

FOREWORD

The SUZUKI GS250T has been developed as a companion motorcycle to the GS models. It features highly advanced design concepts including a forged one piece crankshaft assembly, a full-transistorized ignition system and a new highly efficient combustion system (TSCC). The GS250T provides excellent performance, precise control and handling plus outstanding riding comfort.

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

IMPORTANT

All GS model SUZUKI motorcycles that were manufactured after January 1, 1978 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 the GS250T 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.

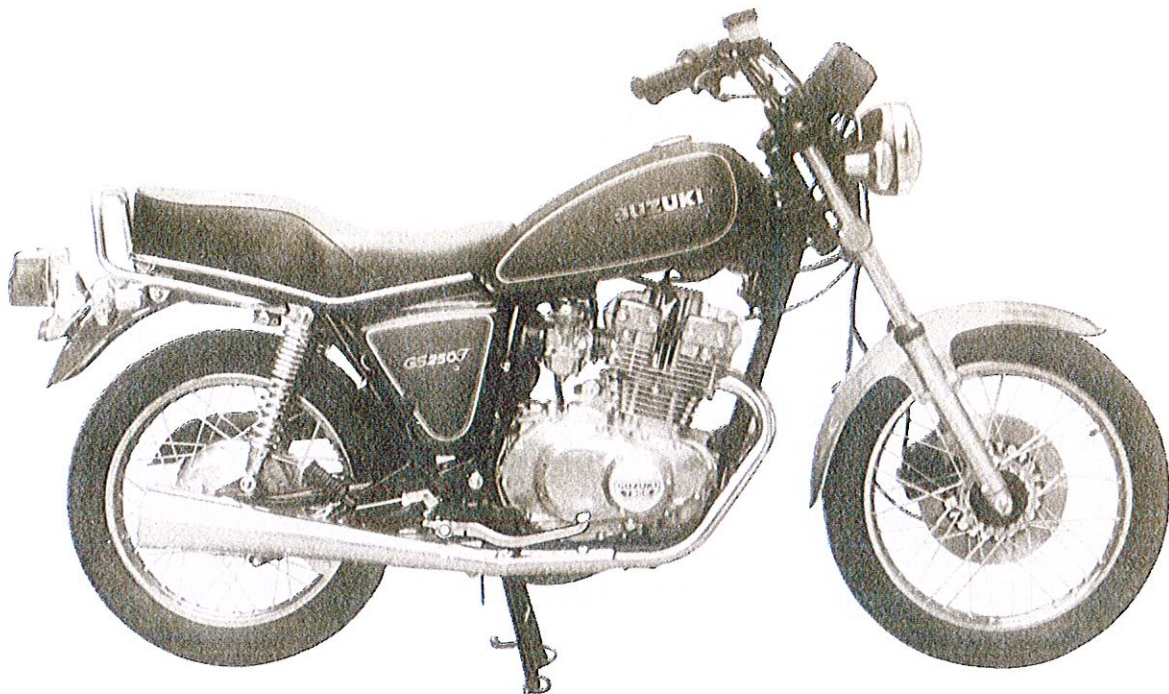
Further information concerning the EPA emission regulations and U.S. SUZUKI'S emission control program can be found in the U.S. SUZUKI EMISSION CONTROL PROGRAM MANUAL/SERVICE BULLETIN.

SUZUKI MOTOR CO., LTD.

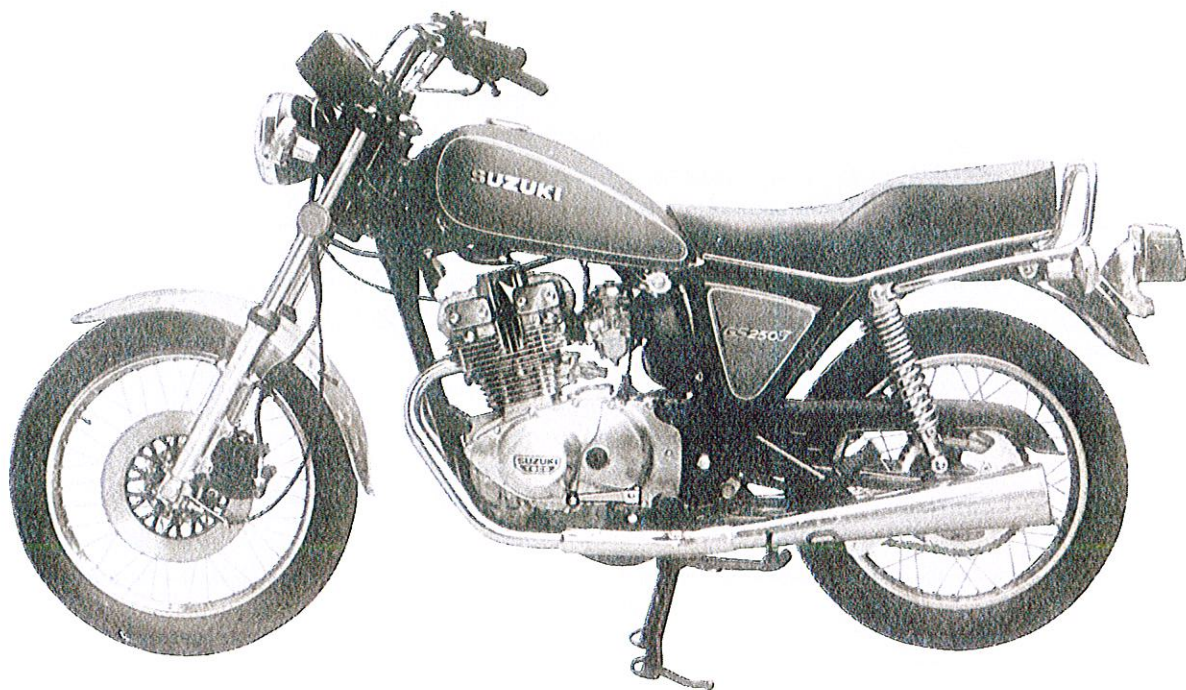
*Service Department
Overseas Operations Division*

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VIEW OF SUZUKI GS250T



RIGHT SIDE



LEFT SIDE

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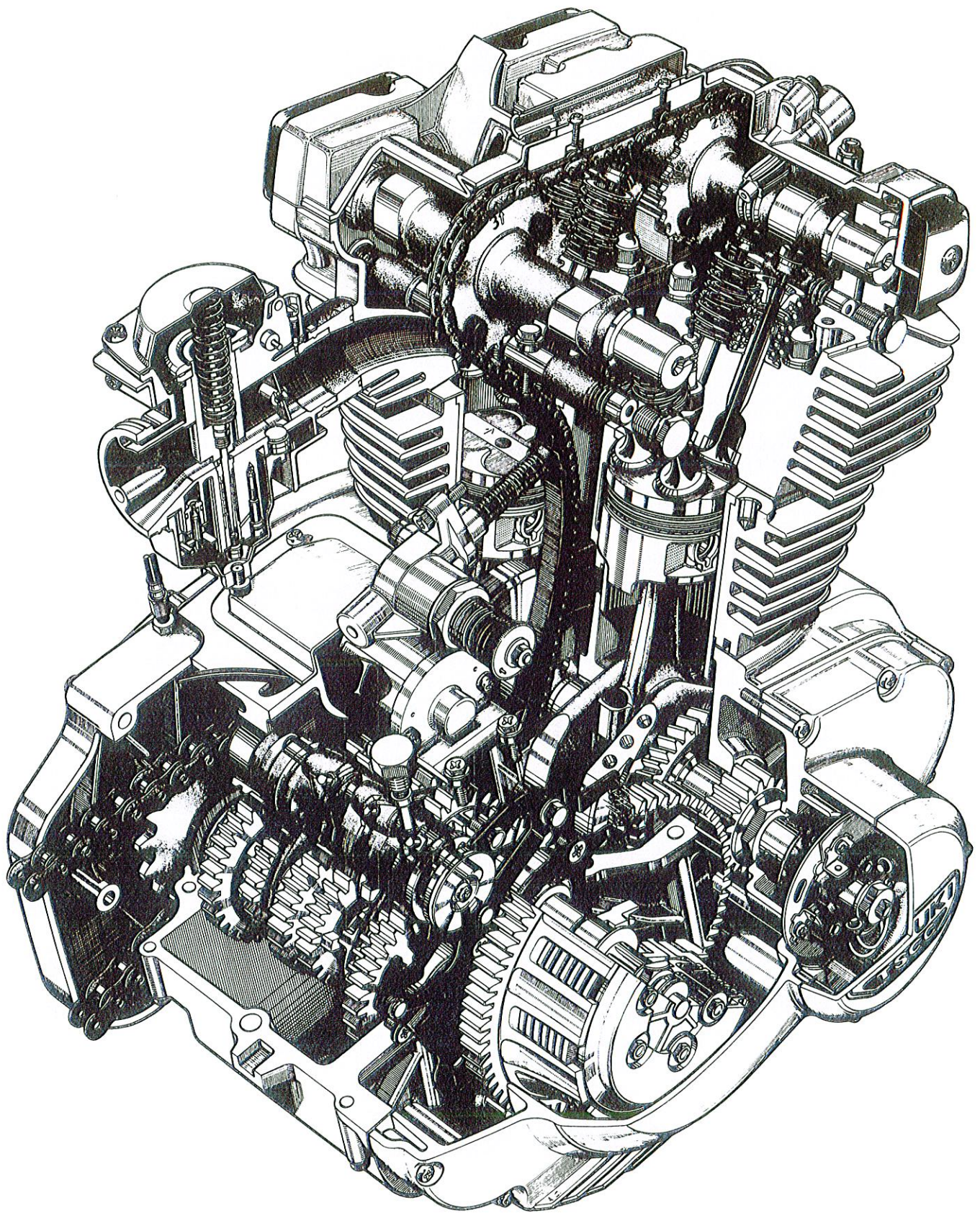
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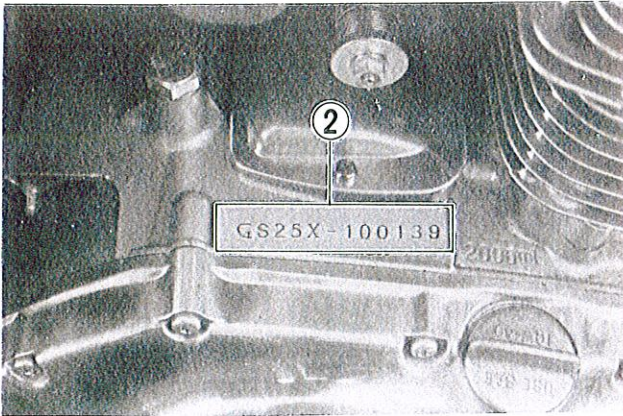
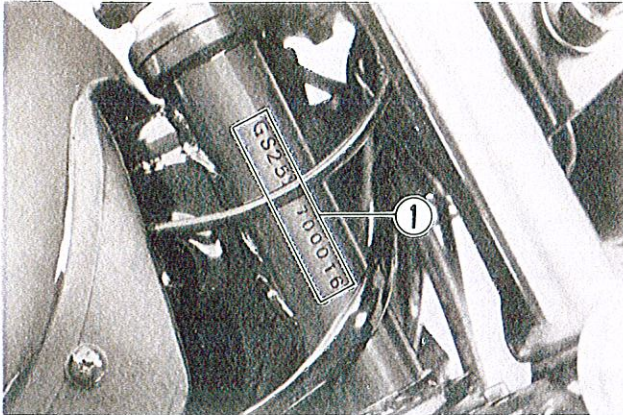
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SERIAL NUMBER LOCATIONS

The frame number ① is stamped on the steering head tube and steering head I.D. plate. The engine serial number ② is located on the right side of the crankcase. These numbers are required especially for registering the machine and ordering spare parts.



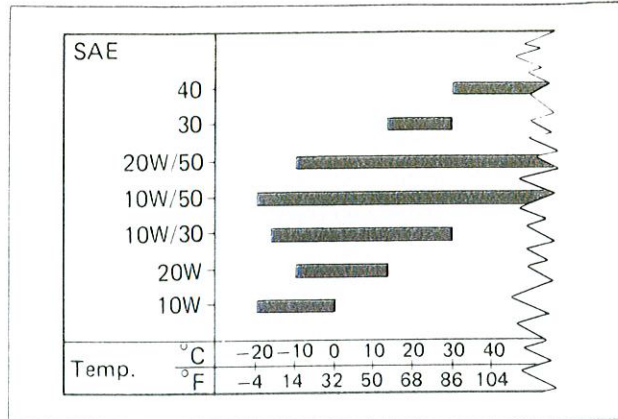
FUEL AND OIL RECOMMENDATIONS

FUEL

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

ENGINE OIL

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



BRAKE FLUID

Specification and classification:	DOT3 or DOT4
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WARNING:

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

FRONT FORK OIL

Use front fork oil #15.

BREAKING-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:

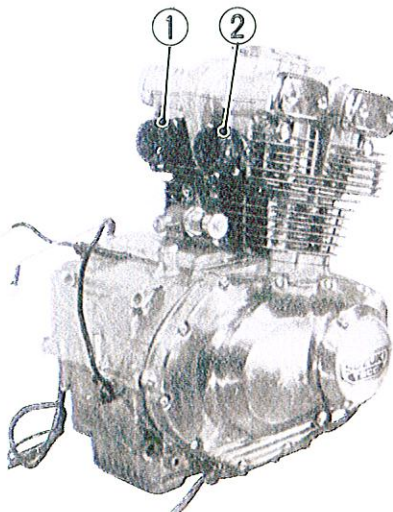
- Keep to these breaking-in engine speed limits:

Initial 500 mile	Below 4,000 r/min
Up to 1 000 mile	Below 6,000 r/min
Over 1 000 mile	Below 10,000 r/min

- Upon reaching an odometer reading of 1 000 miles you can subject the motorcycle to full throttle operation. However, do not exceed 10,000 r/min at any time.
- Do not maintain constant engine speed for an extended time period during any portion of the break-in. Try to vary the throttle position.

CYLINDER IDENTIFICATION

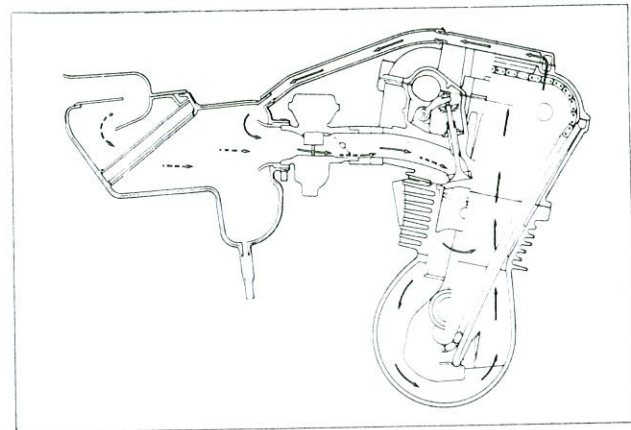
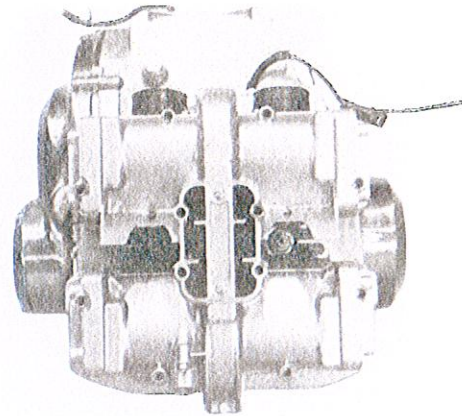
The two cylinders are identified as LEFT-HAND CYLINDER ① and RIGHT-HAND CYLINDER ②.



SPECIAL FEATURES

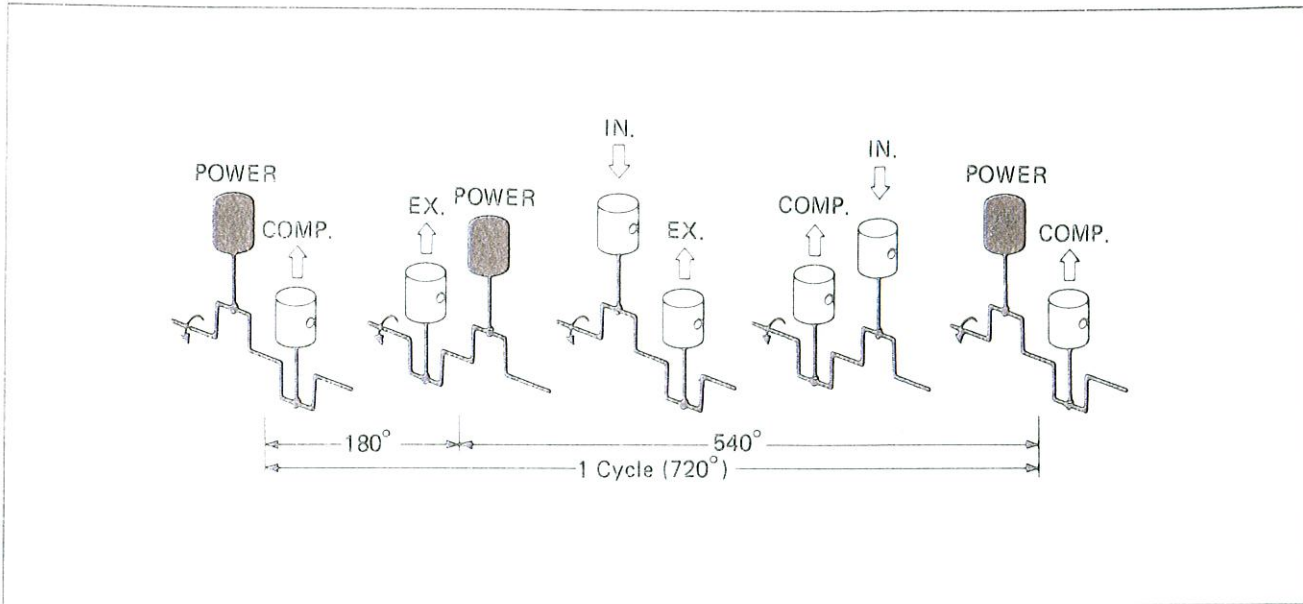
BLOWBY GAS RECYCLING

Blowby gases in the crankcase are constantly drawn into the chain chamber provided in the middle section of the cylinder block. The top section of this chamber is connected with the air cleaner assembly through a rubber tube. In the cleaner, the gases merge with incoming air and thus are recycled to the engine through the normal intake system.



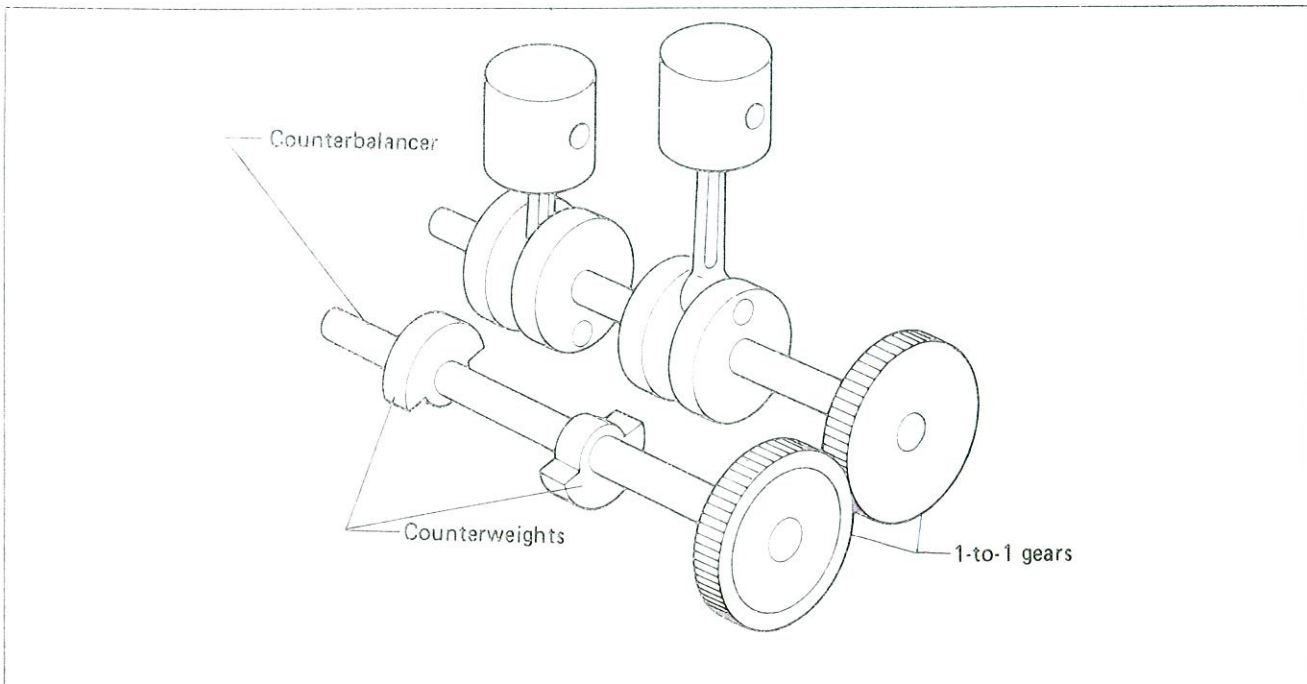
COUNTER BALANCER ENGINE CYCLE

During one engine cycle, power stroke occurs at unequal intervals, that is, intervals of 180° and 540° in terms of crank angle.



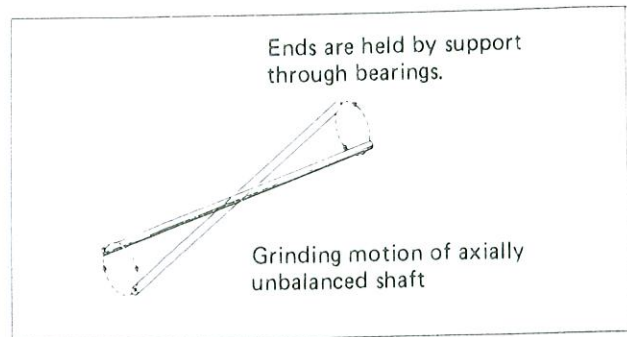
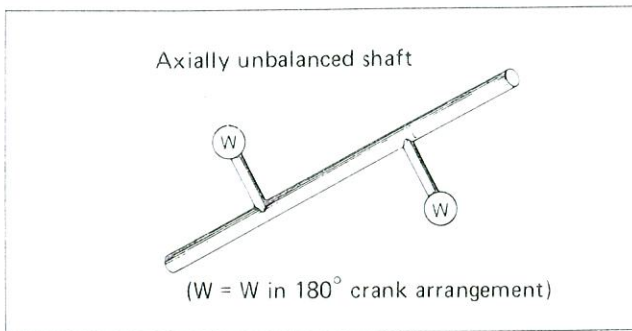
CRANKSHAFT COUNTERBALANCER

One of the distinct features of the GS250T engine is the counterbalancer; it is provided for the purpose of minimizing engine vibration.



This counterbalancer operates on principles quite different from those of conventional counterbalancing devices often employed in reciprocating engines. For one to understand its operation, one must recall several basic facts of dynamics:

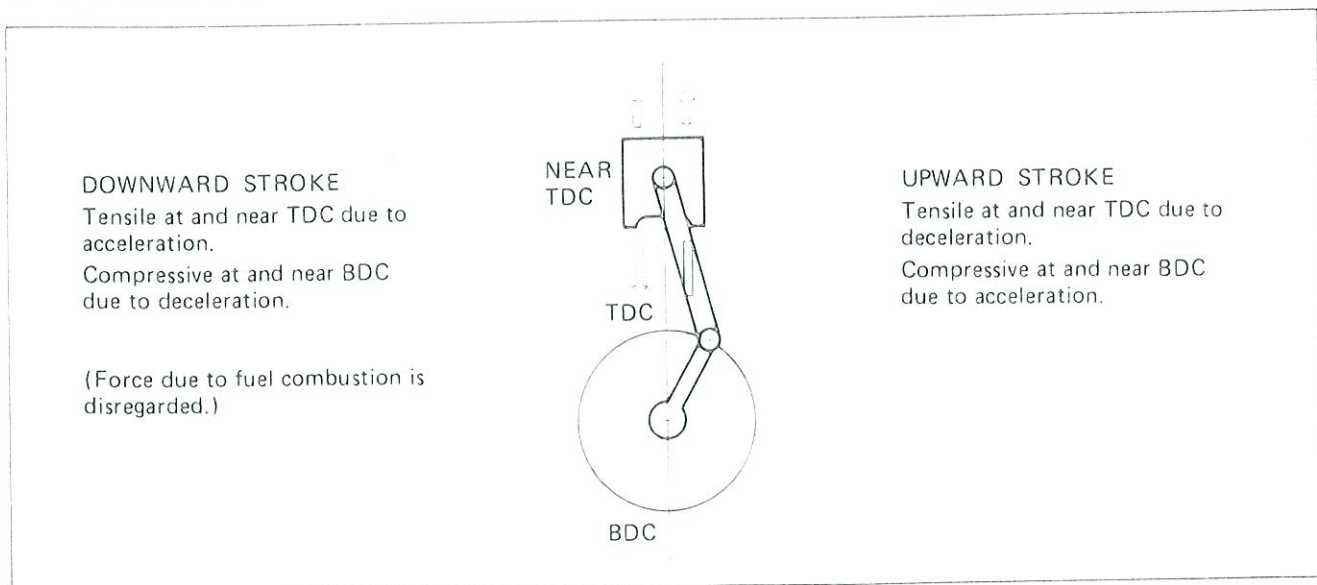
Consider a single rotating shaft having two equal weights attached to it. The weights are 180° apart as is the case with the running parts – including the crankshaft – of the GS250T engine. As the shaft rotates, its ends, supported by bearings, tend to exhibit a grinding motion because of the two centrifugal forces.



The mass of a crank pin plus its connecting-rod big end, crank arms and others may be regarded similar to such a weight.

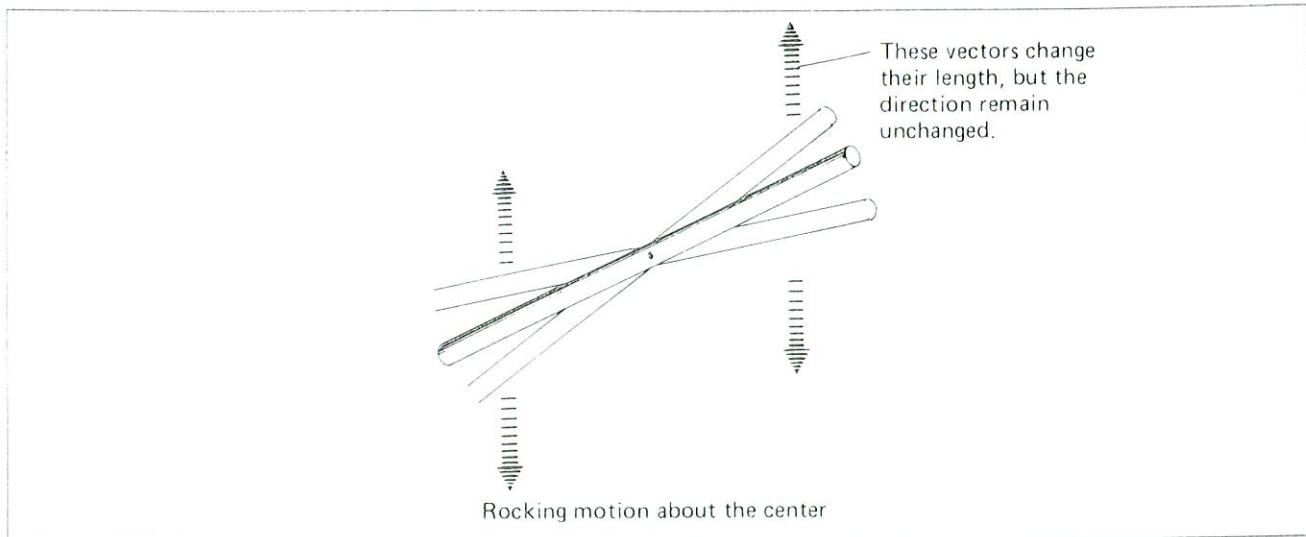
The centrifugal force of such a mass (or weight) can be cancelled off by attaching a counterweight 180° opposite to the crankpin. This is done in practically every engine. In this sense, the crankshaft of the GS250T is properly balanced.

There is another kind of vibration-inducing force which the running parts of a cylinder exert to compress and tension, alternately, the connecting rod and thus tend to vibrate the engine as a whole in vertical direction. It is the reciprocating component of the whole mass (inclusive, of course, of the piston, connecting-rod small end and piston rings) that produce this force occurring cyclically in upward and downward directions.



Let a vector represent this vertical force, which increases and decreases alternately as the piston moves up and down between TDC and BDC. (Remember, the length of a vector signifies the magnitude of the force.)

Another method is necessary to counter and kill off this force – INERTIA FORCE. If not cancelled off, then the crankshaft system of, say, the GS250T would cause the crankshaft to tend to rock up and down, and this would be felt by the rider as vertical vibrations.

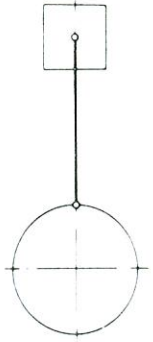
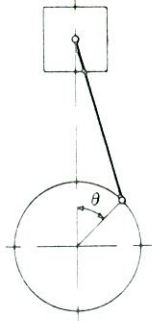
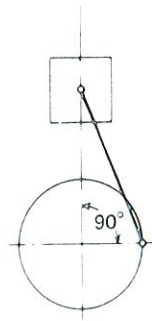
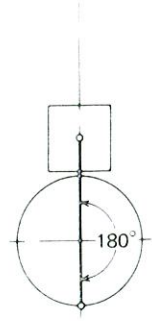
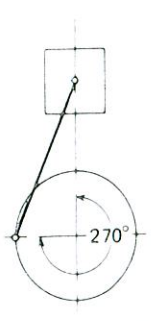
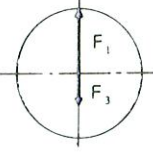

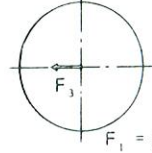
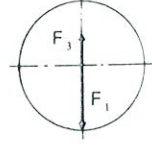
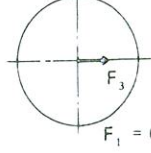

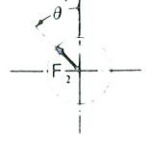
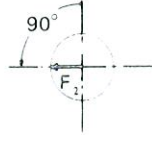
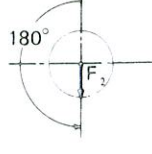
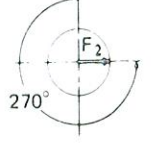


In the case of the GS250T crankshaft system, which is balanced as far as centrifugal forces are concerned, a clever method is used to counter and substantially cancel off the effect of the inertia force. Here's the method:

An additional counterweight is provided for each crankpin, at a position 180° opposite, on the crankshaft to create, intentionally, a centrifugal force. Thus, two extra centrifugal forces occur when the crankshaft rotates in the GS250T engine: their directions are opposite to each other.

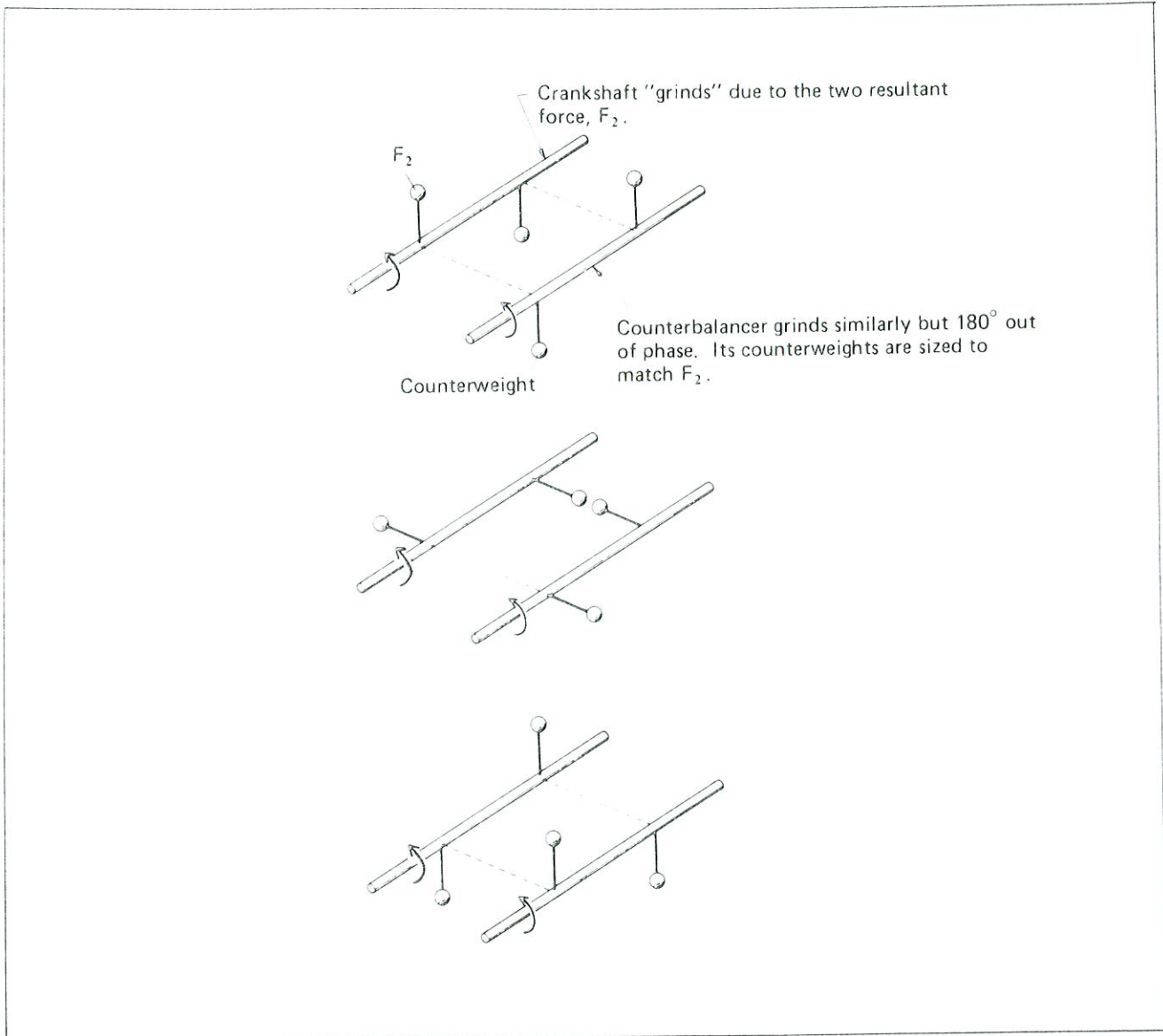
Consider this extra centrifugal force for one cylinder. The extra force (existing at all times when the crankshaft is running) and the up-and-down inertia force add to each other and produce a resultant force.

The resultant force, like a centrifugal force, exists at all times and revolves around crankshaft axis. Two very important things must be noted in this scheme employed in this engine: 1) the additional weight, mentioned above, is so sized and radially located that the resultant centrifugal (which is the vector sum of the extra centrifugal force and the varying inertia force) is practically constant in magnitude, and 2) what is equally important, the resultant centrifugal force revolves in the direction opposite to that of crankshaft! This will be seen in the phased diagram shown in next page.

<p>Crank angle</p>					
<p>F_1 = inertia force F_3 = extra centrifugal force</p>					
<p>$F_1 + F_3 = F_2$, resultant centrifugal force</p>					

Since the resultant centrifugal force embodies the extra centrifugal force and inertia force at every crank angle, it is obvious that canceling off the resultant force cancels off the two component forces. This canceling is accomplished indirectly in the GS250T by providing a separate unbalanced shaft – the COUNTERBALANCER.

Consider the GS250T crankshaft with two resultant centrifugal forces equal in magnitude and 180° apart. With these forces, the crankshaft tends to "grind" and cause the engine to vibrate in a grinding manner. Now, the counterbalancer is sized and shaped to behave, dynamically, as a mirror image of the crankshaft and tend to vibrate the engine in a similar grinding manner 180° out of phase with that of the crankshaft. This is illustrated in three phases schematically:



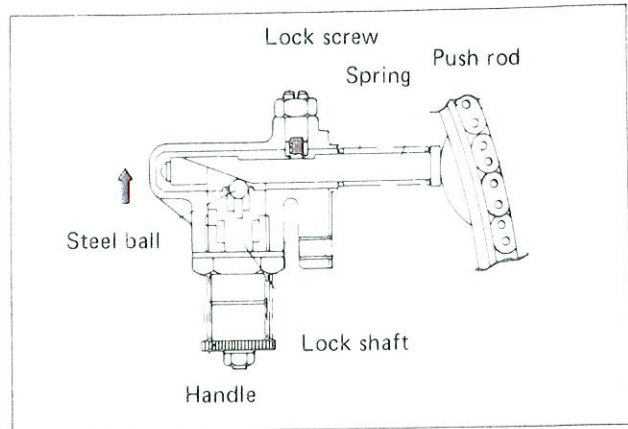
The foregoing explanation is a simplified one and, for sake of brevity, disregards some essentials of dynamics such as revolving speed (on which centrifugal force depends for its magnitude), the breakdown of inertia force into primary force and secondary force, etc. Let it suffice here to add that the crankshaft counterbalancer built into the GS250T engine serves to minimize, not to eliminate, the engine vibration due to mass imbalance in a crankshaft system by intentionally creating special centrifugal forces and by counteracting to the effect (grinding tendency of the engine) of these forces.

CAMSHAFT DRIVE CHAIN TENSIONER

The chain tensioner used in the Model GS250T is of self-adjusting type in that it adjusts itself to apply a constant tensioning force to the chain by compensating for the stretch of the chain.

PUSH ROD AND LOCK SCREW

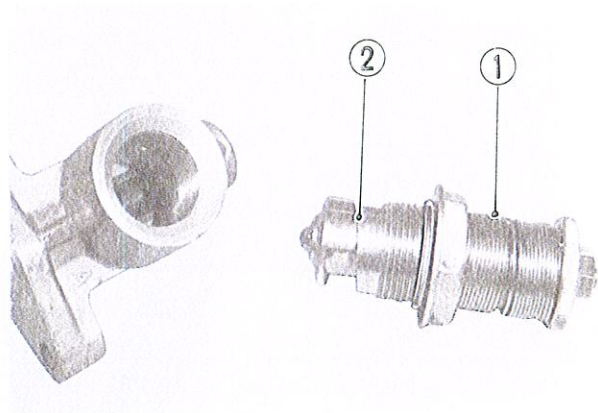
Lock screw is for locking push rod when removing or installing the tensioner, it is normally held away from push rod to allow it to slide toward the chain. Push rod is urged by coil spring toward chain to keep the chain in proper tension. As the chain in service stretches progressively, the push rod shifts to keep on exerting the tensioning force, which remains practically unchanged.



LOCK SHAFT

In operation, the running chain shakes more or less, tending to allow the spring-urged push rod to move in and out. This tendency is countered by preventing push rod from backing away by means of steel ball and lock shaft.

Steel ball bears against the sloped face of push rod. Lock shaft is preloaded with spring ① and keeps ball in contact with push rod by the action of this spring and the tapered contact ② between lock shaft body and shaft. Thus, ball is capable of moving forward (in the direction of the arrow) but not backward.



TSCC (TWIN SWIRL COMBUSTION CHAMBER)

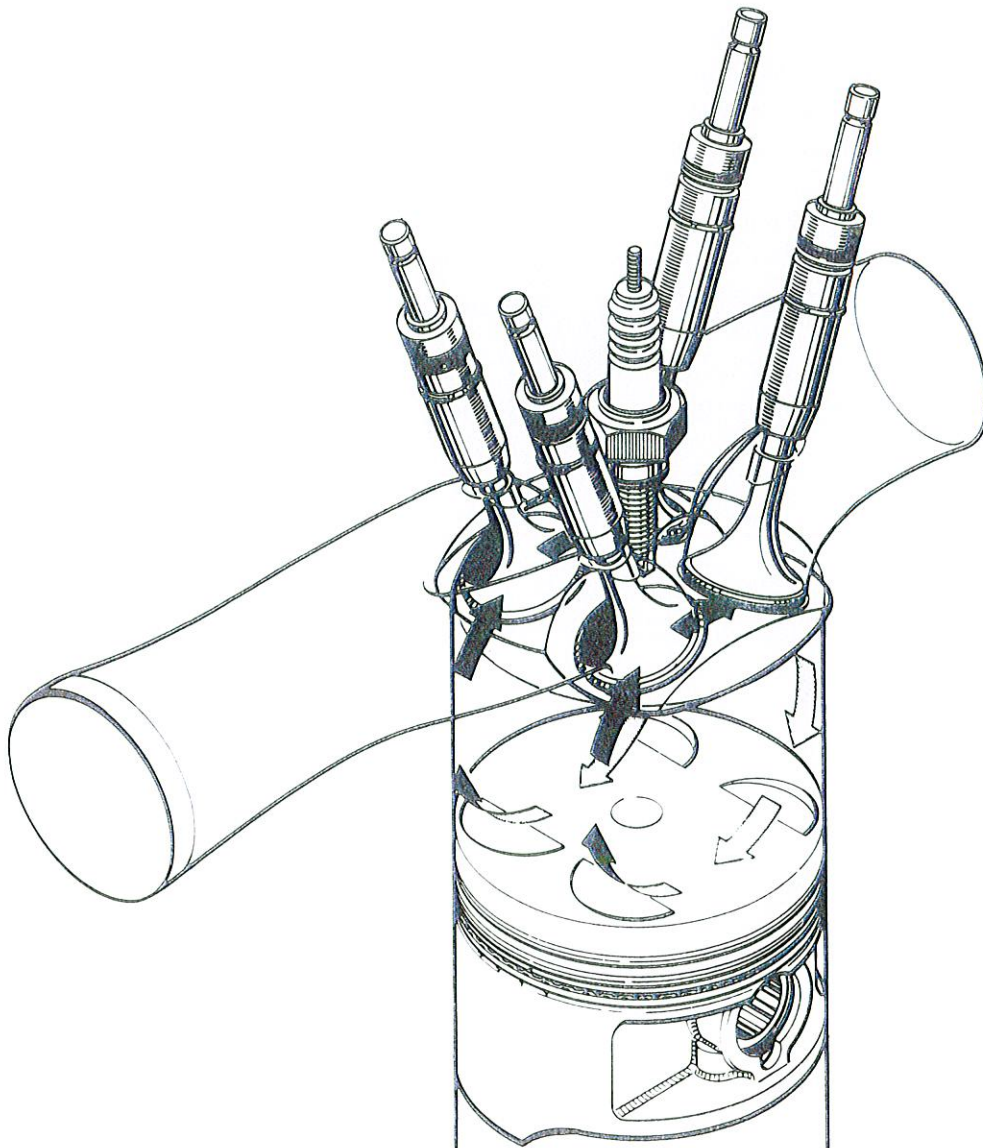
SUZUKI has introduced a new breed of 4-valves-per-cylinder high-performance 4-stroke engines--the TSCC series. TSCC describes the heart of the engine, the Twin Swirl Combustion Chamber.

What the TSCC engine series does better than conventional 4-stroke engines, either 2-valve or 4-valve, is to improve on the two major factors which affect engine performance, charge burning efficiency and intake charging efficiency.

First, charge burning efficiency. The TSCC* system consists of a subtle, yet unique shape machined into the head. Each of the two intake valves is set into adjoining semi-hemispherical depressions in the head. During the intake stroke these depressions channel the incoming fuel/air mixture to form two separate high-speed swirls.

During the compression stroke the squish areas machined in the front and the rear of the cylinder head's combustion chamber accelerate the speed of the swirls. Thus, when the spark plug ignites the mixture, the flame spreads rapidly and completes the combustion more quickly.

To further aid burning efficiency, the spark plug is centrally located, the ideal location. This results in the shortest possible path for the flame to travel.



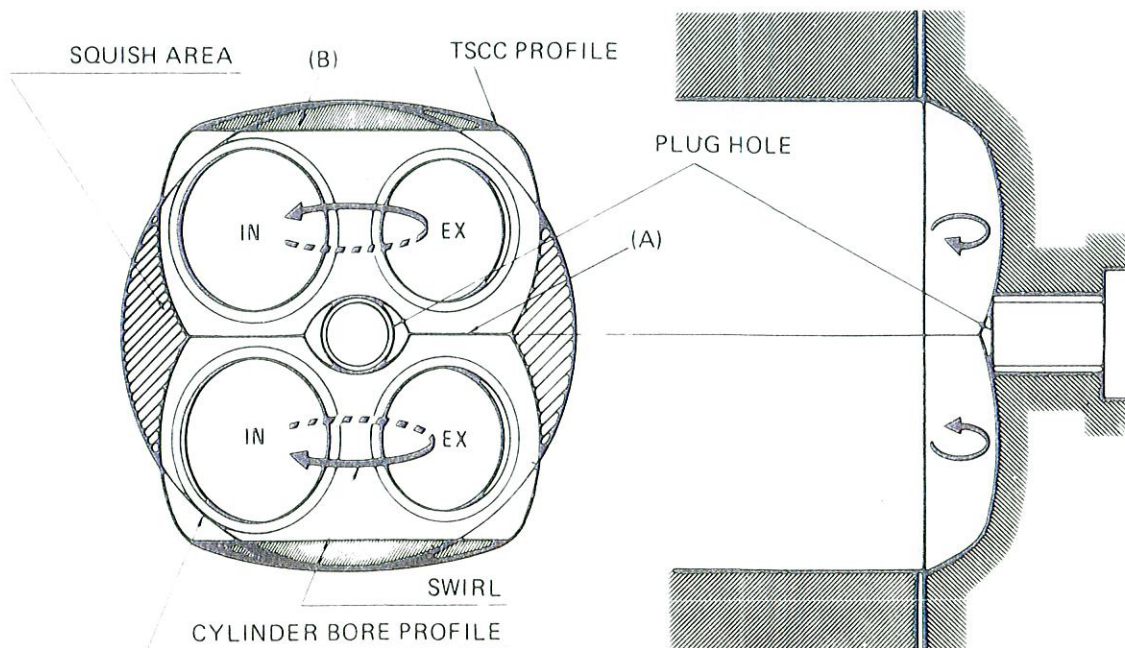
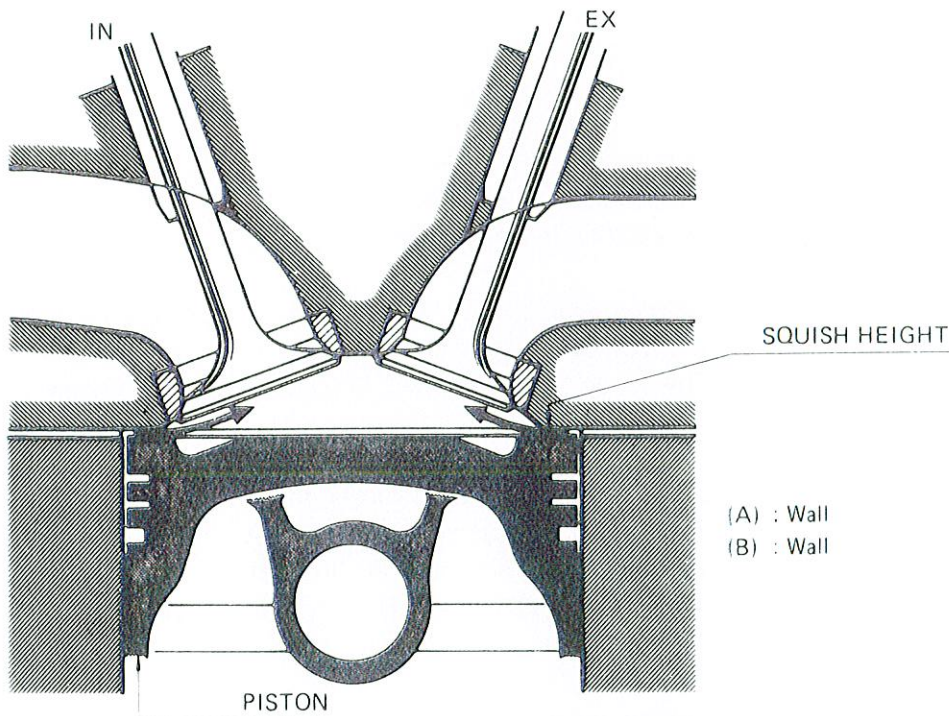
* U.S. PATENT NO. 3633577

The quick completion of burning results in more energy being developed while the piston is in position to transmit maximum power to the crankshaft.

High burning efficiency results in more power, improved throttle response at all rpm's, more complete combustion of the air/fuel mixture (cleaner combustion) and less chance of detonation.

Second, charging efficiency. The benefits of increased burning efficiency are further multiplied if intake charging efficiency is also increased. Basically, increasing the charging efficiency results in more fuel and air being drawn into the engine during each intake stroke. Thus, greater energy potential.

To achieve this, the four valve head was adopted. Two smaller diameter intake valves can flow more than one large valve. Additionally, two smaller valves run cooler due to increased valve seat area and two valve guides to increase heat transfer.



But, SUZUKI went one step further. The valves are set in at a much shallower angle than other engines. The result is a smoother intake tract with less valve guide protrusion than in conventional cylinder heads. Therefore, increased flow, and smoother, less turbulent flow which contributes to more power and improved throttle response at all engine speeds.

There are several other benefits. This design is more efficient and will flow more air/fuel mixture than a conventional 4 valve head. Therefore, even smaller, lighter valves can be used with no decrease in power. Also, the valves can be shorter due to the placement angle. This allows more precise valve control since shorter, lighter valves are more easily controlled--especially at higher rpm's.

Yet another benefit of valves set at shallower angles is that the volume of the cylinder head combustion area is decreased. This allows the use of racing type flat-topped pistons since the desired compression ratio can be achieved without resorting to domed pistons. Flat topped pistons offer no restriction to the incoming air/fuel mixture and a flat-topped piston exposes the minimum amount of surface area to the hot burning mixture. This means that the flat piston absorbs less heat and therefore has to dissipate less heat through the rings and to the oil than a conventional domed piston. The result is a cooler running engine. Flat-topped pistons can also be made lighter resulting in less vibration and stress.

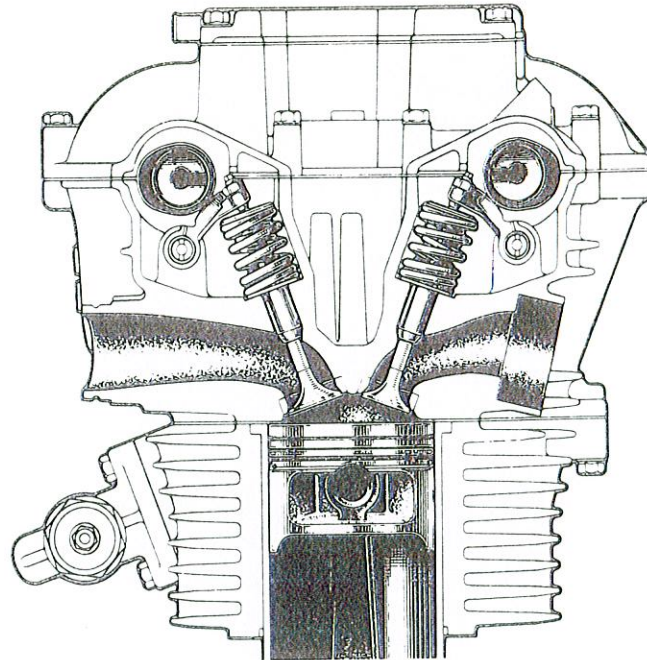
Increased burning efficiency. Increased charging efficiency. The result is more power throughout, from idle to redline. Throttle response is instant and clean. Displacement for displacement, no conventional engine, 2-valve or 4-valve, can compare. This could be enough, but SUZUKI went even further to ensure reliability and ease of maintenance.

A direct acting rocker arm is utilized to activate the valves. Each rocker arm, when depressed by the cam lobe, directly activates two valves at one time. With this system, engine height is reduced and tappets are not necessary. This system allows more room for cooling air flow and allows the use of larger valve springs which increases spring life by reducing stress. Valve adjustment is accomplished without special tools--quickly and easily.

Special sintered steel valve seats are incorporated, manufactured from premium alloys to ensure even more reliability under higher heat loads.

The patented TSCC combustion system combined with SUZUKI's high efficiency charging design results in power and throttle response found only in this new generation 4-stroke engine.

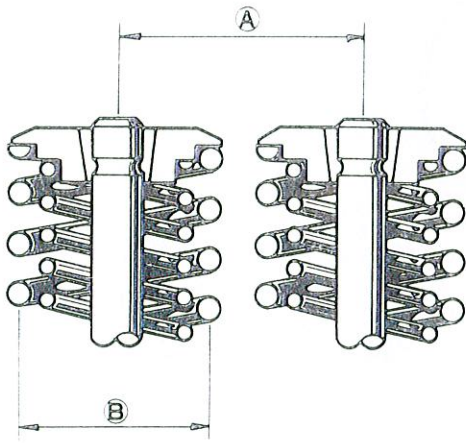
The SUZUKI TSCC engine series--performance without compromise.



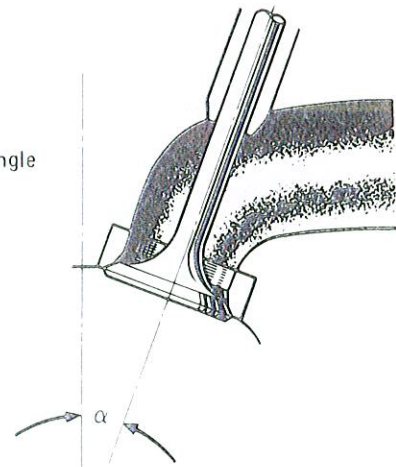
If valve pitch **A** is the same, spring diameter **B** is larger than **C**

TSCC valve angle α is smaller than β .

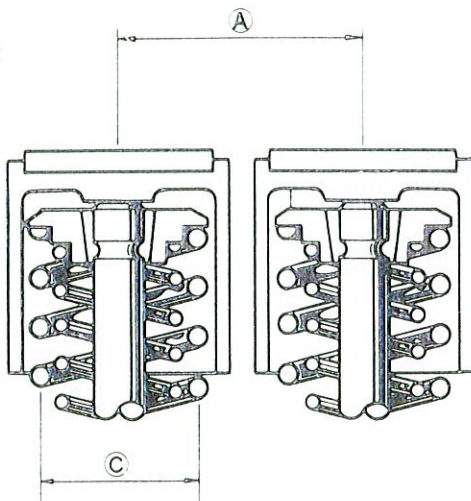
TSCC
4-valve



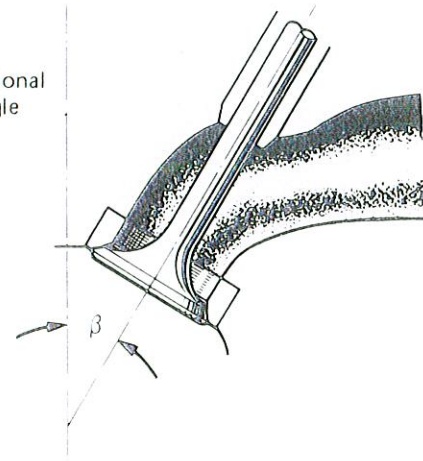
TSCC
valve angle



Conventional
4-valve



Conventional
valve angle



FULL-TRANSISTORIZED IGNITION SYSTEM

DESCRIPTION

A fully transistorized ignition system is now employed on the GS250T. Its primary advantages are:

- * Trouble free operation due to elimination of contact breaker points.
- * Ignition timing is precisely controlled at all times and requires no maintenance.
- * Provides the ignition coil with stable primary voltage.
- * Excellent vibration and moisture resistance.

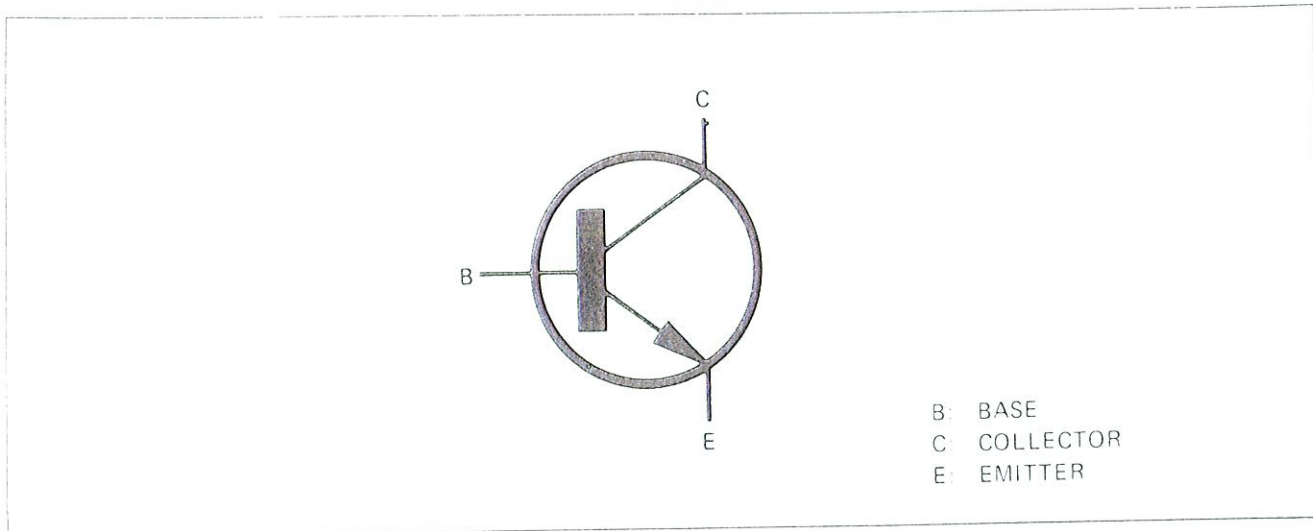
TRANSISTOR

Transistor functions can be divided into four main functions:

1. amplification
2. switching
3. oscillation
4. modulation

These functions are utilized in the ignition system employed on the GS250T.

Transistors are divided into two groups, NPN and PNP types. The transistors used in the GS250T model are of the NPN type only, which work as an amplifier and switching device.



Each transistor has three terminals identified as the Base (B), Collector (C), and Emitter (E), and operation is as follows:

On a NPN type the base is the controlling terminal of the transistor operation. On this type, the base utilizes only a positive or incoming signal to do the "ON", or "OFF" switching. The collector is the terminal where voltage is supplied to the transistor and the emitter is the terminal for passing this current on when the base has the proper "signal". Usually the voltage applied across the collector to the emitter is much larger than that needed at the base. This allows a relatively low voltage at the base to control large working voltages across the collector to the emitter.

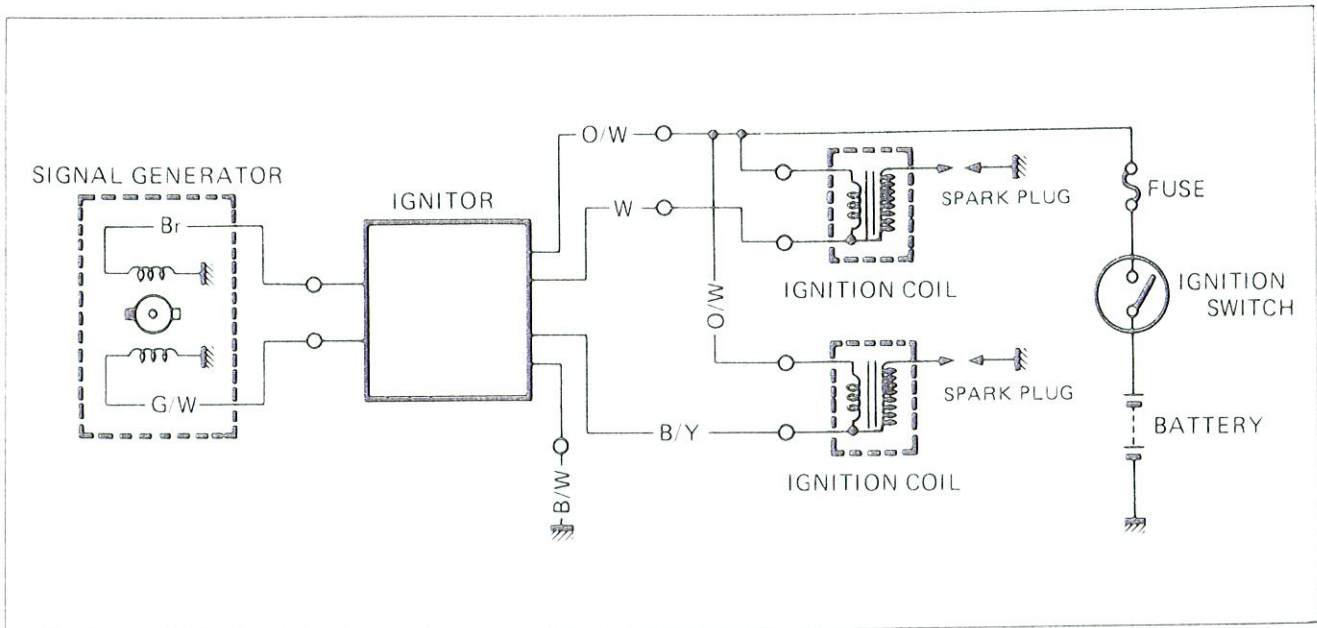
The transistor ignition system used on the GS250T is the KOKUSAN brand and consists of a signal generator, which employs a rotor and two pick-up coils, the transistor unit, ignition coils, and spark plugs.

SIGNAL GENERATOR

The signal generator is mounted on the right hand side of the engine in the area commonly used for the contact breaker points. It is comprised of a magnet embedded rotor attached to a mechanical advance mechanism and two pick-up coils, with iron plates at their bases, affixed to a plate. Each pick-up coil consists of a coil of wire and a yoke or coil and is mounted, 180° apart on the plate.



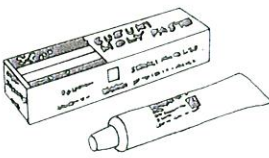

As the rotor magnet is turned past the coils, AC current is produced and used for switching within the transistor unit.






The transistor unit controls power to the ignition coils and causes the spark plugs to fire at the proper time.



SPECIAL MATERIALS

The materials listed below are needed for maintenance work on the GS250T, and should be kept on hand for ready use. They supplement such standard materials as cleaning fluids, lubricants, emery cloth and the like. How to use them and where to use them are described in the text of this manual.

Material	Part	Page	Part	Page
 <p>SUZUKI SUPER GREASE "A" 99000-25030</p>	<ul style="list-style-type: none"> ● Oil seals ● Throttle grip ● Cables (speedometer and tachometer) ● Clutch release mechanism ● Gearshift lever linkage and shaft 	<p>3-53, 3-55, 3-64</p>	<ul style="list-style-type: none"> ● Wheel bearings ● Sprocket mounting drum bearing ● Swinging arm bearing and dust seal ● Rear brake cam ● Brake pedal shaft ● Contact points cam ● Governor link ● Centerstand spacer ● Steering stem bearings 	<p>7-5 7-15 7-45 7-15 7-28 7-40</p>
 <p>SUZUKI SILICONE GREASE 99000-25100</p>	<ul style="list-style-type: none"> ● Caliper axle shaft 	<p>7-21</p>		
 <p>SUZUKI MOLY PASTE 99000-25140</p>	<ul style="list-style-type: none"> ● Valve stem ● Cam shaft journal ● Chain tensioner push rod ● Conrod big end bearing ● Countershaft ● Crankshaft journal bearing ● Counter balancer journal bearing 	<p>3-29 3-70 3-33 3-41 3-52 3-57 3-57</p>		
 <p>SUZUKI BOND No. 1215 99104-31110</p>	<ul style="list-style-type: none"> ● Mating surfaces of upper and lower crankcase ● Mating surfaces of crankcase and oil pan ● Oil pressure switch ● Front fork damper rod bolt 	<p>3-57 3-58 3-64 7-33</p>		

Material	Part	Page	Part	Page
 <p>THREAD LOCK SUPER "1361A" 99104-32020</p>	<ul style="list-style-type: none"> • Gearshift cam retainer screw • Cam sprocket allen bolt • Cam chain guide screw • Starter clutch allen bolt • Counter balancer gear setting bolt 	<p>3-61 3-31 3-34 3-48 3-45</p>		
 <p>THREAD LOCK SUPER "1363A" 99104-32030</p>	<ul style="list-style-type: none"> • Gearshift arm stopper 	<p>3-44</p>		
 <p>THREAD LOCK cement 99000-32040</p>	<ul style="list-style-type: none"> • Carburetor set screw • Camshaft end cap screw • Engine sprocket spacer inner surface • Clutch spring bolt • Front fork damper rod bolt 	<p>4-15 3-75 3-8, 3-52 3-63 7-33</p>		
 <p>THREAD LOCK "1363C" 99104-32050</p>	<ul style="list-style-type: none"> • Generator stator securing screw • Generator lead wire guide screw • Gearshift cam stopper bolt • Countershaft bearing retainer screw • Engine oil pump fitting screw 	<p>3-48 3-48 3-60 3-60 3-49, 3-62</p>	<ul style="list-style-type: none"> • Starter motor securing bolt • Gearshift fork shaft stopper screw 	<p>3-59 3-54</p>
 <p>THREAD LOCK SUPER "1332B" 99104-32090</p>	<ul style="list-style-type: none"> • Generator rotor bolt 	<p>3-59</p>		

PRECAUTIONS AND GENERAL INSTRUCTIONS

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

- Be sure to replace packings, gaskets, circlips, O rings and cotter pins with new ones.
- Tighten cylinder head and case bolts and nuts beginning with larger diameter and ending with smaller diameter, and from inside to outside 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 the safety of each other.
- After the reassembly, check parts for tightness condition and operation.
- Treat gasoline, which is extremely flammable and highly explosive, with greatest care. Never use gasoline as cleaning solvent.

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

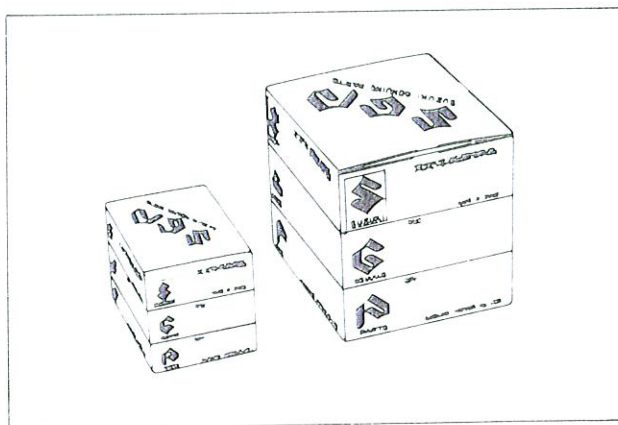
WARNING When personal safety of the rider is involved, disregard of the information could result in injury.

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

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

USE OF GENUINE SUZUKI PARTS

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



SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2 075 mm (81.7 in)
Overall width	885 mm (34.8 in)
Overall height	1 155 mm (45.5 in)
Wheelbase	1 370 mm (53.9 in)
Ground clearance	140 mm (5.5 in)
Dry mass	158 kg (348 lbs)

ENGINE

Type	Four-stroke, air-cooled, DOHC
Number of cylinders	2
Bore	60.0 mm (2.362 in)
Stroke	44.2 mm (1.740 in)
Piston displacement	249 cm ³ (15.2 cu-in)
Compression ratio	10.5 : 1
Carburetor	MIKUNI BS30SS, twin
Air cleaner	Polyurethane foam element
Starter system	Electric
Lubrication system	Wet sump

TRANSMISSION

Clutch	Wet multi-plate type
Transmission	6-speed constant mesh
Gearshift pattern	1-down, 5-up
Primary reduction	3.125 (75/24)
Final reudction	3.133 (47/15)
Gear ratios, Low	2.500 (30/12)
2nd	1.625 (26/16)
3rd	1.210 (23/19)
4th	1.000 (21/21)
5th	0.863 (19/22)
Top	0.782 (18/23)
Drive chain	DAIDO DID520DS or TAKASAGO RK520SM, 106 links

CHASSIS

Front suspension	Telescopic, oil dampened
Rear suspension	Swinging arm, oil dampened, spring 5-way adjustable
Steering angle	42° (right & left)
Caster	62° 00'
Trail	104 mm (4.09 in)
Turning radius	2.3 m (7.5 ft)
Front brake	Disc brake
Rear brake	Internal expanding
Front tire size	3.00-18 4PR
Rear tire size	3.50-17 4PR
Front tire pressure	1.50 kg/cm ² (21 psi) (Normal solo riding)
Rear tire pressure	1.75 kg/cm ² (25 psi) (Normal solo riding)

ELECTRICAL

Ignition type	Transistorized
Ignition timing	20° B.T.D.C. below at 1 650 r/min and 40° B.T.D.C. above at 3 500 r/min
Spark plug	NGK D8EA or NIPPON DENSO X27ES-U
Battery	12V 43.2 kC (12 Ah)/10 HR
Generator	Three-phase A.C. generator
Fuse	15A

CAPACITIES

Fuel tank including reserve	11.0 L (2.9 US gal)
Reserve	2.0 L (2.1 US qt)
Engine oil	2.0 L (2.1 US qt)
Front fork oil (each leg)	150 ml (5.07 US oz)

* These specifications are subject to change without notice.

PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

CONTENTS

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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.

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.

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

PERIODIC MAINTENANCE CHART

INTERVAL: THIS INTERVAL SHOULD BE JUDGED BY ODOMETER READING OR MONTHS WHICHEVER COMES FIRST	mile	600	3 000	6 000	9 500
	km	1 000	5 000	10 000	15 000
	month	2	15	30	45
Air cleaner element		—	C	C	C
Cylinder head nuts and exhaust pipe bolts		T	T	T	T
Battery		—	I	I	I
Valve clearance		I	I	I	I
Spark plug		—	C	R	C
Fuel line	Replace every two years.				
Engine oil and oil filter		R	R	R	R
Carburetor		I	I	I	I
Clutch		I	I	I	I
Drive chain		I	I	I	I
	Clean and lubricate every 600 miles (1 000 km).				
Brake		I	I	I	I
Brake hose	Replace every two years.				
Tire		I	I	I	I
Steering		I	I	I	I
Chassis bolts and nuts		T	T	T	T

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

LUBRICATION CHART

The maintenance schedule, which follows, is based on odometer indication and is calculated to achieve the ultimate goal of motorcycle maintenance in the most economical manner.

Item	Interval	
	Initial and every 3 000 miles (5 000 km)	Every 6 000 miles (10 000 km)
Ignition timing governor link	—	Grease
Throttle cable	Motor oil	—
Throttle grip	—	Grease
Clutch cable	Motor oil	—
Clutch release	—	Grease
Speedometer cable	—	Grease
Tachometer cable	—	Grease
Drive chain	Motor oil every 600 miles (1 000 km)	
Brake pedal	Grease or oil	—
Brake cam shaft	—	Grease
Steering stem bearings	Grease every 2 years or 15 000 miles (24 000 km)	
Swinging arm bearings		

WARNING:

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

Lubricate exposed parts which are subject to rust, with either motor oil or grease whenever the motorcycle has been operated under wet or rainy conditions.

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

MAINTENANCE AND TUNE-UP PROCEDURES

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

AIR CLEANER ELEMENT

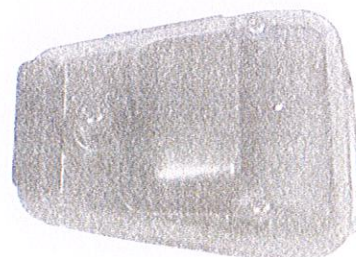
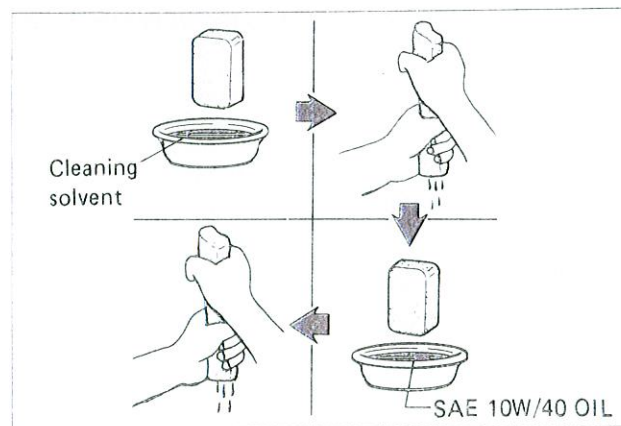
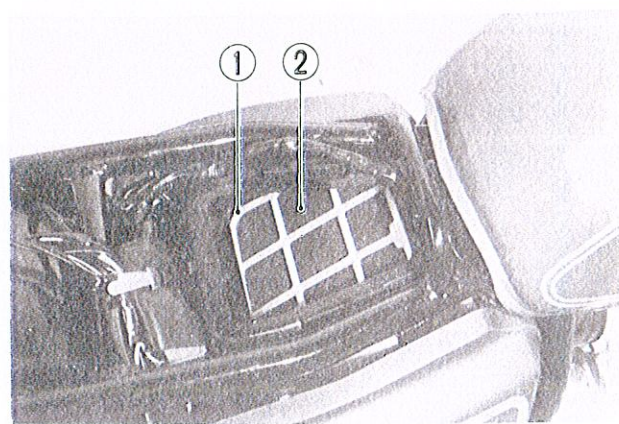
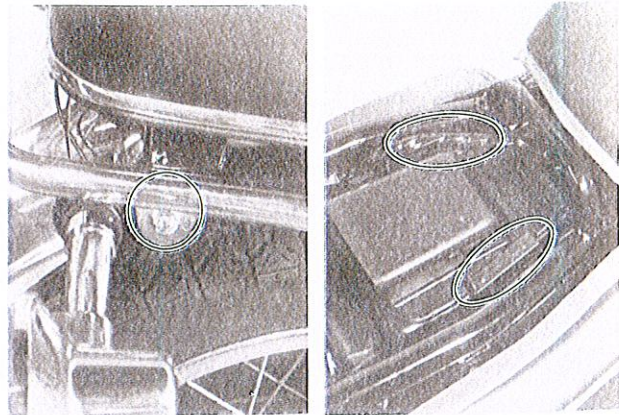
3 000, 6 000, 9 500 miles
5 000, 10 000, 15 000 km

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

- Remove the seat and cleaner case cover.
- Take out air cleaner element ① from the air cleaner case by removing guide ②.
- 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: do not twist or wring the element or it will develop tears.
- Immerse the element in motor oil, and squeeze the oil out of the element leaving it slightly wet with oil.
- Fit the cleaner case cover properly.

CAUTION:

- * Before and during the cleaning operation, inspect the element for tears. A torn element must be replaced.
- * Be sure to position the element snugly and correctly, so that no incoming air will bypass it. Remember, rapid wear of piston rings and cylinder bore is often caused by a defective or poorly fitted element.



BATTERY

600, 3 000, 6 000, 9 500 miles
1 000, 5 000, 10 000, 15 000 km

- The battery must be removed to check the electrolyte level and specific gravity.
- Remove right and left frame covers to check battery.
- Remove battery $-$ lead at the battery terminal.
- Remove battery $+$ lead wire from fuse box and starter motor relay.
- Remove battery from the frame.
- Check electrolyte for level and specific gravity. Add distilled water, as necessary, to keep the surface of the electrolyte above the LOWER level line but not above the UPPER level line.

For checking specific gravity, use a hydrometer to determine the charge condition.

09900-28403	Hydrometer
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Standard specific gravity	1.28 at 20°C (68°F)
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An S.G. reading of 1.22 (at 20°C) or under means that the battery needs recharging off the machine: take it off and charge it from a recharger. Charging the battery in place can lead to failure of the regulator/rectifier.

- To install the battery, reverse the procedure described above.

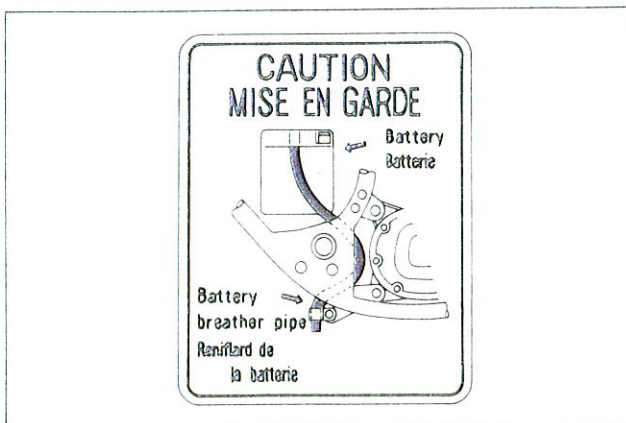
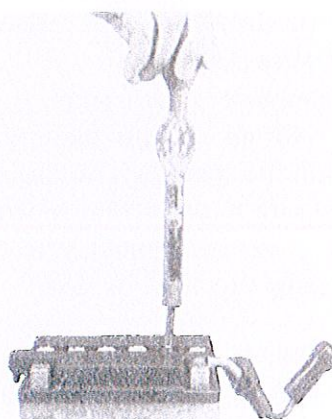
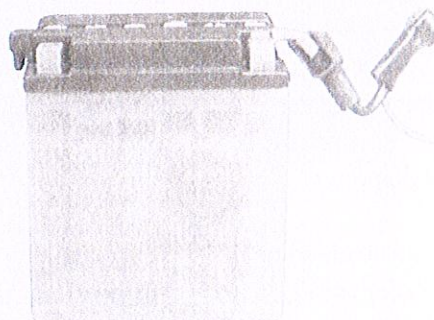
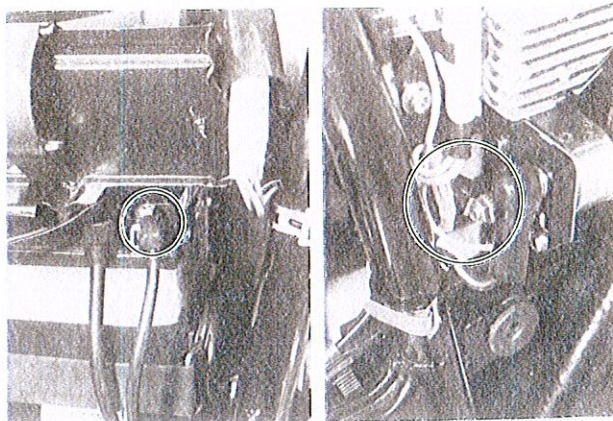
WARNING:

When installing the battery lead wires, fix the $+$ lead first and $-$ lead last.

- Make sure that the breather pipe is tightly secured and undamaged, and is routed as shown in the figure.

CAUTION:

Be careful not to bend, obstruct, or change the routing of the air vent tube from the battery. Make certain that the vent tube is attached to the battery vent fitting and that the opposite end is always open.



VALVE CLEARANCE

600, 3 000, 6 000, 9 500 miles
1 000, 5 000, 10 000, 15 000 km

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

Too small a valve clearance may reduce the engine power; too large a valve clearance increases valve noise and hastens valve and seat wear. When the valve clearance is set to the specification, the engine will run without excessive noise from the valve mechanism and will deliver full power.

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 camshafts are disturbed by removing them for servicing.

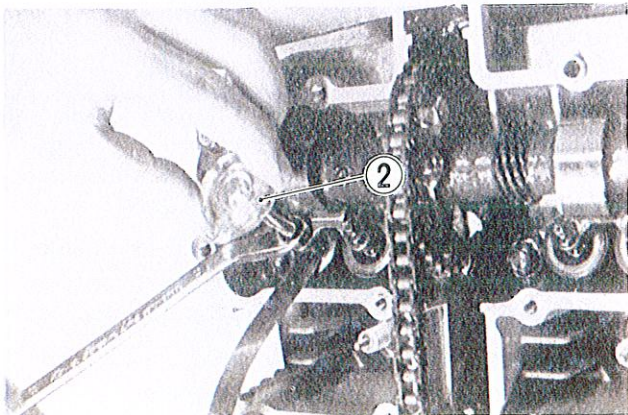
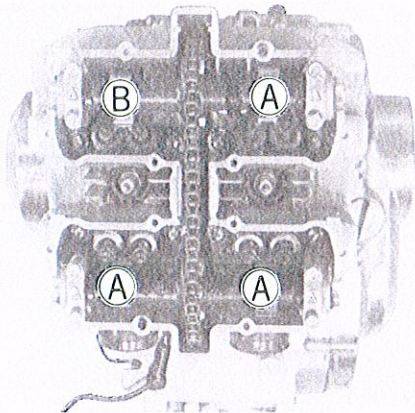
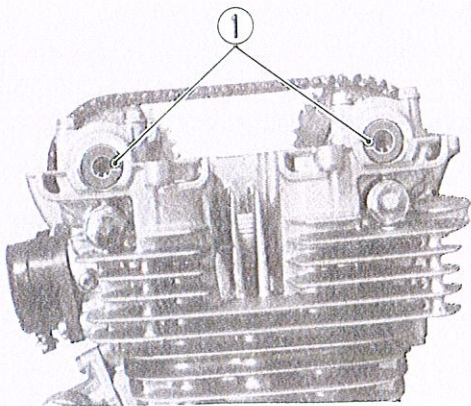
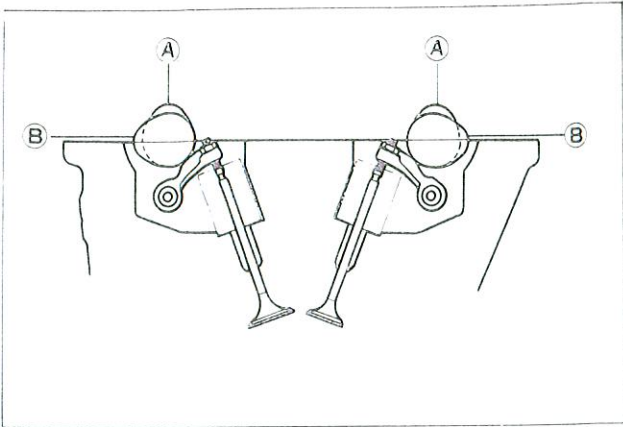
Valve clearance (when cold)	0.08 – 0.13 mm (0.003 – 0.005 in)
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NOTE:

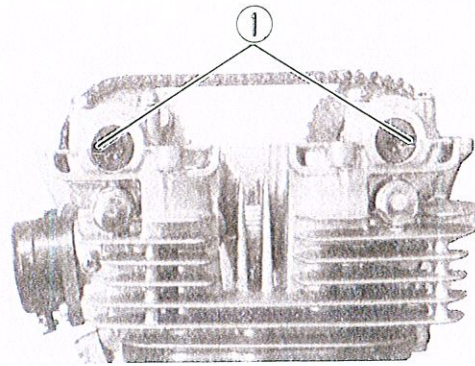
- * The cam must be at position **A** or **B** in order to check the valve clearance or to adjust valve clearance.
- * The clearance specification is for COLD state. Check it when the engine is cold.
- * To turn the crankshaft for clearance checking, be sure to use a 19-mm wrench and to rotate in normal running direction. Both spark plugs should be removed.

- Turn crankshaft to bring the "T" mark on the advance governor of "R" cylinder and also to bring the notches **1** in the both camshaft (Ex. and In.) of the right ends to the position as shown. In this condition, read the valve clearance at the valves **A** (In. and Ex. of "R"-cylinder, and In. of "L"-cylinder). Use thickness gauge between tappet and valve. If clearance is off the specification, bring it into the specified range by using tappet adjust driver **2**.

09900-20803	Thickness gauge
09917-14910	Tappet adjust driver



- Turn crankshaft by 360° (one rotation) to bring the "T" mark on "R"-side advance governor and notches ① to the position as shown.
- Read clearance at the valves ② (Ex. of "L"-cylinder) and adjust the clearance if necessary.



SPARK PLUG

Clean and Adjust Every 3,000 miles and, (5,000 km)
 Replace Every 6,000 miles (10,000 km)

The plug gap is adjusted to 0.6 – 0.7 mm (0.024 – 0.028 in). The gap is correctly adjusted using a thickness gauge (special tool). When carbon is deposited on the spark plug, remove the carbon with a spark plug cleaning machine or carefully using tool with a pointed end. If electrodes are extremely worn or burnt, replace the plug. Also replace the plug if it has a broken insulator, damaged thread, etc.

09930-13210	Socket wrench
09930-14530	Universal joint
09914-24510	T handle
09900-20803	Thickness gauge

NGK D9EA or NIPPON DENSO X27ES-U listed in the table should be used as the standard plug. However, the heat range of the plug should be selected to meet the requirements of speed, actual load, fuel, etc. If the plugs need to be replaced, it is recommended that the standard plugs listed in the table be selected. Remove the plugs and inspect the insulators. Proper heat range would be indicated if both insulators were light brown in color. If they are blackened by carbon, they should be replaced by a hot type NGK D8EA or NIPPON DENSO X24ES-U.

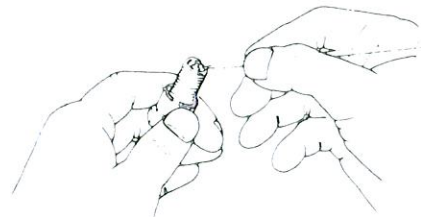
NOTE:

To check the spark plugs, first make sure that the fuel tank contains unleaded gasoline, and if both are sooty with carbon, replace them altogether.

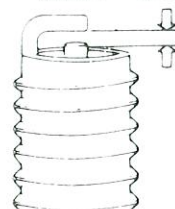
CAUTION:

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.

NGK	NIPPON DENSO	REMARKS
D8EA	X27ES-U	If the standard plug is apt to get wet, replace with this plug. Hot type.
D9EA	X27ES-U	Standard

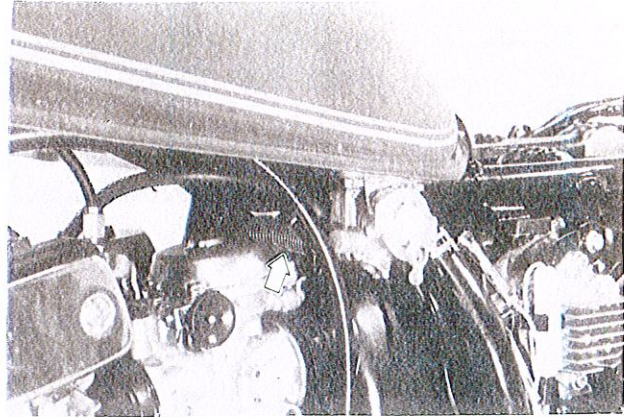


Gap 0.6 -- 0.7 mm
(0.024 -- 0.028 in)



FUEL LINES

Replace Every 2 years



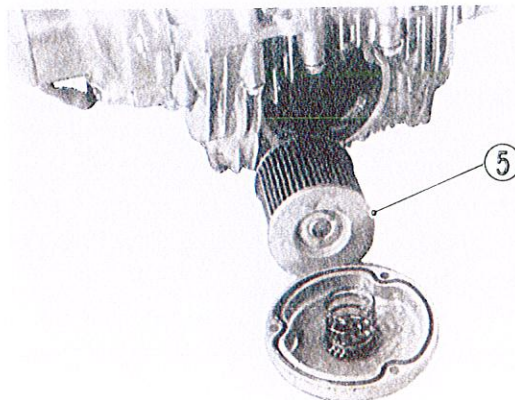
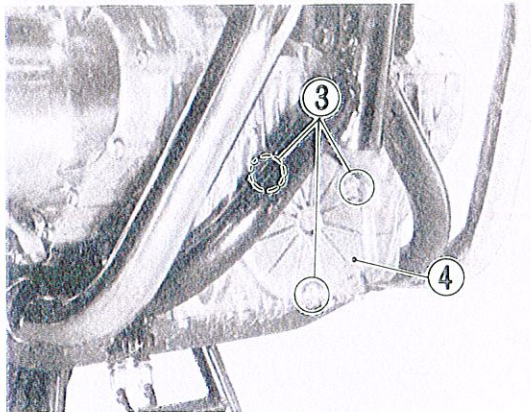
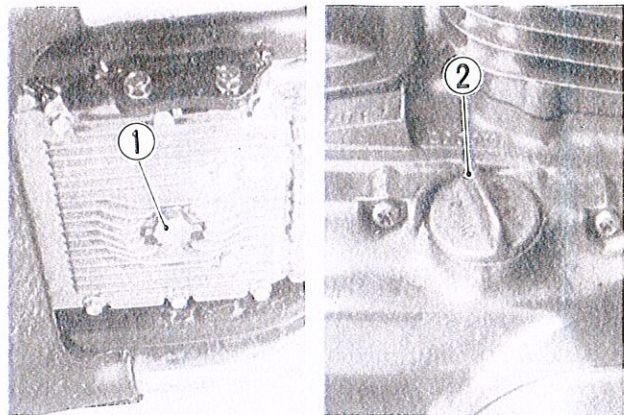
ENGINE OIL AND FILTER

600, 3 000, 6 000, 9 500 miles
1 000, 5 000, 10 000, 15 000 km

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

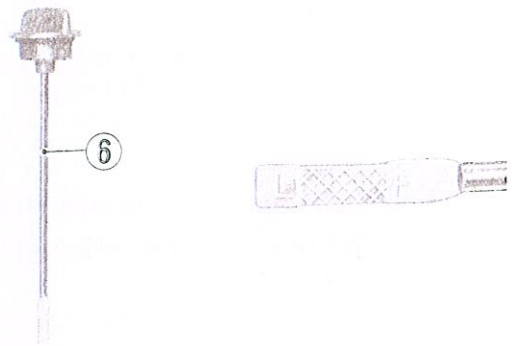
The procedure is as follows:

- Keep the motorcycle upright, supported on the center stand.
- Place an oil pan below the engine and drain the oil by removing drain plug ① and filler cap ②.
- Remove three nuts ③, and remove the oil filter cap ④ and drain oil.
- Pull out old filter ⑤, replace with new one.
- Replace cover, and secure nuts ③.
- Fit drain plug ① securely, and add fresh oil through the filler. The engine will hold about 2.6 L (2.7 US qt) of oil. Use API classification of SE oil with SAE 10W/40 viscosity.
- 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 with the filler cap dipstick ⑥. Do not screw in the cap when making this check. If the level is below mark "F", supply oil to that level.



NOTE:

- * Pour about 2.0 L (2.1 US qt) of engine oil into the engine only when changing oil.
- When performing engine overhaul, the amount of oil to be replenished is 2.6 L (2.7 US qt).
- * Be sure to take care of O-ring to prevent any damage and be sure that filter spring is properly in place.



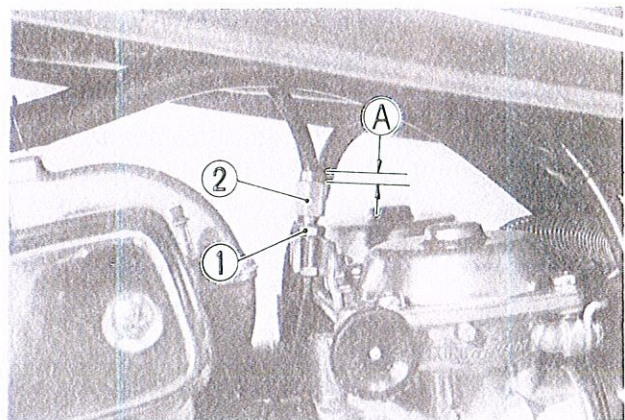
CARBURETOR

600, 3 000, 6 000, 9 500 miles
1 000, 5 000, 10 000, 15 000 km

THROTTLE CABLE PLAY

There should be 0.5 mm play **A** on the throttle cable. To adjust the throttle cable play:

- Tug on the throttle cable to check the amount of play.
- Loosen the lock nut **1** and turn the adjuster **2** in or out until the specified play is obtained.
- Secure the lock nut while holding the adjuster in place.



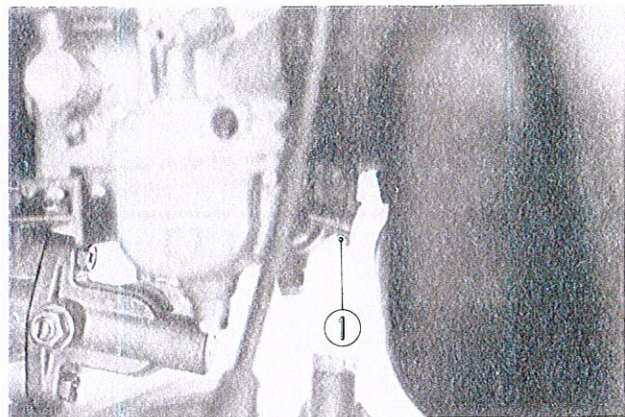
Throttle cable play A	0.5 mm (0.02 in)
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IDLING ADJUSTMENT

NOTE:

Make this adjustment when the engine is hot.

- Start up the engine and set its speed at anywhere between 1,150 and 1,350 r/min by turning throttle stop screw **1**.

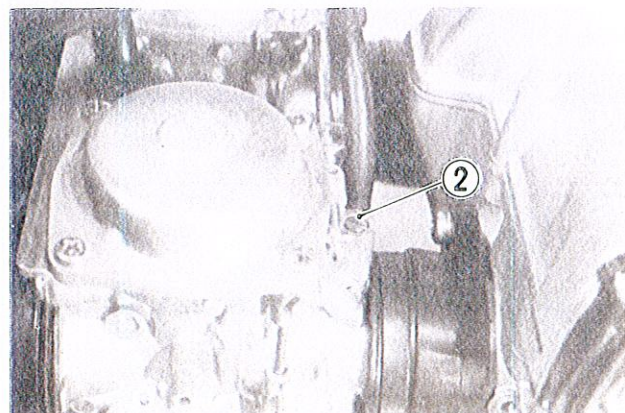


Engine idle speed	1,250 ± 100 r/min
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- Re-adjust the throttle cable play, if required.

CAUTION:

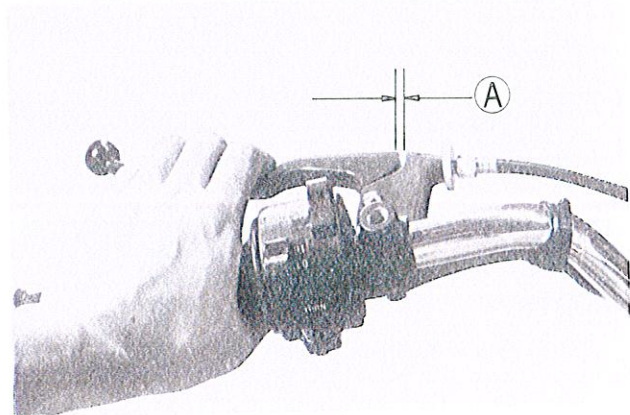
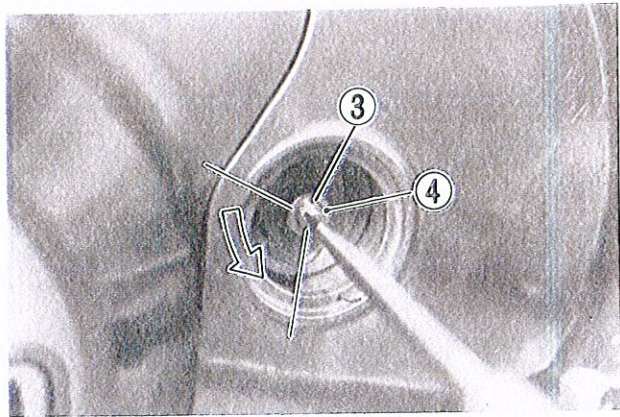
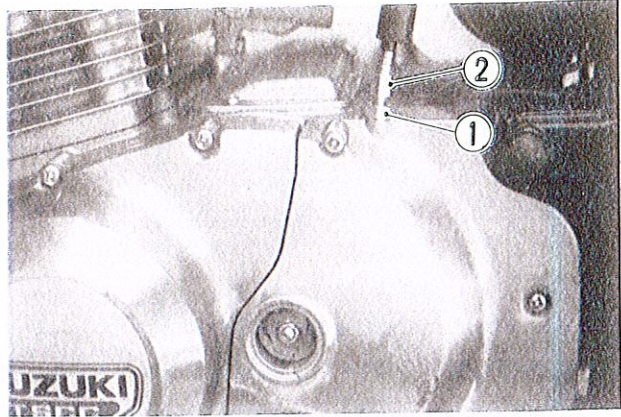
The pilot screw **2** is pre-set by the factory utilizing specialized testing and adjusting procedures, and must not be tampered with.



CLUTCH

600, 3 000, 6 000, 9 500 miles
1 000, 5 000, 10 000, 15 000 km

- Loosen lock nut ① and reposition adjuster ② in place to introduce a necessary amount of play for the clutch cable.
- Loosen lock nut ③, and back adjusting screw ④ away two to three rotations.
- From that position of adjusting screw, slowly run it in until it begins to feel high resistance to turning. From this position, back it away $\frac{1}{4}$ – $\frac{1}{2}$ rotation, and secure it by tightening lock nut ③.
- Set the adjuster ② to provide a clutch lever play A of 4 mm, and tighten the lock nut ①.



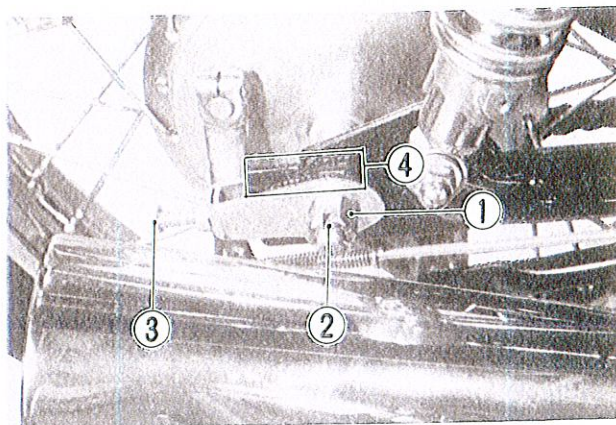
DRIVE CHAIN

600, 3 000, 6 000, 9 500 miles 1 000, 5 000, 10 000, 15 000 km

Visually inspect the drive chain for the possible malconditions listed below.

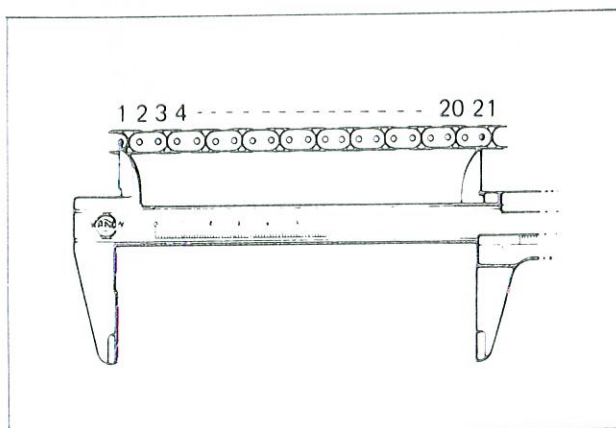
- * Loose pins
- * Damaged rollers
- * Rusted links
- * Twisted or seized links
- * Excessive wear

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



CHECKING

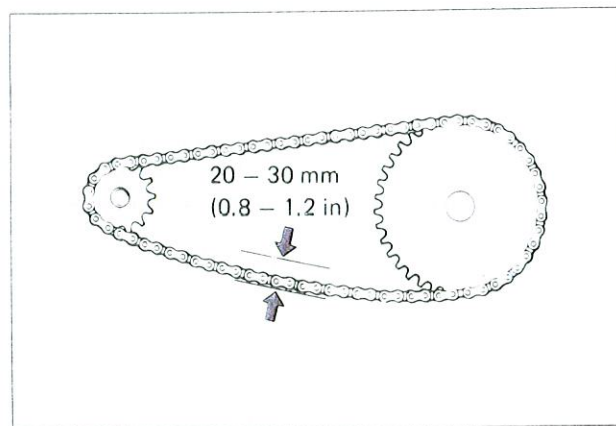
- Loosen axle nut ① after pulling out cotter pin ②.
- Stretch the drive chain fully by tightening the adjusters ③.
- Remove the chain guard. Count out 21 pins (20 pitch) on the chain and measure the distance between the two. If the distance exceeds following limit, the chain must be replaced.



Service Limit	324.3 mm (12.77 in)
---------------	---------------------

ADJUSTING

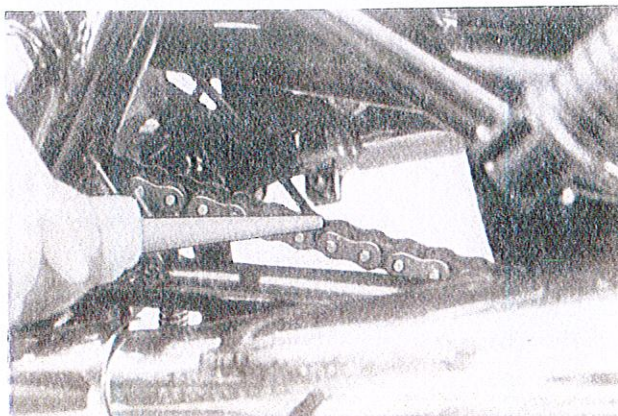
- Loosen the adjuster ③ until the chain has 20 – 30 mm (0.8 – 1.2 in) of sag at the middle between engine and rear sprockets. The mark ④ on both chain adjusters must be at the same position on the scale to ensure that the front and rear wheels are correctly aligned.
- After adjusting the drive chain, tighten the axle nut ① securely and lock with cotter pin ②. Always use a new cotter pin.



Rear axle nut tightening torque	5.0 – 8.0 kg-m (36.0 – 58.0 lb-ft)
---------------------------------	---------------------------------------

CLEANING AND LUBRICATING

Wash the drive chain in cleaning solvent and lubricate it with chain lube or motor oil. If the motorcycle operates under dusty conditions, frequent rapid acceleration or at sustained high speeds, the drive chain should be cleaned and lubricated more often.

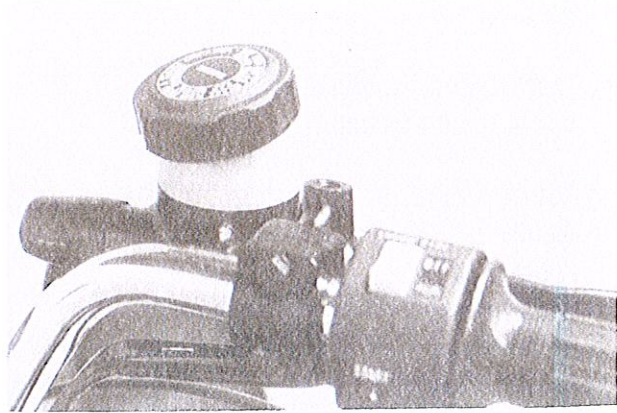


BRAKES

600, 3,000, 6,000, 9,500 miles
 1,000, 5,000, 10,000, 15,000 km
 Replace hose every 2 years

BRAKE FLUID LEVEL

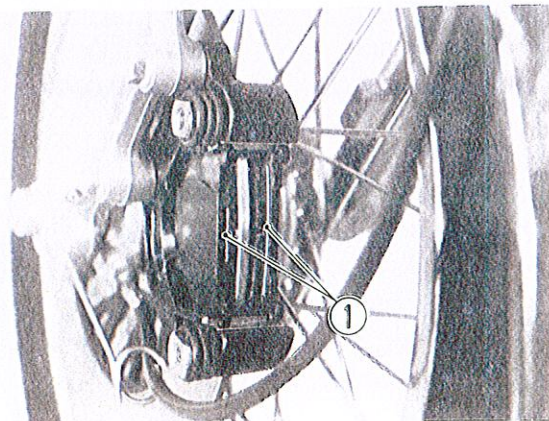
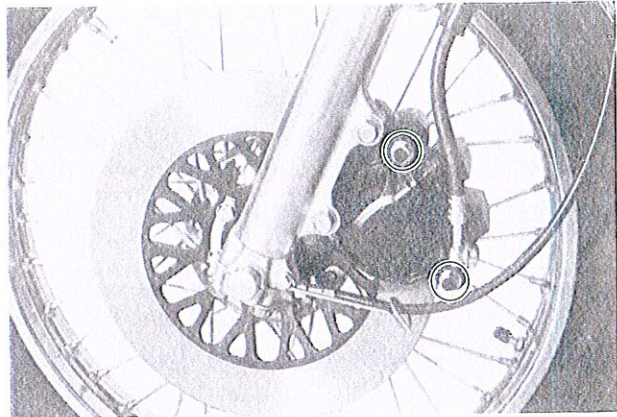
- Support the motorcycle on the center stand and place the handlebars straight.
- Check the brake fluid level by observing the upper and lower limit lines on the brake fluid reservoir.
- When the level is below the lower limit line, replenish with brake fluid that meets the following specification.



Specification and Classification:	DOT3 or DOT4
-----------------------------------	--------------

CAUTION:
 The brake system of this motorcycle is filled with a glycol-based brake fluid. Do not use or mix different types of fluid such as silicone-based and petroleum-based fluid for refilling the system, otherwise serious damage will be caused. Do not use any brake fluid taken from old or used or unsealed containers. Never re-use the brake fluid left over from the last 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 for cracks and hose joint for leakage before riding.



BRAKE PADS

Wear condition of brake pads can be checked by observing the red limit line ① marked on the pad. When the wear exceeds the limit line, replace the pads with new ones. (see page 7-16)

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 remounting the brake and restoring the brake system to the normal condition, the brake fluid circuit be purged of air in the following manner:

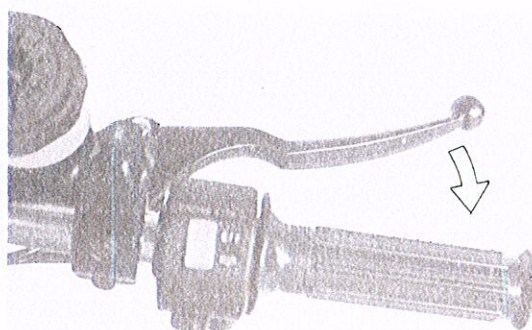
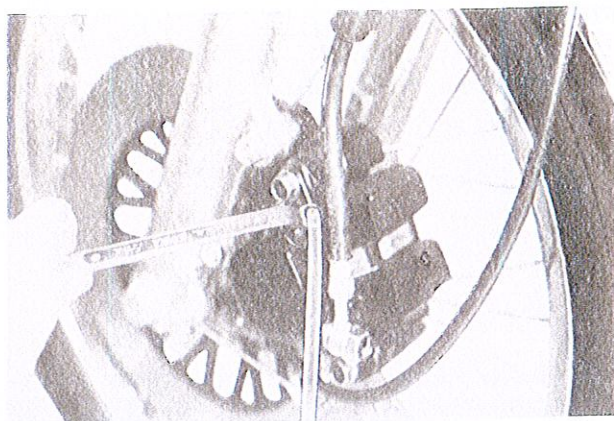
- Fill up the master cylinder reservoir to the "HIGH" level line. Replace the reservoir cap to prevent entry of dirt.
- Attach a pipe to the caliper bleeder valve, and insert the free end of the pipe into a receptacle.

Bleeder valve tightening torque	0.7 – 0.9 kg-m (5.0 – 6.5 lb-ft)
---------------------------------	-------------------------------------

- 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 or so 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 oil flowing into the receptacle no longer contains air bubbles.
- Close the bleeder valve, and disconnect the pipe. Fill the reservoir to the "HIGH" level line.

CAUTION:

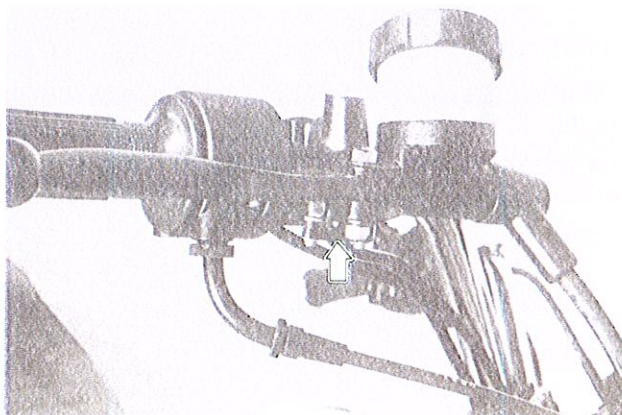
Check to be sure that brake light comes on when front brake lever is squeezed.

**NOTE:**

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

CAUTION:

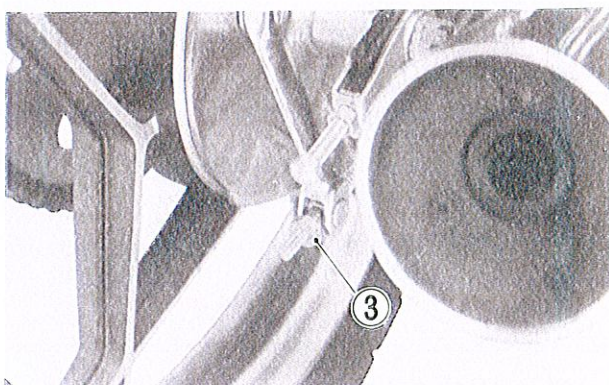
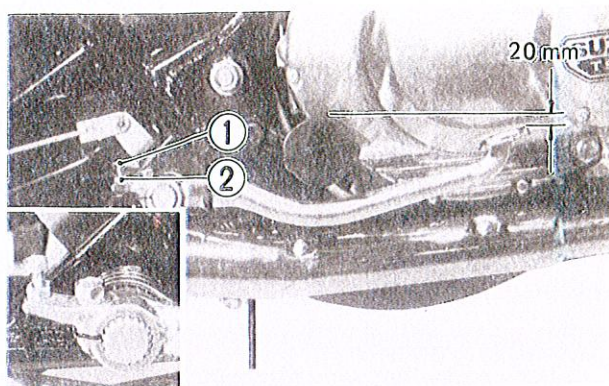
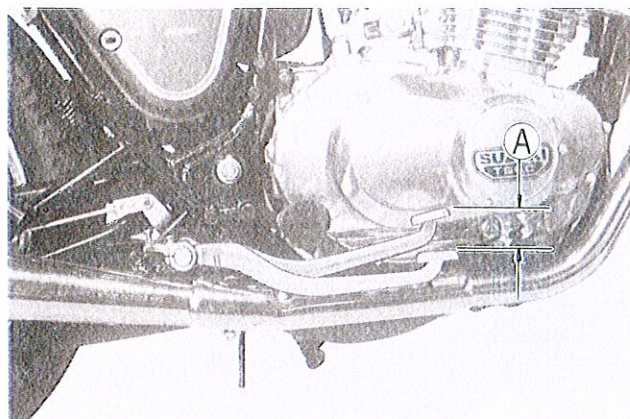
Handle the brake fluid with care: the fluid reacts chemically with paint, plastics, rubber materials, etc.



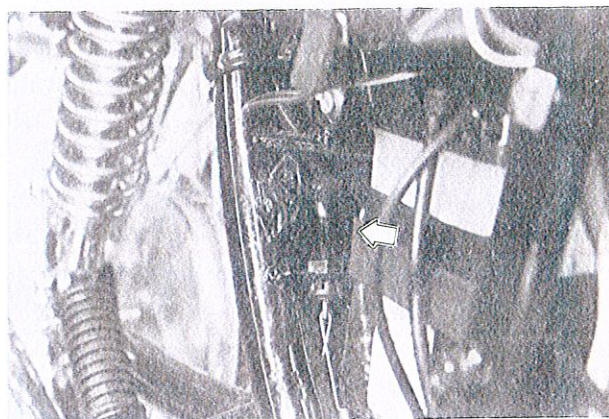
REAR

Bring the brake pedal to a position about 20 mm (0.4 in) below the footrest. This is effected by turning the adjusting bolt ①. Be sure to tighten the lock nut ② good and hard after setting the bolt.

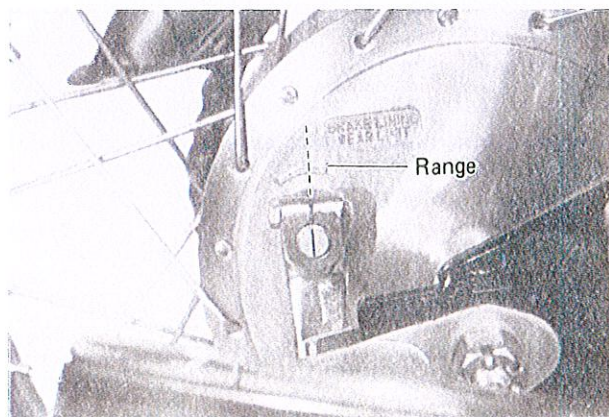
By repositioning the adjusting nut ③ on brake rod, set the pedal play to between 20 and 30 mm Ⓐ (0.8 – 1.2 in) as measured at pedal tip.



Check to be sure that rear brake light comes on when the pedal is depressed to take up the play. The rear brake light switch is located under the right frame cover. To adjust the brake light switch: raise or lower the switch so that the brake light will come on just before a pressure rise is felt when the brake pedal is depressed.

**BRAKE SHOE WEAR**

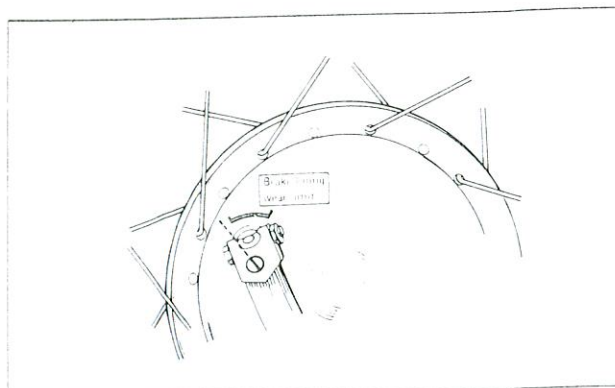
This motorcycle is equipped with brake lining wear limit indicator on rear as shown in Fig. At the condition of normal lining wear, the extension line of the index mark on the brake cam shaft should be within the range embossed on the brake panel with brake on.



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

To check wear of the brake lining, perform the following steps.

- First check if the brake system is properly adjusted.
- While operating the brake, check to see that the extension line of the index mark is within the range on the brake panel.
- If the index mark is beyond the range as shown in the Fig., the brake shoe assembly should be replaced with a new one. (see page 7-26)



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

TIRES

600, 3 000, 6 000, 9 500 miles
1 000, 5 000, 10 000, 15 000 km

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 the tire when the remaining depth of tire tread reaches the following specifications.

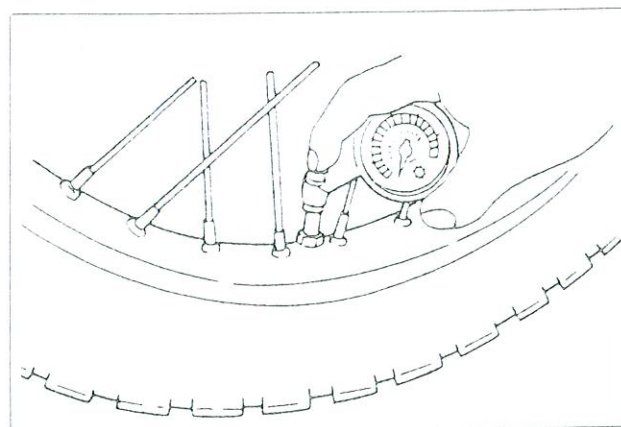
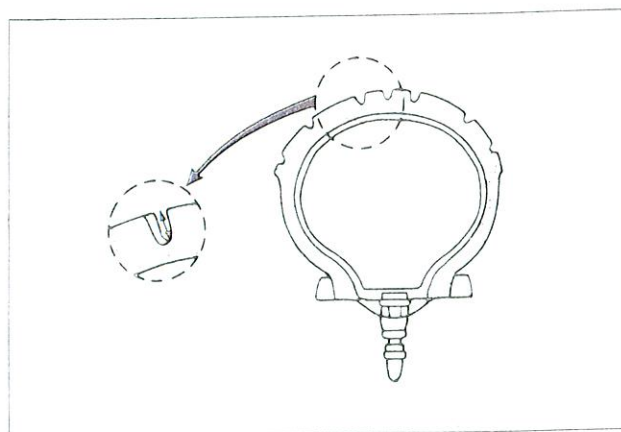
FRONT	REAR
1.6 mm (0.06 in)	2.0 mm (0.08 in)

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.

CAUTION:

The standard tire fitted on this motorcycle is 3.00-18 4PR for front and 3.50-17 4PR for rear. The use of a tire other than the standard may cause instability. It is highly recommended to use a SUZUKI Genuine Tire.



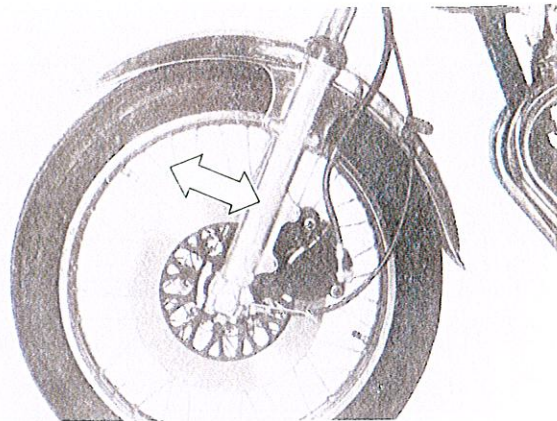
Cold inflation tire pressure is as follows.

		FRONT		REAR	
		psi	kg/cm ²	psi	kg/cm ²
Normal	Solo	21	1.50	25	1.75
	Dual	25	1.75	32	2.25
High speed	Solo	25	1.75	28	2.00
	Dual	28	2.00	32	2.25

STEERING

600, 3 000, 6 000, 9 500 miles
 1 000, 5 000, 10 000, 15 000 km

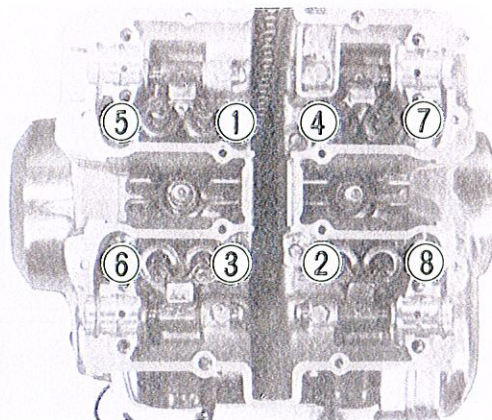
Check that there is no play in the front fork assembly by supporting the machine so that the front wheel is off the ground, with wheel straight ahead, grasp lower fork tubes near the axle and pull forward. If play is found, perform steering bearing adjustment as described in page 7-35 of this manual.



CYLINDER HEAD BOLTS AND NUTS

600, 3 000, 6 000, 9 500 miles
 1 000, 5 000, 10 000, 15 000 km

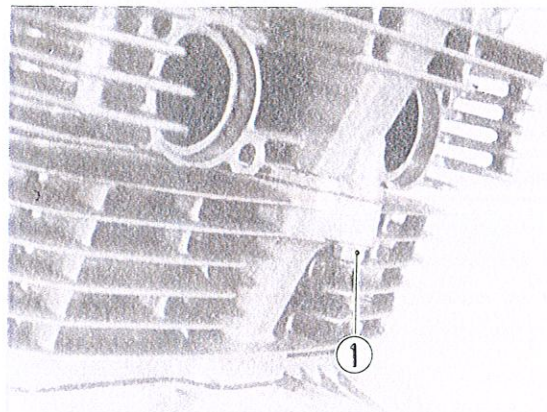
- Tighten the eight 8 mm nuts to the specified torque with a torque wrench sequentially in ascending numeral order with the engine cold.



Cylinder head nut tightening torque	2.3 – 2.8 kg-m (16.5 – 20.0 lb-ft)
-------------------------------------	---------------------------------------

- After tightening the eight nuts firmly, tighten one 6 mm bolt ① to the specified torque with a torque wrench.

Cylinder head bolt tightening torque	0.7 – 1.1 kg-m (5.0 – 8.0 lb-ft)
--------------------------------------	-------------------------------------

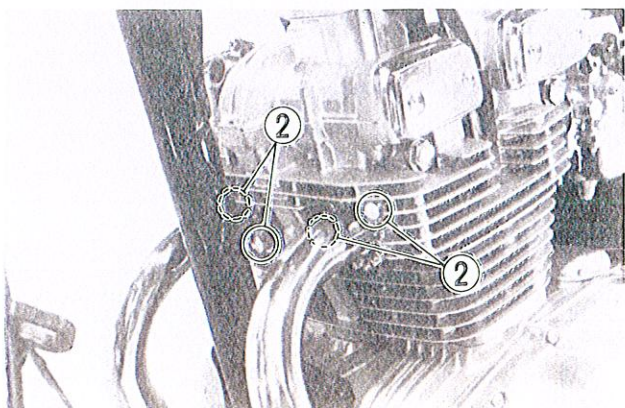


NOTE:

It is necessary to remove the fuel tank and cylinder head cover when tightening cylinder head nuts.

- Tighten four exhaust pipe clamp bolts ② to the specified torque with a torque wrench.

