SUZUKI

DR250

SERVICE MANUAL

99500-42002-03E
(英)

SUZUKI MOTOR CORPORATION PRINTED IN JAPAN OCTOBER, '90 Ⓣ

FOREWORD

The SUZUKI DR250 was designed to offer superior performance through lightweight design, four stroke power (TSCC engine) and Full-floating suspension. The new DR250 represents another major advance by Suzuki in four stroke motorcycles.

This service manual has been produced primarily for experienced mechanics whose job is to inspect, adjust, repair and service Suzuki Motorcycles. Apprentice mechanics and "do it yourself" mechanics will also find this manual to be an extremely useful guide.

Model DR250 manufactured to standard specifications is the main subject matter of this Manual. However, the DR250 machines distributed in your country might differ in minor respects from the standard-specification DR250 and, if they do, it is because some minor modifications (which are of no consequence in most cases as far as servicing is concerned) had to be made to comply with the statutory requirements of your country.

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

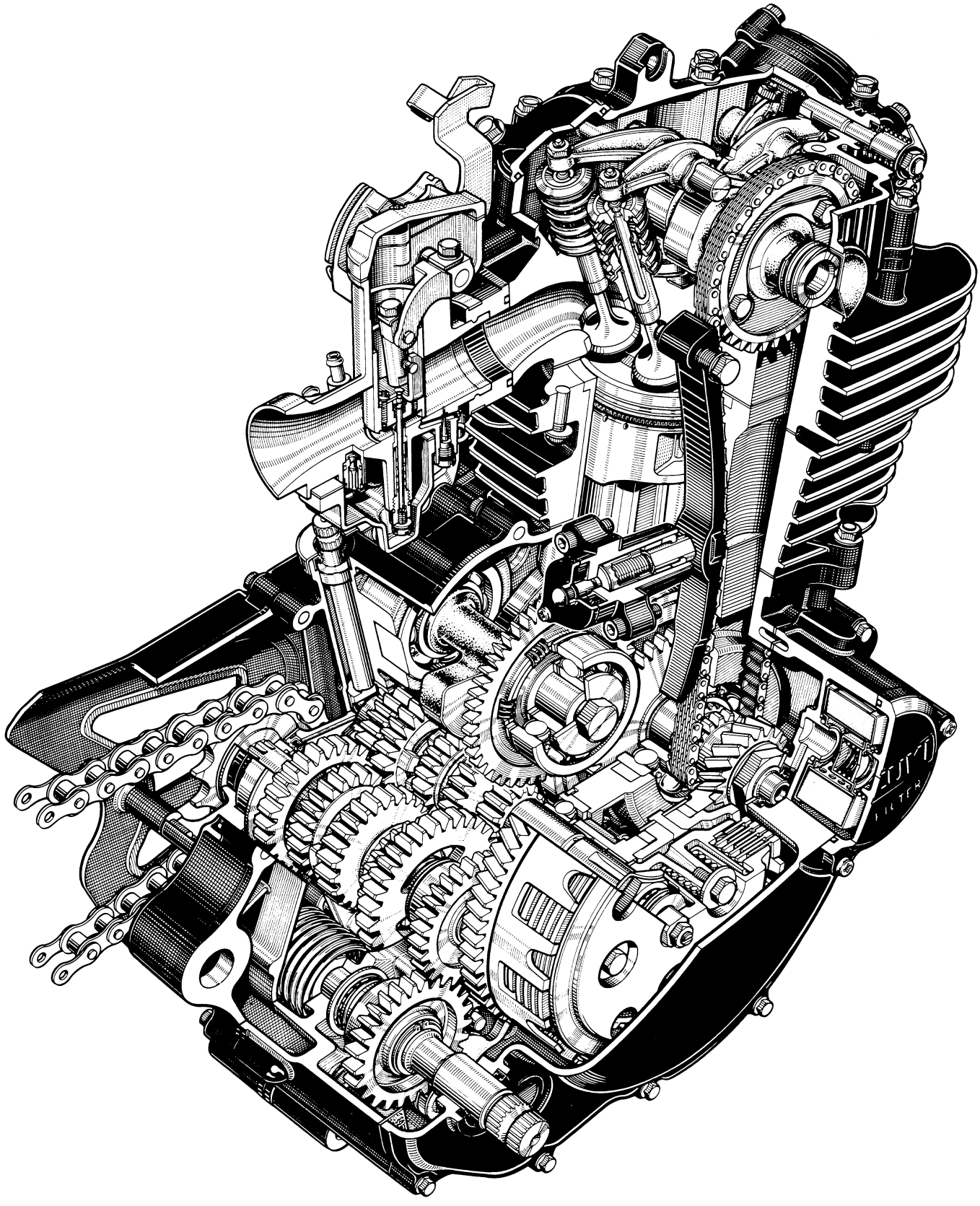
SUZUKI MOTOR CORPORATION.
Motorcycle Technical Service Department

VIEW OF SUZUKI DR250

RIGHT SIDE

LEFT SIDE

GROUP INDEX



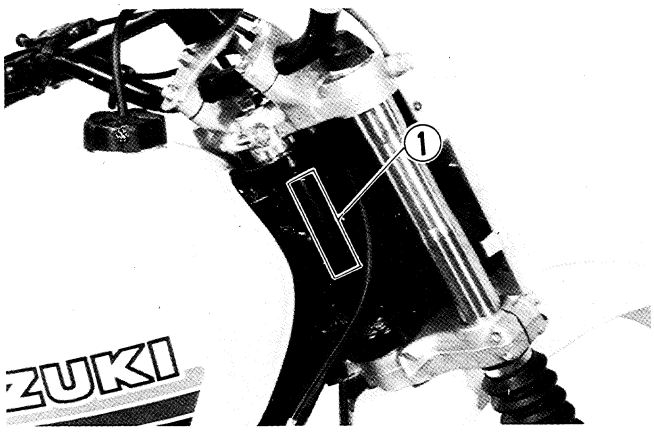
GENERAL INFORMATION

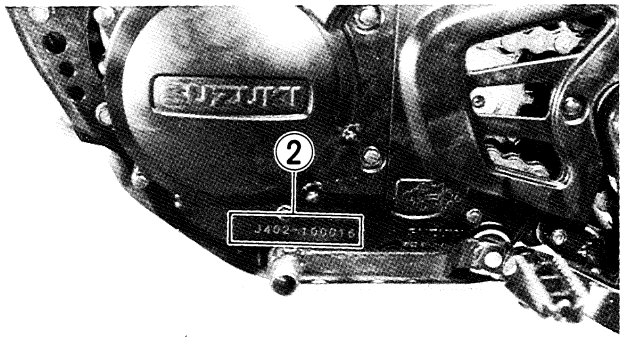
1

CONTENTS

VIN AND SERIAL NUMBER LOCATIONS

The VIN number ① is stamped on the steering head pipe. The engine serial number ② is located on the crankcase.
These numbers are required especially for registering the machine and ordering spare parts.



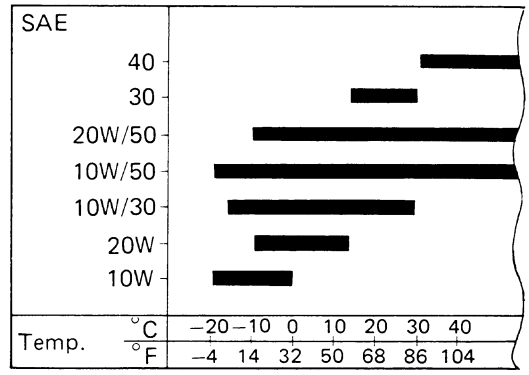


FUEL AND OIL RECOMMENDATIONS

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

ENGINE OIL

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



FRONT FORK OIL

FORK OIL #10

BREAK-IN PROCEDURE

During munufacture only the best possible materials are used and all machined parts are finished to a very high standard but it is still necessary to allow the moving parts to "BREAK-IN" before subjecting the engine to maximum stresses. The future performance and reliability of the engine depends on the care and restraint exercised during its early life. The general rules are as follows.

1. Keep to these break-in throttle positions.

Initial 10 hours	Below ½ throttle
UP to 15 hours	Below ¾ throttle
Over 15 hours	Full throttle

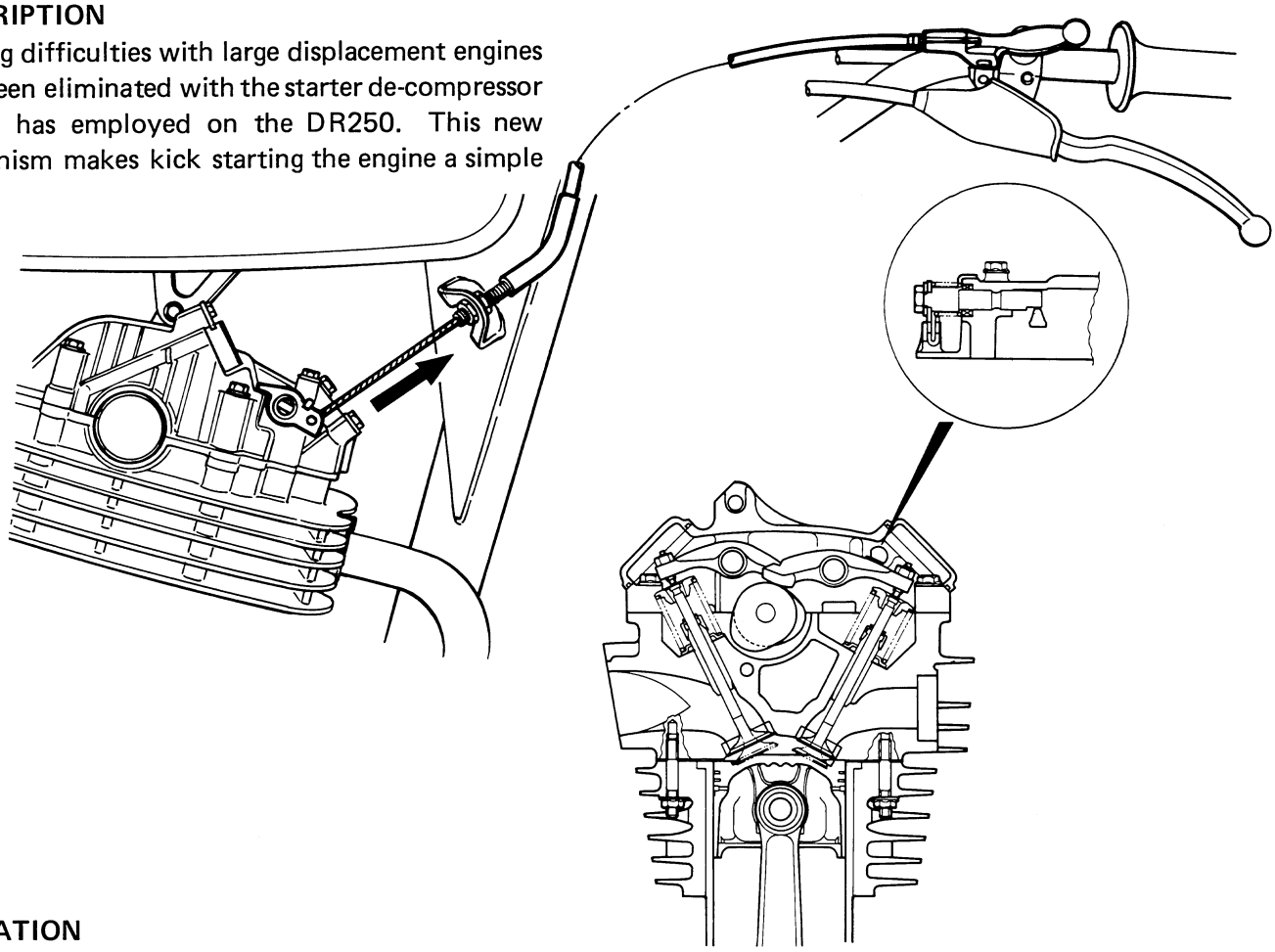
2. After the engine has been operated for 15 hours the motorcyles can be subjected to full throttle operation for short periods of time.

SPECIAL FEATURES

STARTER DE-COMPRESSOR

DESCRIPTION

Starting difficulties with large displacement engines have been eliminated with the starter de-compressor Suzuki has employed on the DR250. This new mechanism makes kick starting the engine a simple task.



OPERATION

Squeezing the de-compression lever rotates the de-compression shaft, pressing the exhaust rocker arm down and opening the exhaust valve slightly as illustrated in Fig. 2.

In this condition, when the kick starter lever is kicked over, the amount of valve cam lift will be more than the de-compression shaft cam lift, creating a clearance between the rocker arm and de-compression shaft. This causes the return spring to return the de-compression shaft to its original position as illustrated in Fig. 1. Thus, when the kick starter lever is turned over, the compression pressure is released, allowing the engine to be started by a single kick.

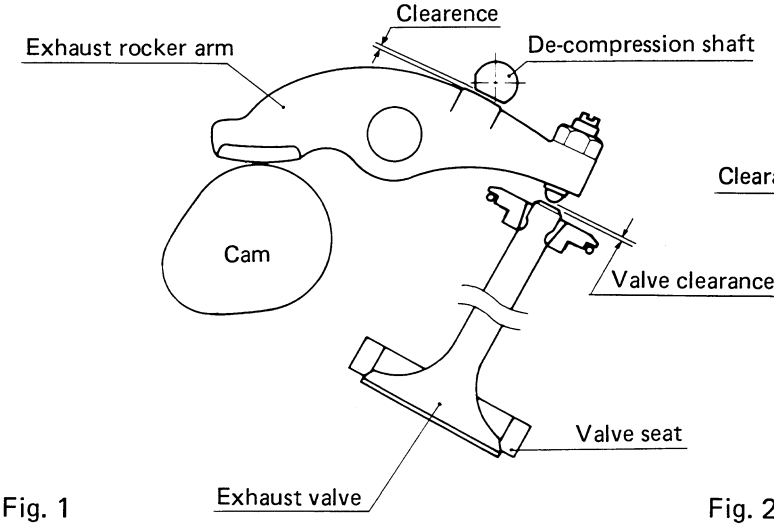


Fig. 1

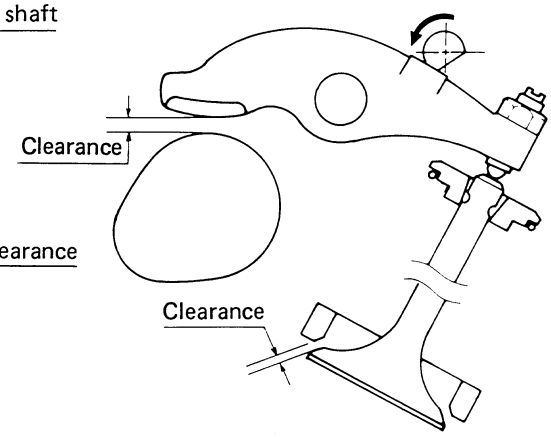


Fig. 2

IGNITION SYSTEM

DESCRIPTION

The DR250 engine is equipped with a new type ignition system. This new system further reduces timing fluctuations. It has an "ignition timing control circuit" which accurately controls the advance curve and maintains consistent timing independent of high RPM fluctuation, magnetic force, temperature, and air gap.

ADVANTAGES OF MAGNETO-TRANSISTORIZED IGNITION SYSTEM

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

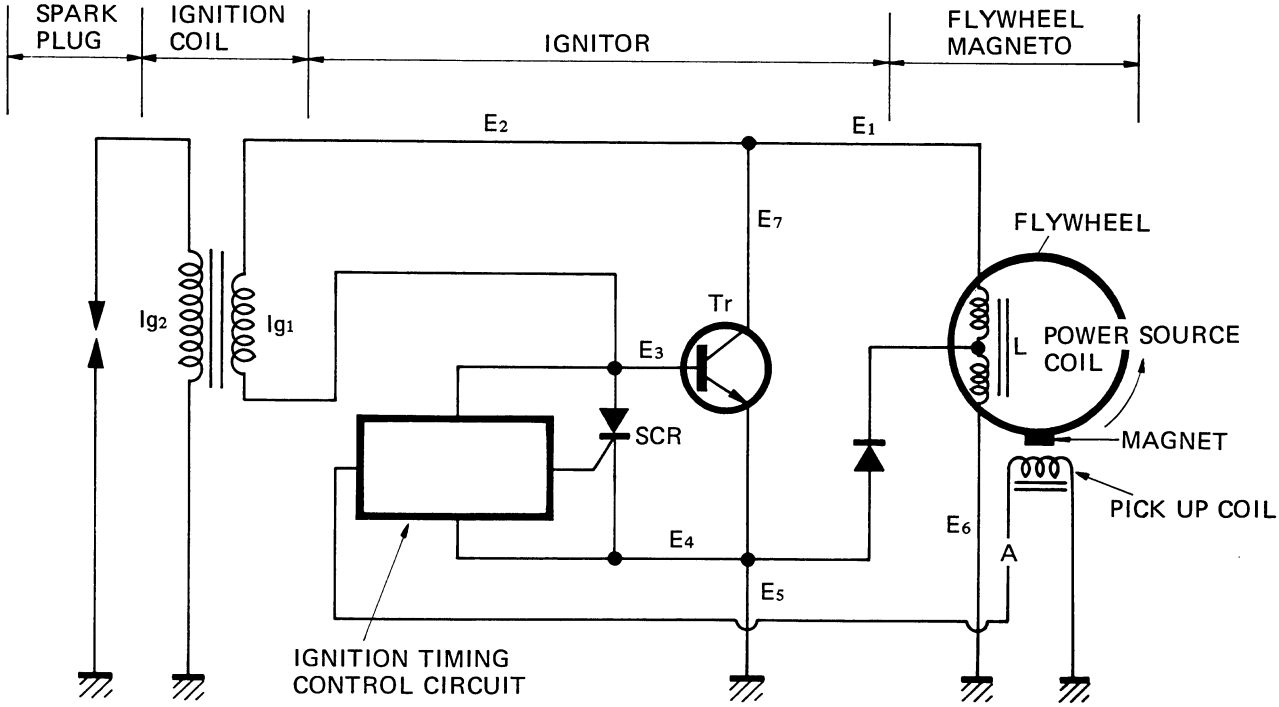
OPERATION

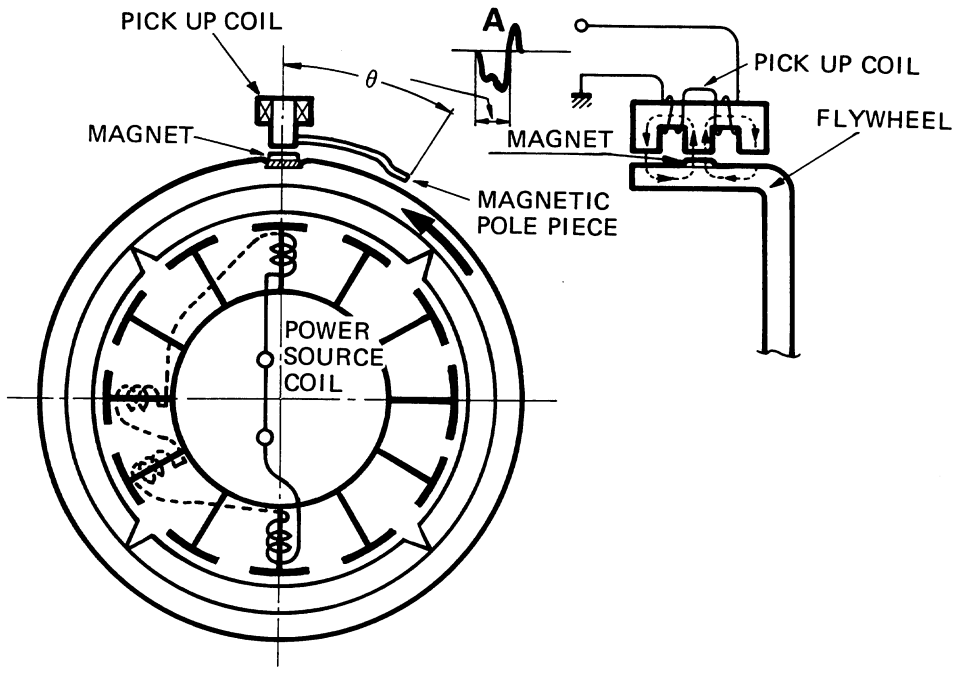
As the flywheel rotates, a current is induced in power source coil (L). As the current flows from (L) to (E_1), (E_2), (Ig_1), (E_3) and (Tr), transistor (Tr) conducts and a closed circuit is made up from (L) to (E_1), (E_7), (Tr), (E_5), (E_6) and (L).

