SUZUKI

RG250

SERVICE MANUAL

99500-12061-01E

FOREWORD

The SUZUKI RG250 has been developed as a new generation motorcycle. It is packed with highly advanced design concepts including automatic exhaust control system, a liquid cooling system, a C.D. ignition system, an positive damping fork and a full-floater suspension system. Combined with precise control and easy handling the RG250 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.

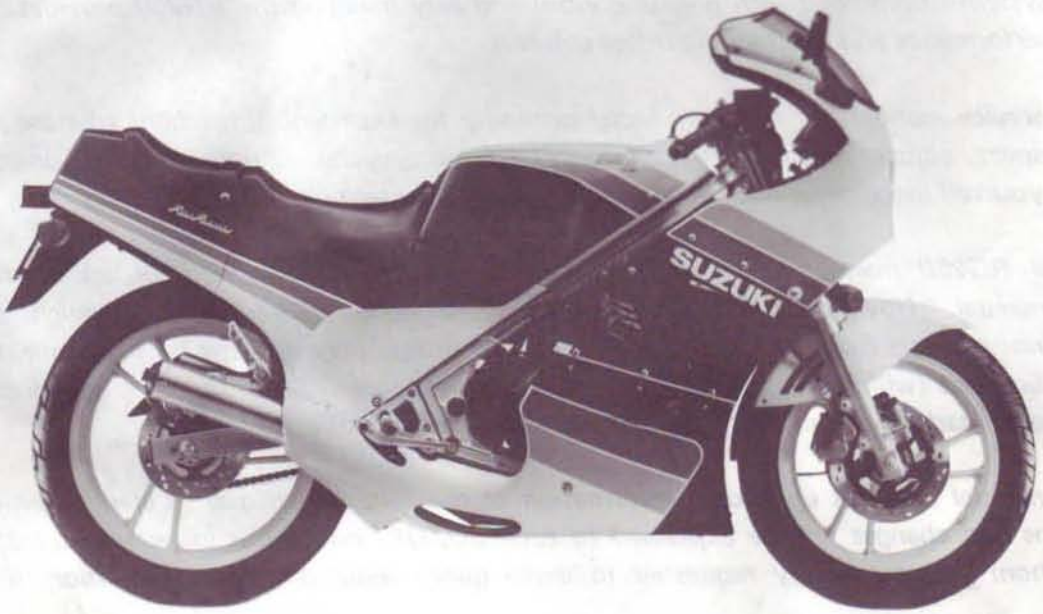
Model RG250 manufactured to standard specifications is the main subject matter of this manual. However, the RG250 machines distributed in your country might differ in minor respects from the standard-specification and, if they do, it is because some minor modifications (which are of no consequence in 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 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.

SUZUKI MOTOR CORPORATION

Motorcycle Technical Service Department

VIEW OF SUZUKI RG250 (FULL COWLING)



RIGHT SIDE

LEFT SIDE

GROUP INDEX

VIEW OF SUZUKI RG250 (HALF COWLING)

RIGHT SIDE

LEFT SIDE

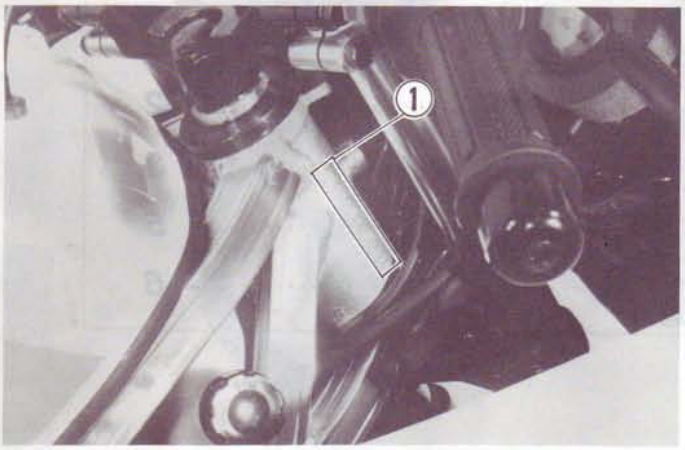
GENERAL INFORMATION

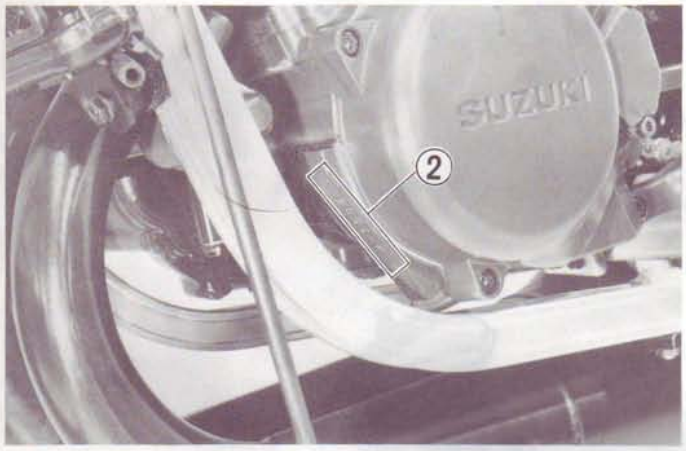
1

CONTENTS

SERIAL NUMBER LOCATION

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





FUEL, OIL AND COOLANT RECOMMENDATION

FUEL

Gasoline used should be graded 85 – 95 octane in Research Method and should be an unleaded or low-lead type where they are available.

ENGINE OIL

Use SUZUKI "CCI" oil or SUZUKI CCI Super oil. They are formulated to give best engine performance with least combustion chamber deposits, least preignition, maximum spark plug life and best lubrication. If they are not available, a good quality TWO-STROKE OIL (non-diluent type) should be used.

TRANSMISSION OIL

Use a good quality SAE 20W/40 malti-grade motor oil.

BRAKE FLUID

Specification and classification:	SAE J1703, DOT3 or DOT4

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

Use the fork oil #10.

COOLANT

Use an anti-freeze & Summer coolant compatible with aluminum radiator, mixed with distilled water only, at the ratio of 50 : 50.

WATER FOR MIXING

Use distilled water only. Water other than distilled water can corrode and clog the aluminum radiator.

ANTI-FREEZE & SUMMER COOLANT

The coolant performs as corrosion and rust inhibitor as well as anti-freeze. Therefore, the coolant should be used at all times even though the atmospheric temperature in your area does not go down to freezing point.

SUZUKI recommends the use of SUZUKI GOLDEN CRUISER 1 200 anti-freeze & summer coolant. If this is not available, use an equivalent which is compatible with aluminum radiator.

REQUIRED AMOUNT OF WATER/COOLANT

Solution capacity (total): 1 500 ml

30%	Water	1 050 ml
	Coolant	450 ml
40%	Water	900 ml
	Coolant	600 ml
50%	Water	750 ml
	Coolant	750 ml

CAUTION:

Mixing of anti-freeze & summer coolant should be limited to 60%. Mixing beyond it would reduce its efficiency. If the anti-freeze & summer coolant mixing ratio is below 30%, rust inhibiting performance is greatly reduced. Be sure to mix it above 30% even though the atmospheric temperature does not go down to freezing point.

Every new unit is filled with anti-leakage material, Bar's leak.

BREAKING-IN PROCEDURE

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:

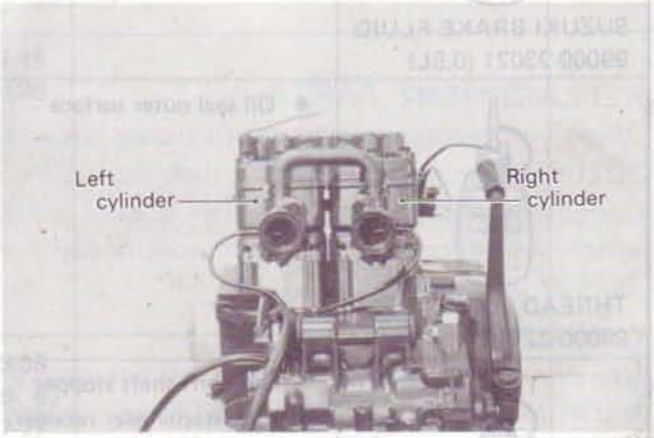
- Keep to these breaking-in engine speed limits:

Initial 800 km	Below 6 000 r/min
Up to 1 600 km	Below 8 000 r/min
Over 1 600 km	Below 12 000 r/min

- Upon reaching an odometer reading of 1 600 km you can subject the motorcycle to full throttle operation.
  However, do not exceed 12 000 r/min at any time.
- Do not maintain constant engine speed for an extended time period during any portion of the break-in. Try to vary the throttle position.

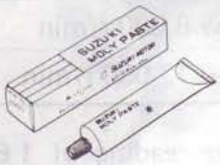
CYLINDER IDENTIFICATION

The two cylinders of this engine are identified as left and right cylinder (as viewed by the rider on the seat).



SPECIAL MATERIALS

The materials listed below are needed for maintenance work on the RG250, 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	3-21 3-33	• Wheel bearings	7-14 7-45
	• Throttle grip • Speedometer cable • Tachometer cable • Cushion lever bearing • Rear shock bearing	7-56 7-56	• Sprocket mounting drum bearing • Swing arm bearing and dust seal • Brake pedal shaft • Steering stem bearings and races • Clutch lever and release • Side stand	7-46 7-55 7-33
 SUZUKI MOLY PASTE 99000-25140	• Clutch release	3-27		
 SUZUKI BOND No. 1207B 99000-31140	• Mating surfaces of upper and lower crankcase • Mechanical seal	3-37 4- 8	• Water temperature gauge	4-10
 SUZUKI BRAKE FLUID 99000-23021 (0.5L)	• Brake fluid	2-14		
 THREAD LOCK "1322" 99000-32110	• Oil seal outer surface	3-36		
 THREAD LOCK SUPER "1303" 99000-32030	• Gearshift shaft stopper • Kick starter gear retainer bolt	3-31 3-32		

Material	Part	Page	Part	Page
 THREAD LOCK "1324" 99000-32120	• Generator rotor nut	3-38		
 THREAD LOCK SUPER "1333B" 99000-32020	• Gearshift cam guide screw • Gearshift pawl lifter screw • Countershaft bearing retainer	3-32 3-32 3-39		
SUZUKI BAR's LEAK 99000-24240	• To prevent leakage of cooling solution from small hole.			
SUZUKI GOLDEN CRUISER 1200 (2L) 99000-24120	• Cooling solution			
 THREAD LOCK "1360" 99000-32130	• Disc bolt	7-15 7-46		
 THREAD LOCK "1342" 99000-32050	• Stator securing screws. • Front fork damper rod bolt • Reed valve	3-38 6- 5 7-27 3-22		

PRECAUTION AND GENERAL INSTRUCTION

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 ..... The personal safety of the rider or bystanders may be involved. Disregarding this information could result in personal injury.

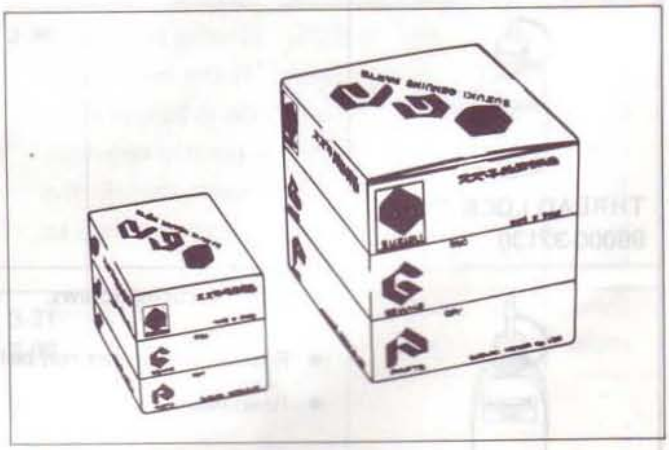
CAUTION ..... These instructions point out special service procedures or precautions that must be followed to avoid damaging the machine.

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

REPLACEMENT PARTS

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

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



SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2 010 mm
Overall width	675 mm
Overall height	1 175 mm
Wheelbase	1 355 mm
Ground clearance	150 mm ..... Half cowling
	130 mm ..... Full cowling
Dry mass	128 kg ..... Half cowling
	130 kg ..... Full cowling

ENGINE

Type	Two-stroke, water-cooled
Number of cylinders	2
Bore	54.0 mm
Stroke	54.0 mm
Piston displacement	247 cm^3
Compression ratio	7.0 : 1
Carburetor	MIKUNI VM28SS, twin
Air cleaner	Polyurethane foam element
Starter system	Primary kick
Lubrication system	SUZUKI "CCI"

TRANSMISSION

Clutch	Wet multi-plate type
Transmission	6-speed constant mesh
Gearshift pattern	1-down, 5-up
Primary reduction	3.000 (72/24)
Final reduction	2.785 (39/14)
Gear ratios, Low	2.230 (29/13)
2nd	1.562 (25/16)
3rd	1.210 (23/19)
4th	1.000 (21/21)
5th	0.863 (19/22)
Top	0.782 (18/23)
Drive chain	DAIDO DID520V-S or TAKASAGO RK520SMO-Z2, 110 links

CHASSIS

Front suspension	Posi damp fork system, telescopic, pneumatic/coil spring oil damped, spring preload fully adjustable, damping force 4-way adjustable
Rear suspension	Full-floating suspension system, pneumatic/coil spring, oil damped
Steering angle	30° (right & left)
Caster	64°25′
Trail	103 mm
Turning radius	3.1 m
Front brake	Disc brake
Rear brake	Disc brake
Front tire size	100/90 H16
Rear tire size	110/80 H18
Front fork stroke	130 mm
Rear wheel travel	125 mm
Front tire pressure	200 kPa (2.00 kg/cm²) (Normal solo riding)
Rear tire pressure	225 kPa (2.25 kg/cm²) (Normal solo riding)

ELECTRICAL

Ignition type	SUZUKI "PEI"
Ignition timing	15° B.T.D.C. at 6 000 r/min
Spark plug	NGK B9ES ..... E-01, 24, 25, 30 NGK BR9ES .... The others
Battery	12V 18.0 kC (5 Ah)/10 HR
Generator	Three-phase A.C. generator
Fuse	20A

CAPACITIES

Fuel tank including reserve	17 L
Reserve	4.7 L
Engine oil	1.2 L
Transmission oil	850 ml
Fork oil	346 ml
Cooling solution	1 500 ml

* These specifications are subject to change without notice.

PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

2

CONTENTS

PERIODIC MAINTENANCE SCHDULE

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. Traveling distances are expressed in term of kilometers or miles.

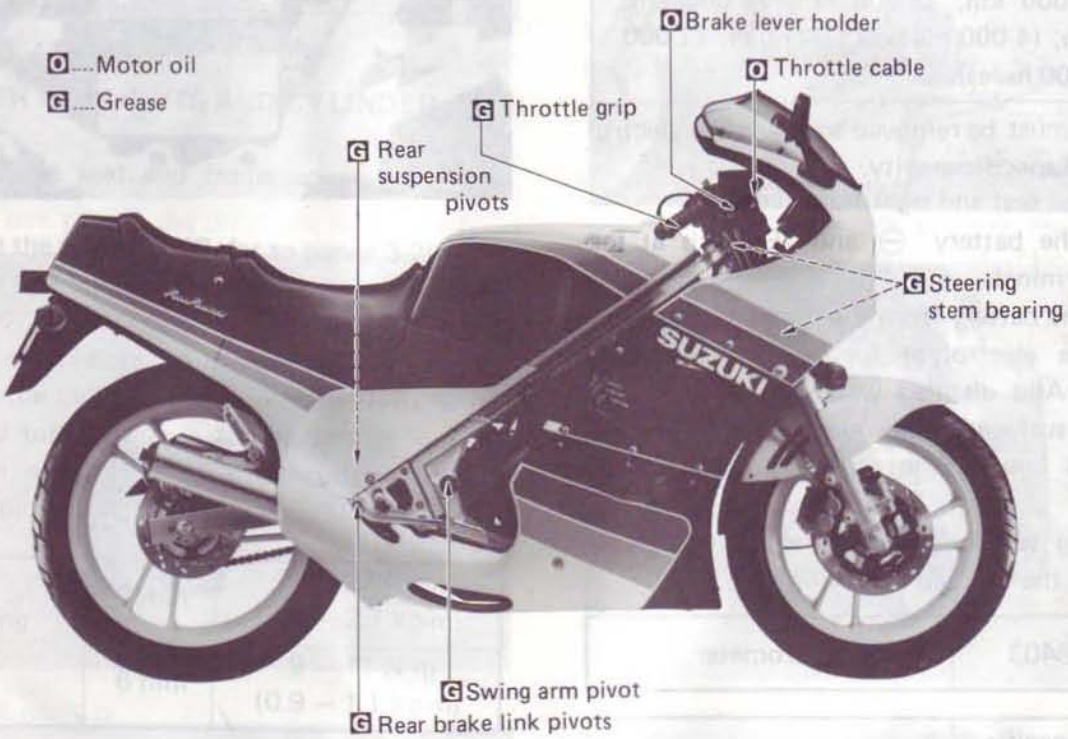
NOTE:
Vehicles operated under severe conditions may required more frequent servicing.

Item \ Interval	km	1 000	6 000	12 000	18 000	24 000
	miles	600	4 000	7 500	11 000	15 000
	months	2	12	24	36	48
Battery		–	I	I	I	I
Engine bolts and nuts		T	T	T	T	T
Cylinder head, cylinder and muffler		–	C	C	C	C
Spark plug		I	R	R	R	R
Air cleaner		Clean every 3 000 km				
Carburetor		I	I	I	I	I
Radiator hose		I	–	I	–	I
		Replace every 4 years				
Coolant		Change every 2 years				
Fuel line		I	I	I	I	I
		Replace very 4 years				
Clutch		I	I	I	I	I
Oil pump		I	I	I	I	I
Transmission oil		R	–	R	–	R
Drive chain		I	I	I	I	I
		Clean and lubricate every 1 000 km				
Brake		I	I	I	I	I
Brake hose		I	I	I	I	I
		Replace every 4 years				
Brake fluid		Replace very 2 years				
Steering		I	I	I	I	I
Front fork		–	–	I	–	I
		Inspect air pressure very 6 months				
Rear suspension		–	–	I	–	I
Tires		I	I	I	I	I
Chassis bolts and nuts		T	T	T	T	T

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

LUBRICATION POINTS

Proper lubrication is important for smooth operation and long life of each working part of your motorcycle and also for safe riding. It is a good practice to lubricate the machine after along rough ride and after getting it wet in the rain or after washing it. Major lubrication points are indicated below.



PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

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

BATTERY

Inspect 6 000 km, 12 000 km, 18 000 km, 24 000 km, (4 000 miles, 7 500 miles, 11 000 miles 15 000 miles)

The battery must be removed to check the electrolyte level and specific gravity.

- Remove the seat and right frame cover.
- Remove the battery ⊖ and ⊕ leads at the battery terminals.
- Remove the battery from the frame.
- Check the electrolyte for level and specific gravity. Add distilled water as necessary, to keep the surface of the electrolyte above the MIN level line but not above the MAX level line.

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

09900-28403	Hydrometer

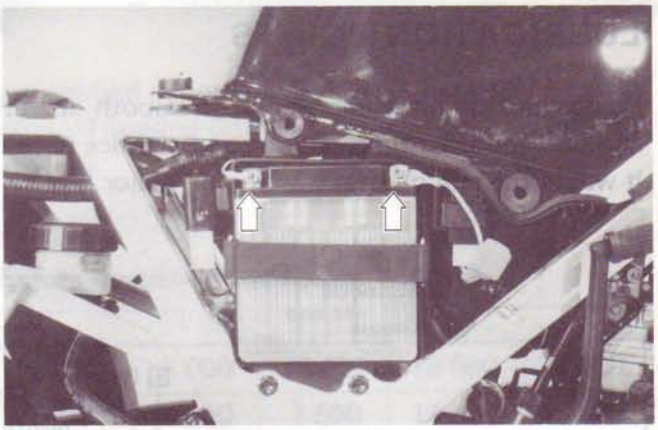
Standard specific gravity	1.28 at 20°C

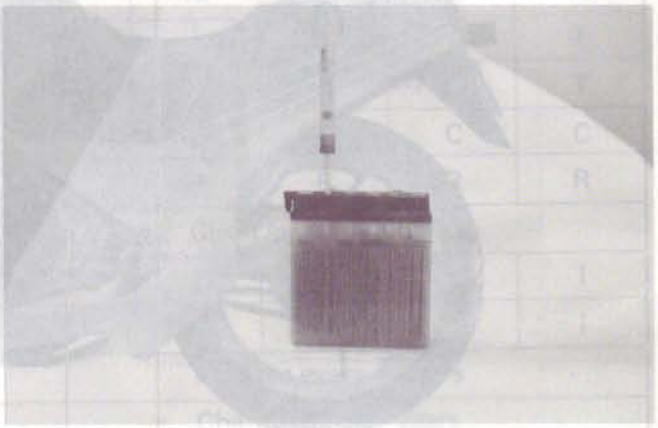
An S.G. reading of 1.22 (at 20°C) or under means that the battery needs recharging off the machine; take it off and charge it from a recharger. Charging the battery in place can lead to failure of the regulator/rectifier.

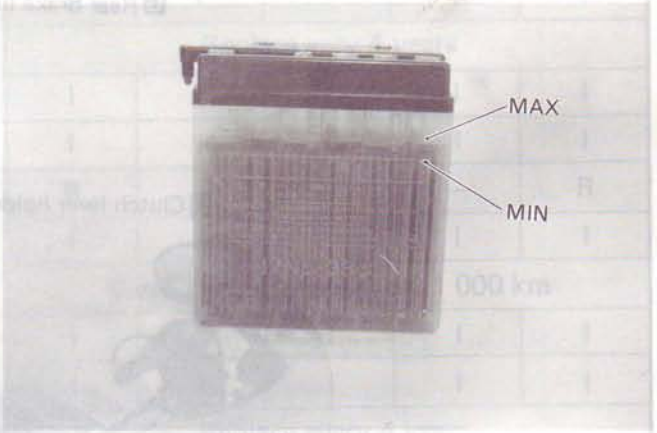
- To install the battery, reverse the procedure described above.

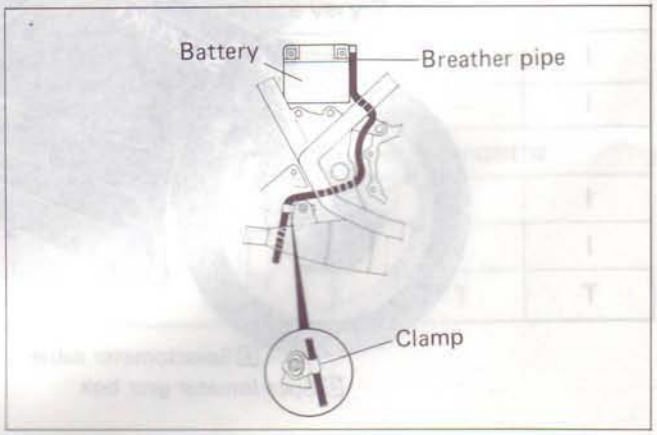
CAUTION:
When installing the battery lead wires, fix the ⊕ lead first and ⊖ lead last.

- Make sure that the battery breather pipe is tightly secured to the battery and is in good condition. Also confirm that it is routed as shown in the figure.









ENGINE BOLTS AND NUTS

Tighten 1 000 km, 6 000 km, 12 000 km, 18 000 km, 24 000 km, (600 miles, 4 000 miles, 7 500 miles, 11 000 miles, 15 000 miles)

CYLINDER HEAD NUTS AND CYLINDER NUTS

- Remove the seat and frame covers (right and left).
- Remove the fuel tank (Refer to papge 3-2)
- Remove the middle and lower cowling (Refer to page 7-2)
- Remove the radiator (Refer to page 4-3)
- Tighten the cylinder head bolts and nuts to the specified torque with a torque wrench sequentially in ascending numerical order with the engine cold.

Tightening torque	8 mm	23 – 27 N·m (2.3 – 2.7 kg-m)
	6 mm	9 – 11 N·m (0.9 – 1.1 kg-m)

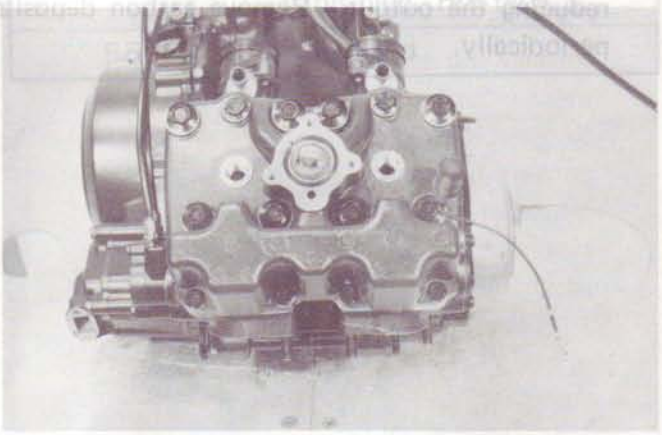
- Tighten the cylinder nuts to the specified torque.

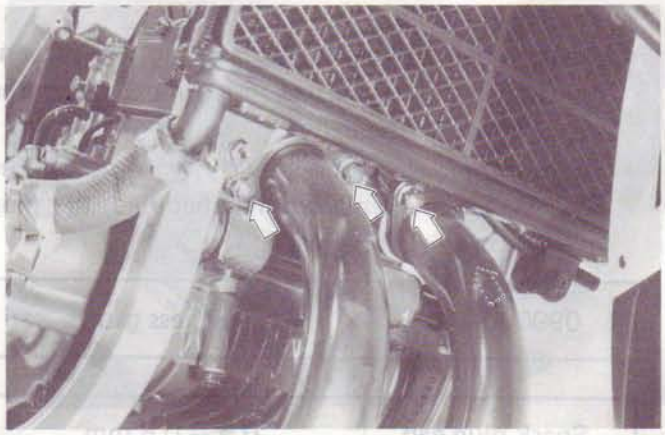
Tightening torque	6 – 9 N·m (0.6 – 0.9 kg-m)

EXHAUST PIPE NUTS

- Tighten the exhaust pipe nuts to the specified torque.

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

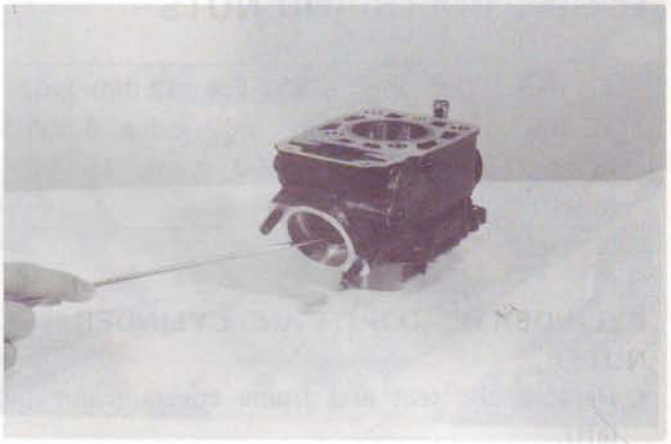




CYLINDER HEAD, CYLINDER AND MUFFLER

Clean 6 000 km, 12 000 km, 18 000 km, 24 000 km (4 000 miles, 7 500 miles, 11 000 miles, 15 000 miles).

- Carbon deposits in the combustion chamber of the cylinder head and at the piston crown will raise the compression ratio and may cause pre-ignition or overheating.
- Carbon deposited at the exhaust port of the cylinder will prevent the flow of exhaust gas, reducing the output. Remove carbon deposits periodically.

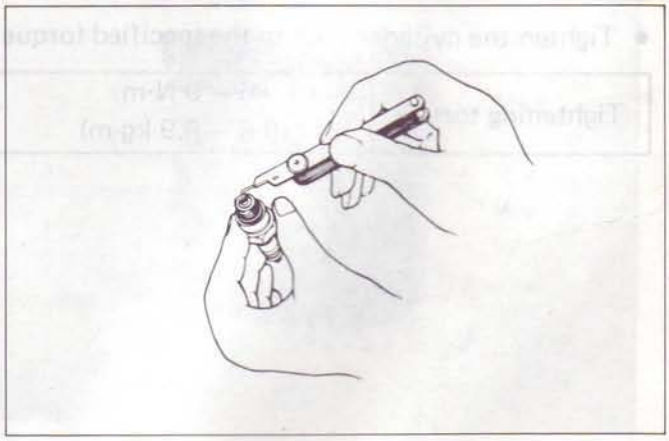


SPARK PLUG

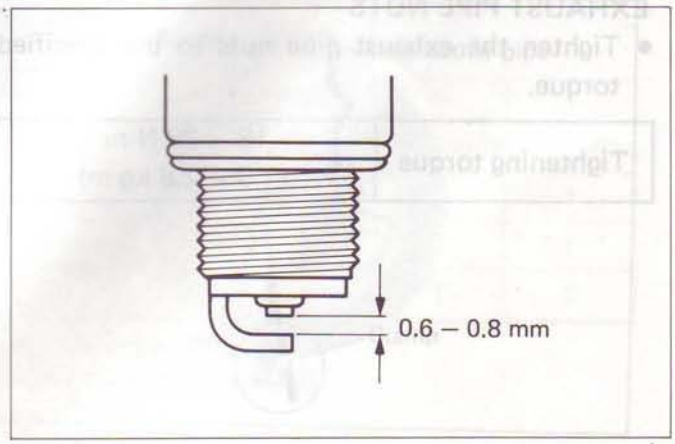
Inspect 1 000 km (600 miles)
Replace 6 000 km, 12 000 km, 18 000 km, 24 000 km, (4 000 miles, 7 500 miles, 11 000 miles, 15 000 miles)

Neglecting the spark plug eventually leads to difficult starting and poor performance. If the spark plug is used for a long period, the electrode gradually burns away and carbon builds up along the inside part. In accordance with the Periodic Maintenance Chart, the spark plug should be inspected or replaced.

- Carbon deposits on the spark plug will prevent good sparking and cause misfiring. Clean the deposits off periodically.
- If the center electrode is fairly worn down, the plug should be replaced. If scheduled, the plug gap sets to the proper gap.



09900-20803	Thickness gauge



Spark plug gap	0.6 – 0.8 mm

- Check spark plug for burnt condition. If abnormal, replace the plug as indicated right.

NOTE:
"R" type spark plug 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.

For E-01, 24, 25, 30

NGK	REMARKS
B8ES	If the standard plug is apt to get wet, replace with this plug. Hot type.
B9ES	Standard

For E-02, 06, 15, 16, 21, 39

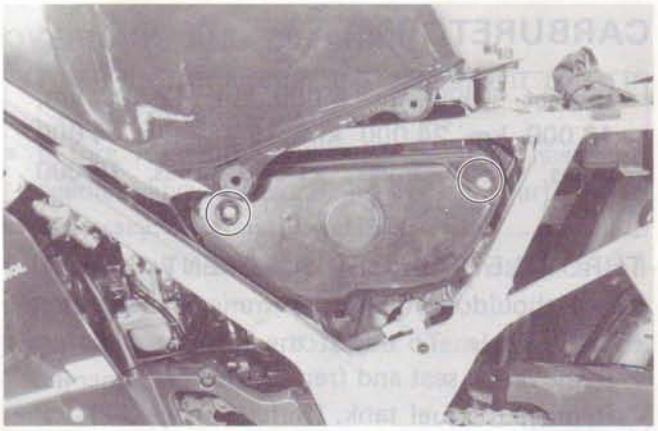
NGK	REMARKS
BR8ES	If the standard plug is apt to get wet, replace with this plug. Hot type.
BR9ES	Standard

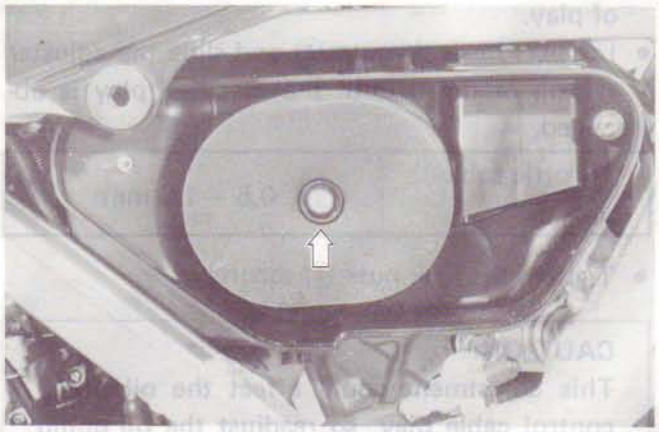
AIR CLEANER

Clean Every 3 000 km

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

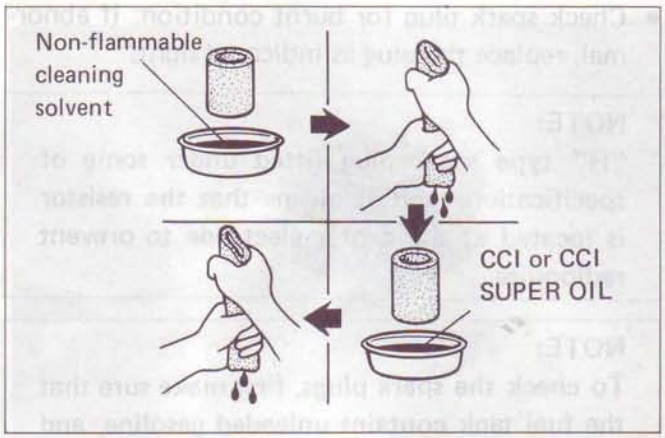
- Remove the right and left frame covers.
- Loosen the fuel tank securing bolts and then lift up rear side.
- Remove the screw and take out the air cleaner case cover.
- Remove a screw and take out the air cleaner element from the cleaner case.
- Separate the polyurethane foam element from the element frame.

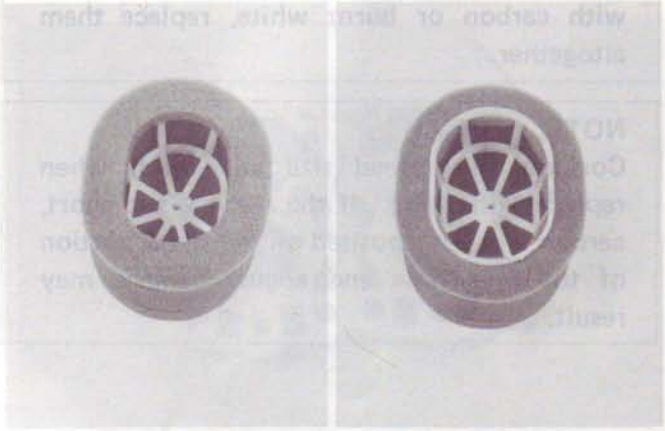




- Fill a washing pan of a proper size with non-flammable cleaning solvent. Immerse the element in the cleaning solvent and wash it clean.
- Squeeze the cleaning solvent out of the washed element by pressing it between the palms of both hands: do not twist or wring the element or it will develop tears.
- Immerse the element in SUZUKI CCI or CCI SUPER 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

CARBURETOR

Inspect 1 000 km, 6 000 km, 12 000 km, 18 000 km 24 000 km, (600 miles, 4 000 miles, 7 500 miles, 11 000 miles, 15 000 miles)

THROTTLE CABLE ADJUSTMENT

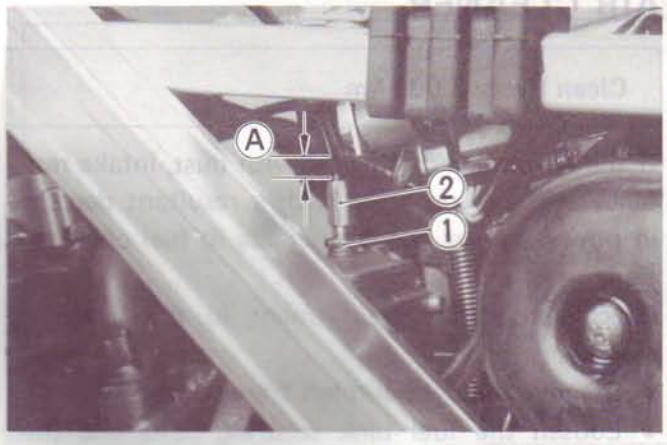
There should be 0.5 – 1.0 mm play Ⓐ on the throttle cable. To adjust the throttle cable play:

- Remove the seat and frame covers.
- Remove the fuel tank. (Refer to page 3-2)
- Tug on the throttle cable to check the amount of play.
- Loosen the lock nuts ① and slide the adjuster ② up or down until the specified play is obtained.

Throttle cable play Ⓐ	0.5 – 1.0 mm

- Tighten the lock nuts ① securely.

CAUTION:
This adjustment could affect the oil pump control cable play, so readjust the oil pump control cable play if necessary.



IDLE R/MIN ADJUSTMENT

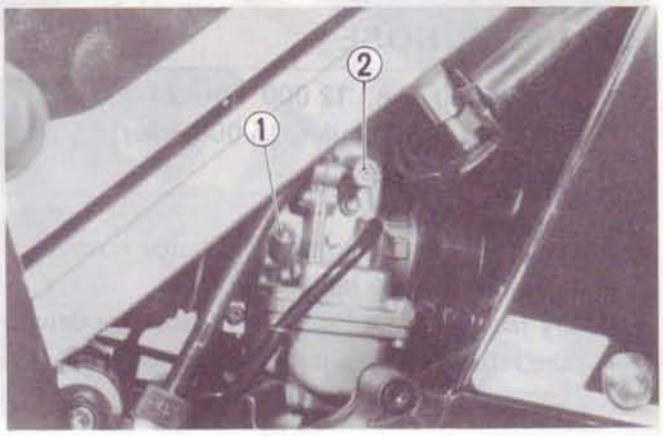
Adjust the engine idle speed as follows.

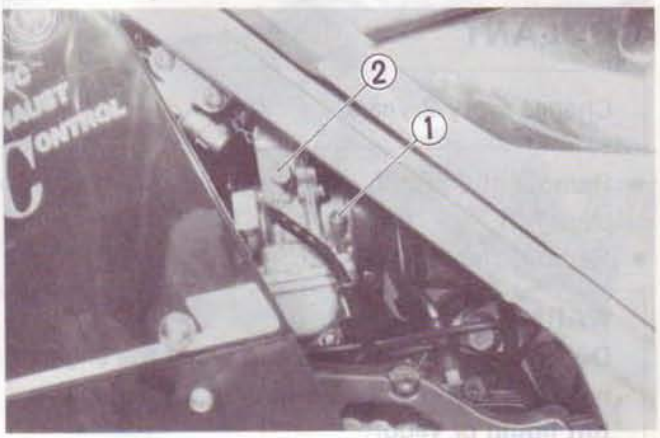
- Adjust the throttle cable adjuster on each carburetor. (See page 2-7)
- Start the engine and allow it to warm up.

> NOTE:
> **A warm engine means an engine which has been run averaging 50 km/h in top gear for 9 minutes.**

- Turn the pilot air screws ① (both right and left) down to the bottom, then turn them back out 1-3/4 turn.
- Remove the spark plug cap on one cylinder.
- Start the engine, which, of course, will fire on only one cylinder since the spark plug cap is off the cylinder, the other being adjusted.
- Adjust the throttle valve stop screw ② until the engine runs at its lowest r/min.
- Turn the air screw in and out within the range of 1/4 of a turn from the standard setting (1-3/4 turn back). The engine r/min will increase and decrease in accordance with the turning of the screw. Find the position where the engine runs regularly and smoothly at the lowest r/min, and fix the screw there.
- After adjusting the air screw, adjust the throttle valve stop screw again and determine the engine idling speed while running on one cylinder.
- When one cylinder has been adjusted, adjust the other cylinder in the same manner.
- After adjusting the two carburetors separately, operate both cylinders at the same time. Idling r/min will be rather high. Turn both throttle valve stop screws in the same amount and adjust the idling r/min.

Idling r/min	1 300 ± 150 r/min





OVERHAUL AND CLEANING

- Wash the carburetor and component parts in cleaning solvent after disassembly.
- Before reassembly, inspect the float level and needle valve. Adjust and replace parts when necessary. (Refer to page 5-3)
- Then blow compressed air through all jets and passages to make sure they are not clogged. Do not use wire, etc. to clean them, as this can damage the parts.

RADIATOR HOSE

Inspect 1 000 km, 12 000 km, 24 000 km (6 000 miles, 7 500 miles, 15 000 miles)
Replace every 4 years

- Inspect for leakage from the radiator hose itself and for kinks in the radiator hose.
- If any leakage from the radiator hose are detected, the radiator hose should be replaced.

COOLANT

Change every 2 years.

- Remove the middle and lower cowling (Refer to page 7-2)
- Remove the radiator cap.

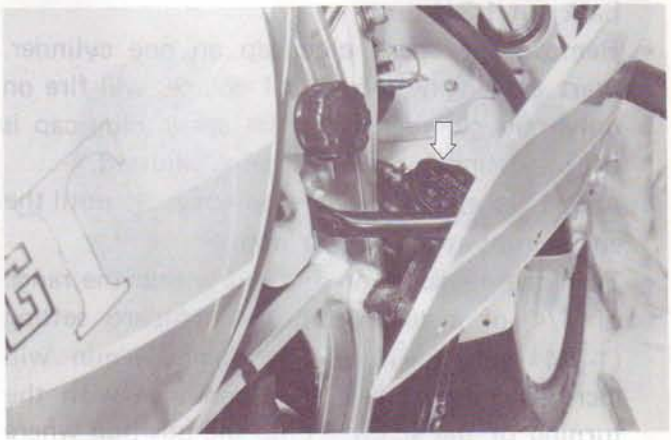
WARNING:
Do not open the radiator cap when the engine is hot, as you may be injured by escape in hot liquid or vapor.

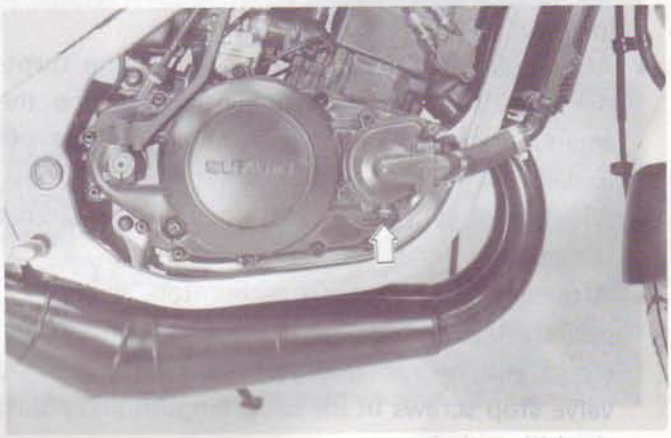
- Loosen the water drain plug at the water pump cover and drain the cooling system thoroughly while holding the motorcycle upright.

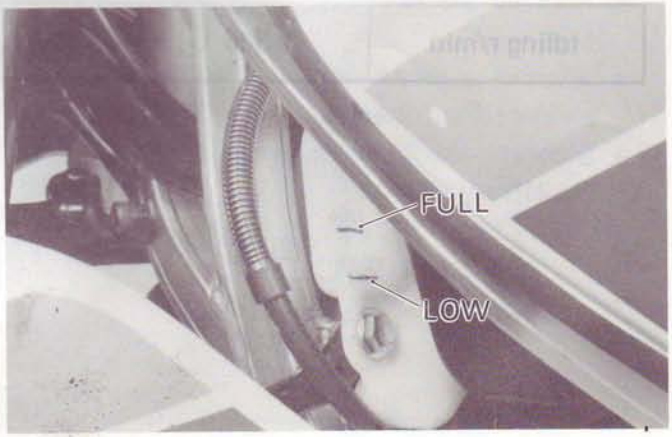
WARNING:
Cooling solution may be harmful if swallowed or if it comes in contact with skin or eyes. Contact your physician immediately. If swallowed induce vomiting. If cooling solution gets into the eyes or in contact with the skin, it should be flushed thoroughly with plenty of water.

- Disconnect the hose from the reservoir tank and drain the cooling solution in the reservoir tank.
- Connect the hose to the reservoir and replace the water drain plug.
- Fill the radiator up to the radiator inlet hole neck with the coolant.
  Close the radiator cap securely.
- Fill the reservoir tank up to the "FULL" line with the coolant.

NOTE:
About 1 500 ml of coolant may be needed when the radiator and reservoir tank.



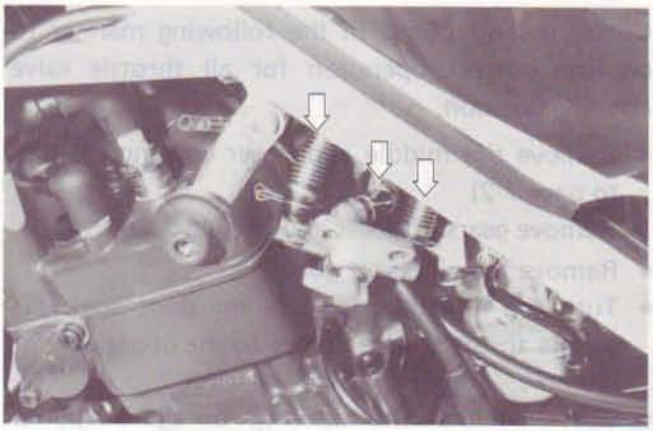




FUEL LINE

Inspect 1 000 km, 6 000 km, 12 000 km, 18 000 km, 24 000 km, (600 miles, 4 000 miles, 7 500 miles, 11 000 miles 15 000 miles)
Replace Every 4 years

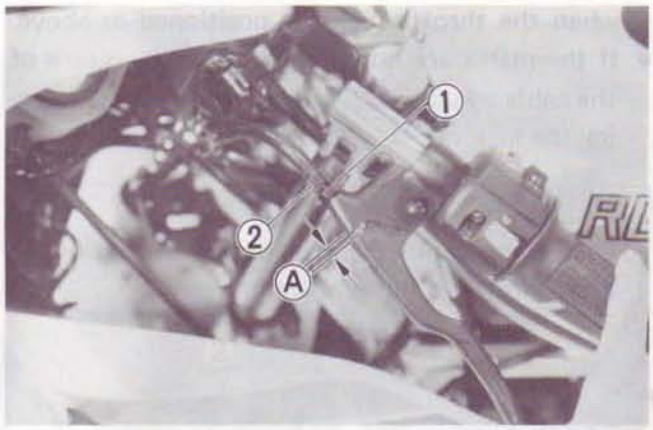
- Inspect the fuel line and connections for damage and fuel leakage.
- If any defects are found, the fuel line must be replaced.

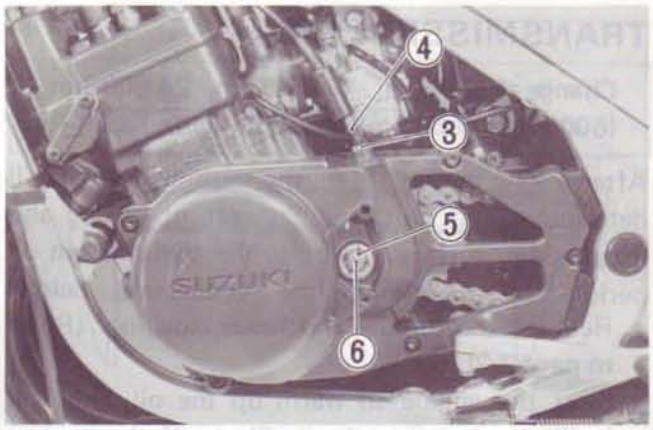


CLUTCH

Inspect 1 000 km, 6 000 km, 12 000 km 18 000 km, 24 000 km (600 miles, 4 000 miles, 7 500 miles, 15 000 miles)

- Remove the middle and lower cowling (Refer to page 7-2)
- Loosen the lock nut ① and screw the adjuster ② on the clutch lever holder all the way in.
- Remove the clutch release adjust cap.
- Loosen lock nut ③ and reposition adjuster ④ in place to introduce a necessary amount of play for the clutch lever.
- Loosen lock nut ⑤ and back adjusting screw ⑥ away two or three rotations.
- From that position of adjusting screw, slowly run it in until it begins to feel high resistance to turning. From this position, back it away 1/4 – 1/2 rotation, and secure it by tightening lock nut ⑤.
- Set the adjuster ④ to provide a clutch lever play Ⓐ of 4 mm, and tighten the lock nut ③.





Clutch cable play Ⓐ	4 mm

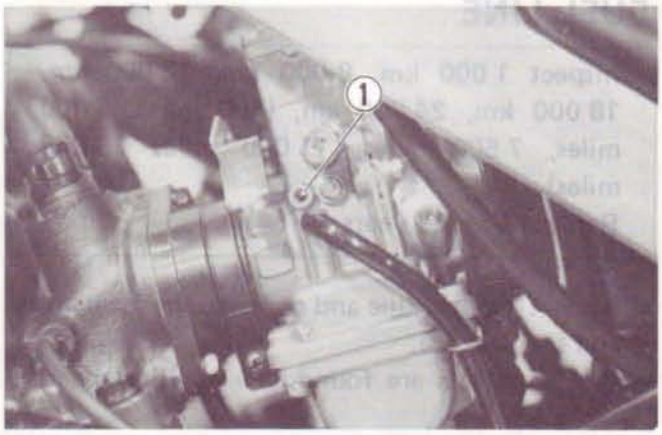
OIL PUMP

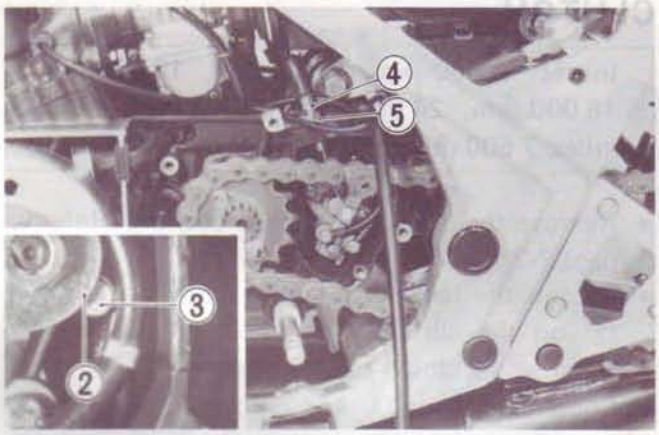
Inspect 1 000 km, 6 000 km, 12 000 km, 18 000 km, 24 000 km (600 miles, 4 000 miles, 7 500 miles, 11 000 miles, 15 000 miles)

The engine oil is fed by the oil pump to the engine. The amount of oil fed to it is regulated by engine speed and the oil pump control lever which is controlled by the amount of throttle opening.

Check the oil pump in the following manner to confirm correct operation for all throttle valve opening position.

- Remove the middle and lower cowling. (Refer to page 7-2)
- Remove gearshift lever and magneto cover.
- Remove the oil pump cover.
- Turn the throttle grip until the dent mark ① on the throttle valve comes to the upper part of the hole.
- Check whether the mark ② on the oil pump control lever is aligned with the index mark ③ when the throttle valve is positioned as above.
- If the marks are not aligned, adjust by means of the cable adjuster ④ to align them while loosening the lock nut ⑤.





CAUTION:
Oil pump cable adjustment must be done after throttle cable adjustment.

TRANSMISSION OIL

Change 1 000 km, 12 000 km, 24 000 km, (600 miles, 7 500 miles, 15 000 miles)

After a long period of use, the transmission oil will deteriorate and quicken the wear of sliding and interlocking surfaces. Replace the transmission oil periodically following the procedure below.

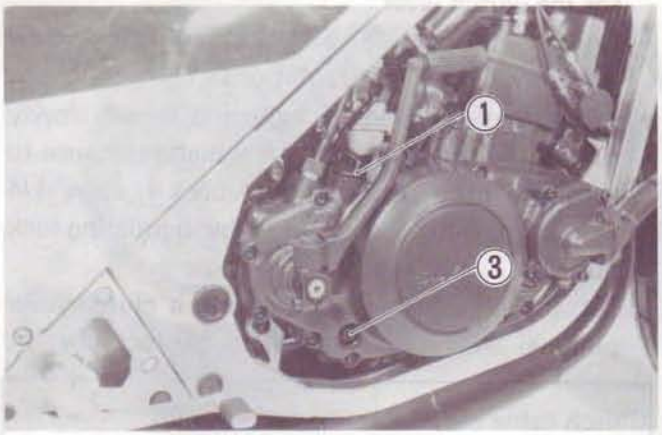
- Remove the middle and lower cowling. (Refer to page 7-2)
- Start the engine to warm up the oil, this will facilitate draining of oil. Shut off the engine.
- Unscrew the oil filler cap ① and drain plug ②, and drain the oil completely.
- Tighten the drain plug.

Tightening torque	20 – 25 N·m (2.0 – 2.5 kg-m)

- Supply a good quality SAE 20W/40 multi-grade motor oil.

Capacity	850 ml

- Check the oil level with the oil level screw ③ after running engine for 3 minutes.



DRIVE CHAIN

Inspect 1 000 km, 6 000 km, 12 000 km, 18 000 km, 24 000 km (600 miles, 4 000 miles, 7 500 miles, 11 000 miles, 15 000 miles)
Clean and Lubricate Every 1 000 km

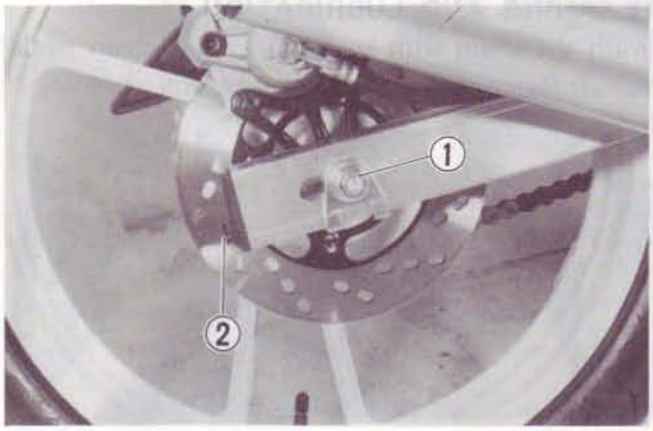
Visually inspect the drive chain for the possible malconditions listed below.

1. Loosen pins
2. Damaged rollers
3. Rusted links
4. Twisted or seized links
5. Excessive wear
6. Damaged oil seal or O ring.

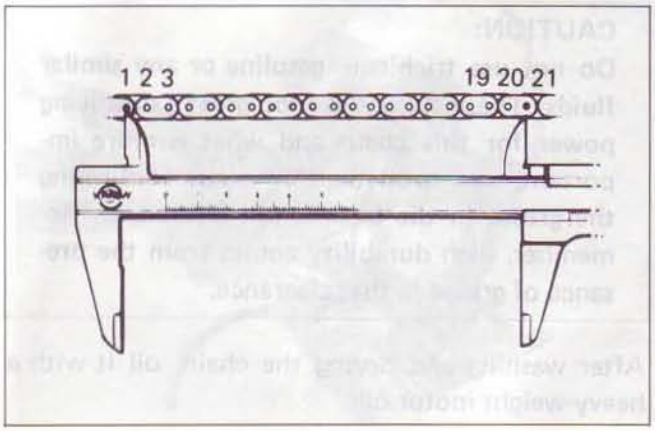
If any defects are found, the drive chain must be replaced.

CHAIN WEAR CHECKING

- Loosen axle nut ①.
- Adjust the drive chain carefully by tightening the adjusting bolt ②.



- Count out 21 pins on the chain and measure the distance between the two. If the distance exceeds 319.4 mm, the chain must be replaced.

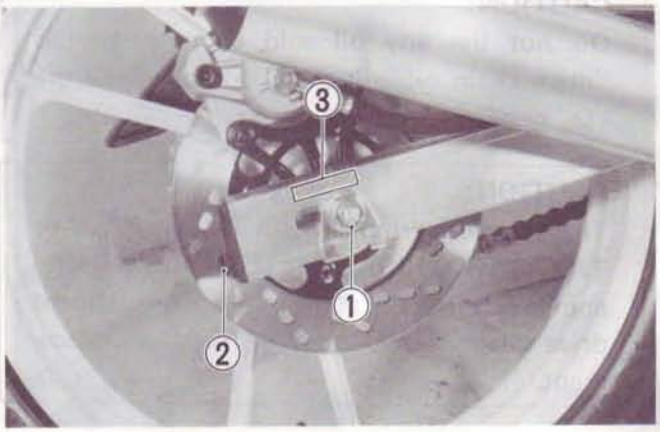


	Service Limit
Drive chain 20 pitch length	319.4 mm

- After measuring the drive chain, tighten the axle nut ① securely.

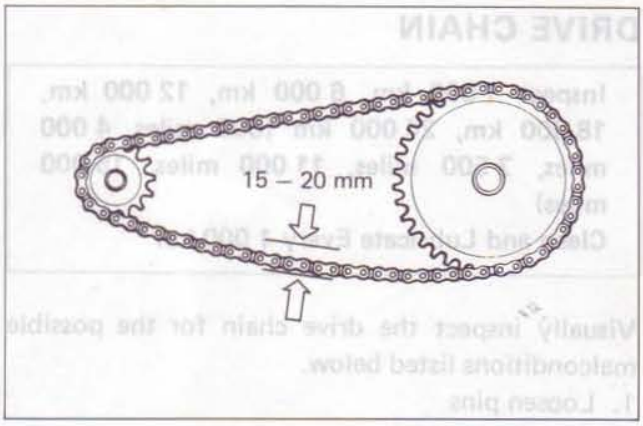
CHAIN SAG ADJUSTING

- Loosen the axle nut ①.



- Turn the adjusting bolt ② until the chain has 15 – 20 mm of sag at the middle between engine and rear sprockets.
  The mark ③ on both chain adjust indicator 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.

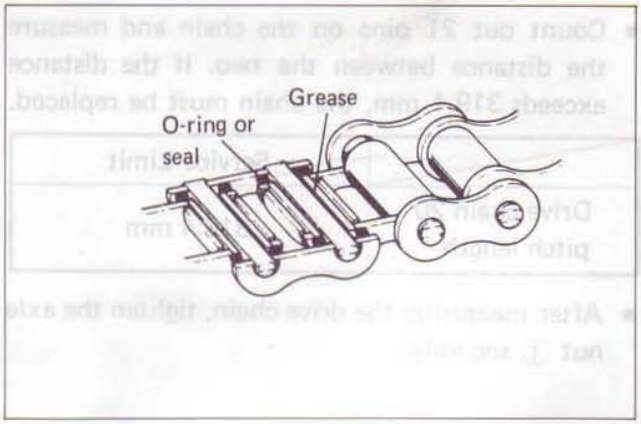
Drive chain sag	15 – 20 mm



CLEANING AND LUBRICATION

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

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



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

CAUTION:
Do not use any oil sold commercially as "drive chain oil". Such oil too can spoil the "O" rings.

CAUTION:
The standard drive chain is D.I.D.520V-S or TAKASAGO RK520SMO-Z2. SUZUKI recommends that the above-mentioned standard drive chain should be used for the replacement.

BRAKES

Inspect 1 000 km, 6 000 km, 12 000 km, 18 000 km, 24 000 km, (600 miles, 4 000 miles, 7 500 miles, 11 000 miles, 15 000 miles)
Change fluid Every 2 year.
Replace hose Every 4 year.

BRAKE FLUID LEVEL

- Check the brake fluid level by observing the lower limit line on the brake fluid reservoir.
- When the level is below the lower limit line, replenish with brake fluid that meets the following specification.

Specification and Classification	SAE J1703, DOT3 or DOT4

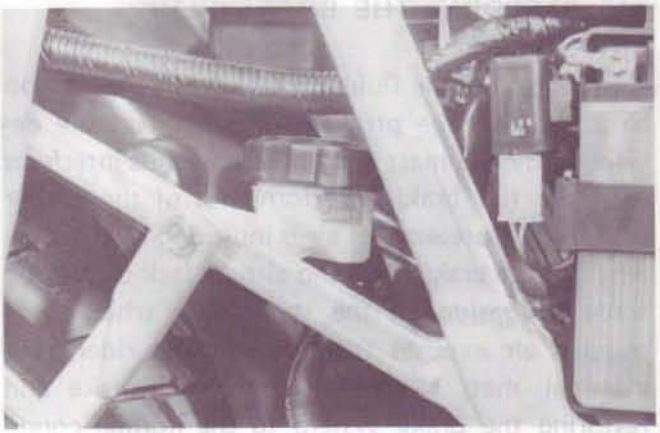
99000-23021	SUZUKI Brake fluid

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

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

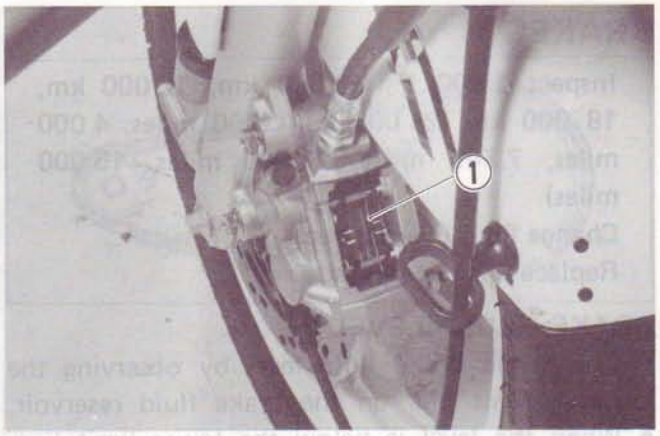
BRAKE LIGHT SWITCHES

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 squeesed, or the brake pedal is depressed.



BRAKE PADS

Wearing condition of brake pads can be checked by observing the limit line ① marked on the pad. When the wear exceeds the limit line, replace the pads with new ones. (See page 7-3 and 7-34)



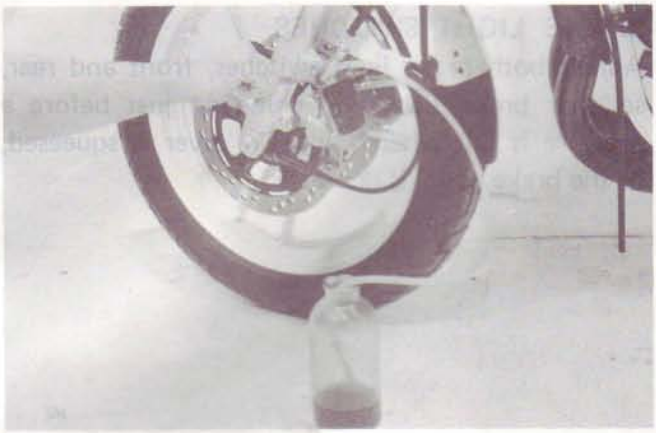
AIR BLEEDING THE BRAKE FLUID CIRCUIT

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 damper to which such trapped air exposes the machine and rider, it is essential that, after remounting the brake and restoring the brake system to the normal condition, the brake fluid circuit be purged of air in the following manner:

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

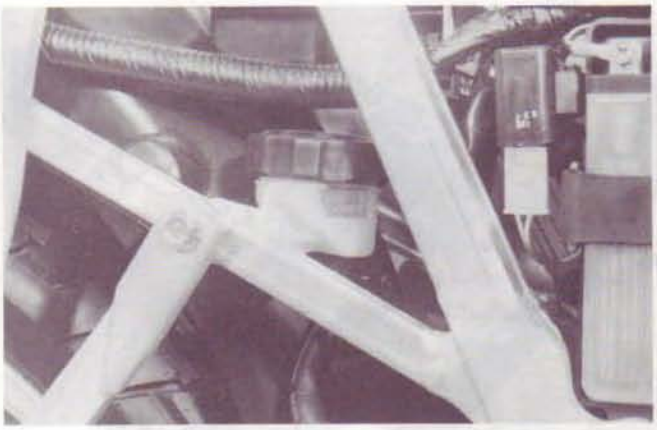
Bleeder valve tightening torque	7 – 9 N·m (0.7 – 0.9 kg-m)

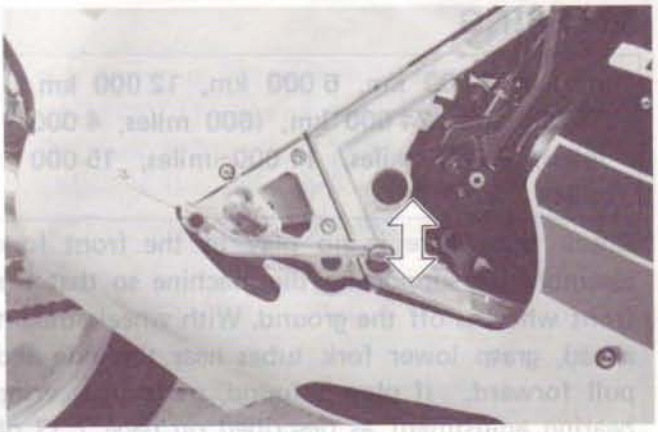
- Front brake: Bleed the air from caliper as following order.
  ① Left caliper – ② Right caliper



- 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.

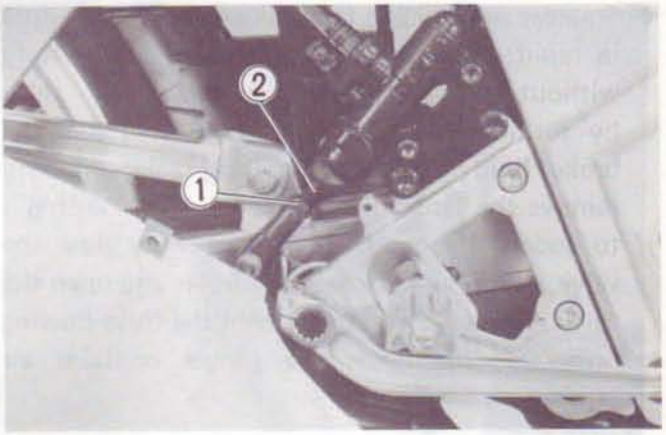
CAUTION:
Handle the brake fluid with care: the fluid reacts chemically with paint, plastics, rubber materials, etc.

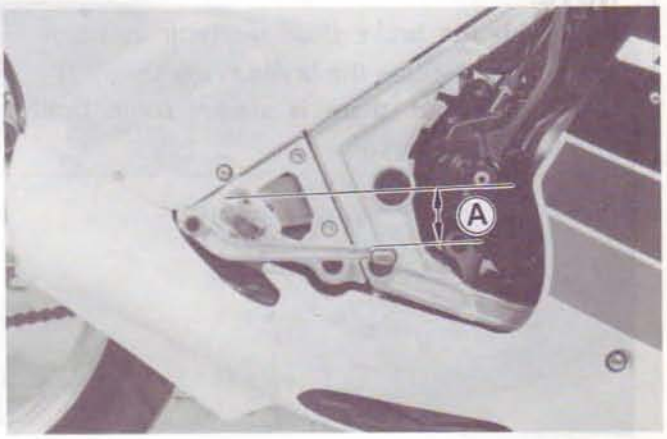
- Differences between front and rear are that the master cylinder is actuated by a pedal.

BRAKE PEDAL HEIGHT

- Remove the seat and right frame cover.
- Loosen lock nut ① and rotate push rod ② to locate brake pedal 50 mm Ⓐ below the top face of the footrest.
- Retighten lock nut ①.

Brake pedal height Ⓐ	50 mm





STEERING

Inspect 1 000 km, 6 000 km, 12 000 km, 18 000 km, 24 000 km, (600 miles, 4 000 miles, 7 500 miles, 11 000 miles, 15 000 miles)

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 on page 7-33 of this manual.

FRONT FORK

Inspect 12 000 km, 24 000 km, (7 500 miles, 15 000 miles)
Inspect air pressure very 6 months

Adjust and replace the part when necessary (Refer to page 7-22)

AIR PRESSURE

- Place the motorcycle by jack and side stand, keep the front wheel off the ground.
- Remove the valve cap ①.

- Set the air gauge to the valve ②. Set the hand pump to the valve ③, turn the valve handle ④ clockwise, and charge the air. Let the air out by loosening the handle ④ till the specified air pressure is left inside.

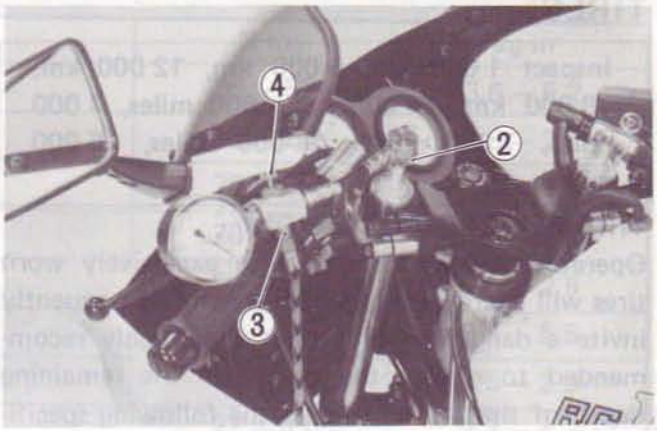
S.T.D. Air pressure	0 kPa 0 kg/cm²

CAUTION:
Do not charge air more than 250 kPa (2.5 kg/cm²).

09940-44120	Air pressure gauge

Adjust the both damping force adjuster to same position.

S.T.D. position	2



REAR SUSPENSION

Inspect 12 000 km, 24 000 km (7 500 miles, 15 000 miles)
Check air pressure every 6 months

- Inspect the operation of rear suspension.
- Replace the part when necessary. (Refer to page 7-47)

AIR PRESSURE

- Remove the seat and left frame cover.
- Place the motor cycle by jack and side stand, and keep the rear wheel off the ground.
- Remove the valve cap .
- Set the air gauge to the valve ①.
  Set the hand pump to the valve ②, turn the valve handle ③ clockwise, and charge the air. Let the air out by loosening the handle ③ till the specified air pressure is left inside.

S.T.D. Air pressure	50 kPa (0.5 kg/cm²)

CAUTION:
Do not charge air more than 100 kPa (1.0 kg/cm²)

09940-44120	Air pressure gauge

TIRES

Inspect 1 000 km, 6 000 km, 12 000 km, 18 000 km, 24 000 km, (600 miles, 4 000 miles, 7 500 miles, 11 000 miles, 15 000 miles)

TIRE THREAD CONDITION

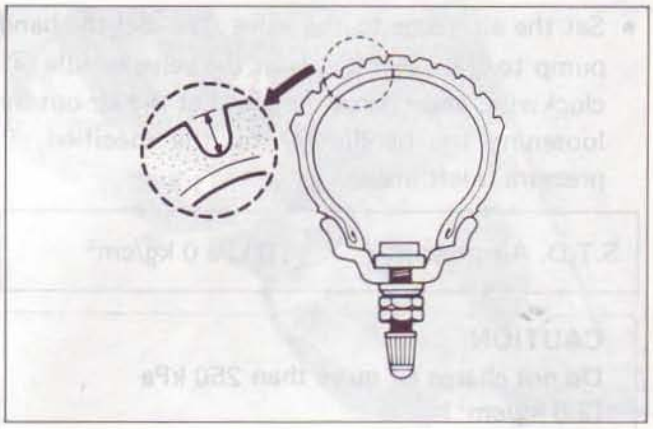
Operating the motorcycle with excessively worn tires will decrease riding stability and consequently invite a dangerous situation. It is highly recommended to replace the tire when the remaining depth of tire thread reaches the following specifications.

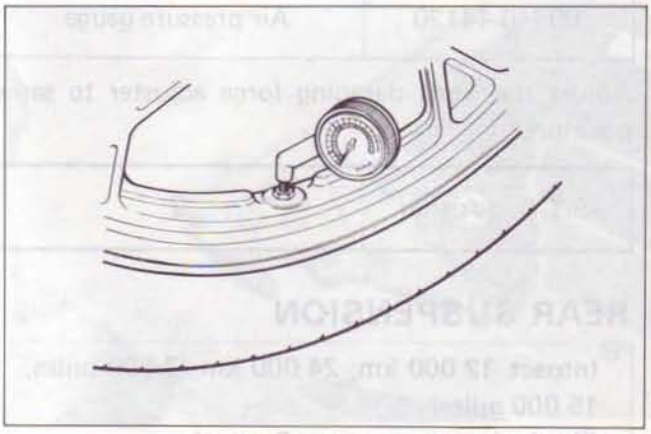
FRONT	REAR
1.6 mm	2.0 mm

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.

CAUTION:
The standard tire fitted on the motorcycle is 100/90 H16 for front and 110/80 H18 for rear. The use of a tire other than the standard may cause instability. It is highly recommended to use a SUZUKI Genuine Tire.





Cold inflation tire pressure is as follows.

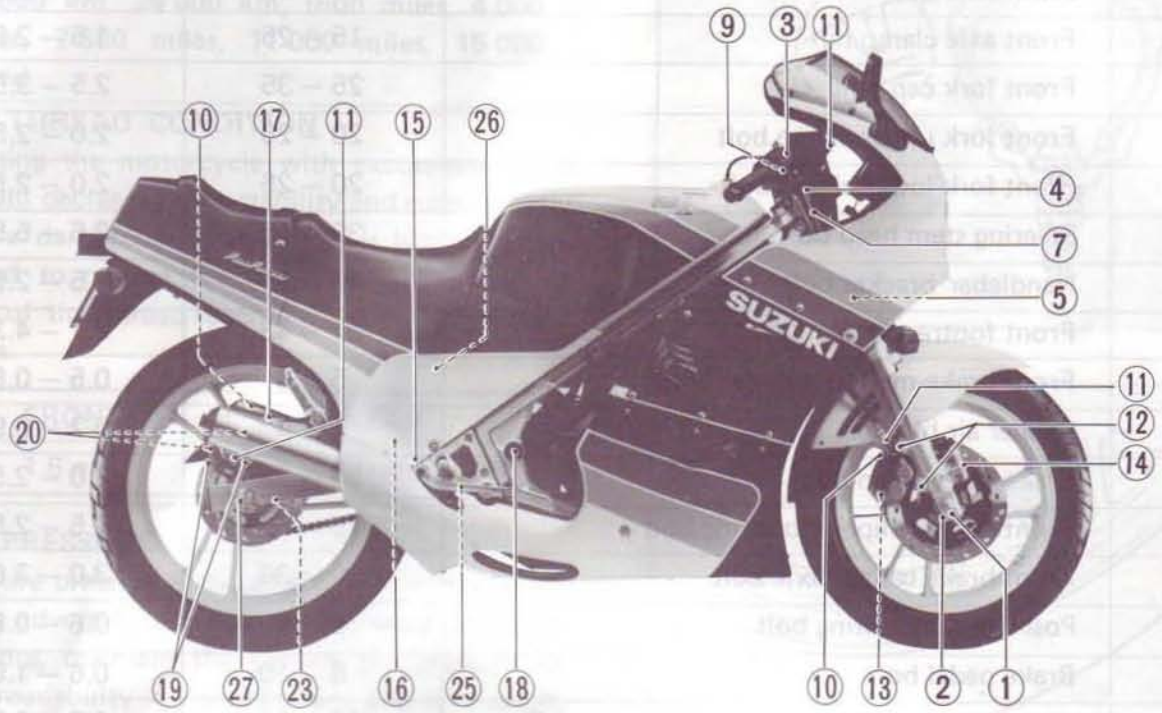
	FRONT		REAR	
	kPa	kg/cm²	kPa	kg/cm²
Solo riding	200	2.00	225	2.25
Dual riding	200	2.00	250	2.50

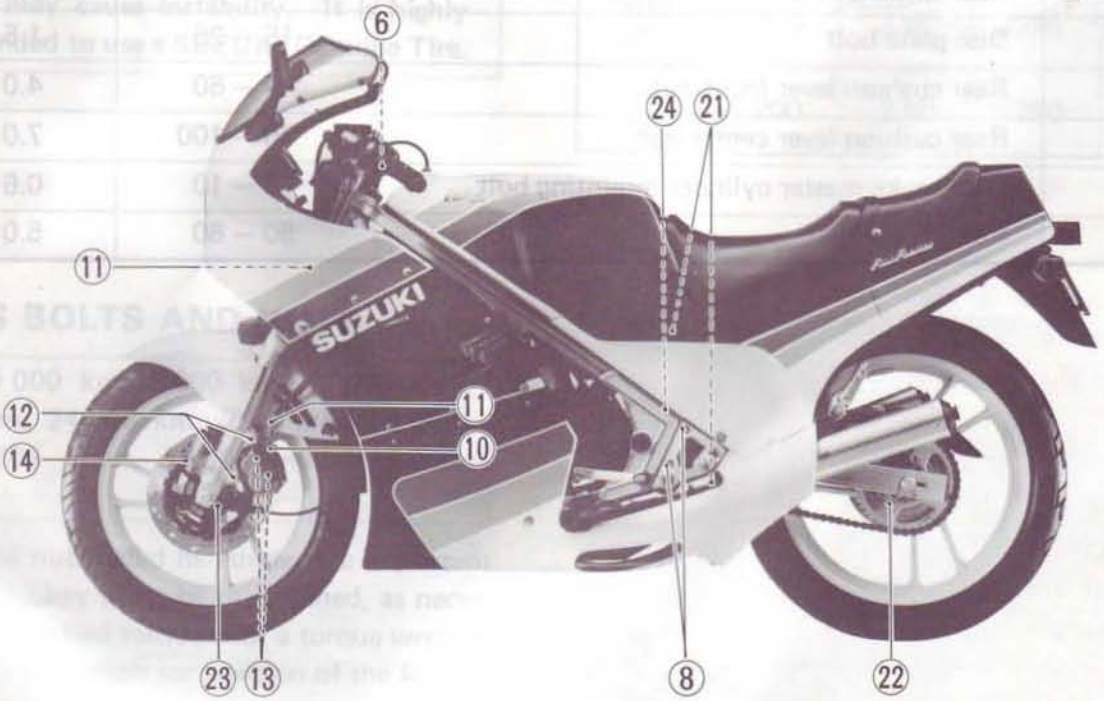
CHASSIS BOLTS AND NUTS

Tighten 1 000 km, 6 000 km, 12 000 km, 18 000 km, 24 000 km, (600 miles, 4 000 miles, 7 500 miles, 11 000 miles, 15 000 miles)

The bolts and nuts listed hereunder are important safety parts. They must be retightened, as necessary, to the specified torque with a torque wrench. Refer to the photograph for position of the following bolts and nuts.