Exhaust pipe clamp bolt tightening torque	0.9 – 1.2 kg-m (6.5 – 8.5 lb-ft)
---	-------------------------------------

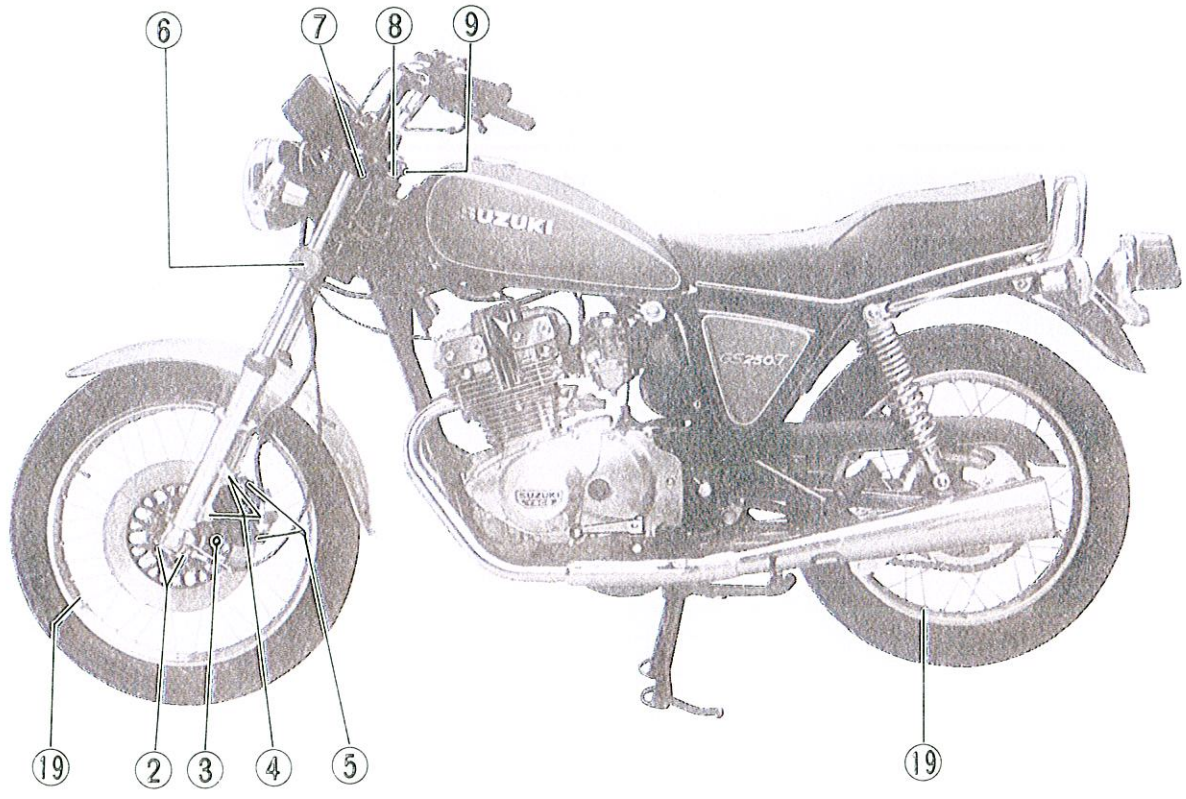
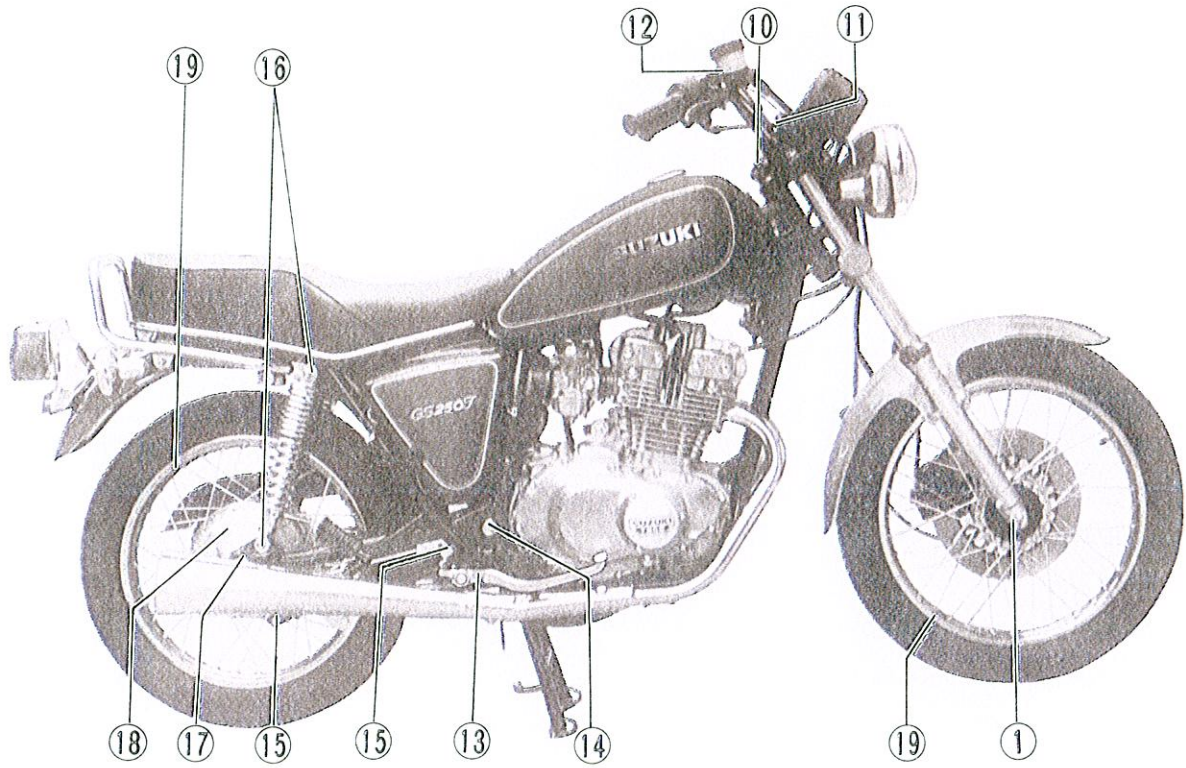


CHASSIS BOLTS AND NUTS

600, 3 000, 6 000, 9 500 miles
1 000, 5 000, 10 000, 15 000 km

The bolts and nuts listed hereunder are important safety parts. They must be retightened, as necessary, to the specified torque with a torque wrench. (Refer to page 2-17 for the position of the following bolts and nuts on the motorcycle.)

ITEM	lb-ft	kg-m
① Front axle nut	26.0 – 37.5	3.6 – 5.2
② Front axle holder nut	11.0 – 18.0	1.5 – 2.5
③ Disc plate bolt	11.0 – 18.0	1.5 – 2.5
④ Caliper bolt	18.0 – 29.0	2.5 – 4.0
⑤ Caliper axle bolt	11.0 – 14.5	1.5 – 2.0
⑥ Front fork lower clamp bolt	18.0 – 29.0	2.5 – 4.0
⑦ Front fork upper clamp bolt	14.5 – 21.5	2.0 – 3.0
⑧ Steering stem nut	29.0 – 36.0	4.0 – 5.0
⑨ Steering stem clamp bolt	11.0 – 18.0	1.5 – 2.5
⑩ Steering stem head bolt	26.0 – 37.5	3.6 – 5.2
⑪ Handlebars clamp bolt	8.5 – 14.5	1.2 – 2.0
⑫ Master cylinder clamp bolt	3.5 – 6.0	0.5 – 0.8
⑬ Brake pedal arm bolt	7.0 – 11.0	1.0 – 1.5
⑭ Swinging arm pivot nut	36.0 – 42.0	5.0 – 5.8
⑮ Rear torque link nut	14.5 – 21.5	2.0 – 3.0
⑯ Rear shock absorber fitting nut	14.5 – 21.5	2.0 – 3.0
⑰ Rear axle nut	36.0 – 58.0	5.0 – 8.0
⑱ Rear brake cam lever bolt	3.5 – 6.0	0.5 – 0.8
⑲ Spoke nipple	3.0 – 3.5	0.4 – 0.5



SERVICING ENGINE

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ENGINE COMPONENTS REMOVABLE WITH 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 LEFT SIDE	See page	ENGINE CENTER	See page	ENGINE RIGHT SIDE	See page
Gear shifting lever	3- 5	Air cleaner	2- 3	Clutch cover	3-14
Engine sprocket cover	3- 5	Oil filter	3- 3	Clutch plates	3-14
Clutch cable	3- 5	Fuel tank	3- 4	Clutch sleeve hub	3-14
Engine sprocket and drive chain	3- 6	Horn	3- 4	Primary driven gear	3-15
Neutral indicator switch body	3-16	Tachometer cable	3- 4	Oil pump drive gear	3-15
Generator cover	3-16	Exhaust pipe and muffler	3- 5	Oil pump ass'y	3-15
Generator rotor	3-17	Carburetor and throttle cable	3- 7	Clutch push rod	3-16
Starter clutch	3-17	Cam chain tensioner	3-11	Gear shifting shaft	3-16
		Cylinder head breather cover	3-11	Primary drive gear	3-15
		Cylinder head cover	3-11		
		Camshaft	3-11		
		Cylinder head	3-12		
		Cylinder	3-12		
		Piston	3-13		
		Starter motor	3-17		
		Oil pan	3-18		
		Sump filter	3-18		

Ⓢ Generator cover and starter motor lead wire should be removed from the starting motor relay side.

COMPRESSION CHECK

The compression of a cylinder is a good indicator of its internal condition. The decision to overhaul the cylinders 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

Standard	Limit	Difference
11 – 14 kg/cm ² (156 – 199 psi)	10 kg/cm ² (142 psi)	2 kg/cm ² (28.4 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 the grooves
- * Poor sealing of valves
- * Ruptured or otherwise defective cylinder head gasket

Overhaul the engine in the following cases:

- * Compression pressure in one of the cylinders is less than 10 kg/cm² (142 psi).
- * Difference in compression pressure between the two is more than 2 kg/cm² (28.4 psi).
- * Both compression pressures are below 11 kg/cm² (standard) even when they measure more than 10 kg/cm² (142 psi).

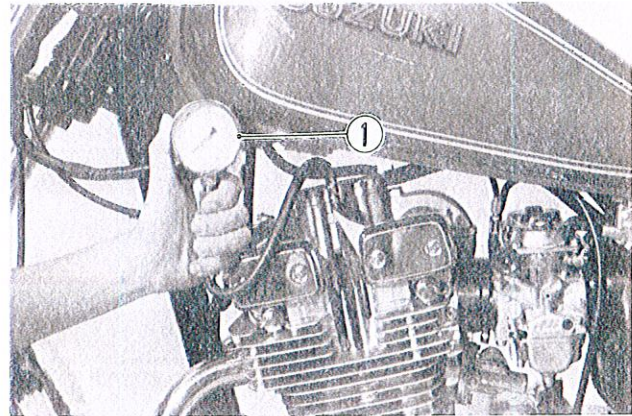
COMPRESSION TEST PROCEDURE

NOTE

- * Before testing the compression of the engine, make sure that the cylinder head cation, and valves are set to proper clearance.
- * Warm up the engine before testing.

- Remove both spark plugs.
- Fit the compression gauge ① in one of the plug holes, while taking care that the connection is tight.
- Twist the throttle grip full open.
- Crank the engine a few seconds with the starter, and record the maximum gauge reading of the compression in that cylinder.
- Repeat this procedure with the other cylinder.

09915-64510	Compression gauge
09915-63210	Adapter

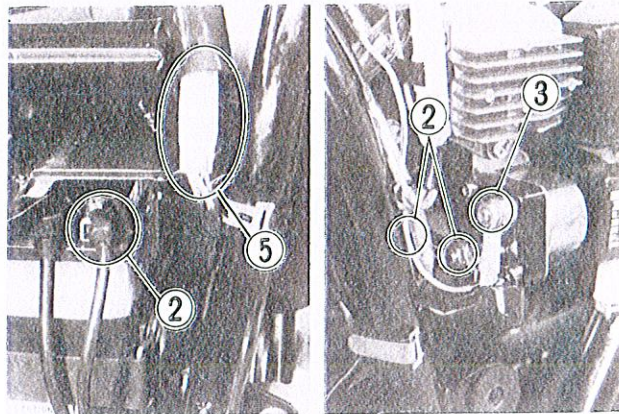
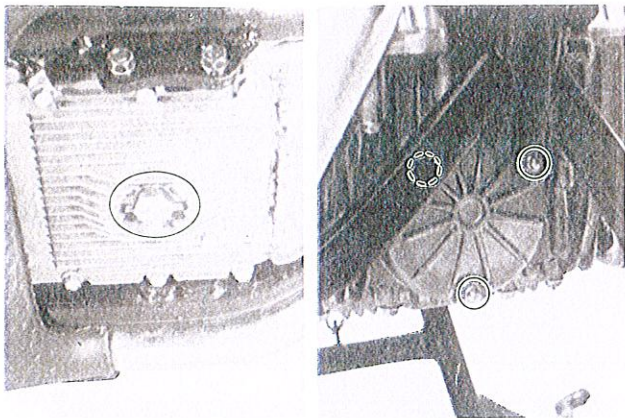
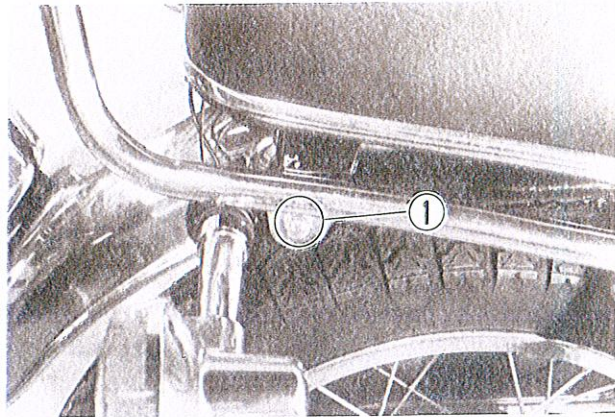


ENGINE REMOVAL AND REINSTALLATION

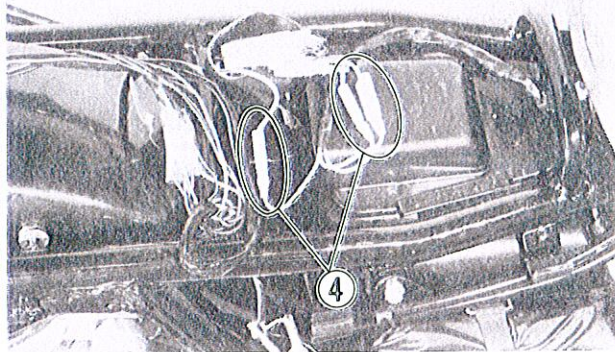
ENGINE REMOVAL

Before taking the engine out of the frame, wash the engine with a steam cleaner and drain engine oil etc. The procedure of engine removal is sequentially explained in the following steps, and engine installation is effected by reversing the removal procedure.

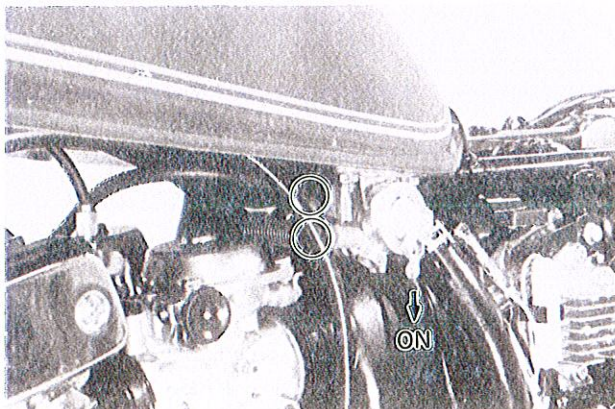
1. Place an oil pan under the engine and remove the oil filter cap and oil drain plug to drain out engine oil.



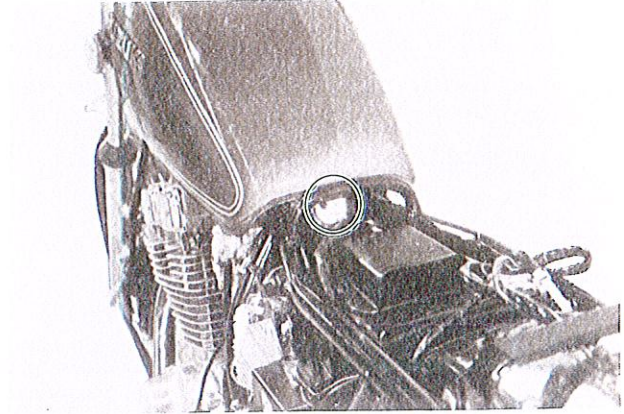
2. Remove the two bolts ① and remove the seat by pulling rearward.
3. Remove the left and right frame covers and disconnect various lead wires.
 - Battery \ominus and \oplus lead wires ②.
 - Starter relay \ominus lead wire ③.
 - Generator lead wires ④.
 - Signal generator and oil pressure switch lead wires ⑤.



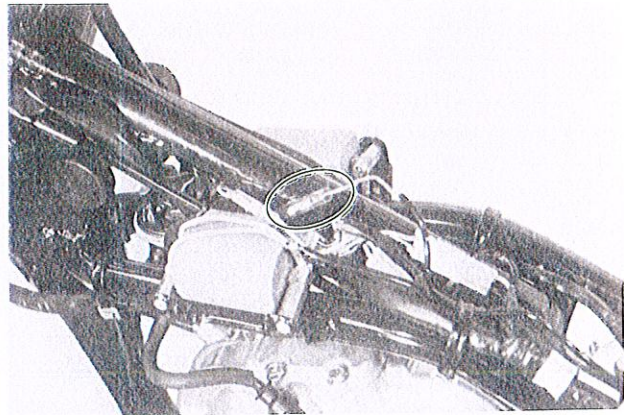
4. Set the fuel cock in the "ON" or "RES" position and shift the fuel hose clip sideways to remove the fuel hose and vacuum hose from the fuel cock.



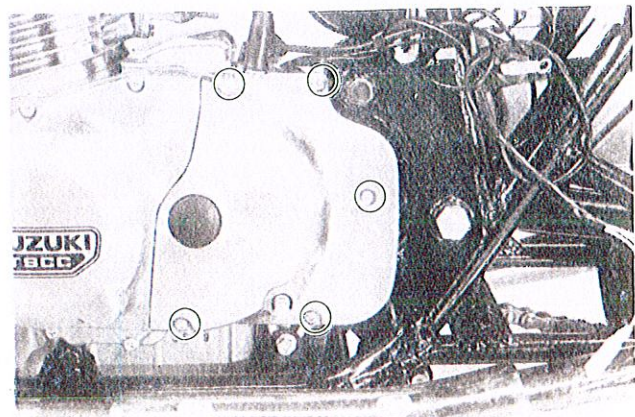
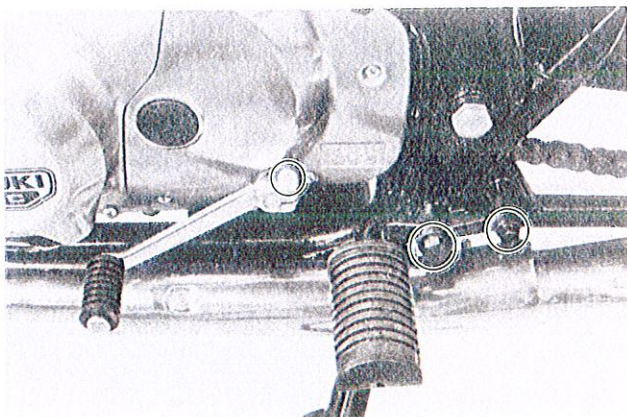
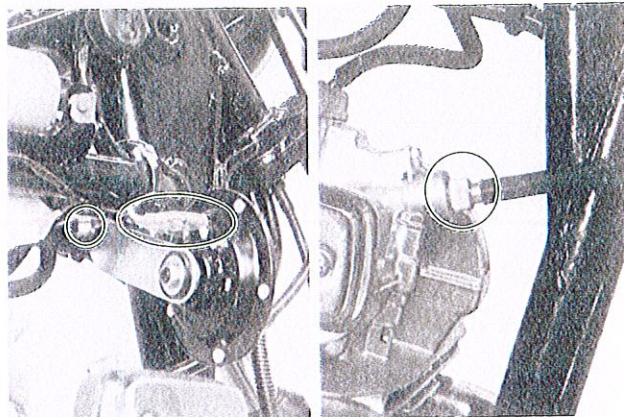
- Remove the bolt at the rear of the fuel tank.
Remove the fuel tank by moving it rearwards.



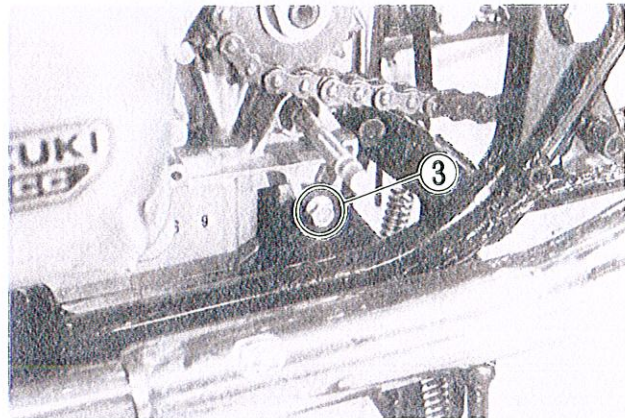
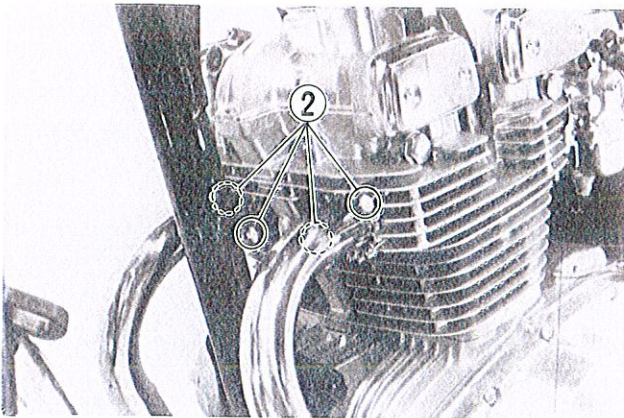
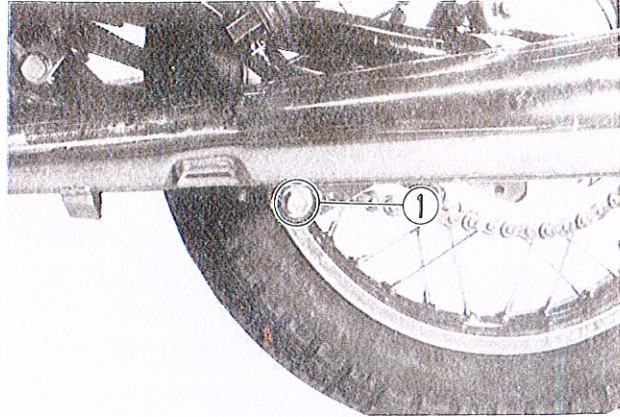
- Disconnect the neutral switch lead wire.



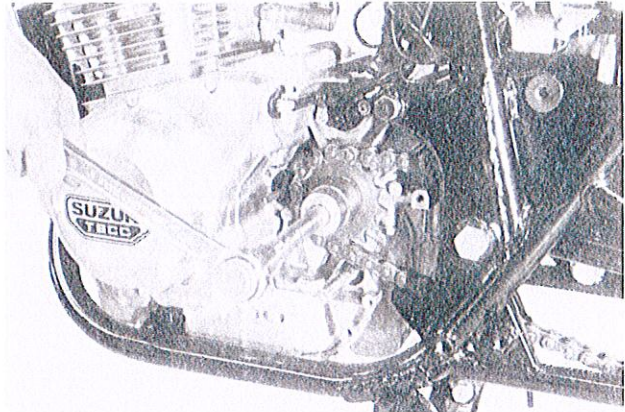
- Remove the horn.
- Remove tachometer cable from the engine.
- Remove the left footrest, gearshifting lever and engine sprocket cover.



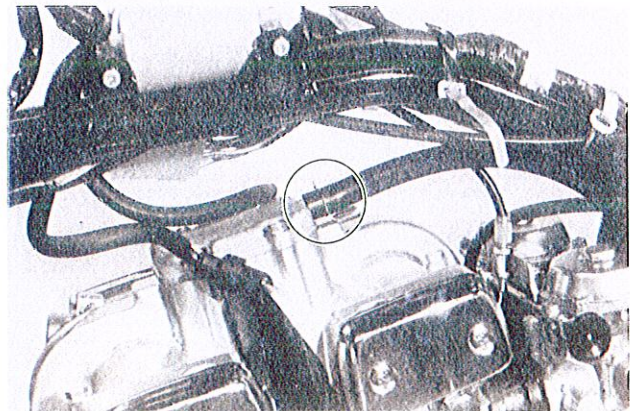
10. Remove the left and right mufflers by unscrewing muffler mounting bolts ①, exhaust pipe clamp bolts ②, exhaust pipe and muffler clamp bolts and power chamber securing bolts ③.



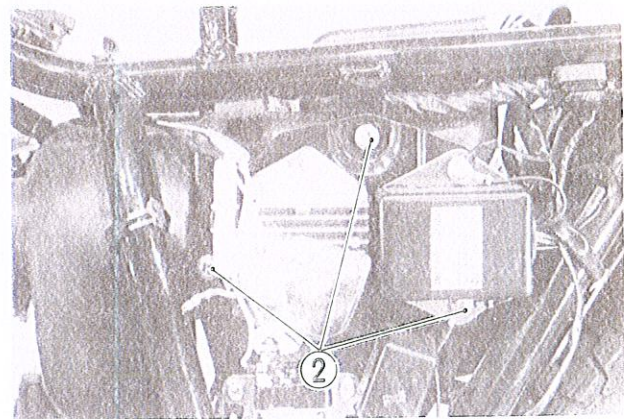
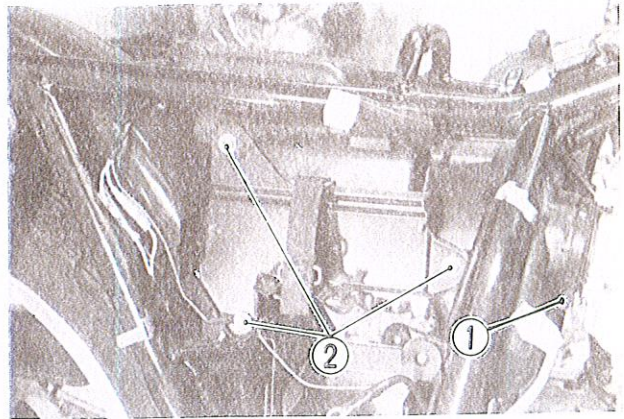
11. Straighten the bent washer on the engine sprocket with a chisel and remove the sprocket. Apply rear brake to remove the mounting nut and the sprocket together with the chain from the drive shaft.



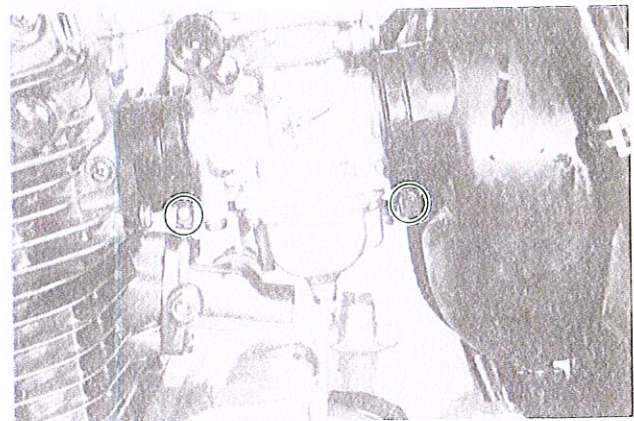
12. Shift the breather pipe clip sideways and remove the pipe from the cylinder head cover cap.



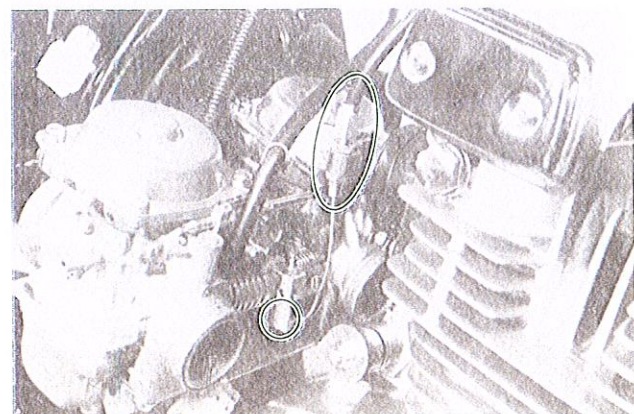
13. Loosen the carburetor intake clamp screws ① and slide the air cleaner case rearward by removing air cleaner case fitting screws ②.



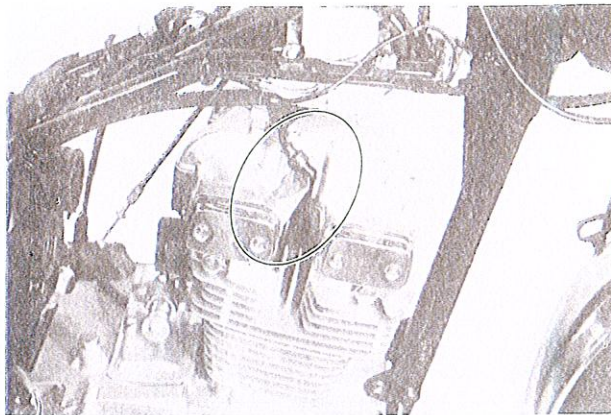
14. Loosen the respective clamps for carburetors insulator to remove the carburetors by pulling them toward the rear.



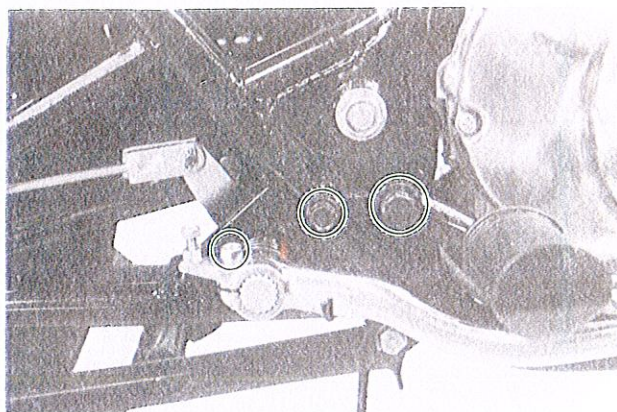
15. Remove the carburetor from right side after removing the throttle cable from the carburetor assembly.



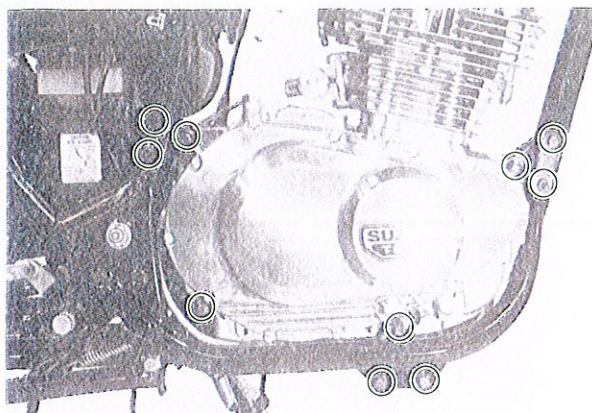
16. Pull out the spark plug caps from spark plugs.



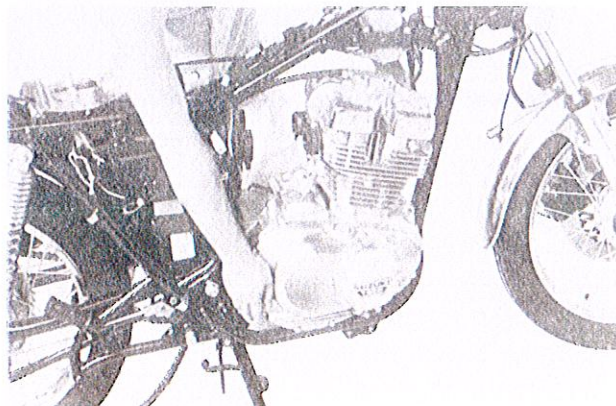
17. Remove the right footrest and rear brake pedal.



18. Remove the engine mounting bolts and brackets.



19. Gradually lift up the engine and lower the engine ass'y on the right side making sure that it does not make contact with the rear bracket. Remove the engine through the right side of the frame.



ENGINE REINSTALLATION

Reinstall the engine in the reverse order of engine removal.

- Temporarily fasten the three engine mounting brackets before inserting the engine mounting bolts.
- Coat thread lock cement lightly to the inner surface of the engine sprocket spacer.

99000-32040	Thread lock cement
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- The engine sprocket and drive chain should be installed on the drive shaft, together, at the same time.

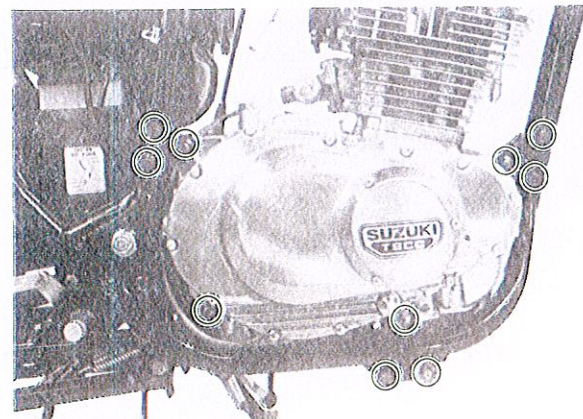
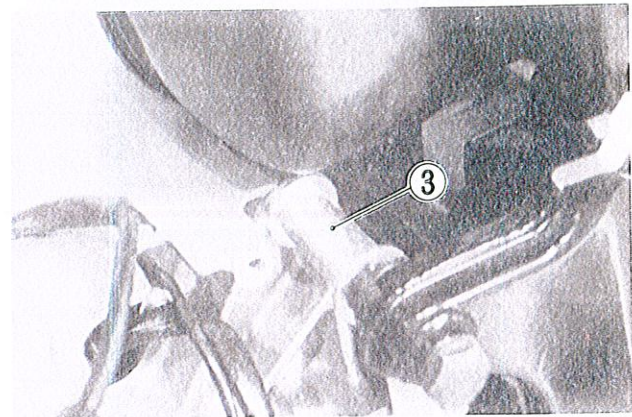
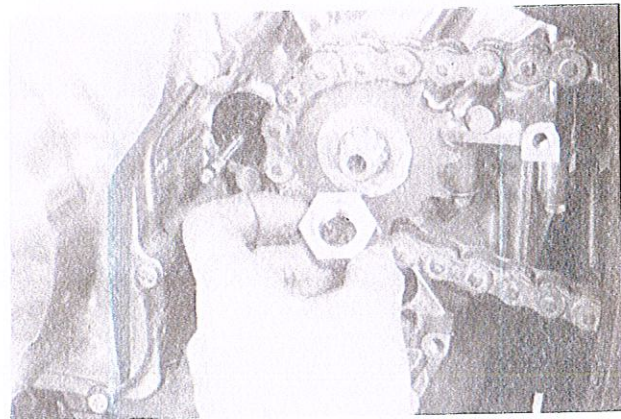
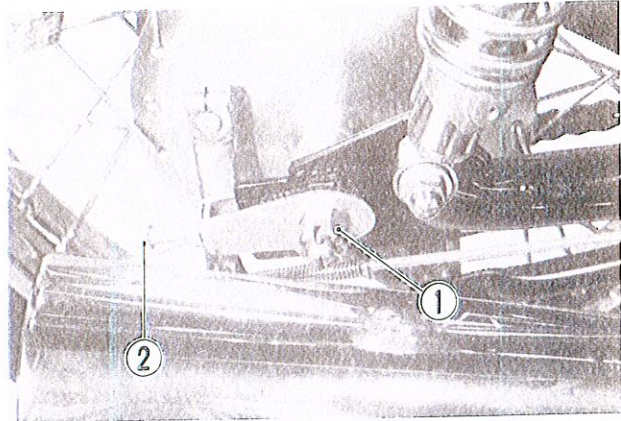
If it is difficult to install the engine sprocket, remove the rear axle cotter pin and loosen the axle nut 1, and chain adjuster bolt 2 to push the wheel forward and give the drive chain some play.

When replacing the engine sprocket nut, stepped side should be faced inside.

- After inserting the engine mounting bolts, tighten engine mounting bracket bolts and engine mounting bolts. Insert all four long bolts from the left side and insert the rear upper bolt through the spacer 3 on the left side of the engine.

Tightening torque for engine mounting bolts

	lb-ft	kg-m
10 mm Dia.	25.5	3.5
8 mm Dia.	18.0	2.5



NOTE

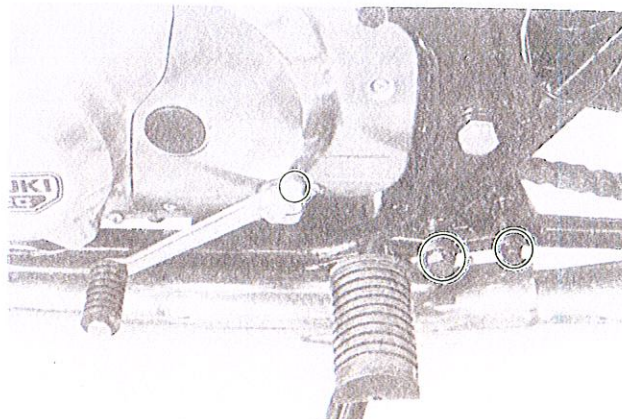
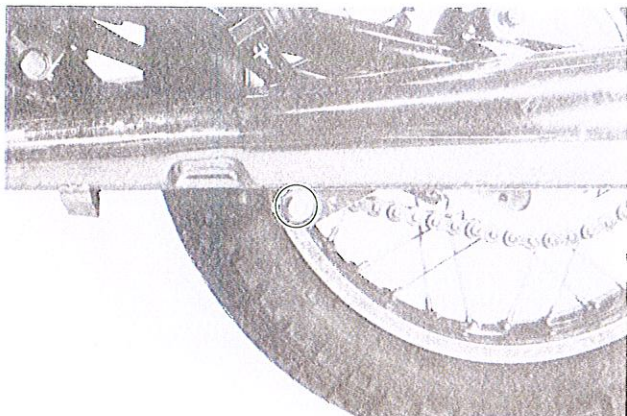
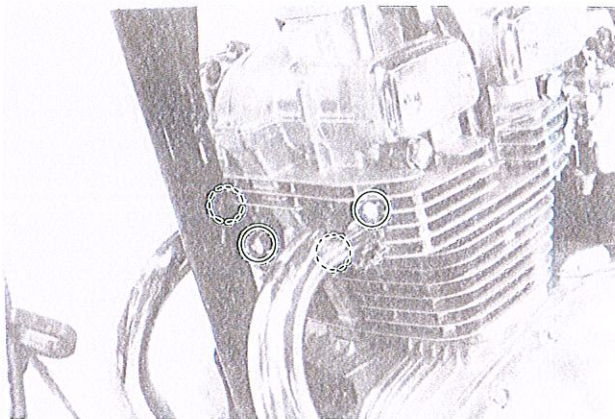
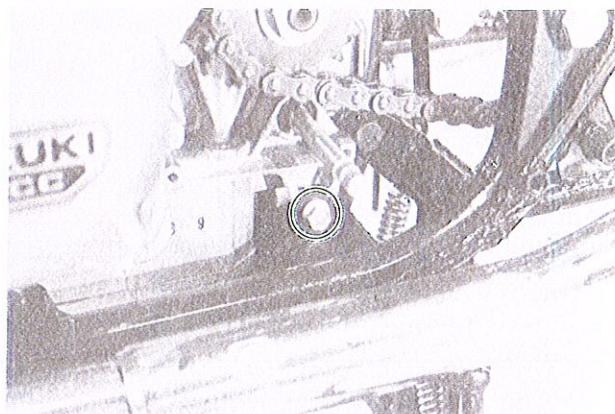
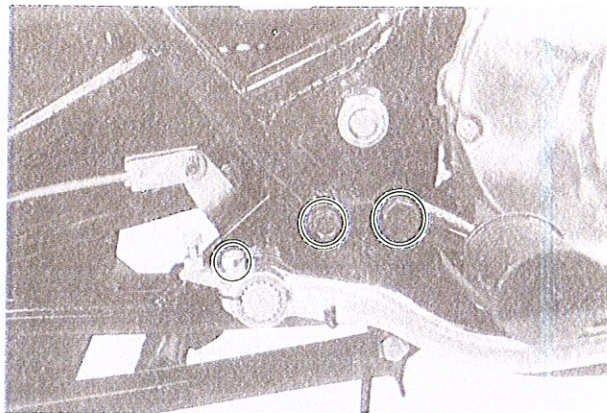
After complete tightening of the engine mounting bolts, adjust the drive chain play, (see page 2-10).

Tightening torque

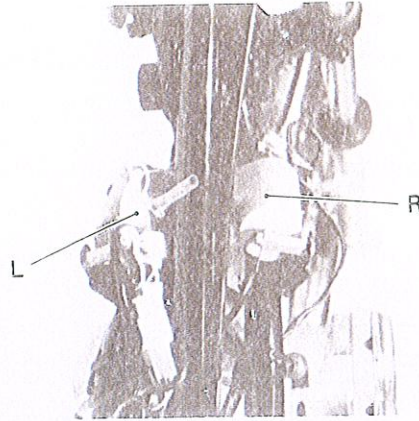
	lb-ft	kg-m
Engine sprocket nut	36.0 – 50.5	5.0 – 7.0
Rear axle nut	36.0 – 58.0	5.0 – 8.0
Torque link nut	14.5 – 21.5	2.0 – 3.0

- Firmly secure the carburetor with the respective clamps. If the carburetor is not firmly secured, gas leakage, incorrect fuel-air ratio and unsatisfactory engine running may result.
- Route wires and cables correctly.
(See pages 8-7 and 8-8)
- Securely tighten each exhaust and muffler clamp bolts to the specified torque.

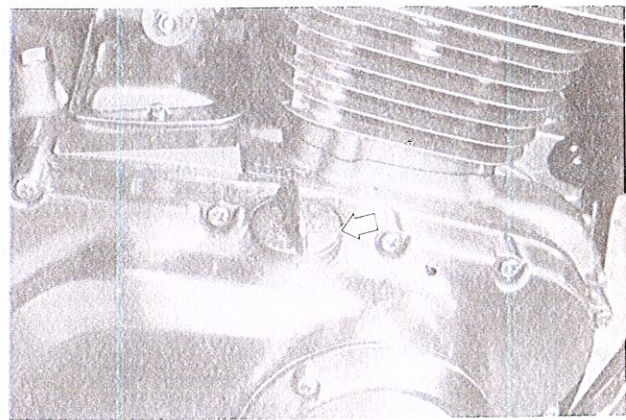
		lb-ft	kg-m
Power chamber bolt		14.5–21.5	2.0–3.0
Muffler mounting bracket bolt		19.5–31.0	2.7–4.3
Footrest mounting bolt	10 mm	19.5–31.0	2.7–4.3
	8 mm	11.0–18.0	1.5–2.5
Exhaust pipe-muffler clamp bolt		6.5–10.0	0.9–1.4
Exhaust pipe clamp bolt		6.5– 8.5	0.9–1.2



- Replace the plug caps on the spark plugs so that "L" side ignition coil goes to the "L" cylinder and "R" side to "R" cylinder respectively.

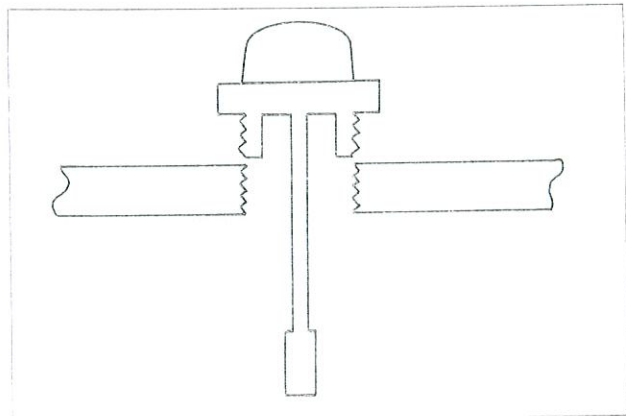


- Pour 2.6 L (2.7 US qt) of engine oil SAE 10W/40 graded SE into the engine after overhauling engine. Several minutes after starting and stopping engine, insure that the oil level remains between the marks of dipstick.



NOTE:

The dipstick should be "set" back into the hole but not threaded down tight to correctly check the oil level.

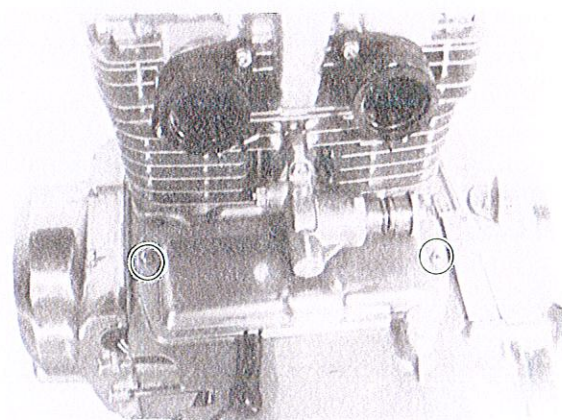
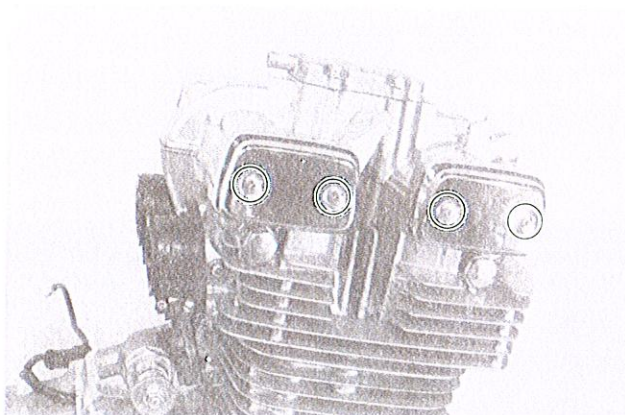
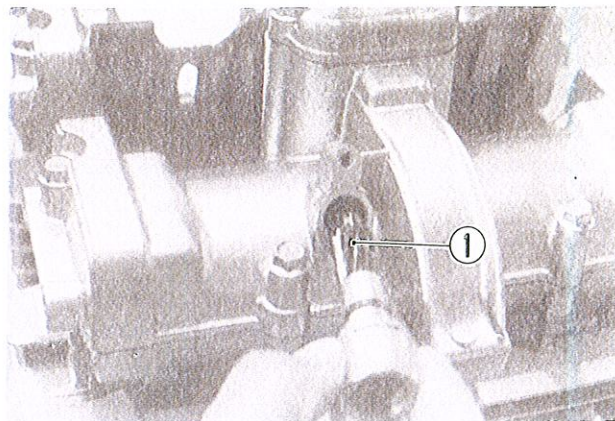


- After remounting the engine, following adjustments are necessary.

	Page
* Throttle cable	2- 8
* Clutch	2- 9
* Drive chain	2-10
* Brake light and pedal	2-13

ENGINE DISASSEMBLY

- Remove tachometer drive gear ① by pulling it off after removing its stopper (secured by a cross-recessed screw).
- Remove four camshaft end caps.
- Remove cylinder head cover.

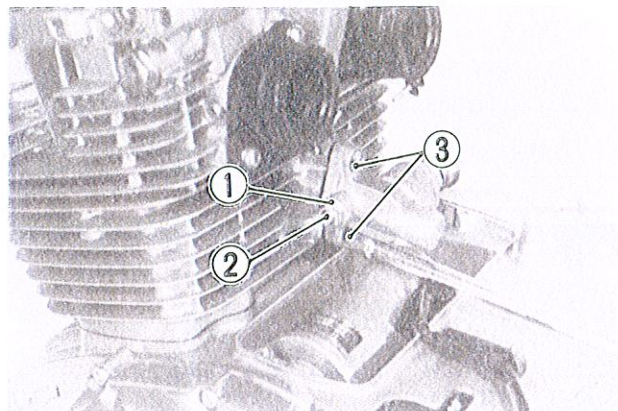


- Remove the starter motor cover.

- Loosen the lock nut ① and tighten the stop screw ② and then remove two cam chain tensioner mounting bolts ③.

NOTE:

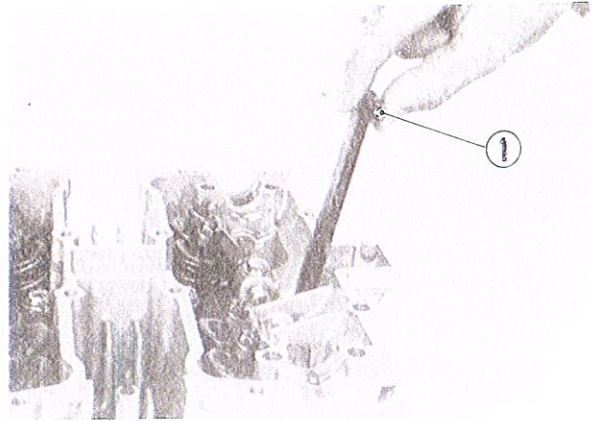
Screw ② locks the spring loaded tensioner push rod inside.



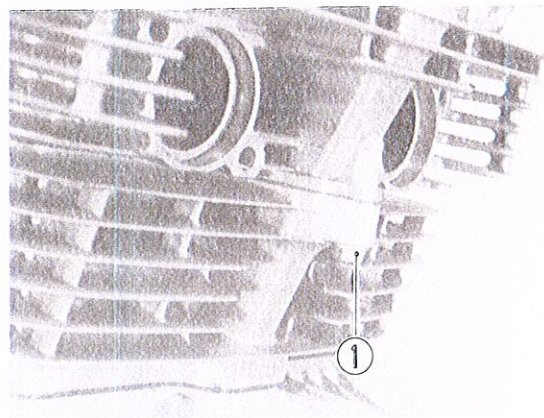
- Hold down each camshaft with vice pliers, and be sure to loosen the four camshaft holder bolts evenly by shifting the wrench diagonally. Then, remove the pliers and take off two camshafts.



- Pull out chain guide 1.

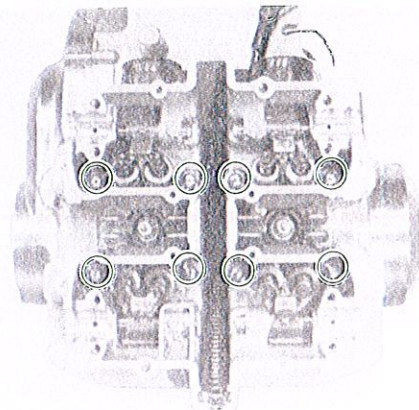


- Remove the 6-mm bolt 1 at the front of the chain cavity.

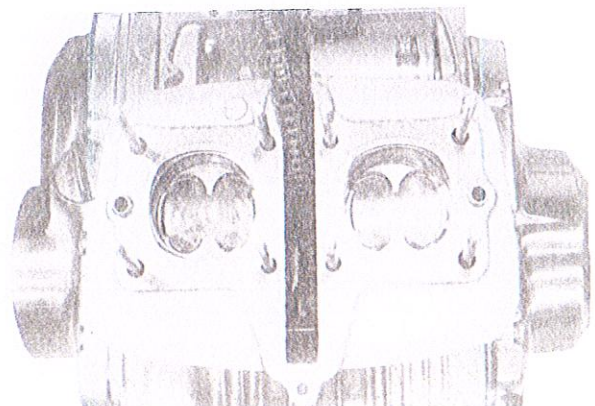


- Remove the eight 8-mm cylinder head nuts in descending order by using special tool.

09914-24510	T handle
09911-74520	Long socket 12 mm



- After removing cylinder head, take a firm grip on the cylinder block at both ends, and lift it straight up. If the block will not come off, lightly tap on the non-fin portions of the block with a plastic mallet to shake the gasketed joint loose.



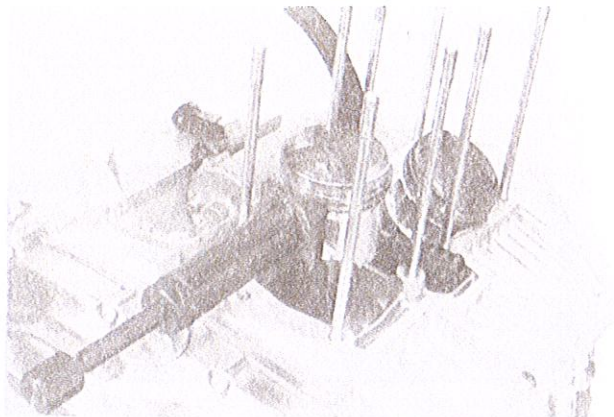
CAUTION

Be careful not to damage the fins when removing or handling the cylinder block. This precaution applies to the cylinder head, too.

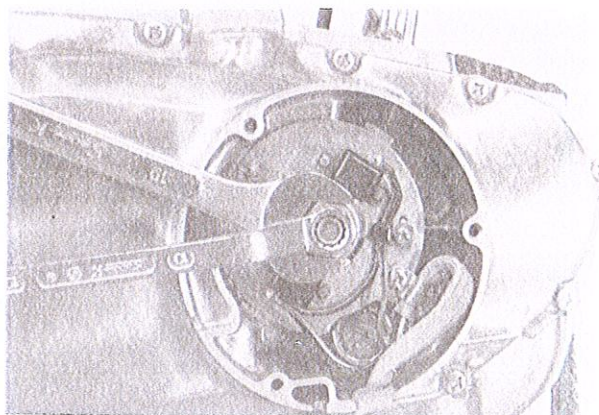
- Put a rag around the connecting rod down in the crankcase to prevent parts from falling into the crankcase. Remove the piston pin circlips and the piston pins.
- Remove both pistons and scribe letters "L" and "R" on the crowns of respective piston.

09910-34510

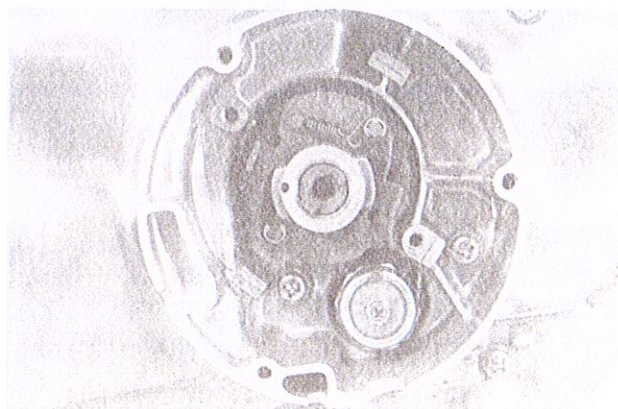
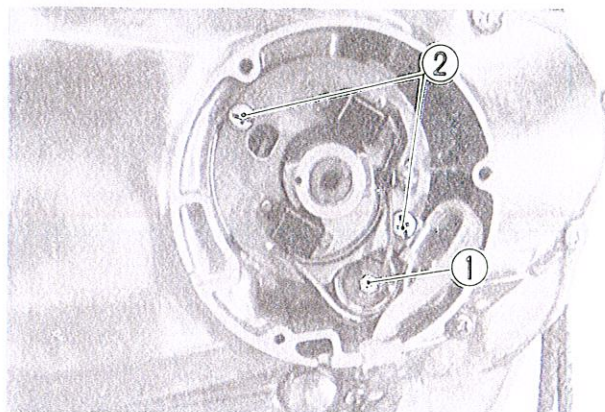
Piston pin puller



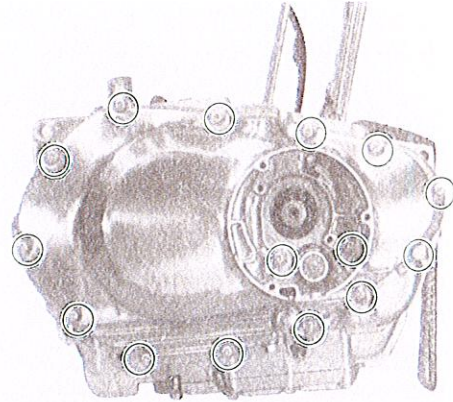
- Remove signal generator cover and gasket.
- Apply wrench to crank turning nut to remove automatic advancer mounting bolt and the crank turning nut.



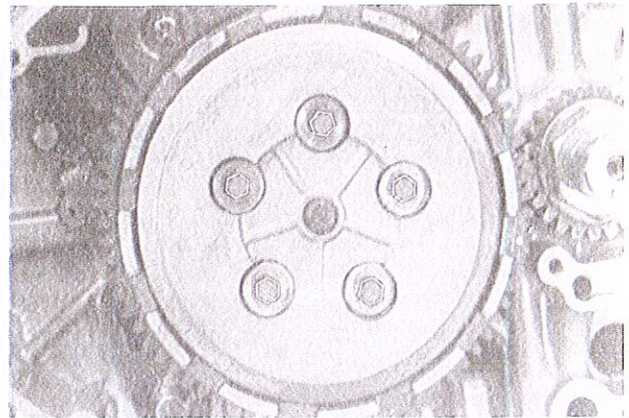
- Remove the oil pressure switch lead wire 1.
- Remove mounting screws 2 for signal generator and then remove the assembly and the automatic advancer.



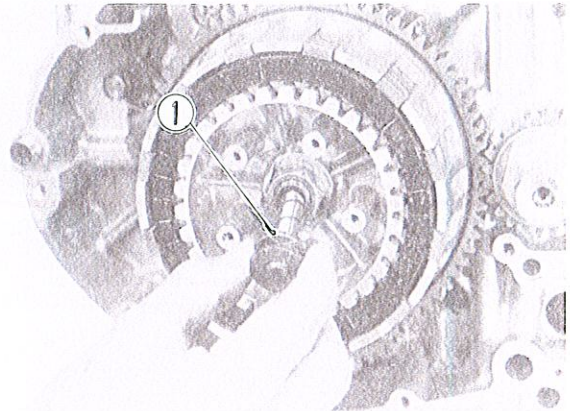
- Remove clutch cover and gasket.



- Remove clutch spring mounting bolts and remove springs and pressure plate.



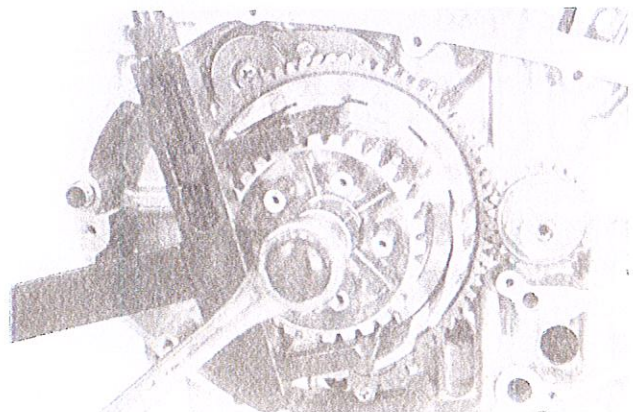
- Remove clutch push piece 1 and needle bearing from countershaft.



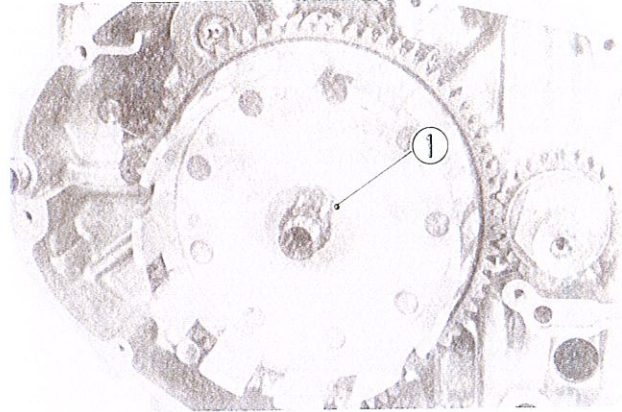
- After removal of clutch drive and driven plates, flatten the lock washer and remove the clutch sleeve hub nut by using special tool.

09920-53710

Clutch sleeve hub holder

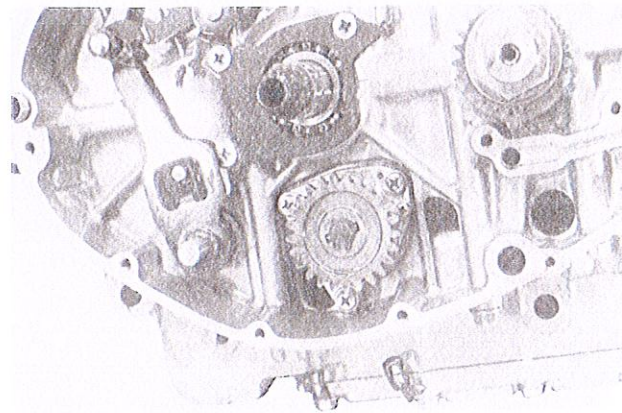


- Draw out thrust washer ① and primary driven gear from countershaft.



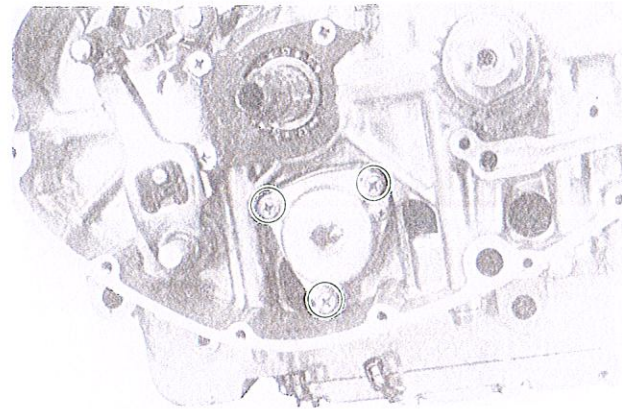
- Using special tool, remove oil pump driven gear.

09900-06107	Snapping opener
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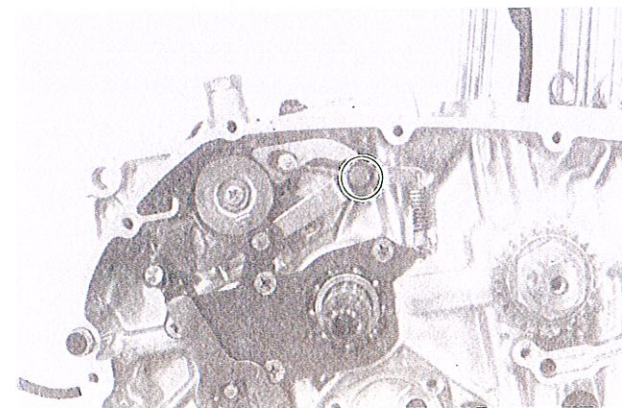


- Remove three oil pump mounting screws and remove oil pump body from crankcase.

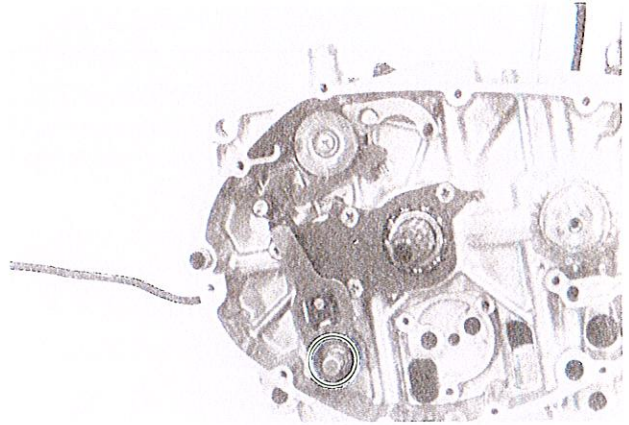
NOTE: Do not misplace oil pump drive pin, washer and two O-rings.



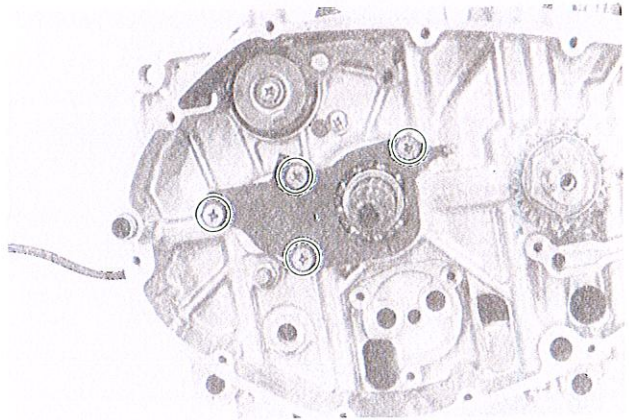
- Remove cam stopper.



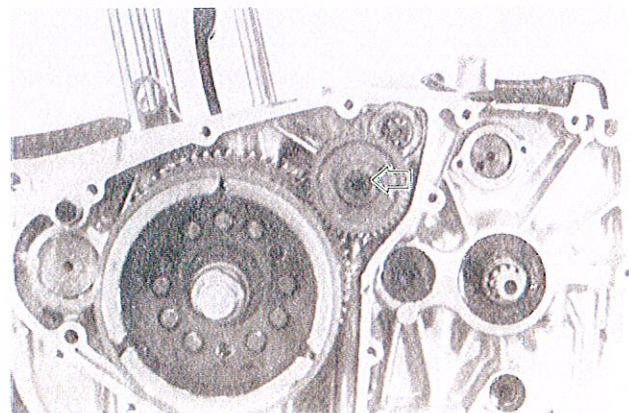
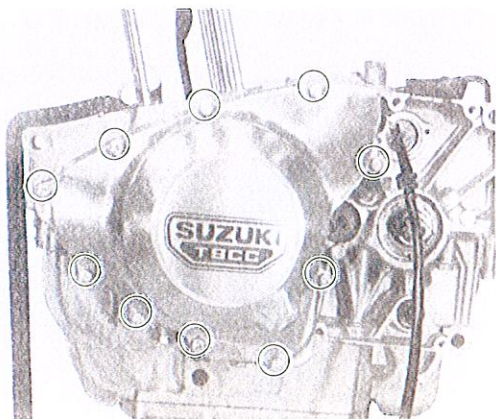
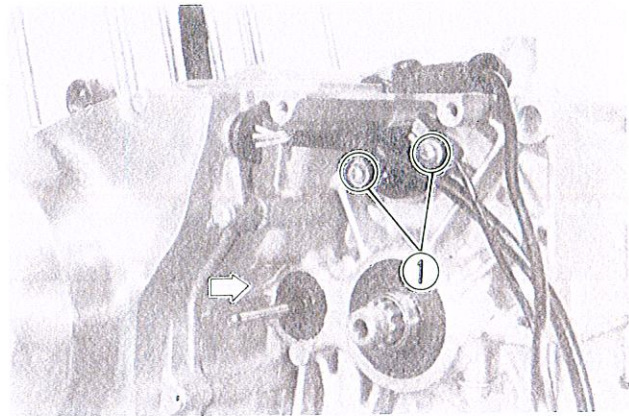
- Draw out gearshifting shaft.



- Remove bearing holder.

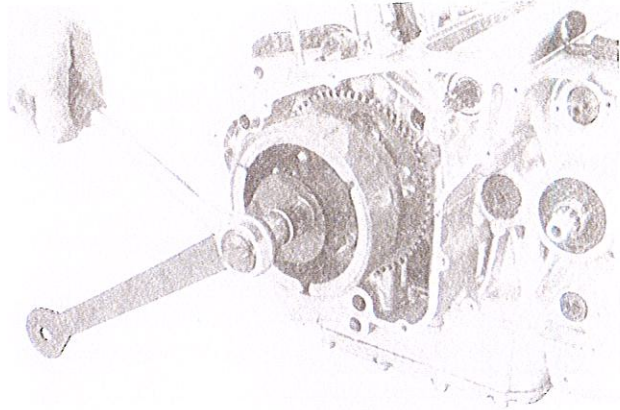


- Push out clutch push rod and remove generator lead wire guide (1) and neutral indicator switch housing.
- Remove generator cover and its gasket.
- Remove starter idle gear and shaft.



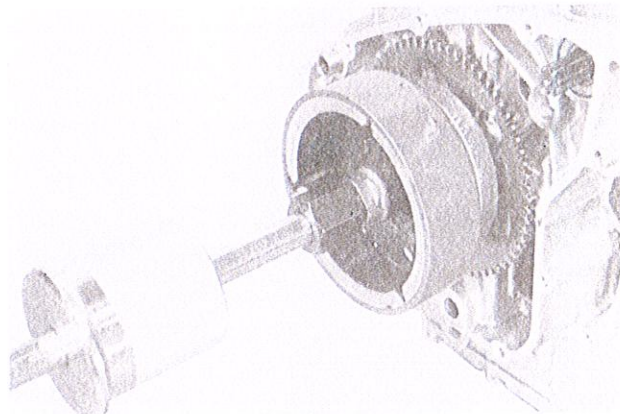
- Using special tool, remove rotor securing bolt.

09930-44510	Rotor holder
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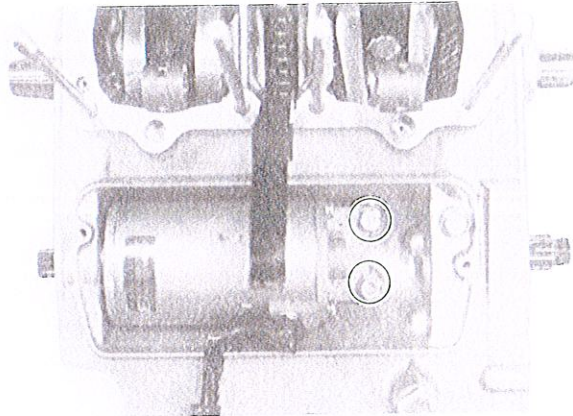


- Using special tools, remove the rotor with starter clutch.

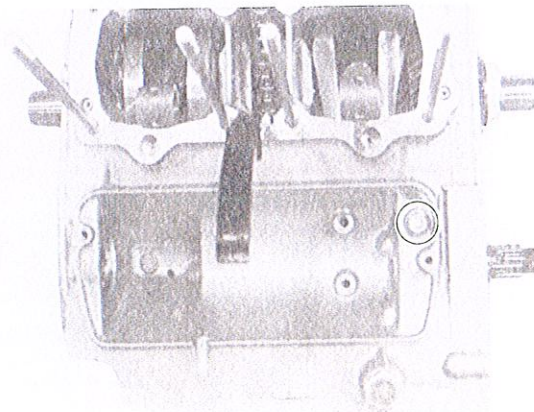
09930-30102	Rotor remover sliding shaft
09930-33710	Attachement



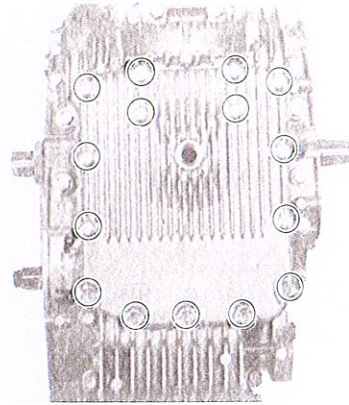
- Remove two bolts, and lightly tap the head of starter motor gear with plastic hammer to remove starter motor.



- Remove upper crankcase tightening bolt.



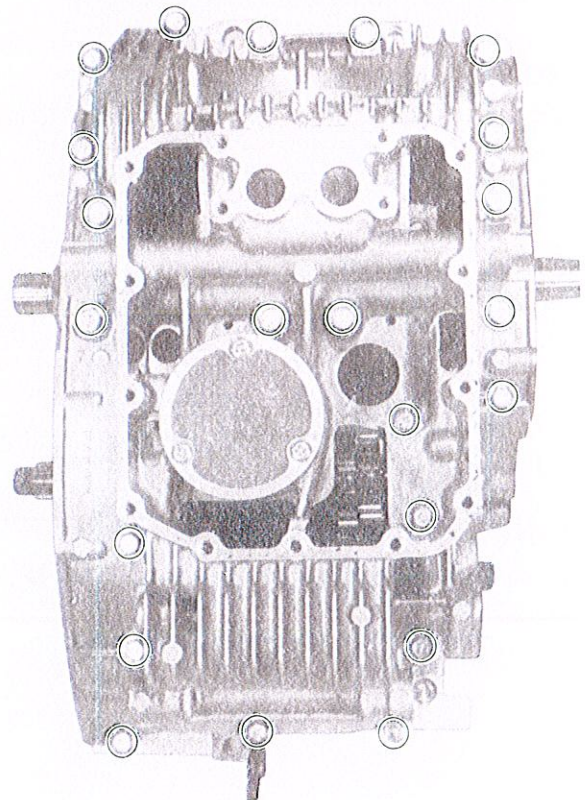
- Turn engine upside down and remove oil pan.



- Remove crankcase tightening bolts.

NOTE:

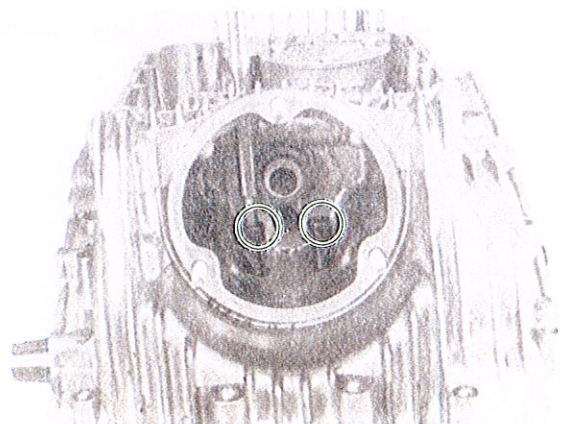
At this moment, it is not necessary to remove the oil sump filter.



- Using special tool, remove two allen bolts.

09914-25811

6 mm T type hexagon wrench

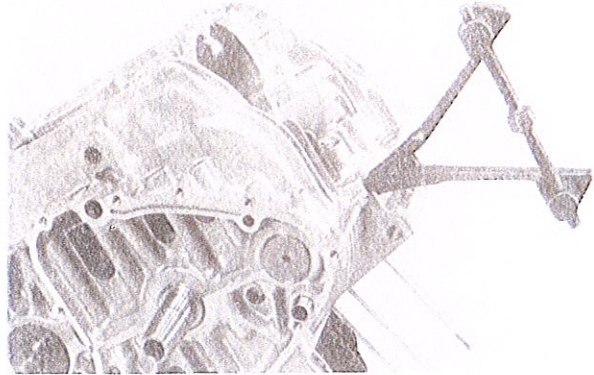


CAUTION

Make sure that all bolts are removed before using the crankcase separating tool.

- Using special tool, separate the upper and lower crankcase halves.

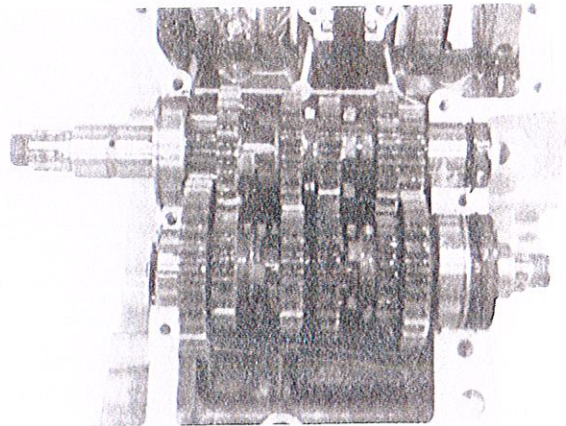
09912-34510	Cylinder disassembling tool
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- Remove the countershaft and drive shaft.

NOTE:

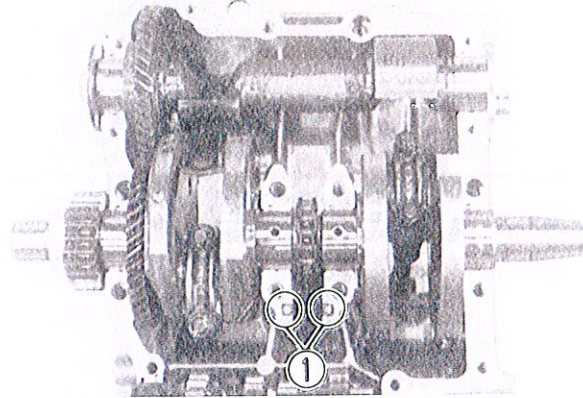
Be careful not to drop "C" rings and the like.



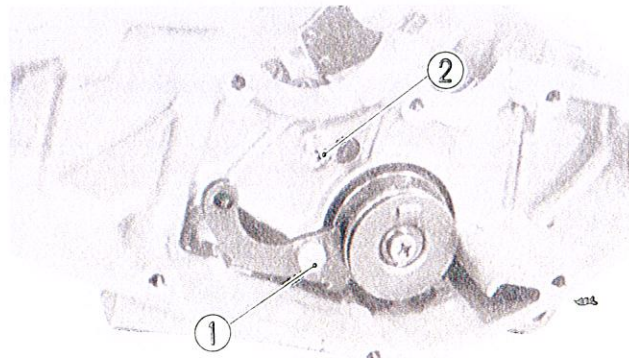
- Remove crankshaft assembly and counter balancer.

NOTE:

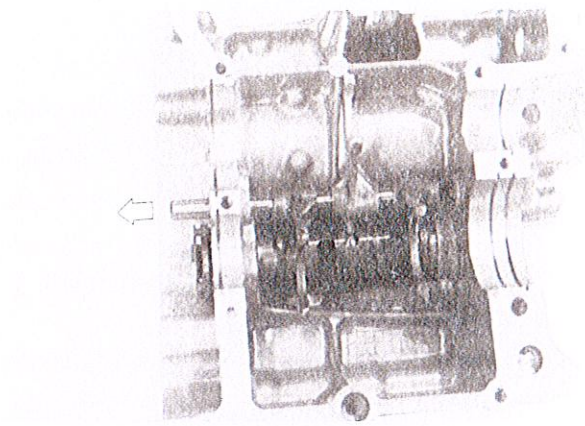
Be careful not to drop two dampers ① of cam chain guide.



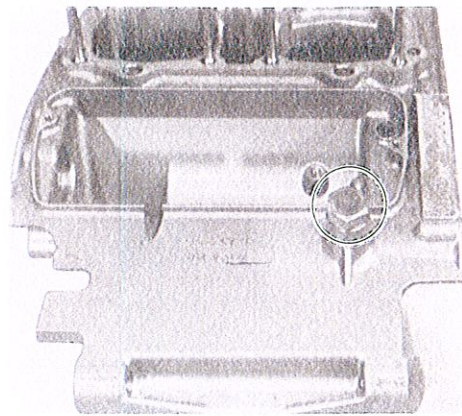
- Remove cam guide bolt ① and gearshifting fork shaft stopper screw ②.



- Extract gear shifting fork shaft from lower crankcase.



- Remove neutral stopper holder, spring and stopper.



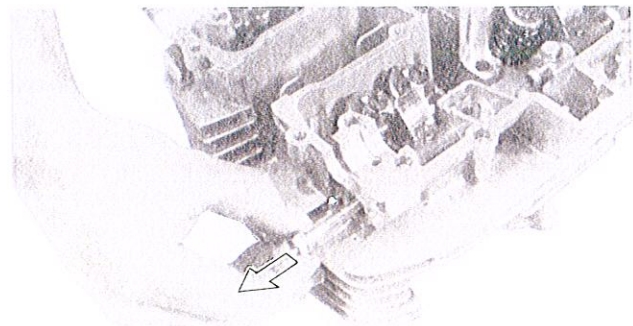
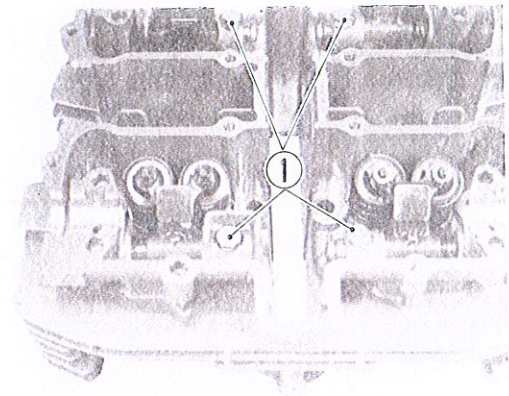
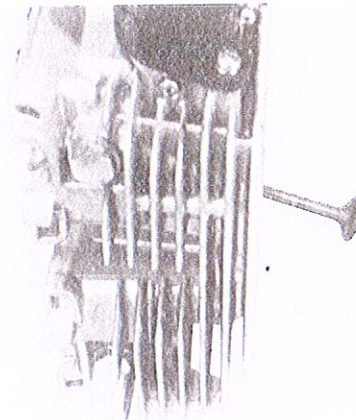
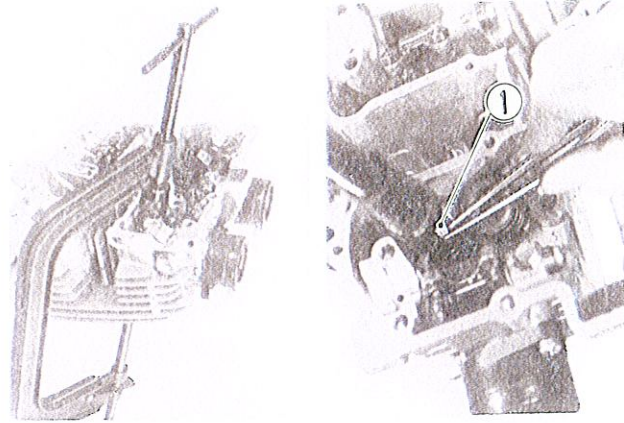
ENGINE COMPONENTS INSPECTION AND SERVICING

CYLINDER HEAD DISASSEMBLY

- Using special tools, compress valve springs and take off two cotter halves ① from valve stem.

09916-14510	Valve lifter
09916-14910	Valve lifter attachment
09916-84510	Forceps

- Take out the spring retainer, inner and outer springs.
- From the other side, pull out the valve.



CAUTION:

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

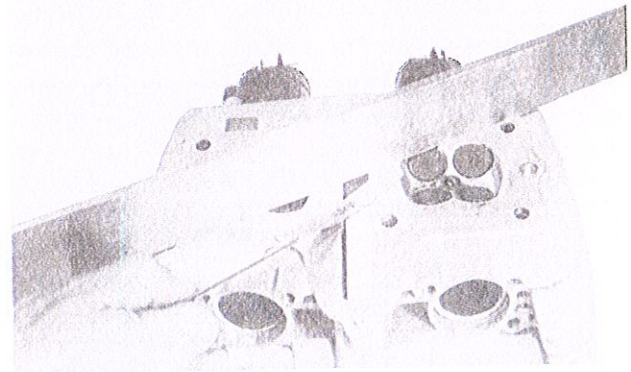
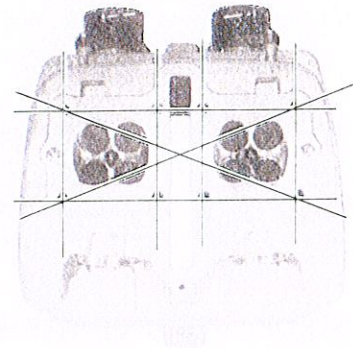
NOTE:

- * Removal of valves completes ordinary disassembling work. If valve guides have to be removed for replacement after inspecting related parts, carry out the steps shown in valve guide servicing.
- * When removing rocker arm shaft, remove the rocker arm shaft stop screw ① and screw 6mm bolt into the rocker arm shaft end and pull it out.

CYLINDER HEAD DISTORTION

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

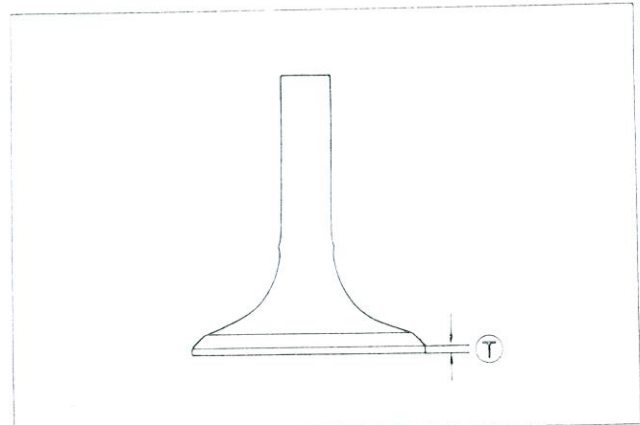
09900-20803	Thickness gauge
Service Limit	0.1 mm (0.004 in)



VALVE FACE WEAR

- Visually inspect each valve for wear of its seating face. Replace any valve with an abnormally worn face.
- The thickness T decreases as the wear of the face advances. Measure the thickness and, if the thickness is found to have been reduced to the limit, replace it.

Service Limit	0.5 mm (0.02 in)
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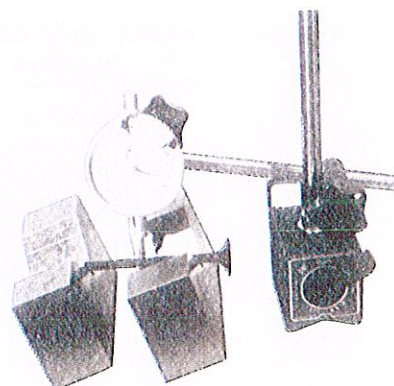


VALVE STEM RUNOUT

- 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.

09900-20606	Dial gauge (1/100 mm)
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Service Limit	0.05 m (0.002 in)
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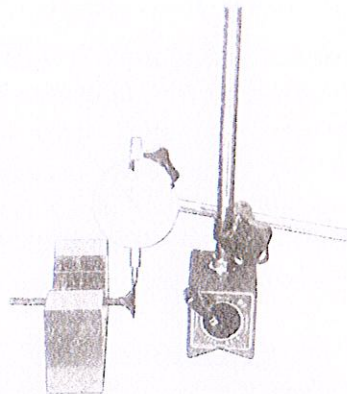


VALVE HEAD RADIAL RUNOUT

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

If it measures more than limit, replace the valve.

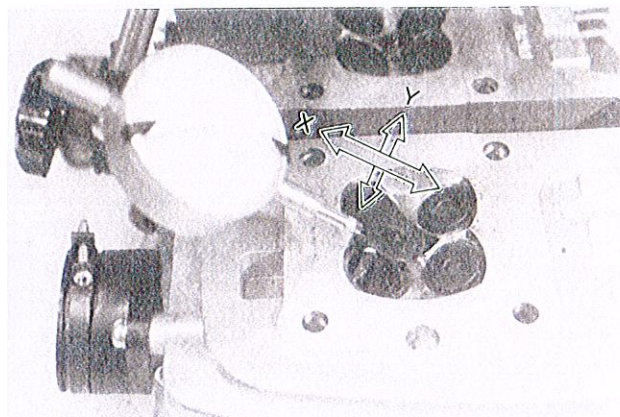
Service Limit	0.03 mm (0.001 in)
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VALVE GUIDE — VALVE STEM CLEARANCE

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

Valve	Service Limit
Intake valves	0.09 mm (0.0035 in)
Exhaust valves	0.10 mm (0.0039 in)

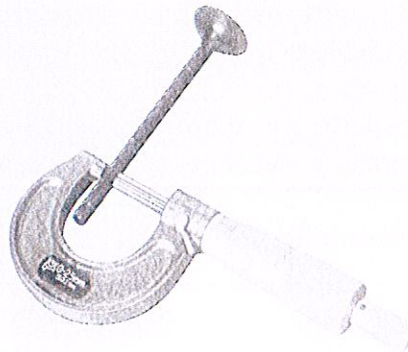


VALVE STEM WEAR

If the valve stem is worn down to the limit, as measured with a micrometer, where the clearance is found to be in excess of the limit indicated, replace the valve; if the stem is within the limit, then replace the guide. After replacing valve or guide, be sure to recheck the clearance.

09900-20205	Micrometer (0 – 25 mm)
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Valve	Standard
Intake valves	5.460 – 5.475 mm (0.2150 – 0.2156 in)
Exhaust valves	5.445 – 5.460 mm (0.2144 – 0.2150 in)



VALVE GUIDE SERVICING

- Using valve guide remover ①, drive the valve guide out toward intake or exhaust camshaft side.

09916-44910	Valve guide remover
-------------	---------------------

NOTE:

Discard the removed valve guide sub-assemblies.

- Re-finish the valve guide holes in cylinder head with a 11.2 mm reamer.

09916-34560	Valve guide hole reamer
09916-34540	Reamer handle

- Fit a ring to each valve guide. Be sure to use new rings and valve guides. Use of rings and valve guides removed during disassembly is prohibited. The intake and exhaust valve guides used during production differ in shape. The intake and exhaust valve guides available from spare parts however are identical in shape as are the oil seals and may be utilized in either position.

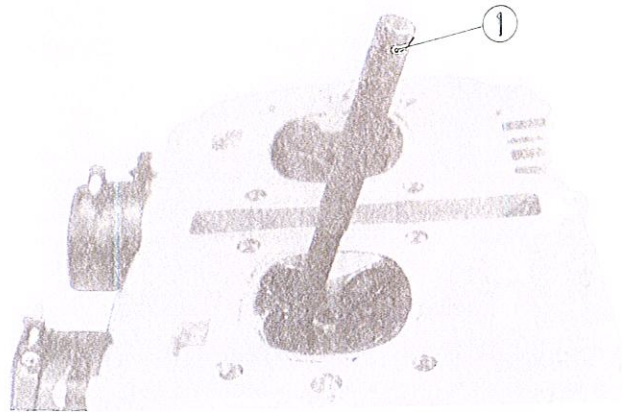
11115-11470	Valve guide
09289-05003	Valve guide oil seal

- Oil the stem hole of each valve guide and drive the guide into the guide hole with the valve guide remover and attachment.

09916-44910	Valve guide remover
09916-44920	Valve guide installer attachment

CAUTION:

Failure to oil the valve guide hole before driving the new guide into place may result in a damaged guide or head.



- Install valve spring lower seats ①. Be careful not to confuse the lower seats with the spring retainer ②.



- Re-finish the valve guide inner surface with a 5.5 mm reamer.

09916-34550	Valve guide reamer
09916-34540	Reamer handle



- Oil each oil seal, and drive them into position with the valve guide remover.

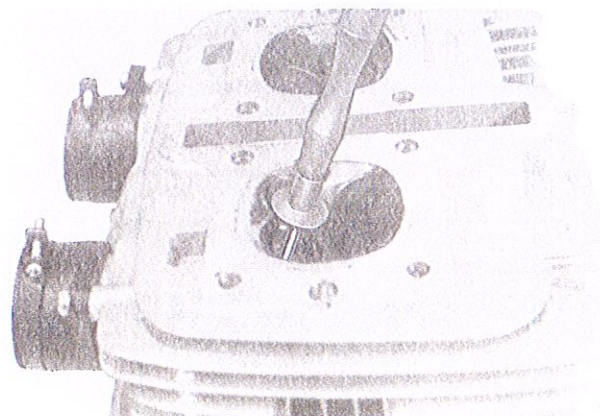
09916-44910	Valve guide remover
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**NOTE:**

Do not use the oil seals removed in disassembly: use new seals.

VALVE SEAT WIDTH

- Coat the valve seat with Prussian blue uniformly. Fit the valve and tap the coated seat with the valve face in a rotating manner, in order to obtain a clear impression of the seating contact. In this operation, use the valve lapper to hold the valve head.
- The ring-like dye impression left on the valve face must be continuous—without any break—and, in addition to this requirement, the width of the dye ring, which is the visualized seat "width", must be within the following specification:



Valve seat width

Seat width	Standard
w	0.9 – 1.1 mm

When inspecting the valve and seat for condition and proper seat width, it is also important to note the position of the contact area on the valve face.

NOTE:

The proper seating position is in the center of the valve face.

If any requirement is not met, correct the seat position by servicing it as follows:

VALVE SEAT SERVICING

The valve seats for both the intake and exhaust valves are machined to two different angles. The seat contact surface is cut 45° and the area above the contact service (closest to the combustion chamber) is cut to 15° .

NOTE:

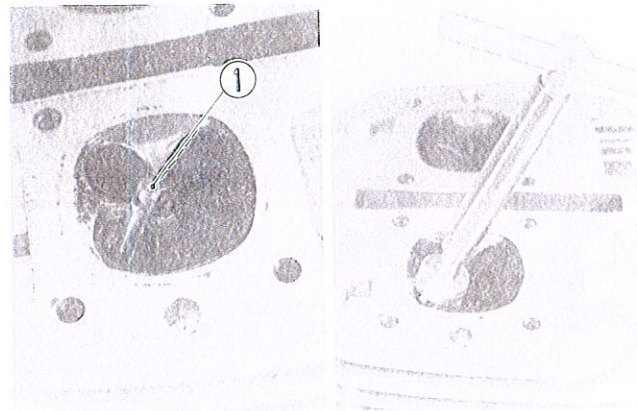
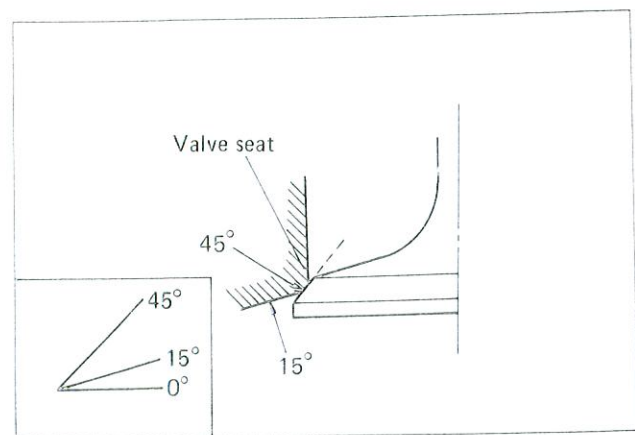
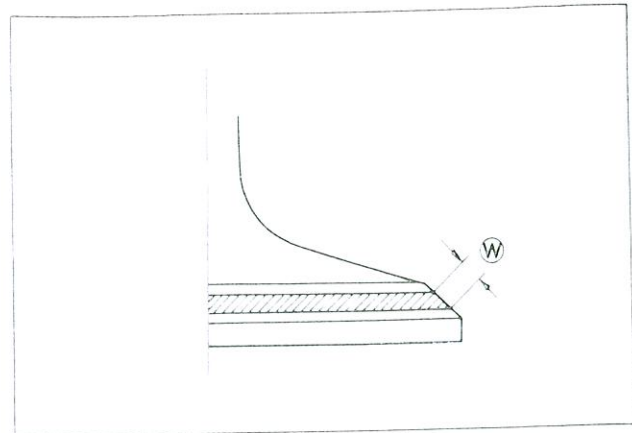
The valve seat contact area must be inspected after each cut.

- Insert the solid pilot 1 with a slight rotation. Seat the pilot snugly. Install the 45° cutter, attachment and T handle.
- Using the 45° cutter, descale and cleanup the seat with one or two turns.
- 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.

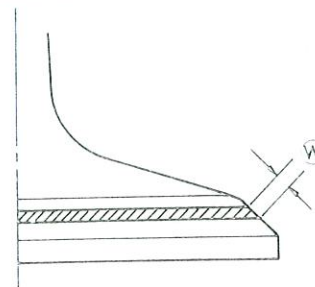
NOTE:

Cut only 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 adjustment.

If the contact area is too high on the valve, or if it is too wide, use a 15° cutter to lower and narrow the contact area.

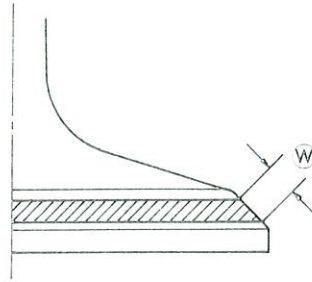


Contact area too low and too narrow on face of valve

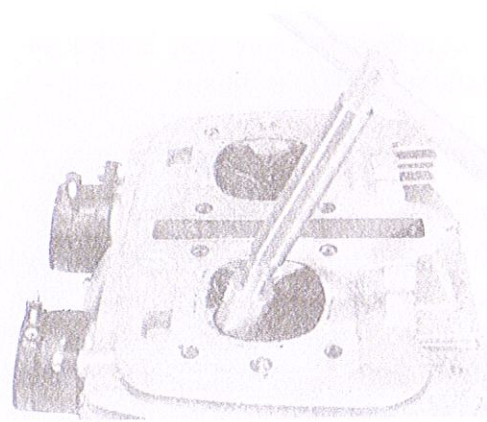


If the contact area is too low or too narrow, use the 45° cutter to raise and widen the contact area.

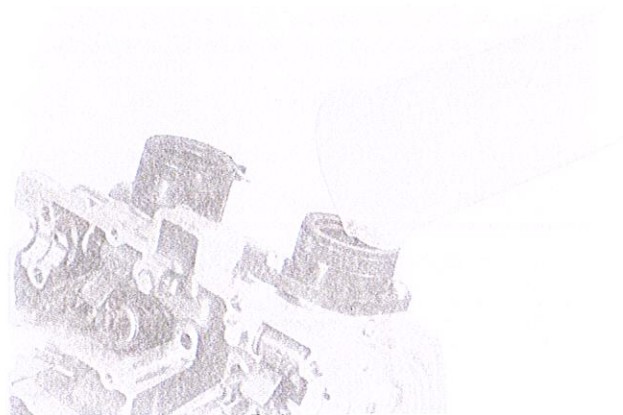
Contact patch too high and too wide on face of valve



- 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.



- 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.



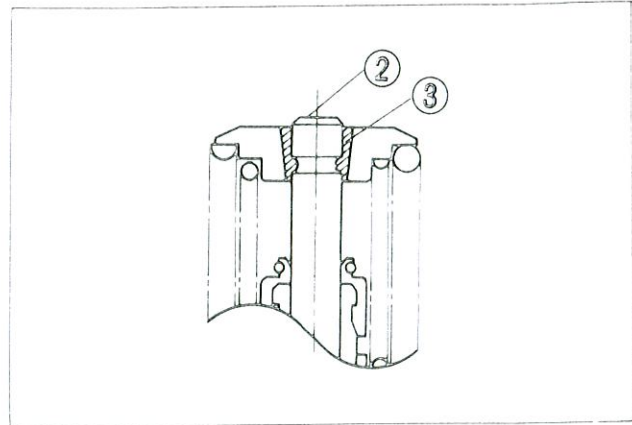
NOTE:

- Always use extreme caution when handling gasoline.
- After servicing the valve seats, be sure to adjust the valve clearance after the cylinder head has been reinstalled. (see page 2-5)

CAUTION:

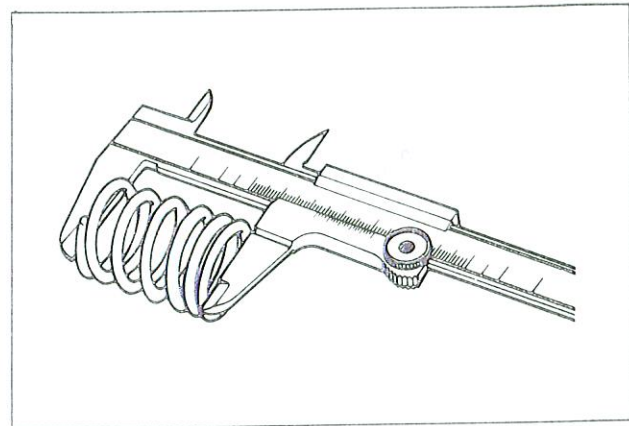
- Refacing valve stem end face is permissible where the length 1 will not be reduced to less than 3.6 mm (0.14 in). If this length becomes shorter than 3.6 mm (0.14 in), then the valve must be replaced.
- After installing the valve whose stem end has been ground off as above, check that the face 2 of valve stem end is above the valve cotter 3.





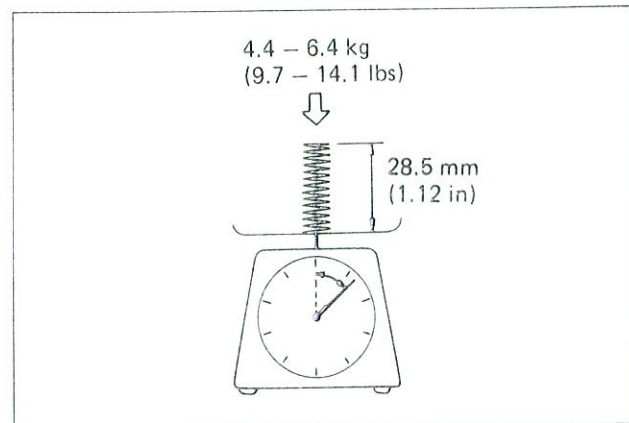
VALVE SPRINGS

- The force of the two coil springs keeps the valve seats tight. Weakened springs result in reduced engine power output, and often account for the chattering noise coming from the valve mechanism.
- Check the springs for strength by measuring their free lengths and also the force required to compress them. If the limit indicated is exceeded by the free length reading or if the measured force does not fall within the range specified, replace with a SUZUKI spring.



CAUTION:

Replace both of the valve springs, inner and outer, at a time, if any one of these is found to be beyond the limit.



Valve spring free length

Spring	Service Limit
INNER	31.9 mm (1.26 in)
OUTER	35.5 mm (1.40 in)

Valve spring tension

Spring	Standard
INNER	4.4 – 6.4 kg/28.5 mm (9.7 – 14.1 lbs/1.12 in)
OUTER	6.5 – 8.9 kg/32.0 mm (14.3 – 19.6 lbs/1.26 in)

REASSEMBLY

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

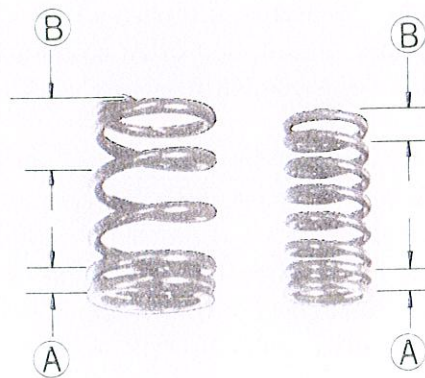
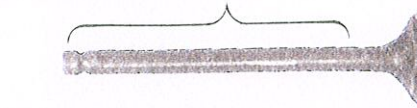
CAUTION:

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

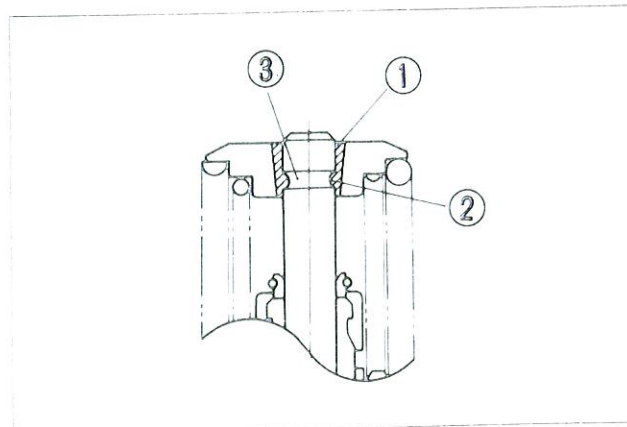
99000-25140

SUZUKI Moly Paste

- Install the valve springs with the small pitch portion **A** facing cylinder head.
B : Large-pitch portion.



- Put on the upper valve seat and, using the valve lifter, press down the springs, fit the two cotter halves to the stem end, and release the lifter to allow the cotter **1** to wedge in between seat and stem. Be sure that the rounded lip **2** of the cotter fits snugly into the groove **3** in the stem end.

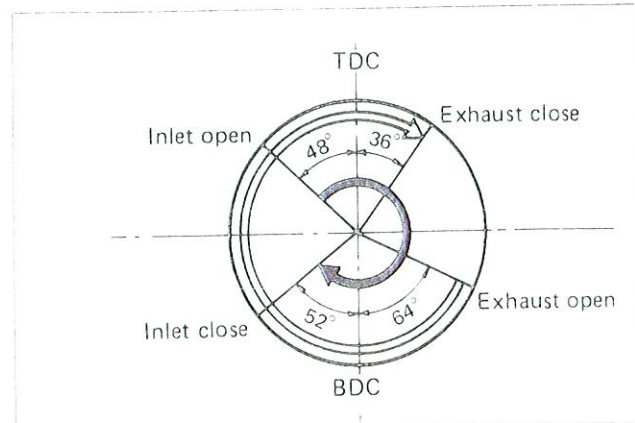


CAUTION:

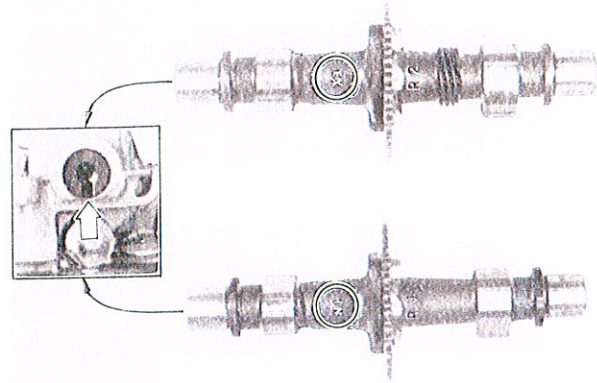
Be sure to restore each spring, valve and spring retainer to their original positions.

CAM SHAFT

Both camshafts should be checked for the wear of cams and journals if the engine has been noted as giving abnormal noise or vibration or lack of power output. Any of these conditions may be caused by cam or camshafts journal worn down to below the service limit.



The exhaust camshaft can be distinguished from that of the intake by the embossed letters "EX" (for exhaust) as against letters "IN" (for intake). The right end can be distinguished by the notches from the left end of each camshaft.

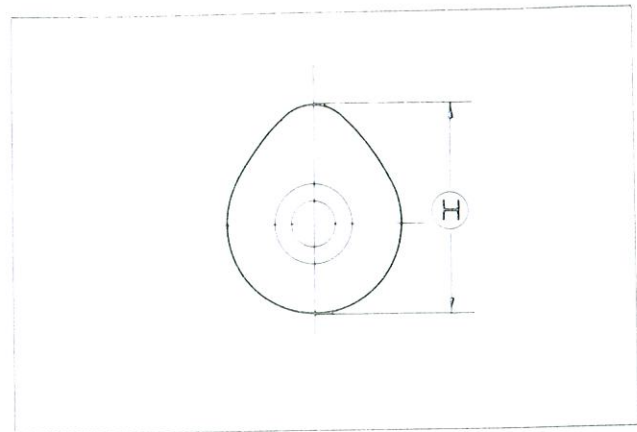


CAMSHAFT WEAR

Worn-down cams can be the cause of incorrect valve timing resulting in reduced power output. The limit of cam wear is specified for both intake and exhaust cams in terms of cam height H , which is to be measured with a micrometer. Replace camshafts if found worn down to the below limit.

Cam height

Height H	Service Limit
Intake cams	34.350 mm (1.3524 in)
Exhaust cams	34.350 mm (1.3524 in)

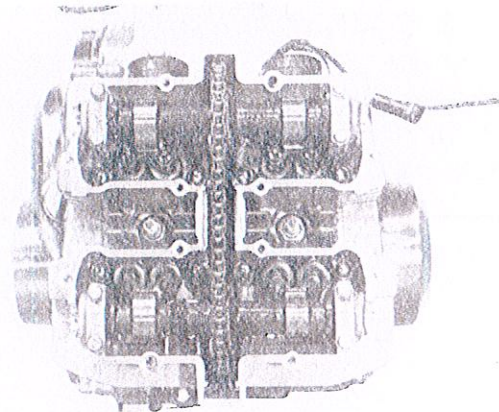


CAMSHAFT JOURNAL WEAR

Install the camshaft correctly, and using a Plastigage measure the camshaft journal clearance.

NOTE:

Install each cap to its original position.

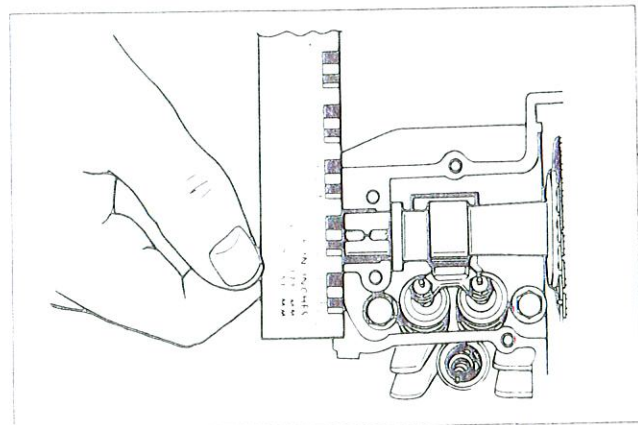


Camshaft bearing cap

Tightening torque	1.0 kg-m (7.0 lb-ft)
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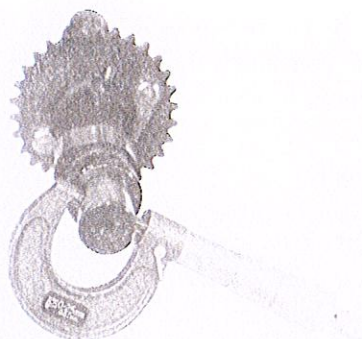
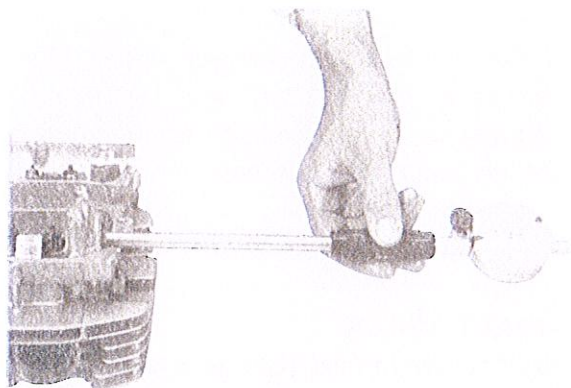
Camshaft-Journal clearance (IN & EX)

Service Limit	0.150 mm (0.0059 in)
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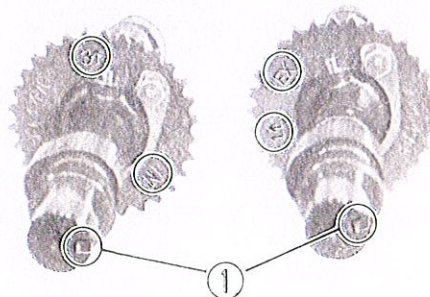
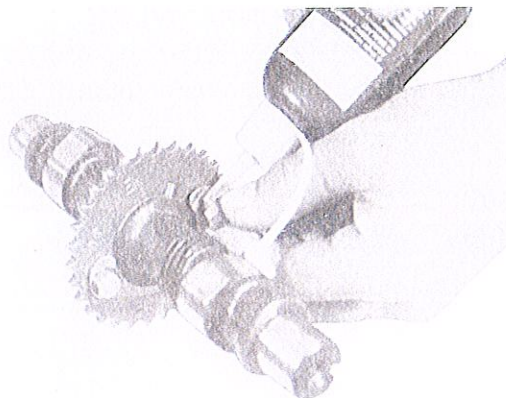
If the camshaft journal clearance measured exceeds the limit, measure the inside diameter of camshaft bearing cap and outside diameter of camshaft. Replace either the cylinder head or the camshaft, whichever the difference from specification is greater.

Item	Standard
Camshaft journal holder I.D. (In & EX)	22,000 – 22,013 mm (0.8661 – 0.8667 in)
Camshaft journal O.D. (In & EX)	21,959 – 21,980 mm (0.8645 – 0.8654 in)



CAM SPROCKET REASSEMBLY

- It is very important that each sprocket be positioned angularly on its camshaft as illustrated. Its correct position is determined by arrow mark "3" (on INTAKE sprocket) or arrow marks "1" and "2" (on EXHAUST sprocket) located (as shown) in reference to the notch ① in the camshaft right end and positioning pin.
- Apply **THREAD LOCK CEMENT SUPER "1361A"** to the threads of bolts, and tighten them with the following specification:
- Bend up the lock washer properly.

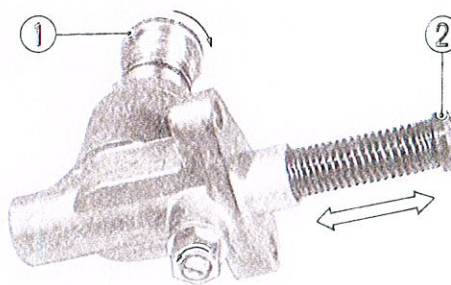


Tightening torque	0.9 – 1.2 kg-m (6.5 – 8.5 lb-ft)
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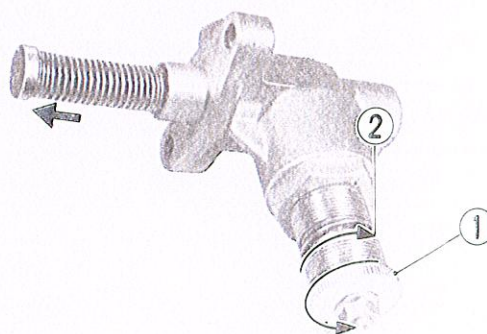
99104-32020	Thread lock super "1361A"
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CAM CHAIN TENSIONER

- Turn the handle ① all the way counterclockwise after loosening the lock screw, and move the push rod ② in place to see if it slides smoothly. If any stickiness is noted, remove the rod for inspection. A bent or scratched push rod must be replaced.

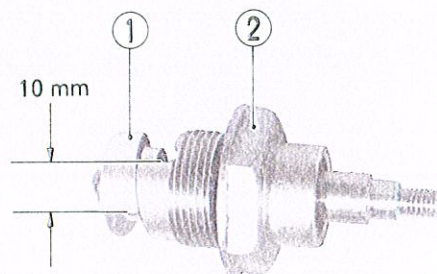


- Turn handle ① all the way counterclockwise against the force of its coil spring and then turn it back as assisted by spring force to see if the handle returns to the original position ② without exhibiting any sticking. Repeat this process several times. If any excessive sticking is felt or if the self-adjusting action is faulty, replace the whole tensioner.

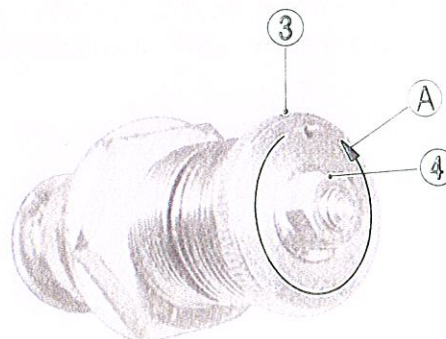


REASSEMBLING

- Apply engine oil to the lock shaft ①. Insert the shaft into the holder ② and bring the two into the relative position indicated.



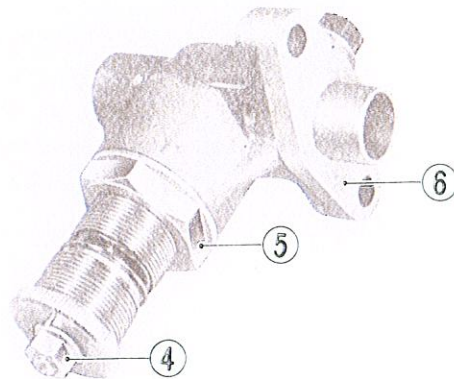
- Hook the spring onto the holder and handle ③, twist the spring by one complete rotation counterclockwise ④, and fit the handle onto the shaft, then install the nut ④.



- After tightening the lock shaft nut ④, install the lock shaft assembly ⑤ on the tensioner body ⑥. Be sure to adhere to the following torque specifications:

Tightening torque

	lb-ft	kg-m
Lock shaft nut	6.0 – 7.0	0.8 – 1.0
Shaft assembly	22.5 – 25.5	3.1 – 3.5

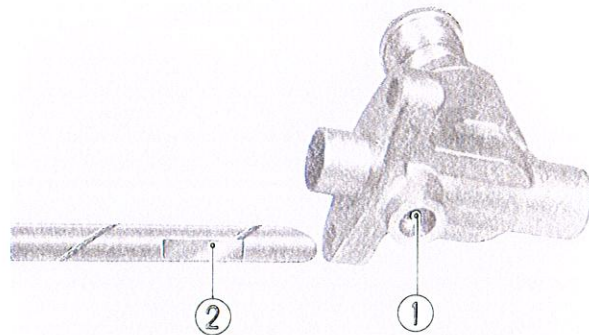


- Apply a high quality molybdenum disulfide lubricant (SUZUKI MOLY PASTE) to the push rod and engine oil to the push rod guide hole.

99000-25140	SUZUKI moly paste
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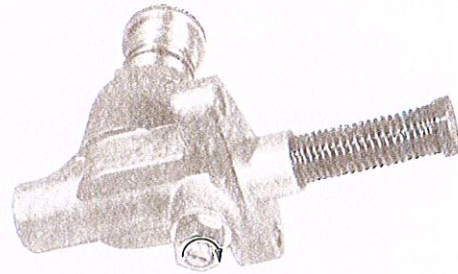
- Match the lock screw hole ① to the long groove ② in the push rod, as shown.
- Slide the push rod spring onto the push rod.



- While turning lock shaft handle counterclockwise, push in the pushrod all the way. Keep on turning the handle until it refuses to turn further.



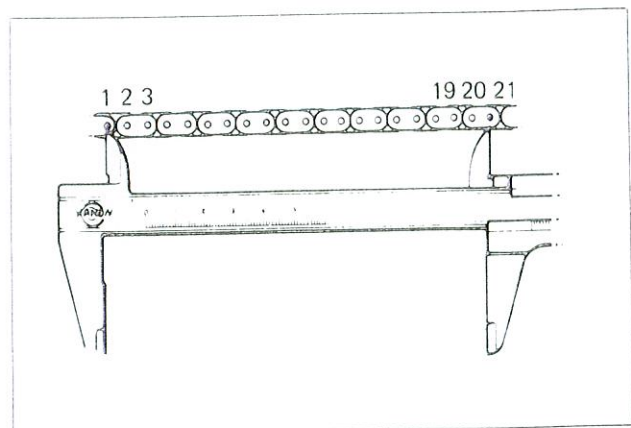
- Tighten the lock screw to lock the push rod, so that the push rod will not plunge out.



CAM CHAIN 20 PITCH LENGTH

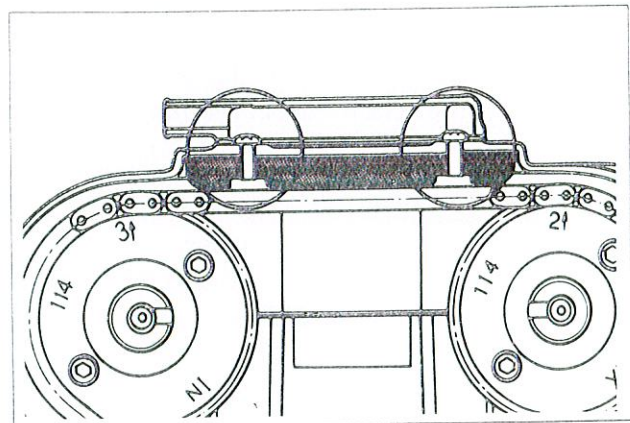
Pull the chain tight to remove any slack, then using vernier calipers, measure the 20 pitch length of cam chain. If it measures more than limit, replace the cam chain.

Service Limit	157.80 mm (6.213 in)
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NOTE:

When replacing following chain guides, apply SUZUKI Thread lock cement "1361A" to screws thread.

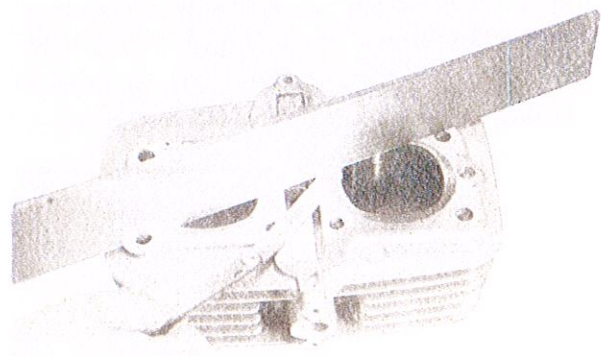


CYLINDER DISTORTION

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

Cylinder distortion specification

Service Limit	0.1 mm (0.004 in)
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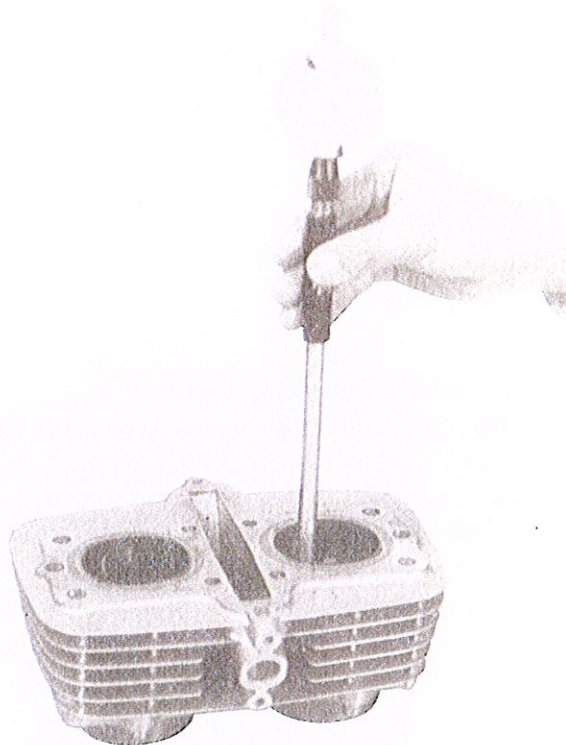
CYLINDER BORE

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. If one cylinder is worn to the point that it needs to go oversize, the other cylinder should go oversize at the same time. Otherwise the imbalance might cause excess vibration.

Cylinder bore

Service Limit	60.095 mm (2.3659 in)
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09900-20508	Cylinder gauge set
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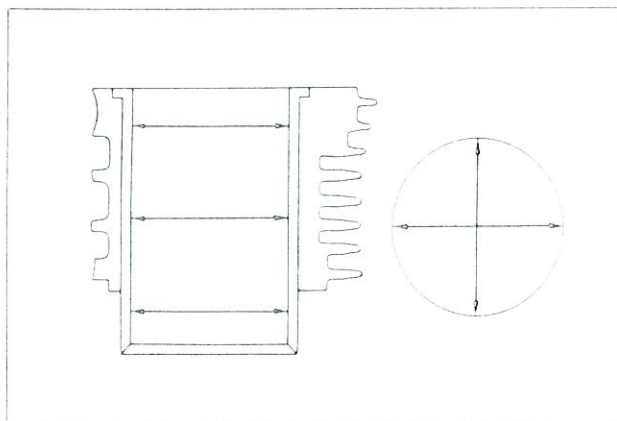
PISTON DIAMETER

Using a micrometer, measure the piston outside diameter at the place shown in Fig. If the measurement is less than the limit, replace the piston.

Piston oversize	0.5, 1.0 mm
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Service Limit	59.880 mm (2.3575 in)
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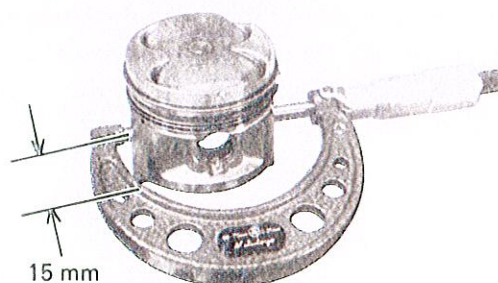
09900-20203	Micrometer (50-75 mm)
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PISTON-CYLINDER CLEARANCE

As a result of the above measurement, if the piston clearance exceeds the limit shown in the table below, rebore 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 clearances of the 1st and 2nd rings. If either of the clearances exceeds the limit, replace both piston and piston rings. Measure the clearance at exhaust side.

