SUZUKI

GSX400F

SERVICE MANUAL

99500-34032-01E
(英)

FOREWORD

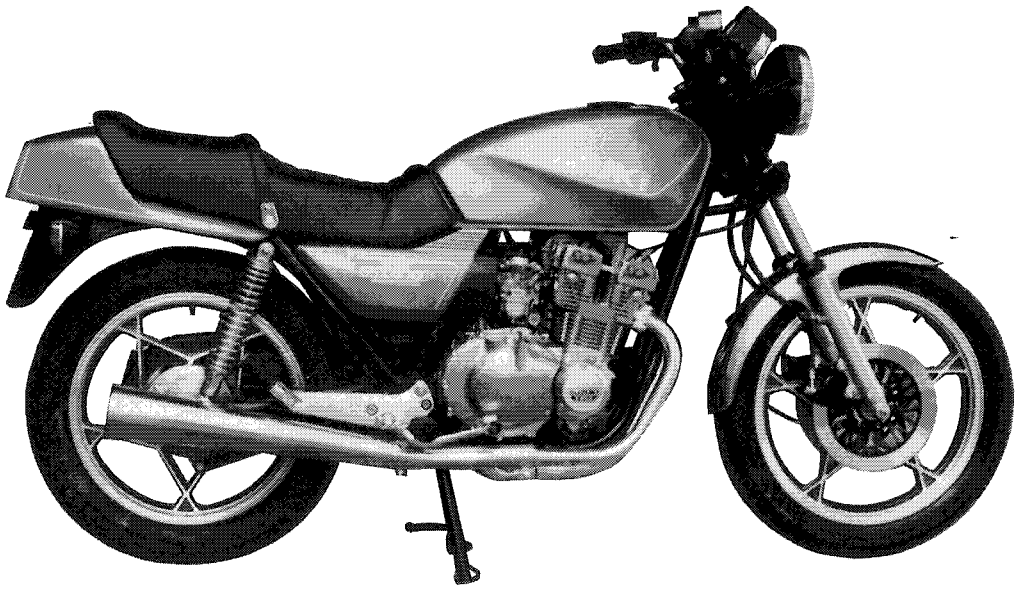
The SUZUKI GSX400F has been developed as a new generation motorcycle to the GS-models. It is packed with highly advanced design concepts including a forged one piece crankshaft assembly and a new highly efficient combustion system (TSCC). Combined with precise control and easy handling the GSX400F provides excellent performance and outstanding riding comfort.
This service manual has been produced primarily for experienced mechanics whose job is to inspect, adjust, repair and service SUZUKI motorcycles. Apprentice mechanics and do-it-yourself mechanics, will also find this manual an extremely useful guide.

Model GSX400F manufactured to standard specifications is the main subject matter of this manual. However, the GSX400F machines distributed in your country might differ in minor respects from the standard-specification and, if they do, it is because some minor modifications (which are of no consequence in most cases as far as servicing is concerned) had to be made to comply with the statutory requirements of your country.

This manual contains up-to-date information at the time of its issue. Latermade modifications are changes will be explained to each SUZUKI distributor in respective markets, to whom you are kindly requested to make query about updated information, if any.

SUZUKI MOTOR CO.,LTD.
Service Publications Department
Overseas Service Division

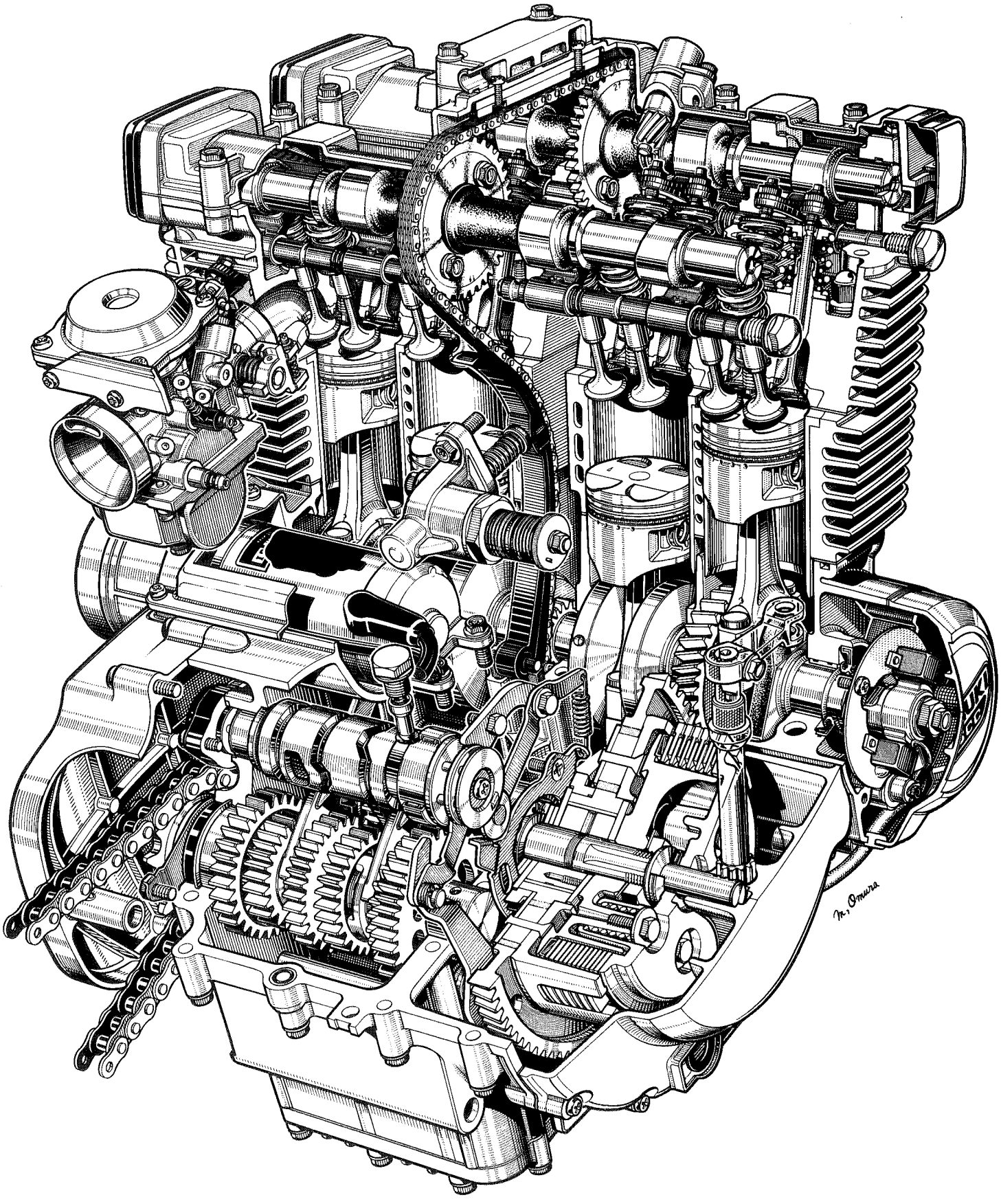
VIEW OF SUZUKI GSX400F



RIGHT SIDE

LEFT SIDE

GROUP INDEX



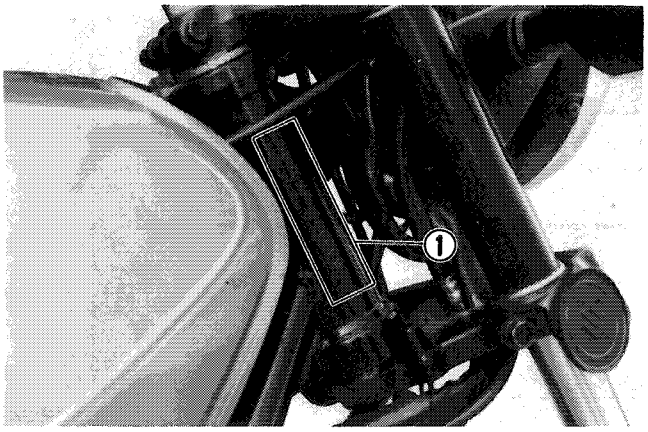
GENERAL INFORMATION

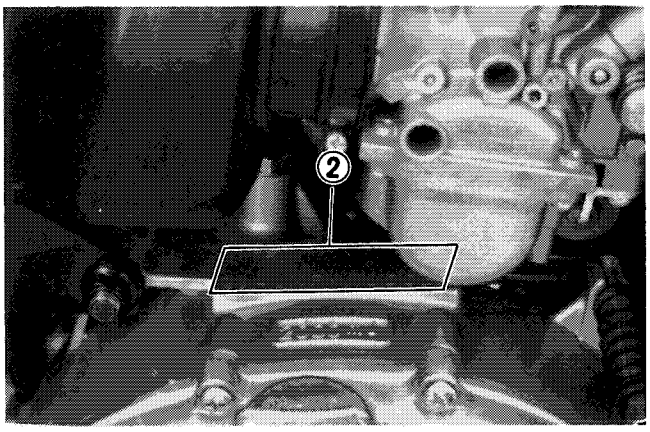
1

CONTENTS

SERIAL NUMBER LOCATIONS

The frame serial number ① is stamped on the steering head pipe. 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.





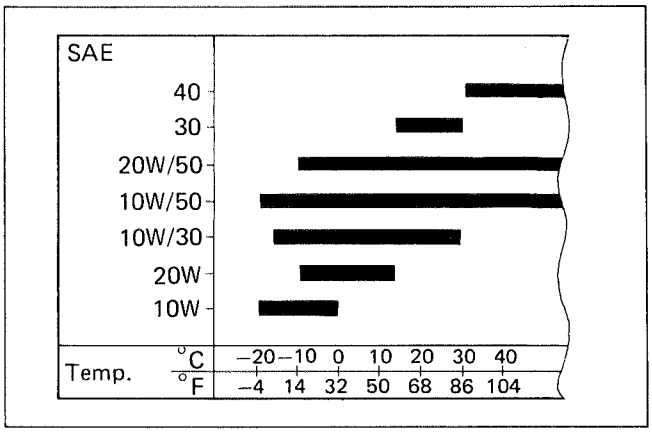
FUEL AND OIL RECOMMENDATIONS

FUEL

Gasoline used should de graded 85 – 95 octane or higher. An unleaded or low-lead gasoline type is recommended.

ENGINE OIL

Be sure that the engine oil you use comes under API classification of SE or SD 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:	SAE J1703

99000-23021	SUZUKI Brake fluid

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

Mixture of SAE 10W/30 motor oil and A.T.F. motor oil, the ratio being 50-to-50 percent.
Or fork oil SAE #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:

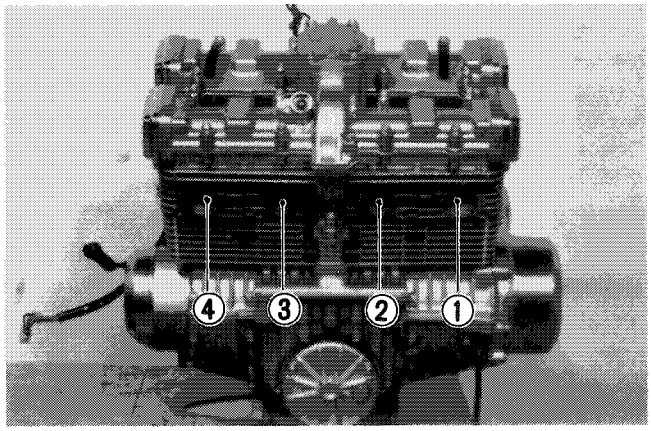
- Keep to these breaking-in engine speed limits:

Initial 800 km	Below 4,000 r/min
Up to 1,600 km	Below 6,000 r/min
Over 1,600 km	Below 10,000 r/min

- Upon reaching an odometer reading of 1,600 km 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

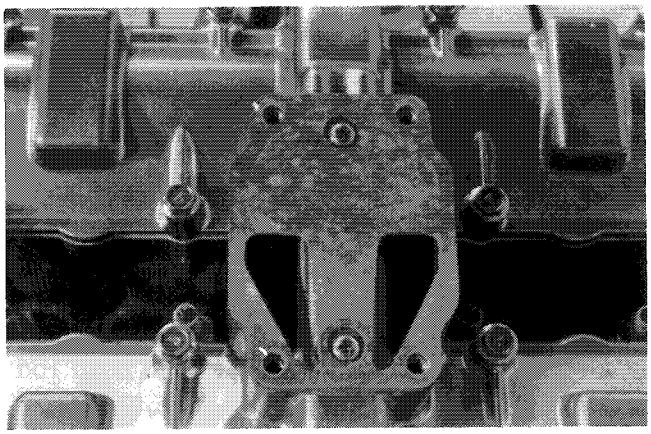
The four cylinders of this engine are identified as No. 1, No. 2, No. 3 and No. 4 cylinder, as counted from left to right (as viewed by the rider on the seat).

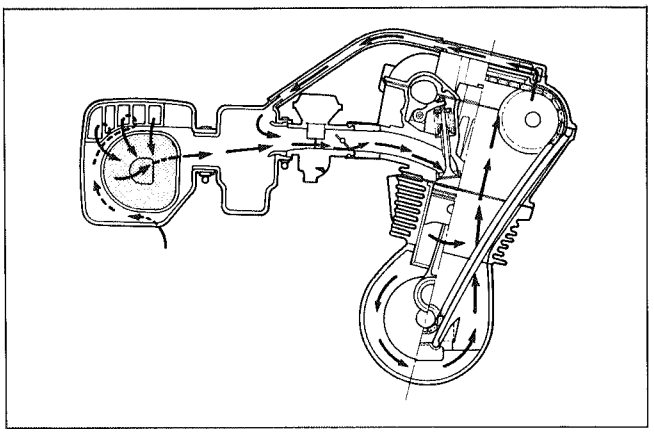


SPECIAL FEATURES

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 chamber body through a rubber tube. In the air chamber, the gases merge with incoming air and thus are recycled to the engine through the normal intake system.



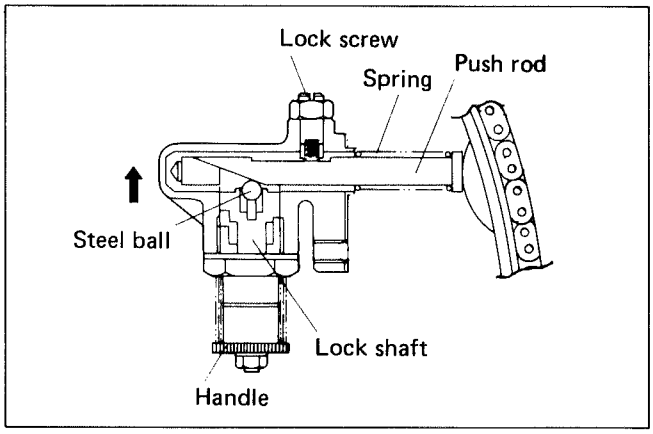


CAMSHAFT DRIVE CHAIN TENSIONER

The chain tensioner used in the Model GSX400F 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 chian.

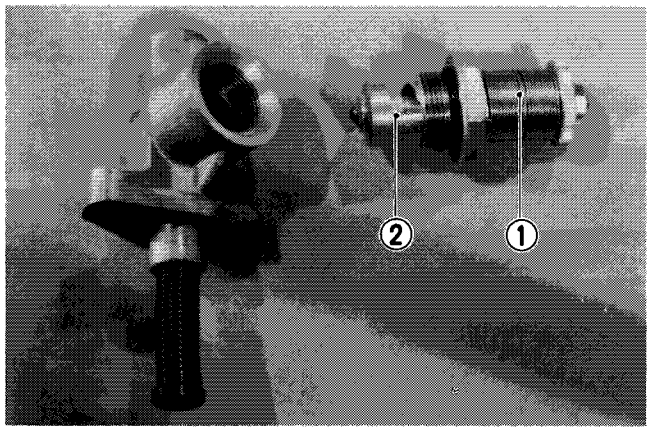
PUSH ROD AND LOCK SCREW

During normal service the cam drive chain will strech. A spring controlled push rod is used to constantly reposition the cam chain guide firmly against the chain to prevent slack from occurring. A lock screw and nut are utilized to eliminate the constant, high spring pressure exerted on the push rod. The lock screw is only used during either removal or installation of the adjuster push rod to ease the procedures.



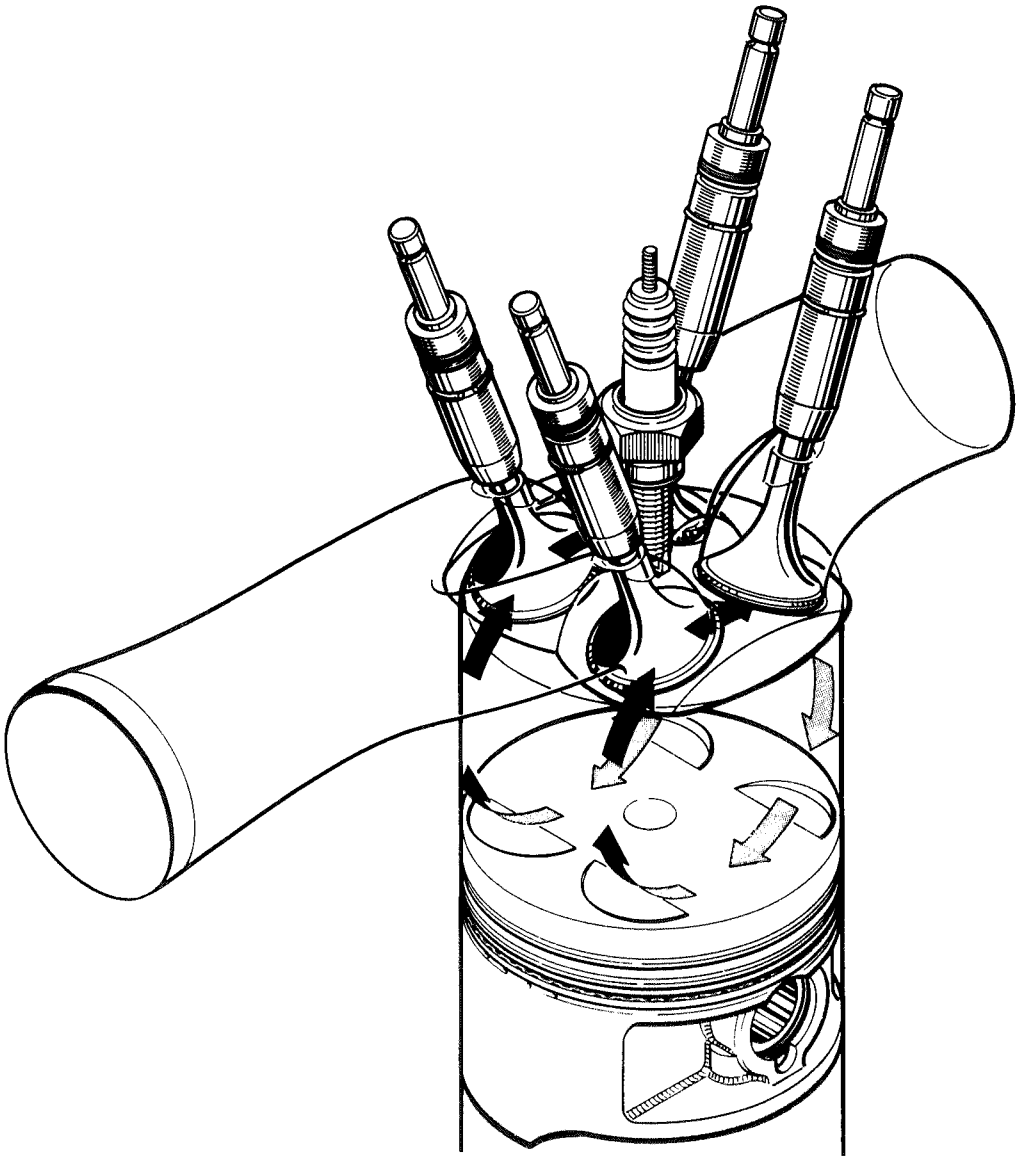
LOCK SHAFT

The cam drive chain tension tries to vary during engine operation. The spring controlled push rod is designed so as to only move in, towards the chain guide preventing slack from occurring if the spring pressure on the push rod were overcome. A steel ball is "jammed" against a angled surface preventing backwards movement of the push rod. The lock shaft is preloaded with a light spring ① which keeps the ball in contact with the push rod and angled surface ②.



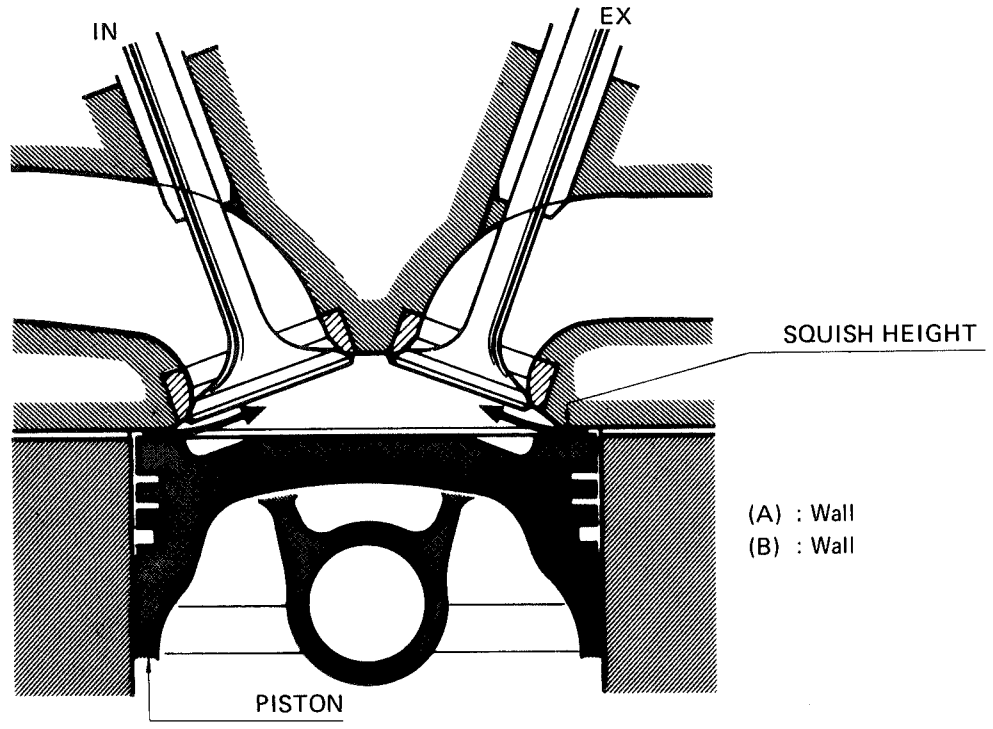
TSCC (TWIN SWIRL COMBUSTION CHAMBER)

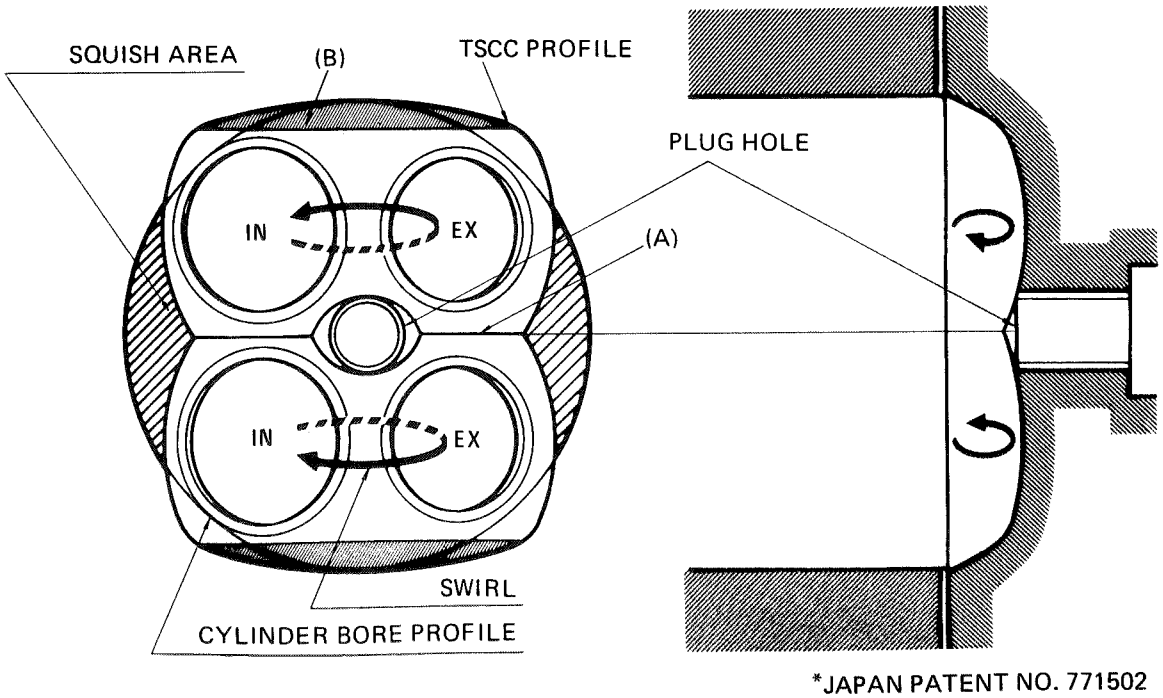
SUZUKI has introduced a new breed of 4-valves-per-cylinder high-performance 4-stroke engines--the TSCC series. TSCC describes the heart of the engine, the Twin Swirl Combustion Chamber.
What the TSCC engine series does better than conventional 4-stroke engines, either 2-valve or 4-valve, is to improve 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 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 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.



*JAPAN PATENT NO. 771502

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.





*JAPAN PATENT NO. 771502

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 turbulant 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.

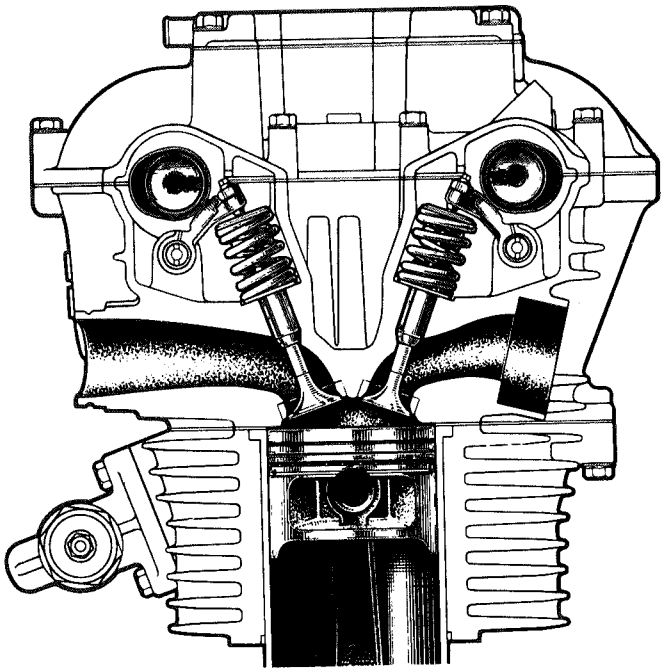
Increased burning efficiency. Increased charging efficiency. The result is more power throughout, from idle to redline. Throttle response is instant and clean. Displacement for displacement, no conventional engine, 2-valve or 4-valve, can compare. This could be enough, but SUZUKI went even further to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

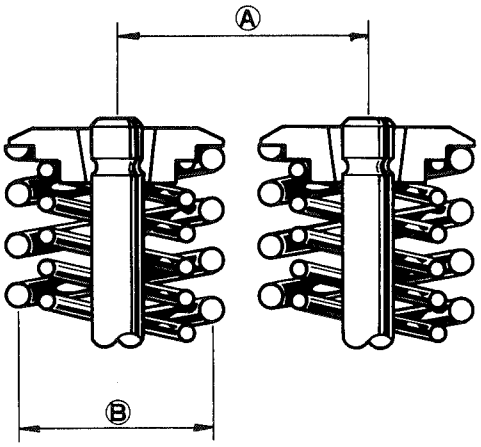
The patented TSCC combustion system combined with SUZUKI's high efficiency charging design results in power and throttle response found only in this new generation 4-stroke engine.

The SUZUKI TSCC engine series--performance without compromise.

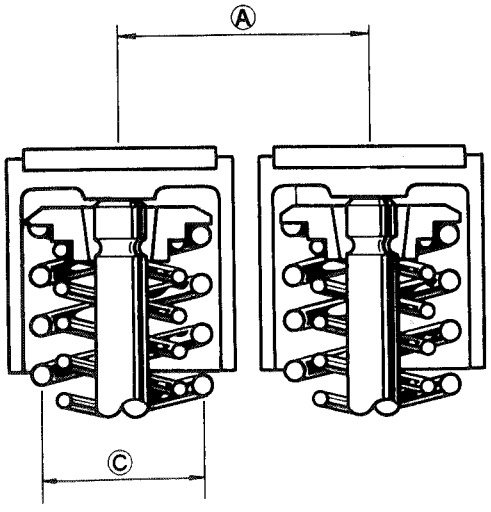


If valve pitch Ⓐ is the same, spring diameter Ⓑ is larger than Ⓒ

TSCC
4-valve

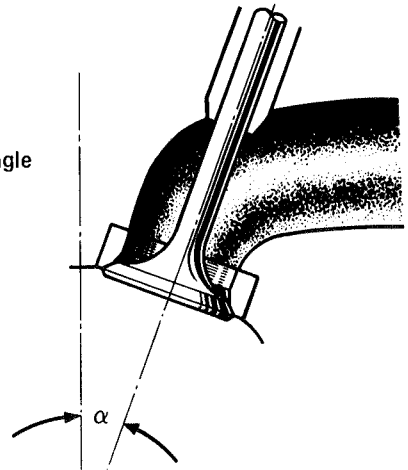


Conventional
4-valve

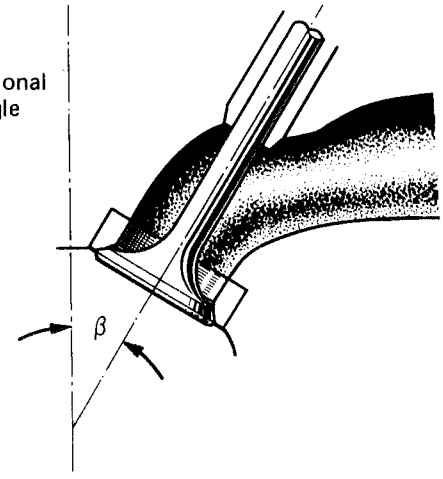


TSCC valve angle α is smaller than β.

TSCC
valve angle



Conventional
valve angle



*JAPAN PATENT NO. 771502

FULL-TRANSISTORIZED IGNITION SYSTEM

DESCRIPTION

A fully transistorized ignition system is now employed on the GSX400F. Its primary advantages are:

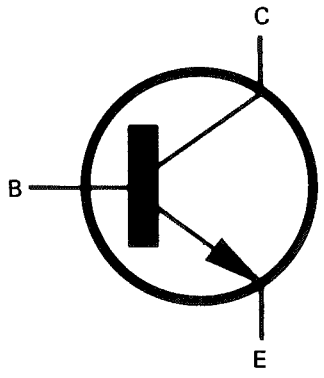
* Trouble free operation due to elimination of contact breaker points which can become contaminated.
* Ignition timing is precisely controlled at all times and requires no maintenance.
* Provides the ignition coil with stable primary voltage.
* Excellent vibration and moisture resistance.

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 GSX400F.
Transistors are divided into two groups, NPN and PNP types. The transistors used in the GSX400F model are of the NPN type only, which work as an amplifier and switching device.



B: BASE
C: COLLECTOR
E: EMITTER

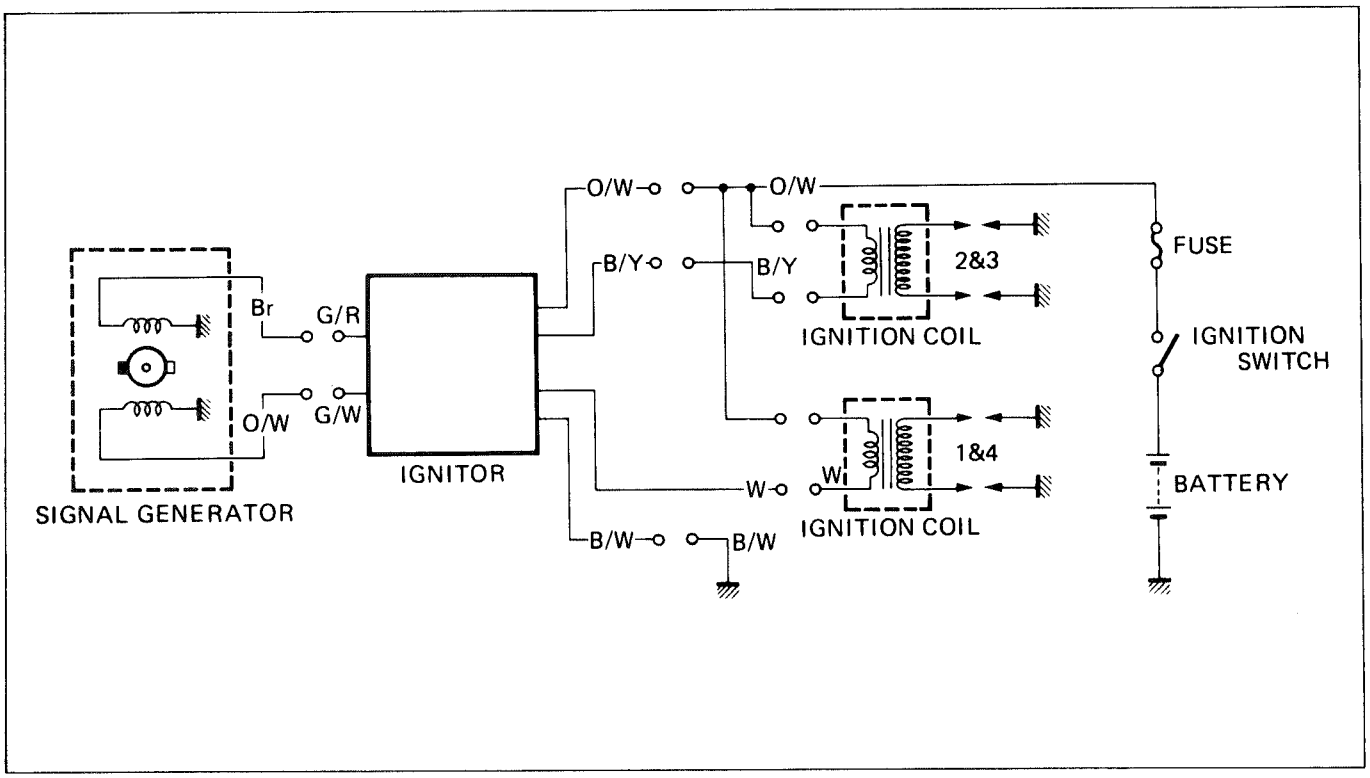
Each transistor has three terminals identified as the Base (B), Collector (C), and Emitter (E), and operation is as follows:
On a NPN type the base is the controlling terminal of the transistor operation. On this type, the base utilizes only a positive or incoming signal to do the "ON", or "OFF" switching. 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 GSX400F is the KOKUSAN brand and consists of a signal generator, which employes a rotor and two pick-up coils, the trasistor 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.

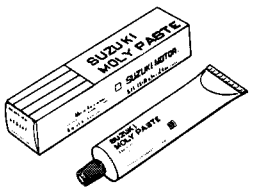
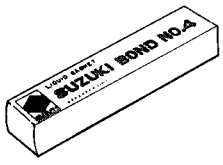
As the rotor magnet is turned past the coils, AC current is produced and used for switching within the transistor unit.

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 GSX400F, 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
 SUZUKI SUPER GREASE "A" 99000-25010	• Oil seals • Throttle grip • Cables (speedometer and tachometer) • Gearshift lever linkage and shaft • Carburetor starter shaft	3-52 3-56 4-16	• Wheel bearings • Sprocket mounting drum bearing • Swinging arm bearing and dust seal • Rear brake cam • Brake pedal shaft • Governor link • Centerstand spacer • Steering stem bearings	6- 3 6-37 6-20
 SUZUKI SILICONE GREASE 99000-25100	• Caliper axle shaft	6- 8		
 SUZUKI MOLY PASTE 99000-25140	• Valve stem • Cam shaft journal • Chain tensioner push rod • Conrod big end bearing • Crankshaft journal bearing • Countershaft	3-27 3-68 3-33 3-41 3-55 3-51		
 SUZUKI BOND No. 4 99000-31030	• Mating surfaces of upper and lower crankcase • Front fork damper rod bolt • Oil pressure switch • Mating surface of crankcase and clutch cover, generator cover	3-56 6-15 3-56 3-59 3-63		
 SUZUKI BRAKE FLUID 99000-23021 (0.5L)	• Brake fluid	2-14		

Material	Part	Page	Part	Page
 THREAD LOCK SUPER "1333B" 99000-32020	• Gearshift cam retainer screw • Cam chain guide screw • Muffler cover screw • Rocker arm shaft stop screw • Carburetor starter shaft screw	3-61 3-34 3-44 3-20 4-16		
 THREAD LOCK SUPER "1303B" 99000-32030	• Gearshift arm return spring stopper • Cam sprocket bolt • Oil pump housing screw • Starter clutch allen bolt	 3-31 3-48 3-48		
 THREAD LOCK cement 99000-32040	• Carburetor bracket screw • Camshaft end cap screw • Engine sprocket spacer inner surface • Front fork damper rod bolt • Oil filter cap nut • Cylinder stud bolt	4-16 3-74 3-52 6-15 2-12	• Anti-Dive fitting bolt • Anti-Dive plunger bolt	
 THREAD LOCK "1342" 99000-32050	• Generator stator securing screw • Generator lead wire guide screw • Gearshift cam stopper bolt • Countershaft bearing retainer screw • Engine oil pump fitting screw	3-47 3-47 3-61 3-60 3-60	• Starter motor securing bolt • Gearshift fork shaft stopper screw • Gearshift cam guide bolt • Oil sump filter screw • Throttle valve screw	3-59 3-53 3-53 3-57 4-15
 THREAD LOCK SUPER "1305" 99000-32100	• Generator rotor bolt	3-58		

PRECAUTIONS AND GENERAL INSTRUCTIONS

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

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

> **CAUTION:**
> **Never reuse a circlip after a circlip has been removed from a shaft, it should be discarded and a new circlip must be installed.**
> **When installing a new circlip, care must be taken not to expand the end gap larger than required to slip the circlip over the shaft.**
> **After installing a circlip, always insure that it is completely seated in its groove and securely fitted.**

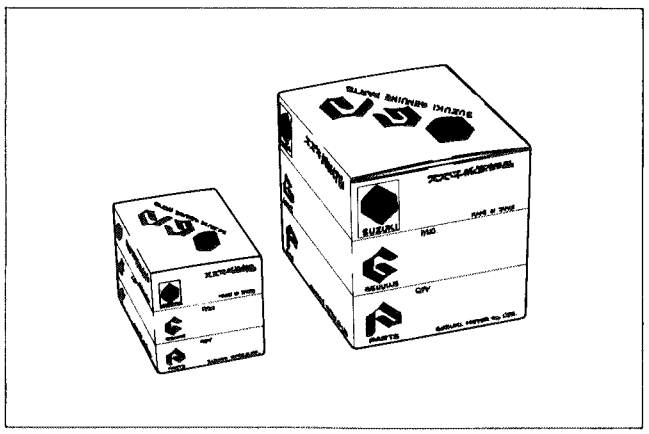
- Tighten cylinder head and case bolts and nuts beginning with larger diameter and ending with smaller diameter, and from inside to out-side diagonally, to the specified tightening torque.
- Use special tools where specified.
- Use genuine parts and recommended oils.
- When 2 or more persons work together, pay attention to the safety of each other.
- After the reassembly, check parts for tightness and operation.
- Treat gasoline, which is extremely flammable and highly explosive, with greatest care. Never use gasoline as cleaning solvent.

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

WARNING ..... 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	2 105 mm
Overall width	750 mm
Overall height	1 135 mm
Wheelbase	1 415 mm
Ground clearance	165 mm
Seat height	780 mm
Dry mass	179 kg

ENGINE

Type	Four-stroke, air-cooled, DOHC
Number of cylinders	4
Bore	53.0 mm
Stroke	45.2 mm
Piston displacement	398 cm^3
Compression ratio	10.2 : 1
Carburetor	MIKUNI BS26SS, four
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		2.300 (92/40)
Final reduction		2.866 (43/15)
Gear ratios,	Low	3.166 (38/12)
	2nd	2.125 (34/16)
	3rd	1.631 (31/19)
	4th	1.333 (28/21)
	5th	1.173 (27/23)
	Top	1.083 (26/24)
Drive chain		DAIDO DID50UB, 104 links

CHASSIS

Front suspension	Telescopic, oil dampened
Rear suspension	Swinging arm, oil dampened, spring 5-way adjustable
Steering angle	42° (right & left)
Caster	63°
Trail	100 mm
Turning radius	2.3 m
Front brake	Disc brake, twin
Rear brake	Internal expanding Disc brake (for England and West Germany)
Front tire size	3.25S19-4PR
Rear tire size	3.75S18-4PR 110/90-18 61S (only for West Germany)
Front fork stroke	150 mm
Rear wheel travel	107 mm
Front tire pressure	175 kPa (1.75 kg/cm^2) (Normal solo riding)
Rear tire pressure	200 kPa (2.00 kg/cm^2) (Normal solo riding)

ELECTRICAL

Ignition type	Fully transistorized
Ignition timing	15° B.T.D.C. below at 1 650 r/min and 35° B.T.D.C. above at 3 500 r/min
Spark plug	NGK D8EA or NIPPON DENSO X24ES-U NGK DR8ES-L or NIPPON DENSO X24ESR-U
Battery	12V 43.2 kC (12 Ah)/10 HR
Generator	Three-phase A.C. generator
Fuse	15A

CAPACITIES

Fuel tank including reserve	15 L (3.3 Imp gal)
Reserve	3.5 L (3.1 Imp qt)
Engine oil	2.0 L (1.8 Imp qt)
Front fork oil (each leg)	169 ml (5.95 Imp oz)

* These specifications are subject to change without notice.

PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

CONTENTS

PERIODIC MAINTENANCE SCHEDULE

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

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

PERIODIC MAINTENANCE CHART

ENGINE

Item \ Interval	Initial 1 000 km	Every 5 000 km	Every 10 000 km	Page
Air cleaner	Clean every 3 000 km			2-3
Battery	Inspect	Inspect	–	2-4
Engine bolts and nuts	Inspect	Inspect	–	2-5
Valve clearance	Inspect	Inspect	–	2-6
Compression	Inspect	Inspect	–	2-8
Spark plug	Inspect	Inspect	Replace	2-9
Ignition timing	Inspect	Inspect	–	2-10
Carburetor	Inspect	Inspect	–	2-10
Fuel lines	Replace every 2 years			2-12
Engine oil and filter	Change	Change	–	2-12
Oil pressure	–	Inspect	–	2-13
Oil sump filter	–	–	Clean	2-13
Clutch	Inspect	Inspect	–	2-14

CHASSIS

Item \ Interval	Initial 1 000 km	Every 5 000 km	Every 10 000 km	Page
Brakes	Inspect	Inspect	–	2-14
Brake hose	Replace every 2 years			2-14
Brake fluid	Change every 1 year			2-14
Drive chain	Inspect and clean every 1 000 km			2-18
Tires	Inspect	Inspect	–	2-19
Steering	Inspect	Inspect	–	2-20
Front fork oil	Change	–	Change	2-21

LUBRICATION CHART

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

Interval / Item	Initial and Every 5 000 km	Every 10 000 km
Governer link	–	Grease
Throttle cable	Motor oil	–
Throttle grip	–	Grease
Clutch cable	Motor oil	–
Clutch lever	Motor oil	–
Speedometer cable	–	Grease
Tachometer cable	–	Grease
Drive chain	Motor oil every 1 000 km	
Brake pedal shaft	Grease or oil	–
Brake cam shaft	–	Grease
Gearshift lever shaft	–	Grease
Steering stem bearings	Grease every 2 years or 20 000 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 items of the Periodic Maintenance requirements.

AIR CLEANER ELEMENT

Clean Every 3 000 km

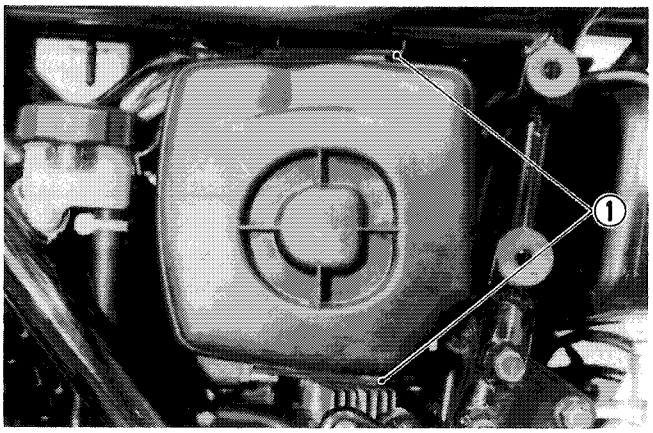
If the air cleaner is clogged with dust, intake resistance will be increased with a resultant decrease in output and an increase in fuel consumption. Check and clean the element in the following manner.

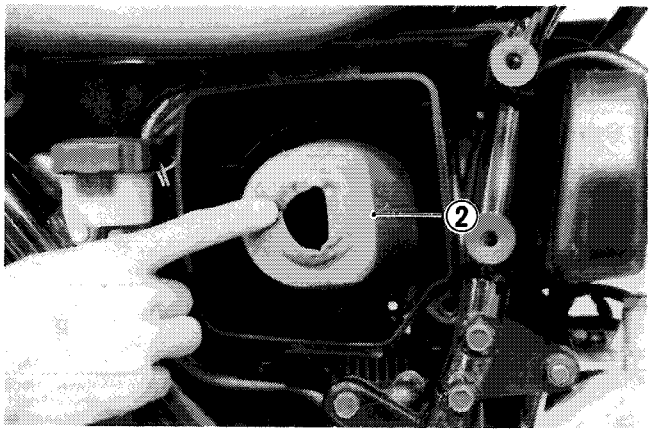
- Take out air cleaner element ② from the air cleaner case by removing two guides ①.
- Fill a washing pan of a proper size with non-flammable cleaning solvent. Immerse the element in the cleaning solvent and wash it clean.
- Squeeze the cleaning solvent out of the washed element by pressing it between 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 element to frame properly.

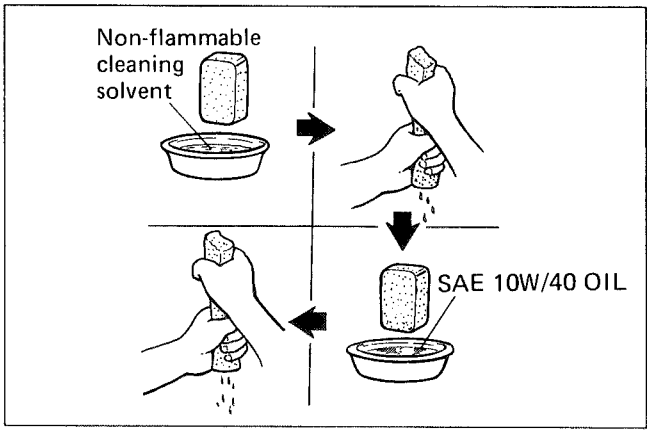
CAUTION:

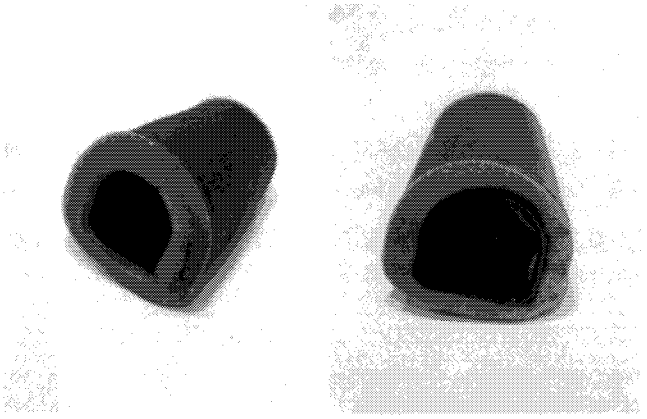
*** Before and during the cleaning operation, inspect the element for tears. A torn element must be replaced.**

*** 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.**





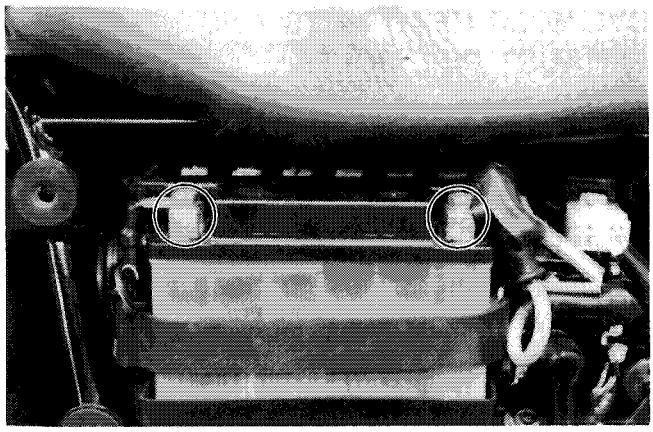




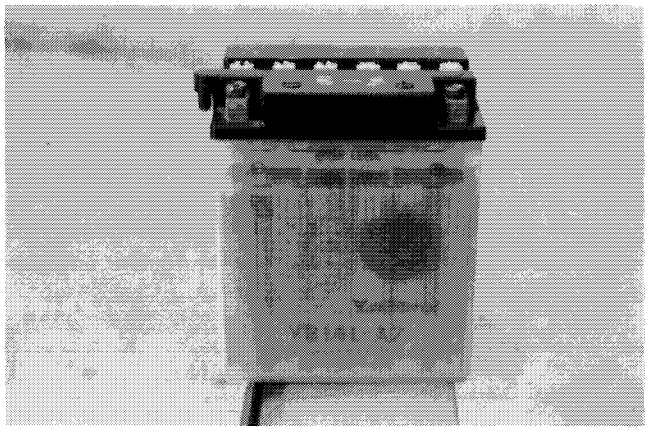
CORRECT INCORRECT

BATTERY

Inspect Initial 1 000 km and Every 5 000 km

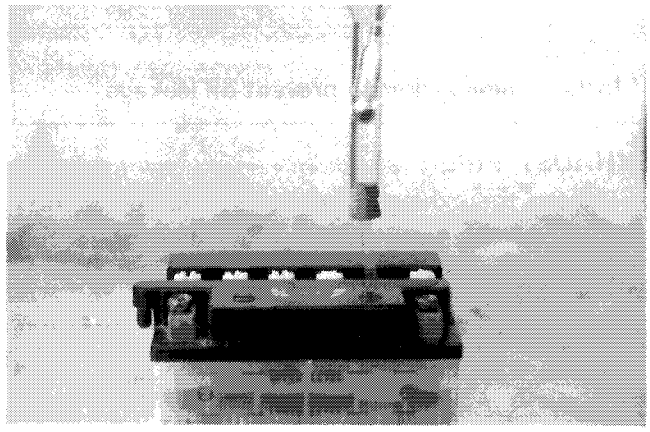


- The battery must be removed to check the electrolyte level and specific gravity.
- Remove left frame cover.
- Remove battery ⊖ lead at the battery terminal.
- Remove battery ⊕ lead wire.
- Remove battery from the frame.
- Check electrolyte for level and specific gravity. Add distilled water, as necessary, 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 charged condition.

09900-28403	Hydrometer
Standard specific gravity	1.28 at 20°C (68°F)

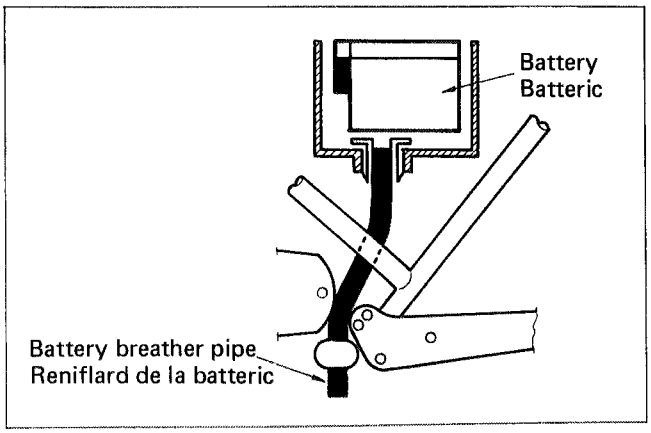


An S.G. reading of 1.22 (at 20°C) or under means that the battery needs recharging off the machine: take it off and charge it from a recharger. Charging the battery in place can lead to failure of the regulator/rectifier.

- 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.



CYLINDER HEAD NUTS AND EXHAUST PIPE BOLTS

Retighten Initial 1 000 km and Every 5 000 km

CYLINDER HEAD

- Remove the fuel tank.
- Remove the cylinder head cover.
- Tighten the twelve 8 mm nuts (12 mm wrench) to the specified torque with a torque wrench sequentially in ascending numerical order with the engine cold.

Cylinder head nut	20 N·m (2.0 kg-m)

- After firmly tightening the 12 nuts, tighten the 6 mm bolt (indicated as Ⓐ) to the torque value below:

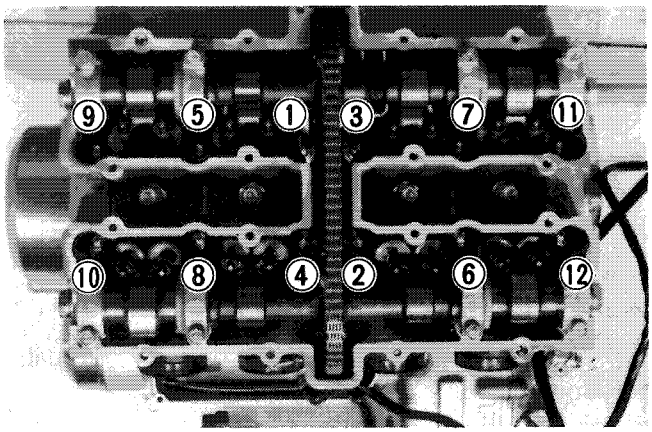
Head bolt	9 – 11 N·m (0.9 – 1.1 kg-m)

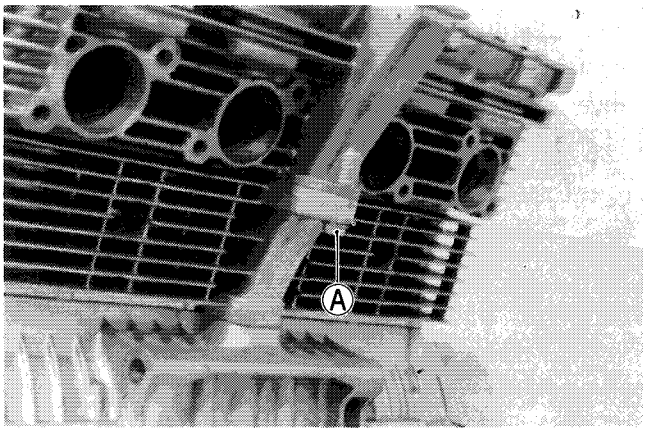
NOTE: Install a new gasket to prevent oil leakage.

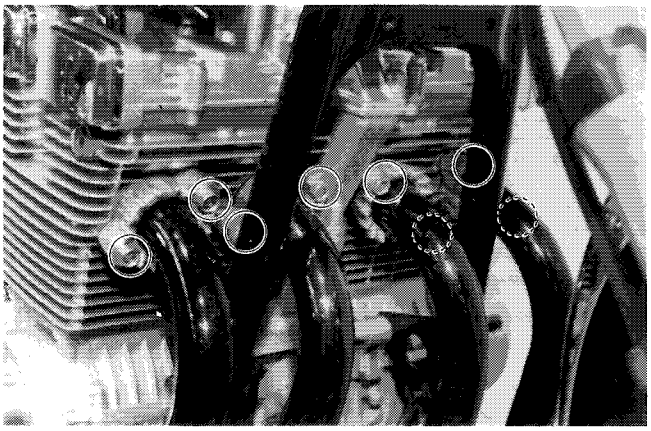
EXHAUST PIPE

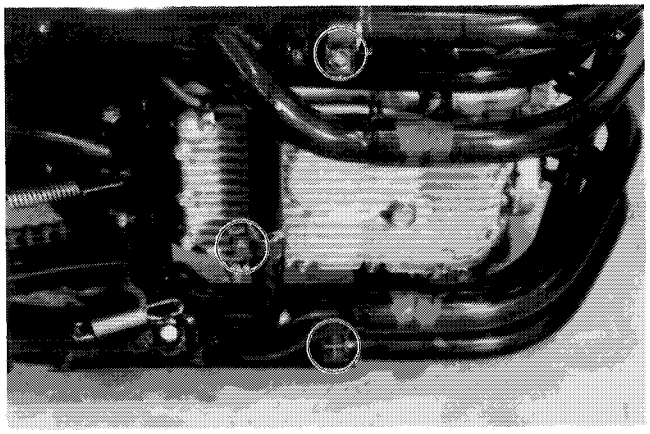
- Tighten the exhaust pipe bolts and coupler tube bolts to the specified torque with a torque wrench.

Exhaust pipe bolt	10 – 16 N·m (1.0 – 1.6 kg-m)
Exhaust pipe connector bolt	9 – 14 N·m (0.9 – 1.4 kg-m)









VALVE CLEARANCE

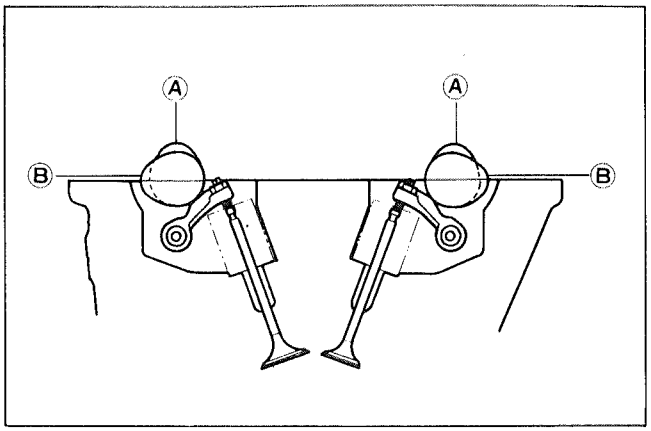
Inspect Initial 1 000 km and Every 5 000 km

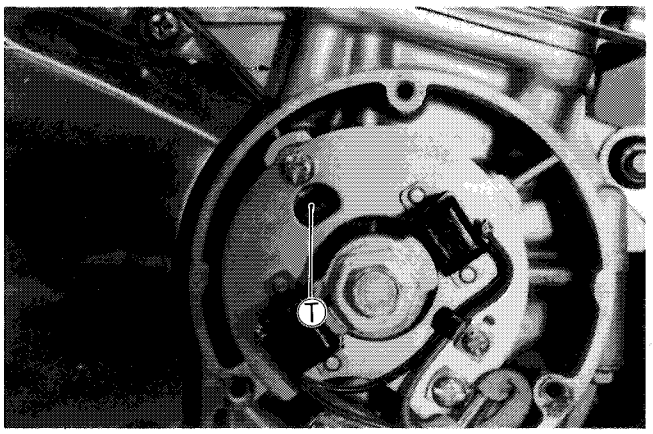
The valve clearance specification is the same for both intake and exhaust valves.
Valve clearance adjustment must be checked and adjusted 1) at the time of periodic inspection, 2) when the valve mechanism is serviced, and 3) when the camshafts are disturbed by removing them for servicing.

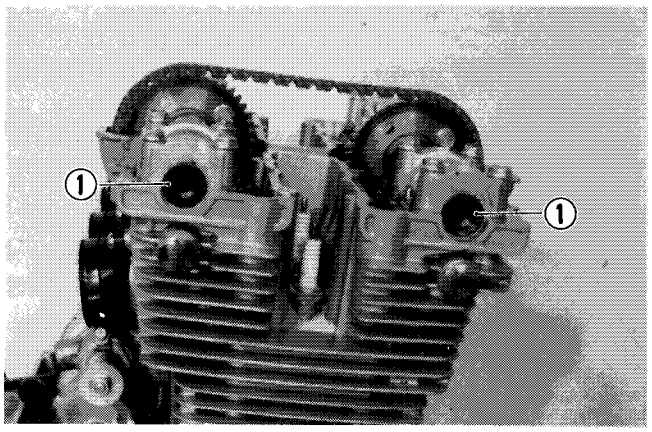
Valve clearance (when cold)	0.08 – 0.13 mm

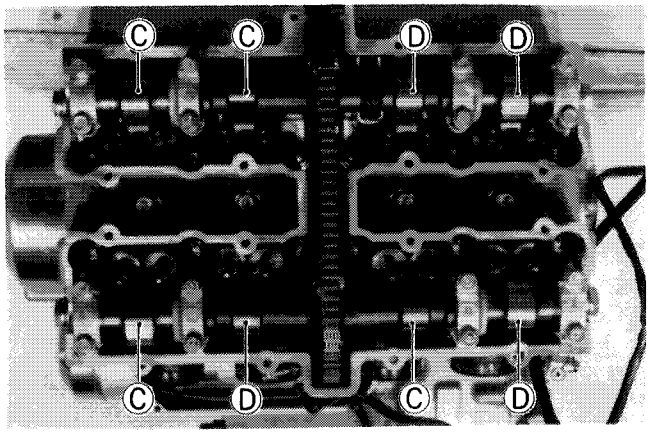
NOTE:
- *** The cam must be at position Ⓐ or Ⓑ in order to check the valve clearance or to adjust valve clearance. Clearance readings should not be taken with the cam in any other position than these two positions.**
- *** The clearance specification is for COLD state.**
- *** To turn the crankshaft for clearance checking, be sure to use a 19-mm wrench and to rotate in normal running derection. All spark plugs should be removed.**

- Turn crankshaft to bring the "T" mark on Nos. 1 and 4 side (of advance governor) to the timing mark 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 Ⓒ (In and Ex of No. 1 cylinder, Ex of No. 2 and In of No. 3).



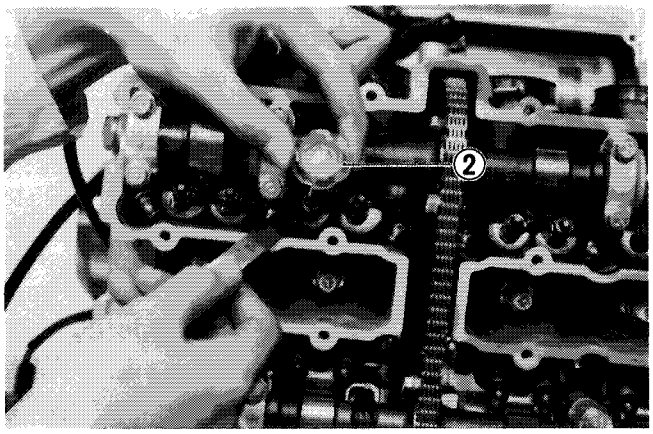




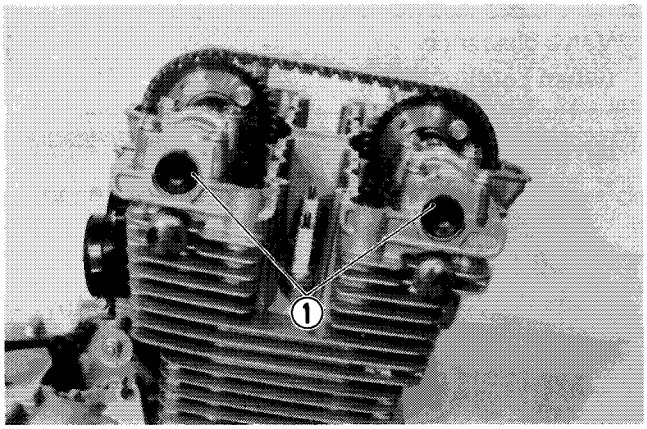


- Use thickness gauge between tappet and valve. If clearance is off the specification, bring it into the specified range by using the tappet adjusting driver ②.

09900-20806	Thickness gauge
09917-14910	Tappet adjust driver

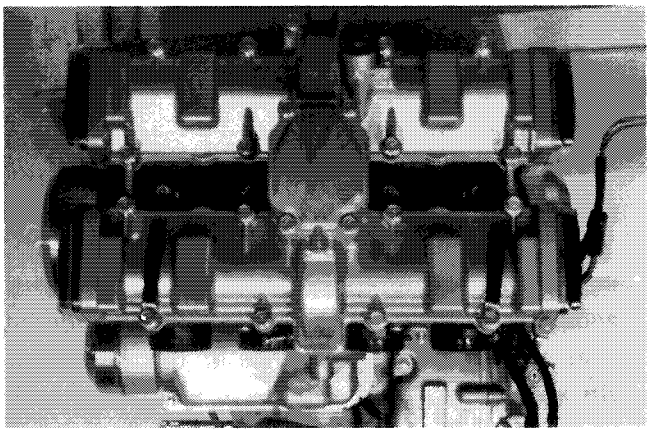


- Turn crankshaft by 360° (one rotation) to bring the "T" mark on Nos. 1 and 4 side to the timing mark and also to bring the notches ① to the position shown.
- Read clearance at the valve Ⓓ and adjust the clearance if necessary.



- Tighten the cylinder head cover properly.

NOTE:
Replace the head cover gasked with new one.



COMPRESSION CHECK

Check Initial 1 000 km and Every 5 000 km

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
1 100 – 1 500 kPa (11 – 15 kg/cm^2)	700 kPa (7 kg/cm^2)	200 kPa (2 kg/cm^2)

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
* Leaking or otherwise defective cylinder head gasket

Overhaul the engine in the following cases:

* Difference in compression pressure between the two is more than 200 kPa (2 kg/cm^2).
* All compression pressure are below 1 100 kPa (11 kg/cm^2) (standard) even when they measure more than 700 kPa (7 kg/cm^2).

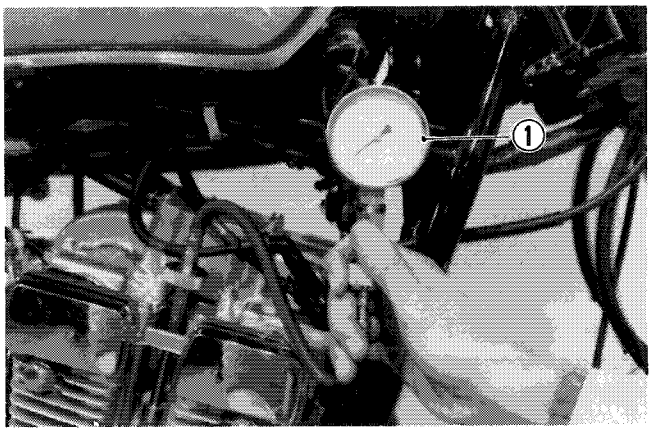
COMPRESSION TEST PROCEDURE

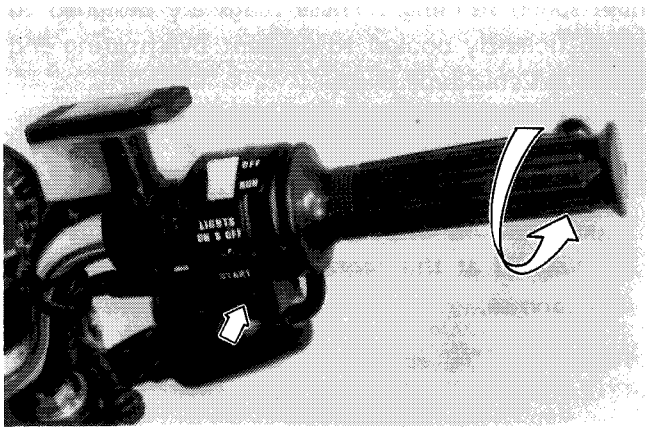
NOTE:

* **Before testing the compression of the engine, make sure that the cylinder head nuts and bolts are torqued to specification.**
* **Warm up the engine before testing.**

- Remove all spark plugs. Ground all plug leads.
- 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 as the compression of that cylinder.
- Repeat this procedure with the other cylinders.

09915-64510	Compression gauge
09915-63210	Adapter





SPARK PLUG

Clean and Adjust Initial 1 000 km and
Every 5 000 km
Replace Every 10 000 km

The plug gap is adjusted to 0.6 – 0.7 mm. 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.

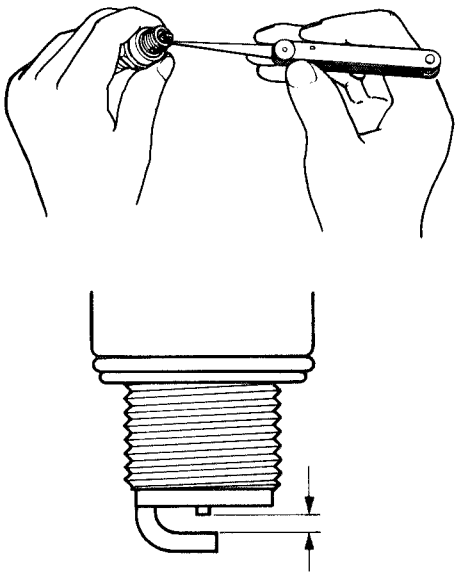
09930-13210	Socket wrench
09930-14530	Universal joint
09914-24510	T handle
09900-20804	Thickness gauge

NGK D8EA or NIPPON DENSO X24ES-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 D7EA or NIPPON DENSO X22ES-U and if baked white, by NGK D9EA or NIPPON DENSO X27ES-U.
Plugs with high heat range number are used for high speed running. These plugs are designed to be sufficiently cooled to prevent overheating and are called cold type plugs.

NOTE:
"R" type spark plug is fitted under some of specifications and it means that the resistor is located at the center electrode to prevent radionoise.

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

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



Gap 0.6 – 0.7 mm

NGK	NIPPON DENSO	REMARKS
D7EA (DR7ES)	X22ES-U (X22ESR-U)	If the standard plug is apt to get wet, replace with this plug. Hot type.
D8EA (DR8ES-L)	**X24ES-U (X24ESR-U)**	**Standard**
D9EA (DR8ES)	X27ES-U (X27ESR-U)	If the standard plug is apt to overheat, replace with this plug. Cold type.

IGNITION TIMING

Inspect Initial 1 000 km and Every 5 000 km

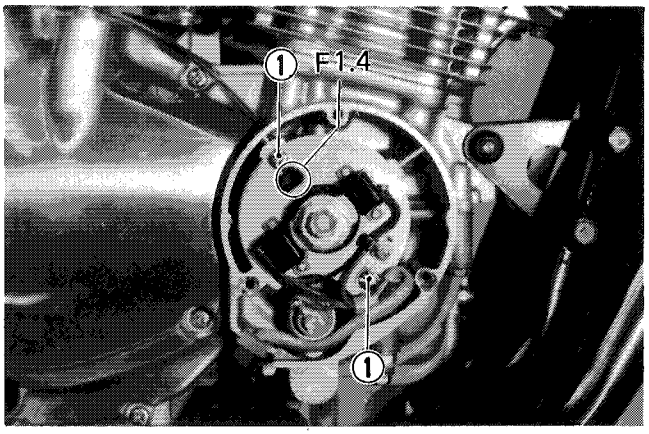
IGNITION TIMING SPECIFICATIONS

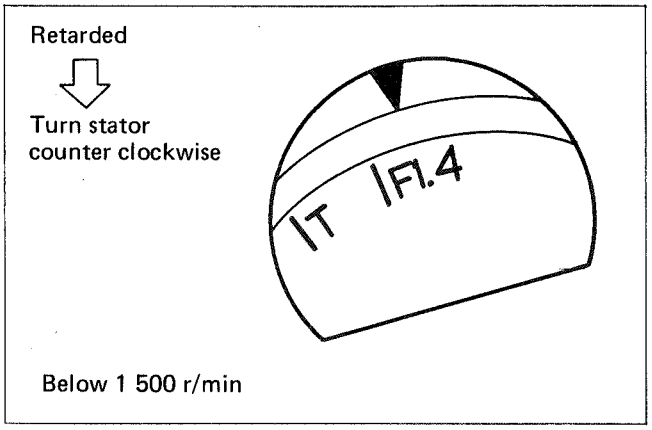
Ignition timing	15° B.T.D.C. below 1 650 ± 100 r/min and 35° B.T.D.C. above 3 500 ± 100 r/min

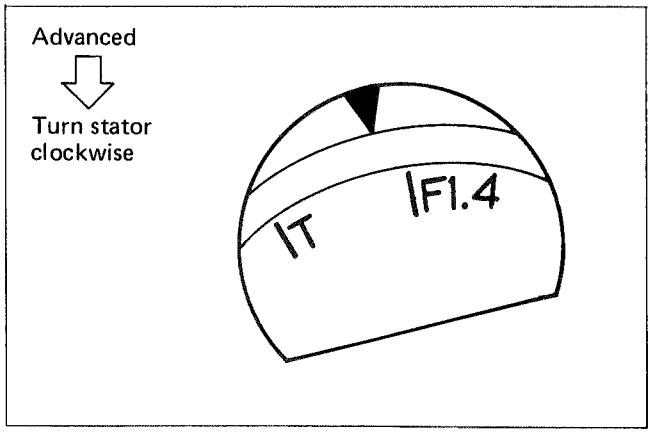
The procedure is as follows:

- Clip the timing light on the high tension cord of the "No. 1 or No. 4" cylinder.
- Run the engine at a speed not exceeding 1 500 r/min. Under this condition, "F" mark on "No. 1 and No. 4" cylinder side advance governor and timing mark should be in perfect alignment: If not, loosen two stator securing screws ① and adjust the ignition timing by turning stator base as shown.

09900-27311	Timing light







CARBURETOR

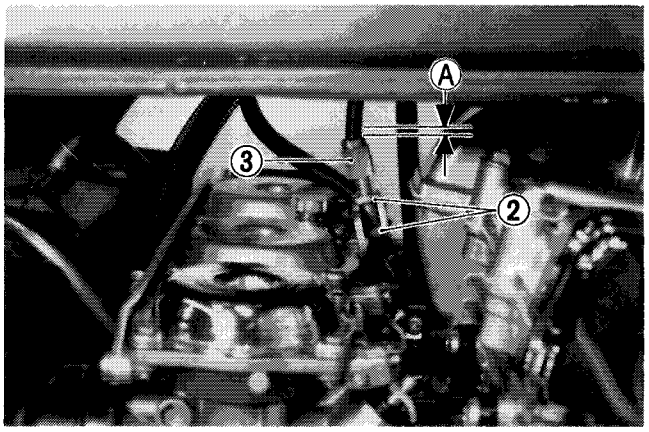
Inspect Initial 1 000 km and Every 5 000 km

THROTTLE CABLE PLAY

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

- Tug on the throttle cable to check the amount of play.
- Loosen the two lock nuts ② and turn the adjuster ③ in or out until the specified play is obtained.
- Secure the lock nuts while holding the adjuster in place.

Throttle cable play Ⓐ	0.5 mm

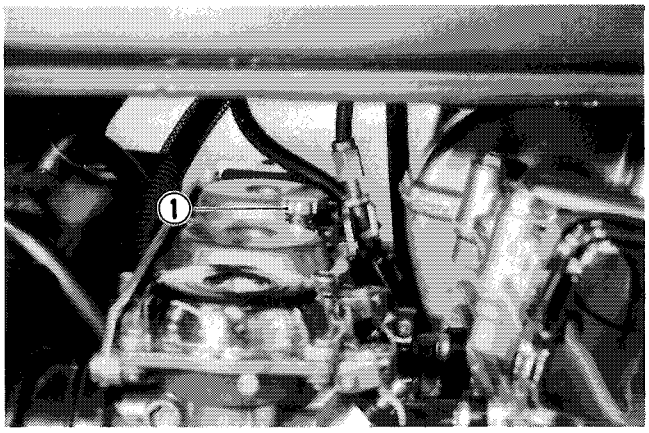


IDLING ADJUSTMENT

NOTE:
Make this adjustment when the engine is hot.

- Start up the engine and set its speed at anywhere between 1 050 and 1 150 r/min by turning throttle stop screw ①.

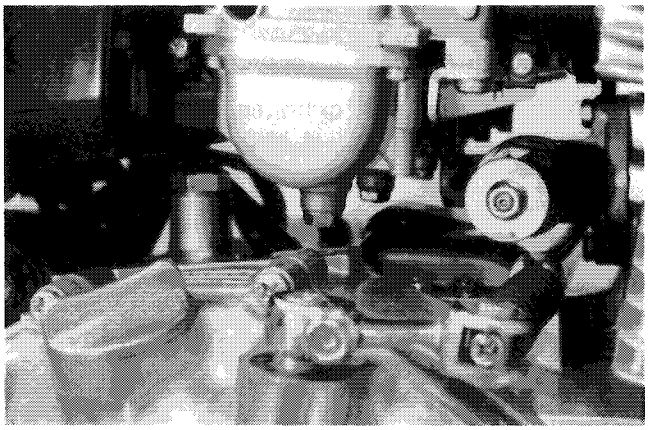
Engine idle speed	1 100 ± 50 r/min



FUEL LEVEL INSPECTION

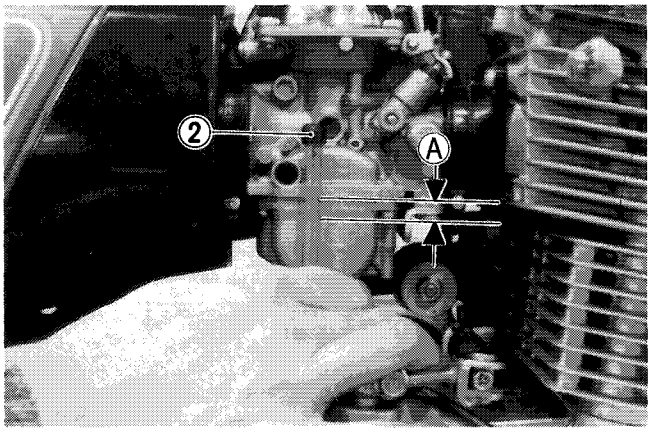
- Place machine on center stand.
- Remove carburetor drain plug and install the fuel level gauge ②.

09913-14511	Fuel gauge body
09913-14550	Attachment



- Run the engine at the idling speed (1 050 – 1 150 r/min), and measure the distance with the middle line of the level gauge aligned with the lower surface of carburetor body as shown in photo. Ⓐ should be within the specified range.

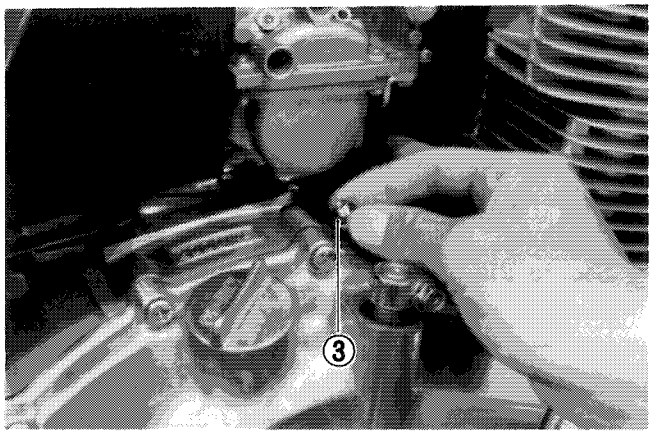
Distance Ⓐ	4.0 ± 1.0 mm



- Repeat the procedure on each carburetor.

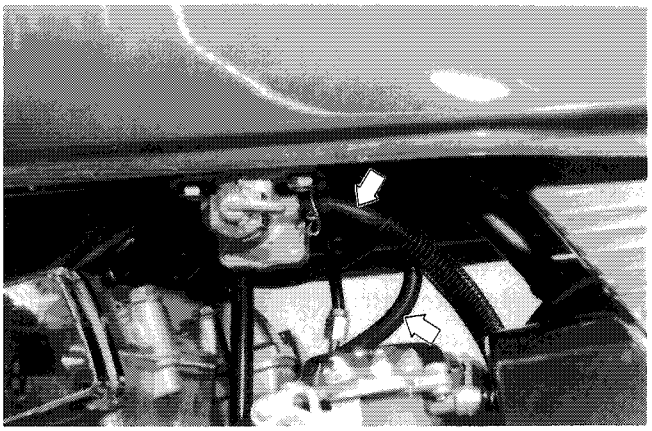
NOTE:
When refitting the screw, be sure to use the "O" ring ③.

- If fuel level readjustment is necessary, see page 4-11 for adjusting float height.



FUEL LINE

Replace every 2 years



ENGINE OIL AND OIL FILTER

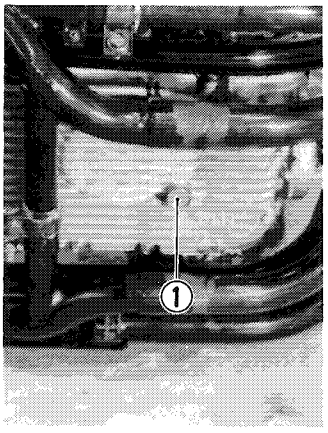
Change oil Initial 1 000 km and Every 5 000 km

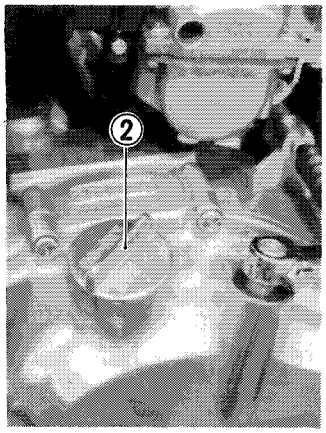
The oil should be changed while the engine is hot. Oil filter replacement at the above intervals should be done together with engine oil change.

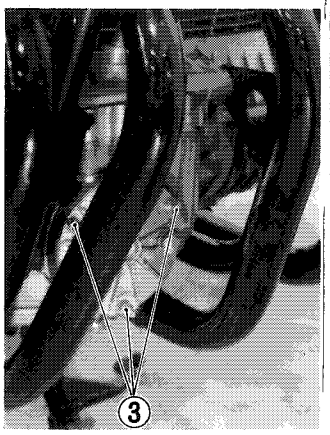
- Keep the motorcycle upright, supported on the center stand.
- Place an oil pan below the engine and drain the oil by removing the drain plug ① and filler cap ②.
- Remove three nuts ③ and remove the filter cover.
- Pull out old filter ④, and replace with new one.
- Replace O-ring and filter cover, and secure nuts ③ with applying thread lock cement.

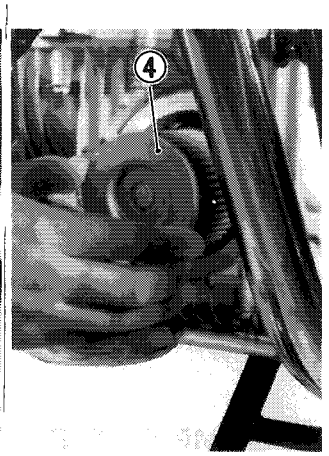
99000-32040	Thread lock cement

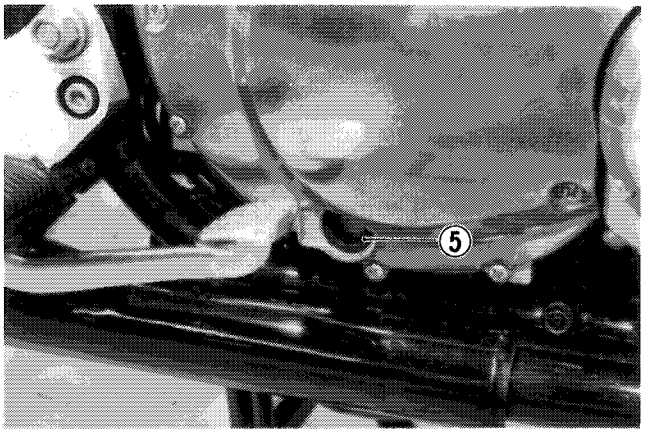
- Fit drain plug ① securely, and add fresh oil through the filler. The engine will hold about 2.4 L (2.1 Imp qt) of oil.
  Use API classification of SE or SF oil with SAE 10W/40 viscosity.
- Start up the engine and allow it to run for several seconds at idling speed.
- Turn off the engine and wait about one minute, then check the oil level through the inspection window ⑤. If the level is below mark "F", supply oil to that level.







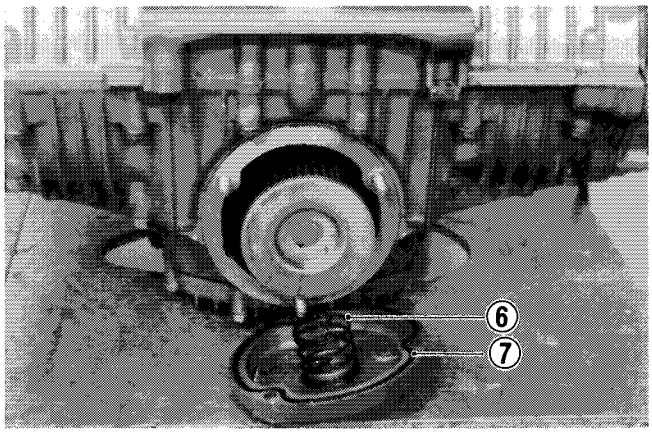




NECESSARY AMOUNT OF ENGINE OIL

Oil change	2.0 L
Filter change	2.4 L
Overhaul engine	2.7 L

NOTE:
Be sure to take care of O-ring ⑥ to prevent any damage and be sure that filter spring ⑦ is properly in place.



OIL PRESSURE

Inspect Every 5 000 km

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:

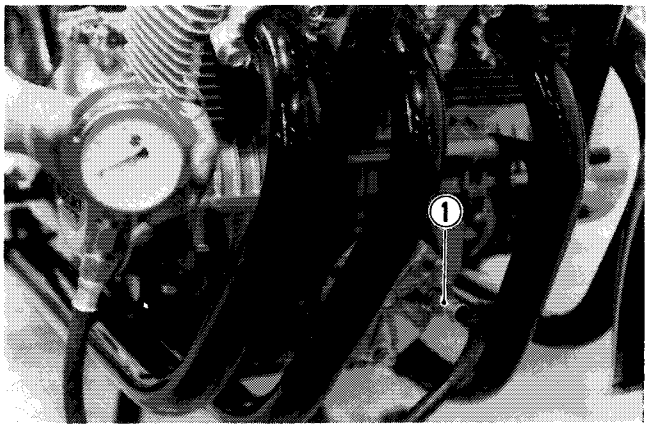
- Install the oil pressure gauge ① in the position shown in the figure.
- Warm up the engine as follows:
  Summer 10 min. or so at 2 000 r/min
  Winter 20 min. or so at 2 000 r/min
- After warming up operation, increase the engine speed to 3 000 r/min, and read the oil pressure gauge.

OIL PUMP PRESSURE SPECIFICATION

Above 250 kPa (2.5 kg/cm^2)
Below 550 kPa (5.5 kg/cm^2) 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 replace with new one.

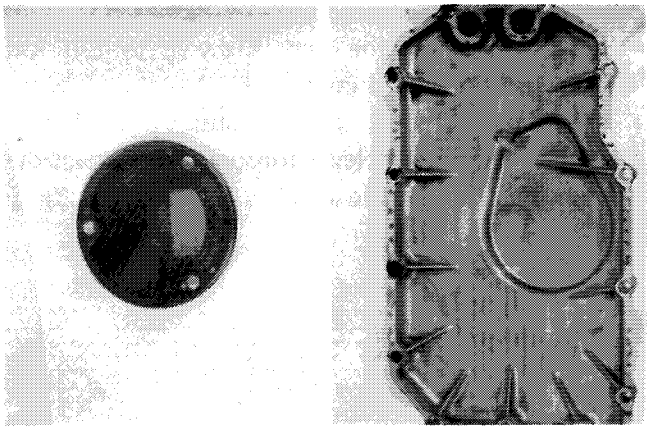


OIL SUMP FILTER

Clean Every 10 000 km

At the same time wash the oil pan. Check to be sure that the strainer screen is free from any sign of rupture and wash the strainer clean periodically. When installing oil sump filter, be sure to face the arrow mark (oil inlet) to the front.

NOTE:
Replace oil pan gasket with new one to prevent oil leakage.



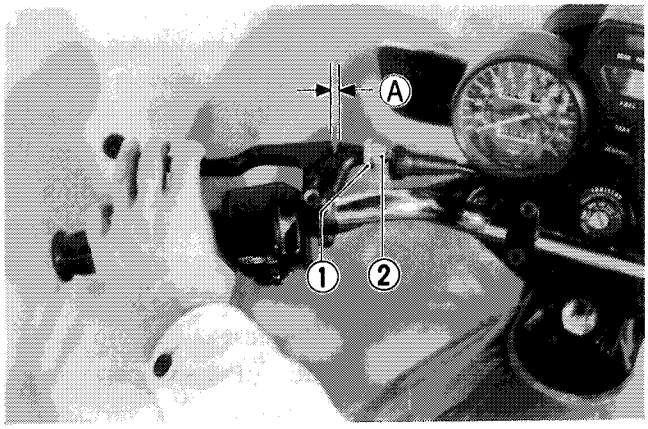
CLUTCH

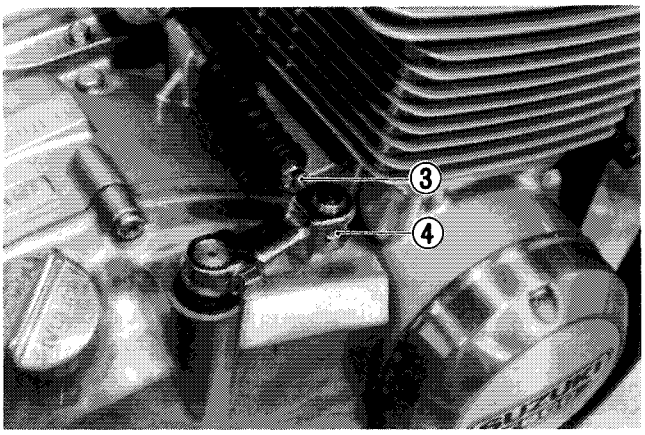
Inspect Initial 1 000 km and Every 5 000 km

- Loosen lock nut ① on the lever side of the clutch cable and adjusting nut ② fully in on the clutch lever side.
- Loosen the cable lock nut ③, tighten the adjusting screw to provide play in the outer cable. Adjust the play of the cable with adjuster ④ until play Ⓐ of the clutch lever is 2 – 3 mm. Next firmly secure lock nut ③.

Cable play Ⓐ	2 – 3 mm

- If the specified play can not be obtained with adjuster ④, carry out the adjustment using the adjusting nut ② on the clutch lever side.





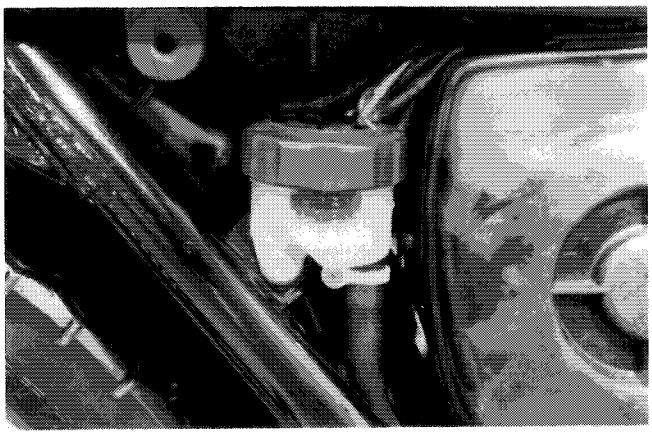
BRAKES

Inspect Initial 1 000 km and Every 5 000 km Replace hoses Every 2 years Change fluid Every 1 year

BRAKE FLUID LEVEL

- Support the motorcycle body on the center stand, and place the handlebars straight.
- Remove the right frame cover.
- Check the brake fluid level by observing the upper and lower limit lines on the brake fluid reservoirs, both front and rear.
- When the level is below the lower limit line, replenish with brake fluid that meets the following specification.

Specification and Classification	SAE J1703
99000-23021	SUZUKI Brake fluid



WARNING:
The brake system of this motorcycle is filled with a glycol-based brake fluid. Do not use or mix different types of fluid such as silicone-based and petroleum-based 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 hoses for cracks and hose joint for leakage before riding.

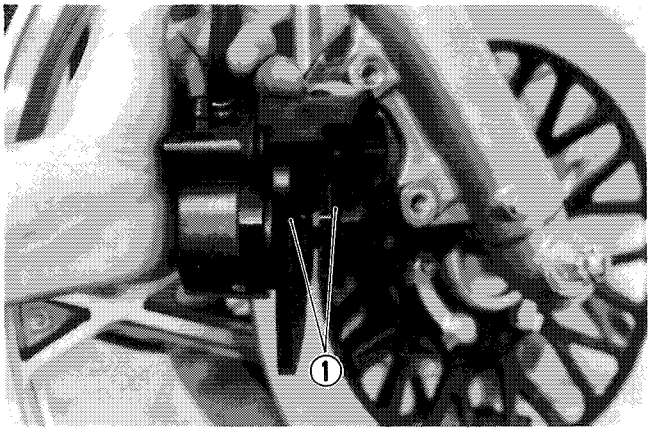
BRAKE PADS

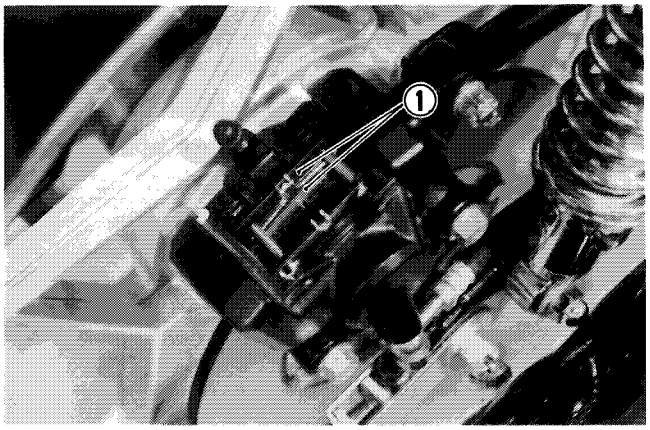
Wearing condition of brake pads can be checked by observing the red limit line ① marked on the pad. When the wear exceeds the limit line, replace the pads with new ones. (see pages 6-5 and 6-29)

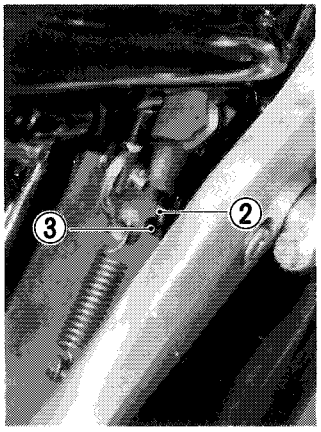
BRAKE PEDAL HEIGHT

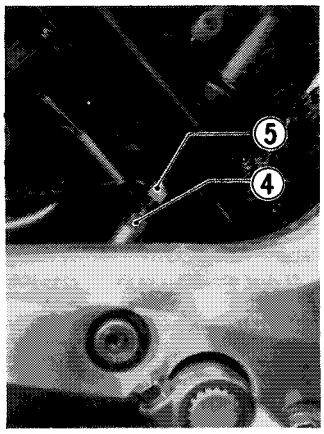
- Loosen lock nut ②, and turn stopper bolt ③ away from the stopper.
- Loosen lock nut ④, and rotate push rod ⑤ to locate brake pedal 20 mm Ⓐ below the top face of the footrest.
- Turn the stopper bolt ③ in so that the clearance between the stopper bolt and stopper is zero.
- Retighten both lock nuts ② and ④.

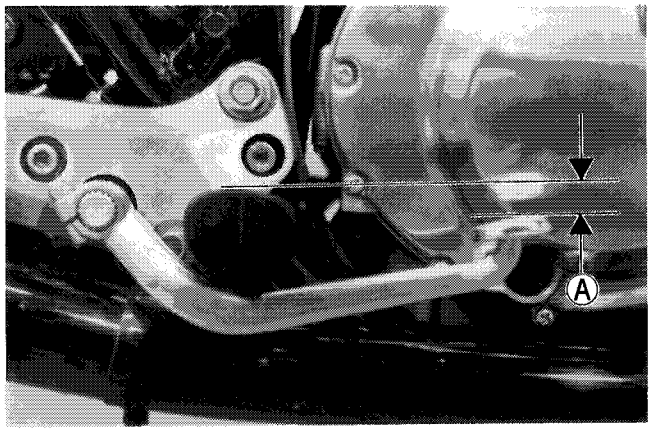
Brake pedal height Ⓐ	20 mm





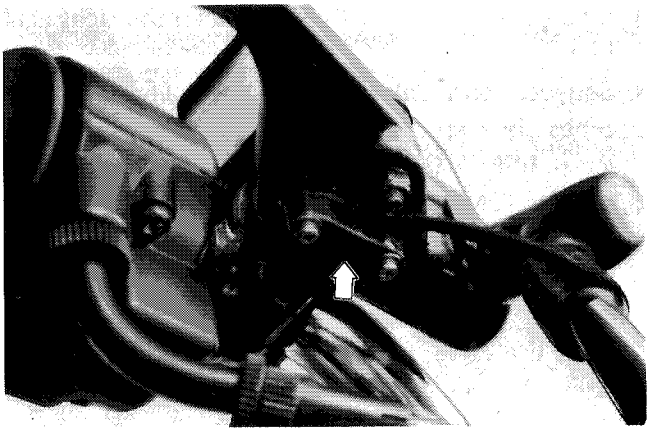


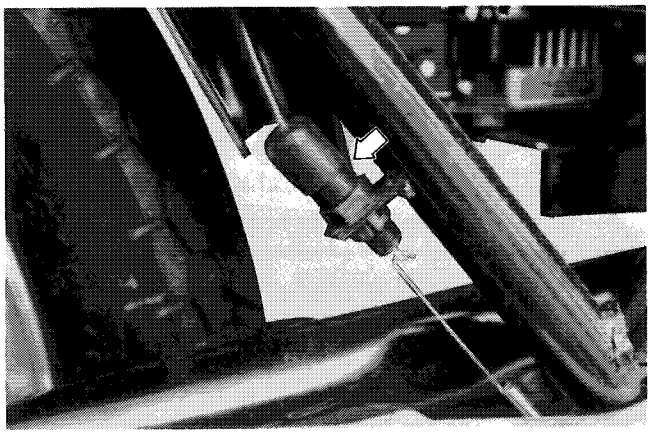




BRAKE LIGHT SWITCHES

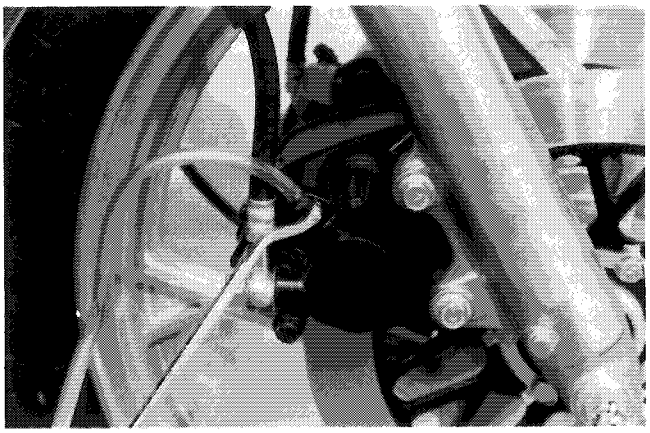
Adjust both brake light switches, front and rear, so that brake light will come on just before a pressure is felt when the brake lever is squeezed, or the brake pedal is depressed.





AIR BLEEDING THE BRAKE FLUID CIRCUIT

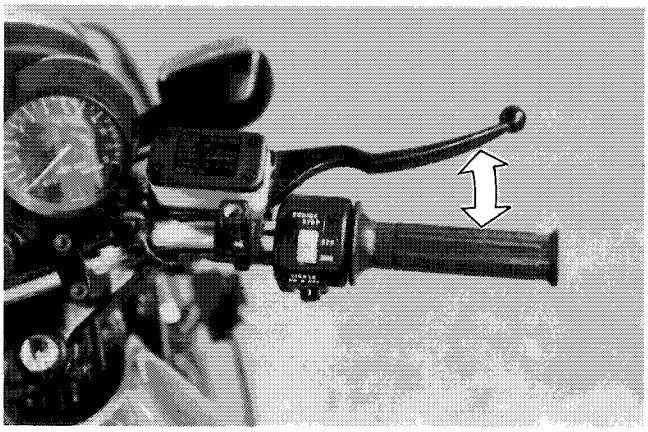
Air trapped in the fluid circuit acts like a cushion to absorb a large proportion of the pressure developed by the master cylinder and thus interferes with the full braking performance of the caliper brake. The presence of air is indicated by "sponginess" of the brake lever and also by lack of braking 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.



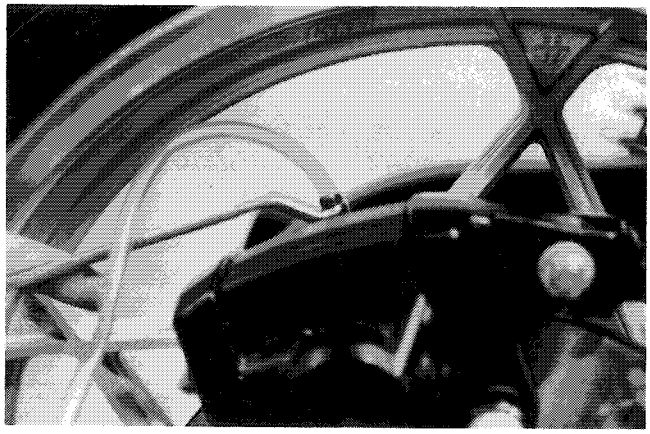
- Fill up the master cylinder reservoir to the "HIGH" level line. Replace the reservoir cap to prevent entry of dirt.
- Attach a pipe to the caliper bleeder valve, and insert the free end of the pipe into a receptacle.

Bleeder valve tightening torque	7 – 9 N·m (0.7 – 0.9 kg-m)

- Bleed the left caliper first, and then the right caliper.
- Squeeze and release the brake lever several times in rapid succession, and squeeze the lever fully without releasing it. Loosen the bleeder valve by turning it a quarter of a turn so that the brake fluid runs into the receptacle; this will remove the tension of the brake lever causing it to touch the handlebar grip. Then, close the valve, pump and squeeze the lever, and open the valve. Repeat this process until the fluid flowing into the receptacle no longer contains air bubbles.



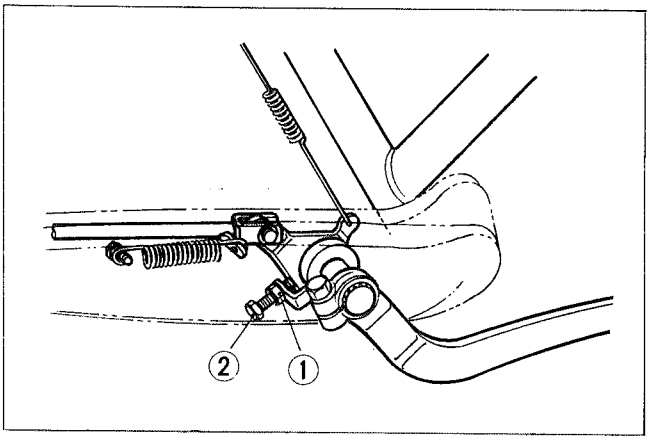
NOTE:
Replenish the brake fluid reservoir as necessary while bleeding the brake system.
Make sure that there is always some fluid visible in the reservoir.



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

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

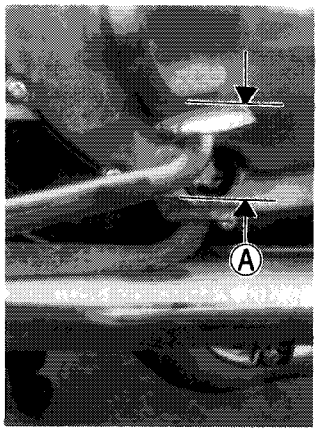
- Differences between front and rear are that the master cylinder is actuated by a pedal.

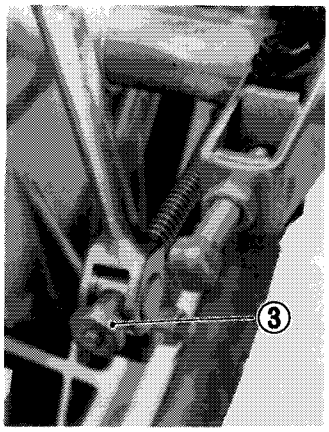


REAR (DRUM TYPE)

Bring the brake pedal to a position about 20 mm 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.

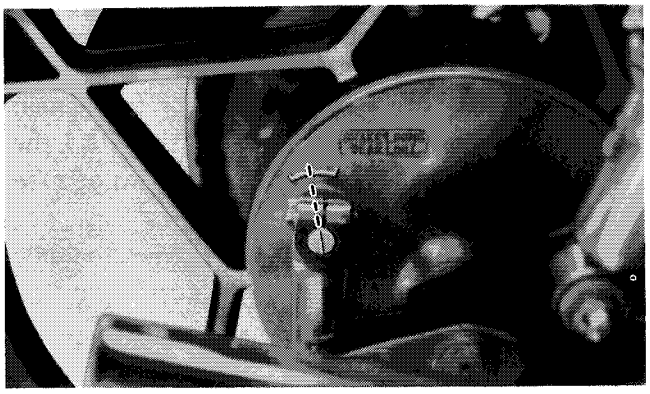
By repositioning the adjusting nut ③ on brake rod, set the pedal play to 20 mm Ⓐ as measured at pedal tip.
Check to be sure that rear brake light comes on when the pedal is depressed to take up the play.





BRAKE SHOE WEAR (DRUM TYPE)

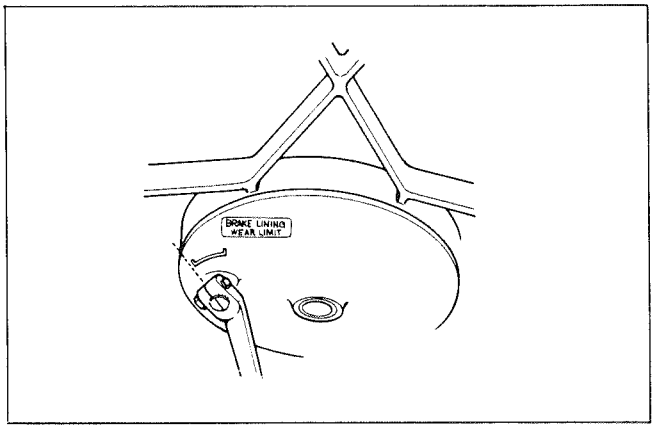
This motorcycle is equipped with brake lining wear limit indicator on rear as shown in Fig. At the condition of normal lining wear, the extension line of the index mark on the brake cam shaft should be within the range embossed on the brake panel with brake on.



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 6-26)



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

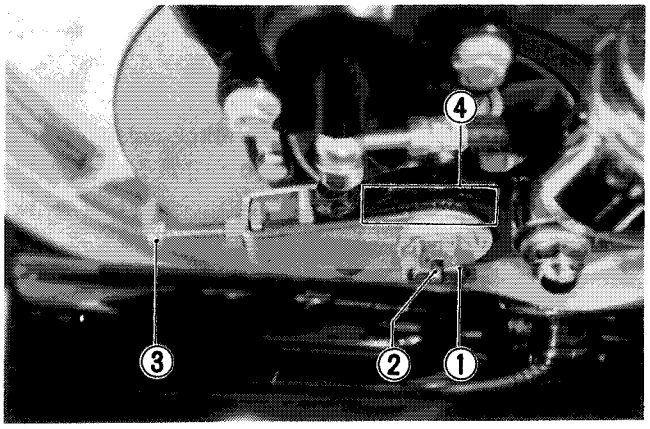
DRIVE CHAIN

Inspect, Clean and Lubricate Every 1 000 km

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

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

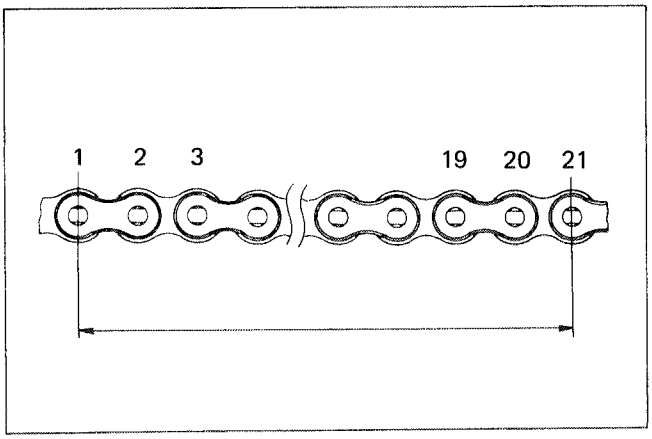
If any defects are found, the drive chain must be replaced.



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.

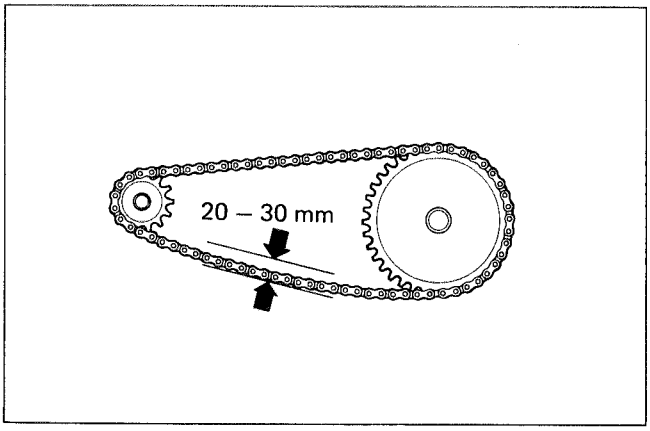
Service Limit	324.3 mm



ADJUSTING

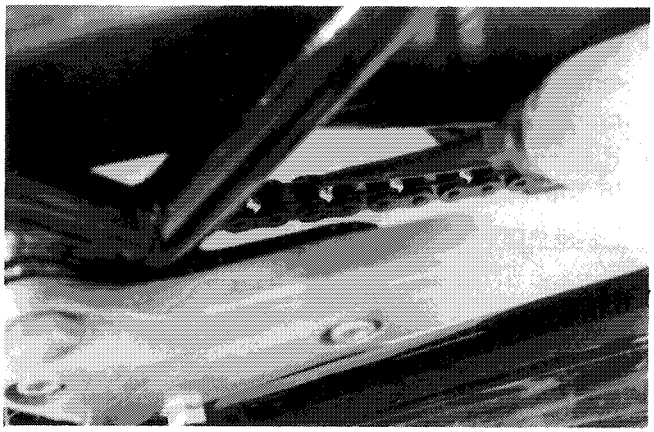
- Loosen the adjuster ③ until the chain has 20 – 30 mm of sag at the middle between engine and rear sprockets. The mark ④ on both chain adjusters must be at the same position on the scale to ensure that the front and rear wheels are correctly aligned.
- After adjusting the drive chain, tighten the axle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

Rear axle nut tightening torque	50 – 80 N·m (5.0 – 8.0 kg-m)



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.



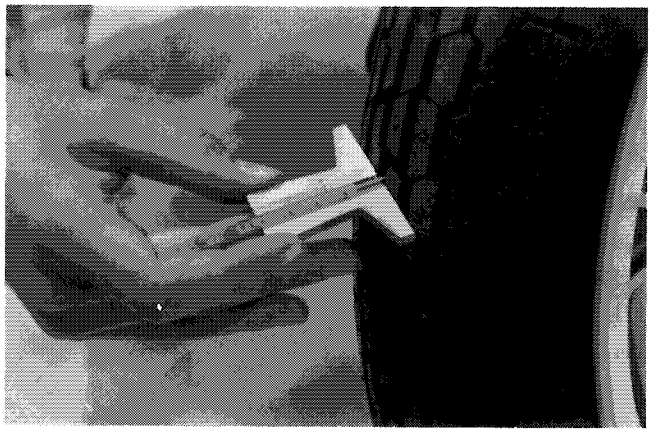
TIRES

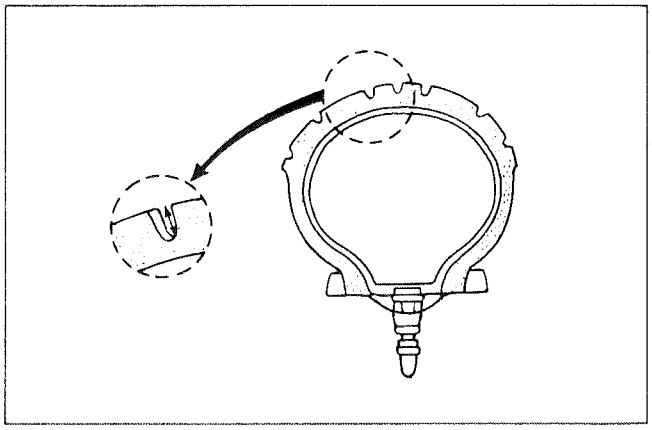
Inspect Initial 1 000 km and Every 5 000 km

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.

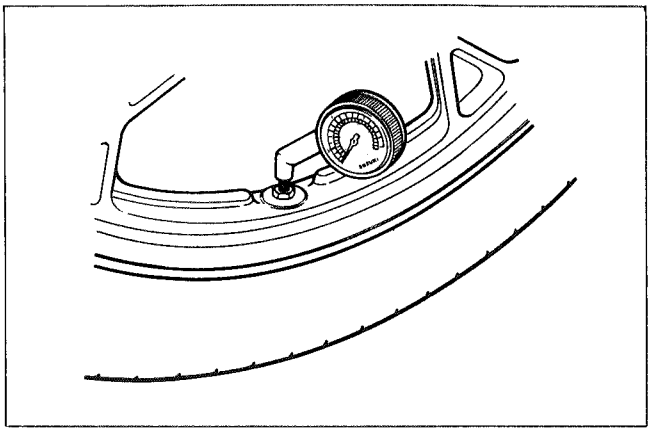
FRONT	REAR
1.6 mm	2.0 mm





TIRE PRESSURE

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

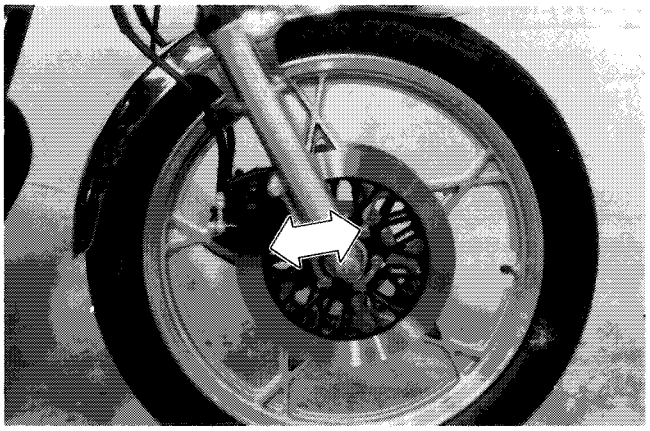


		FRONT		REAR	
		kPa	kg/cm^2	kPa	kg/cm^2
Normal	Solo	175	1.75	200	2.00
	Dual	175	1.75	250	2.50
High-speed	Solo	200	2.00	225	2.25
	Dual	200	2.00	250	2.50

CAUTION:
The standard tire fitted on this motorcycle is 3.25S19 4PR for front and 3.75S18 4PR or 110/90-18 61S (for W. Germany) for rear. The use of a tire other than the standard may cause instability. It is highly recommended to use a SUZUKI Genuine Tire.

STEERING

Inspect Initial 1 000 km and Every 5 000 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 6-20 of this manual.

FRONT FORK

Change oil Initial 1 000 km and Every 10 000 km

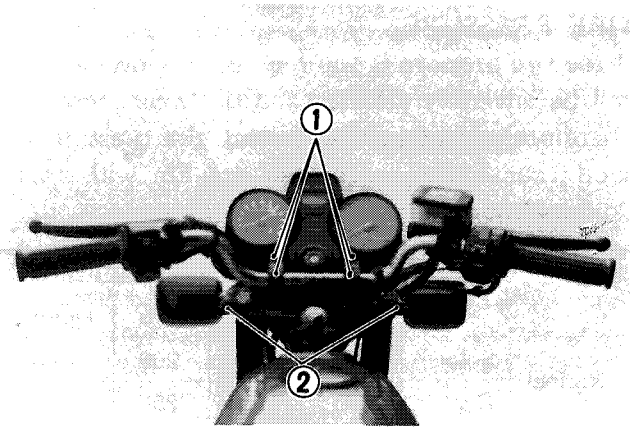
- Remove four handlebar clamp bolts ① and take down the handlebar from the upper bracket.
- Loosen two front fork upper bracket bolts ② and remove front fork top caps, both right and left.
- Unscrew front fork oil drain bolts ③, right and left, and drain oil in the fork tube completely by moving the front fork outer tube up and down some times.
- Mount the drain screw and washer onto the outer tube and pour specified amount of oil from the top of the inner tube.

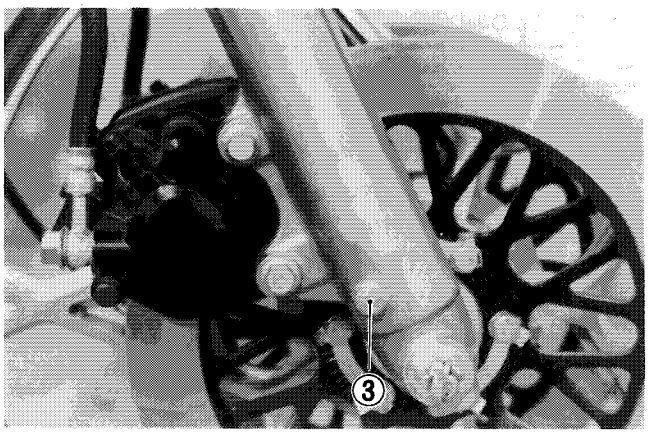
Specified amount (each leg)	169 ml

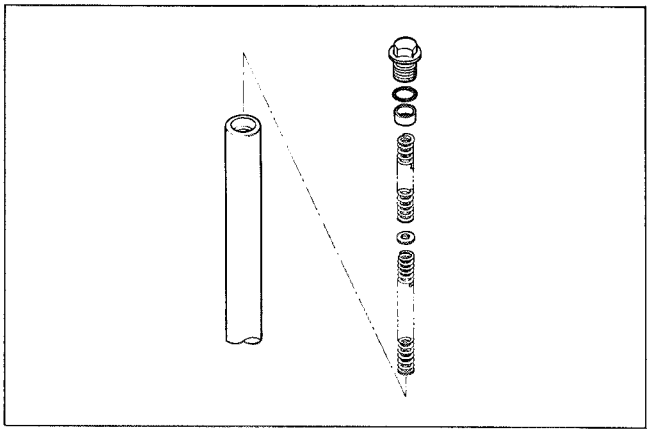
Specification	Mixture SAE 10W/30: ATF (or SEA 5W/20) = 1 : 1 Or fork oil SAE #15

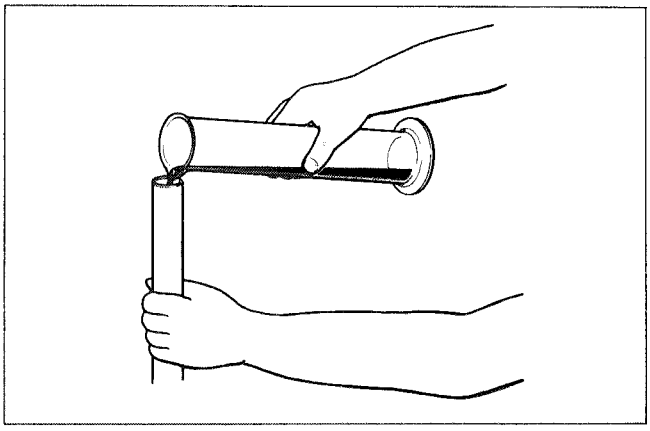
TIGHTENING TORQUE

Item	N·m	kg-m
Handlebar clamp bolt	12 – 20	1.2 – 2.0
Upper clamp bolt	20 – 30	2.0 – 3.0
Fork top cap	15 – 30	1.5 – 3.0
Steering stem head bolt	20 – 30	2.0 – 3.0
Steering stem clamp bolt	15 – 25	1.5 – 2.5









SERVICING ENGINE

CONTENTS

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

ENGINE CENTER

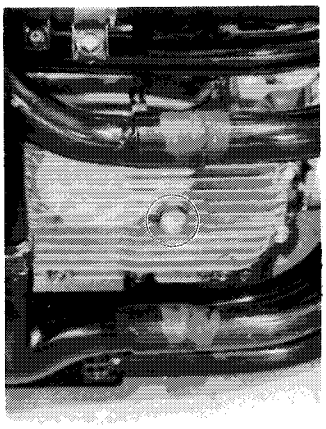
- Generator cover and starter motor lead wire should be removed from the starting motor relay side.

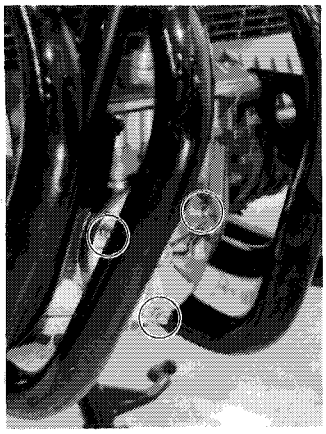
ENGINE RIGHT SIDE

ENGINE REMOVAL AND REINSTALLATION

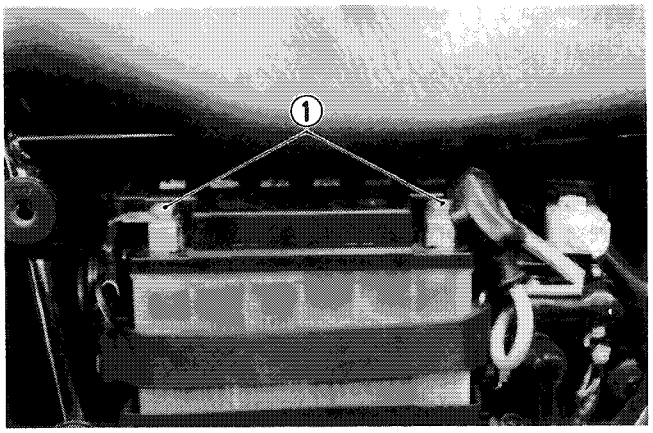
ENGINE REMOVAL

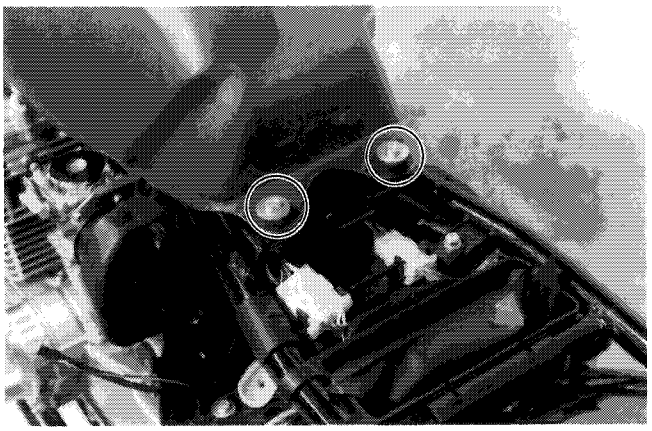
Before taking the engine out of the frame, wash the engine with a steam cleaner and drain engine oil etc. The procedure of engine removal is sequentially explained in the following steps, and engine installation is effected by reversing the removal procedure.