	ITEM		N·m	kg-m
①	Front axle nut		36 – 52	3.6 – 5.2
②	Front axle clamp nut		15 – 25	1.5 – 2.5
③	Front fork cap bolt		25 – 35	2.5 – 3.5
④	Front fork upper clamp bolt		20 – 25	2.0 – 2.5
⑤	Front fork lower clamp bolt		20 – 25	2.0 – 2.5
⑥	Steering stem head bolt		35 – 55	3.5 – 5.5
⑦	Handlebar bracket bolt		15 – 25	1.5 – 2.5
⑧	Front footrest bolt		27 – 43	2.7 – 4.3
⑨	Front brake master cylinder bolt		5 – 8	0.5 – 0.8
⑩	Caliper air bleeder		7 – 9	0.7 – 0.9
⑪	Brake hose union bolt		20 – 25	2.0 – 2.5
⑫	Front brake caliper mounting bolt		15 – 25	1.5 – 2.5
⑬	Front brake caliper axle bolt		30 – 36	3.0 – 3.6
⑭	Posi-damp mounting bolt		6 – 8	0.6 – 0.8
⑮	Brake pedal bolt		6 – 10	0.6 – 1.0
⑯	Rear torque link nut	Front	18 – 28	1.8 – 2.8
⑰		Rear	40 – 60	4.0 – 6.0
⑱	Rear swingarm pivot nut		50 – 80	5.0 – 8.0
⑲	Rear brake caliper mounting bolt		15 – 25	1.5 – 2.5
⑳	Rear brake caliper axle bolt		28 – 32	2.8 – 3.2
㉑	Rear shock absorber fitting bolt (Upper & Lower)		40 – 60	4.0 – 6.0
㉒	Rear sprocket nut		20 – 35	2.0 – 3.5
㉓	Disc plate bolt		15 – 25	1.5 – 2.5
㉔	Rear cushion lever front nut		40 – 60	4.0 – 6.0
㉕	Rear cushion lever center nut		70 – 100	7.0 – 10.0
㉖	Rear brake master cylinder mounting bolt		6 – 10	0.6 – 1.0
㉗	Rear axle nut		50 – 80	5.0 – 8.0





ENGINE

CONTENTS

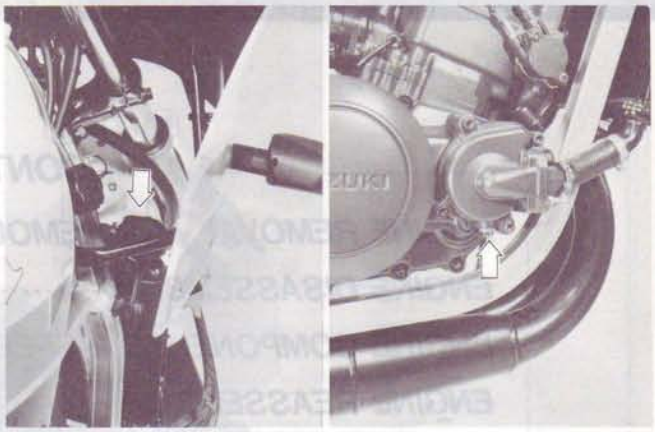
3

ENGINE REMOVAL AND REMOUNTING

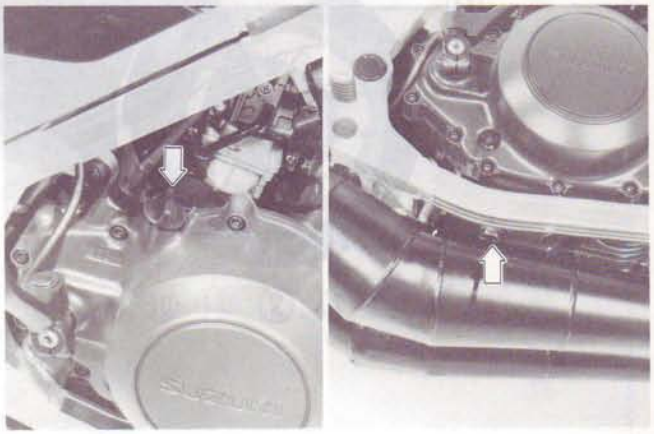
ENGINE REMOVAL

The procedure of engine removal is sequentially explained in the following step.

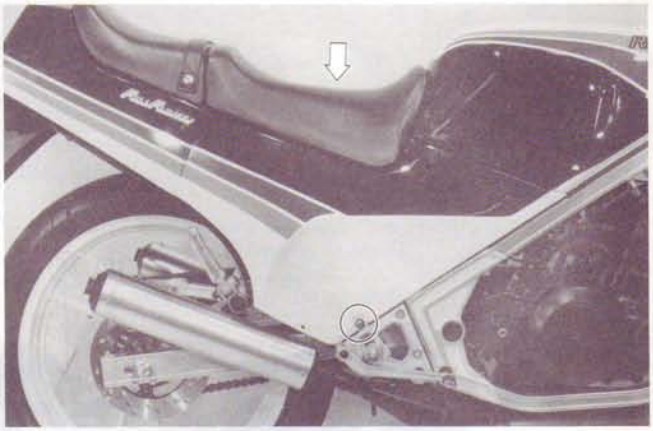
- Remove the middle and lower cowling (See page 7-1)
- Place the pan under the coolant drain plug hole.
- Remove the drain plug and radiator cap, and drain coolant completely.



- Place an oil pan under the engine, and remove the oil filler cap and oil drain plug to drain out transmission oil.

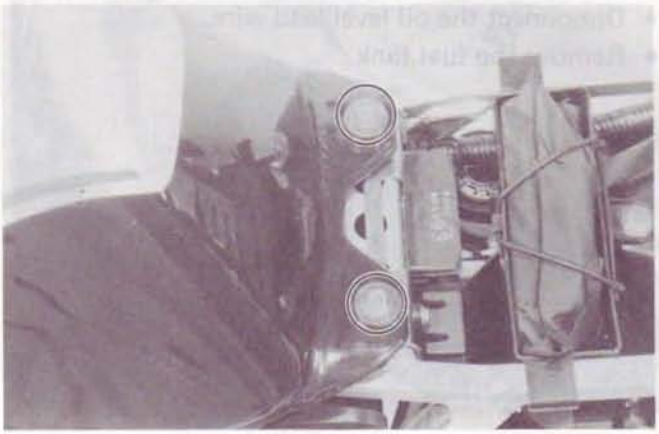


- Remove the seat and frame covers.

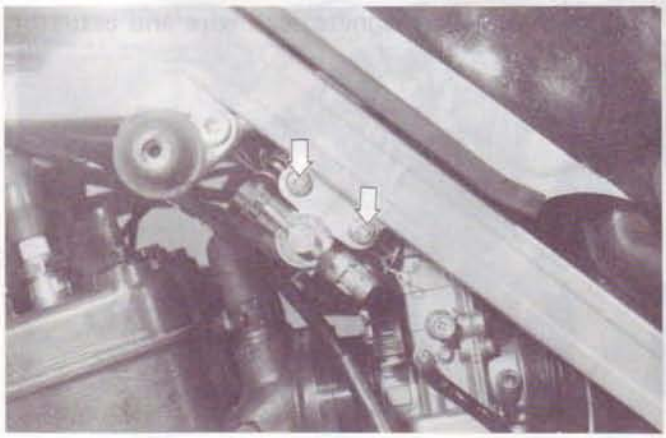


- Remove the battery.

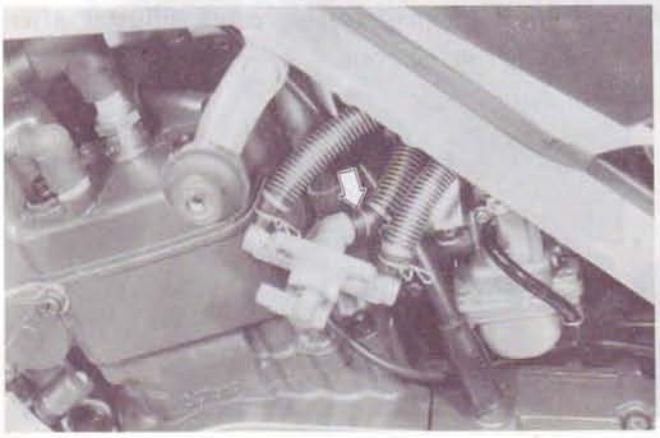
- Remove the fuel tank mounting bolts.



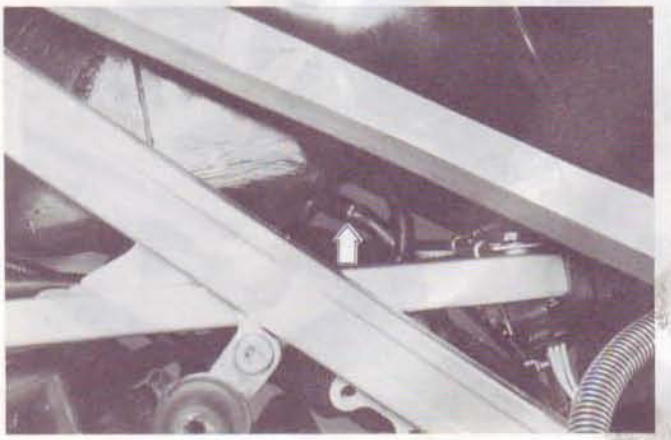
- Remove the fuel cock mounting screws.



- Disconnect the fuel hose which joints carburetor and fuel cock.

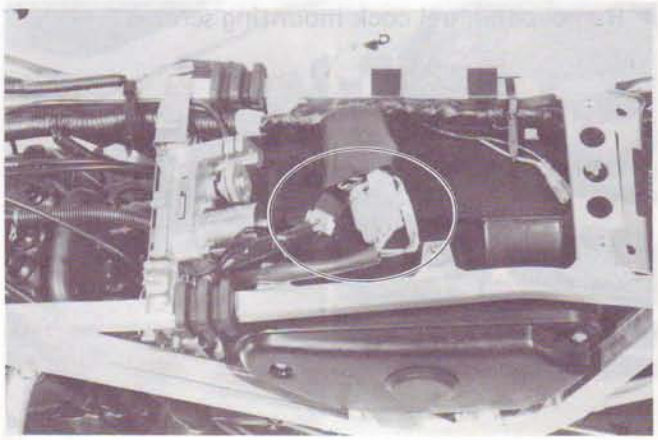


- Disconnect the oil hose and plug the oil outlet.

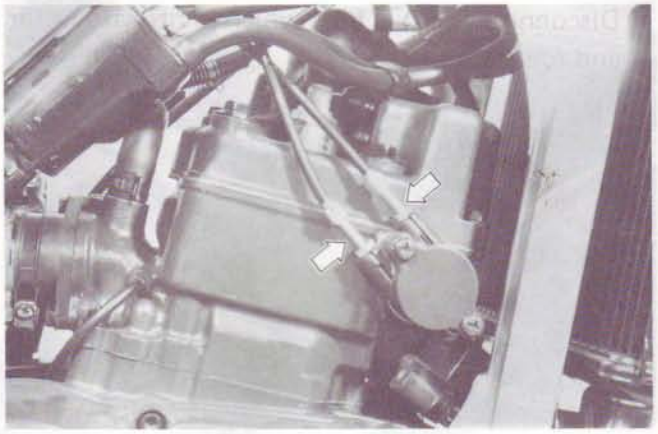


- Disconnect the oil level lead wire.
- Remove the fuel tank.

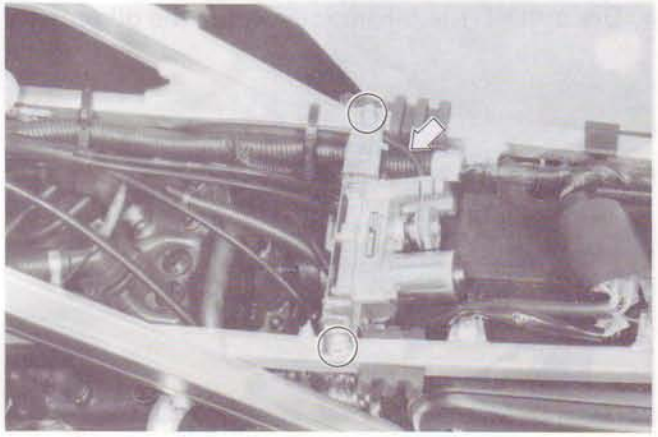
- Disconnect the magneto lead wire and actuator lead wire.



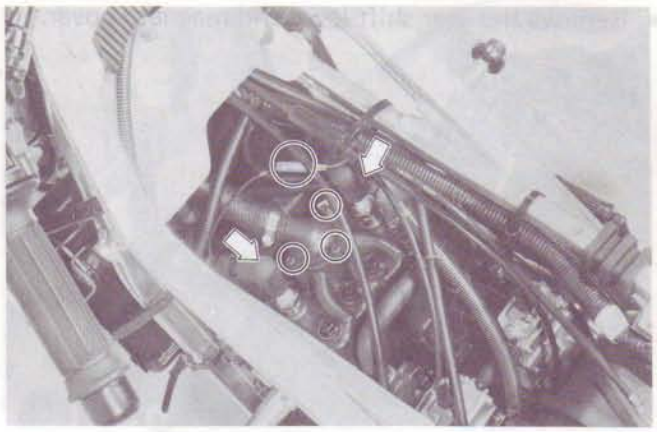
- Loosen the exhaust valve cable adjuster after loosening the lock nut.



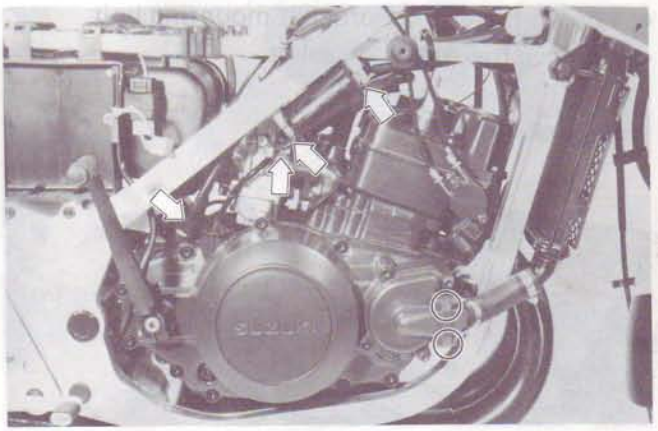
- Disconnect the cables.
- Remove the actuator.



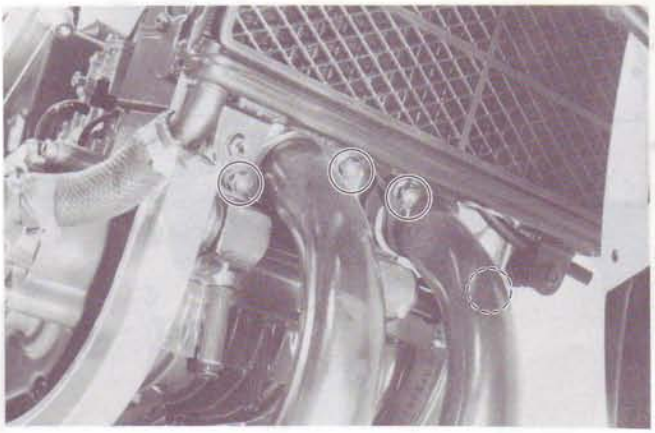
- Remove the thermostat cover, spark plug cap, spark plug and temperature gauge lead wire.

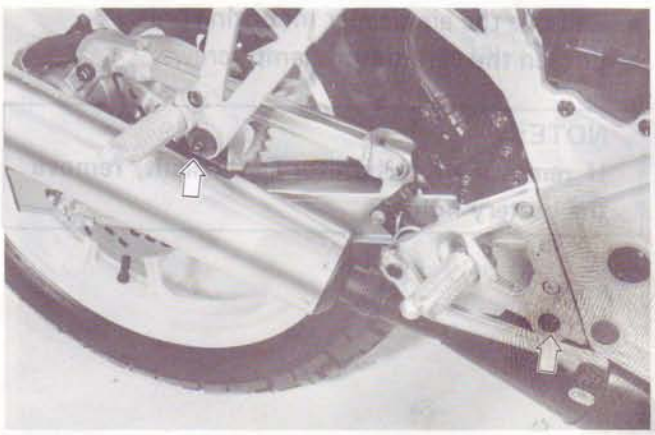


- After disconnecting the lead wire, remove the ignition coil.
- Disconnect the tachometer cable.
- Remove the radiator hose joint.

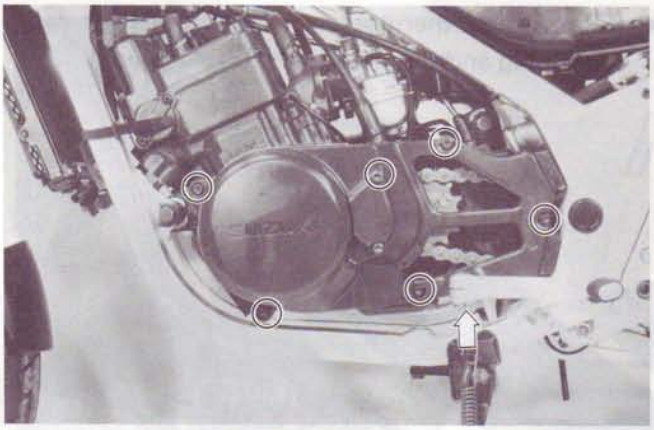


- Remove the muffler.

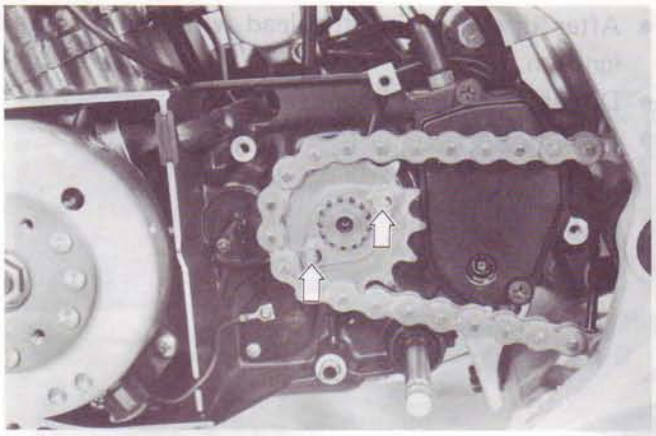




- Remove the gear shift lever and magneto cover.

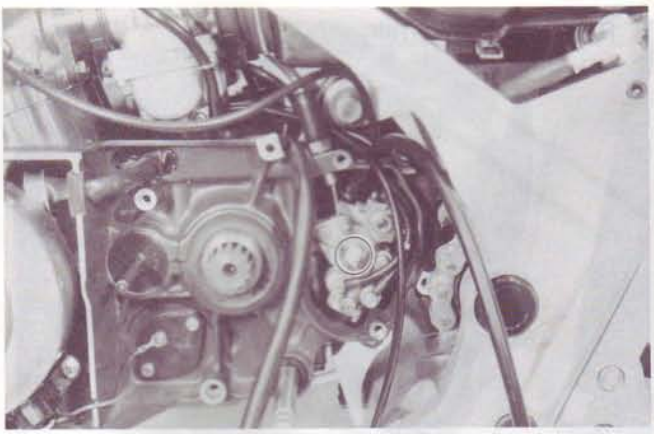


- Loosen the engine sprocket mounting bolt.
- Remove the engine sprocket.



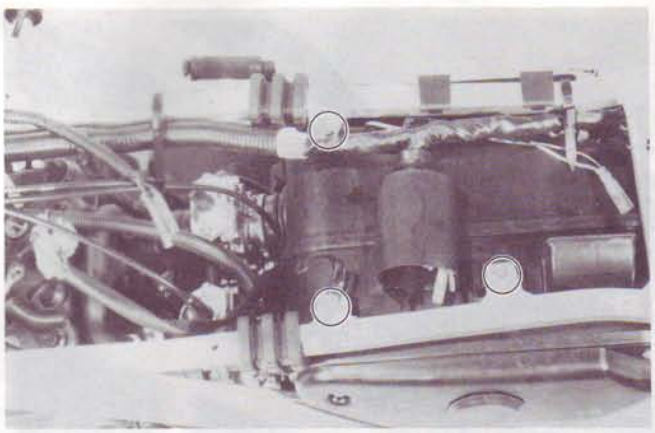
- Remove the oil pump cover.
- Disconnect oil pump cable.

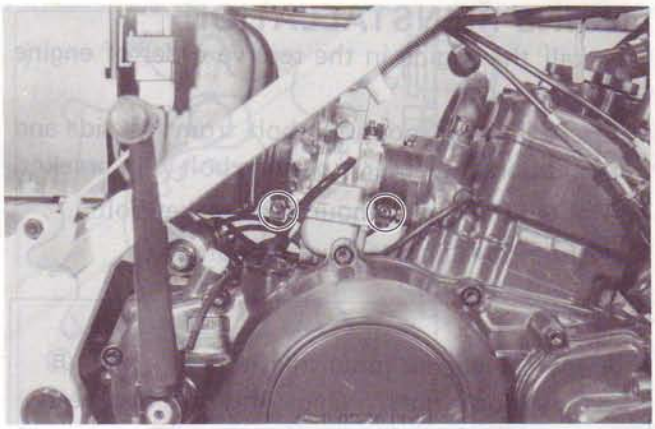
NOTE:
Do not forget the end piece.



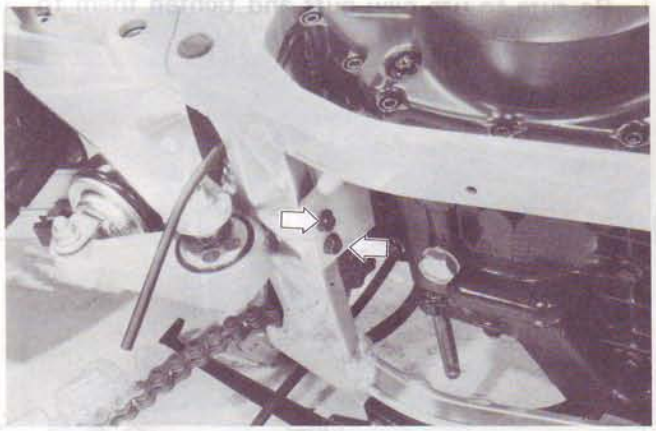
- Remove the air cleaner mounting bolt.
- Loosen the carburetor clamp screws.

NOTE:
If removal of carburetor is difficult, remove the battery holder.

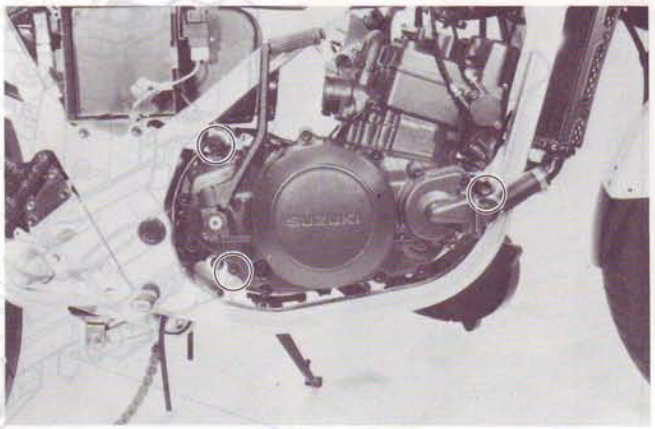




- Loosen and remove the engine mounting bracket bolt.



- Loosen the engine mounting bolts.
- Remove the engine.



ENGINE REINSTALLATION

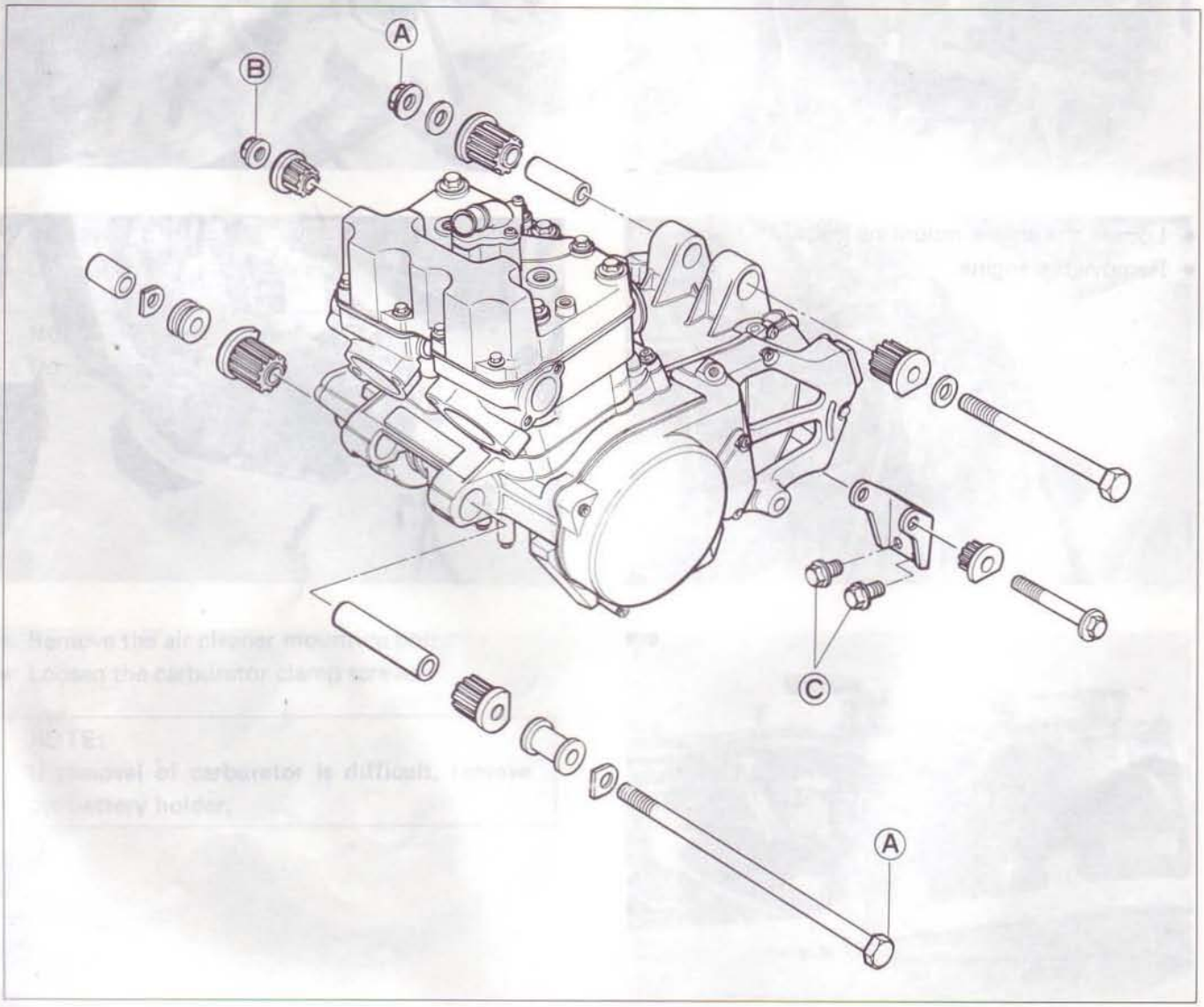
Reinstall the engine in the reserve order of engine removal.

- Insert the two mounting bolt from left side and then insert the other mounting bolt with bracket.
- Tighten the engine mounting bracket bolts.
- Tighten the engine mounting bolts.

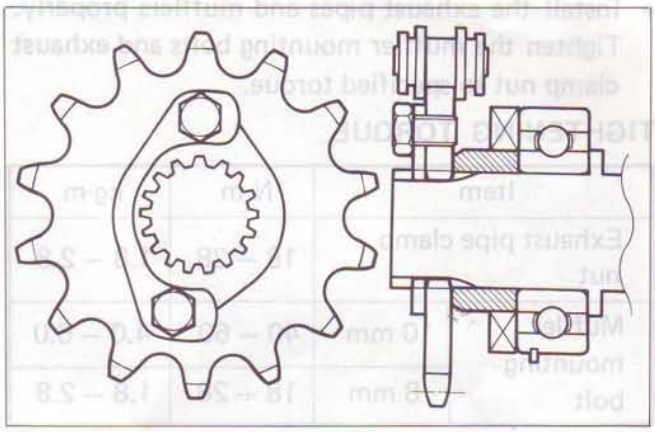
NOTE:
Two rear engine mounting nuts Ⓐ and Ⓑ are self-lock nuts. Once the nut has been removed, it is no longer of any use.
Be sure to use new nuts and tighten them to the specified torque.

TIGHTENING TORQUE

Item	N·m	kg-m
Ⓐ	70 – 80	7.0 – 8.0
Ⓑ	22 – 34	2.2 – 3.4
Ⓒ	9 – 13	0.9 – 1.3

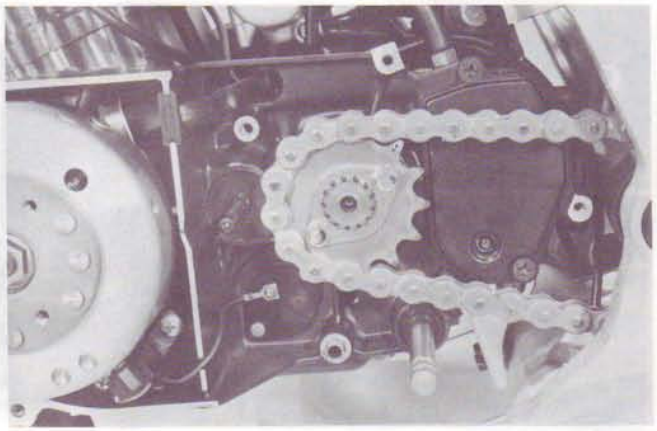


- The engine sprocket, plate and lock washer should be installed on the drive shaft as shown in the figure.
- The engine sprocket should be installed on the driveshaft beforehand, at the same time as installing the drive chain.
- If it is difficult to install the engine sprocket, loosen the axle nut and chain adjuster bolt. Move the wheel assembly and give the drive chain play.



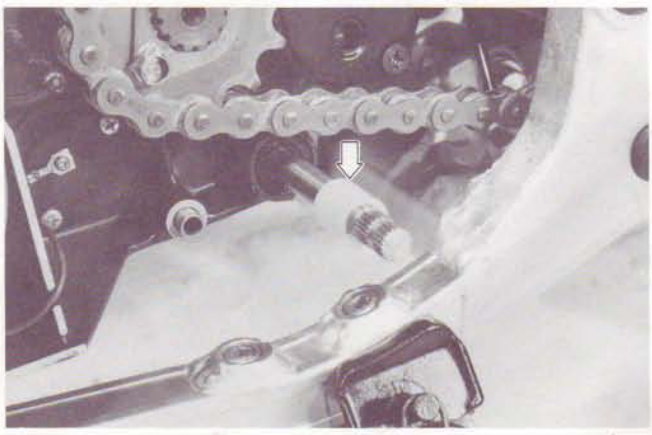
TIGHTENING TORQUE

Item	N·m	kg-m
Engine sprocket bolt	8 – 12	0.8 – 1.2
Rear axle nut	50 – 80	5.0 – 8.0



NOTE:
When installing the right muffler, do not forget the battery breather pipe bracket.

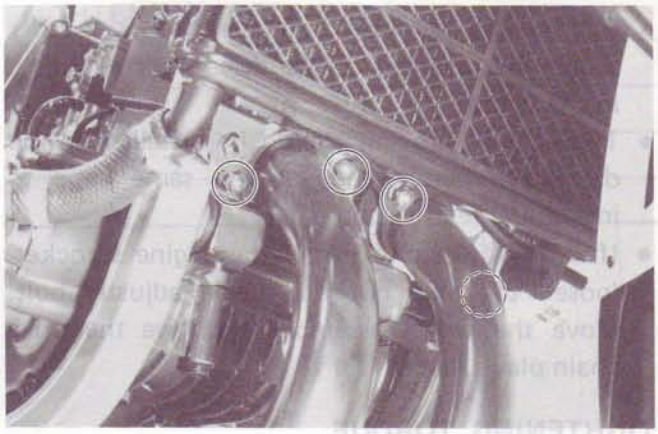
- Before installing the gearshift lever, do not forget the spacer.



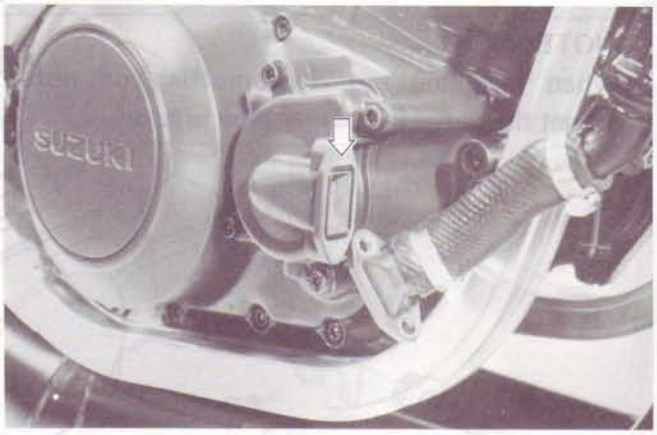
- Install the exhaust pipes and mufflers properly. Tighten the muffler mounting bolts and exhaust clamp nut to specified torque.

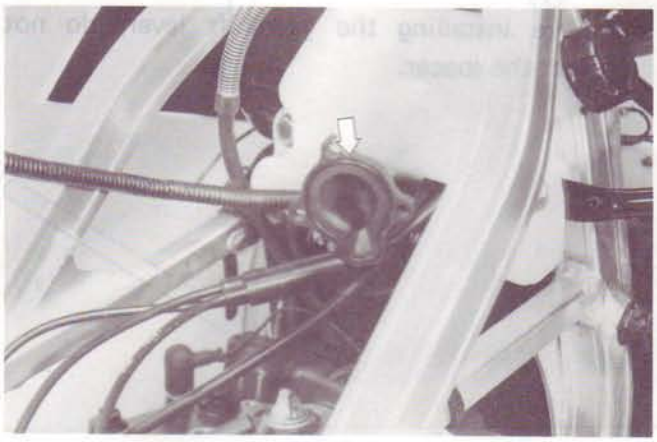
TIGHTENING TORQUE

Item		N·m	kg-m
Exhaust pipe clamp nut		18 – 28	1.8 – 2.8
Muffler mounting bolt	10 mm	40 – 60	4.0 – 6.0
	8 mm	18 – 28	1.8 – 2.8



- Check the new O-ring when installing the radiator hose joint.

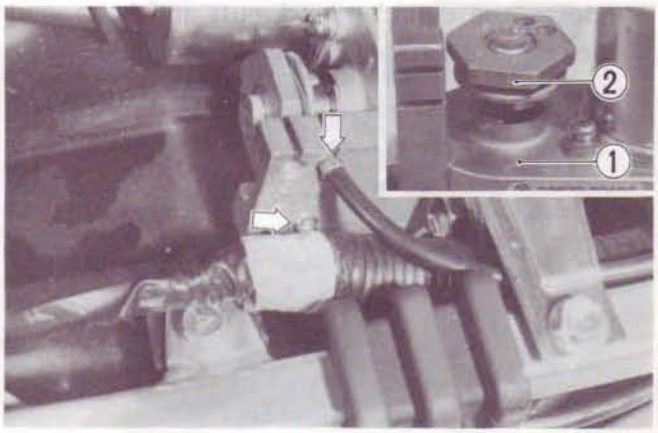




ADJUSTMENT

- After mounting the engine, route wiring harness hoses and cables properly by referring to the sections for wire routing, hose routing and cable routing, and adjust the following items to the specifications.

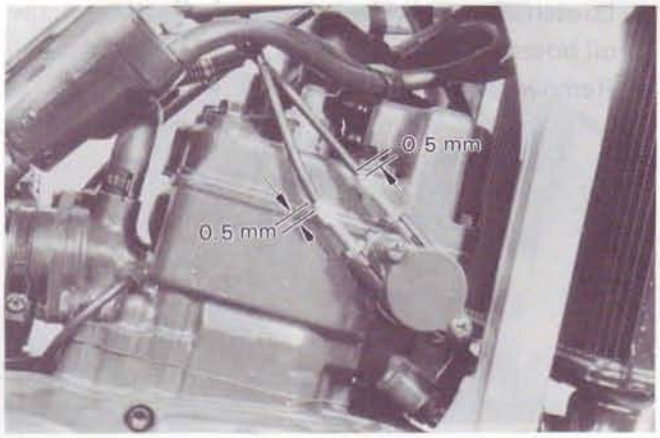
- **Exhaust valve control cable**
- Align the index line ① on the actuator body with the mark ② on the pulley by turning the pulley.
- Connect the each exhaust valve control cable to the respective positions of the actuator.
- No. 1 cable is connected to "1" position of the actuator.



NOTE:
The exhaust valves should be in open position when connecting the cables. (Refer to page 3-44.)

- After connecting all cables to the actuator, adjust the cable play to 0.5 mm by turning the adjuster.

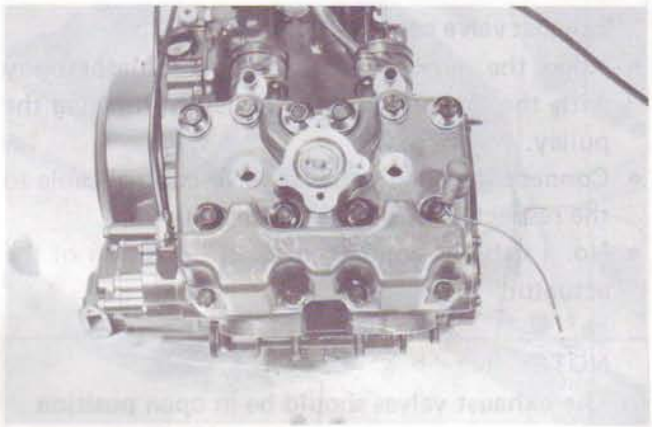
Cable play	0.5 mm



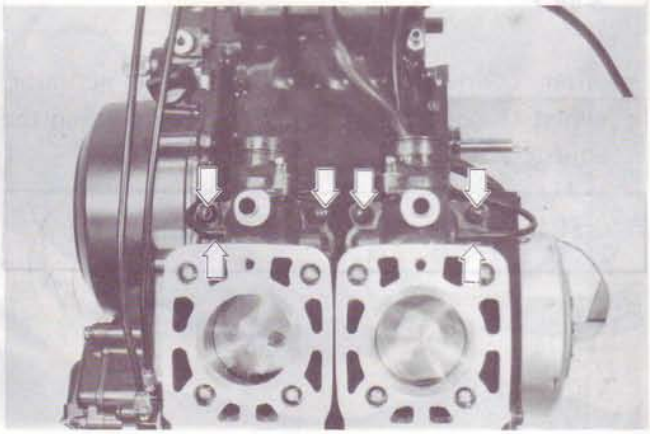
ENGINE DISASSEMBLY

- Remove the kick starter lever and joint hose.

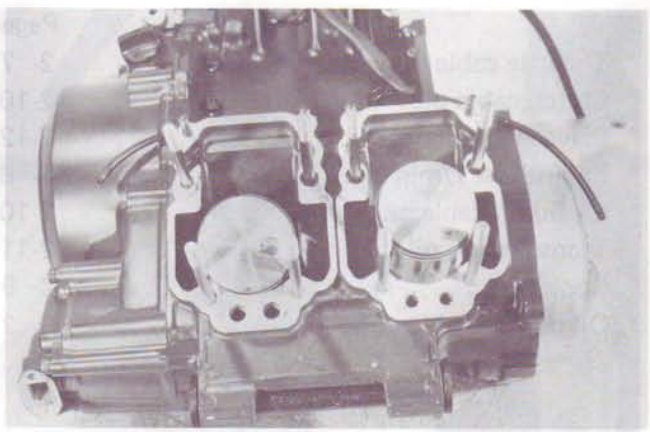
- Loosen the cylinder head nuts and bolts, and then remove the cylinder head.



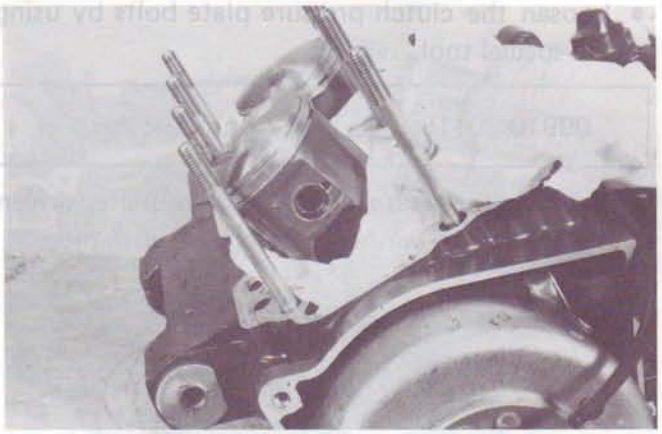
- Loosen the cylinder nuts and disconnect the oil hoses.
- Remove the cylinders.



- Mark the R (right piston) and L (left piston) on piston head.

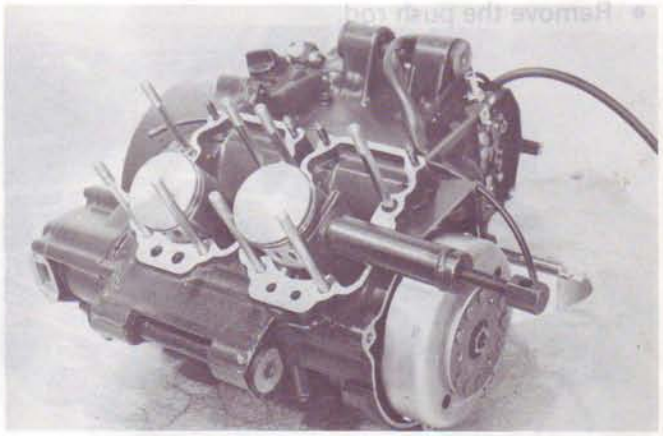


- Place a clean rag over the cylinder base to prevent piston pin circlip from dropping into crankcase, and then remove the piston pin circlip with long-nose pliers.

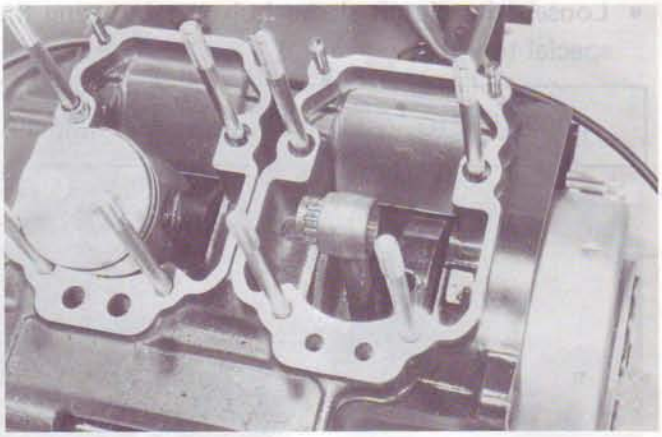


- Draw out piston pin by using special tool and take off piston.

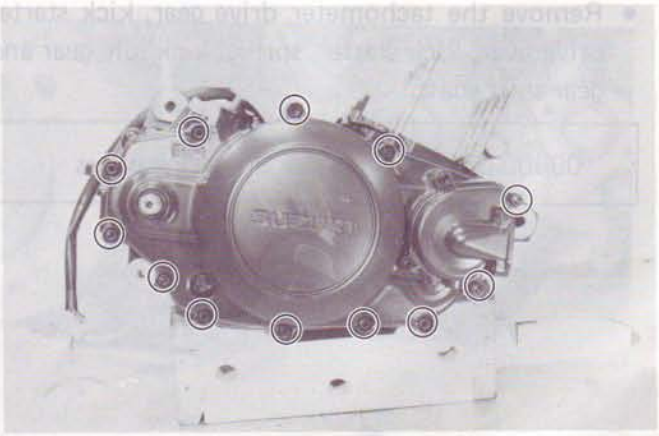
09910-34510	Piston pin puller



- Remove conrod bearing from the conrod small end.

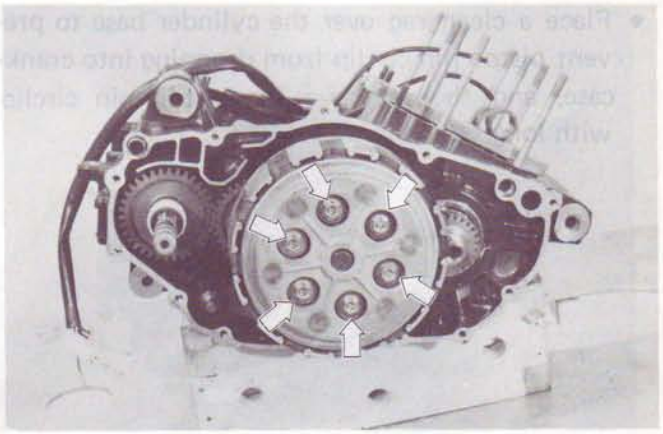


- Remove the clutch cover.

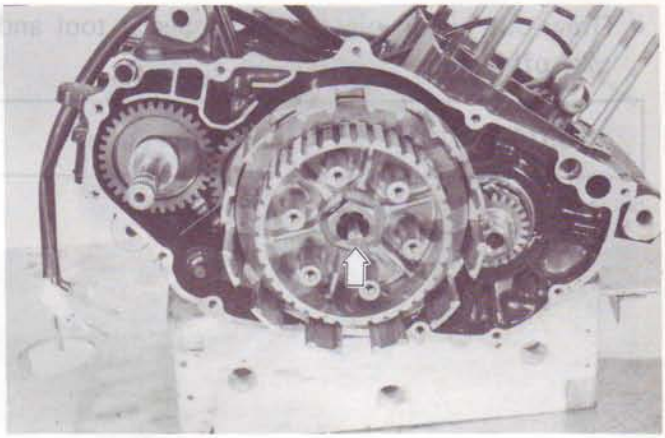


- Loosen the clutch pressure plate bolts by using the special tool.

09910-20115	Conrod holder

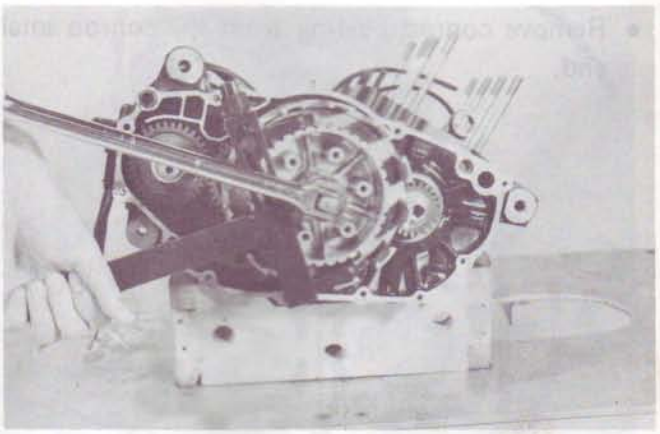


- Remove the pressure plate, drive plate, driven plate, damper, washer, bearing and push piece.
- Remove the push rod.



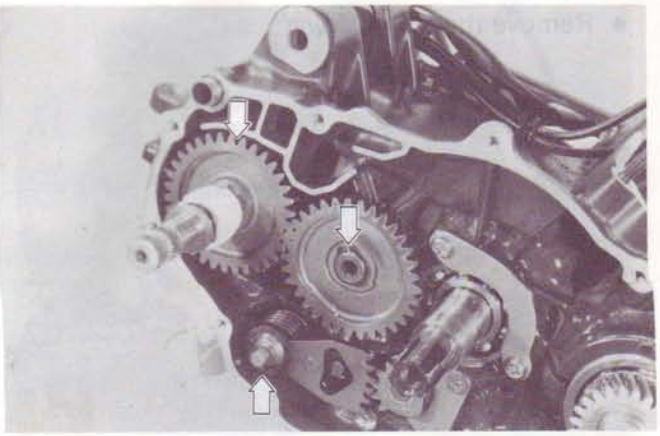
- Loosen the clutch sleeve hub nut by using the special tool.

09920-53710	Clutch sleeve hub holder

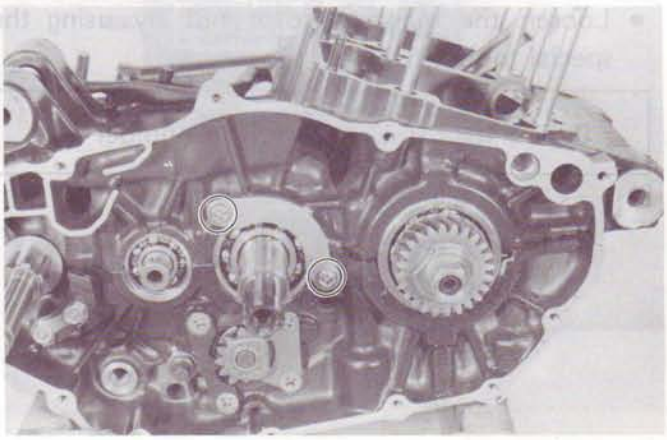


- Remove the tachometer drive gear, kick starter drive gear, kick starter, spring, kick idle gear and gear shift shaft.

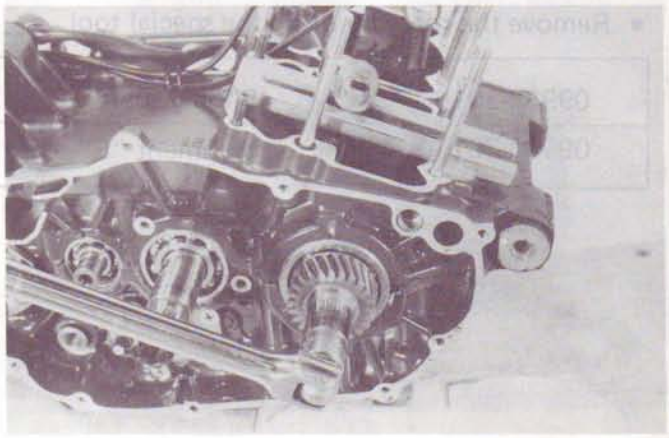
09900-06107	Snap ring pliers



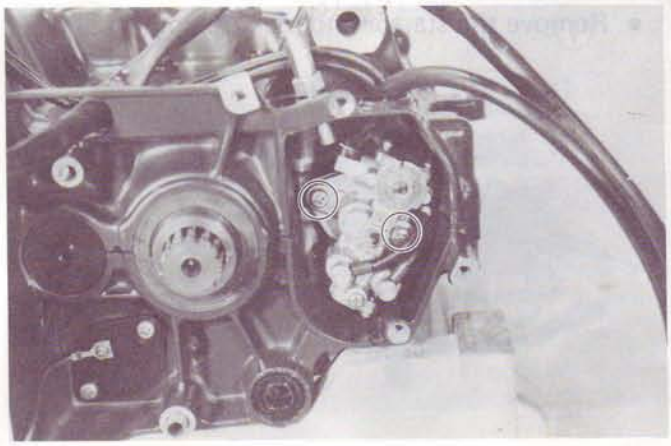
- Remove the countershaft bearing retainer.



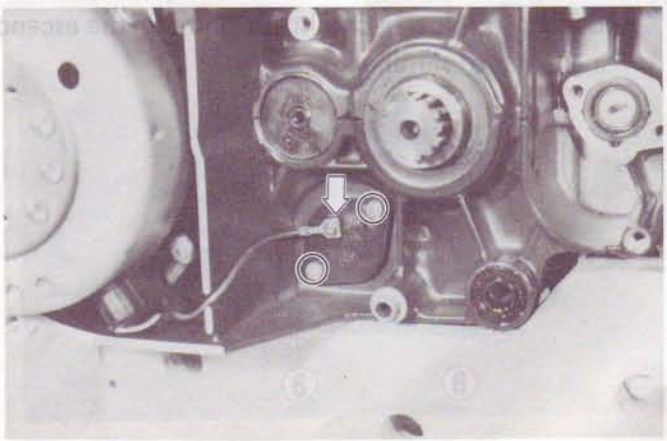
- Loosen the primary drive gear nut by using the special tool and then remove the primary drive gear.



- Remove the oil pump.

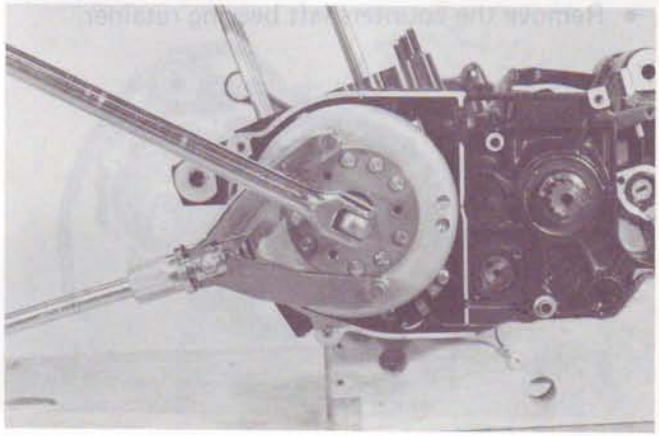


- Disconnect the neutral lead wire.
- Remove the neutral switch contact and spring.



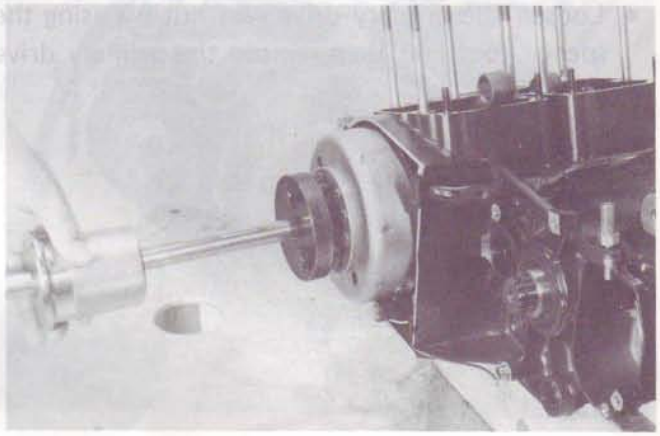
- Loosen the magneto rotor nut by using the special tool.

09930-40113	Rotor holder

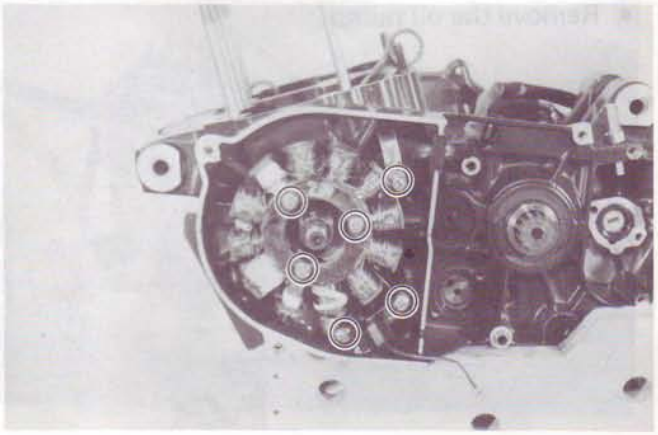


- Remove the rotor by using the special tool.

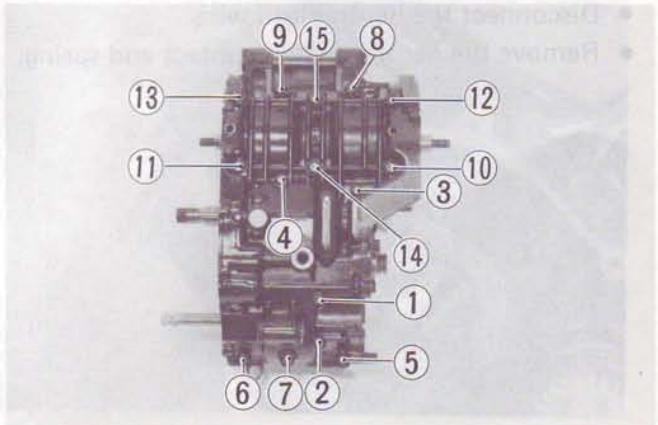
09930-30102	Sliding shaft
09930-30190	Attachment "F"



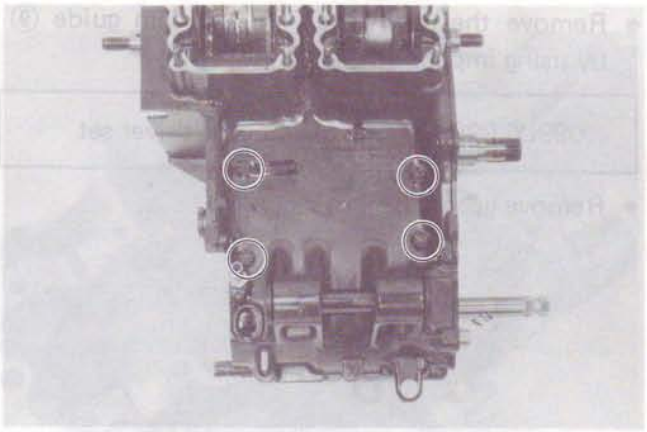
- Remove the startor and pick-up coil.



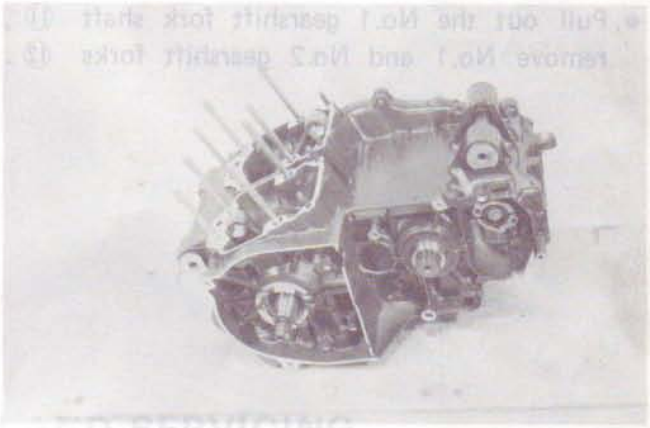
- Loosen the lower crankcase bolts in the ascending order of numbers.



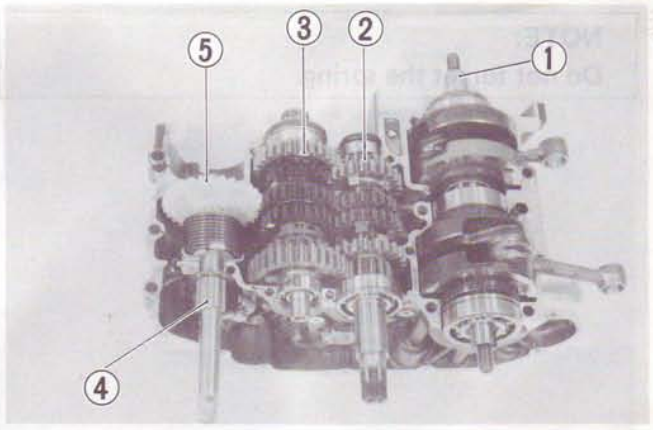
- Remove the upper crankcase bolts.



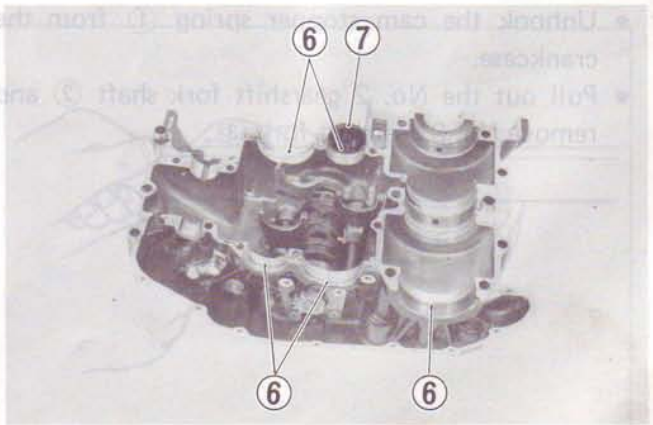
- Separate the upper and lower crankcase.



- Remove the crankshaft ①, countershaft ②, driveshaft ③, kick starter shaft ④ and oil pump drive gear ⑤.



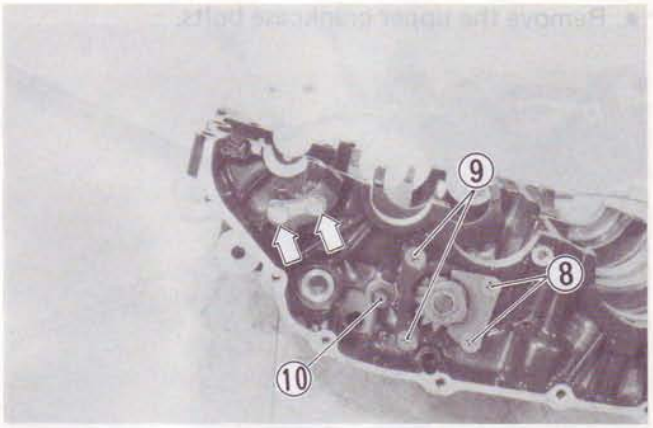
- Remove the C rings ⑥ and oil seal ⑦ from the crankcase.



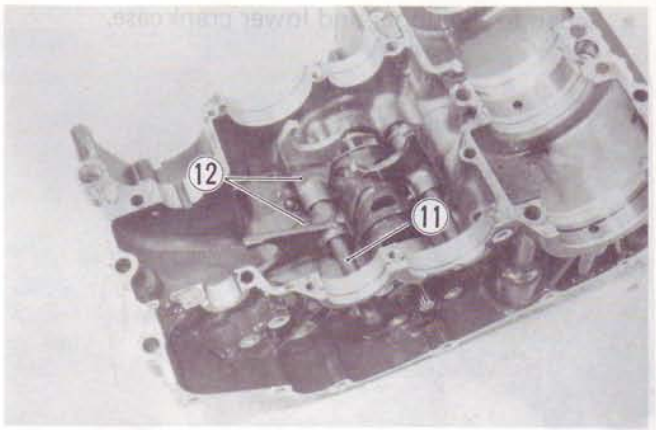
- Remove the pawl lifter ⑧ and cam guide ⑨ by using impact driver.

09900-09003	Impact driver set

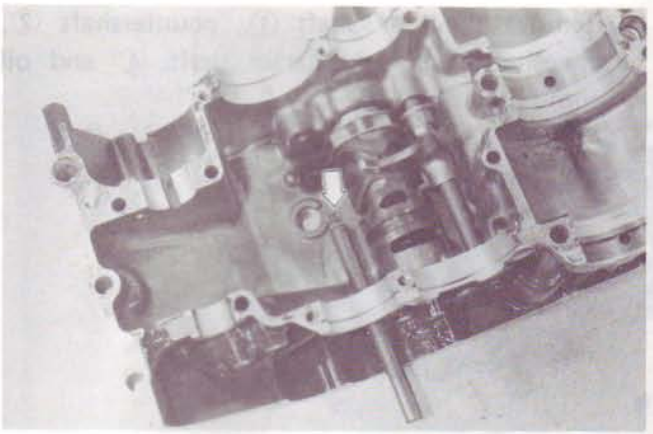
- Remove gear shift arm stopper ⑩.



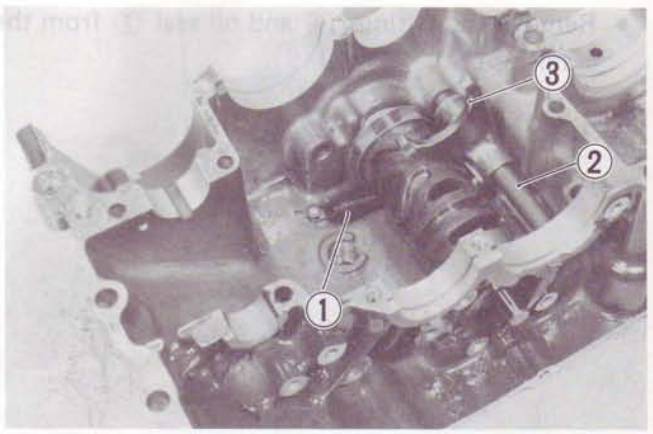
- Pull out the No.1 gearshift fork shaft ⑪, remove No.1 and No.2 gearshift forks ⑫.



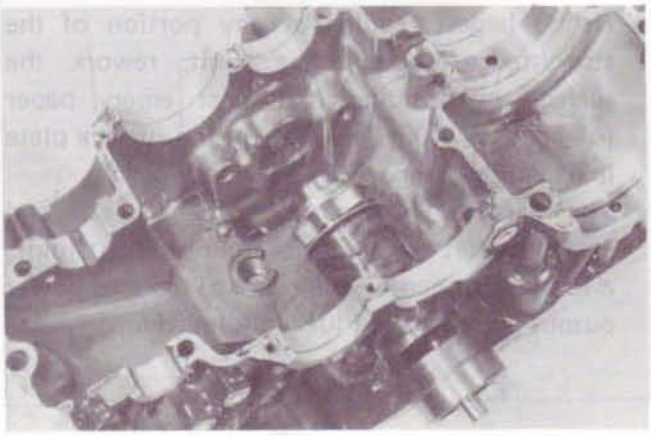
NOTE:
Do not forget the spring.



- Unhook the cam stopper spring ① from the crankcase.
- Pull out the No. 2 gearshift fork shaft ② and remove No. 3 gearshift fork ③.



- Slide the gearshift cam, and then remove the stopper plate and washer.
- Remove the gearshift cam.



ENGINE COMPONENTS INSPECTION AND SERVICING

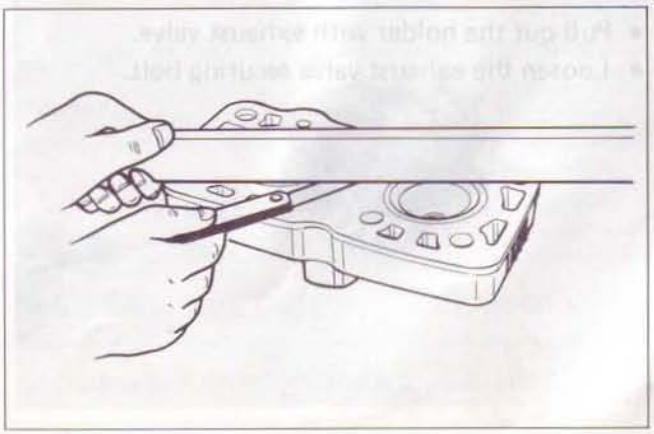
CYLINDER HEAD

DECARBON

- Decarbonize the combustion chamber.

DISTORTION

- The cylinder head is of the 2-cylinder mono-block type.
- Check the gasketed surface of the cylinder head for distortion with a straightedge and thickness gauge. Measure the distortion of each cylinder and distortion between two cylinders.



09900-20803	Thickness gauge

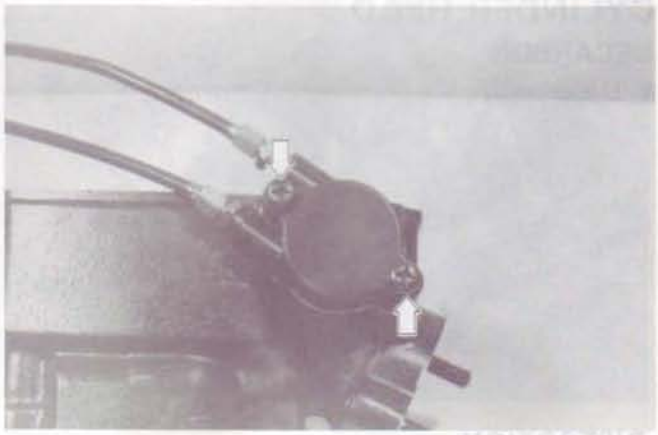
Service Limit	0.10 mm

- If the largest reading at any portion of the straightedge exceeds the limit, rework the surface by rubbing it against emery paper (of about # 400) laid flat on the surface plate in a lapping manner.
- The gasketed surface must be smooth and perfectly flat in order to secure a tight joint: a leaky joint can be the cause of reduced power output and increased fuel consumption.

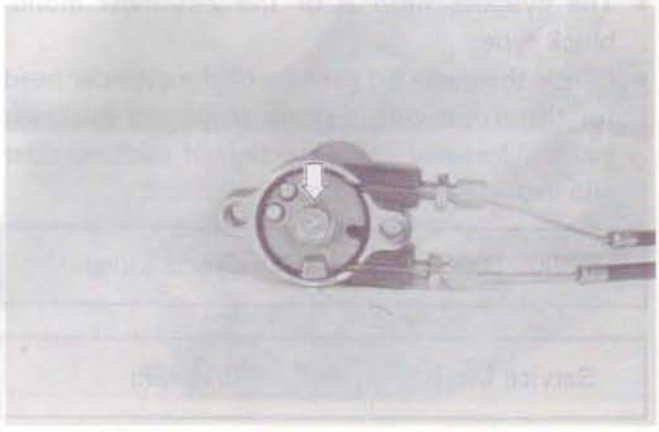
CYLINDER

- Remove the reed valve.

- Remove the holder.



- Pull out the holder with exhaust valve.
- Loosen the exhaust valve securing bolt.

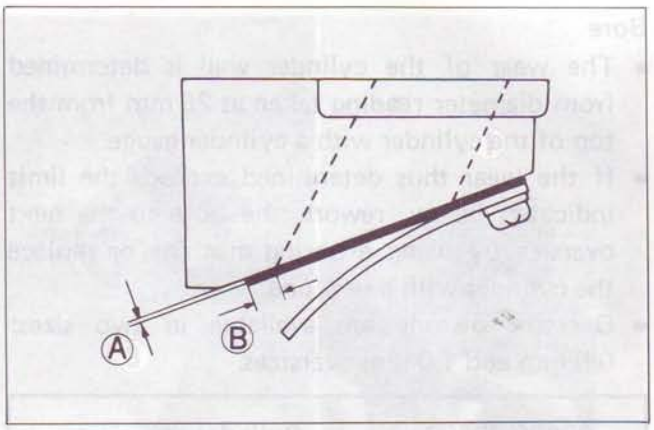


INSPECTION

Reed valve

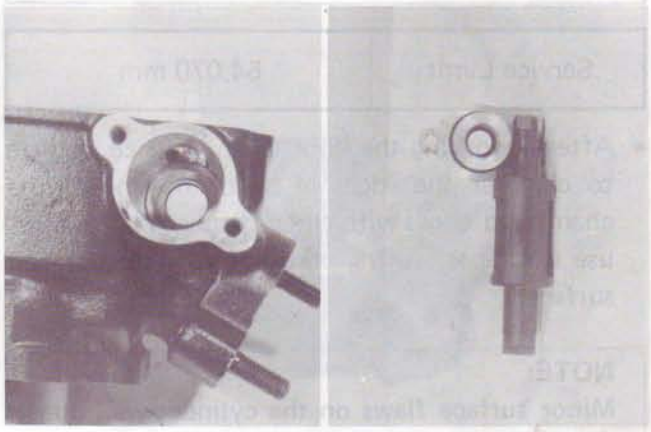
Check the clearance Ⓐ between reed valve and its seat and dimension Ⓑ. If the clearance Ⓐ is noted to exceed 0.2 mm replace the reed valve assembly.

The dimension Ⓑ is at least 1 mm.



Exhaust valve

- Turn the exhaust valve by hand and check that the exhaust valve turns smoothly.
- Remove the exhaust valves from the respective cylinders.
- Decarbon the exhaust port, exhaust valves and the upper part of the cylinder, taking care not to damage the cylinder wall surface.
- Check the oil seal for any signs of exhaust gas leakage.
- Inspect the exhaust valve and cylinder sliding surface for nicks, scratches, wear or other damage.



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.

Service limit	0.05 mm

Decarbon

- Decarbon the exhaust port and the upper part of the cylinder, taking care not to damage the cylinder wall surface.

Bore

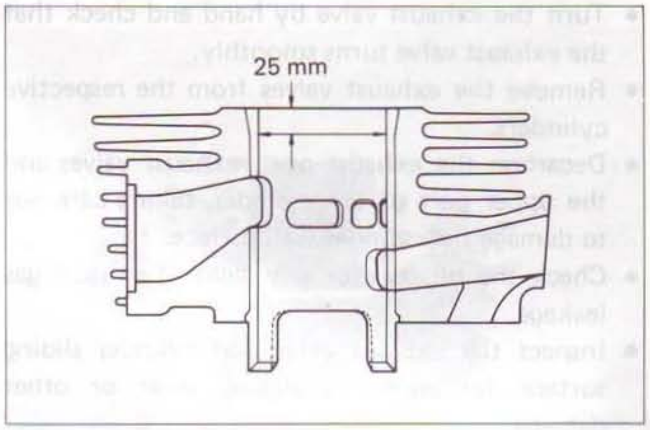
- The wear of the cylinder wall is determined from diameter reading taken at 25 mm from the top of the cylinder with a cylinder gauge.
- If the wear thus determined exceeds the limit indicated below, rework the bore to the next oversize by using a boring machine or replace the cylinder with a new one.
- Oversize pistons are available in two sizes: 0.5 mm and 1.0 mm oversizes.

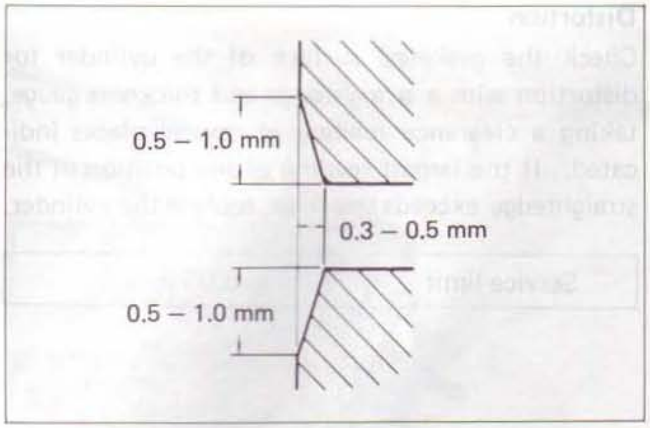
09900-20508	Cylinder gauge set

Service Limit	54.070 mm

- After reworking the bore to an oversize, be sure to chamfer the edges of ports and smooth the chamfered edges with emery paper. To chamfer, use a scraper, taking care not to nick the wall surface.

NOTE:
Minor surface flaws on the cylinder wall due to seizure or similar abnormalities can be corrected by grinding the flaws off with fine-grain emery paper. If the flaws are deep grooves or otherwise persist, the cylinder must be reworked with a boring machine to the next oversize.





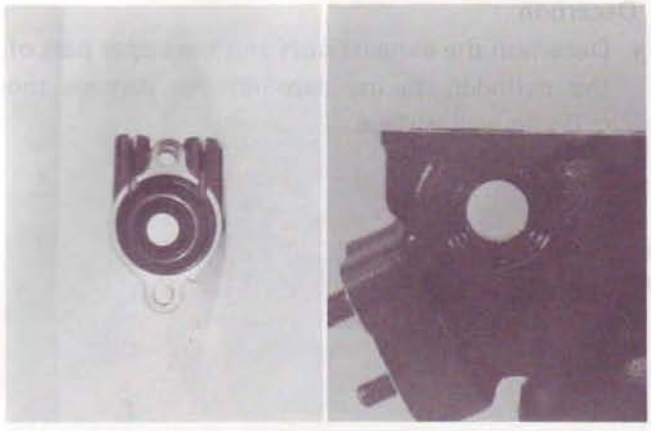
REASSEMBLY

- Apply SUZUKI super grease "A" to the lip of oil seals lightly.

CAUTION:
Do not apply grease to the exhaust valve.

99000-25010	SUZUKI super grease "A"

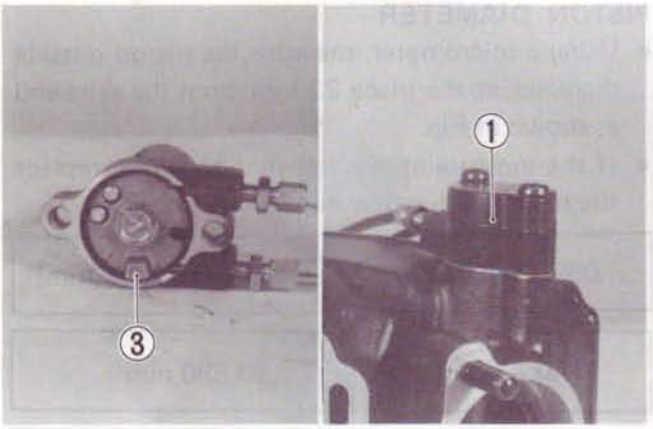
- Install the each exhaust valve to the respective cylinders.



- Connect the cables to the exhaust valve pulley which has a stopper ③.
- Tighten the exhaust valve pulley bolt to the specified torque.

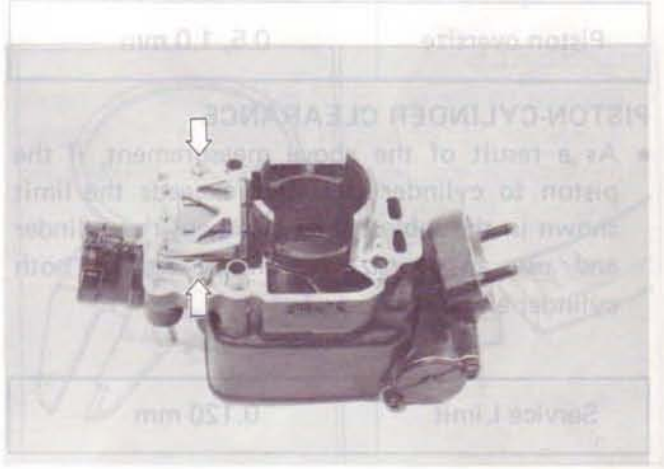
Tightening torque	4 – 7 N·m (0.4 – 0.7 kg-m)

- Install the cover with drain slit ① facing downward.



- When installing the reed valve assembly in cylinder apply thread lock "1342" to securing screws.