09900-20803	Thickness gauge
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Piston ring-groove clearance

Piston ring	Service Limit
1st	0.180 mm (0.0071 in)
2nd	0.150 mm (0.0060 in)

Piston ring groove width

Piston ring	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

Piston ring	Standard
1st	1.175 – 1.190 mm (0.0463 – 0.0469 in)
2nd	1.170 – 1.190 mm (0.0461 – 0.0469 in)

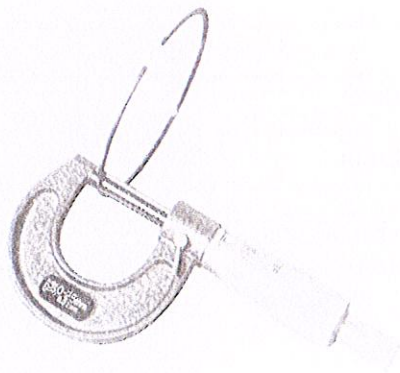
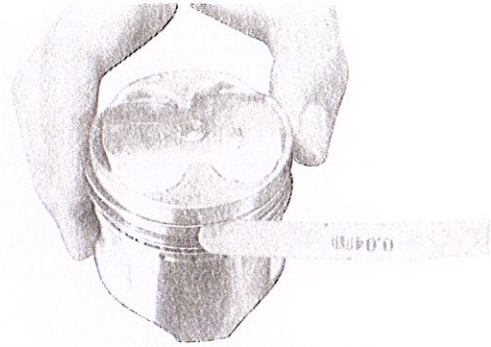
PISTON RING FREE END GAP AND PISTON RING END GAP

Before installing piston rings, measure the free end gap of each ring using vernier calipers. Next, fit the ring in the cylinder, and measure each ring end gap using a thickness gauge.

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

Piston ring free end gap

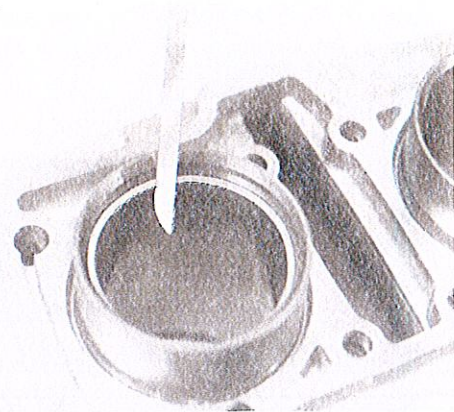
Piston ring	Service Limit
1st	5.2 mm (0.20 in)
2nd	6.8 mm (0.27 in)



Piston ring end gap

Piston ring	Service Limit
1st & 2nd	0.70 mm (0.028 in)

09900-20803	Thickness gauge
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• **Overize piston rings**

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

	1st	2nd
0.5mm	50	50
1.0mm	100	100

• **Overize oil rings**

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

Size	Color code
STD	Painted red
0.5 mm	Painted blue
1.0 mm	Painted yellow

• **Overize side rail**

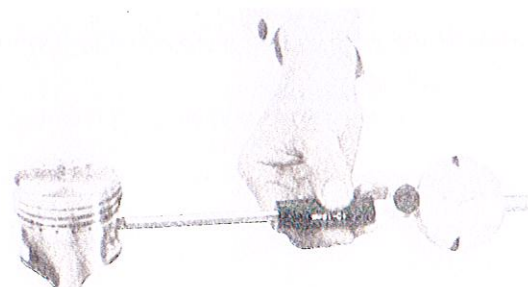
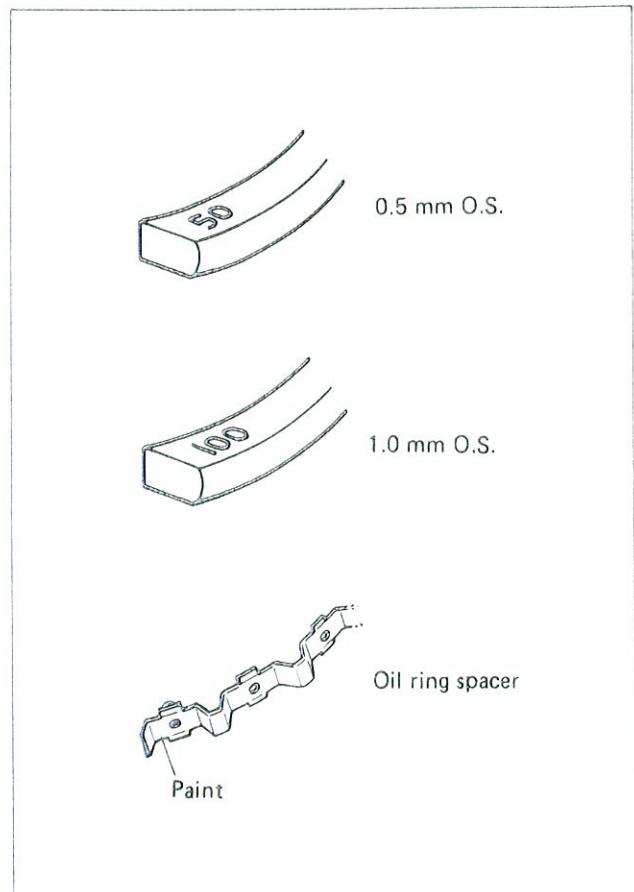
Just measure out side diameter.

PISTON PIN — PIN BORE CLEARANCE

Using a small bore gauge, measure the piston pin bore inside diameter, and using a micrometer, measure the piston pin outside diameter. If the two measurements are outside of the limits, replace piston and piston pin.

Piston pin bore I.D.

Service Limit	16.030 mm (0.6311 in)
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Using a micrometer, measure the piston pin outside diameter at three positions.

Piston pin O.D.

Service Limit	15.980 mm (0.6291 in)
---------------	-----------------------

09900-22401	Small bore gauge (10 – 18 mm)
09900-20201	Micrometer (0 – 25 mm)



CONNECTING ROD SMALL END BORE I.D.

Using a small bore gauge, measure the connecting rod small end diameter.

Connecting rod small end bore I.D.

Service Limit	16.040 mm (0.6315 in)
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- If the difference between the connecting rod small end bore inside diameter and the piston pin outside diameter exceeds the abovementioned limit, replace both connecting rod and piston pin.

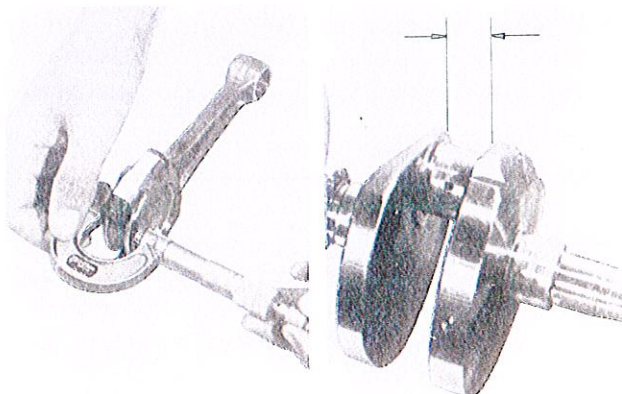
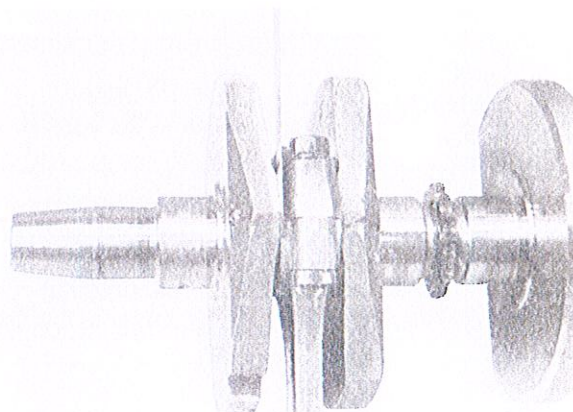
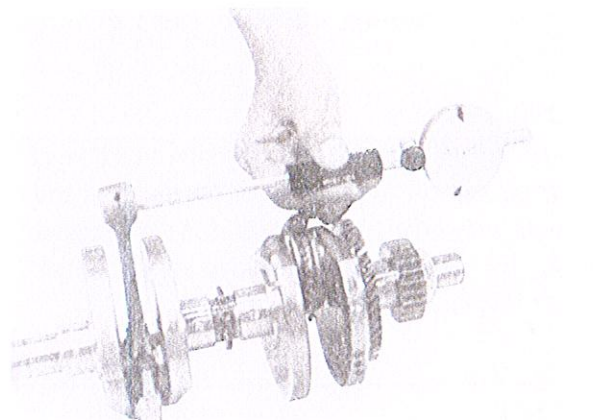
CONNECTING ROD BIG END THRUST CLEARANCE

Check the connecting rod thrust clearance by using thickness gauge. If the clearance exceeds the limit, replace connecting rod or crankshaft.

Service Limit	0.3 mm (0.012 in)
---------------	-------------------

	Standard
Big end width	19.95 – 20.00 mm (0.785 – 0.787 in)
Crank pin width	20.10 – 20.15 mm (0.791 – 0.793 in)

09900-20803	Thickness gauge
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CONNECTING ROD-CRANK PIN BEARING SELECTION

- Loosen bearing cap nuts and tap the bolt end lightly with plastic hammer to remove bearing cap.
- Remove rods and mark them to identify the cylinder position.
- Inspect bearing surfaces for any sign of fusion, pitting, burn or flaws. If any, replace them with specified set of bearings.
- Place plastigauge axially on the crank pin, avoiding the oil hole.
- Tighten the bearing cap with two-step torque values.

NOTE:
When installing the connecting rod and bearing cap on the crank pin, insure that the cap is properly aligned with the connecting rod, and that the rod is installed on the crankshaft facing in the proper direction.

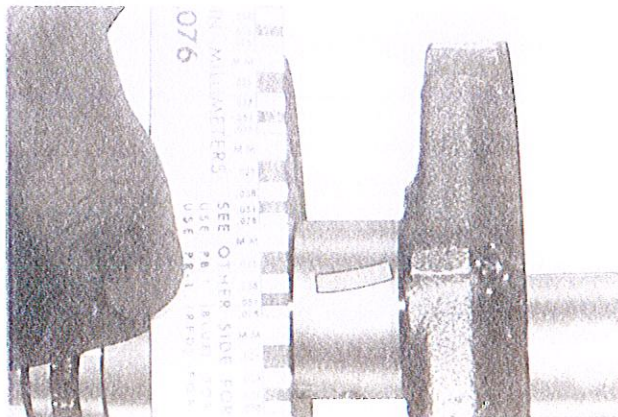
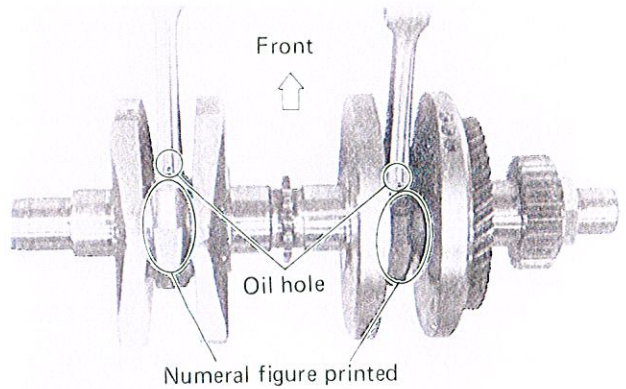
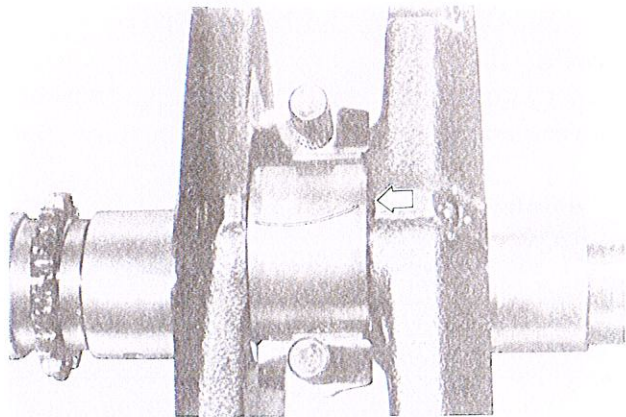
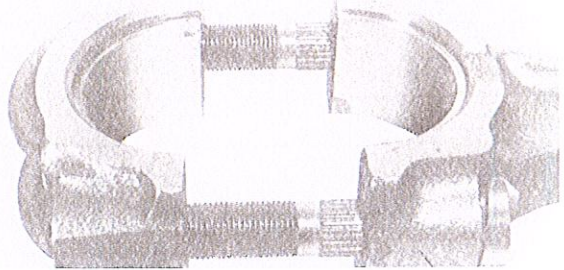
Initial tightening torque	1.2 – 1.8 kg-m (8.5 – 13.0 lb-ft)
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Final tightening torque	3.0 – 3.4 kg-m (21.5 – 24.5 lb-ft)
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NOTE:
Never rotate crankshaft or connecting rod when a piece of Plastigauge is in the clearance.

- Remove the caps and measure the width of compressed plastigauge with envelope scale. This measurement should be taken at the widest part.

Service Limit	0.080 mm (0.0031 in)
---------------	----------------------



- If oil clearance has exceeded the service limit, select the specified bearings from the following table.
- Check the corresponding rod I.D. code number 1, "1" or "2".
- Check the corresponding crank pin O.D. code number, "1", "2" or "3".
- The crank pin O.D. code number is on the inside of each flywheel.

Bearing selection table

		Crank pin		
		Code	1	2
Conrod	1	Green	Black	Brown
	2	Black	Brown	Yellow

Oil clearance

Standard	0.024 – 0.048 mm (0.0009 – 0.0019 in)
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Connecting rod I.D. specification

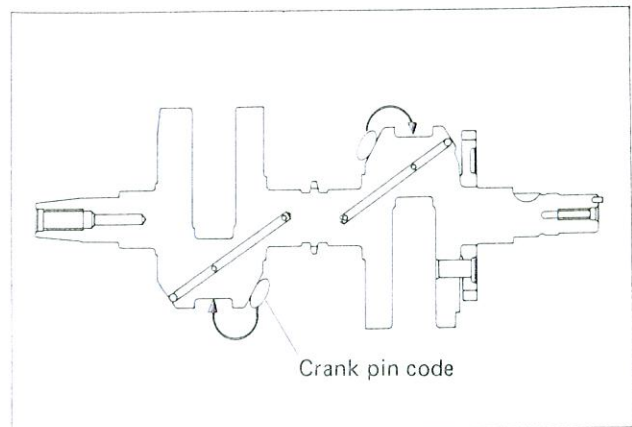
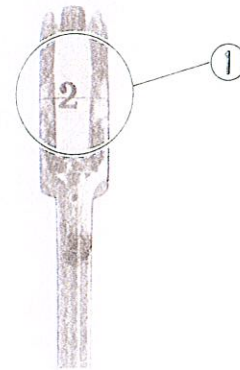
Code	I.D. Specification
1	35.000–35.008mm
2	35.008–35.016mm

Crank pin O.D. specification

Code	O.D. Specification
1	31.992–32.000mm
2	31.984–31.992mm
3	31.976–31.984mm

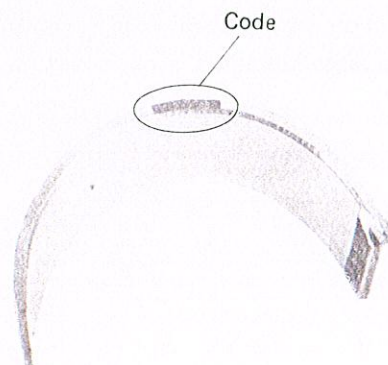
CAUTION:
Bearing should be replace as a set.

NOTE:
Under size bearings are available as an optional part, such as 0.25 and 0.50.



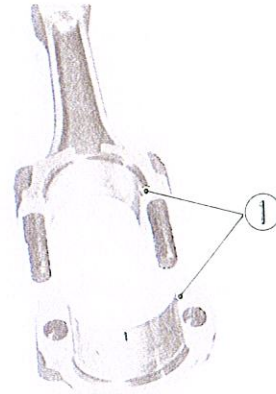
Bearing thickness

Color (Part No.)	Thickness
Green (12164-11400-010)	1.484–1.488mm
Black (12164-11400-020)	1.488–1.492mm
Brown (12164-11400-030)	1.492–1.496mm
Yellow (12164-11400-040)	1.496–1.500mm

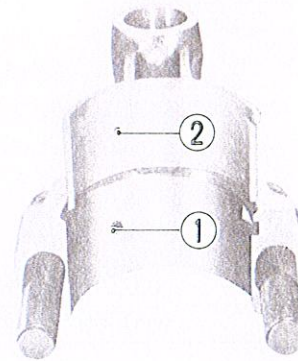


BEARING ASSEMBLY

- When fitting the bearings to the bearing cap and connecting rod, be sure to fix the stopper part ① first and press the other end.

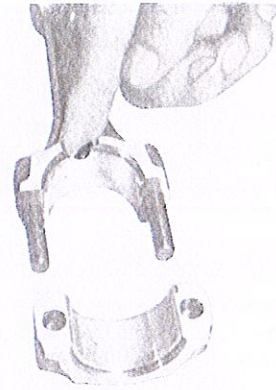


- Check the connecting rod oil hole ① to align with the bearing oil hole ②.



- Apply engine oil or SUZUKI Moly Paste to the crank pin and bearing surface.

99000-25140	SUZUKI Moly Paste
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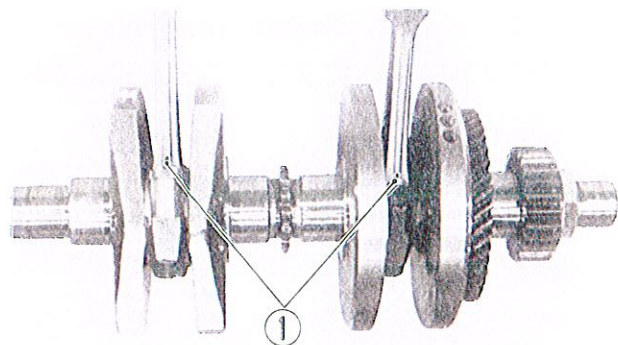


NOTE:
 Never try to remove or loosen the connecting rod big end stud, otherwise, it will displace the stud and will not fit the bearing cap properly.

- When mounting connecting rod on the crank shaft, make sure that oil hole ① of the connecting rod faces rearward.
- Tighten the connecting rod fitting nuts with specified torque.

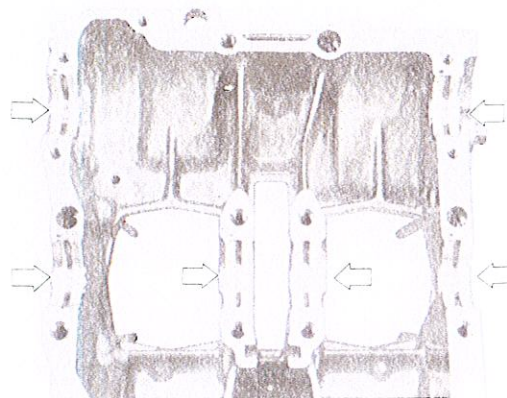
Tightening torque	3.0 – 3.4 kg-m (21.5 – 24.5 lb-ft)
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- Check the connecting rod for smooth turning.



CRANKCASE — CRANKSHAFT AND COUNTER BALANCER BEARING SELECTION

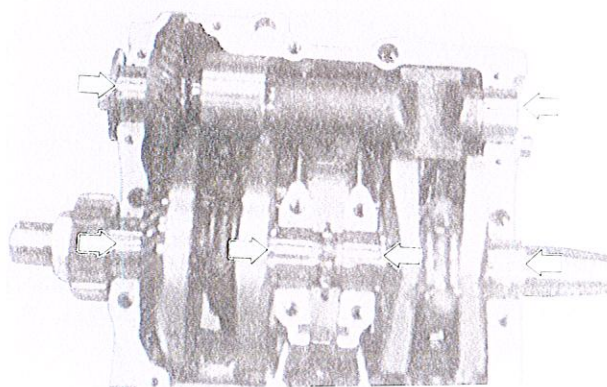
- Inspect each bearing of upper and lower crank cases for any damage.



- Place plastigauge on each crankshaft and counter balancer shaft journal in the usual manner.

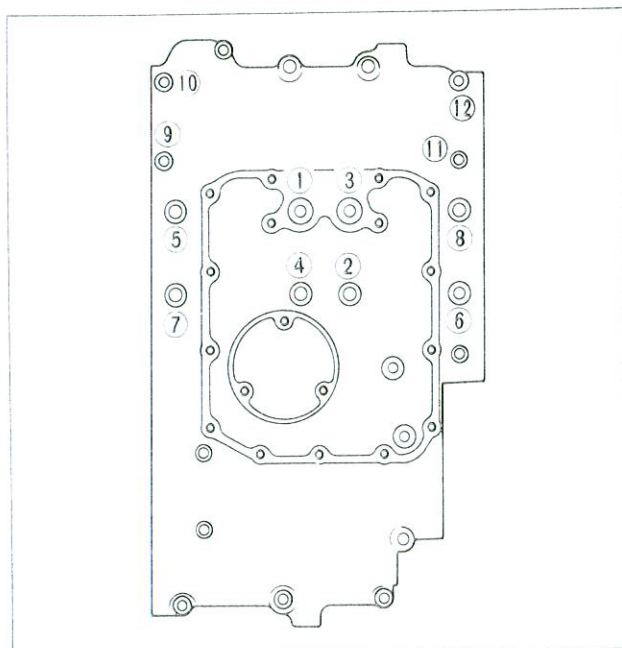
NOTE:

Do not place the plastigauge on the oil hole and do not rotate the shafts when plastigauge is in.



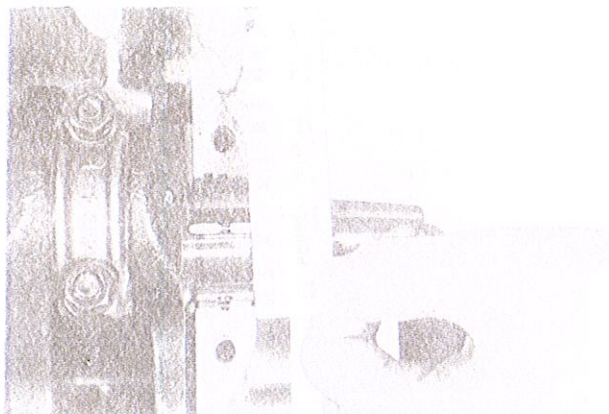
- Mate the lower crankcase with the upper crankcase and tighten the crankcase securing bolts with specified torque value in the following order.

Item	Initial tightening	Final tightening
① - ⑧	1.3 kg-m (9.5 lb-ft)	2.0 - 2.4 kg-m (14.5 - 17.5 lb-ft)
⑨ - ⑫	0.6 kg-m (4.5 lb-ft)	0.9 - 1.3 kg-m (6.5 - 9.5 lb-ft)
The other 6 mm bolt	0.6 kg-m (4.5 lb-ft)	1.0 kg-m (7.0 lb-ft)
The other 8 mm bolt	1.3 kg-m (9.5 lb-ft)	2.0 kg-m (14.5 lb-ft)

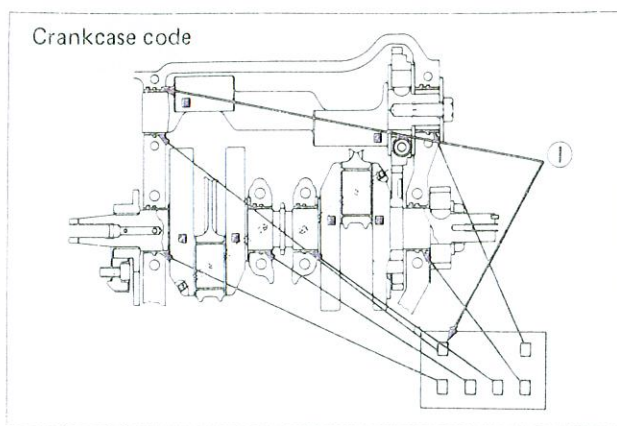


- Remove the lower crankcase and measure the width of compressed plastigauge in the usual manner.

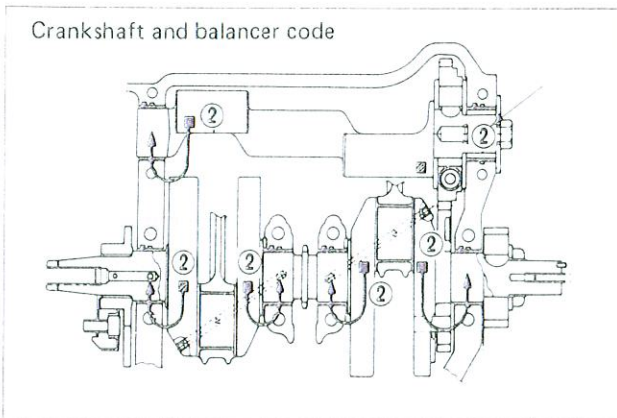
Service Limit	0.080 mm (0.0031 in)
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- If the width exceeds the limit, replace the set of bearing with new ones by referring to the selection table.
- Check the corresponding crankcase journal I.D. code number ① "A" or "B" which are stamped on the rear of upper crankcase.
- Check the corresponding crankshaft and balancer shaft journal O.D. code number ② "A", "B" or "C".



NOTE:
The O.D. code for the journal indicated by the arrow is marked on the journal ("spacer") bearing surface. If the letter code is not visible, the journal O.D. must be checked with a micrometer.



Bearing selection table

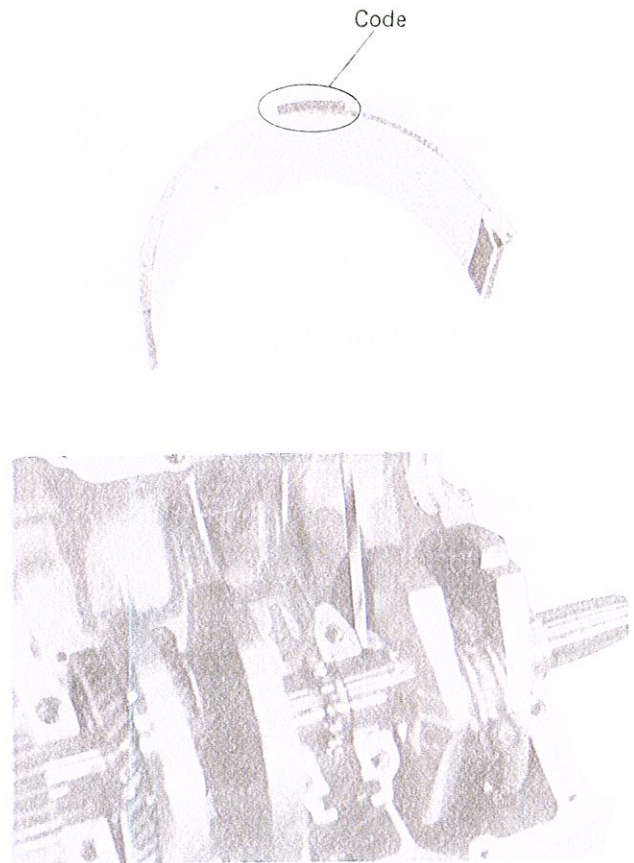
		Crankshaft and Balancer shaft O.D. code			
		Code	A	B	C
Crankcase I.D. code	A	Green	Black	Brown	
	B	Black	Brown	Yellow	

Crankcase journal I.D. specification

Code	I.D. Specification
A	35.000–35.008mm
B	35.008–35.016mm

Crankshaft and Balancer journal O.D. Specification

Code	O.D. Specification
A	31.992–32.000mm
B	31.984–31.992mm
C	31.976–31.984mm



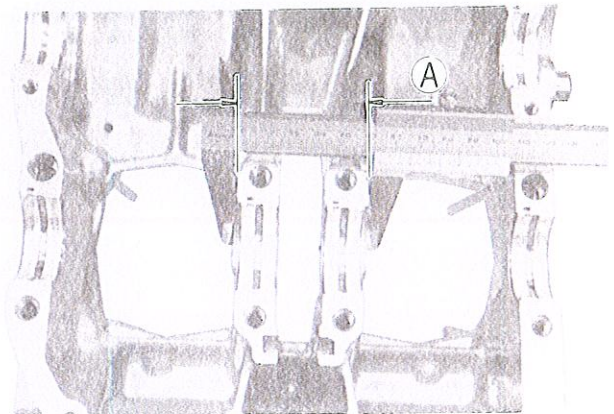
Bearing thickness specification

Color (Part number)	Thickness
Green (12229-11400-010)	1.486–1.490mm
Black (12229-11400-020)	1.490–1.494mm
Brown (12229-11400-030)	1.494–1.498mm
Yellow (12229-11400-040)	1.498–1.502mm

CRANKSHAFT THRUST CLEARANCE

- Check crankshaft thrust clearance with thickness gauge. If it exceeds the service limit, measure the crankcase width **A** and crankshaft width **B** and replace crankcase or crankshaft, whichever the difference from specification is greater.

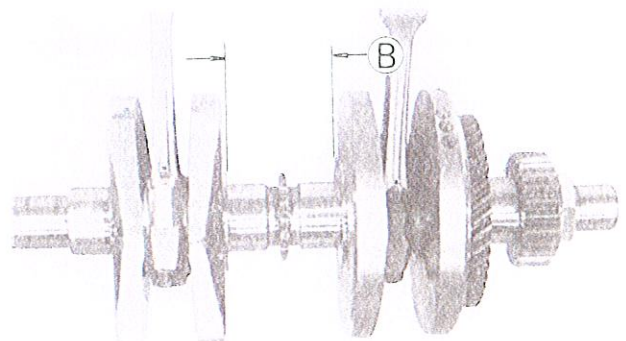
09900-20803	Thickness gauge
09900-20101	Vernier calipers



Thrust clearance

Service Limit	0.35 mm (0.014 in)
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	Standard
Crankcase A	53.90 – 54.00 mm (2.122 – 2.126 in)
Crankshaft B	54.05 – 54.15 mm (2.128 – 2.132 in)



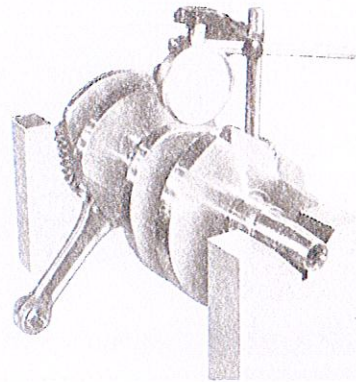
CRANKSHAFT RUNOUT

Support the crankshaft with "V" blocks as shown, with the two end journals resting on the blocks. Rig up the dial gauge, as shown, and rotate the crankshaft slowly to read the runout. Replace the crankshaft if the runout is greater than the limit.

09900-20606	Dial gauge (1/100mm)
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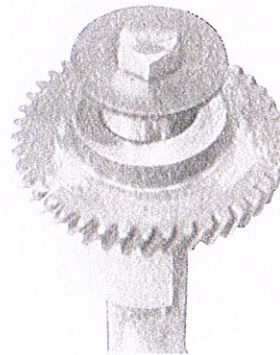
Crankshaft runout specification

Service Limit	0.05 mm (0.002 in)
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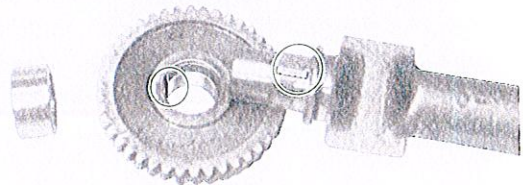
COUNTER BALANCER DISASSEMBLY

- Remove the counter balancer setting bolt.
- Press out the spacer and counter balancer drive gear.



COUNTER BALANCER REASSEMBLY

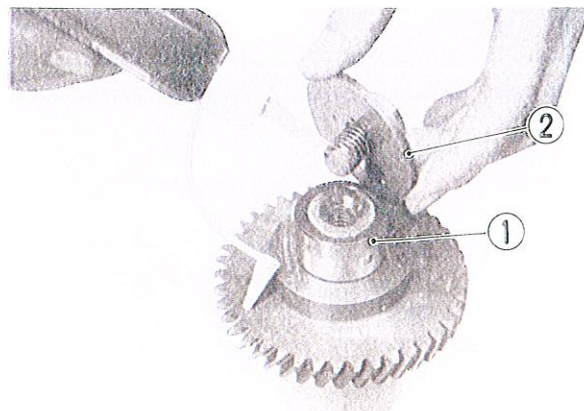
- Fix the key in the groove, press-fit the counter balancer drive gear.



- Fix the spacer ("bearing journal") 1 and washer 2, tighten the counter balancer setting bolt with specified torque. Apply thread lock super "1361A" to the bolt.

Tightening torque	3.5 – 4.5 kg-m (25.5 – 32.5 lb-ft)
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99104-32020	Suzuki thread lock super "1361A"
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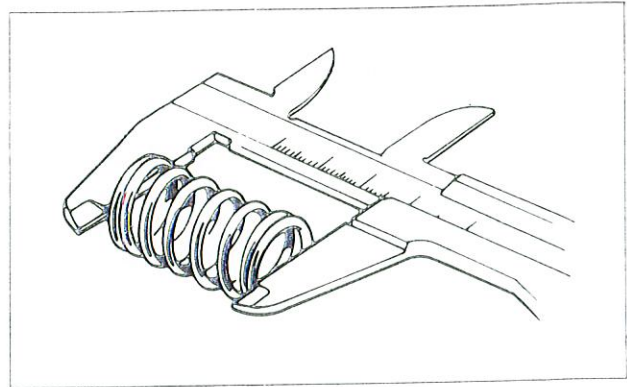


CLUTCH SPRING FREE LENGTH

Measure the free length of each coil spring with vernier calipers and compare the elastic strength of each with the specified limit. Replace all the springs if any spring is not within the limit.

Clutch spring free length

Service Limit	33.6 mm (1.32 in)
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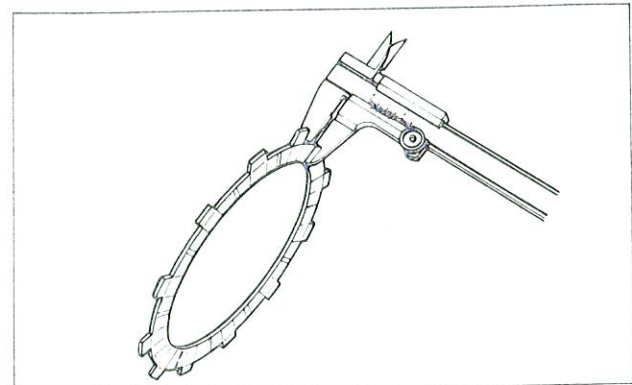


CLUTCH DRIVE PLATES AND DRIVEN PLATES

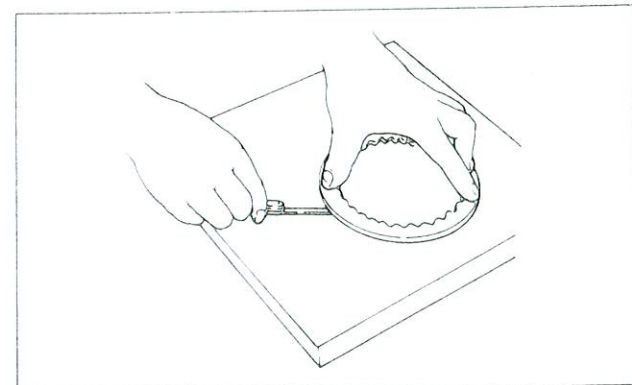
Clutch plates in service remain in oily condition as if they were lubricated with oil. Because of this condition, both drive and driven plates are subject to little wearing action and therefore last much longer. Their life depends largely on the quality of oil used in the clutch and also on the way the clutch is operated.

These plates are expendable: they are meant to be replaced when found worn down or distorted beyond the respective limit: use a caliper to check thickness and a thickness gauge and surface plate to check distortion.

09900-20101	Vernier calipers
09900-20803	Thickness gauge



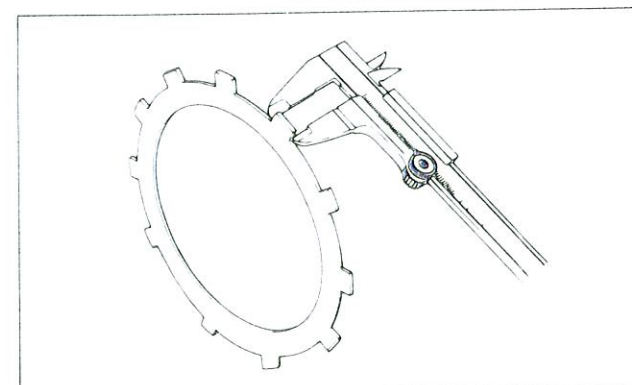
Checking thickness



Checking distortion

Unit: mm (in)

Service Limit	Drive plate	Driven plate
Thickness	2.6 (0.10)	—
Distortion	—	0.1 (0.004)
Claw width	11.0 (0.43)	—

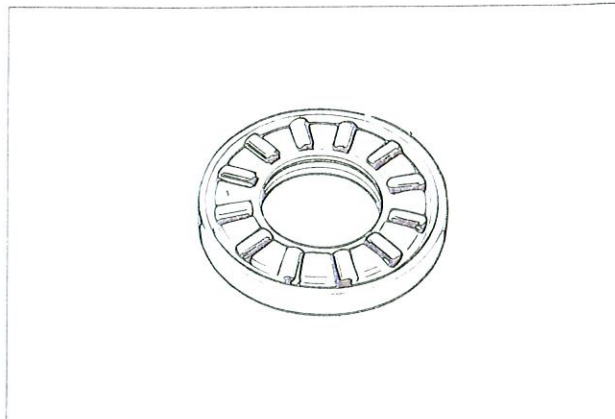


Checking claw width

CLUTCH RELEASE BEARING

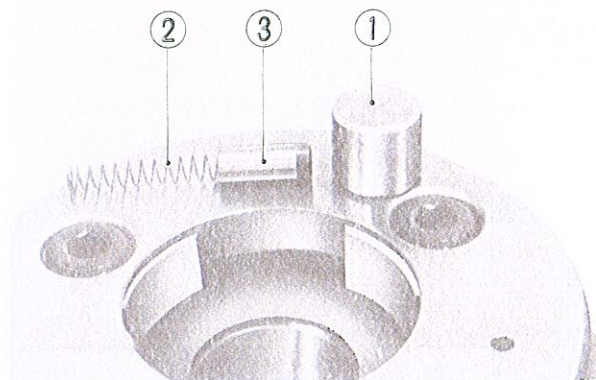
Inspect this thrust-type bearing for any abnormality, particularly cracks, upon removal from the clutch, to decide whether it can be reused or should be replaced.

Smooth engagement and disengagement of the clutch depends much on the condition of this bearing.

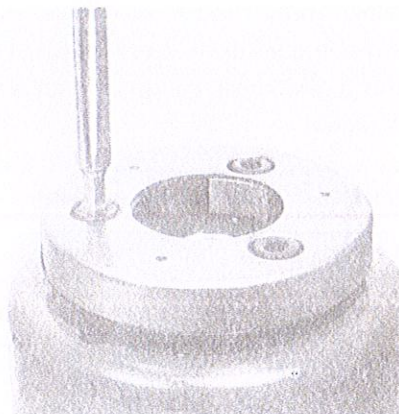


STARTER CLUTCH DISASSEMBLY

- Remove roller ①, spring ② and push piece ③ from starter clutch.



- Clamp the rotor with a vise taking care not to damage it and remove the three hexagon bolts using the 6mm "T" type hexagon wrench.



09914-25811

"T" type hexagon
wrench (6mm)

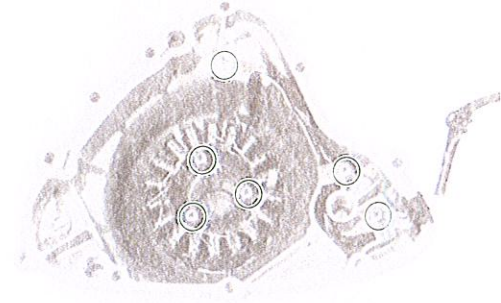
REASSEMBLY

- Apply THREAD LOCK "1363C" (99104-32050) to the stator set and lead wire guide screws.

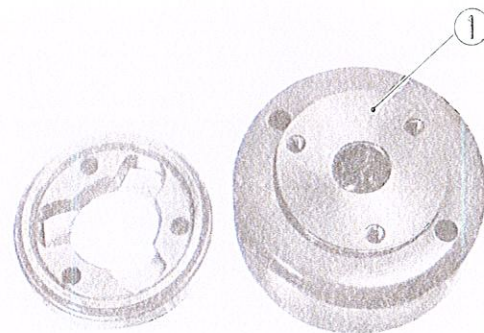
NOTE:

Wipe off oil and grease on screw completely and then apply the screw lock.

- Mount the lead wire clamp as shown in the photo.



- Locate the shim 1 to the proper position.

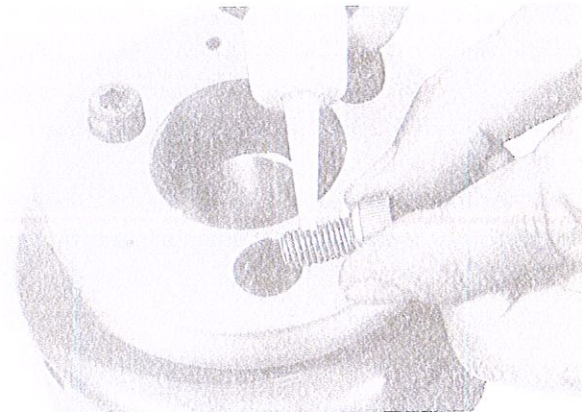


- Apply thread lock super to allen bolts and tighten with specified torque.

99104-32020	Thread lock super "1361A"
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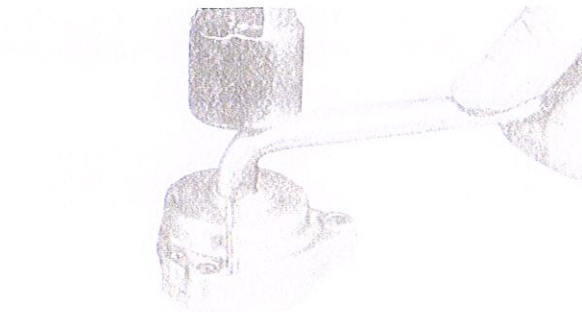
09914-25811	T-type allen wrench (6mm)
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Tightening torque	1.5 – 2.0 kg-m (11.0 – 14.5 lb-ft)
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OIL PUMP

- Remove one screw fastening oil pump body and extract two positioning pins from the oil pump case.



- Check oil pump tip clearance, outer rotor clearance and side clearance by using thickness gauge and straight edge.

Unit: mm (in)

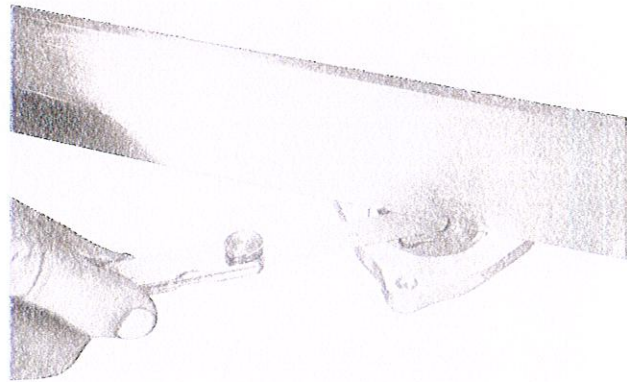
	Service Limit
Tip clearance	0.20 (0.008)
Outer rotor clearance	0.25 (0.010)
Side clearance	0.15 (0.006)



Checking tip clearance



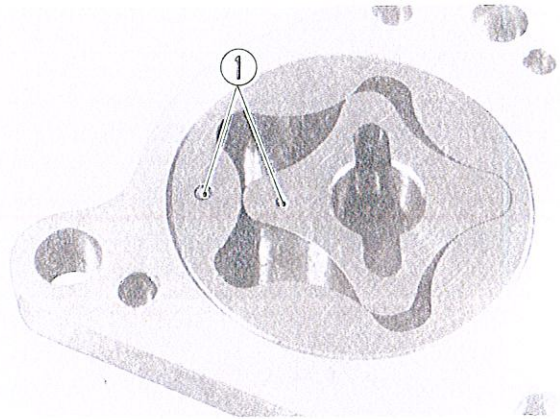
Checking outer rotor clearance



Checking side clearance

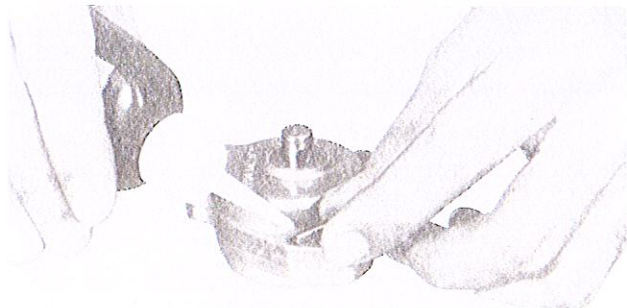
REASSEMBLY

- Thoroughly wash the oil pump, inner and outer rotors and oil pump case with solvent and apply engine oil to them before inserting them into case.
- Since there are punched marks ① on both inner and outer rotor upper surfaces, the rotor should be inserted respective of these portions.

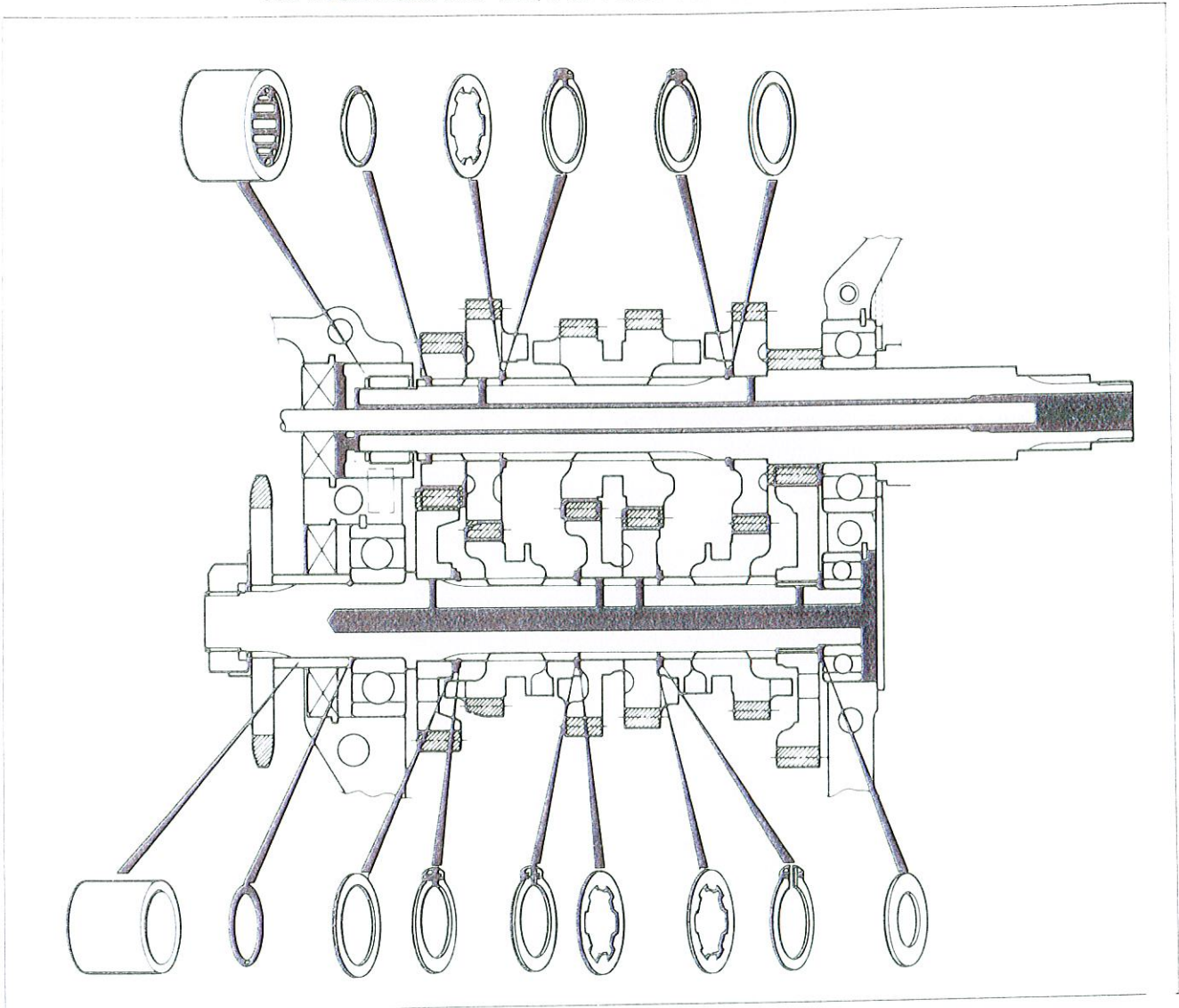


- Insert drive shaft and drive pin, and apply thread lock "1363C" to oil pump body fastening screw.
- Tap the two positioning pins.

99104-32050	Thread lock "1363C"
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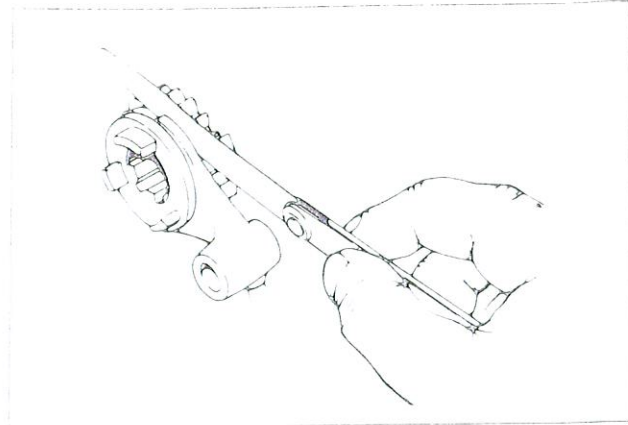
TRANSMISSION GEARS AND RELATED PARTS



GEAR-SHIFTING FORK CLEARANCE

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

This clearance for each of the three shifting forks plays an important role in the smoothness and positiveness of shifting action. Each fork has its prongs fitted into the annular groove provided in its gear. In operation, there is sliding contact between fork and gear and, when a shifting action is initiated, the fork pushes the gear axially. Too much a clearance is, therefore, liable to cause the meshed gears to slip apart.



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

09900-20803

Thickness gauge

Shift fork – groove clearance

		Service Limit
No. 1	for 5th driven gear	0.50 mm (0.020 in)
No. 2	for 3rd/4th drive gears	
No. 3	for 6th driven gear	

Shift fork groove width

Standard	5.5 – 5.6 mm (0.217 – 0.220 in)
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Shift fork thickness

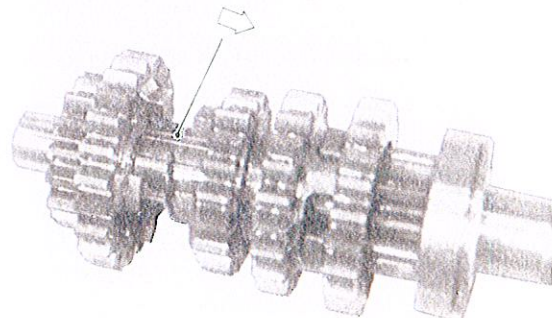
Standard	5.3 – 5.4 mm (0.209 – 0.213 in)
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COUNTERSHAFT DISASSEMBLY

- Remove the 6th drive gear circlip from the groove and slide circlip and washer toward the 3rd/4th drive gears.

09900-06104

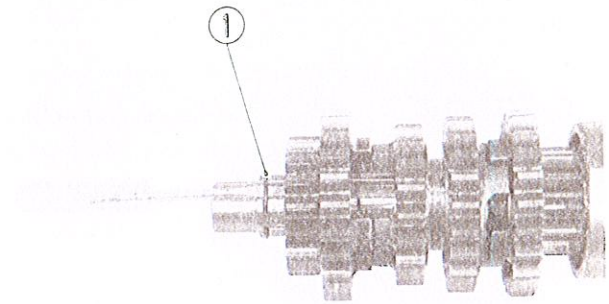
Circlip remover



- Slide the 6th and 2nd drive gears toward the 3rd/4th drive gears and remove the 2nd drive gear circlip 1.

NOTE:

These circlips should be replaced with new ones.

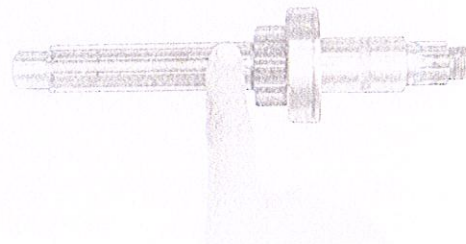


COUNTERSHAFT ASSEMBLY

- Before installing gears, coat lightly moly paste to the countershaft.

99000-25140

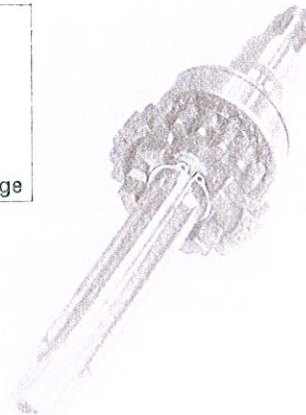
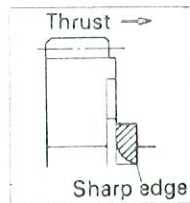
SUZUKI Moly Paste



- When mounting circlip, pay attention to the direction of the circlip. Fit it to the side where the thrust is as shown in the figure.

NOTE:

Always use new circlip.

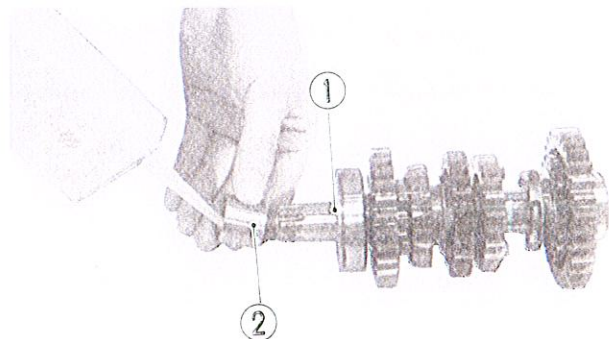


DRIVESHAFT ASSEMBLY

- Fix O-ring 1 to the drive shaft and apply thread lock cement to the inner surface of engine sprocket spacer 2.

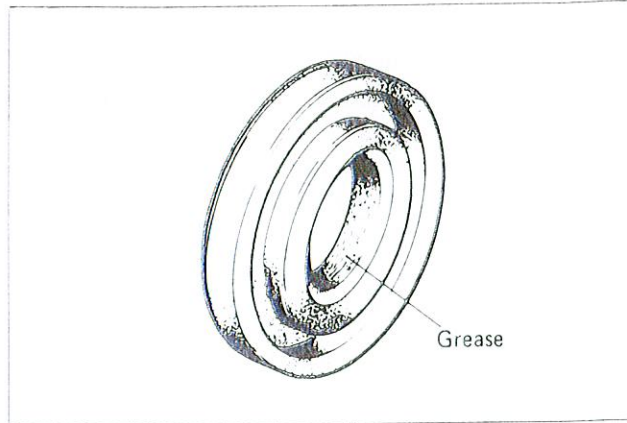
99000-32040

Thread lock cement



- Coat SUZUKI super grease "A" to the lip of oil seal.

99000-25030	SUZUKI Super grease "A"
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ENGINE REASSEMBLY

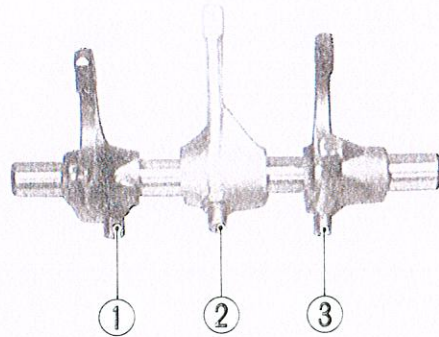
The engine is reassembled by carrying out the steps of disassembly in the reversed order, but there are a number of steps which demand special descriptions or precautionary measures. Only those steps will be set forth on the components of the power unit.

NOTE:

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

- Refer to the following figure in regard to the correct positions and orientations of the forks when installing these parts.

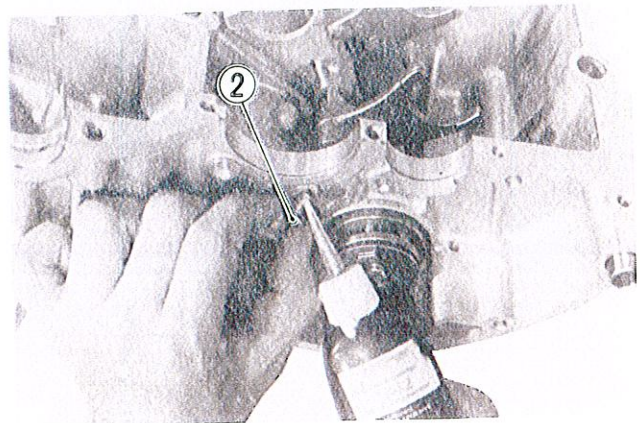
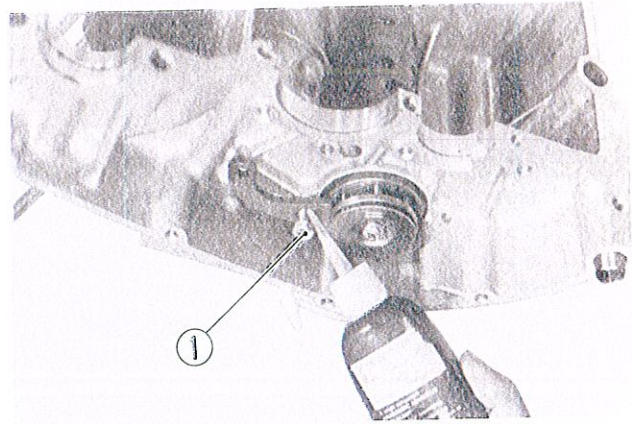
- ① : Gearshift fork for 5th driven gear.
- ② : Gearshift fork for 3rd/4th drive gears.
- ③ : Gearshift fork for 6th driven gear.



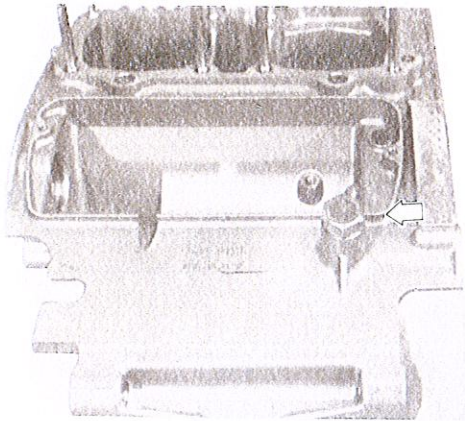
- Before driving in the cam guide bolt ① and fork shaft stopper screw ②, apply THREAD LOCK "1363C" to their threads.

99104 -32050

Thread lock "1363C"

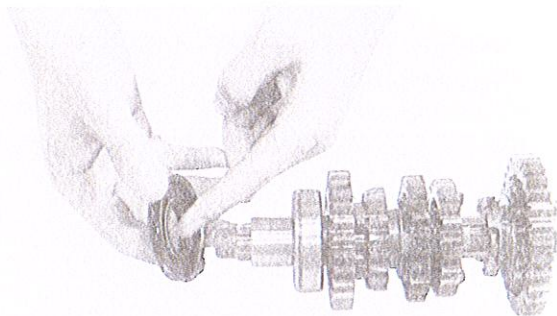


- Install the gearshifting cam with the dent for the neutral stopper directed downward, and meet the neutral stopper 1 with this dent 2.

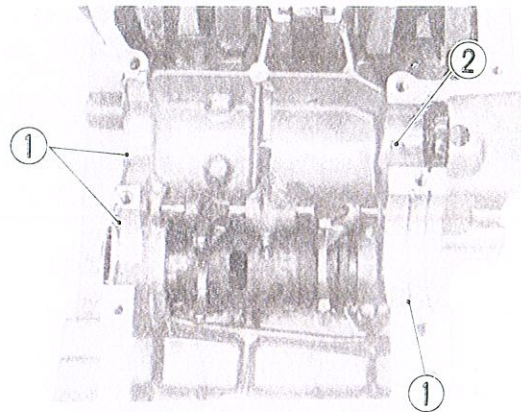


- Apply grease to each oil seal of drive and counter shafts.

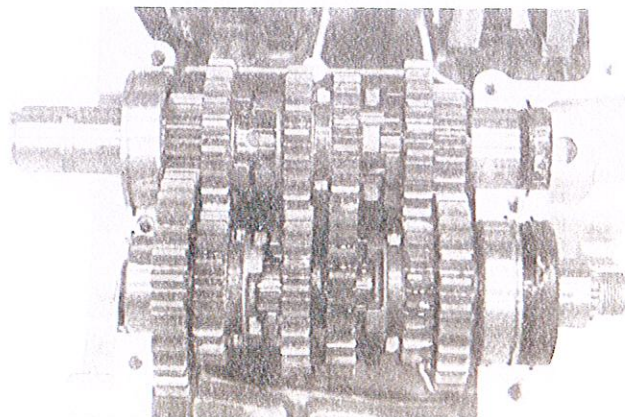
99000-25030	Suzuki Super grease A
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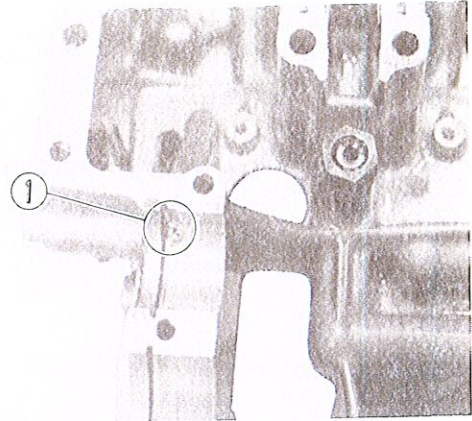
- Place three "C" rings 1 and a knock pin 2 and install drive and counter shafts.



- Install the countershaft and drive shaft oil seals, positioning as shown.

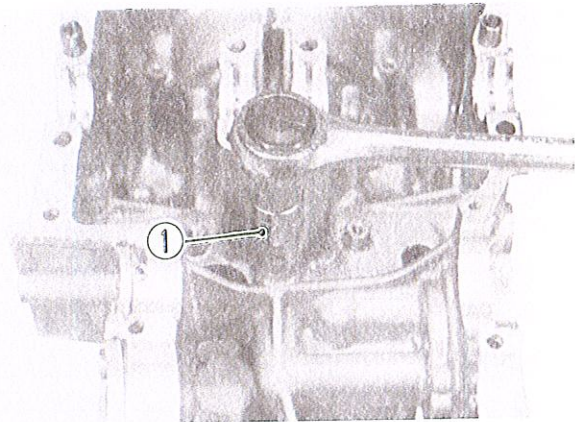


- Check oil orifice ① for clogging by foreign materials.

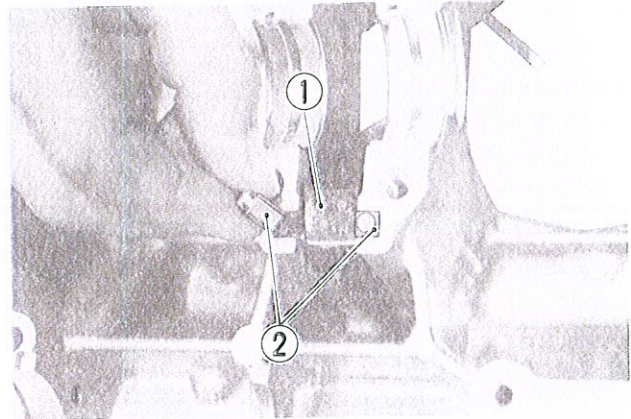


- Seat washer and tighten oil pressure regulator ① with specified torque.

Tightening torque	1.7 – 2.0 kg-m (12.5 – 14.5 lb-ft)
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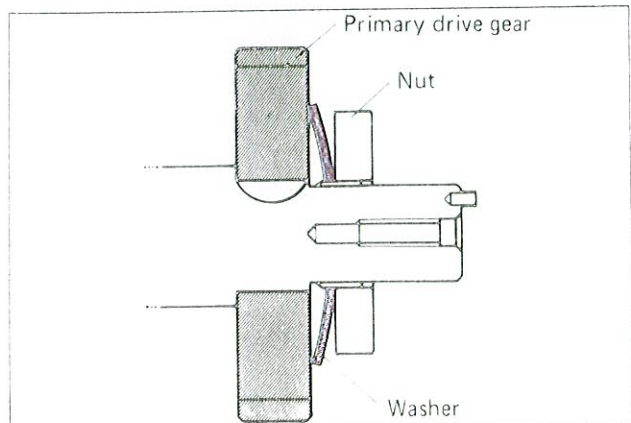


- Place cam chain guide ① properly and fix two dampers ② so that iron side faces to the chain guide pin (inside).



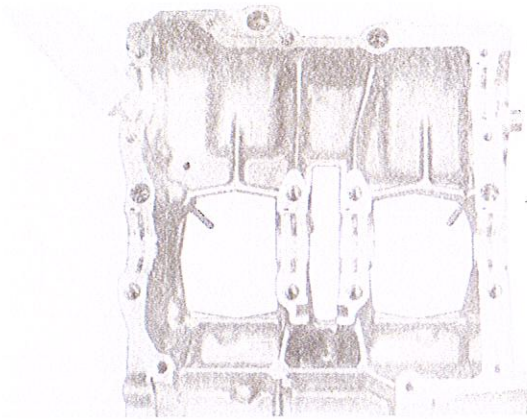
- The washer between primary drive gear and nut is in dish form when it is in free state. When fitting this washer, be sure to face its concave side to the gear as shown.

Tightening torque	5.0 – 7.0 kg-m (36.0 – 50.5 lb-ft)
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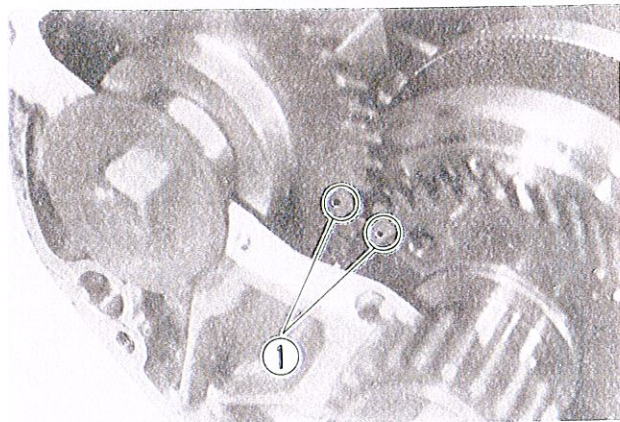


- Apply engine oil or SUZUKI MOLY PASTE to each bearing and journal portions of crankshaft and balancer.

99000-25140	SUZUKI Moly Paste
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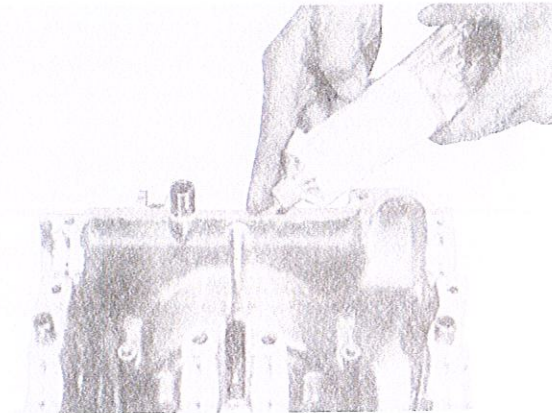


- When mounting the counterbalancer, be sure to position it exactly 180° out of phase with crankshaft. This positioning is accomplished by meshing the drive and driven gears in such a way that the two punch marks 1 meet each other, as shown.



- Clean the mating surfaces of the crankcases before matching the upper and lower ones.
- Apply SUZUKI BOND No. 1215 to the mating surface of the lower crankcase in the following procedure.

99104-31110	Suzuki Bond No. 1215
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NOTE:

- * Make surfaces free from moisture, oil, dust and other foreign materials.
- * Spread on surfaces thinly to form an even layer and wait for around 10 minutes before assembling.
- * Take extreme care not to apply any bond No. 1215 to the bearing surfaces.
- * Applicable on distorted surface as it forms a comparatively thick film.

- When securing the lower crankcase, tighten the 8-mm bolts and the 6-mm bolts in the ascending order of numbers assigned to these bolts, tightening each bolt a little at a time to equalize the pressure. Tighten all the securing bolts to the specified torque values.

Item	Initial tightening	Final tightening
① - ⑧	1.3 kg-m (9.5 lb-ft)	2.0 - 2.4 kg-m (14.5 - 17.5 lb-ft)
⑨ - ⑫	0.6 kg-m (4.5 lb-ft)	0.9 - 1.3 kg-m (6.5 - 9.5 lb-ft)
The other 6mm bolt	0.6 kg-m (4.5 lb-ft)	1.0 kg-m (7.0 lb-ft)
The other 8mm bolt	1.3 kg-m (9.5 lb-ft)	2.0 kg-m (14.5 lb-ft)

09914-25811	6mm T-type hexagon wrench
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NOTE:

Place the engine ground wire to the position **A** shown.

- Fix oil sump filter with three screws.
- Apply Suzuki Bond No. 1215 thinly to the respective portion as shown.

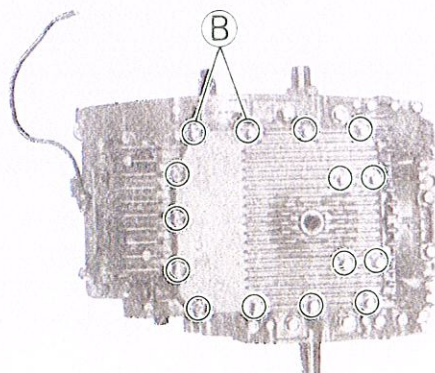
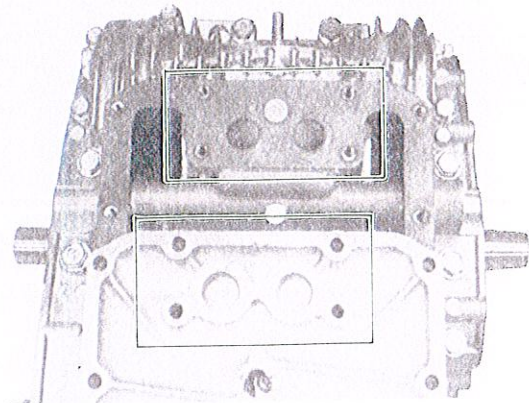
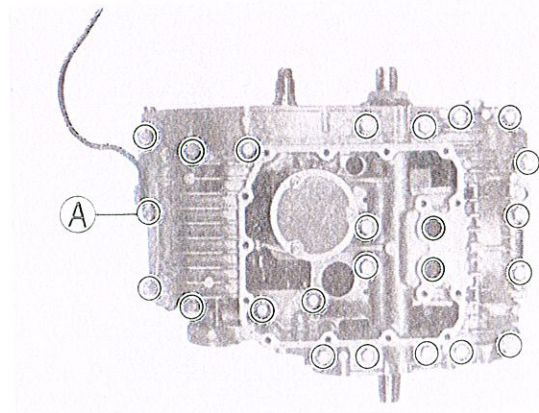
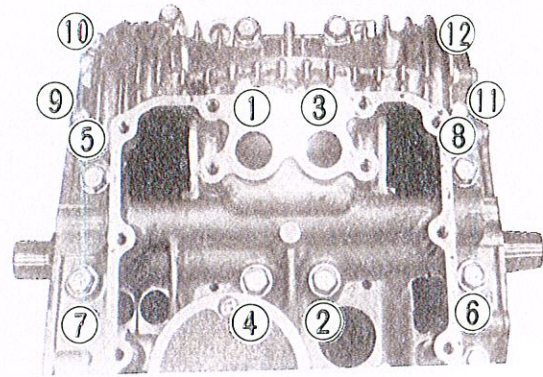
99104-31110	SUZUKI Bond No. 1215
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- Locate oil pan and tighten 15 6-mm bolts with specified torque.

Tightening torque	1.0 kg-m (7.0 lb-ft)
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NOTE:

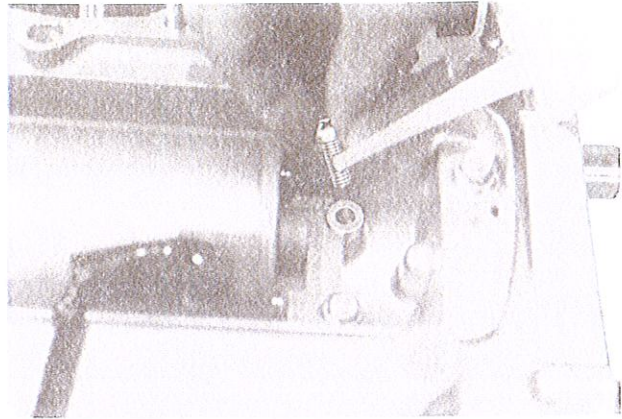
Place the two clamps for signal generator and oil pressure switch lead wires to the proper positions **B** as shown.



- Mount starter motor and route the lead wire properly.

99104-32050	Thread lock "1363C"
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Tightening torque	0.4 – 0.7 kg-m (3.0 – 5.0 lb-ft)
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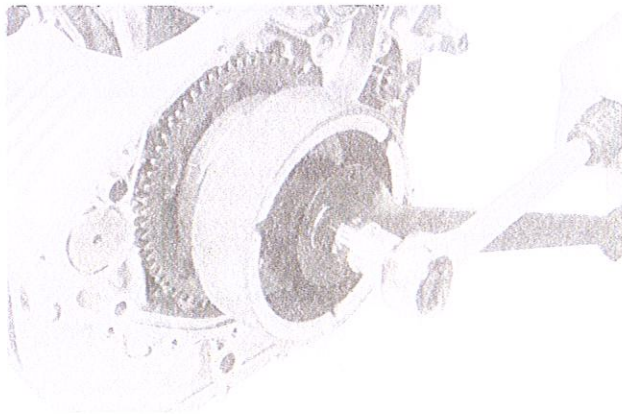
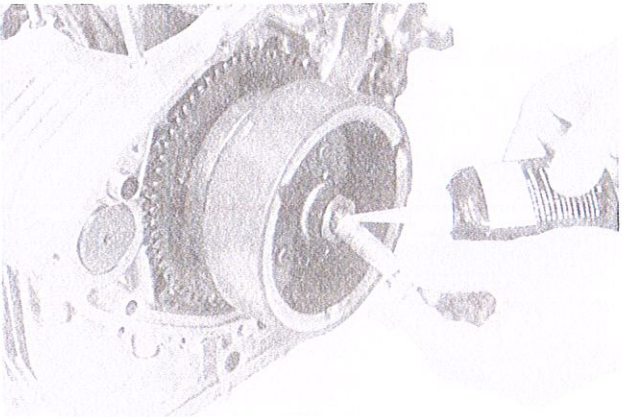
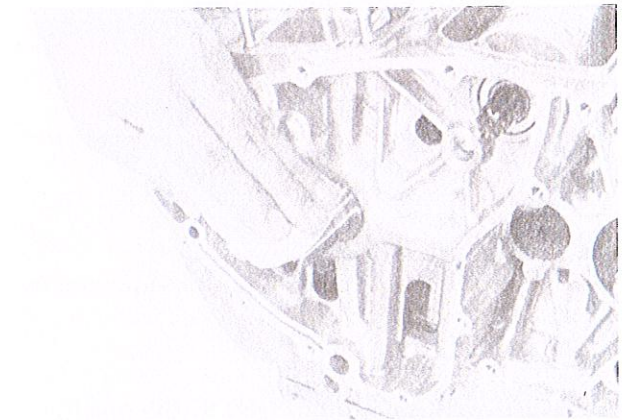


- Degrease the tapered portion of the rotor and also the crankshaft. Use non petroleum cleaning fluid to wipe off the oily or greasy matter to make these surfaces completely dry.
- After mounting the rotor, secure the rotor by tightening the center bolt to the specified torque value.

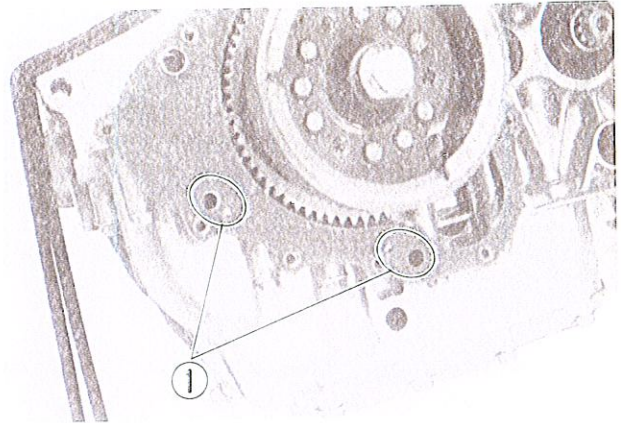
Tightening torque	6.0 – 7.0 kg-m (43.5 – 50.5 lb-ft)
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99104-32090	Thread lock super "1332B"
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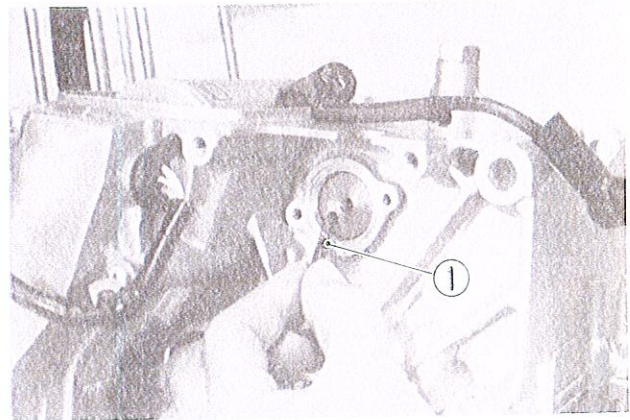
09930-44510	Rotor holder
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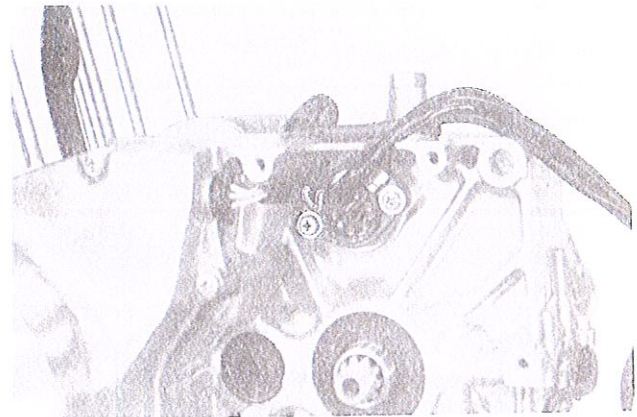
- Install the starter idle gear and its shaft.
- Fit generator cover gasket with extreme care of oil passage ①.



- Remember, switch contact ①, spring and "O" ring are provided for the neutral indicator switch.



- Route generator lead wire and clamp it with neutral indicator switch fitting screw.
- Install bearing holder and cam stopper with screws and bolt.

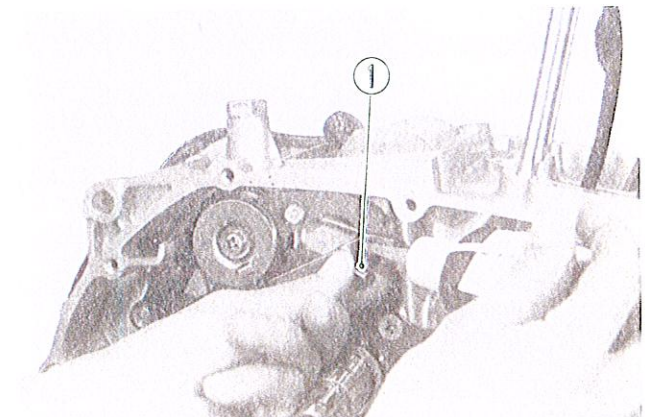
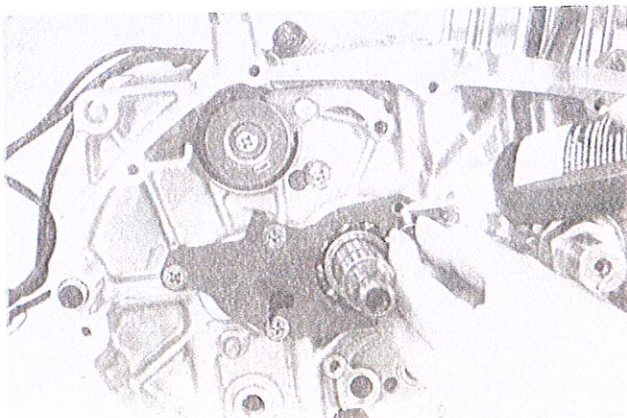


NOTE:

When tightening cam stopper bolt, position its spacer ① properly.

99104-32050

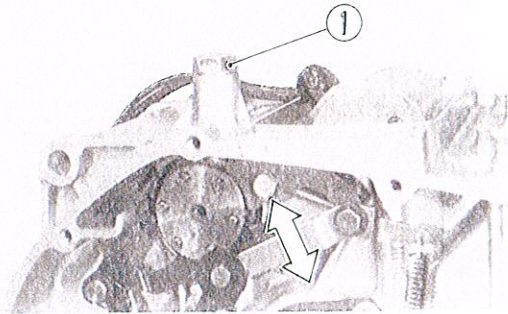
Thread lock "1363C"



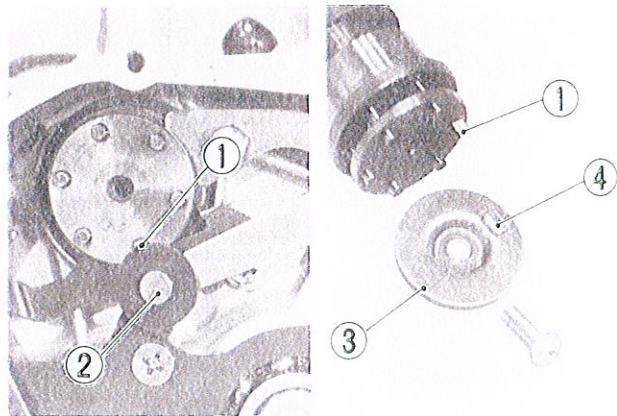
NOTE:

After tightening the cam stopper bolt, move the stopper back and forth with fingers to be sure that its movement is normal.

- Install the gearshift shaft.
- Bring gearshifting cam to "NEUTRAL" position by inspecting neutral cam stopper ①.



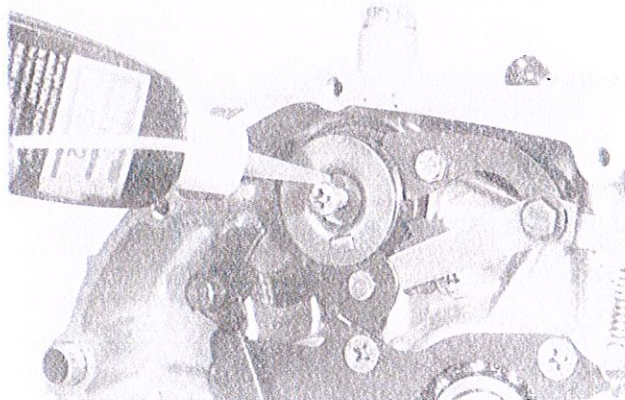
- Insert neutral cam pin ① into the closest pin hole to cam stopper ②.
- Install pin retainer ③ in such a way that the recess ④ of pin retainer will admit the semi-circle end of pin ①.



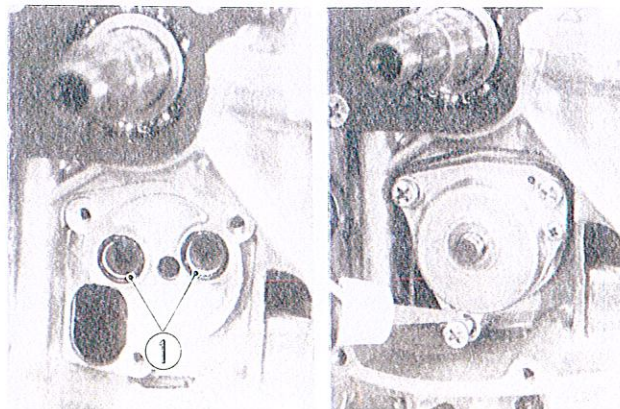
- Tighten pin retainer securing screw after applying thread lock super "1363A".

99104-32020

Thread lock super "1363A"



- Be careful not to leave out the two "O" rings ① when fitting oil pump.
- Apply thread lock "1363C" to oil pump fitting screws.



- Position the washer 1 and oil pump drive pin 2 and fix the oil pump driven gear with circlip 3.

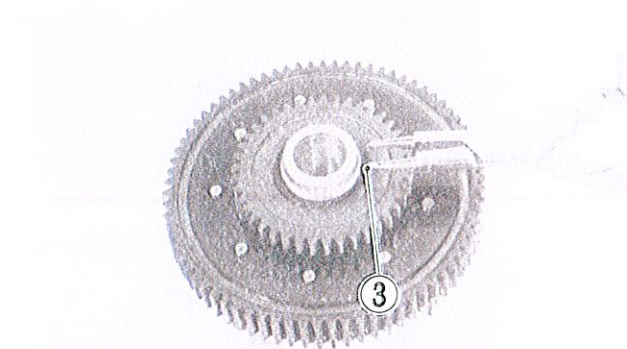
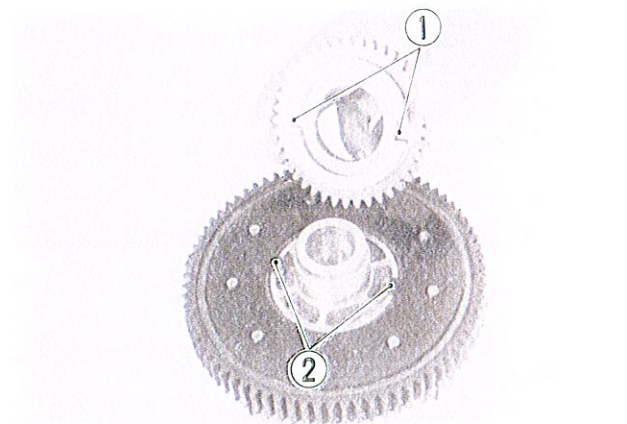
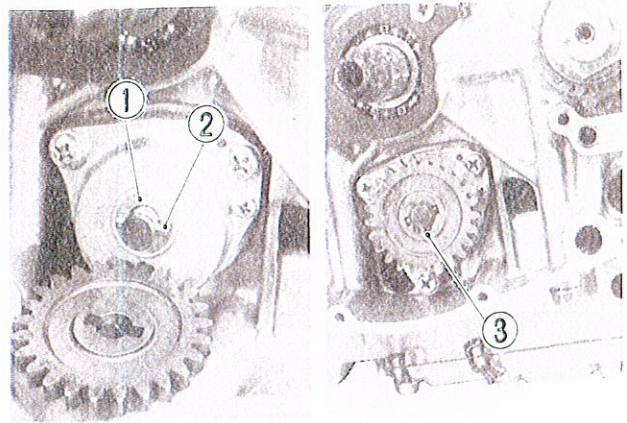
NOTE:

Upon installing the oil pump in crankcase, rotate the pump gear by hand to see if it turns smoothly.

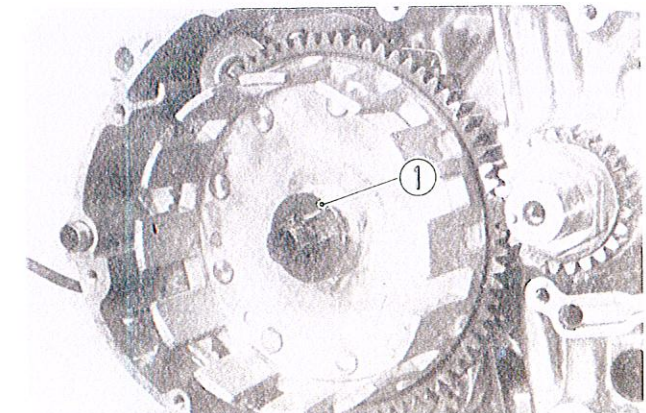
99104-32050	Thread lock "1363C"
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09900-06107	Snap ring opener
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- Be sure to position the oil pump drive gear so that its two notches 1 admit tongues 2 of the primary driven gear damper plate.
- Fix it with circlip 3.



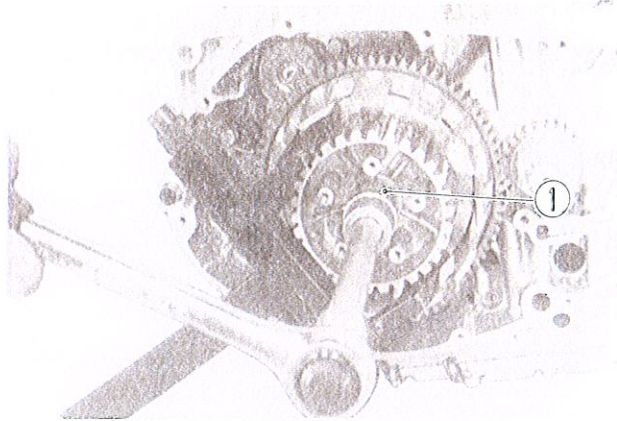
- Install primary driven gear and thrust washer 1.



- After tightening the clutch sleeve hub nut 1, be sure to lock the nut by positively bending the tongue of the washer. Tightening torque for the nut is specified.

09920-50410	Clutch sleeve hub holder
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Tightening torque	3.0 – 5.0 kg-m (21.5 – 36.0 lb-ft)
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- Drive plate (cork plate) is the first to go into the sleeve hub.
- Install push piece 1 and thrust bearing 2 properly.

NOTE:
Bearing side should face the clutch push piece side.

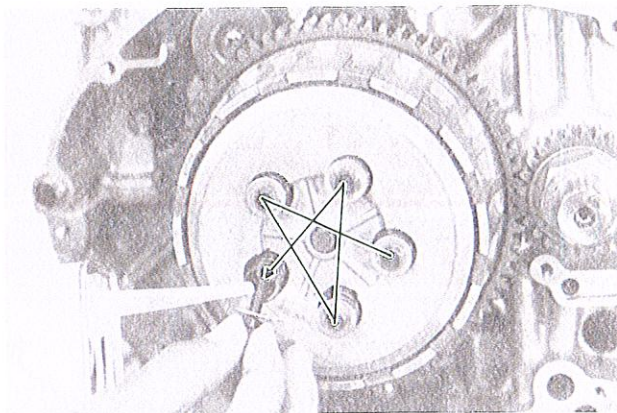
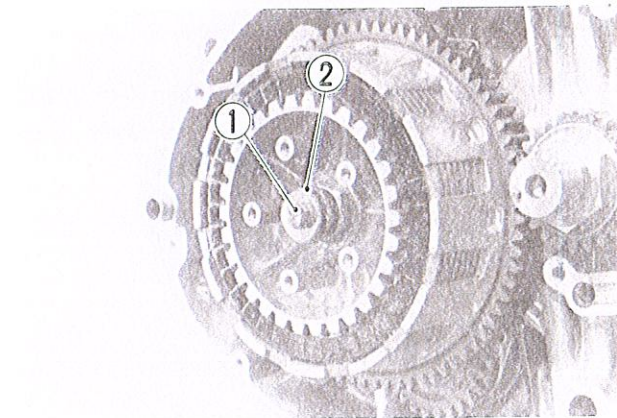
- Apply thread lock cement to the clutch spring set bolts.

99000-32040	Thread lock cement
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NOTE:
Using conrod stopper, tighten the clutch spring set bolts in the indicated manner, making sure that they are tightened just a little at a time to the same final tightness.

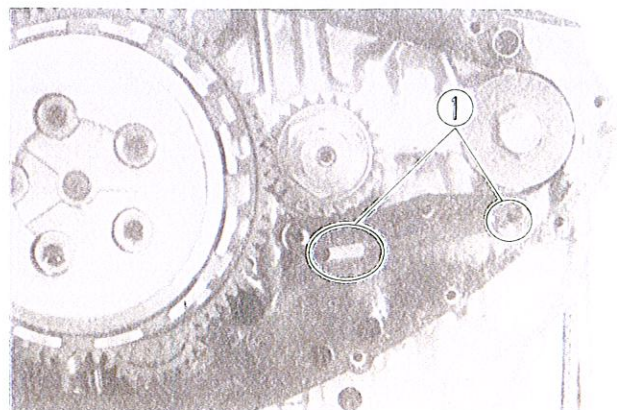
09910-20115	Conrod stopper
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Tightening torque	0.4 – 0.6 kg-m (3.0 – 4.5 lb-ft)
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- Position new gasket to align two holes 1 with oil passage of crankcase.

NOTE:
Do not forget to fix the two positioning pins.



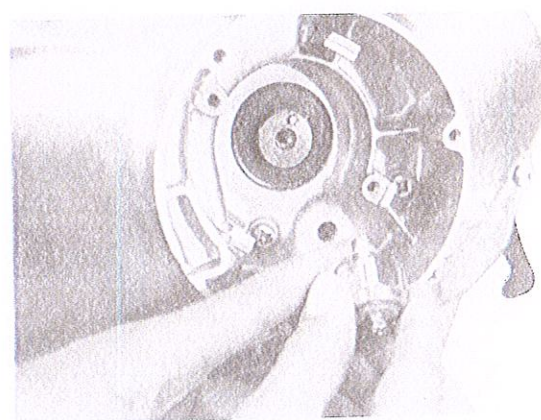
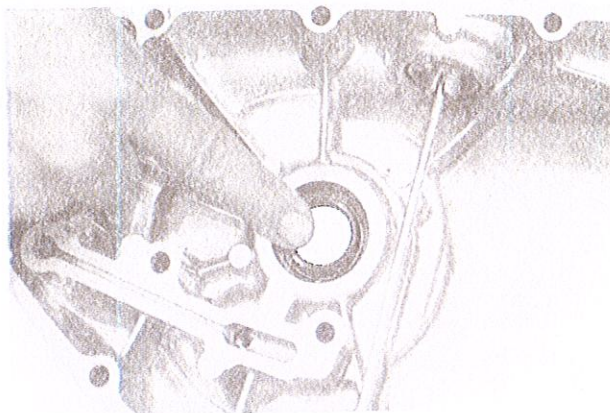
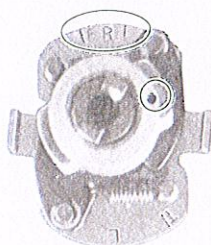
- Apply grease to oil seal lip of the crankshaft.

99000-25030	Suzuki Super grease "A"
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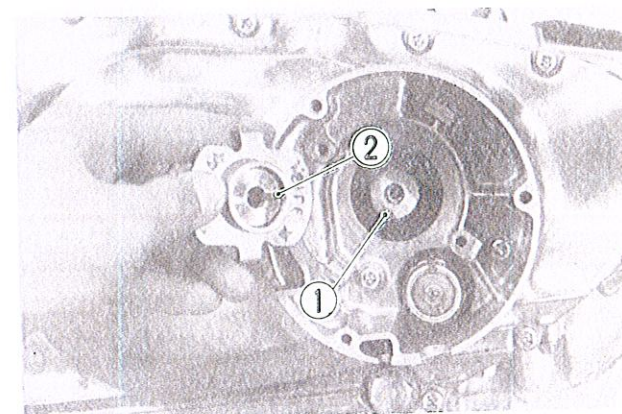
- Apply Suzuki Bond No. 1215 to oil pressure switch thread.

99104-31110	Suzuki Bond No. 1215
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- Install the signal generator rotor to the advance governor properly.

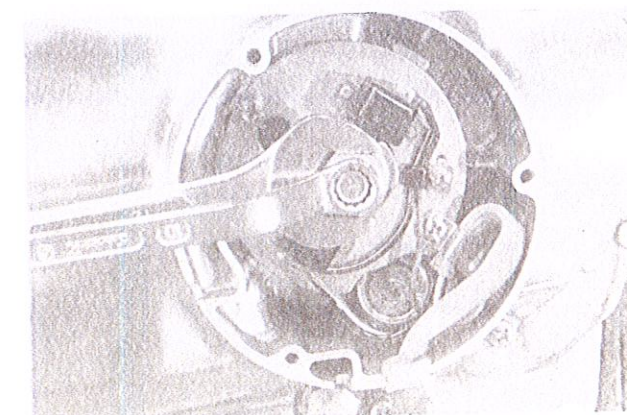


- Install the advance governor after installing the clutch cover. Be sure to position the governor in place so that its groove 2 will admit locating pin 1 provided on crankshaft.

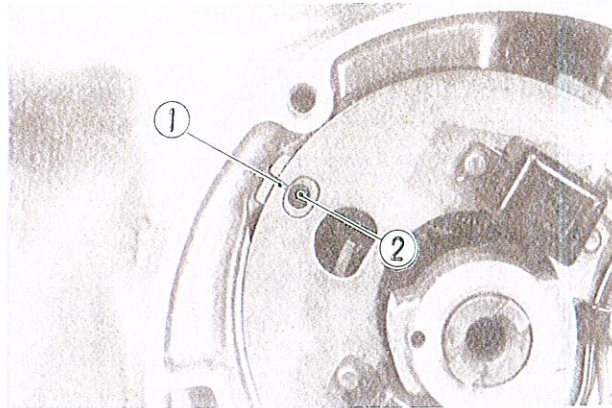


- Hold the crankshaft turning nut and tighten the governor center bolt with specified torque.

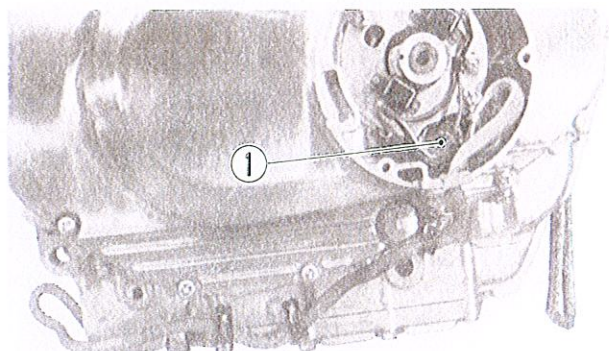
Tightening torque	1.3 – 2.3 kg-m (9.5 – 16.5 lb-ft)
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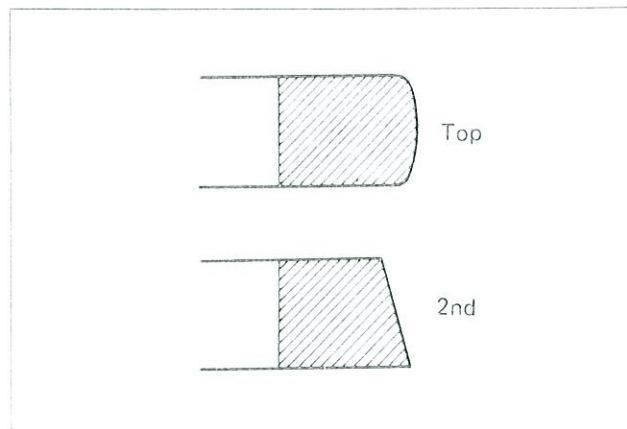
- Install the signal generator so that the index line ① aligns with the center ② of the fitting screw.



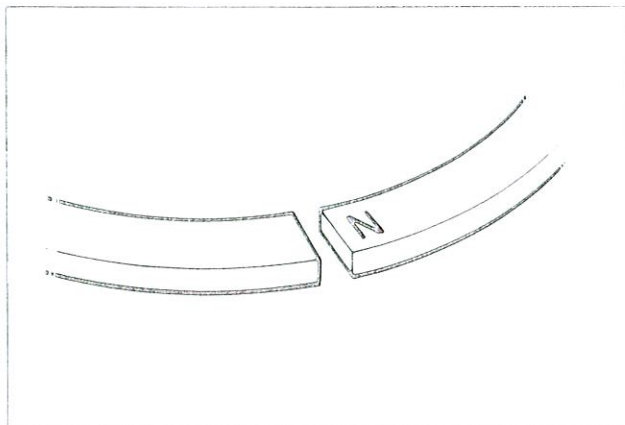
- Route stator and oil pressure switch ① lead wires properly after installing stator.



- Top ring and middle (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 middle (2nd) rings have letter "N" marked on the side. Be sure to bring the marked side to top when fitting them to the piston.

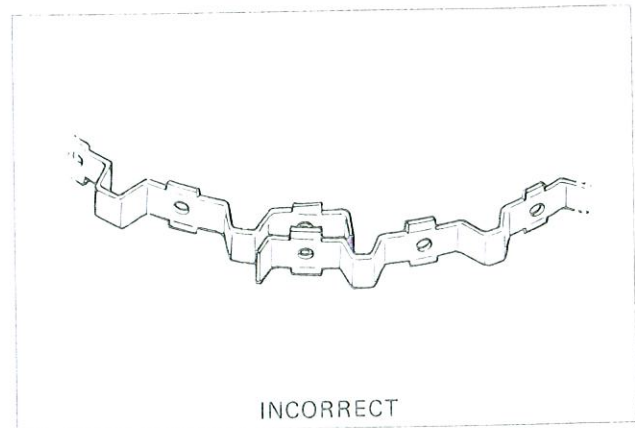
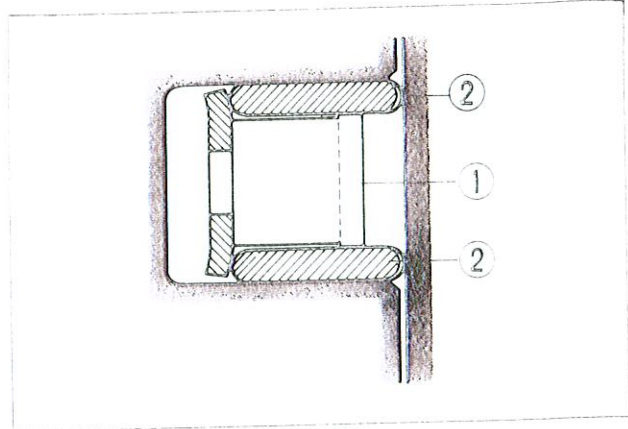


Bottom ring

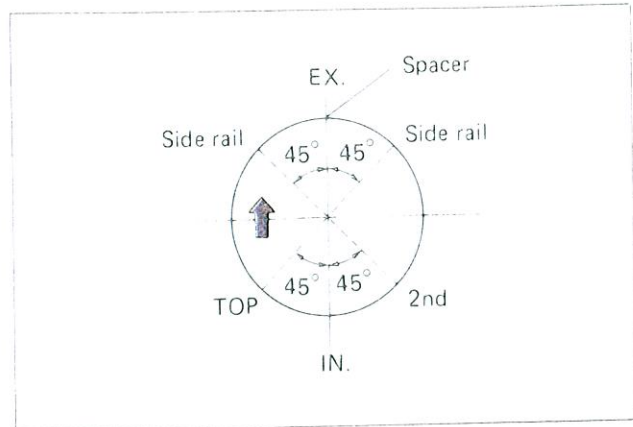
The first member to go into the ring groove is spacer 1. After placing spacer, fit the two side rails 2. Side designations, top and bottom, are not applied to the spacer and side rails: you can position each either way.

CAUTION:

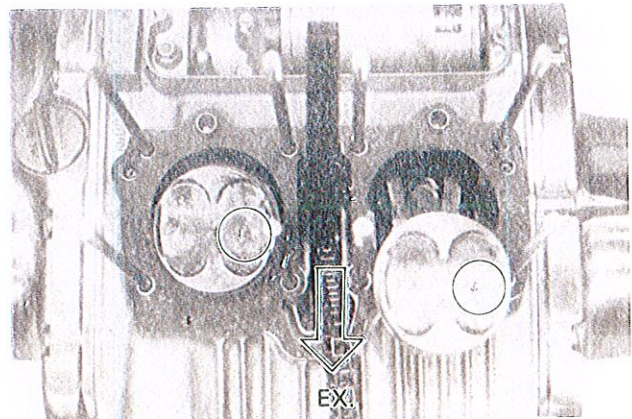
If the spacer is installed, be careful not to allow its two ends to overlap in the groove.



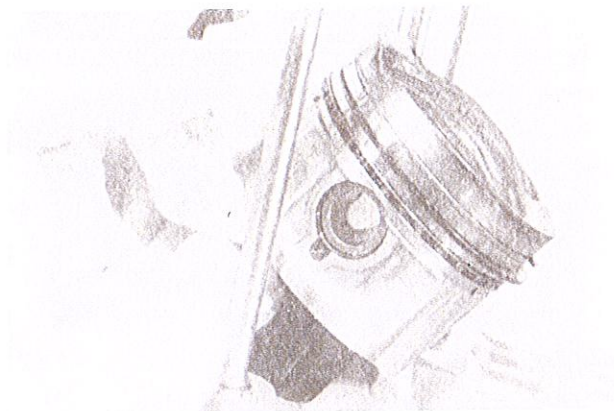
- Position the gaps of the three rings as shown. Before inserting each piston into the cylinder, check that the gaps are so located.



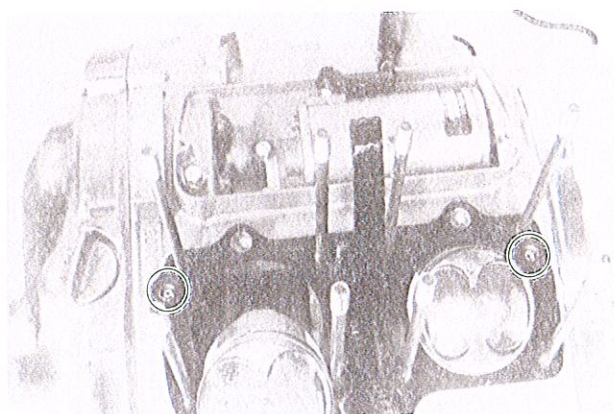
- The piston is in correct position when its arrow (on the crown) points forward.
- Be sure to install the piston in the cylinder from which it was taken out in disassembly, refer to the letter mark, "R" or "L", scribed on the piston crown.



- Have each piston oiled lightly before installing it.
- Place a cloth beneath the piston, and install the circlip.
- Be sure to use new circlips.



- Check to be sure that two oil orifices are not clogged.
- Install the cylinder gasket properly.
- Fix the two positioning pins.



- Install piston ring holders in the indicated manner. Some light resistance must be overcome to lower the cylinder block.

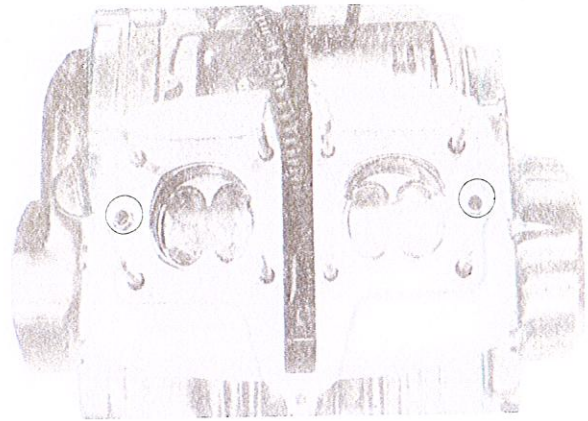
09916-74520	Holder body
09916-74530	Band (bore 55 – 65 mm)

**NOTE:**

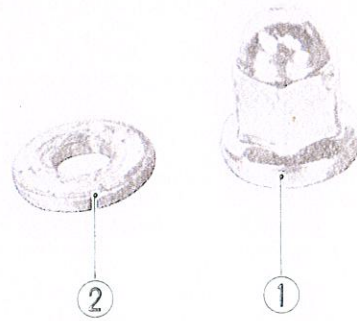
- * Do not overtighten the special tool bands or the pistons will not slide into the cylinders.
- * Each band has a number punch-marked on it. The number refers to a particular range of piston diameter.



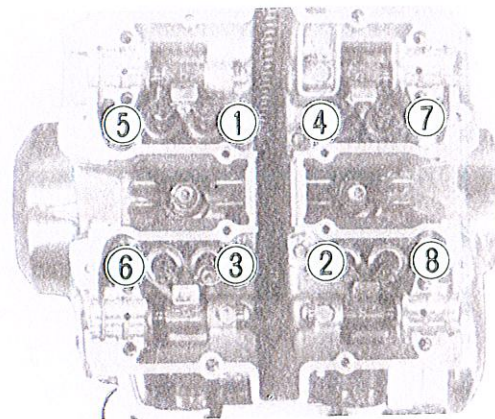
- Be sure to replace cylinder head gasket with new one to prevent gas leakage.
- Fix two positioning pins properly.



- Install eight crown nuts (1) and copper washers (2) to tighten cylinder head.



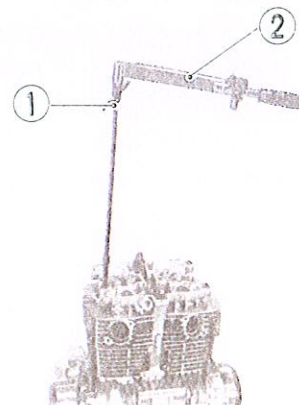
- With the head snugly seated on the cylinder block, secure it by tightening the 8 nuts sequentially in the ascending order of numbers. Tighten each nut just a little at a time and shift the wrench in the indicated order to reach the same final torque value specified.



Cylinder head nut tightening torque	2.2 – 2.8 kg-m (16.0 – 20.0 lb-ft)
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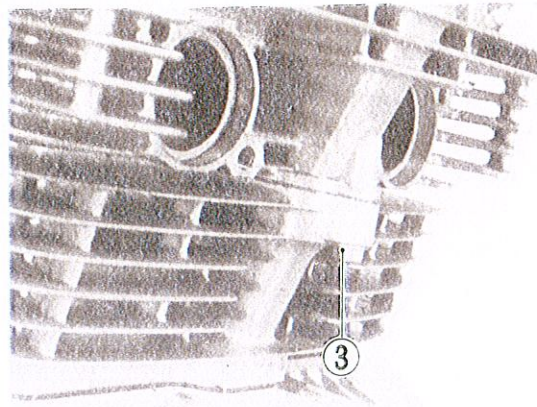
NOTE:

Use the wrench (special tool) (1) and a torque wrench (2) to tighten cylinder head nuts, as shown.



- After tightening the 8 nuts to specification, run in the 6 mm bolt (indicated as ③) and tighten it to this torque value.

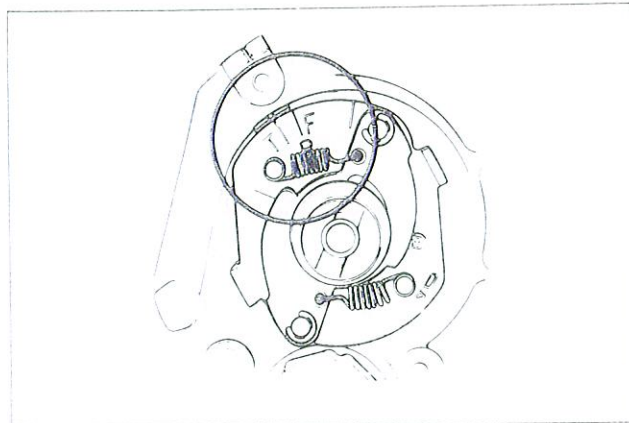
Head bolt tightening torque	0.7 – 1.1 kg-m (5.0 – 8.0 lb-ft)
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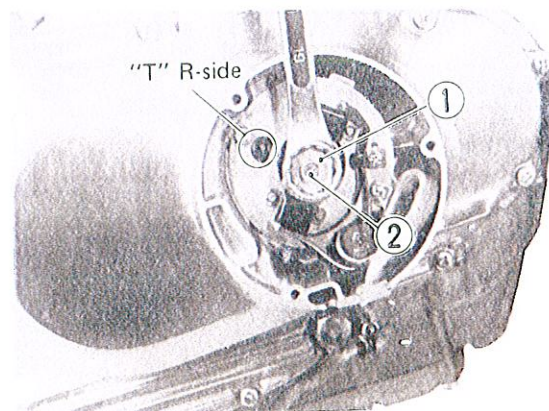
- Place chain guide ① properly.



- While holding down the timing chain, rotate the crankshaft in normal direction to bring the "T" mark (on "R" side of the advance governor) to the timing mark.

**CAUTION:**

To rotate crankshaft, use a 19 mm wrench on the large crankshaft turning nut ①. Never try to rotate crankshaft by putting a 12 mm wrench to bolt ②.



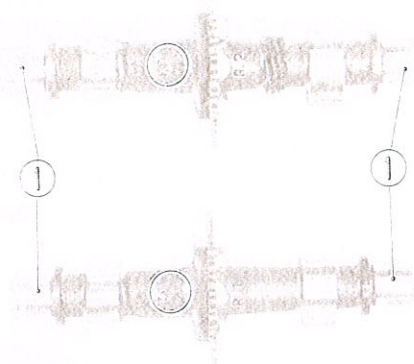
NOTE:

Just before placing the camshaft on the cylinder head, apply high quality molybdenum disulfide lubricant to its journals, fully coating each journal ① with the paste taking care not to leave any dry spot. Apply engine oil to the journal bearings.

99000-25140

Suzuki Moly Paste

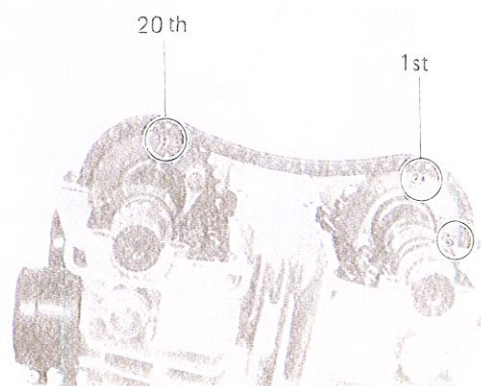
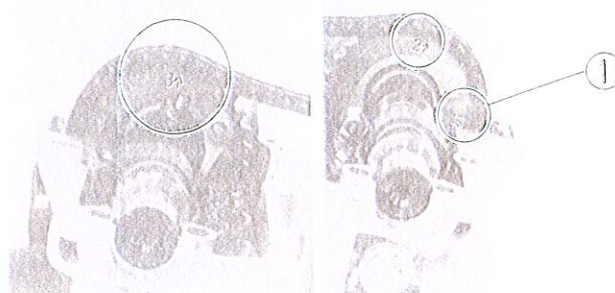
- To identify the exhaust camshaft from the intake, the letters "EX" (for exhaust) and "IN" (for intake) are cast on the camshafts. Also, the right end of both camshafts are identified by a notch.



- With "T" mark accurately lined up with the timing mark, hold the crankshaft steady and lightly pull up the chain to remove the slack between the crank sprocket and exhaust sprocket.
- Exhaust sprocket bears an arrow mark "1" indicated as ①. Turn over the exhaust camshaft so that the arrow points flush with the gasketed surface of the cylinder head. Engage the timing chain with this sprocket.

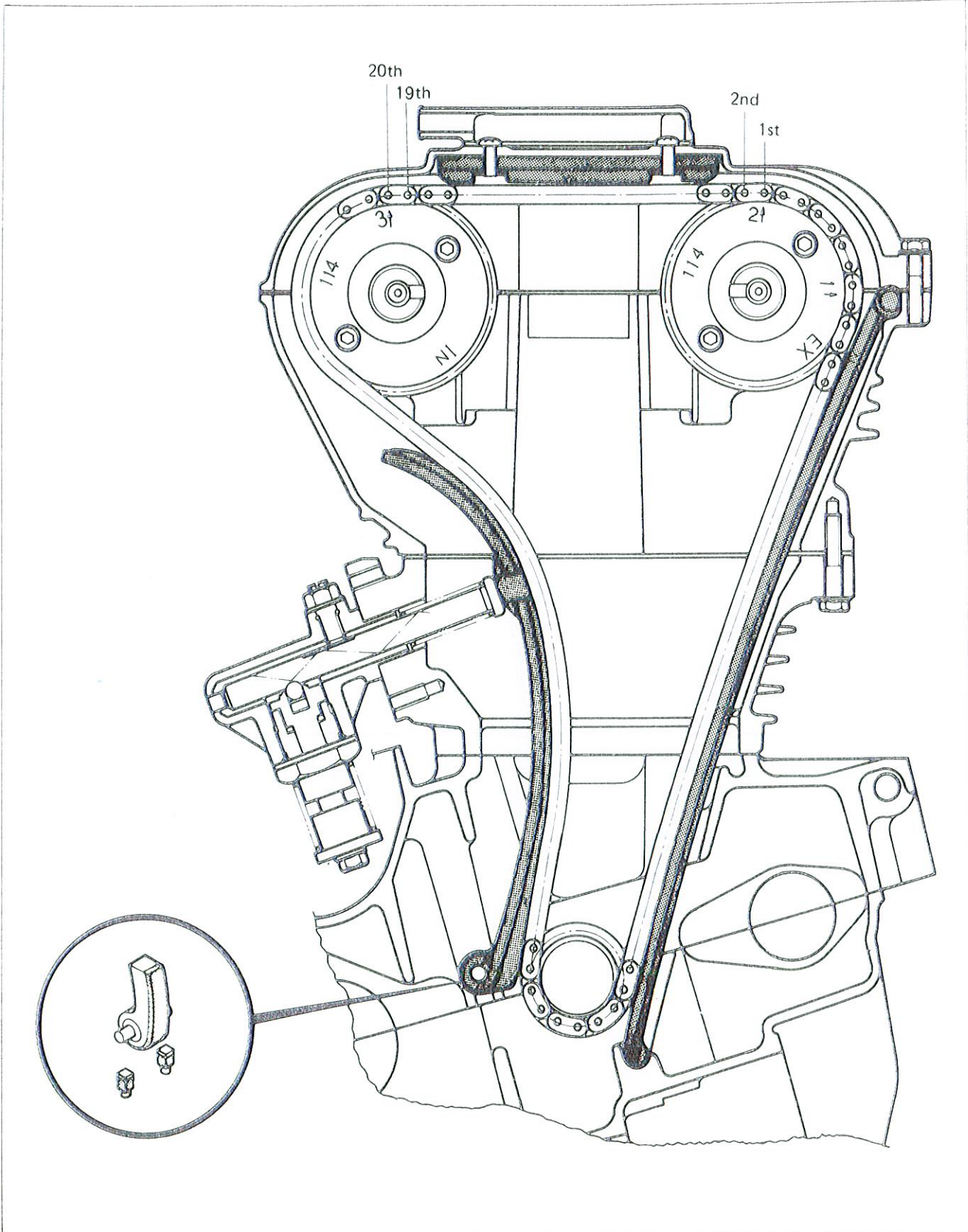


- The other arrow mark "2" is now pointing straight upward. Count the chain roller pins toward the intake camshaft, starting from the roller pin directly above this arrow mark "2" and ending with the 20th roller pin. Engage the chain with intake sprocket, locating the 20th pin, at and above the arrow mark "3" on the intake sprocket.

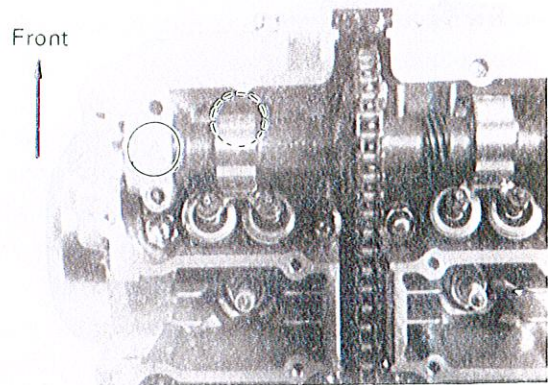


NOTE:

The timing chain is now riding on all three sprockets. Be careful not to disturb the crankshaft until four holders and cam chain tensioner are secured.



- Each camshaft holder is identified with a cast-on letter with a triangle. A matching cast-on symbol appears on the head. Install each holder at its matching letter, with triangle symbols pointing forward.
- Secure the four camshaft bearing holders evenly by tightening the camshaft bearing holder bolts sequentially. Try to equalize the pressure by moving the wrench diagonally from one bolt to another and from one camshaft bearing holder to another, to pull shafts down evenly.



NOTE:

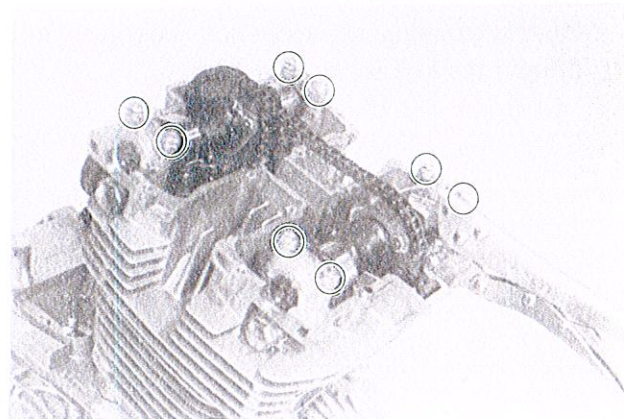
Damage to head or cam bearing holder thrust surfaces may result in cam bearing holders that are not drawn down evenly.

- Tighten the camshaft bearing holder bolts to the following torque value:

CAUTION:

The camshaft bearing holder bolts are made of a special material and much superior in strength compared with other type of high strength bolts.

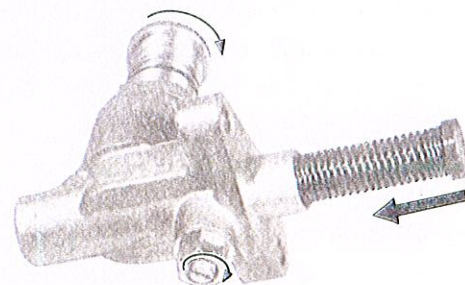
Take special care not to use other type bolts instead of these special bolts. To identify these bolts, each of them has a figure "9" on its head.