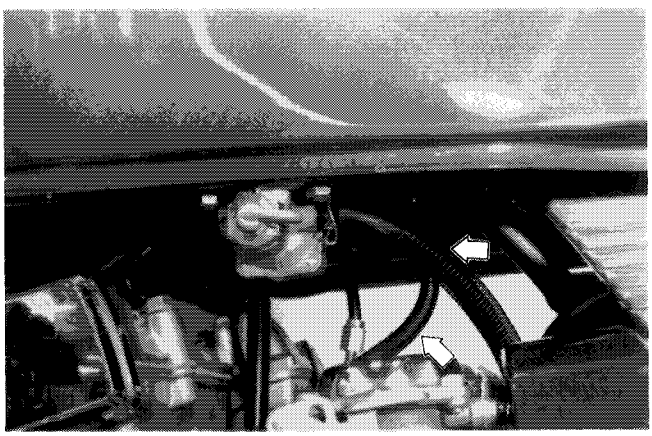




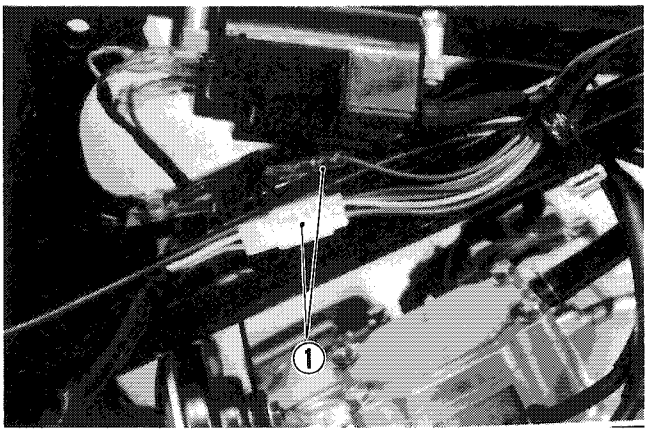
1. Place an oil pan under the engine and remove the oil filter cap and oil drain plug to drain out engine oil.
2. Remove the left and right frame covers and disconnect the battery ⊖ and ⊕ lead wires ①.
3. Remove the seat and remove the two bolts at the rear of the fuel tank.
4. Shift the fuel hose clip sideways to remove two hoses (fuel and vaccum) from the fuel cock.
5. Disconnect the fuel level gauge lead wire and remove the fuel tank.

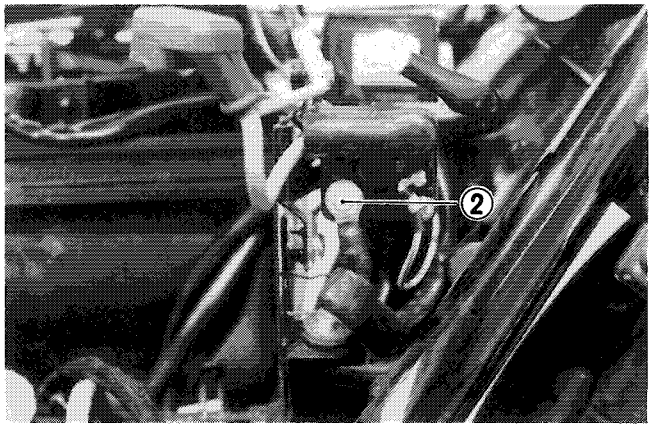


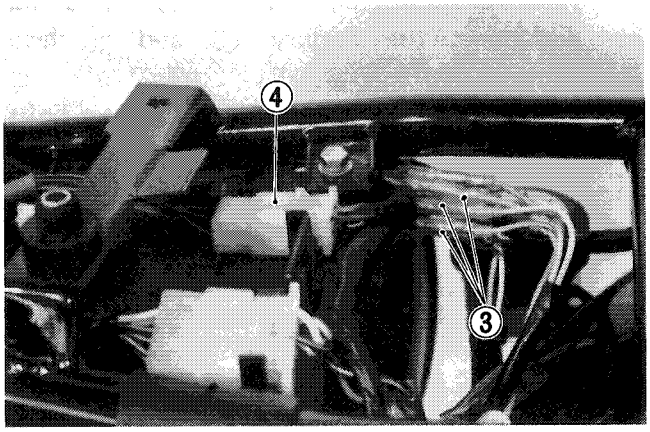




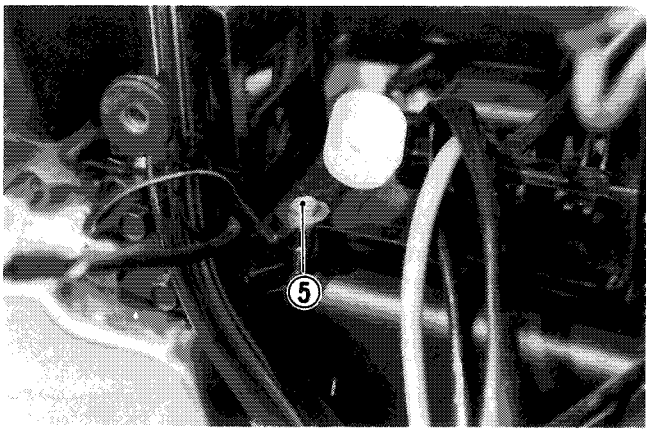
6. Disconnect verious lead wires.
   * Gear position indicator switch and neutral indicator switch leads ①.
   * Starter relay ⊖ lead ②.
   * Signal generator and oil pressure switch lead ③.
   * Generator lead ④.
   * Engine ground wire from the battery holder ⑤.

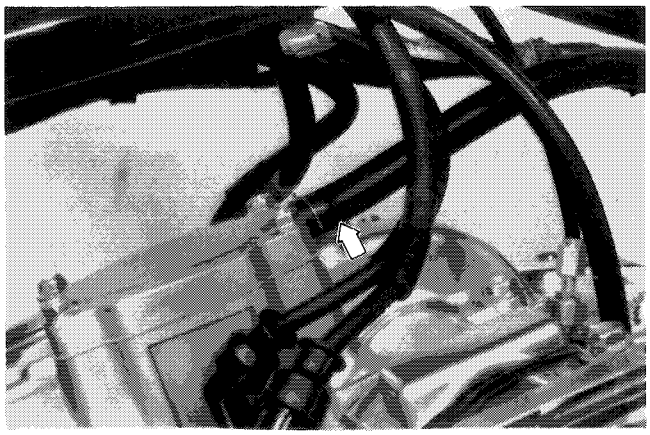


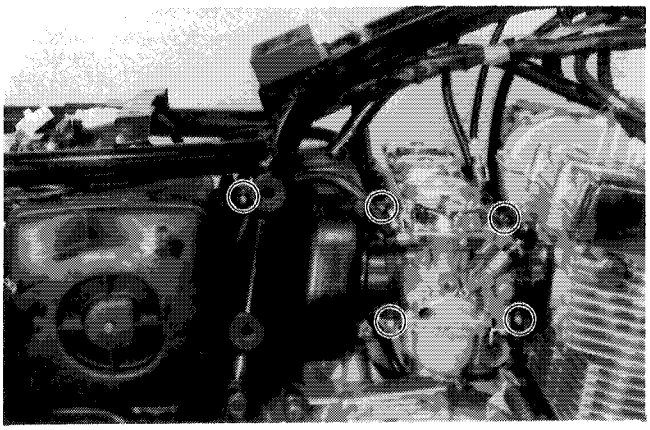




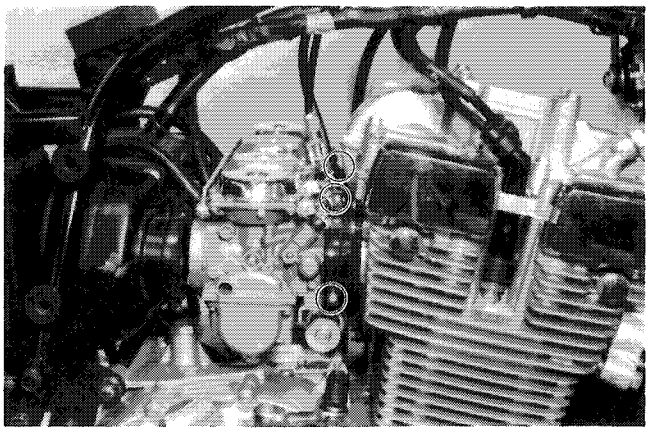
7. Shift the breather pipe clip sideways and remove the pipe from the cylinder head cover cap.
8. Loosen the respective clamps for carburetor insulator, air chamber and air cleaner body.

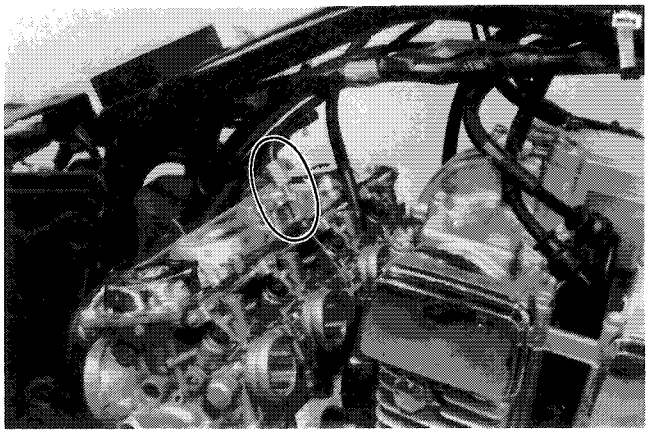




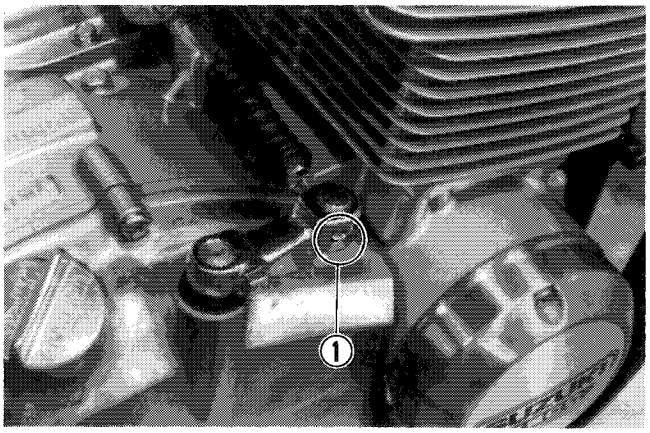


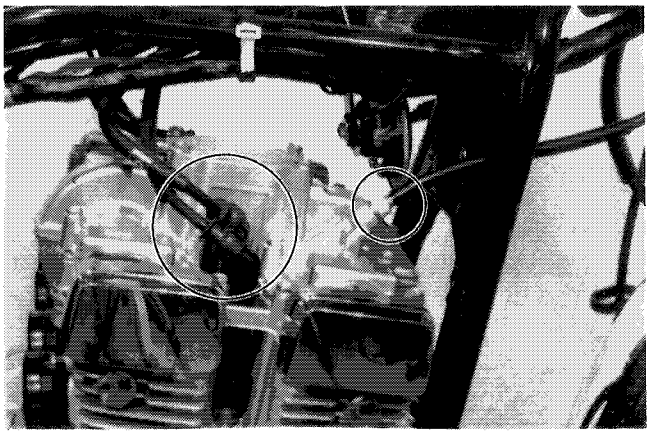
9. Remove the carburetors from right side after removing the throttle cable.
   Remove the air chamber body.

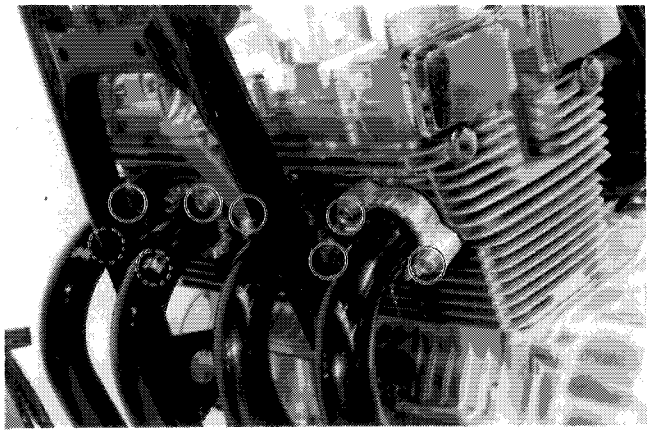




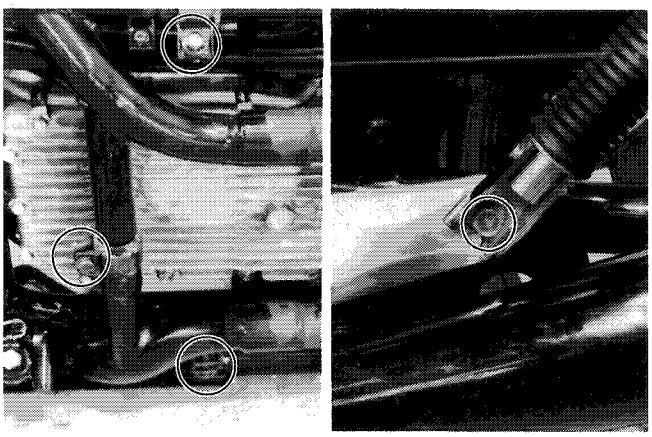
10. Remove the clutch cable by removing the adjusting screw ①.
11. Pull out the spark plug caps from the spark plugs.
12. Remove the tachometer cable from the cylinder head cover.
13. Remove the exhaust pipe clamp bolts.



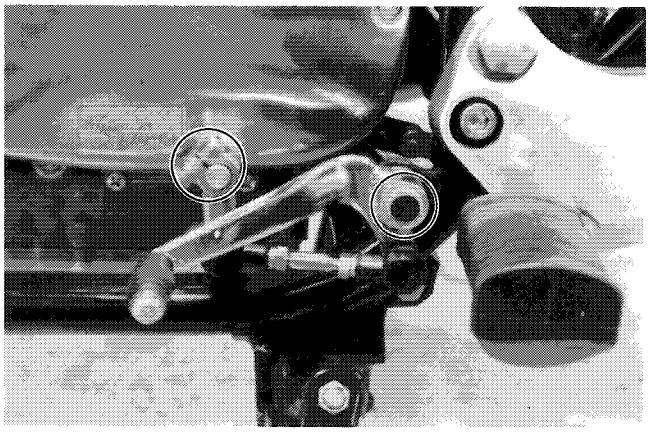




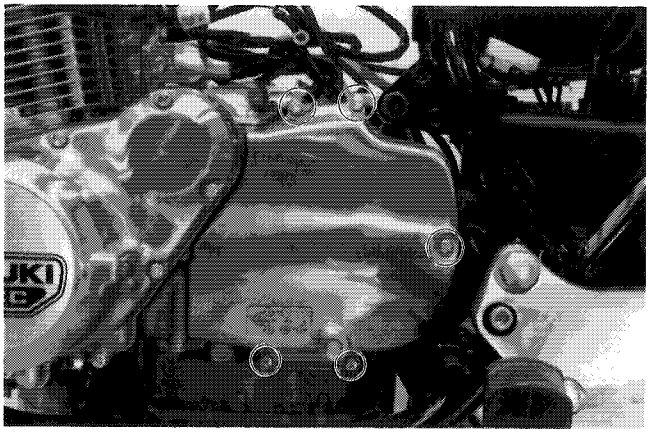
14. Remove the exhaust pipe coupler tube bolt and muffler connector bolts.
Remove the both mufflers by unscrewing muffler mounting bolts.

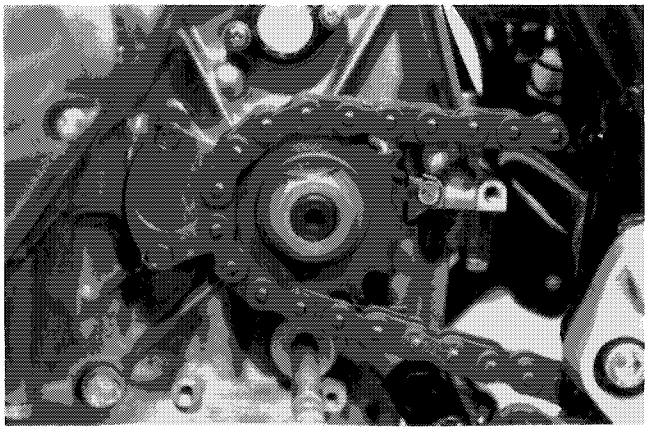


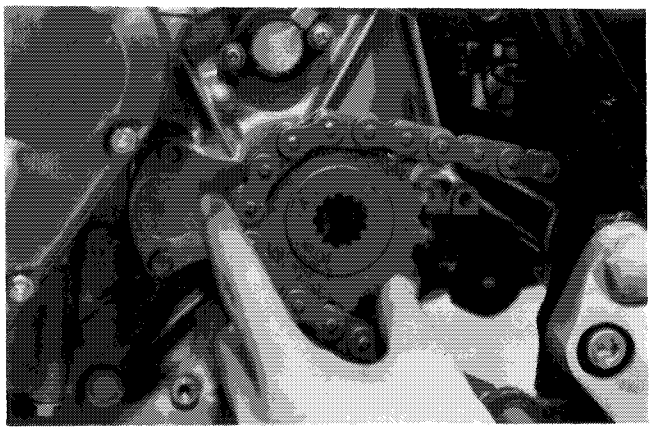
15. Remove the gearshift lever.



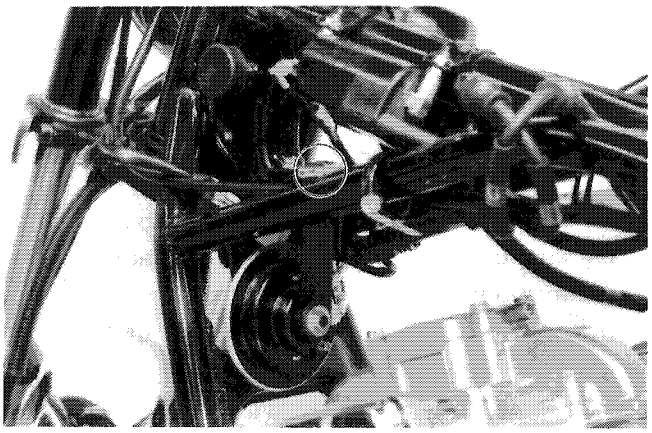
16. Remove the engine sprocket cover.
17. Flatten the lock washer and remove the engine sprocket nut while depressing the rear brake pedal. Loosen the rear axle stopper bolts, lock nuts and adjuster bolts. Then loosen the rear axle nut after pulling out the cotter pin.
Push the rear wheel forward and remove the engine sprocket from the drive shaft.



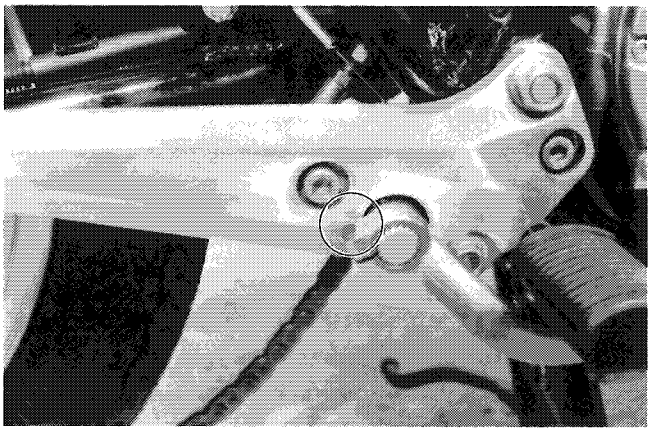




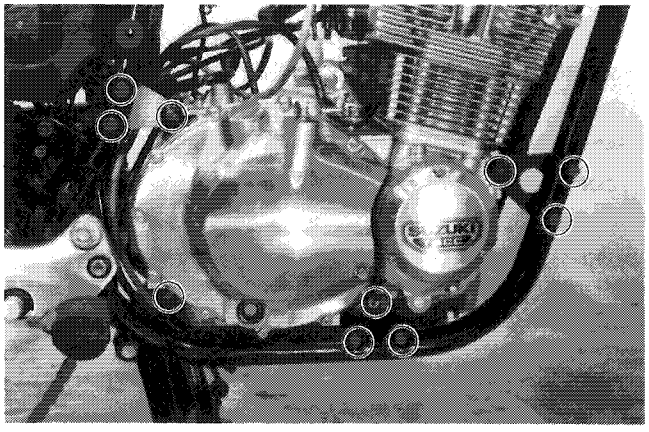
18. Disconnect the horn head wire and remove the horn.



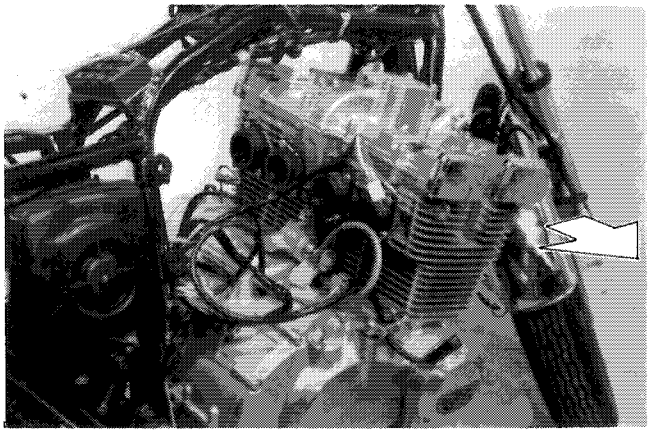
19. Remove the rear brake pedal.



20. Remove the engine mounting bolts and brackets.



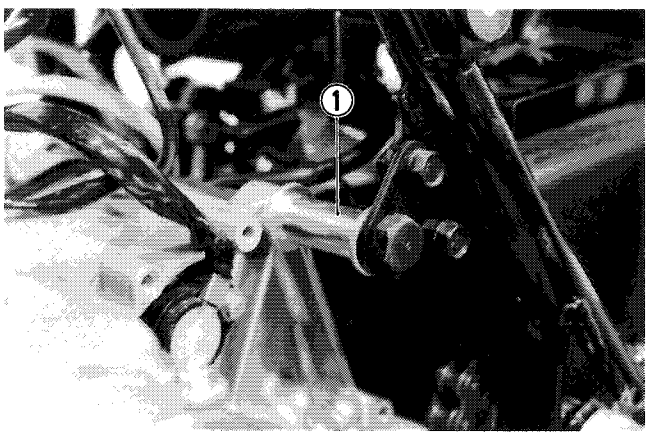
21. Gradually lift up the engine and lower the engine ass'y on the right side making sure that it does not make contact with the rear bracket.
Remove the engine through the right side of the frame.



ENGINE REINSTALLATION

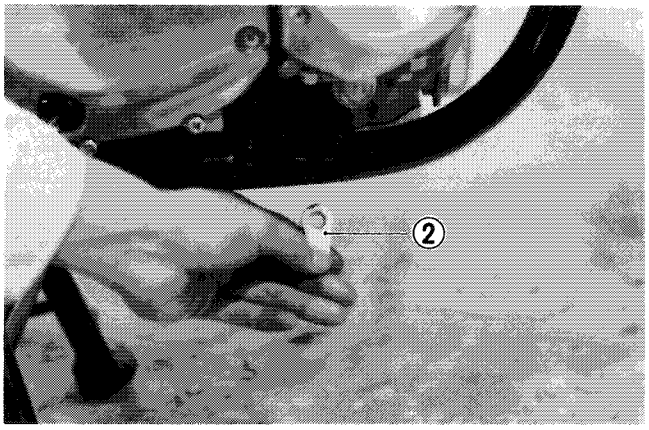
For remounting, reverse the order of engine removal.

- Temporarily fasten the engine mounting bracket before inserting the engine mounting bolts.
- After inserting the engine mounting bolts, tighten engine mounting bracket bolts and engine mounting bolts. Insert all three long bolts from the left side and insert the rear upper bolt through the spacer ① on the left side of the engine.

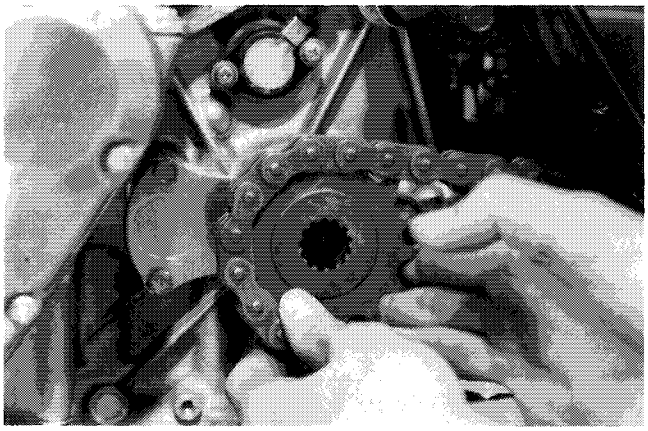


Tightening torque for engine mounting bolts

	N·m	kg-m
10 mm Diam.	35	3.5
8 mm Diam.	25	2.5

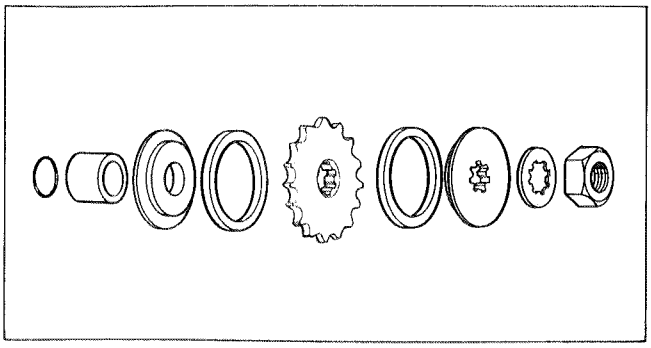


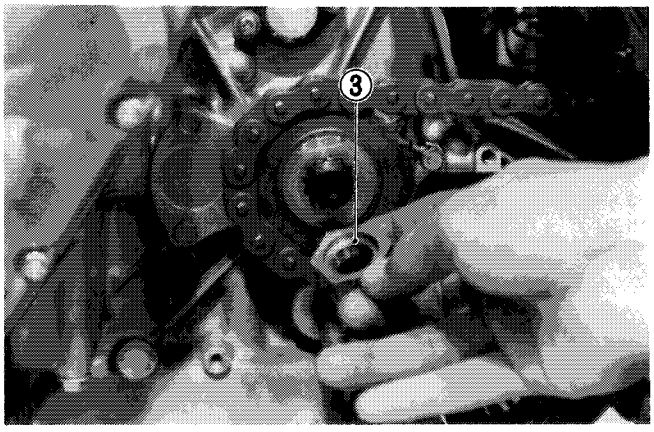
- The nut ② takes its position in the place indicated.
- The engine sprocket should be installed on the drive shaft beforehand as shown in figure, at the same time as installing the drive chain.
  If it is difficult to assemble the engine sprocket, remove the rear axle cotter pin and loosen the axle nut and chain adjuster bolt to push the wheel forward and give the drive chain some play. When replacing the engine sprocket nut, stepped side ③ should be faced inside. After complete tightening of the engine mounting bolts, adjust the drive chain play (see page 2-18).



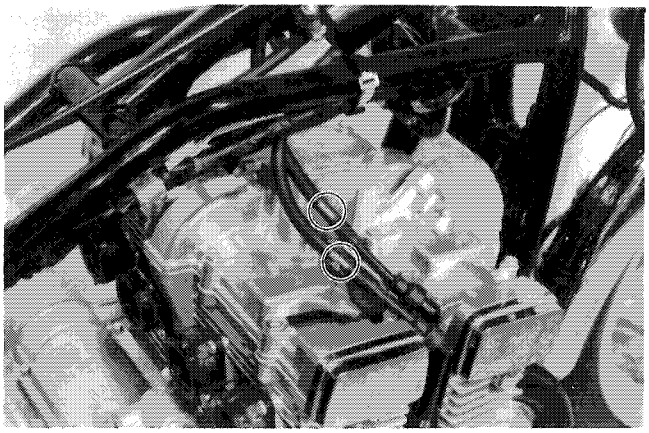
Tightening torque

	N·m	kg-m
Engine sprocket nut	100 – 130	10.0 – 13.0
Rear axle nut	50 – 80	5.0 – 8.0



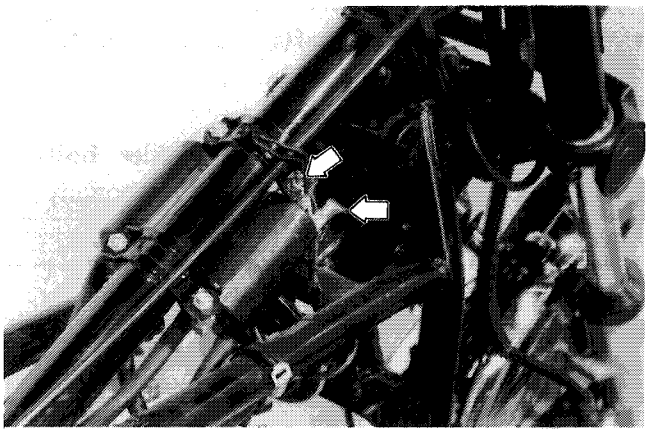


- Replace the plug caps on the spark plugs so that their code markings correspond to the cylinder numbers arranged in the order of 1, 2, 3 and 4 from the left.



NOTE:
O/W and W lead wires should be connected to the left side ignition coil (for 1 and 4 cylinders) ⊕ and ⊖ terminals respectively.

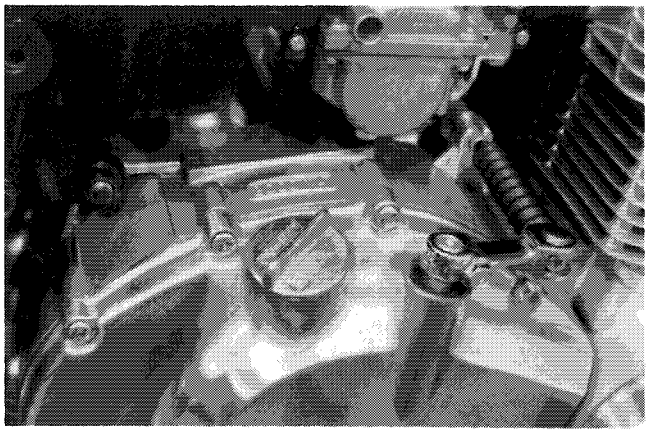
- After tightening the exhaust pipe bolts, tighten both right and left muffler mounting bolts and clamp bolts.



Tightening torque

	N·m	kg-m
Exhaust pipe bolt	10 – 16	1.0 – 1.6
Muffler mounting bolt	18 – 28	1.8 – 2.8
Exhaust pipe connector	9 – 14	0.9 – 1.4

- Firmly secure the carburetor with the clamps. If the carburetor is not firmly secured, gas leakage, incorrect air-fuel ratio and unsatisfactory engine operation may result.
- Install 2.7 L of engine oil SAE 10W/40 under API classification SE or SD into the engine. Several minutes after starting and stopping the engine, check that the oil level remains between the marks of oil inspection window.
- After remounting the engine, route wiring harness and cables properly by referring to the sections, wire routing and cable routing, and adjust the following items to the specification.



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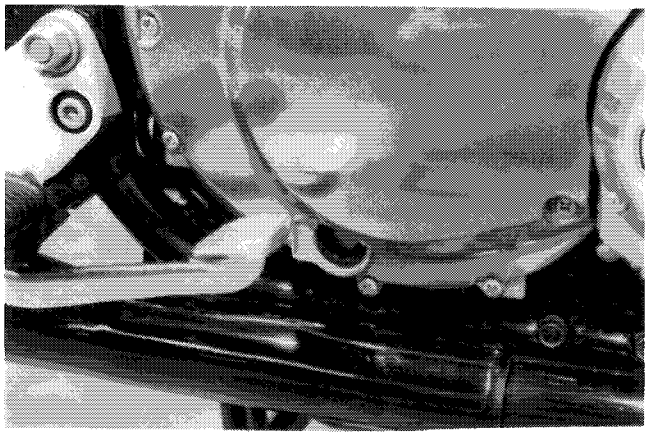
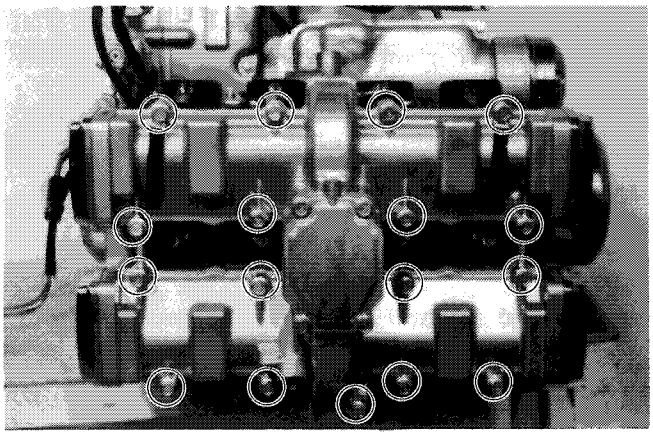


ENGINE DISASSEMBLY

- Remove cylinder head cover and its gasket.

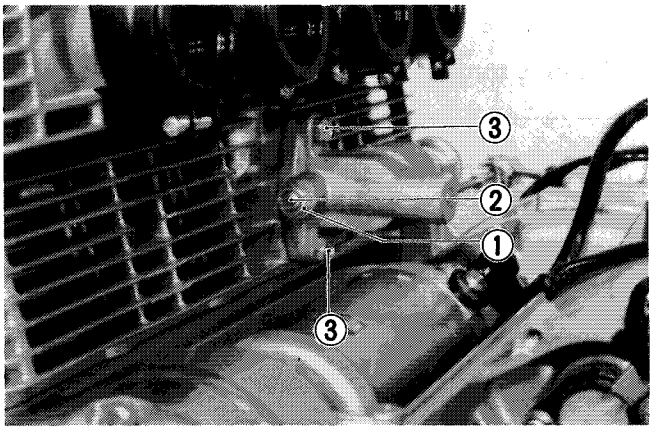


- Loosen the lock nut ① and tighten the stop screw ② and then remove two cam chain tensioner mounting bolts ③.

NOTE:
Screw ② locks the spring loaded tensioner push rod inside.

- Remove the eight camshaft holders.
- Remove the two camshafts, intake and exhaust.

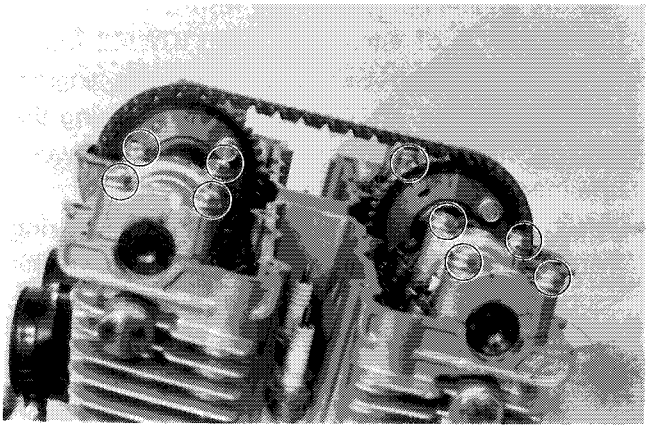
NOTE:
Be sure to loosen camshaft holder bolts evenly by shifting the wrench diagonally.

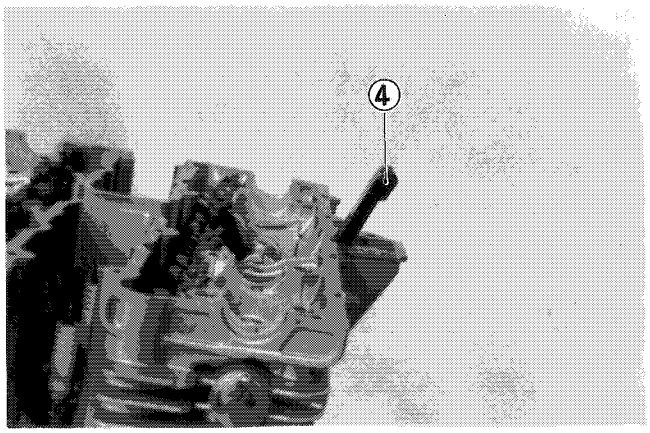


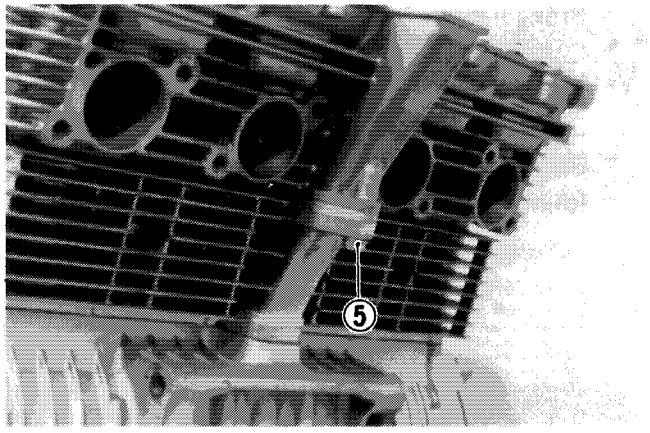
- Pull out cam chain guide ④.

- The cylinder head becomes free for removal when its one 6-mm bolt ⑤ and twelve 8-mm nuts are removed.

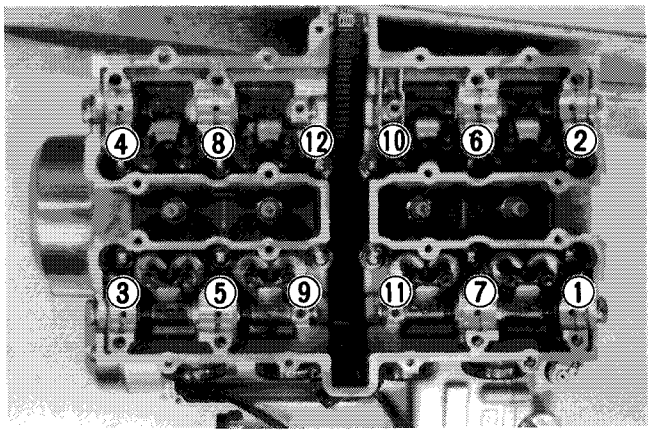
09911-74520	Long socket 12 mm
09914-24510	T handle



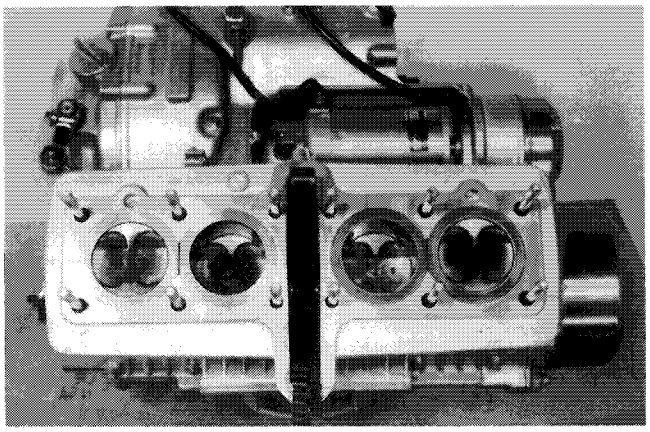




NOTE:
Be sure to use the special tool ("T" wrench) designed to enter the pockets formed in the head and reach the nuts down below to loosen the 8-mm nuts, and to shift the tool sequentially in the nuts descending order of numbers in order to reduce the pressure equally and evenly.

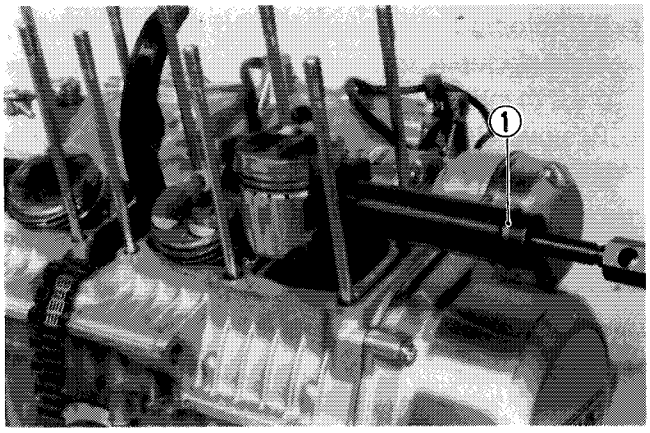


- Firmly grip the cylinder block at both ends, and lift it straight up. If the block does not come off, lightly tap on the finless portions of the block with a plastic mallet to shake the gasketed joint loose.
- Place a cloth beneath the piston so as not to drop the parts in the crankcase, and remove the circlip with pliers.

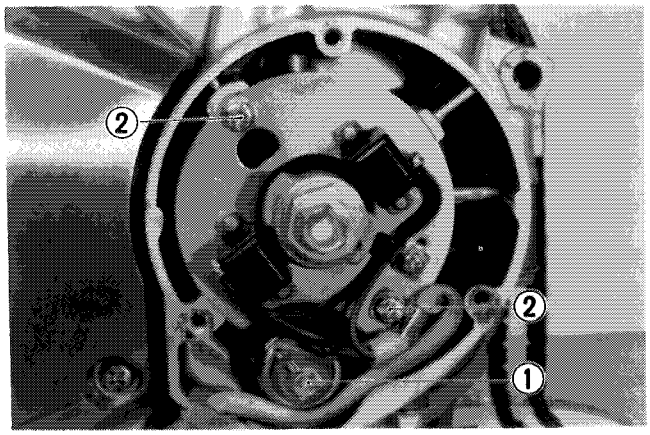


- Scribe the cylinder No. on the head of the piston, and draw out the piston pin with the special tool ①. Place the drawn-out piston pin in the same place as that given the cylinder No. on the head of the piston.

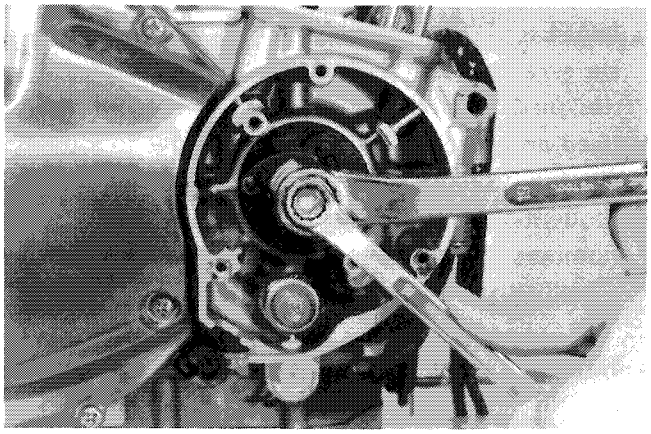
09910-34510	Piston pin puller



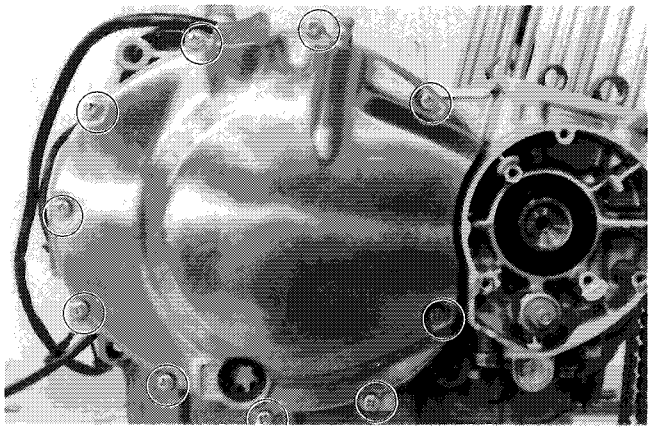
- Remove signal generator cover and gasket.
- Remove the oil pressure switch lead wire ①.
- Remove two mounting screws ② for signal generator assembly, and then remove the assembly.



- Apply wrench to crank turning nut to remove automatic advance governor mounting bolt and the crank turning nut.
  Remove signal generator rotor and advance governor.

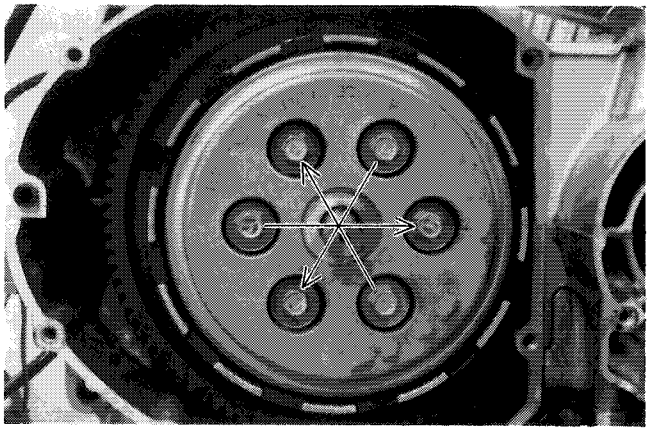


- Remove clutch cover and gasket.

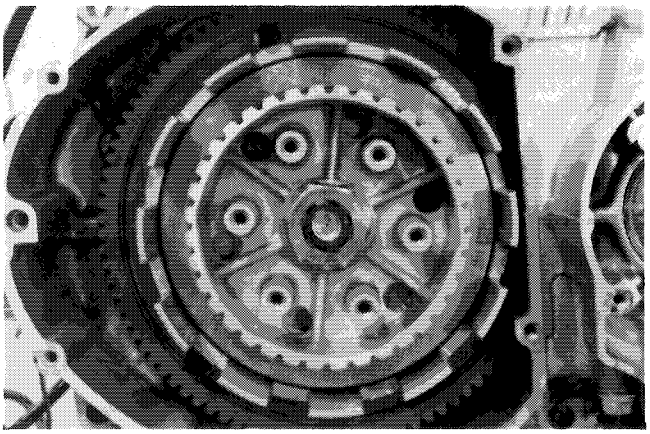


- By holding the crankshaft with conrod stopper, remove clutch spring mounting bolts in a criss cross manner.
- Remove clutch springs and pressure plate with clutch release rack.

09910-20115	Conrod stopper

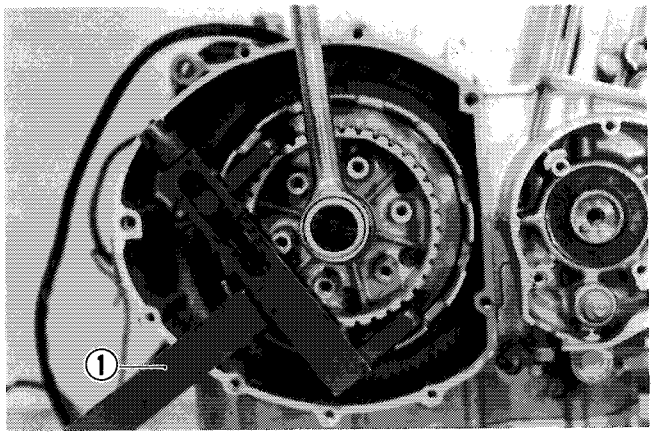


- After removal of several clutch driven and drive plates, flatten clutch sleeve hub nut lock washer by using chisel.

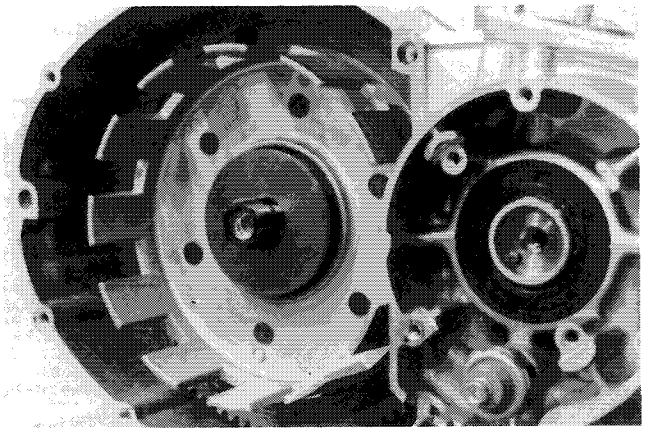


- Firmly secure clutch sleeve hub to remove mounting nut with clutch sleeve hub holder ①.

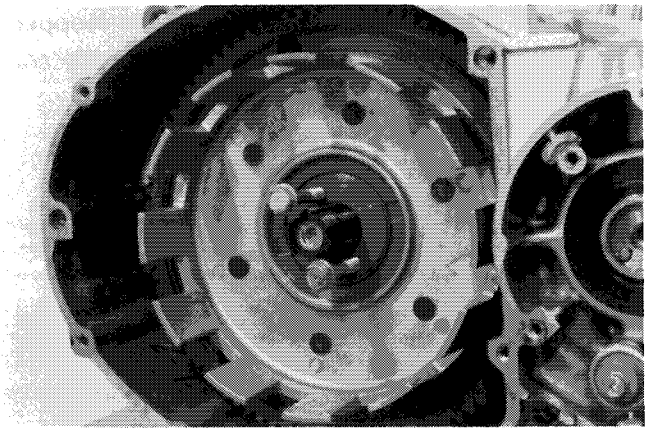
09920-53710	Clutch sleeve hub holder



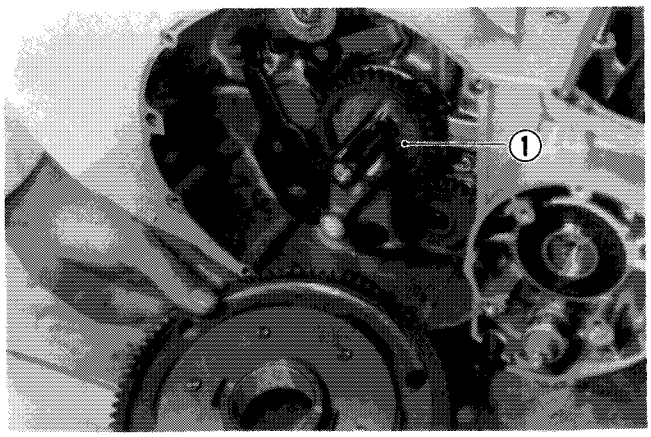
- Remove washer, clutch hub, and the remaining plate.



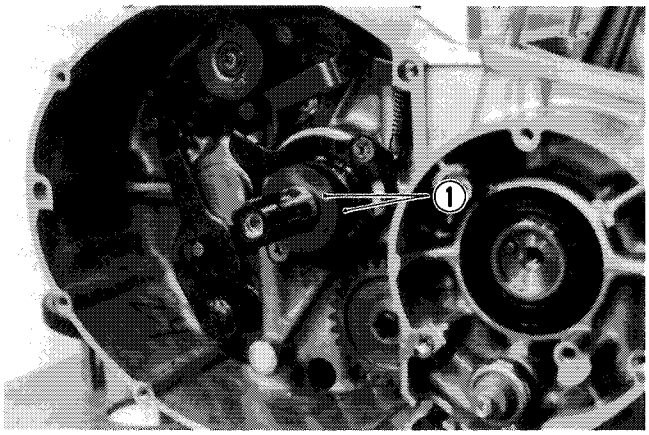
- Run two 6-mm screws into the primary driven gear spacer to ease out the spacer by pulling. With the spacer removed, the primary driven gear (integral with the clutch housing) is free to disengage from the primary drive gear.



- Remove the oil pump drive gear and washer ①.

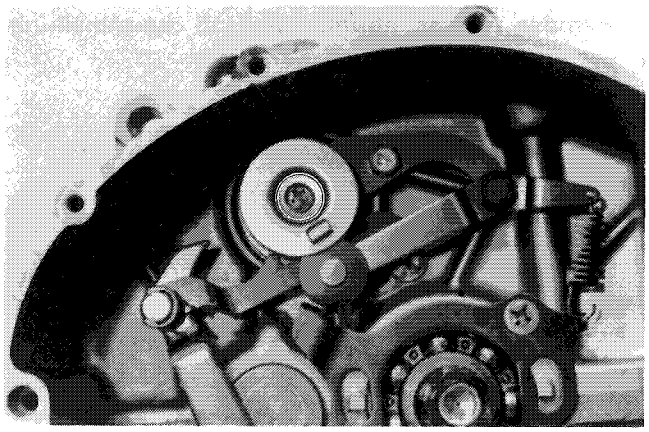


- Pull out the two thrust washers ① from the countershaft.

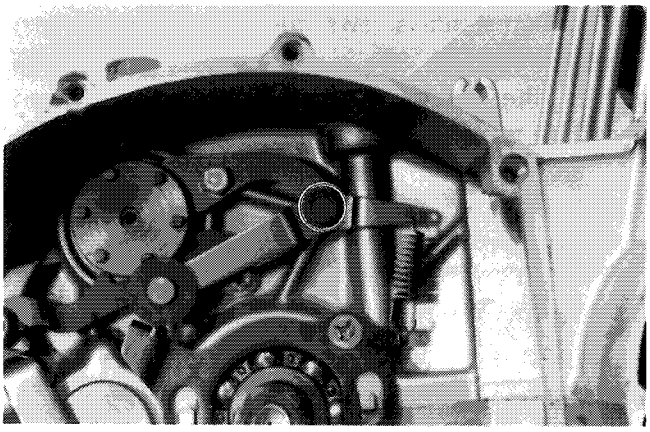


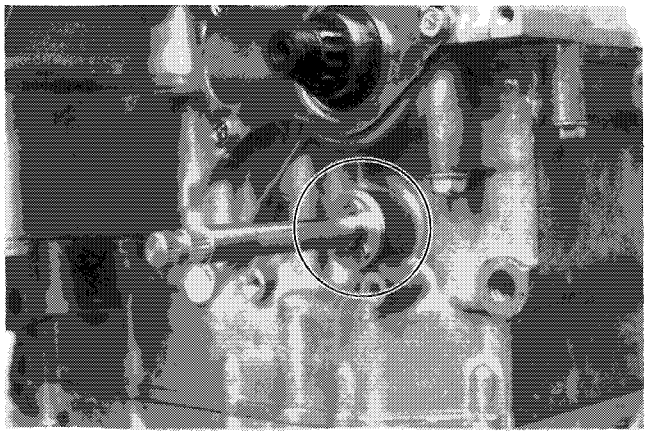
- Using shock driver, remove the cam retainer screw.

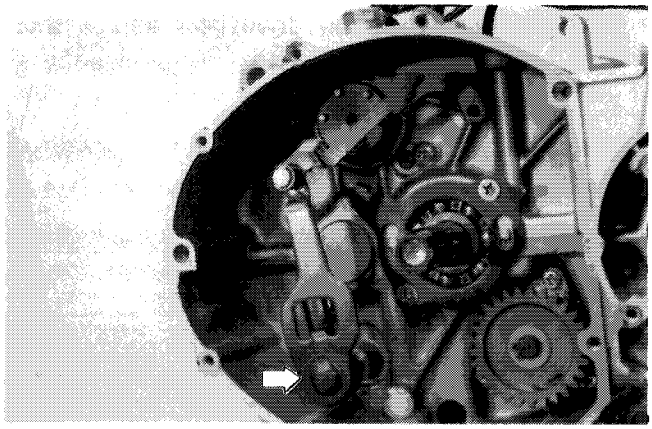
09900-09002	Shock driver set



- Remove the cam stopper pins and cam stopper.
- Remove the gearshift shaft stopper clip and washer, and extract the gearshift shaft.

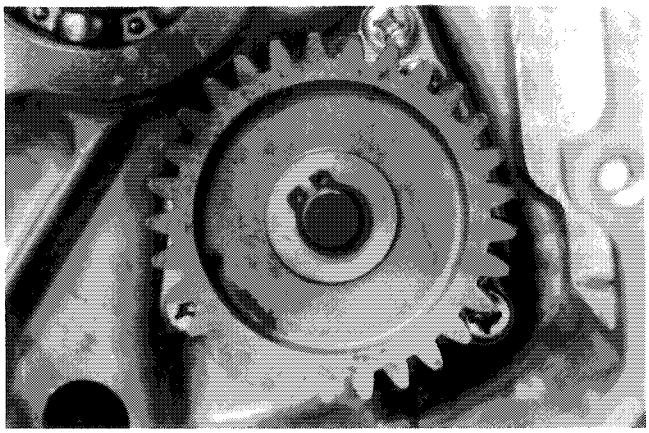




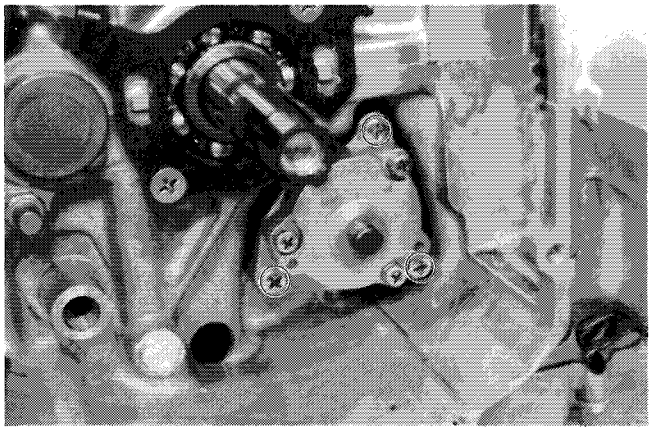


- Using circlip remover, remove oil pump driven gear, drive pin and washer. Then remove oil pump with O-ring by removing three oil pump securing screws.

09900-06107	Circlip remover

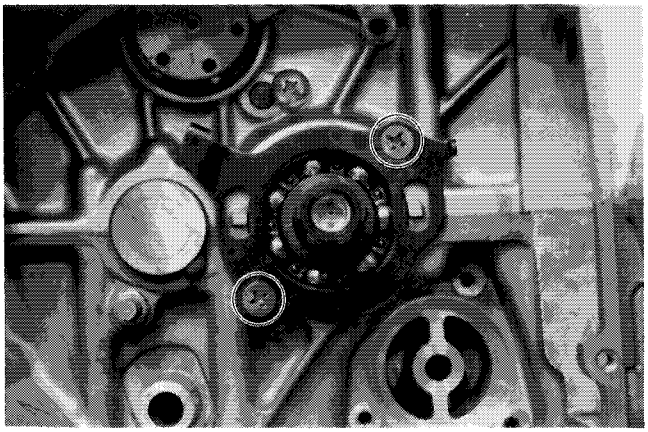


NOTE:
Do not confuse the oil pump securing screws with the oil pump body screws (small size).

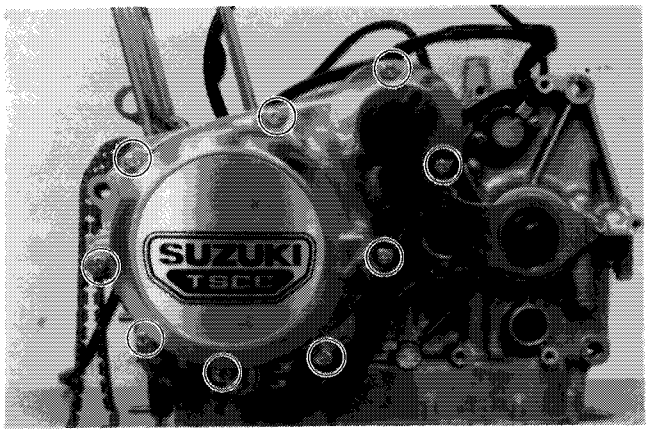


- Remove the countershaft bearing retainer.

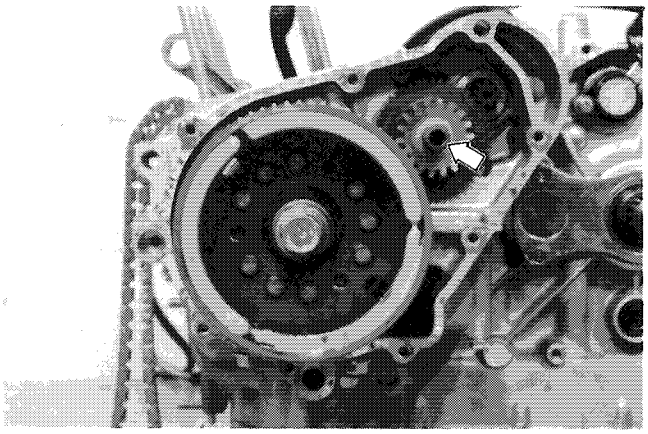
09900-09003	Shock driver set



- Remove the generator cover and its gasket.



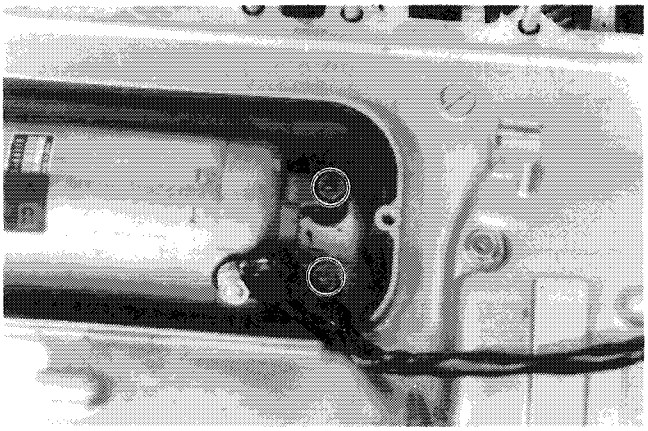
- Remove the starter idle gear shaft and idle gear.



- Remove the starter motor.

- Using rotor holder ①, remove rotor securing bolt.

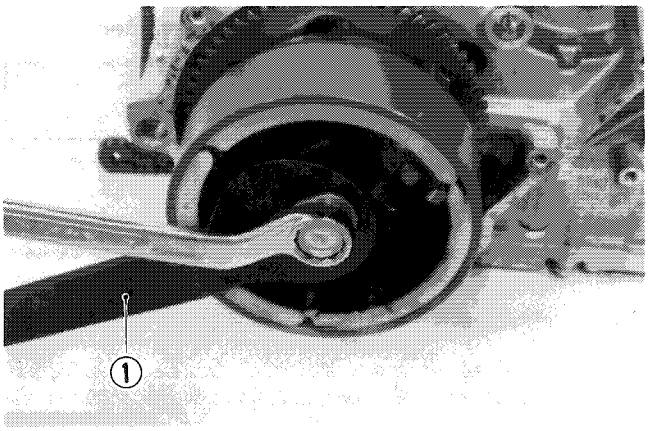
09930-44510	Rotor holder



- Install rotor remover attachment ② and sliding hammer assembly ③ into the boss of rotor and remove rotor with starter clutch assembly while sliding the remover.

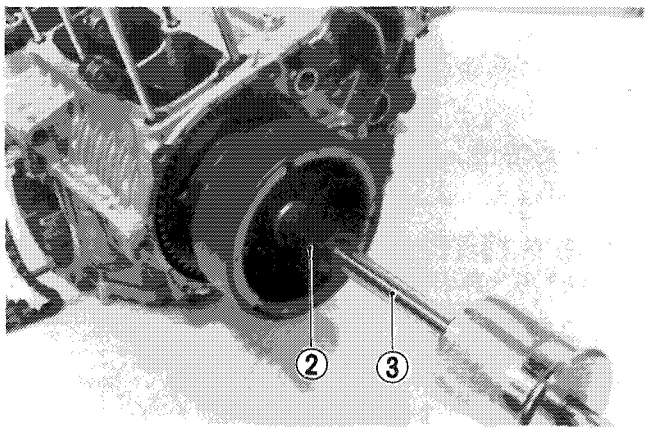
NOTE:
Do not hit the rotor with a hammer.

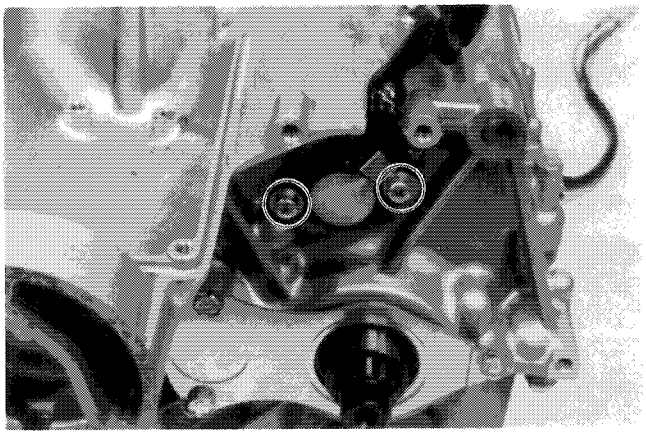
09930-30102	Rotor remover shaft
09930-33710	Attachment



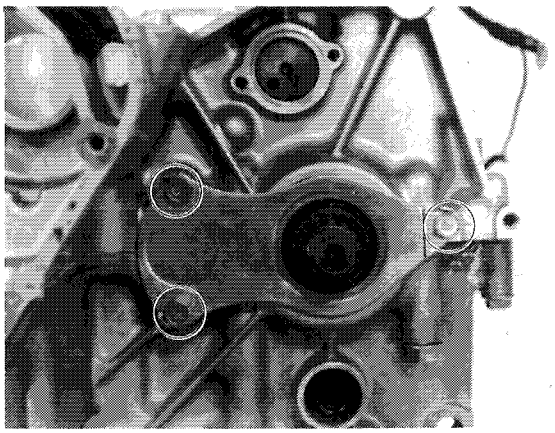
- Unclamp the lead wire and remove the gear position indicator switch body.

NOTE:
Do not miss the O-ring, switch contact and its spring.

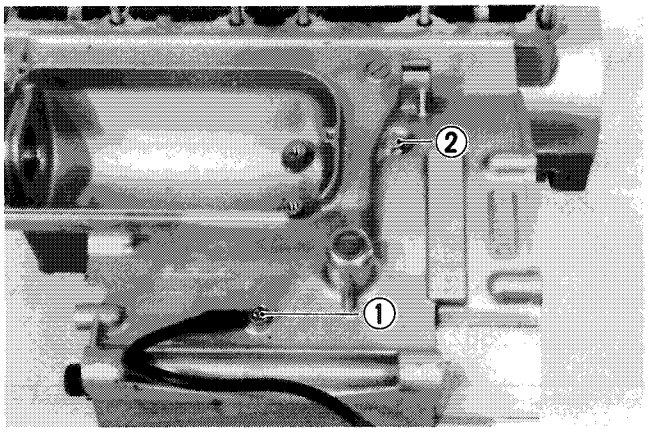




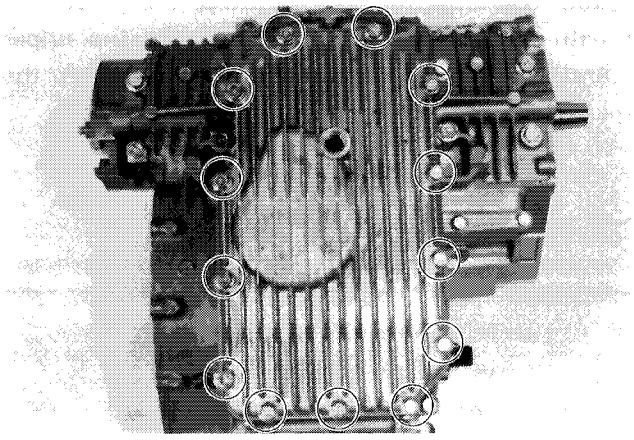
- Flatten the lock portion of the oil seal stopper and remove the oil seal stopper securing bolts.



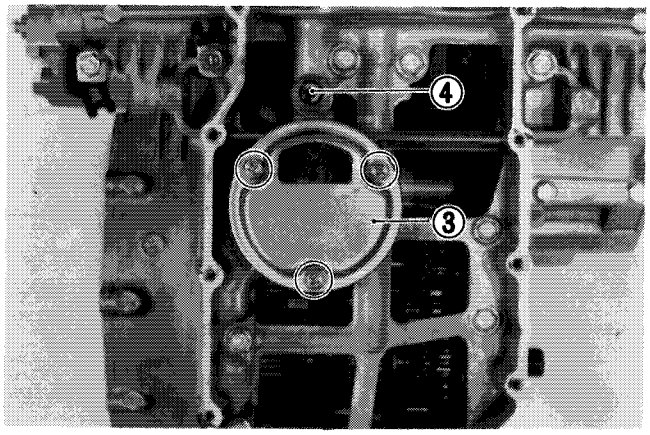
- Remove the engine ground wire ① and remove the crankcase securing bolt ② from the upper crankcase.



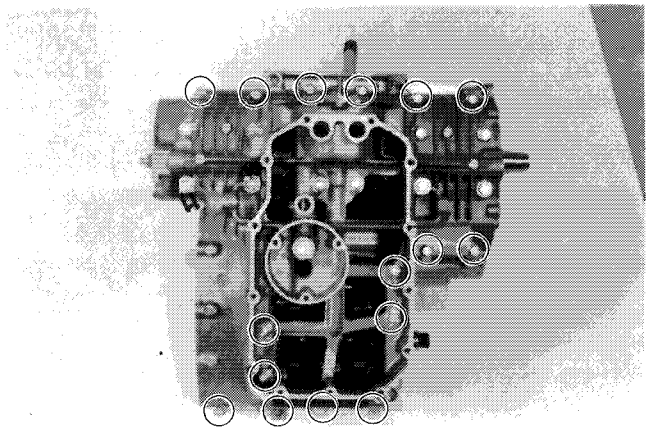
- Turn engine up side down and remove oil pan.



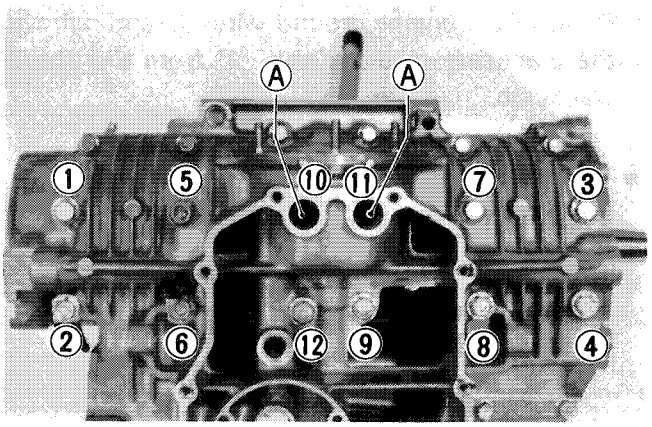
- Remove the oil sump filter ③ and oil pressure regulator ④ .



- Remove the crankcase tightening bolts.



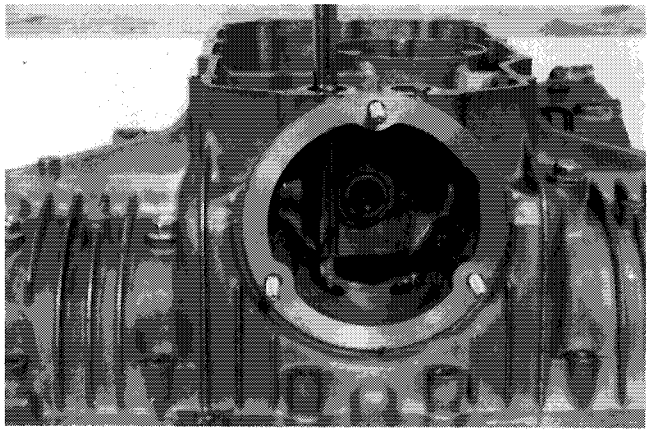
- When removing the crankshaft tightening bolts, loosen them in the descending order of numbers assigned to these bolts.



NOTE:
Two allen bolts are used for securing crankcase at the portion Ⓐ.

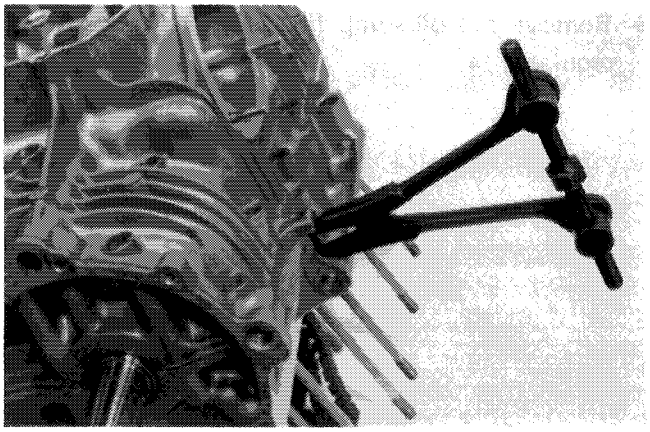
09914-25811	6 mm T-type hexagon wrench

- Make sure that all bolts are removed without fail. Hammer lightly the lower crankcase side with a plastic hammer to separate the upper and lower crankcase halves and then lift the latter.

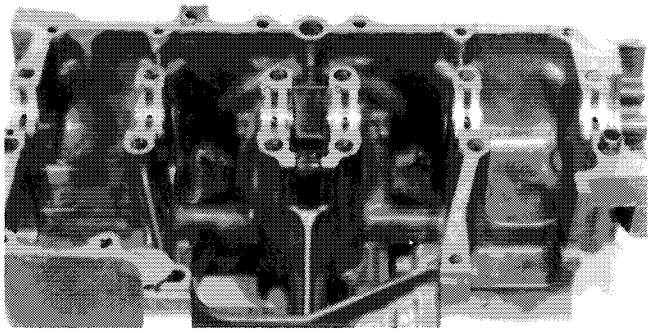


NOTE:
To separate the crankcases is made easier by the use of the cylinder disassembling tool.

09912-34510	Cylinder disassembling tool

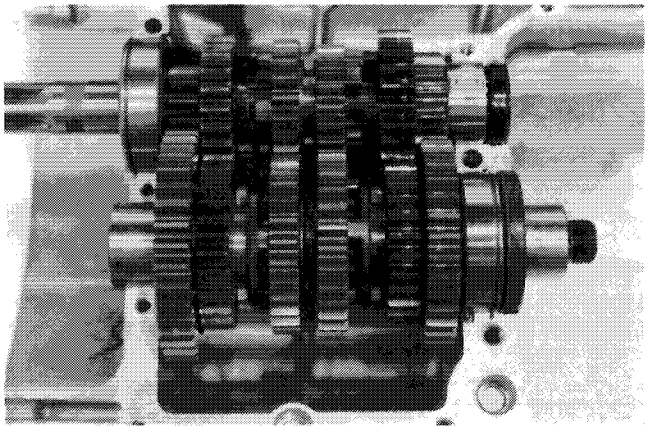


- When removing the lower crankcase from the upper case, make sure that each crankshaft journal bearing positions properly.

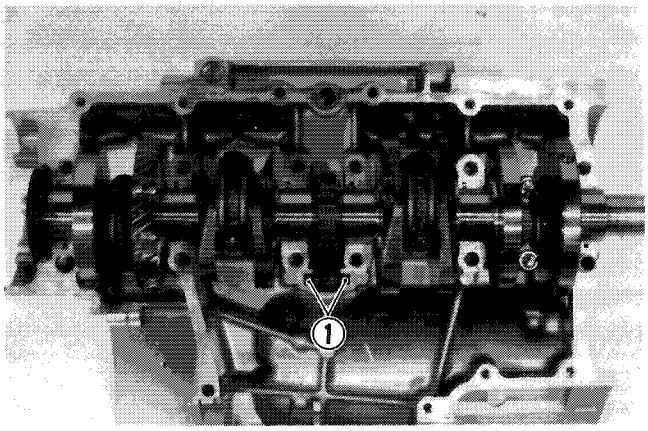


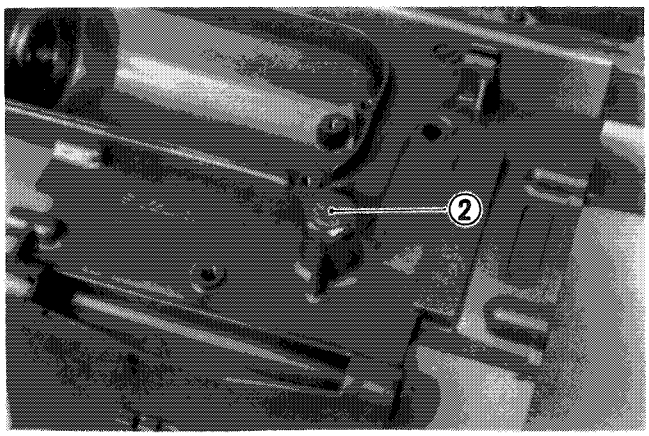
- Remove the countershaft and drive shaft assemblies.

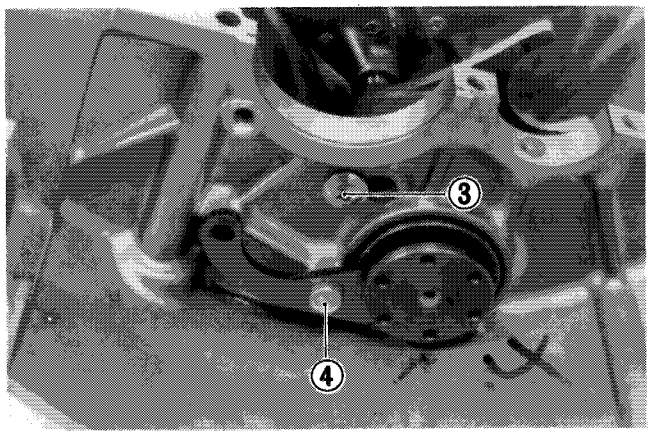
NOTE:
Be careful not to drop two C-rings.



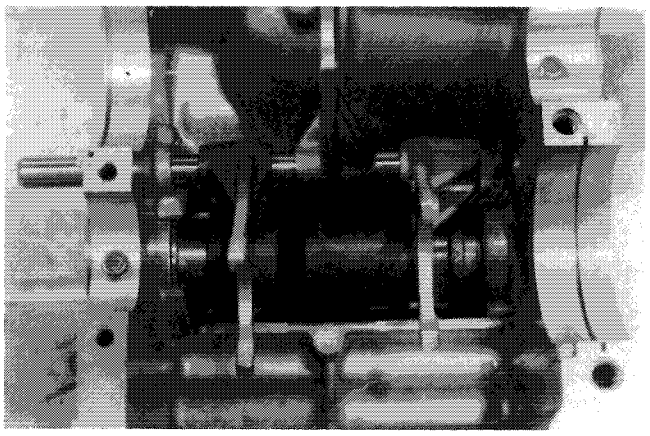
- Remove the crankshaft assembly from the upper crankcase.
- Pull out the cam chain guide and two dampers ①.
- Remove the neutral stopper housing ②.
- Remove the gearshift fork shaft stopper screw ③ and gearshift cam guide bolt ④.



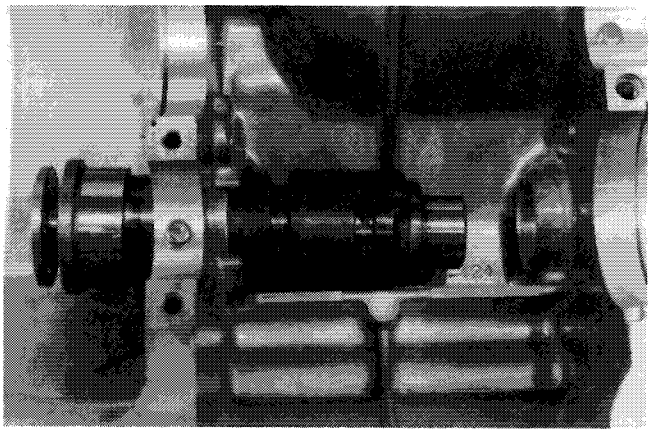




- While holding the gearshift forks by hand, extract the gearshift fork shaft.



- Extract the gearshift cam from the upper crankcase.

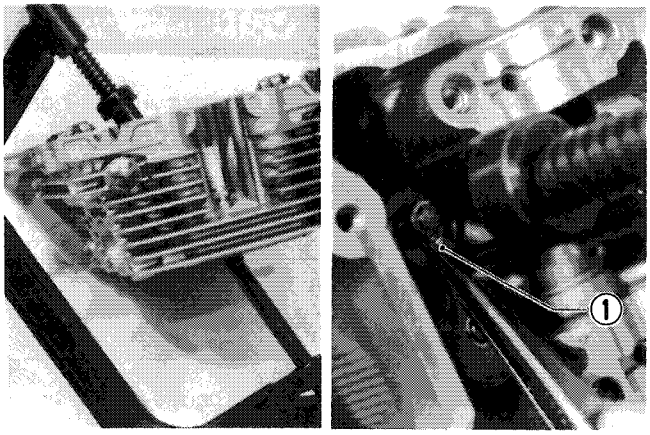


ENGINE COMPONENTS INSPECTION AND SERVICING

CYLINDER HEAD DISASSEMBLY

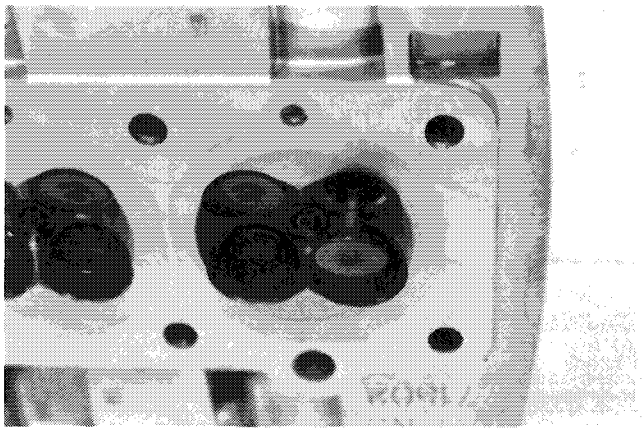
- Using special tools, compress valve springs and take off two cotter halves ① from valve stem.

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

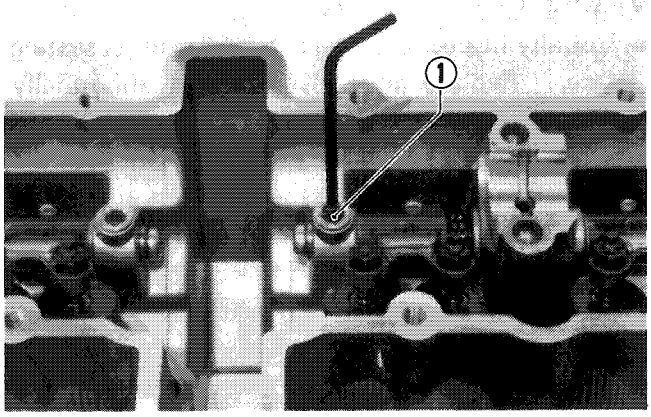


- Take out the spring retainer, inner and outer springs.
- From the other side, pull out the valve.

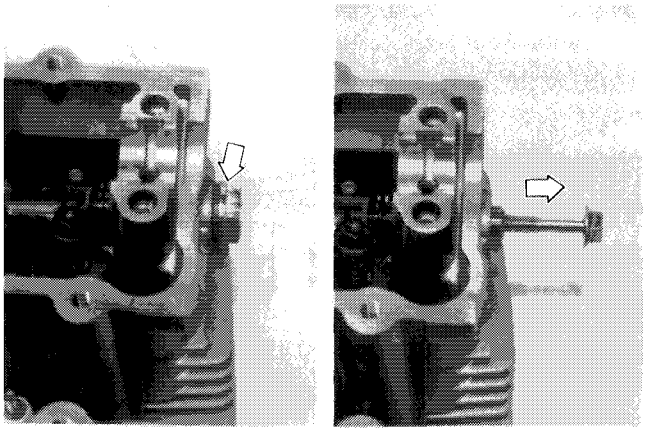
CAUTION:
Be sure to identify each removed part as to its location, and lay the parts out in groups designated as "No. 1 cylinder", "No. 2 cylinder", "Exhaust", "Inlet", "R" and "L", so that each will be restored to the original location during assembly.

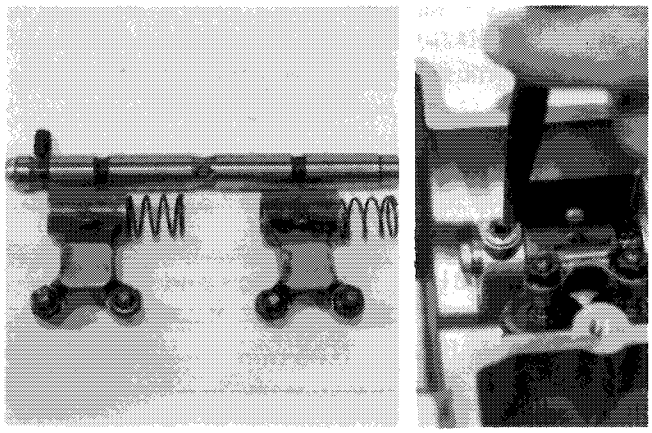


NOTE:
*** Removal of valves completes ordinary disassembling work. If valve guides have to be removed for replacement after inspecting related parts, carry out the steps shown in valve guide servicing.**
*** When removing rocker arm shaft, remove the rocker arm shaft stop screw ① with 3 mm hexagon wrench and screw 6 mm bolt into the rocker arm shaft end and pull it out.**
*** After installing the stop screw ① with applying thread lock "1333B", lock it with punch at four positions.**



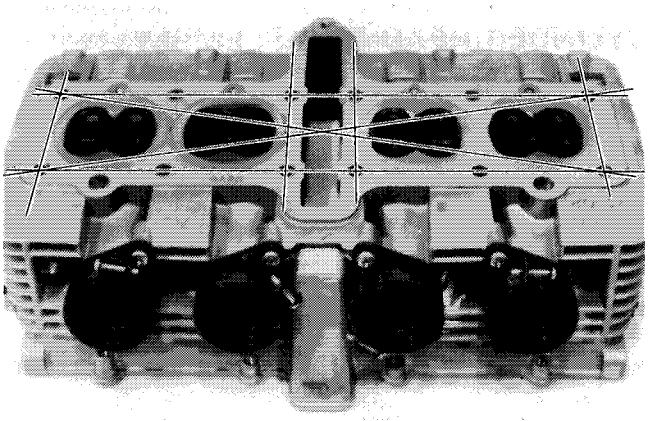
99000-32020	Thread lock super "1333B"

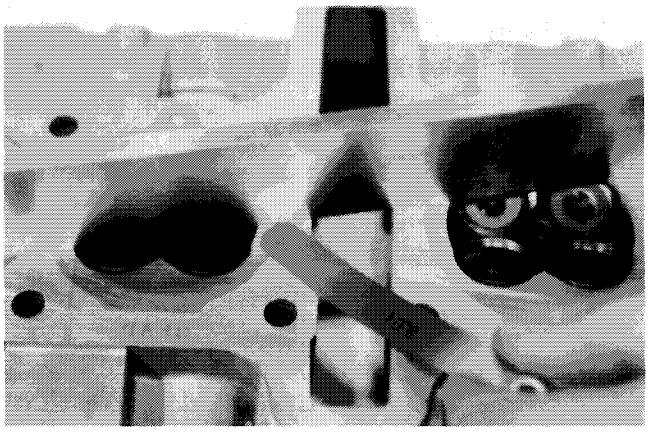




CYLINDER HEAD DISTORTION

- 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.



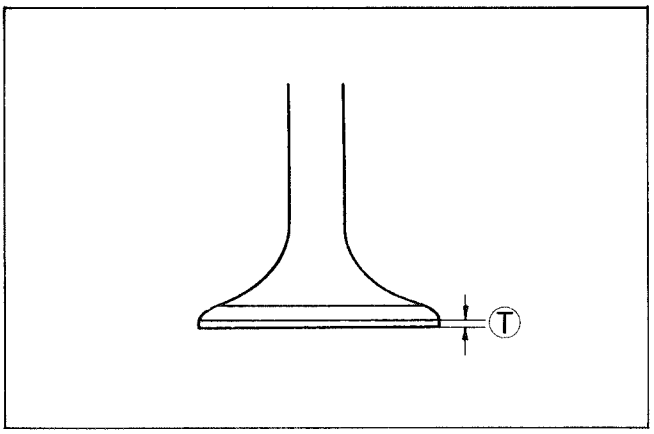


09900-20803	Thickness gauge
Service Limit	0.1 mm

NOTE:
Do not put the straightedge on the valve when reading the distortion.

VALVE FACE WEAR

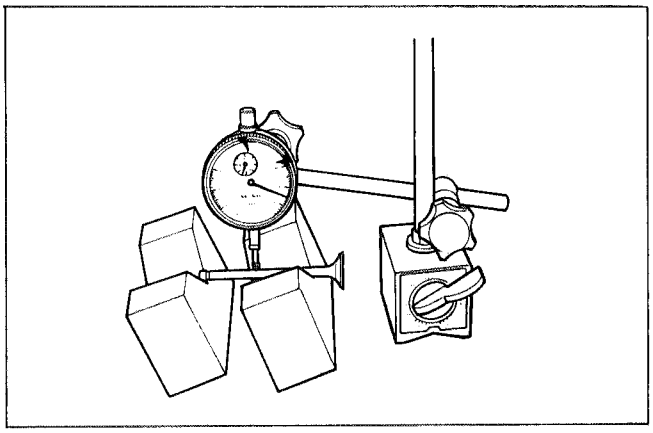
- Visually inspect each valve for wear of its seating face. Replace any valve with an abnormally worn face.
- The thickness Ⓣ decreases as the wear of the face advances. Measure the thickness and, if the thickness is found to have been reduced to the limit, replace it.



Service Limit	0.5 mm

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.



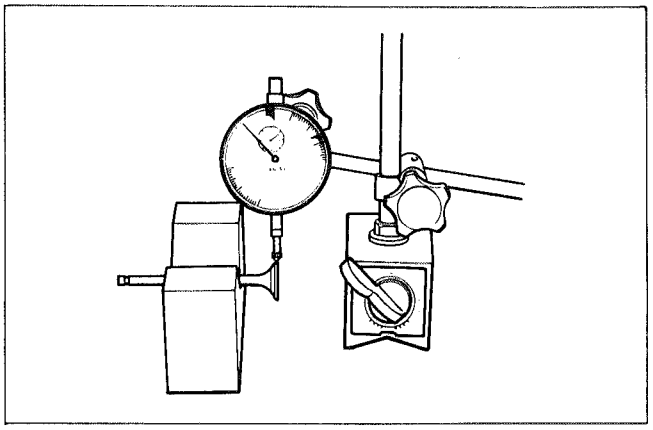
09900-21303	V-block set
09900-20606	Dial gauge (1/100 mm)
09900-20701	Magnetic stand

Service Limit	0.05 mm

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.

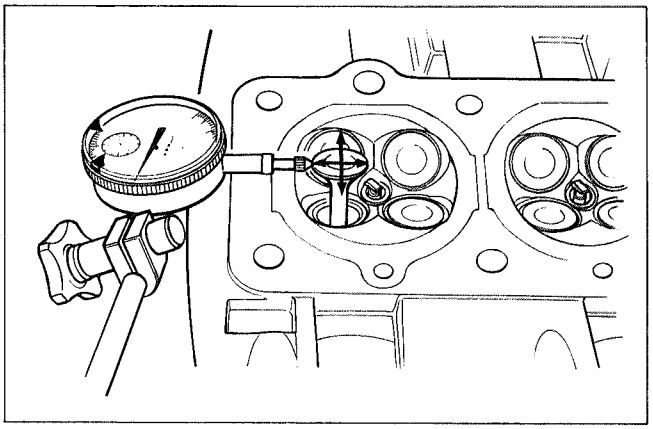
Service Limit	0.03 mm



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	0.35 mm
Exhaust valves	0.35 mm

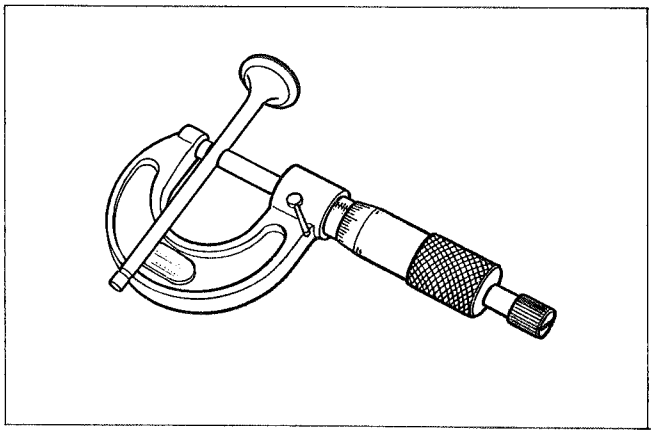


VALVE STEM WEAR

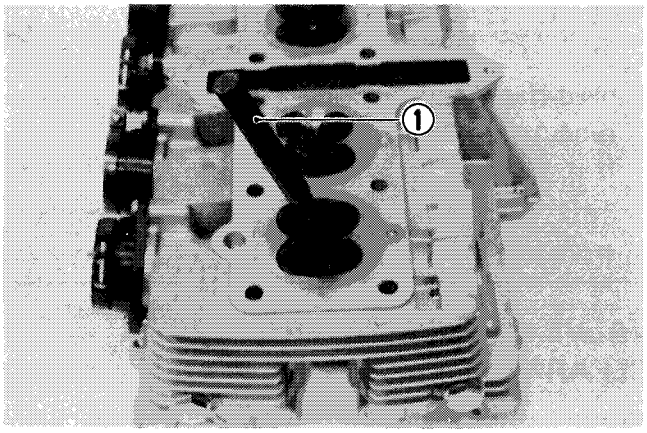
If the valve stem is worn down to the limit, as measured with a micrometer, where the clearance is found to be in excess of the limit indicated replace the valve, if the stem is within the limit, then replace the guide. After replacing valve or guide, be sure to recheck the clearance.

09900-20205	Micrometer (0 – 25 mm)

Valve	Standard
Intake valves	5.460 – 5.475 mm
Exhaust valves	5.445 – 5.460 mm



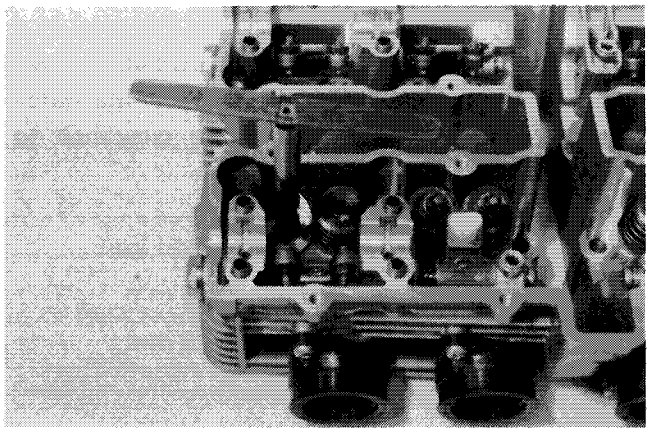
VALVE GUIDE SERVICING



- 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 subassemblies.**
*** Only oversized valve guide is available.**

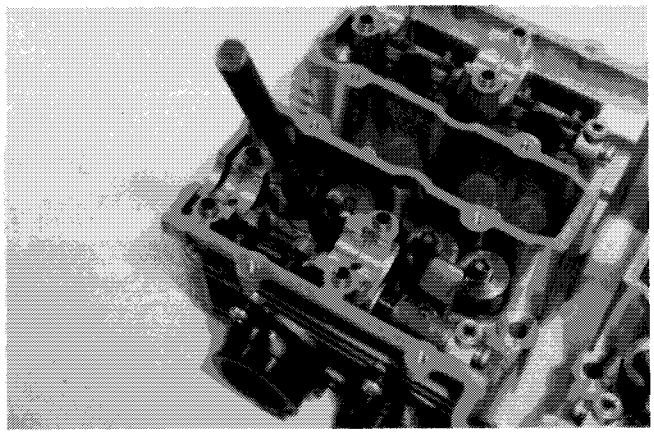


- Re-finish the valve guide holes in cylinder head with a 10.8 mm reamer.

09916-34580	Valve guide hole reamer
09916-34541	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. Remember that both valve guides for intake and exhaust and both oil seals are identical in shape.

11115-33270	Valve guide
09289-05003	Valve guide oil seal

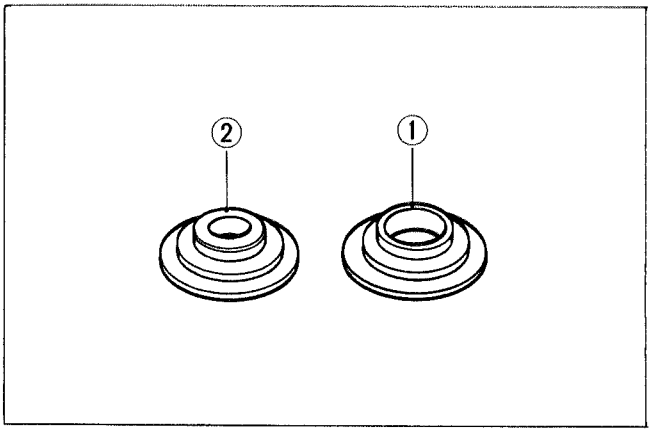


- Oil the stem hole of each valve guide and drive the guide into the guide hole with the valve guide remover and attachment.

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

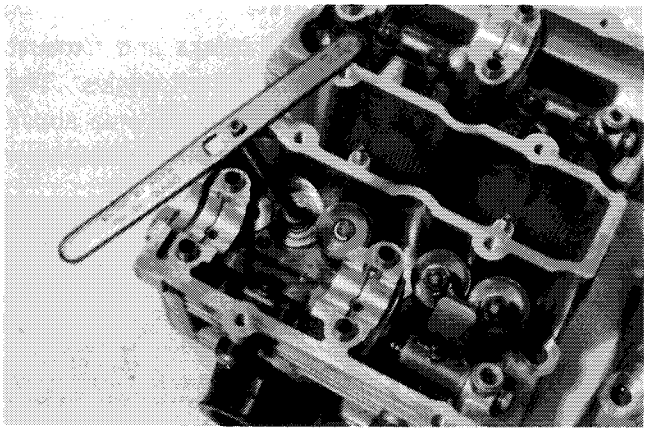
CAUTION:
Failure to oil the valve guide hole before driving the new guide into place many result in a damaged guide or head.

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



- After fitting all valve guides, refinish their guiding bores with a 5.5 mm reamer. Be sure to clean and oil the guide after reaming.

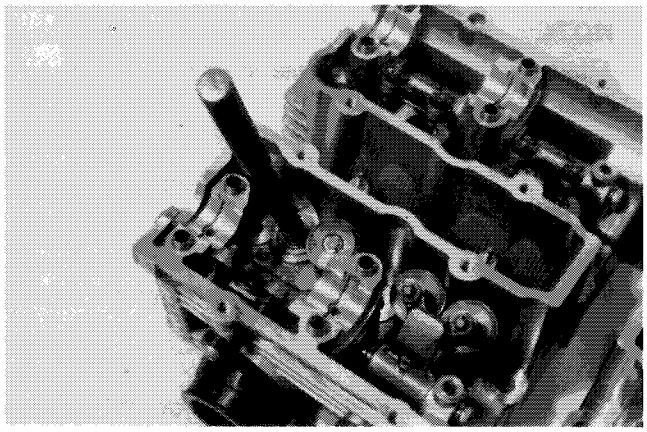
09916-34550	Valve guide reamer
09916-34540	Reamer handle



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

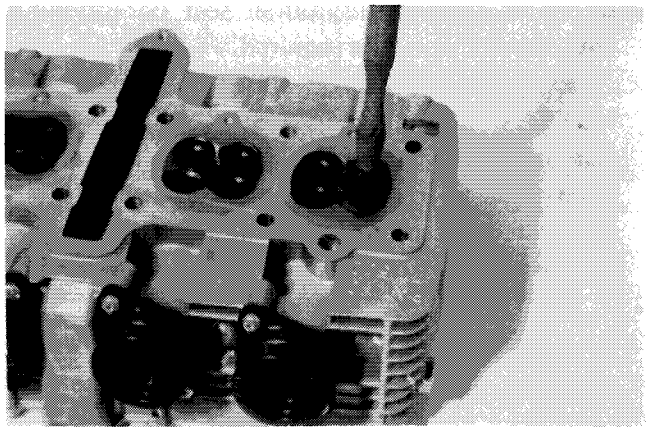
09916-44910	Valve guide remover

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



VALVE SEAT WIDTH

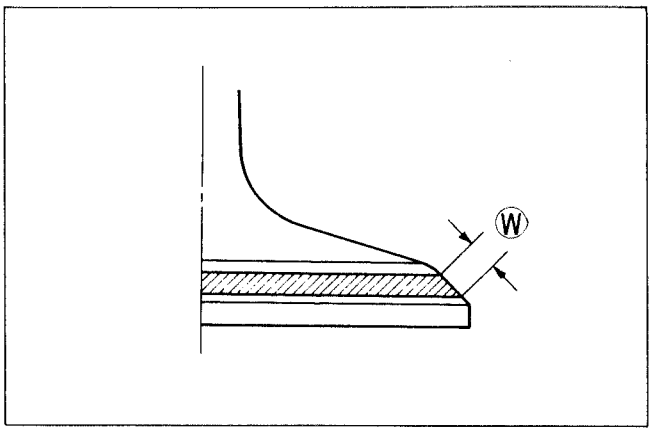
- Coat the valve seat with Prussian blue uniformly. Fit the valve and tap the coated seat with the valve face in a rotating manner, in order to obtain a clear impression of the seating contact. In this operation, use the valve lapper to hold the valve head.
- The ring-like dye impression left on the 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

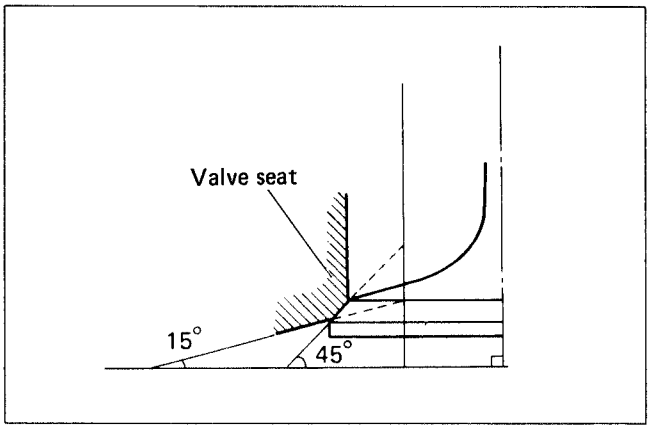
Seat width	Standard
Ⓦ	0.9 – 1.1 mm

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

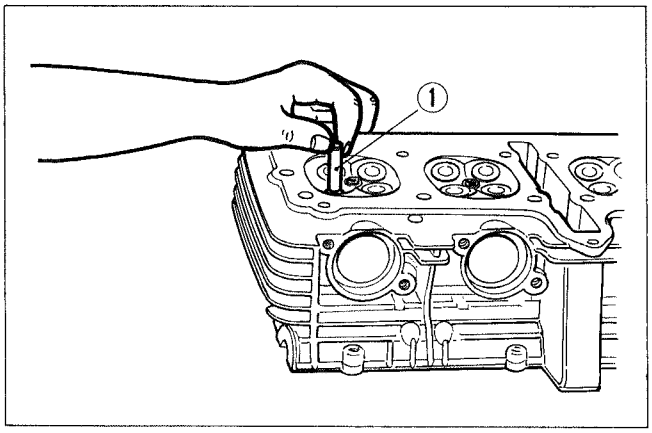


VALVE SEAT SERVICING

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°.



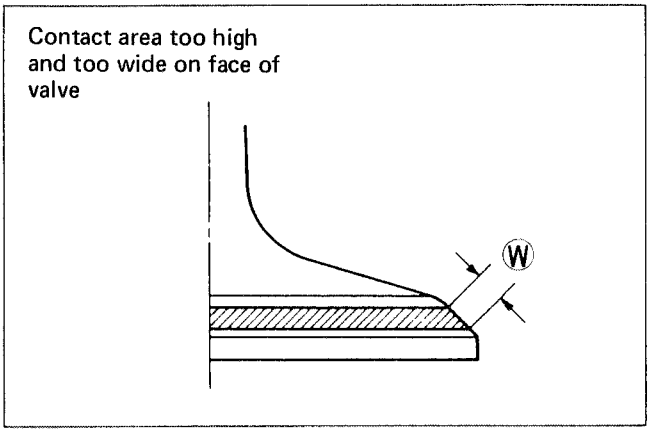
NOTE:
The valve seat contact area must be inspected after each cut.



- 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 cam for correct valve clearance 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.



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

- 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.**

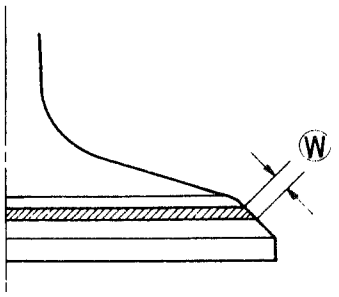
*** After servicing the valve seats, be sure to adjust the valve clearance after the cylinder head has been reinstalled. (see page 2-6)**

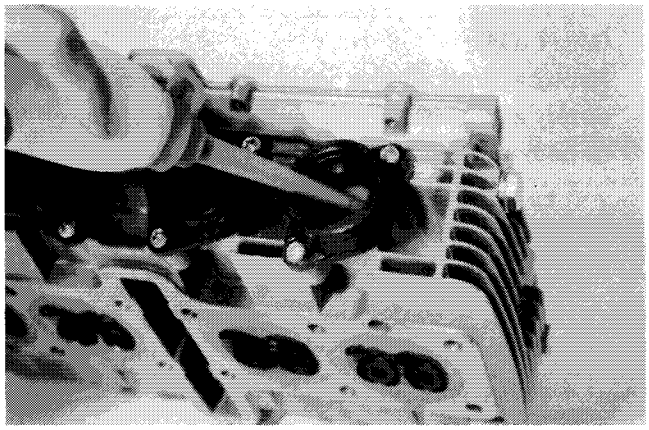
CAUTION:

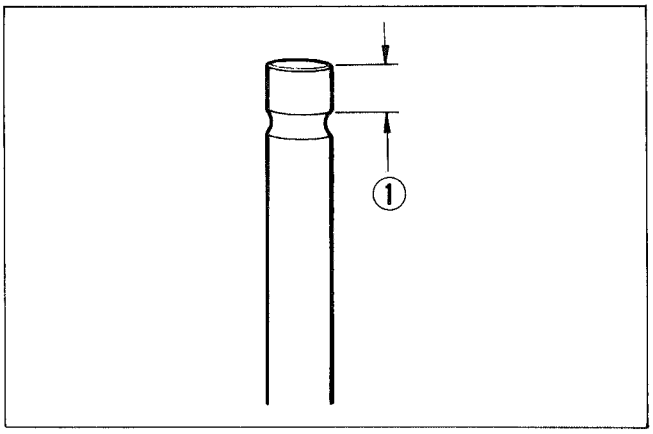
*** Refacing valve stem end face is permissible where the length ① will not be reduced to less than 3.6 mm. If this length becomes shorter than 3.6 mm, then the valve must be replaced.**

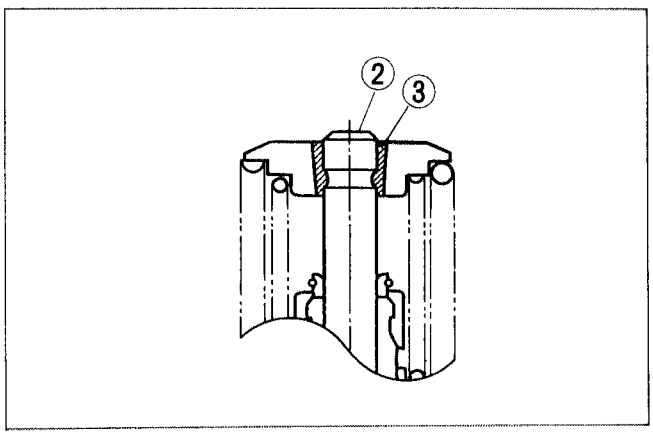
*** After installing the valve whose stem end has been ground off as above, check that the face ② of valve stem end is above the valve cotter ③.**

Contact area too low and too narrow on face of valve



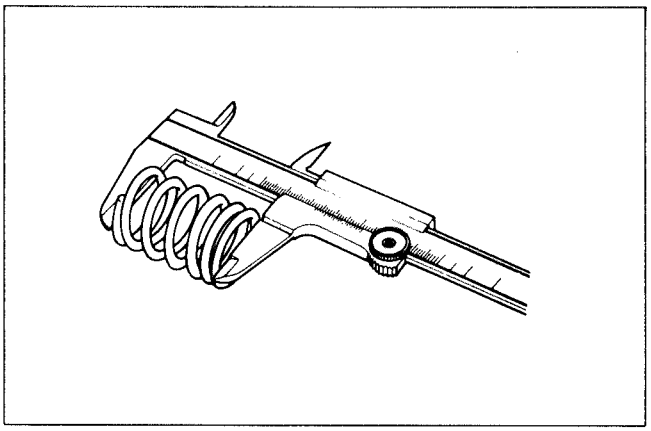




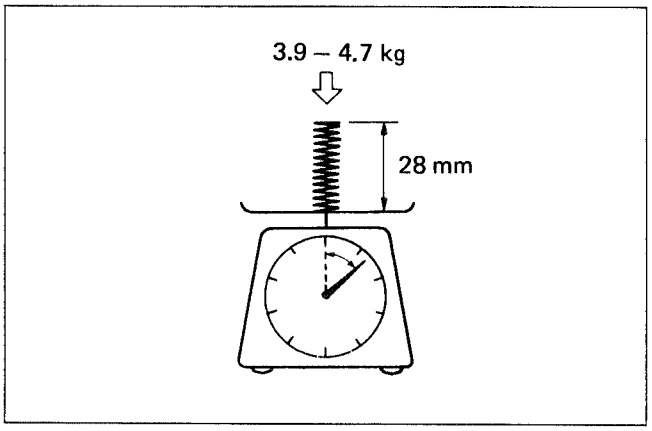


VALVE SPRINGS

- The force of the two coil springs keeps the valve seat 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

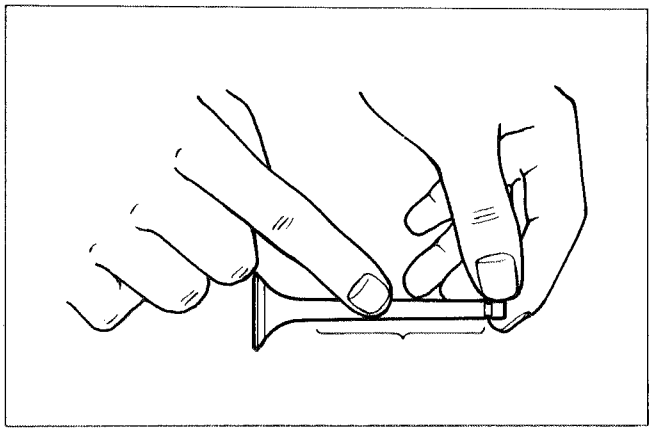
Spring	Service Limit
INNER	31.5 mm
OUTER	35.3 mm

Valve spring tension

Spring	Standard
INNER	3.9 – 4.7 kg/28 mm
OUTER	6.9 – 8.5 kg/31.5 mm

REASSEMBLY

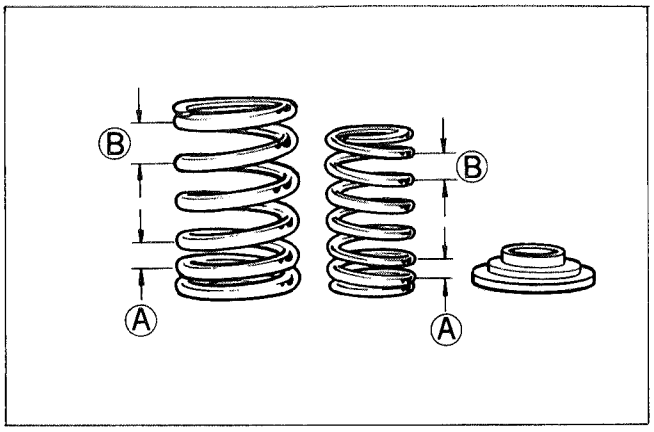
- Insert the valves, with their stems coated with high quality molybdenum disulfide lubricant (SUZUKI MOLY PASTE) all round and along the full stem length without any break.



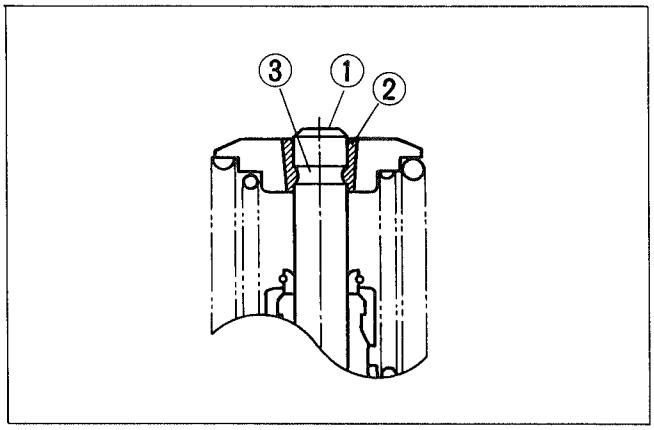
CAUTION:
When inserting each valve, take care not to damage the lip of the stem seal.

99000-25140	SUZUKI Moly Paste

- Install the valve springs with the small pitch portion Ⓐ down.
  Ⓑ : Large-pitch portion.



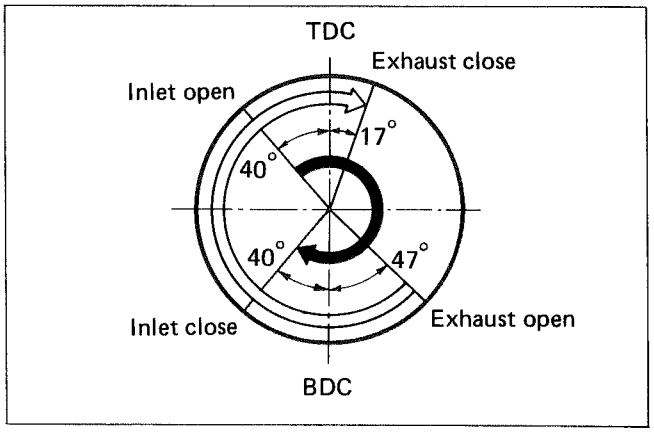
- Put on the upper valve seat and, using the valve lifter, press down the springs, fit the two cotter halves to the stem end, and release the lifter to allow the cotter ① to wedge in between seat and stem. Be sure that the rounded lip ② of the cotter fits snugly into the groove ③ in the stem end.



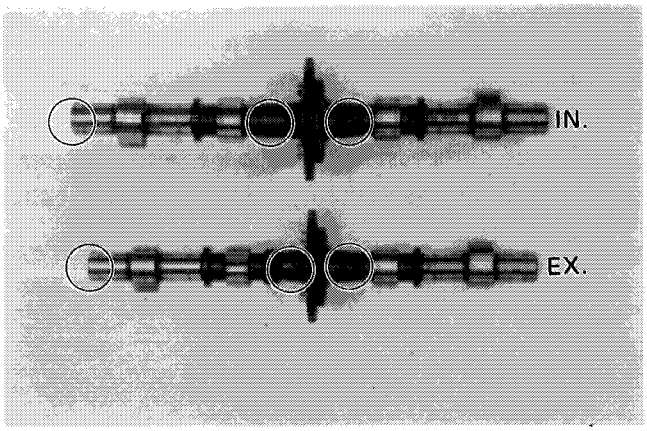
CAUTION:
Be sure to restore each spring, valve and spring retainer to their original positions.

CAMSHAFT

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 to lack power output. Any of these conditions may be caused by cam or camshafts journal worn down to the service limit.

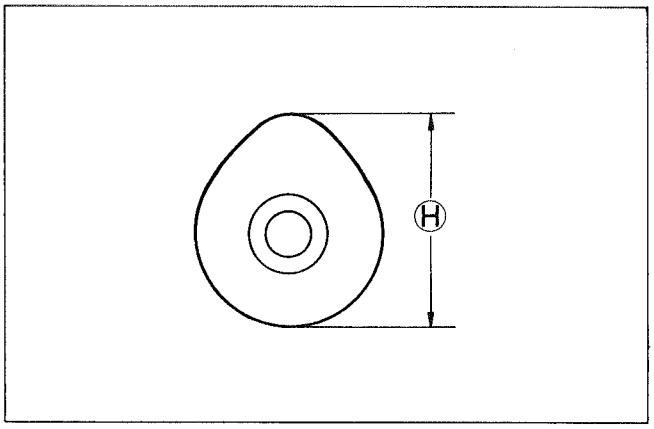


- The exhaust camshaft can be distinguished from that of the intake by the embossed letters "EX" (for exhaust) as against letters "IN" (for intake). The right end can be distinguished by the notch from the left end.



CAM WEAR

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

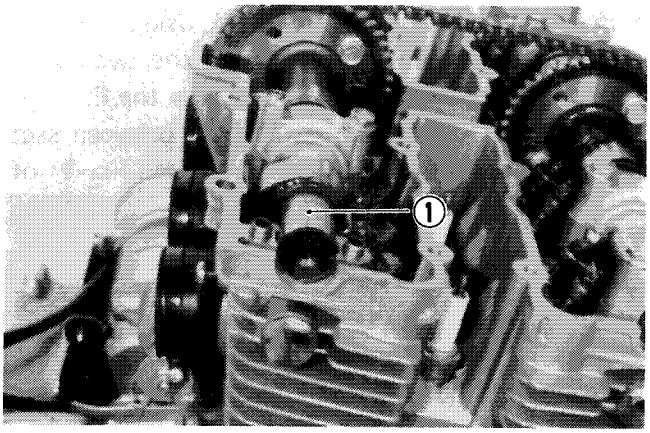


Cam height

Height Ⓗ	Service Limit
Intake cams	34.320 mm
Exhaust cams	33.870 mm

CAMSHAFT JOURNAL WEAR

- Determine whether or not each journal is worn down to the limit by measuring the running clearance with the camshaft installed in place. Use plastigauge ① to read the clearance at the widest portion, which is specified as follows:

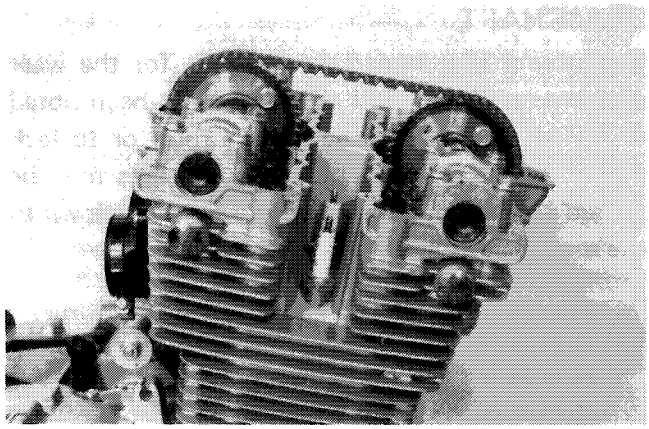


Camshaft—Journal clearance (IN & EX)

Service Limit	0.15 mm

NOTE:
Install each holder to their original positions.

09900-22301	Plastigauge

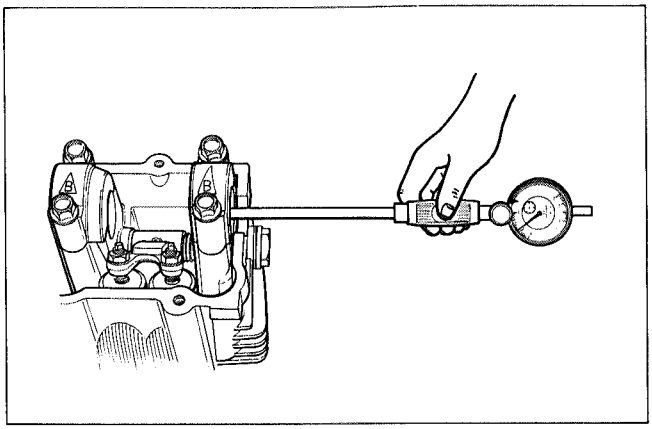


- Tighten the camshaft holder bolts evenly and diagonally to the specified torque.

Tightening torque	10 N·m (1.0 kg-m)

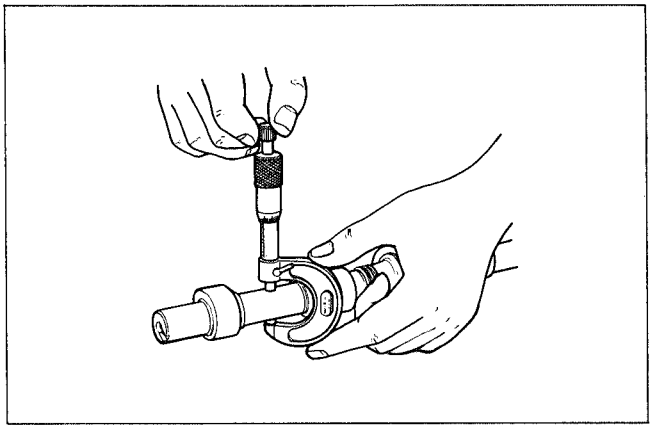
- Remove the camshaft holders, and read the width of compressed plastigauge with envelope scale. This measurement should be taken at the widest part.

- If the camshaft journal clearance measured exceeds the limit, measure the inside diameter of camshaft bearing holder and outside diameter of the camshaft journal. Replace whichever the difference from specification is greater.



