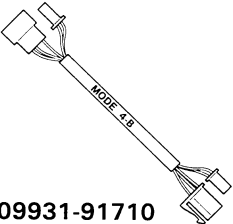
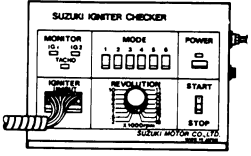
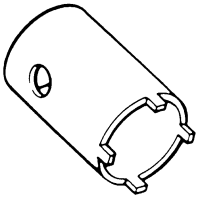
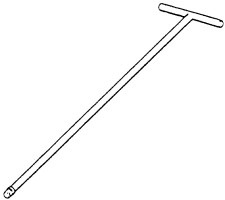
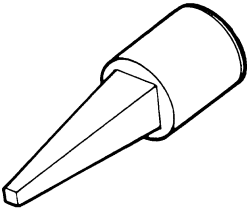
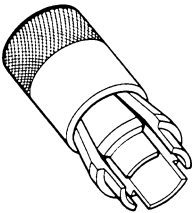
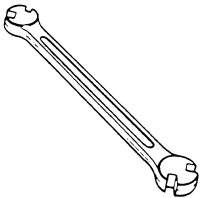
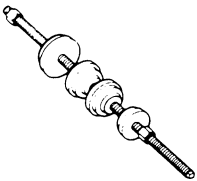
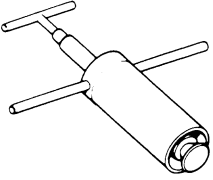
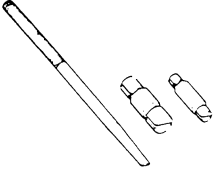
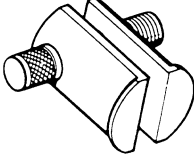



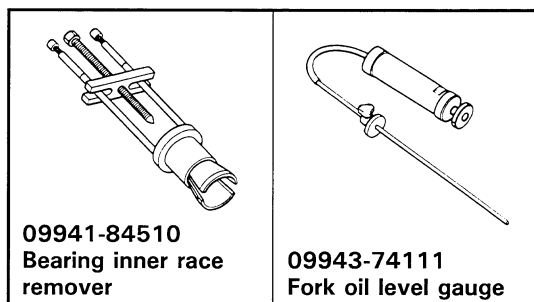
## HEAT SHIELD ADHERING



## SPECIAL TOOL

 <p><b>09900-00401</b> "L" type hexagon wrench set</p>	 <p><b>09900-00410</b> Hexagon wrench set</p>	 <p><b>09900-06107</b> Snap ring pliers</p>	 <p><b>09900-06108</b> Snap ring pliers</p>	 <p><b>09900-09003</b> Impact driver set</p>
 <p><b>09900-20102</b> Vernier calipers (1/20 mm, 200 mm)</p>	 <p><b>09900-20202</b> Micrometer (1/100 mm, 25–50 mm)</p>	 <p><b>09900-20203</b> Micrometer (1/100 mm, 50–75 mm)</p>	 <p><b>09900-20205</b> Micrometer (1/1000 mm, 0–25 mm)</p>	 <p><b>09900-20508</b> Cylinder gauge set (1/100 mm, 40–80 mm)</p>
 <p><b>09900-20605</b> Dial calipers (1/100 mm, 10–34 mm)</p>	 <p><b>09900-20606</b> Dial gauge (1/100 mm, 10 mm)</p>	 <p><b>09900-20701</b> Magnetic stand</p>	 <p><b>09900-20803</b> Thickness gauge</p>	 <p><b>09900-21304</b> V-block set (100 mm)</p>
 <p><b>09900-22301</b> Plastigauge</p>	 <p><b>09900-25002</b> Pocket tester</p>	 <p><b>09900-28106</b> Electro tester</p>	 <p><b>09910-20116</b> Con-rod holder</p>	 <p><b>09910-32812</b> Crankshaft installer</p>
 <p><b>09910-60611</b> Universal clamp wrench</p>	 <p><b>09913-50121</b> Dust seal remover</p>	 <p><b>09913-60710</b> <b>09941-64511</b> Bearing remover</p>	 <p><b>09913-75510</b> Bearing installer</p>	 <p><b>09913-75821</b> Bearing installer</p>
 <p><b>09913-76010</b> Bearing installer</p>	 <p><b>09915-63210</b> Adapter</p>	 <p><b>09915-64510</b> Compression gauge</p>	 <p><b>09915-74510</b> Oil pressure gauge</p>	 <p><b>09916-14510</b> Valve spring compressor</p>

 <p><b>09916-14910</b> Attachment</p>	 <p><b>09916-21110</b> Valve seat cutter set (See page 3-22.)</p>	 <p><b>09916-24480</b> Solid pilot (N-140-5.5)</p>	 <p><b>09916-34541</b> Reamer handle</p>	 <p><b>09916-34550</b> 5.5 mm reamer</p>
 <p><b>09916-34561</b> 11.3 mm reamer</p>	 <p><b>09916-44910</b> Valve guide remover/ installer</p>	 <p><b>09916-84511</b> Tweezers</p>	 <p><b>09920-13120</b> Crankcase separating tool/crankshaft remover</p>	 <p><b>09920-53740</b> Clutch sleeve hub holder</p>
 <p><b>09921-20210</b> Bearing remover</p>	 <p><b>09923-74510</b> Bearing remover</p>	 <p><b>09924-84521</b> Bearing installer</p>	 <p><b>09930-11920</b> Torx bit</p>	 <p><b>09930-11940</b> Bit holder</p>
 <p><b>09930-30102</b> Sliding shaft</p>	 <p><b>09930-34932</b> Rotor remover</p>	 <p><b>09930-44511</b> Rotor holder</p>	 <p><b>09931-91710</b> Sub-lead wire MODE 4-B</p>	 <p><b>09931-94490</b> Ignitor checker</p>
 <p><b>09940-14920</b> Steering stem nut socket wrench</p>	 <p><b>09940-34520</b> T handle</p>	 <p><b>09940-34561</b> Front fork attach- ment "D"</p>	 <p><b>09940-50113</b> Oil seal installer</p>	 <p><b>09940-60113</b> Spoke nipple wrench</p>
 <p><b>09941-34513</b> Bearing installer</p>	 <p><b>09941-44510</b> Swingarm bearing remover</p>	 <p><b>09941-50111</b> Bearing remover</p>	 <p><b>09941-54911</b> Bearing outer race remover</p>	 <p><b>09941-74910</b> Steering stem bear- ing installer</p>



