SUZUKI

TS50

SERVICE MANUAL

SR-2300

FOREWORD

This manual has been prepared to provide service technicians with necessary information for the maintenance and the repair of the motorcycle. The contents are made plain so that less-experienced mechanics may carry out the proper jobs according to the items of assembly and disassembly instructions.

For fully qualified mechanics, the necessary service data for the inspections and repairs is provided in this manual.

Since it is above all important on servicing a motorcycle to know thoroughly its construction and the necessary data, it is highly recommended for those who are engaged in servicing TS50 to study beforehand this manual notwithstanding their technical ability.

We trust the publication of this manual would be of assistance in the service activity as well as in the study of model TS50.

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

GROUP INDEX

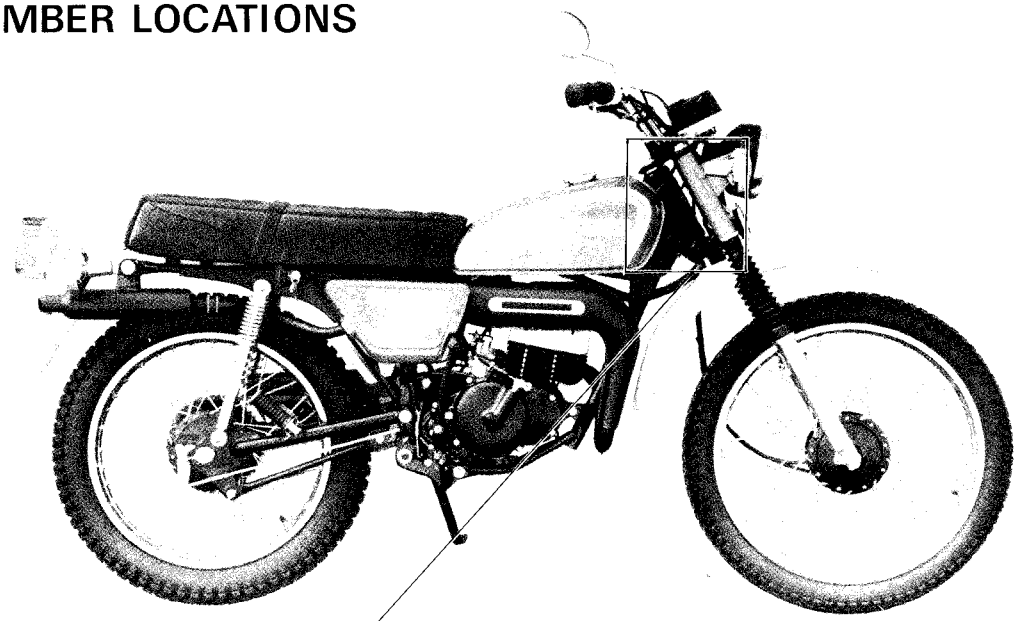
GENERAL INFORMATION

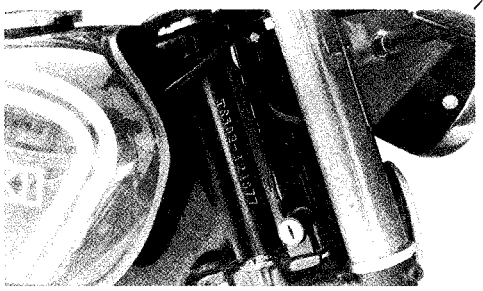
1

CONTENTS

SERIAL NUMBER LOCATIONS

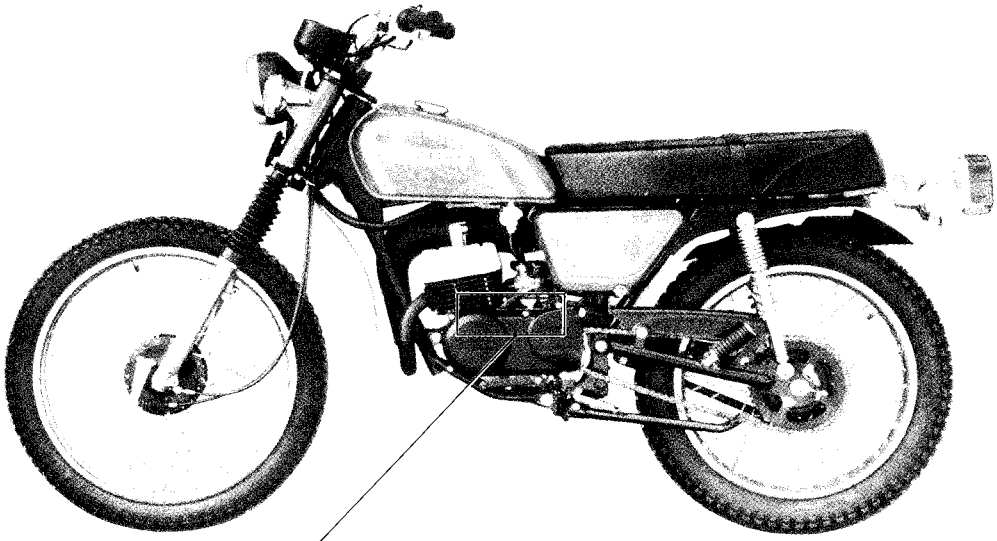
TS50

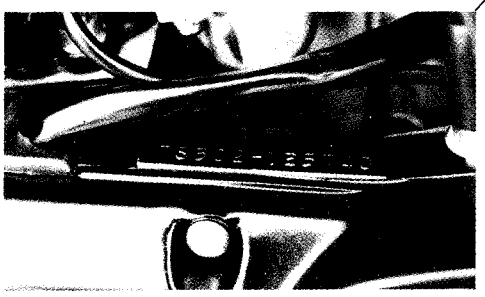




FRAME NUMBER

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





ENGINE NUMBER

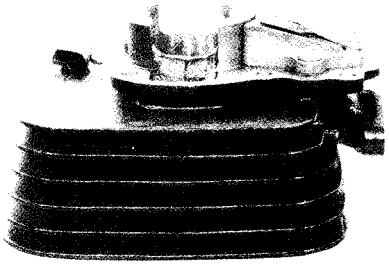
The engine serial number is located on the left side of the crankcase.

These numbers are required especially for registering the machine and ordering the spare parts.

SPECIAL FEATURES

CYLINDER

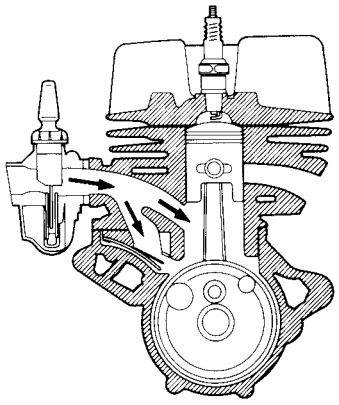
The mixture is admitted into the combustion chamber of the cylinder through six (6) scavenging ports, to which the mixture reaches from the crankcase side in four (4) streams. This arrangement assures smooth scavenging action and contributes to the high-power performance of the TS50 engine.



Cylinder with reed valve

POWER REED INTAKE SYSTEM

The mixture is drawn into the crankcase through two intake ports. One port leads into the lower portion of the cylinder, and the other leads directly into the crankcase through a reed valve. The mixture in the cylinder intake port is allowed into the crankcase by conventional "piston valve action", and the mixture in the crankcase port by the action of the reed valve. This feature is called the "POWER REED Intake System".

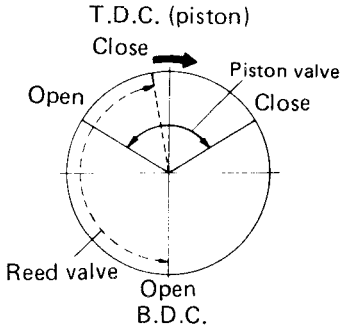


POWER REED system

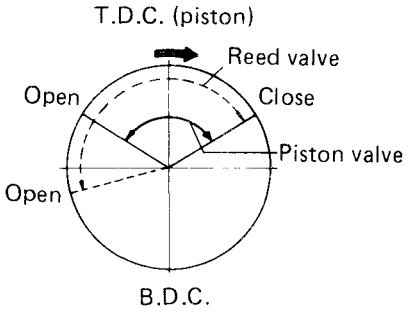
COMBINED ACTION OF PISTON VALVE AND REED VALVE

Whereas the piston valve opens and closes at given crankshaft angles during each cycle, the reed valve opens and closes in response to varying engine vacuum condition and mixture requirements of the engine. The following illustration shows this timing relationship between these two valve actions.

LOW SPEED

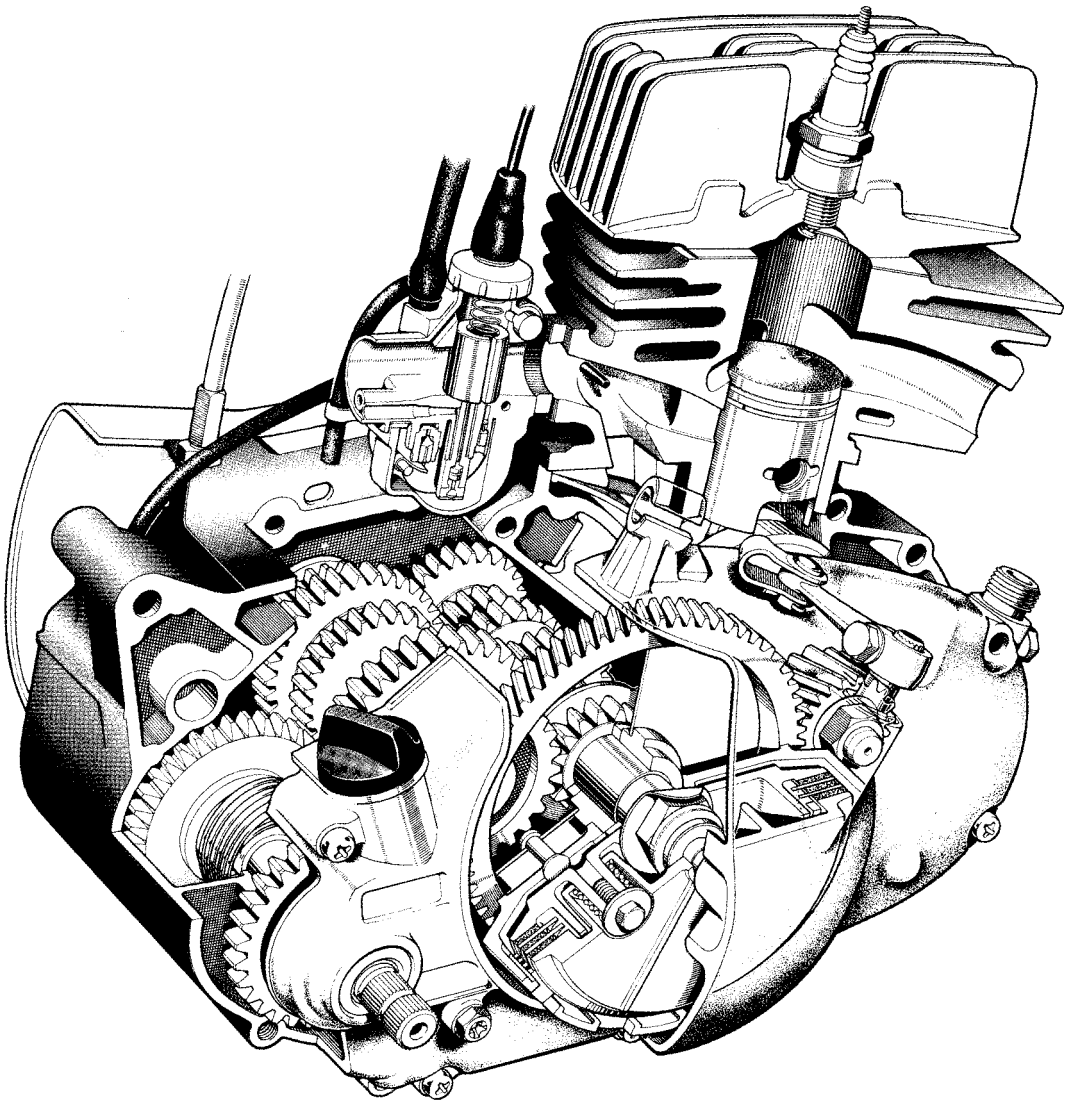


HIGH SPEED



The inlet port (subject to piston valve actions) is located to open later and to close earlier than in ordinary motorcycle engines. This feature is calculated to improve torque performance in the intermediate and low-speed regions. How the improvement is accomplished will be seen in the fact that, with this port closing earlier, the tendency of mixture admitted into the scavenging space to blow back into the intake passage is minimized in the intermediate and low-speed regions.

In the high-speed region; however, this inlet port does not pass enough mixture because of its retarded opening action. This drawback is offset by the reed valve, which opens ahead of the inlet port even when the engine is running very fast.

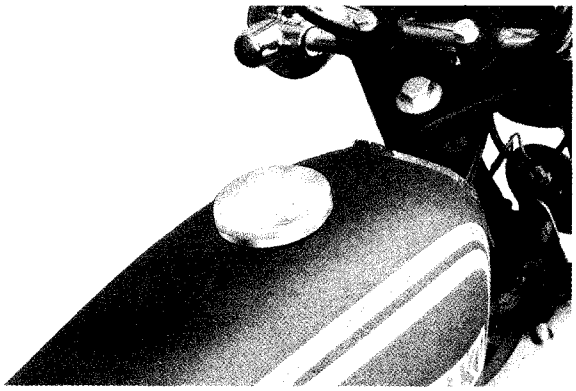


FUEL AND OIL RECOMMENDATIONS

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

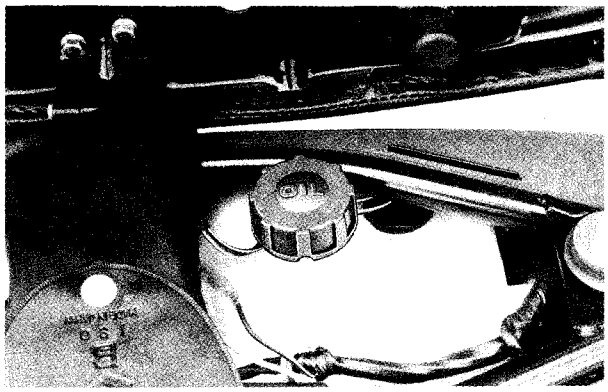
FUEL

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



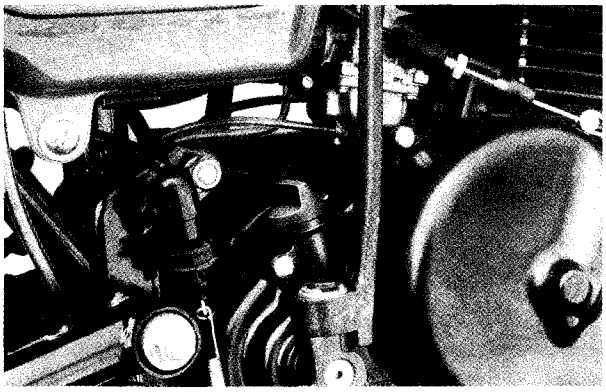
ENGINE OIL

For the SUZUKI CCI system, use of SUZUKI CCI or CCI SUPER OIL is highly recommended, but if they are not available a good quality two-stroke oil should be used.



TRANSMISSION OIL

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



FRONT FORK OIL

For the front fork oil, be sure to use a motor oil whose viscosity rating meets the specifications of SAE 5W/20 or A.T.F. (Automatic Transmission Fluid).

SPECIAL MATERIALS

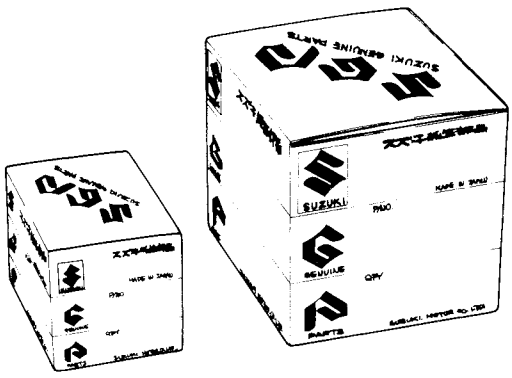
MATERIALS REQUIRED FOR MAINTENANCE

The materials shown are required for maintenance works on the Model TS50, and should be kept on hand for ready use. In addition, such standard materials as cleaning fluids, lubricants, etc., should also be available. Methods of use are discussed in the text of this manual on later pages.

Material	Use
 SUZUKI super grease "A" 99000-25010	○ Oil seals ○ Throttle grip ○ Cables (speedometer and tachometer)
 SUZUKI bond No. 4 99000-31030	○ Crankcase mating surface ○ Front fork damper rod bolt
 SUZUKI lock super "103Q" 1303B 99000-32030	○ 5th drive gear
 Thread lock cement 99000-32040	○ Front fork damper rod bolt ○ Reed valve securing screws ○ Bearing retainer screws

USE OF GENUINE SUZUKI PARTS

When replacing any part of the machine, the use of genuine SUZUKI replacement parts is highly recommended. The use of parts that are not genuine SUZUKI will lower the inherent capability of the machine and could induce costly mechanical trouble.



PRECAUTIONS AND GENERAL INSTRUCTIONS

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

- ☐ Be sure to replace packings, gaskets, circlips, O rings and cotter pins with new ones.
- ☐ Tighten bolts and nuts from the ones of larger diameter to those of smaller diameter, and from inside to outside diagonally, with specified tightening torque.
- ☐ Use special tools where specified.
- ☐ Use specified genuine parts and oils recommended.
- ☐ When more than 2 persons perform works in cooperation, pay attention to the safety of each other.
- ☐ After the reassembly, check parts for tightening condition and operation.
- ☐ Treat gasoline, which is extremely flammable and highly explosive, with greatest care. Never use gasoline as cleaning solvent.

Warning, caution and note are included in this manual occasionally, describing the following contents.

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

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

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

SPECIFICATIONS

DIMENSIONS AND WEIGHT

Overall length	1 815 mm (71.5 in)
Overall width	780 mm (30.7 in)
Overall height	1 040 mm (40.9 in)
Wheelbase	1 185 mm (46.7 in)
Ground clearance	225 mm (8.9 in)
Seat height	770 mm (30.3 in)
Dry mass (weight)	69 kg (152 lbs)

ENGINE

Type	Two-stroke, air cooled
Intake system	Piston and reed valve
Number of cylinder	1
Bore	41.0 mm (1.614 in)
Stroke	37.8 mm (1.488 in)
Piston displacement	49 cm^3 (3.0 cu.in)
Corrected compression ratio	7.1 : 1
Carburetor	MIKUNI VM16SH
Air cleaner	Polyurethane foam element
Starter system	Primary kick
Lubrication system	SUZUKI "CCI"

TRANSMISSION

Clutch		Wet multi-plate type
Transmission		5-speed constant mesh
Gearshift pattern		1-down, 4-up
Primary reduction		3.842 (73/19)
Final reduction		3.750 (45/12)
Gear ratios,	Low	3.166 (38/12)
	2nd	1.941 (33/17)
	3rd	1.380 (29/21)
	4th	1.083 (26/24)
	Top	0.923 (24/26)
Drive chain		DAIDO D.I.D. 420, 106 links or TAKASAGO RK 420, 106 links

CHASSIS

Front suspension	Telescopic, oil dampened
Rear suspension	Swinging arm, oil dampened
Steering angle	43° (right & left)
Caster	62°30′
Trail	86 mm (3.4 in)
Turning radius	1.9 m (6.2 ft)
Front brake	Internal expanding
Rear brake	Internal expanding
Front tire size	2.50-19-4PR
Rear tire size	3.00-17-4PR
Front tire pressure	150 kPa (1.5 kg/cm², 21 psi) (Normal solo riding)
Rear tire pressure	175 kPa (1.75 kg/cm², 25 psi) (Normal solo riding)

ELECTRICAL

Ignition type	Magneto
Ignition timing	18° B.T.D.C.
Spark plug	NGK BP6HS or NIPPON DENSO W20FP
Battery	6V 14.4 kC (4 Ah)/10 HR
Generator	Flywheel magneto
Fuse	10A
Headlight	6V 15/15W
for Austria	6V 25/25W
Parking (City) light (for Austria)	6V 4W
Tail/Brake light	6V 3/10W
for Austria	6V 5/21W
Turn signal light	6V 8W
for Austria	6V 21W
Speedometer light	6V 1.7W
Turn signal indicator light	6V 3W
High beam indicator light	6V 1.7W
Neutral indicator light	6V 3W
Oil level indicator light	6V 3W

CAPACITIES

Fuel tank including reserve	5.0 L (1.3/1.1 US/Imp gal)
reserve	1.3 L (1.4/1.1 US/Imp qt)
Engine oil tank	1.2 L (1.3/1.1 US/Imp qt)
Front fork oil	85 ml (2.87/2.99 US/Imp oz)
Transmission oil	650 ml (1.37/1.14 US/Imp qt)

* These specifications are subject to change without notice.

PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

CONTENTS

PERIODIC MAINTENANCE SCHEDULE

Vehicles should be inspected after a certain period of running for wear of parts, carbon deposits, elongated cables, etc. Inspections should be made periodically and defects should be repaired or adjusted beforehand to prevent trouble and prolong the motorcycle's service life.
Inspect and adjust the vehicle as indicated below.

NOTE:
More frequent maintenance may be performed on motorcycles that are used in an extreme severe condition.

PERIODIC MAINTENANCE CHART

Interval / Item	Initial 1 000 km (600 mi)	Every 3 000 km (2 000 mi)	Every 6 000 km (4 000 mi)	Every 12 000 km (8 000 mi)
Air cleaner element		Wash and apply CCI oil		
Battery	Check and service electrolyte solution	Check and service electrolyte solution		
Brakes	Adjust play	Adjust play		
Carburetor	Adjust throttle valve stop screw and pilot air screw	Adjust throttle valve stop screw and pilot air screw		Overhaul and clean
Clutch	Adjust play	Adjust play		
Cylinder head and Cylinder	Retighten nuts	Retighten nuts	Remove carbon	
Drive chain	Adjust play	Adjust play	Wash	
Fuel hose		Replace every 2 years		
Fuel strainer	Clean		Clean	
Ogmotopm to,omg	Adjust	Adjust		Replace contact points
Oil pump	Check operation and adjust control lever aligning mark	Check operation and adjust control lever aligning mark		
Spark plug	Clean	Clean and adjust gap	Replace	
Steering stem	Check play	Check play		
Throttle cable	Adjust play	Adjust play		
Tire		Check every day before riding Check tire pressure and tread wear		
Transmission oil	Change	Change		
Chassis bolts and nuts	Retighten		Retighten	

LUBRICATION CHART

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

Interval / Item	Initial 1 000 km (600 mi)	Every 3 000 km (2 000 mi)	Every 6 000 km (4 000 mi)	
Brake cable		Motor oil		
Brake cam shaft			Grease	
Clutch cable		Motor oil		
Contact breaker cam oil felt			Grease	
Drive chain	Every 1 000 km (600 mi) Motor oil			
Speedometer gearbox			Grease	
Throtlle and oil pump cables		Motor oil		
Throttle grip and choke lever			Grease	
Swinging arm pivot shaft			Grease	

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

Lubricate exposed parts which are subject to rust, with either motor oil or 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.

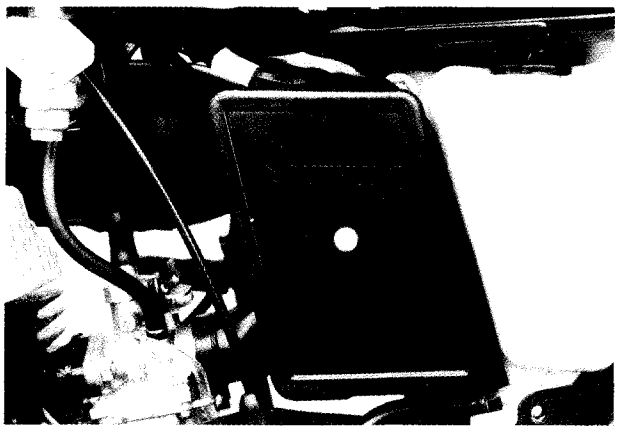
MAINTENANCE AND TUNE-UP PROCEDURES

AIR CLEANER

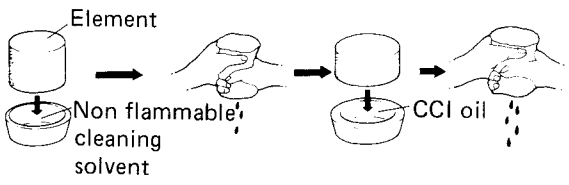
Clean every 3 000 km (2 000 mi)

When the air cleaner element is clogged with dust, air intake resistance is raised, reducing the output and increasing the fuel consumption.
Clean the element periodically, following the procedure below.

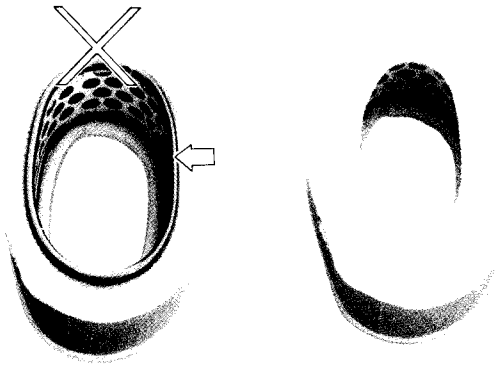
- Remove the air cleaner cover by unscrewing screw after removing left frame cover.



- Fill a washing pan of a proper size with non-flammable cleaning solvent.
  Immerse the element in the solvent and wash it clean.
- Squeeze the solvent off the washed element by pressing it between the palms of both hands: Do not twist and wring the element or it will develop fissures.
- Immerse the element in a pool of motor oil, and squeeze the oil off the element to make it slightly wet with the oil.



- Fit the element on the frame properly.



Wrong Correct

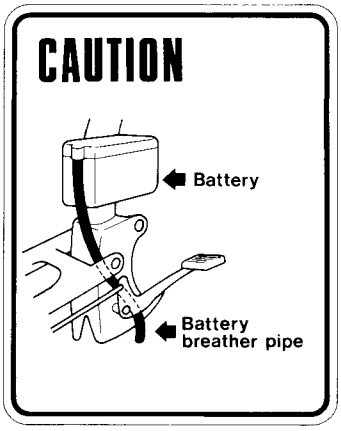
CAUTION:
*** Before and during the cleaning operation, examine the element to see if it has a rupture or fissure. A ruptured or fissured element must be replaced.**
*** Be sure to position the element snugly and correctly, so that no incoming air will bypass it. Remember, rapid wear of piston rings and cylinder bore is often caused by a defective or poorly fitted element.**

BATTERY

Check at initial 1 000 km (600 mi) and every 3 000 km (2 000 mi)

Battery specifications	
Type	6N4B-2A-1 lead storage battery
Voltage	6V
Capacity	14.4 kC (4Ah)
Electrolyte for specific gravity	1.26 at 20°C (68°F)

- Check to be sure that the vent pipe is secured properly and routed correctly.



- Add distilled water as necessary, to keep the surface of the electrolyte above the LOWER level line but not above the UPPER level line.

- If the electrolyte surface falls rapidly and requires frequent addition of distilled water, check the charging system for proper charging rate.
- Periodically, check the electrolyte for specific gravity by using a hydrometer to tell the state of charge.

09900-28403	Hydrometer

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

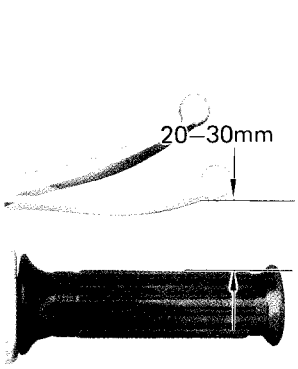
CAUTION:
Do not use tap water for battery solution. Reconnect the battery vent hose after re-installing the battery.

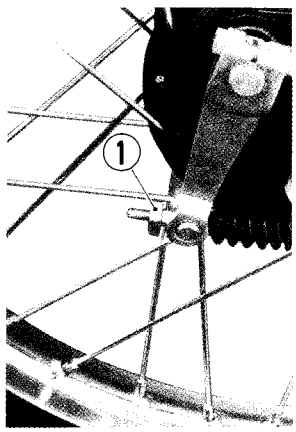
BRAKES

Adjust at initial 1 000 km (600 mi), and every 3 000 km (2 000 mi)

FRONT

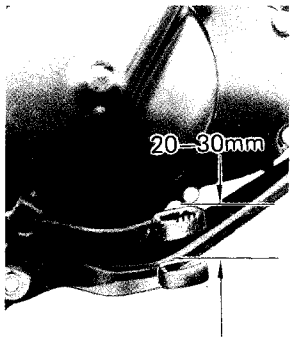
- Measure the clearance between the brake lever end and throttle grip when brake is fully applied. Adjust the clearance to 20 – 30 mm (0.8 – 1.2 in) by turning the adjusting nut ①.

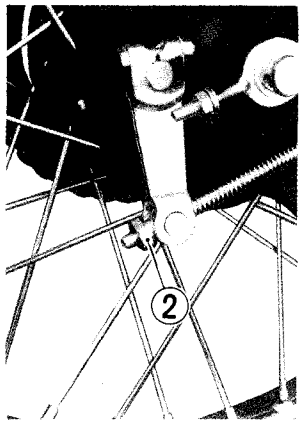




REAR

- Adjust the free travel to 20 – 30 mm (0.8 – 1.2 in) by turning the adjusting nut ②.

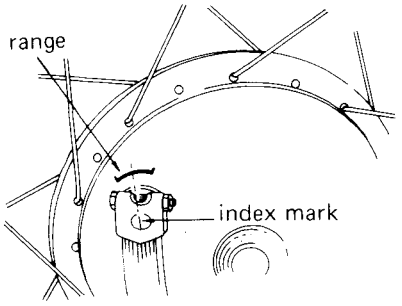




BRAKE SHOE WEAR

Check every 3 000 km (2 000 mi)

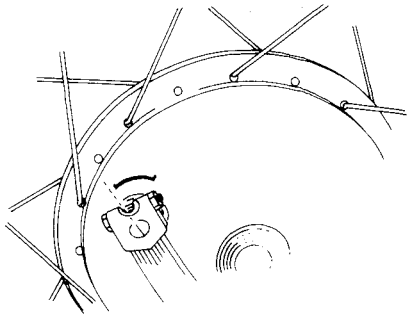
This motorcycle is equipped with brake lining wear limit indicator on front and rear. As shown in Fig., at the condition of normal lining wear, the extension line of the index mark on the brake cam shaft should be within the range embossed on the brake panel with brake on.



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

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

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



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

CARBURETOR

Adjust at initial 1 000 km (600 mi) and every 3 000 km (2 000 mi)

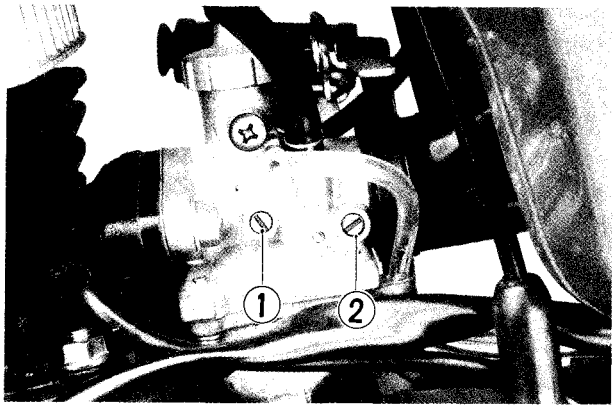
Adjust the engine idle speed as follows.

- Start the engine and allow it to warm up.

NOTE:
A warm engine means an engine which has been run averaging 30 mph (50 km/h) in top gear for 9 minutes.

- Turn the throttle valve stop screw ① so that engine idles at 1 500 r/min.
- Turn the pilot air screw ② in or out around ¼ turn from the original setting (2 turn out). 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 hightest r/min.
- Turn the throttle valve stop screw again and adjust the idling r/min at 1 100 – 1 300 r/min.

Idle r/min	1 200 ± 100 r/min



CARBURETOR OVERHAUL AND CLEANING

Overhaul and clean every 12 000 km (8 000 mi)

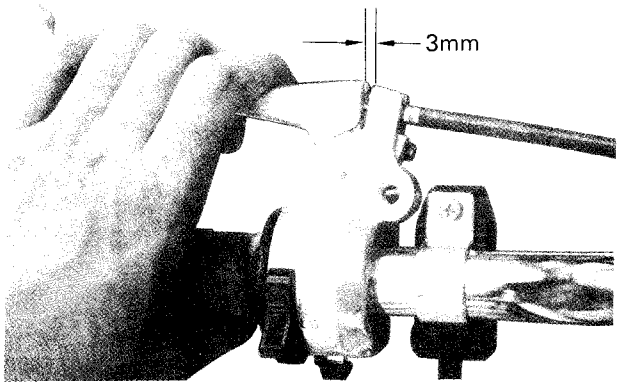
Wash the carburetor and component parts in cleaning solvent after disassembly.
Before reassembly, inspect the float level and needle valve.
Then blow compressed air through all jets to make sure they are not clogged. Do not use wire to clear the passage ways. (Refer to page 4-2.)