09900-20205	Micrometer (0 – 25 mm)

	Standard
Journal holder I.D. (In & Ex)	22.012 – 22.025 mm
Camshaft journal O.D. (In & Ex)	21.959 – 21.980 mm

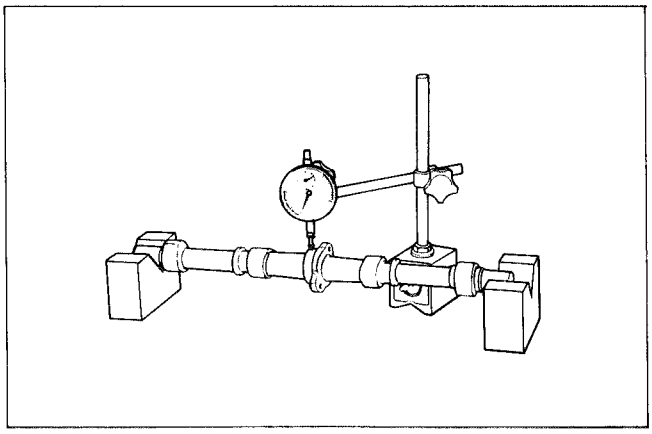


CAMSHAFT RUNOUT

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

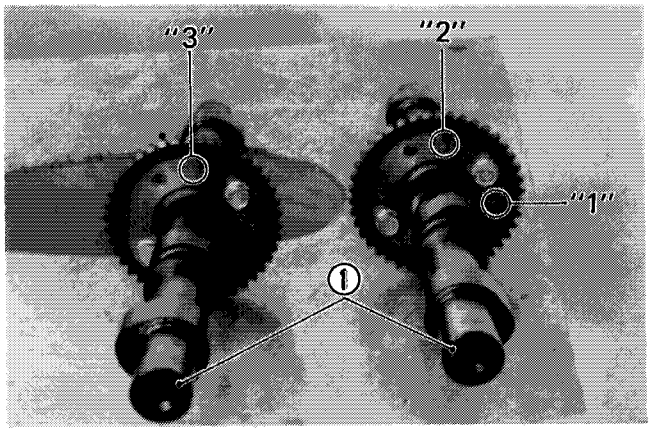
Camshaft runout (IN & EX)

Service Limit	0.10 mm



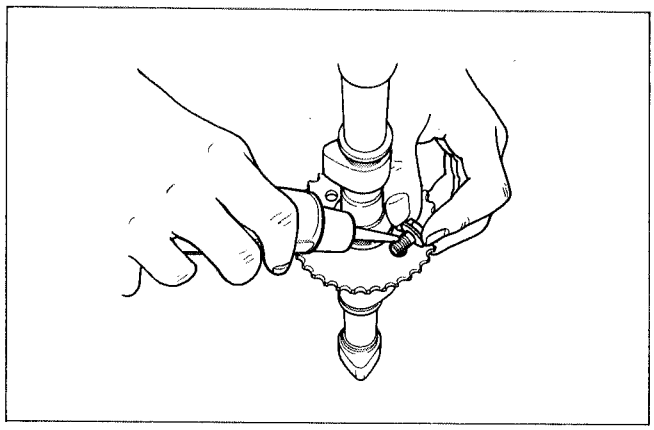
CAM SPROCKET REASSEMBLY

- 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 end.



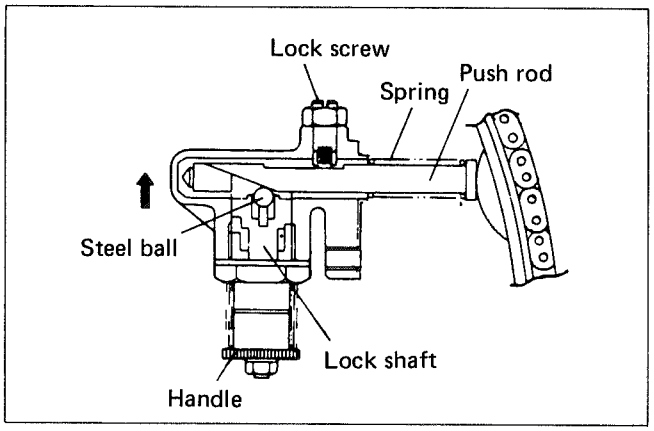
- Apply THREAD LOCK SUPER "1303B" (99000-32030) to threads of bolts, and tighten them of the following torque value:

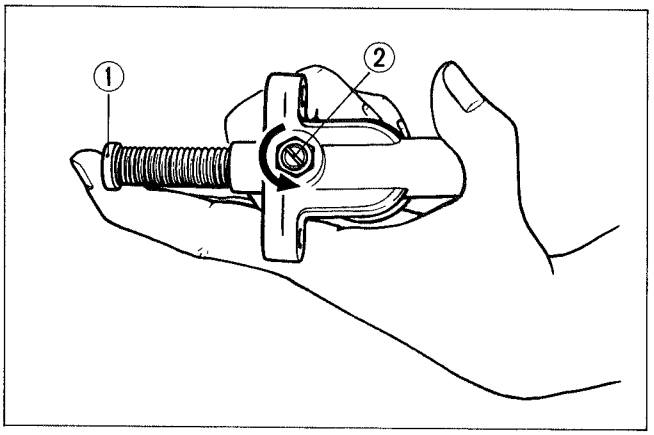
99000-32030	Thread lock super "1303B"
Tightening torque	24 – 26 N·m (2.4 – 2.6 kg-m)



CAM CHAIN TENSIONER DISASSEMBLY

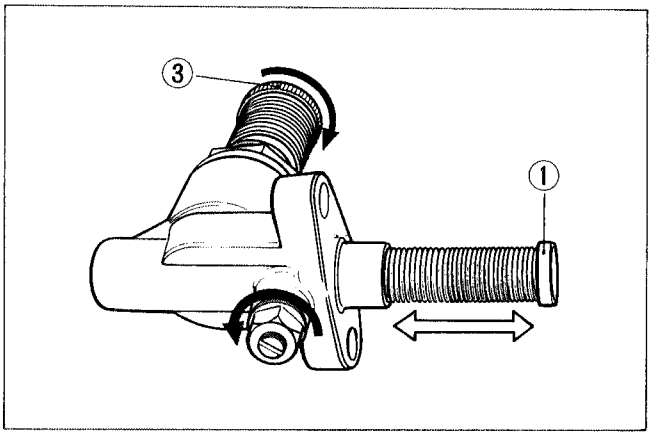
- The tension adjuster used in Model GSX400F is an automatic type that adjusts itself to apply a constant tensioning force to the chain by compensating for the stretch of the chain.
- The spring-loaded pushrod exerts a constant pressure on the camshaft chain. As the chain stretches, it yields to this pressure and remains in a state of tension. Once the adjuster is set after installation, there is no need to make any further adjustment.
- The pushrod is prevented from withdrawing. As a result, the pushrod effectively contends with the tendency of the camshaft chain to shake or vibrate during rough driving conditions.
- While pushing the push rod ①, loosen the lock screw ② and extract the push rod.



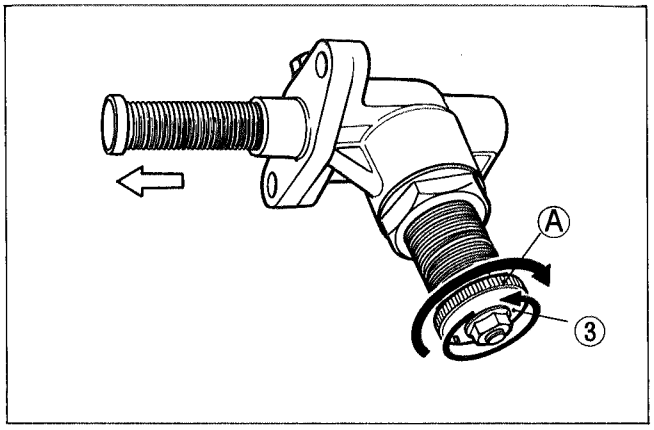


INSPECTION

- Turn the handle ③ all the way counterclockwise after loosening the lock screw, and move the push rod ① 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.

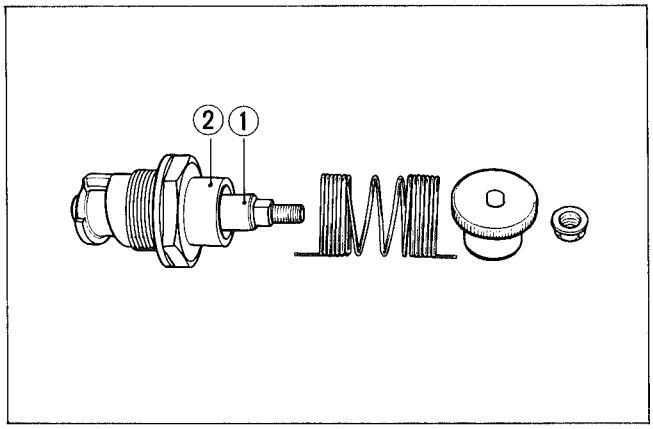


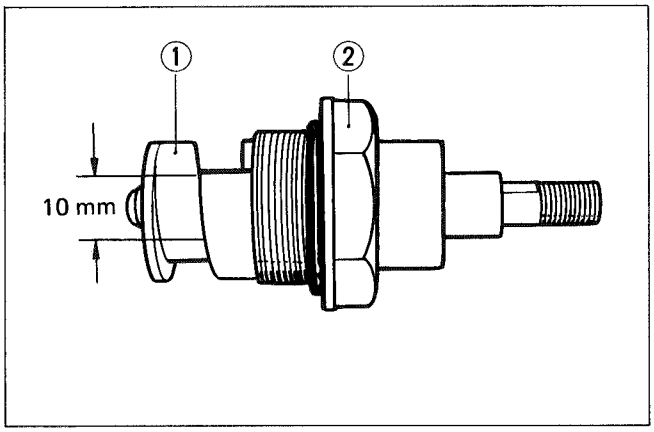
- Turn handle ③ all the way counterclockwise against the force of its coil spring and then turn it back as assisted by spring force to see if the handle returns to the original position Ⓐ without exhibiting any sticking on the way. Repeat this process several times. If any excessive sticking is felt or if the self-adjusting action is faulty, replace the whole tensioner.



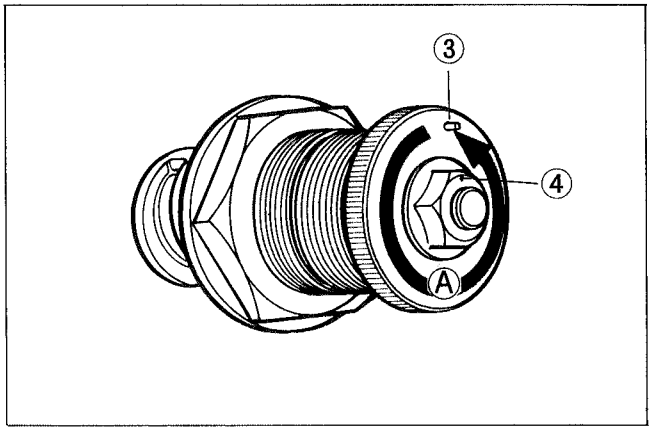
REASSEMBLING

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



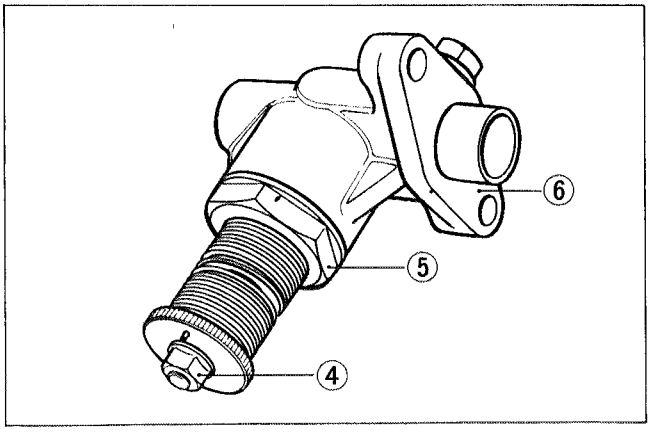


- Hook the spring onto the holder and handle ③, twist the spring by one complete rotation-counterclockwise Ⓐ, fit the handle onto the shaft, and then tighten it by nut ④.



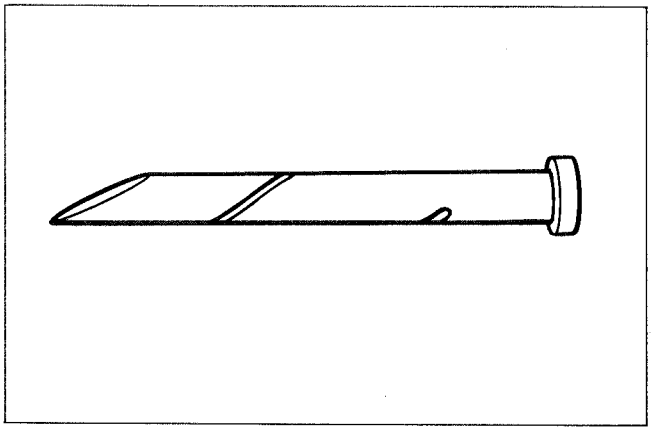
- After tightening the lock shaft nut ④, install the lock shaft assembly ⑤ on the tensioner body ⑥. Be sure to adhere to the following torque specifications:

Lock shaft nut tightening torque	8 – 10 N·m (0.8 – 1.0 kg-m)
Shaft assembly tightening torque	31 – 35 N·m (3.1 – 3.5 kg-m)

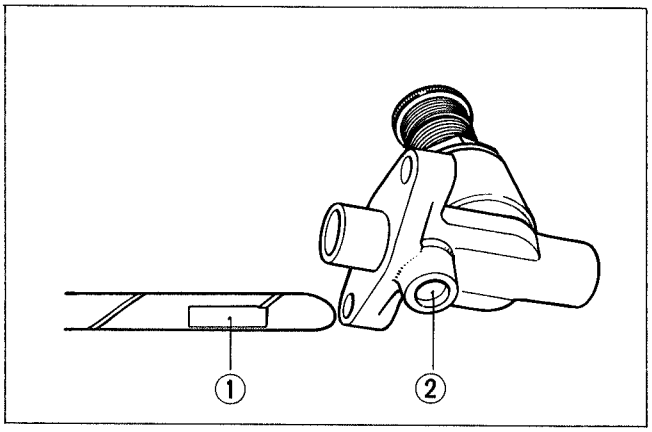


- Apply a high quality molybdenum disulfide lubricant (SUZUKI MOLY PASTE) to the push rod and engine oil to the push rod guide hole.

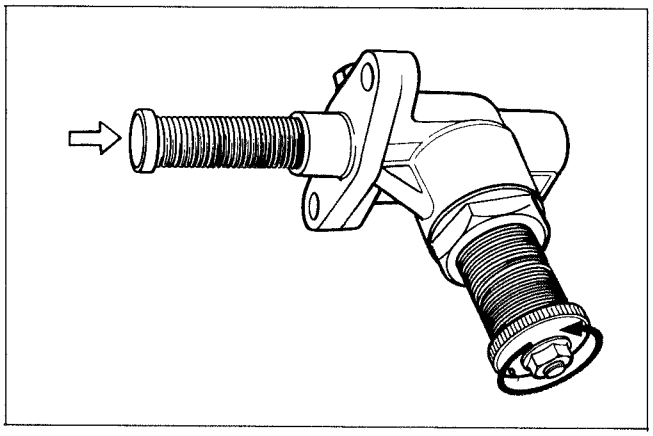
99000-25140	SUZUKI Moly Paste



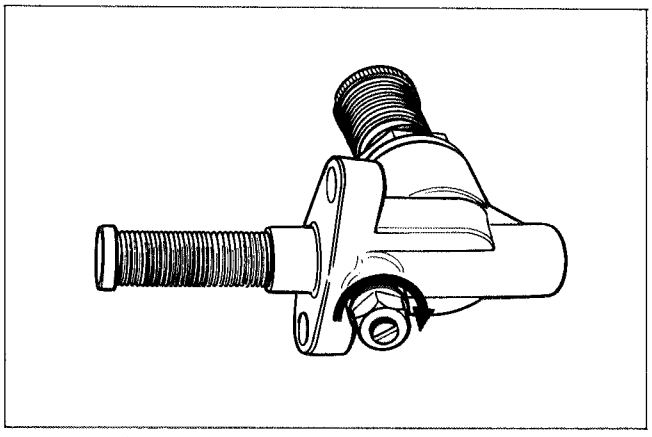
- Match the lock screw hole ① to the long groove ② in the push rod, as shown.
- Slide the push rod spring on the pushrod.



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



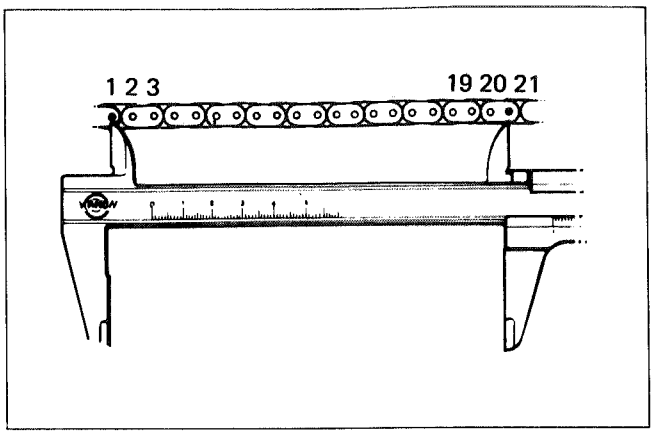
- Tighten the lock screw to lock the pushrod, so that the pushrod will not plunge out.



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 limits, replace the cam chain.

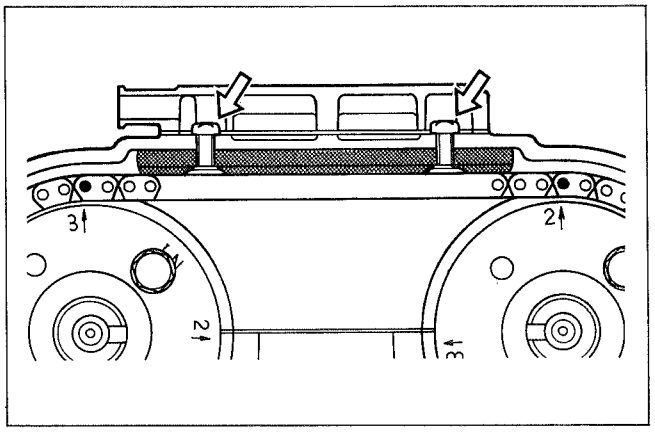
Service Limit	128.9 mm



CAM CHAIN GUIDE

NOTE:
When replacing following chain guides, apply SUZUKI Thread lock cement "1333B" to screws thread.

99000-32020	Thread lock super "1333B"

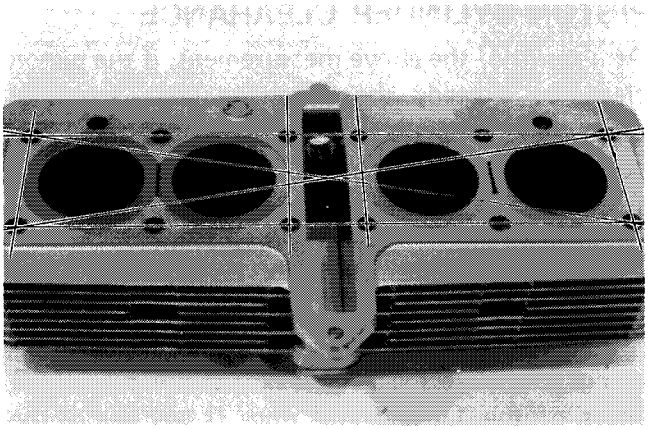


CYLINDER DISTORTION

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.

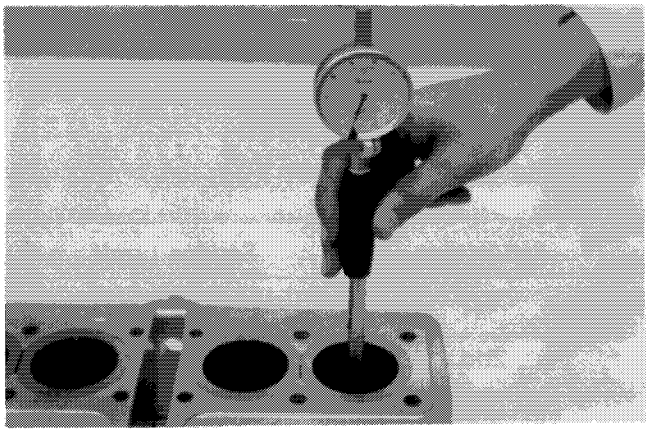
Cylinder distortion

Service Limit	0.2 mm



CYLINDER BORE

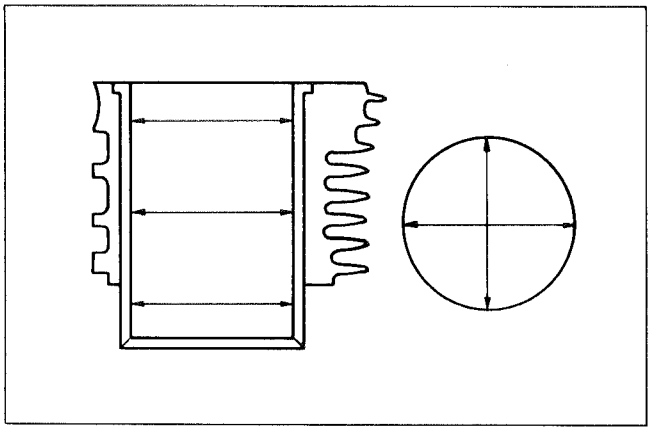
Measure the cylinder bore diameter at six places. If any one of the measurements exceeds the limit, overhaul the cylinder and replace the piston with an oversize, or replace the cylinder. Once the reboring is done on any one cylinder which measurements is beyond the limit, the remaining cylinders must be also rebored accordingly. Otherwise the imbalance might causes excess vibration.



Cylinder bore

Service Limit	53.095 mm

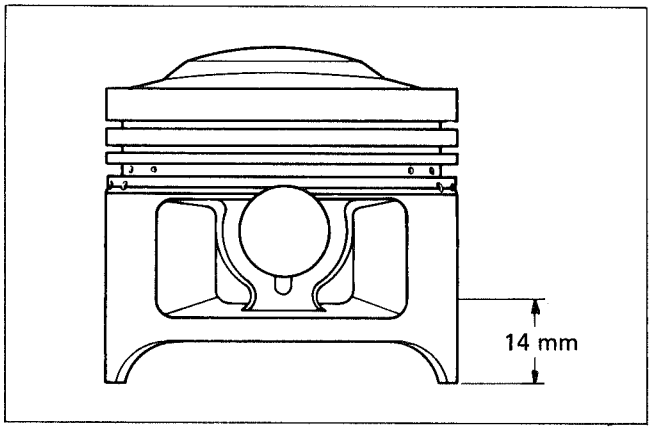
09900-20508	Cylinder gauge set



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.

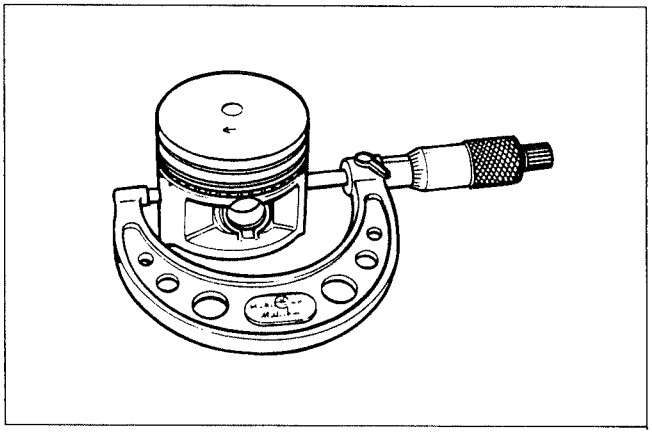
Piston oversize	0.5, 1.0 mm
Service Limit	52.880 mm
09900-20203	Micrometer (50 – 75 mm)



PISTON-CYLINDER CLEARANCE

As a result of the above measurement, if the piston clearance exceeds the following limit, overhaul the cylinder and use an oversize piston, or replace both cylinder and piston.

Service Limit	0.120 mm



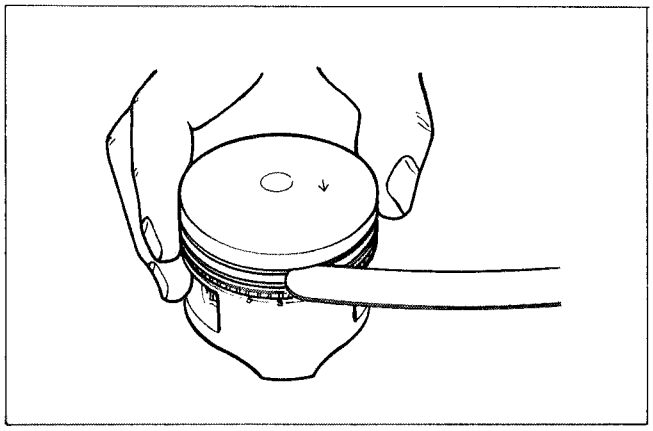
PISTON RING-GROOVE CLEARANCE

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

09900-20803	Thickness gauge

Piston ring–groove clearance

Piston ring	Service Limit
1st	0.18 mm
2nd	0.15 mm



Piston ring groove width

Piston ring	Standard
1st	1.02 – 1.04 mm
2nd	1.21 – 1.23 mm
Oil	2.51 – 2.53 mm

Piston ring thickness

Piston ring	Standard
1st	0.965 – 0.980 mm
2nd	1.170 – 1.190 mm

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.

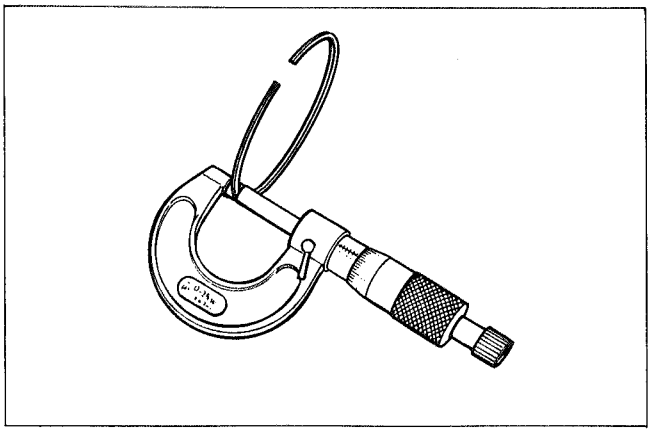
Piston ring free end gap

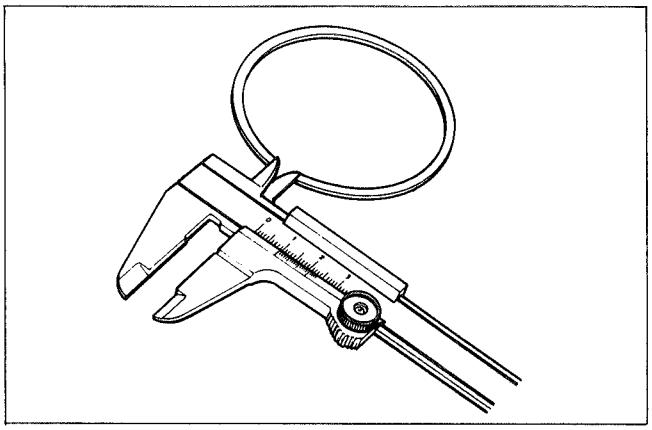
Piston ring	Service Limit
1st	5.2 mm
2nd	6.4 mm

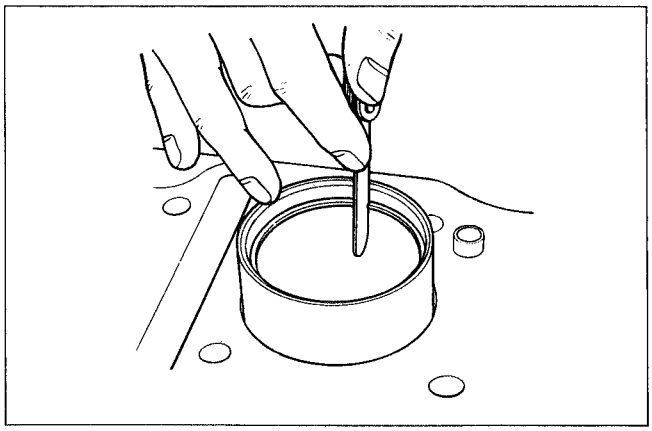
Piston ring end gap

Piston ring	Service Limit
1st & 2nd	0.7 mm

09900-20803	Thickness gauge







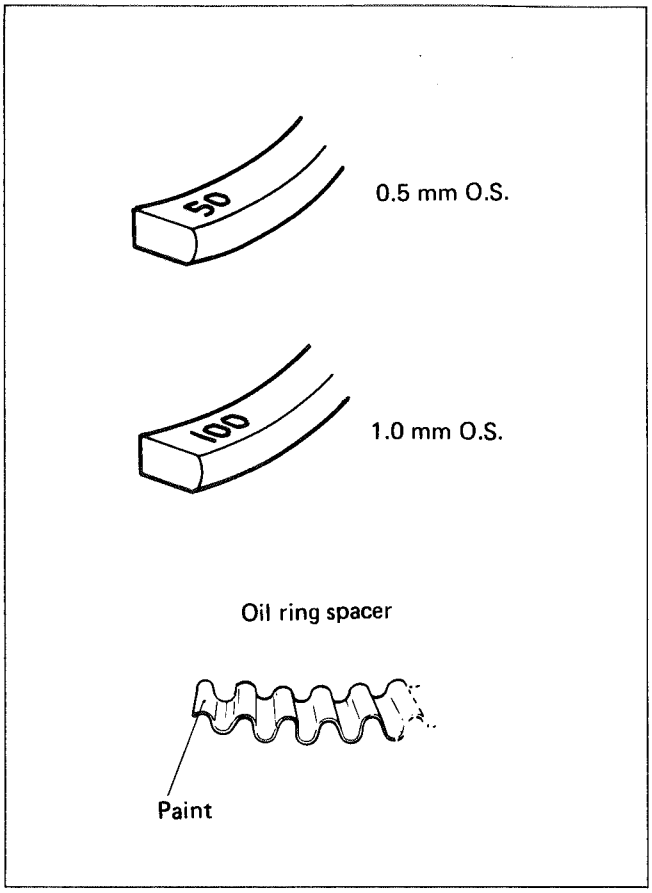
- **Oversize piston rings**
  The following two types of oversize piston rings are used. They bear the following identification numbers.

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

- **Oversize oil rings**
  The following two types of oversize oil rings are available as optional parts. They bear the following identification marks.

SIZE	COLOR
STD	Painted Blue
0.5 mm O.S.	Painted Red
1.0 mm O.S.	Painted yellow

- **Oversize side rail**
  Just measure out side diameter.

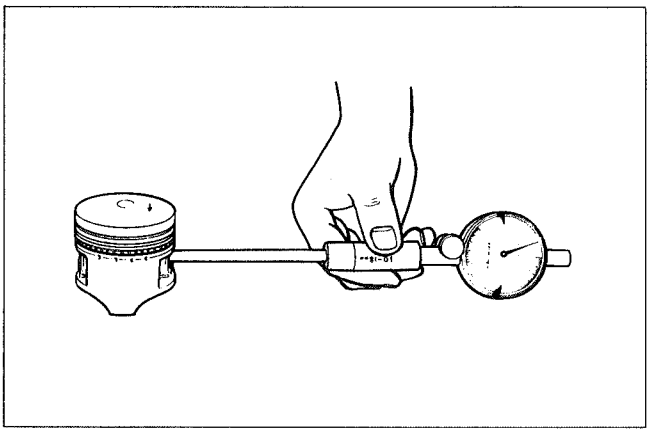


PISTON PIN AND PIN BORE

Using a small bore gauge, measure the piston pin bore inside diameter, and using a micrometer, measure the piston pin outside diameter. If the reading exceeds the following limit, replace both piston and piston pin.

Piston pin bore I.D.

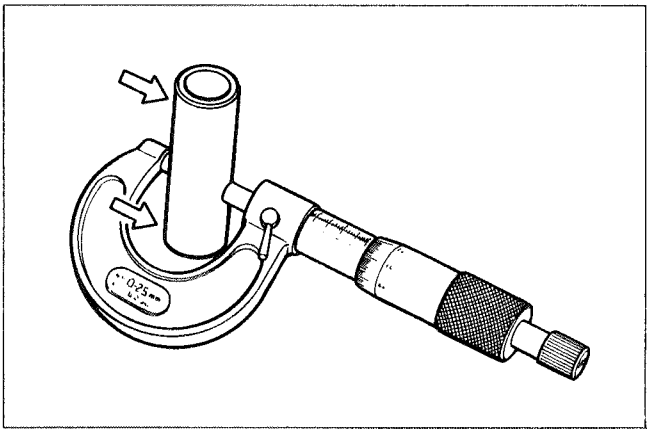
Service Limit	14.030 mm
09900-22401	Small bore gauge (10 – 18 mm)



Using a micrometer, measure the piston pin outside diameter at three positions.

Piston pin O.D.

Service Limit	13.980 mm
09900-20205	Micrometer (0 – 25 mm)



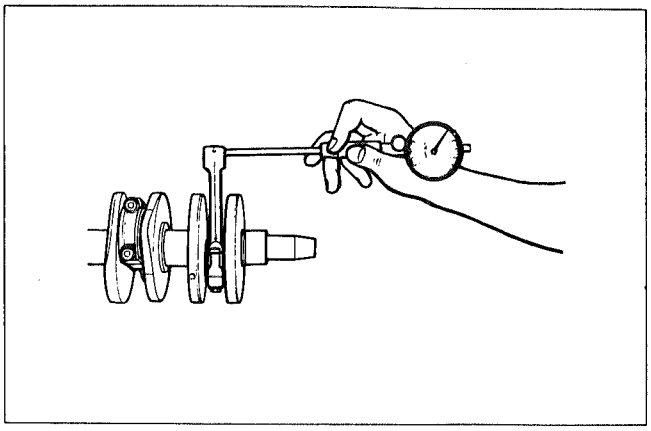
CONNECTING ROD SMALL END BORE I.D.

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

Connecting rod small end bore I.D.

Service Limit	14.040 mm

- If the connecting rod small end bore inside diameter exceeds the abovementioned limit, replace connecting rod.



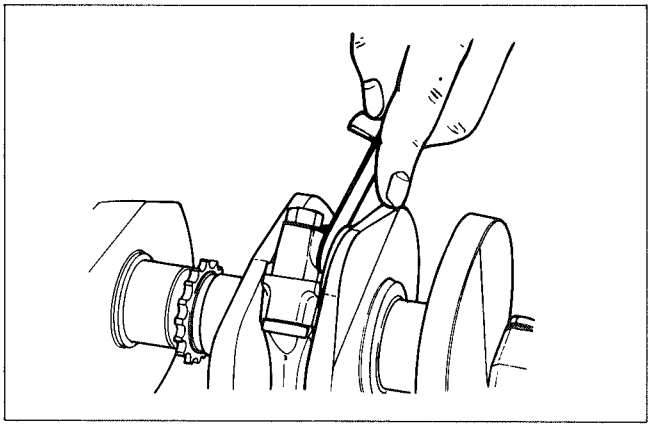
CONNECTING ROD BIG END THRUST CLEARANCE

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

Service Limit	0.30mm

	Standard
Big end width	19.95–20.00mm
Crank pin width	20.10–20.15mm

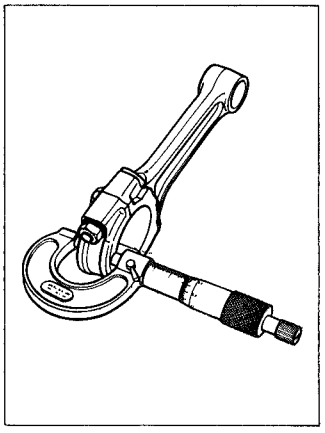
09900-20803	Thickness gauge

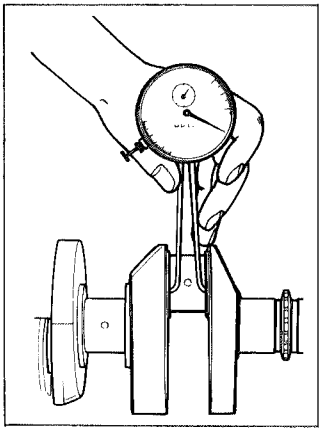


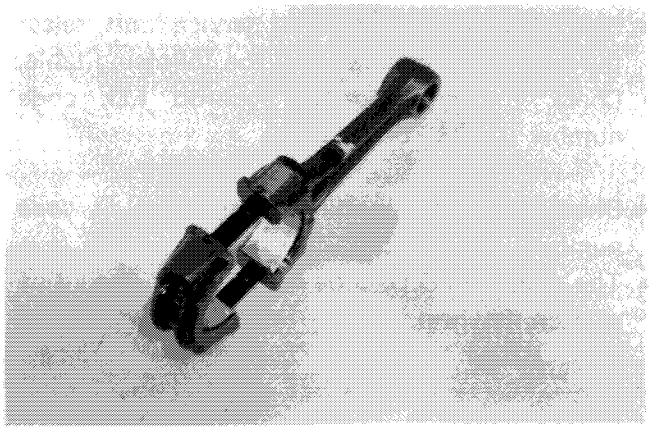
CONNECTING ROD-CRANK PIN BEARING SELECTION

- 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.

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.

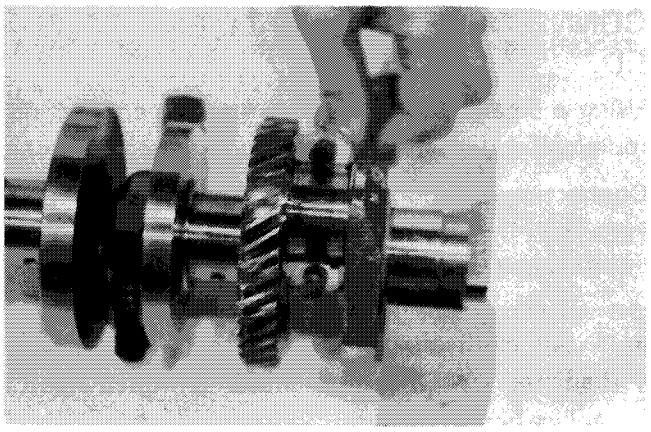






- Place plastigauge axially on the crank pin, avoiding the oil hole and at the TDC or BDC side as shown.

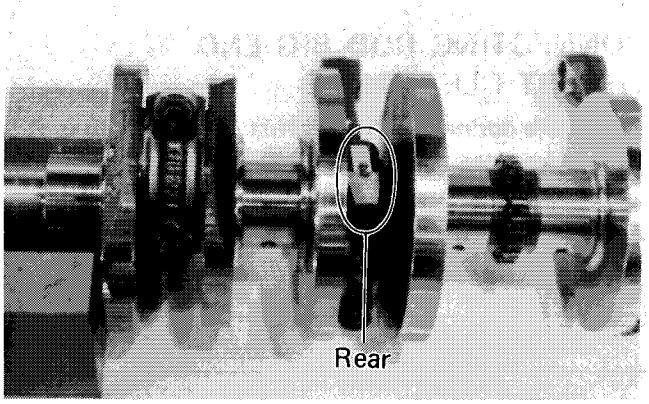
09900-22301	Plastigauge



- Tighten the bearing cap with two-step torque values.

NOTE:
When fitting bearing cap to crank pin, be sure to discriminate between its two ends, front and rear.

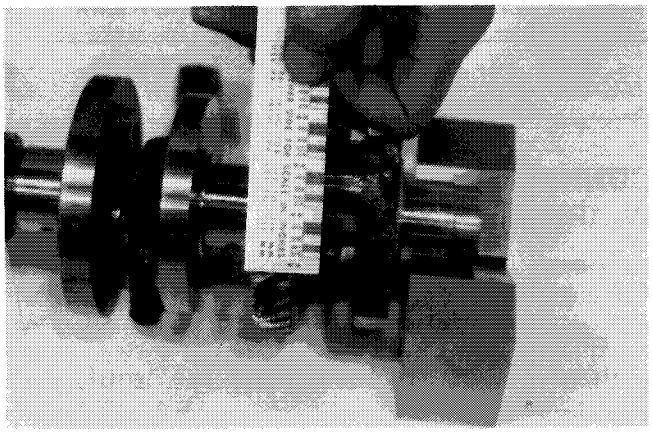
Initial tightening torque	12 – 18 N·m (1.2 – 1.8 kg-m)
Final tightening torque	30 – 34 N·m (3.0 – 3.4 kg-m)



NOTE:
Never rotate crankshaft or connecting rod when a piece of Plastigauge is in the clearance.

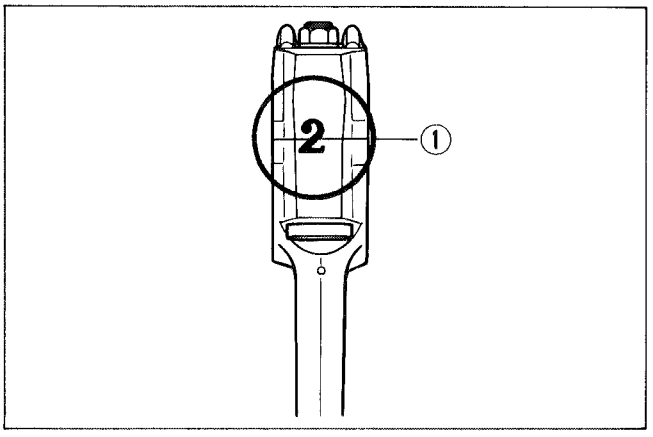
- Remove the caps and measure the width of compressed plastigauge with envelope scale. This measurement should be taken at the widest part.

Service Limit	0.080mm



- If oil clearance is exceeded service limit, select the specified bearings from the following table.
- Check the corresponding conrod 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 O.D. code		
	Code	1	2	3
Conrod I.D. code	1	Green	Black	Brown
	2	Black	Brown	Yellow

Oil clearance

Standard	0.024–0.048mm

Connecting rod I.D. specification

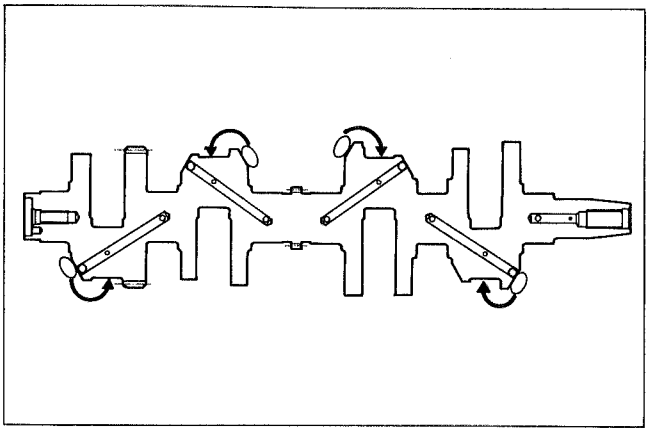
Code	I.D. Specification
1	35.000–35.008mm
2	35.008–35.016mm

Crank pin O.D. specification

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

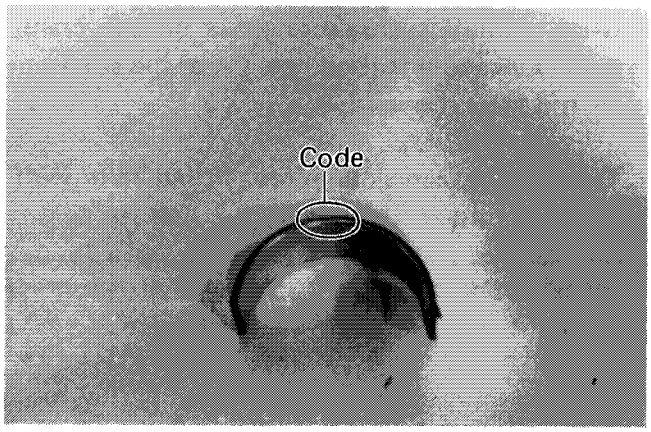
CAUTION:
Bearing should be replace as a set.

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



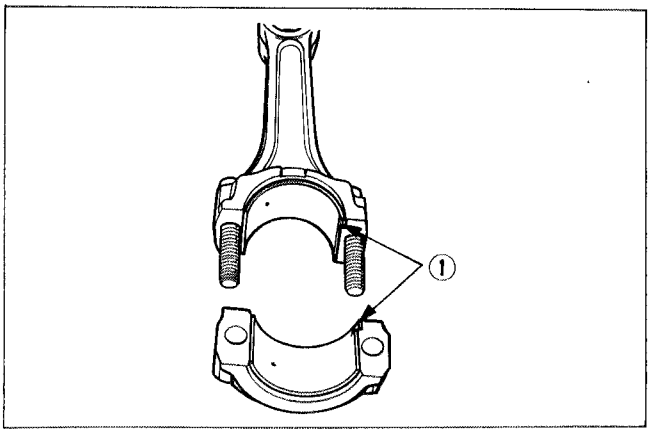
Bearing thickness

Color (Part No.)	Thickness
Green (12164-33200-010)	1.484–1.488mm
Black (12164-33200-020)	1.488–1.492mm
Brown (12164-33200-030)	1.492–1.496mm
Yellow (12164-33200-040)	1.496–1.500mm

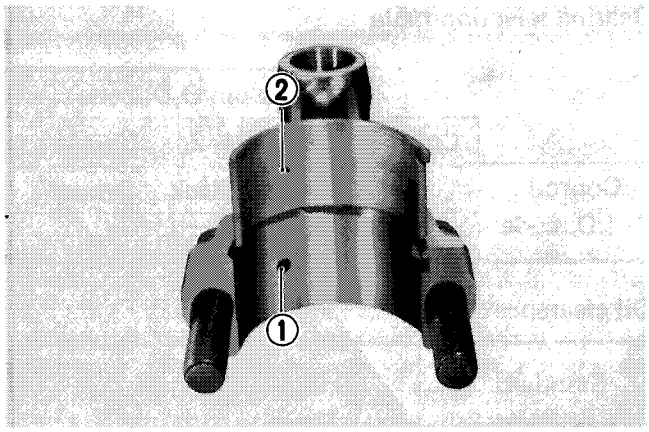


BEARING ASSEMBLY

- 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.



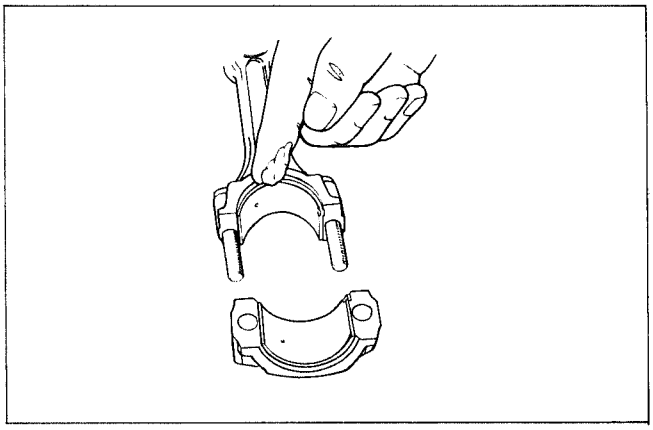
- Check the connecting rod oil hole ① to align with the bearing oil hole ②.



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

99000-25140	SUZUKI Moly Paste

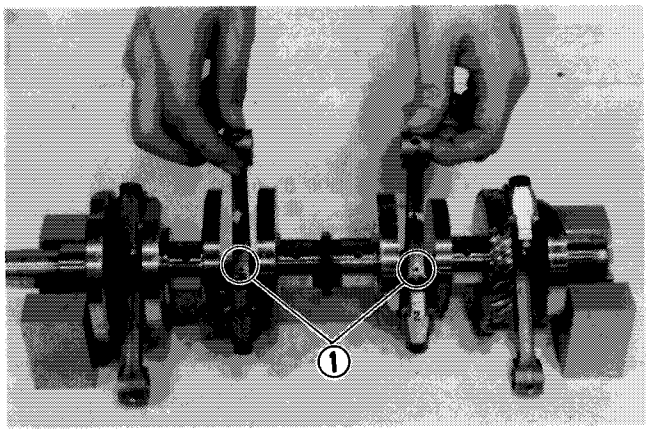
NOTE:
Never try to remove or loosen the connecting rod big end stud, otherwise, it will displace the stud and will not fit the bearing cap properly.



- 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.

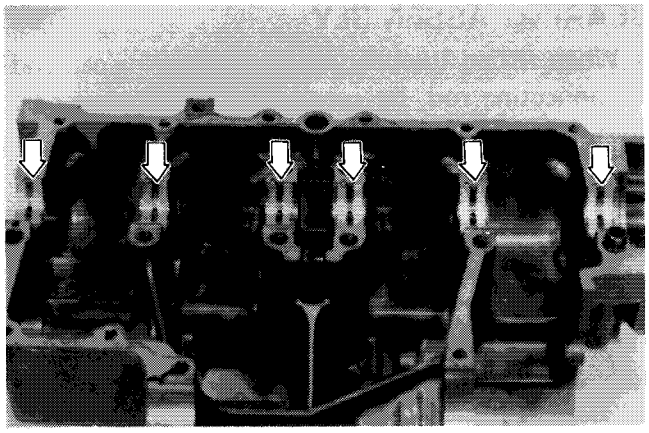
Tightening torque	30 – 34 N·m (3.0–3.4 kg-m)



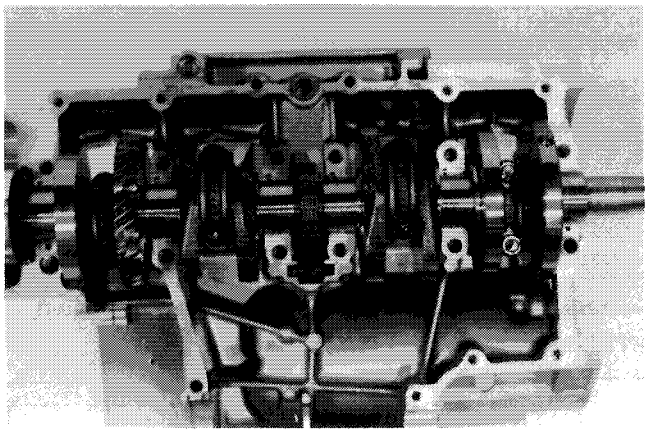
- Check the connecting rod for smooth turning.

CRANKCASE-CRANKSHAFT BEARING SELECTION

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

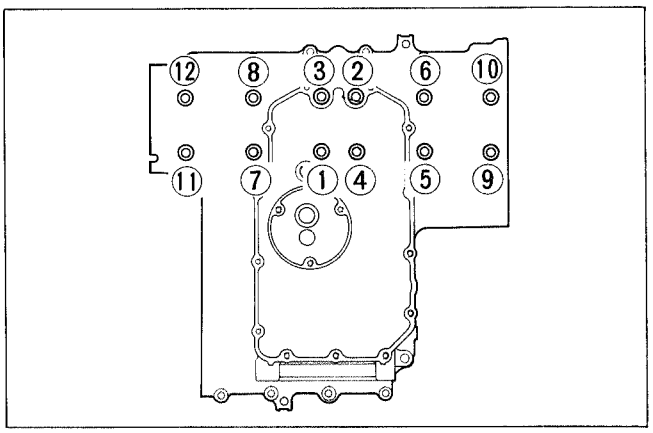


- Place plastigauge on each crankshaft journal in the usual manner.



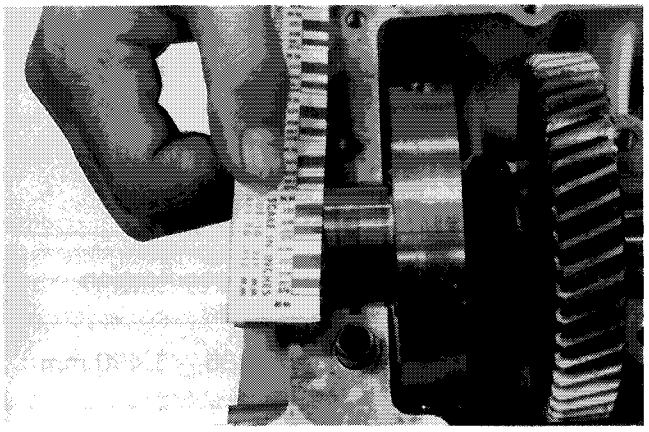
NOTE:
Do not place the plastigauge on the oil hole, and do not rotate the shaft when plastigauge is in place.

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



	Initial Tightening	Final Tightening
8-mm bolt	13 N·m (1.3 kg-m)	20 – 24 N·m (2.0 – 2.4 kg-m)

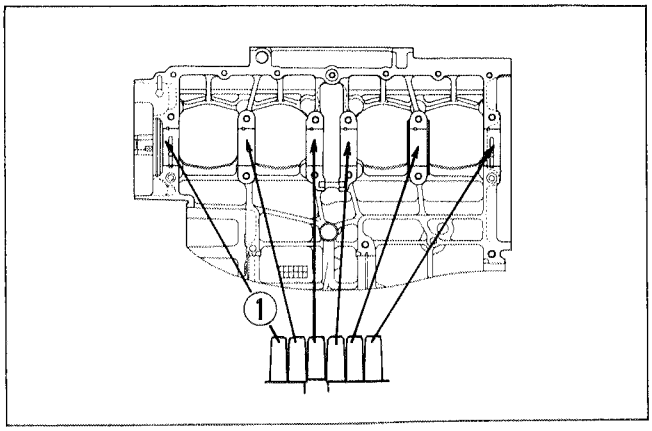
- Remove the lower crankcase, and measure the width of compressed plastigauge in the usual manner.



Crankshaft journal Oil clearance	0.020 – 0.044 mm

Service Limit	0.080 mm

- If the width at the widest part 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 journal O.D. code number ② "A", "B" or "C", printed on the web.

Bearing selection table

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

CAUTION:
Refer to page 8-22 for properly installing crankshaft journal bearings.

Crankcase I.D. specification

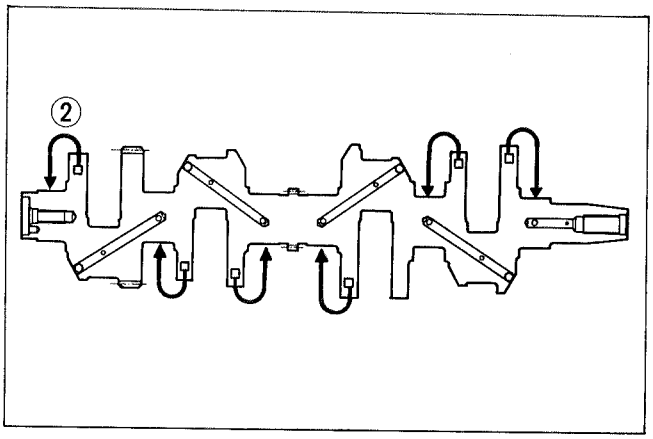
Code	I.D. specification
A	35.000 – 35.008 mm
B	35.008 – 35.016 mm

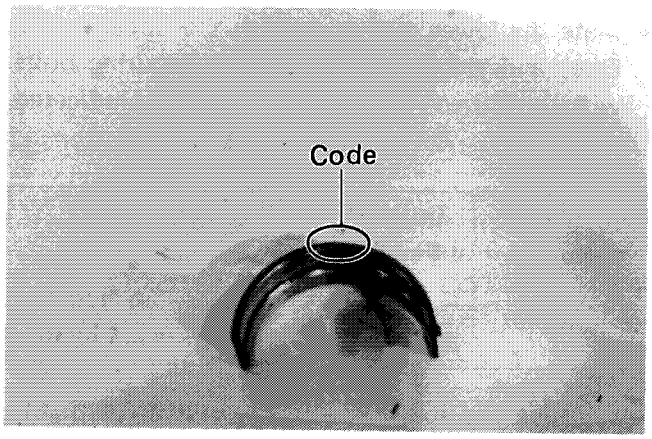
Crankshaft journal O.D. specification

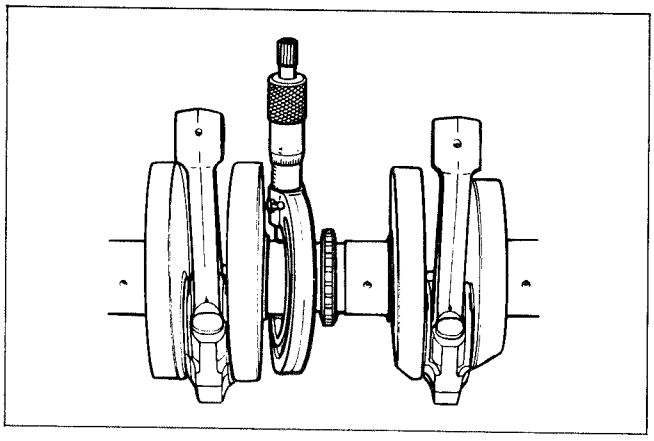
Code	O.D. specification
A	31.992 – 32.000 mm
B	31.984 – 31.992
C	31.976 – 31.984

Bearing thickness specification (lower case bearing with oil groove)

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

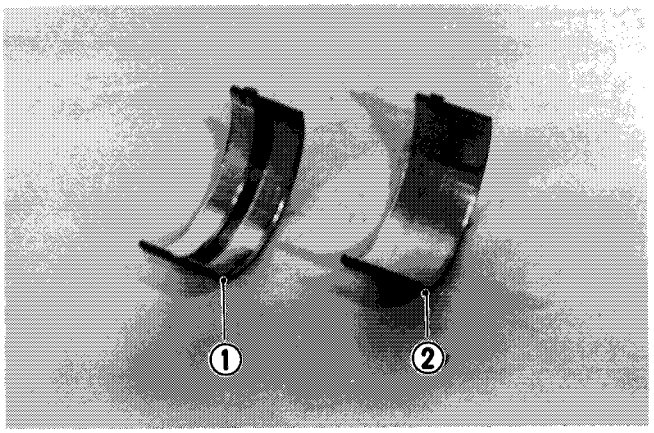






CAUTION:
* Make sure to identify the upper crankcase journal bearing which has no oil groove, and to supply both bearings as a replacement.
* Upper bearings have no oil groove and these parts numbers are shown as follows. 12229-11410-XXX.
* There are two kinds of under-sized bearings as optional parts as follows.

Part No.	Specification
12229-11400-025	1.625 mm
12229-11400-050	1.750 mm

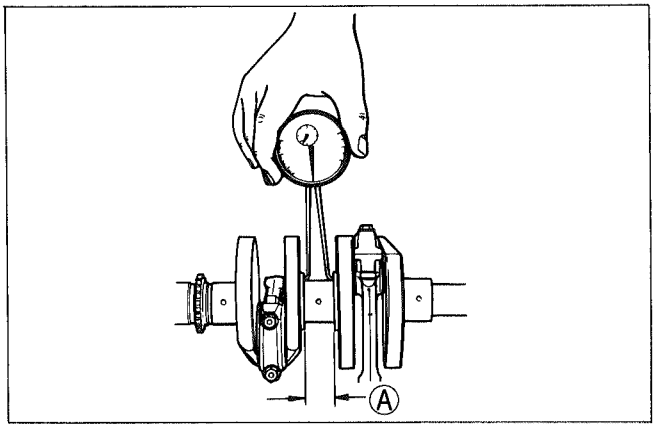


① Lower crankcase bearing
② Upper crankcase bearing

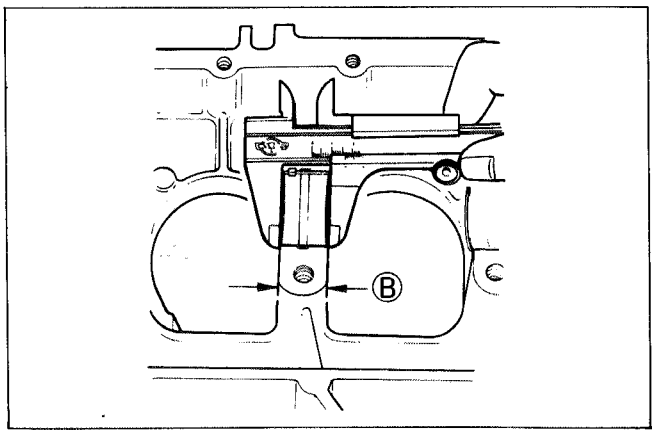
CRANKSHAFT THRUST CLEARANCE

- Check the crankshaft thrust bearing thickness for wear. If most wearing portion exceeds the following limit, replace it with new one.

Service Limit	2.80 mm



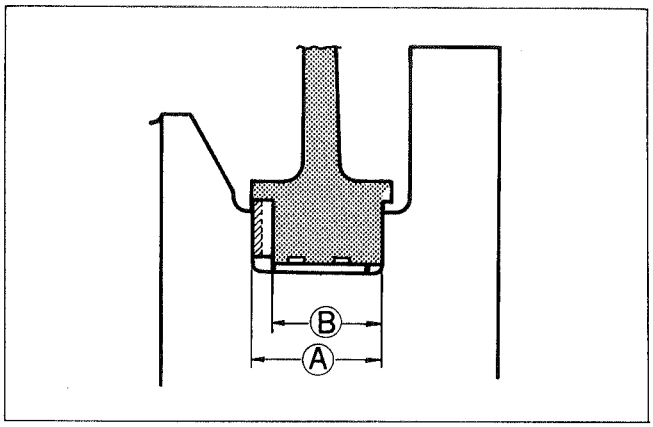
- If bearing thickness exceeds the limit, measure the crankshaft width Ⓐ and crankcase width Ⓑ. Calculate the difference between Ⓐ and Ⓑ, and select the proper size thrust bearing in the following table.



Ⓐ – Ⓑ (mm)	Part No.	Color Code	Thickness (mm)
2.970 – 2.995	12228 – 44104	Green	2.900 – 2.925
2.995 – 3.020	12228 – 44105	Black	2.925 – 2.950
3.020 – 3.045	12228 – 44106	Nil	2.950 – 2.975
3.045 – 3.070	12228 – 44107	Brown	2.975 – 3.000
3.070 – 3.100	12228 – 44108	Yellow	3.000 – 3.025

EXAMPLE:
Crankshaft width Ⓐ is:
20.53 mm
Crankcase width Ⓑ is:
− 17.46 mm
Clearance Ⓐ − Ⓑ is 3.07 mm
so, select the Brown color bearing.

Thrust clearance	0.045 – 0.095 mm

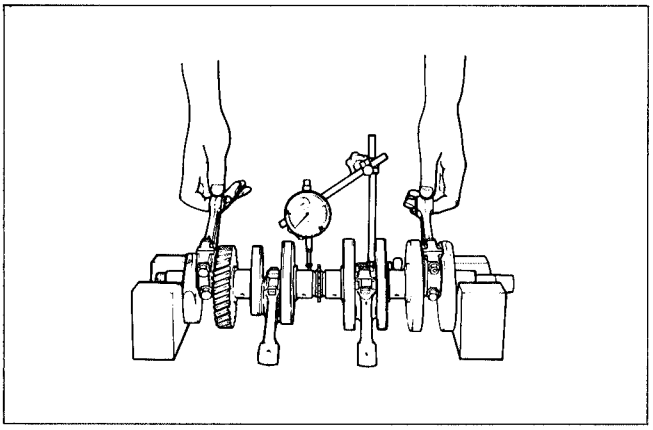


CRANKSHAFT RUNOUT

Support the crankshaft with "V" blocks as shown, with the two end journal 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.

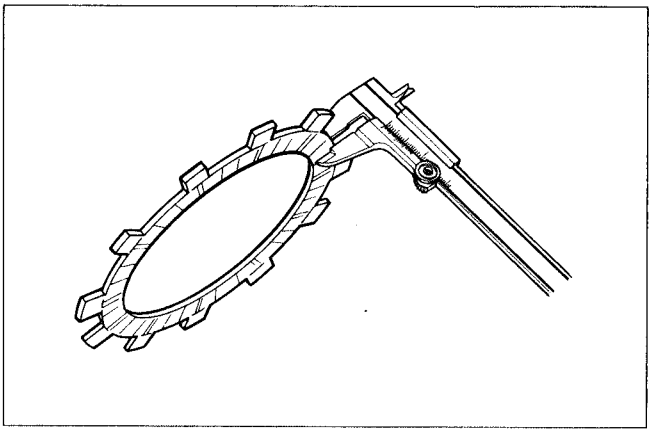
Crankshaft runout

Service Limit	0.05 mm



CLUTCH DRIVE PLATES AND DRIVEN PLATES

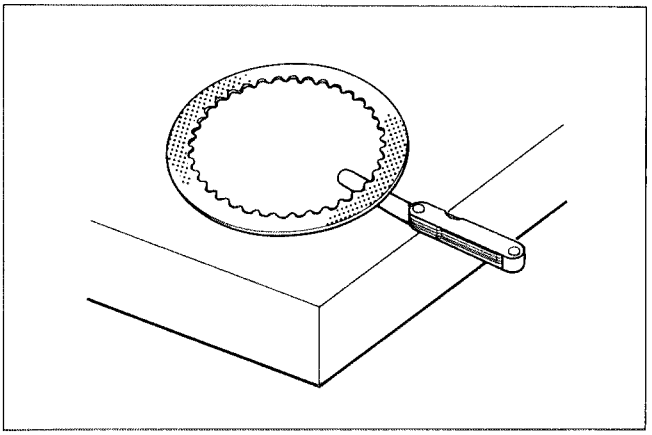
Clutch plates in service remain in oily condition as if they were lubricated with oil. Because of this condition, both drive and driven plates are subject to little wearing action and therefore last much longer. Their life depends largely on the quality of oil used in the clutch and also on the way the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



Checking thickness

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

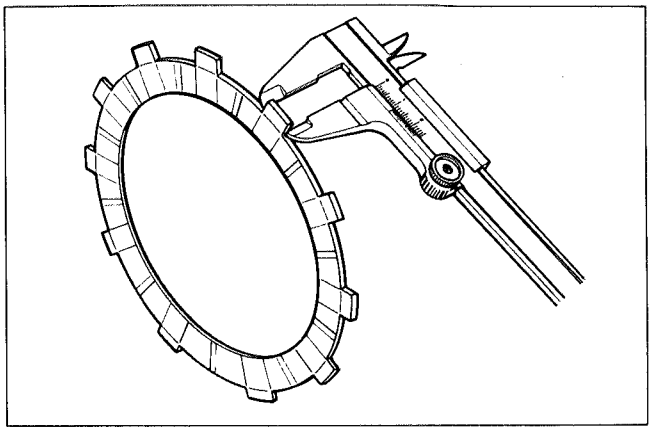
09900-20102	Vernier calipers
09900-20803	Thickness gauge



Checking distortion

Unit: mm

Service Limit	Drive plate	Driven plate
Thickness	2.35	–
Distortion	–	0.1
Claw width	15.0	–



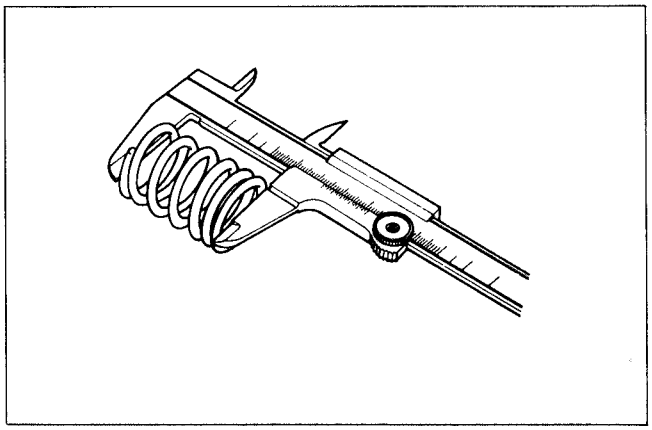
Checking claw width

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

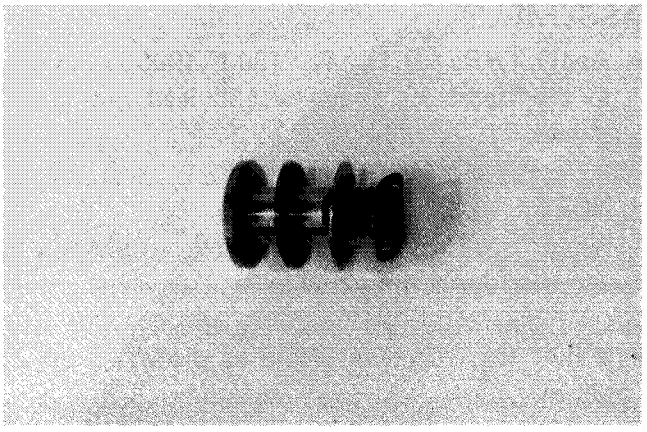
Service Limit	36.5 mm



CLUTCH BEARINGS

Inspect clutch release and rack bearings for any abnormality, particularly cracks, upon removal from the clutch, to decide whether it can be reused or should be replaced.

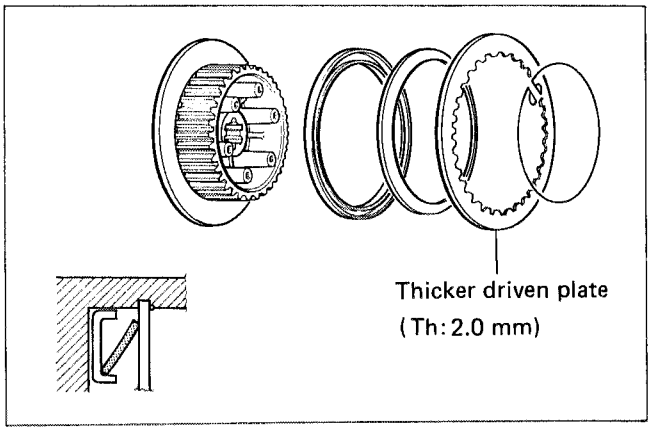
Smooth engagement and disengagement of the clutch depends much on the condition of these bearings.



NOTE:
Wave washer is located between the pressure plate and thrust washer.

SLEEVE HUB WAVE WASHER

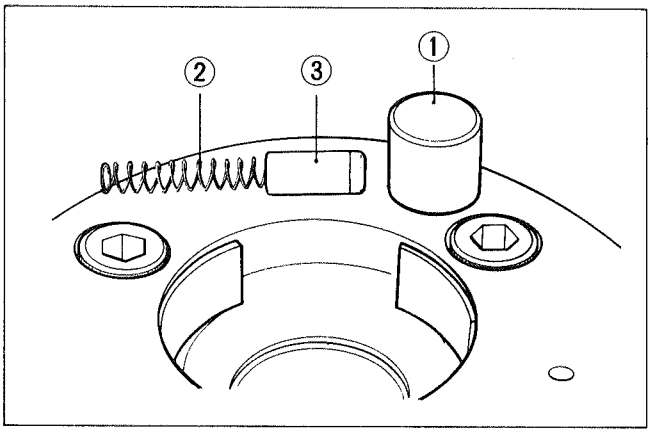
- Install the spring seat, spring, and driven plate in the clutch sleeve bub. Check that these three parts are positioned correctly as illustrated.
  While holding the driven plate with pliers, install the piano wire clip.



NOTE:
Always use a new piano wire clip.

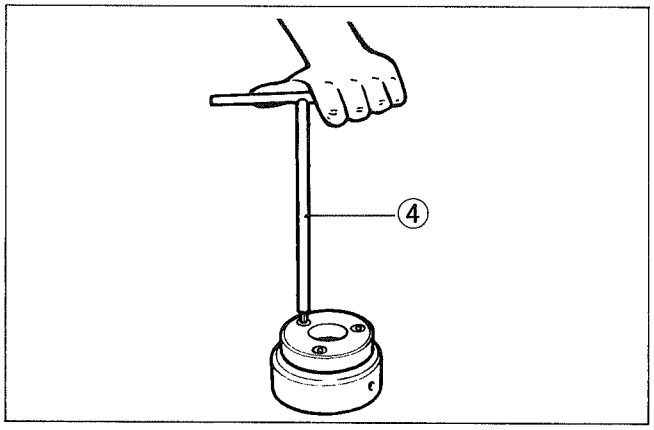
STARTER CLUTCH REMOVAL

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



- While holding the rotor with a special tool taking care not to damage it and separate starter clutch from the rotor using the T type hexagon wrench ④ .

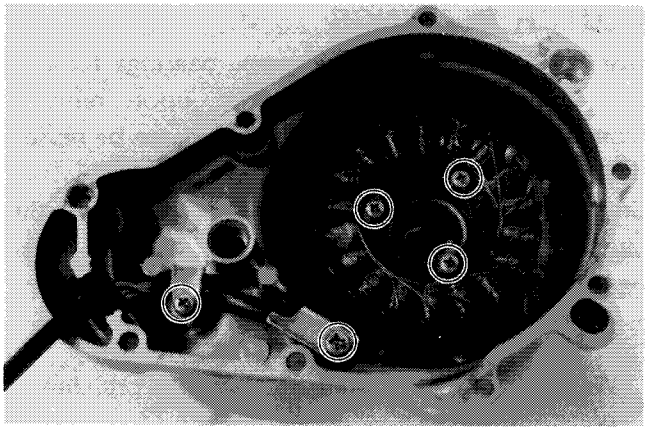
09914-25811	"T" type hexagon wrench (6 mm)
09930-44510	Rotor holder



ASSEMBLY

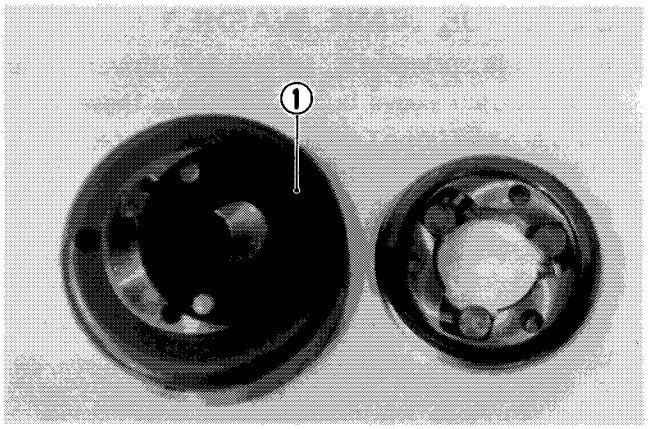
- Apply THREAD LOCK "1342" (99000-32050) to the stator set screws and its lead wire guide screws.

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.

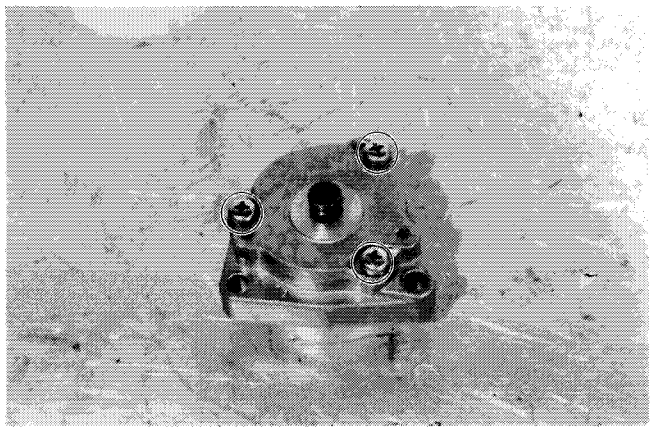


- Apply THREAD LOCK SUPER "1303B" to allen bolts and tighten with specified torque.

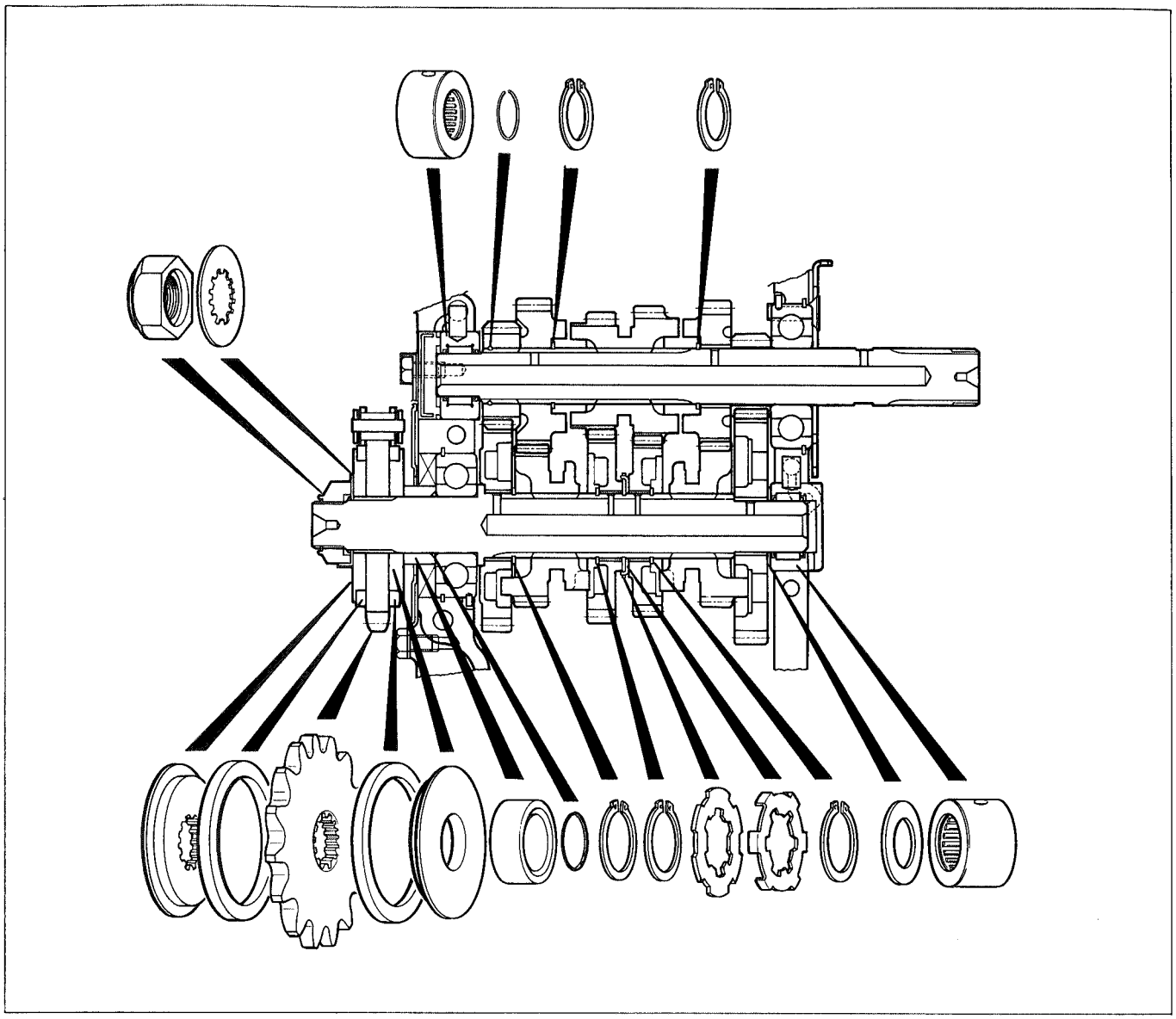
99000-32030	Thread lock super "1303B"
09914-25811	T-type hexagon wrench (6 mm)
Tightening torque	15 - 20 N·m (1.5 – 2.0 kg-m)

OIL PUMP

WARNING:
Oil pump case securing screws are applied with SUZUKI THREAD LOCK SUPER "1303B". If attempt to overhaul the oil pump assembly, screw may be damaged. As a replacement, only the oil pump unit is available.



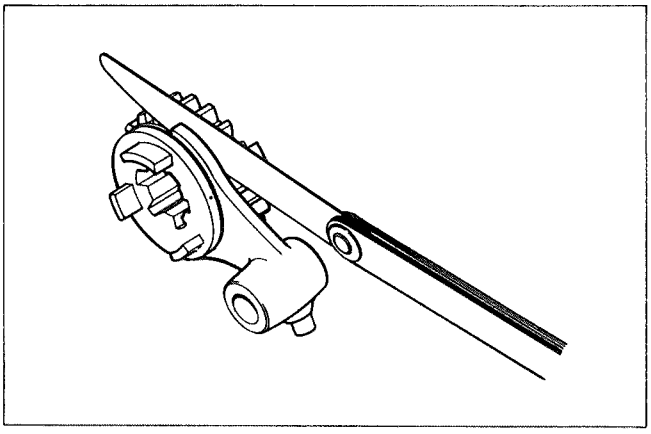
TRANSMISSION GEARS AND RELATED PARTS



GEAR-SHIFTING FORK CLEARANCE

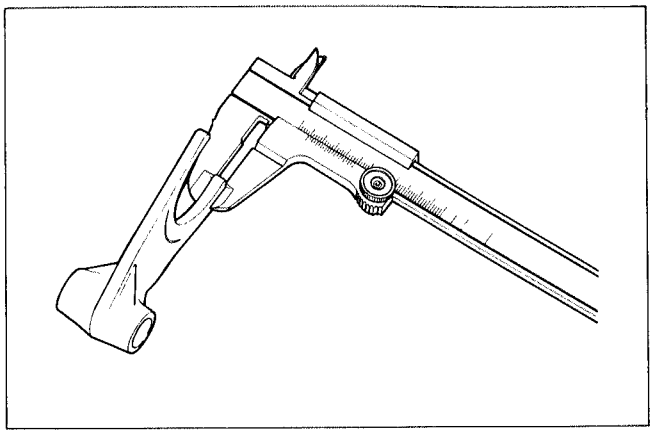
Using a thickness guage, check the shifting fork clearance in the groove of its gear.

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
No. 2	for 6th driven gear	
No. 3	for 3rd/4th drive gears	

Shift fork groove width

Standard	5.5 – 5.6 mm

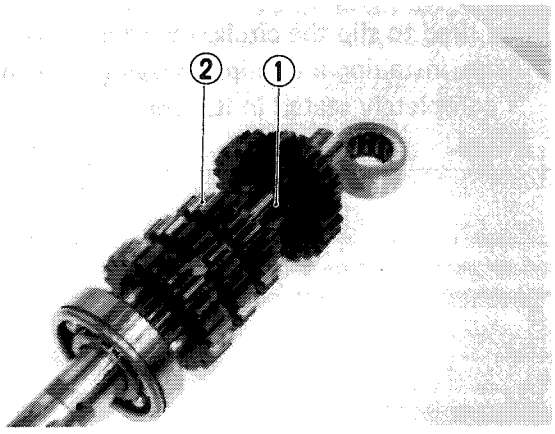
Shift fork thickness

Standard	5.3 – 5.4 mm

COUNTERSHAFT DISASSEMBLY

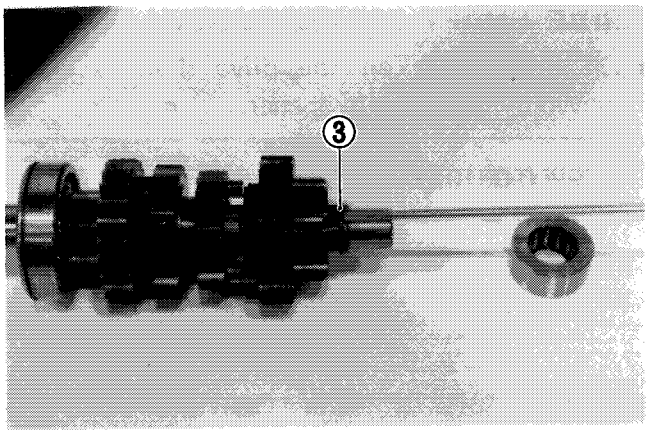
- Remove the 6th drive gear circlip ① from the groove and slide circlip toward the 3rd/4th drive gears ②.

09900-06104	Circlip remover

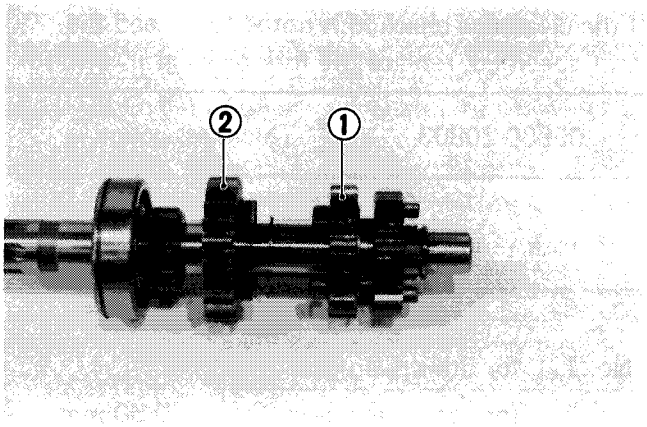


- Slide the 6th and 2nd drive gears toward the 3rd/4th drive gears and remove the 2nd drive gear circlip ③.

NOTE:
These circlips should be replaced with new ones.



- Remove the 3rd/4th drive gears ① and 5th drive gear ②.

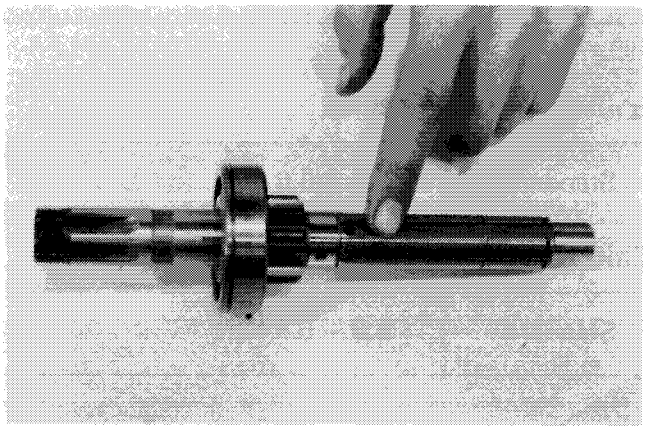


COUNTERSHAFT REASSEMBLY

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

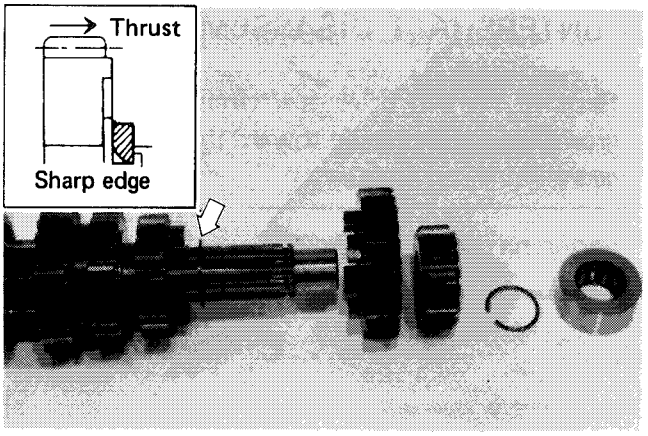
99000-25140	SUZUKI Moly Paste

- 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.

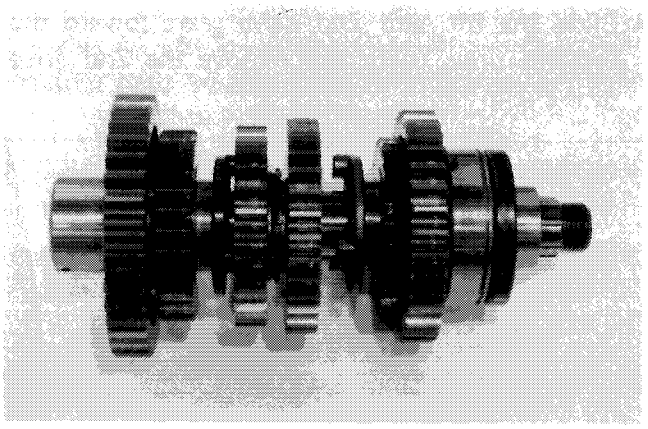
CAUTION:
Never reuse a circlip after a circlip has been removed from a shaft, it should be discarded and a new circlip must be installed.
When installing a new circlip, care must be taken not to expand the end gap larger than required to slip the circlip over the shaft.
After installing a circlip, always insure that it is completely seated in its groove and securely fitted.



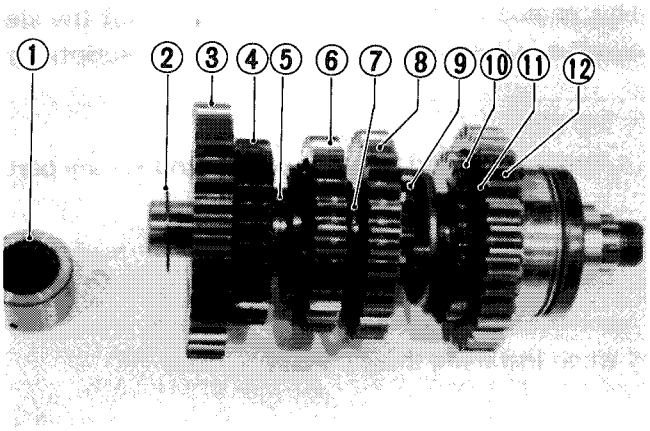
DRIVE SHAFT DISASSEMBLY

Each driven gear on the drive shaft is easily removed by using circlip opener.

09900-06107	Circlip opener



The order of disassembling is as follows;

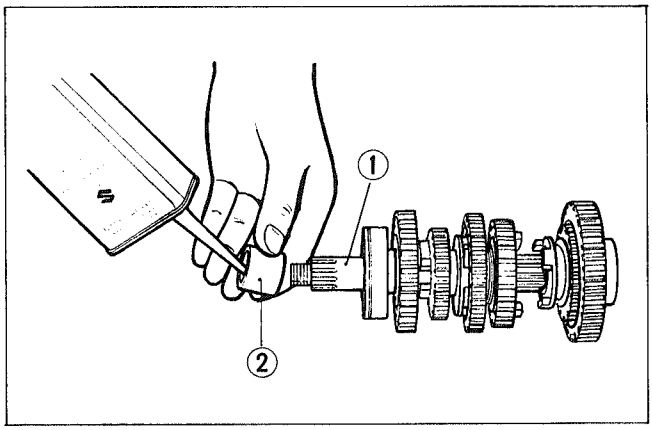


① Right end bearing
② Washer
③ 1st driven gear
④ 5th driven gear
⑤ Circlip
⑥ 4th driven gear
⑦ Pair of lock washers
⑧ 3rd driven gear
⑨ Circlip
⑩ 6th driven gear
⑪ Circlip
⑫ 2nd driven gear

DRIVE SHAFT REASSEMBLY

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

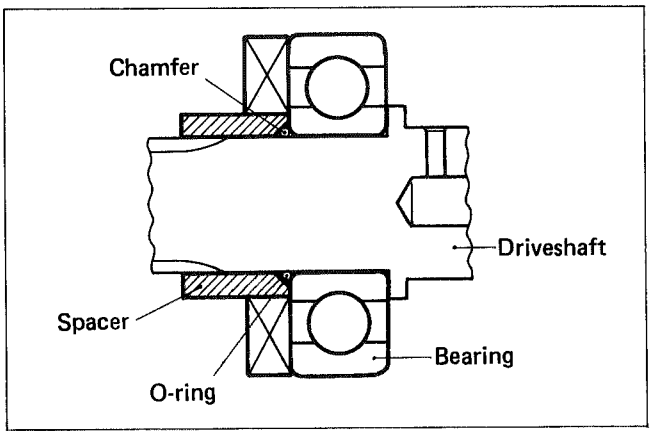
99000-32040	Thread lock cement



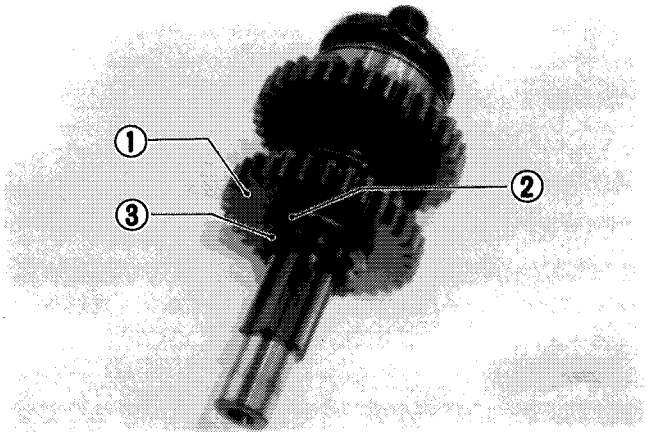
- When installing the engine sprocket spacer, chamfered side should face inward (O-ring side).

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

99000-25010	SUZUKI Super grease "A"



- After mounting the 3rd driven gear ①, install the washer ② in the groove properly, then engage the washer ③ to the washer ②.



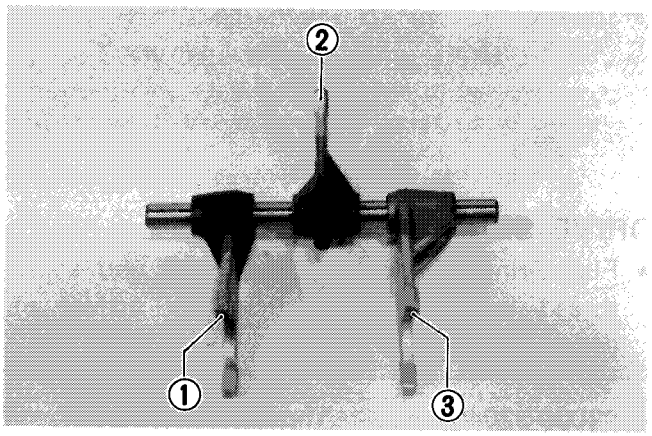
ENGINE REASSEMBLY

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

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

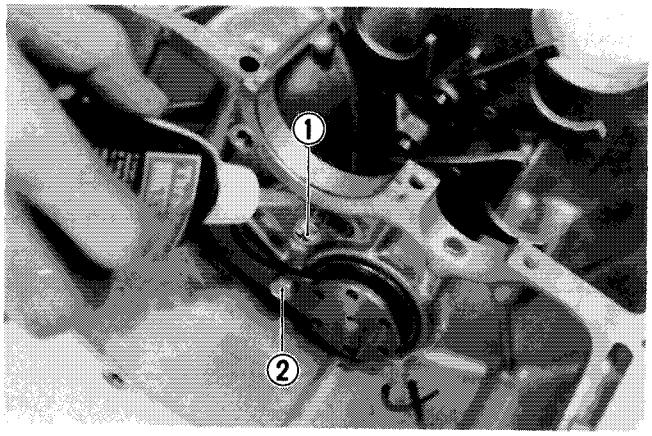
- Refer to the following figure in regard to the correct positions and orientations of the forks when installing these parts.

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

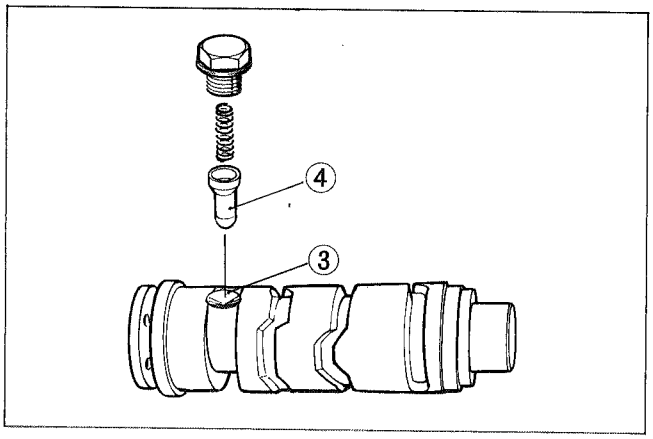


- Before driving in fork shaft stopper screw ① and cam guide bolt ②, apply THREAD LOCK "1342" to their threads.

99000-32050	Thread lock "1342"

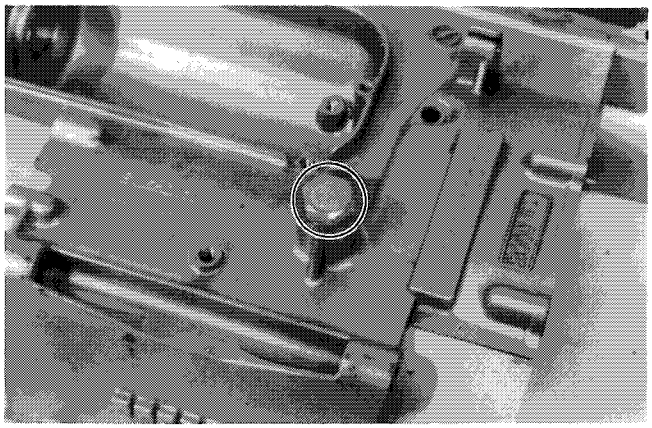


- Install the gearshifting cam with the dent for the neutral stopper directed downward, and meet the neutral stopper ③ with this dent ④.



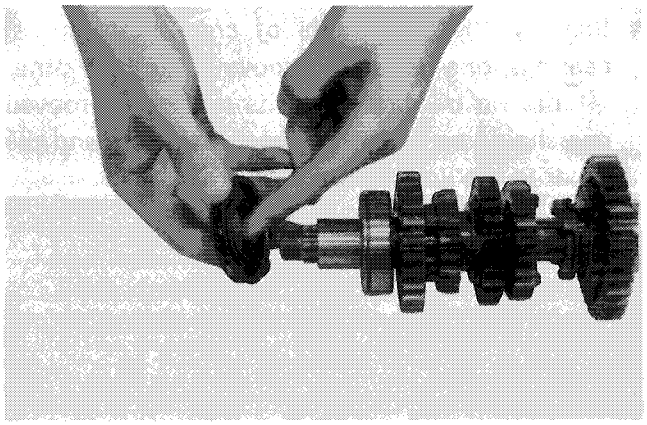
- Tighten the neutral stopper housing as the following torque value.

Tightening torque	18 – 28 N·m (1.8 – 2.8 kg-m)

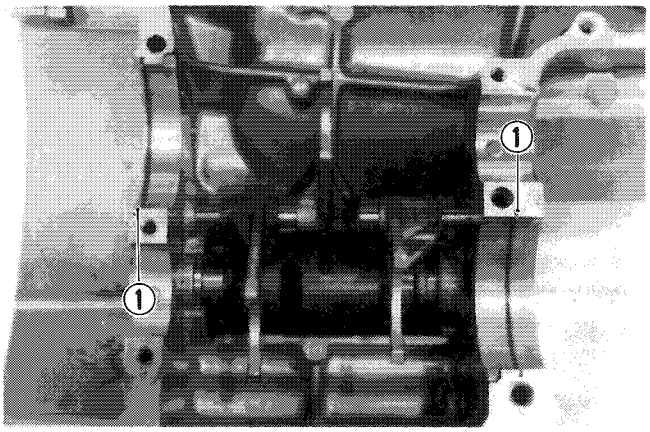


- Apply grease to the drive shaft oil seal.

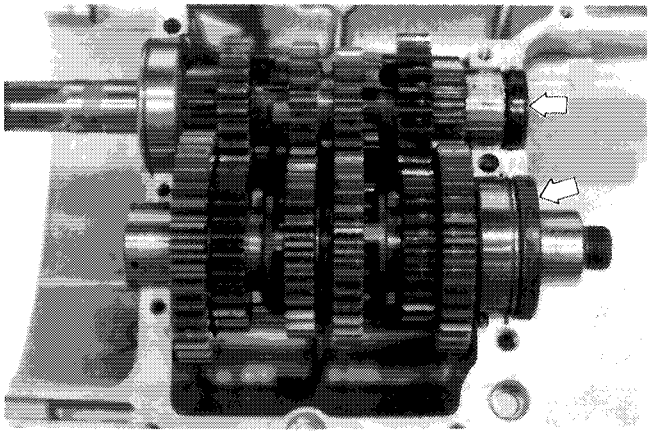
99000-25010	SUZUKI Super grease A



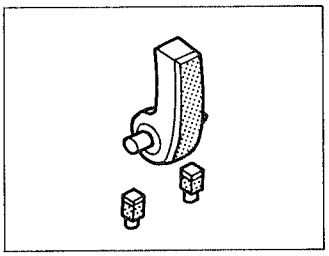
- Place two "C" rings ① and a knock pin ② and install drive and counter shafts.

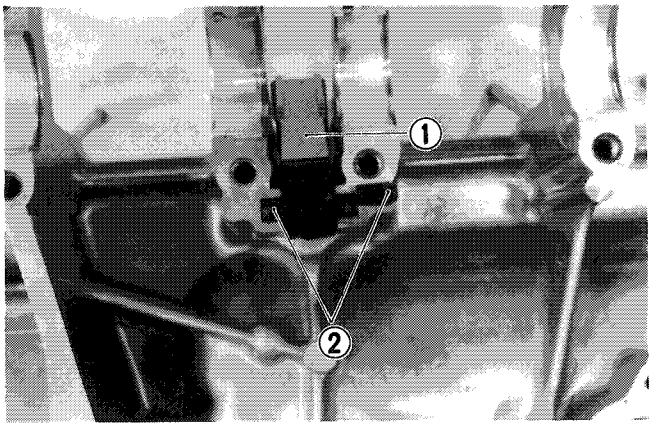


- Install the countershaft and drive shaft oil seals, positioning as shown.



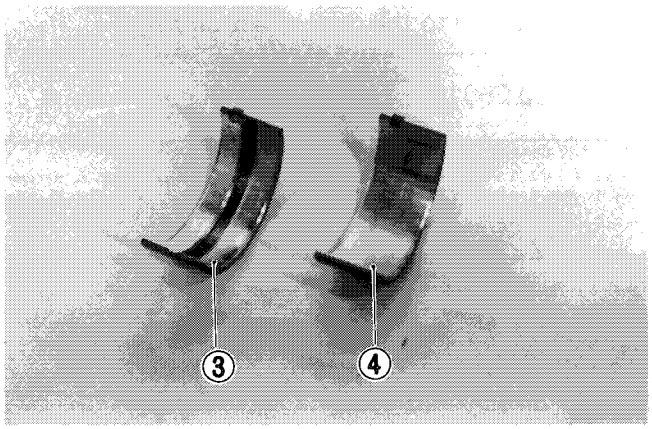
- Place cam chain guide ① properly, and fix two dampers ② so that the iron side faces to the chain guide pin (inside).





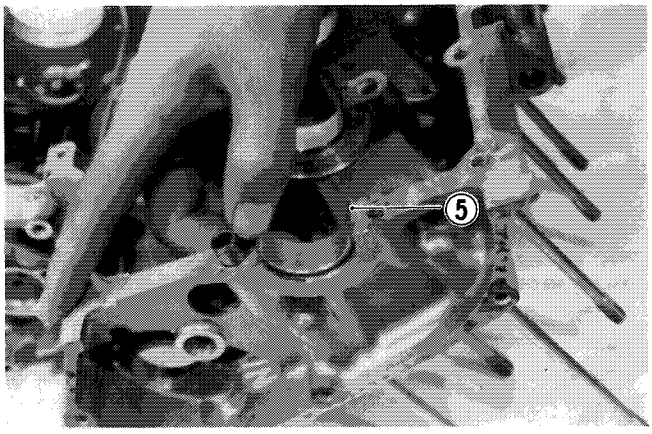
- Identify the two kinds of crankshaft journal bearings, one has an oil groove ③ and the other ④ has no oil groove on its surface. Grooved one should be fix to the lower crankcase and the other to the upper crankcase.

③ : for lower crankcase
④ : for upper crankcase



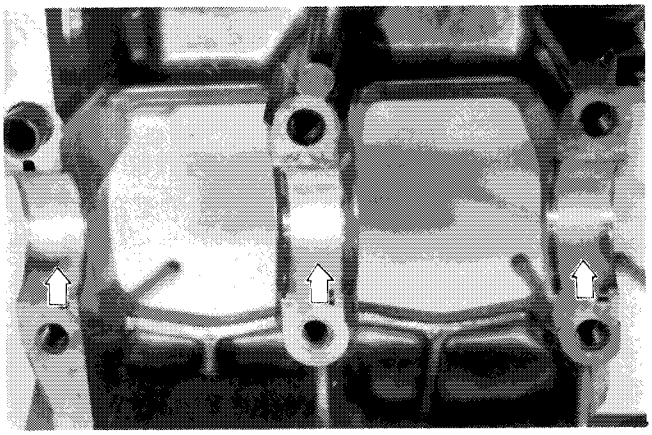
- When fitting the bearings to the crankcase, be sure to fix the stopper part ⑤ first and press the other end.

CAUTION:
Do not touch the bearing surfaces with your hands. Grasp by the edge of the bearing shell.

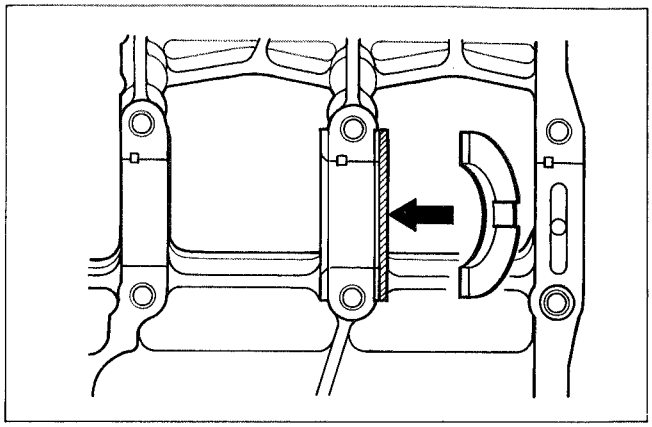


- Apply SUZUKI Moly Paste to each journal bearing lightly.

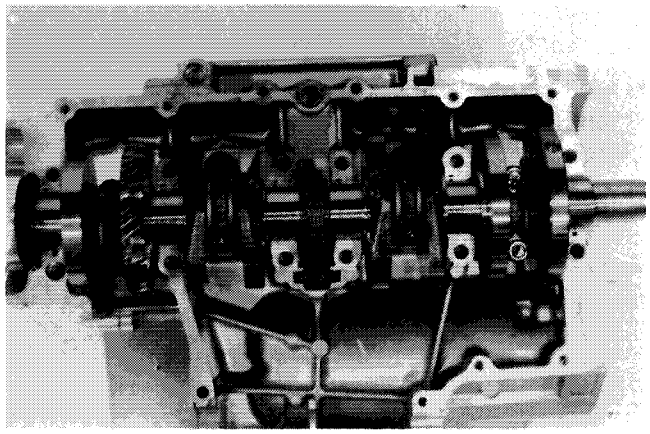
99000-25140	SUZUKI Moly Paste



- Thrust bearing for crankshaft go into place with its oil groove side facing the crank web.



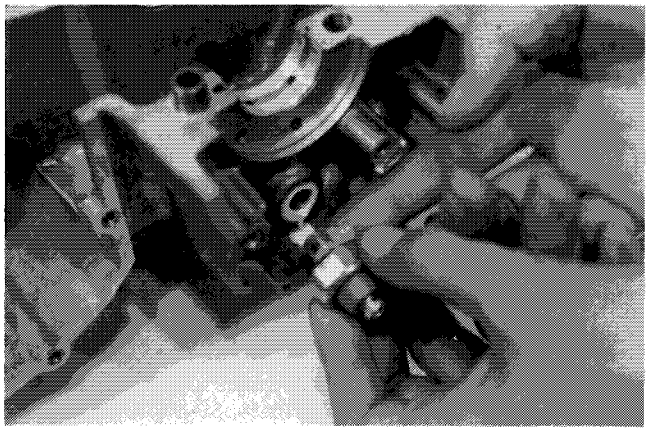
- Mount the crankshaft with cam drive chain to the upper crankcase.
- Apply SUZUKI super grease "A" to the lip of the crankshaft oil seal.



- When fitting the oil pressure switch, apply SUZUKI Bond No. 4 to its thread lightly to prevent oil leakage.

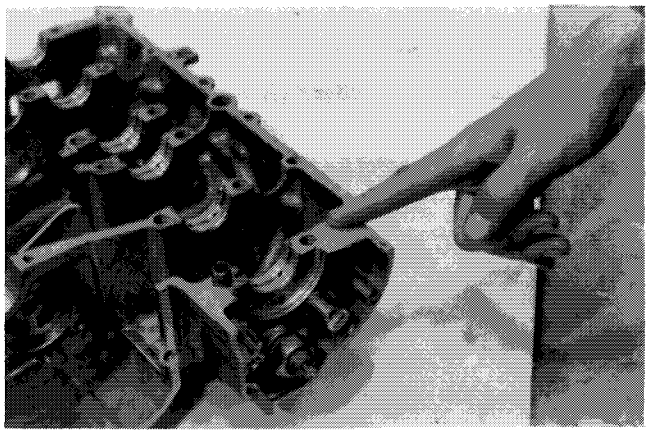
99000-31030	SUZUKI Bond No. 4

Tightening torque	13 – 17 N·m (1.3 – 1.7 kg-m)

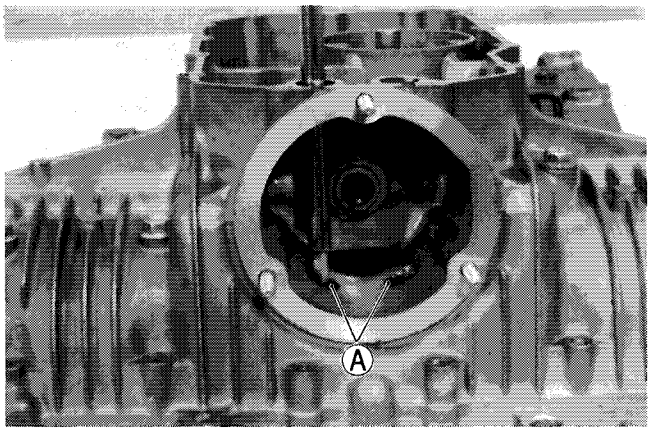


- Clean the mating surfaces of the crankcases before matching the upper and lower ones.
- Apply SUZUKI BOND No. 4 to the mating surface of the lower crankcase in the following procedure.

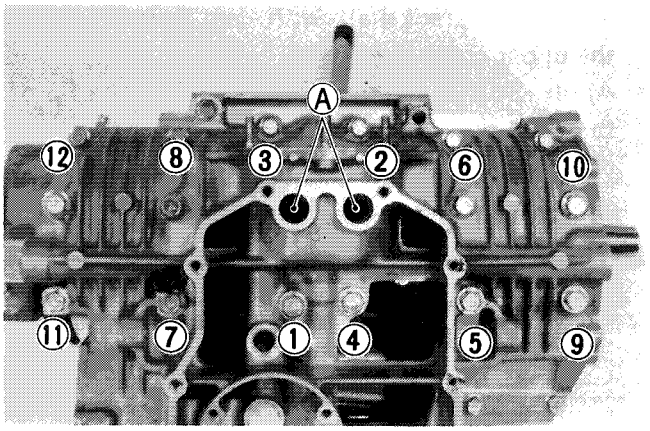
99000-31030	SUZUKI Bond No. 4



NOTE:
Use of SUZUKI BOND No. 4 is as follows:
* 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. 4 to the bearing surfaces.
* Apply to distorted surface as it forms a comparatively thick film.



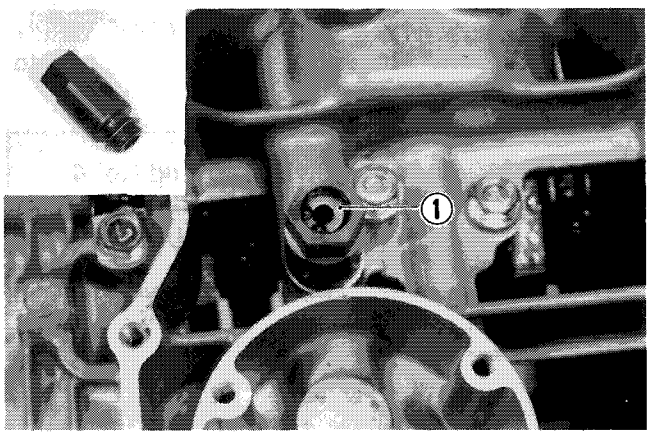
- Locate the two allen bolts at position Ⓐ and ten 8 mm bolts.



- 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.

09914-25811	6 mm T-type hexagon wrench

Tightening torque	Initial tightening		Final tightening	
	N·m	kg-m	N·m	kg-m
6 mm bolt	6	0.6	13	1.3
8 mm bolt	13	1.3	24	2.4

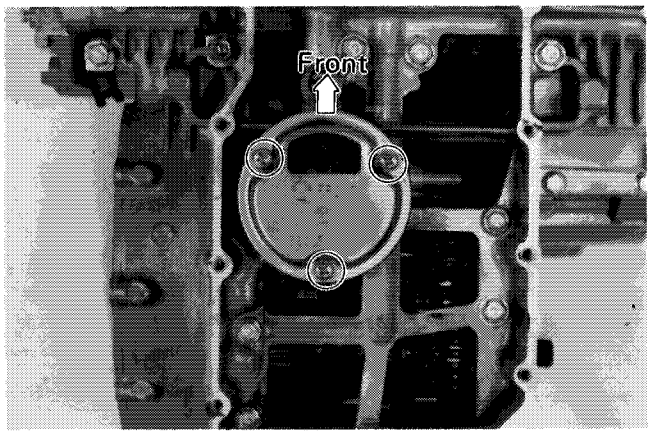


- Seat washer and tighten oil pressure regulator ① with specified torque.

Tightening torque	17 – 20 N·m (1.7 – 2.0 kg-m)

- Install the oil sump filter to face the oil inlet to the front.
- Apply thread lock "1342" to the three screws.

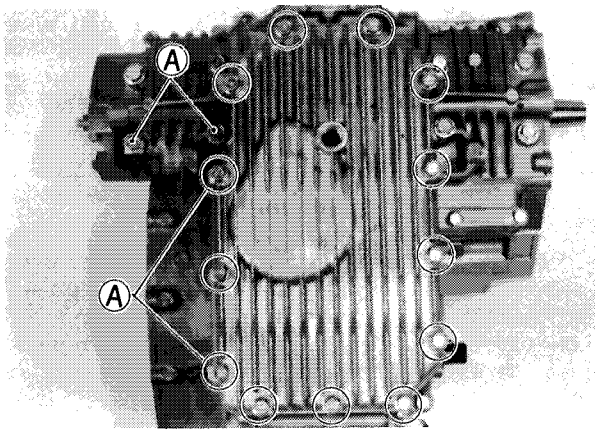
99000-32050	Thread Lock "1342"



- Locate a new gasket and oil pan, and tighten 6 mm bolts with specified torque.

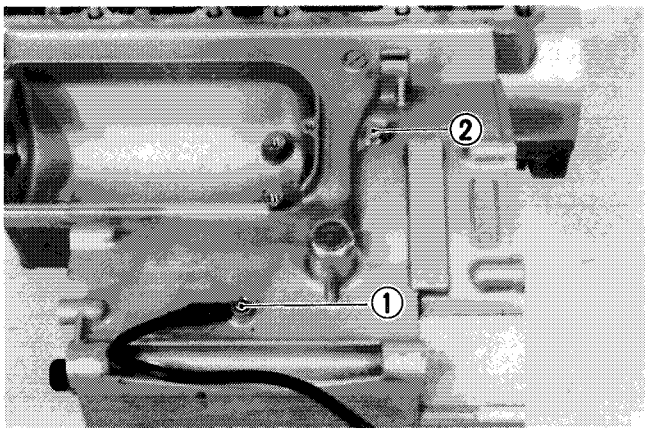
Tightening torque	10 N·m (1.0 kg-m)

NOTE:
Install the four clamps for signal generator lead as shown Ⓐ.



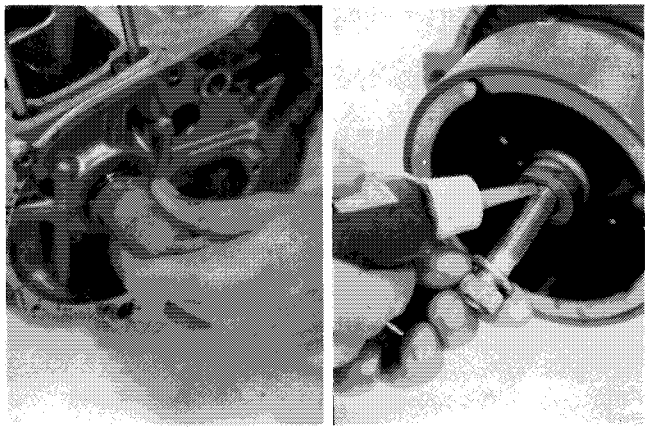
- Install the engine ground wire ①, and crankcase securing bolt ②.

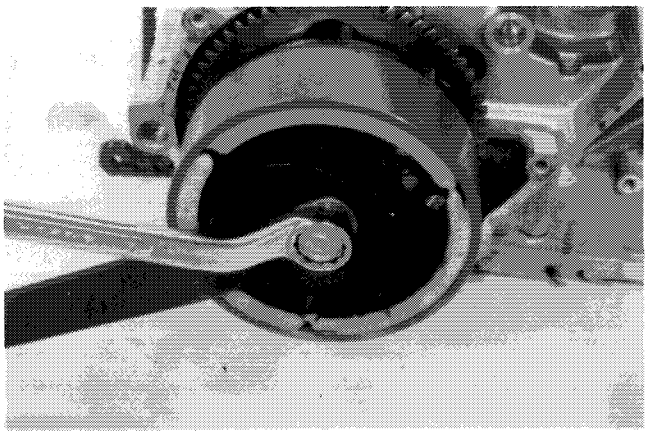
Tightening torque	13 N·m (1.3 kg-m)



- Degrease the tapered portion of the rotor and also the crankshaft. Use nonflammable cleaning solvent 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.

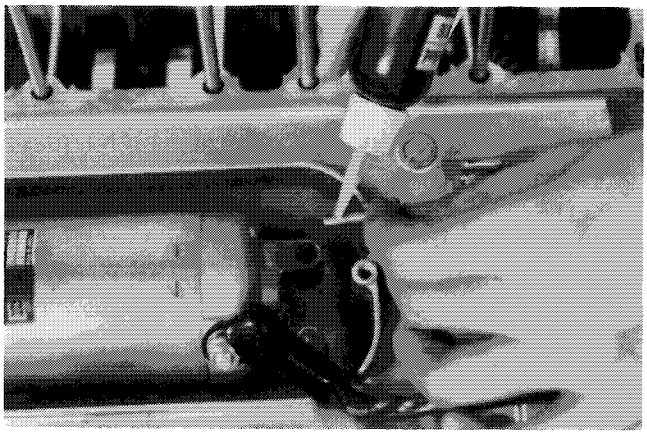
Tightening torque	110 – 130 N.m (11.0 – 13.0 kg-m)
09930-44510	Rotor holder
99000-32100	Thread Lock Super "1305"





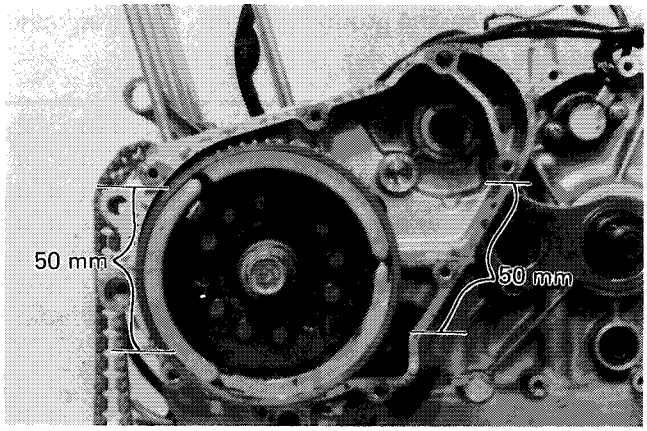
- Mount starter motor, and route the lead wire properly.

99000-32050	Thread Lock "1342"

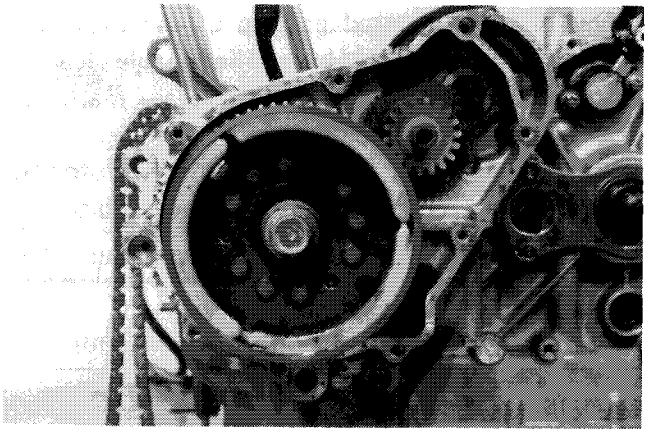


- Coat SUZUKI Bond No. 4 lightly to the portion around mating surface between upper and lower crankcases as shown.

99000-31030	SUZUKI Bond No. 4

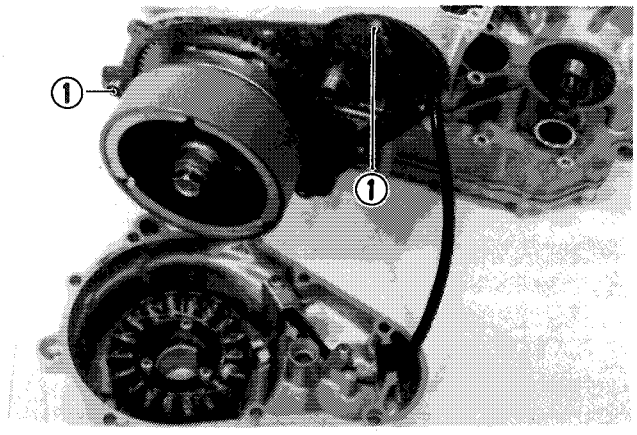


- Install the starter idle gear and its shaft.



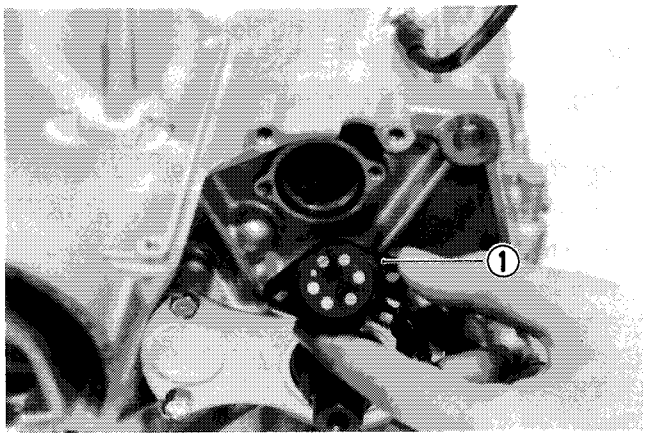
- Pass the generator stator lead wire through gasket and upper crankcase. Route its lead wire properly.

NOTE:
Always use new gasket, and install two positioning pins ① .



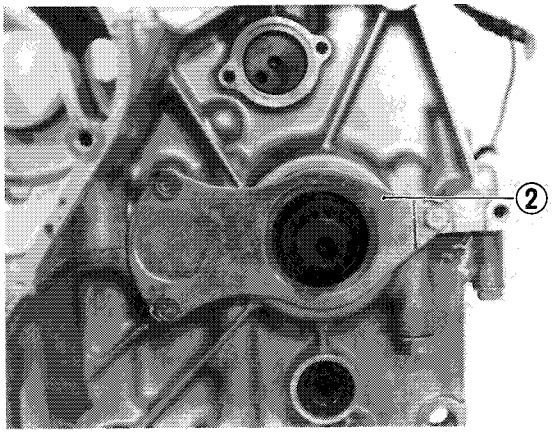
- Install the gear position indicator switch ①.