## TIGHTENING TORQUE

### ENGINE

ITEM	N·m	kg-m	lb-ft
Cylinder head cover bolt	10	1.0	7.0
Camshaft sprocket bolt	11	1.1	8.0
Cylinder head nut 8 mm Diam.	23	2.3	16.5
Cylinder head nut 6 mm Diam.	10	1.0	7.0
Cylinder base nut	10	1.0	7.0
Starter clutch securing bolt	18	1.8	13.0
Cam drive chain tension adjuster bolt	7	0.7	5.0
Generator rotor nut	55	5.5	40.0
Crankcase bolt	11	1.1	8.0
Primary drive gear nut	50	5.0	36.0
Clutch cover bolt and generator cover bolt	10	1.0	7.0
Clutch spring mounting bolt	4	0.4	3.0
Clutch sleeve hub nut	50	5.0	36.0
Gearshift arm stopper	19	1.9	13.5
Neutral cam stopper bolt	23	2.3	16.5
Engine oil drain plug	23	2.3	16.5
Oil filter cap nut and oil sump filter cap bolt	7	0.7	5.0
Engine sprocket bolt	25	2.5	18.0
Engine mounting bolt (Top side)	41	4.1	29.5
Engine mounting bolt (Front side)	90	9.0	65.0
Engine mounting bolt (Rear side)	10	1.0	7.0

ITEM	N·m	kg-m	lb-ft
Engine mounting bracket bolt	41	4.1	29.5
Exhaust pipe bolt	23	2.3	16.5
Muffler connection bolt	23	2.3	16.5
Muffler mounting bolt (Front side)	23	2.3	16.5
Muffler mounting bolt (Rear side)	44	4.4	32.0

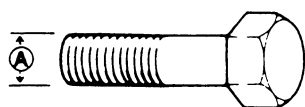
## CHASSIS

ITEM	N·m	kg-m	lb-ft
Front axle nut	48	4.8	34.5
Front fork damper rod bolt	20	2.0	14.5
Front fork lower clamp bolt	29	2.9	21.0
Front fork upper clamp bolt	29	2.9	21.0
Steering stem head nut	90	9.0	65.0
Handlebar clamp bolt	25	2.5	18.0
Handlebar holder nut	45	4.5	32.5
Front brake master cylinder mounting bolt	10	1.0	7.0
Front brake caliper mounting bolt	25	2.5	18.0
Front brake pad mounting bolt	18	1.8	13.0
Front brake caliper axle bolt	23	2.3	16.5
Front brake hose union bolt	23	2.3	16.5
Air bleeder valve	8	0.8	6.0
Front brake disc bolt	23	2.3	16.5
Front footrest nut	42	4.2	30.5
Swingarm pivot nut	65	6.5	47.0
Front footrest bolt	94	9.4	68.0
Rear torque link nut	13	1.3	9.5
Rear shock absorber nut (Upper & Lower)	60	6.0	43.5
Rear cushion lever center nut	72	7.2	52.0
Rear cushion lever nut	78	7.8	56.5
Rear axle nut	65	6.5	47.0
Rear sprocket bolt	27	2.7	19.5
Rear brake cam lever bolt	11	1.1	8.0
Spoke nipple	4.5	0.45	3.0

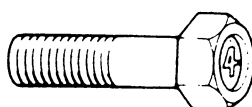
## TIGHTENING TORQUE CHART

For other bolts and nuts listed previously, refer to this chart:

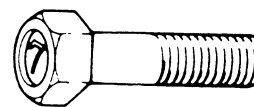
Bolt Diameter Ⓐ (mm)	Conventional or "4" marked bolt			"7" marked bolt		
	N·m	kg-m	lb-ft	N·m	kg-m	lb-ft
4	1.5	0.15	1.0	2	0.2	1.5
5	3	0.3	2.0	5	0.5	3.5
6	6	0.6	4.5	10	1.0	7.0
8	13	1.3	9.5	23	2.3	16.5
10	29	2.9	21.0	50	5.0	36.0
12	45	4.5	32.5	85	8.5	61.5
14	65	6.5	47.0	135	13.5	97.5
16	105	10.5	76.0	210	21.0	152.0
18	160	16.0	115.5	240	24.0	173.5



Conventional bolt



"4" marked bolt



"7" marked bolt



## SERVICE DATA

### VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	30 (1.2)	——
	EX.	26 (1.0)	——
Valve lift	IN.	7.5 (0.29)	——
	EX.	6.5 (0.25)	——
Valve clearance (when cold)	IN. & EX.	0.08–0.13 (0.003–0.005)	——
Valve guide to valve stem clearance	IN.	0.010–0.037 (0.0004–0.0015)	——
	EX.	0.030–0.057 (0.0012–0.0022)	——
Valve stem deflection	IN. & EX.	——	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500–5.512 (0.2165–0.2170)	——
Valve stem O.D.	IN.	5.475–5.490 (0.2146–0.2161)	——
	EX.	5.455–5.470 (0.2148–0.2154)	——
Valve stem runout	IN. & EX.	——	0.05 (0.002)
Valve head thickness	IN. & EX.	——	0.5 (0.02)
Valve stem end length	IN. & EX.	——	2.6 (0.1)
Valve seat width	IN. & EX.	0.9–1.1 (0.04–0.05)	——
Valve head radial runout	IN. & EX.	——	0.03 (0.001)
Valve spring free length (IN. & EX.)	INNER	——	36.0 (1.42)
	OUTER	——	39.3 (1.55)
Valve spring tension (IN. & EX.)	INNER	7.8–9.2 kg (17.2–20.3 lbs) at length 32.5 mm (1.28 in)	——
	OUTER	18.9–22.3 kg (41.7–49.2 lbs) at length 36.0 mm (1.42 in)	——

**CAMSHAFT + CYLINDER HEAD**

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	34.178–34.218 (1.3456–1.3472)	33.880 (1.3339)
	EX.	33.327–33.367 (1.3121–1.3137)	33.030 (1.3004)
Camshaft journal oil clearance	IN. & EX.	0.032–0.066 (0.0013–0.0026)	0.150 (0.0059)
Camshaft journal holder I.D.	IN. & EX.	22.012–22.025 (0.8666–0.8671)	—
Camshaft journal O.D.	IN. & EX.	21.959–21.980 (0.8645–0.8654)	—
Camshaft runout	IN. & EX.	—	0.10 (0.004)
Rocker arm I.D.	IN. & EX.	12.000–12.018 (0.4724–0.4731)	—
Rocker arm shaft O.D.	IN. & EX.	11.977–11.995 (0.4715–0.4722)	—
Cylinder head distortion	—		0.05 (0.002)
Cylinder head cover distortion	—		0.05 (0.002)

**CYLINDER + PISTON + PISTON RING**

Unit: mm (in)