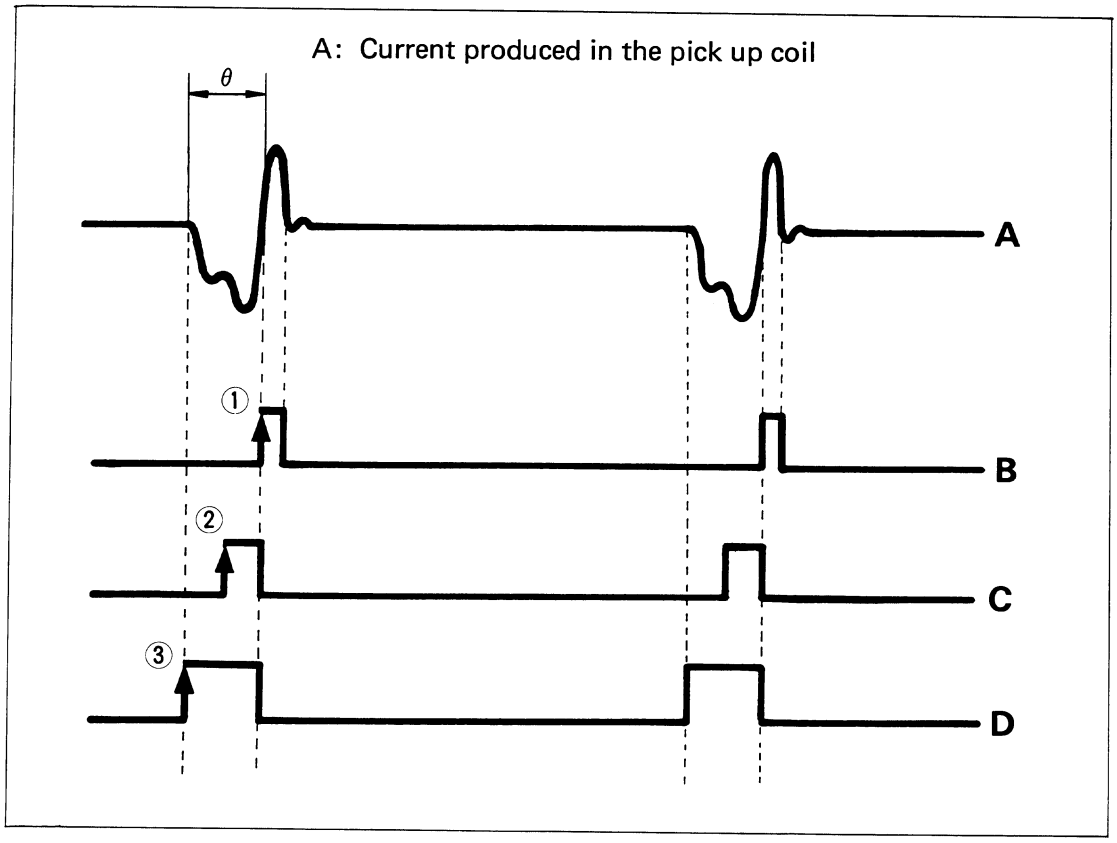
On the other hand, each time the magnet mounted on the flywheel passes by the magnetic pole piece, a current (A) produced in the pick up coil flows in the ignition timing control circuit and an ignition signal is fed to the gate of (SCR). Consequently, (SCR) conducts and a closed circuit is made up from (L) to (E_1), (E_2), (Ig_1), (SCR), (E_4), (E_5), (E_6) and (L), thereby cutting off the (Tr) and inducing some hundreds voltage in power source coil (L). As the same voltage is applied to (Ig_1), (Ig_2) produces a high voltage which is applied to the spark plug to produce sparks in the spark plug gap.

Current (A) is converted by the ignition timing control circuit into an ignition signal as B, C or D depending on the engine speed (r/min).

The ignition timing control circuit controls the ignition timing as follows: When the engine speed is low (When no angle advancing occurred yet), the ignition signal is generated at point ①; when the engine speed is being raised (when angle advancing is in progress), the ignition signal is generated at point ②; when the engine speed is high (when angle advancing is completed), the ignition signal is generated at point ③. Therefore, the range of angle advancing depends on the length (θ) of the magnetic pole piece.




PICK UP COIL
θ
A
PICK UP COIL
MAGNET
MAGNET
FLYWHEEL
MAGNETIC
POLE PIECE
POWER
SOURCE
COIL


A: Current produced in the pick up coil
θ
A
①
B
②
C
③
D

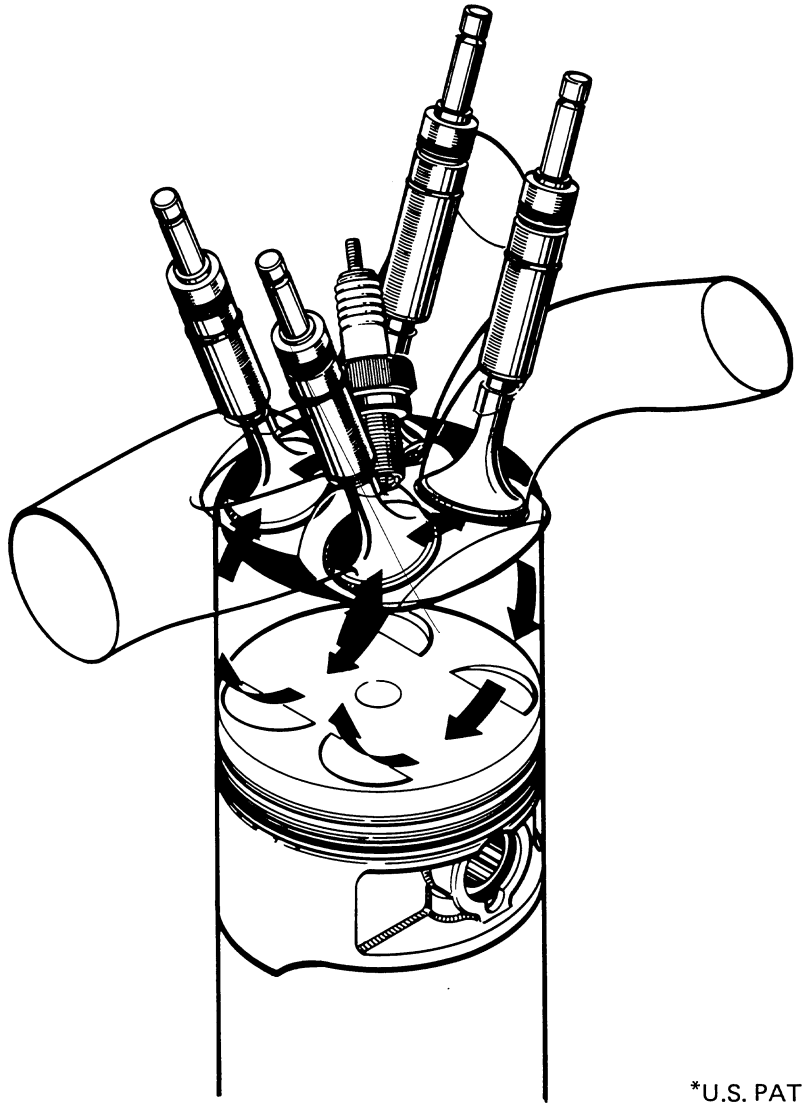
TSCC (TWIN SWIRL COMBUSTION CHAMBER)

DR250 models use SUZUKI's unique TSCC engine design, which is internationally acclaimed for its durability and performance. TSCC describes the heart of the engine, the Twin Swirl Combustion Chamber. What the TSCC engine series does better than convential 4-stroke engines, either 2-valve or 4-valve, is improve on the two major factors which affect engine performance, charge burning efficiency and intake charging efficiency.

First, charge burning efficiency. The TSCC* system consists of a subtle, yet unique shape casted into the head. Each of the two intake valves is set into adjoining semi-hemispherical depressions in the head.

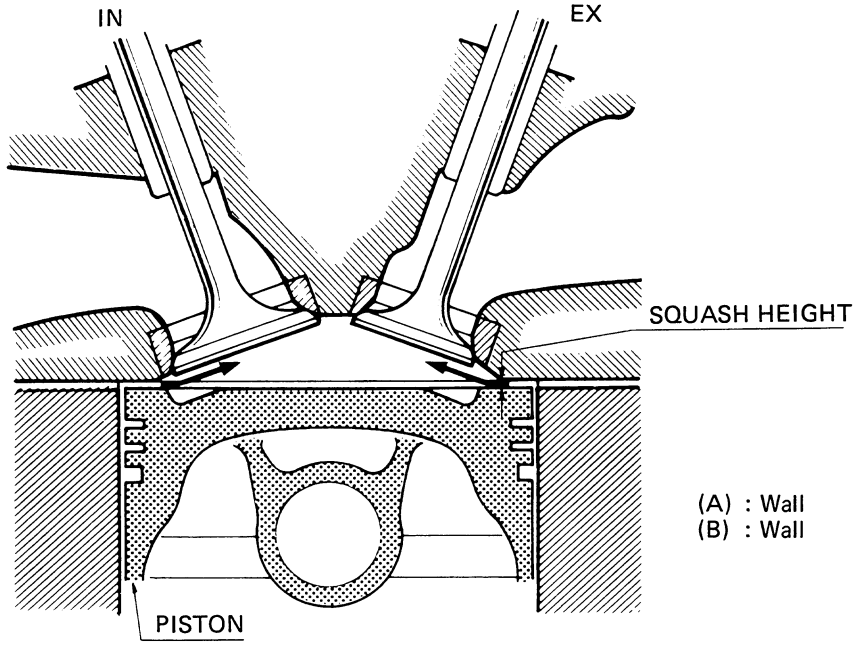
During the intake stroke these depressions channel the incoming fuel/air mixture to form two separate high-speed swirls. During the compression stroke the squash areas machined in the front and the rear of the cylinder head's combustion chamber accelerate the speed of the swirls. Thus, when the spark plug ignites the mixture, the flame spreads rapidly and completes the combustion more quickly.

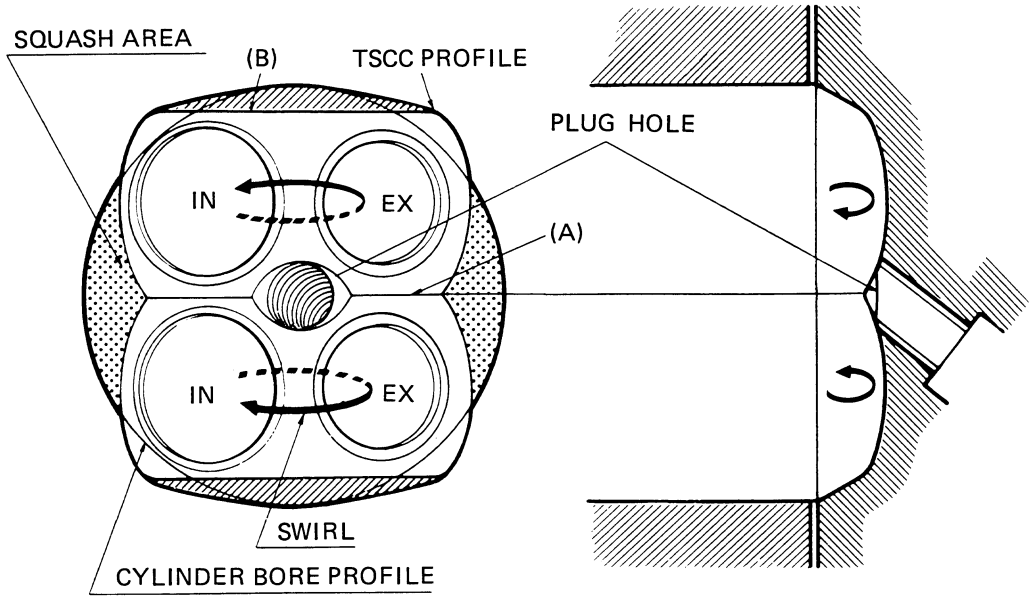
To further aid burning efficiency, the spark plug is centrally located, the ideal location. This results in the shortest possible path for the flame to travel.



*U.S. PATENT NO. 3633577

The quick completion of burning results in more energy being developed while the piston is in position to transmit maximum power to the crankshaft.
High burning efficiency results in more power, improved throttle response at all rpm's, more complete combustion of the air/fuel mixture (cleaner combustion) and less chance of detonation.
Second, charging efficiency. The benefits of increased burning efficiency are further multiplied if intake charging efficiency is also increased. Basically, increasing the charging efficiency results in more fuel and air being drawn into the engine during each intake stroke. Thus, greater energy potential.
To achieve this, the four valve head was adopted. Two smaller diameter intake valve can flow more than one large valve. Additionally, two smaller valves run cooler due to increased valve seat area and two valve guides to increase heat transfer.





*U.S. PATENT NO. 3633577

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

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

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

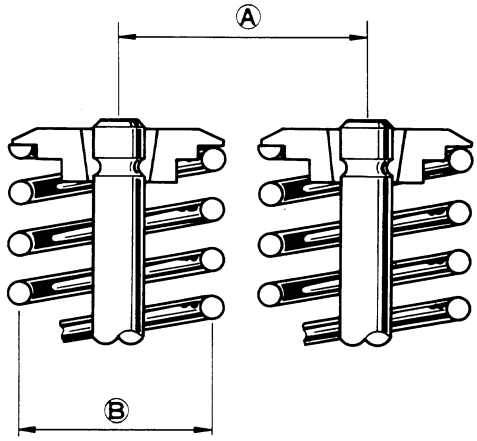
Increases burning efficiency. Increased charging efficiency. The result is more power throughout, from idle to redline. Throttle response is instant and clean. Displacement for displacement, no conventional engine, 2-valve or 4-valve, can compare. This could be enough, but SUZUKI went even further to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

Each rocker arm,when depressed by the cam lobe activates two valves at one time. With this system, engine performance is increased and tappets are not necessary. This system allows the use of larger valve springs which increases spring life by reducing stress. Valve adjustment is accomplished quickly and easily.

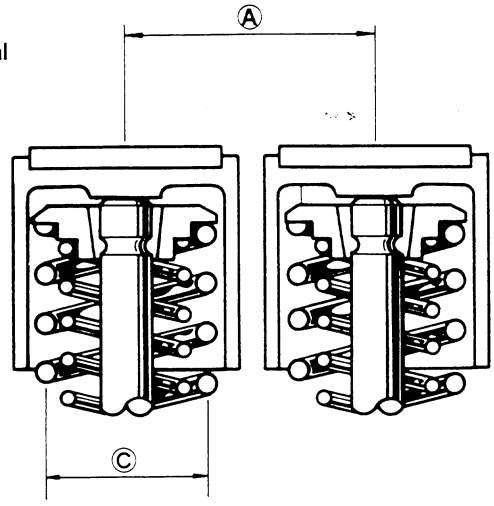
The patented TSCC combustion system combined with SUZUKI's high efficiency charging design results in power and throttle response found only in this new generation 4-stroke engine.