Camshaft bearing holder bolt tightening torque	0.8 – 1.2 kg-m (6.0 – 8.5 lb-ft)
--	-------------------------------------

- While turning lock shaft handle counterclockwise, push in the pushrod all the way. Keep on turning the handle until it refuses to turn further.
- Tighten the lock screw to lock the pushrod, so that the pushrod will not plunge out.
- Secure the adjuster to the cylinder block.

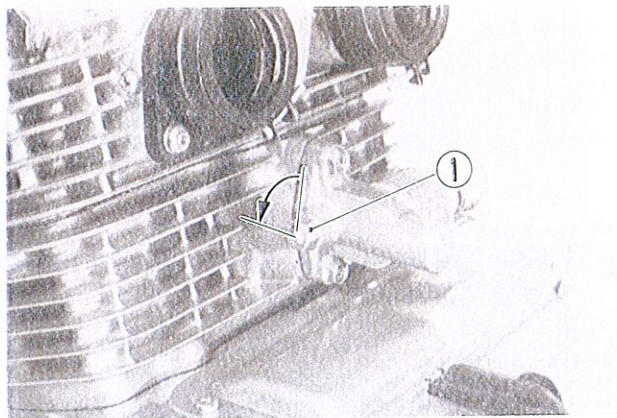
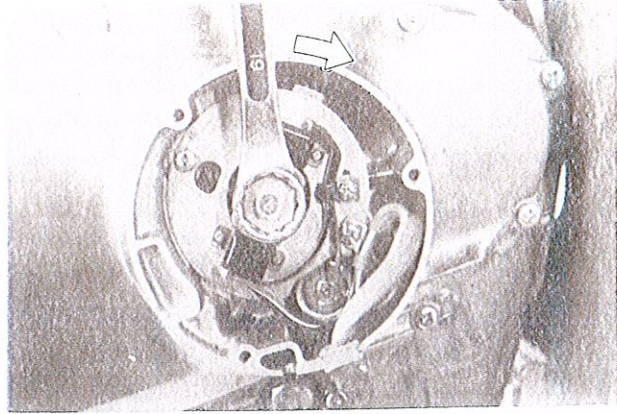
Tightening torque	0.6 – 0.8 kg-m (4.5 – 6.0 lb-ft)
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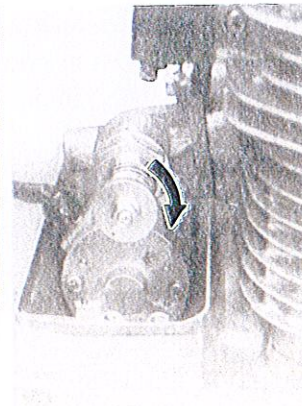
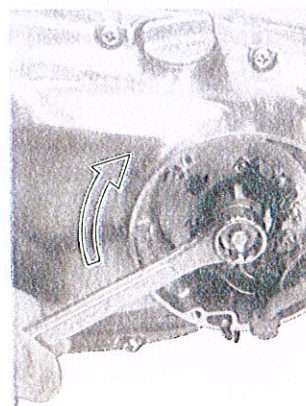
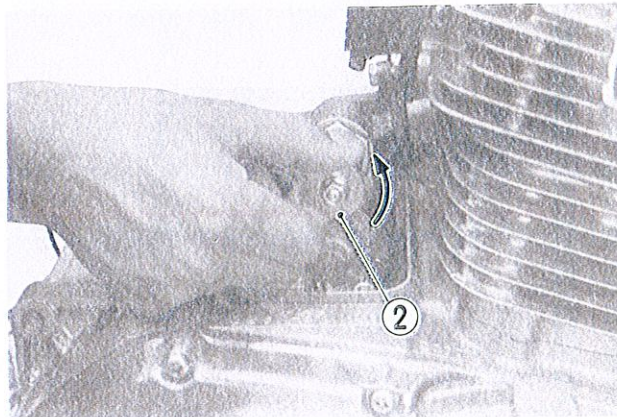
- If tensioner adjuster is not going in, turn the crankshaft slowly clockwise to get chain slack at inlet side.
- Withdraw the lock screw by one-quarter to half a turn: this separates the tip of the screw from the pushrod, thereby allowing the pushrod to advance under spring force and press the tensioner against the camshaft drive chain.
- Tighten the lock nut ①.

NOTE:

When tightening the lock nut, take care to prevent the lock screw from turning.

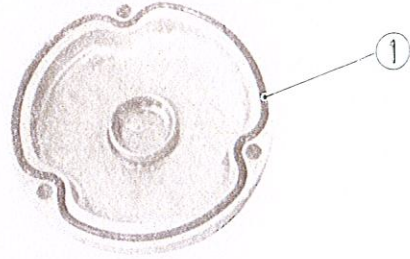


- While turning the handle 2 counterclockwise, slowly rotate the crankshaft in reverse direction (thus causing the chain to push back the tensioner).
- Release the handle and slowly turn back the crankshaft in normal running direction (to slacken that portion of the chain extending along the tensioner). See if the handle rotates by itself as the chain becomes progressively slackened; if it does, then the pushrod inside is obviously moving forward under spring force as it should, thus signifying that the tensioner is in good operable condition. If the handle rotates, but sluggishly, it means that the pushrod or lock shaft is sticking and, in such a case, remove the tensioner and service the pushrod and lock shaft to make them move smoothly.

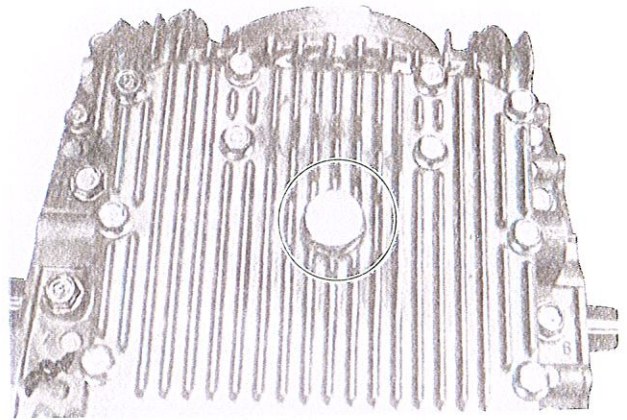
**CAUTION:**

After installing the tensioner and checking it in initially set condition for operation, do not attempt to turn the handle in either direction until the next overhaul.

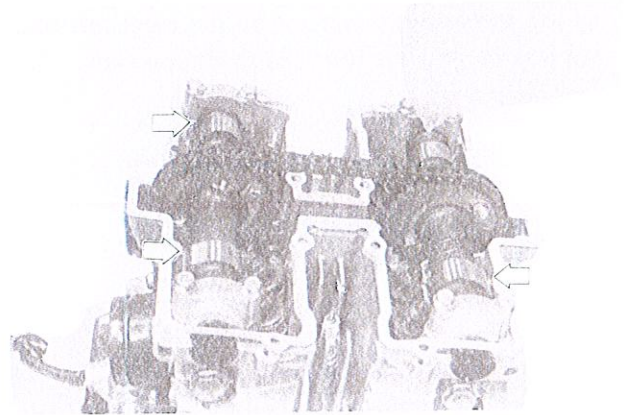
- Adjust valve clearance.
(Refer to page 2-5).
- In fitting the seal ring to the oil filter chamber cap, lightly coat grease on the seal ring ① groove to avoid any chance of dropping or mislocating the ring during the installation work.



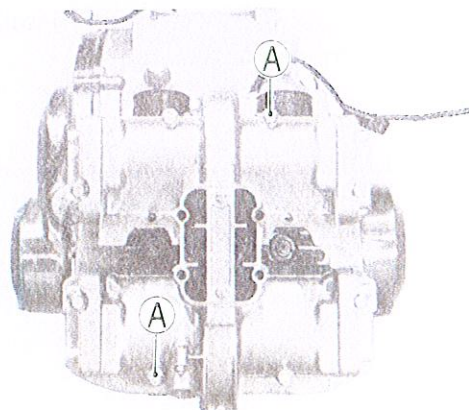
- Tighten engine oil drain plug.



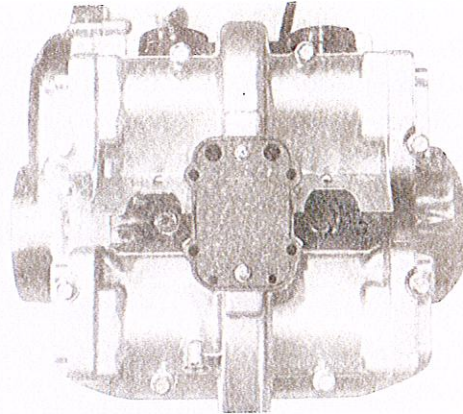
- Pour 50 ml of engine oil in four oil pockets in the head.



- Install cylinder head cover. Two longer bolt ① should be placed at two knock pin positions.



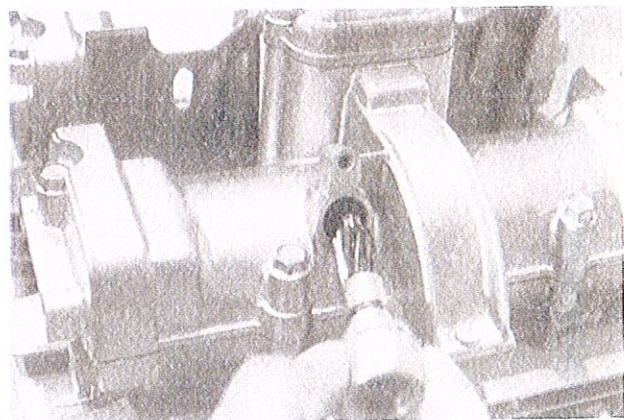
- Place gasket properly and fix head cover cap.



- Install the tachometer drive gear.

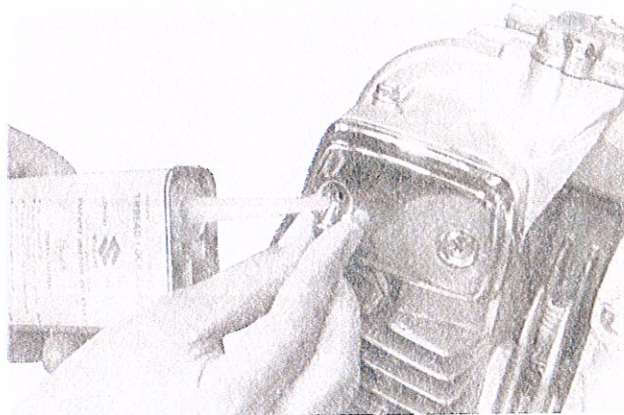
CAUTION:

This is to be effected after installing cylinder head cover. Installing this gear before installing the cylinder head cover may cause the teeth of gear and worm to break.



- Apply thread lock cement to the camshaft end cap screws. Fit the four camshaft end caps.

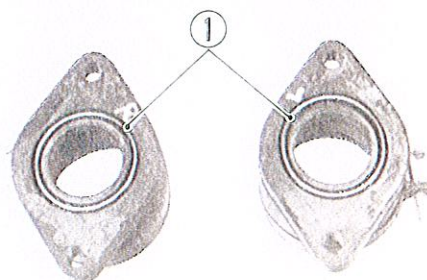
99000-32040	Thread lock cement
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- Install the respective carburetor insulator to the cylinder head with two screws.

NOTE:

- * Each insulator has an identification mark, "R" or "L", and fix it so that the mark should be positioned up side.
- * Locate the O-ring ① in the insulator groove properly.



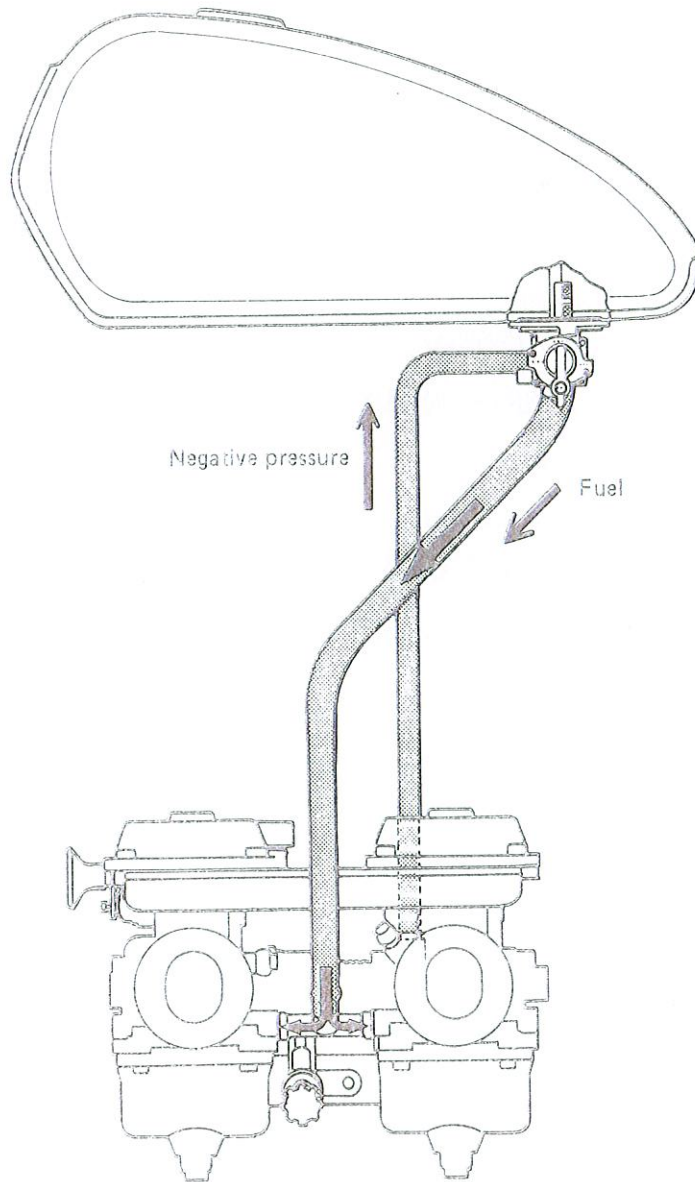
FUEL AND LUBRICATION SYSTEM

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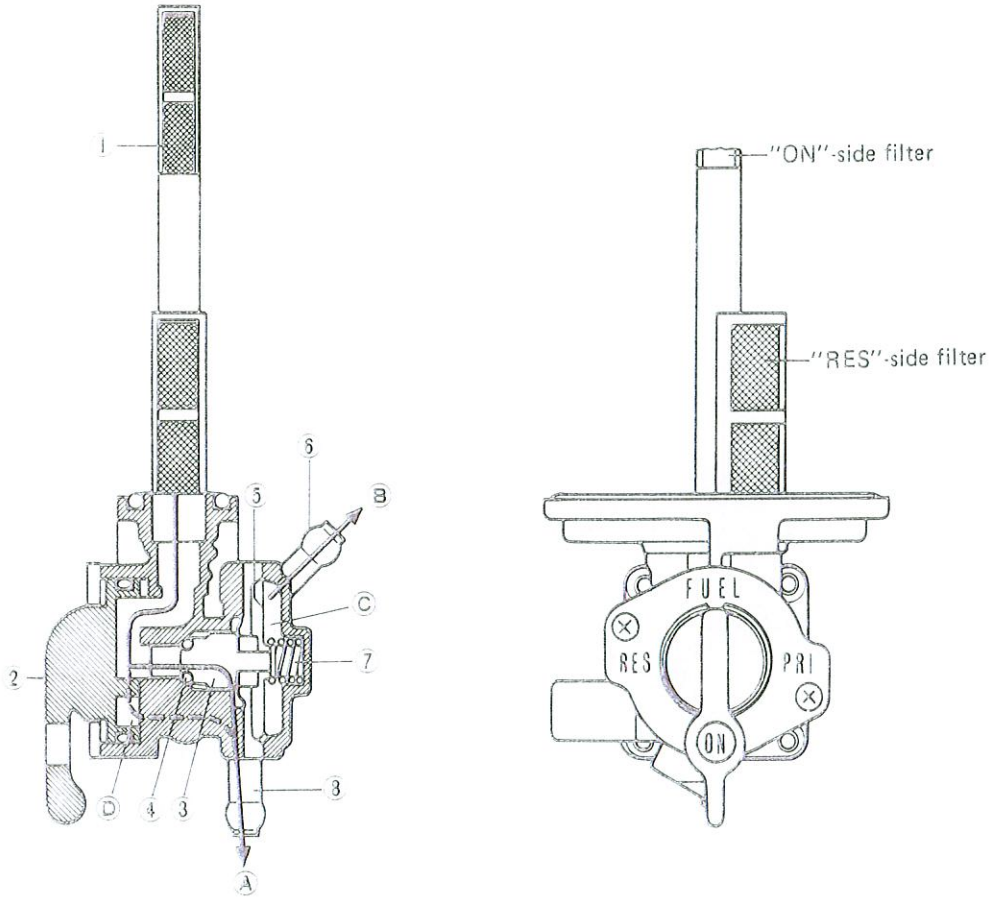
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FUEL SYSTEM

When turning starter motor, negative pressure is generated in the combustion chamber. This negative pressure works on the diaphragm of fuel cock through passageway provided in the carburetor main bore and vacuum pipe, and diaphragm builds up a negative pressure which is higher than the spring pressure. Fuel valve is forced to open due to diaphragm operation, and thus allow fuel to flow into carburetor float chamber.



FUEL COCK

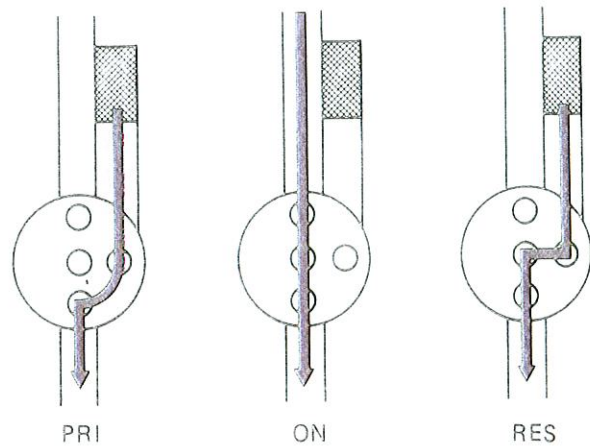


- | | | |
|---------------|---------------|---------------------|
| 1 Fuel filter | 5 Diaphragm | A Fuel flow |
| 2 Lever | 6 Vacuum hose | B Vacuum |
| 3 Fuel valve | 7 Spring | C Diaphragm chamber |
| 4 O-ring | 8 Fuel hose | D Chamber |

This fuel cock has provided three positions "ON", "RES" and "PRI".

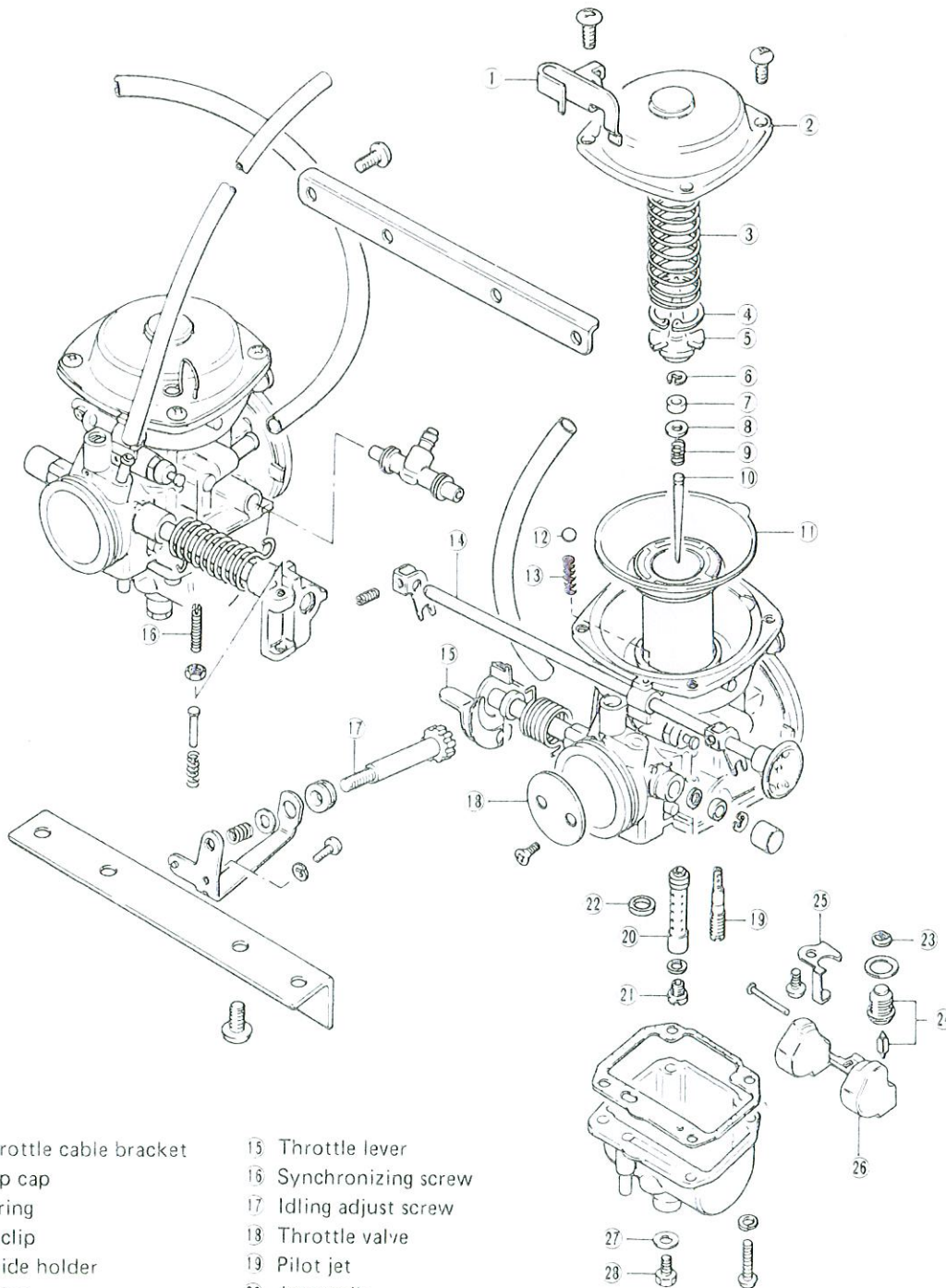
When the engine is not running with the lever in the ON or RES position, the valve is kept in the closed position by applying pressure utilizing a spring so that no fuel will flow to the carburetors. When the engine is engaged, a negative pressure is generated in the diaphragm chamber "C" through the vacuum (negative pressure) pipe which is connected to the carburetor, and builds up a negative pressure which is higher than the spring pressure so that the diaphragm is forced to open the valve and thus allow the fuel to flow to the carburetors.

When turning the lever to PRI position, fuel flows directly to the carburetor through RES side filter and chamber "D".



CARBURETOR

CARBURETOR CONSTRUCTION

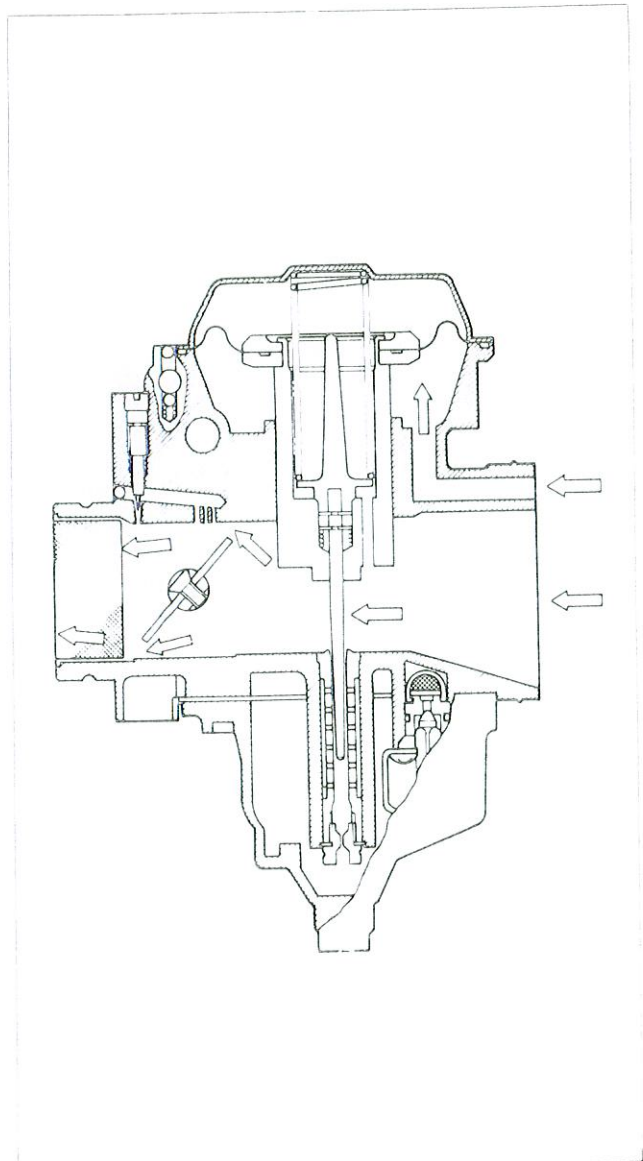
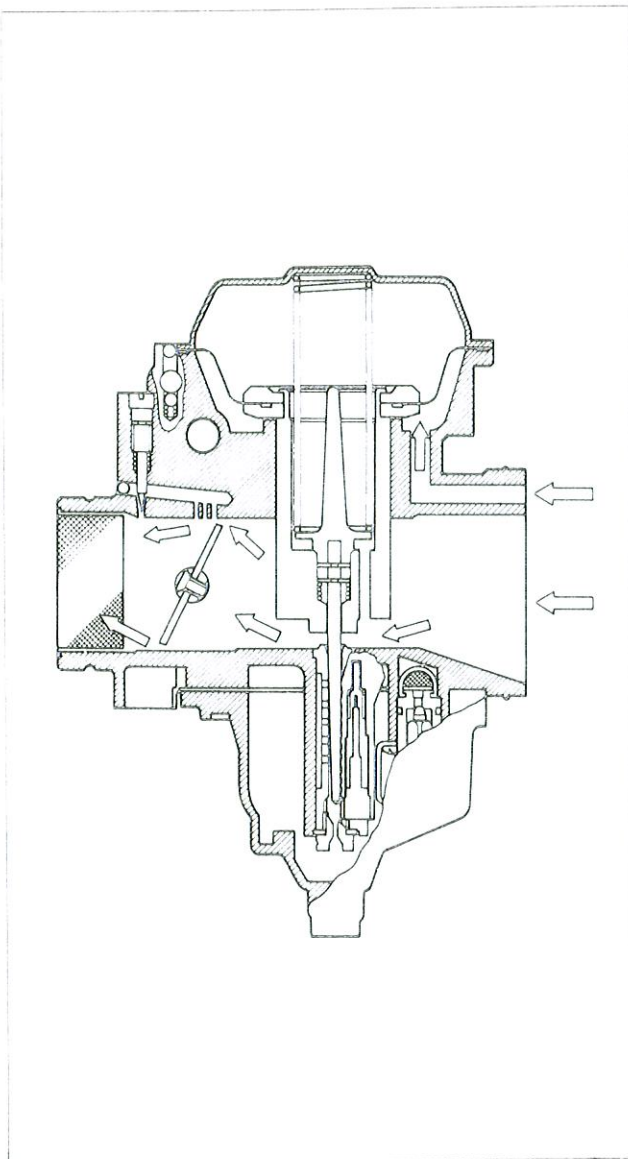


- | | |
|--------------------------|------------------------|
| 1 Throttle cable bracket | 15 Throttle lever |
| 2 Top cap | 16 Synchronizing screw |
| 3 Spring | 17 Idling adjust screw |
| 4 Circlip | 18 Throttle valve |
| 5 Guide holder | 19 Pilot jet |
| 6 E-ring | 20 Jet needle |
| 7 Spacer | 21 Main jet |
| 8 Washer | 22 O-ring |
| 9 Spring | 23 Fuel filter |
| 10 Jet needle | 24 Needle valve |
| 11 Diaphragm | 25 Needle valve guide |
| 12 Steel ball | 26 Float |
| 13 Spring | 27 O-ring |
| 14 Starter shaft | 28 Drain plug |

DIAPHRAGM AND PISTON OPERATION

The carburetor is of a variable-venturi type, whose venturi cross section area is increased or decreased automatically by the piston according to the vacuum present on the downstream side of the venturi. Vacuum is admitted into the diaphragm chamber through an orifice provided in the piston.

Rising vacuum overcomes the spring force, causing the piston to rise to increase the said area and thus prevent the air velocity from increasing. Thus, air velocity in the venturi passage is kept relatively constant for improved fuel atomization and for securing an optimum ratio of fuel to air in the mixture.

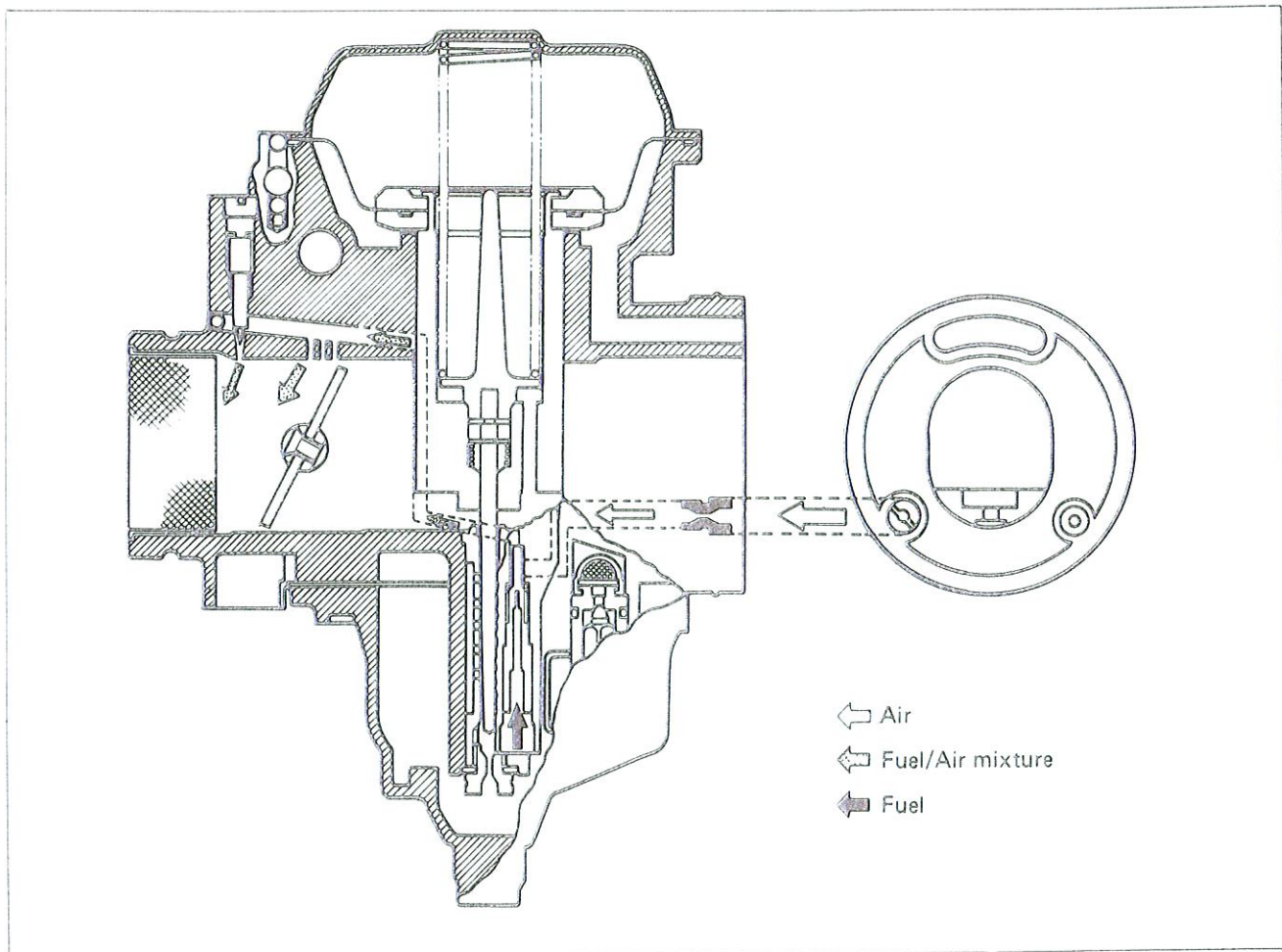


SLOW SYSTEM

This system supplies fuel during engine operation with throttle valve closed or slight opened.

The fuel from float chamber is first passed and metered by pilot jet where it mixes with air coming in through pilot air jet.

This mixture, rich with fuel, then goes up through pilot pipe to pilot screw. A part of the mixture is discharged into the main bore out of bypass ports. The remainder is then metered by pilot screw and sprayed out into the main bore through pilot outlet.



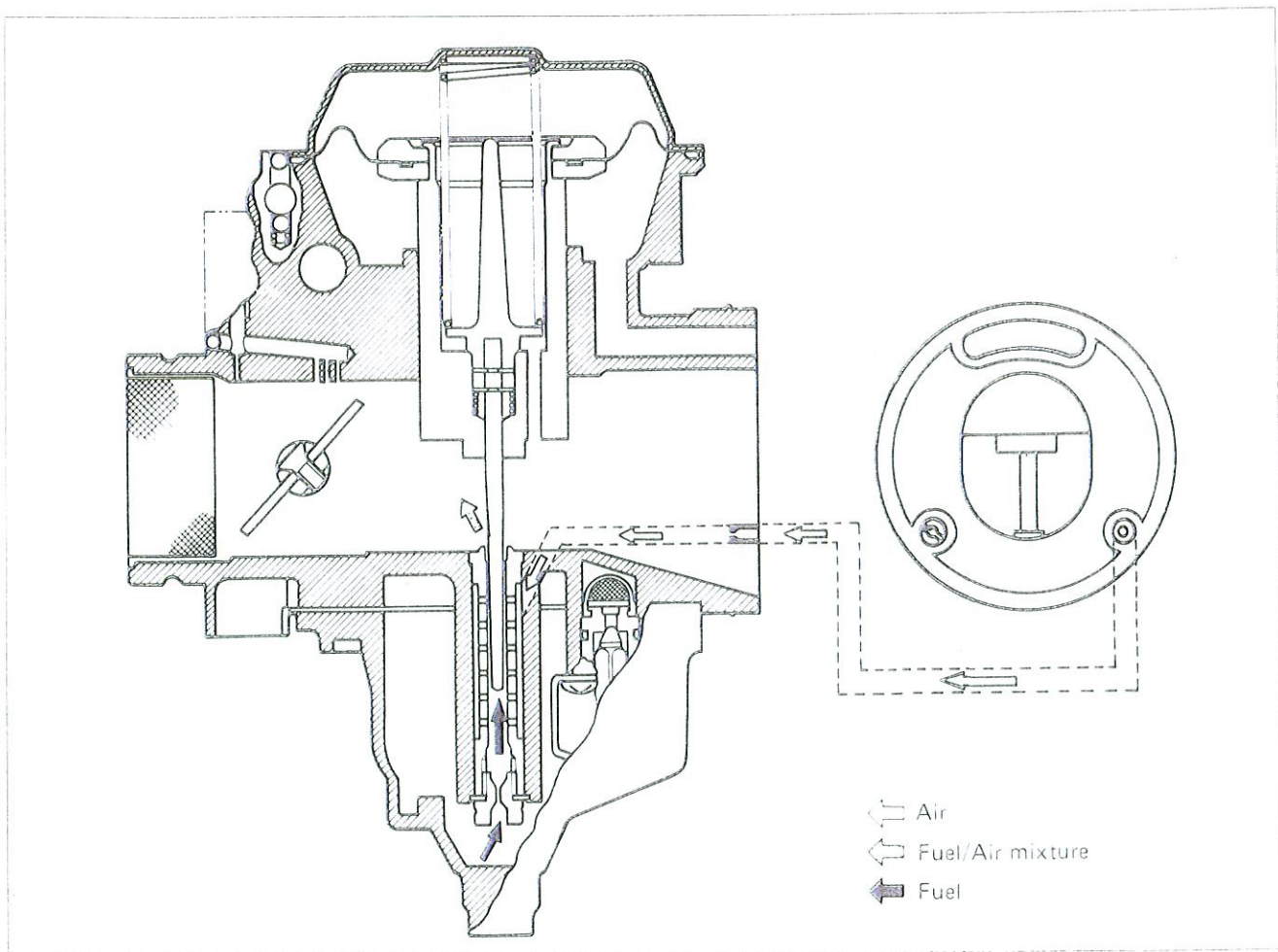
MAIN SYSTEM

As throttle valve is opened, engine speed rises, and this increases vacuum in the venturi. Consequently the piston valve moves upward.

Meanwhile, the fuel in float chamber is metered by main jet, and the metered fuel enters needle jet, in which it mixes with the air admitted through main air jet to form an emulsion.

The emulsified fuel then passes through the clearance between needle jet and jet needle, and is discharged into the venturi, in which it meets main air stream being drawn by the engine.

Mixture proportioning is accomplished in needle jet; the clearance through which the emulsified fuel must flow is large or small, depending ultimately on throttle position.

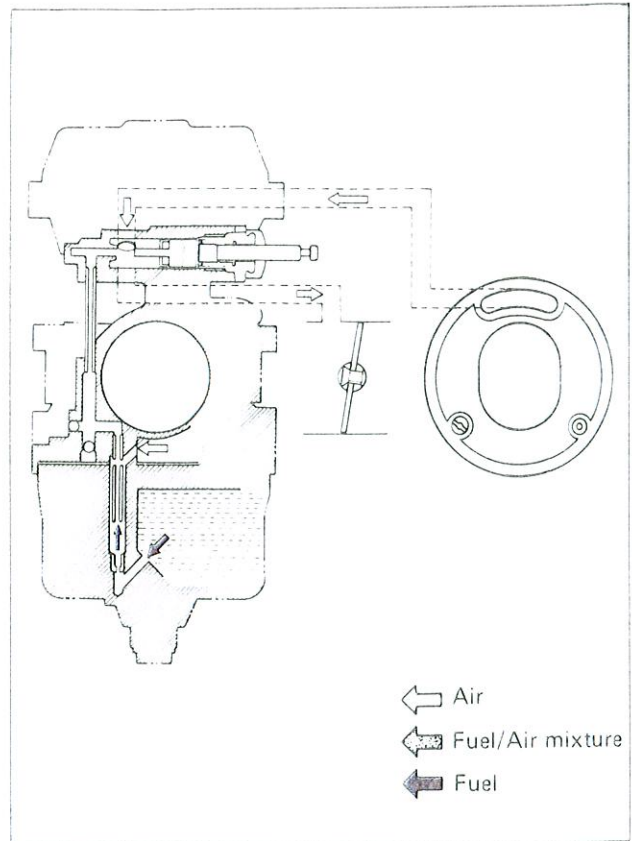


STARTER SYSTEM

Pulling out the choke lever slides starting plunger to draw fuel into the starter circuit from the float chamber through starter jet.

Starter jet meters this fuel, which then flows into starter pipe and mixes with the air coming from the float chamber. The mixture, rich in fuel content, reaches starting plunger and mixes again with the air coming through a passage extending from behind the diaphragm.

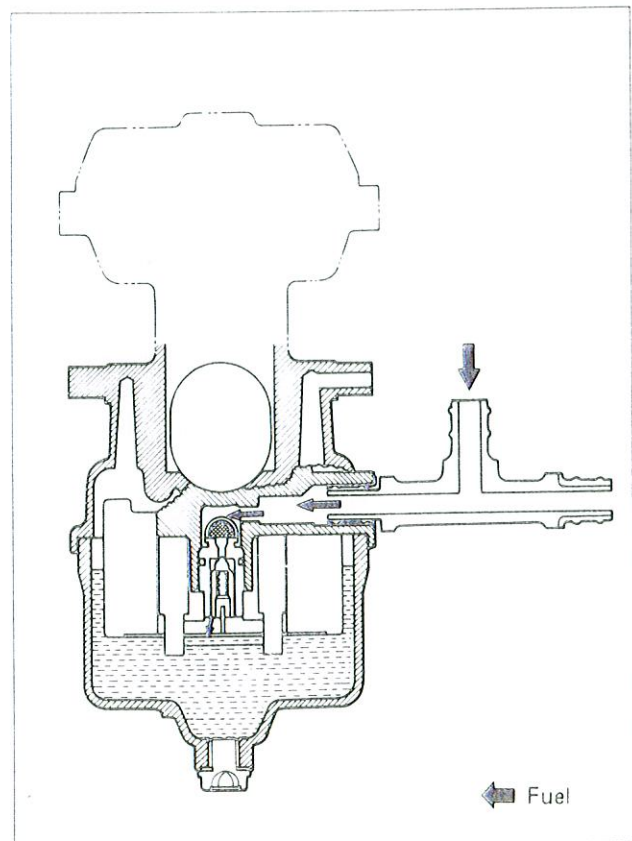
The two successive mixings of fuel with air are such that a proper fuel/air mixture for starting is produced when the mixture is sprayed out through starter outlet into the main bore.



FLOAT SYSTEM

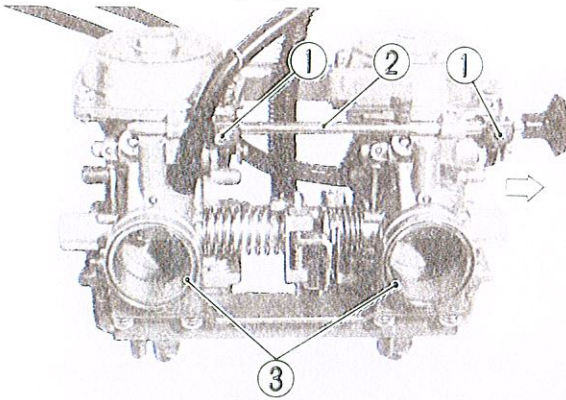
Floats and needle valve are associated with the same mechanism, so that, as the floats move up and down, the needle valve also moves likewise. When fuel level is up in float chamber, floats are up and needle valve remains pushed up against valve seat. Under this condition, no fuel enters the float chamber.

As the fuel level falls, floats go down and needle valve unseats itself to admit fuel into the chamber. In this manner, needle valve admits and shuts off fuel alternately to maintain a practically constant fuel level inside the float chamber.

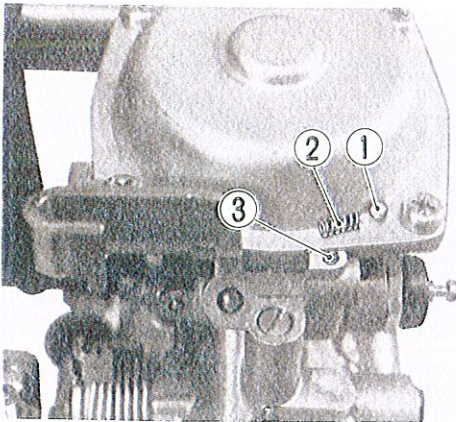


DISASSEMBLY

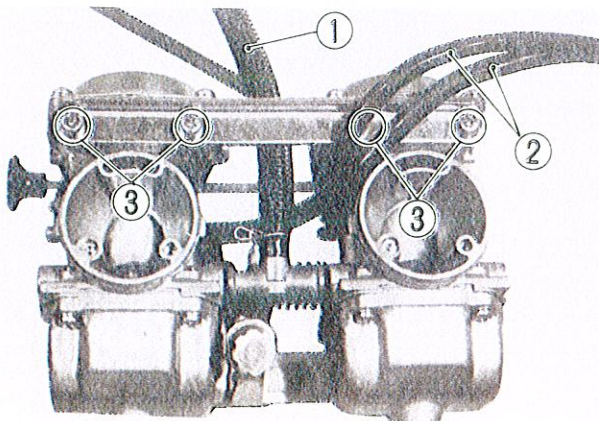
- Loosen two screws ① on starter shaft and draw out starter shaft ②.
- Remove mesh ring ③ from intake.



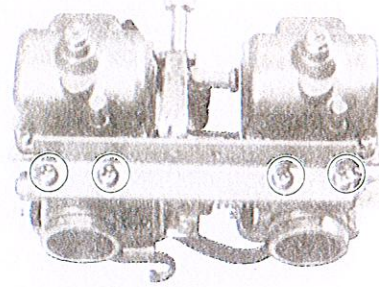
CAUTION:
When pulling out the starter shaft, be careful not to drop the steel ball ① and spring ② from the hole ③.



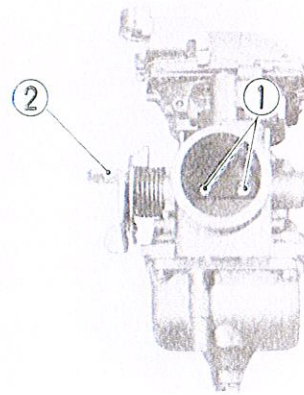
- Remove the fuel pipe ① and two breather pipes ②.
- Loosen four screw ③ and remove upper bracket.



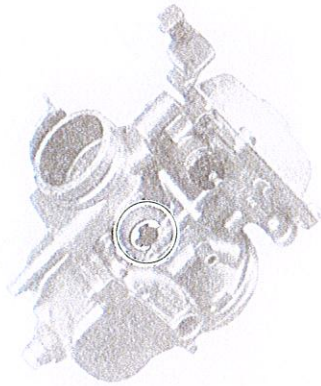
- Remove lower bracket.



- Separate two carburetors and remove two throttle valve screws ① and throttle valve by turning shaft ②.

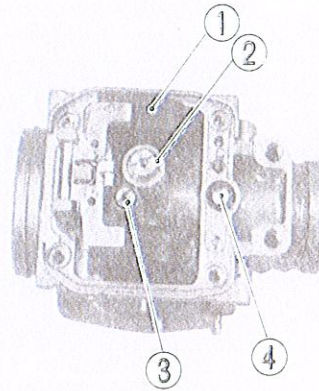


- Remove "E" ring and draw out throttle valve shaft.

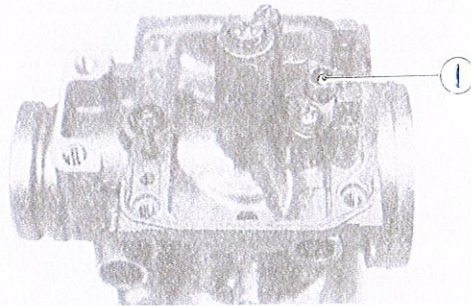


- Remove float ①, main jet ② and pilot jet ③.

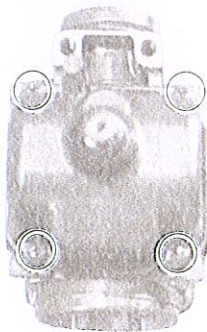
NOTE:
Do not miss the O-ring ④.



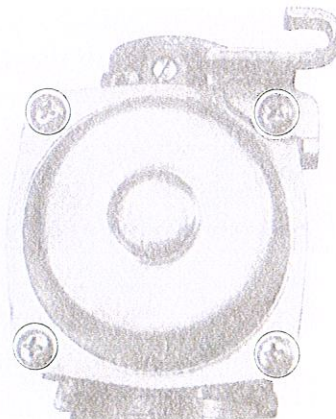
- Remove the needle valve ①.



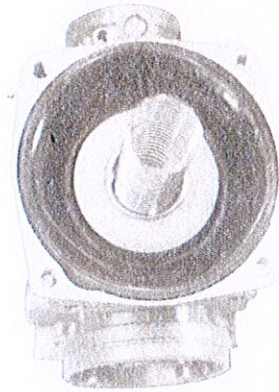
- Remove float chamber.



- Take off carburetor top cap and throttle cable holder by unscrewing 4 screws.

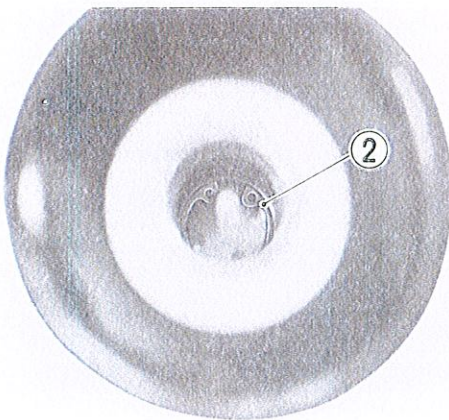


- Remove the spring and piston valve from carburetor body.



- Remove circlip ② from the piston.

09900-06108	Circlip remover
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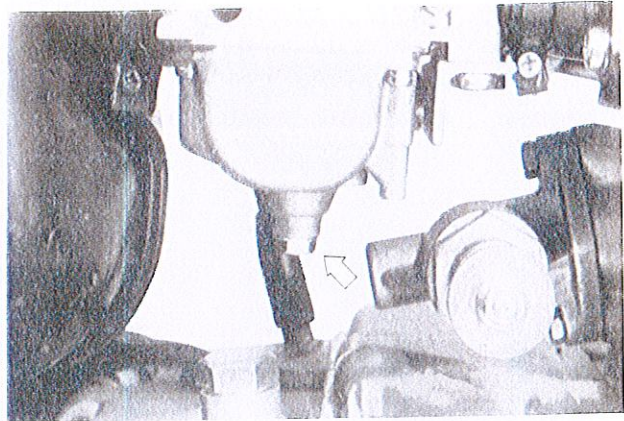


NOTE:
Identify the two piston valves removed as "R" or "L", in order to make sure each will be restored to the carburetor from which it was taken out.

FUEL LEVEL INSPECTION

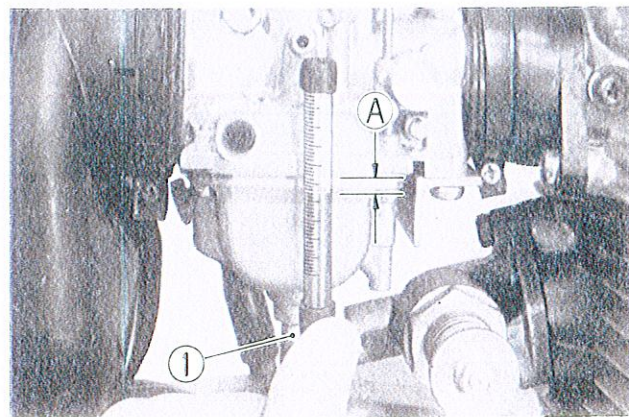
- Remove carburetor drain plug ① and install the fuel level gauge ②.

09913-14540	Fuel level gauge set
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- Run the engine at the idling speed (1,150 – 1,350 r/min), and measure the distance ③ with the middle line of the level gauge aligned with the mating surface of float bowl as shown in photo. ③ should be within the specified range.

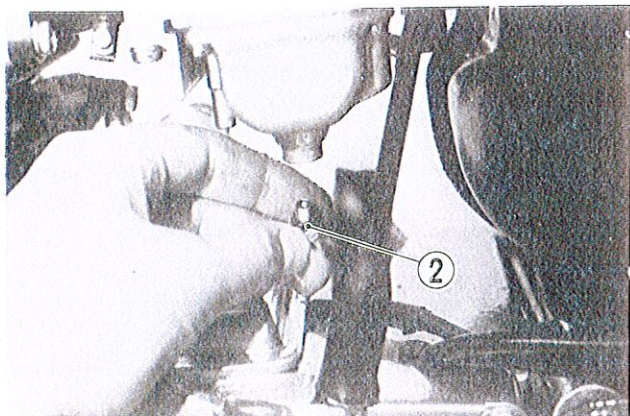
Distance ③	4.0 ± 0.5 mm (0.14 ± 0.02 in)
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NOTE:

When refitting the screw, be sure to use the "O" ring ②.

- When fuel level readjustment is necessary, see the following item for adjusting float height.



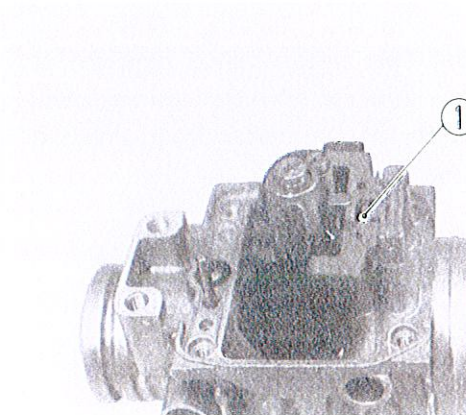
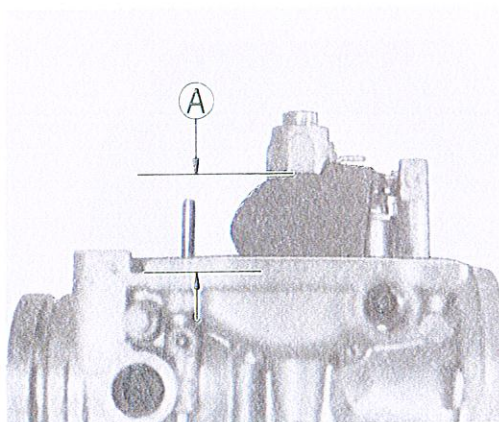
FLOAT HEIGHT ADJUSTMENT

To check the float height, invert the carburetor body, holding the float arm pin so that the pin will not slip off. With the float arm kept free, measure the height ① while float arm is just in contact with needle valve by using the caliper. Bend the tongue ② as necessary to bring the height ① to this value.

Float height ①	21.4 ± 1.0 mm (0.84 ± 0.04 in)
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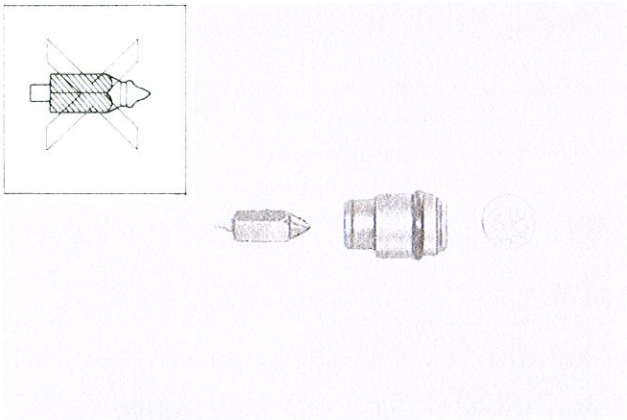
NOTE:

When measuring float height, be sure to remove the gasket.



NEEDLE VALVE

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 out beyond the permissible limits, similar trouble will occur. Conversely, if the needle sticks, the gasoline will not flow into the float chamber. Remove the carburetor, float chamber and floats, and clean the float chamber and float parts with gasoline. If the needle is worn as shown below, replace it together with a valve seat. Clean the fuel passage of the mixing chamber with compressed air.



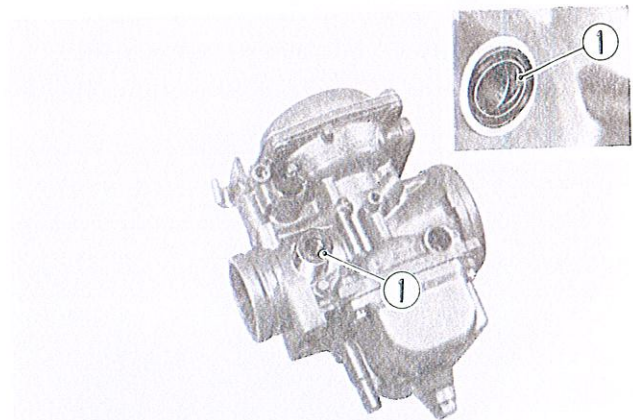
- Check following items for any damage or clogging.
- * Pilot jet
- * Main jet
- * Main air jet
- * Pilot air jet
- * Needle jet air bleeding hole
- * Float
- * Needle valve mesh
- * Diaphragm
- * Gasket
- * Throttle valve shaft oil seals
- * Drain plug O-ring
- * Pilot outlet and bypass holes

REASSEMBLY

- Place tongue ① of diaphragm to carburetor body properly.



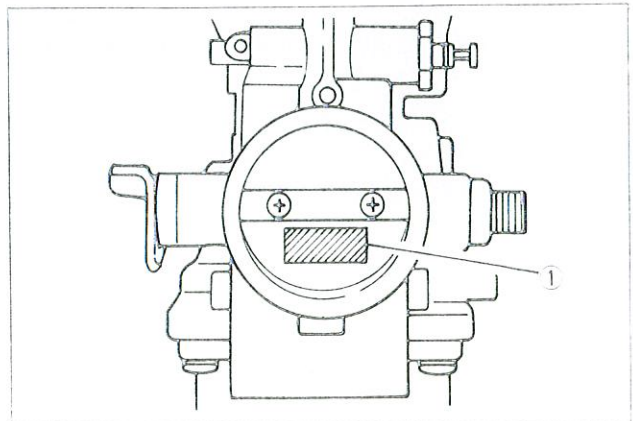
- When fitting throttle valve shaft oil seals, groove should be faced outside ①.



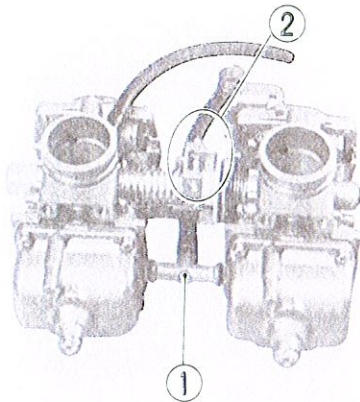
- While turning the throttle valve shaft, place the throttle valve in the groove so that the I.D. number ① of the throttle valve faces down-side. Tighten the throttle valve securing screws with applying thread lock cement.

99000-32040

SUZUKI Thread lock cement

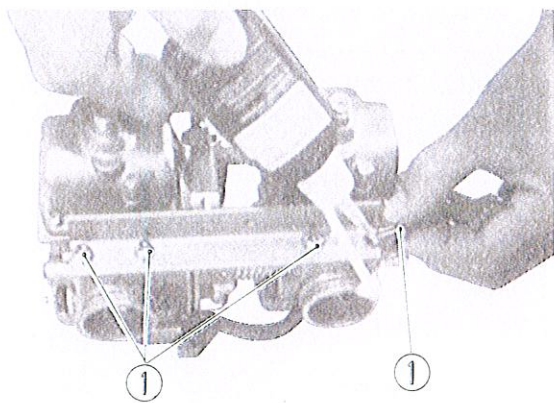
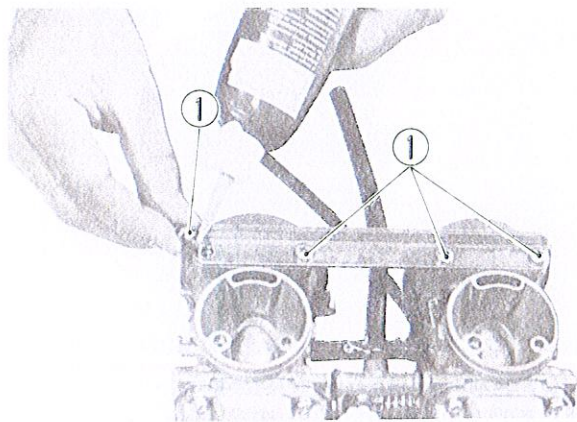


- When engaging two carburetors, be sure to fix fuel pipe 1 and position throttle valve control lever 2 correctly.

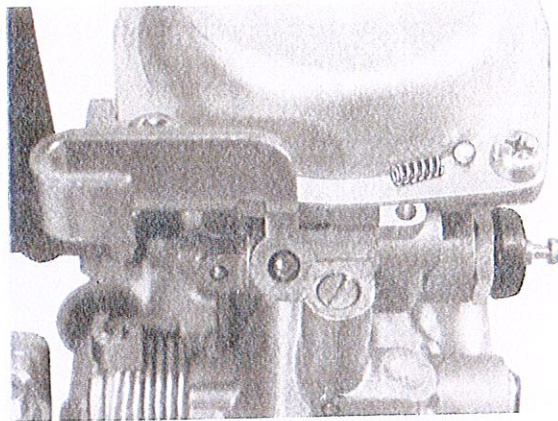


- Apply thread lock cement to upper and lower bracket screws 1.

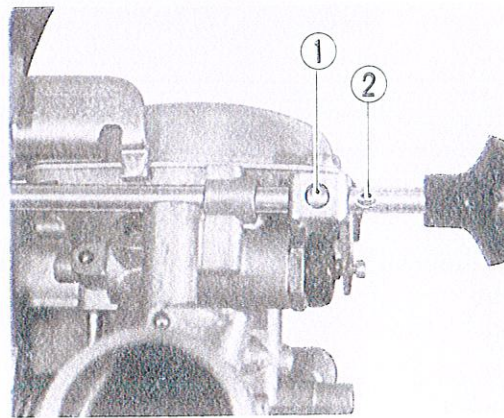
99000-32040	Thread lock cement
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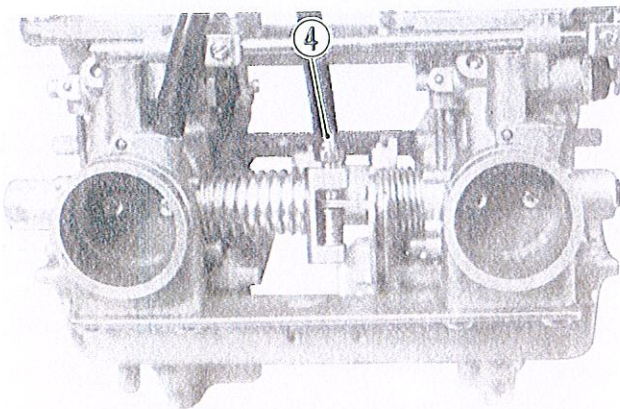
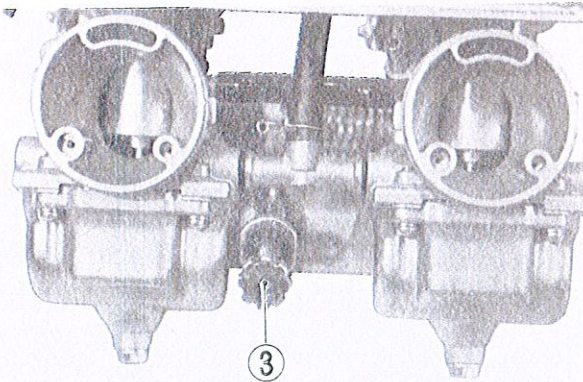
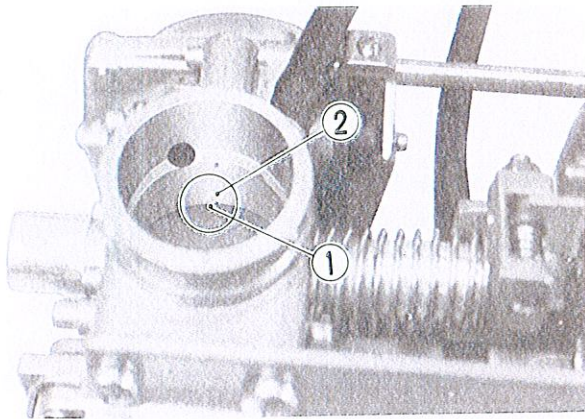
- When inserting the starter shaft install the spring and steel ball to the hole and push them down by small screw driver.



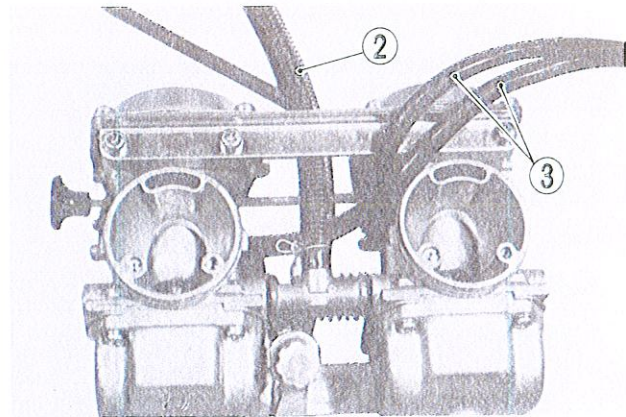
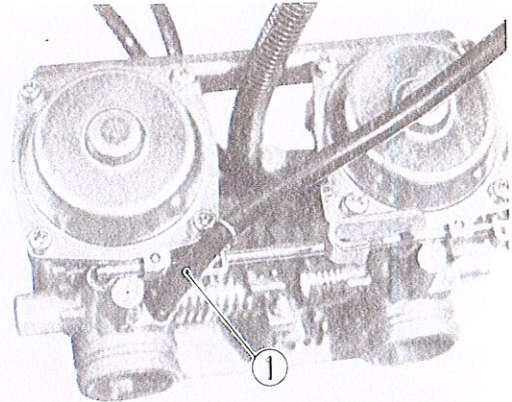
- When mounting starter shaft, align starter valve screw 1 with dent mark 2 on starter shaft and grease sliding portions.



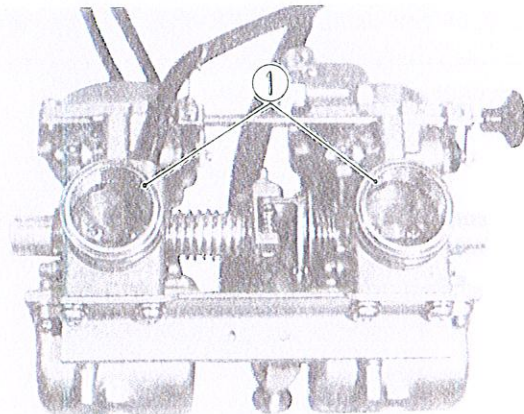
- Set each throttle valve in such a way that its top end ① meets the foremost bypass ②. This is accomplished by turning throttle valve stop screw ③ and balance screw ④.



- Check to be sure that vacuum pipe ① is clamped properly and fuel hose ② and two breather pipes ③ are connected.



- Fix the mesh rings ① to the carburetor intake.



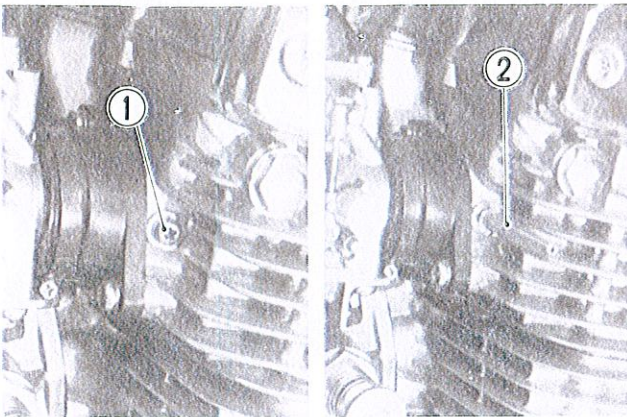
BALANCING CARBURETORS

The two carburetors must be balanced after disassembling the engine or the carburetors. As the first step, calibrate the carburetor balancer gauge, as follows:

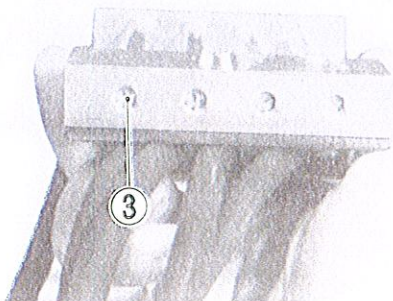
09913-13121	Carburetor balancer
09913-14910	Throttle valve adjust wrench

- Start up the engine and run it in idling condition for warming up.
- Stop the warmed-up engine. Remove vacuum inlet screw ① for "R" or "L" cylinder and install adapter ② with O-ring.

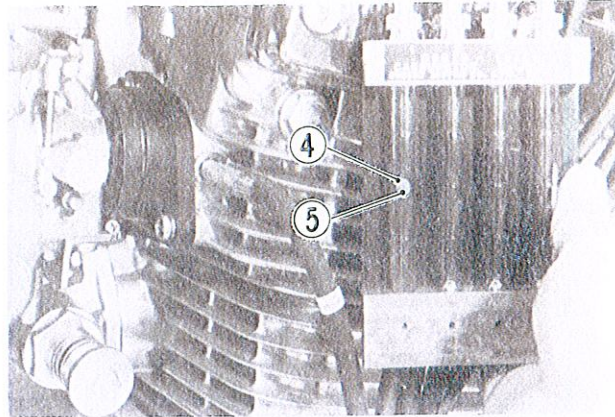
09913-13140	Adapter
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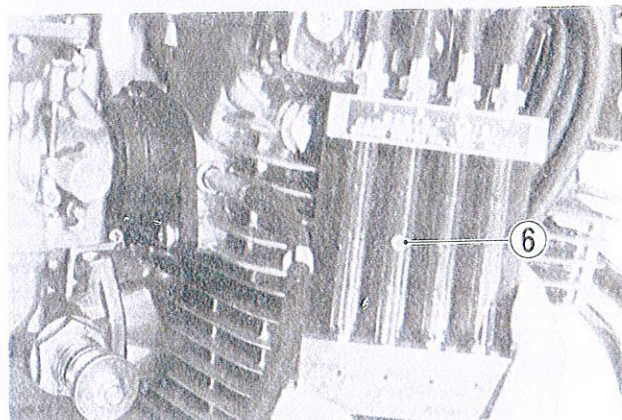
- Tie one of the four rubber hoses of the balancer gauge to this adapter, and start up the engine, and keep it running at 1,750 r/min by turning throttle stop screw.



- Turn the air screw ③ of the gauge so that the vacuum acting on the tube of that hose will bring the steel ball ④ in the tube to the center line ⑤.



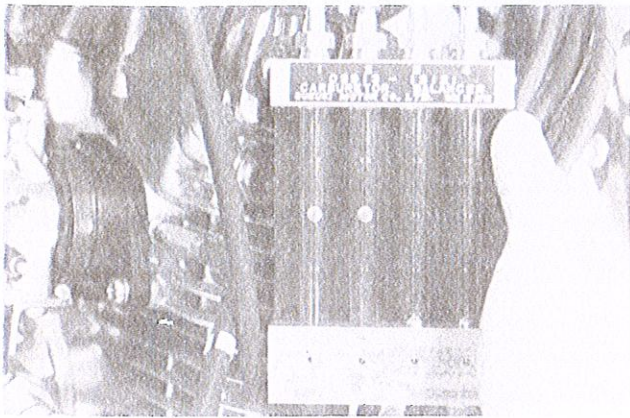
- After making sure that the steel ball stays steady at the center line, disconnect the hose from the adapter and connect the next hose to the adapter. Turn air screw to bring the other steel ball ⑥ to the center line.



- Remove the vacuum inlet screw for the other cylinder, and install the other adapter.
- Have the two hoses, mentioned above, connected to the two, "R" and "L", adapters. Run the engine at steady 1,750 r/min and, under this running condition, see if the two steel balls stay equally at the center level line, as they should, to signify that the two carburetors, "R" and "L", are in balance: if not, loosen lock nut and turn throttle balance screw 1 to adjust the throttle valve setting in "L" carburetor to bring its steel ball to the center level line.

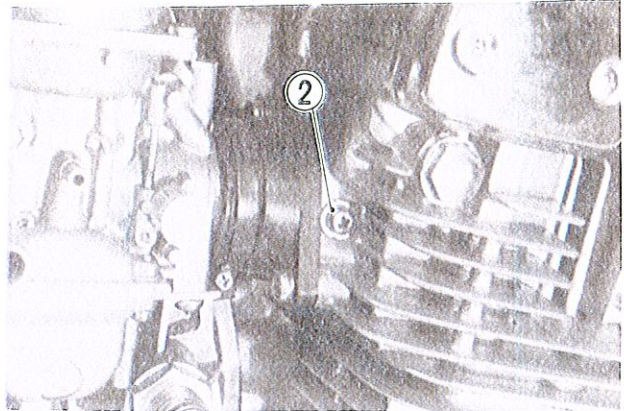
Turning the balance screw ① will tend to change engine speed; if any change is noted, restore the speed to 1,750 r/min by turning the throttle stop screw.

- Having checked to be sure that the two carburetors are in balance, remove the adapters and restore vacuum inlet screws, thus completing the procedure. Remember, each time the carburetors are balanced as above, the engine idling speed setting must be re-established in the manner set forth under the title "IDLING ADJUSTMENT" (page 2-8).



NOTE:

- * Each vacuum inlet screw has a gasket ②. Be careful not to leave out this gasket.
- * If engine is run with fuel tank removed, be sure to plug the fuel cock vacuum line.

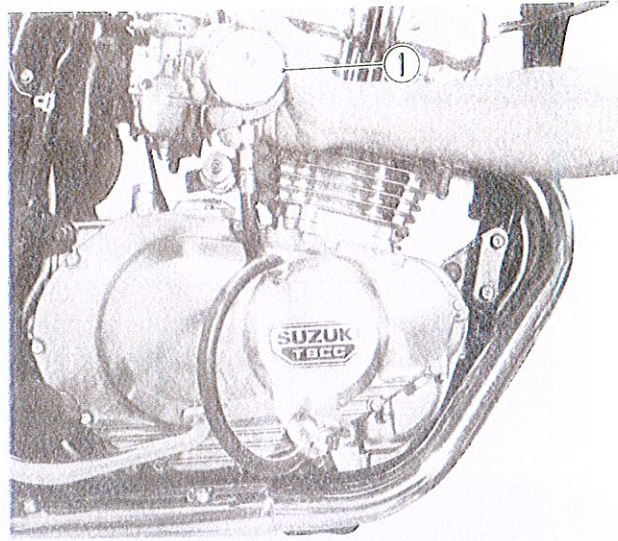


LUBRICATION SYSTEM

OIL PRESSURE

Start the engine and check if the oil pump pressure indicator light is turned on. If it keeps on lighting, check the oil pump pressure indicator light circuit. If it is in good condition, check the oil pump pressure in the following manner:

- Install the oil pressure gauge ① in the position shown in the figure.
- Warm up the engine as follows:
Summer 10 min. or so at 2,000 r/min.
Winter 20 min. or so at 2,000 r/min.
- After warming up operation, increase the engine speed to 3,000 r/min, and read the oil pressure gauge.
- The oil pump pressure is specified below:

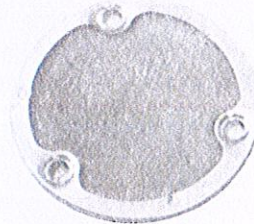


OIL PRESSURE SPECIFICATION

Above 3.0 kg/cm² (43 psi),
Below 5.5 kg/cm² (78 psi) at 3,000 r/min

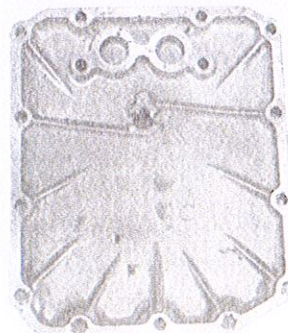
09915-74510	Oil pressure gauge
09915-77330	Gauge (0 – 10 kg/cm ²)

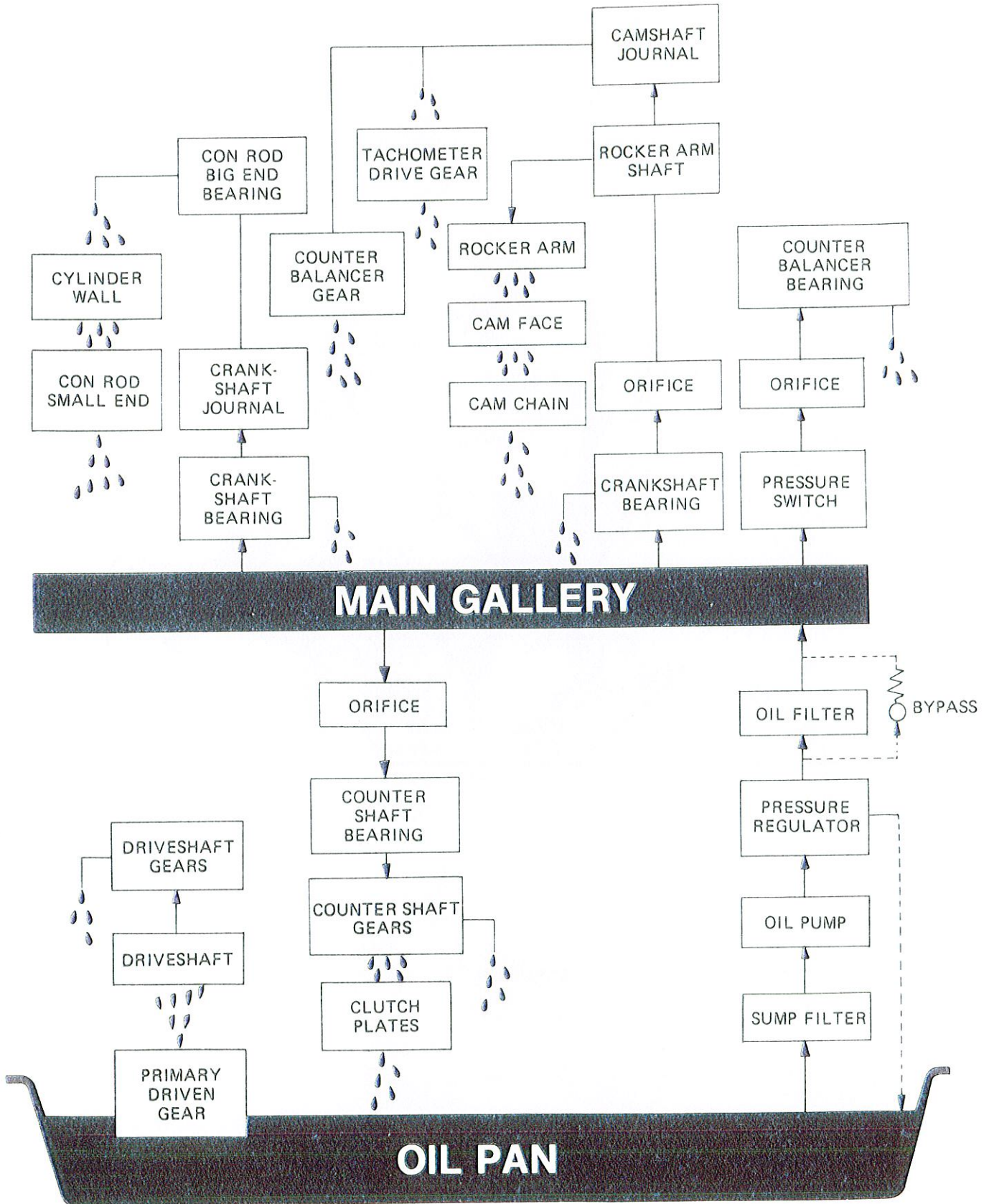
If the pressure is too low, it means that the oil pump is internally worn or otherwise defective and needs to be overhauled. If inner parts are found to be worn down to or beyond the limit, replace the complete oil pump unit. (See page 3-48)

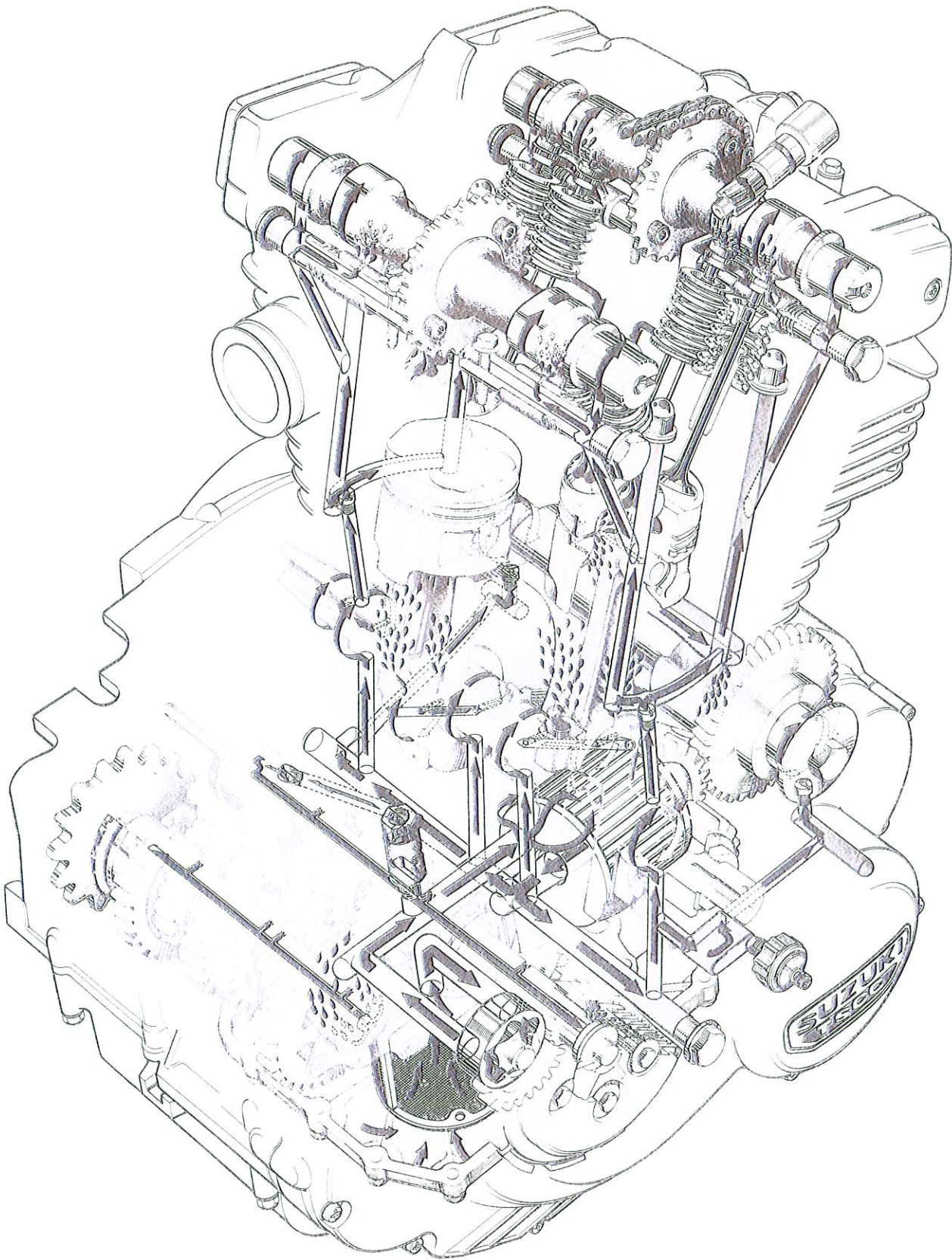


OIL SUMP FILTER

At the same time wash the oil pan. Check to be sure that the sump filter is free of any sign of rupture and wash the sump filter clean periodically.







EMISSION CONTROL & REGULATIONS

CONTENTS

<i>EMISSION REGULATIONS</i>	5- 1
<i>EMISSION CONTROL CARBURETOR COMPONENTS</i>	5- 2
<i>GENERAL EMISSION INFORMATION</i>	5- 3

EMISSION REGULATIONS

On February 4, 1977, Federal Emission Regulations for motorcycles that may be licensable took effect. The regulations provided for a gradual, multi-step application of stricter emission limits beginning with all effected motorcycles manufactured after January 1, 1978, culminating with the present 1980 emission level restrictions. For the 1980 and succeeding years one set of emission limits is in effect. They are as follows:

1980 EMISSION LIMITS

CATEGORIES	HYDROCARBONS (HC)	CARBON MONOXIDE
All motorcycles 50 cc – Larger	5.0 Grams/Kilometer (8.0 Grams/Mile)	12 Gams/Kilometer (19.3 Grams/Mile)

Emission-controlled motorcycles which are subject to the emission regulations are those motorcycles which are equipped with a headlight, taillight, stop light and which have an engine displacement larger than 50 cc.

Suzuki Motor Company performed all the necessary testing and certification of emission-controlled models in strict compliance with the E.P.A. testing regulations. Suzuki motorcycle dealers are not required to either test or certify emission levels on any motorcycles as Suzuki Motor Company is legally responsible for the entire certification procedure.

E.P.A. regulations also provide fines for individuals who alter, render inoperative or improperly service emission-controlled motorcycles ranging up to \$10,000.00 per motorcycle. It is essential that the individual servicing this emission-controlled motorcycle review thoroughly all the service procedures presented in this manual. Under no circumstances should the recommended service procedures be deviated from nor adjustments made which are not in accordance with the factory specifications or service procedures.

EMISSION CONTROL CARBURETOR COMPONENTS

GS250T 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 specification for the emission-controlled GS250T are as follows.

Carburetor I.D. No.	Main Jet	Needle Jet	Jet Needle	Pilot Jet	Pilot Screw
11420	#115	Left □-7 Right □-8	5CT40	#17.5	PRE-SET DO NOT ADJUST

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.

GENERAL EMISSION INFORMATION

There are three different types of regulated exhaust emissions. They are:

- Hydrocarbons (HC)
- Carbon Monoxide (CO)
- Oxides of Nitrogen (NO_x)

Automobiles must meet specific emission standards for all three of these pollutants. Motorcycles must only meet the requirements for the following:

- Hydrocarbons (HC)
- Carbon Monoxide (CO)

HC exhaust emissions are basically unburned fuel vapors which have passed through the engine and escaped the combustion process.

CO exhaust emissions are formed during an incomplete combustion cycle as a result of a rich air/fuel mixture. The only way that CO can be produced is by the combustion cycle.

Total NO_x emissions from all motorcycles is considered negligible. The EPA states that total NO_x emission from motorcycles by 1980 will only amount to approximately 0.5%. NO_x is formed during the combustion process at high combustion chamber temperatures.

CARBON MONOXIDE

Carbon monoxide is a product of an incomplete combustion cycle. CO is measured in grams per mile or kilometer and also in percentage (%).

The most common cause of CO is rich carburetion. As the mixture is richened excessively, the CO amount increases proportionately. Engine oil is also a hydrocarbon, so engine problems which lead to oil burning increase carbon monoxide.

CARBURETION MALFUNCTION

1. Air Cleaner — Dirty or over oiled.
2. Idle Mixture — Adjusted incorrectly.
3. Idle Speed — Too high or low.
4. Fuel Level — Sticking float, leaking needle, incorrect setting.
5. Choke — Leaking or linkage sticking.
6. Synchronization — Improper balance on multi cylinders.

ENGINE MALFUNCTIONS

1. Valve Seals — Leaking or torn.
2. Valve Guide — Worn and leaking excess oil.
3. Gaskets — Leaking oil into combustion chamber.

HYDROCARBONS

Hydrocarbons are unburnt gasoline vapors and can be measured in two different ways. The first is to measure the weight of the pollutants over a specific distance such as grams per mile or grams per kilometer. The second method is to measure the concentration of HC in the exhaust gas in parts per million (PPM).

The most common cause of high HC emission are ignition system problems. If the ignition system fails to ignite the fuel mixture properly, then raw gasoline vapors will pass through the engine into the exhaust system. Listed are the most common ignition problems which occur and which can affect HC emission output.

IGNITION SYSTEM MALFUNCTIONS

1. Spark Plugs – Fouled, dirty, improper type or improperly gapped.
2. Ignition Timing – Advanced or Retarded.
3. Timing Advance – Too fast or too slow an advance rate.
4. Battery – Low charge or faulty.

Carburetion can also lead to high HC emissions if the mixture is either excessively rich or excessively lean.

MIXTURE-RELATED MALFUNCTIONS

1. Air Cleaner – Dirty, over oiled or torn.
2. Jets – Clogged, restricted or incorrect size.
3. Float Level – Level too low (lean) or too high (rich).
4. Choke – Leaking choke plunger or sticking linkage.
5. Air Leaks – Intake manifolds, engine gaskets and other sealing surfaces.
6. Synchronization – Unbalanced on multi-cylinder machines.
7. Exhaust System – Restricted flow or improper exhaust system.

Engine wear or damage can also cause high HC emissions.

1. Ring – Low compression, leakage into crankcase.
2. Valves – Improper adjustment, bent stem or burnt.
3. Gaskets – Leaking, loss of compression.
4. Crank Seals – Leaking.
5. Oil Consumption – Worn valve guides, worn rings, clogged crankcase breather.
6. Oil – Improper engine oil.

ELECTRICAL SYSTEM

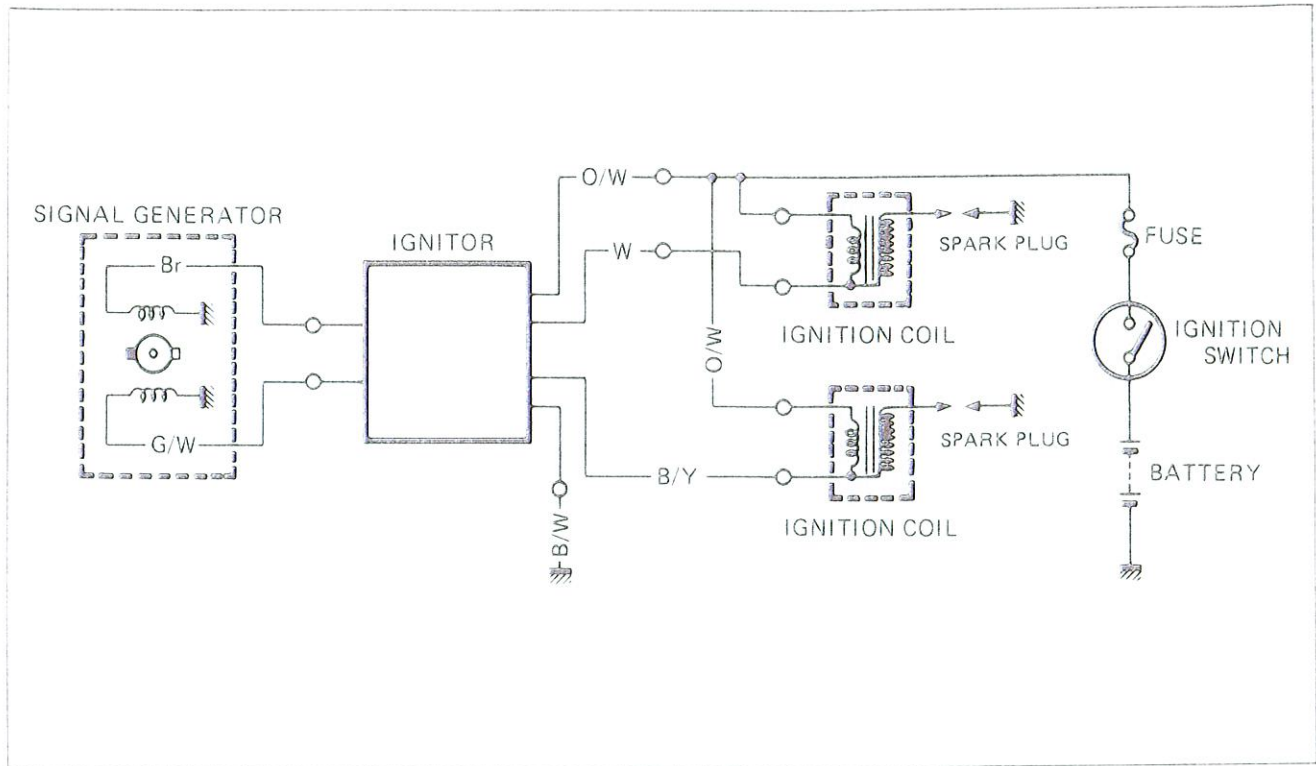
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IGNITION SYSTEM.....	6- 1
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STARTER SYSTEM	6- 9
COMBINATION METER.....	6-14
SWITCHES	6-17
BATTERY	6-20
LAMPS.....	6-24

IGNITION SYSTEM

DESCRIPTION

A fully transistorized, non-contact points, ignition system is newly employed in the new GS250T. The new transistorized ignition system consists, as shown in the following figure, of a signal generator composed of one rotor and two coils, transistor unit, ignition coils, and spark plugs.



ADVANTAGES OF THE TRANSISTORIZED IGNITION SYSTEM

- * Trouble free operation due to elimination of contact breaker points which can become contaminated.
- * Ignition timing is maintained properly at all times and require no maintenance.
- * Free from arcing and provides the ignition coil with stable secondary voltage.
- * Excellent vibration and moisture resistance.

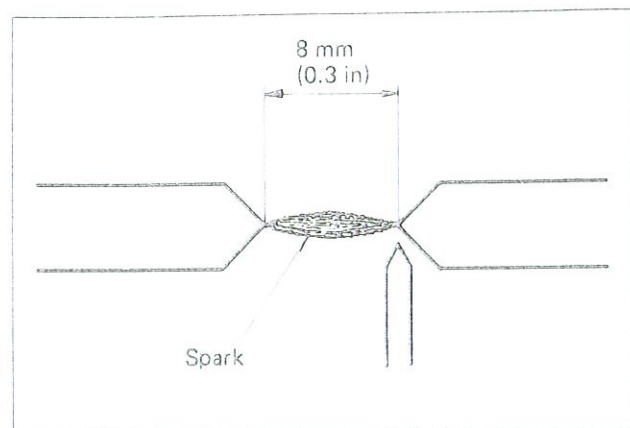
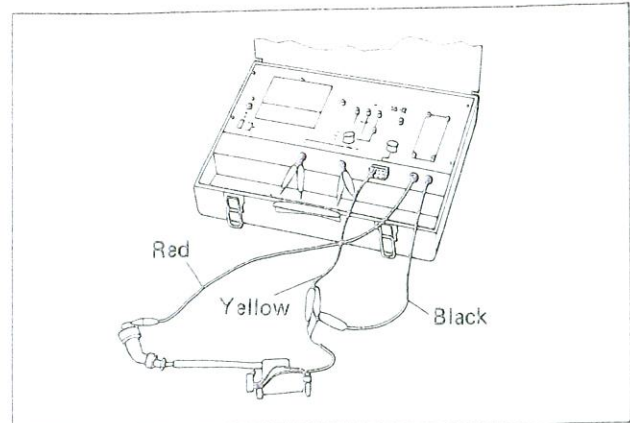
INSPECTION**IGNITION COILS (Checking with Electro Tester)**

Using the electro tester, test each ignition coil for sparking performance. Test connection is as indicated. Make sure that the three-needle sparking distance is at least 8 mm (0.3 in).

If no sparking or orange color sparking occurs with this much gap, then it is defective and must be replaced.

09900-28106	Electro tester
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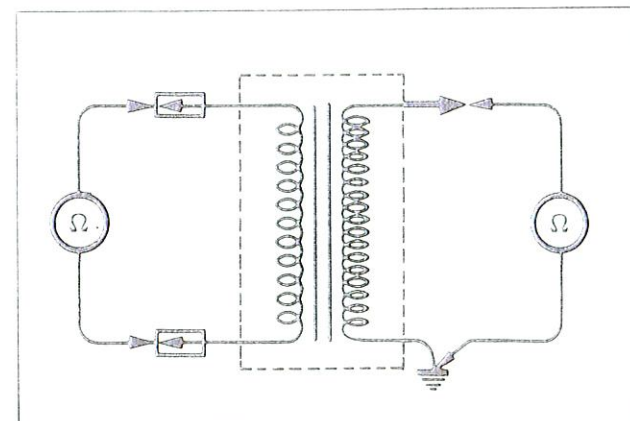
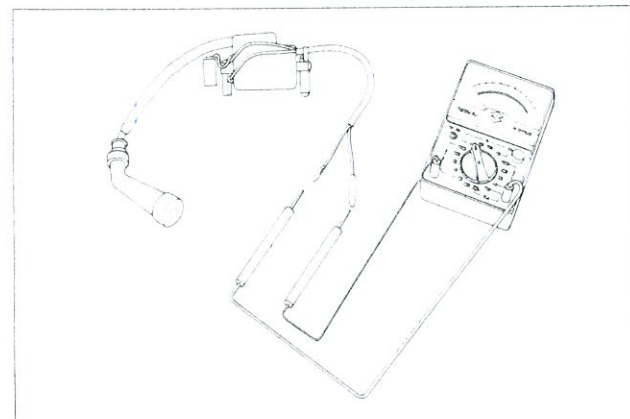
STD	8 mm
Spark performance	(0.3 in)

**IGNITION COILS (Checking with Pocket Tester)**

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

09900-25002	Pocket tester
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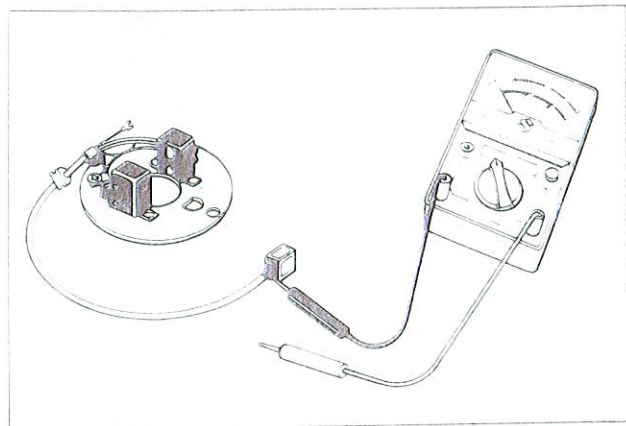
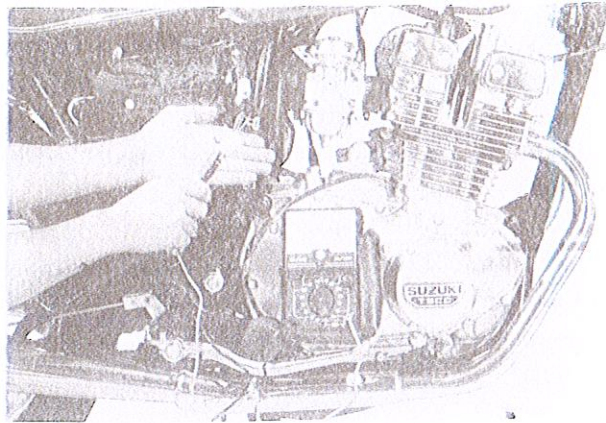
Ignition coil resistance		
Primary	O/W – W or B/Y	Approx 3.5 – 4.5Ω
Secondary	Plug cap – W or B/Y	Approx. 23 – 25kΩ



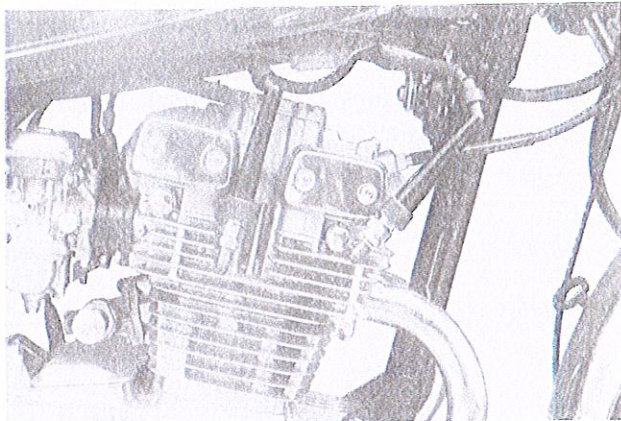
SIGNAL GENERATOR

Measure the resistance between lead wires.
If the resistance noted to show infinity or too low resistance value, signal generator must be replaced.

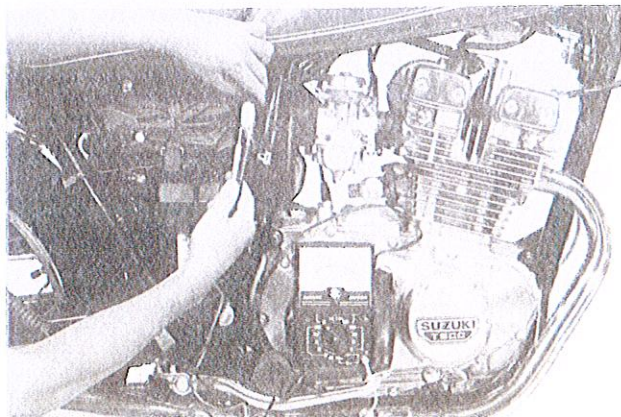
09900-25002	Pocket tester
STD resistance	
B1 – G	60 – 80Ω

**IGNITER**

Remove the spark plugs from the right and left cylinders. Re-fit the spark plugs to the respective plug caps and place the spark plugs against the cylinder head.

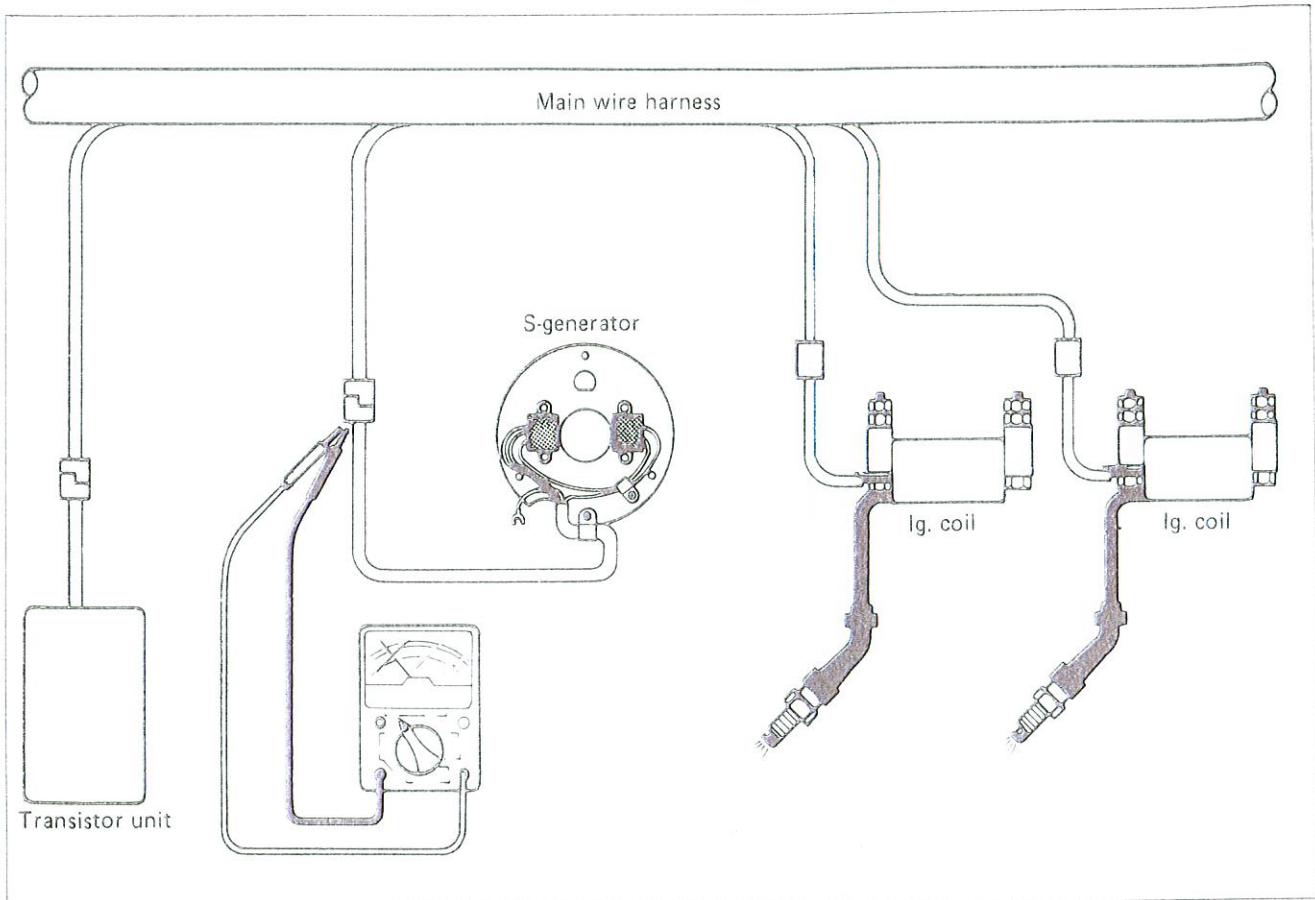


Remove the right frame cover and disconnect the lead wire reaching from the signal generator. Turn ON the ignition switch and connect the ⊖ pin of the pocket tester (x1Ω range) to B/W, and then connect the ⊕ pin to Br and G/W alternately. If the right plug sparks, with the ⊕ pin connected to Br, and if the left one sparks, with the ⊕ pin to G/W, the igniter is good.



NOTE:

This checking presupposes that the ignition coil used for checking a good one.

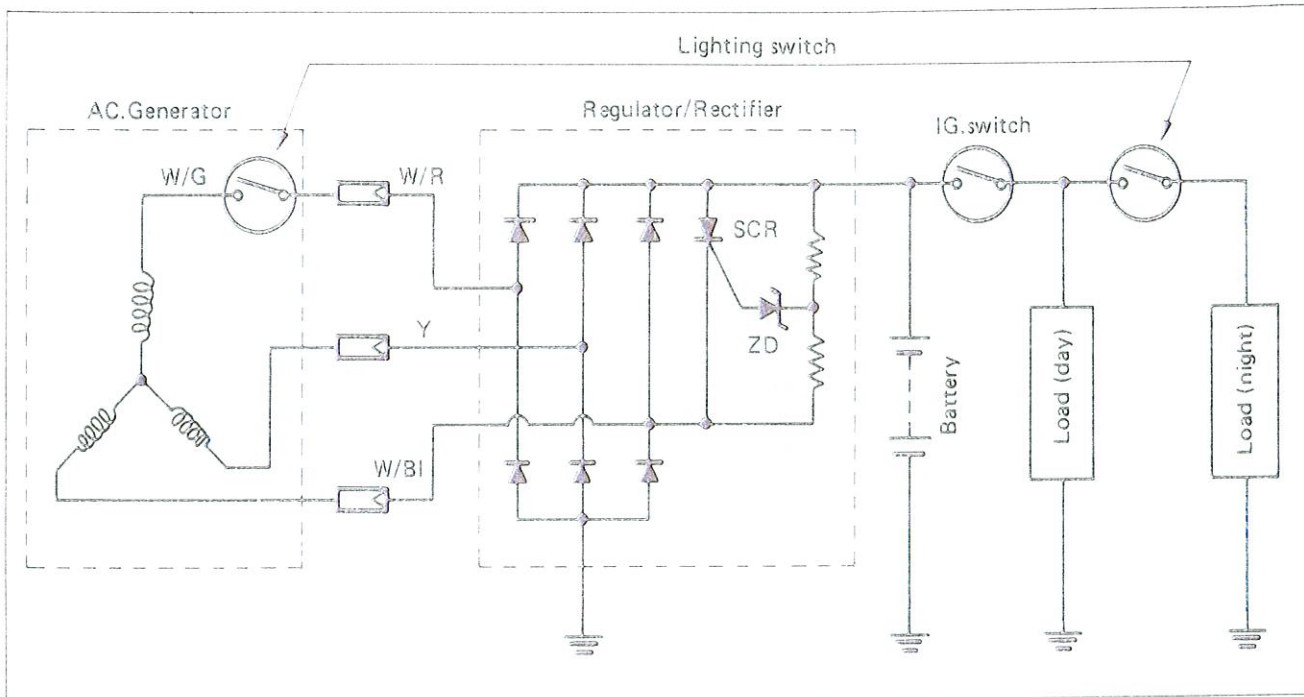


CHARGING SYSTEM

DESCRIPTION

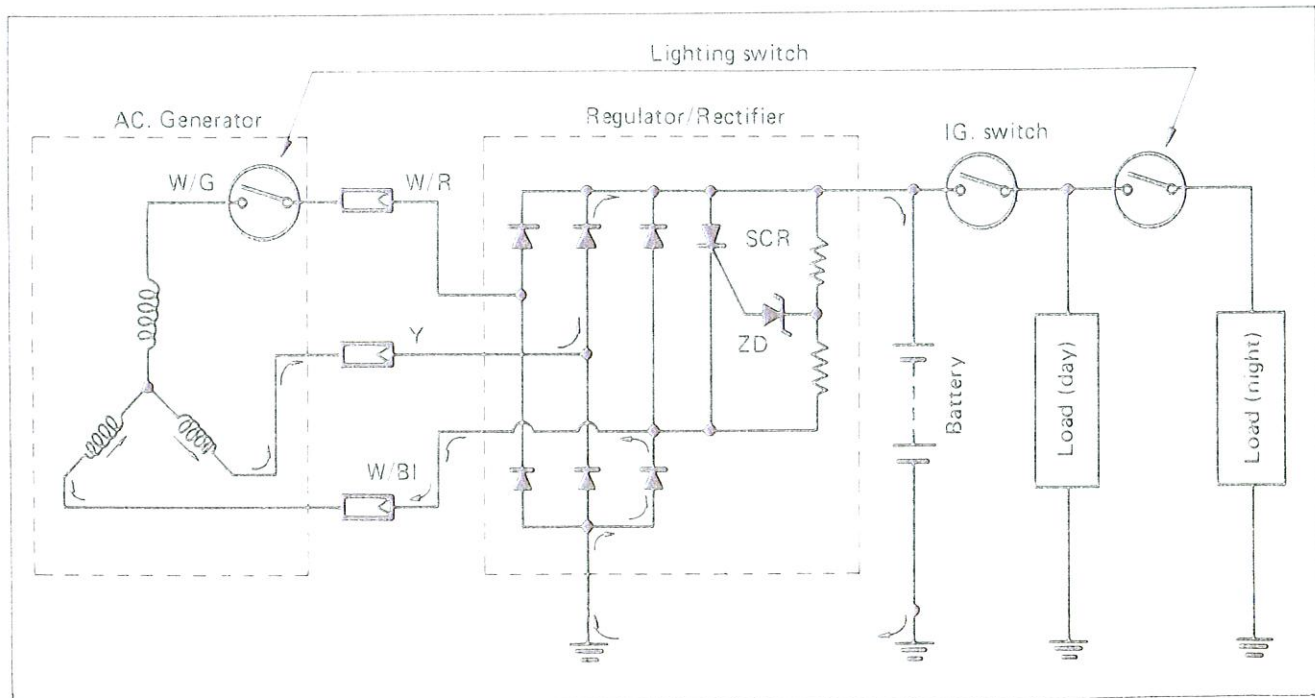
This motorcycle, the circuit of its charging system is indicated in the figure, is composed of AC generator, rectifier/regulator unit and battery.

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

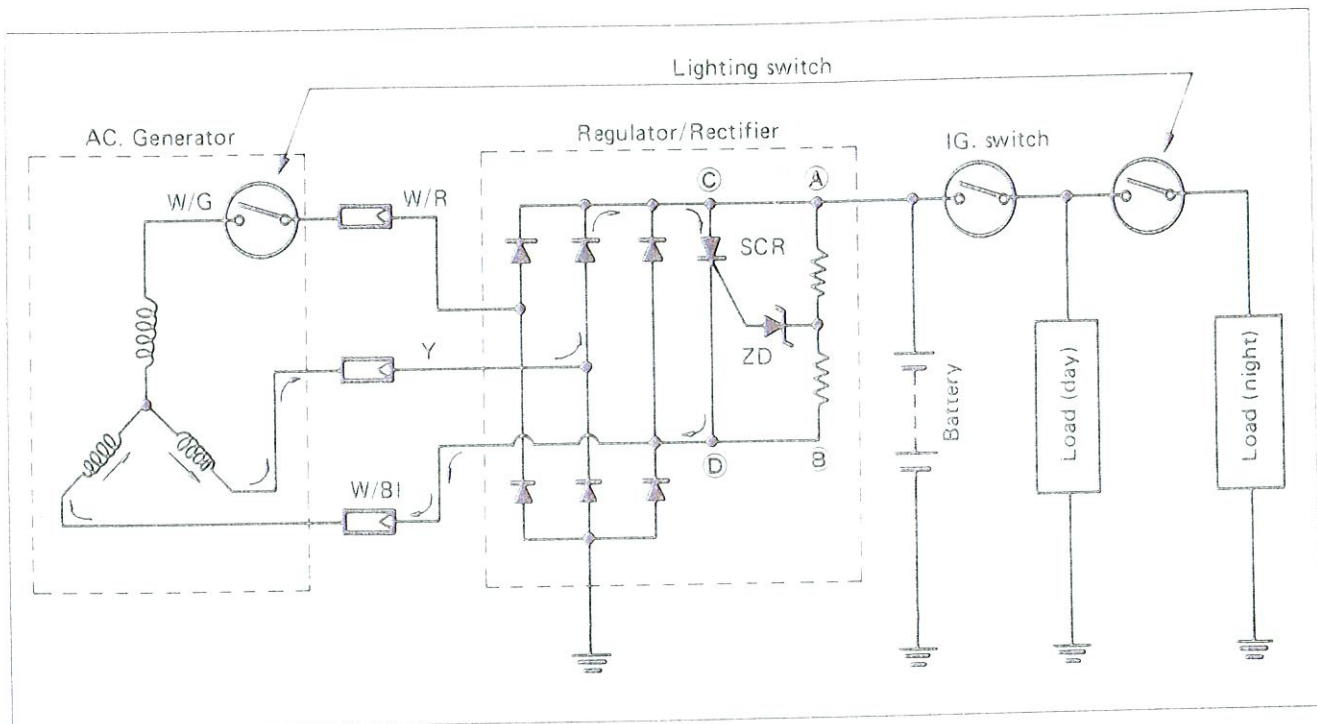


Function of Regulator

While the engine r/min is low and the generated voltage of 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 points \bar{A} and \bar{B} of regulator becomes high accordingly, and when it reaches the adjusted voltage of regulator, ZD (Zener diode) sends signal to the gate of SCR (Thyristor). Then the SCR becomes conductive to the direction from point \bar{C} to point \bar{D} . 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. At the end of this state, since the AC current generated from AC generator flows into the point \bar{D} , reverse current tends to flow to SCR, then the circuit of SCR turns to OFF mode and begins to charge the battery again. Thus these repetitions maintain charging voltage to the battery constant and protect it from overcharging.



INSPECTION

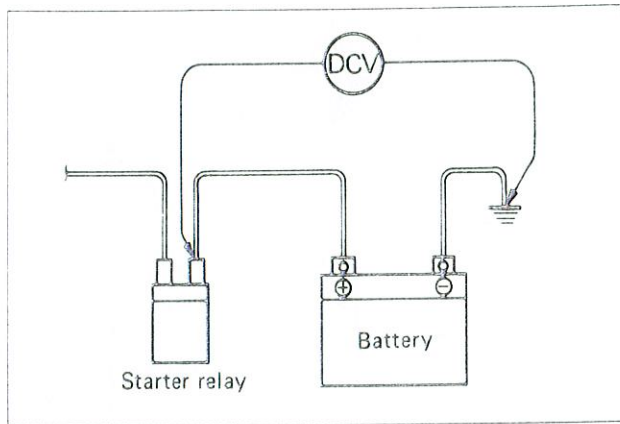
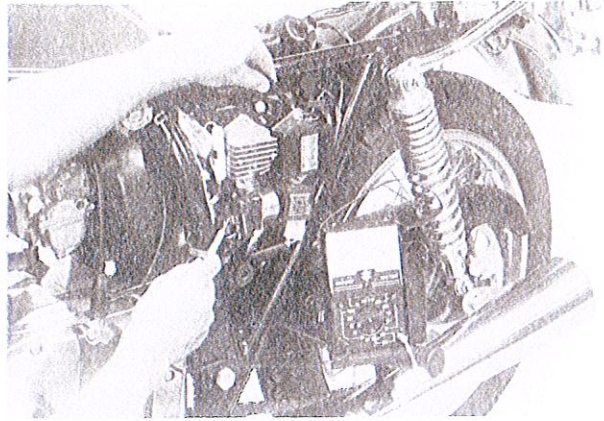
CHARGING OUTPUT CHECK

Start the engine and keep it running at 5 000 r/min with the dimmer switch turned HI position. Using pocket tester, measure the DC voltage between the battery terminals.

NOTE:

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

STD charging output	14 – 15 V (DC) at 5 000 r/min
09900-25002	Pocket tester



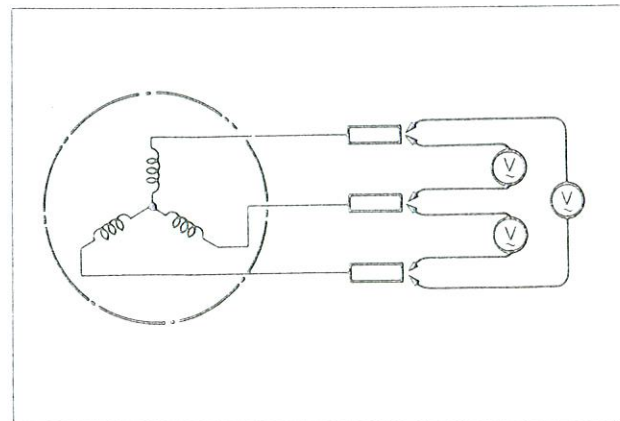
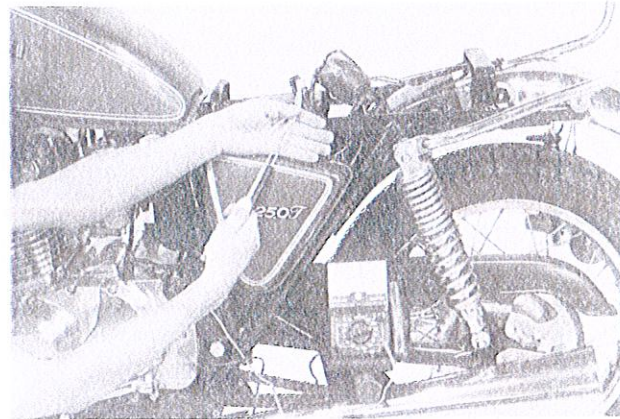
AC GENERATOR NO-LOAD PERFORMANCE

Disconnect the three lead wires from the AC generator terminal.

Start the engine and keep it running at 5 000 r/min.

Using the pocket tester, measure the AC voltage between the three lead wires.

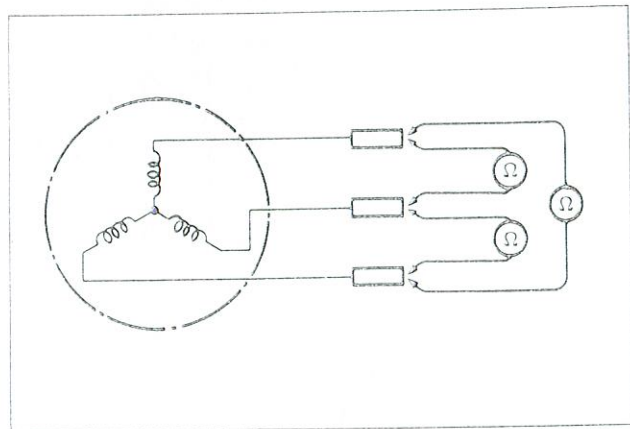
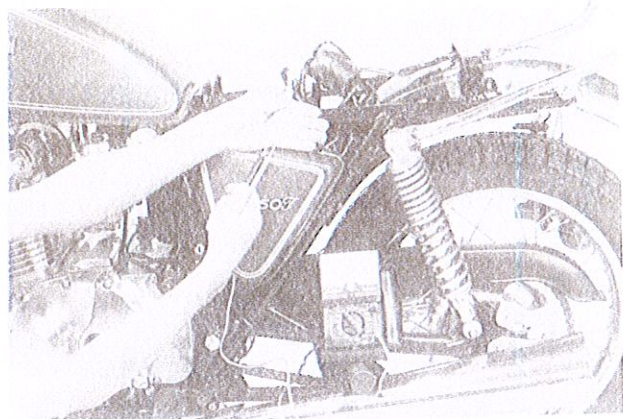
STD No-load performance	75 V (AC) or Over at 5 000 r/min
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Using pocket tester, check the continuity between the lead wires of the stator.
Also check that the stator core is insulated.

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

09900-25002	Pocket tester
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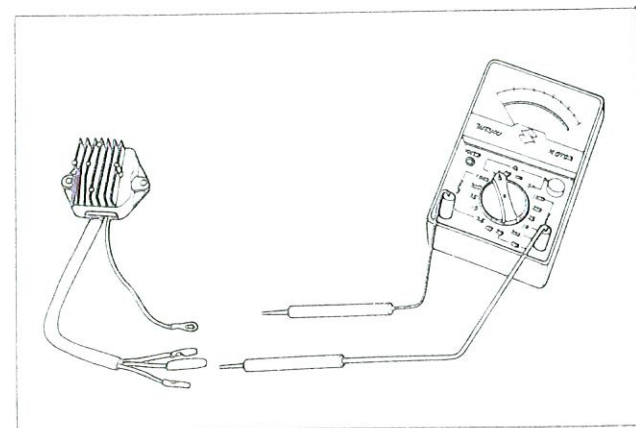
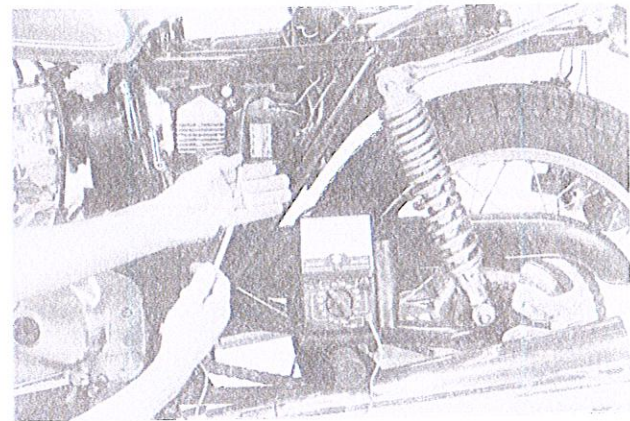


REGULATOR/RECTIFIER

Using pocket tester (X1Ω range), measure the resistance between the lead wires in the following table.

If the resistance checked is incorrect, replace the regulator/rectifier.