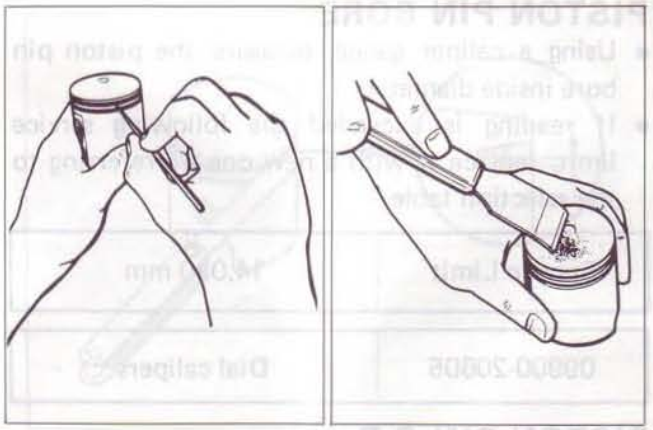
99000-32050	Thread lock "1342"



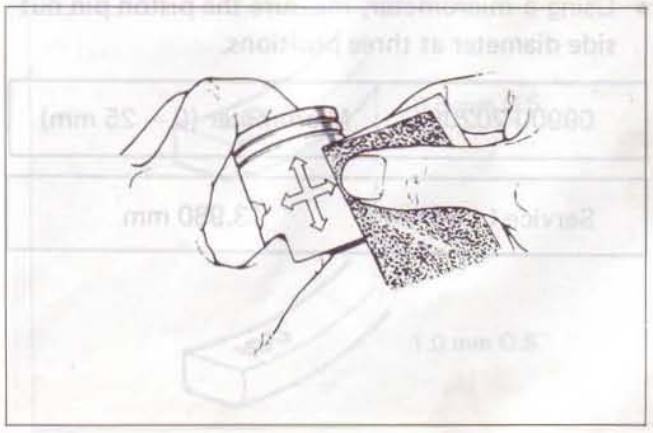
PISTON

DECARBON

- De-carbon the crown of the piston and piston ring grooves. After cleaning the grooves, fit the rings and rotate them in their respective grooves to be sure that they move smoothly.
- Carbon in groove is liable to cause the piston ring to get stuck in the groove, and this condition will lead to reduced engine power output.
- A piston whose sliding surface is badly grooved or scuffed due to overheating must be replaced with a new one.



- Shallow grooves or minor scuff can be removed by grinding with emery paper of about # 400.



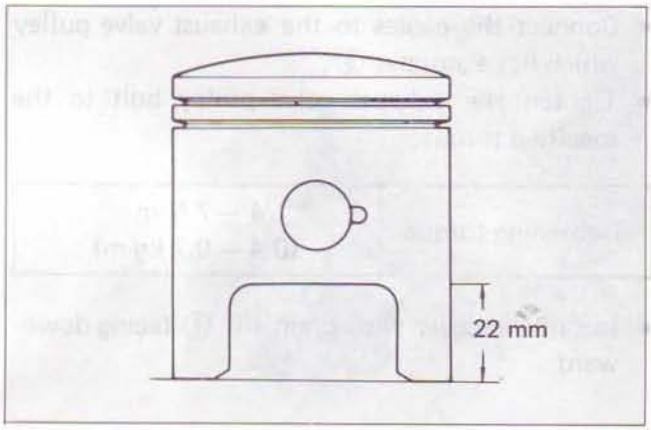
PISTON DIAMETER

- Using a micrometer, measure the piston outside diameter at the place 22 mm from the skirt end as shown in Fig.
- If the measurement is less than the limit, replace the piston with a new one.

09900-20203	Micrometer (50 – 75 mm)

Service Limit	53.890 mm

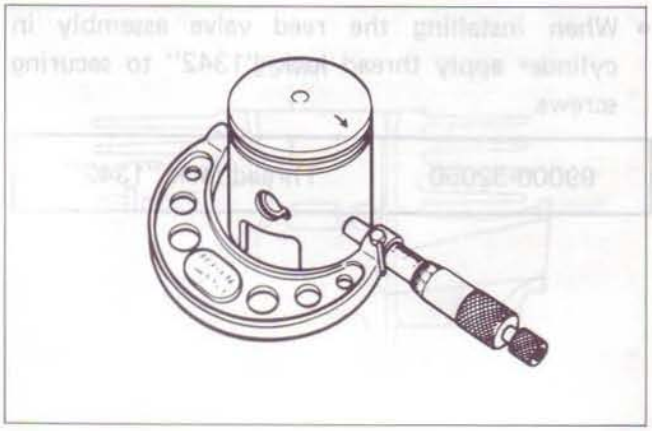
Piston oversize	0.5, 1.0 mm



PISTON-CYLINDER CLEARANCE

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

Service Limit	0.120 mm

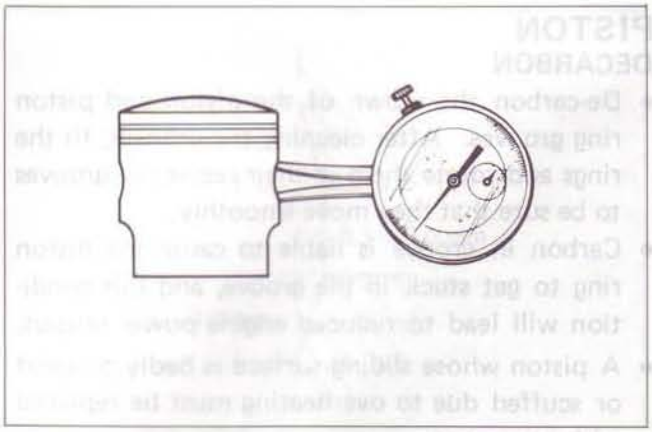


PISTON PIN BORE

- Using a caliper gauge, measure the piston pin bore inside diameter.
- If reading is exceeded the following service limit, replace it with a new one by referring to the selection table.

Service Limit	14.030 mm

09900-20605	Dial calipers

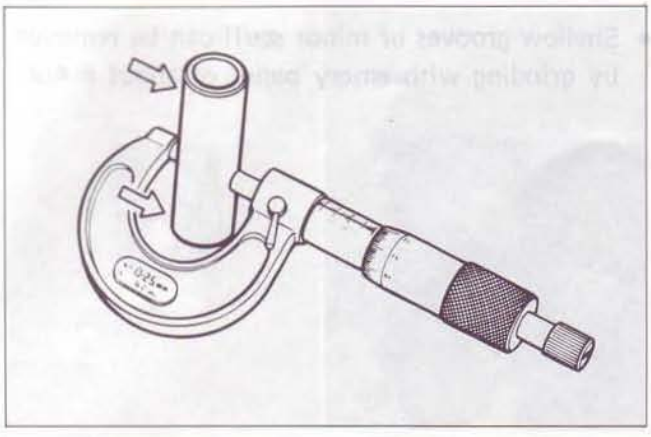


PISTON PIN O.D.

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

09900-20205	Micrometer (0 – 25 mm)

Service Limit	13.980 mm



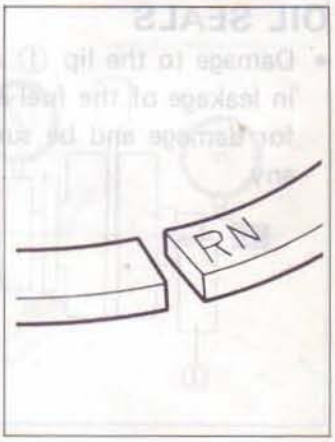
PISTON RINGS

END GAP

- Check each ring for end gap, reading the gap with a thickness gauge as shown in Fig. If the end gap is found to exceed the limit, indicated below, replace it with a new one.
- The end gap of each ring is to be measure with the ring fitted squarely into the cylinder bore and held at the least worn part near the cylinder bottom, as shown in Fig.

09900-20803	Thickness gauge

Service Limit	0.75 mm



FREE END GAP

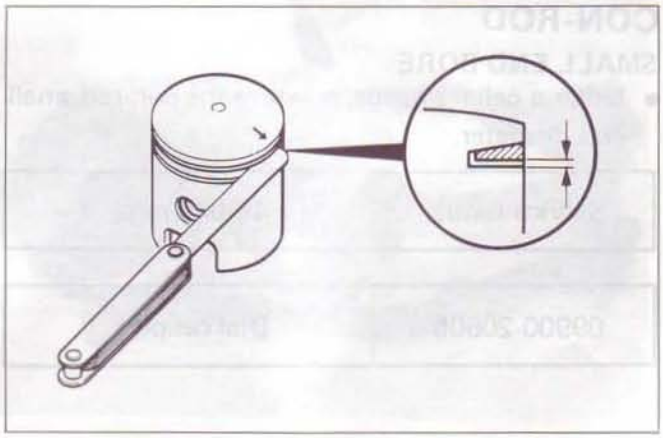
- As the piston ring wears, its end gap increases reducing engine power output because of the resultant blowby through the enlarged gap. Here lies the importance of using piston rings with end gaps within the limit.
- Measure the piston right free end gap.

Mark		Service Limit
RN	1st	3.6 mm
	2nd	4.2 mm

PISTON RING TO GROOVE CLEARANCE

- Fix the piston ring in the piston ring groove, measure the ring side clearance with the thickness gauge while matching the sliding surface of piston and ring.

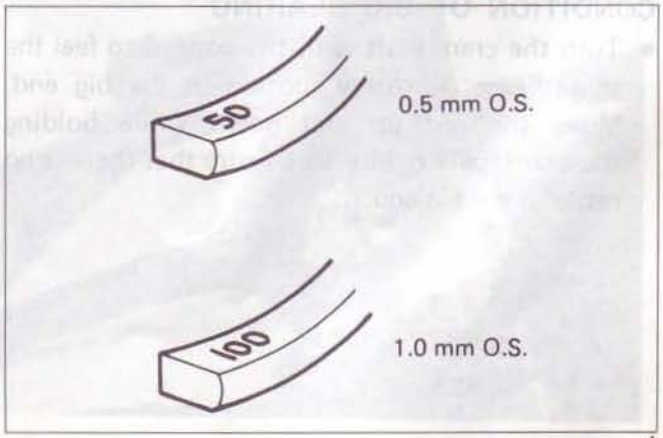
STD Clearance	1st	0.03 – 0.06 mm
	2nd	0.02 – 0.06 mm



OVERSIZE PISTON RING

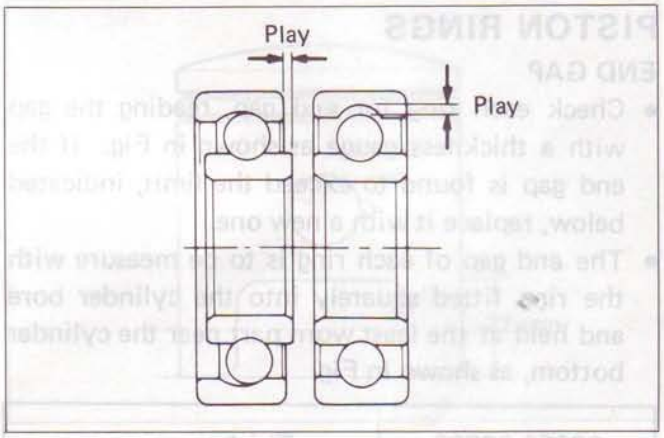
- The following two types of oversize piston rings are used. They bear the following identification numbers.

Oversize	Mark
	1st and 2nd
0.5 mm	50
1.0 mm	100



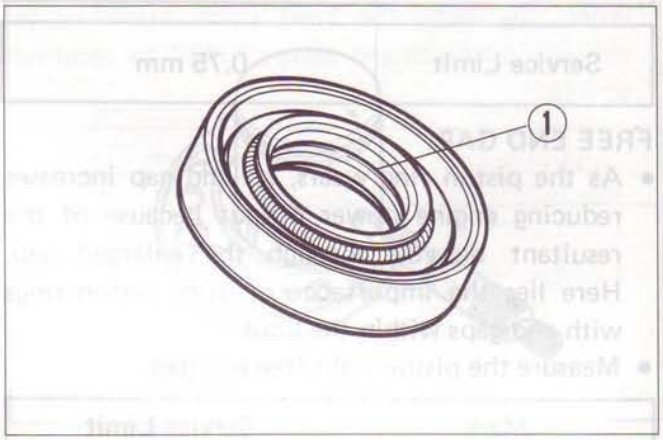
BEARINGS

- Wash the bearing with cleaning solvent and lubricate with motor oil before inspecting.
- Turn the inner race and check to see that the inner race turns smoothly.
- If it does not turn lightly, quietly and smoothly, or if noise is heard, the bearing is defective and must be replaced with a new one.



OIL SEALS

- Damage to the lip ① of the oil seal may result in leakage of the fuel-air mixture or oil. Inspect for damage and be sure to replace if there are any.



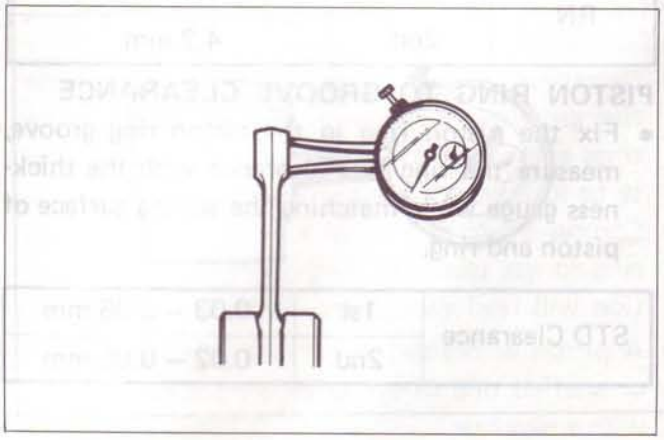
CON-ROD

SMALL END BORE

- Using a caliper gauge, measure the con-rod small end diameter.

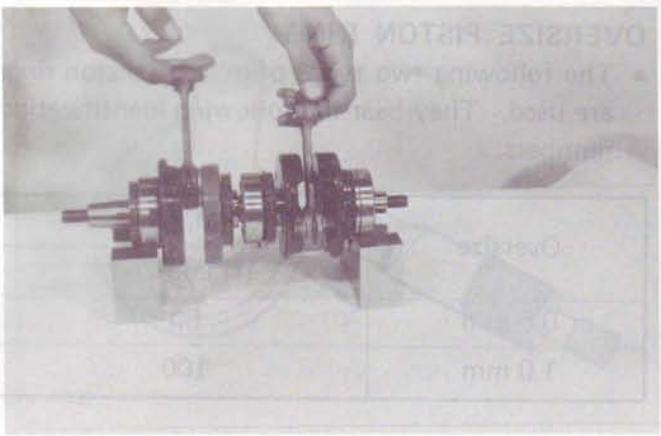
Service Limit	18.040 mm

09900-20605	Dial calipers



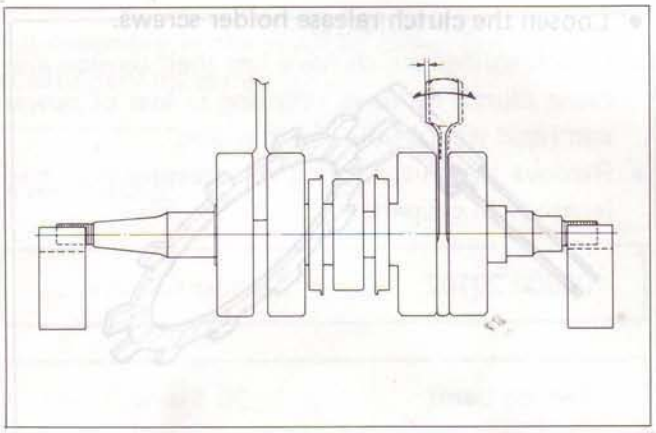
CONDITION OF BIG BEARING

- Turn the crankshaft with the conrod to feel the smoothness of rotary motion in the big end. Move the rod up and down while holding the crankshaft rigidly to be sure that there is no rattle in the big end.



- Wear on the big end of the connecting rod can be estimated by checking the movement of the small end of the rod. This method can also check the extent of wear on the parts of the connecting rod's big end.
- If wear exceeds the limit, conrod, crank pin and crank pin bearing should all be replaced.

Service Limit	3.0 mm

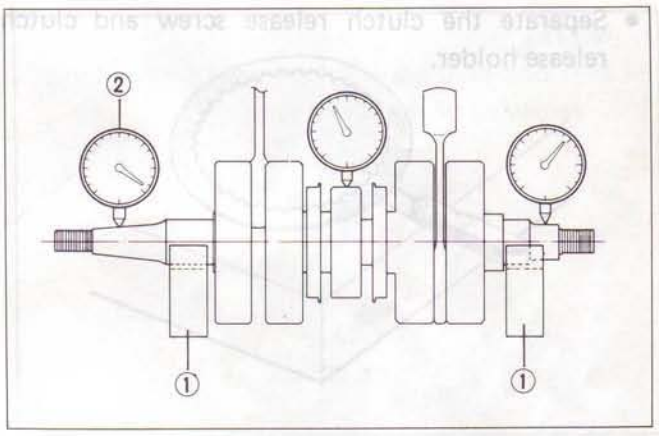


CRANKSHAFT

CRANKSHAFT RUNOUT

- Support crankshaft by "V" blocks ①, with the dial gauge ② rigged to read the runout as shown.

Service Limit	0.05 mm



- Excessive crankshaft runout is often responsible for abnormal engine vibration. Such vibration shortens engine life.

09900-21304	V-block
09900-20701	Magnetic stand
09900-20606	Dial gauge (1/100 mm)

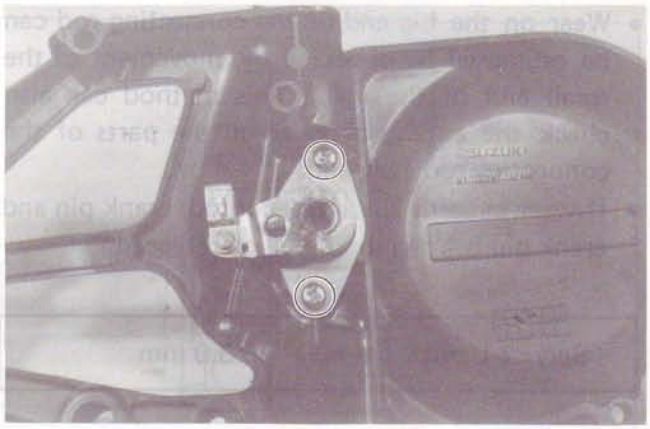
CLUTCH RELEASE

DISASSEMBLY

- Remove the clutch release cover.

- Flatten the lock plate.
- Remove the clutch cable.

- Loosen the clutch release holder screws.



- Separate the clutch release screw and clutch release holder.

ASSEMBLY

Inspect the clutch release mechanism for smooth operation. If any worn parts are found, replace it with a new one. When reinstalling clutch release assembly to the engine sprocket cover, apply Suzuki Moly Paste to the sliding surface lightly.

99000-25140	Suzuki Moly Paste

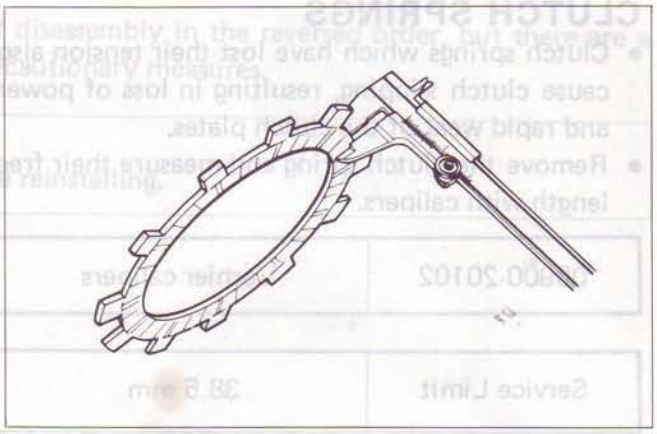
Install the sliding screw properly as shown in figure so that the clutch release lever operates positively.

CLUTCH PLATES

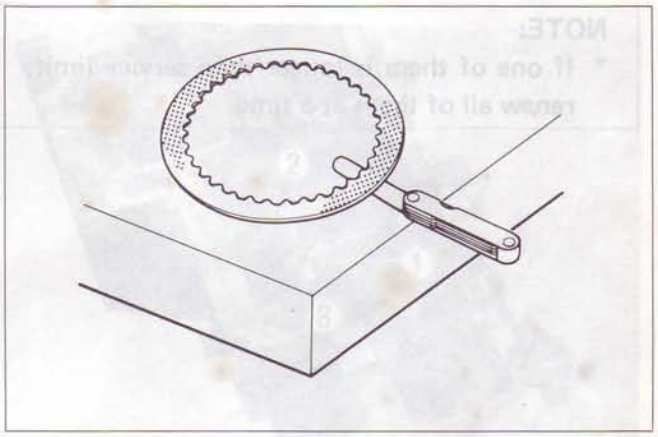
- Clutch plates in service remain in oily condition as if they were lubricated with oil. Because of this condition, both drive and driven plates are subject to little wearing action and therefore last much longer. Their life depends largely on the quality of oil used in the clutch and also on the way the clutch is operated.
- These plates are expandable: they are meant to be replaced when found worn down or distorted to the respective limit: use a caliper to check thickness and claw width and a thickness gauge and surface plate to check distortion.

09900-20102	Vernier calipers
09900-20803	Thickness gauge

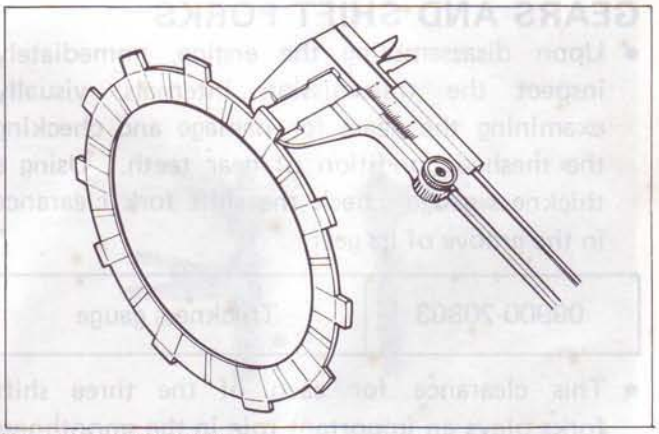
Service Limit	Drive plate	Driven plate	
		No. 1	No. 2
Thickness	2.6		
Distortion		0.10	0.10
Claw width	15.0		



Checking thickness

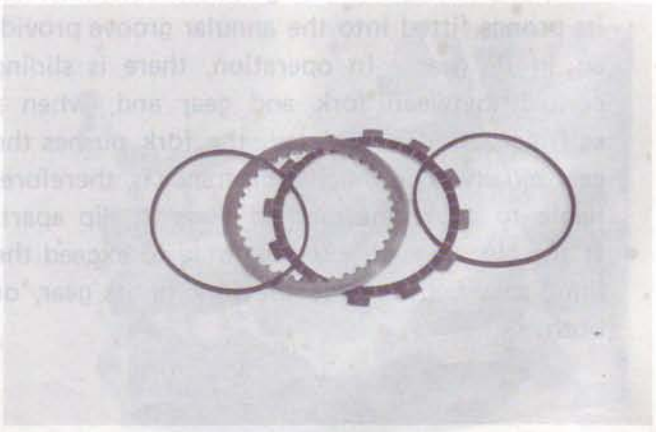


Checking distortion



Checking claw width

- Inspect the damper for wear or damage.



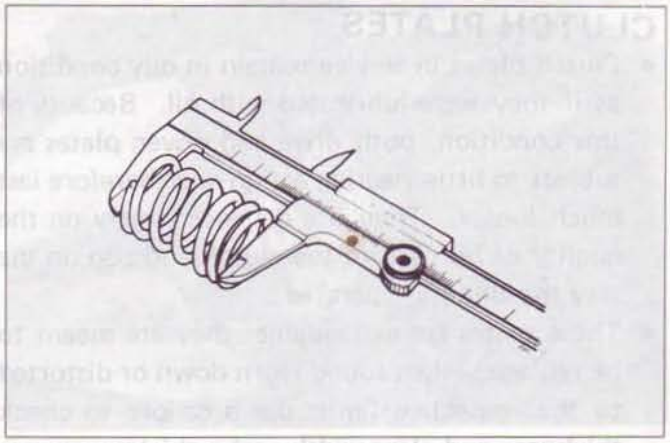
CLUTCH SPRINGS

- Clutch springs which have lost their tension also cause clutch slipping, resulting in loss of power and rapid wear of the clutch plates.
- Remove the clutch spring and measure their free length with calipers.

09900-20102	Vernier calipers

Service Limit	38.5 mm

NOTE:
*** If one of them is longer than service limit, renew all of them at a time.**

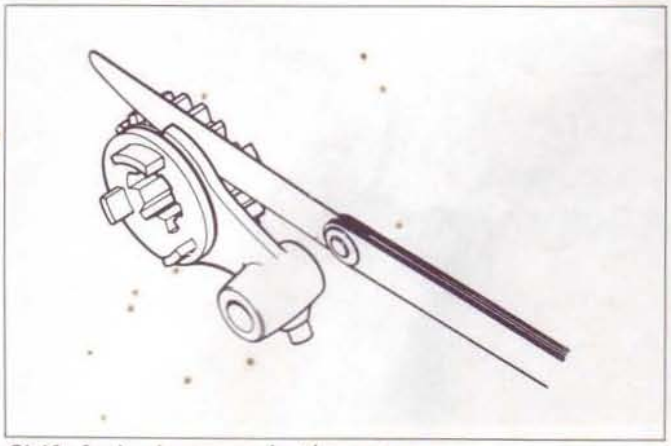


GEARS AND SHIFT FORKS

- Upon disassembling the engine, immediately inspect the transmission internals, visually examining the gears for damage and checking the meshed condition of gear teeth. Using a thickness gauge, check the shift fork clearance in the groove of its gear.

09900-20803	Thickness gauge

- This clearance for each of the three shift 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.



Shift fork clearance in the groove

Shift fork – groove clearance

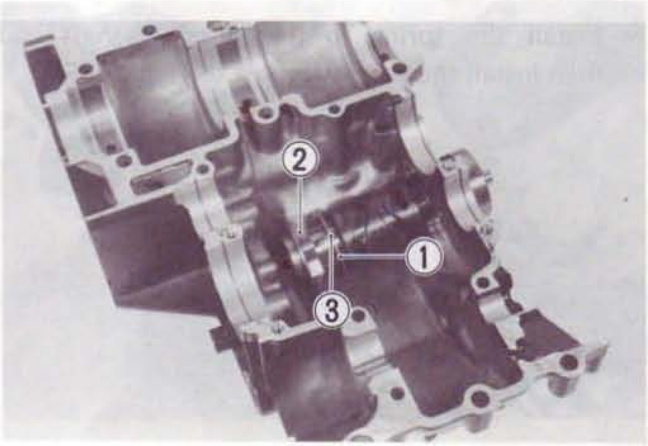
	Service Limit
for 3rd and 4th drive gear	0.5 mm
for 5th driven gear	
for top driven gear	

ENGINE REASSEMBLY

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

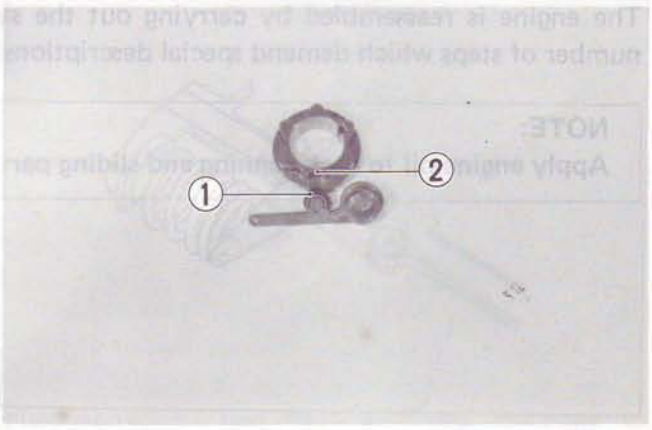
NOTE:
Apply engine oil to each running and sliding part before reinstalling.

- Install the gearshift cam to the lower crankcase, install washer ① and gearshift cam stopper plate ② on the positioning pin ③.

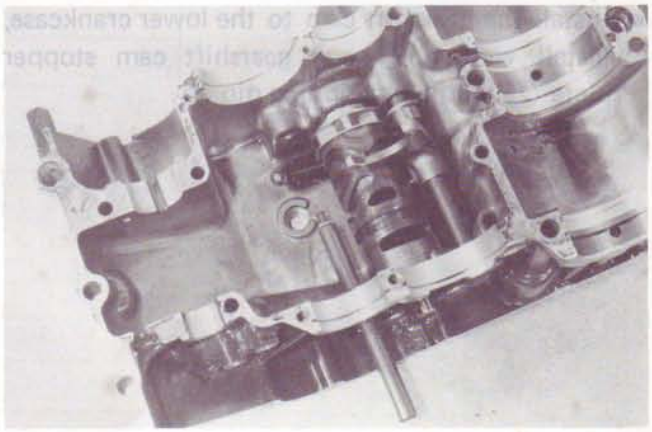


- Three kinds of gearshift forks are used. They resemble each other very closely in external appearance and configuration.
  Carefully examine the photograph for correct installing positions and directions.

- Mate the cam stopper ① to the neutral position ② of the cam stopper plate and reassemble them.

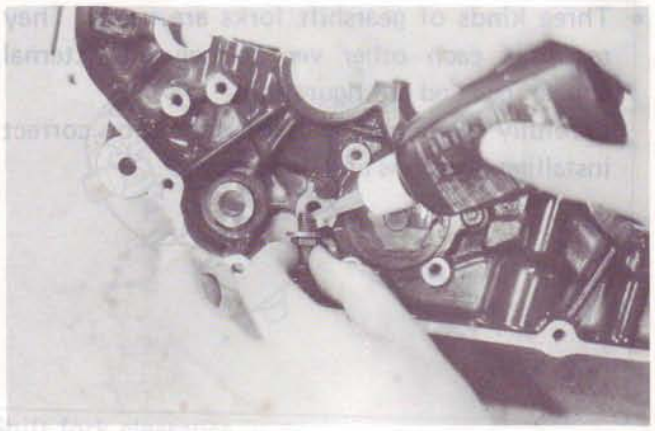


- Install the spring to the gearshift shaft and then install the gearshift shaft to crankcase.



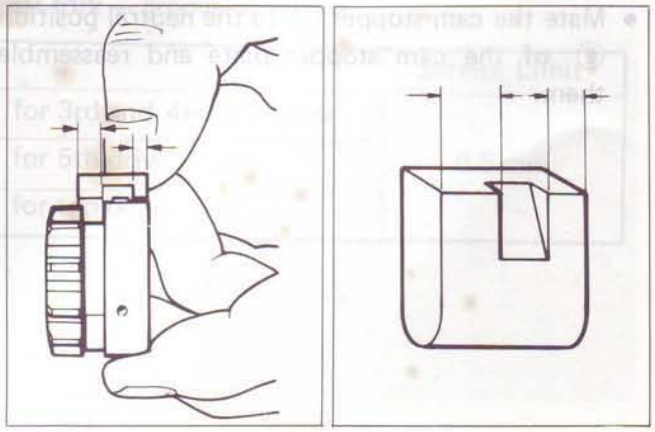
- Seat the washer and install the gearshift shaft stopper with applying Thread Lock Super "1303".

99000-32030	Thread Lock Super "1303"



GEARSHIFT CAM

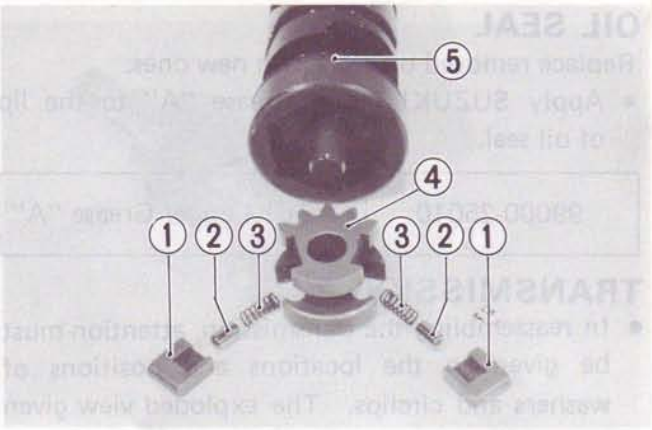
- The shape of each gearshift pawl is different. Mount the one with the narrow width on the gearshift cam guide.



- Mount the gearshift pawl ① on the gearshift cam as shown.
- Mount the cam driven gear ④ on the gearshift cam.

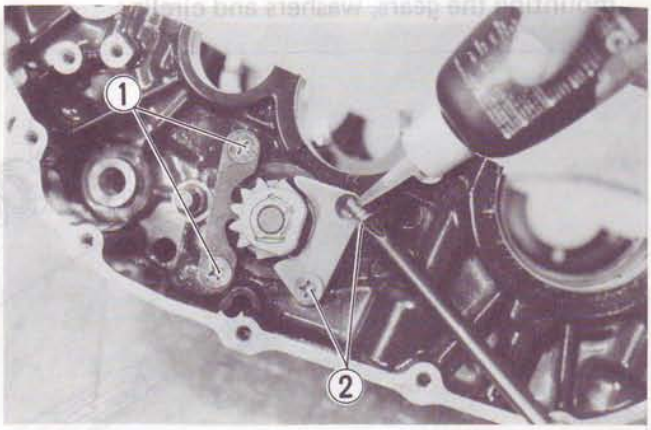
① Pawl
② Push piece
③ Spring

- Mount the washer ⑤ on the gearshift cam.



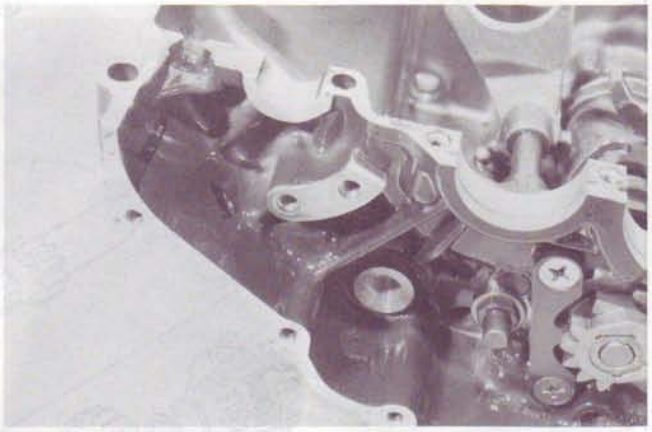
- Install both gearshift cam guide screws ① and gearshift pawl screws ② with applying Thread Lock Super "1333B".

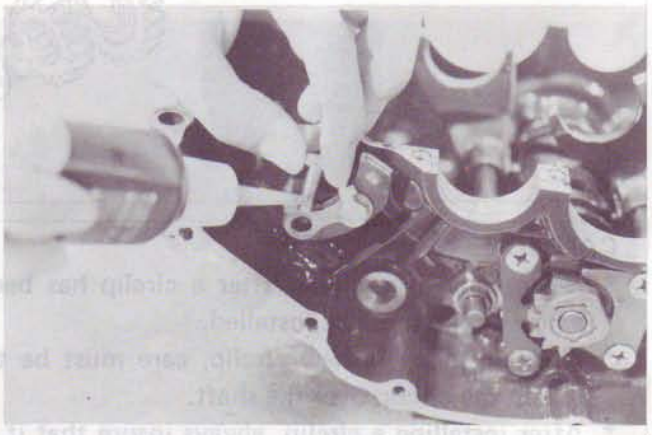
99000-32020	Thread Lock Super "1333B"



- Install the kick starter gear retainer after applying the thread lock super "1303" to the thread of kick starter gear retainer bolts.

99000-32030	Thread lock super 1303





OIL SEAL

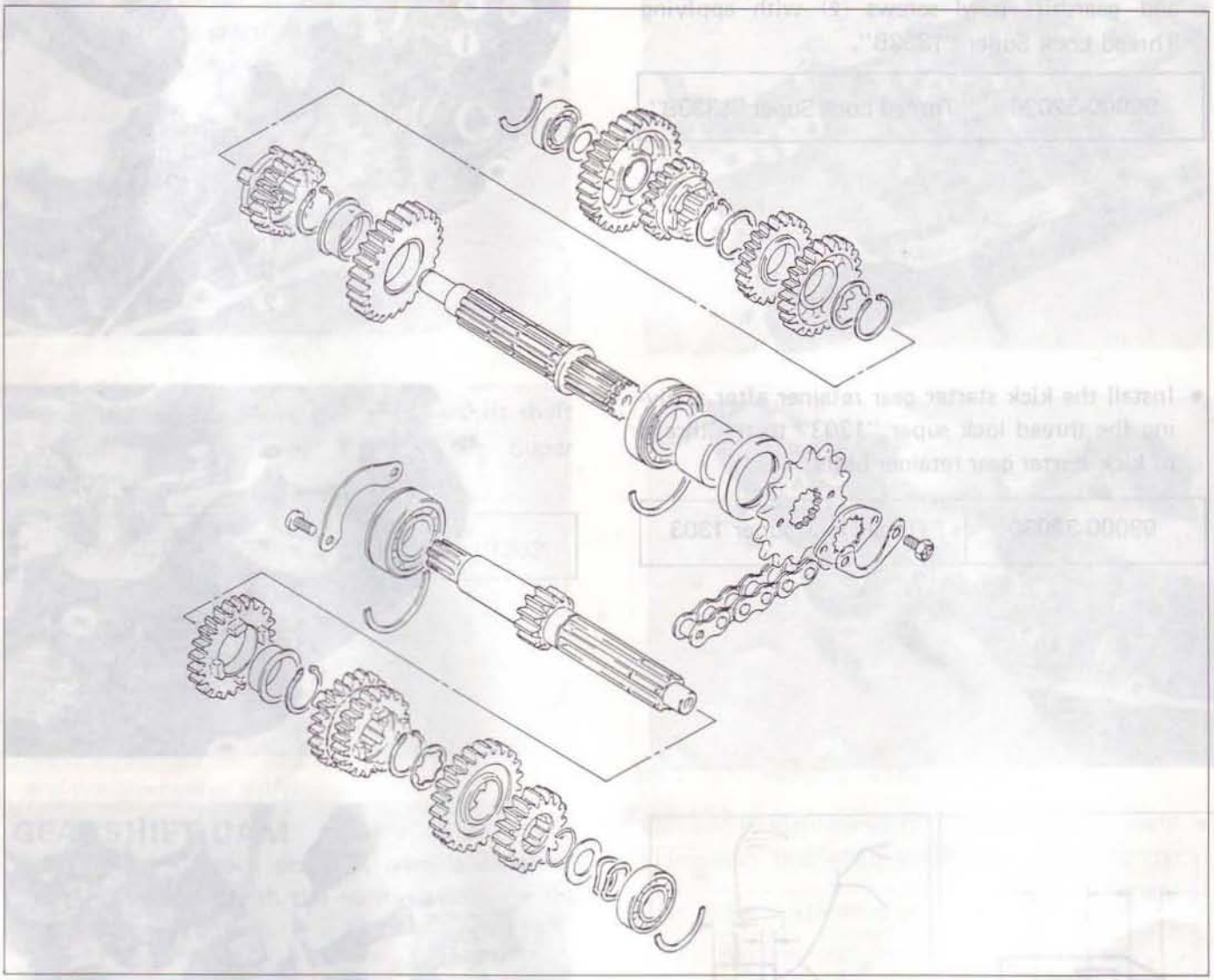
Replace removed oil seals with new ones.

- Apply SUZUKI Super Grease "A" to the lip of oil seal.

99000-25010	SUZUKI Super Grease "A"

TRANSMISSION

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

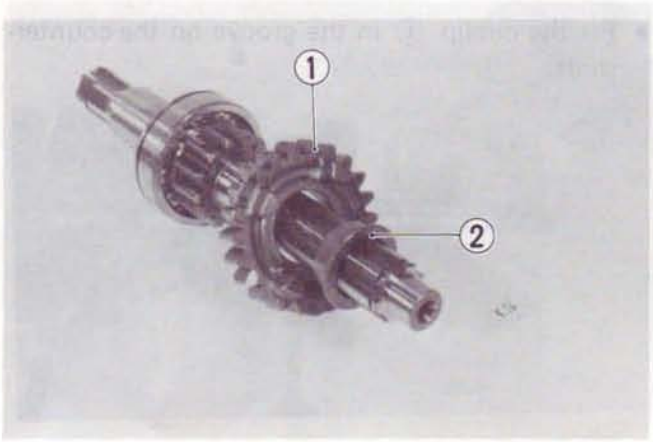


CAUTION:

* 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.

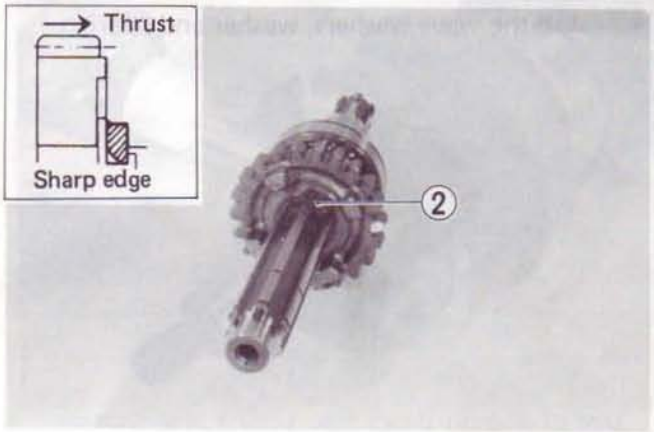
COUNTERSHAFT

- Install the 5th drive gear ① and bush ②.

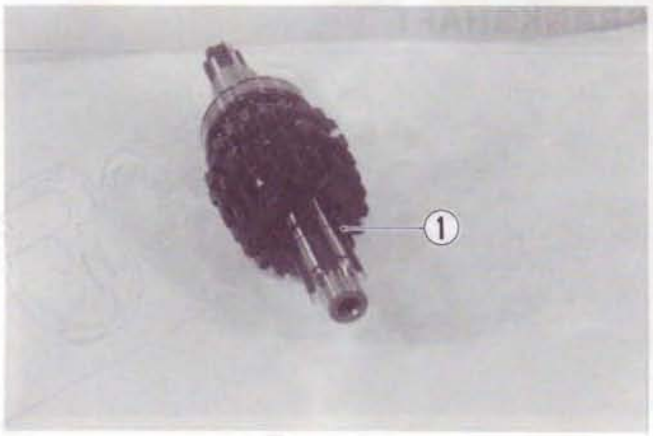


- When mounting circlip ②, pay attention to the direction of the circlip. Fit it to the side where the thrust is as shown in the figure with the rounded side against the gear surface.

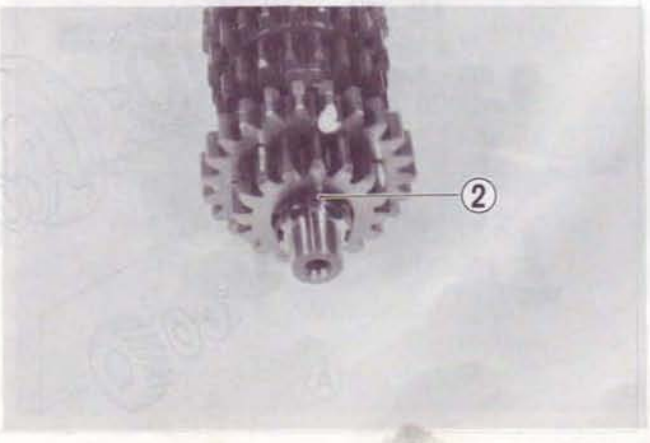
CAUTION:
Always use new circlip when reassembling.



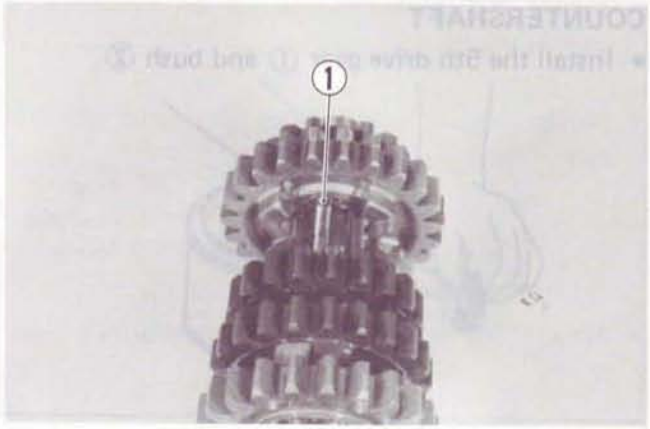
- Install the 5th drive gear and 3rd/4th drive gear on the countershaft.
- Temporarily position the circlip ① beyond the groove on the countershaft.
- Install the lock washer, top drive gear and 2nd drive gear.



- Fit the ring ② in the groove on the countershaft.

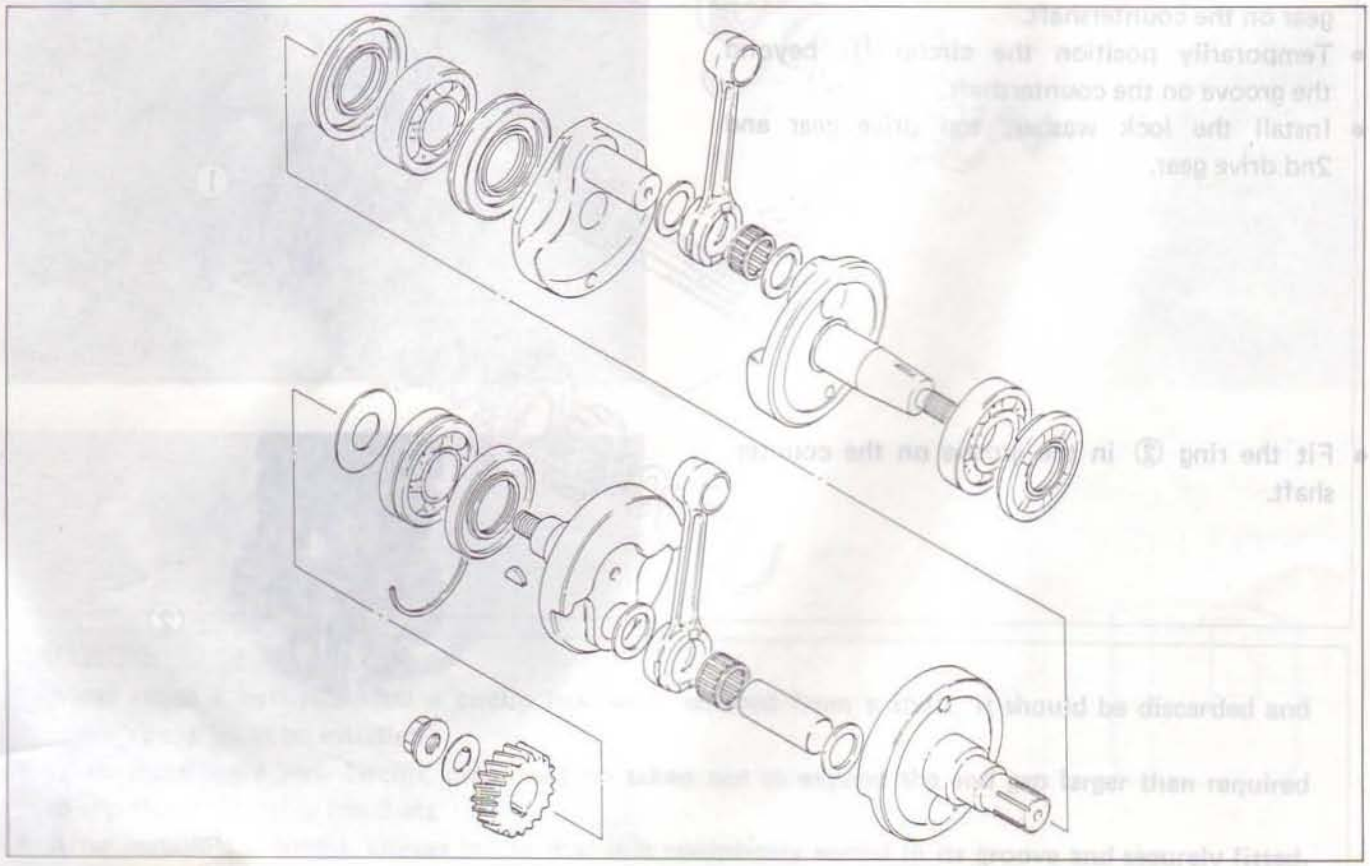


- Fit the circlip ① in the groove on the countershaft.



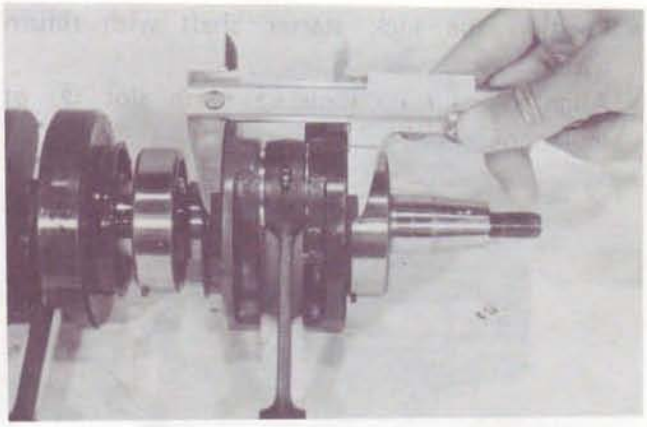
- Install the wave washers, washer and bearing.

CRANKSHAFT



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

Crank web to web width	50.0 ± 0.1 mm



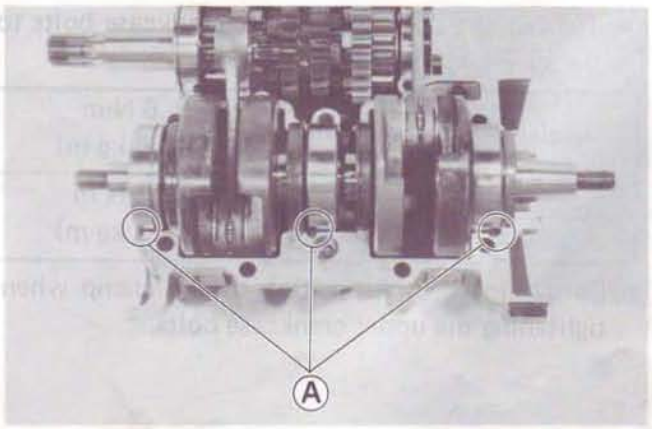
- Apply Thread Lock "1322" to the outer surface of the left crankshaft oil seal.

99000-32110	Thread Lock "1322"

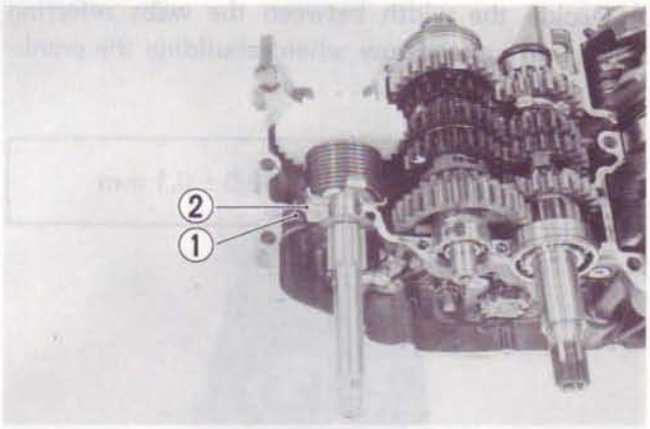
CRANKCASE

- Clean the mating surfaces of crankcase.
- Install the five C rings and oil seal.

- Be sure to install the bearing dowel pins Ⓐ in the locations indicated.

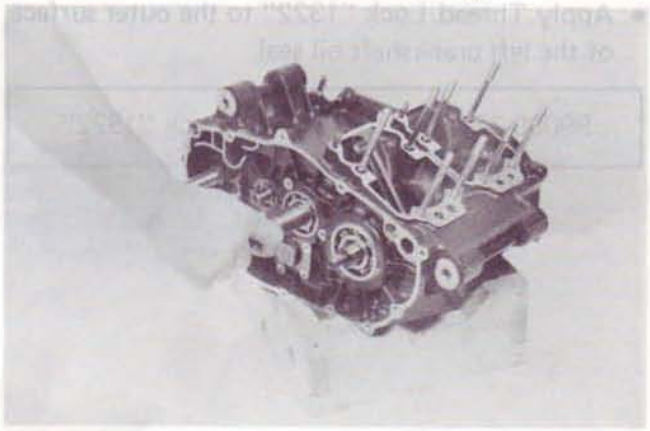


- Position the kick starter shaft with return spring.
- Align the spring hook ① with slot ② of lower crankcase.

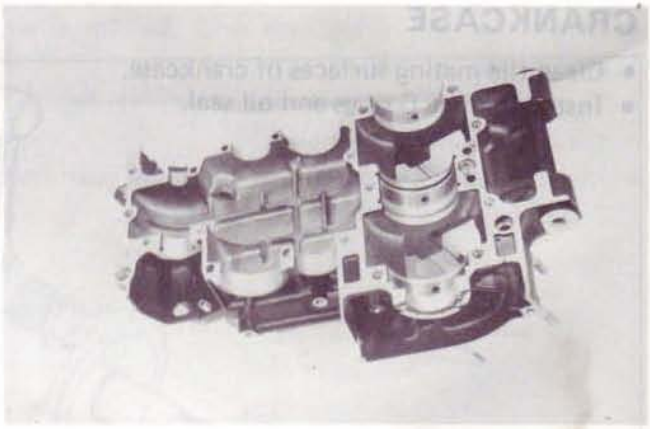


- Check the movement of the countershaft and drive shaft for smoothness when gear position is in neutral.
- Apply Suzuki Bond No. 1207B to the mating surface of the upper crankcase and part of lower crankcase in the following procedure.

99000-31140	Suzuki Bond No. 1207B



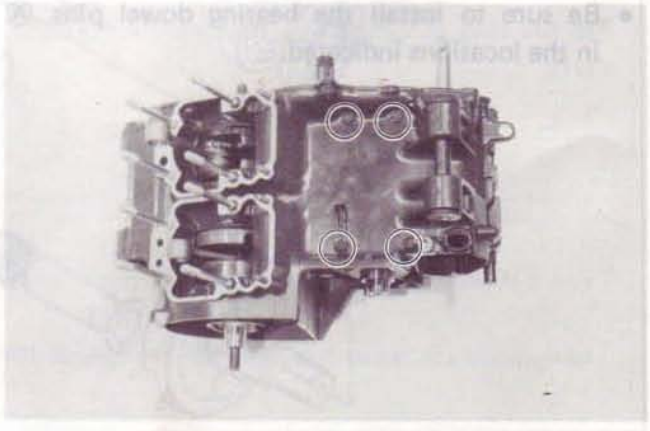
NOTE:
Use of Suzuki Bond No. 1207B is as follows:
- *** Make surface free from moisture, oil, dust and other foreign materials.**
- *** Spread on surfaces thinly to form and even layer and assemble the cases within few minutes.**
- *** Take extreme care not to apply any bond No. 1207B to the bearing surfaces.**
- *** Applicable on distorted surface as it forms a comparatively thick film.**



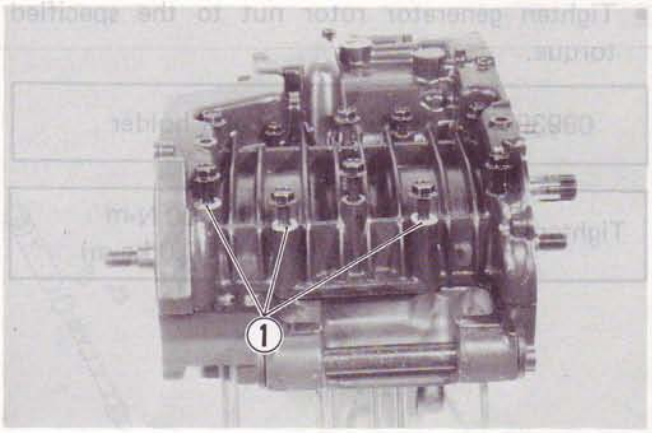
- Tighten the upper and lower crankcase bolts to the specified torque values.

Initial tightening torque	6 mm	6 N·m (0.6 kg-m)
	8 mm	13 N·m (1.3 kg-m)

- Be careful of the position of the clamp when tightening the upper crankcase bolts.



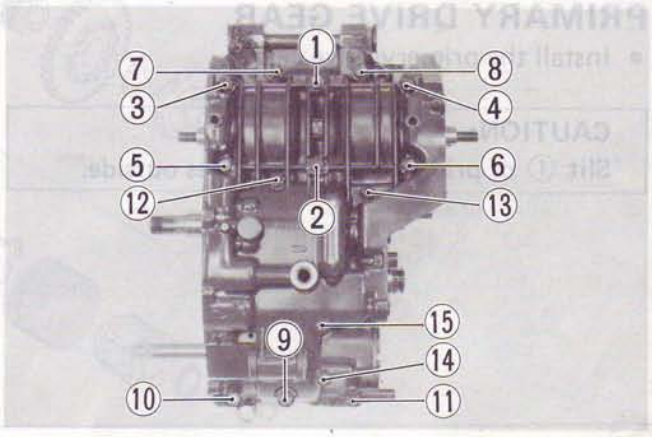
- Install the gaskets ①.



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

Tightening torque

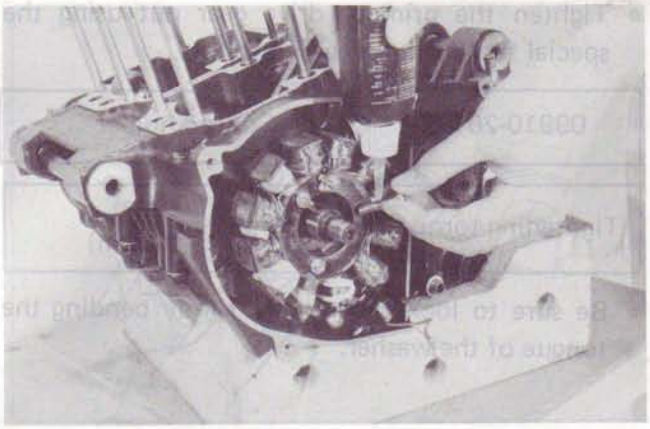
Final	6 mm bolt	9 – 13 N·m (0.9 – 1.3 kg-m)
	8 mm bolt	20 – 24 N·m (2.0 – 2.4 kg-m)



STATOR AND PICK-UP COIL

- Install the stator after applying the thread lock "1342" to the securing screws.

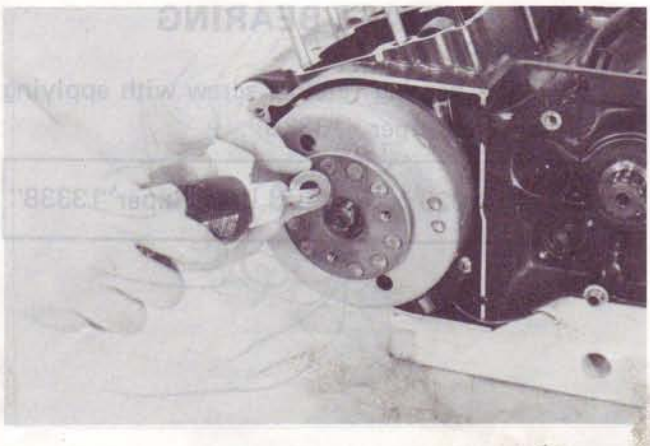
99000-32050	Thread lock "1342"



GENERATOR ROTOR

- Clean thoroughly both mating surfaces of the rotor and crankshaft with cleaning solvent.
- Fit key in the key slot on the crankshaft.
- Install the generator rotor.
- Apply a small quantity of Thread Lock "1324" to the threaded parts of crankshaft.

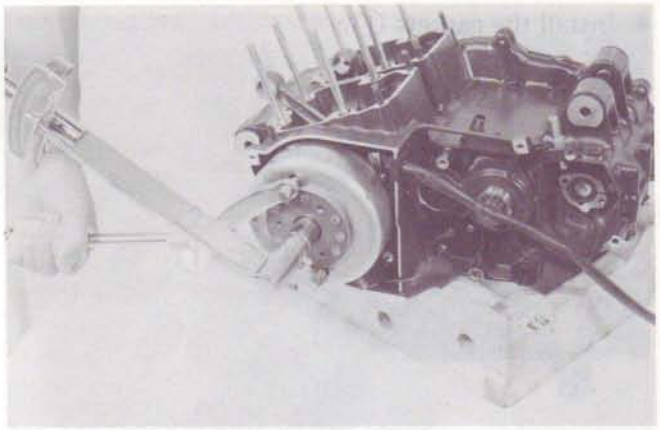
99000-32120	Thread Lock "1324"



- Tighten generator rotor nut to the specified torque.

09930-40113	Rotor holder

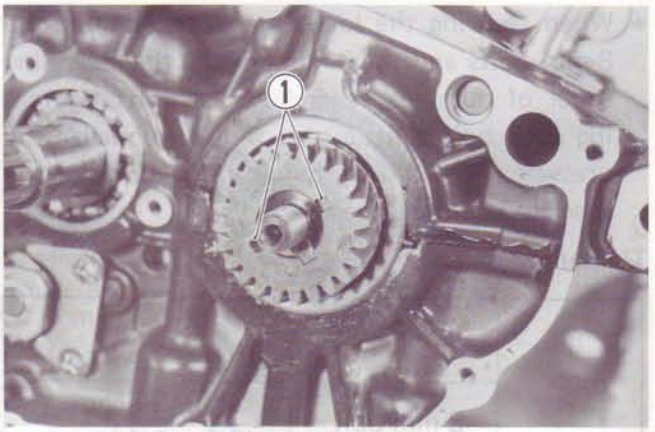
Tightening torque	80 – 100 N·m (8.0 – 10.0 kg-m)



PRIMARY DRIVE GEAR

- Install the primary drive gear.

CAUTION:
Slit ① of primary drive gear faces outside.

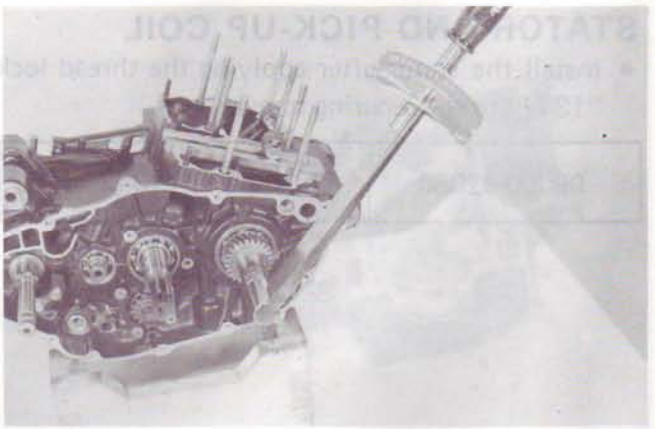


- Tighten the primary drive gear nut using the special tool to the specified torque.

09910-20115	Conrod holder

Tightening torque	60 – 80 N·m (6.0 – 8.0 kg-m)

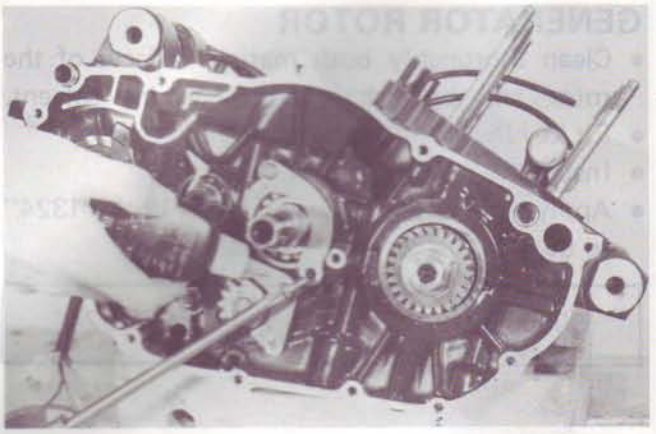
- Be sure to lock the nut by firmly bending the tongue of the washer.



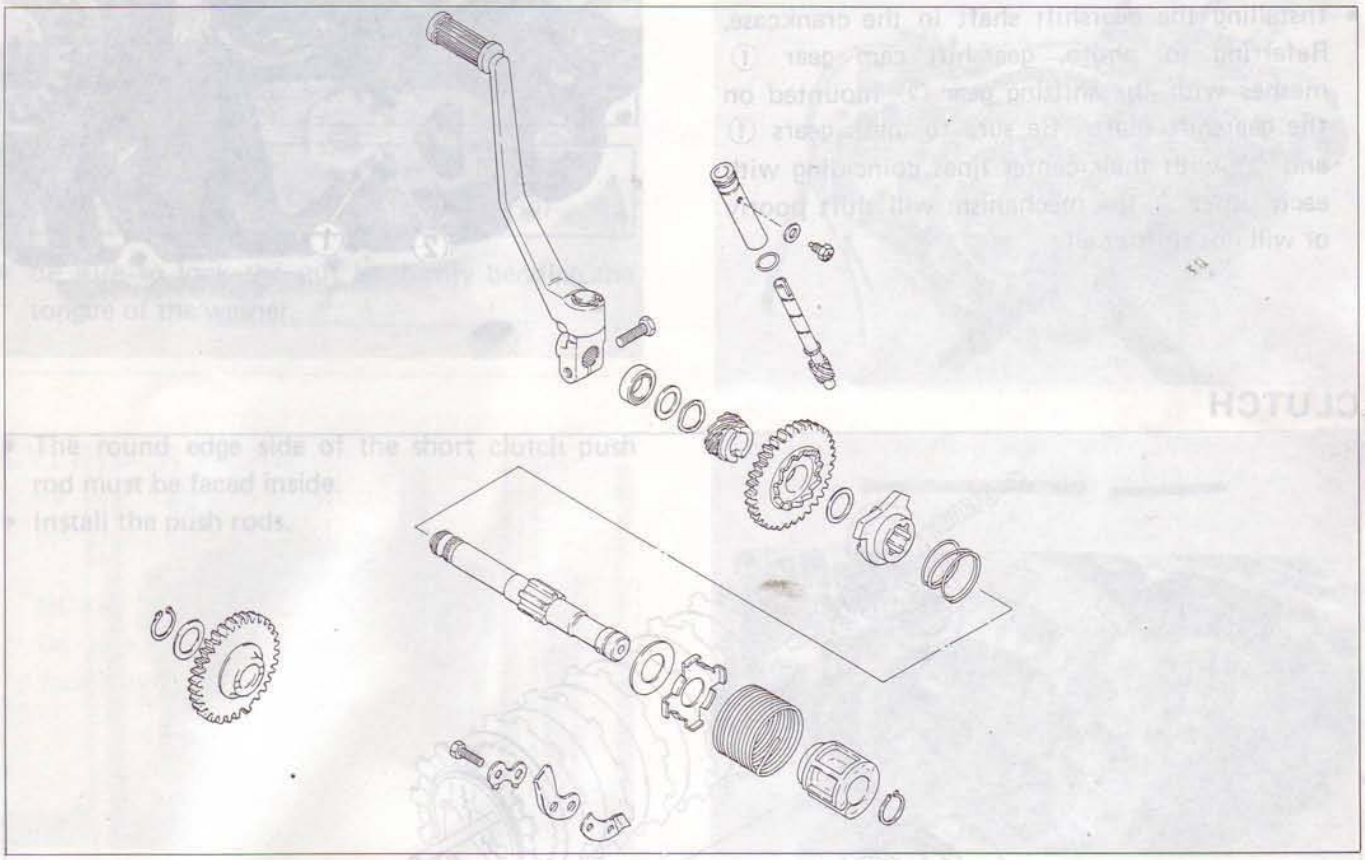
COUNTERSHAFT BEARING RETAINER

- Install the bearing retainer screw with applying Thread Lock Super "1333B".

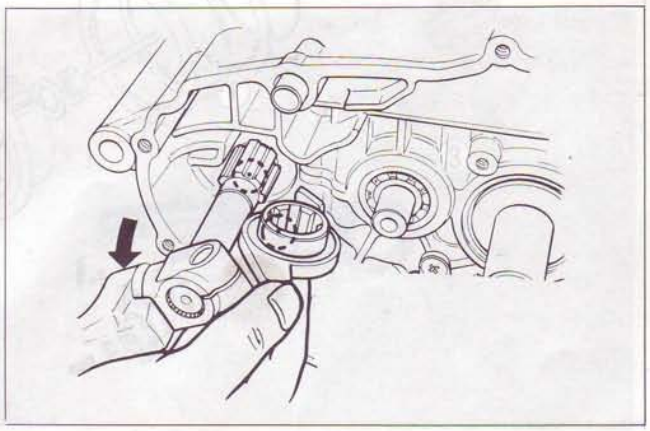
99000-32020	Thread Lock Super"1333B"

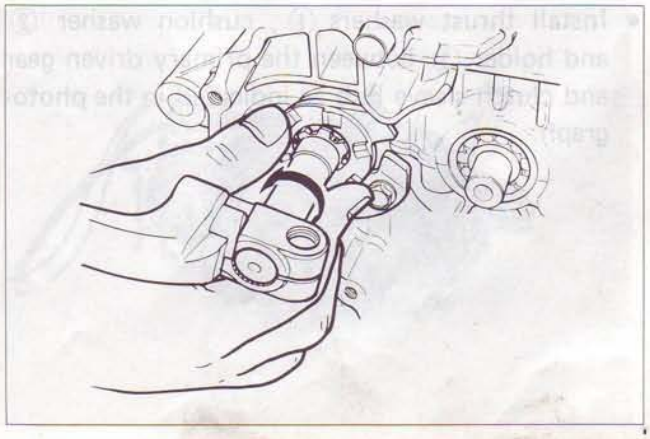


KICK STARTER



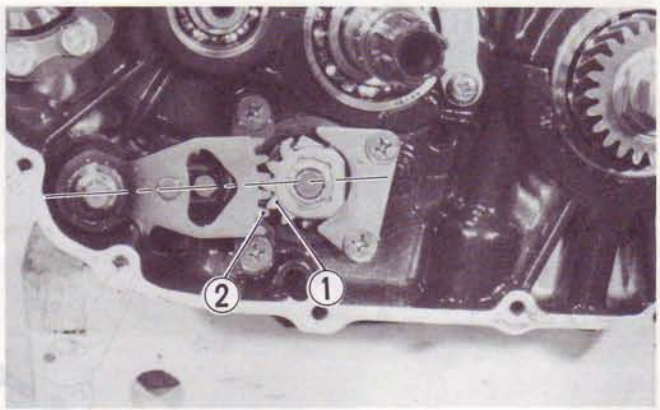
- Install the kick starter return spring.
- Turn the kick starter shaft counterclockwise by using the kick starter lever so that the marking on the kick starter shaft is on top.
- Fix the kick starter so that the marking on the kick starter matches the marking on the kick starter shaft.
- Free the kick starter lever with the kick starter depressed and the kick starter will be fixed in the kick starter guide.



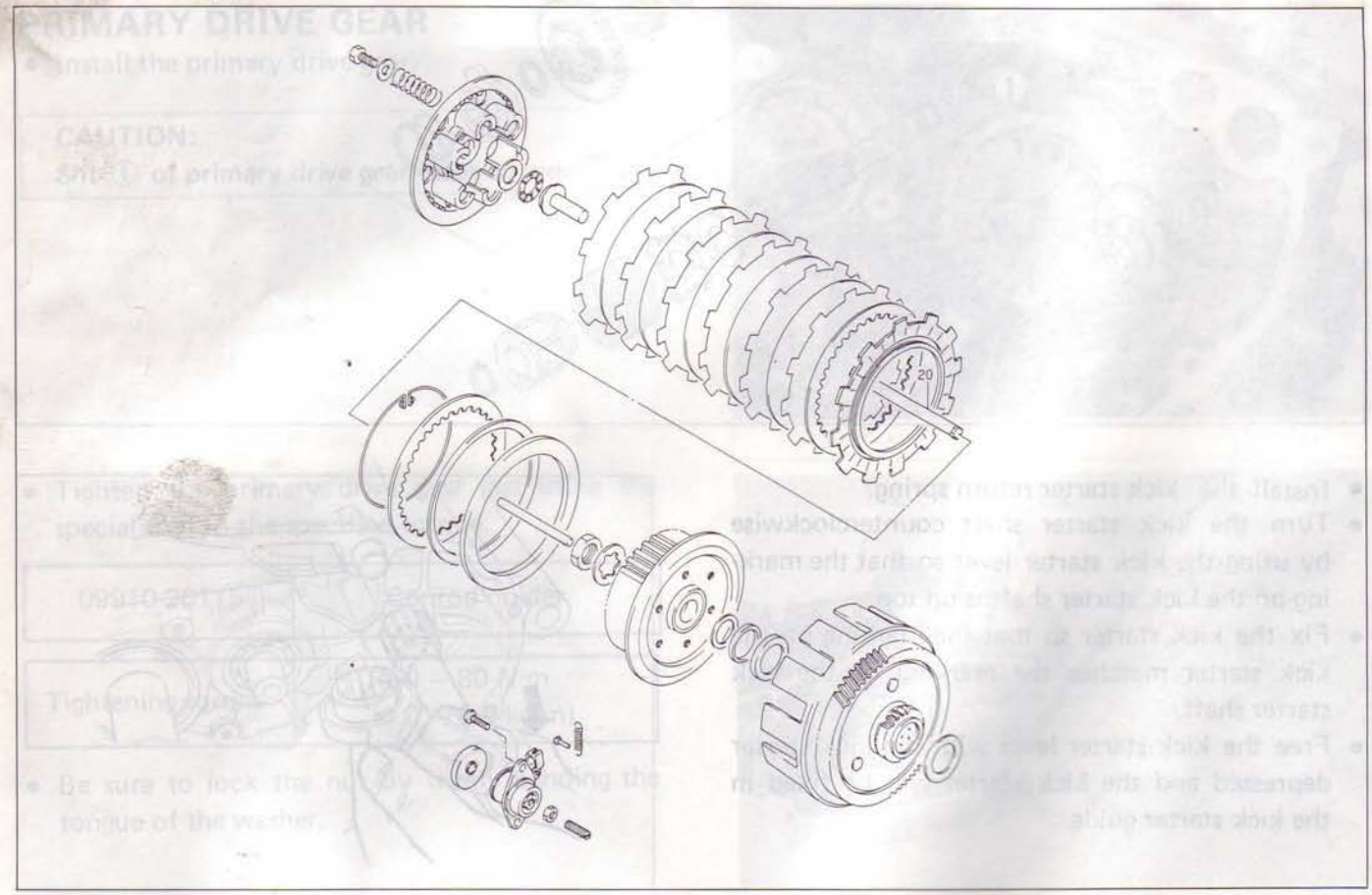


GEARSHIFT SHAFT

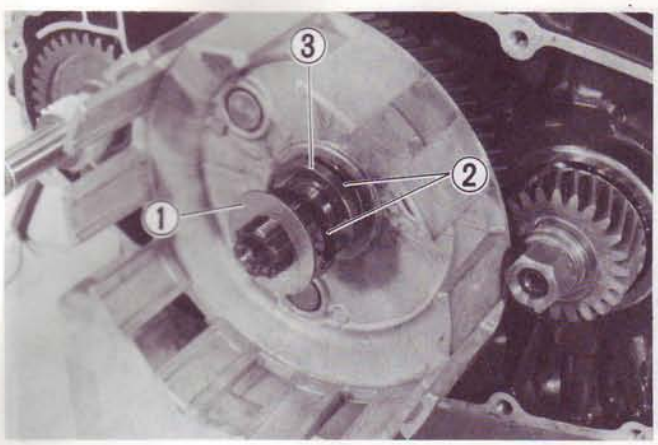
- Installing the gearshift shaft in the crankcase. Referring to photo. gearshift cam gear ① meshes with the shifting gear ② mounted on the gearshift shaft. Be sure to mesh gears ① and ② with their center lines coinciding with each other or the mechanism will shift poorly or will not shift at all.



CLUTCH



- Install thrust washers ① , cushion washer ② and holder ③ between the primary driven gear and clutch sleeve hub as indicated in the photograph.

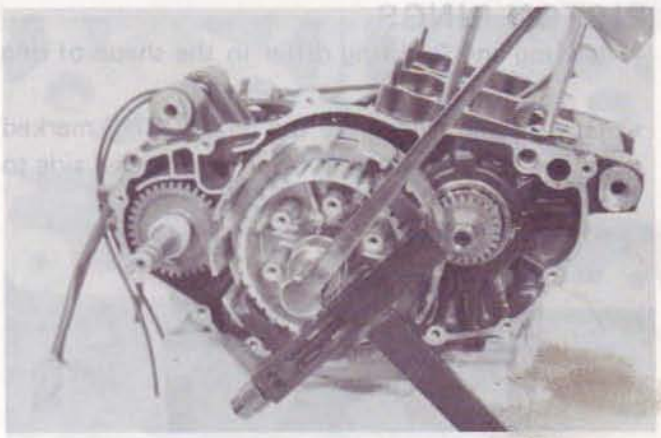


- Using special tool, tighten the clutch sleeve hub nut with specified torque.

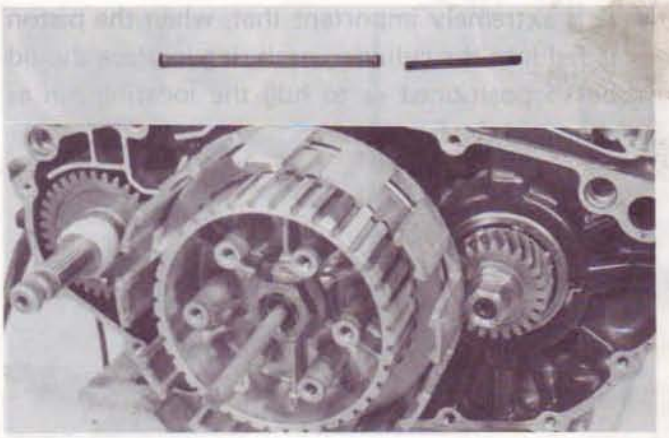
09920-53710	Clutch sleeve hub holder

Tightening torque	40 – 60 N·m (4.0 – 6.0 kg-m)

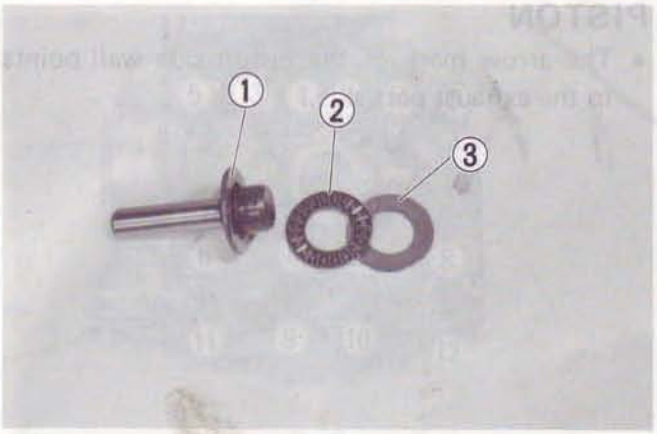
- Be sure to lock the nut by firmly bending the tongue of the washer.



