SUZUKI

TS50W

SERVICE MANUAL

99500-20110-01E
(英)

FOREWORD

This service manual has been specially prepared to provide all the necessary information for the proper maintenance and repair of the TS50W. The TS50W is a new type of motorcycle that has many technical features such as:

* *Water cooled*

The TS50W fits the needs of a wide variety of motorcycle users. Those who will be servicing this motorcycle should carefully review this manual before performing any repairs or services.

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

The TS50W motorcycles 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.

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

GROUP INDEX

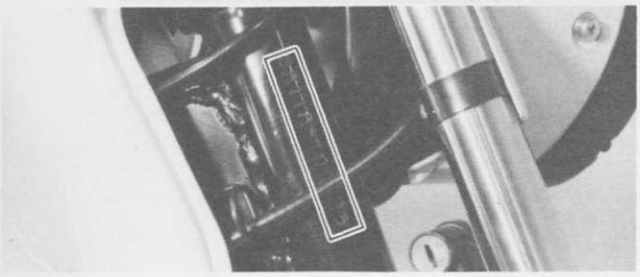
GENERAL INFORMATION

1

CONTENTS

SERIAL NUMBER LOCATIONS

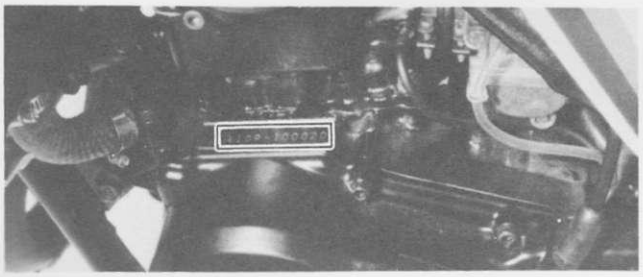
RIGHT SIDE



FRAME NUMBER

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

LEFT SIDE



ENGINE NUMBER

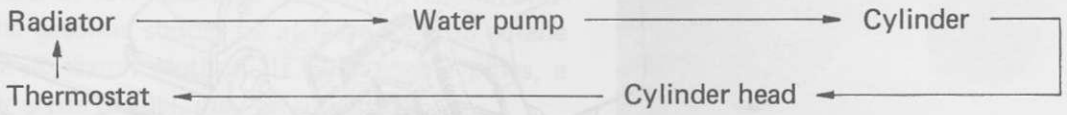
The engine serial number is located on the left side of the crankcase.

SPECIAL FEATURE

TS50 COOLING SYSTEM

The cooling system is composed of radiator, reservoir tank, radiator hoses, water pump, thermostat, and coolant.

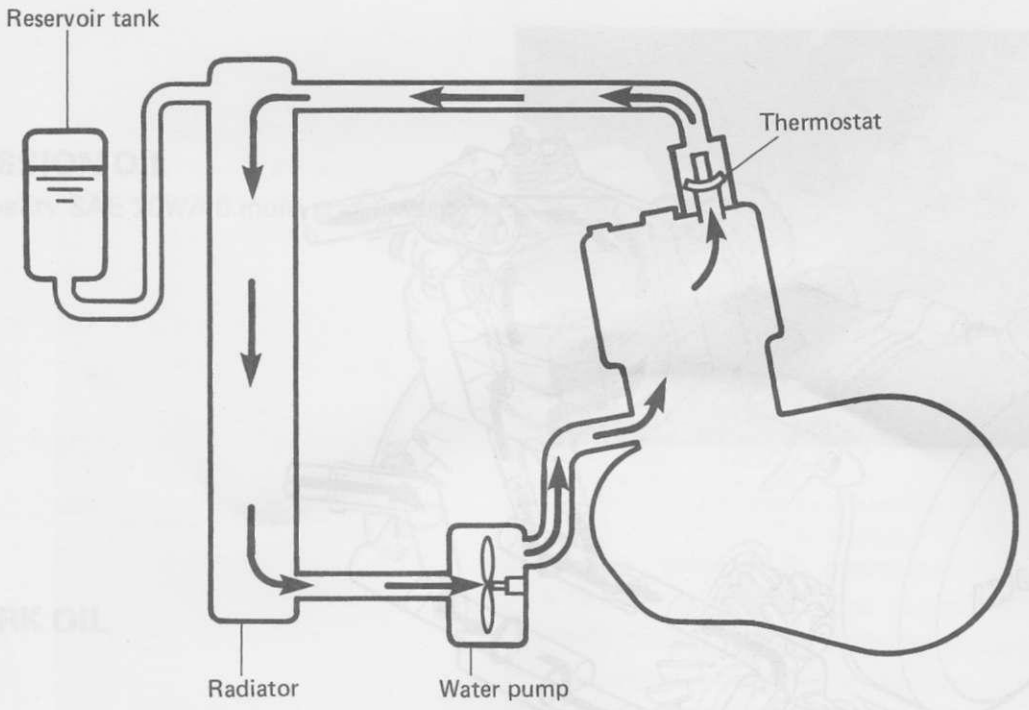
The coolant flow cycle is shown and explained below.

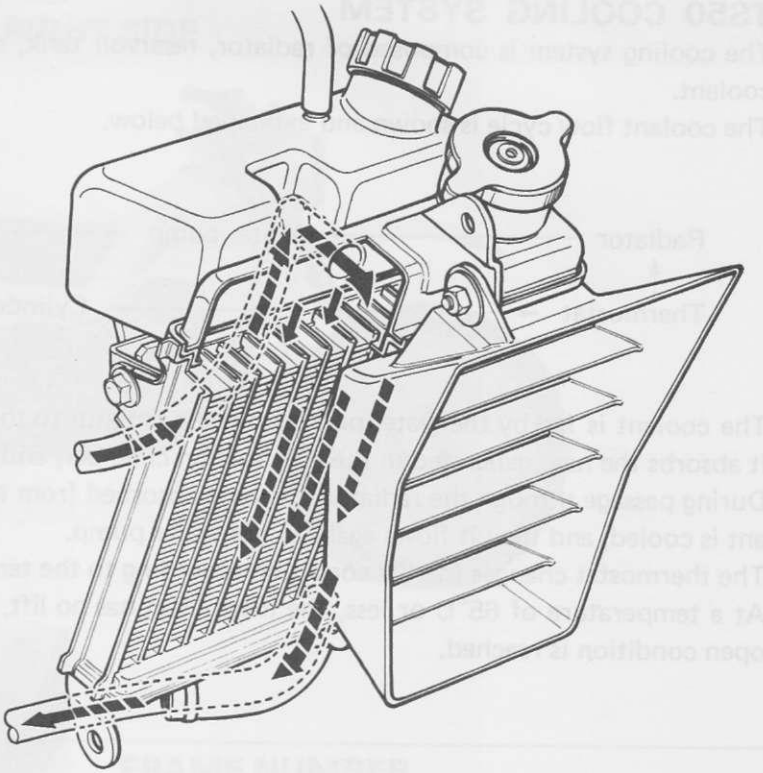


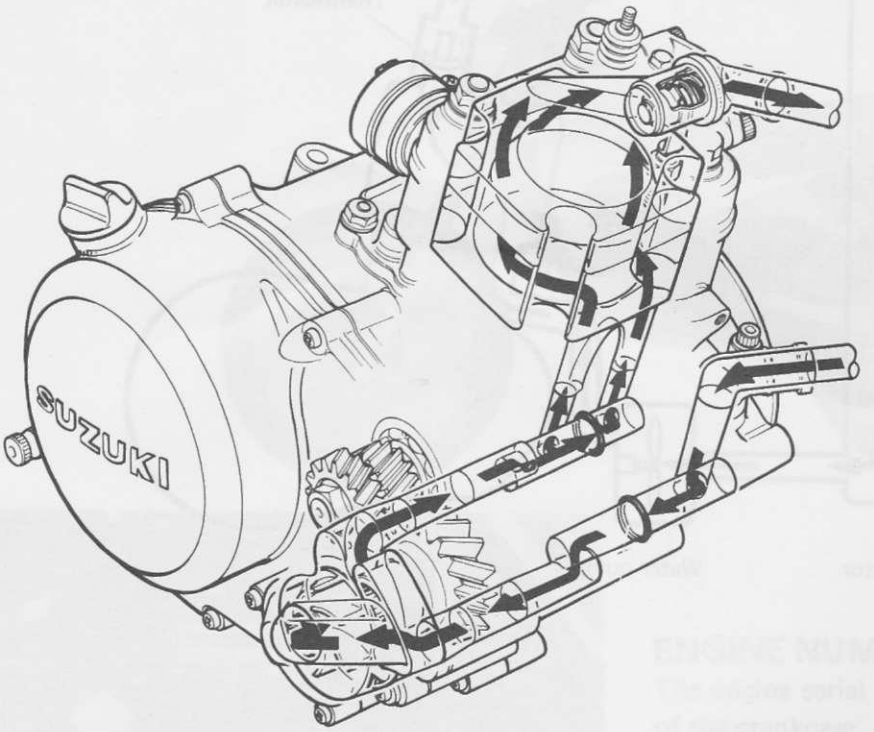
The coolant is fed by the water pump from the radiator to the circumference of the combustion chamber, it absorbs the heat generated in the combustion chamber, and it returns to the radiator via the thermostat. During passage through the radiator, the heat absorbed from the combustion chamber is released, the coolant is cooled, and then it flows again to the water pump.

The thermostat changes the lift condition according to the temperature of the coolant.

At a temperature of 65°C or less, the thermostat has no lift, and at a temperature of 80°C or more, fully-open condition is reached.

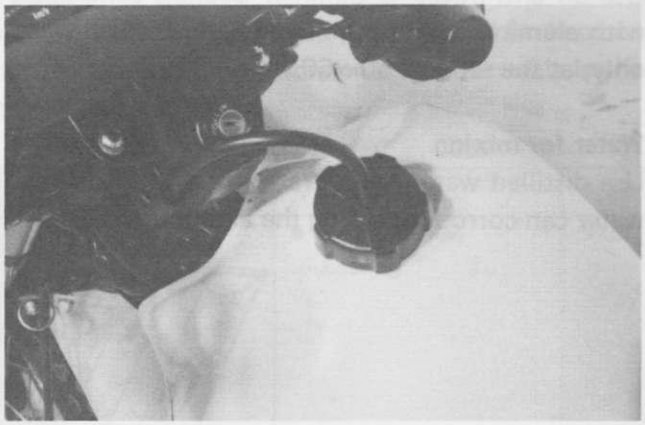





SUZUKI

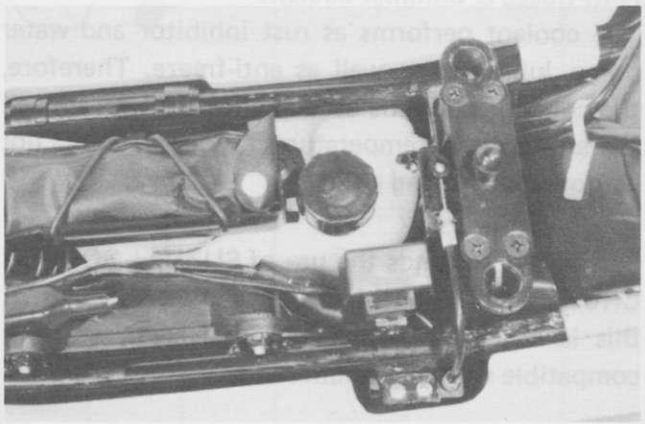
FUEL, OIL AND COOLING SOLUTION RECOMMENDATIONS

Be sure to use the specified fuel and oil.
The following are the specifications.



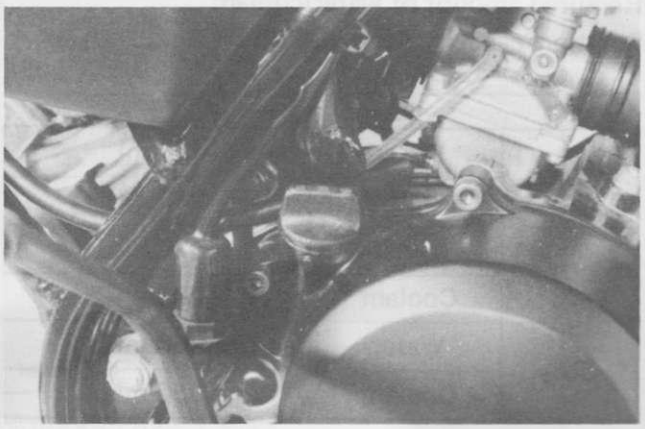
FUEL

Unleaded or low-lead type gasoline is recommended. The gasoline should be at least 85 – 95 octane by the Research Method. If your engine pings, a regular grade of fuel, may be substitute.



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

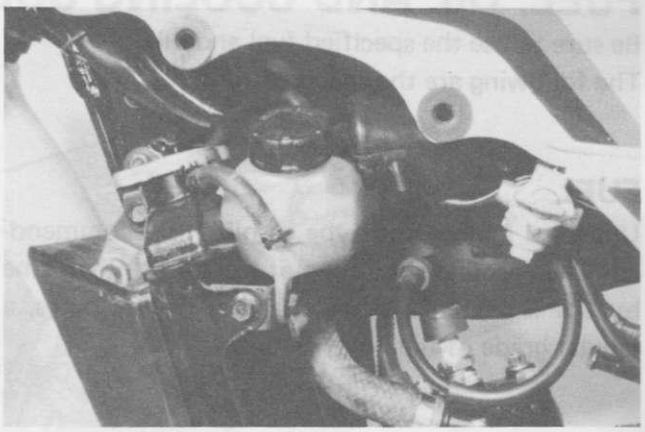
Use a good quality SAE 20W/40 multi grade motor oil.

FRONT FORK OIL

Fork oil # 10.

COOLING SOLUTION

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 rust inhibitor and water pump lubricant 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 1200 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): 700 ml

30%	Water	490 ml
	Coolant	210 ml
40%	Water	420 ml
	Coolant	280 ml
50%	Water	350 ml
	Coolant	350 ml

CAUTION:

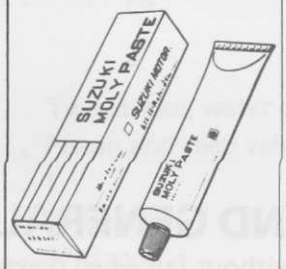
Mixing of anti-freeze & summer coolant should be limited to 60%. Mixing beyond it would reduce its efficiency. If the anti-freeze & summer coolant mixing ratio is below 30%, rust inhibiting performance is gently reduced. Be sure to mix it above 30% even though the atmospheric temperature does not go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

SPECIAL MATERIALS

MATERIALS REQUIRED FOR MAINTENANCE

The materials shown are required for maintenance works on the Model TS50W, and should be kept on hand for ready use. In addition, such standard materials as cleaning fluid, lubricants, etc., should also be available. Methods of use discussed in the test of this manual on later pages.

Material	Use	Page
 SUZUKI SUPER GREASE "A" 99000-25010	• Oil seal • Gear shift shaft • Wheel bearing • Steering bearing • Sprocket mounting drum bearing • Rear swingarm bush	3-21 3-27 7-7 7-25 7-18 7-26 7-33 7-35
 SUZUKI BOND No. 1207B 99000-31140	• Matching surface of crankcase • Front fork damper rod bolt	3-26 7-12
 THREAD LOCK "1342" 99000-32050	• Cam guide screw • Pawl lifter screw • Countershaft bearing retainer	3-27 3-27
 THREAD LOCK "1303B" 99000-32030	• Gear shift arm stopper bolt	

Material	Use	Page
 SUZUKI MOLY PASTE 99000-25140	• Cushion lever bearing	7-34
 THREAD LOCK CEMENT 99000-32040	• Front fork damper rod bolt	7-12
 THREAD LOCK "1322" 99000-32110	• Rotor nut	3-30
SUZUKI GOLDEN CRUISER 99000-24120	• Radiator	
Bar's Leak 99000-24240	• Radiator	

SPECIFICATIONS

DIMENSIONS AND DRYMASS

Overall length	2 045 mm
Overall width	810 mm
Overall height	1 115 mm
Wheelbase	1 315 mm
Seat height	260 mm
Dry mass	77 kg

ENGINE

Type	Two-stroke, water cooled
Intake system	Piston and reed valve
Number of cylinder	1
Bore	41.0 mm
Stroke	37.8 mm
Piston displacement	49 cm^3
Compression ratio	8.6 : 1
Carburetor	MIKUNI VM18SS, single
Air cleaner	Polyurethane form element
Lubrication system	SUZUKI "CCI"

TRANSMISSION

Clutch	Wet multi-plate type
Transmission	6-speed constant mesh
Gearshift pattern	1-down, 5-up
Primary reduction	3.842 (73/19)
Final reduction	3.833 (46/12)
Gear ratios, Low	3.166 (38/12)
2nd	2.000 (34/17)
3rd	1.500 (27/18)
4th	1.217 (28/23)
5th	1.041 (25/24)
Top	0.923 (24/26)
Drive chain	DAIDO D.I.D.420 or TAKASAGO RK420, 120 links

CHASSIS

Front suspension	Telescopic, oil damped
Rear suspension	Full-floating suspension system
Steering angle	43° (right & left)
Caster	60° 50′
Trail	113 mm
Turning radius	2.2 m
Front brake	Internal expanding
Rear brake	Internal expanding
Front tire size	2.50-21 4PR
Rear tire size	3.00-18 4PR

ELECTRICAL

Ignition type	SUZUKI "PEI"
Ignition timing	22° B.T.D.C. at 6 000 r/min
Spark plug	NGK BPR8ES or NIPPON DENSO W24EPR
Battery	12V 14.4 kC (4 Ah)/10 HR
Generator	Flywheel magneto
Fuse	15A
Headlight	12V 25/25W
Tail/Brake light	12V 5.2/18.4W
Turn signal light	12V 10W
Speedometer light	12V 1.7W
Tachometer light	12V 1.7W
Oil level indicator light	12V 3.4W
Neutral indicator light	12V 3.4W
High beam indicator light	12V 1.7W
Turn signal indicator light	12V 3.4W

CAPACITIES

Fuel tank including reserve	7.0 L
reserve	1.8 L
Engine oil tank	1.2 L
Front fork oil	150.6 ml
Transmission oil	850 ml
Cooling solution	700 ml

* These specifications subject to change without notice.

PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

CONTENTS

PERIODIC MAINTENANCE SCHEDULE

The chart below lists the recommended interval for all the required periodic service work necessary to keep the motorcycle operating at peak performance and economy. Traveled distance is expressed in terms of kilometer and hour.

PERIODIC MAINTENANCE CHART

Item \ Interval	Initial 1 000 km or 1 month	Every 3 000 km or 3 months	Every 6 000 km or 6 months	Every 12 000 km or 12 months
Battery	I	I	–	–
Air cleaner	–	C	–	–
Cylinder head, cylinder and muffler	–	–	Remove carbon	–
Spark plug	I	I	R	–
Ignition timing	I	I	–	–
Carburetor	I	I	–	Overhaul
Oil pump	I	I	–	–
Fuel lines	Replace every 4 years			
Fuel strainer	C	–	C	–
Clutch	I	I	–	–
Transmission oil	Ch	–	Ch	–
Cooling solution	Change every 2 years			
Radiator hose	Change every 2 years			
Engine bolts and nuts	I	I	–	–
Drive chain	Inspect and clean every 1 000 km			
Brakes	I	I	–	–
Tires	I	I	–	–
Steering	I	I	–	–
Front fork oil	Ch	–	–	Ch
Chassis bolts and nuts	I	I	–	–

Note: I : Inspect C : Clean Ch : Change R : Replace

LUBRICATION CHART

Rotating and rubbing parts must be lubricated periodically. Insufficient lubrication will cause rapid wear and severe damage may result.

LUBRICATION CHART

Item \ Interval	Initial and every 6 000 km or 6 months	Every 12 000 km or 12 months
Throttle cable	Motor oil	–
Throttle grip	–	Grease
Clutch cable	Motor oil	–
Speedometer cable	–	Grease
Speedometer gear box	–	Grease
Tachometer cable	–	Grease
Drive chain	Motor oil every 1 000 km	
Brake pedal	Grease or oil	–
Brake cam shaft	–	Grease
Steering stem bearing	Grease every 2 years or 20 000 km	

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

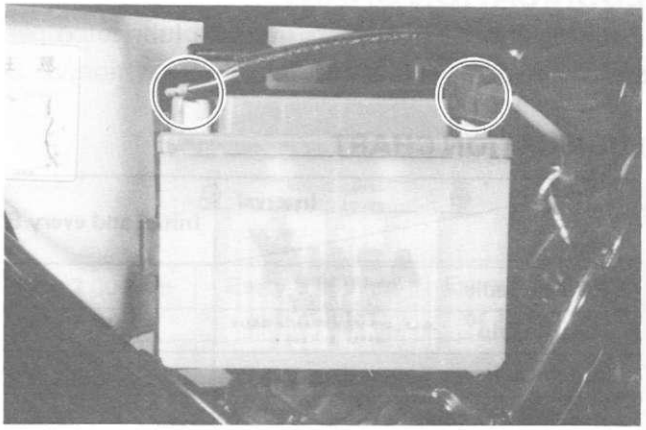
Lubricate exposed parts which are subject to rust, with either motor oil or SUZUKI super grease "A" (99000-25010) whenever the motorcycle has been operated under wet or rainy conditions.
Before lubricating each part, clean off any rusty spots and wipe off any grease, oil, dirt or grime.

MAINTENANCE PROCEDURES
BATTERY

Inspect Initial 1 000 km (1 month) and Every 3 000 km (3 months)

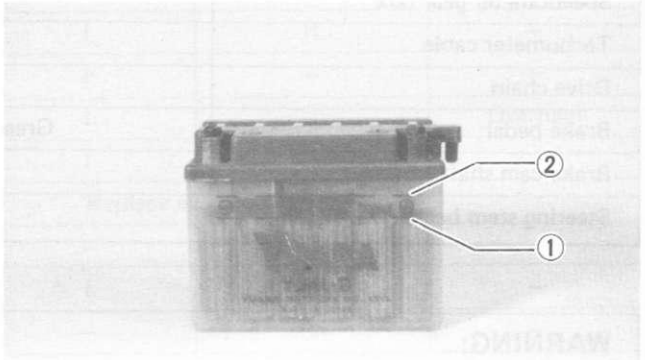
To check the electrolyte level and specific gravity, remove the battery from the motorcycle.

- Remove the seat.
- Take off the frame cover.
- Remove the battery ⊖ lead wire and next ⊕ lead wire.
- Remove the battery from the motorcycle.



Electrolyte level

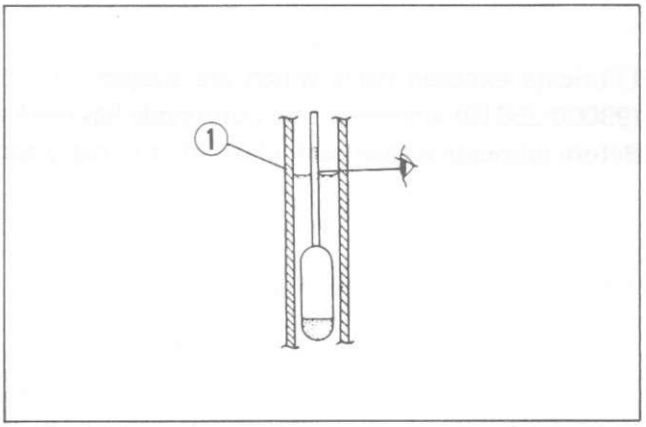
- Inspect whether electrolyte level is between Lower level line ① and Upper level line ② .
- Add distilled water, as necessary, to keep the surface of the electrolyte above the Lower level line ① but not above the Upper level line ②.



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

09900 - 28403	Hydrometer

Standard specific gravity	1.28 at 20°C

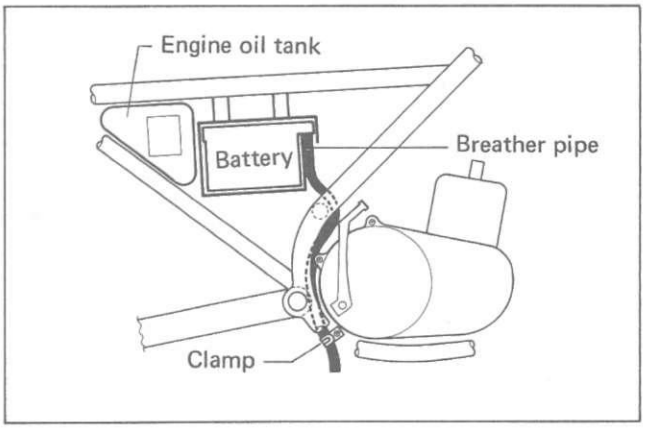


An S.G. reading of 1.24 (at 20°C) or under means that the battery needs recharging off the machine: take it off and charge it from a recharger. Charging the battery in place can lead to failure of the regulator/rectifier.

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

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

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



AIR CLEANER

Clean Every 3 000 km (3 months)

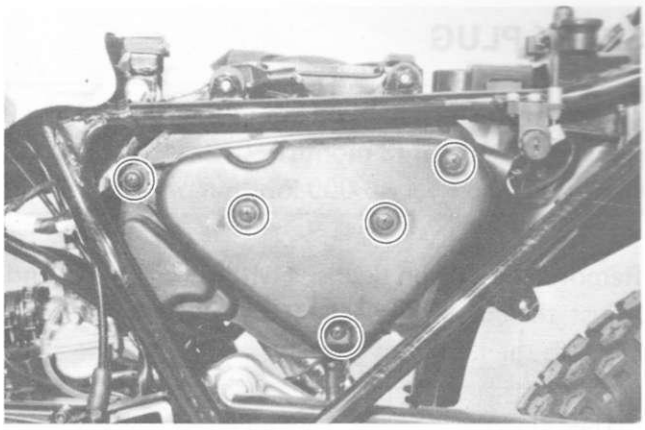
If the air cleaner element is clogged with dust, intake resistance will be increased with a resultant decrease in power output and an increase in fuel consumption.

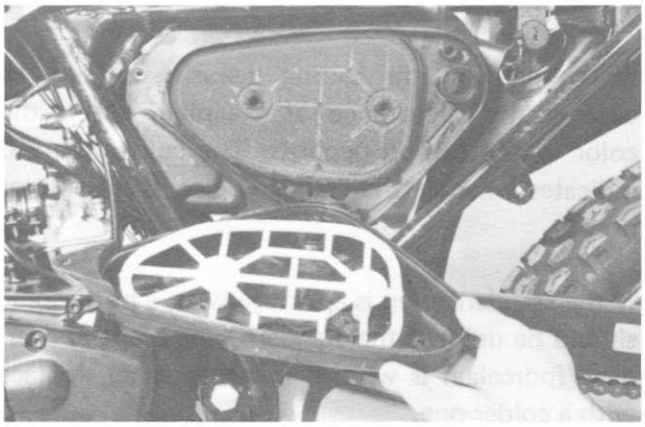
Check and clean the element in the following manner.

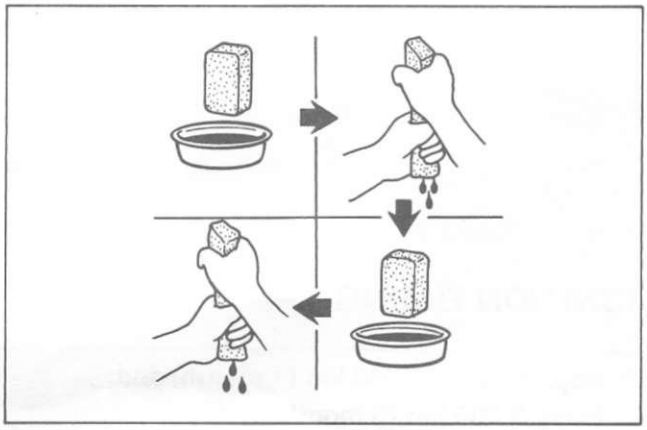
- Remove the seat and left frame cover.
- Unscrewing the screws and, take off the cleaner cover and element retainer.
- Fill the washing pan of a proper size with non flammble cleaning solvent. Immerse the element in the cleaning solvent and wash it clean.
- Squeeze the cleaning solvent out of the washed by pressing it between the palms of both hands.
- Immerse the element in motor oil, and squeeze the oil out of the element leaving it sightly wet with oil.

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

CAUTION:
Inspect the element carefully for rips, torn seams, et. If any damaged is noted, replace the element with a new one.



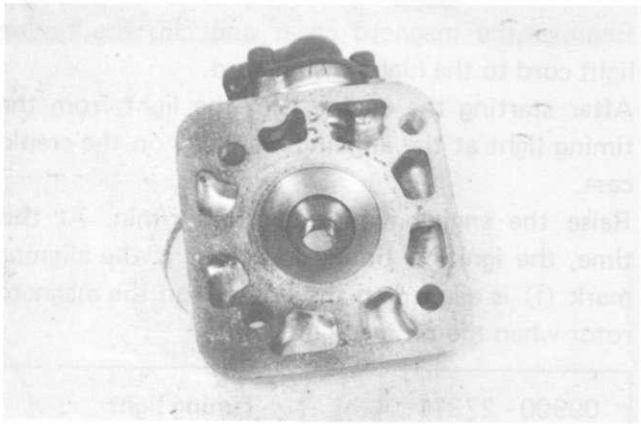




CYLINDER HEAD, CYLINDER AND MUFFLER

Remove the carbon Every 6 000 km (6 months)

Carbon deposits in the combustion chamber of the cylinder head and at the piston crown will raise the compression ratio and may cause preignition or overheating. Carbon deposited at the exhaust port of the cylinder will prevent the flow of the exhaust, reducing the output. Remove the carbon deposits periodically. Be careful not to damage the surface of the combustion chamber and exhaust port when removing carbon.



SPARK PLUG

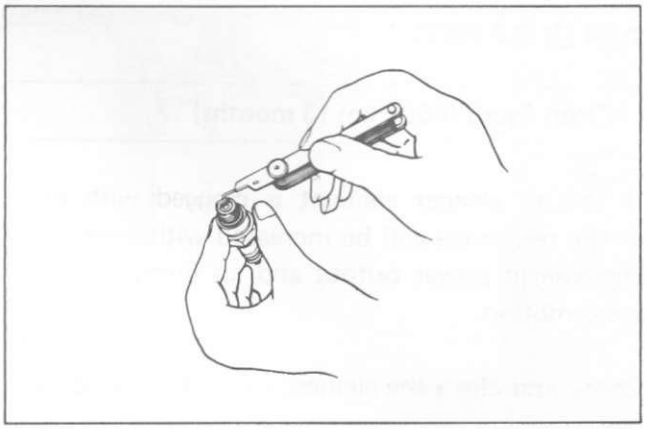
Inspect the Initial 1 000 km (1 month) and Every 3 000 km (3 months)
Replace the Every 6 000 km (6 months)

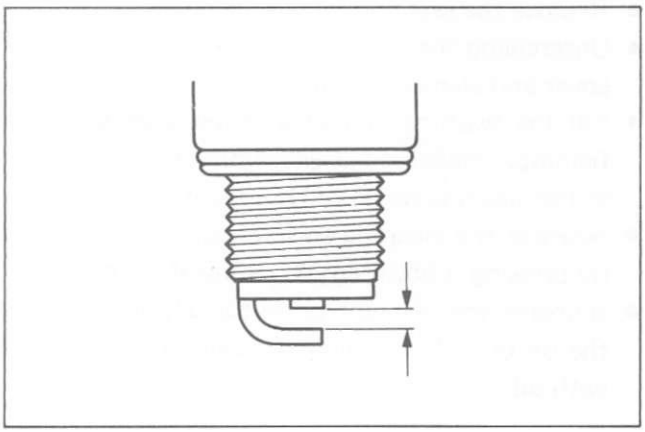
Remove the carbon deposits with a wire or pin and adjust the spark plug gaps 0.6 – 0.8 mm, measuring with the thickness gauge.

09900 - 20804	Thickness gauge

When removing the carbon deposits, be sure to observe the appearance of the plug, noting the color of the carbon deposits. The color observed indicates whether the standard plug is suitable or not.

If the standard plug is apt to get wet, a hotter plug should be used. If the standard plug is apt to overheat (porcelain is whitish in appearance), replace with a colder one.





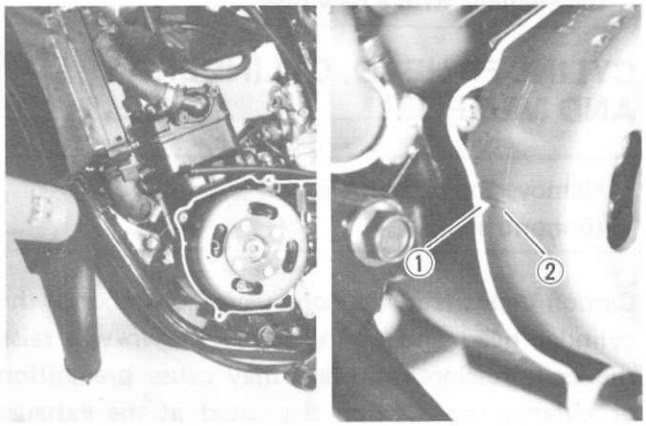
	NGK	NIPPON DENSO
Hot type	BPR7ES	W22EPR
Standard	BPR8ES	W24EPR

IGNITION TIMING

Inspect Initial 1 000 km (1 month) and Every 3 000 km (3 months)

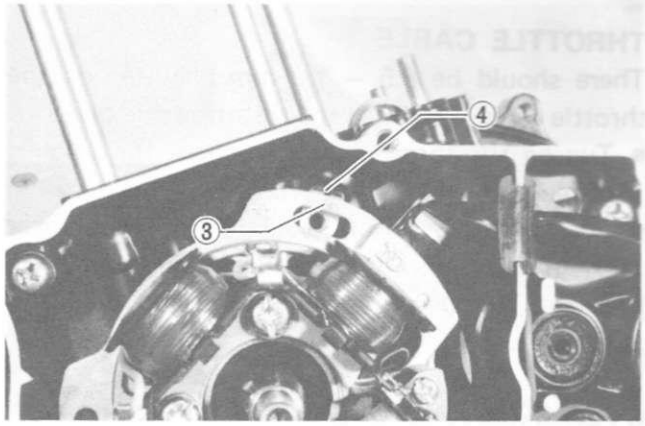
Remove the magneto cover and clip the timing light cord to the high-tension cord.
After starting the engine, aim the light from the timing light at the aligning mark ① on the crankcase.
Raise the engine r/min to 6 000 r/min. At this time, the ignition timing is proper if the aligning mark ① is aligned to the line ② on the magneto rotor when the timing light flashes.

09900 - 27311	Timing light



If the ignition timing is not correct, adjust following procedure below.

- Remove the rotor by using special tool. (refer to page 3-9)
- Loosen the stator fitting screws.
- Align the index line ③ on the stator to the alignment line ④ on crankcase.



CARBURETOR

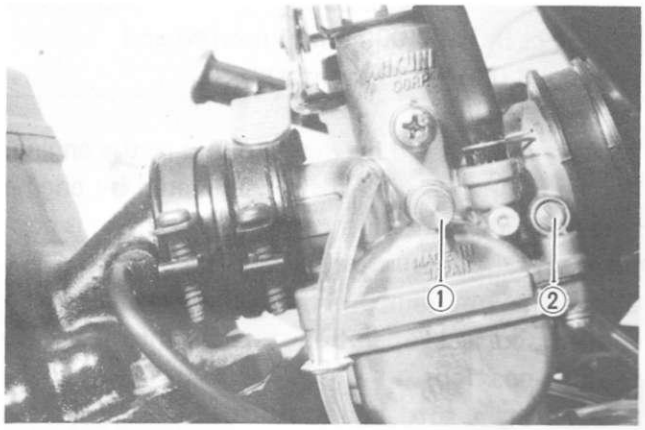
Inspect Initial 1 000 km (1 month) and Every 3 000 km (3 months)
Overhaul Every 12 000 km (12 months)

Adjust the engine idle speed as follows.

- Start the engine and allow it to warms up.

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

- Turn the throttle stop screw ① so that engine idle at 1 500 r/min.
- Turn the pilot air screw ② in or out around 1/4 turn from the original setting (refer to page 8-8). The engine r/min will increase or decrease in accordance with the turning of the pilot air screw. Set this screw in a position that allows the engine to idle at the highest r/min.
- Turn the throttle valve stop screw again and adjust the idle r/min at 1 150 – 1 450 r/min.



Idle r/min	1 300 ± 150 r/min

TRANSMISSION OIL

Change Initial 1 000 km (1 month) and Every 6 000 km (6 months)

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 procedure below.

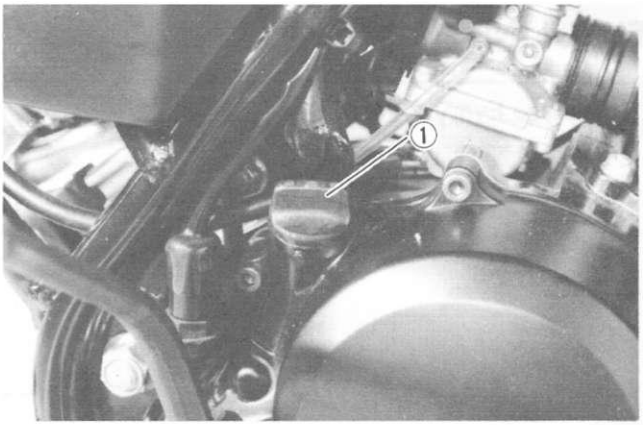
- Start the engine to warm up the engine oil, this will facilitate draining oil. Shut off the engine.
- Unscrew the oil filler cap ① and drain plug ②, and drain the oil completely.
- Tighten the drain plug.

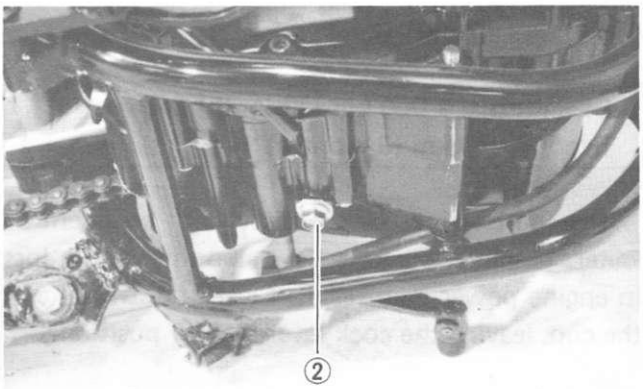
Tightening torque	15 – 20 N·m (1.5 – 2.0 kg-m)

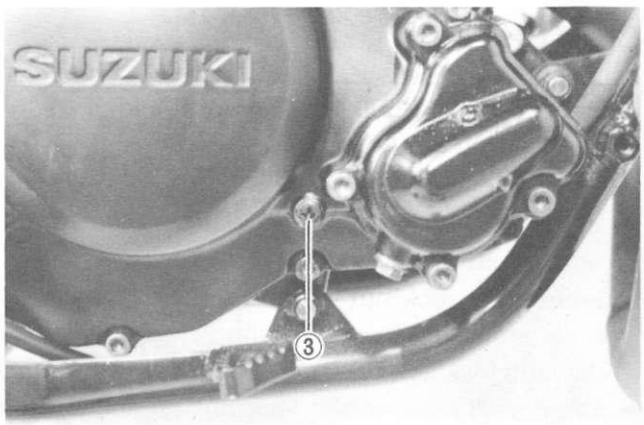
- Supply a good quality SAE 20W/40 multigrade motor oil.

Capacity	850 ml

- Check the oil level with oil level screw ③.



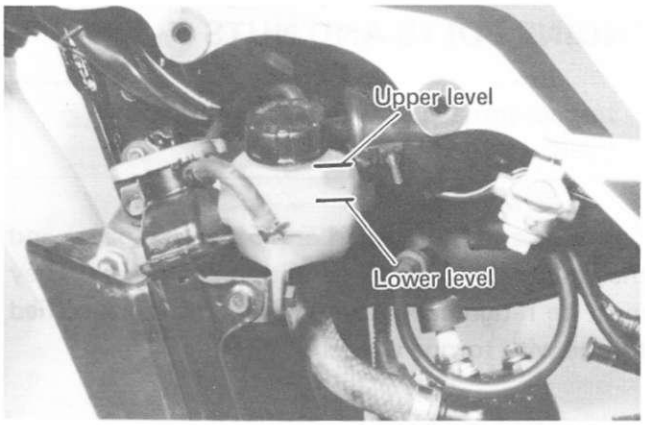




COOLING SOLUTION

Inspect the cooling solution level.
Change Every 2 years

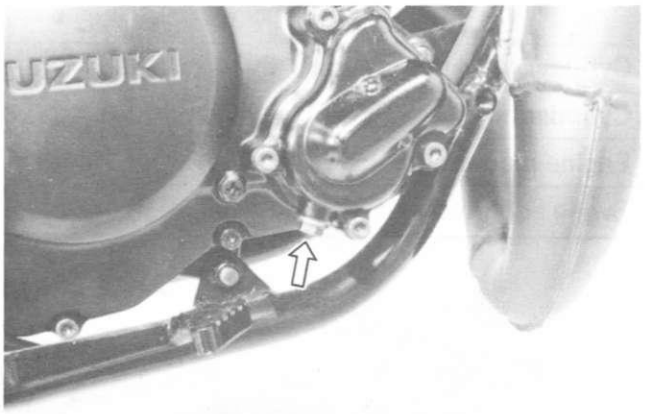
WARNING:
Do not remove the radiator cap or change the cooling solution when engine is still hot. Wait until it cools down.



Inspection

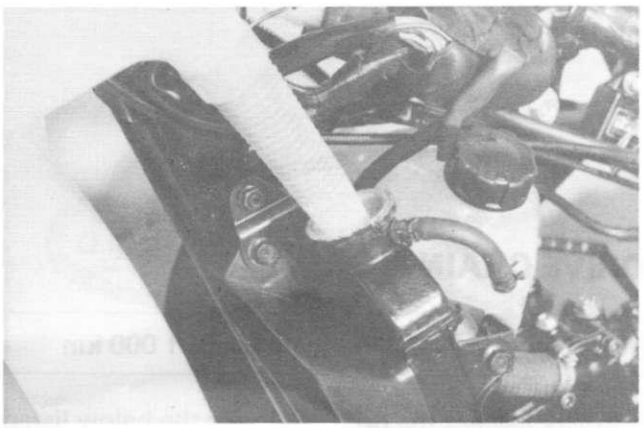
Check the cooling solution level of the reservoir. The level should be between "LOW" level line and "FULL" level line.

If the cooling solution level is below the "LOW" level line, remove the reservoir tank cap and fill to "FULL" level line.



Change

- Support the motorcycle by using jack or block.
- Remove the radiator cap and drain plug. Drain the coolant from radiator, engine side and reservoir completely.
- Tighten the drain plug.

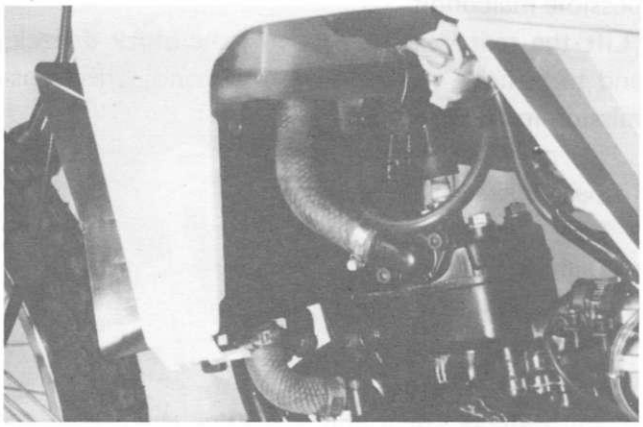


- Fill the cooling solution in the radiator and reservoir.

Capacity	700 ml

RADIATOR HOSE

Change Every 2 years



- Drain the cooling solution.
- Loosen the clamp screw.
- Disconnect the radiator hose.
- Replace the radiator hose with a new one.

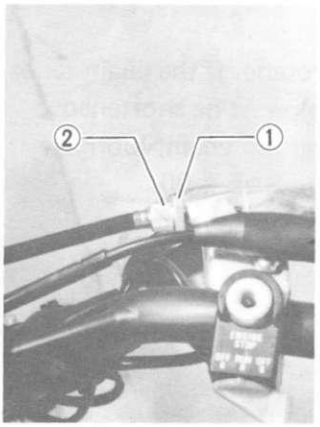
BRAKES

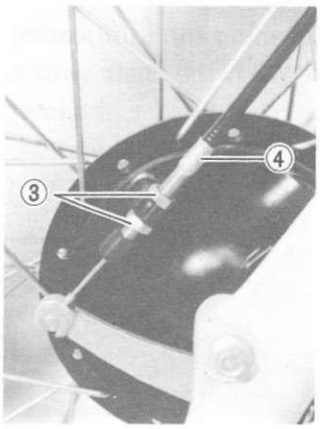
Inspect Initial 1 000 km (1 month) and Every 3 000 km (3 months)

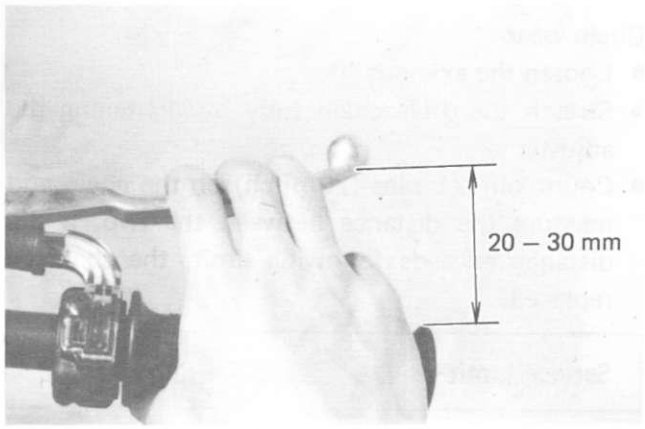
Front

Measure the clearance between the brake lever end and throttle grip when brake is fully applied.

- Loosen the lock nut ① and slide the adjuster ② on the front brake lever fully in.
- Loosen the lock nut ① and slide the adjuster ance to 20 – 30 mm by sliding the adjuster ④.

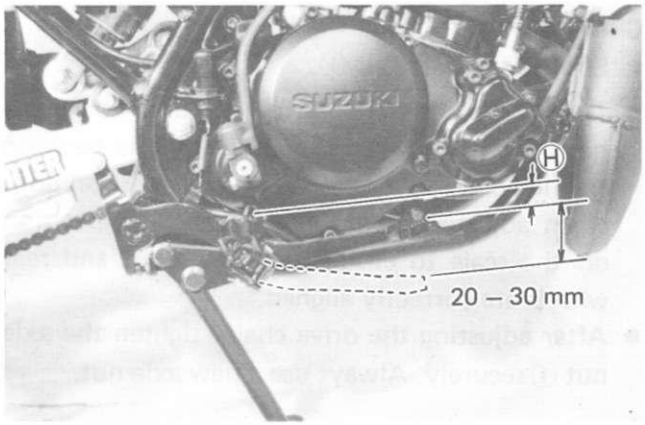


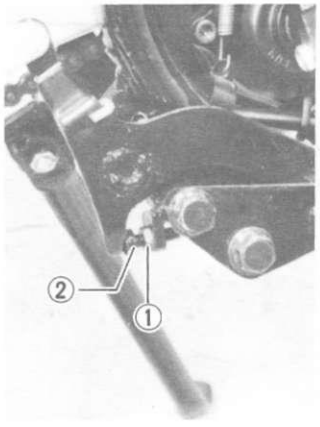


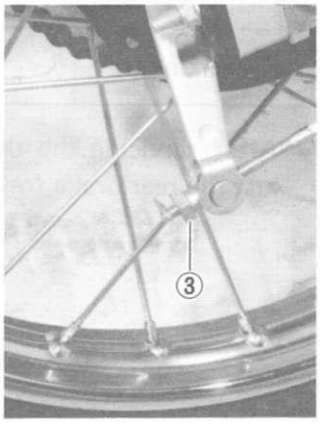


Rear

- Loosen the lock nut ① and adjust the brake pedal height Ⓗ to 10 mm by turning the adjuster ② in or out.
- Adjust the free travel to 20 – 30 mm by turning the adjuster ③ .





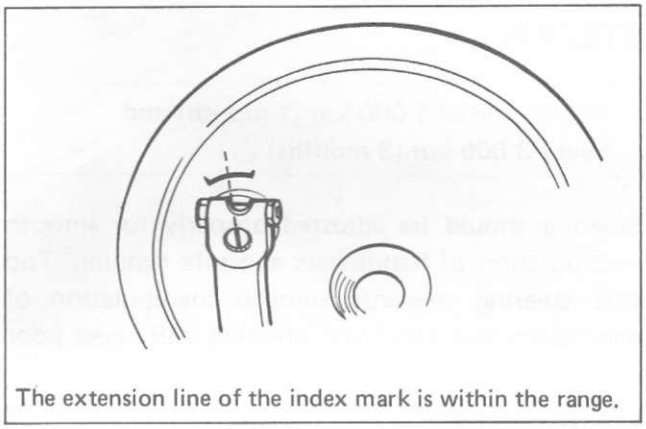


Brake shoe wear

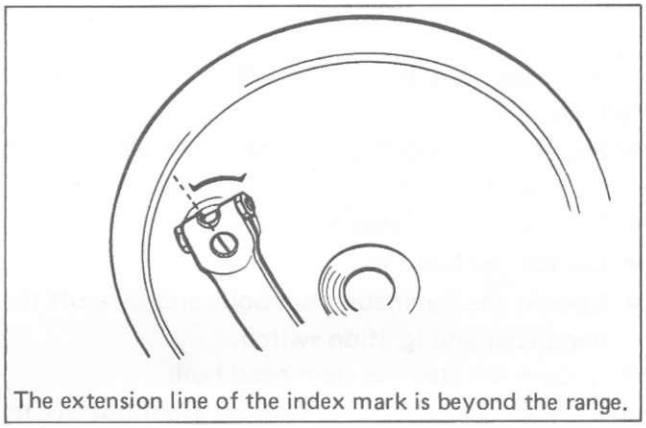
This motorcycle has brake lining wear limit indicator on the front and rear. As shown in Fig., at the condition of normal lining wear, the extension line of index mark on the brake cam shaft should be within the range embossed on the brake panel with brake on.

To check wear of the brake lining perform following steps.

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



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



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

TIRES

Inspect Initial 1 000 km (1 month) and Every 3 000 km (3 months)

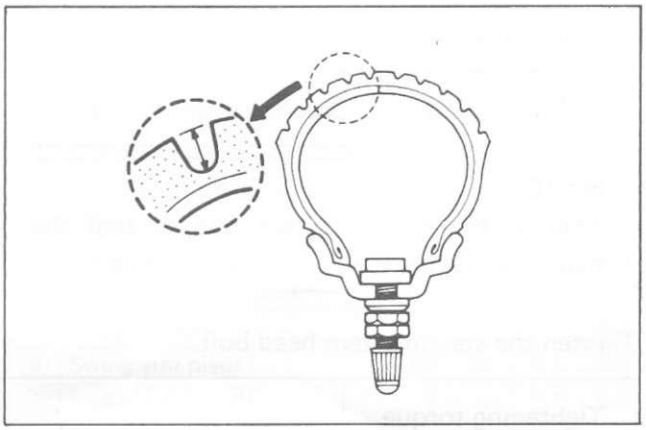
TREAD CONDITION

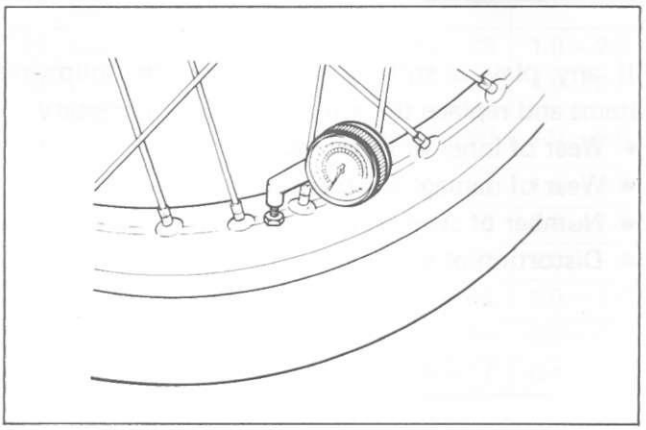
Operating the motorcycle with the excessively worn tires will decrease riding stability and consequently invite a dangerous situation. It is highly recommended to replace the tire when the remaining depth of tire tread reaches the following specifications.

FRONT	REAR
3.0 mm	3.0 mm

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.

	FRONT	REAR
COLD INFLATION TIRE PRESSURE	150 kPa 1.50 kg/cm^2	175 kPa 1.75 kg/cm^2





WARNING:

The standard tire fitted on this motorcycle is 2.50-21 4PR for front and 3.00-18 4PR for rear.

The use of a tire other than the standard may cause instability. It is highly recommended to use a SUZUKI Genuine Tire.

STEERING

Inspect Initial 1 000 km (1 month) and Every 3 000 km (3 months)

Steering should be adjusted properly for smooth manipulation of handlebars and safe running. Too stiff steering prevents smooth manipulation of handlebars and too loose steering will cause poor stability.
Check to see that there is no play in the steering bearings.

If any play can be found, adjust the steering as follows:

- Support the motorcycle body and jack up the front wheel.
- Remove the radiator cover.
- Detach the fuel tank.
- Loosen the handlebars set bolts and take off the handlebar and ignition switch.
- Loosen the steering stem head bolt.
- Tighten or loosen the steering stem nut ① by using the special tool ② so that the handlebars move smoothly.

09910 - 60611	Steering stem nut wrench

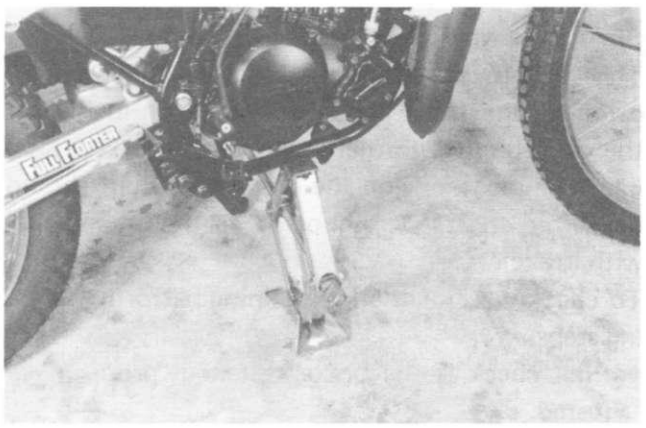
NOTE:
Tighten the steering stem nut so that the handlebar pivots freely by its own weight.