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

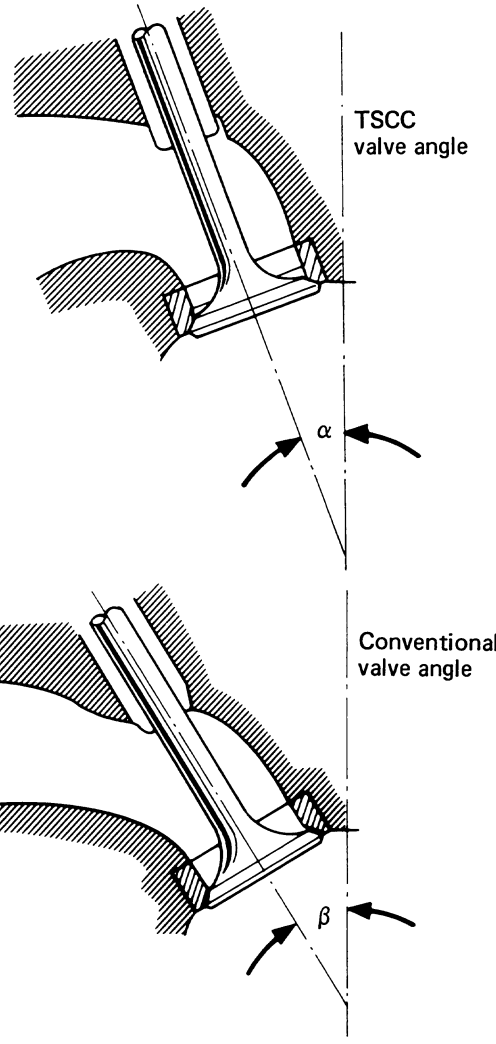
TSCC
4-valve



Conventional
4-valve

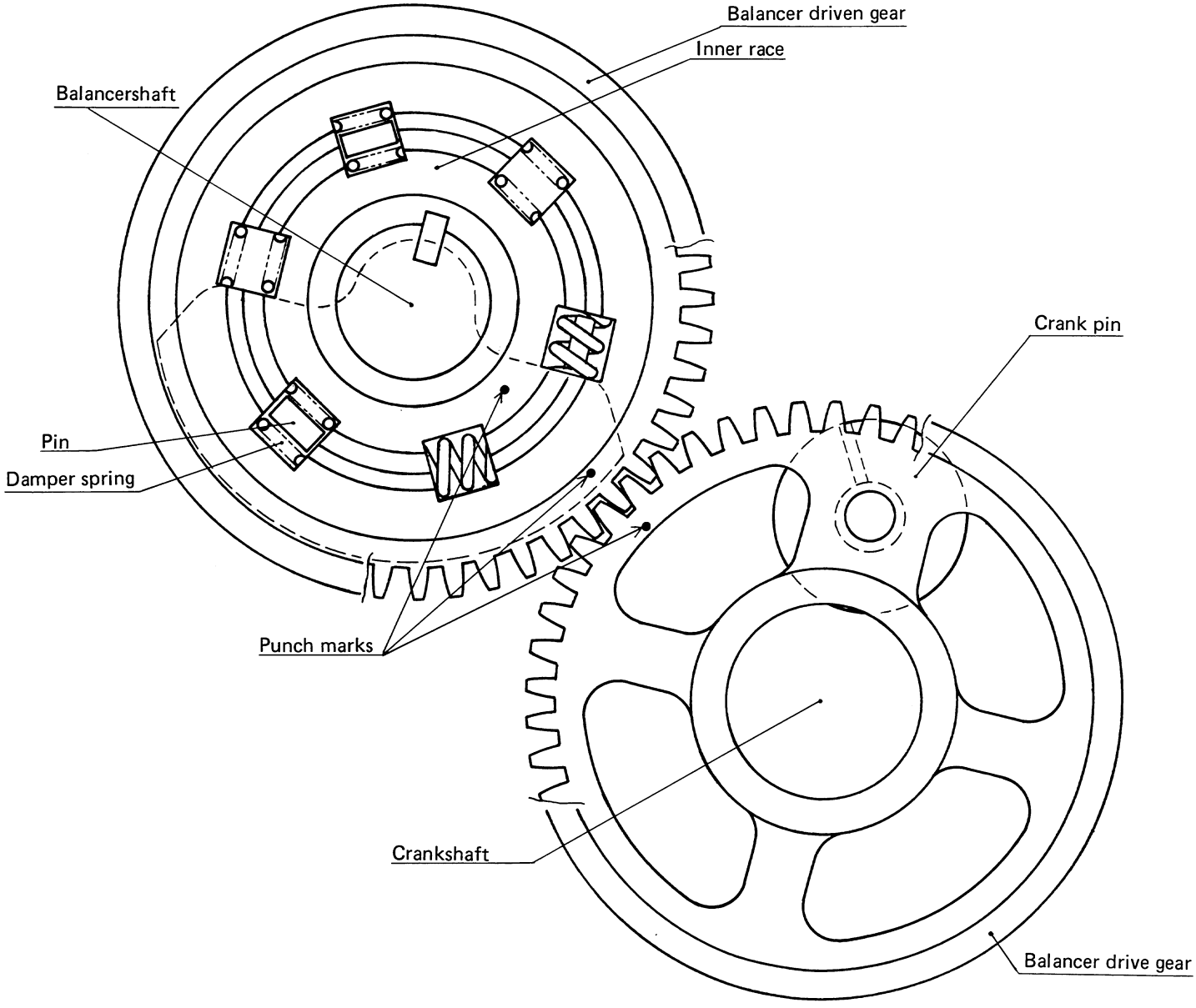


TSCC valve angle α is smaller than β.



*U.S. PATENT NO. 3633577

COUNTER BALAUCER

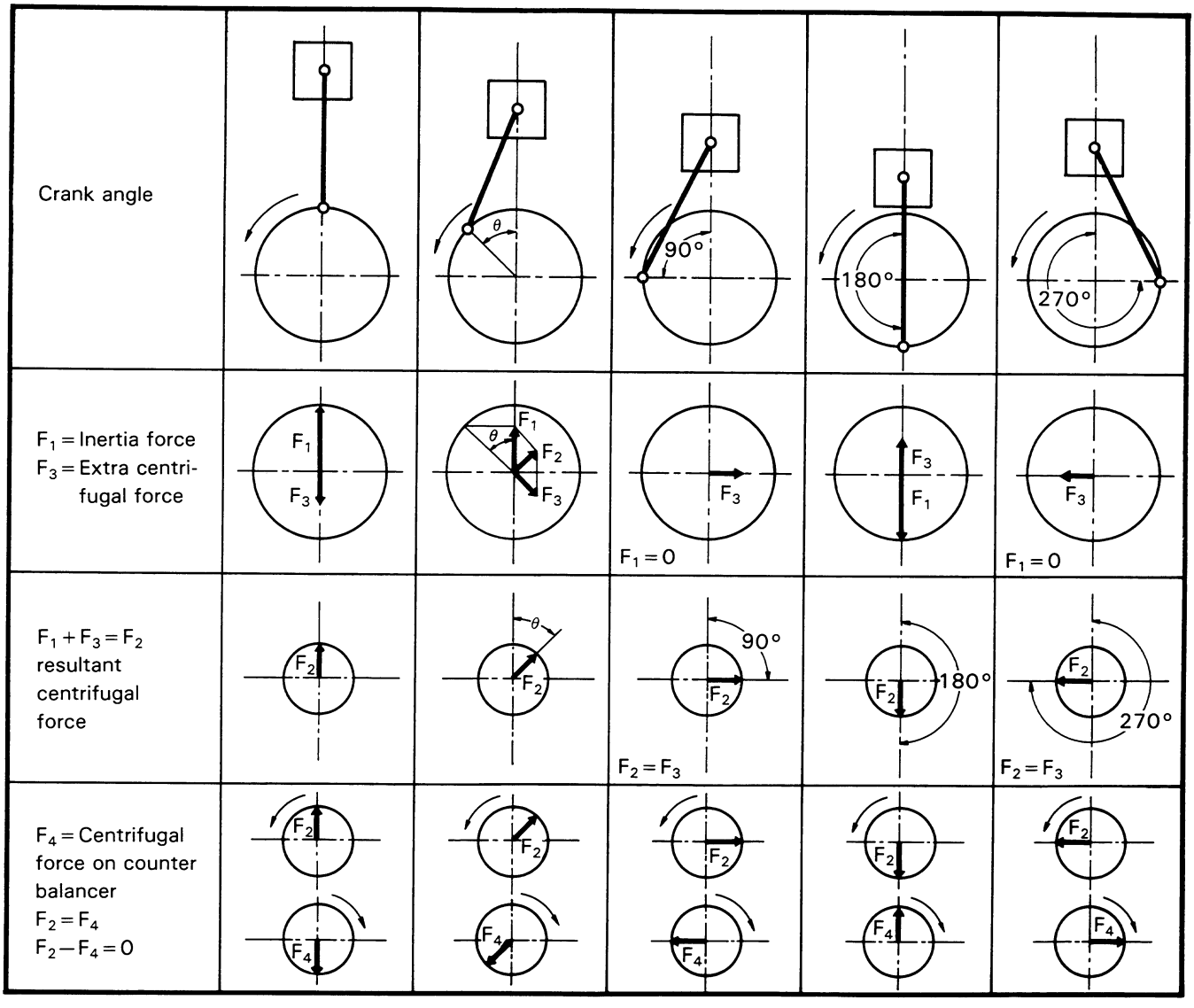


NOTE:
Align the three punch marks in line.

OPERATION

The mass (or weight) of the counter weight provided 180° on the opposite side of the crank pin is equivalent to approximately one half of the inertia force (F_1) that develops in the rising/falling directions of reciprocating engine. However, the counter weight creates a new extra centrifugal force (F_3). The inertia force (F_1) and extra centrifugal force (F_3) combine to become the resultant centrifugal force (F_2), which occurs at every crank angle. In order to cancel the resultant centrifugal force (F_2), the centrifugal force (F_4) of the counter balancer is needed.

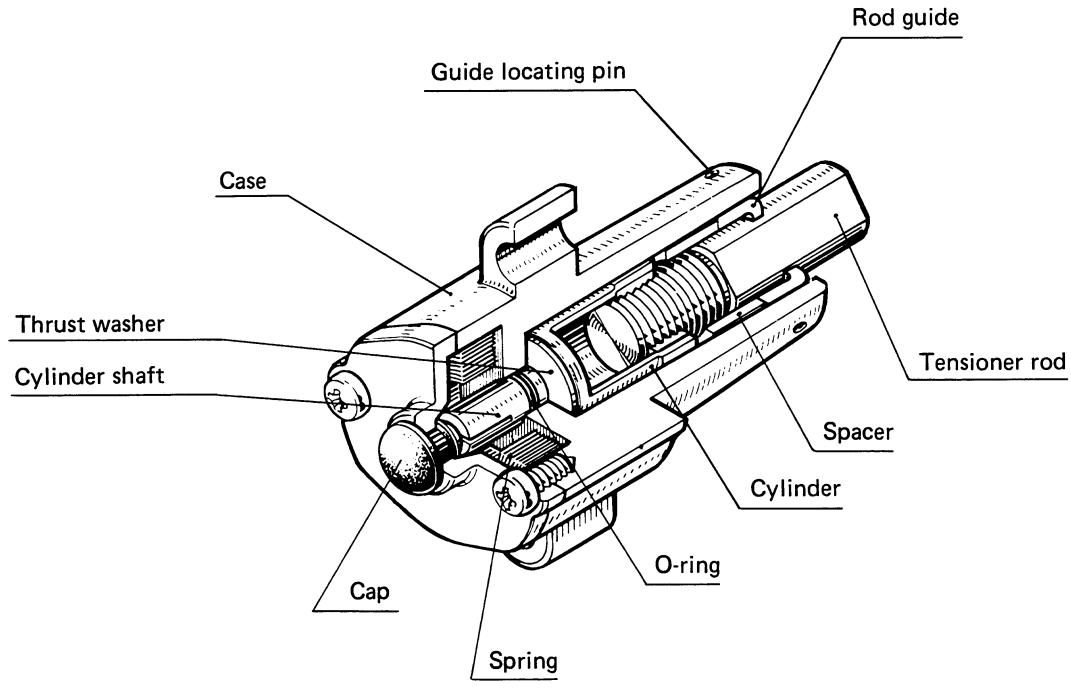
The foregoing explains how the inertia and centrifugal forces are reduced by the counter balancer.



AUTOMATIC CAM CHAIN TENSIONER

HOW THE CHAIN TENSIONER OPERATES

The spring attached to the cylinder shaft serves to revolve the cylinder. The threaded part of the inside of the cylinder is in contact with threaded part of the tensioner rod. Since the rod guide prevents the tensioner rod from revolving, as the cylinder turns, the tensioner rod is pushed out. The tensioner rod can be retracted by the following procedure: Remove the cap and turn the slotted end of the cylinder shaft with a screw driver in the clockwise direction.



FULL-FLOATING SUSPENSION SYSTEM

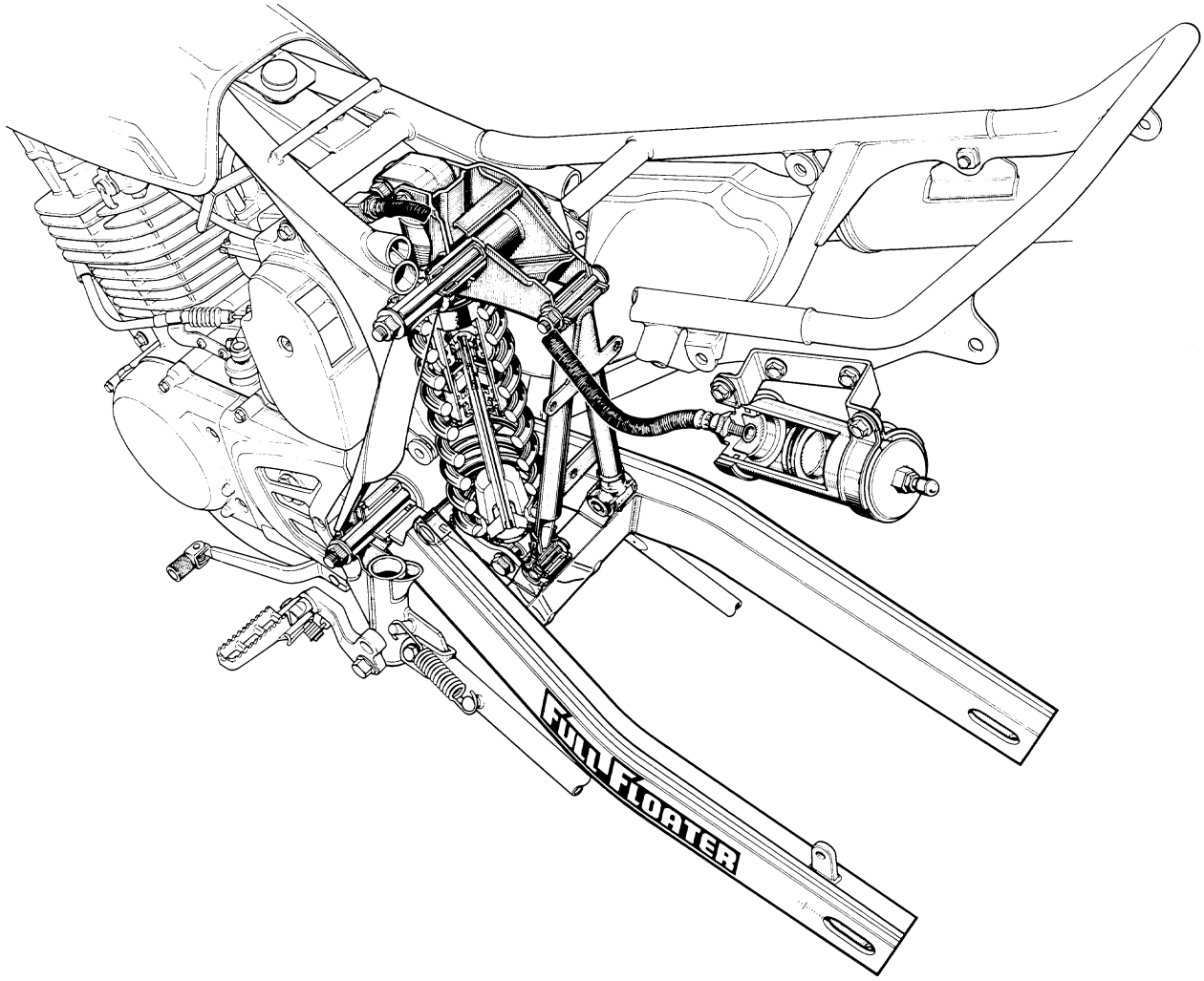
DESCRIPTION

Suzuki's new Full-Floating Suspension System achieves superior stability and handling while offering a wide degree of adjustability.

The heart of the system is a large, single shock absorber mounted vertically, near the center of gravity. The lower end of the shock absorber is mounted directly to the swingarm and the upper end is attached by rod and link to the swingarm. Thus, when the rear suspension responds to a bump, the shock absorber is compressed from each "floating" end. The vertical position of the shock absorber reduces friction caused by side pressure.

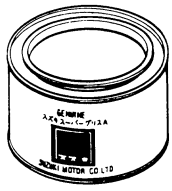
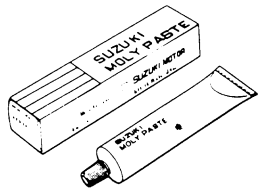
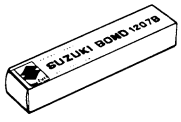
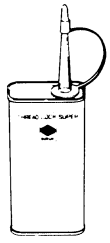
The shock absorber itself features a remote reservoir for stable performance, 4-way adjustable rebound damping and infinitely variable spring preload adjustment.

The concentration of the rear suspensions' mass near the chassis' center of gravity, the vertical mounting of the shock absorber, the reduction of unspring weight and the wide range of adjustability allow the rear wheel to follow the terrain precisely. The result is a stable ride, precise handling, and the ability to apply the engine's power to the ground more consistantly.



SPECIAL MATERIALS

The materials listed below are needed for maintenance work on the DR250 and should be kept on hand for ready use. These items supplement such standard materials as cleaning fluids, lubricants, emery cloth and the like. How to use them and where to use them are described in the text of this manual.

Material	Part	Page	Part	Page
 SUZUKI SUPER GREASE "A" 99000-25030	• Oil seals	3-52 3-58 6-7	• Wheel bearings	6-6 6-28
	• Throttle grip	2-2	• Front and rear brake cams	6-7 6-29
	• Gearshift lever and shaft			
	• Trip meter cable	2-2	• Brake pedal shaft	2-2
	• Rear shock absorber upper and lower bushings	6-40	• Steering stem bearings	6-20
	• Rear shock absorber spacer	6-44	• Trip meter drive gear	6-7
	• Rear cushion lever bearing	6-40		
	• Rear cushion rod upper bushing	6-40		
	• Rear cushion rod lower bushing	6-40		
 SUZUKI MOLY PASTE 99000-25140	• Valve stem	3-27		
	• Camshaft journal	3-30		
	• Rocker arm shaft	3-30		
	• Piston pin	3-26		
	• De-compression shaft	3-31		
	• Throttle valve joint	4-8		
 SUZUKI BOND No. 1207B 99104-31140	• Mating surfaces of left and right crankcase	3-52		
	• Cylinder head cover	2-3 3-31		
	• Front fork damper rod bolt	6-13		
 THREAD LOCK SUPER "1303" 99000-32030	• Cam sprocket bolts	3-29		
	• Magneto rotor nut	3-58		
 THREAD LOCK CEMENT 99000-32040	• Front fork damper rod bolts	6-13		

Material	Part	Page	Part	Page
 THREAD LOCK "1342" 99000-32050	• Magneto stator securing screws • Gearshift cam guide and pawl screws • Countershaft bearing retainer screws • Engine oil pump mounting screws	5-3 3-53 3-47 3-54		

PRECAUTIONS AND GENERAL INSTRUCTIONS

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

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

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

- Tighten bolts and nuts from the ones of larger diameter to those of smaller diameter, and from inside to out-side diagonally, with specified tightening torque.
- Use special tools where specified.
- Use specified genuine parts and recommended oils.
- When more than 2 persons perform work 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.