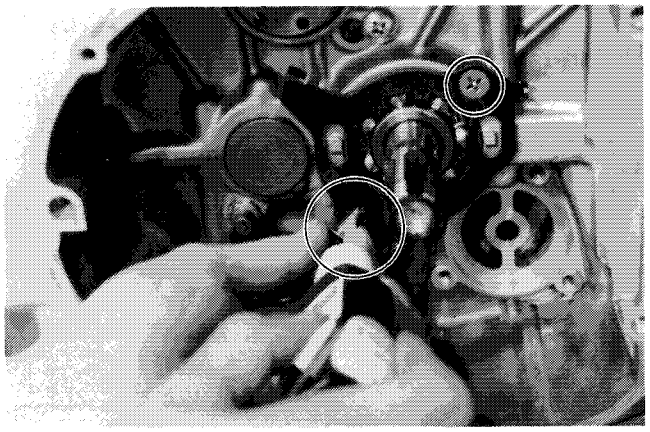
NOTE:
When installing gear position indicator switch, be sure to locate spring, switch contact, and O-ring.



- Install drive shaft oil seal holder ② and positivety bend the lock portion of the holder.
- Install the countershaft bearing retainer with two (16 mm length) screws.

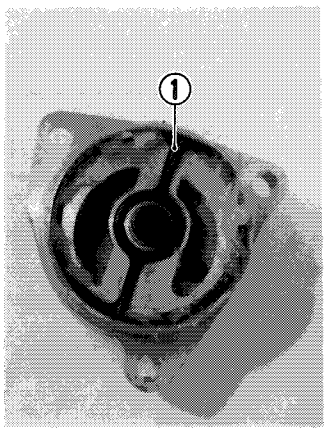
99000-32050	Thread Lock "1342"

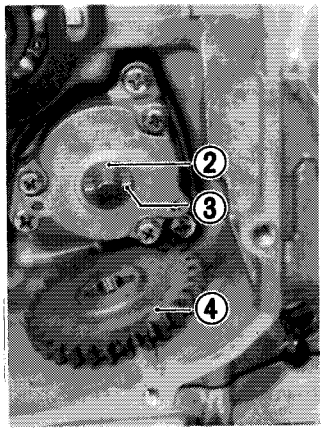




- Install oil pump assembly without fail to install O-ring ①.

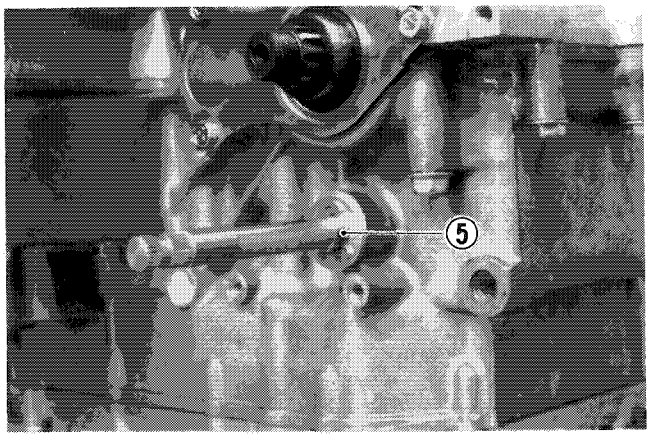
99000-32050	Thread Lock "1342"

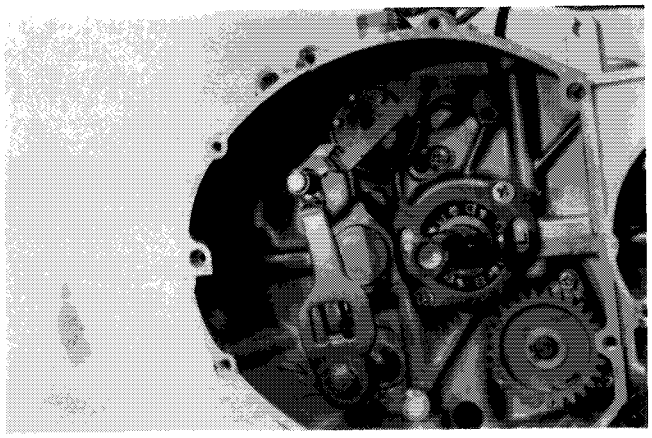




- Install the washer ②, drive pin ③ and driven gear ④ by using circlip opener.

- Install the gearshift shaft and fix washer and clip ⑤ to the gearshift shaft.

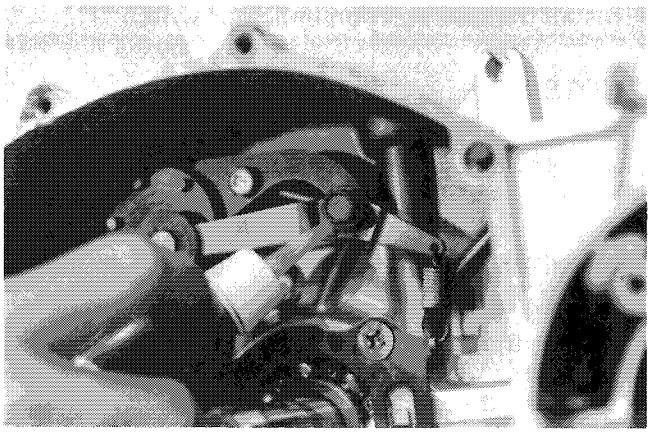




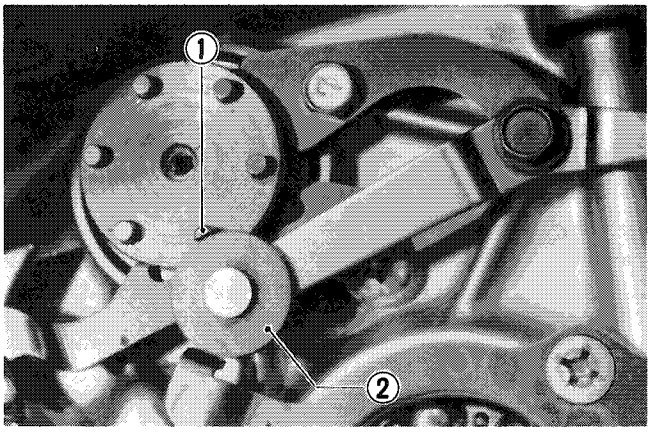
- Install the cam stopper with bolt.

99000-32050	Thread lock "1342"

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

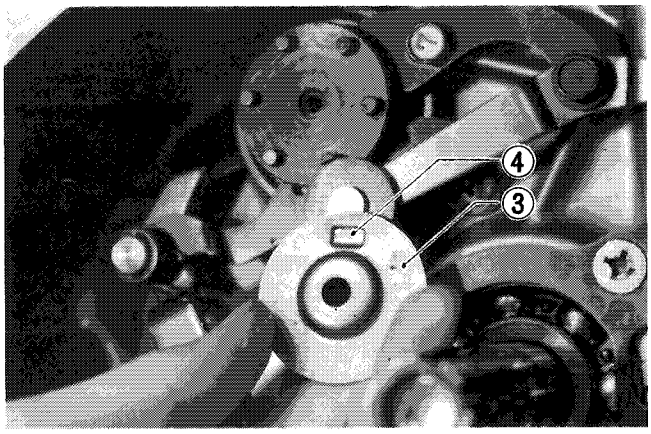


- Bring gear shifting cam to "NEUTRAL" position.
- Insert the neutral cam pin (half end circle pin) ① into the closest pin hole to cam stopper ②.
- Install pin retainer ③ in such a way that the recess ④ of pin retainer will admit the semi-circle end of pin ①.

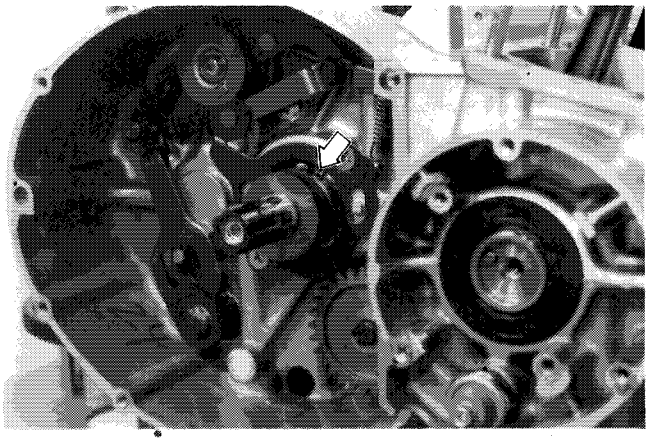


- Tighten pin retainer securing screw with applying thread lock super "1333B".

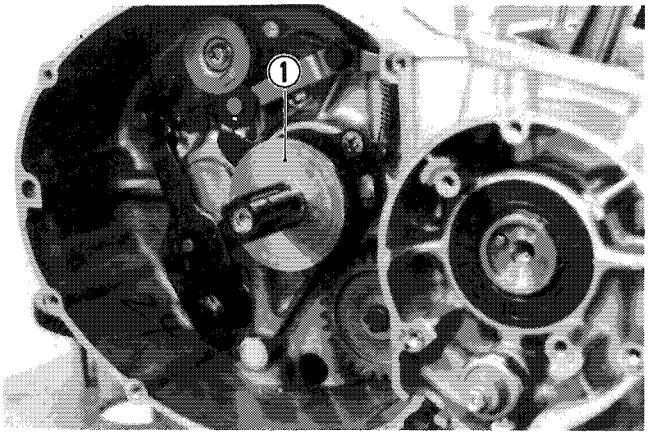
99000-32020	Thread lock supper "1333B"



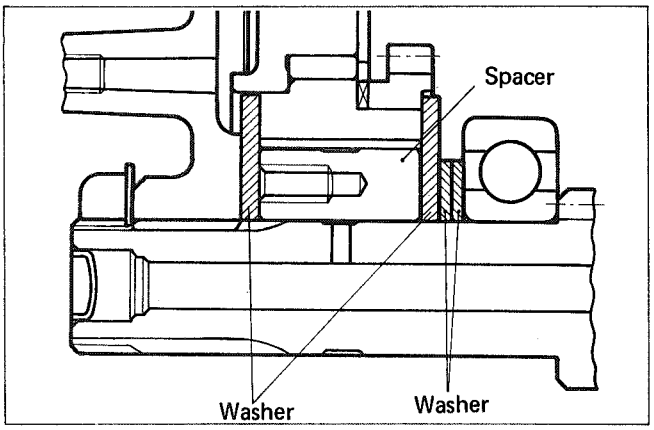
- Install the two washers on the countershaft.

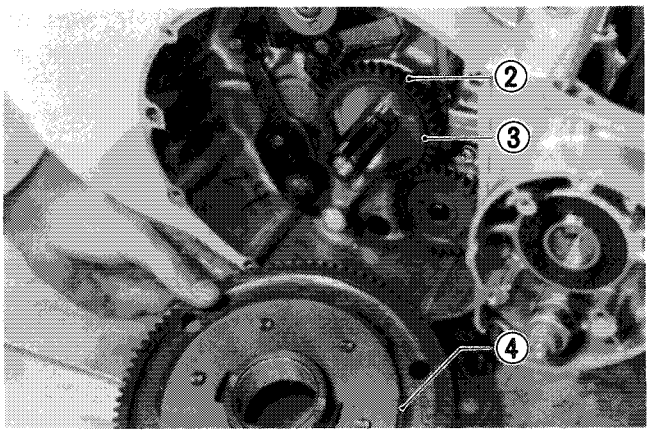


- Install the large washer ① and oil pump drive gear.

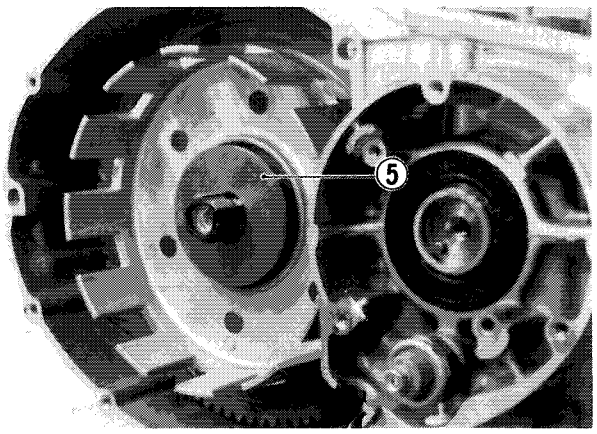


- Fix the oil pump drive gear ② to face the protrusions ③ outside.
- Assemble the primary driven gear so that the protrusions align with the notch ④ behind the primary driven gear.





- Install the spacer so that the screw hole faces outside.
- Install the washer ⑤.

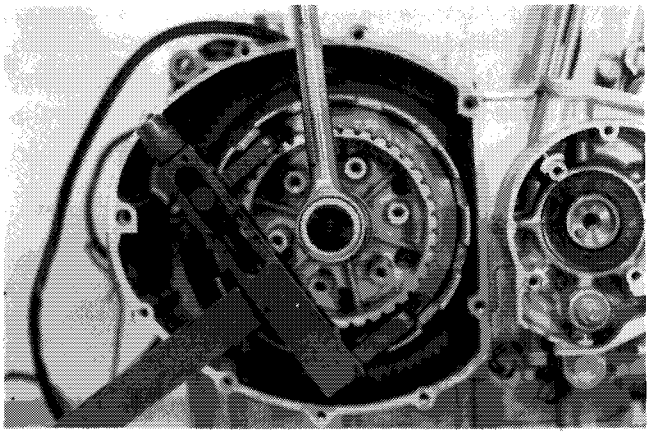


- Check to be sure that the piano wire, wave washer and driven plate are properly installed.

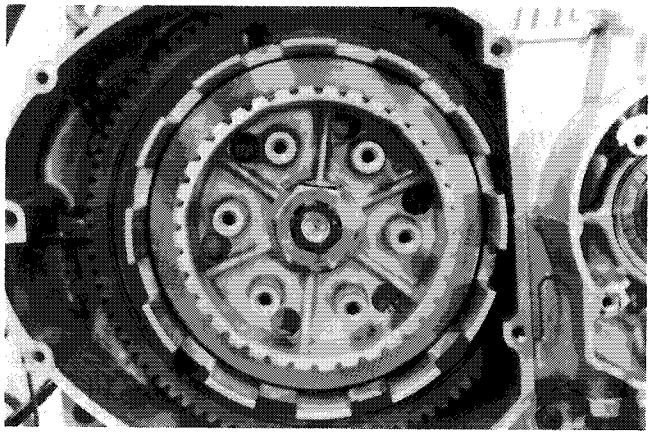
- After tightening the clutch sleeve hub nut, be sure to lock the nut by firmly bending the tongue of the washer. Tightening torque for the nut is specified.

Clutch sleeve hub nut tightening torque	50 – 70 N·m (5.0 – 7.0 kg-m)

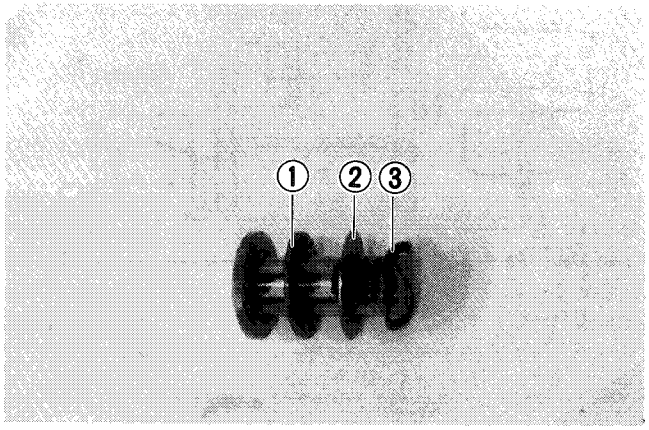
09920-53710	Clutch sleeve holder



- Insert clutch driven plate and drive plate one by one into sleeve hub in the prescribed order, cork plate first.



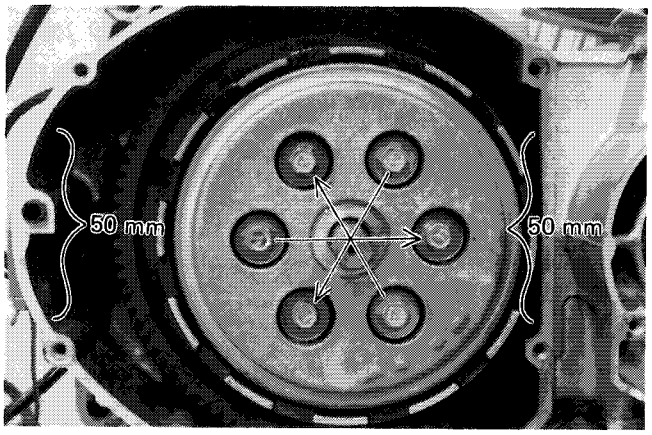
- Insert clutch release rack bearing ①, washer ② , and wave washer ③ into pressure plate in the order as shown in the figure.
- Fit the pressure plate into the sleeve hub.



- Tighten clutch spring bolts in the order shown in the photo.

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

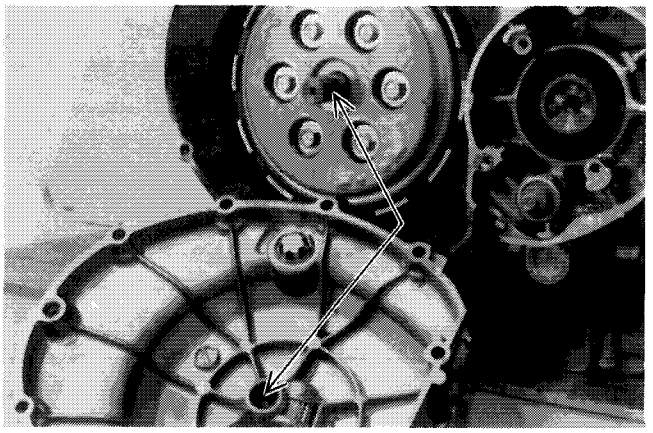
Clutch spring bolt tightening torque	11 – 13 N·m (1.1 – 1.3 kg-m)



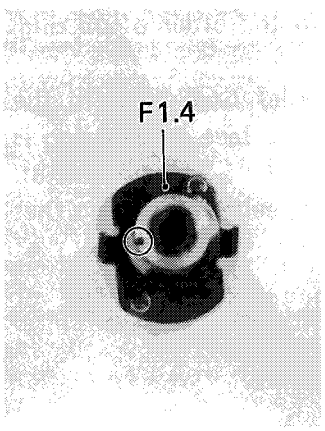
- Coat SUZUKI Bond No. 4 lightly to the portion around mating surface between crankcases as shown.

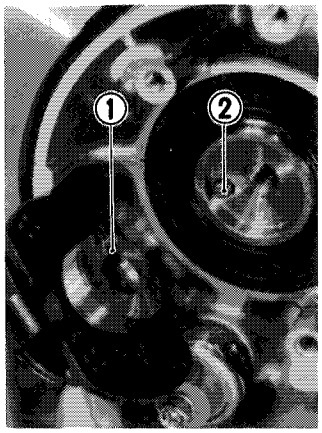
99000-31030	SUZUKI Bond No. 4

- Replace clutch cover gasket with new one to prevent oil leakage.
- Engage the teeth of clutch release rack with those of pinion gear at the clutch cover side, and replace clutch cover. Make sure that the rack and pinion gear engage positively. To install cover, tap lightly with plastic hammer, and tighten screws.



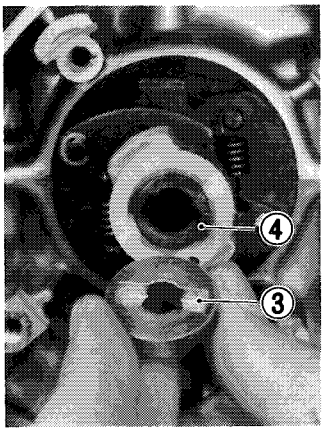
- Install the signal generator rotor to the advance governor properly.
- Make sure to fit the slot ① on the back surface of the automatic advance governor over the locating pin ② at the end of crankshaft.

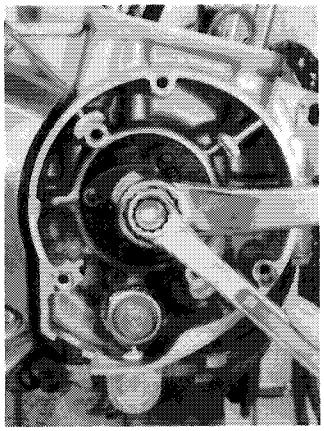




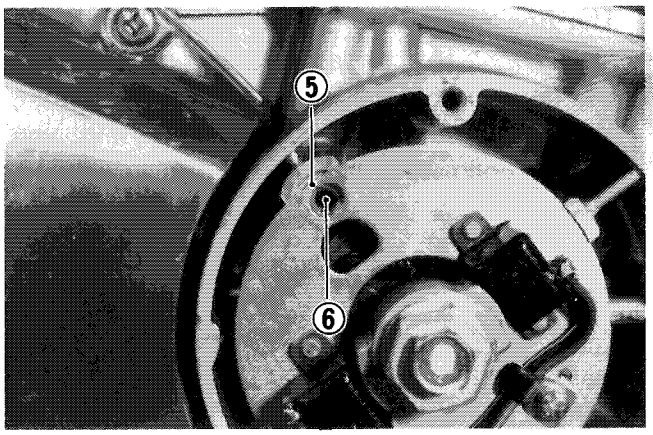
- Fit the groove ③ of the crankshaft turning nut on protrusion ④ of the advance governor body.
- Hold the crankshaft turning nut and tighten the governor center bolt with specified torque.

Tightening torque	13 – 23 N·m (1.3 – 2.3 kg-m)

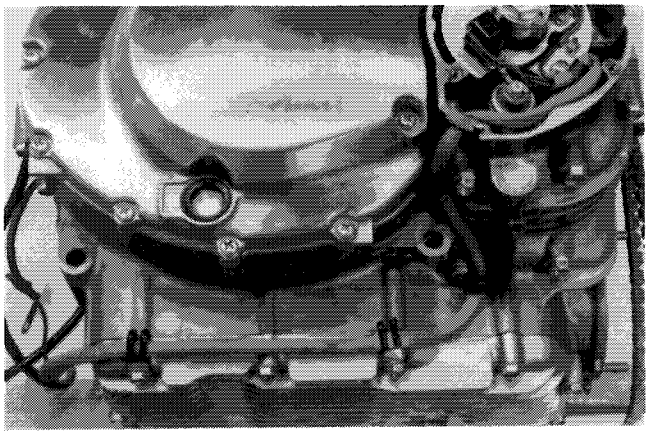




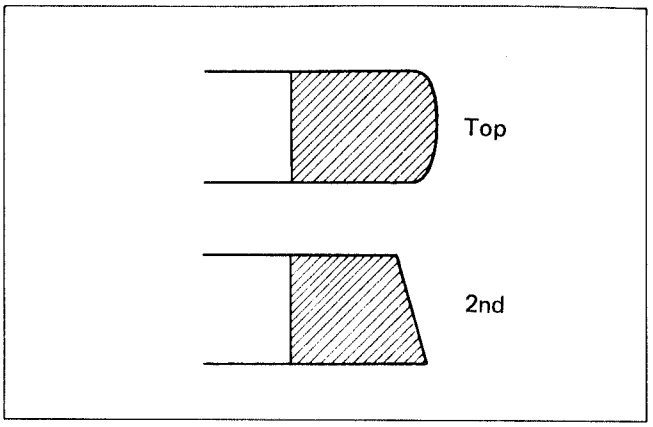
- Install the signal generator so that the index line ⑤ aligns with the center ⑥ of the fitting screw.
- Install the lead wire to the oil pressure switch.



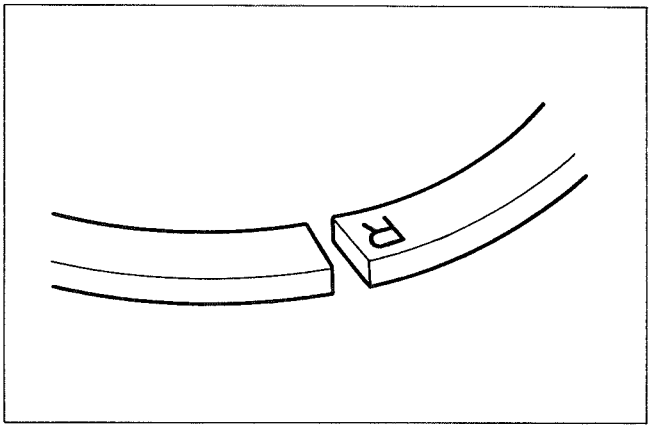
- Route the signal generator lead wire as shown.



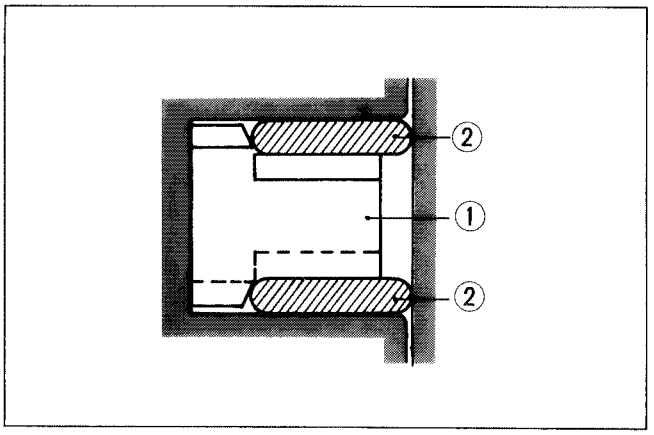
- Mount the piston ring in the order of oil ring, 2nd ring, and top ring.
- Top ring and 2nd (middle) ring differ in the shape of ring face, and the face of top ring is chrome-plated whereas that of 2nd ring is not. The color of 2nd ring appears darker than that of the top one.



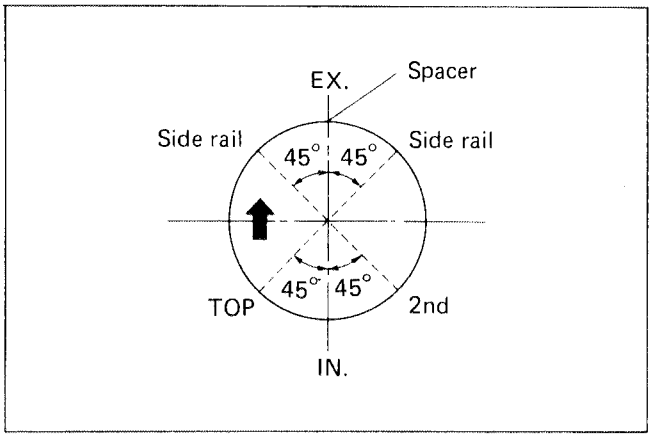
- Top and 2nd (middle) rings have letter "R" marked on the side. Be sure to bring the maked side to top when fitting them to the piston.



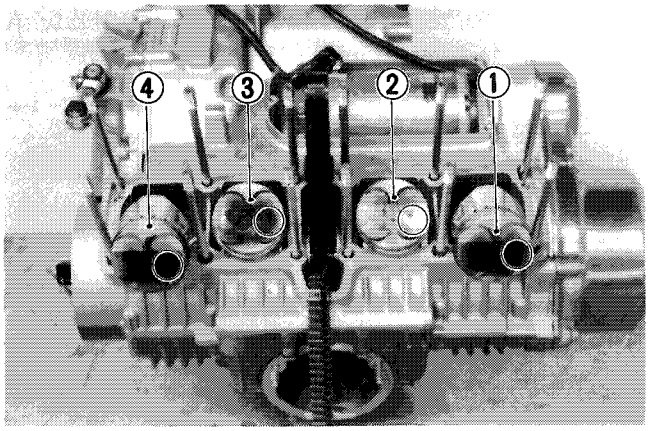
- The first member to go into the ring groove is spacer ①. After placing spacer, fit the two side rails ②. Side designations, top and bottom, are not applied to the spacer and side rails: you can position each either way.



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

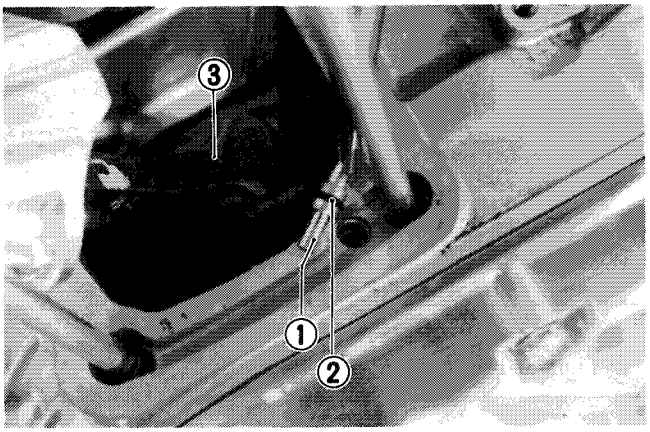


- The piston is in correct position when its arrow (on the crown) points forward.
- Be sure to install the pistons in the cylinder from which they were taken out in disassembly, refer to the letter mark, "1" through "4", scribed on the piston.



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

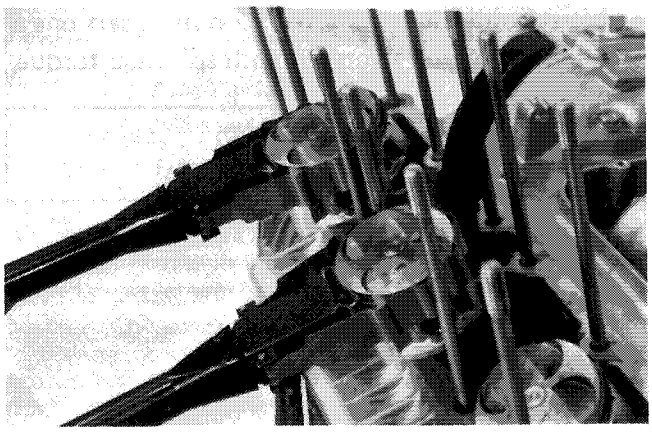
- Check to be sure two oil jet orifices ① are not clogged.
- Install the new O-ring ②.



- Make sure that the conrod oil hole ③ is located rearside.

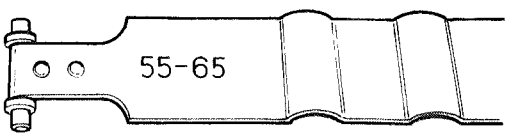
- Place the new cylinder gasket on the crankcase.

- Install piston ring holders in the indicated manner. Some light resistance must be overcome to lower the cylinder block.
- With No. 2 and No. 3 pistons in place, install No. 1 and No. 4 pistons, and insert them into the cylinder.



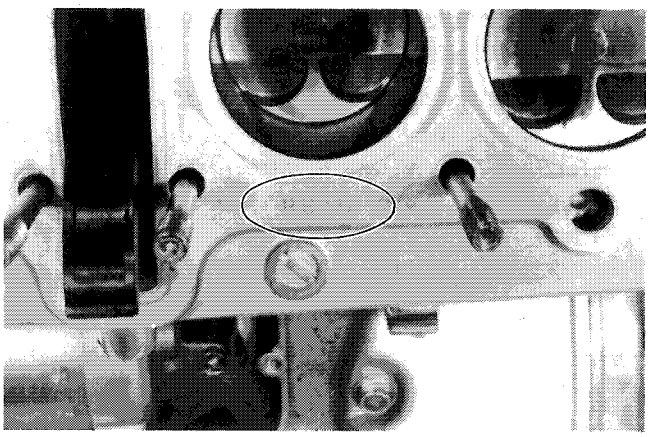
09916-74520	Holder body
09916-74530	Band (bore 55 – 65 mm)

NOTE:
* Do not overtighten the special tool bands or the cylinders will resist to admit the pistons.
* Each band has a number punchmarked on it. The number refers to a particular range of piston sizes.



- Be sure to replace cylinder head gasket with new one to prevent gas leakage.

NOTE: Be sure to identify the "HEAD" surface of the cylinder head gasket as shown.

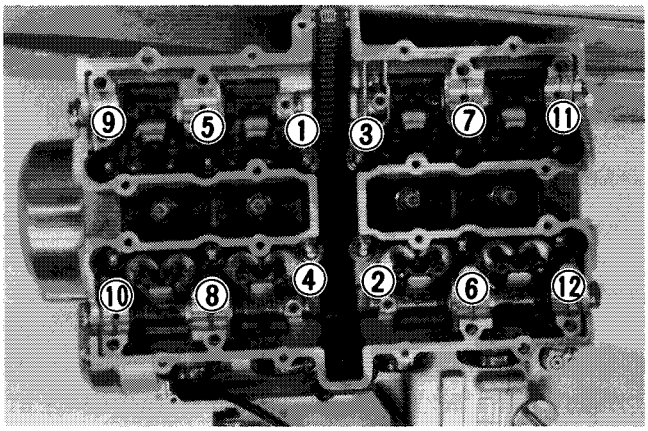


- Fix two knock pins properly.

- Tighten the twelve 8-mm nuts to specification with a torque wrench sequentially in the ascending order of numbers.

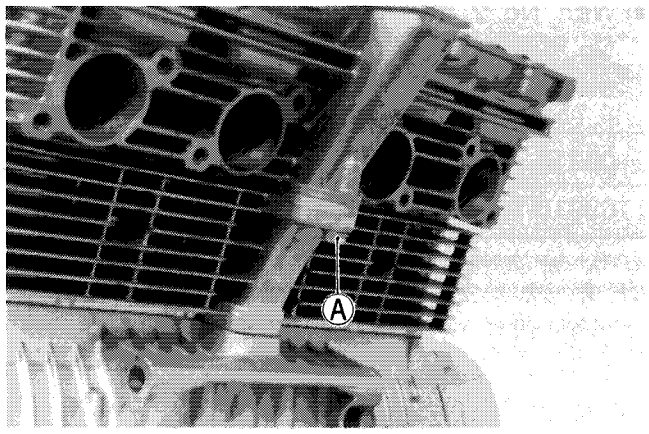
09911-74520	Long socket 12-mm
09914-24510	T handle

Cylinder head nut Tightening torque	20 N·m (2.0 kg-m)

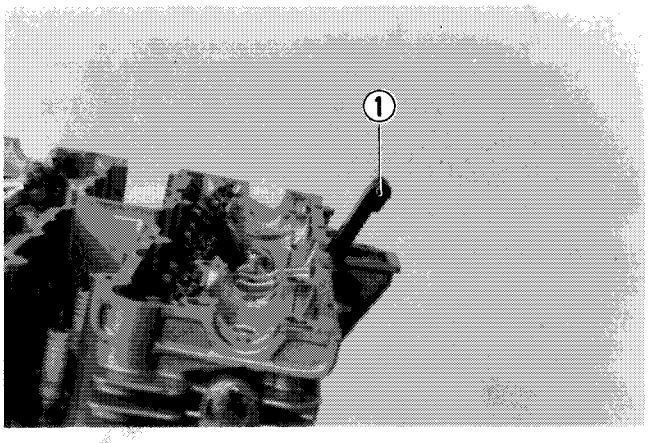


- After firmly tightening the 12-nuts, insert one 6 mm bolt Ⓐ and tighten it with specified torque.

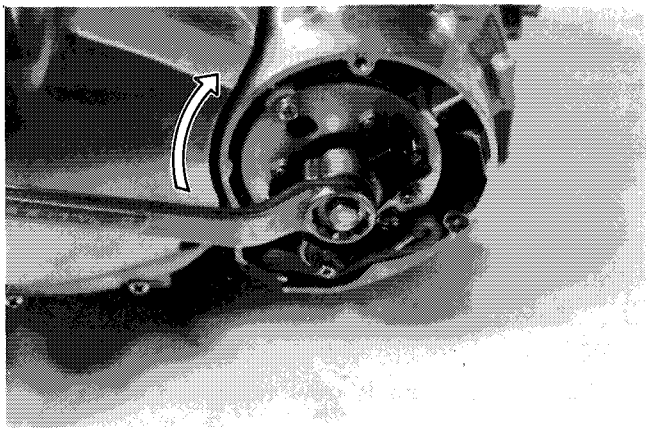
Tightening torque	9 – 11 N·m (0.9 – 1.1 kg-m)



- Place chain guide ① properly.

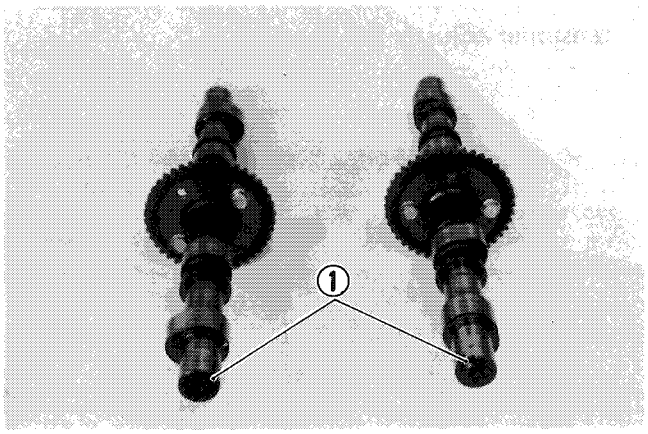


- While holding down the timing chain, rotate the crankshaft in normal direction to bring the "T" mark (on Nos. 1 and 4 cylinder side of the advance governor) to the timing mark.



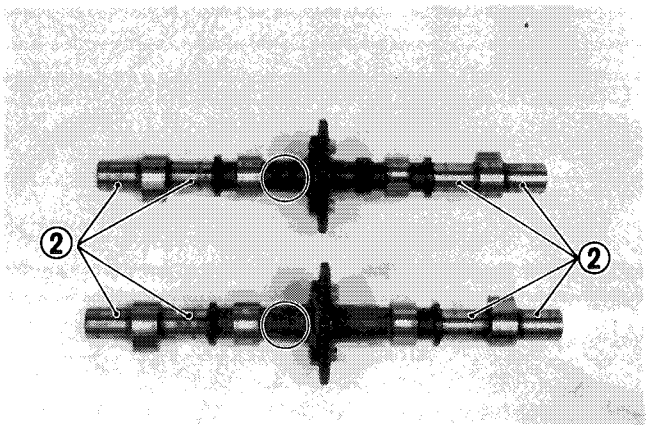
CAUTION:
To turn over crankshaft, torque nut with a 19 mm wrench. Never try to rotate crankshaft by putting a 12 mm wrench to bolt.

- 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 notch ①.

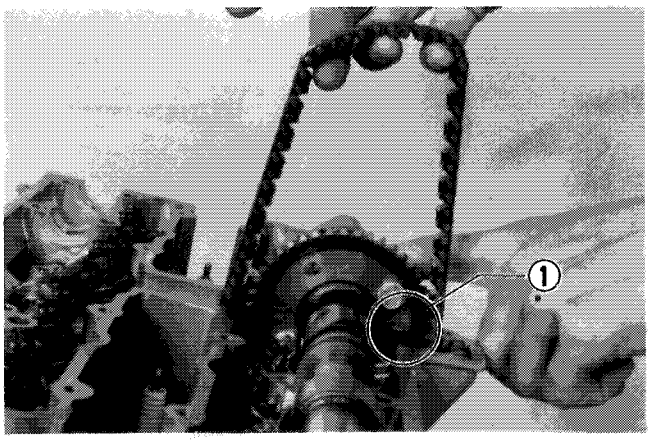


NOTE:
Just before placing the camshaft on the cylinder head, apply high quality molybdenum disulfide lubricant to its journals, fully coating each journal ② with the paste taking care not to leave any dry spot. Apply engine oil to the journal bearings.

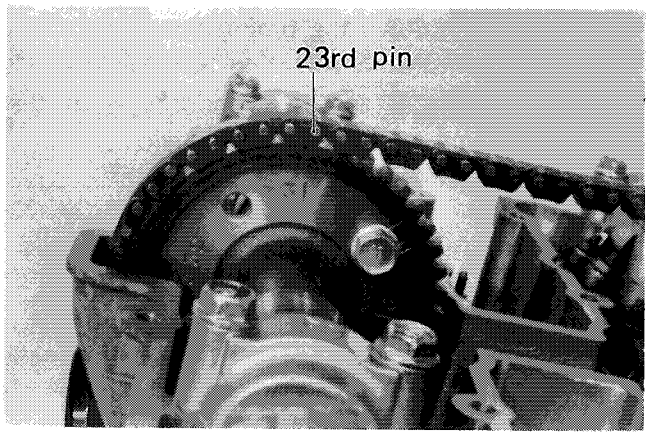
99000-25140	SUZUKI Moly Paste



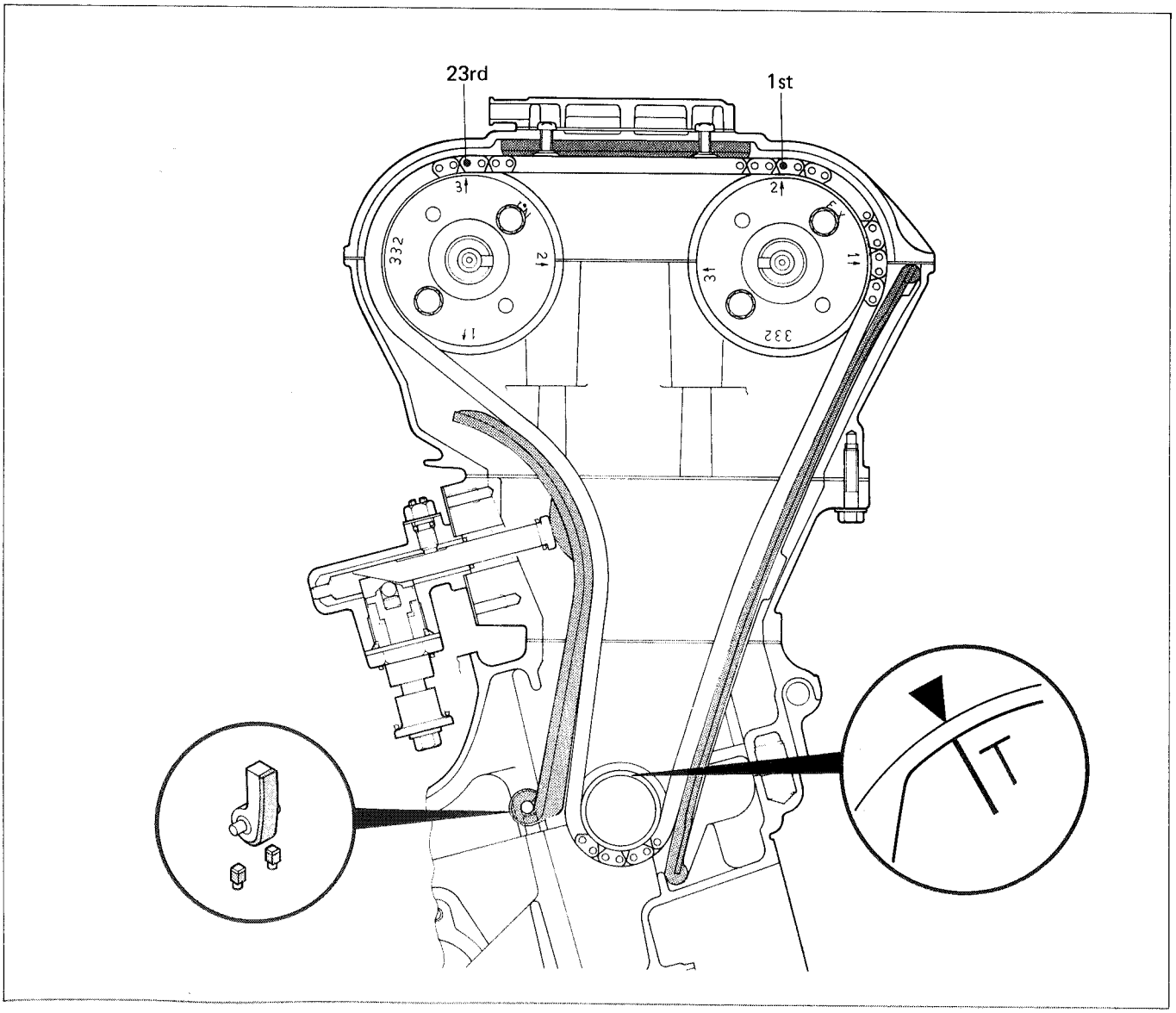
- With "T" mark accurately lined up with the timing mark, hold the crankshaft steady and lightly pull up the chain to remove the slack between the crank sprocket and exhaust sprocket.
- Exhaust sprocket bears an arrow marked "1" indicated as ①. Turn over the exhaust camshaft so that the arrow points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



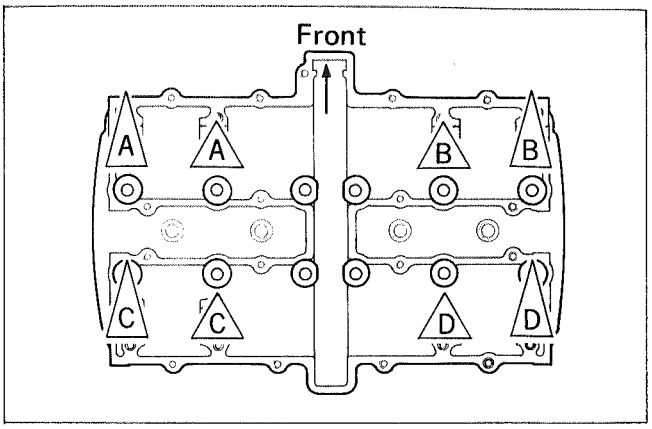
- The other arrow marked "2" is now pointing straight upward. Count the chain roller pins toward the intake camshaft, starting from the roller pin directly above this arrow marked"2" and ending with the 23rd roller pin. Engage the chain with intake sprocket, locating the 23rd pin at and above the arrow marked "3" on the intake sprocket.



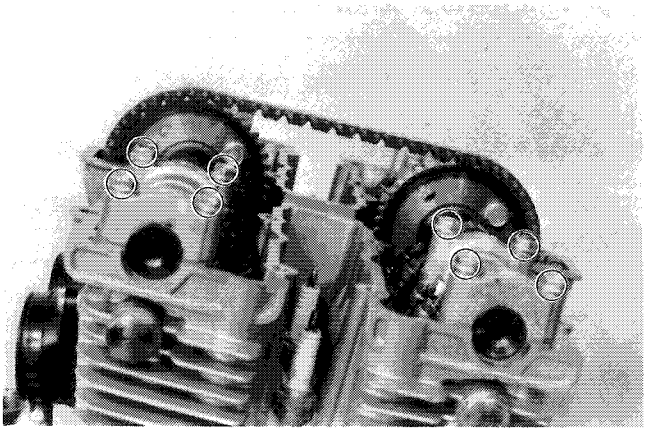
NOTE:
The timing chain is now riding on all three sprockets. Be careful not to disturb the crankshaft until the four holders and chain tensioner adjuster are secured.



- Each camshaft holder is idnetified with a cast-on letter with a triangle. A matching cast-on symbol appears on the head. Install each holder at it's matching letter, with triangle symbols pointing forward.
- Secure the eight camshaft journal holders evenly by tightening the camshaft journal holder bolts sequentially. Try to equalize the pressure by moving the wrench diagonally from one bolt to another and from one camshaft journal holder to another, to push shafts down evenly.

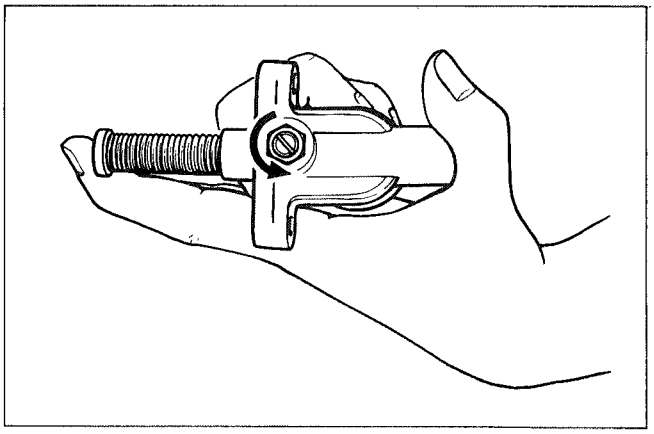


NOTE:
Damage to head or cam journal holder thrust surfaces may result in the situation that cam journal holders are not drawn down evenly.



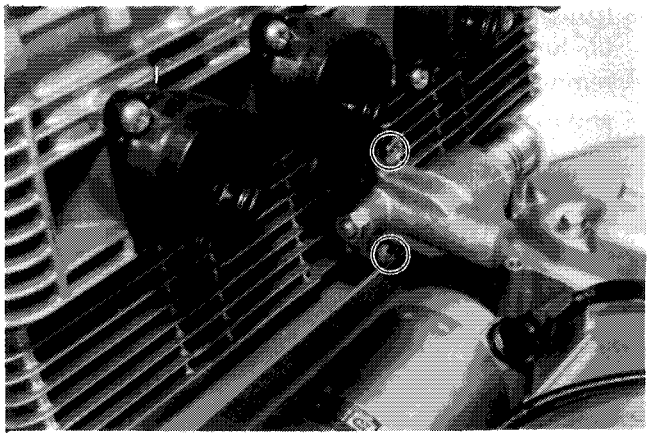
- Tighten the camshaft journal holder bolts to the following torque value:

CAUTUION
The camshaft journal holder bolts are made of a special material and much superior in strength campared with other type of high strenghth bolts.
Take special care not to use other types of bolts instead of these special bolts. To dientify these bolts, each of them has a figure "9" on its head.

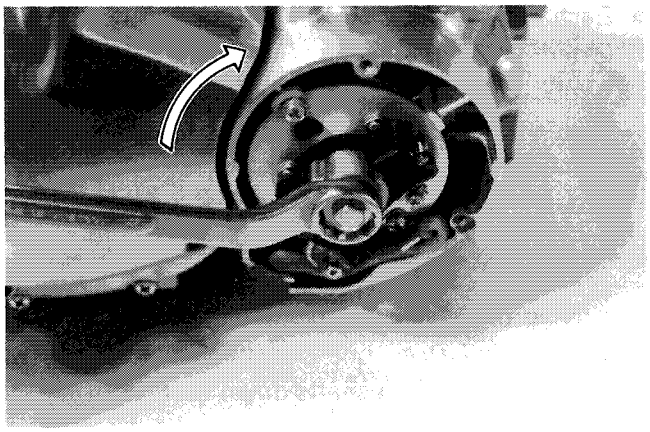


Camshaft journal holder bolt tightening torque	10 N·m (1.0 kg-m)

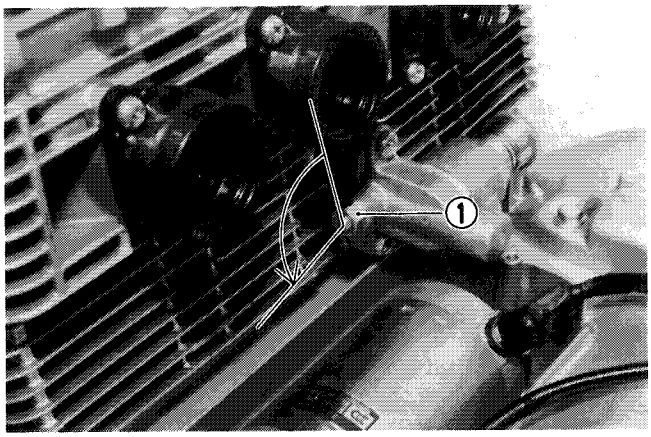
- While turning lock shaft handle counterclockwise, push in the pushrod all the way. Keep on turning the handle until it refuses to turn further.
- Tighten the lock screw to lock the pushrod, so that the pushrod will not plunge out.
- Secure the adjuster to the cylinder block.



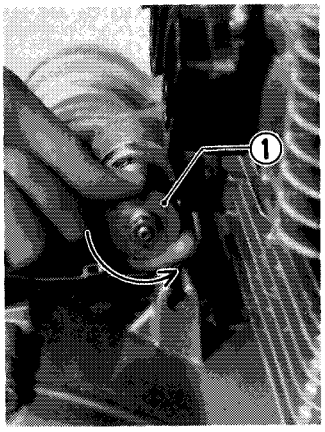
- If tensioner adjuster is not going in, turn the crankshaft slowly clockwise to get chain play at inlet side.
- Withdraw the lock screw by one-quarter to half a turn: this separates the tip of the screw from the pushrod, thereby allowing the pushrod to advance under spring force and to press the tensioner against the camshaft chain.
- Tighten the lock nut ①.

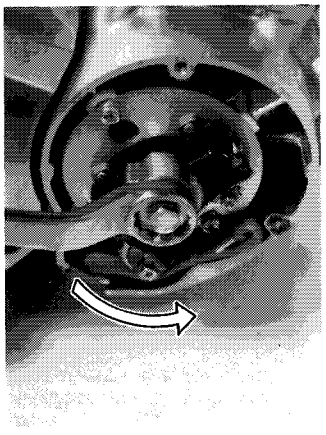


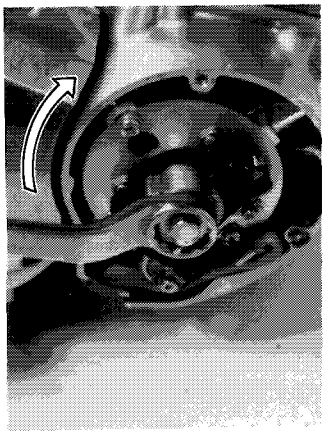
NOTE:
When tightening the lock nut, take care to prevent the lock screw from turning.

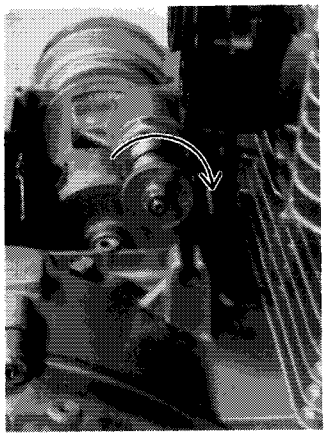


- While turning the handle ① counterclockwise, slowly rotate the crankshaft in reverse direction (thus causing the chain to push back the tensioner).
- Release the handle and slowly turn back the crankshaft in normal running direction (to slacken that portion of the chain extending along the tensioner). 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.





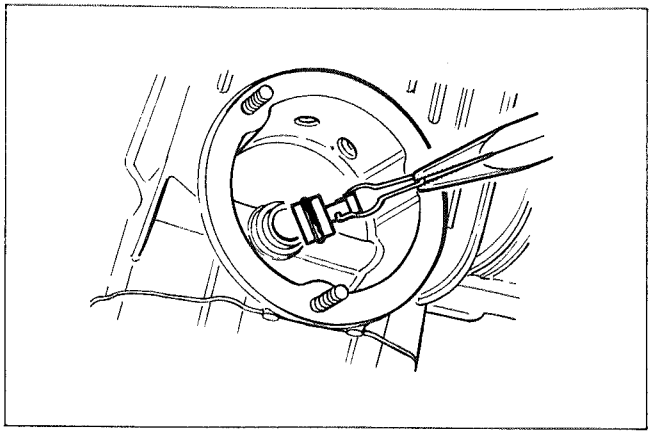




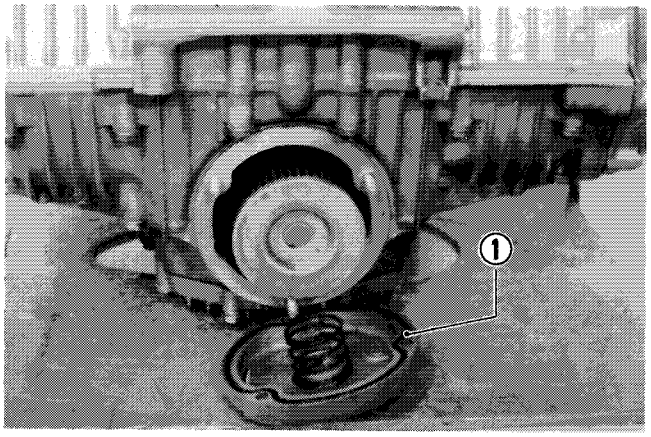
CAUTION:
After installing the tensioner and checking it in initially set condition for operation, do not attempt to turn the handle in either direction until the next overhaul.

- Adjust the valve clearance. (see page 2-6).

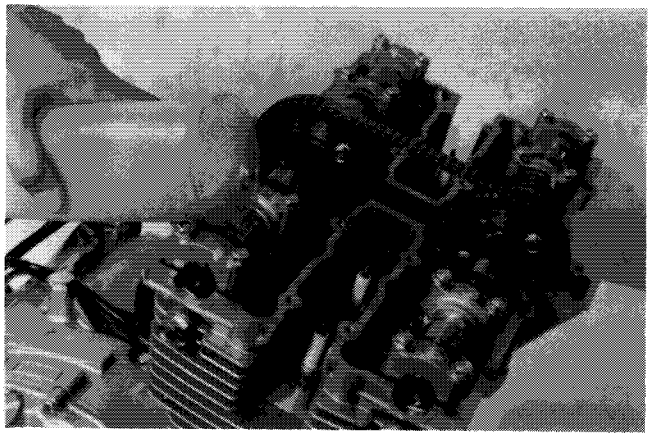
- Install the oil jet as shown.



- In fitting the seal ring to the oil filter chamber cap, lightly coat grease on the seal ring groove ① 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 the oil pockets of the head.

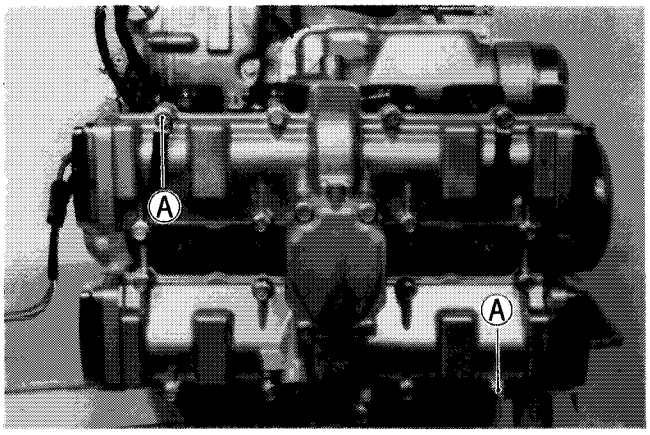


- Install a new gasket and cylinder head cover.

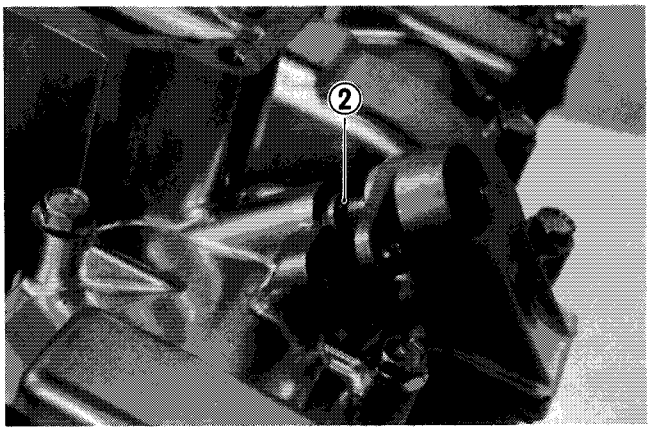
NOTE:
Place the two longer bolts at the knock pin positions Ⓐ.

- Install a new gasket and cylinder head cover cap.

Tightening torque	9 – 10 N·m (0.9 – 1.0 kg-m)

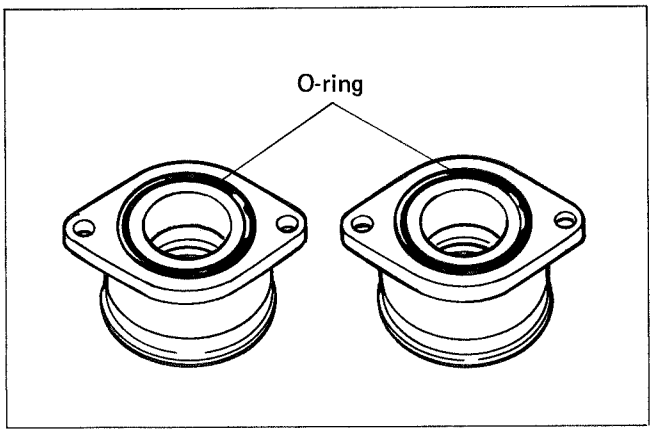


- Install the tachometer drive gear with a new O-ring ②.

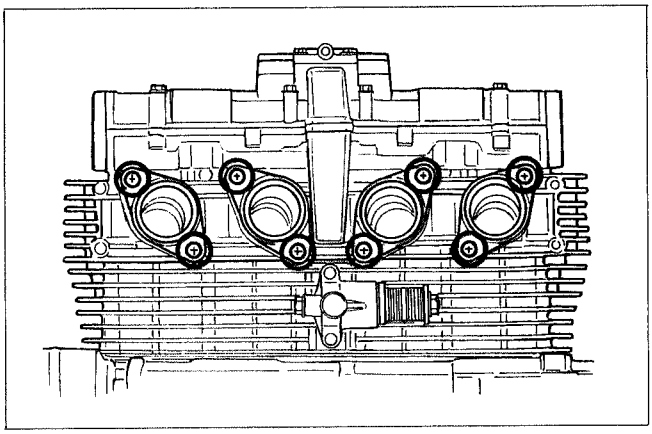


- Install new O-ring to the intake pipe groove as shown.

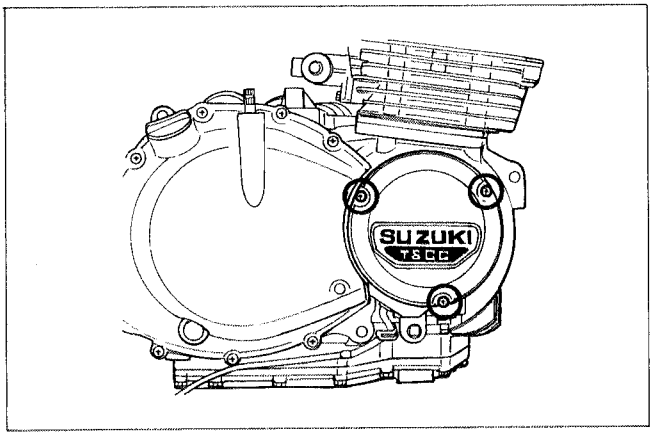
CAUTION:
Always use new O-rings to prevent sucking air from the joint part.



- Install each intake pipe to the cylinder head properly.



- Install the signal generator cover and gasket with three screws.

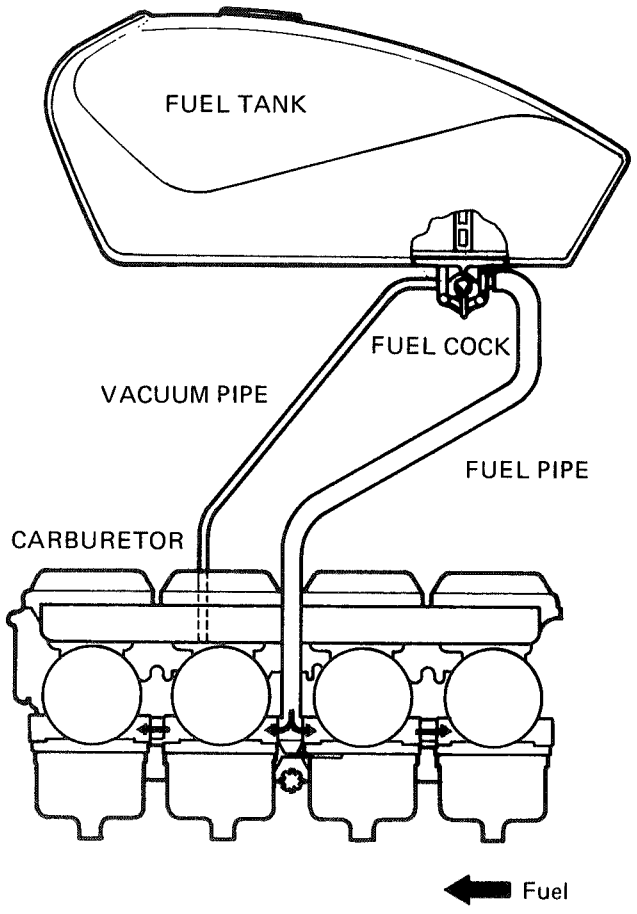


FUEL AND LUBRICATION SYSTEM

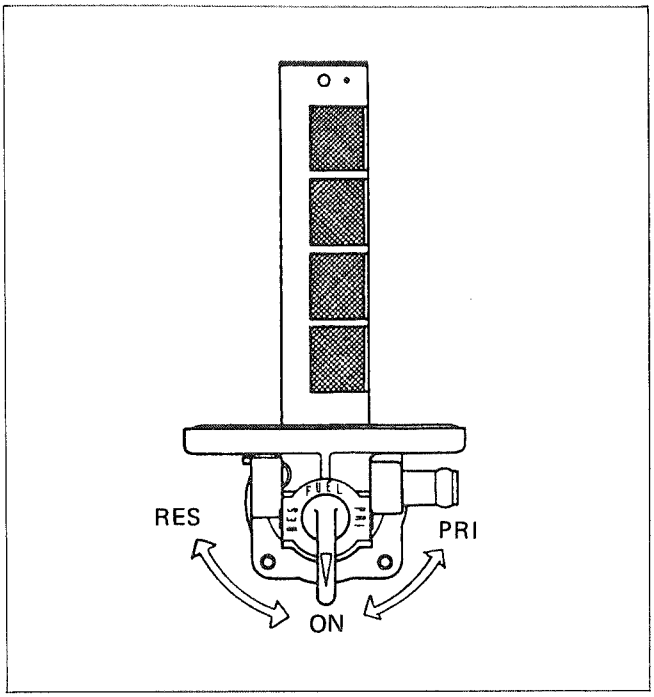
CONTENTS

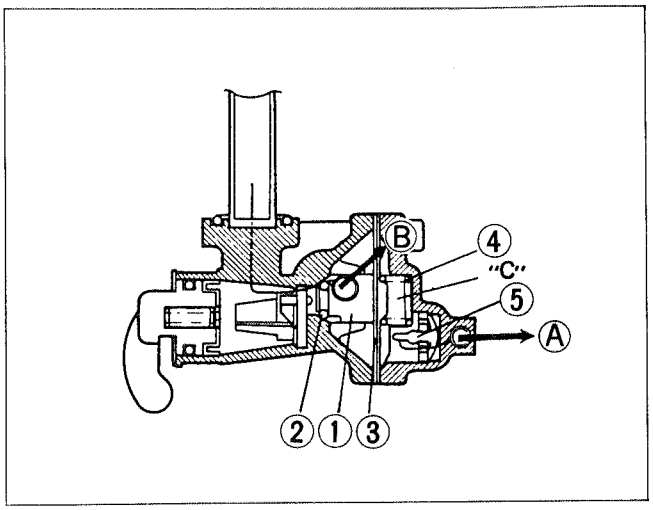
FUEL SYSTEM

When engaging 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



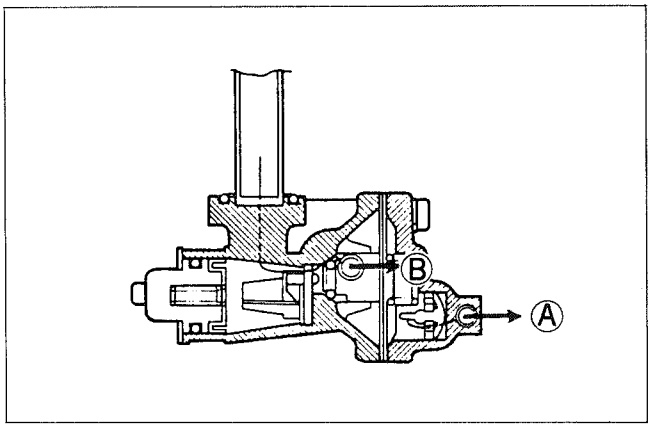


"ON"

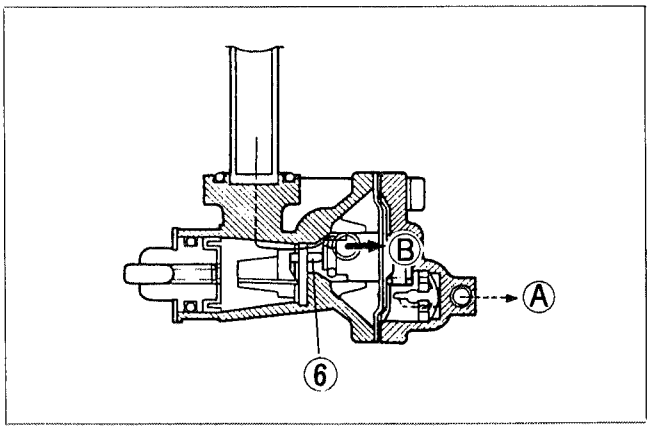
① Fuel valve ② O-ring ③ Diaphragm
④ Spring ⑤ One way valve
Ⓐ Vacuum Ⓑ Fuel flow

When the engine is not running and the valve 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 engaged, 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.

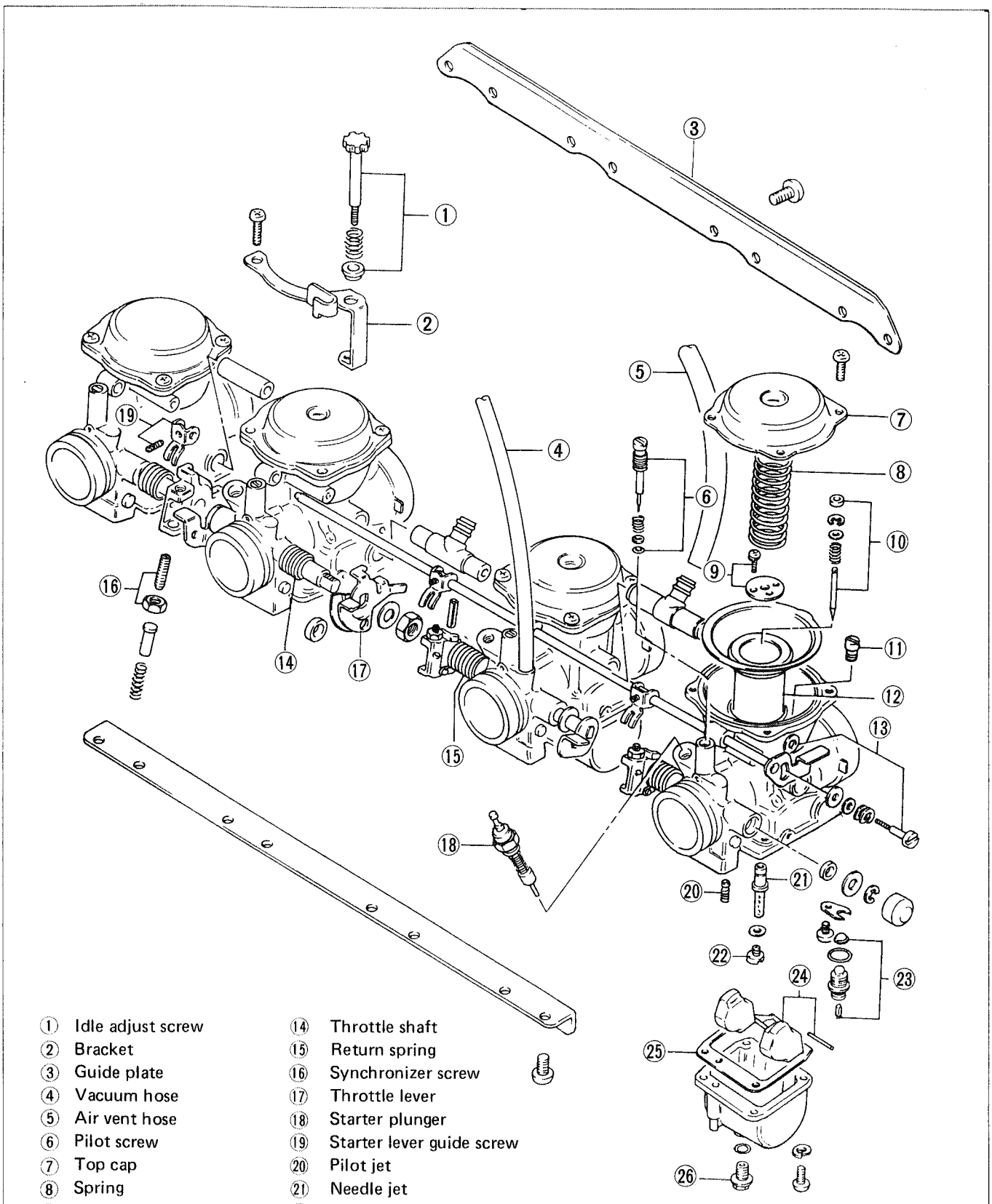


"RES"



"PRI"

CARBURETOR

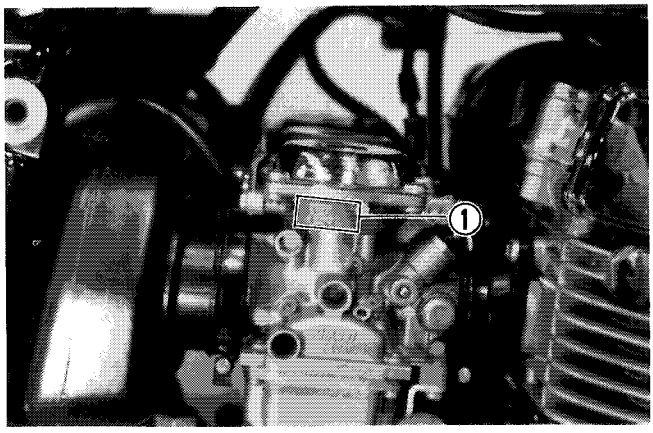


① Idle adjust screw
② Bracket
③ Guide plate
④ Vacuum hose
⑤ Air vent hose
⑥ Pilot screw
⑦ Top cap
⑧ Spring
⑨ Stopper plate
⑩ Jet needle
⑪ Pilot air jet
⑫ Diaphragm and piston
⑬ Starter lever guide screw
⑭ Throttle shaft
⑮ Return spring
⑯ Synchronizer screw
⑰ Throttle lever
⑱ Starter plunger
⑲ Starter lever guide screw
⑳ Pilot jet
㉑ Needle jet
㉒ Main Jet
㉓ Needle valve
㉔ Float
㉕ Gasket
㉖ Drain plug

SPECIFICATIONS

ITEM	SPECIFICATIONS	
Type	MIKUNI BS26SS	←
I.D. No.	33200	33201
Bore	26 mm	←
Idle r/min	1 100 ± 50 r/min	←
Fuel level	5.0 ± 1.0 mm	←
Float height	21.4 ± 1.0 mm	←
Main jet	# 97.5	←
Main air jet	1.8 mm	←
Jet needle	4CL11-3rd	←
Needle jet	P–0	←
Throttle valve	# 125	←
Pilot jet	# 40	←
By pass	0.8, 0.8, 0.8 mm	←
Pilot outlet	0.8 mm	←
Valve seat	2.0	←
Starter jet	# 27.5	←
Pilot screw	Pre-set	←
Pilot air jet	# 180	# 170
Throttle cable play	0.5 – 1.0 mm	←

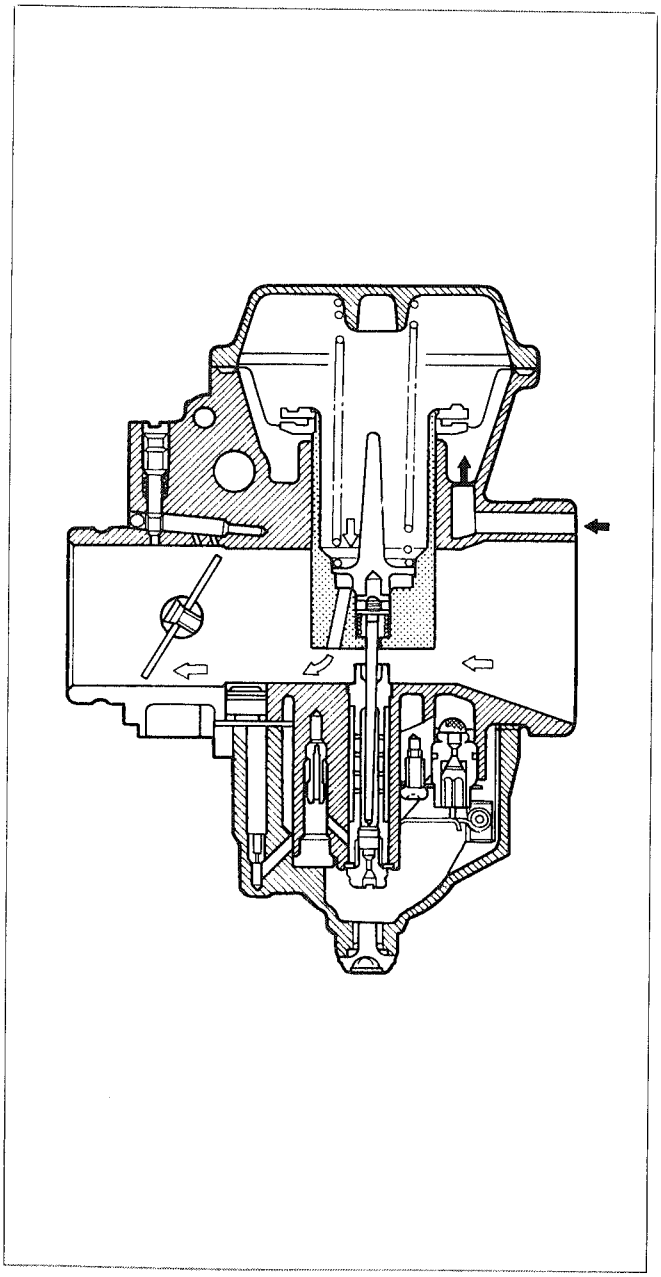
Each carburetor has I.D. Number ① printed on the carburetor body according to its specifications.

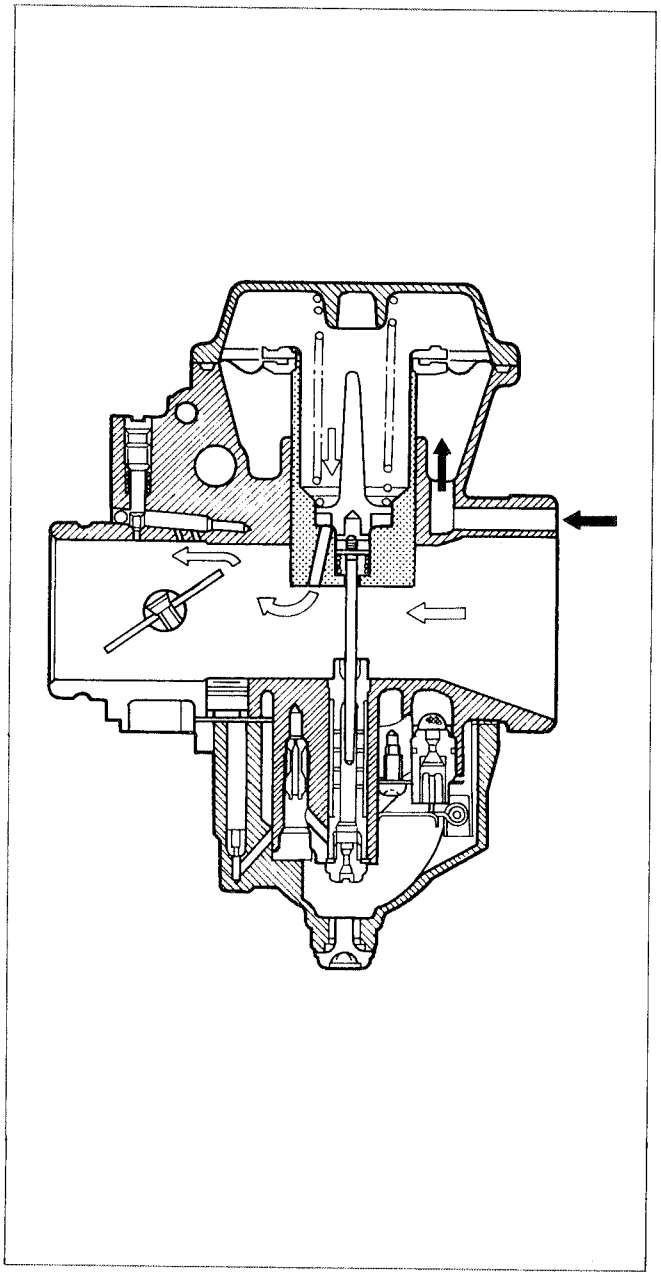


DIAPHRAGM AND PISTON OPERATION

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 to prevent the air velocity from increasing. Therefore, 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.



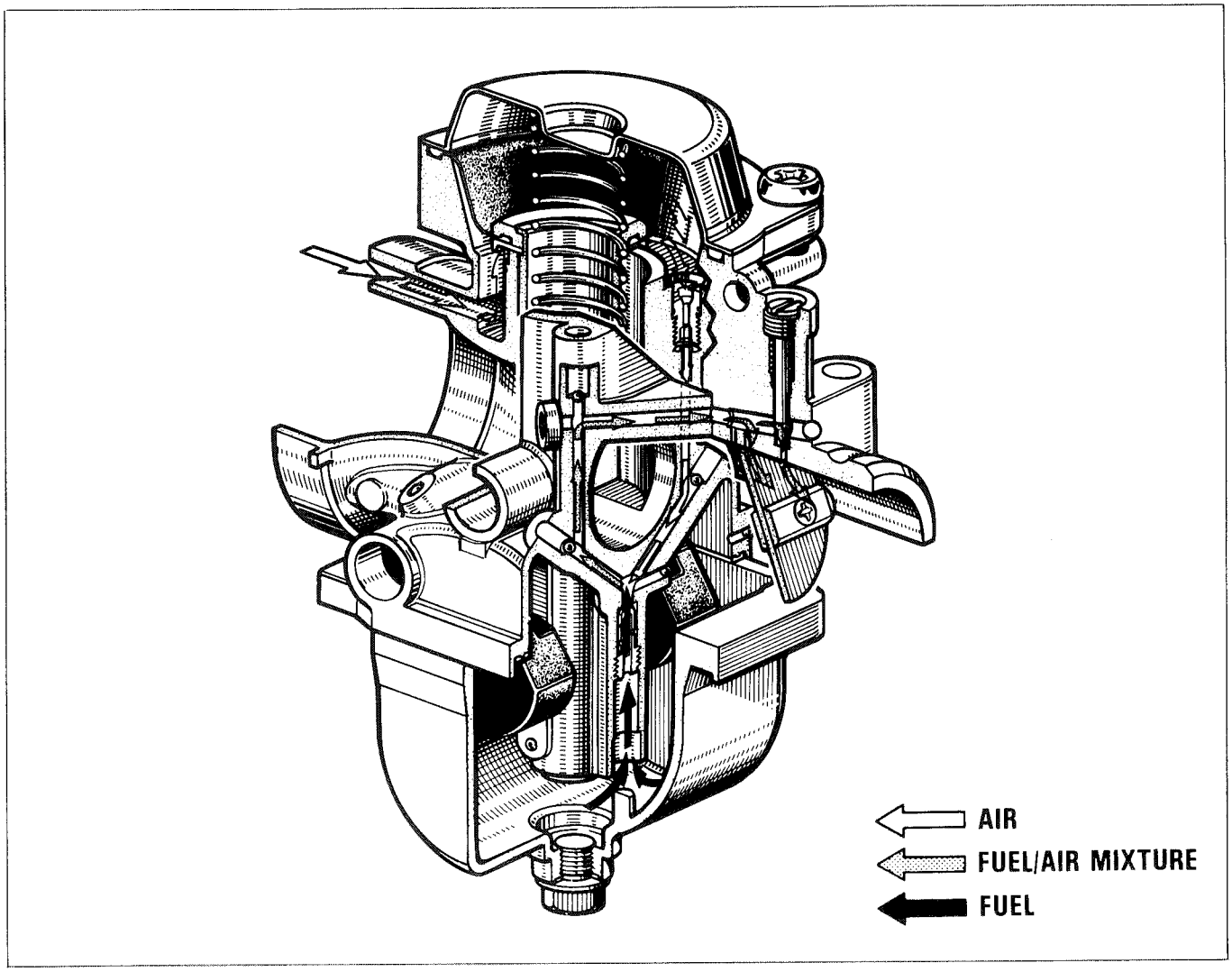


SLOW SYSTEM

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

The fuel from float chamber is 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.



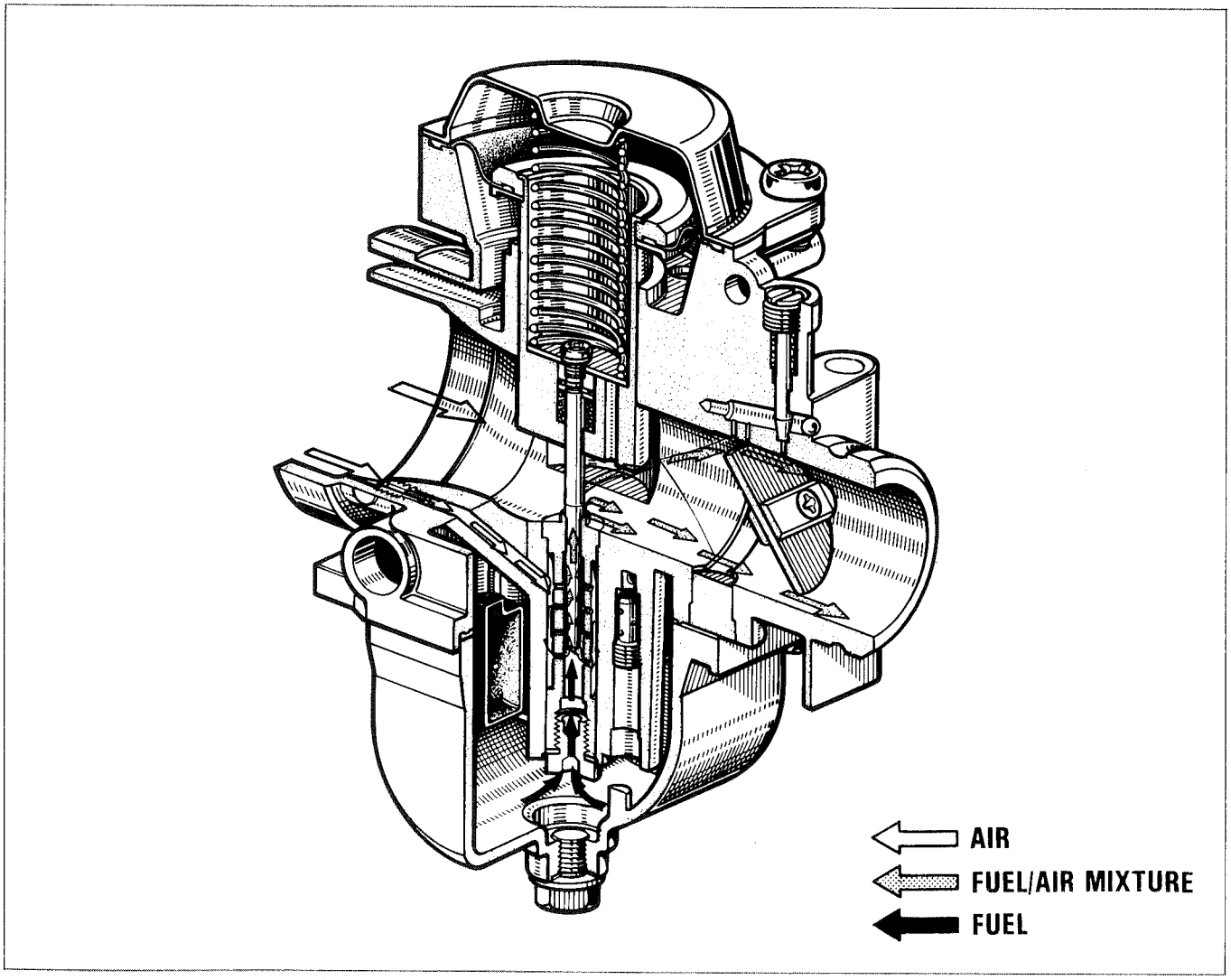
MAIN SYSTEM

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 either large or small, depending ultimately on throttle position.

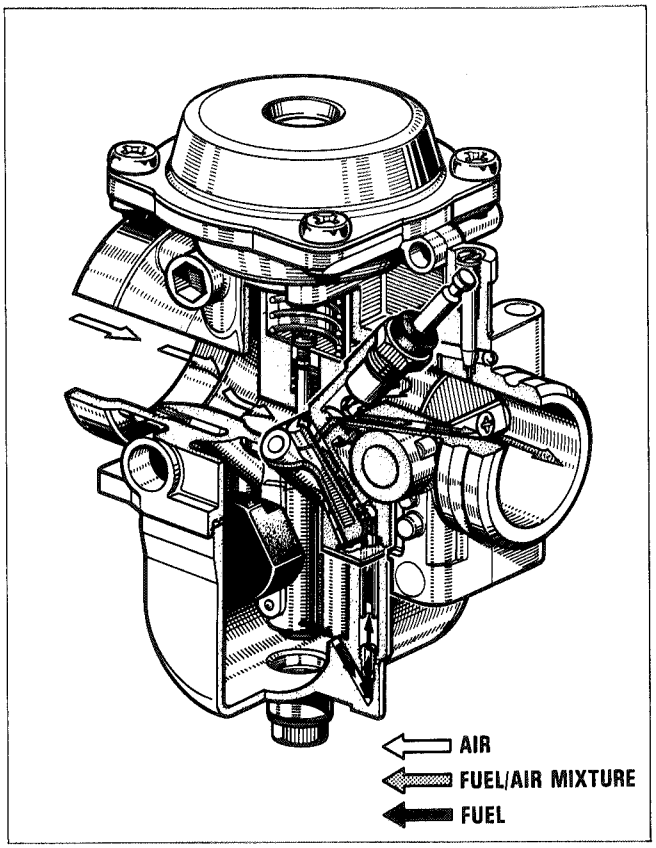


STARTER SYSTEM

Pushing down the starter lever allows 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 extended from behind the diaphragm.

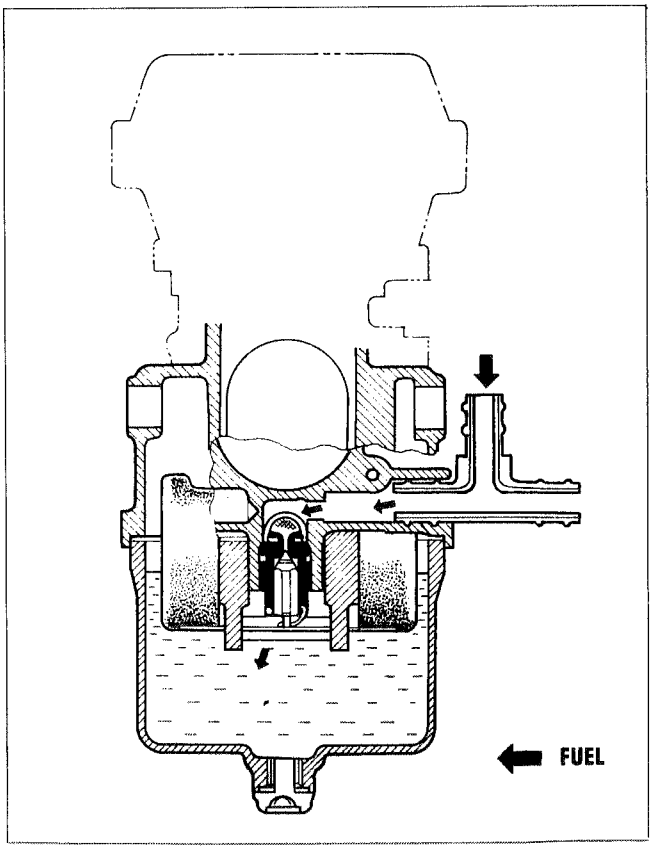
The two successive mixings of fuel with air are such that proper air/fuel mixture for starting is produced when the mixture is sprayed out through starter outlet into the main bore.



FLOAT SYSTEM

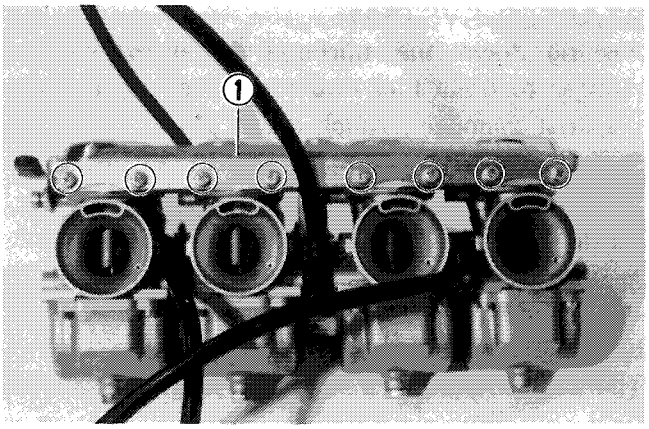
Floats and needle valve are associated with the same mechanism, so that, as the floats move up and down, the needle valve too moves likewise. When fuel level is up in float chamber, floats are up and needle valve remains pushed up against valve seat. Under this condition, no fuel enters the float chamber.

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.

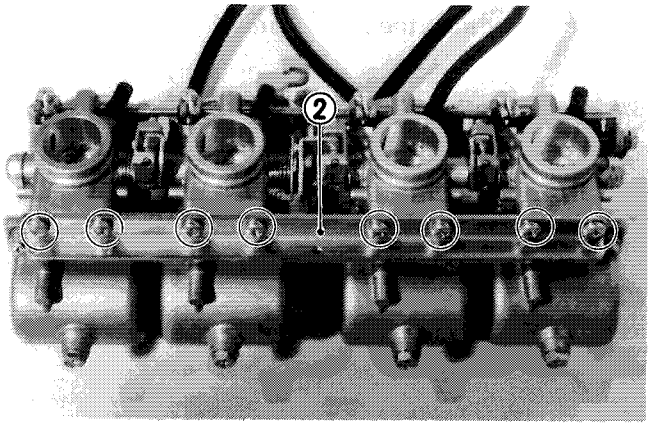


DISASSEMBLY

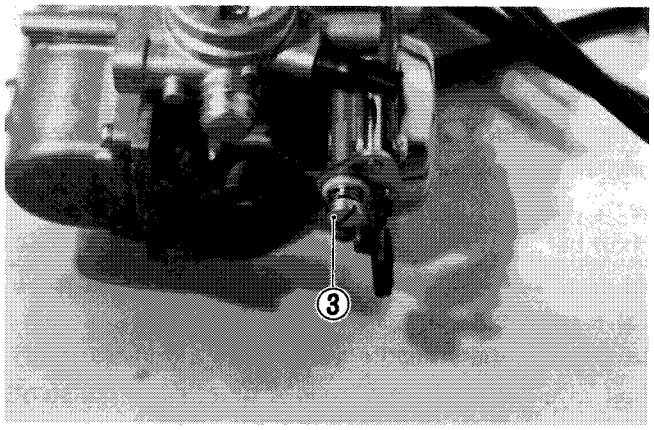
- Remove the carburetor set upper plate ① by unscrewing 8 screws.

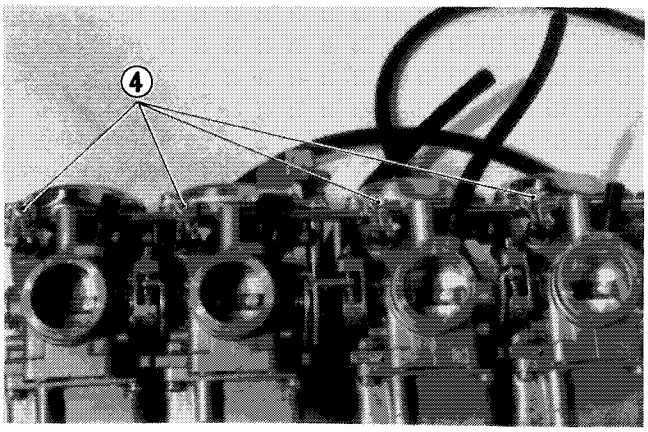


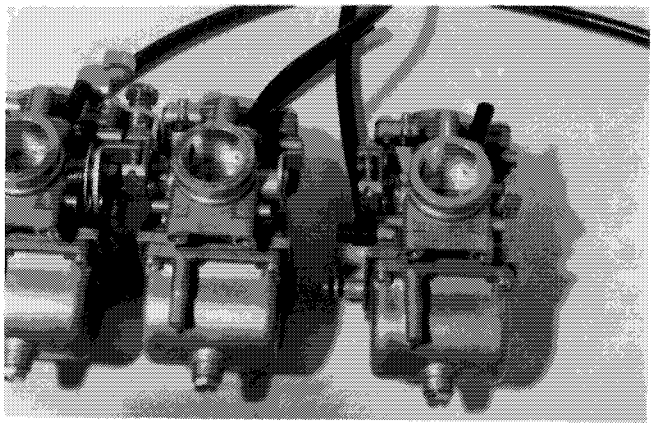
- Remove carburetor set lower plate ② by unscrewing 8 screws.



- Remove the starter lever guide screw ③.
- Loosen 4 tightening screws ④ of the starter shaft and pull out the starter shaft to the right.
- Separate 4 carburetors each.

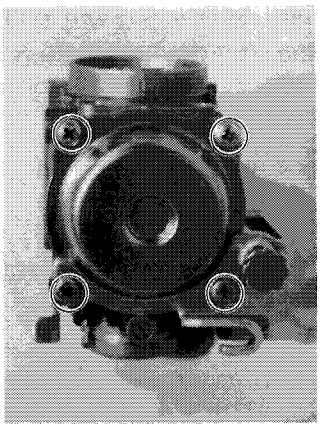


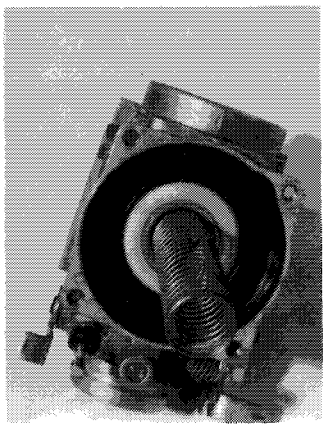




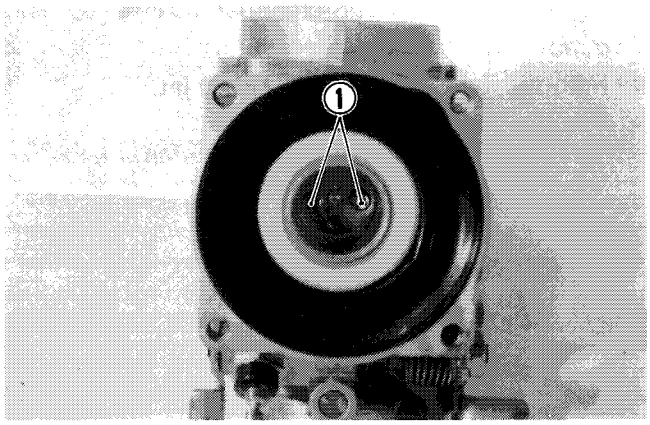
- Take off carburetor top cap and throttle valve stop screw plate by unscrewing 4 screws.

NOTE:
Identify the four piston valves removed as No. 1 through No. 4 in order to make sure each will be restored to the carburetor from which it was taken out.



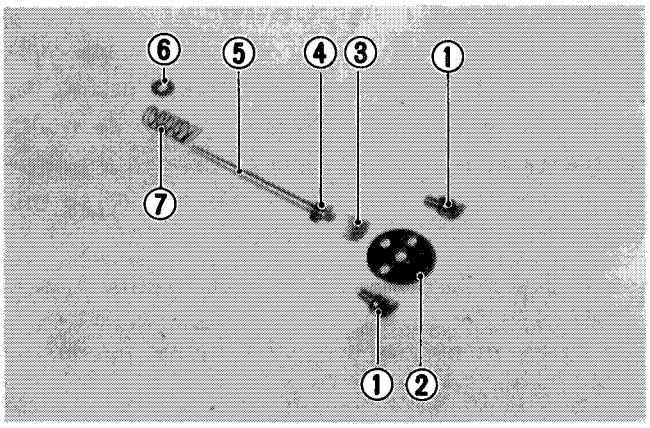


- Remove the two screw ① for securing the jet needle stopper plate.

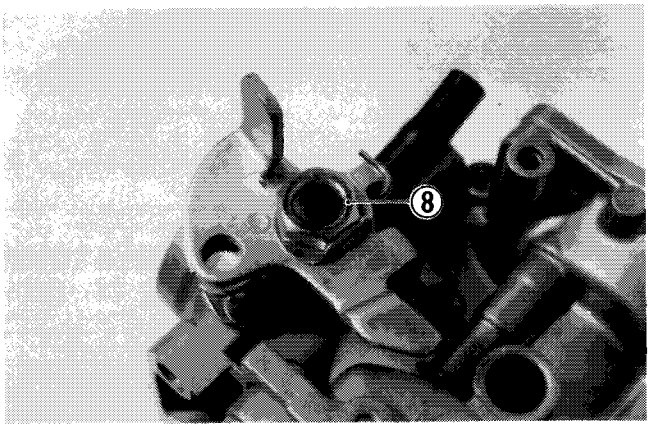


- Take out the jet needle related parts.

① Stopper plate screw
② Stopper plate
③ Spacer
④ Clip
⑤ Jet needle
⑥ Washer (spring seat)
⑦ Spring

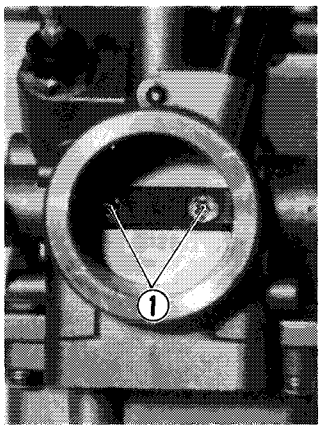


- Flatten the lock washer and remove the throttle valve shaft nut. ⑧.
- Remove the throttle valve shaft lever and spring.

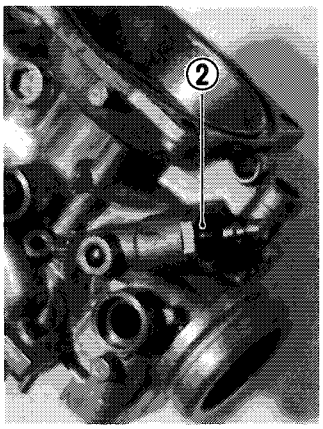


- Remove two throttle valve screws ①, and pull out the valve by turning throttle valve shaft.

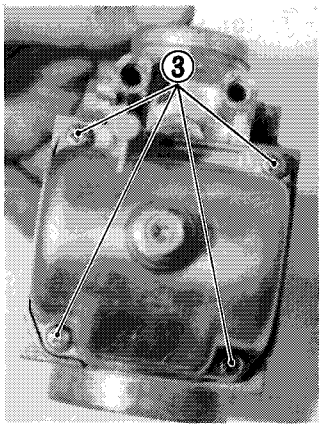
CAUTION:
These two screws are locked by punching its end. Once remove the screws, they will be damaged.

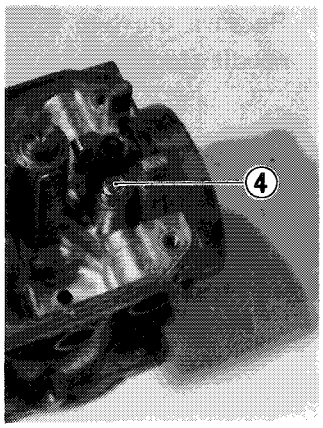


- Remove the starter plunger ② from the carburetor body.



- Remove the 4 float chamber screws ③ and remove the float chamber.
- Remove float, main jet, and pilot jet.
- Remove the needle valve ④.



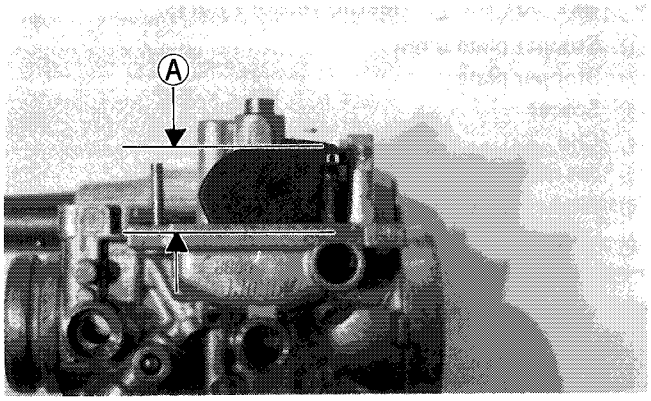


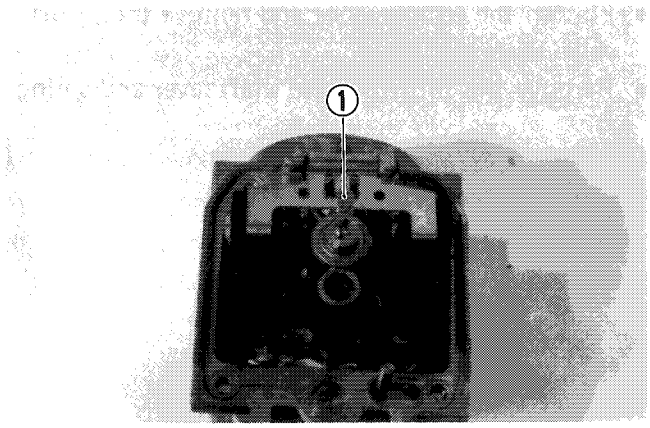
FLOAT HEIGHT ADJUSTMENT

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

NOTE:
Be sure to remove the gasket before measuring the height.

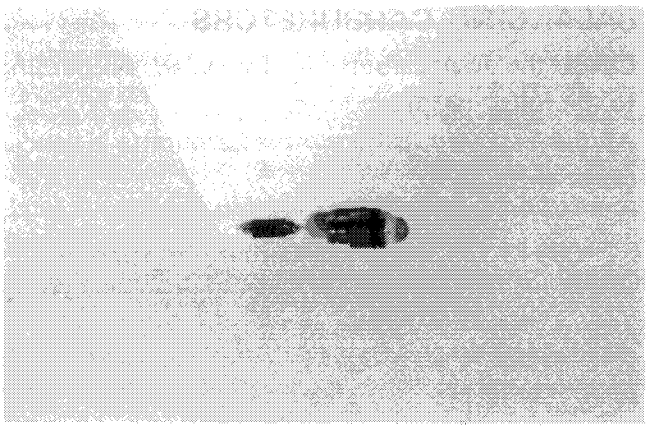
Standard	21.4 ± 1.0 mm

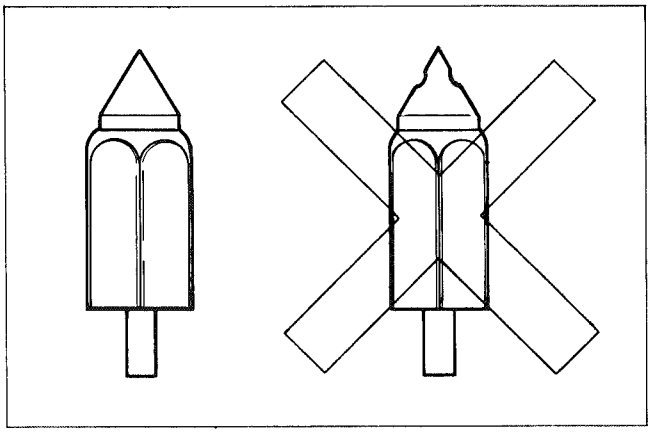




NEEDLE VALVE

If foreign matter is caught between the valve seat and the needle, the gasoline will continue to flow and result in overflowing. 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.





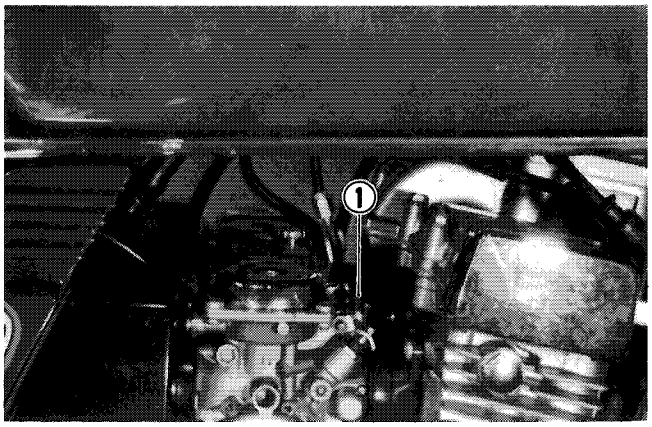
- Check following items for any damage or clogging.

* Pilot jet
* Main jet
* Main air jet
* Pilot air jet
* Needle jet air bleeding holes
* Float
* Needle valve mesh and O-ring
* Diaphragm
* Gasket and O-ring
* Throttle valve shaft oil seals
* Drain plug O-ring
* Pilot screw bleeding hole
* Pilot outlet and bypass holes
* Fuel pipe O-rings

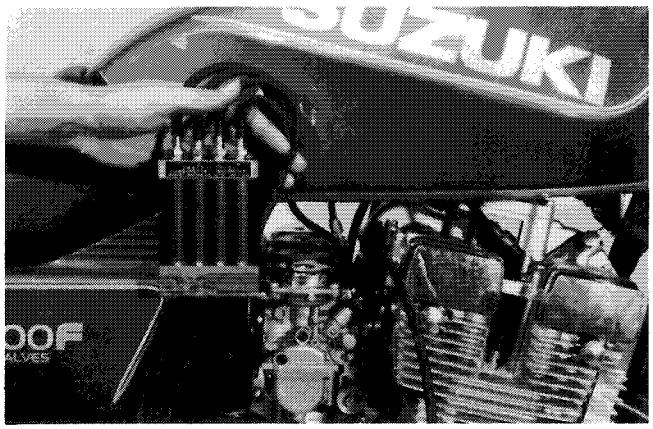
BALANCING CARBURETORS

Check the four carburetors for balance according to the following procedures.
As the first step, calibrate the carburetor balancer gauge as follows:

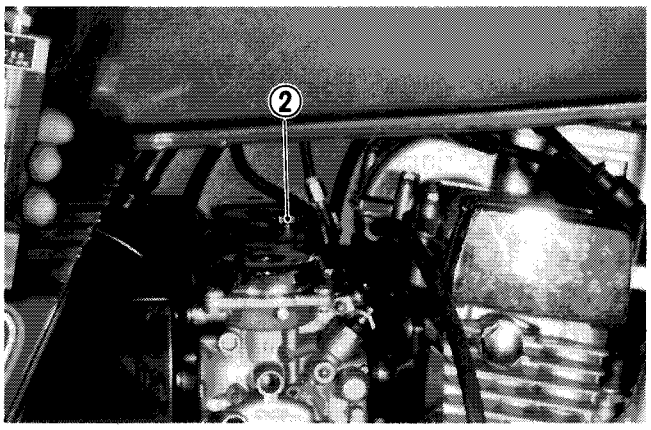
09913-13121	Carburetor balancer



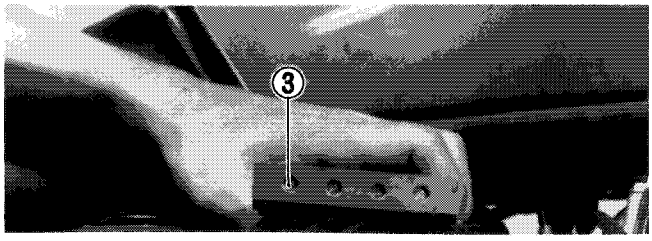
- Start up the engine and run it in idling condition for warming up.
- Stop the warmed-up engine. Remove the vacuum inspection plug ① for No. 1 or No. 4 cylinder and install the hose of the carbaretor balancer gauge.

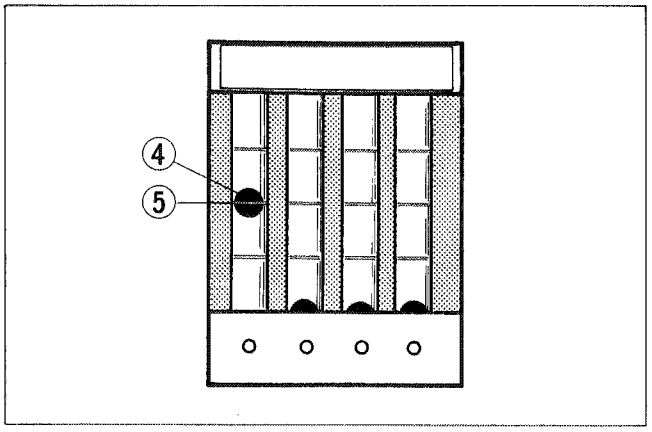


- Start up the engine, and keep it running at 1 750 r/min by turning throttle stop screw ②.

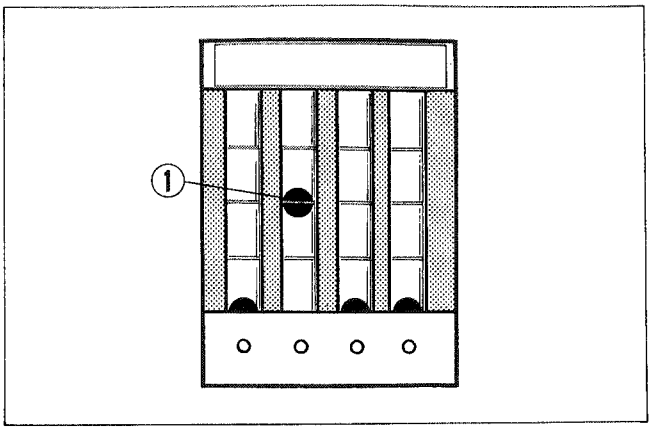


- Turn the air screw ③ of the gauge so that the vacuum acting on the tube of that hose will bring the steel ball ④ in the tube to the center line ⑤.



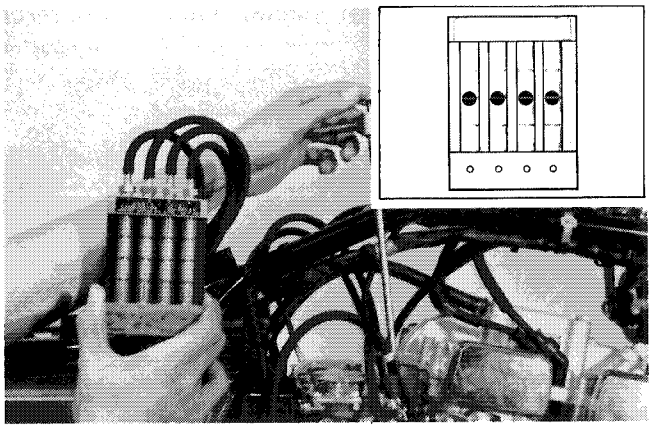


- After making sure that the steel ball stays steady at the center line, disconnect the hose from the vacuum inspection pipe and connect the next hose to the pipe. Turn air screw to bring the other steel ball ① to the center line.
- Repeat the process on the third and fourth tubes. The balancer gauge is now ready for use in balancing the carburetors.

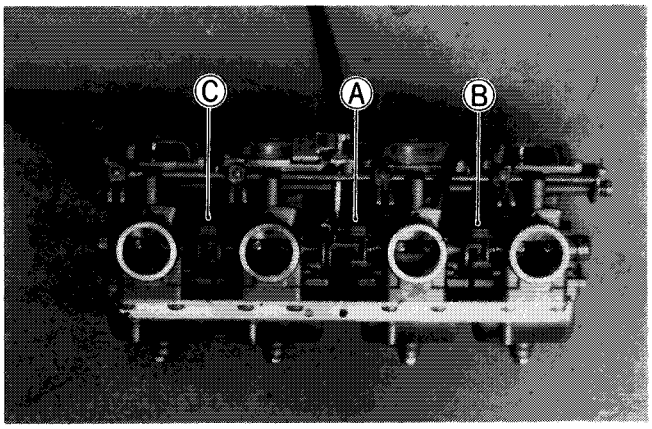


Remove the respective vacuum inspection caps and the hose to the pipe respectively. Balance the four carburetors as follows:

NOTE:
*** Remove the vacuum hose of the fuel cock from the No. 2 carburetor and connect the hose to this pipe.**
*** When balancing the carburetors, remove the fuel tank and fuel should be supplied by a separate fuel tank.**



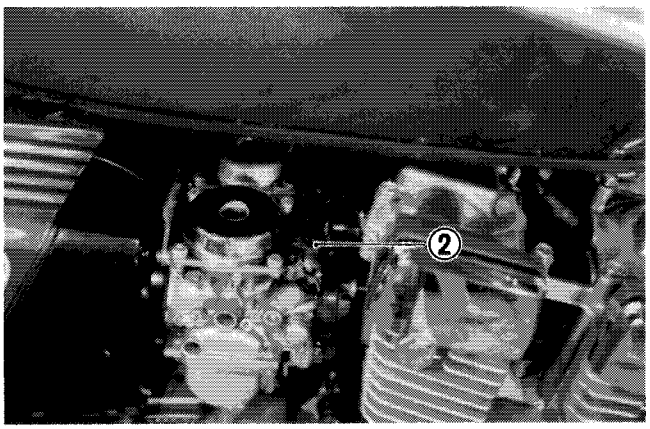
- Start up the engine, and keep it running at 1 750 r/min.
- A correctly adjusted carburetor has the steel balls in the Nos. 1 through 4 tubes at the same level, as shown.
- If the steel balls are not in correct positions, adjust the throttle valve adjusting screw correctly by using throttle valve adjust wrench.



09913-14910	Throttle valve adjust wrench

Adjusting order:

Ⓐ (for No. 2 Carb) → (for No. 1)
→ Ⓒ (for No. 4)

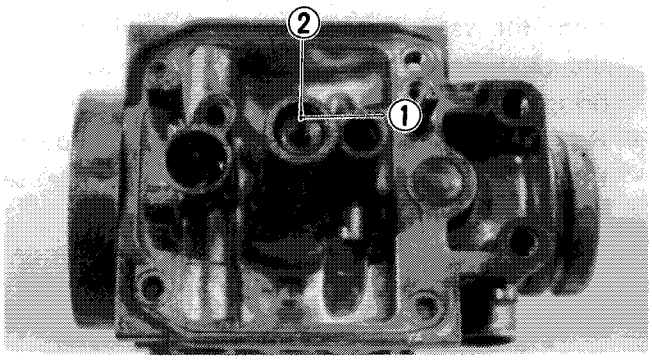


- After balancing carburetors, set its speed between 1 050 and 1 150 r/min by turning throttle stop screw.

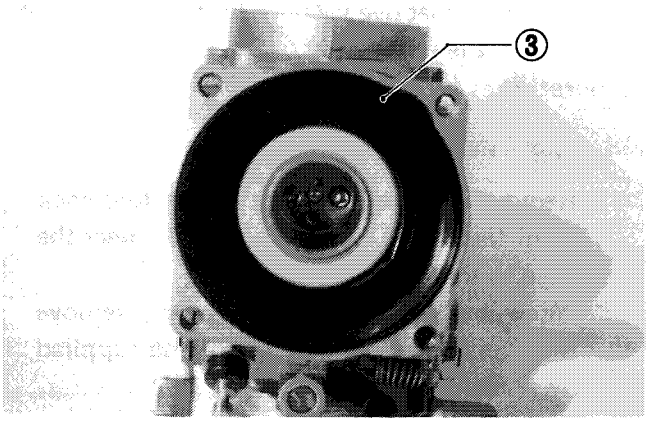
CAUTION:
Do not disturb the pilot screw ②. This component is pre-set at the factory by the very specialized equipment.

REASSEMBLY

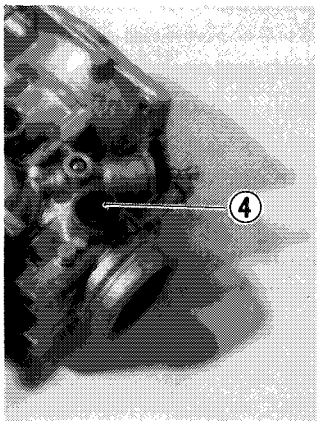
- Align the groove ① of the needle jet with the pin ② and replace it.

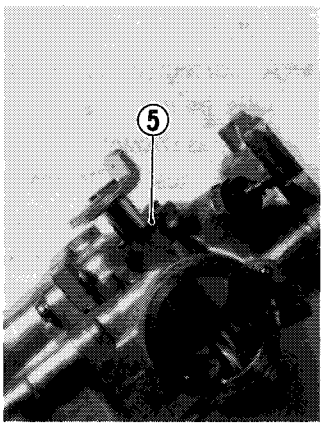


- Place tongue ③ of diaphragm to carburetor body properly.

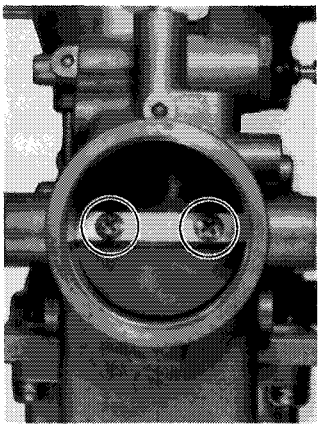


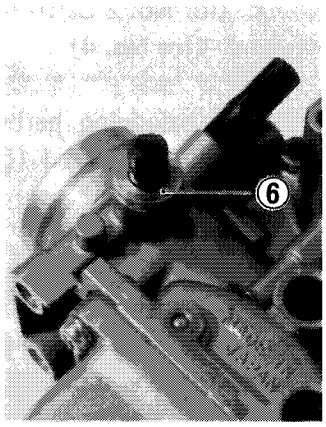
- When fitting throttle valve shaft oil seals, groove should be faced outside ④.
  Apply SUZUKI SUPER Grease "A" lightly to the lip of oil seal.
- Set the throttle valve shaft and install the washer ⑤ as shown.



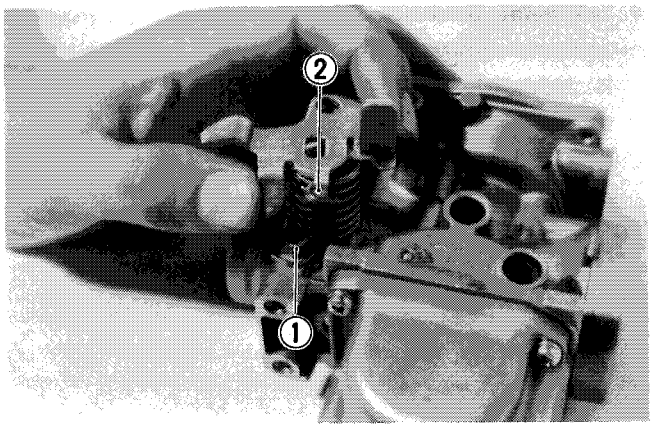


- Apply SUZUKI thread lock "1342" to these two screws and install the throttle valve.
- Properly position the spacer ⑥ on the oil seal.