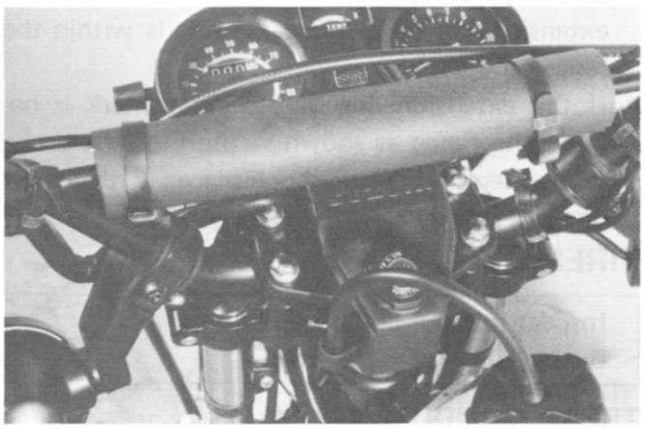
Tighten the steering stem head bolt.

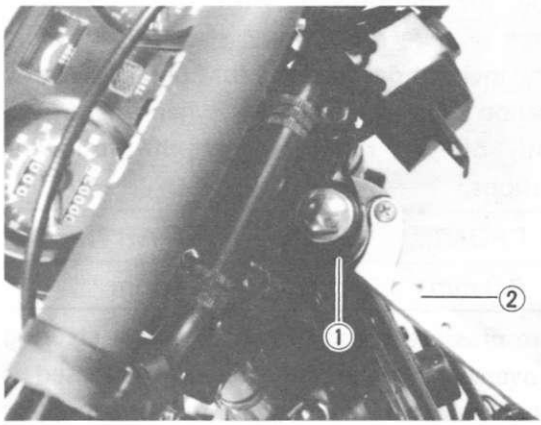
Tightening torque	35 – 55 N·m (3.5 – 5.5 kg-m)

If any play is still found, inspect the following items and replace the affected parts, if necessary.

- Wear of inner or outer races.
- Wear of damage of steel balls.
- Number of steel balls.
- Distortion of steering stem.







Number of balls

Upper	22 pcs
Lower	18 pcs

FRONT FORK OIL

Change Initial 1 000 km (1 month) and Every 3 000 km (3 months)

- Support the motorcycle by using the jack or block.
- Remove the handlebars and ignition switch.
- Take off the front fork cap.
- Loosen the drain plug.
- Drain the front fork oil completely and retighten the drain plug.
- Pour specified amount of oil from the top of the inner tube.

Specified amount (each leg)	150.6 ml

Fork oil type	Fork oil # 10

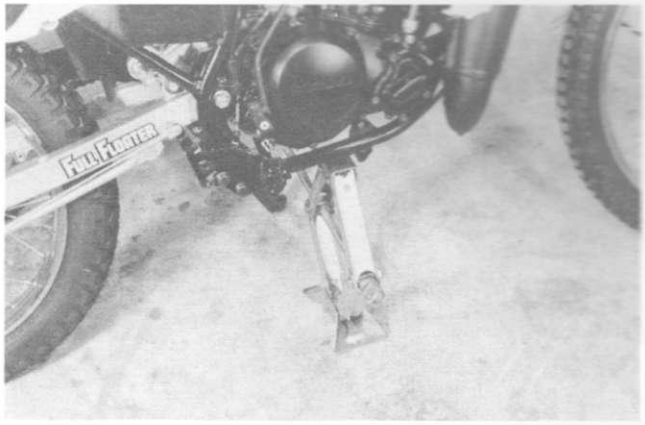
- Tighten the handlebars clamp bolts.

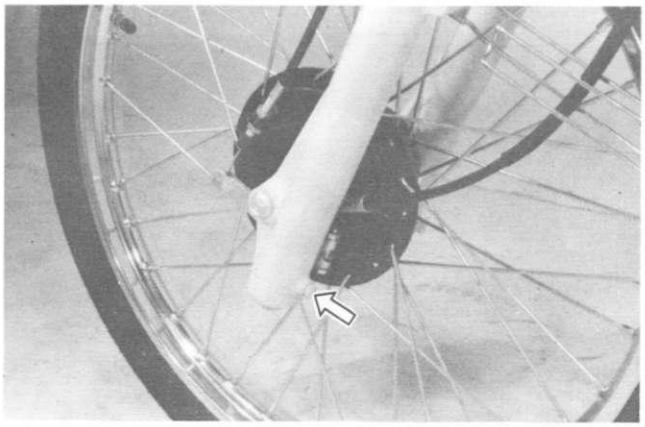
Tightening torque	12 – 20 N·m (1.2 – 2.0 kg-m)

CHASSIS BOLTS AND NUTS

Inspect Initial 1 000 km (1 month) and Every 3 000 km (3 months)

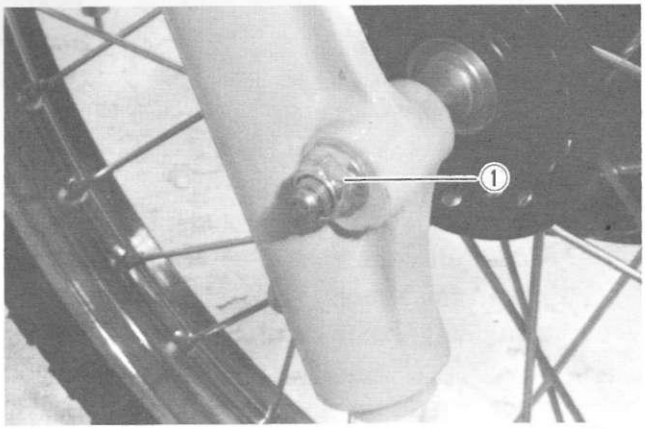
The nuts and bolts listed are important parts, and they must be in good condition for safety. They must be retightened, as necessary, to the specified torque with torque wrench.

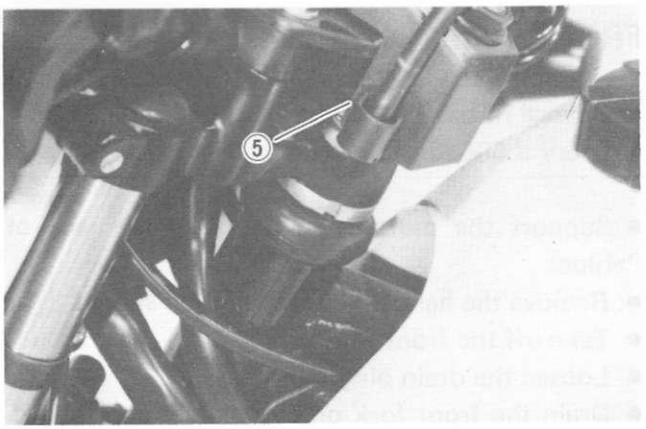


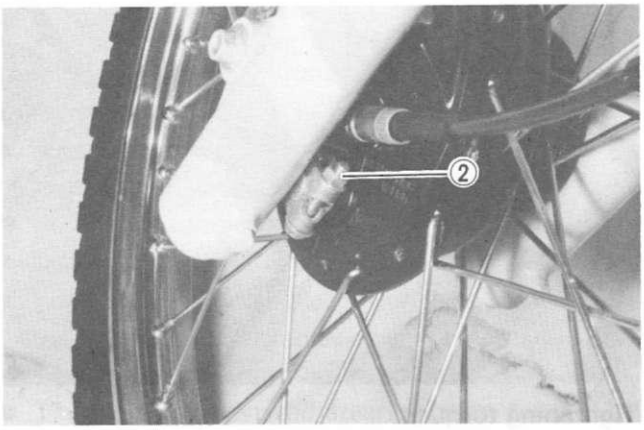


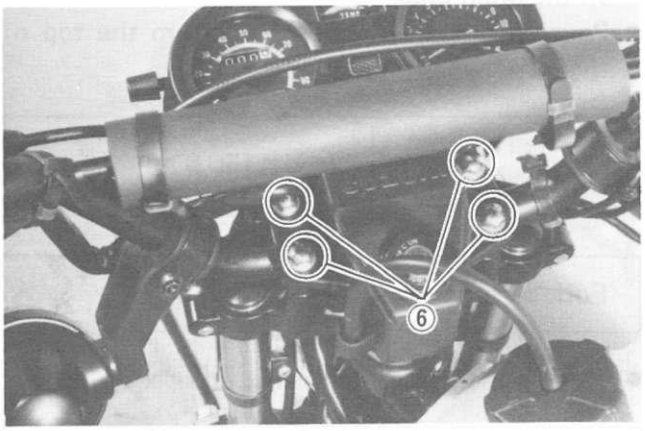
Tightening torque

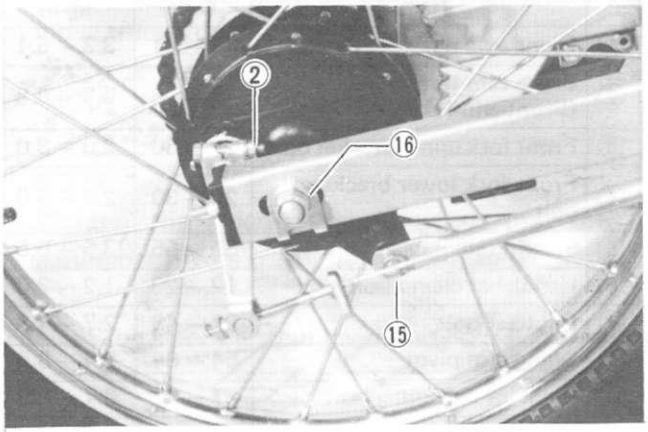
	Item	N·m	kg-m
①	Front axle nut	33 – 51	3.3 – 5.1
②	Brake cam lever bolts (Front and Rear)	5 – 8	0.5 – 0.8
③	Front fork upper bracket bolt	20 – 30	2.0 – 3.0
④	Front fork lower bracket bolt	20 – 30	2.0 – 3.0
⑤	Steering stem head bolt	35 – 55	3.5 – 5.5
⑥	Handlebar clamp bolt	12 – 20	1.2 – 2.0
⑦	Footrest bolt	27 – 43	2.7 – 4.3
⑧	Swing arm pivot	54 – 84	5.4 – 8.4
⑨	Radiator mounting bolt	7 – 9	0.7 – 0.9
⑩	Rear shock absorber upper bolt	40 – 60	4.0 – 6.0
⑪	Cushion lever holder bolt	18 – 28	1.8 – 2.8
⑫	Cushion lever bolt	40 – 60	4.0 – 6.0
⑬	Rear shock absorber lower bolt	40 – 60	4.0 – 6.0
⑭	Cushion lever rod bolt	18 – 28	1.8 – 2.8
⑮	Torque link bolt	10 – 15	1.0 – 1.5
⑯	Rear axle nut	40 – 57	4.0 – 5.7
⑰	Muffler mounting bolt	10 – 16	1.0 – 1.6
⑱	Cushion lever center bolt	40 – 60	4.0 – 6.0
⑲	Exhaust pipe mounting bolt	4 – 7	0.4 – 0.7

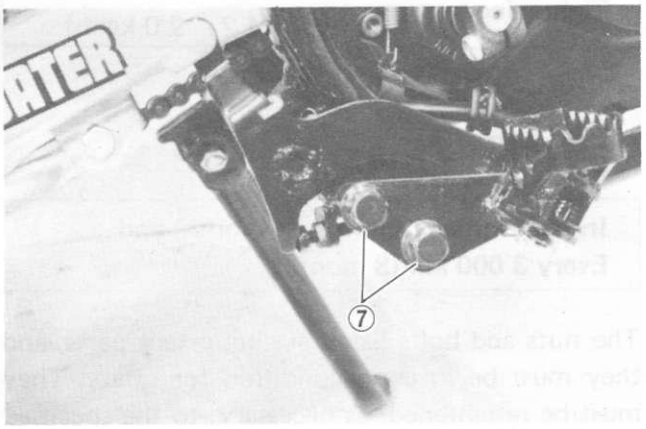

1

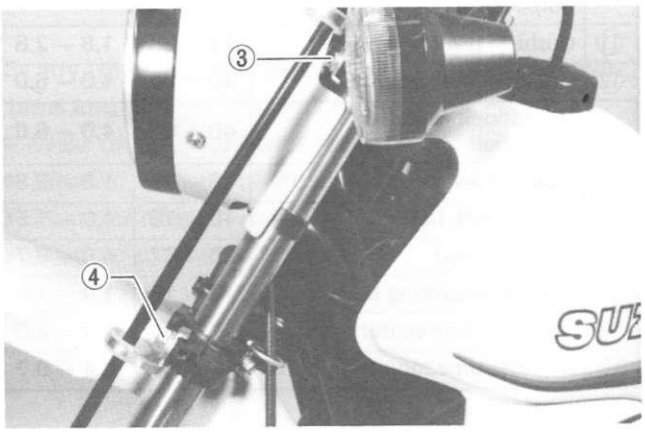

5

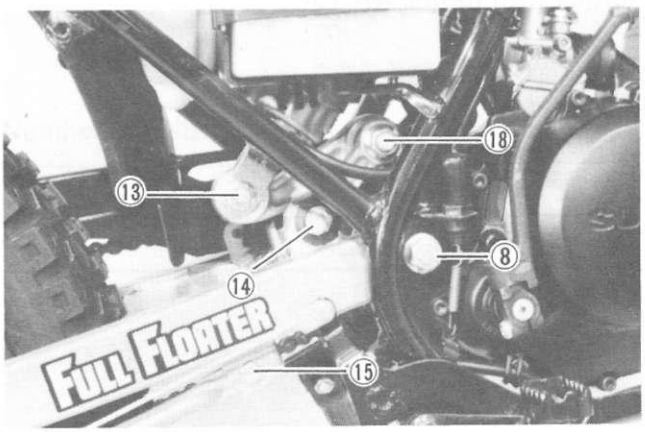

2

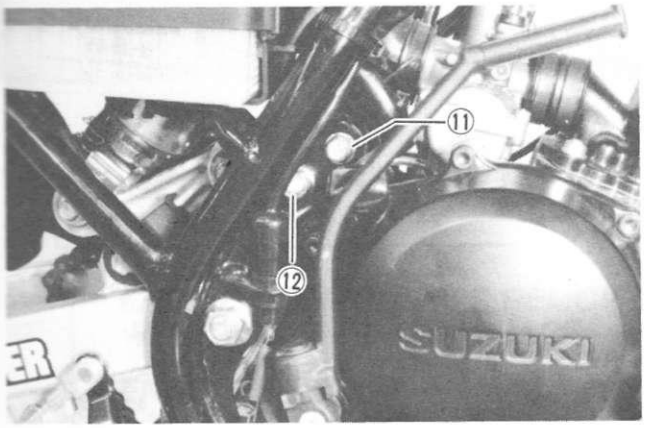

6

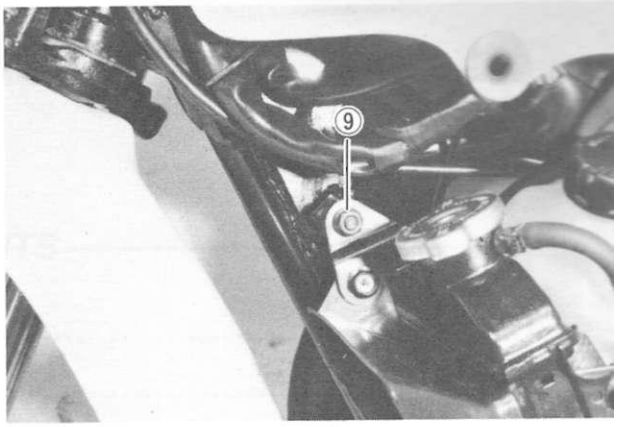

2
16
15

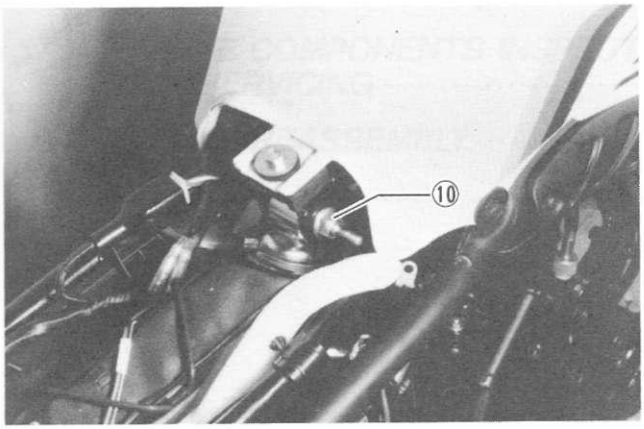

7

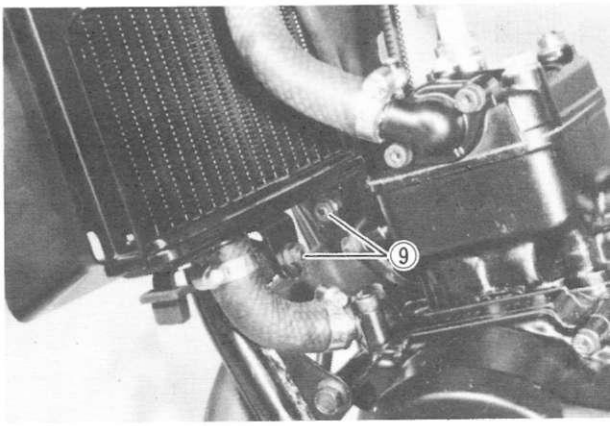

3
4

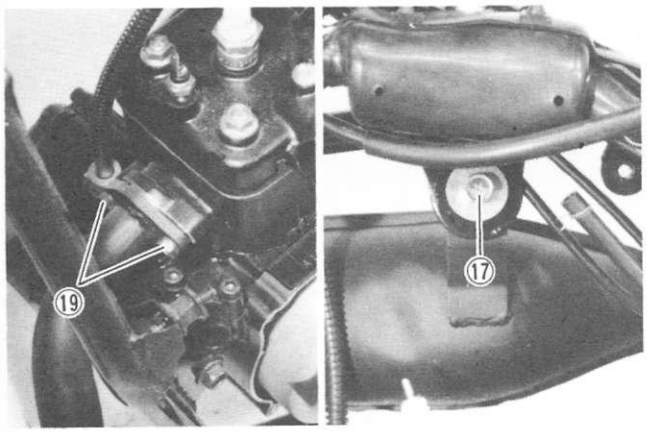

18
13
8
14
15

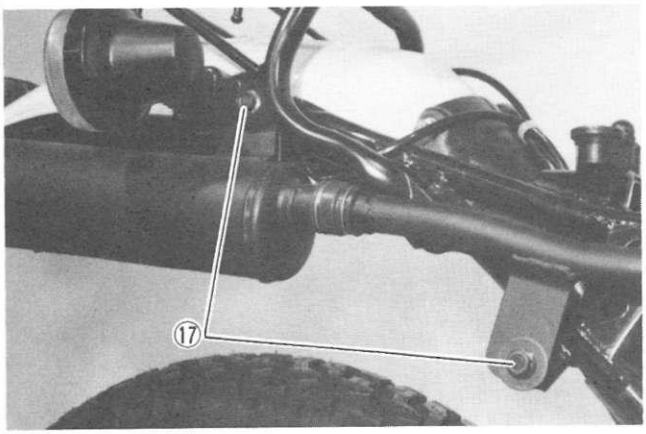

⑪
⑫
SUZUKI


⑨


⑩


⑨


⑲
⑰


⑰

SERVICING ENGINE

CONTENTS

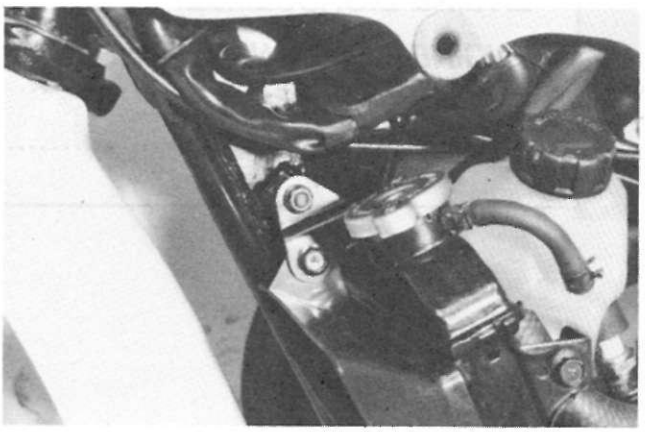
ENGINE COMPONENTS REMOVAL WITH THE ENGINE IN PLACE

These parts and components can be removed for servicing without dismounting the engine as a whole.

Water pump
Cylinder head, Cylinder, piston
Clutch
Primary gear
Kick starter gear, etc.
Oil pump
Magneto
Gear shift shafts etc.

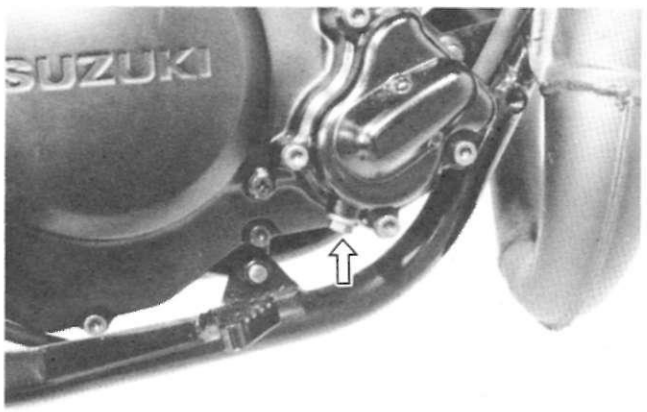
ENGINE REMOVAL

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



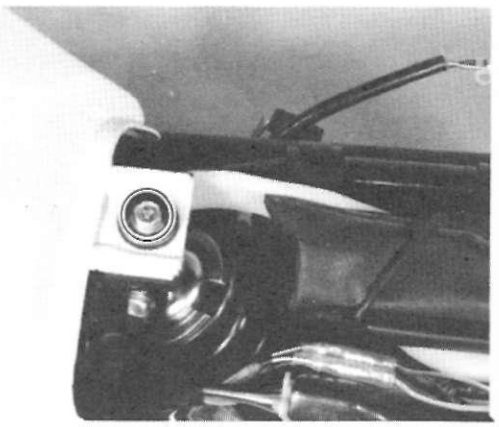
- Support the motorcycle by using jack or block.
- Take off the radiator cover.
- Remove the radiator cap.

WARNING:
Do not remove the radiator cap when engine is still hot. Wait until it is cools down.



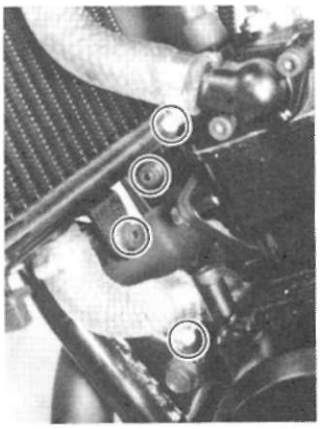
- Remove the drain plug and drain the cooling solution.

- Remove the seat and frame cover (right and left).
- Loosen the fuel tank mounting bolt.

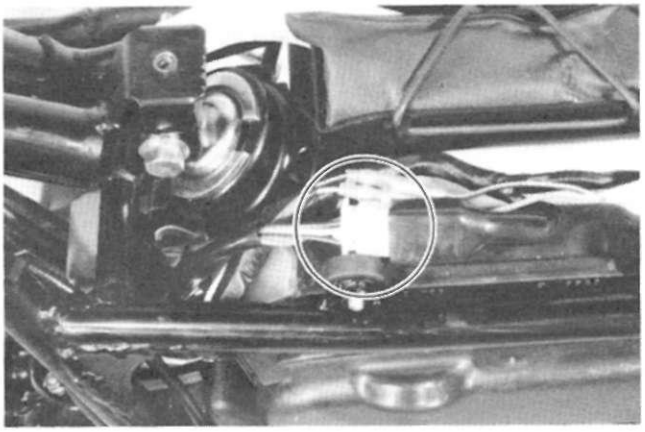


- Turn the fuelcock "ON" or "RES" position.
- Disconnect the fuel hose.
- Remove the fuel tank.

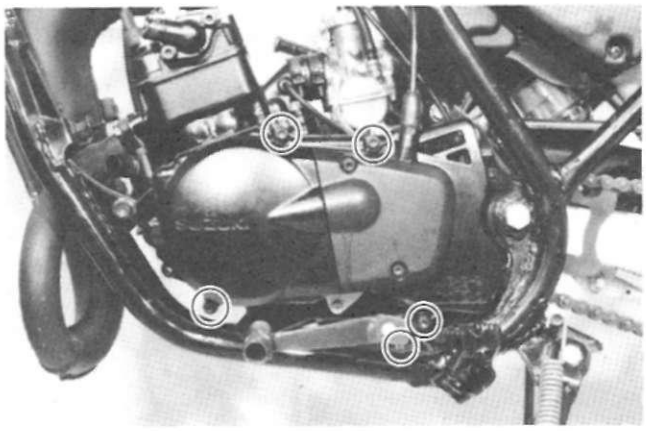
- Loosen the radiator mounting nuts holding with open end wrench and radiator hose clamp screw.
- Take off the radiator.



- Disconnect the magneto lead wire.

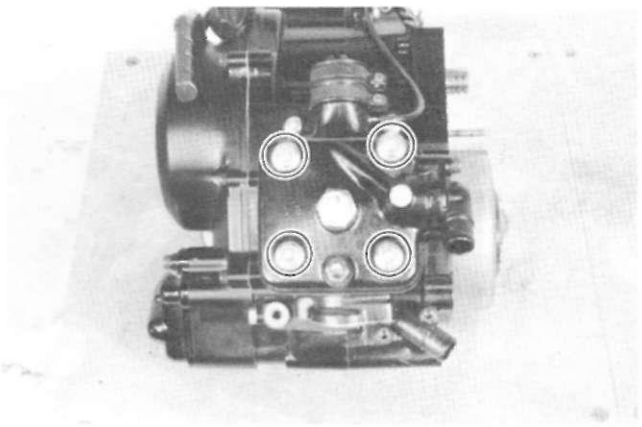


- Remove the magneto cover and gearshift lever.

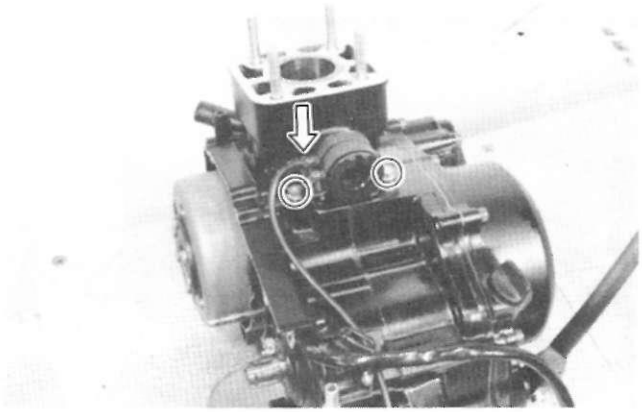


ENGINE DISASSEMBLY

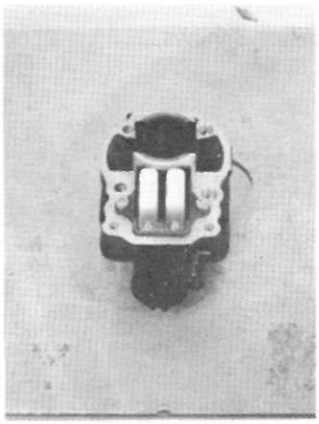
- Loosen the cylinder head nut and remove the cylinder head.

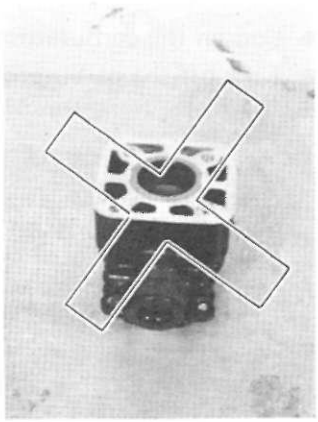


- Loosen the cylinder nut and disconnect the oil hose.
- Remove the cylinder.

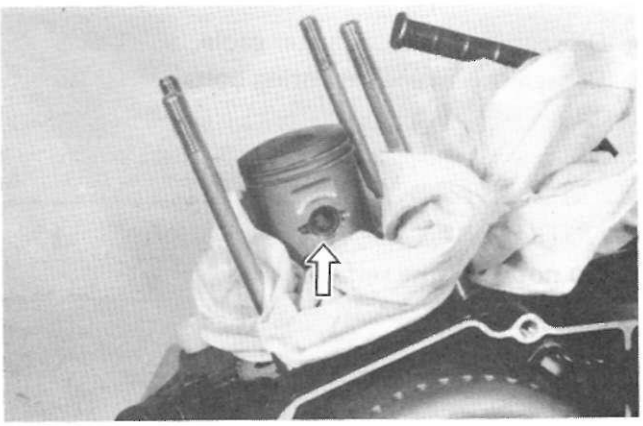


CAUTION:
Place the removed cylinders on the table upside down to prevent distortion of the reed valve stopper.



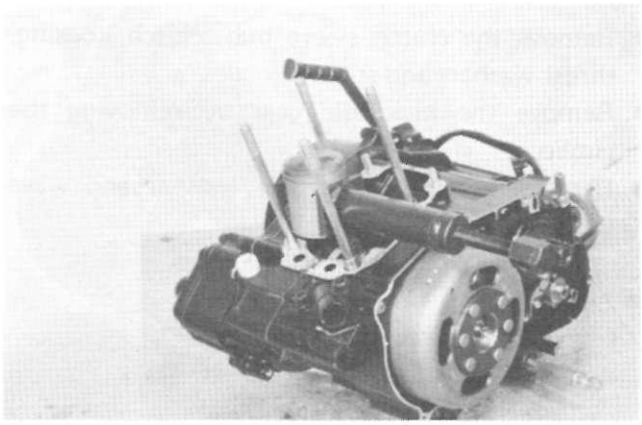


- Remove the piston pin circlip.



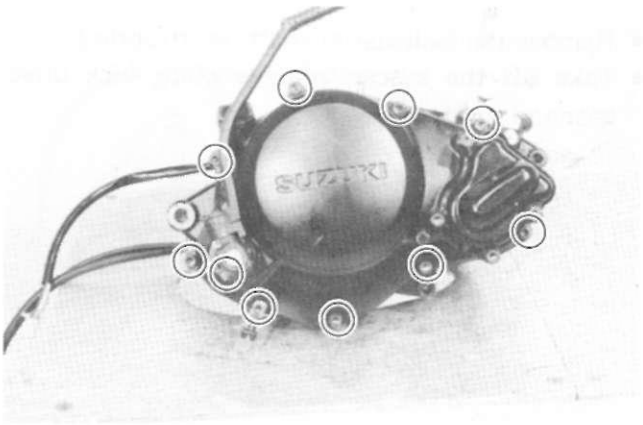
- Draw out the piston pin by using special tool.

09910 - 34510	Piston pin puller

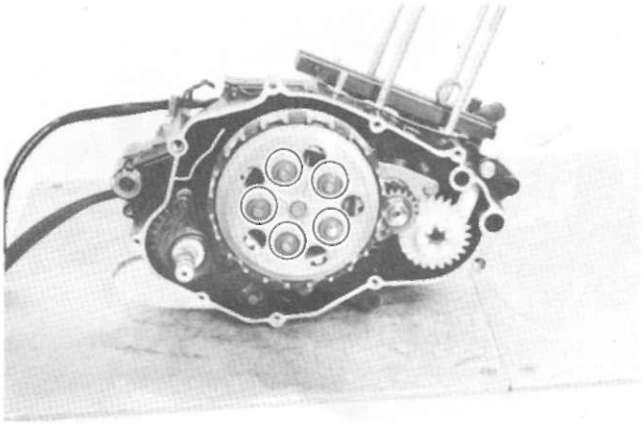


- Remove the clutch cover and kick starter lever.

NOTE:
Do not miss the dowel pin.

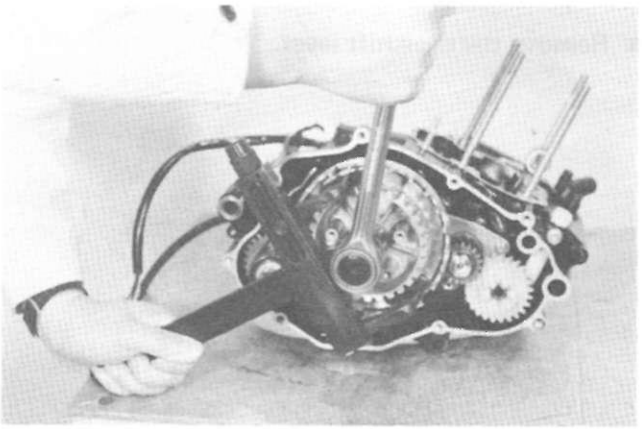


- Loosen the clutch pressure plate bolts by using the special tool.
- Take off the spring, pressure plate, drive plate, driven plate and push piece.



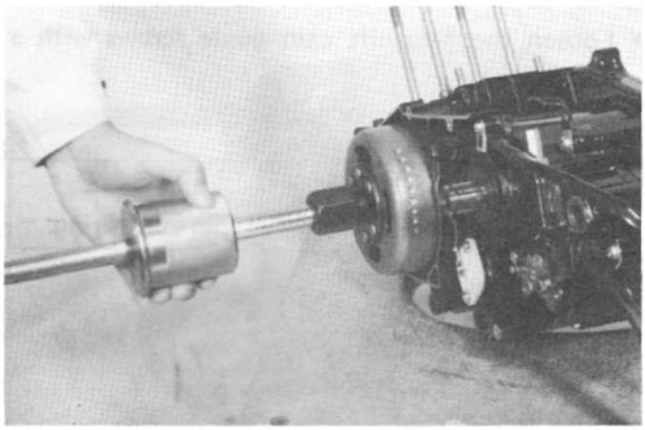
- Flatten the lock washer.
- Loosen the clutch sleeve hub nut by using the special tool.

09920 - 53710	Clutch sleeve hub holder

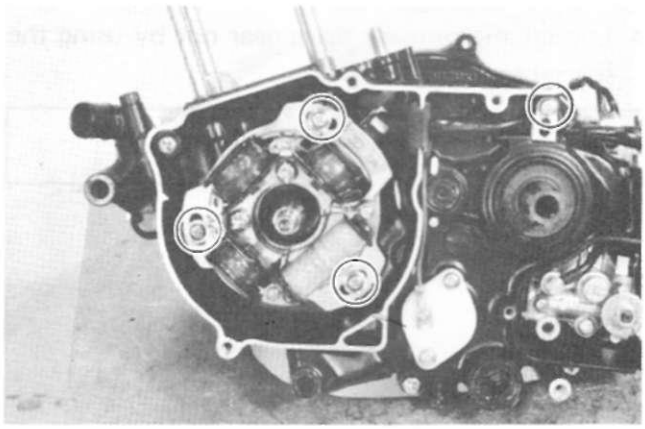


- Remove the rotor by using the special tool.

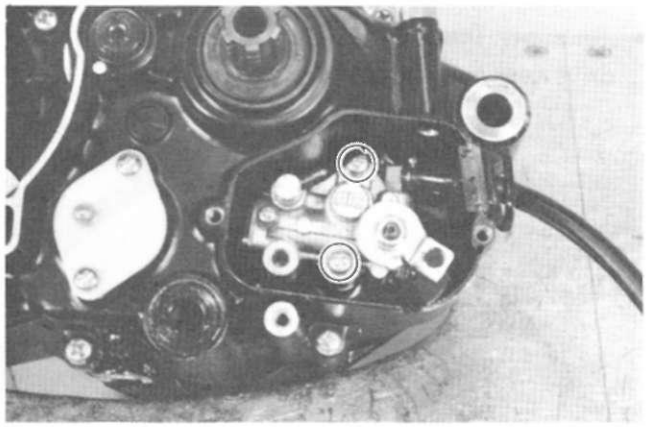
09930 - 30102	Sliding shaft
09930 - 30161	Attachment



- Remove the stator.

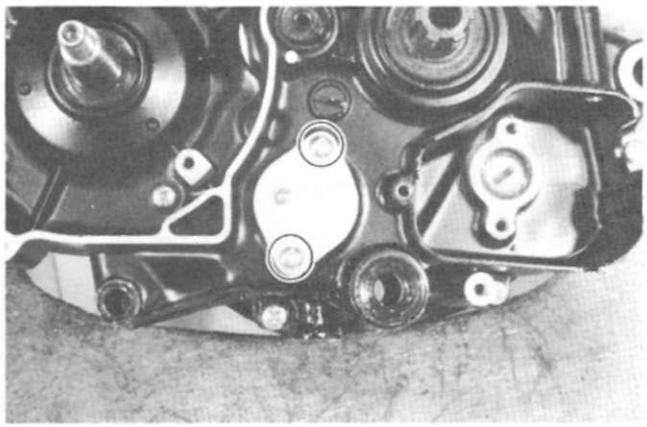


- Remove the oil pump.



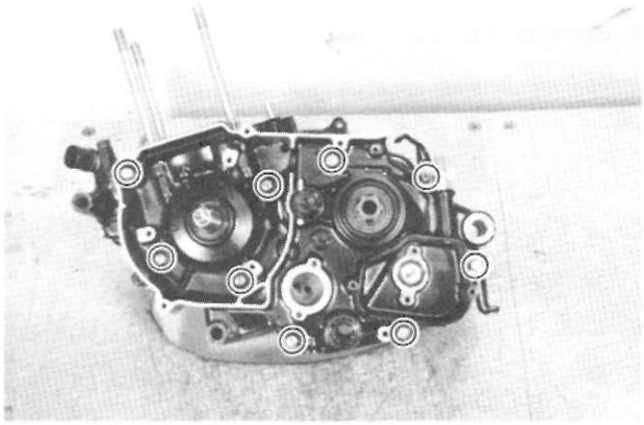
- Remove the neutral switch.

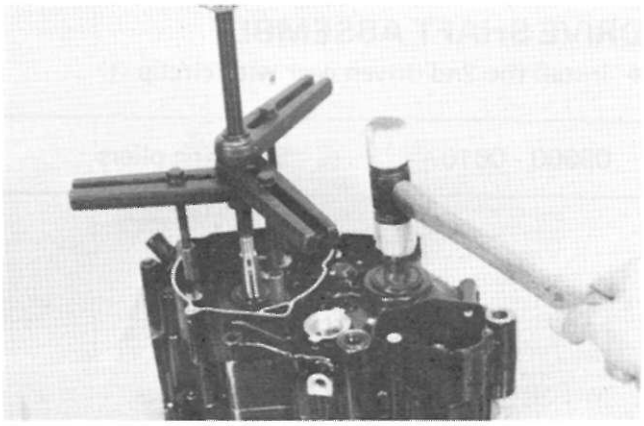
NOTE:
Do not lose the spring and the contact pin.



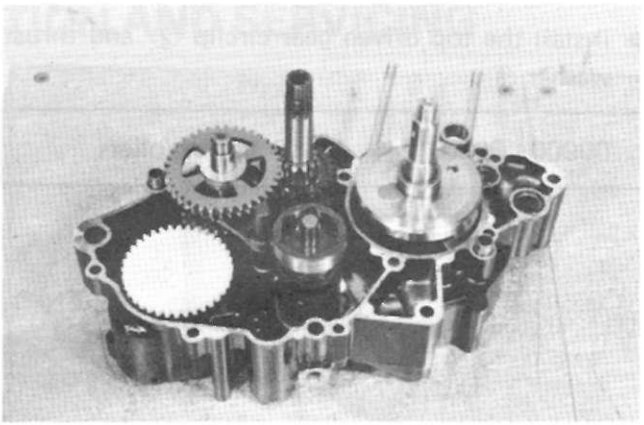
- Loosen the crankcase screws.
- Separate the crankcase by using the special tool.

09920 - 13120	Crankcase separator

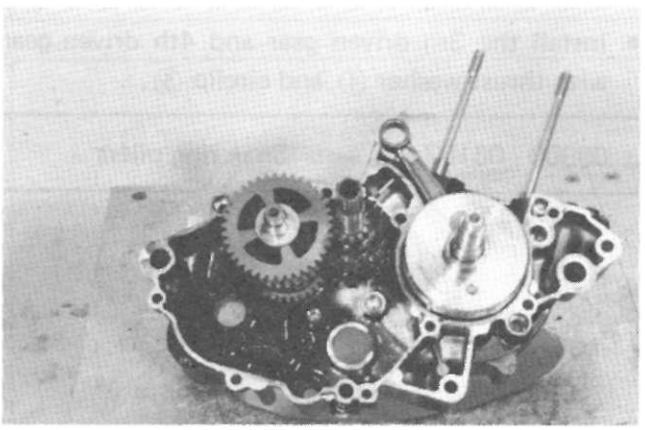




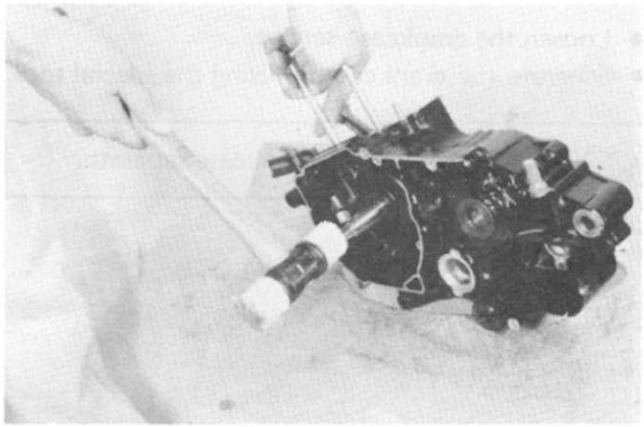
- Take off the oil pump drive gear.
- Remove the gear shift fork shaft, gear shift fork, gear shift cam, spring and neutral stopper.



- Remove the counter shaft and drive shaft.



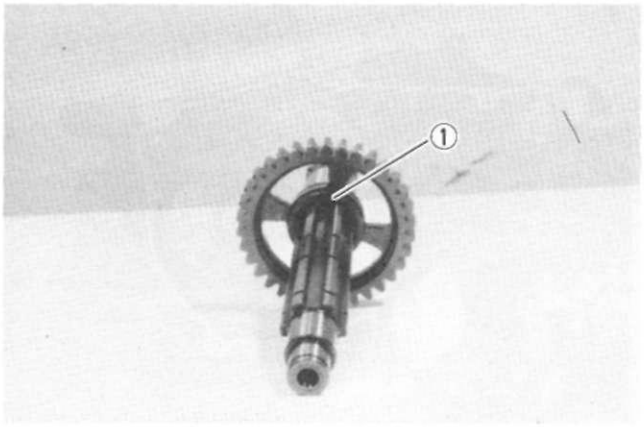
- Remove the crankshaft by hitting with plasctic hammer.



DRIVE SHAFT ASSEMBLY

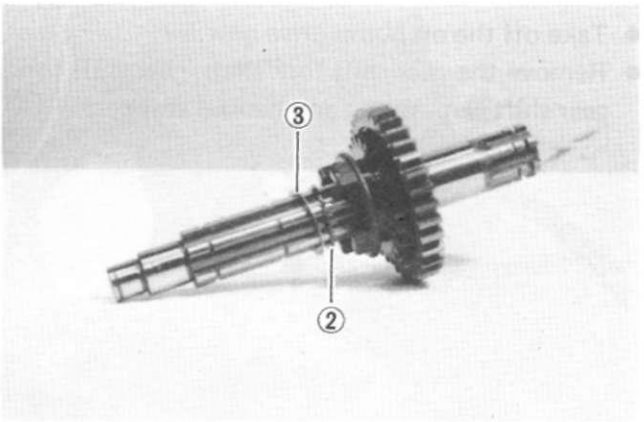
- Install the 2nd driven gear with circlip ① .

09900 - 06107	Snap ring pliers



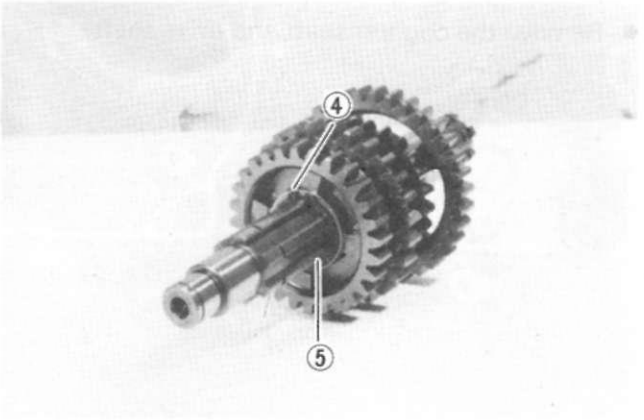
- Install the top driven gear circlip ② and thrust washer ③ .

09900 - 06107	Snap ring pliers



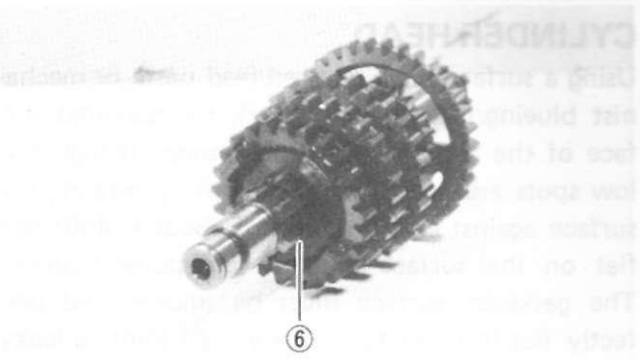
- Install the 3rd driven gear and 4th driven gear with thrust washer ④ and circlip ⑤ .

09900 - 06107	Snap ring pliers

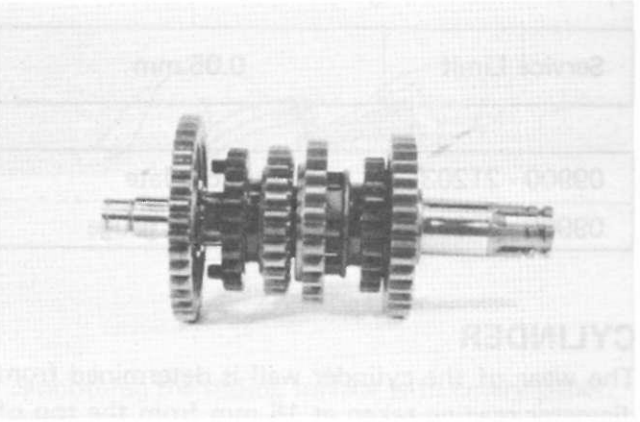


- Install the 5th driven gear and circlip ⑥.

09900 - 06107	Snap ring pliers



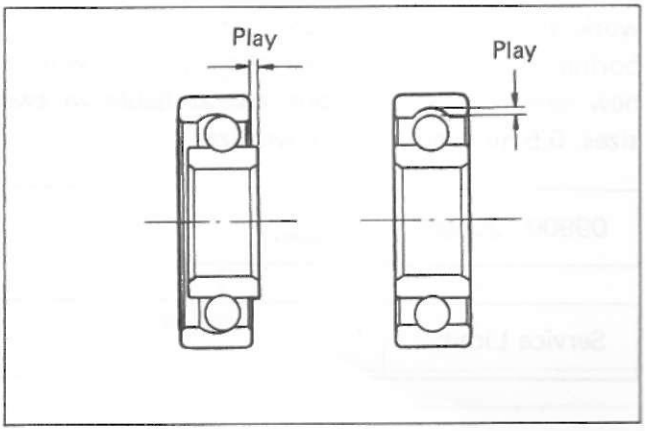
- Install the low driven gear and washer.



ENGINE COMPONENTS INSPECTION AND SERVICING

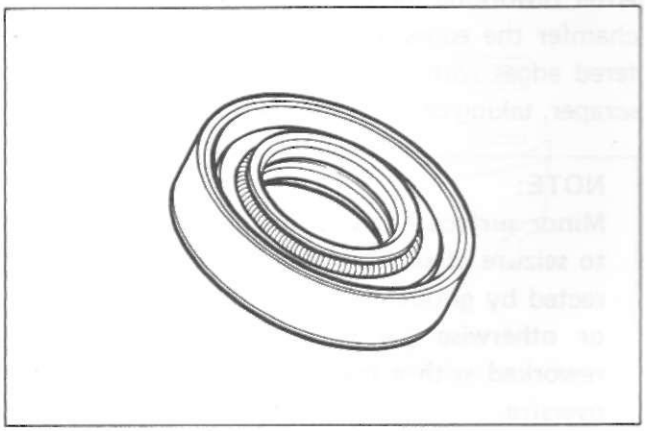
BEARINGS

Wash the bearing with cleaning solvent and lubricate with motor oil before inspecting.
Inspect the play of each bearing inner race by hand while fixing it in the crankcase.
Rotate the inner race by hand to inspect an abnormal noise and a smooth rotation. Replace the bearing if there is something unusual.



OIL SEALS

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



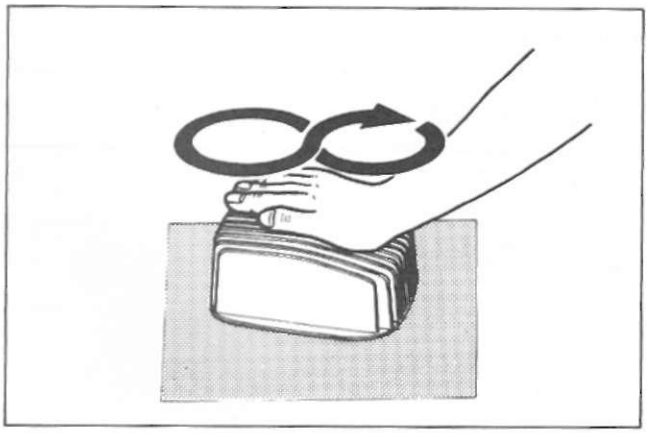
CYLINDER HEAD

Using a surface plate and red lead paste or mechanist blueing/making dye, check the gasketed surface of the cylinder head for flatness. If high and low spots are noted, remove them by rubbing the surface 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 head warpage

Service Limit	0.05 mm

09900 - 21203	Surface plate
09900 - 20806	Thickness gauge

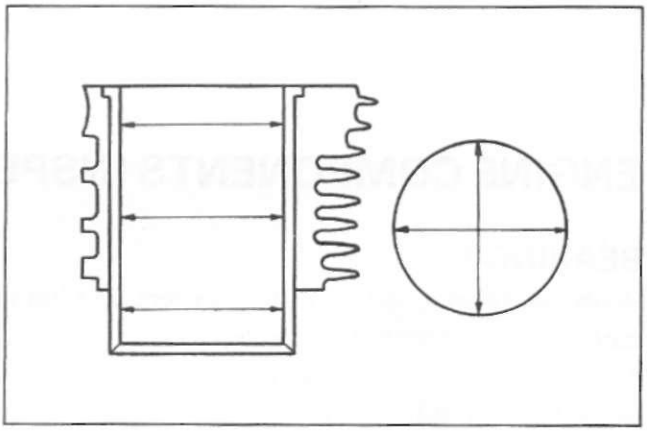


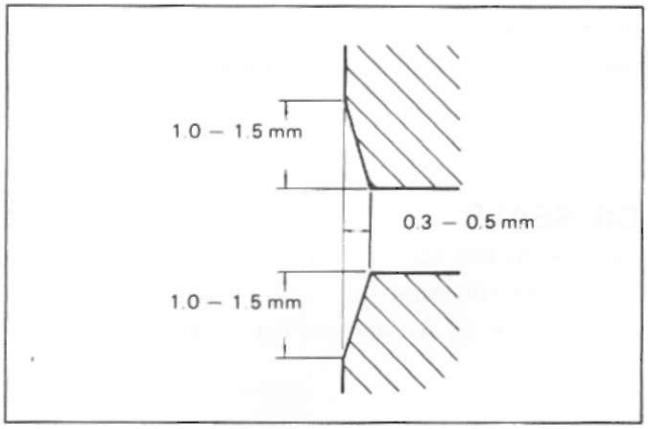
CYLINDER

The wear of the cylinder wall is determined from diameter reading taken at 15 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	41.090 mm





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

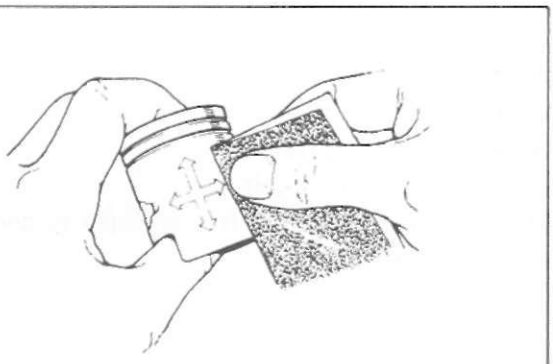
NOTE:
Minor surface flows on the cylinder wall due to seizure or similar abnormalities can be corrected by grinding the flaws are deep grooves or otherwise persist the cylinder must be reworked with a boring machine to the next oversize.

PISTON

De-carbon the piston and piston ring grooves, as shown in Fig. After cleaning the grooves, fit the ring and rotate them in their respective grooves to be sure that they move smoothly.

Carbon in the groove is liable to cause the piston ring to get stuck in the groove, and this condition will lead to reduced engine power output.

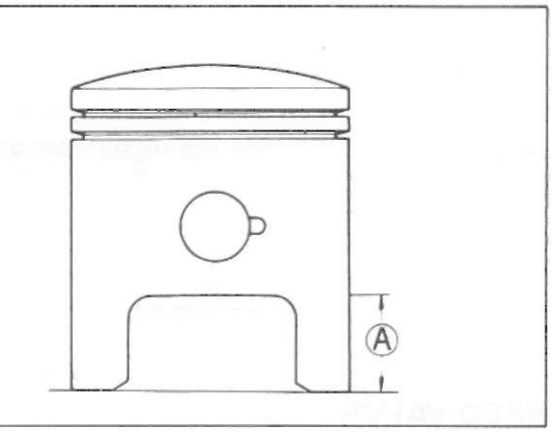
A piston whose sliding surface is badly grooved or scuffed due to overheating must be replaced. Shallow grooves or minor scuff can be removed by grinding with emery paper of about # 400.



Smoothing the sliding surface with emery paper.

Cylinder to piston clearance is the difference between piston diameter and bore diameter. Be sure to take the miked diameter at right angles to the piston pin. The value of elevation Ⓐ is prescribed to be 23 mm.

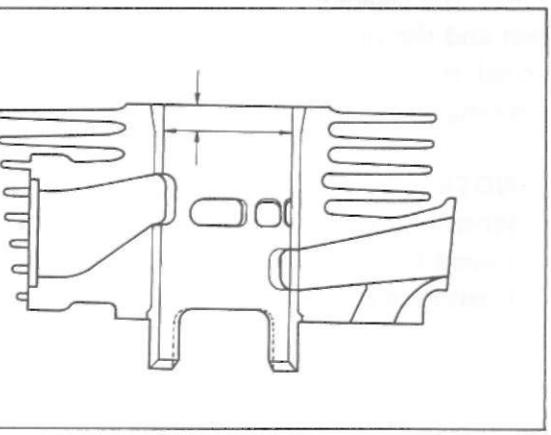
09900 - 20202	Micrometer



Piston diameter to cylinder to piston clearance determination. The measurement for the bore diameter will be made at Ⓑ 15 mm from the cylinder top surface.