ITEM	STANDARD			LIMIT
Compression pressure	1 400 kPa (14 kg/cm <sup>2</sup> ) 199 psi			980 kPa (9.8 kg/cm <sup>2</sup> ) 139 psi
Piston to cylinder clearance	0.020–0.030 (0.0008–0.0012)			0.120 (0.0047)
Cylinder bore	57.000–57.015 (2.2441–2.2447)			57.110 (2.2484)
Piston diam.	56.975–56.990 (2.2431–2.2437) Measure at 12 mm (0.47 in) from the skirt end.			56.880 (2.2394)
Cylinder distortion	—			0.05 (0.002)
Piston ring free end gap	1st	R	Approx. 7.0 (0.28)	5.6 (0.22)
	2nd	R	Approx. 7.5 (0.29)	6.0 (0.24)
Piston ring end gap	1st	0.10–0.25 (0.004–0.010)		0.5 (0.02)
	2nd	0.10–0.25 (0.004–0.010)		0.5 (0.02)
Piston ring to groove clearance	1st	—		0.18 (0.007)
	2nd	—		0.15 (0.006)

ITEM	STANDARD		LIMIT
Piston ring groove width	1st	1.21—1.23 (0.047—0.048)	——
	2nd	1.21—1.23 (0.047—0.048)	——
	Oil	2.51—2.53 (0.099—0.100)	——
Piston ring thickness	1st	1.175—1.190 (0.046—0.047)	——
	2nd	1.170—1.190 (0.046—0.047)	——
Piston pin bore	14.002—14.008 (0.5513—0.5515)		14.030 (0.5524)
Piston pin O.D.	13.994—14.002 (0.5509—0.5513)		13.980 (0.5504)

**CONROD + CRANKSHAFT**

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	14.004—14.012 (0.5513—0.5517)	14.040 (0.5528)
Conrod deflection	——	3.0 (0.12)
Conrod big end side clearance	0.10—0.45 (0.004—0.018)	1.00 (0.039)
Conrod big end width	15.95—16.00 (0.628—0.630)	——
Crank web to web width	53.0±0.1 (2.09±0.004)	——
Crankshaft runout	——	0.08 (0.003)

**OIL PUMP**

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	2.000 (30/15)	——
Oil pressure (at 60°C, 140°F)	Above 15 kPa (0.15 kg/cm <sup>2</sup> , 2.1 psi) Below 35 kPa (0.35 kg/cm <sup>2</sup> , 4.9 psi) at 3 000 r/min.	——

**CLUTCH**

Unit: mm (in)

ITEM	STANDARD	LIMIT
Clutch lever play	10—15 (0.4—0.6)	——
Clutch release screw	¼ turn back	——
Drive plate thickness	2.95—3.15 (0.116—0.124)	2.6 (0.10)
Driven plate distortion	——	0.10 (0.004)
Clutch spring free length	——	31.0 (1.22)

## TRANSMISSION + DRIVE CHAIN

Unit: mm (in) Except ratio

ITEM		STANDARD		LIMIT
Primary reduction ratio		3.470 (59/17)		—
Final reduction ratio		3.312 (53/16)		—
Gear ratios	Low	3.000 (33/11)		—
	2nd	1.857 (26/14)		—
	3rd	1.368 (26/19)		—
	4th	1.095 (23/21)		—
	5th	0.923 (24/26)		—
	Top	0.833 (20/24)		—
Shift fork to groove clearance		0.10–0.30 (0.004–0.012)		—
Shift fork groove width	No.1	5.0–5.1 (0.20–0.21)		—
	No.2	5.5–5.6 (0.22–0.23)		—
Shift fork thickness	No.1	4.8–4.9 (0.18–0.19)		—
	No.2	5.3–5.4 (0.20–0.21)		—
Countershaft length (Low to 2nd)		88.0 ± $0.1_0$ (3.46 ± $0.004_0$ )		—
Drive chain	Type	DID 428HG RK428HM		—
	Links	134		—
	20-pitch length	—		259.0 (10.20)
Drive chain slack		25–35 (1.0–1.4)		—
Gearshift lever height		5 (0.2)		—

## CARBURETOR

ITEM	SPECIFICATION		
	E-01,04,34	E-03,28	E-33
Carburetor type	MIKUNI BST31SS	←	←
Bore size	31 mm	←	←
I.D. No	44AA	44AB	44AC
Idle r/min.	1400 ± 100 r/min.	←	←
Float height	13.0 ± 1.0 mm (0.51 ± 0.04 in)	←	←
Main jet (M.J.)	# 110	# 112.5	←
Main air jet (M.A.J.)	0.7 mm	←	←
Jet needle (J.N.)	5D26–3rd	5D65	←
Needle jet (N.J.)	P–5	P–5	←
Throttle valve (Th.V.)	# 125	←	←
Pilot jet (P.J.)	# 40	# 40	←
Starter jet (G.S.)	# 22.5	←	←
Pilot screw (P.S.)	PRE-SET (1-7/8 turns out)	PRE-SET	←
Throttle cable play	3–6 mm (0.1–0.2 in)	←	←

**ELECTRICAL**

Unit: mm (in)

ITEM		SPECIFICATION	NOTE
Ignition timing		13° B.T.D.C. Below at 1 950 r/min. and 39° B.T.D.C. Above at 3 800 r/min.	
Spark plug	Type	ND: W24ESR-U NGK: DR8EA	
	Gap	0.6—0.7 (0.024—0.028)	
Spark performance		Over 8 (0.3) at 1 atm.	
Signal coil resistance		100—140 Ω	G—BI
Ignition coil resistance	Primary	2—6 Ω	Terminal— Terminal
	Secondary	20—30 kΩ	Plug cap— Terminal
Generator coil resistance		Charging 0.1—1.5 Ω	——
Generator no-load voltage		More than 70V (AC) at 5 000 r/min.	
Regulated voltage		13.0—16.0V at 5 000 r/min.	
Starter relay resistance		2—6 Ω	
Battery	Type designation	YTX7L-BS	
	Capacity	12V 21.6 kC (6 Ah)/10 HR	
	Standard electrolyte S.G.	1.32 at 20°C (68°F)	
Fuse size		20A	

**WATTAGE**

Unit: W

ITEM		SPECIFICATION	
		E-01,04,22,34	E-03,28,33
Headlight	HI	60	←
	LO	55	←
Position light		4	
Tail/Brake light		5/21	←
Turn signal light		21	←
Speedometer light		3.4	←
Turn signal indicator light		3.4	←
High beam indicator light		1.7	←
Neutral indicator light		3.4	←

**BRAKE + WHEEL**

Unit: mm (in)