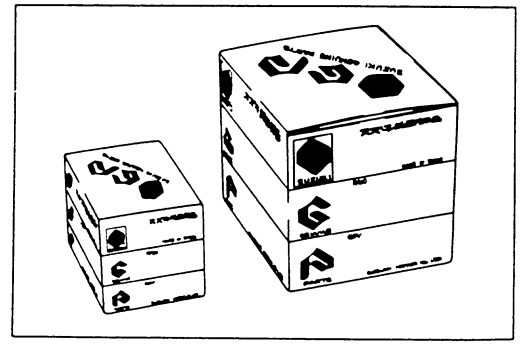
WARNING..... **The personal safety of the rider or bystanders may be involved. Disregarding this information could result in personal injury.**

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

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

REPLACEMENT PARTS

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



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

SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2 115 mm (83.3 in)
Overall width	860 mm (33.9 in)
Overall height	1 250 mm (49.2 in)
Wheelbase	1 420 mm (55.9 in)
Ground clearance	320 mm (12.6 in)
Dry mass	113 kg (249 lbs)

ENGINE

Type	Four-stroke, air-cooled, OHC
Number of cylinders	1
Bore	72.0 mm (2.834 in)
Stroke	61.2 mm (2.409 in)
Piston displacement	249 cm^3 (15.2 cu. in)
Compression ratio	8.9 : 1
Carburetor	MIKUNI VM28SS, single
Air cleaner	Polyurethane foam element
Starter system	Primary kick
Lubrication system	Wet sump

TRANSMISSION

Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction	3.238 (68/21)
Final reduction	3.230 (42/13)
Gear ratios, Low	2.636 (29/11)
2nd	1.750 (28/16)
3rd	1.315 (25/19)
4th	1.000 (20/20)
Top	0.818 (18/22)
Drive chain	DAIDO D.I.D.520DS 104 links

ELECTRICAL

Ignition type	SUZUKI "PEI"
Ignition timing	10° B.T.D.C. below 1 700 r/min and 35° B.T.D.C. above 3 000 r/min
Spark plug	NGK D8EA or NIPPON DENSO X24ES-U
Headlight	6V 15/15W
Taillight	6V 5W

CHASSIS

Front suspension	Telescopic, pneumatic/coil spring, oil dampened
Rear suspension	Full-floating suspension system
Steering angle	45° (Right & Left)
Caster	65°50′
Trail	117 mm (4.61 in)
Turning radius	2.1 m (6.9 ft)
Front brake	Internal expanding
Rear brake	Internal expanding
Front tire size	3.00-21 4PR
Rear tire size	5.10-17 4PR

CAPACITIES

Fuel tank including reserve	9.5 L (2.5 US gal)
reserve	1.0 L (1.1 US qt)
Engine oil	1.2 L (1.3 US qt)
Front fork oil	298 ml (10.1 US oz)

** The specifications subject to change without notice.

PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

CONTENTS

PERIODIC MAINTENANCE SCHEDULE

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

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

PERIODIC MAINTENANCE CHART

ENGINE AND CHASSIS

Item \ Interval	Initial 5 Hrs	Every 30 Hrs	Every 60 Hrs
Cylinder head nuts and exhaust pipe bolts	T	T	–
Fuel line	I	I	–
	Replace every four years		
Fuel strainer	–	–	C
Air cleaner	Clean and oil each time motorcycle is ridden		
Spark plug	–	C	R
Valve clearance	I	I	–
Engine oil	R	R	–
Oil sump filter	–	–	C
Engine oil filter	-	R	–
Engine idle speed	A	A	–
Clutch cable adjustment	A	A	–
Brakes	A	A	–
Drive chain and guide rollers	Clean, oil, and inspect each time motorcycle is ridden		
Tires and spokes	Check tire pressure and tighten spoke nipple each time motorcycle is ridden		
Steering	I	–	I
Chassis bolts and nuts	T	T	–
Engine mounting bolts	T	T	–

Note: T = Tighten, A = Adjust, I = Inspect, R = Replace, C = Clean.

* The reason for this is that the DR250 is an OFF-ROAD type and does not come within the scope of the EPA regulations.

LUBRICATION CHART

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

Item \ Interval	Initial and every 30 Hrs	Every 60 Hrs
Throttle cable	Motor oil	–
Throttle grip	–	Grease
Clutch cable	Motor oil	–
De-compression cable	Motor oil	–
Brake cable	Motor oil	–
Trip meter cable	–	Grease
Drive chain	Chain lube or gear oil SAE 90 each time motorcycle is ridden	
Brake pedal shaft	Grease or oil	–
Brake cam shaft	–	Grease
Steering stem bearing	Grease every 2 years	
Bushing, spacer and dust seal of full-floating suspension	Grease	–

*** Lubricate exposed parts which are subject to rust, with a rust preventative spray whenever the motorcycle has been operated under wet or rainy conditons. If the spray is unavailable, use either motor oil or grease.**

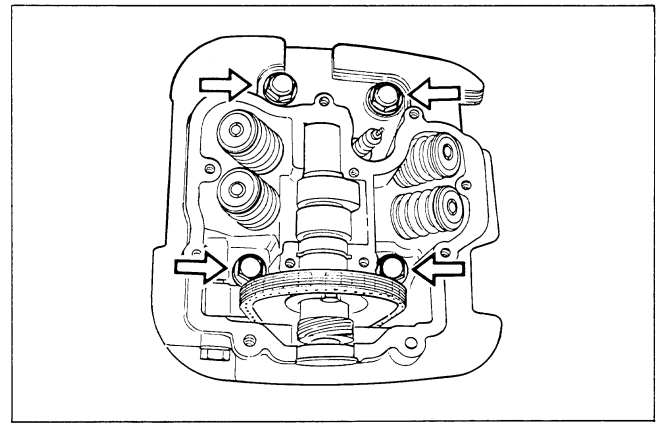
*** Before lubricating each part, clean off any rusty spots and wipe off any grease, oil, dirt or grime.**

WARNING:

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

MAINTENANCE PROCEDURES

This section describes the service procedures for each section of Periodic Maintenance.

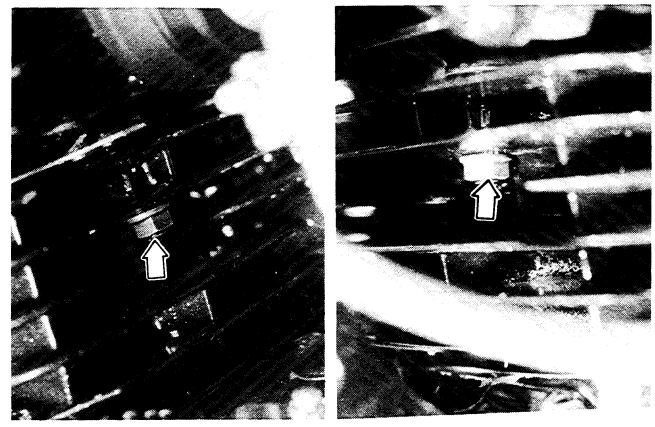


CYLINDER HEAD NUTS, CYLINDER NUTS, EXHAUST PIPE BOLTS

Tighten Initially at 5 Hrs and Every 30 Hrs thereafter.

Cylinder head nuts

- Remove the fuel tank and seat. (Refer to page 3-2)
- Remove the cylinder head cover. (Refer to page 3-7)
- Tighten the four 10-mm nuts and two 6-mm nuts to the specified torque with a torque wrench, when engine is cold.

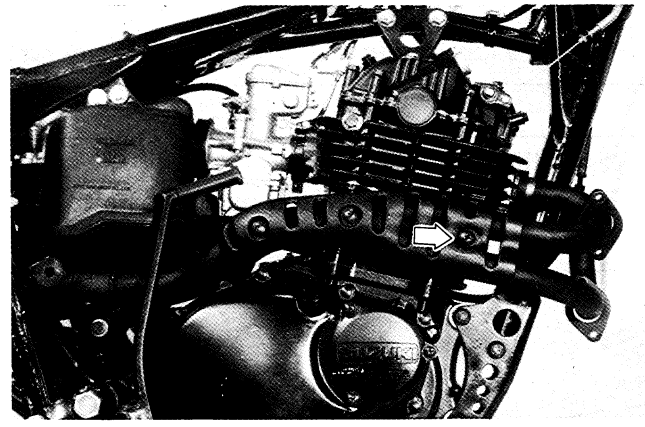


Tightening torque

Tightening torque	10 mm	35 – 40 N·m (3.5 – 4.0 kg-m) (25.5 – 29.0 lb-ft)
	6 mm	7 – 11 N·m (0.7 – 1.1 kg-m) (5.0 – 8.0 lb-ft)

- When installing cylinder head cover, apply Suzuki Bond No. 1207B to the mating surface. (Refer to page 3-31)

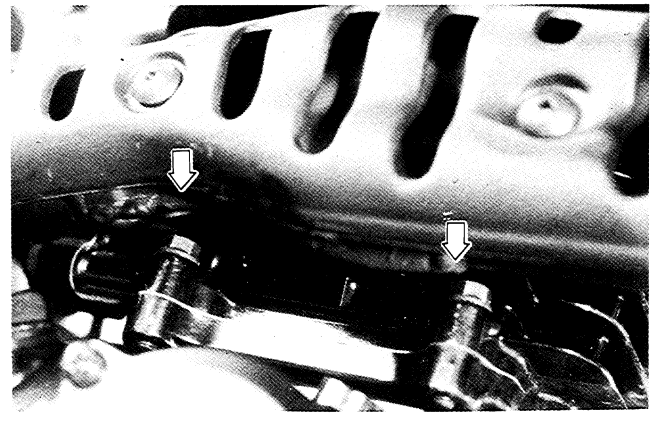
Suzuki Bond No. 1207B	99104-31140



Cylinder nuts

- Remove the four exhaust bolts and loosen the muffler clamp bolt.
- Slide the exhaust pipe forward.
- Tighten the two 6 mm nuts to the specified torque.

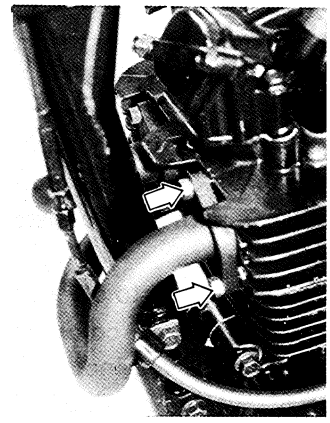
Tightening torque	7 – 11 N·m (0.7 – 1.1 kg-m) (5.0 – 8.0 lb-ft)

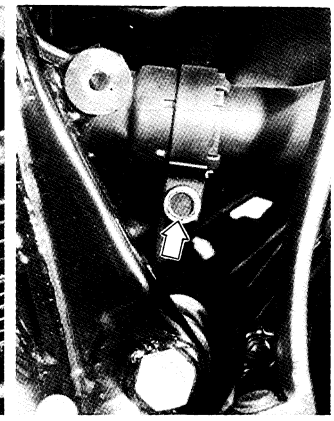


Exhaust pipe bolts and muffler clamp bolt
Tighten the exhaust pipe bolts and muffler clamp bolt to the specified torque.

Tightening torque

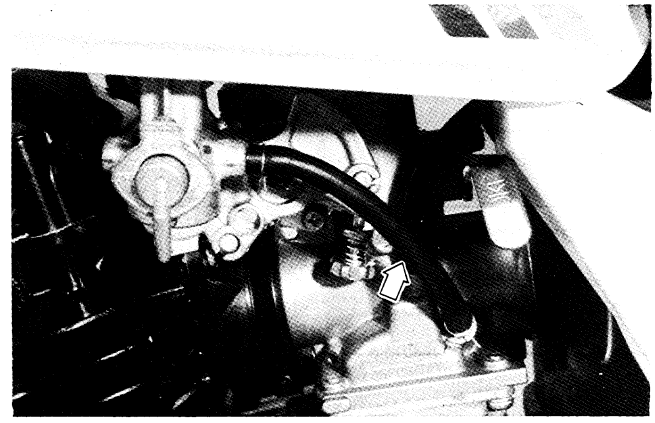
Exhaust pipe bolts	9 – 12 N·m (0.9 – 1.2 kg-m) (6.5 – 8.5 lb-ft)





FUEL LINE

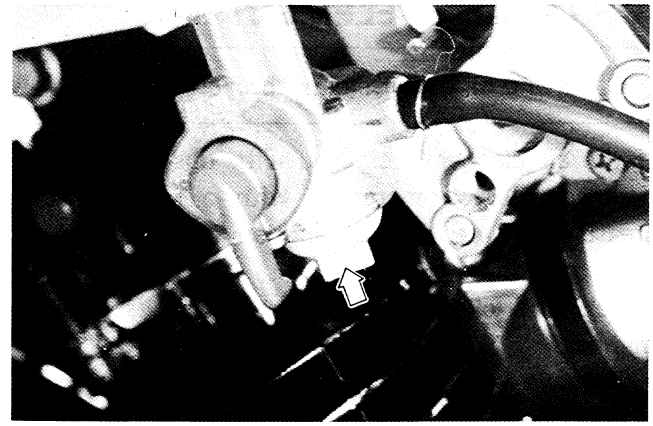
Inspect Initial 5 Hrs and Every 30 Hrs.
Replace Every four years.

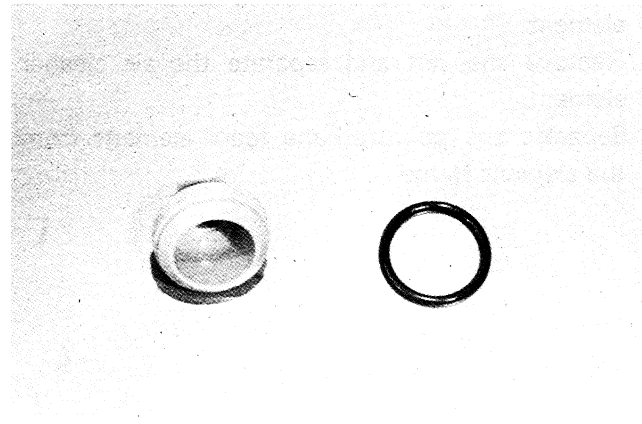


FUEL STRAINER

Clean Every 60 Hrs

If the fuel strainer is dirty with sediment, fuel will not flow smoothly and loss in engine power may result.
Clean the strainer cup with non-flammable cleaning solvent.





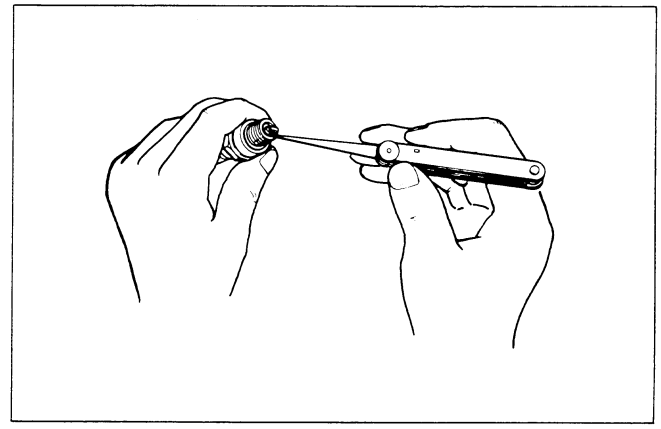
SPARK PLUG

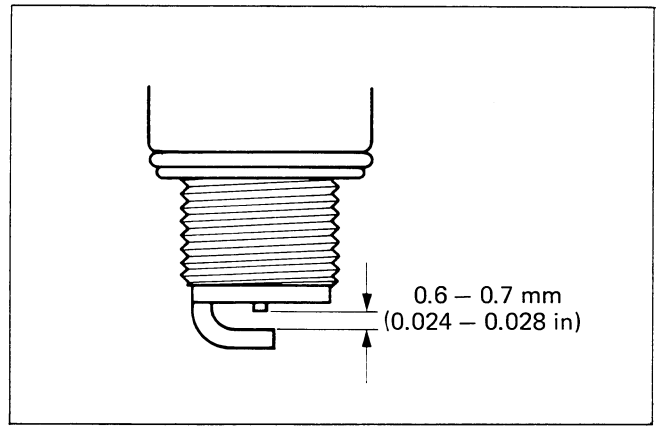
Clean Every 30 Hrs and Replace Every 60 Hrs

Remove the carbon deposits with a wire or pin and adjust the spark plug gap to 0.6 – 0.7 mm (0.024 – 0.028 in), measuring with a thickness gauge.

When removing carbon deposits, be sure to observe the appearance of the plug, noting the color of the carbon deposits. The color observed indicates whether the standard plug is suitable or not. If the standard plug is apt to get wet, a hotter plug should be used. If the standard plug is apt to overheat (porcelain is whitish in appearance), replace with a colder one.