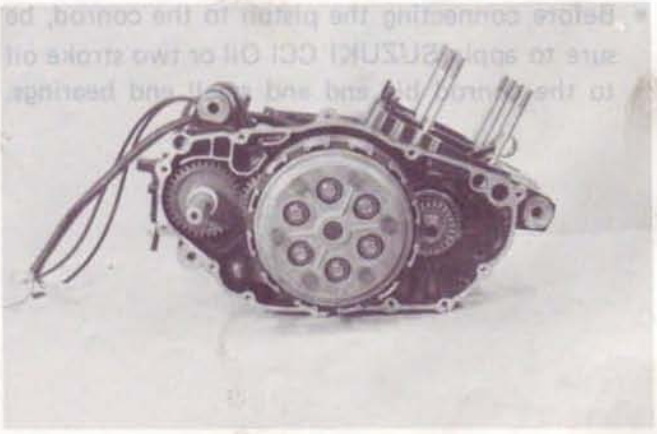
- The round edge side of the short clutch push rod must be faced inside.
- Install the push rods.



- Install push piece ①, thrust bearing ② and thrust washer ③ properly.



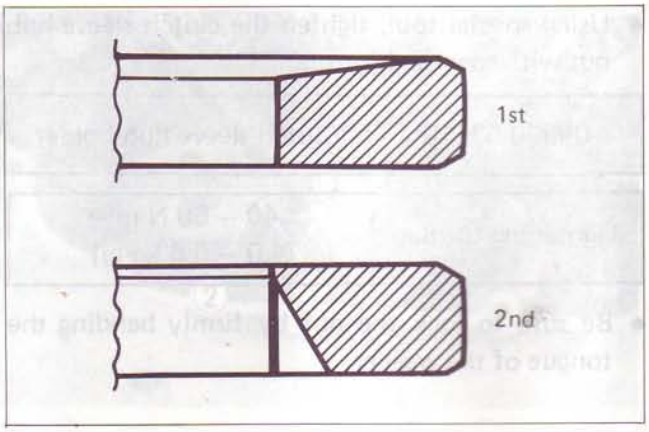
- Tighten the clutch spring set bolts in the indicated manner, making sure that they are tightened just a little at a time to the same final tightness.



PISTON RINGS

- 1st ring and 2nd ring differ in the shape of ring

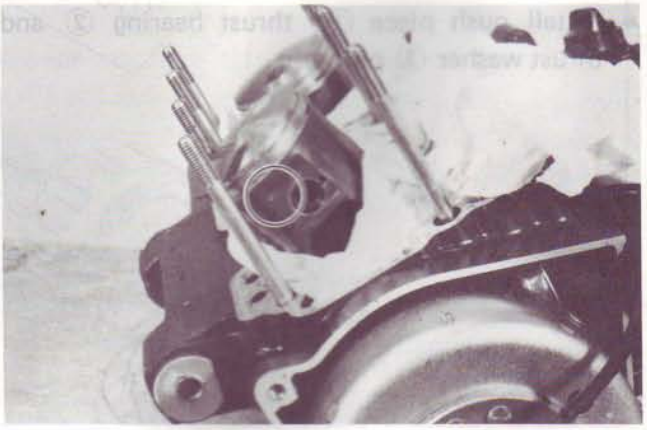
- 1st and 2nd rings have the letter "RN" marked on the top. Be sure to bring the marked side to the top when fitting them to the piston.



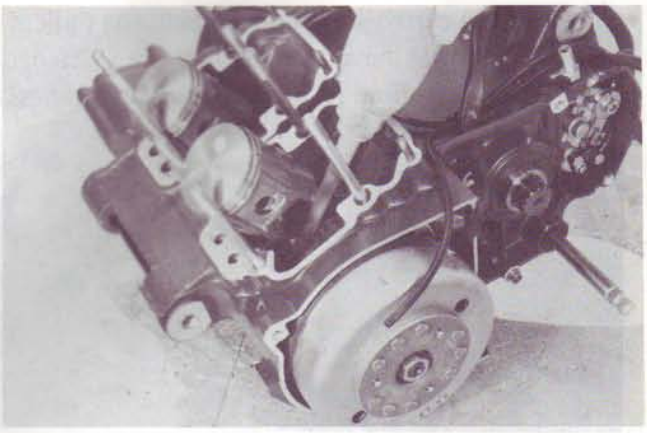
- It is extremely important that, when the piston is fed into the cylinder, each ring in place should be so positioned as to hug the locating pin as shown in the Fig.

PISTON

- The arrow mark of the piston side wall points to the exhaust port side.

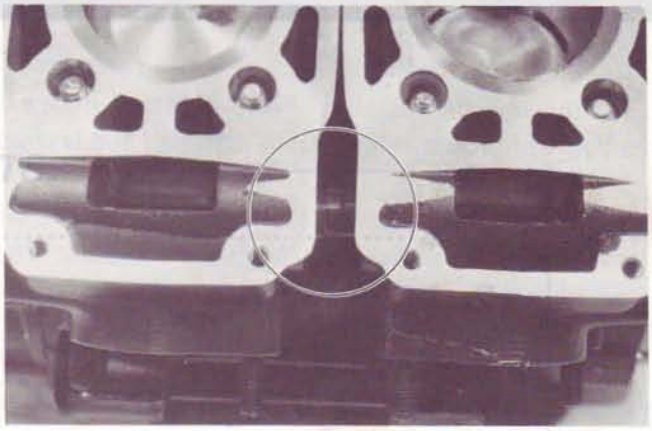


- Before connecting the piston to the conrod, be sure to apply SUZUKI CCI Oil or two stroke oil to the conrod big end and small end bearings.



CYLINDER

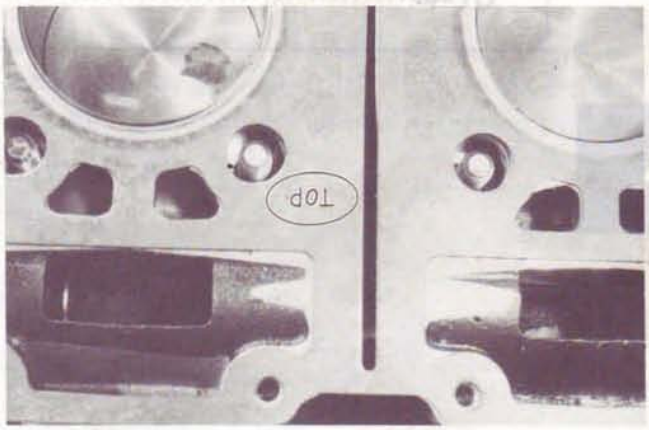
- Install the cylinder with aligning the exhaust valves.



CYLINDER HEAD

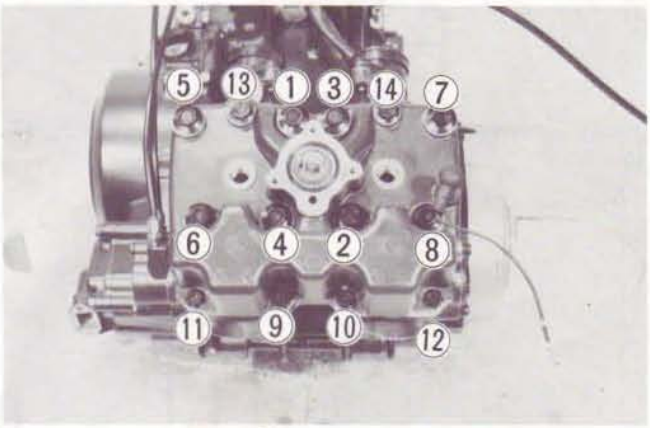
- Be sure to replace cylinder head gasket with new one to prevent gas leakage.

NOTE:
Be sure to identify that "Top" marked surface is cylinder head side.



- Mount the cylinder head on the cylinder block.
- Tighten the 8-mm nuts and 6-mm bolts to specification with a torque wrench sequentially in the ascending order of numbers.

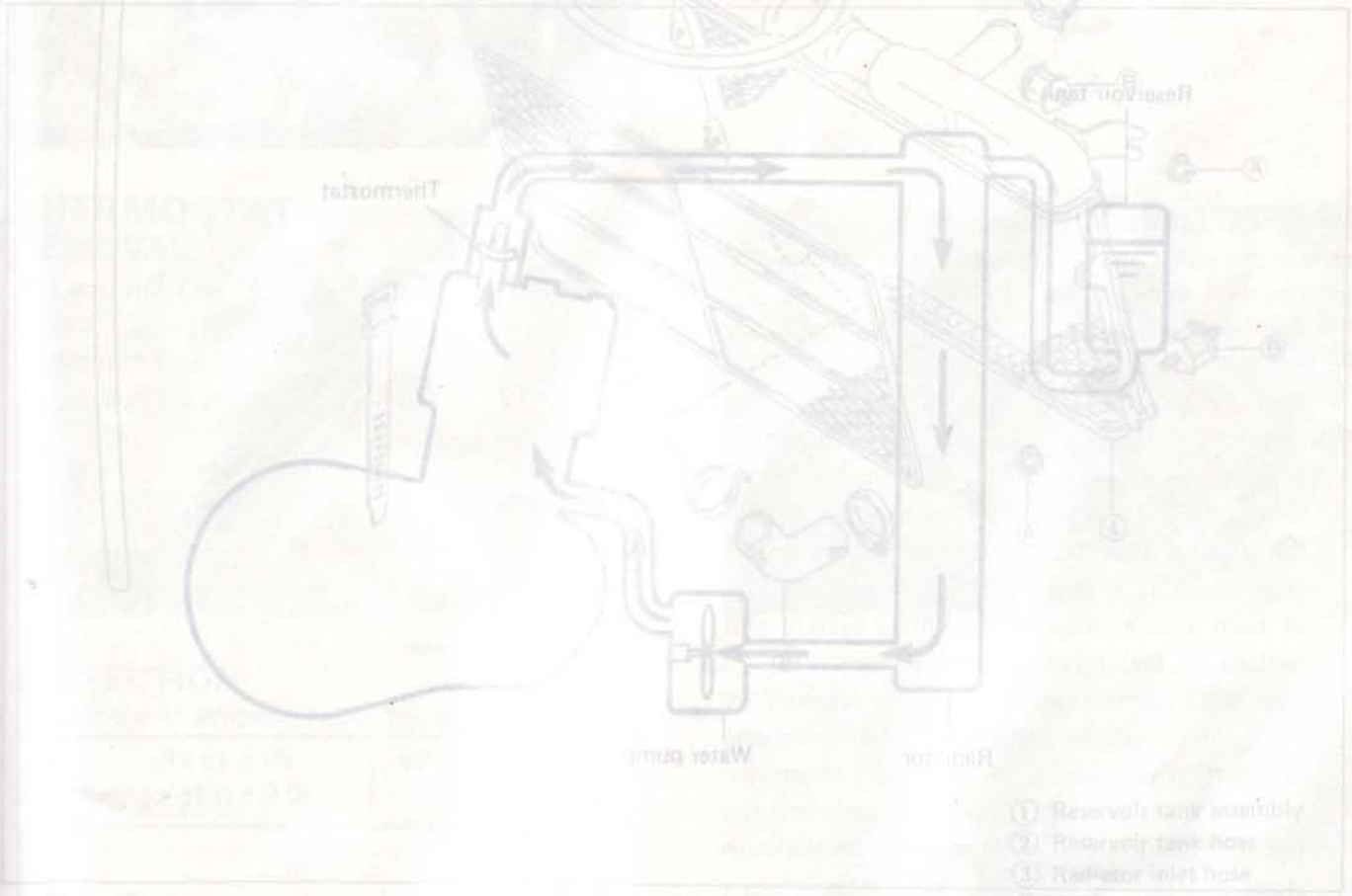
	8-mm nut	6-mm bolt
Tightening torque	23 – 27 N·m (2.3 – 2.7 kg-m)	9 – 11 N·m (0.9 – 1.1 kg-m)



COOLING SYSTEM

CONTENTS

4



COOLING SYSTEM

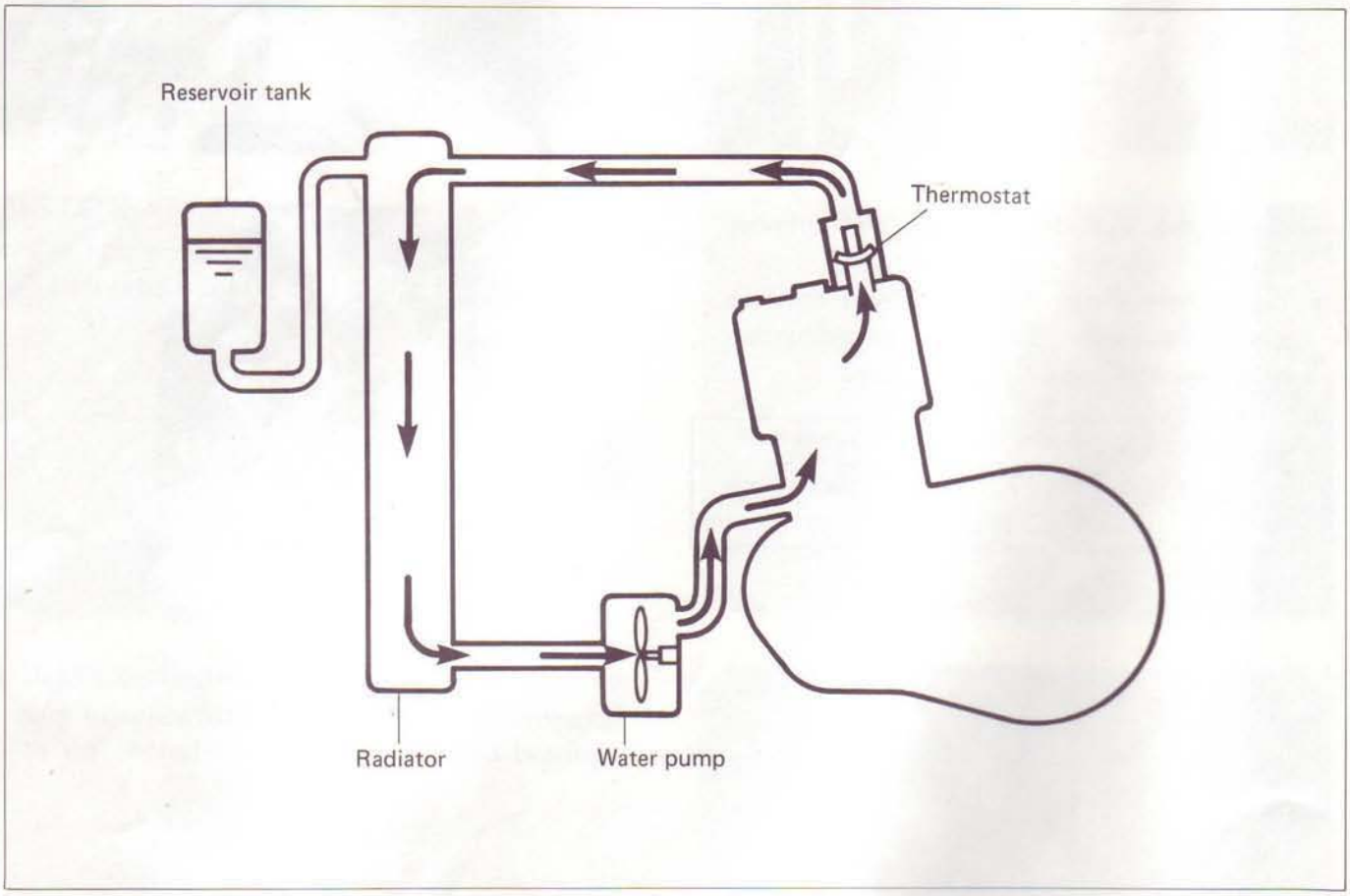
DESCRIPTION

The engine is cooled by coolant set in forced recirculation through jackets formed in the cylinder and head, and through the radiator. For the water pump, a high-capacity centrifugal pump is used. For the radiator, a tube-and-fin type aluminum in material, and is characterized by lightness in weight and good heat dissipation.

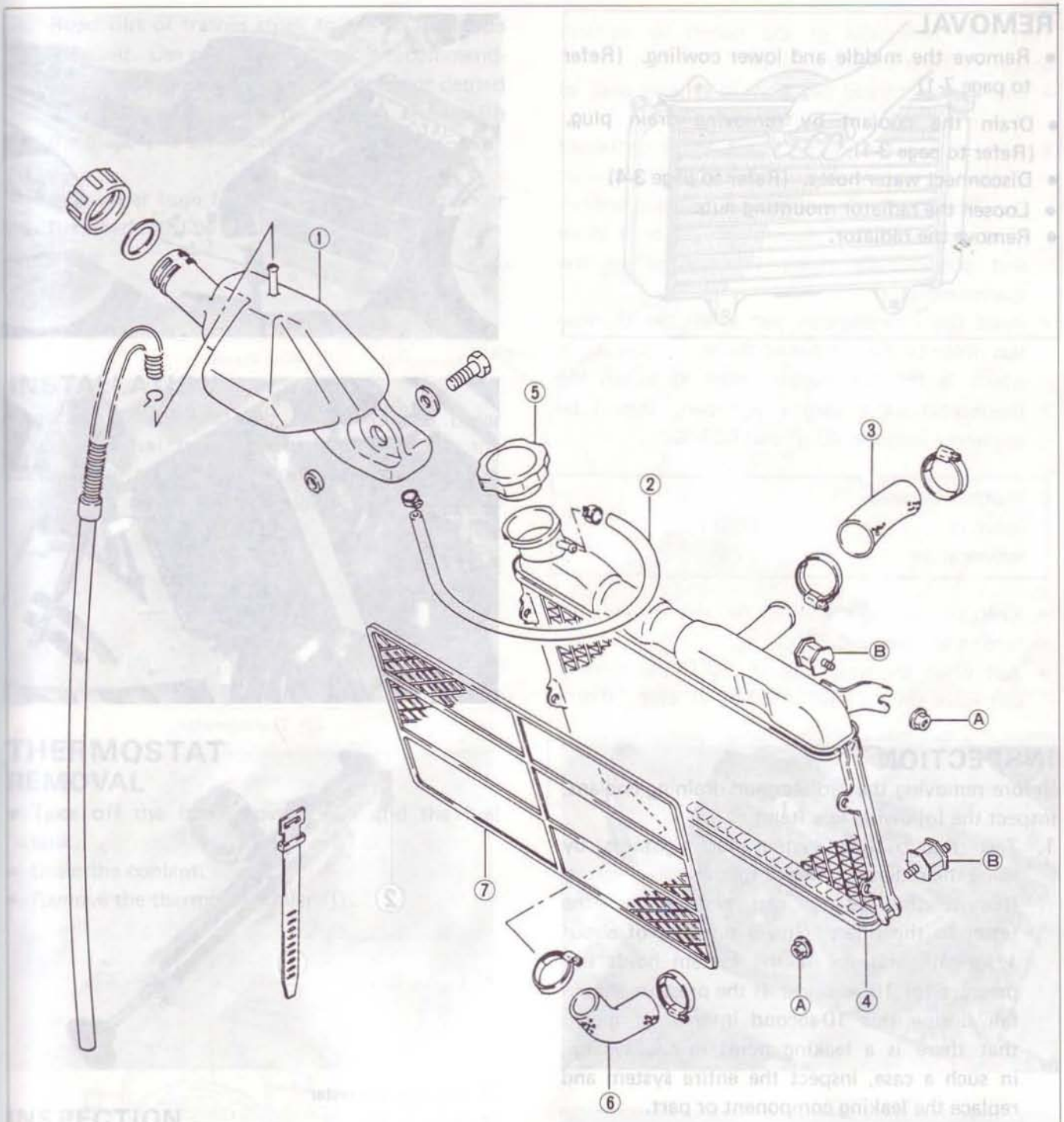
The thermostat is of wax pellet type, complete with a valve as the means of temperature-dependent control over the flow of water through the radiator. The valve is actuated by the temperature-sensitive wax contained in the pellet.

Referring to the following illustration, the thermostat is in closed condition, so that water recirculates through the route comprising pump, engine, by-pass holes of the thermostat and radiator in the regulated condition.

As the coolant temperature rises to 65°C and the thermostat valve unseats the normal water flow is established. At about 80°C of rising coolant temperature, the thermostat becomes completely open and the most of heat is released to the atmosphere through the radiator core.



RADIATOR AND WATER HOSES



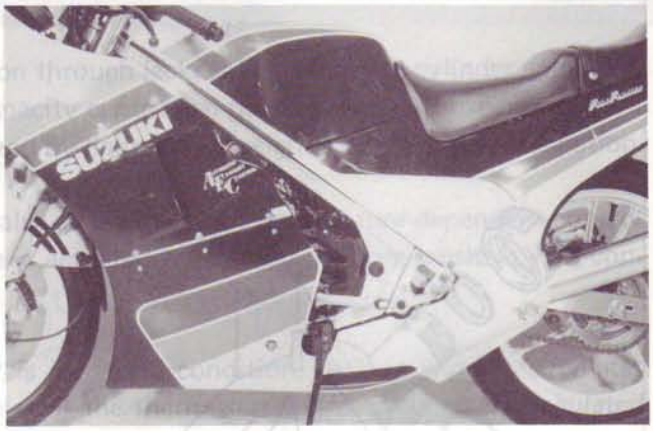
1. Reservoir tank assembly
2. Reservoir tank hose
3. Radiator inlet hose
4. Radiator assembly
5. Radiator cap
6. Radiator outlet hose
7. Radiator cover

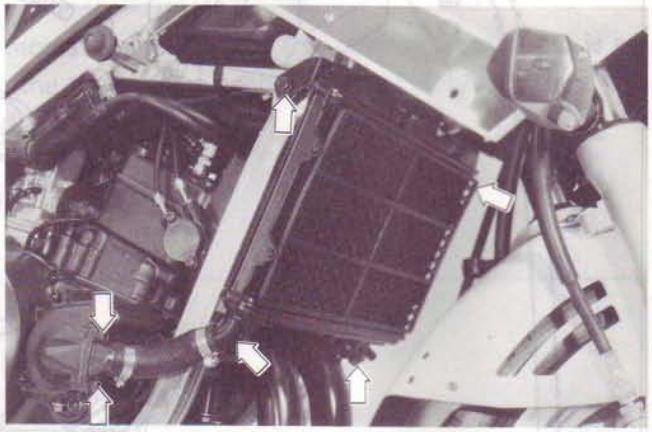
Tightening torque

Item	N·m	kg-m
Ⓐ	7 – 9	0.7 – 0.9
Ⓑ	10 – 13	1.0 – 1.3

REMOVAL

- Remove the middle and lower cowling. (Refer to page 7-1)
- Drain the coolant by removing drain plug. (Refer to page 3-1).
- Disconnect water hoses. (Refer to page 3-4)
- Loosen the radiator mounting nuts.
- Remove the radiator.

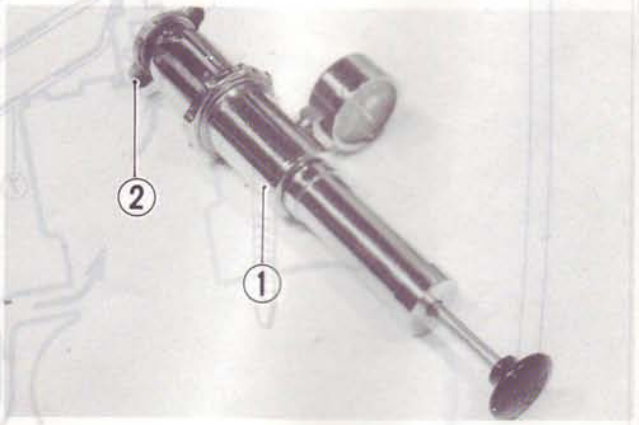




INSPECTION

Before removing the radiator and draining coolant, inspect the following two items.

1. Test the cooling system for tightness by using the radiator tester as follows:
   Remove the radiator cap, and connect the tester to the filler. Give a pressure of about 1 kg/cm² and see if the system holds this pressure for 10 seconds. If the pressure should fall during this 10-second interval, it means that there is a leaking point in the system; in such a case, inspect the entire system and replace the leaking component or part.
2. Test the radiator cap for relieving pressure by using the radiator tester in the following manner: Fit the cap to the tester, as shown, and build up pressure slowly by operating the tester. Make sure that the pressure build-up stops at 0.9 ± 0.15 kg/cm² and that, with the tester held standstill, the cap is capable of that pressure for at least 10 seconds. Replace the cap if it is found not to satisfy either of these two requirements.

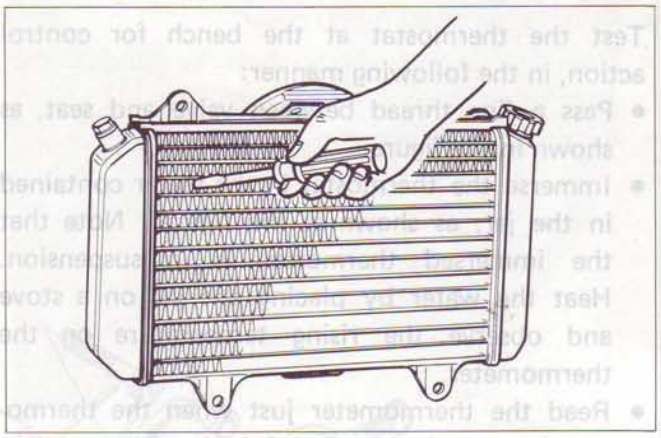


① Radiator cap tester
② Radiator cap

Radiator cap valve release pressure	90 ± 15 kPa (0.9 ± 0.15 kg/cm²)

3. Road dirt or trashes stuck to the fins must be removed. Use of compressed air is recommended for this cleaning. Fins bent down or dented can be repaired by straightening them with the blade of a small screwdriver.

4. Any water hose found in cracked condition or flattened must be replaced.



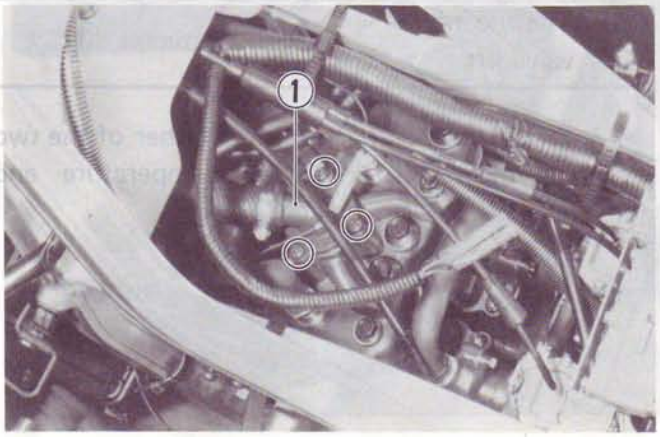
INSTALLATION

The radiator is reinstalled in the reverse order of the removal procedure. After installing the radiator, be sure to add cooling water: refer to page 2-9 for refilling information.

THERMOSTAT

REMOVAL

- Take off the frame covers, seat and the fuel tank.
- Drain the coolant.
- Remove the thermostat cover ①.



INSPECTION

Inspect the thermostat pellet for signs of cracking.

Test the thermostat at the bench for control action, in the following manner:

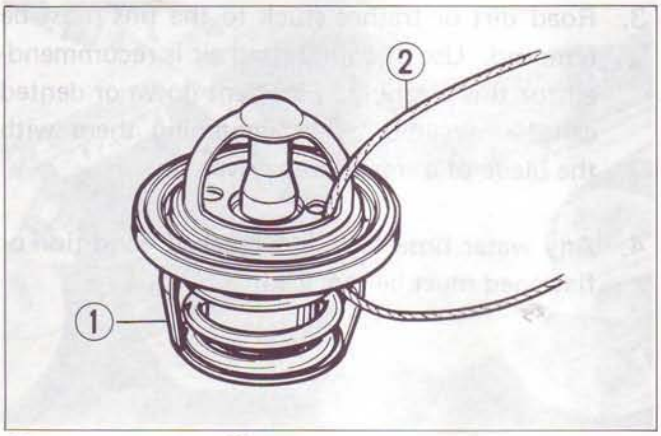
- Pass a fine thread between valve and seat, as shown in the figure.
- Immerse the thermostat in the water contained in the jar, as shown in the figure. Note that the immersed thermostat is in suspension. Heat the water by placing the jar on a stove and observe the rising temperature on the thermometer.
- Read the thermometer just when the thermostat drops to the bottom of the jar. This reading, which is the temperature level at which the thermostat valve begins to open, should be anywhere between 63.5° and 66.5°C.

Thermostat valve opening temperature	65.0 ± 1.5°C

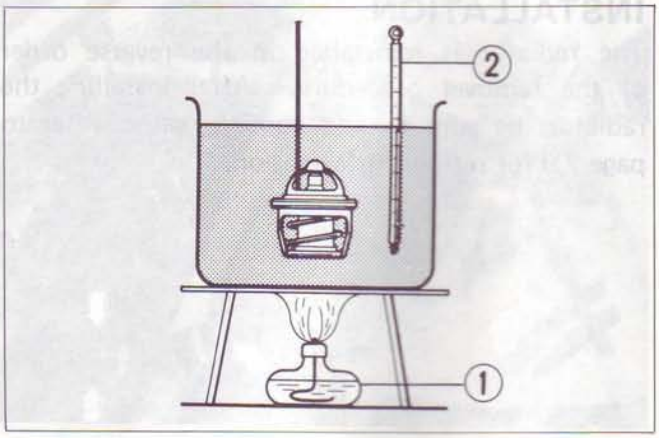
- Keep on heating the water to raise its temperature to and beyond 80°C.
- Just when the water reaches 80°C, the thermostat valve should have lifted by at least 6.0 mm.

Thermostat valve lift	Over 6.0 mm at 80°C

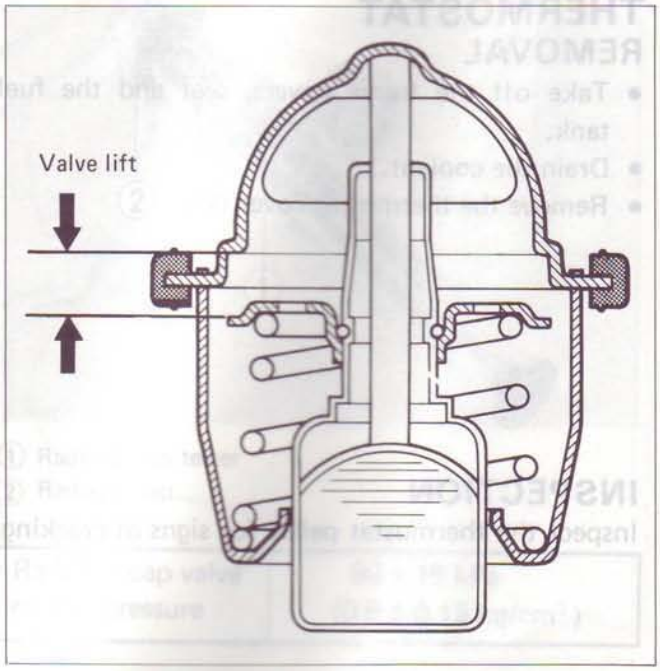
- A thermostat failing to satisfy either of the two requirements (start-to-open temperature and valve lift) must be replaced.



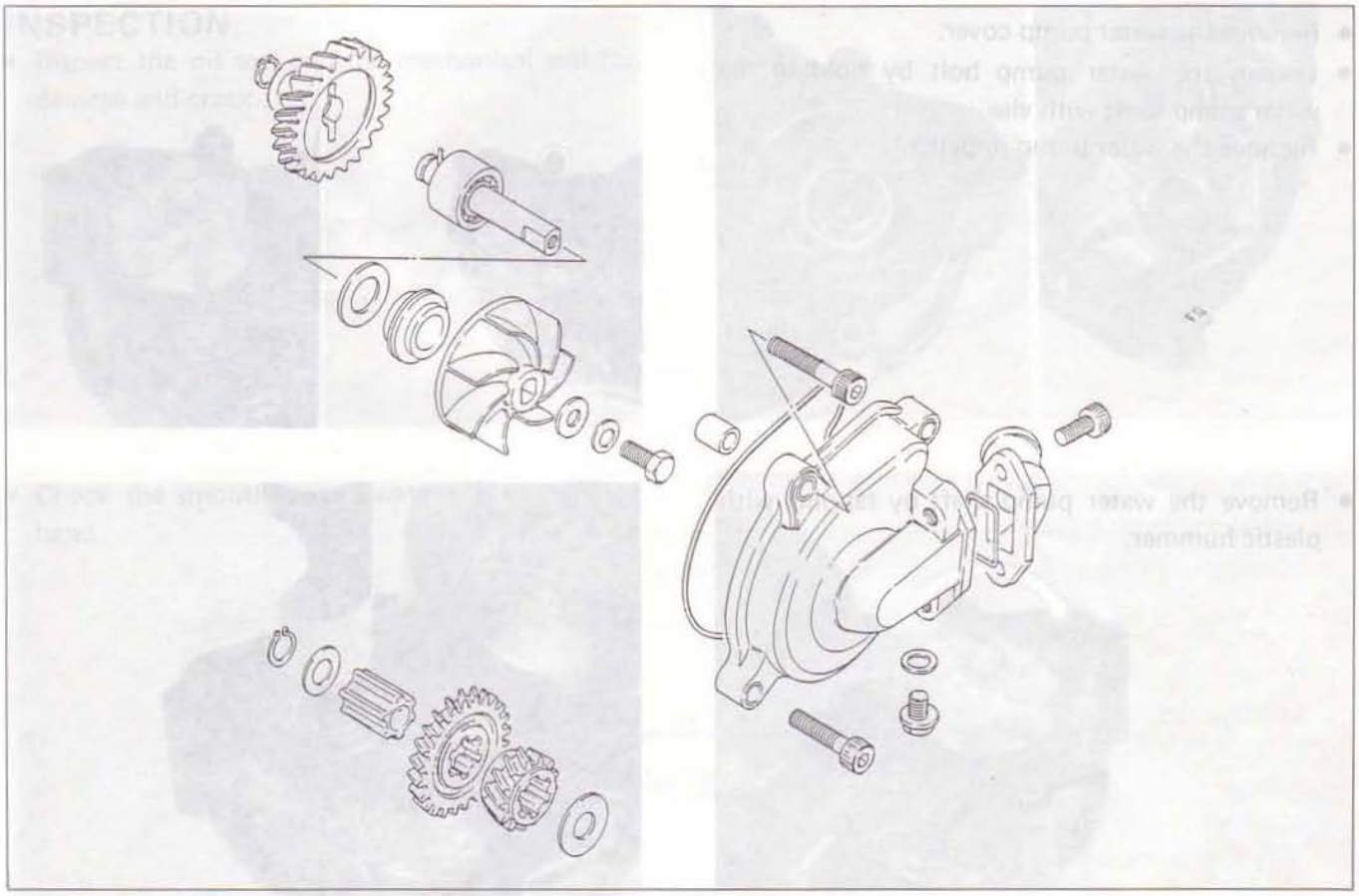
① Thermostat ② Fine thread



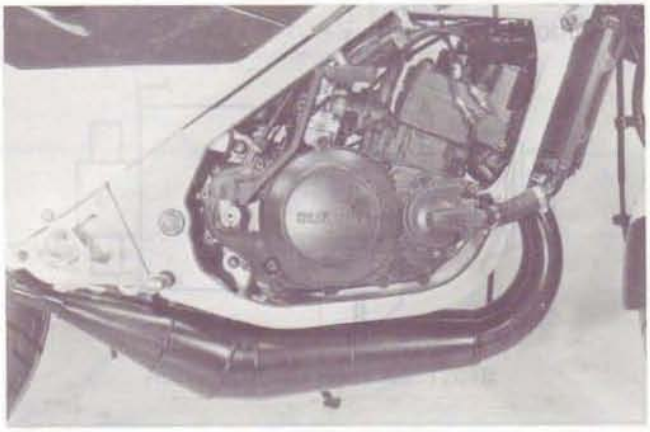
① Stove ② Thermometer



WATER PUMP

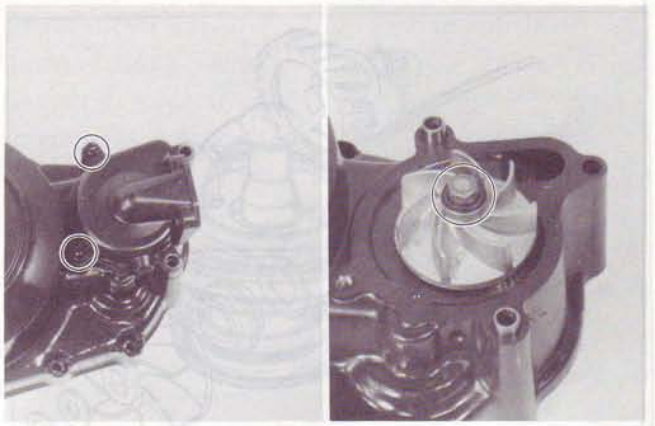


- Remove the middle and lower cowling. (Refer to page 7-1)
- Drain the transmission oil and coolant.
- Loosen and remove the inlet connector bolt.
- Take off the inlet connector.
- Disconnect the tachometer cable.
- Remove the kick starter lever and clutch cover.

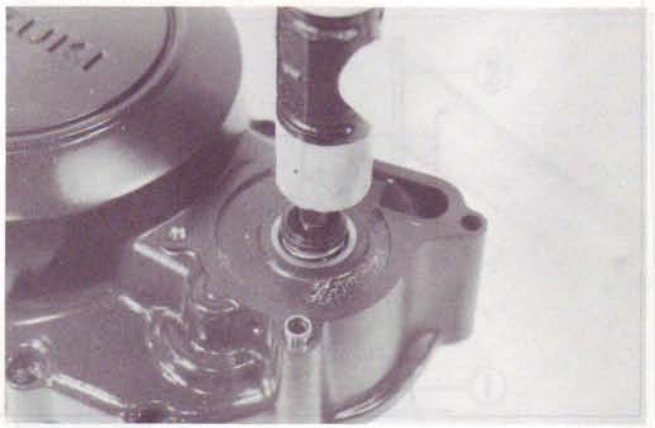


- Remove the water pump idle gear and driven gear by removing the circlip.

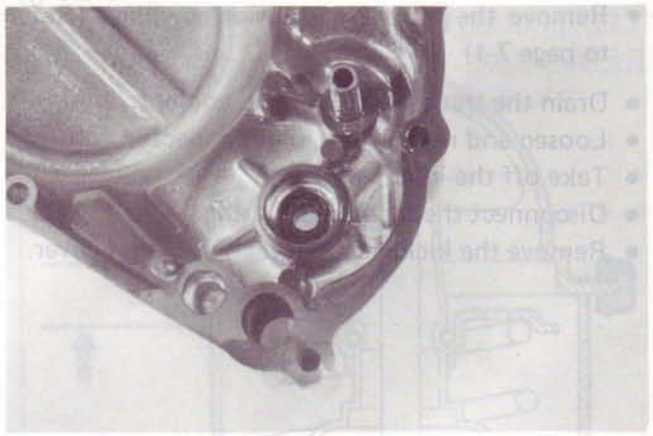
- Remove the water pump cover.
- Loosen the water pump bolt by holding the water pump shaft with vise.
- Remove the water pump impeller.



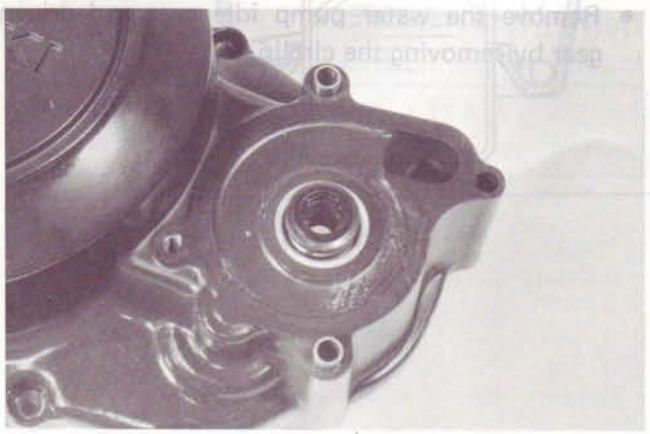
- Remove the water pump shaft by tapping with plastic hummer.



- Remove the oil seal.

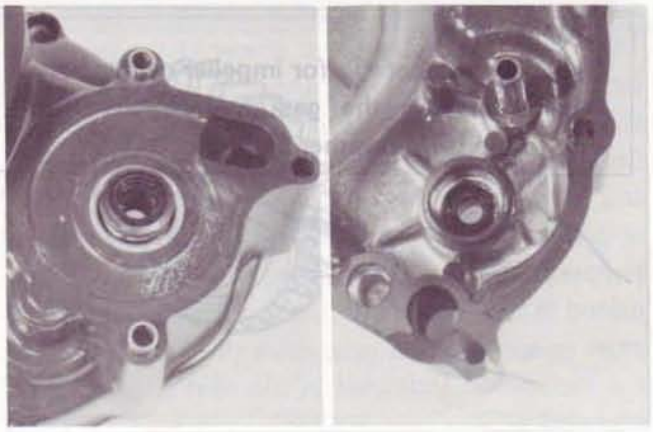


- Remove the mechanical seal.



INSPECTION

- Inspect the oil seal and the mechanical seal for damage and crack.

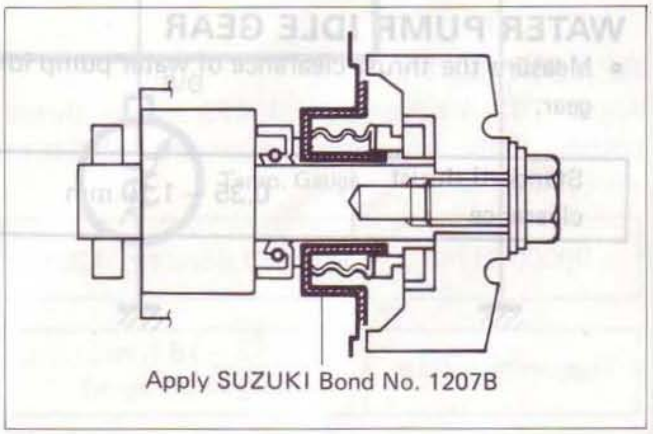


- Check the smoothness of water pump shaft by hand.

REASSEMBLY

- Reassemble and remount the water pump in the reverse order of disassembly and removal and also carry out the following steps.
- When installing the mechanical seal, apply the SUZUKI BOND No. 1207B to the matching surface.

99000-31140	SUZUKI BOND No. 1207B



Apply SUZUKI Bond No. 1207B

- When installing the water pump impeller, degrease the reverse side of impeller.
- Tighten the water pump bolt to the specified torque.

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

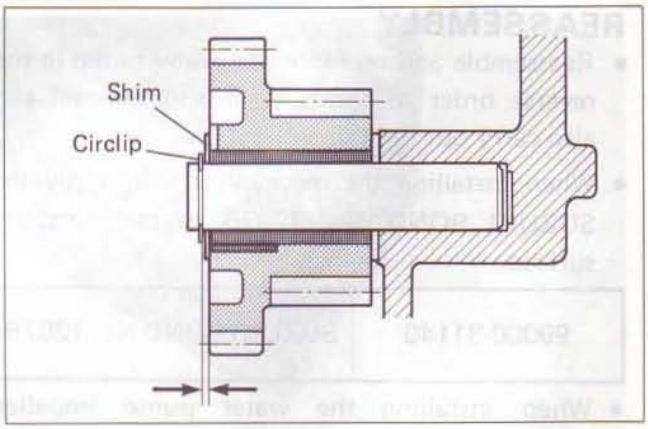
CAUTION:
Use a new gasket ① for impeller center bolt. When installing the gasket, face the iron side to the spring washer and bolt.

- Install the new O-ring and dowell pin when installing the water pump cover.

WATER PUMP IDLE GEAR

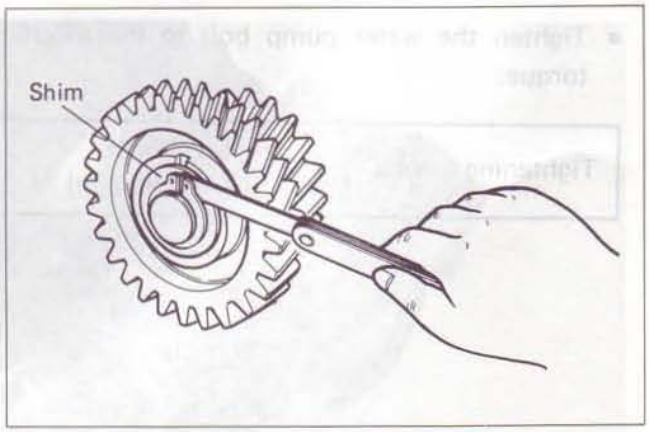
- Measure the thrust clearance of water pump idle gear.

Standard thrust clearance	0.35 – 1.10 mm



- Reassemble shim as shown below and adjust the thrust clearance to less than 0.3 mm.

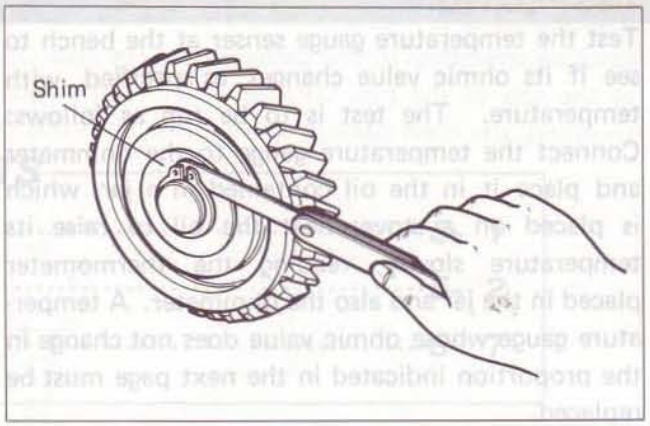
Part Number	Shim
09181-10002	0.3 mm
08221-10205	0.5 mm
09221-10206	0.8 mm



WATER PUMP DRIVEN GEAR

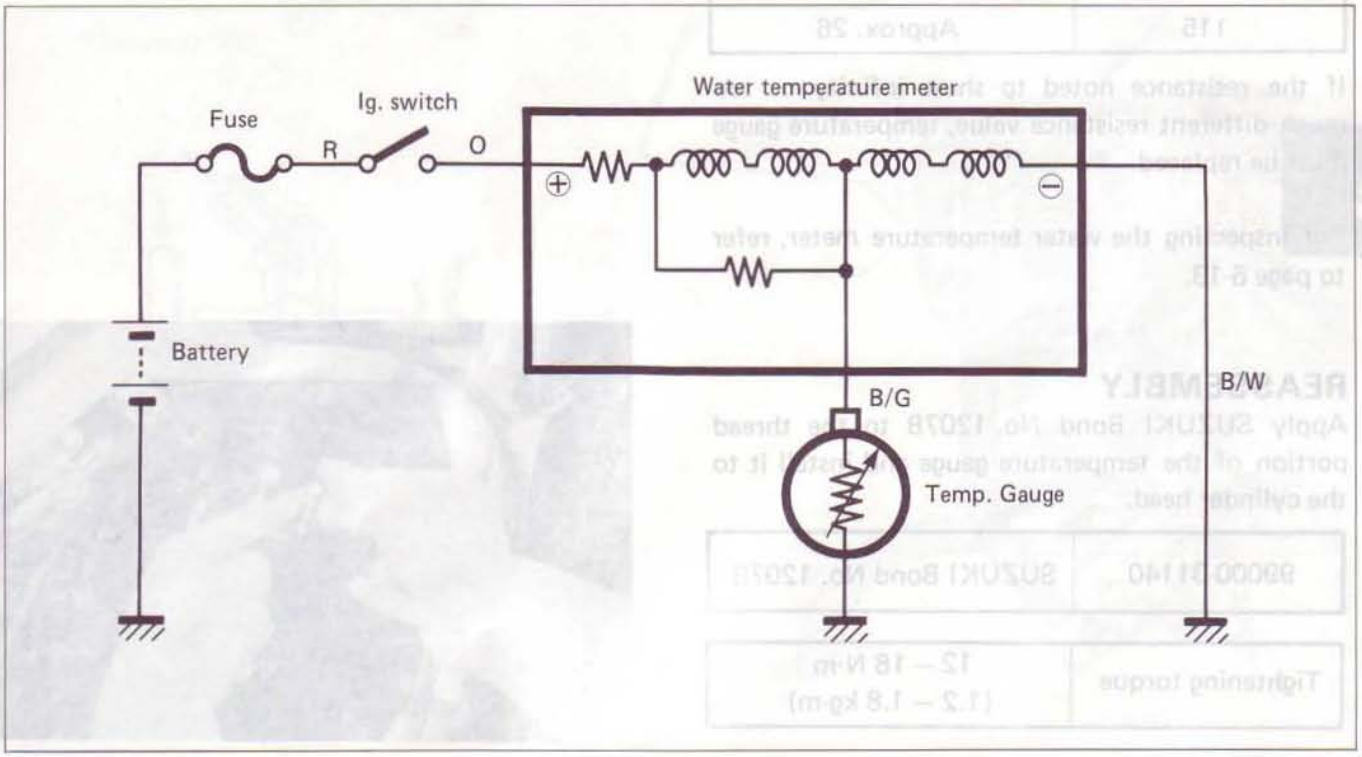
- Reassemble shim as shown below and adjust the thrust clearance to less than 0.3 mm.

Part Number	Shim
09181-10002	0.3 mm
08221-10205	0.5 mm



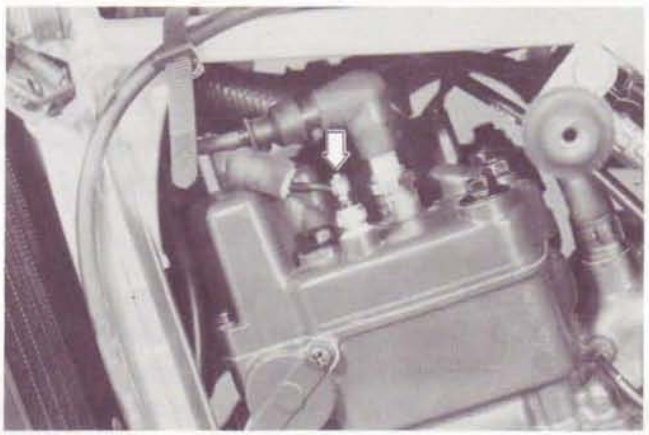
WATER TEMPERATURE GAUGE

The following circuit diagram shows the electrical wiring for the thermometer. The major components are: temperature gauge in contact with cooling water; and temperature indicator (water temperature meter).



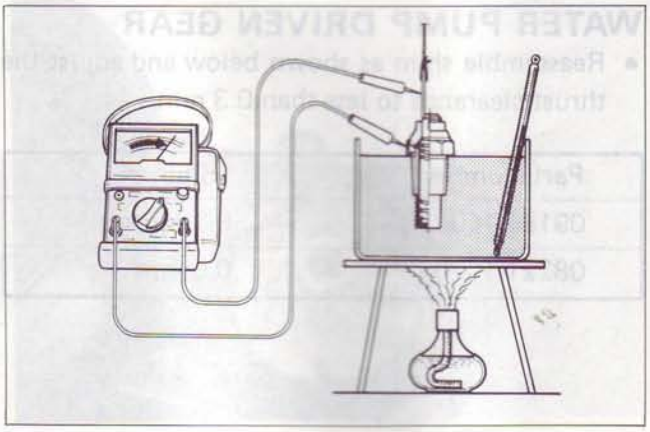
REMOVAL

- Remove the middle cowling. (Refer to page 7-1)
- Remove the lead wire.
- Remove the temperature gauge.



INSPECTION

Test the temperature gauge senser at the bench to see if its ohmic value changes, as specified, with temperature. The test is to be run as follows: Connect the temperature gauge to the ohmmeter and place it in the oil contained in a jar, which is placed on a stove; heat the oil to raise its temperature slowly, reading the thermometer placed in the jar and also the ohmmeter. A temperature gauge whose ohmic value does not change in the proportion indicated in the next page must be replaced.



Temperature gauge specification

Water temp. (°C)	Standard resistance (Ω)
50	Approx. 226
115	Approx. 26

If the resistance noted to show infinity or too much different resistance value, temperature gauge must be replaced.

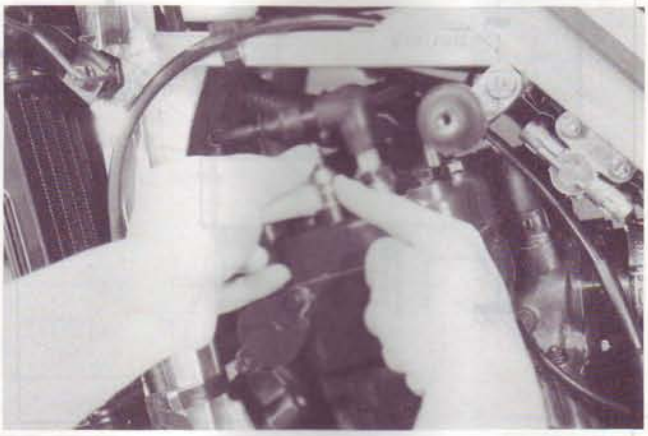
For inspecting the water temperature meter, refer to page 6-13.

REASSEMBLY

Apply SUZUKI Bond No. 1207B to the thread portion of the temperature gauge and install it to the cylinder head.

99000-31140	SUZUKI Bond No. 1207B

Tightening torque	12 – 18 N·m (1.2 – 1.8 kg-m)



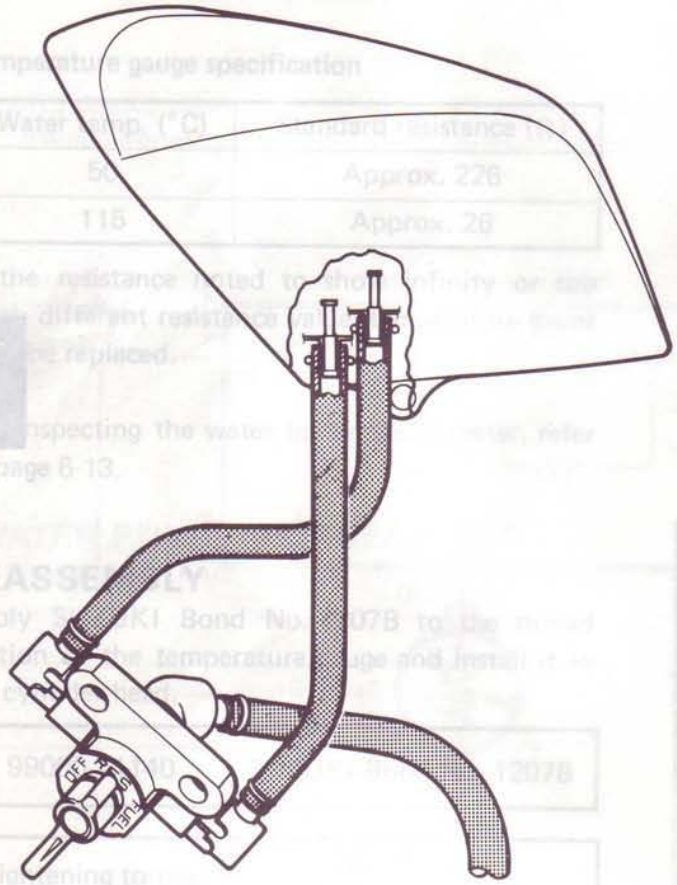
FUEL AND LUBRICATION SYSTEM

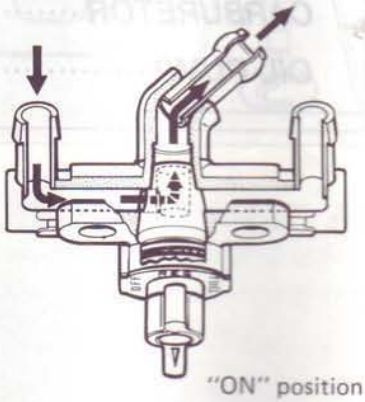
CONTENTS

5

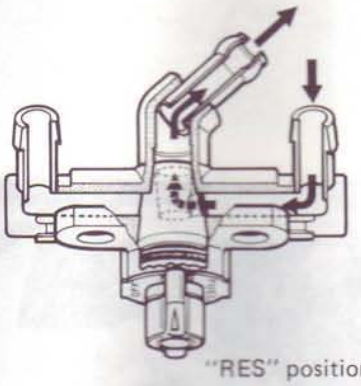
FUEL TANK AND FUEL COCK

The fuel tank is provided with a tank cap and fuel filter. An air vent is provided in the tank cap to supply gasoline smoothly to the carburetor. The fuel cock has the structure as shown in Fig. A valve is provided at the top of the fuel cock lever and can switch over to "OFF", "ON" and "RES". With the valve ON (normal), the main passage opens. With the valve OFF, both holes close.





"ON" position



"RES" position

CLEAN

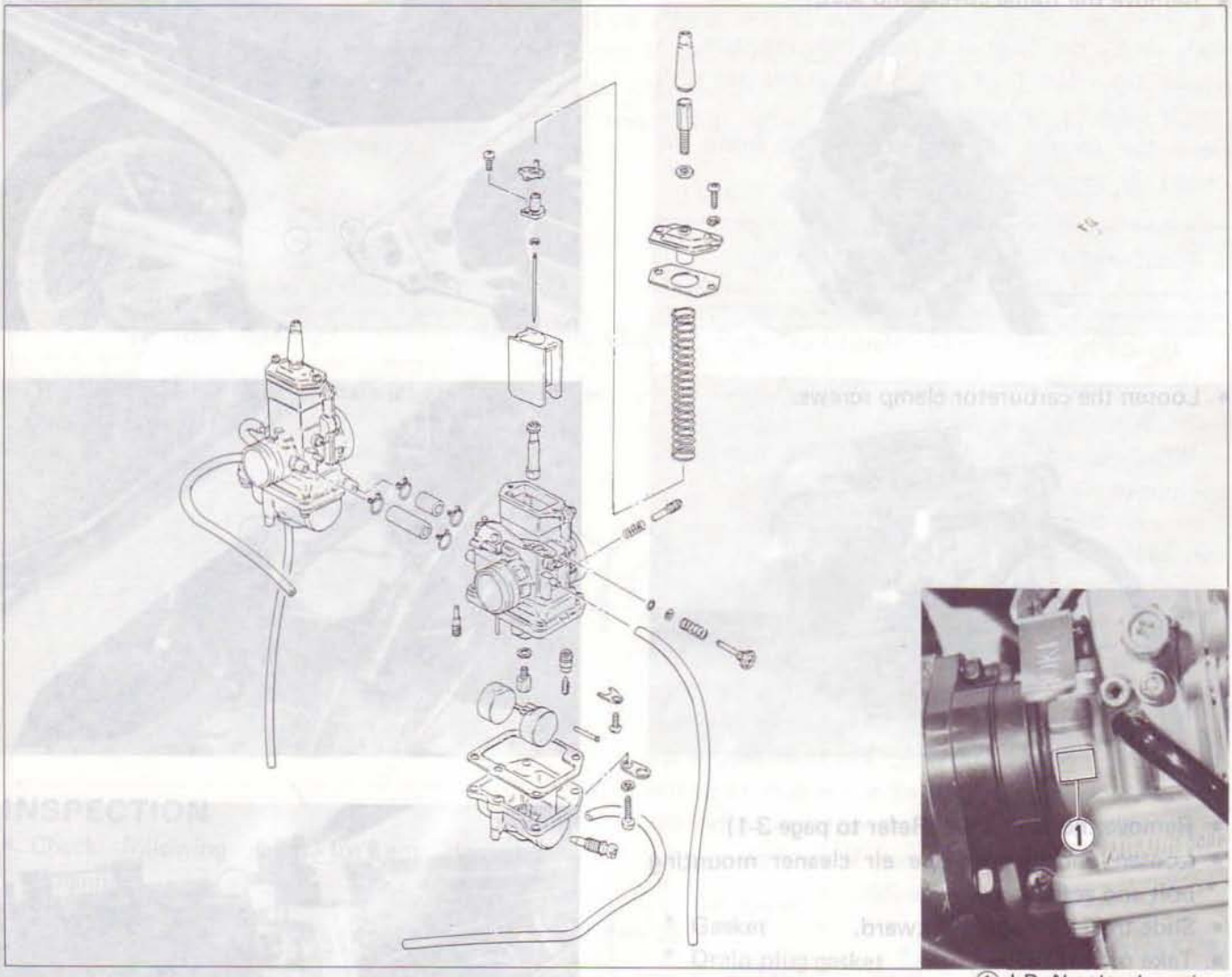
The fuel cock filter will collect impurities, and therefore must be periodically checked and cleaned. The fuel tank should be cleaned at the same time the fuel cock filter is being cleaned.

INSPECTION

If the fuel leaks from around the fuel cock or from the filter connection part, gasket may be damaged. Visually inspect these parts, and replace them if necessary. Examine the air vent in the fuel cock to see if it is obstructed. Use compressed air to clean an obstructed vent.

CARBURETOR

CONSTRUCTION



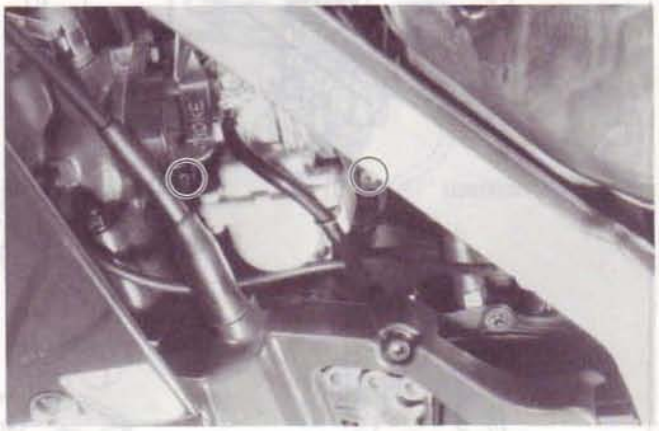
① I.D. Number Location

ITEM		SPECIFICATION		
		E-01, 06, 30		The others
Carburetor type		MIKUNI VM28SS		←
I.D. Number		40A00		40A10
Idle r/min		1 300 ± 150 r/min		←
Fuel level		4.0 ± 1.0 mm		←
Float height		23.5 ± 1.0 mm		←
Main jet	(M.J.)	#160		←
Jet needle	(J.N.)	5DP5-3rd		5DP5-2nd
Needle jet	(N.J.)	P-0		←
Pilot jet	(P.J.)	# 20		←
Air screw	(A.S.)	R	1-3/4 turn back	←
		L	1-3/4 turn back	←
Starter jet	(G.S.)	#60		←

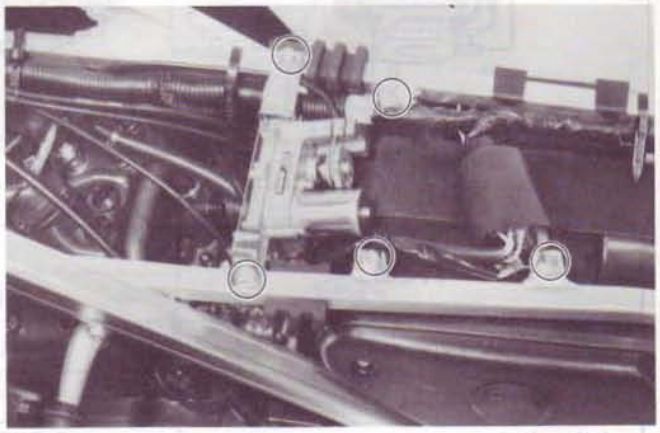
REMOVAL

- Remove the frame covers and seat.

- Loosen the carburetor clamp screws.

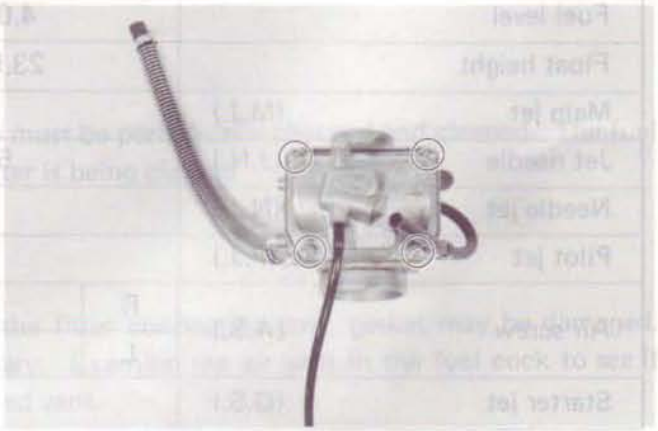


- Remove the fuel tank. (Refer to page 3-1)
- Loosen and remove the air cleaner mounting bolt and actuator.
- Slide the air cleaner backward.
- Take off the carburetor.
- Loosen and remove the top cap screws.



DISASSEMBLY

- Unscrew the float chamber screws.



- Remove the float.

- Remove the needle valve, main jet and pilot jet.

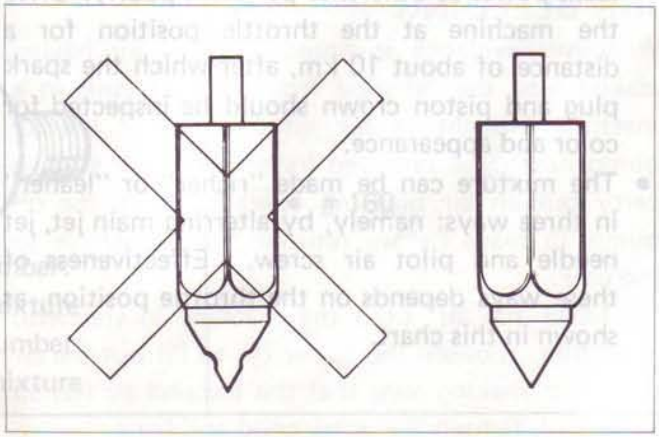
INSPECTION

- Check following items for any damage or clogging.

* Pilot jet
* Main jet
* Needle jet air bleeding hole
* Float
* Needle valve O-ring
* Fuel pipe
* Gasket
* Drain plug gasket
* Pilot outlet and by-pass holes

NEEDLE VALVE

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



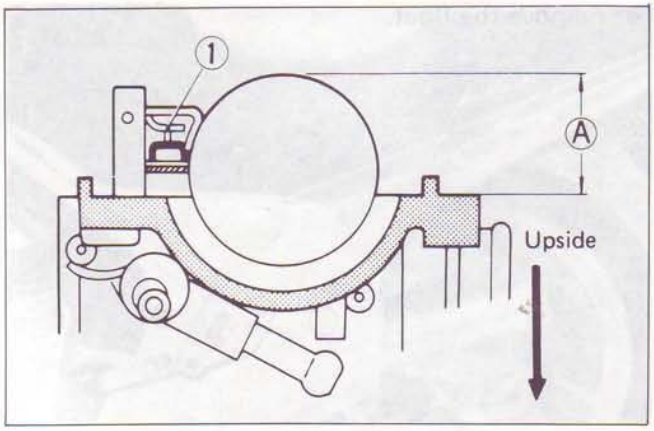
FLOAT HEIGHT ADJUSTMENT

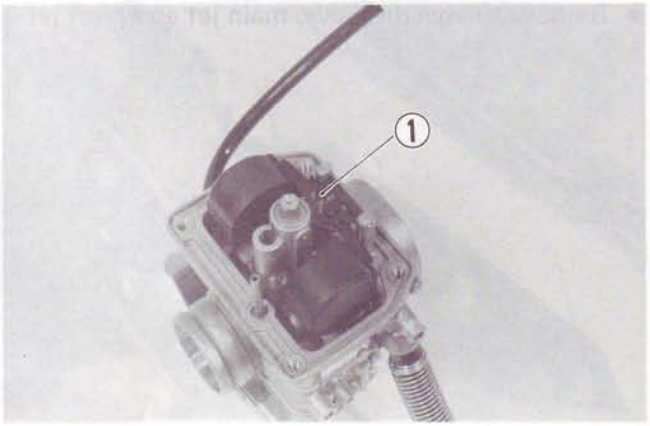
To check the float height, invert the carburetor body, with the float arm kept free, measure the height Ⓐ while float arm is just in contact with needle valve by using calipers.
Bend the tongue ① as necessary to bring the height Ⓐ to this value.

Float height Ⓐ	23.5 ± 1.0 mm

09900-20102	Vernier calipers

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



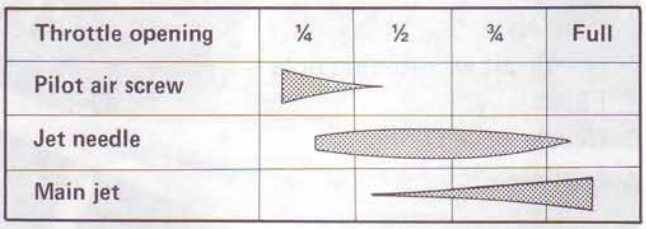


DIAGNOSIS OF CARBURETOR

Whether the carburetor is producing a proper mixture of fuel and air can be checked by making a road test (simulating the way the user operates the machine) with a standard spark plug (refer to service data) fitted to the engine. After the road test, remove the spark plug, and observe the appearance of the plug as well as the surface of the piston crown. The color observed tells whether the mixture is too rich or too lean. When replacing the spark plug, consult the page 2-5.

MIXTURE ADJUSTMENT

- This adjustment is effected mainly by main jet and jet needle.
  Before doing so, check to be sure that the float level is correctly set and that the overflow pipes, breather pipes, inlet hose and air cleaner are in sound condition.
- Find out at which throttle position the engine lacks power or otherwise performs poorly. Drive the machine at the throttle position for a distance of about 10 km, after which the spark plug and piston crown should be inspected for color and appearance.
- The mixture can be made "richer" or "leaner" in three ways: namely, by alterring main jet, jet needle and pilot air screw. Effectiveness of these ways depends on the throttle position, as shown in this chart.



NOTE:
If the machine is tested at 1/2 throttle resulting in a color and appearance indicating a mixture that is too rich or too lean, perform adjustment by means of jet needle and pilot air screw.

CARBURETION

Adequate carburetion is determined according to the results of various tests, mainly concerning engine power, fuel consumption and cooling effect of fuel on engine, and jet settings are made so as to satisfy and balance all of these conditions. Therefore, the jet should not be replaced with a size other than the original, and the positions of adjustable parts should not be changed except when compensating for the mixture ratio due to altitude differences or other climatic conditions. When adjustment is necessary, refer to the following.

Fuel-air mixture ratio can be changed as follows:

Throttle Opening	Method of Changing Ratio	Standard Setting
 Slight	Pilot air screw 	• 1-3/4 turns out (R & L)
 Medium	Jet needle 	• 5DP5-3rd (E-01, 06, 30) • 5DP5-2nd (The others)
 High	Main jet  Larger number: richer mixture Smaller number: leaner mixture	• #160

REASSEMBLY

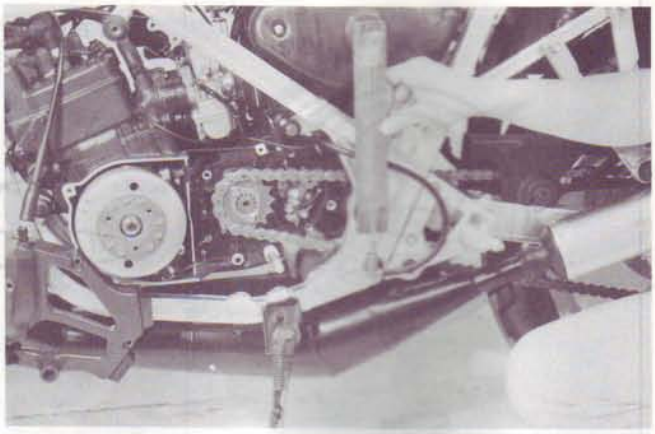
- Reassemble the carburetor by reversing the sequence of disassembling steps.

REMOUNTING

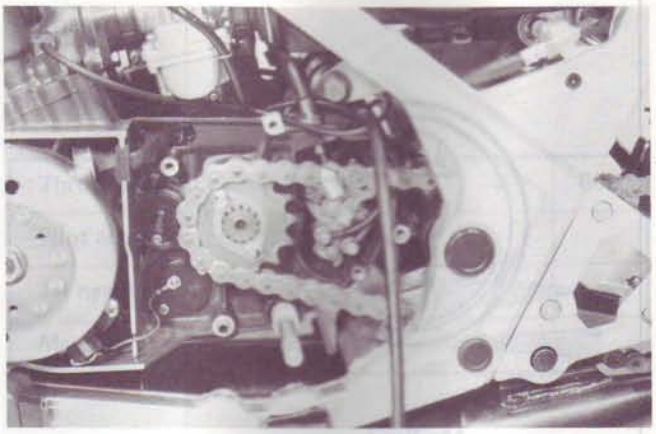
- Remount the carburetor by reversing the sequence of removal steps.
- Throttle cable play adjustment to necessary after mounting the carburetor. (See page 2-7)
- Exhaust valve control cable adjustment to necessary after mounting the carburetor. (See page 3-10)

OIL PUMP

Use the special tool, and check the pump for capacity by measuring the amount of oil which pump draws during the specified interval.



- Have the tool filled with SUZUKI CCI or CCI SUPER OIL and connect it to the suction side of the pump.
- Run the engine at 2 000 r/min.
- Holding engine speed at the same 2 000 r/min., move the lever up to the fully open position ② and let the pump draw for 2 minutes. For this operation, the reading taken on the device should be 2.9 – 3.5 ml.



09900-21602	CCI oil gauge

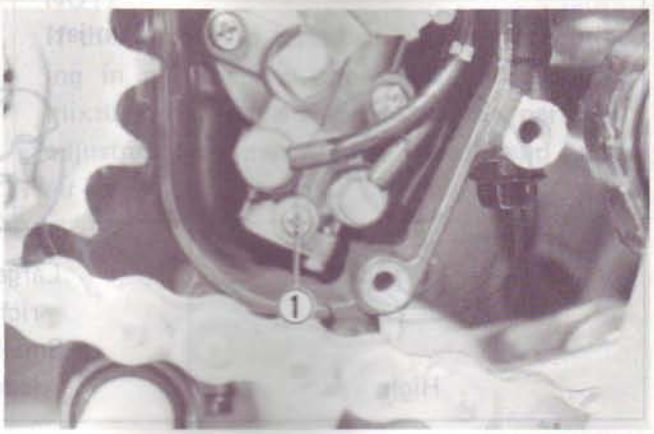
Oil discharge amount	2.9 – 3.5 ml at 2 000 r/min for 2 minutes

NOTE:
Adjust both throttle and oil pump control cable play after checking oil pump.
(See page 2-7 and 2-11)

AIR BLEEDING

Whenever evidence is noted of some air having leaked into the oil pipe from the oil tank in a machine brought in for servicing, or if the oil pump has to be removed for servicing, be sure to carry out an air bleeding operation with the oil pump in place before returning the machine to the user.

To bleed the air, hold the machine in standstill condition. Loosen the screw ① to let out the air and after making sure that the trapped air has all been bled, tighten the screw good and hard.