Unit: mm

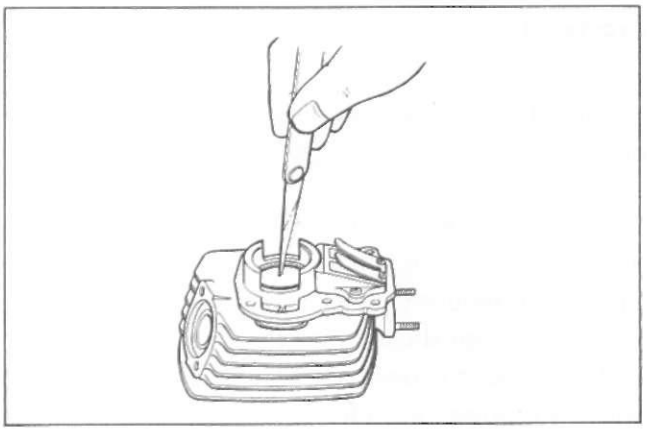
	STD	Limit
Cylinder bore	41.000 – 41.015	41.090
Piston diameter	40.955 – 40.970	40.880
Cylinder to piston	0.040 – 0.050	0.120



PISTON RINGS

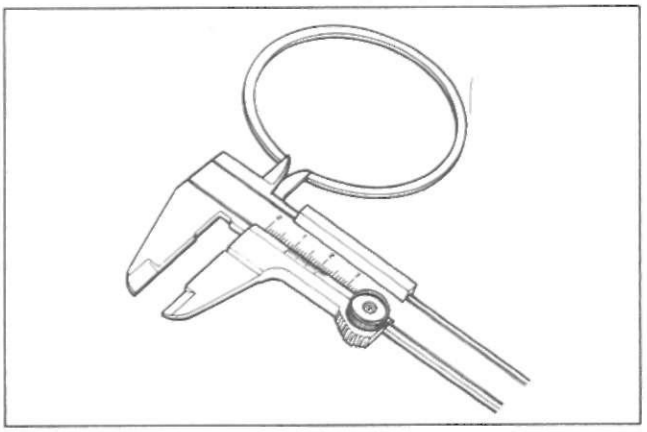
Check each ring for end gap, reading the gap with a thickness gauge (Part No. 09900-20803), as shown in Fig. If the end gap is found to exceed the limit, indicated below, replace it with a new one.
The end gap of each ring is to be measured with the ring fitted squarely into the cylinder bore and held at the least worn part near the cylinder bottom, as shown in Fig.

Service Limit	0.75 mm



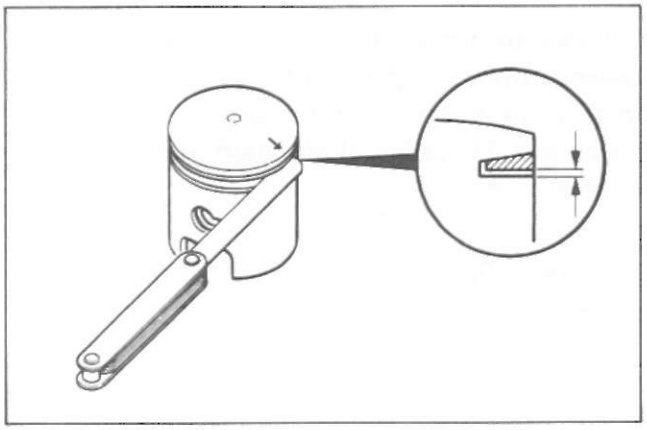
As the piston ring wears, its end gap increases reducing engine power output because of the resultant blow by through the enlarged gap.
Here lies the importance of using piston rings with end gaps within the limit.
Measure the piston ring free end gap to check the spring tension.

Mark	Service limit
"N" mark	2.4 mm
"T" mark	3.6 mm



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

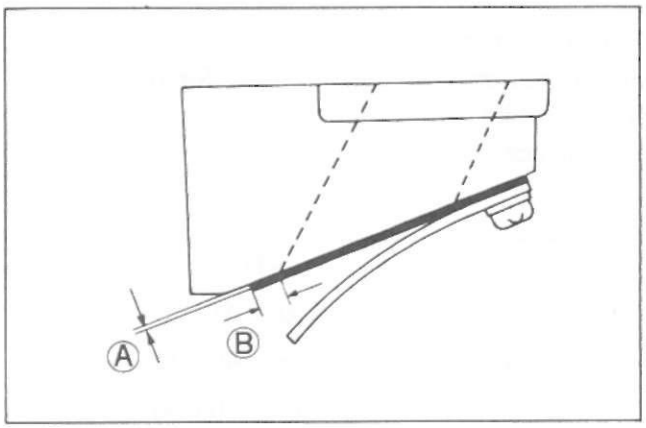
S.T.D.	0.02 – 0.06 mm



REED VALVE

Check the clearance Ⓐ between reed valve and its seat and the dimension Ⓑ. If the clearance Ⓐ is noted to exceed 0.2 mm, replace the reed valve flapping piece. The dimension Ⓑ is at least 1 mm.

NOTE:
When replacing the individual part, apply the thread lock cement to the screws and tighten it with the torque value 7 – 9 kg-cm.



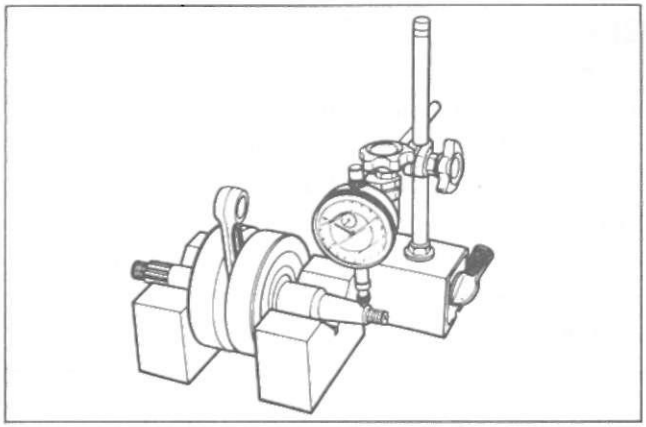
CRANK SHAFT

RUNOUT

Support the crankshaft with "V" blocks ①.
Mount the dial indicator ② at the positions shown to read the runout. Runout is total dial reading, and is specified to be within the following limit:

Service Limit	0.05 mm

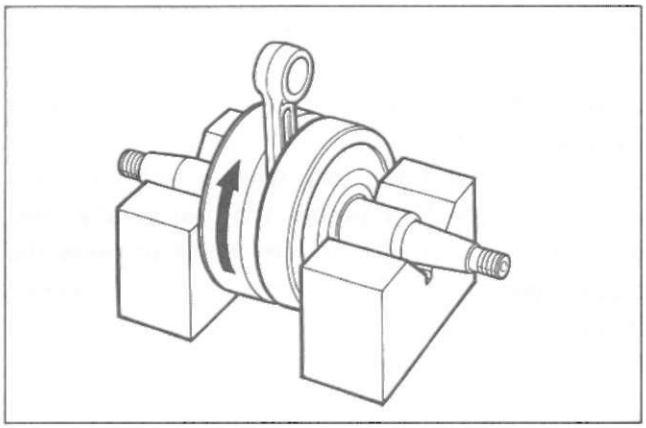
Excessive crankshaft runout is often responsible for abnormal engine vibration. Such vibration shortens engine life.



CONDITION OF BIG END BEARING

Turn the crankshaft with the connecting rod 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.

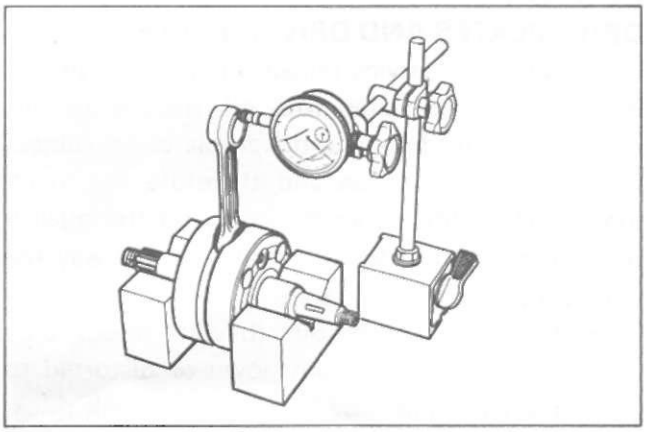
09900 - 21304	V-block set
09900 - 20606	Dial gauge (1/100)
09900 - 20701	Magnetic stand



Wear on the big end of 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, connecting rod, crank pin and crank pin bearing should all be replaced.

Service Limit	3 mm

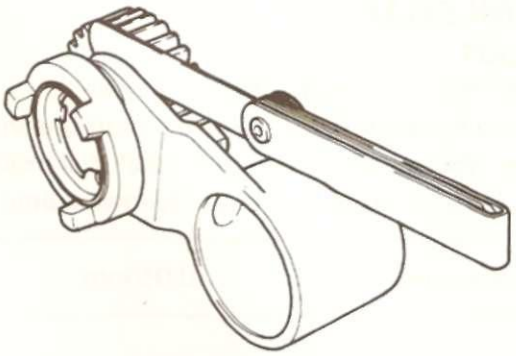


GEARS AND SHIFTING FORKS

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 shifting fork clearance in the groove of its gear.

09900 - 20804	Thickness gauge

This clearance for each of the three shifting forks plays an important role in the smoothness and positiveness of shifting action. Each fork has its prongs fittted 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.



Shifting fork clearance in the groove

Shift fork — groove clearance

		Service Limit
No. 1	for 2nd drive gear	0.50 mm
No. 2	for 5th driven gear	
No. 3	for top driven gear	

CLUTCH

DRIVE PLATES AND DRIVEN PLATES

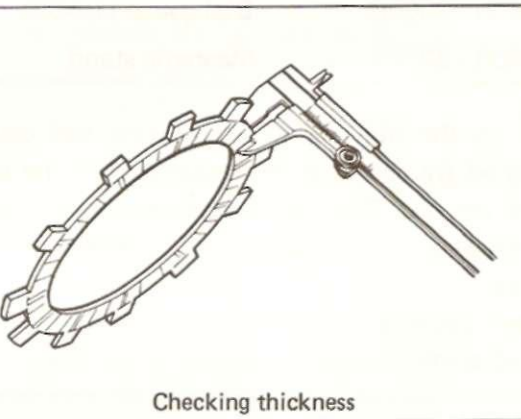
Clutch plates in service remain in oily condition as if they were lubricated with oil. Because of this condition, both drive and driven plates are subject to little wearing action and therefore last much longer. Their life depends largely on the quality of oil used in the clutch and also on the way the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

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

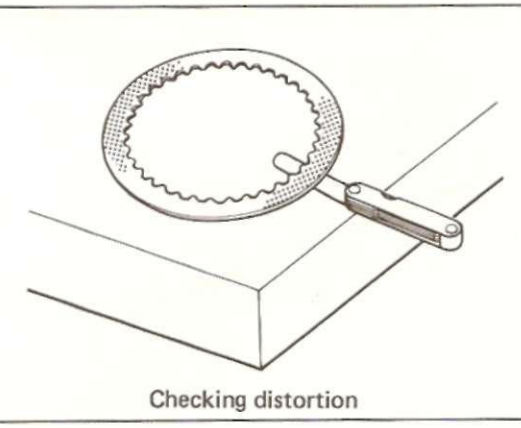
09900 - 21203	Surface plate
09900 - 20101	Vernier caliper
09900 - 20804	Thickness gauge

Unit: mm

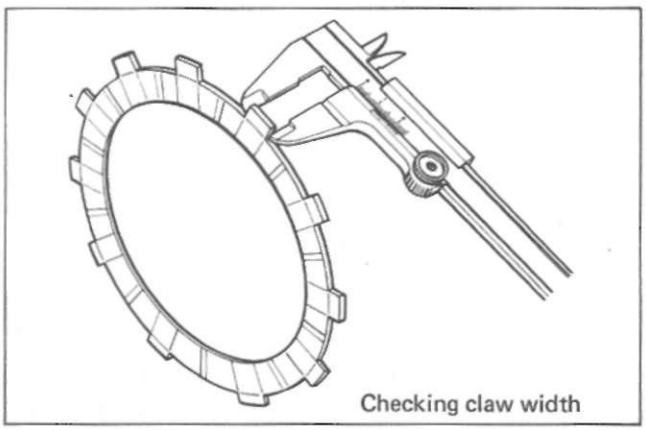
Service limit	Drive plate	Driven plate
Thickness	4.1	–
Distortion	–	0.10
Claw width	11.2	–



Checking thickness



Checking distortion


Checking claw width

CLUTCH SPRINGS

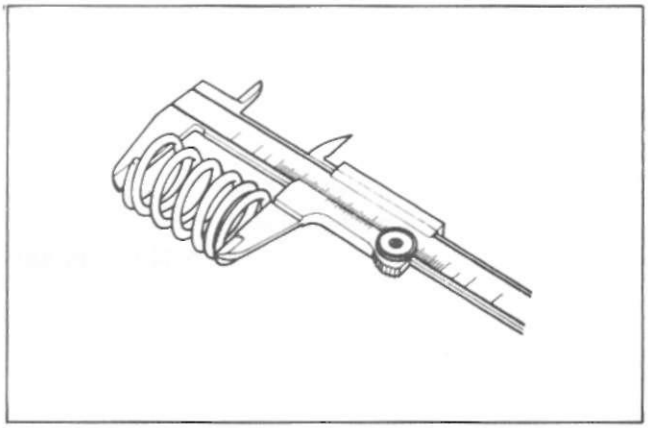
Clutch springs which have lost their tension also cause clutch slipping, resulting in loss of power and rapid wear of the clutch plates.

Remove the clutch springs and measure their free length with calipers.

Service Limit	33.6 mm

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

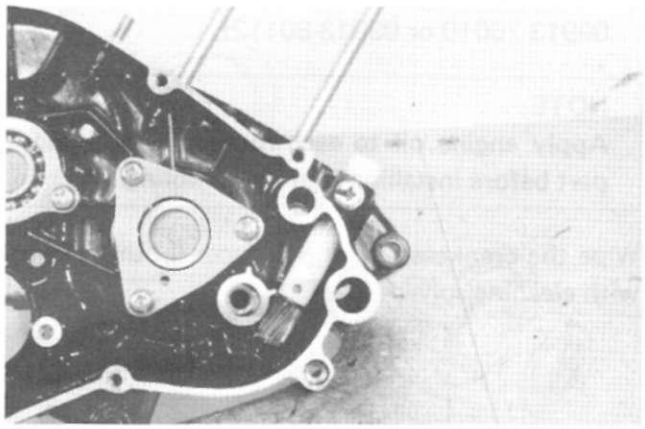
09900 - 20101	Vernier caliper

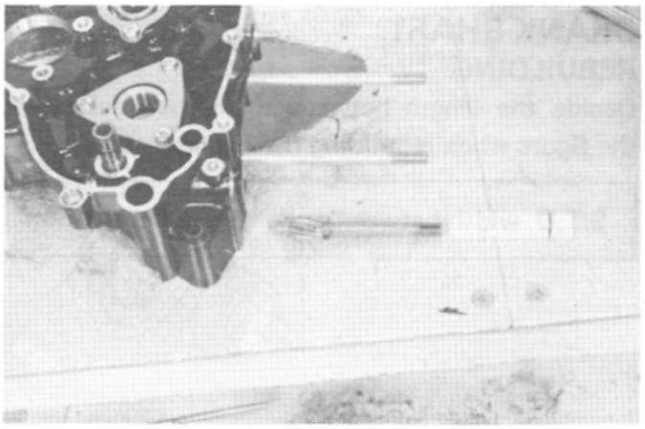


TACHOMETER DRIVE GEAR

- Loosen the tachometer drive gear retainer bolt.
- Pull out the tachometer drive gear.

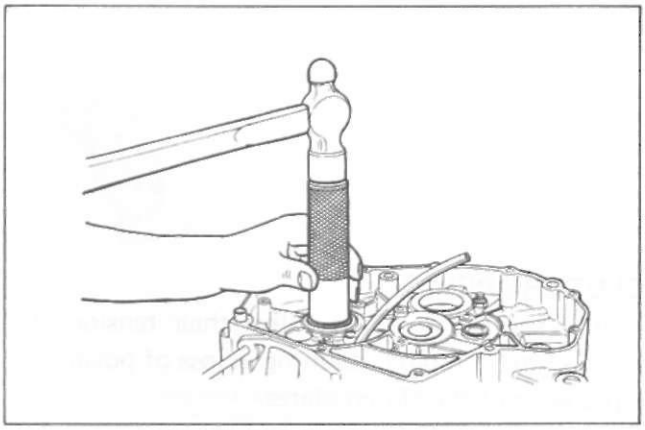
NOTE:
When reinstall the tachometer drive gear replace the O-ring with a new one.





ENGINE REASSEMBLY

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



BEARINGS

Insert the bearing into the crankcase using the special tool (Part No. 09913-70122, 09913-76010, 09913-80112 or 09914-79610). After the bearing is installed, be sure lubricate to prevent initial wear.

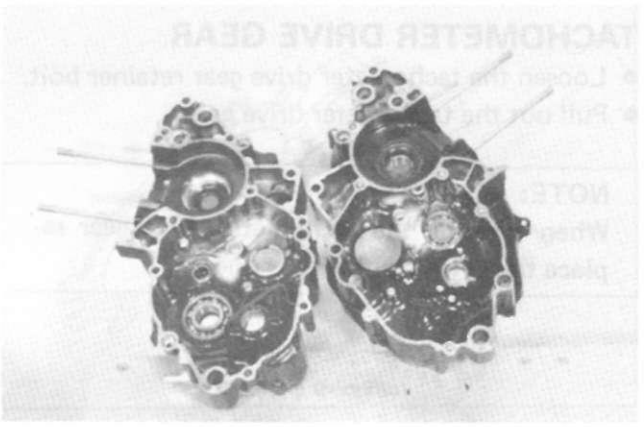
OIL SEALS

Fit the oil seals to the crankcase following the procedure below.

- Apply SUZUKI Super grease "A" (99000-25010) to the lip of the oil seal.
- Be sure to apply "Thread Lock 1342" (99000-32050) to the outer surfaces of right and left crankshaft oil seals, to prevent them from moving.
- When fitting the oil seal in the crankcase, insert it slowly using the special tool (09913-75820, 09913-76010 or 09913-80112).

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

Wipe the crankcase mating surfaces (both surfaces) with cleaning solvent.

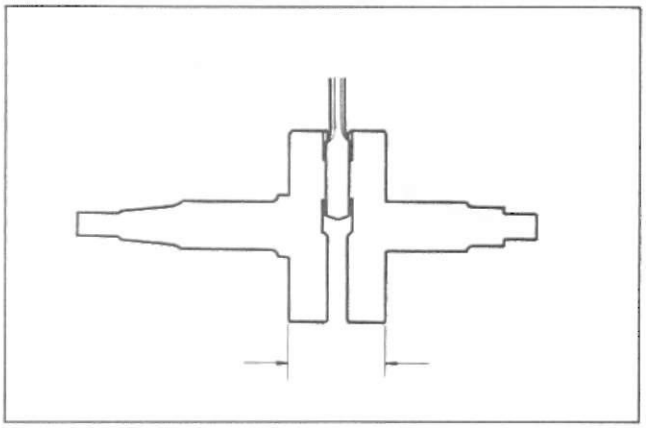


CRANK SHAFT

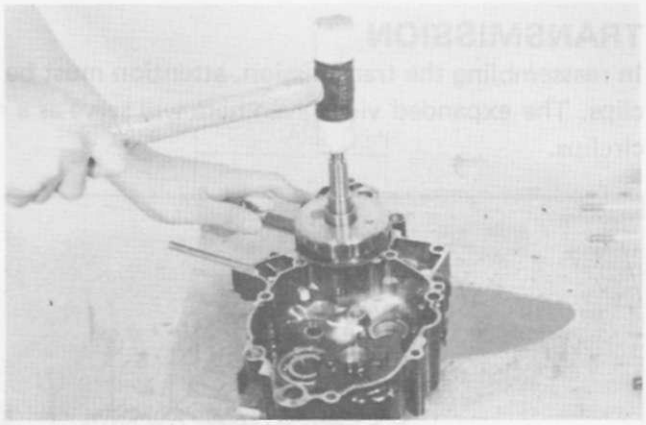
REBUILDING

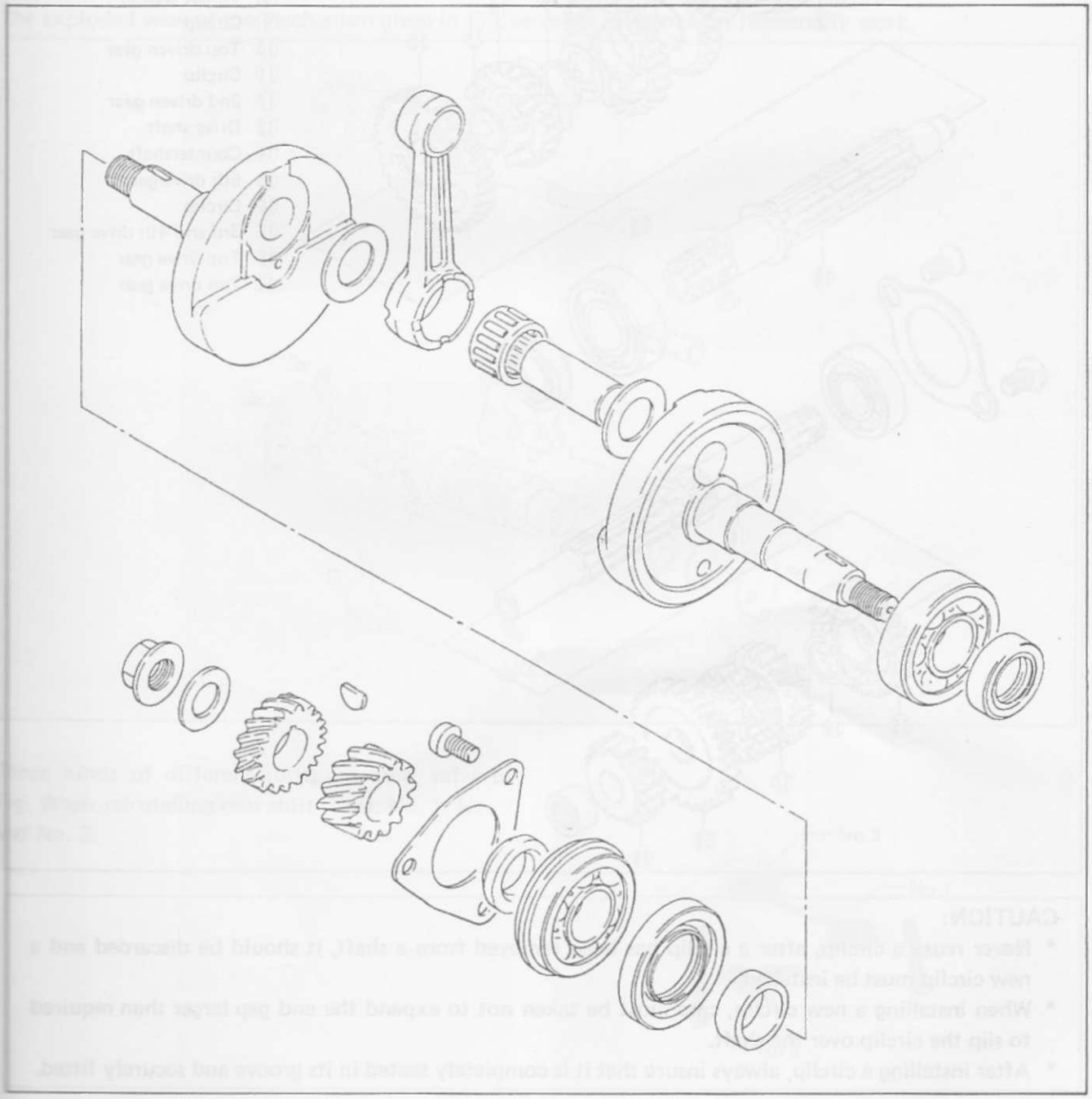
Decide the length between the webs referring to the figure when rebuilding the crankshaft.

S.T.D. width between webs	40.0 ± 0.1 mm



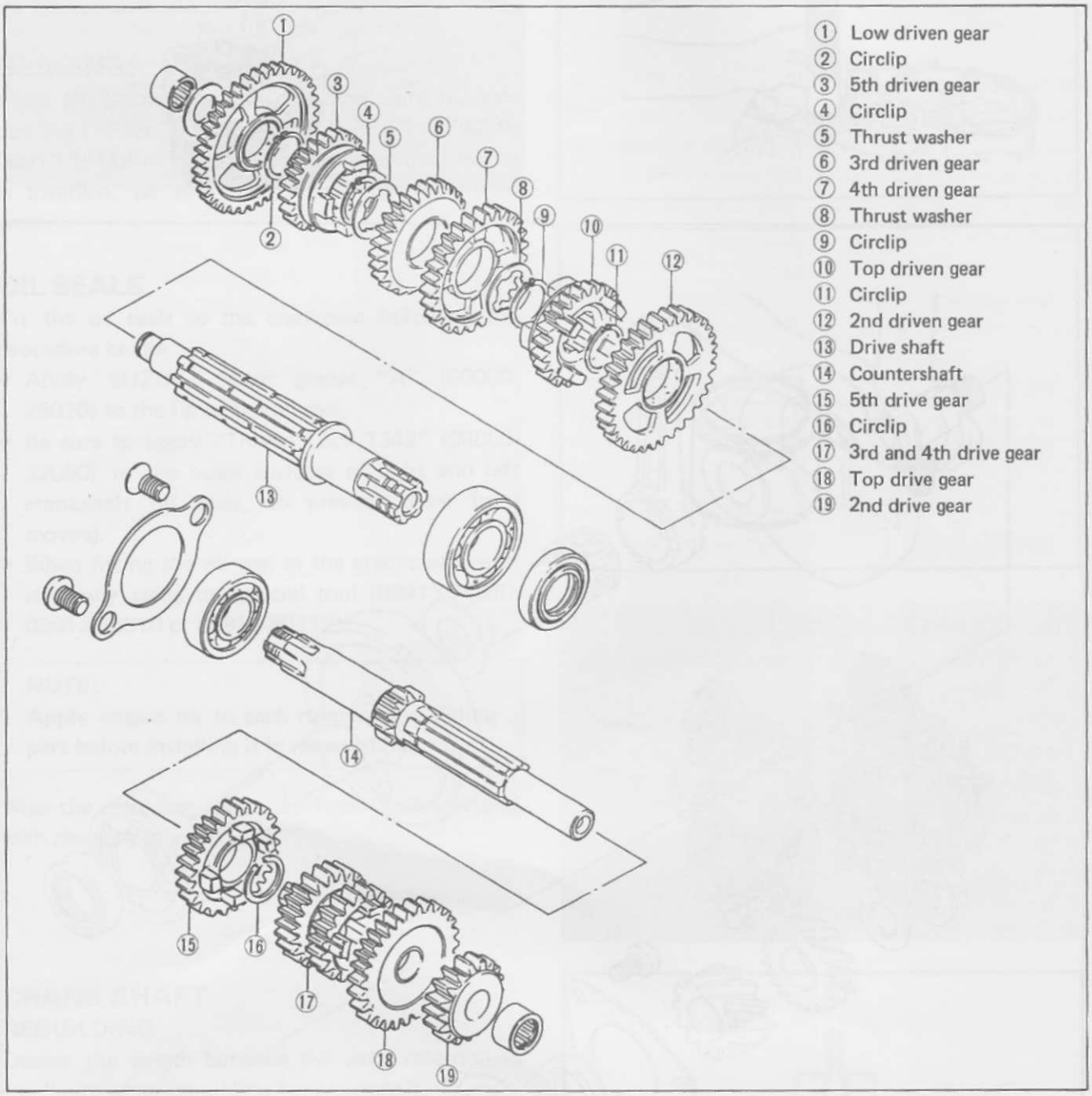
When mounting the crankshaft in the crankcase, it is necessary to drive its right end into the crankcase. Use a plastic or soft material hammer for the purpose.





TRANSMISSION

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



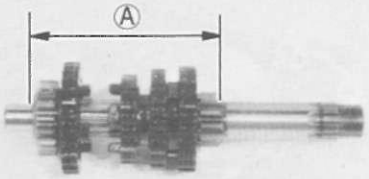
① Low driven gear
② Circlip
③ 5th driven gear
④ Circlip
⑤ Thrust washer
⑥ 3rd driven gear
⑦ 4th driven gear
⑧ Thrust washer
⑨ Circlip
⑩ Top driven gear
⑪ Circlip
⑫ 2nd driven gear
⑬ Drive shaft
⑭ Countershaft
⑮ 5th drive gear
⑯ Circlip
⑰ 3rd and 4th drive gear
⑱ Top drive gear
⑲ 2nd drive gear

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.**

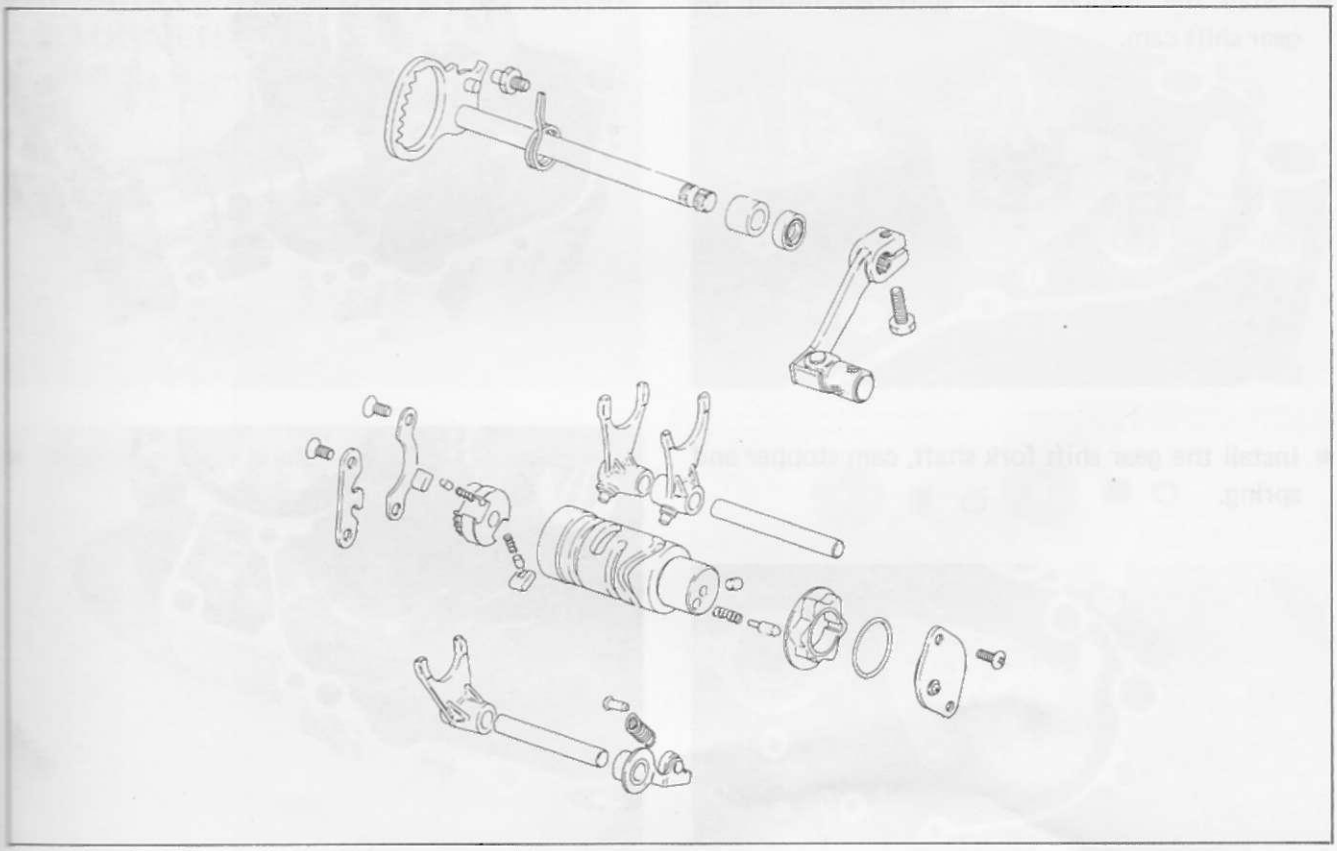
The 2nd drive gear ① has been press-fitted into the counter shaft. Remove it using a hydraulic press.
Before reassembling, coat the internal face of the 2nd drive gear with thread lock "1303B" and install so that the length Ⓐ is 84.5 – 84.6 mm.

S.T.D.	84.5 – 84.6 mm

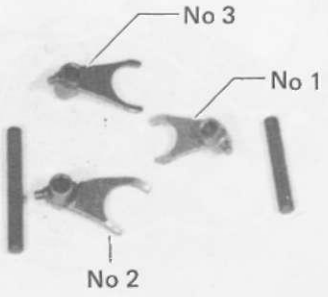


GEAR SHIFT MECHANISM

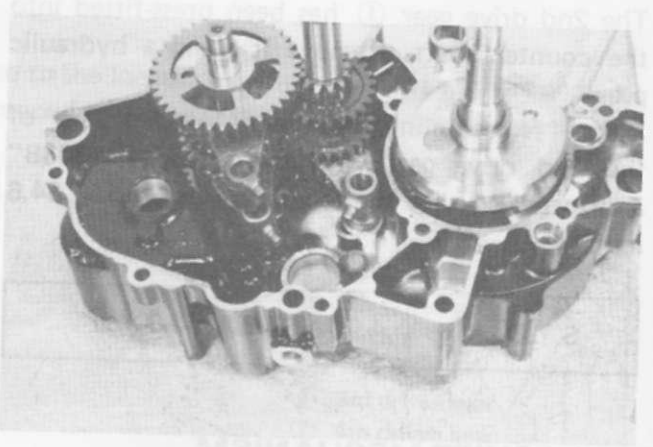
The exploded view of the mechanism given in Fig. serves as reference for reassembly work.



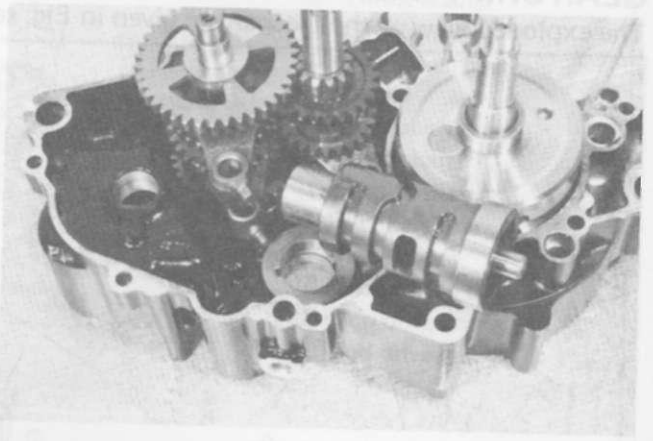
Three kinds of different forks are used, refer to Fig. When reinstalling gear shift forks; No. 1, No. 2 and No. 3.



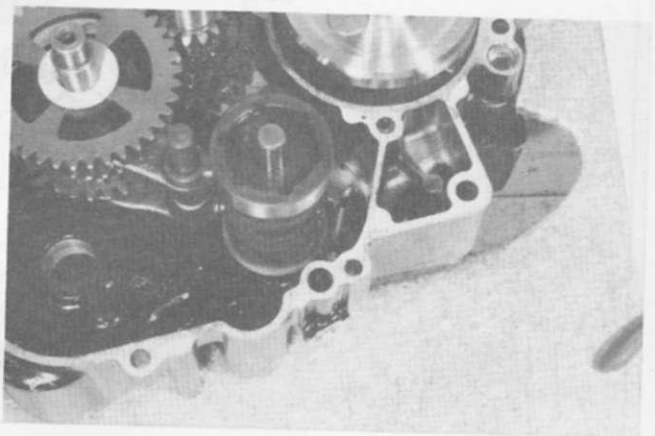
- Install the countershaft, drive gears, drive shaft, driven gears, shift forks and cam stopper.



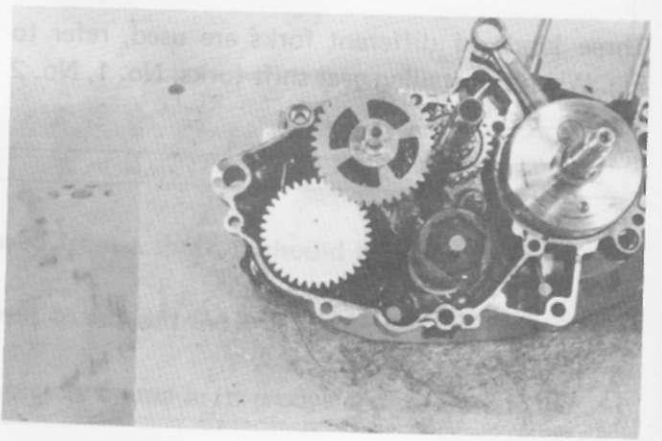
- Install the stopper plate and then install the gear shift cam.



- Install the gear shift fork shaft, cam stopper and spring.



- Install the oil pump drive gear.

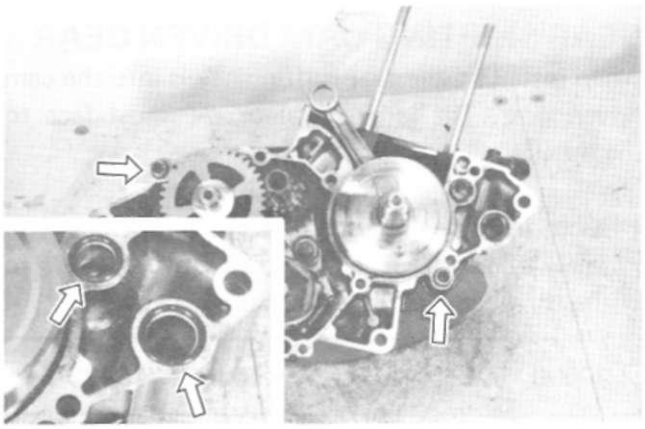


CRANK CASE

- Install the two O-ring and two dowel pins.
- Coat one of a pair with SUZUKI Bond No. 1207B, just before assembling the crankcase.

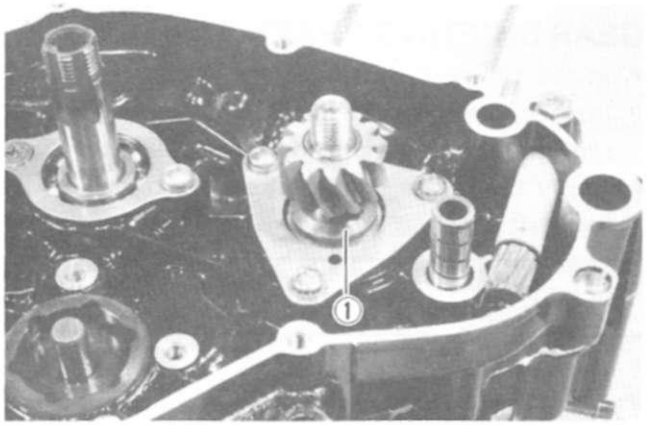
NOTE:
*** Spread on surface thinly to form and even layer and assemble the cases within few minutes.**

99000 - 31140	SUZUKI BOND NO. 1207B

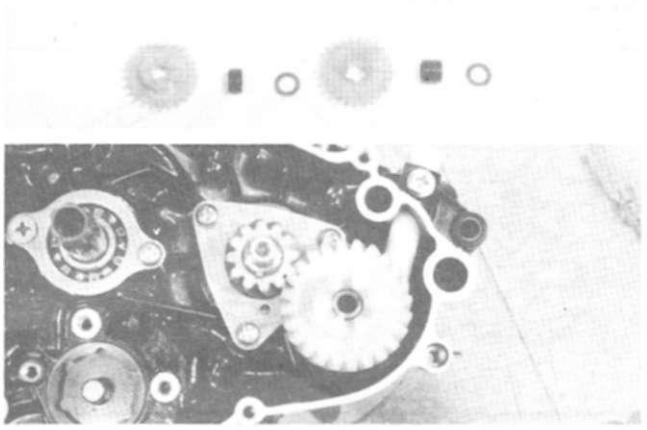


PRIMARY GEAR, WATER PUMP DRIVE AND DRIVEN GEAR

- Install the spacer ① and water pump drive gear.



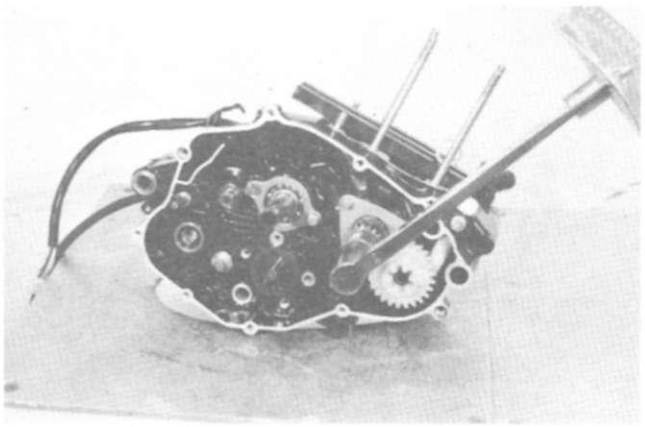
- Install the water pump driven gear assembly.



- Install the key, primary gear and nut.
- Tighten the primary gear nuts by using the special tool.

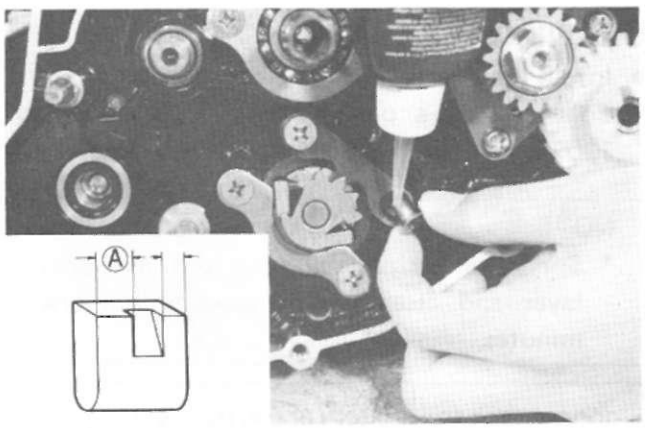
Tightening torque	40 – 60 N·m (4.0 – 6.0 kg-m)

09910 - 20116	Conrod stopper



GEAR SHIFTING CAM DRIVEN GEAR

When installing the gear shifting pawls into the cam driven gear. The large shoulder Ⓐ must face to the outside.

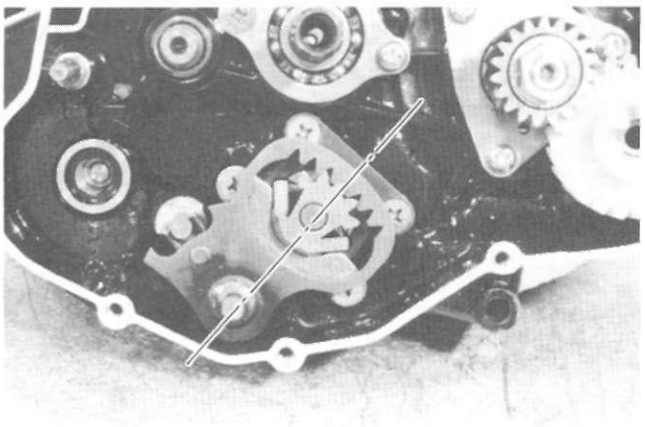


- Next, install cam guide and pawl lifter. Apply a small quantity of THREAD LOCK "1342" to the threaded parts of the securing screws.

99000 - 32050	Thread lock "1342"

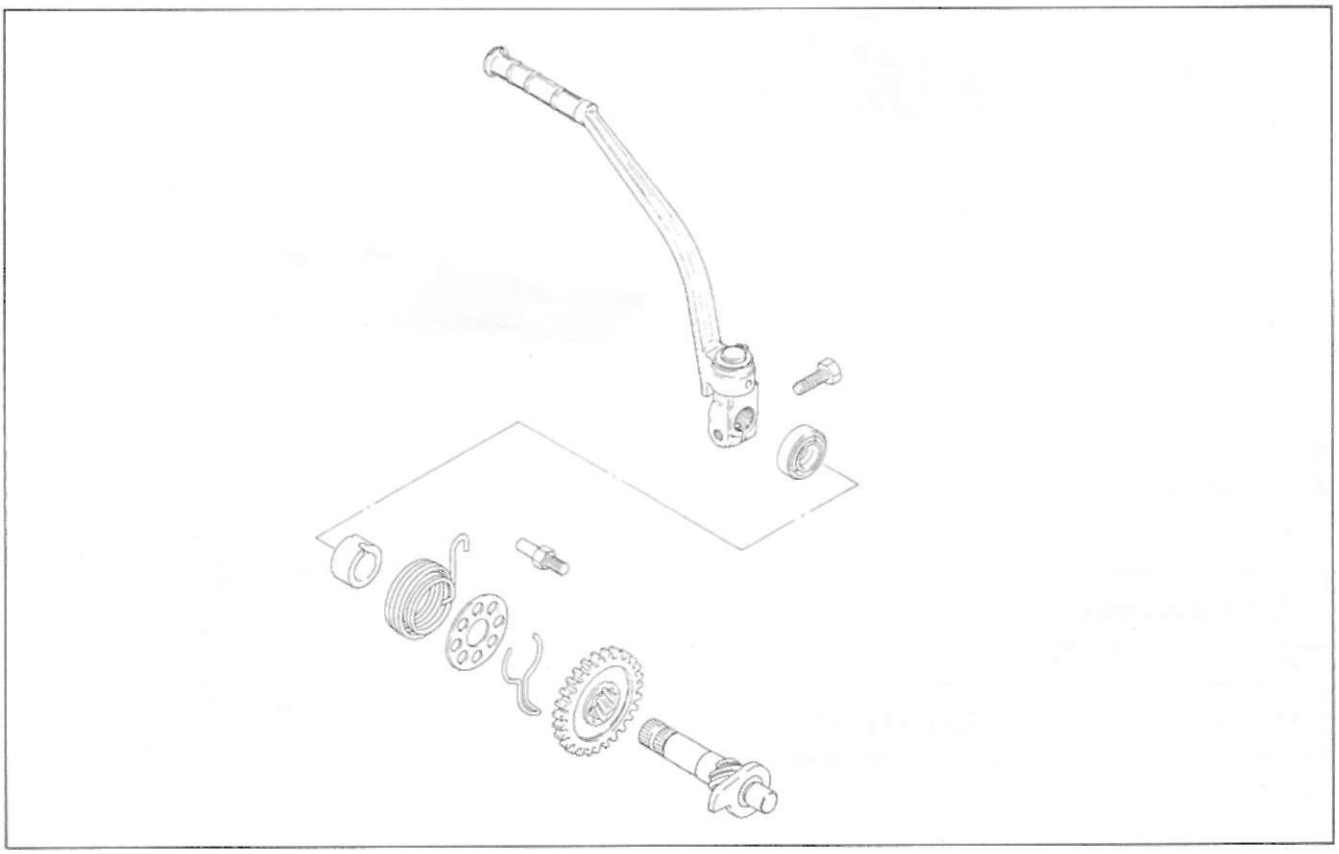
GEAR SHIFTING SHAFT

- Install the gear shifting shaft. Match the center teeth of the gear on the shifting shaft with the center teeth on the shifting driven gear as shown.
- Apply the grease to the oil seal lip of gear shifting shaft.

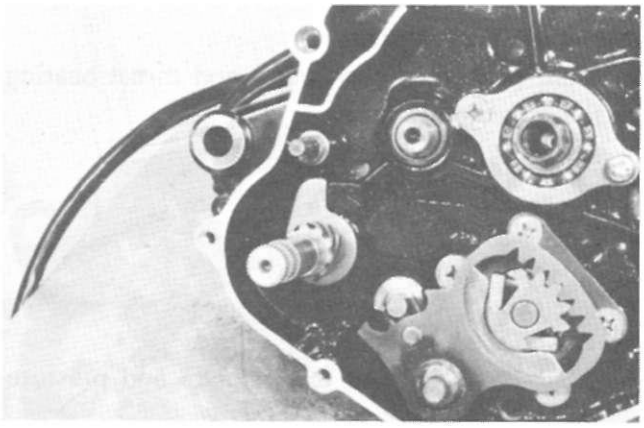


99000 - 25010	SUZUKI super grease "A"

KICK STARTER

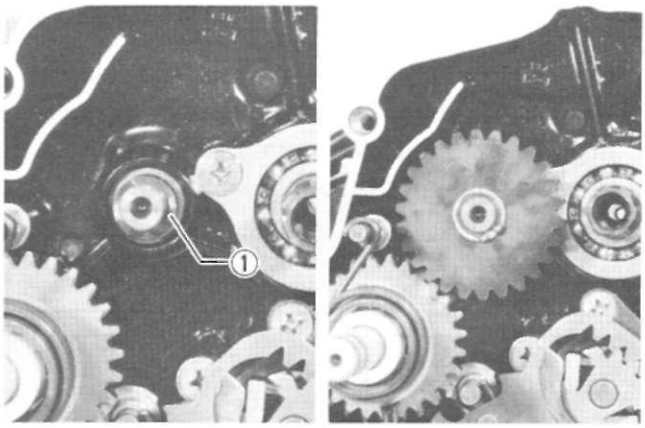


- Install the kick starter shaft as shown in the photograph.
- Next install the spring retainer, return spring and spacer.



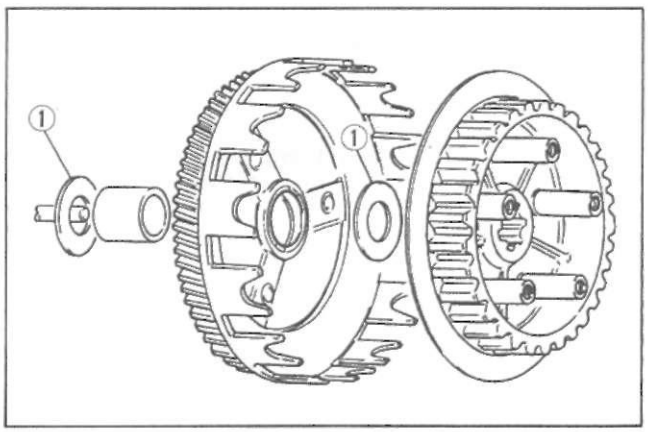
- Install the wave washer ①, kick idle gear and washer with circlip.

09900 - 06107	Snap ring pliers



CLUTCH

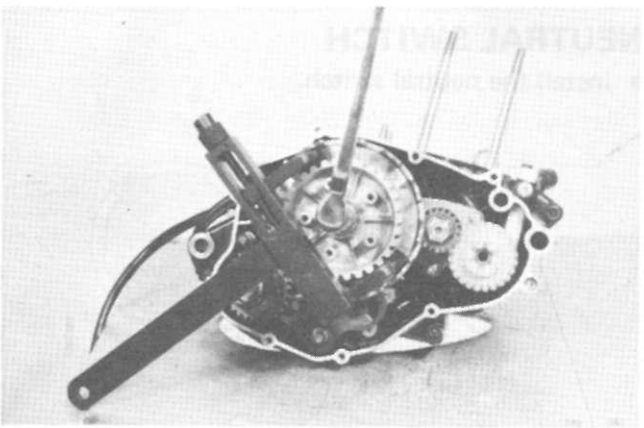
NOTE:
Attention must be particularly given in setting two washers ① in place.



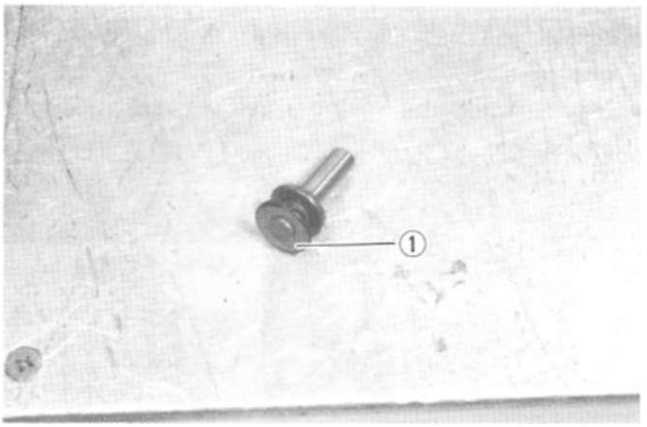
- Using special tool, tighten the clutch sleeve hub nut with specified torque.

09920 - 53710	Clutch sleeve hub holder

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



- Bend the lock washer.
- Install push rod, push piece and thrust bearing ① on the countershaft.

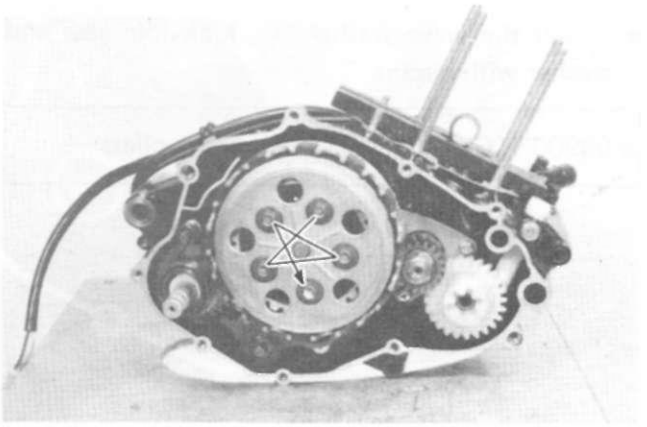


- Install the drive and driven plate and pressure plate.

NOTE:
Using conrod holder, tighten the clutch spring set bolts in the indicated manner, making sure that they are tightened just a little at a time to the same final tightness.