	⊕ probe of tester to				
	R	W/BI	W/R	Y	B/W
⊖ probe of tester to	R	∞	∞	∞	∞
W/BI	5-6Ω		∞	∞	∞
W/R	5-6Ω	∞		∞	∞
Y	5-6Ω	∞	∞		∞
⊕	B/W	35-45Ω	5-6Ω	5-6Ω	5-6Ω



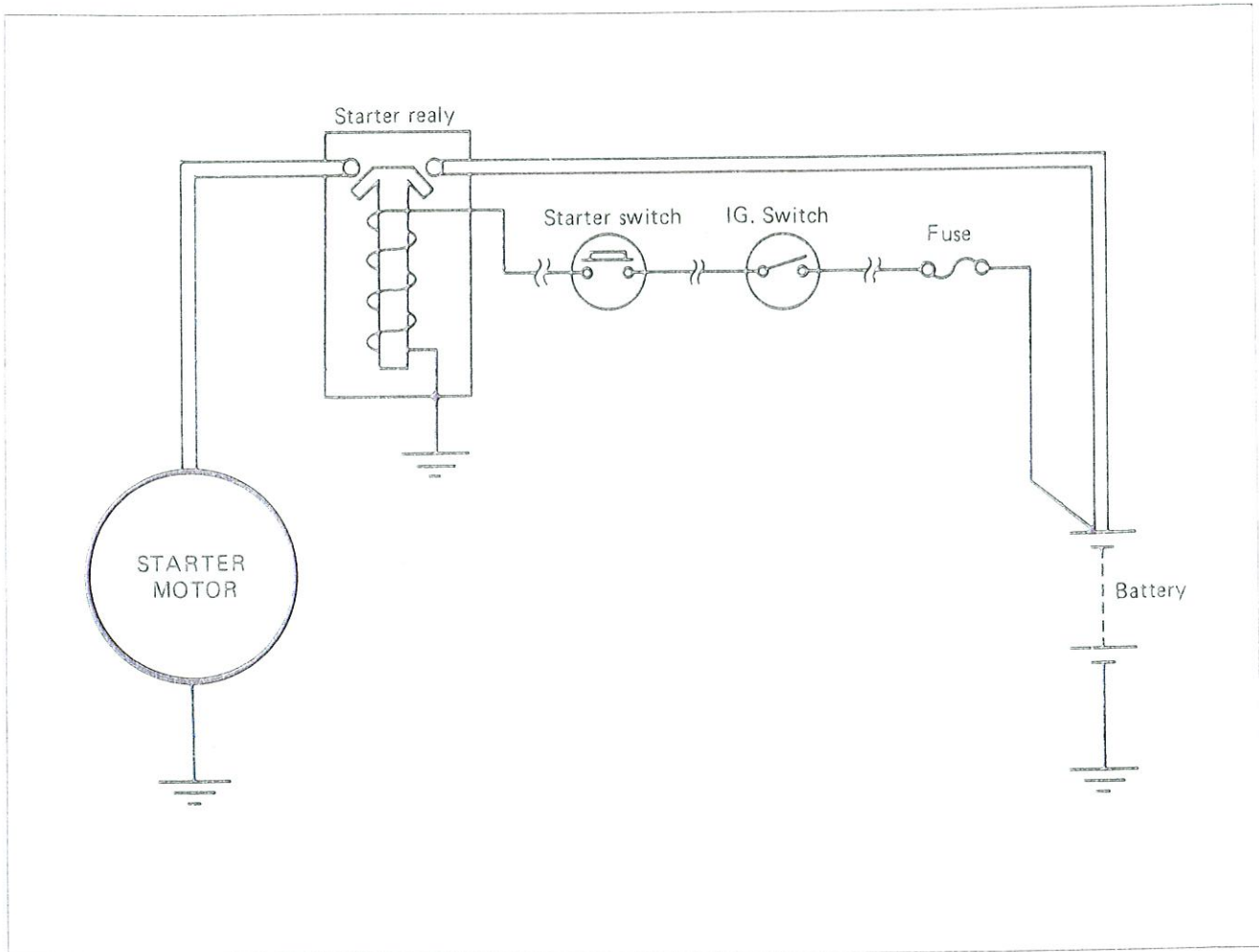
STARTER SYSTEM

DESCRIPTION

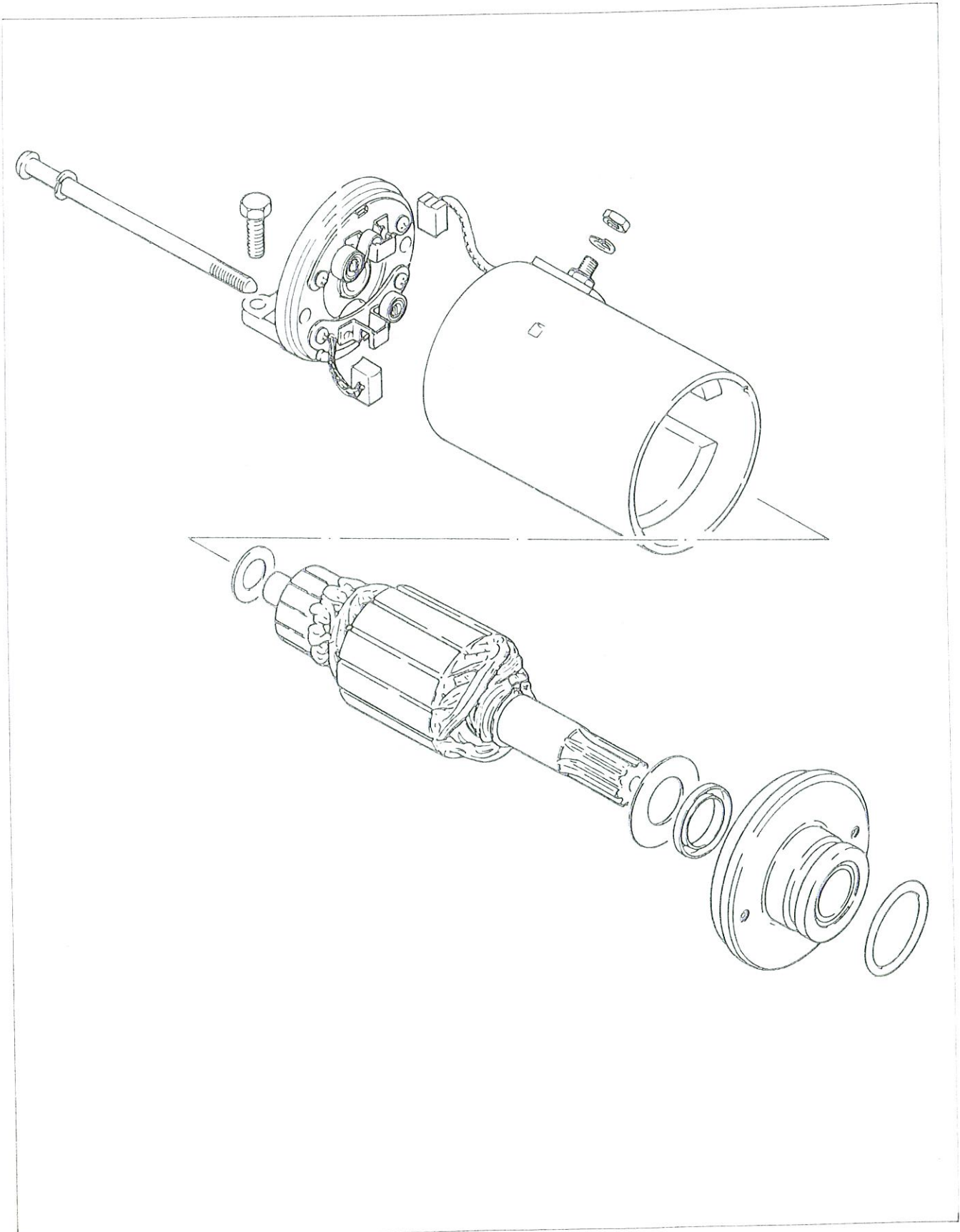
The starter system is operated by starter motor, starter relay, starter switch, ignition switch, and battery. The diagram below shows the electrical circuit of starter system.

When the starter switch is "ON", the plunger is forced to link the main contact points of the relay by the magnetic force of the coil.

The current from the battery now flows to the starter motor through these connected points, and next the starter motor makes the engine start to run.



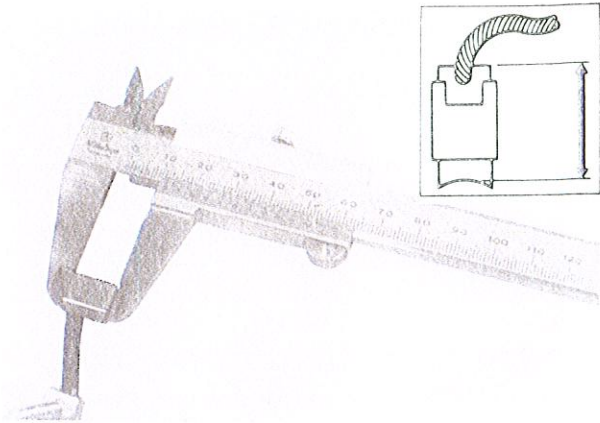
STARTER MOTOR DISASSEMBLY



STARTER MOTOR INSPECTION CARBON BRUSHES

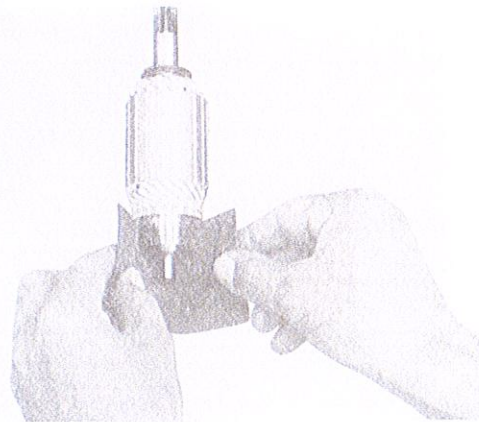
When the brushes are worn, the motor will be unable to produce sufficient torque, and the engine will be difficult to turn over. To prevent this, periodically inspect the length of the brushes, and replace them when they are too short or chipping.

Service Limit	9 mm (0.35 in)
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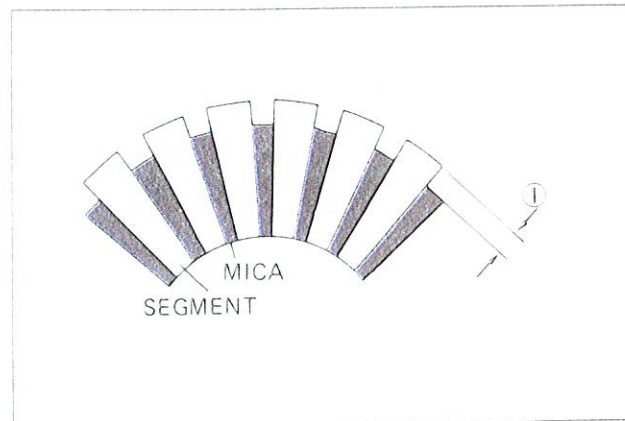
COMMUTATOR

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, wipe the commutator with a clean dry cloth.



Measure the commutator under cut 1.

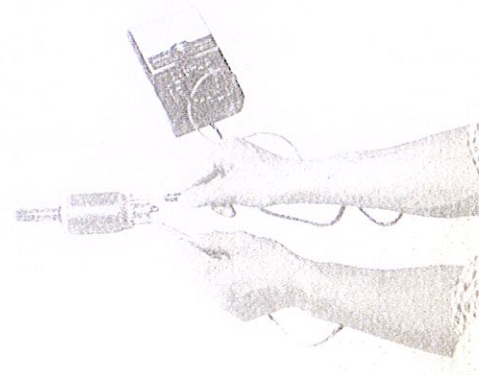
Service Limit	0.2 mm (0.008 in)
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ARMATURE COIL

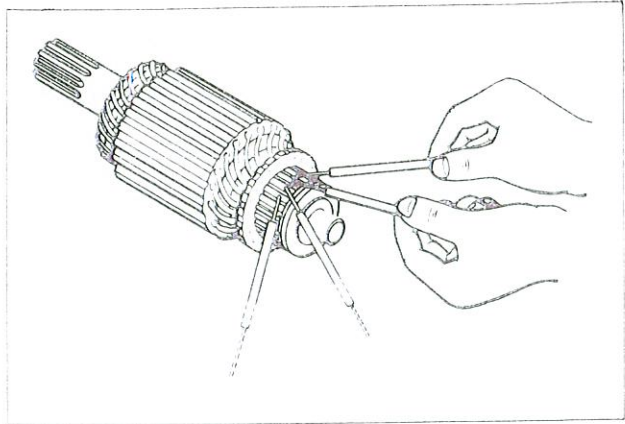
Using a pocket tester, check the coil for open and ground by placing probe pins on each commutator segment and rotor core (to test for ground) and on any two segments at various places (to test for open), with the brushes lifted off the commutator surface.

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



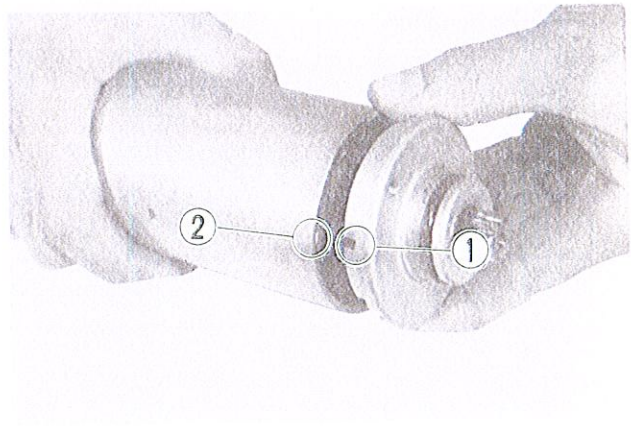
09900-25002

Pocket tester



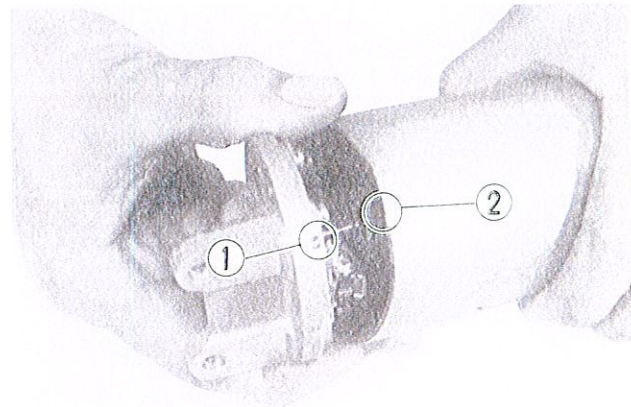
STARTER MOTOR REASSEMBLY

Align the protrusion 1 of the housing with notch 2 of the top cap and fit them together.



Fit the protrusion 1 of the housing to the dent 2 of the end cap while pushing the carbon brushes with fingers.

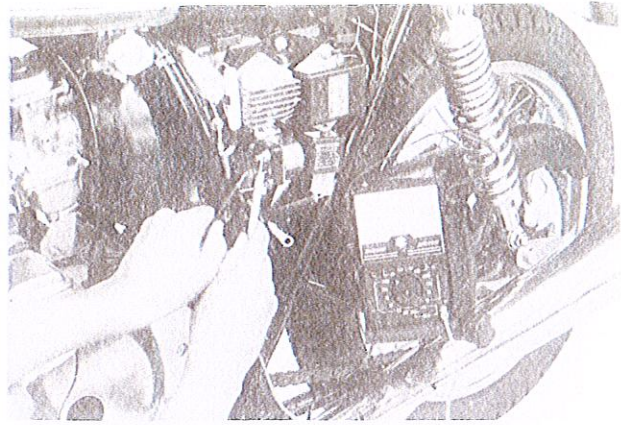
Tighten the two screws securely.



STARTER RELAY INSPECTION

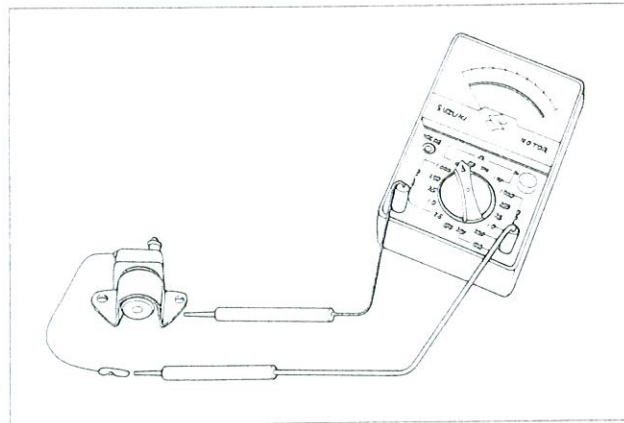
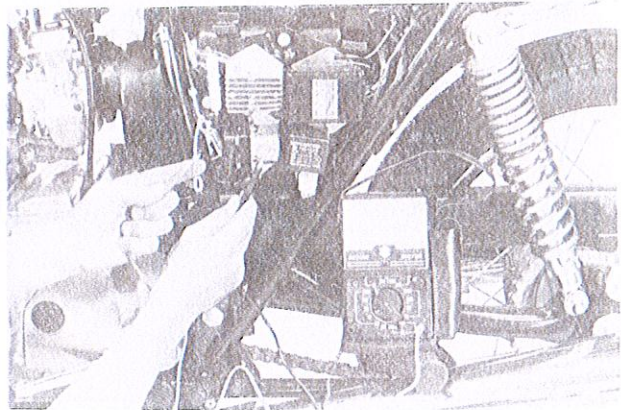
Disconnect lead wire of starter motor at the starter relay.

Turn on the ignition switch, check the continuity between the terminals of the starter relay. If continuity is found when pushing the starter button, the starter relay is in sound condition.



Check the coil for "open", "ground" and ohmic resistance. The coil is in good condition if the resistance is as follows.

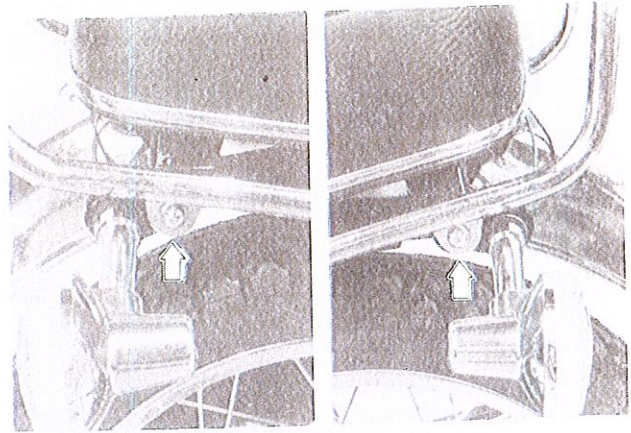
STD resistance	3 – 4 Ω
----------------	----------------



COMBINATION METER

REMOVAL

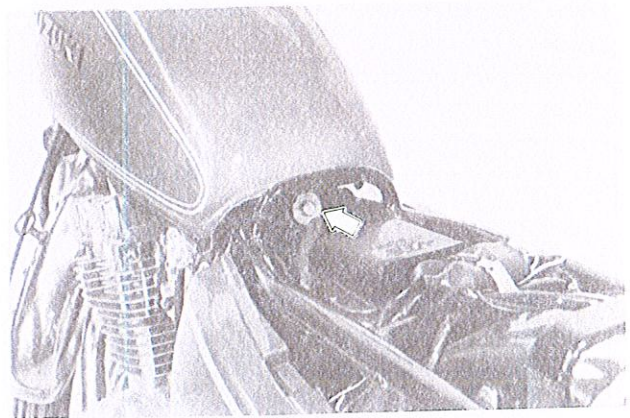
Remove seat.



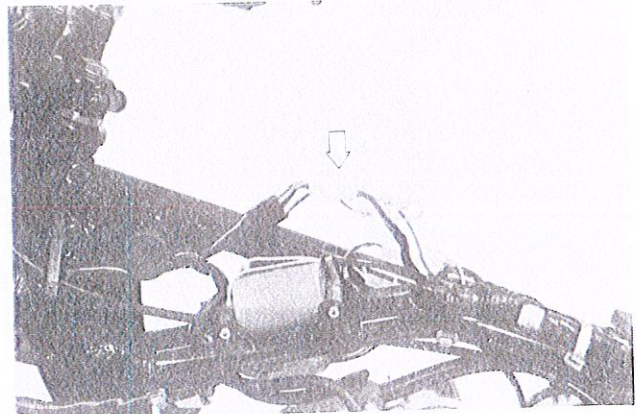
Take off fuel tank.

NOTE:

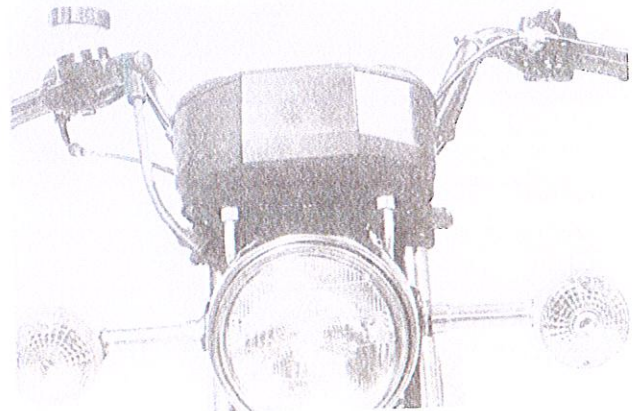
When taking off fuel tank, disconnect fuel hose and vacuum hose and turn the fuel cock lever to "ON" or "RES" position.



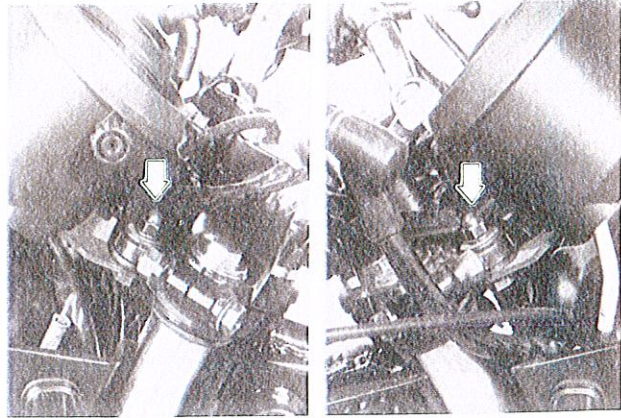
Disconnect the couplers from combination meter.



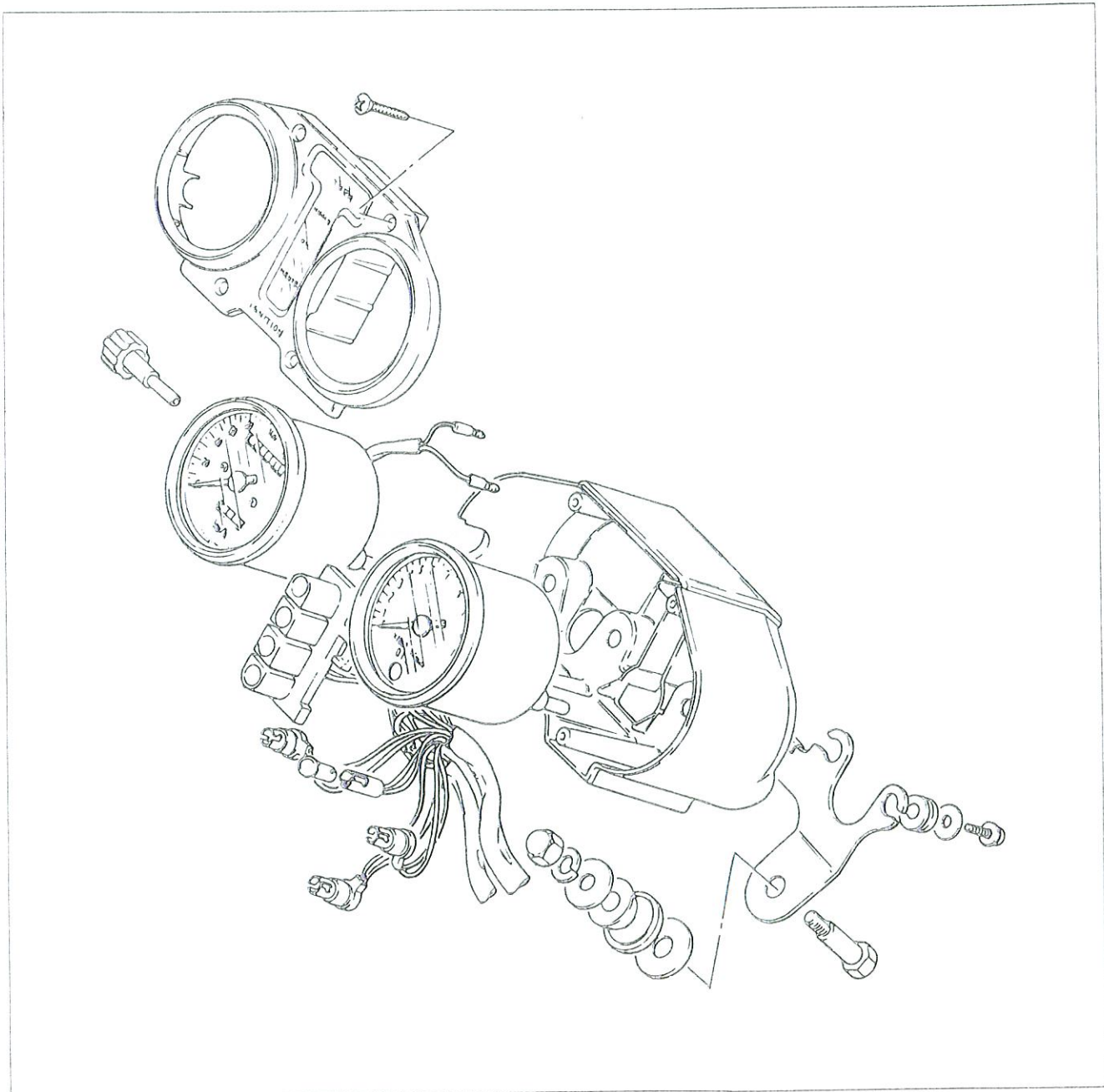
Disconnect speedometer and tachometer cables.



Remove combination meter mounting nuts and take off meter.



DISASSEMBLY



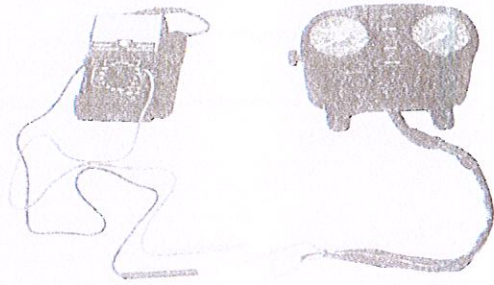
INSPECTION

Using pocket tester, check the continuity between lead wires in the following diagram.

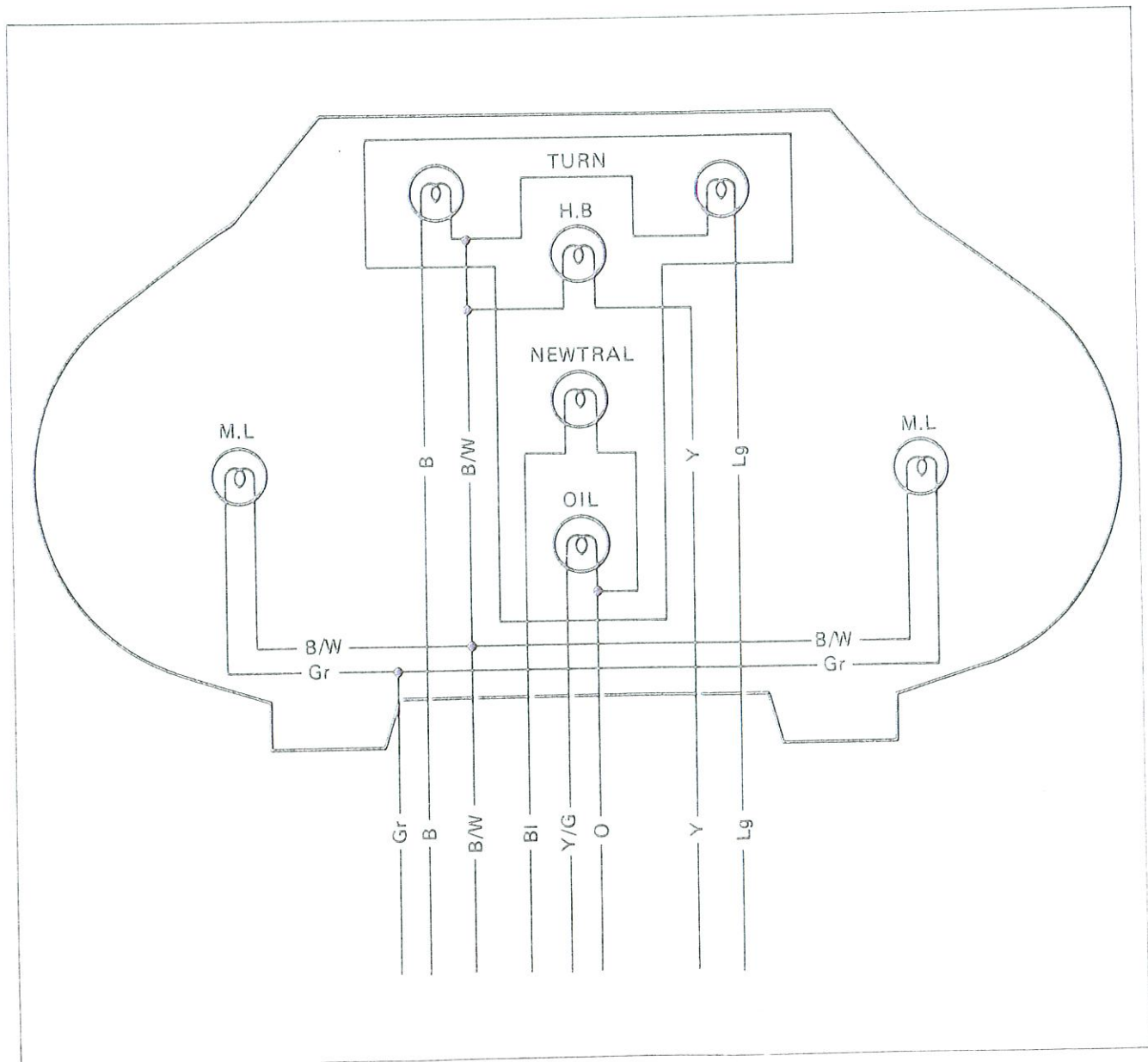
If the continuity measured is incorrect, replace the respective part.

09900-25002

Pocket tester

**NOTE:**

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



SWITCHES

Inspect each switch for continuity with the pocket tester referring to the chart.

09900-25002	Pocket tester
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IGNITION SWITCH

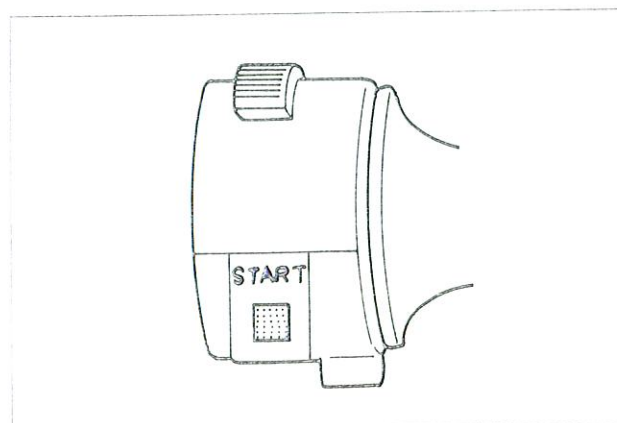
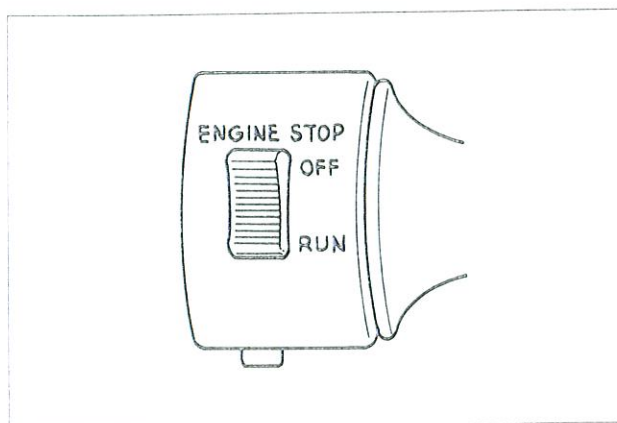
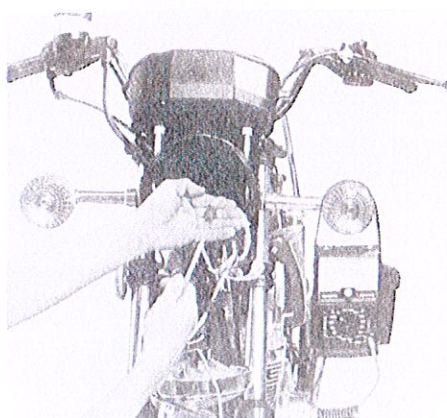
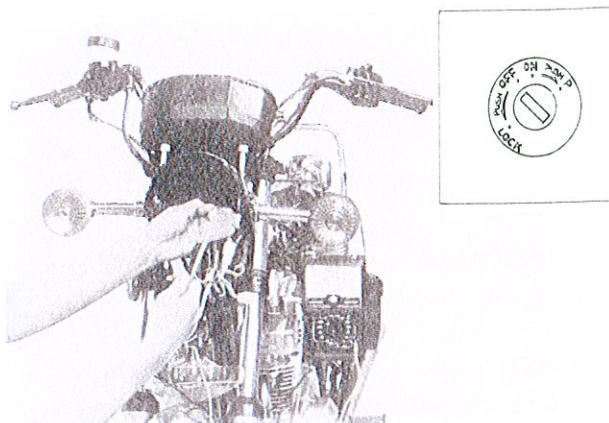
Wire color	R	O	Gr	Br
OFF				
ON	○	○	○	○
P	○			○

ENGINE STOP SWITCH

Wire color	O	O/W
RUN	○	○
OFF		

STARTER SWITCH

Wire color	O/W	Y/G
ON (Push)	○	○
OFF		



DIMMER SWITCH

Wire color	Y	Y/W	W
HI	○	○	
LO		○	○

TURN SIGNAL LIGHT SWITCH

Wire color	B	Lbl	Lg
R		○	○
L	○	○	

HORN SWITCH

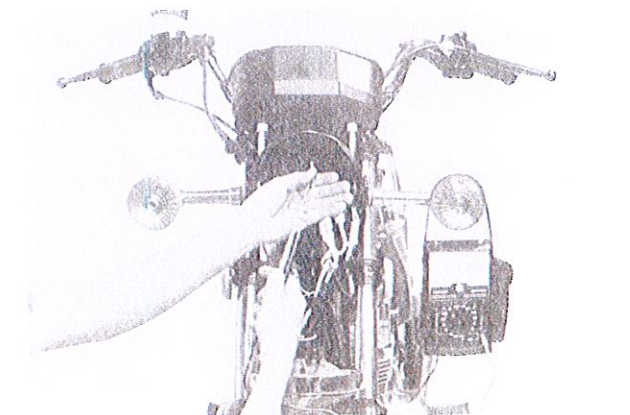
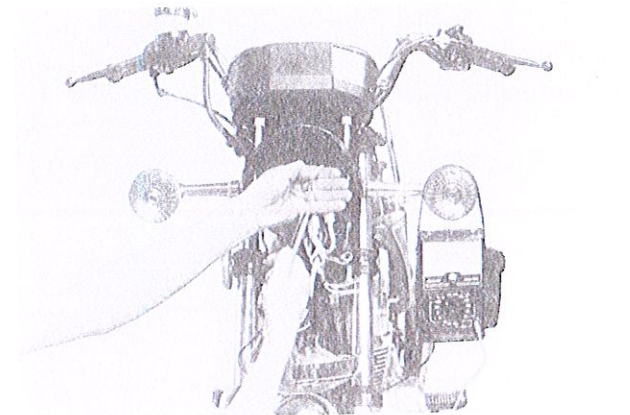
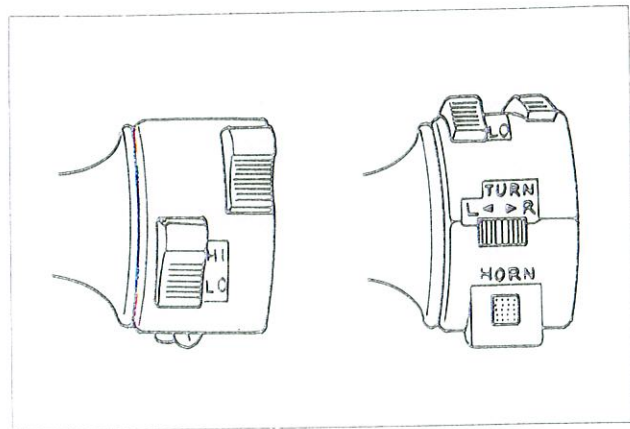
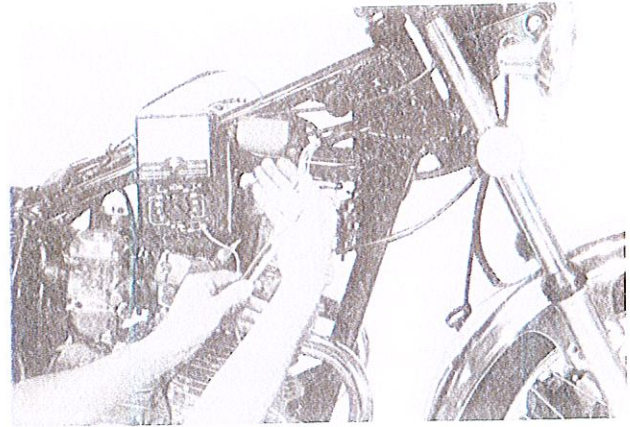
Wire color	G	BYW
HORN	○	○
OFF		

FRONT BRAKE LIGHT SWITCH

Wire color	O	W
ON	○	○
OFF		

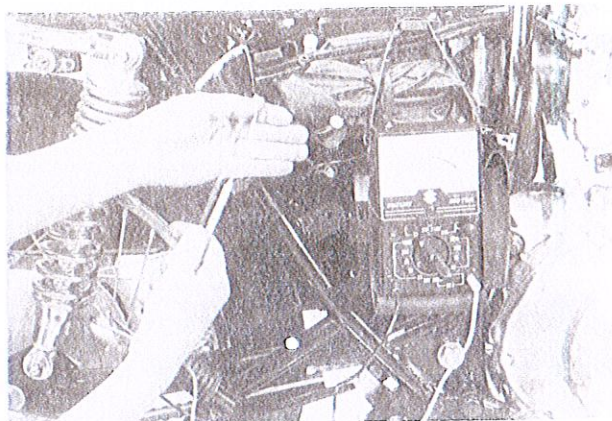
STARTER DISCONNECT SWITCH

Wire color	Y/G	Y/G
ON	○	○
OFF		



REAR BRAKE LIGHT SWITCH

Wire color	O	W
ON	○	○
OFF		

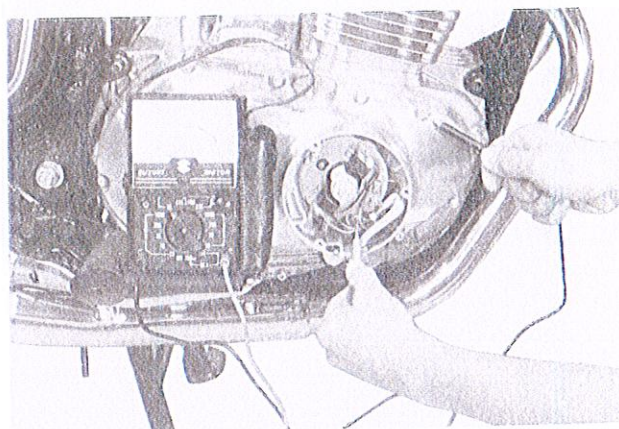
**OIL PRESSURE SWITCH**

Continuity, when engine is stopped.

No continuity, when engine is running.

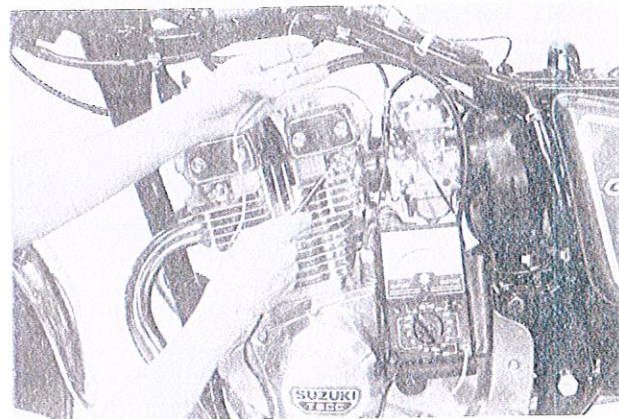
NOTE:

Before testing the oil pressure switch, check the engine oil level.

**NEUTRAL INDICATOR LIGHT SWITCH**

Continuity, when gear position is neutral.

No continuity, when the other positions.



BATTERY

DESCRIPTION

YUASA YB10L-A2 vacuumsealed dry cell battery is furnished with every GS250T. All necessary information is contained in the instructions given under the heading of INITIAL CHARGING METHOD. The battery's serviceable life depends mainly both on initial charge and on the attention it subsequently receives. Each GS250T user should be reminded of the importance of giving proper care to their batteries.

SPECIFICATIONS

Type designation	YB10L-A2
Battery voltage	12 volts
Standard electrolyte S.G.	1.280 (at 20°C or 68°F)
Capacity	12 Ah/10 HR

INITIAL CHARGING METHOD

Each new GS250T motorcycle is delivered with the battery in a "vacuum-sealed dry" condition. The battery can be used after conducting the four following steps:

1. Initial electrolyte filling

Take the battery off the motorcycle, and place it on a battery servicing bench. Fill each cell to the upper level with electrolyte:

Dilute sulfuric acid solution with acid concentration of 34.6% by weight, having a specific gravity of 1.28 at 20°C (68°F). Electrolyte temperature, at the time of filling, should not be higher than 30°C (86°F).

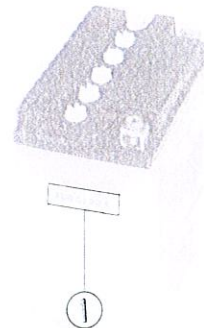
After filling, let the battery stand for about 30 minutes. Then, check electrolyte level in each cell and, if the level in any cell has fallen add more electrolyte to bring it back to the upper level.

2. Initial charging duration

The acting materials on the cell plates have a store of energy equivalent to 75% of the rated capacity if the battery is new manufactured recently. This stored energy, however, dissipates spontaneously and progressively with lapse of time, so that, after filling it with electrolyte, the charging duration must be extended if a period of more than 6 months has elapsed since the date of manufacture (which is indicated on each battery as shown in picture. The standard initial charging duration being 20 hours. The charging time is to be determined according to the following schedule.

Age of dry battery (since manufacture)	Charging time
Up to 6 months	20 hours
Over 6 months or up to 9 months	30 hours
Over 9 months and up to 12 months	40 hours
Over 12 months	50 hours

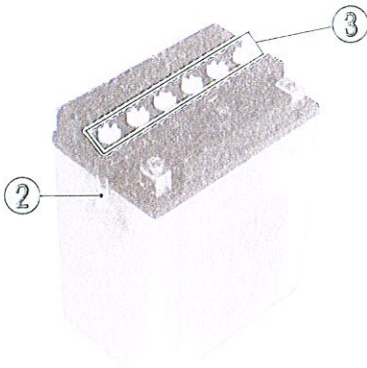
Date of manufacture ① is indicated by a three-part number, the leftmost part indicating for the months, the middle part the year, and the last part the day of the month.



3. Initial charging current

The constant-current method of charging is recommended for initial charging, and is carried out in the following manner.

- 1) Before turning on the charger, to which the filled battery is connected, remove the seal cap ② and cell caps ③. Make sure that the polarity marks are matched correctly.



- 2) Start charging, with the charger set for a maximum charging rate of 1.2 amperes. While charging, occasionally check the electrolyte S.G. (specific gravity) and also the charging voltage, particularly towards the end of the charging time.
- 3) Towards the end of the charge, the electrolyte will start releasing gas bubbles and the voltage and S.G. will be up and leveling; if not, it is likely that the vacuum seal was damaged during transit or in storage. Continue charging, even in excess of the predetermined time, until the voltage and S.G. stay level, for one or two hours, with the battery allowed to continue releasing gas.

4. Electrolyte adjustment

After charging re-check the electrolyte S.G. to make sure it is 1.280 corrected for 20°C (68°F). Add distilled water, if necessary, to adjust the S.G. of each cell. Replace the caps, and wash the surfaces of the battery container with fresh water. Let the battery dry before mounting it on the motorcycle.

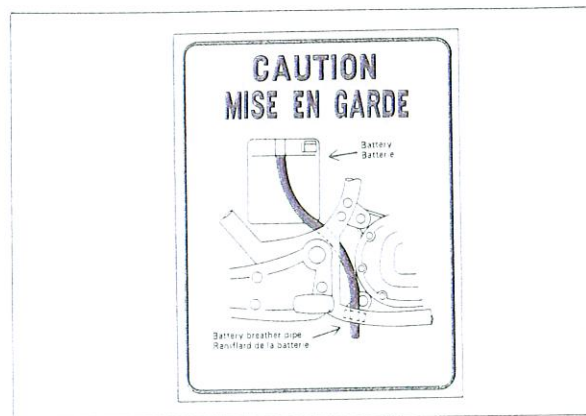
BATTERY SERVICING

Removal

1. Remove left and right frame cover.
2. Disconnect (–) lead wire from the starter relay and (+) lead wire.
3. Disconnect the breather hose and take out battery.

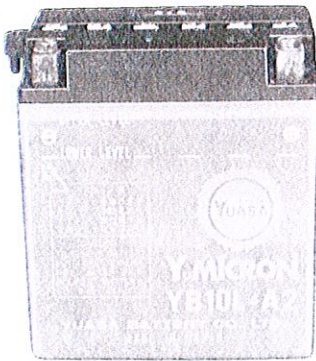
Installation

Before mounting the battery, make sure that the exterior surface of the battery container is dry and free from electrolyte. Be careful not to forget to re-connect the battery breather hose. The installing procedure is the reverse of removal.



Inspection

1. Visually inspect the surface of the battery. If signs of cracking or electrolyte leakage from the sides of the battery are noticed, replace the battery with a new one.
2. 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 or hot water, respectively.
3. Check the electrolyte level and add distilled water, if necessary, to raise the electrolyte in each cell to the upper level.



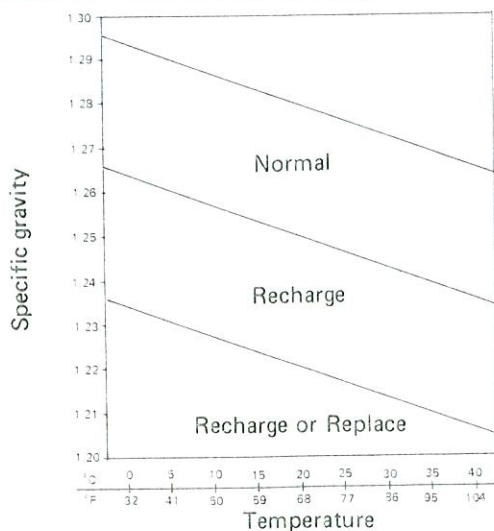
S.G. Reading to corresponding temperature

When reading specific gravity by using hydrometer, measure the temperature of the air firstly, and read the accurate specific gravity by the graph below.

If S.G. is less than normal range, recharge or replace the battery.

NOTE:

It needs recharging when the gravity reading is 1.22 at 20°C.



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

Check the reading (corrected for 20°C) with figure to determine the recharging time in hours by constant-current charging at a charging rate of 1.2 amperes (which is a tenth of the capacity of the present battery).

Do not permit the electrolyte temperature to exceed 45°C (113°F), at any time, during the recharging operation. Interrupt the operation, if necessary, to let the electrolyte cool down.

The battery is properly recharged if three conditions are met:

Recharging has been carried out to the specification indicated in the graph in Fig. A Electrolyte S.G. has risen to 1.28 or higher and has remained there for at least one hour. The battery terminal voltage has risen to 15 – 16 volts or higher and has remained there for at least one hour.

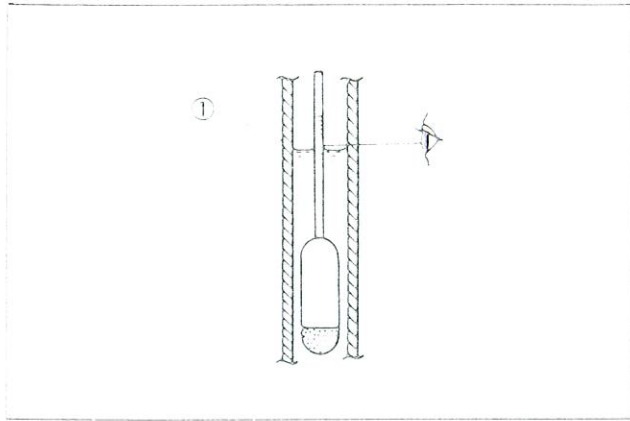
Gas bubbles are being released in every cell.

WARNING:

- * Before charging a battery, remove the seal cap from each cell.
- * Keep fire and sparks away from a battery being charged.

NOTE:

Constant-voltage charging, otherwise called "quick" charging, is not recommended for recharging because it may shorten the life of the battery.



① Hydrometer

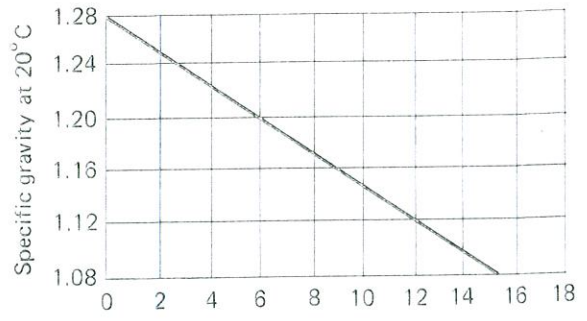
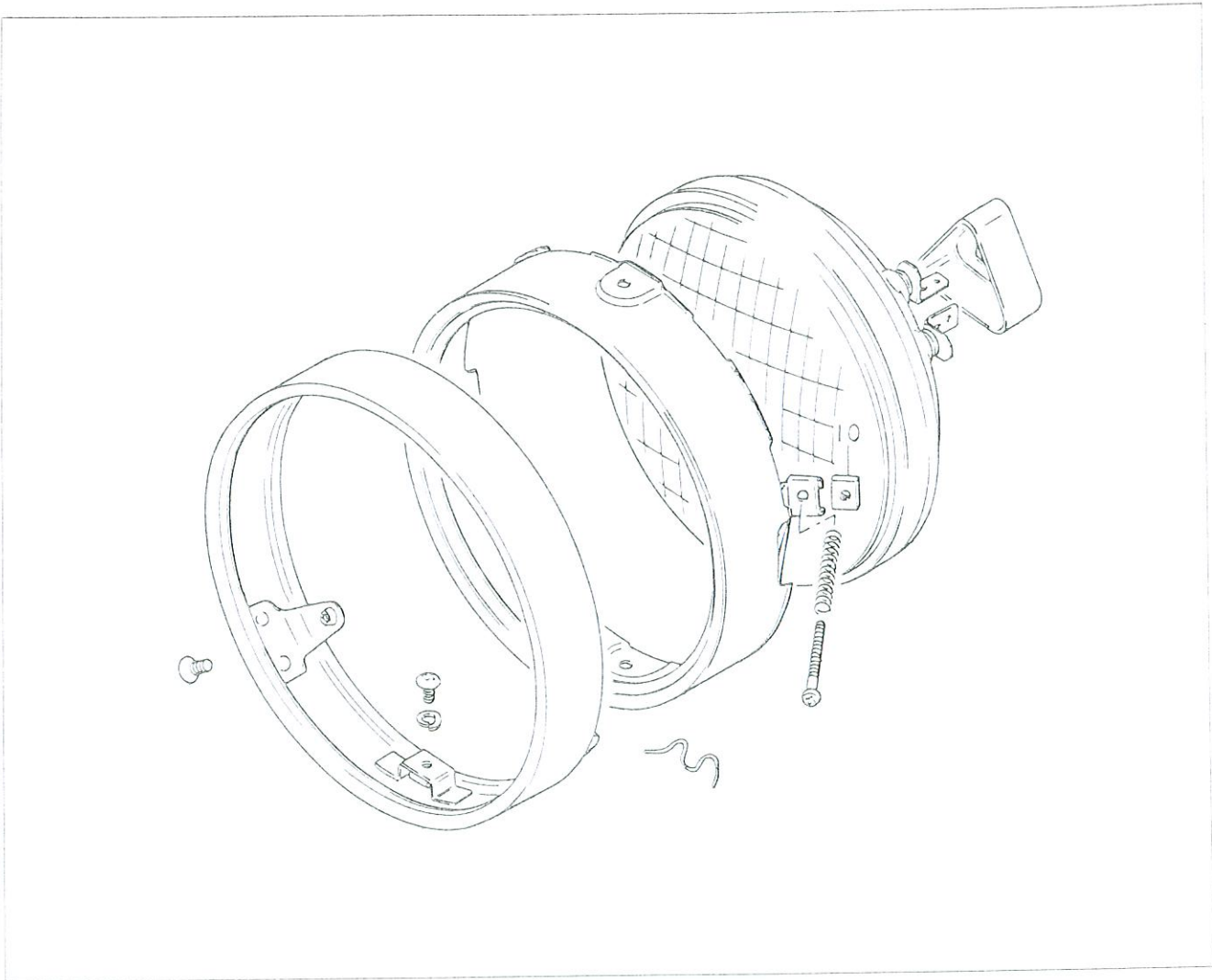


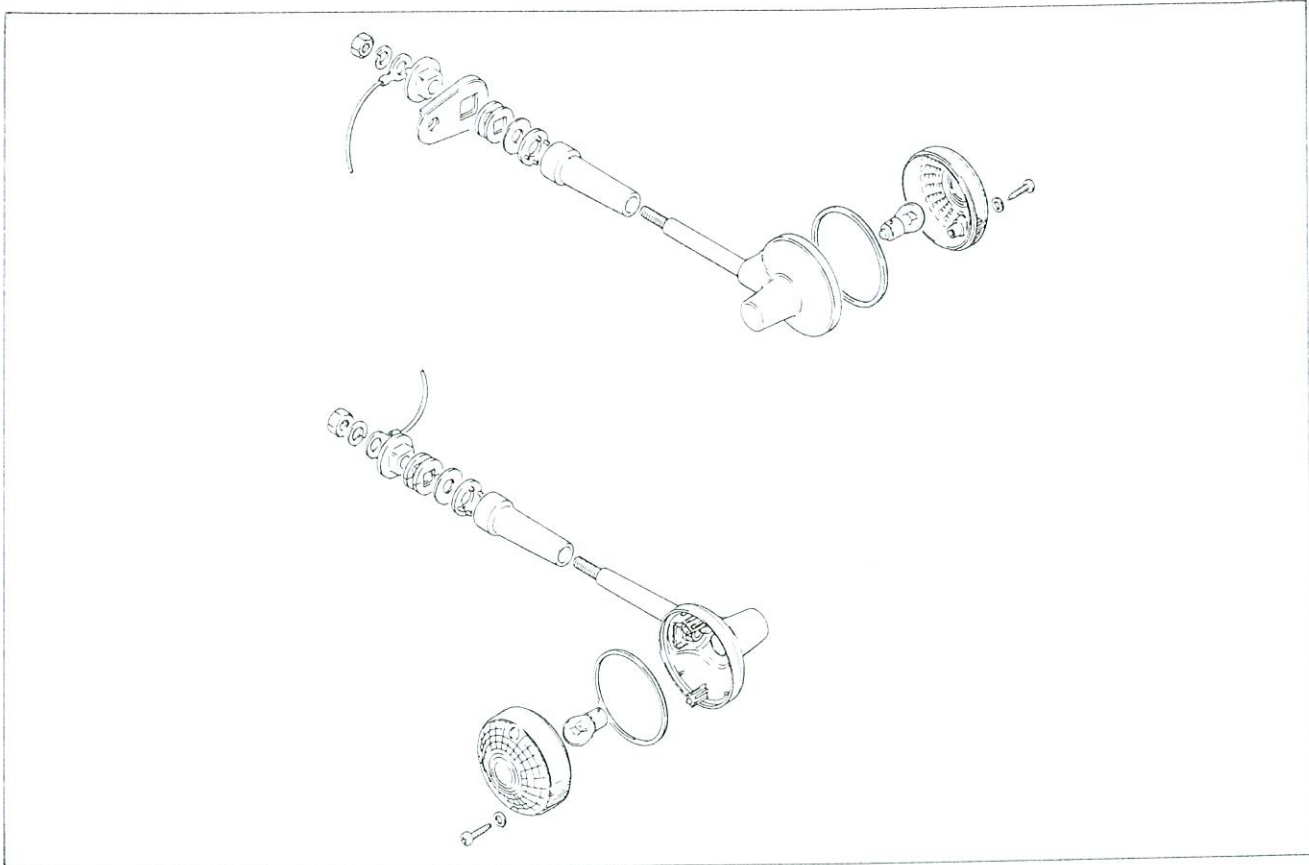
Fig. A Charging time (hour)

LAMPS

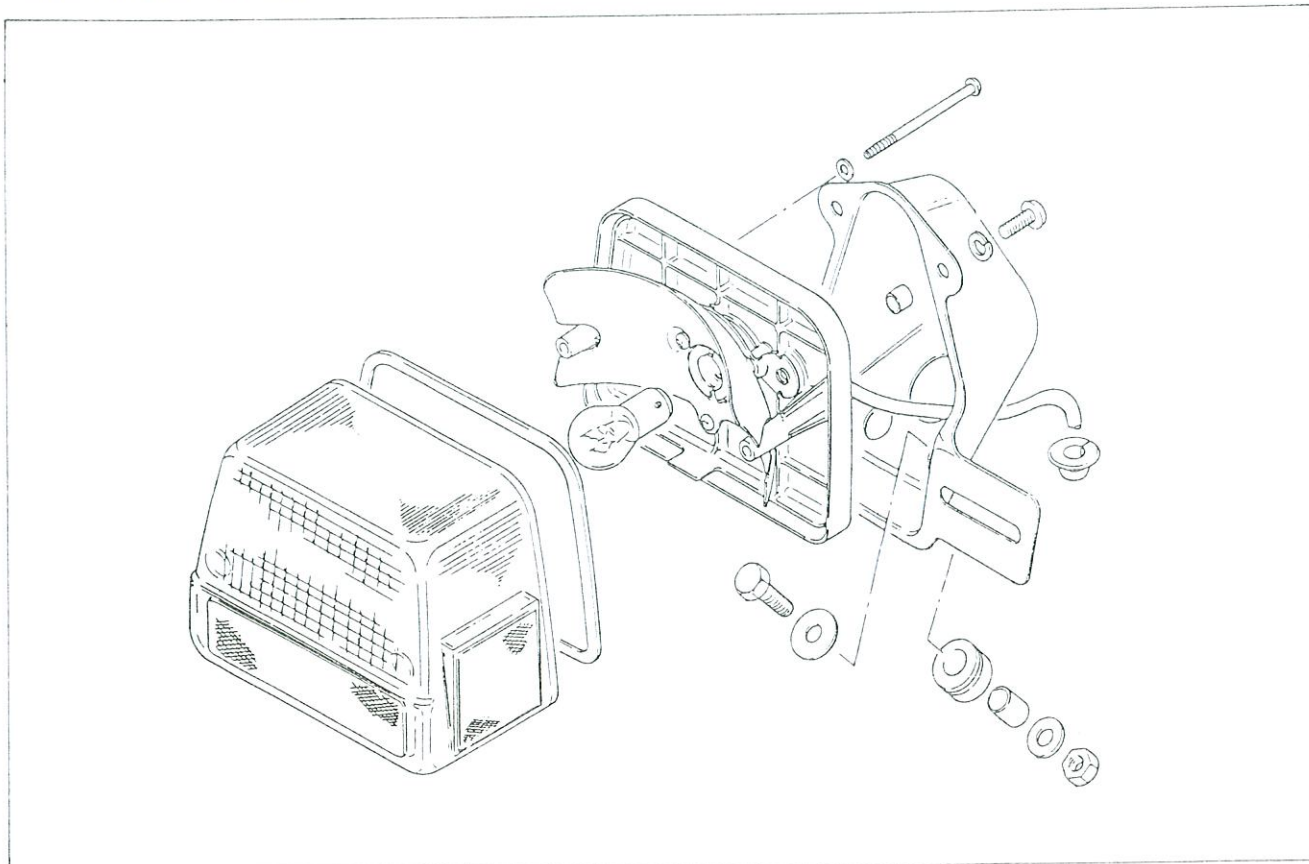
HEADLIGHT



TURN SIGNAL LIGHT



TAIL/BRAKE LIGHT



CHASSIS

CONTENTS

<i>FRONT WHEEL</i>	7- 1
<i>REAR WHEEL</i>	7- 7
<i>FRONT BRAKE</i>	7-16
<i>REAR BRAKE</i>	7-26
<i>FRONT FORK</i>	7-29
<i>STEERING STEM</i>	7-35
<i>REAR SUSPENSION</i>	7-42

FRONT WHEEL

REMOVAL

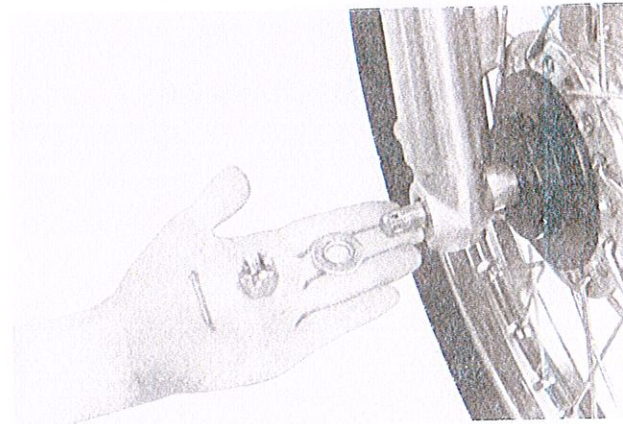
Support the machine by center stand, and jack or block.



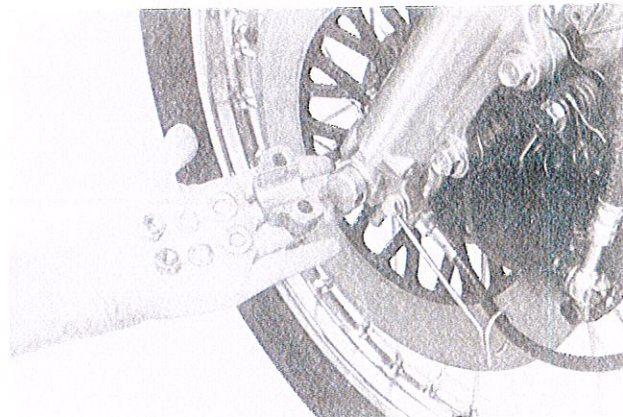
Pull off cotter pin and remove axle nut.

CAUTION:

Do not reuse the cotter pin.



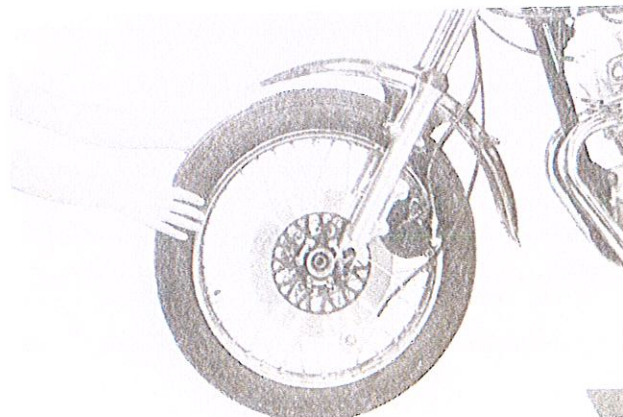
Remove axle holder nuts and take off axle holder.



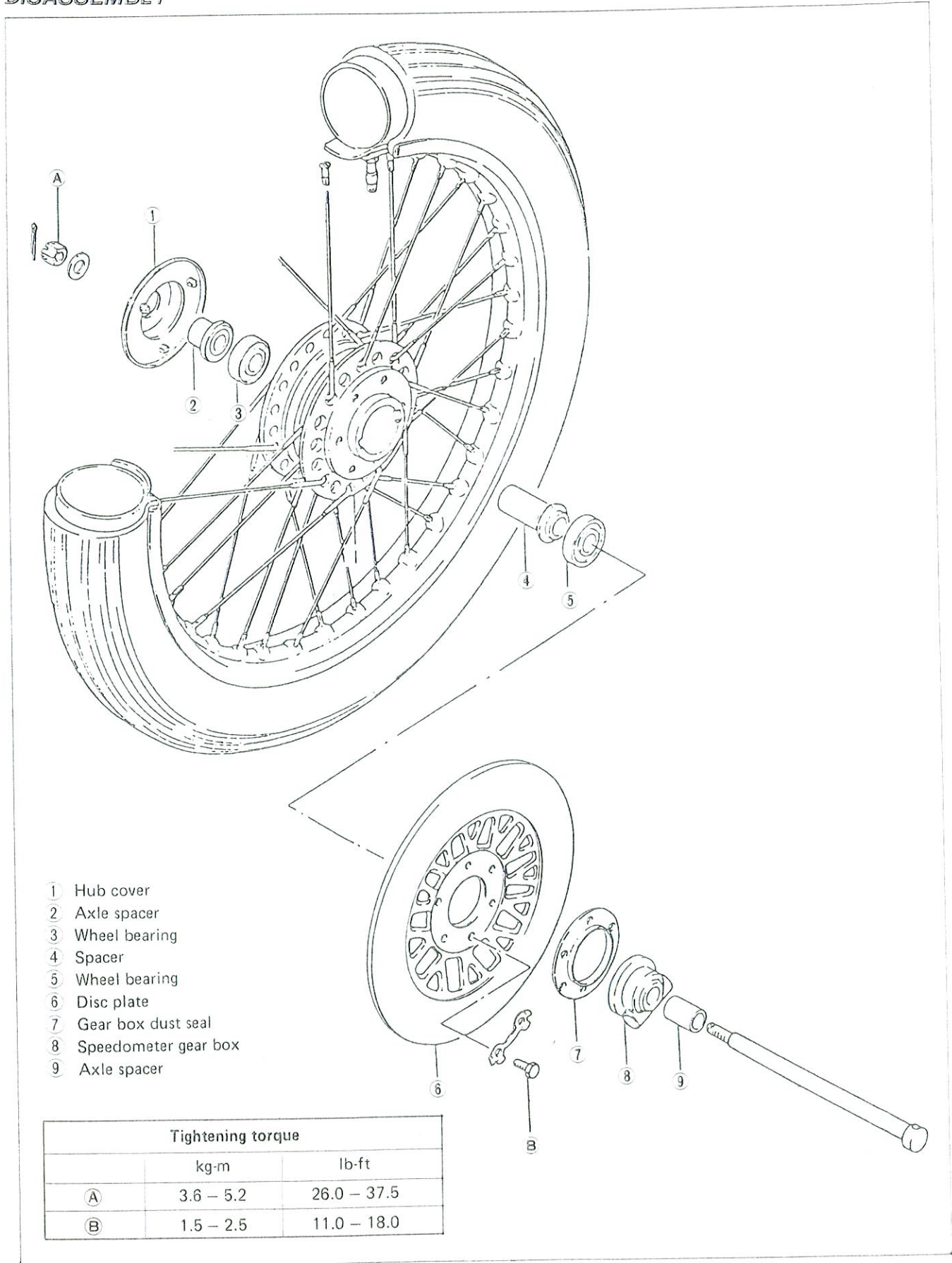
Draw out axle shaft and take off front wheel.

NOTE:

Do not operate the brake lever while dismounting the wheel.



DISASSEMBLY

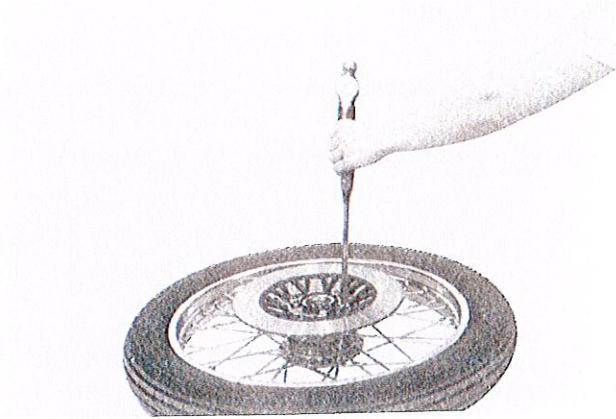


Unlock the lock washers.

Remove securing bolts and separate the disc from wheel.

CAUTION:

Do not reuse the lock washers.



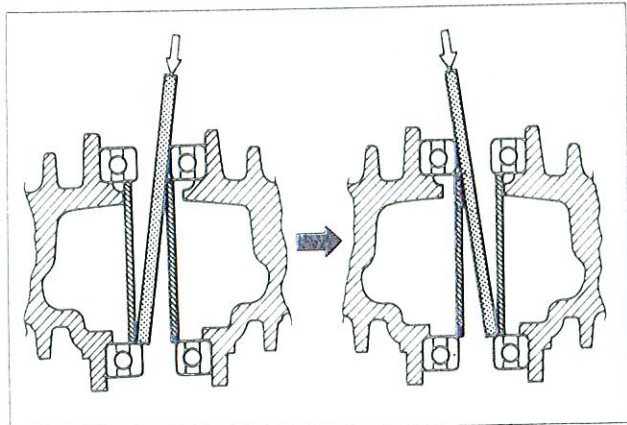
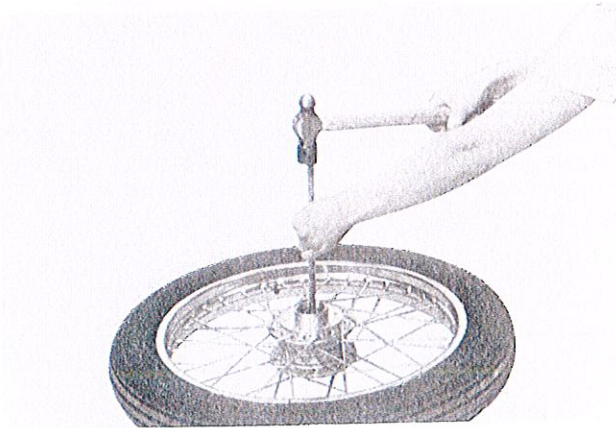
Drive out the wheel bearings right and left.

NOTE:

Removing the left side bearing first makes the job easier.

CAUTION:

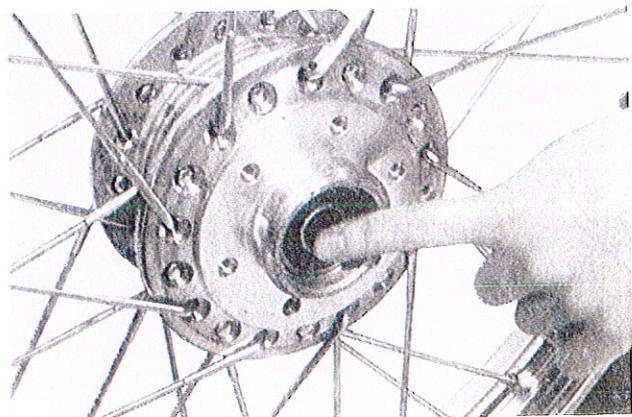
The removed bearing should be replaced.



INSPECTION

WHEEL BEARINGS

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

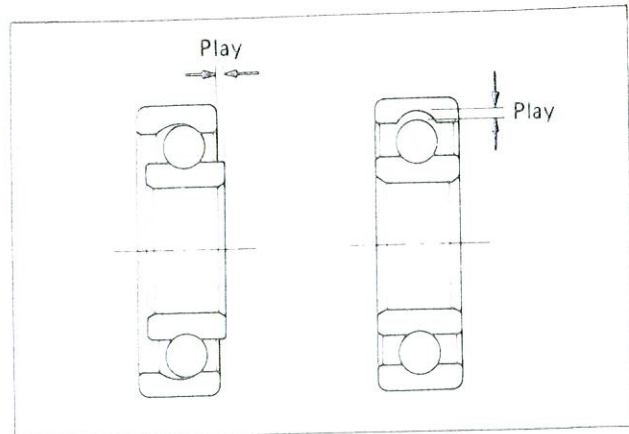


AXLE SHAFT

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

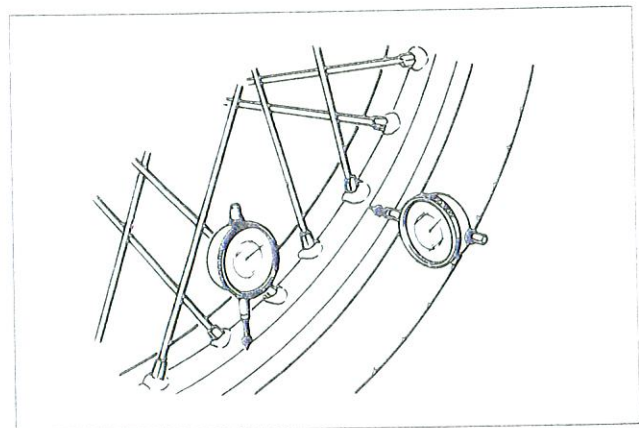
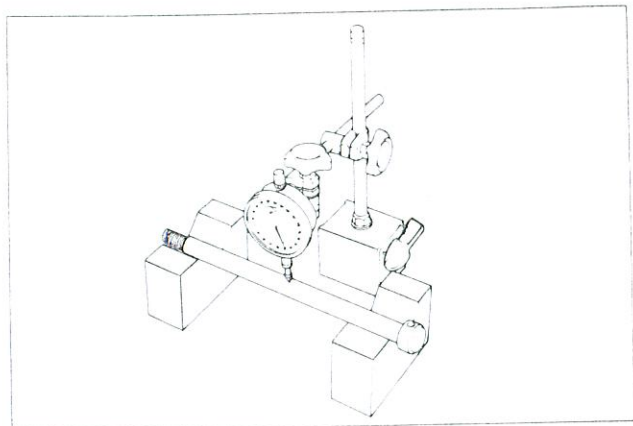
09900-20606	Dial gauge (1/100)
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Service Limit	0.25 mm (0.01 in)
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**WHEEL RIM**

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

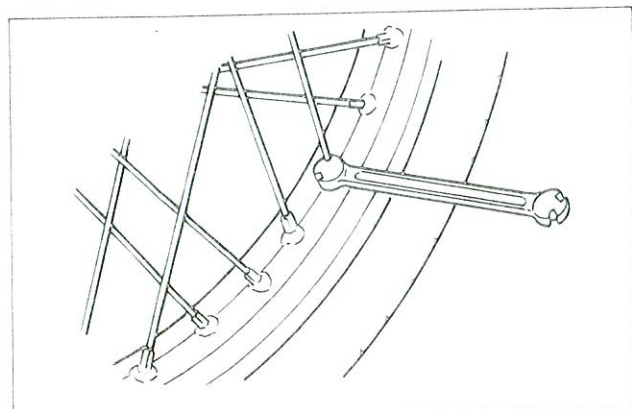
Service Limit (Axial and Radial)	2.0 mm (0.08 in)
-------------------------------------	------------------

**SPOKE NIPPLE**

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

09940-60113	Spoke nipple wrench
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Tightening torque	0.4 – 0.5 kg-m (3.0 – 3.5 lb-ft)
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REASSEMBLY

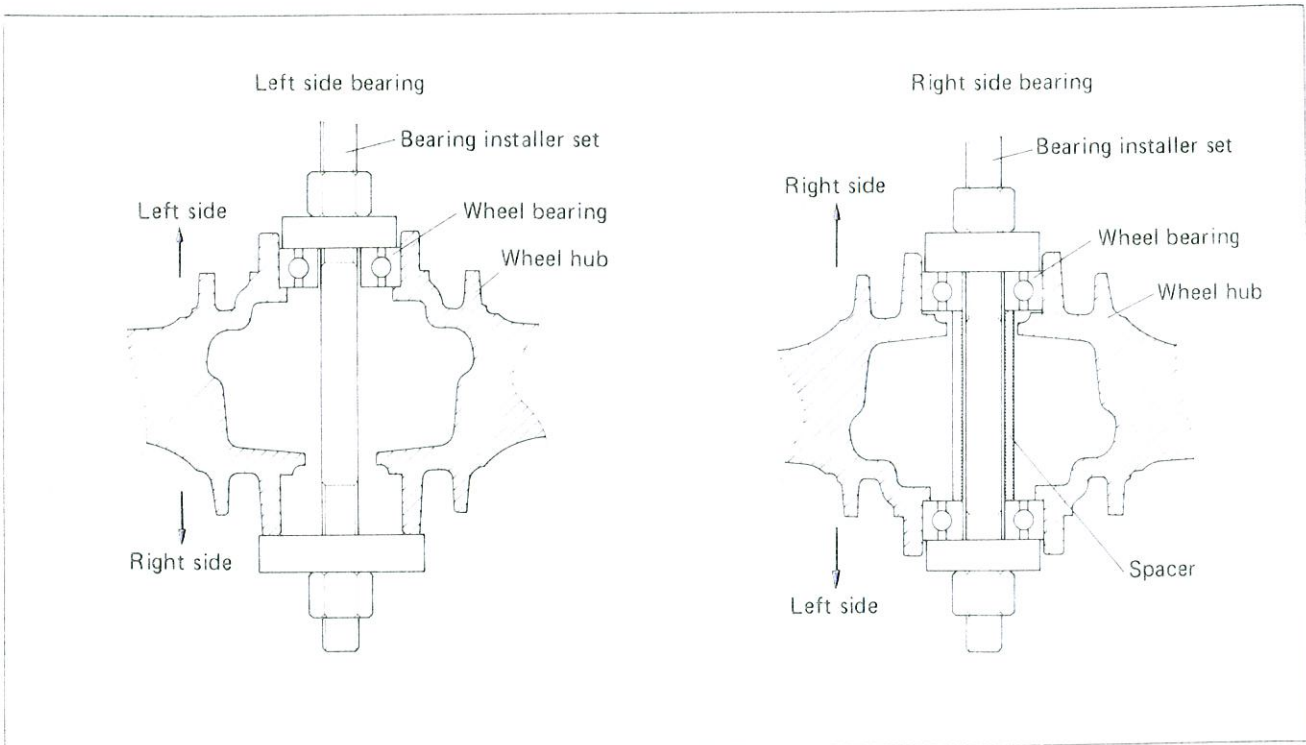
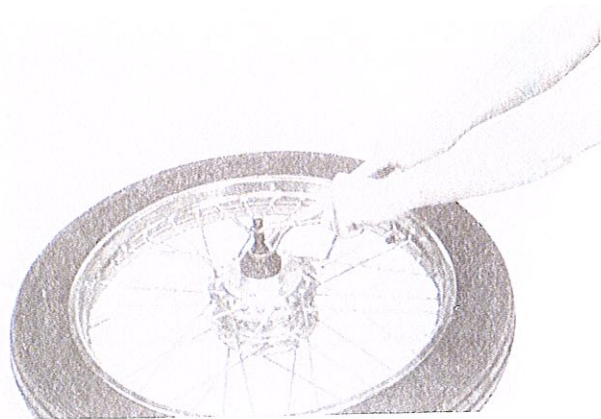
Reassemble and remount the front wheel in the reverse order of disassembly and removal, and also carry out the following steps:

WHEEL BEARINGS

Install the wheel bearings by using special tool.

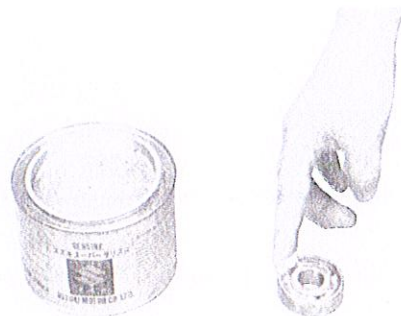
CAUTION:
First install the wheel bearing for left side.

09924-84510	Bearing installer set
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Apply grease before installing the bearings.

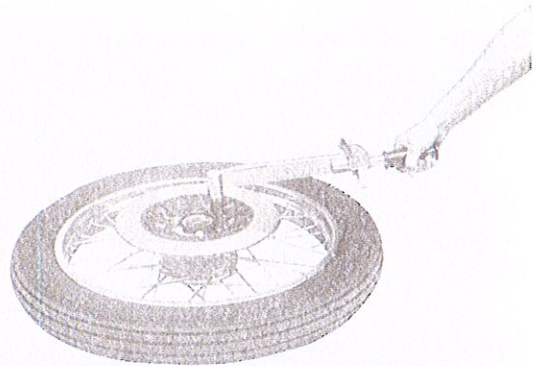
99000-25030	Suzuki super grease "A"
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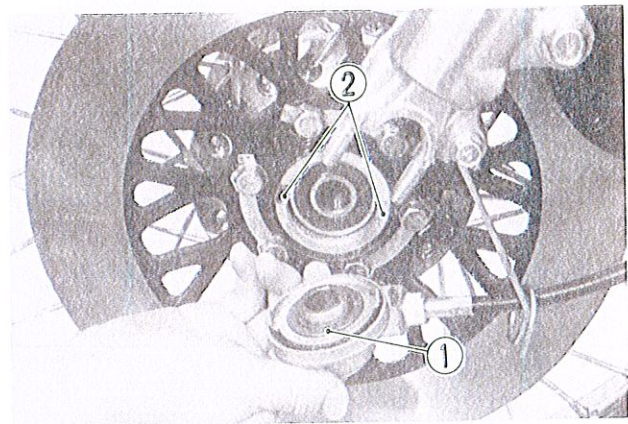
BRAKE DISC

Make sure that the brake disc is clean and free of any greasy matter. After securing it in place by tightening its bolts, be sure to lock each tongue.

Tightening torque	1.5 – 2.5 kg-m (11.0 – 18.0 lb-ft)
-------------------	---------------------------------------

**SPEEDOMETER GEARBOX**

Before installing the speedometer gearbox 1), grease it and align its groove 2), (for fitting to the hub of two drive pawls) with the hub to insert the gearbox to the wheel side.

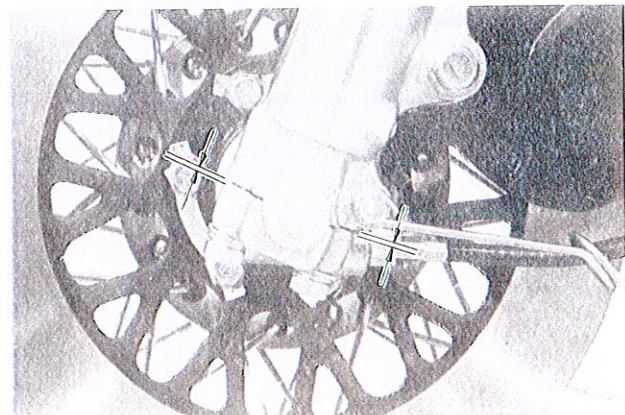


When tightening the front axle, check to be sure that the arrow mark of the speedometer gearbox is in the position shown.

**AXLE HOLDER**

When securing the axle holder, be sure to tighten the nuts on the holder in such a way that clearances ahead of and behind the axle will become equalized.

Tightening torque	1.5 – 2.5 kg-m (11.0 – 18.0 lb-ft)
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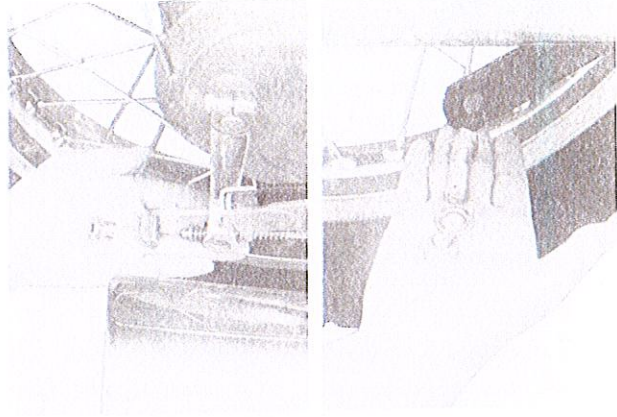
REAR WHEEL

REMOVAL

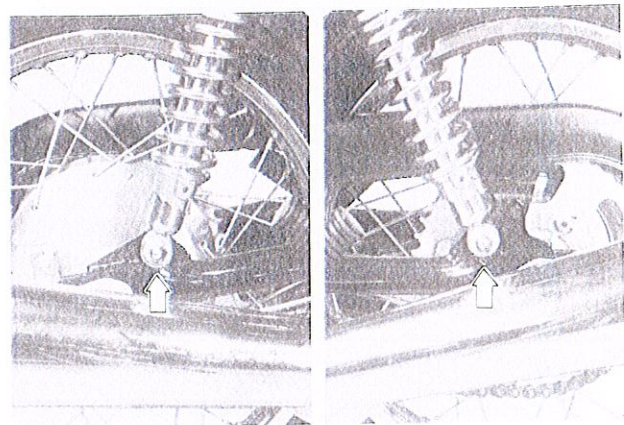
Support the machine by center stand.
Remove brake adjuster, and torque link nut after pulling off cotter pin.

CAUTION:

Do not reuse the cotter pin.



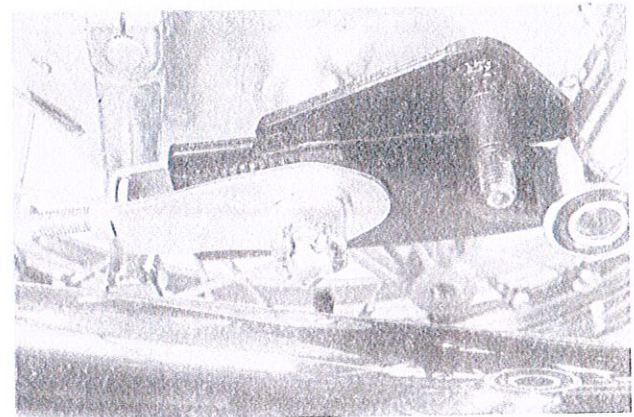
Remove the bottom side of rear shock absorbers, right and left, from the swing arm.



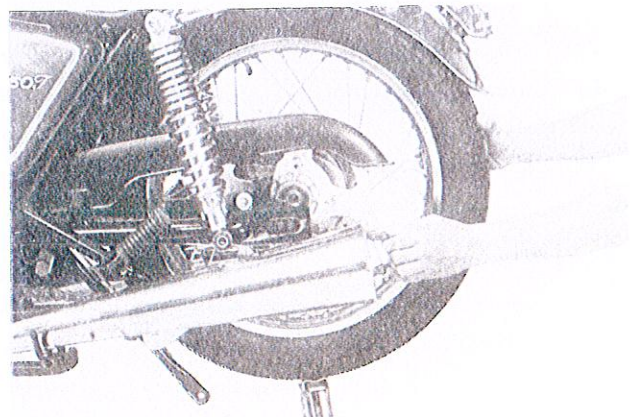
Pull off cotter pin and remove axle nut.

CAUTION:

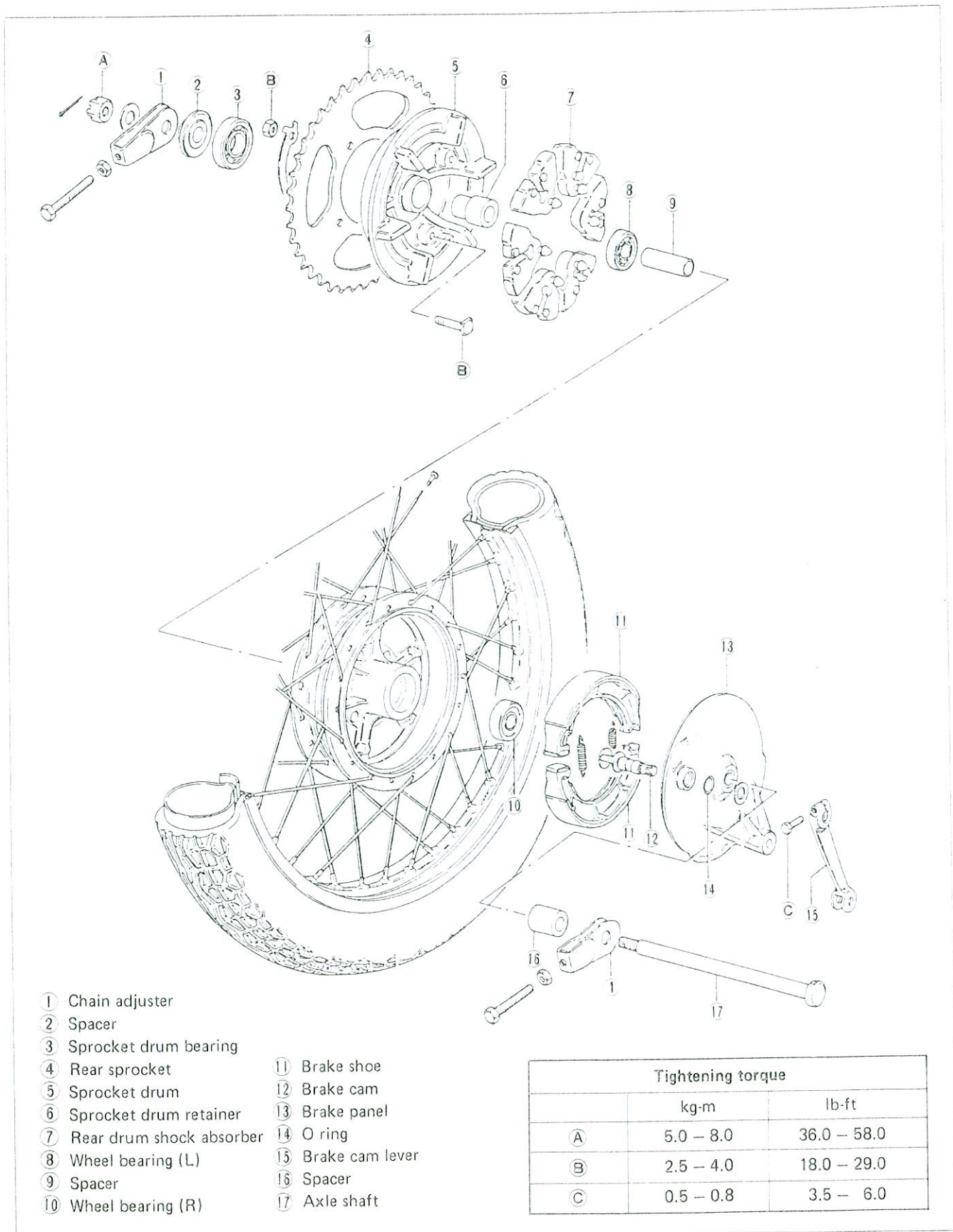
Do not reuse the cotter pin.



To remove the axle, raise the rear wheel high enough for the axle to clear the mufflers. Pull the axle from the rear wheel/swing arm and lower the and remove the drive chain from the sprocket. Pull the wheel backwards and remove the wheel from the swing arm assembly.



DISASSEMBLY



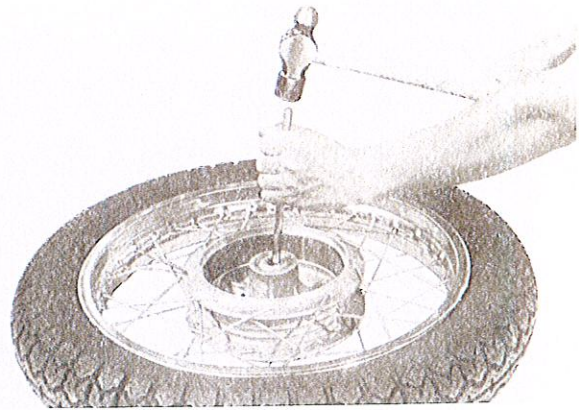
Drive out wheel bearings, right and left.

NOTE:

Removing the right side bearing first makes the job easier.

CAUTION:

The removed bearing should be replaced.



Unlock the lock washers.

Remove securing bolts and separate the sprocket from sprocket mounting drum.

CAUTION:

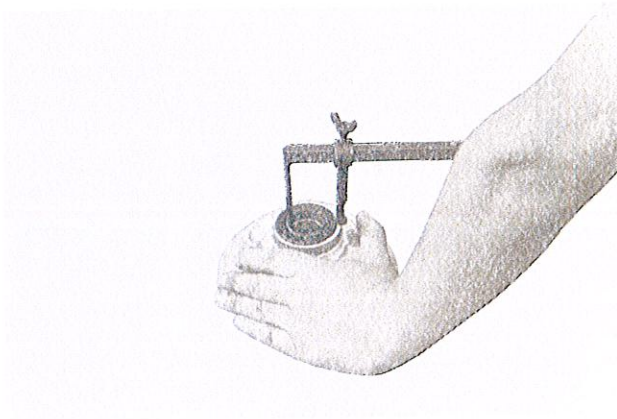
Do not reuse the lock washers.



Draw out sprocket mounting drum oil seal by using special tool.

09913-50121

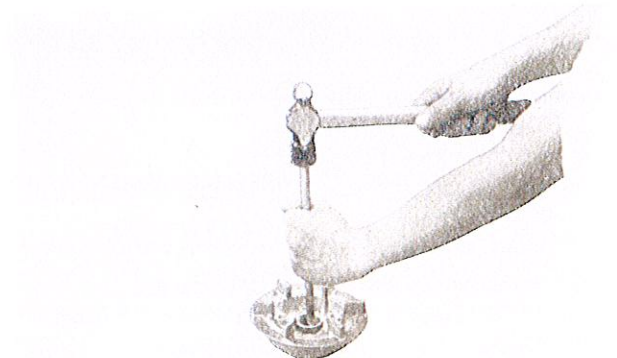
Oil seal remover



Drive out sprocket mounting drum bearings.

CAUTION:

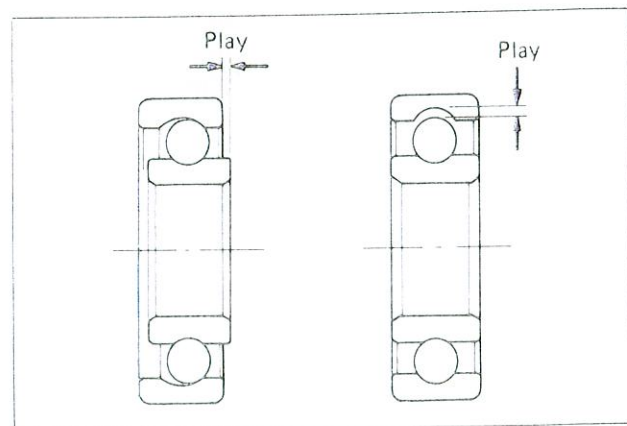
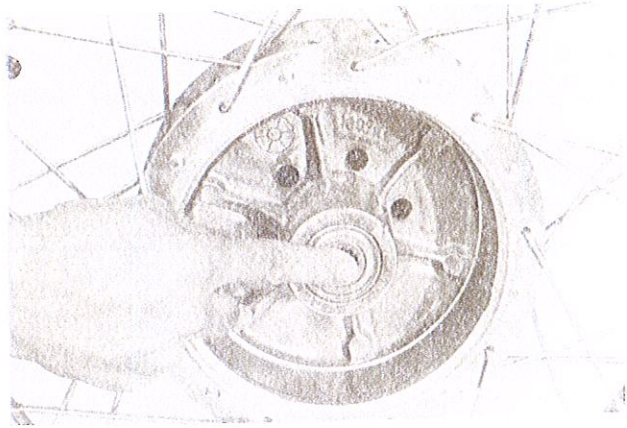
The removed bearing should be replaced.



INSPECTION

WHEEL AND SPROCKET MOUNTING DRUM BEARINGS

Inspect the play of bearing inner race by hand while fixing it in the wheel hub or sprocket mounting drum. Rotate the inner race by hand to inspect for abnormal noise and a smooth rotation. Replace the bearing if there is something unusual.

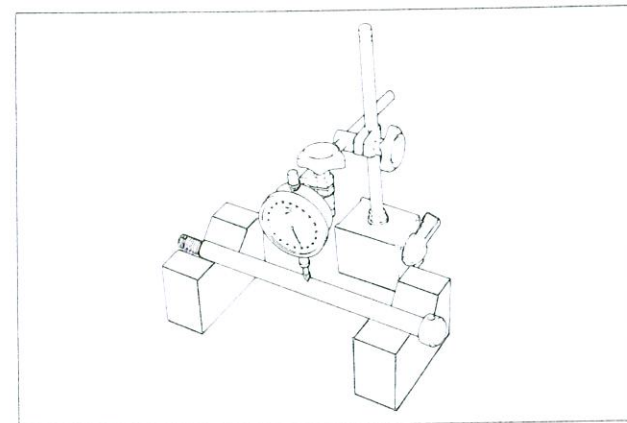


AXLE SHAFT

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

09900-20606	Dial gauge (1/100)
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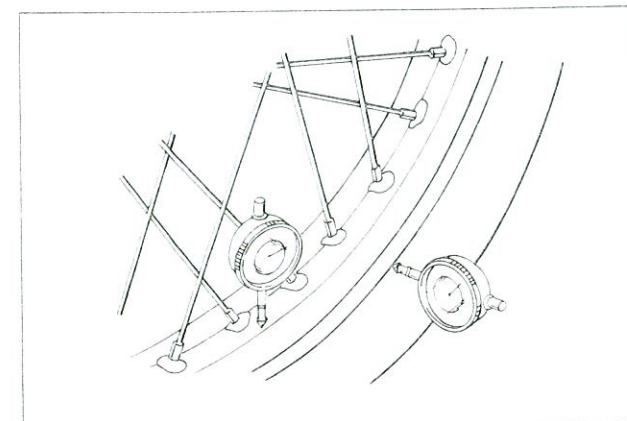
Service Limit	0.25 mm (0.01 in)
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WHEEL RIM

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

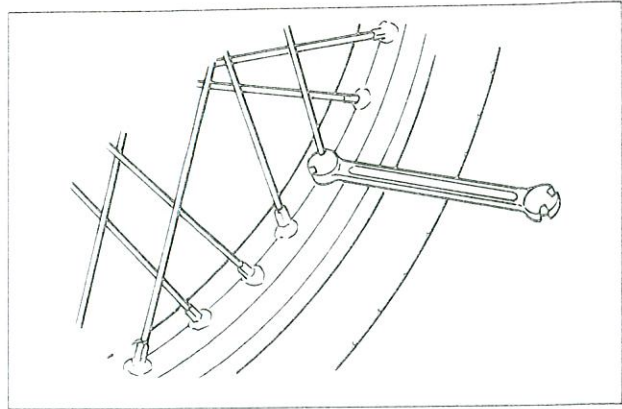
Service Limit (Axial and Radial)	2.0 mm (0.08 in)
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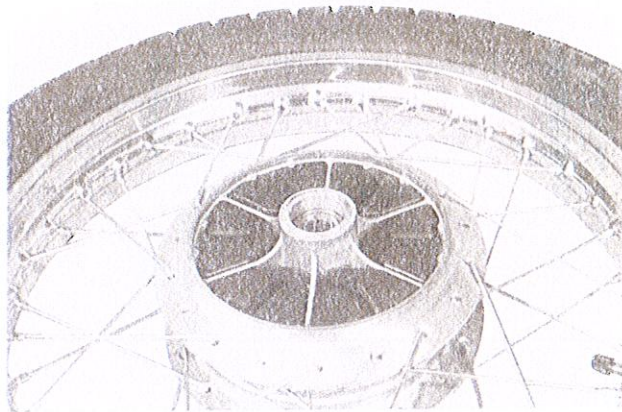
SPOKE NIPPLE

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

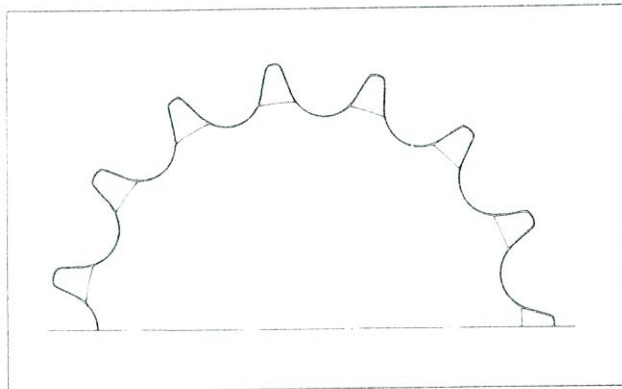
09940-60113	Spoke nipple wrench
Tightening torque	0.4 – 0.5 kg-m (3.0 – 3.5 lb-ft)

**REAR DRUM SHOCK ABSORBERS**

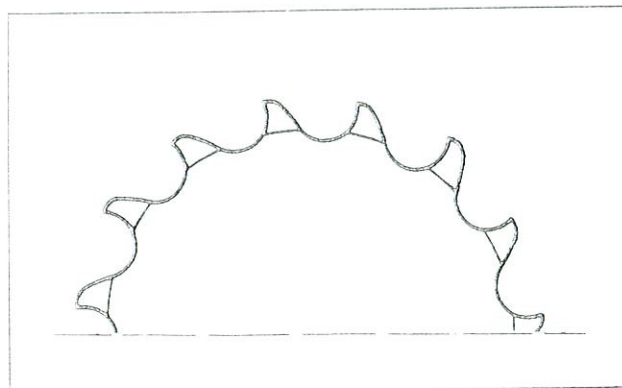
Inspect the rear drum shock absorbers for damage. If they are damaged, replace the shock absorbers.

**SPROCKET**

Inspect the sprocket teeth for wear. If they are worn as illustrated, replace the sprocket.



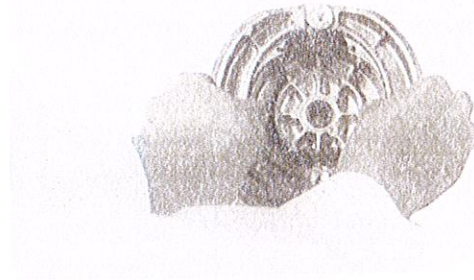
Proper wear



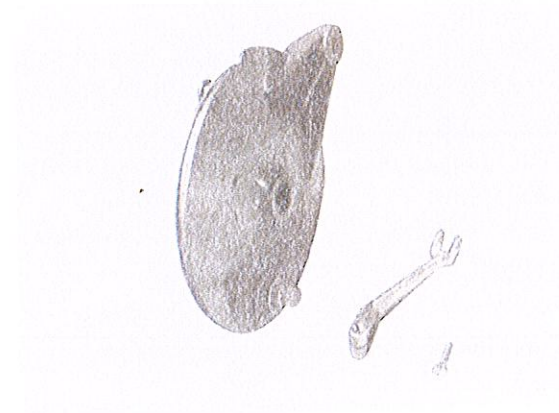
Excessive wear

REAR BRAKE PANEL DISASSEMBLY

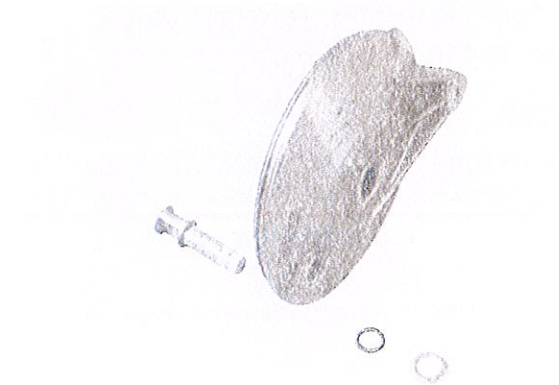
Take off brake shoes.



Remove fitting bolt and pull off brake cam lever.



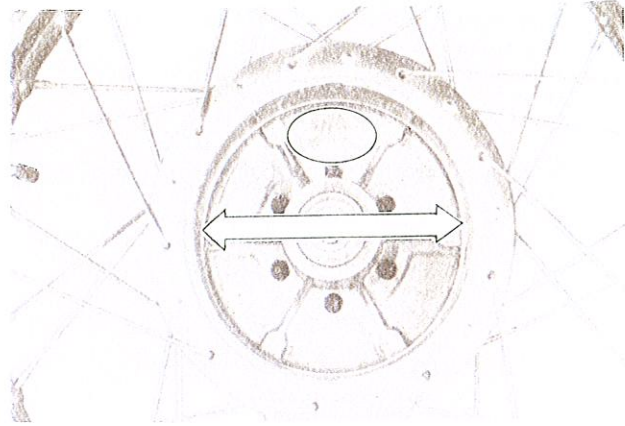
Pull off brake cam, O ring and washer.



REAR BRAKE INSPECTION**BRAKE DRUM**

Measure the brake drum I.D. to determine the extent of wear and, if the limit is exceeded by the wear noted, replace the drum. The value of this limit is indicated inside the drum.

Service Limit	160.7 mm (6.33 in)
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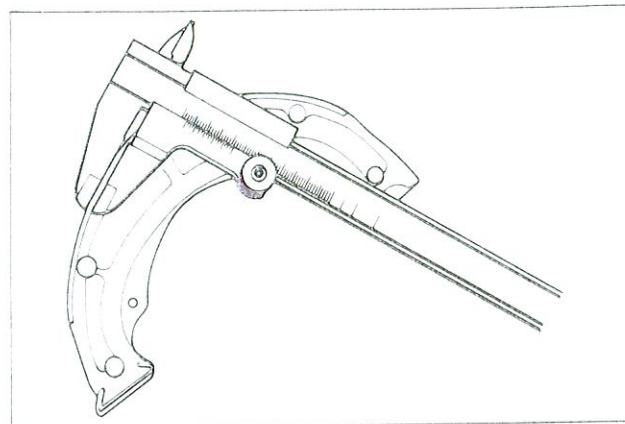
**BRAKE SHOE**

Check the brake shoe and decide whether it should be replaced or not from the thickness of the brake shoe lining.

Service Limit	1.5 mm (0.06 in)
---------------	------------------

CAUTION:

Replace the brake shoe with a set, otherwise braking performance will be adversely affected.

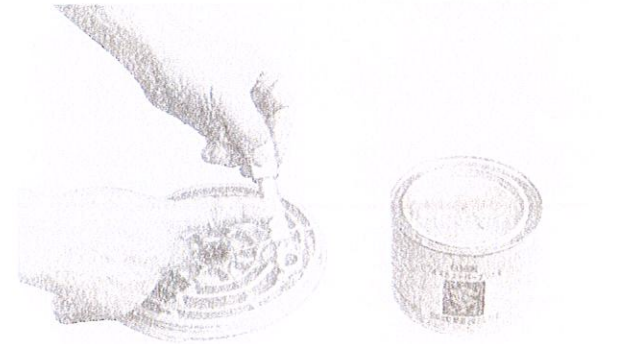
**REAR BRAKE PANEL REASSEMBLY**

Apply grease to the brake cam.

CAUTION:

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

99000-25030	Suzuki Super Grease "A"
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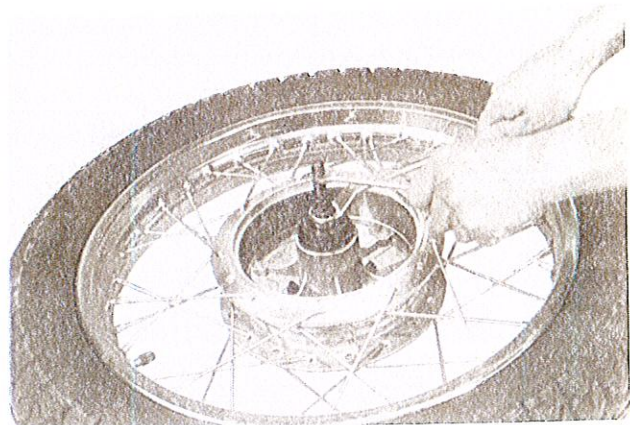


REASSEMBLY

Reassemble and remount the rear wheel in the reverse order of disassembly and removal, and also carry out the following steps:

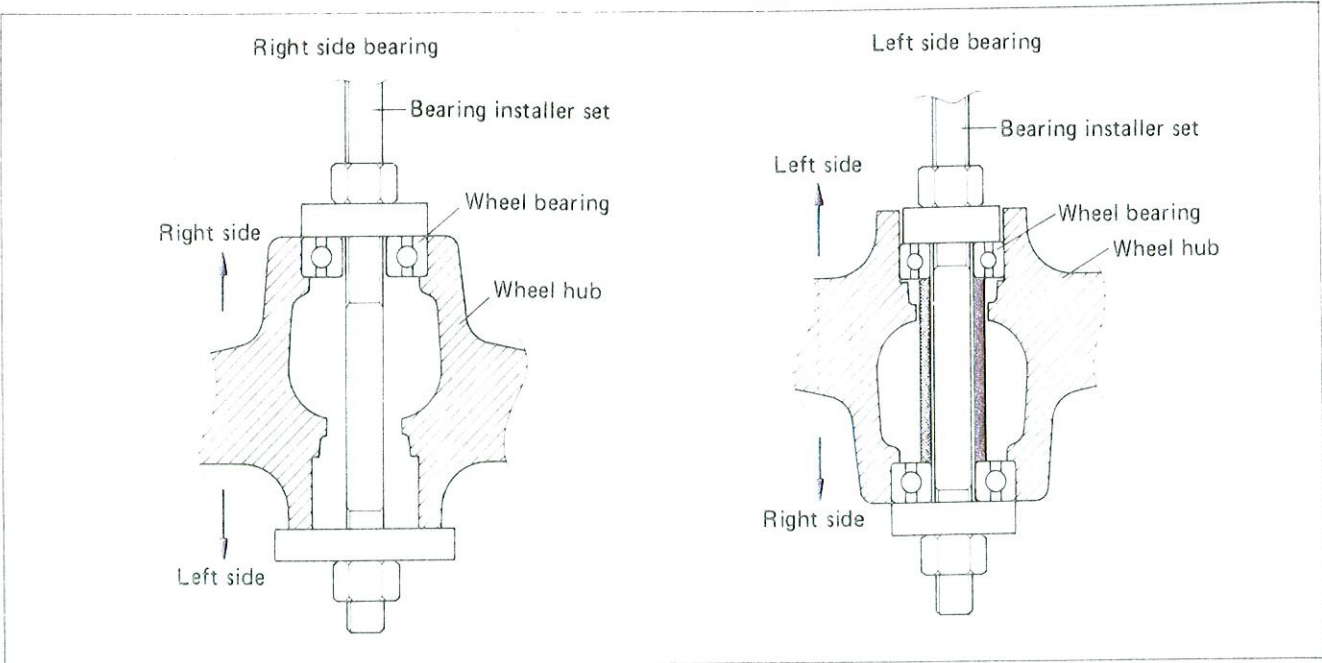
WHEEL BEARINGS

Install the wheel bearings by using special tool.



CAUTION:
First install the wheel bearing for right side.

09924-84510	Bearing installer set
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CAUTION:
Make sure to identify each bearing, the right side (rubber sealed type) ① and left side (iron plate sealed type) ② .



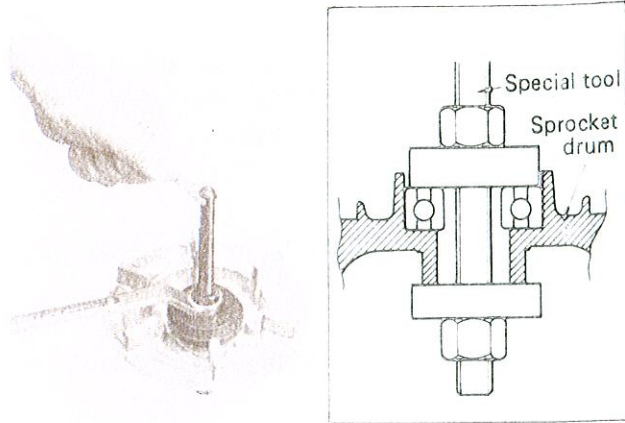
① Right side

② Left side

SPROCKET MOUNTING DRUM BEARING

Install the sprocket mounting drum bearing by using special tool as shown.

09924-84510	Bearing installer set
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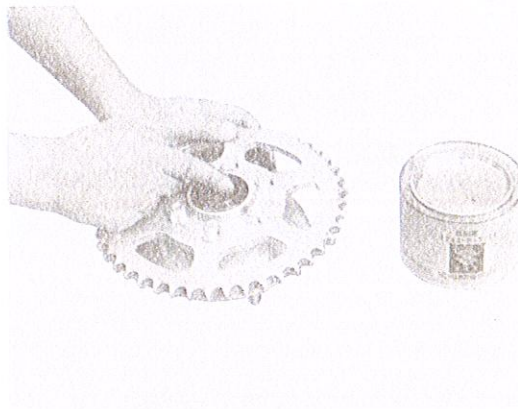
**SPROCKET MOUNTING DRUM OIL SEAL**

Install the sprocket mounting drum oil seal.



Apply grease to the sprocket mounting drum oil seal.

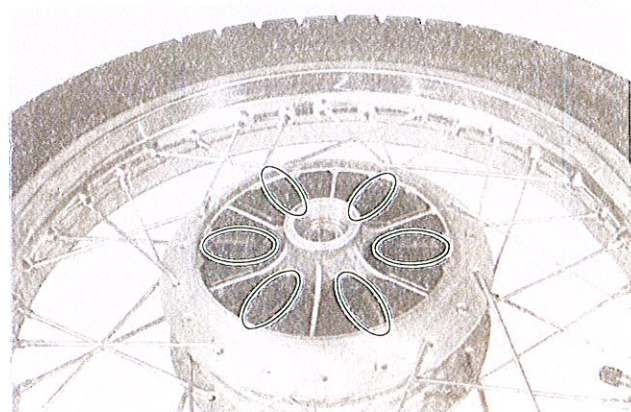
99000-25030	Suzuki super grease "A"
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**REAR DRUM SHOCK ABSORBERS****NOTE:**

When installing the rear drum shock absorbers and sprocket mounting drum into the wheel hub, applying detergent soapy water makes the job easy.

CAUTION:

Adjust the drive chain slack and rear brake pedal play after installation of the rear wheel. (See pages 2-10 and 2-13.)



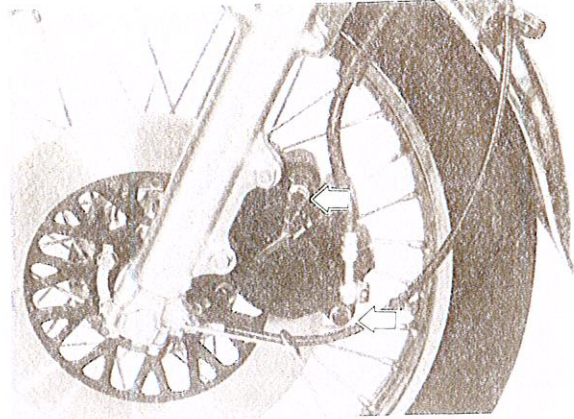
FRONT BRAKE

BRAKE PAD REPLACEMENT

Remove two bolts and take off caliper.

CAUTION:

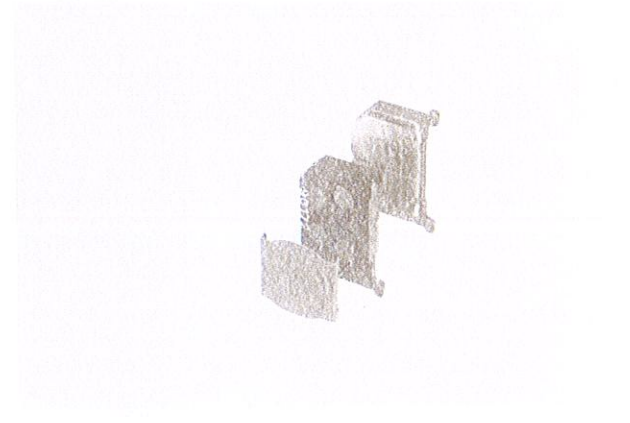
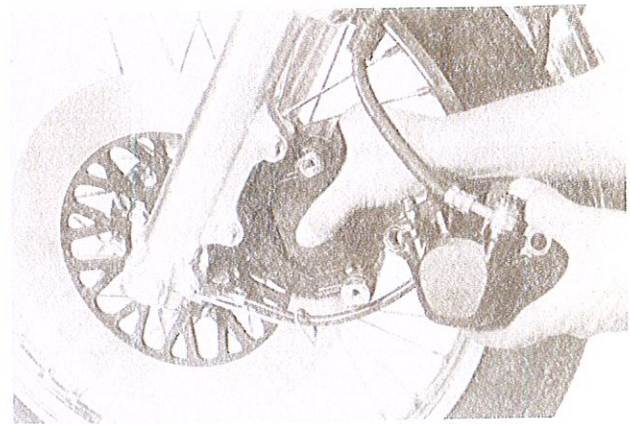
Do not operate the brake lever when removing the caliper.



Pull out brake pads with pad shim.

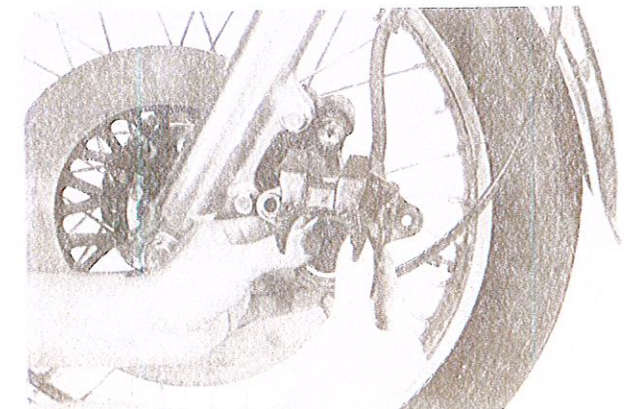
CAUTION:

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

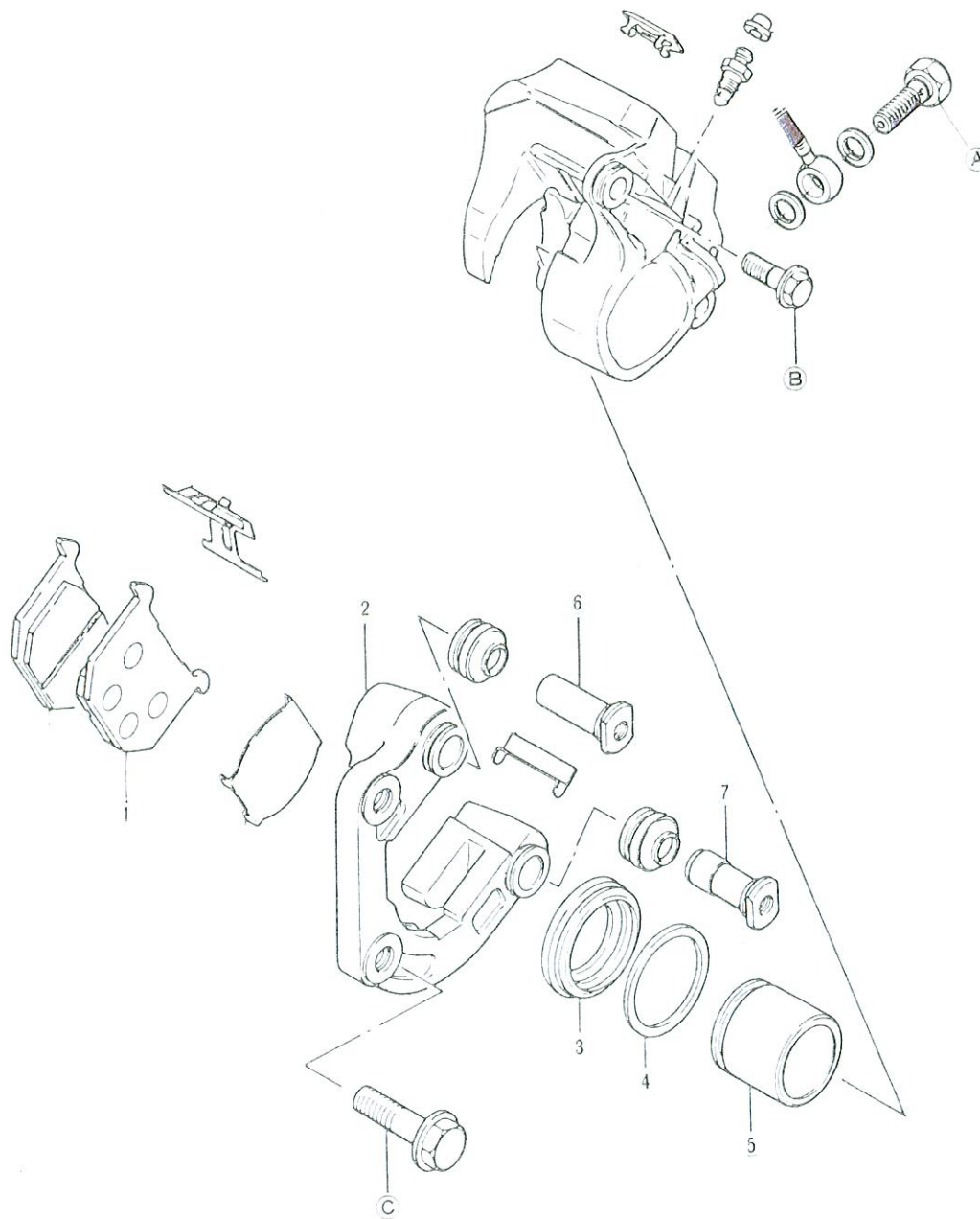


NOTE:

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



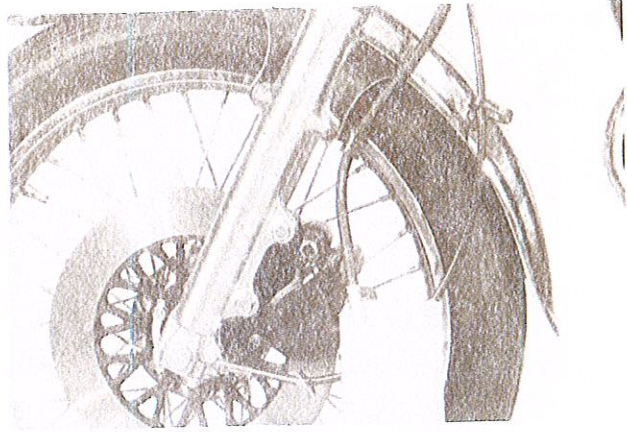
CALIPER REMOVAL AND DISASSEMBLY



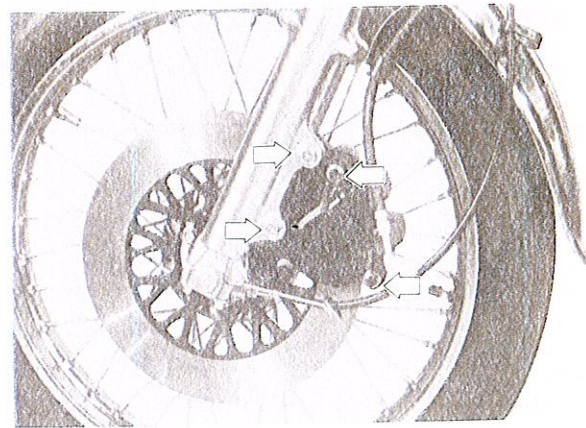
- 1 Pad set
- 2 Caliper holder
- 3 Dust cover
- 4 Piston seal
- 5 Piston
- 6 Caliper axle No. 1
- 7 Caliper axle No. 2

Tightening torque		
	kg-m	lb-ft
A	2.0 – 2.5	14.5 – 18.0
B	1.5 – 2.0	11.0 – 14.5
C	2.5 – 4.0	18.0 – 29.0

Disconnect brake hose and catch the brake fluid in a suitable receptacle.