ELECTRICAL SYSTEM

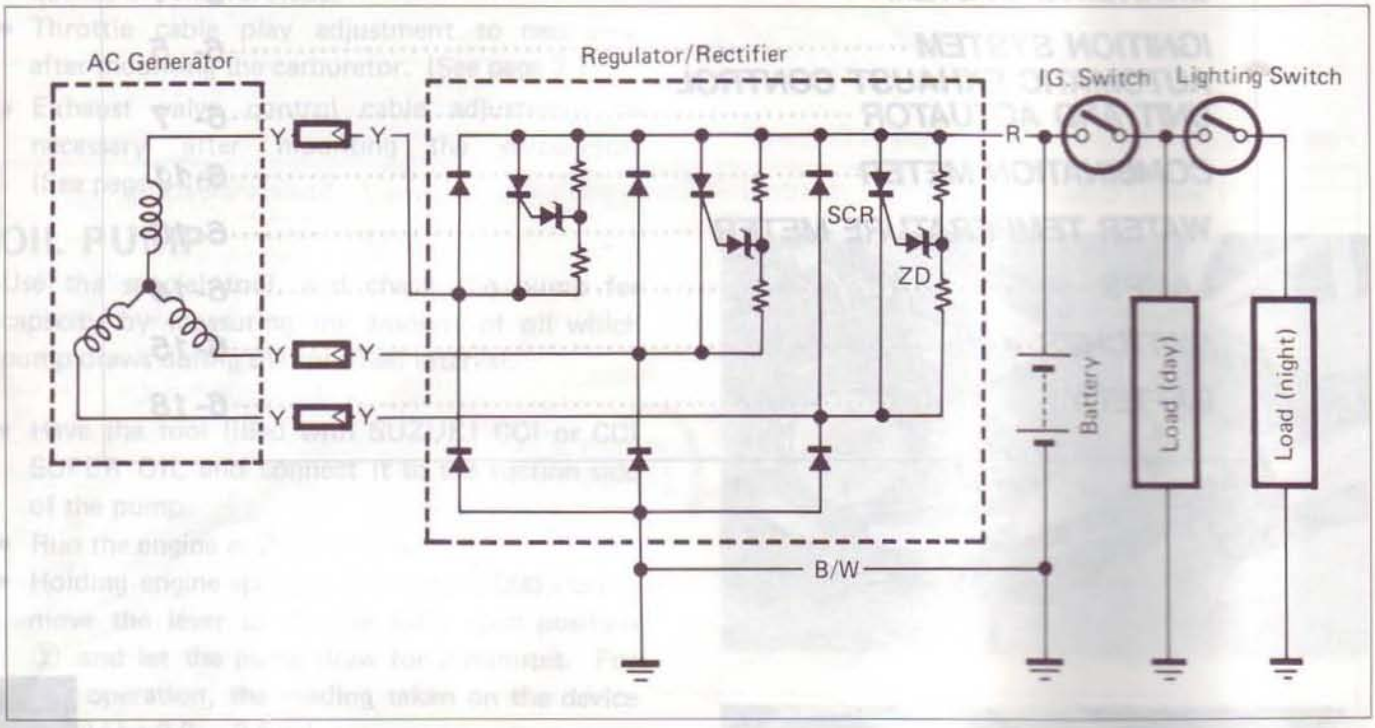
CONTENTS

CHARGING SYSTEM

DESCRIPTION

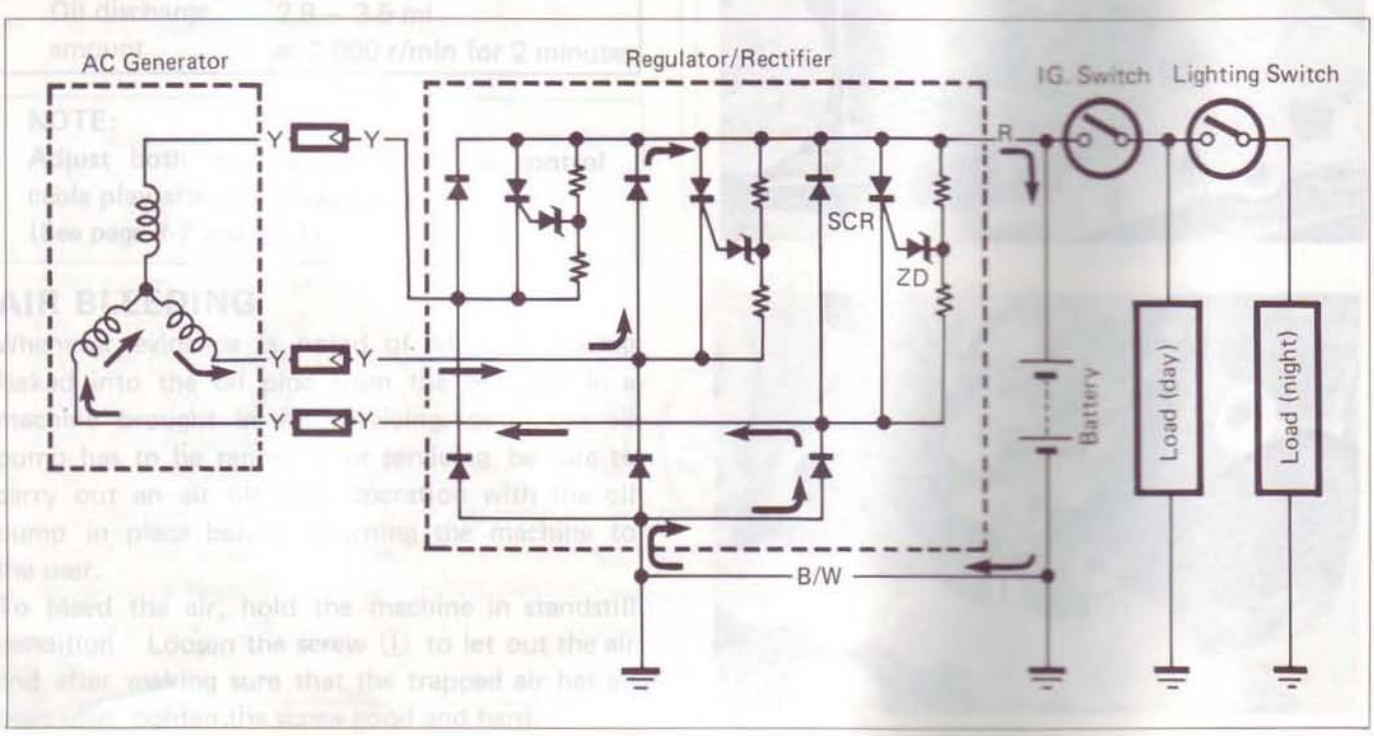
The circuit of the charging system is indicated in figure, which is composed of an AC generator, regulator/-rectifier unit and battery.

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



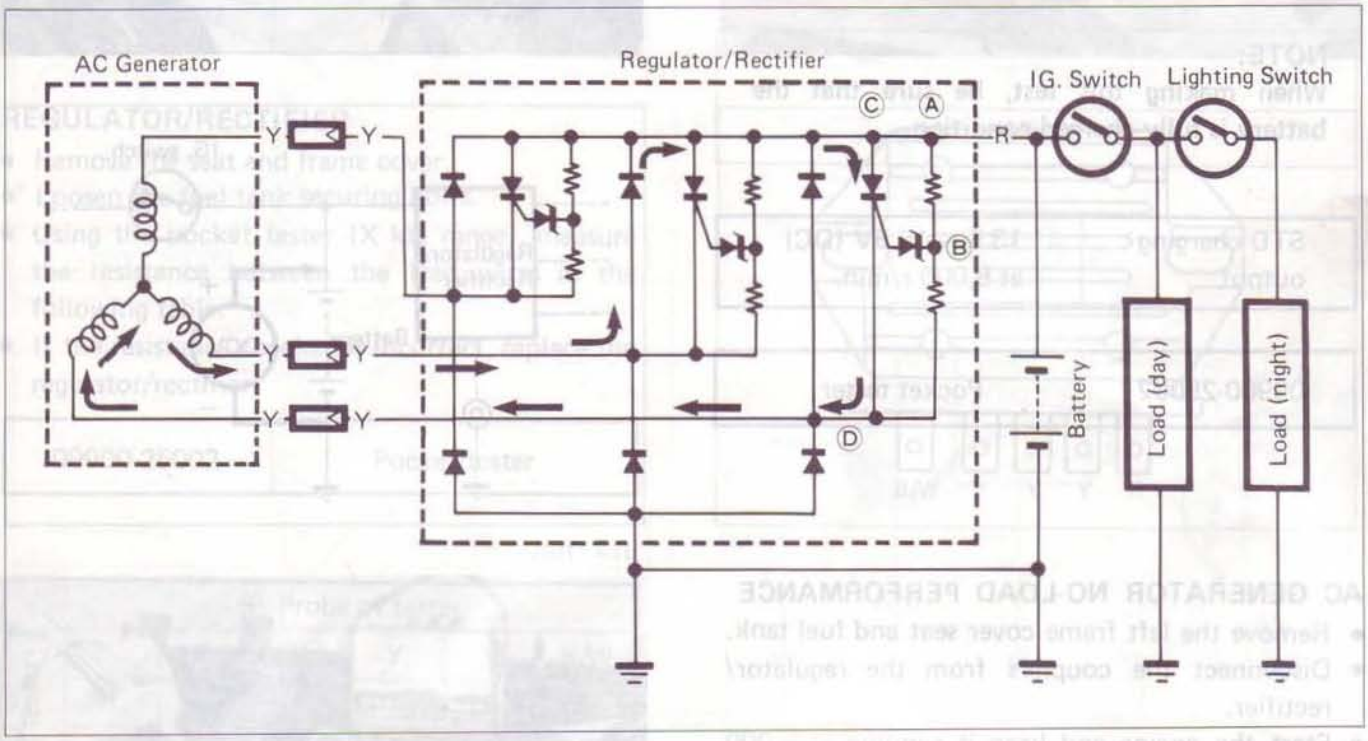
Function of Regulator

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) becomes "ON" condition and, signal will be sent to the SCR (Thyristor) gate probe and SCR will become "ON" condition.

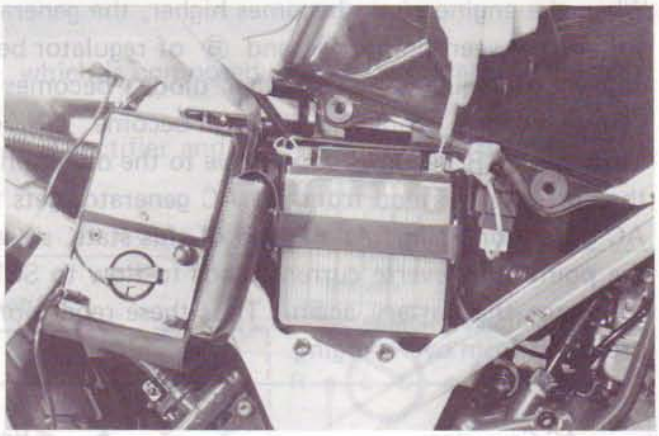
Then the SCR becomes conductive to the direction from point Ⓒ to point Ⓓ. Namely at the state of this, the current generated from the AC generator gets through SCR without charging the battery and returns to AC generator again. At the end of this state, since the AC current generated from AC generator flows into the point Ⓓ, 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.



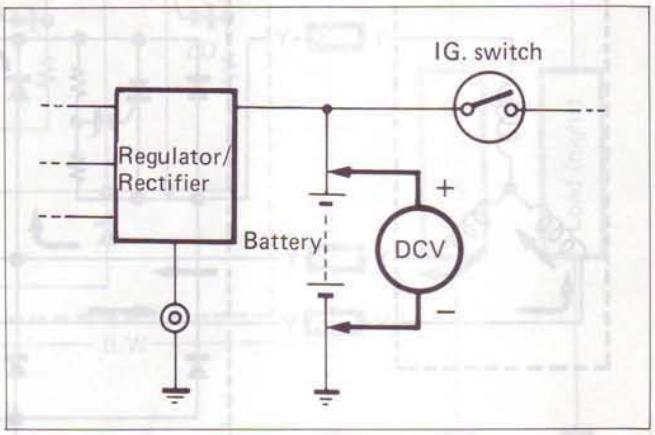
INSPECTION

CHARGING OUTPUT CHECK

- Remove the seat.
- Start the engine and keep it running at 5 000 r/min with dimmer switch turned HI position.
- Using the pocket tester, measure the DC voltage between the battery terminal ⊕ and ⊖.
- If the tester reads under 13.5V or over 15.5V, check the AC generator no-load performance and regulator/rectifier.



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

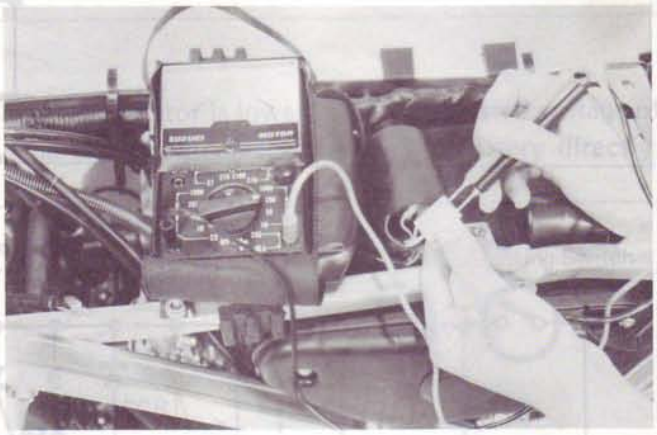


STD charging output	13.5 – 15.5V (DC) at 5,000 r/min.

09900-25002	Pocket tester

AC GENERATOR NO-LOAD PERFORMANCE

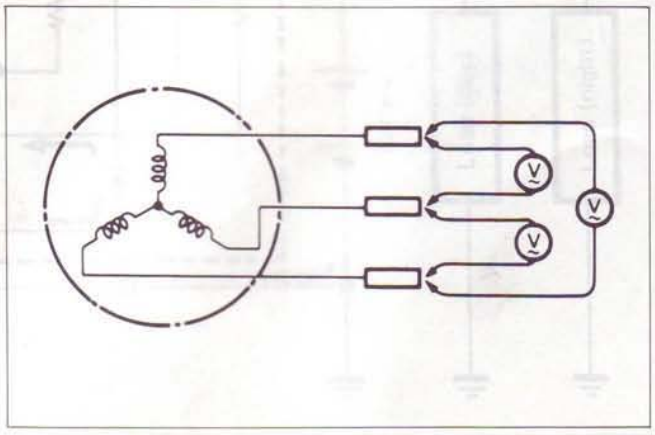
- Remove the left frame cover seat and fuel tank.
- Disconnect the couplers from the regulator/ rectifier.
- Start the engine and keep it running at 5 000 r/min.
- Using the pocket tester, measure the AC voltage between the three yellow lead wires.
- If the tester reads under 34V, the AC generator is faulty.



STD No-load performance

More than 34V (AC) at 5000 r/min

09900-25002	Pocket tester



AC GENERATOR STATOR COIL

Using the pocket tester, check the continuity between the lead wires of the stator.
Also check that the stator core is insulated.

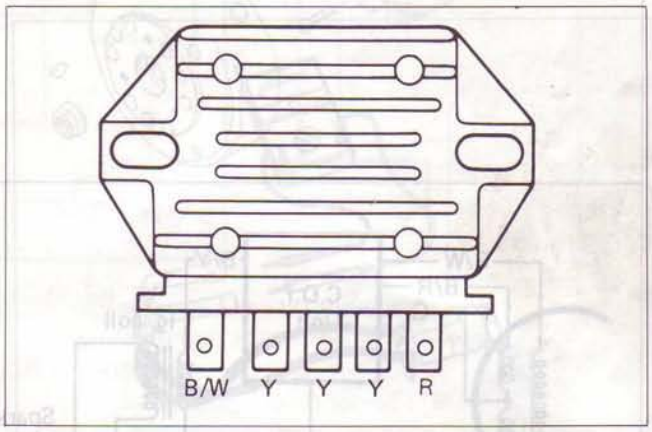
NOTE:
When making this test, it is not necessary to remove the AC generator.

09900-25002	Pocket tester

REGULATOR/RECTIFIER

- Remove the seat and frame cover.
- Loosen the fuel tank securing bolts.
- Using the pocket tester (X kΩ range), measure the resistance between the lead wires in the following table.
- If the resistance checked is incorrect, replace the regulator/rectifier.

09900-25002	Pocket tester



Unit: kΩ

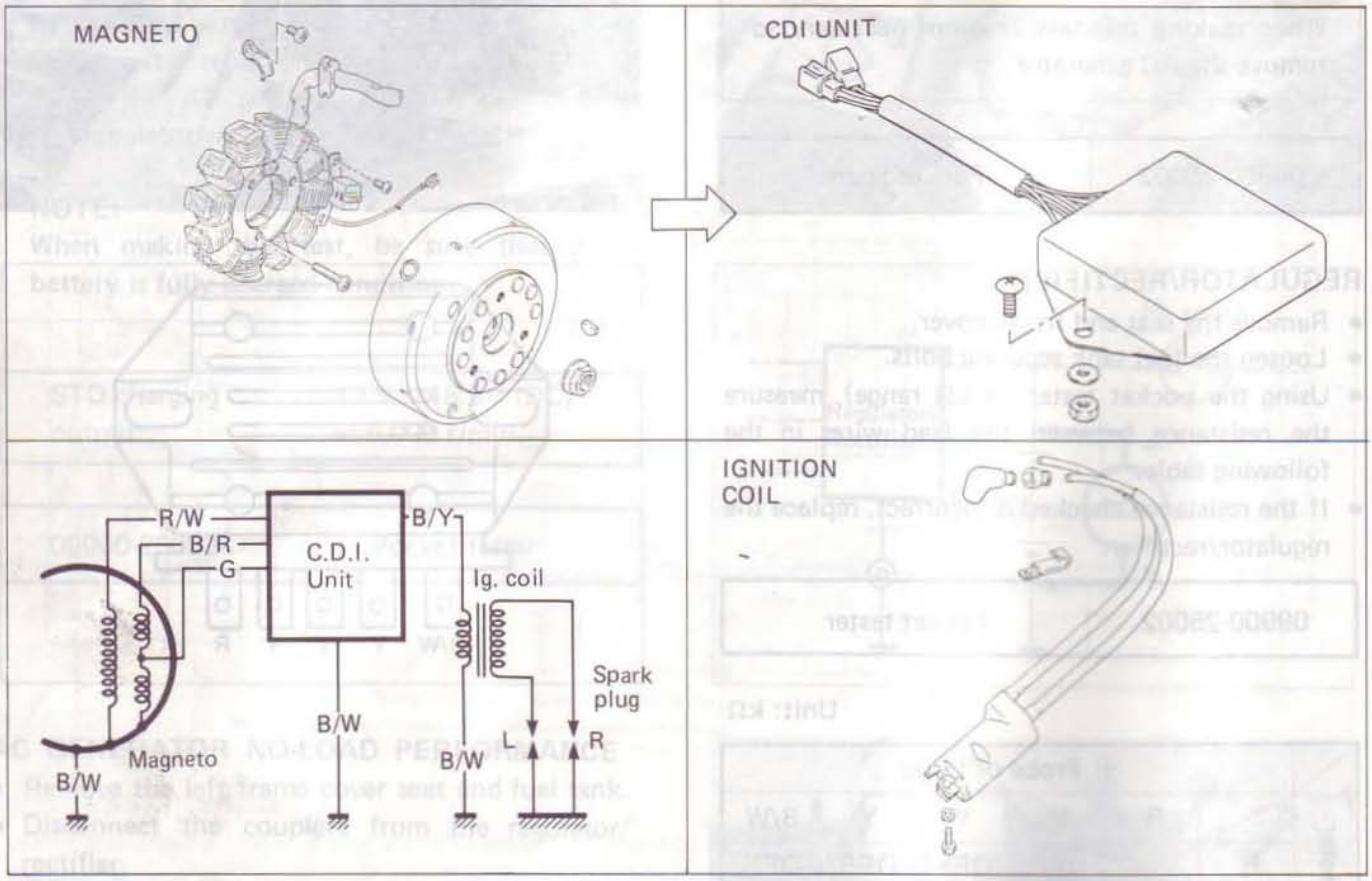
⊖ Probe of tester	⊕ Probe of tester					
		R	Y	Y	Y	B/W
R			OFF	OFF	OFF	OFF
Y		2-4		OFF	OFF	OFF
Y		2-4	OFF		OFF	OFF
Y		2-4	OFF	OFF		OFF
B/W		5-11	2-4	2-4	2-4	

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

IGNITION SYSTEM

DESCRIPTION

In the capacitor discharged ignition system, the electrical energy generated by the magneto charges the capacitor. This energy is released in a signal surge at the specified ignition timing point, and current flows through the primary side of the ignition coil. A high voltage current is induced in the secondary windings of the ignition coil resulting in strong spark between the spark plug gap.



STATOR COIL

- Using the pocket tester, measure the resistance between the lead wires in the following table.
- If the resistance checked is incorrect, replace the stator assembly.

Unit: X100Ω

Resistance	
Pick-up coil R/W – B/W	40 – 70 Ω
Pulser coil G – B/W	190 – 290 Ω
Pulser coil B/R – G	5 – 15 Ω

NOTE:
When mounting stator on the crankcase, apply a small quantity of THREAD LOCK "1342" to the threaded parts of screws.

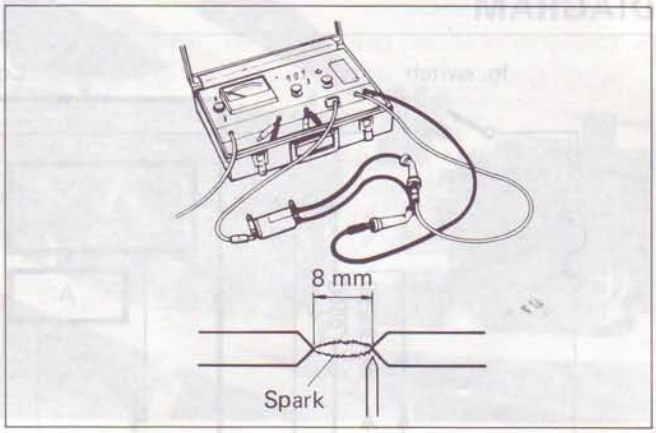
99000-32050	Thread Lock "1342"

IGNITION COIL

- Check ignition coil with electro tester.
- Test the ignition coil for sparking performance. Test connection is as indicated. Make sure that the three-needle sparking distance is at least 8 mm.

09900-28106	Electro tester

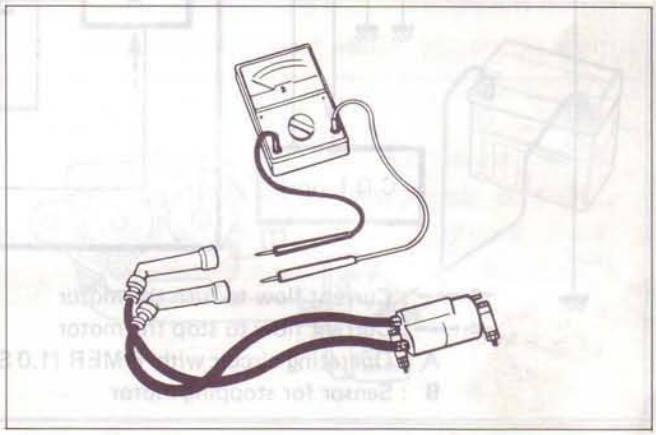
STD spark performance	Over 8 mm at 1 atm.



- Check ignition coil with pocket tester.

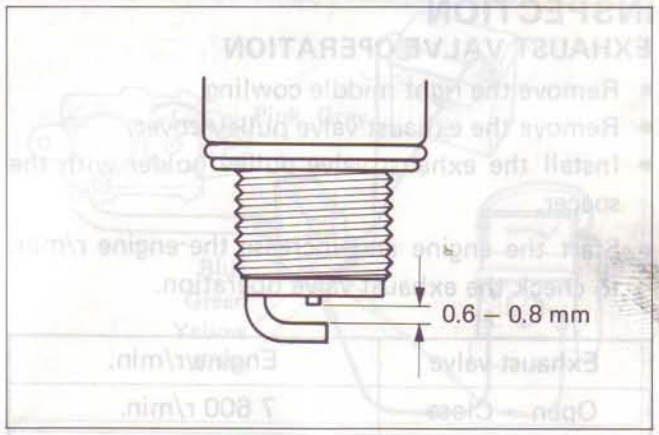
09900-25002	Pocket tester

Ignition coil resistance	
Primary	B/Y – B/W 0 – 1.0 Ω
Secondary	Plug cap – Plug cap 20 – 35 kΩ



- Check the gap with a thickness gauge

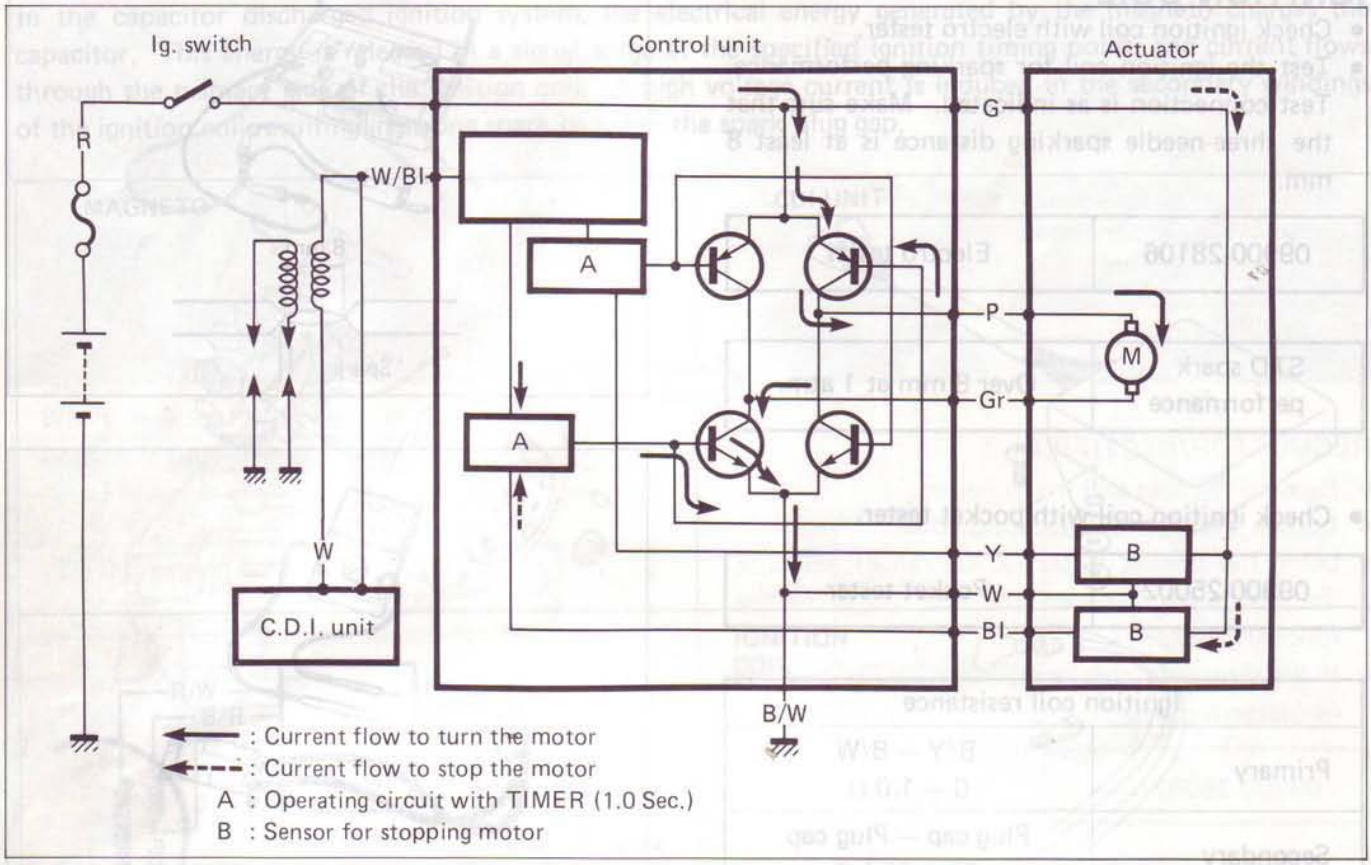
Spark plug gap	0.6 – 0.8 mm



NOTE:
If not sparking is produced at spark plug gap, replace the CDI unit or inspect the magneto coils, ignition coil and spark plug. If the magneto coils, ignition coil and spark plug checked are correct, the CDI unit may be faulty, replace the CDI unit with a new one.

AUTOMATIC EXHAUST CONTROL UNIT AND ACTUATOR

DIAGRAM



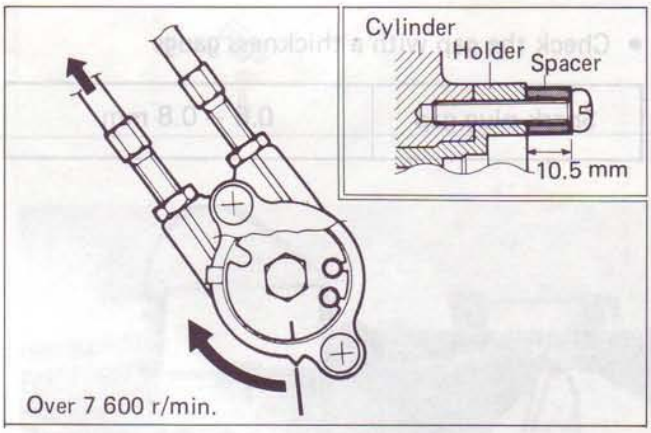
INSPECTION

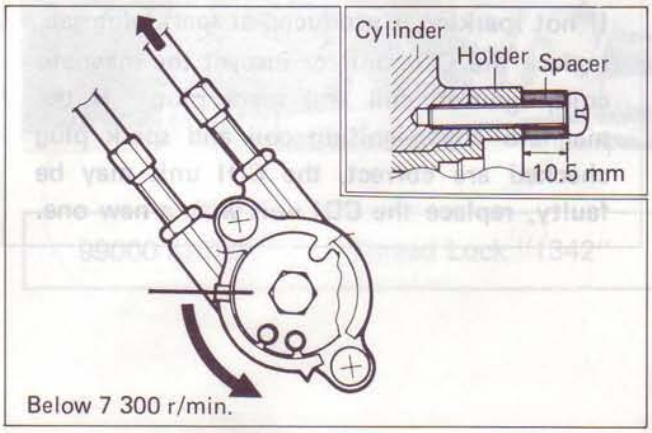
EXHAUST VALVE OPERATION

- Remove the right middle cowling.
- Remove the exhaust valve pulley cover.
- Install the exhaust valve pulley holder with the spacer.
- Start the engine and increase the engine r/min. to check the exhaust valve operation.

Exhaust valve	Engine r/min.
Open → Close	7 600 r/min.
Close → Open	7 300 r/min.

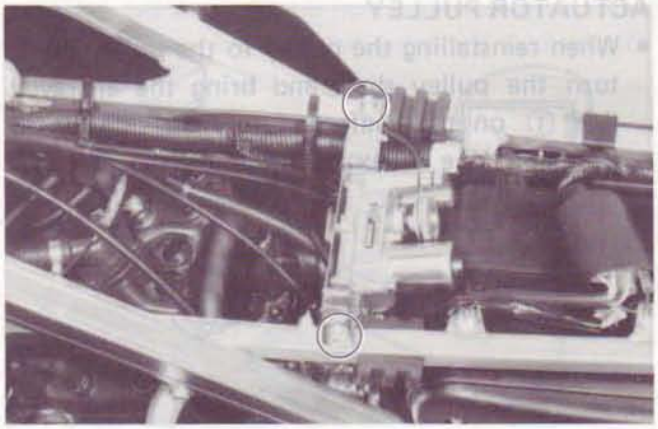
- If the exhaust valve does not operate at the specified r/min, inspect the individual parts for any defect.



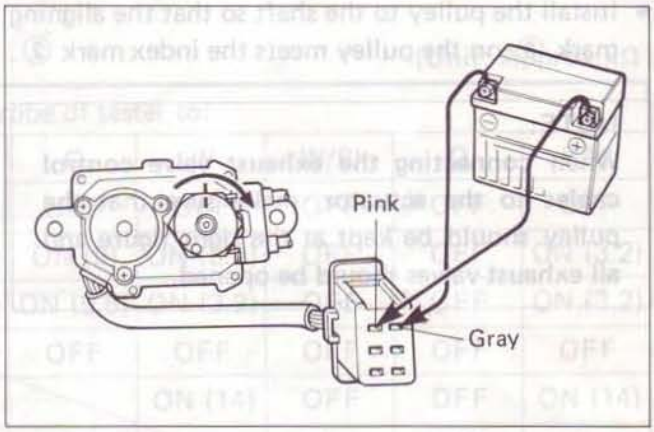


ACTUATOR

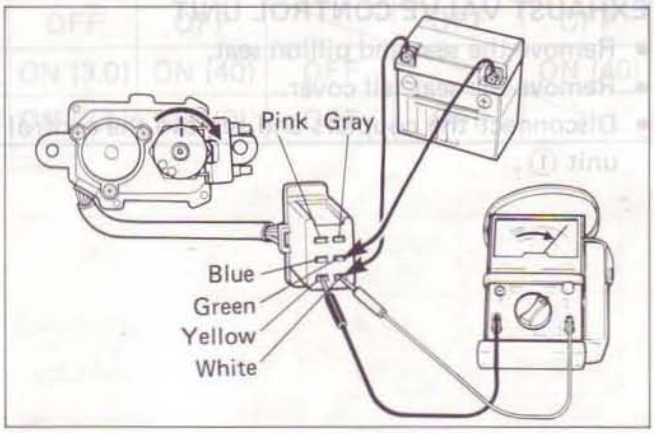
- Remove the fuel tank.
- Disconnect the exhaust valve control cables from the actuator and remove the actuator from the chassis.



- Apply DC 12V to the Pink and Gray leads of the actuator.
- Actuator pulley turns clockwise when ⊕ lead connects to the Pink and ⊖ lead to the Gray lead.
- When reversing the connection, pulley turns counterclockwise.
- If the actuator shaft or pulley does not turn, replace the actuator assembly with a new unit.

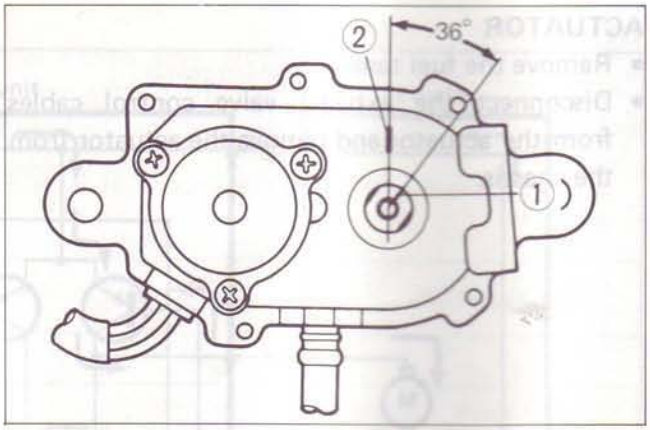


- Apply DC12V to the Green lead and White lead of the actuator. Connect the ⊕ positive terminal of the battery to the Green lead and ⊖ negative terminal to the White lead of the actuator.
- Using a pocket tester (x kΩ range) check the continuity between White and Yellow leads while turning the actuator pulley slowly by hand. Connect ⊕ probe of tester to the White lead and ⊖ probe to the Yellow lead. If there is no continuity point in one rotation of the pulley, stopper sensor in the actuator is defective and replace the actuator with a new one.
- Check the continuity between White and Blue leads in the same manner prescribed above. Connect the ⊕ probe of tester to White lead and ⊖ probe to Blue lead.



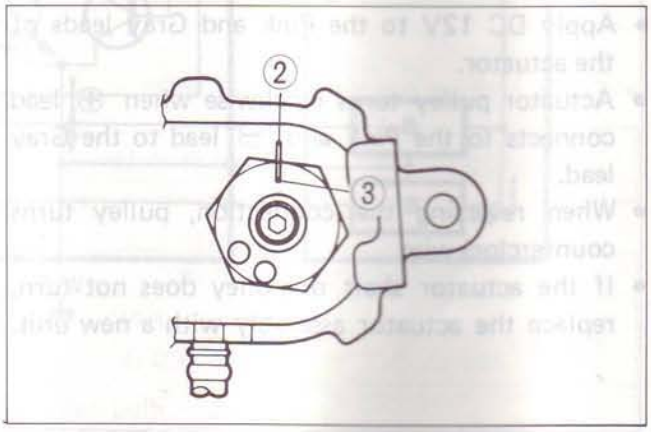
ACTUATOR PULLEY

- When reinstalling the pulley to the pulley shaft, turn the pulley shaft and bring the engraved line ① on the shaft end to right side by 36 degree to the index mark ② on the actuator body.



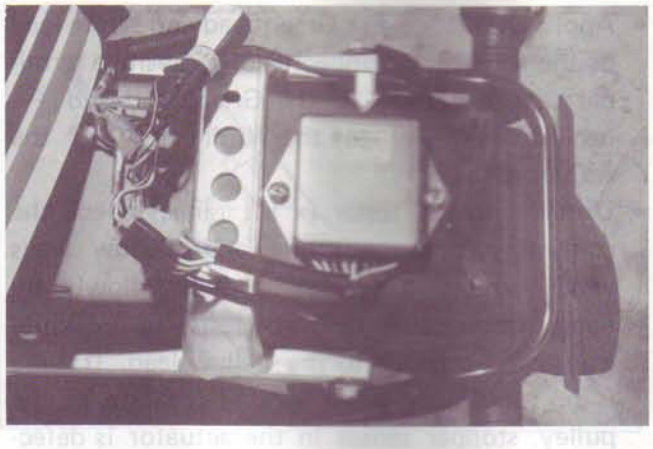
- Install the pulley to the shaft so that the aligning mark ③ on the pulley meets the index mark ② .

NOTE:
When connecting the exhaust valve control cables to the actuator, make sure that the pulley should be kept at the right figure and all exhaust valves should be opened.

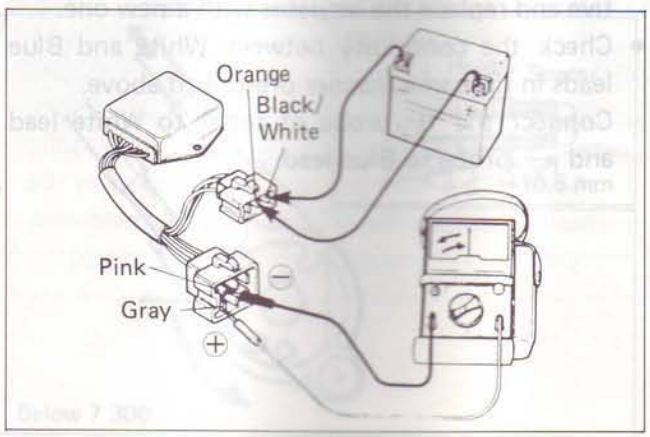


EXHAUST VALVE CONTROL UNIT

- Remove the seat and pillion seat.
- Remove the seat tail cover.
- Disconnect the couplers and remove the control unit ① .



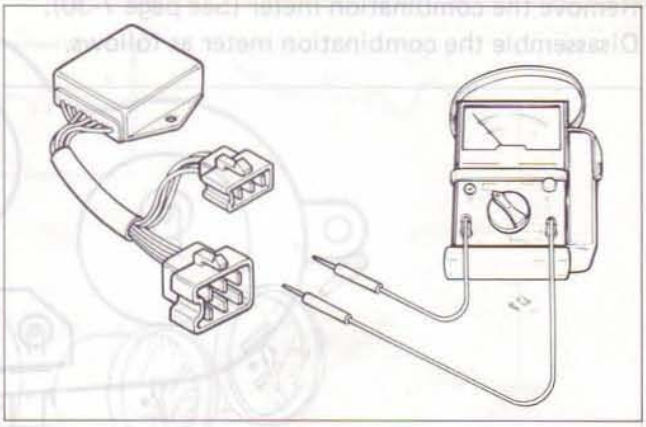
- Use a SUZUKI pocket tester (x 25 DCV) and connect the ⊕ and ⊖ probe pins to Gray and Pink leads respectively.
- Apply 12V (DC) to the Orange ⊕ and Black/White ⊖ .
- If the tester shows 8 – 12V for approx. one second, control unit is in good condition about TIMER circuit and motor driving circuit.
- Further inspection is needed.
- Use the Suzuki pocket tester, bring the ⊕ probe and the ⊖ probe into contact with each lead wire of the control unit, check for continuity, and measure the resistance value.



- When the continuity and the resistance values are as shown in the following table, it can be judged that the control unit is normal.

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

09900-25002	SUZUKI Pocket tester

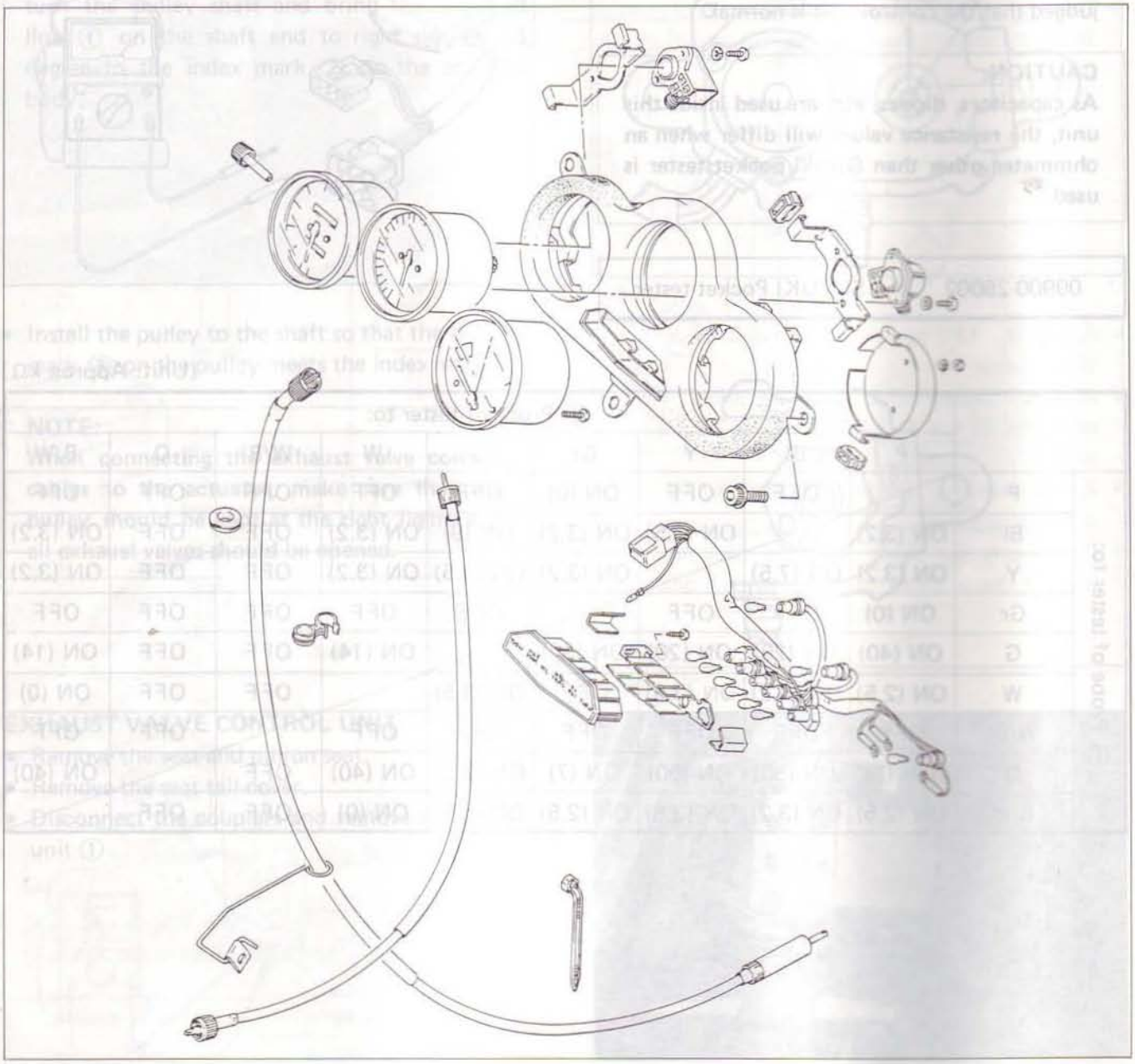


(Unit: Approx kΩ)

		⊕ Probe of tester to:								
		P	Bl	Y	Gr	G	W	W/Bl	O	B/W
⊖ Probe of tester to:	P		OFF	OFF	ON (0)	OFF	OFF	OFF	OFF	OFF
	Bl	ON (3.2)		ON (7.5)	ON (3.2)	ON (9)	ON (3.2)	OFF	OFF	ON (3.2)
	Y	ON (3.2)	ON (7.5)		ON (3.2)	ON (9.5)	ON (3.2)	OFF	OFF	ON (3.2)
	Gr	ON (0)	OFF	OFF		OFF	OFF	OFF	OFF	OFF
	G	ON (40)	ON (20)	ON (20)	ON (32)		ON (14)	OFF	OFF	ON (14)
	W	ON (2.5)	ON (3.2)	ON (3.8)	OFF	ON (3.5)		OFF	OFF	ON (0)
	W/Bl	OFF	OFF	OFF	OFF	OFF	OFF		OFF	OFF
	O	ON (7)	ON (50)	ON (50)	ON (7)	ON (3.0)	ON (40)	OFF		ON (40)
	B/W	ON (2.5)	ON (3.2)	ON (3.8)	ON (2.5)	ON (3.5)	ON (0)	OFF	OFF	

COMBINATION METER

Remove the combination meter (See page 7-30).
Disassemble the combination meter as follows.

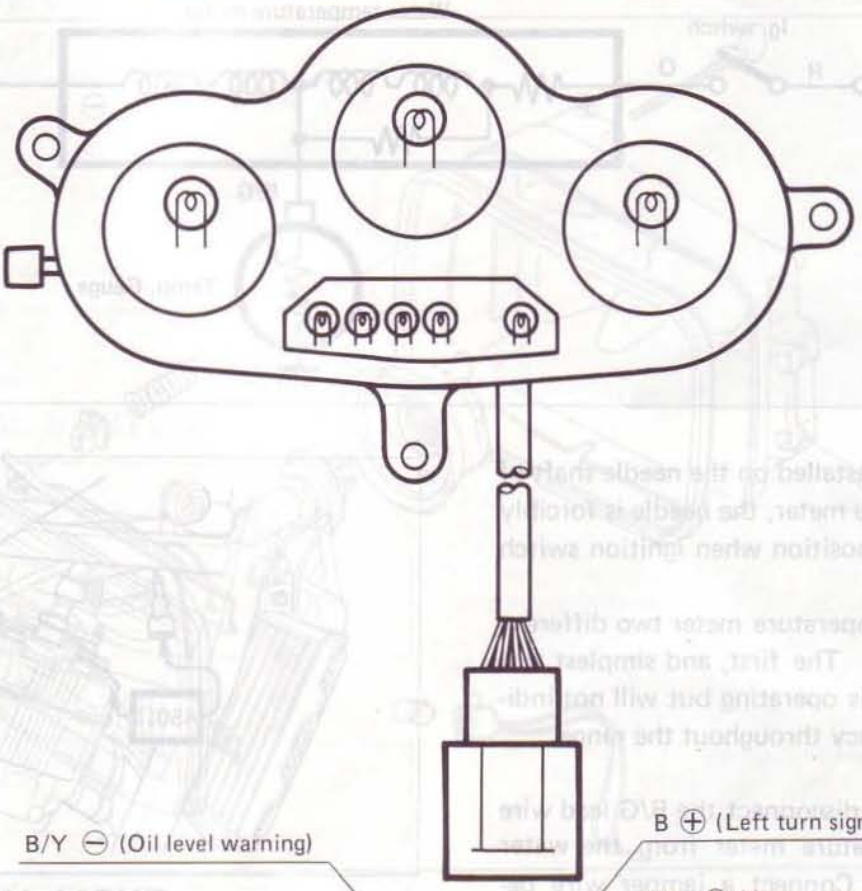


INSPECTION

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

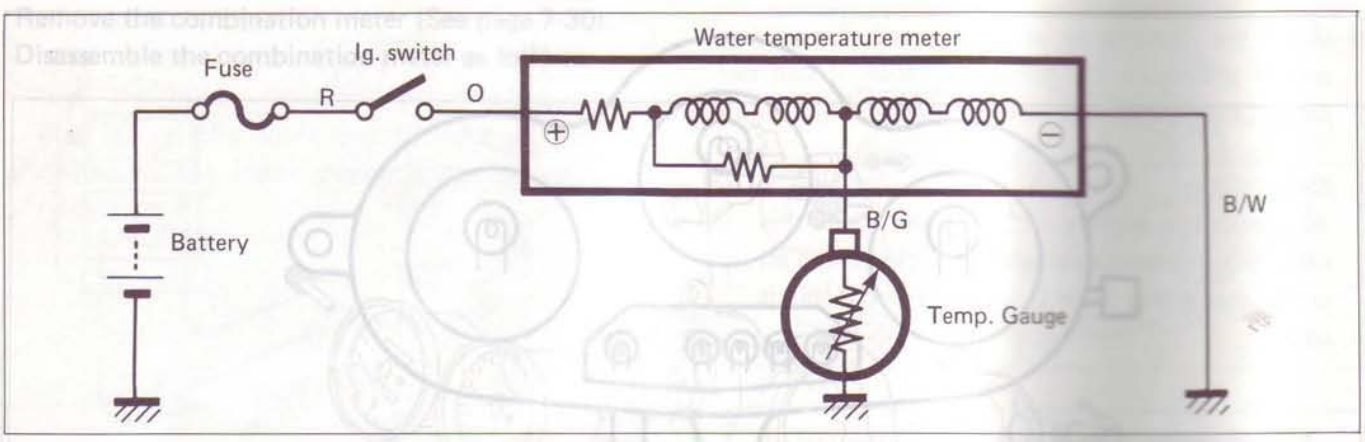
09900-25002	Pocket tester

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



Item	⊕ Probe of tester	⊖ Probe of tester
Speedometer light	B/Gr	B/W
Tachometer light	B/Gr	B/W
Temperature meter light	B/Gr	B/W
Turn signal indicator light (L)	B	B/W
High beam indicator light	B/R	B/W
Oil level warning light	B/Y	B/W
Neutral indicator light	B/Bl	B/W
Turn signal indicator light (R)	B/Br	B/W

WATER TEMPERATURE METER INSPECTION



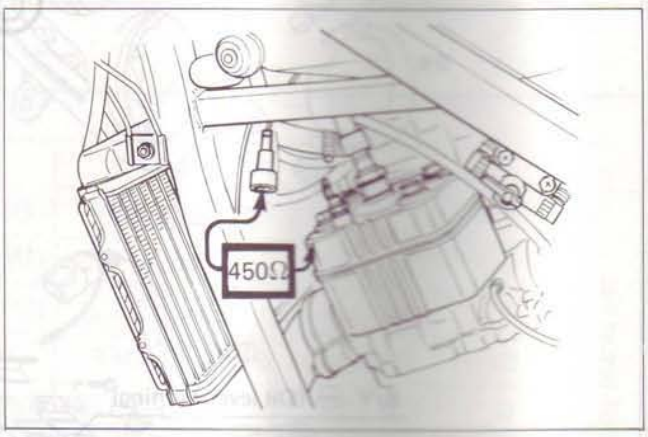
As the coil spring is installed on the needle shaft of the water temperature meter, the needle is forcibly back to the original position when ignition switch is turned OFF.

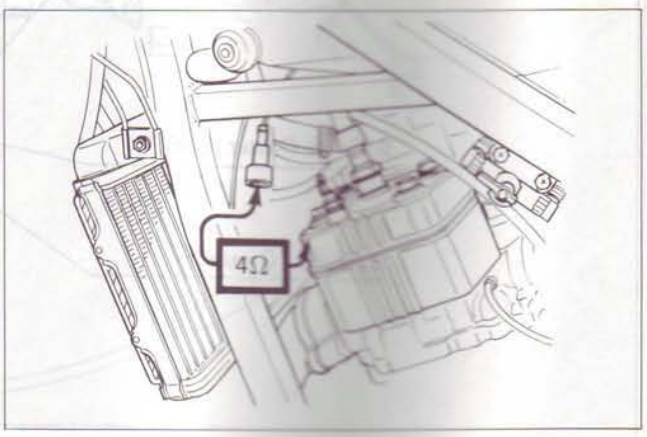
To test the water temperature meter two different checks may be used. The first, and simplest test will tell if the meter is operating but will not indicate the meters accuracy throughout the range.

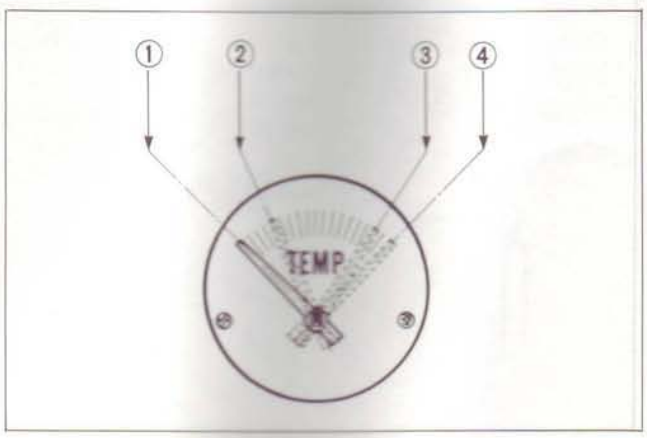
To perform this test, disconnect the B/G lead wire of the water temperature meter from the water temperature gauge. Connect a jamper wire between B/G wires coming from the main wiring harness and engine ground. With the ignition switch turned on, the water temperature meter should indicate "④".

The second test will check the accuracy of the meter in the "①" and "④" positions.

Connect a 450-ohm resistor between the B/G lead wire of the water temperature gauge and the ground lead wire. The water temperature gauge is normal if its pointer indicates the ① position when the specified voltage is applied to the circuit and if its pointer indicates the ④ position when the resistor is changed to 4 ohms. If either one or both indications are abnormal, replace the water temperature meter with a new one.





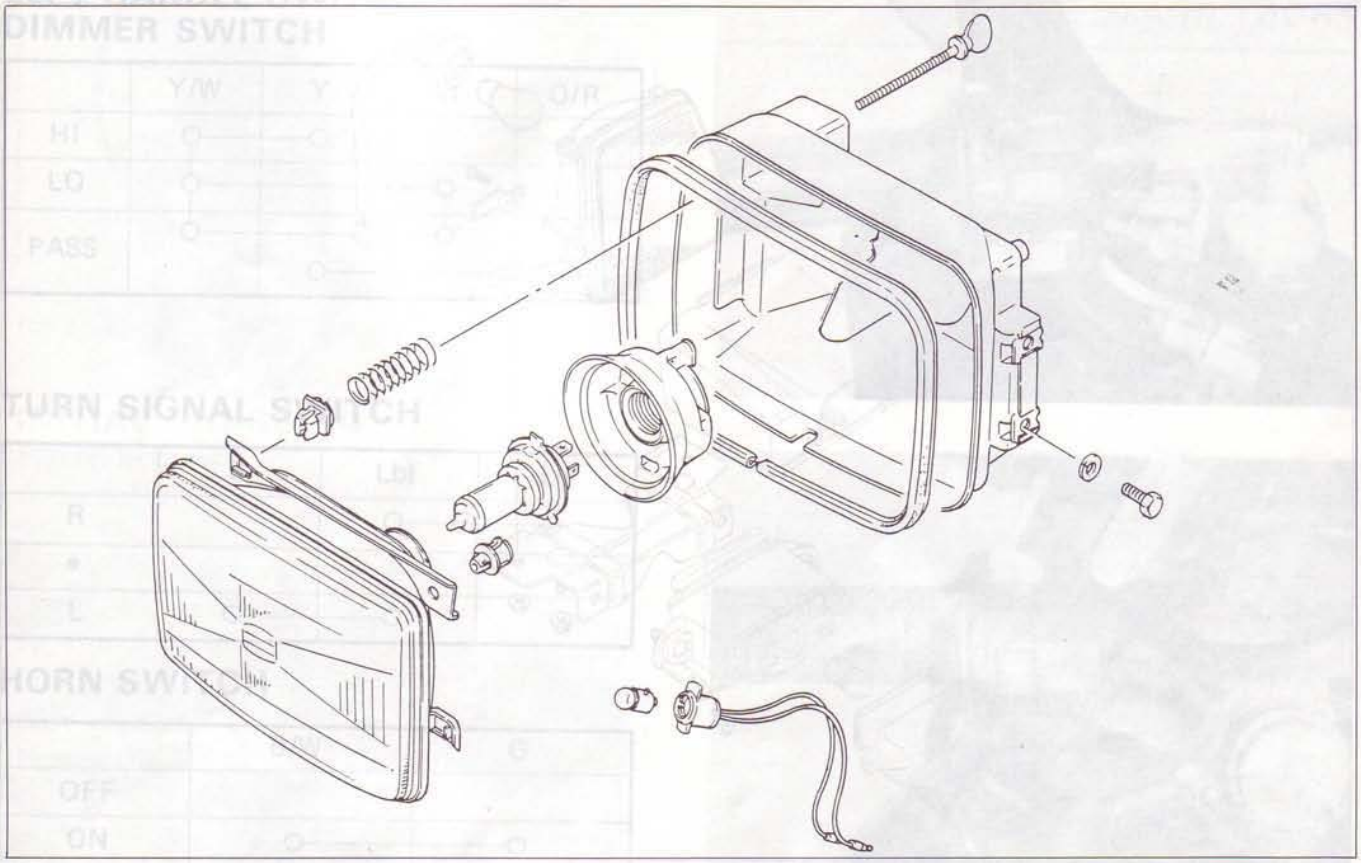


WATER TEMPERATURE METER

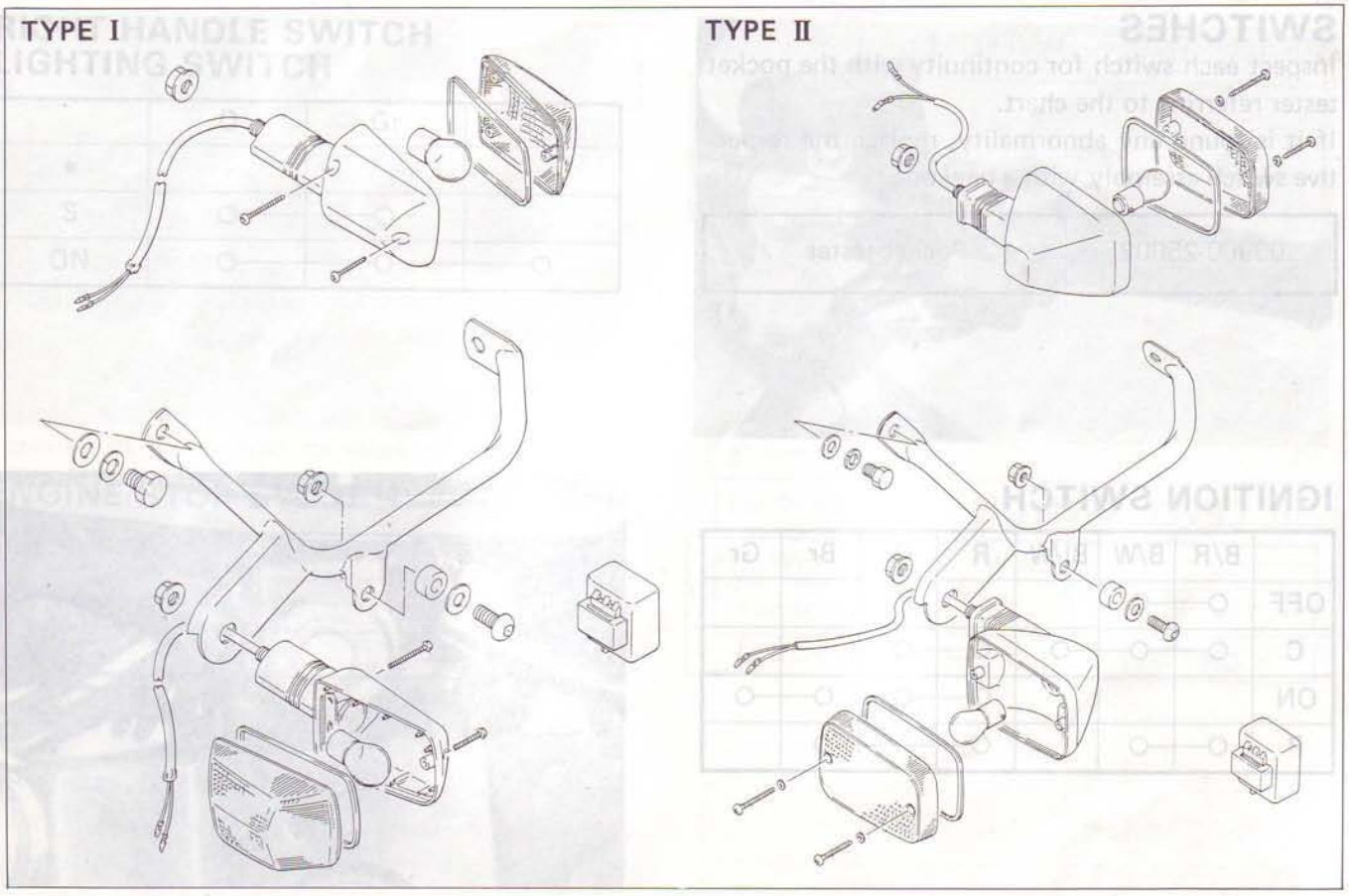
POSITION	RESISTANCE
①	450 Ω
②	232 Ω
③	27 Ω
④	4 Ω

LAMPS

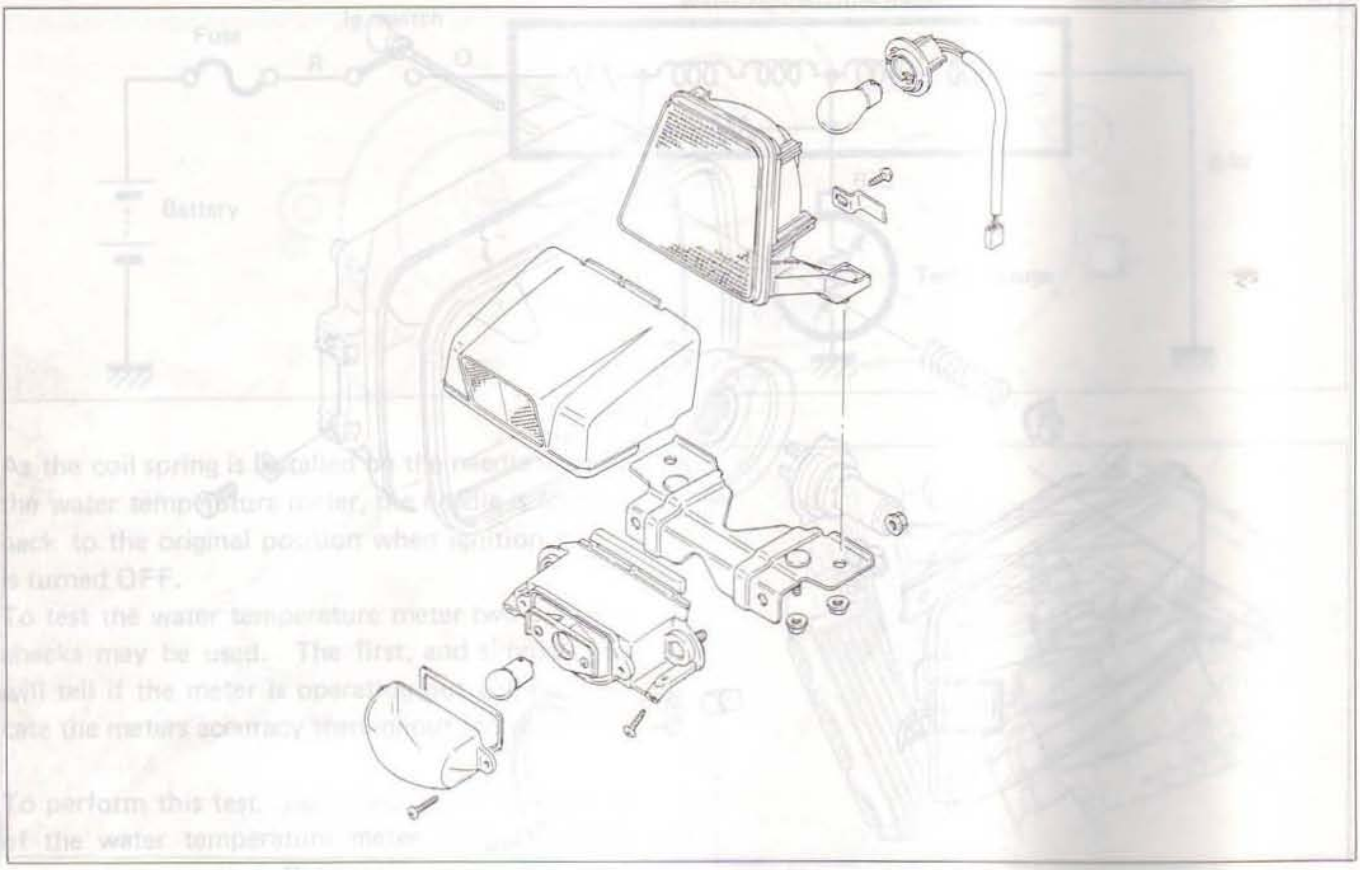
HEAD LIGHT



TURN SIGNAL LIGHT



TAIL / BRAKE 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 a new one.

09900-25002	Pocket tester

IGNITION SWITCH

	B/R	B/W	Bl/W	R	O	Br	Gr
OFF	O—O						
C	O—O—O			O—O			
ON				O—O		O—O	
P	O—O			O		O	

LEFT HANDLE SWITCH
DIMMER SWITCH

	Y/W	Y	W	O/R
HI	○	○		
LO	○		○	
PASS	○	○	○	

TURN SIGNAL SWITCH

	B	Lbl	Lg
R		○	○
•			
L	○	○	

HORN SWITCH

	B/W	G
OFF		
ON	○	○

RIGHT HANDLE SWITCH
LIGHTING SWITCH

	O	Gr	Y/W
•			
S	○	○	
ON	○	○	○

ENGINE STOP SWITCH

	B/Y	B/W
OFF	○	○
RUN		

FRONT BRAKE SWITCH

	O	W/B
OFF		
ON	○———	———○

NEUTRAL SWITCH

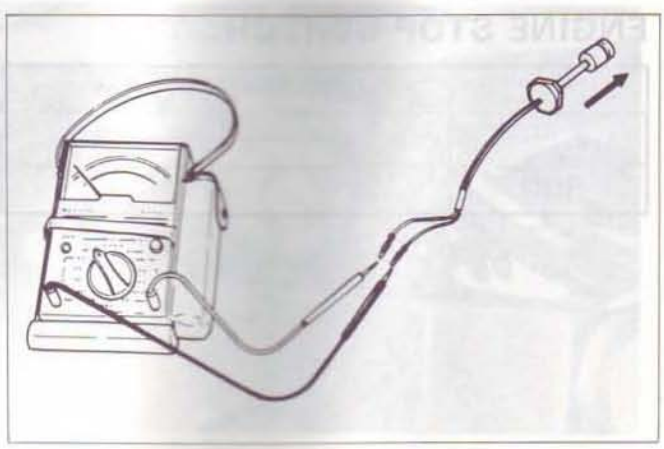
	Bl	Ground
•		
ON	○———	———○

REAR BRAKE SWITCH

	O	W/B
OFF		
ON	○———	———○

OIL LEVEL SWITCH

	Bl/W	B/W
•		
ON	○———	———○

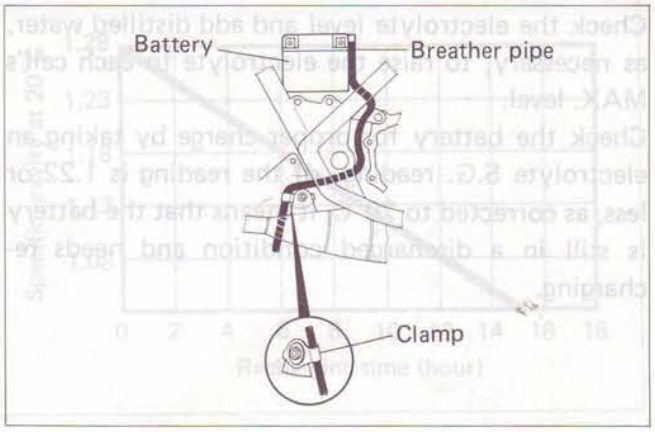


BATTERY

SPECIFICATIONS

Type designation	12N5-3B
Capacity	12V, 18.0kC (5Ah)/10 HR
Standard electrolyte S.G.	1.28 at 20°C

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



INITIAL CHARGING

Filling electrolyte

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

Charge battery with current as discribed in the table shown below.

Maximum charging current	0.5 A

Charging time

The charging time for a new battery is determined by the number of months that have elapsed since the 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 MAX. LEVEL with DISTILLED WATER.

Ⓐ Seal tube

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.

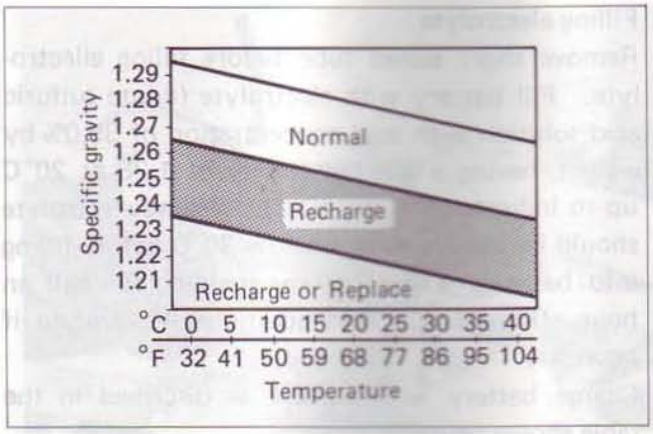
If the battery terminals are found to be coated with rust or an acidic white powder substance, then this can be cleaned away with emery paper.

Check the electrolyte level and add distilled water, as necessary, to raise the electrolyte to each cell's MAX. level.
Check the battery for proper charge by taking an electrolyte S.G. reading. If the reading is 1.22 or less, as corrected to 20°C, it means that the battery is still in a discharged condition and needs re-charging.

BASED ON S.G. READING RECHARGING OPERATION

To correct an S.G. reading 20°C, use the table at the right.

To read the S.G. on the hydrometer, bring the electrolyte in the hydrometer ① to eye level and read the graduations on the float scale bordering on the meniscus (curved-up portion of electrolyte surface), as shown in figure.

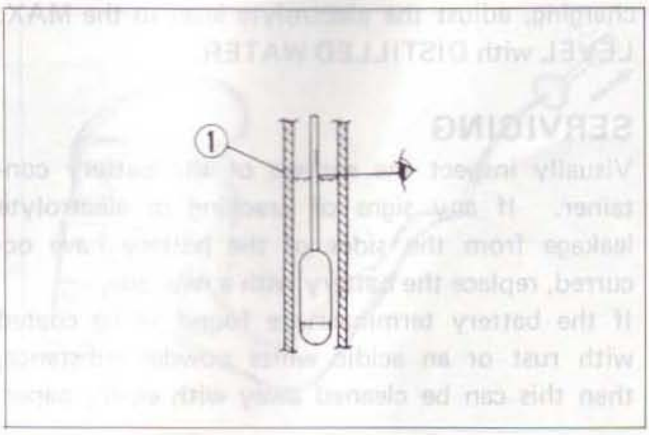


Check the reading (as corrected to 20°C) with chart to determine the recharging time in hours by constant-current charging at a charging rate of 0.5 amperes (which is a tenth of the capacity of the present battery).

Be careful not to permit the electrolyte temperature to exceed 45°C, 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

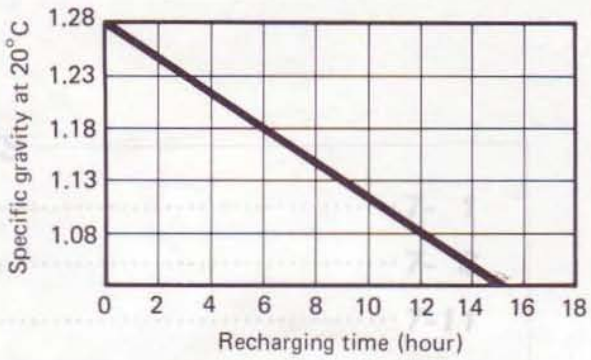
CAUTION:
Constant-voltage charging, otherwise called "quick" charging, is not recommended as it could shorten the life of the battery.



09900-28403	Hydrometer

WARNING:

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



SERVICE LIFE

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

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

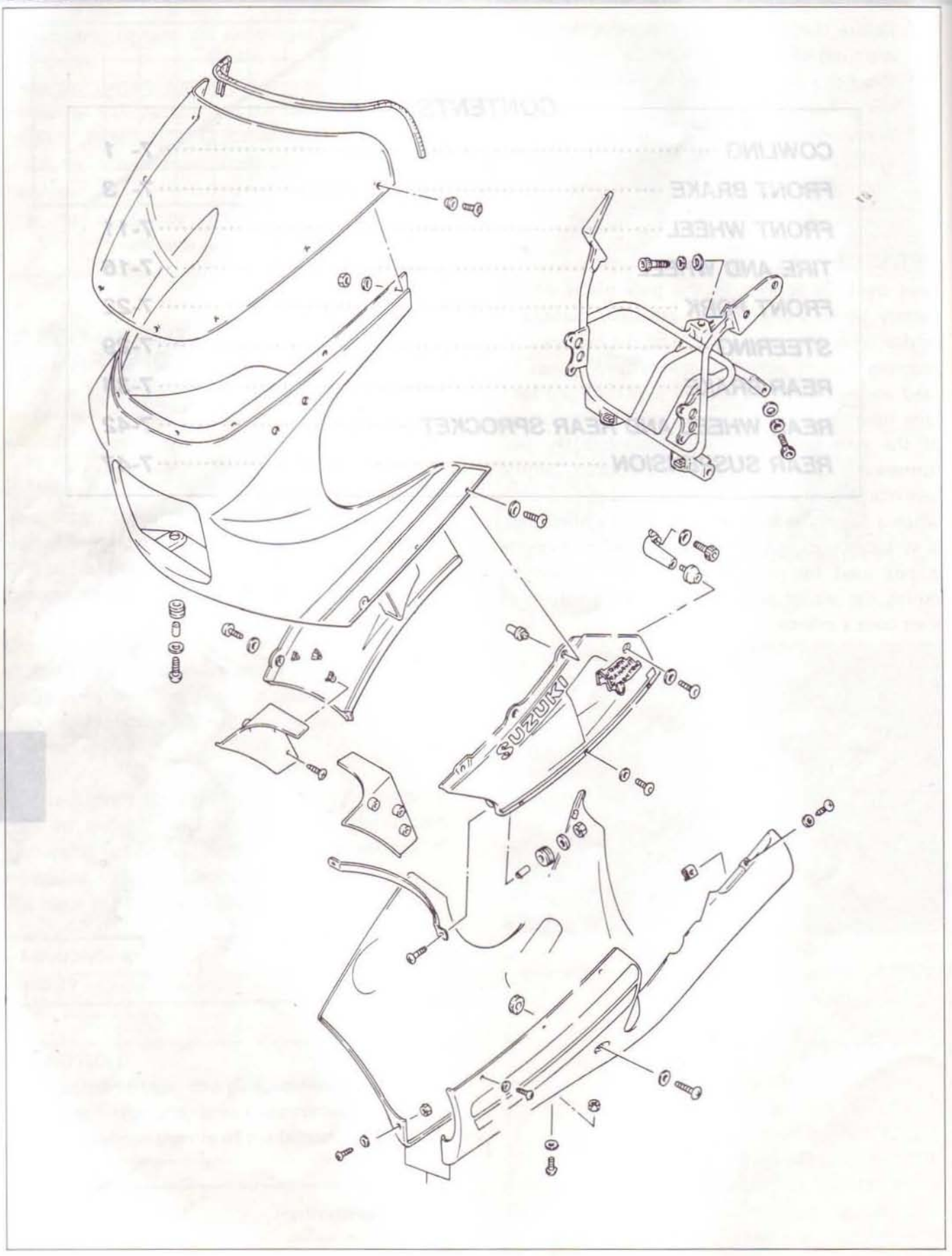
CHASSIS

CONTENTS

7

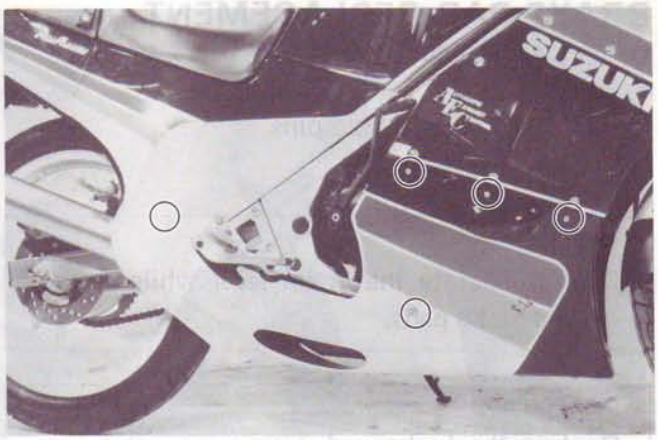
COWLING

CONSTRUCTION



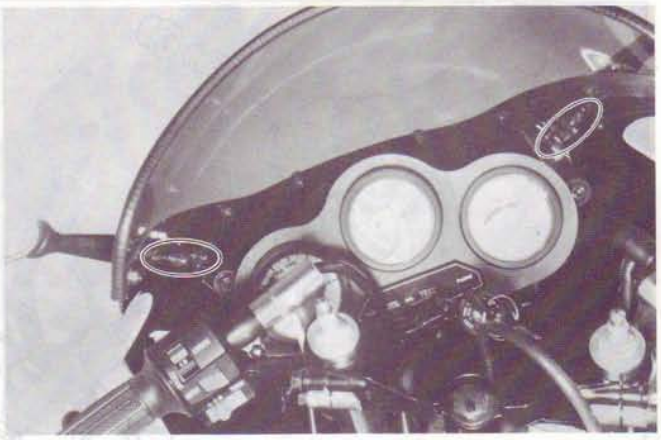
REMOVAL

- Remove the lower cowling by loosening 5 screws (left and right).



- Remove the middle cowling by loosening 4 screws (left and right)

- Remove the upper cowling by loosening 2 screws and mirror mounting nuts.



FRONT BRAKE

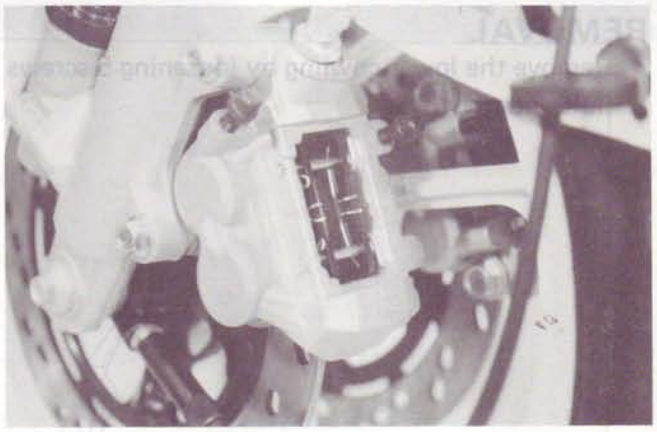
BRAKE PAD REPLACEMENT

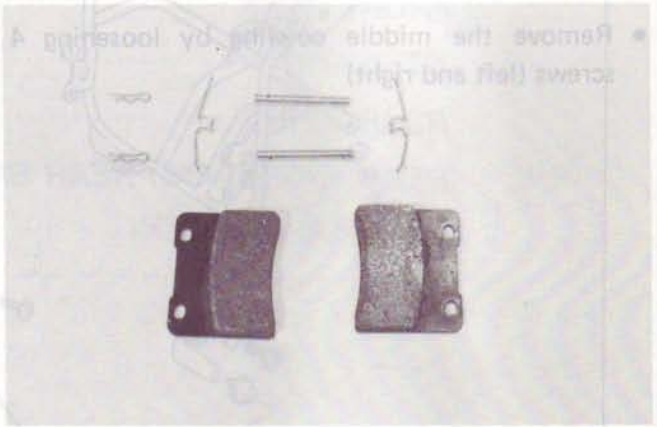
- Remove dust cover.
- Pull off clips.
- Pull off brake pad hold pins.
- Take off brake pads.