ITEM	STANDARD		LIMIT
Rear brake pedal free travel	20–30 (0.8–1.2)		—
Rear brake pedal height	10 (0.4)		—
Brake drum I.D.	Rear	—	130.7 (5.15)
Brake lining thickness	Rear	—	1.5 (0.06)
Brake disc thickness	Front	$3.5 \pm 0.2$ ( $0.138 \pm 0.008$ )	3.0 (0.12)
Brake disc runout	Front	—	0.30 (0.012)
Master cylinder bore	Front	12.700–12.743 (0.5000–0.5017)	—
Master cylinder piston diam.	Front	12.657–12.684 (0.4983–0.4994)	—
Brake caliper cylinder bore	Front	33.960–34.010 (1.3370–1.3390)	—
Brake caliper piston diam.	Front	33.878–33.928 (1.3338–1.3357)	—
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	70/100-21 44P	—
	Rear	90/90-18 51P	—
Tire tread depth	Front	—	3.0 (0.12)
	Rear	—	3.0 (0.12)

**SUSPENSION**

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	205 (8.1)	—	
Front fork spring free length	—	561 (22.1)	
Front fork oil level	179.5 (7.07)	—	
Rear shock absorber spring pre-set length	231 (9.1)	—	
Rear wheel travel	200 (7.9)	—	
Swingarm pivot shaft runout	—	0.6 (0.02)	

**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	150	1.50	22	150	1.50	22
REAR	175	1.75	25	225	2.25	33

**FUEL + OIL**

ITEM	SPECIFICATION		NOTE
Fuel type	Use only unleaded gasoline of at least 87 pump octane ( $\frac{R+M}{2}$ ) or 91 octane or higher rated by the research method. Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.		E-03,33
	Use only unleaded gasoline of at least 87 pump octane ( $\frac{R+M}{2}$ method) or 91 octane or higher rated by the Research Method.		E-28
	Gasoline used should be graded 85-95 octane or higher. An unleaded gasoline is recommended.		The others
Fuel tank including reserve	12.5 L (3.3/2.8 US/Imp gal)		E-33
	13.0 L (3.4/2.9 US/Imp gal)		The others
	2.5 L (0.7/0.5 US/Imp gal)		
Engine oil type	SAE 10W/40, API SE or SF		
Engine oil capacity	Change	850 ml (0.90/0.75 US/Imp qt)	
	Filter change	950 ml (1.00/0.84 US/Imp qt)	
	Overhaul	1 300 ml (1.37/1.14 US/Imp qt)	
Front fork oil type	Fork oil # 10		
Front fork oil capacity (each leg)	309 ml (10.4/10.9 US/Imp oz)		
Brake fluid type	DOT4		

# ***EMISSION CONTROL INFORMATION***

## ***CONTENTS***

<b><i>EMISSION CONTROL CARBURETOR COMPONENTS .....</i></b>	<b><i>8- 1</i></b>
<b><i>EVAPORATIVE EMISSION CONTROL SYSTEM .....</i></b>	<b><i>8- 2</i></b>
<b><i>CANISTER HOSE ROUTING .....</i></b>	<b><i>8- 3</i></b>



## EMISSION CONTROL CARBURETOR COMPONENTS

DR125SE motorcycles are equipped with precision, manufactured carburetors for emission level control. These carburetors require special mixture control components and other precision adjustments to function properly.

There are several carburetor mixture control components in each carburetor assembly. Three (3) of these components are machined to much closer tolerances than standard machined carburetor jets. These three (3) particular jets—MAIN JET, NEEDLE JET, PILOT JET—must not be replaced by standard jets. To aid in identifying these three (3) jets a different design of letter and number are used. If replacement of these close tolerance jets becomes necessary, be sure to replace them with the same type close tolerance jets marked as in the examples shown below.

The jet needle is also of special manufacture. Only one clip position is provided on the jet needle. If replacement becomes necessary the jet needle may only be replaced with an equivalent performing replacement component. Suzuki recommends that Genuine Suzuki Parts be utilized whenever possible for the best possible performance and durability.

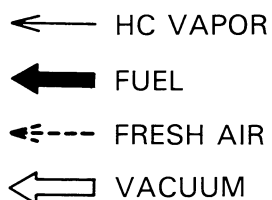
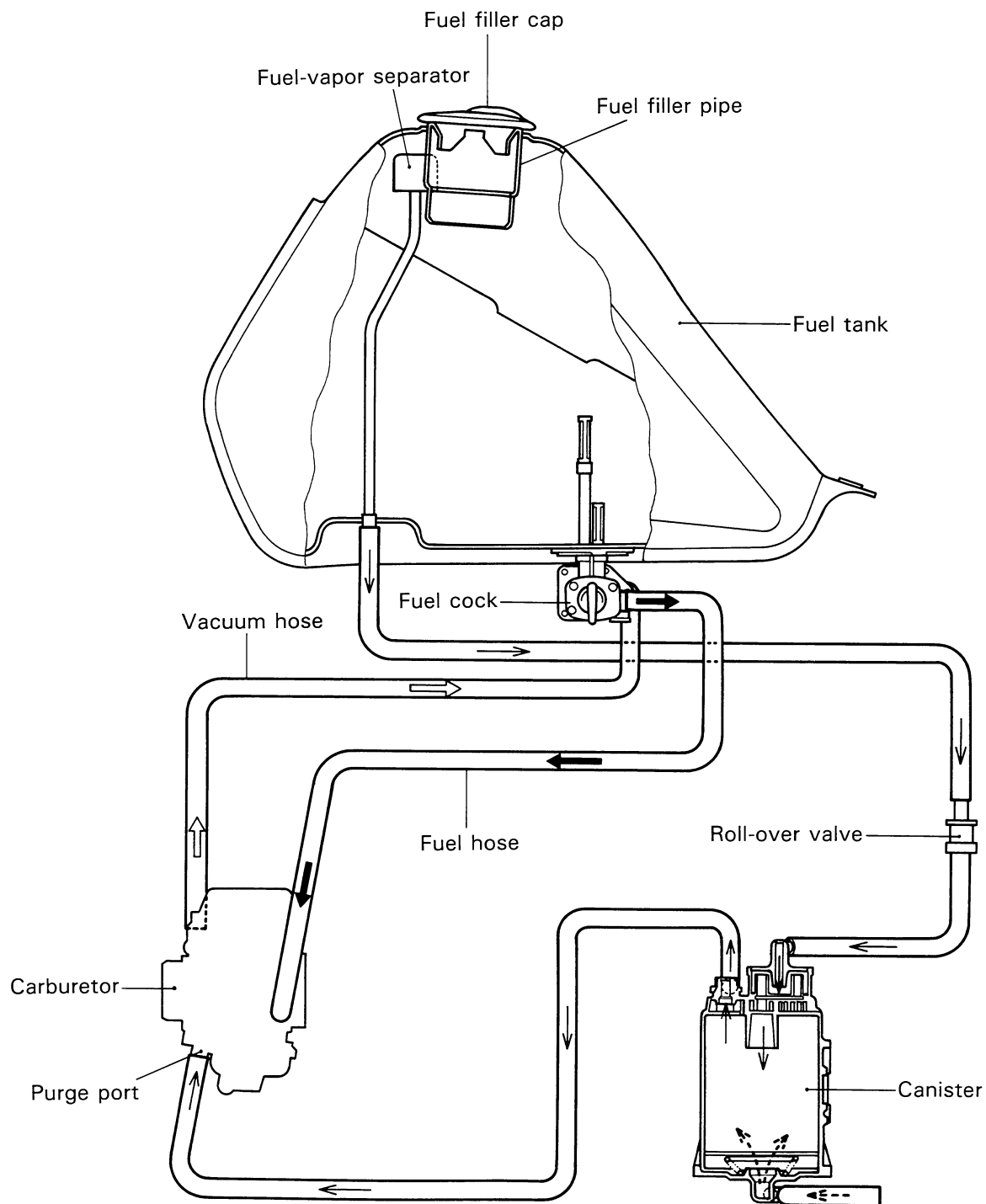
Conventional Figures Used on Standard Tolerance Jet Components	1 2 3 4 5 6 7 8 9 0
Emission Type Figures Used on Close Tolerance Jet Components	1 2 3 4 5 6 7 8 9 0