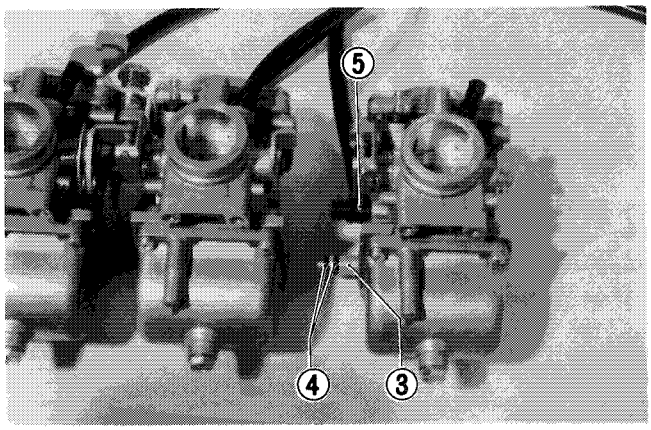




- Hook one end of spring to the boss ①, turn the other end ② clockwise by one turn, and hook it to the cable guide properly.
  Tighten lock nut and bend up lock washer.
- Apply thread lock "1342" to two screws for securing throttle valve.



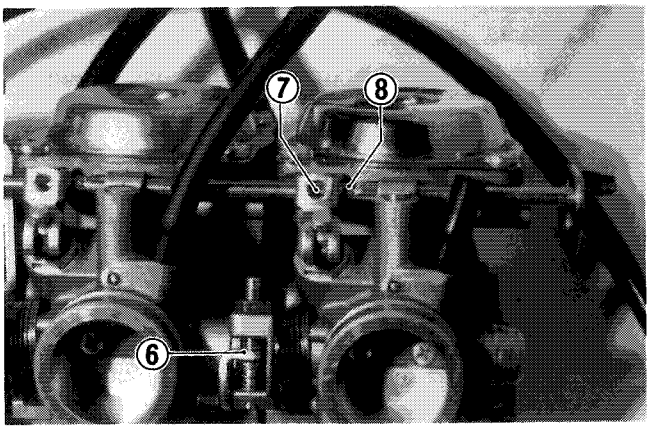
- When engaging four carburetors, be sure to fix fuel pipe ③ with four O-rings ④ and breather connector ⑤ properly.

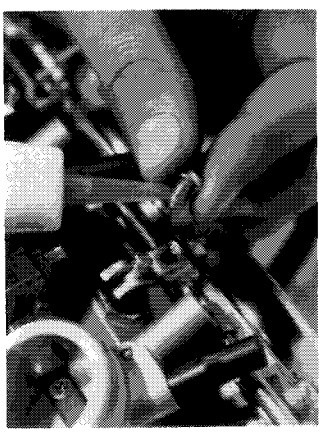


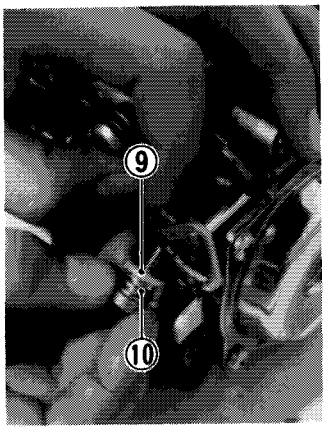
- Position throttle valve control lever ⑥ correctly.
- Apply thread lock cement to lower bracket screws.
- Apply thread lock cement to the upper bracket screws.

99000-32040	Thread lock cement

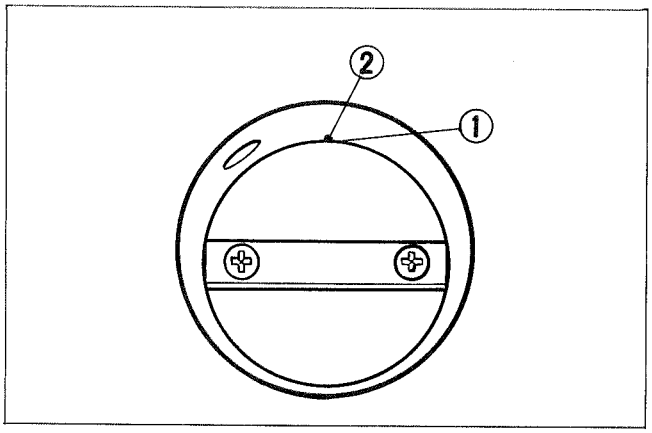
- When mounting starter shaft, align starter valve screw ⑦ with dent mark ⑧ on starter shaft and grease sliding portions.
- Apply thread lock super "1333B" to starter shaft securing screws.
- Install the iron washer between carburetor body and starter lever.
- Tighten the starter lever guiding screw with plastic spacer ⑨ and spring ⑩ .

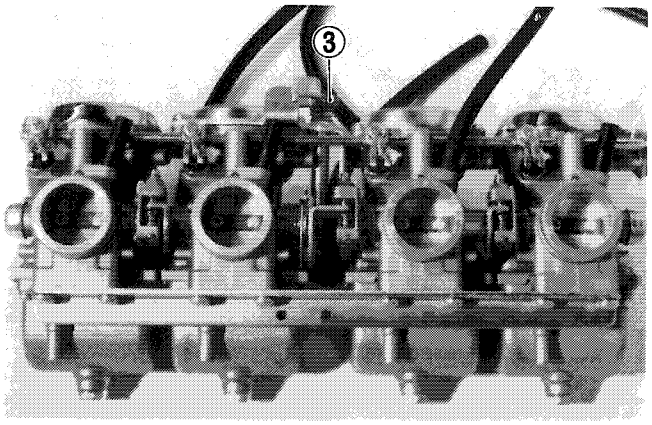


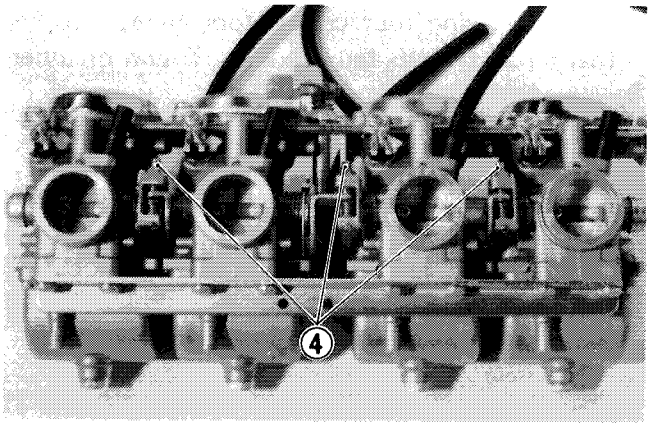




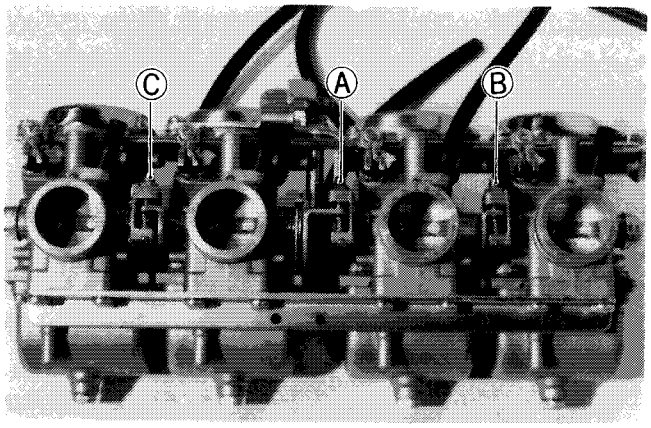
- Set each throttle valve in such a way that its top end ① meets the foremost bypass ②. This is accomplished by turning throttle valve stop screw ③ and balance screw ④.





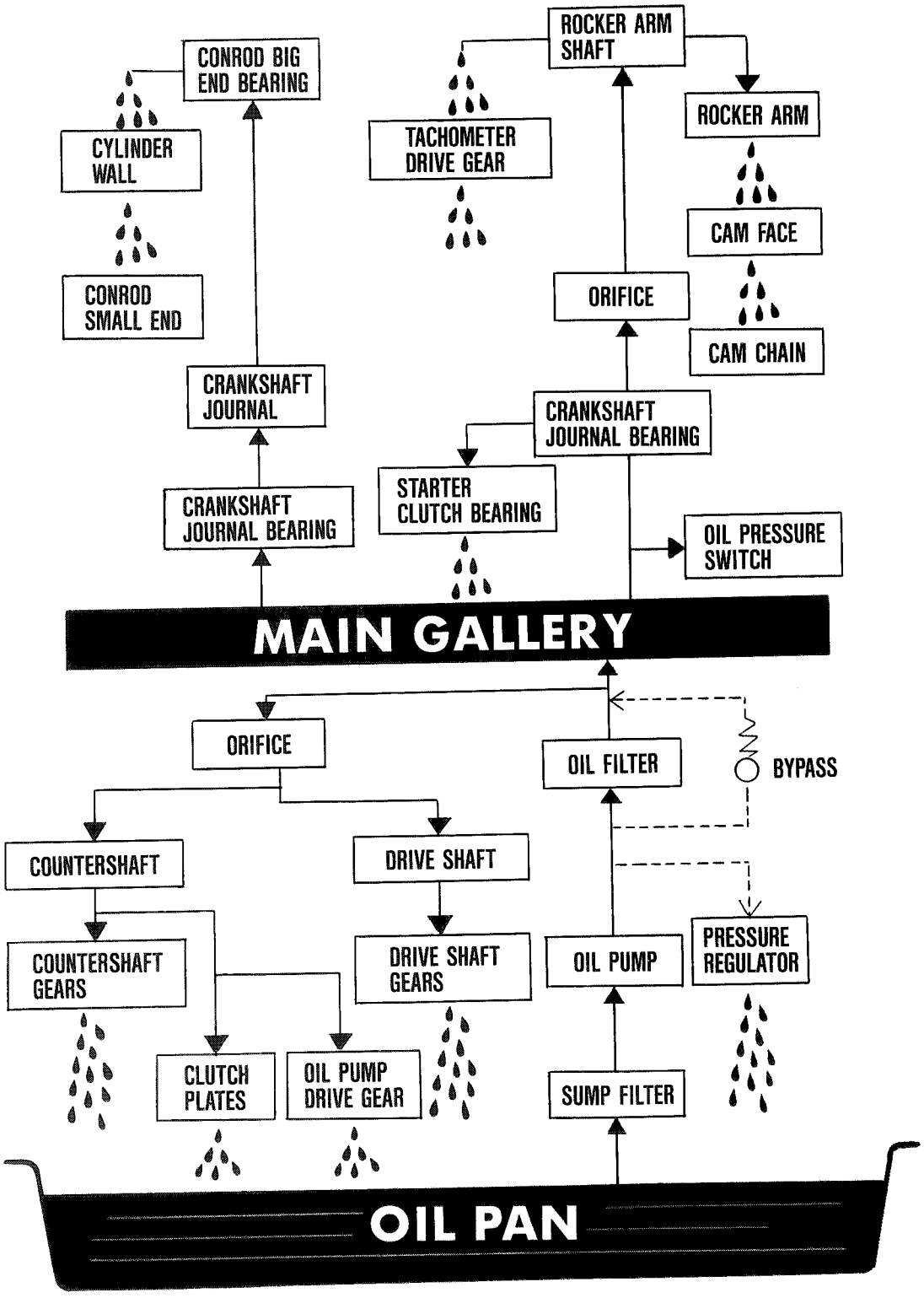


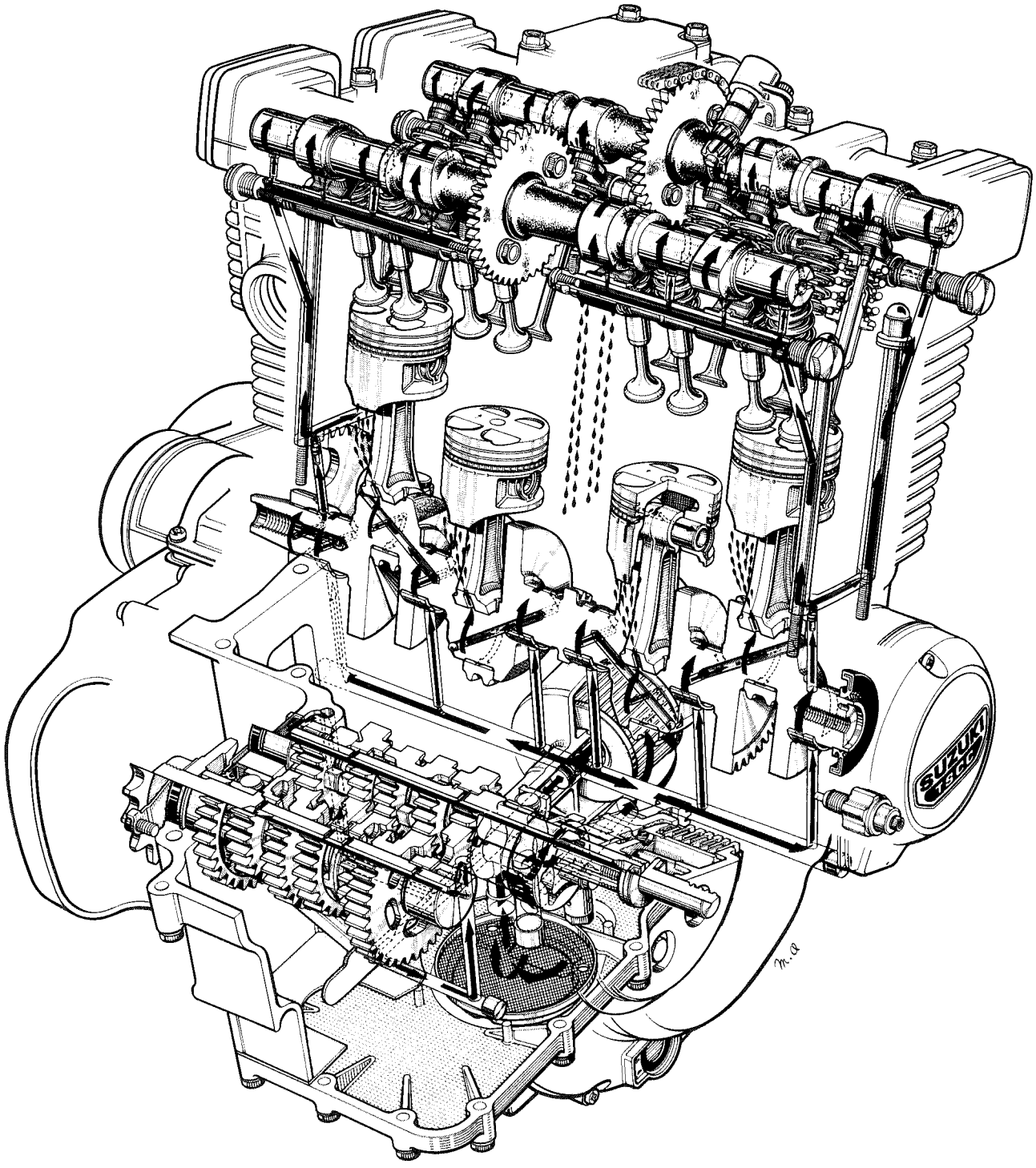
NOTE:
When adjusting the throttle balance screws, adjusting order is as follows:
Ⓐ (for No. 2 Carb.) → Ⓑ (for No. 1) → Ⓒ (for No. 4)



After each job is completed, mount the carburetor on the engine, and the following adjustments are necessary.

LUBRICATION SYSTEM




SUZUKI

ELECTRICAL SYSTEM

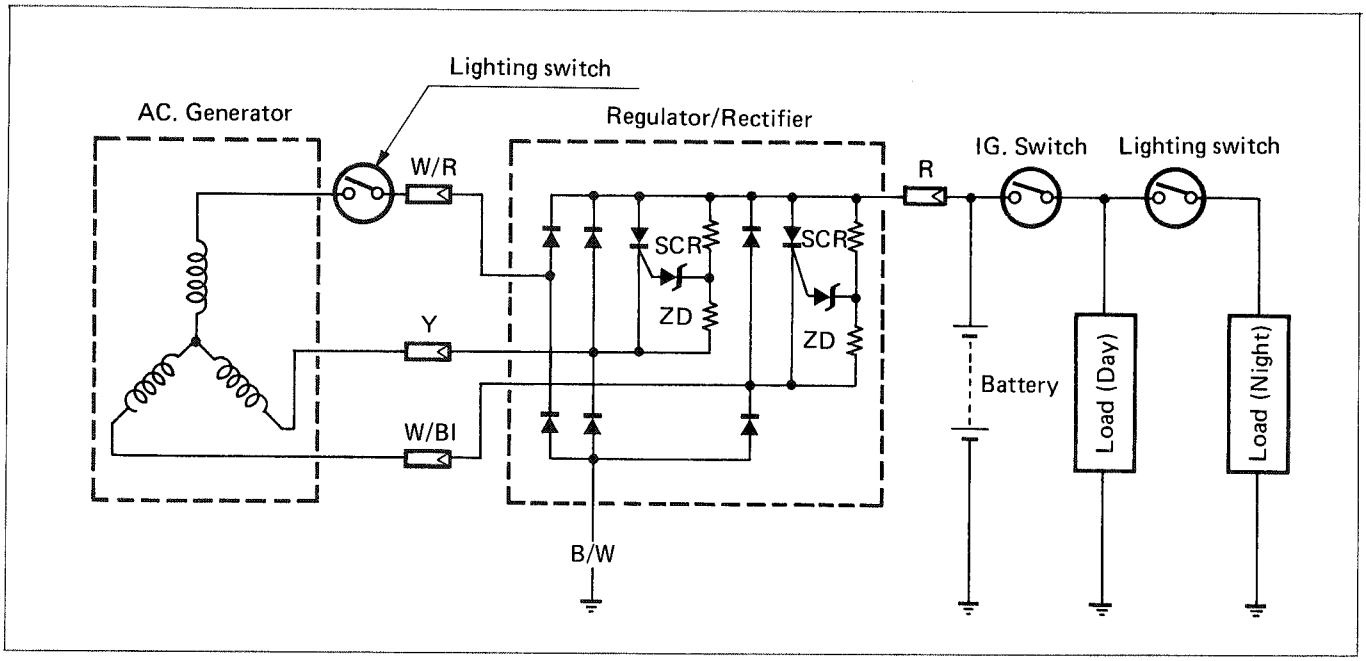
CONTENTS

CHARGING SYSTEM

DESCRIPTION

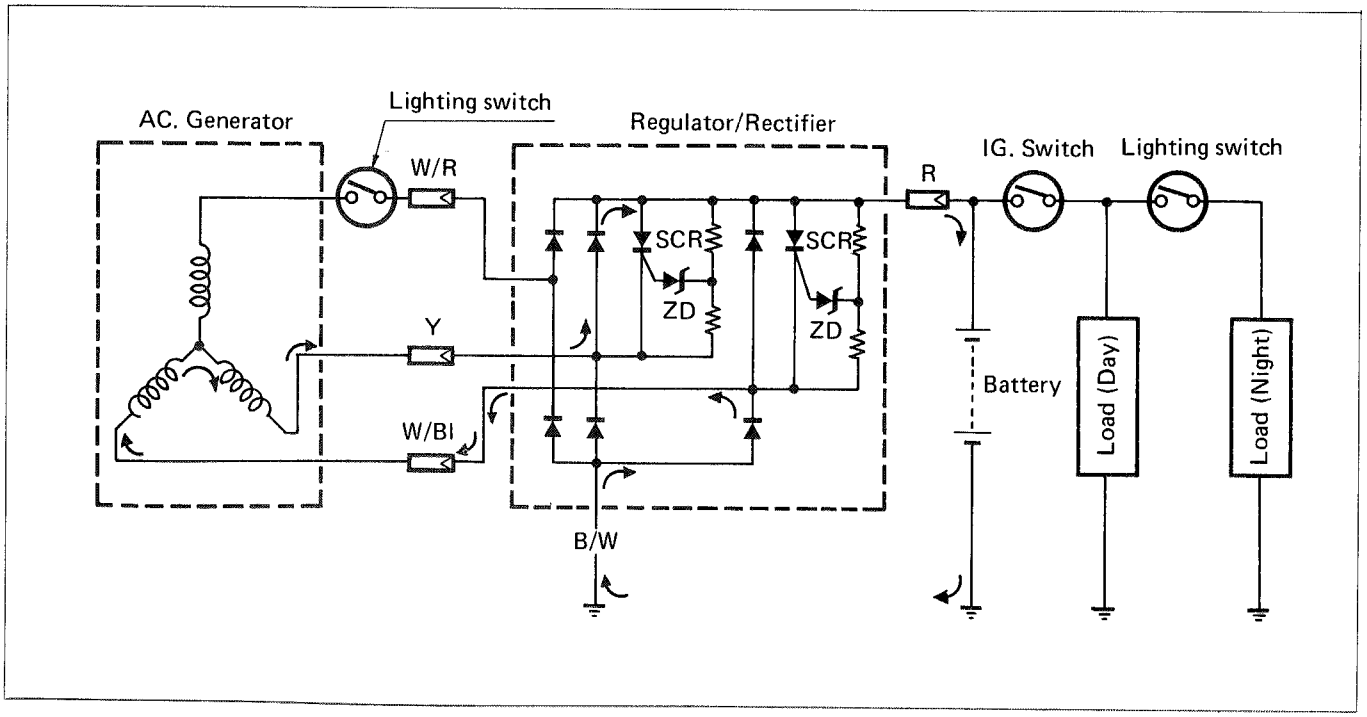
This motorcycle, the circuit of its charging system is indicated in the figure, is composed of AC generator, regulator/recifier unit and battery.

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

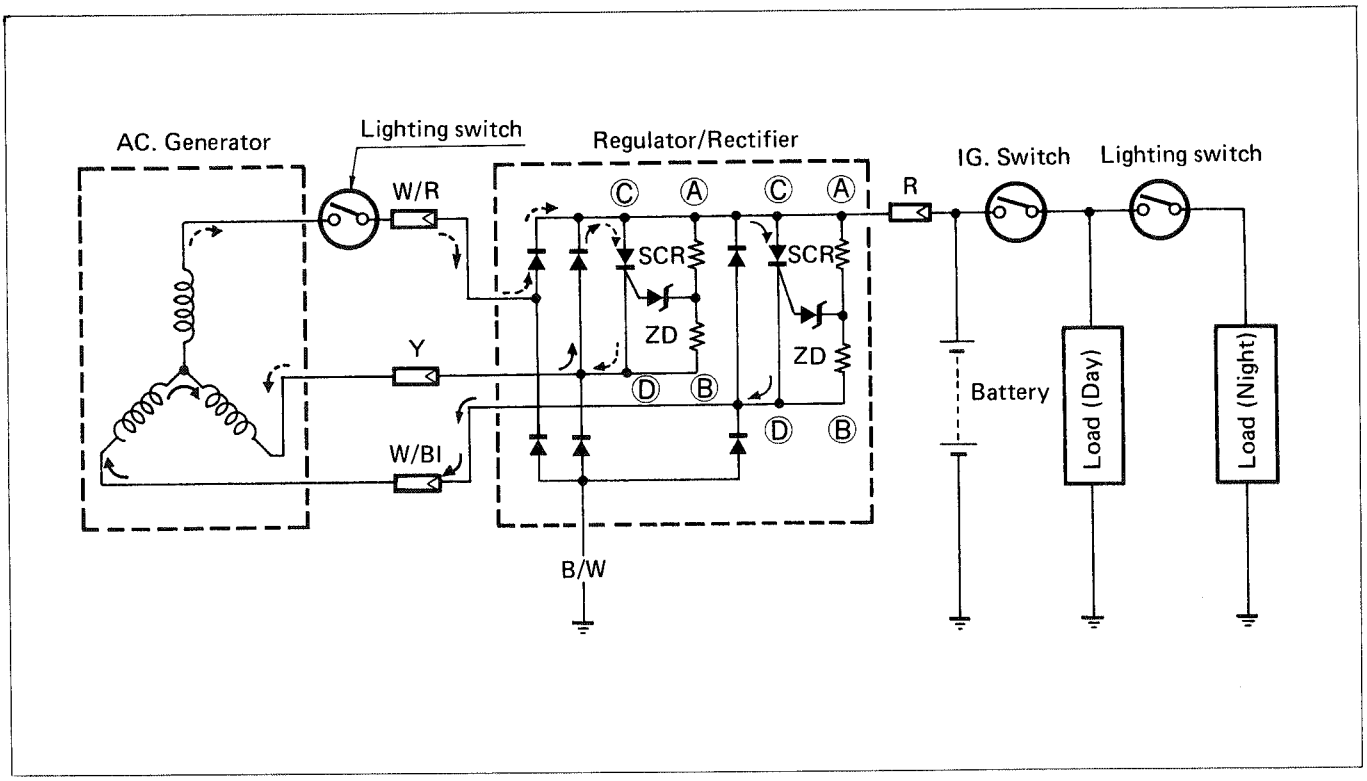


Function of Regulator

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.



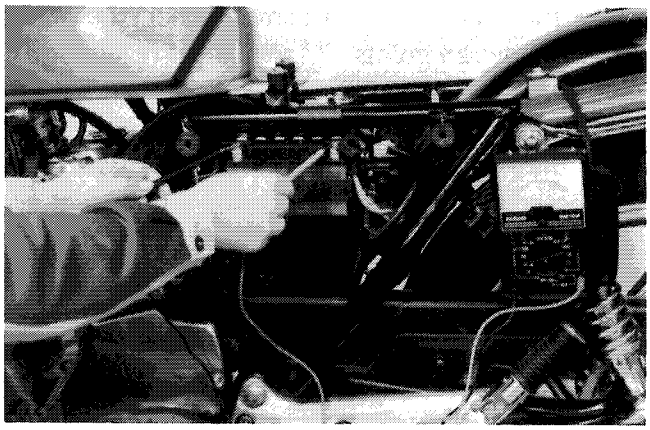
When the engine r/min becomes higher, the generated voltage of AC generator also becomes higher and the voltage between points Ⓐ and Ⓑ of regulator becomes high accordingly, and when it reaches the adjusted voltage of regulator, ZD (Zener diode) sends signal to the gate of SCR (Thyristor). Then the SCR becomes conductive to the direction from point Ⓒ to point Ⓓ. Namely at the state of this the current generated from the AC generator get 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 Ⓓ, 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

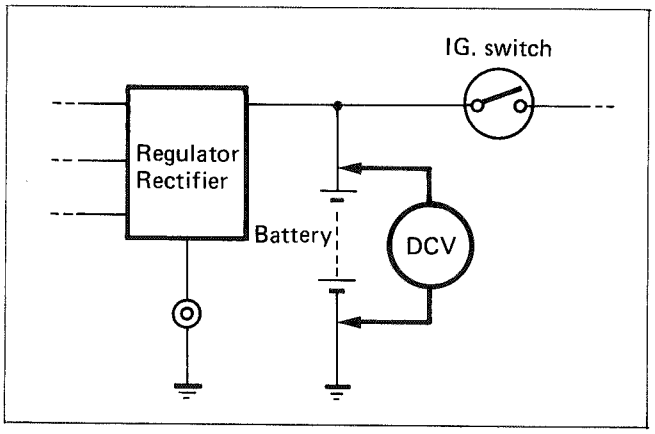
Remove the left frame cover.
Start the engine and keep it running at 5 000 r/min with lighting switch turned ON (HI position).
Using pocket tester, measure the DC voltage between the battery terminal ⊕ and ⊖ .
If the tester reads under 14V or over 15V, check the AC generator no-load performance and regulator/rectifier.



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

STD charging output
14 – 15 V (DC) at 5 000 r/min

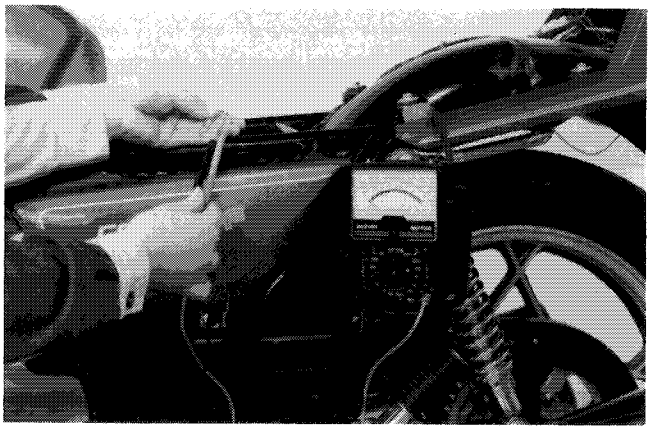
09900-25002	Pocket tester

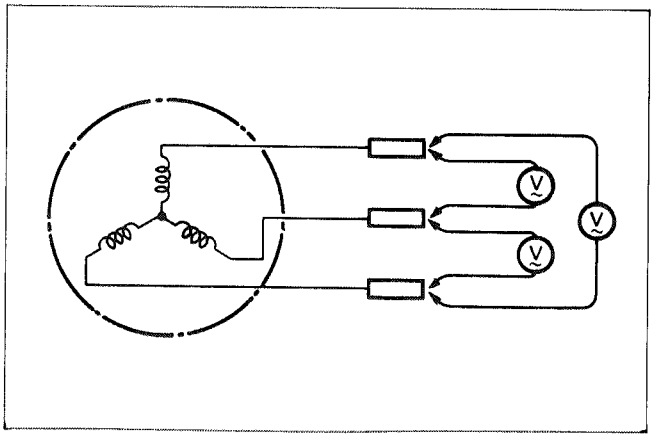


AC GENERATOR NO-LOAD PERFORMANCE

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.
If the tester reads under 80V, the AC generator is faulty.

STD No-load performance
80V (AC) or Over at 5 000 r/min



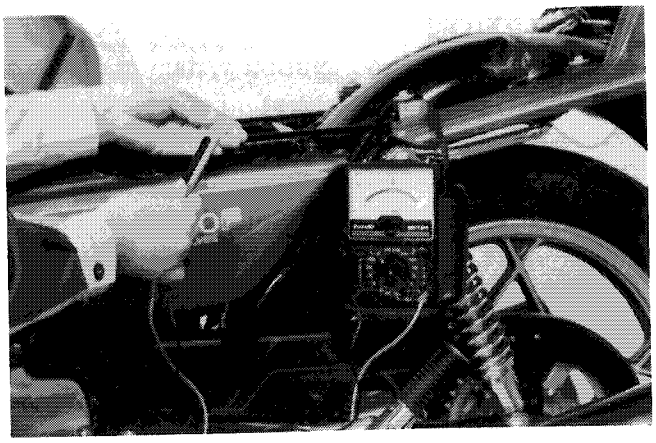


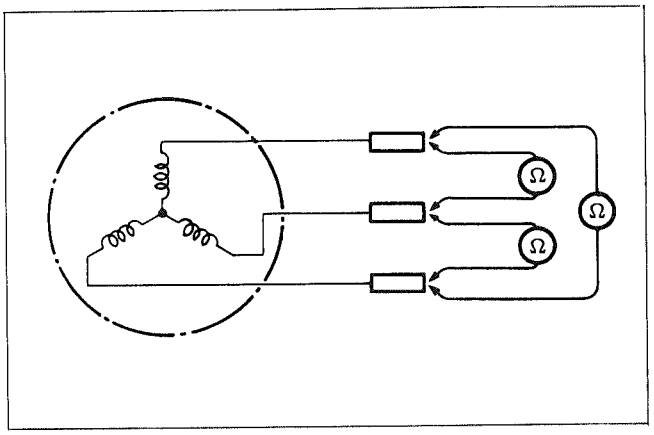
AC GENERATOR CONTINUITY CHECK

Using the 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



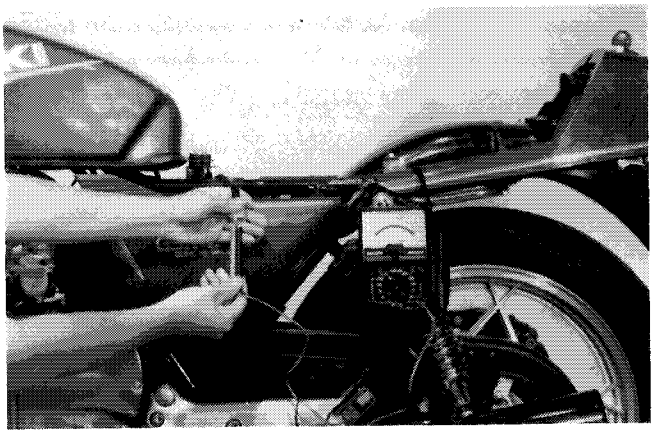


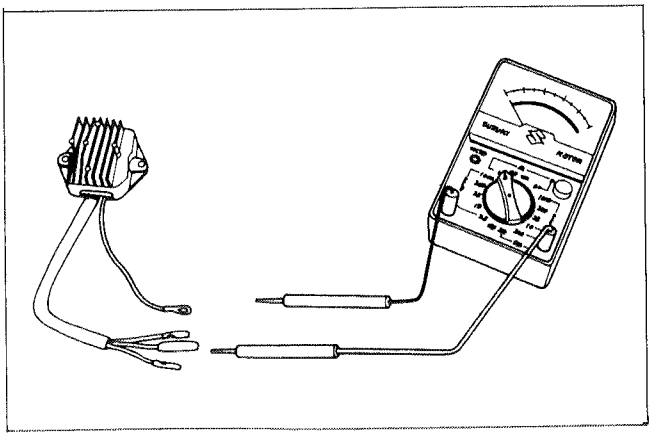
REGULATOR/RECTIFIER

Using the 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.

09900-25002	Pocket tester

⊖ Probe of tester \ ⊕ Probe of tester	R	W/BI	W/R	Y	B/W
R		∞	OFF	∞	OFF
W/BI	5-6Ω		OFF	∞	OFF
W/R	5-6Ω	∞		∞	OFF
Y	5-6Ω	∞	OFF		OFF
B/W	30-40Ω	5-6Ω	5-6Ω	5-6Ω	



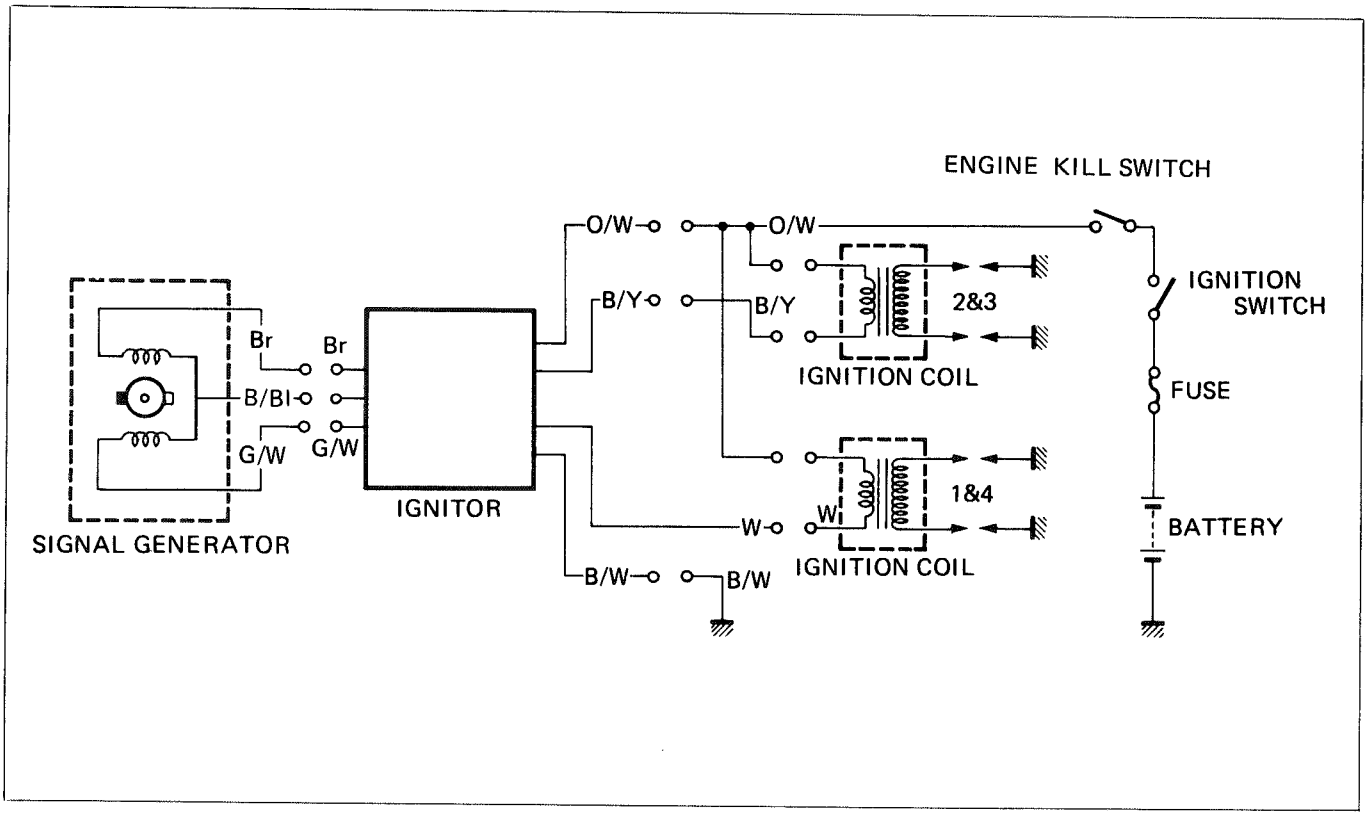


IGNITION SYSTEM

DESCRIPTION

The fully transistorized ignition system consists of a signal generator, transistor igniter, ignition coils, and spark plugs. The signal generator comprises one rotor and two pick-up coils.

The signal generator is mounted at the right end of the crankshaft. The output of the signal generator goes to the transistor igniter 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.



INSPECTION

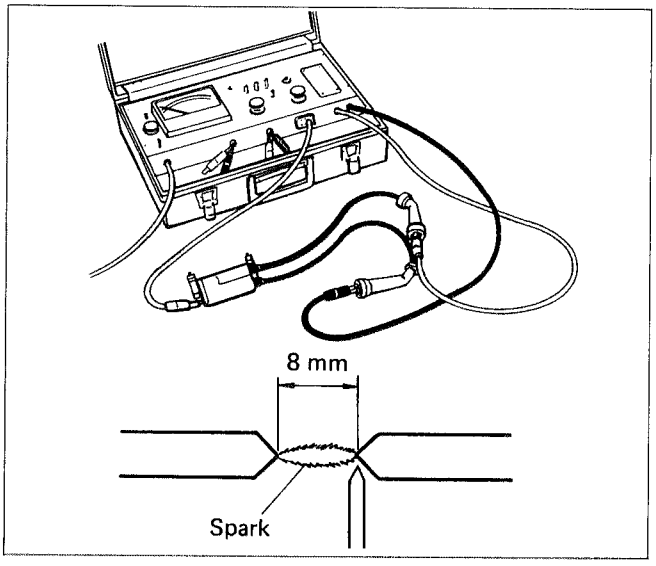
IGNITION COILS (Checking with Electro Tester)

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

If no sparking or orange color sparking occures with this much gap, then it is defective and must be replaced. Test for 5 minutes.

09900-28106	Electro tester

STD Spark performance	8 mm

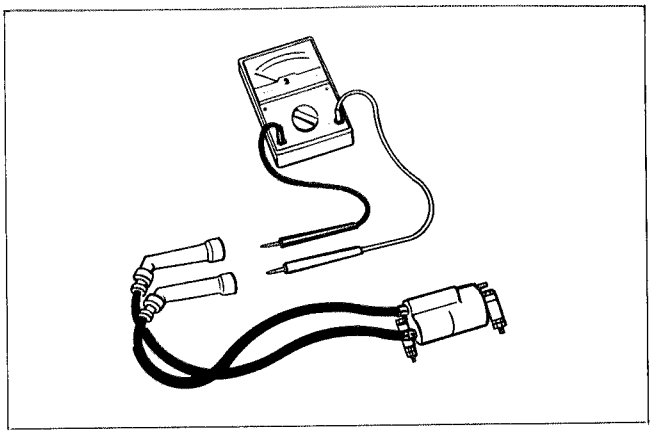


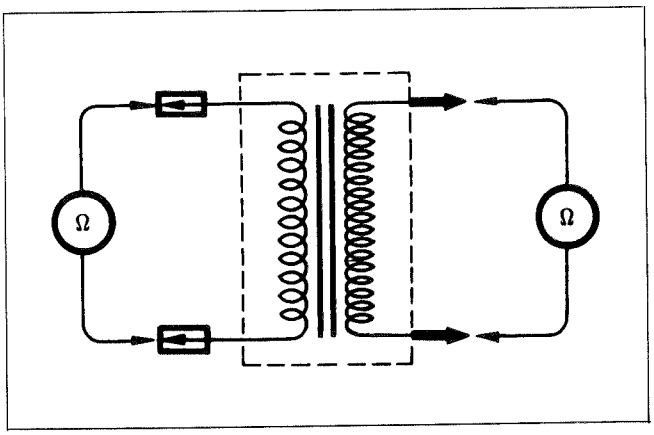
IGNITION COILS (Checking with Pocket Tester)

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

Ignition coil resistance	
Terminal – Terminal	Approx. 3 – 5Ω
Plug cam – Plug cap	Approx. 35 – 45 kΩ



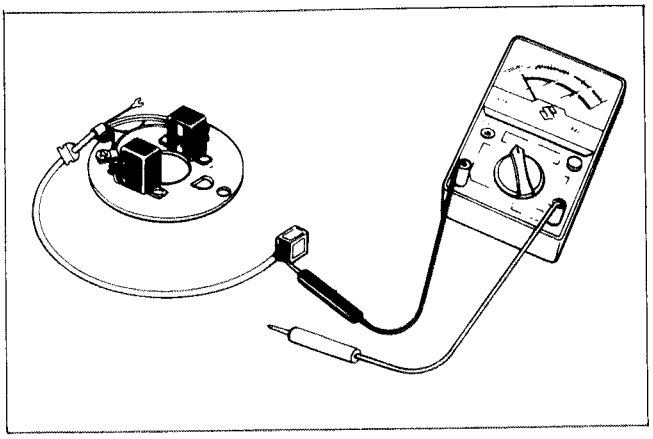


SIGNAL GENERATOR

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

09900-25002	Pocket tester

STD resistance	
Br – B/Bl G/W – B/Bl	60 – 80 Ω

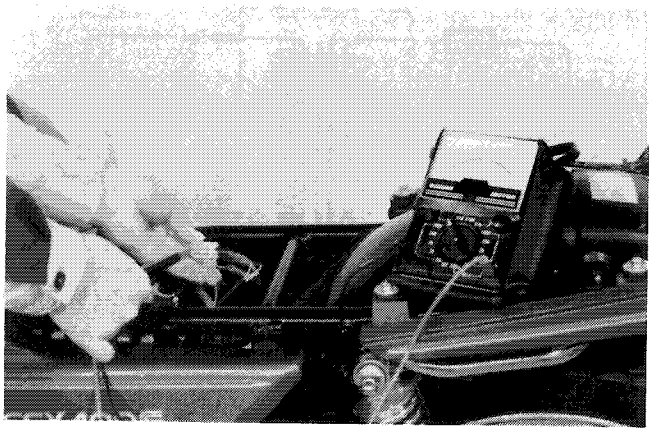


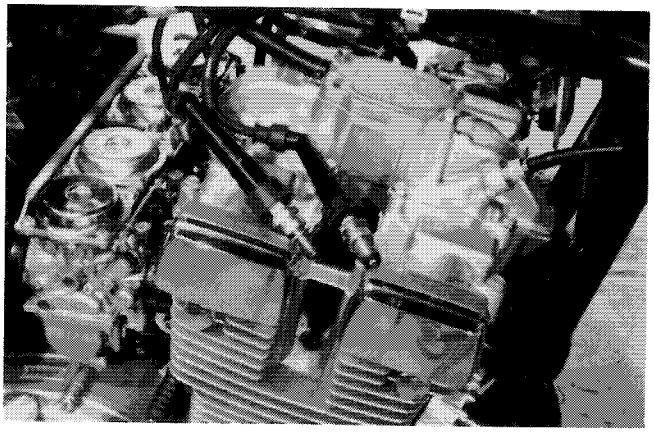
IGNITER UNIT

Remove each spark plug of Nos. 3 and 4 cylinders, fit it to respective plug cap and place it on the cylinder head.

Remove the frame cover on the right side and disconnect the lead wire from the signal generator.
Connect the ⊖ pin of the pocket tester (x1Ω range) to B/Bl, and then connect the ⊕ pin to Br and G/W alternately. If the No. 4 plug sparks, with the ⊕ pin connected to Br, and if the No. 3 sparks, with the ⊕ pin to G/W, the igniter is good.

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

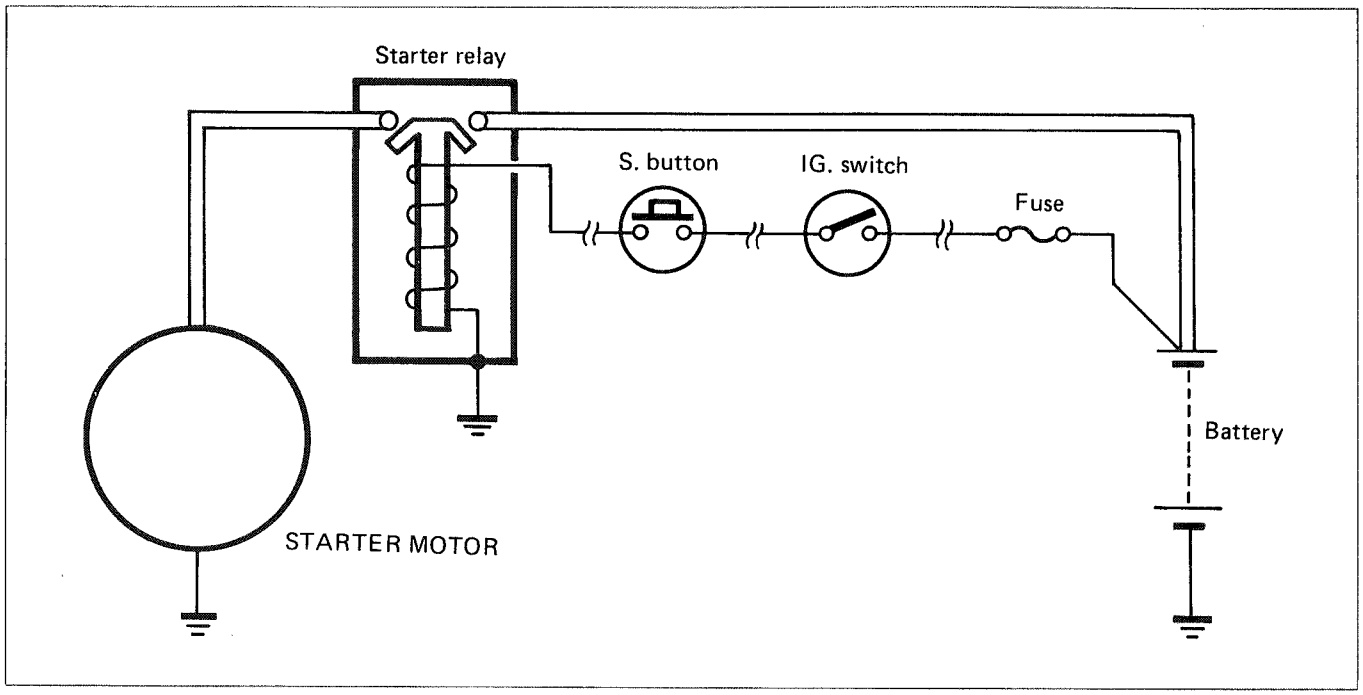




STARTER SYSTEM

DESCRIPTION

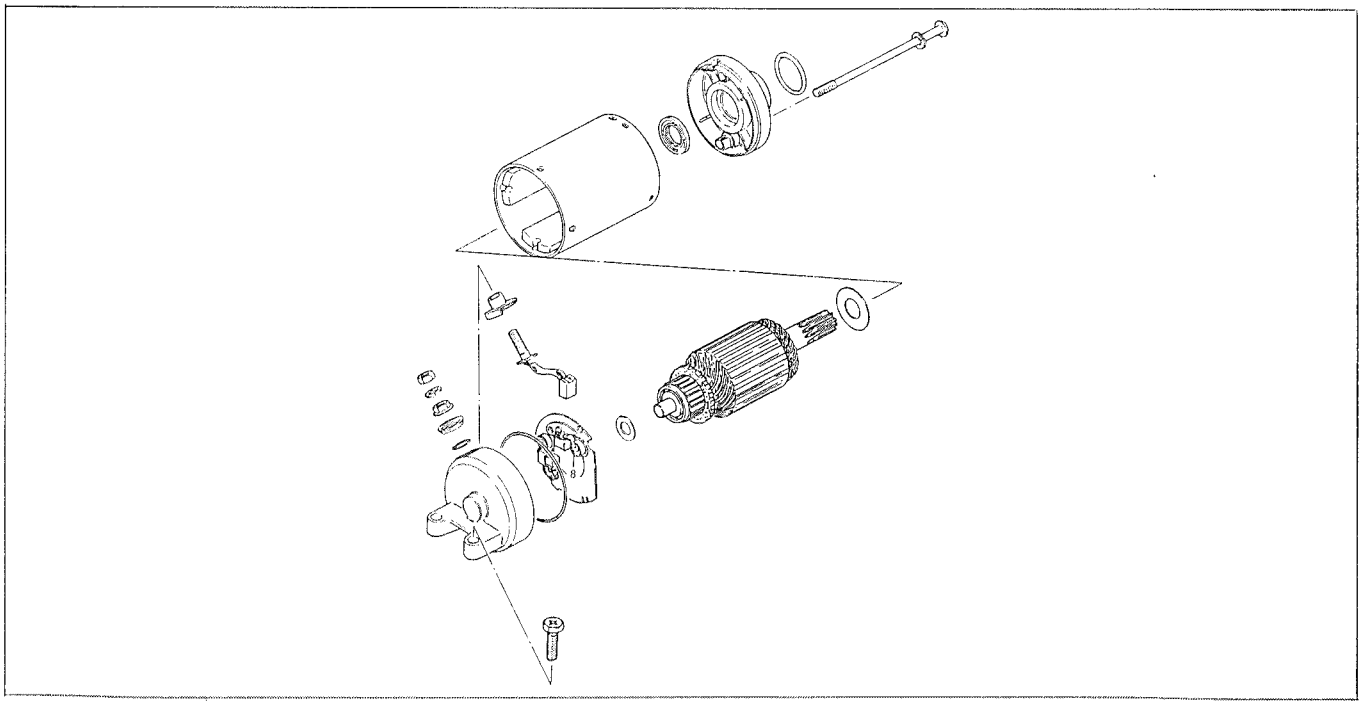
The starter system is shown in the diagram below: namely, the starter motor, relay, starter switch and battery. Depressing the starter button (on the right handlebar switch box) energizes the relay, causing the contact points to close which connects the starter motor to the battery. The motor draws about 80 amperes to start the engine.



STARTER MOTOR REMOVAL AND DISASSEMBLY

Remove the starter motor (See page 3-15).

Disassembly the starter motor as follows.

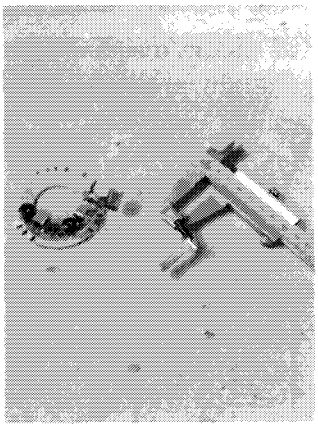


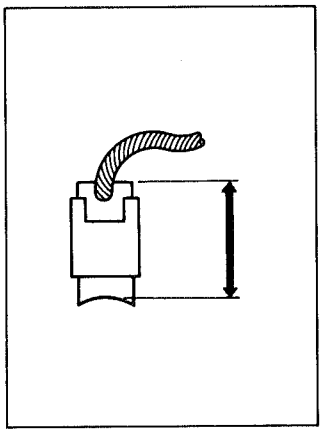
STARTER MOTOR INSPECTION

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, replacing them when they are too short or chipping.

Service Limit	6 mm



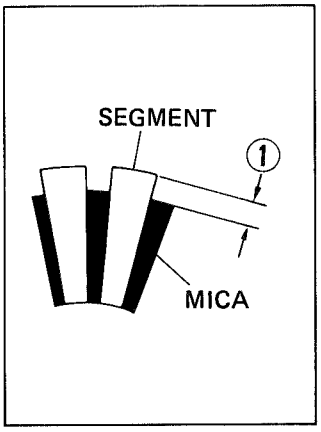


COMMUTATOR

If the commutator surface is dirty, starting performance decrease. 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 comutator under cut ①.

Service Limit	0.2 mm

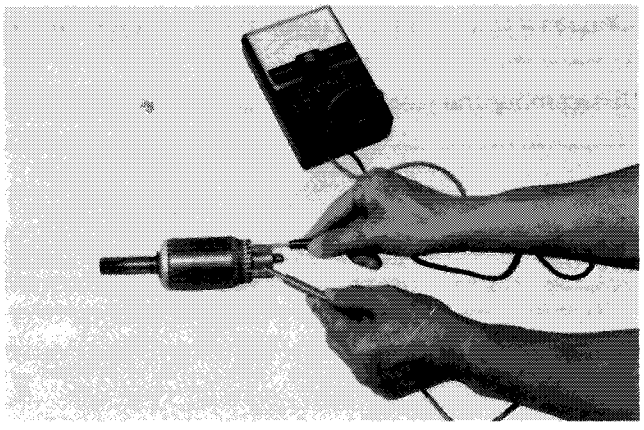


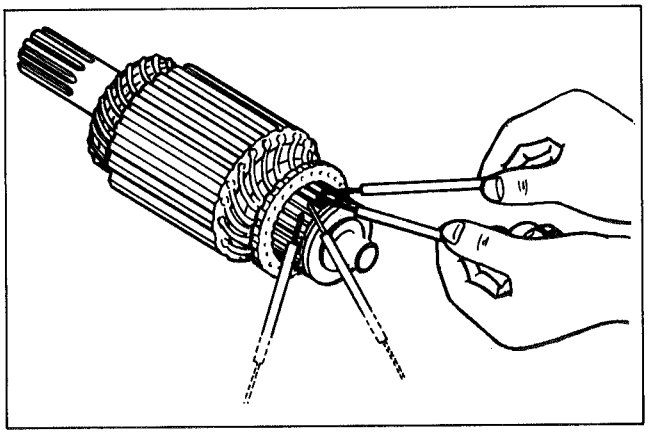
ARMATURE COIL

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

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

09900-25002	Pocket tester

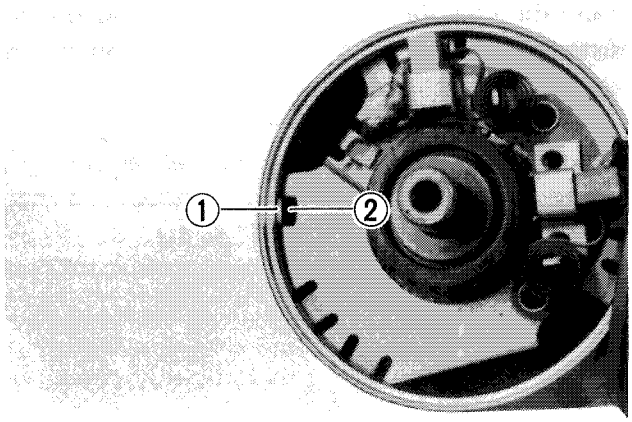




STARTER MOTOR REASSEMBLY

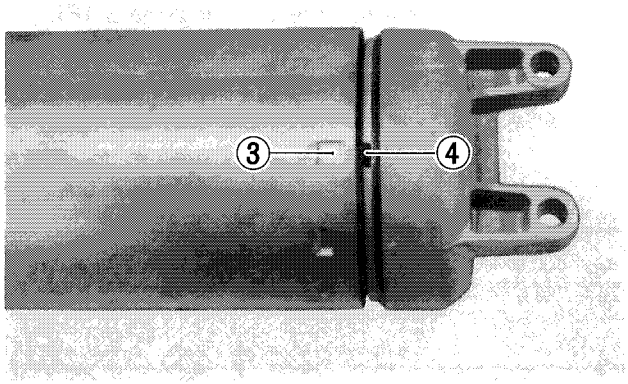
BRUSH HOLDER

When fixing brush holder to starter motor case, align the protrusion ① of the starter motor case with the notch ② of the brush holder.



HOUSING END

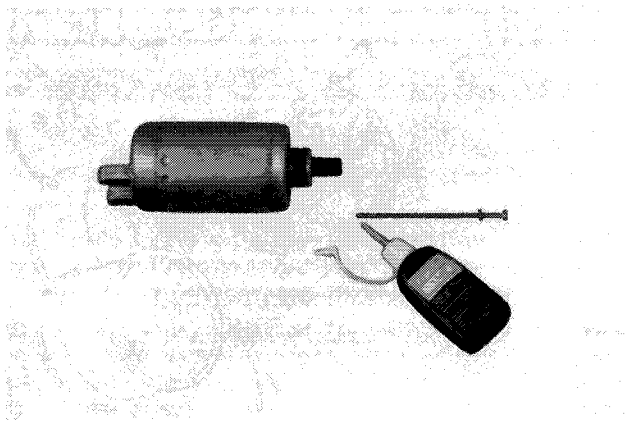
When installing housing end, fix the protrusion ③ of the starter motor case to the notch ④ on the housing end.



SECURING SCREWS

Apply Thread Lock "1342" to starter motor securing screws.

99000-32050	Thread lock "1342"



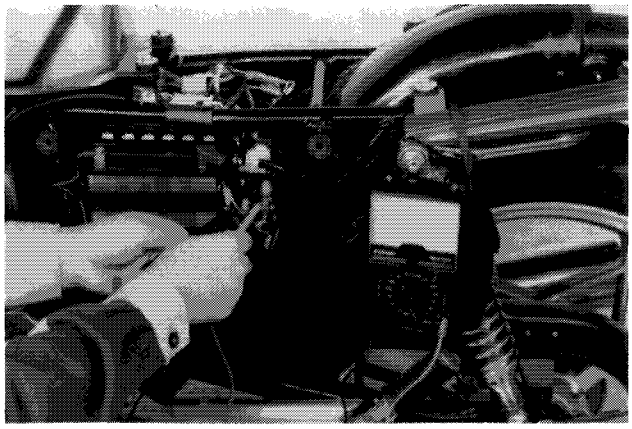
STARTER RELAY INSPECTION

Disconnect lead wire of the starter motor at starter relay.

Turn on the ignition switch, inspect the continuity between the terminals, positive and negative, when pushing the starter button.

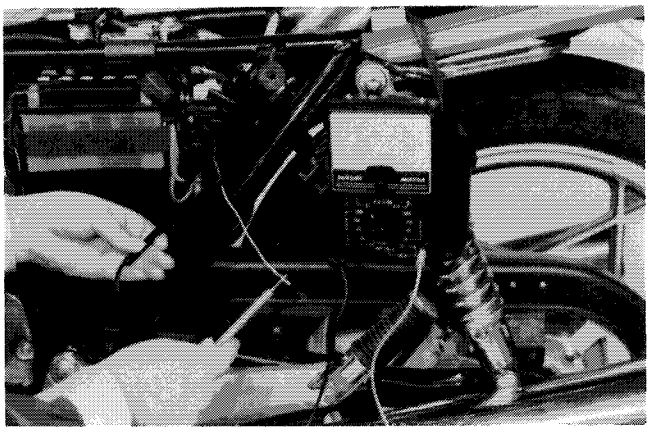
If the starter relay is in sound condition, continuity is found.

09900-25002	Pocket tester



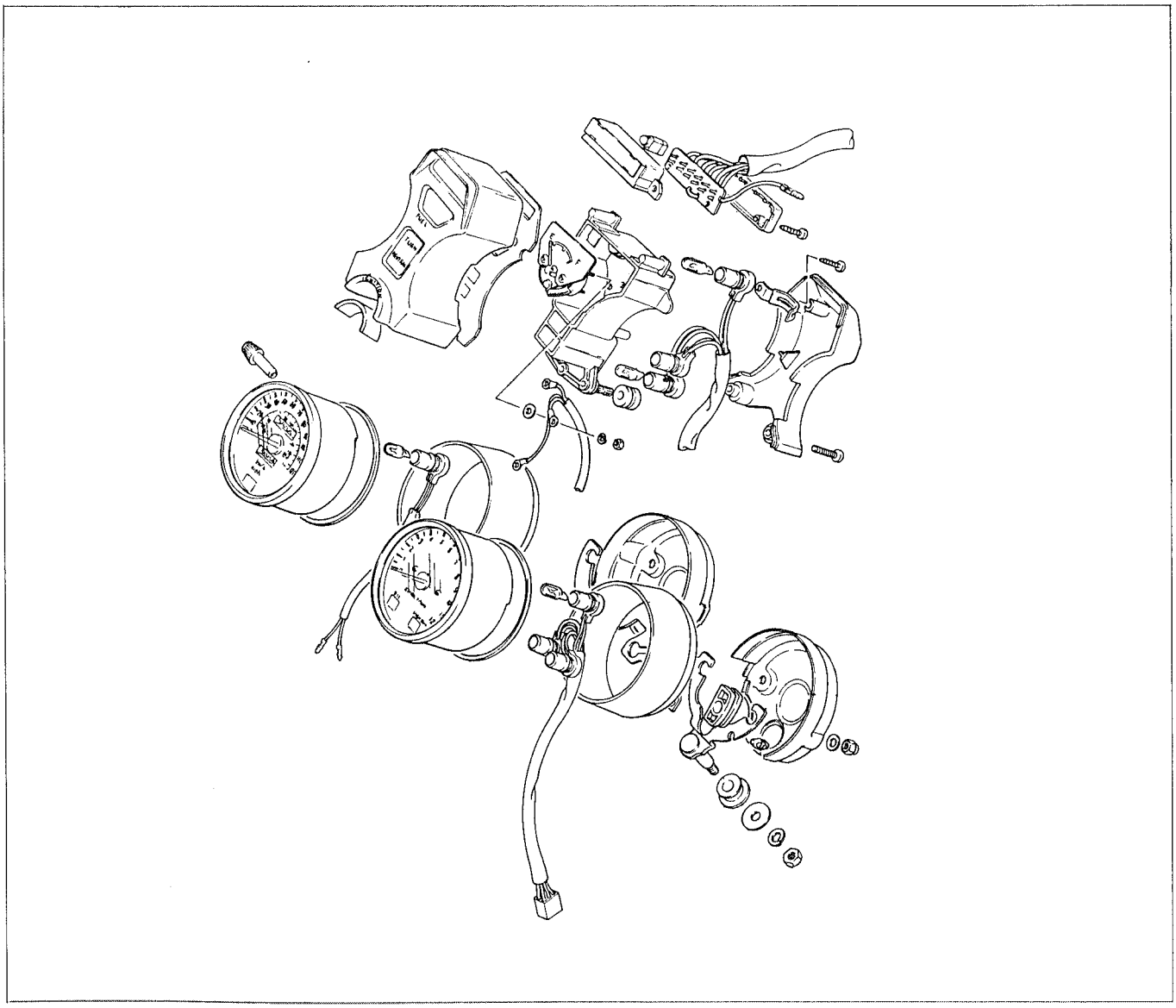
Check the coil for "open", "ground" and ohmic resistance. The coil is in good condition if the resistance is as follows.

09900-25002	Pocket tester
STD resistance	3 – 4Ω



COMBINATION METER

Remove the combination meter (See page 6-18).
Disassembly the combination meter as follows.

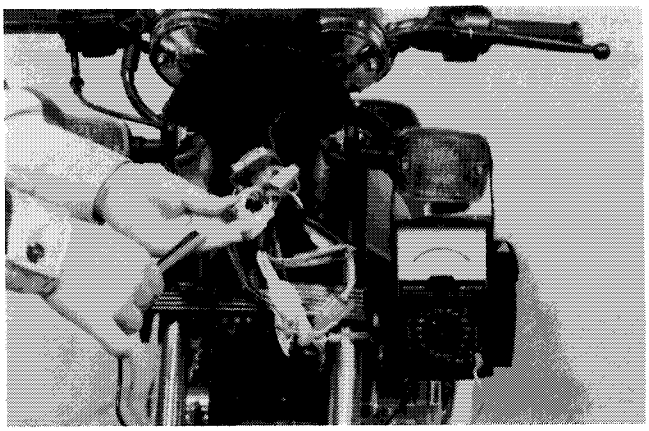


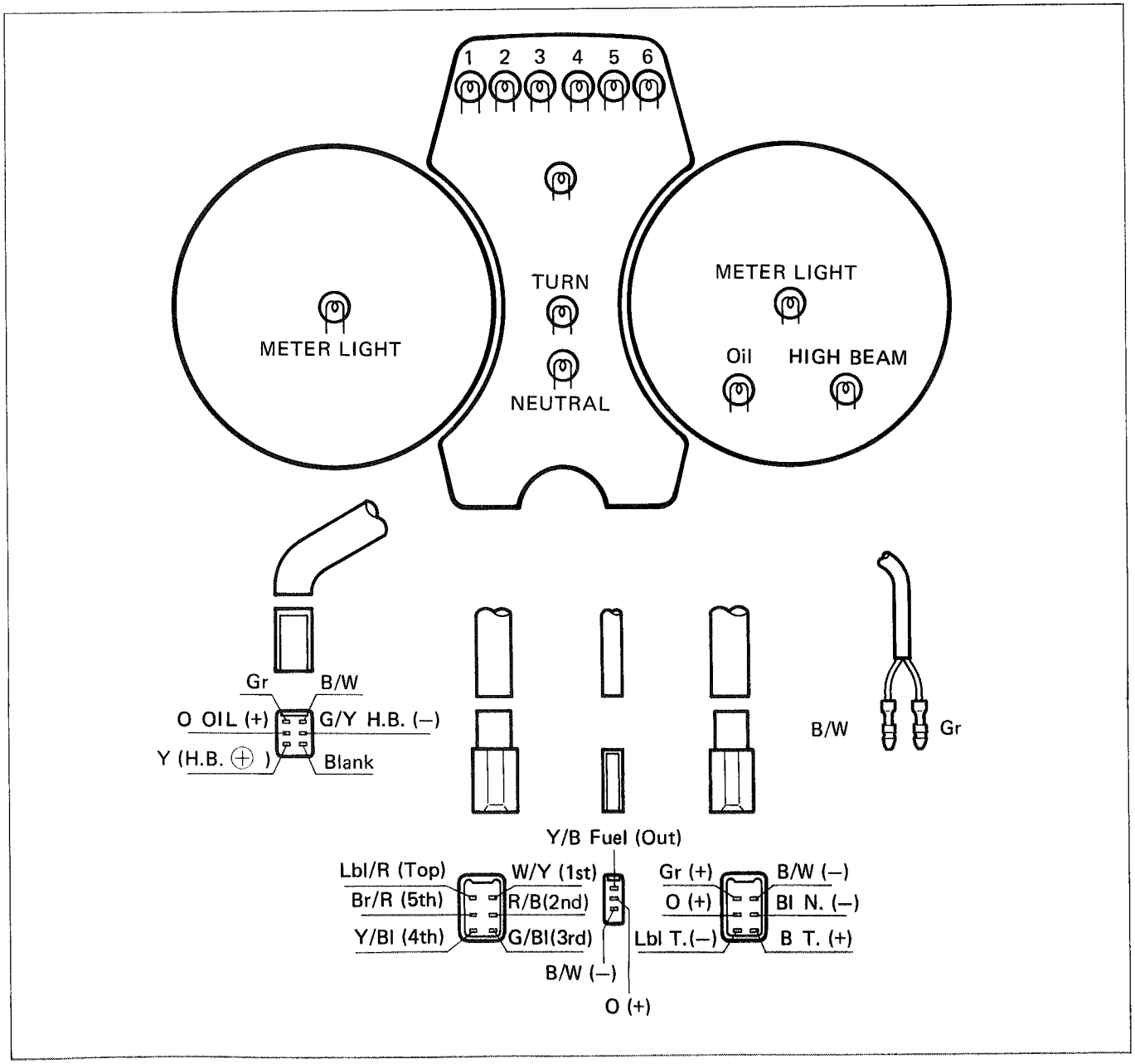
INSPECTION

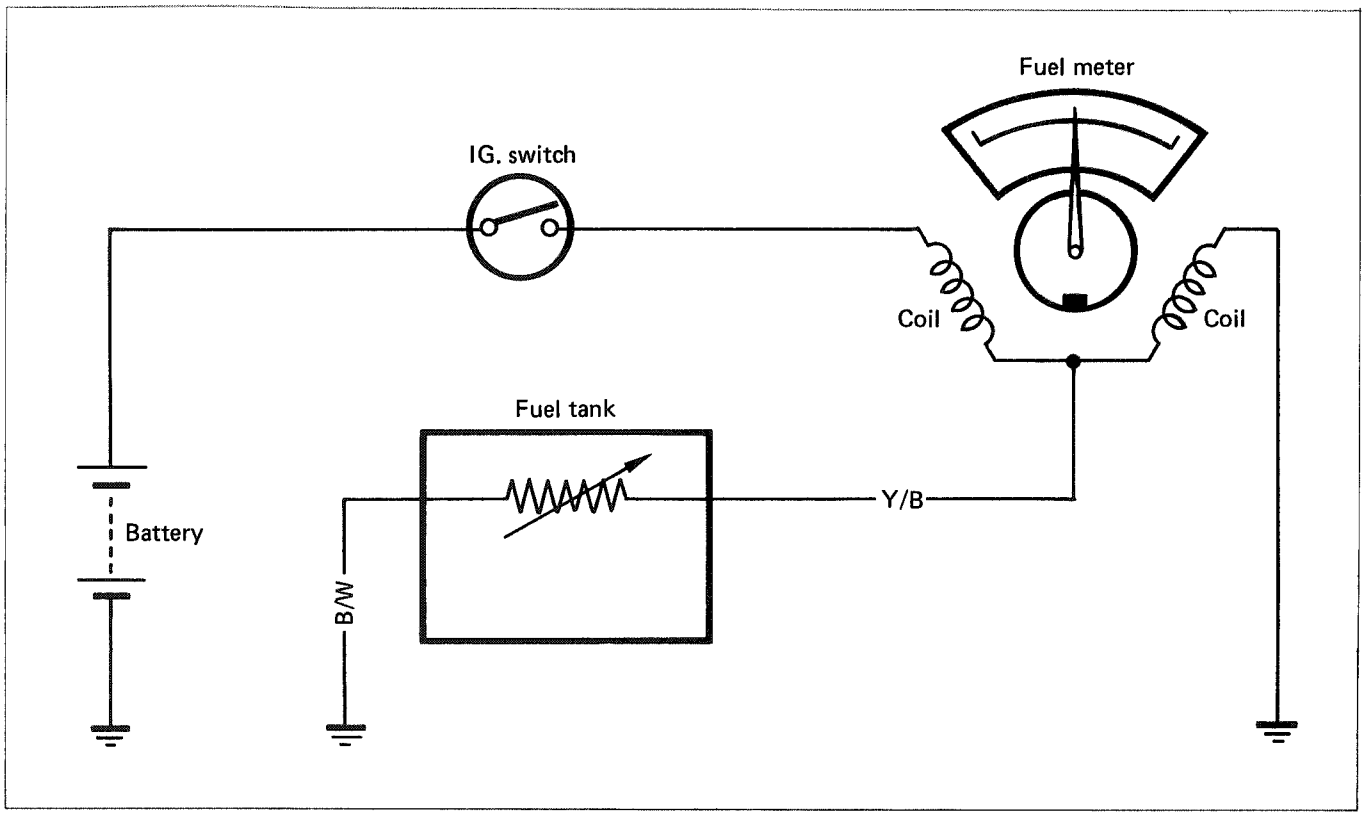
Using pocket tester, check the continuity between lead wires in the following diagram.
If the continuity measured is incorrect, replace the respective part.

09900-25002	Pocket tester

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



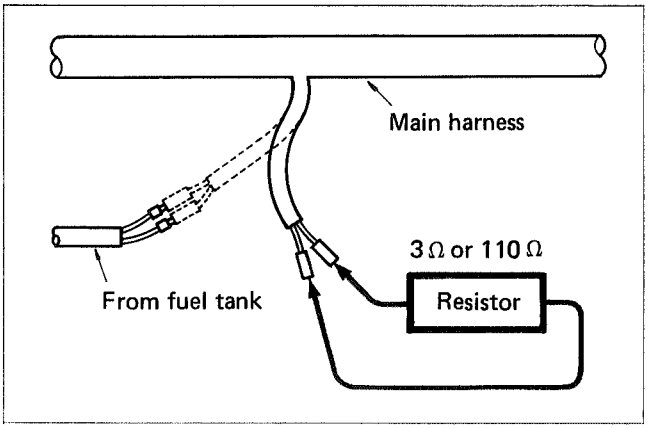




FUEL METER

With the ignition switch turned on, remove two lead wires going into the fuel gauge, and connect the resistor between the main wiring harness side, and check the fuel meter.

"F"	Connect the 3 Ω resistor
"E"	Connect the 110 Ω resistor



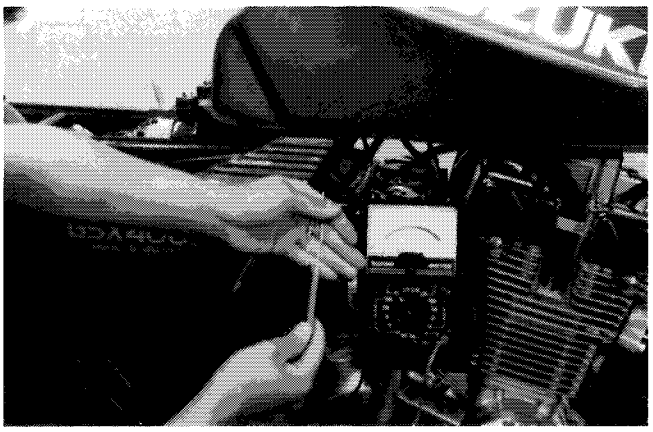
FUEL GAUGE

Remove the lead wires coming out of the fuel gauge and check resistance of each of them.

If the resistance measured is incorrect, replace the fuel gauge assembly with new one.

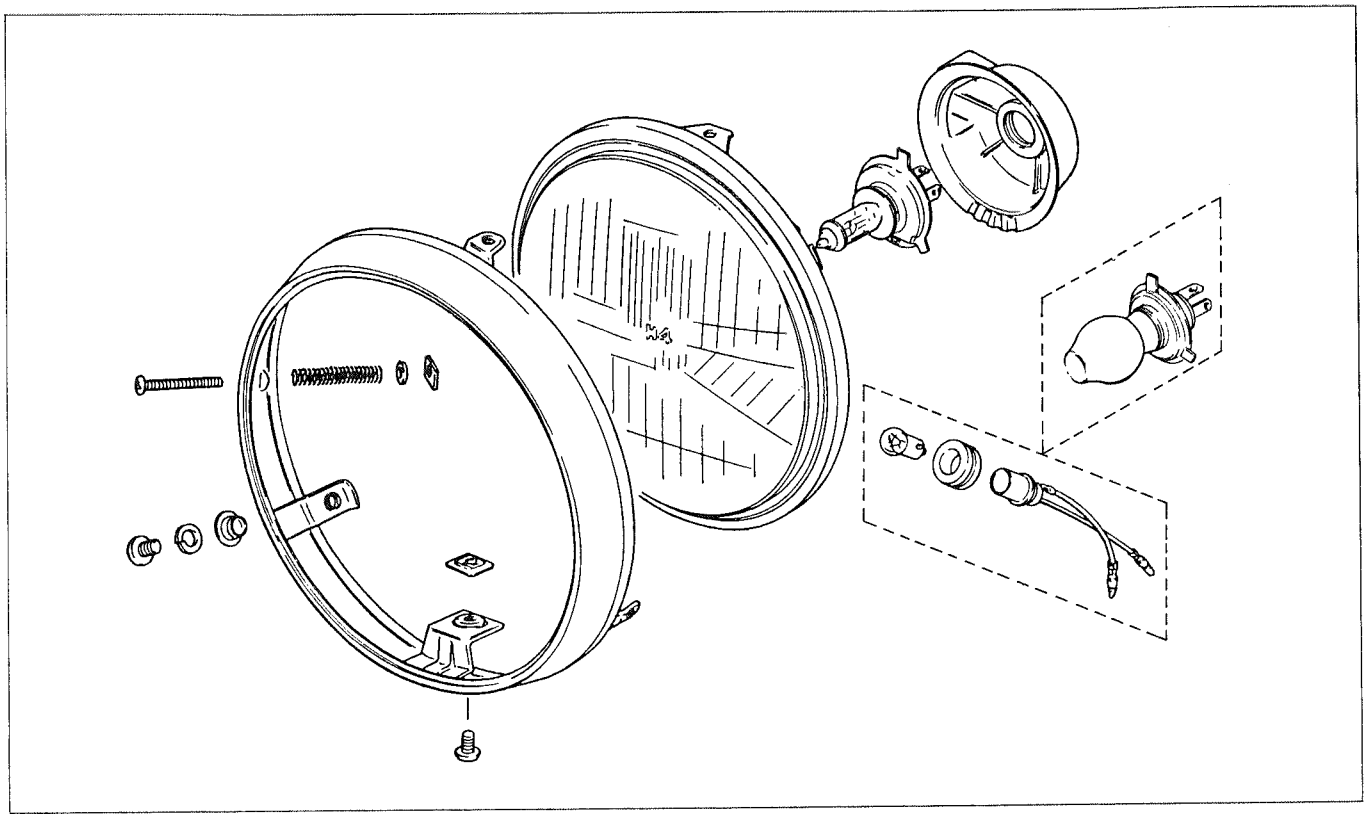
09900-25002	Pocket tester

POSITION	RESISTANCE
FULL	Approx. 3 Ω
1/2	Approx. 32.5 Ω
ENP	Approx. 110 Ω

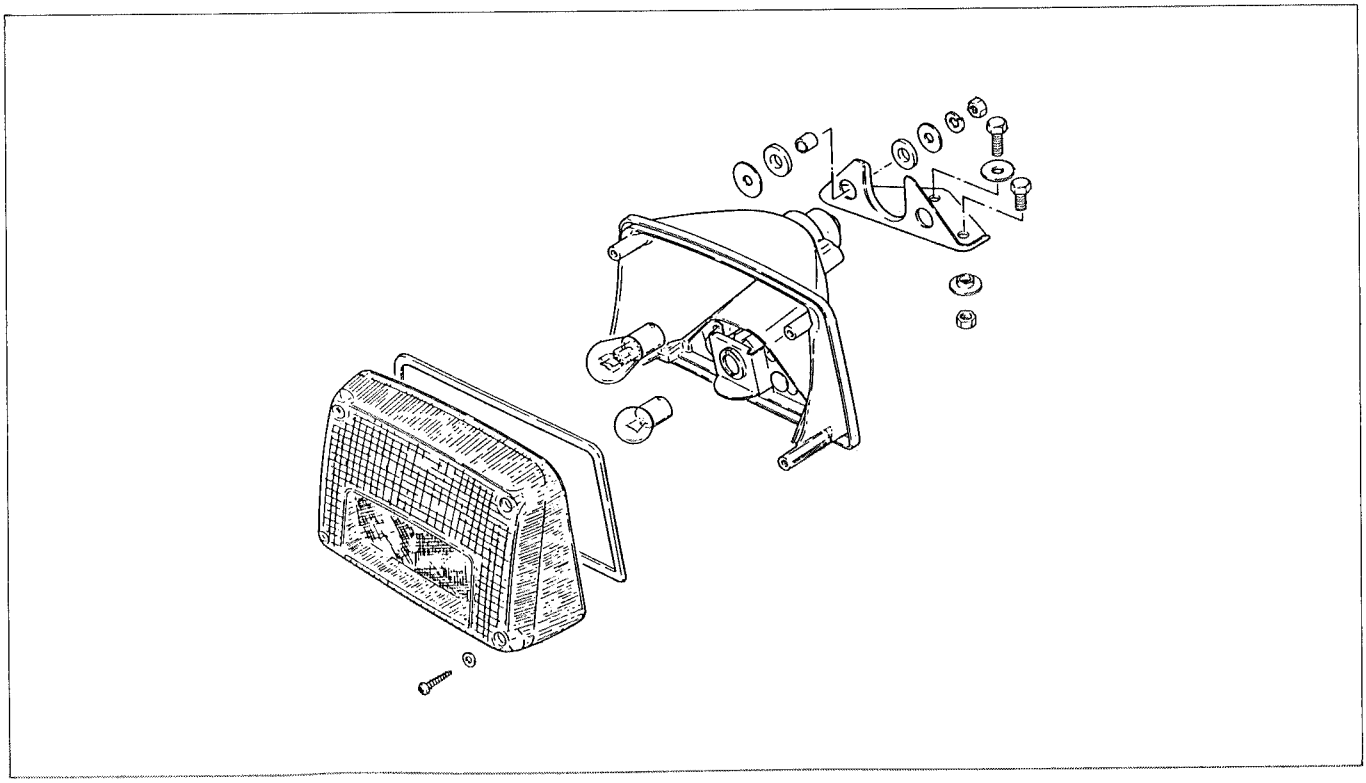


LAMPS

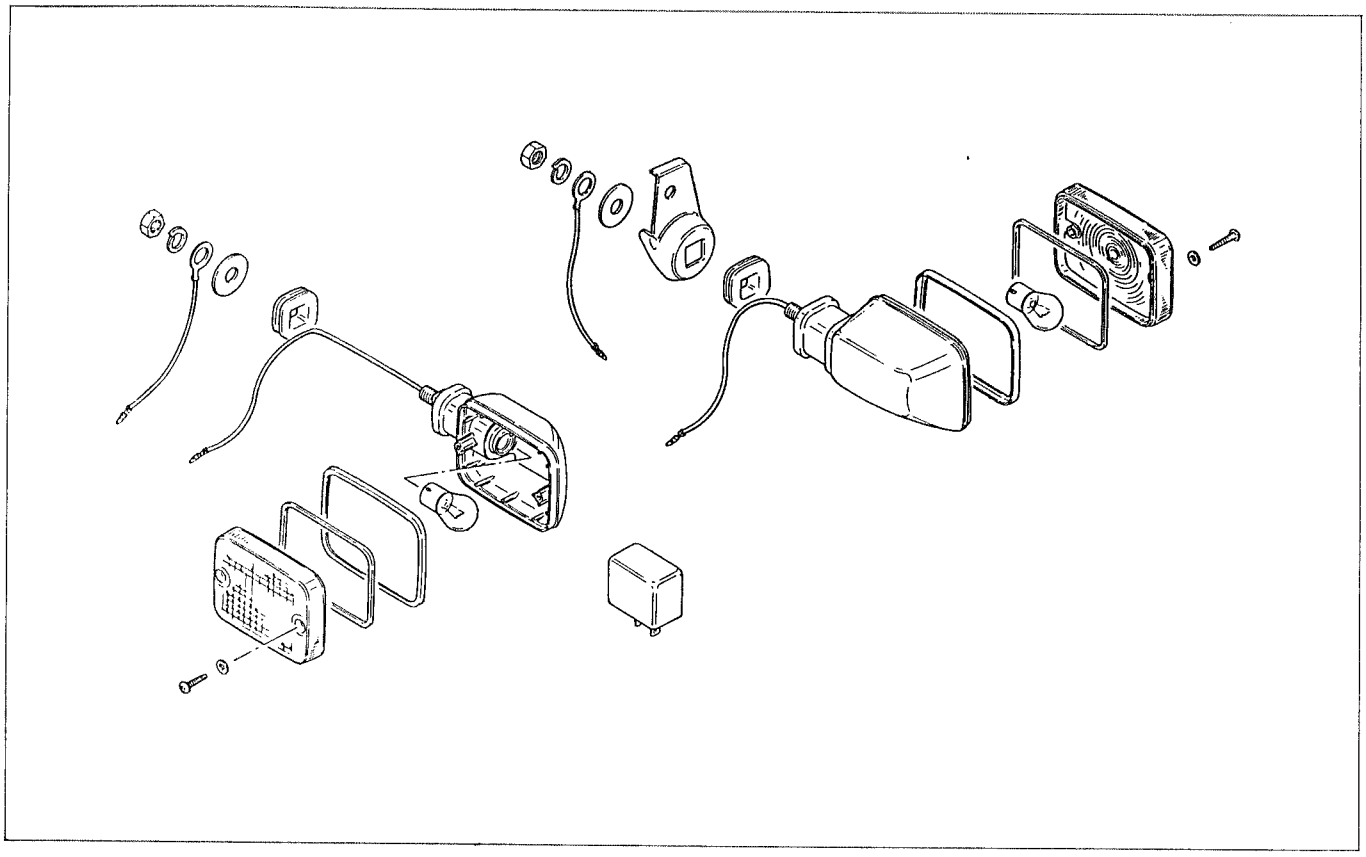
HEADLIGHT



TAIL/BRAKE LIGHT



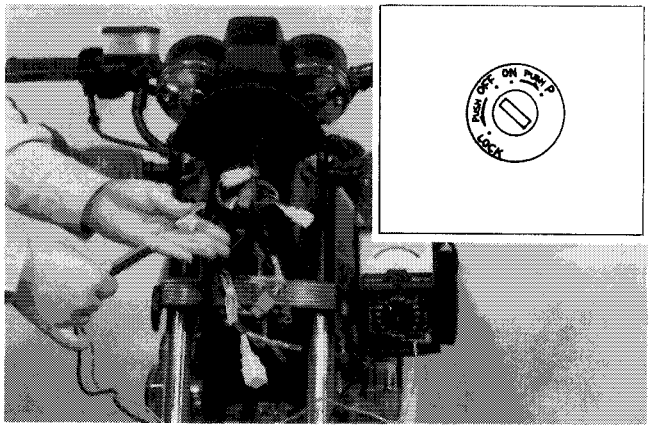
TURN SIGNAL LIGHT

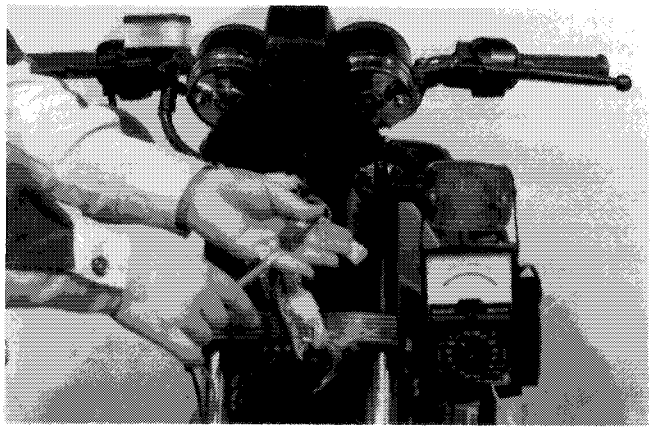


SWITCHES

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

09900-25002	Pocket tester





IGNITION SWITCH

	R	O	Gr	Br
OFF				
ON	○——	——○	○——	——○
P	○——			——○

ENGINE STOP AND START SWITCH

	O	O/W	Y/G
OFF			
RUN	○——	——○	
START		○——	——○

LIGHTING SWITCH

For General E-01

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

For the others

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

FRONT BRAKE RIGHT SWITCH

	R/Bl	O/G
OFF		
ON	○	○

DIMMER SWITCH

	W	Y	Y/W
HI		○	○
LO	○		○

TURN SIGNAL LIGHT SWITCH

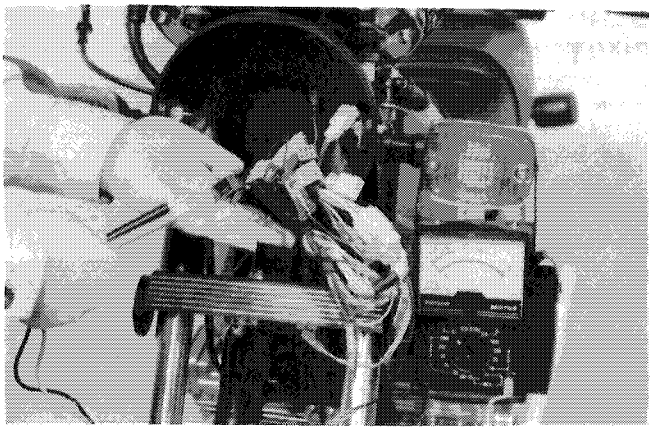
	B	Lbl	Lg
R		○	○
•			
L	○	○	

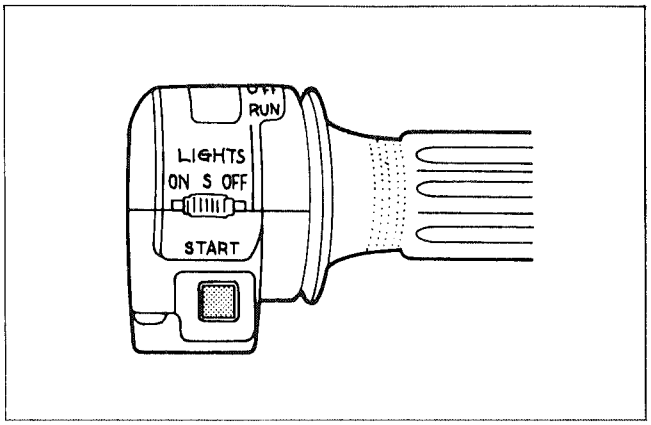
HORN AND PASSING SWITCH

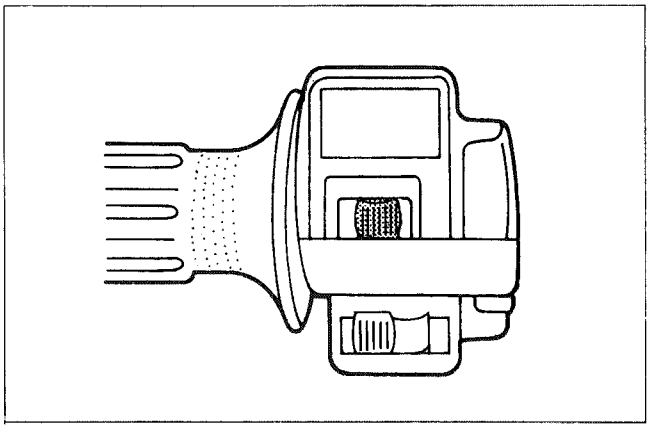
	Y/W	Bl/W	G	B/W
OFF				
HORN	○	○		
PASS			○	○

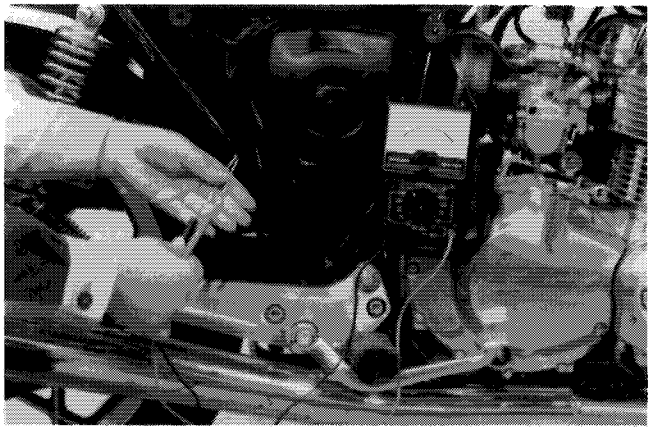
REAR BRAKE LIGHT SWITCH

	R/Bl	O/G
OFF		
ON	○	○



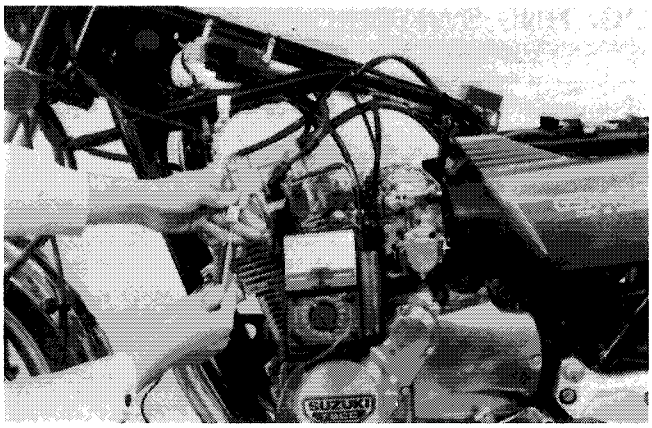






GEAR POSITION INDICATOR LIGHT SWITCH

Gear position	Wire color	
1st	W/Y	Ground
Neutral	BI	
2nd	R/B	
3rd	G/BI	
4th	Y/BI	
5th	Br/R	
Top	G/R	

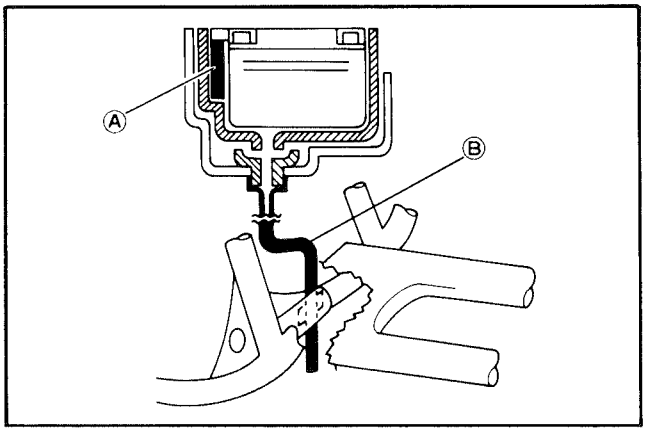


BATTERY

Specifications

Type designation	YB10L-A2
Capacity	43.2 kC (12 Ah)
Standard electrolyte S.G.	1.28 at 20°C (68°F)

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



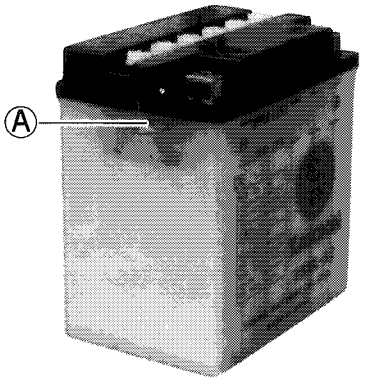
Ⓐ Breather hose Ⓑ Drain hose

INITIAL CHARGING

Filling electrolyte

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

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



Ⓐ Sealed tube

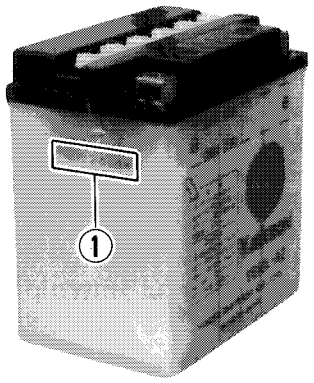
Maximum charging current	1.2A

Charging time

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

Confirmation for date of manufacture.

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



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

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

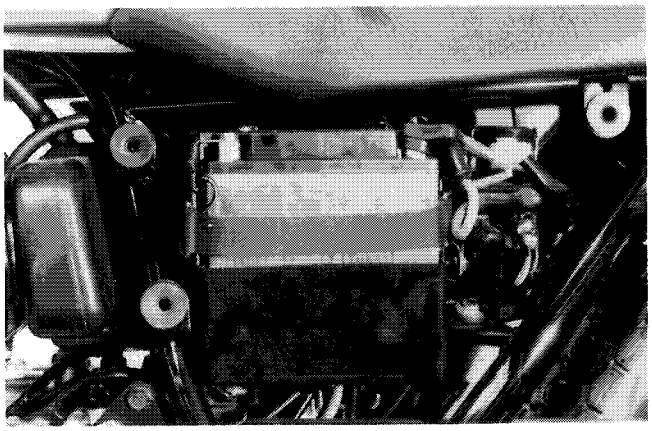
SERVICING

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

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

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

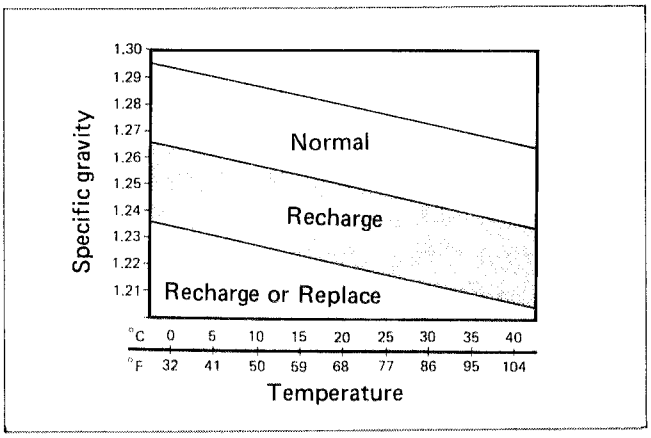
Check the battery for proper charge by taking an electrolyte S.G. reading. If the reading is 1.22 or less, as corrected to 20°C (68°F), it means that the battery is still in a run-down condition and needs recharging.



BASED ON S.G. READING RECHARGING OPERATION

To correct a S.G. reading 20°C (68°F), use following table.

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



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

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

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

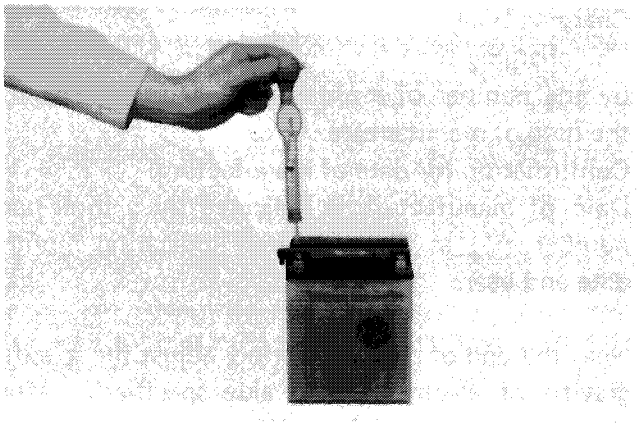
CAUTION:
Constant-voltage charging, otherwise called "quick" charging, is not recommendable for it could shorten the life of the battery.

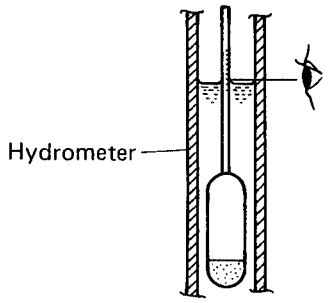
09900-28403	Hydrometer

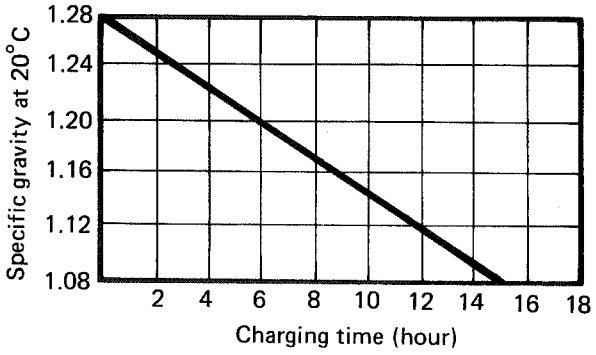
SERVICE LIFE

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

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







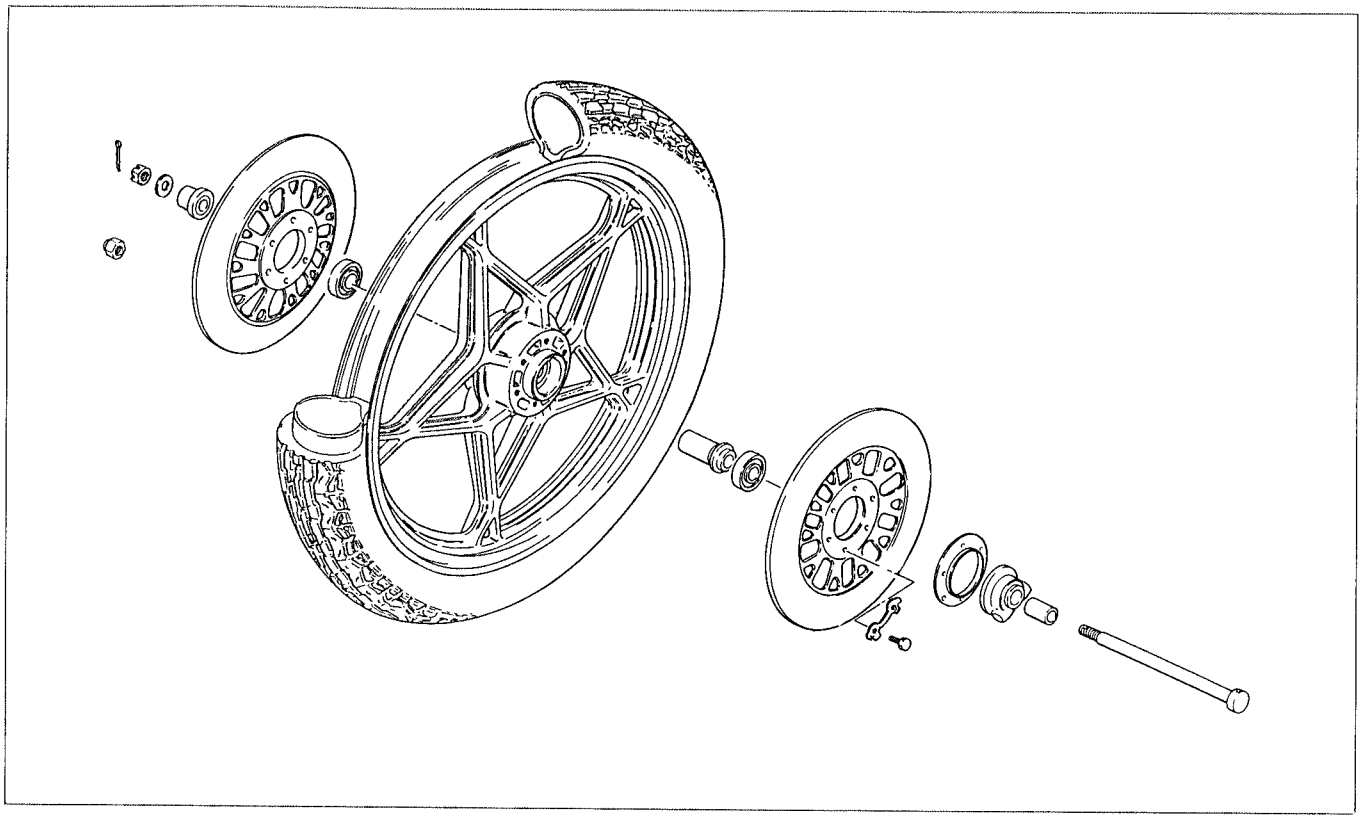
WARNING:
- **Before charging a battery, remove the seal cap from each cell.**
- **Keep fire and sparks away from a battery being charged.**
- **When removing a battery from the motorcycle, be sure to remove the ⊖ terminal first.**

CHASSIS

CONTENTS

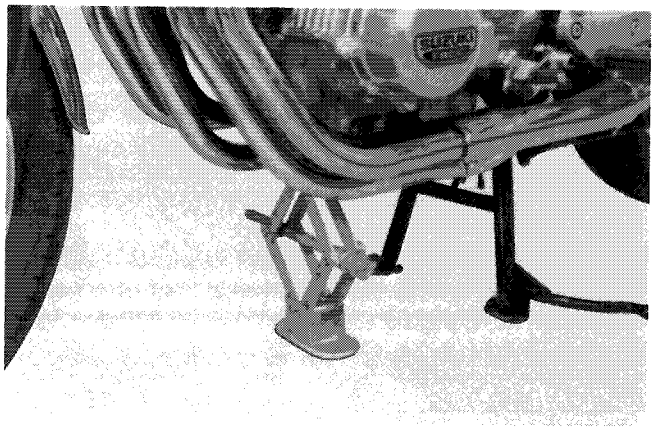
FRONT WHEEL

CONSTRUCTION



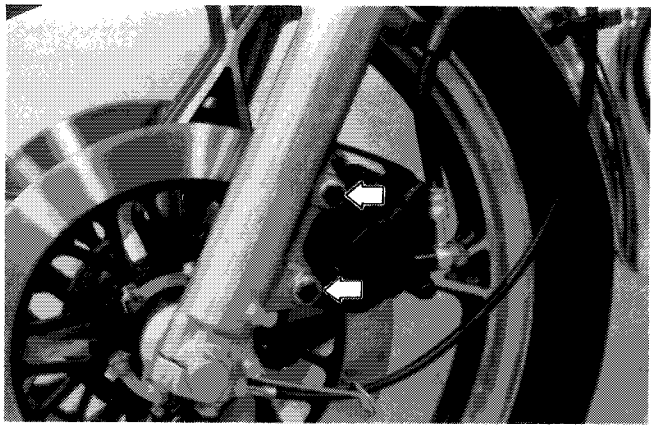
REMOVAL AND DISASSEMBLY

Support the machine by center stand and jack.

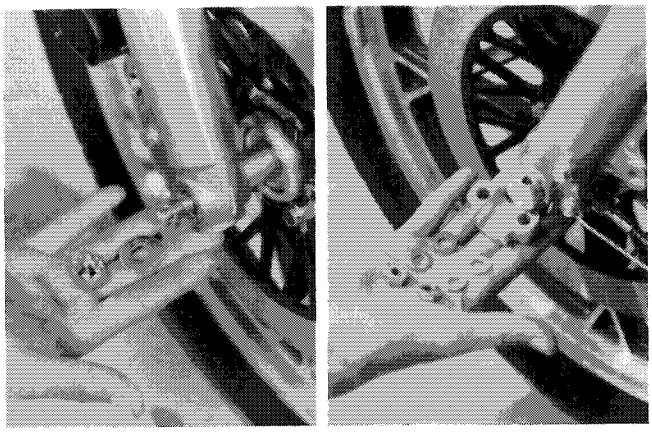


Remove caliper mounting bolts and dismount the caliper.

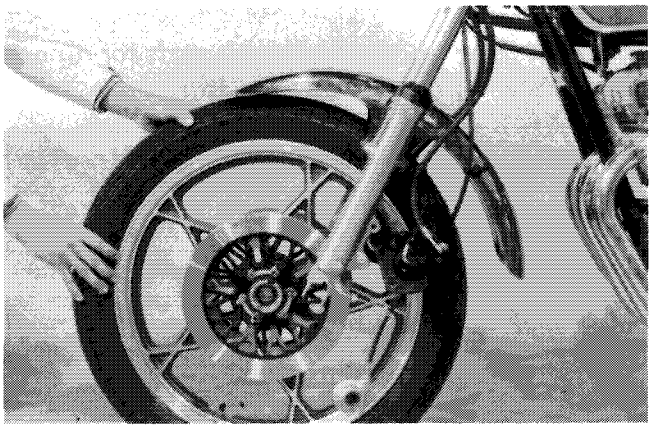
NOTE:
Do not operate the brake lever while dismounting the caliper.



Pull off cotter pin and remove axle nut.
Remove axle holder.

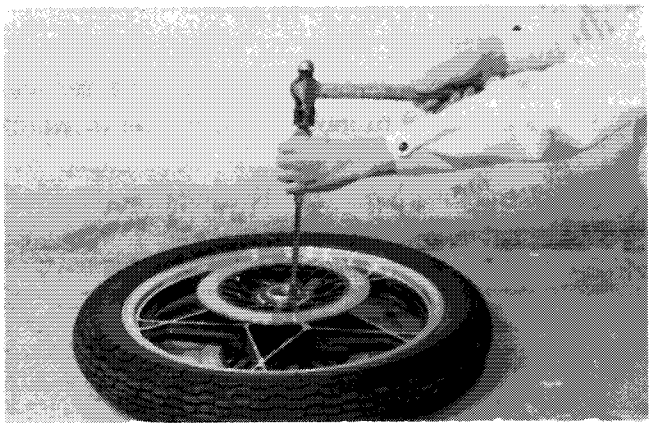


Draw out axle shaft and take off front wheel.



Unlock the lock washer.
Remove the securing bolts and separate the disc from wheel (Right and Left).

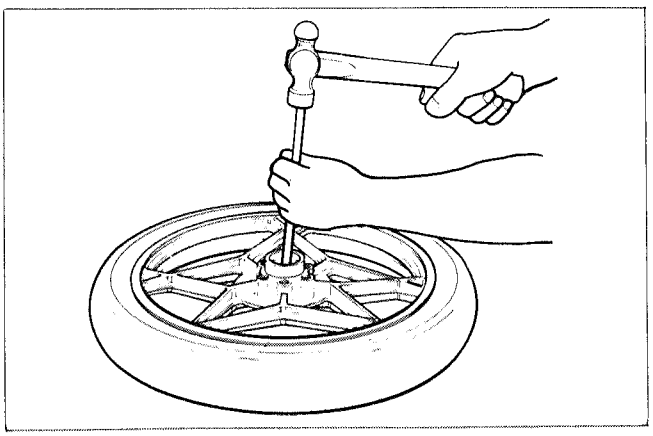
CAUTION:
Do not reuse the lock washer.



Draw out the right and left wheel bearings.

NOTE:
If drawing out the left side bearing first, it makes the job easier.

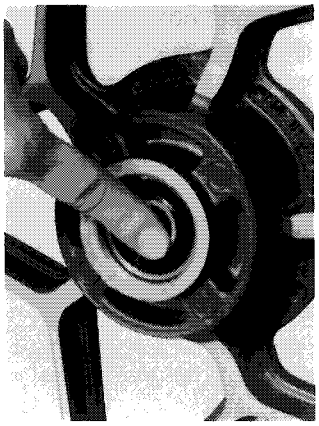
CAUTION:
The removed bearing should be replaced.

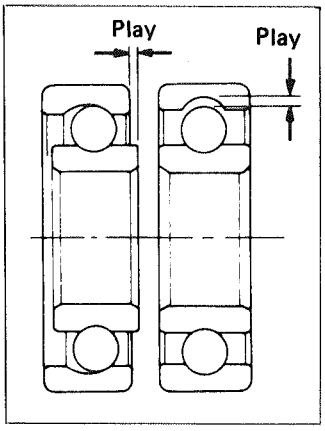


INSPECTION

WHEEL BEARINGS

Inspect the play of wheel bearing inner race by hand while fixing it in the wheel or wheel hub. Rotate the inner race by hand to inspect whether abnormal noise occurs or rotating smoothly. Replace the bearing if there is something unusual.



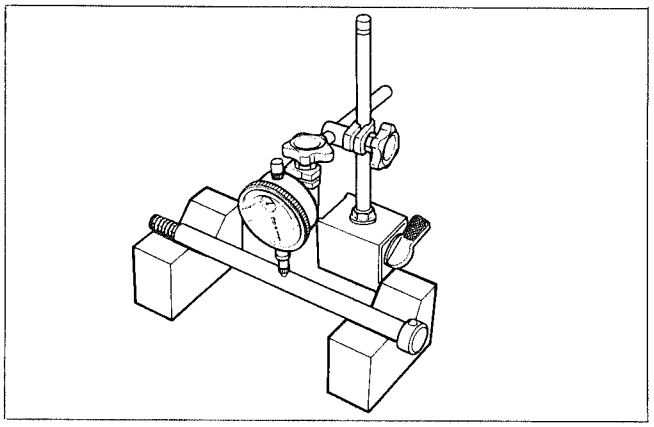


AXLE SHAFT

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)
09900 - 20701	Magnetic stand

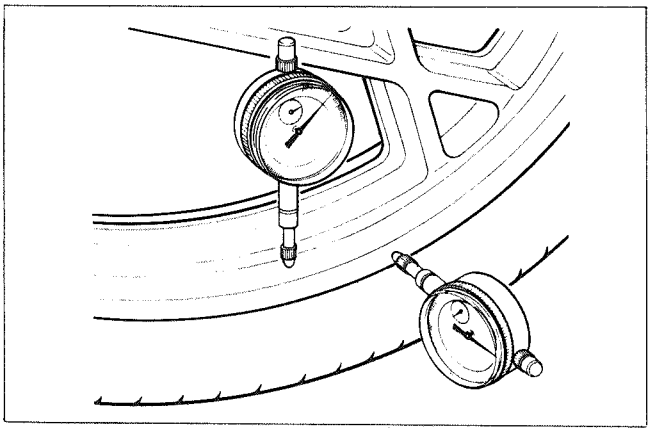
Service Limit	0.25 mm



WHEEL AND WHEEL RIM

Make sure that the wheel or 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 or wheel rim.

Service Limit (Axial and Radial)	2.0 mm



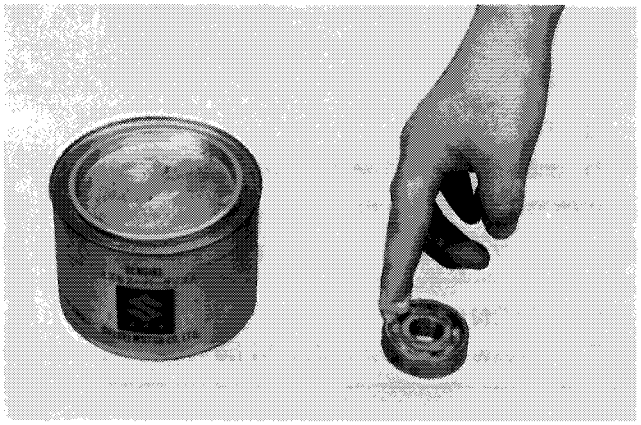
REASSEMBLY

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

WHEEL BEARING

Apply grease before install the bearings.

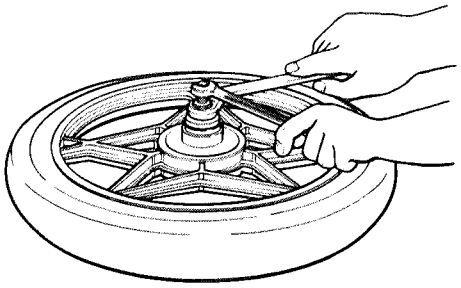
99000 - 25010	Suzuki super grease "A"

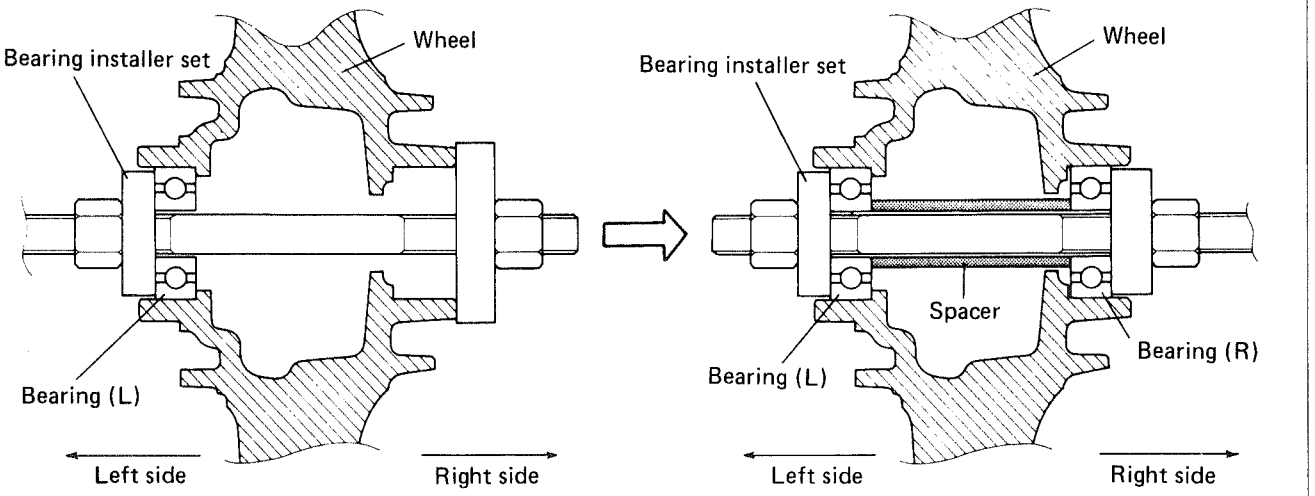


Install the wheel bearings as follows by using special tool.

CAUTION:
First install the wheel bearing for left side.

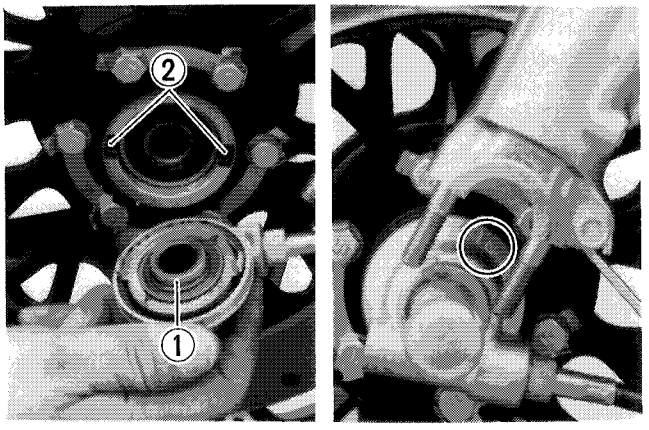
09924 - 84510	Bearing installer set





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.

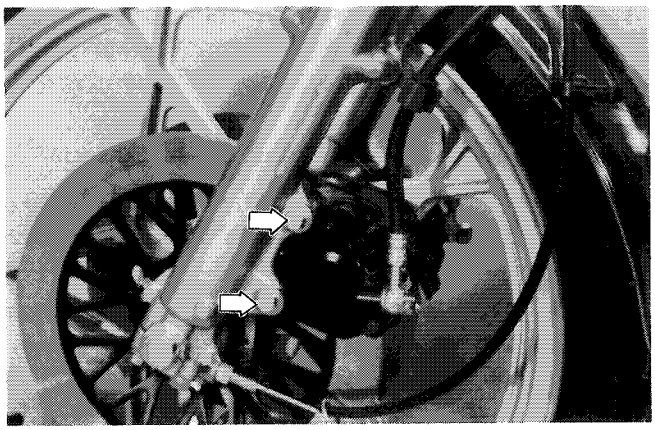
When tightening the front axle, check to be sure that the speedometer gearbox is in the position shown.



FRONT BRAKE

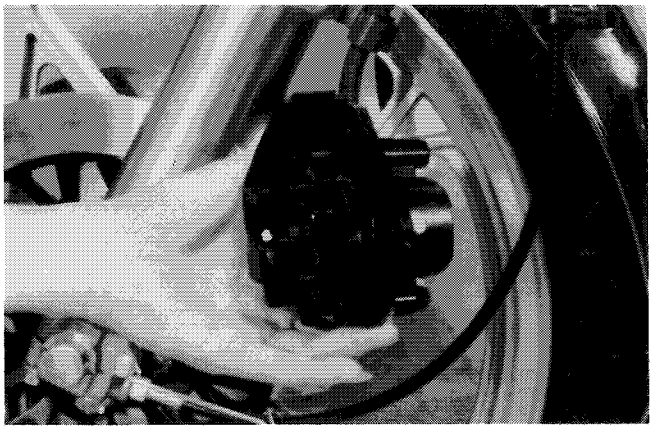
BRAKE PAD REPLACEMENT

Remove caliper mounting bolts and take off caliper.



CAUTION:
Do not operate the brake lever while dismounting the caliper.

Pull out brake pads right and left.

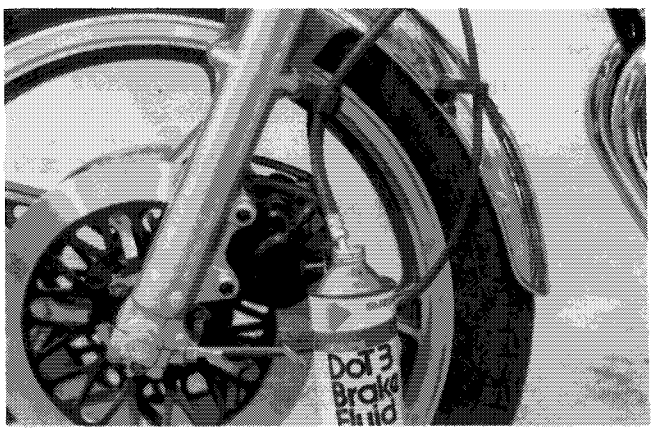


CAUTION:
Replace the brake pad with a set, otherwise braking performance will be adversely affected.

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

CALIPER REMOVAL AND DISASSEMBLY

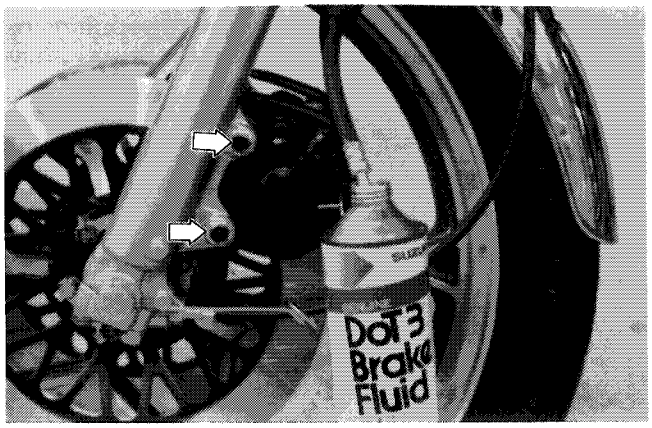
Disconnect brake hose and catch the brake fluid in a suitable receptacle.



CAUTION:
Never re-use the brake fluid left over from the last servicing and stored for long periods.

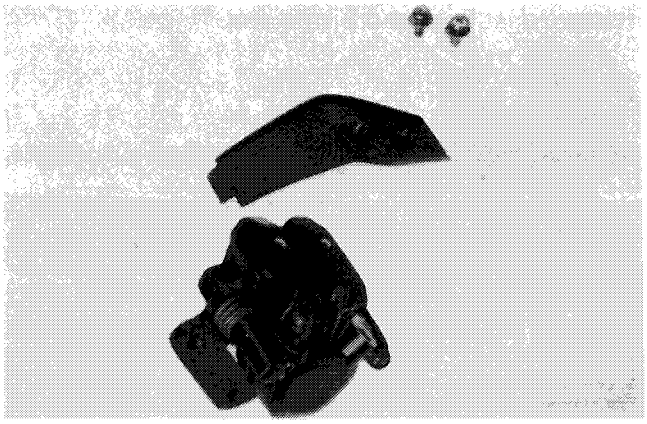
WARNING:
Brake fluid, if it leaks, will interfere with safe running and discolor painted surfaces. Check the brake hose for cracks and hose joint for leakage before riding.

Remove caliper mounting bolts and take off caliper.