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

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

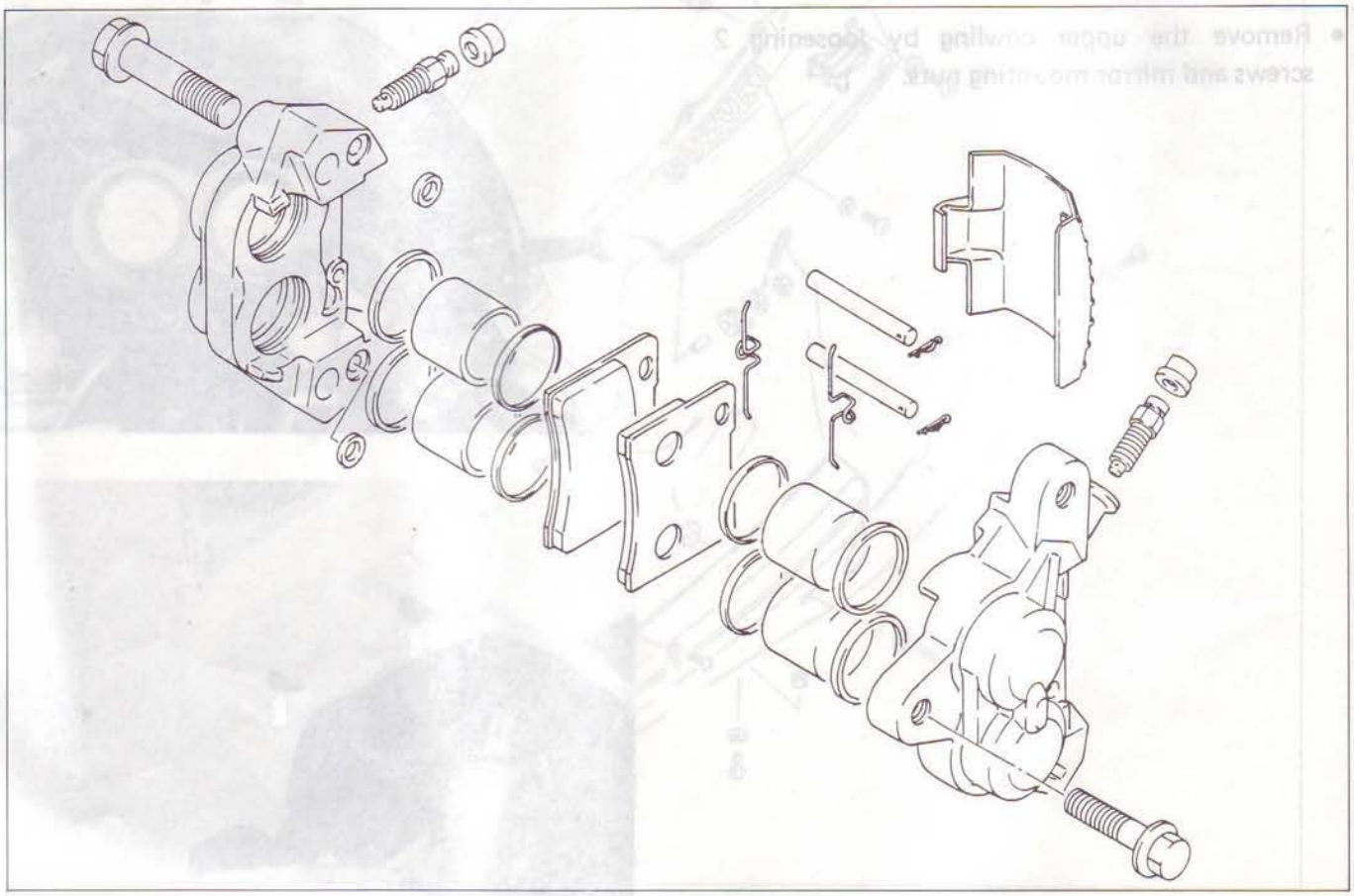
CAUTION:
Fit the brake pad shims to the brake pad so that the shims are positioned as shown in the figure.





CALIPER

CONSTRUCTION

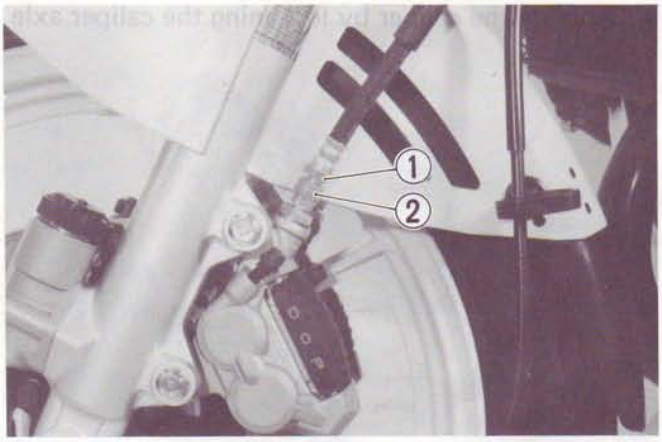


REMOVAL

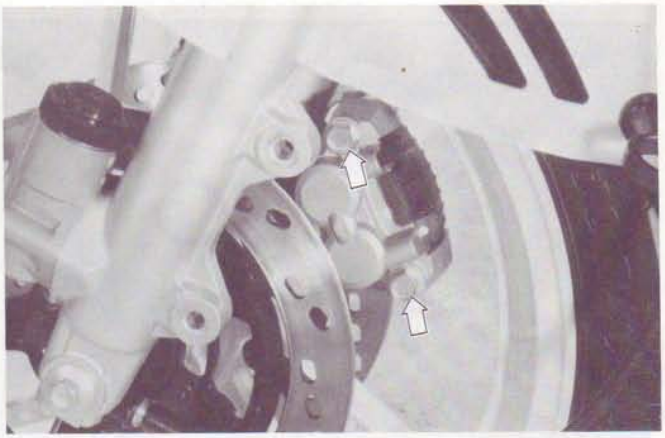
- Loosen the nut ② while holding the lock nut ①.
- Disconnect brake hose and catch the brake fluid in a suitable receptacle.

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

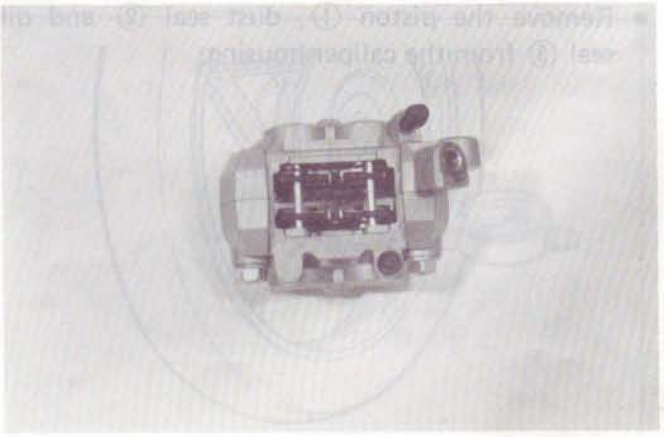
WARNING:
Brake fluid, if it leaks, will interfere with safe running and discolor painted surfaces. Check the brake hose for cracks and hose joint for leakage before riding.



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



- Remove the dust cover and pad. (Refer to page 7-3)

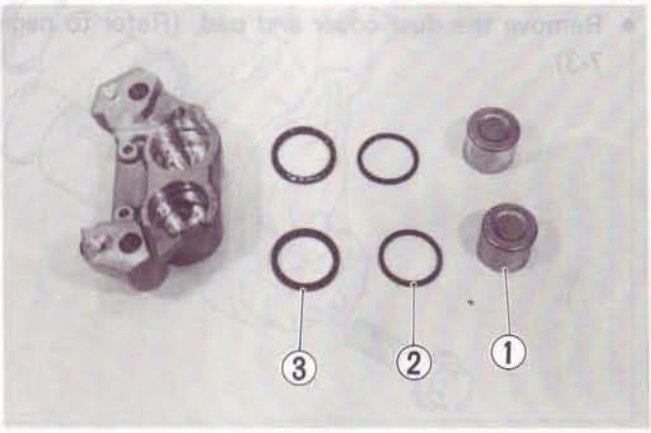


- Separate the caliper by loosening the caliper axle bolts.

- Push out the piston by using air gun.

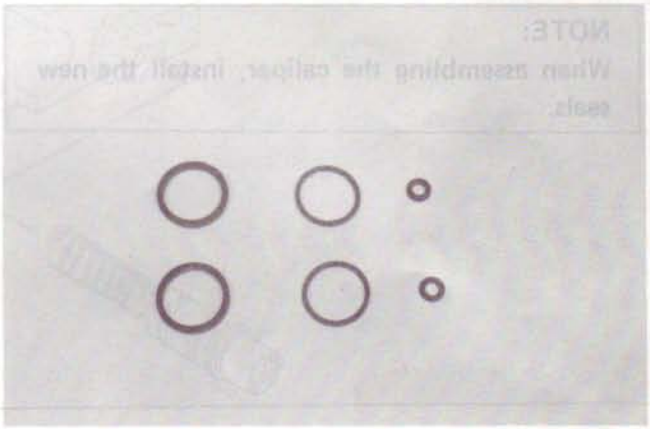
CAUTION:
Do not use high pressure air to prevent piston damage.

- Remove the piston ①, dust seal ② and oil seal ③ from the caliper housing.



CALIPER AND DISC INSPECTION

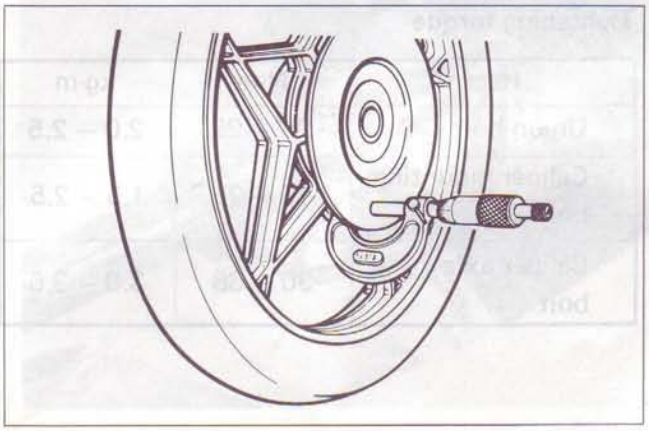
- Inspect the caliper bore wall for nicks, scratches or other damage.
- Inspect the each rubber parts for damage and wear.
- Inspect the piston surface for any scratches or other damage.



- 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 disc are shown below.

09900-20205	Micrometer (0 – 25 mm)

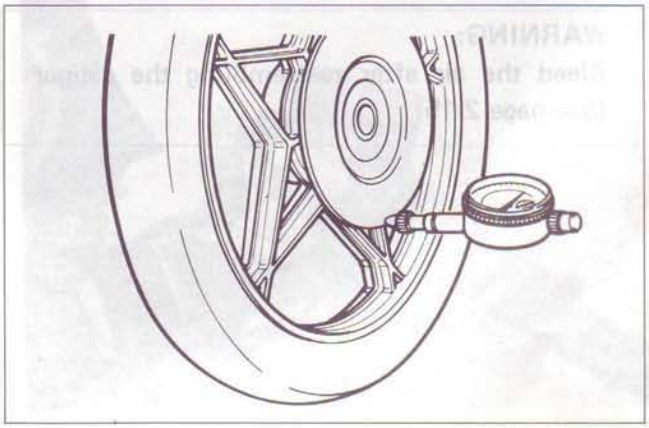
Service Limit	4.0 mm



- 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

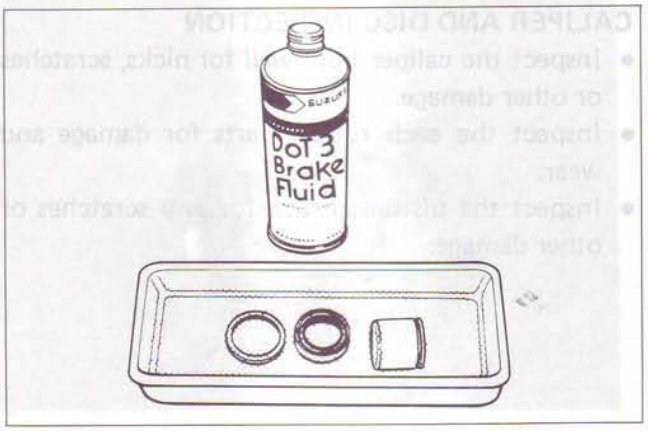
Service Limit	0.30 mm



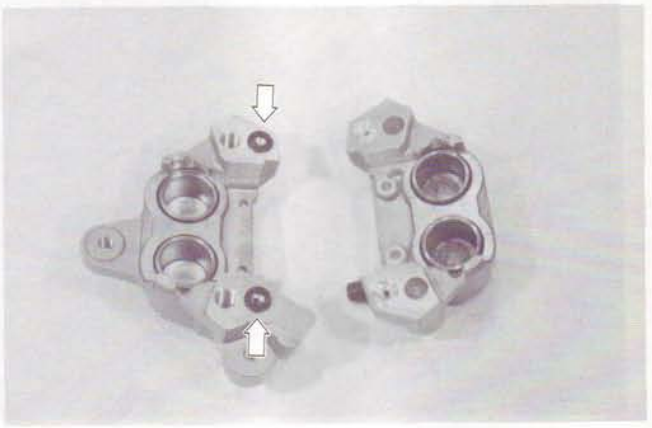
CALIPER REASSEMBLY

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.

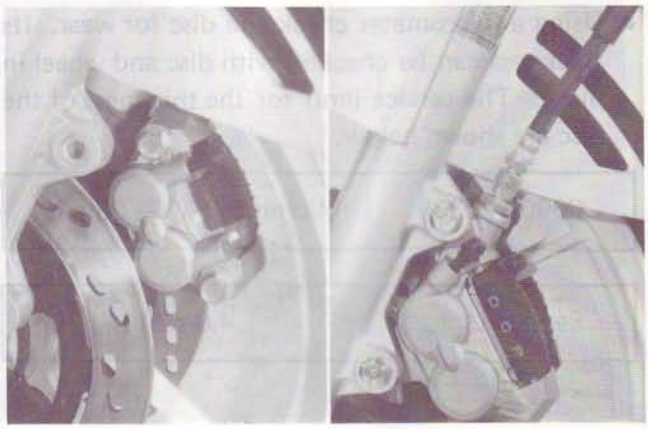


NOTE:
When assembling the caliper, install the new seals.

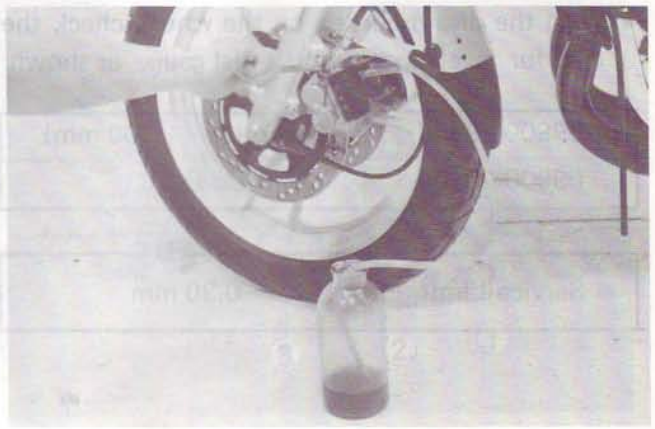


Tightening torque

Item	N·m	kg-m
Union bolt	20 – 25	2.0 – 2.5
Caliper mounting bolt	15 – 25	1.5 – 2.5
Caliper axle bolt	30 – 36	3.0 – 3.6

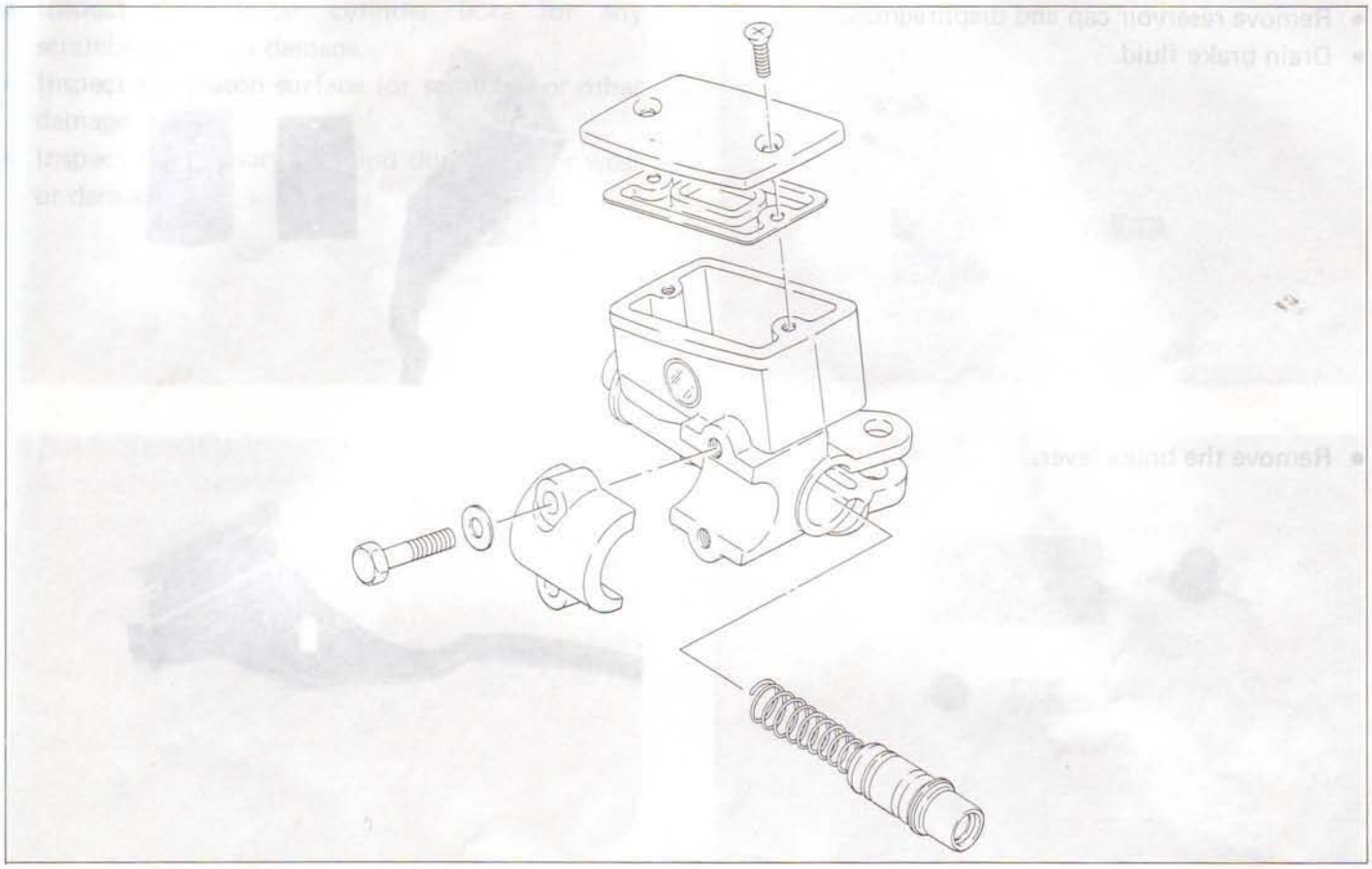


WARNING:
Bleed the air after reassembling the caliper (See page 2-15)



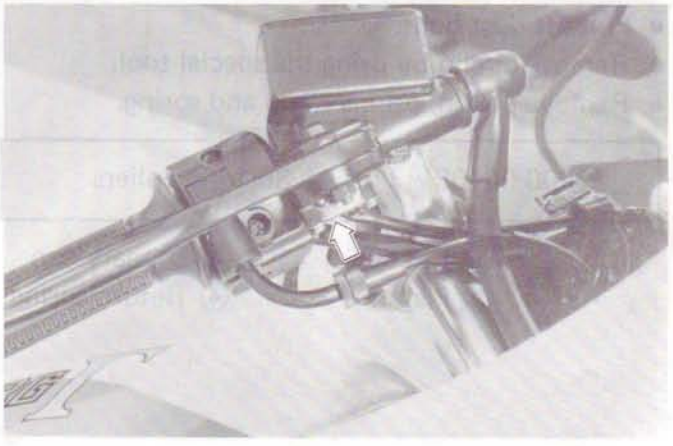
MASTER CYLINDER

CONSTRUCTION



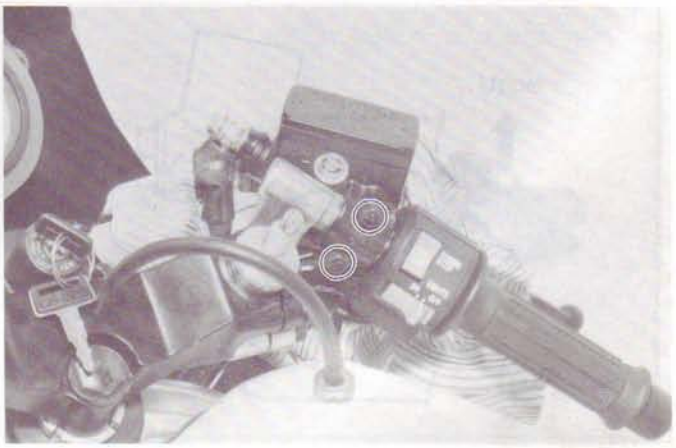
REMOVAL

- Take off front brake light switch.



- 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 the two clamp bolts and take off master cylinder assembly.

DISASSEMBLY

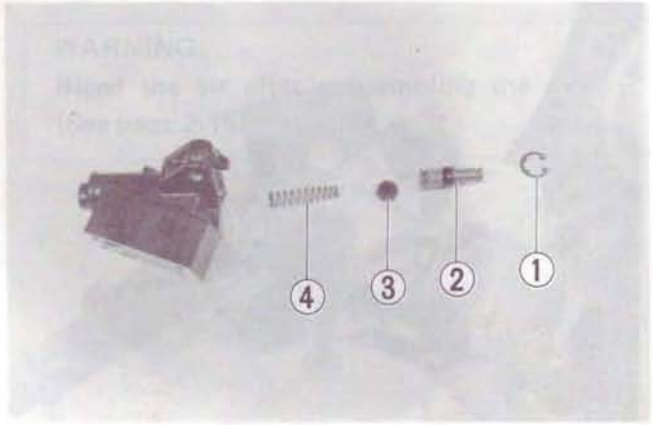
- Remove reservoir cap and diaphragm.
- Drain brake fluid.

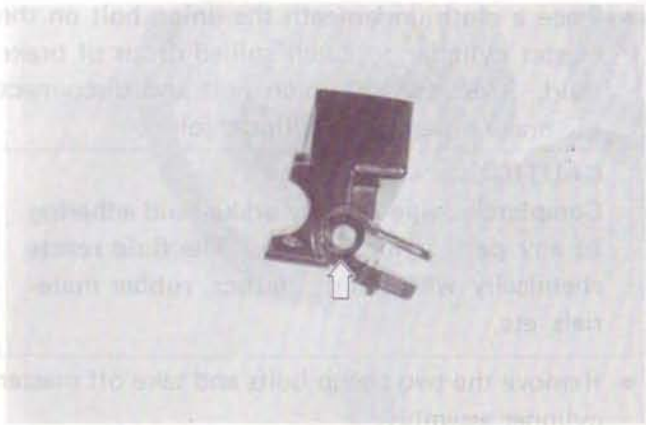
- Remove the brake lever.

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

09900-06108	Snap ring pliers

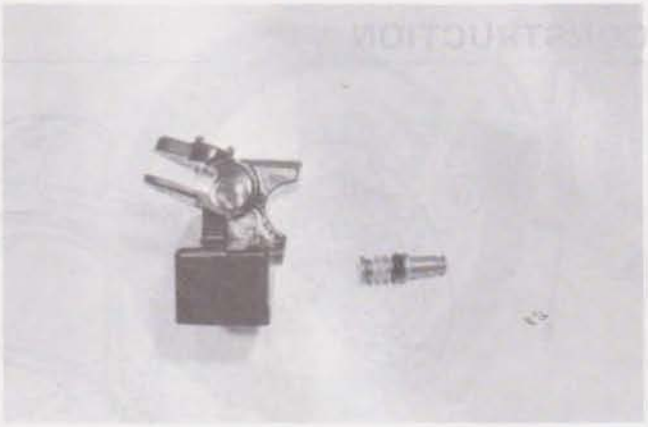
① Circlip
② Piston
③ Primary cup
④ Return spring

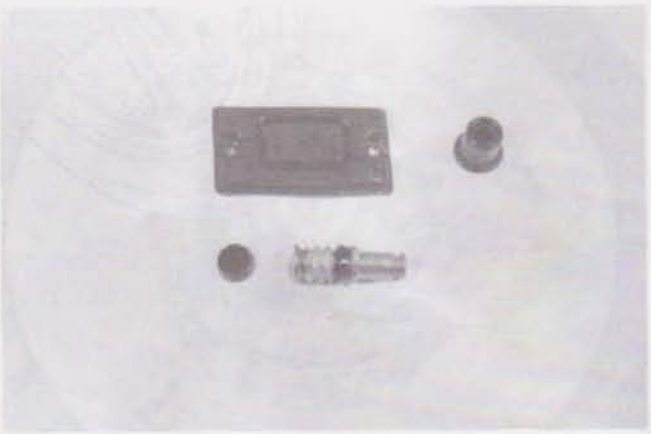




INSPECTION

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

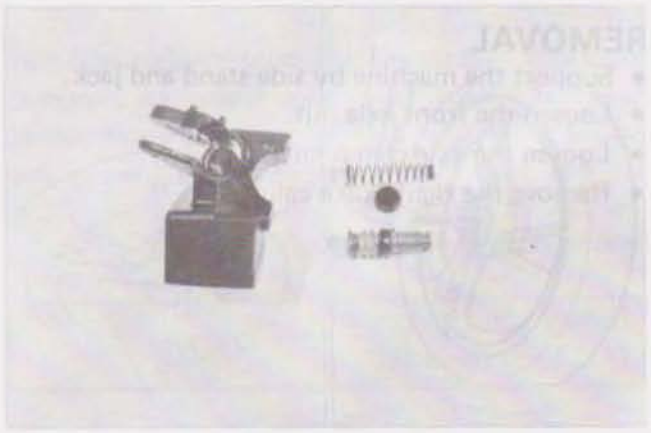




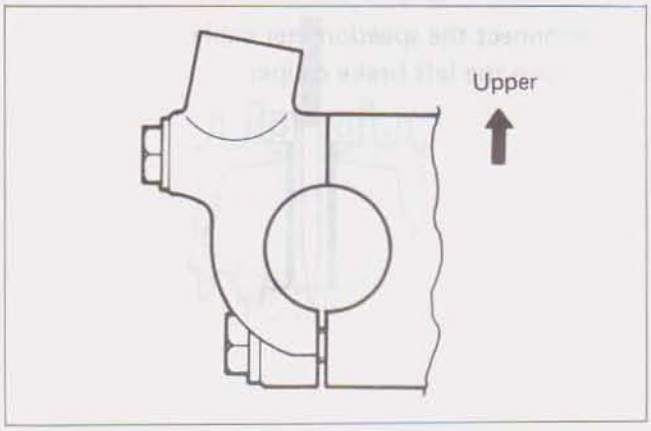
REASSEMBLY

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

CAUTION:
Wash the master cylinder components with fresh brake fluid before reassembly. Never use cleaning solvent or gasoline to wash them. Apply brake fluid to the cylinder bore and all the internals to be inserted into the bore.



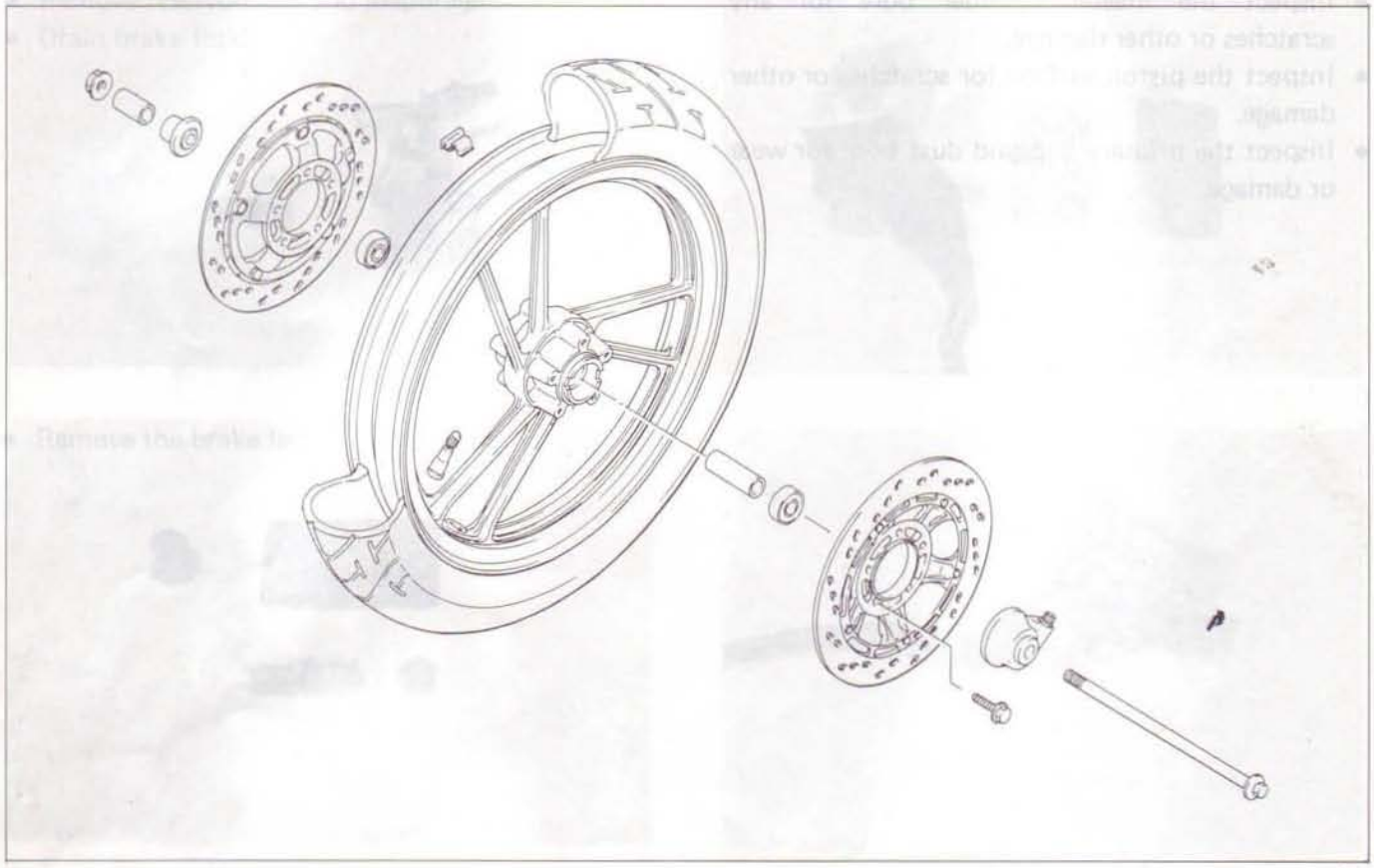
When remounting the master cylinder on the handlebars, first tighten the clamp bolt for upside as shown.



CAUTION:
Bleed the air after reassembling master cylinder (See page 2-15).
Adjust the front brake light switch after installation.

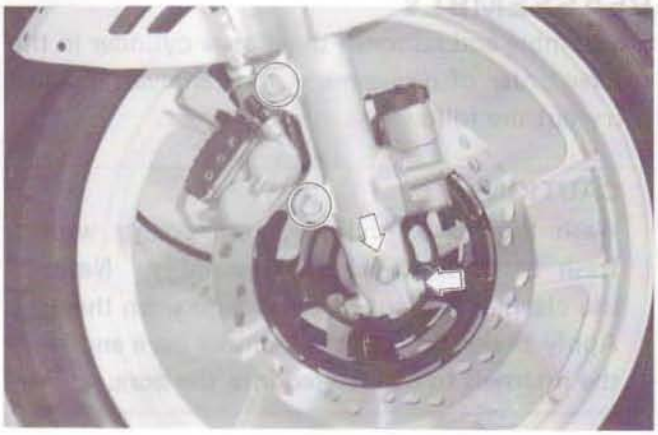
FRONT WHEEL

CONSTRUCTION



REMOVAL

- Support the machine by side stand and jack.
- Loosen the front axle nut.
- Loosen the axle clamp nut.
- Remove the right brake caliper.

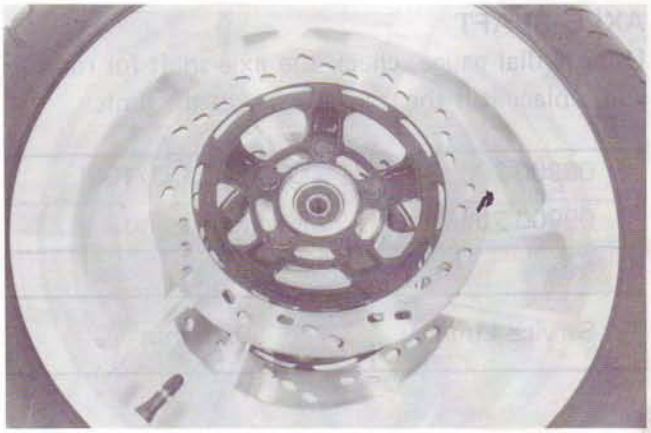


- Disconnect the speedometer cable.
- Remove the left brake caliper.

- Draw out the axle shaft.
- Remove the front wheel.

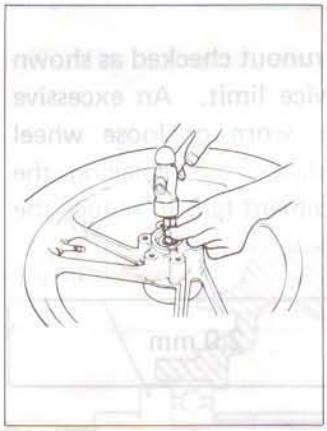
DISASSEMBLY

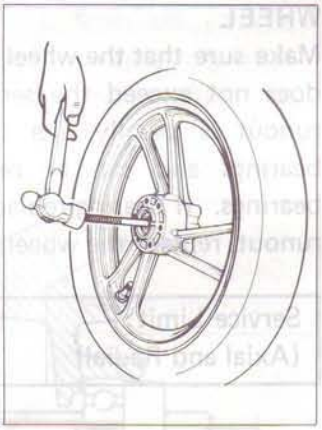
- Remove the securing bolts and separate the disc from wheel.



Drive out the right and left wheel bearings by using the special tool in the following procedures.

- Insert the adapter into the wheel bearing.
- After inserting the wedge bar from the opposite side, lock the wedge bar in the slit of the adapter.

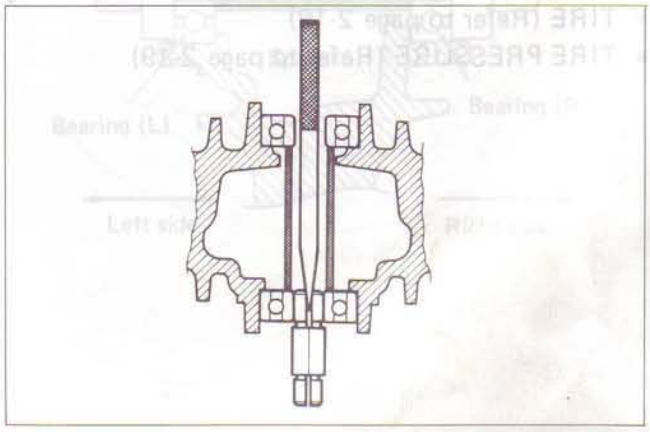




- Drive out the wheel bearing by knocking the wedge bar.

CAUTION:
The removed bearing should be replaced.

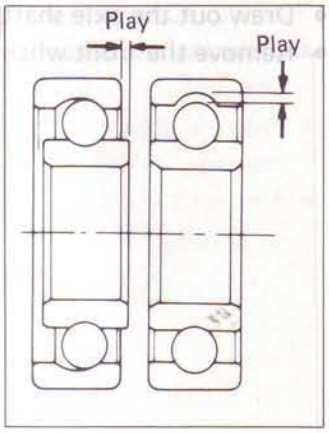
09941-50110	Bearing remover



INSPECTION

WHEEL BEARINGS

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

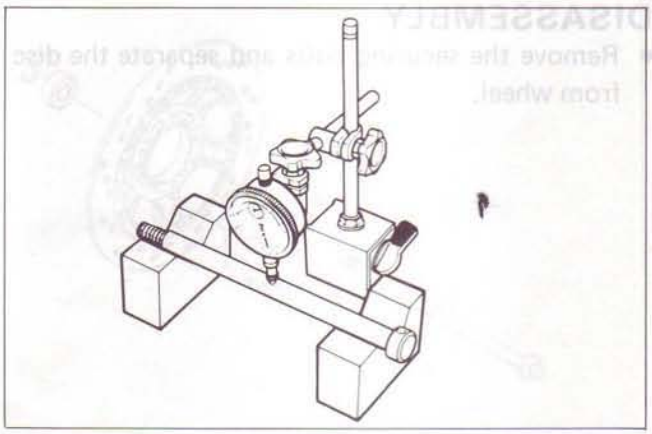


AXLE SHAFT

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

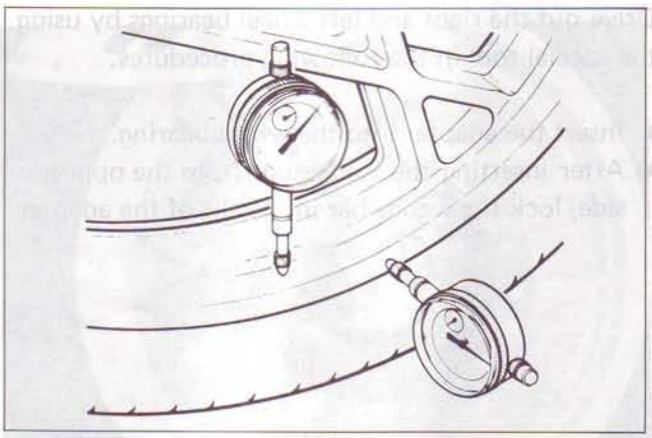
Service Limit	0.25 mm



WHEEL

Make sure that the wheel runout checked as shown does not exceed the service limit. An excessive runout is usually due to worn or loose wheel bearings and can be reduced by replacing the bearings. If bearing replacement fails to reduce the runout, replace the wheel.

Service Limit (Axial and Radial)	2.0 mm



- TIRE (Refer to page 2-19)
- TIRE PRESSURE (Refer to page 2-19)

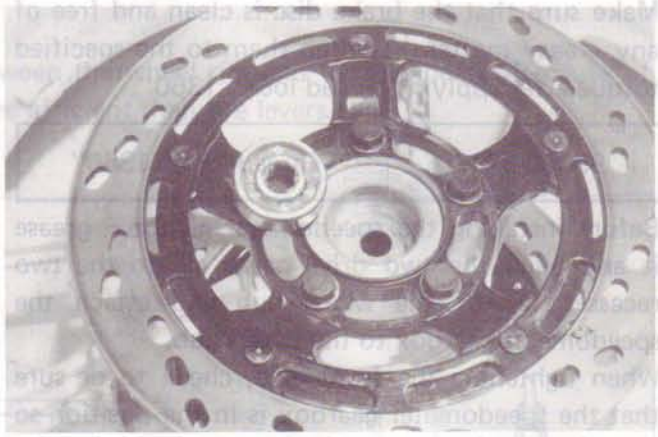
REASSEMBLY

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

WHEEL BEARING

Apply grease to the bearing before installing the bearings.

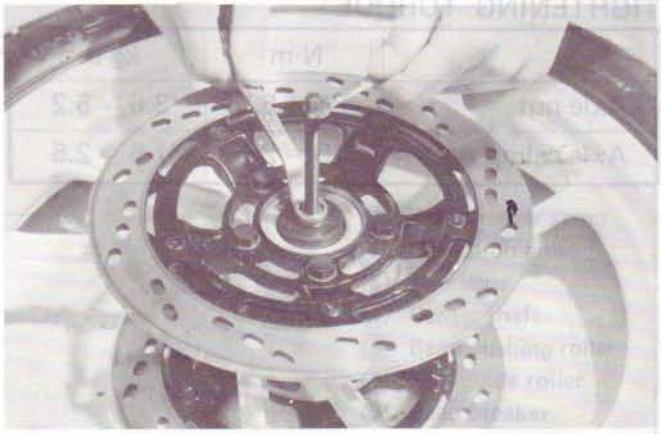
99000-25010	SUZUKI Super grease "A"

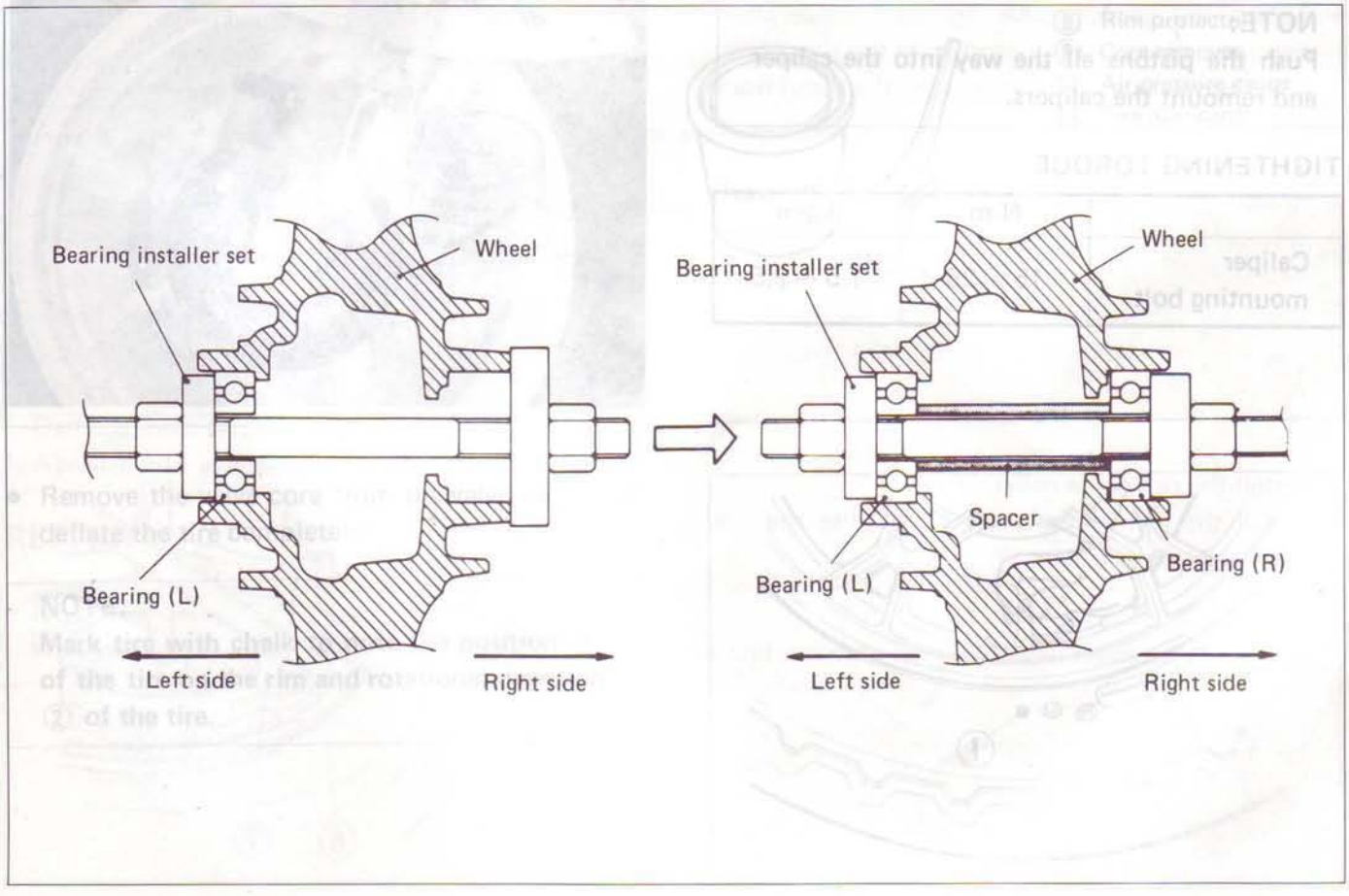


Install the wheel bearings by using the special tool.

CAUTION:
First install the wheel bearing for left side.

09924-84520	Bearing installer set

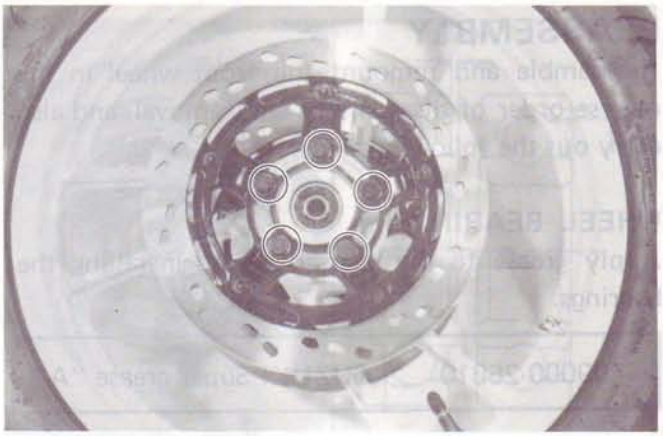




Make sure that the brake disc is clean and free of any greasy matter. Tighten them to the specified torque after applying thread lock "1360".

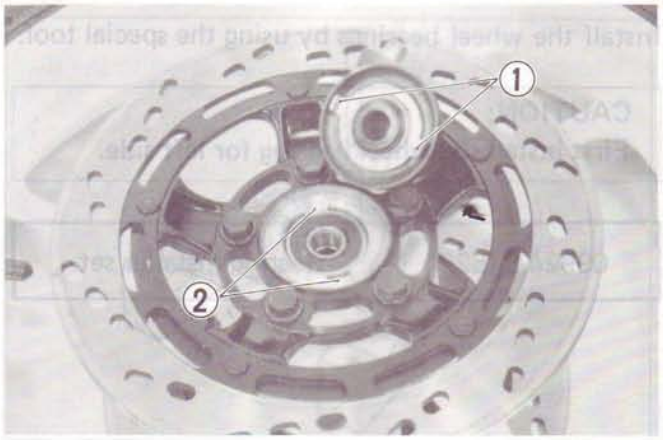
99000-32130	Thread lock "1360"

Before installing the speedometer gearbox, grease it and align the two drive pawls ① to the two recesses ② of the wheel hub and attach the speedometer gearbox to the wheel hub.
When tightening the front axle, check to be sure that the speedometer gearbox is in the position so that the speedometer cable does not bend sharply.



TIGHTENING TORQUE

	N·m	kg-m
Axle nut	36 – 52	3.6 – 5.2
Axle calmp nut	15 – 25	1.5 – 2.5



NOTE:
Push the pistons all the way into the caliper and remount the calipers.

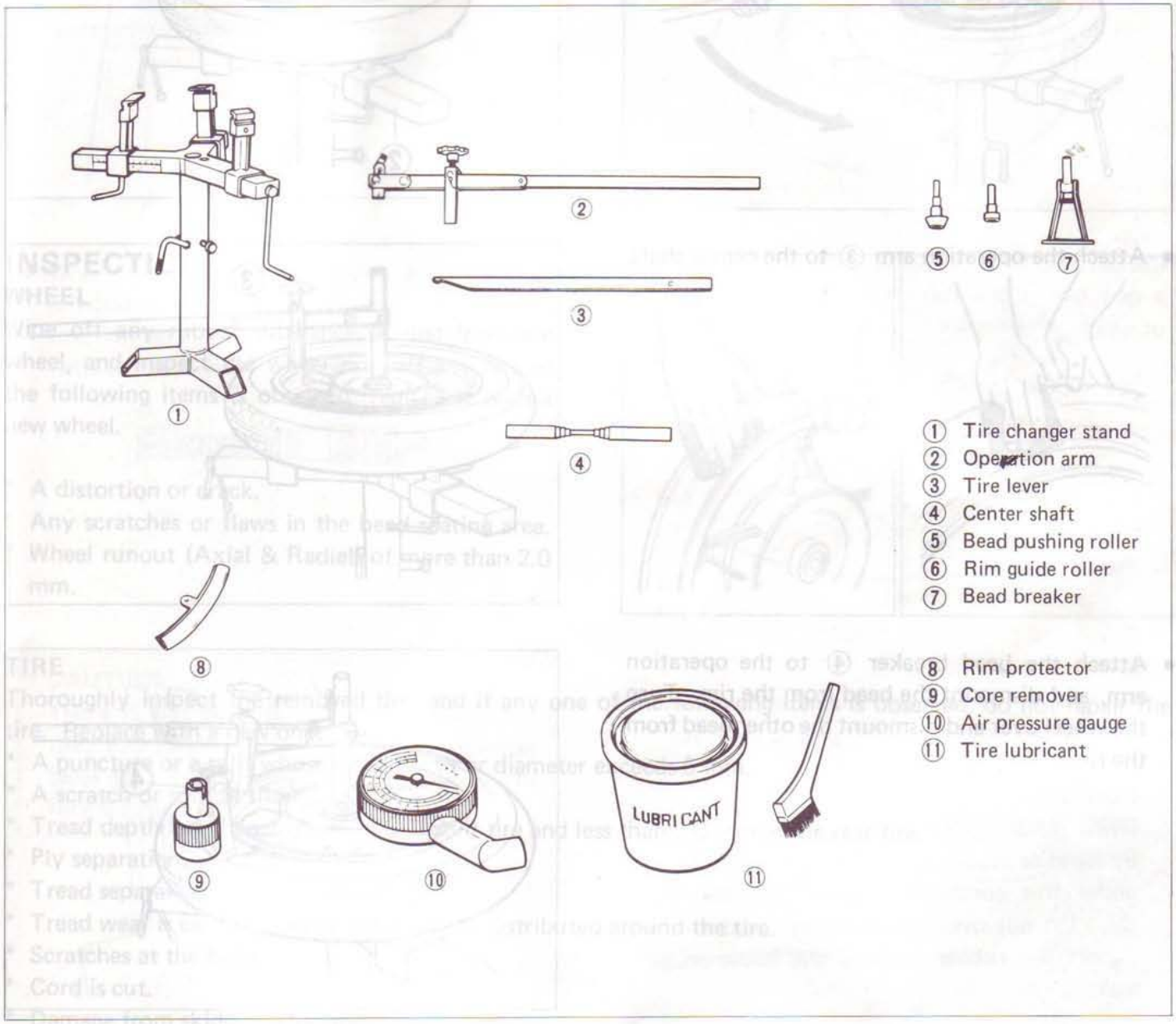
TIGHTENING TORQUE

	N·m	kg-m
Caliper mounting bolt	15 – 25	1.5 – 2.5

TIRE AND WHEEL

REMOVAL

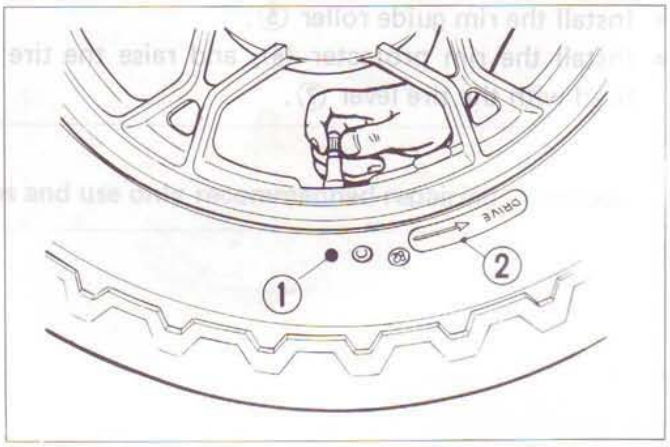
The most critical factor of a tubeless tire is the seal between the wheel rim and the tire bead. Because of this, we recommend using a tire changer which is also more efficient than tire levers.
For tire removal the following tools are required.



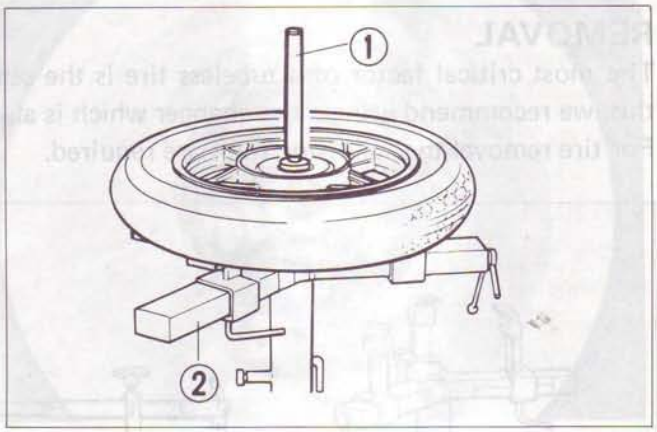
① Tire changer stand
② Operation arm
③ Tire lever
④ Center shaft
⑤ Bead pushing roller
⑥ Rim guide roller
⑦ Bead breaker
⑧ Rim protector
⑨ Core remover
⑩ Air pressure gauge
⑪ Tire lubricant

- Remove the valve core from the valve stem, and deflate the tire completely.

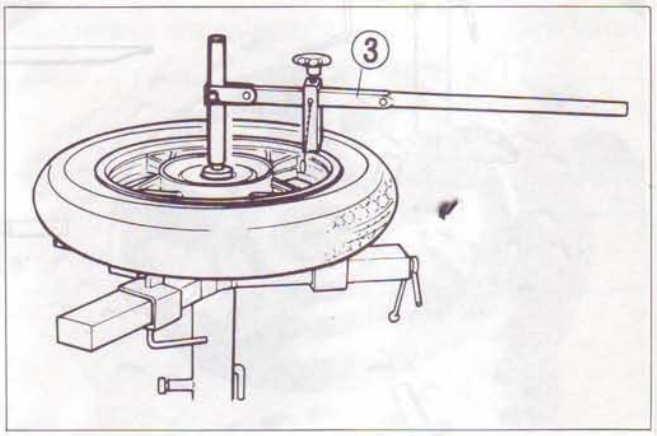
NOTE:
Mark tire with chalk to note the position ① of the tire on the rim and rotational direction ② of the tire.



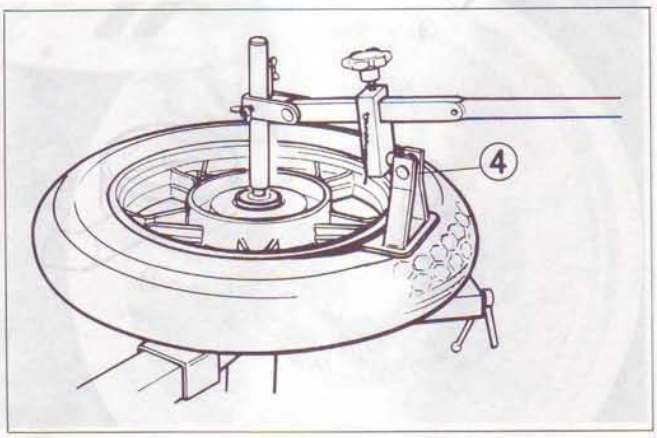
- Place the center shaft ① to the wheel, and fix the wheel firm by the rim holder ②.



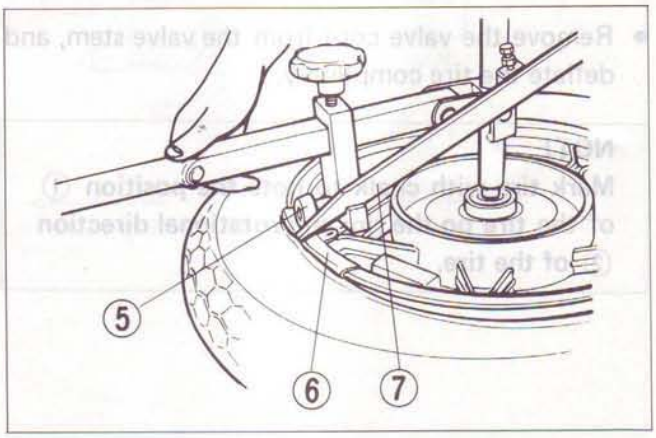
- Attach the operation arm ③ to the center shaft.



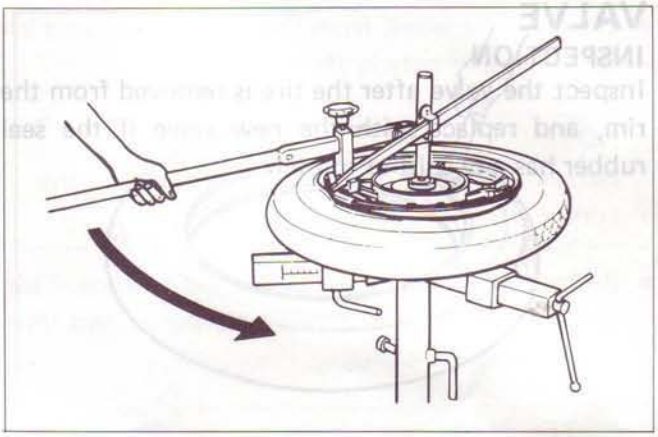
- Attach the bead breaker ④ to the operation arm, and dismount the bead from the rim. Turn the wheel over and dismount the other bead from the rim.



- Install the rim guide roller ⑤.
- Install the rim protecter ⑥, and raise the tire bead with the tire lever ⑦.



- Set the tire lever against the operation arm, and rotate the lever around the rim. Repeat this procedure to remove the other bead from the rim.

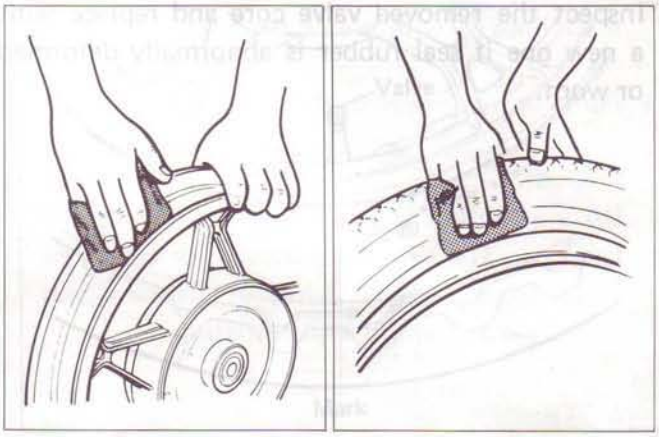


INSPECTION

WHEEL

Wipe off any rubber substance or rust from the wheel, and inspect the wheel rim. If any one of the following items is observed, replace it with a new wheel.

* A distortion or crack.
* Any scratches or flaws in the bead seating area.
* Wheel runout (Axial & Radial) of more than 2.0 mm.



TIRE

Thoroughly inspect the removed tire, and if any one of the following items is observed, do not repair the tire. Replace with a new one.

* A puncture or a split whose total length or diameter exceeds 6 mm.
* A scratch or split at the side wall.
* Tread depth less than 1.6 mm in the front tire and less than 2.0 mm in the rear tire.
* Ply separation.
* Tread separation.
* Tread wear is extraordianrily deformed or distributed around the tire.
* Scratches at the bead.
* Cord is cut.
* Damage from skidding (flat spots.)
* Abnormality in the inner liner.

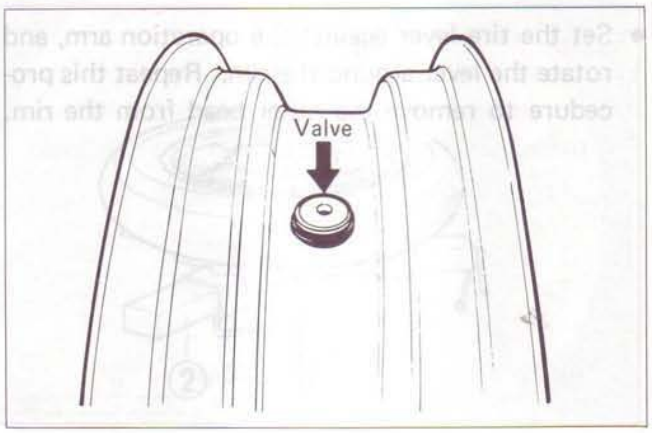
REPAIR

NOTE:
When repairing a flat tire, follow the repair instructions and use only recommended repairing materials.

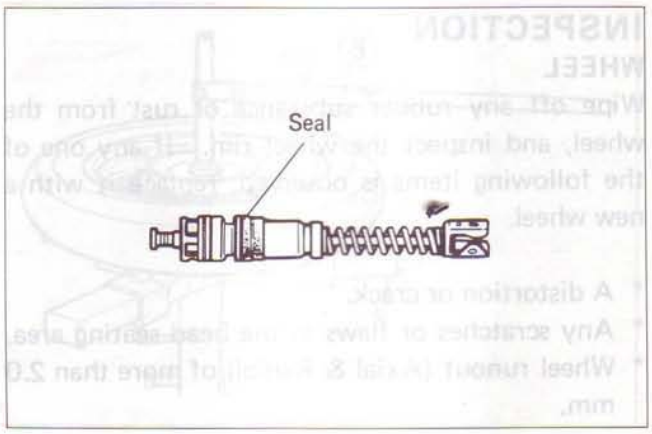
VALVE

INSPECTION

Inspect the valve after the tire is removed from the rim, and replace with the new valve if the seal rubber has any split or scratch.



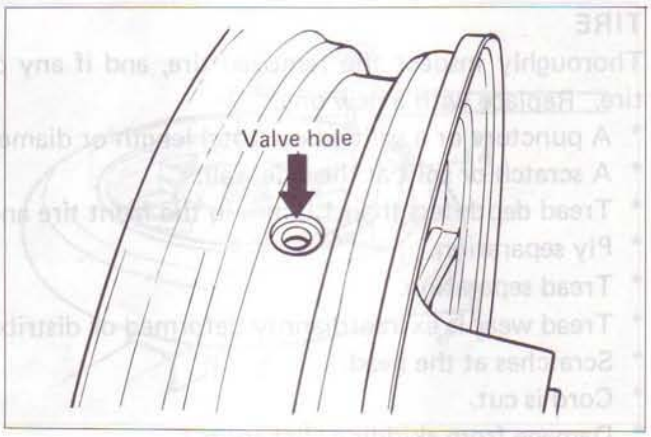
Inspect the removed valve core and replace with a new one if seal rubber is abnormally deformed or worn.

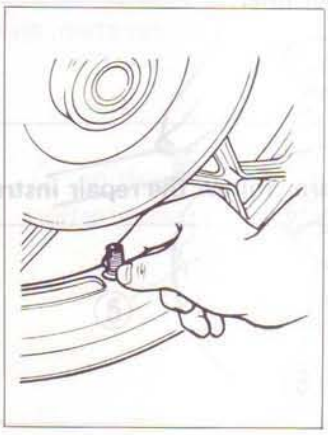


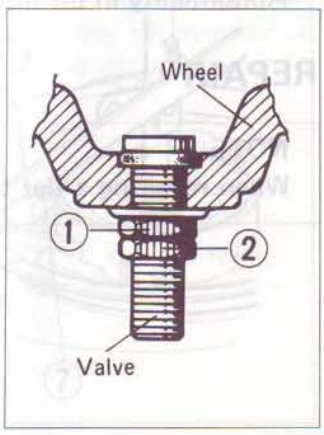
INSTALLATION

Any dust or rust around the valve hole must be cleaned off. Then install the valve in the rim.

CAUTION:
When installing the valve, tighten the nut ① by hand as much as possible. Holding the nut under this condition, tighten the lock nut ②. Do not overtighten nut ① as this may distort the rubber packing and cause an air leak.



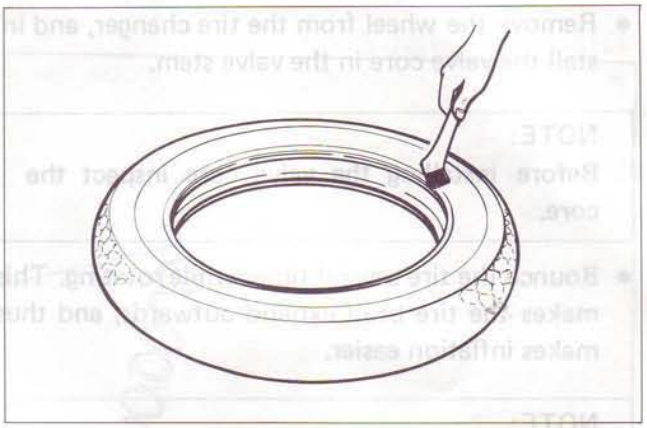




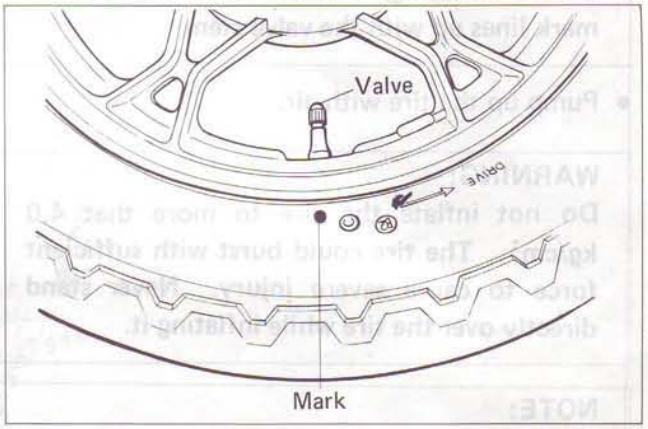
TIRE MOUNTING

- Apply a special tire lubricant or neutral soap liquid to the tire bead.

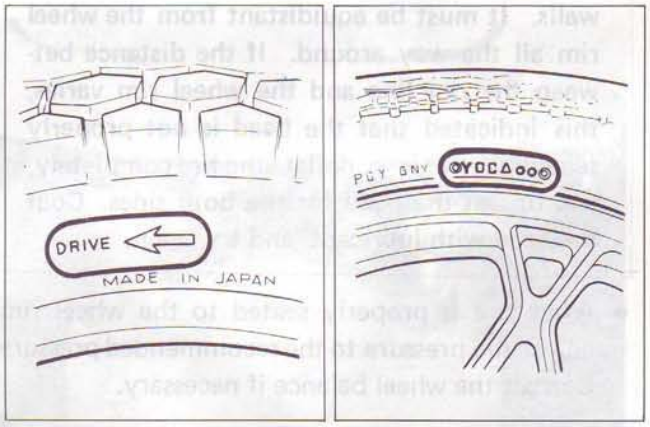
CAUTION:
Never apply grease, oil or gasoline.



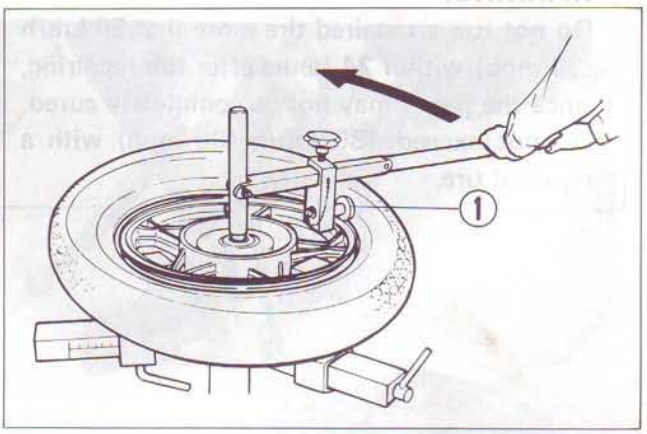
- When installing the tire, make certain that the directional arrow faces the direction of wheel rotation and align the balancing dot of the tire with the valve stem as shown.



CAUTION:
There is not directional arrow on the front tire, so mount the tire so that I.D. number faces to the left side when the tire is in the forward running direction.



- Set the bead pushing roller ①.
- Rotate operation arm around the rim to mount the bead completely. Do the bottom bead first, then the upper bead.



- Remove the wheel from the tire changer, and install the valve core in the valve stem.

NOTE:
Before installing the valve core inspect the core.

- Bounce the tire several times while rotating. This makes the tire bead expand outwards, and thus makes inflation easier.

NOTE:
Before inflating, confirm that the balance mark lines up with the valve stem.

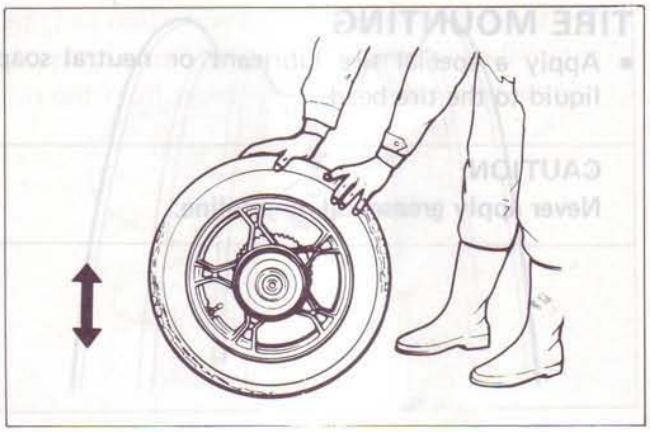
- Pump up the tire with air.

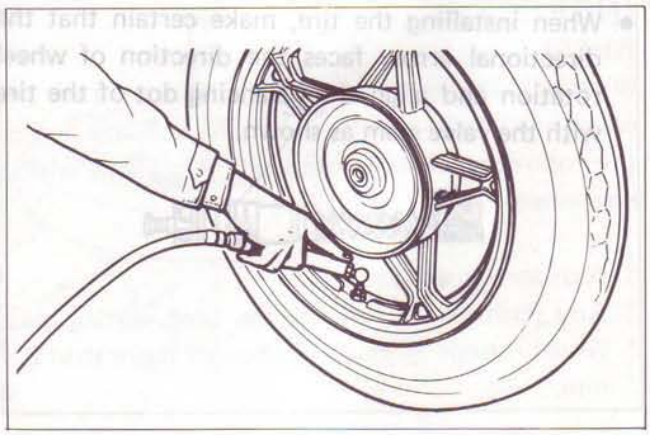
WARNING:
Do not inflate the tire to more that 4.0 kg/cm^2. The tire could burst with sufficient force to cause severe injury. Never stand directly over the tire while inflating it.

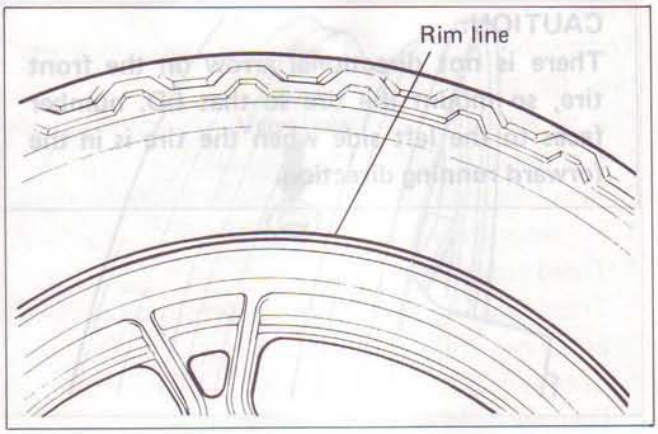
NOTE:
Check the "rim line" cast on the tire side walls. It must be equidistant from the wheel rim all the way around. If the distance between the rim line and the wheel rim varies, this indicated that the bead is not properly seated. If this is so, deflate the tire completely, and unseat the bead for the both sides. Coat the bead with lubricant, and try again.

- After tire is properly seated to the wheel rim, adjust the pressure to the recommended pressure. Correct the wheel balance if necessary.

WARNING:
Do not run a repaired tire more that 50 km/h (30 mph) within 24 hours after tire repairing, since the patch may not be completely cured. Do not exceed 130 km/h (80 mph) with a repaired tire.

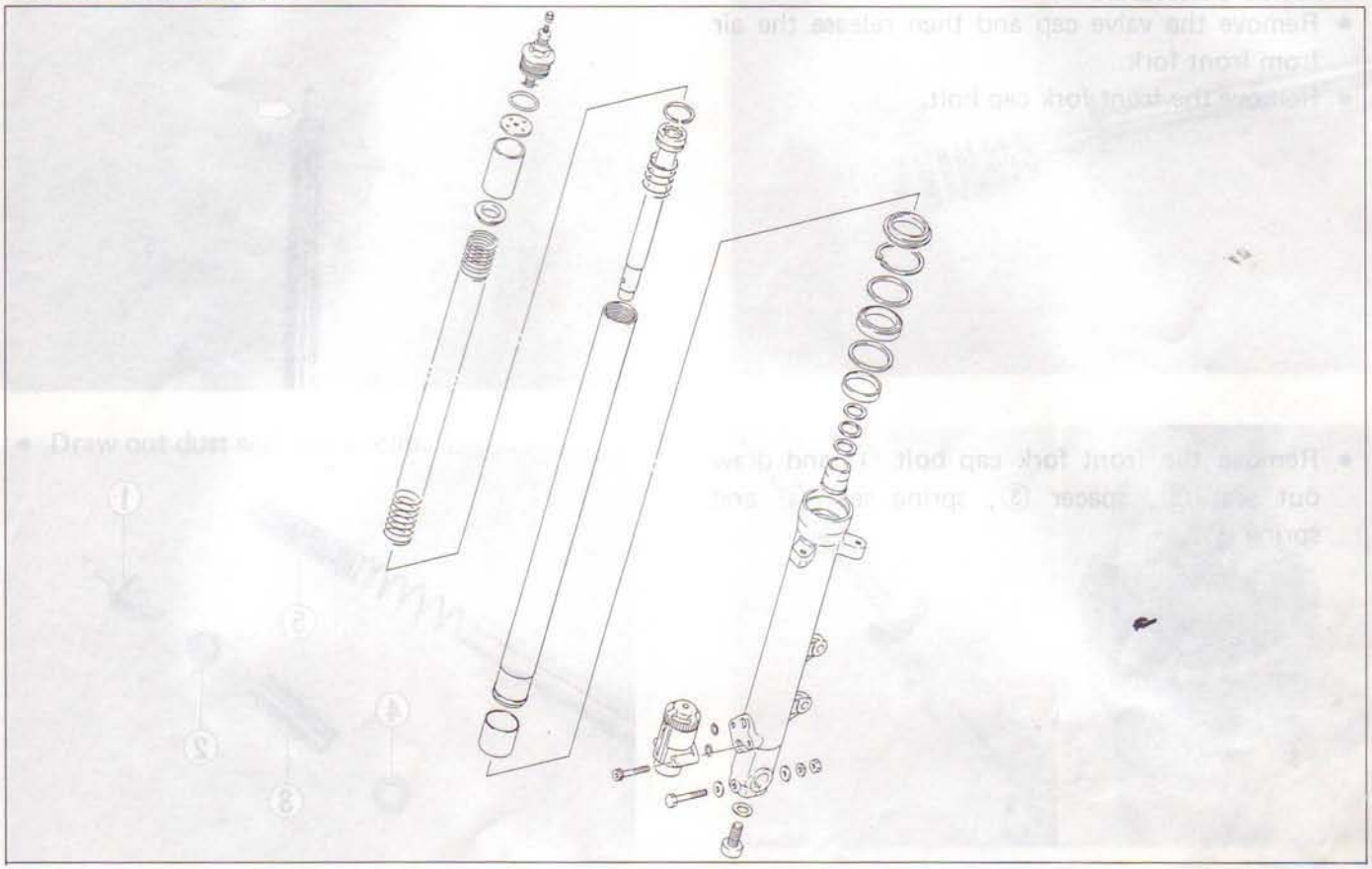






FRONT FORK

CONSTRUCTION



REMOVAL

- Remove the front wheel. (Refer to page 7-11)
- Remove the stabilizer and front fender.

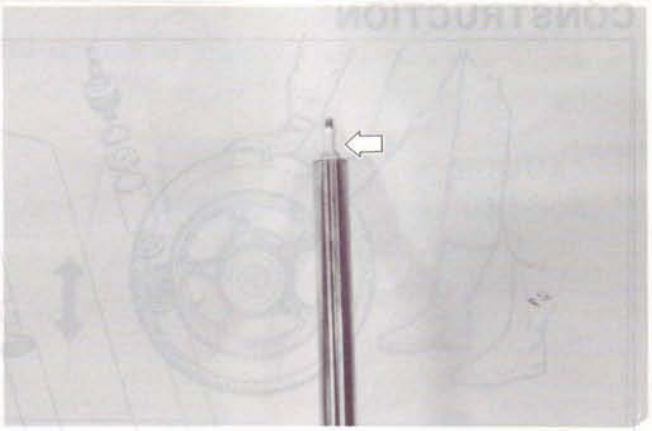
- Loosen the upper, lower clamp bolts (right and left) and handlebar bracket bolt.

NOTE:
Loosen the front fork cap bolt before loosening the front fork lower clamp bolts, which can be easy to remove the fork cap bolts.