The carburetor specifications for the emission-controlled DR125SE are as follows.

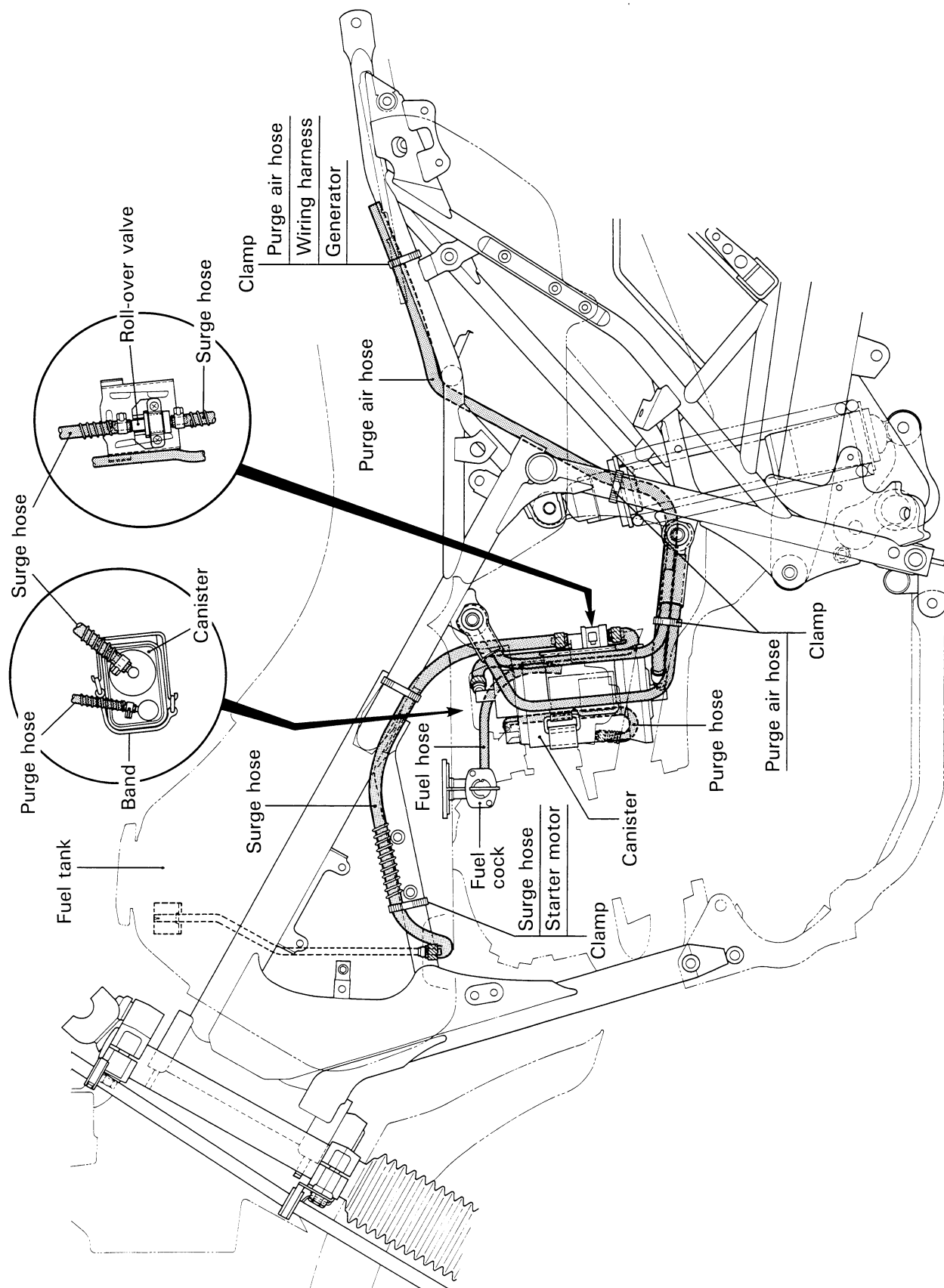
Carburetor I.D. No.	Main Jet	Needle Jet	Jet Needle	Pilot Jet	Pilot Screw
44AC (California model only)	#112.5	P-5	5D65	#40	PRE-SET DO NOT ADJUST
44AB					

The pilot screw is pre-set by the factory utilizing specialized testing and adjusting procedures. The pilot screw is not adjustable as the idle circuit is “sealed” after factory adjustment. Adjusting, interfering with, improper replacement, or resetting of any of the carburetor components may adversely affect carburetor performance and cause the motorcycle to exceed the exhaust emission level limits. If persons, who are unaware of these special carburetor servicing requirements tamper with the carburetors the Suzuki dealer should restore the carburetors to their original condition or if unable to effect repairs, contact the distributors representative for further technical information and assistance.