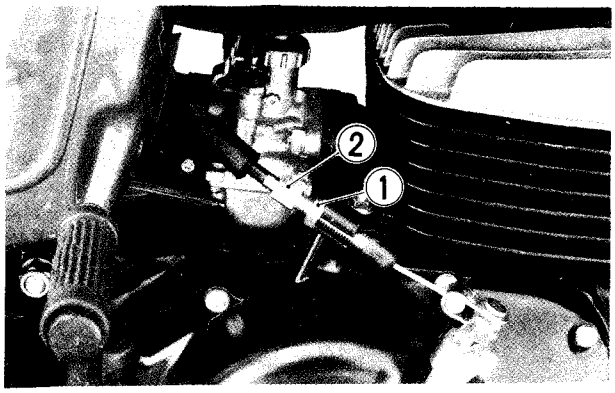
CLUTCH

Adjust at initial 1 000 km (600 mi) and every 3 000 km (2 000 mi)

Clutch play should be 3 mm (0.12 in) as measured at the clutch lever holder before the clutch begins to disengage.

- Loosen the lock nut ① and adjust the clutch play by turning the adjuster ② in or out to acquire the specified play.
- Tighten the lock nut while holding the adjuster in position.



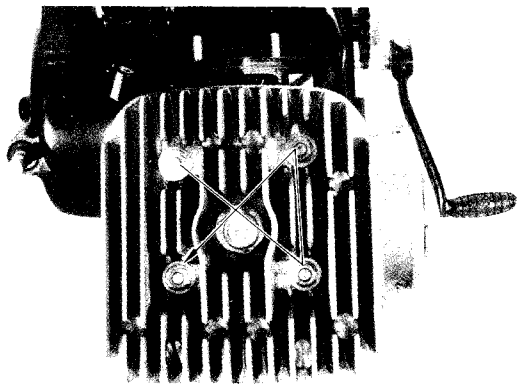


CYLINDER AND HEAD NUTS

Retighten at initial 1 000 km (600 mi) and every 3 000 km (2 000 mi)

- Retighten cylinder and cylinder head nuts as specified torque according to the following tightening order.

Cylinder head nut	8 – 12 N-m (0.8 – 1.2 kg-m, 6.0 – 8.5 lb-ft)
Cylinder nut	8 – 12 N-m (0.8 – 2.3 kg-m, 6.0 – 8.5 lb-ft)
Exhaust pipe clamp bolt	15 – 20 N-m (1.5 – 2.0 kg-m, 11.0 – 14.5 lb-ft)



CYLINDER HEAD

Remove carbon every 6 000 km (4 000 mi)

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

Be careful not to damage the surface of the combustion chamber and exhaust port when removing carbon.

DRIVE CHAIN

Check and adjust at initial 1 000 km (600 mi) and every 3 000 km (2 000 mi). Lubricate every 1 000 km (600 mi) Wash and lubricate 6 000 km (4 000 mi).

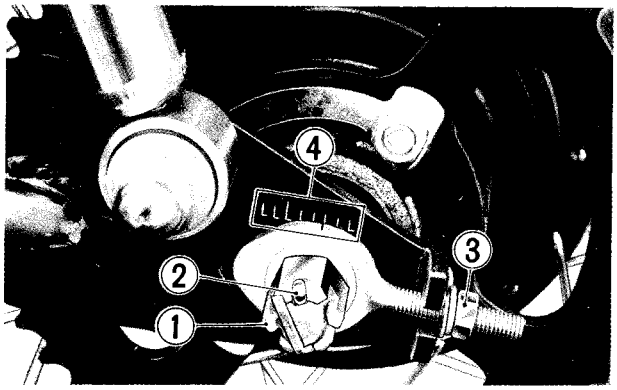
Visually inspect the drive chain for the possible malconditions listed below.

1. Loose pins
2. Damaged rollers
3. Rusted links
4. Twisted or seized links
5. Excessive wear

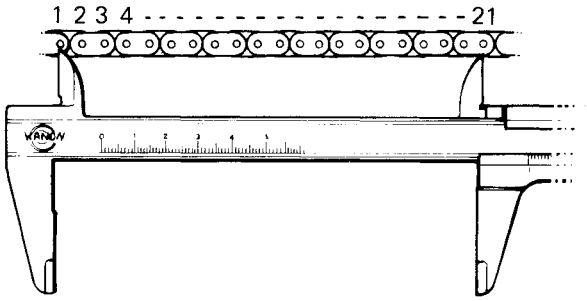
If any defects are found, the drive chain must be replaced.

CHECKING AND ADJUSTING

- Loosen axle nut ① after pulling out cotter pin ② .
- Tense the drive chain fully by tightening the adjusters ③ .

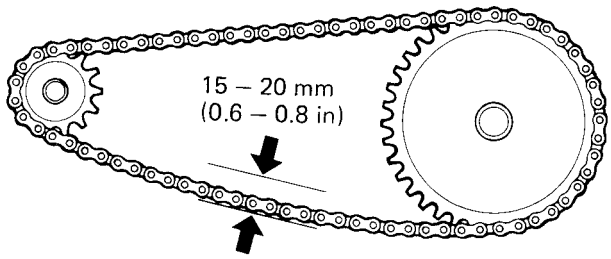


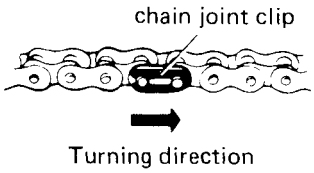
- Remove the chain case. Count out 21 pins (20 pitch) on the chain and measure the distance between the two. If the distance exceeds following limit, the chain must be replaced.



Service Limit	259.0 mm (10.20 in)

- Loosen the adjuster ③ until the chain has 15 –20 mm (0.6 – 0.8 in) of sag at the middle between engine and rear sprockets. The mark ④ on both chain adjusters must be at the same position on the scale to ensure that the front and rear wheels are correctly aligned.





- After adjusting the drive chain, tighten the axle nut ① securely and lock with cotter pin ② . Always use a new cotter pin.

Rear axle nut tightening torque	36 – 52 N·m (3.6 – 5.2 kg-m 26.0 – 31.5 lb-ft)

CLEANING AND LUBRICATING

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

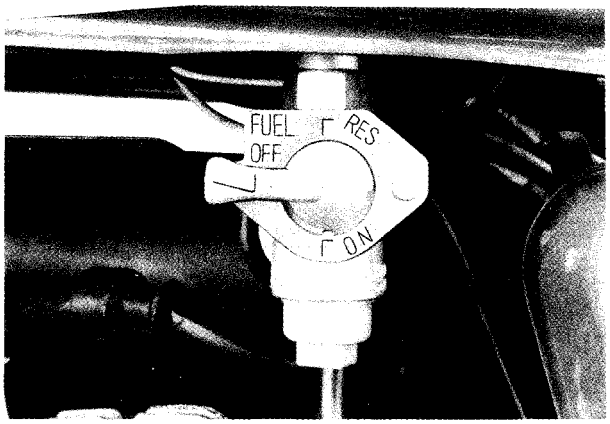
FUEL HOSE

Replace every two years

FUEL STRAINER

Clean at initial 1 000 km (600 mi) and every 6 000 km (4 000 mi)

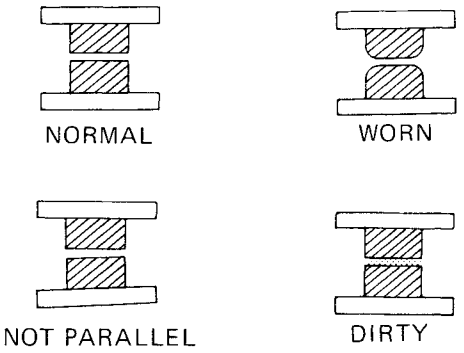
If the fuel strainer cup is dirty with sediment or water, gasoline will not flow smoothly and a loss in engine power may result. Clean the strainer and the cup, leaving the cock lever in OFF position.



IGNITION TIMING

Adjust at initial 1 000 km (600 mi) and every 3 000 km (2 000 mi)
Replace contact point every 12 000 km (8 000 mi)

- Check the condition of contact point surfaces. If pitted or damaged, replace with a new set of points. A point file, or flexstone may be used to correct minor damage.



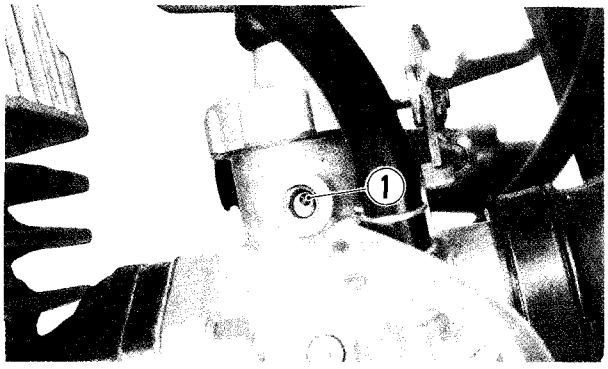
- Adjust the contact point gap with a thickness gauge (09900-20803) which should be 0.3 – 0.4 mm (0.012 – 0.016 in).
  To adjust the ignition timing, see page 5 - 3.

OIL PUMP

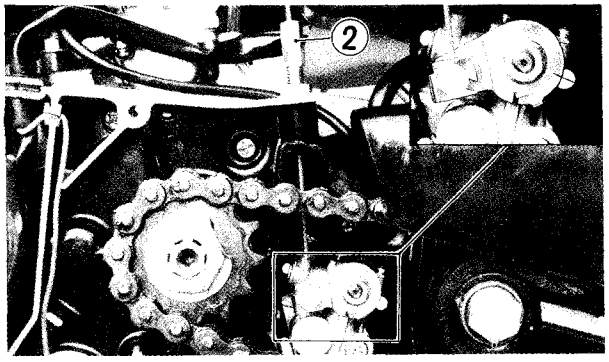
Adjust at initial 1 000 km (600 mi) and every 3 000 km (2 000 mi)

The engine oil is fed by the oil pump to the engine. The amount of oil fed to it is regulated by engine speed and the oil pump control lever which is controlled by the amount of throttle opening.
Check the oil pump in the following manner to confirm correct operation for all throttle valve opening positions.

- Turn the throttle grip until the dent mark ① on the throttle valve comes to the upper part of the hole.



- Check whether the mark on the oil pump control lever is aligned with the index mark when the throttle valve is positioned as above.



- If the marks are not aligned, adjust by means of the cable adjuster ② to align them.

CAUTION:
This adjustment could affect the throttle cable play, so readjust the throttle cable play if necessary.

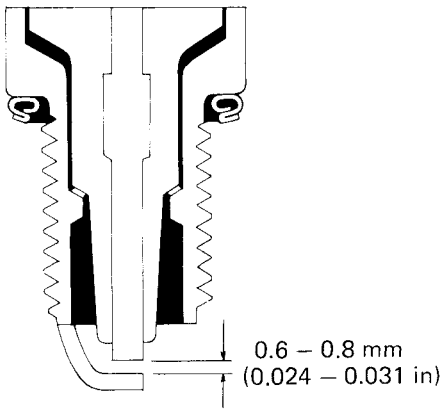
SPARK PLUG

Clean and adjust at initial 1 000 km (600 mi) and every 3 000 km (2 000 mi)
Replace every 6 000 km (4 000 mi)

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

- Carbon deposits on the spark plug will prevent good sparking and cause misfiring. Clean the deposits off periodically.
- If the center electrode is fairly worn down, the plug should be replaced and the plug gap set to the specified gap using a thickness gauge.

Thickness gauge	09900-20803



Spark plug gap	0.6 – 0.8 mm (0.024 – 0.031 in)

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

NGK	DENSO	Remarks
BP4H	W14EP	If the standard plug is apt to wet foul, replace with this plug.
BP6HS	W20FP	Standard
BP7HS	W22FP	If the standard plug is apt to overheat, replace with this plug.

- Tighten the spark plug in the cylinder head with the specified torque.

Spark plug tightening torque	25 – 30 N·m (2.5 – 3.0 kg-m 18.0 – 21.5 lb-ft)

STEERING STEM

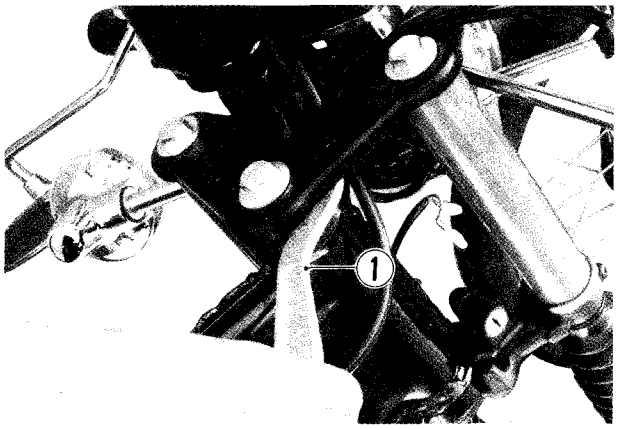
Check at initial 1 000 km (600 mi) and every 3 000 km (2 000 mi)

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 front fork bearings.

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

- Support the motorcycle body and jack up the front wheel.
- Detach the fuel tank.
- Untighten the steering stem head bolt, the front fork cap bolts and lower clamp bolts.



- Tighten the steering stem head nut using the special tool ① so that the handlebars move smoothly.

Steering stem nut wrench	09940-10122

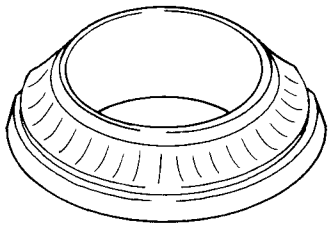
NOTE:
Tighten the steering so that the handlebar pivots freely by its own weight.

- Tighten the bolts to the following torque:

Steering stem head bolt	35 – 55 N·m (3.5 – 5.5 kg-m / 25.5 – 39.5 lb-ft)
Front fork cap bolt	35 – 55 N·m (3.5 – 5.5 kg-m / 25.5 – 39.5 lb-ft)
Lower clamp bolt	20 – 30 N·m (2.0 – 3.0 kg-m / 14.5 – 21.5 lb-ft)

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

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



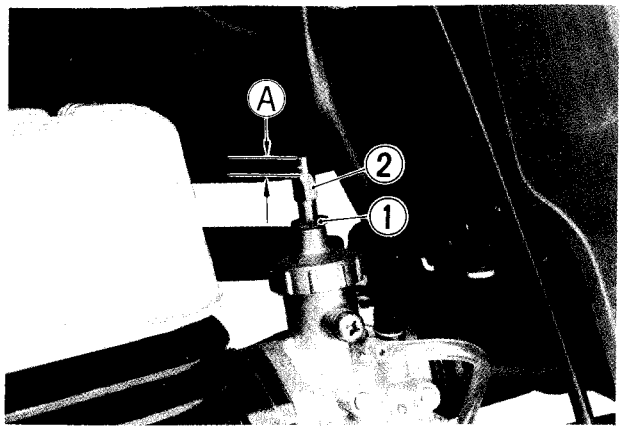
Number of steel balls	
Upper	22 pcs.
Lower	18 pcs.

THROTTLE CABLE

Adjust at initial 1 000 km (600 mi) and every 3 000 km (2 000 mi)

There should be 0.5 mm (0.02 in) play Ⓐ on the throttle cable. To adjust the throttle cable play:

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



- Secure the lock nut while holding the adjuster in place.

NOTE:
Oil pump cable adjustment must be done after throttle cable adjustment. (See page 2-9.) If the throttle stop screw is alterred, the cable free play should be re-checked.

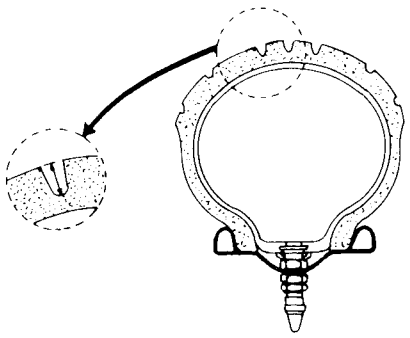
TIRE

Check every day

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
4.0 mm (0.16 in)	4.0 mm (0.16 in)



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

		kPa	kg/cm²	psi
SOLO RIDING	Front	150	1.50	21
	Rear	175	1.75	25
DUAL RIDING	Front	150	1.50	21
	Rear	200	2.00	28

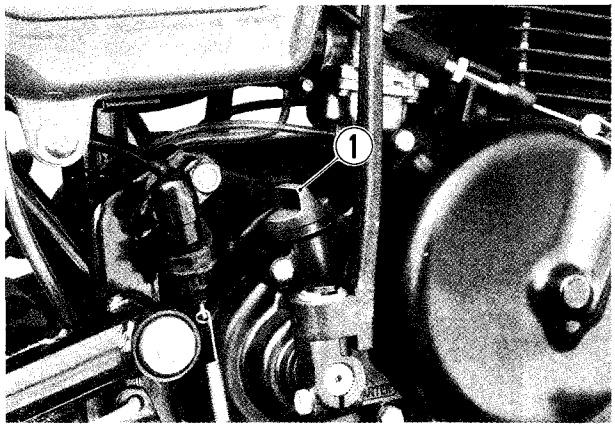
CAUTION:
The standard tire fitted on this motorcycle is 2.50-19-4PR for front and 3.00-17-4PR for rear.
The use of a tire other than the standard may cause instability. It is highly recommended to use a SUZUKI Genuine Tire.

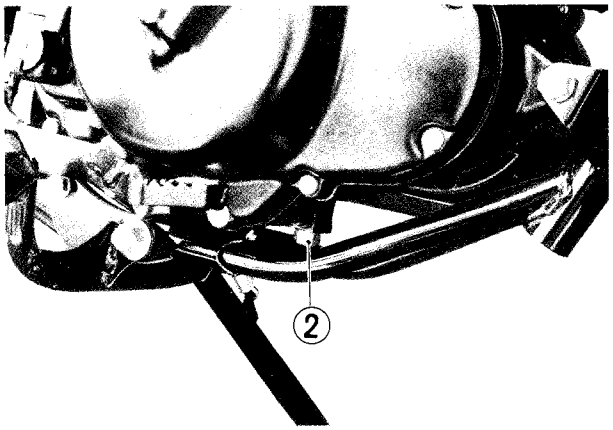
TRANSMISSION OIL

Change at initial 1 000 km (600 mi) and every 3 000 km (2 000 mi)

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

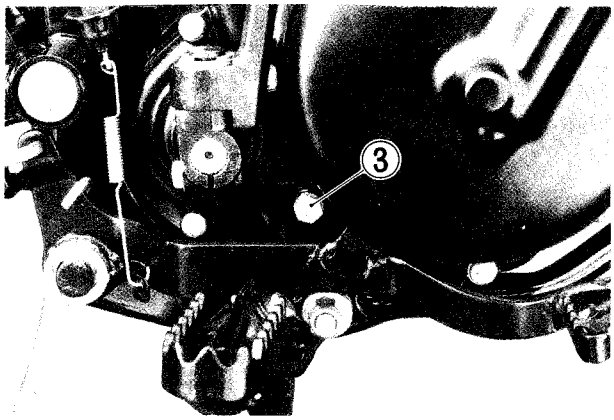
- Start the engine to warm up the oil, this will facilitate draining of oil. Shut off the engine.
- Unscrew the oil filler cap ① and drain plug ②, and drain the oil completely.





- Tighten the drain plug.
- Supply a good quality SAE 20W/40 multigrade motor oil.

Capacity	650 ml (0.69/0.57 US/Imp qt)

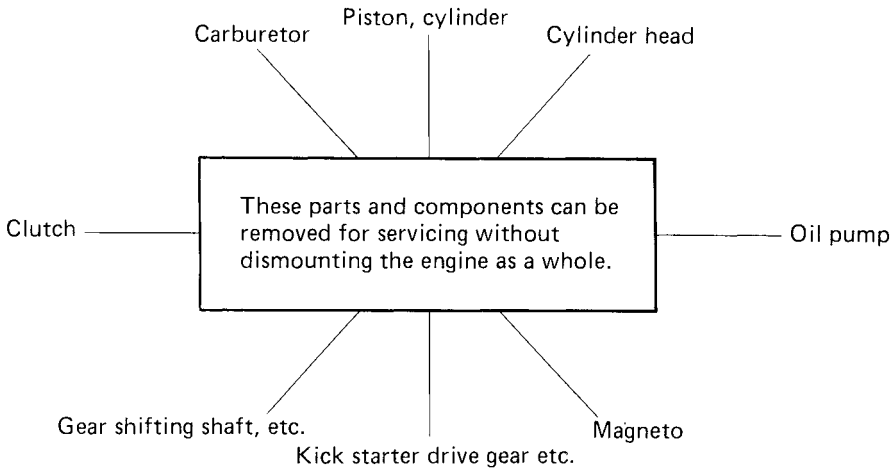


- Check the oil level with the oil level screw ③.

SERVICING ENGINE

CONTENTS

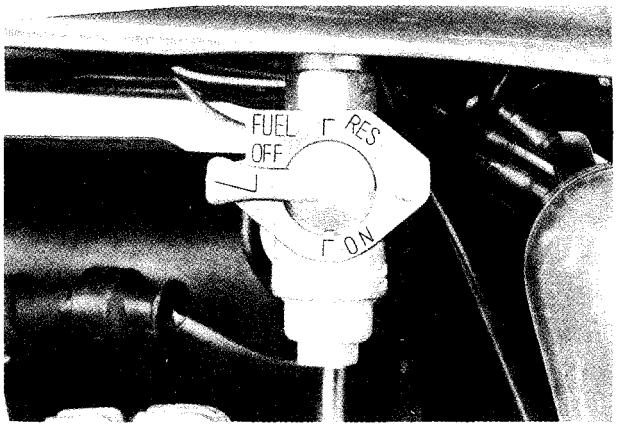
ENGINE COMPONENTS REMOVAL WITH THE ENGINE IN PLACE



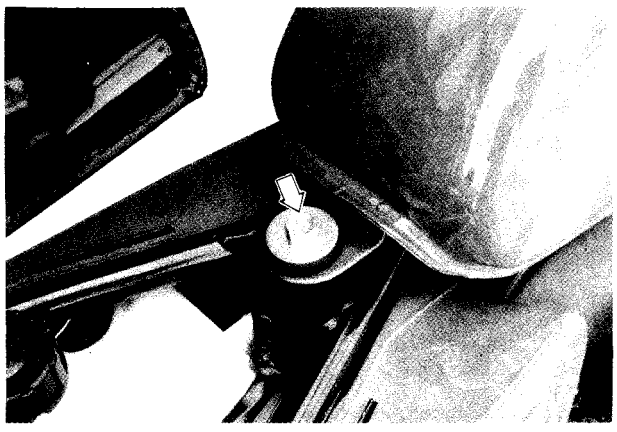
ENGINE REMOVAL

Before taking the engine out of the frame, wash the engine with a steam 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.

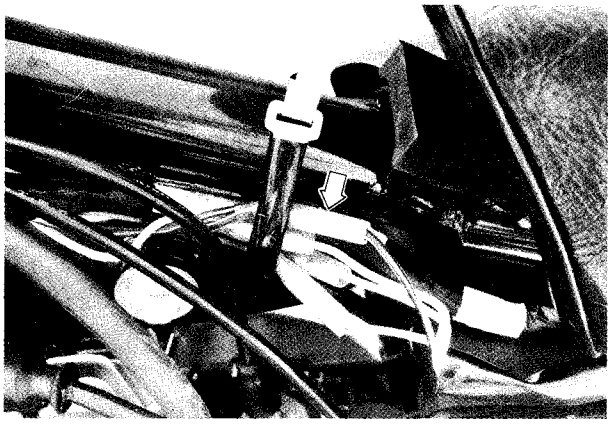
1. Turn the fuel cock OFF position and disconnect fuel hose.



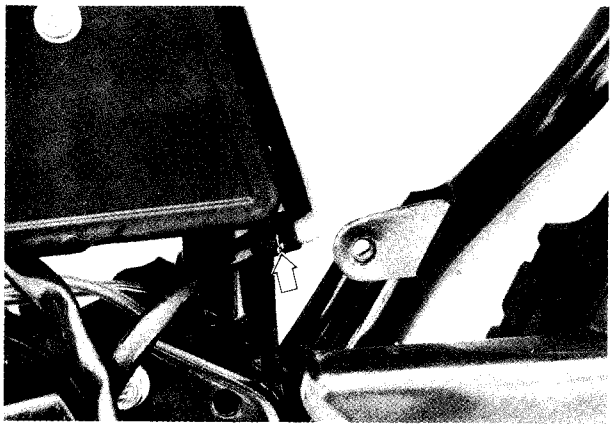
2. Remove the fuel tank securing bolt and draw out the fuel tank rearward.



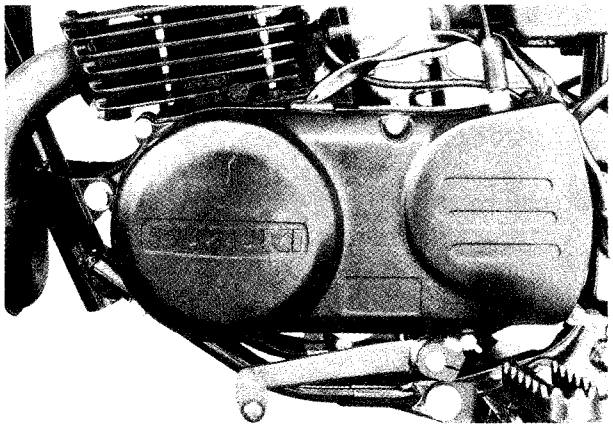
3. Remove the left frame cover and disconnect mogneto lead wires after loosening clamp.



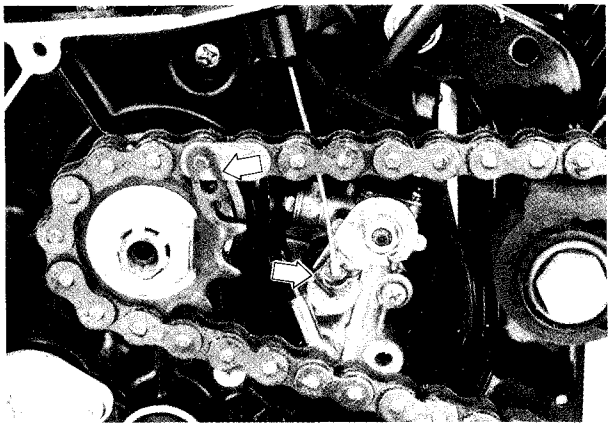
4. Disconnect oil pipe from oil tank.



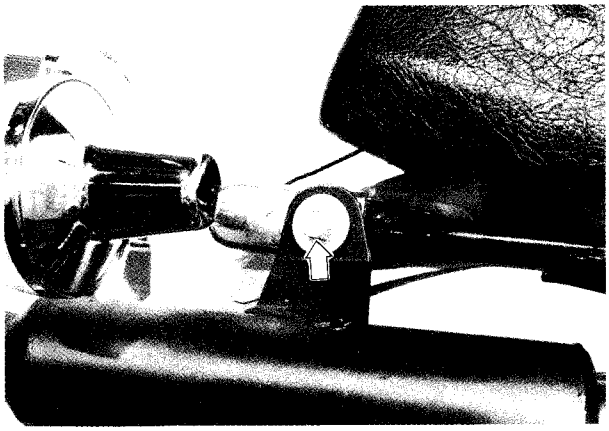
5. Remove magneto cover.



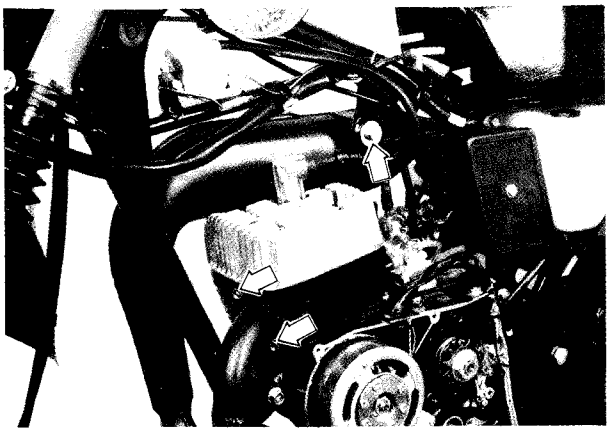
6. Remove oil pump cover and disconnect oil pump control cable. Disconnect chain by removing clip.



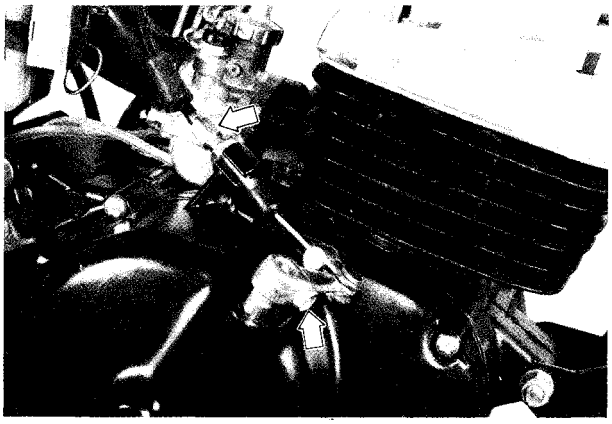
7. Remove the second muffler.



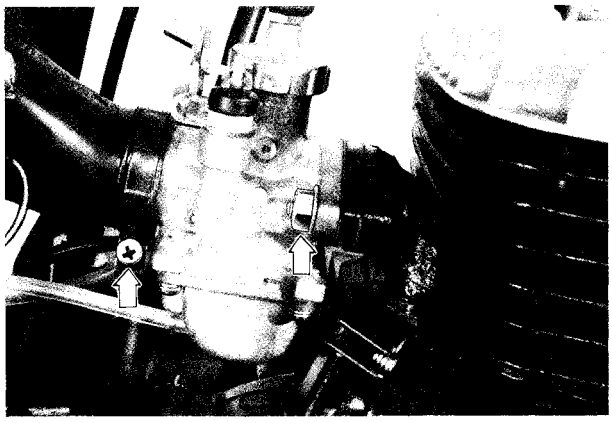
8. Remove the muffler by removing three muffler securing bolts.



9. Remove the clutch cable by loosening two bolts.

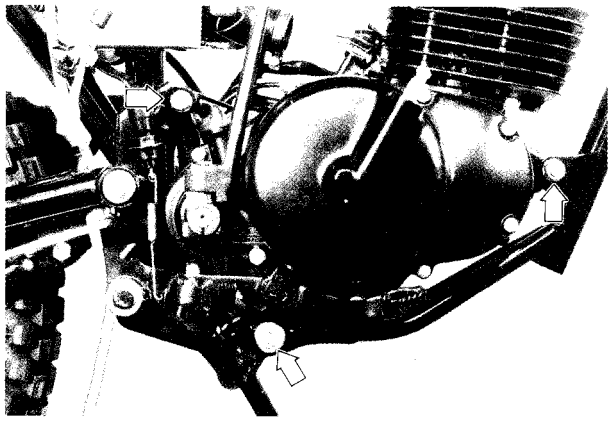


10. Remove the carburetor assembly from the cyclinder.

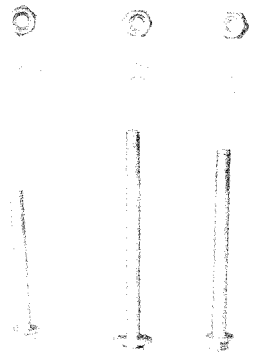


11. Remove the spark plug cap and loosen three engine mounting bolts, then dismount the engine assembly.

Tightening torque	13 – 23 N·m (1.3 – 2.3 kg-m, 9.5 – 16.5 lb-ft)



Self-lock nut are used for engine mounting. Do not reuse them.



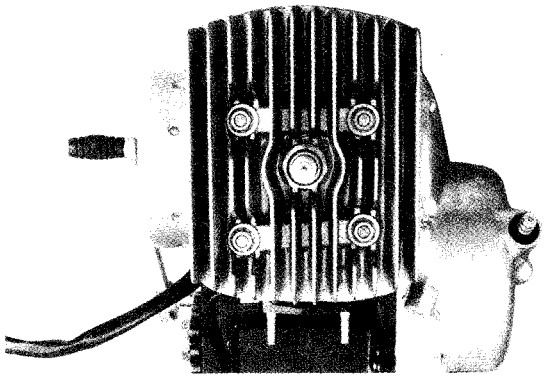
NOTE:
After engine installation, following adjustments are required.

- **Throttle cable play.**
- **Oil pump control cable.**
- **Clutch cable play.**
- **Drive chain sag.**

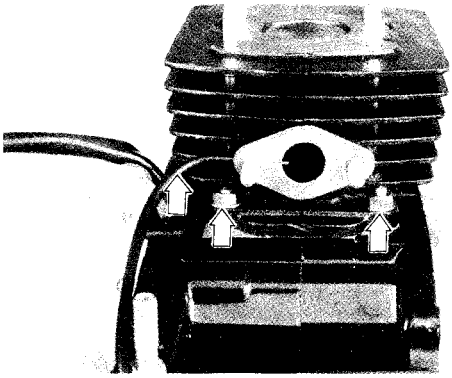
ENGINE DISASSEMBLY

The procedure for engine disassembly is sequencially explained in the following steps.