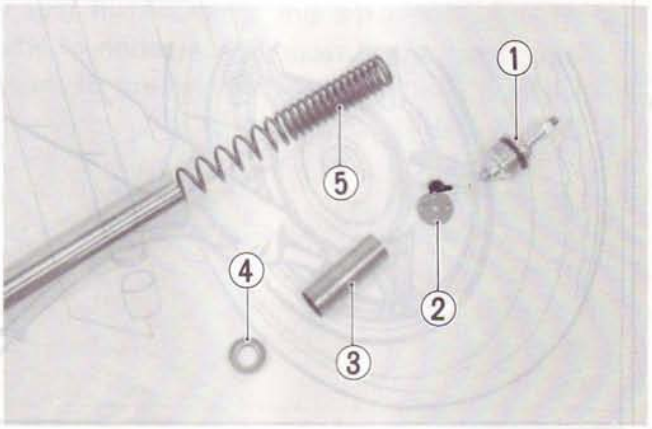
- Pull off the front fork.

DISASSEMBLY

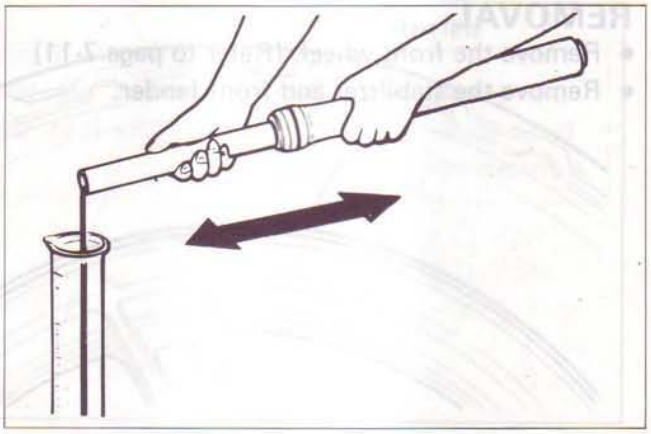
- Remove the valve cap and then release the air from front fork.
- Remove the front fork cap bolt.



- Remove the front fork cap bolt ① and draw out seat ②, spacer ③, spring seat ④ and spring ⑤.



- Hold the fork inverted for a few minutes to drain the oil.
- Invert the fork and stroke it several times to remove the oil from inside.



- Remove damper rod securing bolt by using the special tools.

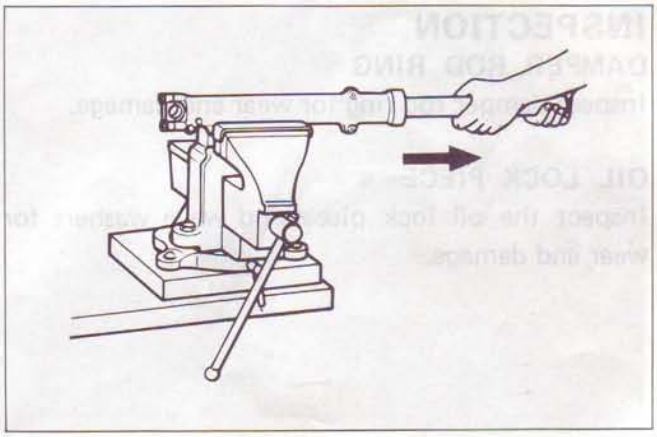
09940-34520	"T" handle
09940-34581	Attachment "F"
09900-00401	"L" type hexagon wrench set

- Draw out damper rod and rebound spring.

- Draw out dust seal and circlip.

- 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 metal or metal slide rings must be replaced along with the oil seal at any time the fork is disassembled.



- Draw out the oil lock piece, wave washer and washer.

- Remove the posi-damp unit by loosening two bolts.

09900-00401	L-type hexagon wrench set

INSPECTION

DAMPER ROD RING

Inspect damper rod ring for wear and damage.

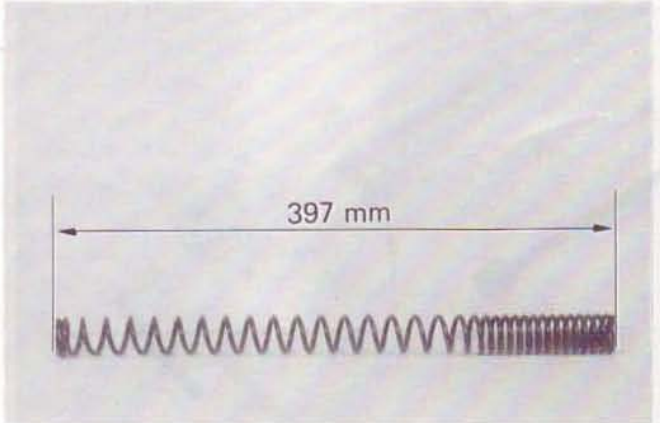
OIL LOCK PIECE

Inspect the oil lock piece and wave washers for wear and damage.

FORK SPRING

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

Service Limit	397 mm



INNER TUBE
Inspect the inner tube outer surface for any scuffing.

OUTER TUBE
Inspect outer tube and anti-friction metal fitting surface for any scuffing.

POSI-DAMP UNIT
Inspect the posi-damp unit for leakage of fork oil. If any defect is found, replace affected unit with a new one.

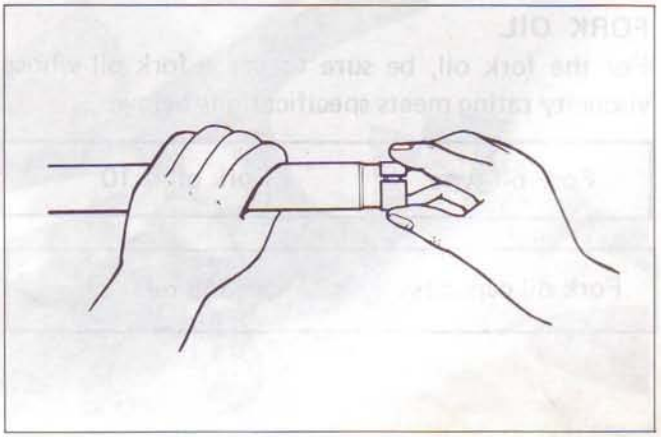
NOTE:
This unit is only available as a replacement unit.

Inspect the O-rings located between unit and front fork outer tube for wear or damage.

FRONT FORK CAP
- Inspect O-ring for wear or damage.

REASSEMBLY AND REMOUNTING
Reassemble and remount the front fork in the reverse order of removal and disassembly, and also carry out the following steps.

INNER TUBE METAL
Install the metal by hand as shown.



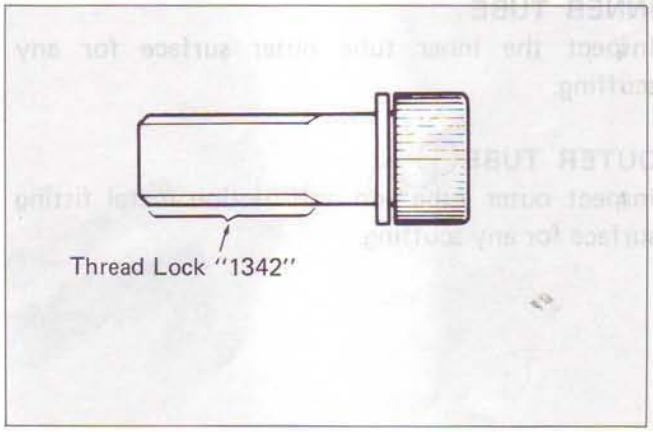
CAUTION:
Use special care to prevent damage to the "Teflon" coated surface of the Anti-friction metal when mounting it.

DAMPER ROD BOLT

Apply thread lock "1342" to the damper rod bolt.
Tighten the damper rod bolt with specified torque.

99000-32050	Thread lock 1342

Tightening torque	25 – 35 N·m (2.5 – 3.5 kg-m)

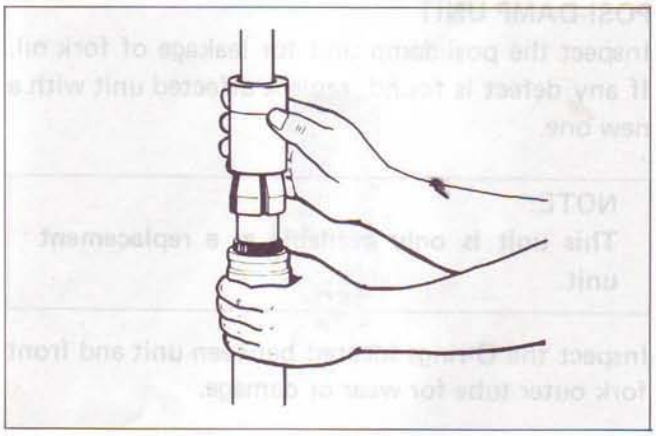


OUTER TUBE METAL, WASHER AND OIL SEAL

- Install the outer tube metal, washer and oil seal by using the special tool.

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

09940-50112	Oil seal installer

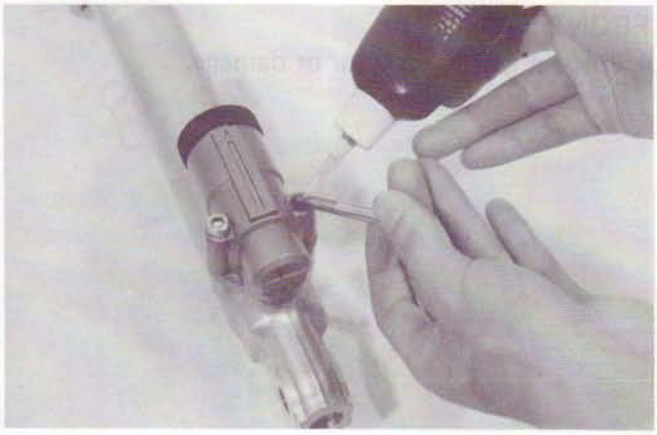


POSI-DAMP UNIT

Apply thread lock "1342" to the securing bolt and tighten them to the specified torque.

99000-32050	Thread lock "1342"

Tightening torque	6 – 8 N·m (0.6 – 0.8 kg-m)

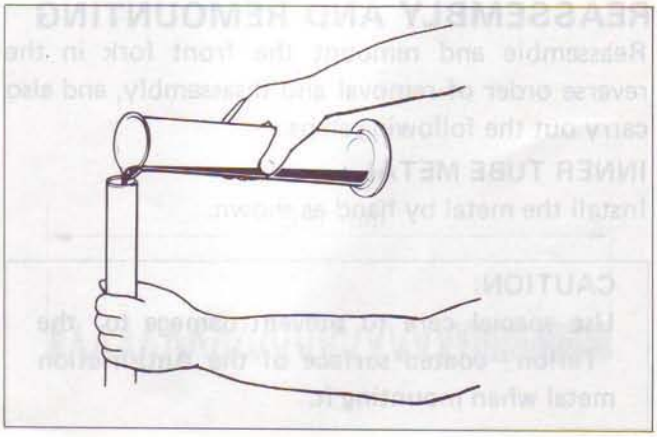


FORK OIL

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

Fork oil type	Fork oil # 10

Fork oil capacity	346 ml

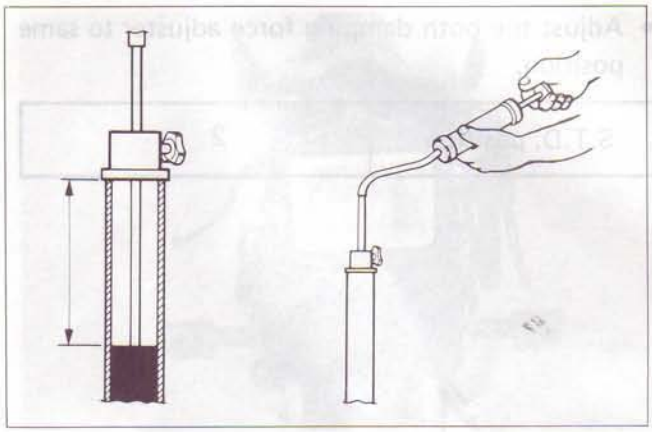


Hold the front fork vertical and adjust the fork oil level with the special tool.

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

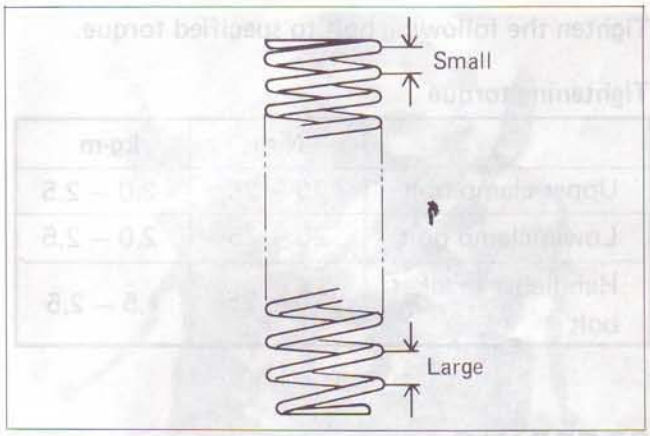
09943-74111	Fork oil level gauge

STD oil level	99 mm

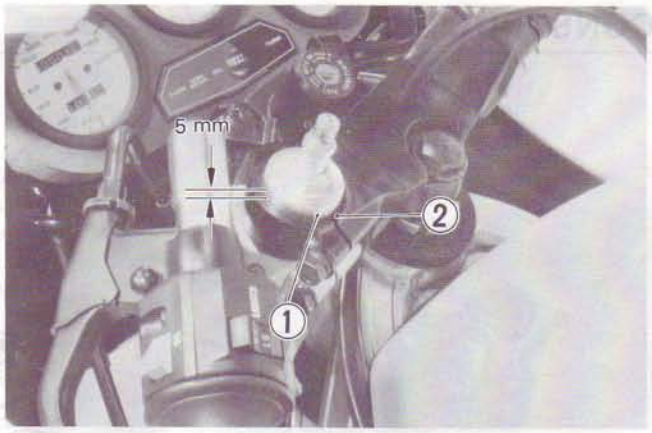


FORK SPRING

When installing the fork spring, small pitch end should position in top.



When reinstalling the front fork assembly, it must be 5 mm in height between upper surface ① of the inner tube and the upper surface ② of upper bracket.



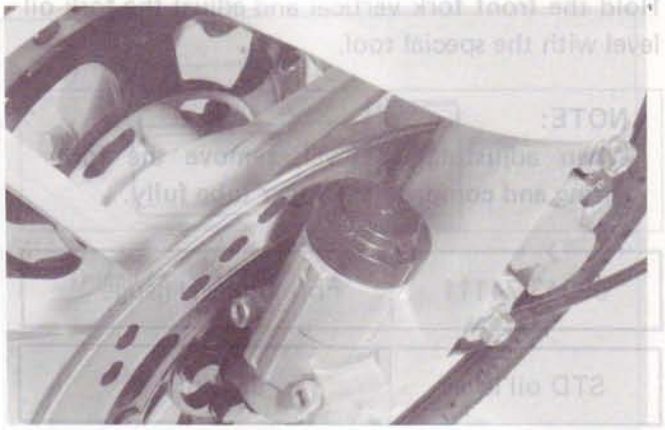
Adjust the both fork spring preload adjuster to same position.

S.T.D. position	5th line from top side

- Adjust the front fork air pressure. (Refer to page 2-17)

- Adjust the both damping force adjuster to same position.

S.T.D. position	2



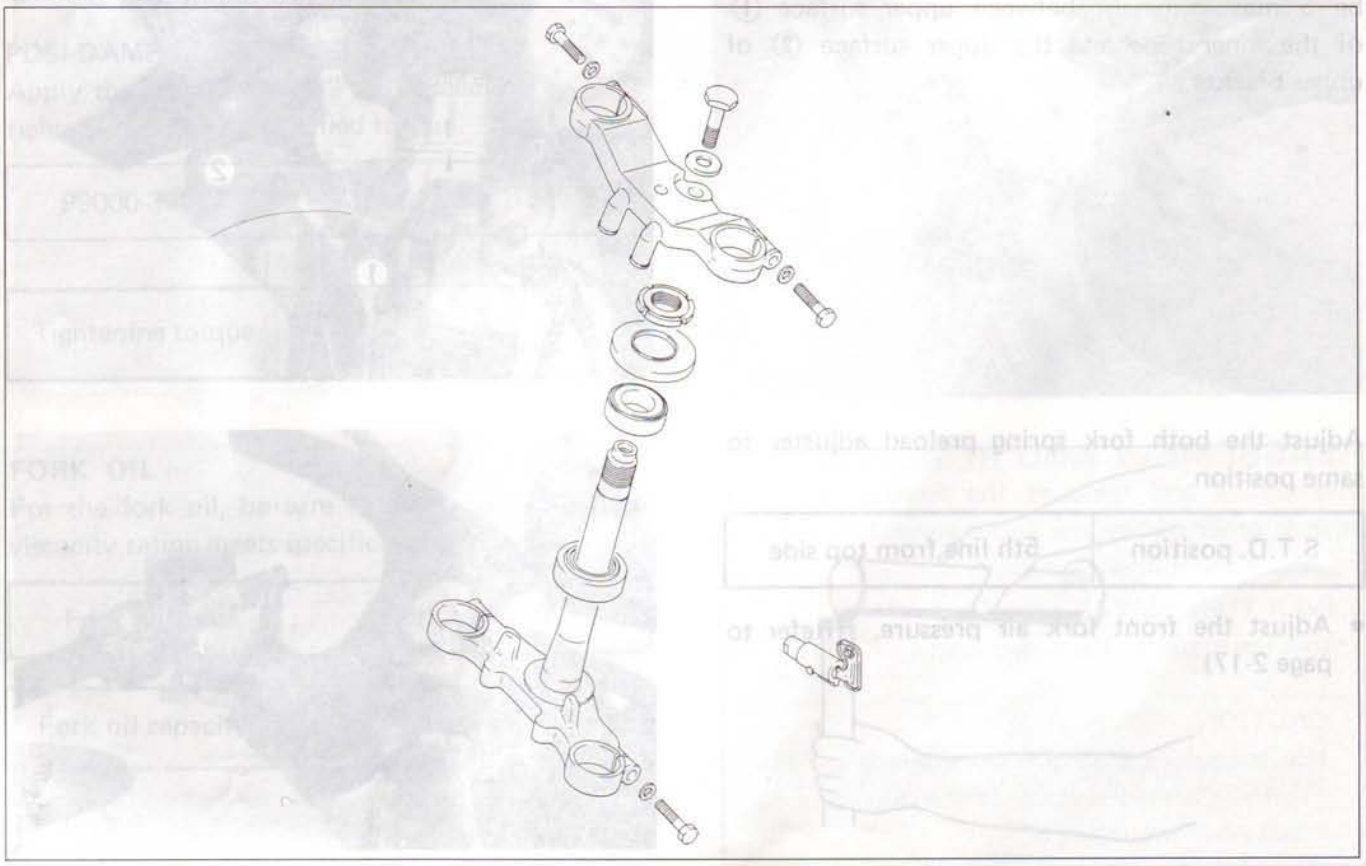
Tighten the following bolt to specified torque.

Tightening torque

	N·m	kg-m
Upper clamp bolt	20 – 25	2.0 – 2.5
Lower clamp bolt	20 – 25	2.0 – 2.5
Handlebar bracket bolt	15 – 25	1.5 – 2.5

STEERING

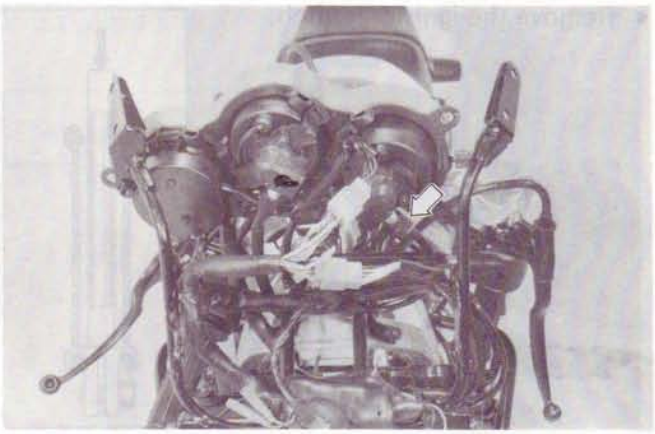
CONSTRUCTION



REMOVAL

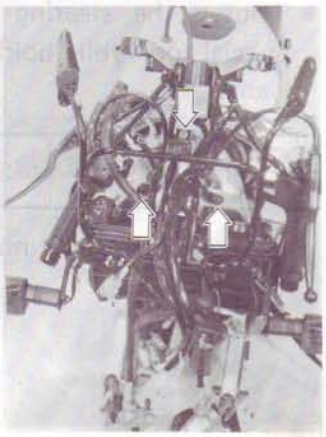
- Remove the cowling. (Refer to page 7-1)
- Remove the front wheel. (Refer to page 7-11)
- Remove the front fork. (Refer to page 7-22)
- Remove the headlight and disconnect the wire harness.

- Disconnect the combination lead wire and tachometer cable.



- Remove the combination meter.

- Disconnect the wire harness.
- Remove the cowling bracket.



- Remove the brake hose joint.

- Remove the ignition switch.

- Loosen the steering stem head bolt and remove the upper bracket.

- Loosen the steering stem nut by using the special tool while holding the steering stem with hand.

09940-14911	Steering stem nut wrench

- Remove the stem nut, dust seal, washer and bearing.

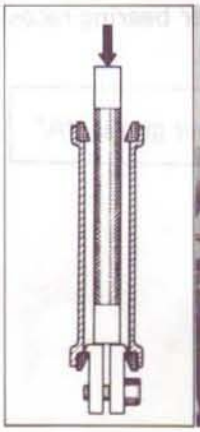
- Draw out lower steering stem bearing by using the special tool.

CAUTION:
The removed bearing should be replaced.

09941-84510	Bearing remover

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

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



INSPECTION

Inspect and check the removed parts for the following abnormalities.

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

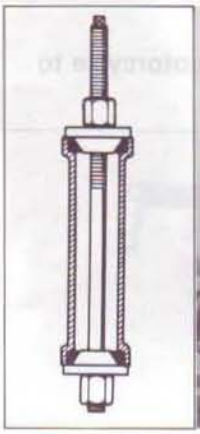
REASSEMBLY

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 the special tool.

09941-34513	Steering outer race installer



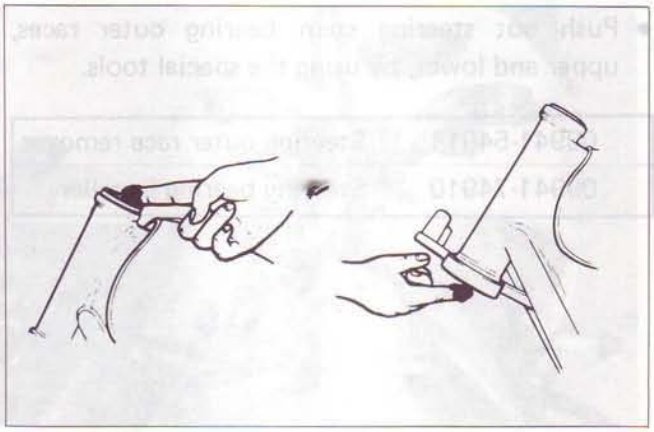
BEARING

Place a washer and press in the lower bearing by using the special tool.

09941-74910	Steering bearing installer

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

99000-25010	SUZUKI super grease "A"

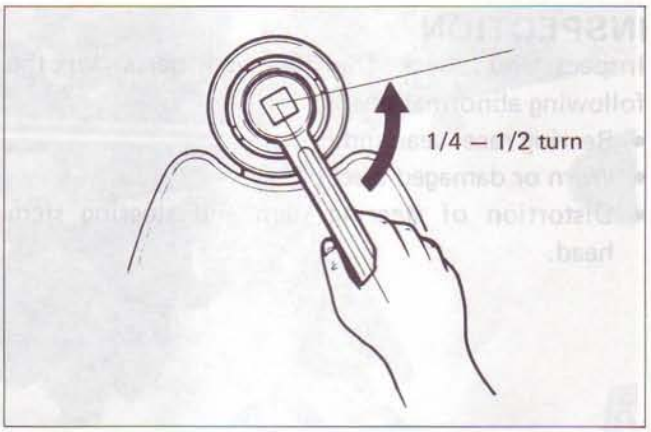


STEM NUT

Fit the dust seal to the stem nut.

Tighten the steering stem nut to 40 – 50 N·m (4.0 – 5.0 kg-m).

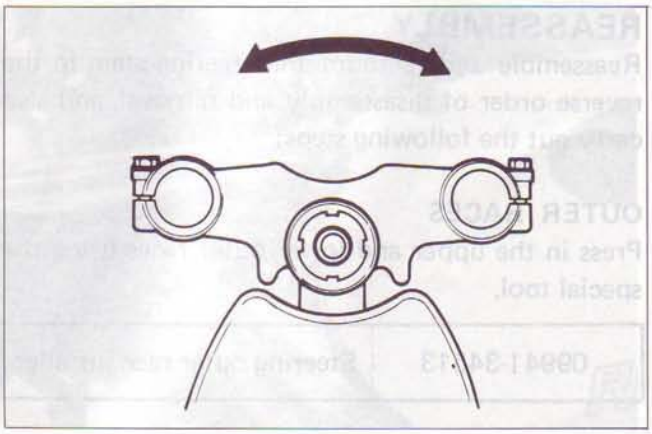
09940-14911	Steering stem nut wrench



Turn the steering stem bracket about five or six times to the left and right until it locks in position so that the taper roller bearing will be seated properly.

Turn back the stem nut by ¼ – ½ turn.

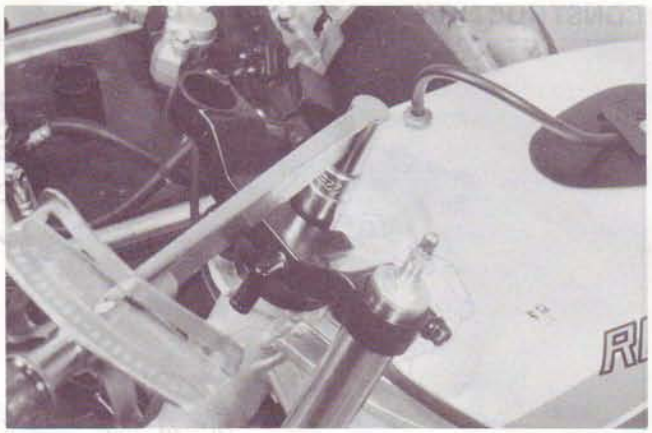
NOTE:
This adjustment will vary from motorcycle to motorcycle.



Steering stem head bolt should be tightened to the specified torque while inserting front fork.

Tightening torque	35 – 55 N·m (3.5 – 5.5 kg-m)

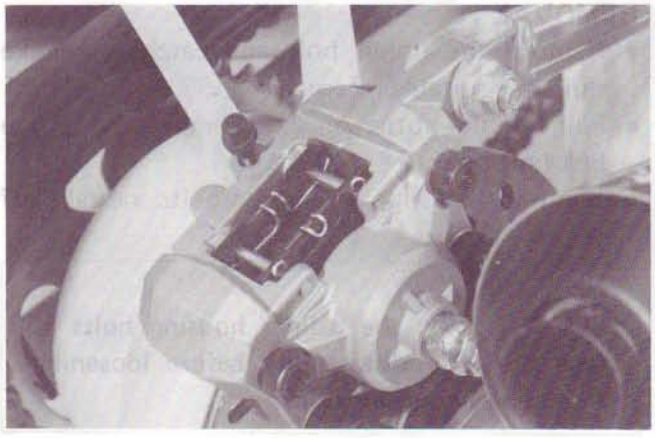
CAUTION:
After performing the adjustment and installing the steering stem upper bracket, "rock" the front wheel assembly forward and back to ensure that there is no play and that the procedure was accomplished correctly. Finally check to be sure that the steering stem moves freely from left to right with own weight. If play of stiffness is noticeable, re-adjust the steering stem nut.



REAR BRAKE

BRAKE PAD REPLACEMENT

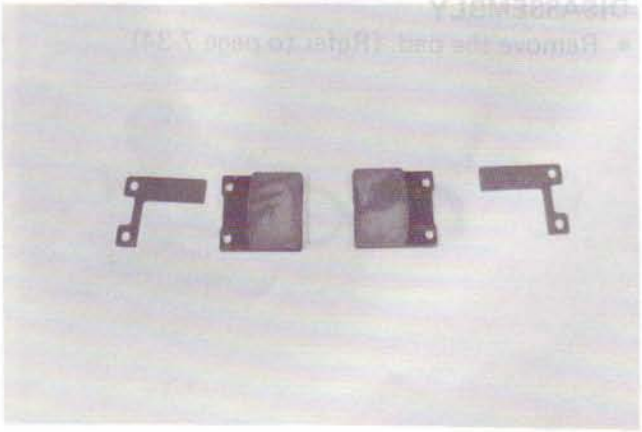
- Remove dust cover.
- Pull off clips.
- Pull off brake pad hold pins.



- Take off brake pads with pad shims.

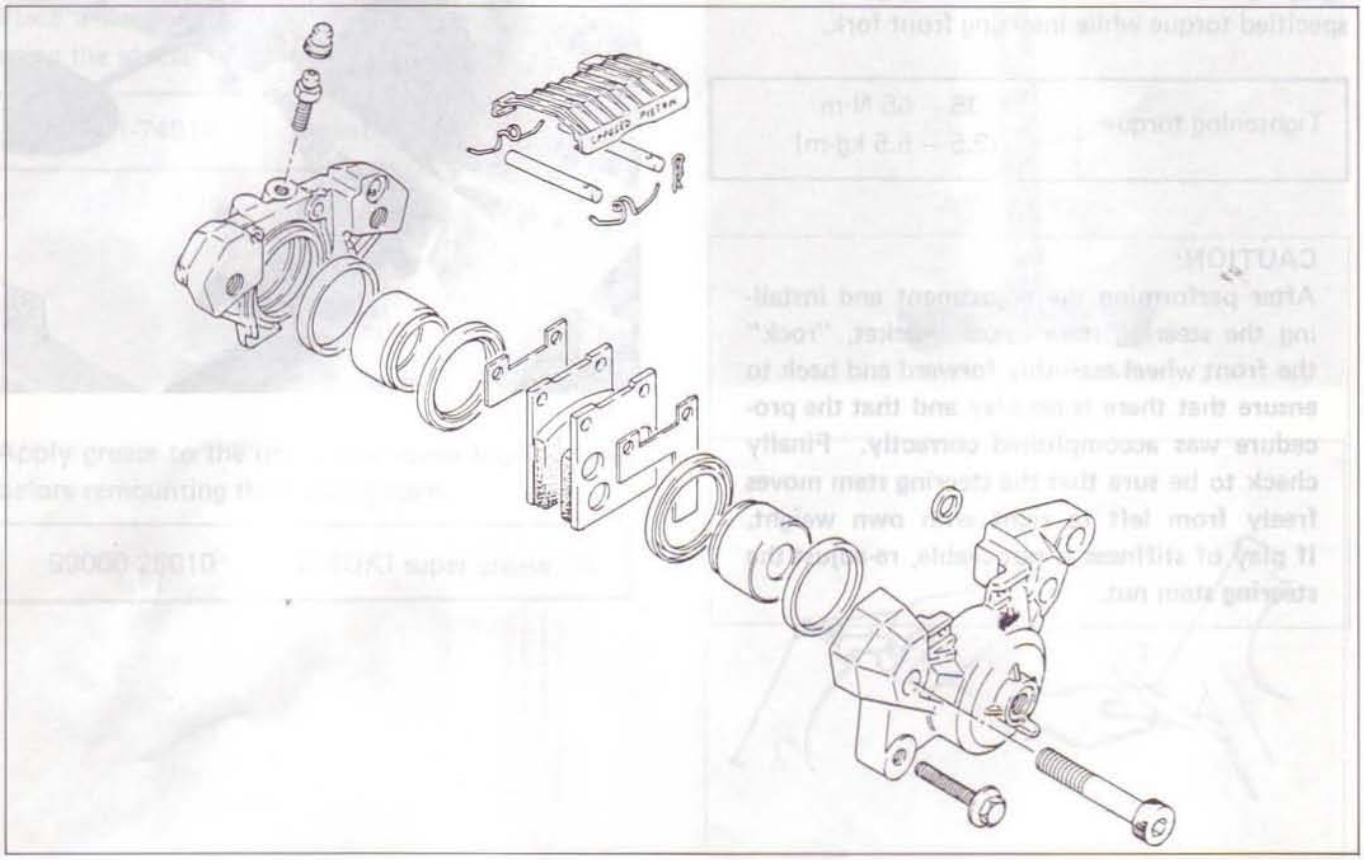
NOTE:
Do not operate the brake pedal while taking off the brake pads.

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



CALIPER

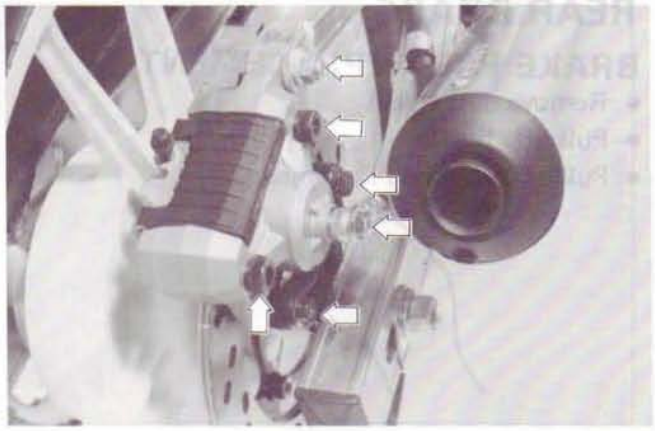
CONSTRUCTION



REMOVAL

- Remove the union bolt and catch the brake fluid in a suitable receptacle.
- Pull out the cotter pin and remove the torque link bolt and nut.
- Remove the caliper mounting bolts and take off the caliper.

NOTE:
Slightly loosen the caliper housing bolts to facilitate later disassembly before loosening the caliper mounting bolts.



DISASSEMBLY

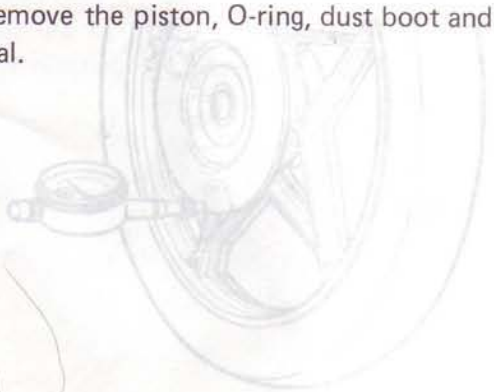
- Remove the pad. (Refer to page 7-34)

- Remove the caliper housing bolts by using the 8 mm hexagon wrench and separate the caliper halves.

- Place a rag over the piston to prevent it from popping out.
  Push out the piston by using air gun.

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

- Remove the piston, O-ring, dust boot and piston seal.

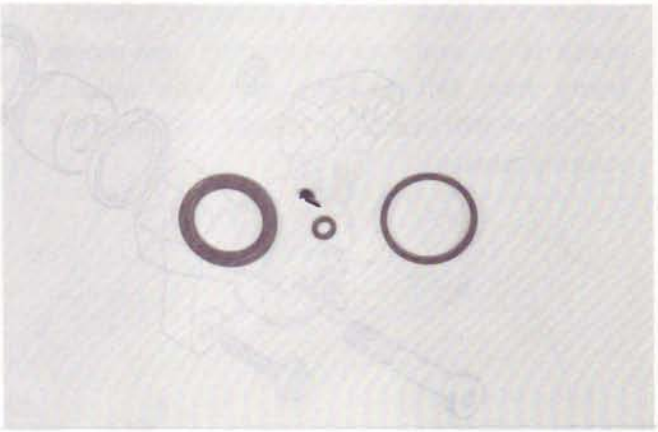


INSPECTION

Inspect cylinder wall and piston surface for nicks, scratches or other damage.

Dust boot and piston seal

Inspect the each rubber part for damage and wear.

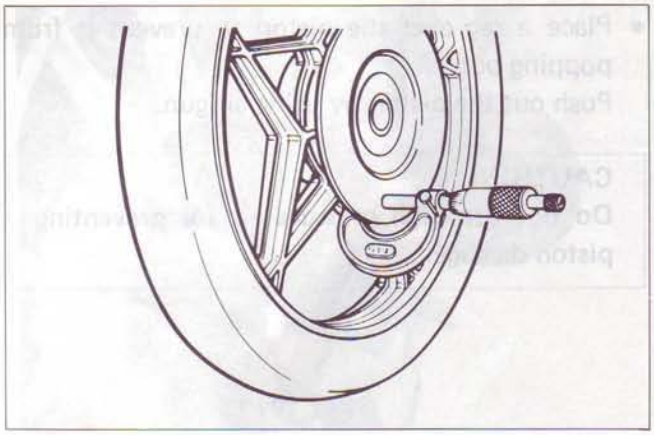


Disc

- Measure the disc thickness by using the micrometer.

09900-20205	Micrometer (0 – 25 mm)

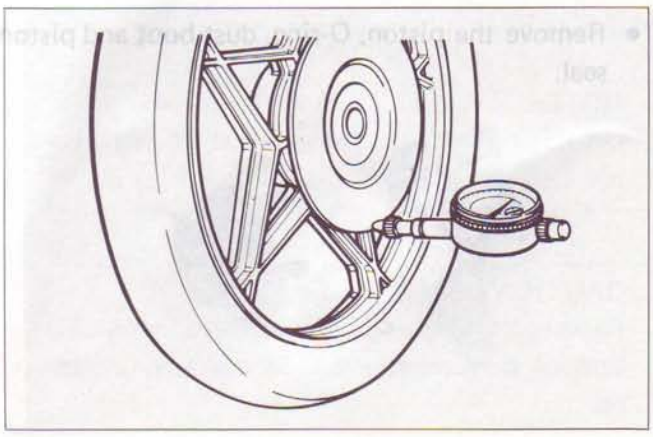
Service Limit	5.3 mm



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

09900-20606	Dial guage (1/100)

Service Limit	0.3 mm

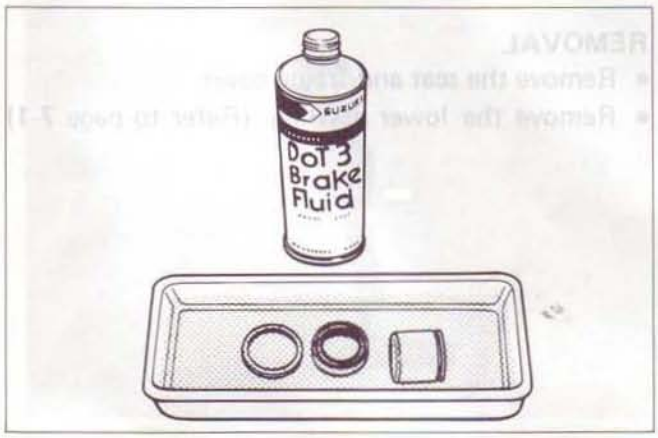


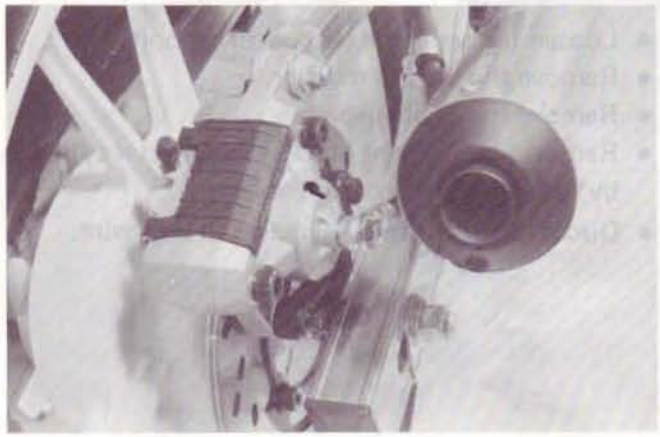
REASSEMBLY

Reassemble and remount the caliper in the reverse order of disassembly and removal, and also carry out 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 the caliper (See page 2-15).**



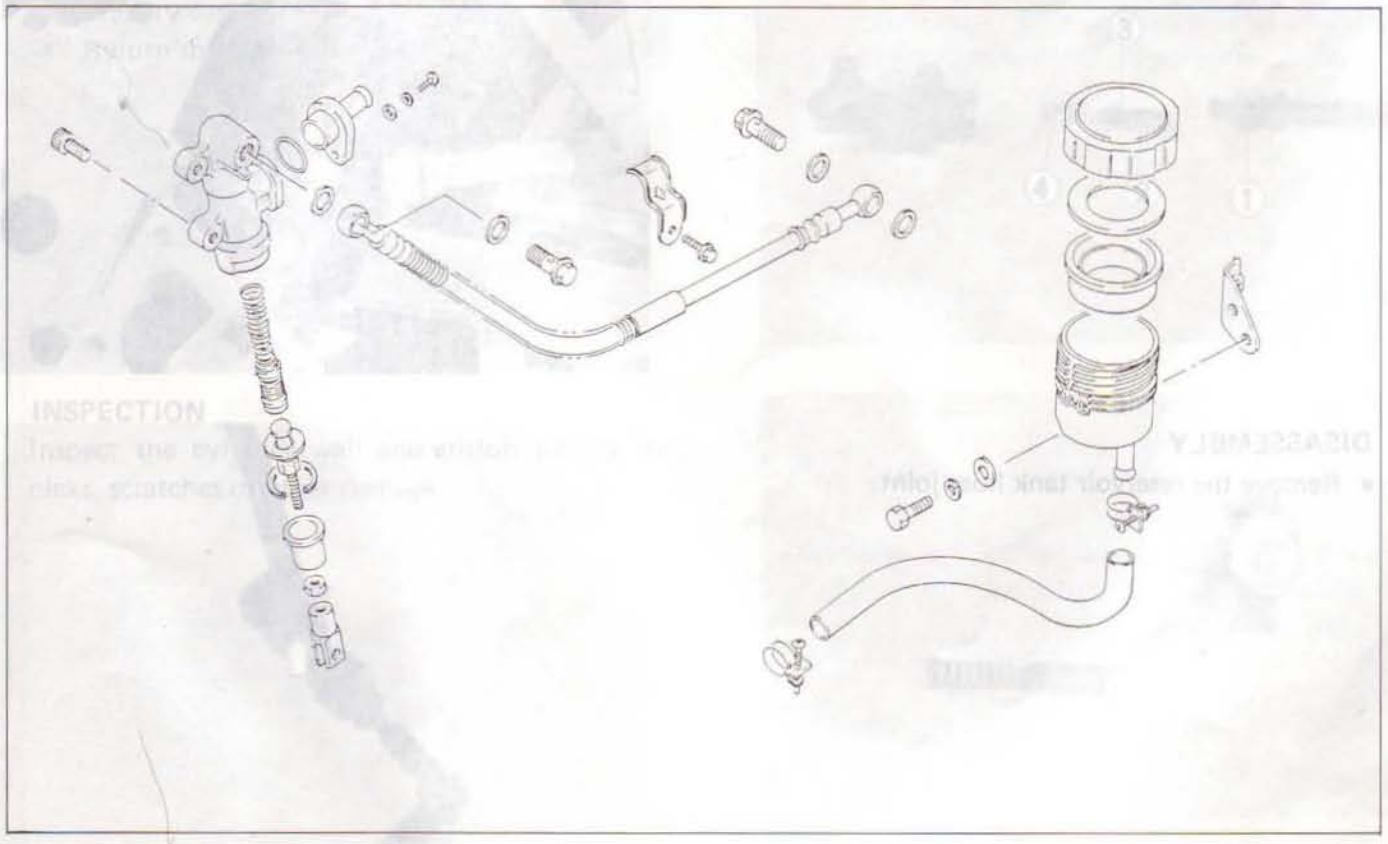


TIGHTENING TORQUE

Item		N·m	kg-m
Union bolt		20 – 25	2.0 – 2.5
Torque link bolt and nut	Front	18 – 28	1.8 – 2.8
	Rear	40 – 60	4.0 – 6.0
Caliper axle bolt		28 – 32	2.8 – 3.2
Caliper mounting bolt		15 – 25	1.5 – 2.5

MASTER CYLINDER

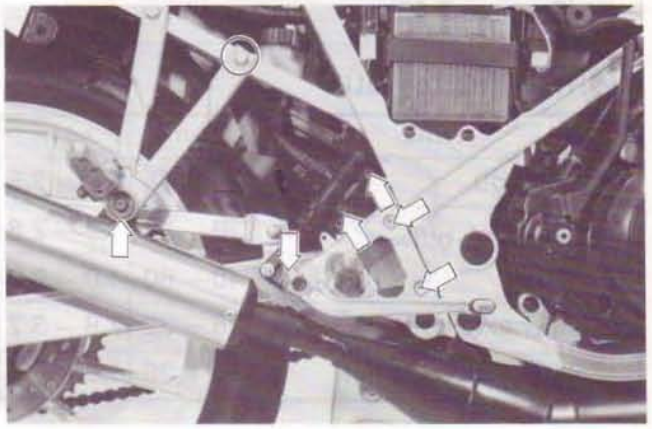
CONSTRUCTION



REMOVAL

- Remove the seat and frame cover.
- Remove the lower cowling. (Refer to page 7-1)

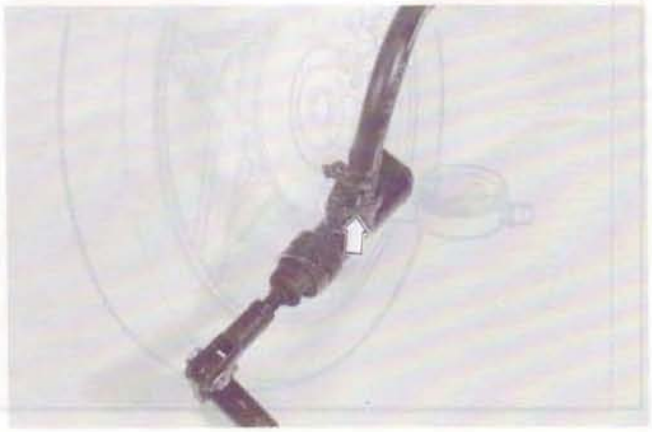
- Loosen the reservoir tank securing bolt.
- Remove the second muffler.
- Remove the brake pedal.
- Remove the footrest bracket and master cylinder by loosening the securing bolts.
- Disconnect the brake light switch lead wire.



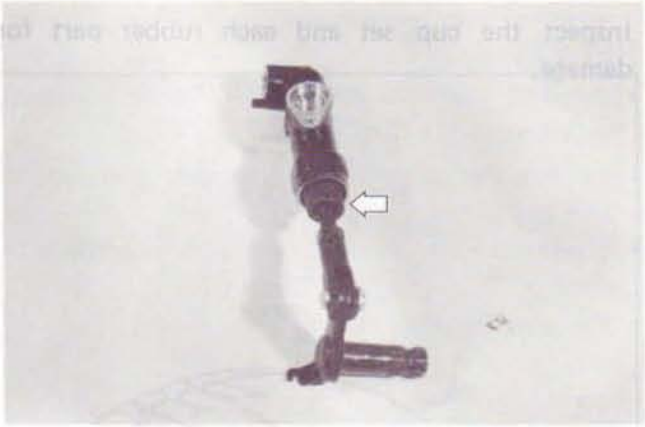
- Disconnect the brake hose.

DISASSEMBLY

- Remove the reservoir tank hose joint.



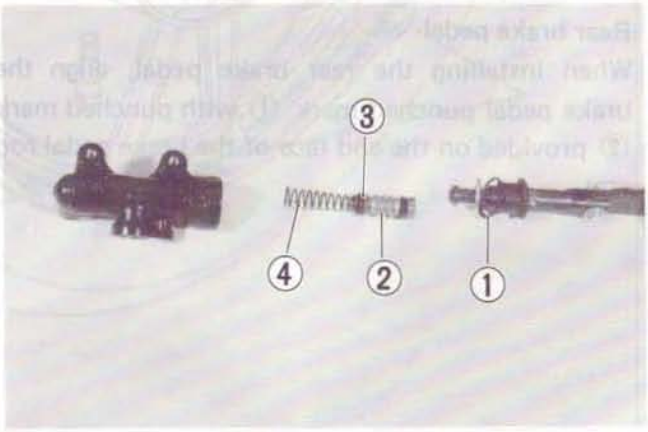
- Slide the boot.



- Remove the circlip by using the special tool.

09900-06105	Snap ring pliers

① Circlip
② Piston
③ Primary cap
④ Return spring



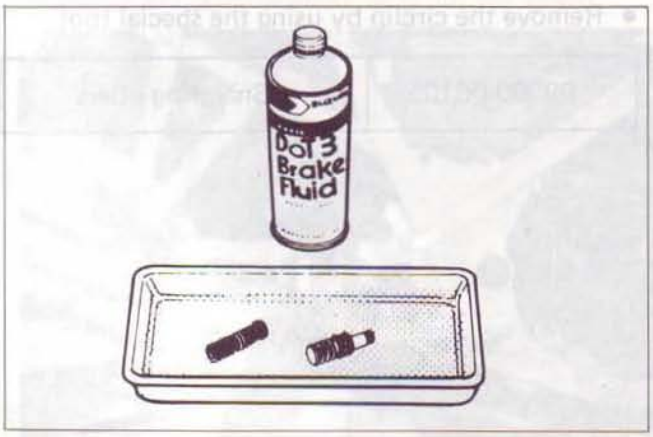
INSPECTION

Inspect the cylinder wall and piston surface for nicks, scratches or other damage.

Inspect the cup set and each rubber part for damage.

REASSEMBLY

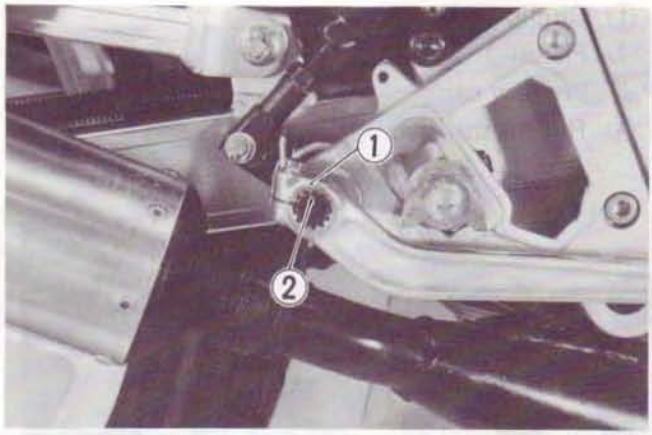
Reassemble and remount the master cylinder in the reverse order of disassembly and removal, and also carry out the following steps:



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.

Rear brake pedal

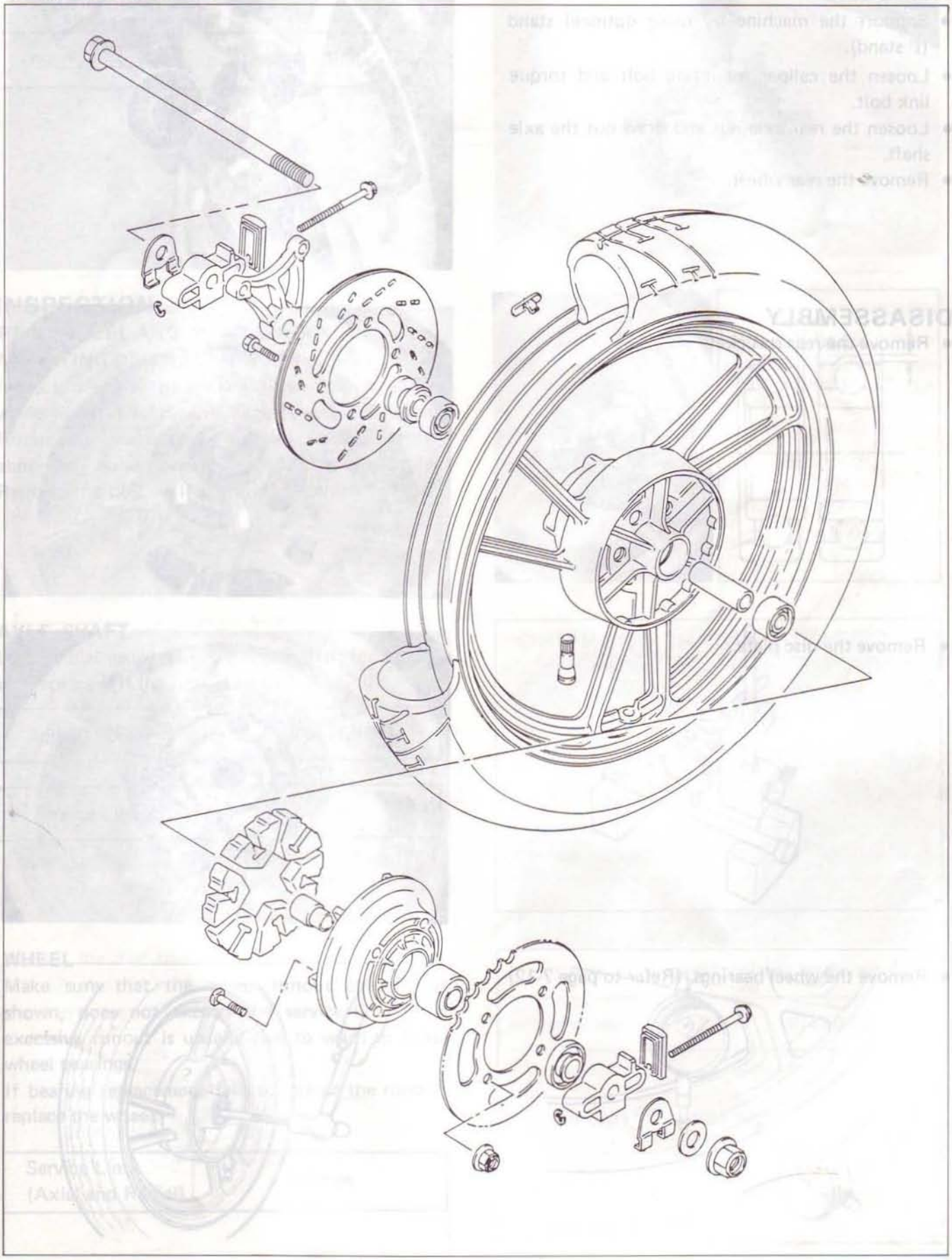
When installing the rear brake pedal, align the brake pedal punched mark ① with punched mark ② provided on the end face of the brake pedal rod arm.



CAUTION:
Bleed the air after reassembling master cylinder (See page 2-15).
Adjust the rear brake light switch and brake pedal height after installation.
(See page 2-14 and 2-17).

REAR WHEEL AND REAR SPROCKET

CONSTRUCTION

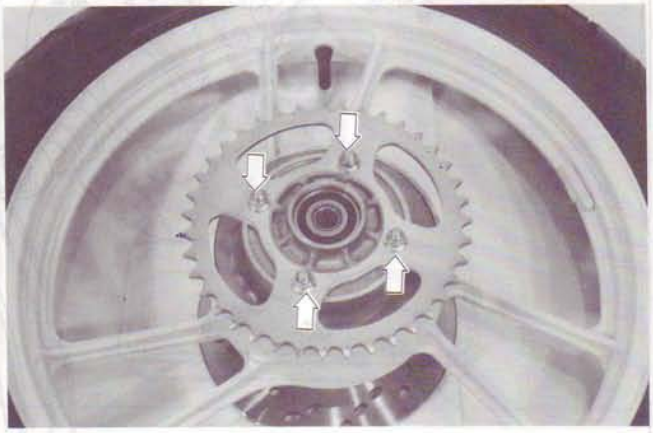


REMOVAL

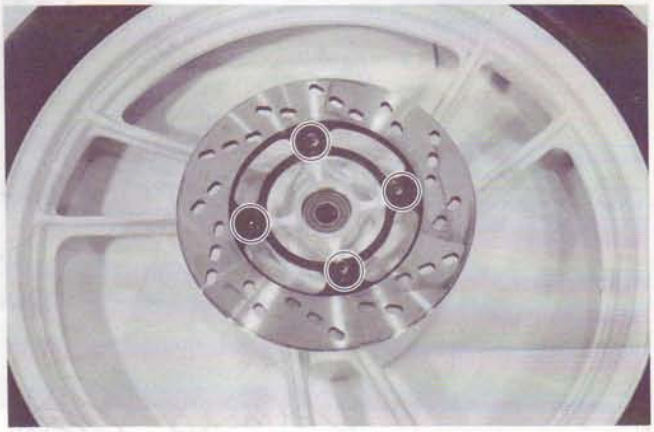
- Support the machine by using optional stand (Γ stand).
- Loosen the caliper mounting bolt and torque link bolt.
- Loosen the rear axle nut and draw out the axle shaft.
- Remove the rear wheel.

DISASSEMBLY

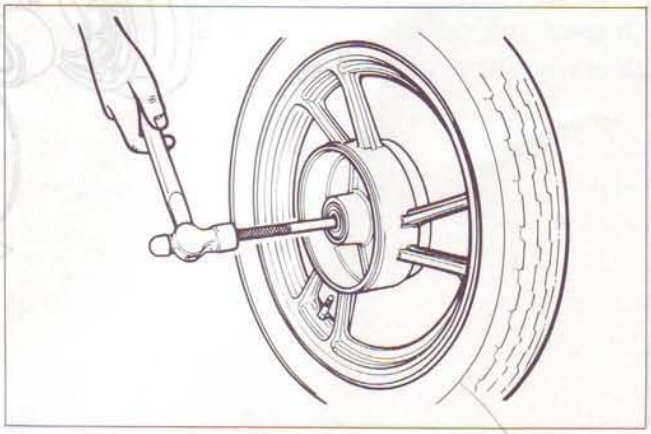
- Remove the rear sprocket.



- Remove the disc plate.

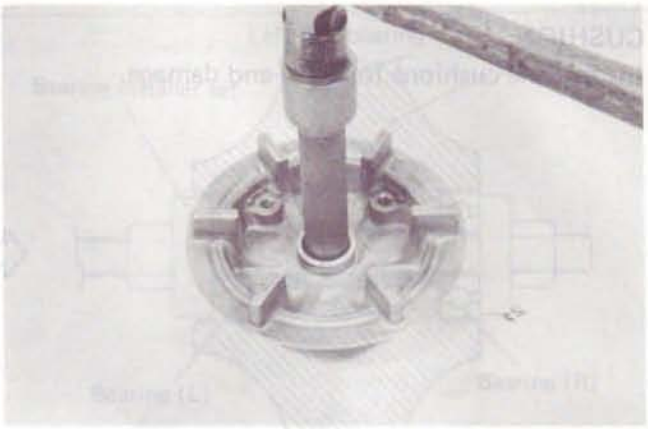


- Remove the wheel bearings. (Refer to page 7-12)



- Remove the sprocket mounting drum bearing by using the special tool.

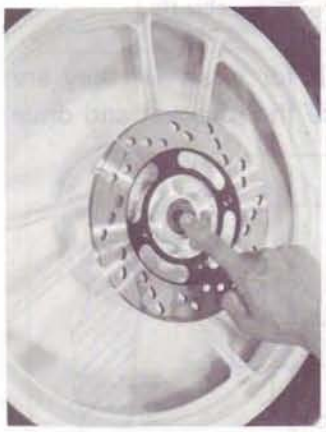
09922-55131	Bearing remover

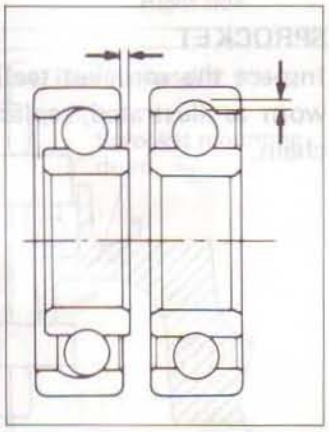


INSPECTION

REAR WHEEL AND REAR SPROCKET MOUNTING DRUM BEARINGS

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



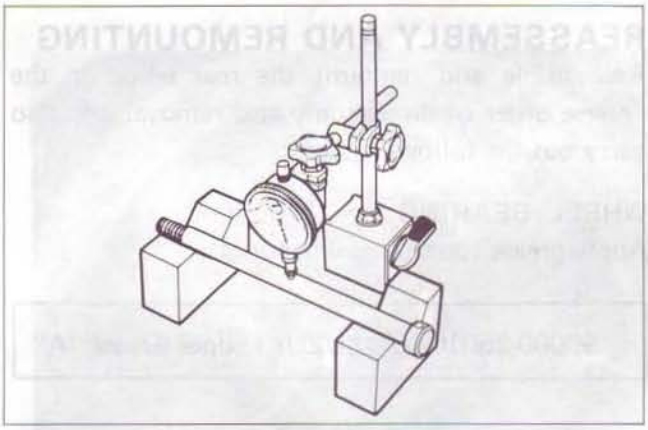


AXLE SHAFT

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

09900-20606	Dial guage (1/100)

Service Limit	0.25 mm

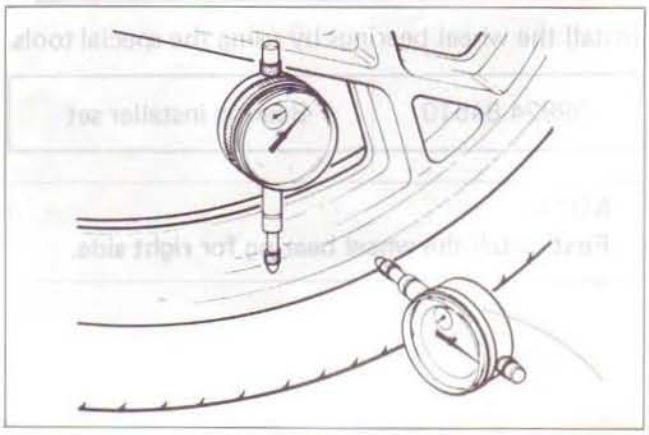


WHEEL

Make sure that the wheel runout checked as shown, does not exceed the service limit. An excessive runout is usually due to worn or loose wheel bearings.

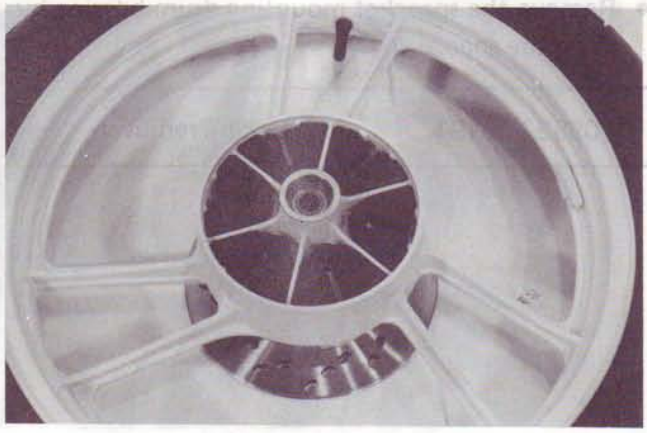
If bearing replacement fails to reduce the runout, replace the wheel.

Service Limit (Axial and Radial)	2.0 mm



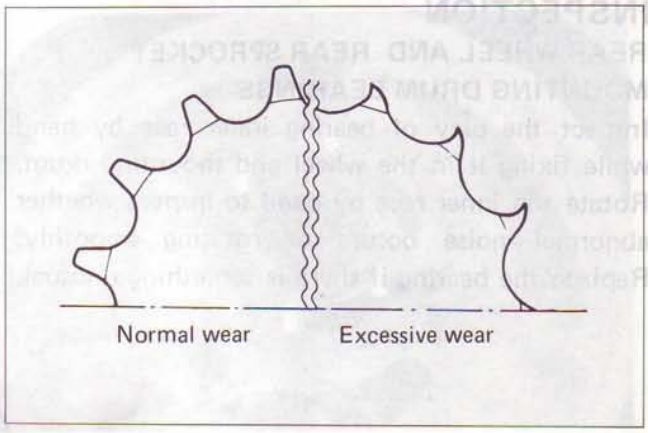
CUSHION

Inspect the cushions for wear and damage.



SPROCKET

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



REASSEMBLY AND REMOUNTING

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

WHEEL BEARING

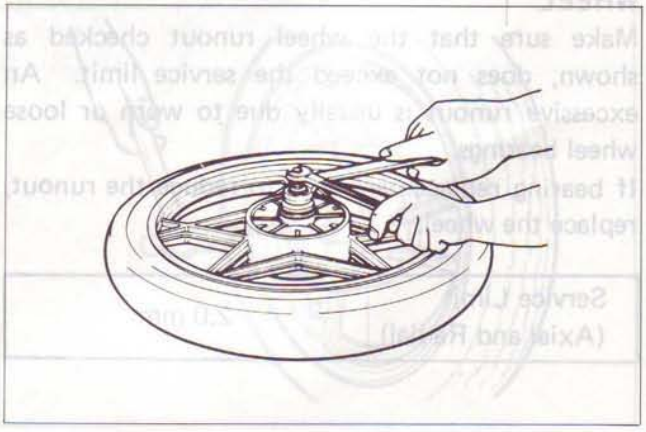
Apply grease to the wheel bearings.

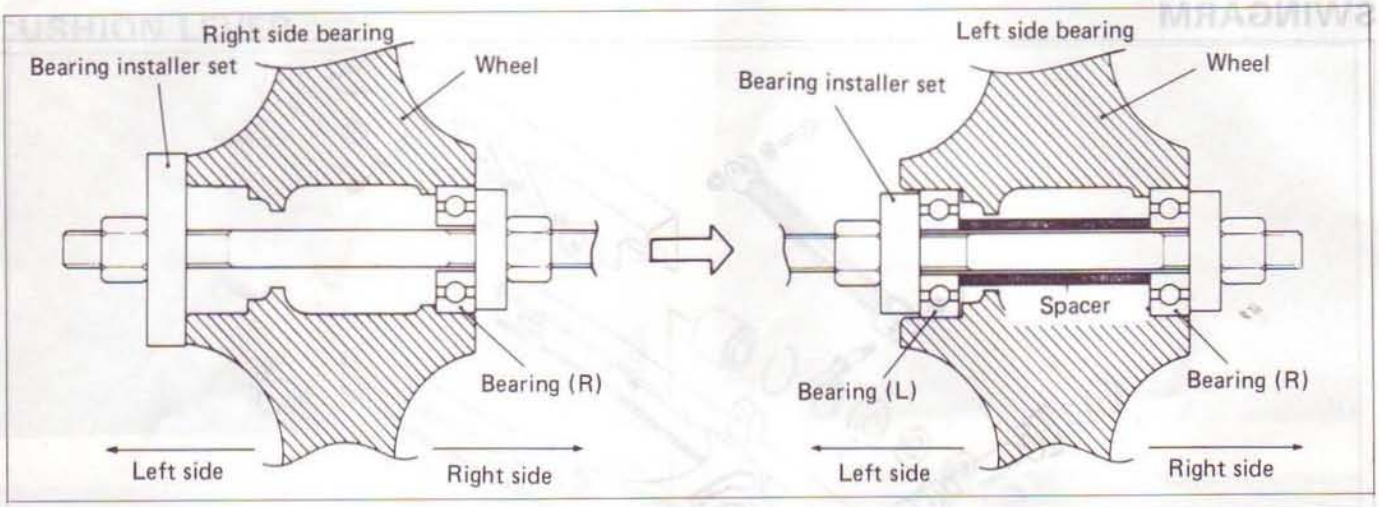
99000-25010	SUZUKI Super Grease "A"

Install the wheel bearings by using the special tools.

09924-84510	Bearing installer set

NOTE:
First install the wheel bearing for right side.





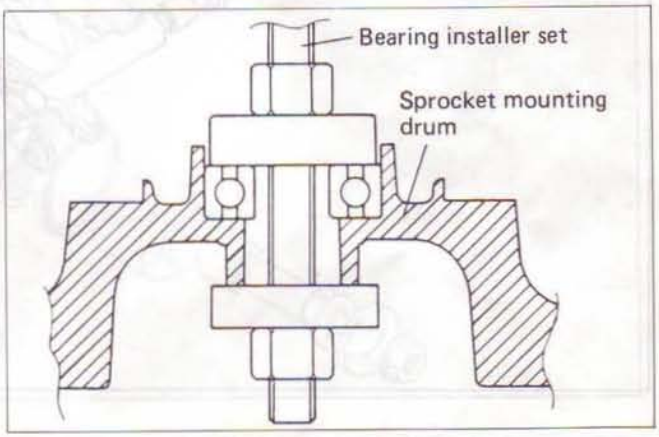
MOUNTING DRUM BEARING

Install the bearing by using the special tool.

09924-84520	Bearing installer set

NOTE:
Apply grease to the bearing before assembling rear wheel.

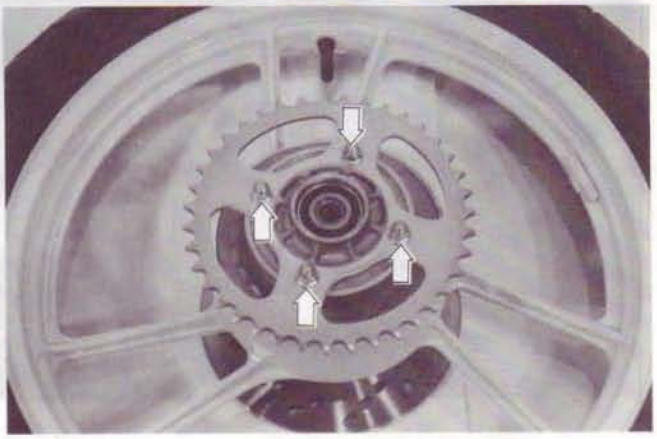
99000-25010	SUZUKI Super Grease "A"



REAR SPROCKET

Install the rear sprocket to the mounting drum.

Tightening torque	20 – 35 N·m (2.0 – 3.5 kg-m)

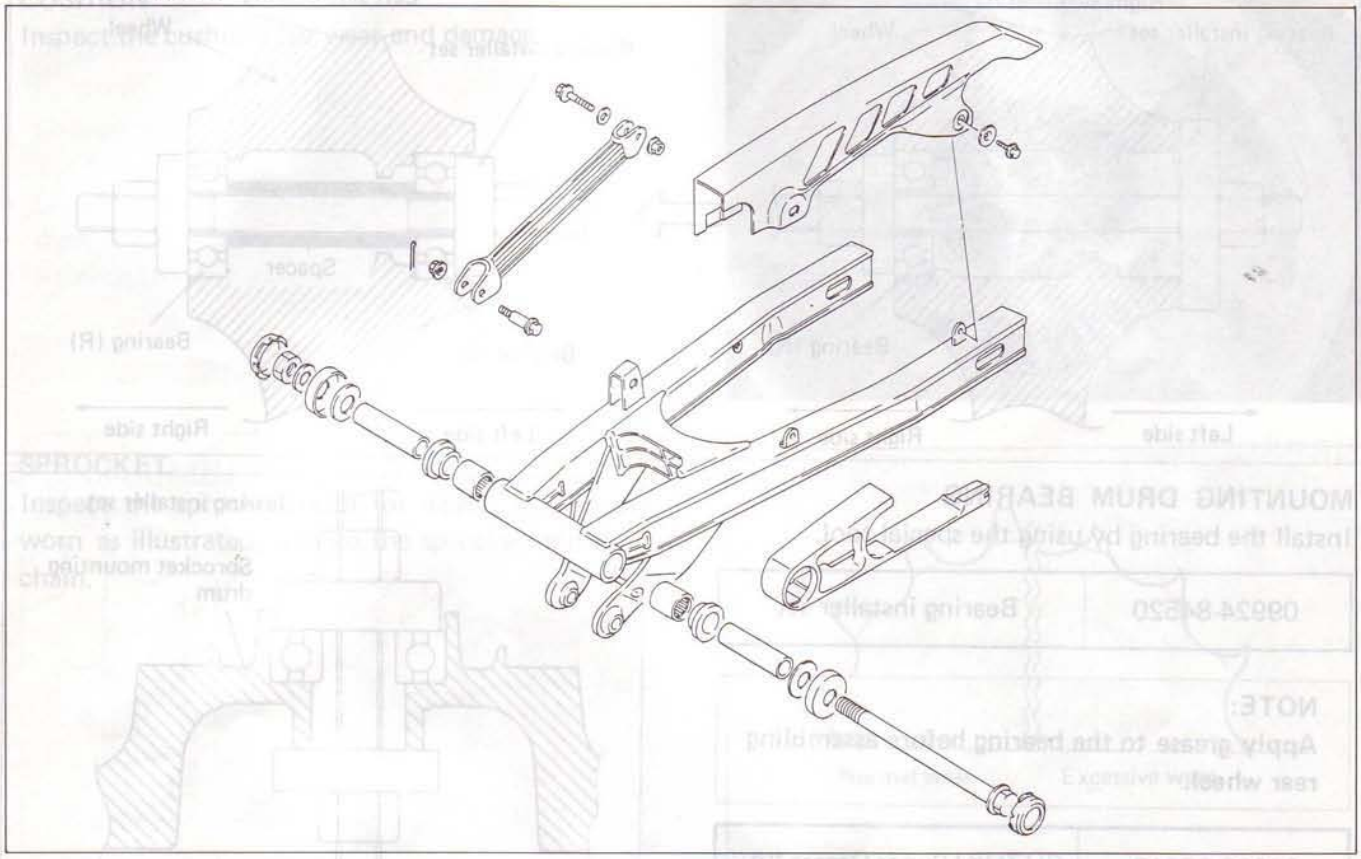


Install the disc to the wheel. After applying the thread lock "1360" to the bolt, tighten the disc bolt to the specified torque.