Slightly loosen the caliper axle bolts. Remove caliper mounting bolts and take off caliper.



Remove caliper axle bolts, separate the caliper mounting bracket and caliper.

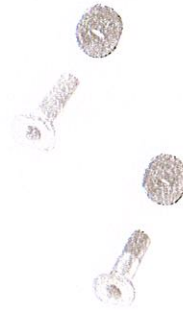


Place a rag over the piston to prevent popping up. Force out the piston by using air gun.

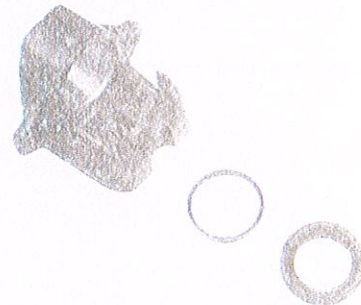
CAUTION:
Do not use high pressure air for preventing piston damage.



Remove caliper axles and dust boots.



Remove piston boot and piston seal.



CALIPER AND DISC INSPECTION

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



Inspect the piston surface for any flaw or other damage.

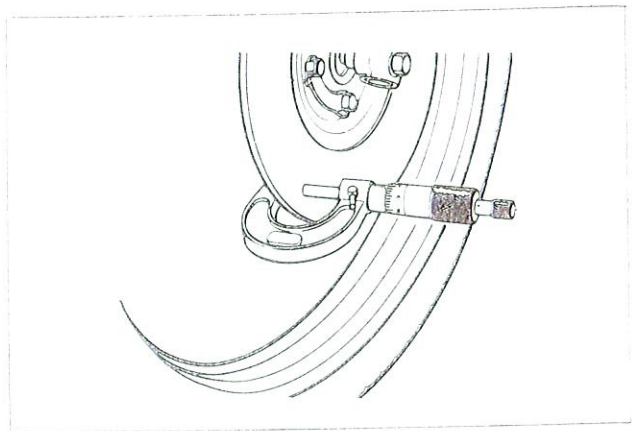


Inspect the rubber parts for damage and wear.



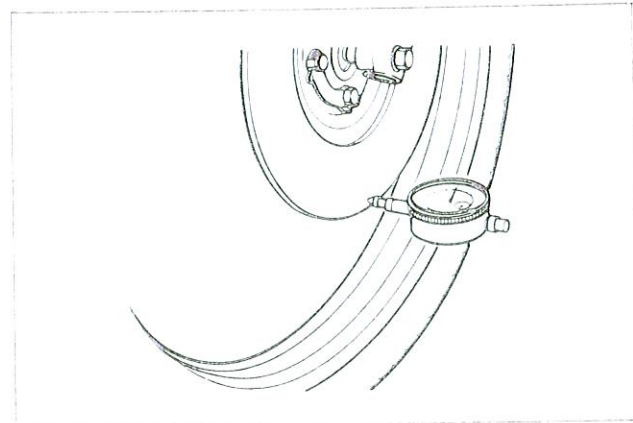
Using a micrometer check the disc for wear. Its thickness can be checked with disc and wheel in place. The service limit is specified for the thickness of the disc:

09900-20201	Micrometer (0 – 25 mm)
Service Limit	4.5 mm (0.18 in)



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

09900-20606	Dial gauge (1/100 mm)
Service Limit	0.30 mm (0.012 in)



CALIPER REASSEMBLY

Reassemble the caliper in the reverse orders of disassembly and by taking the following steps:

CAUTION:

Wash the caliper components with fresh brake fluid before reassembly.

Never use cleaning solvent or gasoline to wash them.

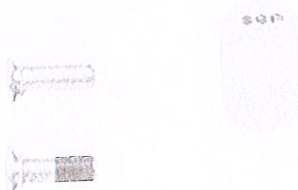
Apply brake fluid to the caliper bore and piston to be inserted into the bore.



Apply grease to the caliper axles.

99000-25100

SUZUKI silicone grease

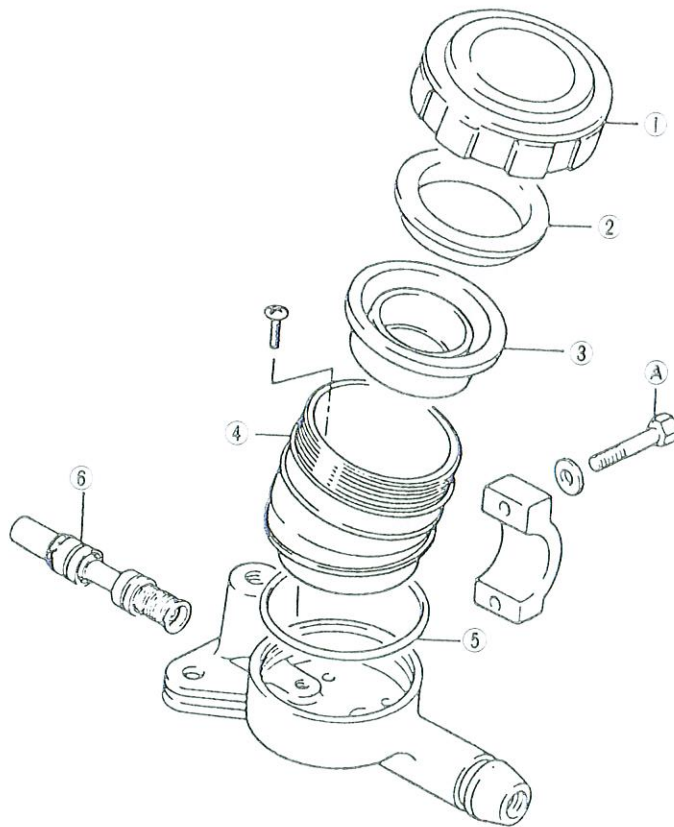


Install the brake pad as shown.

**CAUTION:**

Bleed the air from the brake system after reassembling caliper (See page 2-11.).

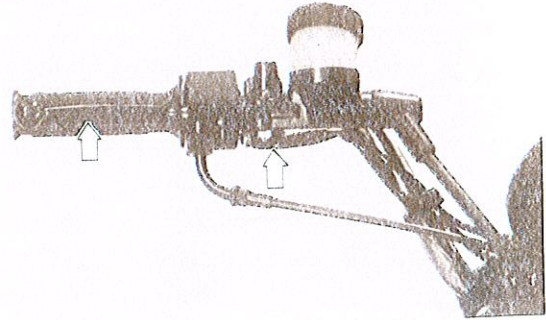
MASTER CYLINDER REMOVAL AND DISASSEMBLY



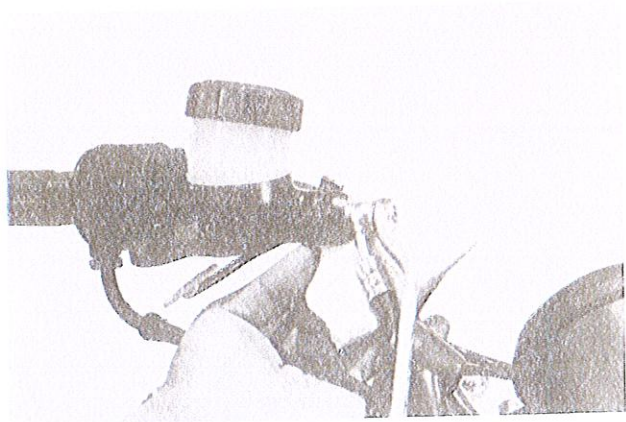
- 1 Reservoir cap
- 2 Diaphragm plate
- 3 Diaphragm
- 4 Reservoir
- 5 O ring
- 6 Piston and cup set

Tightening torque		
	kg-m	lb-ft
A	0.5 – 0.8	3.5 – 6.0

Remove brake light switch and brake lever.



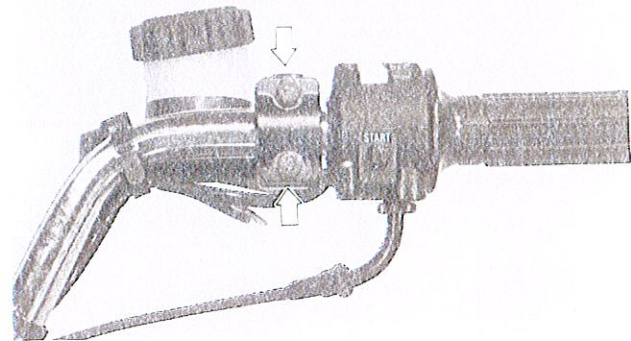
Place a rag underneath the union bolt on the master cylinder to catch spilled drops of brake fluid. Unscrew the union bolt and disconnect the brake hose/master cylinder joint.



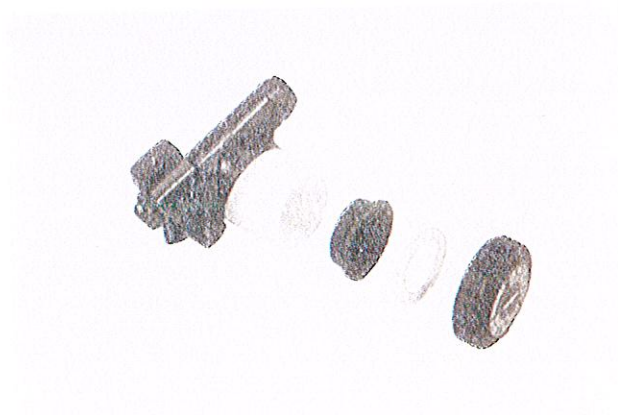
CAUTION:

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

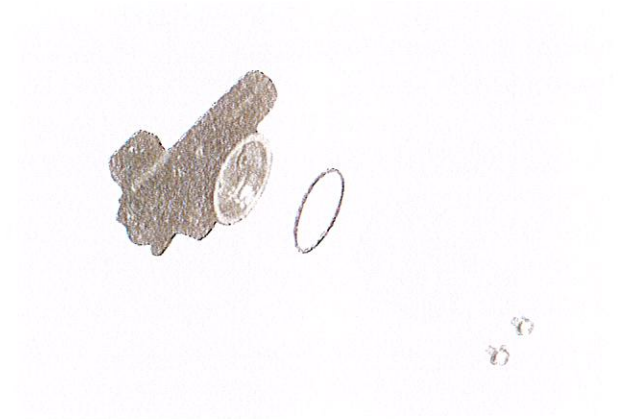
Remove two fitting bolts and take off master cylinder.



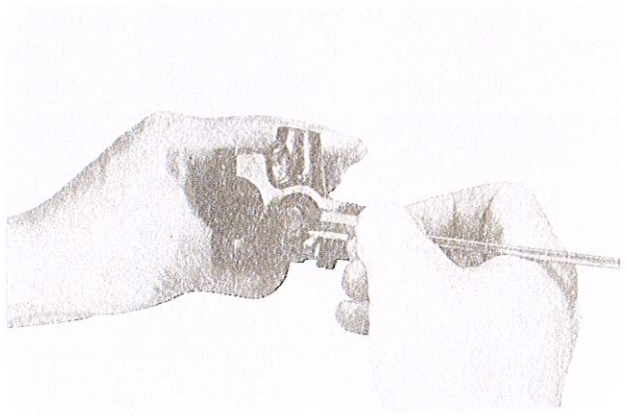
Remove filler cap, diaphragm plate, diaphragm, and drain brake fluid.



Pull out the reservoir and O ring by removing two fitting screws.



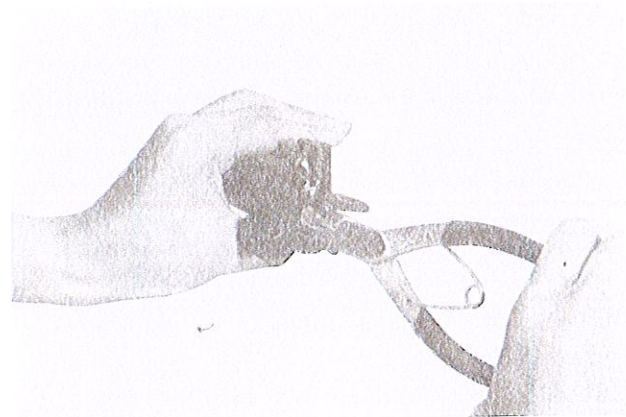
Draw out dust seal boot.



Remove circlip by using special tool.

09900-06108

Snap ring pliers

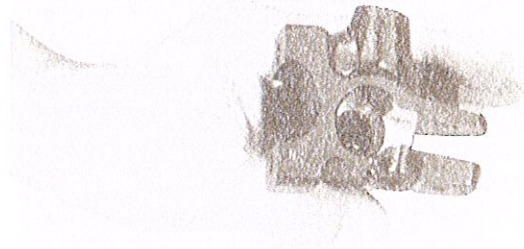


Pull out piston, primary cup and spring.



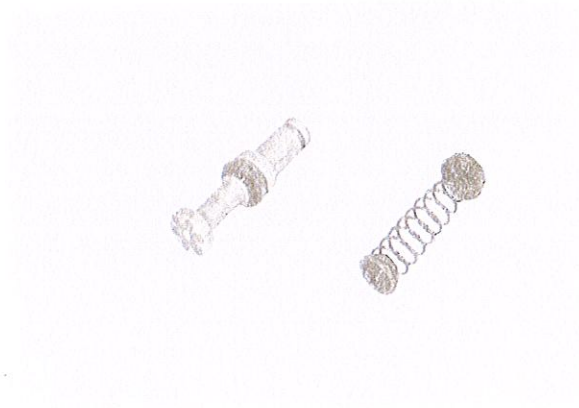
MASTER CYLINDER INSPECTION

Inspect the cylinder bore wall for any scratch or other damage.



Inspect the piston surface for scratches or other damage.

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



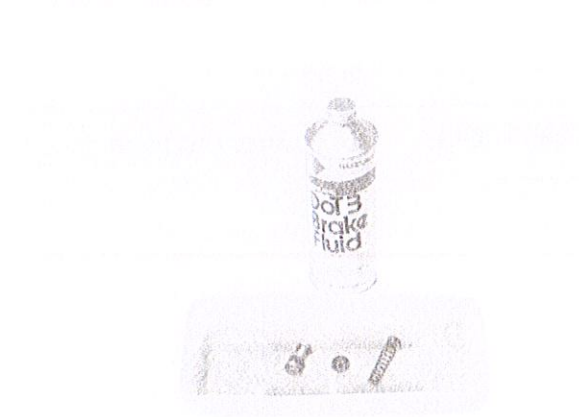
MASTER CYLINDER REASSEMBLY

Reassemble the master cylinder in the reverse orders of disassembly and by taking the following steps:

CAUTION:

Wash the master cylinder components with fresh brake fluid before reassembly. Never use cleaning solvent or gasoline to wash them.

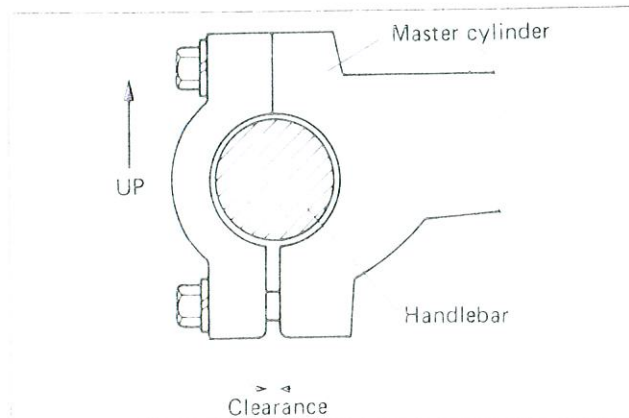
Apply brake fluid to the cylinder bore and all the internals to be inserted into the bore.



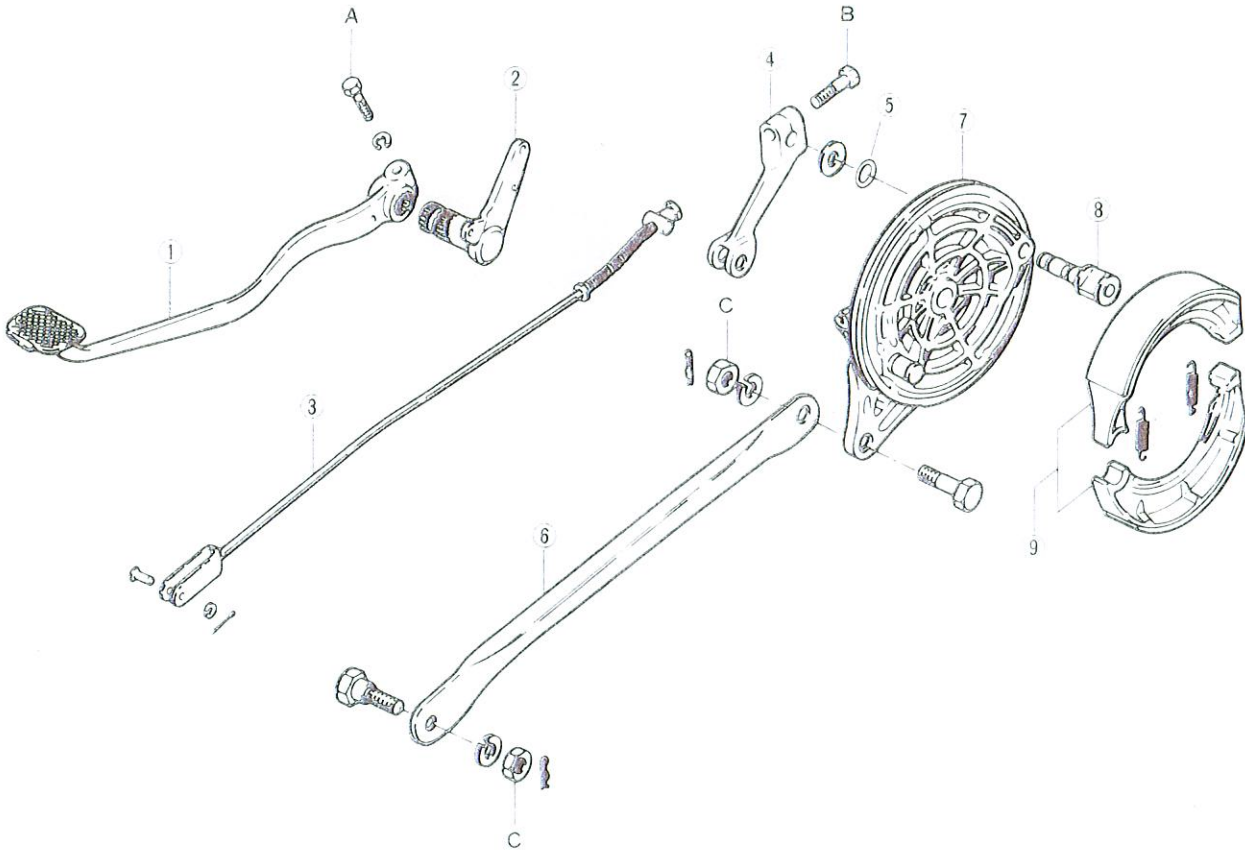
When remounting the master cylinder to the handlebars, first tighten the clamp bolt for top side as shown.

CAUTION:

Adjust the front brake light switch after installation. Bleed the air from the brake fluid circuit after reassembling master cylinder.



REAR BRAKE



- 1) Brake pedal
- 2) Brake pedal rod arm
- 3) Brake rod Ass'y
- 4) Brake cam lever
- 5) O ring
- 6) Torque link
- 7) Brake panel
- 8) Brake cam
- 9) Brake shoe

Tightening torque		
	kg-m	lb-ft
A	1.0 - 1.5	7.0 - 11.0
B	0.5 - 0.8	3.5 - 6.0
C	2.0 - 3.0	14.5 - 21.5

REAR BRAKE DRUM

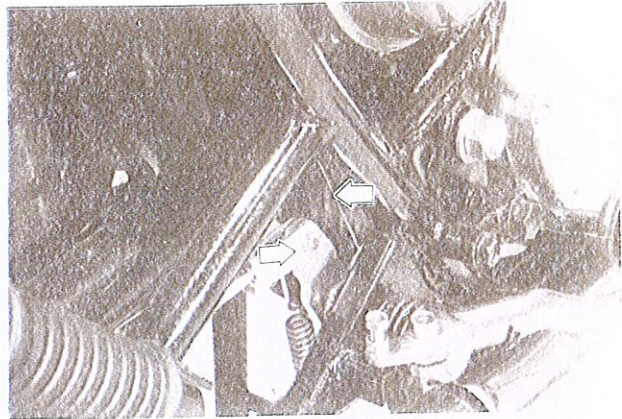
When removing, inspecting and reassembling the rear brake drum, refer to the section of the rear wheel in the pages 7-7 through 7-15.

BRAKE PEDAL REMOVAL

Pull off cotter pin and disconnect brake rod. Disconnect brake light switch rod.

CAUTION:

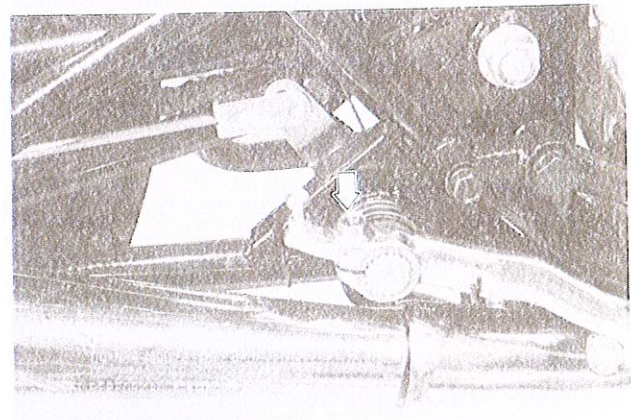
Do not reuse the cotter pin.



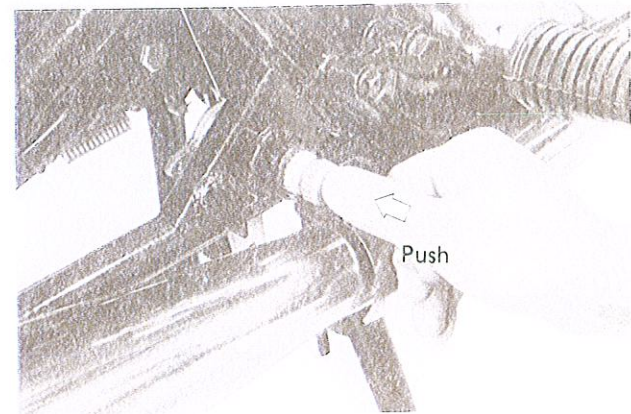
Remove the brake pedal securing bolt and pull off brake pedal.

NOTE:

Unhook the return spring when pulling off brake pedal.



Draw out brake pedal rod arm.



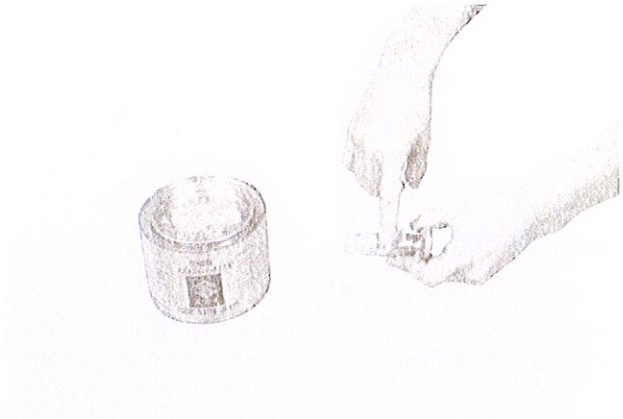
BRAKE PEDAL REASSEMBLY

Reassemble the brake pedal in the reverse order of removal and also carry out the following steps.

BRAKE PEDAL ROD ARM

Apply grease to the brake pedal rod arm shaft.

99000-25030	Suzuki Super Grease "A"
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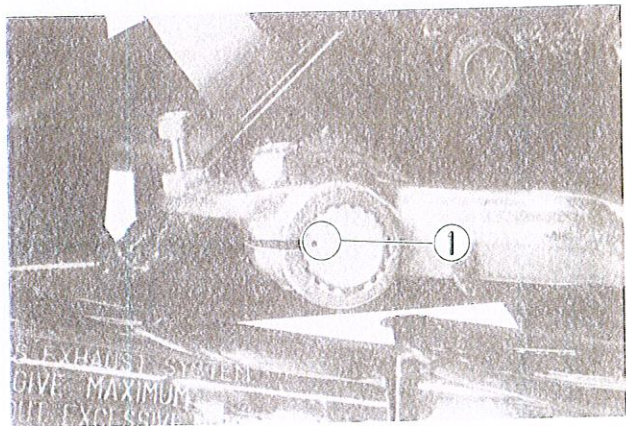


BRAKE PEDAL

When installing the rear brake pedal, align the brake pedal groove with punched mark ① provided on the end face of brake pedal shaft.

CAUTION:

Adjust the brake pedal height and rear brake light switch after remounting. (Refer to the page 2-13).

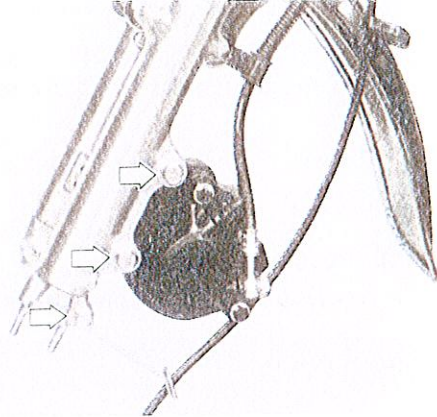


FRONT FORK

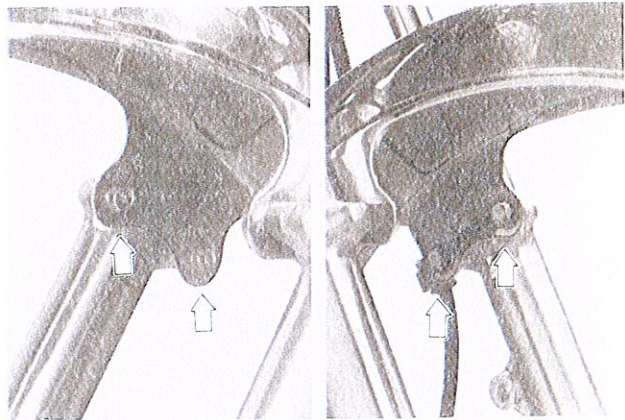
REMOVAL

Remove front wheel (See page 7-1).

Take off front brake caliper and disconnect speedometer cable guide.



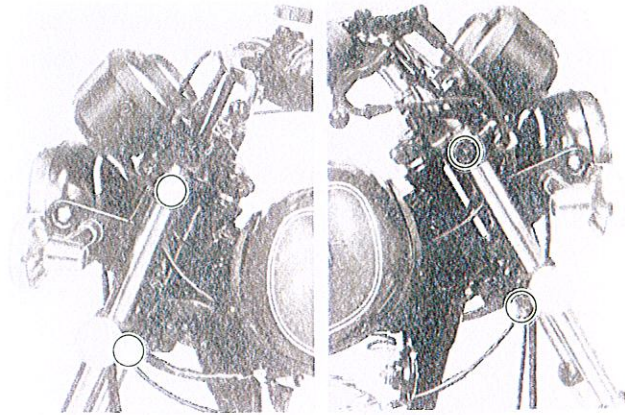
Remove front fender.



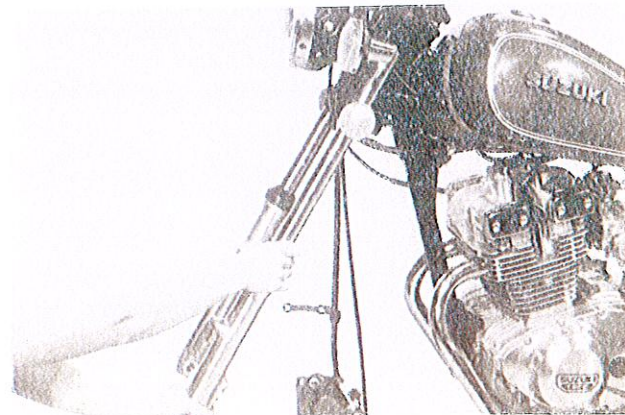
Loosen the steering stem upper and lower clamp bolts.

NOTE:

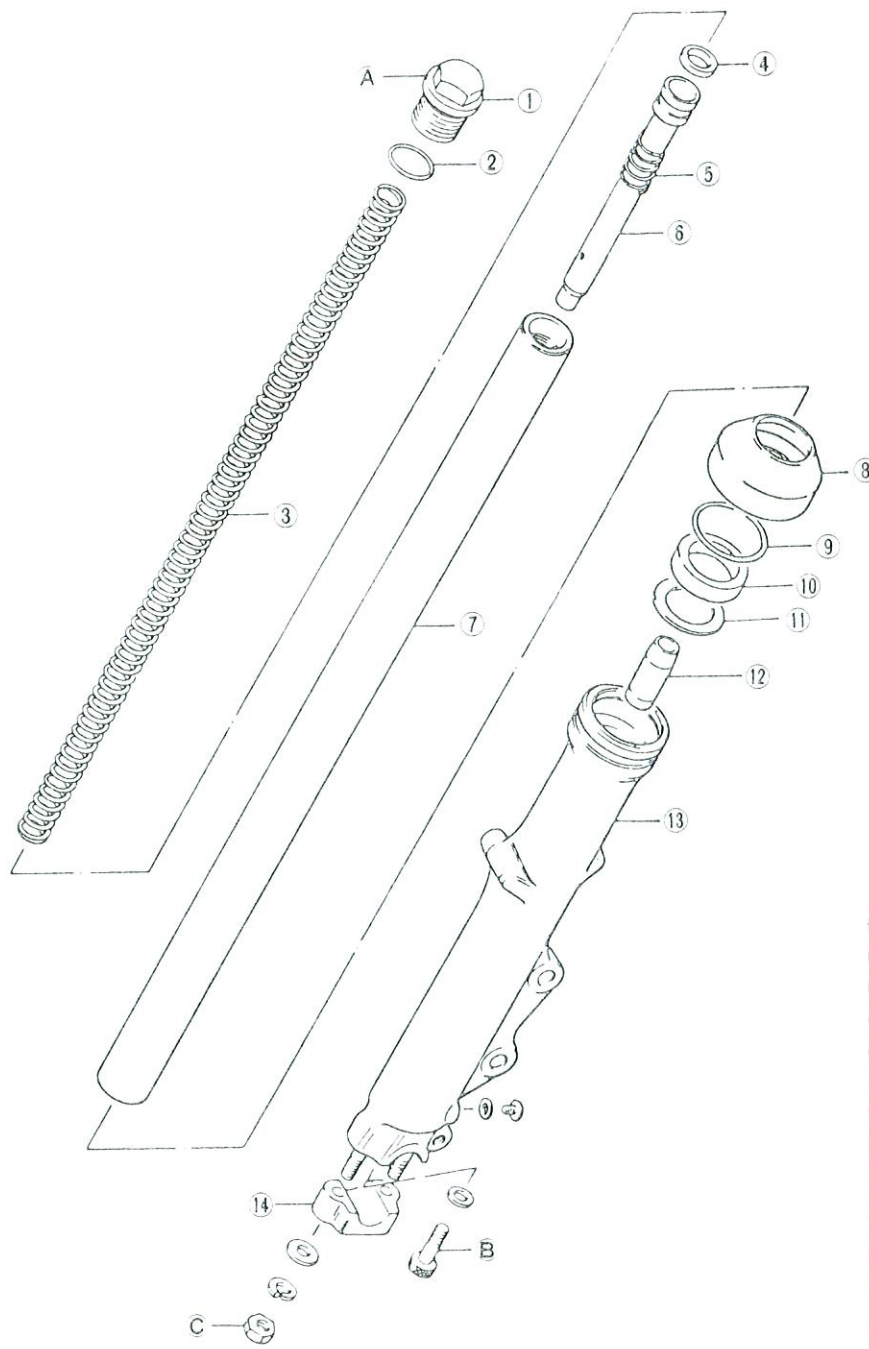
Slightly loosen the front fork cap bolt to facilitate later disassembly.



Pull down right and left front fork assemblies.



DISASSEMBLY



- ① Cap bolt
- ② O ring
- ③ Fork spring
- ④ Damper rod ring
- ⑤ Rebound spring
- ⑥ Damper rod
- ⑦ Inner tube
- ⑧ Dust seal
- ⑨ Stopper ring
- ⑩ Oil seal
- ⑪ Oil seal spacer
- ⑫ Oil lock piece
- ⑬ Outer tube
- ⑭ Axle holder

Tightening torque		
	kg-m	lb-ft
A	1.5 - 3.0	11.0 - 21.5
B	1.5 - 2.5	11.0 - 18.0
C	1.5 - 2.5	11.0 - 18.0

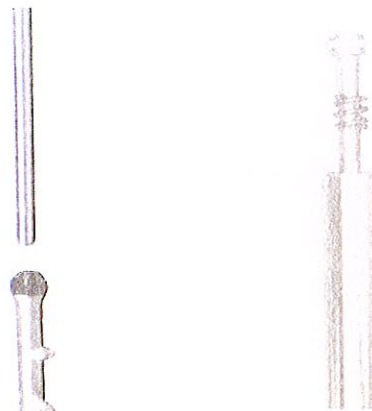
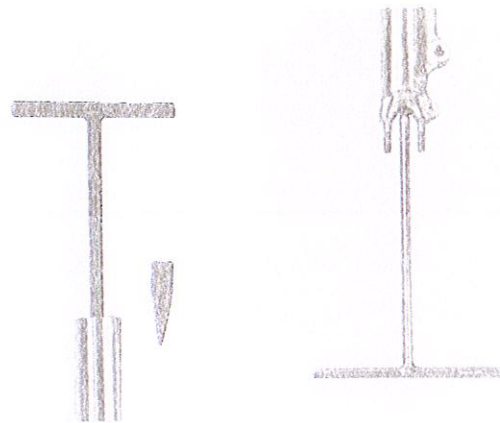
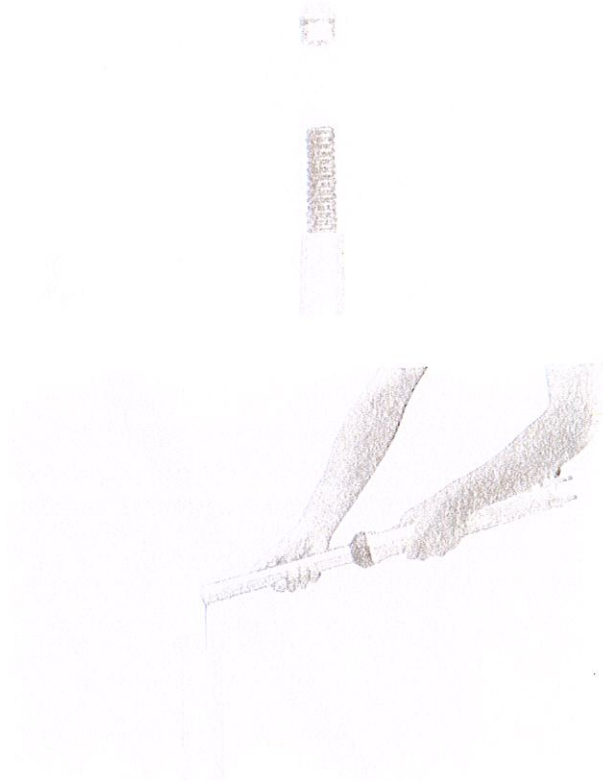
Remove front fork cap bolt and draw out fork spring.

Invert the fork and stroke it several times to let out the oil inside. Under this condition (inverted condition), hold the fork for a few minutes.

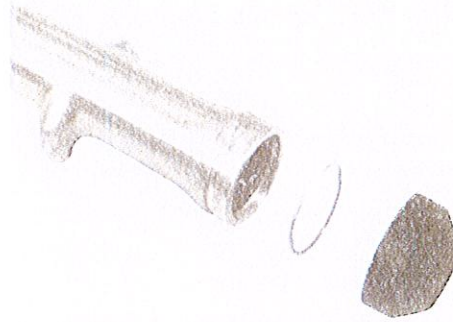
Remove damper rod securing bolt by using special tools.

09914-25811	"T" type hexagon wrench
09940-34520	T handle
09940-34561	Attachment "D"

Pull out inner tube.
Draw out damper rod with rebound spring and ring.



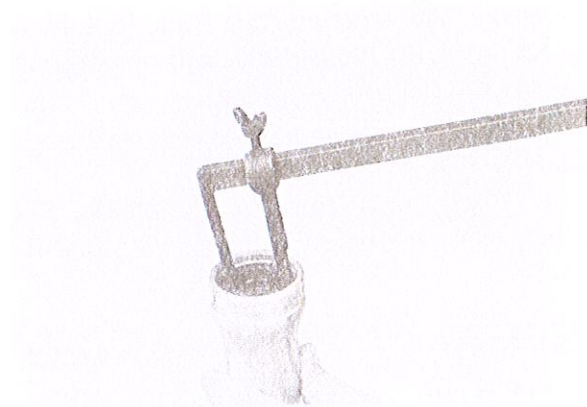
Remove dust seal and snap ring.



Remove the oil seal by using special tool.

09913-50121	Oil seal remover
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CAUTION:
The removed oil seal should be replaced.



INSPECTION

FORK SPRING

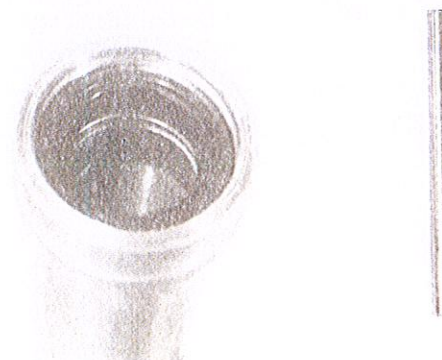
Measure the fork spring free length.
If it is shorter than service limit, replace it.

Service Limit	Upper	103 mm (4.1 in)
	Lower	391 mm (15.4 in)



INNER TUBE AND OUTER TUBE

Inspect both inner and outer tubes sliding surfaces for any scuffing.



DAMPER ROD RING

Inspect damper rod ring for wear and damage.

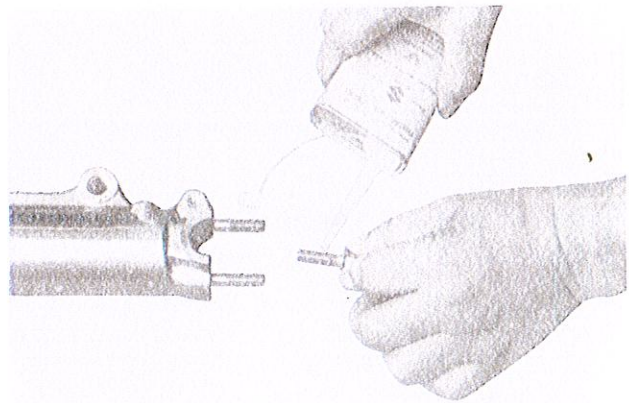


REASSEMBLY

Reassemble and remount the front fork in the reverse order of disassembly and removal and also carry out the following steps:

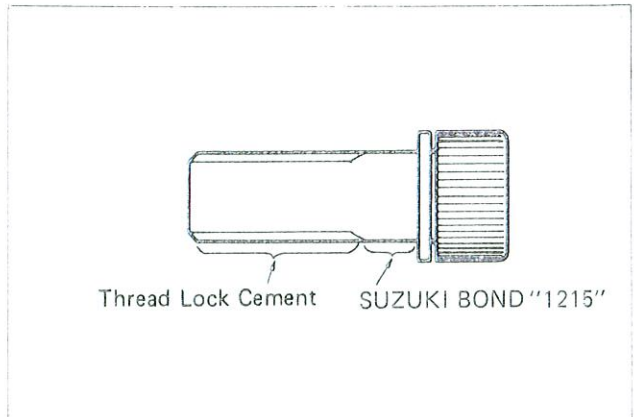
DAMPER ROD BOLT

Apply Thread Lock Cement and Bond No. 1215 to the damper rod bolt and tighten with specified torque.



09914-25811	"T" type hexagon wrench
99014-31110	SUZUKI BOND "1215"
99000-32040	Thread Lock Cement

Tightening torque	1.5 – 2.5 kg-m (11.0 – 18.0 lb-ft)
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OIL SEAL

Install oil seal to the outer tube by using special tool.

09940-53311	Oil seal installer
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FORK OIL

For the fork oil, be sure to use a motor oil whose viscosity rating meets specifications below.

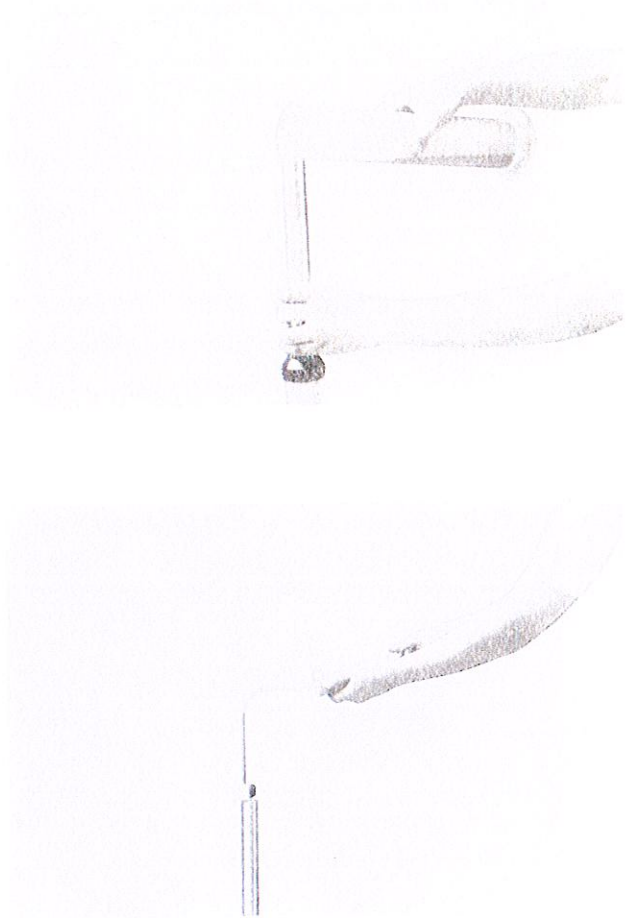
Fork oil	Fork oil #15
Capacity	150 ml (5.07 US oz)

Adjust the fork oil level with a special tool.

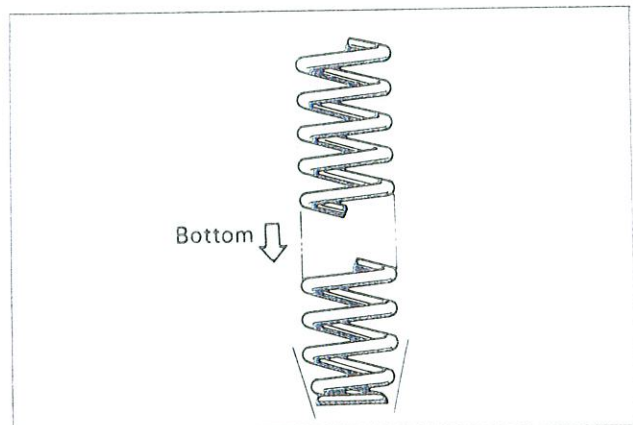
NOTE:

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

09943-74111	Fork oil level gauge
Oil level	186 mm (7.3 in)

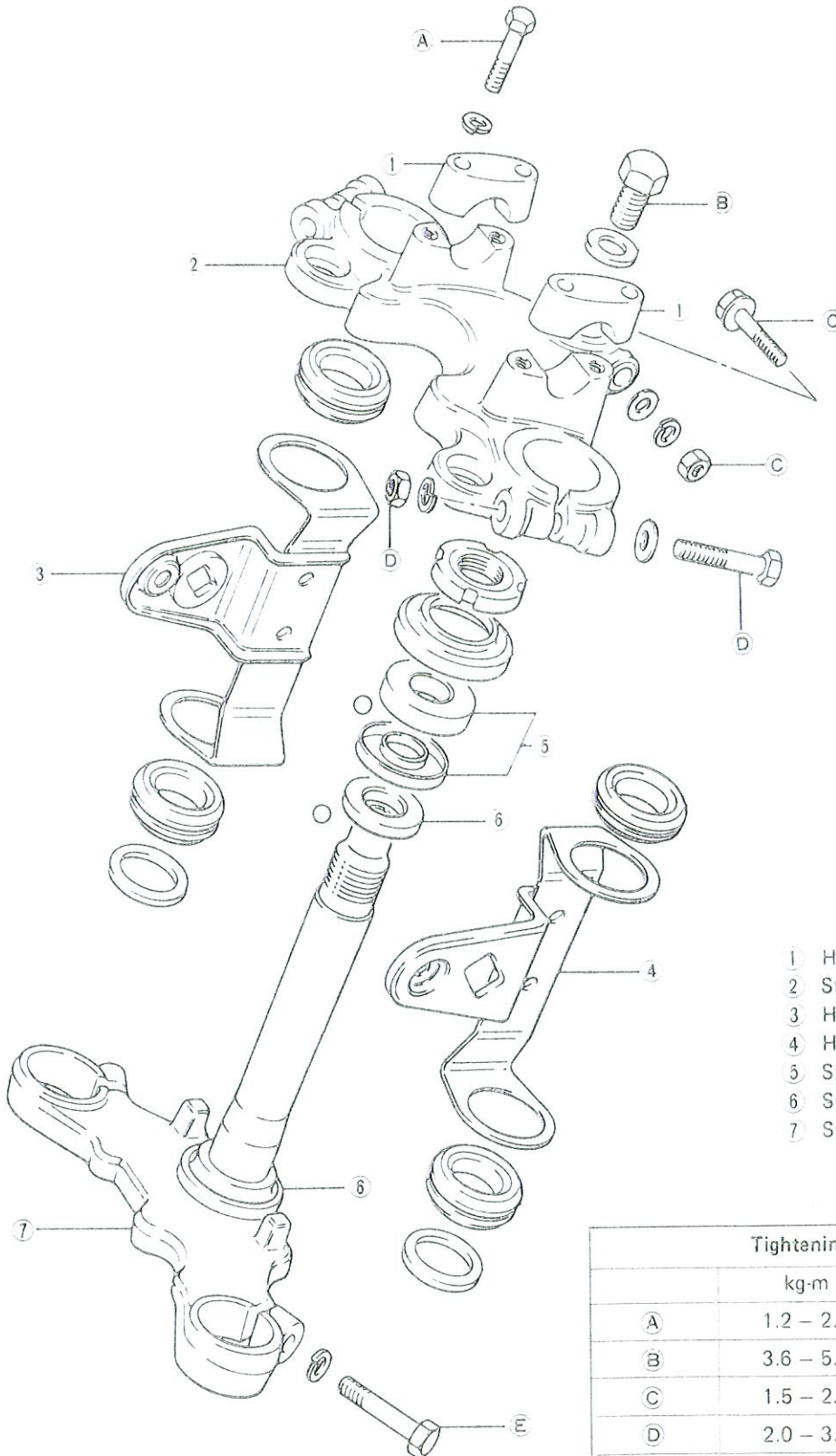
**FORK SPRING**

When installing the fork spring, small diameter end should position in bottom.



STEERING STEM

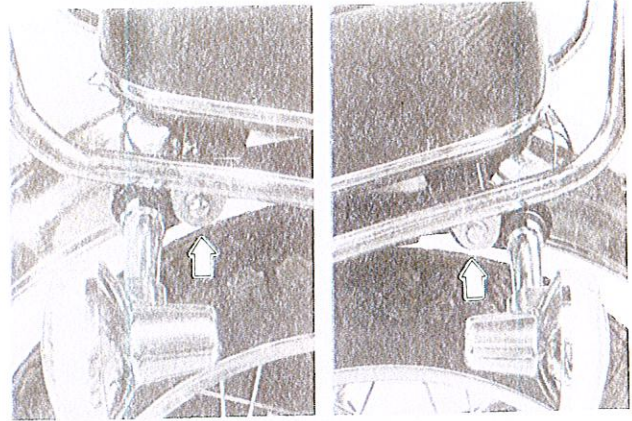
REMOVAL AND DISASSEMBLY



- 1 Handlebar clamp
- 2 Steering stem upper bracket
- 3 Headlight bracket (R)
- 4 Headlight bracket (L)
- 5 Steering stem bearing (Upper)
- 6 Steering stem bearing (Lower)
- 7 Steering stem lower bracket

Tightening torque		
	kg-m	lb-ft
A	1.2 - 2.0	8.5 - 14.5
B	3.6 - 5.2	26.0 - 37.5
C	1.5 - 2.5	11.0 - 18.0
D	2.0 - 3.0	14.5 - 21.5
E	2.5 - 4.0	18.0 - 29.0

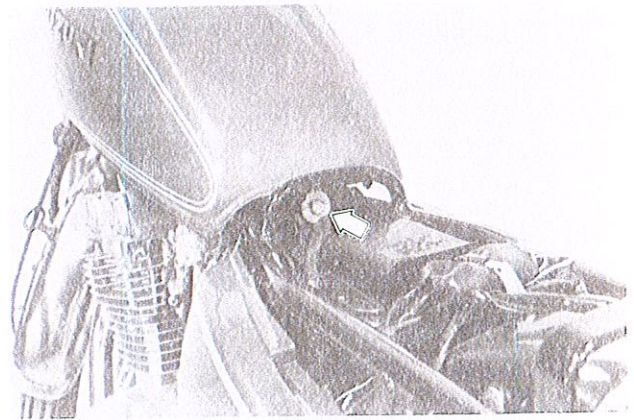
Remove front wheel (See page 7-1).
Remove the right and left front fork assemblies.
(See page 7-29).
Remove seat.



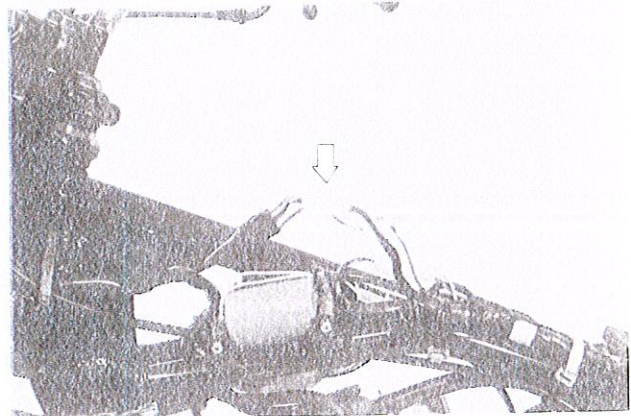
Take off fuel tank.

NOTE:

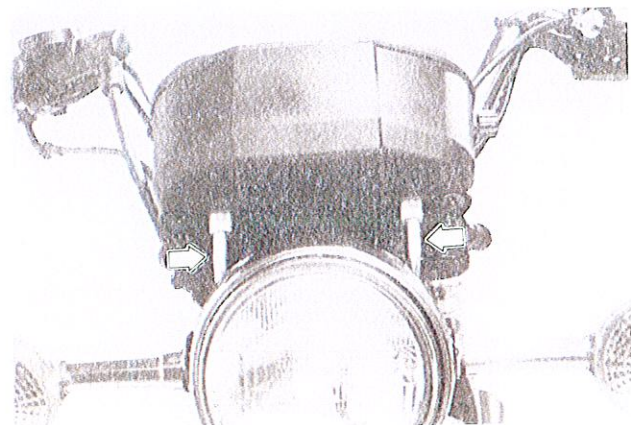
When taking off fuel tank, disconnect fuel hose and vacuum hose with turning the fuel cock lever to "ON" or "RES" position.



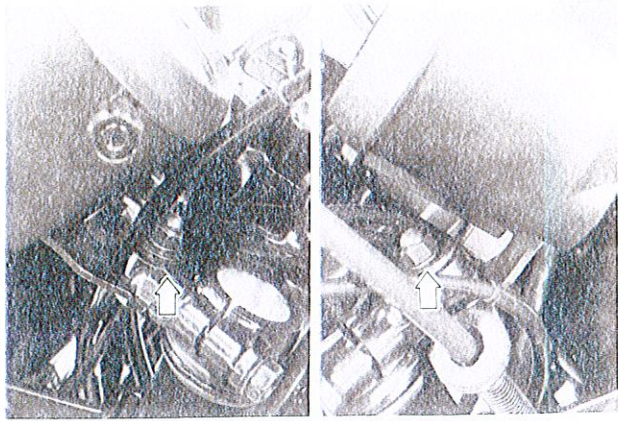
Disconnect lead wires from the combination meter.



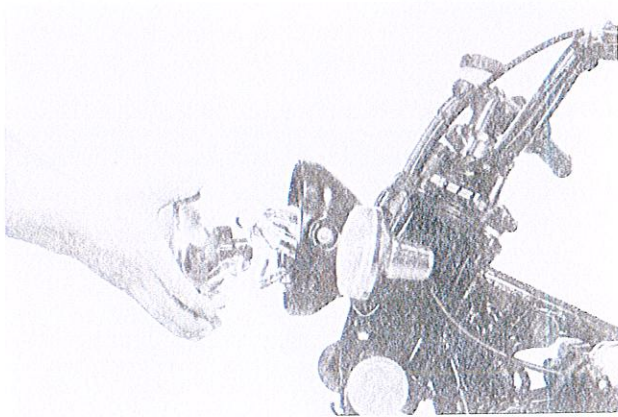
Disconnect tachometer cable and speedometer cable.



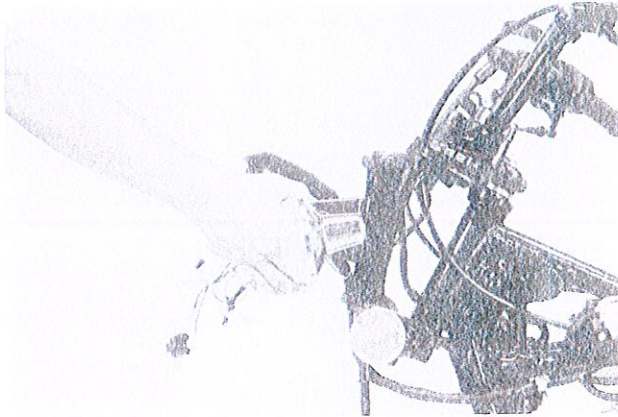
Remove mounting bolts and combination meter.



Remove headlight assembly and disconnect lead wires.



Remove headlight housing with right and left turn signal lights.



Remove ignition switch by using special tool.

09911-73730

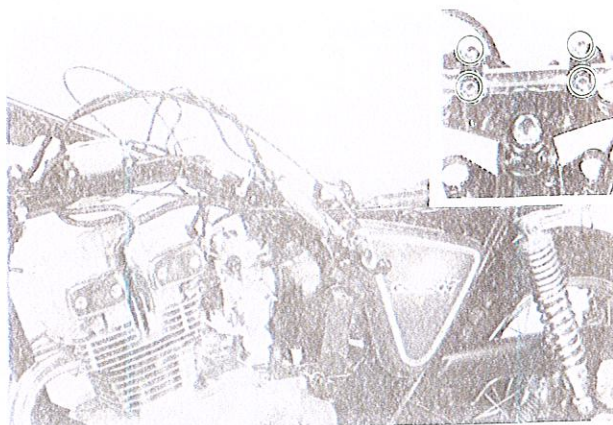
T type hexagon wrench



Remove handlebars clamp bolts and take off handlebars.

NOTE:

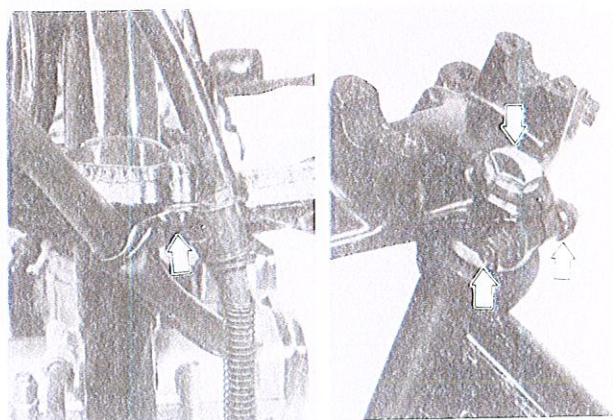
Put the handlebars on the frame.



Remove wiring harness clamp and brake hose clamp bolt.

Remove steering stem head bolt and loosen clamp bolt.

Take off steering stem upper bracket.



Remove steering stem nut by using special tool.

NOTE:

Hold the steering stem lower bracket by hand to prevent dropping.

09940-14910

Steering nut
socket wrench

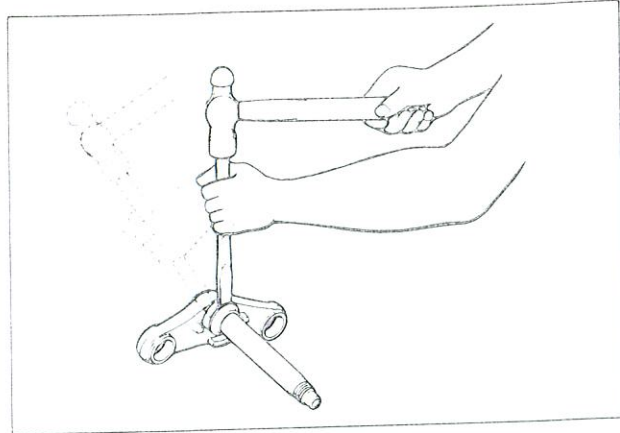


Draw out bearing outer race and steel balls.
Take down steering stem lower bracket.

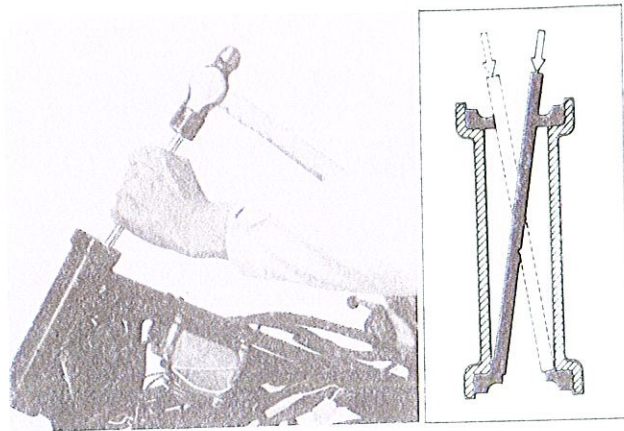
Number of balls	Upper	18
	Lower	18



Remove bearing outer race by using a chisel.



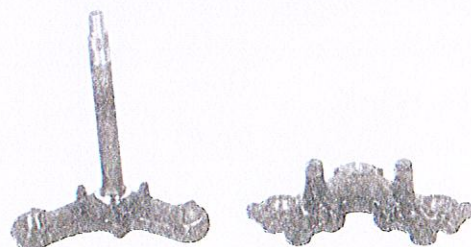
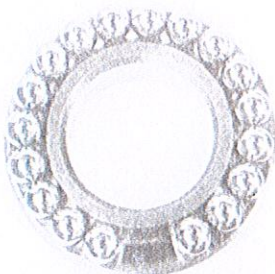
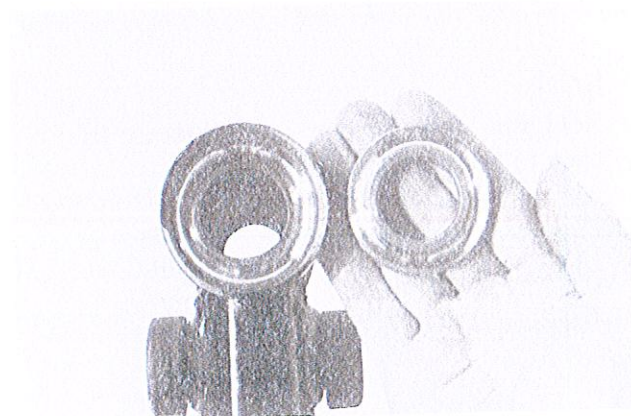
Push out bearing inner races, upper and lower.



INSPECTION

Inspect and check the removed parts for the following abnormalities.

- Bearing race wear and brinelling.
- Worn or damaged steel balls.
- Distortion of steering stem.



REASSEMBLY

Reassemble and remount the steering stem in the reverse order of disassembly and removal and also carry out the following steps:

INNER RACES

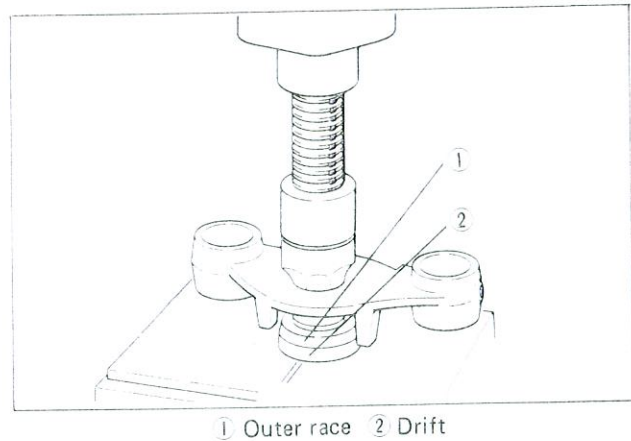
Press in the upper and lower inner races by using special tool.

09941-34511	Steering inner race installer
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OUTER RACES

Press in the lower bearing outer race.



STEEL BALL

Apply grease when installing the upper and lower steel balls.

99000-25030	Suzuki super grease "A"	
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Number of balls	Upper	18
	Lower	18

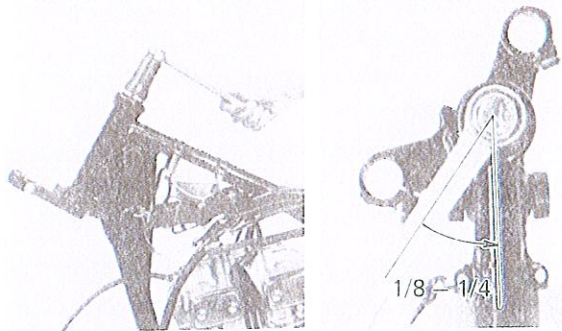


Tighten the steering stem nut by using special tool until resistance is felt, then loosen it $1/8 - 1/4$ turn.

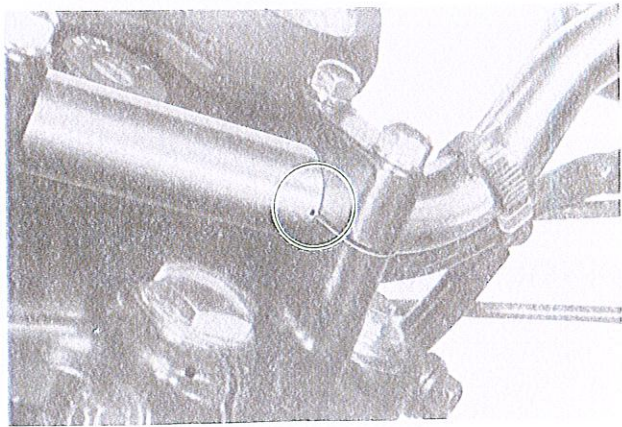
Make sure that the steering turns smoothly and easily left to right.

NOTE:

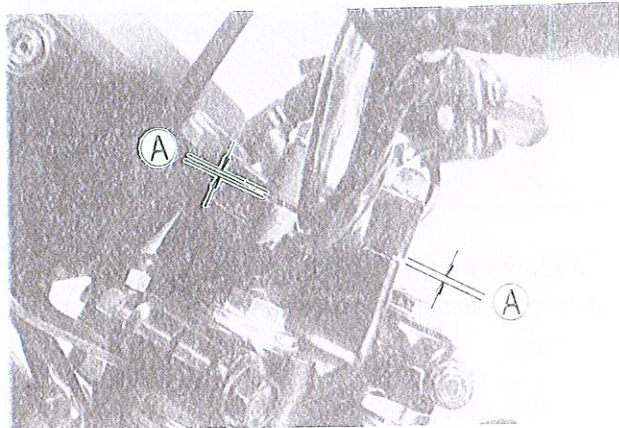
This adjustment will vary from motorcycle to motorcycle.

**HANDLEBARS**

Set the handlebars to match its dent mark to the mating surface between steering stem and handlebars clamp as shown.

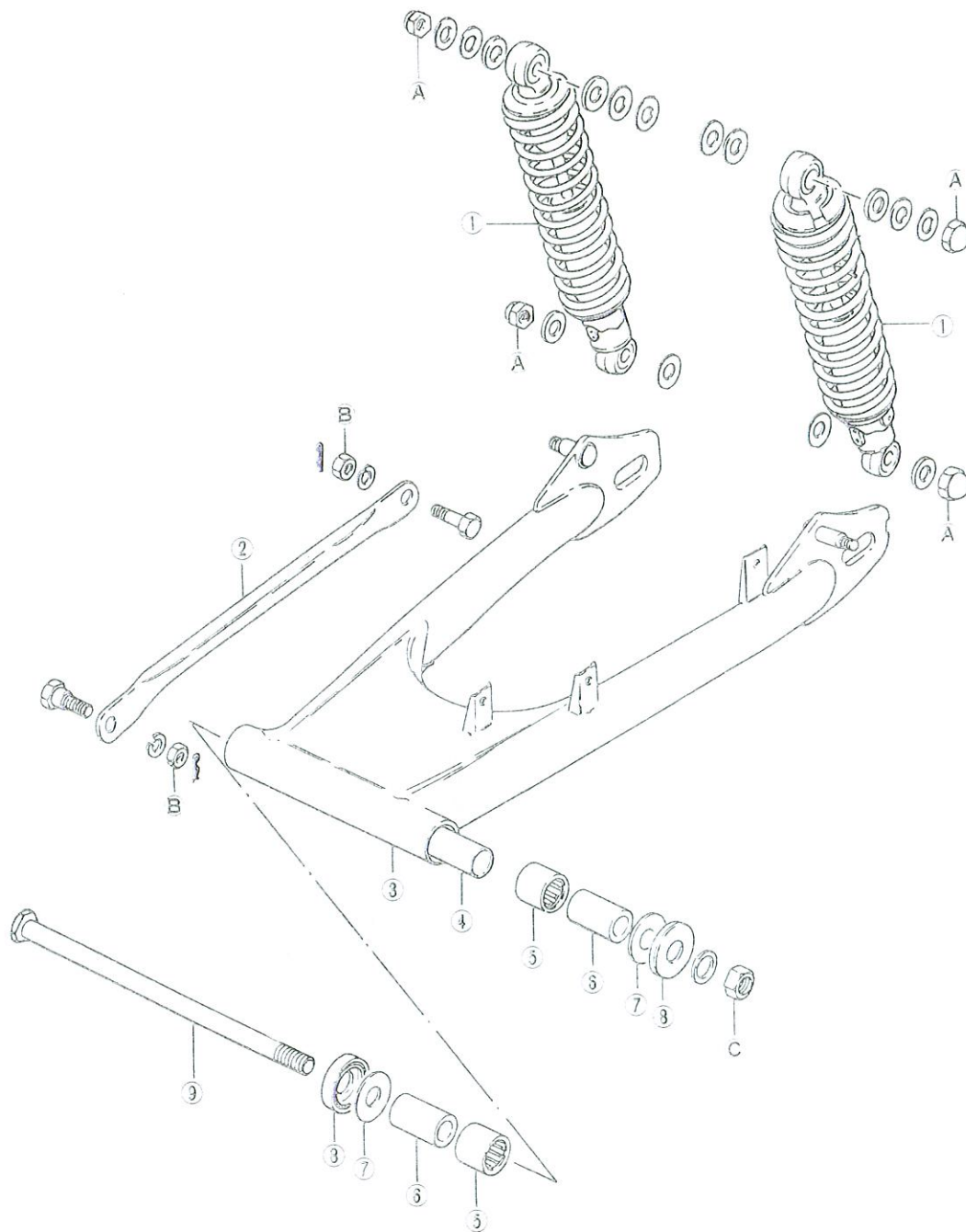


Secure the handlebars clamp in such a way that the clearances **A** ahead of and behind the handlebars are equalized.



REAR SUSPENSION

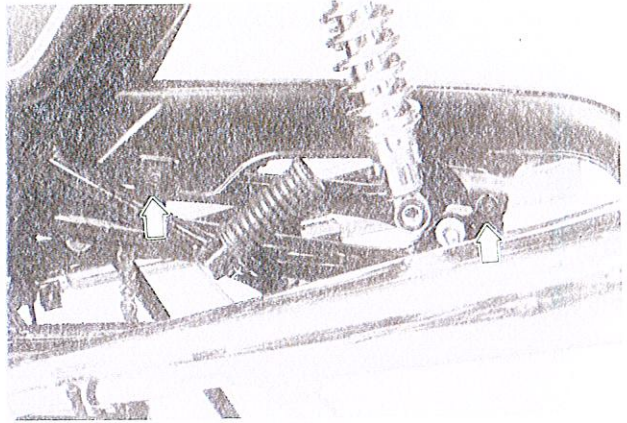
REMOVAL AND DISASSEMBLY



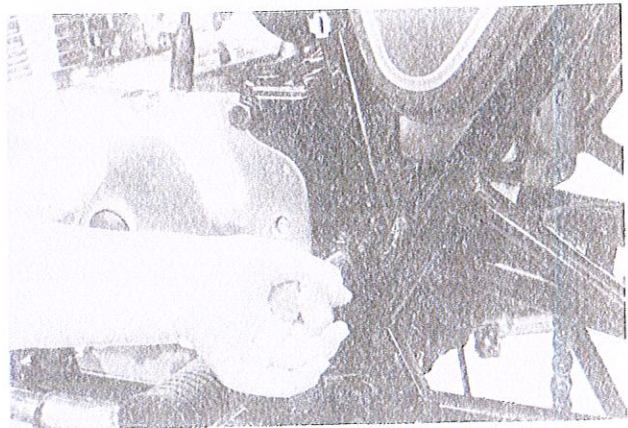
- ① Shock absorber
- ② Torque link
- ③ Swinging arm
- ④ Spacer
- ⑤ Swinging arm bearing
- ⑥ Spacer
- ⑦ Washer
- ⑧ Dust seal cover
- ⑨ Pivot shaft

Tightening torque		
	kg-m	lb-ft
A	2.0 - 3.0	14.5 - 21.5
B	2.0 - 3.0	14.5 - 21.5
C	5.0 - 5.8	36.0 - 42.0

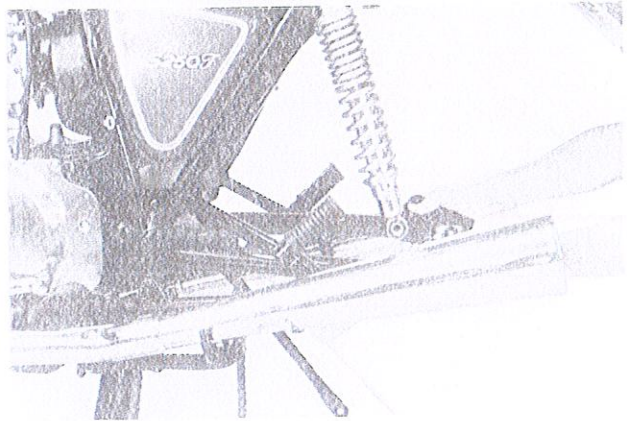
Remove rear wheel (See page 7-7).
Remove chain case.



Draw out swinging arm pivot shaft after removing nut.



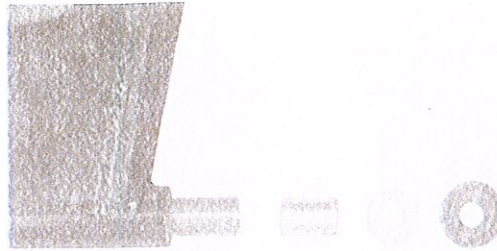
Take off swing arm.



Remove torque link.



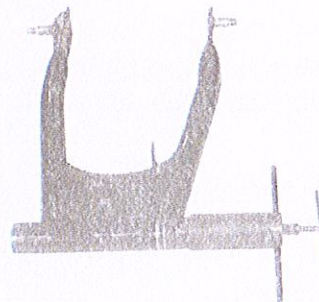
Remove dust seal cover, washer and draw out spacers.



Draw out swing arm bearings by using special tools.

CAUTION:
The removed bearing should be replaced.

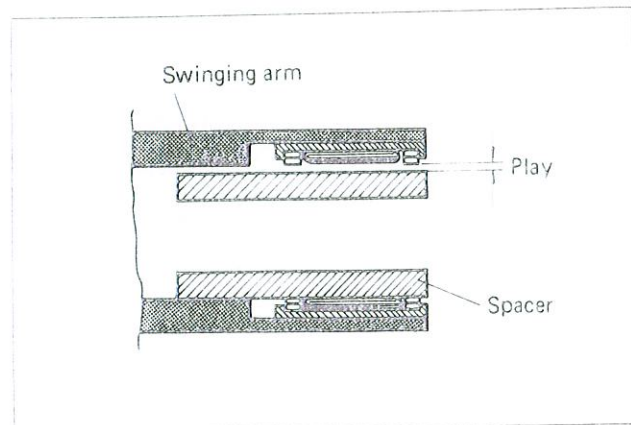
09941-44510	Swing arm bearing remover
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INSPECTION

SWING ARM BEARINGS

Inspect the play of swinging arm bearing inner spacer by hands while fixing it in the swinging arm. Rotate the spacer by hands to inspect whether abnormal noise occurs or rotating smoothly. Replace the bearing and spacer if there is something unusual.

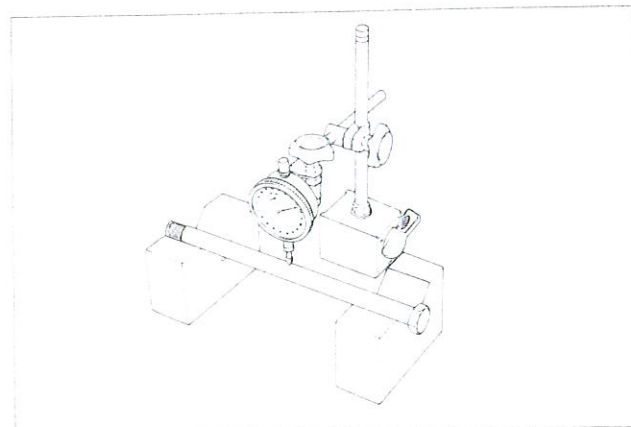


SWING ARM PIVOT SHAFT

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

09900-20606	Dial gauge (1/100)
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Service Limit	0.30 mm (0.012 in)
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REASSEMBLY

Reassemble and remount the swinging arm and rear shock absorbers in the reverse order of disassembly and removal and also carry out the following steps:

SWING ARM BEARINGS

Press in the bearings by using special tool.

09941-34511	Bearing installer
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CAUTION:

When installing a set of bearings, punch-marked side of each bearing comes on outer side.

CAUTION:

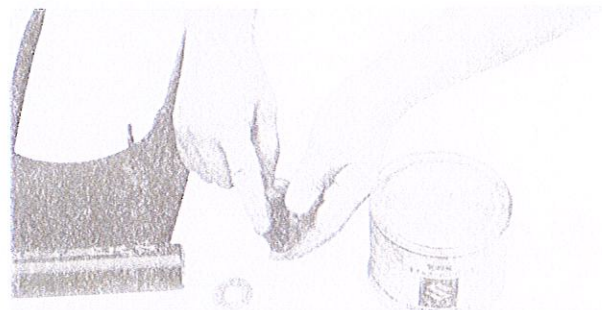
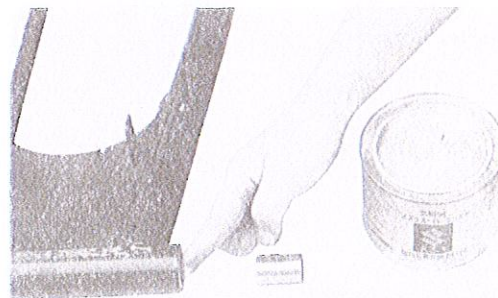
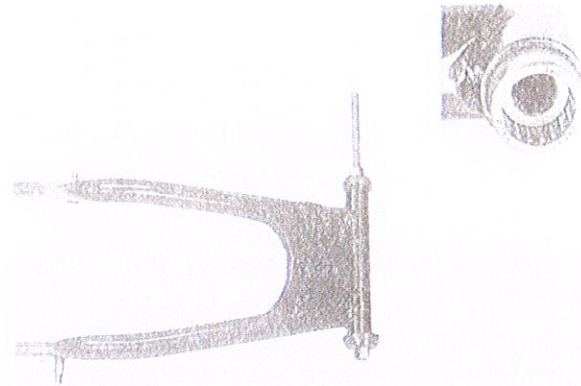
Apply grease to the bearing before installing the spacers.

99000-25030	Suzuki Super Grease "A"
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DUST SEAL COVER

Apply grease to the dust seal lip when installing the dust seal cover.

99000-25030	Suzuki Super Grease "A"
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SERVICING INFORMATION

CONTENTS

TROUBLESHOOTING.....	8- 1
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WIRE ROUTING	8- 7
CABLE ROUTING	8- 8
SPECIAL TOOLS	8- 9
TIGHTENING TORQUE.....	8-15
SERVICE DATA	8-17

TROUBLESHOOTING

ENGINE

Complaint	Symptom and possible causes	Remedy
Engine will not start, or is hard to start.	<p>Compression too low</p> <ol style="list-style-type: none"> 1. Valve clearance out of adjustment. 2. Worn valve guides or poor seating of valves. 3. Valves mistiming. 4. Piston rings excessively worn. 5. Worn-down cylinder bores. 6. Starter motor cranks but too slowly. <p>Plugs not sparking</p> <ol style="list-style-type: none"> 1. Fouled spark plugs. 2. Wet spark plugs. 3. Ignition timing out of adjustment. 4. Defective ignition coil. 5. Open or short in high-tension cords. 6. Ruptured condenser. 7. Defective signal generator or transistor unit <p>No fuel reaching the carburetors</p> <ol style="list-style-type: none"> 1. Clogged hole in the fuel tank cap. 2. Clogged or defective fuel cock. 3. Defective carburetor float valve. 4. Clogged fuel pipe or suction cock pipe. 5. Defective fuel cock diaphragm. 	<p>Adjust. Repair, or replace. Adjust. Replace. Replace, or rebore. Consult "electrical complaints".</p> <p>Clean. Clean and dry. Adjust. Replace. Replace. Replace. Replace.</p> <p>Clean. Clean or replace. Replace. Clean. Replace.</p>
Engine stalls easily.	<ol style="list-style-type: none"> 1. Fouled spark plugs. 2. Ignition timing out of adjustment. 3. Defective signal generator or transistor unit. 4. Clogged fuel pipe. 5. Clogged jets in carburetors. 6. Valve clearance out of adjustment. 	<p>Clean. Adjust. Replace. Clean. Clean. Adjust.</p>
Noisy engine.	<p>Excessive valve chatter</p> <ol style="list-style-type: none"> 1. Valve clearance too large. 2. Weakened or broken valve springs. 3. Camshaft journal worn and burnt. <p>Noise appears to come from pistons</p> <ol style="list-style-type: none"> 1. Pistons or cylinders worn down. 2. Combustion chambers fouled with carbon. 3. Piston pins worn. <p>Noise seems to come from timing chain</p> <ol style="list-style-type: none"> 1. Stretched chain. 2. Worn sprockets. 3. Tension adjuster not working. <p>Noise seems to come from clutch</p> <ol style="list-style-type: none"> 1. Worn splines of countershaft or hub. 2. Worn teeth of clutch plates. 3. Distorted clutch plates, driven and drive. <p>Noise seems to come from crankshaft</p> <ol style="list-style-type: none"> 1. Rattling bearings due to wear. 2. Big-end bearings worn and burnt. 3. Journal bearing worn and burnt. <p>Noise seems to come from transmission</p> <ol style="list-style-type: none"> 1. Gears worn or rubbing. 2. Badly worn splines. 3. Primary gears worn or rubbing. 4. Counter balancer gear worn or rubbing. 	<p>Adjust. Replace. Replace.</p> <p>Replace. Clean. Replace.</p> <p>Replace. Replace. Repair or replace.</p> <p>Replace. Replace. Repair or replace.</p> <p>Replace. Replace. Replace.</p> <p>Replace. Replace. Replace.</p>

Complaint	Symptom and possible causes	Remedy
Slipping clutch	<ol style="list-style-type: none"> 1. Clutch control out of adjustment or loss of play. 2. Weakened clutch springs. 3. Worn or distorted pressure plate. 4. Distorted clutch plates, driven and drive. 	Adjust. Replace. Replace. Replace.
Dragging clutch	<ol style="list-style-type: none"> 1. Clutch control out of adjustment or too much play. 2. Some clutch springs weakened while others are not. 3. Distorted pressure plate or clutch plates. 	Adjust. Replace. Replace.
Transmission will not shift	<ol style="list-style-type: none"> 1. Broken gearshift cam. 2. Distorted gearshift forks. 	Replace. Replace.
Transmission will not shift back.	<ol style="list-style-type: none"> 1. Broken return spring on shift shaft. 2. Shift shafts are rubbing or sticky. 	Replace. Repair.
Transmission jumps out of gear.	<ol style="list-style-type: none"> 1. Worn shifting gears on drive shaft or countershaft. 2. Distorted or worn gearshift forks. 3. Weakened stopper spring on gearshift stopper. 	Replace. Replace. Replace.
Engine idles poorly.	<ol style="list-style-type: none"> 1. Valve clearance out of adjustment. 2. Poor seating of valves. 3. Defective valve guides. 4. Ignition timing out of adjustment. 5. Spark plug gaps too wide. 6. Defective ignition coil. 7. Defective signal generator or transistor unit. 8. Float-chamber fuel level out of adjustment in carburetors. 9. Clogged jets or imbalance of carburetors. 	Adjust. Replace. Replace. Adjust. Adjust or replace. Replace. Replace. Adjust. Clean or adjust.
Engine runs poorly in high-speed range.	<ol style="list-style-type: none"> 1. Valve springs weakened. 2. Valve timing out of adjustment. 3. Spark plug gaps too narrow. 4. Ignition not advanced sufficiently due to poorly working advancer. 5. Defective ignition coil. 6. Defective signal generator or transistor unit. 7. Float-chamber fuel level too low. 8. Clogged air cleaner element. 9. Clogged fuel pipe, resulting in inadequate fuel supply to carburetors. 10. Clogged suction cock pipe. 	Replace. Adjust. Adjust. Replace. Replace. Replace. Adjust. Clean. Clean, and prime. Clean.
Dirty or heavy exhaust smoke.	<ol style="list-style-type: none"> 1. Too much engine oil in the engine. 2. Worn piston rings or cylinders. 3. Worn valve guides. 4. Cylinder walls scored or scuffed. 5. Worn valves stems. 6. Defective stem seal. 	Check with level gauge drain out excess oil. Replace. Replace. Rebore or replace. Replace. Replace.

Complaint	Symptom and possible causes	Remedy
Engine lacks power	<ol style="list-style-type: none"> 1. Loss of valve clearance. 2. Weakened valve springs. 3. Valve timing out of adjustment. 4. Worn piston rings or cylinders. 5. Poor seating of valves. 6. Ignition timing out of adjustment. 7. Spark plug gaps incorrect. 8. Clogged jets in carburetors. 9. Float-chamber fuel level out of adjustment. 10. Clogged air cleaner element. 11. Carburetor balancing screw loose. 12. Sucking air from intake pipe. 13. Too much engine oil in the engine. 	<p>Adjust. Replace. Adjust. Replace. Repair. Adjust. Adjust or replace. Clean. Adjust. Clean. Retighten. Retighten or replace. Drain out excess oil.</p>
Engine overheats.	<ol style="list-style-type: none"> 1. Heavy carbon deposit on piston crowns. 2. Not enough oil in the engine. 3. Defective oil pump or clogged oil circuit. 4. Fuel level too low in float chambers. 5. Suck air from intake pipes. 6. Use incorrect engine oil. 	<p>Clean. Add oil. Replace or clean. Adjust. Retighten or replace. Change.</p>

ELECTRICAL

Complaint	Symptom and possible causes	Remedy
No sparking or poor sparking	<ol style="list-style-type: none"> 1. Defective ignition coil. 2. Defective spark plugs. 3. Defective signal generator or transistor unit. 	<p>Replace. Replace. Replace.</p>
Spark plugs soon become fouled with carbon.	<ol style="list-style-type: none"> 1. Mixture too rich. 2. Idling speed set too high. 3. Incorrect gasoline. 4. Dirty element in air cleaner. 5. Spark plugs too cold. 	<p>Adjust carburetors. Adjust carburetors. Change. Clean. Replace by hot type plugs.</p>
Spark plugs become fouled too soon.	<ol style="list-style-type: none"> 1. Worn piston rings. 2. Pistons or cylinders worn. 3. Excessive clearance of valve stems in valve guides. 4. Worn stem oil seal. 	<p>Replace. Replace. Replace. Replace.</p>
Spark plug electrodes overheat or burn.	<ol style="list-style-type: none"> 1. Spark plugs too hot. 2. The engine overheats. 3. Ignition timing out of adjustment. 4. Spark plugs loose. 5. Mixture too lean. 	<p>Replace by cold type plugs. Tune up. Adjust. Retighten. Adjust carburetors.</p>
Generator does not charge.	<ol style="list-style-type: none"> 1. Open or short in lead wires, or loose lead connections. 2. Shorted, grounded or open generator coils. 3. Shorted or punctured regulator/rectifier. 	<p>Repair or replace or retighten. Replace. Replace.</p>

Complaint	Symptom and possible causes	Remedy
Generator does charge, but charging rate is below the specification.	<ol style="list-style-type: none"> 1. Lead wires tend to get shorted or open-circuited or loosely connected at terminals. 2. Grounded or open-circuited stator coils of generator. 3. Defective regulator/rectifier. 4. Not enough electrolyte in the battery. 5. Defective cell plates in the battery. 	<p>Repair, or retighten.</p> <p>Replace.</p> <p>Replace. Add distilled water to the upper level. Replace the battery.</p>
Generator Overcharges.	<ol style="list-style-type: none"> 1. Internal short-circuit in the battery. 2. Resistor element in the regulator/rectifier damaged or defective. 3. Regulator/rectifier poorly grounded. 	<p>Replace the battery. Replace.</p> <p>Clean and tighten ground connection.</p>
Unstable charging	<ol style="list-style-type: none"> 1. Lead wire insulation frayed due to vibration, resulting in intermittent shorting. 2. Generator internally shorted. 3. Defective regulator/rectifier. 	<p>Repair or replace.</p> <p>Replace. Replace.</p>
Starter button is not effective.	<ol style="list-style-type: none"> 1. Battery run down. 2. Defective switch contacts. 3. Brushes not seating properly on commutator in starter motor. 4. Defective starter relay. 	<p>Recharge or replace. Replace. Repair or replace.</p> <p>Replace.</p>
Battery "sulfation"	<ol style="list-style-type: none"> 1. Charging rate too low or too high. (When not in use batteries should be recharged at least once a month to avoid sulfation.) 2. Battery electrolyte excessive or insufficient, or its specific gravity too high or too low. 3. The battery left unused for too long in cold climate. 	<p>Replace the battery.</p> <p>Keep the electrolyte up to the prescribed level, or adjust the S.G. by consulting the battery maker's directions. Replace the battery, if badly sulfated.</p>
Battery discharges too rapidly.	<ol style="list-style-type: none"> 1. Dirty container top and sides. 2. Impurities in the electrolyte or electrolyte S.G. is too high. 	<p>Clean. Change the electrolyte by consulting the battery maker's directions.</p>

CHASSIS

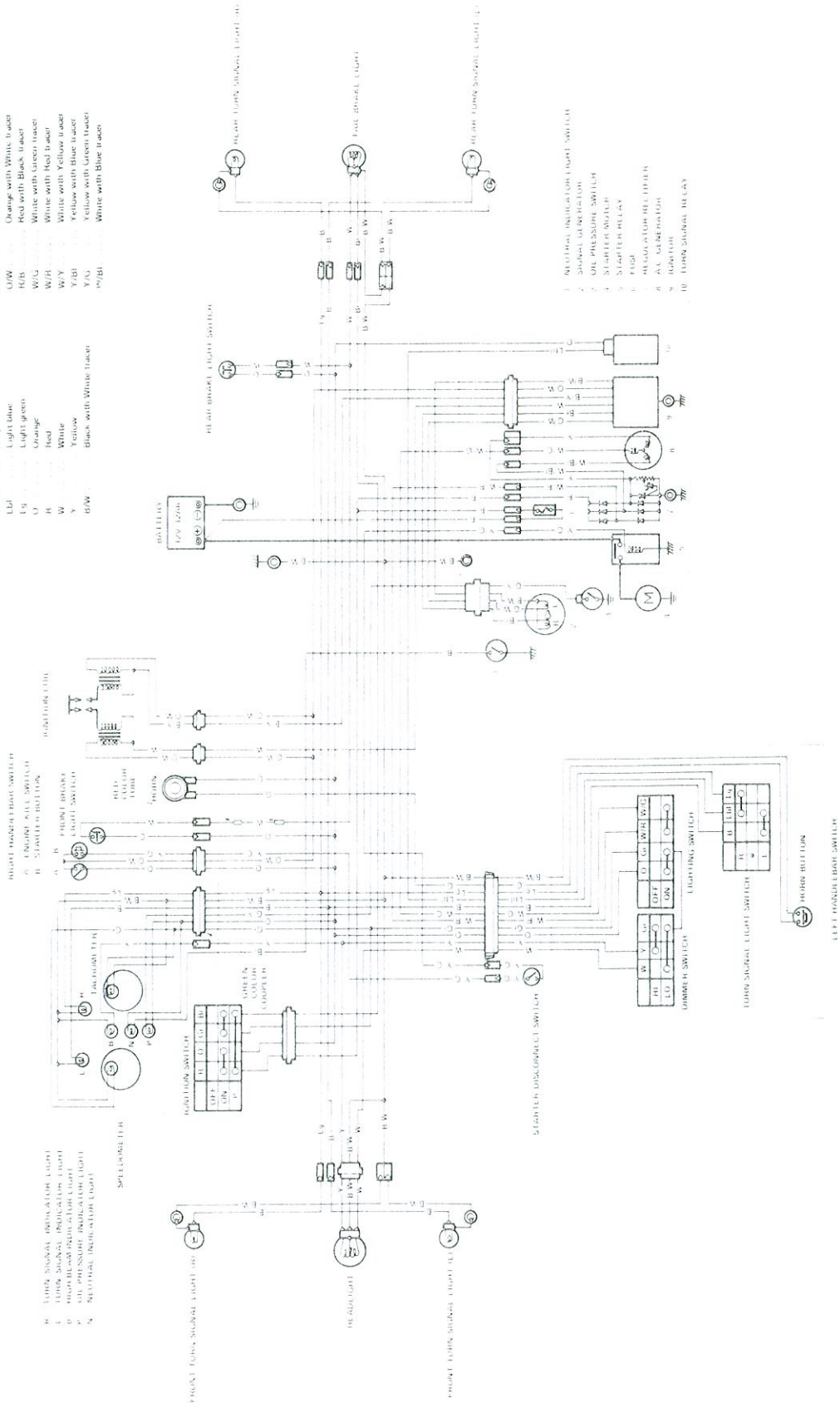
Complaint	Symptom and possible causes	Remedy
Heavy steering	<ol style="list-style-type: none"> 1. Steering stem nut overtightened. 2. Broken bearing in steering stem. 3. Distorted steering stem. 4. Not enough pressure in tires. 5. Overtightened steering stem nut. 	Adjust. Replace. Replace. Adjust. Adjust.
Wobbly handle	<ol style="list-style-type: none"> 1. Loss of balance between right and left suspension. 2. Distorted front fork. 3. Distorted front axle or cocked tire. 	Replace. Repair or replace. Replace.
Wobbly front wheel	<ol style="list-style-type: none"> 1. Distorted wheel rim. 2. Worn-down front wheel bearings. 3. Loose wheel spokes. 4. Defective or incorrect tire. 5. Loose nut on axle. 	Replace. Replace. Retighten. Replace. Retighten.
Front suspension too soft	<ol style="list-style-type: none"> 1. Weakened springs. 2. Not enough fork oil. 	Replace. Refill.
Front suspension too stiff	<ol style="list-style-type: none"> 1. Fork oil too viscous. 2. Too much fork oil. 	Replace. Drain excess oil.
Noisy front suspension	<ol style="list-style-type: none"> 1. Not enough fork oil. 2. Loose nuts on suspension. 	Refill. Retighten.
Wobbly rear wheel	<ol style="list-style-type: none"> 1. Distorted wheel rim. 2. Worn-down rear wheel bearings. 3. Loose wheel spokes. 4. Defective or incorrect tire. 	Replace. Replace. Retighten. Replace.
Rear suspension too soft	<ol style="list-style-type: none"> 1. Weakened springs. 2. Rear suspension adjusters improperly set. 	Replace. Adjust.
Rear suspension too stiff	Rear suspension adjusters improperly set.	Adjust.
Noisy rear suspension	Loose nuts on suspension.	Retighten.
Poor braking (FRONT and REAR)	<ol style="list-style-type: none"> 1. Not enough brake fluid in the reservoir. 2. Air trapped in brake fluid circuit. 3. Pads or linings worn down. 4. Too much play on brake pedal. 	Refill to level mark. Bleed air out. Replace. Adjust.

WIRING DIAGRAM

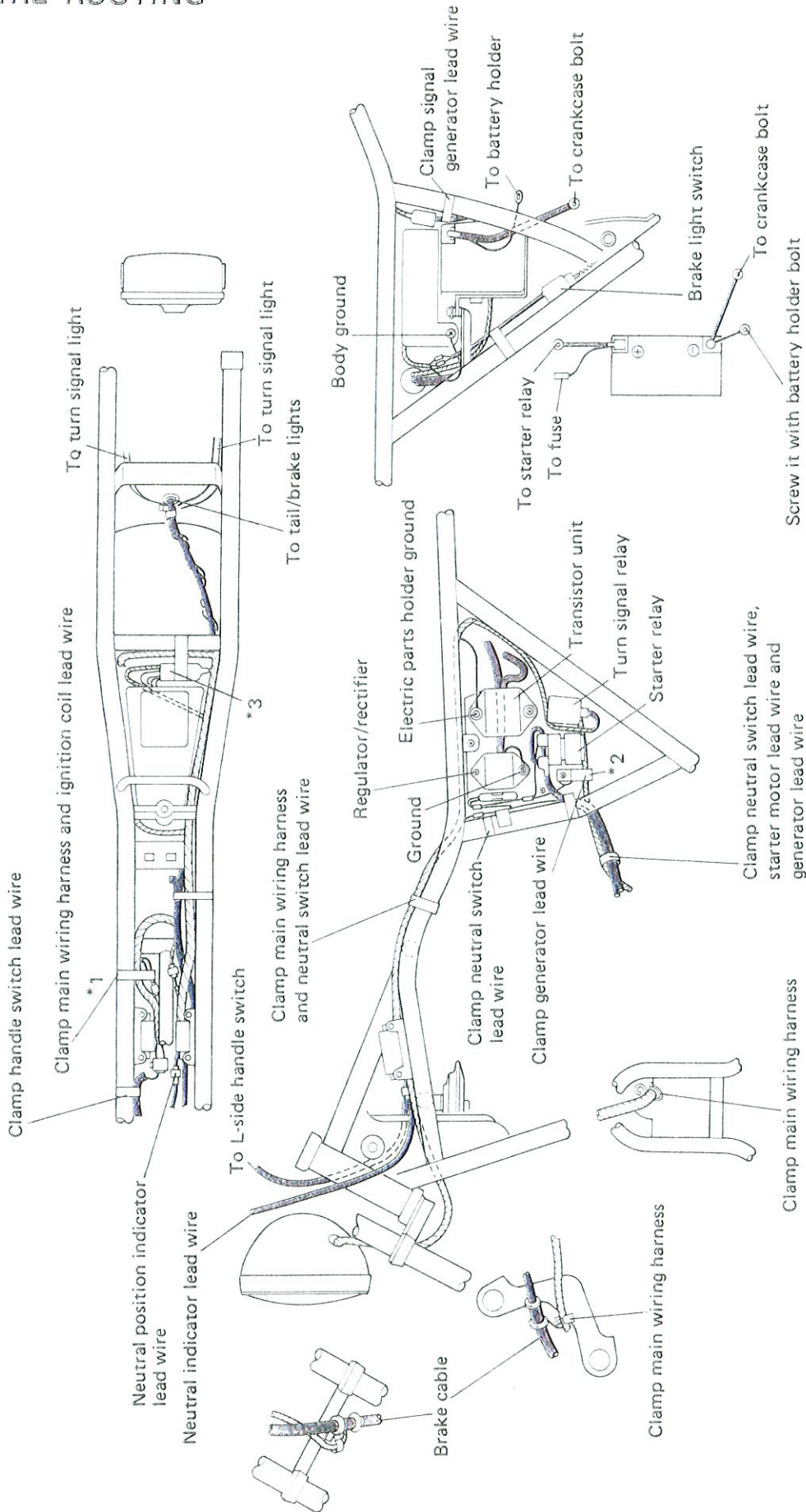
WIRE COLOR

- | | |
|------|--------------------------|
| B | Black |
| Bl | Blue |
| Br | Brown |
| Br/R | Brown with Red tracer |
| B/G | Black with Green tracer |
| B/W | Black with White tracer |
| G | Green |
| Gr | Gray |
| Gr/Y | Green with Yellow tracer |
| U/W | Orange with White tracer |
| U/B | Orange with Black tracer |
| W | White |
| W/G | White with Green tracer |
| W/R | White with Red tracer |
| W/Y | White with Yellow tracer |
| Y | Yellow |
| Y/G | Yellow with Green tracer |
| Y/B | Yellow with Blue tracer |
| Y/W | Yellow with White tracer |
| W/B | White with Blue tracer |

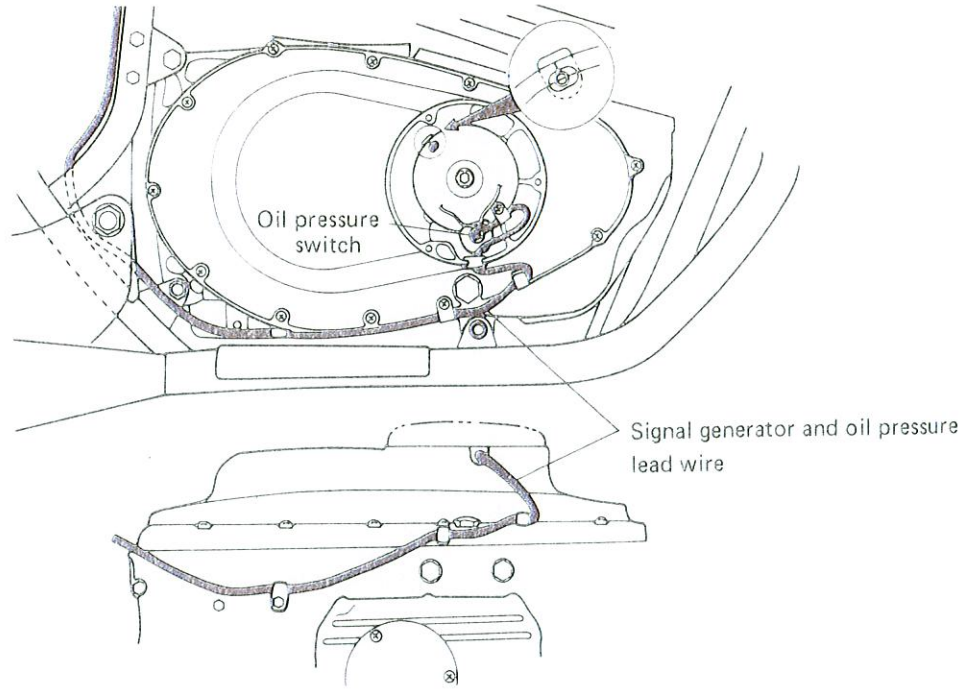
- | | |
|------|--------------------------|
| B | Black |
| Bl | Blue |
| Br | Brown |
| Br/R | Brown with Red tracer |
| B/G | Black with Green tracer |
| B/W | Black with White tracer |
| G | Green |
| Gr | Gray |
| Gr/Y | Green with Yellow tracer |
| U/W | Orange with White tracer |
| U/B | Orange with Black tracer |
| W | White |
| W/G | White with Green tracer |
| W/R | White with Red tracer |
| W/Y | White with Yellow tracer |
| Y | Yellow |
| Y/G | Yellow with Green tracer |
| Y/B | Yellow with Blue tracer |
| Y/W | Yellow with White tracer |
| W/B | White with Blue tracer |



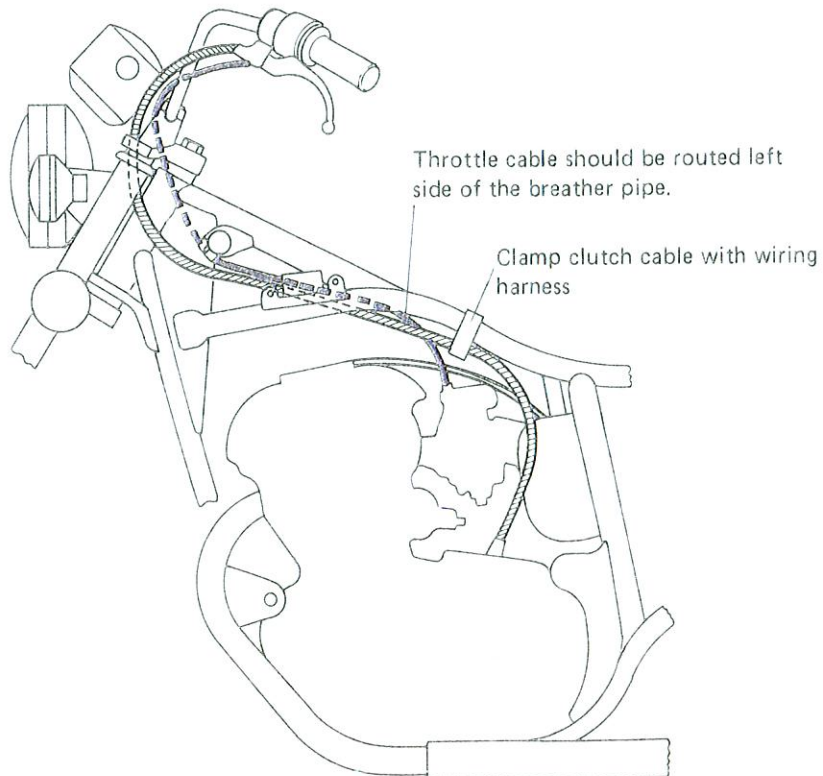
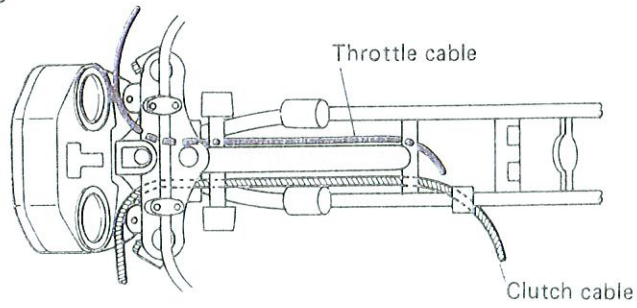
WIRE ROUTING



NOTE:
 * 1: Clamp the ignition coil lead wire under the frame pipe.
 * 2: Do not touch the generator lead wire with the chain case.
 * 3: Do not block the air intake of the cleaner case.



CABLE ROUTING

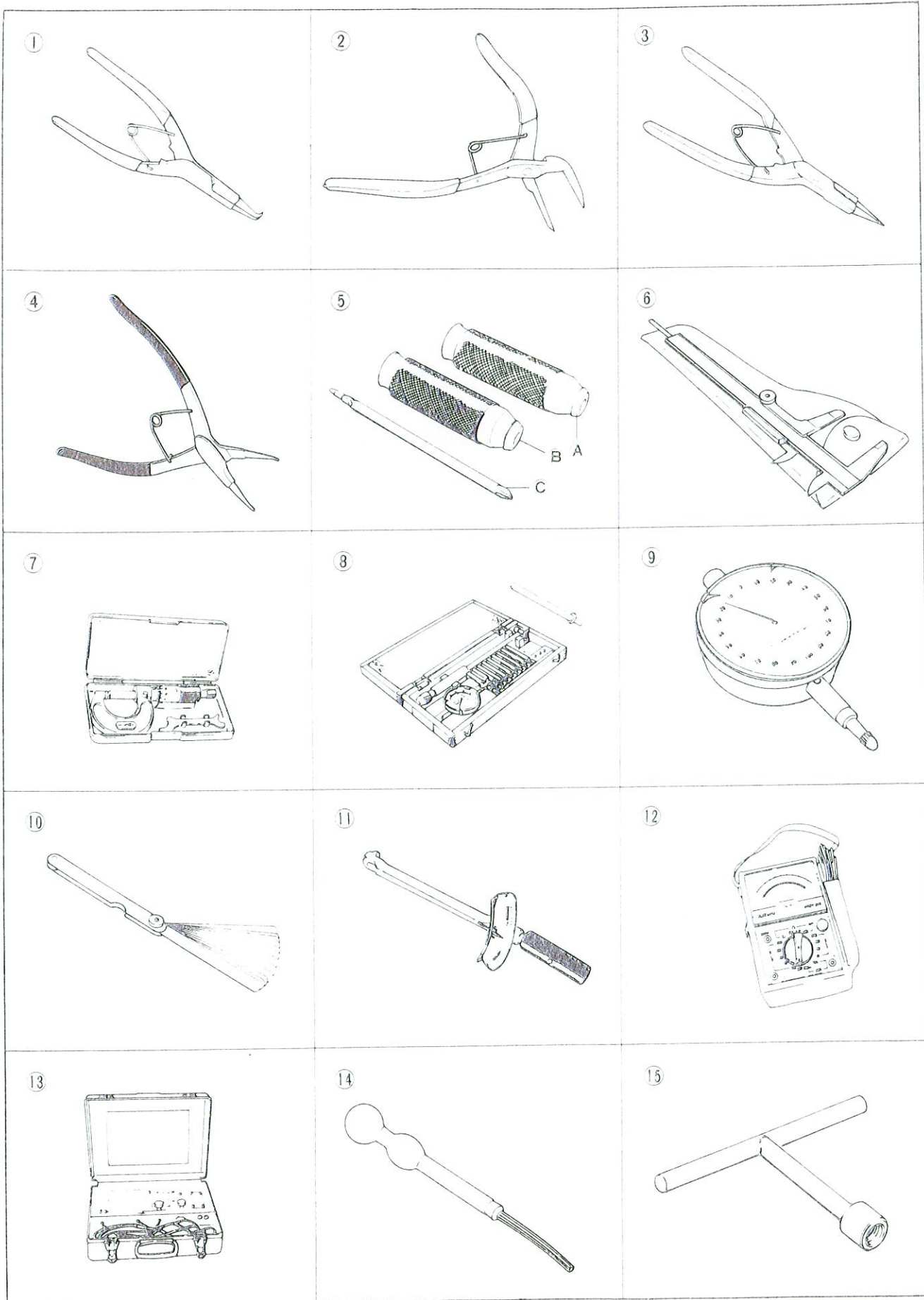


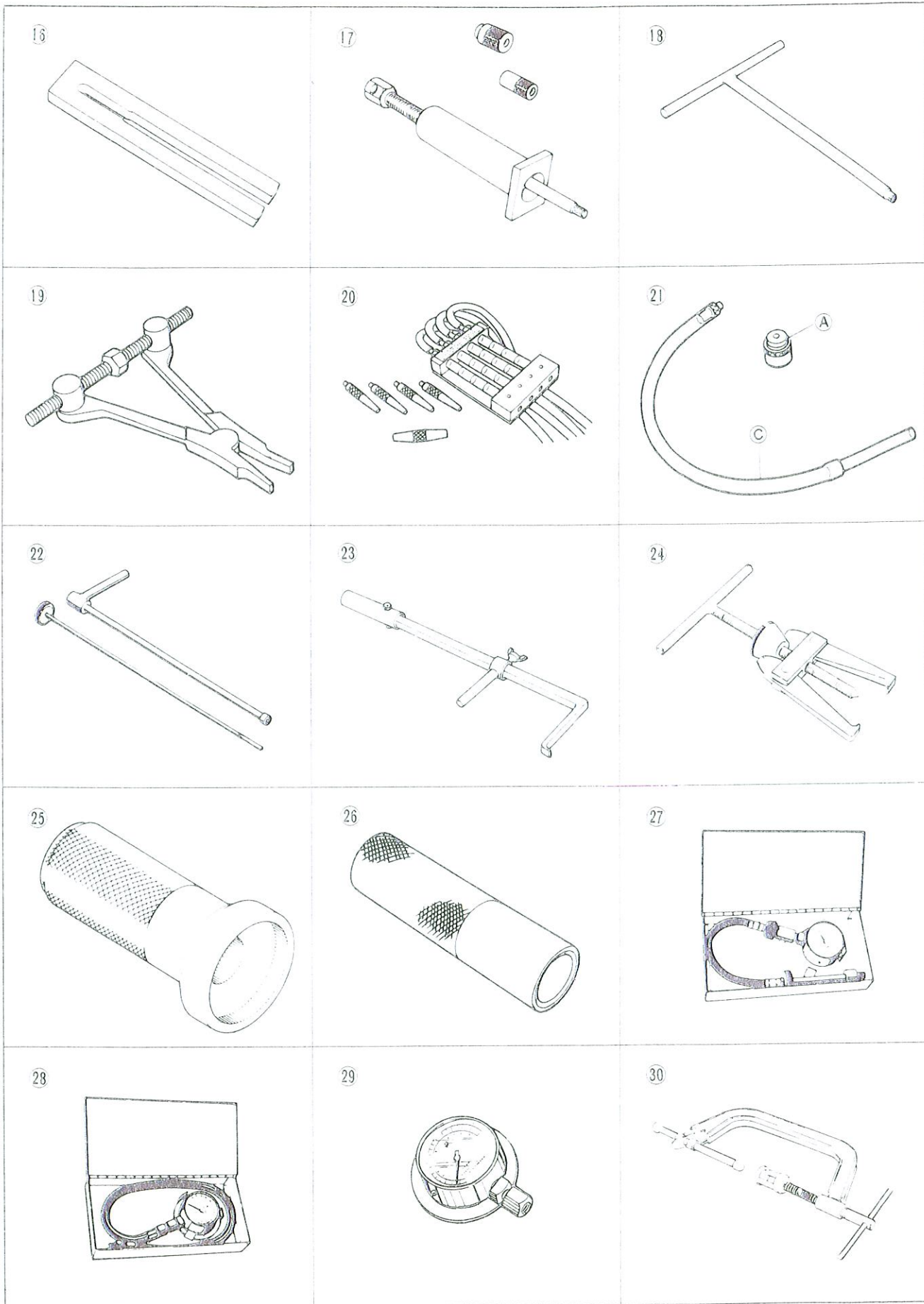
SPECIAL TOOLS

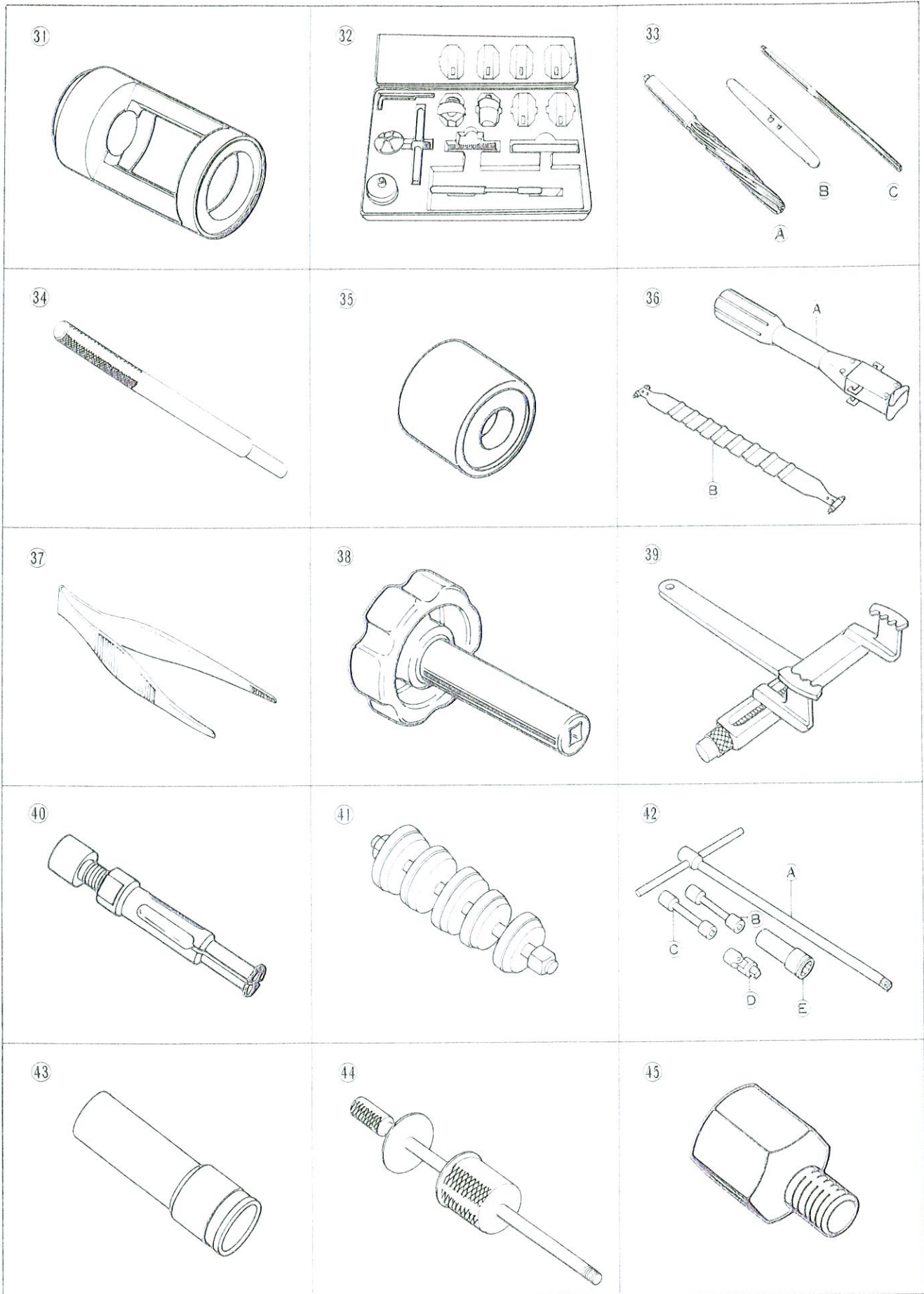
Item	Part No.	Part Name
1	09900-06104	Snap ring pliers (opening type)
2	09900-06105	Snap ring pliers (closing type)
3	09900-06107	Snap ring pliers (opening type)
4	09900-06108	Snap ring pliers (closing type)
5	09900-09002	Shock driver set Ⓐ 09900-09101 Body (for untightening) Ⓑ 09900-09102 Body (for tightening) Ⓒ 09900-09202 Bit
6	09900-20101	Vernier caliper (200 mm)
7	09900-20201	Micrometer (0 – 25 mm)
	09900-20202	Micrometer (25 – 50 mm)
	09900-20203	Micrometer (50 – 75 mm)
8	09900-20508	Cylinder gauge set
9	09900-20606	Dial gauge (1/100 mm)
10	09900-20803	Thickness gauge
11	09900-21102	Torque wrench (0 – 1.2 kg-m)
	09900-21103	Torque wrench (1.0 – 9.0 kg-m)
12	09900-25002	Pocket tester
13	09900-28106	Electrotester
14	09900-28403	Hydrometer
15	09910-10710	Stud bolt installer (8 mm)
16	09910-20115	Con rod stopper
17	09910-34510	Piston pin puller
18	09911-73730	"T" type hexagon wrench (5 mm)
	09914-25811	"T" type hexagon wrench (6 mm)
19	09912-34510	Cylinder disassembling tool
20	09913-13121	Carburetor balancer gauge set 09913-13140 Adapter
21	Ⓐ 09913-14410	Attachment (16 mm x P1.0)
	Ⓑ 09913-14511	Gauge body (6 mm x P0.75)
22	*09913-14910	Throttle valve adjust wrench
23	09913-50121	Oil seal remover
24	09913-61110	Bearing puller
25	09913-70122	Bearing installer
26	09913-80112	Bearing installer
27	09915-64510	Compression gauge
28	*09915-63210	Adapter
	09915-74510	Oil pressure gauge
29	*09915-77330	Meter (0 – 10 kg/cm ²)
30	09916-14510	Valve lifter
31	*09916-14910	Valve lifter attachment
32	09900-21110	Valve seat cutter set

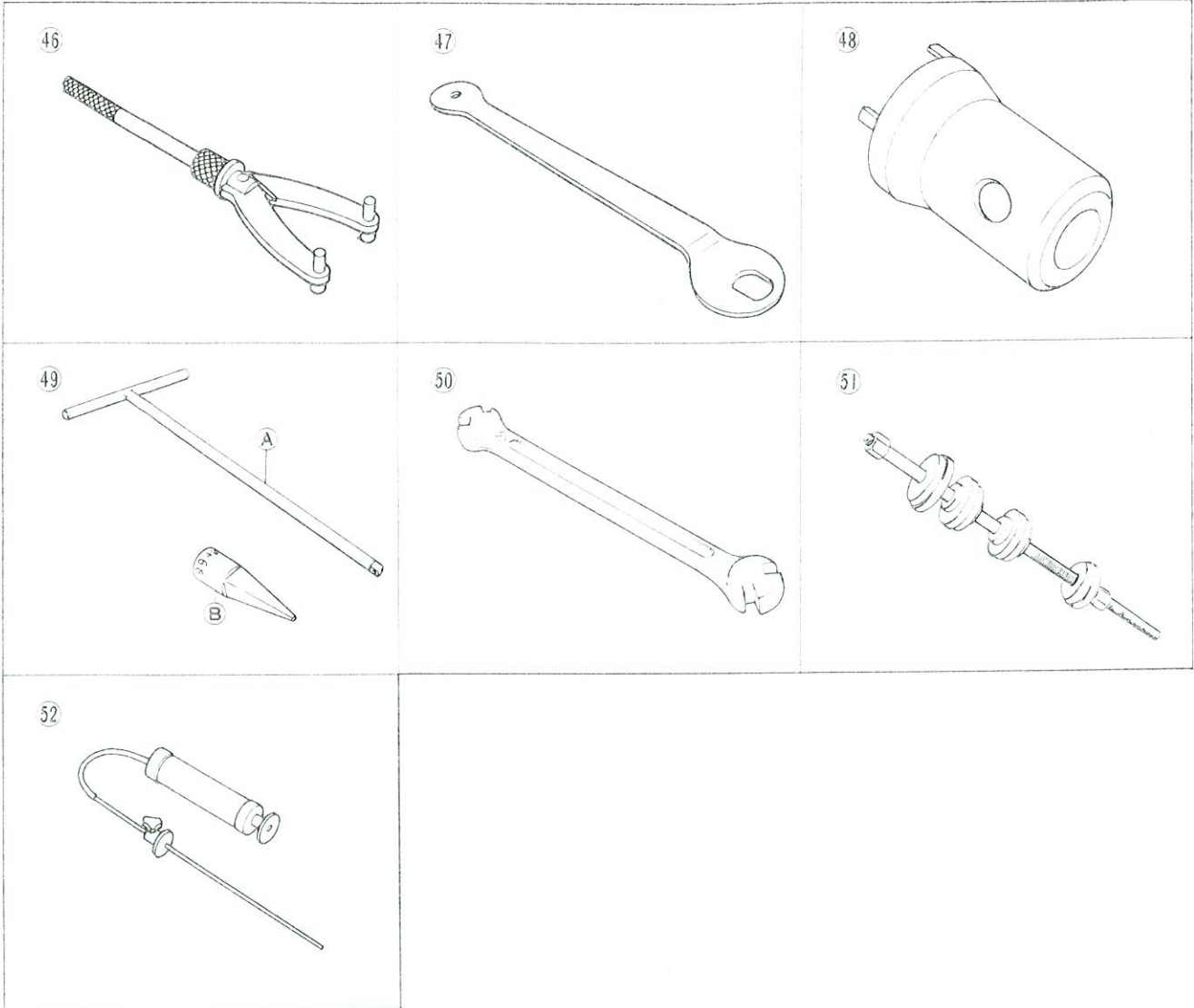
Item	Part No.	Part Name
33	*09916-34560	Ⓐ Valve guide reamer (11.2 mm)
	*09916-34540	Ⓑ Reamer handle
	*09916-34550	Ⓒ Valve guide reamer (5.5 mm)
34	*09916-44910	Valve guide remover
35	*09916-44920	Valve guide installer attachment
36	09916-74520	Ⓐ Piston ring holder body
	09916-74530	Ⓑ Band (Bore: 55 – 65 mm)
37	09916-84510	Forceps
38	*09917-14910	Tappet adjust driver
39	09920-53710	Clutch sleeve hub holder
40	09923-74510	Bearing puller (ID: 20 – 38 mm)
41	09924-84510	Bearing installer set
42	09930-14511	Cylinder head nut and spark plug wrench set
		Ⓐ 09914-24510 "T" handle
		Ⓑ 09911-74510 Long socket 14 mm
		Ⓒ 09911-74520 Long socket 12 mm
		Ⓓ 09930-14530 Universal joint
Ⓔ 09930-14520 Spark plug wrench 21 mm		
43	09930-13210	Spark plug socket wrench 19 mm
44	09930-30102	Rotor remover sliding shaft
45	09930-33710	Attachment
46	09930-40113	Rotor and engine sprocket holder
47	09930-44510	Rotor holder
48	09940-14910	Steering nut socket wrench
49	09940-34520	Ⓐ Front fork assembling "T" handle
	09940-34561	Ⓑ Attachment "D"
50	09940-60113	Spoke nipple wrench
51	09941-34511	Steering race installer
52	09943-74111	Front fork oil level gauge

Note: (*) Mark shows newly applied for GS250T.