## EVAPORATIVE EMISSION CONTROL SYSTEM (California model only)



## CANISTER HOSE ROUTING (California model only)



# ***DR125SES/T ('95, '96-MODELS)***

## ***FOREWORD***

*This chapter describes service specifications and service data which differ from those of the DR125SER ('94-MODEL).*

**NOTE:**

*Please refer to the chapters 1 through 8 for details which are not given in this chapter.*

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# SPECIFICATIONS

## DIMENSIONS AND DRY MASS

Overall length.....	2 250 mm (88.9 in) ... E22 2 150 mm (84.6 in) ... Others
Overall width.....	805 mm (31.7 in)
Overall height.....	1 170 mm (46.1 in)
Wheelbase.....	1 385 mm (54.5 in)
Ground clearance.....	240 mm ( 9.4 in)
Seat height.....	800 mm (31.5 in)
Dry mass.....	114 kg (251 lbs)

## ENGINE

Type.....	Four stroke, air-cooled, OHC
Number of cylinder.....	1
Bore.....	57.0 mm (2.244 in)
Stroke.....	48.8 mm (1.921 in)
Piston displacement.....	124 cm <sup>3</sup> (7.6 cu. in)
Compression ratio.....	9.5: 1
Carburetor.....	BST31, single
Air cleaner.....	Polyurethane foam element
Starter system.....	Starter motor
Lubrication system.....	Wet sump

## TRANSMISSION

Clutch.....	Wet multi-plate type
Transmission.....	6-speed constant mesh
Gearshift pattern.....	1-down, 5-up
Primary reduction ratio.....	3.470 (59/17)
Gear ratios, Low.....	3.000 (33/11)
2nd.....	1.857 (26/14)
3rd.....	1.368 (26/19)
4th.....	1.095 (23/21)
5th.....	0.923 (24/26)
Top.....	0.833 (20/24)
Final reduction ratio.....	3.312 (53/16)
Drive chain.....	D.I.D 428HG, 134 links

## CHASSIS

Front suspension.....	Telescopic, coil spring, oil damped
Rear suspension.....	Link type, coil spring
Front suspension stroke.....	205 mm (8.1 in)
Rear wheel travel.....	200 mm (7.9 in)
Caster.....	61°
Trail.....	112 mm (4.4 in)
Steering angle.....	43°
Turning radius.....	2.3 m (7.5 ft)
Front brake.....	Disc brake
Rear brake.....	Internal expanding
Front tire size.....	70/100-21 44P
Rear tire size.....	90/90-18 51P

## ELECTRICAL

Ignition type.....	Electronic ignition (CDI)
Ignition timing.....	39° B.T.D.C. at 3 800 rpm
Spark plug.....	NGK DR8EA or NIPPONDENSO X24ESR-U
Battery.....	12V 21.6 kC (6 Ah)/10 HR
Fuse.....	20A
Headlight.....	12V 60/55W
Tail/Brake light.....	12V 5/21W
Turn signal light.....	12V 21W
Neutral indicator light.....	12V 3.4W
High beam indicator light.....	12V 1.7W
Turn signal indicator light.....	12V 3.4W

## CAPACITIES

Fuel tank, including reserve.....	12.5 L (3.3/2.8 US/Imp. gal) ... E33 13.0 L (3.4/2.9 US/Imp. gal) ... Others
Reserve.....	2.5 L (0.7/0.5 US/Imp. gal)
Engine oil, without filter change.....	850 ml (0.9/0.7 US/Imp. qt)
with filter change.....	950 ml (1.0/0.8 US/Imp. qt)

## SERVICE DATA

### VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	30 (1.2)	—
	EX.	26 (1.0)	—
Valve lift	IN.	7.5 (0.29)	—
	EX.	6.5 (0.25)	—
Valve clearance (when cold)	IN. & EX.	0.08–0.13 (0.003–0.005)	—
Valve guide to valve stem clearance	IN.	0.010–0.037 (0.0004–0.0015)	—
	EX.	0.030–0.057 (0.0012–0.0022)	—
Valve stem deflection	IN. & EX.	—	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500–5.512 (0.2165–0.2170)	—
Valve stem O.D.	IN.	5.475–5.490 (0.2146–0.2161)	—
	EX.	5.455–5.470 (0.2148–0.2154)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
Valve stem end length	IN. & EX.	—	2.6 (0.1)
Valve seat width	IN. & EX.	0.9–1.1 (0.04–0.05)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length (IN. & EX.)	INNER	—	36.0 (1.42)
	OUTER	—	39.3 (1.55)
Valve spring tension (IN. & EX.)	INNER	7.8–9.2 kg (17.2–20.3 lbs) at length 32.5 mm (1.28 in)	—
	OUTER	18.9–22.3 kg (41.7–49.2 lbs) at length 36.0 mm (1.42 in)	—

**CAMSHAFT + CYLINDER HEAD**

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	34.178–34.218 (1.3456–1.3472)	33.880 (1.3339)
	EX.	33.327–33.367 (1.3121–1.3137)	33.030 (1.3004)
Camshaft journal oil clearance	IN. & EX.	0.032–0.066 (0.0013–0.0026)	0.150 (0.0059)
Camshaft journal holder I.D.	IN. & EX.	22.012–22.025 (0.8666–0.8671)	—
Camshaft journal O.D.	IN. & EX.	21.959–21.980 (0.8645–0.8654)	—
Camshaft runout	IN. & EX.	—	0.10 (0.004)
Rocker arm I.D.	IN. & EX.	12.000–12.018 (0.4724–0.4731)	—
Rocker arm shaft O.D.	IN. & EX.	11.977–11.995 (0.4715–0.4722)	—
Cylinder head distortion	—		0.05 (0.002)
Cylinder head cover distortion	—		0.05 (0.002)

**CYLINDER + PISTON + PISTON RING**

Unit: mm (in)

ITEM	STANDARD		LIMIT
Compression pressure	1 400 kPa (14 kg/cm <sup>2</sup> ) (199 psi)		980 kPa (9.8 kg/cm <sup>2</sup> ) (139 psi)
Piston to cylinder clearance	0.020–0.030 (0.0008–0.0012)		0.120 (0.0047)
Cylinder bore	57.000–57.015 (2.2441–2.2447)		57.110 (2.2484)
Piston diam.	56.975–56.990 (2.2431–2.2437) Measure at 12 mm (0.47 in) from the skirt end.		56.880 (2.2394)
Cylinder distortion	—		0.05 (0.002)
Piston ring free end gap	1st	R Approx. 7.0 (0.28)	5.6 (0.22)
	2nd	R Approx. 7.5 (0.29)	6.0 (0.24)
Piston ring end gap	1st	0.10–0.25 (0.004–0.010)	0.5 (0.02)
	2nd	0.10–0.25 (0.004–0.010)	0.5 (0.02)
Piston ring to groove clearance	1st	—	0.18 (0.007)
	2nd	—	0.15 (0.006)

ITEM	STANDARD		LIMIT
Piston ring groove width	1st	1.21–1.23 (0.047–0.048)	—
	2nd	1.21–1.23 (0.047–0.048)	—
	Oil	2.51–2.53 (0.099–0.100)	—
Piston ring thickness	1st	1.175–1.190 (0.046–0.047)	—
	2nd	1.170–1.190 (0.046–0.047)	—
Piston pin bore	14.002–14.008 (0.5513–0.5515)		14.030 (0.5524)
Piston pin O.D.	13.994–14.002 (0.5509–0.5513)		13.980 (0.5504)