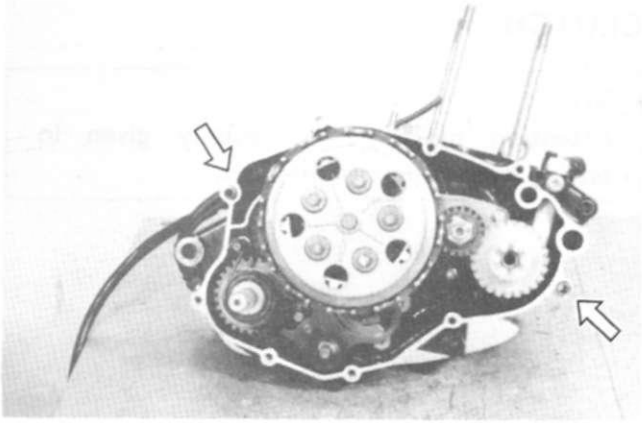
09910 - 20116	Conrod holder

Tightening torque	8 – 12 N·m (0.8 – 1.2 kg-m)



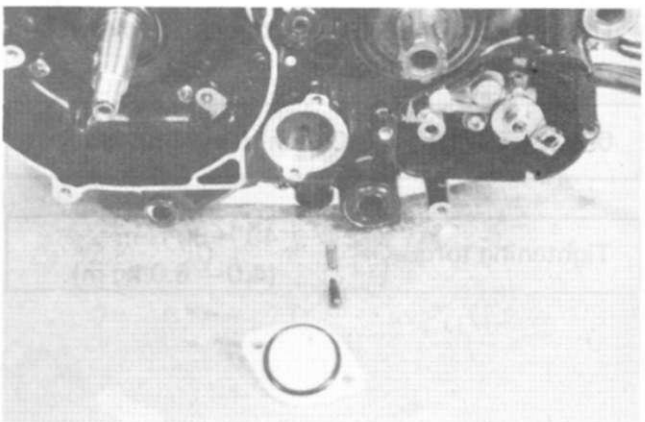
- Install the clutch cover and kick starter lever.

NOTE:
Do not forget the two dowel pins.



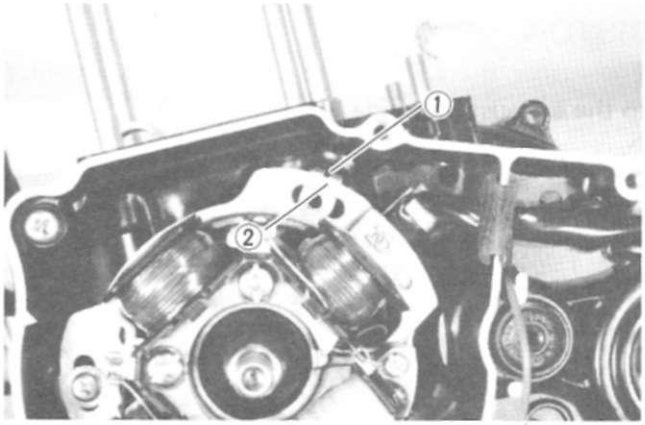
NEUTRAL SWITCH

- Install the neutral switch.



STATOR

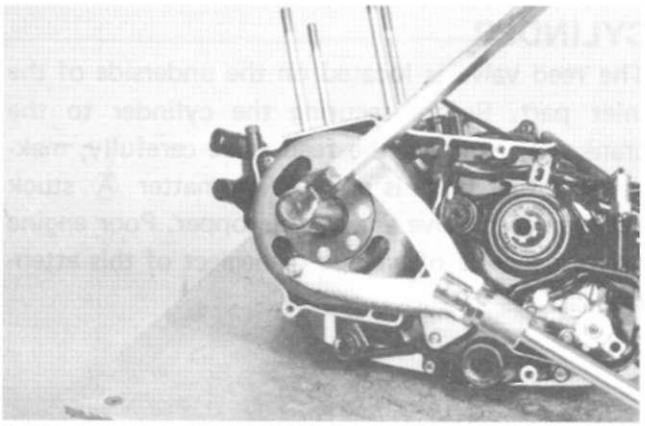
When installing the stator, align the index mark ① of crankcase with index line ② of the stator.



ROTOR

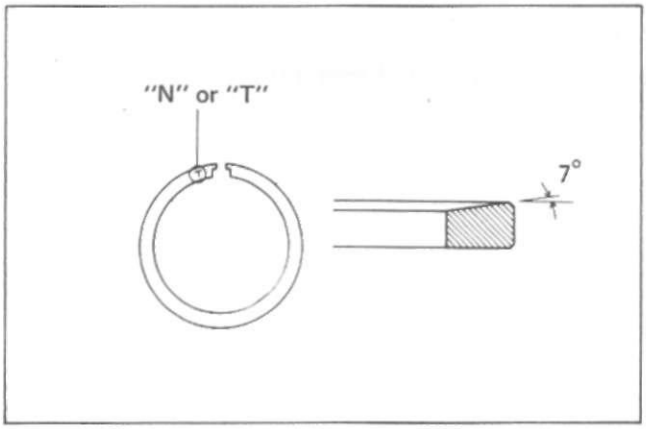
Clean thoroughly both mating surfaces of the rotor and crankshaft with cleaning solvent, fix the stator to the crankcase. Then fix the rotor with the key, apply thread lock super "1322" to the rotor nut and tighten the nut by using special tool.

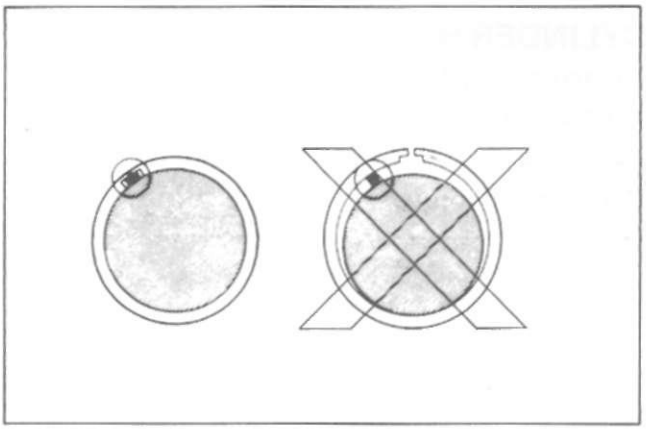
09930 - 40113	Rotor holder
99000 - 32110	Thread lock super "1322"
Tightening torque	40 – 60 N·m (4.0 – 6.0 kg-m)



PISTON RINGS

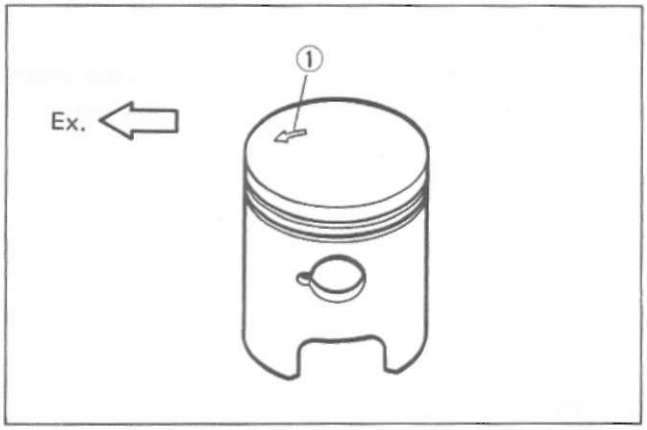
The two piston rings, 1st and 2nd, are identical in shape and key-stone type with the stamped mark, "N" or "T", on their upper sides. Each ring in place should be so positioned as to hug the locating pin.





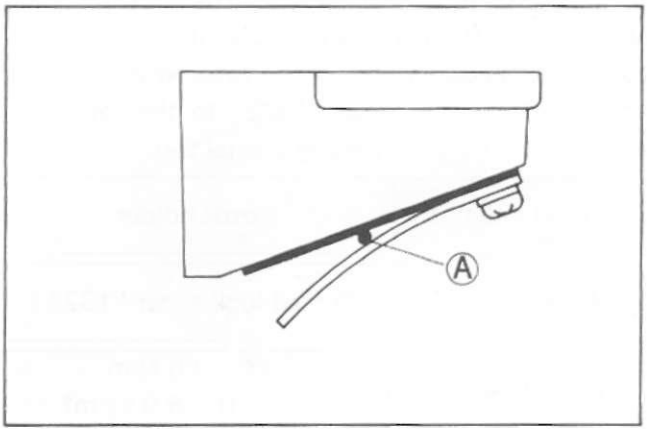
PISTON

The arrow mark ① on the piston crown points to the exhaust port side.

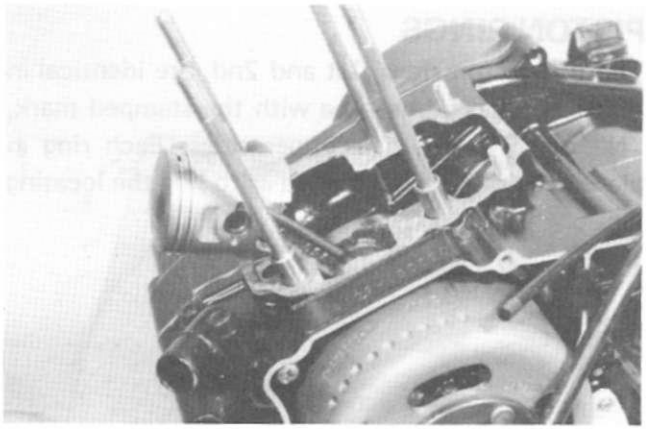


CYLINDER

The reed valve is located on the underside of the inlet part. Before securing the cylinder to the crankcase, examine the reed valve carefully, making sure that there is not foreign matter Ⓐ stuck between reed valve and valve stopper. Poor engine performance is often due to neglect of this attention.



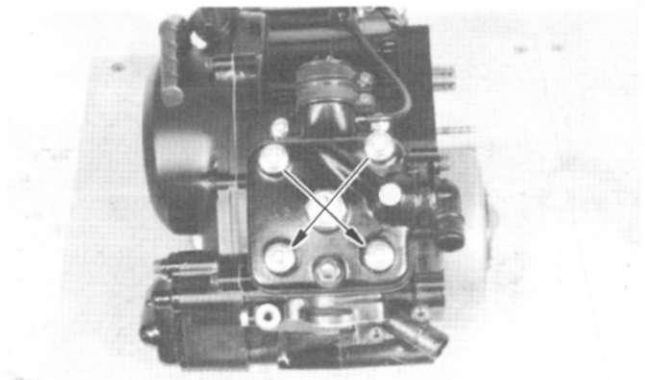
NOTE:
Do not forget the dowel pin.



CYLINDER HEAD

Tighten the cylinder head nut with the following order and specified torque.

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



FUEL AND OIL SYSTEM

CONTENTS

FUEL TANK AND FUEL COCK

The fuel tank is provided with a tank cap and fuelcock. An air vent is provided in the tank cap to supply gasoline smoothly to the carburetor. The fuelcock has the structure as shown in Fig. A valve is provided at the top of the fuelcock 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.

Generally, water or other impurities are contained in gasoline. A filter is provided to remove them and filter cup to deposit them.

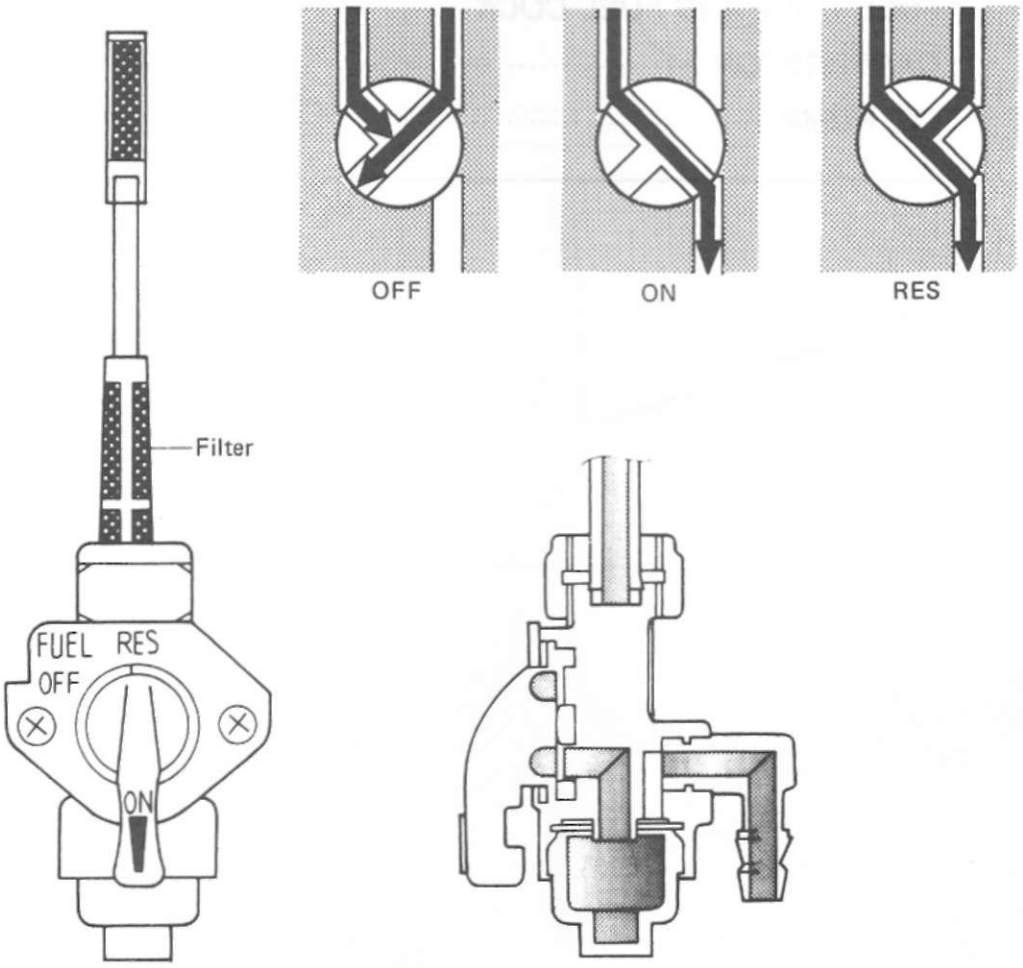


Fig. A

CLEAN

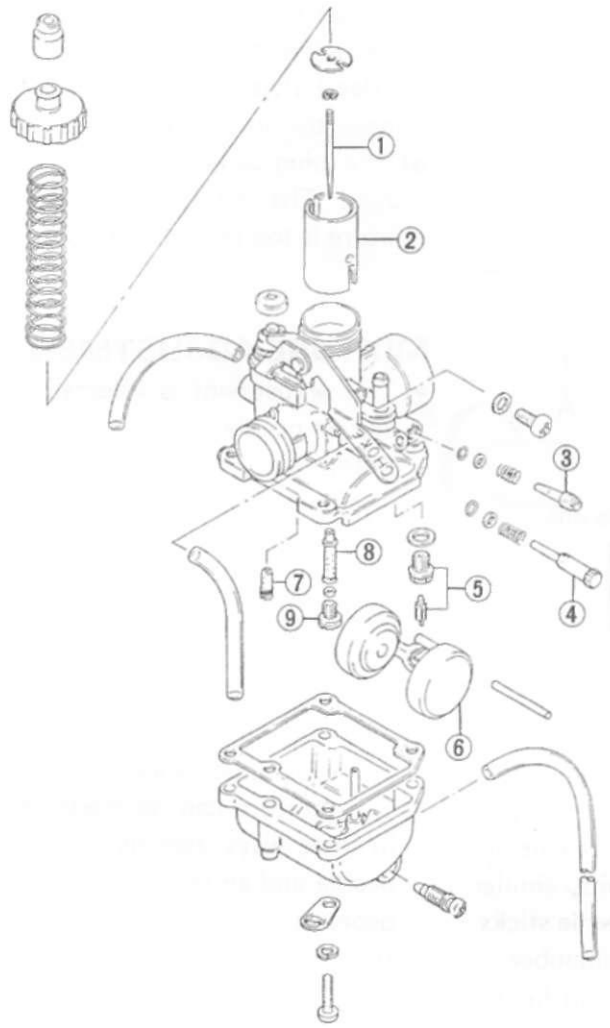
The fuelcock filter will collect impurities, and therefore must be periodically checked cleaned.

The fuel tank should be cleaned at the same time, the fuelcock filter is being cleaned.

INSPECTION

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

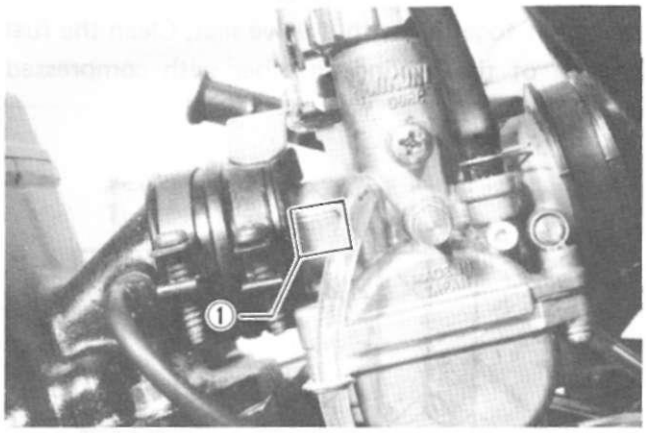
CARBURETOR
CONSTRUCTION



① Jet needle
② Piston valve
③ Air screw
④ Throttle valve stop screw
⑤ Needle valve
⑥ Float
⑦ Pilot jet
⑧ Needle jet
⑨ Main jet

CARBURETOR SPECIFICATION

Item		Specification
Type		MIKUNI VM18SS
Float height		21.9 ± 1.0 mm
Main jet	(M.J.)	# 77.5
Air jet	(A.J.)	0.6
Jet needle	(J.N.)	3FL17-3rd
Needle jet	(N.J.)	D-9
Cut-away	(C.A.)	2.5
Pilot jet	(P.J.)	# 20
Air screw	(A.S.)	1 1/2 turn out
I.D. Number		13600

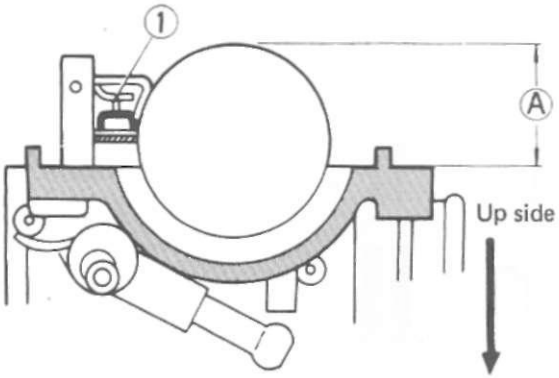


① I.D. number location

FLOAT HEIGHT ADJUSTMENT

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

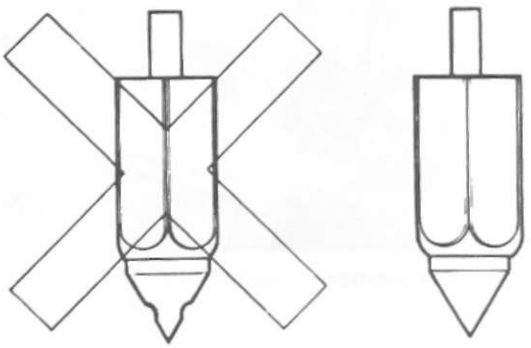
Float height	21.4 ± 1.0 mm



NEEDLE VALVE INSPECTION

If foreign matter is caught between the valve seat and the needle, the gasoline will continue flowing and cause it to overflow. If the seat and needle are worn out beyond the permissible limits, similar trouble will occur. Conversely, if the needle sticks, the gasoline will not flow into the float chamber.

Remove the carburetor, float chamber and floats, and clean the float chamber and float parts with gasoline. If the needle is worn as shown below, replace it together with a valve seat. Clean the fuel passage of the mixing chamber with compressed air.



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 surfaces of the piston crown. The color observed tells whether the mixture is too rich or too lean.

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 pipe, 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 that 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 air screw. Effectiveness of these ways depends on the throttle position, as shown in this chart.

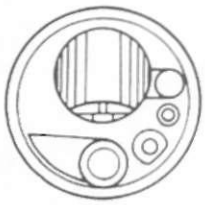
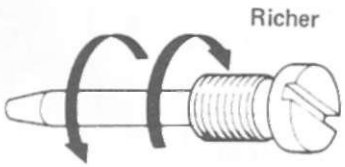
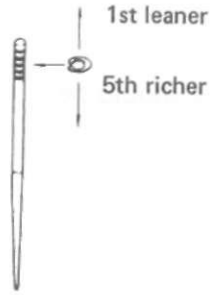
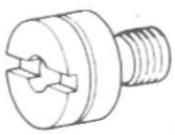
Throttle opening	¼	½	¾	Full
Air screw				
Jet needle				
Main jet				

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 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.

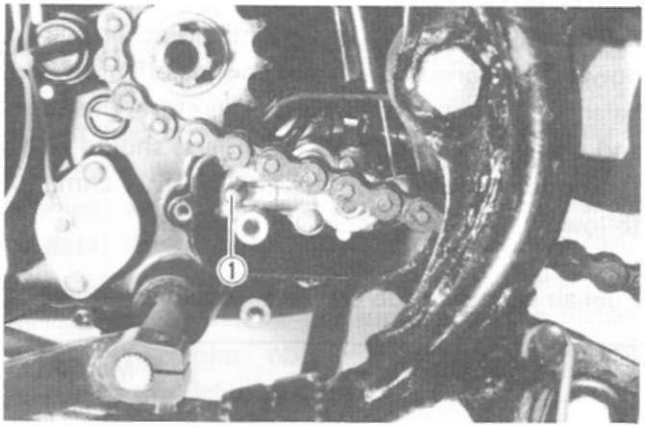
Fuel-air mixture ratio can be changed as follows:

Throttle Opening	Method of Changing Ratio	Standard Setting
 Slight	Air screw 	1 1/2 turns out
 Medium	Jet needle 	3FL17-3rd
 High	Main jet  Larger number: richer mixture Smaller number: leaner mixture	# 77.5

OIL PUMP

AIR BLEEDING

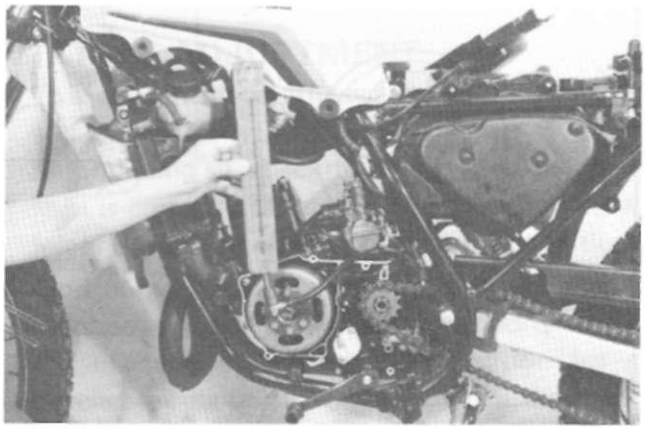
Whenever evidence is noted of some air having leaked into the oil pipe from the oil tank in a machine brought in for servicing, or if the oil pump has to be removed for servicing, be sure to carry out an air bleeding operation with the oil pump in place before returning the machine to the user.
To bleed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



CHECKING OIL PUMP

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

09900 - 21602	Engine oil measuring tool



The checking procedure follows:

- Have the tool filled with 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 and let the pump draw for 2 minutes. For this operation, the reading taken on the device should be from 0.95 – 1.18 ml.

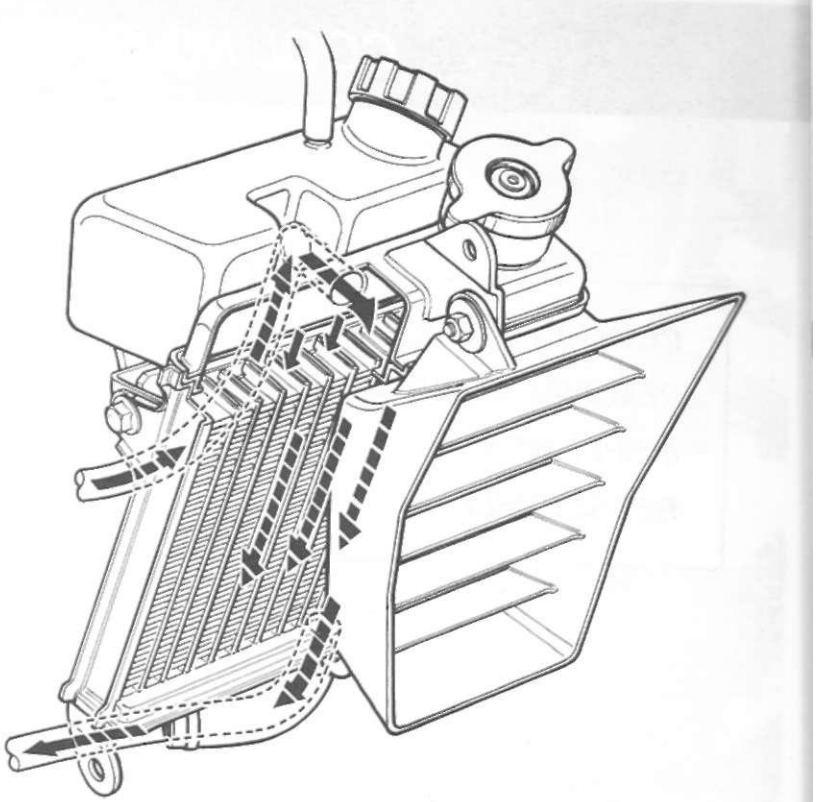
2 minutes at 2 000 r/min (full open position)

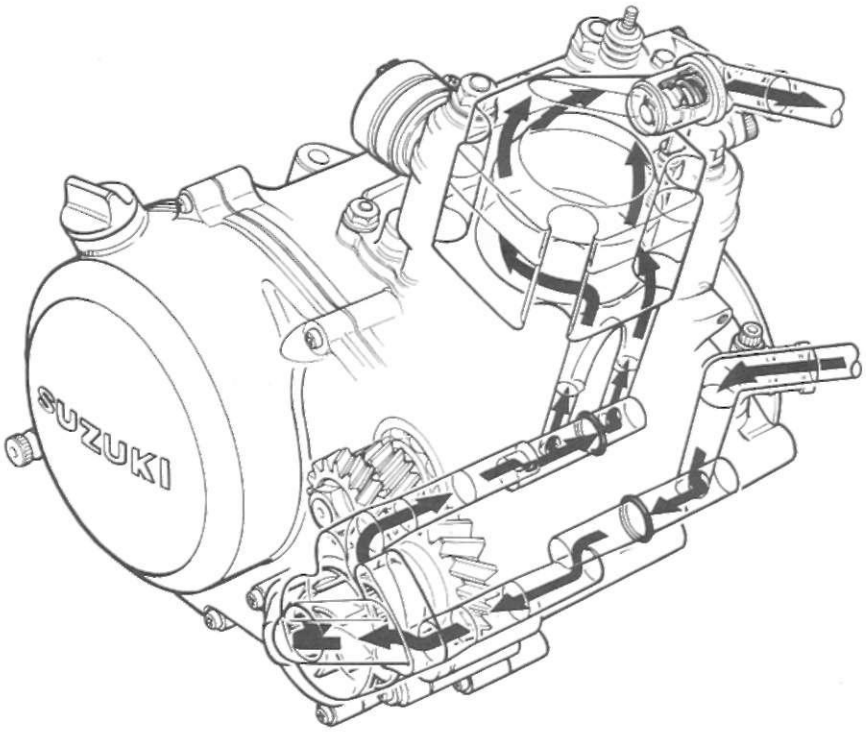
Oil discharge amount	0.95 – 1.18 ml

NOTE:
Adjust both throttle and oil pump control cable play after checking oil pump.

CONTENTS

TS50 COOLING SYSTEM





INSPECTION

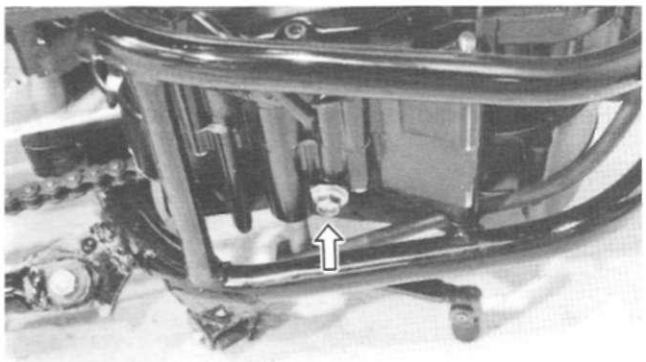
Check the pressure leakage of cooling system by using the radiator pressure tester.
If the leakage is found, replace or repair the leakage parts.

* O-ring
* Oil seal
* Radiator hose
* Radiator hose clamps

REMOVAL AND DISASSEMBLY

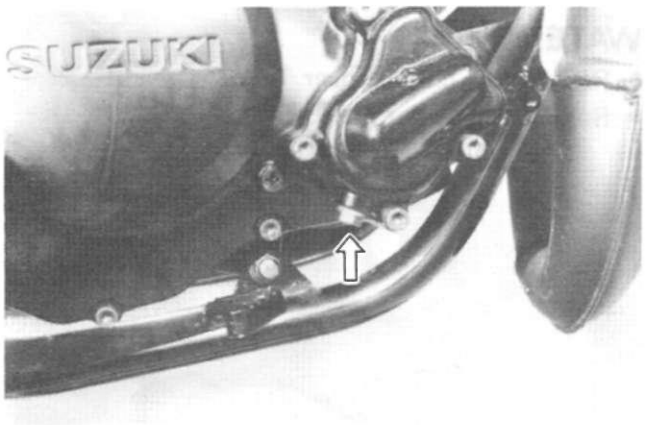
- Loosen the drain plug.
- Drain the engine oil.

Tightening torque	15 – 20 N·m (1.5 – 2.0 kg-m)



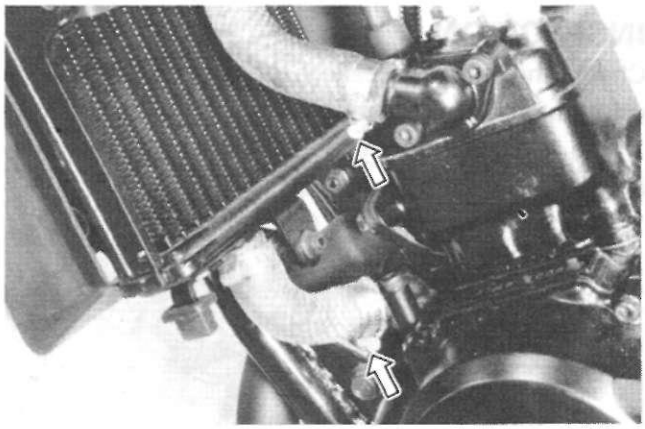
- Loosen the drain plug.
- Drain the coolant.

Tightening torque	12 – 16 N·m (1.2 – 1.6 kg-m)

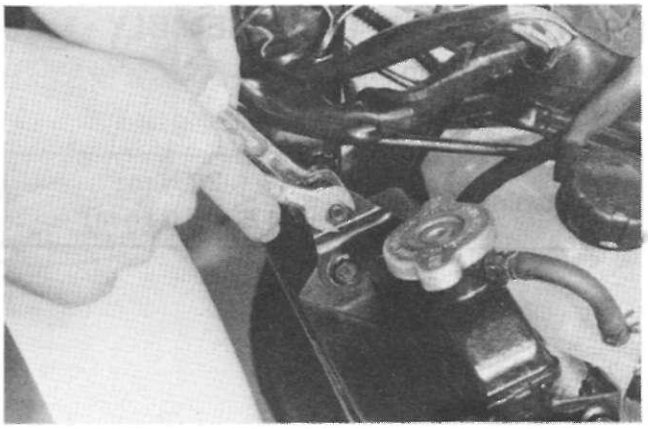


- Remove the seat, frame covers and fuel tank.
- Disconnect the fuel hose.

- Disconnect the radiator hoses.

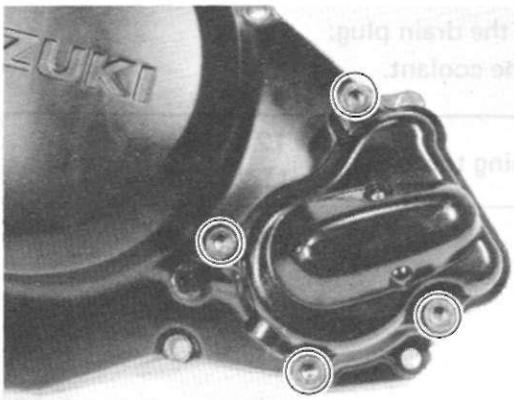


- Loosen the radiator mounting nut by holding the cushion bolt with open end wrench.
- Remove the radiator and reservoir tank.

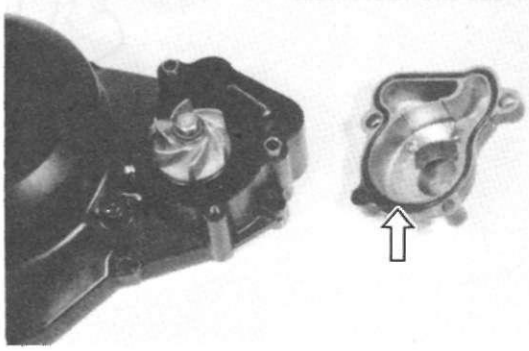


WATER PUMP

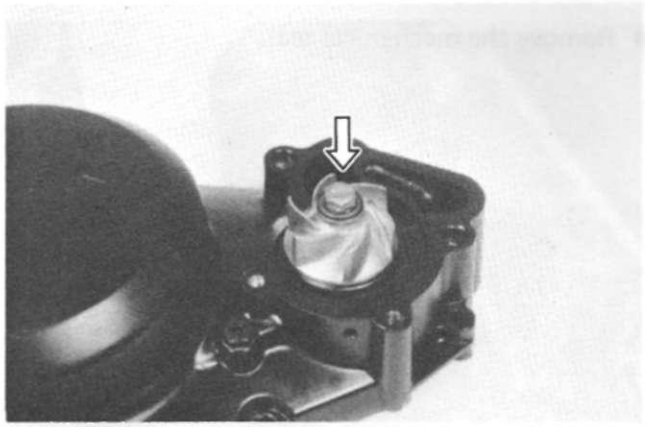
- Remove the clutch cover.
- Remove the water pump cover.

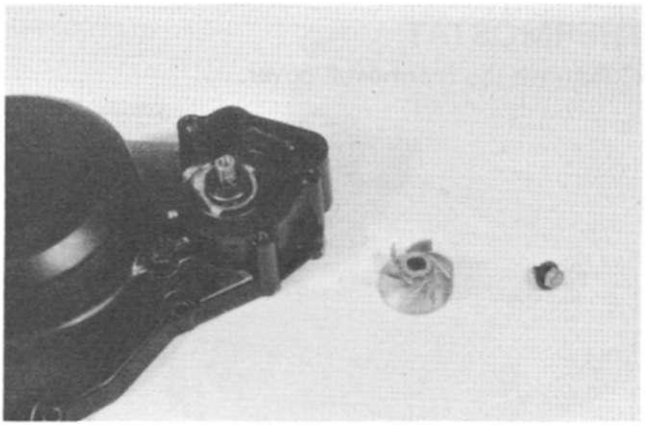


NOTE:
When reinstall the water pump cover, replace the O-ring with a new one.

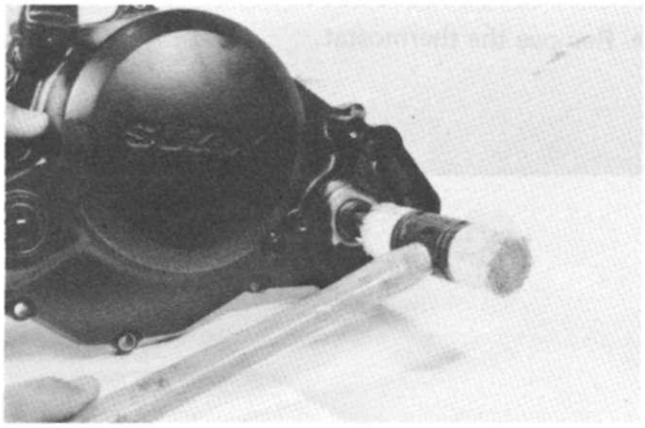


- Loosen the water pump impeller bolt by holding the water pump shaft with the vise.

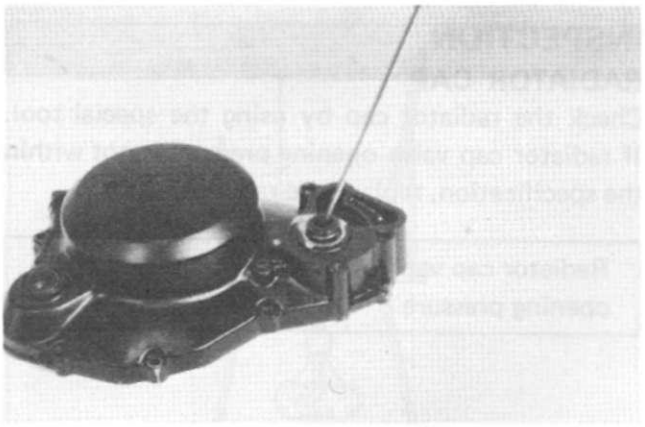




- Remove the water pump shaft by hitting with plastic hammer.



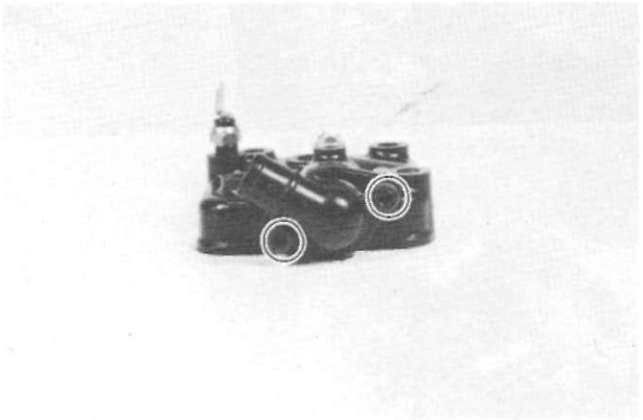
- Remove the water pump oil seal.



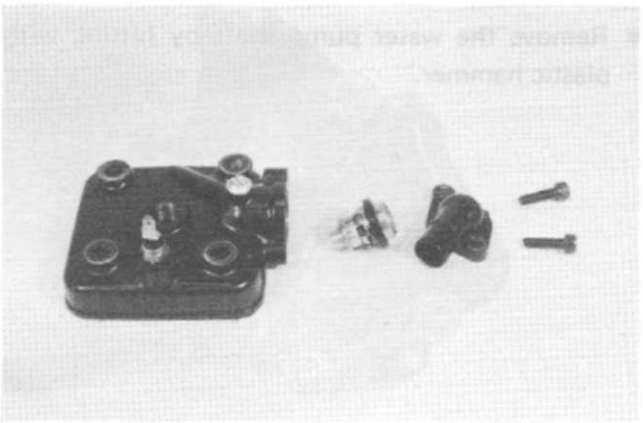
- Remove the mechanical seal.

THERMOSTAT

- Remove the thermostat cover.



- Remove the thermostat.

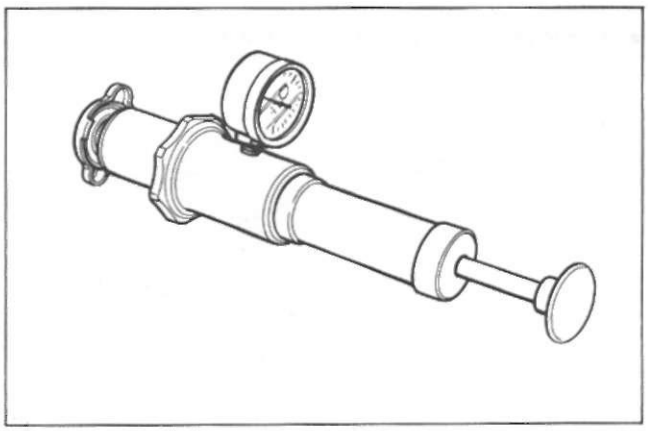


INSPECTION

RADIATOR CAP

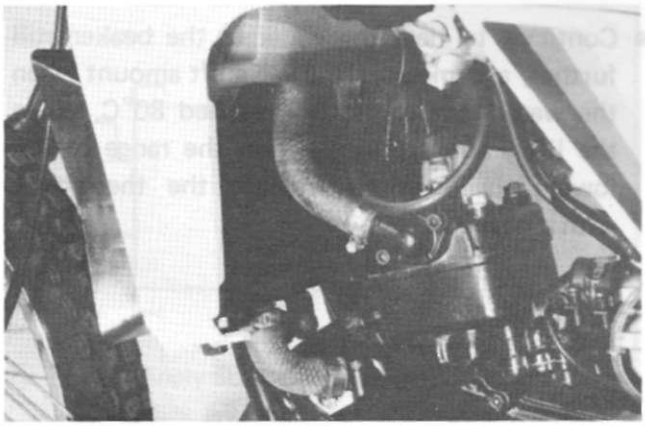
Check the radiator cap by using the special tool. If radiator cap valve opening pressure is not within the specification, replace the radiator cap.

Radiator cap valve opening pressure	0.9 kg/cm^2 (90 kPa)



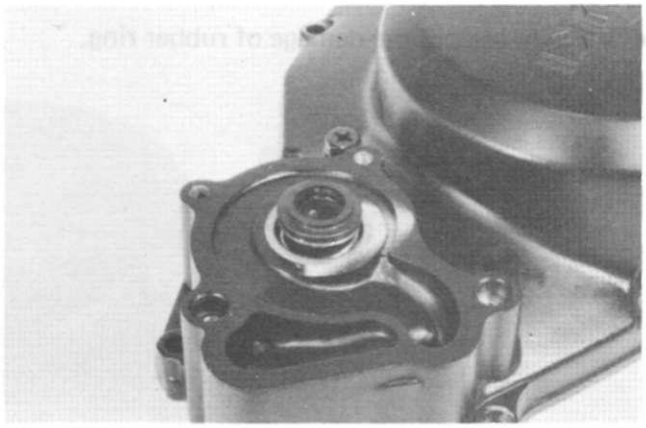
RADIATOR HOSE

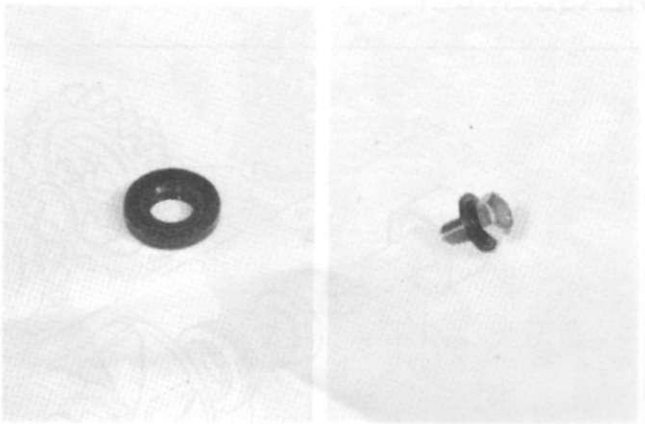
Inspect for leakages from the radiator hose connecting (joint) section and from the radiator hose itself and check for kinks in the radiator hose.
If any leakages from the radiator hose are detected, the radiator hose should be replaced.
Any leakages from the connecting (joint) section should be corrected by proper tightening.



WATER PUMP

Visually inspect the mechanical seal, seal washer and oil seal.

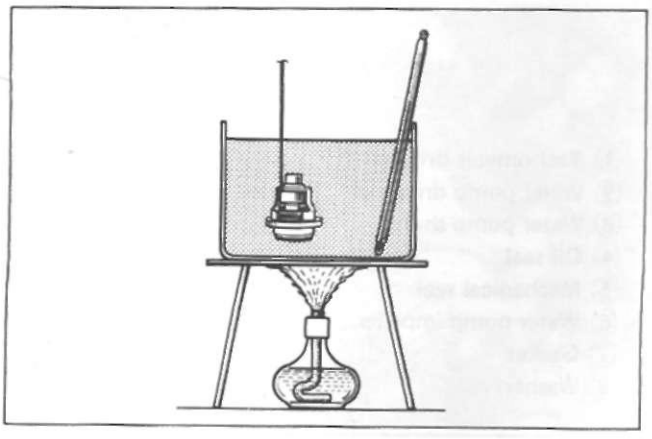




THERMOSTAT

- Fill the beaker with water and immerse the thermostat. Heat the water and check the temperature at which the valve opens. When the opening temperature is not within the range of following specifications, replace the thermostat with a new one.

Valve opening temperature	65 ± 1.5°C



ELECTRICAL SYSTEM

CONTENTS

CHARGING SYSTEM

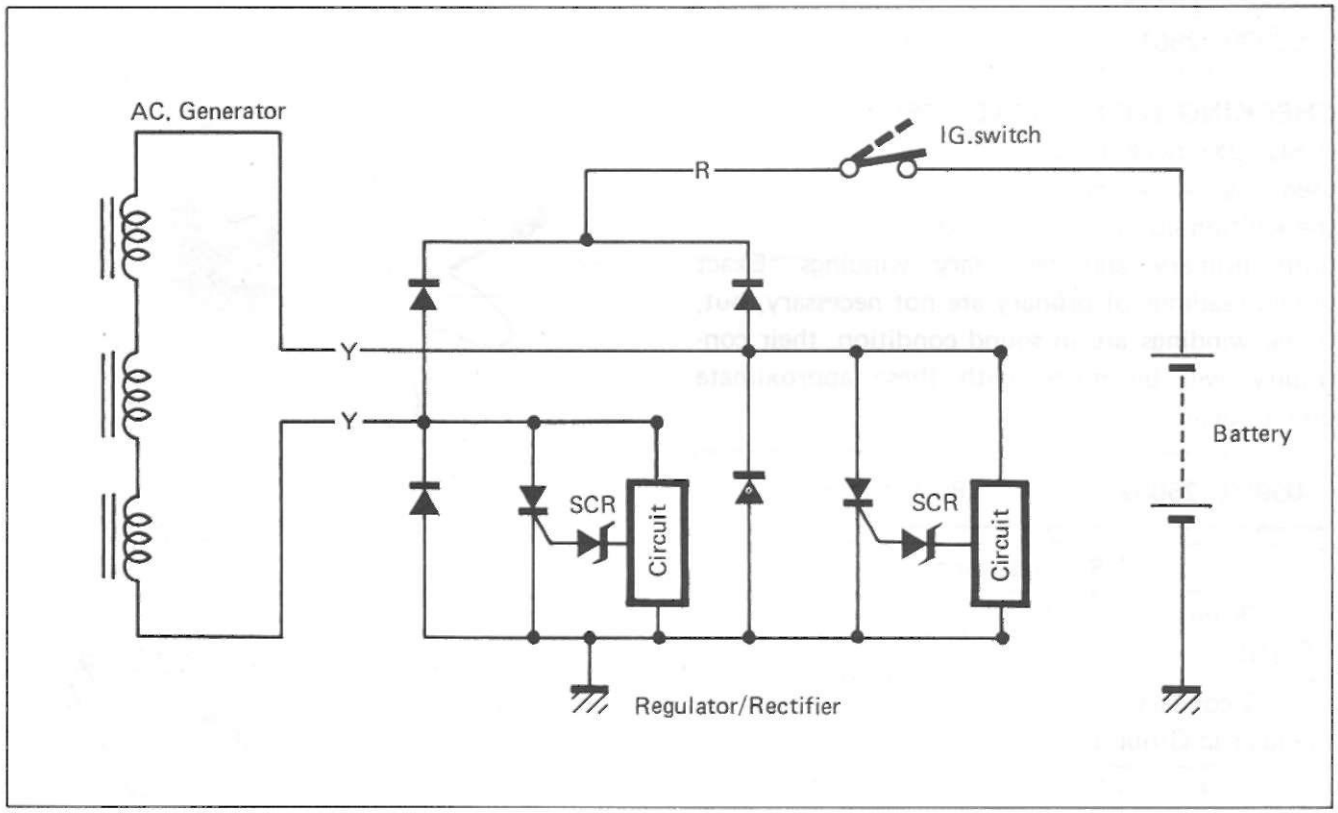
DESCRIPTION

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

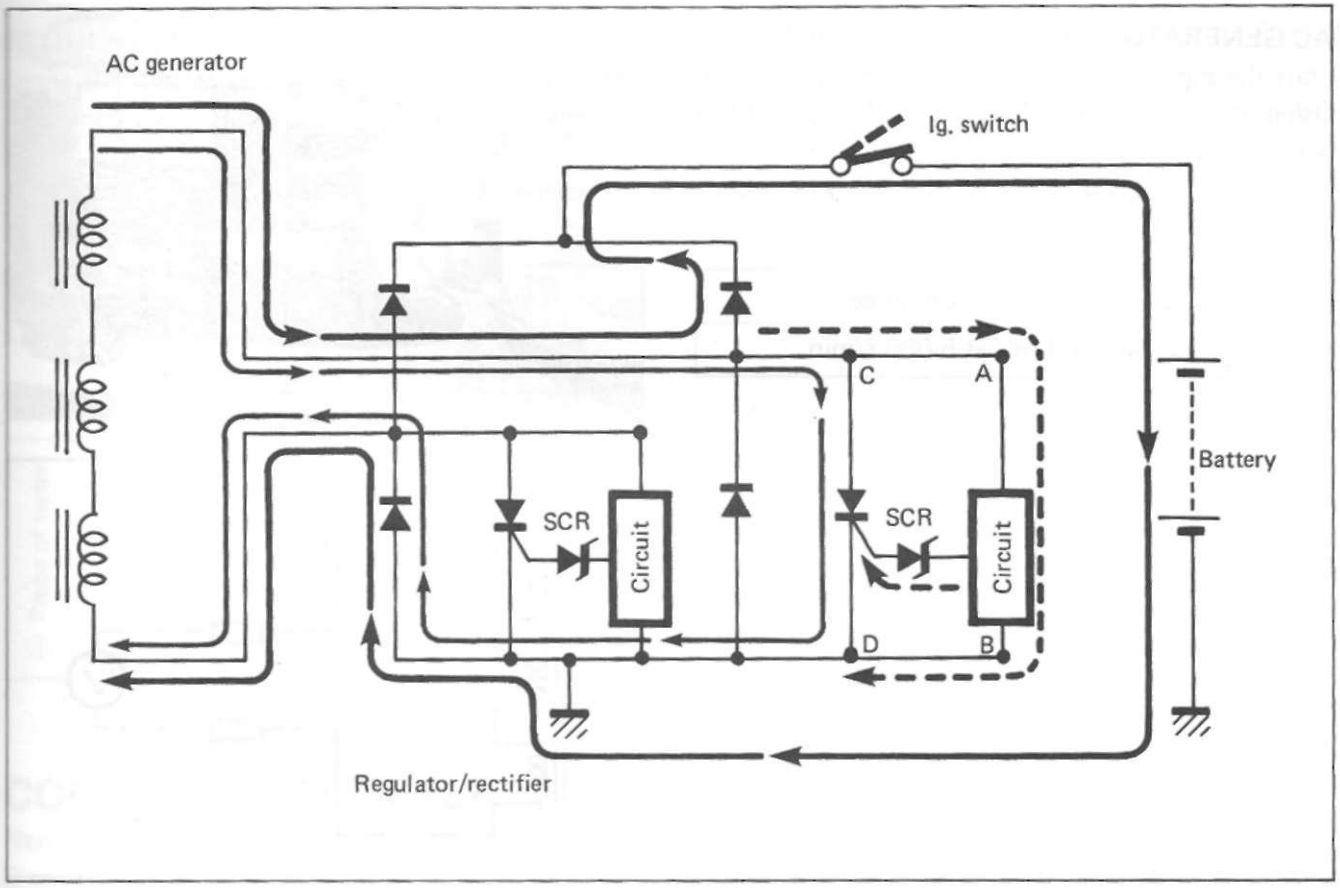
The AC current generated from AC generator is converted by rectifier and is turned into DC current, then it charges the battery.

Function of Regulator

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



Current is produced by the rotation of the generator. When the regulator is not functioning, the current passes through the diode, is rectified, and charges the battery. While the current is flowing, circuit C monitors the voltage between A and B, and when voltage reaches the set voltage (voltage of the battery at full charge), a signal is sent from circuit to the SCR. The SCR receives this signal and turns ON. The circuit between A and B is opened by the SCR coming ON, and current flows between C and D, not proceeding to the battery, but returning to the generator.



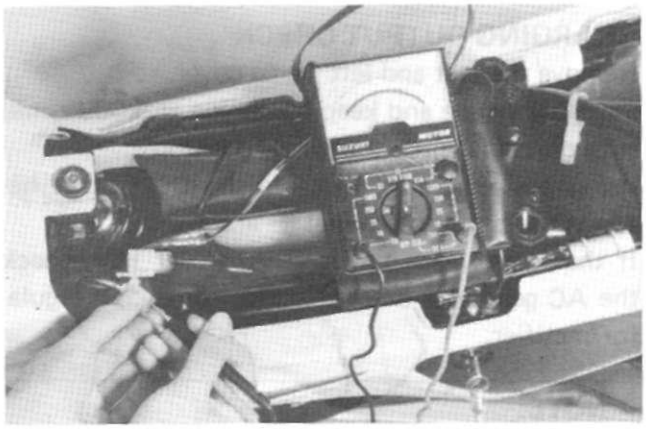
INSPECTION

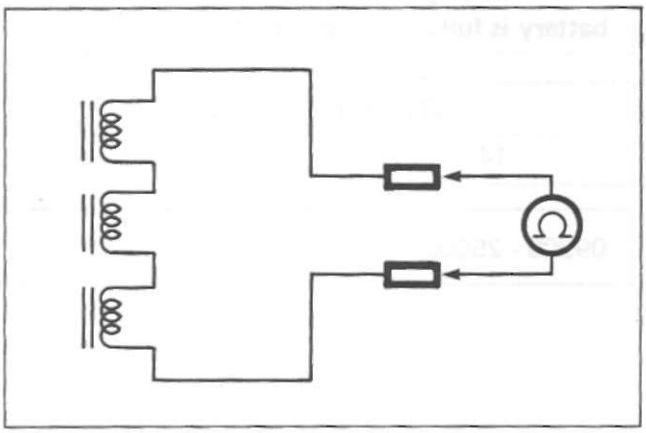
AC GENERATOR CONTINUITY CHECK

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

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

09900 - 25002	Pocket tester

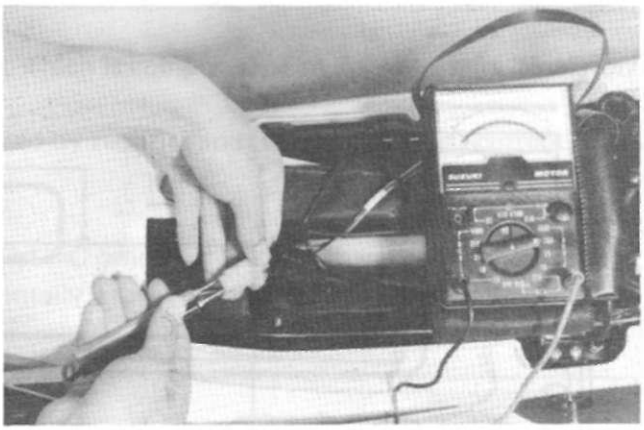


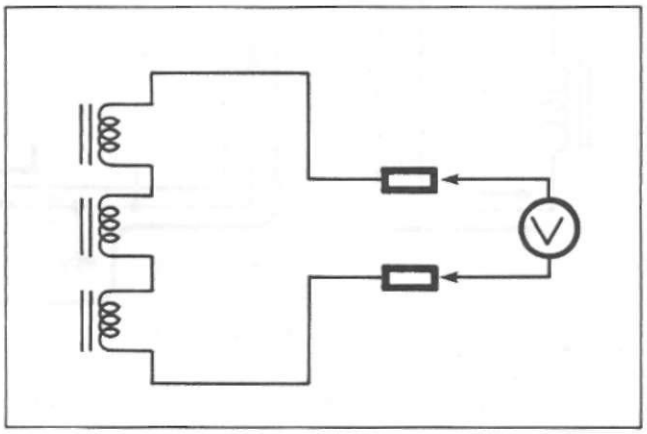


AC GENERATOR NO-LOAD PERFORMANCE

Start the engine and keep it running at 5 000 r/min.
Using the pocket tester, measure the AC voltage between the two lead wires.
If the tester reads under 40V, the AC generator is faulty.