TIGHTENING TORQUE

ENGINE

ITEM	lb-ft	kg-m
Cylinder head cover bolt	6.5 – 7.0	0.9 – 1.0
Cam shaft journal holder bolt	6.0 – 8.5	0.8 – 1.2
Cam shaft sprocket bolt	6.5 – 8.5	0.9 – 1.2
Rocker arm shaft stopper bolt	6.0 – 7.0	0.8 – 1.0
Valve clearance adjuster lock nut	6.5 – 8.0	0.9 – 1.1
Cylinder head bolt	5.0 – 8.0	0.7 – 1.1
Cylinder head nut	16.0 – 20.0	2.2 – 2.8
Cam chain tensioner adjuster fitting bolt	4.5 – 6.0	0.6 – 0.8
Cam chain tensioner shaft assy	22.5 – 25.5	3.1 – 3.5
Cam chain tensioner adjuster lock nut	6.5 – 10.0	0.9 – 1.4
Cam chain tensioner shaft lock nut	6.0 – 7.0	0.8 – 1.0
Starter motor bolt	3.0 – 5.0	0.4 – 0.7
Generator rotor bolt	43.5 – 50.5	6.0 – 7.0
Starter clutch allen bolt	11.0 – 14.5	1.5 – 2.0
Primary drive gear nut	36.0 – 50.5	5.0 – 7.0
Counter balancer center bolt	25.5 – 32.5	3.5 – 4.5
Con rod nut	21.5 – 24.5	3.0 – 3.4
Oil pressure regulator	12.5 – 14.5	1.7 – 2.0
Governor center bolt	9.5 – 16.5	1.3 – 2.3
Pressure switch	9.5 – 12.5	1.3 – 1.7
Neutral stopper housing	13.0 – 20.0	1.8 – 2.8
Clutch spring bolt	3.0 – 4.5	0.4 – 0.6
Clutch sleeve hub nut	21.5 – 36.0	3.0 – 5.0
Gearshifting arm stopper	11.0 – 16.5	1.5 – 2.3
Oil pan bolt	7.0	1.0
Crankcase bolt 1 – 3	14.5 – 17.5	2.0 – 2.4
9 – 12	6.5 – 9.5	0.9 – 1.3
6 mm bolt	7.0	1.0
8 mm bolt	14.5	2.0
Engine sprocket nut	36.0 – 50.5	5.0 – 7.0
Engine mounting bolt 8 mm	18.0	2.5
10 mm	25.5	3.5
Exhaust pipe clamp bolt	6.5 – 10.0	0.9 – 1.4

CHASSIS

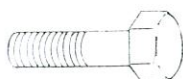
ITEM	lb-ft	kg-m
Front axle nut	26.0 – 37.5	3.6 – 5.2
Front axle holder nut	11.0 – 18.0	1.5 – 2.5
Front fork damper rod bolt	11.0 – 18.0	1.5 – 2.5
Disc plate bolt	11.0 – 18.0	1.5 – 2.5
Caliper bolt	18.0 – 29.0	2.5 – 4.0
Caliper axle bolt	11.0 – 14.5	1.5 – 2.0
Caliper bleeder	5.0 – 6.5	0.7 – 0.9
Front fork lower clamp bolt	18.0 – 29.0	2.5 – 4.0
Front fork upper clamp bolt	14.5 – 21.5	2.0 – 3.0
Front fork cap bolt	11.0 – 21.5	1.5 – 3.0
Steering stem nut	29.0 – 36.0	4.0 – 5.0
Steering stem clamp bolt	11.0 – 18.0	1.5 – 2.5
Steering stem head bolt	26.0 – 37.5	3.6 – 5.2
Handlebars clamp bolt	8.5 – 14.5	1.2 – 2.0
Brake hose union bolt	14.5 – 18.0	2.0 – 2.5
Master cylinder clamp bolt	3.5 – 6.0	0.5 – 0.8
Brake pedal arm bolt	7.0 – 11.0	1.0 – 1.5
Swinging arm pivot nut	36.0 – 42.0	5.0 – 5.8
Front footrest bolt 10 mm	19.5 – 31.0	2.7 – 4.3
Front footrest bolt 8 mm	11.0 – 18.0	1.5 – 2.5
Muffler bracket mounting bolt	19.5 – 31.0	2.7 – 4.3
Rear footrest bolt	19.5 – 31.0	2.7 – 4.3
Muffler bracket bolt	14.5 – 21.5	2.0 – 3.0
Rear torque link nut	14.5 – 21.5	2.0 – 3.0
Rear shock absorber fitting nut	14.5 – 21.5	2.0 – 3.0
Rear axle nut	36.0 – 58.0	5.0 – 8.0
Rear sprocket nut	18.0 – 29.0	2.5 – 4.0
Rear brake cam lever bolt	3.5 – 6.0	0.5 – 0.8
Spoke nipple	3.0 – 3.5	0.4 – 0.5

TIGHTENING TORQUE CHART

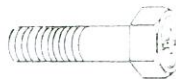
For other bolts and nuts not listed above, refer to this chart.

Tightening torque

Thread Diameter (mm)	Conventional or "4" Marked Bolt		"7" Marked Bolt	
	lb-ft	kg-m	lb-ft	kg-m
5	1.5 – 3.0	0.2 – 0.4	2.0 – 4.5	0.3 – 0.6
6	3.0 – 5.0	0.4 – 0.7	6.0 – 8.5	0.8 – 1.2
8	7.0 – 11.5	1.0 – 1.6	13.0 – 20.0	1.8 – 2.8
10	16.0 – 25.5	2.2 – 3.5	29.0 – 43.5	4.0 – 6.0



Conventional Bolt



"4" Marked Bolt



"7" Marked Bolt

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM		STANDARD	LIMIT
Valve diam.	IN.	20.90 – 21.10 (0.823 – 0.831)	---
	EX.	17.90 – 18.10 (0.705 – 0.713)	---
Valve lift	IN.	7.0 (0.28)	---
	EX.	7.0 (0.28)	---
Valve clearance or Tappet clearance (when cold)	IN. & EX.	0.08 – 0.13 (0.003 – 0.005)	---
Valve guide to Valve stem clearance	IN.	0.025 – 0.052 (0.0010 – 0.0020)	0.090 (0.0035)
	EX.	0.040 – 0.067 (0.0016 – 0.0026)	0.100 (0.0039)
Valve guide I.D.	IN. & EX.	5.500 – 5.512 (0.2165 – 0.2170)	---
Valve stem O.D.	IN.	5.460 – 5.475 (0.2150 – 0.2156)	---
	EX.	5.445 – 5.460 (0.2144 – 0.2150)	---
Valve stem runout	IN. & EX.	---	0.05 (0.002)
Valve head thickness	IN. & EX.	---	0.5 (0.02)
Valve stem end length	IN. & EX.	---	3.6 (0.14)
Valve seat width	IN. & EX.	0.9 – 1.1 (0.035 – 0.043)	---
Valve head radial runout	IN. & EX.	---	0.03 (0.001)
Valve spring free length (IN. & EX.)	INNER	---	31.9 (1.26)
	OUTER	---	35.5 (1.40)
Valve spring tension (IN. & EX.)	INNER	4.4 – 6.4 kg (9.7 – 14.1 lbs) at length 28.5 mm (1.12 in)	---
	OUTER	6.5 – 8.9 kg (14.3 – 19.6 lbs) at length 32.0 mm (1.26 in)	---

CAMSHAFT + CYLINDER + HEAD

Unit: mm (in)

ITEM		STANDARD	LIMIT
Cam height	IN.	34.650 – 34.690 (1.3642 – 1.3657)	34.350 (1.3524)
	EX.	34.650 – 34.690 (1.3642 – 1.3657)	34.350 (1.3524)
Camshaft journal oil clearance	IN. & EX.	0.020 – 0.054 (0.0008 – 0.0021)	0.150 (0.0059)
Camshaft journal holder I.D.	IN. & EX.	22.000 – 22.013 (0.8661 – 0.8667)	—
Camshaft journal O.D.	IN. & EX.	21.959 – 21.980 (0.8645 – 0.8654)	—
Camshaft runout	IN. & EX.	—	0.10 (0.004)
Cam chain 20 pitch length		—	157.80 (6.213)
Cam chain pin (at arrow "3")		20 th pin	—
Rocker arm I.D.	IN. & EX.	12.000 – 12.018 (0.4724 – 0.4731)	—
Rocker arm shaft O.D.	IN. & EX.	11.973 – 11.984 (0.4714 – 0.4718)	—
Cylinder head distortion		—	0.10 (0.004)

PISTON + RING + CYLINDER

Unit: mm (in)

ITEM	STANDARD		LIMIT
Compression pressure	11 – 14 kg/cm ² (156 – 199 psi)		10 kg/cm ² (142 psi)
Compression pressure difference	—		2 kg/cm ² (28.4 psi)
Piston to Cylinder clearance	0.035 – 0.045 (0.0014 – 0.0018)		0.120 (0.0047)
Cylinder bore	60.000 – 60.015 (2.3622 – 2.3628)		60.095 (2.3659)
Piston dia.	59.960 – 59.975 (2.3606 – 2.3612) Measure the 15 (0.6) from piston skirt end.		59.880 (2.3575)
Cylinder distortion	—		0.10 (0.004)
Piston ring free end gap	1st	N Approx. 6.5 (0.26)	5.2 (0.20)
	2nd	N Approx. 8.5 (0.33)	6.8 (0.27)
Piston ring end gap	1st	0.10 – 0.25 (0.004 – 0.010)	0.70 (0.028)
	2nd	0.10 – 0.30 (0.004 – 0.012)	0.70 (0.028)
Piston ring groove clearance	1st	—	0.180 (0.0071)
	2nd	—	0.150 (0.0060)
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 (0.0463 – 0.0469)	—
	2nd	1.170 – 1.190 (0.0461 – 0.0469)	—
Piston pin bore	16.002 – 16.008 (0.6300 – 0.6302)		16.030 (0.6311)
Piston pin O.D.	15.995 – 16.000 (0.6297 – 0.6300)		15.980 (0.6291)

CRANKSHAFT + COUNTER BALANCER + CRANKCASE

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	16.006 – 16.014 (0.6302 – 0.6305)	16.040 (0.6315)
Conrod big end side clearance	0.10 – 0.20 (0.004 – 0.008)	0.30 (0.012)
Conrod big end width	19.95 – 20.00 (0.785 – 0.787)	—
Crank pin width	20.10 – 20.15 (0.791 – 0.793)	—
Conrod big end oil clearance	0.024 – 0.048 (0.0009 – 0.0019)	0.080 (0.0031)
Crank pin O.D.	31.976 – 32.000 (1.2589 – 1.2598)	—
Crankshaft journal oil clearance	0.020 – 0.044 (0.0008 – 0.0017)	0.080 (0.0031)
Crankshaft journal O.D.	31.976 – 32.000 (1.2589 – 1.2598)	—
Crankshaft thrust clearance	0.05 – 0.25 (0.002 – 0.010)	0.35 (0.014)
Crankshaft journal holder width (crankshaft)	54.05 – 54.15 (2.128 – 2.132)	—
Crankshaft journal width (crankcase)	53.90 – 54.00 (2.122 – 2.126)	—
Crankshaft runout	—	0.05 (0.002)
Balancer journal oil clearance	0.020 – 0.044 (0.0008 – 0.0017)	0.080 (0.0031)
Balancer journal O.D.	31.984 – 32.000 (1.2592 – 1.2598)	—

OIL PUMP

Unit: mm (in)

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.905 (75 / 24 x 25 / 41)	—
Oil pressure (at 60°C, 140°F)	Above (3.0 kg/cm ² 43 psi) Below (5.5 kg/cm ² 78 psi) at 3000 r/min.	—
Tip clearance	—	0.20 (0.008)
Outer rotor clearance	—	0.25 (0.010)
Side clearance	—	0.15 (0.006)

CLUTCH

Unit: mm (in)

ITEM	STANDARD	LIMIT
Clutch cable play	4.0 (0.16)	—
Clutch release screw	$\frac{1}{4}$ – $\frac{1}{2}$ turn back	—
Drive plate thickness	2.9 – 3.1 (0.11 – 0.12)	2.6 (0.10)
Drive plate claw width	11.8 – 12.0 (0.46 – 0.47)	11.0 (0.43)
Driven plate thickness	1.60 ± 0.06 (0.063 ± 0.002)	—
Driven plate distortion	—	0.1 (0.004)
Clutch spring free length	—	33.6 (1.32)

TRANSMISSION

Unit: mm (in)

ITEM	STANDARD		LIMIT
Primary reduction	3.125	(75 / 24)	—
Final reduction	3.133	(47 / 15)	—
Gear ratios	Low	2.500 (30 / 12)	—
	2nd	1.625 (26 / 16)	—
	3rd	1.210 (23 / 19)	—
	4th	1.000 (21 / 21)	—
	5th	0.863 (19 / 22)	—
	Top	0.782 (18 / 23)	—
Shift fork to Groove clearance	0.10 – 0.30 (0.004 – 0.012)		0.50 (0.020)
Shift fork groove width	5.5 – 5.6 (0.217 – 0.220)		—
Shift fork thickness	5.3 – 5.4 (0.209 – 0.213)		—
Drive chain	Type	D.I.D.: 520DS TAKASAGO: RK520SM	—
	Links	106	—
	20 pitch length	—	324.3 (12.77)
Drive chain slack	20 – 30 (0.8 – 1.2)		—

CARBURETOR

Unit: mm (in)

ITEM	SPECIFICATION
Carburetor type	MIKUNI BS30SS
Bore size	30 (1.18)
I.D. No.	11420
Idle r/min.	1250 ± 100 r/min.
Fuel level	4.0 ± 0.5 (0.16 ± 0.02)
Float height	21.4 ± 1.0 (0.84 ± 0.04)
Main jet (M. J.)	#115
Main air jet (M. A. J.)	1.0
Jet needle (J. N.)	5CHT40
Needle jet (N. J.)	Left \square -7, Right \square -8
Pilot jet (P. J.)	#17.5
By pass (B. P.)	0.9, 0.8, 0.7
Pilot outlet (P. O.)	0.8
Valve seat (V. S.)	2.0
Starter jet (G. S.)	35
Pilot screw (P. S.)	PRE-SET
Throttle cable play	0.5 - 1.0 (0.02 - 0.04)

ELECTRICAL

Unit: mm (in)

ITEM	SPECIFICATION		NOTE
Ignition timing	20° B.T.D.C. Below 1650 ± 100 r/min and 40° B.T.D.C. Above 3500 ± 100 r/min.		
Spark plug	Type	NGK: D9EA N. D.: X27ES-U	
	Gap	0.6 – 0.7 (0.024 – 0.028)	
Spark performance	Over 8 (0.3) at 1 atm		
Signal coil resistance	Approx.	60 – 80 Ω	Br – B/W G/W – B/W
Ignition coil resistance	Primary	O/W – W or B/Y Approx. 3.5 – 4.5 Ω	
	Secondary	Plug cap – W or B/Y Approx. 23 – 25 kΩ	
Generator No-Load voltage	More than	75 V (AC) at 5000 r/min.	
Regulated voltage		14 – 15 V at 5000 r/min.	
Starter motor	Brush length	N. D. Limit: $\frac{9}{0.4}$	
	Commutator under cut	Limit: $\frac{0.2}{0.008}$	
Starter relay resistance	Approx.	3 – 4 Ω	
Battery	Type designation	YB10L-A2	
	Capacity	12V 43.2kC(12Ah)/10HR	
	Standard elec- trolyte S. G.	1.28 at 20°C (68°F)	
Fuse size	Main	15A	

BRAKE + WHEEL

Unit: mm (in)

ITEM		STANDARD	LIMIT
Rear brake pedal free travel		20 – 30 (0.8 – 1.2)	—
Rear brake pedal height		20 (0.8)	—
Brake drum I.D.	Rear	—	160.7 (6.33)
Brake lining thickness		—	1.5 (0.06)
Brake disc thickness	Front	5.0 ± 0.1 (0.20 ± 0.004)	4.5 (0.18)
Brake disc runout		—	0.30 (0.012)
Master cylinder bore	Front	14.000 – 14.043 (0.5512 – 0.5529)	—
Master cylinder piston dia.	Front	13.957 – 13.984 (0.5495 – 0.5506)	—
Brake caliper cylinder bore	Front	42.850 – 42.926 (1.6870 – 1.6900)	—
Brake caliper piston dia.	Front	42.770 – 42.820 (1.6839 – 1.6858)	—
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	3.00-18 4PR	—
	Rear	3.50-17 4PR	—
Tire tread depth	Front	—	1.6 (0.06)
	Rear	—	2.0 (0.08)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	140 (5.5)	—	
Front fork spring free length	Upper —	103 (4.1)	
	Lower —	391 (15.4)	
Front fork oil level	186 (7.3)	—	
Rear wheel travel	100 (3.9)	—	
Swinging arm pivot shaft runout	—	0.3 (0.012)	

FUEL + OIL CAPACITY

ITEM	SPECIFICATION	NOTE
Fuel type	Use only unleaded or low-lead type gasoline of at least 85 – 95 pump octane ($\frac{R+M}{2}$ method) or 89 octane or higher rated by the Research Method.	
Fuel tank including reserve	11.0 L (2.9 US gal)	
reserve	2.0 L (2.1 US gal)	
Engine oil type	SAE 10W/40	
Engine oil capacity	Change 2000 ml (2.1 US qt)	
	Filter change 2600 ml (2.7 US qt)	
	Overhaul 2600 ml (2.7 US qt)	
Front fork oil type	Fork oil #15	
Front fork oil capacity (each leg)	150 ml (5.07 US oz)	
Brake fluid type	SAE J1703 or DOT3, DOT4	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	NORMAL RIDING						CONTINUOUS HIGH SPEED RIDING					
	SOLO RIDING			DUAL RIDING			SOLO RIDING			DUAL RIDING		
	kPa	kg/cm ²	psi	kPa	kg/cm ²	psi	kPa	kg/cm ²	psi	kPa	kg/cm ²	psi
FRONT	150	1.50	21	175	1.75	25	175	1.75	25	200	2.00	28
REAR	175	1.75	25	225	2.25	32	200	2.00	28	225	2.25	32

WATTAGE

(W)

ITEM		SPECIFICATION
Headlight	HI	45
	LO	40
Parking or city light		3.4
Tail/Brake light		8/23
Turn signal light		23
Speedometer light		3.4
Tachometer light		3.4
Turn signal indicator light		3.4
High beam indicator light		3.4
Neutral indicator light		3.4
Oil pressure indicator light		3.4

Prepared by

SUZUKI MOTOR CO., LTD.

Service Department
Overseas Operations Division

November, 1980

Manual No. 99000-85551-0E3

Printed in Japan

SUZUKI

GS300L

SUPPLEMENTARY SERVICE MANUAL

USE THIS MANUAL WITH :

* GS250T SERVICE MANUAL (99500-32010-03E)

99501-32020-03E

(英)

FOREWORD

This supplementary service manual has been produced to aid Suzuki mechanics in properly maintaining and repairing the 1982 "Z" model.

This manual has been written primarily for the experienced Suzuki mechanic but will also be very useful even for the apprentice mechanic and do-it-yourself mechanic. The entire manual should be thoroughly reviewed before any servicing is performed.

Please also refer to the GS250T "T" MODEL (1980 MODEL) Service Manual (99500-32010-03E) for all other areas of information not covered in this publication.

IMPORTANT

All Suzuki motorcycles manufactured on or after January 1, 1978, were subject to Environmental Protection Agency emission regulations.

These regulations set specific standards for emission control, and also set new servicing requirements. This manual contains pertinent information that should be carefully studied. Other, vital emission information is also contained in the GS250T "T" MODEL Service Manual and should also be carefully reviewed.

Complete information concerning the EPA emission regulation and U.S. Suzuki's emission control program can be found in the U.S. SUZUKI EMISSION CONTROL PROGRAM MANUAL.

NOTE:

1. How the manual is compiled.

- This supplementary service manual lists only the points relating to maintenance work which differ from those applying to the GS250T "T" model.*
- However, in order to make this manual easier to use, some parts have the same information as provided in the service manual (99500-32010-03E) for the GS250T model.*
- Any differences in service data, service specifications and tightening torque tables with those that apply to the GS250T "T" model is clearly indicated with an asterisk (*).*

2. How to use the manual

- Give precedence to this supplementary service manual when using it as the service manual for the GS300L "Z" model.*
- Refer to the service manual for details which are not given in this supplementary service manual.*

SUZUKI MOTOR CO., LTD.

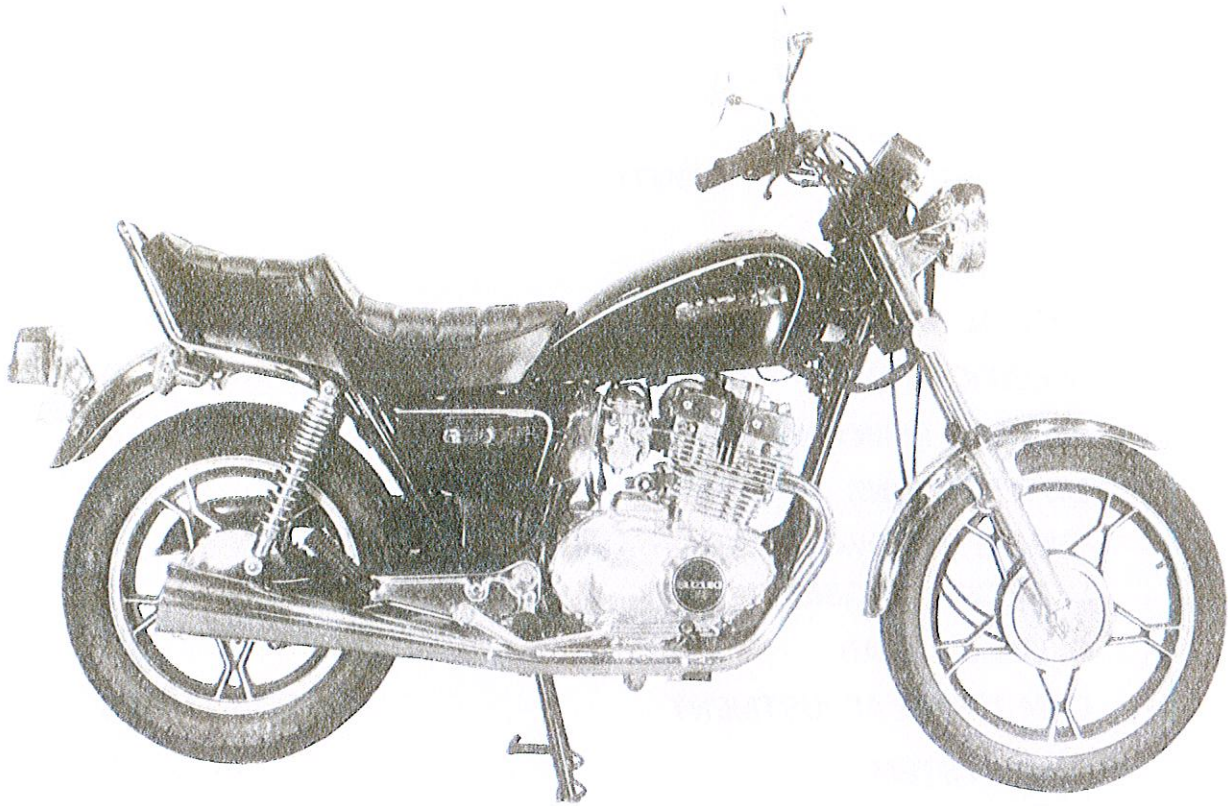
Administration Department
Overseas Service Division

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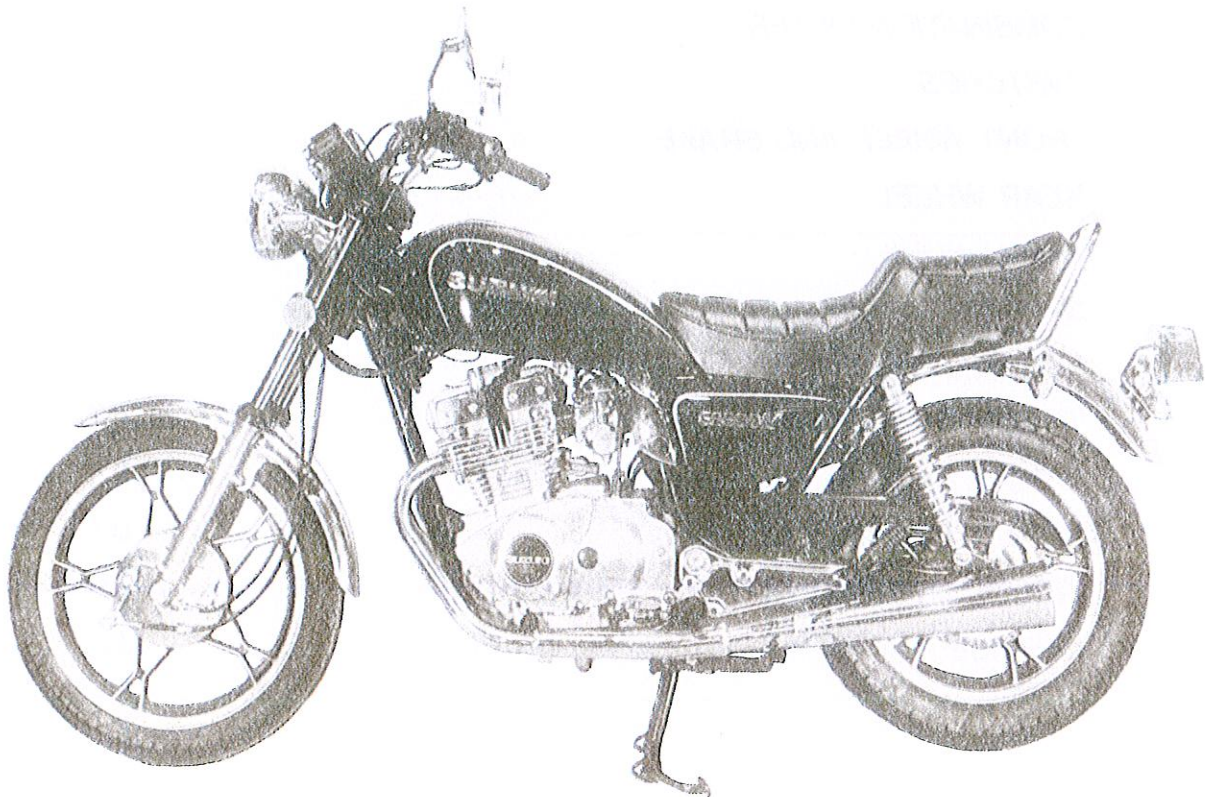
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VIEW OF SUZUKI GS300LZ



RIGHT SIDE



LEFT SIDE

SPECIAL FEATURES

TRANSISTORIZED IGNITION SYSTEM WITH ELECTRONIC ADVANCE

On the Model GS300L, the timing advance characteristics of the ignition timing have been changed from the hitherto-employed mechanical timing advance system incorporating an advance governor to an electronic timing advance system.

This system consists of a signal generator, ignitor and ignition coil as shown in Fig. 1.

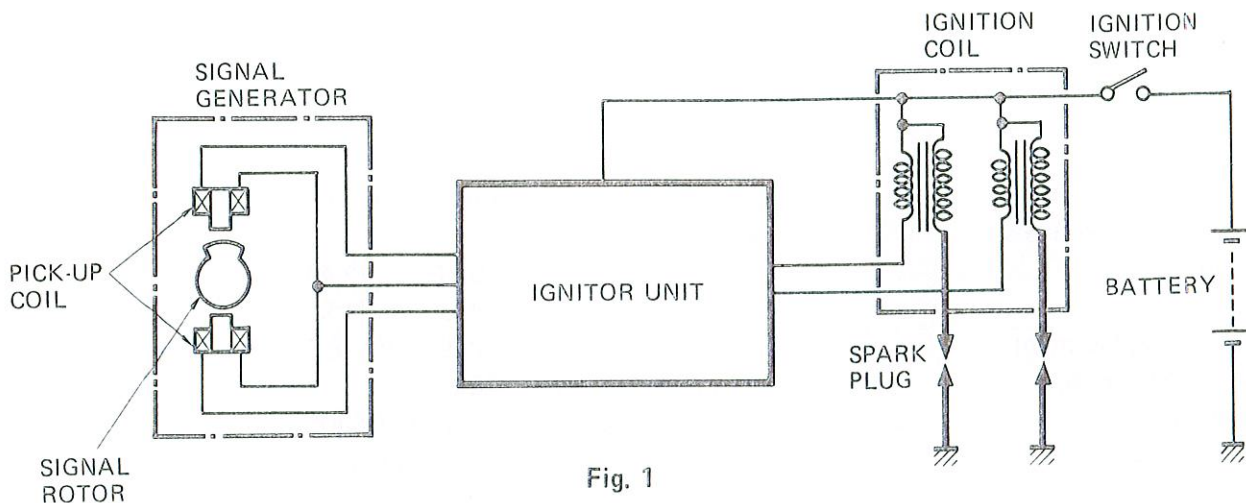


Fig. 1

When the signal rotor is rotated in the system block diagram above, the signal "A" is generated in the pick-up coil. The thus-generated signal will be converted to the signal waveform "B" inside of the ignitor unit and ignition timing is controlled in response to the engine speed as shown in Fig. 2. That is, timing controlled in the ignitor unit becomes ① when the engine speed is lower than N_1 , and it becomes ② when the engine speed is $N_1 \sim N_2$. The advanced angle when ignited with ② is θ_1 . When higher than N_2 , timing is ③, and the timing does not advance higher than the above. The maximum advanced angle is θ_2 .

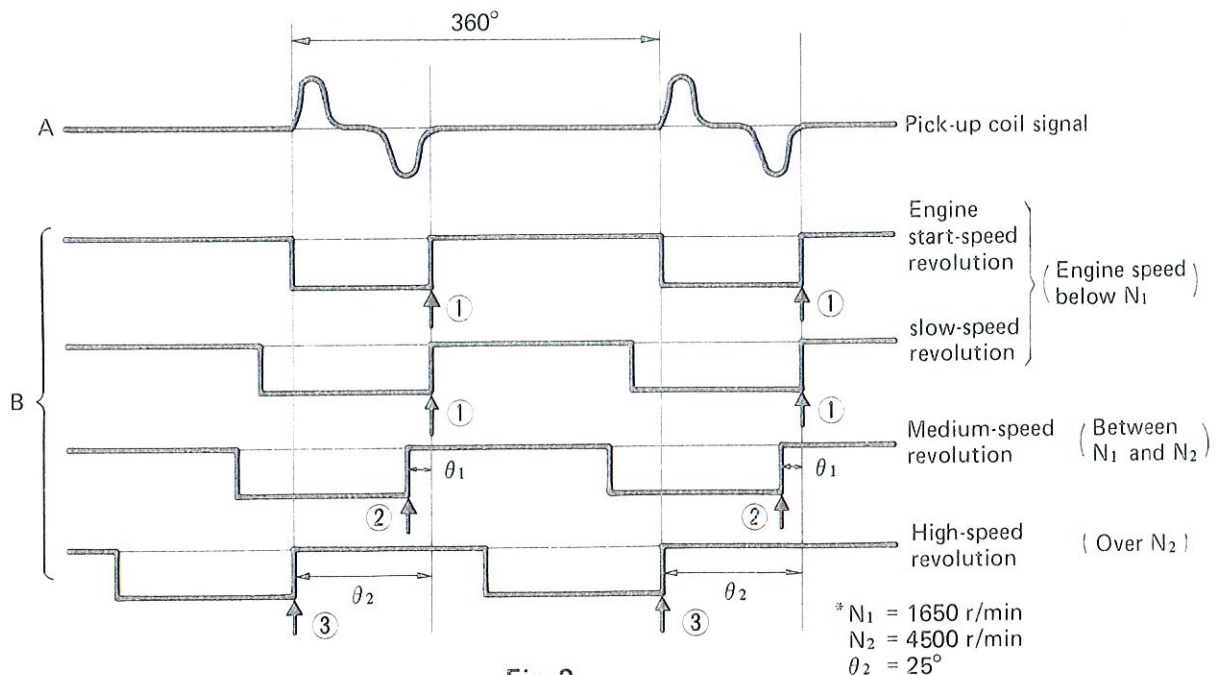


Fig. 2

SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	*2020 mm (79.5 in)
Overall width	* 840 mm (33.1 in)
Overall height	*1100 mm (43.3 in)
Wheelbase	*1410 mm (55.5 in)
Ground clearance	140 mm (5.5 in)
Dry mass	* 159 kg (351 lbs)

ENGINE

Type	Four-stroke, air-cooled, DOHC
Number of cylinders	2
Bore	*62.0 mm (2.44 in)
Stroke	*49.6 mm (1.95 in)
Piston displacement	*299 cm ³ (18.3 cu. in)
Compression ratio	*8.9 : 1
Carburetor	MIKUNI BS30SS, twin
Air cleaner	Polyurethane foam element
Starter system	Electric
Lubrication system	Wet sump

TRANSMISSION

Clutch	Wet multi-plate type
Transmission	*5-speed constant mesh
Gearshift pattern	*1-down, 4-up
Primary reduction	3.125 (75/24)
Final reduction	*2.800 (42/15)
Gear ratios, Low	2.500 (30/12)
2nd	1.625 (26/16)
3rd	1.210 (23/19)
4th	1.000 (21/21)
Top	0.863 (19/22)
Drive chain	*DAIDO DID520UB or TAKASAGO RK520SU, 108 links

CHASSIS

Front suspension	*Telescopic, coil spring oil dampened
Rear suspension	Swinging arm, oil dampened, spring 5-way adjustable
Steering angle	42° (right & left)
Caster	62° 00'
Trail	104 mm (5.51 in)
Turning radius	2.3 m (7.5 ft)
Front brake	*Internal expanding
Rear brake	Internal expanding
Front tire size	*3.60S18 4PR
Rear tire size	*4.60S16 4PR
Front tire pressure	*1.75 kg/cm ² (24 psi) (Normal solo riding)
Rear tire pressure	*2.00 kg/cm ² (28 psi) (Normal solo riding)

ELECTRICAL

Ignition type	Transistorized
Ignition timing	*15° B.T.D.C. below at 1 650 r/min and 40° B.T.D.C. above at 4 500 r/min
Spark plug	NGK D9EA or NIPPON DENSO X27ES-U
Battery	12V 43.2 kC (12 Ah)/10 HR
Generator	Three-phase A.C. generator
Fuse	15A

CAPACITIES

Fuel tank including reserve	*13.0 L (3.43 US gal)
Reserve	2.0 L (2.1 US qt)
Engine oil	2,000 ml (2.1 US qt)
Front fork oil (each leg)	*153 ml (5.17 US oz)

- These specifications are subject to change without notice.
- Specifications marked with asterisks (*) are exclusive to GS300LZ.

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.

NOTE:

Vehicles operated under severe conditions may require more frequent servicing.

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

PERIODIC MAINTENANCE CHART

Interval: This interval should be judged by odometer reading or months, whichever comes first.	miles	600	4,000	7,500	11,000	15,000
	km	1,000	6,000	12,000	18,000	24,000
	months	2	12	24	36	48
Battery (Specific gravity of electrolyte)	—	I	I	I	I	I
Air cleaner element	—	C	C	C	C	C
Cylinder head nuts & exhaust pipe bolts	T	T	T	T	T	T
Valve clearance	I	I	I	I	I	I
Spark plugs	—	C	R	C	R	R
Fuel line	I	I	I	I	I	I
	Replace every four years.					
Engine oil and oil filter	R	R	R	R	R	R
Carburetor idle rpm	I	I	I	I	I	I
Clutch	I	I	I	I	I	I
Drive chain	I	I	I	I	I	I
	Clean and lubricate every 600 miles (1,000 km)					
Brakes	I	I	I	I	I	I
Tires	I	I	I	I	I	I
Steering stem	I	I	I	I	I	I
Chassis bolts and nuts	T	T	T	T	T	T
Front fork	—	—	I	—	I	I

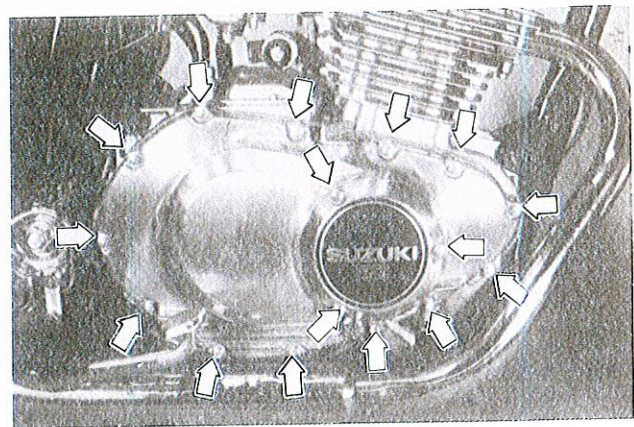
NOTE: T = Tighten, I = Inspect, R = Replace, C = Clean

The following number of refinements have been carried out on the GS300LZ (1982 model) and new mechanisms adopted.

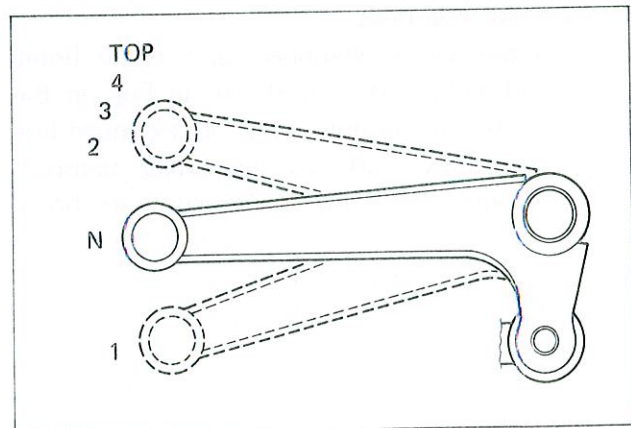
- The displacement has been increased.

	GS300LZ	GS250TT
Cylinder bore	62.0 mm	60.0 mm
Piston stroke	49.6 mm	44.2 mm
Piston displacement	299 cm ³	249 cm ³

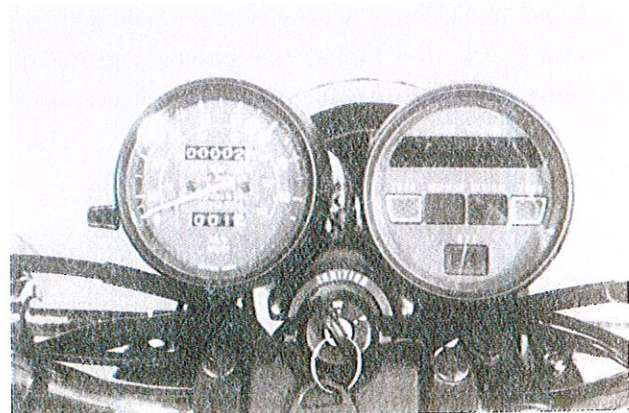
- The engine cover screws have been replaced with bolts and the following special tools have been newly provided for extra convenience in mounting and removal.



- The transmission has been changed from 6 speeds to 5 speeds.



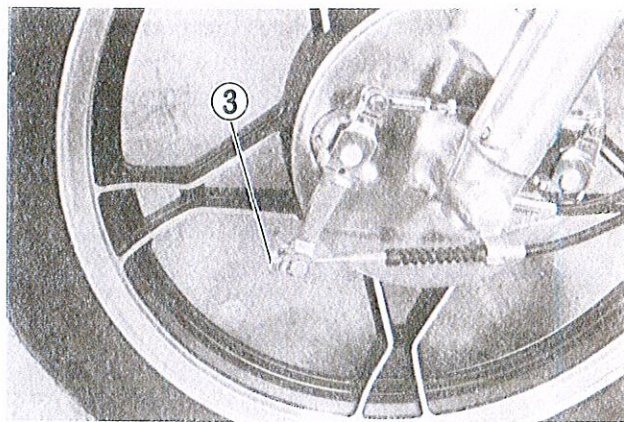
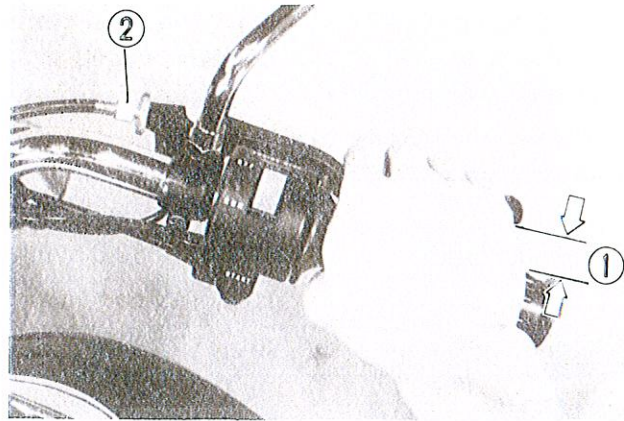
- A new combination meter is being used. A gear position indicator is provided, so that the gear position can be seen at one glance.



- An internal expanding brake of the two-leading shoes type is being used for the front brake.

Front brake adjustment

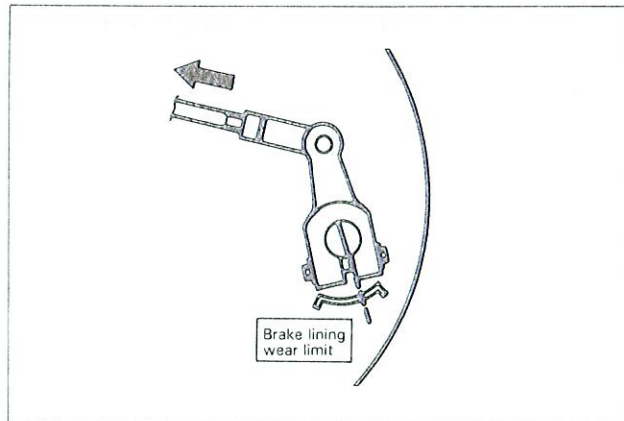
Squeeze the front brake lever firmly and measure the distance between the lever and the throttle grip. The distance ① should be 20 – 30 mm (0.8 – 1.2 in). If adjustment is necessary, slacken the cable by screwing the adjuster ② on the front brake lever holder all the way in. Turn the front brake adjuster ③ in or out to acquire the specified distance.



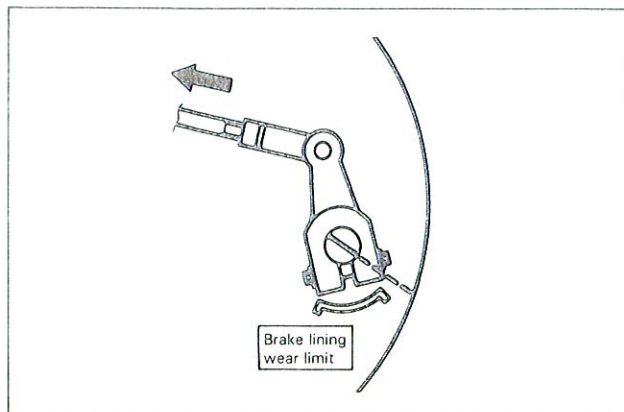
Brake lining wear limit

This motorcycle is equipped with brake lining wear limit indicators. As shown in Fig., at the condition of normal lining wear, an extended line from the index mark on the brake camshaft should be within the range embossed on the brake panel with brake on. To check wear of the brake lining, follow the steps below.

- First check if the brake system is properly adjusted.
- While operating the brake, check to see that the extension line from the index mark is within the range on the brake panel.
- If the index mark is outside the range as shown in the Fig., the brake shoe assembly should be replaced to ensure safe operation.



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

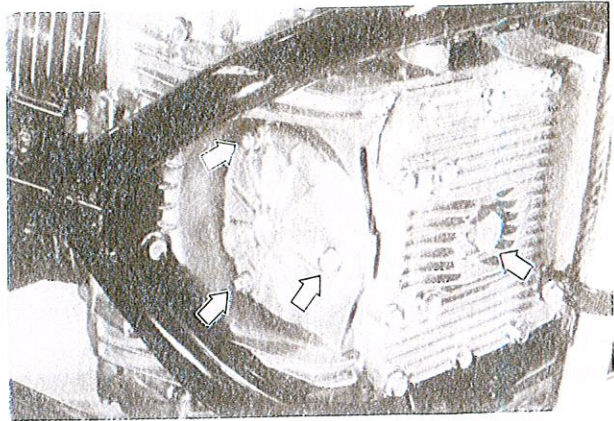


The extension line of the index mark is outside of the range.

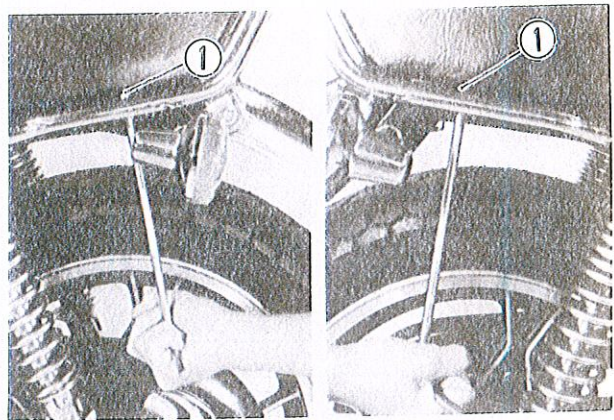
ENGINE REMOVAL

Before taking the engine out of the frame, wash the engine with a steam cleaner and drain engine oil etc. The procedure of engine removal is sequentially explained in the following steps, and engine installation is effected by reversing the removal procedure.

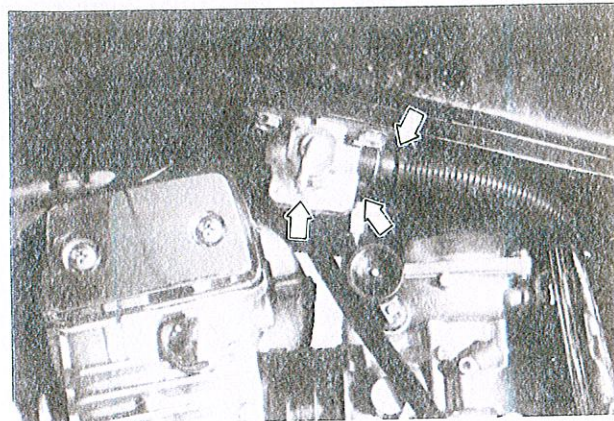
- Place an oil pan under engine and remove the oil filter cap and oil drain plug to drain out engine oil.



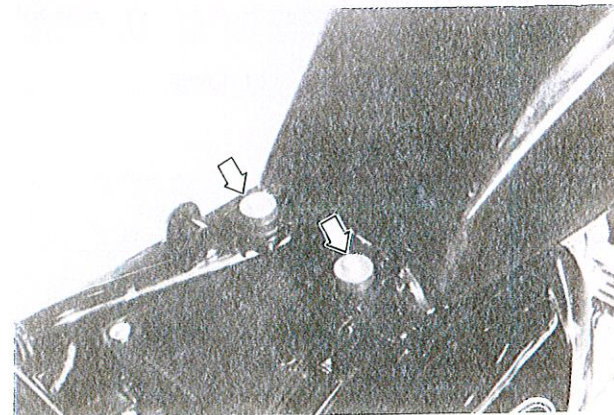
- Remove the two bolts ① and remove the seat by pulling rearward.



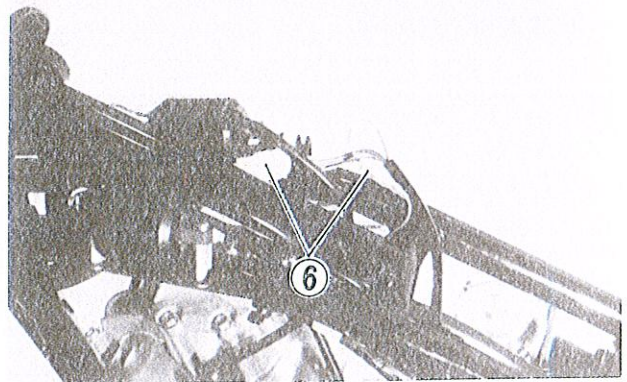
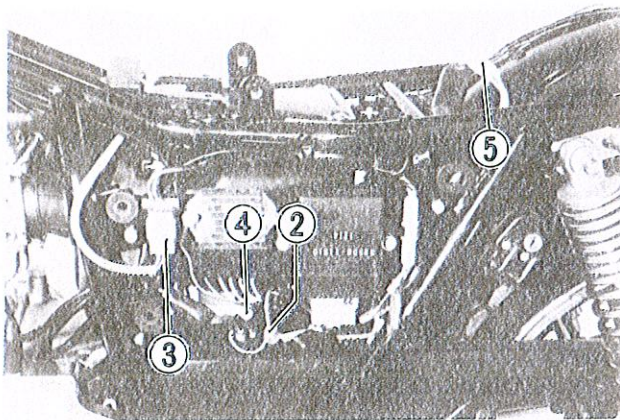
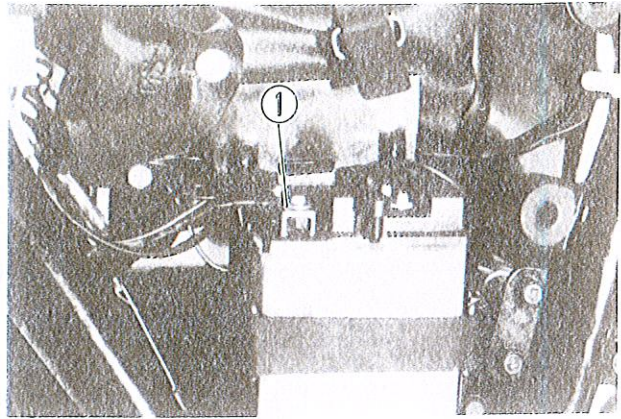
- Set the fuel cock in the "ON" or "RES" position and shift the fuel hose clip sideways to remove the fuel hose and vacuum hose from the fuel cock.



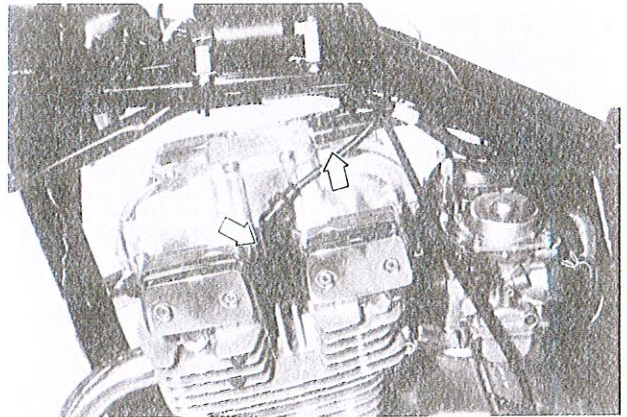
- Remove the bolts at the rear of the fuel tank. Remove the tank by moving it rearwards.



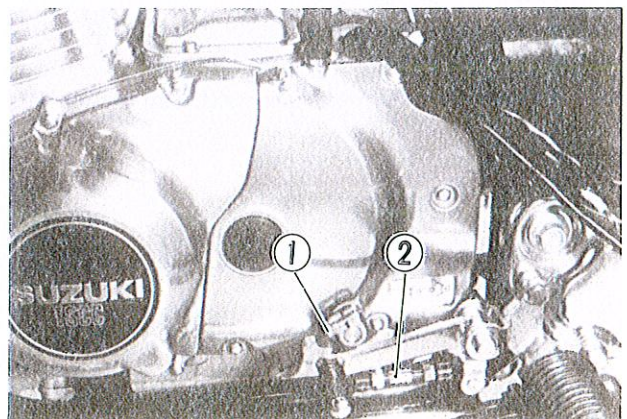
- Remove the left and right frame covers and disconnect various lead wires.
 - Battery \ominus lead wire ①.
 - Battery \oplus lead wire ②.
 - Signal generator and oil pressure switch lead wires ③.
 - Starter relay \ominus lead wire ④.
 - Generator lead wires ⑤.
 - Gear position and neutral switch lead wires ⑥.



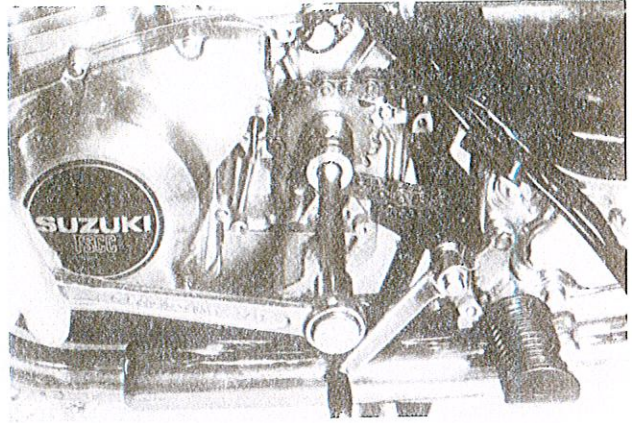
- Pull out the spark plug caps from spark plugs.
- Shift the breather pipe clip sideways and remove the pipe from the cylinder head cover cap.



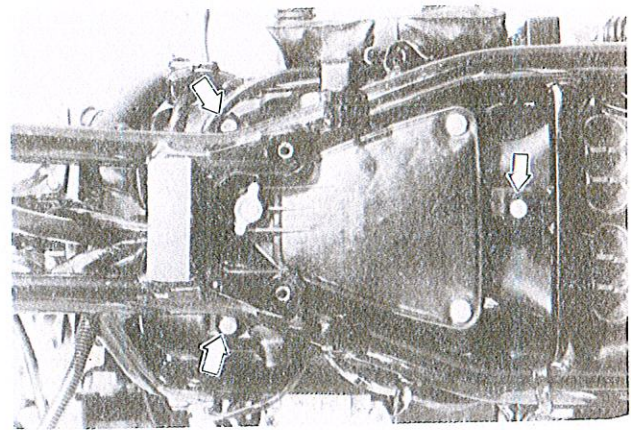
- Remove the bolt ① and pull off the gearshift lever link arm ②.
- Remove the engine sprocket cover.



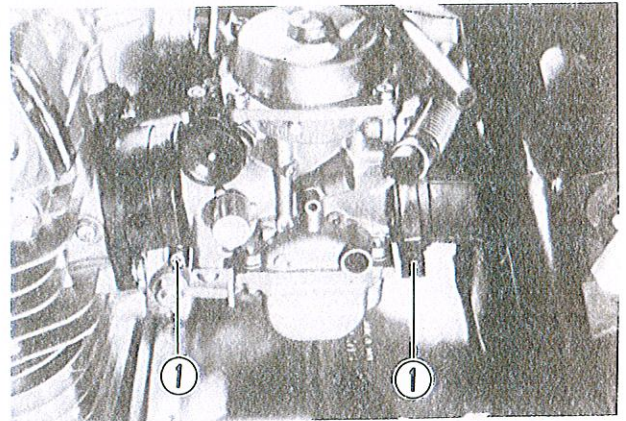
- Straighten the bent washer on the engine sprocket with a chisel and remove the sprocket. Apply rear brake to remove the mounting nut and the sprocket together with the chain from the drive shaft.



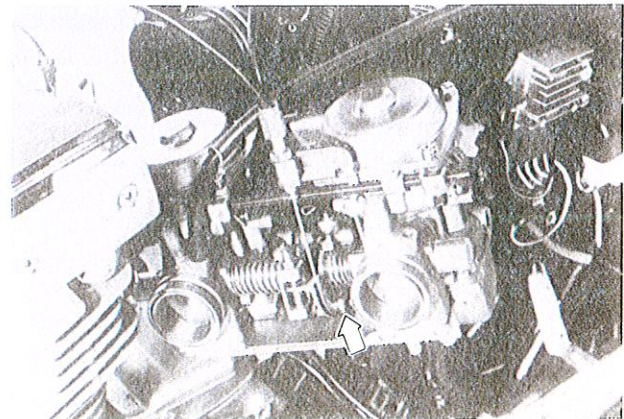
- Remove the air cleaner case fitting screws.



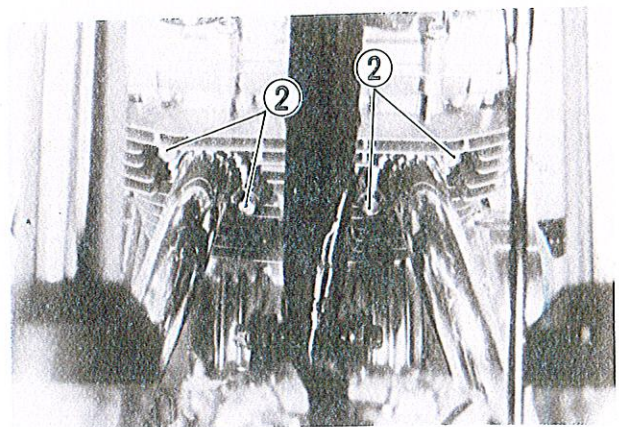
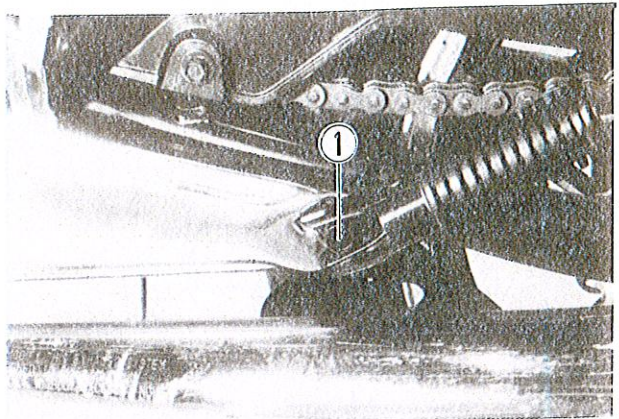
- Loosen the carburetor clamp screws ①, slide the air cleaner case rearward and remove the carburetors.



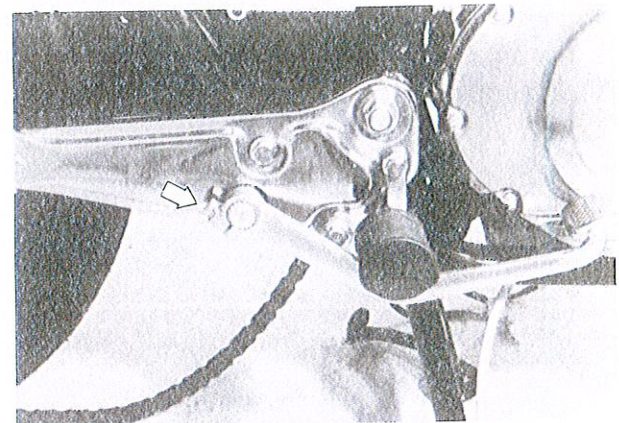
- Remove the throttle cable from the carburetor assembly.



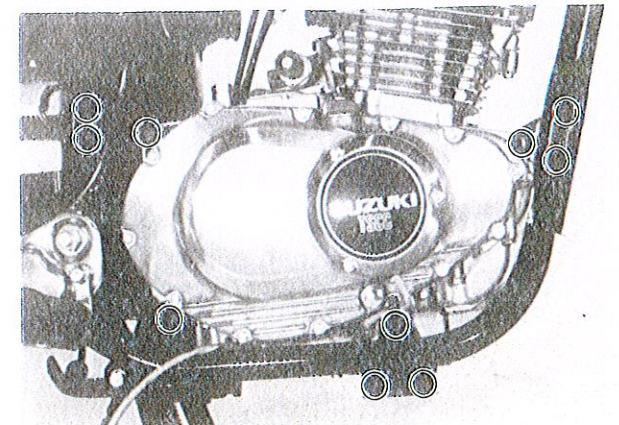
- Remove the left and right mufflers by unscrewing pillion footrest mounting bolts ① and exhaust pipe clamp bolts ②.



- Remove the rear brake pedal.



- Remove the engine mounting bolts and brackets.
- Gradually lift up the engine and lower the engine ass'y on the right side making sure that it does not make contact with the rear bracket. Remove the engine through the right side of the frame.



SERVICING ENGINE

VALVE SPRINGS

- The valve springs for intake and exhaust valves were composed of inner and outer spring on the GS250T, but only one valve spring per valve is installed for GS300L.

Together with this, the valve spring tension and the shape of the valve spring seat were changed.

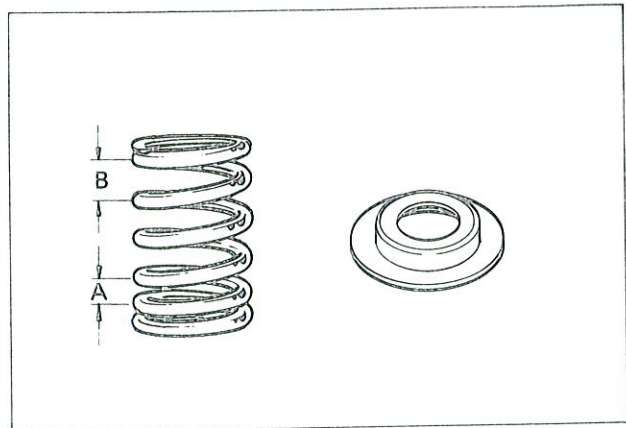
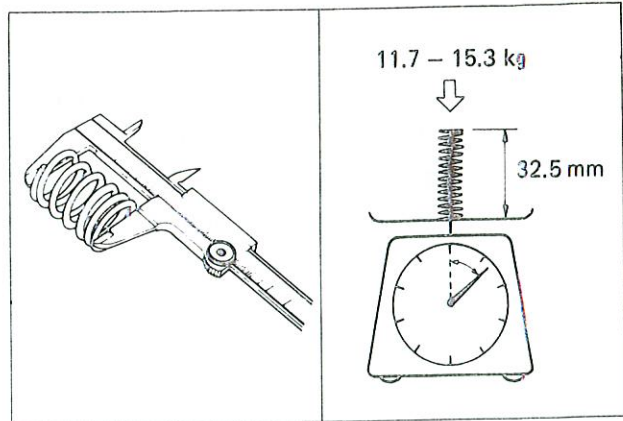
Valve spring free length

Service Limit	36.1 mm (1.42 in)
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Valve spring tension

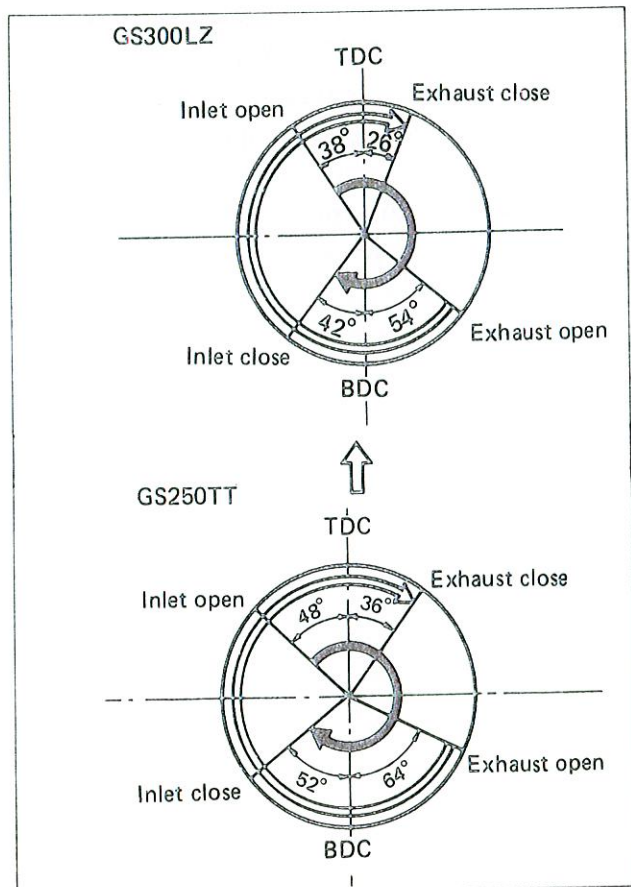
Standard	11.7 – 15.3 kg/32.5 mm (25.8 – 33.7 lbs/1.28 in)
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- Install the valve springs with the small pitch portion **A** down.
B: Large-pitch portion.



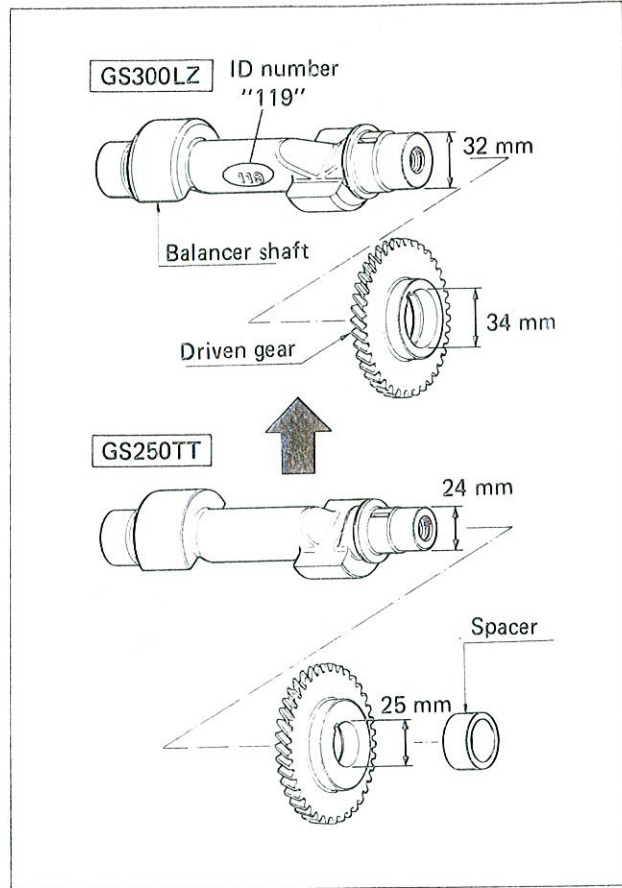
CAM SHAFT

- Basically this model's engine is a up-sized bore version of the GS250T engine. With the up-sizing, the intake and exhaust cam shafts have been changed. Along with the differences in the intake and exhaust cam shafts, valve timing has been changed.



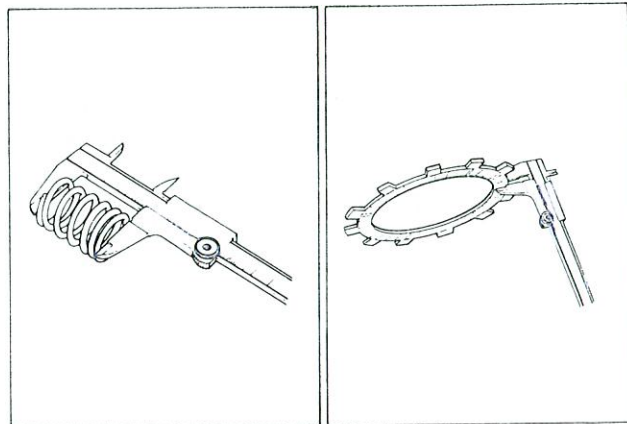
COUNTERBALANCER

- The dimensions of the counterbalancer shaft and the driven gear of the balancer were changed as shown in the illustration on the right. Together with this, the spacer was abolished, and the number "119" was marked on the counterbalancer shaft.



CLUTCH DRIVE PLATES, DRIVEN PLATES AND SPRINGS

- The transmission of GS300L is a 5-speed transmission on the basis of the transmission of GS250T. Together with this, the clutch drive and driven plates and the clutch spring were changed.



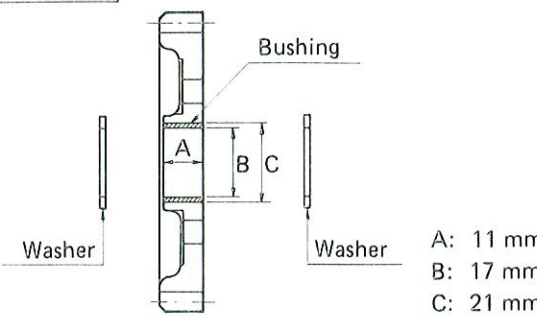
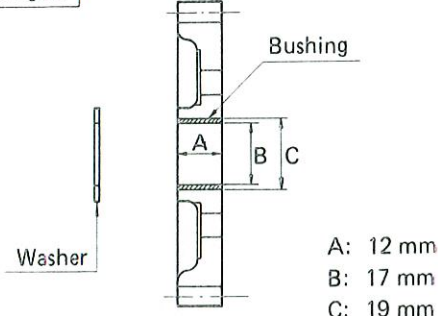
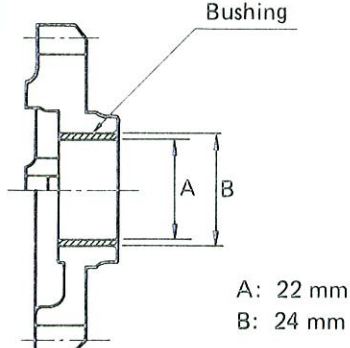
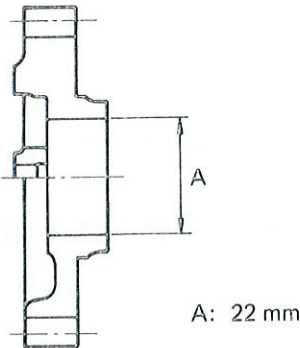
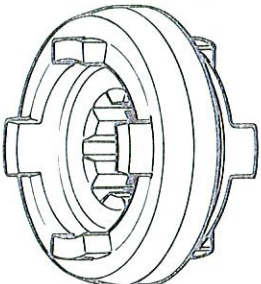
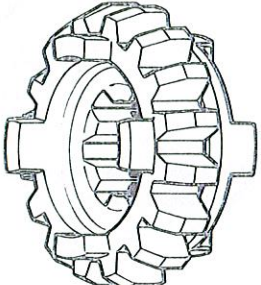
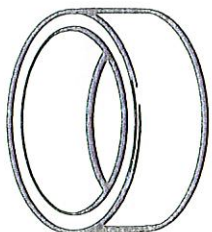
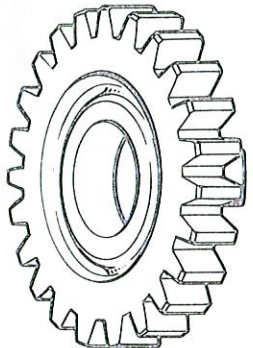
Unit: mm (in)

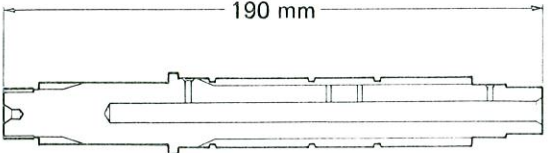
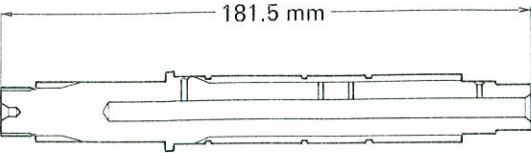
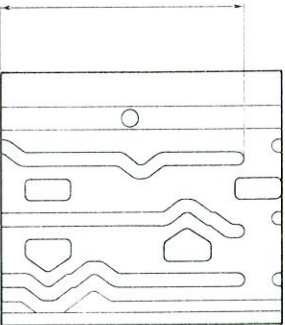
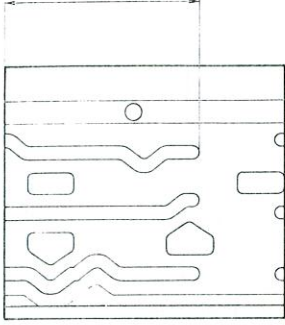
		GS300LZ	GS250TT
Drive plate		8 pieces	7 pieces
Driven plate		7 pieces	6 pieces
Drive plate thickness	STD	2.7 – 2.9 (0.10 – 0.11)	2.9 – 3.1 (0.11 – 0.12)
	Service Limit	2.4 (0.09)	2.6 (0.10)
Driven plate thickness	STD	1.20 ± 0.05 (0.047 ± 0.002)	1.60 ± 0.05 (0.063 ± 0.002)
Clutch spring free length	Service Limit	29.5 (1.16)	33.6 (1.32)

TRANSMISSION

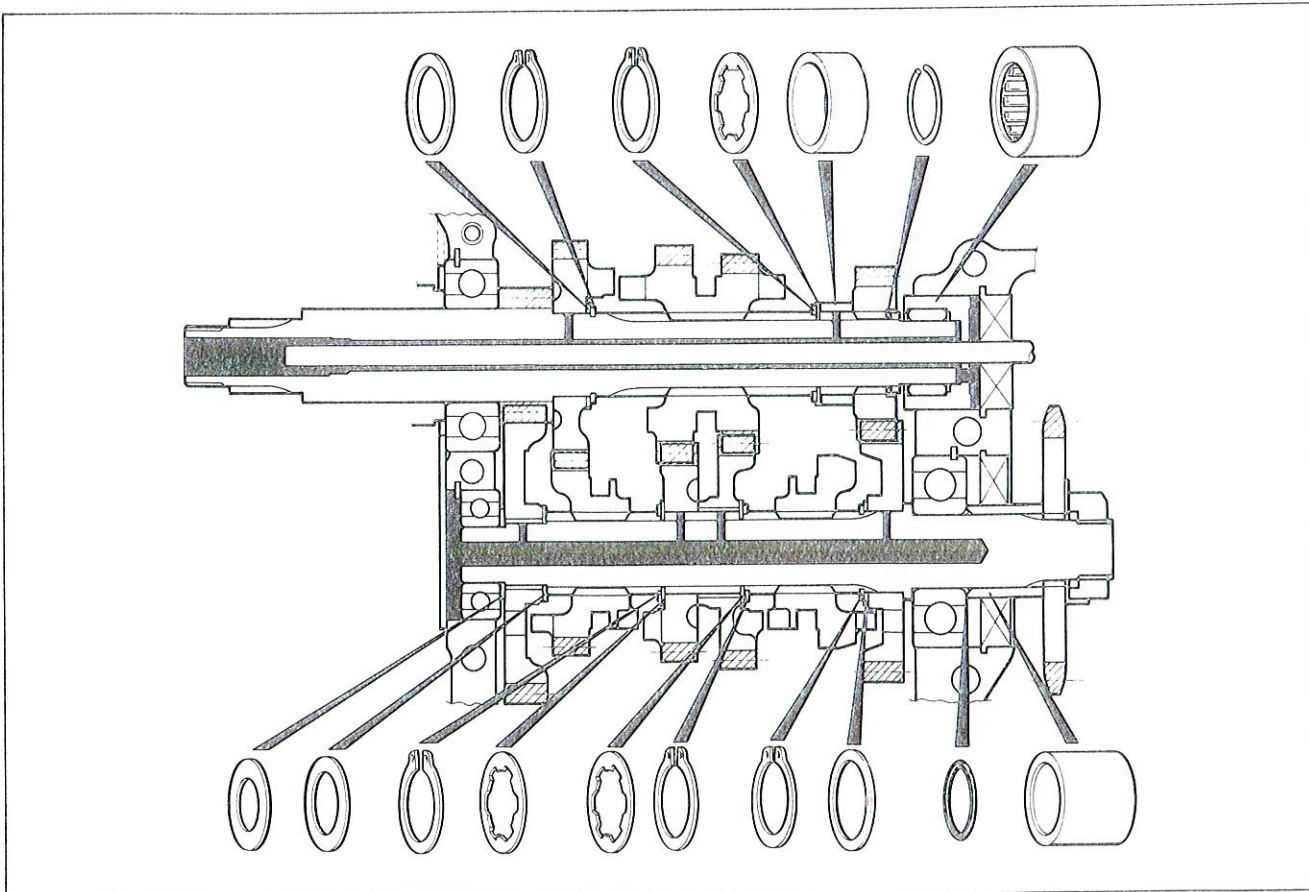
- The transmission of GS300L is based on the transmission of GS250T and has been changed from 6 speeds to 5 speeds.

The main differences between the corresponding parts of the transmissions of GS300LZ and GS250TT are as shown below.

GS300LZ	GS250TT
<p>1st driven gear</p>  <p>A: 11 mm B: 17 mm C: 21 mm</p>	<p>1st driven gear</p>  <p>A: 12 mm B: 17 mm C: 19 mm</p>
<p>3rd driven gear</p>  <p>A: 22 mm B: 24 mm</p>	<p>3rd driven gear</p>  <p>A: 22 mm</p>
<p>Sliding dog wheel</p> 	<p>6th driven gear</p> 
<p>Spacer</p> 	<p>6th drive gear</p> 

GS300LZ	GS250TT
<p data-bbox="115 275 228 300">Driveshaft</p> 	<p data-bbox="771 275 885 300">Driveshaft</p> 
<p data-bbox="115 663 261 688">Gearshift cam</p>  <p data-bbox="233 1010 643 1035">(Development of the lead groove shape)</p>	<p data-bbox="771 663 917 688">Gearshift cam</p>  <p data-bbox="889 1010 1299 1035">(Development of the lead groove shape)</p>

TRANSMISSION GEARS AND RELATED PARTS



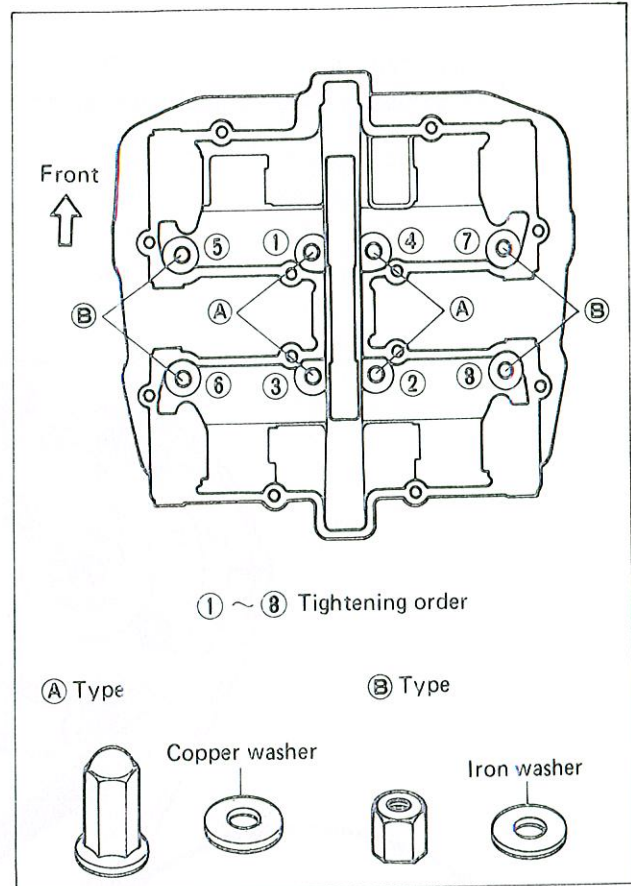
CYLINDER HEAD

The cylinder head nut and its washer consists of two types. When the cylinder head has been removed, reinstallation should be carried out according to the illustration right.

If a **(B)** type nut and its washer is used on the **(A)** section of the cylinder head, it may cause oil leakage.

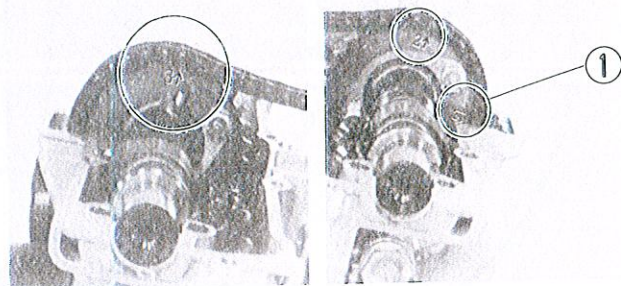
Therefore, the cylinder head should be fitted with the correct set of nut and washer.

Cylinder head nut tightening torque	2.2 – 2.8 kg-m (16.0 – 20.0 lb-ft)
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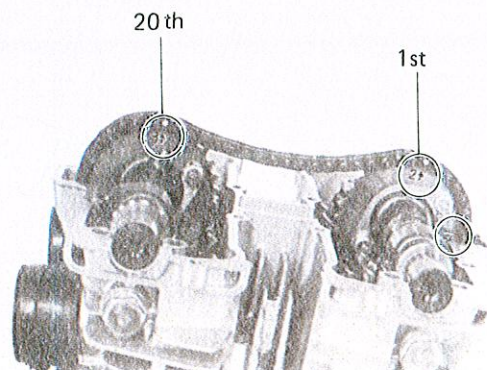


CAM TIMING ADJUSTMENT

- With R" T" mark accurately lined up with the timing mark, hold the crankshaft steady and lightly pull up the chain to remove the slack between the crank sprocket and exhaust sprocket.
- Exhaust sprocket bears an arrow mark "1" indicated as ①. Turn over the exhaust camshaft so that the arrow points flush with the gasketed surface of the cylinder head. Engage the timing chain with this sprocket.

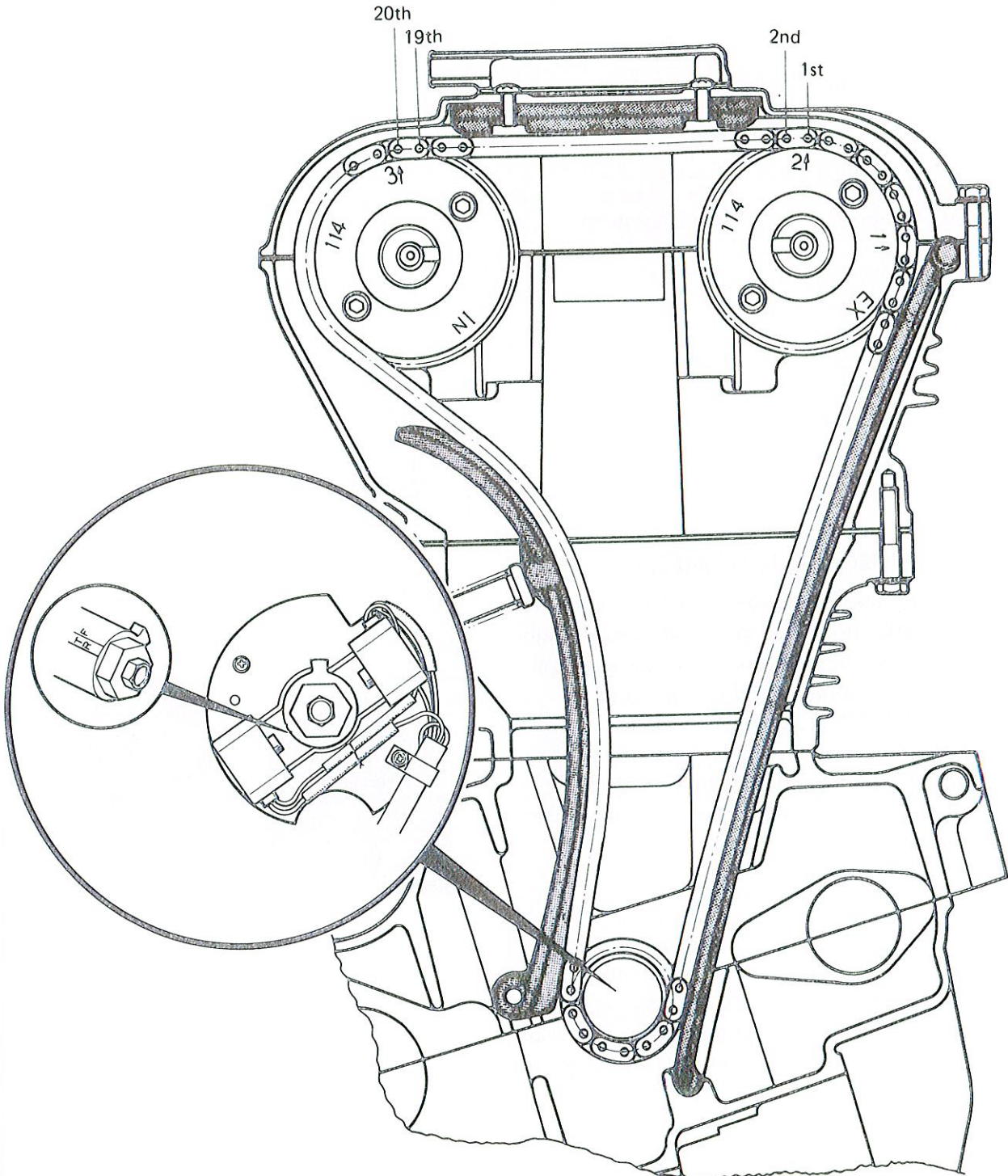


- The other arrow mark "2" is now pointing straight upward. Count the chain roller pins toward the intake camshaft, starting from the roller pin directly above this arrow mark "2" and ending with the 20th roller pin. Engage the chain with intake the arrow mark "3" on the intake sprocket.



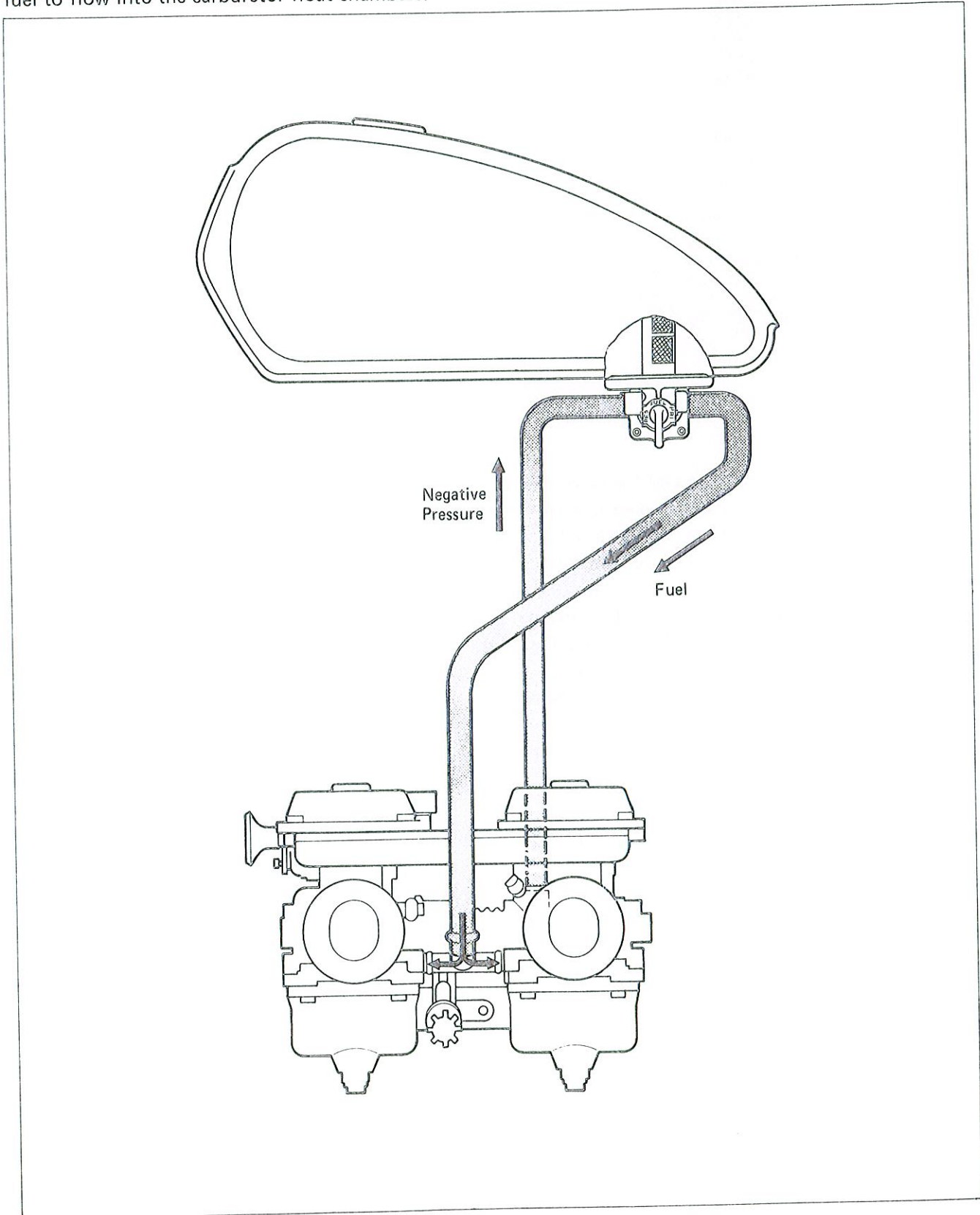
NOTE :

The timing chain is now riding on all three sprockets. Be careful not to disturb the crankshaft until four holders and cam chain tensioner are secured.

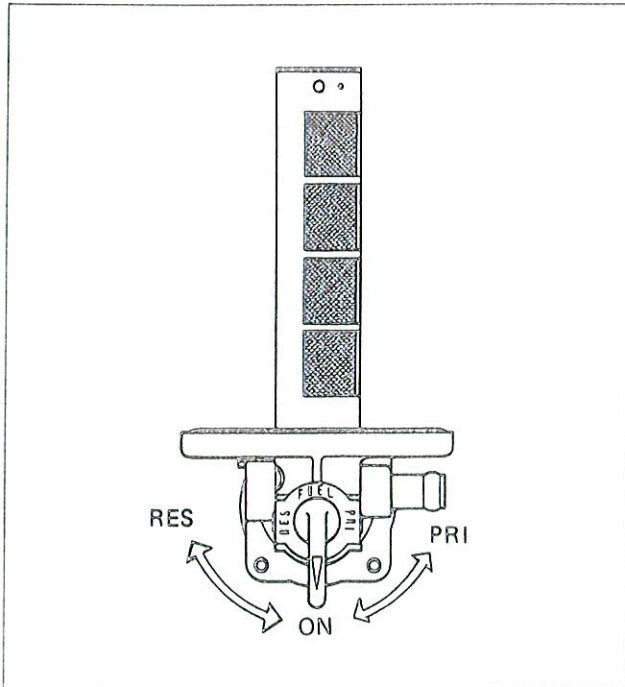


FUEL SYSTEM

When the starter motor is engaged, a negative pressure (vacuum) is generated in the combustion chamber. This vacuum is then transmitted to the diaphragm of the fuel cock through a passageway in the main carburetor bore and a vacuum pipe. When the vacuum applied to the diaphragm becomes greater than the spring pressure holding the diaphragm controlled fuel valve closed, the fuel valve is forced open, allowing fuel to flow into the carburetor float chambers.

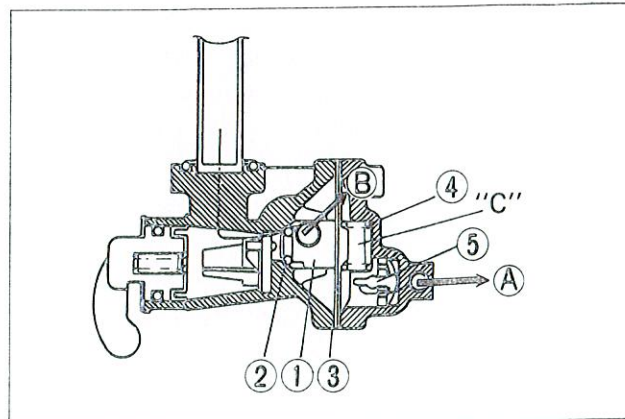


FUEL COCK



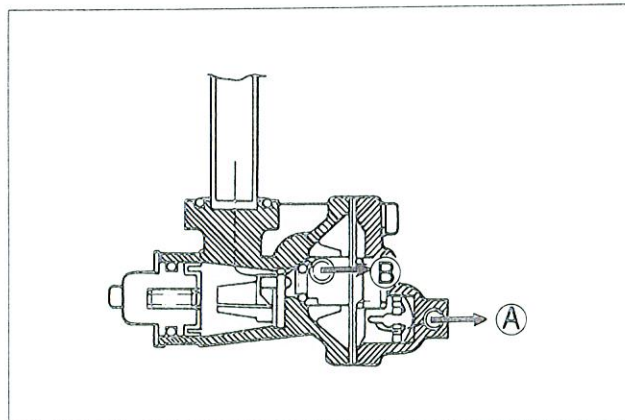
When the engine is not running and the valve is in the ON or RES position, the fuel valve is kept in the closed position by applying pressure utilizing a spring so that no fuel will flow to the carburetors. When the engine is started, a negative pressure is generated in the diaphragm chamber "C" through the vacuum (negative pressure) pipe which is connected to the No. 2 carburetor, and builds up a negative pressure which is higher than the spring pressure so that the diaphragm is forced to open the fuel valve and thus allow the fuel to flow to the carburetors.

When the lever is set to PRI position, the protrusion ⑥ located on the lever end pushes back the fuel valve mechanically against the spring force and it allows fuel to flow to the carburetors directly, whether the engine is running or not, through the RES side fuel filter and fuel valve clearance.

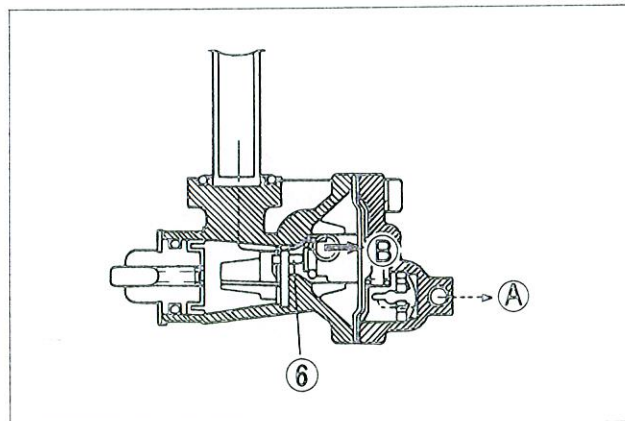


"ON"

- | | | |
|--------------|-----------------|-------------|
| ① Fuel valve | ② O-ring | ③ Diaphragm |
| ④ Spring | ⑤ One way valve | |
| Ⓐ Vacuum | Ⓑ Fuel flow | |



"RES"



"PRI"

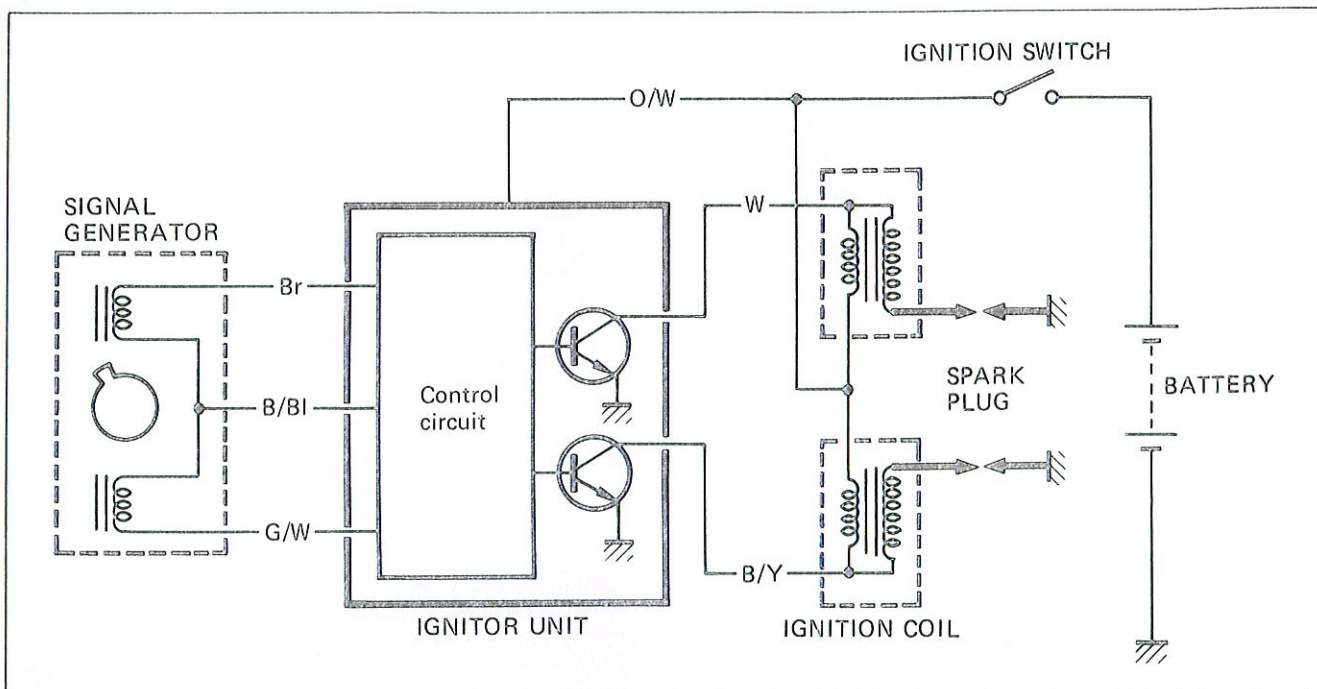
IGNITION SYSTEM

DESCRIPTION

The fully transistorized ignition system consists of a signal generator, ignitor unit, ignition coils, and spark plugs.

The signal generator comprises one rotor and two pickup coils.

The signal generator is mounted at the right end of the crankshaft. The output of the signal generator goes to the ignitor unit, where it turns ON and OFF the transistor alternately. As the transistor is turned ON and OFF, the current passing through the primary winding of the ignition coil is also turned OFF and ON accordingly, thus it induces the secondary current on the ignition coil secondary windings and produce the spark between spark plug gaps.



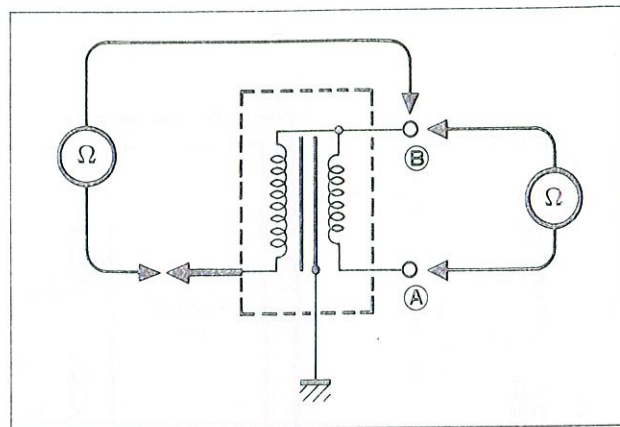
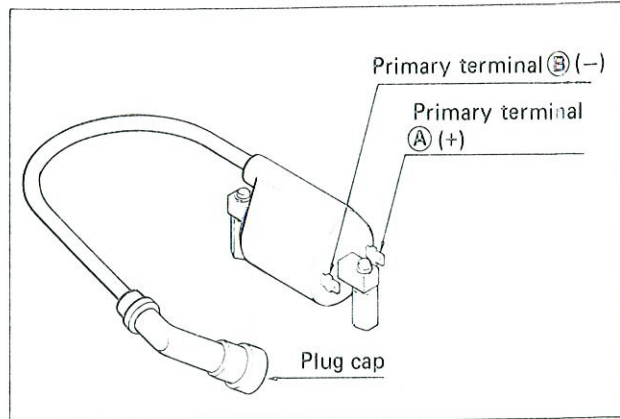
IGNITION COILS

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

09900-25002	Pocket tester
-------------	---------------

Ignition coil resistance

Primary	Terminal (A) ⊕ – Terminal (B) ⊖ Approx. 3 – 5 Ω
Secondary	Terminal (B) ⊖ – Plug cap Approx. 22 – 33 kΩ



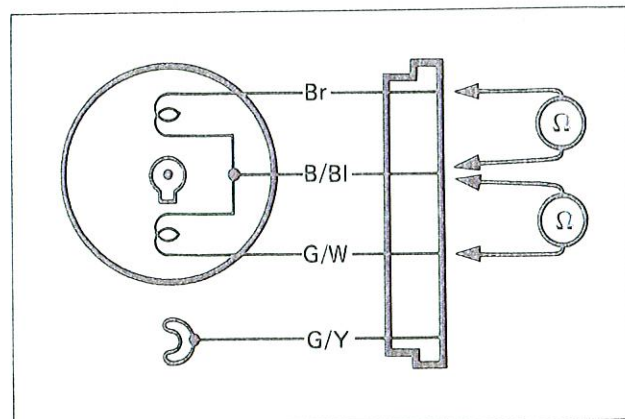
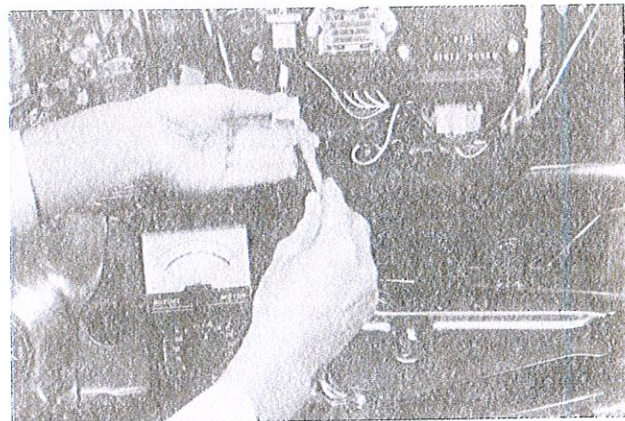
SIGNAL GENERATOR

Measure the resistance between lead wires. If the resistance noted to show infinity or too low resistance value, the signal generator must be replaced.

09900-25002	Pocket tester
-------------	---------------

Signal coil resistance

B/Bl – Br	Approx. 200 – 280 Ω
B/Bl – G/W	



REGULATOR/RECTIFIER

- Using pocket tester, check the continuity between the lead wires as shown.

09900-25002

Pocket tester

REGULATOR/RECTIFIER CHECKING CHART

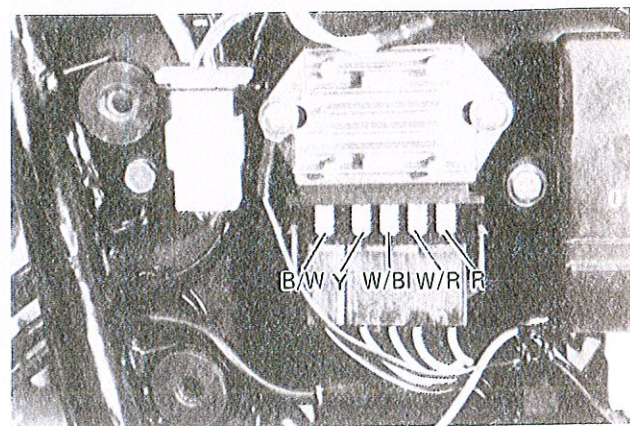
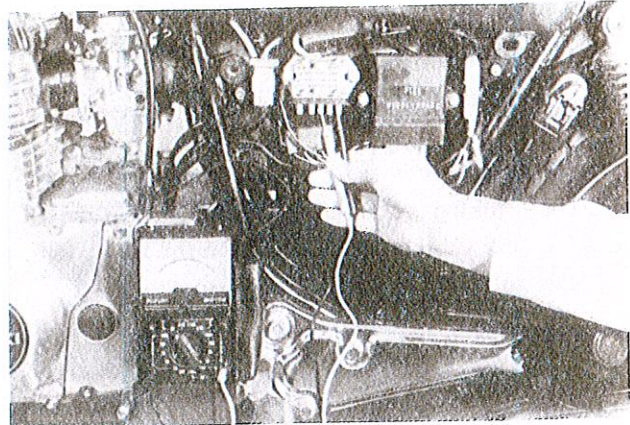
- Using pocket tester ($\times 1\Omega$ range), measure the resistance between the lead wires in the following table.
If the continuity checked is incorrect, replace the regulator/rectifier.

Normal direction: Continuity

⊕ probe of tester	⊖ probe of tester
R	Y
	W/BI
	W/R
	B/W
Y	B/W
W/BI	
W/R	

Reverse direction: No continuity

⊕ probe of tester	⊖ probe of tester
Y	R
W/BI	
W/R	
B/W	
B/W	W/BI
	W/R
	Y



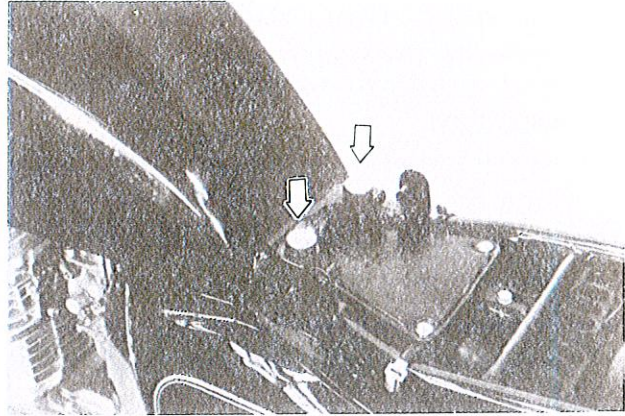
COMBINATION METER

REMOVAL

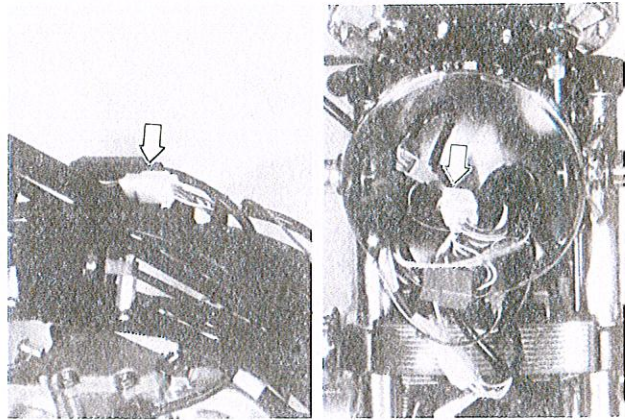
- Remove seat.
- Take off fuel tank.

NOTE:

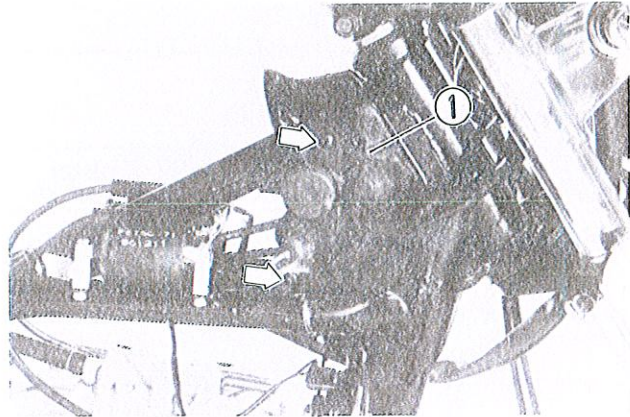
When taking off fuel tank, disconnect fuel hose and vacuum hose and turn the fuel cock lever to "ON" or "RES" position.



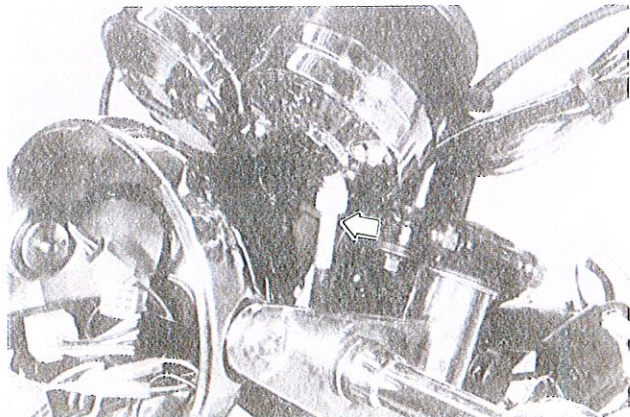
- Disconnect the couplers from combination meter.



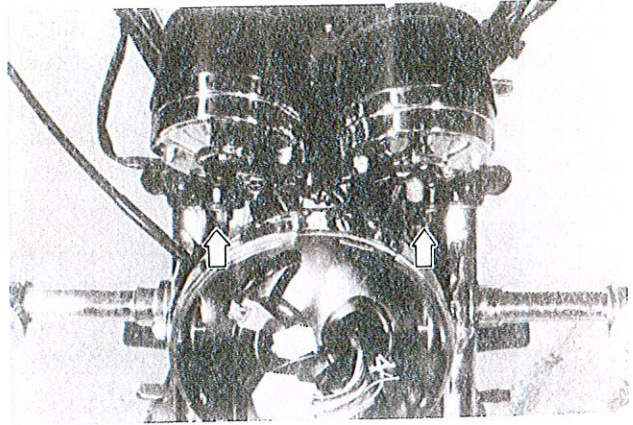
- Remove frame head cover ①.



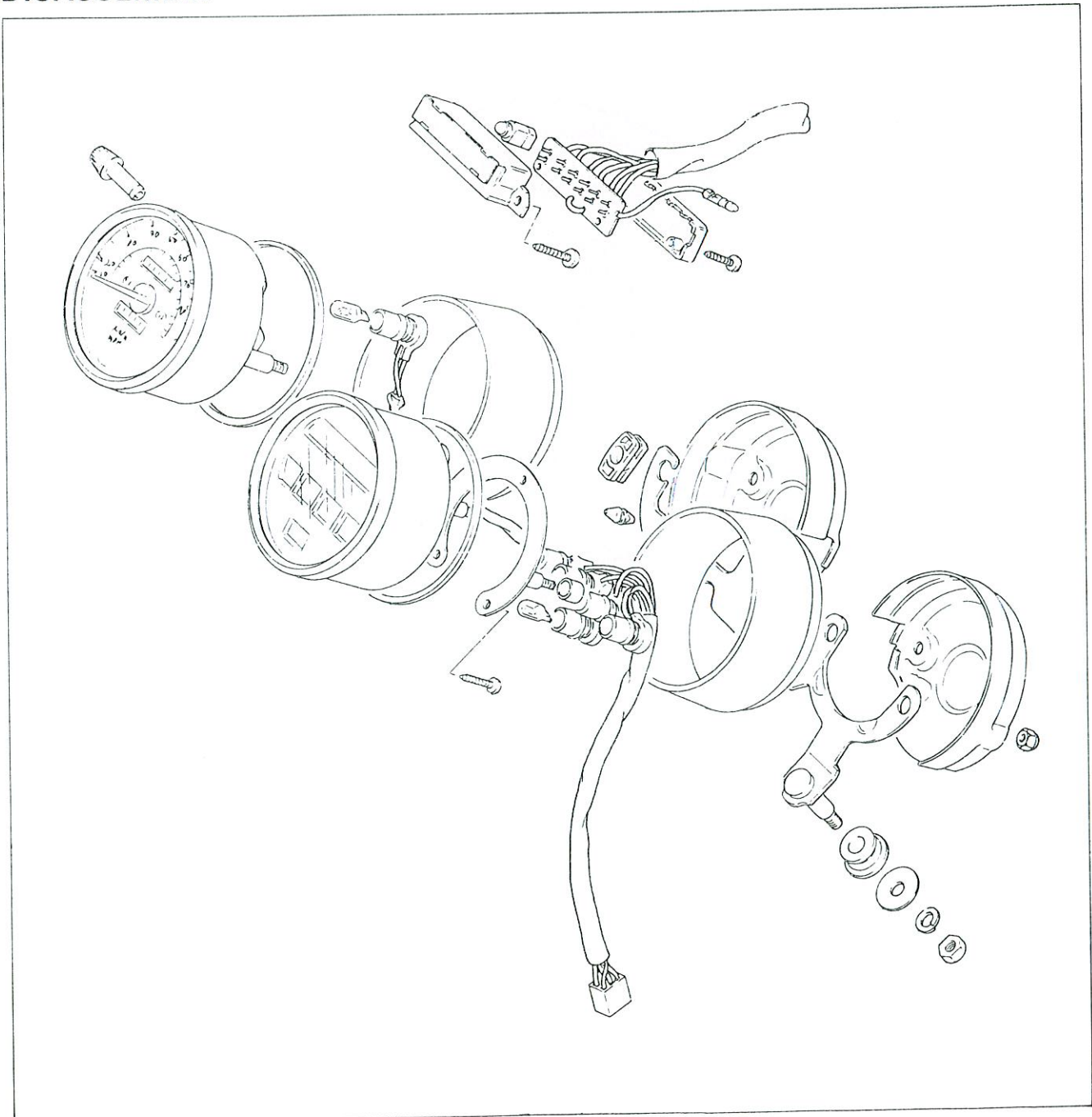
- Disconnect speedometer cable.



- ◉ Remove combination meter mounting nuts and take off meter.



DISASSEMBLY



INSPECTION

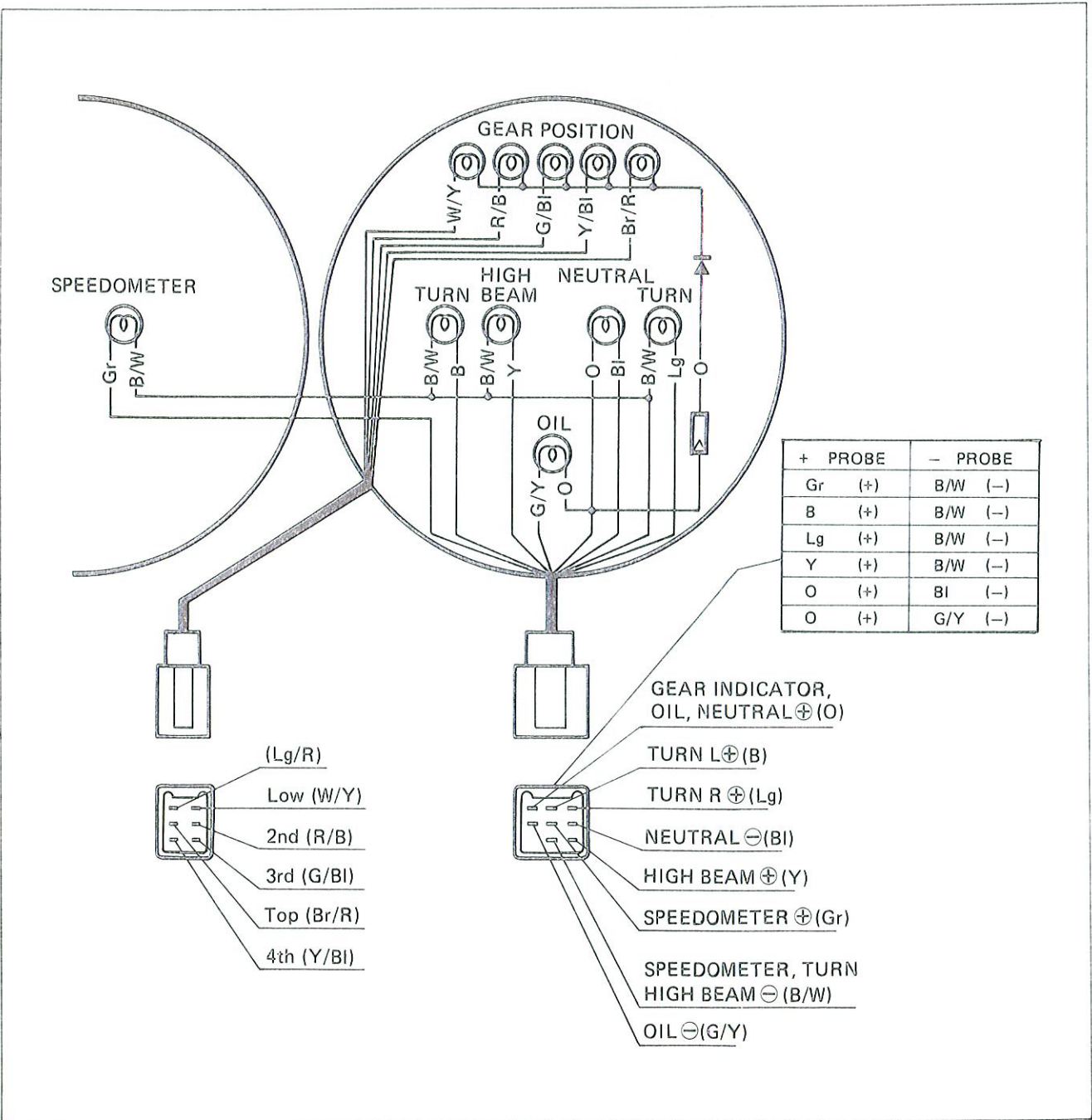
Using pocket tester, check the continuity between lead wires in the following diagram.

If the continuity measured is incorrect, replace the respective part.



09900-25002	Pocket tester
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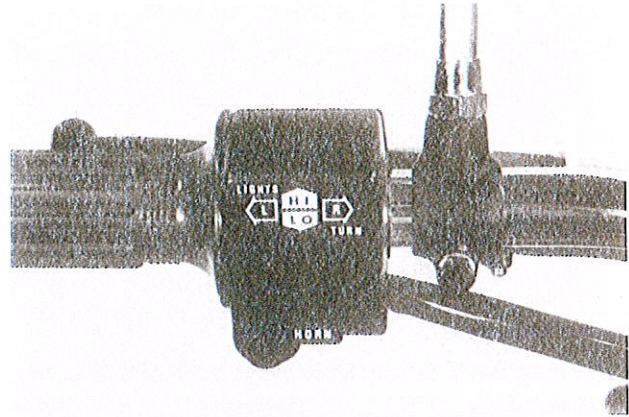
NOTE:
When making this test, it is not necessary to remove the combination meter.



SWITCHES

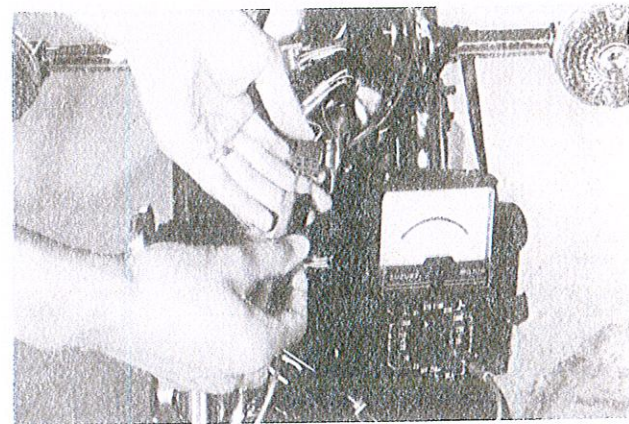
DIMMER SWITCH

Position \ Wire color	Y	Y/W	W
HI	○	○	
LO		○	○



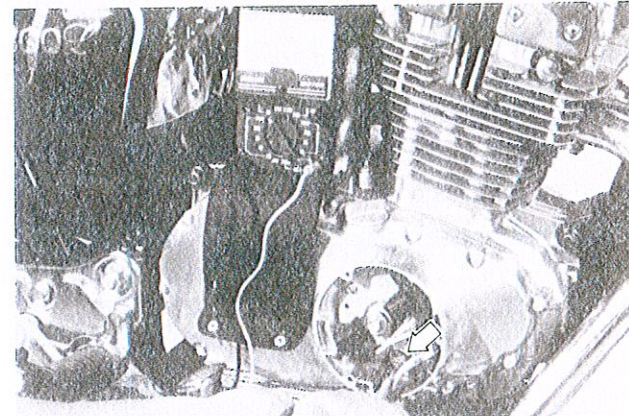
TURN SIGNAL LIGHT SWITCH

Position \ Wire color	B	Lbl	Lg
R		○	○
L	○	○	



HORN SWITCH

Position \ Wire color	G	B/W
HORN	○	○
OFF		



OIL PRESSURE SWITCH

Wire color	G/Y – Ground
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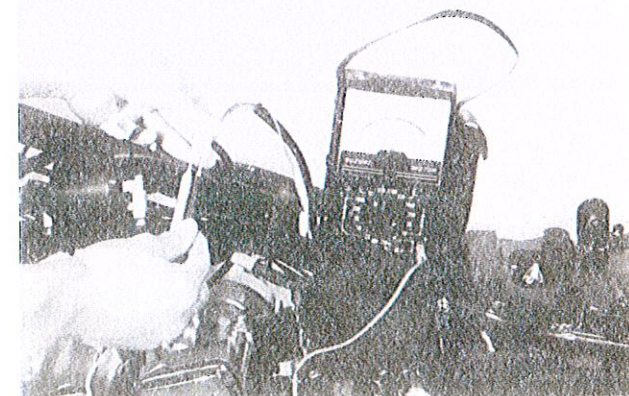
- Continuity, when engine is stopped.
- No. continuity, when engine is running.

CAUTION:

Before testing the oil pressure switch, check the engine oil level.

GEAR POSITION INDICATOR LIGHT SWITCH

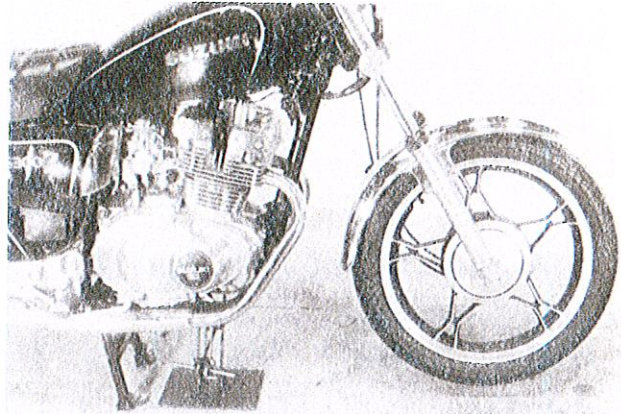
Gear position	Wire color	Ground
1st	W/Y	
Neutral	Bl	
2nd	R/B	
3rd	G/Bl	
4th	Y/Bl	
Top	Br/R	



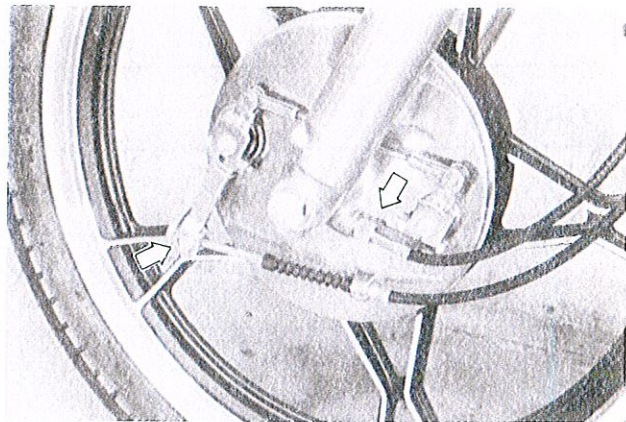
FRONT WHEEL AND BRAKE

REMOVAL AND DISASSEMBLY

- Support the machine by center stand, and jack or block.