Hot type spark plug	..... NGK D7EA or NIPPON DENSO X22ES-U
Standard spark plug	..... NGK D8EA or NIPPON DENSO X24ES-U
Cold type spark plug	..... NGK D9EA or NIPPON DENSO X27ES-U





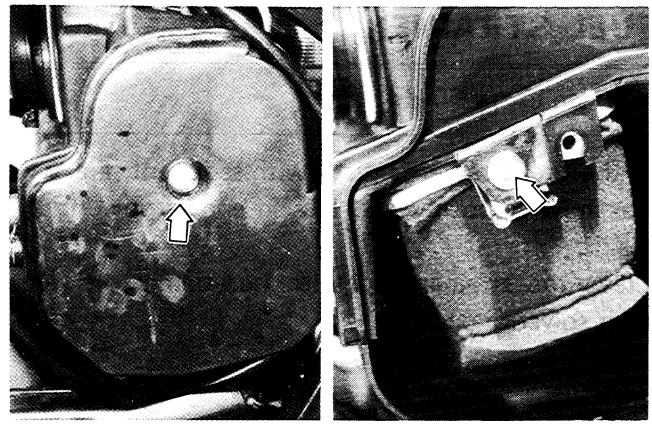
AIR CLEANER ELEMENT

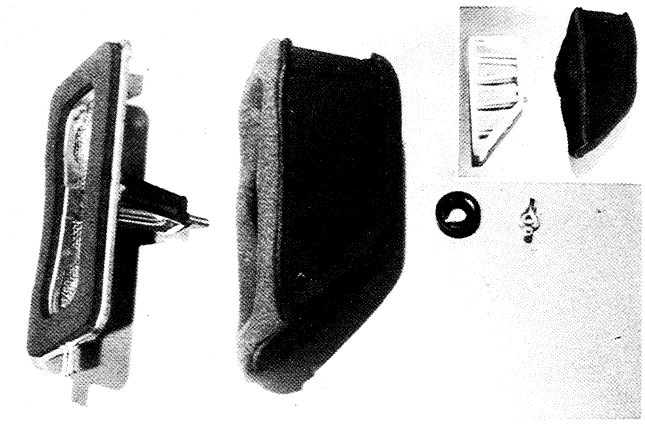
Clean and oil each time motorcycle is ridden

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

Check and clean the element in the following manner.

- Remove the left frame cover and air cleaner case cover.
- Remove the screw and take out the air cleaner element.
- Remove the nut and separate the air cleaner element.
- Separate the polyurethane foam element from the element frame.

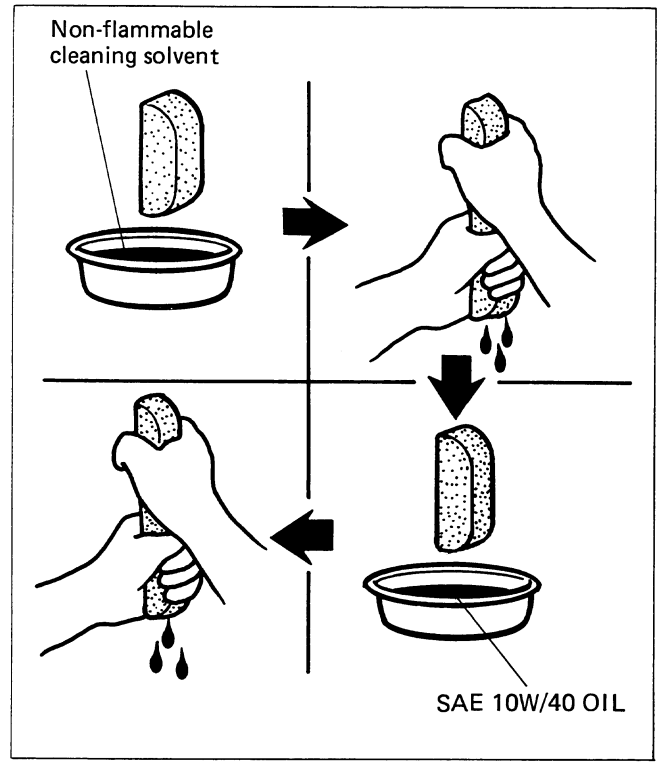




- Fill a washing pan of a proper size with non-flammable cleaning solvent. Immerse the element in the cleaning solvent and wash it clean.
- Squeeze the cleaning solvent out of the washed element by pressing it between the palms of both hands.
- Immerse the element in motor oil, and squeeze the oil out of the element leaving it slightly wet with oil.

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

CAUTION:
Inspect the element carefully for rips, torn seams, etc. If any damage is noted, replace the element.



VALVE CLEARANCE

Inspect Initial 5 Hrs and Every 30 Hrs

Excessive valve clearance results in valve noise and insufficient valve clearance results in valve damage and reduced power. At the distances indicated above, check and adjust the clearance to the following specification.

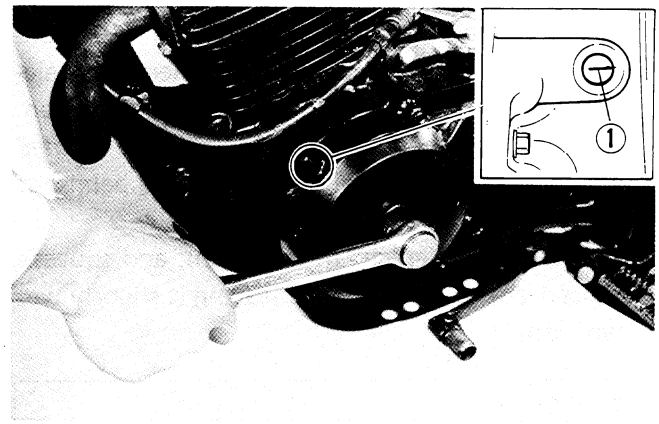
NOTE:
Valve clearance is to be checked when the engine is cold.
Both the intake and exhaust valves must be checked and adjusted when the piston is at Top–Dead–Center (TDC) of the compression stroke.

Valve clearance specifications

IN.	0.03 – 0.08 mm (0.001 – 0.003 in)
EX.	0.08 – 0.13 mm (0.003 – 0.005 in)

The procedure for adjusting the valve clearance is as follows:

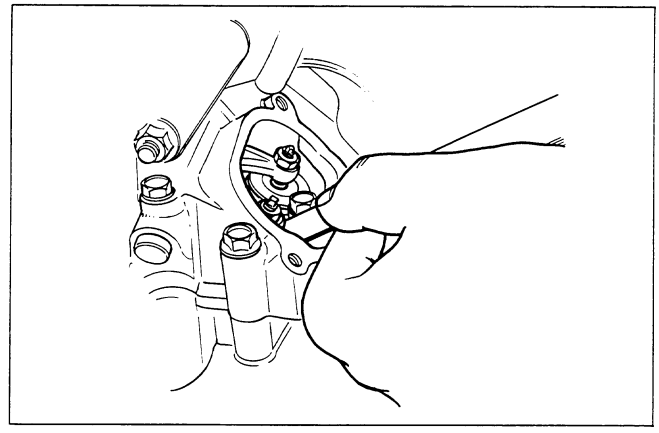
- Remove the seat and fuel tank.
- Remove spark plug, valve inspection caps, and valve timing inspection plug.
- Remove the magneto cover cap and rotate the magneto rotor with the 22-mm box wrench to set the piston at (TDC) of the compression stroke.
  (Rotate the rotor until the "T" line ① on the rotor is aligned with the center of hole on the crankcase.)
- Insert the thickness gauge to the valve stem end and the adjusting screw on the rocker arm.



Thickness gauge	09900 – 20803

Valve clearance specifications

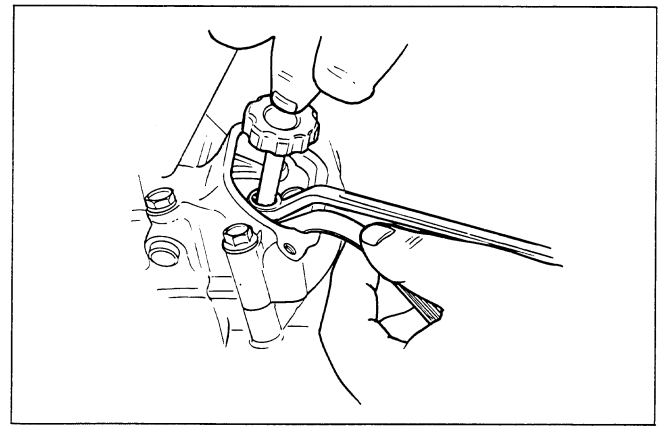
IN.	0.03 – 0.08 mm (0.001 – 0.003 in)
EX.	0.08 – 0.13 mm (0.003 – 0.005 in)



- If clearance is off the specification, bring it into the specified range by using the special tool.

Tappet adjust driver	09917 – 14910

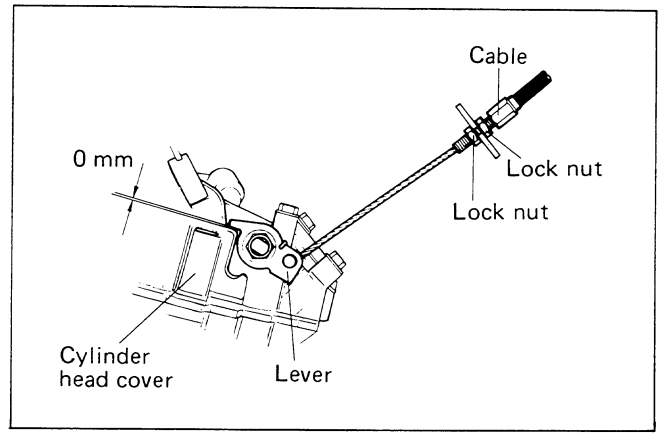
CAUTION.
Both of the valve clearances, right and left, should be as closely set as possible.



- Reinstall spark plug, valve inspection caps, valve timing inspection plug and magneto cover cap.

De-compression cable

- After adjusting the valve clearance, adjust the de-compression cable.
- With the de-compression lever squeezed.
- Loosen and adjust the two adjuster lock nuts so that the clearance between the lever on the engine and upper cylinder head cover becomes zero as indicated in Fig.
- After adjusting the cable correctly, tighten the two lock nuts.

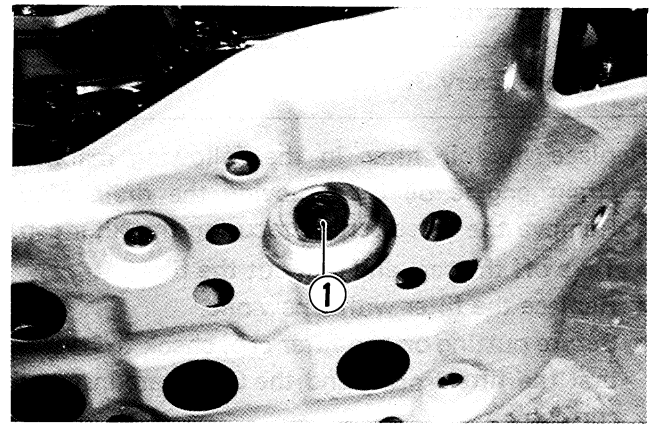


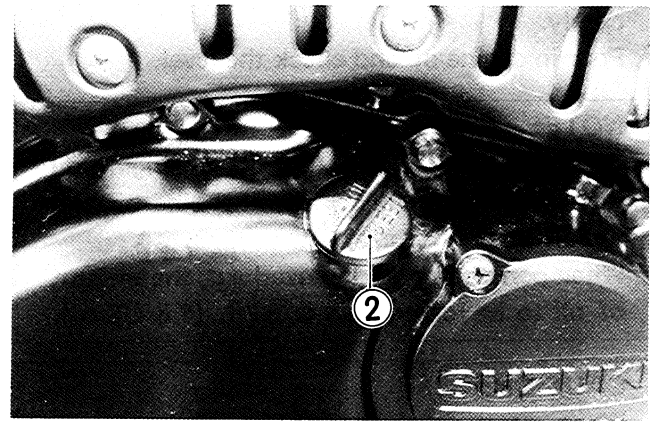
ENGINE OIL

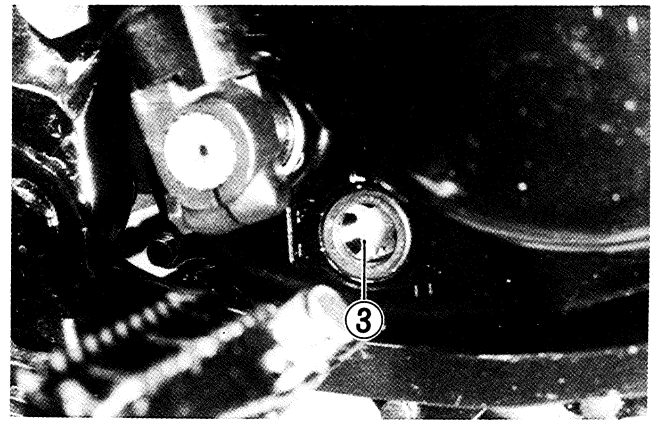
Replace Initial 5 Hrs and Every 30 Hrs (change)

The oil should be changed with the engine hot. The procedure is as follows:

- Support the motorcycle in an upright position by placing a jack or block on the frame under the engine. Both wheels must remain on the ground for the oil to drain completely.
- Drain the oil by removing the drain plug ① and filler cap ②.
- Fit drain plug ① securely and add fresh oil through the filler. The engine will hold about 1.2 L (1.3 US qt) of oil.
  Use 10W/40 viscosity of oil under API classification of SE or SF.
- Start up the engine and allow it to run for several seconds at idling speed.
- Shut down the engine and wait about one minute. Then check the oil level in the oil level window ③. The motorcycle must be in a level, upright position for accurate measurement. If the level is below the "F" mark, add oil until the level reaches the "F" mark.



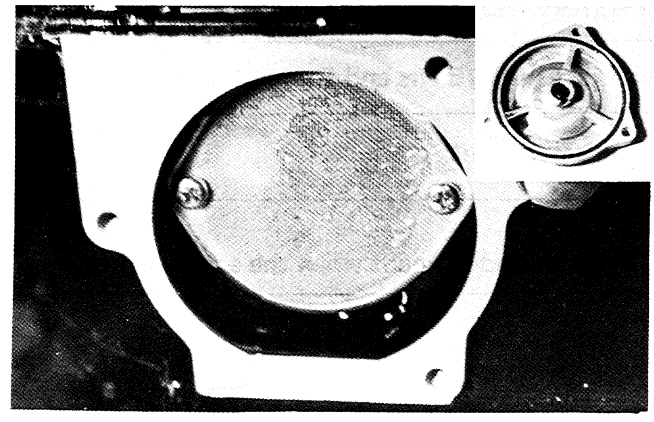




OIL SUMP FILTER

Clean Every 60 Hrs

Clean the sump filter screen to remove any foreign matter that may be collected there. Inspect the screen to insure that it is free of any sign of damage.



ENGINE OIL FILTER

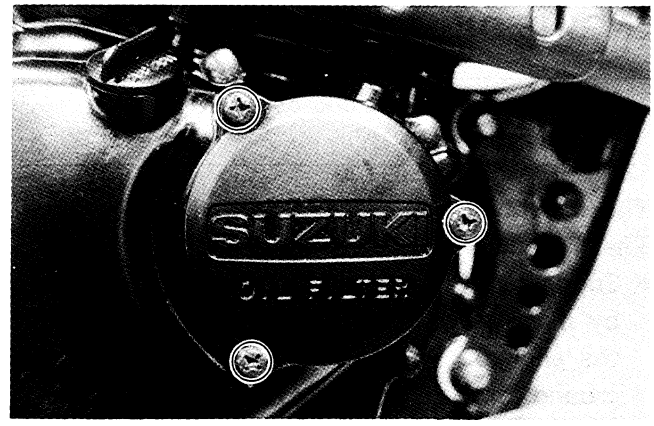
Replace Every 30 Hrs

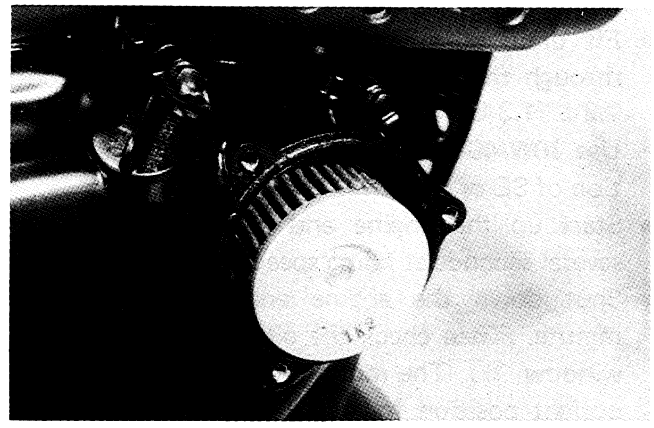
Replace the oil filter in the following manner:

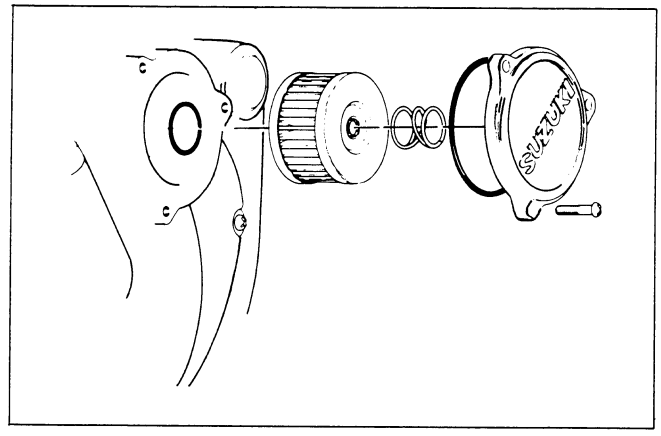
- Drain engine oil by removing the drain plug.
- Remove the three screws securing the filter cap.
- Take off the cap, and pull out the filter.
- Replace the filter with a new one.
- Before putting on the filter cap, check to be sure that the filter spring and the O-ring are installed correctly.
- Replace the filter cap and tighten the screws securely.
- Pour in engine oil and check the level.

NOTE:
Pour about 1.3 L (1.4 US qt) of engine oil into the engine only when changing oil and replacing oil filter at the same time.
When performing engine overhaul, the amount of oil to be replenished is 1.7 L (1.8 US qt).

CAUTION:
When reassembling the oil filter, make sure to check the oil filter installed as shown in illustration. If the filter is installed improperly, the serious engine damage may result.