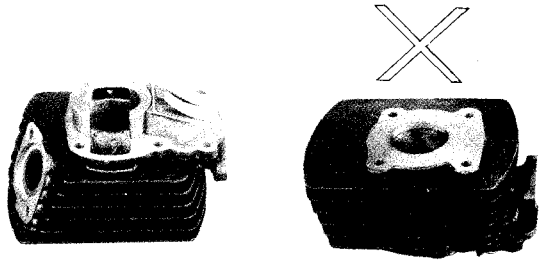
1. Remove the cylinder head.



2. Disconnect the oil outlet hose and remove the cylinder by loosening cylinder nuts.



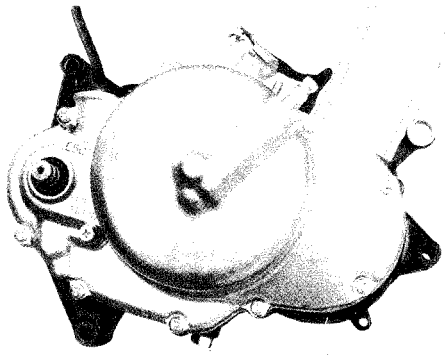
CAUTION:
Place the removed cylinder on the table upside down to prevent distortion of the reed valve stopper.



3. Remove the piston pin circlip and draw out the piston pin.

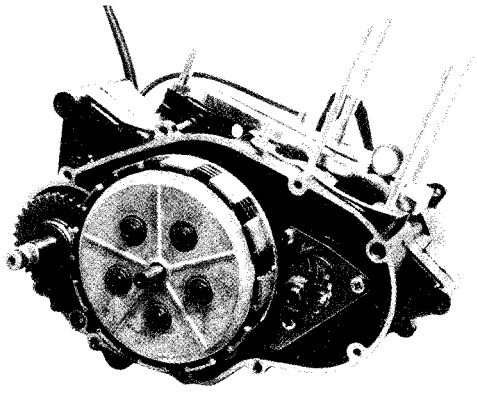
4. Remove the clutch cover screws by using impact driver.

NOTE:
Do not miss two dowel pins.



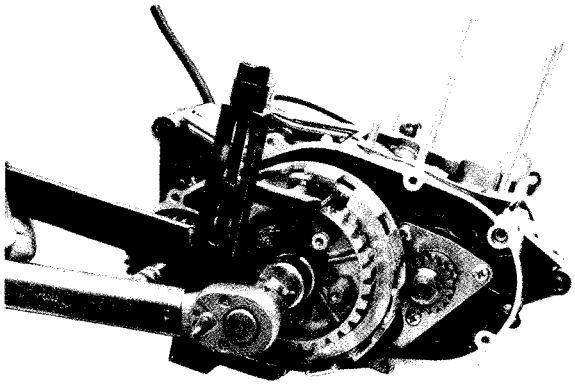
5. Loosen the clutch pressure plate bolts by using special tool, and take off the clutch springs, pressure, drive and driven plates.

09910-20115	Conrod stopper



6. Flatten the clutch sleeve hub washer, and remove hub nut by using special tool.

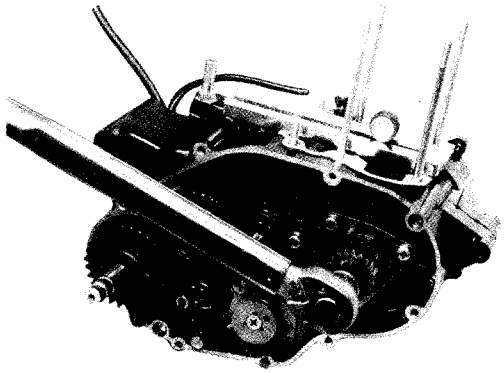
09920-53710	Clutch sleeve hub holder



7. Using special tool, loosen the primary drive gear nut.

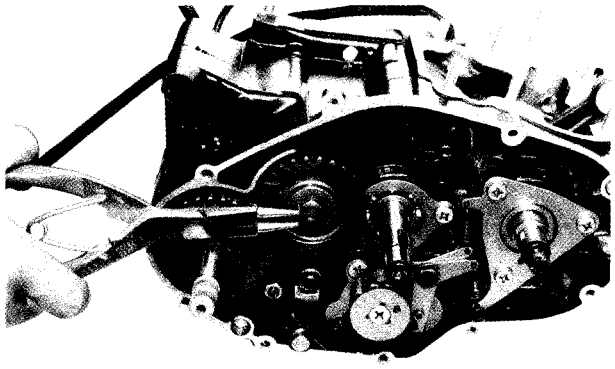
NOTE:
Do not miss primary drive gear key.

09910-20115	Con rod stopper

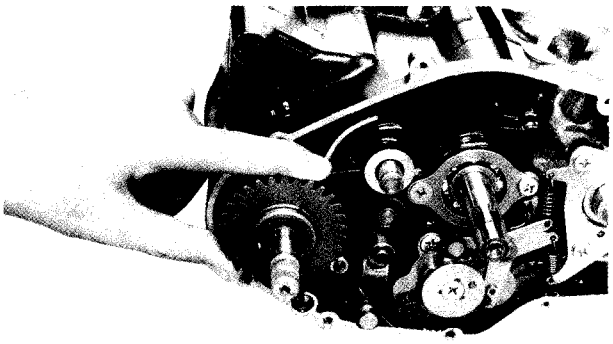


8. Using special tool, remove the kick starter idle gear.

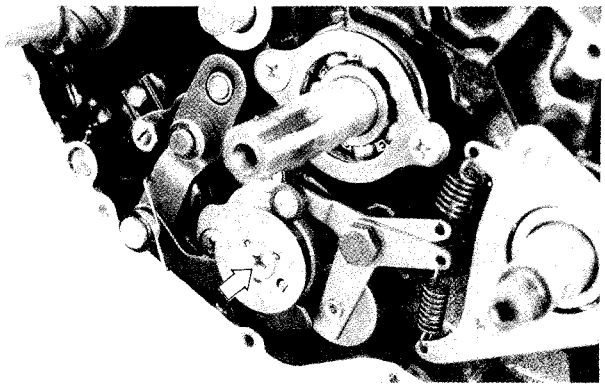
09900-06104	Snap ring pliers



9. Draw out the kick starter drive gear with its retainer spring.

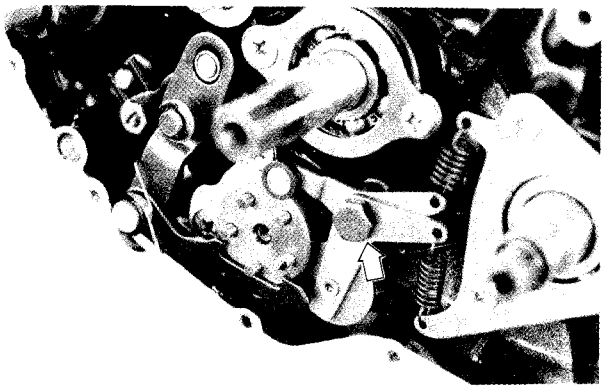


10. Loosen the screw by using impact driver and remove the retainer.



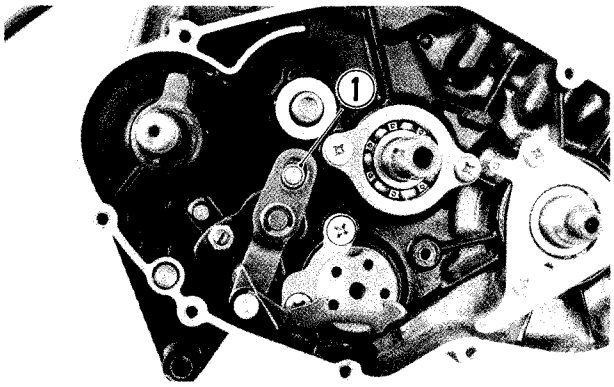
11. Loosen the bolt and remove the gearshifting cam and the neutral stoppers with two springs.

NOTE:
Do not miss the washer being located inside of the neutral stopper.

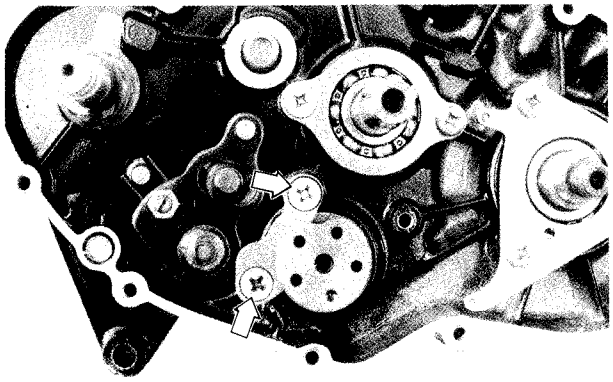


12. Remove the E ring and draw out the gear-shifter.

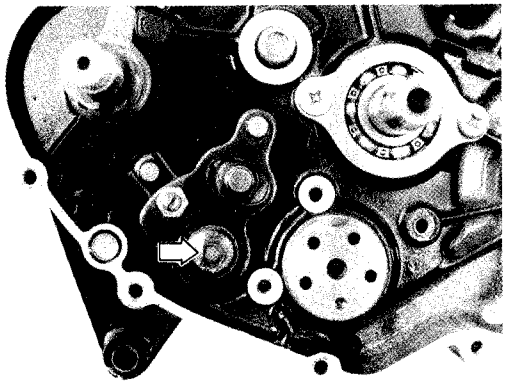
NOTE:
Do not miss the roller ① .



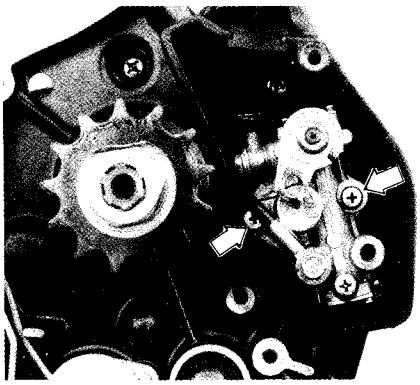
13. Remove the gearshifting cam guide by using impact driver.



14. Draw out the gearshifting shaft.

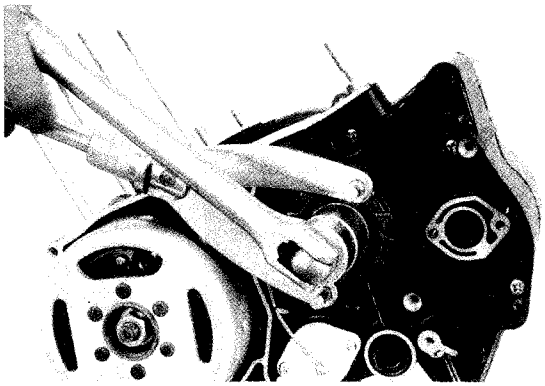


15. Remove the oil pump with the drive piece.



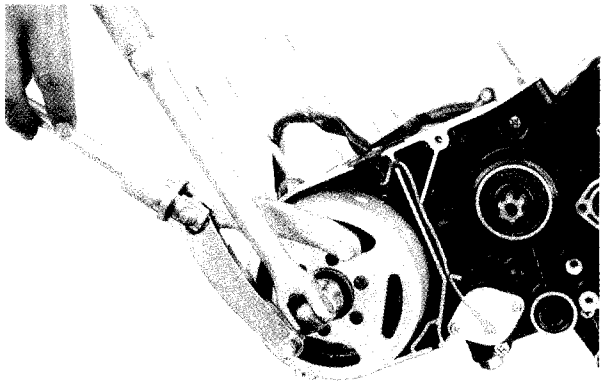
16. Flatten the lock washer and loosen the engine sprocket nut by using special tool.

09930-40113	Rotor holder



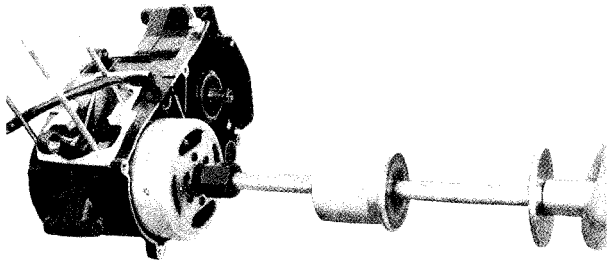
17. Loosen the rotor nut by using special tool.

09930-40113	Rotor holder

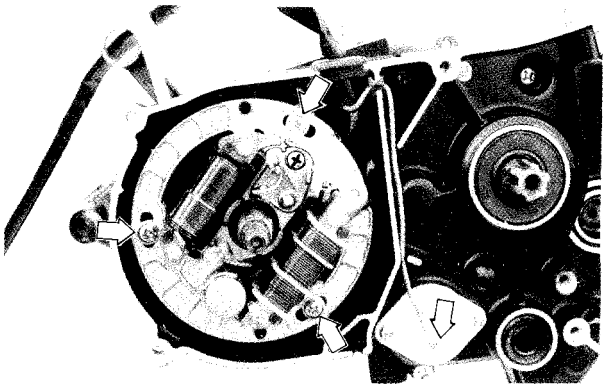


18. Remove the rotor by using special tool.

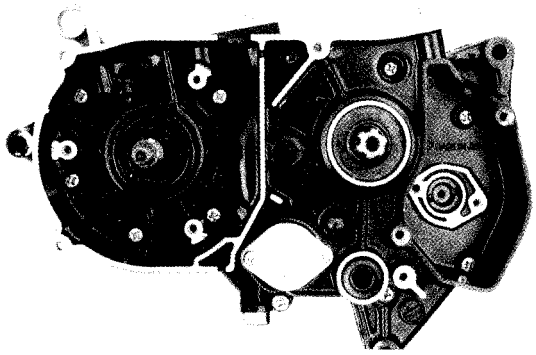
09930-30102	Rotor remover shaft
09930-30161	Attachment C



19. Remove the stator by loosening stator securing screws and neutral lead wire.

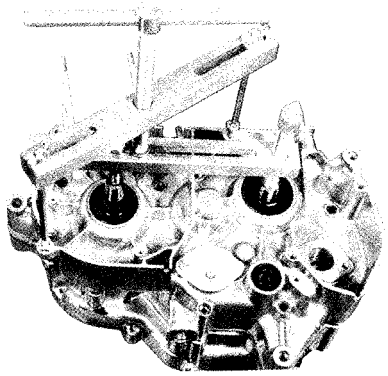


20. Loosen the crankcase securing screws by using impact driver.

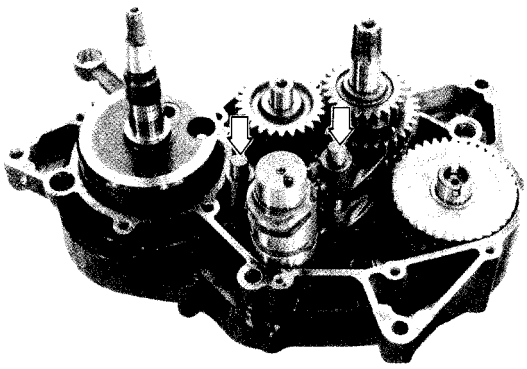


21. Separate the crankcase by using special tool.

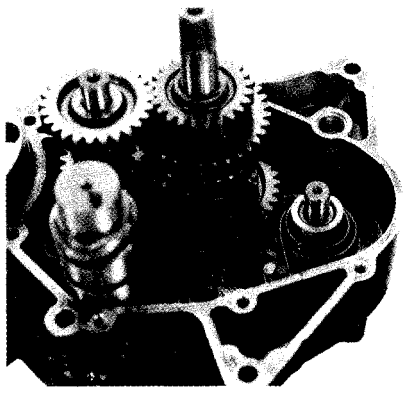
09910-80115	Crankcase separating tool



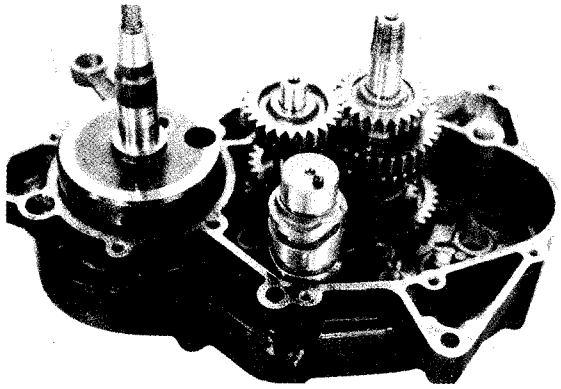
22. Draw out two gearshifting fork shafts and remove the three gearshifting forks.



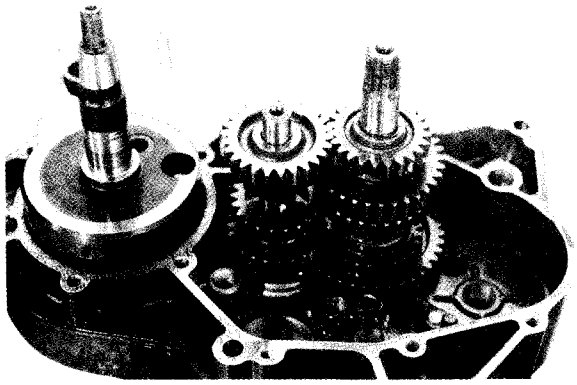
23. Remove the oil pump drive gear.



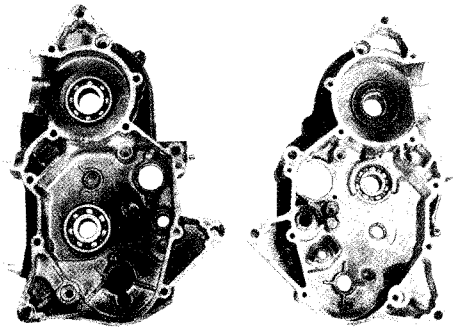
24. Draw out the kick starter return spring guide and remove the return spring. Draw out the kick starter shaft.



25. Pull out the gearshifting cam.



26. Draw out the counter and drive shafts at the same time. Remove the crankshaft.

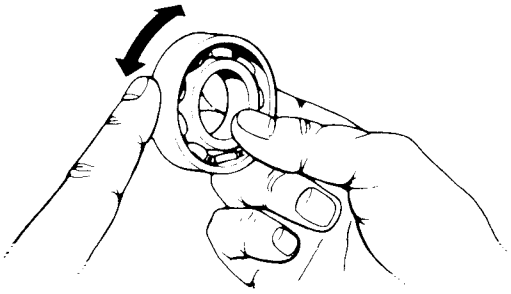


ENGINE COMPONENTS INSPECTION AND SERVICING

BEARINGS

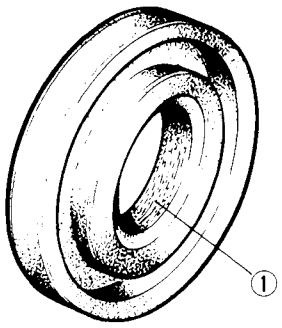
Wash the bearing with cleaning solvent and lubricate with motor oil before inspecting.

- Hold the bearing by the inner race.
- Turn the outer race and check to see that the outer race turns smoothly. If it does not turn lightly, quietly and smoothly, or if noise is heard, the bearing is defective and must be replaced with a new one.



OIL SEALS

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



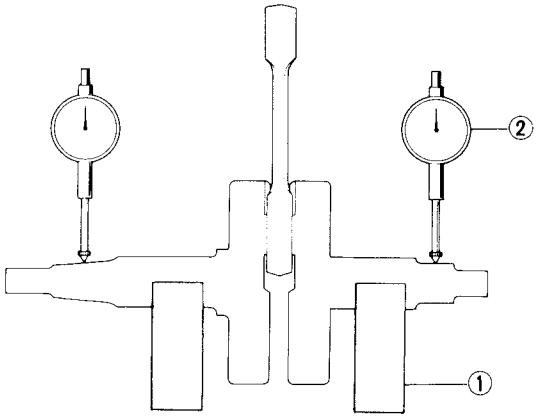
CRANKSHAFT

CRANKSHAFT DEFLECTION

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

Service Limit	0.05 mm (0.002 in.)

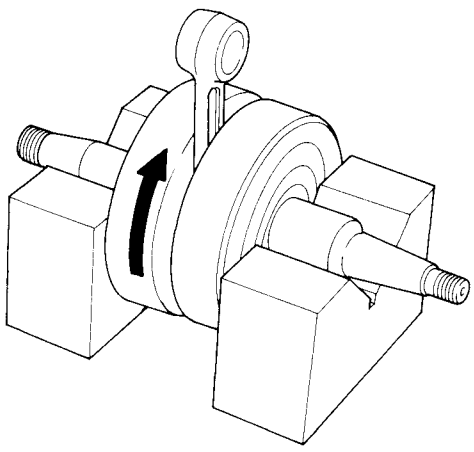
Excessive crankshaft deflection is often responsible for abnormal engine vibration. Such vibration shortens engine life.



CONDITION OF BIG END BEARING

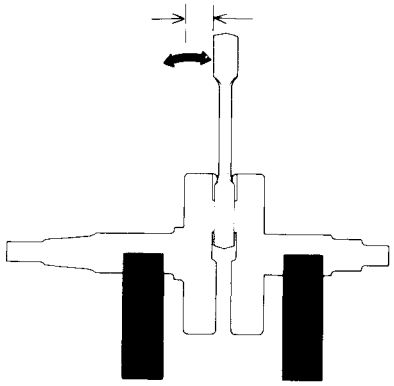
Turn the crankshaft with the connecting rod to feel the smoothness of rotary motion in the big end. Move the rod up and down while holding the crankshaft rigidly to be sure that there is no rattle in the big end.

09900-21302	V-block set
09900-20603	Dial gauge (1/100 mm)
09900-20701	Magnetic stand



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

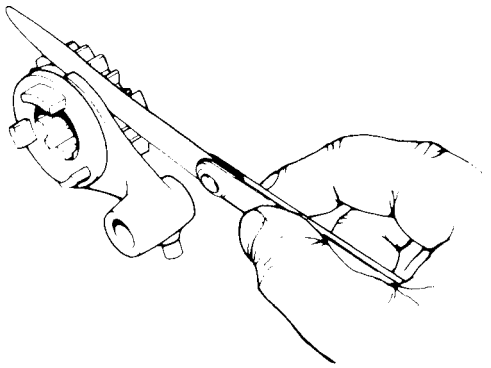
Service Limit	3 mm (0.12 in)



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.

09900-20803	Thickness gauge



Shifting fork clearance in the groove.

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

Shift fork – groove clearance

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

CLUTCH

DRIVE PLATES AND DRIVEN PLATES

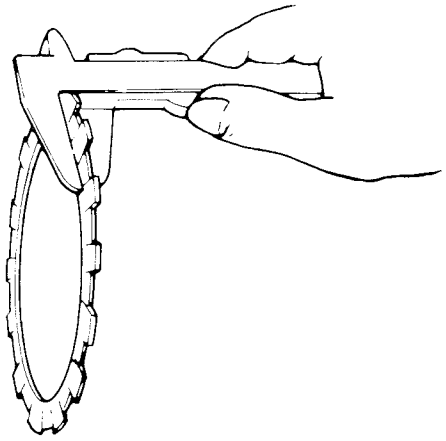
Clutch plates in service remain in oily condition as if they were lubricated with oil. Because of this condition, both drive and driven plates are subject to little wearing action and therefore last much longer. Their life depends largely on the quality of oil used in the clutch and also on the way the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

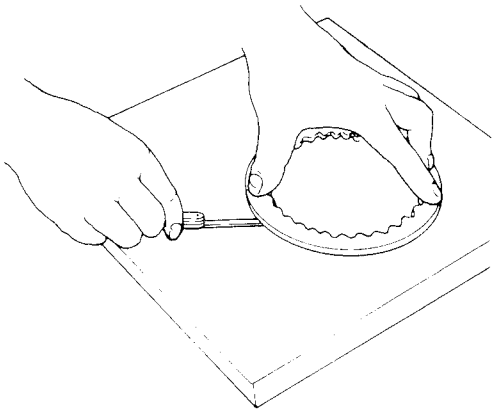
09900-20101	Vernier caliper
09900-20803	Thickness gauge

Unit: mm (in)

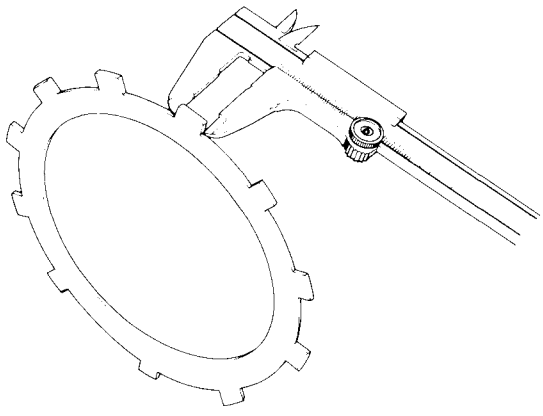
Service Limit	Drive plate	Driven plate
Thickness	2.6 (0.10)	—
Distortion	0.4 (0.016)	0.1 (0.004)
Claw width	11.3 (0.44)	—



Checking thickness



Checking distortion



Checking claw width

CLUTCH SPRINGS

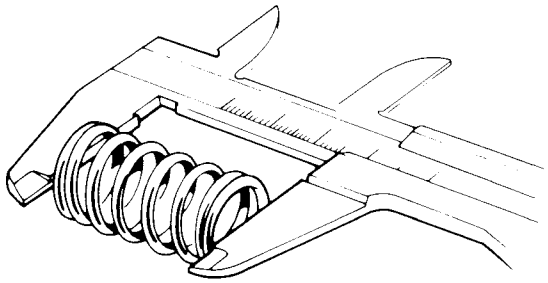
Clutch springs which have lost their tension also cause clutch slipping, resulting in loss of power and rapid wear of the clutch plates.

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

Service Limit	33.7 mm (1.32 in)

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

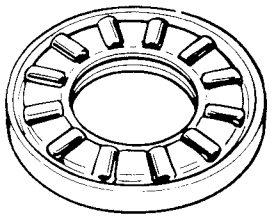
09900-20101	Vernier caliper



CLUTCH RELEASE BEARING

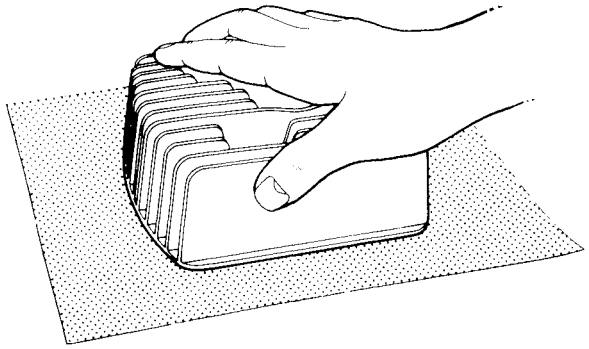
Inspect this thrust-type bearing for any a abnormality, particularly cracks, upon removal from the clutch, to decide whether it can be reused or should be replaced.

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



CYLINDER HEAD

Using a surface plate and red lead paste or machinist 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.



Repairing warped surface of cylinder head.

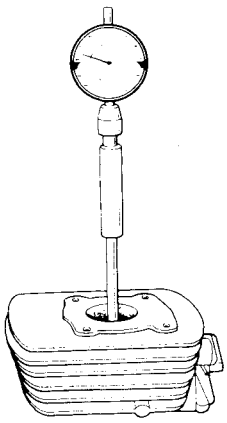
Cylinder head warpage

Service Limit	0.05 mm (0.002 in)

CYLINDER

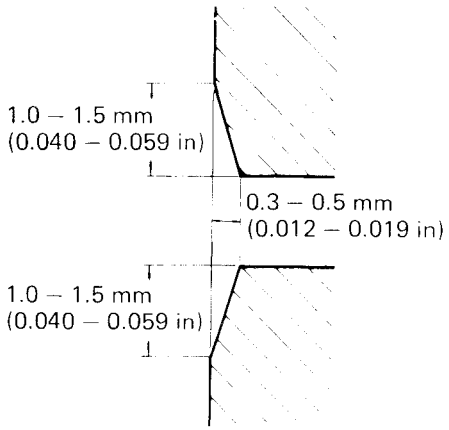
The wear of the cylinder wall is determined from diameter reading taken at 15 mm (0.6 in) from the top of the cylinder with a cylinder gauge. If the wear thus determined exceeds the limit indicated below, rework the bore to the next oversize by using a boring machine or replace the cylinder with a new one. Oversize pistons are available in two sizes: 0.5 mm (0.0196 in) and 1.0 mm (0.0394 in) oversizes.

09900-20508	Cylinder gauge set



Service Limit	41.065 mm (1.6167 in)

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



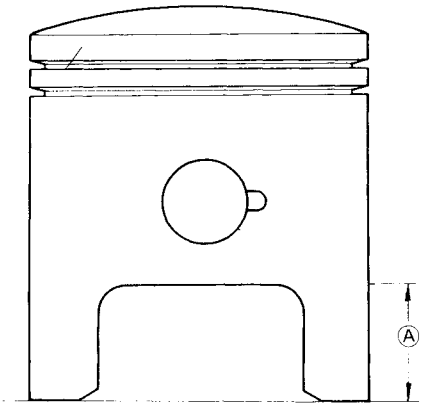
NOTE:
Minor surface flaws on the cylinder wall due to seizure or similar abnormalities can be corrected by grinding the flaws off with fine-grain sandpaper. If the flaws are deep grooves or otherwise persist, the cylinder must be reworked with a boring machine to the next oversize.

PISTON

Cylinder to piston clearance

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 (0.9 in).

09900-20202	Micrometer

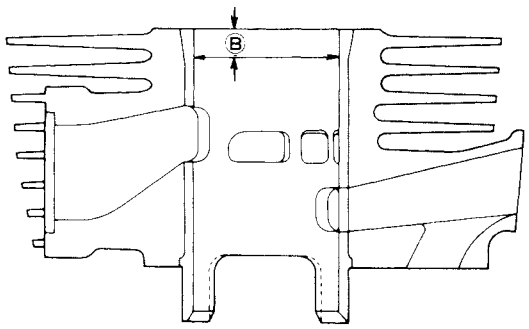


Piston diameter for cylinder-to-piston clearance determination.

The measurement for the bore diameter will be made at Ⓑ 15 mm (0.59 in) from the cylinder top surface.

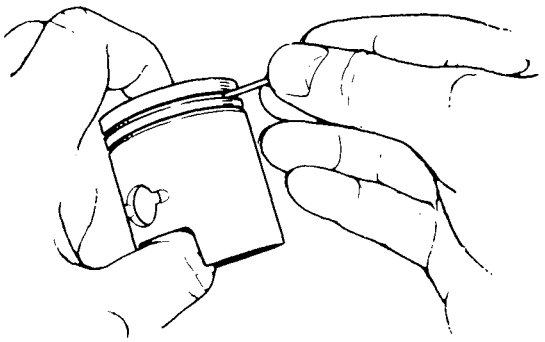
Unit: mm (in)

	STD	Service Limit
Cylinder	41.000 – 41.015 (0.6142 – 1.6148)	41.065 (1.6167)
Piston	40.930 – 40.945 (1.6114 – 1.6120)	40.880 (1.6094)
Cylinder to piston	0.065 – 0.075 (0.0026 – 0.0030)	0.120 (0.0047)

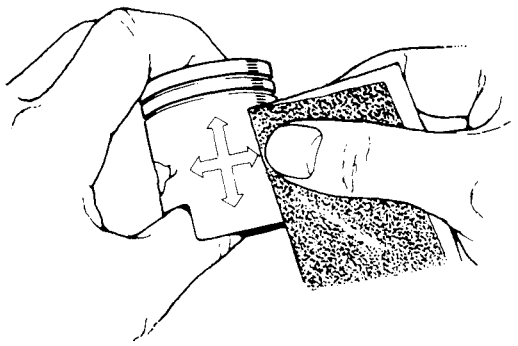


De-carbon the piston and piston ring grooves, as shown in Fig. After cleaning the grooves, fit the rings and rotate them in their respective grooves to be sure that they move smoothly.

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.

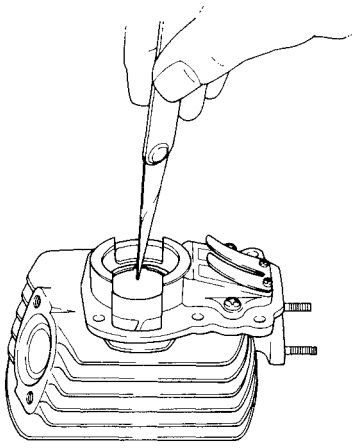


Smoothing the sliding surface with emery paper.

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.

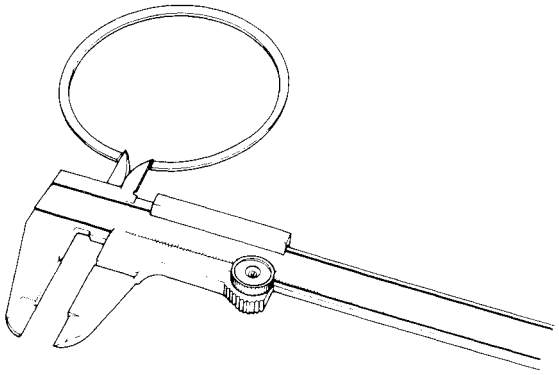
The end gap of each ring is to be measured with the ring fitted squarely into the cylinder bore and held at the least worn part near the cylinder bottom, as shown in Fig.