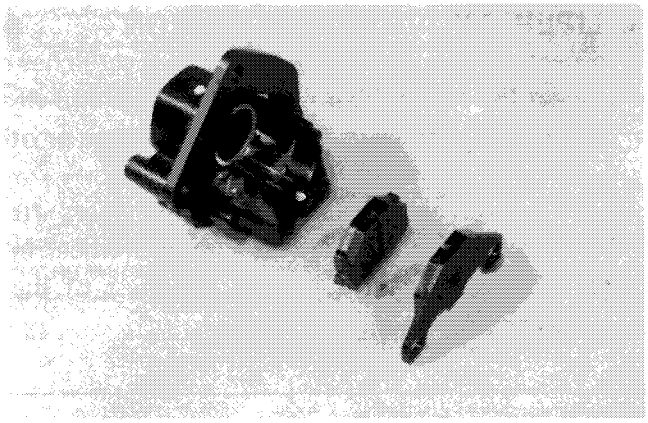


> NOTE:
> **Slightly loosen the caliper axle bolts to facilitate later disassembly.**

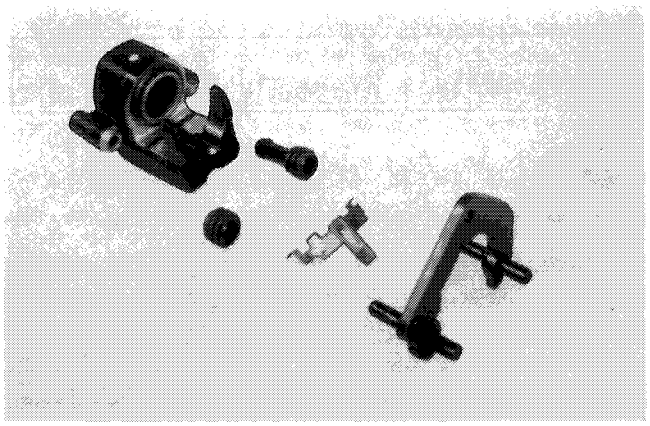
Remove caliper cover.



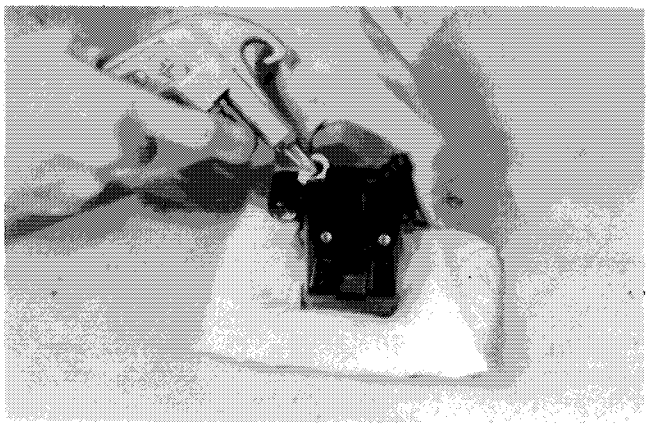
Remove brake pads.



Separate the caliper and caliper holder.

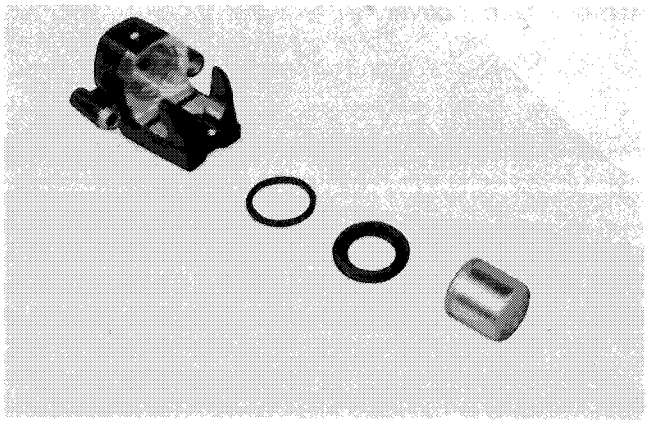


Place a rag over the piston to prevent popping up. Force out the piston by using air gun.



CAUTION:
Do not use high pressure air to prevent piston damage.

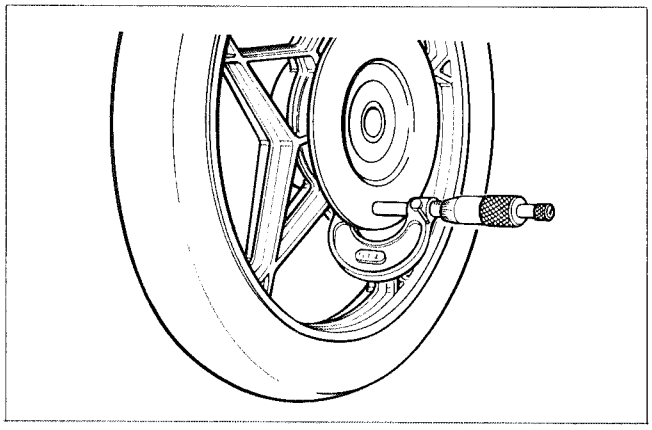
Remove dust boot and piston seal.



CALIPER AND DISC INSPECTION

- Inspect the caliper bore wall for nicks, scratches or other damage.
- Inspect the each rubber parts for damage and wear.
- Inspect the piston surface for any scratches or other damage.

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



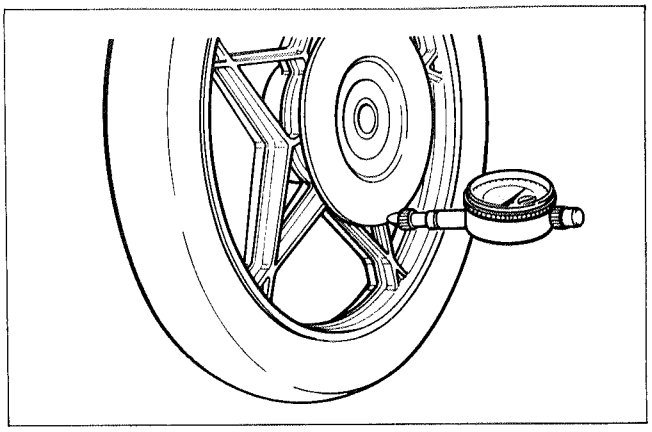
09900 - 20205	Micrometer (0 - 25 mm)

Service Limit	4.5 mm

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)
09900 - 20701	Magnetic stand

Service Limit	0.30 mm



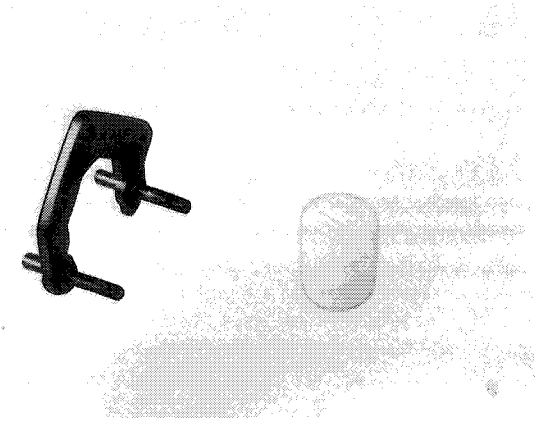
CALIPER REASSEMBLY

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 SUZUKI silicone grease to the caliper axles.

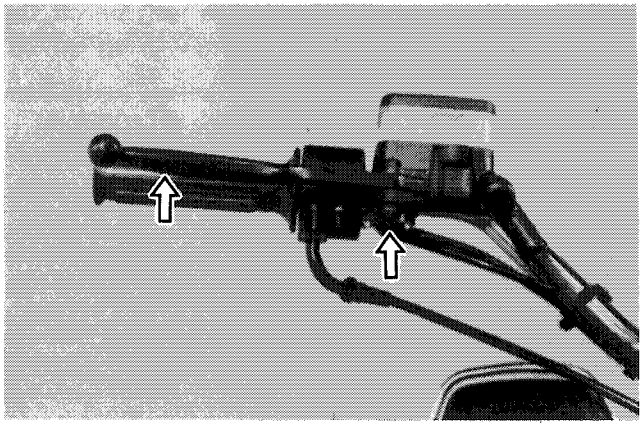
99000 - 25100	SUZUKI silicone grease



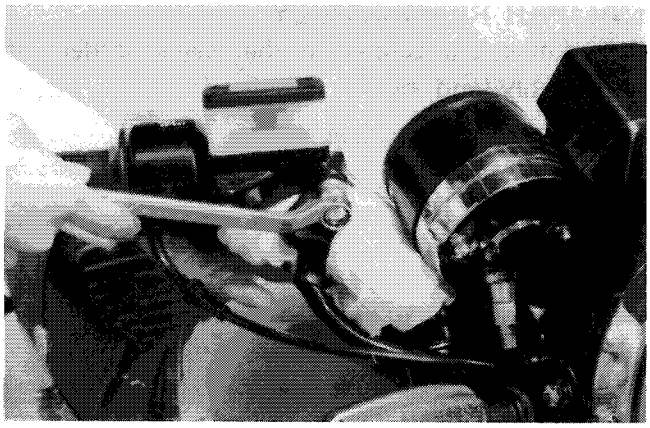
WARNING:
Bleeding the air after reassembling caliper (See page 2-16).

MASTER CYLINDER REMOVAL AND DISASSEMBLY

Take off front brake light switch and remove front brake lever.

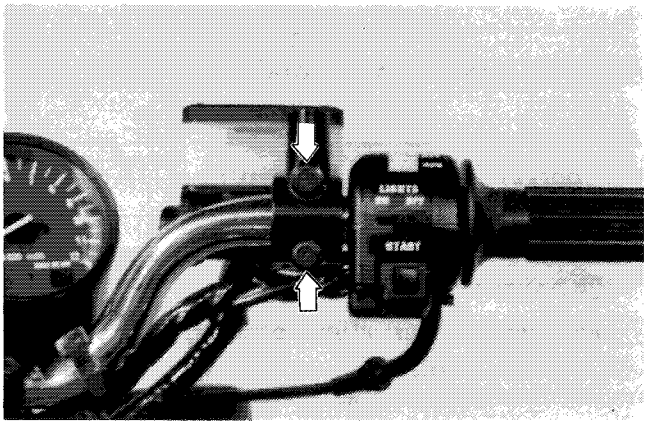


Place a cloth underneath the union bolt on the master cylinder to catch spilled drops of brake fluid. Unscrew the union bolt and disconnect the brake hose/master cylinder joint.

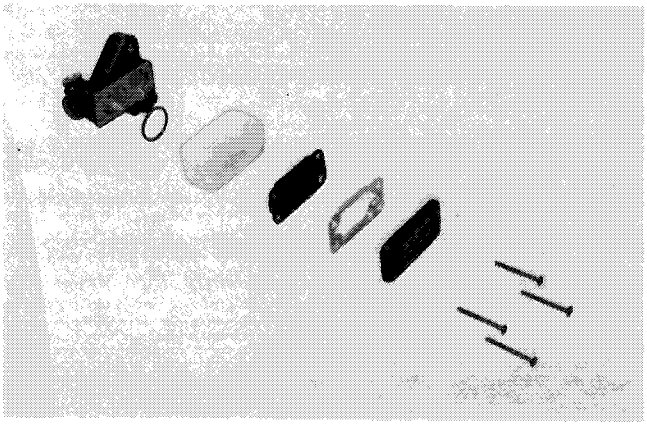


CAUTION:
Completely wipe off any brake fluid adhering to any part of motorcycle. The fluid reacts chemically with paint, plastics, rubber materials, etc.

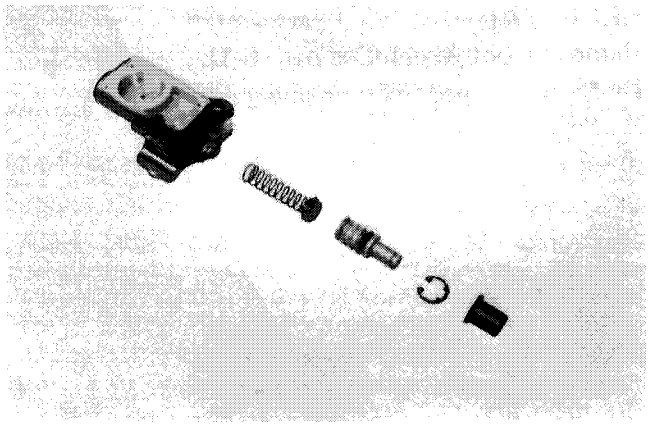
Remove two clamp bolts and take off master cylinder ass'y.



Remove reservoir cap, diaphragm plate, diaphragm, reservoir and O ring.



Pull off dust boot.
Remove circlip by using special tool.
Remove piston, primary cup and spring.



MASTER CYLINDER INSPECTION

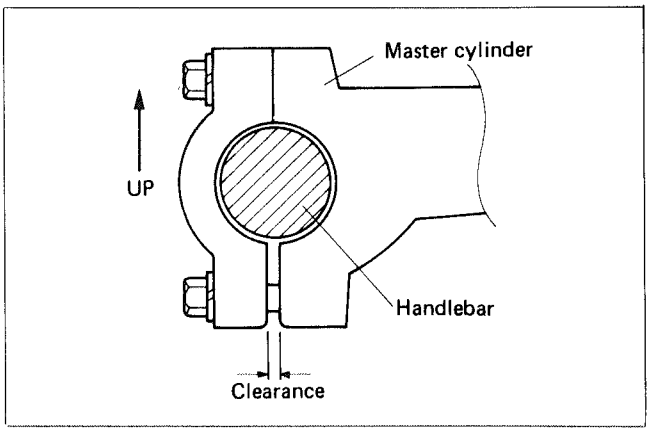
- Inspect the master cylinder bore for any scratches or other damage.
- Inspect the piston surface for scratches or other damage.
- Inspect the primary cup, secondary cup and dust boot for wear or damage.

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 remount the master cylinder to the handlebars, first tighten the clamp bolt for upside as shown.

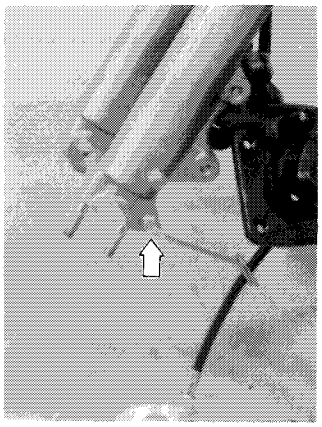


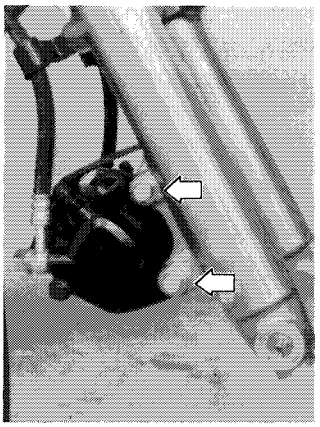
CAUTION:
Bleed the air after reassembling master cylinder. (See page 2-16).
Adjust the front brake light switch after installation.

FRONT FORK

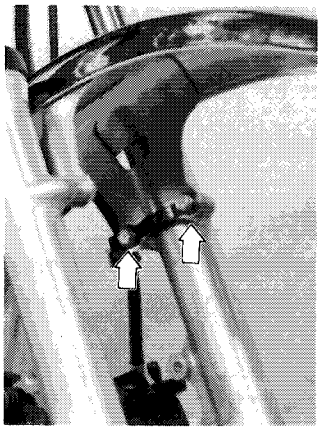
REMOVAL

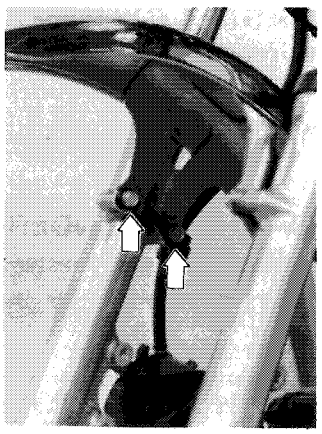
Remove front wheel (See page 6-1).
Disconnect speedometer cable guide.
Remove caliper.





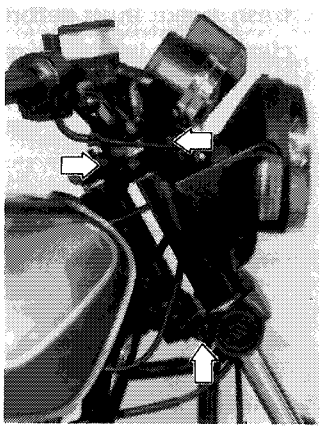
Remove fender.



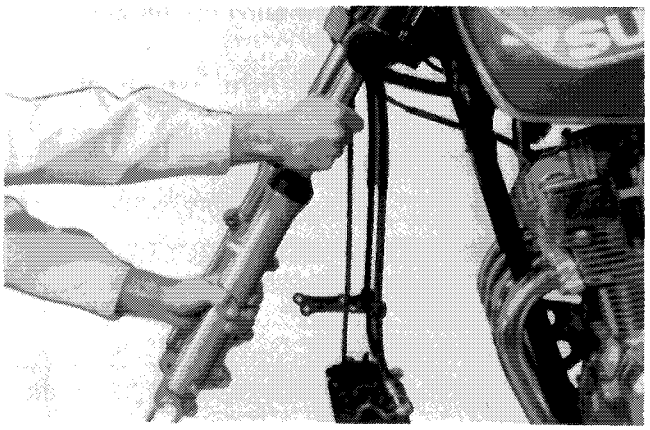


Loosen the front fork clamp bolts, upper and lower.

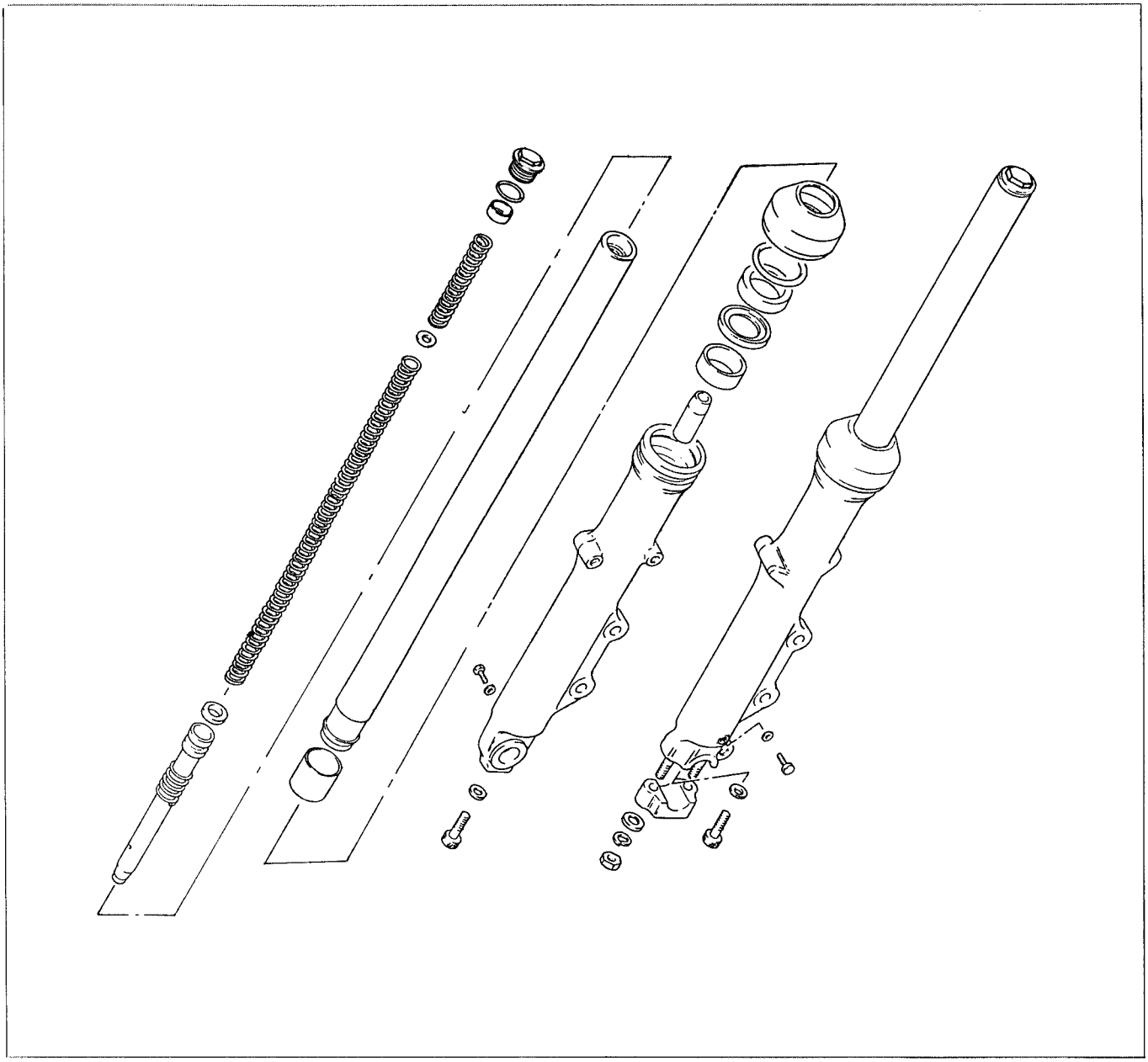
> **NOTE:**
> **Slightly loosen the front fork cap bolts to facilitate later disassembly.**



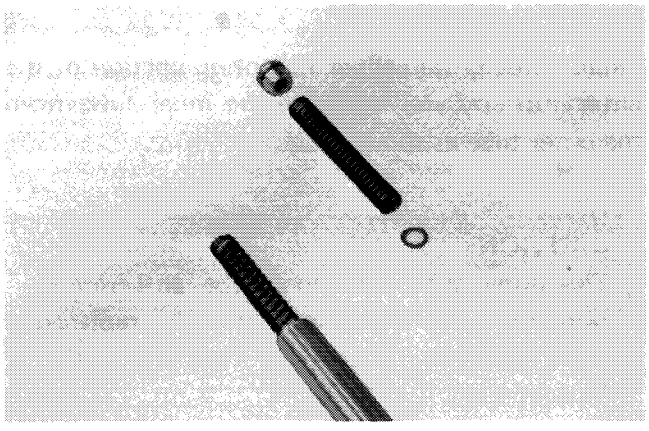
Pull off front fork.



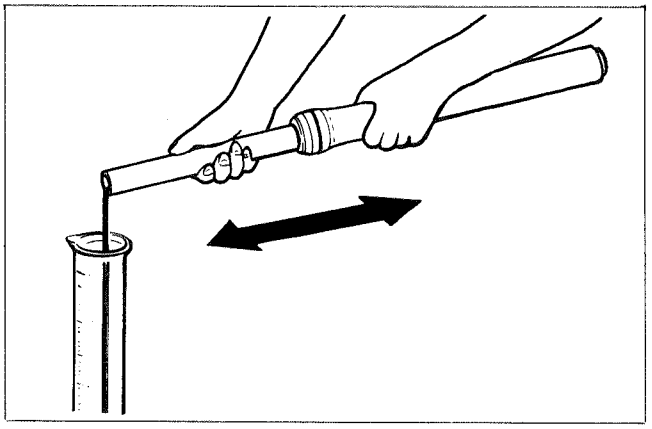
DISASSEMBLY



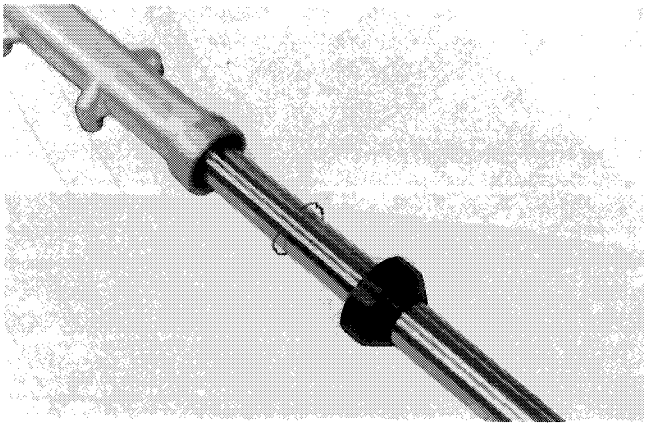
Remove fork cap and take off color, springs and spring seat.
Draw out fork spring.



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

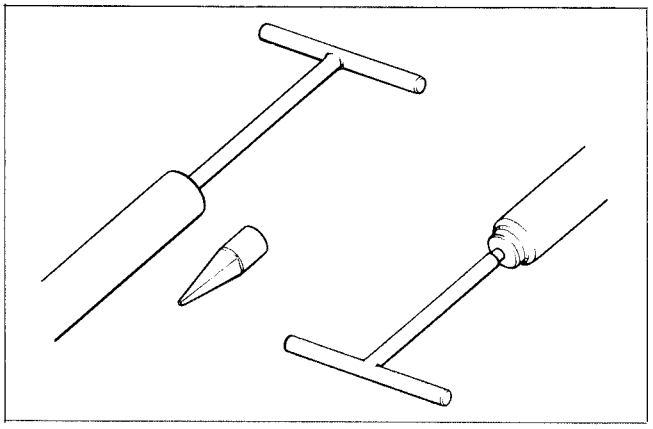


Draw out dust seal and circlip.



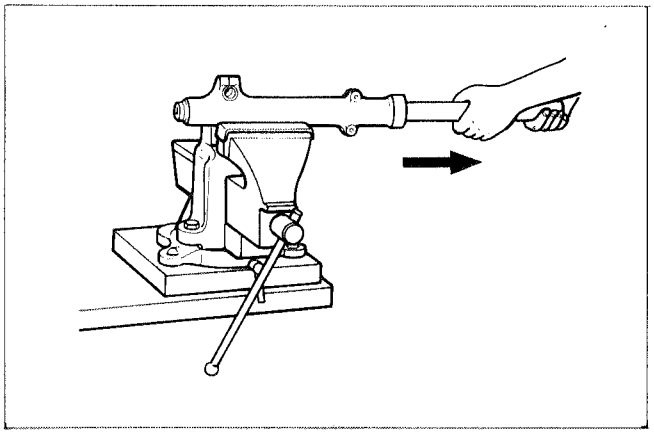
Remove damper rod securing bolt by using special tools.
Draw out damper rod and rebound spring.

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

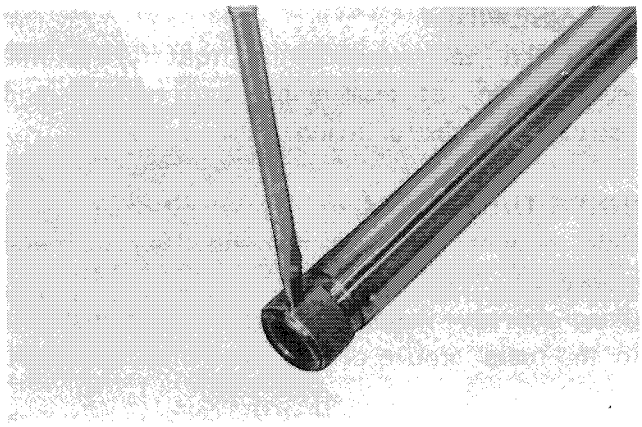


While holding the caliper mounting portion of the outer tube by vise, separate the inner tube from the outer tube as shown.

CAUTION:
The outer tube and inner tube anti-friction rings or metal slide rings must be replaced along with the oil seal any time the fork is disassembled.



Remove inner tube anti-friction ring.

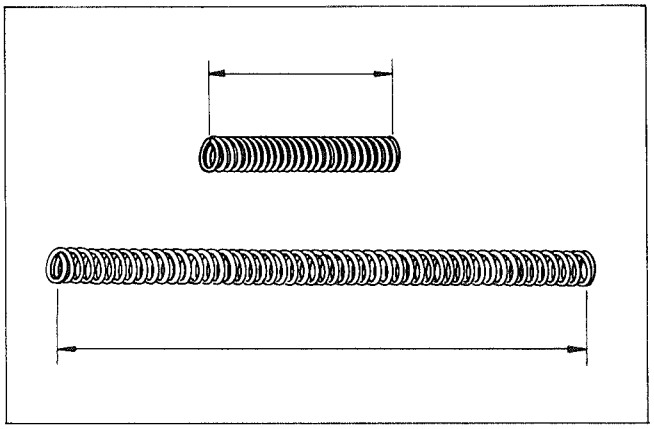


INSPECTION

FORK SPRING

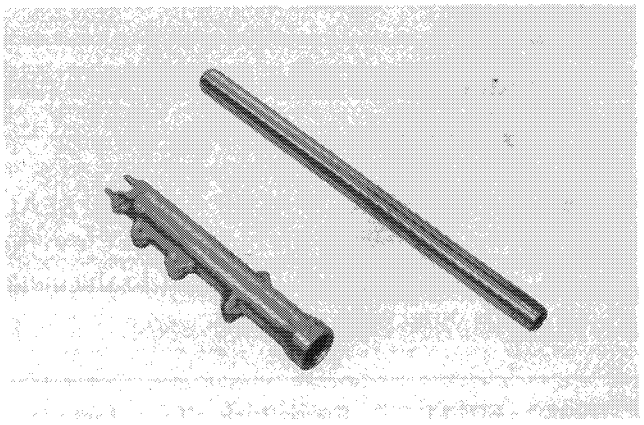
Measure the fork spring free length. If it is shorter than service limit, replace it.

Service Limit	S	122 mm
	L	371 mm



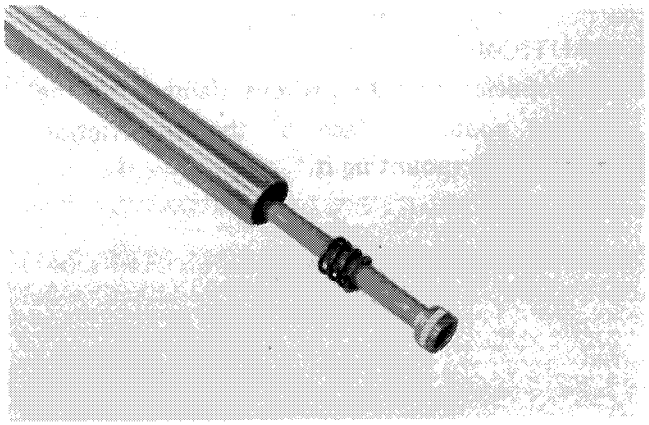
INNER TUBE AND OUTER TUBE

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



DAMPER ROD RING

Inspect damper rod ring for wear and damage.



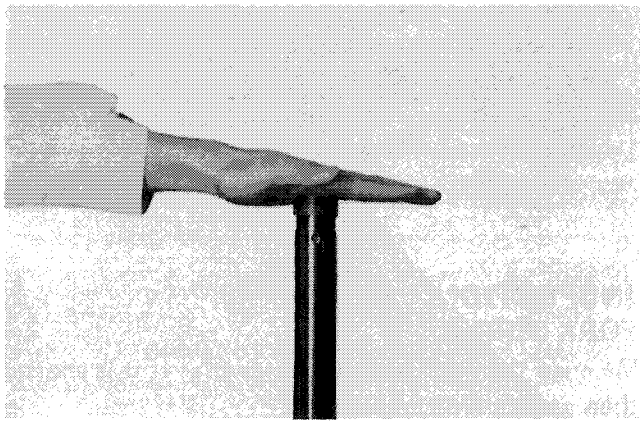
REASSEMBLY

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

INNER TUBE METAL

Hold the inner tube vertically and clean the metal groove.

Clean the new metal inner surface and install it to the metal groove of the inner tube as shown.



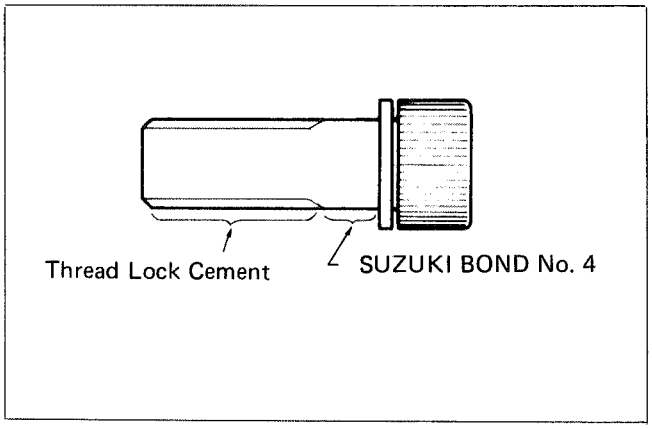
CAUTION:
Use special care to prevent damage to the Teflon coated surface of the anti-friction metal when mounting it.

DAMPER ROD BOLT

Apply Thread Lock Cement and SUZUKI BOND NO. 4 to the damper rod bolt. Tighten the damper rod bolt with specified torque.

99000 - 32040	Thread Lock Cement
99000 - 31030	SUZUKI BOND NO. 4

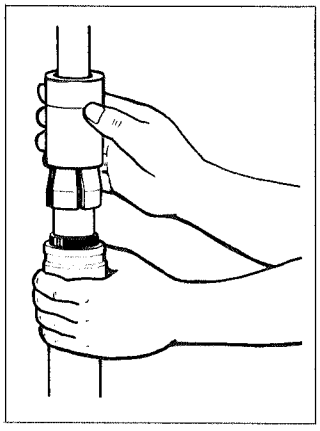
Tightening torque	15 – 25 N·m (1.5 – 2.5 kg-m)

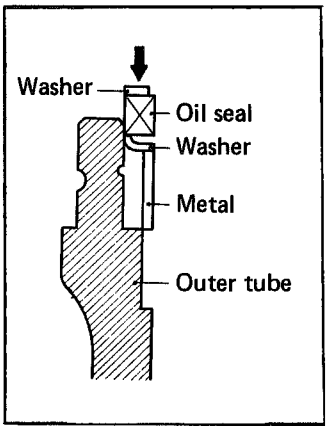


OUTER TUBE METAL, SPACER AND OIL SEAL

Clean the metal groove of the outer tube. Clean the new metal outer surface and install it to the metal groove of the outer tube as shown.

09940 - 50111	Front fork oil seal installer





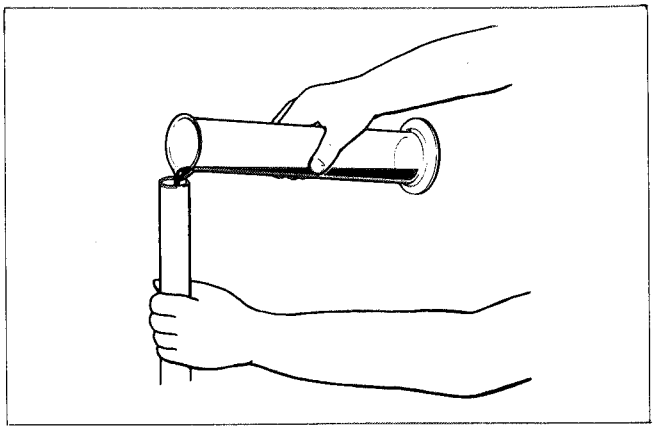
CAUTION:
Use special care to prevent damage to the Teflon coated surface of the anti-friction metal when mounting it.

FORK OIL

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

Fork oil	Fork oil # 15

Fork oil capacity	169 ml

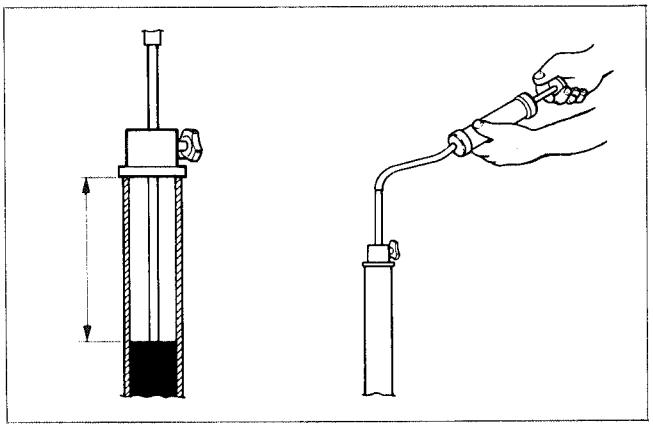


Hold the front fork vertical and adjust the fork oil level with a special tool.

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

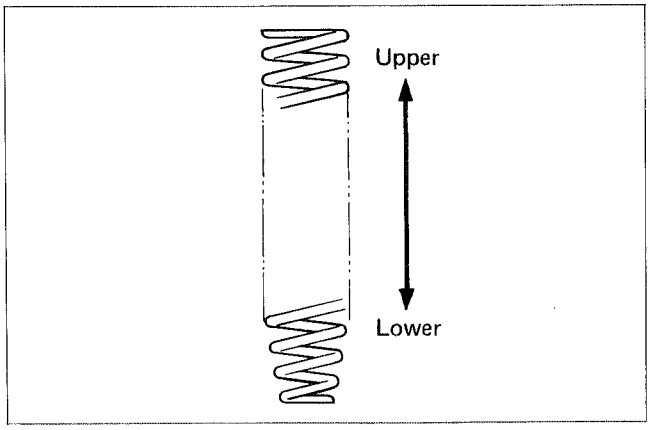
09943 - 74111	Fork oil level gauge

Fork oil level	182 mm



FORK SPRING

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

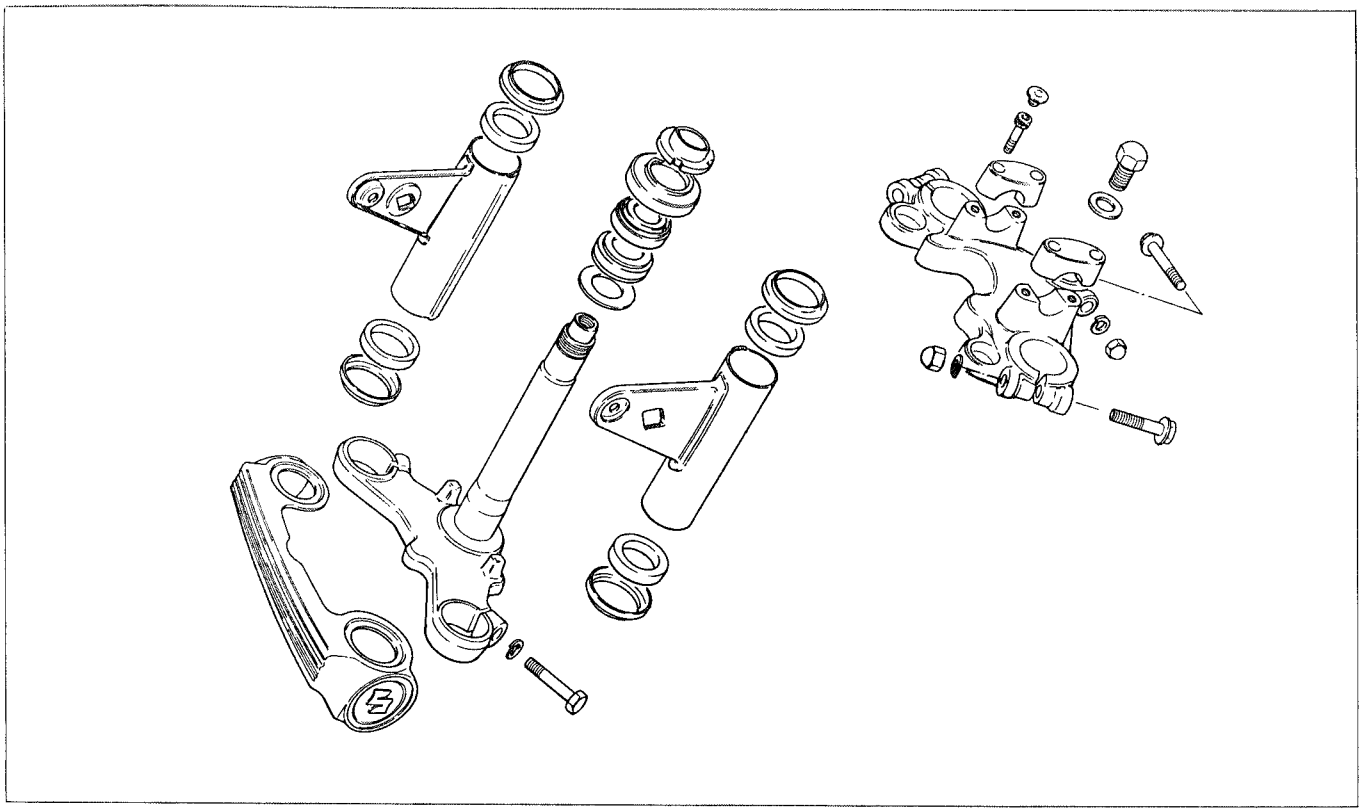


Tightening torque:

	N·m	kg-m
Front fork clamp bolt (U)	20 – 30	2.0 – 3.0
Front fork clamp bolt (L)	27 – 43	2.7 – 4.3
Damper rod bolt	15 – 25	1.5 – 2.5

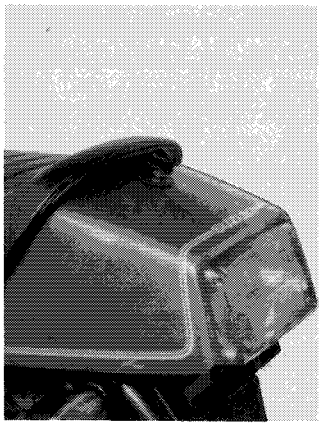
STEERING STEM

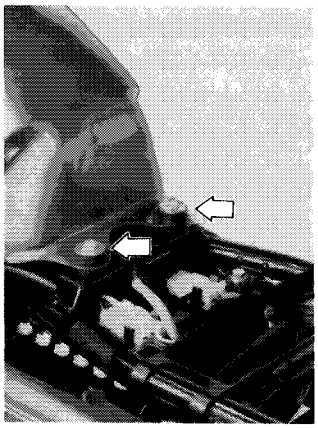
CONSTRUCTION



DISASSEMBLY

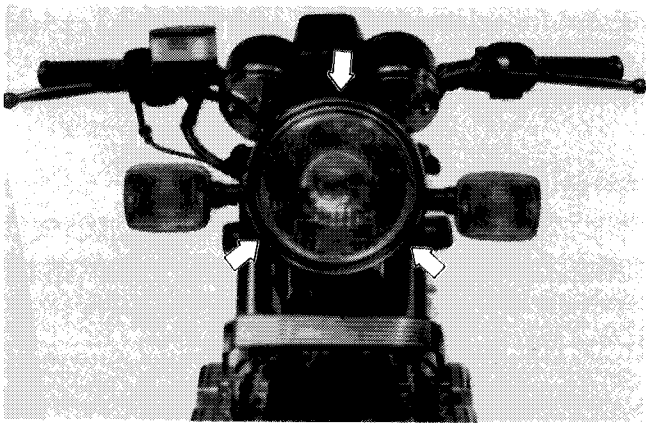
Remove front wheel (See page 6-1).
Remove front forks (See page 6-11).
Remove seat.
Take off fuel tank.



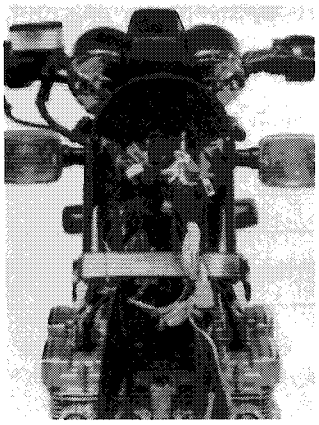
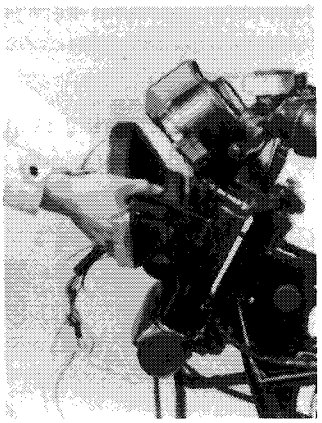


NOTE:
When taking off fuel tank, disconnect fuel hose, vacuum hose and fuel gauge lead wires. Fuel cock must be in ON position.

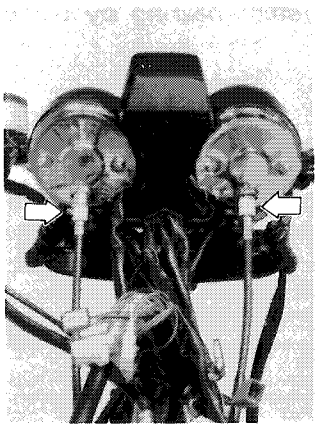
Remove headlight by removing three fitting screws.



Disconnect lead wires.
Dismount the headlight housing, turn signal light and headlight bracket for same time.

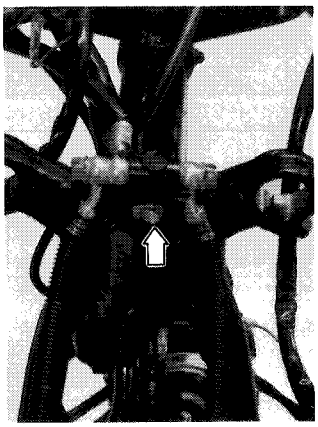
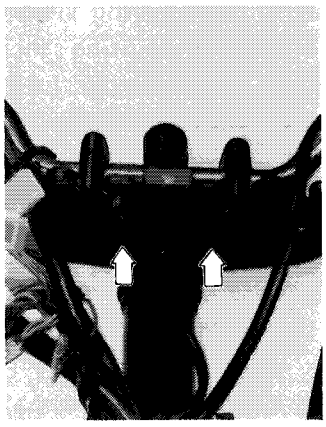



Disconnect speedometer and tachometer cables.
Remove meter mounting nuts and take off meter.

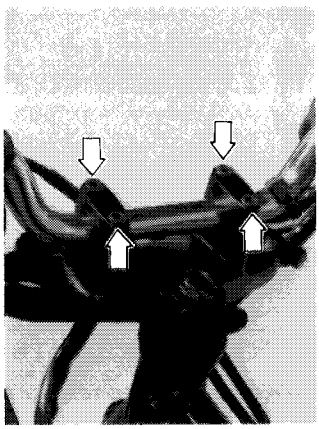
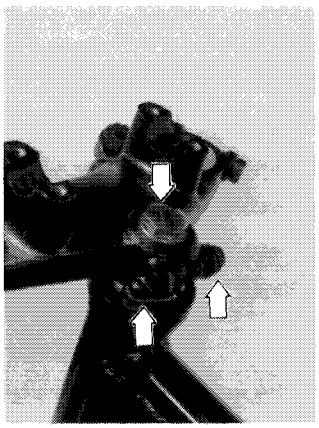



Disconnect brake hose joint.
Remove ignition switch by using special tool.

09911 - 73730	T type hexagon wrench

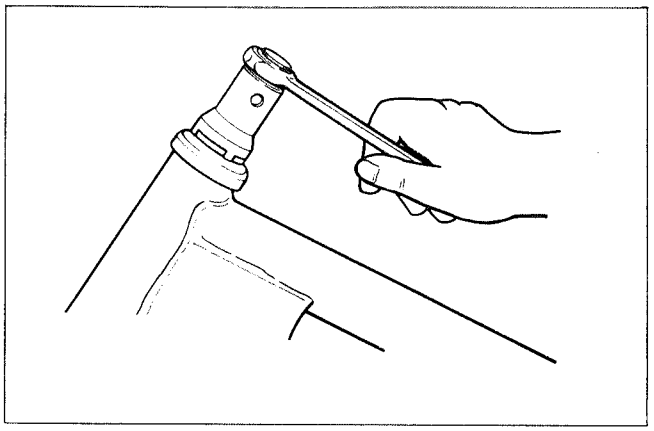
Remove clamp bolts and take off handlebars.
Loosen the steering stem clamp bolt.
Remove steering stem head nut and take off steering stem upper bracket.

Remove steering stem nut by using special tool.

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

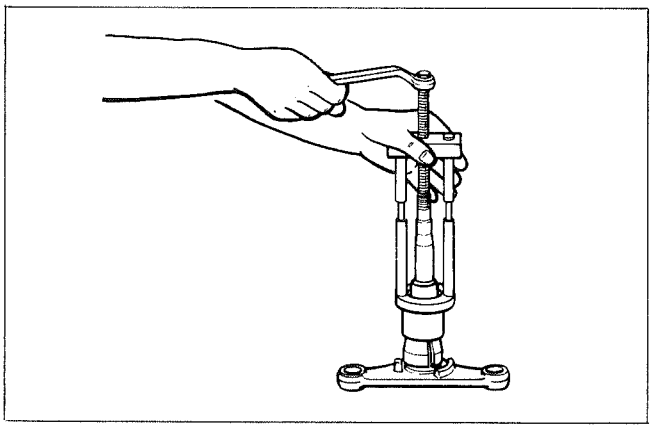
09940 - 14911	Steering nut socket wrench



Draw out lower steering stem bearing by using special tool.

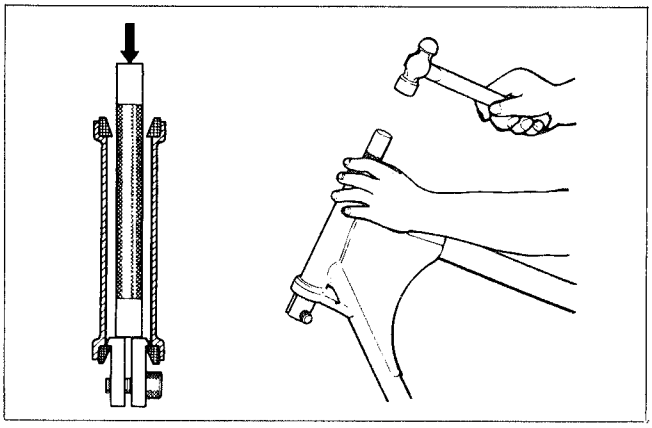
CAUTION:
The removed bearing should be replaced.

09941 - 84510	Bearing inner race remover



Push out steering stem bearing outer races, upper and lower, by using special tools.

09941 - 54911	Steering race remover
09941 - 74910	Steering bearing installer



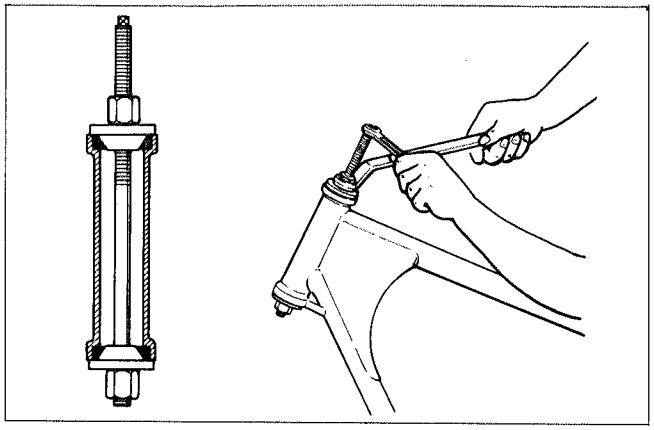
REASSEMBLY

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

OUTER RACES

Press in the upper and lower outer races using special tool.

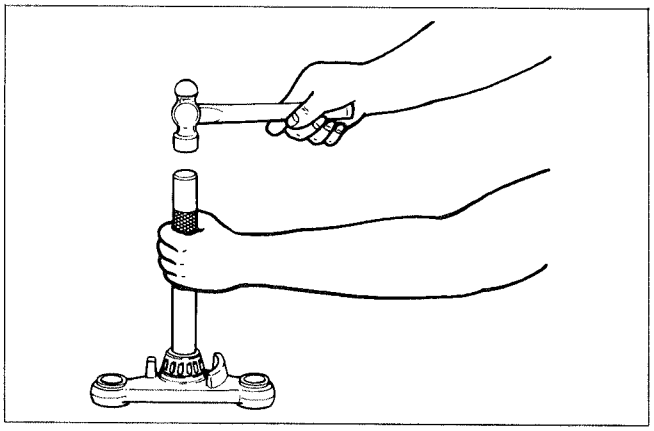
09941 - 34511	Steering outer race installer



BEARING

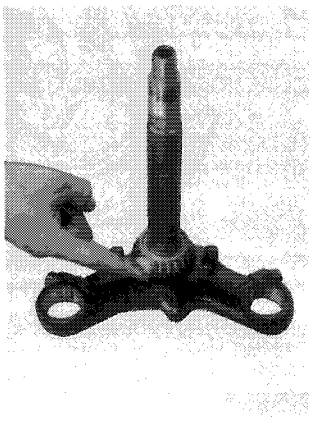
Press in the lower bearing by using special tool.

09941 - 74910	Steering bearing installer



Apply grease upper and lower bearing before remounting the steering stem.

99000 - 25010	Suzuki super grease "A"

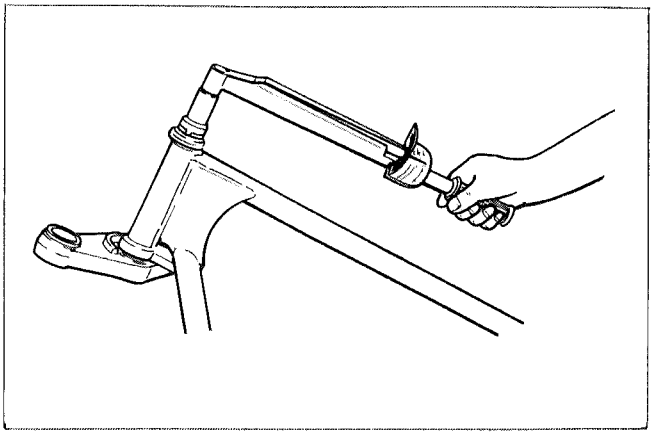


STEM NUT

Tighten the steering stem nut by using special tool with specified torque.
Turn the front fork right and left 5 or 6 times to seat the bearings.
Turn out the steering stem nut 1/4 turn.
Then retighten very lightly so that no play can be detected in the stem.

09940 - 14911	Stem nut socket wrench

Tightening torque	14 – 20 N·m (1.4 – 2.0 kg-m)

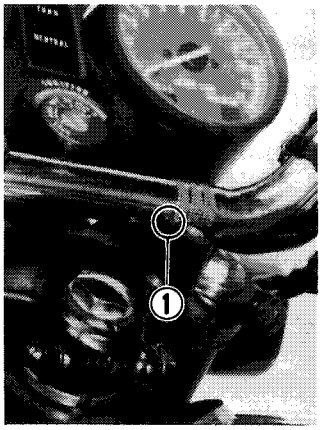


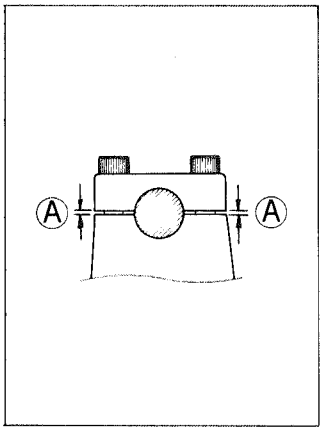
HANDLEBARS

Set the handlebars to match its punched mark ① to the mating face of the holder.

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

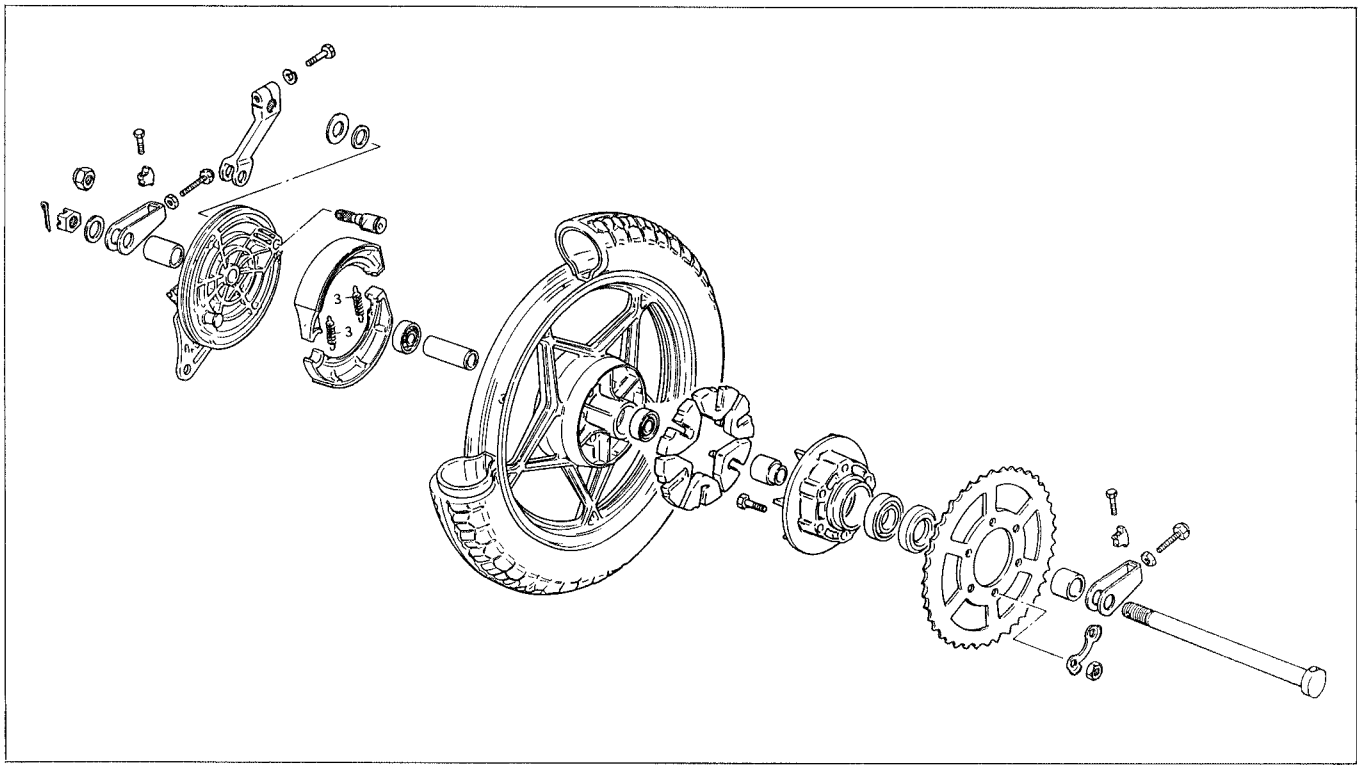
Tightening torque	12 – 20 N·m (1.2 – 2.0 kg-m)





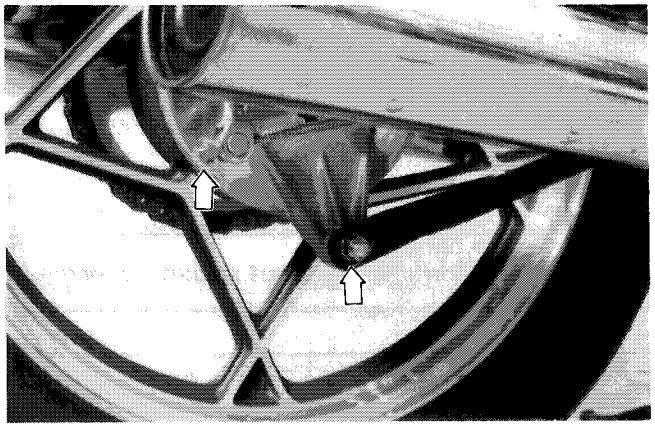
REAR WHEEL

CONSTRUCTION (DRUM BRAKE TYPE)

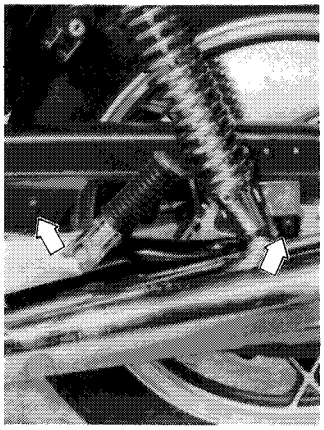


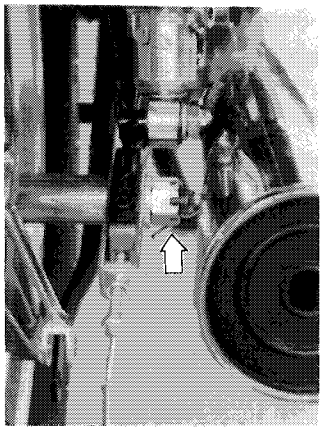
REMOVAL

Support the machine by center stand.
Remove brake adjuster and torque link bolt.

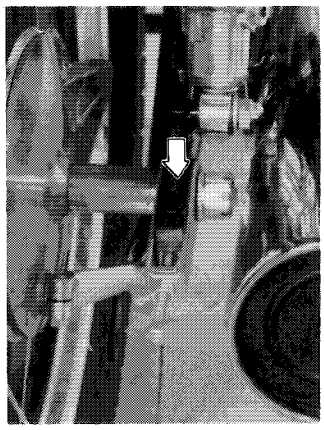


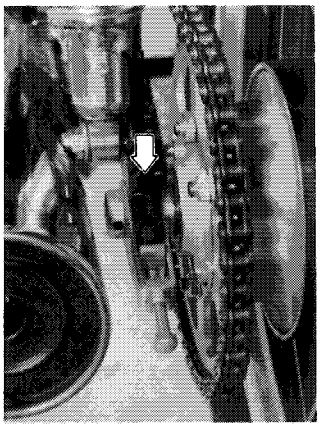
Remove chain case.
Pull off cotter pin and loosen axle nut.



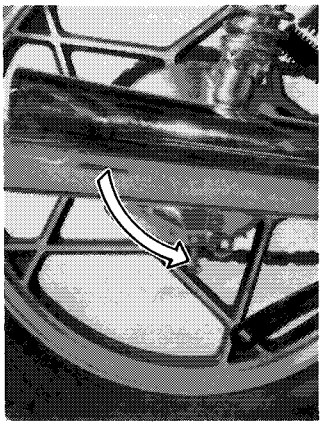


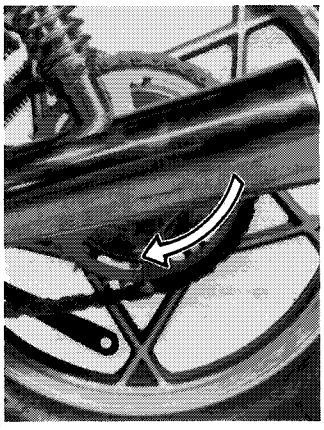
Remove chain adjuster support bolts.



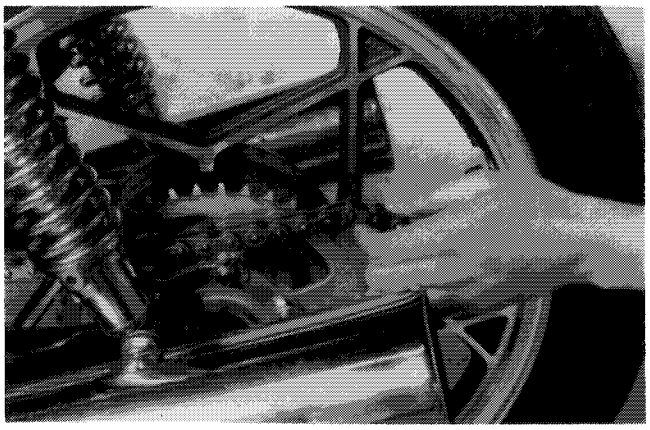


Pull the wheel rearward and push down chain adjusters.

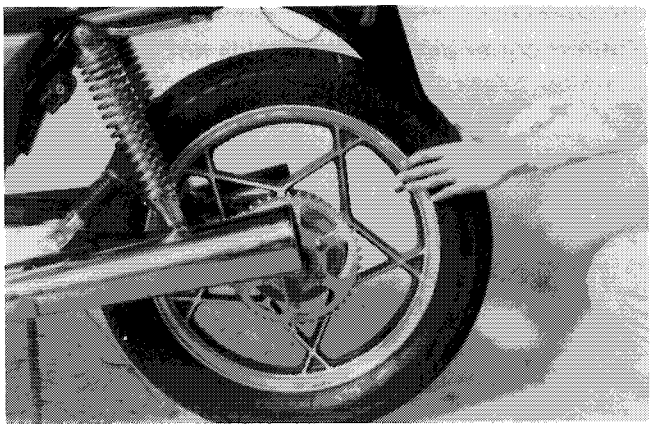




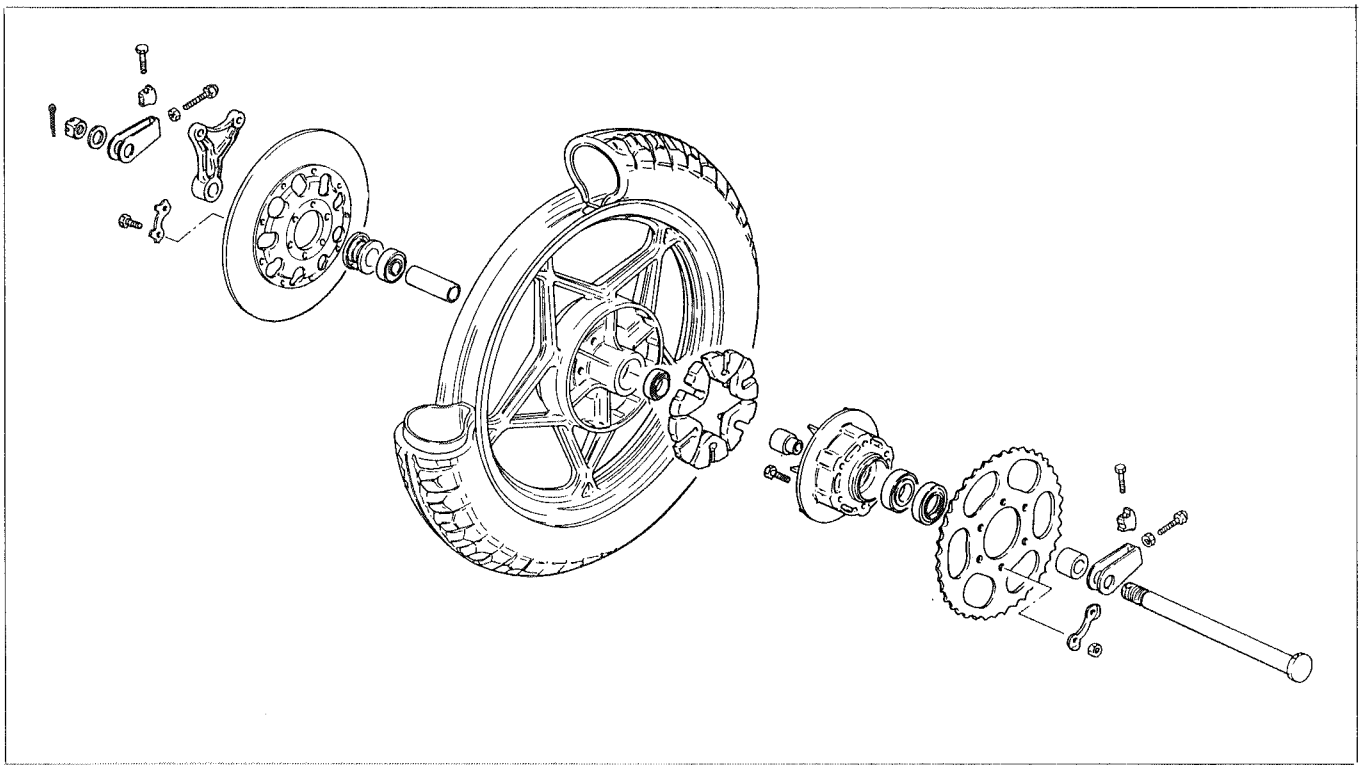
Push the wheel forward and dismount drive chain from sprocket.



Pull off wheel rearward.



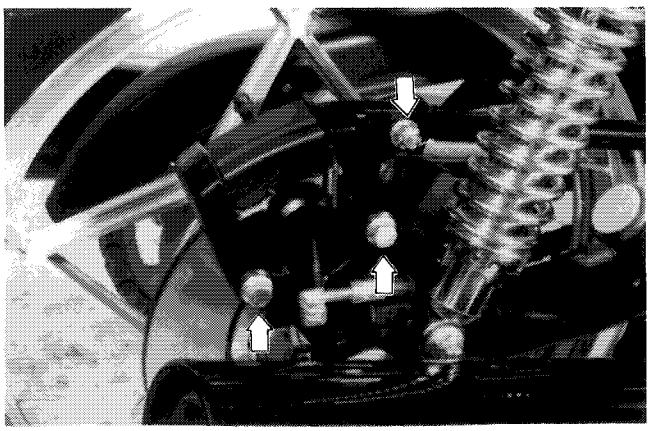
CONSTRUCTION (DISC BRAKE TYPE)



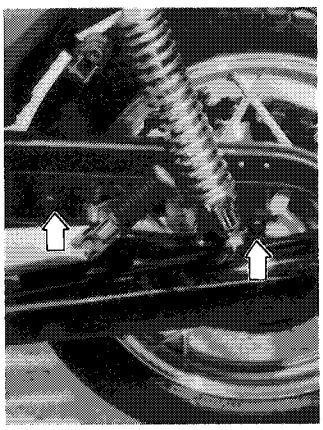
REMOVAL

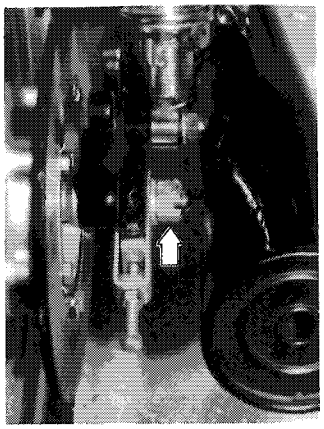
Support the machine by center stand.

Remove torque link bolt from the caliper and caliper mounting bolts, and dismount caliper.

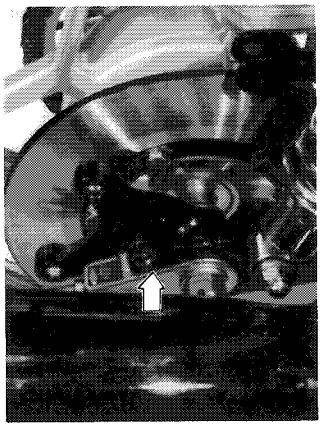


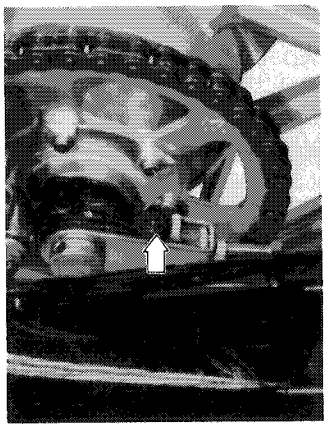
Remove chain case.
Pull off cotter pin and loosen axle nut.



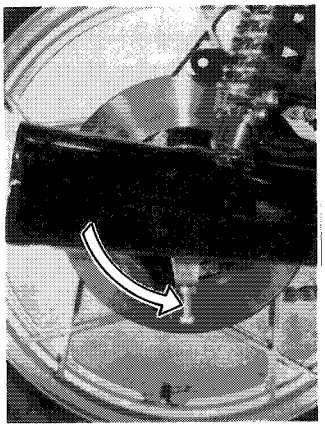


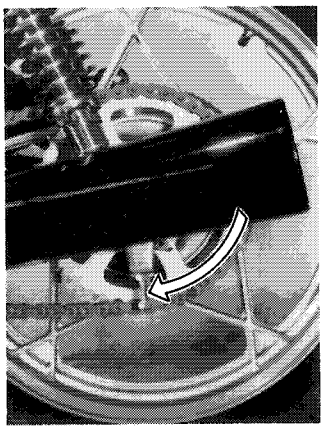
Remove chain adjuster support bolts.



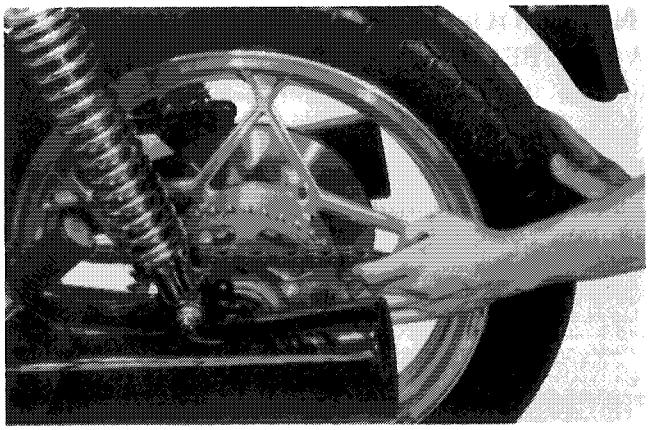


Pull the wheel rearward and push down the chain adjusters.

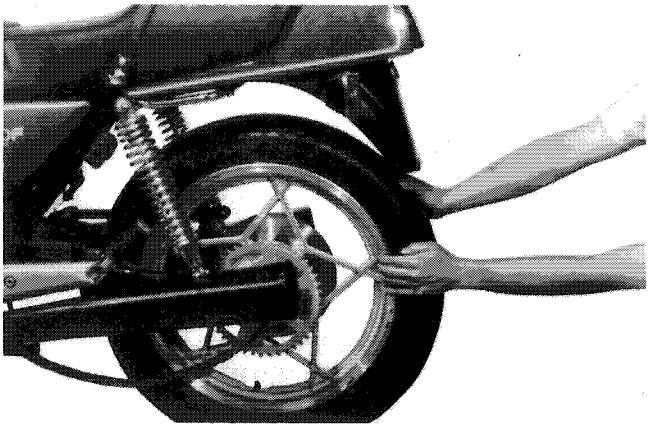




Push the wheel forward and dismount drive chain from sprocket.

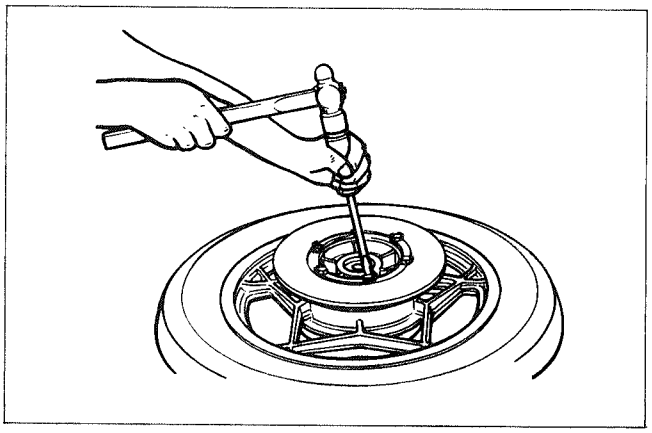


Pull off wheel rearward.



Flatten the lock washers. Remove fitting bolts and separate the disc from wheel.

WARNING:
Do not reuse the lock washers.

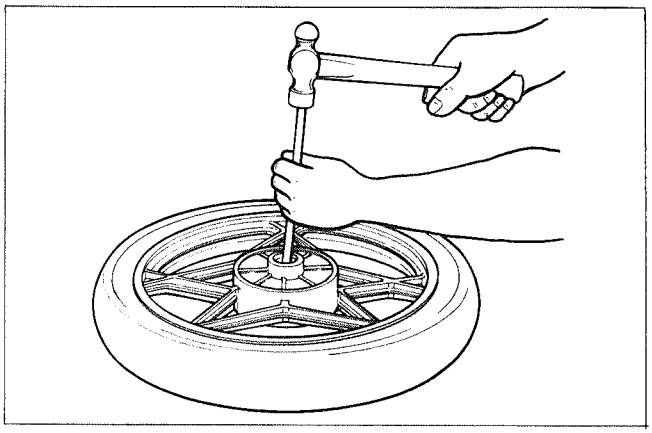


DISASSEMBLY

Drive out wheel bearing, right and left.

NOTE:
If drawing out the right side bearing first, it makes the job easier.

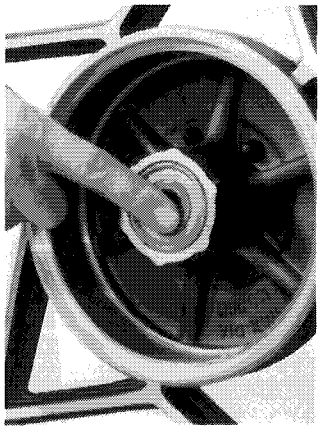
CAUTION:
The removed bearing should be replaced.

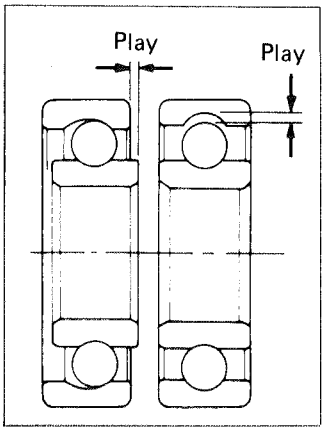


INSPECTION

WHEEL BEARINGS

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

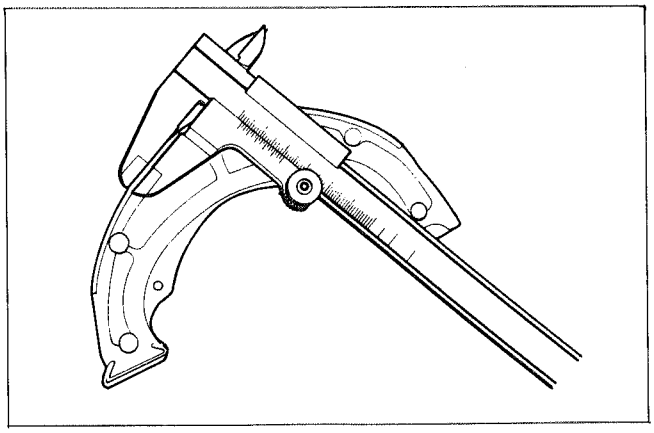




BRAKE SHOES (DRUM BRAKE TYPE)

Check the brake shoe for wear by the indicator embossed on the brake panels. If the extension line exceeds the range, remove the wheel and inspect the following items.

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



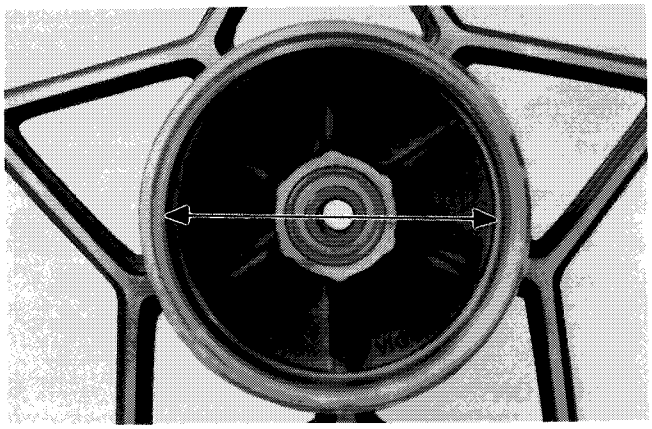
Service Limit	1.5 mm

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

09900 - 20101	Vernier calipers

BRAKE DRUM (DRUM BRAKE TYPE)

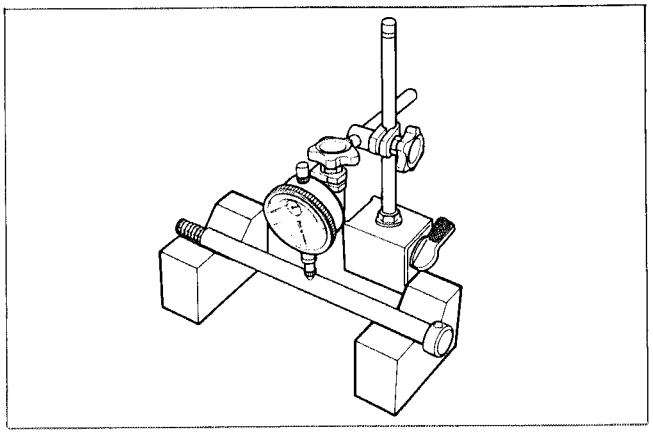
Measure the brake drum I.D. to determine the extent of wear and, if the limit is exceeded by the wear noted, replace the drum. The value of this limit is indicated inside the drum.



Service Limit	160.7 mm

AXLE SHAFT

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

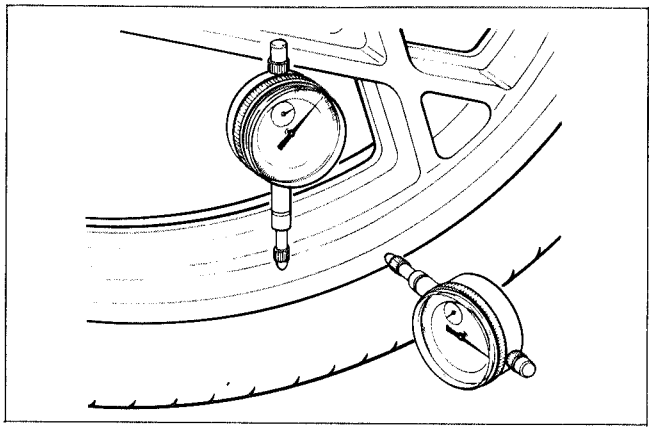


09900 - 20606	Dial gauge (1/100)
09900 - 20701	Magnetic stand

Service Limit	0.25 mm

WHEEL AND WHEEL RIM

Make sure that the wheel or 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 or wheel rim.



Service Limit (Axial and Radial)	2.0 mm

WHEEL DAMPER

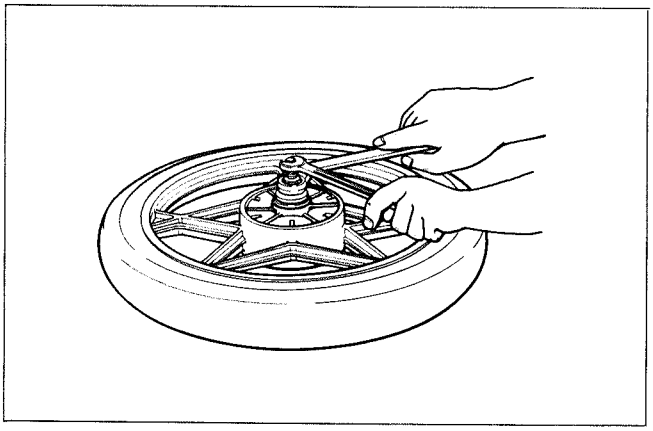
Inspect the wheel dampers for damage or wear.

REASSEMBLY

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

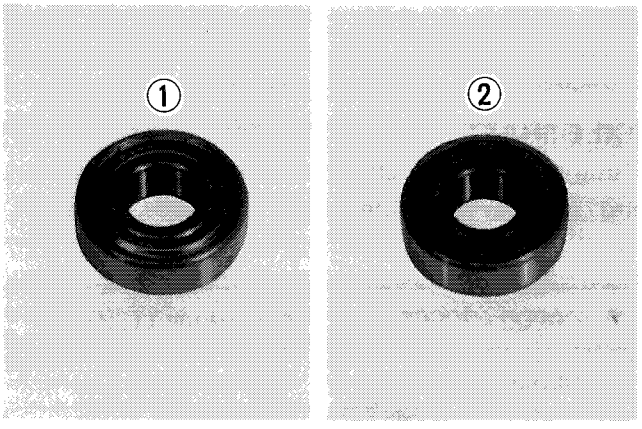
WHEEL BEARINGS

Install the wheel bearings by using special tool as shown.

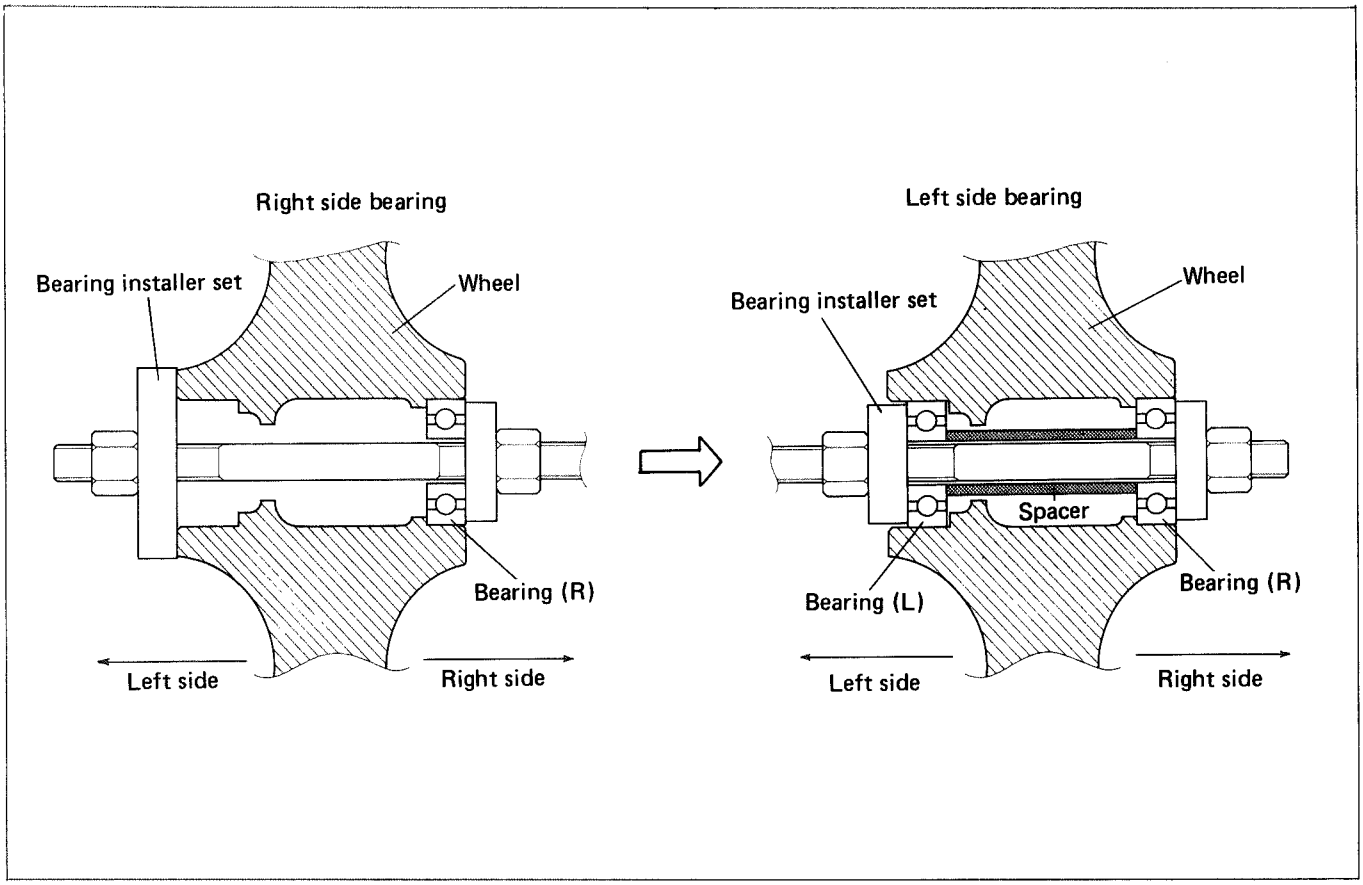


CAUTION:
First install the wheel bearing for right side.

CAUTION:
Make sure to identify each bearing, for the left side (iron plate sealed type) ① and for right side (rubber sealed type) ②.
This caution is only applied for DISC BRAKE TYPE.

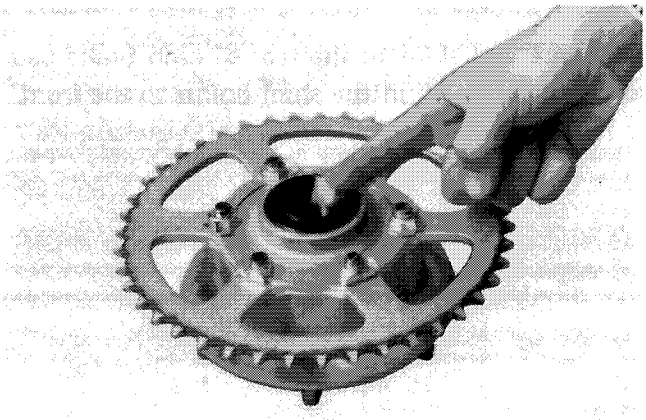


09924 - 84510	Bearing installer set



Apply grease to the sprocket drum oil seal.

99000 - 25010	Suzuki super grease "A"



BRAKE PANEL (DRUM BRAKE TYPE)

Apply grease to the brake cam.

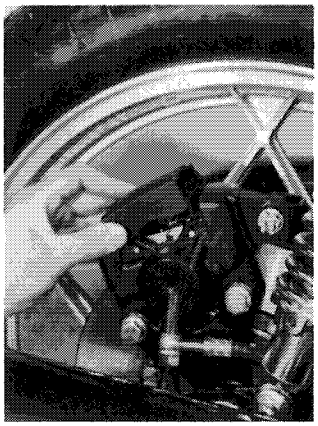
99000 - 25010	Suzuki Super Grease "A"

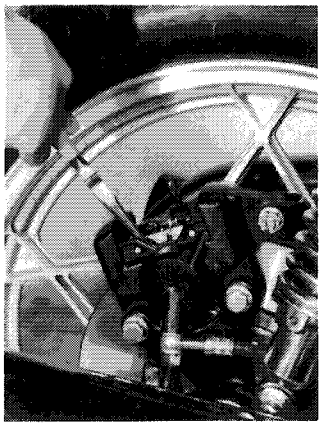
WARNING:
Adjust the brake pedal free travel after re-assembly.

REAR BRAKE (DISC BRAKE TYPE)

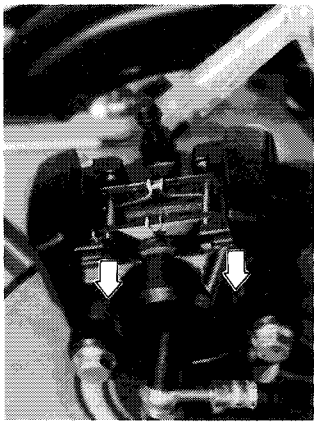
BRAKE PAD REPLACEMENT

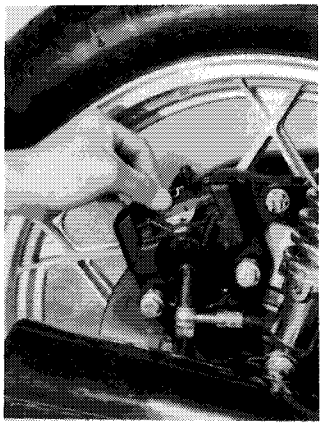
Remove dust cover.
Pull off clips.





Pull off brake pad hold pins.
Take off brake pads with pad shims.

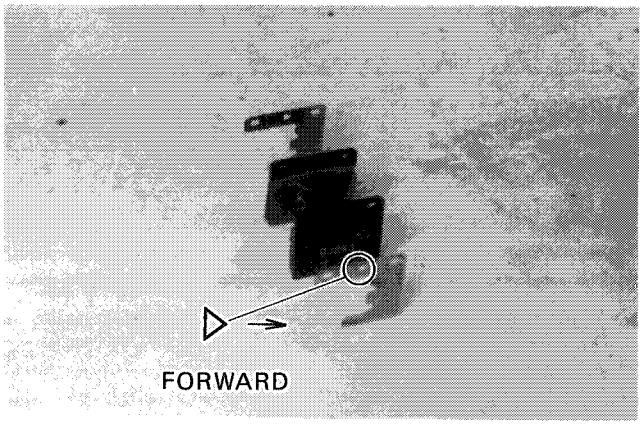




NOTE:
Do not operate the brake pedal while taking off the brake pads.

CAUTION:
Replace the brake pad with a set, otherwise braking performance will be adversely affected.

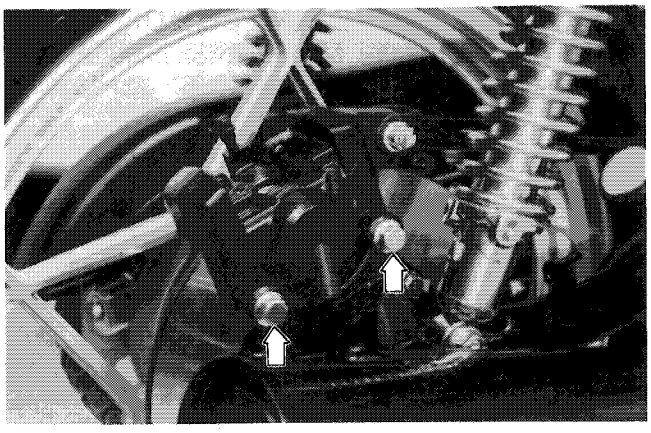
Fit brake pad shim to the rear of each brake pad so that the "hole" in the shim points to the front.



CALIPER REMOVAL AND DISASSEMBLY

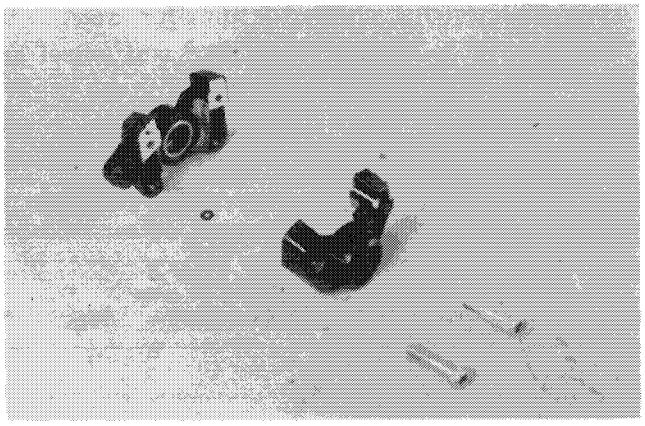
Remove brake pads.
Disconnect brake hose and catch the brake fluid in a suitable receptacle.

Pull off cotter pin and remove torque link bolt from the caliper.
Remove caliper mounting bolts and take off caliper.



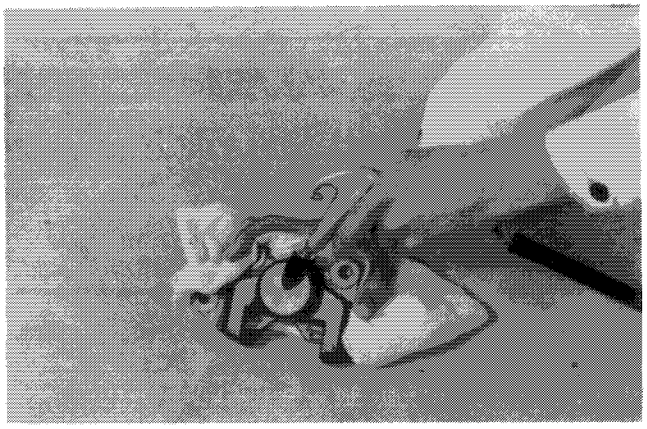
Separate the caliper after removing caliper bolts.

09911 - 71510	"L" type hexagon wrench

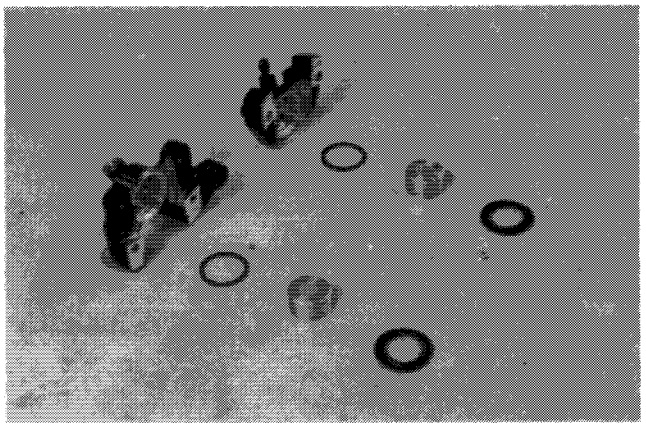


Place a rag over the piston to prevent the piston popping out. Push out the piston (Right and Left) by using air gun.

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



Remove dust boot and piston seal.



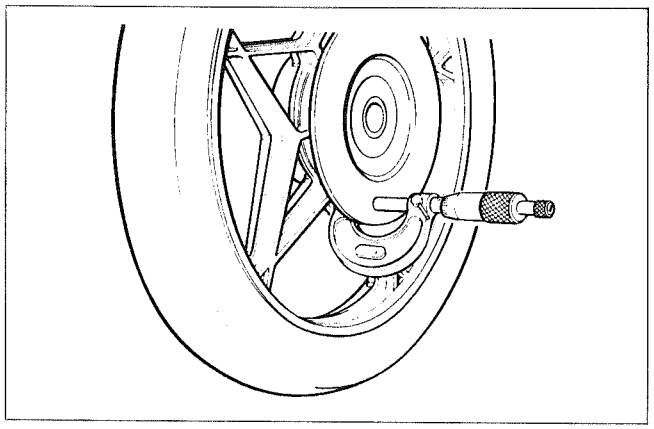
CALIPER AND DISC INSPECTION

- Inspect the cylinder bore wall for nick, scratch or other damage.
- Inspect the piston surface for any flaws or other damage.
- Inspect the each 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 - 20205	Micrometer (0 – 25 mm)

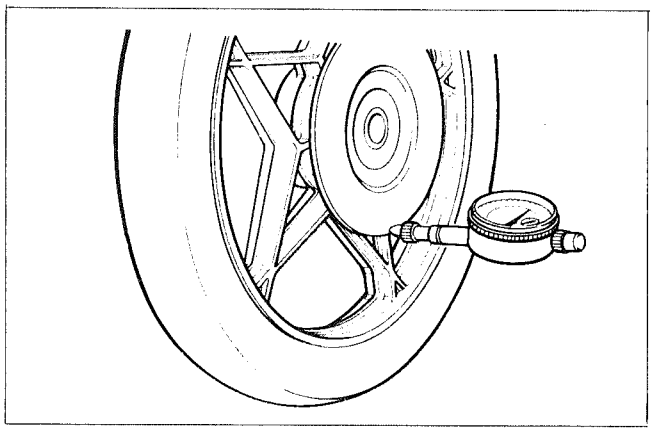
Service Limit	6.0 mm



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)
09900 - 20701	Magnetic stand

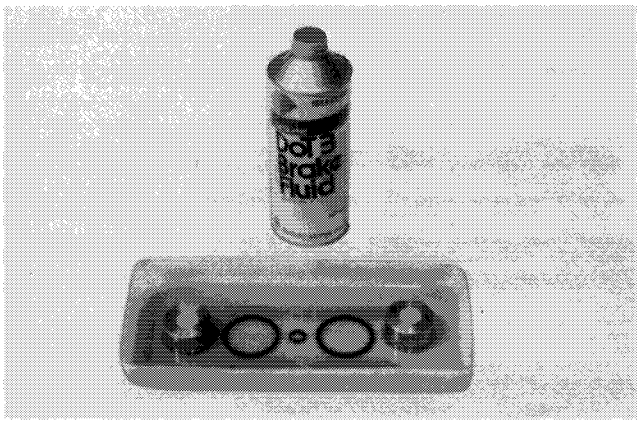
Service Limit	0.30 mm



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.
Bleed the air after reassembling master cylinder.

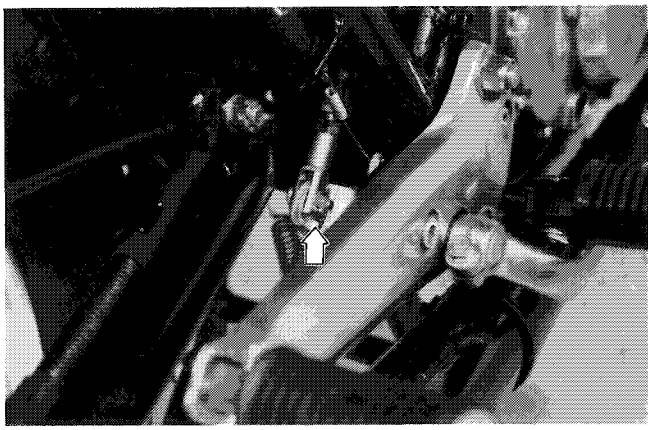


Tightening torque:

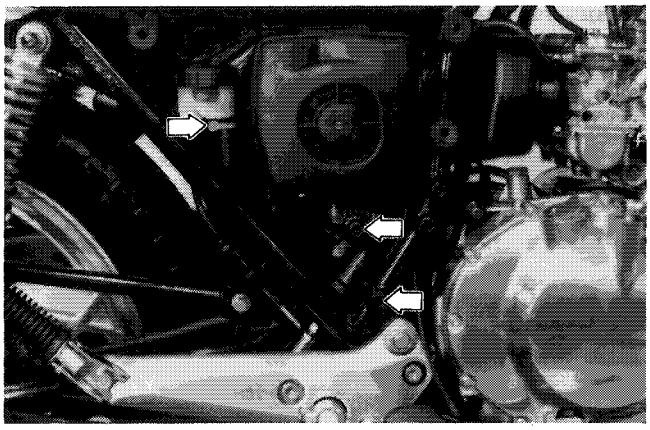
	N·m	kg-m
Union bolt	20 – 25	2.0 – 2.5
Torque link bolt	20 – 30	2.0 – 3.0
Caliper bolt	20 – 30	2.0 – 3.0
Caliper mounting bolt	25 – 40	2.5 – 4.0

MASTER CYLINDER REMOVAL AND DISASSEMBLY

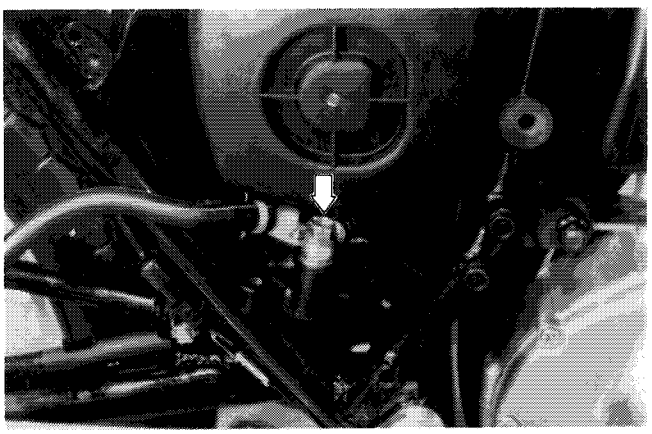
Disconnect master cylinder rod from the brake pedal arm.



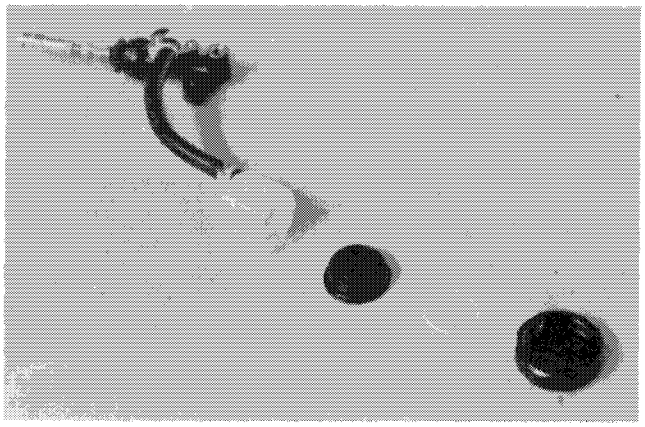
Remove reservoir fitting bolt.
Remove master cylinder mounting bolts.



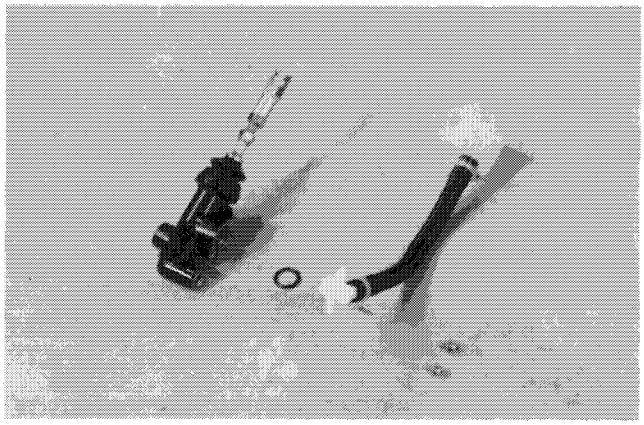
Disconnect brake hose and take off master cylinder.



Remove reservoir cap and drain brake fluid.

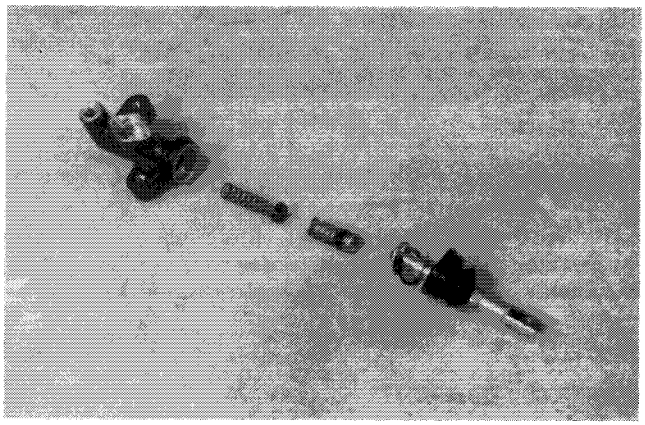


Remove reservoir.



Remove rod, piston, primary cup and spring by using special tool.

09900 - 06105	Snap ring pliers



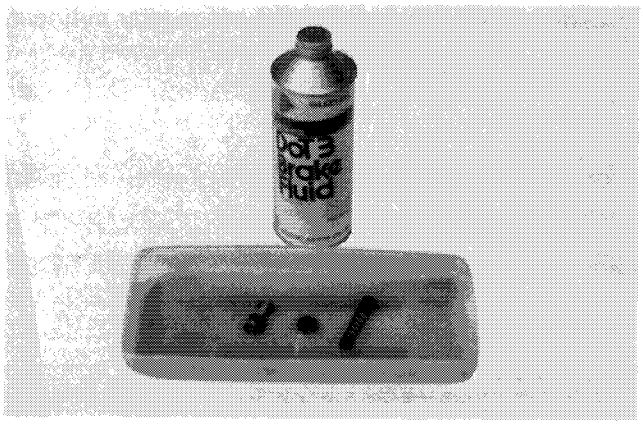
MASTER CYLINDER INSPECTION

- Inspect the cylinder bore wall for any scratch or other damage.
- Inspect the primary cup, secondary cup and each rubber parts for damage.
- Inspect the piston surface for scratch or other 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.

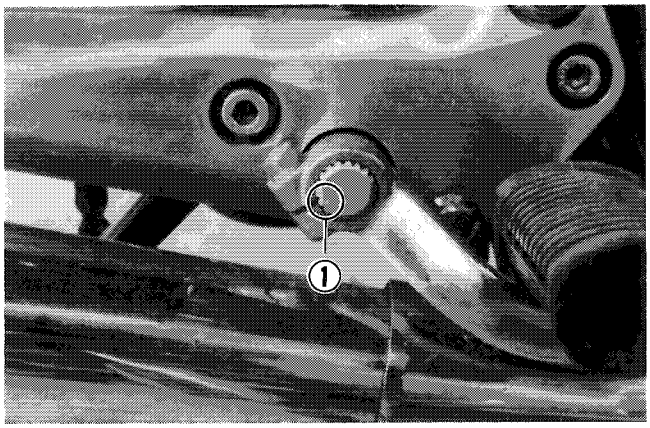


CAUTION:
Adjust the rear brake light switch and brake pedal height after installation.
Bleed the air after reassembling master cylinder. (See page 2-16)

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

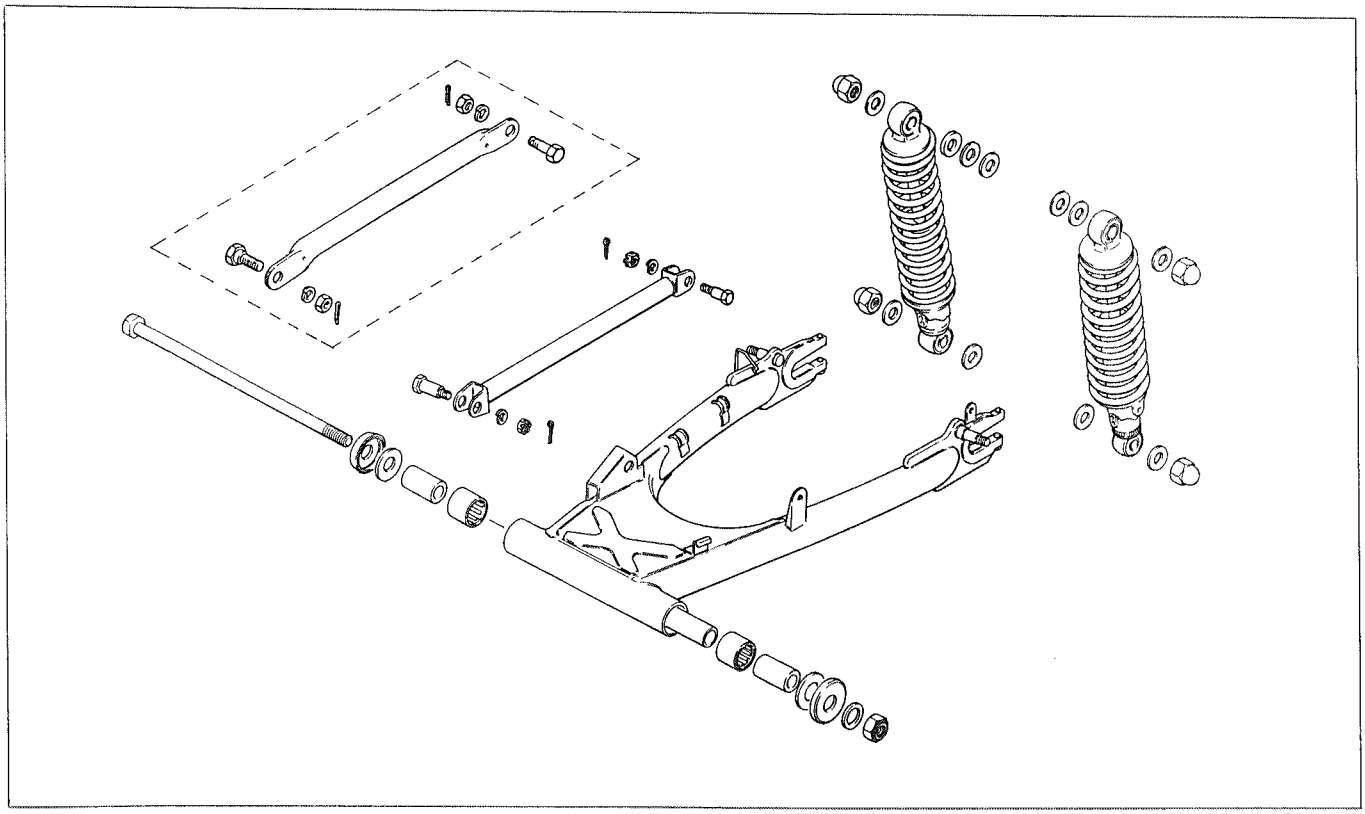
Tightening torque:

	N·m	kg-m
Union bolt	20 – 25	2.0 – 2.5
Mounting bolt	5 – 8	0.5 – 0.8



REAR SUSPENSION

CONSTRUCTION

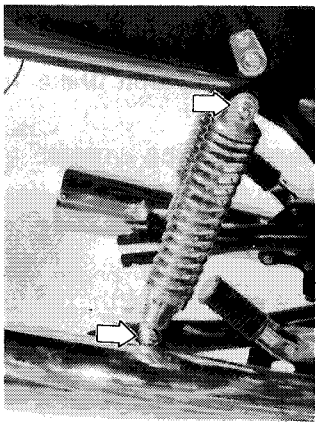


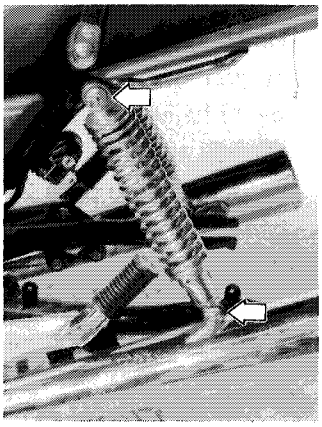
REMOVAL AND DISASSEMBLY

Remove rear wheel (See page 6-21).

Remove torque link bolts after pulling off cotter pin and take off torque link.

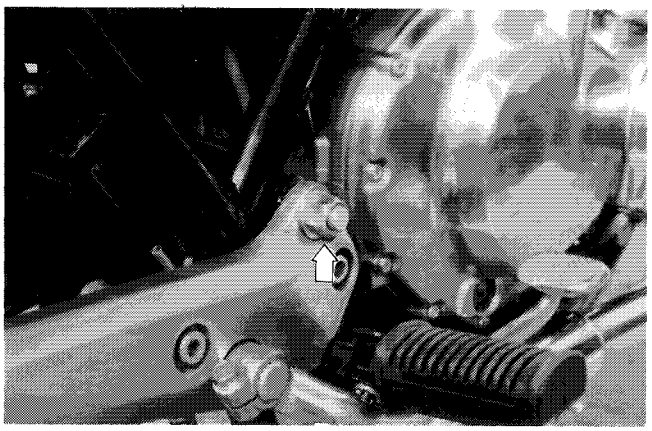
Remove brake hose union bolt and remove rear brake caliper with brake hose (Only for DISC BRAKE TYPE).



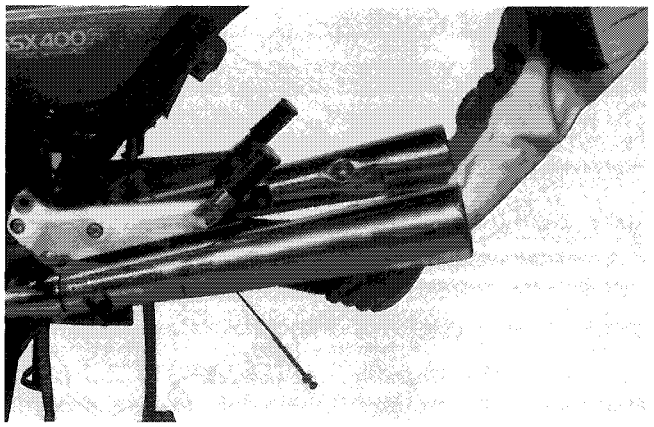


Remove rear shock absorbers, right and left.

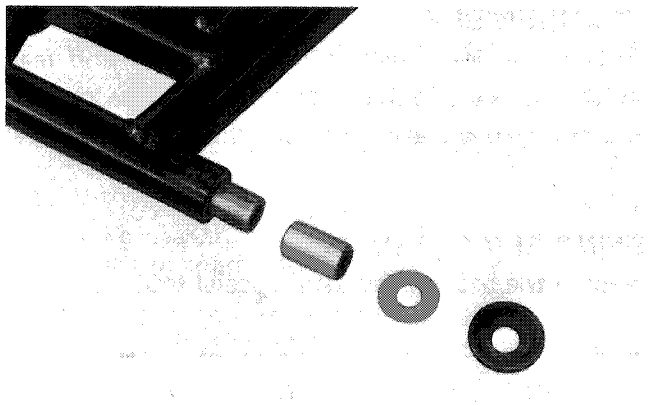
Remove swing arm pivot nut.



Draw out pivot shaft and take off swing arm.



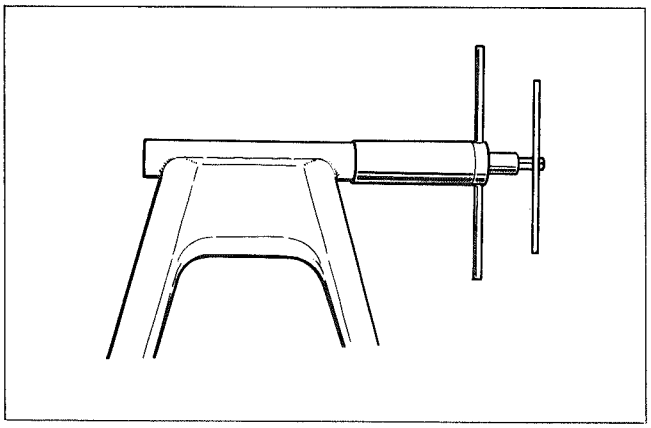
Remove dust cover, washer, bearing inner race and spacer.



Remove the bearing outer race by using special tool.

CAUTION:
The removed bearing should be replaced.

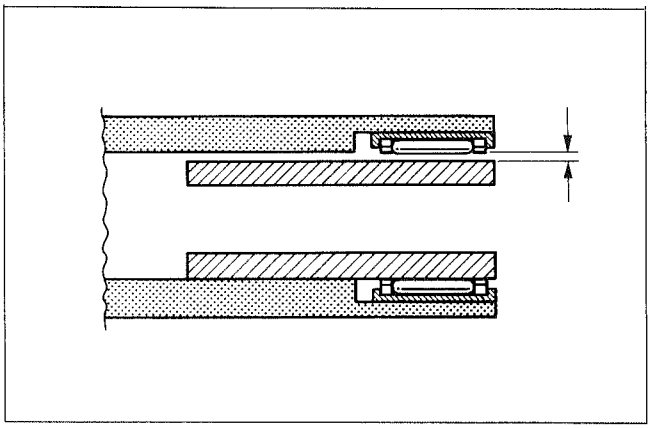
09941 - 44510	Swing arm bearing remover



INSPECTION

SWING ARM BEARINGS

Inspect the play of swing arm bearing inner spacer by hand while fixing it in the swing arm. Rotate the spacer by hand to inspect it for abnormal noise or sm
spacer if there is something unusual.

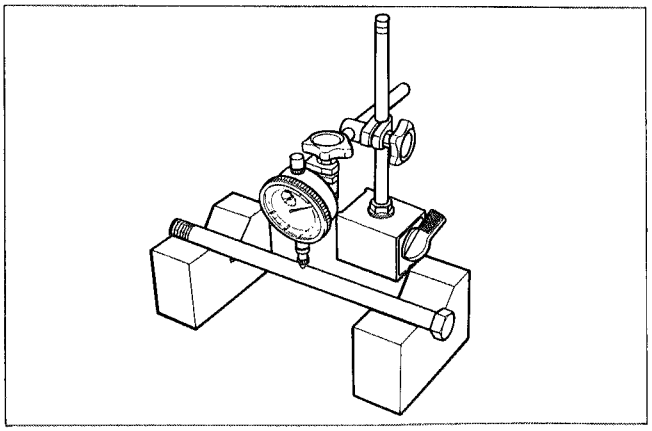


SWING ARM PIVOT SHAFT

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

09900 - 20606	Dial gauge (1/100)
09900 - 20701	Magnetic stand

Service Limit	0.30 mm



REASSEMBLY

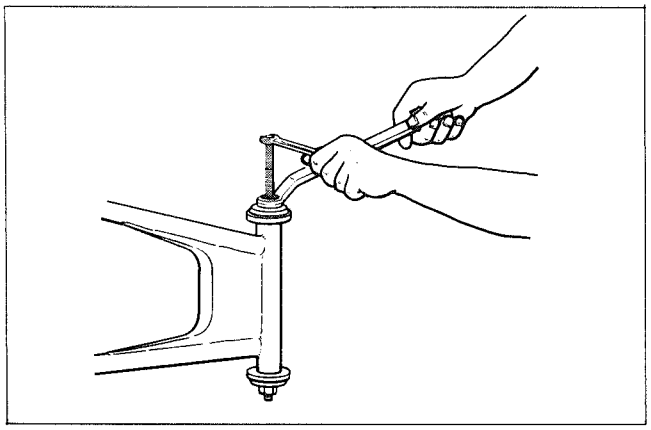
Reassemble and remount the swing arm and rear shock absorbers in the reverse order of disassembly and removal, and also carry out the following steps:

SWING ARM BEARINGS

Press in the bearings by using special tool.

09941 - 34511	Bearing installer

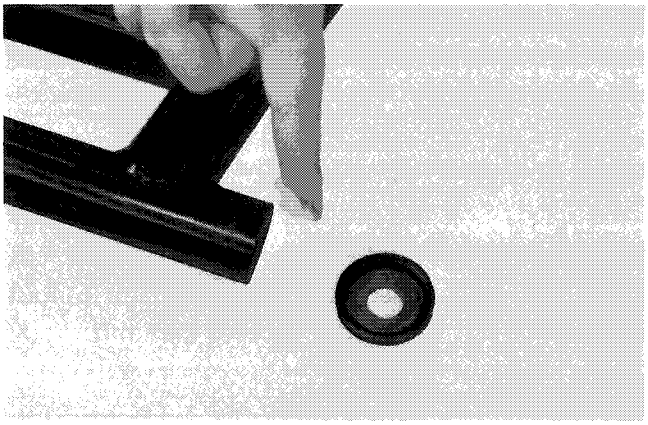
CAUTION:
When installing a set of bearings, punch marked side of each bearing comes on outer side.



Apply grease to inside of bearing.
Apply grease to dust seal cover.

99000 - 25010	Suzuki super grease "A"

WARNING:
Bleed the air from the rear brake system after reassembling swing arm and rear wheel.



SERVICING INFORMATION

CONTENTS

TROUBLESHOOTING

ENGINE

Complaint	Symptom and possible causes	Remedy
Engine will not start, or is hard to start.	**Compression too low**	
	1. Valve clearance out of adjustment.	Adjust.
	2. Worn valve guides or poor seating of valves.	Repair, or replace.
	3. Valves mistiming.	Adjust.
	4. Piston rings excessively worn.	Replace.
	5. Worn-down cylinder bores.	Replace, or rebore.
	6. Starter motor cranks but too slowly.	Consult "electrical complaints".
	Plugs not sparking	
	1. Fouled spark plugs.	Clean.
	2. Wet spark plug.	Clean and dry.
	3. Ignition timing out of adjustment.	Adjust.
	4. Defective ignition coil.	Replace.
	5. Open or short in high-tension cords.	Replace.
	6. Defective signal generator or transistor unit.	Replace.
	No fuel reaching the carburetors	
	1. Clogged hole in the fuel tank cap.	Clean.
	2. Clogged or defective fuel cock.	Clean or replace.
	3. Defective carburetor float valve.	Replace.
	4. Clogged fuel pipe or suction cock pipe.	Clean.
	5. Defective fuel cock diaphragm.	Replace.
Engine stalls easily.	1. Fouled spark plugs.	Clean.
	2. Ignition timing out of adjustment.	Adjust.
	3. Defective signal generator or transistor unit.	Replace.
	4. Clogged fuel pipe.	Clean.
	5. Clogged jets in carburetors.	Clean.
	6. Valve clearance out of adjustment.	Adjust.
Noisy engine.	**Excessive valve chatter**	
	1. Valve clearance tool large.	Adjust.
	2. Weakened or broken valve springs.	Replace.
	3. Camshaft journal worn and burnt.	Replace.
	Noise appears to come from pistons	
	1. Pistons or cylinders worn down.	Replace.
	2. Combustion chambers fouled with carbon.	Clean.
	3. Piston pins worn.	Replace.
	Noise seems to come from timing chain	
	1. Stretched chain.	Replace.
	2. Worn sprockets.	Replace.
	3. Tension adjuster not working.	Repair or replace.
	Noise seems to come from clutch	
	1. Worn splines of countershaft or hub.	Replace.
	2. Worn teeth of clutch plates.	Replace.
	3. Distorted clutch plates, driven and drive.	Repair or replace.
	Noise seems to come from crankshaft	
	1. Rattling bearings due to wear.	Replace.
	2. Big-end bearings worn and burnt.	Replace.
	3. Journal bearing worn and burnt.	Replace.