**CONROD + CRANKSHAFT**

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	14.004–14.012 (0.5513–0.5517)	14.040 (0.5528)
Conrod deflection	—	3.0 (0.12)
Conrod big end side clearance	0.10–0.45 (0.004–0.018)	1.00 (0.039)
Conrod big end width	15.95–16.00 (0.628–0.630)	—
Crank web to web width	53.0±0.1 (2.09±0.004)	—
Crankshaft runout	—	0.08 (0.003)

**OIL PUMP**

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	2.000 (30/15)	—
Oil pressure (at 60°C, 140°F)	Above 15 kPa (0.15 kg/cm <sup>2</sup> , 2.1 psi) Below 35 kPa (0.35 kg/cm <sup>2</sup> , 4.9 psi) at 3 000 r/min.	—

**CLUTCH**

Unit: mm (in)

ITEM	STANDARD	LIMIT
Clutch lever play	10–15 (0.4–0.6)	—
Clutch release screw	¼ turn back	—
Drive plate thickness	2.95–3.15 (0.116–0.124)	2.6 (0.10)
Driven plate distortion	—	0.10 (0.004)
Clutch spring free length	—	31.0 (1.22)



**TRANSMISSION + DRIVE CHAIN**

Unit: mm (in) Except ratio

ITEM		STANDARD		LIMIT
Primary reduction ratio		3.470 (59/17)		—
Final reduction ratio		3.312 (53/16)		—
Gear ratios	Low	3.000 (33/11)		—
	2nd	1.857 (26/14)		—
	3rd	1.368 (26/19)		—
	4th	1.095 (23/21)		—
	5th	0.923 (24/26)		—
	Top	0.833 (20/24)		—
Shift fork to groove clearance		0.10–0.30 (0.004–0.012)		—
Shift fork groove width	No.1	5.0–5.1 (0.20–0.21)		—
	No.2	5.5–5.6 (0.22–0.23)		—
Shift fork thickness	No.1	4.8–4.9 (0.18–0.19)		—
	No.2	5.3–5.4 (0.20–0.21)		—
Countershaft length (Low to 2nd)		88.0 ± $\begin{smallmatrix} 0.1 \\ 0 \end{smallmatrix}$ (3.46 ± $\begin{smallmatrix} 0.004 \\ 0 \end{smallmatrix}$ )		—
Drive chain	Type	DID 428HG RK428HM		—
	Links	134		—
	20-pitch length	—		259.0 (10.20)
Drive chain slack		25–35 (1.0–1.4)		—
Gearshift lever height		5 (0.2)		—

**CARBURETOR**

ITEM	SPECIFICATION		
	E-01,04,34	E-03,28	E-33
Carburetor type	MIKUNI BST31SS	←	←
Bore size	31 mm	←	←
I.D. No	44AA	44AB	44AC
Idle r/min.	1400 ± 100 r/min.	←	←
Float height	13.0 ± 1.0 mm (0.51 ± 0.04 in)	←	←
Main jet (M.J.)	# 110	# 112.5	←
Main air jet (M.A.J.)	0.7 mm	←	←
Jet needle (J.N.)	5D26–3rd	5D65	←
Needle jet (N.J.)	P–5	P–5	←
Throttle valve (Th.V.)	# 125	←	←
Pilot jet (P.J.)	# 40	# 40	←
Starter jet (G.S.)	# 22.5	←	←
Pilot screw (P.S.)	PRE-SET (1-7/8 turns out)	PRE-SET	←
Throttle cable play	3–6 mm (0.1–0.2 in)	←	←

**ELECTRICAL**

Unit: mm (in)

ITEM		SPECIFICATION	NOTE
Ignition timing		13° B.T.D.C. Below at 1 950 r/min. and 39° B.T.D.C. Above at 3 800 r/min.	
Spark plug	Type	ND: W24ESR-U NGK: DR8EA	
	Gap	0.6–0.7 (0.024–0.028)	
Spark performance		Over 8 (0.3) at 1 atm.	
Signal coil resistance		100–140 $\Omega$	G—BI
Ignition coil resistance	Primary	2–6 $\Omega$	Terminal— Terminal
	Secondary	20–30 k $\Omega$	Plug cap— Terminal
Generator coil resistance		Charging 0.1–1.5 $\Omega$	—
Generator no-load voltage		More than 70V (AC) at 5 000 r/min.	
Regulated voltage		13.0–16.0V at 5 000 r/min.	
Starter relay resistance		2–6 $\Omega$	
Battery	Type designation	YTX7L-BS	
	Capacity	12V 21.6 kC (6 Ah)/10 HR	
	Standard electrolyte S.G.	1.32 at 20°C (68°F)	
Fuse size		20A	

**WATTAGE**

Unit: W

ITEM		SPECIFICATION	
		E-01,04,22,34	E-03,28,33
Headlight	HI	60	←
	LO	55	←
Position light		4	
Tail/Brake light		5/21	←
Turn signal light		21	←
Speedometer light		3.4	←
Turn signal indicator light		3.4	←
High beam indicator light		1.7	←
Neutral indicator light		3.4	←

**BRAKE + WHEEL**

Unit: mm (in)

ITEM	STANDARD		LIMIT
Rear brake pedal free travel	20–30 (0.8–1.2)		—
Rear brake pedal height	10 (0.4)		—
Brake drum I.D.	Rear	—	130.7 (5.15)
Brake lining thickness	Rear	—	1.5 (0.06)
Brake disc thickness	Front	$3.5 \pm 0.2$ ( $0.138 \pm 0.008$ )	3.0 (0.12)
Brake disc runout	Front	—	0.30 (0.012)
Master cylinder bore	Front	12.700–12.743 (0.5000–0.5017)	—
Master cylinder piston diam.	Front	12.657–12.684 (0.4983–0.4994)	—
Brake caliper cylinder bore	Front	33.960–34.010 (1.3370–1.3390)	—
Brake caliper piston diam.	Front	33.878–33.928 (1.3338–1.3357)	—
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	70/100-21 44P	—
	Rear	90/90-18 51P	—
Tire tread depth	Front	—	3.0 (0.12)
	Rear	—	3.0 (0.12)

**SUSPENSION**

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	205 (8.1)	—	
Front fork spring free length	—	561 (22.1)	
Front fork oil level	179.5 (7.07)	—	
Rear shock absorber spring pre-set length	231 (9.1)	—	
Rear wheel travel	200 (7.9)	—	
Swingarm pivot shaft runout	—	0.6 (0.02)	