ENGINE IDLE SPEED

Adjust Initial 5 Hrs and Every 30 Hrs

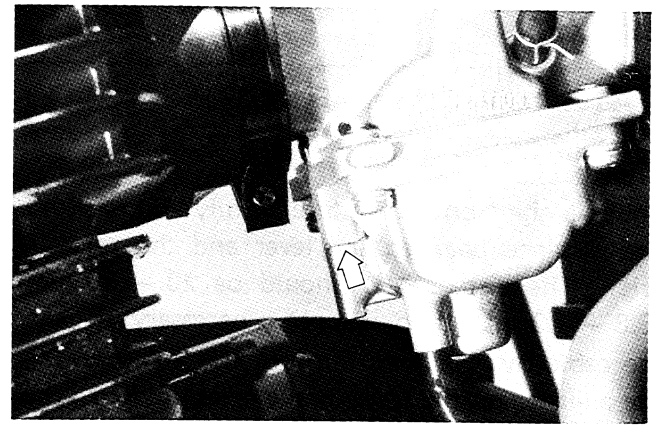
Idling adjustment

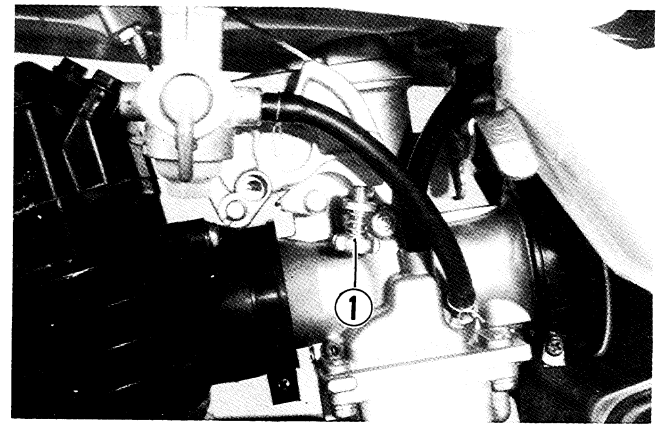
NOTE:
Make this adjustment when the engine is hot.

- Carefully turn in the pilot screw until it bottoms.
- From that position, turn out the pilot screw 1½ turn.

NOTE:
Be careful not to overtighten the screw.

- Connect a tachometer.
- Start up the engine and set its speed between 1 200 and 1 300 r/min by turning throttle stop screw ①.
- Turn in and out the pilot screw within ¼ turn from the standard setting. When the engine speed is at the highest possible level, the mixture is correct.
- After this adjustment, recheck the idling speed and adjust to between 1 200 and 1 300 r/min with throttle stop adjusting screw if necessary.
- Finally readjust the throttle cable play. (Refer to page 4-9).





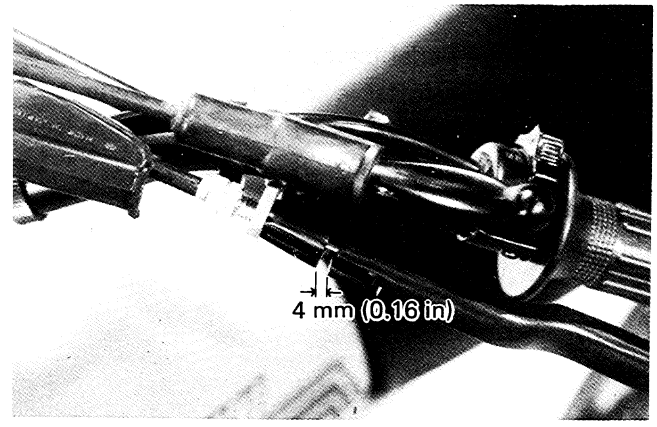
CLUTCH

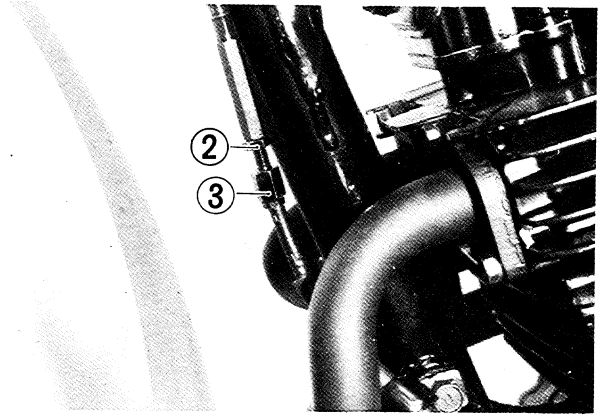
Adjust Initial 5 Hrs and Every 30 Hrs

Clutch play should be 4 mm (0.16 in) as measured at the clutch lever holder before the clutch begins to disengage. If the play in the clutch is incorrect, adjust it in the following way:

- Loosen the lock nut on the lever adjuster screw.
- Screw the adjuster on the clutch lever holder all the way in.
- Loosen clutch cable adjuster lock nut ②.
- Turn the clutch cable adjuster ③ in or out to acquire the specified play.
- Tighten lock nut while holding the adjuster in position.

The clutch cable should be lubricated with a light weight oil whenever it is adjusted.



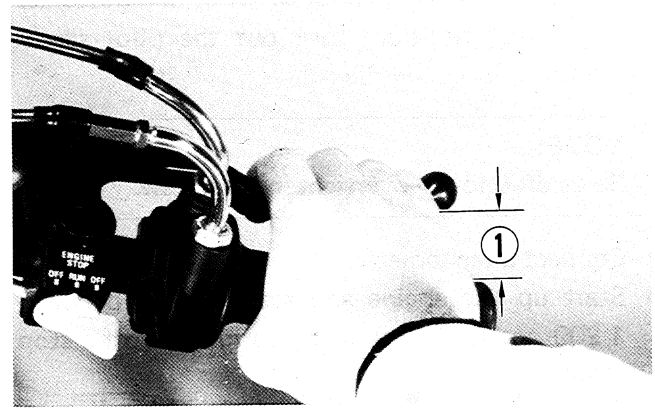


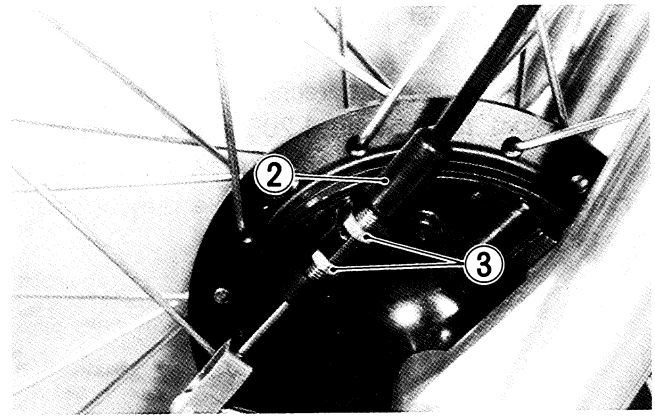
BRAKES

Adjust Initial 5 Hrs and Every 30 Hrs

Front brake

Squeeze the front brake lever firmly and measure the distance between the lever and the throttle grip. The distance ① should be 20 – 30 mm (0.8 – 1.2 in). If adjustment is necessary, slacken the cable by loosening the lock nut and screwing the adjuster on the front brake lever holder all the way in. Then loosen the lock nuts ③ and slide the front brake adjuster ② rising or falling to acquire the specified distance. While holding the adjuster in position, tighten the lock nuts.

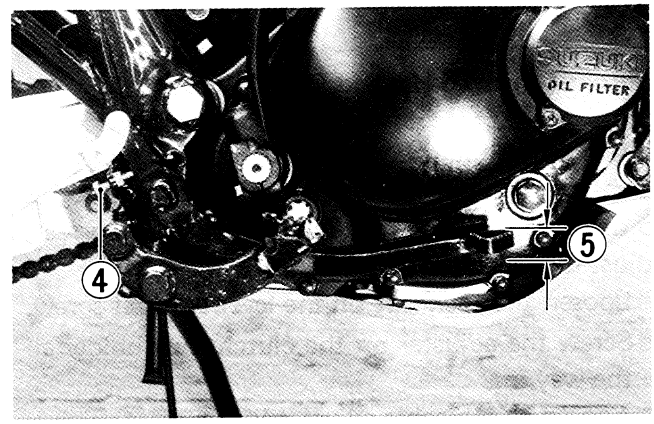


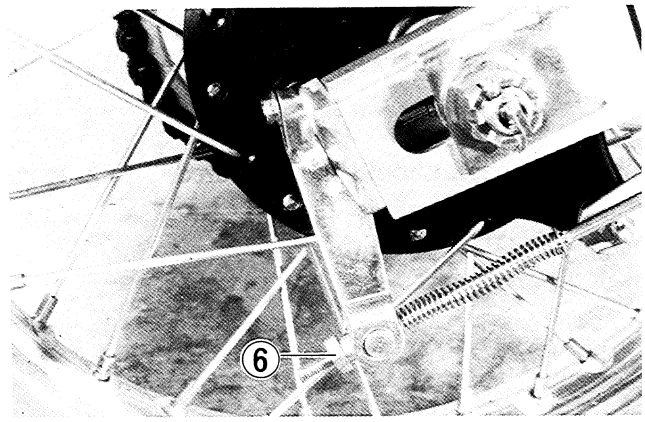


Rear brake

To adjust brake pedal travel, first set the pedal at a position for comfortable riding by turning the brake pedal stopper ④, and then adjust the free travel ⑤ to 20 – 30 mm (0.8 – 1.2 in).

If adjustment is necessary, turn the rear brake adjuster ⑥.

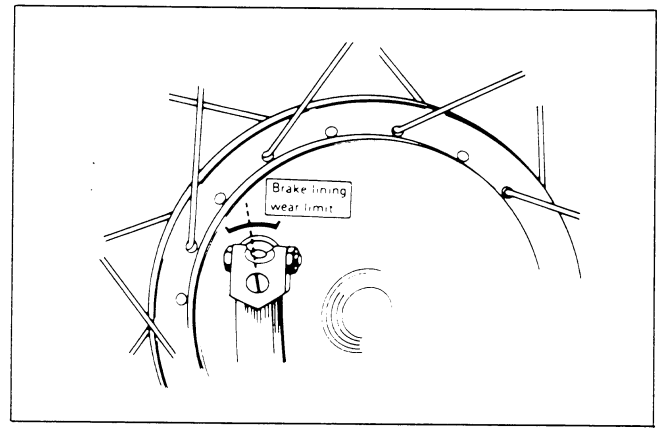




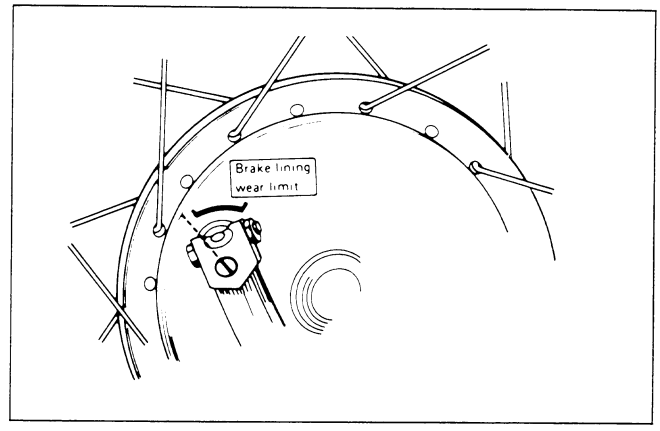
Brake lining wear limit

This motorcycle is equipped with brake lining wear limit indicators on both front and rear brakes. As shown in the illustration at right, at the condition of normal lining wear, an extended line from the index mark on the brake camshaft should be within the range embossed on the brake panel with the brake on. To check wear of the brake lining, follow the steps below.

- First check if the brake system is properly adjusted.
- While operating the brake, check to see that the extension line from the index mark is within the range on the brake panel.
- If the index mark is outside the range as shown in the illustration at right, the brake shoe assembly should be replaced to ensure safe operation.



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



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

DRIVE CHAIN AND GUIDE ROLLERS

Clean, oil, and inspect each time motorcycle is ridden.

Drive chain

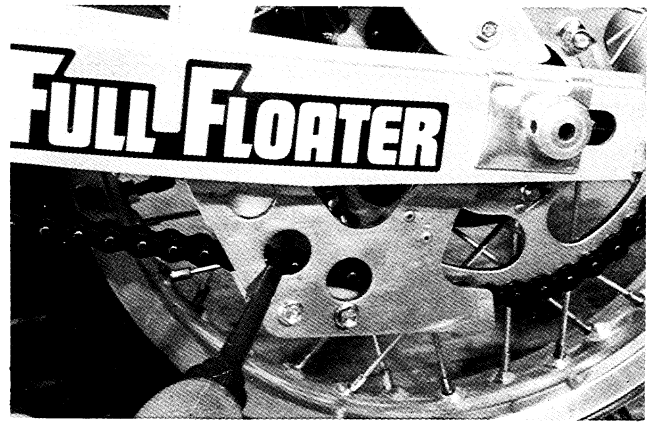
Visually inspect the drive chain for the below - listed possible malconditions. (Lift the rear wheel and place a jack or block under the engine, and turn the rear wheel slowly by hand, with the transmission in NEUTRAL.)

Inspect for:

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

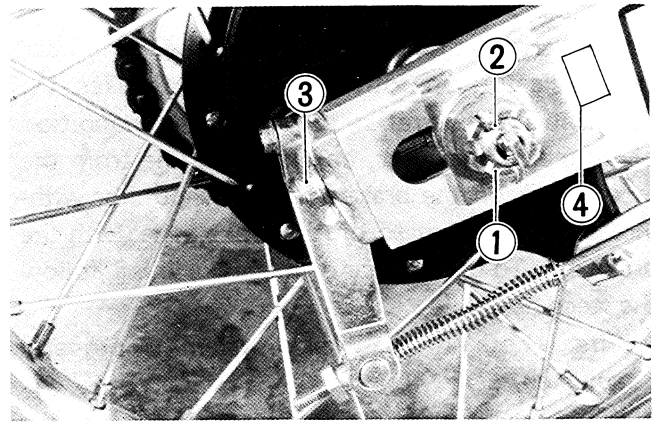
If any defects are found, the driven chain must be replaced.

- Wash the chain with kerosene. If the chain tends to rust faster, the interval must be shortened.
- After washing and drying the chain, lubricate it with chain lube or gear oil SAE90.



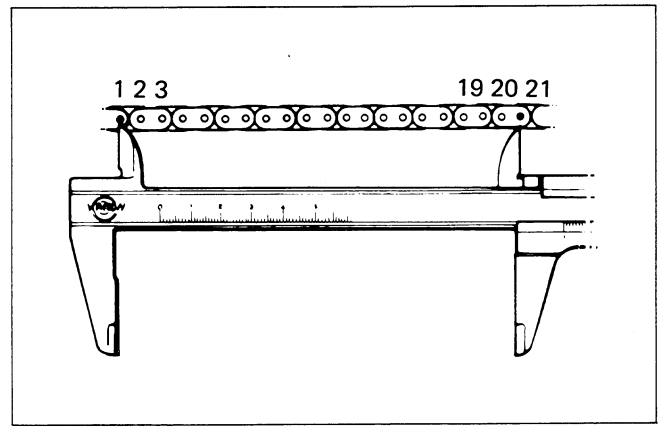
Check the drive chain for wear and adjust the chain tension as follows:

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

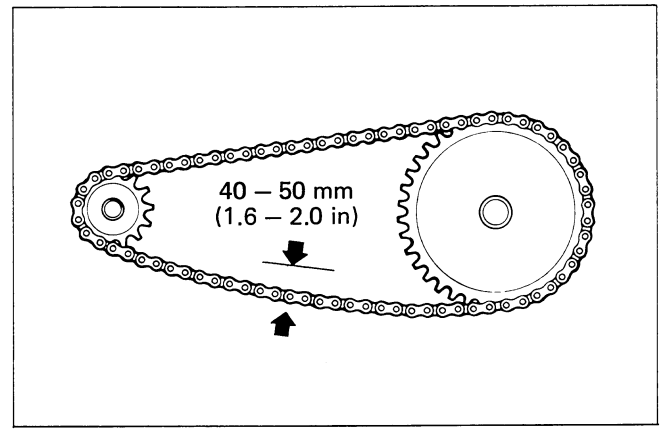


Chain wear

- Count out 21 pins on the chain and measure the distance between. If the distance exceeds 324.2 mm (12.76 in), the chain must be replaced.

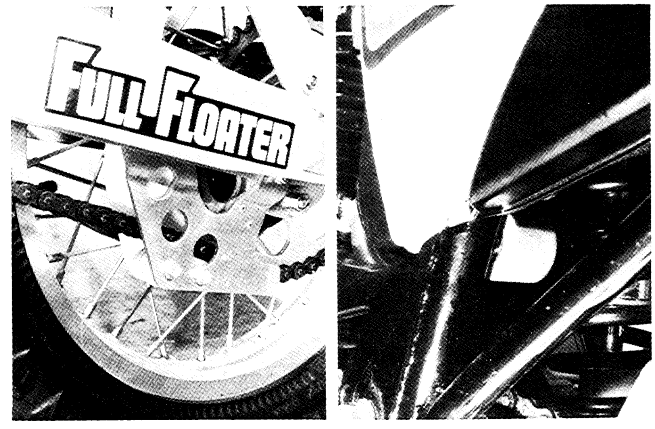


- Loosen the adjuster ③ until the chain has 40 – 50 mm (1.6 – 2.0 in) of sag at the middle between engine and rear sprockets.
  The mark ④ on both chain adjusters must be at the same position on the scale to ensure that the front and rear wheels are correctly aligned.
- After adjusting the drive chain, tighten the axle nut ① securely and lock with cotter pin ②. Always use a new cotter pin.



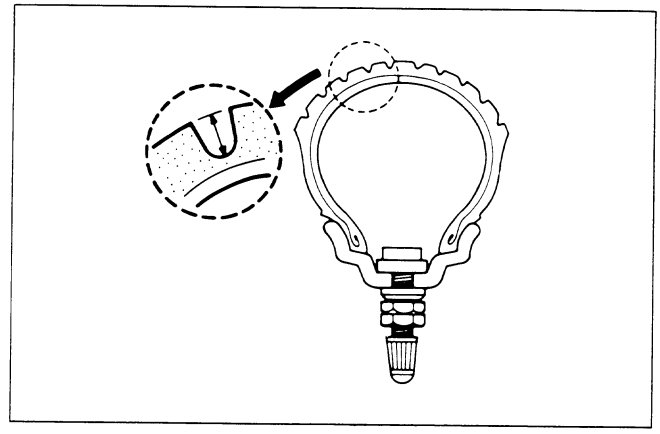
Guide rollers

Inspect the chain guide rollers for wear or damage. Replace any worn or damaged parts.



TIRES AND SPOKES

Check tire pressure and tighten each spoke nipple every time motorcycle is ridden.



Tire

Inspect the tires for wear and damage; and check the tire tread depth as shown. Replace a badly worn or damaged tire. A tire with its tread worn down to the limit (in terms of tread depth) must be replaced.

Tread depth service limit

Front Rear	4.0 mm (0.16 in)

Check the tire pressure, and examine the valve for evidence of air leakage.