Complaint	Symptom and possible causes	Remedy
Noisy engine.	**Noise seems to come from transmission**	
	1. Gears worn or rubbing.	Replace.
	2. Badly worn splines.	Replace.
	3. Primary gears worn or rubbing.	Replace.
Slipping clutch	1. Clutch control out of adjustment or loss of play.	Adjust.
	2. Weakened clutch springs.	Replace.
	3. Worn or distorted pressure plate.	Replace.
	4. Distorted clutch plates, driven and drive.	Replace.
Dragging clutch	1. Clutch control out of adjustment or too much play.	Adjust.
	2. Some clutch springs weakened while others are not.	Replace.
	3. Distorted pressure plate or clutch plates.	Replace.
Transmission will not shift	1. Broken gearshift cam.	Replace.
	2. Distorted gearshift forks.	Replace.
Transmission will not shift back.	1. Broken return spring on shift shaft.	Replace.
	2. Shift shafts are rubbing or sticky.	Repair.
Transmission jumps out of gear.	1. Worn shifting gears on drive shaft or countershaft.	Replace.
	2. Distorted or worn gearshift forks.	Replace.
	3. Weakened stopper spring on gearshift stopper.	Replace.
Engine idles poorly.	1. Valve clearance out of adjustment.	Adjust.
	2. Poor seating of valves.	Replace.
	3. Defective valve guides.	Replace.
	4. Ignition timing out of adjustment.	Adjust.
	5. Spark plug gaps too wide.	Adjust or replace.
	6. Defective ignition coil.	Replace.
	7. Defective signal generator or transistor unit.	Replace.
	8. Float-chamber fuel level out of adjustment in carburetors.	Adjust.
	9. Clogged jets or imbalance of carburetors.	Clean or adjust.
Engine runs poorly in high-speed range.	1. Valve springs weakened.	Replace.
	2. Valve timing out of adjustment.	Adjust.
	3. Spark plug gaps too narrow.	Adjust.
	4. Ignition not advanced sufficiently due to poorly working advancer.	Replace.
	5. Defective ignition coil.	Replace.
	6. Defective signal generator or transistor unit.	Replace.
	7. Float-chamber fuel level too low.	Adjust.
	8. Clogged air cleaner element.	Clean.
	9. Clogged fuel pipe, resulting in inadequate fuel supply to carburetors.	Clean, and prime.
	10. Clogged suction cock pipe.	Clean.
Dirty or heavy exhaust smoke	1. Too much engine oil in the engine.	Check with level inspection window, drain out excess oil.
	2. Worn piston rings or cylinders.	Replace.
	3. Worn valve guides.	Replace.
	4. Cylinder walls scored or scuffed.	Rebore or replace.
	5. Worn valves stems.	Replace.
	6. Defective stem seal.	Replace.

Complaint	Symptom and possible causes	Remedy
Engine lacks power	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.	Adjust. Replace. Adjust. Replace. Repair. Adjust. Adjust or replace. Clean. Adjust. Clean. Retighten. Retighten or replace. Drain out excess oil.
Engine overheats.	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.	Clean. Add oil. Replace or clean. Adjust. Retighten or replace. Change.

CARBURETOR

Complaint	Symptom and possible causes	Remedy
Trouble with starting	1. Starter jet is clogged. 2. Starter pipe is clogged. 3. Air leaking from a joint between starter body and carburetor. 4. Air leaking from carburetor's joint or vacuum gauge joint. 5. Starter plunger is not operating properly.	Clean. Clean. Check starter body and carburetor for tightness, adjust and replace gasket. Check and adjust. Check and adjust.
Idling or low-speed trouble	1. Pilot jet, pilot air jet are clogged or loose. 2. Air leaking from carburetor's joint, vacuum gauge joint, or starter. 3. Pilot outlet or bypass is clogged. 4. Starter plunger is not fully closed.	Check and clean. Check and adjust. Check and clean. Check and adjust.
Medium- or high-speed trouble	1. Main jet or main air jet is clogged. 2. Needle jet is clogged. 3. Throttle valve is not operating properly. 4. Filter is clogged.	Check and clean. Check and clean. Check throttle valve for operation. Check and clean.
Overflow and fuel level fluctuations	1. Needle valve is worn or damaged. 2. Spring in needle valve is borken. 3. Float is not working properly. 4. Foreign matter has adhered to needle valve. 5. Fuel level is too high or low.	Replace. Replace. Check and adjust. Clean. Adjust float height.

ELECTRICAL

Complaint	Symptom and possible causes	Remedy
No sparking or poor sparking	1. Defective ignition coil. 2. Defective spark plugs. 3. Defective signal generator or transistor unit.	Replace. Replace. Replace.
Spark plugs soon become fouled with carbon.	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 by hot type plugs.
Spark plugs become fouled too soon.	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.	1. Spark plugs too hot. 2. The engine overheats. 3. Ignition timing out of adjustment. 4. Spark plugs loose. 5. Mixture too lean.	Replace by cold type plugs. Tune up. Adjust. Retighten. Adjust carburetors.
Generator does not charge.	1. Open or short in lead wires, or loose lead connections. 2. Shorted, grounded or open generator coils. 3. Shorted or panctured regulator/rectifier.	Repair or replace or retighten. Replace. Replace.
Generator does charge, but charging rate is below the specification.	1. Lead wires tend to get shorted or open-circuited or loosely connected at terminals. 2. Grounded or open-circuited startor coils of generator. 3. Defective regulator/rectifier. 4. Not enough electrolyte in the battery. 5. Defective cell plates in the battery.	Repair, or retighten. Replace. Replace. Add distilled water to the upper level. Replace the battery.
Generator overchanges.	1. Internal short-circuit in the battery. 2. Resistor element in the regulator/rectifier damaged or defective. 3. Regulator/rectifier poorly grounded.	Replace the battery. Replace. Clean and tighten ground connection.
Unstable charging	1. Lead wire insulation frayed due to vibration, resulting in intermittent shorting. 2. Generator internally shorted. 3. Defective regulator/rectifier.	Repair or replace. Replace. Replace.
Starter button is not effective.	1. Battery run down. 2. Defective switch contacts. 3. Brushes not seating properly on commutator in starter motor. 4. Defective starter relay.	Recharge or replace. Replace. Repair or replace. Replace.

BATTERY

Symptom	Probable causes	Remedy
"Sulfation", acidic white powdery substance or spots on surfaces of cell plates.	1. Not enough electrolyte	Add distilled water, if the battery has not been damaged and "sulfation" has not advanced too far, and recharge.
	2. Battery case is cracked.	Replace the battery.
	3. Battery has been left in a run-down condition for a long time.	Replace the battery.
	4. Adulterated electrolyte (Foreign matter has enteres the battery and become mixed with the electrolyte.	If "sulfation" has not advanced too far, try to restore the battery by replacing the electrolyte, recharging it fully with the battery detached from the motorcycle and then adjusting electrolyte S.G.
Battery runs down quickly.	1. The charging method is not correct.	Check the generator, regulator/rectifier and circuit connections, and make necessary adjustments to obtain specified charging operation.
	2. Cell plates have lost much of their active material as a result of over-charging.	Replace the battery, and correct the charging system.
	3. A short-circuit condition exists within the battery due to excessive accumulation of sediments caused by the high electrolyte S.G.	Replace the battery
	4. Electrolyte S.G. is too low.	Recharge the battery fully and adjust electrolyte S.G.
	5. Adulterated electrolyte.	Replace the electrolyte, recharge the battery and then adjust S.G.
	6. Battery is too old.	Replace the battery.
Reversed battery polarity.	The battery has been connected the wrong way round in the system, so that it is being charged in the reverse direction.	Replace the battery and be sure to connect the battery properly.
Battery "sulfation"	1. Charging rate too low or too high. (When not in use batteries should be recharged at least once a month to avoid sulfation.)	Replace the battery.
	2. Battery electrolyte excessive or insufficient, or its specific gravity too high or too low.	Keep the electrolyte up to the prescribed level, or adjust the S.G. by consulting the battery maker's directions.
	3. The battery left unused for too long in cold climate.	Replace the battery, if badly sulfated.
Battery discharges too rapidly.	1. Dirty container top and sides.	Clean.
	2. Impurities in the electrolyte or electrolyte S.G. is too high.	Change the electrolyte by consulting the battery maker's directions.

CHASSIS

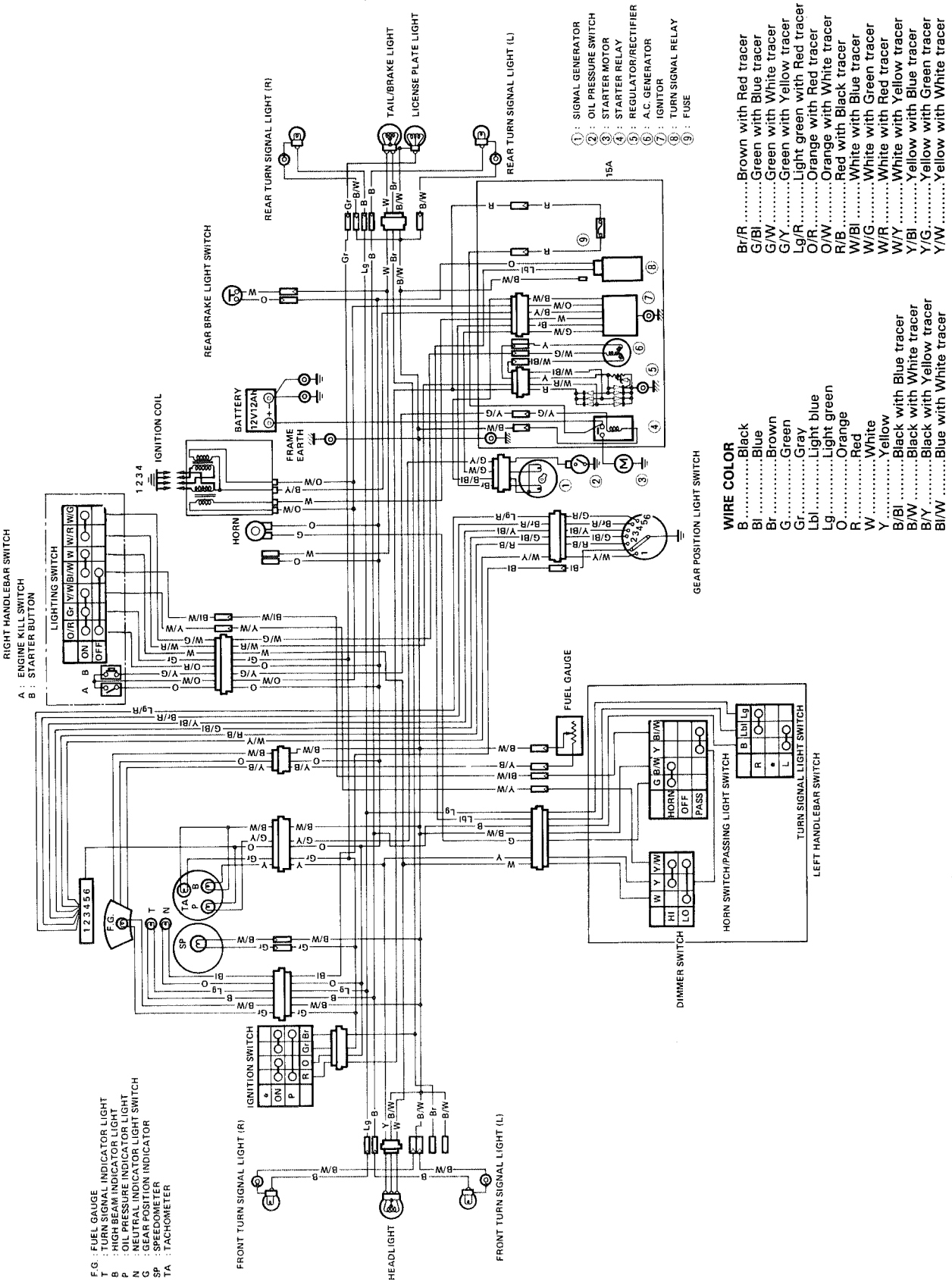
Complaint	Symptom and possible causes	Remedy
Heavy steering	1. Steering stem nut overtightened. 2. Broken bearing in steering stem. 3. Distorted steering stem. 4. Not enough pressure in tires.	Adjust. Replace. Replace. Adjust.
Wobbly handle	1. Loss of balance between right and left suspension 2. Distorted front fork. 3. Distorted front axle or cockced tire.	Replace. Repair or replace. Replace.
Wobbly front wheel	1. Distorted wheel rim. 2. Worn-down front wheel bearings. 3. Defective or incorrect tire. 4. Loose nut on axle. 5. Loose wheel spokes.	Replace. Replace. Replace. Retighten. Retighten.
Front suspension too soft.	1. Weakened springs. 2. Not enough fork oil.	Replace. Refill
Front suspension too stiff	1. Fork oil too viscous. 2. Too much fork oil.	Replace. Drain excess oil.
Noisy front suspension	1. Not enough fork oil. 2. Loose nuts on suspension.	Refill. Retighten.
Woobly rear wheel	1. Distorted wheel rim. 2. Worn-down rear wheel or swing arm bearings. 3. Defective or incorrect tire. 4. Loose wheel sparkes	Replace. Replace. Replace. Retighten.
Rear suspension too soft	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)	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.

BRAKES

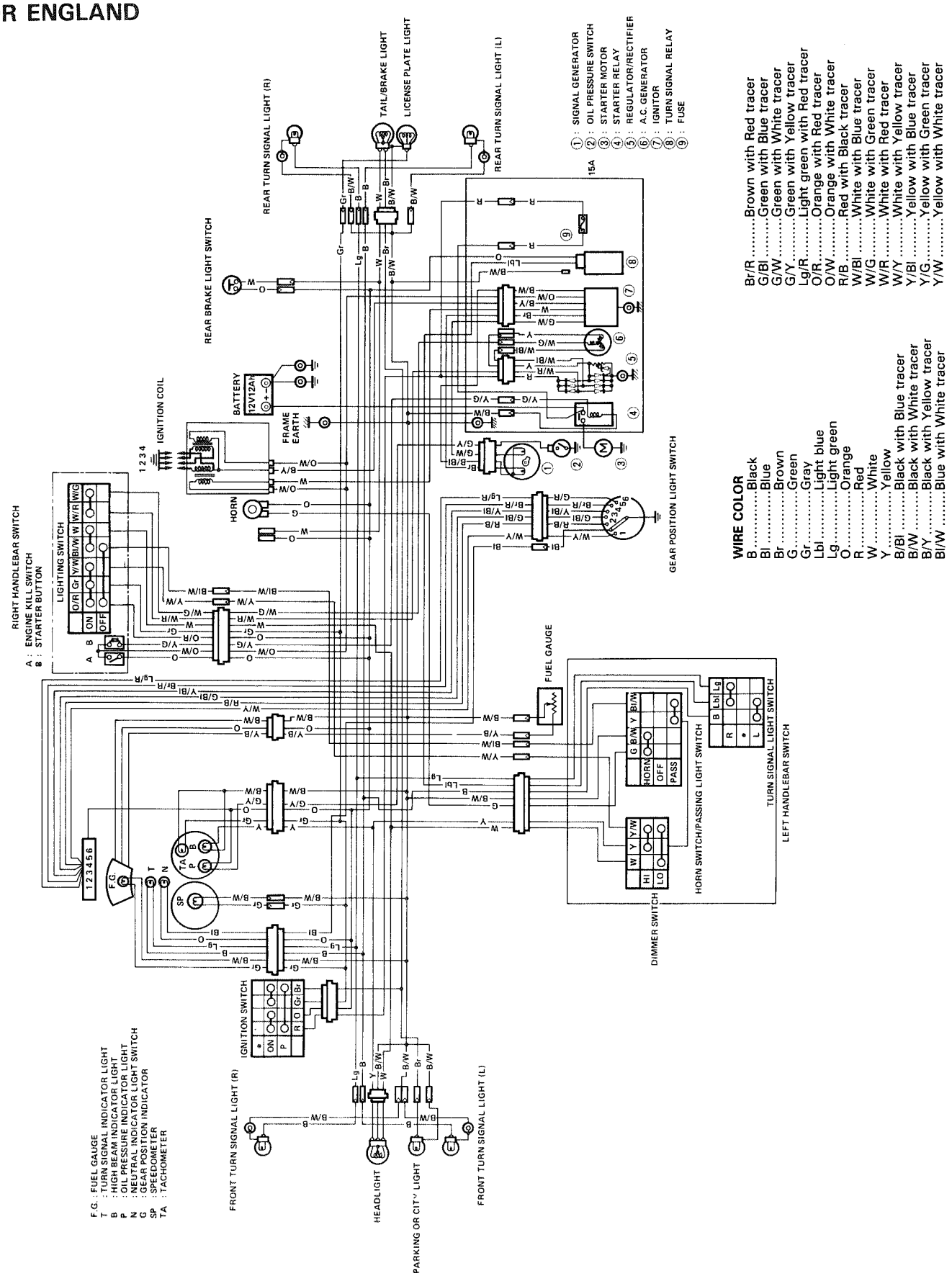
Complaint	Symptom and possible causes	Remedy
Insufficient brake power	1. Leakage of brake fluid from hydraulic system. 2. Worn pads. 3. Oil adhesion on engaging surface of pads. 4. Worn disc. 5. Air in hydraulic system. 6. Lining worn down.	Repair or replace. Replace. Clean disc and pads. Replace. Bleed air. Replace.
Brake squeaking	1. Carbon adhesion on pad surface. 2. Tilted pad. 3. Damaged wheel bearing. 4. Loose front-wheel axle or rear-wheel axle. 5. Worn pads. 6. Foreign material in brake fluid. 7. Clogged return port of master cylinder.	Repair surface with sand-paper. Modify pad fitting. Replace. Tighten to specified torque. Replace. Replace brake fluid. Disassemble and clean master cylinder.
Excessive brake lever stroke	1. Air in hydraulic system. 2. Worn brake lever cam. 3. Insufficient brake fluid. 4. Improper quality of brake fluid.	Bleed air. Replace brake lever. Replenish fluid to specified level; bleed air. Replace with correct fluid.
Leakage of brake fluid	1. Insufficient tightening of connection joints. 2. Cracked hose. 3. Worn piston and/or cup.	Tighten to specified torque. Replace. Replace piston and/or cup.

WIRING DIAGRAM

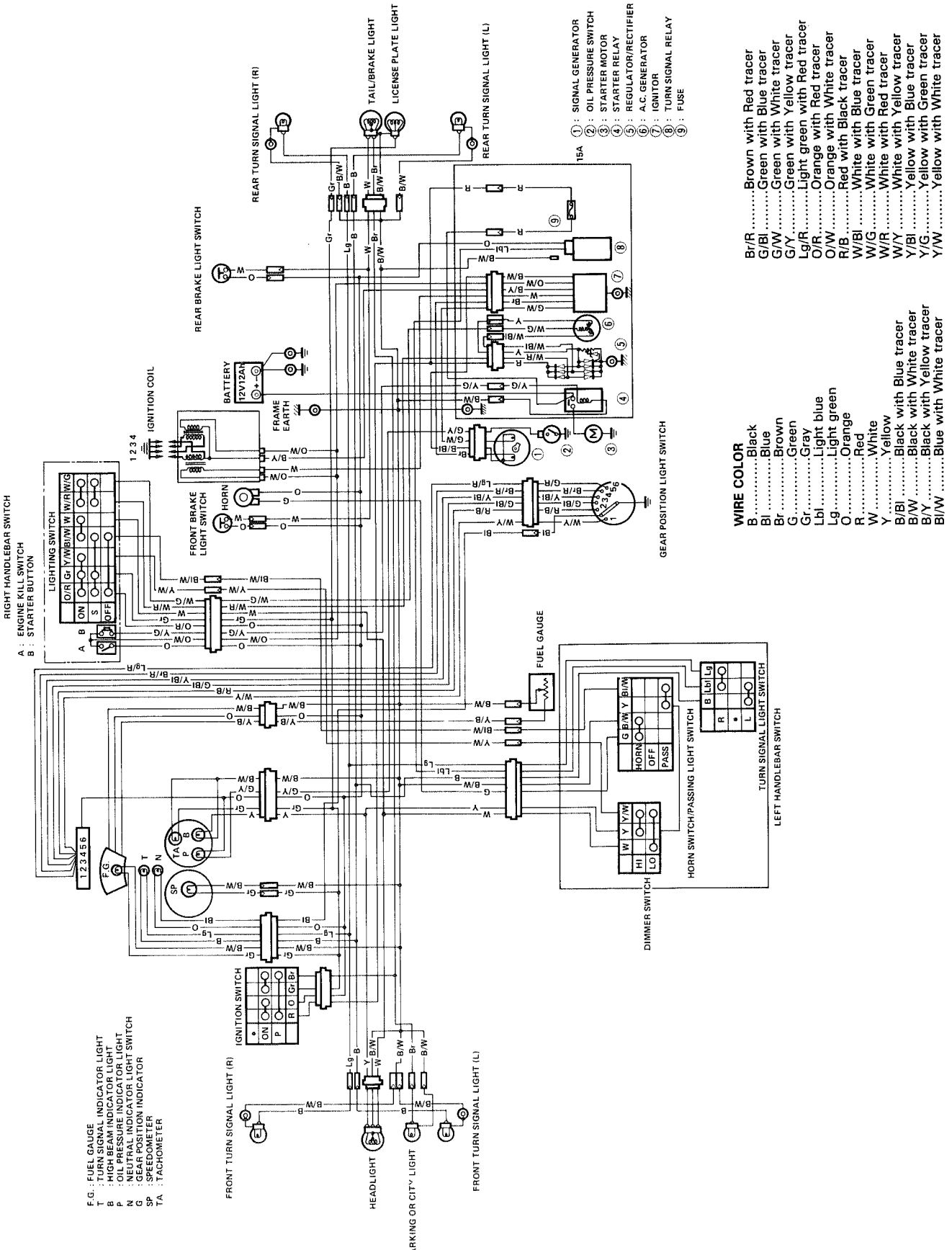
(FOR GENERAL AND SOUTH AFRICA)



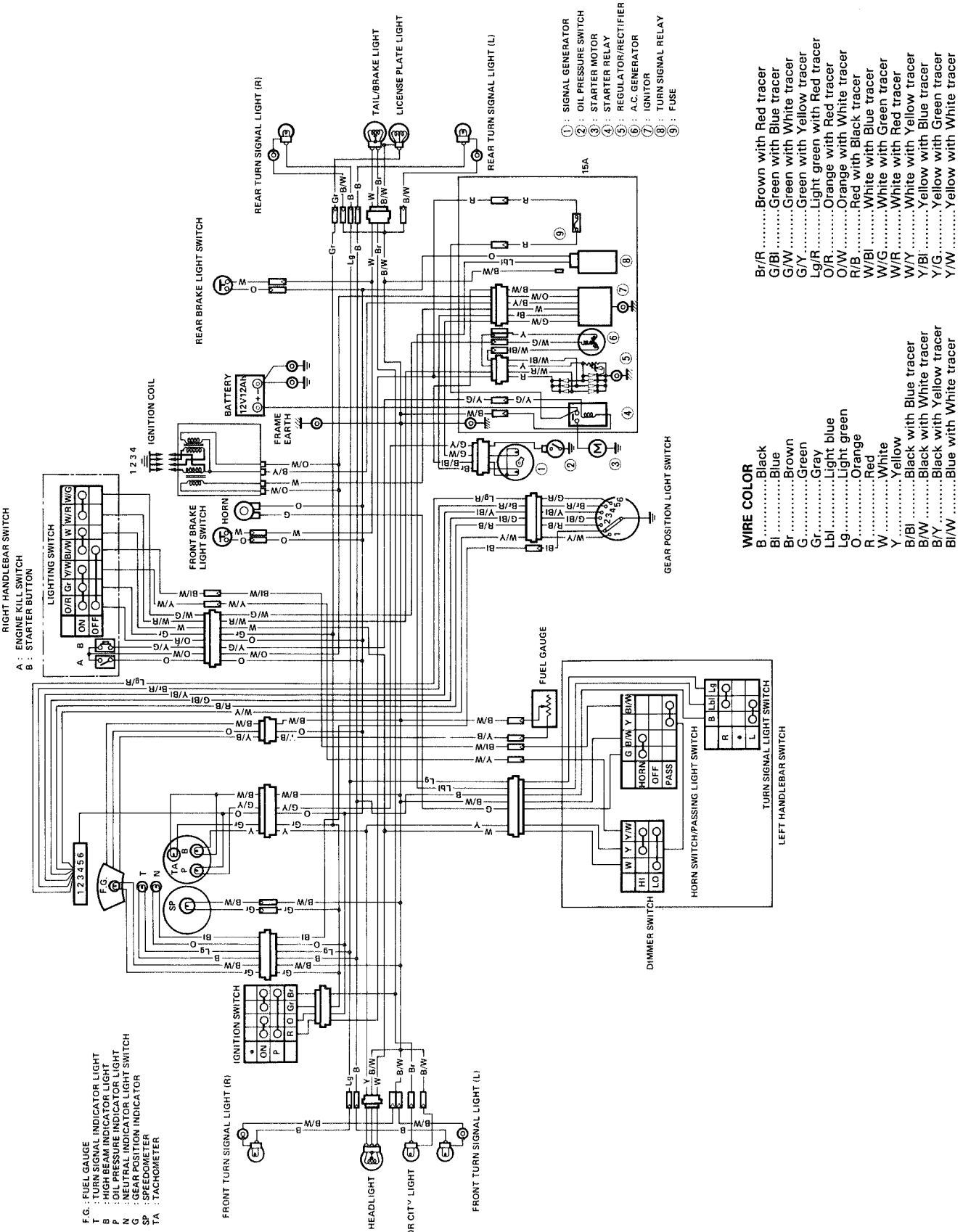
FOR ENGLAND


F.G. : FUEL GAUGE
T : TURN SIGNAL INDICATOR LIGHT
B : HIGH BEAM INDICATOR LIGHT
P : OIL PRESSURE INDICATOR LIGHT
N : NEUTRAL INDICATOR LIGHT SWITCH
G : GEAR POSITION INDICATOR
SP : SPEEDOMETER
TA : TACHOMETER
FRONT TURN SIGNAL LIGHT (R)
HEADLIGHT
PARKING OR CITY LIGHT
FRONT TURN SIGNAL LIGHT (L)
IGNITION SWITCH
RIGHT HANDLEBAR SWITCH
A : ENGINE KILL SWITCH
B : STARTER BUTTON
LIGHTING SWITCH
IGNITION COIL
HORN
REAR BRAKE LIGHT SWITCH
REAR TURN SIGNAL LIGHT (R)
TAIL/BRAKE LIGHT
LICENSE PLATE LIGHT
REAR TURN SIGNAL LIGHT (L)
BATTERY
12V12AH
FRAME EARTH
FUEL GAUGE
DIMMER SWITCH
HORN SWITCH/PASSING LIGHT SWITCH
TURN SIGNAL LIGHT SWITCH
LEFT HANDLEBAR SWITCH
GEAR POSITION LIGHT SWITCH
15A
① : SIGNAL GENERATOR
② : OIL PRESSURE SWITCH
③ : STARTER MOTOR
④ : STARTER RELAY
⑤ : REGULATOR/RECTIFIER
⑥ : A.C. GENERATOR
⑦ : IGNITOR
⑧ : TURN SIGNAL RELAY
⑨ : FUSE
WIRE COLOR
B.....Black
Bl.....Blue
Br.....Brown
G.....Green
Gr.....Gray
Lbl.....Light blue
Lg.....Light green
O.....Orange
R.....Red
W.....White
Y.....Yellow
B/Bl.....Black with Blue tracer
B/W.....Black with White tracer
B/Y.....Black with Yellow tracer
Bl/W.....Blue with White tracer
Br/R.....Brown with Red tracer
G/Bl.....Green with Blue tracer
G/W.....Green with White tracer
G/Y.....Green with Yellow tracer
Lg/R.....Light green with Red tracer
O/R.....Orange with Red tracer
O/W.....Orange with White tracer
R/B.....Red with Black tracer
W/Bl.....White with Blue tracer
W/G.....White with Green tracer
W/R.....White with Red tracer
W/Y.....White with Yellow tracer
Y/Bl.....Yellow with Blue tracer
Y/G.....Yellow with Green tracer
Y/W.....Yellow with White tracer

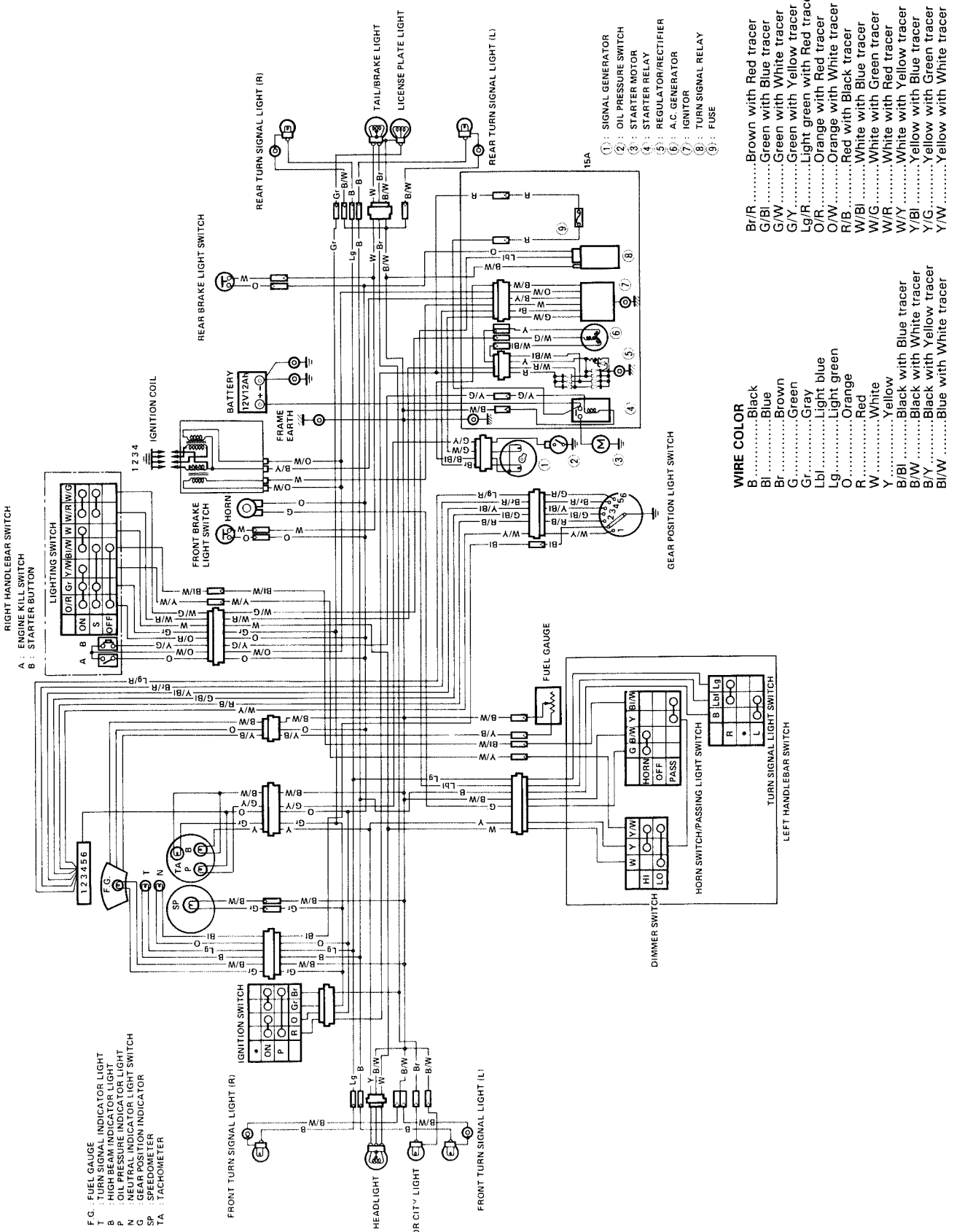
FOR FRENCH, NORWAY, SWITZERLAND, DENMARK, SWEDEN AND AUSTRIA



FOR FINLAND AND BELGIUM



FOR W. GERMANY AND THE NETHERLAND



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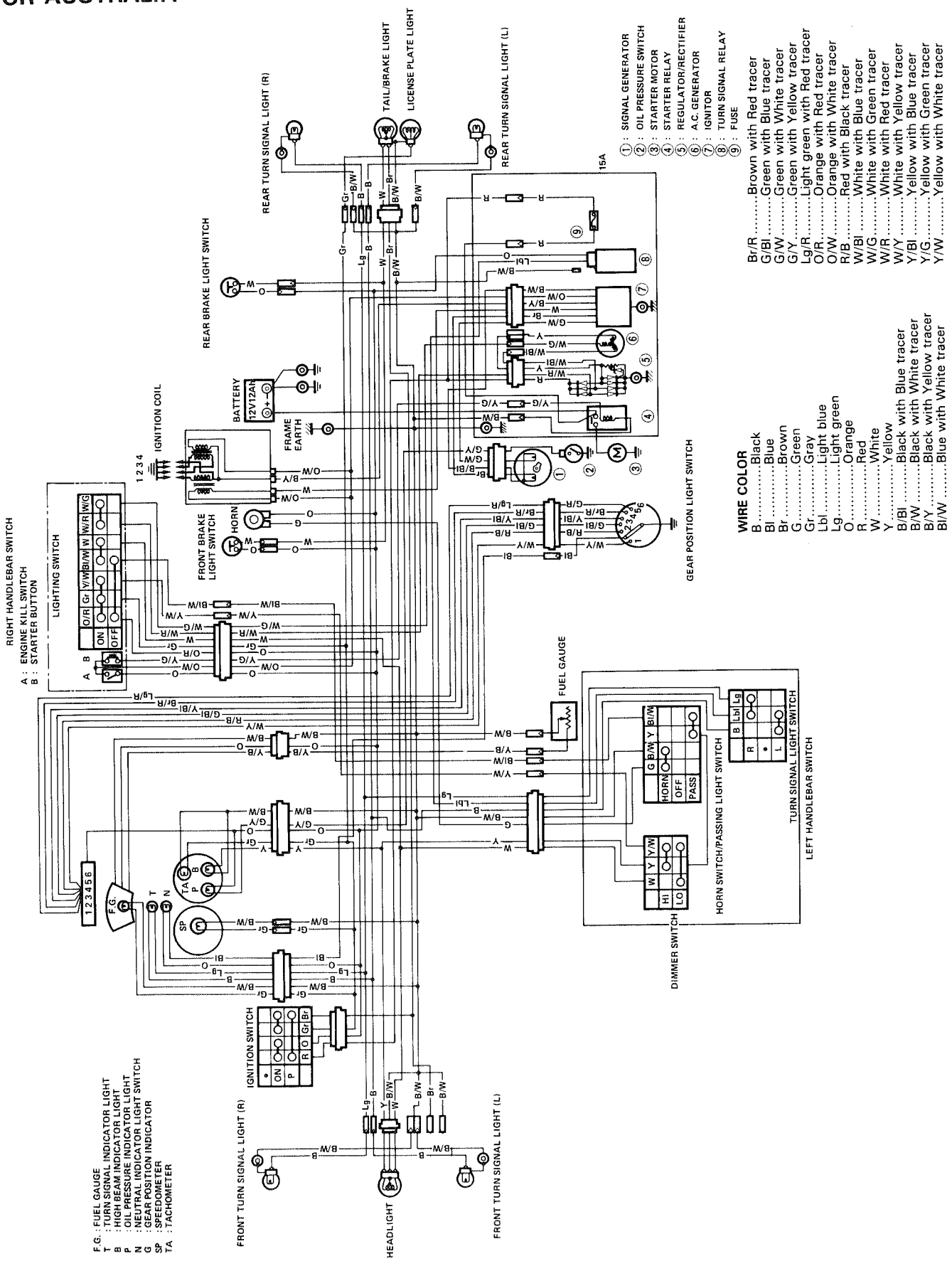

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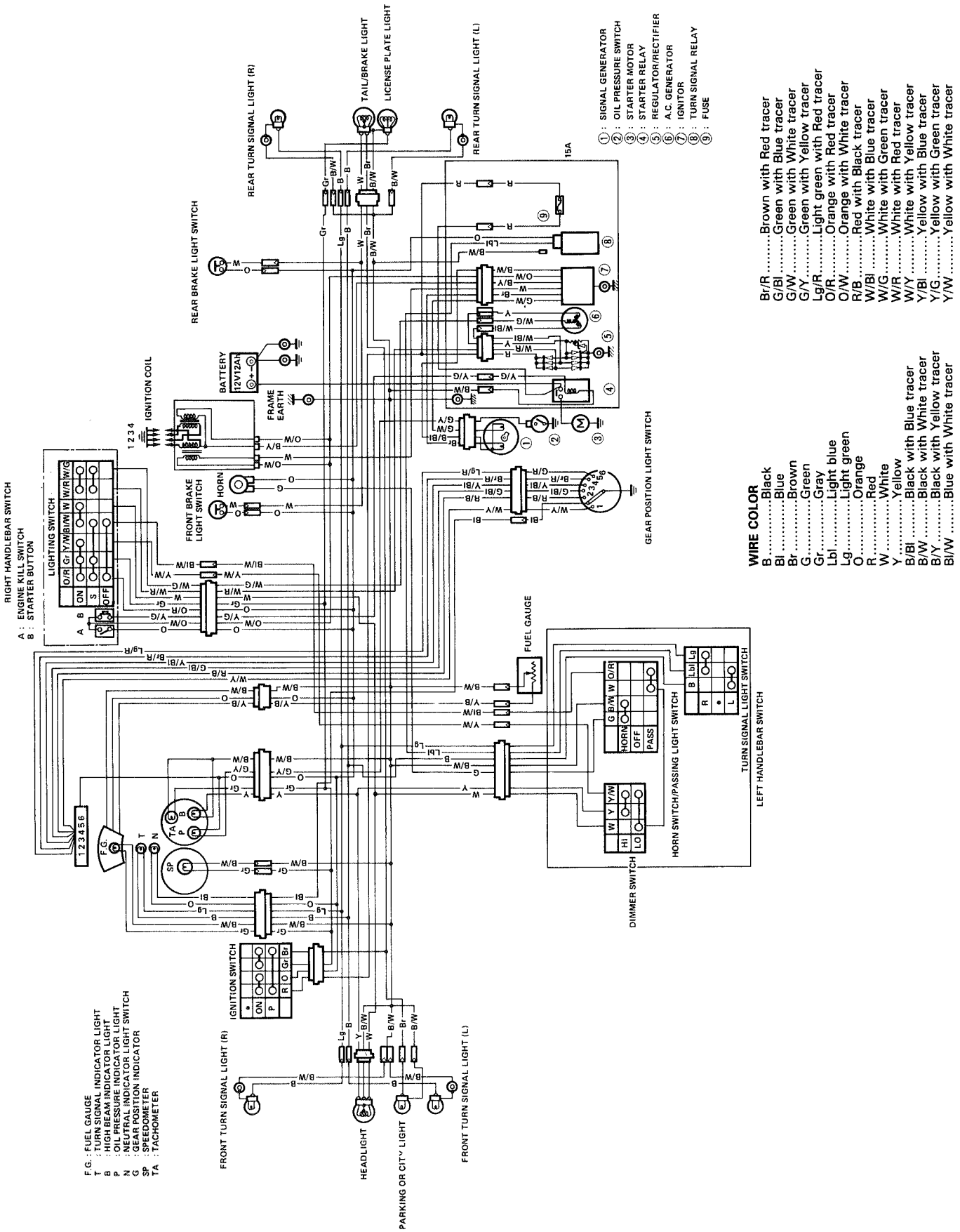
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LIGHTING SWITCH
IGNITION COIL
BATTERY
12V12Ah
FRAME EARTH
REAR BRAKE LIGHT SWITCH
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LICENSE PLATE LIGHT
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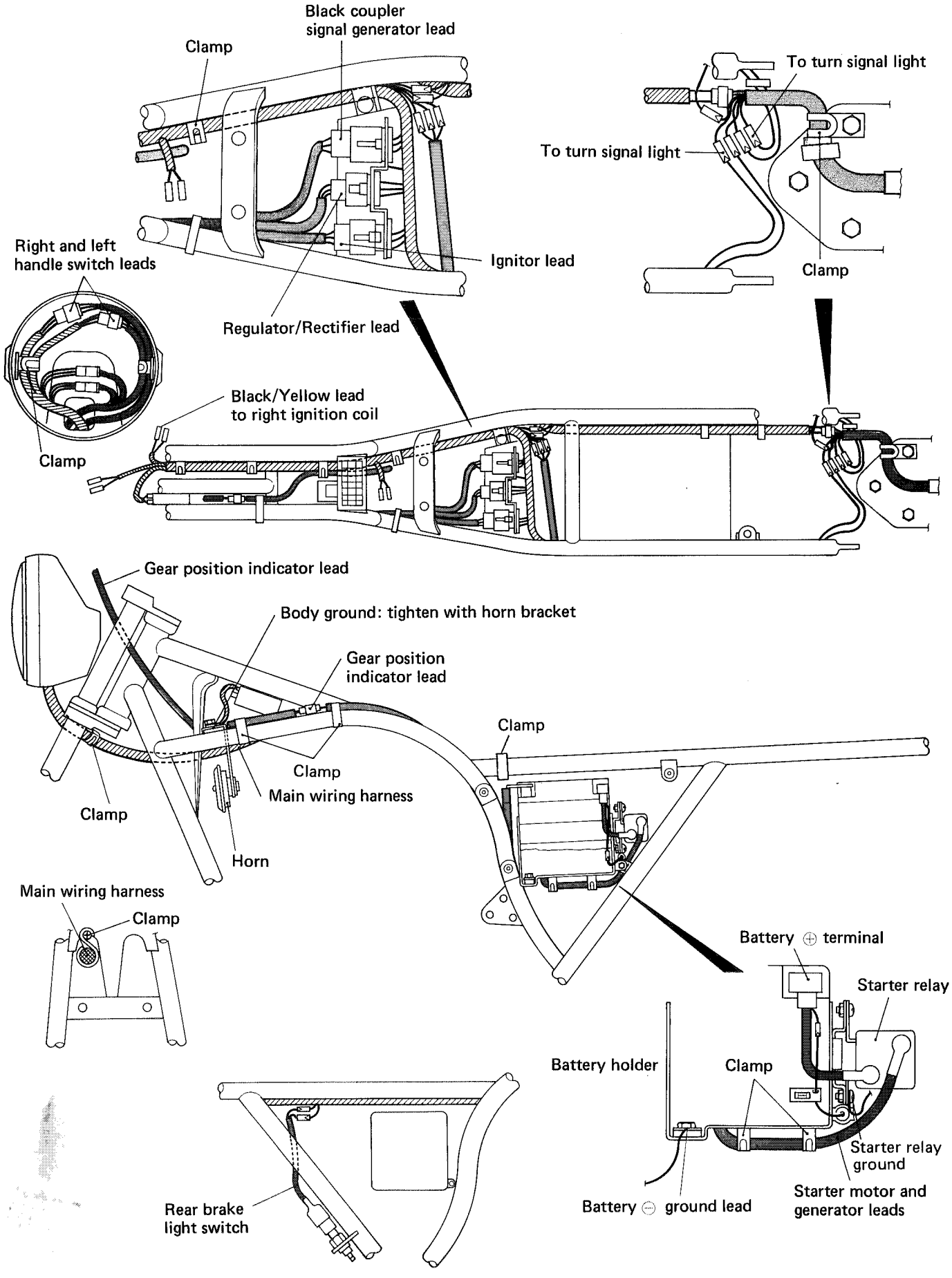
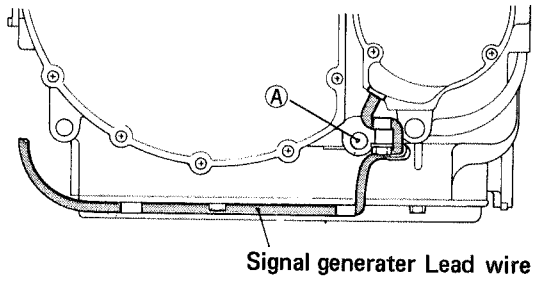
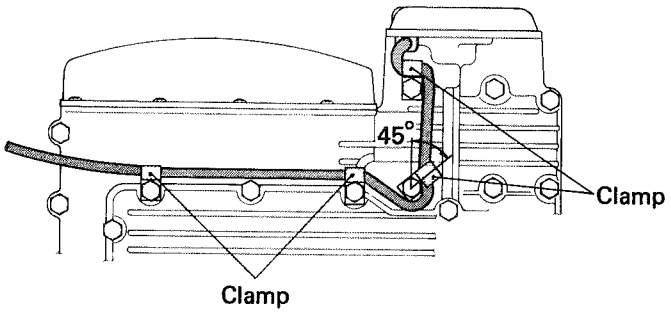
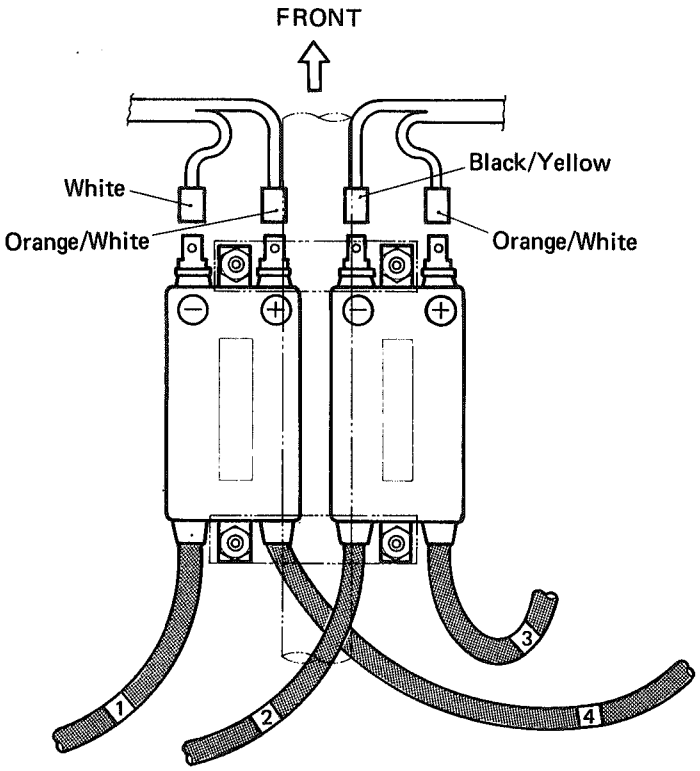
W/Y.....White with Yellow tracer
Y/Bl.....Yellow with Blue tracer
Y/G.....Yellow with Green tracer
Y/W.....Yellow with White tracer

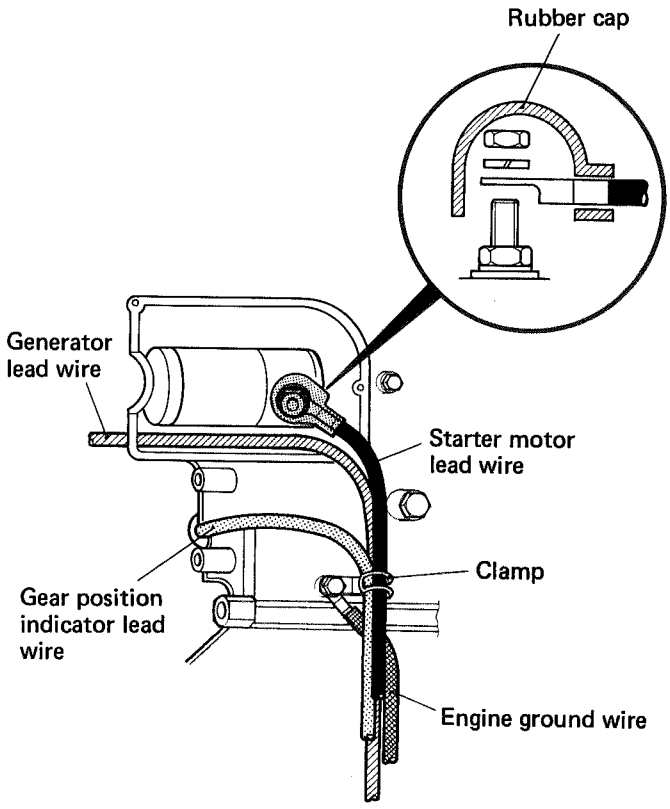
WIRE ROUTING

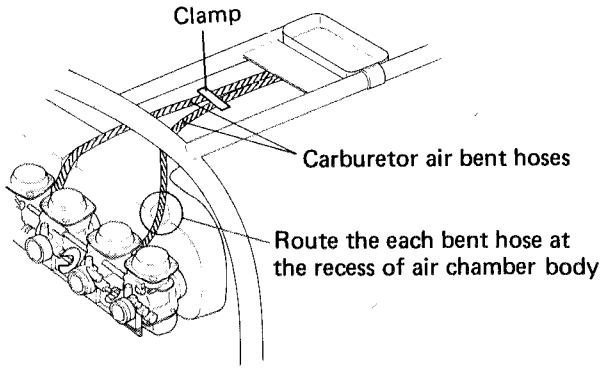



Ⓐ when tightening engine mounting nut, do not bite this lead wire between chassis and engine.
Signal generater Lead wire

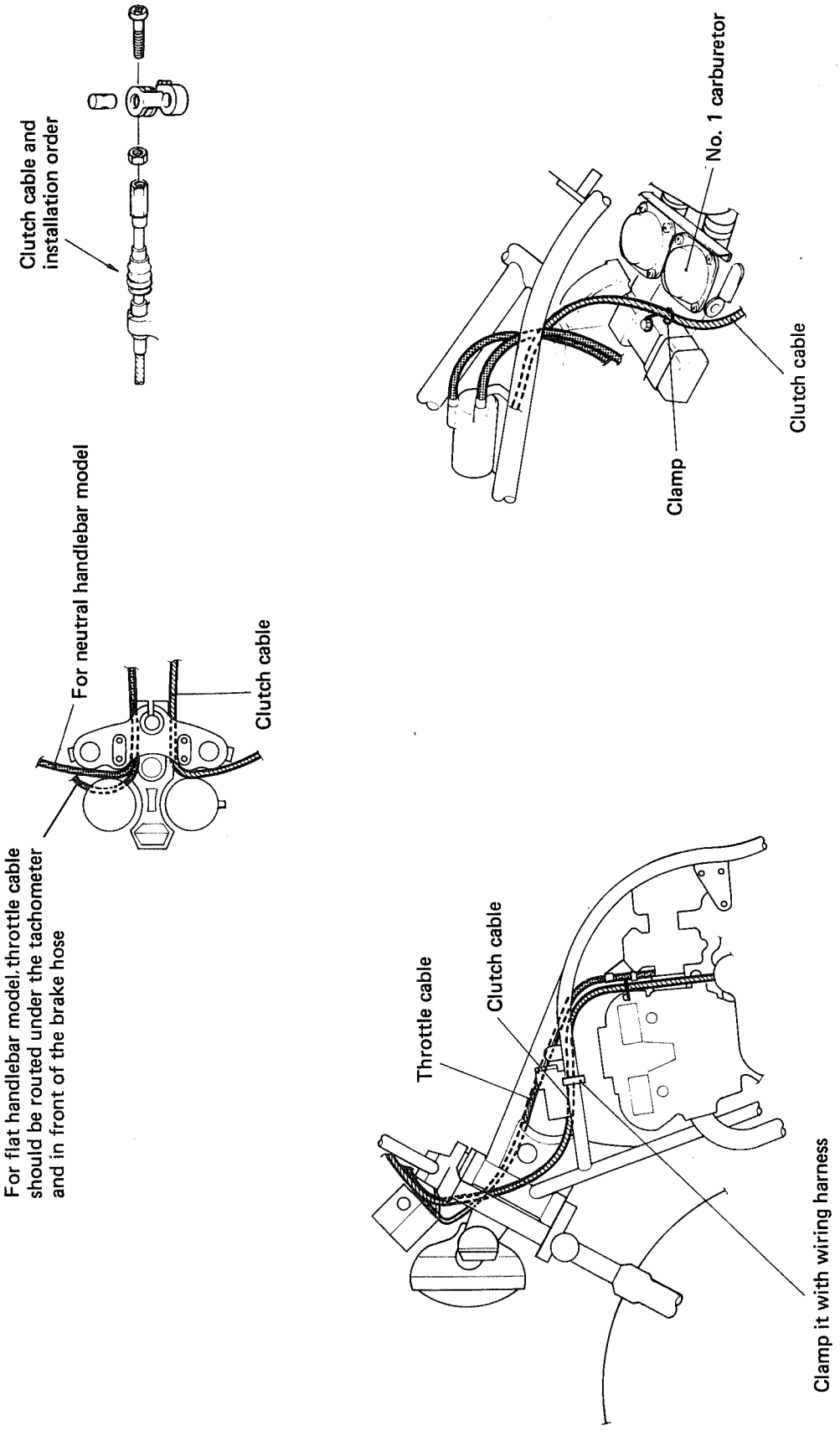

45°
Clamp
Clamp


FRONT
White
Orange/White
Black/Yellow
Orange/White
1
2
3
4


Rubber cap
Generator lead wire
Starter motor lead wire
Clamp
Gear position indicator lead wire
Engine ground wire


Clamp
Carburetor air bent hoses
Route the each bent hose at the recess of air chamber body

CABLE ROUTING



SPECIAL TOOLS

Item	Part No.	Part Name
1	09900-06104	Snap ring plier (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	09900-09003	Inpact driver set
6	09900-20101	Vernier calipers (150 mm)
	-20102	" (200 mm)
7	09900-20205	Micrometer (0 – 25 mm)
	-20202	" (25 – 50 mm)
	-20203	" (50 – 75 mm)
8	09900-20508	Cylinder gauge set
9	09900-20605	Dial calipers (10 – 34 mm)
10	09900-20606	Dial gauge (1/100 mm)
11	09900-20701	Magnetic stand
12	09900-20803	Thickness gauge
	-20806	" (for checking valve clearance)
13	09900-20804	"
14	09900-21101	Torque wrench (0.5 – 4.5 kg-m)
	-21102	" (0 – 1.2 kg-m)
	-21103	" (1.0 – 9.0 kg-m)
15	09900-21303	V-block set
16	09900-22301	Plastigauge
17	09900-22401	Small bore gauge (10 – 18 mm)
	-22403	" (18 – 35 mm)
18	09900-25002	Pocket tester
19	09900-27311	Timing light
20	09900-28106	Electrotester
21	09900-28403	Hydrometer
22	09910-10710	Stud bolt installer (8 mm)
23	09910-20115	Conrod stopper
24	09910-34510	Piston pin puller
26	09911-73730	"T" type hexagon wrench (5 mm)
	09914-25811	"T" type hexagon wrench (6 mm)
27	09911-71510	"L" type hexagon wrench (8 mm)
28	09912-34510	Cylinder disassembling tool
29	09913-13121	Carburetor balancer gauge set
30	09913-14511	Gauge body (6 mm x P 0.75)
31	-14550	Attachment
32	09913-14910	Throttle valve adjust wrench

Item	Part No.	Part Name
33	09913-50121	Oil seal remover
34	09913-80112	Drive pinion race installer (34 mm)
35	09913-84510	Bearing installer (38 mm)
36	09915-64510	Compression gauge
37	09915-63210	Adapter
38	09915-74510	Oil pressure gauge
39	-77330	Meter (0 – 10 kg/cm^2)
40	09916-14510	Valve lifter
41	-14910	Attachment
42	09916-34560	Ⓐ Valve guide reamer (12.2 mm)
	-34540	Ⓑ Reamer handle
	-34550	Ⓒ Valve guide reamer (7 mm)
43	09916-44910	Valve guide remover
44	09916-44920	Valve guide installer attachment
45	09916-74520	Ⓐ Piston ring holder body
	-74530	Ⓑ Band (Bore: 55 – 65 mm)
46	09916-84510	Forceps
47	09917-14910	Tappet adjust driver
48	09920-53710	Clutch sleeve hub holder
49	09924-84510	Bearing installer set
50	09930-14511	Cylinder head nut and spark plug wrench set Ⓐ 09914-24510 "T" handle Ⓑ 09911-74510 Long socket (14 mm) Ⓒ 09911-74520 " (12 mm) Ⓓ 09930-14530 Universal joint Ⓔ 09930-14520 Spark plug wrench (21 mm)
51	09930-13210	Spark plug socket wrench (19 mm)
52	09930-30102	Rotor remover sliding shaft
53	09930-33710	Attachment (14 mm screw)
54	09930-40113	Rotor and engine sprocket holder
55	09930-44510	Rotor holder
56	09940-14911	Steering nut wrench
57	09940-34520	Front fork assembling "T" handle
	-34561	Attachment "D"
58	09940-50111	Front fork oil seal installer
59	09941-34511	Steering race installer
60	-44510	Swing arm bearing remover
61	09941-54911	Bearing outer race remover
62	09941-74910	Steering bearing installer
63	09941-84510	Bearing inner race remover
64	09943-74111	Front fork oil level gauge

NOTE: (*) mark shows newly applied for GSX400F.

TIGHTENING TORQUE

ENGINE

ITEM	kg-m	N·m
Cylinder head cover bolt	0.9 – 1.0	9 – 10
Cylinder head bolt	0.9 – 1.1	9 – 11
Cylinder head nut	2.0	20
Valve clearance adjuster lock nut	0.9 – 1.1	9 – 11
Camshaft holder bolt	1.0	10
Cam sprocket bolt	2.4 – 2.6	24 – 26
Cam chain tensioner fitting bolt	0.6 – 0.8	6 – 8
Cam chain tensioner shaft assy	3.1 – 3.5	31 – 35
Cam chain tensioner lock shaft nut	0.8 – 1.0	8 – 10
Cam chain tensioner adjuster lock nut	0.9 – 1.4	9 – 14
Conrod bearing cap nut	3.0 – 3.4	30 – 34
Generator rotor bolt	11.0 – 13.0	110 – 130
Starter clutch allen bolt	1.5 – 2.0	15 – 20
Governer center bolt	1.3 – 2.3	13 – 23
Crankcase bolt (6 mm)	1.3	13
(8 mm)	2.4	24
Starter motor bolt	0.4 – 0.7	4 – 7
Oil pan bolt	1.0	10
Oil pressure switch	1.3 – 1.7	13 – 17
Oil pressure regulator	1.7 – 2.0	17 – 20
Oil filter cover nut	0.6 – 0.8	6 – 8
Rocker arm shaft stopper screw	0.5 – 0.8	5 – 8
Oil pamp securing bolt	0.7 – 0.9	7 – 9
Neutral stopper housing	1.8 – 2.8	18 – 28
Gearshift arm stopper	1.5 – 2.3	15 – 23
Clutch sleeve hub nut	5.0 – 7.0	50 – 70
Clutch spring bolt	1.1 – 1.3	11 – 13
Engine mounting bolt (8 mm)	2.0 – 3.0	20 – 30
(10 mm)	3.0 – 3.7	30 – 37
Gearshift lever return spring	1.3 – 2.3	13 – 23
Clutch release arm bolt	0.6 – 0.8	6 – 8
Engine sprocket nut	10.0 – 13.0	100 – 130
Exhaust pipe bolt	10 – 13	10 – 16
Exhaust pipe connector bolt	0.9 – 1.4	9 – 14

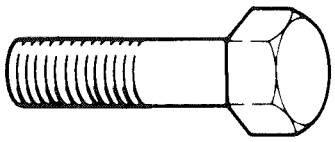
CHASSIS

ITEM	kg-m	N·m
Spoke nipple	0.4 – 0.5	4 – 5
Disc bolt	1.5 – 2.5	15 – 25
Front axle nut	3.6 – 5.2	36 – 52
Front axle holder bolt	1.5 – 2.5	15 – 25
Front caliper mounting bolt	2.5 – 4.0	25 – 40
Brake hose union bolt	2.0 – 2.5	20 – 25
Caliper bleeder	0.7 – 0.9	7 – 9
Front fork damper rod bolt	1.5 – 2.5	15 – 25
Front fork lower clamp bolt	2.7 – 4.3	27 – 43
Front fork upper clamp bolt	2.0 – 3.0	20 – 30
Steering stem nut	1.4 – 2.0	14 – 20
Steering stem clamp bolt	1.5 – 2.5	15 – 25
Steering stem head bolt	2.0 – 3.0	20 – 30
Handlebar clamp bolt	1.2 – 2.0	12 – 20
Front master cylinder clamp bolt	0.5 – 0.8	5 – 8
Front footrest bolt	2.7 – 4.3	27 – 43
Swing arm pivot nut	5.0 – 8.0	50 – 80
Brake pedal arm bolt	1.0 – 1.5	10 – 15
Rear master cylinder mounting bolt	0.5 – 0.8	5 – 8
Rear torque link bolt and nut	2.0 – 3.0	20 – 30
Rear caliper mounting bolt	2.5 – 4.0	25 – 40
Rear caliper bolt	2.0 – 3.0	20 – 30
Muffler bracket nut	1.5 – 2.0	15 – 20
Rear shock abosrber fitting nut	2.0 – 3.0	20 – 30
Rear footrest bolt	2.7 – 4.3	27 – 43
Rear sprocket nut	2.5 – 4.0	25 – 40
Rear brake cam lever bolt	0.5 – 0.8	5 – 8
Rear axle nut	5.0 – 8.0	50 – 80
Chain adjuster support bolt	1.5 – 2.0	15 – 20

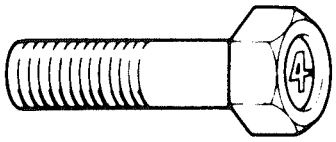
TIGHTENING TORQUE CHART

For other bolts and nuts not listed above, refer to this chart:
Tightening torque

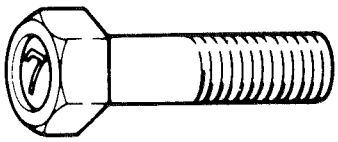
Bolt Diameter (mm)	Conventional or "4" marked bolt			"7" marked bolt		
	N·m	kg-m	lb-ft	N·m	kg-m	lb-ft
4	1 – 2	0.1 – 0.2	0.7 – 1.5	1.5 – 3	0.15 – 0.3	1.0 – 2.0
5	2 – 4	0.2 – 0.4	1.5 – 3.0	3 – 6	0.3 – 0.6	2.0 – 4.5
6	4 – 7	0.4 – 0.7	3.0 – 5.0	8 – 12	0.8 – 1.2	6.0 – 8.5
8	10 – 16	1.0 – 1.6	7.0 – 11.5	18 – 28	1.8 – 2.8	13.0 – 20.0
10	22 – 35	2.2 – 3.5	16.0 – 25.5	40 – 60	4.0 – 6.0	29.0 – 43.5
12	35 – 55	3.5 – 5.5	25.5 – 40.0	70 – 100	7.0 – 10.0	50.5 – 72.5
14	50 – 80	5.0 – 8.0	36.0 – 58.0	110 – 160	11.0 – 16.0	79.5 – 115.5
16	80 – 130	8.0 – 13.0	58.0 – 94.0	170 – 250	17.0 – 25.0	123.0 – 181.0
18	130 – 190	13.0 – 19.0	94.0 – 137.5	200 – 280	20.0 – 28.0	144.5 – 202.5



Conventional bolt



"4" marked bolt



"7" marked bolt

SERVICE DATA

VALVE + GUIDE

Unit: mm

ITEM	STANDARD		LIMIT
Valve diam.	IN.	19	———
	EX.	17	———
Valve lift	IN.	7.0	———
	EX.	6.2	———
Valve clearance (when cold)	IN. & EX.	0.08 – 0.13	———
Valve guide to valve stem clearance	IN.	0.025 – 0.052	0.35
	EX.	0.040 – 0.067	0.35
Valve guide I.D.	IN. & EX.	5.500 – 5.512	———
Valve stem O.D.	IN.	5.460 – 5.475	———
	EX.	5.445 – 5.460	———
Valve stem runout	IN. & EX.	———	0.05
Valve head thickness	IN. & EX.	———	0.5
Valve stem end length	IN. & EX.	———	3.6
Valve seat width	IN. & EX.	0.9 – 1.1	———
Valve head radial runout	IN. & EX.	———	0.03
Valve spring free length (IN. & EX.)	INNER	———	31.5
	OUTER	———	35.3
Valve spring tension (IN. & EX.)	INNER	3.9 – 4.7 kg at length 28 mm	———
	OUTER	6.9 – 8.5 kg at length 31.5 mm	———

CAMSHAFT + CYLINDER HEAD

Unit: mm

ITEM	STANDARD		LIMIT
Cam height	IN.	34.620 – 34.660	34.320
	EX.	34.170 – 34.210	33.870
Camshaft journal oil clearance	IN. & EX.	0.032 – 0.066	0.150
Camshaft journal holder I.D.	IN. & EX.	22.012 – 22.025	———
Camshaft journal O.D.	IN. & EX.	21.959 – 21.980	———
Camshaft runout	IN. & EX.	———	0.10
Cam chain 20 pitch length		———	128.9
Cam chain pin (at arrow "3")		23rd pin	———
Rocker arm I.D.	IN. & EX.	12.000 – 12.018	———
Rocker arm shaft O.D.	IN. & EX.	11.973 – 11.984	———
Cylinder head distortion		———	0.2

CYLINDER + PISTON + PISTON RING

Unit: mm

ITEM	STANDARD			LIMIT
Compression pressure	11 – 15 kg/cm²			7 kg/cm²
Compression pressure difference	———			2 kg/cm²
Piston to cylinder clearance	0.045 – 0.055			0.120
Cylinder bore	53.000 – 53.015			53.095
Piston diam.	52.960 – 52.975 Measure at the 14 from skirt end.			52.880
Cylinder distortion	———			0.2
Piston ring free end gap	1st	R	Approx. 6.5	5.2
	2nd	R	Approx. 8.0	6.4
Piston ring end gap	1st		0.10 – 0.30	0.7
	2nd		0.10 – 0.30	0.7
Piston ring to groove clearance	1st		———	0.180
	2nd		———	0.150
Piston ring groove width	1st		1.02 – 1.04	———
	2nd		1.21 – 1.23	———
	Oil		2.51 – 2.53	———
Piston ring thickness	1st		0.965 – 0.995	———
	2nd		1.170 – 1.190	———
Piston pin bore	14.002 – 14.008			14.030
Piston pin O.D.	13.995 – 14.000			13.980

CONROD + CRANKSHAFT

Unit: mm

ITEM	STANDARD	LIMIT
Conrod small end I.D.	14.006 – 14.014	14.040
Conrod big end side clearance	0.10 – 0.20	0.30
Conrod big end width	19.95 – 20.00	———
Crank pin width	20.10 – 20.15	———
Conrod big end oil clearance	0.024 – 0.048	0.080
Crank pin O.D.	31.976 – 32.000	———
Crankshaft journal oil clearance	0.020 – 0.044	0.080
Crankshaft journal O.D.	31.976 – 32.000	———
Crankshaft thrust bearing thickness	2.900 – 3.025	2.80
Crankshaft thrust clearance	0.045 – 0.100	———
Crankshaft journal holder width	17.45 – 17.53	———
Crankshaft journal width	20.50 – 20.55	———
Crankshaft runout	———	0.05

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.755 (92/40 x 29/38)	———
Oil pressure (at 60°C, 140°F)	Above 2.5 kg/cm² Below 5.5 kg/cm² at 3000 r/min.	———

CLUTCH

Unit: mm

ITEM		STANDARD	LIMIT
Clutch cable play		2 – 3	———
Drive plate thickness		2.65 – 2.95	2.35
Drive plate claw width		15.8 – 16.0	15.0
Driven plate thickness	No. 1	1.60 ± 0.06	———
	No. 2	2.0 ± 0.06	———
Driven plate distortion		———	0.1
Clutch spring free length		———	36.5

TRANSMISSION + DRIVE CHAIN

Unit: mm

ITEM		STANDARD	LIMIT
Primary reduction ratio		2.300 (92/40)	———
Final reduction ratio		2.866 (43/15)	———
Gear ratios	Low	3.166 (38/12)	———
	2nd	2.125 (34/16)	———
	3rd	1.631 (31/19)	———
	4th	1.333 (28/21)	———
	5th	1.173 (27/23)	———
	Top	1.083 (26/24)	———
Shift fork to groove clearance		0.1 – 0.3	0.5
Shift fork groove width		5.5 – 5.6	———
Shift fork thickness		5.3 – 5.4	———
Drive chain	Type	D.I.D.: 50UB	———
	Links	104	———
	20 pitch length	———	324.3
Drive chain slack		20 – 30	———

CARBURETOR

Unit: mm

ITEM	SPECIFICATION	
Carburetor type	MIKUNI BS26, Four	←
Bore size	26	←
I. D. No.	33200	33201
Idle r/min.	1100 ± 50 r/min.	←
Fuel level	4.0 ± 1.0	←
Float height	21.4 ± 1.0	←
Main jet (M. J.)	# 97.5	←
Main air jet (M. A. J.)	1.8	←
Jet needle (J. N.)	4CL11 – 3 rd	←
Needle jet (N. J.)	P – O	←
Throttle valve	# 125	←
Pilot jet (P. J.)	# 40	←
By pass (B. P.)	0.8, 0.8, 0.8	←
Pilot outlet (P. O.)	0.8	←
Valve seat (V. S.)	2.0	←
Starter jet (G. S.)	# 27.5	←
Pilot screw (P. S.)	PRE-SET	←
Pilot air jet (P. A. J.)	# 180	# 170
Throttle cable play	0.5 – 1.0	←

ELECTRICAL

Unit: mm

ITEM	SPECIFICATION			NOTE
Ignition timing	15° B.T.D.C. Below 1650 ± 100 r/min and 35° B.T.D.C. Above 3500 ± 100 r/min.			
Firing order	1. 2. 4. 3.			
Spark plug	Type	NGK D8EA or N.D. X24ES-U		E1, 24, 25, 34
	Gap	0.6 – 0.7		
	Type	NGK DR8ES-L or N.D. X24ESR-U		E-2, 4, 6, 15, 16, 17, 18, 21, 22, 26, 39
	Gap	0.6 – 0.7		
Spark performance	Over 8 (0.3) at 1 atm			
Signal coil resistance	Approx. 60 – 80 Ω			
Ignition coil resistance	Primary	Terminal – Terminal Approx. 3 – 5 Ω		
	Secondary	Plug cap – Plug cap Approx. 35 – 45 kΩ		
Generator no-load voltage	More than 80 V (AC) at 5000 r/min.			
Regulated voltage	14 – 15 V at 5000 r/min.			
Starter motor	Brush length	N. D.	Limit: 9	
	Commutator under cut		Limit: 0.2	
Starter relay resistance	Approx. 3 – 4 Ω			
Battery	Type designation	YB10L – A2		
	Capacity	12V, 43.2 kC (12Ah)		
	Standard electrolyte S. G.	1.28 at 20° C (68° F)		
Fuse size	Main	15 A		

BRAKE + WHEEL

Unit: mm

ITEM	STANDARD		LIMIT	NOTE
Rear brake pedal free travel (Drum type)	20		———	
Rear brake pedal height	20		———	
Brake drum I.D.	Rear	———	160.7	
Brake lining thickness	———		1.5	
Brake disc thickness	Front	5.0 ± 0.2	4.5	
	Rear	6.7 ± 0.2	6.0	
Brake disc runout	———		0.30	
Master cylinder bore	Front	15.870 – 15.913	———	
	Rear	14.000 – 14.043	———	E2, 22
Master cylinder piston diam.	Front	15.827 – 15.854	———	
	Rear	13.957 – 13.984	———	
Brake caliper cylinder bore	Front	33.960 – 34.036	———	
	Rear	38.180 – 38.256	———	E2, 22
Brake caliper piston diam.	Front	33.884 – 33.934	———	
	Rear	38.098 – 38.148	———	E2, 22
Wheel rim runout	Axial	———	2.0	
	Radial	———	2.0	
Wheel axle runout	Front	———	0.25	
	Rear	———	0.25	
Tire size	Front	3.25S19 4PR	———	
	Rear	3.75S18 4PR	———	
		110/90 – 18 61S	———	E22
Tire tread depth	Front	———	1.6	
	Rear	———	2.0	

SUSPENSION

Unit: mm

ITEM	STANDARD		LIMIT	NOTE
Front fork stroke	150		———	
Front fork spring free length	Short	———	122	
	Long	———	371	
Front fork oil level	182		———	
Rear wheel travel	107		———	
Swing arm pivot shaft runout	———		0.3	

FUEL + OIL

ITEM	SPECIFICATION		NOTE
Fuel type	Use gasoline with an octane number of 85-90 or higher (Research Method), Preferably unleaded or low-lead type.		
Fuel tank including reserve	15 L		
reserve	3.5 L		
Engine oil type	SAE 10W/40		
Engine oil capacity	Change	2000 ml	
	Filter change	2400 ml	
	Overhaul	2700 ml	
Front fork oil type	Fork oil # 15		
Front fork oil capacity (each leg)	169 ml		
Brake fluid type	SAE J1703, DOT3 or DOT4		

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	NORMAL RIDING				CONTINUOUS HIGH SPEED RIDING			
	SOLO RIDING		DUAL RIDING		SOLO RIDING		DUAL RIDING	
	kPa	kg/cm²	kPa	kg/cm²	kPa	kg/cm²	kPa	kg/cm²
FRONT	175	1.75	175	1.75	200	2.00	200	2.00
REAR	200	2.00	250	2.50	225	2.25	250	2.50

WATTAGE

(W)

ITEM		SPECIFICATION			
		E1	E2,6,24	E4,15,16,17,18,21,25,26,34,39	E22
Headlight	HI	60	←	←	←
	LO	55	←	←	←
Parking or city light			3.4	4	←
Tail/Brake light		8/23	5/21	←	←
Turn signal light		23	21	←	←
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	←	←	←
License light					10
Fuel meter light		1.7	←	←	←
Gear position indicator light		1.4	←	←	←

FOREWORD

The GSX400FZ model was introduced as new model in 1982. Many innovative refinements were incorporated in the new model. This supplementary section has been produced to aid Suzuki mechanics in properly maintaining and repairing the 1982 "Z" model.
This section 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 sections, I through 7, for GSX400FX MODEL (1981 MODEL) for all other areas of information not covered in this section.

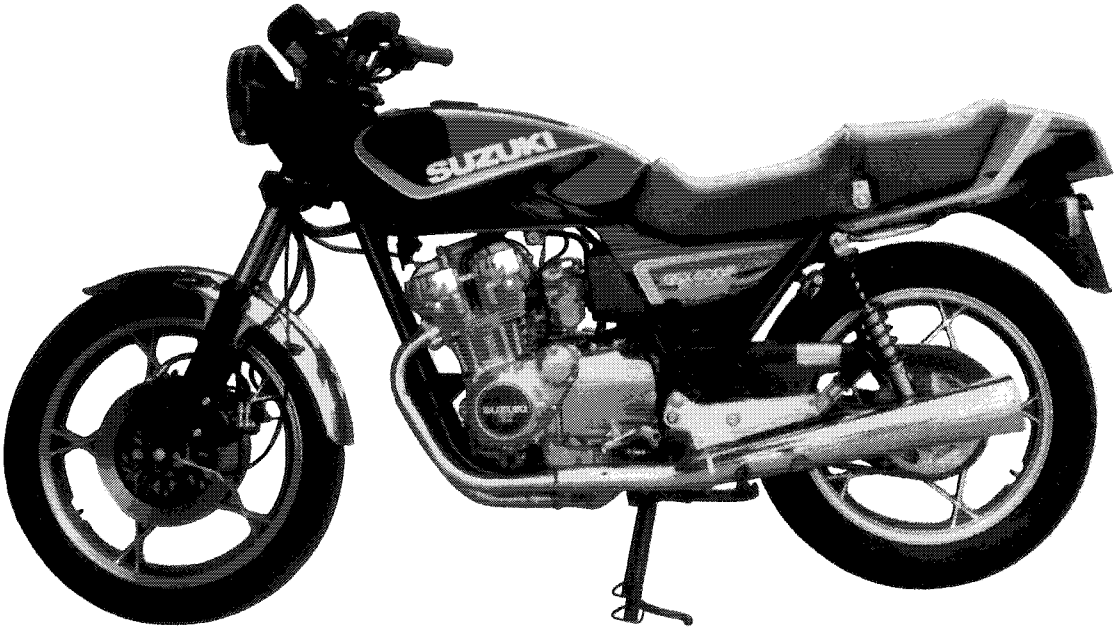
This section contains up-to-date information at the time of its issue. Latermade modifications and changes will be explained to each Suzuki distributor in respective markets, to whom you are kindly requested to make query about updated information, if any.

1. *How the section is compiled.*
   - *This supplementary section lists only the points relating to maintenance work which differ from those applying to the GSX400F "X" model.*
   - *However, in order to make this section easier to use some parts have the same information as provided in the sections, 1 through 7, for the GSX400F model.*
   - *Any differences in service data, service specifications and tightening torque tables with those that apply to the GSX400F "X" model are clearly indicated with an asterisk (*).*
2. *How to use the section.*
   - *Give precedence to this supplementary section when using it as the service manual for the GSX400FZ model.*
   - *Refer to the other sections for details which are not given in this section.*

CONTENTS

VIEW OF SUZUKI GSX400FZ

RIGHT SIDE



LEFT SIDE

SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2 105 mm
Overall width	750 mm
Overall height	1 135 mm
Wheelbase	1 415 mm
Ground clearance	165 mm
Seat height	780 mm
Dry mass	179 kg

ENGINE

Type	Four-stroke, air-cooled, DOHC
Number of cylinders	4
Bore	53.0 mm
Stroke	45.2 mm
Piston displacement	398 cm^3
Compression ratio	10.2 : 1
Carburetor	MIKUNI BS26SS, four
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		2.300 (92/40)
Final reduction		2.866 (43/15)
Gear ratios,	Low	3.166 (38/12)
	2nd	2.125 (34/16)
	3rd	1.631 (31/19)
	4th	1.333 (28/21)
	5th	1.173 (27/23)
	Top	1.083 (26/24)
Drive chain		DAIDO DID50UB, 104 links

CHASSIS

Front suspension	Telescopic, oil dampened with anti-dive
Rear suspension	Swinging arm, oil dampened, spring 5-way adjustable
Steering angle	42° (right & left)
Caster	63°
Trail	100 mm
Turning radius	2.3 m
Front brake	Disc brake, twin
Rear brake	Internal expanding Disc brake (for England)
Front tire size	3.25S19 4PR
Rear tire size	3.75S18 4PR
Front fork stroke	150 mm
Rear wheel travel	107 mm
Front tire pressure	175 kPa (1.75 kg/cm^2) (Normal solo riding)
Rear tire pressure	200 kPa (2.00 kg/cm^2) (Normal solo riding)

ELECTRICAL

Ignition type	Fully transistorized
Ignition timing	15° B.T.D.C. below at 1 650 r/min and 35° B.T.D.C. above at 3 500 r/min
Spark plug	NGK D8EA or NIPPON DENSO X24ES-U NGK DR8ES-L or NIPPON DENSO X24ESR-U
Battery	12V 43.2 kC (12 Ah)/10 HR
Generator	Three-phase A.C. generator
Fuse	15A

CAPACITIES

Fuel tank including reserve	15 L (3.3 Imp gal)
Reserve	3.5 L (3.1 Imp qt)
Engine oil	*2.6 L (2.3 Imp qt)
Front fork oil (R-side)	169 ml (5.95 Imp oz)
(L-side)	*191 ml (6.73 Imp oz)

* Asterisk indicates the new GSX400FZ specification.

** These specifications are subject to change without notice.

PERIODIC MAINTENANCE SCHEDULE

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

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

PERIODIC MAINTENANCE CHART

ENGINE

Item \ Interval	Initial 1 000 km	Every 5 000 km	Every 10 000 km
Air cleaner		Clean every 3 000 km	
Battery	Inspect	Inspect	–
Engine bolts and nuts	Inspect	Inspect	–
Valve clearance	Inspect	Inspect	–
Compression	Inspect	Inspect	–
Spark plug	Inspect	Inspect	Replace
Ignition timing	Inspect	Inspect	–
Carburetor	Inspect	Inspect	–
Fuel lines	Inspect	Inspect	–
	* Replace every 4 year		
Engine oil and filter	Change	Change	–
Oil pressure	–	Inspect	–
Oil sump filter	–	–	Clean
Clutch	Inspect	Inspect	–

CHASSIS

Item \ Interval	Initial 1 000 km	Every 5 000 km	Every 10 000 km
Brakes	Inspect	Inspect	–
Brake hose	* Replace every 4 year		
Brake fluid	* Change every 2 year		
Drive chain	Inspect and clean every 1 000 km		
Tires	Inspect	Inspect	–
Steering	Inspect	Inspect	–
Front fork oil	Change	–	Change

SERVICE DATA

VALVE + GUIDE

Unit: mm

ITEM		STANDARD	LIMIT
Valve diam.	IN.	19.0	———
	EX.	17.0	———
Valve lift	IN.	7.0	———
	EX.	6.2	———
Valve clearance or (when cold)	IN. & EX.	0.08—0.13	———
Valve guide to valve stem clearance	IN.	0.025—0.052	0.35
	EX.	* 0.047—0.067	0.35
Valve guide I.D.	IN. & EX.	5.500—5.512	———
Valve stem O.D.	IN.	5.460—5.475	———
	EX.	5.445—5.460	———
Valve stem runout	IN. & EX.	———	0.05
Valve head thickness	IN. & EX.	———	0.5
Valve stem end length	IN. & EX.	———	3.6
Valve seat width	IN. & EX.	0.9—1.1	———
Valve head radial runout	IN. & EX.	———	0.03
Valve spring free length (IN. & EX.)	INNER	———	31.5
	OUTER	———	35.3
Valve spring tension (IN. & EX.)	INNER	3.9—4.7 kg at length 28 mm	———
	OUTER	6.9—8.5 kg at length 31.5 mm	———

* Asterisk indicates the new GSX400FZ specification.

CAMSHAFT + CYLINDER HEAD

Unit: mm

ITEM	STANDARD		LIMIT
Cam height	IN.	34.620—34.660	34.320
	EX.	34.170—34.210	33.870
Camshaft journal oil clearance	IN. & EX.	* 0.032—0.066	0.150
Camshaft journal holder I.D.	IN. & EX.	* 22.012—22.025	———
Camshaft journal O.D.	IN. & EX.	21.959—21.980	———
Camshaft runout	IN. & EX.	———	0.10
Cam chain 20-pitch length	———		128.9
Cam chain pin (at arrow "3")	23 th pin		———
Rocker arm I.D.	IN. & EX.	12.000—12.018	———
Rocker arm shaft O.D.	IN. & EX.	11.973—11.984	———
Cylinder head distortion		———	0.2

CYLINDER + PISTON + PISTON RING

Unit: mm

ITEM	STANDARD	LIMIT
Compression pressure	11—15 kg/cm^2	7 kg/cm^2
Compression pressure difference	———	2 kg/cm^2
Piston to cylinder clearance	0.045—0.055	0.120
Cylinder bore	53.000—53.015	53.095
Piston diam.	52.960—52.975 Measure at 14 from the skirt end.	52.880
Cylinder distortion	———	0.2

* Asterisk indicates the new GSX400FZ specification.

Unit: mm

ITEM	STANDARD			LIMIT
Piston ring free end gap	1st	R	Approx. 6.5	5.2
	2nd	R	Approx. 8.0	6.4
Piston ring end gap	1st		0.10—0.30	0.7
	2nd		0.10—0.30	0.7
Piston ring to groove clearance	1st		———	0.180
	2nd		———	0.150
Piston ring groove width	1st		1.02—1.04	———
	2nd		1.21—1.23	———
	Oil		2.51—2.53	———
Piston ring thickness	1st		0.965—0.980	———
	2nd		1.170—1.190	———
Piston pin bore	14.002—14.008			14.030
Piston pin O.D.	13.995—14.000			13.980

CONROD + CRANKSHAFT

Unit: mm

ITEM	STANDARD	LIMIT
Conrod small end I.D.	14.006—14.014	14.040
Conrod big end side clearance	0.10—0.20	0.30
Conrod big end width	19.95—20.00	———
Crank pin width	20.10—20.15	———
Conrod big end oil clearance	0.024—0.048	0.080
Crank pin O.D.	31.976—32.000	———
Crankshaft journal oil clearance	0.020—0.044	0.080
Crankshaft journal O.D.	31.976—32.000	———
Crankshaft thrust bearing thickness	2.900—3.025	2.80
Crankshaft thrust clearance	0.045—0.100	
Crankshaft journal holder width	17.45—17.53	———
Crankshaft journal width	20.50—20.55	———
Crankshaft runout	———	0.05

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.755 (92/40 x 29/38)	———
Oil pressure (at 60°C, 140°F)	Above 2.5 kg/cm² Below 5.5 kg/cm² at 3000 r/min.	———

CLUTCH

Unit: mm

ITEM		STANDARD	LIMIT
Clutch cable play		2—3	———
Drive plate thickness		2.65—2.95	2.35
Drive plate claw width		15.8—16.0	15.0
Driven plate thickness	No.1	1.60 ± 0.06	———
	No.2	2.00 ± 0.06	———
Driven plate distortion		———	0.1
Clutch spring free length		———	36.5

TRANSMISSION + DRIVE CHAIN

Unit: mm

ITEM		STANDARD	LIMIT
Primary reduction ratio		2.300 (92/40)	———
Final reduction ratio		2.866 (43/15)	———
Gear ratios	Low	3.166 (38/12)	———
	2nd	2.125 (34/16)	———
	3rd	1.631 (31/19)	———
	4th	1.333 (28/21)	———
	5th	1.173 (27/23)	———
	Top	1.083 (26/24)	———
Shift fork to groove clearance		0.1—0.3	0.5
Shift fork groove width		5.5—5.6	———
Shift fork thickness		5.3—5.4	———
Drive chain	Type	D.I.D.: 50 UB	———
	Links	104	———
	20 pitch length	———	324.3
Drive chain slack		20—30	———

CARBURETOR

Unit: mm

ITEM	SPECIFICATION
Carburetor type	MIKUNI BS26SS, Four
Bore size	26
I.D. No.	* 33202
Idle r/min.	* 1200 ± 50 r/min.
Fuel level	* 4.0 ± 1.0
Float height	21.4 ± 1.0
Main jet (M.J.)	# 97.5
Main air jet (M.A.J.)	1.8
Jet needle (J.N.)	* 4CFX16-3rd
Needle jet (N.J.)	* O–8
Throttle valve (Th.V.)	*# 120
Pilot jet (P.J.)	* # 37.5
By pass (B.P.)	* 0.9, 0.8, 0.8
Pilot outlet (P.O.)	0.8
Valve seat (V.S.)	2.0
Starter jet (G.S.)	# 27.5
Pilot screw (P.S.)	* PRE-SET (3 1/4)
Pilot air jet (P.A.J.)	* # 165
Throttle cable play	0.5–1.0

* Asterisk indicates the new GSX400FZ specification.

ELECTRICAL

Unit: mm

ITEM	SPECIFICATION			NOTE
Ignition timing	15° B.T.D.C. Below 1650 ± 100 r/min and 35° B.T.D.C. Above 3500 ± 100 r/min.			
Firing order	1,2,4,3			
Spark plug	Type	NGK: D8EA or ND: X24ES-U		E-01,24,25,34, 48
	Gap	0.6—0.7		
	Type	NGK: DR8ES-L or ND: X24ESR-U		E-02,04,04Z,06,16 17, 21, 26
	Gap	0.6—0.7		
Spark performance	Over 8 at 1 atm			
Signal coil resistance	Approx. 60—80 Ω			
Ignition coil resistance	Primary	O/W—O or B/Y Approx. 3—5 Ω		
	Secondary	Plug cap — Plug cap * Approx. 30—35 kΩ		
Generator no-load voltage	More than 80 V (AC) at 5000 r/min.			
Regulated voltage	* 13.5—16.0 V at 5000 r/min.			Day and Night
Starter motor	Brush length	N.D.	Limit: 9	
	Commutator under cut		Limit: 0.2	
Starter relay resistance	Approx. 3—4 Ω			
Battery	Type designation	YB10L-A2		
	Capacity	12V43.2kC(12Ah)/10HR		
	Standard electrolyte S.G.	1.28 at 20°C (68°F)		
Fuse size	Main	15 A		

* Asterisk indicates the new GSX400FZ specification.

BRAKE + WHEEL

Unit: mm

ITEM	STANDARD		LIMIT	NOTE
Rear brake pedal free travel (Drum type)	20		———	
Rear brake pedal height	20		———	
Brake drum I.D.	Rear	———	160.7	
Brake lining thickness	———		1.5	
Brake disc thickness	Front	5.0 ± 0.2	4.5	
	Rear	6.7 ± 0.2	6.0	E-02 Only
Brake disc runout	———		0.30	
Master cylinder bore	Front	15.870—15.913	———	
	Rear	14.000—14.043	———	E-02 Only
Master cylinder piston diam.	Front	15.827—15.854	———	
	Rear	13.957—13.984	———	E-02 Only
Brake caliper cylinder bore	Front	33.960—34.036	———	
	Rear	38.180—38.256	———	E-02 Only
Brake caliper piston diam.	Front	33.884—33.934	———	
	Rear	38.098—38.148	———	E-02 Only
Wheel rim runout	Axial	———	2.0	
	Radial	———	2.0	
Wheel axle runout	Front	———	0.25	
	Rear	———	0.25	
Tire size	Front	3.25S19 4PR	———	
	Rear	3.75S18 4PR	———	
Tire tread depth	Front	———	1.6	
	Rear	———	2.0	

SUSPENSION

Unit: mm

ITEM	STANDARD		LIMIT
Front fork stroke	150		———
Front fork spring free length	Short	———	* 122
	Long	———	* 368
Front fork oil level	* 186		———
Rear wheel travel	107		———
Swing arm pivot shaft runout	———		0.3

FUEL + OIL

ITEM	SPECIFICATION		NOTE
Fuel type	Use gasoline with an octane number of 85-90 or higher (Research Method), Preferably unleaded or low-lead type.		
Fuel tank including reserve	15 L		
reserve	3.5 L		
Engine oil type	SAE 10W/40, API SE or SF		
Engine oil capacity	Change	* 2600 ml	
	Filter change	* 3000 ml	
	Overhaul	* 3200 ml	
Front fork oil type	Fork oil #15		
Front fork oil capacity (each leg)	R-side	* 169 ml	
	L-side	* 191 ml	with Anti-Dive
Brake fluid type	SAE J1703		

* Asterisk indicates the new GSX400FZ specification.

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	NORMAL RIDING						CONTINUOUS HIGH SPEED RIDING					
	SOLO RIDING			DUAL RIDING			SOLO RIDING			DUAL RIDING		
	kPa	kg/cm²	psi	kPa	kg/cm²	psi	kPa	kg/cm²	psi	kPa	kg/cm²	psi
FRONT	175	1.75	24	175	1.75	24	200	2.00	28	200	2.00	28
REAR	200	2.00	28	250	2.50	36	225	2.25	32	250	2.50	36

WATTAGE

(W)

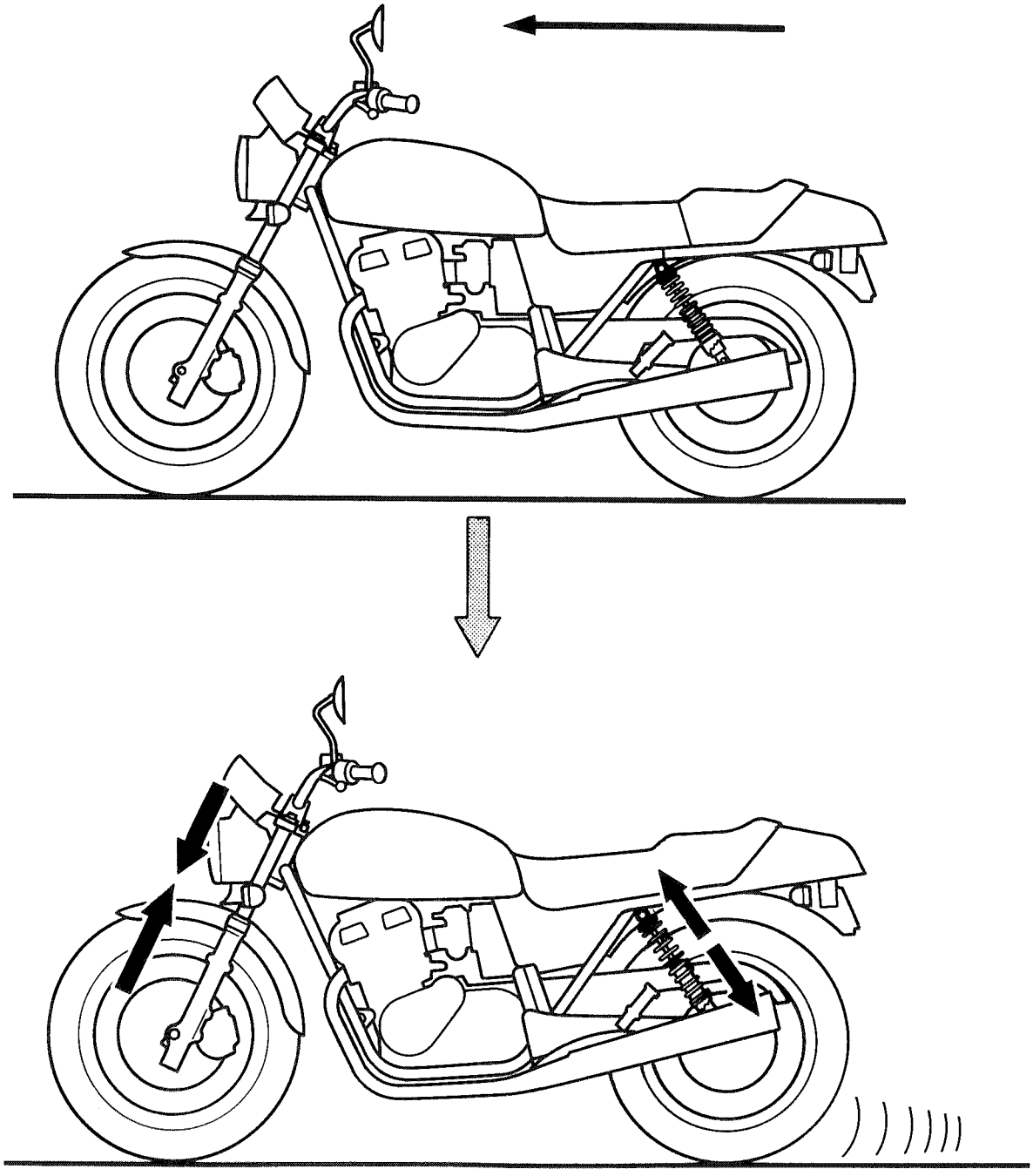
ITEM		SPECIFICATION			
		E-01,06,24,48	E-02	E-04,16,17,21,26,34	E-25
Headlight	HI	60	←	←	←
	LO	55	←	←	←
Parking or city light			3.4	4	←
Tail/Brake light		8/23	5/21	←	←
Turn signal light		23	21	←	←
Speedometer light		3.4	←	←	←
Tachometer light		3.4	←	←	←
Turn signal indicator light		3.4	←	←	←
High beam indicator light		3.4	←	←	←
Neutral indicator light		3.4	←	←	←
Oil pressure indicator light		3.4	←	←	←
License light		8	5	←	10
Fuel meter light		1.7	←	←	←
Gear position indicator light		1.1	←	←	←

SPECIAL FEATURE

ANTI-DIVE FRONT FORK

THE PHENOMENON OF DIVING

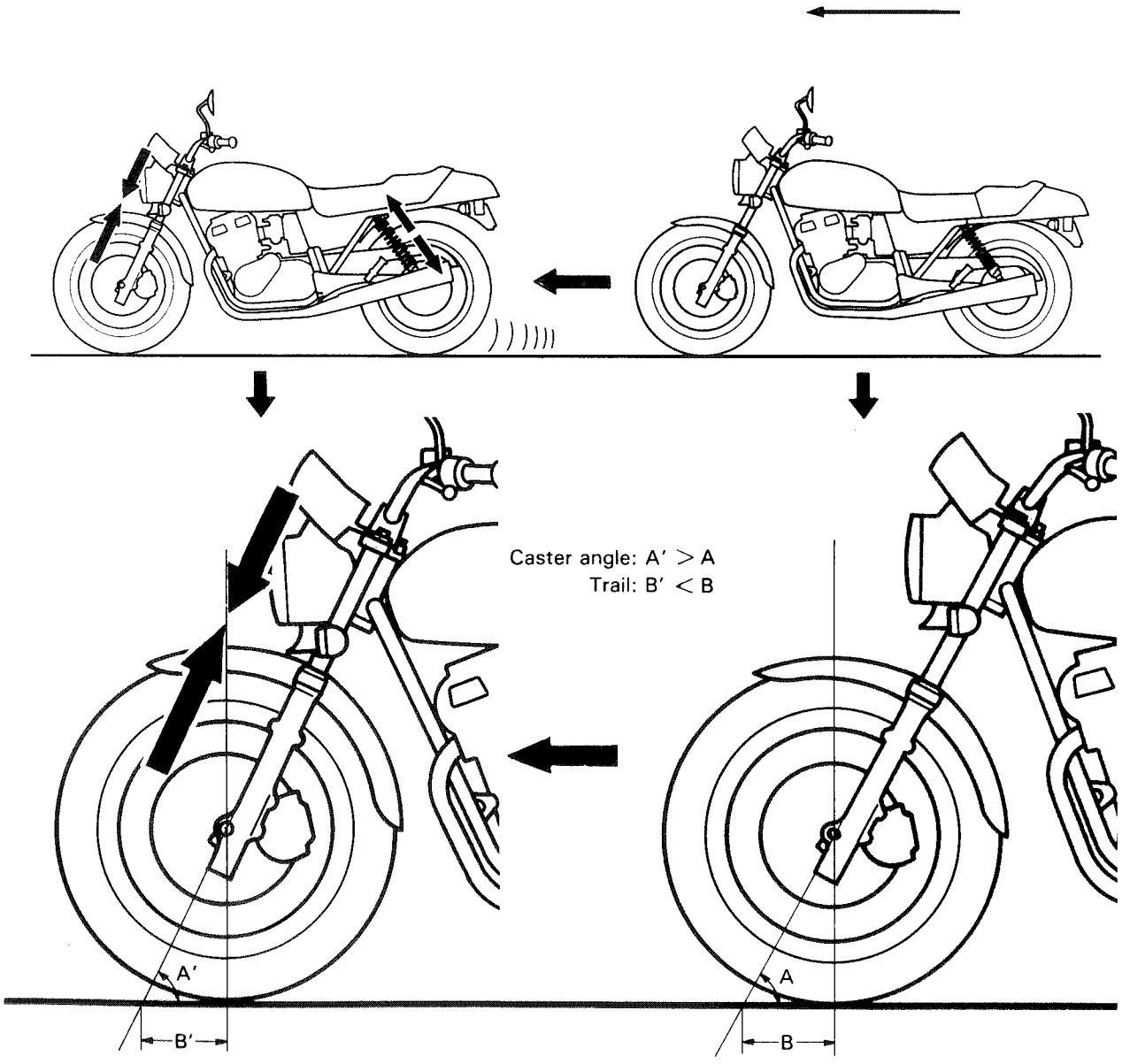
Consider the case of the motorcycle that is stopped suddenly. Excepting the rider, the machine itself cannot automatically counteract the momentum of its center of gravity moving forward to maintain its balance. At the point of "stoppage" the momentum continues its forward motion to exert its weight through the front fork on the point of contact of the front wheel. Simultaneously, the rear wheel tends to lift as the weight on it is reduced proportionately to the forward momentum. This has the effect of compressing the front fork and extending the rear shock absorber.



ANTI-DIVE DIVICE

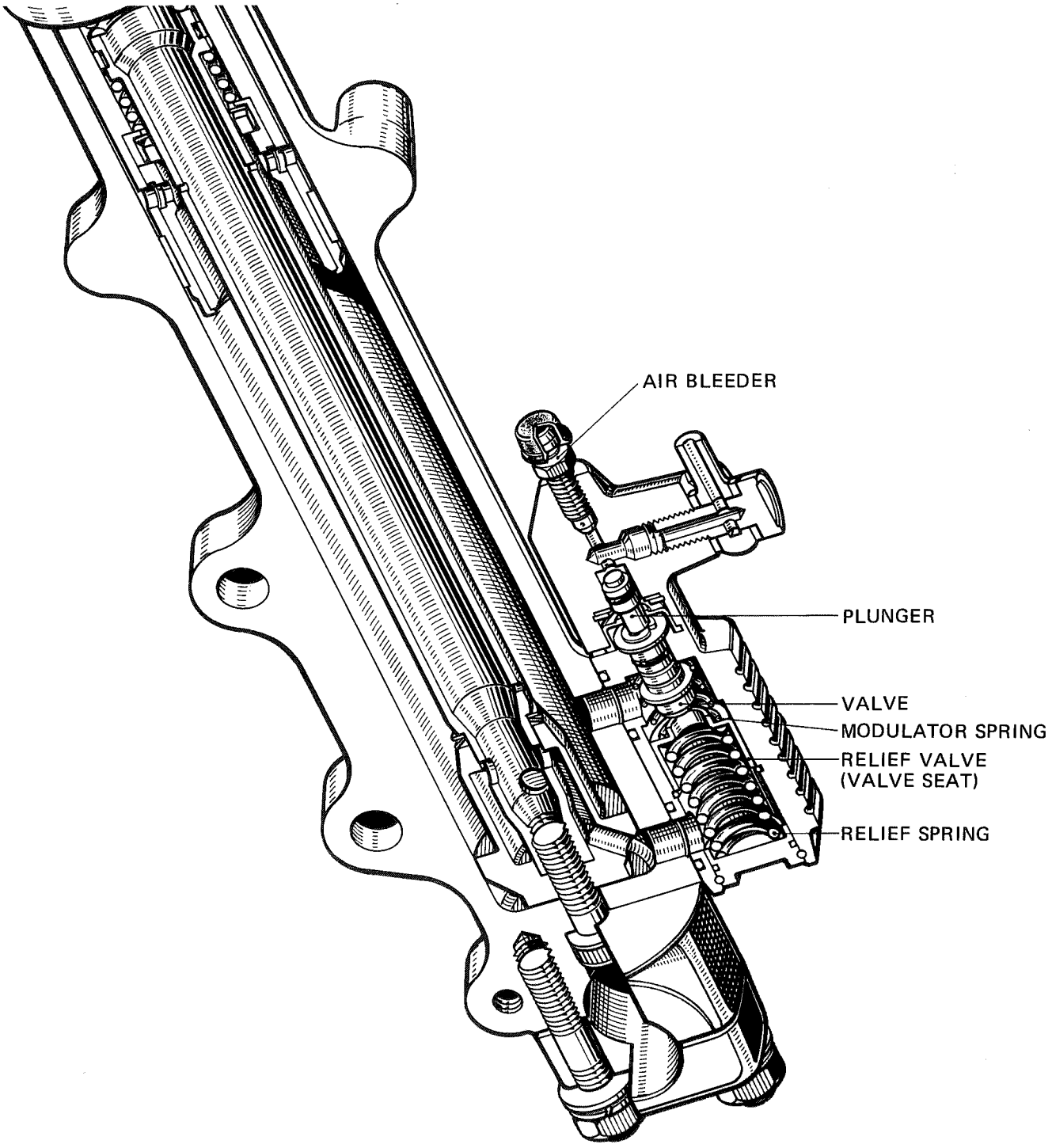
When a speeding motorcycle is stopped, it is impossible to prevent the front fork dive because the momentum of the machine's center of gravity continues forward. The front fork is compressed and extended, as it is braked before cornering and full throttle applied coming out of the corner, which naturally changes its cornering clearance (motorcycle-to-ground clearance and balance). In order to minimize this change of the front fork length on a racing motorcycle, the spring of the front fork has to be stiffened,while the damping force of the rear shock absorber must be strengthened. However, the suspension system of the street motorcycle is generally set soft for absorbing the bump and shock of the road to ensure riding comfort. However, when the bike's cornering performance requires improvement, the suspension system must be reinforced.

Suzuki's hydraulic anti-dive fork was developed to provide exceptional handling performance and a smooth ride. It ensures the bike's stability during high-speed cornering by preventing the caster angle from being changed during braking and preventing loss of cornering clearance, while assuring riding comfort on the road.



ANTI-DIVE SYSTEM

Suzuki's anti-dive system, developed from the feedback of racing technology, is now equipped on many of Suzuki's 1982 models. The new system is attached to the outer tube of the front fork. The brake line of the front brake's master cylinder leading to the caliper is connected by a hose to the anti-dive device. When the master cylinder's hydraulic line functions to brake the front wheel, it simultaneously operates the anti-dive device's plunger, which regulates and limits the flow of oil in the front fork. This reduces the compression of the front fork, which also reduces the extension of the rear shock absorber. Hence, the device serves to counteract the change in the motorcycle's attitude during braking.

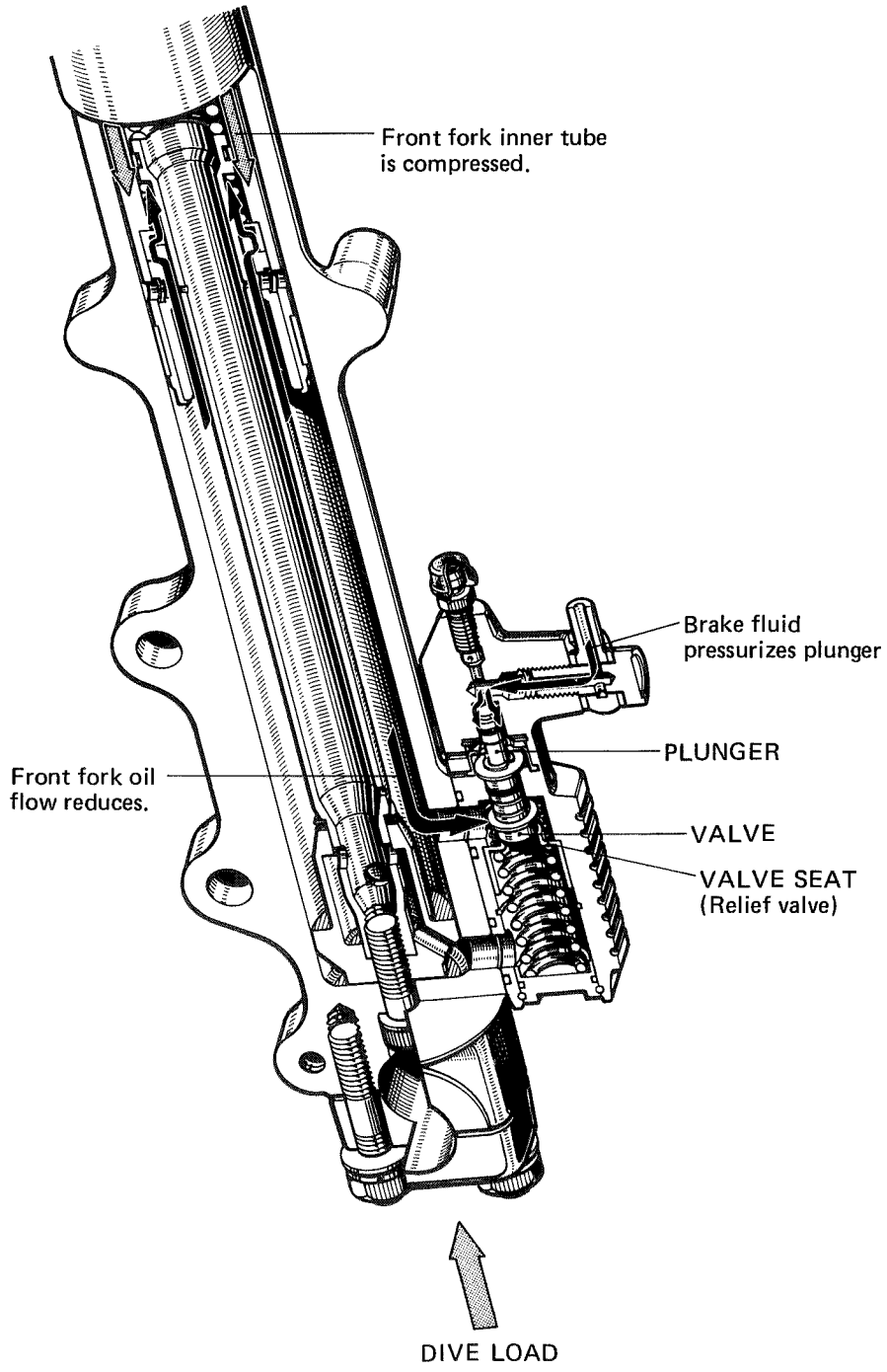


THE ANTI-DIVE SYSTEM IS INACTIVE, WHILE THE FRONT BRAKE IS INACTIVE

As long as the front brake remains inactive, the oil in the front fork passes through the clearance between the relief valve and valve seat without restriction. Consequently, the telescopic front fork functions normally.

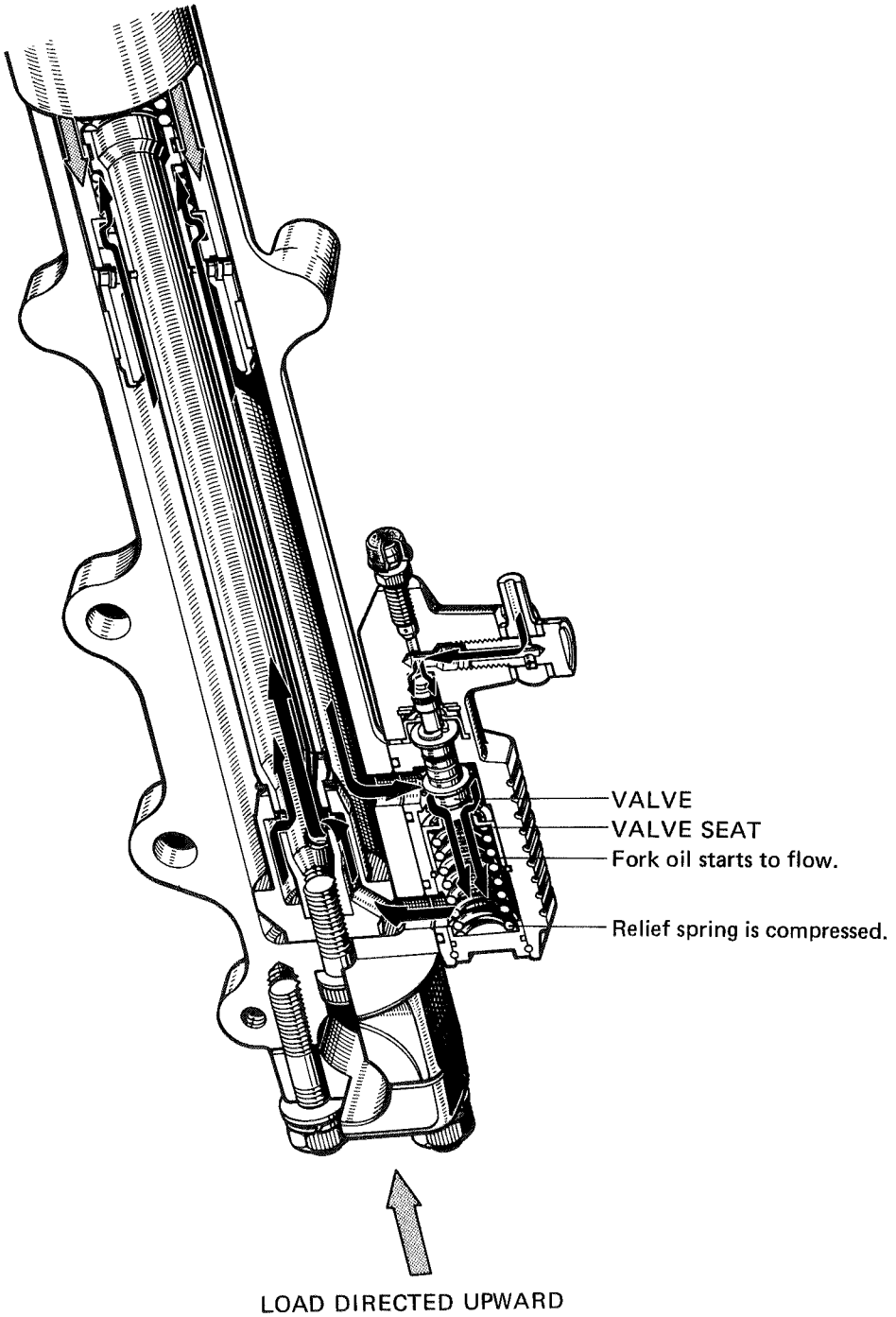
WHEN THE ANTI-DIVE SYSTEM IS ACTIVATED

When the rider squeezes the lever of the front brake, pressure is exerted on the brake's master cylinder, then transmitted through the brake hose to pressurize the plunger of the anti-dive system. The plunger then lowers the valve, which reduces the clearance between the valve and the valve seat. This in turn reduces the flow of fork oil, which reduces the allowable compression of the fork; stiffening it. As a result, the front fork is compressed less, while the extension of the rear shock absorber is also reduced. This stabilizes the motorcycle's braking attitude, and braking during cornering becomes much more controllable.



WHAT HAPPENS WHEN THE MOTORCYCLE RECEIVES A JOLT FROM THE ROAD, WHILE THE ANTI-DIVE DEVICE IS ACTIVE?

While the anti-dive device is restricting fluid flow, any road shock could be directly transmitted to the chassis because the front fork would react as if it were equipped with very stiff springs. However, the road shock is reduced by the following mechanism: The relief valve, mounted on a spring, is compressed and opened in direct proportion to the pressure on the front-fork oil,permitting the oil to progressively flow through the clearance between the valve and valve seat. Hence the pressure of the fork oil is automatically regulated at a predetermined level. In other words, the clearance at the relief valve represents the difference of fork oil pressure developed by the upward load from the road and the strength of the relief valve's spring. In order to ensure safety, separate chambers are provided for the fork oil and brake fluid to prevent their mixture.

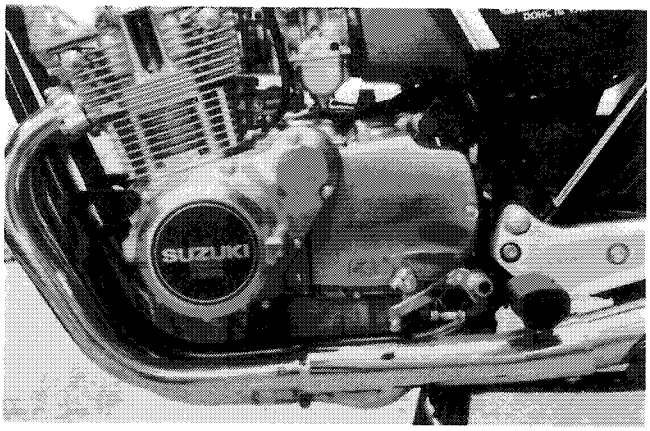


MODIFICATIONS

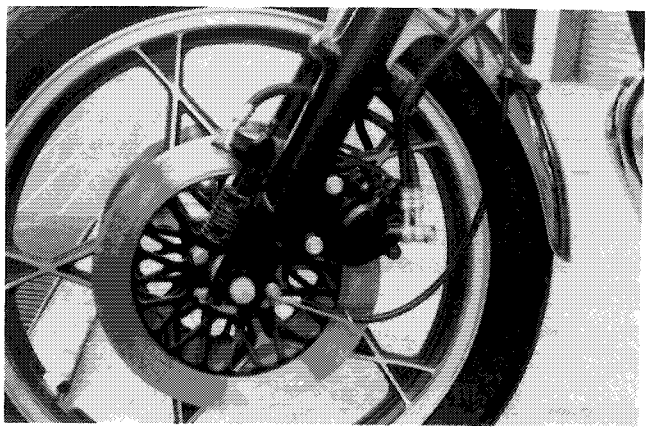
The following number of refinements have been carried out on the GSX400FZ (1982 model) and new mechanisms adopted.

1. 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.

09900-06711	T-type box wrench (7-mm)
09900-00302-015	T-type box wrench (8-mm)



2. An anti-dive device has been incorporated into the right front fork leg.



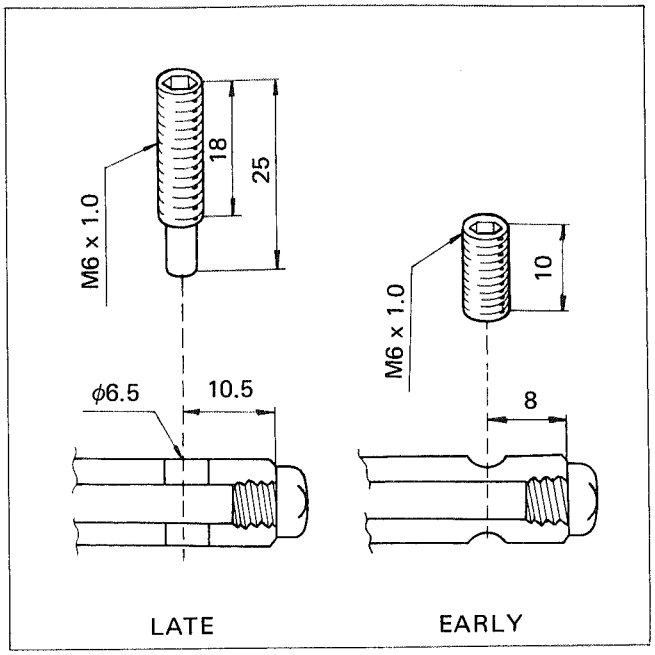
VALVE ROCKER ARM SHAFT STOPPER SCREW

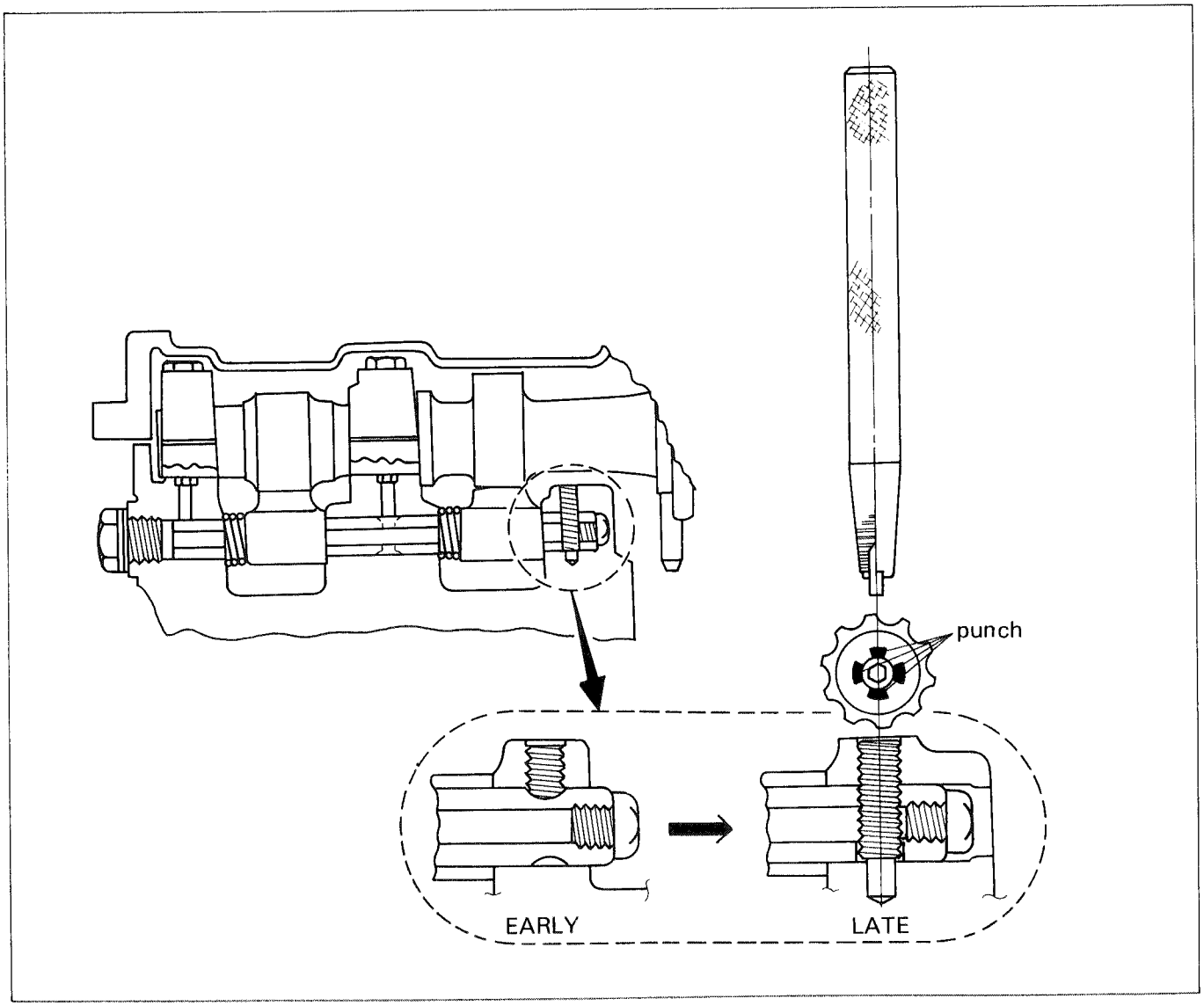
The valve rocker arm shaft's stopper screw has been modified and also the rocker arm shaft and cylinder head have been changed in accordance.

1. MODIFICATION

A) The rocker arm shaft stopper screw's length has been extended to penetrate through the rocker arm shaft, and its hole position in the rocker arm shaft has also been changed.

B) A hole has been drilled into the cylinder head to hold the valve rocker arm shaft stopper screw in position.





2. SERVICING

Apply Suzuki Thread Lock "1333B" to the screw thread and tighten it with a 3 mm allen wrench. Lock the screw with the punch at four positions.

Tightening torque	5 – 8 N·m (0.5 – 0.8 kg-m)

99000-32020	Thread lock "1333B"

3. PARTS SUPPLY DATA

Part Name	LATE Part No.	EARLY Part No.
Stopper screw	09139-06019	09139-06016
Valve rocker arm shaft	12860-33201	12860-33200
Cylinder head assy	11100-33201	11100-33200

NOTE:

1) It's not possible to fit a late type shaft and stopper screw to an early type cylinder head. When the rocker arm shaft needs to be replaced before this modification, replacement shaft must be ordered with early part number.
   Also, use the below specified stopper screw for the early type shaft.

Stopper screw for early type shaft	09139-06020

   Stopper screw (09139-06016) has been discontinued and is no longer available.

2) When the cylinder head assembly is ordered, it will be supplied with a rocker arm shaft and stopper screw together.

4. EFFECTIVE ENGINE NUMBER

The above modifications have been carried out on and after the following engine number.

EFFECTIVE E/NO . . . GSX400F 108376 ~.

CRANKSHAFT JOURNAL BEARING AND CONROD BIG END BEARING

Further improvement in material for longer durability has been applied to the conrod bearing of one-piece forged crankshaft for model GSX400F. At the same time the location of crankshaft journal bearing has been changed to facilitate the oil distribution for a more effective lubrication.