Service Limit	0.75 mm (0.030 in)

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

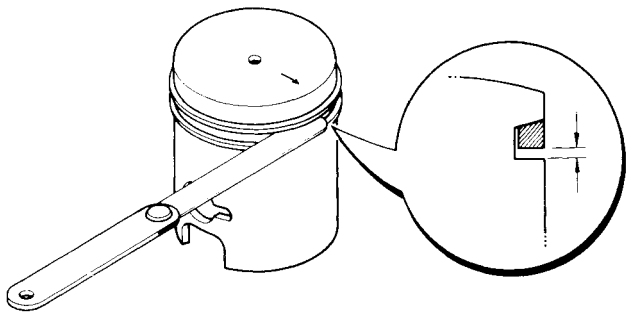
Measure the piston ring free end gap to check the spring tension.



Mark	Service Limit
"R" marked	3.6 mm (0.14 in)
"T" marked	4.0 mm (0.16 in)

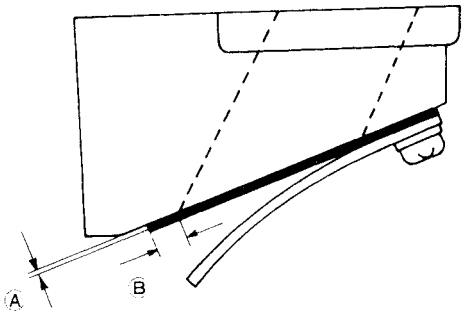
Fix the piston ring in the piston ring groove, measure the ring side clearance with the thickness gauge while matching the sliding surfaces of piston and ring.

STD Clearance	0.020 – 0.060 mm (0.0008 – 0.0024 in)



REED VALVE

Check the clearance Ⓐ between reed valve and its seat and the dimension Ⓑ. If the clearance Ⓐ is noted to exceed 0.2 mm (0.008 in), replace the reed valve flapping piece. The dimension Ⓑ is at least 1 mm (0.04 in).



Part Name	Part No.
Reed valve assy	13150-46011
Valve stopper	13152-23011
Flapping piece	13153-27110
Screw	13154-19011

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

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

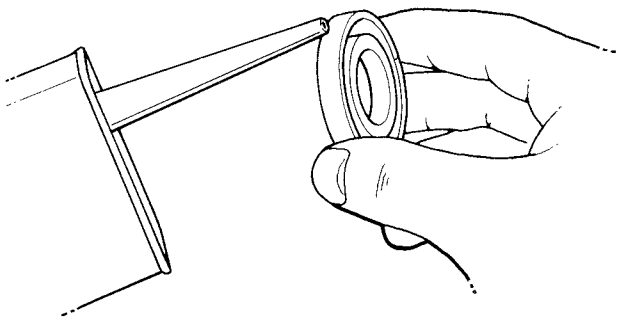
Insert the bearing into the crankcase using the special tool (Part No. 09913-70122 or 09913-80111). After the bearing is installed, be sure to lubricate to prevent initial wear.

OIL SEALS

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

Replace removed oil seals with new ones.

- Apply SUZUKI Super Grease "A" (Part No. 99000-25010) to the lip of the oil seal.
- Be sure to apply "Thread Lock Cement" (Part No. 99000-32040) to outer surfaces of right and left crankshaft oil seals, to prevent them from moving.



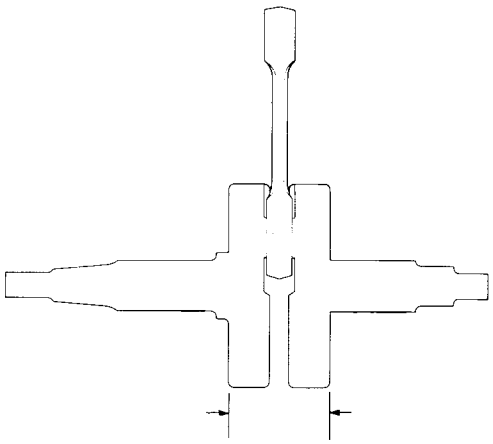
- When fitting the oil seal in the crankcase, insert it slowly using the special tool (Part No. 09913-70122 or 09913-80111).

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

CRANKSHAFT

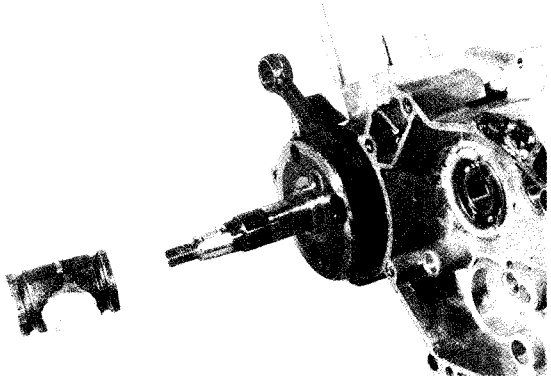
CRANKSHAFT REBUILDING

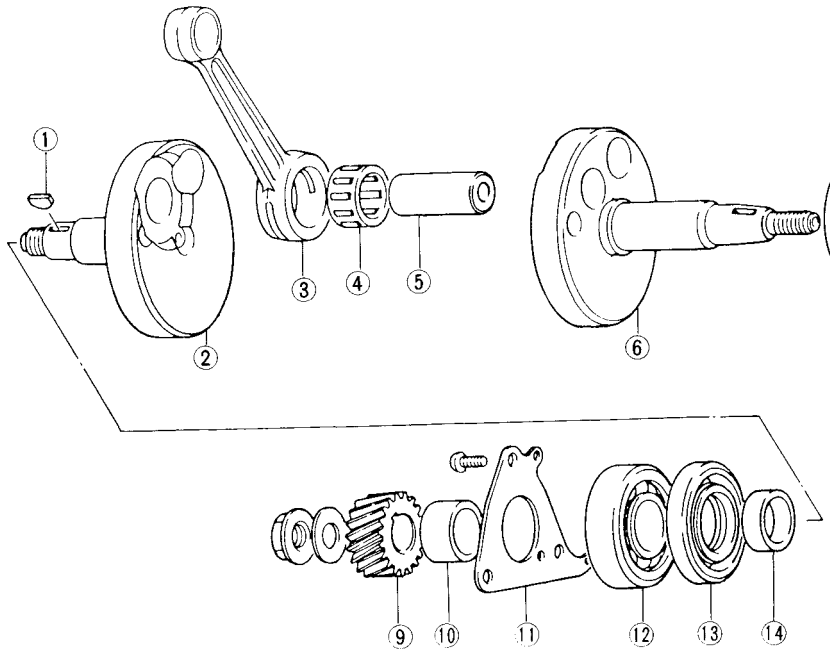
Decide the length between the webs referring to the figure below when rebuilding the crankshaft.



STD width between webs	39.9 – 40.1 mm (1.57 – 1.58 in)

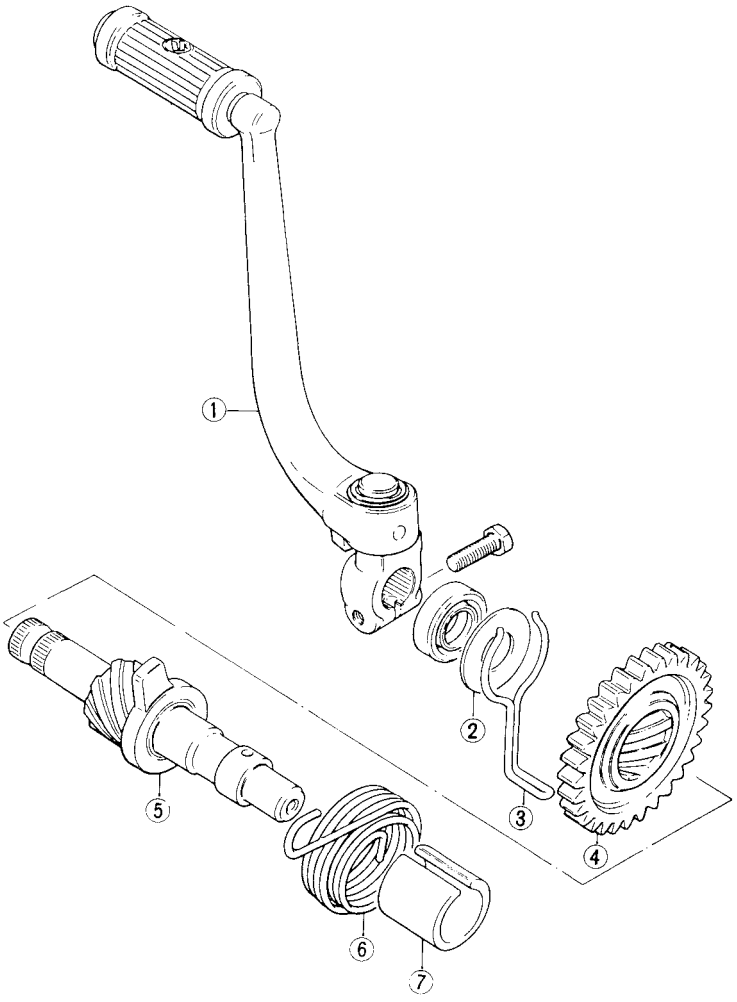
When mounting the crankshaft in the crankcase, it is necessary to drive its right end into the crankcase. Use a plastic or soft material hammer for the purpose.





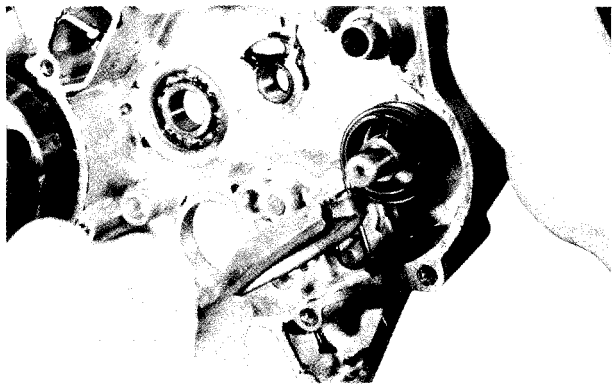
① Key
② RH crankshaft
③ Connecting rod
④ Bearing
⑤ Pin
⑥ LH crankshaft
⑦ Bearing
⑧ LH oil seal
⑨ Primary drive gear
⑩ Primary drive gear spacer
⑪ Bearing RH retainer
⑫ Bearing
⑬ RH oil seal
⑭ Crankshaft RH spacer

KICK STARTER



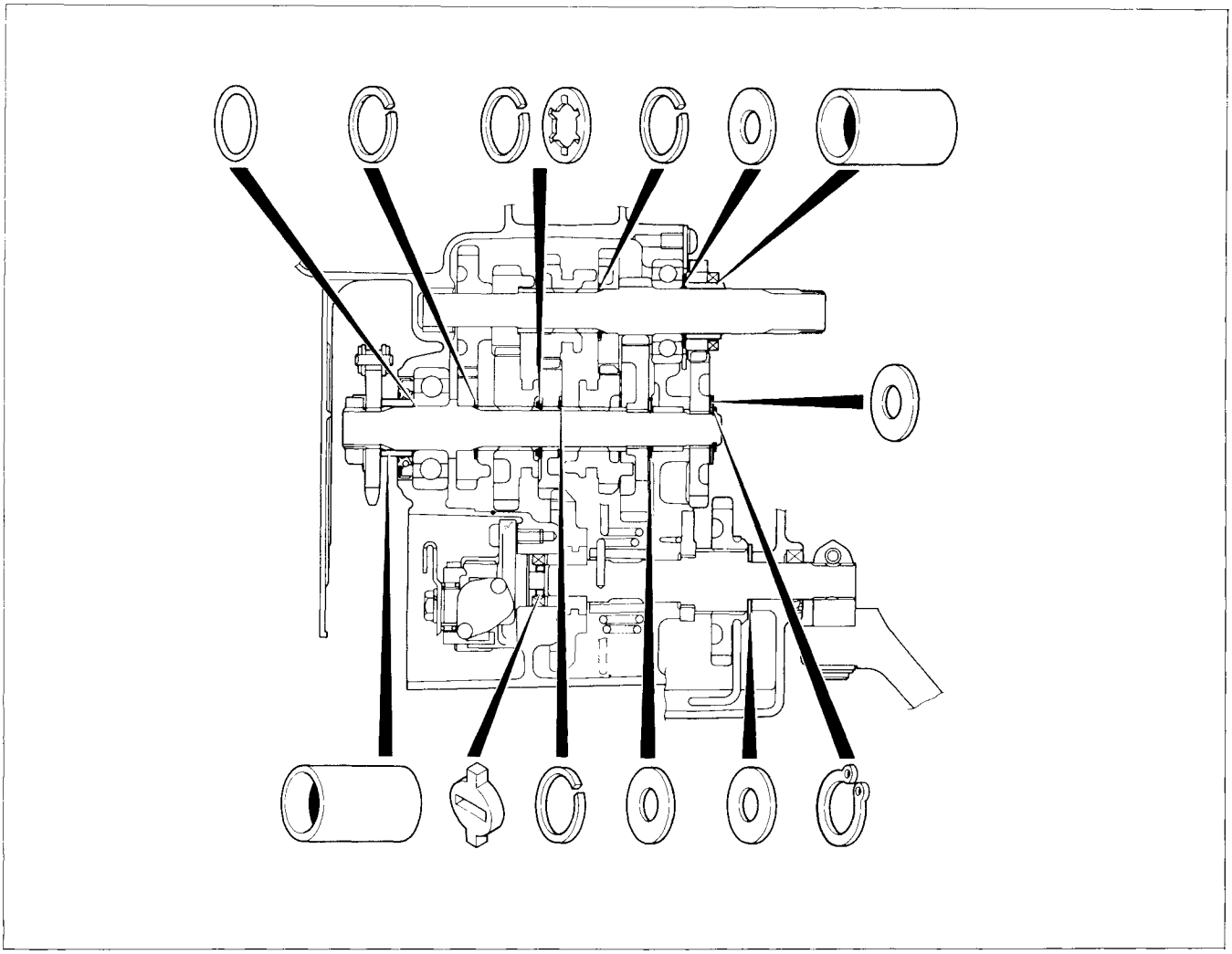
① Kick starter lever
② Kick starter shaft right washer
③ Spring retainer
④ Kick starter drive gear
⑤ Kick starter shaft
⑥ Kick starter shaft spring
⑦ Shaft spring guide

Hitch one end of return spring to the hole provided in kick starter shaft: rotate the spring about 90 degree counter-clockwise; and hitch the other end to crankcase stopper.



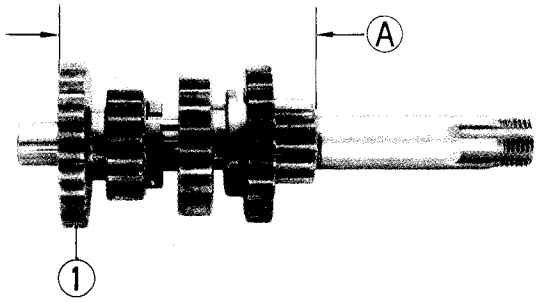
TRANSMISSION

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



The top 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 top drive gear with SUZUKI lock super "103Q" (Part No. 99000-32030) and install so that the length Ⓐ is 76.0 – 76.1 mm (2.992 – 2.996 in).

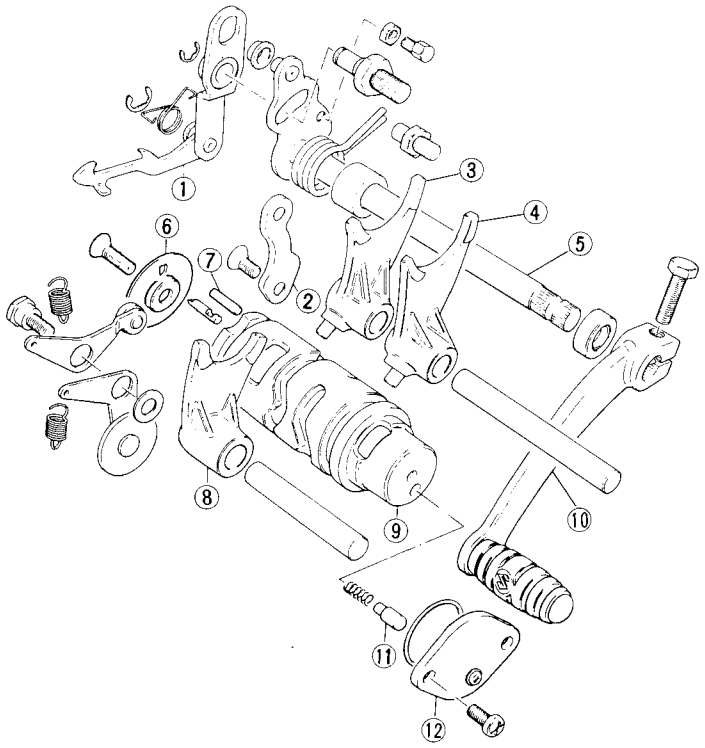


COUNTERSHAFT LENGTH

STD	76.0 – 76.1 mm (2.992 – 2.996 in)

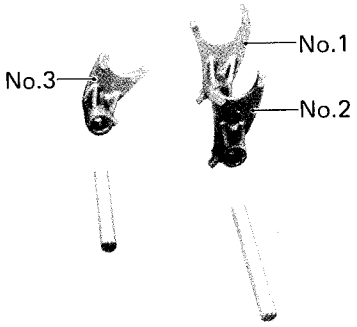
GEARSHIFT MECHANISM

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

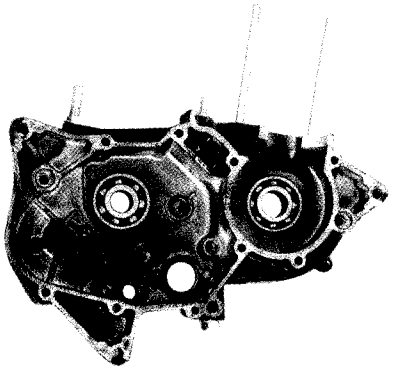


① Gearshifting pawl
② Gearshifting cam guide
③ Gearshifting fork No. 1
④ Gearshifting fork No. 2
⑤ Gearshifting shaft
⑥ Drive pin retainer
⑦ Cam drive pin
⑧ Gearshifting fork No. 3
⑨ Gearshifting cam
⑩ Gearshifting lever
⑪ Contact
⑫ Gearshifting switch body

Three kinds of different forks are used, refer to Fig. when reinstalling gearshifting forks; No. 1, No. 2 and No. 3.

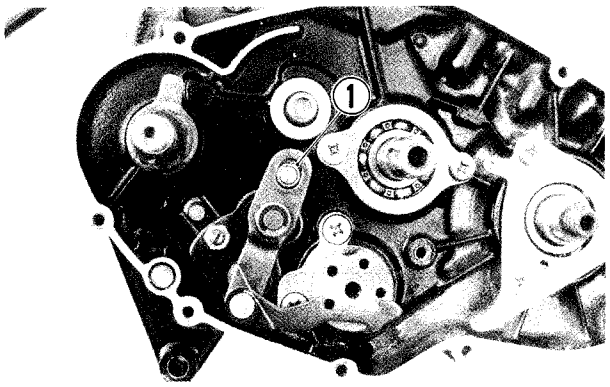


Wipe the crankcase mating surfaces (both surfaces) with cleaning solvent and coat one of a pair with SUZUKI Bond No. 4 (99000-31030) in the usual manner, just before assembling the crankcase.



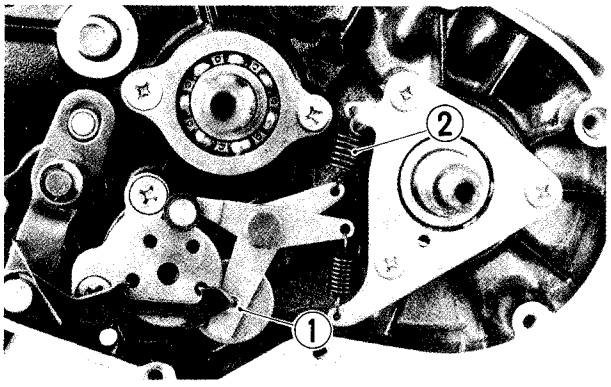
CAM SHIFTER

Before installing the cam shifter, locate the roller ① to proper position.

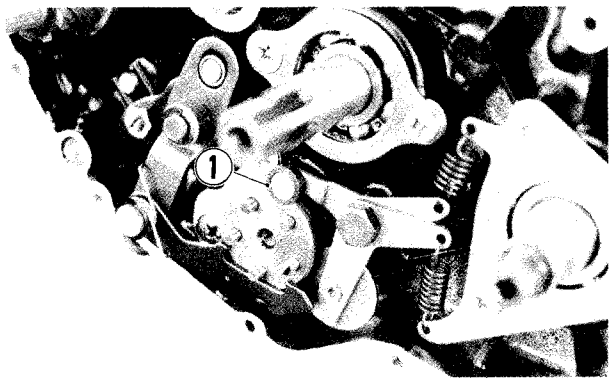


CAM STOPPER AND NEUTRAL STOPPER

Be sure to fit washer when installing gearshifting cam stopper ① and cam neutral stopper. Hitch the bigger spring ② to the cam neutral stopper.



Turn the gearshifting cam, and meet the neutral position ① with the neutral stopper.

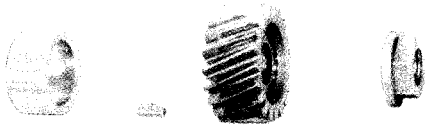


PRIMARY DRIVE GEAR NUT

Fit the spacer, the primary drive gear with key, washer and nut on the crankshaft.
Using special tool, tighten the nut with applying thread lock cement.

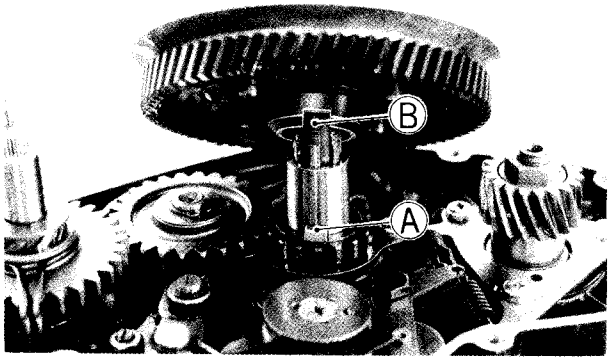
09910-20115	Con rod stopper
99000-32040	Thread lock cement

Tightening torque	40 – 60 N·m (4.0 – 6.0 kg-m, 28.5 – 36.0 lb-ft)

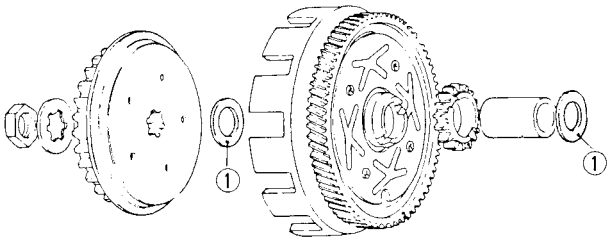


CLUTCH HOUSING

After installing the washer spacer and the kick starter driven gear to the counter shaft. Match the boss Ⓐ of the kick starter driven gear with the groove Ⓑ of the primary driven gear.



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

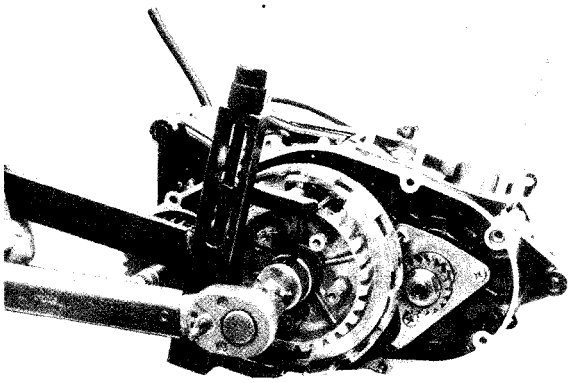


CLUTCH SLEEVE HUB

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

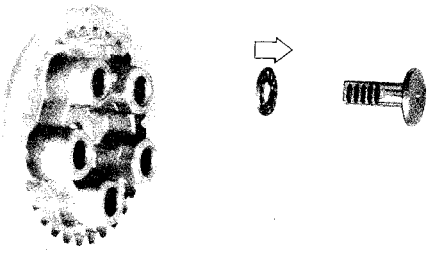
09920-53710	Clutch sleeve hub holder

Tightening torque	30 – 50 N·m (3.0 – 5.0 kg-m, 22.0 – 36.0 lb-ft)



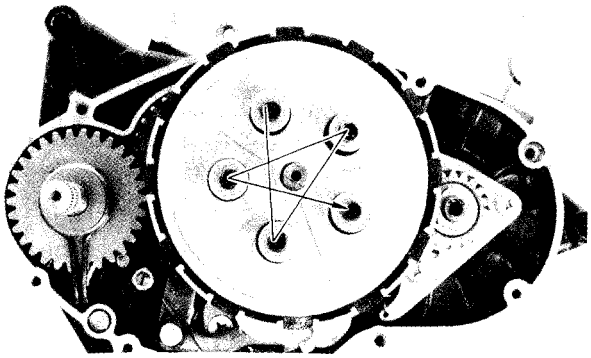
CLUTCH PRESSURE PLATE

When fixing thrust bearing, its bearing faces the release rack side (not face the clutch pressure plate side).



Tighten clutch spring bolts according to the following sequence with the specified torque.

Tightening torque	3 – 5 N·m (0.3 – 0.5 kg-m, 2.5 – 3.5 lb-ft)



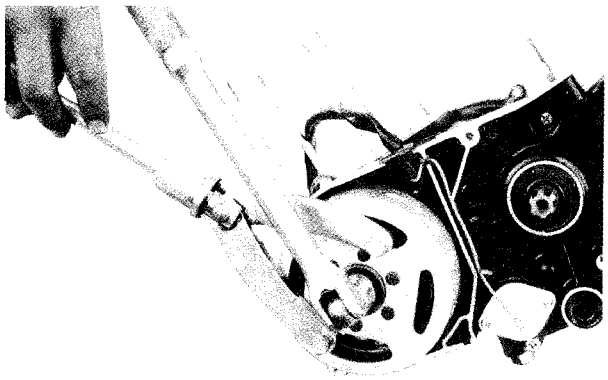
ROTOR

Clean througly 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 cement to the rotor nut and tighten the nut by using special tool.

09930-40113	Rotor holder

99000-32040	Thread lock cement

Tightening torque	30 – 40 N·m (3.0 – 4.0 kg-m, 22.0 – 28.9 lb-ft)

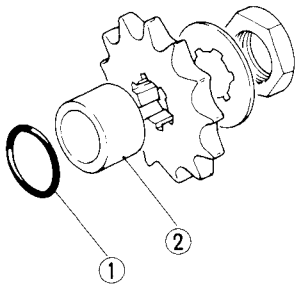


ENGINE SPROCKET

The "O" ring ① located next to the spacer ② on the drive shaft is for sealing the clearance between the drive shaft and the spacer. Tighten the engine sprocket nut with specified torque by using special tool.

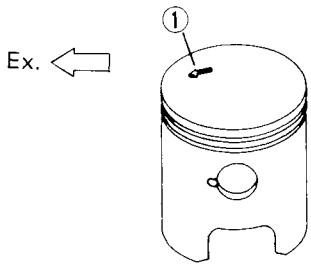
09930-40113	Rotor holder

Tightening torque	30 – 50 N·m (3.0 – 5.0 kg-m, 22.0 – 36.0 lb-ft)



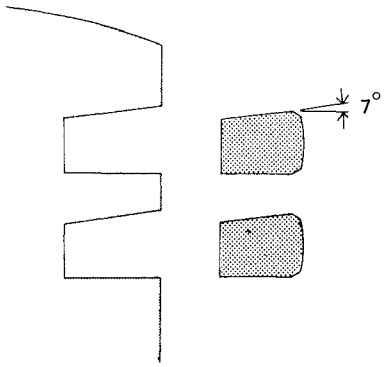
PISTON

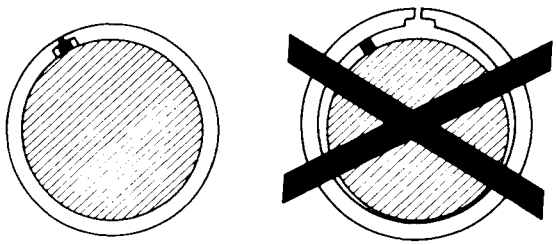
The arrow mark ① on the piston crown points to the exhaust port side.



PISTON RINGS

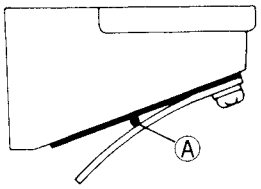
The two piston rings, 1st and 2nd, are identical in shape and key-stone type with the stamped mark, "R" or "T", on their upper sides. Each ring in place should be so positioned as to hug the locating pin.





CYLINDER

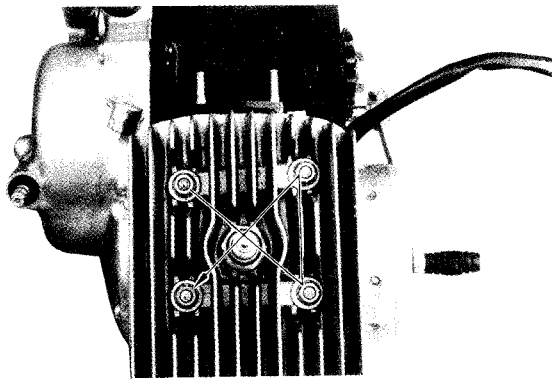
The reed valve is located on the underside of the inlet port. Before securing the cylinder to the crankcase, examine the reed valve carefully, making sure that there is not foreign matter Ⓐ stuck between reed valve and valve stopper. Poor engine performance is often due to neglect of this attention.



CYLINDER HEAD

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

Tightening torque	8 – 12 N·m (0.8 – 1.2 kg, 6.0 – 8.5 lb-ft)

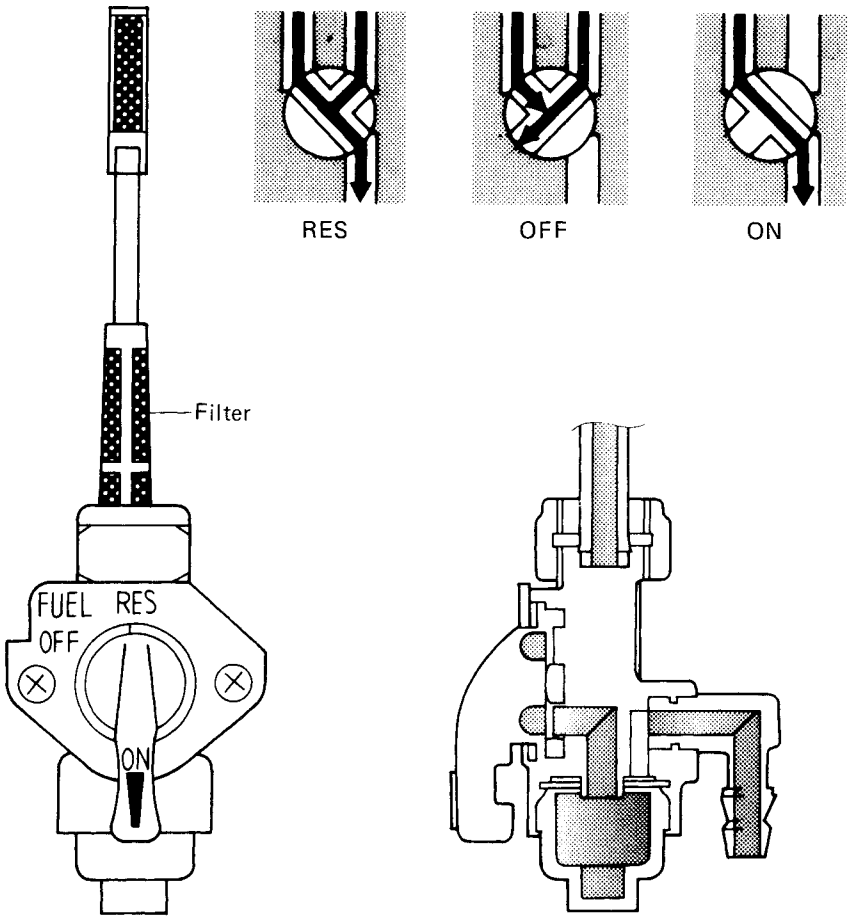


FUEL AND OIL SYSTEM

CONTENTS

FUEL TANK AND FUEL COCK

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



CLEAN

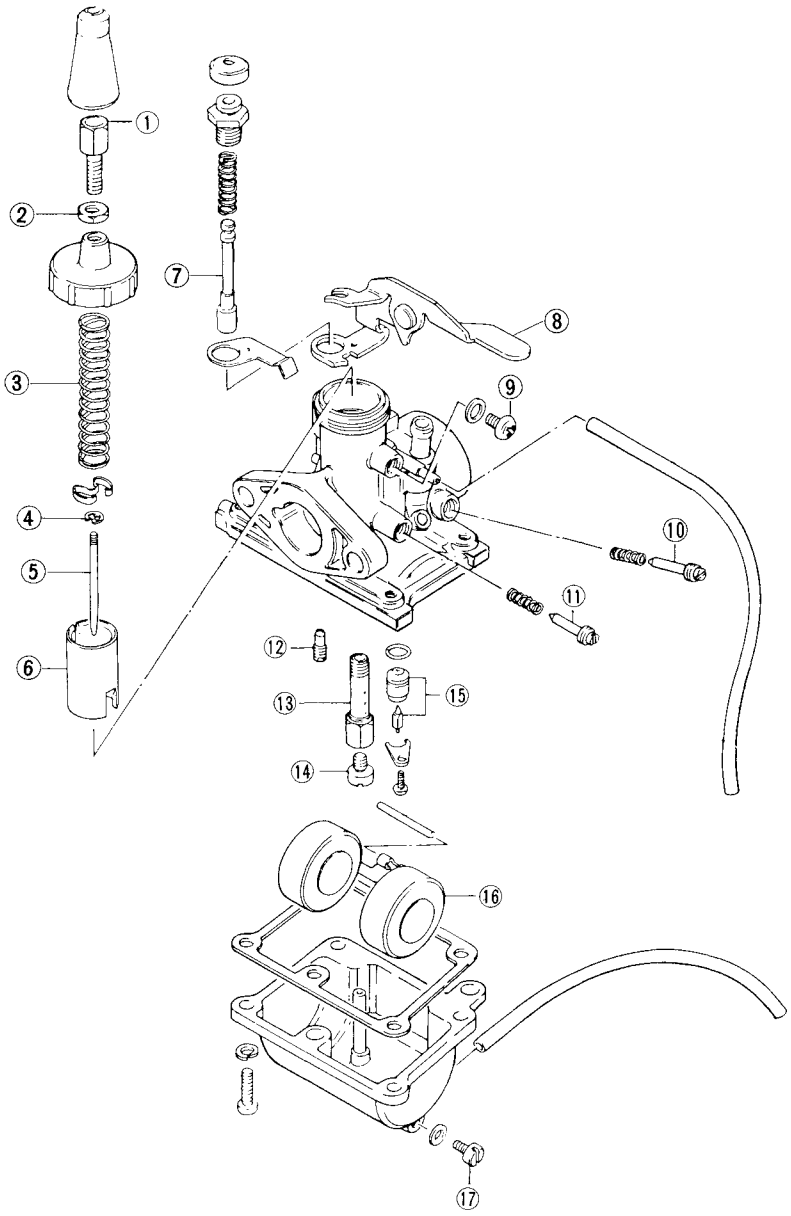
The fuel cock filter will collect impurities, and therefore must be periodically checked cleaned.
The fuel tank should be cleaned at the same time the fuel cock filter is being cleaned.