STD No-load performance
40V (AC) or Over at 5 000 r/min





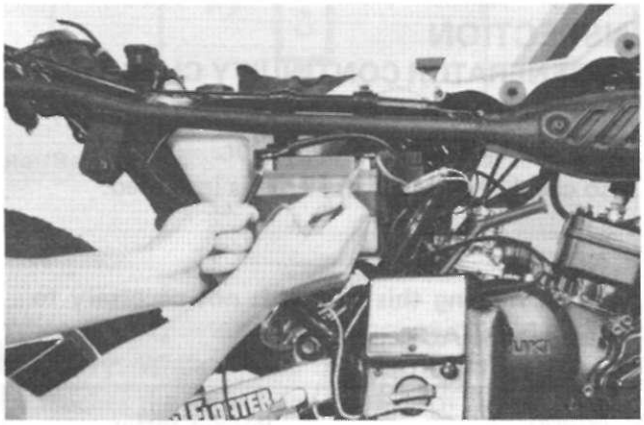
CHARGING OUTPUT CHECK

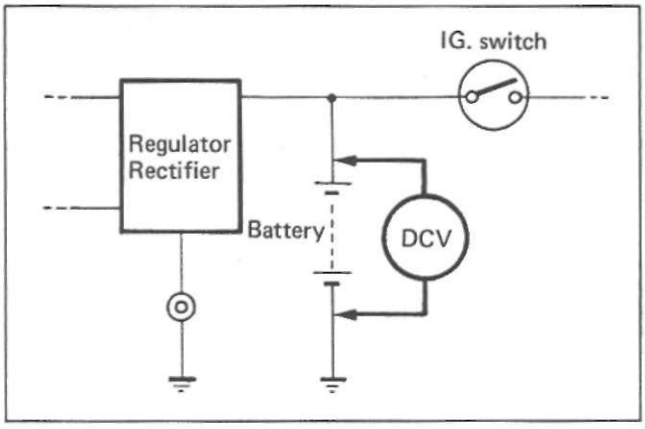
Remove the seat and left frame cover.
Start the engine and keep it running at 5 000 r/min with dimmer switch turned HI position.
Using pocket tester, measure the DC voltage between the battery terminal ⊕ and ⊖ .
If the tester reads under 14V or over 15V, check the AC generator no-load performance and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

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

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

09900 - 25002	Pocket tester





REGULATOR/RECTIFIER

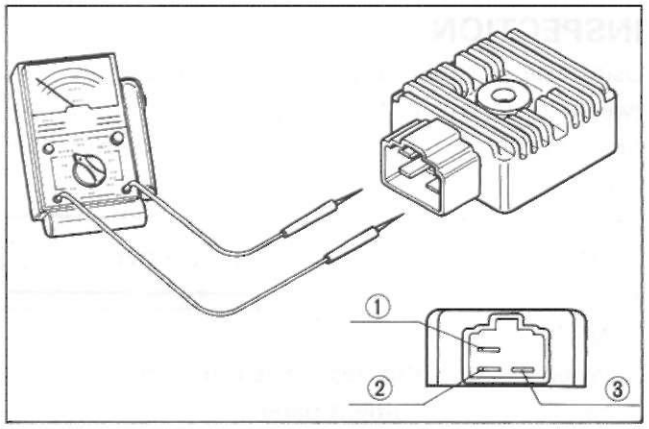
Using the pocket tester (X kΩ range), measure the resistance between the lead wires in the following table.

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

09900 - 25002	Pocket tester

Unit: kΩ

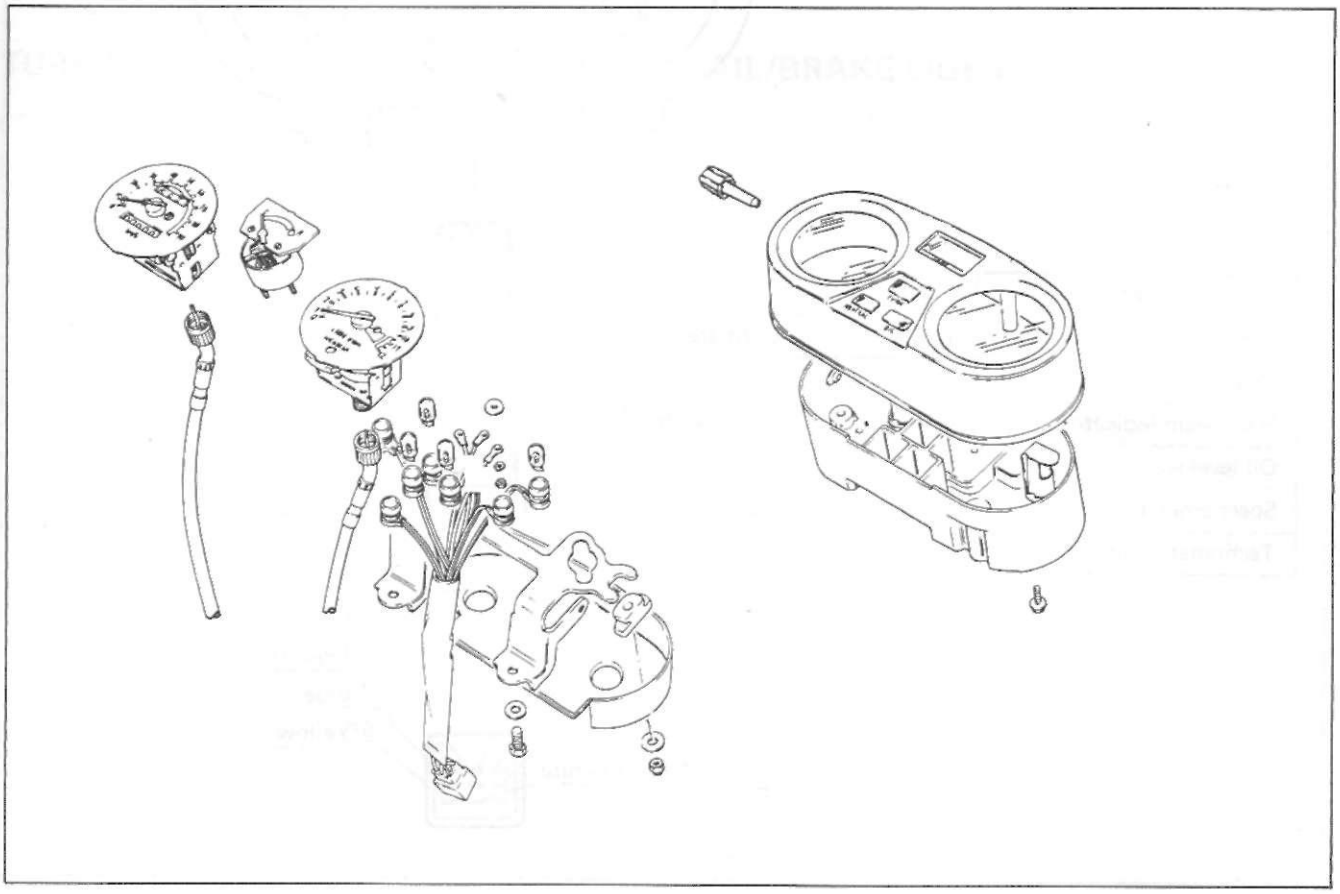
		⊕ Probe of tester			
		①	②	③	Ground
⊖ Probe of tester	①		OFF	OFF	OFF
	②	2 – 4		OFF	OFF
	③	2 – 4	OFF		OFF
	Ground	8 – 12	2 – 4	2 – 4	



COMBINATION METER

Remove the combination meter (See page 7-15).

Disassemble the instrument panel.

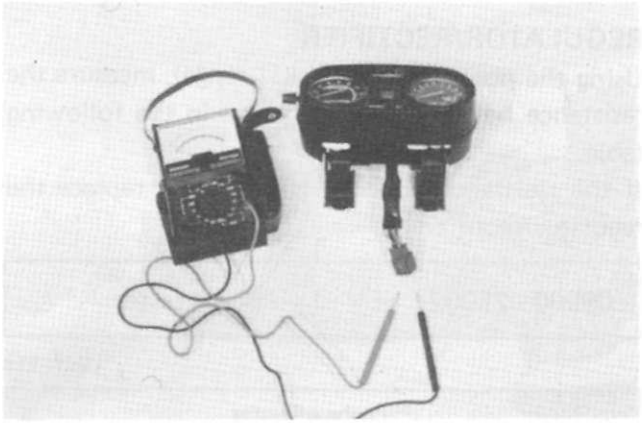


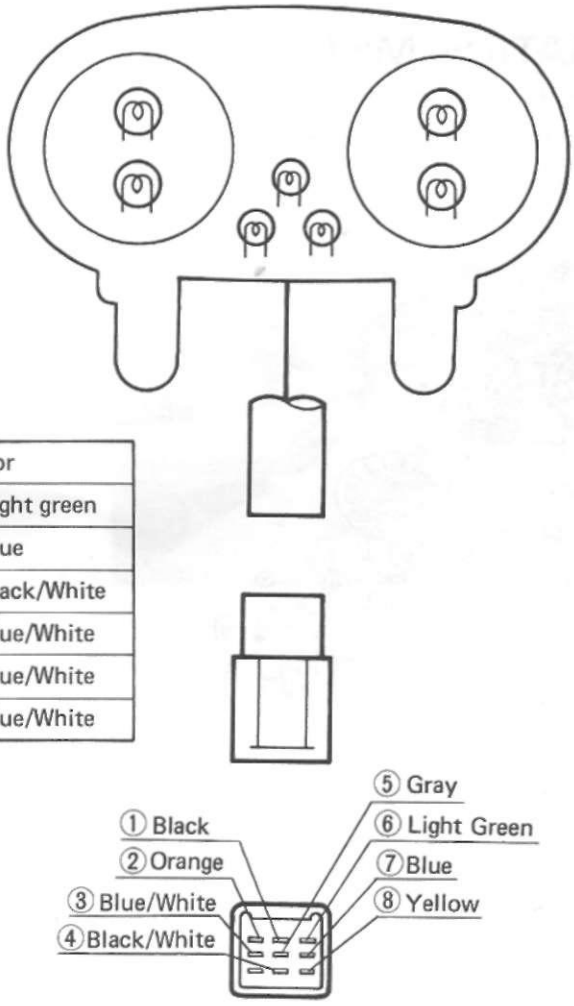
INSPECTION

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

09900 - 25002	Pocket tester

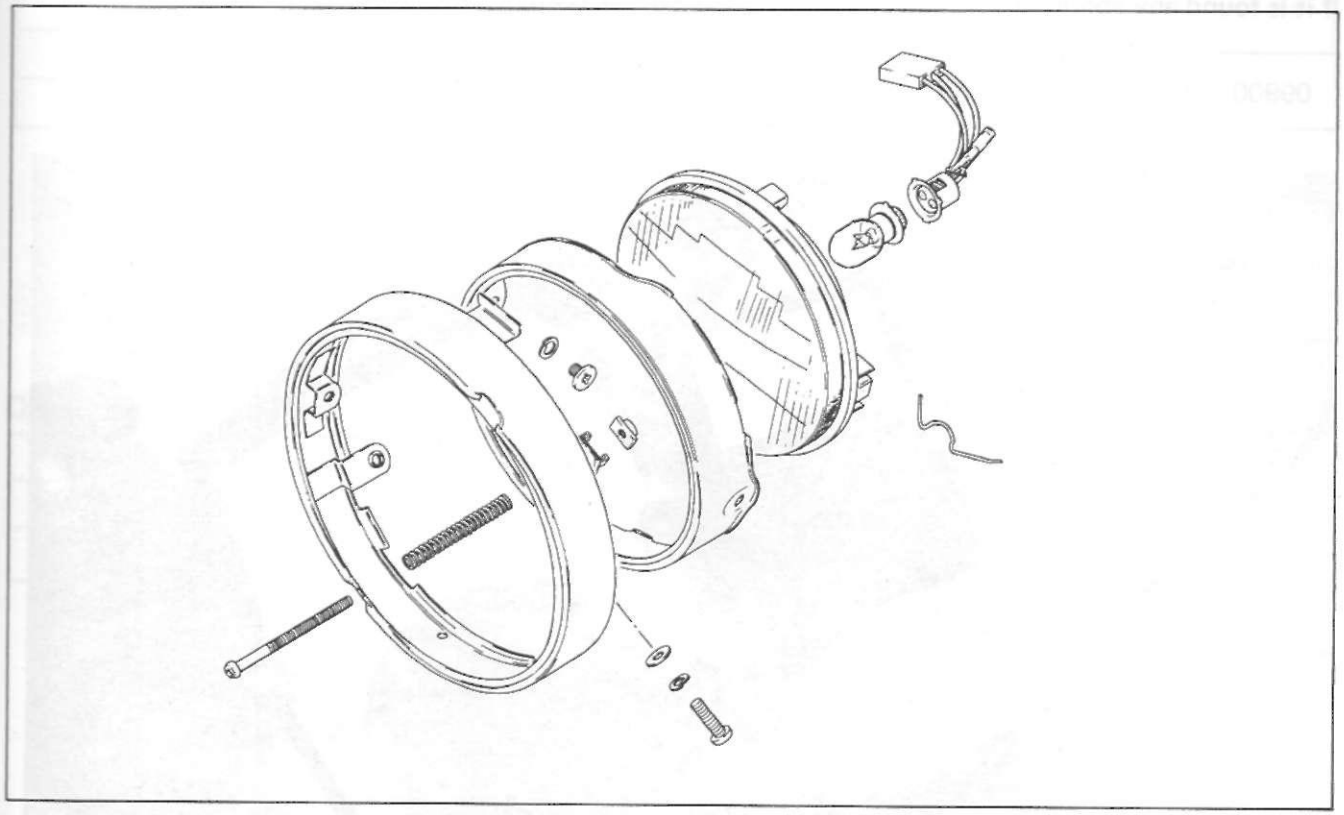
NOTE:
When making this test, it is not necessary to remove the instrument panel.



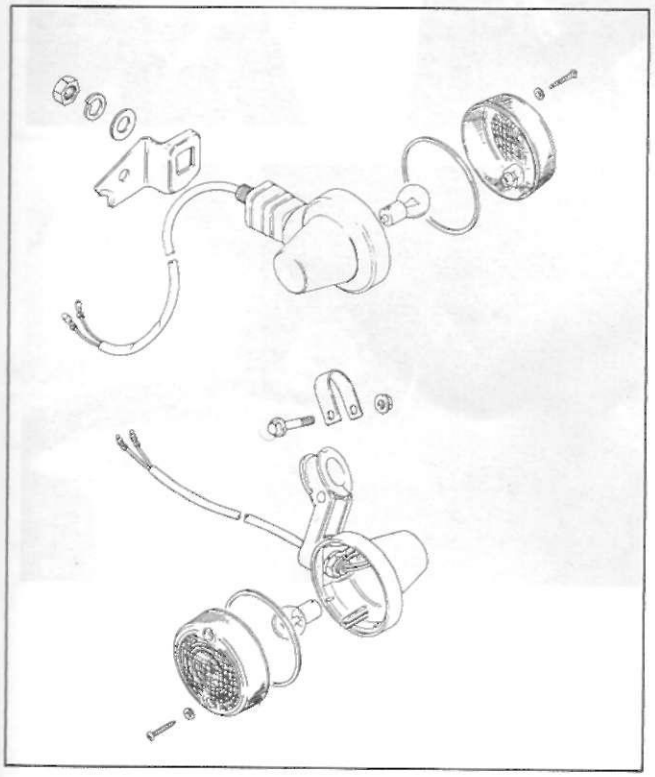


Item	Wire color	
Turn signal indicator light	① Black	⑥ Light green
Neutral indicator light	② Orange	⑦ Blue
High beam indicator light	⑧ Yellow	④ Black/White
Oil level warning light	② Orange	③ Blue/White
Speedometer light	⑤ Gray	③ Blue/White
Tachometer light	⑤ Gray	③ Blue/White

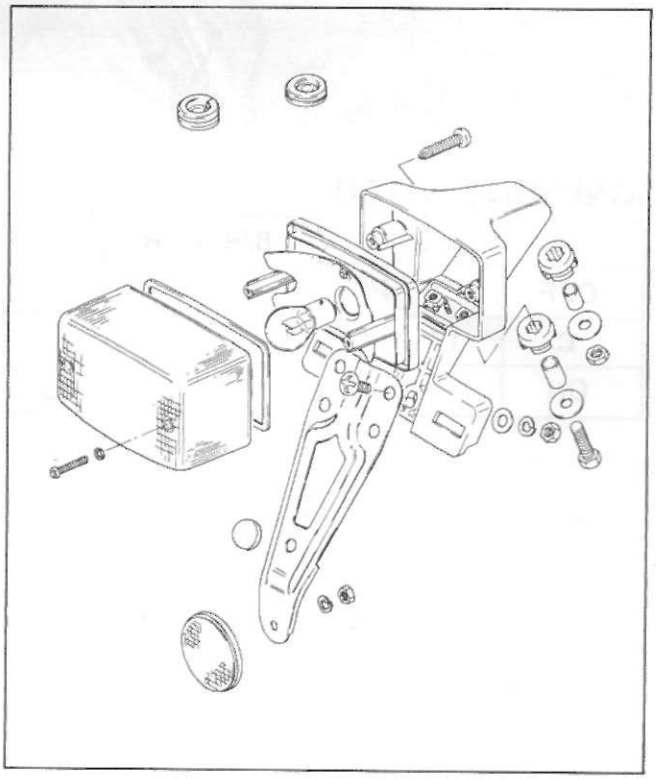
LAMPS
HEADLIGHT



TURN SIGNAL LIGHT



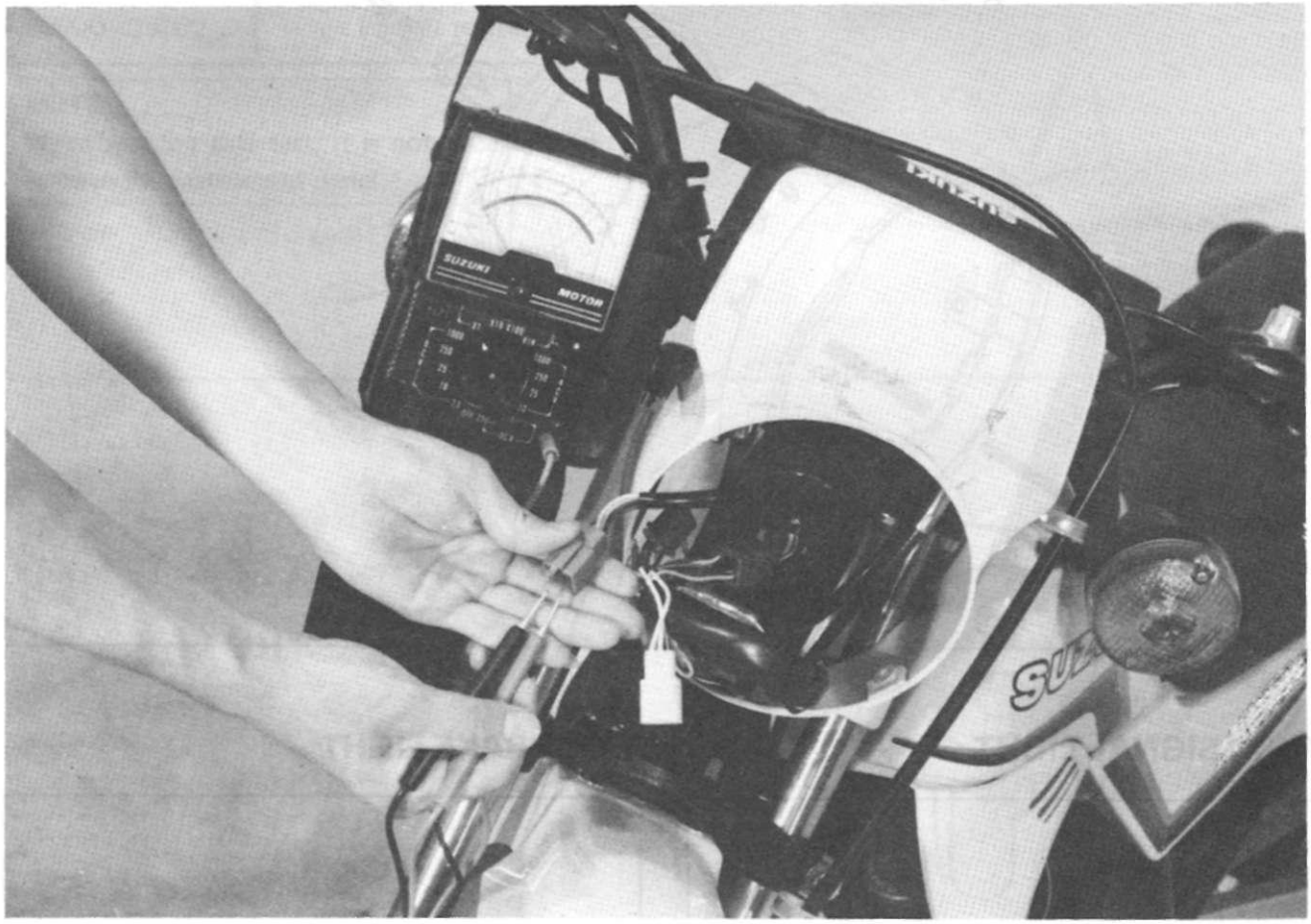
TAIL/BRAKE LIGHT



SWITCHES

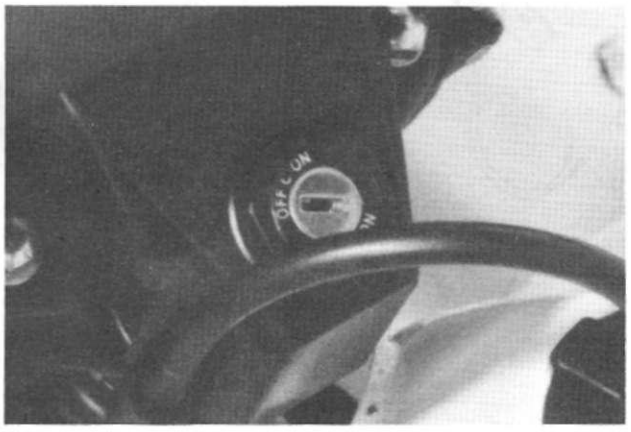
Inspect each switch for continuity with the pocket tester referring to the chart.
If it is found any abnormality, replace the respective switch assembly with a new one.

09900 - 25002	Pocket tester



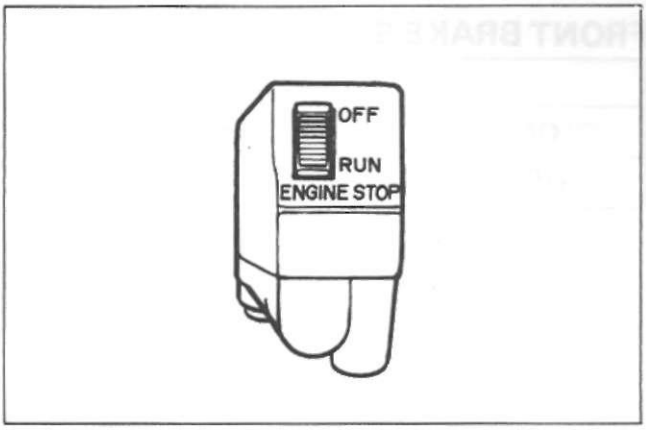
IGNITION SWITCH

	Bl/W	B/W	B/R	R	O
OFF		○—○			
C	○—○	○—○	○—○	○—○	
ON				○—○	



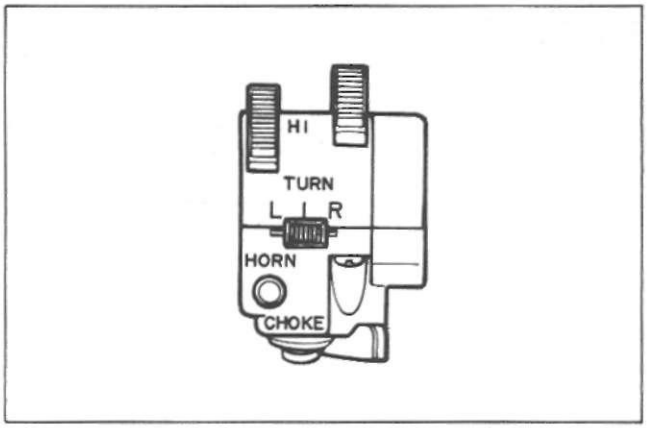
ENGINE KILL SWITCH

	B/Y	B/W
ON		
OFF	○———	———○



DIMMER SWITCH

	Gr	Y	W
HI	○———	———○	
LO	○———		———○



TURN SIGNAL SWITCH

	B	Lbl	Lg
R		○———	———○
·			
L	○———	———○	

LIGHTING SWITCH

	Y/W	W/R	G/W	Y/R	Gr	O	Br
ON	○———	———○		○———	———○	○———	———○
OFF		○———	———○				

HORN SWITCH

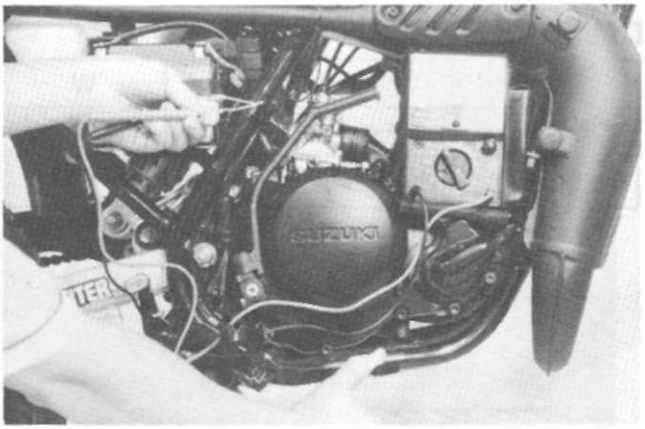
	G	B/W
OFF		
ON	○———	———○

FRONT BRAKE SWITCH

	O	W/B
ON	○———	———○
OFF		

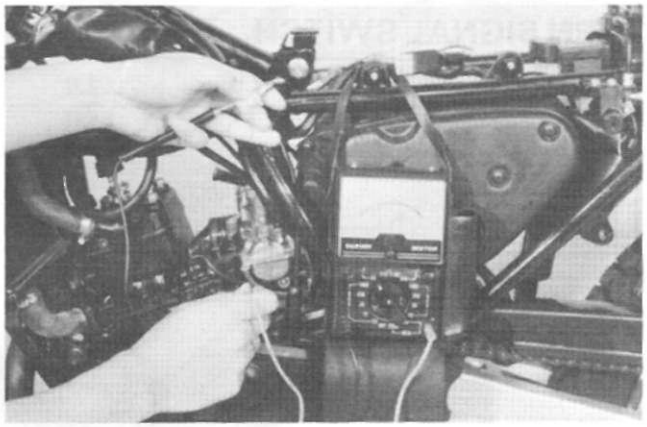
REAR BRAKE SWITCH

	O	W
ON	○———	———○
OFF		



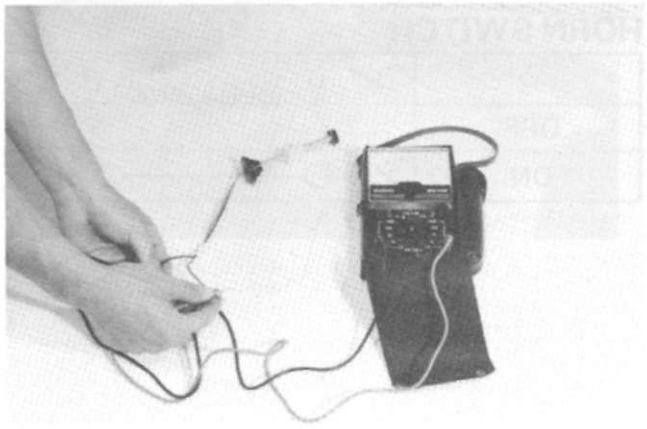
NEUTRAL SWITCH

	BI	Ground
ON	○———	———○
OFF		



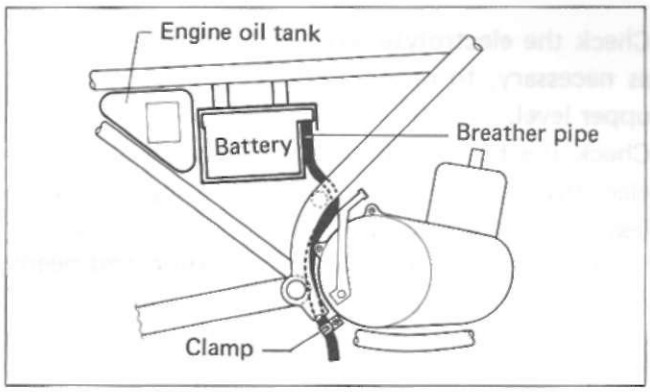
OIL LEVEL GAUGE INSPECTION

Check the oil level switch for continuity between BI/W and B/W lead wires. If the tester does not show the value of 0 – 1 ohm when the switch ring is in bottom, file the contact surface or replace the unit.



BATTERY

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



INITIAL CHARGING

Filling electrolyte

Remove short sealed cap before filling electrolyte. 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 (68°F) up to indicated UPPER LEVEL. Filling electrolyte should be always cooled below 30°C (86°F)) before filling into battery. Leave battery standing for half an hour after filling. Add additional electrolyte if necessary.

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

Maximum charging current	0.4 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.

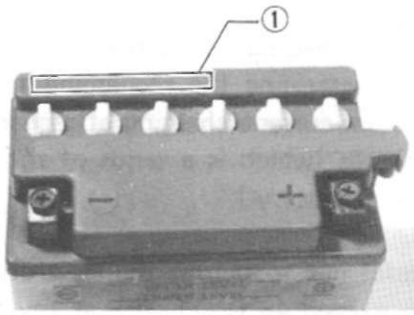
Confirmation for date of manufacture

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

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

Specifications

Type designation	YB4L-B
Capacity	12V 14.4 kC (4 Ah)/ 10HR
Standard electrolyte S.G.	1.28 at 20°C (68°F)

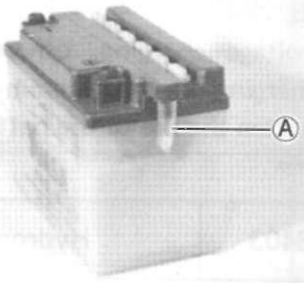


Months after manufacturing	Within 6	Within 9	Within 12	Over 12
Necessary charging hours	20	30	40	60

SERVICING

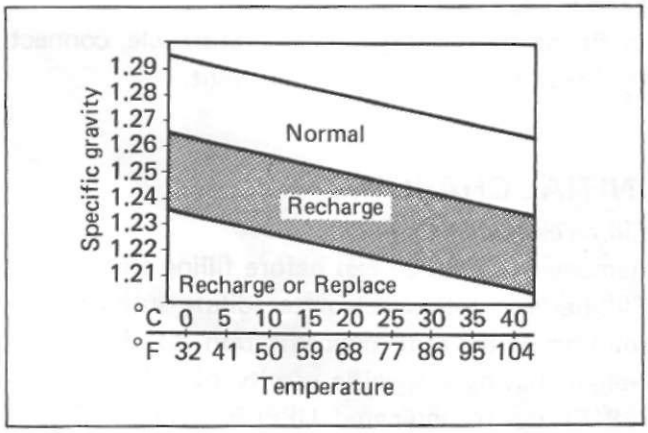
Visually inspect the surface of the battery container. If any signs of cracking or electrolyte leakage from the sides of the battery have occurred, replace the battery with a new one.

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



Sealed cap Ⓐ

Check the electrolyte level and add distilled water, as necessary, to raise the electrolyte to each cell's upper level.
Check the battery for proper charge by taking an electrolyte S.G. reading. If the reading is 1.22 or less, as corrected to 20°C (68°F), it means that the battery is still in a run-down condition and needs recharging.

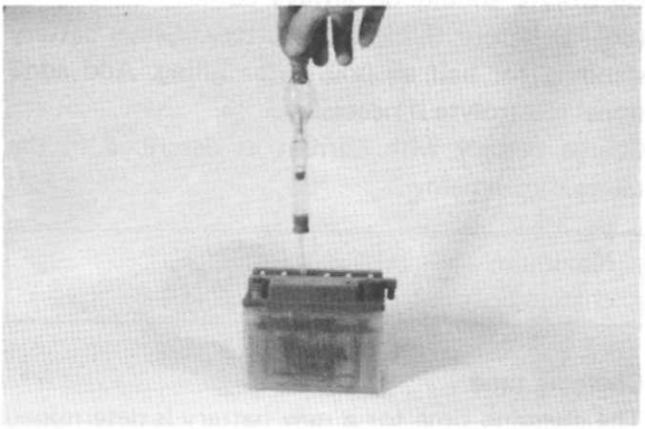


BASED ON S.G. READING

RECHARGING OPERATION

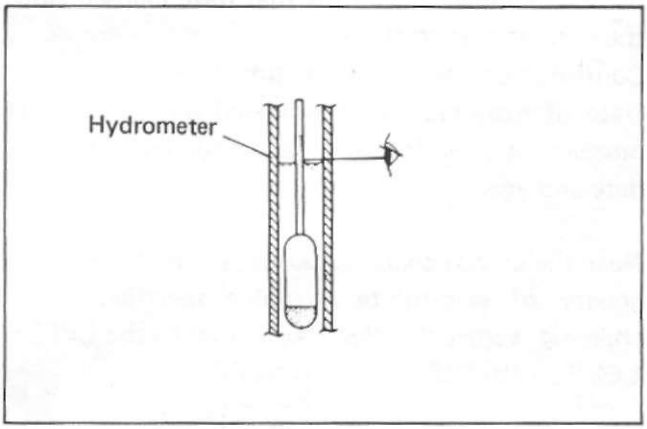
To correct a S.G. reading 20°C (68°F), use following table.

To read the S.G. on the hydrometer, bring the electrolyte in the hydrometer to eye level and 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 0.4 amperes (which is a tenth of the capacity of the present battery.)

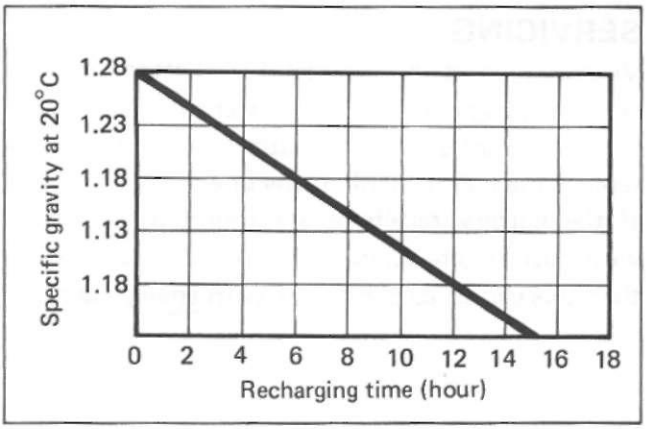
Be careful not to permit the electrolyte temperature to exceed 45°C (113°F), at any time, during the recharging operation. Interrupt the operation, as necessary, to let the electrolyte cool down. Recharge the battery to the specification.



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

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

09900 - 28403	Hydrometer



SERVICE LIFE

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

STORING

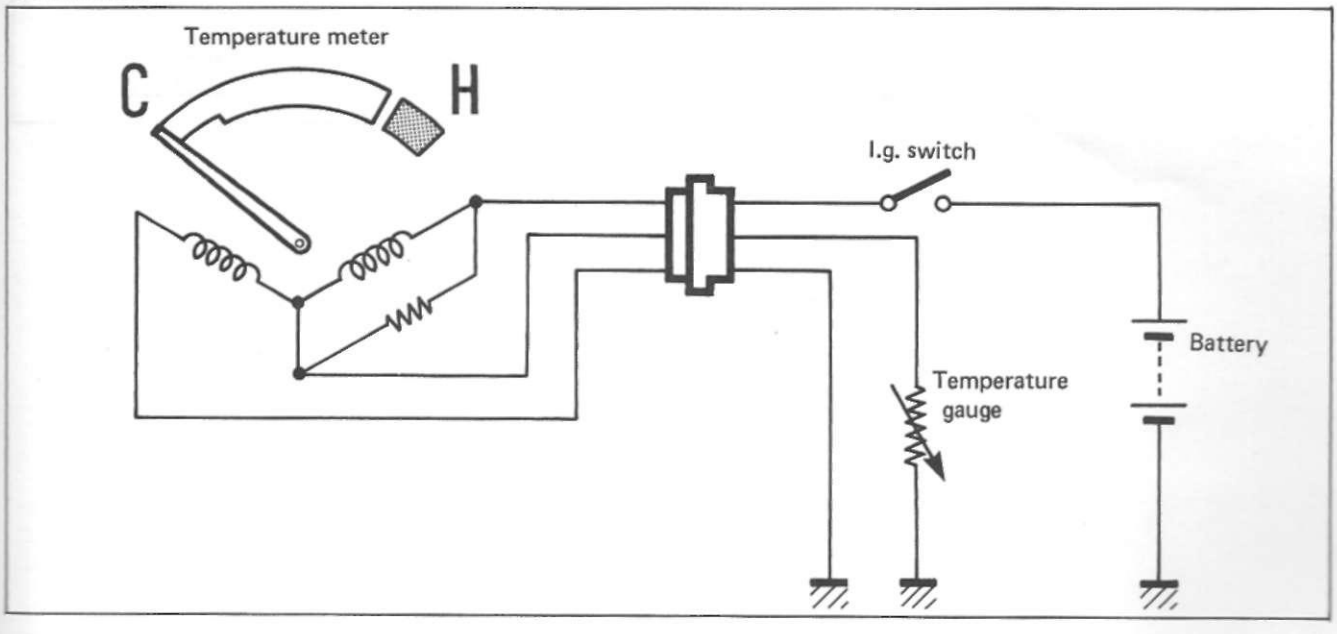
When a battery is left for a long term without using, it is apt to subject to sulfation. When the motorcycle is not used for more than 1 month (especially during the winter season), recharge the battery once a month at least.

WARNING:

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

TEMPERATURE METER

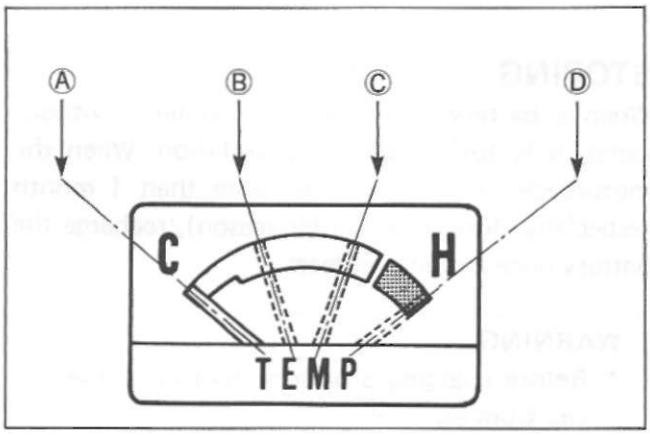
WIRING



- With the ignition switch turned on, disconnect the temperature gauge lead wire, connect the temperature gauge lead wire and ground with the resister.

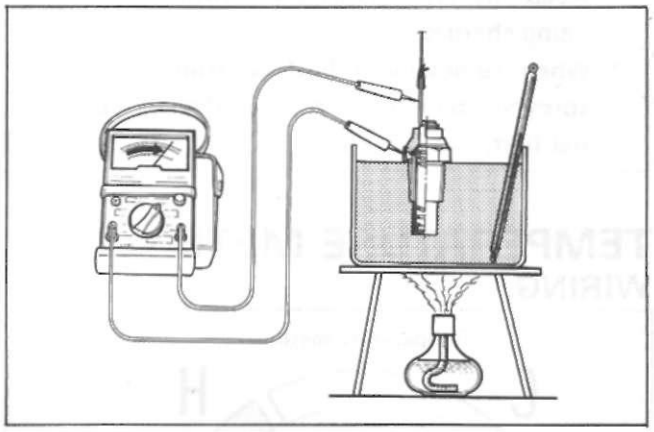
- Inspect the pointer position whenever replacing the respectable resister as indicated below table.

Pointer position	Ⓐ	Ⓑ	Ⓒ	Ⓓ
Resister resistance Unit: Ω	240	104	52	27



- Fill the beaker with water and immerse the temperature gauge unit. Heat the water and measure the resistance of temperature gauge unit about respectable temperature.

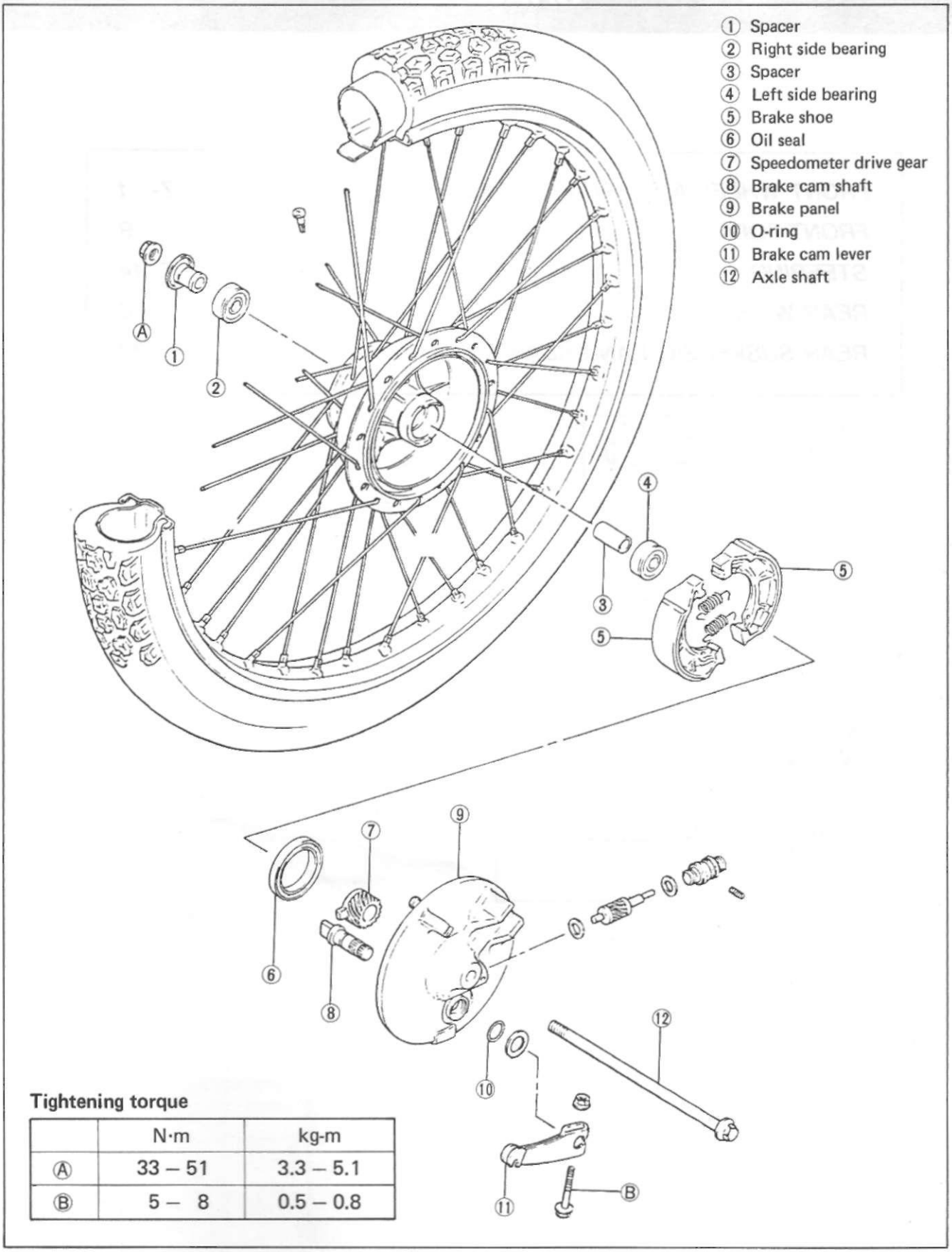
Temperature °C	40	60	80	100
Resistance Ω	240	104	52	27



CHASSIS

CONTENTS

FRONT WHEEL



Tightening torque

	N·m	kg-m
Ⓐ	33 – 51	3.3 – 5.1
Ⓑ	5 – 8	0.5 – 0.8

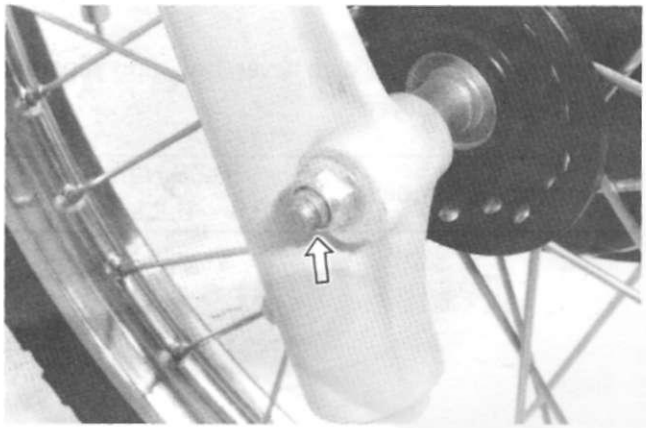
REMOVAL AND DISASSEMBLY

Front wheel

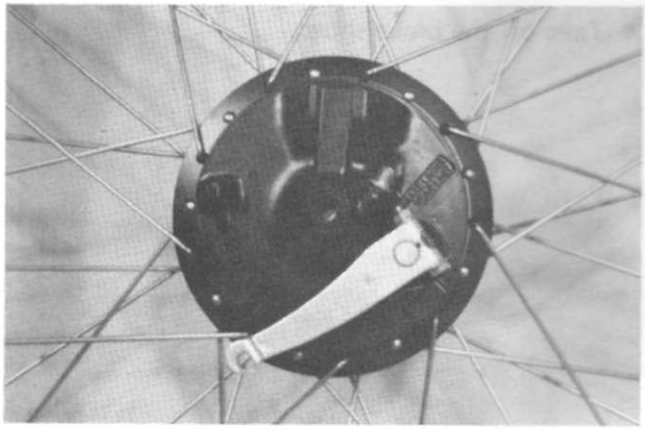
- Support the motorcycle by stand and jack.

- Disconnect the speedometer and front brake cables.

- Loosen and remove the front axle nut.
- Draw out the axle shaft and remove the front wheel.

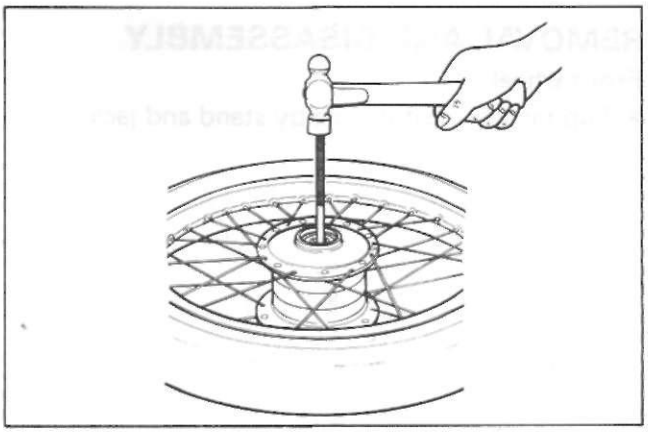


- Separate the front wheel and front brake.



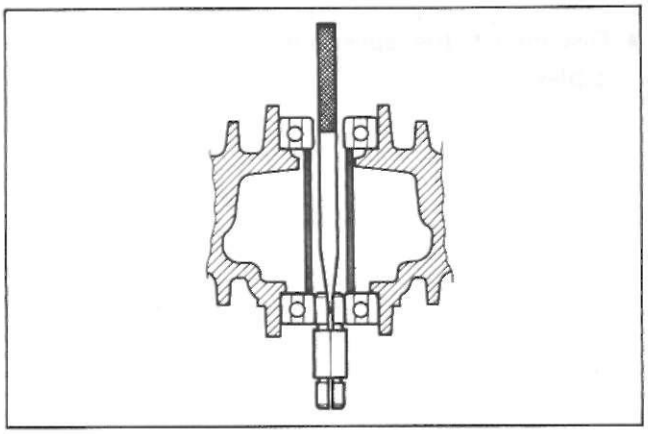
Drive out the wheel bearings right and left using by special tool as following step.

- Insert the adapter into the wheel bearing.
- After insert the wedge bar from the opposite wheel bearing, lock the wedge bar about the adapter.
- Drive out the wheel bearing by knocking the wedge bar.



CAUTION:
The removed bearing should be replaced.

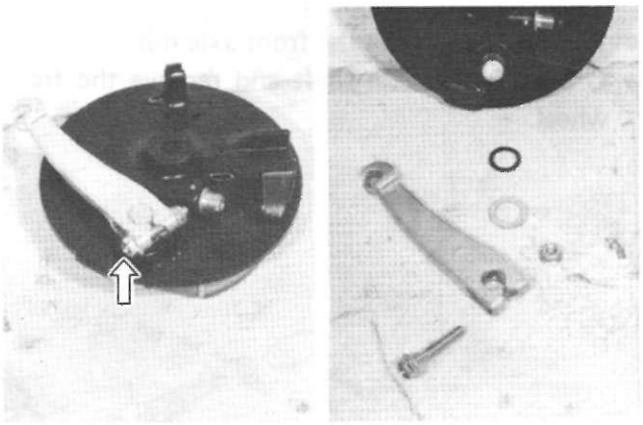
09941 - 50110	Bearing remover



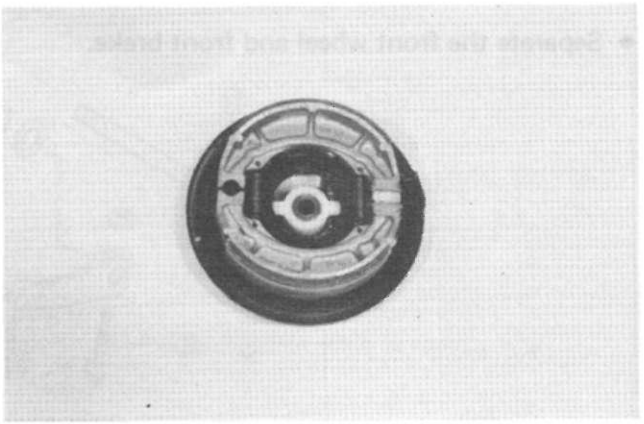
Front brake

- Remove the brake cam lever bolt and separate the brake cam lever.

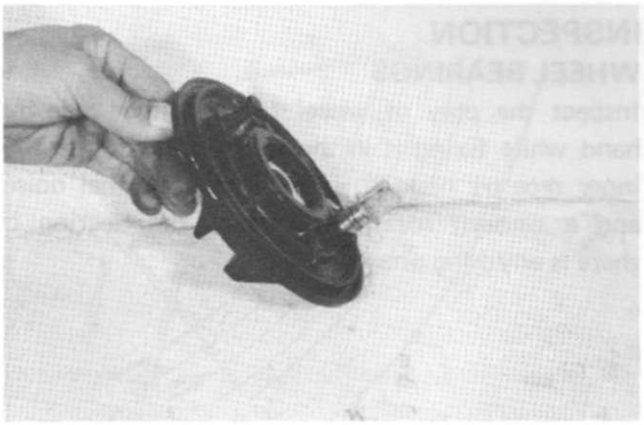
Tightening torque	5 – 8 N·m (0.5 – 0.8 kg-m)



- Take off the brake shoes.

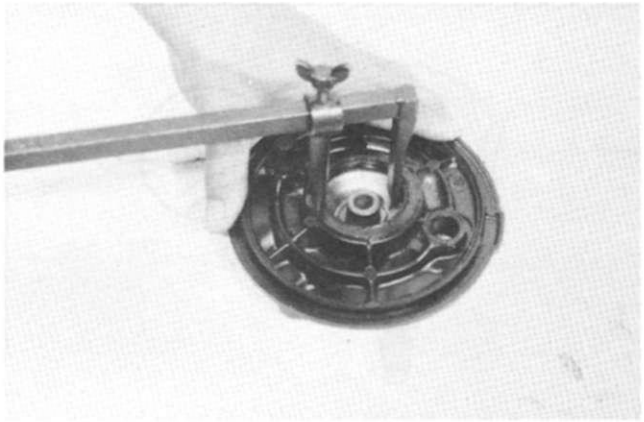


- Remove the cam shaft.

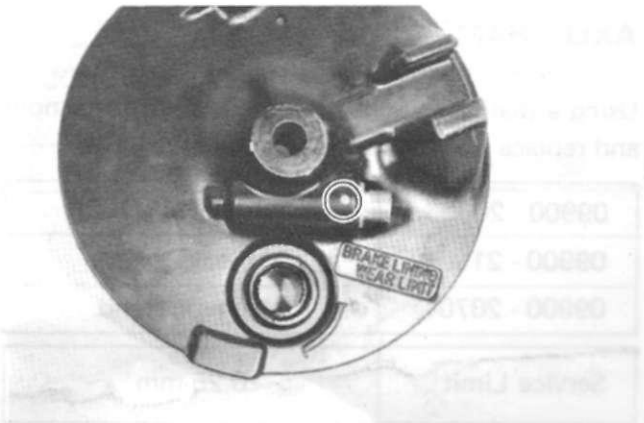


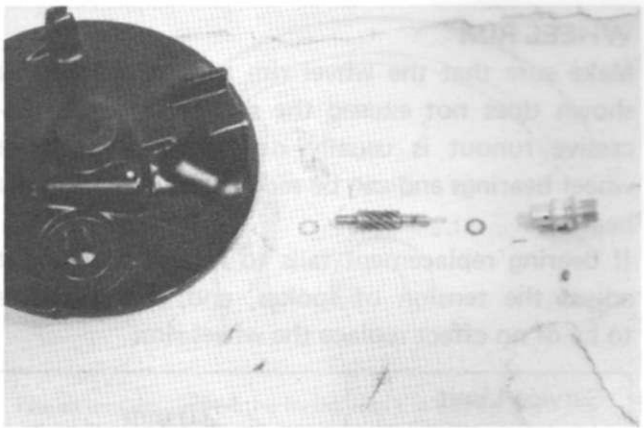
- Take off the oil seal by using the special tool.