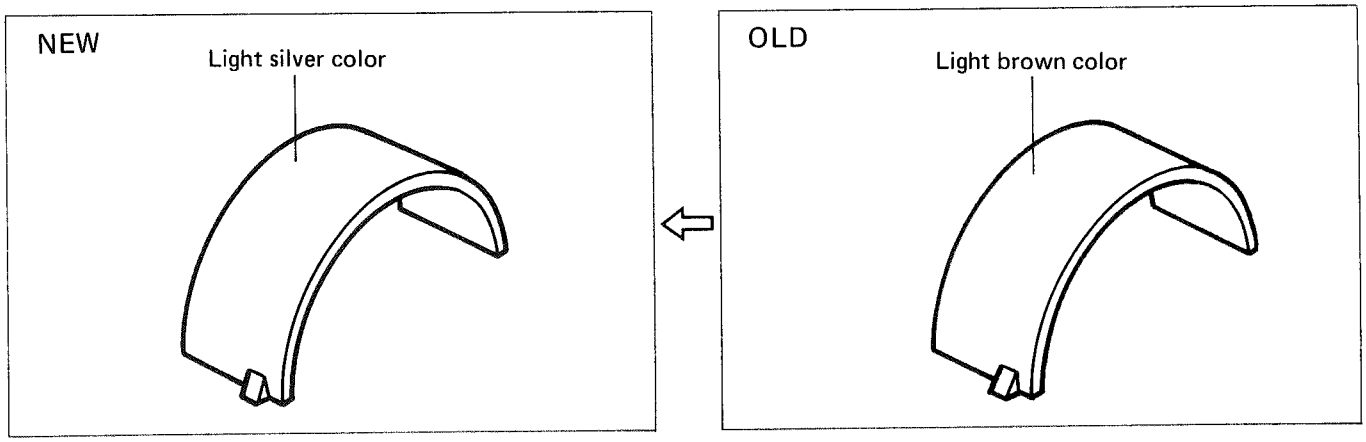
CONROD BIG END BEARING

The material of the conrod big end bearing has been changed to a copper based type from an aluminum based one to increase its durability. The surface of this new type of copper based bearing is plated with a light silver metalic color. A new bearing can be distinguished from early bearing by its light silver color on the back surface. When replacing conrod big end bearings, all the bearings, No. 1 conrod bearings through No. 4, should be replaced with the new type.

PART SUPPLY DATA FOR CONROD BIG END BEARING

MODEL	OLD PART NO.	NEW PART NO.
GSX400FX and GSX400FZ	12164-33200-010 12164-33200-020 12164-33200-030 12164-33200-040	12164-33210-010 12164-33210-020 12164-33210-030 12164-33210-040

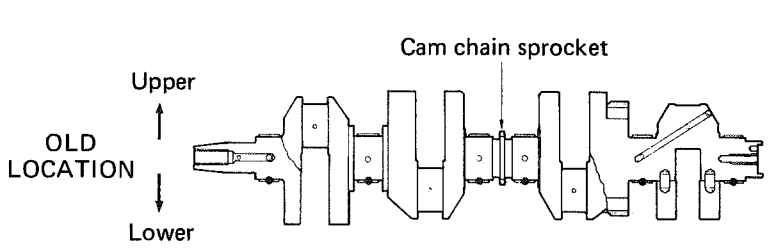
Four different sizes of bearing are provided as a standard size to each of above mentioned big end bearings, and also two sizes, 0.25 mm and 0.50 mm, are available as under-size.
When replacing conrod big end bearings, refer to the page 3-40 of GSX400F service manual to select the proper size bearings.



CRANKSHAFT JOURNAL BEARING

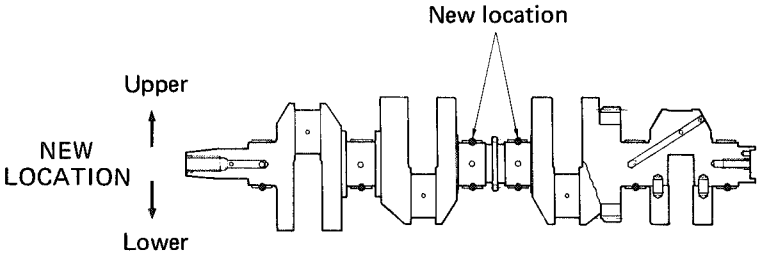
The engine of GSX400F "X" model was assembled with non grooved bearings in the upper crankcase half and oil grooved bearings in the lower crankcase half. To facilitate improved oil distribution throughout the crankshaft, oil grooved bearings have now been installed in the upper crankcase bearings located on each side of the cam chain sprocket. The remaining positions of upper crankcase continue to utilize non grooved bearings.

When overhauling an engine which has not been modified to this configuration, the bearings should be changed as noted.



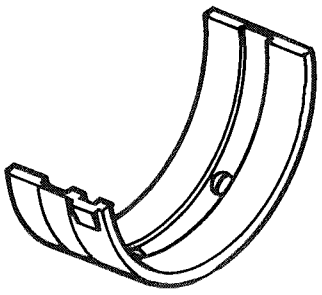
CRANKSHAFT
Bearing without oil groove
Bearing with oil groove

Oil grooved bearings are now provided to the lower case and both sides of the cam chain sprocket of the upper case.

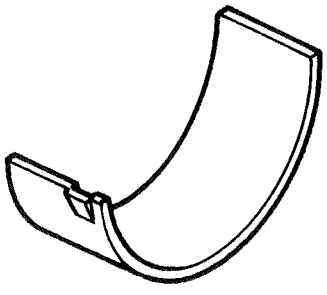


When replacing crankshaft journal bearings, it is necessary to replace the pair of bearings, but make sure, to always identify the two types of bearings, and to place them in the proper position. Care must be taken when installing the bearing which does not have an oil groove. If it were placed to the lower crankcase, this would disturb the proper oil distribution and as a result cause damage to the internal engine parts.

OIL GROOVED BEARING



NO OIL GROOVED BEARING



PART SUPPLY DATA FOR CRANKSHAFT JOURNAL BEARING

MODEL	NO OIL GROOVED BEARING	OIL GROOVED BEARING
GSX400FX and GSX400FZ	12229-11410 -010 -020 -030 -040	12229-11400 -010 -020 -030 -040

Four different sizes of bearing are provided as a standard size to each of above mentioned journal bearings, and also two sizes, 0.25 mm and 0.50 mm, are available as an under-size.
When replacing the journal bearings, refer to the page 3-43 of GSX400F service manual to select the bearing properly.

CAUTION:
* **When changing any conrod big end bearing, and crankshaft journal bearing to new one, make it a rule to check the I.D. code number printed or stamped on the crank web, conrod, and crankcase. Select the specified size of bearing, and install properly as explained in the service manual.**
* **Apply SUZUKI Moly Paste to each journal bearing lightly.**
* **Please inform your customers to maintain the following engine r/min. limit, whenever changing new bearing.**

  Up to 1 000 km . . . . . Below 4 000 r/min.
  Up to 2 000 km . . . . . Below 5 000 r/min.

The above modifications have been completed on and after the following engine numbers.

GSX400F E/NO. 113461 ~

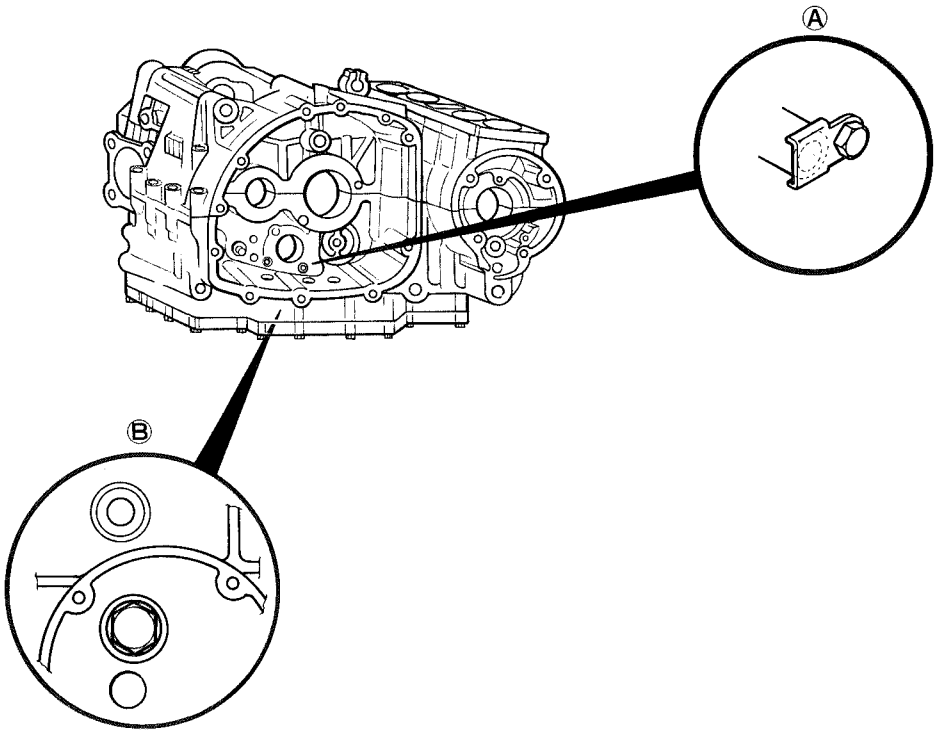
OIL GALLERY PLUG STOPPER

All oil stopper plugs in the lubrication compartment of the crankcases of model GSX400F are to be covered by locking plates. This modification have been carried out on and after the E. No. 112260 ~ .

Please take notice of the following remarks on each respective position, when reinstalling each locking plate together with its bolt.

Below are the illustration of the modified area.

POSITION	REMARKS
Ⓐ	Tigtening torque for 6 mm bolt is 8 – 12 N·m (0.8 – 1.2 kg-m). After tightening bolt, positively bend up the sleeve of the plate locking position.
Ⓑ	Tightening torque for 16 mm bolt is 35 – 45 N·m (3.5 – 4.5 kg-m).



PART SUPPLY DATA

POSITION	PART NO.	PART NAME
Ⓐ	11329–33200	Plate
	01107–06128	Bolt (6 mm)
Ⓑ	09247–16002	Bolt (16 mm)
	09168–16002	Gasket

COIL TYPE FUEL GAUGE

As shown in Fig. 1, coils N_1, N_2, N_3 and N_4 are set in the fuel gauge. When the ignition switch is ON, the float in the tank is displaced in proportion to the change in the amount of gasoline, the resistance of the fuel gauge sending unit varies, currents I_1 and I_2 vary, strength of the magnetic field generated by the coils vary, compound vector H (Fig. 2) varies, and the magnet of the fuel gauge rotates to deflect the pointer.

Even when the ignition is turned off, the pointer remains in the position where it was when the switch was ON. This function is displayed by using high-viscosity oil and a balanced magnet.

FUEL LEVEL SYSTEM

The Fuel Level System can be divided into two sections:
(1) The Fuel Meter: Located in the instrument cluster.
(2) The Fuel Tank Float Assembly (Fuel gauge sending unit)

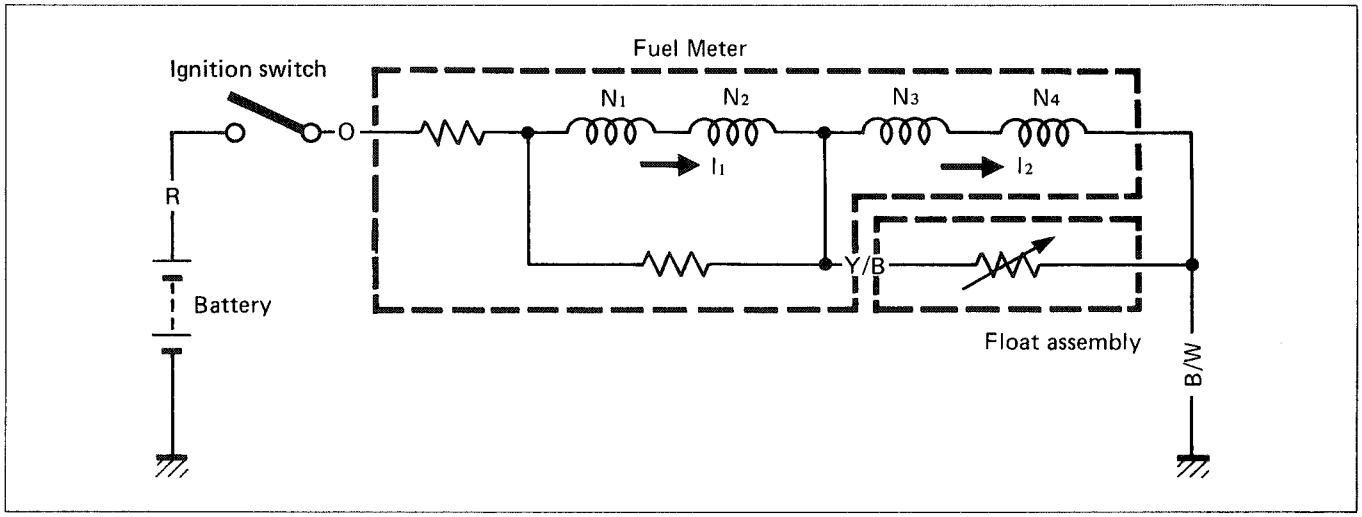
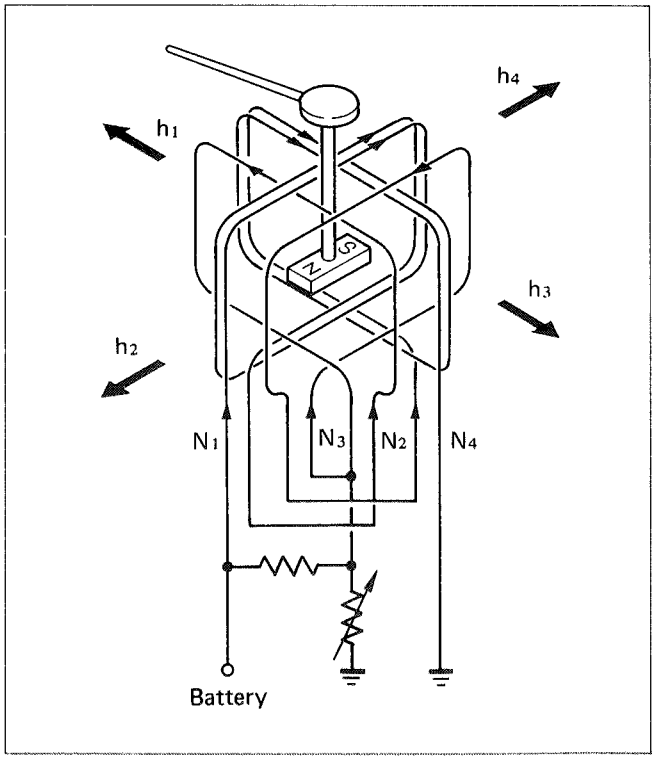


Fig. 1



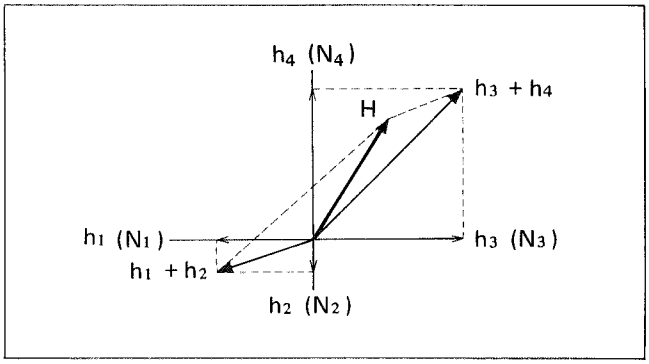


Fig. 2

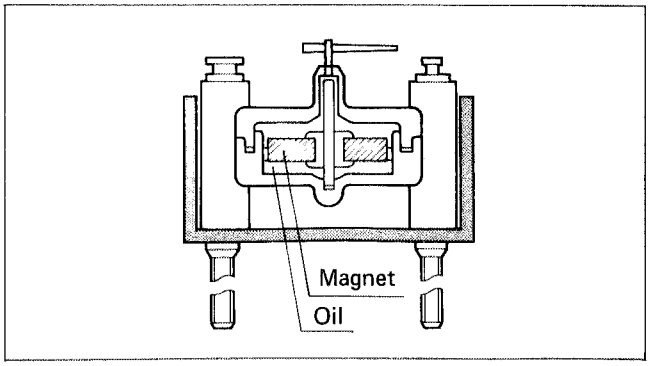


Fig. 3

NOTE:
Prior to testing the Fuel Level System, verify that the battery is in a fully charged condition.

FUEL METER

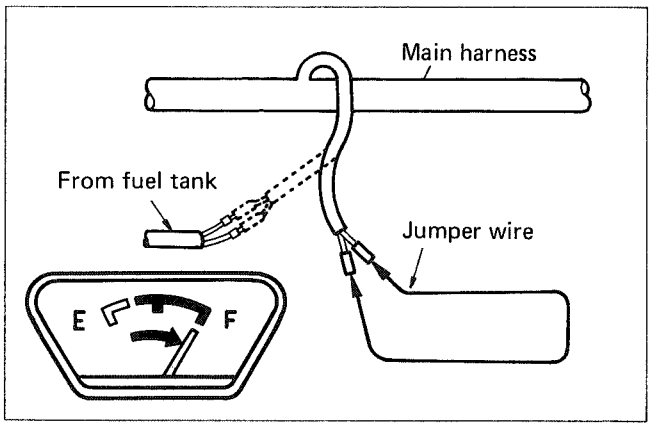
To test the Fuel Meter two different checks may be used. The first, and simplest test will tell if the meter is operating but will not indicate the meters accuracy throughout the range.

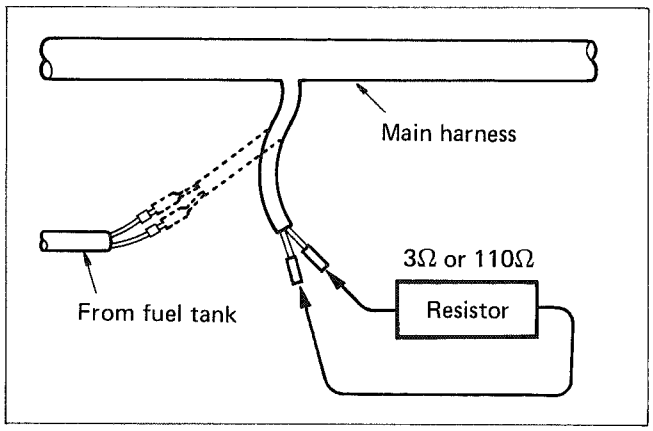
To perform this test, disconnect the B/W and Y/B wires going to the Fuel Tank Float Assembly. Connect a jumper wire between the B/W and Y/B wires coming from the main harness. With the ignition switch turned on, the fuel meter should indicate "F".

The second test will check the accuracy of the meter in the full and empty positions.

Disconnect the B/W and Y/B wires which connect to the Float Assembly and install a 3Ω resistor between the two leads coming from the main harness. Turn the ignition switch on and the fuel meter should indicate "F". Remove the 3Ω resistor and install a 110Ω resistor in its place and the fuel meter should indicate "E".

If the fuel meter does not read as prescribed above, replace the meter.



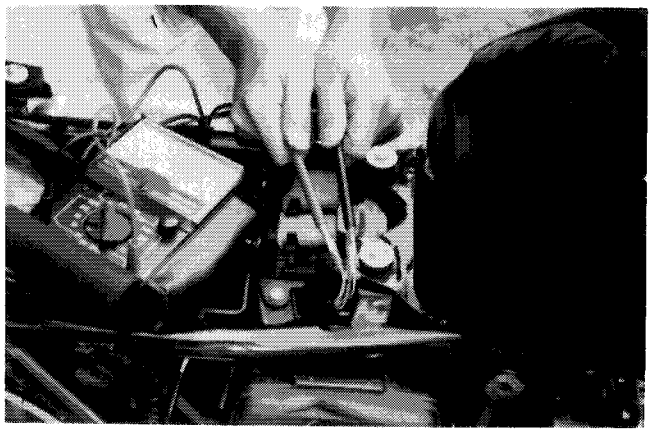


FUEL TANK FLOAT ASSEMBLY (FUEL GAUGE SENDING UNIT)

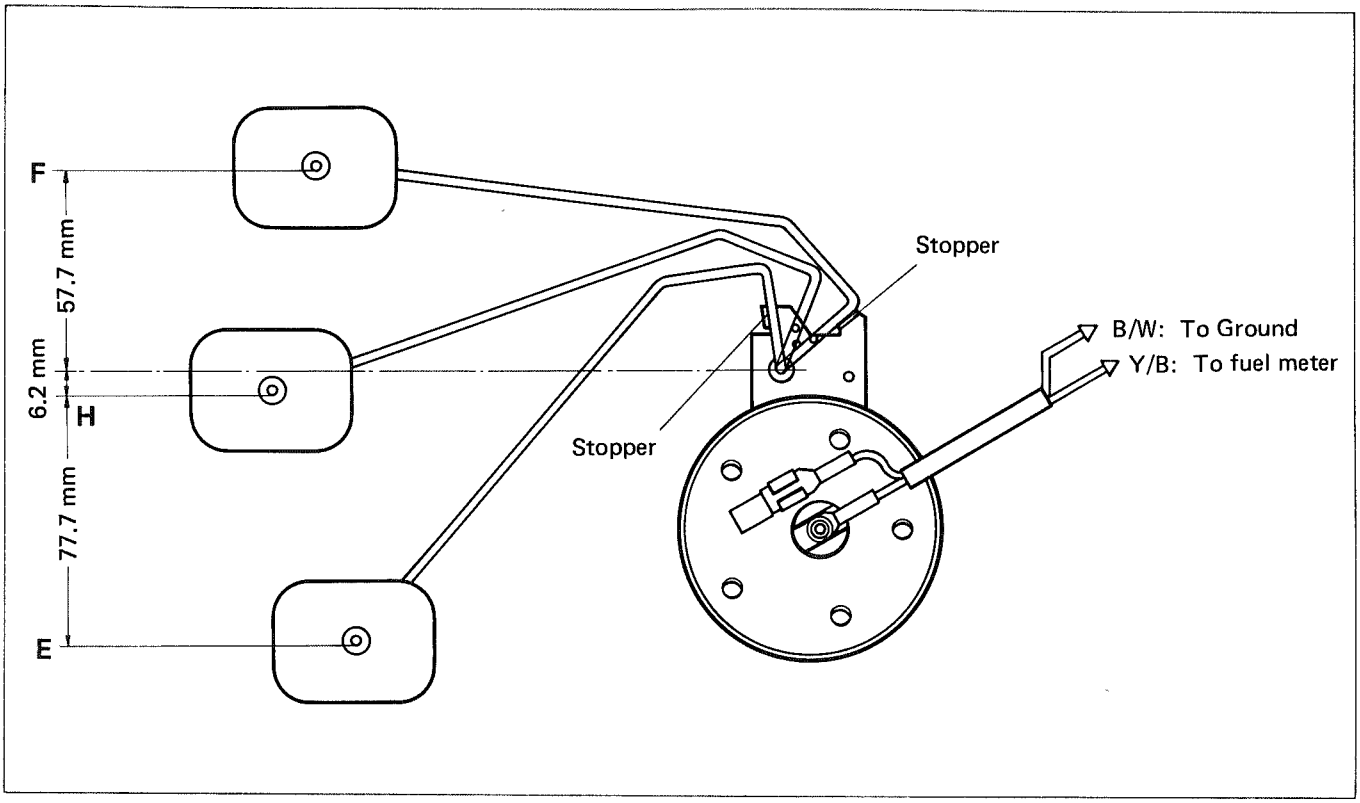
To check the variable resistor in the Float Assembly, disconnect the two wires (B/W – Y/B) coming out of the Float Assembly. Using the Pocket tester, measure the resistance in each of the following positions:

09900-25002	Pocket Tester

FLOAT POSITION	RESISTANCE	FUEL IN TANK
Full	Approx. 3Ω	12L
1/2	Approx. 32.5Ω	7L
Empty	Approx. 110Ω	2L



If the resistance measured is incorrect, replace the Float Assembly.



OIL PUMP

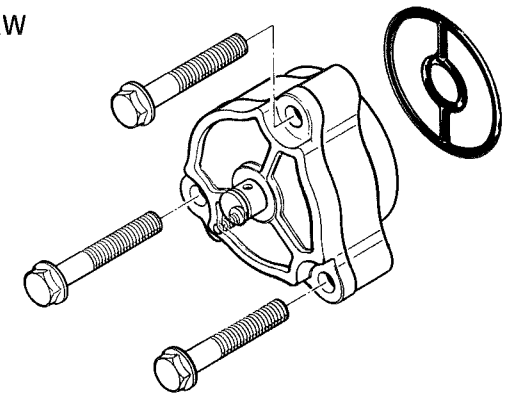
The three screws used to secure the oil pump to the crankcase have been replaced with three bolts. In addition, the three screws that were utilized to secure the oil pump cover to the housing have been eliminated and the three bolts now retain the entire assembly. The tightening torque for the oil retaining bolts is as follows:

Tightening torque	7 – 9 N·m (0.7 – 0.9 kg-m)

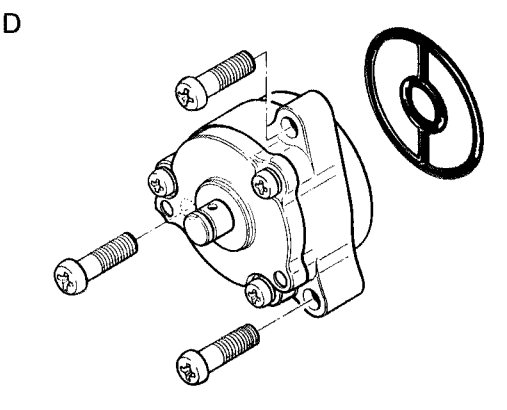
CAUTION:

* **Never disassemble the oil pump. No replacement parts are available for the oil pump. It is available only as an assembled unit for replacement.**
* **When replacing the oil pump with a new unit, be sure to replace the O-ring also.**
* **Performance for both oil pumps is not changed.**

NEW



OLD



Part Name	New Part No.	Old Part No.
① Oil pump assy	16400-49220	16400-49210
② Oil pump screw		02112-06258
③ Oil pump bolt	09103-06045	

After having exhausted old oil pump in stock, the new oil pump will be supplied with three oil pump bolts.

EFFECTIVE ENGINE NUMBER

The above modification has been carried out on and after the following engine number.

GSX400F . . . E/NO. 112260 ~

AMOUNT OF ENGINE OIL

The engine oil amount of the GSX400F model has been increased to improve the engine productability.

MODIFICATIONS

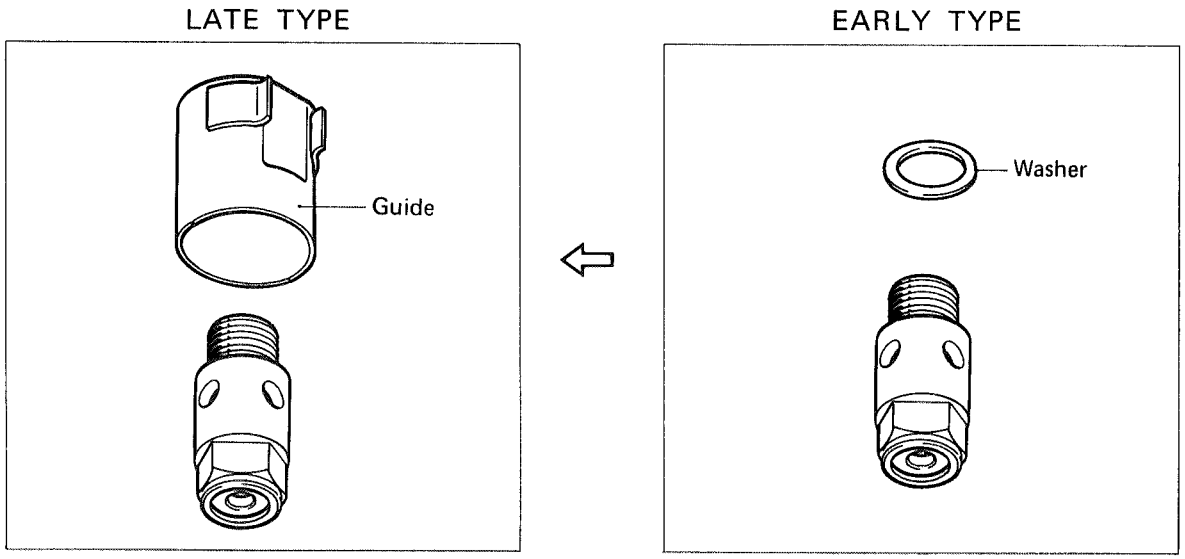
1. Engine oil capacity

	New Spec.	Old Spec.
Oil change	2600 ml	2000 ml
Filter change	3000 ml	2400 ml
Engine overhaul	3200 ml	2700 ml

The above new specification could also be applied to machines produced before following modifications, without any trouble.

2. Accompanied with the above changes in oil capacity, the following modifications have been made.

A) The engine oil pressure regulator has been changed in form and washer ① is eliminated. And instead of a washer, a new guide has been adopted to the oil pressure regulator.



B) Due to the introduction of a new guide in the oil pressure regulator, the oil pan gasket has also been changed in shape.

C) As the oil level will increase due to extra engine oil capacity, position of the oil level inspection window has been changed and also the inspection window diameter has been enlarged to 22 mm from the previous 18 mm size.

PARTS SUPPLY DATA

Part Name	LATE Part No.	EARLY Part No.
Oil pressure regulator guide	16449-33200	
Oil pressure regulator washer		08212-14181
Oil pressure regulator	16440-44101	16440-34301
Oil pan gasket	11489-33203	11489-33202
Clutch cover	11340-33202	11340-33201
Oil level lens	11971-33210	11971-45010

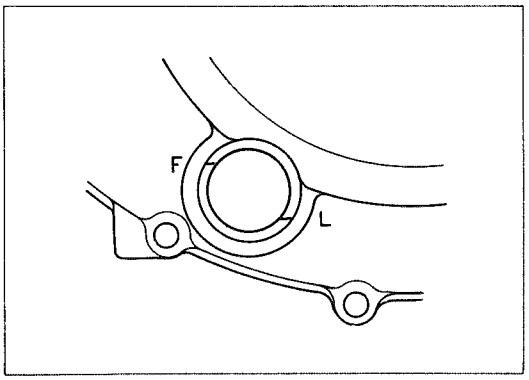
Only new parts will be supplied.

SERVICING

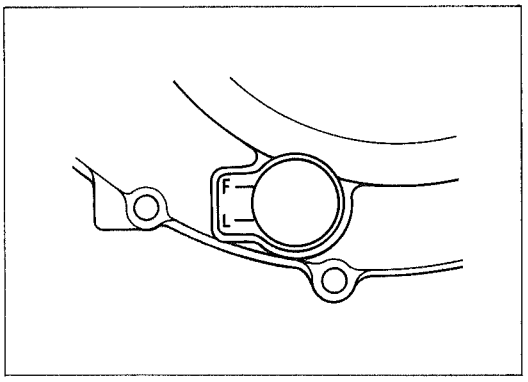
The following precautions should be taken among the machines produced before this modification.

1) When the oil pressure regulator needs replacing, always fit an oil pressure regulator guide, in place of the washer and also change the oil pan gasket to a new one.
2) To determine the oil level, the oil level may appear above the "F" mark in the inspection window and it must be informed to dealers and customers that there is no trouble in it.

LATE TYPE



EARLY TYPE



EFFECTIVE ENGINE NO.

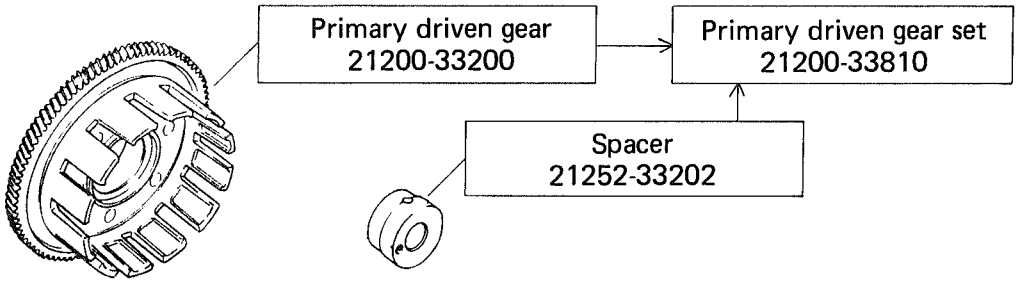
The above modifications have been carried out on and after the following engine number.

GSX400F . . . E/NO. 120762 ~

PRIMARY DRIVEN GEAR AND SPACER

The primary driven gear and its spacer has been supplied as individual parts for replacement. In order to reduce the primary drive and driven gear noise together with clutch noise, the primary driven gear and its spacer will be supplied as a set.

PARTS SUPPLY DATA



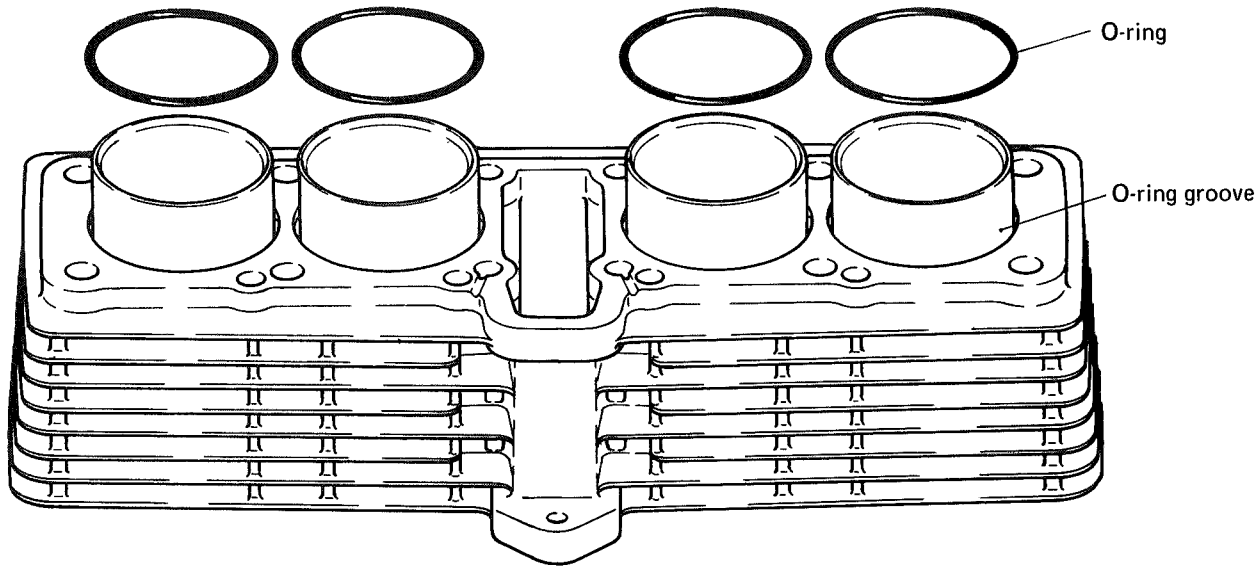
Part Name	Old Part No.	New Part No.
Primary driven gear	21200-33200	(Gear Set) 21200-33810
Spacer	21252-33202	

INTERCHANGEABILITY

As the primary driven gear and its spacer will not be supplied individually here-on, the primary driven gear and its spacer will have to be obtained in a set when either of the parts needs changing and be fitted in a set.

CYLINDER

The cylinder base section in the GSX400F model has been modified to hold an O-ring.
The O-ring must be fitted into its groove of the cylinder base properly when installing cylinder.



NOTE:
The O-ring cannot be fitted to cylinder that have no groove.

EFFECTIVE ENGINE NO.

This modification has been carried out on and after the following engine number.
GSX400F . . . E/NO. 122480 ~

PART SUPPLY DATA

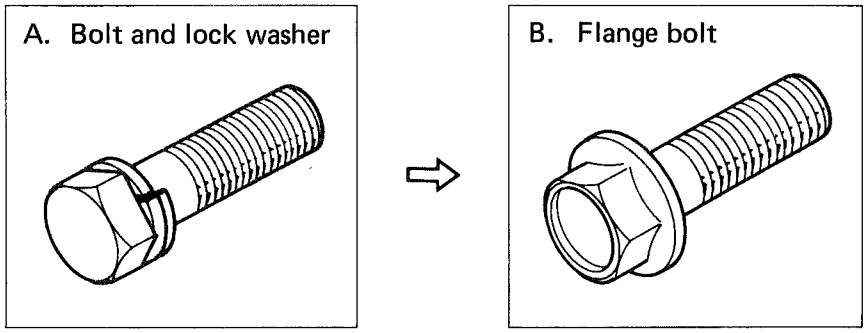
Part Name	Part No.	Remarks
Cylinder (early)	11210-33202	without O-ring groove
Cylinder (late)	11210-33203	with O-ring groove
O-ring	09280-56001	

Only the late style cylinder will be available from the Parts Dept. The early style cylinder has been discontinued.

When ordering the early style cylinder, the late style cylinder and a set of O-rings will be supplied automatically.

GENERATOR ROTOR BOLT

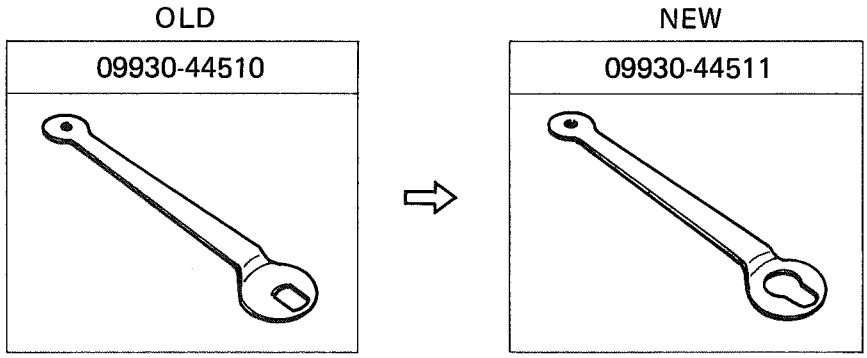
To improve efficiency, the Generator rotor bolt has been changed from A to B and the specified securing torque is as follows. This new tightening torque is applicable to the A type bolt, too.



	OLD	NEW
Tightening torque	9.0 – 10.0 kg-m	11.0 – 13.0 kg-m
Thread lock cement	1332B (99000-32090)	1305 (99000-32100)
Bolt	01107-12458	09103-12004
Lock washer	08321-31128	

NOTE:
When replacing generator rotor or bolt, use new type bolt and tighten it with specified torque.

Below are the special tools necessary for tightening B type flange bolt.



As illustrated above, the new rotor holder has been arranged to tighten the flange bolt.
This tool is applicable to both A and B type bolts.

TOOL SUPPLY DATA

Only the new type will be supplied.

EFFECTIVE ENGINE NO.

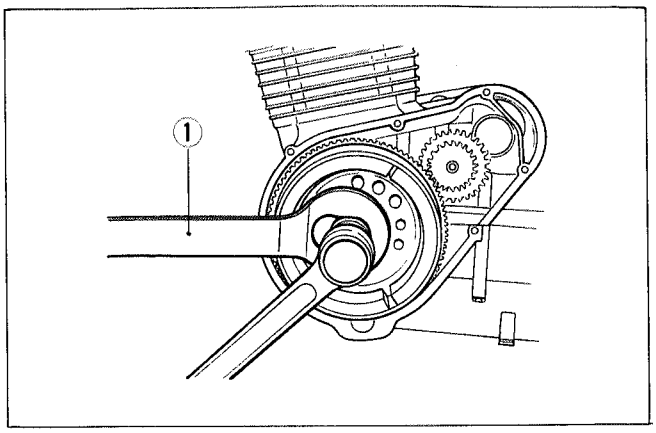
This modification has been carried out on and after the following engine number.

GSX400F . . . E/NO. 118089 ~

REMOVAL

- Using rotor holder ①, remove rotor securing bolt.

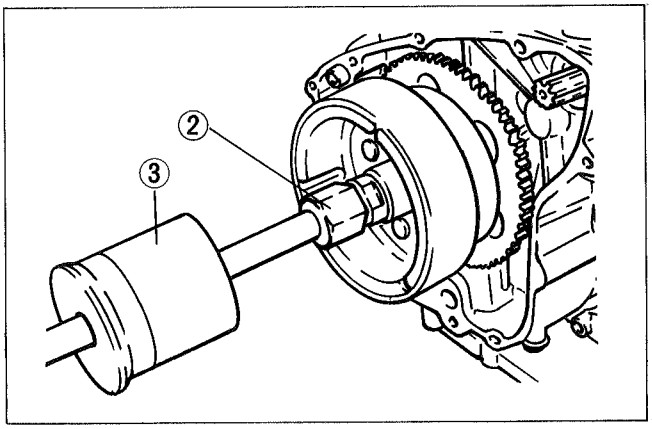
09930-44511	Rotor holder



- Install rotor remover attachment ② and sliding shaft ③ into the boss of rotor and remove rotor with starter clutch assembly while sliding the remover.

NOTE:
Do not hit the rotor with a hammer.

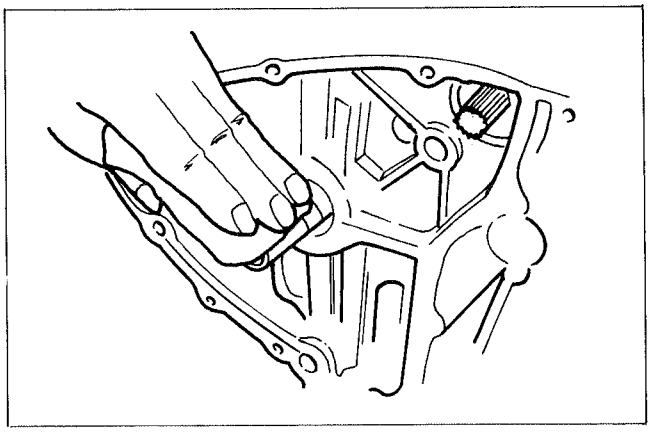
09930-30102	Rotor remover shaft
09930-33710	Attachment

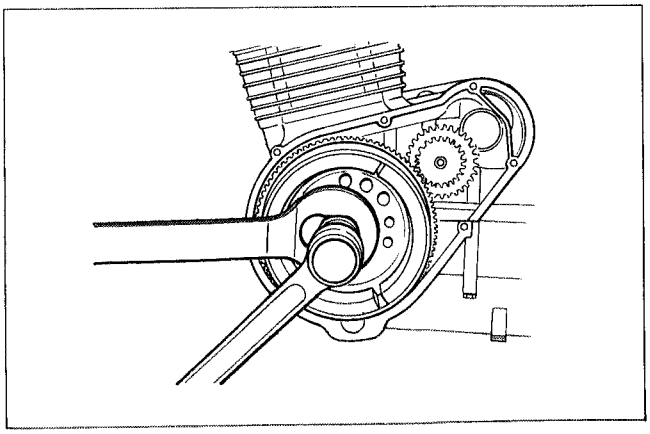


INSTALLATION

- Degrease the tapered portion of the rotor and also the crankshaft. Use nonflammable cleaning solvent 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.

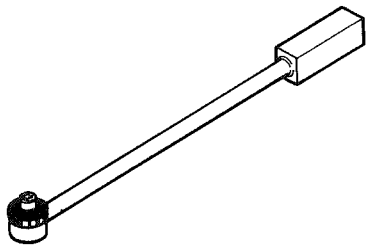
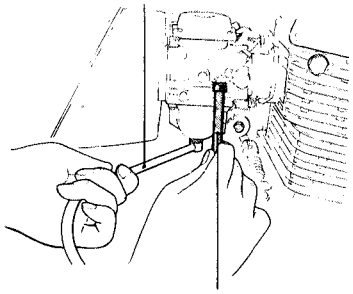
Tightening torque	110 – 130 N·m (11.0 – 13.0 kg-m)
09930-44511	Rotor holder
99000-23100	Thread Lock Super "1305"





FUEL LEVEL GAUGE ATTACHMENT

To facilitate the fuel level inspection, following attachment is newly established.

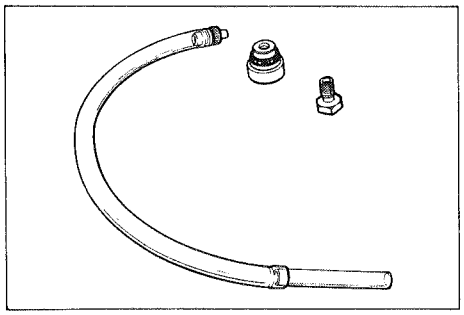
Part No. Part Name	Use of Parts	
09913–14550 Fuel level gauge attachment 	Fuel level gauge attachment  Fuel level gauge set	Remove the carburetor drain plug. Install the attachment to the body of the fuel level gauge. This attachment is used by pressing the top of it toward the surface.

TOOL SUPPLY

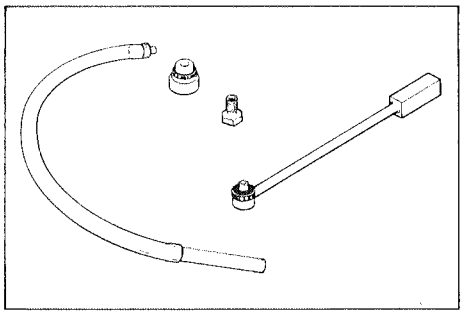
The attachment is supplied individually.
In accordance with this change, fuel level gauge set is also renewd as follows.

OLD		NEW	
Set	09913–14540	Set	09913–14541
Gauge body	09913–14511	Gauge body	09913–14511
16 mm x P1.0 screw	09913–14410	16 mm x P1.0 screw	09913–14410
10 mm x P1.0 screw	09913–14530	10 mm xP1.0 screw	09913–14530
		Attachment	09913–14550

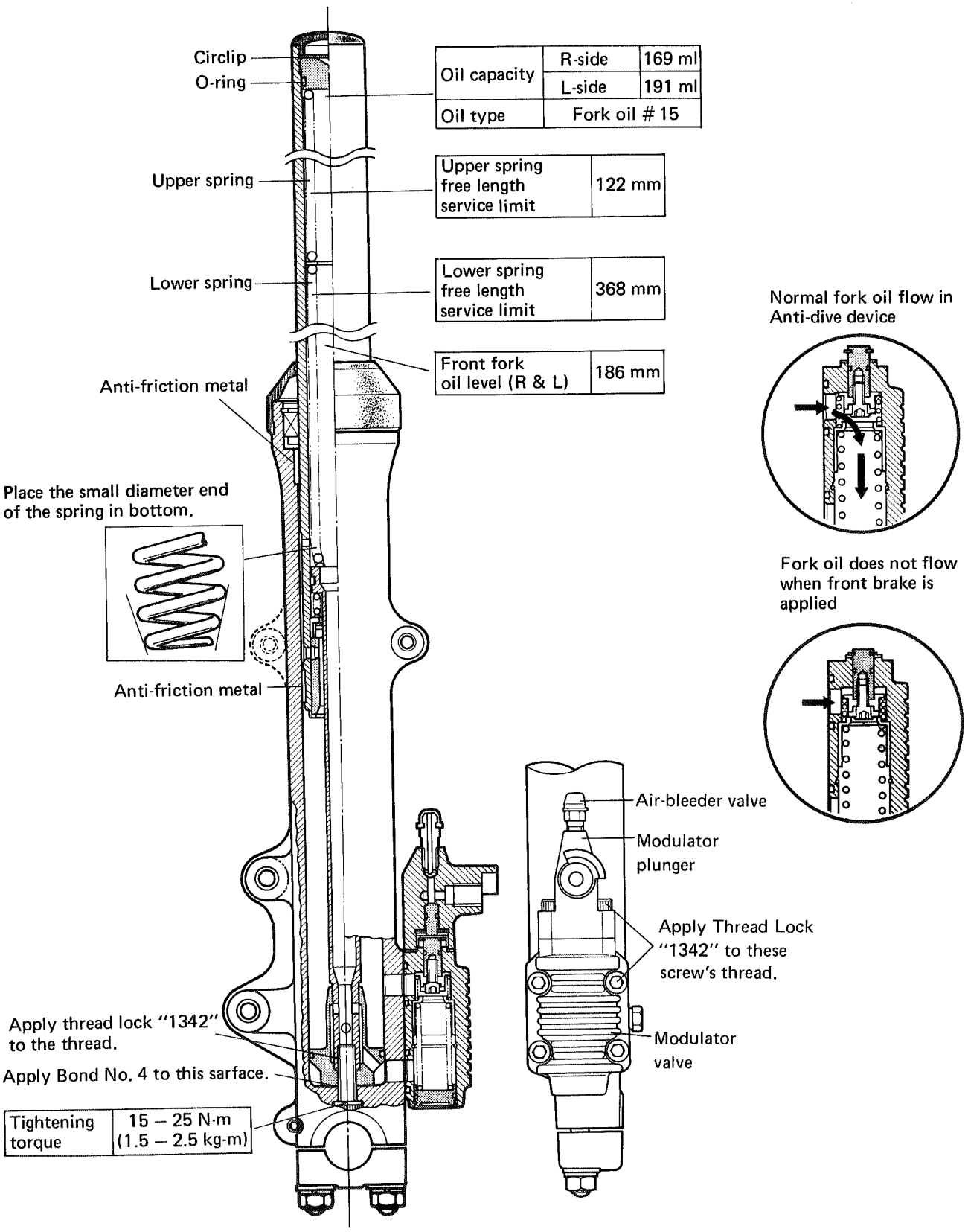
OLD

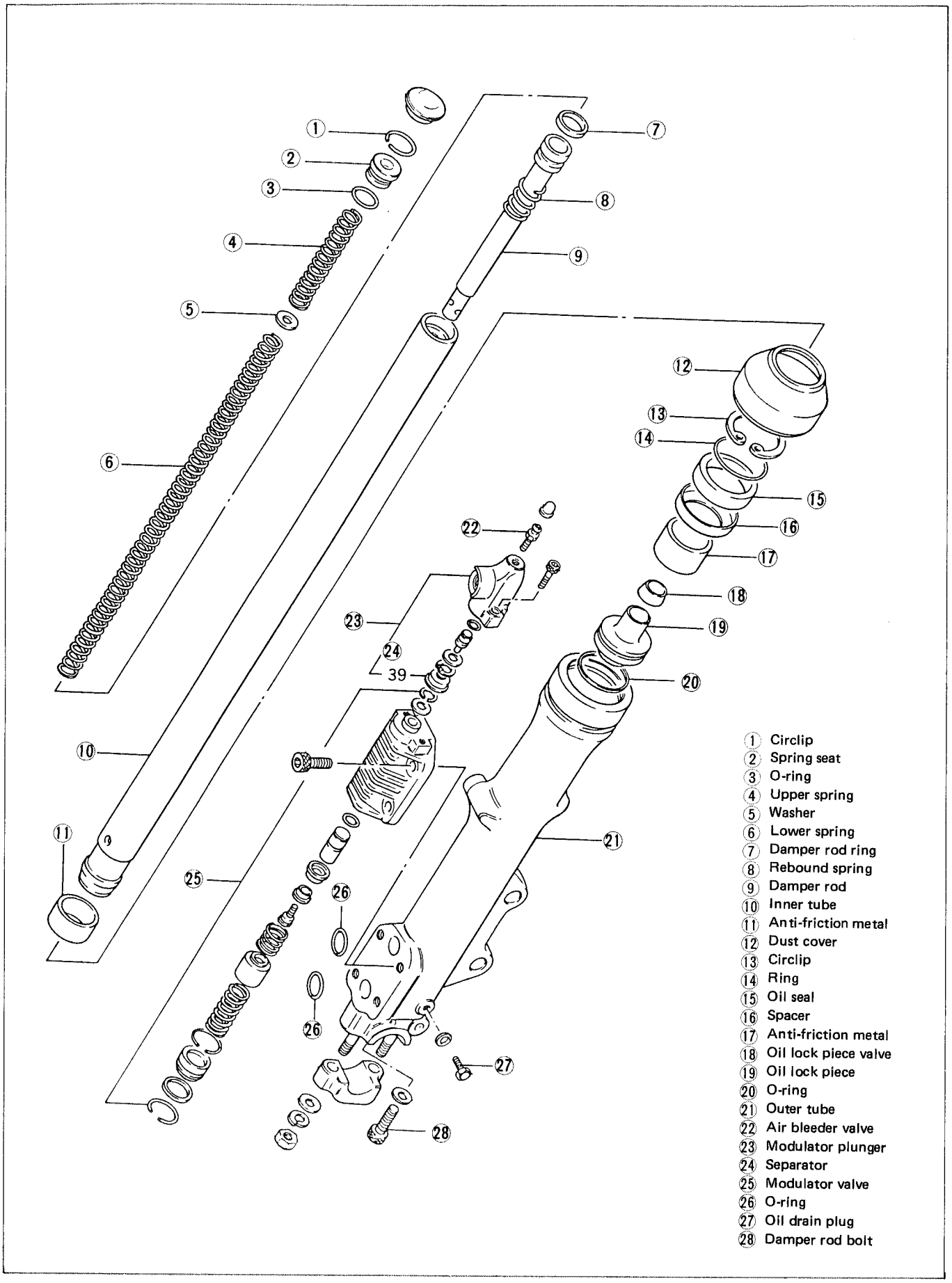


NEW



FRONT FORK (WITE ANTI-DIVE DEVICE)





1 Circlip
2 Spring seat
3 O-ring
4 Upper spring
5 Washer
6 Lower spring
7 Damper rod ring
8 Rebound spring
9 Damper rod
10 Inner tube
11 Anti-friction metal
12 Dust cover
13 Circlip
14 Ring
15 Oil seal
16 Spacer
17 Anti-friction metal
18 Oil lock piece valve
19 Oil lock piece
20 O-ring
21 Outer tube
22 Air bleeder valve
23 Modulator plunger
24 Separator
25 Modulator valve
26 O-ring
27 Oil drain plug
28 Damper rod bolt

This motorcycle comes equipped with an anti-dive device. Here is how it differs from an ordinary fork when it comes to servicing.

AIR-BLEEDING PROCEDURE

The front brake fluid is used to work not only the front brake but also the anti-dive device. For air-bleeding from the brake fluid circuit, therefore, the following sequence must be adopted for proper procedure:

For the basic air-bleeding procedure, refer to page 2-16 in the GSX400F Service Manual.

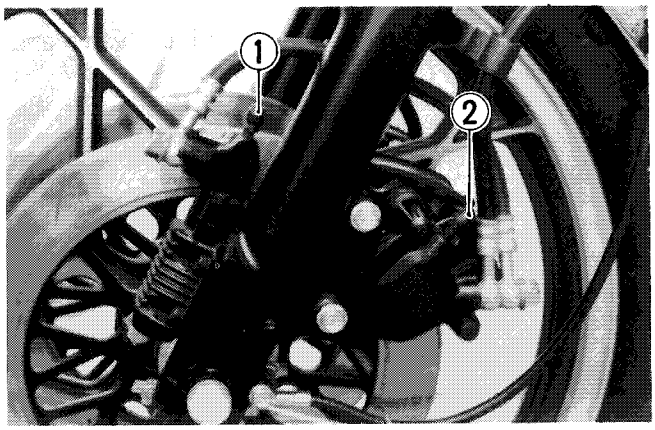
① Anti-dive device
⇩
② Left side caliper
⇩
③ Right side caliper

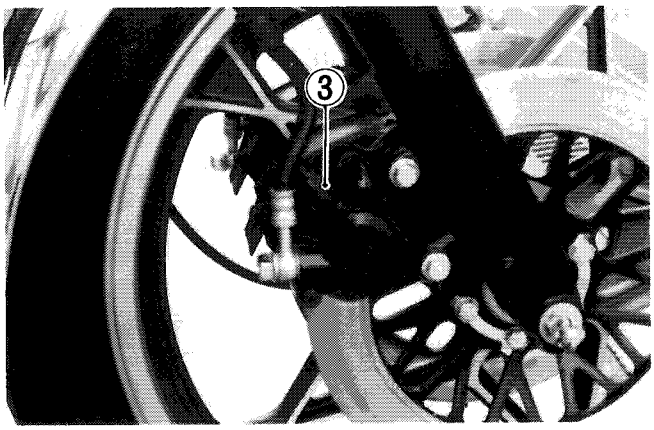
CAUTION:
It takes time for the air-bleeding since the brake fluid circuit is longer than that in the ordinary disc brake models. Make sure that the air-bleeding is undertaken in its totality in order that the performance for both the anti-dive device and braking efficiency is satisfied.

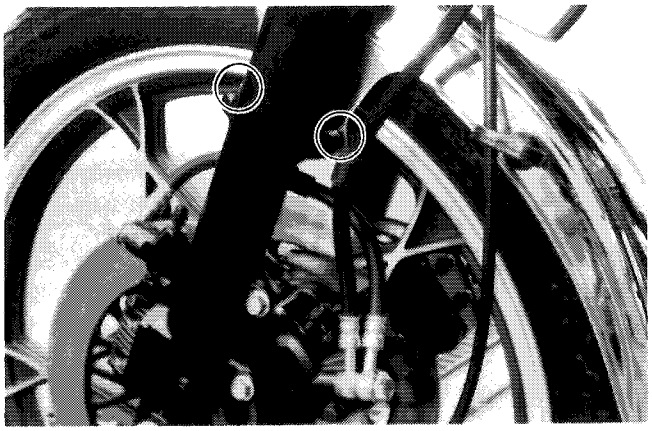
FRONT FORK REMOVAL

Refer to P6-11 in the GSX400F Service Manual for details on the procedure involved in removing and disassembling the front fork. In view of the fact that the anti-dive device is provided on the left front fork, the following steps differ.

- When removing the front fender, remove the hose guide connected between the caliper and anti-dive device.
- The anti-dive device can be divided into two large sections: the first is included in the brake fluid circuit and the second is the front fork oil circuit. Use a 4 mm hexagon wrench to separate the modulator plunger from the fork assembly.





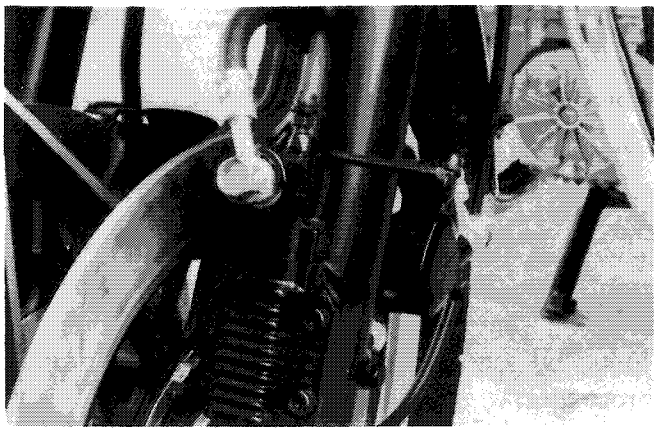


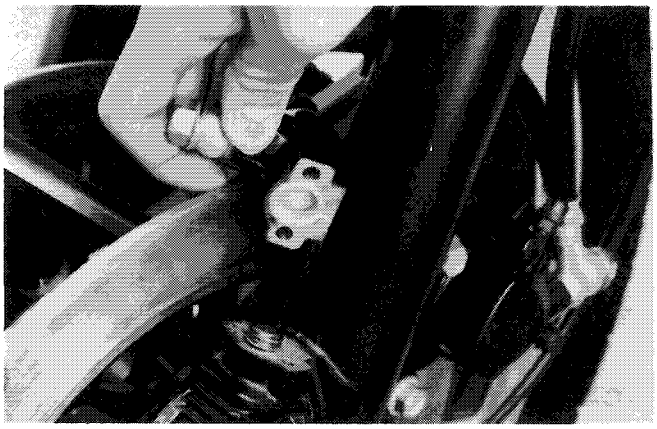
ANTI-DIVE DEVICE INSPECTION

As shown in the figure, the anti-dive device can be disassembled into the modulator plunger and modulator valve and for these two sections, no individual replacement parts are provided.

If the moving parts should be marked or scratched or if the brake fluid or front fork oil is leaking from the sliding parts, replace the modulator plunger or valve as a unit.

The modulator valve is attached to the front fork by 4 mm allen bolts. Two O-rings are provided between the modulator valve and front fork. If the O-rings are marked or scratched or if the oil is leaking from between the modulator valve and fork, replace the O-rings.

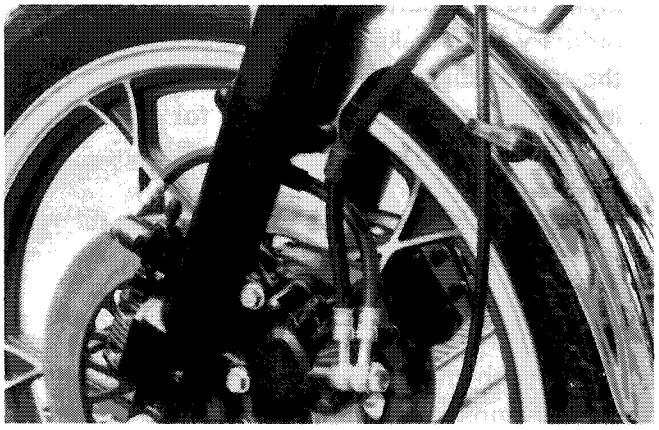




FRONT FORK REASSEMBLY

Refer to the procedure in the GSX400F Service Manual when it comes to reassembling the front fork.

CAUTION:
Make sure that the front brake hoses are put together with precision.



TIGHTENING TORQUE

ENGINE

ITEM	kg-m	N·m
Cylinder head cover bolt	0.9 – 1.0	9 – 10
Cylinder head bolt	0.9 – 1.1	9 – 11
Cylinder head nut	2.0	20
Valve clearance adjuster lock nut	0.9 – 1.1	9 – 11
Camshaft holder bolt	1.0	10
Cam sprocket bolt	2.4 – 2.6	24 – 26
Cam chain tensioner fitting bolt	0.6 – 0.8	6 – 8
Cam chain tensioner shaft assy	3.1 – 3.5	31 – 35
Cam chain tensioner lock shaft nut	0.8 – 1.0	8 – 10
Cam chain tensioner adjuster lock nut	0.9 – 1.4	9 – 14
Conrod bearing cap nut	3.0 – 3.4	30 – 34
Generator rotor bolt	*11.0 – 13.0	110 – 130
Starter clutch allen bolt	1.5 – 2.0	15 – 20
Governor center bolt	1.3 – 2.3	13 – 23
Crankcase bolt (6 mm)	1.3	13
(8 mm)	2.4	24
Starter motor bolt	0.4 – 0.7	4 – 7
Oil pan bolt	1.0	10
Oil pressure switch	1.3 – 1.7	13 – 17
Oil pressure regulator	1.7 – 2.0	17 – 20
Oil filter cover nut	0.6 – 0.8	6 – 8
*Rocker arm shaft stopper screw	*0.5 – 0.8	5 – 8
*Oil pump securing bolt	*0.7 – 0.9	7 – 9
Neutral stopper housing	1.8 – 2.8	18 – 28
Gearshift arm stopper	1.5 – 2.3	15 – 23
Clutch sleeve hub nut	5.0 – 7.0	50 – 70
Clutch spring bolt	1.1 – 1.3	11 – 13
Engine mounting bolt (8 mm)	2.0 – 3.0	20 – 30
(10 mm)	3.0 – 3.7	30 – 37
Gearshift lever return spring bolt	1.3 – 2.3	13 – 23
Clutch release arm bolt	0.6 – 0.8	6 – 8
Engine sprocket nut	10.0 – 13.0	100 – 130
Exhaust pipe bolt	1.0 – 1.6	10 – 16
Exhaust pipe connector bolt	0.9 – 1.4	9 – 14

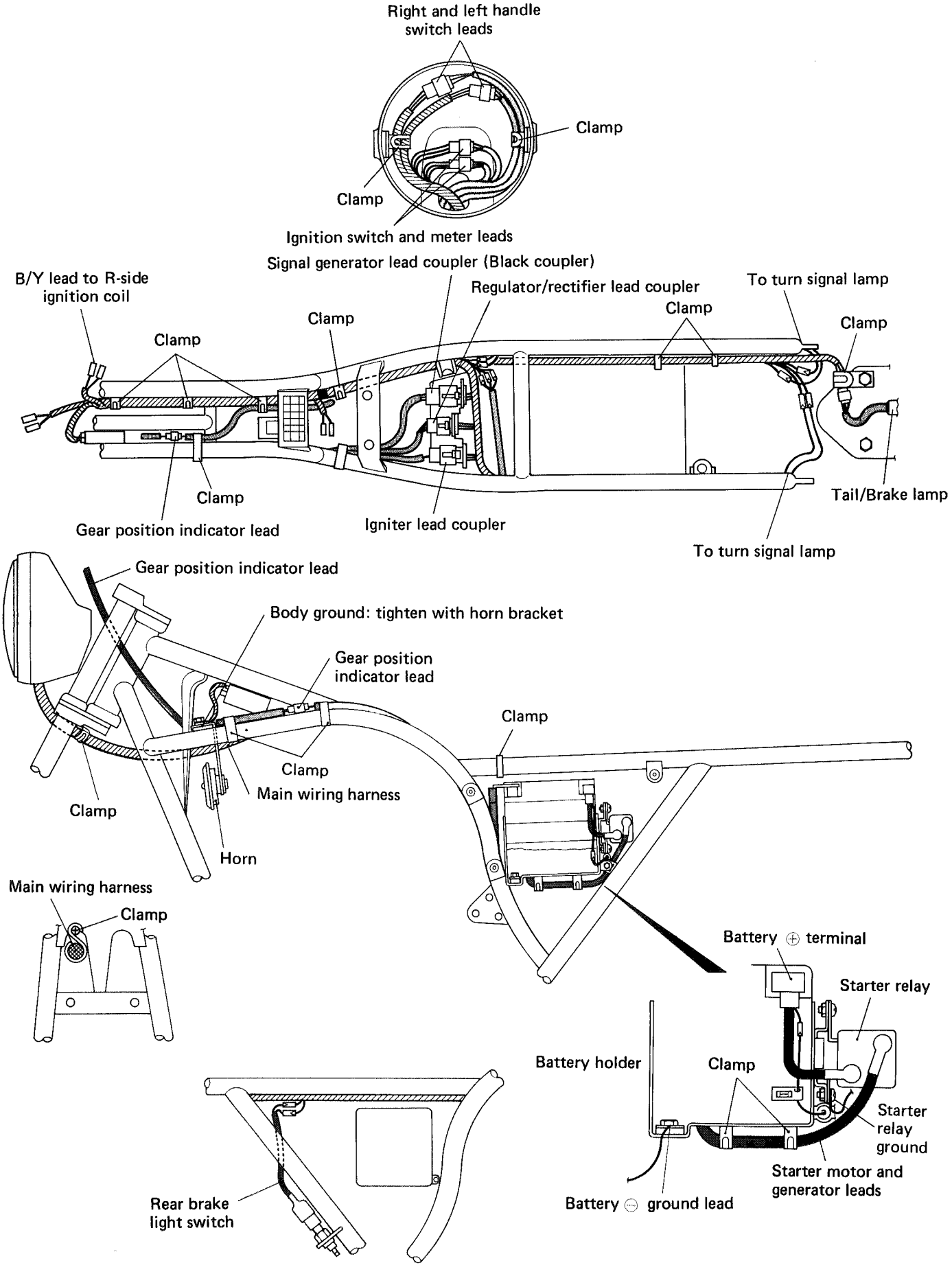
* Asterisk indicates the new GSX400FZ specification.

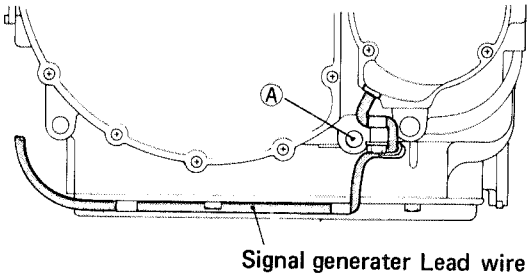
CHASSIS

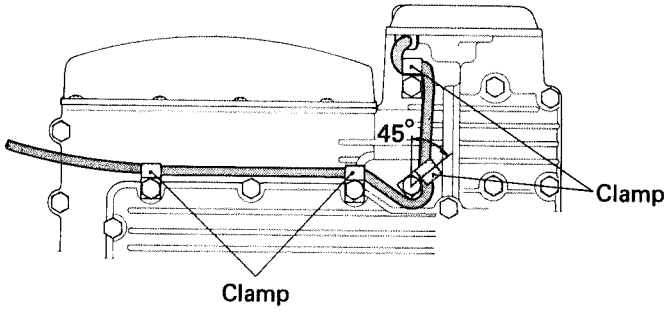
ITEM	kg-m	N·m
Spoke nipple	0.4 – 0.5	4 – 5
Disc bolt	1.5 – 2.5	15 – 25
Front axle nut	3.6 – 5.2	36 – 52
Front axle holder bolt	1.5 – 2.5	15 – 25
Front caliper mounting bolt	2.5 – 4.0	25 – 40
Brake hose union bolt	2.0 – 2.5	20 – 25
Caliper air bleeder	0.7 – 0.9	7 – 9
Front fork damper rod bolt	1.5 – 2.5	15 – 25
Front fork lower clamp bolt	2.7 – 4.3	27 – 43
Front fork upper clamp bolt	2.0 – 3.0	20 – 30
*Anti-dive device hose union bolt	*2.0 – 2.5	20.0 – 25.0
*Anti-dive device air bleeder valve	*0.7 – 0.9	7.0 – 9.0
*Anti-dive device fitting bolt	*0.6 – 0.8	6.0 – 8.0
*Anti-dive modulator fitting bolt	*0.4 – 0.5	4.0 – 5.0
Steering stem nut	1.4 – 2.0	14 – 20
Steering stem clamp bolt	1.5 – 2.5	15 – 25
Steering stem head bolt	2.0 – 3.0	20 – 30
Handlebar clamp bolt	1.2 – 2.0	12 – 20
Front master cylinder clamp bolt	0.5 – 0.8	5 – 8
Front footrest bolt	2.7 – 4.3	27 – 43
Swing arm pivot nut	5.0 – 8.0	50 – 80
Brake pedal arm bolt	1.0 – 1.5	10 – 15
Rear master cylinder mounting bolt	0.5 – 0.8	5 – 8
Rear torque link bolt and nut	2.0 – 3.0	20 – 30
Rear caliper mounting bolt	2.5 – 4.0	25 – 40
Rear caliper bolt	2.0 – 3.0	20 – 30
Muffler bracket nut	1.5 – 2.0	15 – 20
Rear shock abosrber fitting nut	2.0 – 3.0	20 – 30
Rear footrest bolt	2.7 – 4.3	27 – 43
Rear sprocket nut	2.5 – 4.0	25 – 40
Rear brake cam lever bolt	0.5 – 0.8	5 – 8
Rear axle nut	5.0 – 8.0	50 – 80
Chain adjuster support bolt	1.5 – 2.0	15 – 20

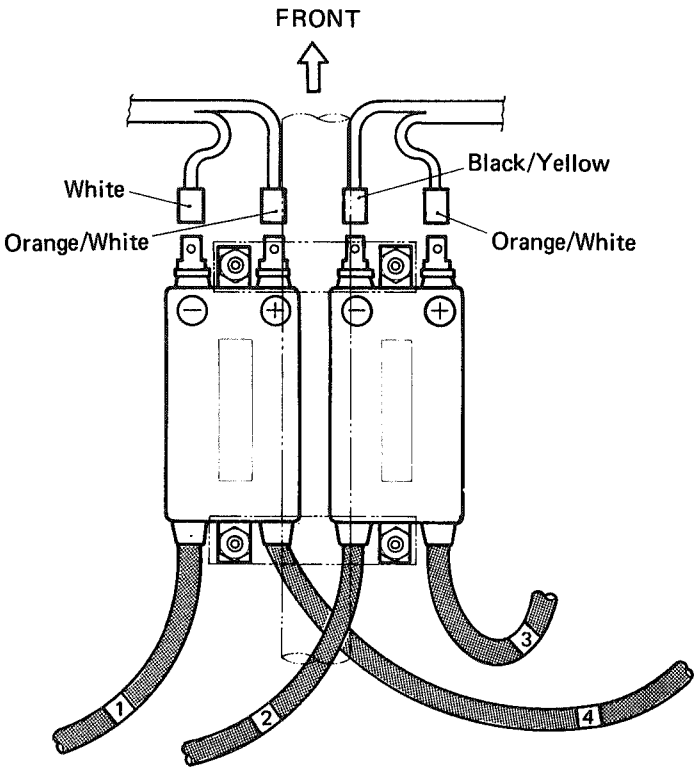
* Asterisk indicates the new GSX400FZ specification.

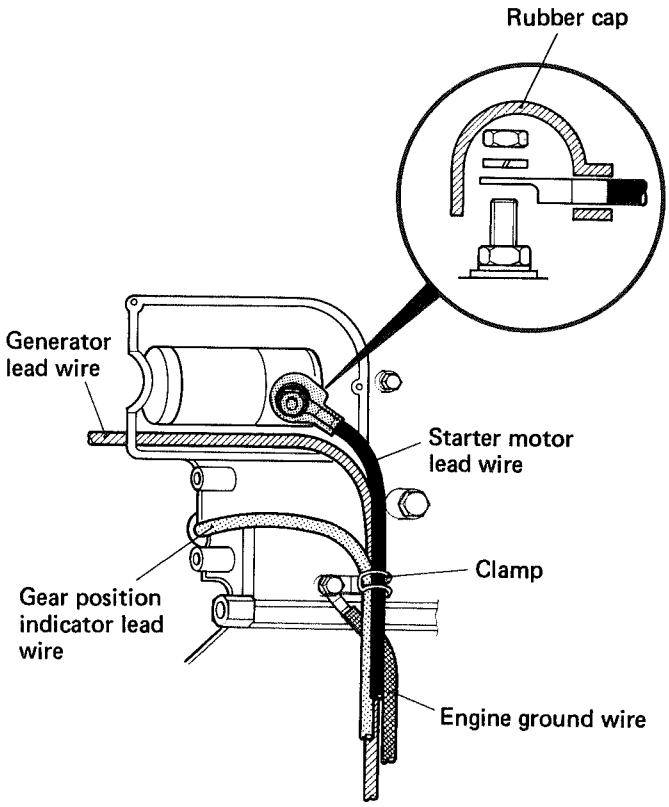
WIRE ROUTING

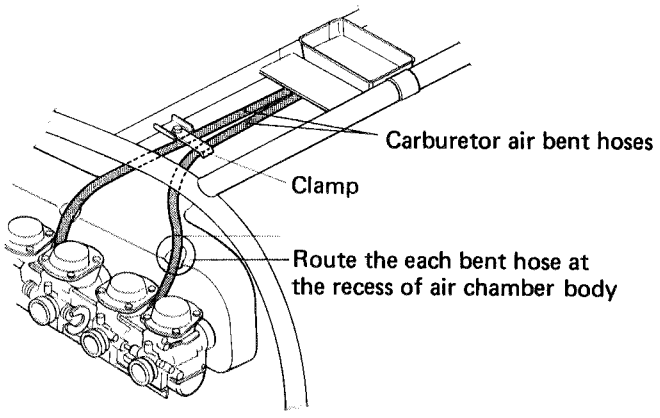



Ⓐ when tightening engine mounting nut, do not bite this lead wire between chassis and engine.
Signal generater Lead wire

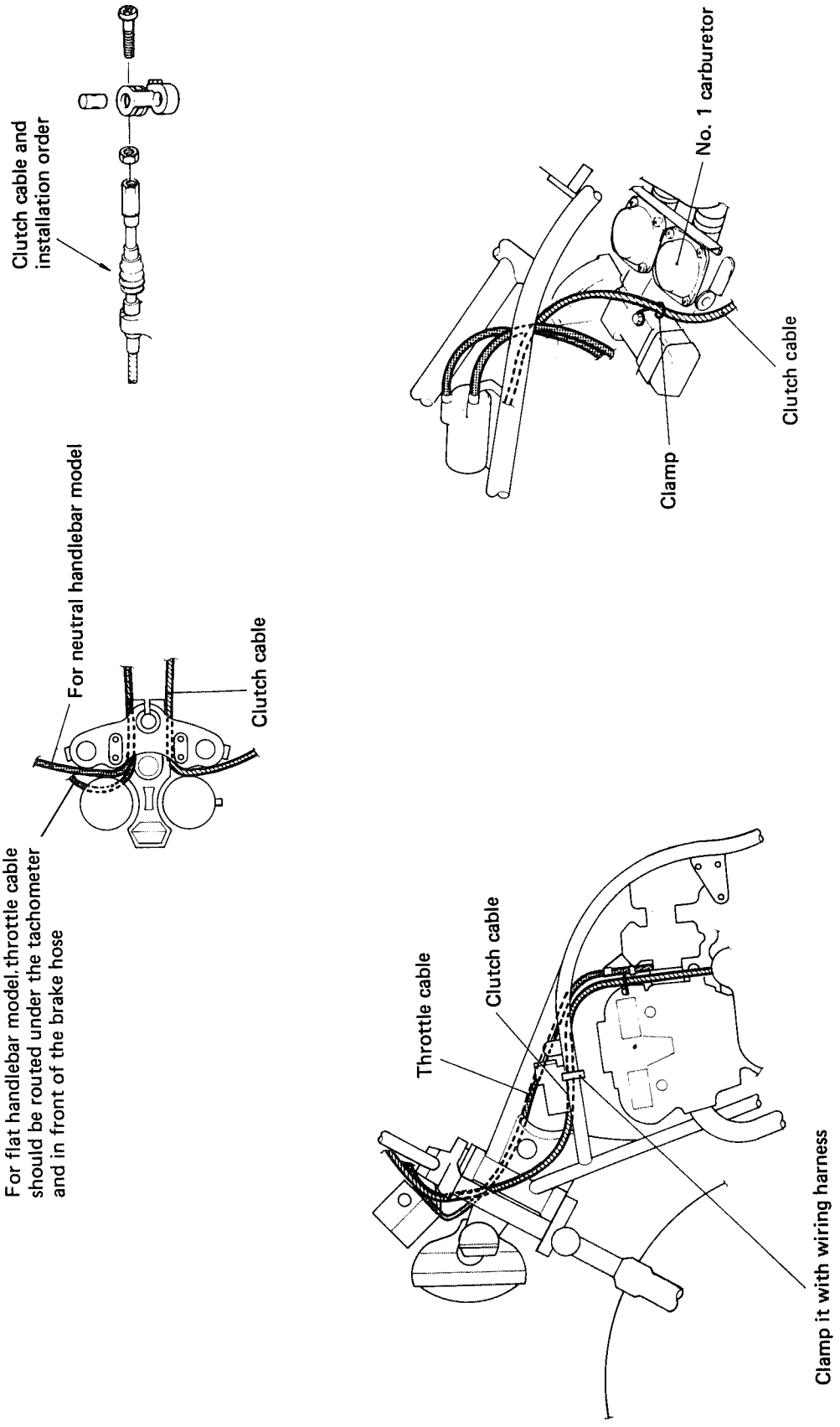

45°
Clamp
Clamp


FRONT
White
Black/Yellow
Orange/White
Orange/White
1
2
3
4


Rubber cap
Generator lead wire
Starter motor lead wire
Clamp
Gear position indicator lead wire
Engine ground wire

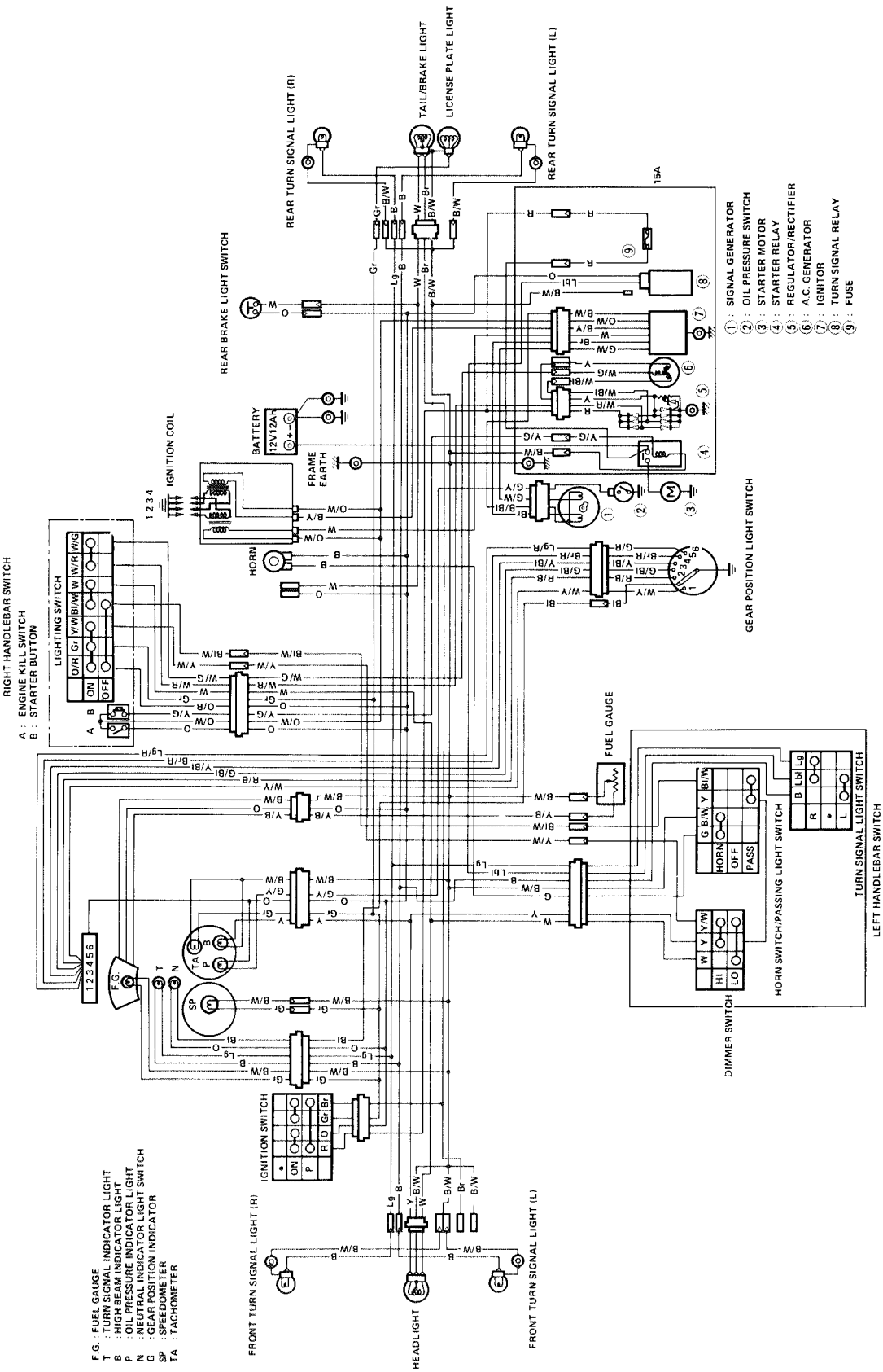

Carburetor air bent hoses
Clamp
Route the each bent hose at the recess of air chamber body

CABLE ROUTING



WIRING DIAGRAM

(FOR GENERAL, SOUTH AFRICA, AUSTRALIA AND ARGENTINA



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Gr	Gray
Lbl	Light blue
Lg	Light green
O	Orange
R	Red
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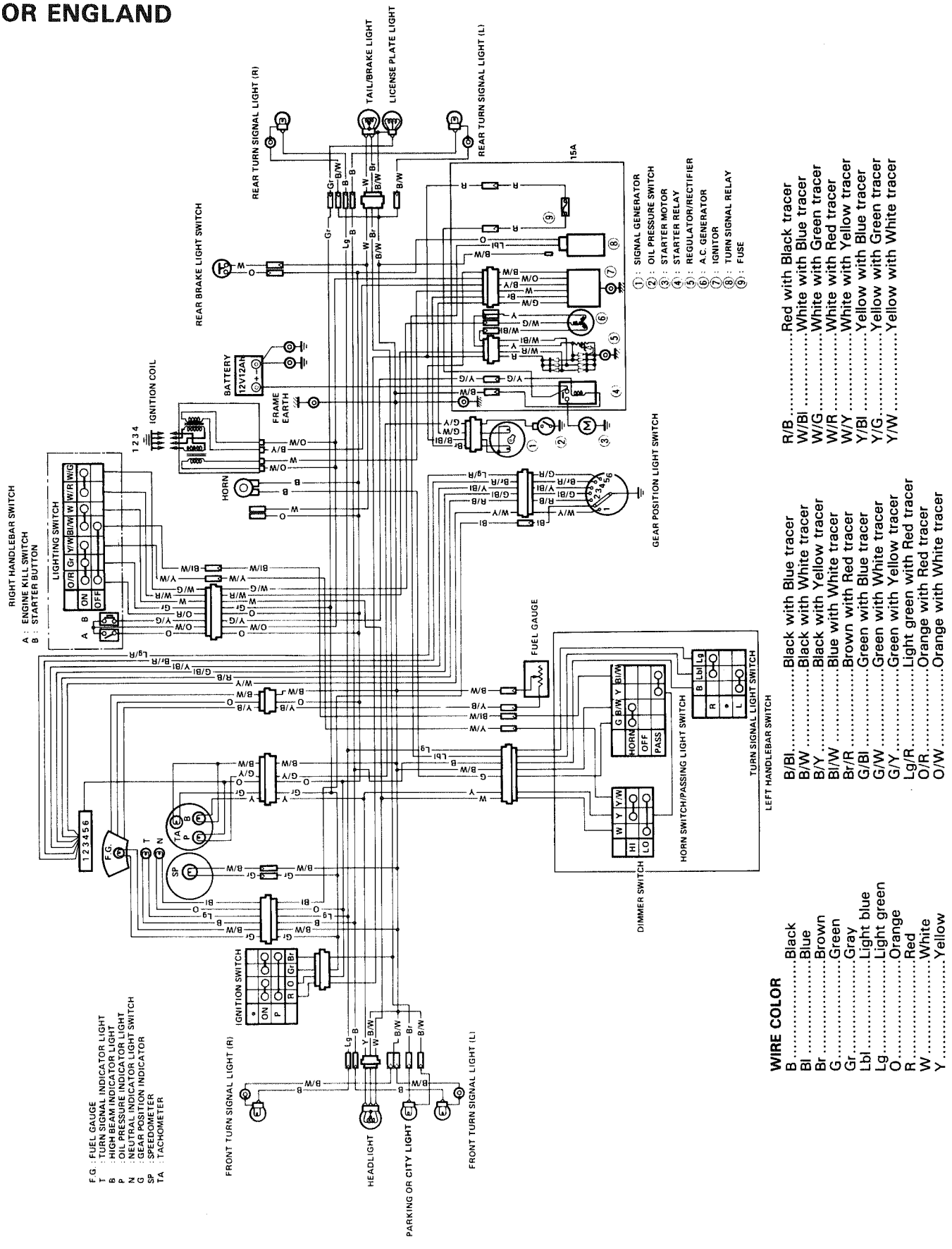
FOR ENGLAND



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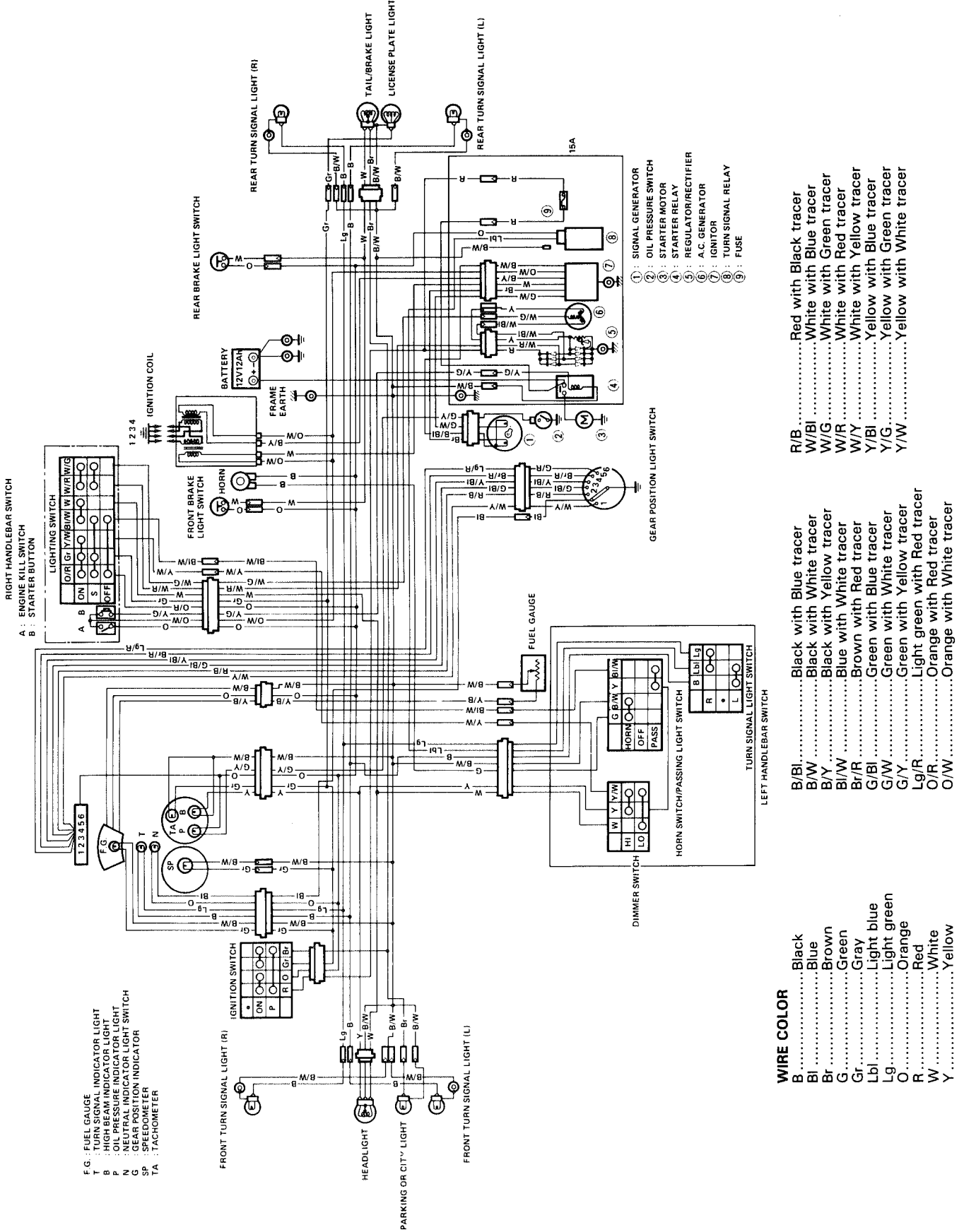
FOR FRENCH, NORWAY, SWEDEN AND DENMARK



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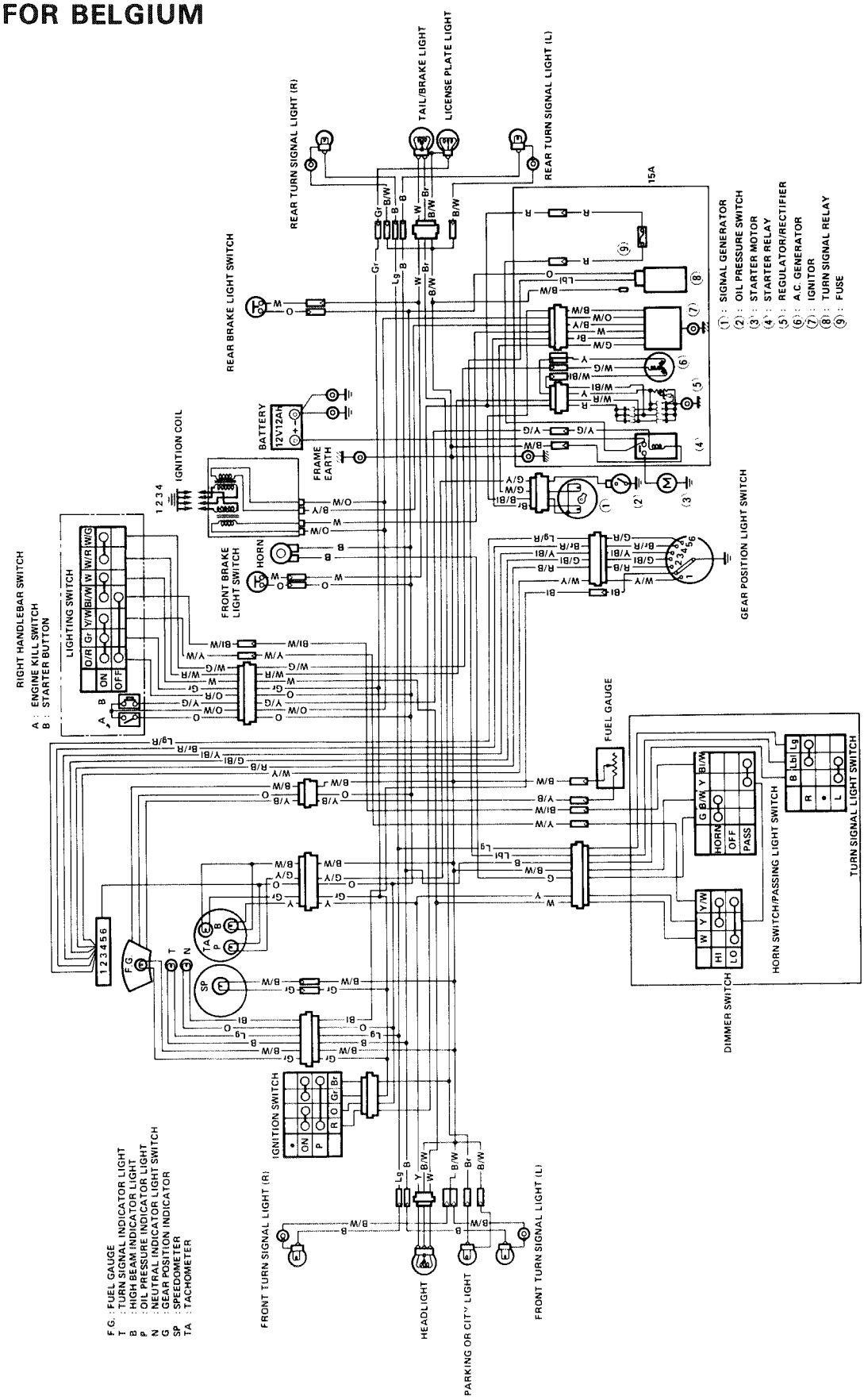
FOR BELGIUM



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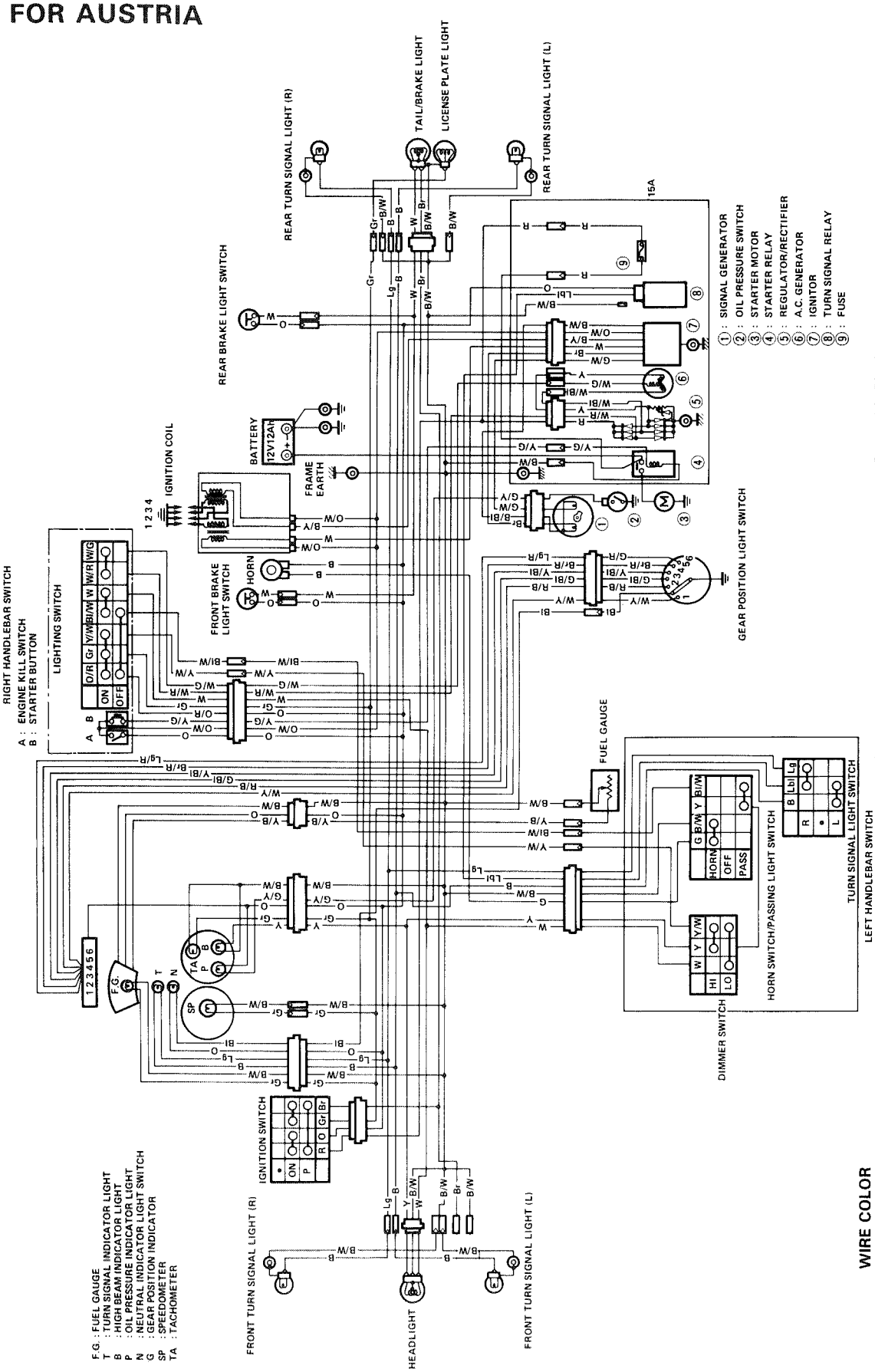
FOR AUSTRIA



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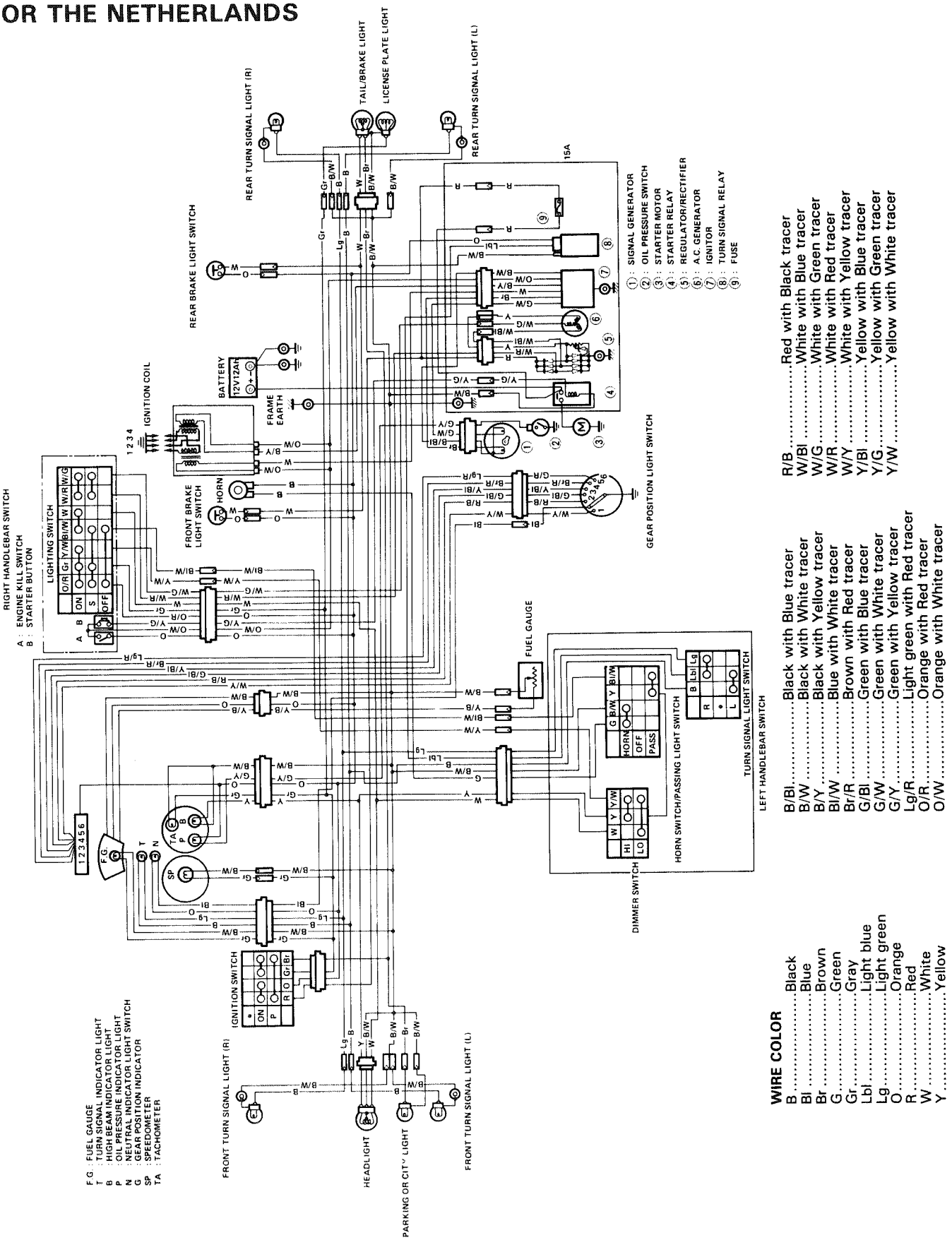
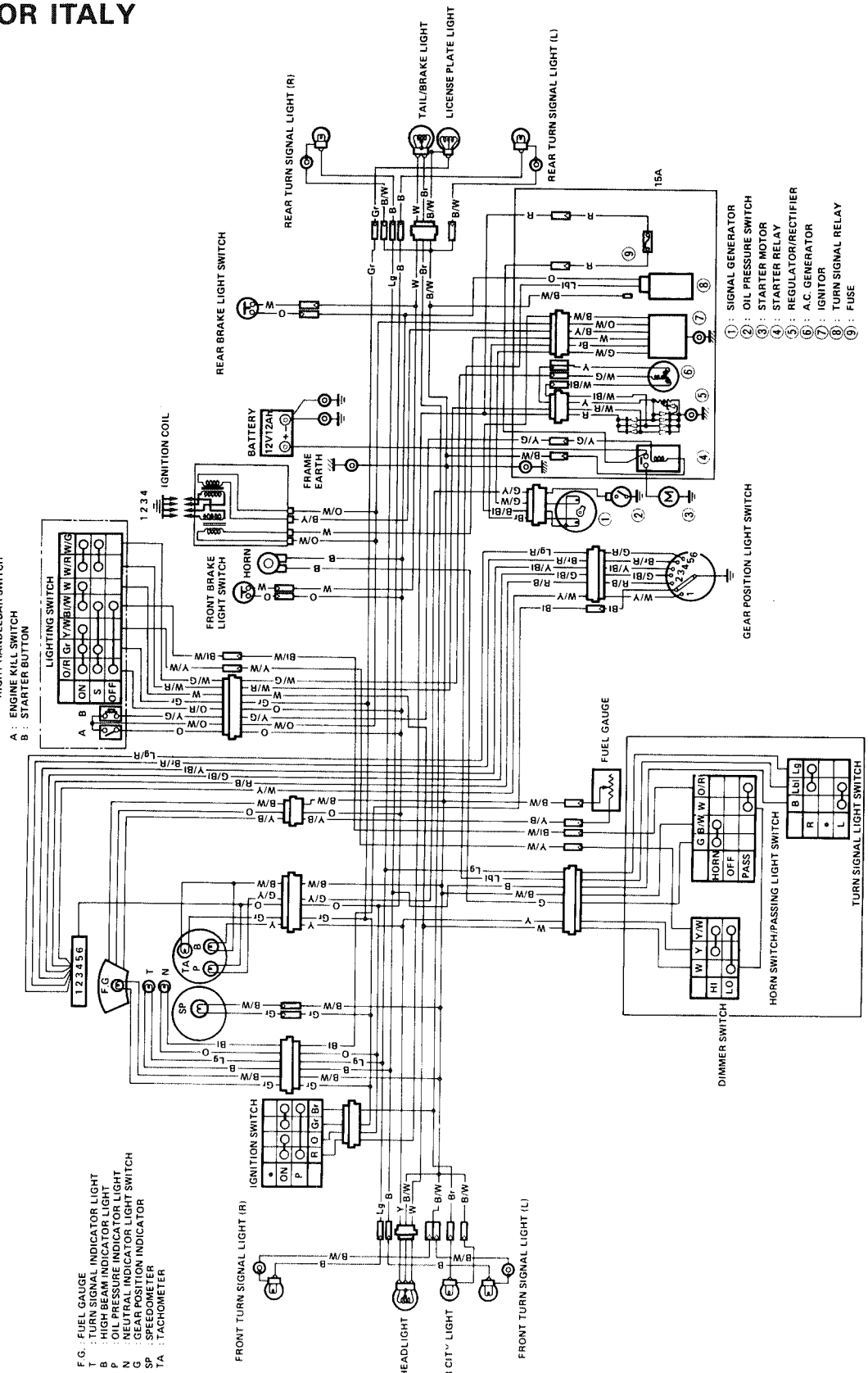
FOR THE NETHERLANDS



FOR ITALY



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GSX400FD ('83-model)

CONTENTS

SERVICE DATA

VALVE + GUIDE

Unit: mm

ITEM		STANDARD	LIMIT
Valve diam.	IN.	19.0	———
	EX.	17.0	———
Valve lift	IN.	7.0	———
	EX.	6.2	———
Valve clearance or tappet clearance (when cold)	IN. & EX.	0.08—0.13	———
Valve guide to valve stem clearance	IN.	0.025—0.052	0.35
	EX.	* 0.047—0.067	0.35
Valve guide I.D.	IN. & EX.	5.500—5.512	———
Valve stem O.D.	IN.	5.460—5.475	———
	EX.	5.445—5.460	———
Valve stem runout	IN. & EX.	———	0.05
Valve head thickness	IN. & EX.	———	0.5
Valve stem end length	IN. & EX.	———	3.6
Valve seat width	IN. & EX.	0.9—1.1	———
Valve head radial runout	IN. & EX.	———	0.03
Valve spring free length (IN. & EX.)	INNER	———	31.5
	OUTER	———	35.3
Valve spring tension (IN. & EX.)	INNER	3.9—4.7 kg at length 28 mm	———
	OUTER	6.9—8.5 kg at length 31.5 mm	———

CAMSHAFT + CYLINDER HEAD

Unit: mm

ITEM	STANDARD		LIMIT
Cam height	IN.	34.620—34.660	34.320
	EX.	34.170—34.210	33.870
Camshaft journal oil clearance	IN. & EX.	* 0.032—0.066	0.150
Camshaft journal holder I.D.	IN. & EX.	*22.012—22.025	———
Camshaft journal O.D.	IN. & EX.	21.959—21.980	———
Camshaft runout	IN. & EX.	———	0.10
Cam chain 20-pitch length		———	128.9
Cam chain pin (at arrow "3")		23rd pin	———
Rocker arm I.D.	IN. & EX.	12.000—12.018	———
Rocker arm shaft O.D.	IN. & EX.	11.973—11.984	———
Cylinder head distortion		———	0.2

CYLINDER + PISTON + PISTON RING

Unit: mm

ITEM	STANDARD	LIMIT
Compression pressure	11—15 kg/cm²	** 9 kg/cm²
Compression pressure difference	———	2 kg/cm²
Piston to cylinder clearance	** 0.025—0.035	0.120
Cylinder bore	53.000—53.015	** 53.105
Piston diam.	** 52.970—52.985 Measure at 14 from the skirt end.	52.880
Cylinder distortion	———	0.2

Unit: mm

ITEM	STANDARD			LIMIT
Piston ring free end gap	1st	R	Approx. 6.5	5.2
	2nd	R	Approx. 8.0	6.4
Piston ring end gap	1st		0.10—0.30	0.7
	2nd		0.10—0.30	0.7
Piston ring to groove clearance	1st		———	0.180
	2nd		———	0.150
Piston ring groove width	1st		1.02—1.04	———
	2nd		1.21—1.23	———
	Oil		2.51—2.53	———
Piston ring thickness	1st		**0.970—0.995	———
	2nd		1.170—1.190	———
Piston pin bore	14.002—14.008			14.030
Piston pin O.D.	13.995—14.000			13.980

CONROD + CRANKSHAFT

Unit: mm

ITEM	STANDARD	LIMIT
Conrod small end I.D.	14.006—14.014	14.040
Conrod big end side clearance	0.10—0.20	0.30
Conrod big end width	19.95—20.00	———
Crank pin width	20.10—20.15	———
Conrod big end oil clearance	0.024—0.048	0.080
Crank pin O.D.	31.976—32.000	———
Crankshaft journal oil clearance	0.020—0.044	0.080
Crankshaft journal O.D.	31.976—32.000	———
Crankshaft thrust bearing thickness	2.900—3.025	2.80
Crankshaft thrust clearance	0.045—0.100	
Crankshaft journal holder width	17.45—17.53	———
Crankshaft journal width	20.50—20.55	———
Crankshaft runout	———	0.05

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.755 (92/40 x 29/38)	———
Oil pressure (at 60°C, 140°F)	Above 2.5 kg/cm² Below 5.5 kg/cm² at 3000 r/min.	———

CLUTCH

Unit: mm

ITEM	STANDARD		LIMIT
Clutch cable play	2—3		———
Drive plate thickness	2.65—2.95		2.35
Drive plate claw width	15.8—16.0		15.0
Driven plate thickness	No.1	1.60 ± 0.06	———
	No.2	2.00 ± 0.06	———
Driven plate distortion	———		0.1
Clutch spring free length	———		36.5

TRANSMISSION + DRIVE CHAIN

Unit: mm

ITEM	STANDARD		LIMIT
Primary reduction ratio	2.300 (92/40)		———
Secondary reduction ratio	2.866 (43/15)		———
Gear ratios	Low	3.166 (38/12)	———
	2nd	2.125 (34/16)	———
	3rd	1.631 (31/19)	———
	4th	1.333 (28/21)	———
	5th	1.173 (27/23)	———
	Top	1.083 (26/24)	———
Shift fork to groove clearance	0.1—0.3		0.5
Shift fork groove width	5.5—5.6		———

Unit: mm

ITEM	STANDARD		LIMIT
Shift fork thickness	5.3—5.4		———
Drive chain	Type	D.I.D.: 50UB	———
	Links	104	———
	20 pitch length	———	✳✳ 323.9
Drive chain slack	20—30		———

CARBURETOR

Unit: mm

ITEM	SPECIFICATION
Carburetor type	MIKUNI BS26SS, Four
Bore size	26 mm
I.D. No.	✳— 33202
Idle r/min.	✳1200 ± 50 r/min.
Fuel level	✳✳5.0 ± 1.0 mm
Float height	21.4 ± 1.0 mm
Main jet (M.J.)	# 97.5
Main air jet (M.A.J.)	1.8 mm
Jet needle (J.N.)	✳ ✳ 5CFX16-3rd
Needle jet (N.J.)	✳0-8
Throttle valve (Th. V.)	✳ # 120
Pilot jet (P.J.)	✳# 37.5
By pass (B.P.)	✳ 0.9, 0.8, 0.8 mm
Pilot outlet (P.O.)	0.8 mm
Valve seat (V.S.)	2.0 mm
Starter jet (G.S.)	# 27.5
Pilot screw (P.S.)	✳ PRE-SET (3 1/4)
Pilot air jet (P.A.J.)	✳# 165
Throttle cable play	0.5—1.0 mm

ELECTRICAL

Unit: mm

ITEM	SPECIFICATION			NOTE
Ignition timing	15° B.T.D.C. Below 1650 ± 100 r/min and 35° B.T.D.C. Above 3500 ± 100 r/min.			
Firing order	1· 2· 4· 3			
Spark plug	Type	NGK: D8EA or ND: X24ES-U		E-01,24,25 34,48
	Gap	0.6—0.7		
	Type	NGK: DR8ES-L or ND: X24ESR-U		E02,04,06,16, 17,21,26
	Gap	0.6—0.7		
Spark performance	Over 8 at 1 atm			
Signal coil resistance	60—80 Ω			
Ignition coil resistance	Primary	O/W—O or B/Y 3—5 Ω		
	Secondary	Plug cap — Plug cap ※ 30—35 kΩ		
Generator no-load voltage	More than 80 V (AC) at 5000 r/min.			
Regulated voltage	13.5—16.0 V at 5000 r/min.			
Starter motor	Brush length	N.D.	Limit: 9	
	Commutator under cut		Limit: 0.2	
Starter relay resistance	3—4 Ω			
Battery	Type designation	YB10L—A2		
	Capacity	12V43.2kC(12Ah)/10HR		
	Standard electrolyte S.G.	1.28at 20°C (68°F)		
Fuse size	Main	15 A		

BRAKE + WHEEL

Unit: mm

ITEM		STANDARD		LIMIT
Rear brake pedal free travel (Drum type)			20	———
Rear brake pedal height			20	———
Brake drum I.D.		Rear	———	160.7
Brake lining thickness			———	1.5
Brake disc thickness		Front	5.0 ± 0.2	4.5
	E-02	Rear	6.7 ± 0.2	6.0
Brake disc runout			———	0.30
Master cylinder bore		Front	15.870–15.913	———
	E-02	Rear	14.000–14.043	———
Master cylinder piston diam.		Front	15.827–15.854	———
	E-02	Rear	13.957–13.984	———
Brake caliper cylinder bore		Front	33.960–34.036	———
	E-02	Rear	38.180–38.256	———
Brake caliper piston diam.		Front	33.884–33.934	———
	E-02	Rear	38.098–38.148	———
Wheel rim runout		Axial	———	2.0
		Radial	———	2.0
Wheel axle runout		Front	———	0.25
		Rear	———	0.25
Tire size		Front	3.25S19 4PR	———
		Rear	3.75S18 4PR	———
Tire tread depth		Front	———	1.6
		Rear	———	2.0

SUSPENSION

Unit: mm

ITEM	STANDARD		LIMIT
Front fork stroke	150		———
Front fork spring free length	Short	———	✳122
	Long	———	✳368
Front fork oil level	✳186		———
Rear wheel travel	107		———
Swing arm pivot shaft runout	———		0.3

FUEL + OIL

ITEM	SPECIFICATION		NOTE
Fuel type	Gasoline used should be graded 85-95 octane or higher (Research Method). An unleaded or low-lead gasoline type is recommended.		
Fuel tank including reserve	15 L		
reserve	3.5 L		
Engine oil type	SAE 10W/40, API SE or SF		
Engine oil capacity	Change	✳2600 ml	
	Filter change	✳3000 ml	
	Overhaul	✳3200 ml	
Front fork oil type	Fork oil #15		
Front fork oil capacity (each leg)	R-side	✳169 ml	
	L-side	✳191 ml	with Anti-dive
Brake fluid type	SAE J1703		

Prepared by
SUZUKI MOTOR CO., LTD.

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Overseas Service Division
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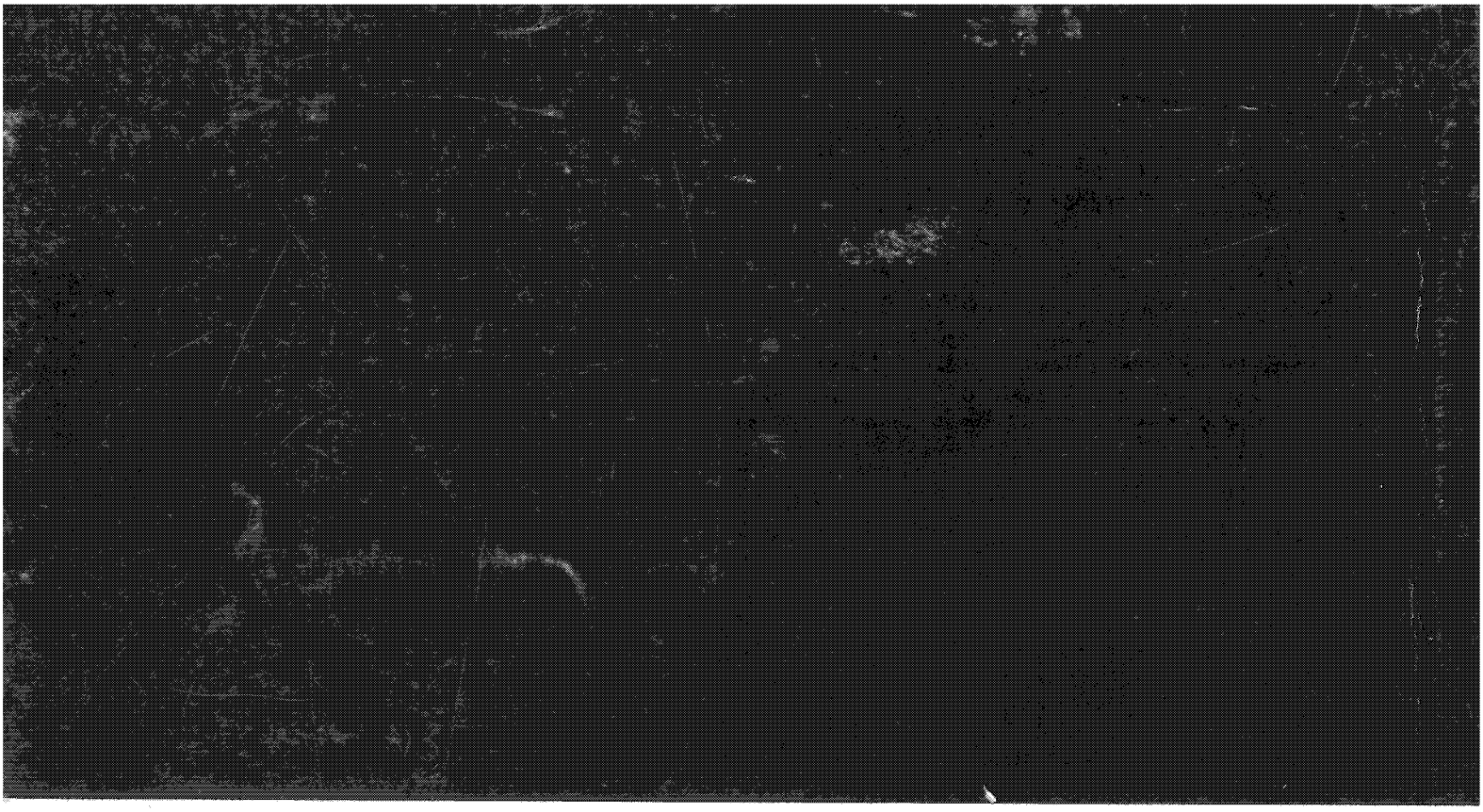

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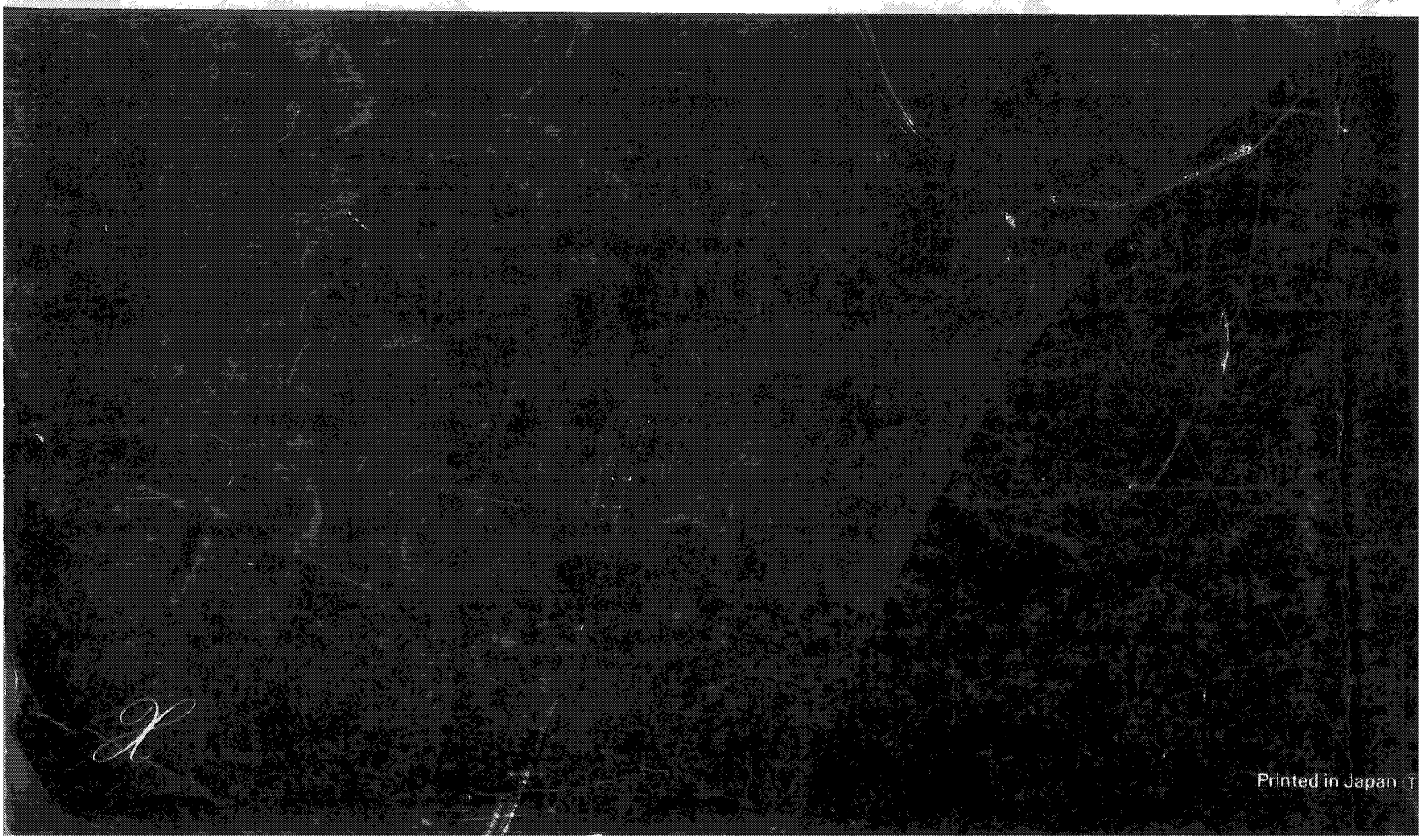

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