INSPECTION

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

CARBURETOR

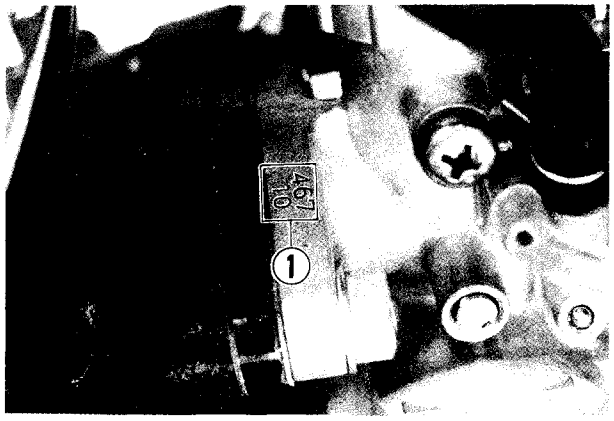
CONSTRUCTION



① Throttle cable adjuster
② Lock nut
③ Return spring
④ Clip
⑤ Jet needle
⑥ Throttle valve
⑦ Choke valve
⑧ Choke lever
⑨ Screw (for oil pump adjustment)
⑩ Pilot air screw
⑪ Throttle valve adjusting screw
⑫ Pilot jet
⑬ Needle jet
⑭ Main jet
⑮ Needle valve
⑯ Float
⑰ Drain plug

CARBURETOR SPECIFICATIONS

Type	MIKUNI VM16SH
I.D. No.	46710
Bore size	16 mm
Float height	22.4 ± 1.0 mm (0.88 ± 0.04 in)
Air screw	2 turns back
Cut-away	1.5
Jet needle	3L4-3
Pilot jet	#15
Pilot outlet	0.9
Needle jet	E-2
Main jet	#77.5

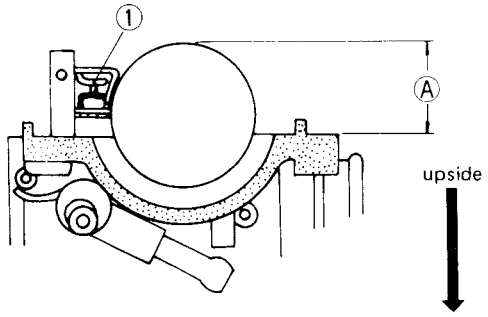


① I.D. number location

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.

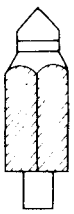
Float height	22.4 ± 1.0 mm (0.88 ± 0.04 in)

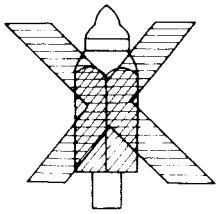


NEEDLE VALVE INSPECTION

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 (NGK BP6HS or NIPPON DENSO W20FP) 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 adjusting screw. Effectiveness of these ways depends on the throttle position, as shown in this chart.

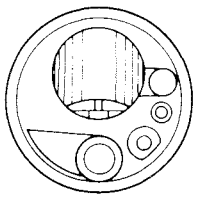
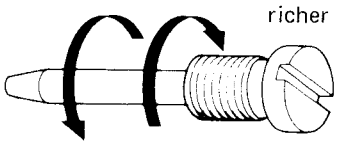
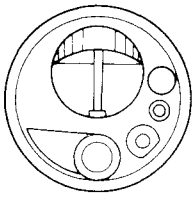
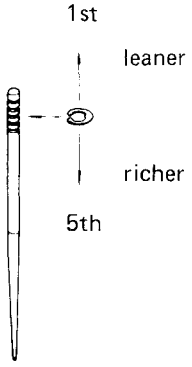
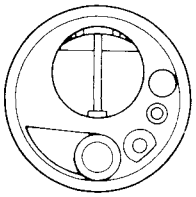
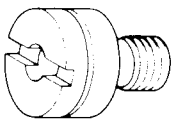
Throttle opening	¼	½	¾	Full
Pilot air screw				
Jet needle				
Main jet				

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 adjusting 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:

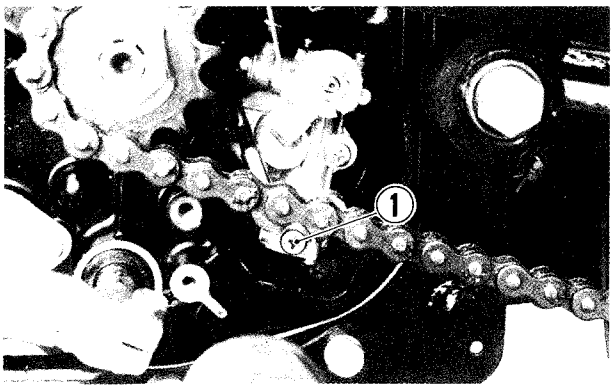
Throttle Opening	Method of Changing Ratio	Standard setting
 Slight	Air adjusting screw  leaner	2 turns back
 Medium	Jet needle 	3L4 – 3rd Groove
 High	Main jet  Larger number: richer mixture Smaller number: leaner mixture	#77.5

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.



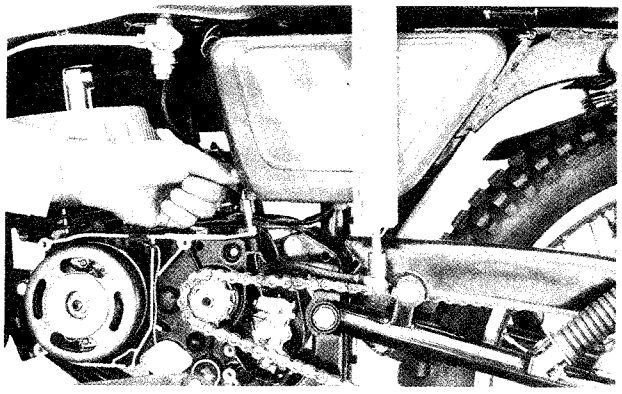
CHECKING OIL PUMP

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 discharge amount measuring tool

The checking procedure follows:

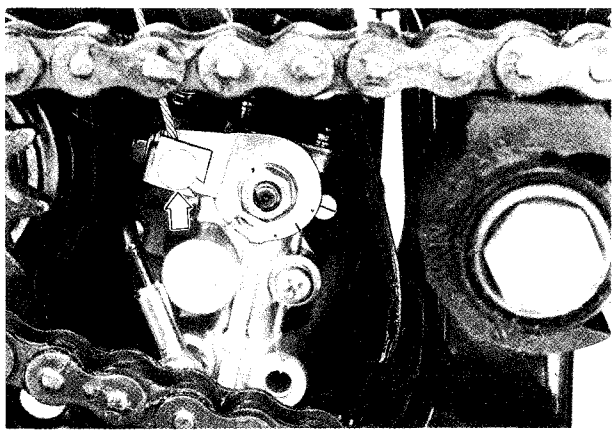
- Have the tool filled with CCI SUPER 2 OIL and connect it to the suction side of the pump.



- Run the engine at 2 000 r/min.
- Holding engine speed at the same 2 000 r/min., move the lever up to the fully open position ② and let the pump draw for 5 minutes. For this operation, the reading taken on the device should be from 1.08 to 1.27 ml.

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

Oil discharge amount	1.08 – 1.27 ml



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

ELECTRICAL SYSTEM

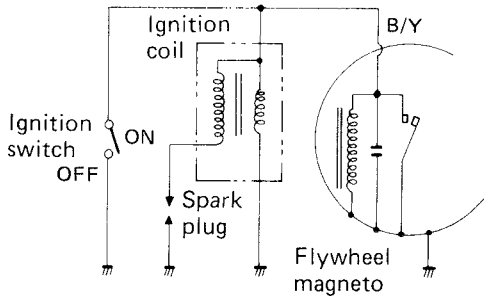
CONTENTS

DESCRIPTION

The TS50 flywheel magneto incorporates two types of coils, one for the ignition and the other for charging the battery and powering the lamps.

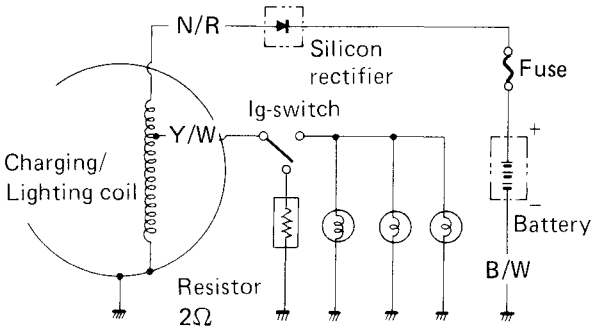
IGNITION SYSTEM

The flywheel magneto type ignition system is wired as shown in the diagram. As the flywheel magneto rotates, current is generated in the primary coil mounted on the stator. When the breaker points close, this current flows to ground through them, because the primary coil is grounded and thus has no influence on the primary ignition coil. When the contact points open, the current induced in the flywheel magneto primary coil flows into the primary ignition coil to provide high voltage induction in the secondary coil, thereby creating a sufficiently strong spark to jump the spark plug electrode gap.



CHARGING AND LIGHTING SYSTEM

The charging and lighting system use the flywheel magneto as shown in figure. The charging and lighting coils are mounted on the stator and generate AC as the flywheel rotor turns. AC generated in the charging coil flows to the rectifier where it is changed to DC. This DC is served to the horn, neutral indicator light, turn signal light, brake light, turn signal indicator light and oil level indicator light, and also charge the battery. Lighting AC current from the lighting coil passes to the headlight, meter light, small light, tail light and high beam indicator light when the ignition switch is "NIGHT" position and the engine is running.



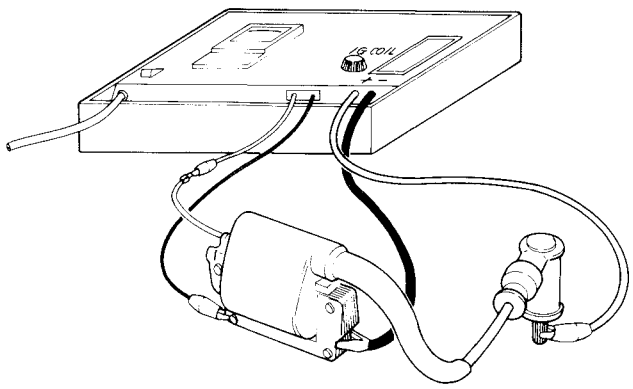
INSPECTION AND ADJUSTMENT

CHECKING IGNITION COIL

The ignition coil is essentially a transformer which changes low voltage into high. For this reason there are two windings; the first (low voltage – input side) is the primary coil and the second (high voltage – output) the secondary coil.

Use electro tester type SS-II to verify ignition coil performance.

09900-28106	Electro tester



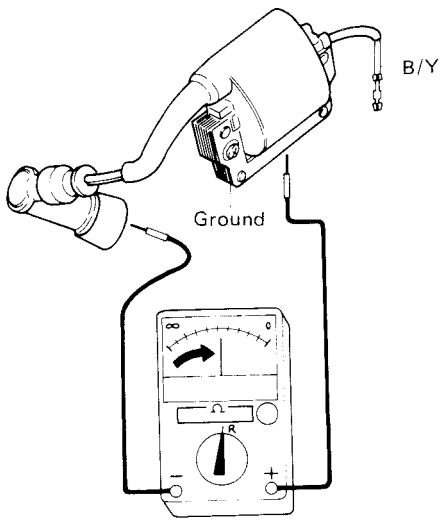
- Set the power switch to "OFF".
- Connect the coil test leads with the yellow tip attached to the coils B/Y wire and the black tip to the coils mounting bracket (ground). Connect the high tension leads with the red ⊕ lead attached to the spark plug cable and the black ⊖ lead to the coils mounting bracket (ground).
- Set the test selector knob to "IG. COIL".
- Switch the power ON.
- Note the spark in the spark gap window. It should be strong and continuous, not intermittent, across a preset 8 mm (0.3 in) gap. Allow the spark to jump the test gap for at least five minutes continuously, to insure proper operation under the temperature conditions of actual riding.

CHECKING WITH POCKET TESTER:

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

09900-25002	Pocket tester

	Coil resistance
Primary (B/Y – Ground)	0.75Ω
Secondary (B/Y – Plug cord)	5.7 kΩ

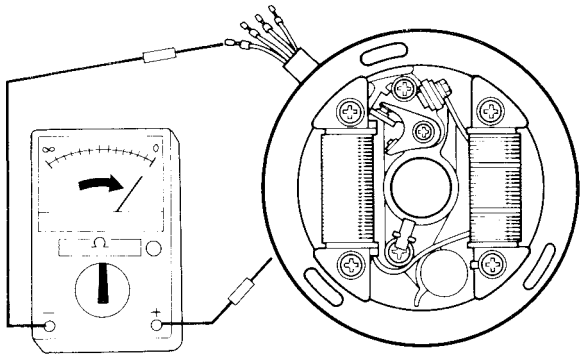


CHECKING CHARGING AND LIGHTING COILS

Use a SUZUKI pocket tester or an ohm meter and check both charging and lighting coils for continuity.

Unit: Approx, Ω

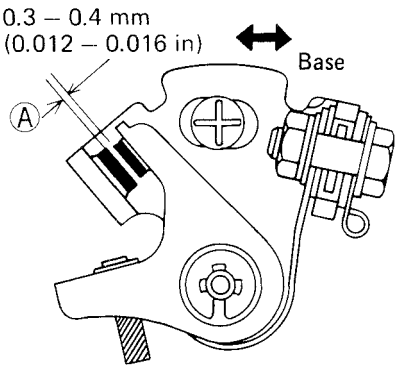
		Coil resistance
Primary coil (B/Y – Ground)		2.2 Ω
Charging coil (W/R –Ground)	(E01)	0.85 Ω
	(E39)	0.35 Ω
Lighting coil (Y – Ground)	(E01)	0.45 Ω
(Y/W – Ground)	(E39)	0.25 Ω



CONTACT POINTS

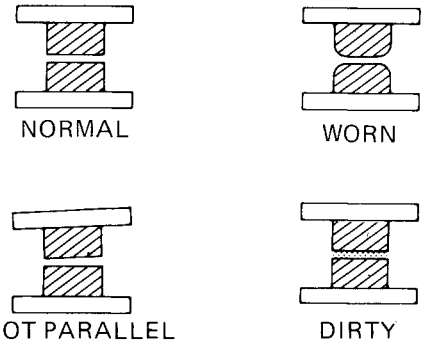
The contact breaker on the flywheel magneto is in reality a type of switch which is activated by the cam rotating inside the flywheel rotor. It acts to pass and cut the current generated in the primary coil.

To inspect the point gap, first rotate the crankshaft slowly until the gap is largest. Next, check this gap with a thickness gauge. The standard gap Ⓐ is 0.3 – 0.4 mm (0.012 – 0.016 in). If the gap is not set to this standard, reset it by sliding the contact point base.



CAUTION:
Whenever the point gap is reset, be sure to then reset the ignition timing.

Inspect the point surface condition. If either surface is burnt or pitted, clean the point surface with a point file or flex stone. Clean off all particles with a non-oily type cleaner such as electrical contact cleaner.

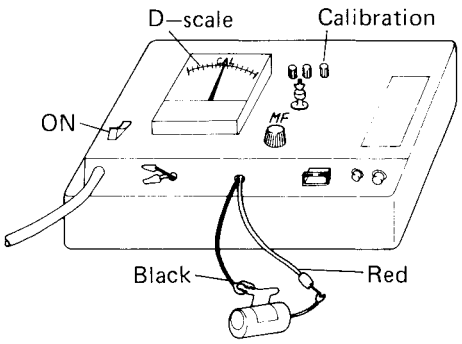


CONDENSER

A condenser is connected in parallel with the contact points to minimize point arcing. The amount of charge the condenser can store is determined by its capacity.
The capacity should be checked using an electro tester.

- Insert insulation between the points and the condenser body should be isolated from ground.
- Set the tester selector knob to "MF".
- Set the power switch to "ON" and calibrate the multimeter "D" scale to the "CAL" position using the "MF" calibration screw.
- Connect the red (positive) lead to the condenser lead and the black (negative) lead to the condenser case mounting tab.
- Press the test button and note the "D" scale reading.
  If the reading does not fall within the standard range, replace the condenser.

Standard condenser capacity range	0.18 ± 0.02 μF

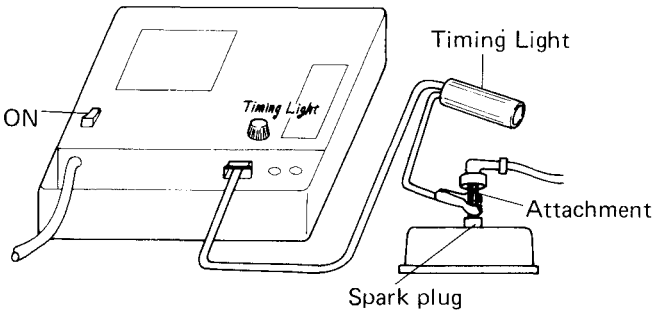


IGNITION TIMING

Ignition timing accuracy can be checked using a timing light or a timing (dial) gauge and timing tester. Before checking ignition timing, always be sure the point gap is correctly set at 0.3 – 0.4 mm (0.012 – 0.016 in) by sliding the contact point base.

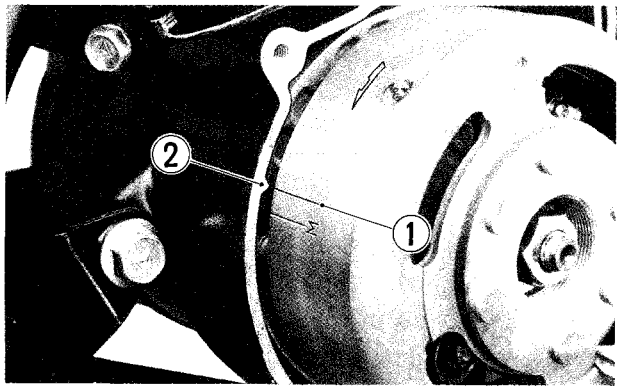
(1) CHECK WITH TIMING LIGHT

09900-28106	Electro tester



- Set the power switch to "OFF".
- Plug the timing light cord into the test plug socket on the tester.
- Attach the high-tension lead to the spark plug cap adaptor (high tension adaptor).
- Turn the selector to "TIMING LIGHT".
- Turn the power switch "ON".
- With the engine running aim the timing light at the aligning mark ① , and embossed mark ② on the magneto flywheel. When the aligning and embossed marks are together at the time the timing light flashes, timing is correct. If the light flashes when the aligning mark is before the embossed mark (in relation to the direction of rotation), firing is too early; if it is after the embossed mark, firing is late. If the timing is too relarded or too

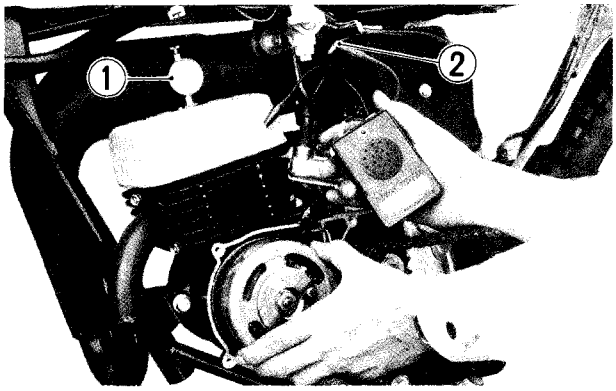
advanced, adjust the timing by turning the stator of the flywheel magneto after loosening three screws. In case of minor adjustment, it can be done by sliding the contact point base, but gap should be remain within the specified range.



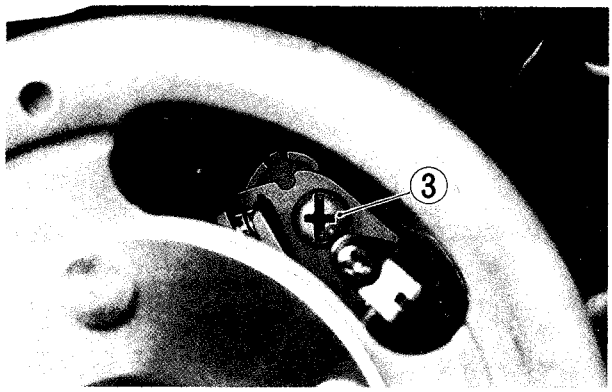
(2) CHECK WITH TIMING GAUGE AND TESTER

09900-27003	Timing tester
09931-00112	Timing gauge

- Remove the spark plug from the cylinder head and install the timing gauge ① in its place.
- Connect one tester lead ② to the contact point positive terminal or B/Y lead wire from the magneto, the other to a ground.



- Find TDC on the dial gauge by turning the crankshaft slowly. At TDC set the dial indicator to "ZERO".
- Turn the crankshaft slowly clockwise (the reverse of normal engine rotation); stop when the tester sound fades out.
- Read the dial gauge indication. This shows the ignition timing in piston travel from TDC.



- If timing is incorrect, loosen the screw ③ and adjust by moving the ground side of the contact breaker.

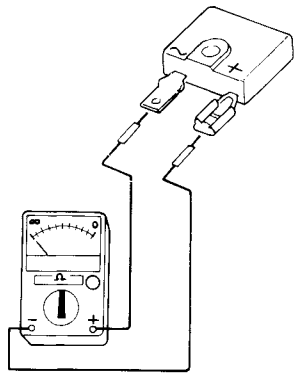
NOTE:
If the point gap is narrower fhan standard (0.3 mm), remove the flywheel rotor and readjust the ignition timing after turning the stator base clockwise.

	Timing Retarded		Std.	Timing Advanced	
Crankshaft Angle (degree)	16	17	18	19	20
Piston Distance (mm)	0.90	1.02	1.14	1.27	1.40

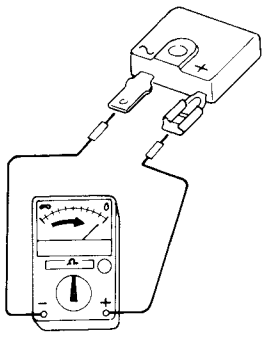
SILICON RECTIFIER

The silicon rectifier converts AC to DC by allowing current to pass in one direction only.
Check the silicon rectifier for continuity.

- Set the pocket tester to the "Ω x 1" scale.
- Connect the pocket tester plus terminal (+) to the rectifier AC terminal (~) and minus terminal (−) to plus terminal (+).
- Reverse the test connections.
- If first step shows no continuity and the reverse step shows continuity, the rectifier is in sound condition.



CONTINUITY: NONE



CONTINUITY: 5 – 8Ω

LIGHTING COIL PERFORMANCE

Below are the steps for checking lighting/charging coil performance.

09900-25002	Pocket tester

NOTE:
Be sure to use a 6V 4A·h (14.4 KC) battery which is completely charged. When connecting the pocket tester terminals, be sure to differentiate the two terminals, plus (+) and minus (−).

LIGHTING PERFORMANCE CHECK

- Set the pocket tester knob to AC Volt range 10.
- Connect the terminal as shown in Figure.
- Start engine.
- Check that the voltmeter reads as follows.

FOR E01

Above 5.7V at 2 500 r/min, Below 8.5V at 8 000 r/min

FOR E39

Above 5.7V at 2 500 r/min, Below 8.7V at 8 000 r/min

CHARGING PERFORMANCE CHECK

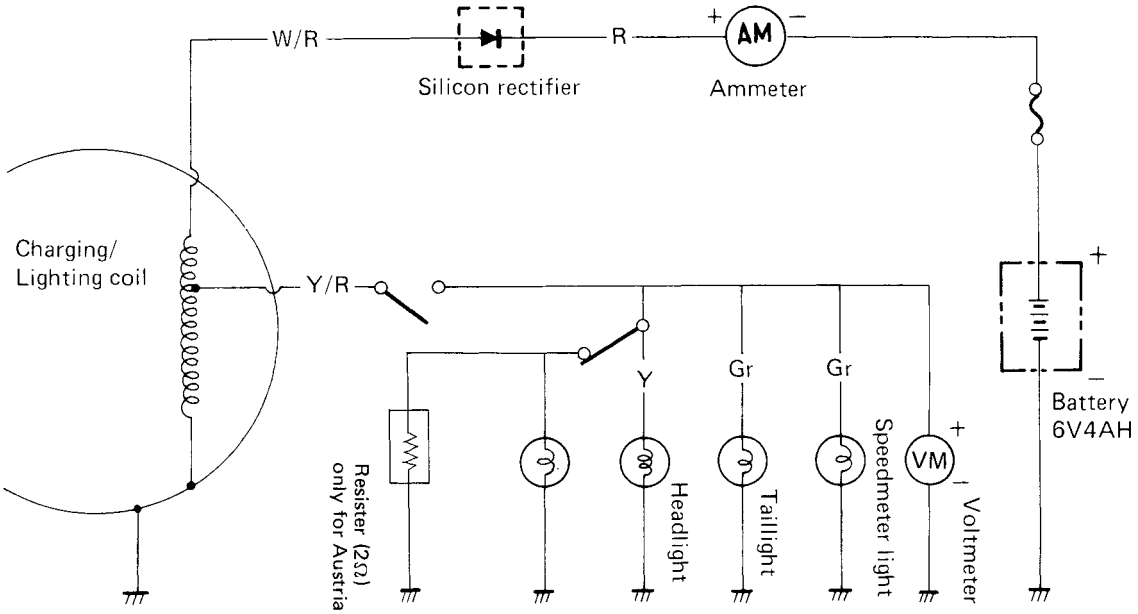
- Set the pocket tester knob to DC Ampere range 20A.
- Start the engine.
- Check that the proper charging occurs at the various engine speeds shown in the following table. (Values in the listed below are slightly different from actual values due to load conditions.)

FOR E01

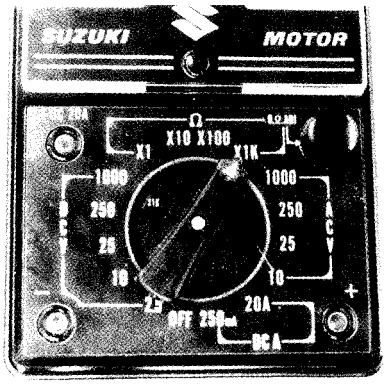
Day time	Above 0.7A at 4 000 r/min, Below 3.4A at 8 000 r/min
Night time	Above 0.6A at 4 000 r/min, Below 2.8A at 8 000 r/min

FOR E39

Day time	Above 0.7A at 4 000 r/min, Below 2.8A at 8 000 r/min
Night time	Above 0.6A at 4 000 r/min, Below 2.8A at 8 000 r/min



Be sure to turn the tester knob to OHM (Ω) as shown in Fig. before measuring resistance of the following sections.



IGNITION SWITCH

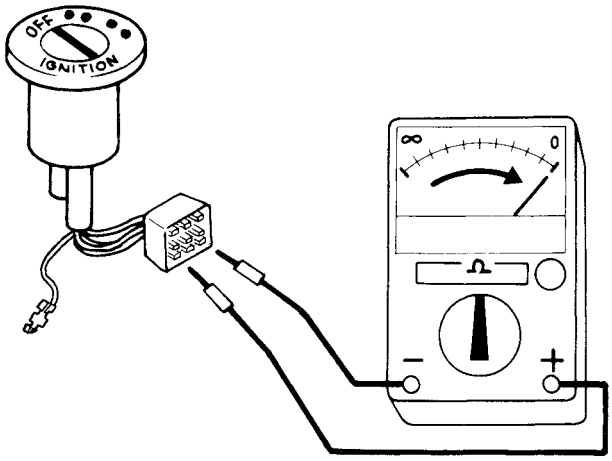
Check the conductivity of each lead wire by using the connections shown in the following table. If there is conductivity where no connection is shown in the table or no conductivity where a connection is indicated, replace the switch.

FOR E01

	Bl/W	B/W	B/Y	R	O	Br/W	G/W	Y/W	Gr
OFF		○	○						
C	○	○	○	○	○				
I				○	○		○	○	
II				○	○	○	○	○	

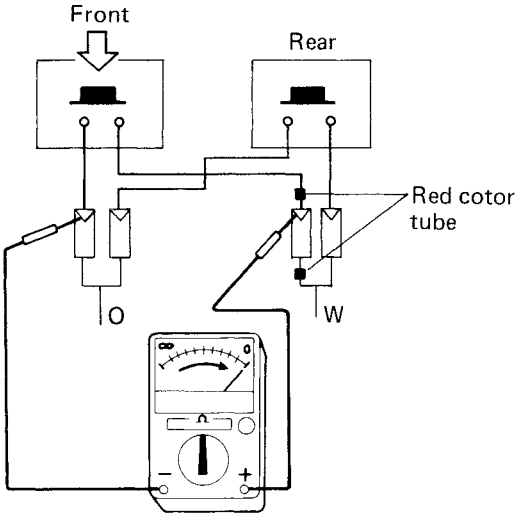
FOR E39

	Bl/W	B/W	B/Y	R	O	Br/W	G/W	Y/W	Gr	Br
OFF		○	○							
C	○	○	○	○	○					
I				○	○		○	○		
II				○	○	○	○	○	○	○
P		○	○	○						○



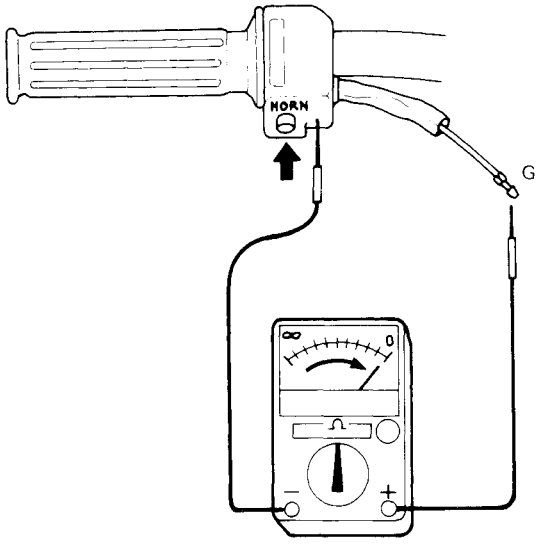
FRONT AND REAR BRAKE LIGHT SWITCH

Check the conductivity between the switch terminals while the brake pedal or lever is depressed. If conductivity is present, the brake switch is normal.



HORN BUTTON

Check the conductivity between the green lead terminal on the left handle switch box inside the headlamp housing and the handlebar ground, while the horn button is pressed. If conductivity is present, the horn button is normal.