09913 - 50121	Oil seal remover



- Remove the speedometer drive gear by unscrewing the securing screw.

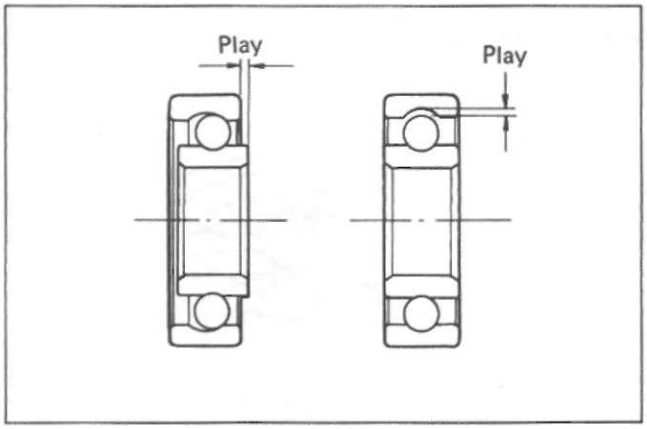


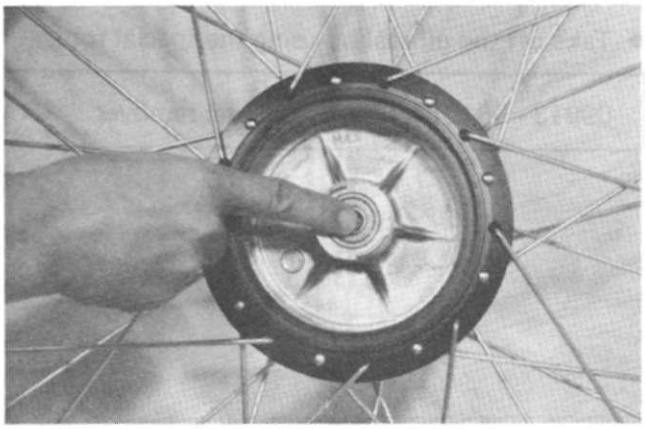


INSPECTION

WHEEL BEARINGS

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



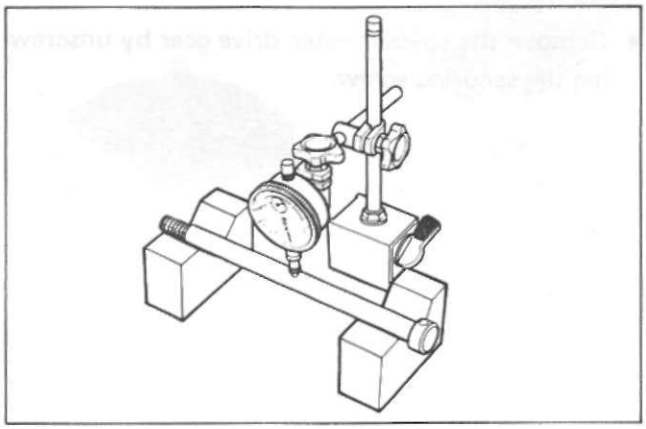


AXLE SHAFT

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

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

Service Limit	0.25 mm

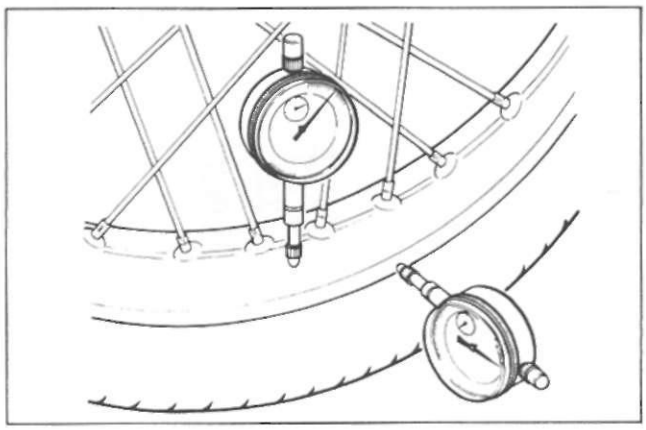


WHEEL RIM

Make sure that the wheel rim runout checked as shown does not exceed the service limit. An excessive runout is usually due to worn or loose wheel bearings and can be reduced by replacing the bearings.

If bearing replacement fails to reduce the runout adjust the tension of spokes, and, if this proves to be of no effect replace the wheel rim.

Service Limit (Axial and Radial)	2.0 mm

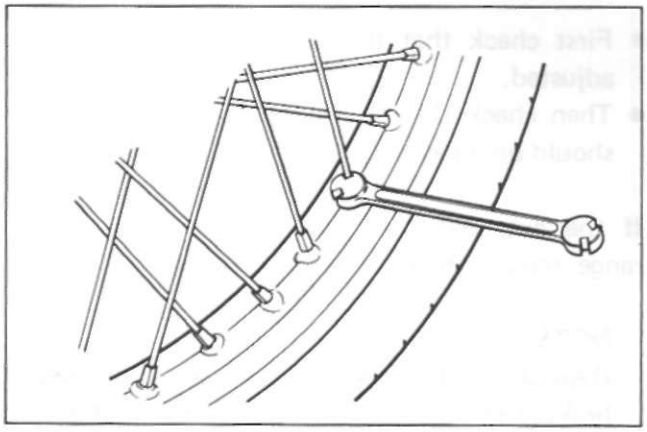


SPOKE NIPPLE

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

Tightening torque	4 – 5 N·m (0.4 – 0.5 kg-m)

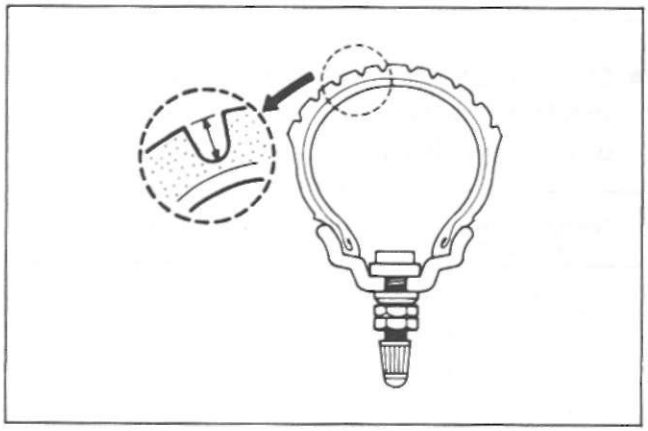
09940 - 60113	Spoke nipple wrench



TIRE

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

	Service Limit
Front	3.0 mm



PRESSURE

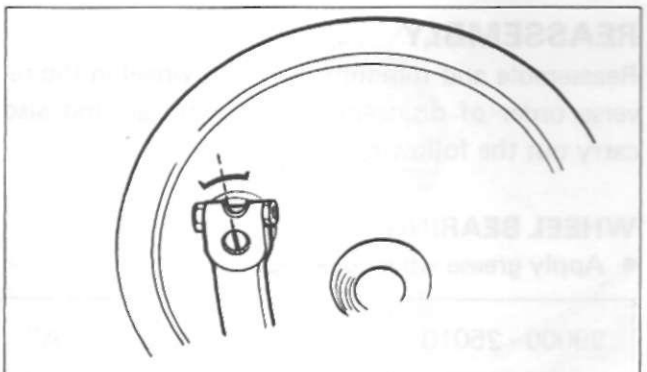
Inflation pressure affects the durability, riding comfort and safety of a tire to a great extent, so it is necessary to maintain a proper inflation pressure.

NOTE:
Tire pressure should be measured when tire is cold.

COLD INFLATION TIRE PRESSURE	NORMAL RIDING	
	kPa	kg/cm²
Front	150	1.50

BRAKE SHOE

Brake panel incorporate a brake lining wear limit indicator. If the lining condition is normal, the brake camshaft index mark line Ⓐ , when extended, will fall within the range Ⓑ embossed on the brake panel (when brake is on).



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

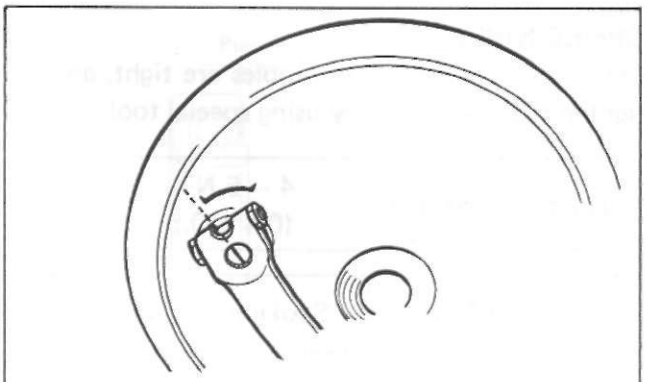
- First check that the brake system is properly adjusted.
- Then check the mark extension line; the brake should be on at this time.

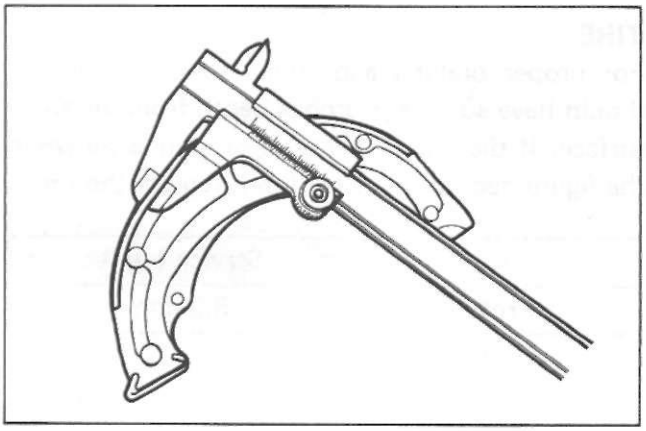
If the extended line falls outside the indicated range, replace the brake shoe assembly.

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

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

Service Limit	1.5 mm


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

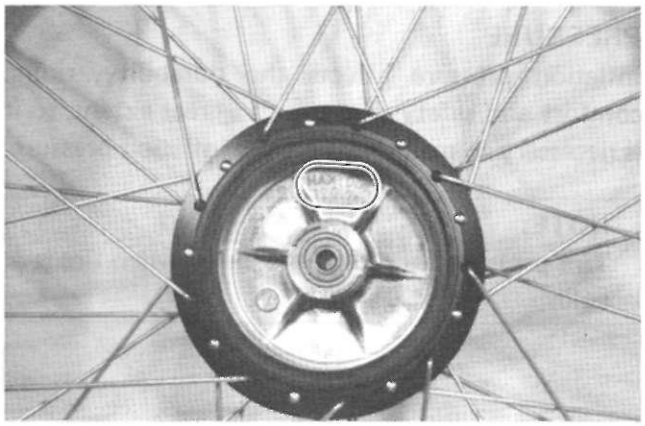


BRAKE DRUM

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

Service Limit	120.7 mm

Inspect the drum I.D. for scratch marks. If the I.D. surface is scratched or otherwise roughened, smoothen it by grinding with sandpaper.



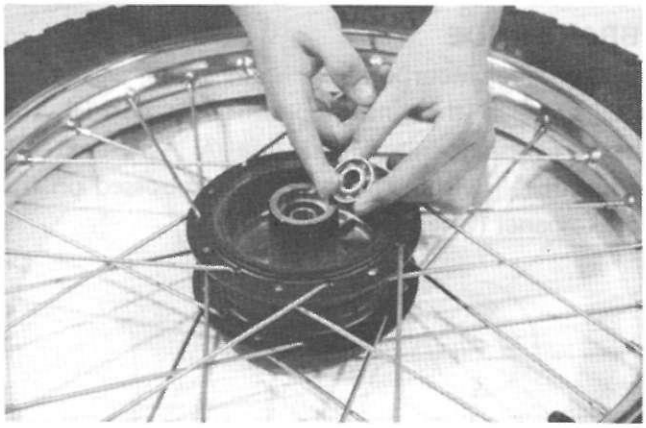
REASSEMBLY

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

WHEEL BEARINGS

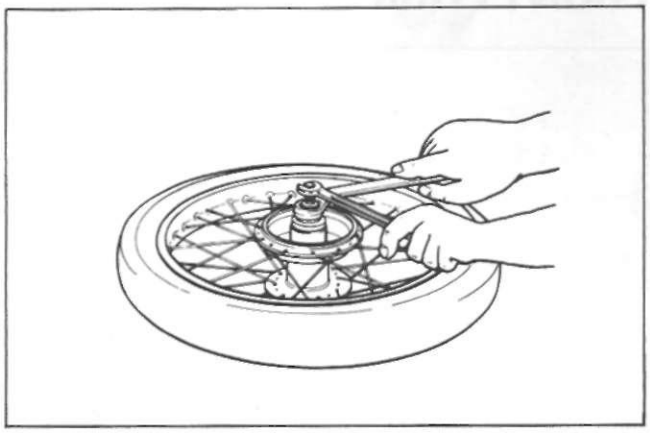
- Apply grease wheel bearings.

99000 - 25010	SUZUKI super grease "A"



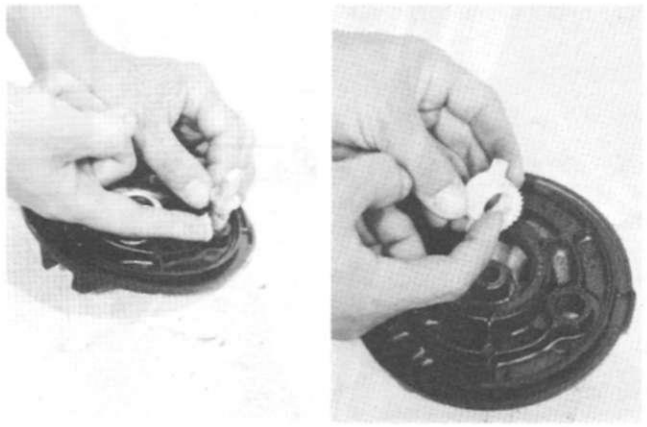
- Install the wheel bearings by using the special tool.

09924 - 84520	Bearing installer set

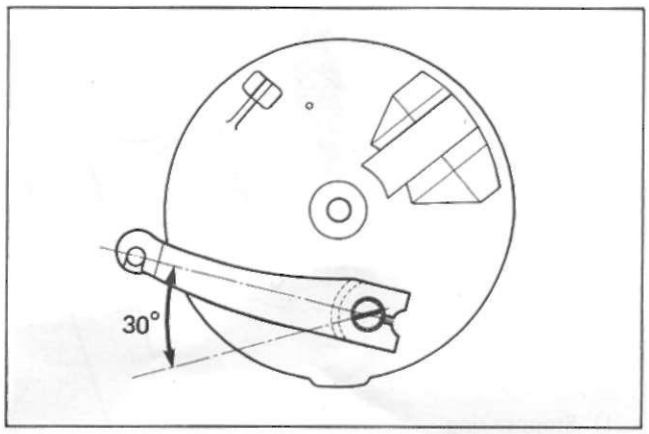


- Apply the grease to the brake cam shaft, surface, speedometer drive and driven gears.

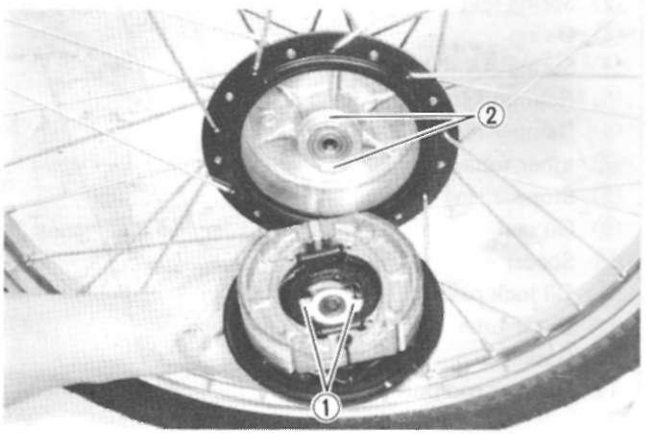
WARNING:
Be careful not to apply too much grease to the brake cam shafts.



- Install the brake cam lever as shown in illustration.

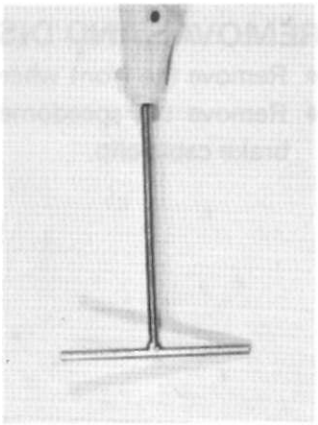


- When installing the brake panel into the brake drum, align the groove ① of brake drum with pawl ② of speedometer gear.

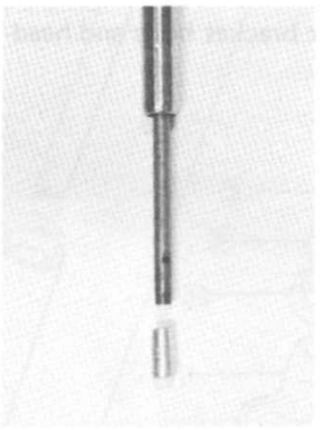


- Loosen the damper rod bolt by using the special tool.

09940 - 34520	T-handle
09940 - 34561	Attachment D
09914 - 25811	6 mm "T" type hexagon wrench

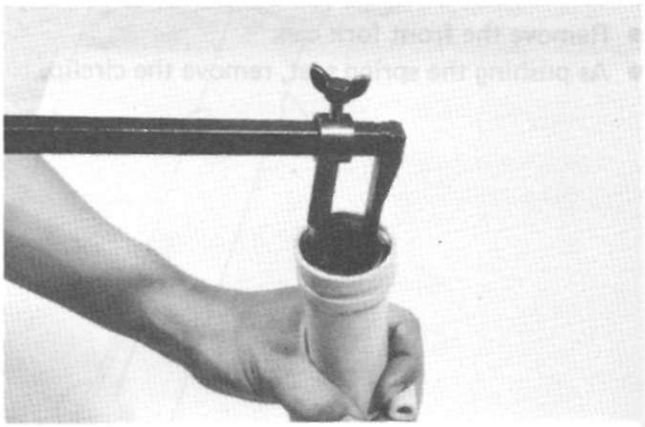


- Remove the oil lock piece and then remove the damper rod.



- Take off the ring.
- Remove the oil seal by using the special tool.

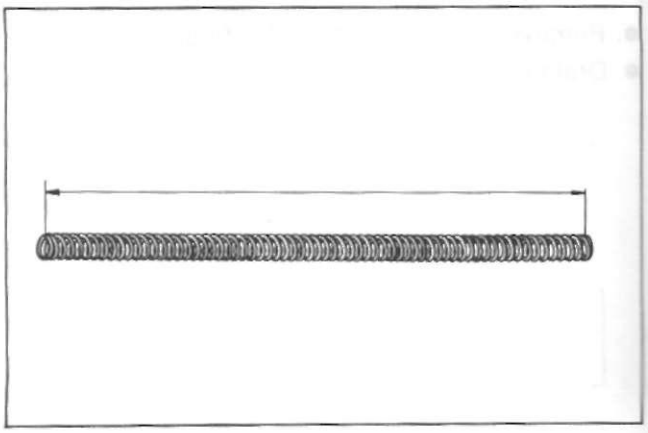
09913 - 50121	Oil seal remover



INSPECTION

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

Service Limit	544.2 mm



REASSEMBLY

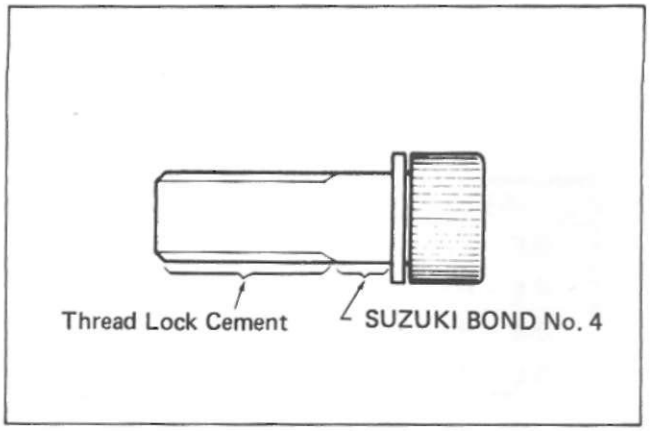
Reassemble and remount the front fork in the reserve order of disassembly and removal, and also carry out the following steps.

DAMPER ROD BOLT

Apply Thread lock cement and Bond No. 1207B to the damper rod bolt and tighten with specified torque value.

09940 - 34520	T-handle
09940 - 34561	Attachment D
09914 - 25811	6 mm "T" type hexagon wrench
99000 - 31140	SUZUKI Bond No. 1207B
99000 - 32040	Thread lock cement

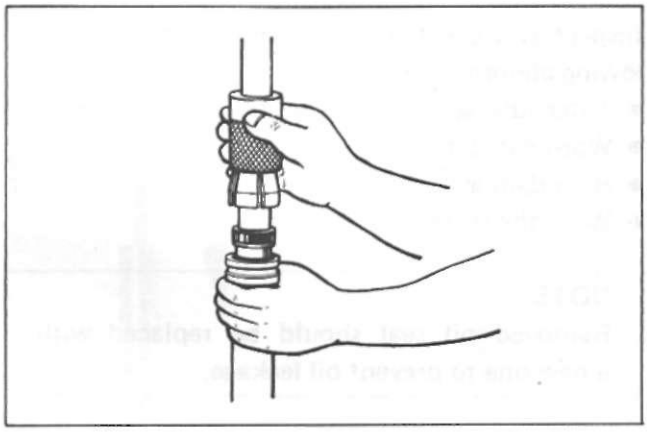
Tightening torque	15 – 25 N·m (1.5 – 2.5 kg-m)



OIL SEAL

- Install the oil seal by using the special tool.

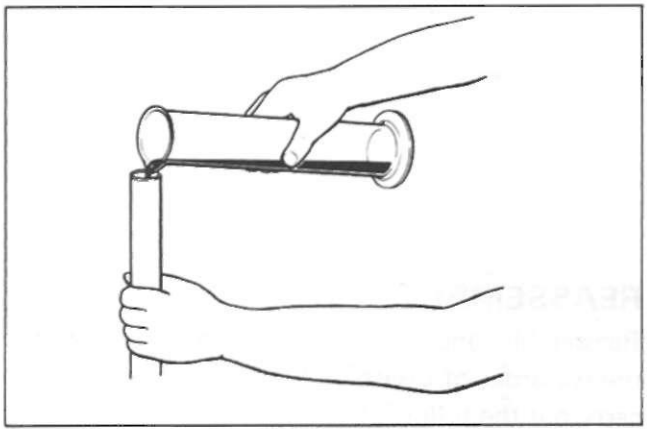
09940 - 50112	Oil seal installer



FORK OIL

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

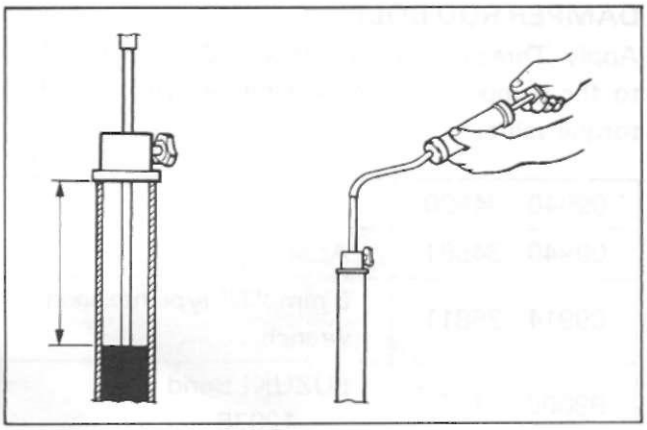
Fork oil	Fork oil # 10
Capacity	150.6 ml



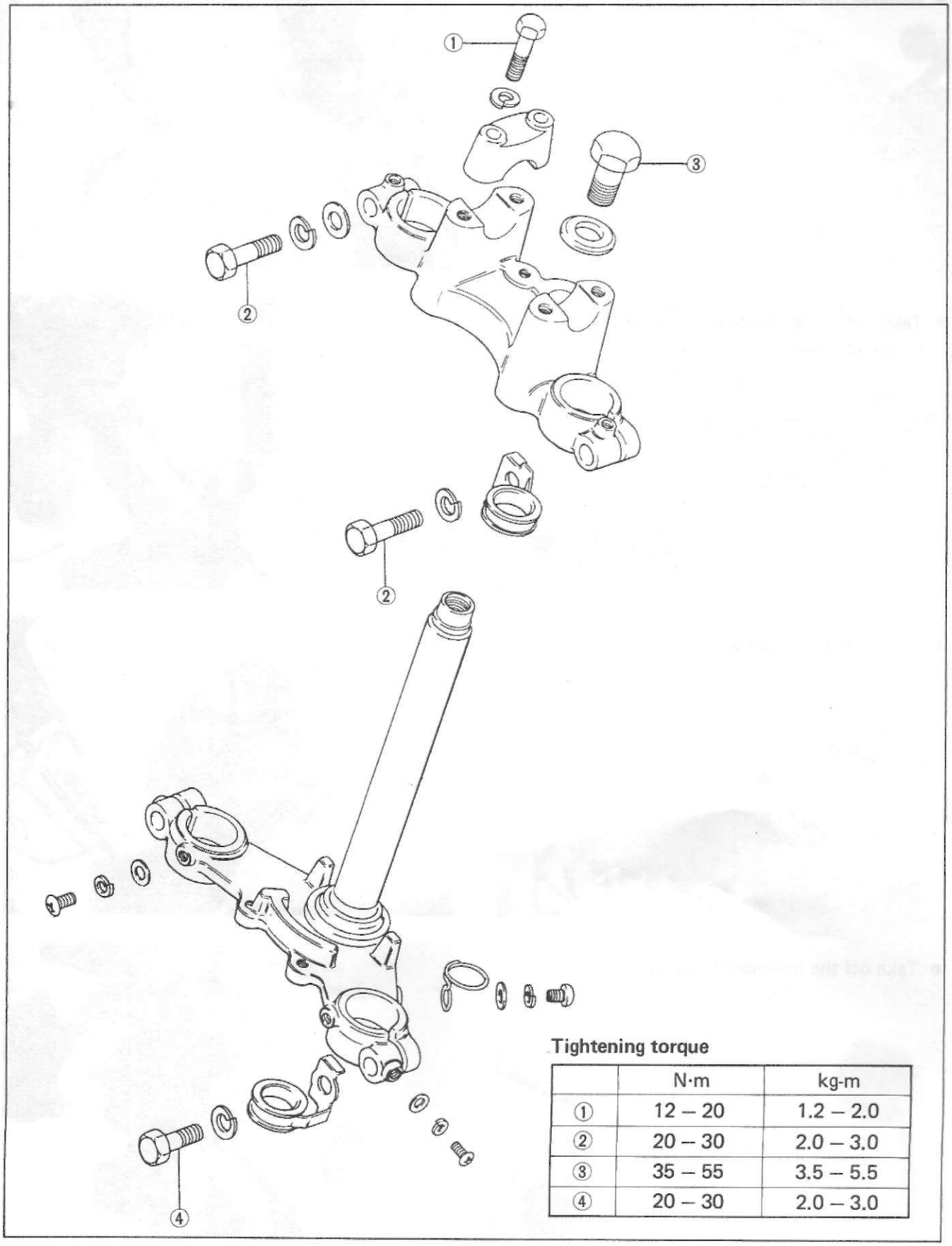
Hold the fork oil vertical and adjust the fork oil level with the special tool.

NOTE:
When adjusting oil level, compress the inner tube fully.

09943 - 74111	Fork oil level gauge
Oil level	185 mm



STEERING

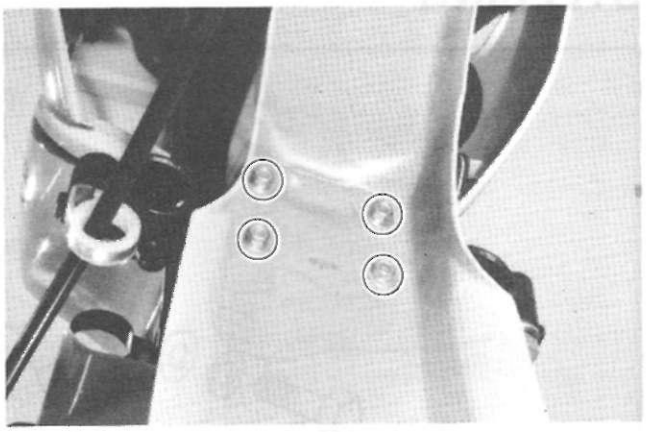


Tightening torque

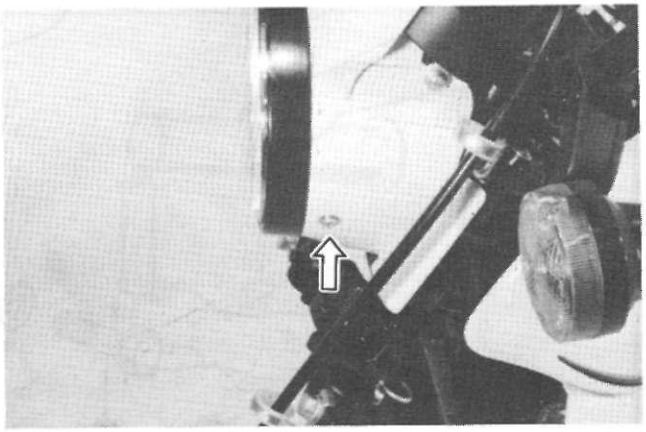
	N·m	kg-m
①	12 – 20	1.2 – 2.0
②	20 – 30	2.0 – 3.0
③	35 – 55	3.5 – 5.5
④	20 – 30	2.0 – 3.0

DISASSEMBLY

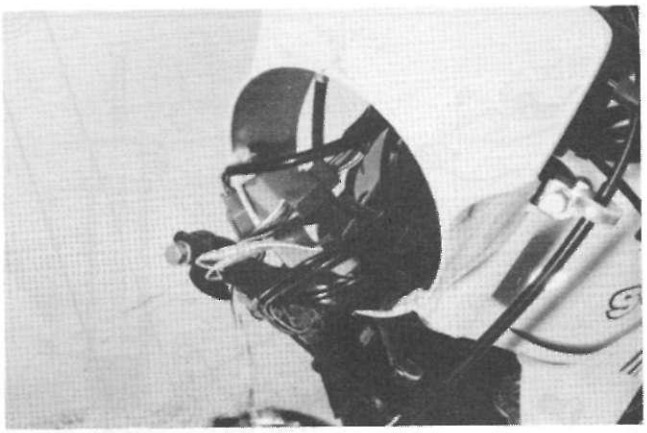
- Remove the fender.



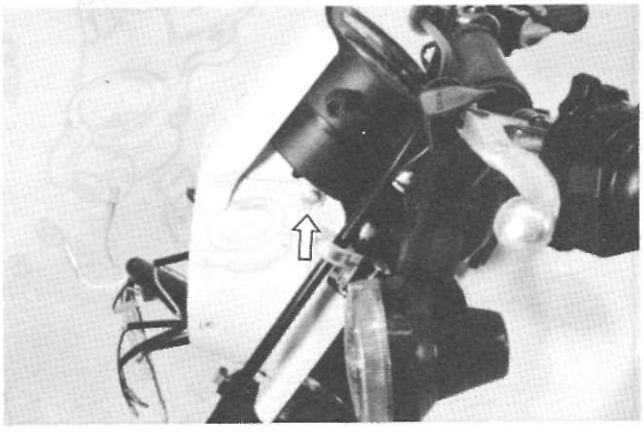
- Take off the headlight by unscrewing the retaining screws.



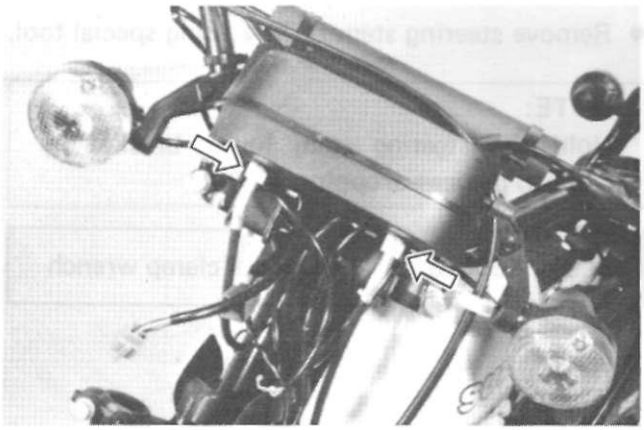
- Disconnect the lead wires.



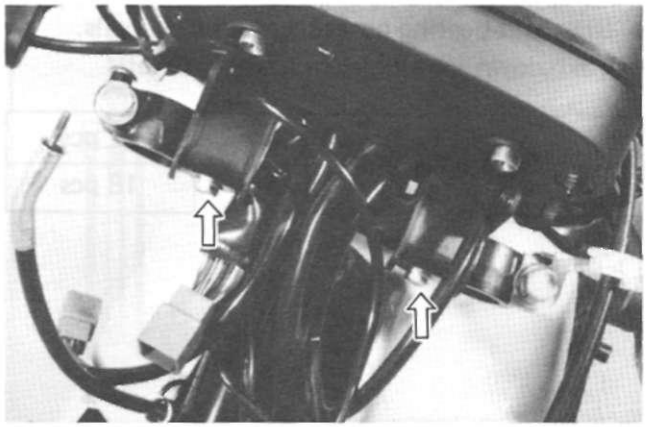
- Take off the headlight housing.



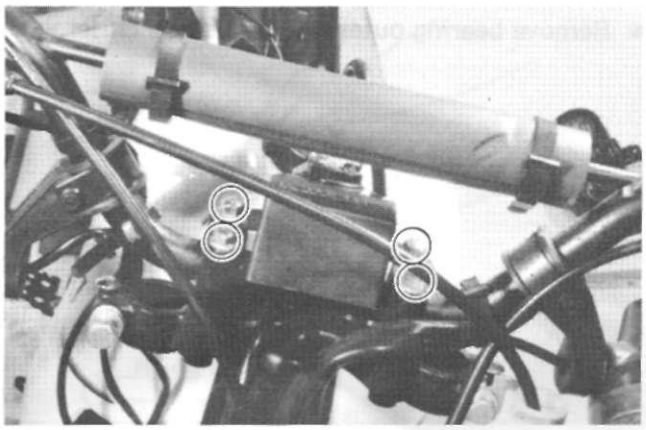
- Disconnect the speedometer cable and tachometer cable.



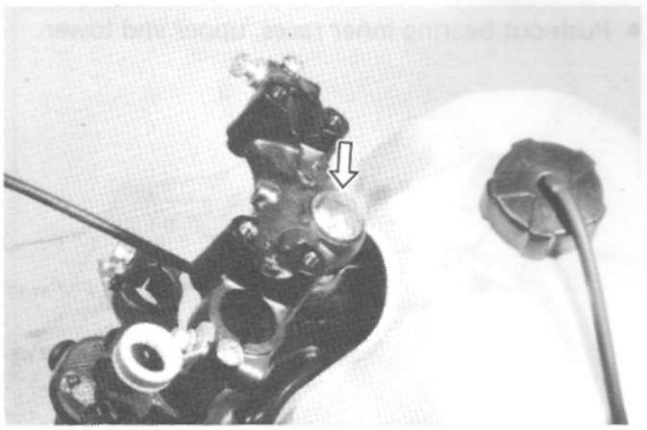
- Loosen the combination meter retaining bolts and remove the combination meter.



- Loosen the handlebar set bolt, and then remove the handlebar and ignition switch.



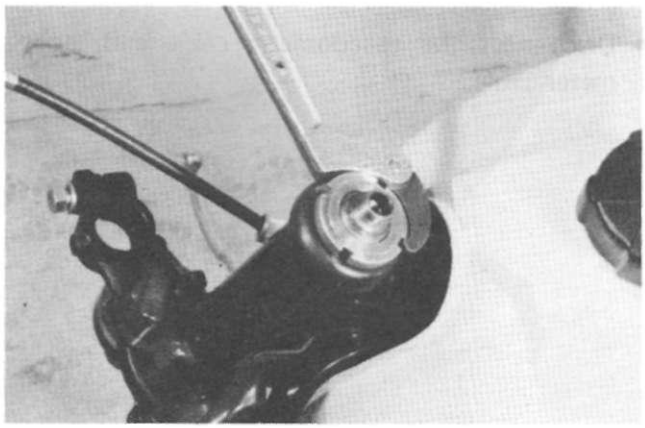
- Loosen the steering stem head bolt.
- Remove the steering stem upper bracket.



- Remove steering stem nut by using special tool.

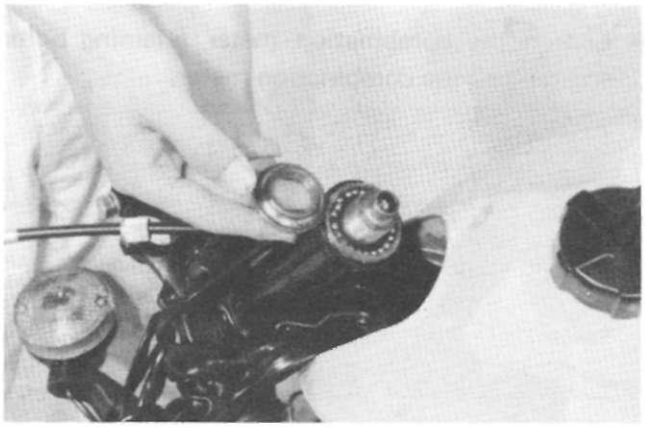
NOTE:
Hold the steering stem lower bracket by hand to prevent dropping.

09910 - 60610	Universal clamp wrench

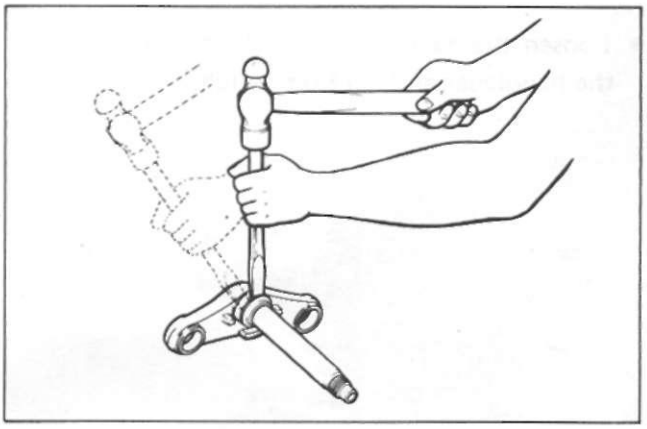


- Draw out bearing outer race and steel balls.
- Take down steering stem lower bracket.

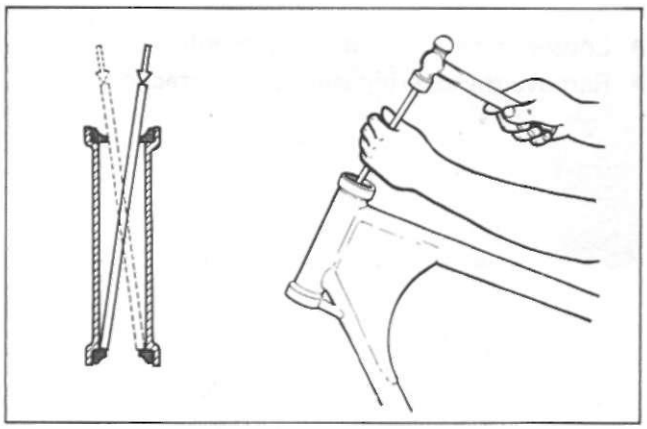
Number of balls	Upper	22 pcs
	Lower	18 pcs



- Remove bearing outer race by using a chisel.



- Push out bearing inner races, upper and lower.



INSPECTION

Inspect and check the removed parts for the following abnormalities.

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

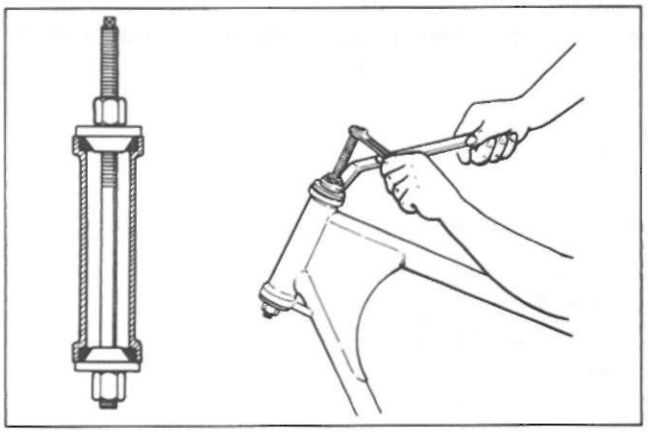
REASSEMBLY

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

OUTER RACES

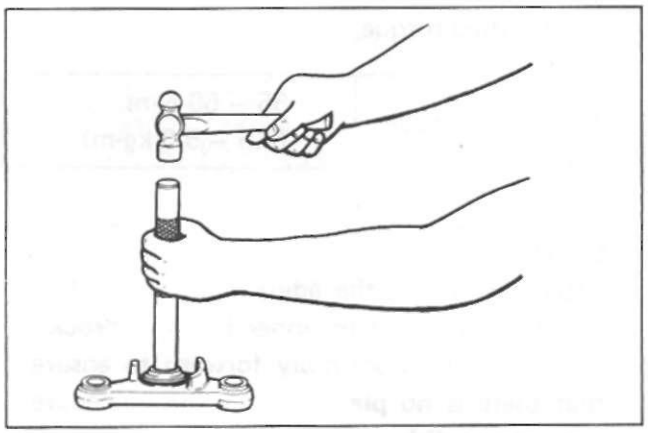
- Press in the upper and lower outer races using special tool.

09941 - 34513	Steering outer race installer



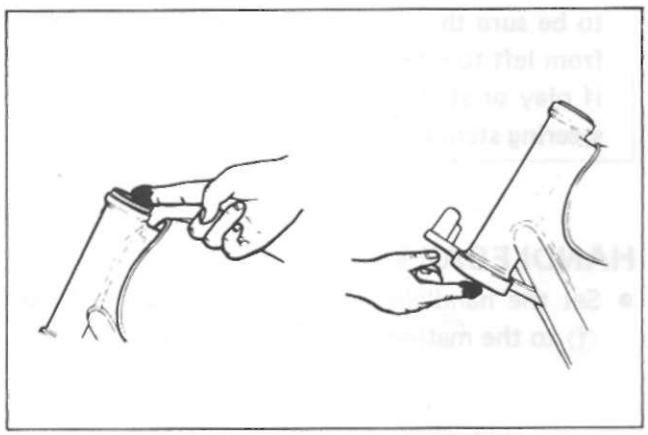
- Press in the lower inner race by using special tool.

09941 - 74910	Steering bearing installer



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

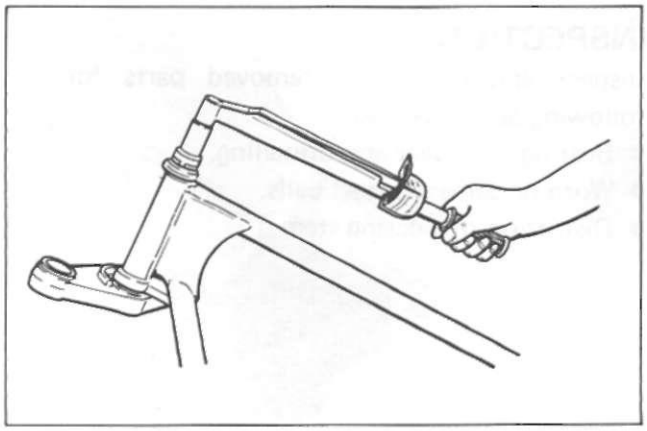
09900 - 25010	Suzuki super grease "A"



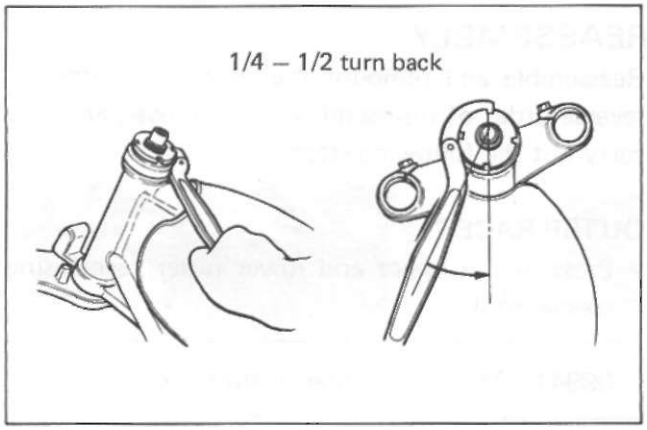
STEERING ADJUSTMENT

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

09940 - 14911	Steering nut socket wrench



- Turn the steering stem bracket about five or six times to the left and right until it locks in position so that the ball bearing will be seated properly.
- Turn back the stem nut by 1/4 – 1/2 turn.

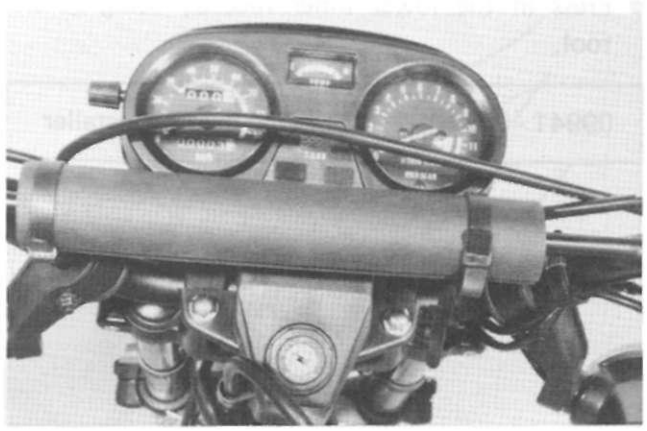


NOTE:
This adjustment will vary from motorcycle to motorcycle.

- Steering stem head bolt should be tightened to the specified torque.

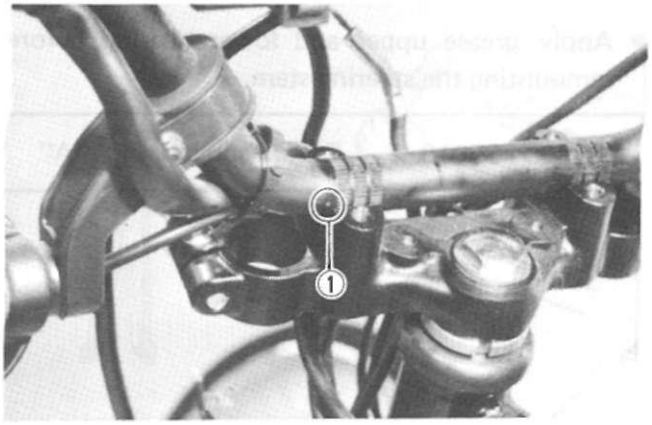
Tightening torque	35 – 50 N·m (3.5 – 5.0 kg-m)

CAUTION:
After performing the adjustment and installing the steering stem upper bracket, "rock" the front wheel assembly forward 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 or stiffness is noticeable, re-adjust the steering stem nut.



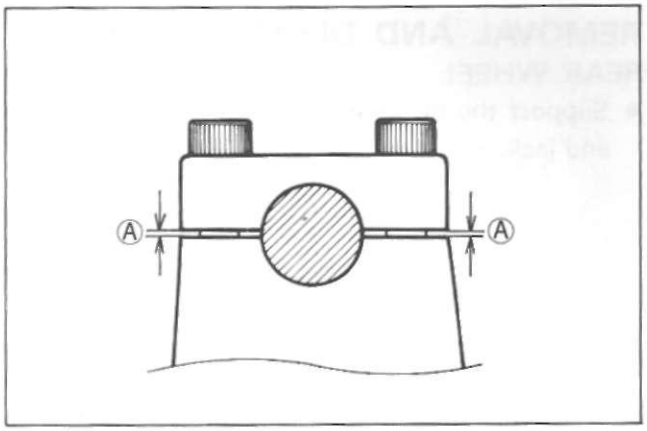
HANDLEBARS

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

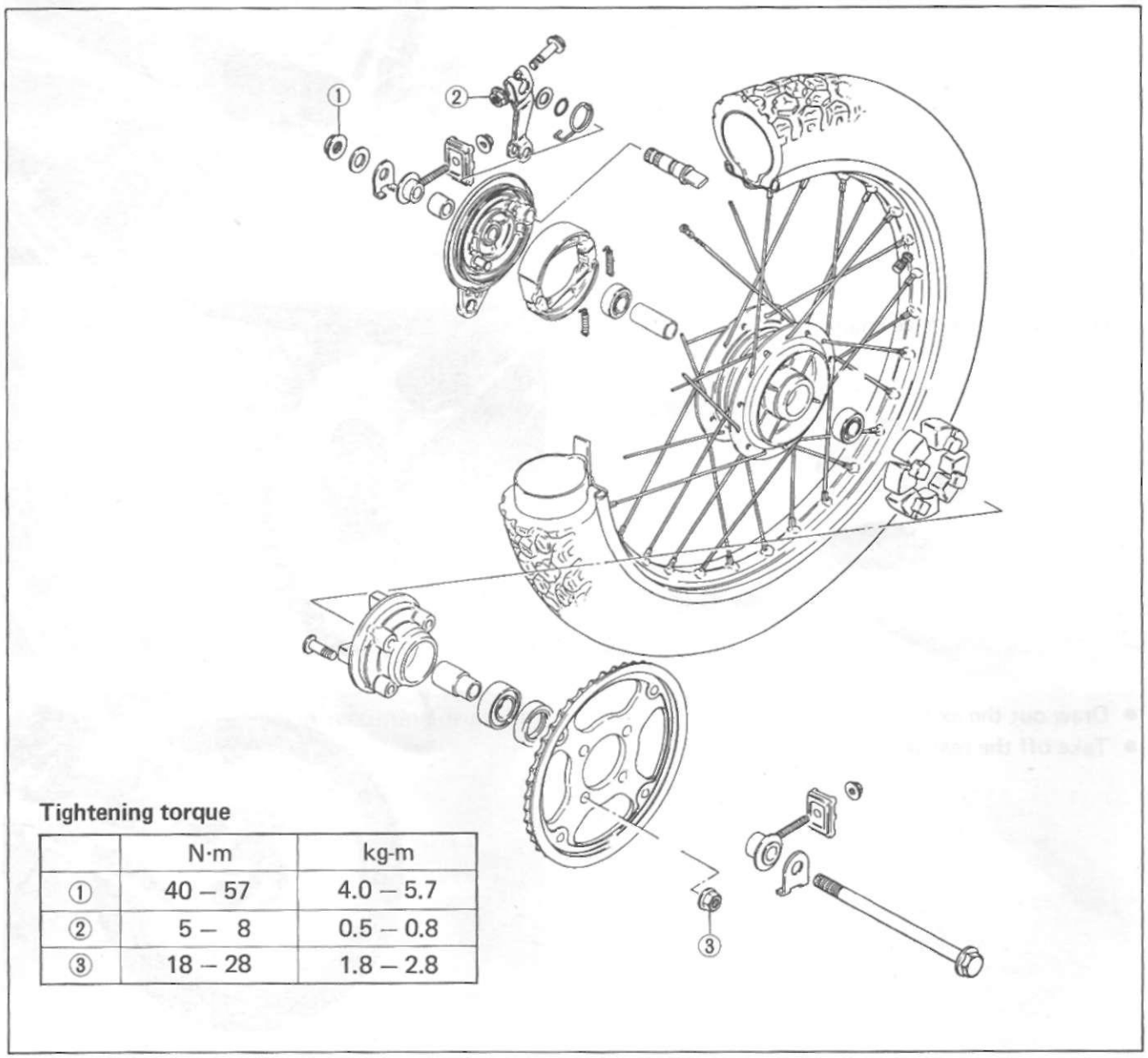


- Secure the each handlebars clamp in such a way that the clearance Ⓐ ahead of an behind the handlebars be equalized.

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



REAR WHEEL AND REAR BRAKE



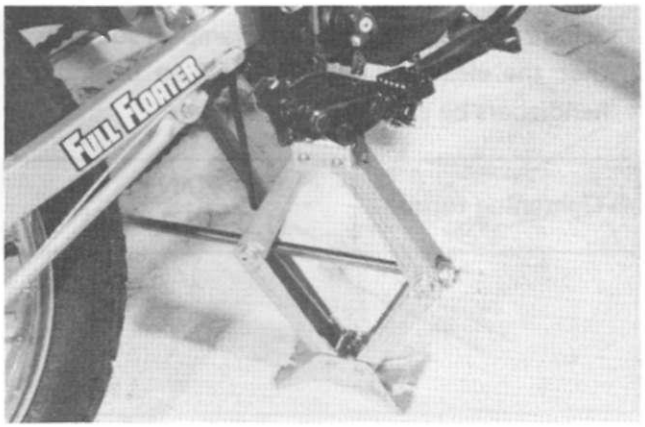
Tightening torque

	N·m	kg-m
①	40 – 57	4.0 – 5.7
②	5 – 8	0.5 – 0.8
③	18 – 28	1.8 – 2.8

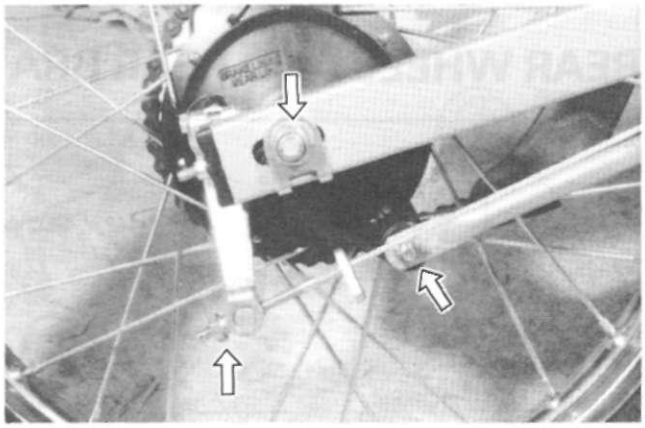
REMOVAL AND DISASSEMBLY

REAR WHEEL

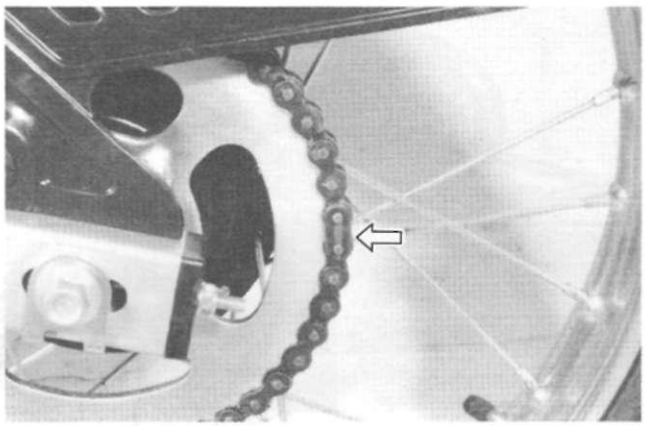
- Support the motorcycle by using the side stand and jack.