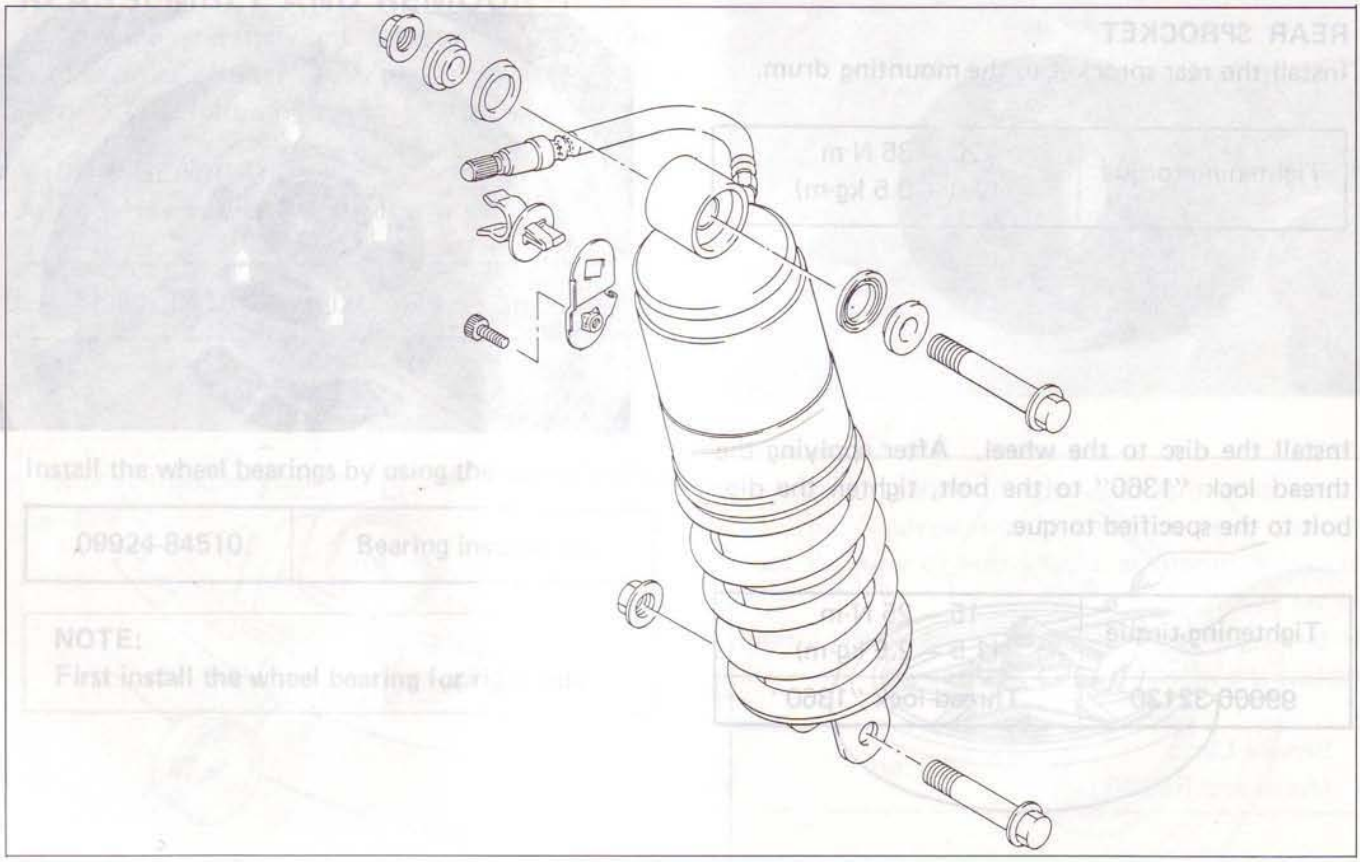
Tightening tirque	15 – 25 N·m (1.5 – 2.5 kg-m)
99000-32130	Thread lock "1360"

REAR SUSPENSION

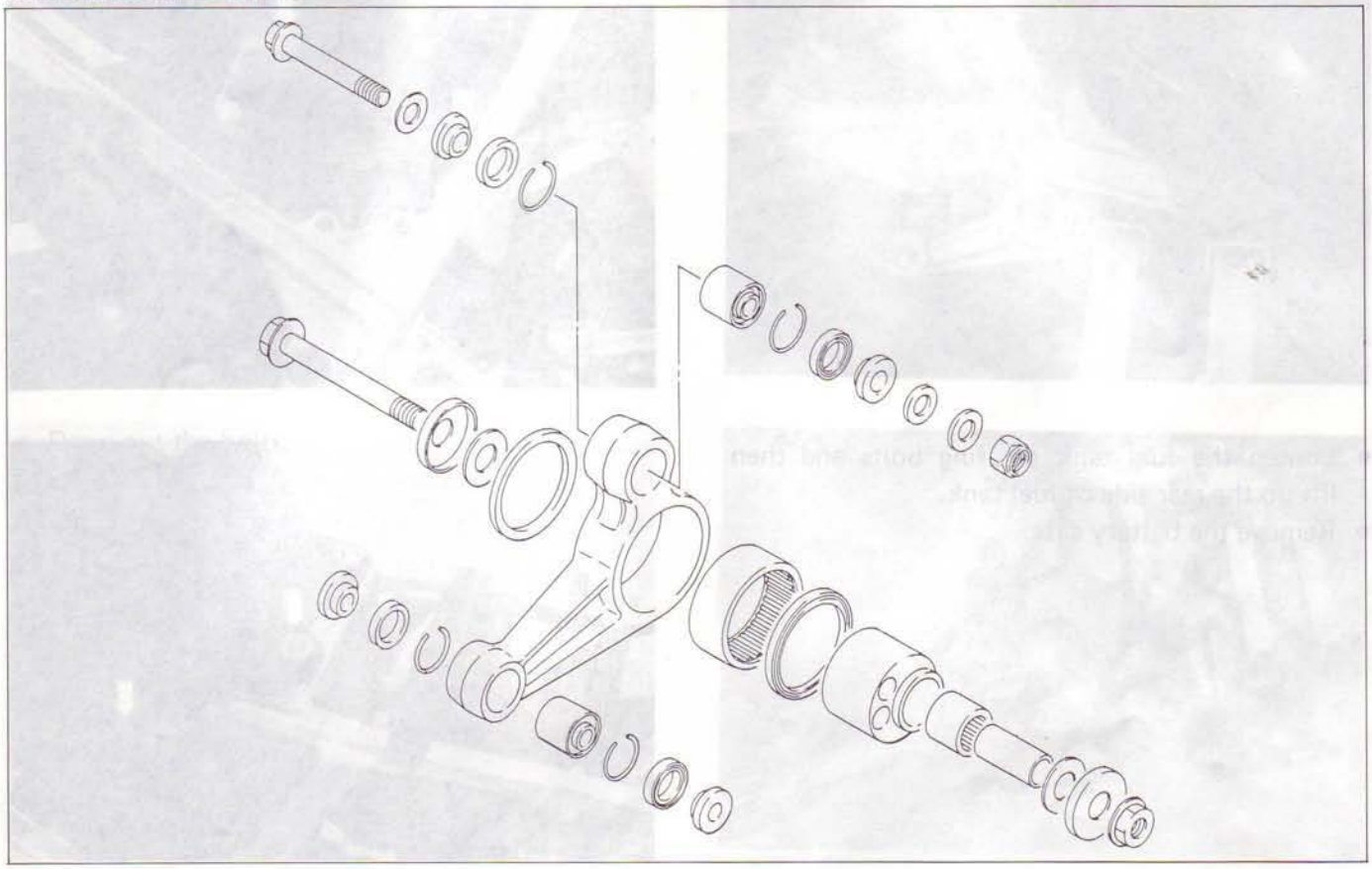
SWINGARM



REAR SHOCK ABSORBER

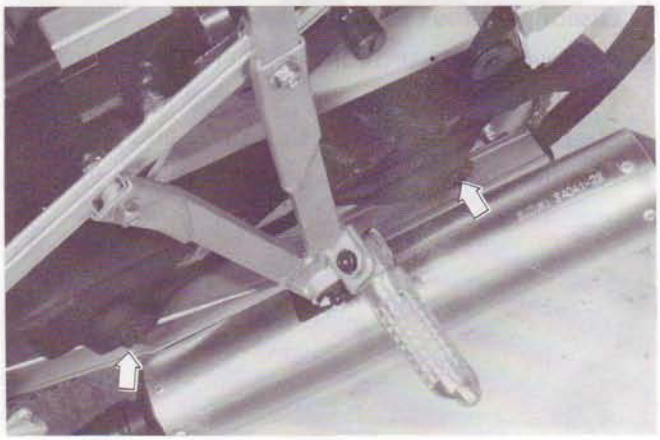


CUSHION LEVER



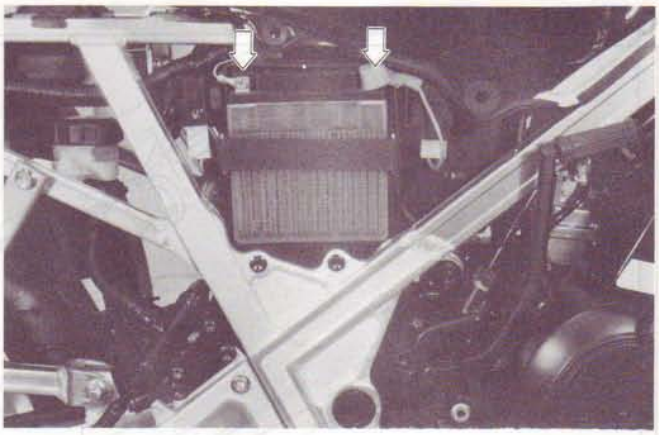
REMOVAL

- Remove the middle and lower cowling. (Refer to page 7-1)
- Remove the seat and frame cover.
- Remove the chain cover.



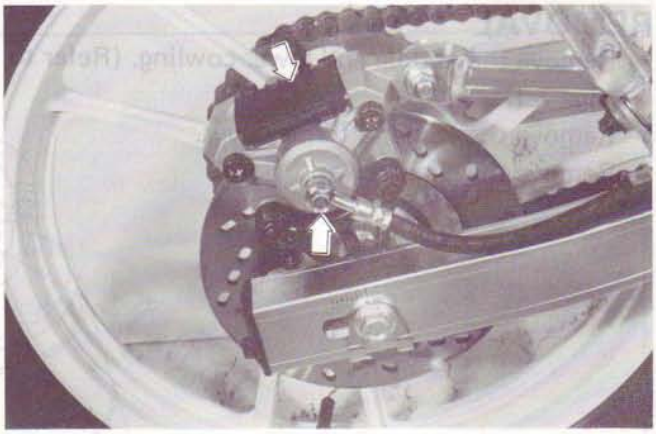
- Remove the muffler. (Refer to page 3-4)

- Remove the battery.

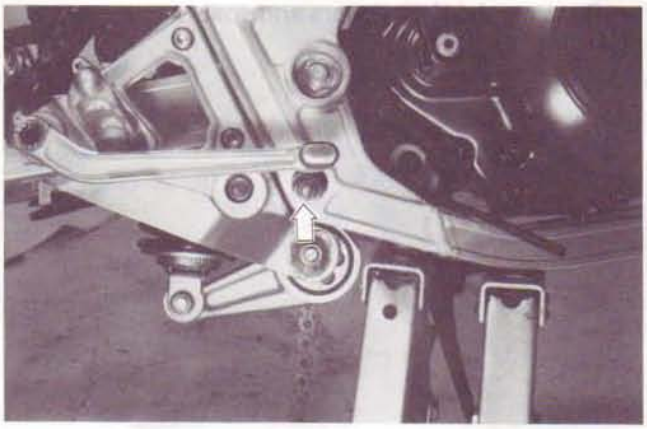


- Loosen the fuel tank securing bolts and then lift up the rear side of fuel tank.
- Remove the battery case.

- Disconnect the brake hose.
- Remove the rear brake caliper. (Rear to page 7-35)
- Support the machine by side stand and jack.
- Remove the rear wheel. (Refer to page 7-42)



- Loosen the cushion lever front nut, rear shock absorber upper nut and swingarm pivot shaft nut.



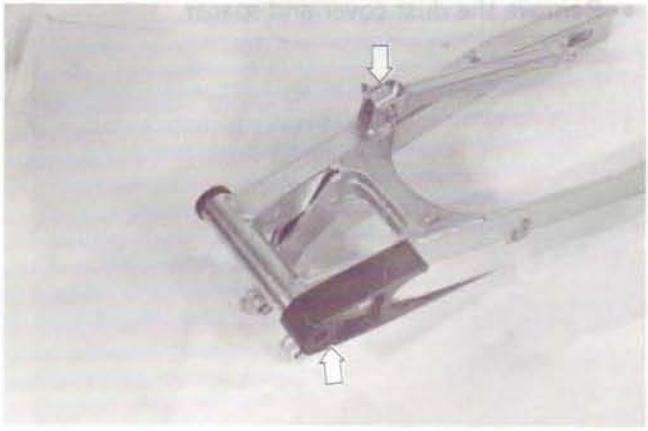
- Draw out the bolts.
- Remove the swingarm.

DISASSEMBLY

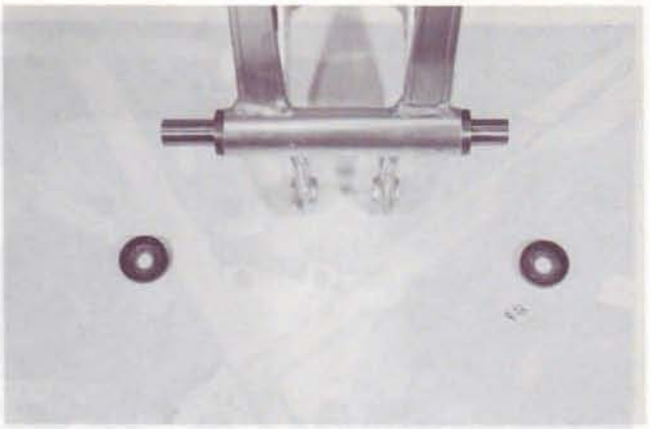
- Loosen the rear shock lower nut and cushion lever center nut.
- Separate the swingarm, rear shock and cushion lever.

SWINGARM

- Remove the torque link and chain buffer.

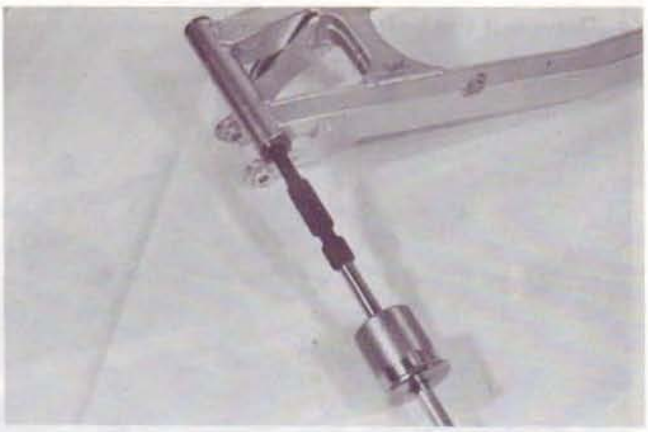


- Remove the dust covers and spacers.



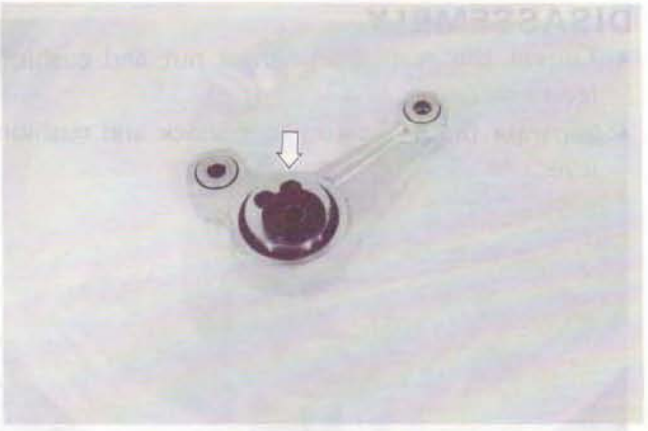
- Remove the bearing and bush by using the special tool.

09923-73210	Bearing remover
09930-30102	Sliding shaft



CUSHION LEVER

- Remove the eccentric spacer.



- Remove the dust cover and spacer.

- Remove the bearing from the spacer.

- Remove the oil seal.

- Remove the bearing by using the special tool.

09913-75810	Bearing installer

- Remove the spacer and dust seal.

- Remove the bearing by using appropriate socket after removing the ring.

SHOCK ABSORBER

- Remove the spacer and dust seal.
- Remove the bearing by using appropriate socket.

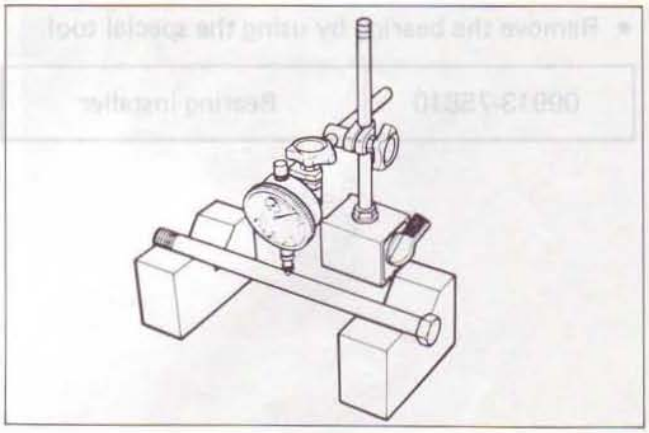
INSPECTION

SWING ARM PIVOT SHAFT

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

09900-20606	Dial gauge (1/100)

Service Limit	0.3 mm



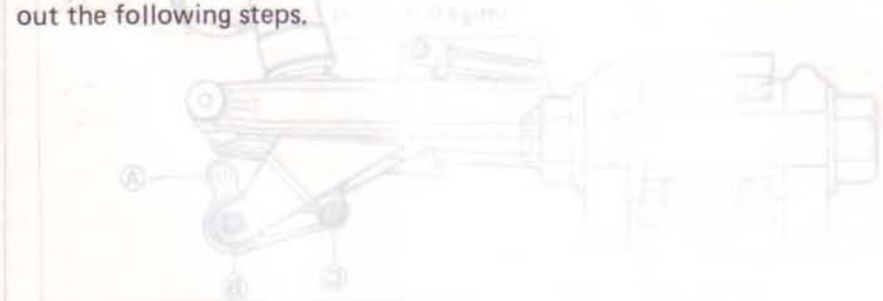
BEARINGS (NEEDLE ROLLER BEARING AND SPHERICAL BALL BEARINGS).

- Insert the spacer in the bearing and check the play by moving the spacer up and down. If an excessive play is noted, replace the bearing with a new one.

- Spherical ball bearings are located on cushion lever and upper part of shock absorber. Insert the mounting bolt to the bearing and check the play be moving, the bolt. If an excessive play is noted, replace the bearing with a new one.

REASSEMBLY AND REMOUNT

Reassemble the rear suspension in the reverse order of disassembly and removal, and also carry out the following steps.



SWINGARM

- Install the bearing and bush by using the special tool

09924-84510	Bearing installer set

NOTE:
When installing two bearings, punch-marked side of bearing comes outside.

- Apply grease to the bearings and dust seal cover.

99000-25010	SUZUKI Super Grease "A"

CUSHION LEVER

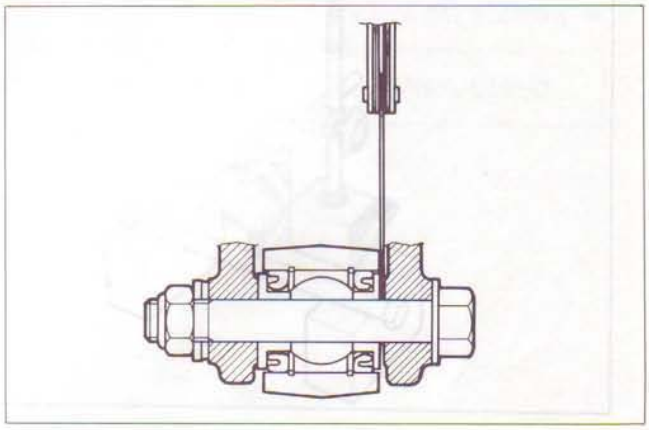
- Install the bearing and dust seal by using special tool.

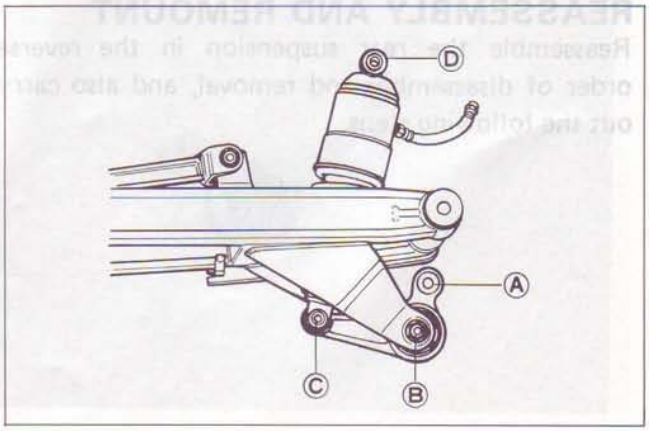
09913-75810	Bearing installer

Remounting of the rear suspension is easy by according to the order and illustrations.

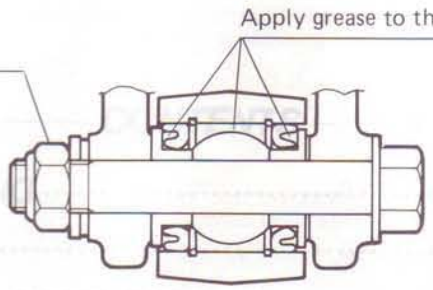
① Cushion lever
② Swingarm
③ Rear shock

When install the cushion lever, adjust the clearance Ⓐ to 0 – 1 mm.





Portion Ⓐ



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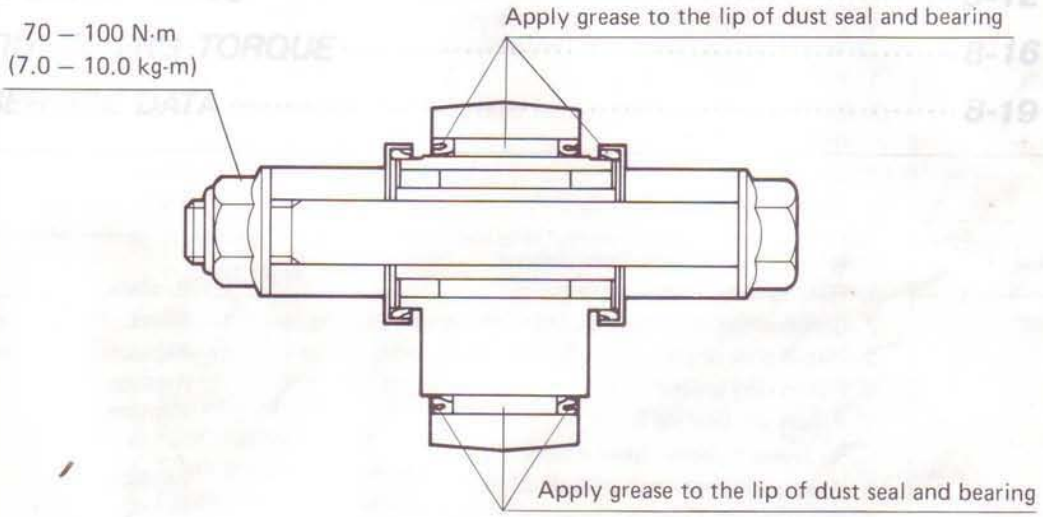

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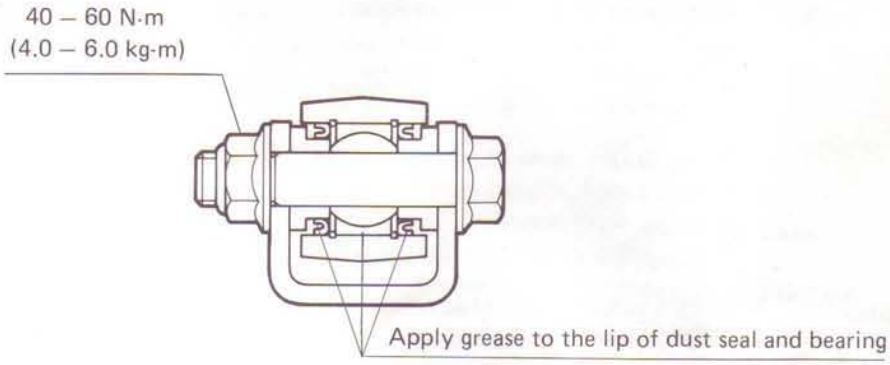

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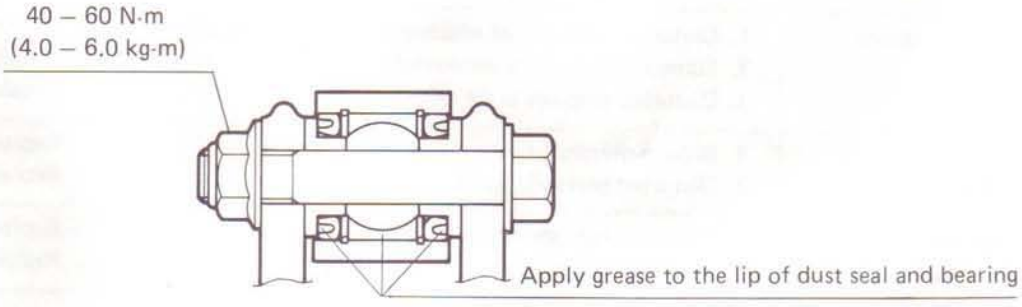


SERVICING INFORMATION

CONTENTS

TROUBLESHOOTING

ENGINE

Complaint	Symptom and possible causes	Remedy
Engine will not start, or is hard to start.	**Plugs not sparking**	
	1. Fouled spark plugs.	Clean.
	2. Wet spark plug.	Clean and dry.
	3. Defective ignition coil.	Replace.
	4. Open or short in high-tension cords.	Replace.
	5. Defective pick-up coil, exciter coil, pulser coil or CDI 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 needle valve.	Replace.
	4. Clogged fuel pipe or suction cock pipe.	Clean.
Engine stalls easily.	1. Fouled spark plugs.	Clean.
	2. Defective pick-up coil, exciter coil, pulser coil or CDI unit.	Replace
	3. Clogged fuel pipe.	Replace.
	4. Clogged jets in carburetors.	Clean.
Noisy engine.	**Noise appears to come from pistons**	
	1. Pistons or cylinders worn down.	Replace.
	2. Combustion chambers fouled with carbon.	Clean.
	3. Piston pins or piston pin bore worn.	Replace.
	4. Piston ring groove worn.	Replace.
	5. Piston pin bearing worn.	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.	Replace.
	Noise seems to come from crankshaft	
	1. Rattling bearings due to wear.	Replace.
	2. Big-end bearings worn and burnt.	Replace.
	3. Crankshaft bearing worn and burnt.	Replace.
	Noise seems to come from transmission	
	1. Gears worn or rubbing.	Replace.
	2. Badly worn splines.	Repalce.
	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.	Repalce.
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 or replace.

Complaint	Symptom and possible causes	Remedy
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. Spark plug gaps too wide.	Adjust.
	2. Defective ignition coil.	Replace.
	3. Defective pick-up coil, exciter coil, pulser coil or CDI unit.	Replace.
	4. Float-chamber fuel level out of adjustment in carburetors.	Replace.
	5. Clogged jets or imbalance of carburetors.	Clean or adjust.
Engine runs poorly in high-speed range.	1. Spark plug gaps too narrow.	Adjust.
	2. Clogged jets or imbalance of carburetors.	Clean or adjust.
	3. Defective ignition coil.	Replace.
	4. Defective pick-up coil, exciter coil, pulser coil or CDI unit.	Replace.
	5. Float-chamber fuel level too low.	Adjust.
	6. Clogged air cleaner element.	Clean.
	7. Clogged fuel pipe, resulting in inadequate fuel supply to carburetors.	Clean, and prime.
	8. Defective exhaust valve control unit, actuator or exhaust valve.	Replace.
Dirty or heavy exhaust smoke.	1. Oil pump out of adjustment.	Adjust.
	2. Damage or worn crankshaft oil seal.	Replace.
Engine lacks power.	1. Worn piston rings or cylinders.	Replace.
	2. Poor seating of valves.	Repair.
	3. Spark plug gaps incorrect.	Adjust or replace.
	4. Clogged jets in carburetors.	Clean.
	5. Float-chamber fuel level out of adjustment.	Adjust.
	6. Clogged air cleaner element.	Clean.
	7. Sucking air from intake pipe.	Retighten or replace.
	8. Too much engine oil in the engine.	Drain out excess oil.
	9. Defective exhaust valve control unit, actuator or exhaust valve.	Replace.
Engine overheats.	1. Heavy carbon deposit on piston crowns.	Clean.
	2. Not enough oil in the engine.	Add oil.
	3. Defective oil pump or clogged oil circuit.	Replace or clean.
	4. Fuel level too low in float chambers.	Adjust.
	5. Suck air from intake pipes.	Retighten or replace.
	6. Use incorrect engine oil.	Change.
	7. Defective cooling system.	See radiator section.

CARBURETOR

Complaint	Symptom and possible causes	Remedy
Trouble with starting.	1. Starter jet is clogged.	Clean.
	2. Starter pipe is clogged.	Clean.
	3. Air leaking from a joint between starter body and carburetor.	Check starter body and carburetor for tightness, adjust and replace gasket.
	4. Air leaking from carburetor's joint or oil pump adjusting hole screw.	Check and retighten.
	5. Starter plunger is not operating properly.	Check and adjust.
Idling or low-speed trouble.	1. Pilot jet, is clogged or loose.	Check and clean.
	2. Air leaking from carburetor's joint, oil pump adjusting hole screws, or starter.	Check and adjust.
	3. Pilot outlet is clogged.	Check and clean.
	4. Starter plunger is not fully closed.	Check and adjust.
Medium- or high-speed trouble.	1. Main jet is clogged.	Check and clean.
	2. Needle jet is clogged.	Check and clean.
	3. Throttle valve is not operating properly.	Check throttle valve for operation.
	4. Air cleaner element is clogged.	Check and clean.
Overflow and fuel level functuations.	1. Needle valve is worn or damaged.	Replace.
	2. Spring in needle valve is broken.	Replace.
	3. Float is not working properly.	Check and adjust.
	4. Foreign matter has adhered to needle valve.	Clean.
	5. Fuel level is too high or low.	Adjust float height.
	6. Clogged carburetor air vent pipe.	Clean.

RADIATOR

Symptom	Probable cause	Remedy
Engine overheats.	1. Not enough cooling water.	Add.
	2. Radiator core is clogged with dirt or trashes.	Clean.
	3. Erratic thermostat, stuck in closed position.	Replace.
	4. Clogged water passage.	Clean.
	5. Air trapped in the cooling circuit.	Bleed out air.
	6. Defective water pump.	Replace.
	7. Use incorrect cooling water.	Change.
Engine overcools.	1. Erratic thermostat, stuck in full-open position.	Replace.
	2. Extremely cold weather.	Put on the radiator cover.

ELECTRICAL

Complaint	Symptom and possible causes	Remedy
No sparking or poor sparking.	1. Defective ignition coil. 2. Defective spark plugs. 3. Defective pick-up coil, exciter coil, pulser coil or CDI 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.	Replace. Replace.
Spark plug electrodes overheat or burn.	1. Spark plugs too hot. 2. The engine overheats. 3. Spark plugs loose. 4. Mixture too lean.	Replace by cold type plugs. Tune up. 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 stator 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 MAX. level. Replace the battery.
Generator overcharges.	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. Repalce. 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. Repalce.

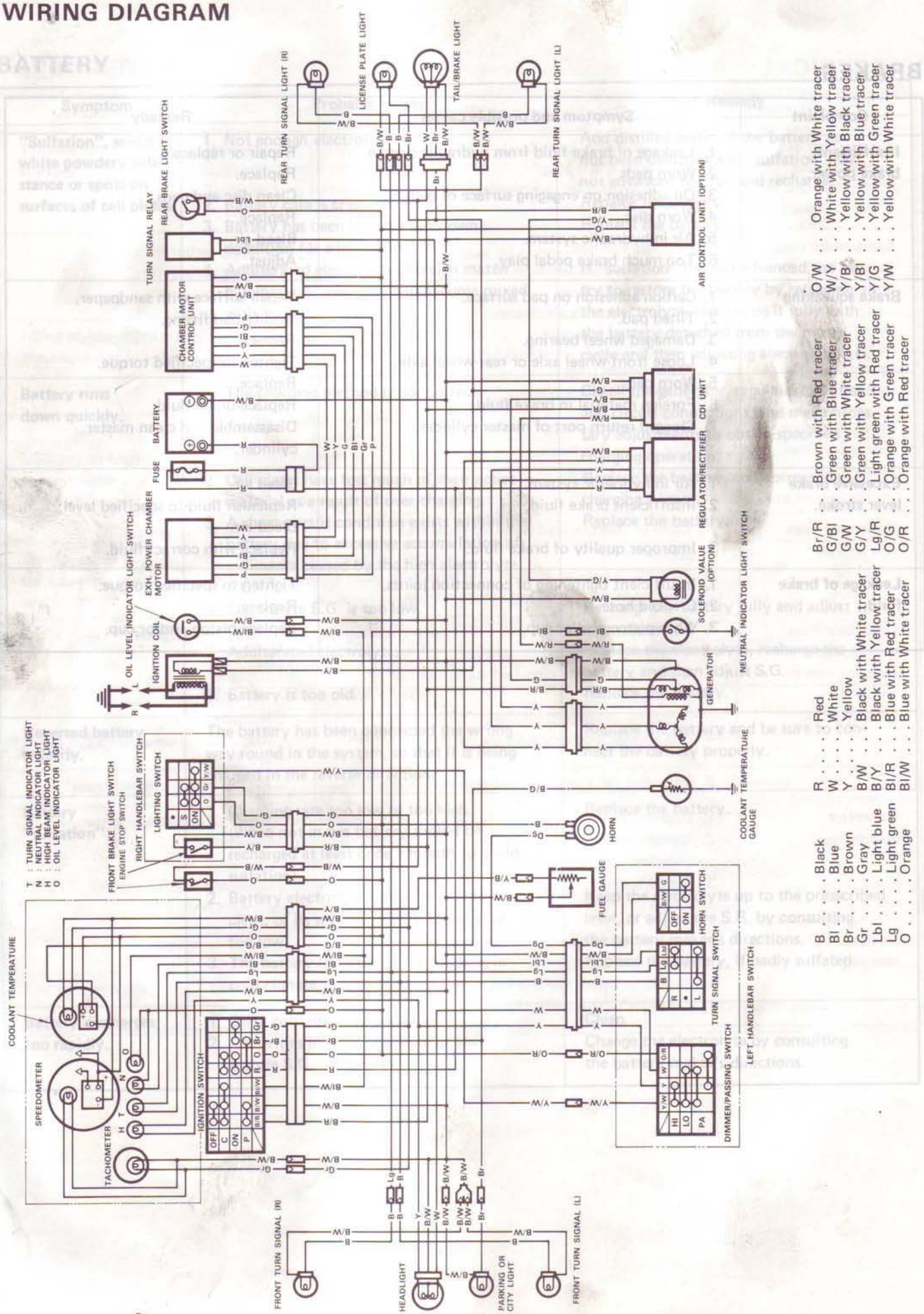
BATTERY

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.	Repalce 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 battery 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 presscribed 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.

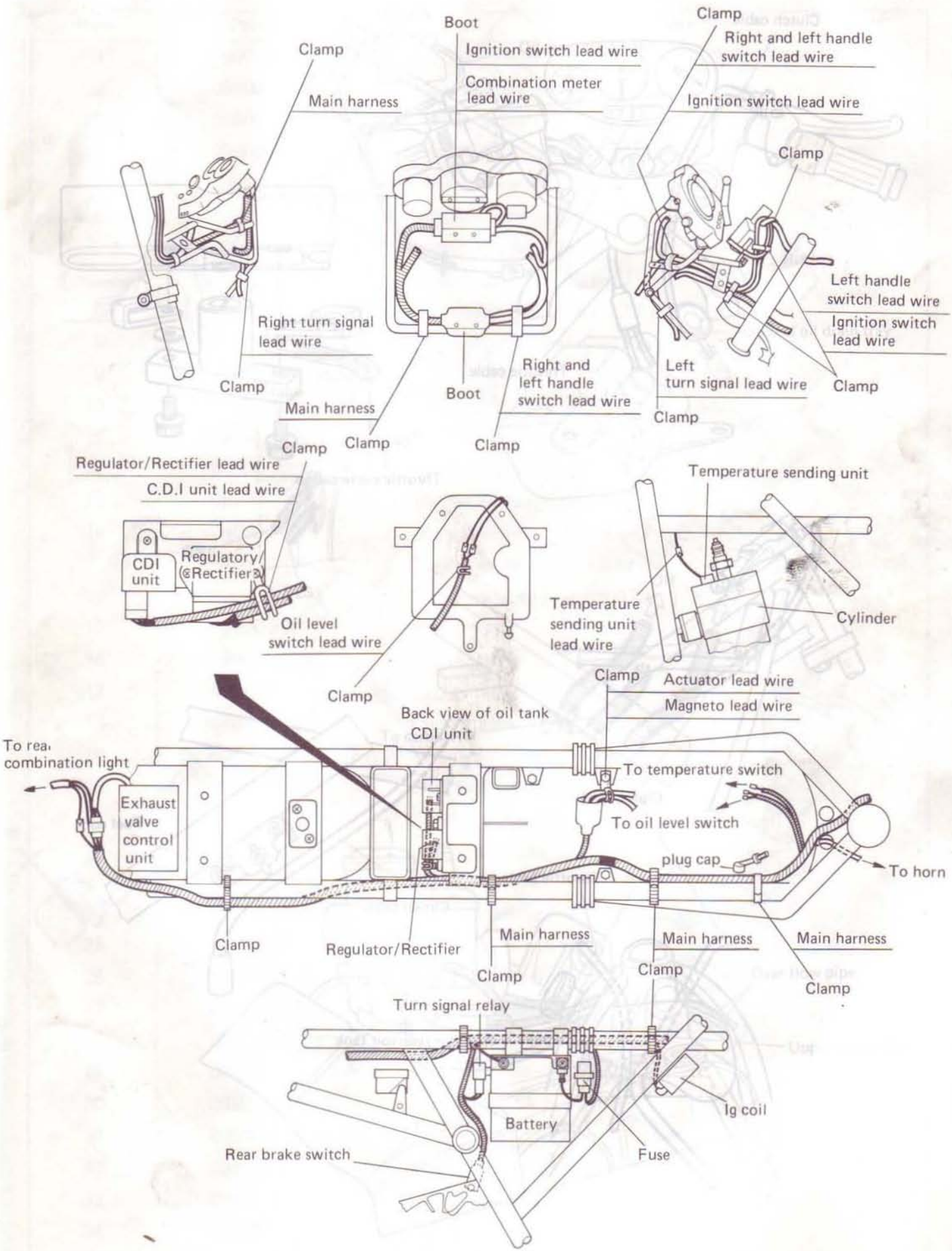
BRAKES

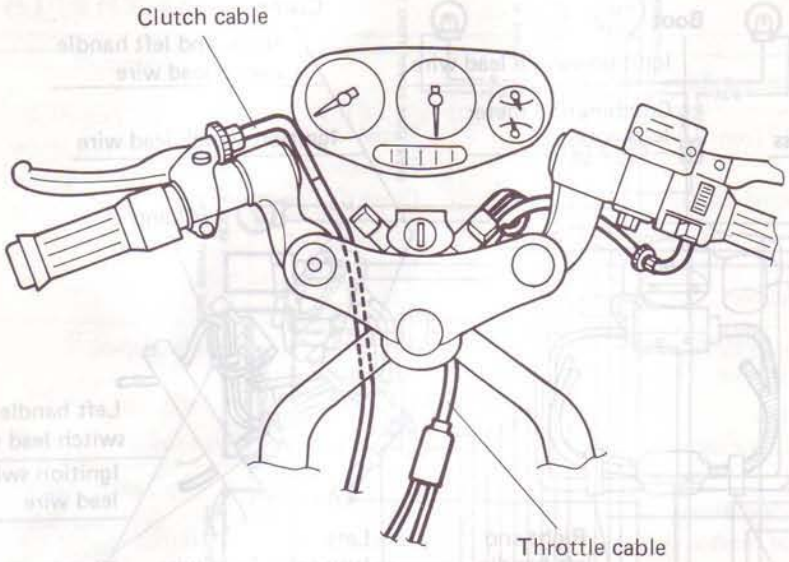
Complaint	Symptom and possible causes	Remedy
Insufficient brake power.	1. Leakage of brake fluid from hydraulic system. 2. Worn pads. 3. Oil adhesion on engaging surface of pads. 4. Worn disc. 5. Air in hydraulic system. 6. Too much brake pedal play.	Repair or replace. Replace. Clean disc and pads. Replace. Bleed air. Adjust.
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 sandpaper. 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. Insufficient brake fluid. 3. Improper quality of brake fluid.	Bleed air. 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.

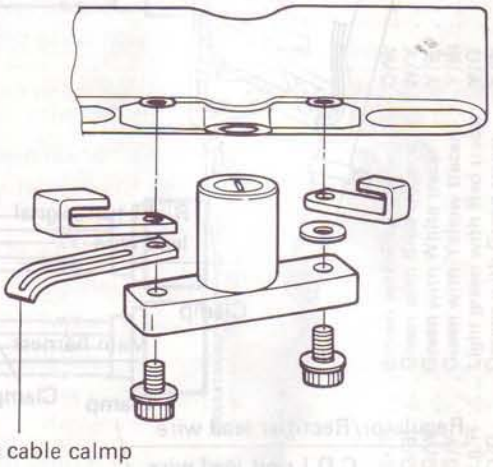
WIRING DIAGRAM

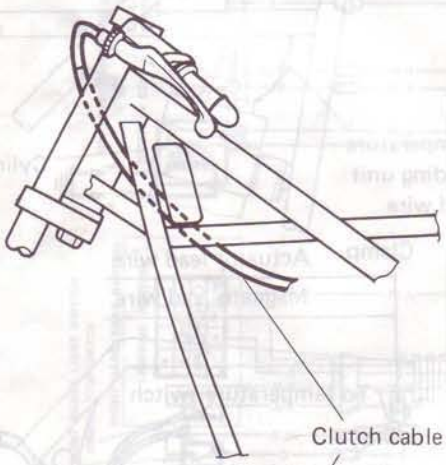


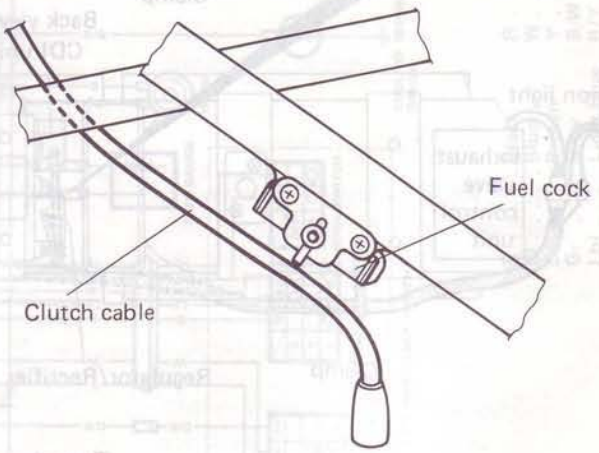
CABLE, WIRE AND HOSE ROUTING

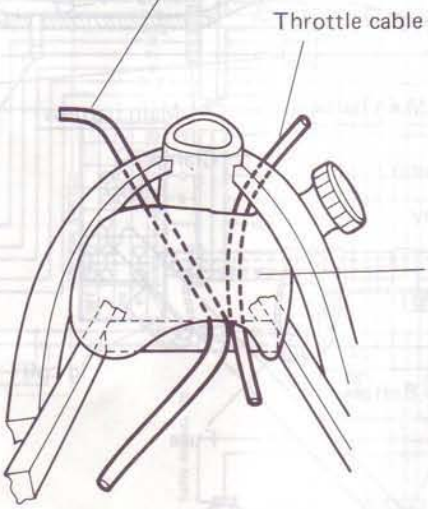


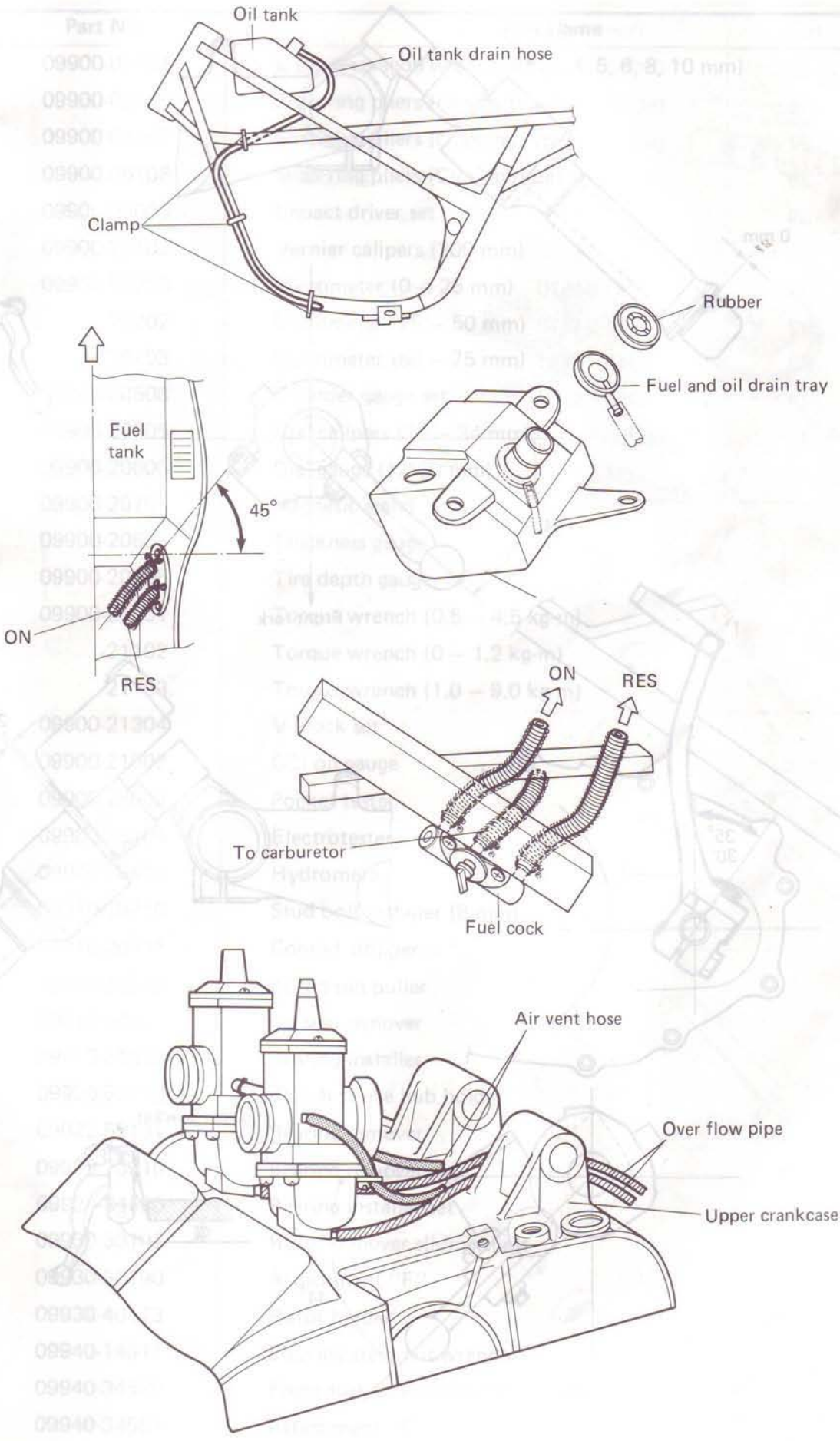




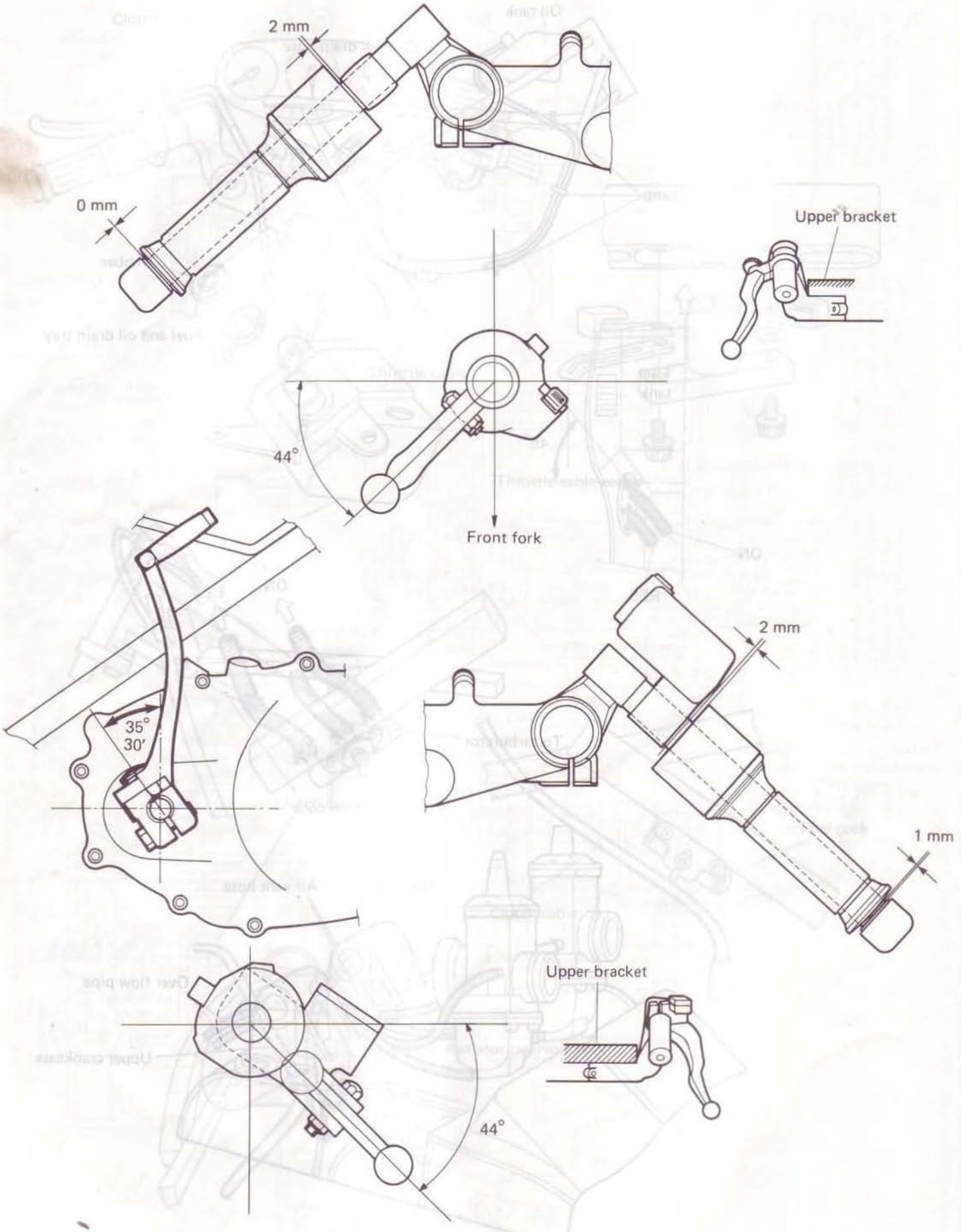








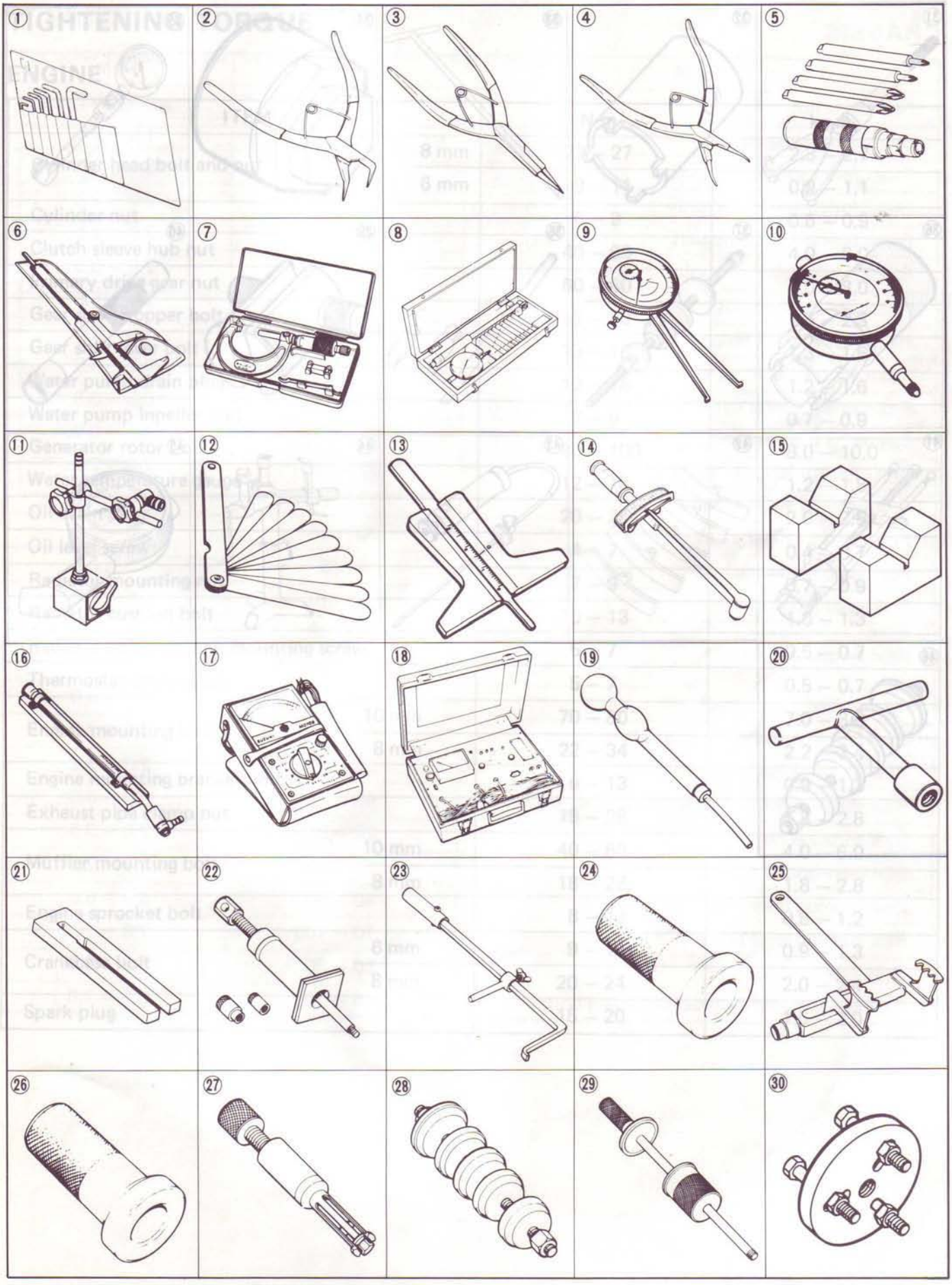
HANDLE AND KICK LEVER INSTALLATION

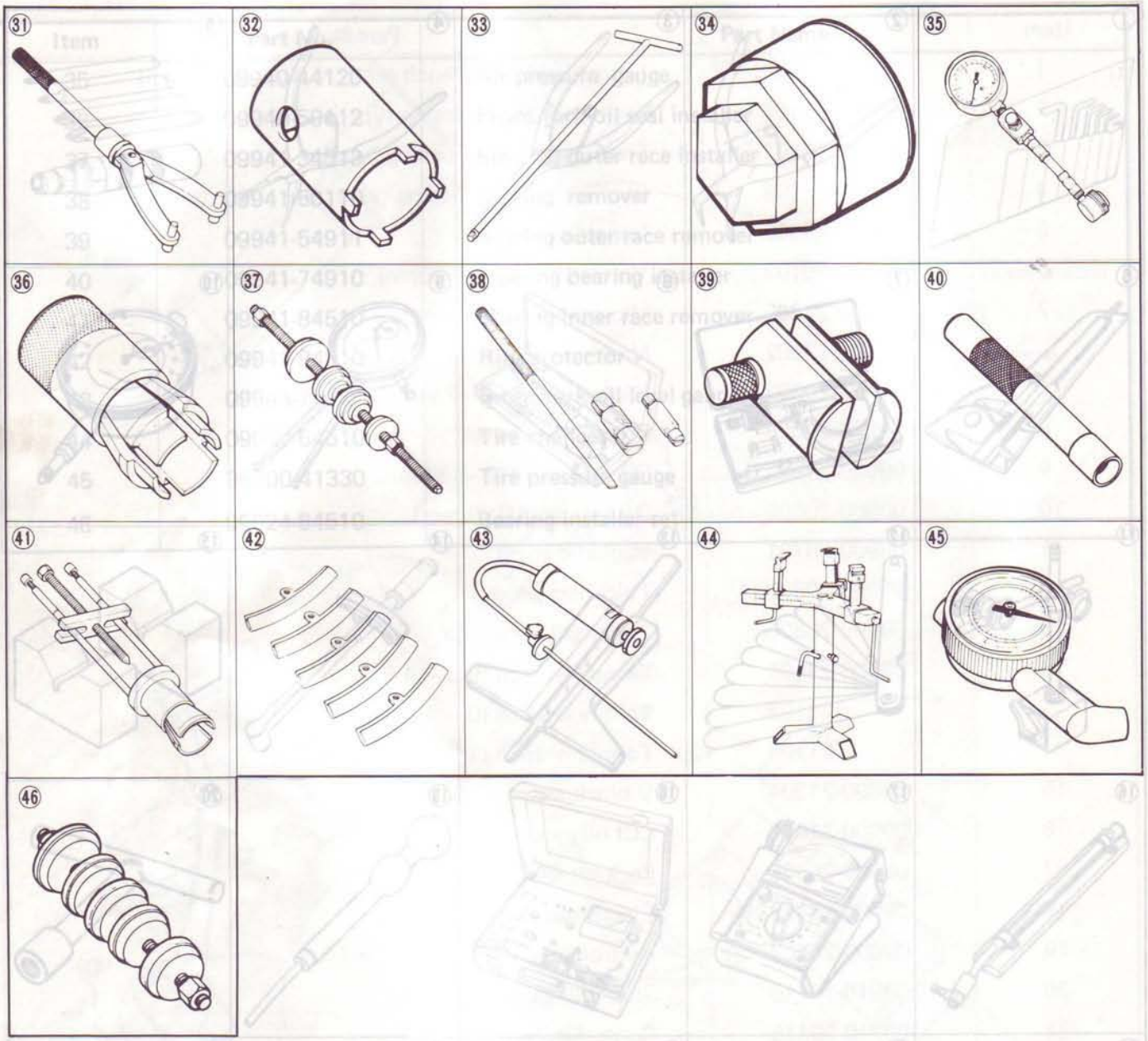


SPECIAL TOOL

Item	Part No.	Part Name
1	09900-00401	L-type hexagon wrench set (3, 4, 5, 6, 8, 10 mm)
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	Impact driver set
6	09900-20102	Vernier calipers (200 mm)
7	09900-20205	Micrometer (0 – 25 mm)
	-20202	Micrometer (25 – 50 mm)
	-20203	Micrometer (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
13	09900-20805	Tire depth gauge
14	09900-21101	Torque wrench (0.5 – 4.5 kg-m)
	-21102	Torque wrench (0 – 1.2 kg-m)
	-21103	Torque wrench (1.0 – 9.0 kg-m)
15	09900-21304	V-block set
16	09900-21602	CCI oil gauge
17	09900-25002	Pocket tester
18	09900-28106	Electrotester
19	09900-28403	Hydrometer
20	09910-10710	Stud bolt installer (8 mm)
21	09910-20115	Conrod stopper
22	09910-34510	Piston pin puller
23	09913-50121	Oil seal remover
24	09913-75810	Bearing installer
25	09920-53710	Clutch sleeve hub holder
26	09922-55131	Bearing remover
27	09923-73210	Bearing remover
28	09924-84520	Bearing installer set
29	09930-30102	Rotor remover sliding shaft
30	09930-30190	Attachment "F"
31	09930-40113	Rotor holder
32	09940-14911	Steering stem nut wrench
33	09940-34520	Front fork assembling "T" handle
34	09940-34581	Attachment "F"

Item	Part No.	Part Name
35	09940-44120	Air pressure gauge
36	09940-50112	Front fork oil seal installer
37	09941-34513	Steering outer race installer
38	09941-50110	Bearing remover
39	09941-54911	Bearing outer race remover
40	09941-74910	Steering bearing installer
41	09941-84510	Bearing inner race remover
42	09941-94510	Rim protector
43	09943-74111	Front fork oil level gauge
44	09950-64510	Tire changer
45	96200-41330	Tire pressure gauge
46	09924-84510	Bearing installer set





TIGHTENING TORQUE

ENGINE

ITEM		N·m	kg-m
Cylinder head bolt and nut	8 mm	23 – 27	2.3 – 2.7
	6 mm	9 – 11	0.9 – 1.1
Cylinder nut		6 – 9	0.6 – 0.9
Clutch sleeve hub nut		40 – 60	4.0 – 6.0
Primary drive gear nut		60 – 80	6.0 – 8.0
Gear shift stopper bolt		15 – 23	1.5 – 2.3
Gear shift lever bolt		13 – 16	1.3 – 1.6
Water pump drain plug		12 – 16	1.2 – 1.6
Water pump inpeller bolt		7 – 9	0.7 – 0.9
Generator rotor bolt		80 – 100	8.0 – 10.0
Water temperature gauge		12 – 18	1.2 – 1.8
Oil drain plug		20 – 25	2.0 – 2.5
Oil level screw		4 – 7	0.4 – 0.7
Radiator mounting nut		7 – 9	0.7 – 0.9
Radiator cushion bolt		10 – 13	1.0 – 1.3
Radiator reservoir tank mounting screw		5 – 7	0.5 – 0.7
Thermostat cover screw		5 – 7	0.5 – 0.7
Engine mounting bolt	10 mm	70 – 80	7.0 – 8.0
	8 mm	22 – 34	2.2 – 3.4
Engine mounting bracket bolt		9 – 13	0.9 – 1.3
Exhaust pipe clamp nut		18 – 28	1.8 – 2.8
Muffler mounting bolt	10 mm	40 – 60	4.0 – 6.0
	8 mm	18 – 28	1.8 – 2.8
Engine sprocket bolt		8 – 12	0.8 – 1.2
Crankcase bolt	6 mm	9 – 13	0.9 – 1.3
	8 mm	20 – 24	2.0 – 2.4
Spark plug		15 – 20	1.5 – 2.0

CHASSIS

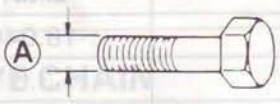
ITEM		N·m	kg-m
Front axle nut		36 – 52	3.6 – 5.2
Front axle clamp nut		15 – 25	1.5 – 2.5
Front fork cap bolt		25 – 35	2.5 – 3.5
Front fork upper clamp bolt		20 – 25	2.0 – 2.5
Front fork lower clamp bolt		20 – 25	2.0 – 2.5
Front fork damper rod bolt		25 – 35	2.5 – 3.5
Steering stem head bolt		35 – 55	3.5 – 5.5
Handlebar bracket bolt		15 – 25	1.5 – 2.5
Front footrest bolt		27 – 43	2.7 – 4.3
Front brake master cylinder bolt		5 – 8	0.5 – 0.8
Caliper air bleeder (Front & Rear)		7 – 9	0.7 – 0.9
Brake hose union bolt		20 – 25	2.0 – 2.5
Front brake caliper mounting bolt		15 – 25	1.5 – 2.5
Front brake caliper axle bolt		30 – 36	3.0 – 3.6
Posi-damp mounting bolt		6 – 8	0.6 – 0.8
Brake pedal bolt		6 – 10	0.6 – 1.0
Rear torque link nut	Front	18 – 28	1.8 – 2.8
	Rear	40 – 60	4.0 – 6.0
Rear swingarm pivot nut		50 – 80	5.0 – 8.0
Rear brake caliper mounting bolt		15 – 25	1.5 – 2.5
Rear brake caliper axle bolt		28 – 32	2.8 – 3.2
Rear shock absorber fitting bolt (Upper & Lower)		40 – 60	4.0 – 6.0
Rear sprocket nut		20 – 35	2.0 – 3.5
Disc plate bolt (Front and Rear)		15 – 25	1.5 – 2.5
Rear cushion lever front nut		40 – 60	4.0 – 6.0
Rear cushion lever center nut		70 – 100	7.0 – 10.0
Rear axle nut		50 – 80	5.0 – 8.0
Rear brake master cylinder mounting bolt		6 – 10	0.6 – 1.0

TIGHTENING TORQUE CHART

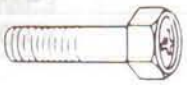
For other bolts and nuts not listed above, refer to this chart:

Tightening torque

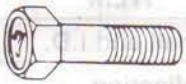
Bolt Diameter Ⓐ (mm)	Conventional or "4" marked bolt		"7" marked bolt	
	N·m	kg-m	N·m	kg-m
4	1 – 2	0.1 – 0.2	1.5 – 3	0.15 – 0.3
5	2 – 4	0.2 – 0.4	3 – 6	0.3 – 0.6
6	4 – 7	0.4 – 0.7	8 – 12	0.8 – 1.2
8	10 – 16	1.0 – 1.6	18 – 28	1.8 – 2.8
10	22 – 35	2.2 – 3.5	40 – 60	4.0 – 6.0
12	35 – 55	3.5 – 5.5	70 – 100	7.0 – 10.0
14	50 – 80	5.0 – 8.0	110 – 160	11.0 – 16.0
16	80 – 130	8.0 – 13.0	170 – 250	17.0 – 25.0
18	130 – 190	13.0 – 19.0	200 – 280	20.0 – 28.0



Conventional bolt



"4" marked bolt



"7" marked bolt

SERVICE DATA

CYLINDER + PISTON + PISTON RING

Unit: mm

ITEM	STANDARD			LIMIT
Piston to cylinder clearance	0.070—0.080			0.120
Cylinder bore	54.010—54.025 Measure at 25 from the top surface			54.070
Piston diam.	53.935—53.950 Measure at 22 from the skirt end			53.890
Cylinder distortion	———			0.05
Cylinder head distortion	———			0.10
Piston ring free end gap	1st	RN	Approx. 4.5	3.6
	2nd	RN	Approx. 5.3	4.2
Piston ring end gap	0.15—0.30			0.75
Piston ring to groove clearance	1st		0.03—0.06	———
	2nd		0.02—0.06	———
Piston pin bore	14.002—14.010			14.030
Piston pin O.D.	13.995—14.000			13.980

CONROD + CRANKSHAFT

Unit: mm

ITEM	STANDARD	LIMIT
Conrod small end I.D.	18.003—18.011	18.040
Conrod deflection	———	3.0
Crank web to web width	50 ± 0.1	———
Crankshaft runout	———	0.05

OIL PUMP

ITEM	SPECIFICATION
Oil pump reduction ratio	4.573 (72/24 × 23/19 × 29/23)
CCI pump discharge rate (Full open)	2.9—3.5 ml for 2 minutes at 2 000 r/min.

CLUTCH

Unit: mm

ITEM	STANDARD	LIMIT
Clutch cable play	4	———
Clutch release screw	1/4—1/2 Turn back	———
Drive plate thickness	2.9—3.1	2.6
Drive plate claw width	15.8—16.0	15.0
Driven plate distortion	———	0.10
Clutch spring free length	———	38.4

THERMOSTAT + RADIATOR

ITEM	STANDARD	LIMIT
Thermostat valve opening temperature	65 ± 1.5°C	———
Thermostat valve lift	6 mm or more at 80°C	———
Radiator cap valve opening pressure	0.9 ± 0.15 kg/cm², 90 ± 15 kPa	———

ITEM	STANDARD	LIMIT
Water temp. gauge resistance	Approx. 226 Ω at 50°C Approx. 26 Ω at 115°C	———

TRANSMISSION

Unit: mm (Except ratio)

ITEM		STANDARD	LIMIT
Primary reduction ratio		3.000 (72/24)	———
Final reduction ratio		2.785 (39/14)	———
Gear ratios	Low	2.230 (29/13)	———
	2nd	1.562 (25/16)	———
	3rd	1.210 (23/19)	———
	4th	1.000 (21/21)	———
	5th	0.863 (19/22)	———
	Top	0.782 (18/23)	———
Shift fork to groove clearance	No.1, No.2 & No.3	0.1—0.3	0.5
Shift fork groove width	No.1, No.2 & No.3	5.5—5.6	———
Shift fork thickness	No.1, No.2 & No.3	5.3—5.4	———

DRIVE CHAIN

Unit: mm

ITEM	STANDARD		LIMIT
Drive chain	Type	D.I.D.: D.I.D.520V-S TAKASAGO: RK520SMO-Z2	———
	Links	110	———
	20-pitch length	———	319.4
Drive chain slack	15—20		———

CARBURETOR

ITEM		SPECIFICATION	
		E-01, 06, 30	The others
Carburetor type		MIKUNI VM28SS	←
Bore size		28 mm	←
I.D. No.		40A00	40A10
Idle r/min.		1 300 ± 150 r/min.	←
Fuel level		4 ± 1.0 mm	←
Float height		23.5 ± 1.0 mm	←
Main jet	(M.J.)	#160	←
Jet needle	(J.N.)	5DP5-3rd	5DP5-2nd
Needle jet	(N.J.)	P-0	←
Cut-away	(C.A.)	2.0	←
Pilot jet	(P.J.)	#20	←
By-pass	(B.P.)	1.0 mm	←
Pilot outlet	(P.O.)	0.6 mm	←
Air screw	(A.S.)	1 3/4 turns back	←

ITEM		SPECIFICATION	
		E-01, 06, 30	The others
Starter jet	(G.S.)	#60	←
Throttle cable play		0.5—1.0 mm	←

ELECTRICAL

Unit: mm

ITEM		SPECIFICATION		NOTE
Ignition timing		15° ± 2° B.T.D.C. at 6 000 r/min.		
Exhaust valve		OPEN→CLOSE	7 600 r/min.	
		CLOSE→OPEN	7 300 r/min.	
Spark plug		Type	NGK: BR9ES	E-02,06,15, 16,21,39
		Gap	0.6—0.8	
		Type	NGK: B9ES	The others
		Gap	0.6—0.8	
Spark performance		Over 8 at 1 atm.		
Ignition coil resistance		Primary	0.1—1.0 Ω	B/Y—B/W
		Secondary	20—35 kΩ	Plug cap—Plug cap
Generator coil resistance		0.1—1.0 Ω		Y—Y
Magneto coil resistance		Pick-up	40—70 Ω	R/W—B/W
		Pulser	150—300 Ω	G—B/W
		Exciter	5—15 Ω	B/R—G
Generator no-load voltage		More than 34 V (AC) at 5 000 r/min.		
Regulated voltage		13.5—15.5 V at 5 000 r/min.		
Battery		Type designation	12N5-3B	
		Capacity	12V18.0 kC(5Ah)/10HR	
		Standard electrolyte S.G.	1.28 at 20°C	
Fuse size		MAIN	20 A	

WATTAGE

Unit: W

ITEM		SPECIFICATION		
		E-02	E-01, 06, 24	The others
Headlight	HI	60	←	←
	LO	55	←	←
Parking or position light		3.4		4
Tail/Brake light		5/21	8/23	5/21
Turn signal light		21	23	21
Tachometer light		3	←	←
Speedometer light		3	←	←
Water temp. meter light		1.7	←	←
Turn signal indicator light		3	←	←
High beam indicator light		1.7	←	←
Neutral indicator light		3	←	←
Oil level warning light		3	←	←

ITEM	SPECIFICATION		
License light	5	8	5

BRAKE + WHEEL

Unit: mm

ITEM		STANDARD	LIMIT
Rear brake pedal height		50	———
Brake disc thickness	Front	4.5 ± 0.2	4.0
	Rear	6.0 ± 0.2	5.3
Brake disc runout		———	0.30
Master cylinder bore	Front	14.000–14.043	———
	Rear	12.700–12.743	———
Master cylinder piston diam.	Front	13.957–13.984	———
	Rear	12.657–12.684	———
Brake caliper cylinder bore	Front	27.000–27.076	———
	Rear	38.180–38.256	———
Brake caliper piston diam.	Front	26.920–26.970	———
	Rear	38.098–38.148	———
Wheel runout	Axial	———	2.0
	Radial	———	2.0
Wheel axle runout	Front	———	0.25
	Rear	———	0.25
Tire size	Front	100/90H-16	———
	Rear	110/80H-18	———
Tire tread depth	Front	———	1.6
	Rear	———	2.0

SUSPENSION

Unit: mm

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	130	———	
Front fork spring free length	———	397	
Front fork oil level	99	———	
Front fork spring adjuster	5th line from top side	———	
Front fork damping force adjuster	2	———	
Front fork air pressure	0 kPa, 0 kg/cm²	———	
Rear shock absorber air pressure	50 kPa, 0.5 kg/cm²	———	
Rear wheel travel	125	———	
Swingarm pivot shaft runout	———	0.3	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	SOLO RIDING		DUAL RIDING	
	kPa	kg/cm²	kPa	kg/cm²
FRONT	200	2.00	200	2.00
REAR	225	2.25	250	2.50

FUEL + OIL + COOLANT

ITEM	SPECIFICATION		NOTE
Fuel type	Gasoline used should be graded 85-95 octane or higher. An unleaded or low-lead type gasoline is recommended.		
Fuel tank including reserve	17.0 L		
reserve	4.7 L		
Engine oil type	SUZUKI CCI oil or CCI super oil		
Engine oil tank capacity	1.2 L		
Transmission oil type	SAE 20W/40		
Transmission oil capacity	Change	850 ml	
	Overhaul	900 ml	
Front fork oil type	Fork oil #10		
Front fork oil capacity (each leg)	346 ml		
Coolant type	Use an anti-freeze/ coolant compatible with aluminum radiator, mixed with distilled water only, at the ratio of 50 : 50.		
Coolant including reserve	1 500 ml		
Brake fluid type	SAE J1703, DOT3 or DOT4		

RG250H ('87-MODEL)

Please refer to the sections 1 through 8 except for the items discribed in this section.

CONTENTS

9

SERVICE DATA

CYLINDER + PISTON + PISTON RING

Unit: mm

ITEM	STANDARD			LIMIT
Piston to cylinder clearance	0.060—0.070			0.120
Cylinder bore	54.000—54.015 Measure at 25 from the top surface			54.070
Piston diam.	53.935—53.950 Measure at 22 from the skirt end			53.880
Cylinder distortion	———			0.05
Cylinder head distortion	———			0.30
Piston ring free end gap	1st	RN	Approx. 4.5	3.6
	2nd	RN	Approx. 5.3	4.2
Piston ring end gap	0.15—0.30			0.75
Piston ring to groove clearance	1st		0.09—0.12	———
	2nd		0.02—0.06	———
Piston pin bore	14.002—14.010			14.030
Piston pin O.D.	13.995—14.000			13.980

CONROD + CRANKSHAFT

Unit: mm

ITEM	STANDARD	LIMIT
Conrod small end I.D.	18.003—18.011	18.040
Conrod deflection	———	3.0
Crank web to web width	50 ± 0.1	———
Crankshaft runout	———	0.05

OIL PUMP

ITEM	SPECIFICATION
Oil pump reduction ratio	4.573 (72/24 × 23/19 × 29/23)
CCI pump discharge rate (Full open)	2.9—3.5 ml for 2 minutes at 2 000 r/min.

CLUTCH

Unit: mm

ITEM	STANDARD	LIMIT
Clutch cable play	4	———
Clutch release screw	1/4—1/2 Turn back	———
Drive plate thickness	2.9—3.1	2.6
Drive plate claw width	15.8—16.0	15.0
Driven plate distortion	———	0.10
Clutch spring free length	———	38.4

THERMOSTAT + RADIATOR

ITEM	STANDARD	LIMIT
Thermostat valve opening temperature	65 ± 1.5°C	———
Thermostat valve lift	6 mm or more at 80°C	———
Radiator cap valve release pressure	0.9 ± 0.15 kg/cm², 90 ± 15 kPa,	———

TRANSMISSION

Unit: mm (Except ratio)

ITEM		STANDARD	LIMIT
Primary reduction ratio		3.000 (72/24)	———
Final reduction ratio		2.785 (39/14)	———
Gear ratios	Low	2.230 (29/13)	———
	2nd	1.562 (25/16)	———
	3rd	1.210 (23/19)	———
	4th	1.000 (21/21)	———
	5th	0.863 (19/22)	———
	Top	0.782 (18/23)	———
Shift fork to groove clearance		0.1—0.3	0.5
Shift fork groove width		5.5—5.6	———
Shift fork thickness		5.3—5.4	———
Gearshift lever height		30—35	———

DRIVE CHAIN

Unit: mm

ITEM	STANDARD		LIMIT
Drive chain	Type	D.I.D.: DID520V-S TAKASAGO: RK 520 SMO-Z2	———
	Links	110	———
	20-pitch length	———	319.4
Drive chain slack	15—20		———

CARBURETOR

ITEM		SPECIFICATION	
		E-01, 06, 22, 28, 30	The others
Carburetor type		MIKUNI VM28SS	←
Bore size		28 mm	←
I.D. No.		40A00	40A10
Idle r/min.		1 300 ± 150 r/min	←
Fuel level		4 ± 1.0 mm	←
Float height		23.5 ± 1.0 mm	←
Main jet	(M.J.)	#160	←
Jet needle	(J.N.)	5DP5-3rd	5DP5-2nd
Needle jet	(N.J.)	P-0	←
Cut-away	(C.A.)	2.0	←
Pilot jet	(P.J.)	#20	←
By-pass	(B.P.)	1.0 mm	←
Pilot outlet	(P.O.)	0.6 mm	←
Air screw	(A.S.)	1 3/4 turns back (Right & Left)	←
Starter jet	(G.S.)	#60	←
Throttle cable play		0.5—1.0 mm	←

ELECTRICAL

Unit: mm

ITEM		SPECIFICATION		NOTE
Ignition timing		15° ± 2° B.T.D.C. at 6 000 r/min.		
Exhaust valve		OPEN → CLOSE 7 600 r/min. CLOSE → OPEN 7 300 r/min.		
Spark plug		Type	NGK: B9ES	E-01, 22, 24 28, 30, 34
		Gap	0.6–0.8	
		Type	NGK: BR9ES	The others
		Gap	0.6–0.8	
Spark performance		Over 8 at 1 atm.		
Generator coil resistance		0.1–1.0 Ω		Y–Y
Magneto coil resistance		Exciter	5–15 Ω	B/R–G
		Pulser	150–300 Ω	G–B/W
		Pick-up	40–70 Ω	R/W–B/W
Ignition coil resistance		Primary	0.1–1.0 Ω	B/Y–B/W
		Secondary	20–35 kΩ	Plug cap–Plug cap
Generator no-load voltage		More than 34 V (AC) at 5 000 r/min.		
Regulated voltage		13.5–15.5 V at 5 000 r/min.		
Battery	Type designation	12N5–3B(S)		
	Capacity	12V 18.0 kC (5Ah)/10 HR		
	Standard electrolyte S.G.	1.28 at 20°C (68°F)		
Fuse size	Main	20 A		

WATTAGE

Unit: W

ITEM		SPECIFICATION				
		E-02	E-22	E-30	E-01, 06 24, 28	E-04,15,16, 21,25,34, 39,53
Headlight	HL	60	←	←	←	←
	LO	55	←	←	←	←
Parking or position light		3.4	4			4
Tail/Brake light		21/5	←	23/8	←	21/5
Turn signal light		21	←	←	23	21
Tachometer light		3	←	←	←	←
Speedometer light		3	←	←	←	←
Water temp. meter light		1.7	←	←	←	←
Turn signal indicator light		3	←	←	←	←
High beam indicator light		1.7	←	←	←	←
Neutral indicator light		3	←	←	←	←
Oil level warning light		3	←	←	←	←
License light		5		8	←	5

BRAKE + WHEEL

Unit: mm

ITEM		STANDARD	LIMIT
Rear brake pedal height		45–55	—
Brake disc thickness	Front	4.5 ± 0.2	4
	Rear	6.0 ± 0.2	5.3
Brake disc runout		—	0.30
Master cylinder bore	Front	14.000–14.043	—
	Rear	12.700–12.743	—
Master cylinder piston diam.	Front	13.957–14.984	—
	Rear	12.657–12.684	—
Brake caliper cylinder bore	Front	27.000–27.076	—
	Rear	38.180–38.256	—
Brake caliper piston diam.	Front	26.920–26.970	—
	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	100/90 16 54H	—
	Rear	110/80 18 58H	—
Tire tread depth	Front	—	1.6
	Rear	—	2.0

SUSPENSION

Unit: mm

ITEM	STANDARD	LIMIT
Front fork stroke	130	—
Front fork spring free length	—	397
Front fork oil level	99	—
Front fork spring adjuster	5th line from top side	—
Front fork damping force adjuster	2	—
Front fork air pressure	0 kPa 0 kg/cm²	—
Rear shock absorber gas pressure	50 kPa 0.5 kg/cm²	—
Rear wheel travel	125	—
Swingarm pivot shaft runout	—	0.3

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	SOLO RIDING			DUAL RIDING		
	kPa	kg/cm²	psi	kPa	kg/cm²	psi
FRONT	200	2.00	29	200	2.00	29
REAR	225	2.25	33	250	2.50	36

FUEL + OIL + COOLANT

ITEM		SPECIFICATION
Fuel type		Gasoline used should be graded 85-95 octane or higher. An unleaded or low-lead type gasoline is recommended.
Fuel tank including reserve		17.0 L
reserve		4.7 L
Engine oil type		CCI or CCI super
Engine oil tank capacity		1.2 L
Transmission oil type		SAE 20W/40
Transmission oil capacity	Change	850 ml
	Overhaul	900 ml
Front fork oil type		Fork oil #10
Front fork oil capacity (each leg)		346 ml
Coolant type		Use an anti-freeze/ coolant compatible with aluminum radiator, mixed with distilled wateronly, at the ratio of 50 : 50.
Coolant including reserve		1 500 ml
Brake fluid type		SAE J1703, DOT 3 or DOT4

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