## 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	150	1.50	22	150	1.50	22
REAR	175	1.75	25	225	2.25	33

## FUEL + OIL

ITEM	SPECIFICATION		NOTE
Fuel type	Use only unleaded gasoline of at least 87 pump octane ( $\frac{R+M}{2}$ ) or 91 octane or higher rated by the research method. Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.		E-03,33
	Use only unleaded gasoline of at least 87 pump octane ( $\frac{R+M}{2}$ method) or 91 octane or higher rated by the Research Method.		E-28
	Gasoline used should be graded 85-95 octane or higher. An unleaded gasoline is recommended.		The others
Fuel tank including reserve	12.5 L (3.3/2.8 US/Imp gal)		E-33
	13.0 L (3.4/2.9 US/Imp gal)		The others
	2.5 L (0.7/0.5 US/Imp gal)		
Engine oil type	SAE 10W/40, API SE or SF		
Engine oil capacity	Change	850 ml (0.90/0.75 US/Imp qt)	
	Filter change	950 ml (1.00/0.84 US/Imp qt)	
	Overhaul	1 300 ml (1.37/1.14 US/Imp qt)	
Front fork oil type	Fork oil # 10		
Front fork oil capacity (each leg)	309 ml (10.4/10.9 US/Imp oz)		
Brake fluid type	DOT4		

## CARBURETOR (For '94, '95 and '96 models)

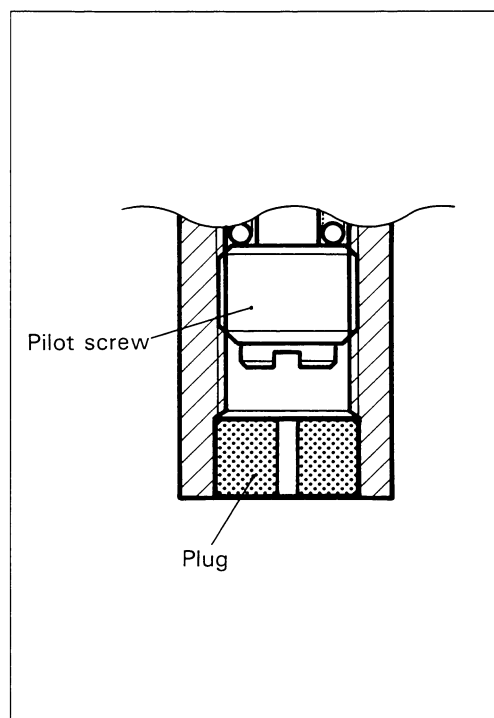
### PILOT SCREW REMOVAL AND INSTALLATION

- Remove the plug by carefully punching a hole in it using an awl or suitable tool.
- Before removing the pilot screw, determine the setting by slowly turning it clockwise and count the number of turns required to lightly seat the screw. Turn the screw counterclockwise to remove it.

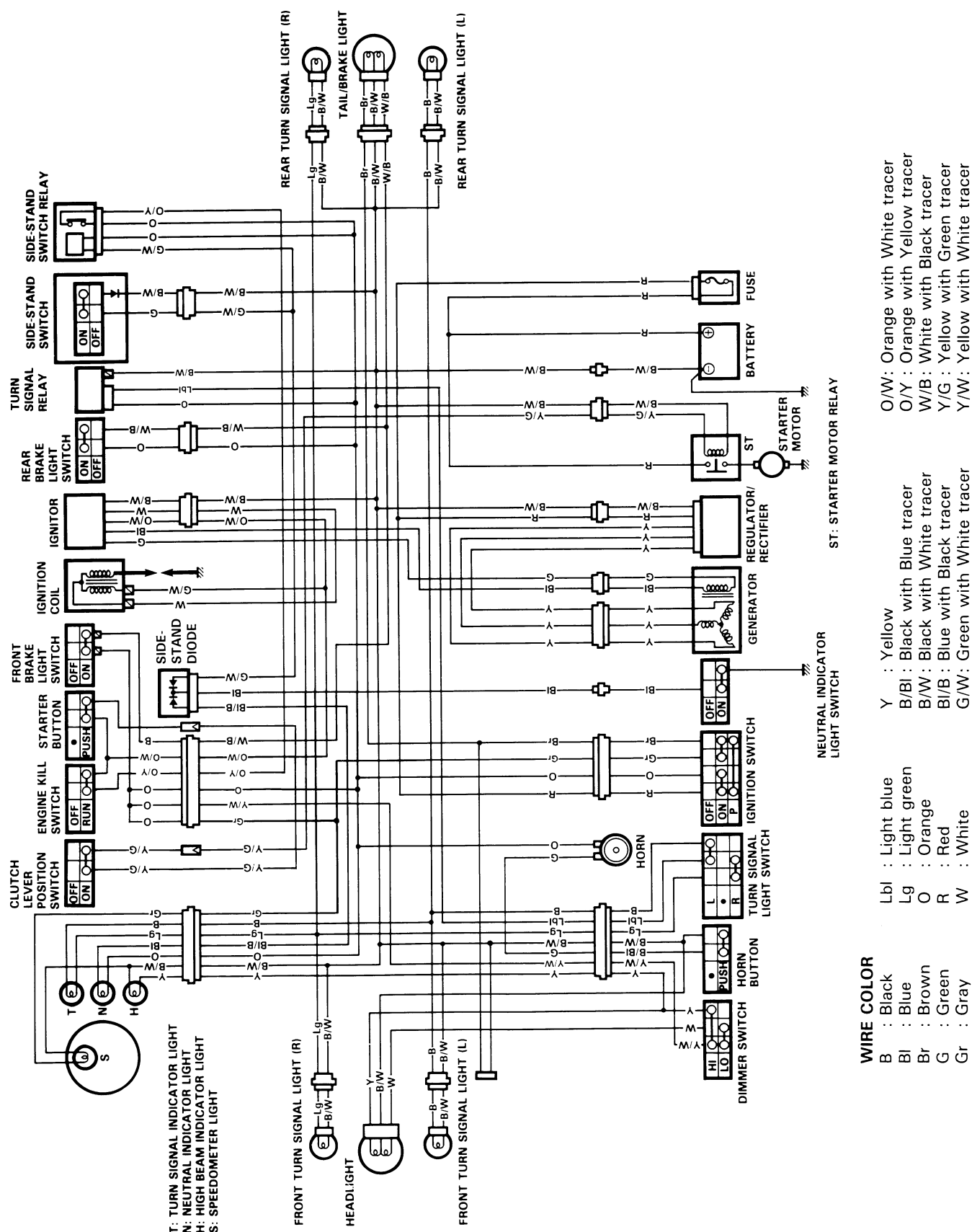
**NOTE:**

*This counted number is important when reassembling pilot screw to original position.*

- When installing the pilot screw, turn it in fully but not tightly. From that position turn it out the same number as counted during removal.
- Install the new plug in the pilot screw hole.



## WIRING DIAGRAM FOR USA '96 MODEL



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