- Remove the rear torque link and rear brake rod.
- Loosen the rear axle nut.

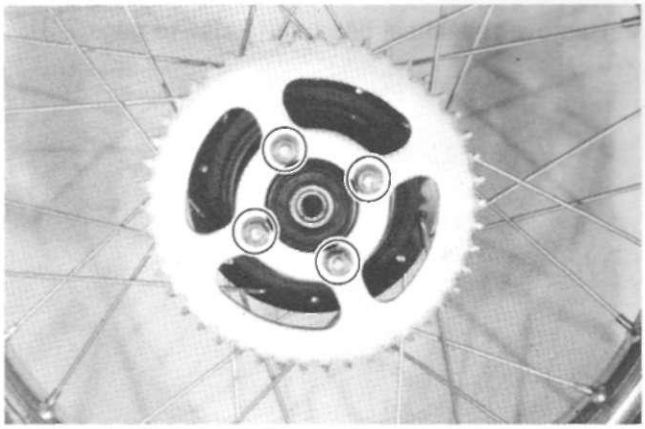


- Disconnect the drive chain.

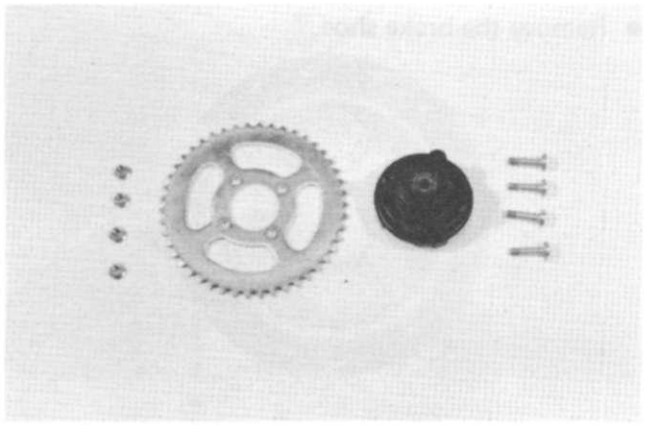


- Draw out the axle shaft.
- Take off the rear wheel.

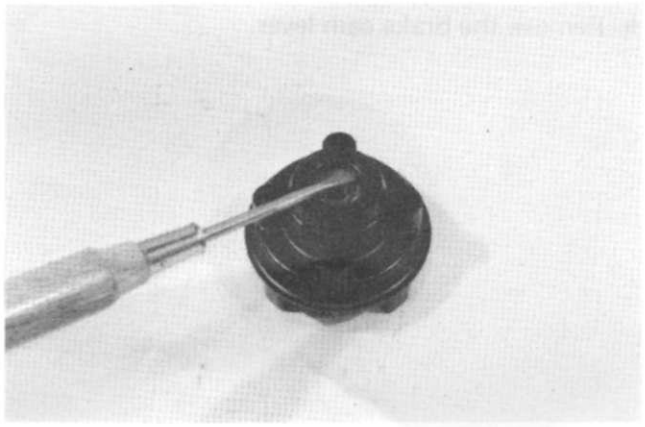
- Loosen and remove the rear sprocket mounting nuts.



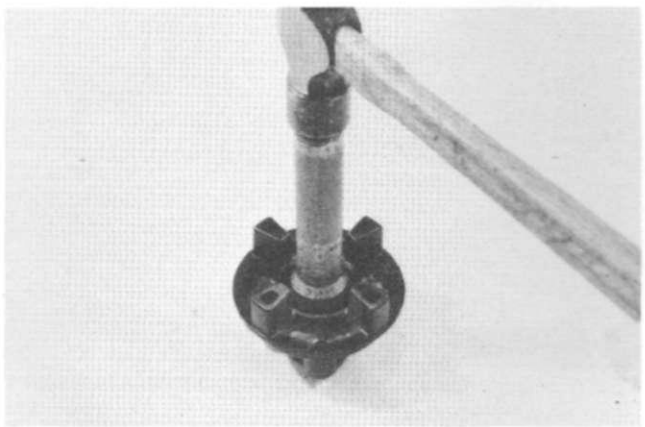
NOTE:
Do not reuse the self lock nuts.



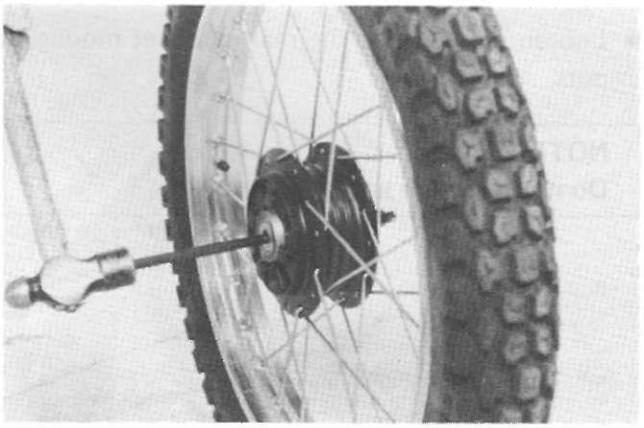
- Remove the oil seal.



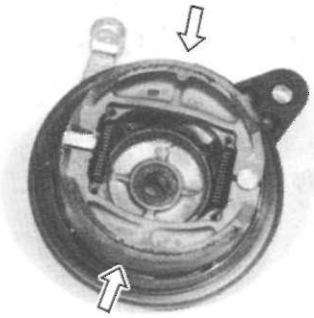
- Remove the rear sprocket mounting drum bearing.



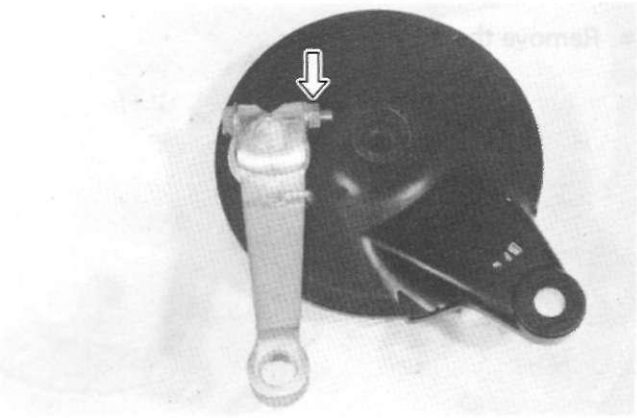
- Remove the wheel bearing. (Refer to page 7-3).

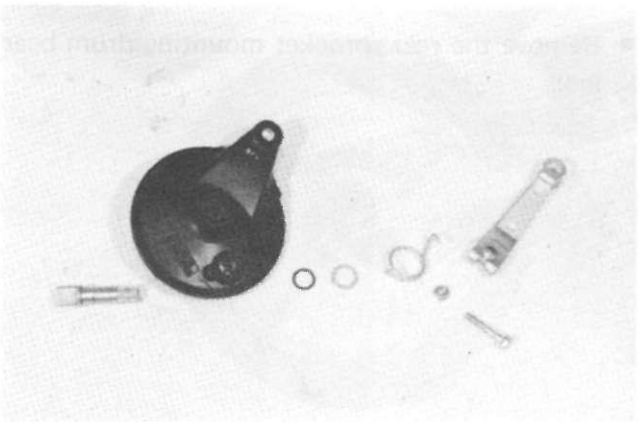


- Remove the brake shoe.



- Remove the brake cam lever.





INSPECTION

- WHEEL BEARING (Refer to page 7-5).
- AXLE SHAFT (Refer to page 7-5).
- WHEEL RIM (Refer to page 7-5).
- SPOKE NIPPLE (Refer to page 7-6).
- TIRE (Refer to page 7-6).

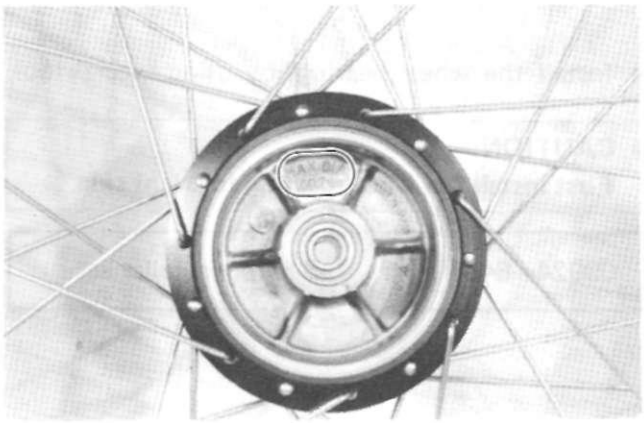
Rear tire pressure

COLD INFLATION TIRE PRESSURE	NORMAL RIDING	
	kPa	kg/cm²
REAR	175	1.75

- BRAKE SHOE (Refer to page 7-6).
- BRAKE DRUM (Refer to page 7-7).

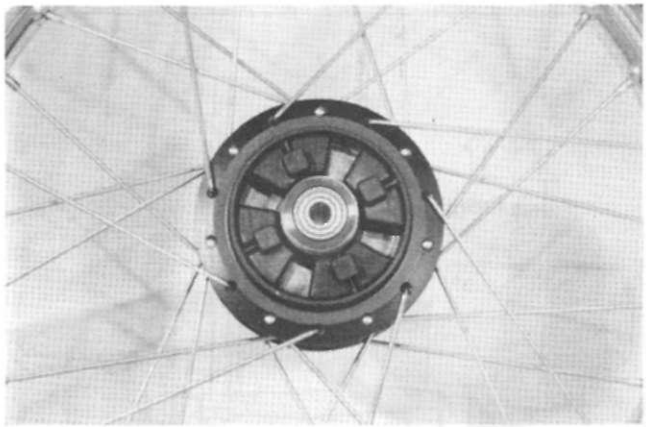
Rear brake drum I.D.

Service Limit	100.7 mm



REAR DRUM SHOCK ABSORBERS

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



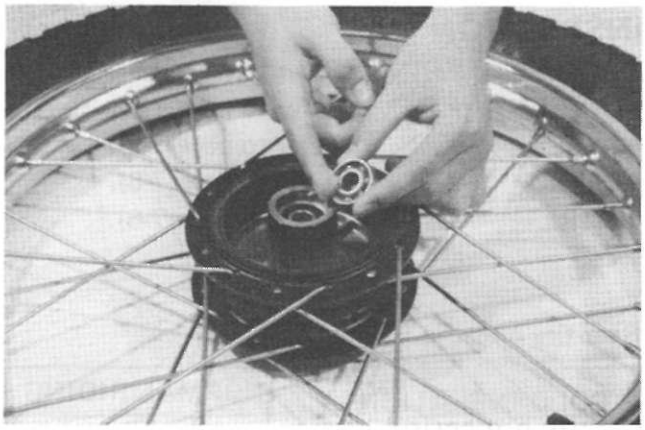
REASSEMBLY

Reassemble and remount the rear wheel in the reserve order of removal and disassembly, and also carry out the following step.

WHEEL BEARING

- Apply the grease to the wheel bearings.

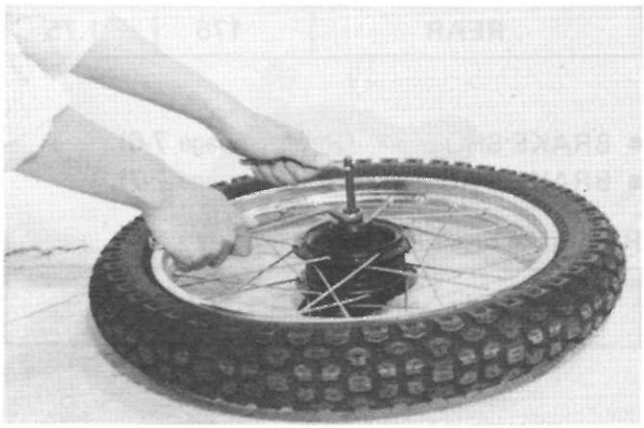
99000 - 35010	Suzuki super grease "A"

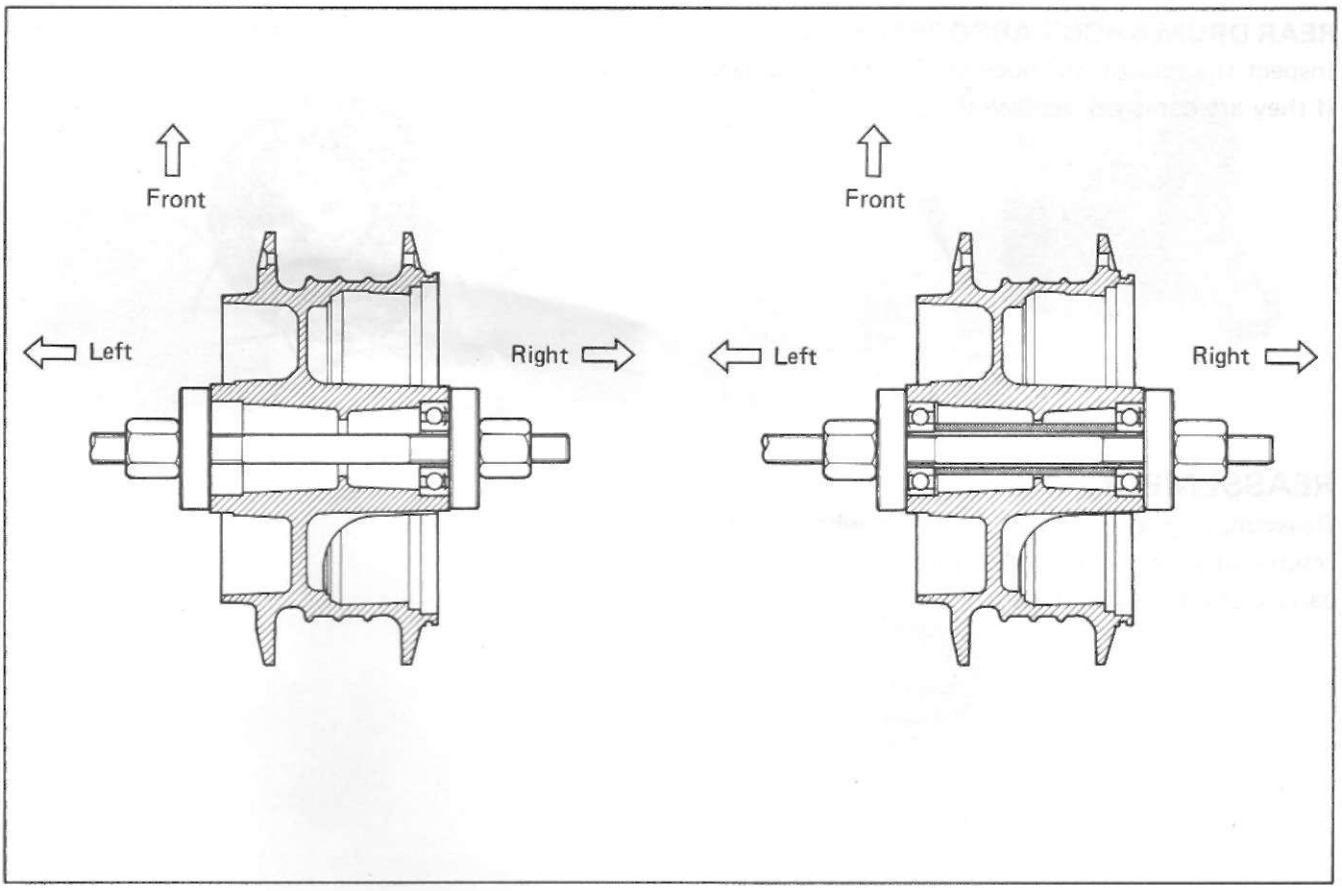


- Install the wheel bearings by using special tool.

CAUTION:
First install the wheel bearing for right side.

09924 - 84510	Bearing installer set





SPROCKET MOUNTING DRUM BEARING

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

09913 - 84510	Bearing installer

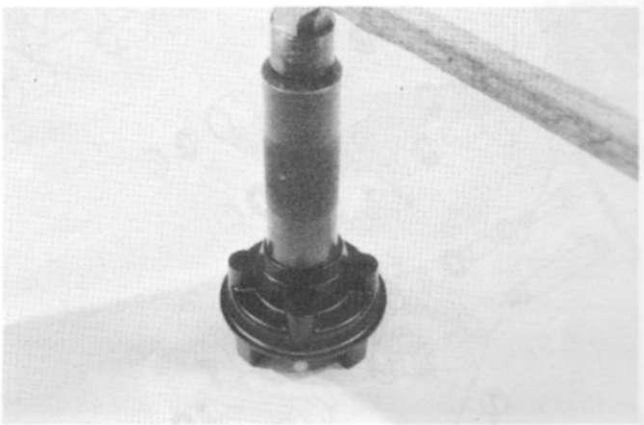
- Apply the grease to bearing.

99000 - 25010	Suzuki super grease "A"

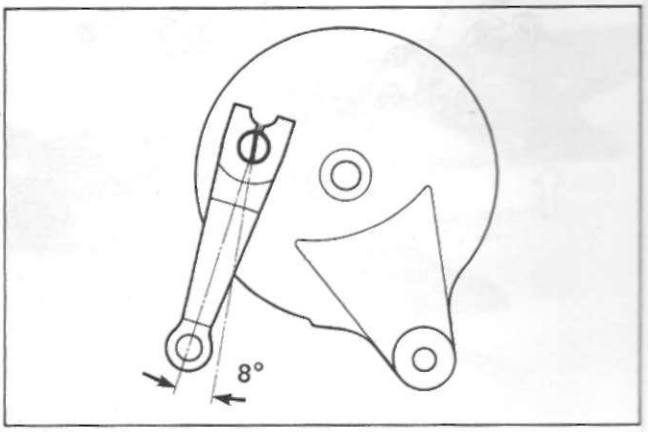
OIL SEAL

Install the oil seal by using special tool.

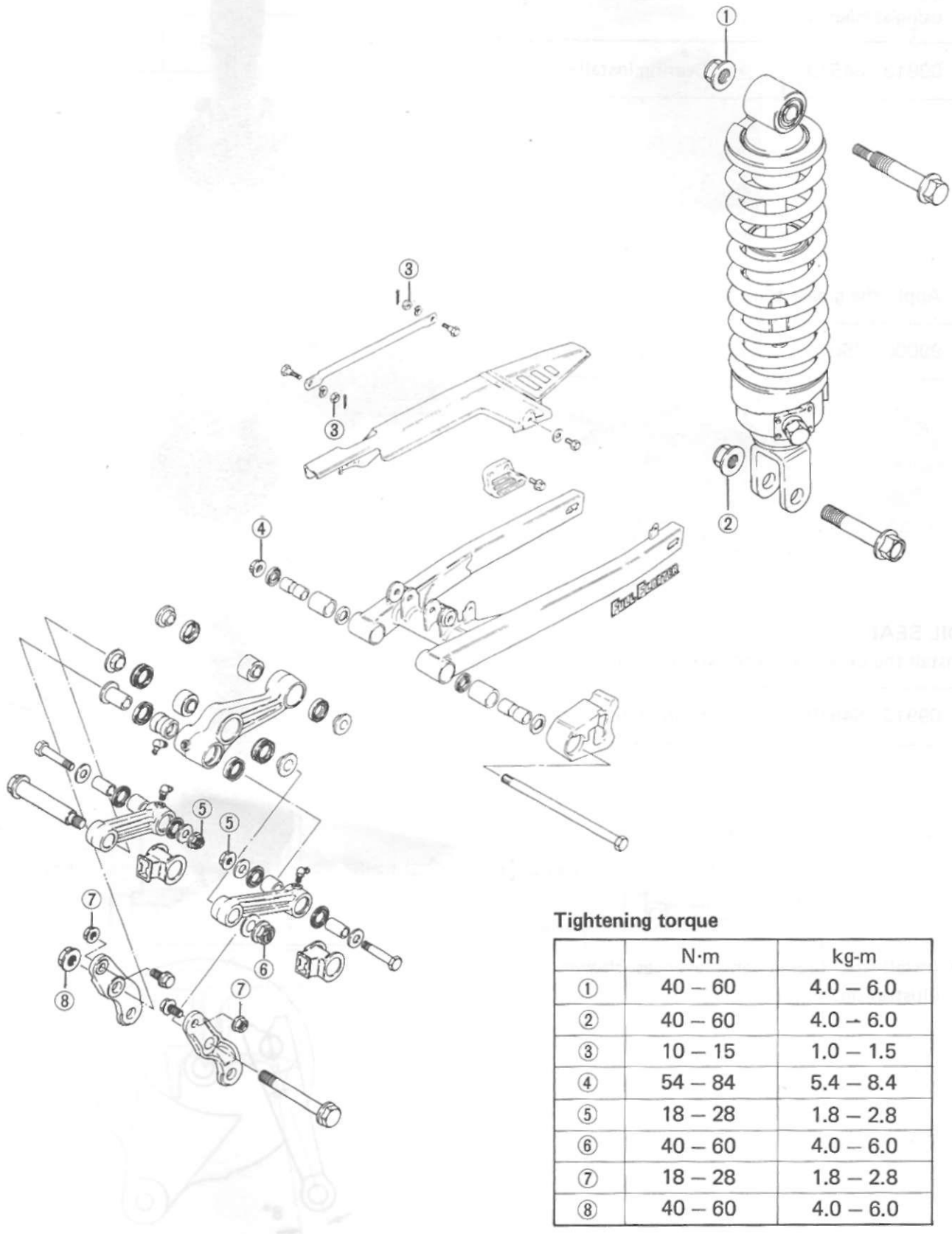
09913 - 84510	Bearing installer



- Install the brake cam lever as shown in the illustration.



REAR SUSPENSION AND SWING ARM

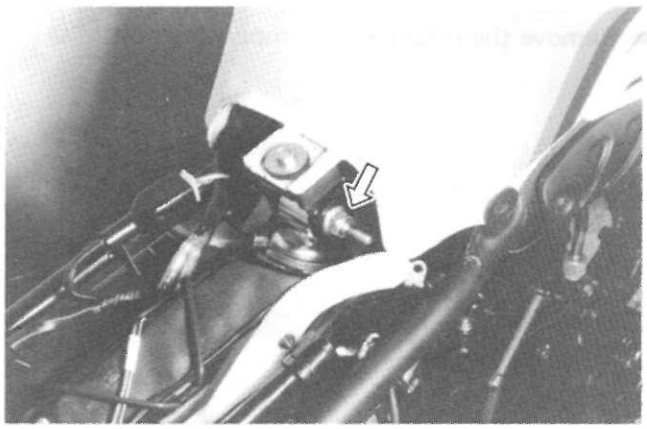


Tightening torque

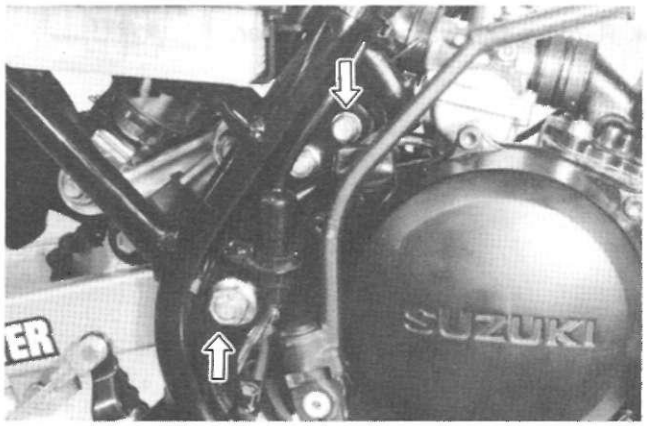
	N·m	kg-m
①	40 – 60	4.0 – 6.0
②	40 – 60	4.0 – 6.0
③	10 – 15	1.0 – 1.5
④	54 – 84	5.4 – 8.4
⑤	18 – 28	1.8 – 2.8
⑥	40 – 60	4.0 – 6.0
⑦	18 – 28	1.8 – 2.8
⑧	40 – 60	4.0 – 6.0

REMOVAL AND DISASSEMBLY

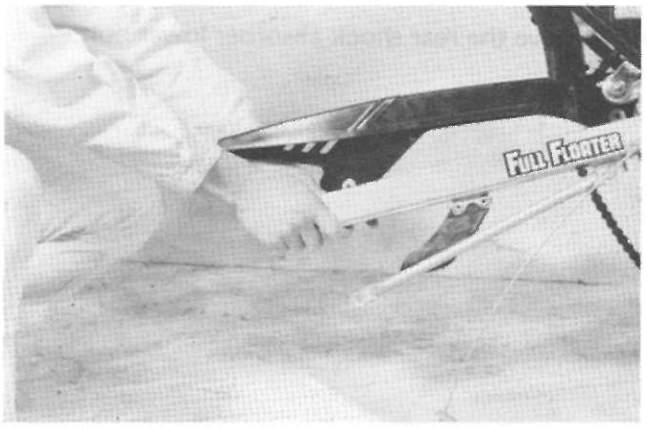
- Remove the rear wheel. (See page 7-21).
- Remove the seat.
- Remove the oil tank by loosen the retainer nut.
- Remove the rear shock absorber upper bolt.



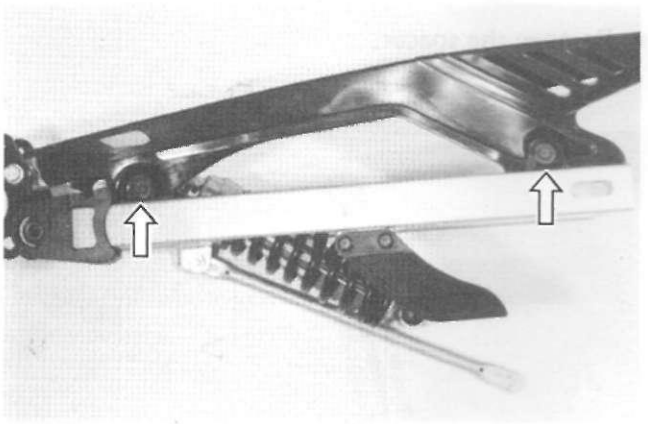
- Loosen and remove the cushion lever bolts and swing arm pivot nut.



- Take off the swing arm and rear cushion unit.

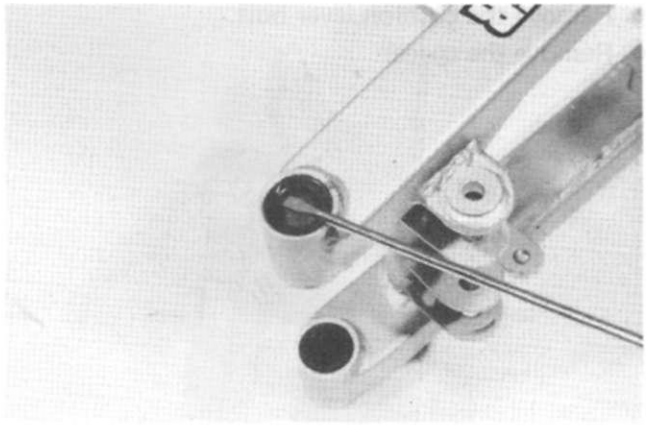


- Remove the chain case, chain cushion and torque link.



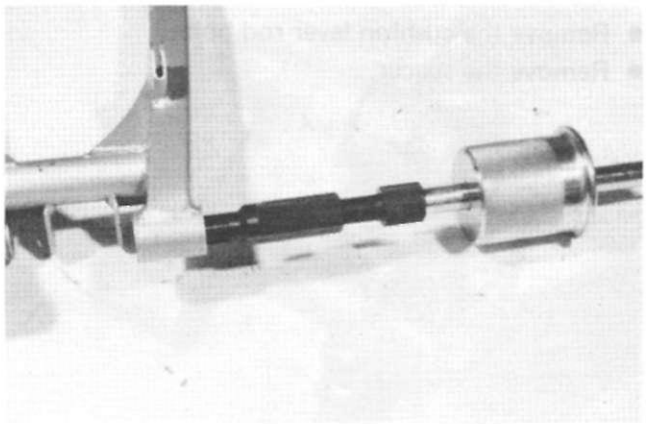
SWING ARM

- Remove the oil seal.



- Remove the bush by using special tool.

09923 - 73210	Bearing puller
09930 - 30102	Sliding shaft



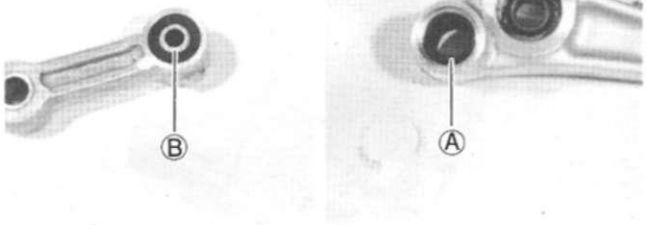
INSPECTION

Bush

Measure the inside diameter of the bush by using the special tool. If inside diameter is over the service limit, replace the bush together with the spacer.

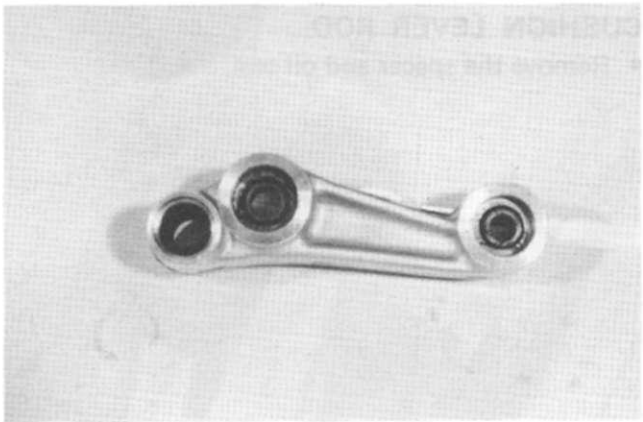
Service Limit	Ⓐ	17.3 mm
	Ⓑ	13.4 mm

09900 - 20101	Vernier caliper

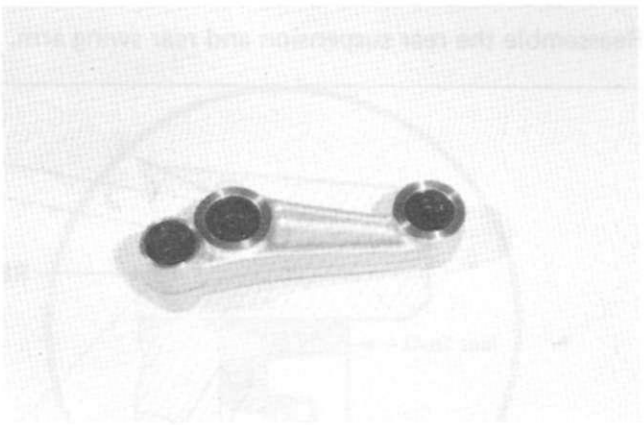


Bearing

Inspect the play of bearing by hand fixing it in the rear shock or cushion lever.



Dust seal
Inspect the dust seal, if they are found to be damaged, replace them with a new dust seal.

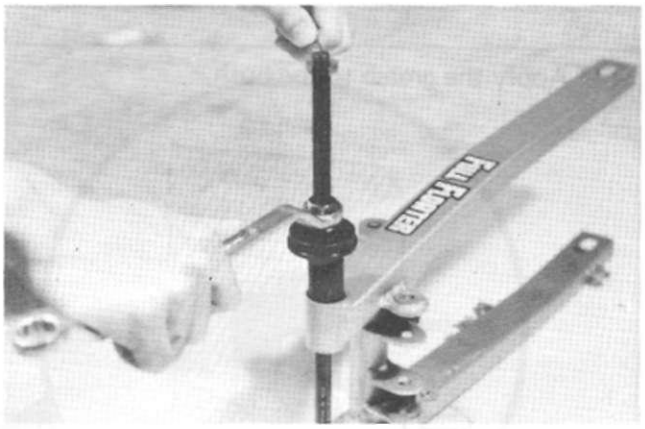


REASSEMBLY

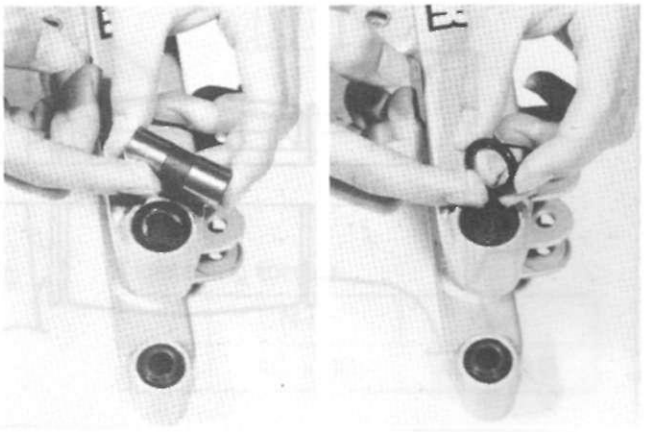
Reassemble and remount the rear swing arm and rear shock absorber in the reverse order of removal and disassembly, and carry out the following step.

- Install the bush by using the special tool.

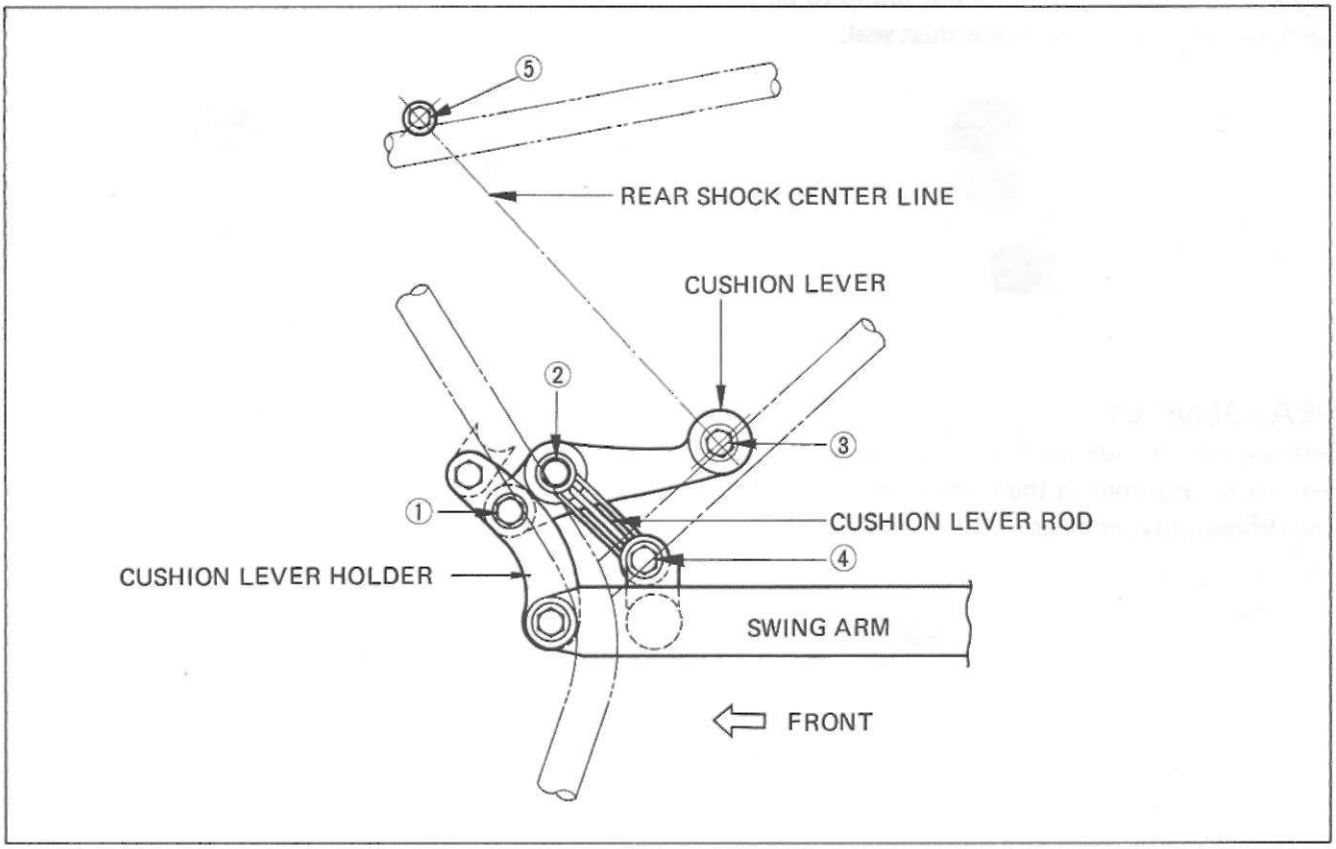
09941 - 34513	Swing arm bearing installer



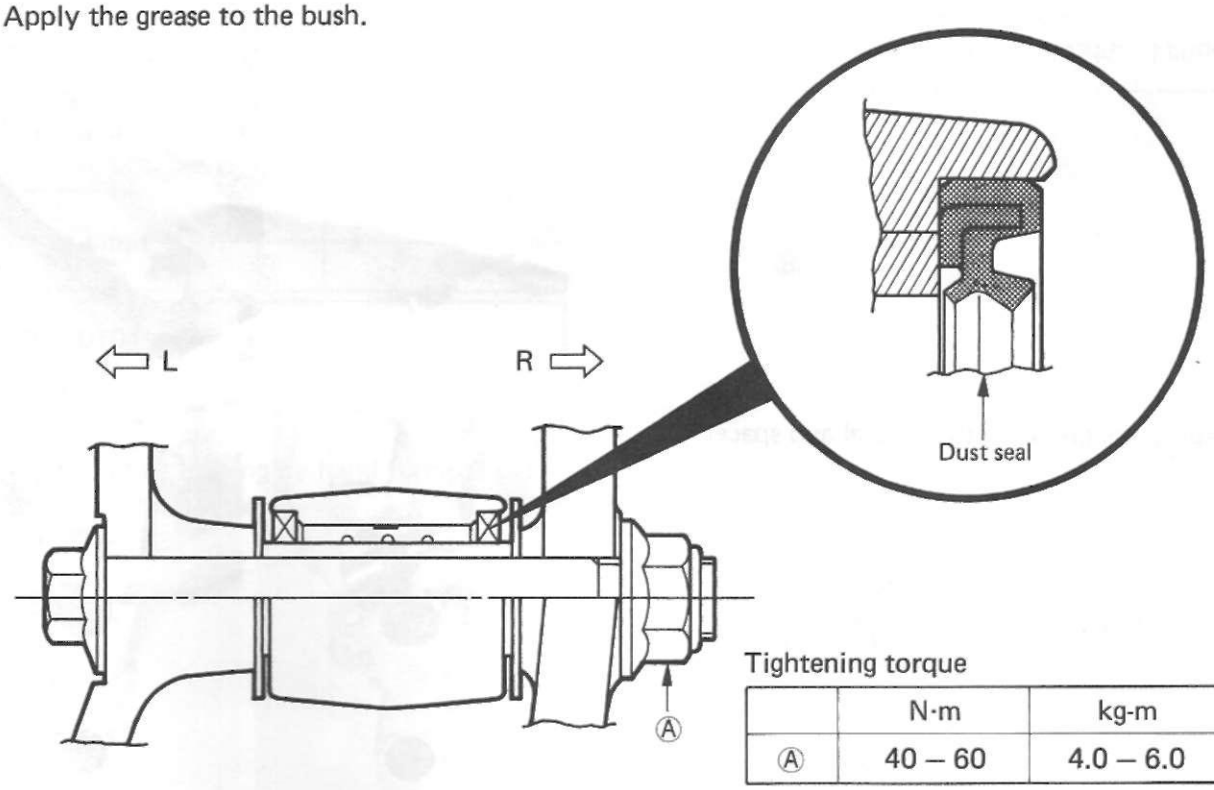
- Apply the grease to the oil seal and spacer.



Reassemble the rear suspension and rear swing arm.



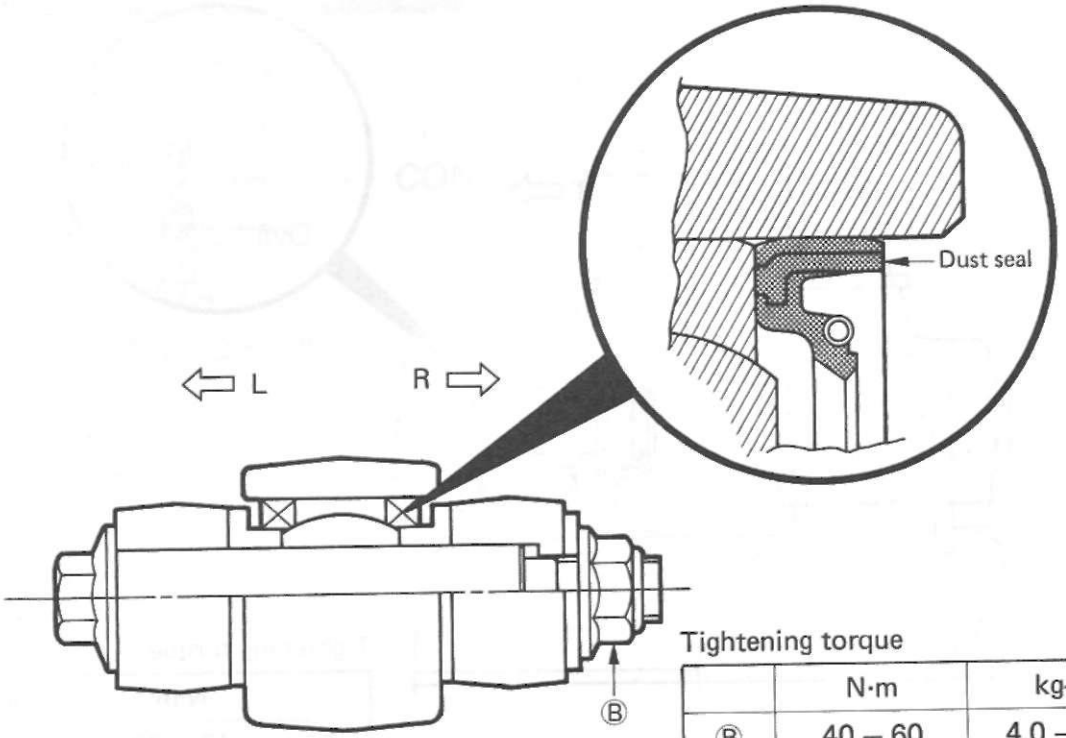
① * Apply the grease to the bush.



Tightening torque

	N·m	kg-m
Ⓐ	40 – 60	4.0 – 6.0

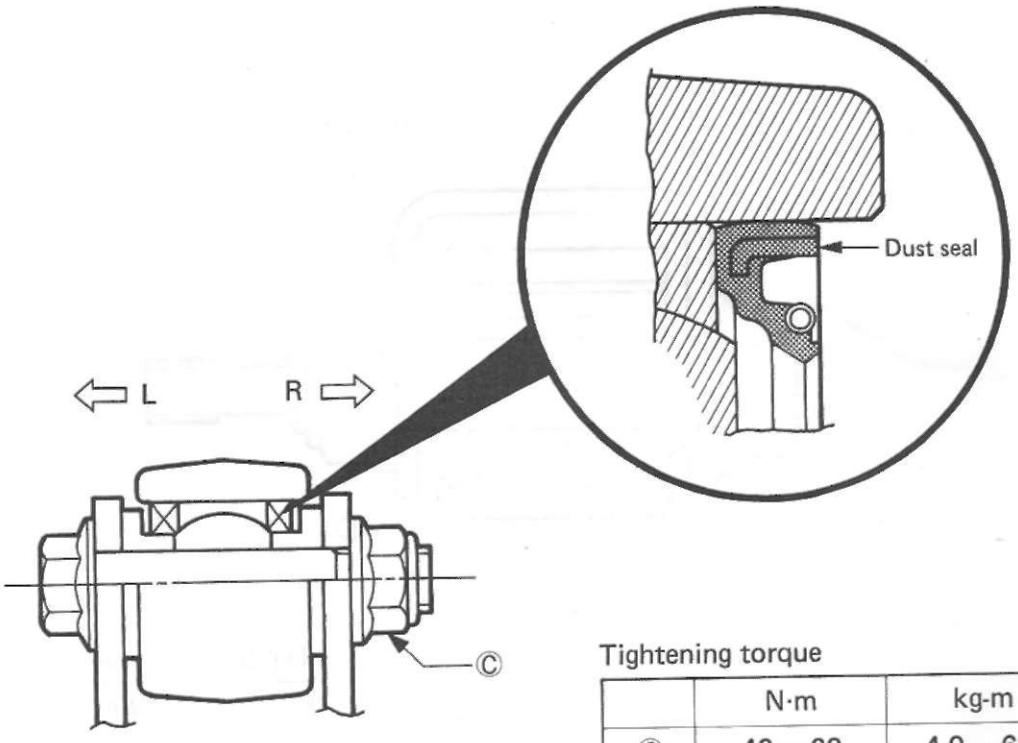
② * Apply the moly paste to the bearing.



Tightening torque

	N·m	kg-m
Ⓑ	40 – 60	4.0 – 6.0

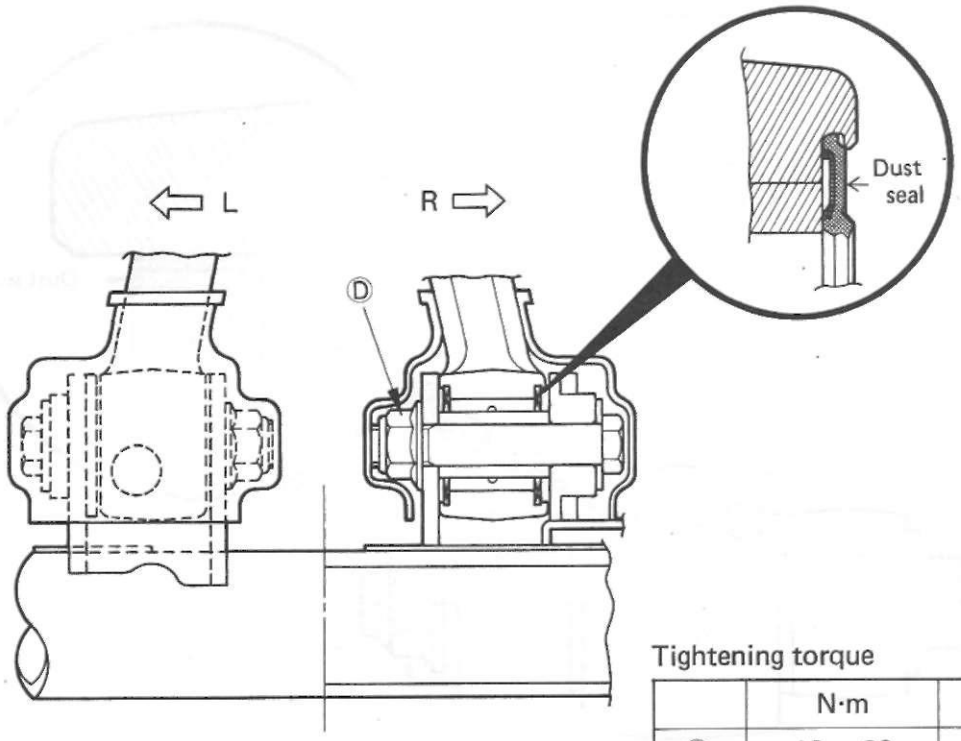
③ * Apply the molypaste to the bearing.



Tightening torque

	N·m	kg-m
Ⓒ	40 – 60	4.0 – 6.0

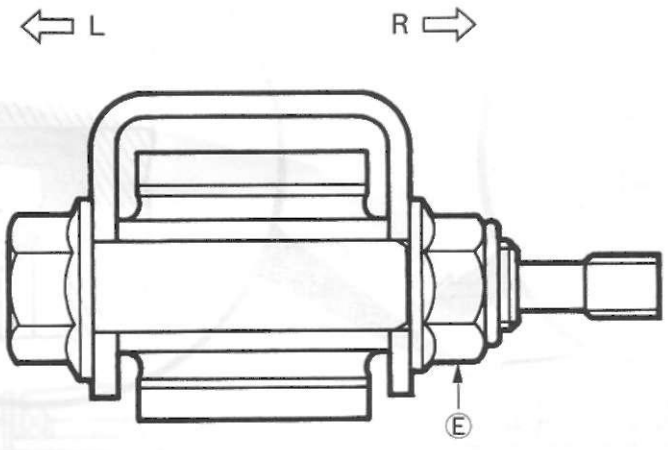
④ * Apply the grease to the bush.



Tightening torque

	N·m	kg-m
Ⓓ	18 – 28	1.8 – 2.8

⑤ * Apply the grease to the bush.



Tightening torque

	N·m	kg-m
Ⓔ	40 – 60	4.0 – 6.0

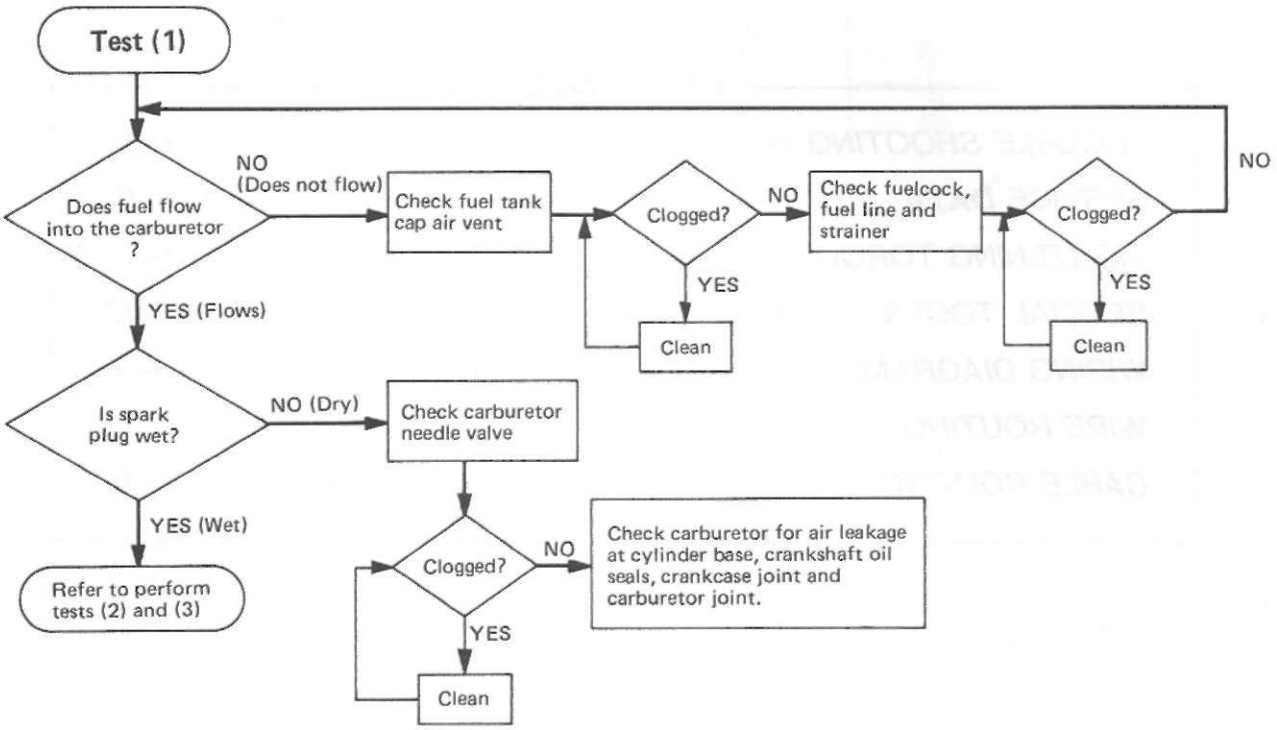
SERVICING INFORMATION

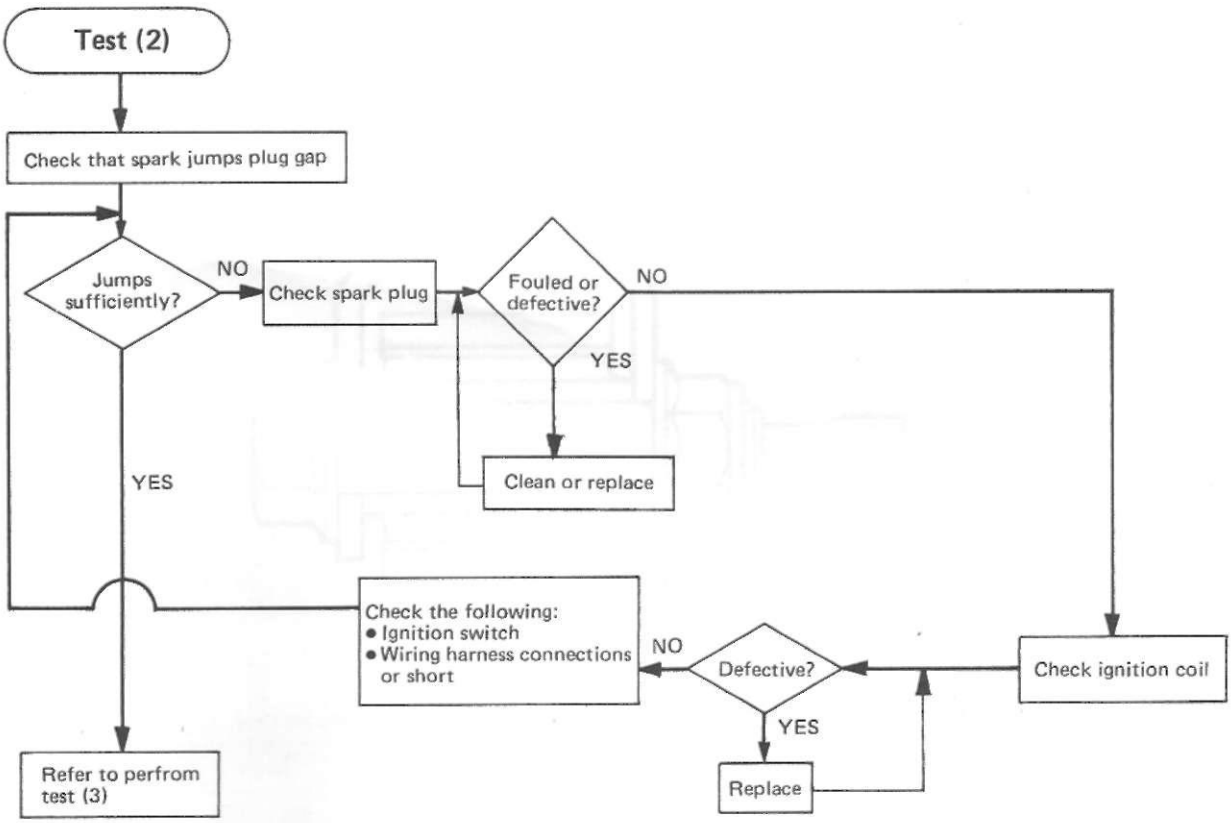
CONTENTS

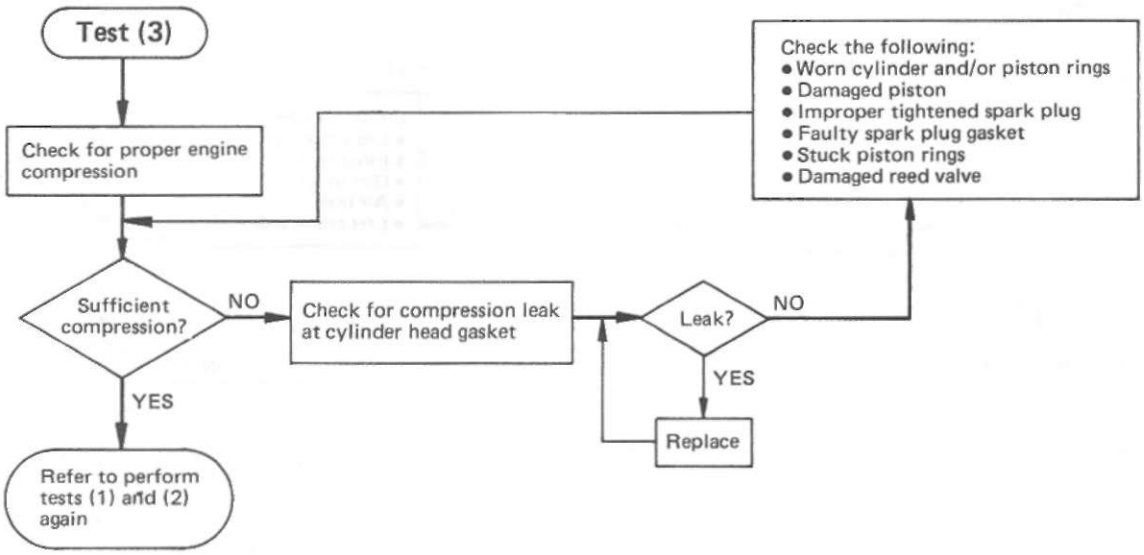
TROUBLE SHOOTING

ENGINE DIFFICULT TO START

First check that there is fuel in the tank. If there is a sufficient amount of fuel, check the following.