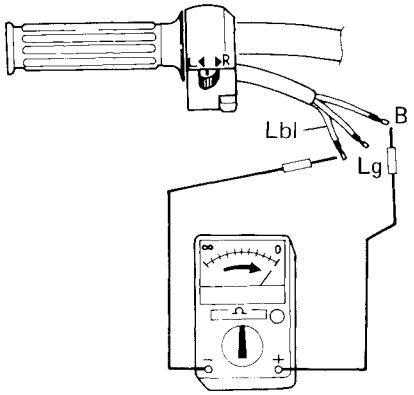


TURN SIGNAL LIGHT SWITCH

Check the conductivity between the lead terminals on the left handle switch box when the turn signal indicator knob is operated.

If there is conductivity where no connection is shown in the table or no conductivity where a connection is indicated, replace the switch.

	B	Lbl	Lg
Left	○	○	
Right		○	○

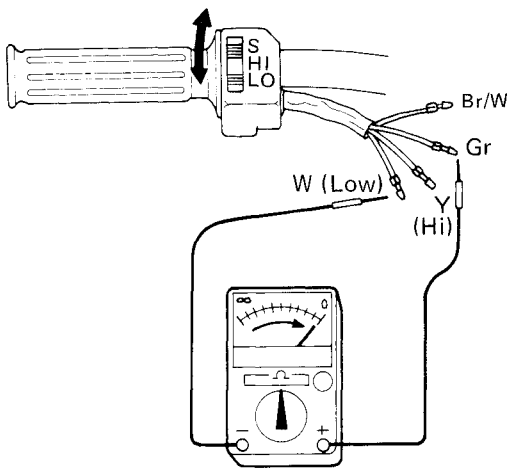


DIMMER SWITCH

Check the conductivity between the respective lead terminals on the left handle switch box (headlight housing). Refer to the following chart for this check.

Br/W lead wire is exclusively for Austria Market.

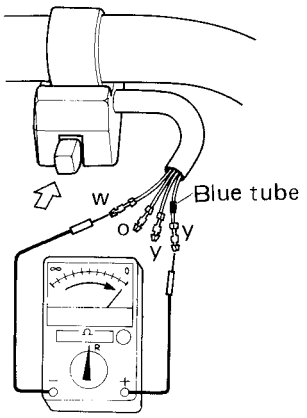
	Gr	Y	W	Br/W
High	○	○		
Low	○		○	
Small	○			○



PASSING LIGHT SWITCH
(Only for E39)

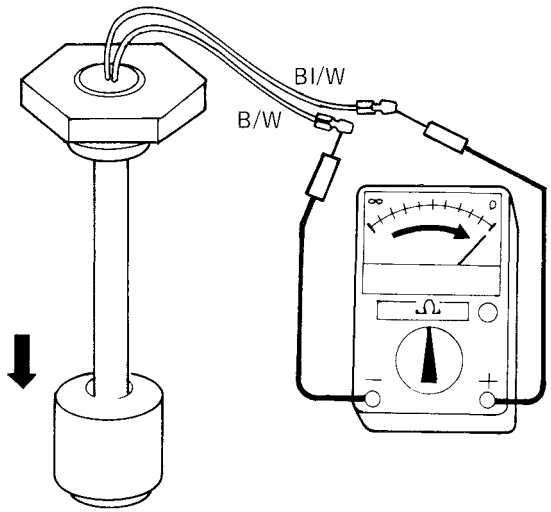
Turn the ignition switch to "C", "I" or "II" position and check the conductivity between the lead wires when pushing or releasing the passing light switch.

	O	Y	Y	W
Free		○	○	
Push	○	○	○	○



OIL LEVEL INDICATOR SWITCH

Check the conductivity between the two lead wires (BI/W and B/W) when the switching contact stays at bottom.



BATTERY

INITIAL CHARGE

This battery is a dry-charge type, unlike larger capacity batteries. It must be initially charged at the specified rate before it is used, because the plates may have been slightly oxidized during storage.

Initial charge rate	0.4A, 10 — 12 hours
Electrolyte specific gravity	1.26 at 20°C (68°F)

RECHARGE

To check the battery capacity, and hence its condition, measure the specific gravity of the electrolyte using a hydrometer. Refer to the following chart.

09900-28403	Hydrometer

Specific gravity at 20°C (68°F)	Condition	Measure
1.250 - 1.270	Normal	
1.220 - 1.250	Under-charged	Recharge
Below 1.220	Run down	Recharge or replace

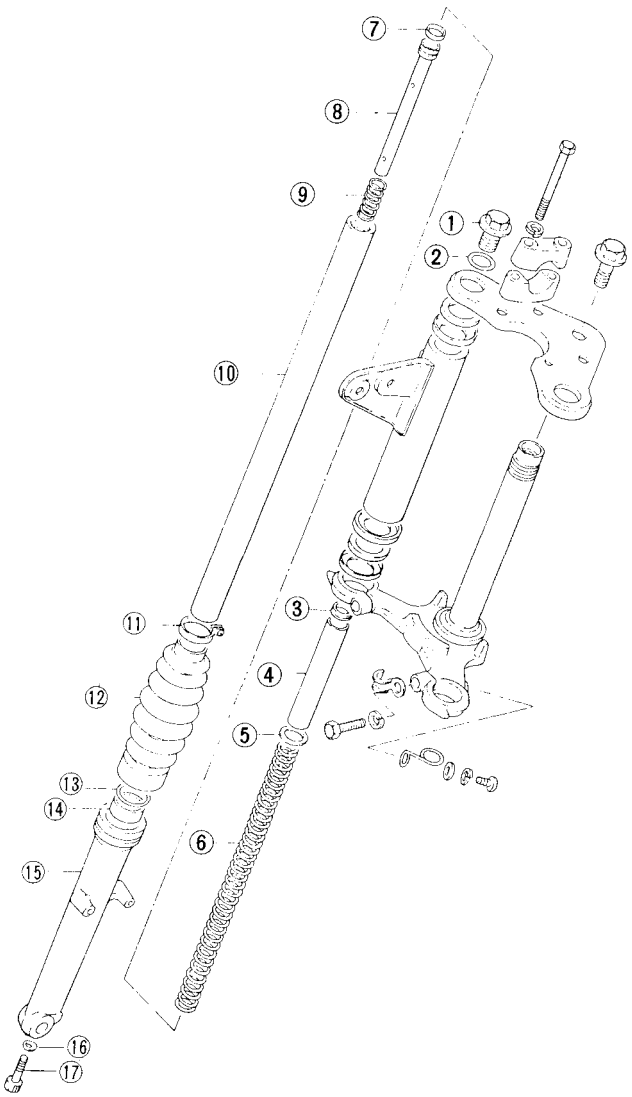
NOTE:
When recharging, be sure to remove the battery from the motorcycle to protect the rectifier against excessive voltage.

WARNING:
When checking, servicing, or charging a battery, always be certain that the battery vent is open and that the vent hose is properly routed. An obstructed vent or vent hose could result in the battery case exploding with resultant acid damage.

CHASSIS

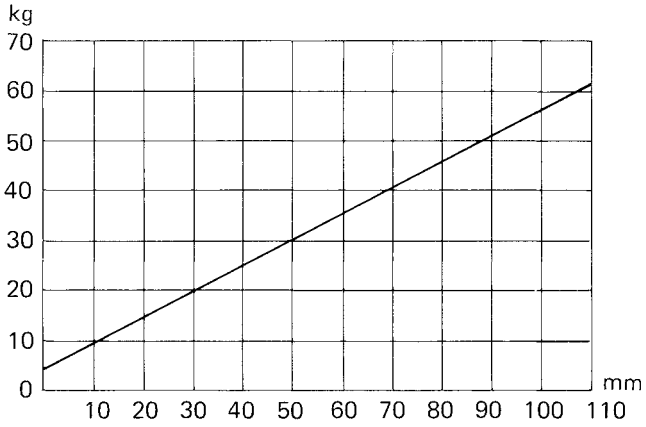
CONTENTS

FRONT FORK



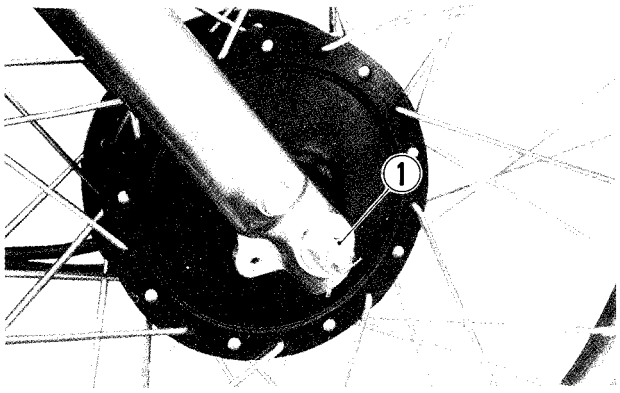
① Cap bolt
② O-ring
③ Spacer lock bolt
④ Spring spacer
⑤ Washer
⑥ Spring
⑦ Damper rod ring
⑧ Damper rod
⑨ Rebound spring
⑩ Inner tube
⑪ Clamp
⑫ Dust seal boot
⑬ Stopper ring
⑭ Oil seal
⑮ Outer tube
⑯ Gasket
⑰ Damper rod bolt

SPRING CHARACTERISTICS

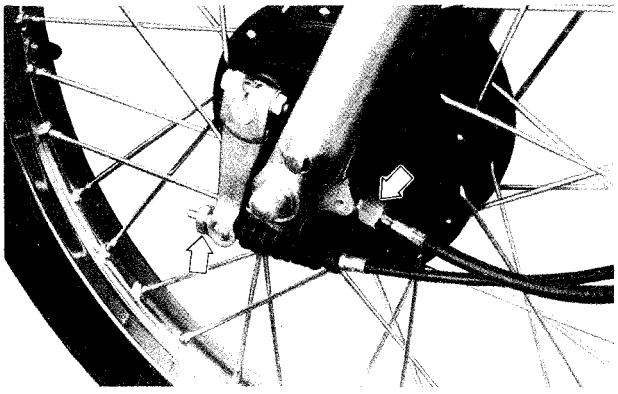


DISASSEMBLY

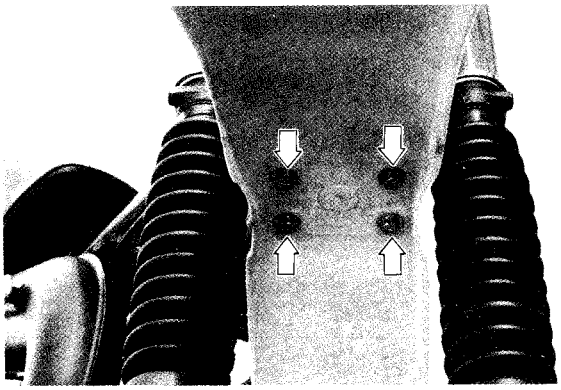
1. Remove the cotter pin and loosen the front axle nut ①.



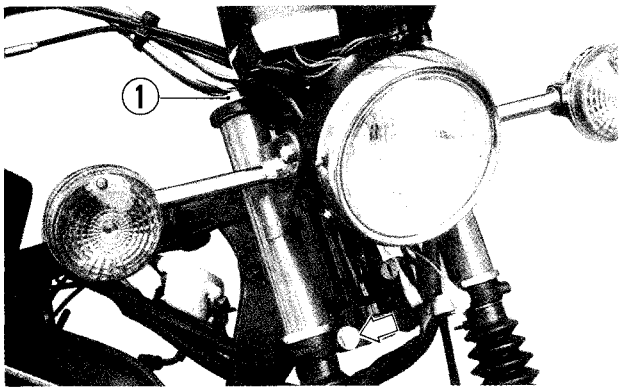
2. Remove speedometer and brake cables. Draw out axle shaft and remove the front wheel assembly.



3. Remove the front fender.



4. Loosen the front fork cap ① and the lower braket bolt.



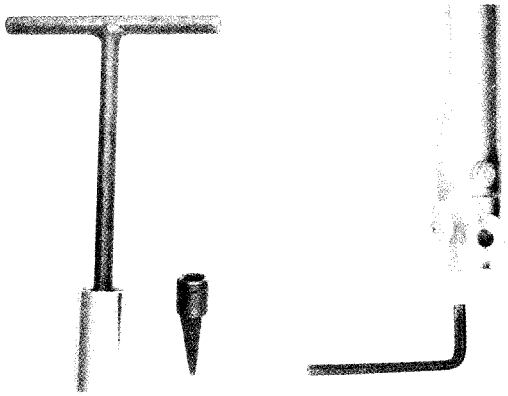
5. Draw out the front fork assy and remove the spacer lock bolt by using special tool.

09911-71510	8 mm hexagon wrench

6. Remove the spacer, the washer and the spring.

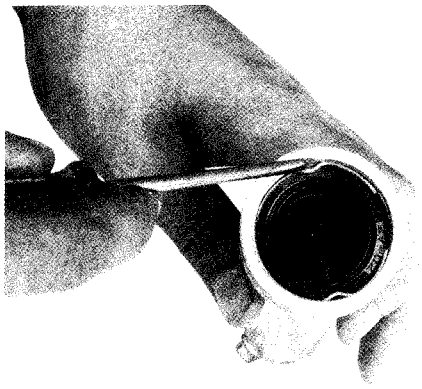
7. Loosen the damper rod bolt by using special tools and 6 mm hexagon wrench.

09940-34520	T handle
09940-34561	Attachment D
09911-70120	6 mm hexagon wrench



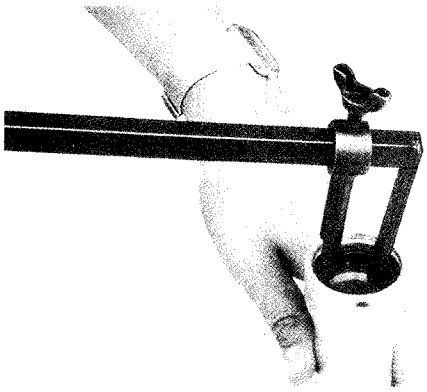
8. Draw out the inner tube and the damper rod with spring.

9. Remove the circlip.



10. Using the special tool, remove the oil seal from the outer tube.

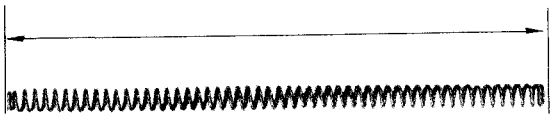
09913-50120	Oil seal remover



INSPECTION

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

Service Limit	350.0 mm (13.8 in)



Inspect and check the removed parts for the following abnormalities.

- Inner tube scuffing and bent
- Worn damper rod ring
- Bent damper rod

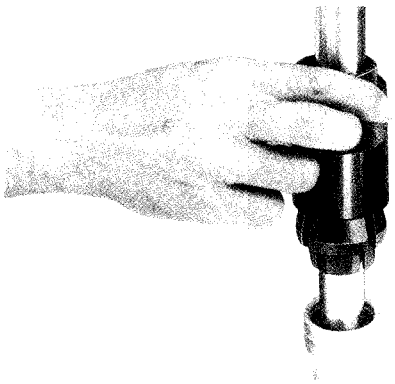
NOTE:
Removed oil seal should be replaced with new one to prevent oil leakage.

REASSEMBLY

Reassemble the front fork by reversing the sequence of disassembling steps and by referring to the exploded view. Be sure to take the following measures on damper rod bolt and fork oil:

- Install the new oil seal by using special tool.

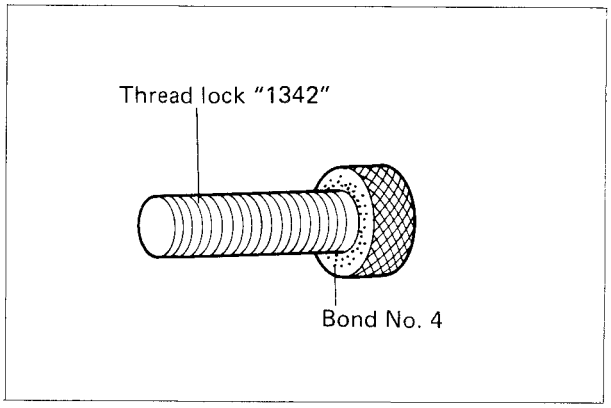
09940-50110	Oil seal installer



DAMPER ROD BOLT

After installing the oil seal, push down the inner tube as far as it will go in, with the damper rod in place. This will center the damper rod inside the outer tube. Under this condition, insert the damper rod bolt and run it into the damper rod through outer tube end to secure the damper rod. Before installing this bolt, be sure to apply THREAD LOCK CEMENT (99000-32040) to its threads and SUZUKI BOUND NO. 4 to its mating surface.

99000-32040	Thread lock cement
99000-31030	Bond No. 4



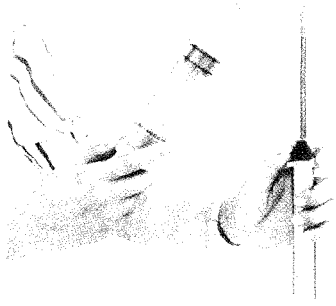
FORK OIL:

For the fork oil, be sure to use a motor oil whose viscosity rating meets the specifications of SAE 5W/20 or A.T.F. (Automatic Transmission Fluid).

Front fork oil capacity (for each fork leg)	85 ml (85 cc, 2.87/2.99 US/Imp oz)

Adjust the front fork oil level with a special tool.

09943-74110	Fork oil gauge
Fork oil level	142 mm (5.6 in)



NOTE:
Remove the fork spring and compress the inner tube fully to measure the oil level.

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

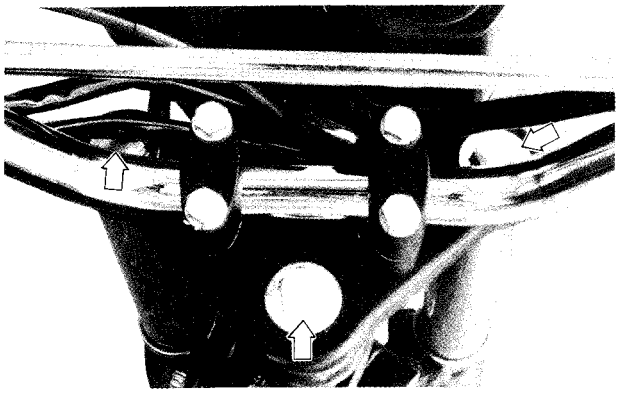
Tighten the following bolts and nut with specified torque.

	N.m	kg-m	lb-ft
Front fork cap	35 – 55	3.5 – 5.5	25.5 – 39.5
Fork lower clamp bolt	20 – 30	2.0 – 3.0	14.5 – 21.5
Front axle nut	27 – 43	2.7 – 4.3	20.0 – 31.0

STEERING

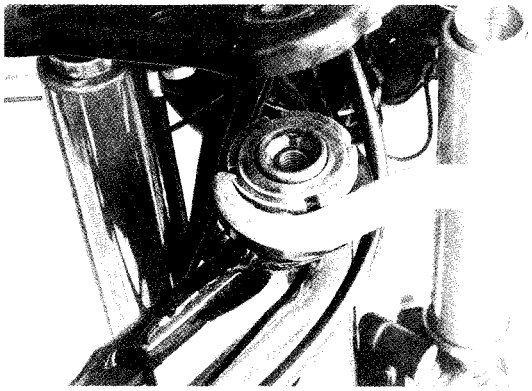
DISASSEMBLY

1. Remove the headlight, the handlebar and the steering stem head by loosening the fork cap bolts and the steering stem head bolt.



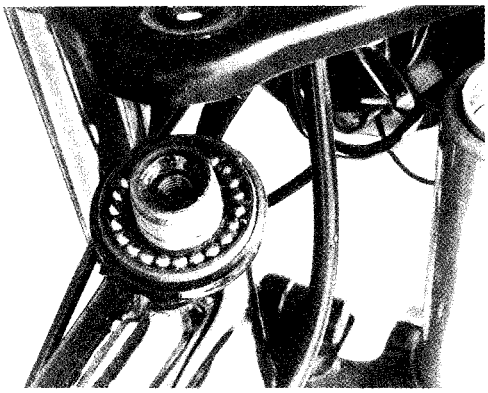
2. Remove the steering stem nut with special tool.

09940-10122	Steering stem nut wrench



3. Slide off the stem and be careful not to loose any of the steel balls.

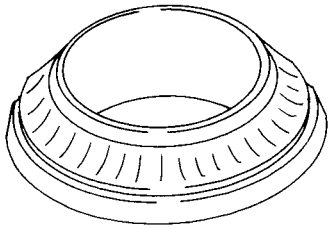
Number of balls	Top	22
	Bottom	18



INSPECTION

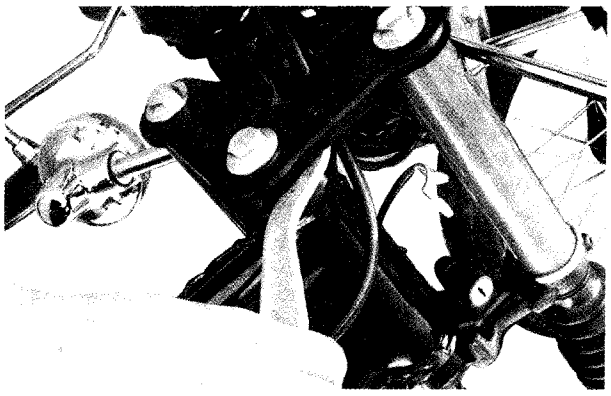
Inspect and check the removed parts for the following abnormalities.

- Handlebar distortion
- Handlebar clamp wear
- Race wear and brinelling
- Worn or damaged steel balls
- Distortion of steering stem

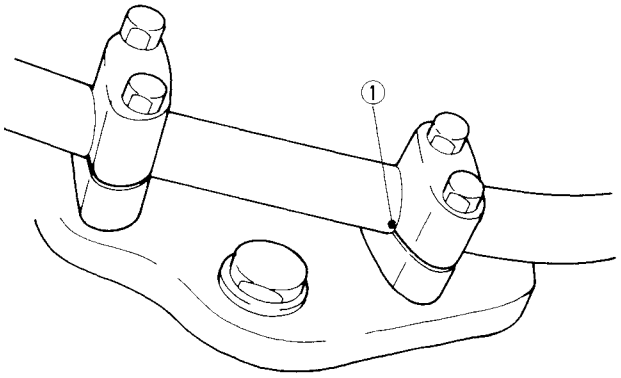


ADJUSTMENT

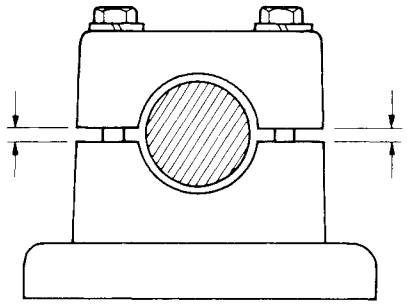
Tighten the steering stem nut until the stem pivots by its own weight (with handlebar and front fork installed).



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



The clearance ahead of and behind the handlebar clamps are equalized.

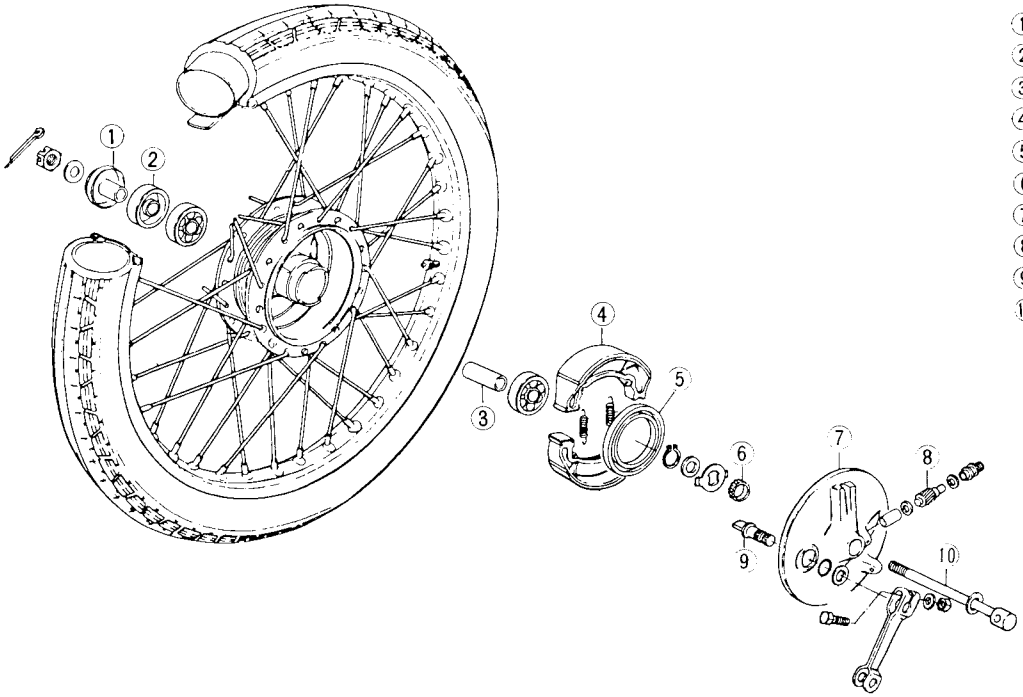


Tighten the following bolts with specified torque.

	N.m	kg-m	lb-ft
Handlebar clamp bolt	12 – 20	1.2 – 2.0	9.0 – 14.0
Steering stem bolt	35 – 55	3.5 – 5.5	25.5 – 39.5
Front fork cap bolt	35 – 55	3.5 – 5.5	25.5 – 39.5

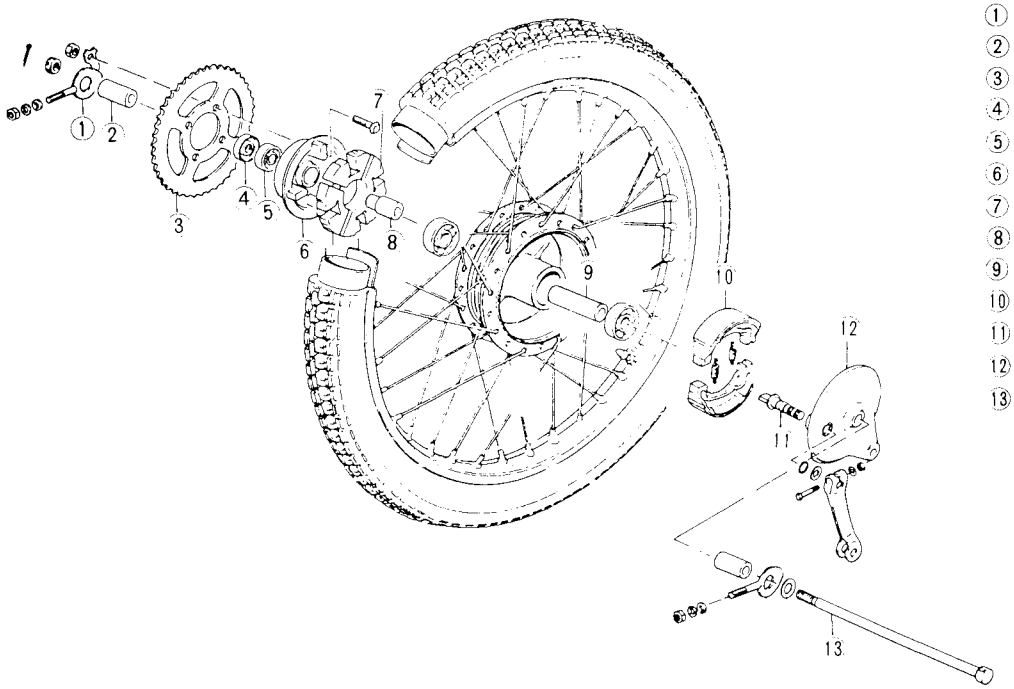
FRONT AND REAR WHEELS

FRONT WHEEL EXPLODED VIEW



① Spacer
② Oil seal
③ Hub spacer
④ Brake shoe
⑤ Oil seal
⑥ Speedometer gear
⑦ Hub panel
⑧ Speedometer pinion
⑨ Brake cam shaft
⑩ Front axle shaft

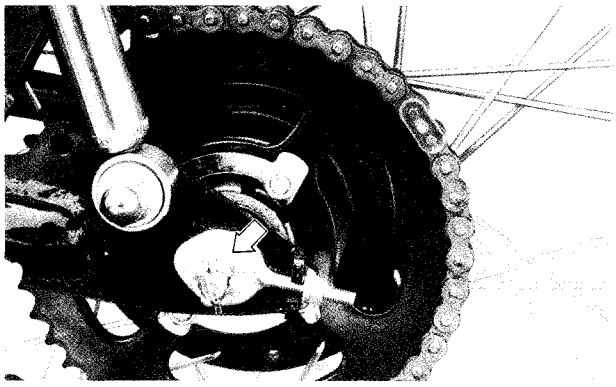
REAR WHEEL EXPLODED VIEW



① Chain adjuster
② Spacer
③ Sprocket
④ Oil seal
⑤ Bearing
⑥ Sprocket drum
⑦ Hub damper
⑧ Hub retainer
⑨ Hub spacer
⑩ Brake shoe
⑪ Brake cam shaft
⑫ Hub panel
⑬ Rear axle shaft

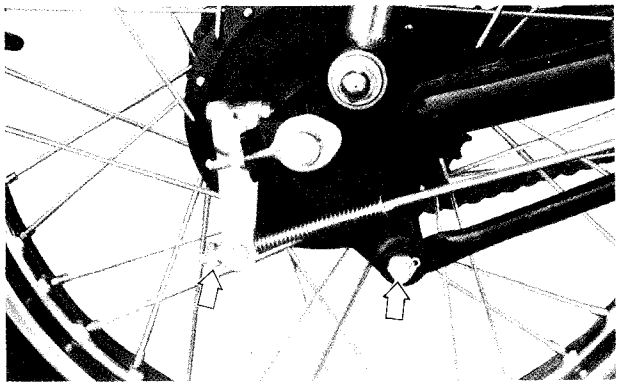
REAR WHEEL REMOVAL

1. Remove the drive chain and loosen the rear axle nut after removing the cotter pin.



2. Loosen the chain adjuster and remove the rear brake adjuster and the rear torque link nut.

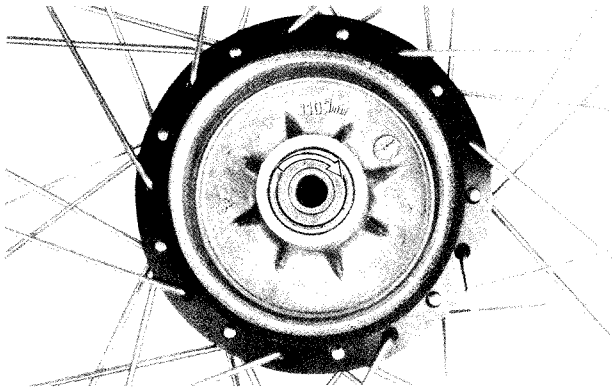
3. Remove the axle and draw out the rear wheel.



INSPECTION

WHEEL BEARINGS

- Visually inspect the wheel hub bore, from which the bearings have been extracted. Check for evidence of abnormal wear caused by the bearings spinning, in the bearing outer races.
- Check the wheel bearings in the usual manner after washing them. Make sure that the bearings spin smoothly without any noise or resistance: spin them with your fingers. Never use an air gun for this purpose.

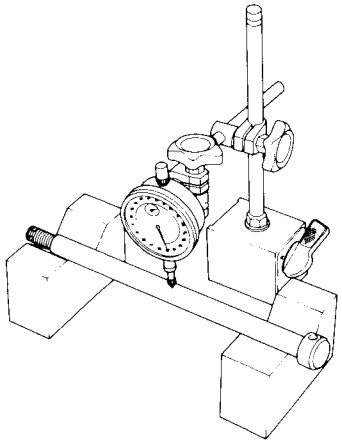


AXLE SHAFT

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

09900-20603	Dial gauge (1/100)

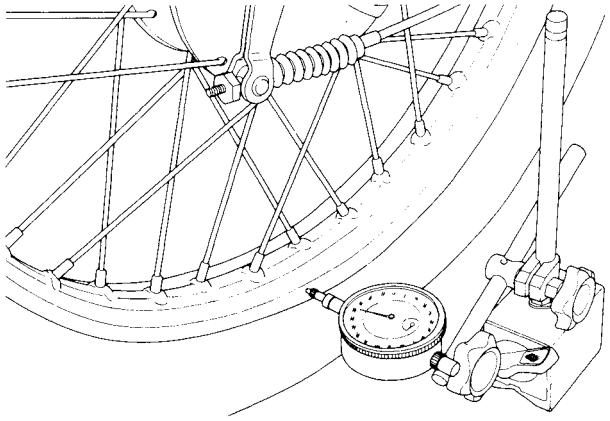
Axle runout	0.25 mm (0.01 in)



RIM

Make sure that the rim runout checked as shown, does not exceed the service limit. Adjust the tension of the spokes and, if this proves to be of no effect, replace the rim.