COLD INFLATION TIRE PRESSURE	kPa	kg/cm²	psi
FRONT	100	1.00	14
REAR	100	1.00	14

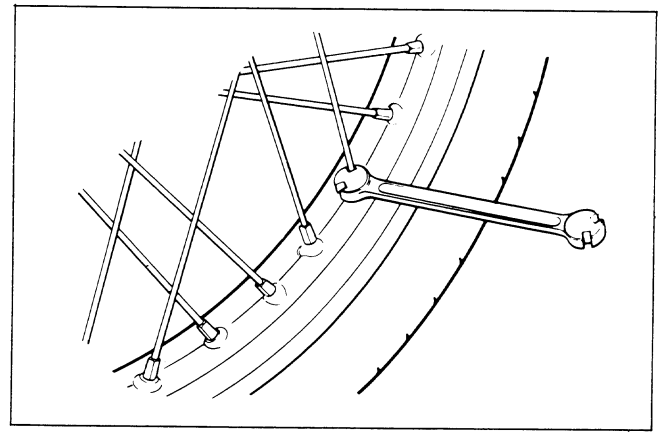
Spoke

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

Spoke nipple wrench	09940-60113

Tightening torque	4 – 5 N·m (0.4 – 0.5 kg-m) (3.0 – 3.5 lb-ft)

CAUTION:
Over or under-tightening may cause spoke breakage.

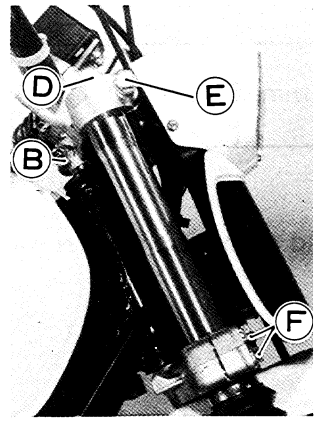


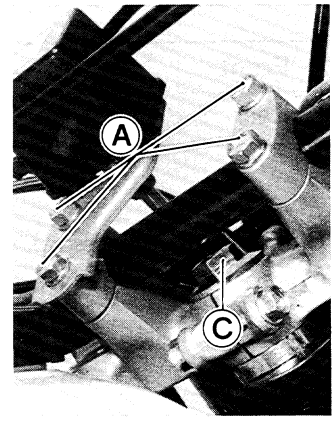
STEERING

Inspect Initial 5 Hrs and Every 60 Hrs

Steering stem bearings should be adjusted properly for smooth turning of the handlebars and safe running.
Steering which is too stiff prevents smooth movement of handlebars.
Steering which is too loose will cause vibration and damage to the steering bearings. Check to see that there is no play in the front fork attachment.

If the play is found, perform steering bearing adjustment as described in page 6-21 of this manual.





Tightening torque

ITEM	N·m	kg-m	lb-ft
Ⓐ Handlebars clamp bolts	12 – 20	1.2 – 2.0	8.5 – 14.5
Ⓑ Steering stem upper clamp bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
Ⓒ Steering stem head bolt	35 – 50	3.5 – 5.0	25.5 – 36.0
Ⓓ Front fork cap bolts	15 – 30	1.5 – 3.0	11.0 – 21.5
Ⓔ Front fork upper clamp bolt	20 – 30	2.0 – 3.0	14.5 – 21.5
Ⓕ Front fork lower clamp bolt	15 – 25	1.5 – 2.5	11.0 – 18.0

CHASSIS

Bolts and Nuts

ENGINE

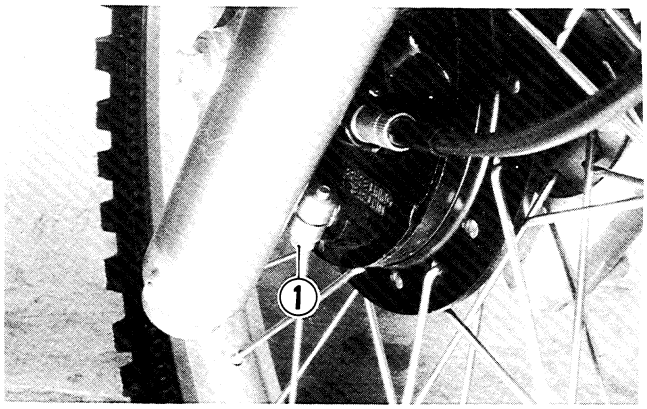
Mounting bolts

Tighten Initial 5 Hrs and Every 30 Hrs

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

Tightening torque

ITEM	N·m	kg-m	lb-ft
① Brake cam lever bolts (Front and Rear)	5 – 8	0.5 – 0.8	3.5 – 6.0
② Rear torque link bolts	10 – 15	1.0 – 1.5	7.0 – 11.0
③ Swing arm pivot nut	50 – 80	5.0 – 8.0	36.0 – 58.0
④ Front axle nut	36 – 52	3.6 – 5.2	26.0 – 37.5
⑤ Rear axle nut	50 – 80	5.0 – 8.0	36.0 – 58.0
⑥ Engine mount bolts	37 – 45	3.7 – 4.5	27.0 – 32.5
⑦ Rear shock absorber fitting nut	40 – 60	4.0 – 6.0	29.0 – 43.5
⑧ Rear cushion lever nut	45 – 70	4.5 – 7.0	32.5 – 50.5
⑨ Rear cushion rod upper nut	40 – 60	4.0 – 6.0	29.0 – 43.5
⑩ Rear cushion rod lower bolt	18 – 28	1.8 – 2.8	13.0 – 20.0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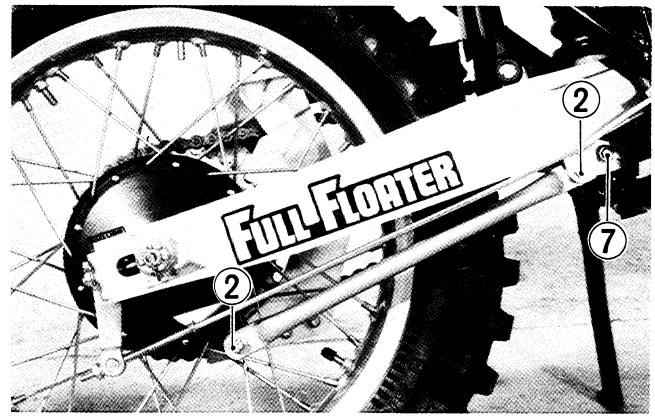
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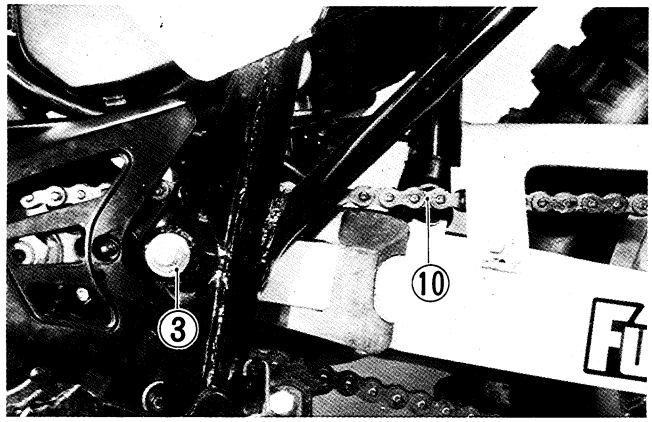
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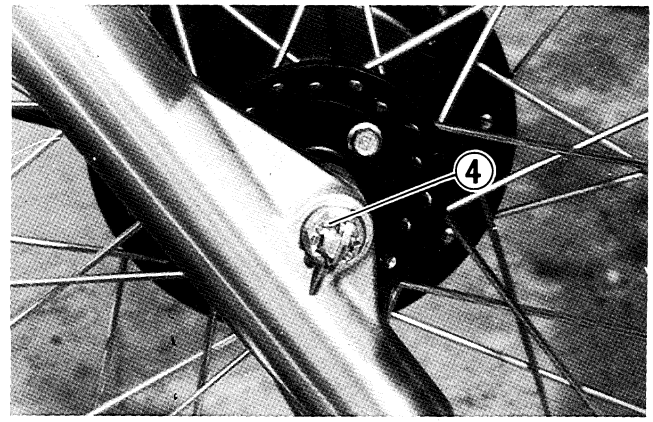
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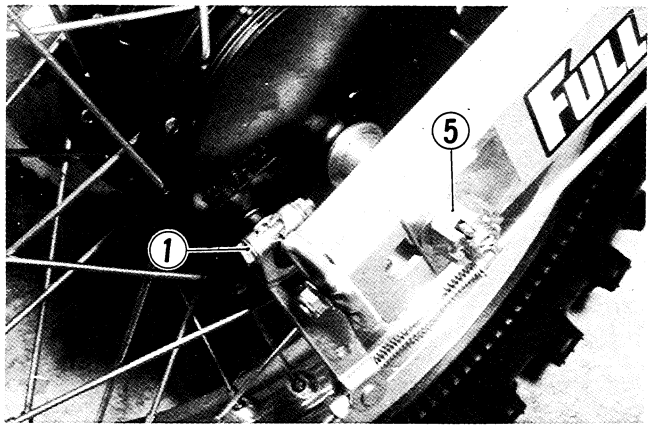
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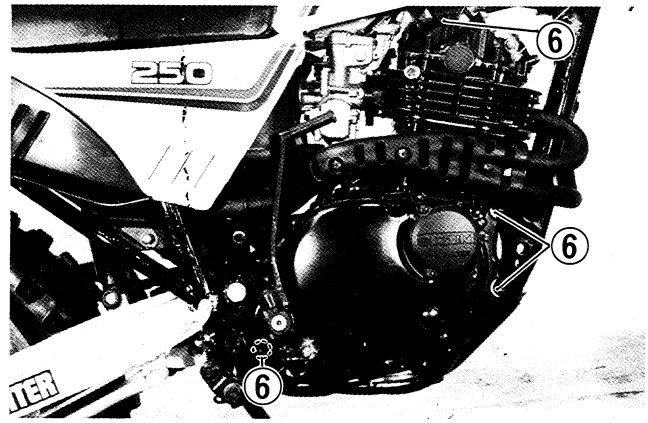
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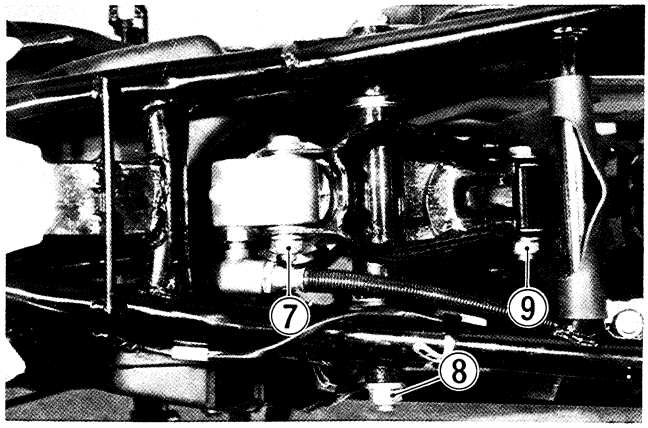
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SERVICING ENGINE

CONTENTS

COMPRESSION PRESSURE AND OIL PRESSURE

COMPRESSION PRESSURE

NOTE:
*** Before testing the engine for compression pressure, make sure that the cylinder head nuts and bolts are tightened to specified torque values and valves are properly adjusted.**
*** Have the engine warmed up by idling before testing it.**

Compression gauge	09915-64510
Adapter	09915-63210

- Remove spark plug.
- Fit the compression gauge to the plug hole, taking care to make the connection absolutely tight.
- Twist the throttle grip into wide-open position.
- Crank the engine several times with the kick starter, and read the highest gauge indication as the compression of the cylinder.

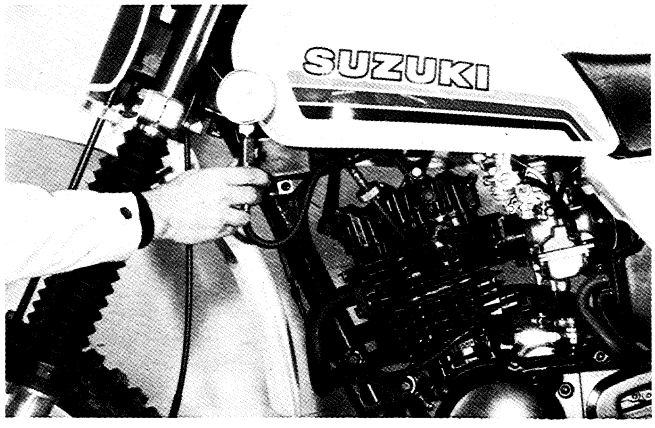
Compression pressure

Standard	Limit
12 – 16 kg/cm² (171 – 228 psi)	10 kg/cm² (142 psi)

A low compression pressure may indicate any of the following malfunctions:

* Excessively worn cylinder wall
* Worn piston or piston rings.
* Piston rings stuck in the grooves
* Poor seating contact of valves
* Defective cylinder head gasket.

When the compression pressure noted is down to or below the limit indicated above, the engine must be disassembled, inspected and repaired as required, with these five malconditions in mind.



OIL PRESSURE

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

NOTE:
Engine oil must be warmed up to 60°C (140° F) when checking the oil pressure.

Oil pressure

Above 0.30 kg/cm² (4.26 psi),
Below 0.70 kg/cm² (9.94 psi) at 3 000 r/min.

Oil pressure gauge	09915-74510

If the oil pressure is lower or higher than the specifications, several causes may be considered.

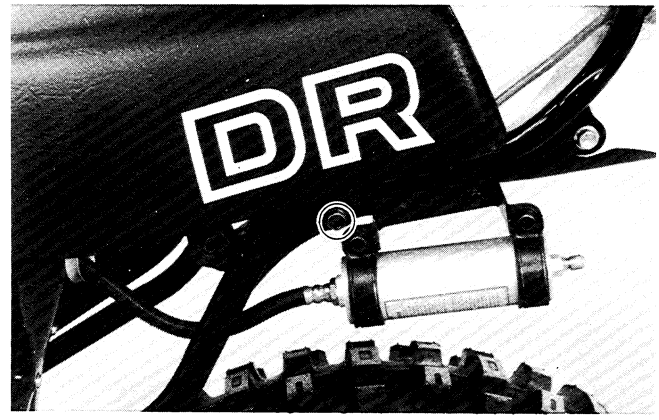
* Low oil pressure is usually the result of a clogged oil filter, oil leakage from the oil passageway, damaged oil seal, a defective oil pump or a combination of these items.
* High oil pressure is usually caused by a engine oil which is too heavy a weight, a clogged oil passage, improper installation of the oil filter or a combination of these items.

ENGINE REMOVAL AND REMOUNTING

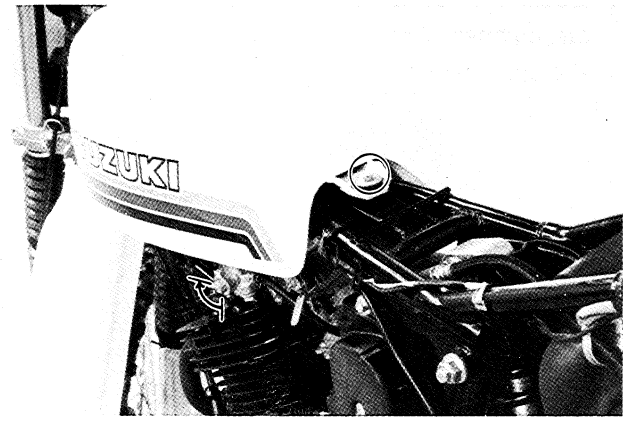
ENGINE REMOVAL

Before taking the engine out of the frame, thoroughly clean the engine with a suitable cleaner.
The procedure of engine removal is sequentially explained in the following steps.

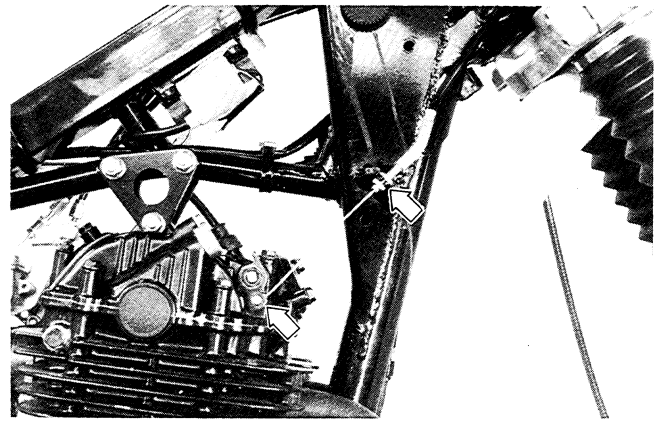
- Remove the left and right frame covers.



- Remove the seat securing bolts from both sides, then take off the seat.

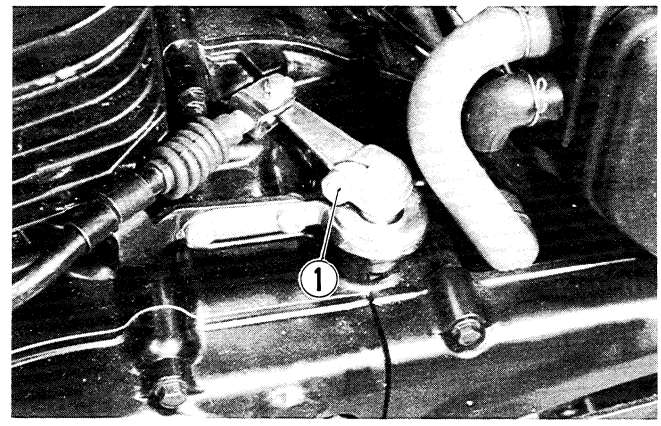


- Turn the fuel cock to the "OFF" position. Disconnect fuel hose from the fuel cock, then remove the fuel tank rearward.

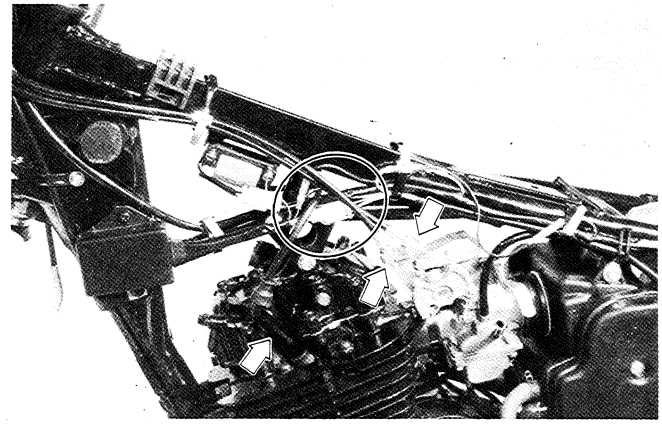


- Remove de-compression cable.