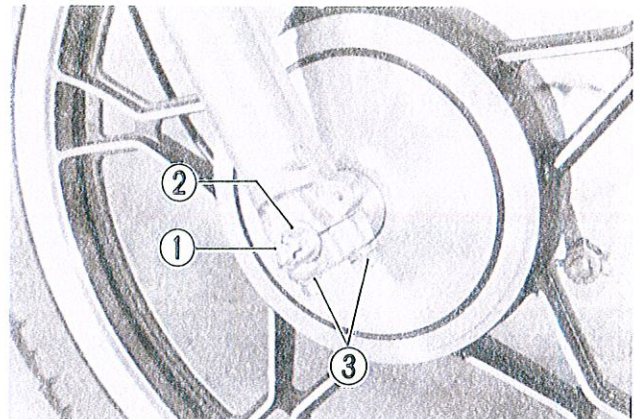
- Remove the speedometer and front brake cables.



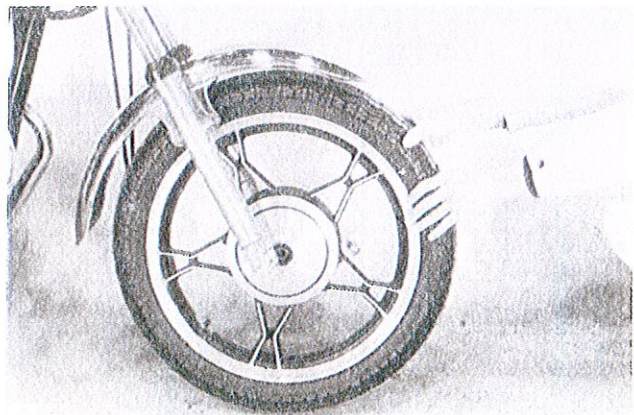
- Pull out cotter pin ① and remove axle nut ②.

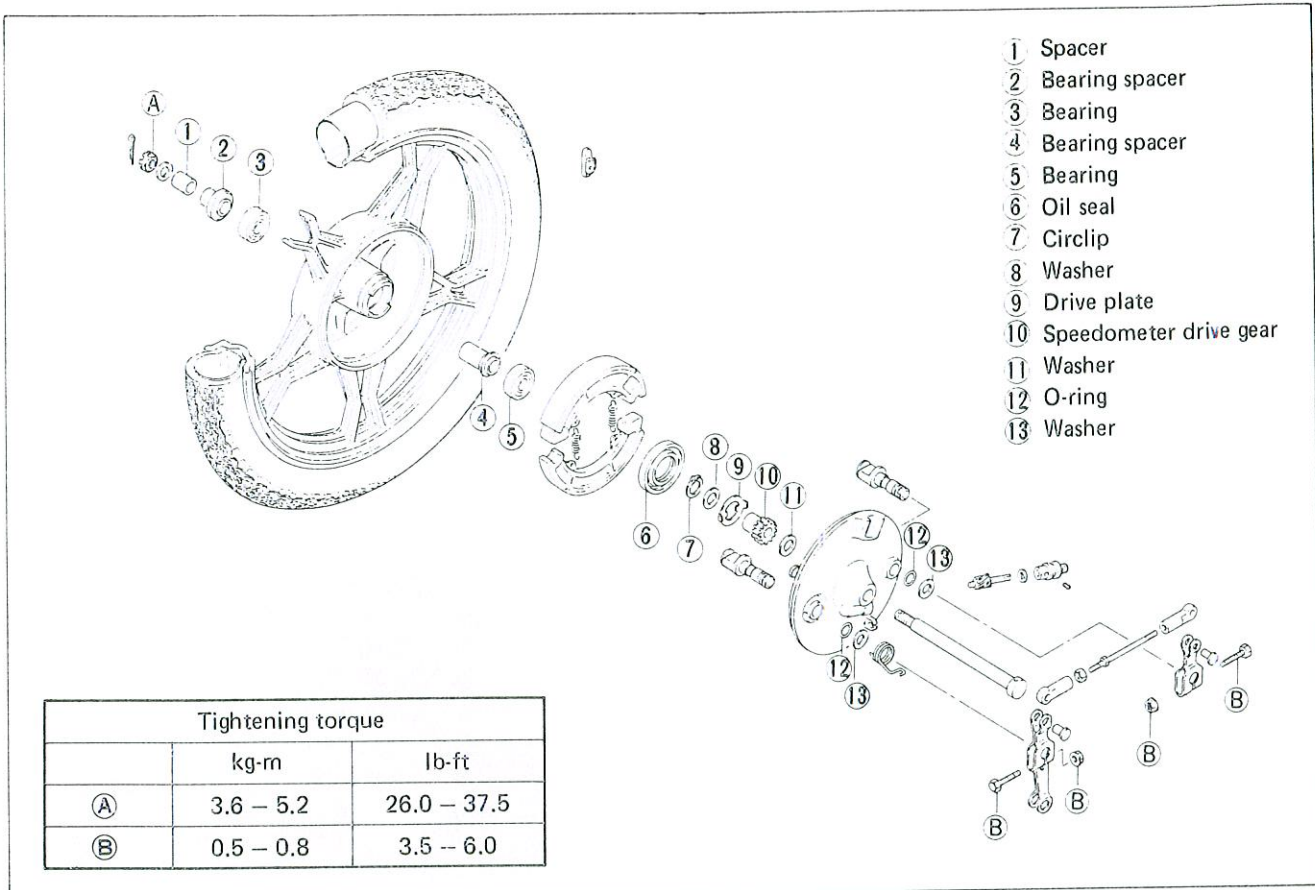
CAUTION:
Do not reuse the cotter pin.

- Loosen the axle holder nuts ③.



- Draw out axle shaft and take off front wheel.





FRONT WHEEL

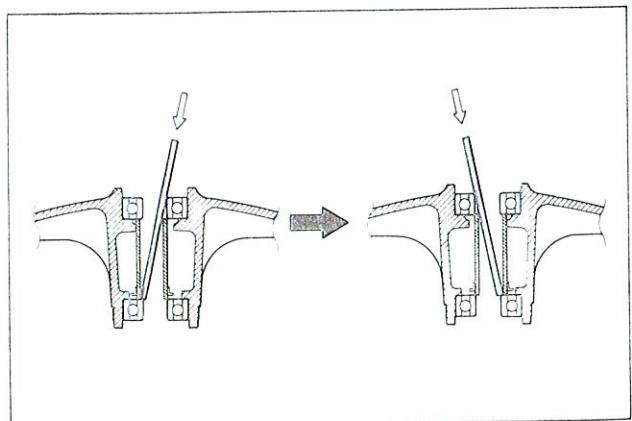
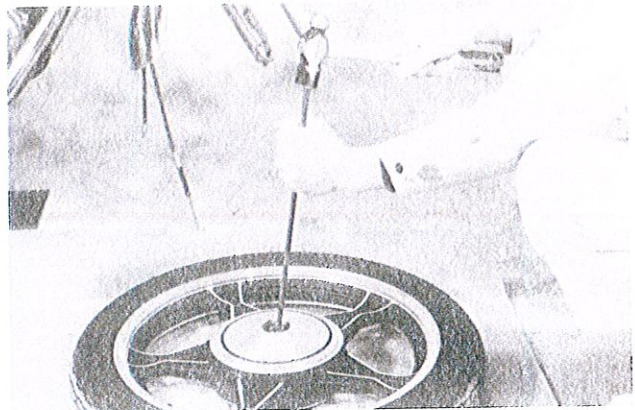
- Push out the wheel bearings, right and left.

NOTE:

Drawing out the left side bearing first makes the job easier.

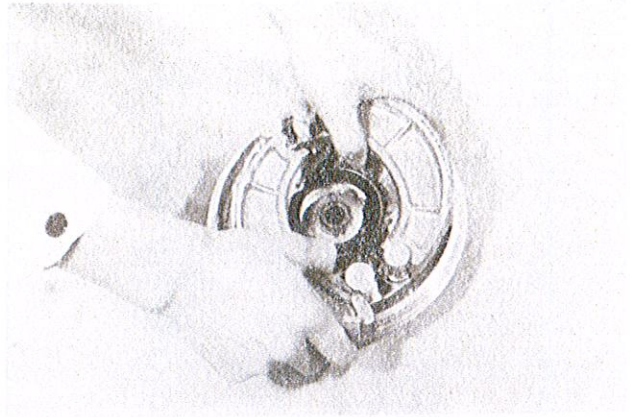
CAUTION:

The removed bearing should be replaced.

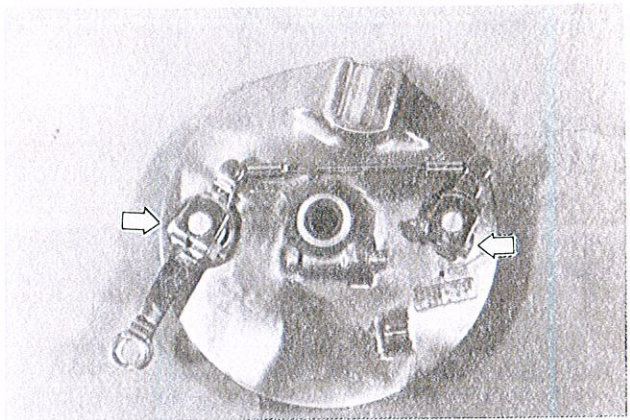


FRONT BRAKE

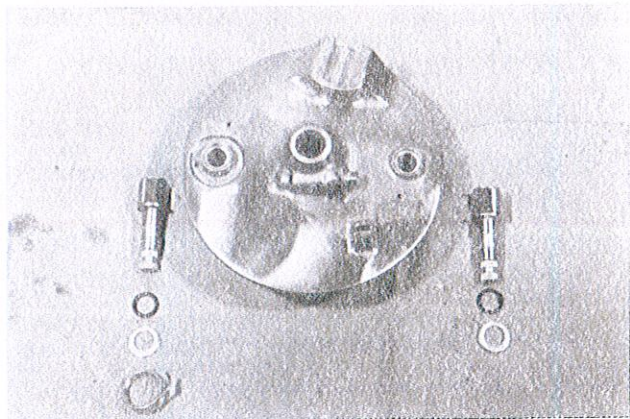
- Take off brake shoes.



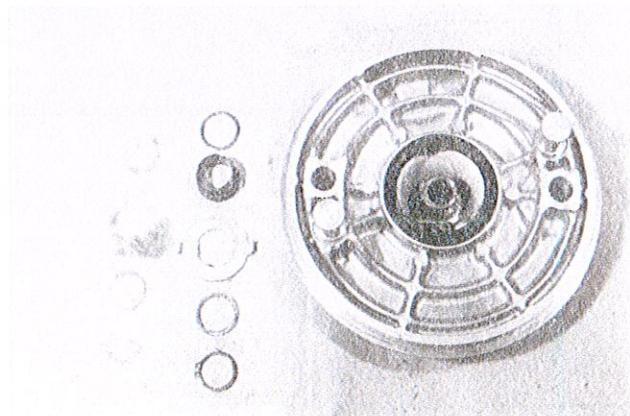
- Remove fitting bolts and pull off brake cam levers.



- Pull off brake cams.



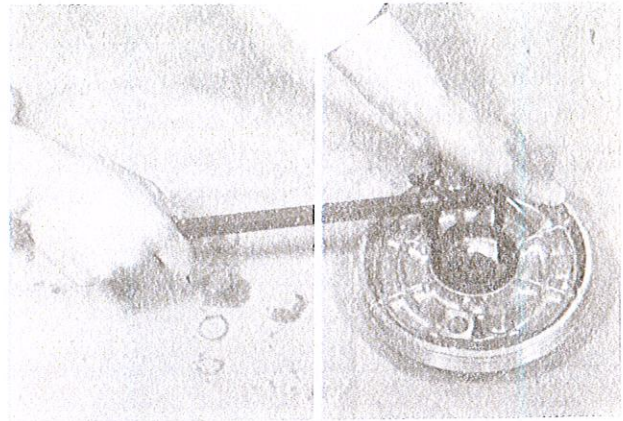
- Remove circlip, and pull off drive plate and drive gear.



Snap ring pliers	09900-06107
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- Remove oil seal by using special tool.

Oil seal remover	09913-50121
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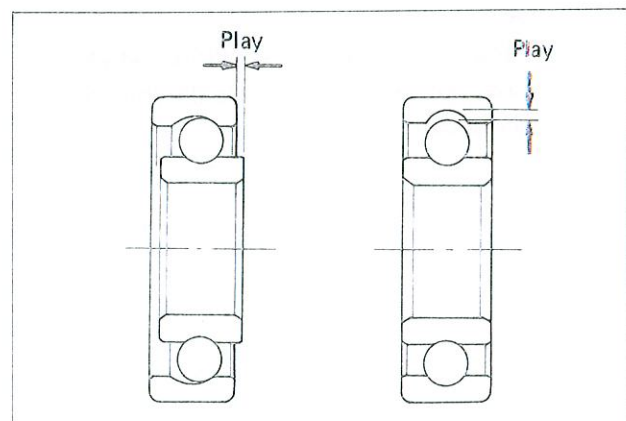
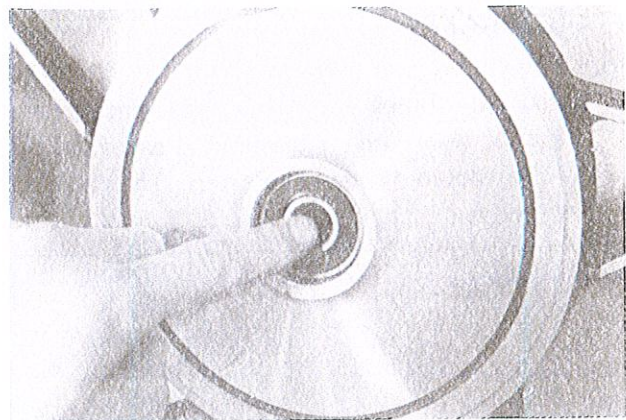


INSPECTION

FRONT WHEEL

Wheel bearings

- Inspect the play of bearing inner race by hand while fixing it in the wheel. Rotate the inner race by hand to inspect an abnormal noise and a smooth rotation. Replace the bearing if there is anything unusual.

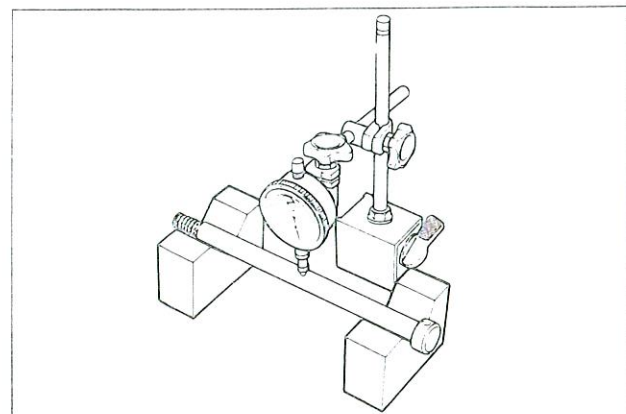


Axle shaft

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

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

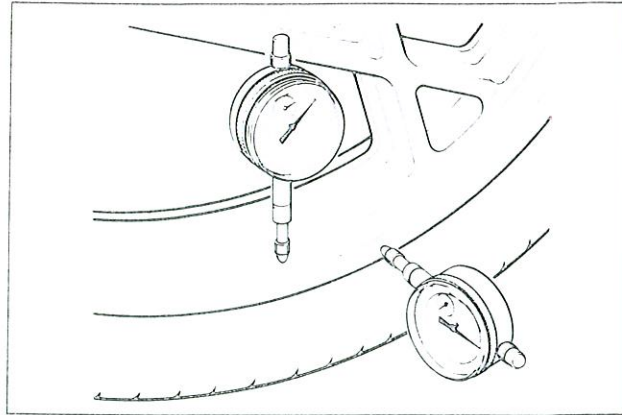
Service Limit	0.25 mm (0.010 in)
---------------	-----------------------



Wheel rim

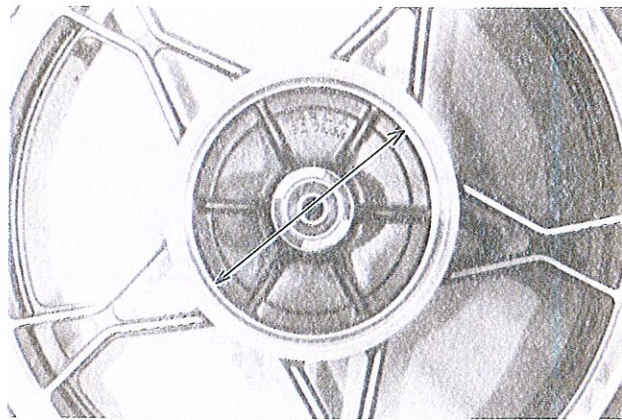
- Make sure that the wheel rim runout checked as shown, does not exceed the service limit. An excessive runout is usually due to worn or loose wheel bearings and can be reduced by replacing the bearings. If bearing replacement fails to reduce the runout, replace the wheel rim.

Service Limit (Axial and Radial)	2.0 mm (0.08 in)
-------------------------------------	-----------------------

**FRONT BRAKE****Brake drum**

- Measure the brake drums I.D. to determine the extent of wear and, if the limit is exceeded by the wear noted, replace the drum. The value of this limit is indicated inside the drum.

Service Limit	180.7 mm (7.11 in)
---------------	-----------------------

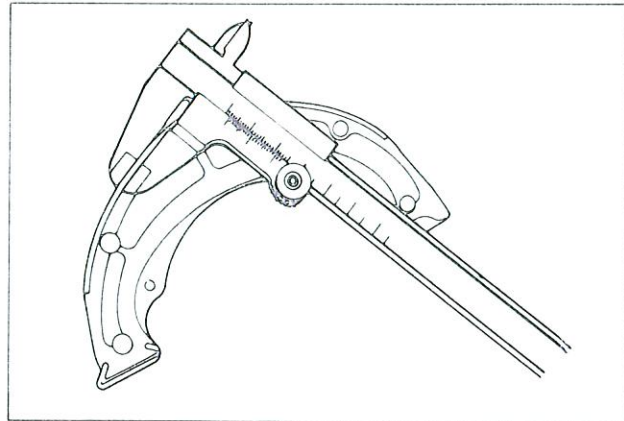
**Brake shoe**

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

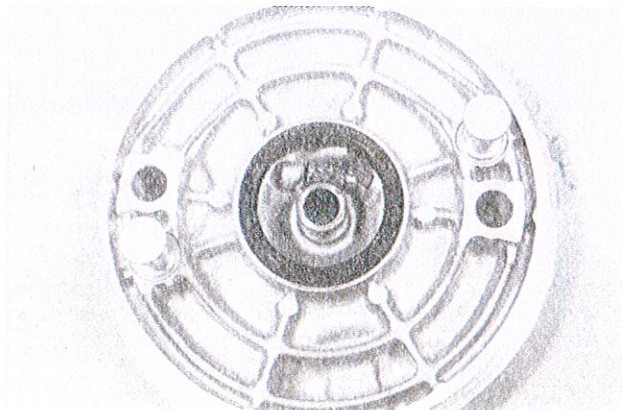
Service Limit	1.5 mm (0.06 in)
---------------	---------------------

CAUTION:

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

**Oil seal**

- Inspect the lip of the oil seal for damage.



REASSEMBLY

Reassemble and remount the front wheel and brake in the reverse order of disassembly and removal, and also carry out the following steps:

WHEEL BEARINGS

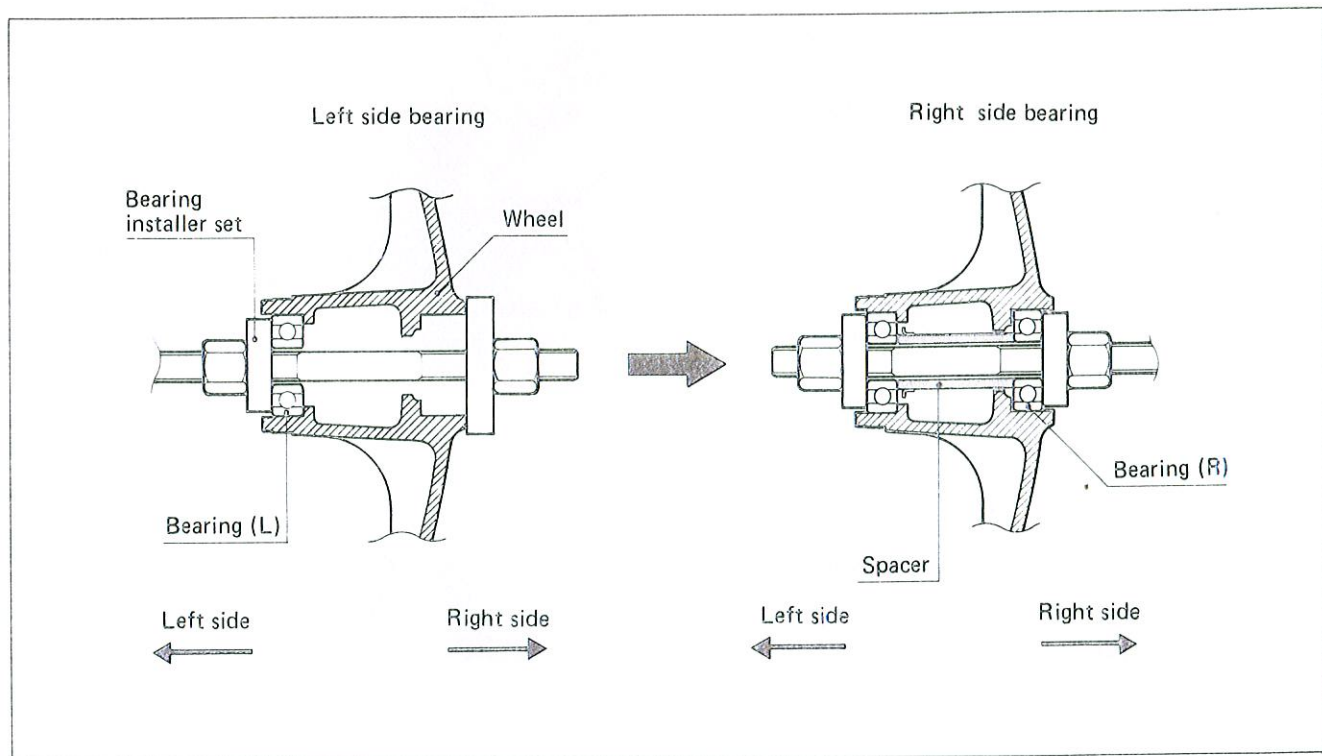
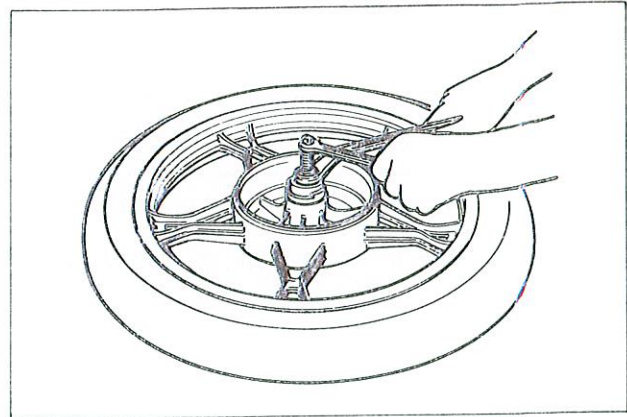
- Install the wheel bearings by using special tool.

CAUTION:

First install the wheel bearing for left side.

09924-84510

Bearing installer set



- Apply grease to the bearing before installing the bearings.

09900-25030

Suzuki super grease "A"



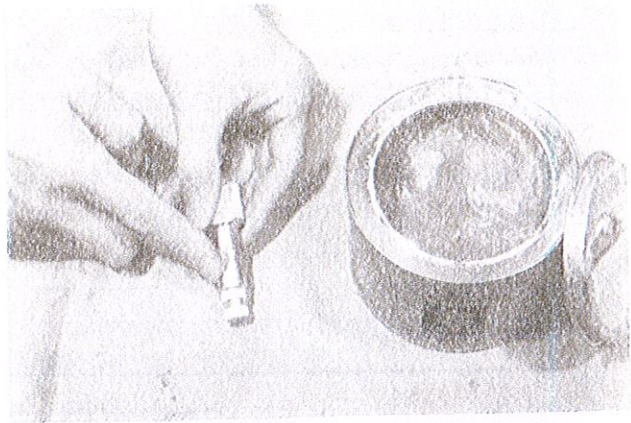
BRAKE CAMS

- Apply grease to the brake cams.

Suzuki super grease "A"	99000-25030
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WARNING:

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

**SPEEDOMETER GEAR**

- Apply grease to the speedometer drive gear.

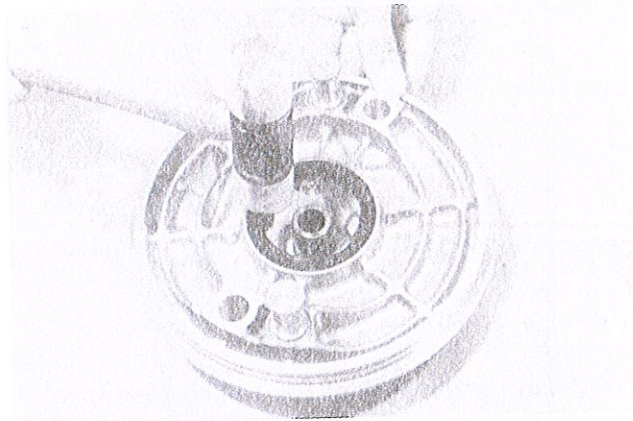
Suzuki super grease "A"	99000-25030
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**OIL SEAL**

- Apply grease to the oil seal before installing.

Suzuki super grease "A"	99000-25030
-------------------------	-------------

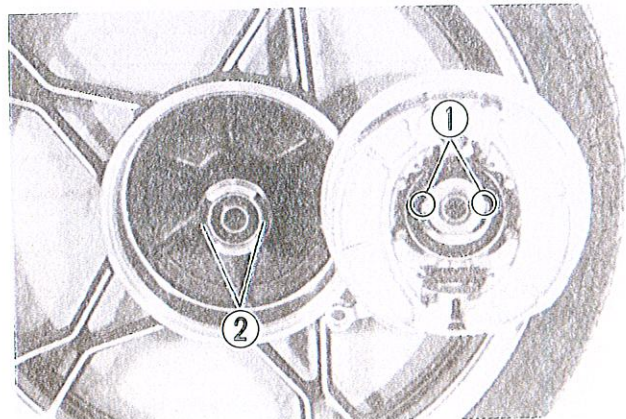
- Install the oil seal.

**BRAKE PANEL**

- Installing the brake panel, align groove ① on the wheel hub with the two drive pawls ② on speedometer gearbox.

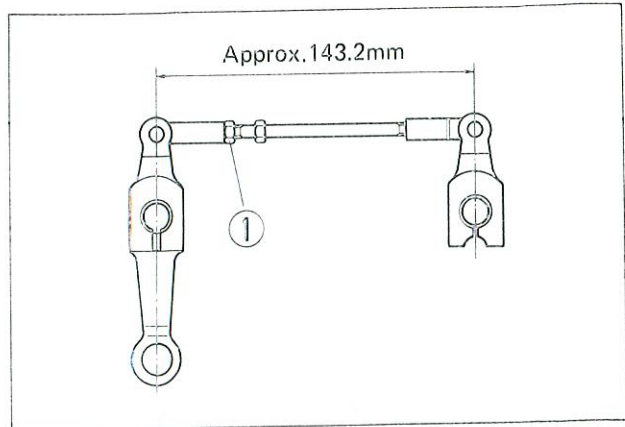
CAUTION:

Adjust the front brake lever play after installation of the front wheel.

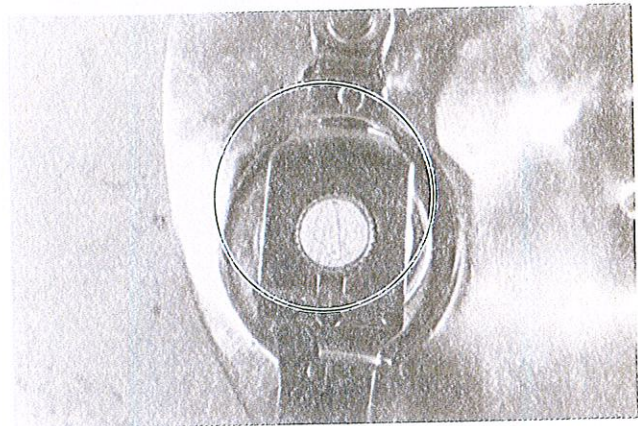


BRAKE CAM LEVER

- Loosen the lock nut ① and adjust the connecting rod to the dimensions shown in the illustration on the right.
- Tighten the lock nut ①.

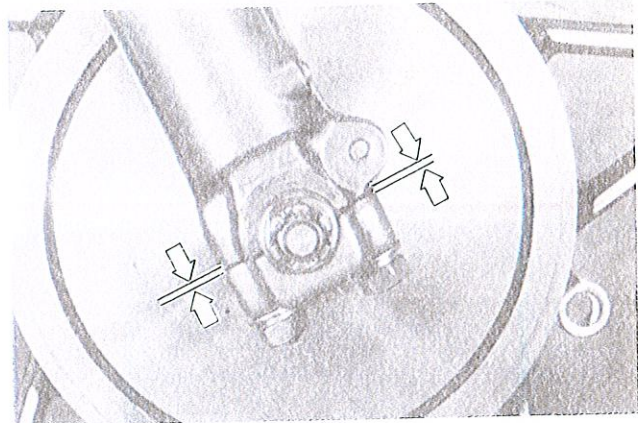


- Install the brake cam lever after matching the punch mark on the cam lever with the index mark on the cam.

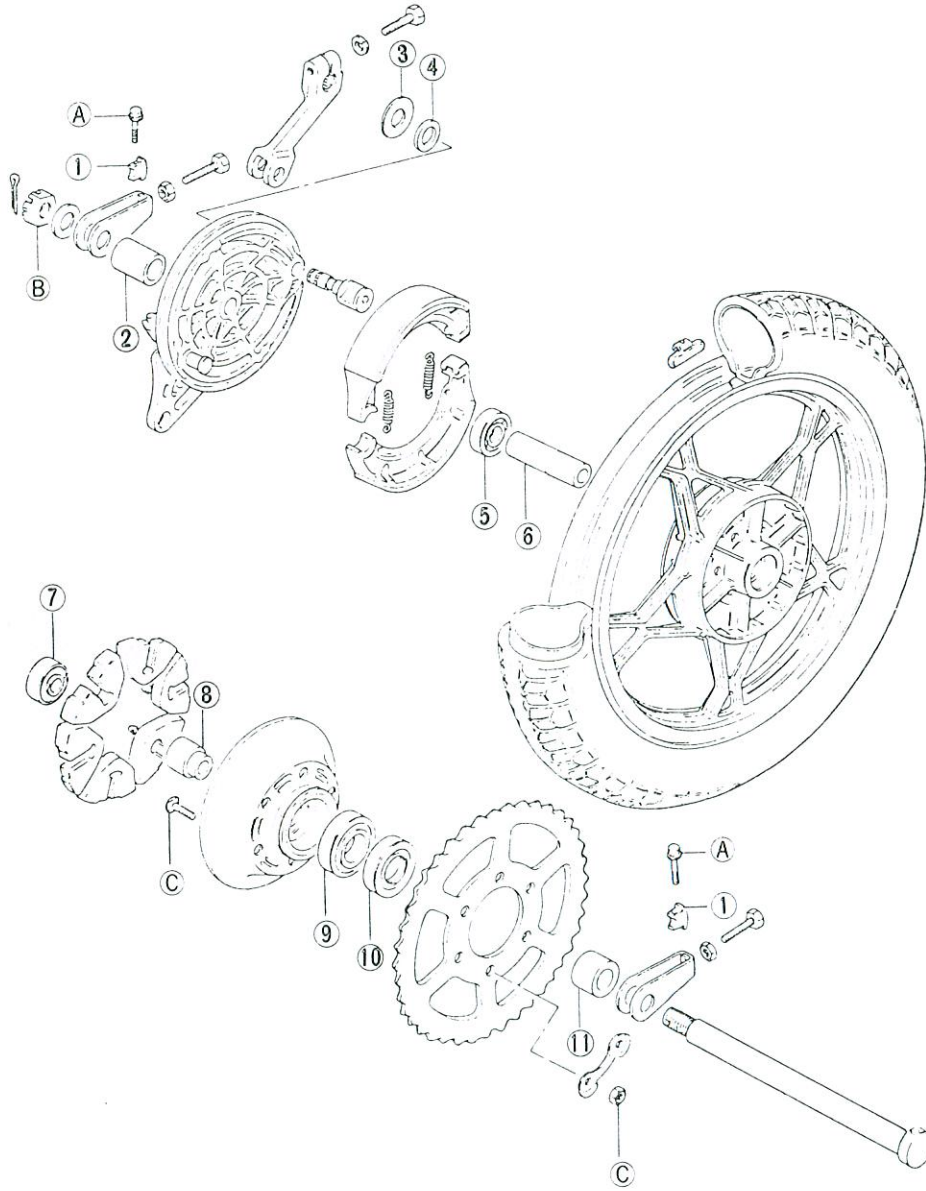
**AXLE HOLDER**

- When securing the axle holder, be sure to tighten the nuts on the holder in such a way that clearances ahead of and behind the axle will become equalized.

Tightening torque	1.5 – 2.5 kg-m (11.0 – 18.0 lb-ft)
-------------------	---------------------------------------



REAR WHEEL



- ① Chain adjuster supporter
- ② Spacer
- ③ Washer
- ④ O-ring
- ⑤ Bearing
- ⑥ Bearing spacer
- ⑦ Bearing
- ⑧ Sprocket drum retainer
- ⑨ Bearing
- ⑩ Oil seal
- ⑪ Spacer

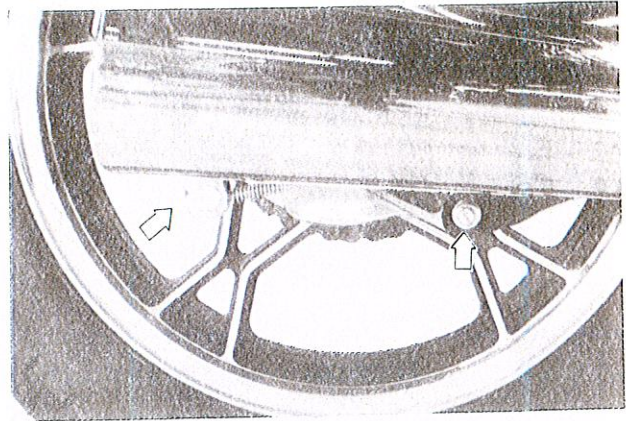
Tightening torque		
	kg-m	lb-ft
A	1.5 - 2.0	11.0 - 14.5
B	5.0 - 8.0	36.0 - 58.0
C	2.5 - 4.0	18.0 - 29.0

REMOVAL

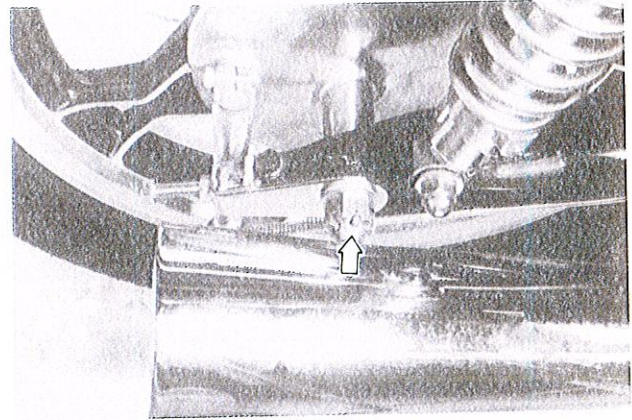
- Support the machine by center stand.
- Remove brake adjuster, and torque link nut after pulling out cotter pin.

CAUTION:

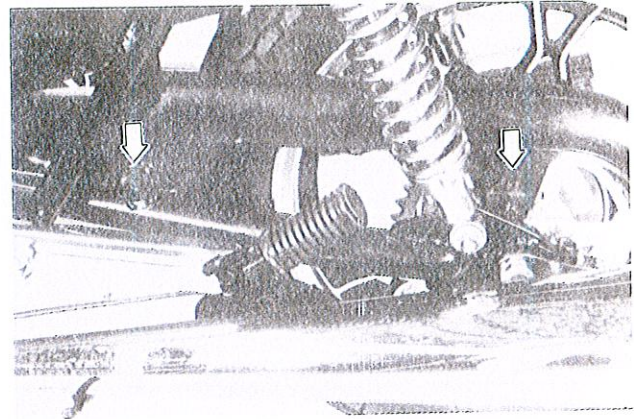
Do not reuse the cotter pin.



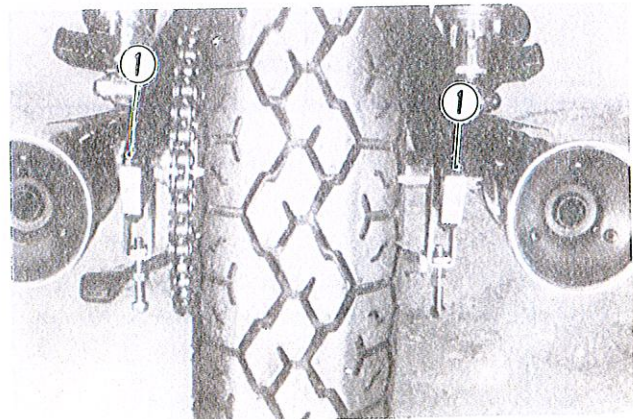
- Pull out cotter pin and loosen axle nut.



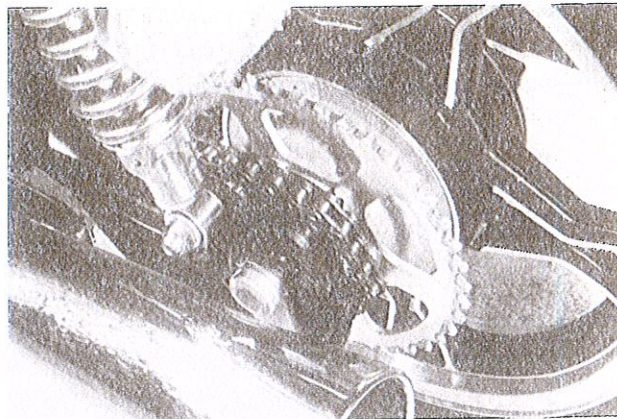
- Loosen the two fitting bolts and take off chain case.



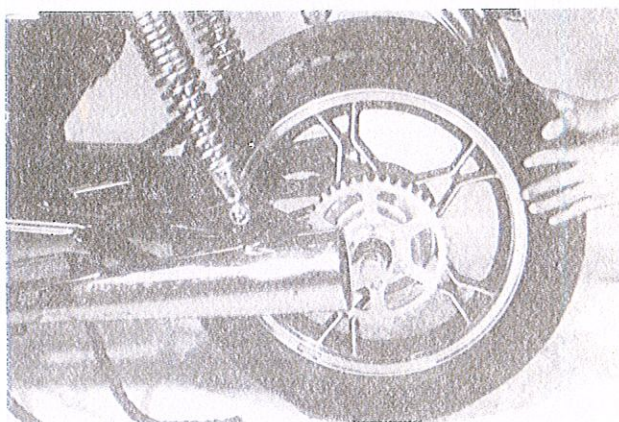
- Pull the rear wheel rearward and push down chain adjusters.
- Remove chain adjuster supporter by loosening bolt ①.



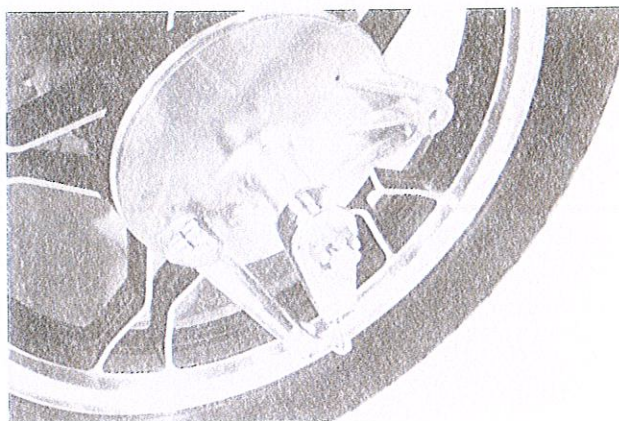
- Push the rear wheel forward and dismount the drive chain from rear sprocket.



- Take off rear wheel rearward.



- Remove axle nut and draw out axle shaft.



DISASSEMBLY

- Refer to page 7-9 of GS250T service manual.

INSPECTION

- Refer to page 7-10 of GS250T service manual.

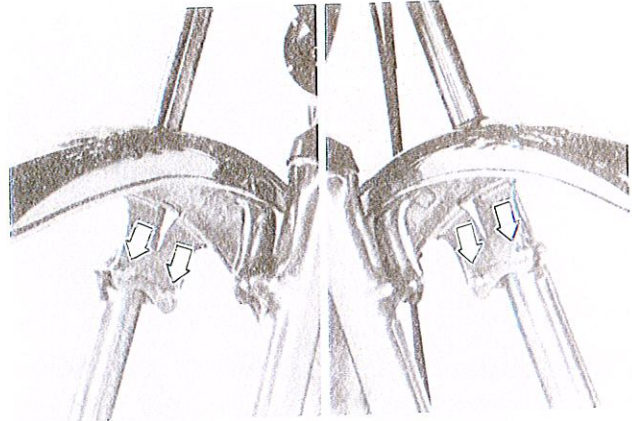
REASSEMBLY

- Reassemble and remount the rear wheel in the reverse order of disassembly and removal, and refer to page 7-14 of GS250T service manual.

FRONT FORK

REMOVAL

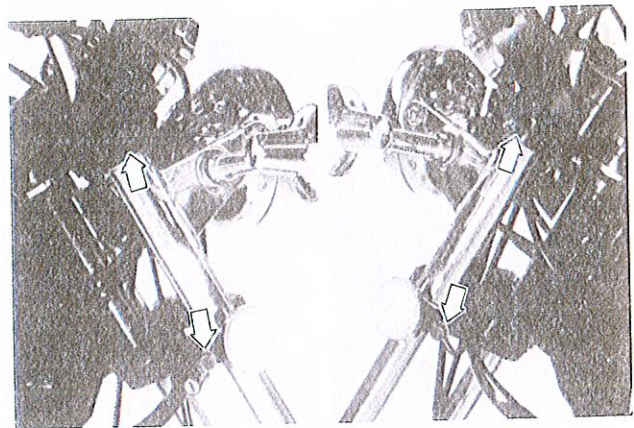
- Remove front wheel (See page 27).
- Remove front fender.



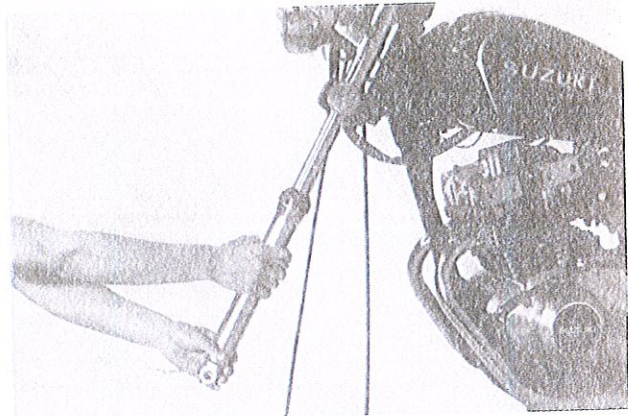
- Loosen the steering stem upper and lower clamp bolts.

NOTE:

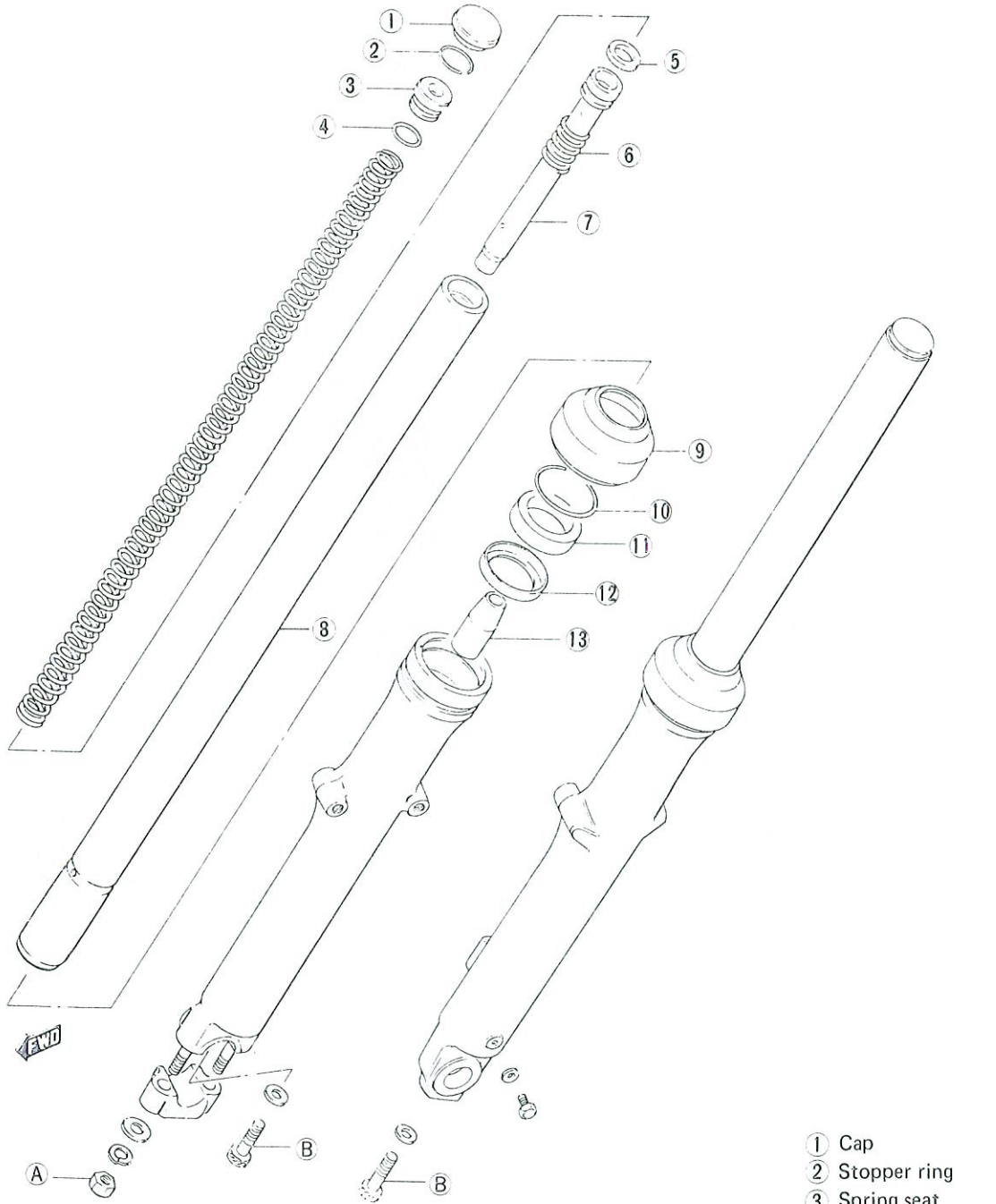
Slightly loosen the front fork cap bolt to facilitate later disassembly.



- Pull down right and left front fork assemblies.



DISASSEMBLY



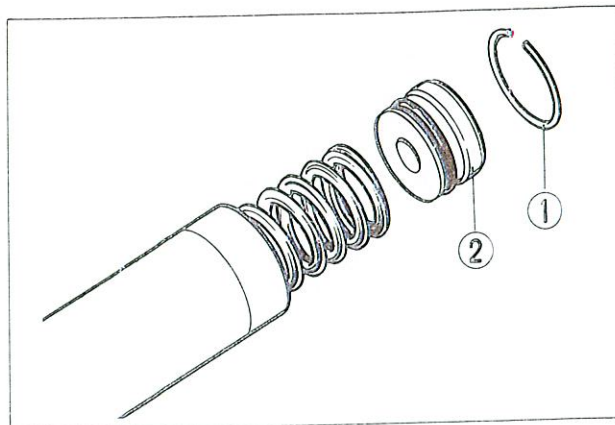
- ① Cap
- ② Stopper ring
- ③ Spring seat
- ④ O-ring
- ⑤ Damper rod ring
- ⑥ Rebound spring
- ⑦ Damper rod
- ⑧ Inner tube
- ⑨ Dust seal
- ⑩ Stopper ring
- ⑪ Oil seal
- ⑫ Oil seal spacer
- ⑬ Oil lock piece

Tightening torque		
	kg-m	lb-ft
A	1.5 - 2.5	11.0 - 18.0
B	1.5 - 2.5	11.0 - 18.0

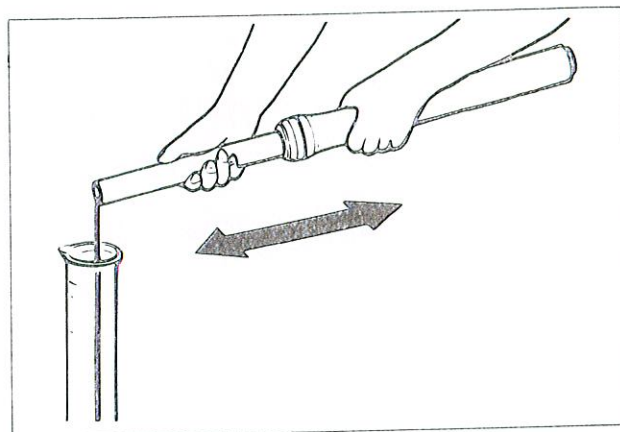
- Remove the front fork cap, stopper ring ① and spring seat ②, and draw out fork spring.

NOTE:

- * To remove the stopper ring ①, it will be necessary to push the spring seat ② inwards, to remove spring pressure from the stopper ring.
- * The removed stopper ring ① should be replaced.

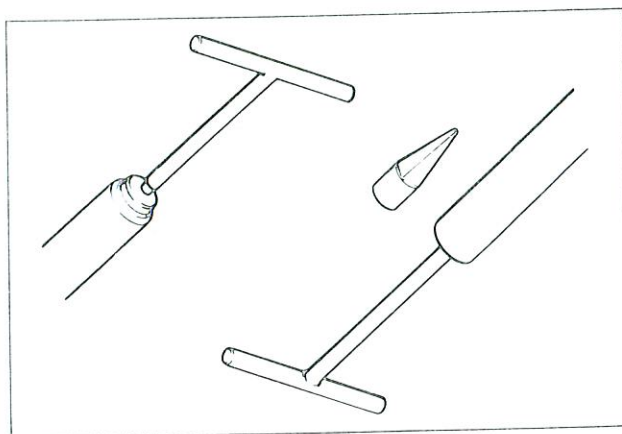


- Invert the fork and stroke it several times to remove the oil.
- Hold the fork inverted for a few minutes.

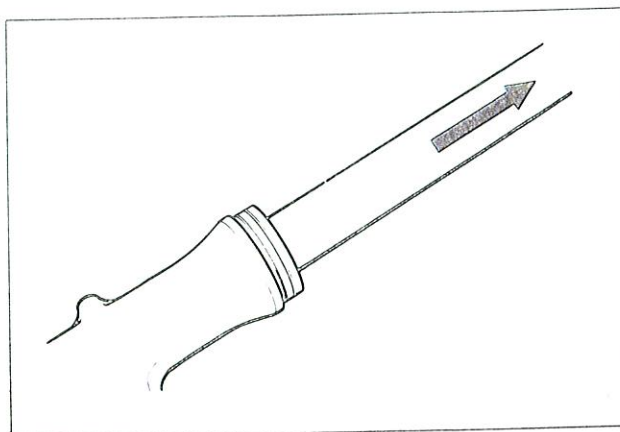


- Remove damper rod bolt by using the special tools.

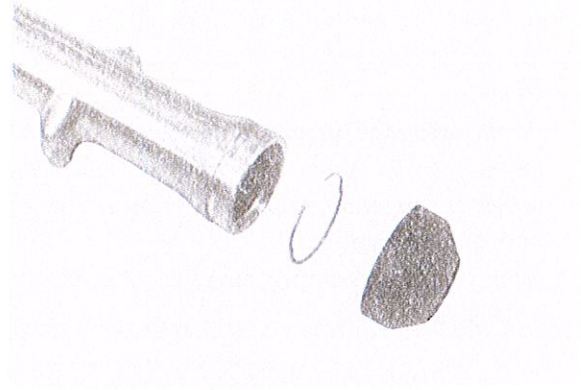
09940-34520	"T" handle
09940-34561	Attachment "D"
09914-25811	"T" type hexagon wrench



- Separate the inner tube from outer tube.
- Remove oil lock piece and damper rod with rebound spring and damper rod ring.



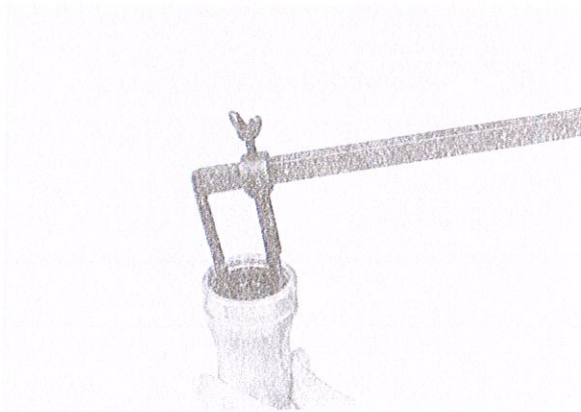
- Remove dust seal and stopper ring.



- Remove the oil seal by using special tool.

09913-50121	Oil seal remover
-------------	------------------

CAUTION:
The removed oil seal should be replaced.



INSPECTION

FORK SPRING

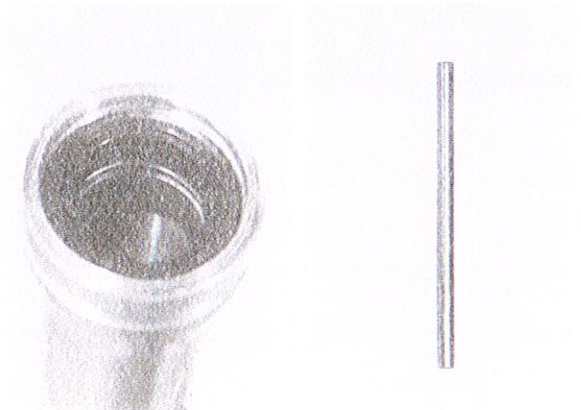
- Measure the fork spring free length.
If it is shorter than service limit, replace it.

Service Limit	494 mm (19.5 in)
---------------	------------------



INNER TUBE AND OUTER TUBE

- Inspect both inner and outer tubes sliding surfaces for any scuffing.



DAMPER ROD RING

Inspect damper rod ring for wear and damage.

REASSEMBLY

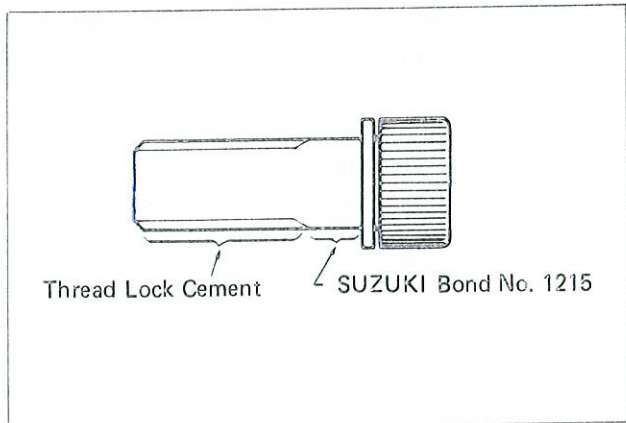
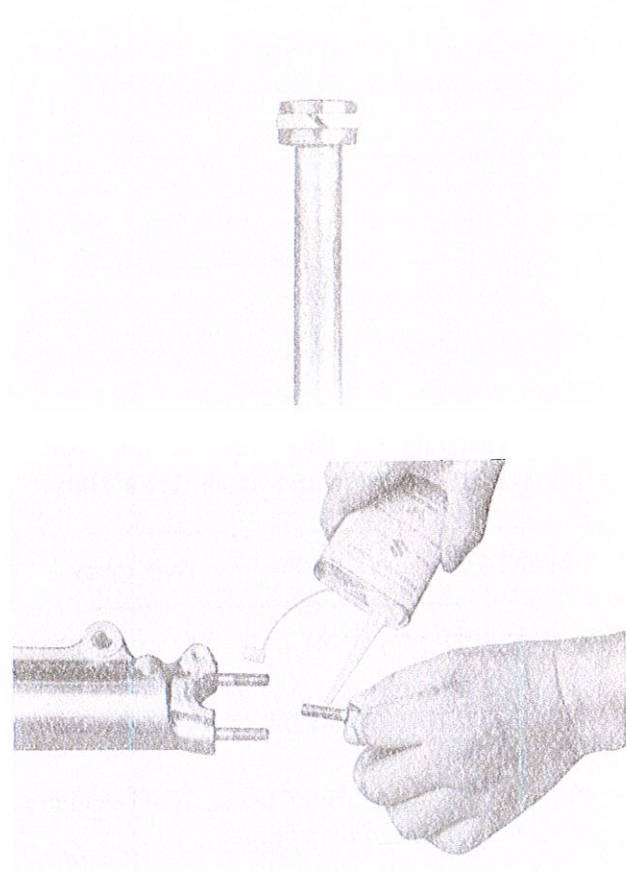
Reassemble and remount the front fork in the reverse order of disassembly and removal and also carry out the following steps:

DAMPER ROD BOLT

Apply Thread Lock Cement and Bond No. 1215 to the damper rod bolt and tighten with specified torque.

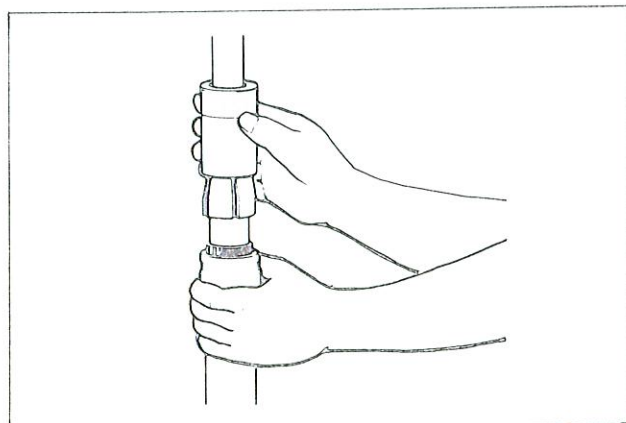
09914-25811	"T" type hexagon wrench
99014-31110	SUZUKI BOND No. 1215
99000-32040	Thread Lock Cement

Tightening torque	1.5 – 2.5 kg-m (11.0 – 18.0 lb-ft)
-------------------	---------------------------------------

**OIL SEAL**

Install new oil seal to the outer tube by using special tool.

09940-50112	Oil seal installer
-------------	--------------------



FORK OIL

- For the fork oil, be sure to use a fork oil whose viscosity rating meets specifications below.

Fork oil	Fork oil #15
----------	--------------

Capacity	153 ml (5.17 US oz)
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- Adjust the fork oil level with a special tool.

NOTE:

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

09943-74111	Fork oil level gauge
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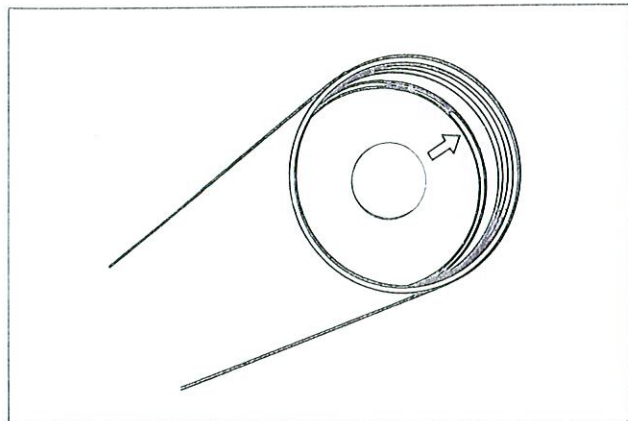
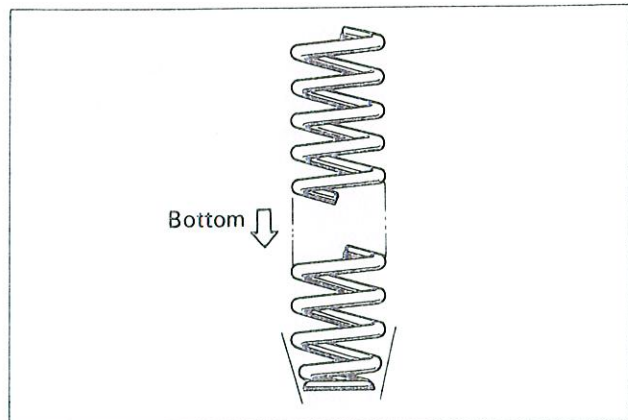
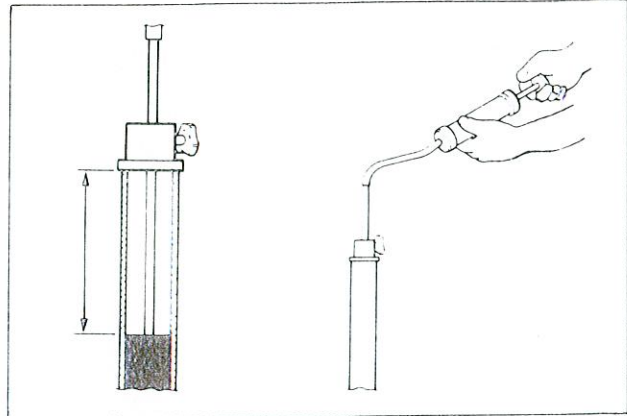
Oil level	186 mm (7.3 in)
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FORK SPRING

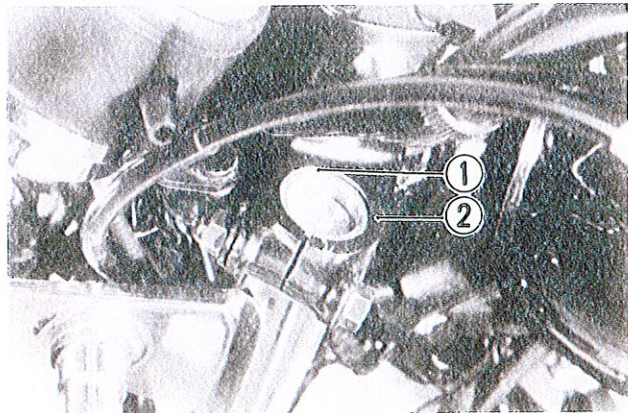
- When installing the fork spring, small diameter end should position in bottom.
- To install a new stopper ring, it will be necessary to push the spring seat inward.

CAUTION :

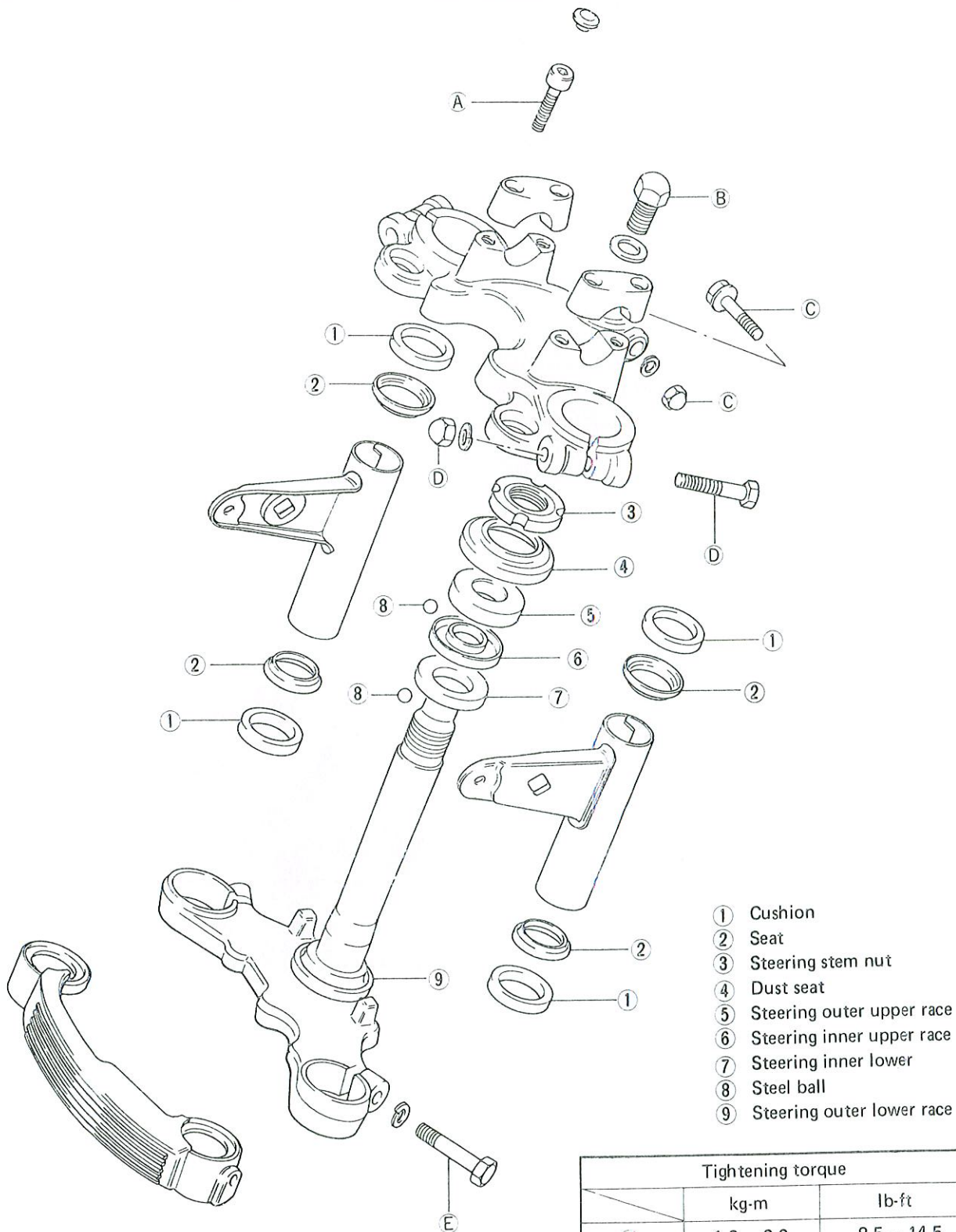
- * Always use a new stopper ring.
- * After installing a stopper ring, always insure that it is completely seated in its groove and securely fitted.

**INNER TUBE**

- When installing the front fork assembly, align the top ① of inner tube to the upper surface ② of the steering stem upper bracket.



STEERING STEM



- ① Cushion
- ② Seat
- ③ Steering stem nut
- ④ Dust seat
- ⑤ Steering outer upper race
- ⑥ Steering inner upper race
- ⑦ Steering inner lower
- ⑧ Steel ball
- ⑨ Steering outer lower race

Tightening torque		
	kg-m	lb-ft
A	1.2 – 2.0	8.5 – 14.5
B	3.6 – 5.2	26.0 – 37.5
C	1.5 – 2.5	11.0 – 18.0
D	2.0 – 3.0	14.5 – 21.5
E	2.5 – 4.0	18.0 – 29.0

REMOVAL AND DISASSEMBLY

- Please refer to the GS250T service manual page 7-35.

INSPECTION

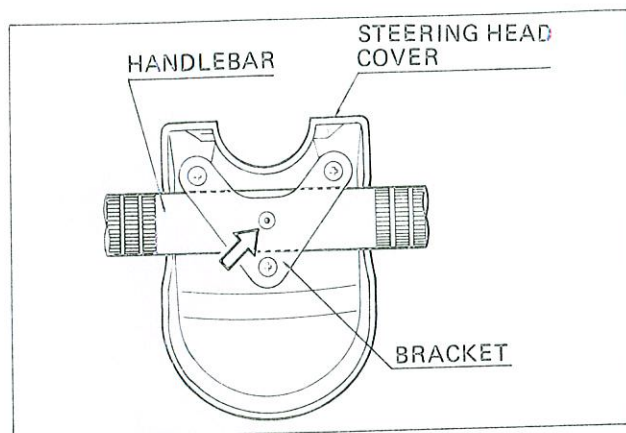
- Please refer to the GS250T service manual page 7-39.

REASSEMBLY

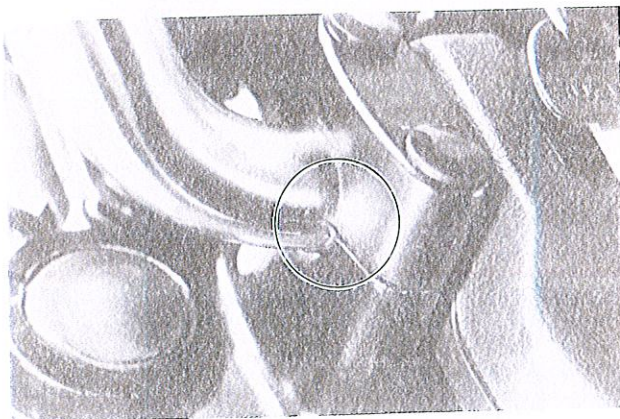
- Please refer to the GS250T service manual page 7-40.

HANDLEBARS

- Install the steering head cover on the handlebar after matching the punch mark at the lower side of the handlebar center with the center hole of the bracket.



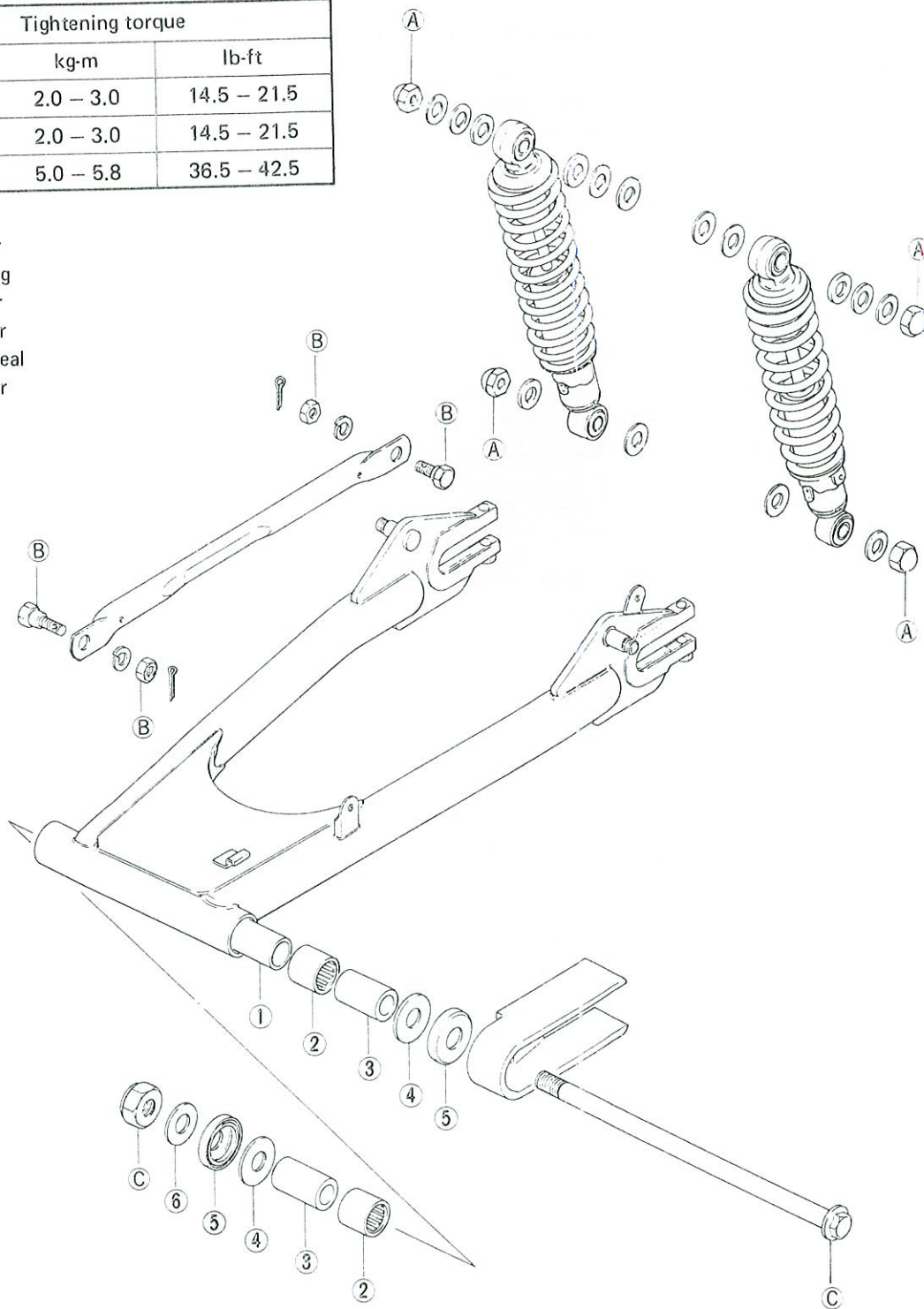
- Set the handlebars to match its dent mark to the mating surface between steering stem and handlebars clamp as shown.



REAR SUSPENSION

Tightening torque		
	kg-m	lb-ft
A	2.0 - 3.0	14.5 - 21.5
B	2.0 - 3.0	14.5 - 21.5
C	5.0 - 5.8	36.5 - 42.5

- ① Spacer
- ② Bearing
- ③ Spacer
- ④ Washer
- ⑤ Dust seal
- ⑥ Washer

**NOTE :**

Please refer to the rear suspension section of GS250T service manual (See page 7-43 ~ 7-45).

TROUBLESHOOTING

ENGINE

Complaint	Symptom and possible causes	Remedy
<p>Engine will not start, or is hard to start.</p>	<p>Compression too low</p> <ol style="list-style-type: none"> 1. Valve clearance out of adjustment. 2. Worn valve guides or poor seating of valves. 3. Valves mistiming. 4. Piston rings excessively worn. 5. Worn-down cylinder bores. 6. Starter motor cranks but too slowly. <p>Plugs not sparking</p> <ol style="list-style-type: none"> 1. Fouled spark plugs. 2. Wet spark plugs. 3. Defective ignition coil. 4. Open or short in high-tension cords. 5. Defective signal generator or ignitor unit. <p>No fuel reaching the carburetors</p> <ol style="list-style-type: none"> 1. Clogged hole in the fuel tank cap. 2. Clogged or defective fuel cock. 3. Defective carburetor float valve. 4. Clogged fuel pipe or vacuum pipe. 5. Defective fuel cock diaphragm. 	<p>Adjust. Repair, or replace. Adjust. Replace. Replace, or rebore. Consult "electrical complaints".</p> <p>Clean. Clean and dry. Replace. Replace. Replace.</p> <p>Clean. Clean or replace. Replace. Clean. Replace.</p>
<p>Engine stalls easily.</p>	<ol style="list-style-type: none"> 1. Fouled spark plugs. 2. Defective signal generator or ignitor unit. 3. Clogged fuel pipe. 4. Clogged jets in carburetors. 5. Valve clearance out of adjustment. 	<p>Clean. Replace. Clean. Clean. Adjust.</p>
<p>Noisy engine.</p>	<p>Excessive valve chatter</p> <ol style="list-style-type: none"> 1. Valve clearance too large. 2. Weakened or broken valve springs. 3. Camshaft journal worn and burnt. <p>Noise appears to come from pistons</p> <ol style="list-style-type: none"> 1. Pistons or cylinders worn down. 2. Combustion chambers fouled with carbon. 3. Piston pins worn. <p>Noise seems to come from timing chain</p> <ol style="list-style-type: none"> 1. Stretched chain. 2. Worn sprockets. 3. Tension adjuster not working. <p>Noise seems to come from clutch</p> <ol style="list-style-type: none"> 1. Worn splines of countershaft or hub. 2. Worn teeth of clutch plates. 3. Distorted clutch plates, driven and drive. <p>Noise seems to come from crankshaft</p> <ol style="list-style-type: none"> 1. Rattling bearings due to wear. 2. Big-end bearings worn and burnt. 3. Journal bearing worn and burnt. <p>Noise seems to come from transmission</p> <ol style="list-style-type: none"> 1. Gears worn or rubbing. 2. Badly worn splines. 3. Primary gears worn or rubbing. 4. Counter balancer gear worn or rubbing. 	<p>Adjust. Replace. Replace.</p> <p>Replace. Clean. Replace.</p> <p>Replace. Replace. Repair or replace.</p> <p>Replace. Replace. Repair or replace.</p> <p>Replace. Replace. Replace.</p> <p>Replace. Replace. Replace.</p>

Complaint	Symptom and possible causes	Remedy
Slipping clutch	<ol style="list-style-type: none"> 1. Clutch control out of adjustment or loss of play. 2. Weakened clutch springs. 3. Worn or distorted pressure plate. 4. Distorted clutch plates, driven and drive. 	Adjust. Replace. Replace. Replace.
Dragging clutch	<ol style="list-style-type: none"> 1. Clutch control out of adjustment or too much play. 2. Some clutch springs weakened while others are not. 3. Distorted pressure plate or clutch plates. 	Adjust. Replace. Replace.
Transmission will not shift	<ol style="list-style-type: none"> 1. Broken gearshift cam. 2. Distorted gearshift forks. 	Replace. Replace.
Transmission will not shift back.	<ol style="list-style-type: none"> 1. Broken return spring on shift shaft. 2. Shift shafts are rubbing or sticky. 	Replace. Repair.
Transmission jumps out of gear.	<ol style="list-style-type: none"> 1. Worn shifting gears on driveshaft or countershaft. 2. Distorted or worn gearshift forks. 3. Weakened stopper spring on gearshift stopper. 	Replace. Replace. Replace.
Engine idles poorly.	<ol style="list-style-type: none"> 1. Valve clearance out of adjustment. 2. Poor seating of valves. 3. Defective valve guides. 4. Spark plug gaps too wide. 5. Defective ignition coil. 6. Defective signal generator or igniter unit. 7. Float-chamber fuel level out of adjustment in carburetors. 8. Clogged jets or imbalance of carburetors. 	Adjust. Replace. Replace. Adjust or replace. Replace. Replace. Adjust. Clean or adjust.
Engine runs poorly in high-speed range.	<ol style="list-style-type: none"> 1. Valve springs weakened. 2. Valve timing out of adjustment. 3. Spark plug gaps too narrow. 4. Defective ignition coil. 5. Defective signal generator or ignitor unit. 6. Float-chamber fuel level too low. 7. Clogged air cleaner element. 8. Clogged fuel pipe, resulting in inadequate fuel supply to carburetors. 9. Clogged vacuum pipe to fuel cock. 	Replace. Adjust. Adjust. Replace. Replace. Adjust. Clean. Clean, and prime. Clean.
Dirty or heavy exhaust smoke.	<ol style="list-style-type: none"> 1. Too much engine oil in the engine. 2. Worn piston rings or cylinders. 3. Worn valve guides. 4. Cylinder walls scored or scuffed. 5. Worn valves stems. 6. Defective stem seal. 	Check with level gauge drain out excess oil. Replace. Replace. Rebore or replace. Replace. Replace.

Complaint	Symptom and possible causes	Remedy
Engine lacks power	<ol style="list-style-type: none"> 1. Loss of valve clearance. 2. Weakened valve springs. 3. Valve timing out of adjustment. 4. Worn piston rings or cylinders. 5. Poor seating of valves. 6. Spark plug gaps incorrect. 7. Clogged jets in carburetors. 8. Float-chamber fuel level out of adjustment. 9. Clogged air cleaner element. 10. Carburetor balancing screw loose. 11. Sucking air from intake pipe. 12. Too much engine oil in the engine. 	Adjust. Replace. Adjust. Replace. Repair. Adjust or replace. Clean. Adjust. Clean. Retighten. Retighten or replace. Drain out excess oil.
Engine overheats.	<ol style="list-style-type: none"> 1. Heavy carbon deposit on piston crowns. 2. Not enough oil in the engine. 3. Defective oil pump or clogged oil circuit. 4. Fuel level too low in float chambers. 5. Sucking air from intake pipes. 6. Incorrect engine oil used. 	Clean. Add oil. Replace or clean. Adjust. Retighten or replace. Change.

ELECTRICAL

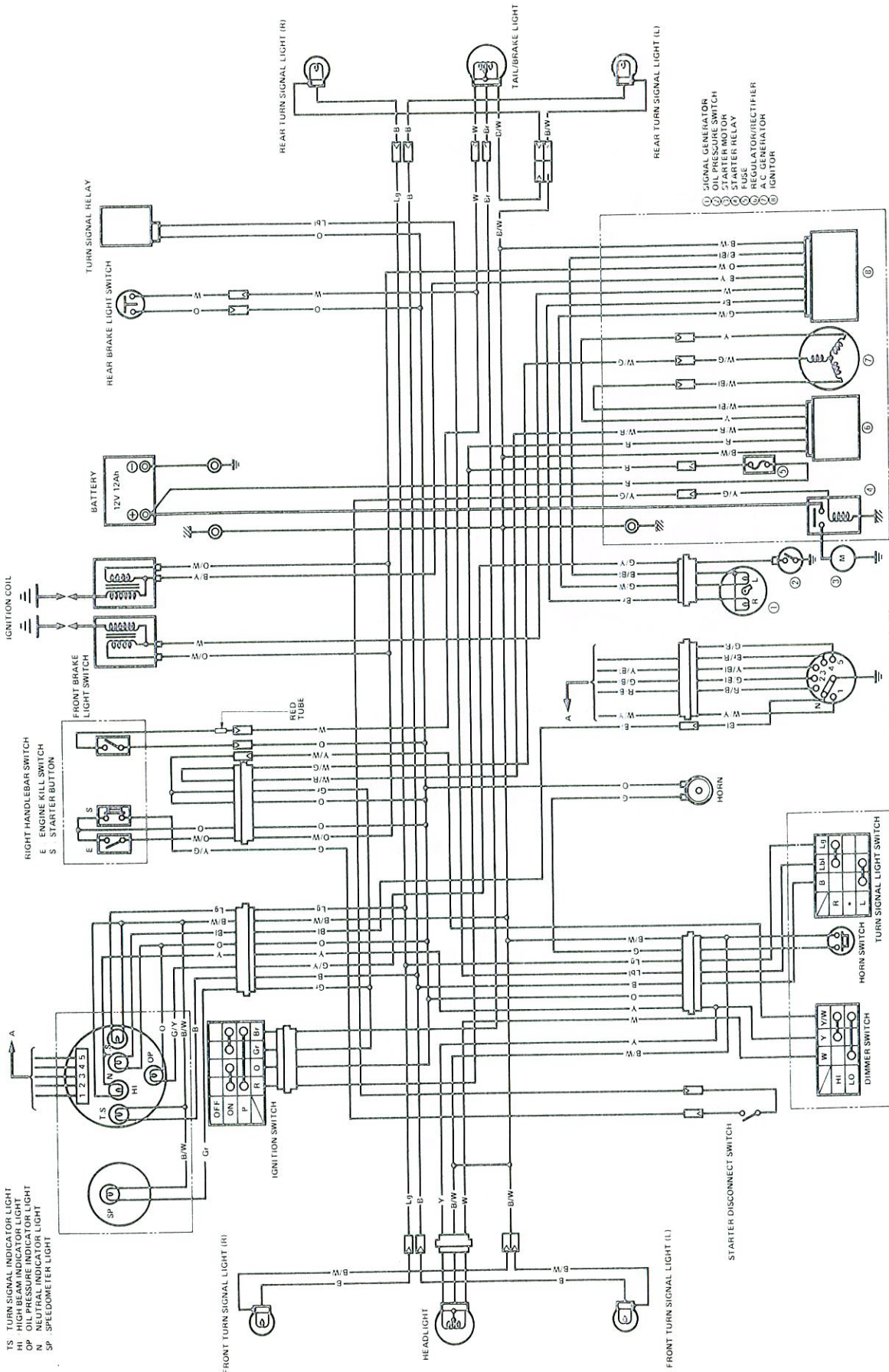
Complaint	Symptom and possible causes	Remedy
No sparking or poor sparking.	<ol style="list-style-type: none"> 1. Defective ignition coil. 2. Defective spark plugs. 3. Defective signal generator or ignitor unit. 	Replace. Replace. Replace.
Spark plugs soon become fouled with carbon.	<ol style="list-style-type: none"> 1. Mixture too rich. 2. Idling speed set too high. 3. Incorrect gasoline. 4. Dirty element in air cleaner. 5. Spark plugs too cold. 	Adjust carburetors. Adjust carburetors. Change. Clean. Replace with hot type plugs.
Spark plugs become fouled too soon.	<ol style="list-style-type: none"> 1. Worn piston rings. 2. Pistons or cylinders worn. 3. Excessive clearance of valve stems in valve guides. 4. Worn stem oil seal. 	Replace. Replace. Replace. Replace.
Spark plug electrodes overheat or burn.	<ol style="list-style-type: none"> 1. Spark plugs too hot. 2. The engine overheats. 3. Spark plugs loose. 4. Mixture too lean. 	Replace with cold type plugs. Tune up. Retighten. Adjust carburetors.
Generator does not charge.	<ol style="list-style-type: none"> 1. Open or short in lead wires, or loose lead connections. 2. Shorted, grounded or open generator coils. 3. Shorted or open regulator/rectifier. 	Repair or replace or retighten. Replace. Replace.

Complaint	Symptom and possible causes	Remedy
Generator does charge, but charging rate is below the specification.	<ol style="list-style-type: none"> 1. Lead wires tend to get shorted or open-circuited or loosely connected at terminals. 2. Grounded or open-circuited stator coils of generator. 3. Defective regulator/rectifier. 4. Not enough electrolyte in the battery. 5. Defective cell plates in the battery. 	<p>Repair, or retighten.</p> <p>Replace.</p> <p>Replace. Add distilled water to the upper level. Replace the battery.</p>
Generator Overcharges.	<ol style="list-style-type: none"> 1. Internal short-circuit in the battery. 2. Resistor element in the regulator/rectifier damaged or defective. 3. Regulator/rectifier poorly grounded. 	<p>Replace the battery. Replace.</p> <p>Clean and tighten ground connection.</p>
Unstable charging.	<ol style="list-style-type: none"> 1. Lead wire insulation frayed due to vibration, resulting in intermittent shorting. 2. Generator internally shorted. 3. Defective regulator/rectifier. 	<p>Repair or replace.</p> <p>Replace. Replace.</p>
Starter button is not effective.	<ol style="list-style-type: none"> 1. Battery run down. 2. Defective switch contacts. 3. Brushes not seating properly on commutator in starter motor. 4. Defective starter relay. 	<p>Recharge or replace. Replace. Repair or replace.</p> <p>Replace.</p>
Battery "sulfation"	<ol style="list-style-type: none"> 1. Charging rate too low or too high. (When not in use batteries should be recharged at least once a month to avoid sulfation.) 2. Battery electrolyte excessive or insufficient, or its specific gravity too high or too low. 3. The battery left unused for too long in cold climate. 	<p>Replace the battery.</p> <p>Keep the electrolyte up to the prescribed level, or adjust the S.G. by consulting the battery maker's directions. Replace the battery, if badly sulfated.</p>
Battery discharges too rapidly.	<ol style="list-style-type: none"> 1. Dirty container top and sides. 2. Impurities in the electrolyte or electrolyte S.G. is too high. 	<p>Clean. Change the electrolyte by consulting the battery maker's directions.</p>

CHASSIS

Complaint	Symptom and possible causes	Remedy
Steering feels too heavy.	<ol style="list-style-type: none"> 1. Steering stem nut overtightened. 2. Broken bearing in steering stem. 3. Distorted steering stem. 4. Not enough pressure in tires. 	Adjust. Replace. Replace. Adjust.
Wobbly handling.	<ol style="list-style-type: none"> 1. Loss of balance between right and left suspension. 2. Distorted front fork. 3. Distorted front axle or cocked tire. 	Replace. Repair or replace. Replace.
Wobbly front wheel.	<ol style="list-style-type: none"> 1. Distorted wheel rim. 2. Worn-down front wheel bearings. 3. Defective or incorrect tire. 4. Loose nut on axle. 	Replace. Replace. Replace. Retighten.
Front suspension too soft.	<ol style="list-style-type: none"> 1. Weakened springs. 2. Not enough fork oil. 	Replace. Refill.
Front suspension too stiff.	<ol style="list-style-type: none"> 1. Fork oil too viscous. 2. Too much fork oil. 	Replace. Drain excess oil.
Noisy front suspension.	<ol style="list-style-type: none"> 1. Not enough fork oil. 2. Loose nuts on suspension. 	Refill. Retighten.
Wobbly rear wheel.	<ol style="list-style-type: none"> 1. Distorted wheel. 2. Worn-down rear wheel bearings. 3. Defective or incorrect tire. 	Replace. Replace. Replace.
Rear suspension too soft.	<ol style="list-style-type: none"> 1. Weakened springs. 2. Rear suspension adjusters improperly set. 	Replace. Adjust.
Rear suspension too stiff.	Rear suspension adjusters improperly set.	Adjust.
Noisy rear suspension.	Loose nuts on suspension.	Retighten.
Poor braking (FRONT and REAR)	<ol style="list-style-type: none"> 1. Linings worn down. 2. Too much play on brake pedal and lever. 	Replace. Adjust.

WIRING DIAGRAM



TS TURN SIGNAL INDICATOR LIGHT
 HI HIGH BEAM INDICATOR LIGHT
 LO LOW BEAM INDICATOR LIGHT
 N NEUTRAL INDICATOR LIGHT
 SP SPEEDOMETER LIGHT

① SIGNAL GENERATOR
 ② OIL PRESSURE SWITCH
 ③ STARTER MOTOR
 ④ STARTER RELAY
 ⑤ FUSE
 ⑥ REGULATOR/RECTIFIER
 ⑦ A.C. GENERATOR
 ⑧ IGNITOR

W/R/I White with Blue tracer
 W/G White with Green tracer
 W/R White with Red tracer
 W/Y White with Yellow tracer
 Y/B/I Yellow with Blue tracer
 Y/G Yellow with Green tracer
 Y/W Yellow with White tracer

Br/R Brown with Red tracer
 G/Bl Green with Blue tracer
 G/R Green with Red tracer
 G/W Green with White tracer
 G/Y Green with Yellow tracer
 O/W Orange with White tracer
 R/B Red with Black tracer

O Orange
 R Red
 W White
 Y Yellow
 B/Bl Black with Blue tracer
 B/W Black with White tracer
 Lg Light green

WIRE COLOR
 B Black
 Bl Blue
 Br Brown
 G Green
 Gr Gray
 Lbl Light blue
 Lg Light green

LEFT HANDLEBAR SWITCH
 O Orange
 R Red
 W White
 Y Yellow
 B/Bl Black with Blue tracer
 B/W Black with White tracer
 Lg Light green

TURN SIGNAL LIGHT SWITCH
 B Black
 Bl Blue
 Br Brown
 G Green
 Gr Gray
 Lbl Light blue
 Lg Light green

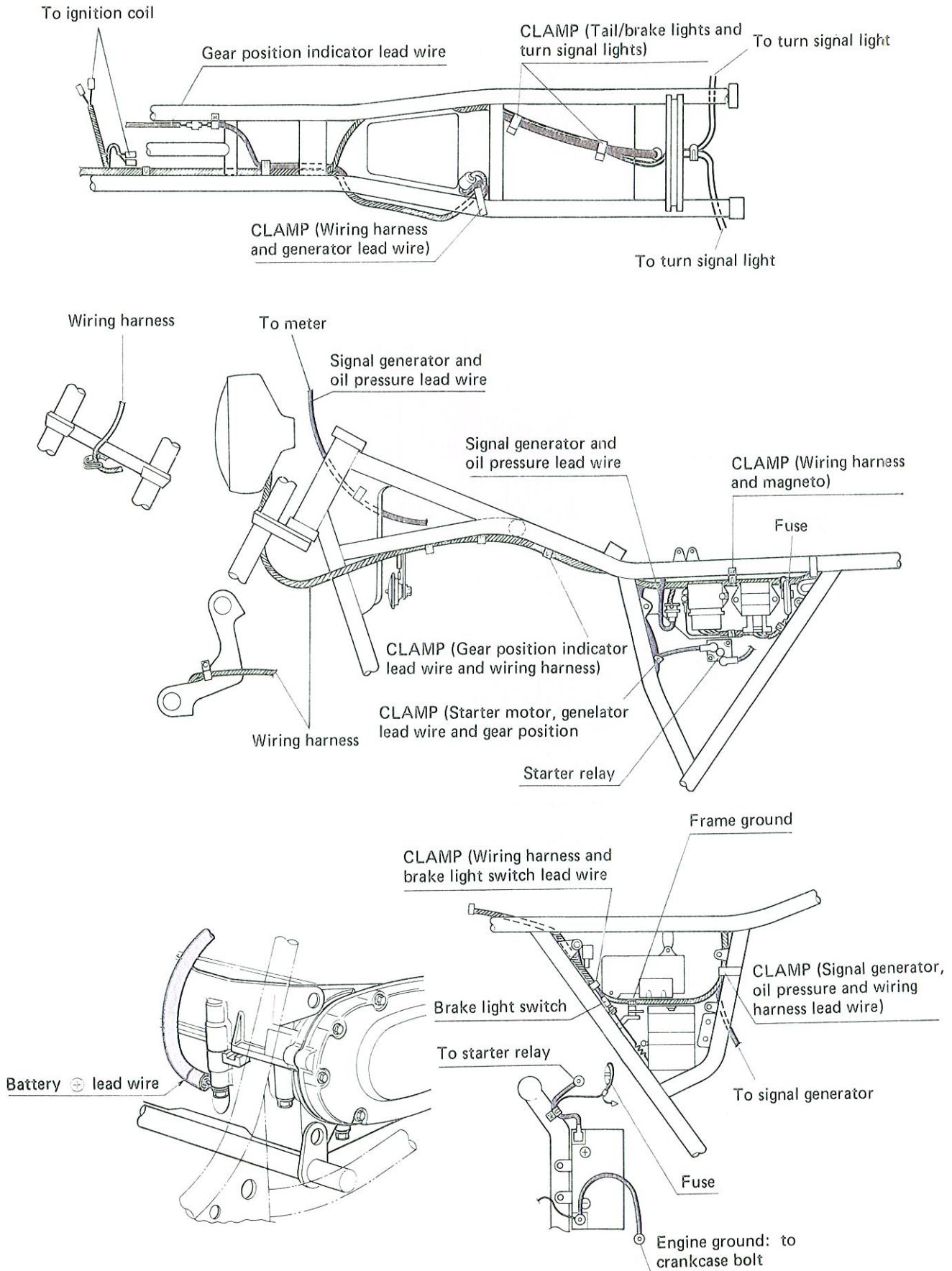
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 Bl Blue
 Br Brown
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 Gr Gray
 Lbl Light blue
 Lg Light green

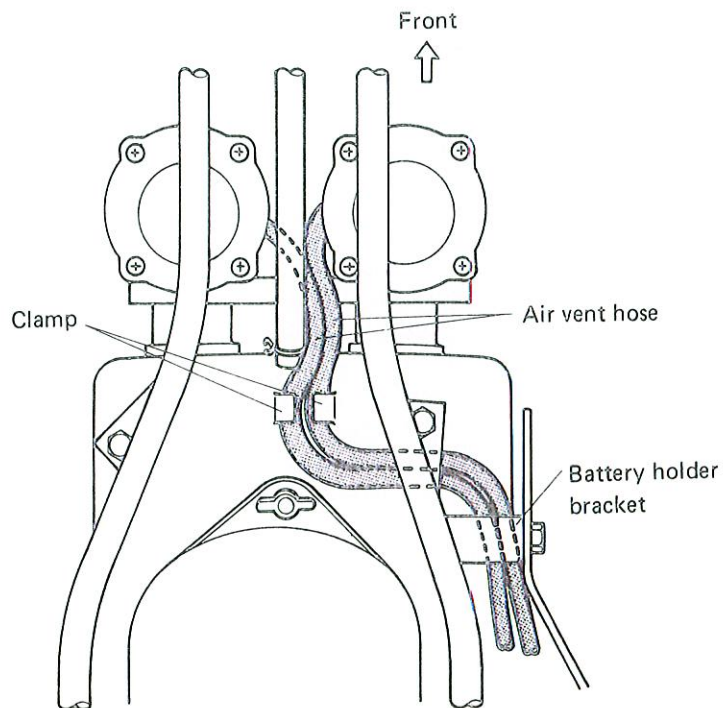
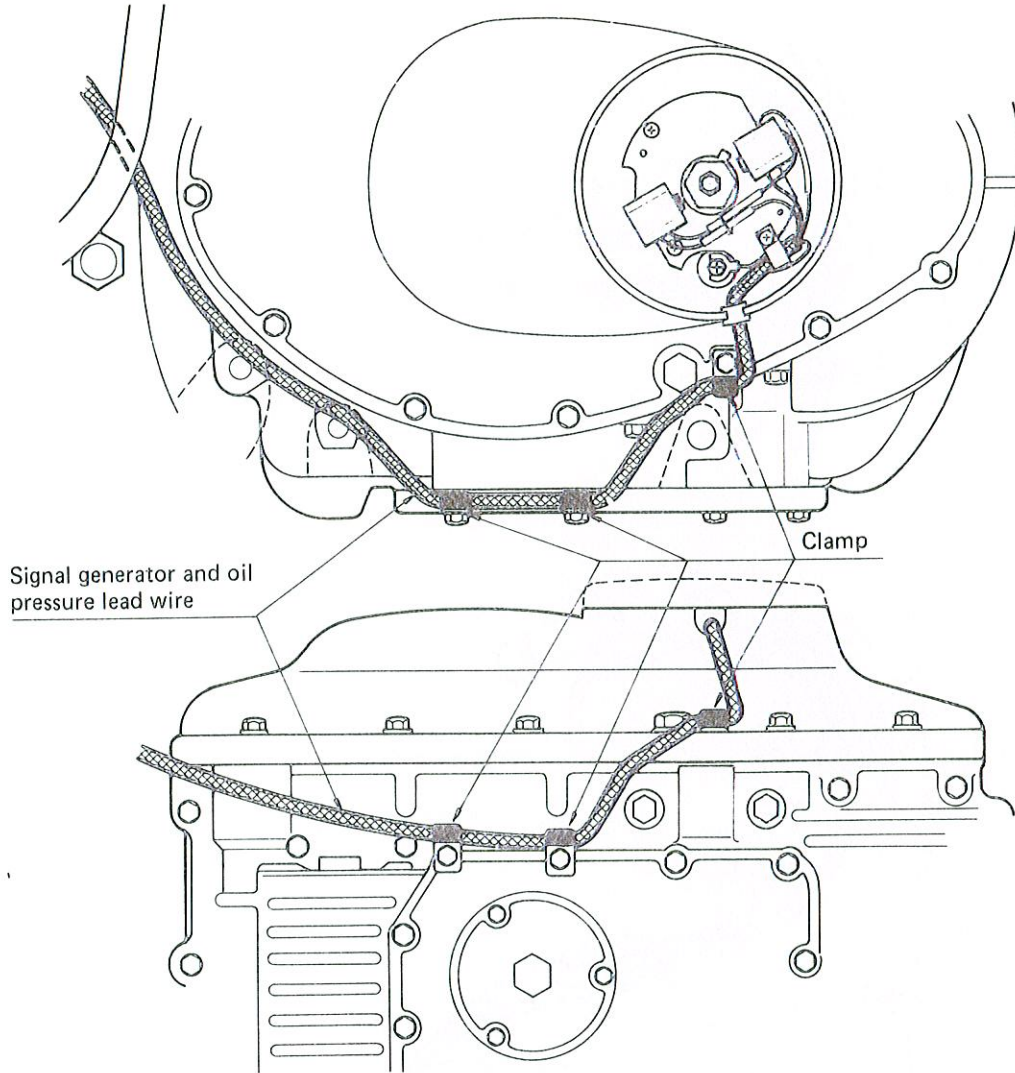
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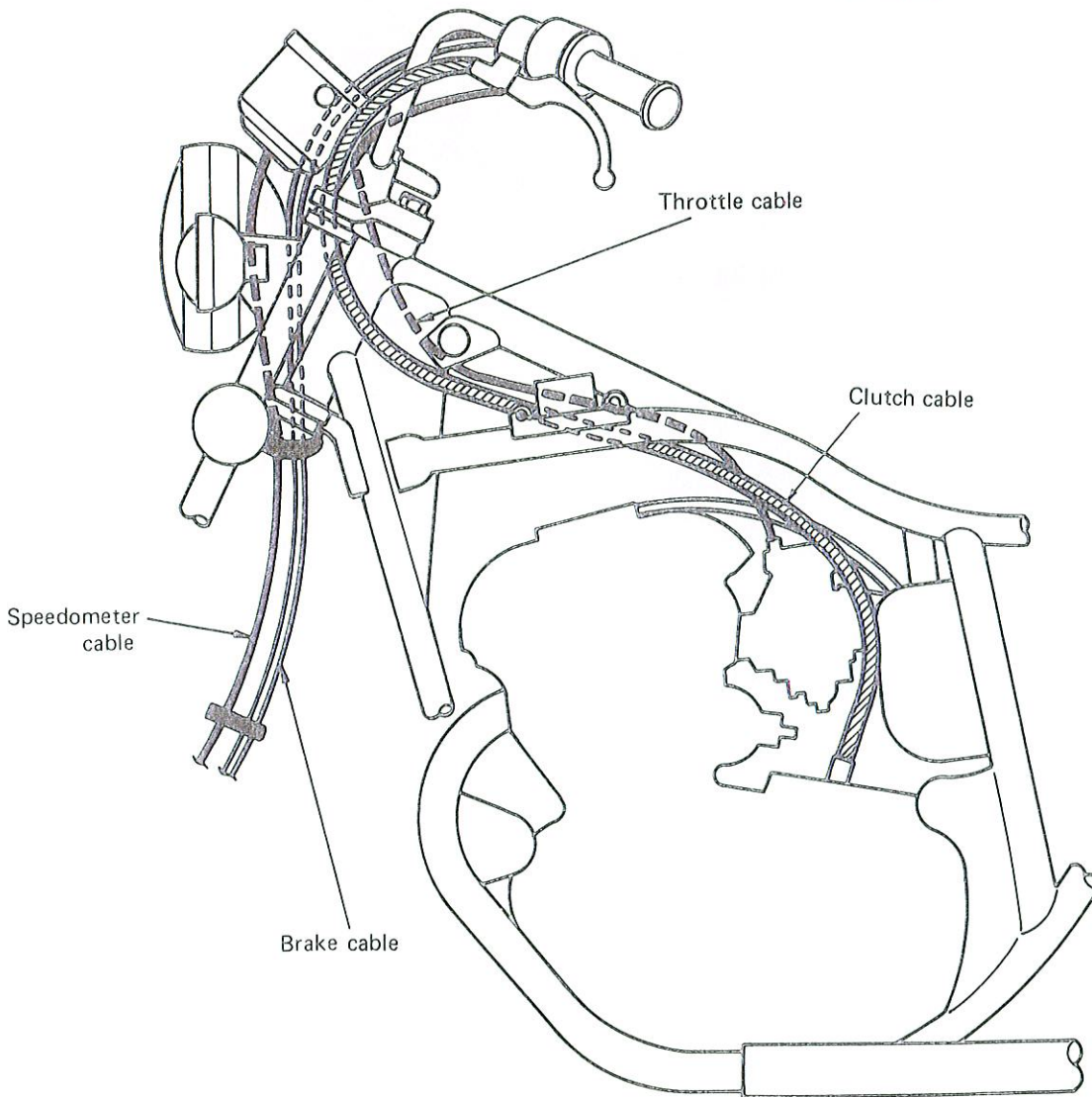
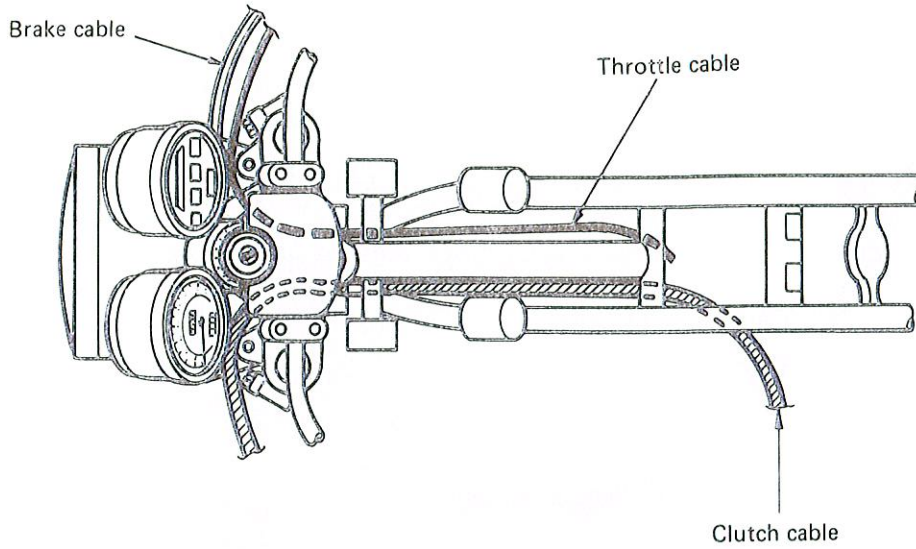
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BATTERY
 12V 12Ah

WIRE AND CABLE ROUTING







TIGHTENING TORQUE

ENGINE

ITEM		kg-m	lb-ft
Cam chain tensioner adjuster fitting bolt		0.6 – 0.8	4.5 – 6.0
Cam chain tensioner adjuster lock nut		0.9 – 1.4	6.5 – 10.0
Cam chain tensioner shaft ass'y		3.1 – 3.5	22.5 – 25.5
Cam chain tensioner shaft lock nut		0.8 – 1.0	6.0 – 7.0
Cam shaft journal holder bolt		0.8 – 1.2	6.0 – 8.5
Cam shaft sprocket bolt		*1.7 – 1.9	*12.5 – 13.5
Clutch sleeve hub nut		3.0 – 5.0	21.5 – 36.0
Clutch spring bolt		0.4 – 0.6	3.0 – 4.5
Con rod nut		3.0 – 3.4	21.5 – 24.5
Counter balancer center bolt		3.5 – 4.5	25.5 – 32.5
Crankcase bolt	6 mm	0.9 – 1.3	6.5 – 9.5
	8 mm	2.0 – 2.4	14.5 – 17.5
Cylinder head bolt		0.7 – 1.1	5.0 – 8.0
Cylinder head cover bolt		*1.0	*7.0
Cylinder head nut		2.2 – 2.8	16.0 – 20.0
Engine mounting bolt	8 mm	2.5	18.0
	10 mm	3.5	25.5
Engine sprocket nut		5.0 – 7.0	36.0 – 50.5
Exhaust pipe clamp bolt		0.9 – 1.4	6.5 – 10.0
Gearshifting arm stopper		1.5 – 2.3	11.0 – 16.5
Generator rotor bolt		*9.0 – 10.0	*65.0 – 72.5
Neutral stopper housing		1.8 – 2.8	13.0 – 20.0
Oil pan bolt		1.0	7.0
Oil pressure regulator		1.7 – 2.0	12.5 – 14.5
Pressure switch		1.3 – 1.7	9.5 – 12.5
Primary drive gear nut		5.0 – 7.0	36.0 – 50.5
Rocker arm shaft stopper bolt		0.8 – 1.0	6.0 – 7.0
Signal generator rotor bolt		1.3 – 2.3	9.5 – 16.5
* Starter clutch allen bolt		1.5 – 2.0	11.0 – 14.5
Starter motor bolt		0.4 – 0.7	3.0 – 5.0
Valve clearance adjuster lock nut		0.9 – 1.1	6.5 – 8.0

Specifications marked with asterisks () are exclusive to GS300LZ.

CHASSIS

ITEM	kg-m	lb-ft
Brake pedal arm bolt	1.0 – 1.5	7.0 – 11.0
Chain adjuster support bolt	*1.5 – 2.0	*11.0 – 14.5
Front axle holder nut	1.5 – 2.5	11.0 – 18.0
Front axle nut	3.6 – 5.2	26.0 – 37.5
Front brake cam lever bolt	*0.5 – 0.8	*3.5 – 6.0
Front footrest bolt 8 mm	1.5 – 2.5	11.0 – 18.0
10 mm	2.7 – 4.3	19.5 – 31.0
Front fork damper rod bolt	1.5 – 2.5	11.0 – 18.0
Front fork lower clamp bolt	2.5 – 4.0	18.0 – 29.0
Front fork upper clamp bolt	2.0 – 3.0	14.5 – 21.5
Handlebars clamp bolt	1.2 – 2.0	8.5 – 14.5
Muffler bracket bolt	2.0 – 3.0	14.5 – 21.5
Muffler bracket mounting bolt	2.7 – 4.3	19.5 – 31.5
Rear axle nut	5.0 – 8.0	36.0 – 58.0
Rear brake cam lever bolt	0.5 – 0.8	3.5 – 6.0
Rear shock absorber fitting nut	2.0 – 3.0	14.5 – 21.5
Rear footrest bolt	2.7 – 4.3	19.5 – 31.5
Rear sprocket nut	2.5 – 4.0	18.0 – 29.0
Rear torque link nut	2.0 – 3.0	14.5 – 21.5
Steering stem clamp bolt	1.5 – 2.5	11.0 – 18.0
Steering stem head bolt	3.6 – 5.2	26.0 – 37.5
Swing arm pivot nut	5.0 – 8.0	36.0 – 58.0

Specifications marked with asterisks () are exclusive to GS300LZ.

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	21 (0.827)	_____
	EX.	18 (0.709)	_____
Valve lift	IN.	7 (0.28)	_____
	EX.	7 (0.28)	_____
Valve clearance or tappet clearance (when cold)	IN. & EX.	0.08–0.13 (0.003–0.005)	_____
Valve guide to valve stem clearance	IN.	0.025–0.052 (0.0010–0.0020)	*0.35 (0.014)
	EX.	0.040–0.067 (0.0016–0.0026)	*0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500–5.512 (0.2165–0.2170)	_____
Valve stem O.D.	IN.	5.460–5.475 (0.2150–0.2156)	_____
	EX.	5.445–5.460 (0.2144–0.2150)	_____
Valve stem runout	IN. & EX.	_____	0.05 (0.002)
Valve head thickness	IN. & EX.	_____	0.5 (0.02)
Valve stem end length	IN. & EX.	_____	*3.7 (0.15)
Valve seat width	IN. & EX.	0.9–1.1 (0.035–0.043)	_____
Valve head radial runout	IN. & EX.	_____	0.03 (0.001)
Valve spring free length (IN. & EX.)	_____		*36.1 (1.42)
Valve spring tension (IN. & EX.)	*11.7–15.3 kg (25.8–33.7 lbs) at length 32.5 mm (1.28 in)		_____

Specifications marked with asterisks () are exclusive to GS300LZ.

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM		STANDARD	LIMIT
Cam height	IN. & EX.	*34.42–34.46 (1.355–1.357)	*34.16 (1.345)
Camshaft journal oil clearance	IN. & EX.	*0.032–0.067 (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.	————	0.1 (0.004)
Cam chain 20 pitch length		————	157.8 (6.213)
Cam chain pin (at arrow "3")		20 th pin	————
Rocker arm I.D.	IN. & EX.	12.000–12.018 (0.4724–0.4731)	————
Rocker arm shaft O.D.	IN. & EX.	11.973–11.984 (0.4714–0.4718)	————
Cylinder head distortion		————	0.10 (0.004)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM		STANDARD	LIMIT
Compression pressure		*12–15 kg/cm ² (170–213 psi)	10 kg/cm ² (142 psi)
Compression pressure difference		————	2 kg/cm ² (28.4 psi)
Piston to cylinder clearance		*0.045–0.055 (0.0018–0.0022)	0.120 (0.0047)
Cylinder bore		*62.000–62.015 (2.4409–2.4415)	*62.085 (2.4443)
Piston diam.		*61.950–61.965 (2.4390–2.4396) Measure at 16 (0.6) from the skirt end.	*61.880 (2.4362)
Cylinder distortion		————	0.10 (0.004)

Specifications marked with asterisks () are exclusive to GS300LZ.

Unit: mm (in)

ITEM	STANDARD			LIMIT
Piston ring free end gap	1st	N	Approx. *7.5 (0.30)	*6.0 (0.24)
		R	Approx. *7.5 (0.30)	*6.0 (0.24)
	2nd	N	Approx. *9.5 (0.37)	*7.6 (0.30)
		R	Approx. *9.5 (0.37)	*7.6 (0.30)
Piston ring end gap	1st	N	0.10–0.25 (0.004–0.010)	0.7 (0.028)
		R	*0.10–0.30 (0.004–0.012)	0.7 (0.028)
	2nd		0.10–0.30 (0.004–0.012)	0.7 (0.028)
Piston ring to groove clearance	1st		————	0.180 (0.0071)
	2nd		————	0.150 (0.0060)
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 (0.0463–0.0469)	————
	2nd		1.170–1.190 (0.0461–0.0469)	————
Piston pin bore			16.002–16.008 (0.6300–0.6302)	16.030 (0.6311)
Piston pin O.D.			15.995–16.000 (0.6297–0.6300)	15.980 (0.6291)

Specifications marked with asterisks () are exclusive to GS300LZ.

CONROD + CRANKSHAFT + BALANCER

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	16.006–16.014 (0.6302–0.6305)	16.040 (0.6315)
Conrod deflection	—————	3.0 (0.12)
Conrod big end side clearance	0.10–0.20 (0.004–0.008)	1.0 (0.04)
Conrod big end width	19.95–20.00 (0.785–0.787)	—————
Crank pin width	20.10–20.15 (0.791–0.793)	—————
Conrod big end oil clearance	0.024–0.048 (0.0009–0.0019)	0.080 (0.0031)
Crank pin O.D.	31.976–32.000 (1.2589–1.2598)	—————
Crankshaft journal oil clearance	0.020–0.044 (0.0008–0.0017)	0.080 (0.0031)
Crankshaft journal O.D.	31.976–32.000 (1.2589–1.2598)	—————
Crankshaft thrust clearance	0.05–0.25 (0.002–0.010)	0.35 (0.014)
Crankshaft journal holder width	54.05–54.15 (2.128–2.132)	—————
Crankshaft journal width	53.90–54.00 (2.122–2.126)	—————
Crankshaft runout	—————	0.05 (0.002)
Balancer journal oil clearance	0.020–0.044 (0.0008–0.0017)	0.080 (0.0031)
Balancer journal O.D.	31.984–32.000 (1.2592–1.2598)	—————

OIL PUMP

Unit: mm (in)

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.905 (75/24 x 25/41)	—————
Oil pressure (at 60°C, 140°F)	Above 3.0 kg/cm ² (43 psi) Below 5.5 kg/cm ² (78 psi) at 3000 r/min.	—————

CLUTCH

Unit: mm (in)

ITEM	STANDARD	LIMIT
Clutch cable play	4 (0.16)	_____
Clutch release screw	1/4 – 1/2 Turn back	_____
Drive plate thickness	*2.7–2.9 (0.106–0.114)	*2.4 (0.09)
Drive plate claw width	11.8–12.0 (0.46–0.47)	11.0 (0.43)
Driven plate thickness	*1.20 ± 0.05 (0.047 ± 0.002)	_____
Driven plate distortion	_____	0.1 (0.004)
Clutch spring free length	_____	*29.5 (1.16)

TRANSMISSION + DRIVE CHAIN

ITEM	STANDARD		LIMIT
Primary reduction ratio	3.125 (75/24)		_____
Final reduction ratio	*2.800 (42/15)		_____
Gear ratios	Low	2.500 (30/12)	_____
	2nd	1.625 (26/16)	_____
	3rd	1.210 (23/19)	_____
	4th	1.000 (21/21)	_____
	Top	0.863 (19/22)	_____
Shift fork to groove clearance	0.10–0.30 mm (0.04–0.12 in)		0.50 mm (0.020 in)
Shift fork groove width	5.5–5.6 mm (0.127–0.220 in)		_____
Shift fork thickness	5.3–5.4 mm (0.209–0.213 in)		_____
Drive chain	Type	D.I.D.: *520UB TAKASAGO: *RK520SU	_____
	Links	*108	_____
	20 pitch length	_____	324.2 mm (12.77 in)
Drive chain slack	20–30 mm (0.8–1.2 in)		_____

Specifications marked with asterisks () are exclusive to GS300LZ.

CARBURETOR

ITEM	SPECIFICATION
Carburetor type	MIKUNI BS30SS
Bore size	30 mm (1.2 in)
I. D. No.	*11900
Idle r/min.	1250 ± 100 r/min.
Fuel level	4.0 ± 0.5 mm (0.16 ± 0.02 in)
Float height	21.4 ± 1.0 mm (0.84 ± 0.04 in)
Main jet (M. J.)	# 115
Main air jet (M. A. J.)	1.0 mm (0.04 in)
Jet needle (J. N.)	* 5C53
Needle jet (N. J.)	* 0-7
Pilot jet (P. J.)	# 17.5
By pass (B. P.)	0.9 mm (0.035 in), 0.8 mm (0.031 in), 0.7 mm (0.028 in)
Pilot outlet (P. O.)	0.8 mm (0.03 in)
Valve seat (V. S.)	2.0 mm (0.08 in)
Starter jet (G. S.)	* # 25
Pilot screw (P. S.)	PRE-SET
Pilot air jet (P. A. J.)	* # 147.5
Throttle cable play	* 1.0–2.0 mm (0.04–0.08 in)

Specifications marked with asterisks () are exclusive to GS300LZ.

ELECTRICAL

ITEM	SPECIFICATION		NOTE
Ignition timing	*15° B.T.D.C. Below 1650 ± 100 r/min and 40° B.T.D.C. Above 4500 ± 100 r/min.		
Spark plug	Type	NGK D9EA or NIPPON DENSO X27ES-U	
	Gap	0.6–0.7 mm (0.024–0.028 in)	
Spark performance	Over 8 mm (0.31 in) at 1 atm		
Signal coil resistance	Approx. *200–280 Ω		B/BI-Br B/BI-G/W
Ignition coil resistance	Primary	* Primary terminal ⊕ – Primary terminal ⊖ Approx. 3–5 Ω	
	Secondary	* Plug cap – Primary terminal Approx. 22–33 kΩ	
Generator no-load voltage	More than 75 V (AC) at 5000 r/min.		
Regulated voltage	14–15 V at 5000 r/min.		
Starter motor	Brush length	N. D. Limit: 9 mm (0.4 in)	
	Commutator under cut	Limit: 0.2 mm (0.008 in)	
Starter relay resistance	Approx. 3–4 Ω		
Battery	Type designation	*YB12B-B2	
	Capacity	12V43.2kC(12Ah)/10HR	
	Standard electrolyte S. G.	1.280 at 20°C (68°F)	
Fuse size	Main	15 A	

Specifications marked with asterisks () are exclusive to GS300LZ.

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Front brake lever distance	20-30 (0.8-1.2)		—
Rear brake pedal free travel	20-30 (0.8-1.2)		—
Brake drum I.D.	Front	—	*180.7 (7.11)
	Rear	—	160.7 (6.33)
Brake lining thickness	—		1.5 (0.06)
Wheel rim runout	Axial	—	2.0 (0.08)
	Radial	—	2.0 (0.08)
Wheel axle runout	Front	—	0.25 (0.010)
	Rear	—	0.25 (0.010)
Tire size	Front	*3.60S18 4PR	—
	Rear	*4.60S16 4PR	—
Tire tread depth	Front	—	1.6 (0.06)
	Rear	—	2.0 (0.08)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	140 (5.5)	—	
Front fork spring free length	—	*494 (19.4)	
Front fork oil level	186 (7.3)	—	
Rear wheel travel	*90 (3.5)	—	
Swing arm pivot shaft runout	—	0.3 (0.012)	

Specifications marked with asterisks () are exclusive to GS300LZ.

FUEL + OIL

ITEM	SPECIFICATION	NOTE
Fuel type	Use only unleaded or low-lead type gasoline of at least 85 - 95 pump octane ($\frac{R+M}{2}$ method) or 89 octane or higher rated by the Research Method.	
Fuel tank including reserve	*13.0 L (3.43 US gal)	
reserve	2.0 L (2.1 US qt)	
Engine oil type	SAE 10W/40	
Engine oil capacity	Change (2000 ml 2.1 US qt)	
	Filter change (2600 ml 2.7 US qt)	
	Overhaul (2600 ml 2.7 US qt)	
Front fork oil type	*Fork oil #15	
Front fork oil capacity (each leg)	*153 ml (5.17 US oz)	
Brake fluid type	DOT3 or DOT4	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	NORMAL RIDING				CONTINUOUS HIGH SPEED RIDING			
	SOLO RIDING		DUAL RIDING		SOLO RIDING		DUAL RIDING	
	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi
FRONT	*1.75	*24	1.75	24	*2.00	*28	2.00	28
REAR	*2.00	*28	2.25	32	*2.25	*32	*2.50	*36

Specifications marked with asterisks () are exclusive to GS300LZ.

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	45
	LO	40
Tail/Brake light		8/23
Turn signal light		23
Speedometer light		3.4
Turn signal indicator light		3.4
High beam indicator light		3.4
Neutral indicator light		3.4
Oil pressure indicator light		3.4
*Gear position indicator light		* 1.12

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Prepared by
SUZUKI MOTOR CO., LTD.

Administration Department
Overseas Service Division

July, 1982

Manual No. 99501-32020-03E

Printed in Japan