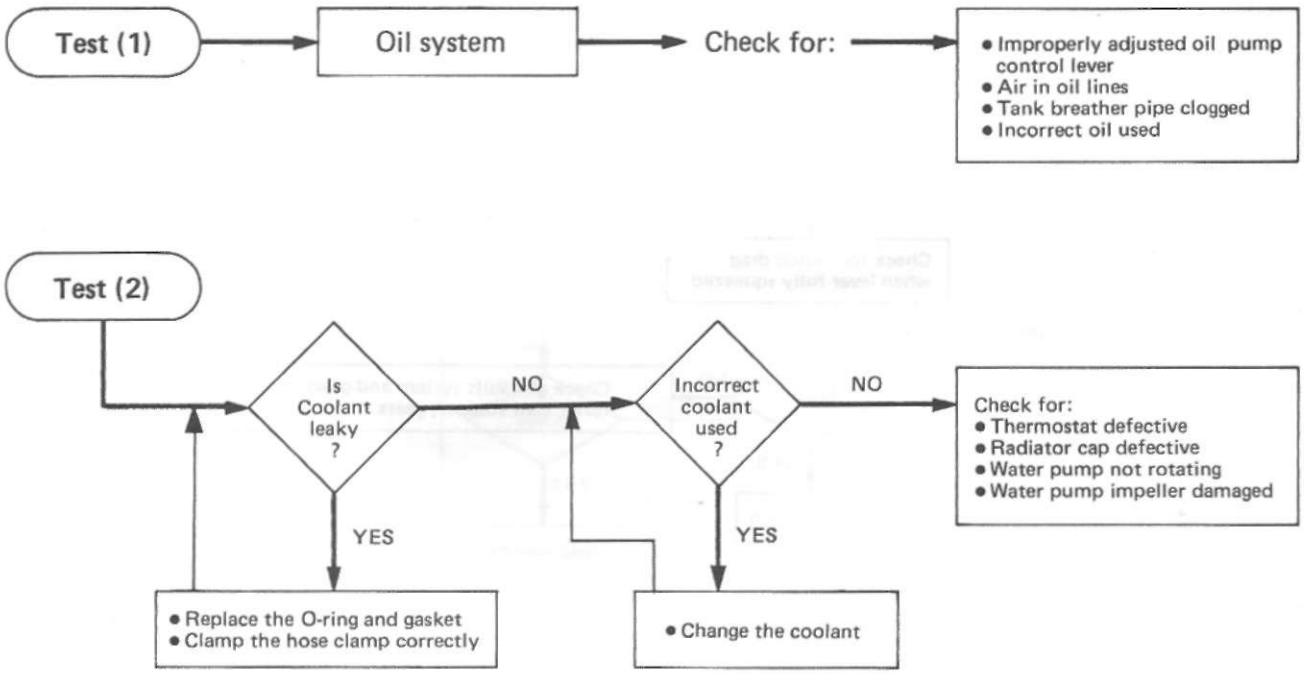


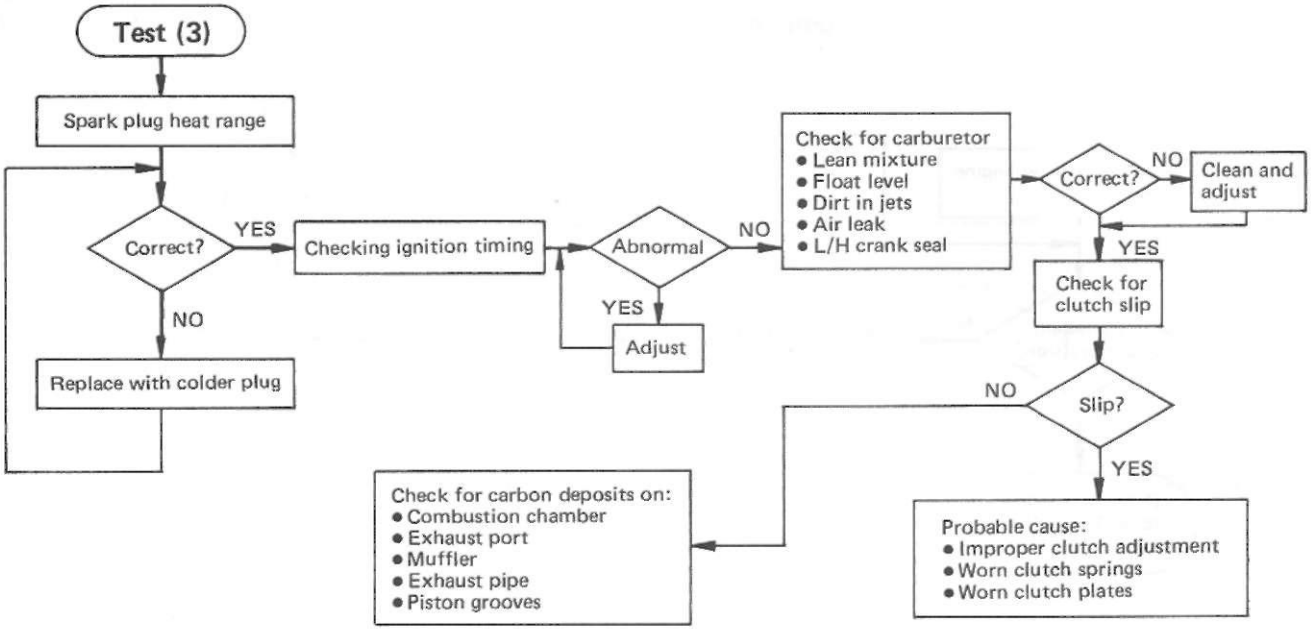




ENGINE OVERHEATS

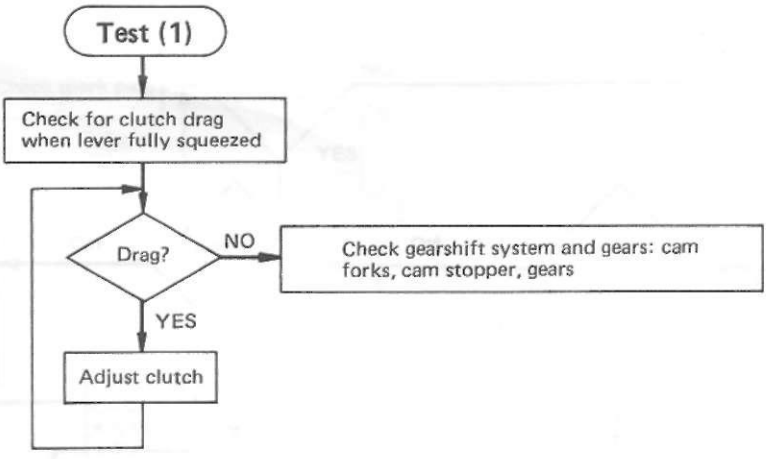
If the engine tends to overheat during low-speed running, check the condition of the lubrication system, the brakes (for dragging) chain tension and cooling system. If no abnormality is found, make the following checks:



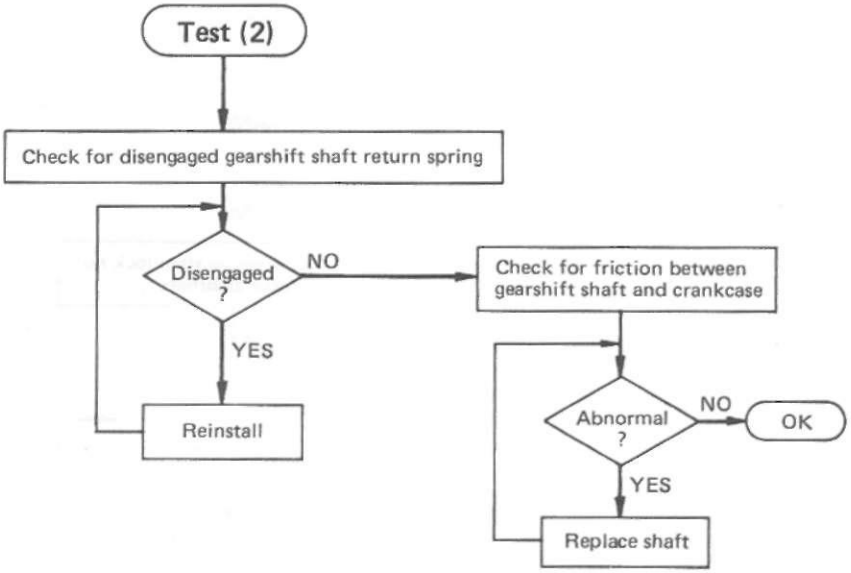


GEARSHIFT PROBLEMS

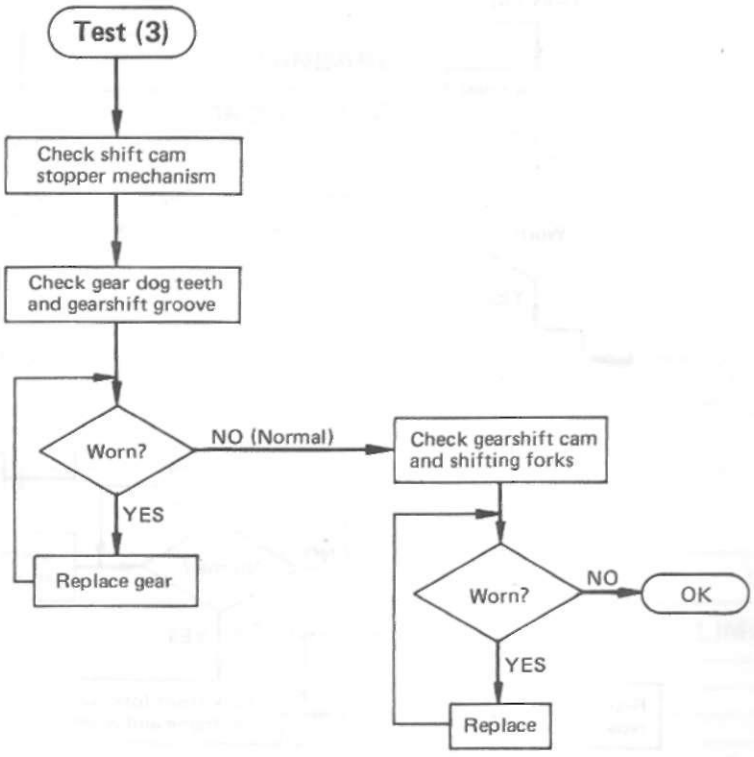
Case 1 Gears do not engage



Case 2 Gearshift lever does not return to normal position

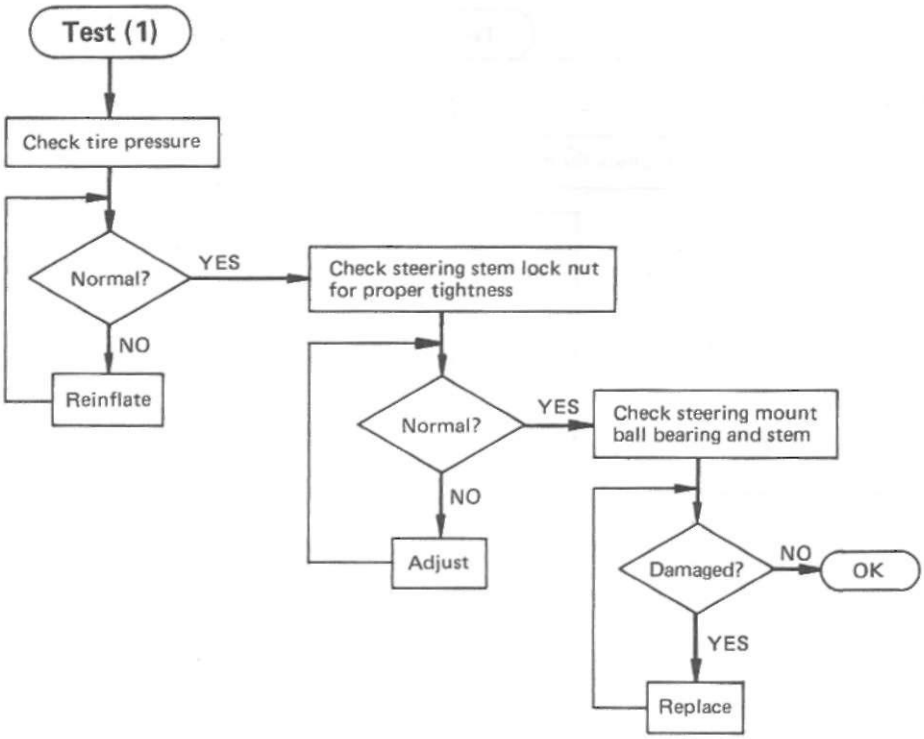


Case 3 Gears disengage while running

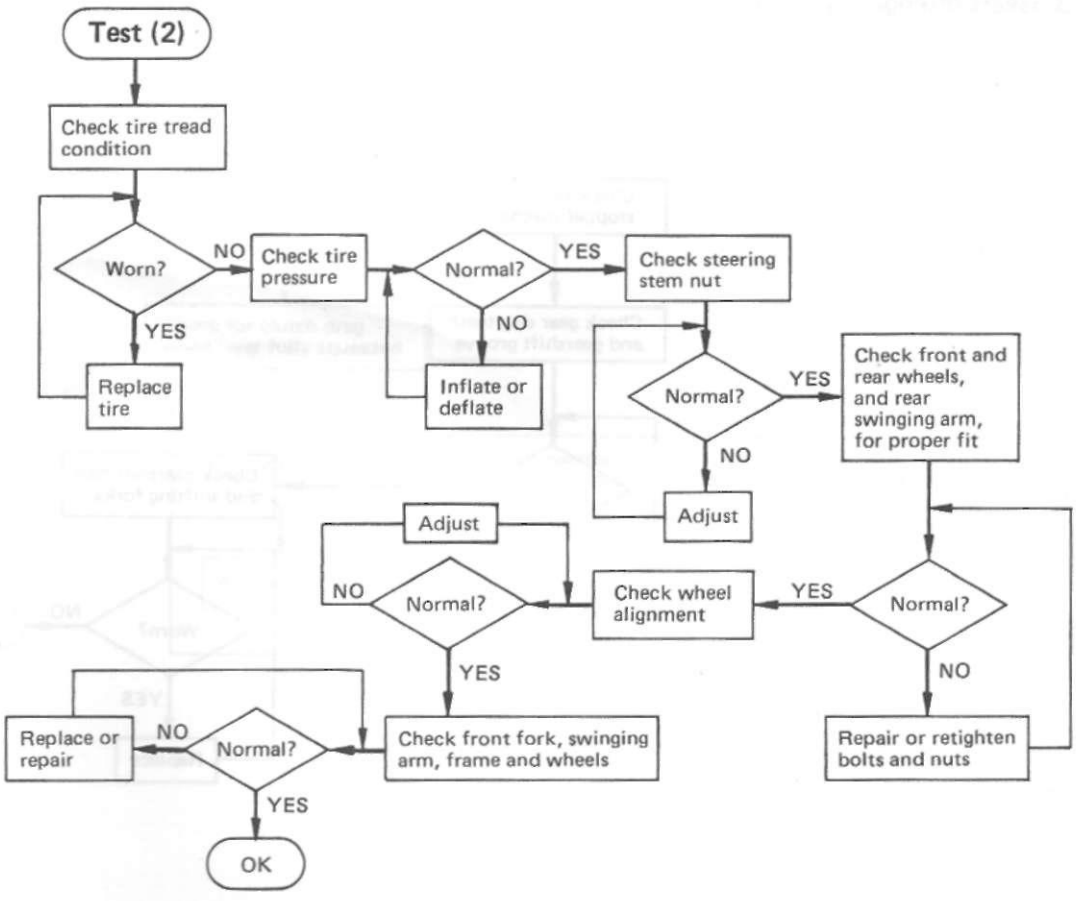


POUR STABILITY AND STEERING

Handlebar feels stiff to turn



Handlebar operation unstable



SERVICE DATA

CYLINDER + PISTON + PISTON RING

Unit: mm

ITEM	STANDARD			LIMIT
Piston to cylinder clearance	0.040 – 0.050			0.120
Cylinder bore	41.000 – 41.015 Measure at 23 from the skirt end.			41.090
Piston diam.	40.955 – 40.970 Measure at 15 from the top surface.			40.880
Cylinder distortion	——			0.05
Cylinder head distortion	——			0.05
Piston ring free end gap	1st	N	Approx. 3.0	2.4
		R	Approx. 4.5	3.6
	2nd	N	Approx. 3.0	2.4
		R	Approx. 4.5	3.6
Piston ring end gap	0.08 – 0.18			0.70
Piston ring to groove clearance	1st		0.02 – 0.07	——
	2nd		0.02 – 0.07	——
Piston pin bore	12.002 – 12.010			12.030
Piston pin O.D.	11.994 – 12.000			19.980

CONROD + CRANKSHAFT

Unit. mm

ITEM	STANDARD	LIMIT
Conrod small end I.D.	16.000 – 16.008	16.040
Conrod deflection	——	3.0
Crank web to web width	40.0 ± 0.1	——
Crankshaft runout	——	0.05

OIL PUMP

ITEM	SPECIFICATION
Oil pump reduction ratio	6.008 (73/19 x 28/23 x 36/28)
CCI pump discharge rate (Full open)	0.95 – 1.18 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	4.4 – 4.6	4.1
Drive plate claw width	11.8 – 12.0	11.2

Unit: mm

ITEM	STANDARD	LIMIT
Driven plate thickness	1.6 ± 0.1	———
Driven plate distortion	———	0.10
Clutch spring free length	———	33.6

THERMOSTAT + RADIATOR

ITEM	STANDARD	LIMIT
Thermostat valve opening temperature	65 ± 2°C	———
Thermostat valve lift	3.0 – 3.1 mm at 80°C	———
Radiator cap valve release pressure	0.9 kg/cm²	———

TRANSMISSION

Unit: mm Except ratio

ITEM	STANDARD		LIMIT
Primary reduction ratio	3.842 (73/19)		———
Final reduction ratio	3.833 (46/12)		———
Gear ratios	Low	3.166 (38/12)	———
	2nd	2.000 (34/17)	———
	3rd	1.500 (27/18)	———
	4th	1.217 (28/23)	———
	5th	1.041 (25/24)	———
	Top	0.923 (24/26)	———
Shift fork to groove clearance (No. 1, No. 2 and No. 3)	0.10 – 0.30		0.70
Shift fork groove width (No. 1, No. 2 and No. 3)	4.45 – 4.55		———
Shift fork thickness (No. 1, No. 2 and No. 3)	4.25 – 4.35		———
Countershaft length (Low to 2nd)	84.5 – 84.6		———

DRIVE CHAIN

Unit: mm

ITEM	STANDARD		LIMIT
Drive chain	Type	D.I.D.: 420 TAKASAGO: RK420	———
	Links	120	———
	20-pitch length	———	259.1
Drive chain slack	35 – 40		———

CARBURETOR

ITEM		SPECIFICATION
Carburetor type		MIKUNI VM18SS
Bore size		18 mm
I.D. No.		13600
Idle r/min		1 300 ± 150 r/min
Float height		21.9 ± 1.0 mm
Main jet	(M.J.)	# 77.5
Main air jet	(M.A.J.)	0.6
Jet needle	(J.N.)	3FL17-3rd
Needle jet	(N.J.)	D-9
Cut-away	(C.A.)	2.5
Pilot jet	(P.J.)	# 20
Pilot outlet	(P.O.)	0.8
Air screw	(A.S.)	1 1/2 turn out
Valve seat	(V.S.)	1.2
Starter jet	(G.S.)	# 35
Throttle cable play		0.5 – 1.0 mm

ELECTRICAL

Unit: mm

ITEM	SPECIFICATION		NOTE
Ignition timing	22° ± 2° B.T.D.C. at 6 000 r/min		
Spark plug	Type	N.G.K.: BPR8ES	
	Gap	0.6 – 0.8	
	Type	N.D.: W24EPR	
	Gap	0.6 – 0.8	
Spark performance	Over 8 at 1 atm.		
Ignition coil resistance	Secondary	Plug cap – tap 14 – 17 kΩ	
Megneto coil resistance	Primary	B/R – Ground 120 – 190 Ω	
	Charging	Y – Y 0 – 1 Ω	
Charging rate	Night	Above 5.8 A at 3 000 r/min Below 9.4 A at 8 000 r/min	

ITEM	SPECIFICATION		NOTE
Regulated voltage	14.0 – 15.0 V at 5 000 r/min		
Thermostat resistance	104 Ω at 60 ± 10°C		
	27 Ω at 100 ± 2°C		
Battery	Type designation	YB4L-B	
	Capacity	12V 14.4 kC(4 Ah)/10HR	
	Standard electrolyte S.G.	1.28 at 20°C (68°F)	
Fuse size	15A		

BRAKE + WHEEL

Unit: mm

ITEM	STANDARD		LIMIT
Front brake lever distance	20 – 30		—
Rear brake pedal free travel	20 – 30		—
Rear brake pedal height	10		—
Brake drum I.D.	Front	—	120.7
	Rear	—	100.7
Brake lining thickness	—		1.5
Wheel rim runout	Axial	—	2.0
	Radial	—	2.0
Wheel axle runout	Front	—	0.25
	Rear	—	0.25
Tire size	Front	2.50 – 21 4PR	—
	Rear	3.00 – 18 4PR	—
Tire tread depth	Front	—	3.0
	Rear	—	3.0

SUSPENSION

Unit: mm

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	170	—	
Front fork spring free length	—	544.2	
Front fork oil level	185	—	
Rear wheel travel	170	—	
Swing arm pivot shaft runout	—	0.6	

FUEL + OIL

ITEM	SPECIFICATION	NOTE
Fuel type	Unlead or low-lead type gasoline is recommended. The gasoline should be at least 85 – 95 octane by the Research method.	
Fuel tank including reserve	7.0 L	
reserve	1.8 L	
Engine oil type	SUZUKI CCI or SUZUKI CCI SUPER	
Engine oil tank capacity	1.2 L	
Transmission oil type	SAE 20W/40	
Transmission oil capacity	Change 850 ml	
	Overhaul 900 ml	
Cooling solution	Use an anti-freeze & Summer coolant compatible with aluminum radiator, mixed with distilled water only, at the ratio of 50 : 50.	
Radiator including reserve	700 ml	
Front fork oil type	Fork oil # 10	
Front fork oil capacity (each leg)	150.6 ml	
Brake fluid type	DOT3, DOT4 or SAE J1703	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	NORMAL RIDING	
	kPa	kg/cm²
FRONT	150	1.50
REAR	175	1.75

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	25
	LO	25
Tail/Brake light		5.2/18.4
Turn signal light		10
Speedometer and Tachometer light		1.7
Turn signal indicator light		3.4
High beam indicator light		1.7
Neutral indicator light		3.4
Oil level warning light		3.4

TIGHTENING TORQUE

ENGINE

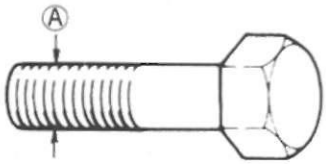
Description	Q'ty	N·m	kg-m
Cylinder head nut	4	18 – 28	1.8 – 2.8
Cylinder nut	2	8 – 12	0.8 – 1.2
Engine mounting bolt	2	37 – 45	3.7 – 4.5
Clutch sleeve hub nut	1	40 – 60	4.0 – 6.0
Primary drive gear nut	1	40 – 60	4.0 – 6.0
Water pump impeller bolt	1	7 – 9	0.7 – 0.9
Magneto rotor nut	1	40 – 60	4.0 – 6.0

CHASSIS

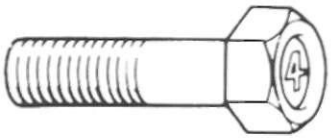
Description	Q'ty	N·m	kg-m
Front axle nut	1	33 – 51	3.3 – 5.1
Handlebar clamp bolt	4	12 – 20	1.2 – 2.0
Steering stem head bolt	1	35 – 55	3.5 – 5.5
Front fork upper clamp bolt	2	20 – 30	2.0 – 3.0
Front fork lower clamp bolt	2	20 – 30	2.0 – 3.0
Swinging arm pivot nut	1	54 – 84	5.4 – 8.4
Rear torque link nut	2	10 – 15	1.0 – 1.5
Rear axle nut	1	40 – 57	4.0 – 5.7
Brake cam lever nut (Front and Rear)	2	5 – 8	0.5 – 0.8
Footrest bolt	2	27 – 43	2.7 – 4.3
Rear sprocket mounting nut	4	18 – 28	1.8 – 2.8
Rear shock absorber lower bolt	1	40 – 60	4.0 – 6.0
Cushion lever rod bolt	2	18 – 28	1.8 – 2.8
Rear shock absorber upper bolt	1	40 – 60	4.0 – 6.0
Muffler mounting bolt	3	10 – 16	1.0 – 1.6
Exhaust pipe mounting bolt	2	4 – 7	0.4 – 0.7
Radiator mounting nut	3	7 – 9	0.7 – 0.9
Spoke nipple		4 – 5	0.4 – 0.5
Cushion lever bolt	1	40 – 60	4.0 – 6.0
Cushion lever holder bolt	2	18 – 28	1.8 – 2.8
Retainer plate mounting bolt	1	40 – 60	4.0 – 6.0
Damper rod bolt	1	15 – 25	1.5 – 2.5

TORQUE SPECIFICATIONS

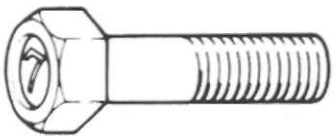
The table below, relating tightening torque to thread diameter, lists the basic torque for the general bolts and nuts used on Suzuki Motorcycles. However, the actual torque that is necessary may vary among bolts and nuts with the same thread diameter. Refer to this table for only the bolts and nuts not included in the tables "Engine" and "Chassis". All of the values are for use with dry, solvent-cleaned threads.



Conventional bolt



"4" marked bolt

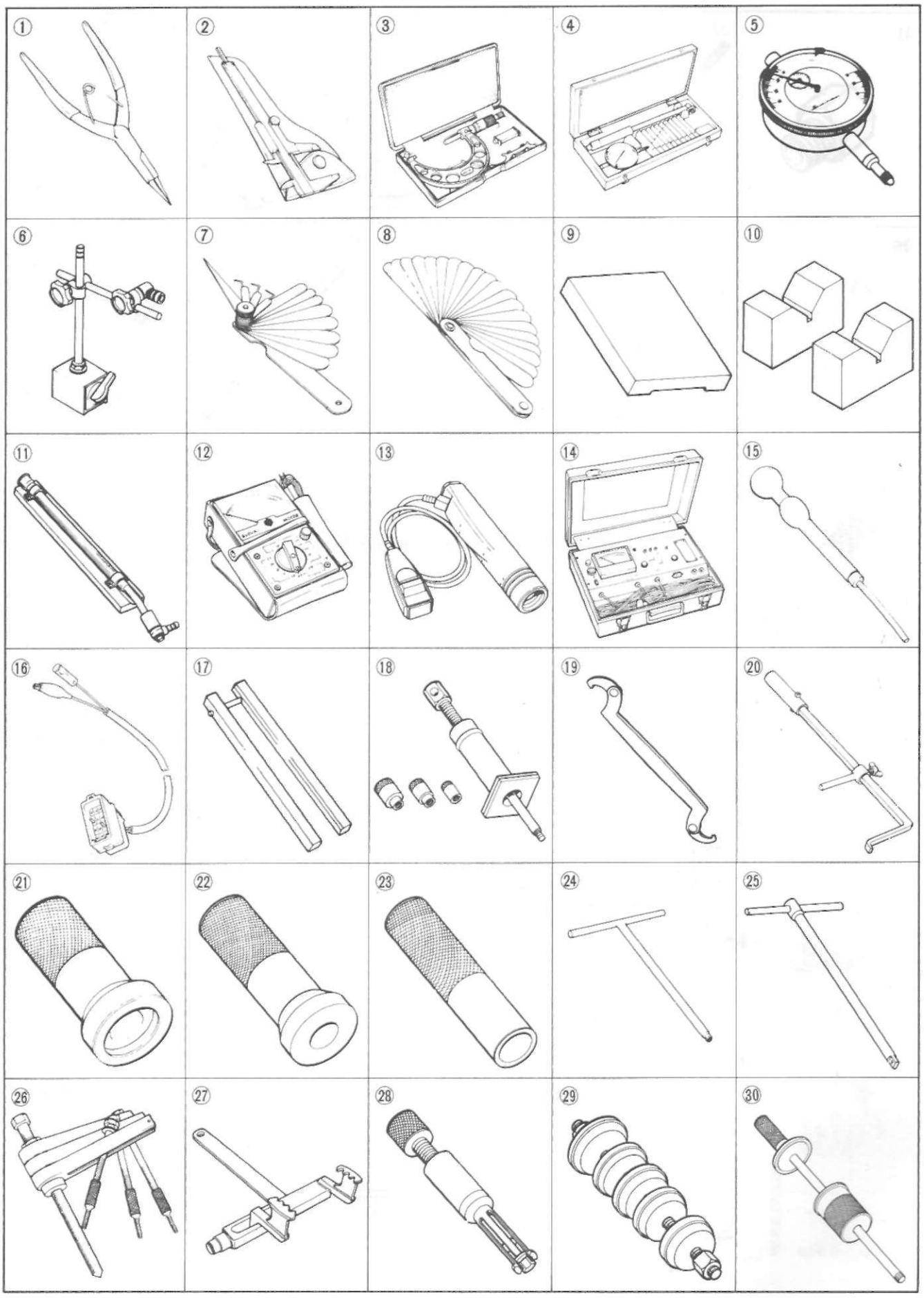


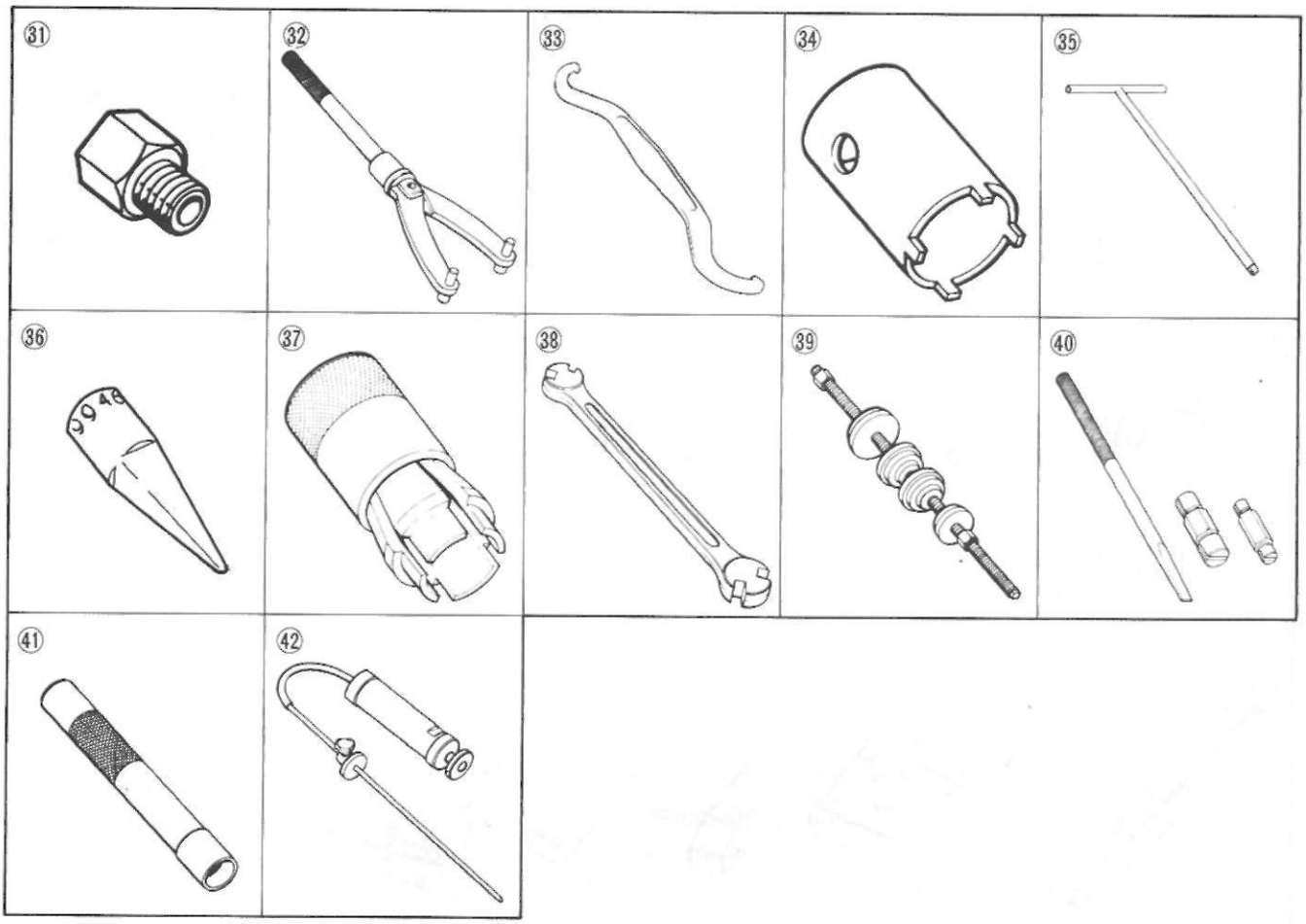
"7" marked bolt

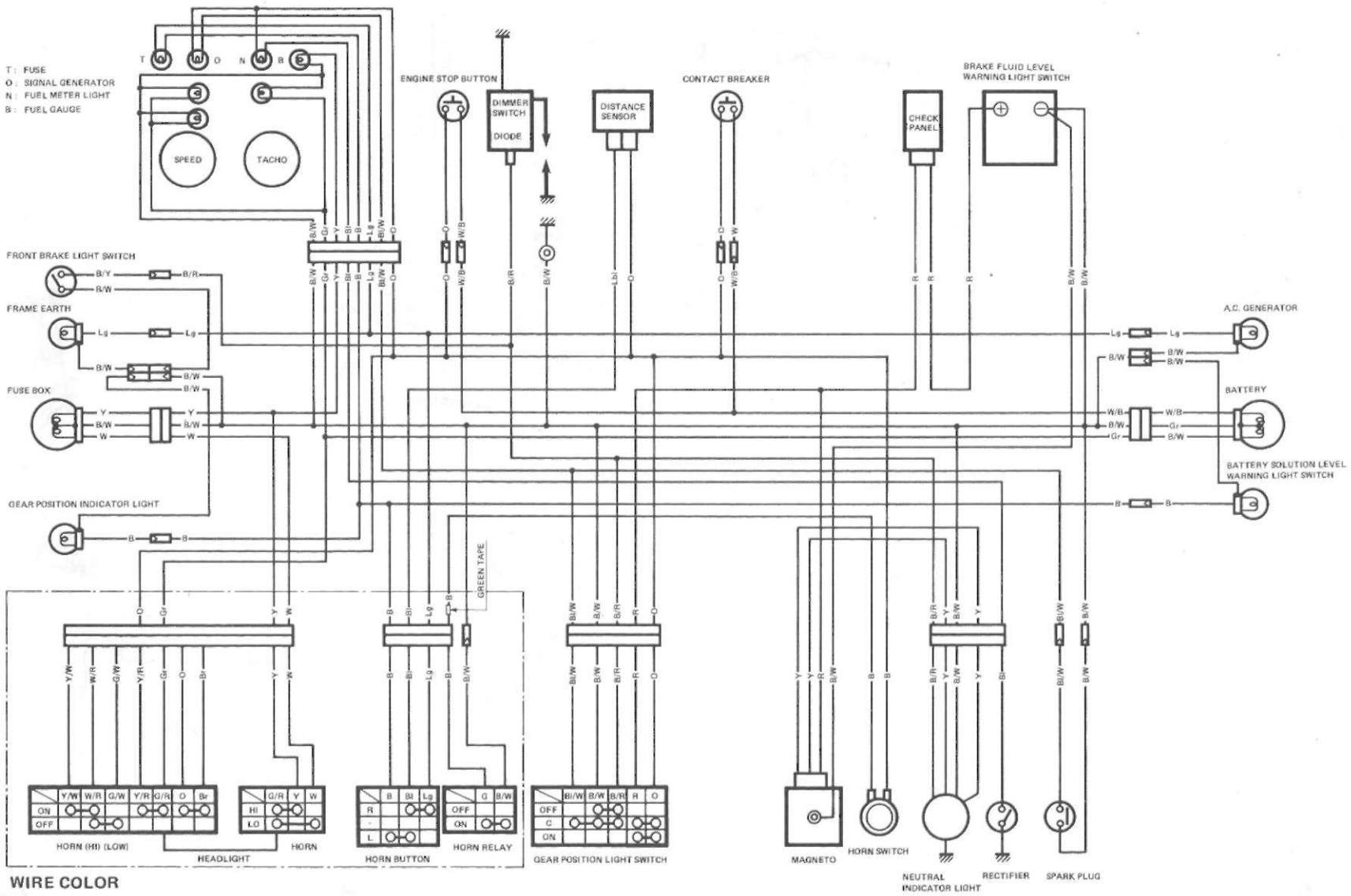
Bolt Diameter (mm) Ⓐ	Conventional or "4" marked bolt		"7" marked bolt	
	N·m	kg-m	N·m	kg-m
4	1 – 2	0.1 – 0.2	1.5 – 3	0.15 – 0.3
5	2 – 4	0.2 – 0.4	3 – 6	0.3 – 0.6
6	4 – 7	0.4 – 0.7	8 – 12	0.8 – 1.2
8	10 – 16	1.0 – 1.6	18 – 28	1.8 – 2.8
10	22 – 35	2.2 – 3.5	40 – 60	4.0 – 6.0
12	35 – 55	3.5 – 5.5	70 – 100	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

SPECIAL TOOLS

No.	Part No.	Part Name
1	09900 - 06107	Snap ring pliers
2	09900 - 20101	Vernier caliper
3	09900 - 20202	Micrometer
4	09900 - 20508	Cylinder gauge set
5	09900 - 20606	Dial gauge (1/100)
6	09900 - 20701	Magnetic stand
7	09900 - 20804	Thickness gauge
8	09900 - 20806	Thickness gauge
9	09900 - 21203	Surface plate
10	09900 - 21304	V-block set
11	09900 - 21604	Engine oil measuring tool
12	09900 - 25002	Pocket tester
13	09900 - 27311	Timing light
14	09900 - 28106	Electro tester
15	09900 - 28403	Hydrometer
16	09900 - 28617	Test lead
17	09910 - 20116	Conrod stopper
18	09910 - 34510	Piston pin puller
19	09910 - 60610	Universal clamp wrench
20	09913 - 50121	Oil seal remover
21	09913 - 70122	Bearing installer
22	09913 - 76010	Bearing installer
23	09913 - 80112	Bearing installer
24	09914 - 25811	6 mm "T" type hexagon wrench
25	09914 - 76010	Bearing installer
26	09920 - 13120	Crankcase separator
27	09920 - 53710	Clutch sleeve hub holder
28	09923 - 73210	Bearing puller
29	09924 - 84510	Bearing installer set
	09924 - 84520	Bearing installer set
30	09930 - 30102	Sliding shaft
31	09930 - 30161	Attachment C
32	09930 - 40113	Rotor holder
33	09940 - 10122	Steering stem nut wrench
34	09940 - 14911	Steering nut socket wrench
35	09940 - 34520	T-handle
36	09940 - 34561	Attachment D
37	09940 - 50112	Oil seal installer
38	09940 - 60113	Spoke nipple wrench
39	09941 - 34513	Swing arm bearing installer
40	09941 - 50110	Bearing remover
41	09941 - 74910	Steering bearing installer
42	09943 - 74111	Fork oil level gauge


①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
⑪
⑫
⑬
⑭
⑮
⑯
⑰
⑱
⑲
⑳
㉑
㉒
㉓
㉔
㉕
㉖
㉗
㉘
㉙
㉚

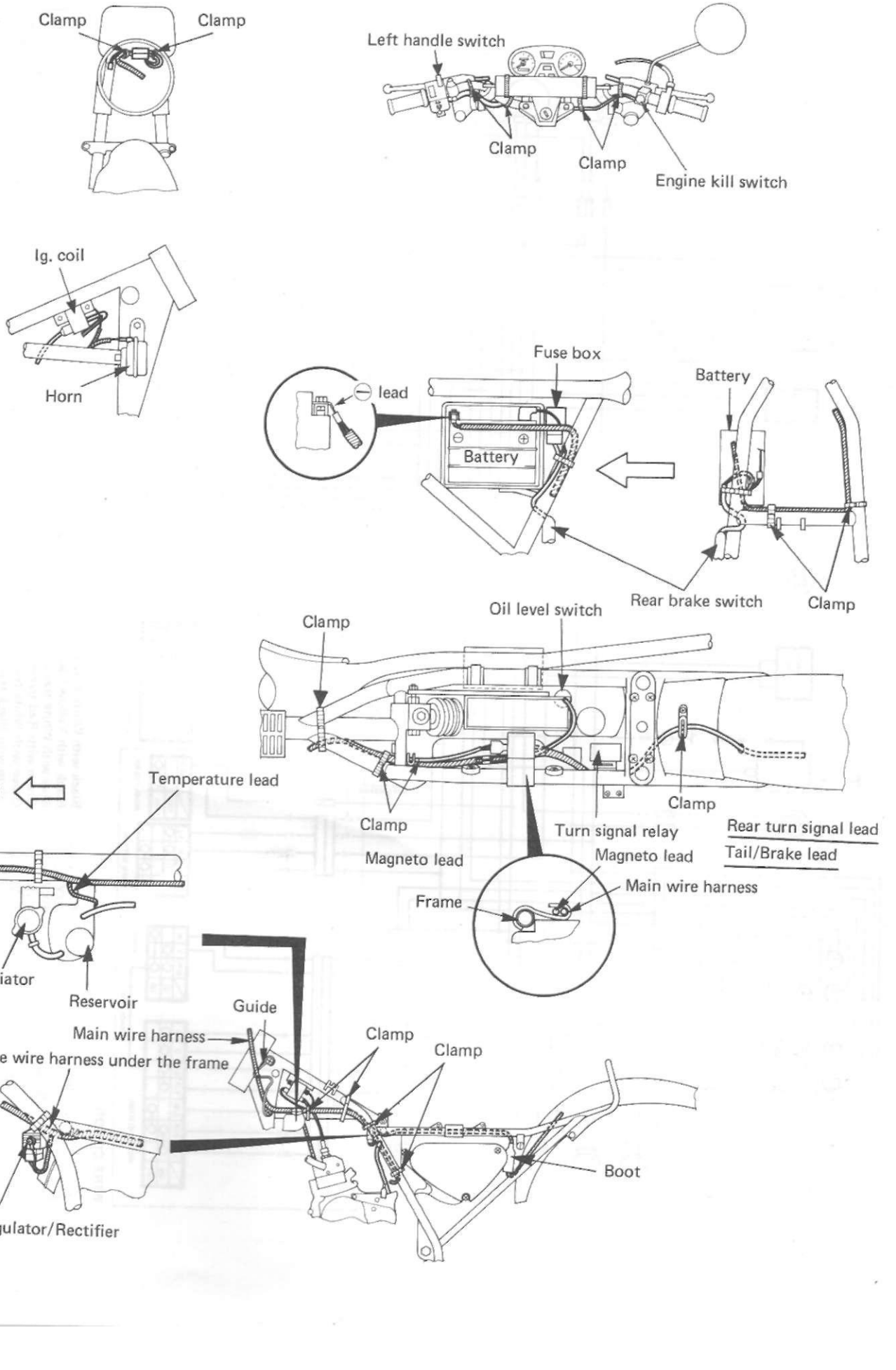

31
32
33
34
35
36
37
38
39
40
41
42



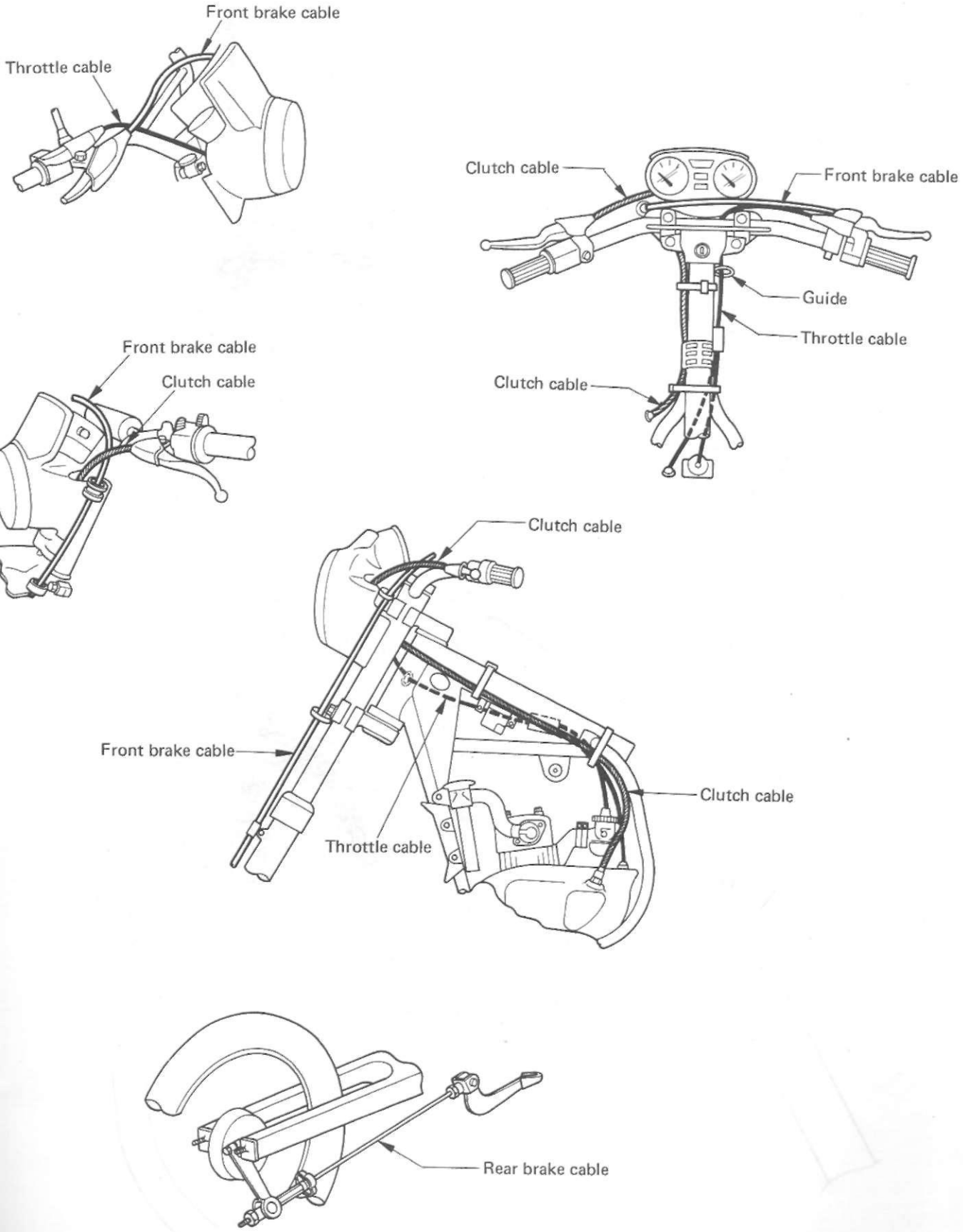
WIRE COLOR

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

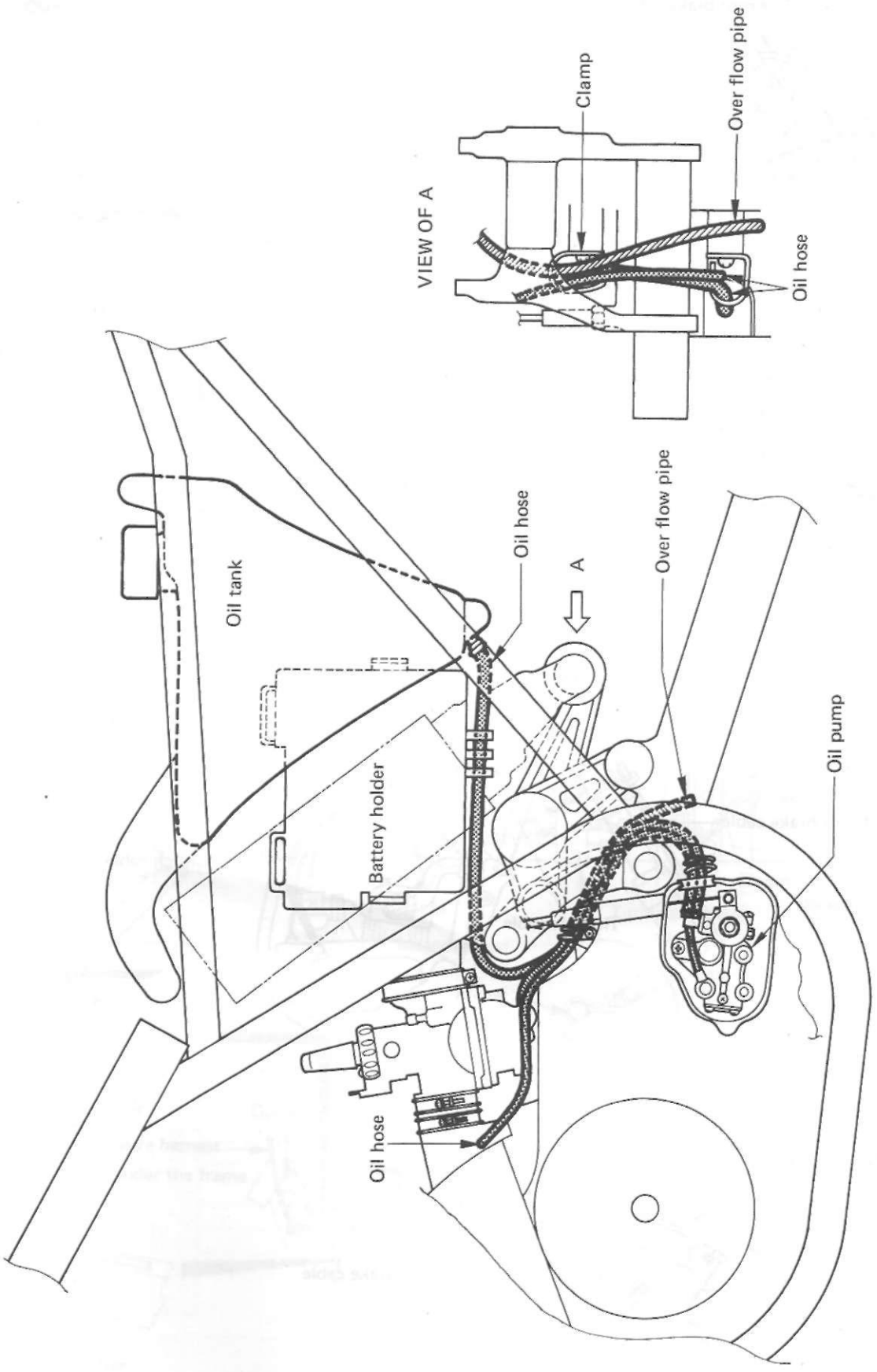
WIRE ROUTING



CABLE ROUTING



HOSE ROUTING



Prepared by

SUZUKI MOTOR CO.,LTD.

Administration Department
Overseas Service Division
August, 1983
Part No. 99500-20110-01E
Printed in Japan