Rim runout (Radial & Axial)	2.0 mm (0.08 in)

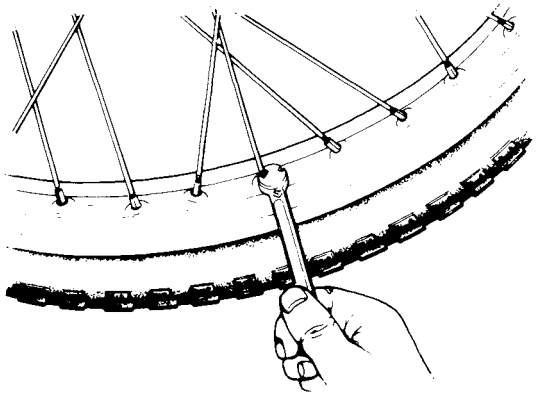


SPOKE NIPPLE

Check to be sure that all nipples are tight, and retighten them as necessary using special tool. Loose spoke nipples are likely to result in spoke damage or in rim distortion.

09940-60112	Spoke nipple wrench

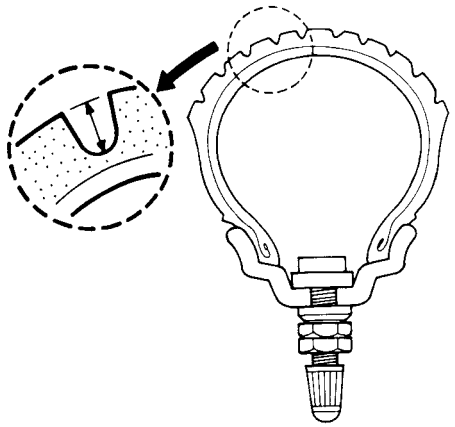
Tightening torque	2.5 – 3.0 N.m (0.25 – 0.3 kg-m 1.8 – 2.1 lb-ft)



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.

Wear limit of front and rear tires	4.0 mm (0.16 in)



TIRE 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.

		kPa	kg/cm^2	psi
SOLO RIDING	Front	150	1.50	21
	Rear	175	1.75	25
DUAL RIDING	Front	150	1.50	21
	Rear	200	2.00	28

REASSEMBLY

Tighten the following bolts and nuts with specified torque.

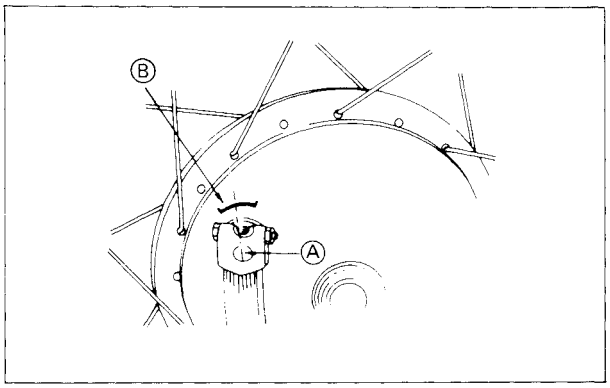
	N.m	kg-m	lb-ft
Rear axle nut	36 – 52	3.2 – 5.2	26.0 – 37.5
Torque link nut	10 – 15	1.0 – 1.5	7.5 – 10.5
Sprocket nut	30 – 50	3.0 – 5.0	22.0 – 36.0

BRAKES

INSPECTION

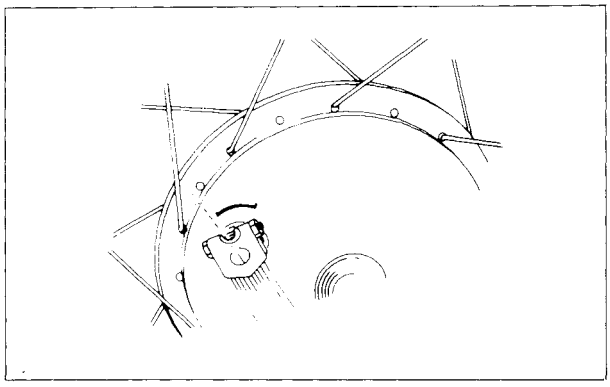
BRAKE SHOE

The front and the rear brake panels 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).



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

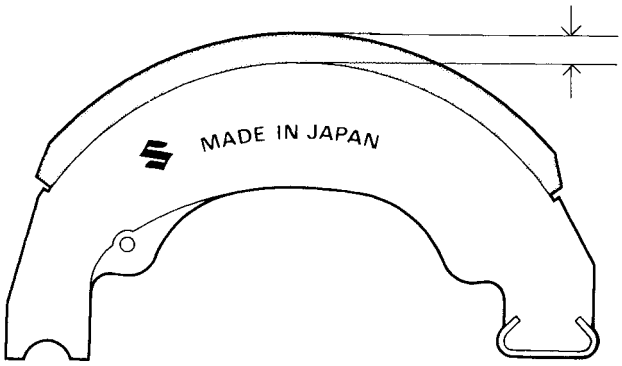
If the extended line falls outside the indicated range, replace the brake shoe assembly.



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.

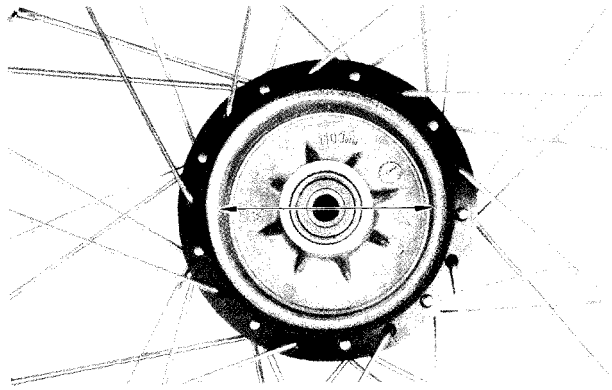
Service Limit	1.5 mm (0.06 in)



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	110.7 mm (4.36 in)



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

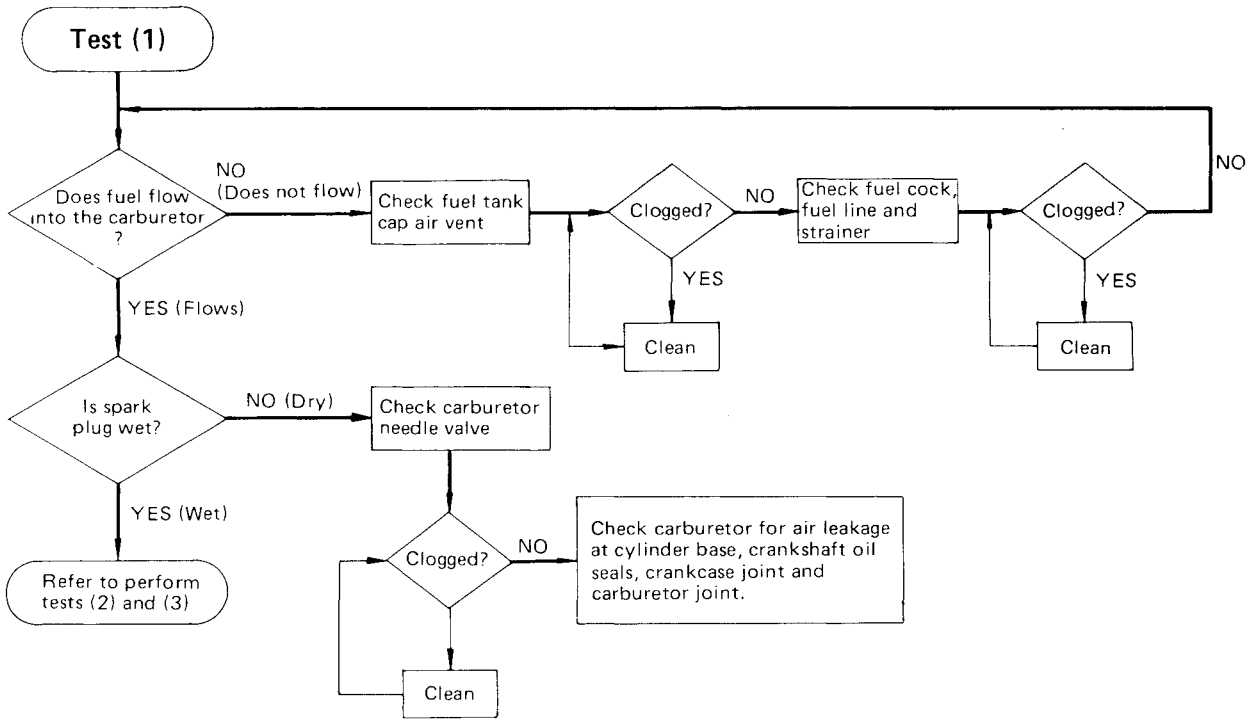
SERVICING INFORMATION

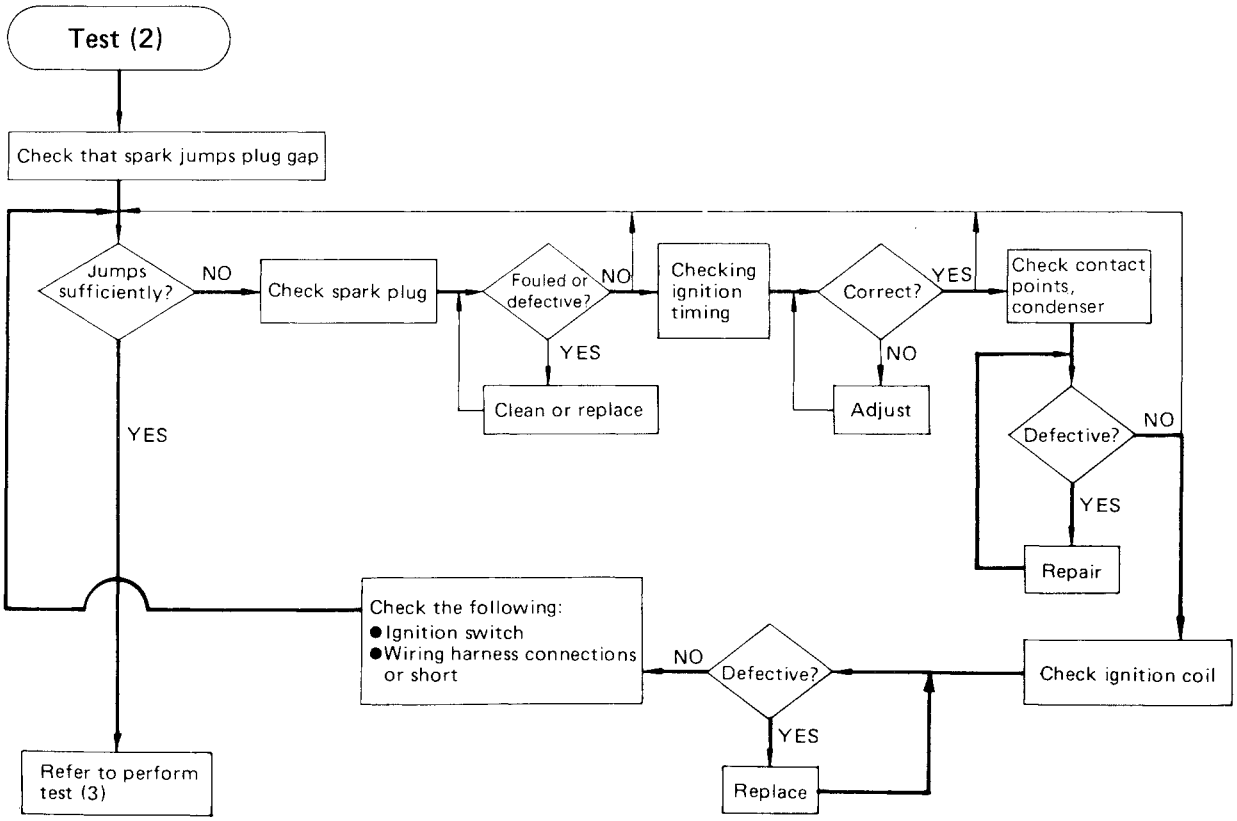
CONTENTS

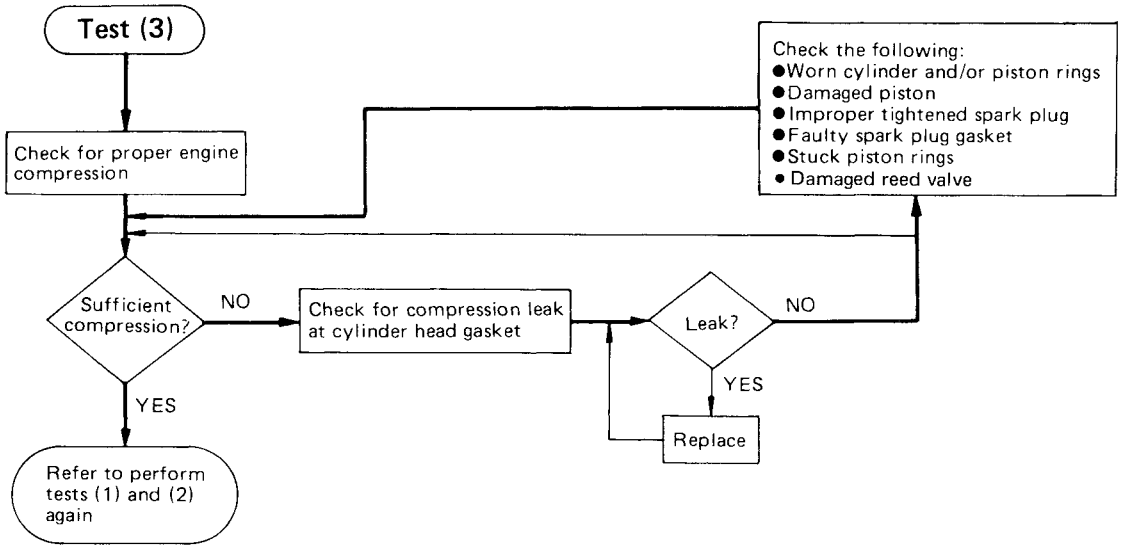
TROUBLE SHOOTING

ENGINE DIFFICULT TO START

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

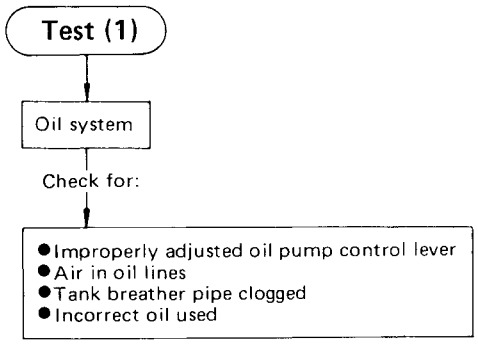


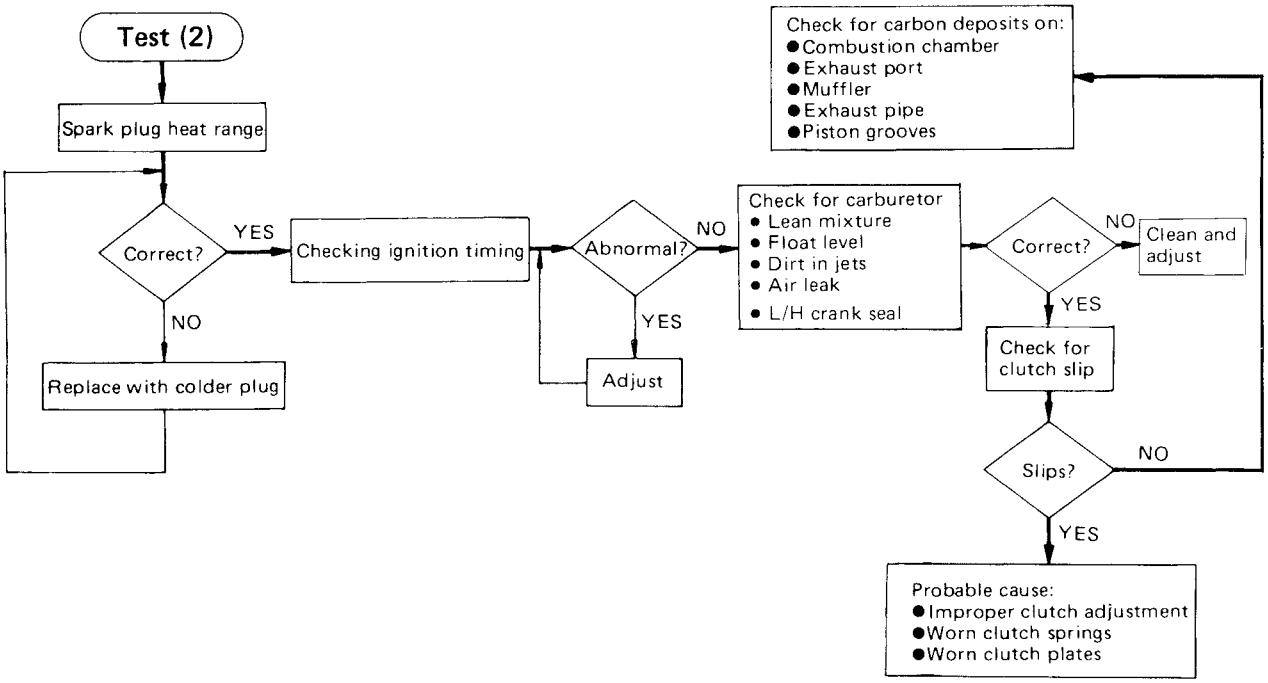




ENGINE OVERHEATS

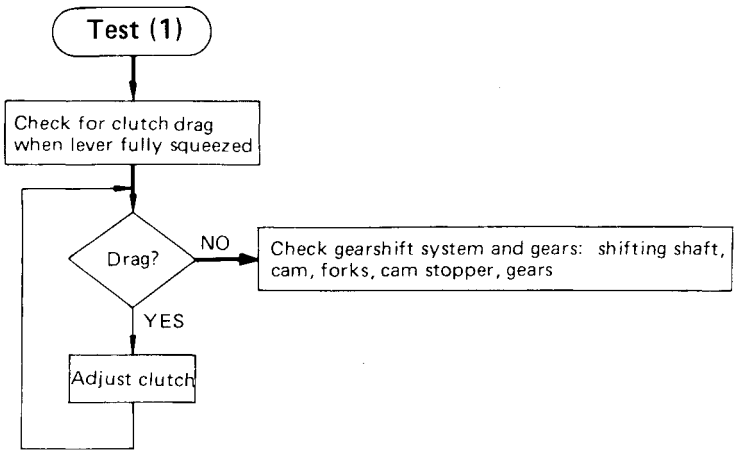
If the engine tends to overheat during low-speed running, check the condition of the lubrication system, the brakes (for dragging) chain tension and cylinder fin cleanliness. If no abnormality is found, make the following checks:



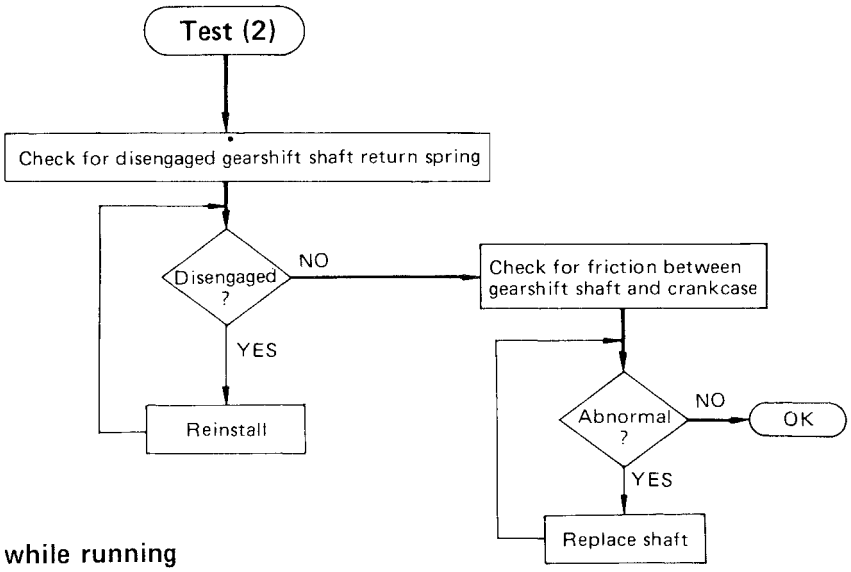


GEAR SHIFT PROBLEMS

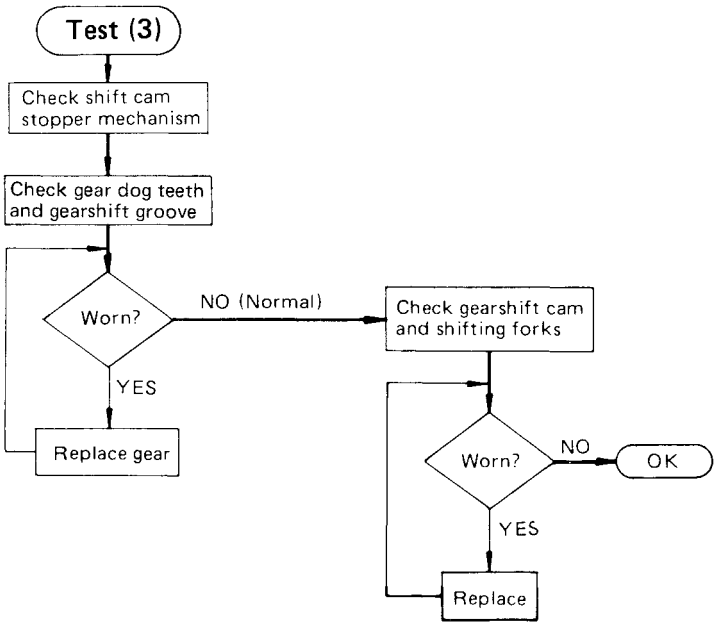
Case 1 Gears do not engage



Case 2 Gear shift lever does not return to normal position

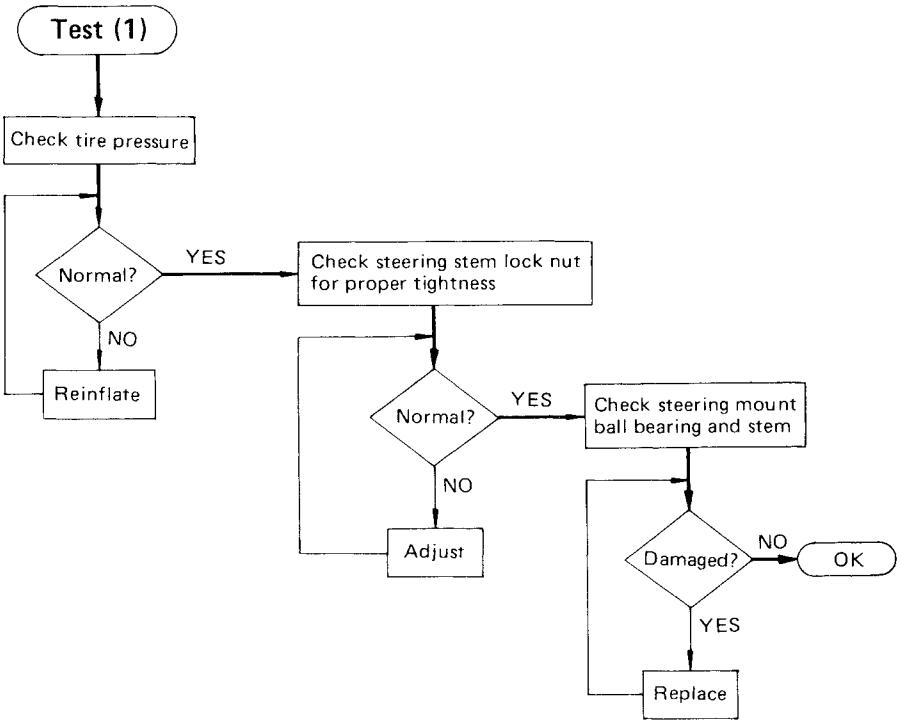


Case 3 Gears disengage while running

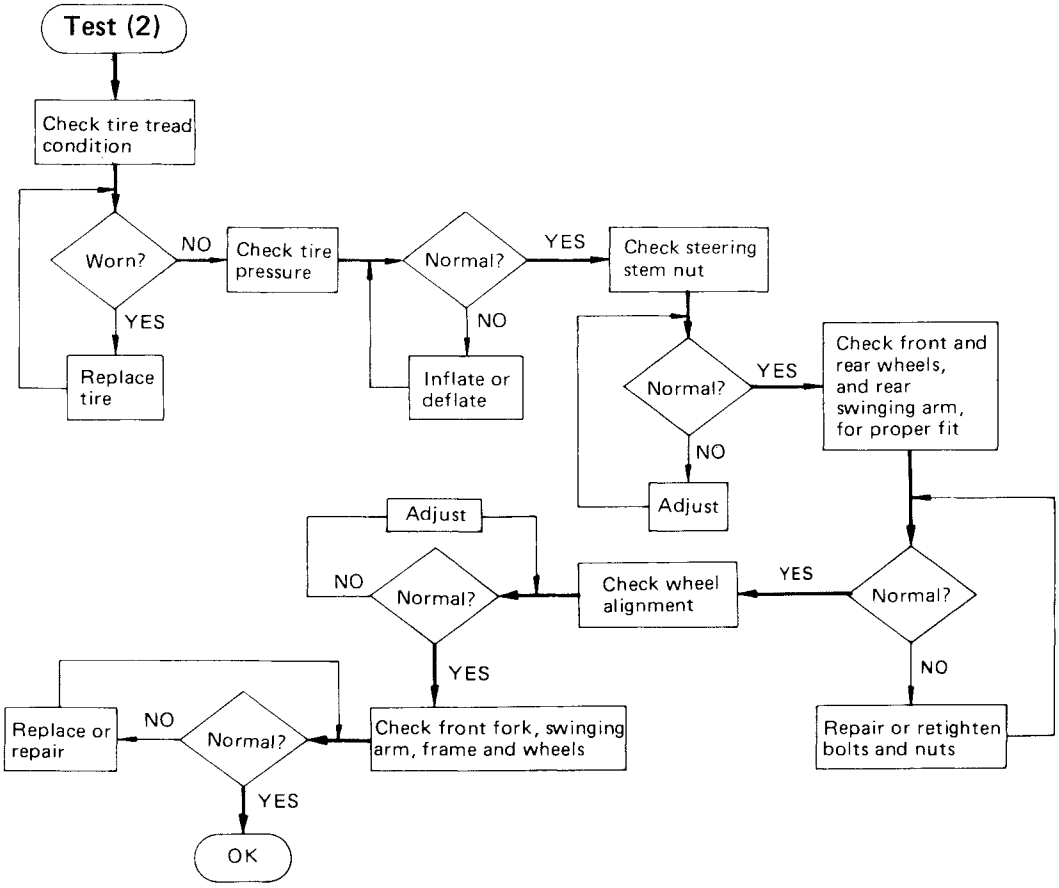


POOR STABILITY AND STEERING

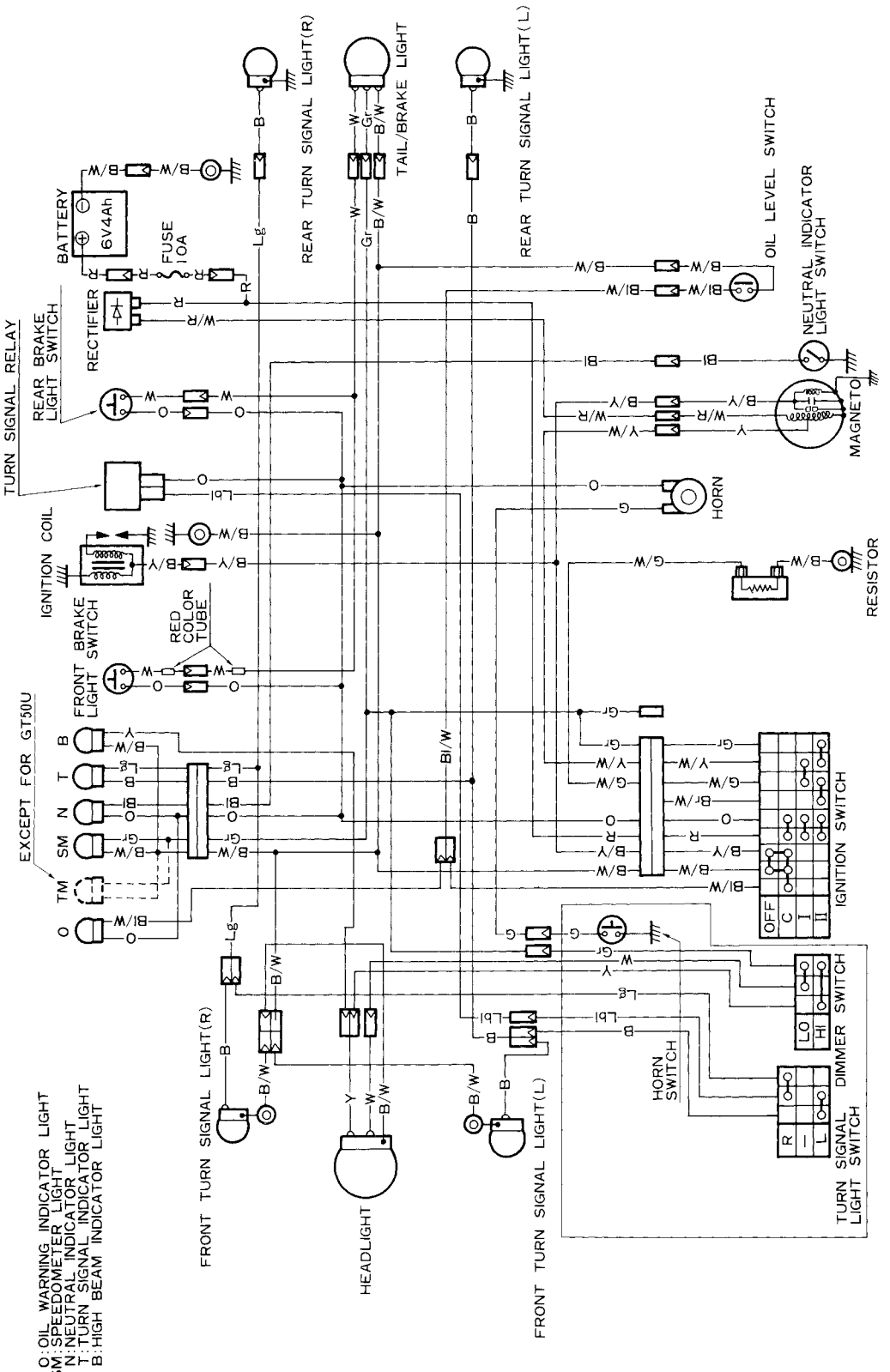
Handlebar feels stiff to turn



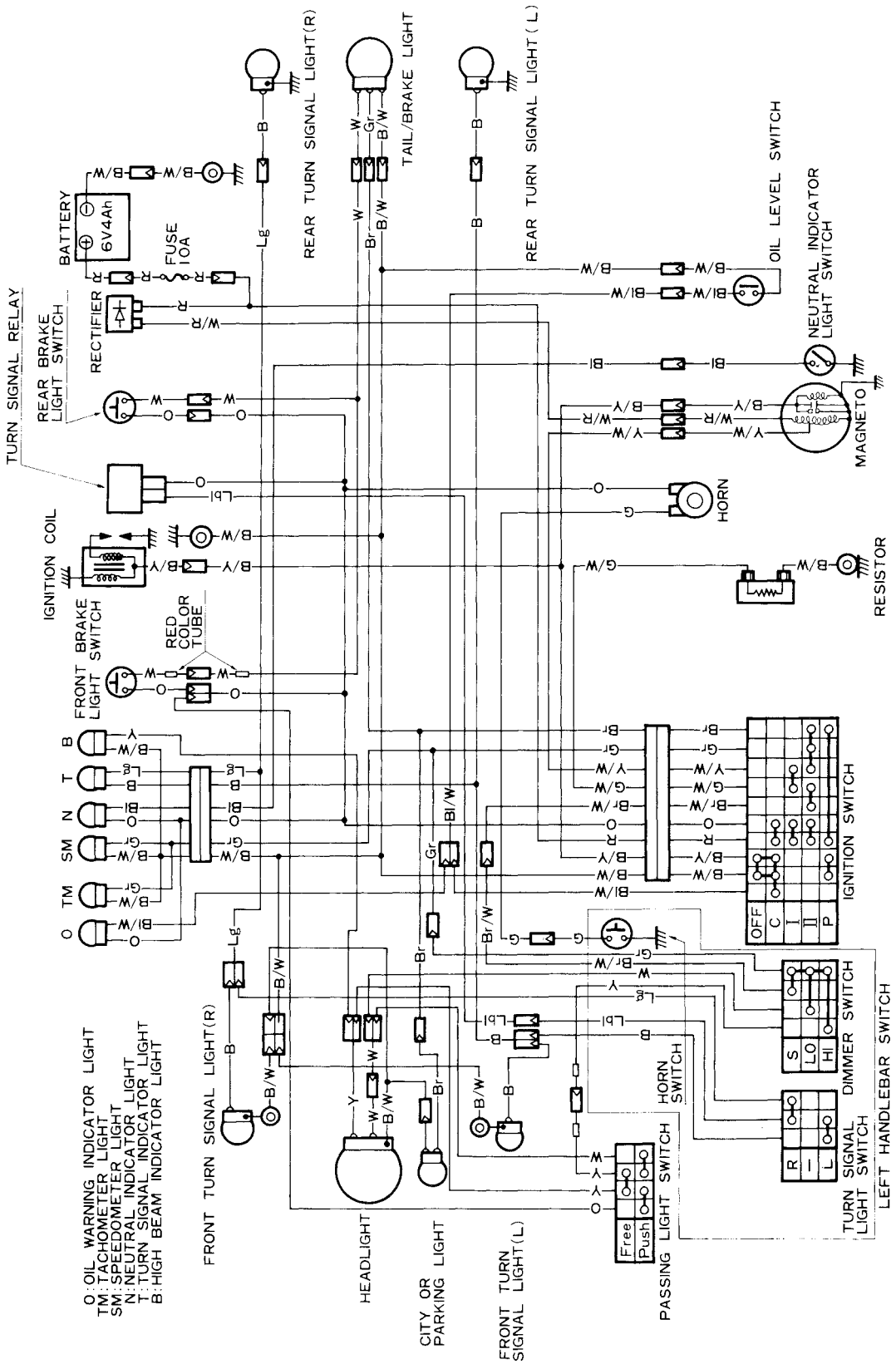
Handlebar operation unstable



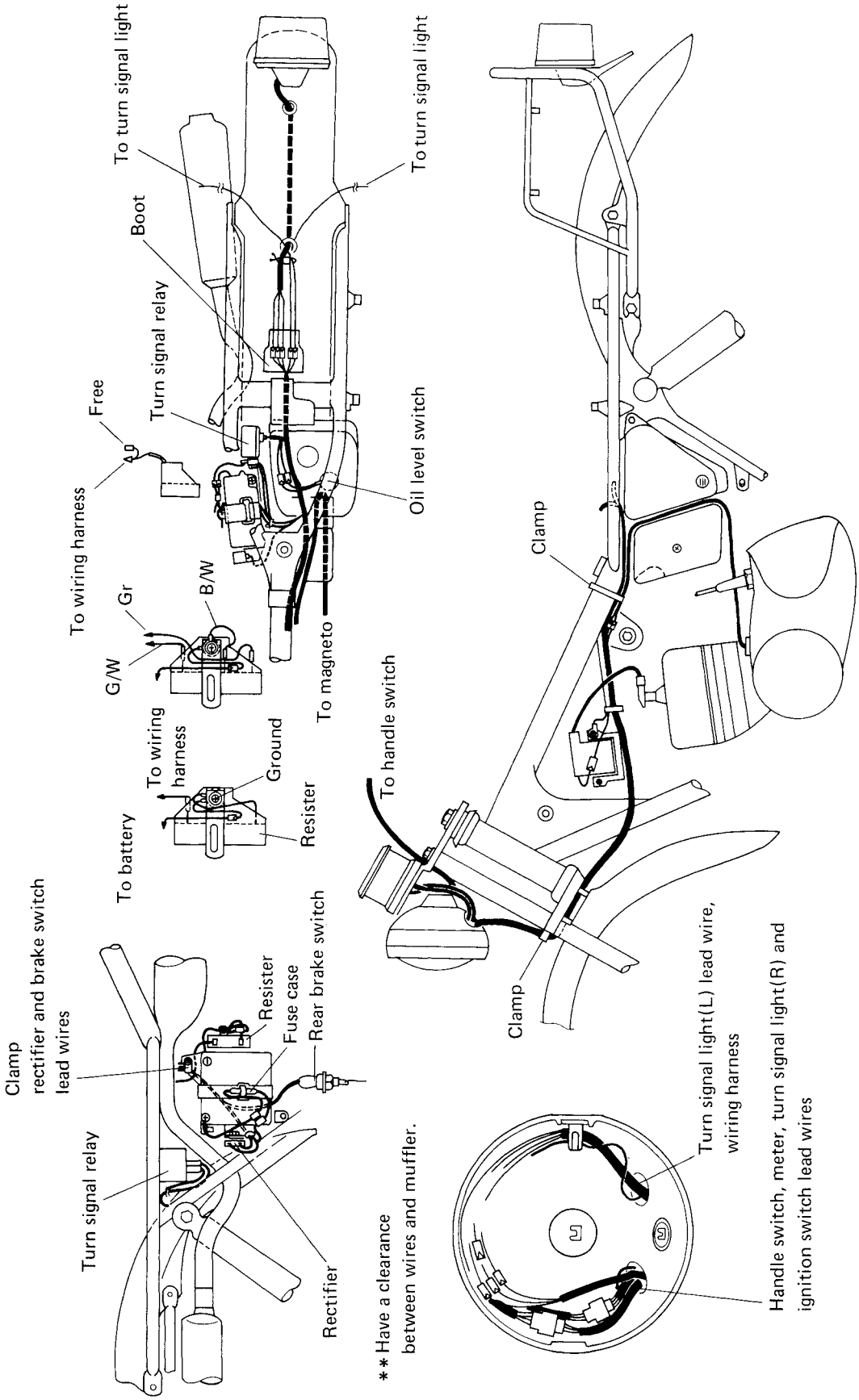
WIRING DIAGRAM
(E1, E9)



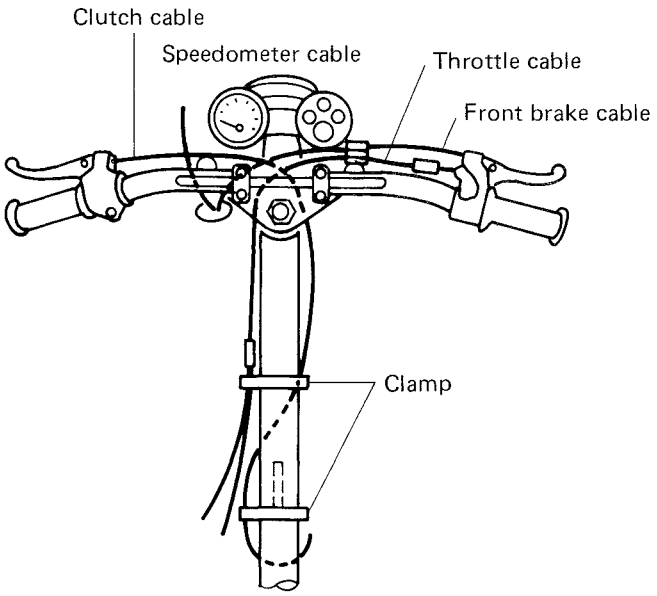
(E39)

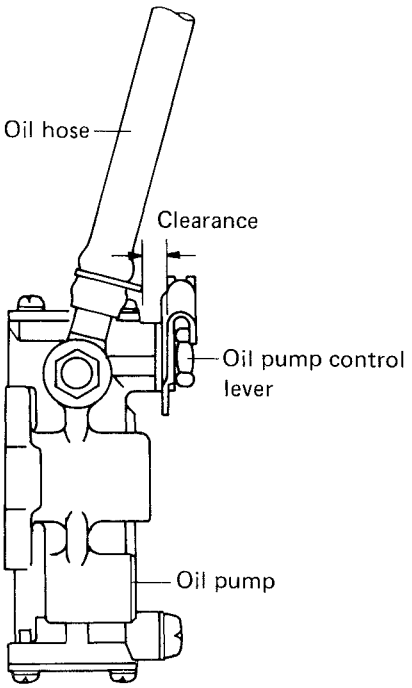

O:OIL WARNING INDICATOR LIGHT
TM:TACHOMETER LIGHT
SM:SPEEDOMETER LIGHT
N:NEUTRAL INDICATOR LIGHT
T:TURN SIGNAL INDICATOR LIGHT
B:HIGH BEAM INDICATOR LIGHT
TURN SIGNAL RELAY
REAR BRAKE LIGHT SWITCH
BATTERY
6V4Ah
FUSE
10A
RECTIFIER
IGNITION COIL
FRONT BRAKE LIGHT SWITCH
RED COLOR TUBE
REAR TURN SIGNAL LIGHT(R)
TAIL/BRAKE LIGHT
REAR TURN SIGNAL LIGHT(L)
OIL LEVEL SWITCH
NEUTRAL INDICATOR LIGHT SWITCH
MAGNETO
HORN
RESISTOR
IGNITION SWITCH
OFF
C
I
II
P
DIMMER SWITCH
S
LO
HI
HORN SWITCH
TURN SIGNAL LIGHT SWITCH
R
L
LEFT HANDLEBAR SWITCH
PASSING LIGHT SWITCH
Free
Push
FRONT TURN SIGNAL LIGHT(R)
HEADLIGHT
CITY OR PARKING LIGHT
FRONT TURN SIGNAL LIGHT(L)

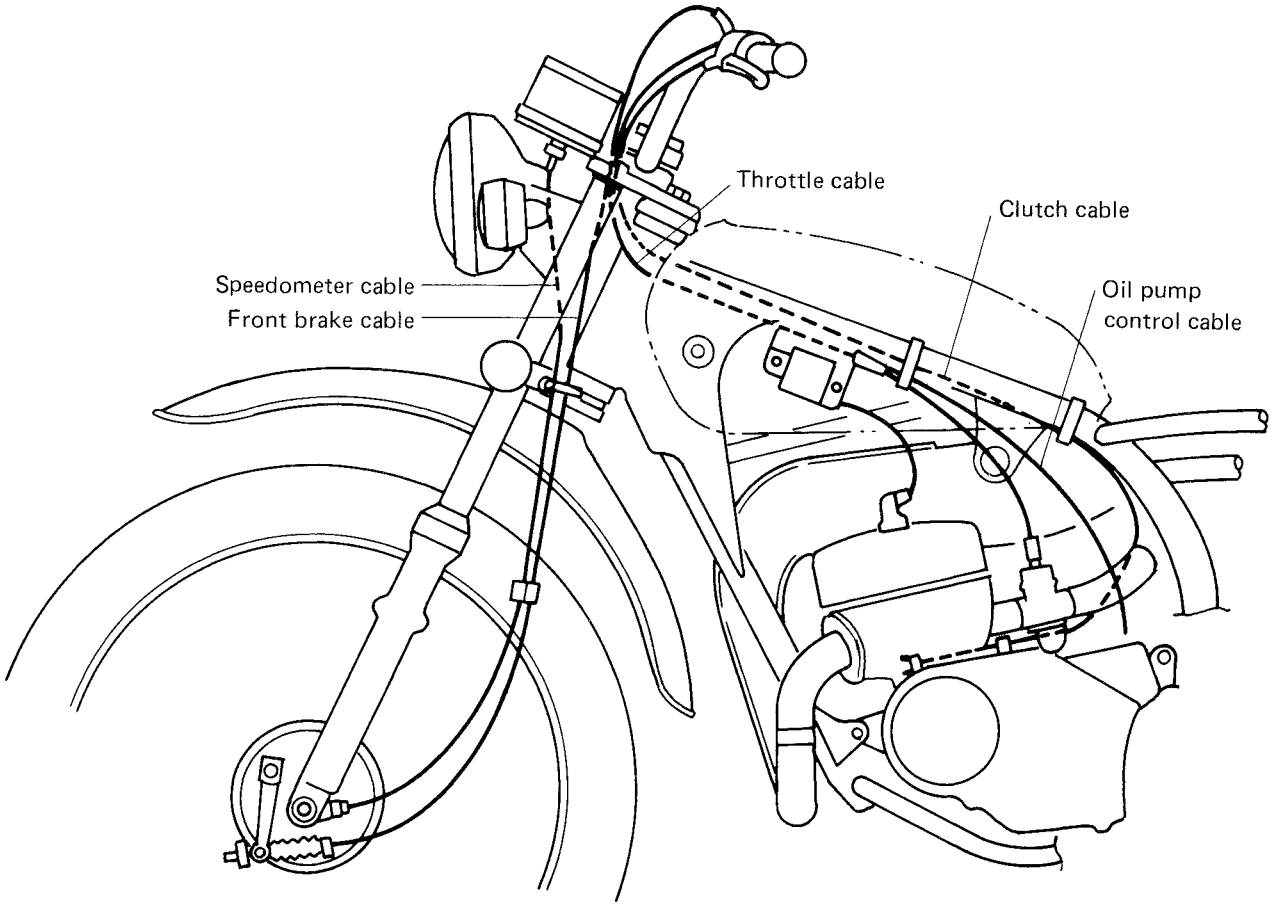
WIRE ROUTING



CABLE ROUTING

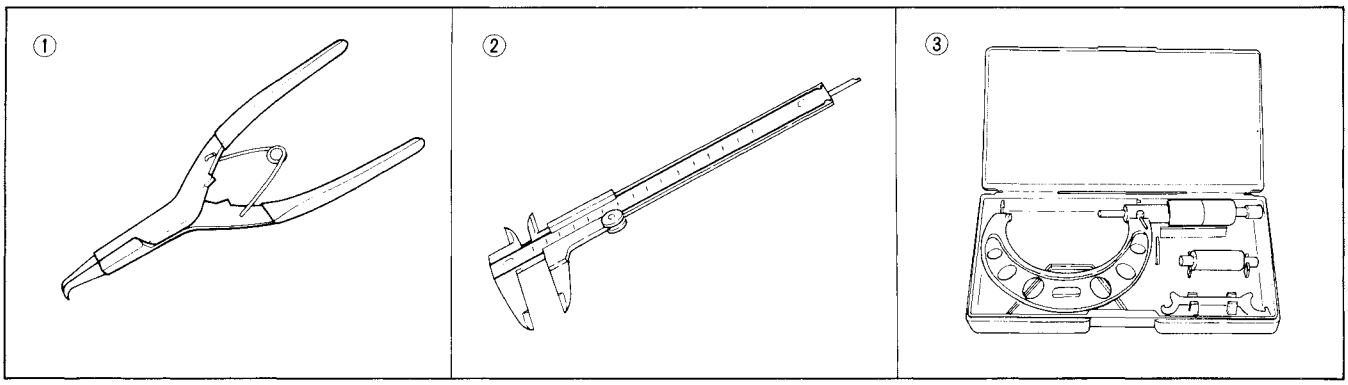






SPECIAL TOOLS

No.	Part No.	Part Name
1	09900-06104	Snap ring pliers
2	09900-20101	Vernier caliper
3	09900-20201	Micrometer (0 – 25 mm)
	09900-20202	Micrometer (25 – 50 mm)
4	09900-20508	Cylinder gauge
5	09900-20603	Dial gauge (1/100 mm)
6	09900-20701	Magnetic stand
7	09900-20803	Thickness gauge
8	09900-21302	V-block set
9	09900-21602	CCI oil gauge
10	09900-25002	Pocket tester
11	09900-27003	Timing tester
12	09900-28106	Electro-tester
13	09900-28403	Hydrometer
14	09910-10110	Stud bolt installer
15	09910-20115	Con rod stopper
16	09910-80115	Crankcase separating tool
17	09911-70120	6 mm Hexagon wrench
	09911-71510	8 mm Hexagon wrench
18	09913-50120	Oil seal remover
19	09913-70122	Bearing installer
20	09913-80111	Bearing installer (34 mm)
21	09920-53710	Clutch sleeve hub holder
22	09930-10111	Spark plug wrench
23	09930-30102	Rotor remover shaft
24	09930-30611	Attachment C
25	09930-40113	Rotor holder
26	09931-00112	Timing gauge
27	09940-10122	Steering stem wrench
28	09940-34520	Front fork assembly tool "T" handle
29	09940-34561	Attachment D
30	09940-50110	Oil seal installer
31	09940-60112	Spoke nipple wrench
32	09943-74110	Front fork oil level gauge



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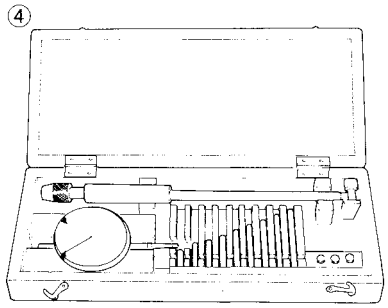

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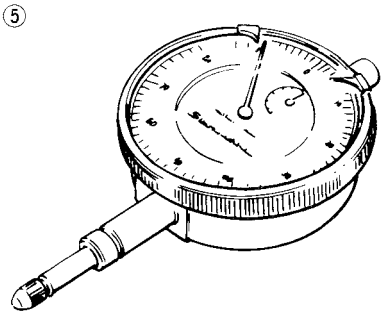

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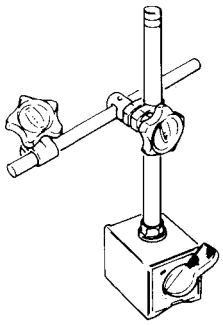

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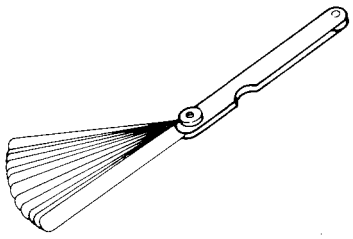

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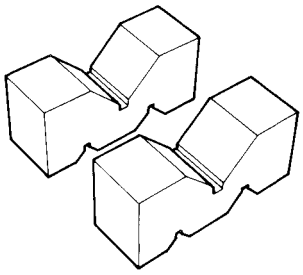

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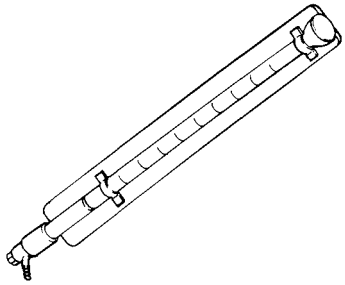

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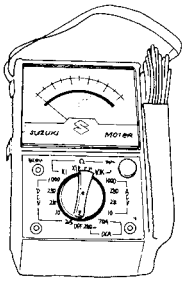

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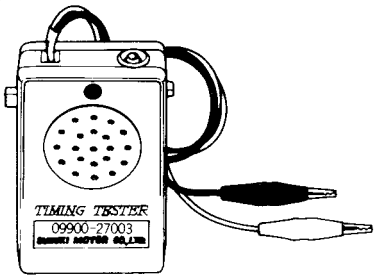

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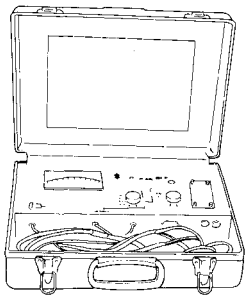

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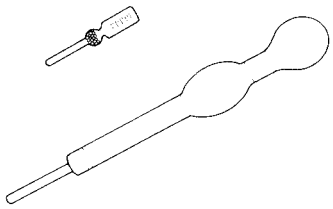

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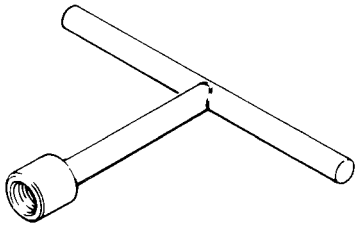

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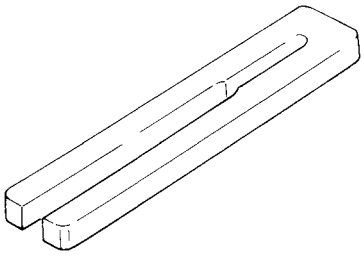

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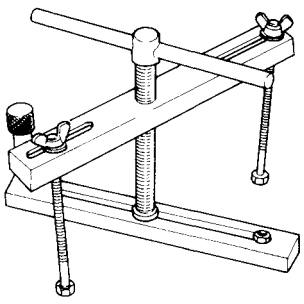

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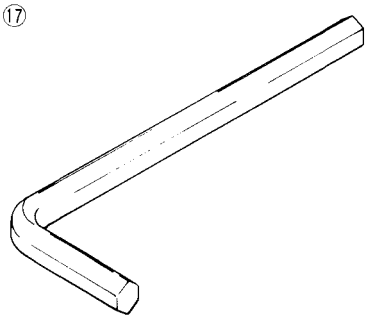

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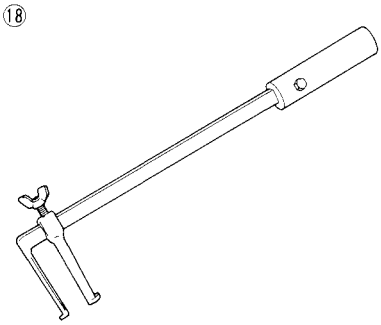

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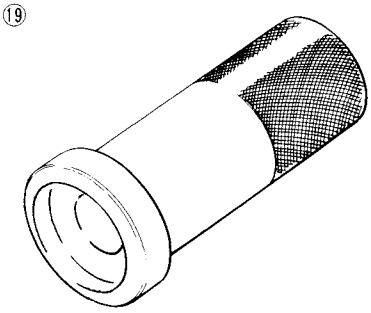

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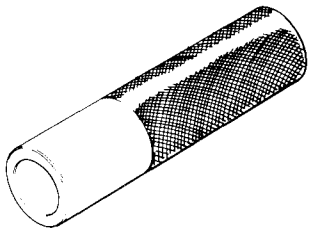

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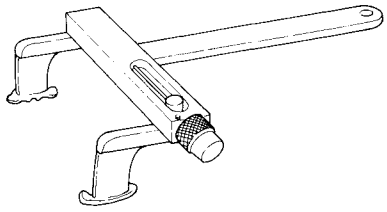

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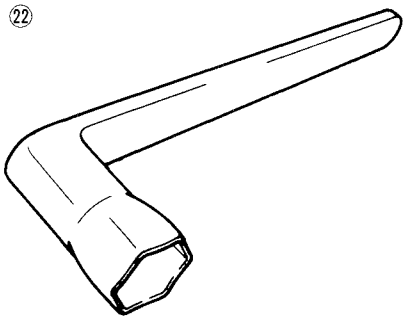

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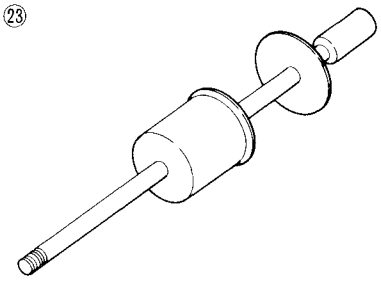

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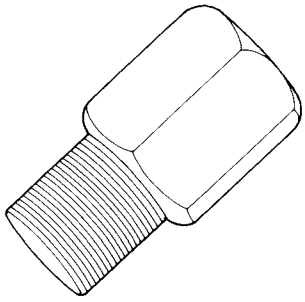

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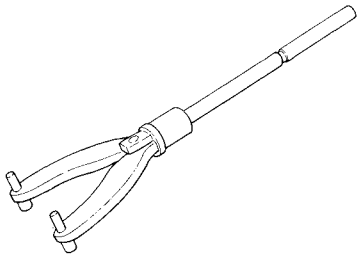

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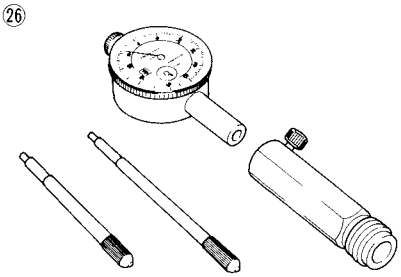

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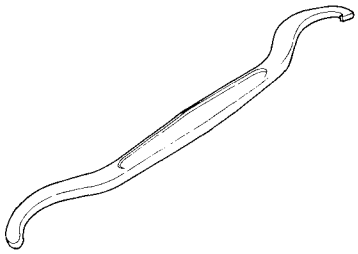

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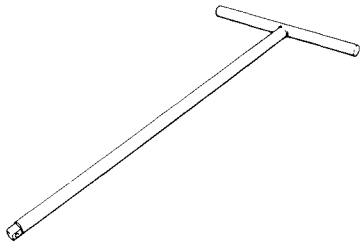

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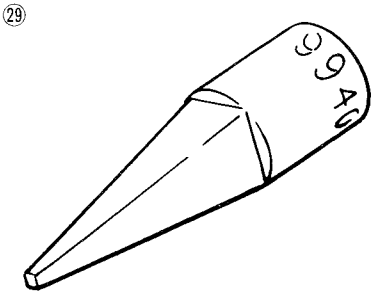

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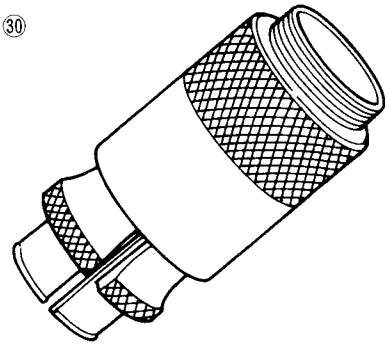

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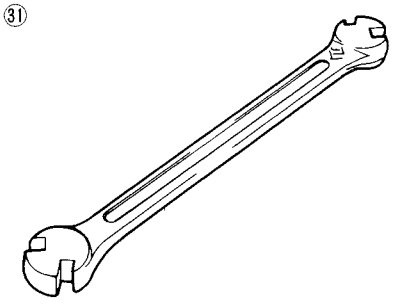

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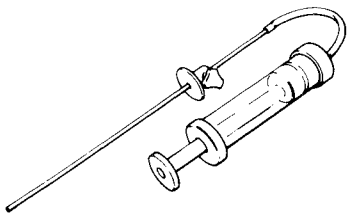


TIGHTENING TORQUE

ENGINE

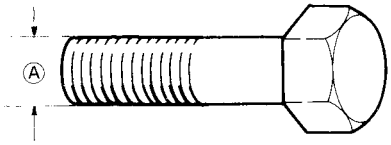
Description	Q'ty	N.m	kg-m	lb-ft
Cylinder head nut	1	8 – 12	0.8 – 1.2	6.0 – 8.5
Magneto rotor	1	30 – 40	3.0 – 4.0	22.0 – 28.5
Engine sprocket nut	1	30 – 50	3.0 – 5.0	22.0 – 36.0
Clutch sleeve hub nut	1	30 – 50	3.0 – 5.0	22.0 – 36.0
Primary drive gear nut	1	40 – 60	4.0 – 6.0	28.5 – 36.0
Engine mounting nut diam. 8 mm	3	13 – 23	1.3 – 2.3	9.5 – 16.5
Clutch spring bolt	5	3 – 5	0.3 – 0.5	2.5 – 3.5
Gearshifting arm stopper	1	16 – 23	1.6 – 2.3	12.0 – 16.5
Clutch release arm bolt	1	5 – 9	0.5 – 0.9	4.0 – 6.5

CHASSIS

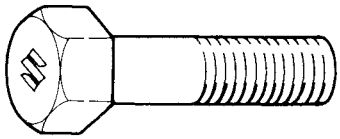
Description	Q'ty	N.m	kg-m	lb-ft
Front axle nut	1	27 – 43	2.7 – 4.3	20.0 – 31.0
Handlebar clamp bolt	4	12 – 20	1.2 – 2.0	9.0 – 14.0
Steering stem head bolt	1	35 – 55	3.5 – 5.5	25.5 – 39.5
Front fork cap bolt	2	35 – 55	3.5 – 5.5	25.5 – 39.5
Front fork lower clamp bolt	2	20 – 30	2.0 – 3.0	14.5 – 21.5
Exhaust pipe clamp bolt	2	15 – 20	1.5 – 2.0	11.0 – 14.5
Rear swinging arm pivot nut	1	25 – 40	2.5 – 4.0	18.5 – 28.5
Rear shock absorber nut	4	20 – 30	2.0 – 3.0	14.5 – 21.5
Rear torque link nut	2	10 – 15	1.0 – 1.5	7.5 – 10.5
Rear axle nut	1	36 – 52	3.6 – 5.2	26.0 – 37.5
Brake cam lever nut	2	5 – 8	0.5 – 0.8	4.0 – 5.5

TORQUE SPECIFICATIONS

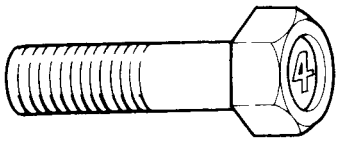
The table below, relating tightening torque to thread diameter, lists the basic torque for the general bolts and nuts used on Suzuki Motorcycles. However, the actual torque that is necessary may vary among bolts and nuts with the same thread diameter. Refer to this table for only the bolts and nuts not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



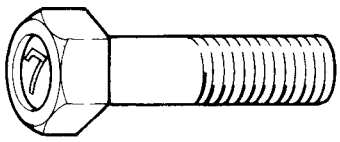
Conventional bolt



"S" marked bolt



"4" marked bolt



"7" marked bolt

Thread dia. (mm) Ⓐ	Conventional or "4" marked bolt			"S" or "7" marked bolt		
	N.m	kg-m	lb-ft	N.m	kg-m	lb-ft
4	1 – 1.5	0.1 – 0.15	0.8 – 1.0	1.5 – 2.5	0.15 – 0.25	1.1 – 1.8
5	2 – 3	0.2 – 0.3	1.5 – 2.0	3 – 5.0	0.3 – 0.5	2.0 – 3.5
6	4 – 6	0.4 – 0.6	3.0 – 4.5	6 – 9	0.6 – 0.9	4.5 – 6.5
8	9 – 12	0.9 – 1.2	6.5 – 8.5	15 – 20	1.5 – 2.0	11.0 – 14.5
10	20 – 25	2.0 – 2.5	14.5 – 18.0	30 – 37	3.0 – 3.7	21.5 – 27.0
12	35 – 40	3.5 – 4.0	25.0 – 28.5	50 – 65	5.0 – 6.5	36.5 – 47.0
14	60 – 70	6.0 – 7.0	43.5 – 50.5	90 – 110	9.0 – 11.0	65.5 – 79.5
16	90 – 110	9.0 – 11.0	65.5 – 79.5	140 – 170	14.0 – 17.0	101.5 – 122.5
18	140 – 160	14.0 – 16.0	101.5 – 115.5	210 – 250	21.0 – 25.0	152.0 – 180.5

SERVICE DATA

PISTON + RING + CYLINDER

Unit: mm (in)

ITEM	STANDARD			LIMIT	
Piston – Cylinder clearance	0.065 – 0.075 (0.0026 – 0.0030)			0.120 (0.0047)	
Cylinder bore/Measurement point from the top	41.000 – 41.015 (1.6142 – 1.6148)/15 (0.6)			41.065 (1.6167)	
Piston dia./Measurement point from the botton	40.930 – 40.945 (1.6114 – 1.6120)/23 (0.9)			40.880 (1.6094)	
Cylinder warpage	———			0.05 (0.002)	
Cylinder head warpage	———			0.05 (0.002)	
Piston ring free end gap		RIKEN	TEIHOKU	R	T
	1st	Approx. 4.5 (0.18)	Approx. 5.0 (0.20)	3.6 (0.14)	4.0 (0.16)
	2nd				
Piston ring end gap	1st	Approx. 0.10 – 0.25 (0.004 – 0.010)		0.75 (0.030)	
	2nd				
Piston ring – Grove clearance	1st	0.020 – 0.060 (0.0008 – 0.00024)		———	
	2nd				
Piston pin – Pin bore clearance	0.002 (Tight) – 0.010 (0.0001 – 0.0004)			0.080 (0.0031)	
Piston pin bore I.D.	11.998 – 12.006 (0.4724 – 0.4727)			———	
Piston pin O.D.	11.996 – 12.000 (0.4723 – 0.4724)			———	

CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Con-rod small end bore	16.003 – 16.011 (0.6300 – 0.6303)	16.040 (0.6315)
Piston pin O.D.	11.996 – 12.000 (0.4723 – 0.4724)	11.980 (0.4717)
Con-rod deflection (small end)	———	3.0 (0.12)
Con-rod big end wear	———	0.08 (0.003)
Crankshaft runout	———	0.05 (0.002)
Crank web width	39.9 – 40.1 (1.57 – 1.58)	———

OIL PUMP

ITEM	SPECIFICATION
Oil pump reduction ratio	11.846 (73/19 x 37/21)
CCI pump discharge rate (Full open)	1.08 – 1.27 ml/5 minutes at 2 000 r/min

TIRE AIR PRESSURE

NORMAL SOLO RIDING		DUAL RIDING	
Front	Rear	Front	Rear
150 kPa 1.5 kg/cm^2 21 psi	175 kPa 1.75 kg/cm^2 25 psi	150 kPa 1.5 kg/cm^2 21 psi	200 kPa 2.0 kg/cm^2 28 psi

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT
Front fork stroke	110 (4.3)	
Rear wheel travel	73 (2.9)	
Fork spring free length	357.9 (14.09)	350.0 (13.8)
Fork oil level	142 (5.6)	
Swinging arm pivot shaft runout	———	0.6 (0.02)

CAPACITY

ITEM	SPECIFICATION
Fuel tank including reserve	5.0L (1.3/1.1 US/Imp gal)
reserve	1.3L (1.4/1.1 US/Imp qt)
Engine oil tank	1.2L (1.3/1.1 US/Imp qt)
Transmission oil	Change: 650 ml (0.69/0.57 US/Imp qt)
	Overhaul: 700 ml (0.74/0.62 US/Imp qt)
Front fork oil (each leg)	85 ml (2.87/2.99 US/Imp oz)
Fuel type	Unleaded or low-lead type gasoline
Engine oil type	SUZUKI "CCI" or "CCI SUPER"
Transmission oil type	SAE 20W/40
Front fork oil type	SAE 5W/20 or A.T.F.

Prepared by

SUZUKI MOTOR CO., LTD.

Service Department
Overseas Operations Division

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