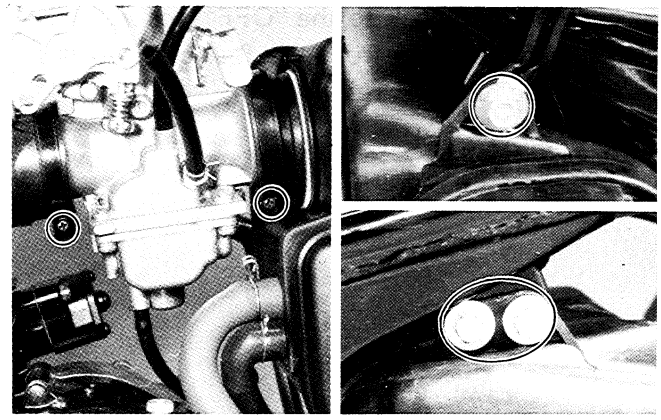
- Remove clutch cable by removing release arm bolt ①.



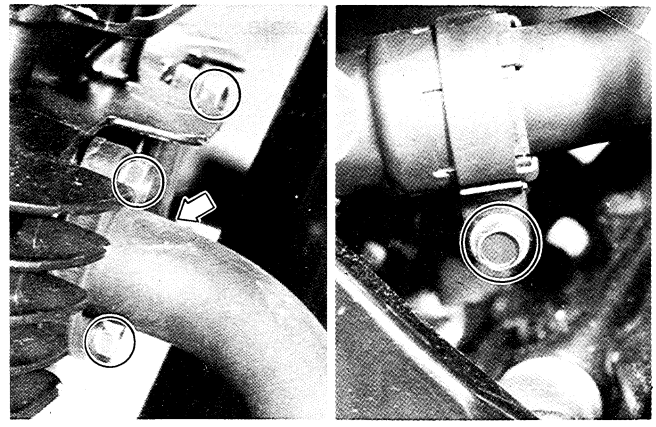
- Disconnect magneto lead wires.
- Pull out spark plug cap.
- Remove throttle cables.



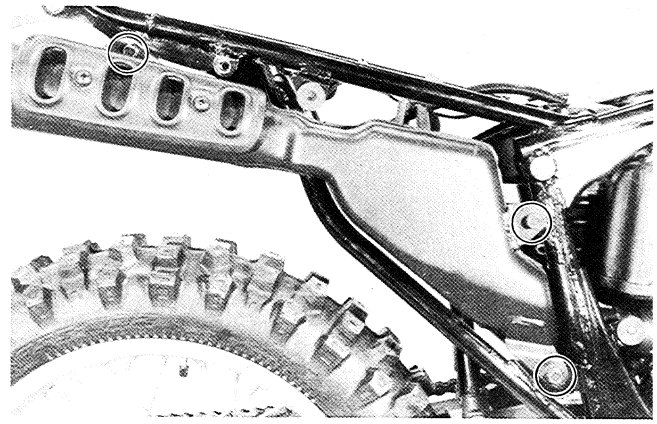
- Loosen inlet pipe clamp screws, and remove air cleaner case mounting bolts, then take off the carburetor.



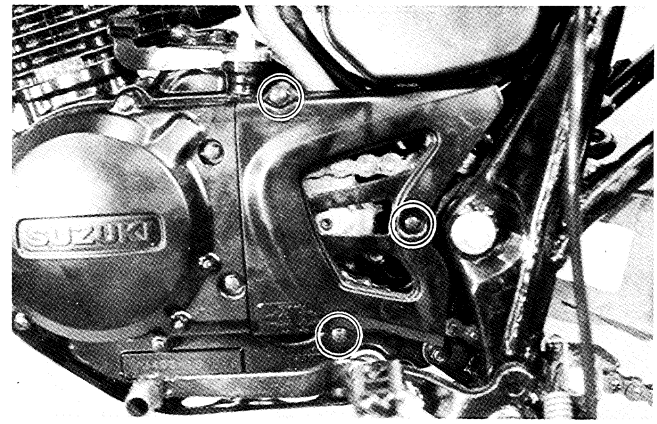
- Remove exhaust pipe bolts and muffler clamp bolt.



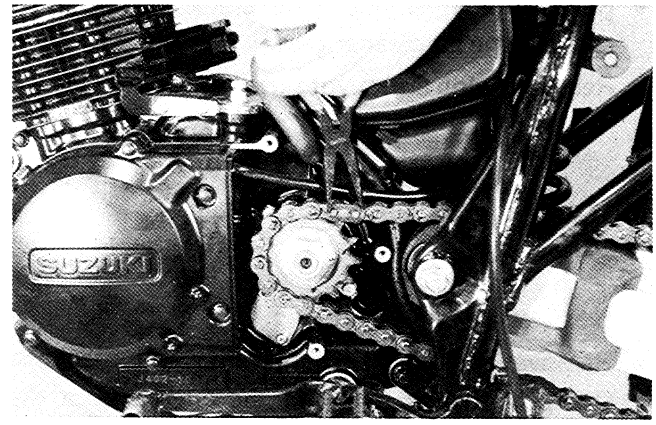
- Remove muffler mounting bolts, then take off the muffler and exhaust pipe.



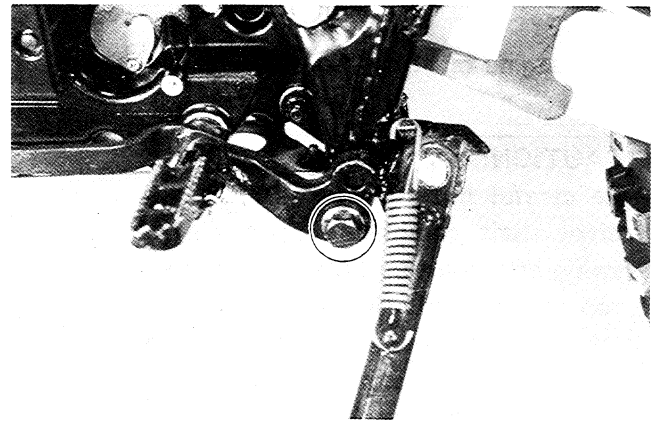
- Remove engine sprocket cover.



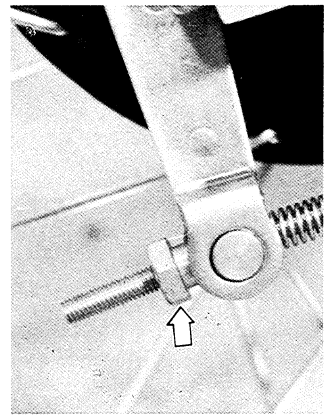
- Remove drive chain.

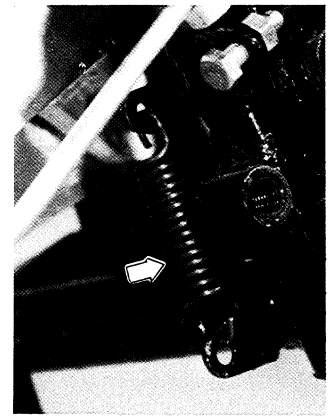


- Remove left and right footrests.

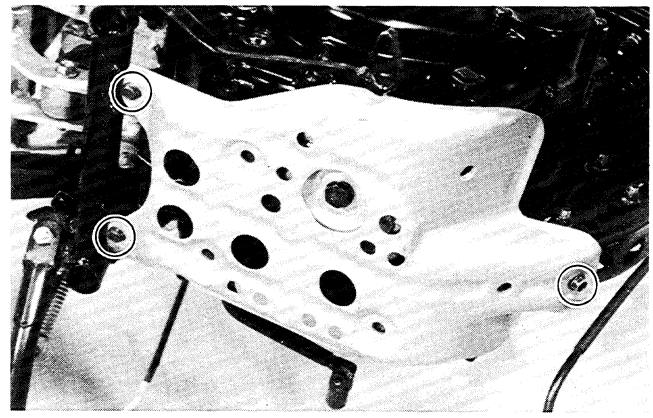


- Remove brake adjuster nut and brake pedal return spring.

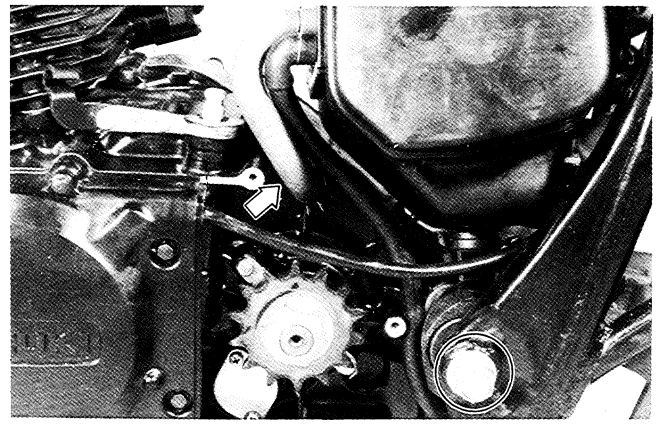




- Remove engine protector.



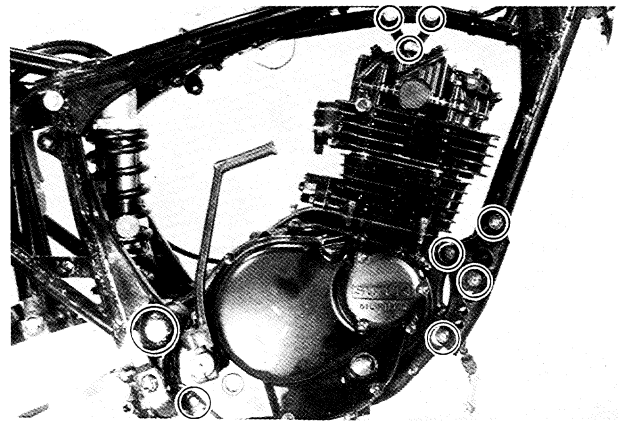
- Remove breather hose from crankcase, and then take off the air cleaner case.
- Remove swing arm pivot nut.



- Remove engine mounting bolts and brackets.
- Use both hands, and lift the engine from the frame.

NOTE:
The engine must be taken out from the right side.

CAUTION:
Be careful not to draw out the swing arm pivot shaft completely from the right side swing arm pivoting hole. Insert the shaft or rod into the left side pivoting hole from the left side of the frame to keep the alignment of the frame holes and swing arm pivoting holes.



ENGINE REMOUNTING

The engine can be mounted in the reverse order of removal.

- Temporarily fasten the engine mounting bracket before inserting the engine mounting bolts.

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

Tightening torque for engine mounting bolts

Tightening torque	37 – 45 N·m (3.7 – 4.5 kg-m) (27.0 – 32.5 lb-ft)

- Tightening the exhaust pipe bolts and muffler clamp to specified torque.

Tightening Torque	9 – 12 N·m (0.9 – 1.2 kg-m) (6.5 – 8.5 lb-ft)

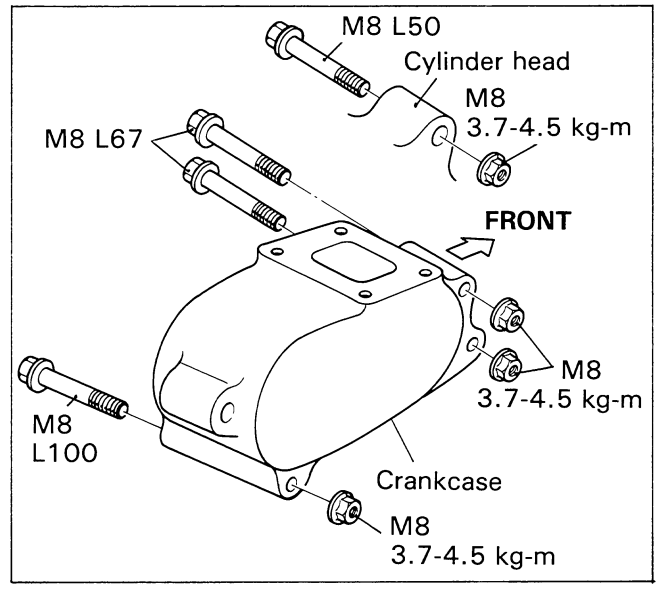
- Pour 1.7 L (1.8/1.5 US/Imp qt) of engine oil SAE 10W/40 graded SE or SF into the engine after overhauling engine.
- Start up the engine and allow it run for several seconds at idle speed. About one minute after stopping engine, check oil level.
  If the level is below the "F" mark, add oil until the level reaches the "F" mark.

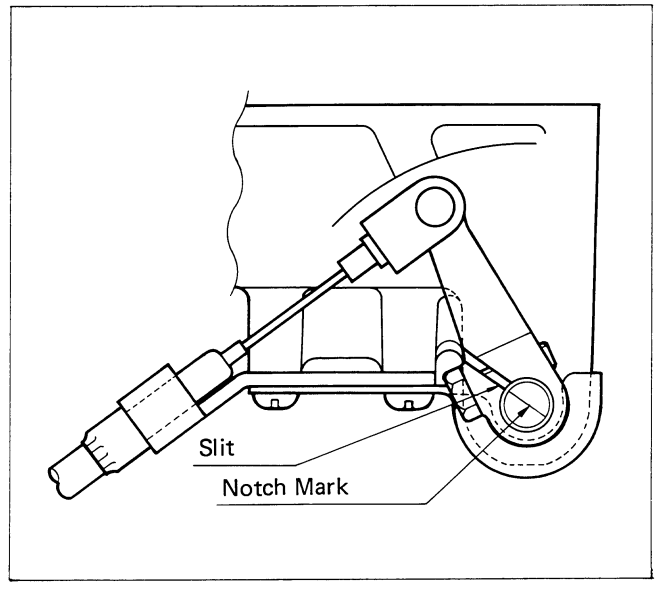
Installing position for clutch release arm

- Align the release arm slit surface with the notch mark on the release cam shaft.

- After remounting the engine, following adjustments are necessary.

* Throttle cable (Page: 4 – 9)
* Clutch cable (Page: 2 – 10)
* De-compression cable (Page: 2 – 7)
* Drive chain (Page: 2 – 12)
* Rear brake pedal (Page: 2 – 11)
* Idling speed (Page: 2 – 9)

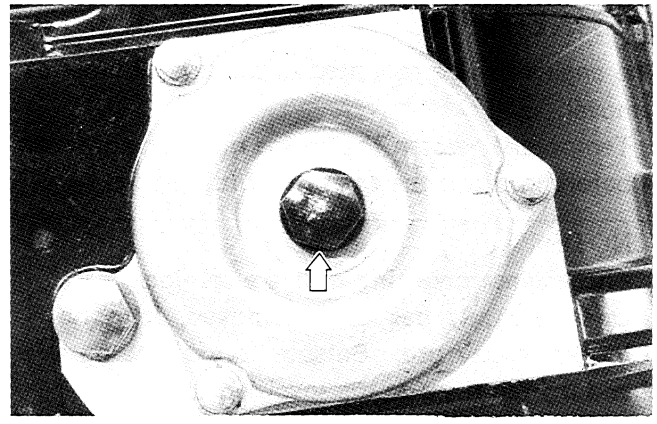




UPPER END COMPONENTS DISASSEMBLY

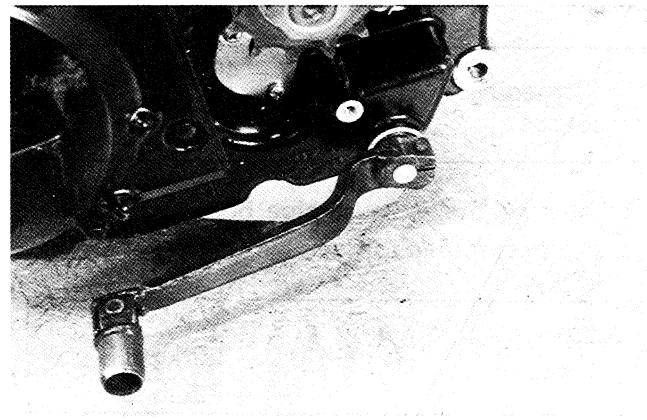
CYLINDER HEAD COVER AND CYLINDER HEAD

NOTE:
*** If top end repair only is being performed, it is not necessary to remove the engine from the frame.**
*** As already noted, seat, fuel tank, side covers etc. must be removed.**

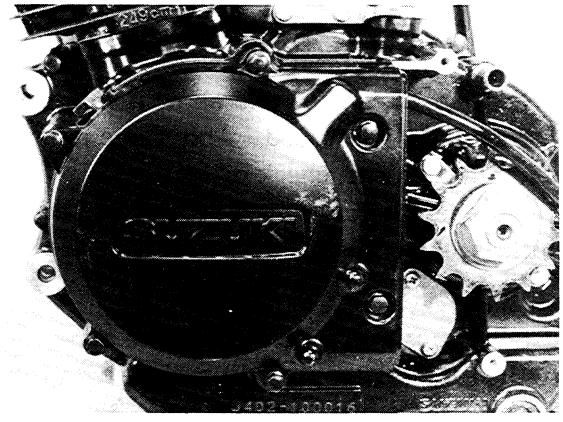


- Drain engine oil.

- Remove gear shift lever.

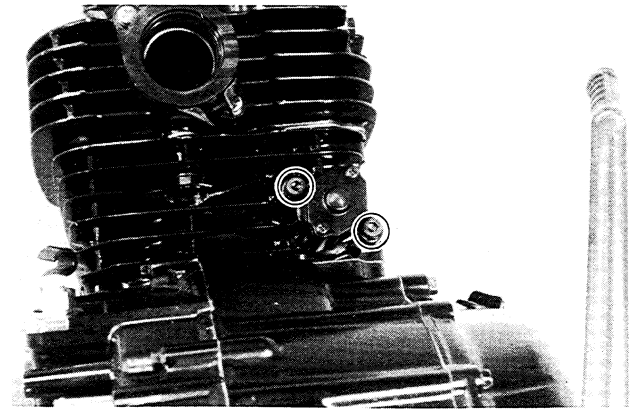


- Remove magneto cover.

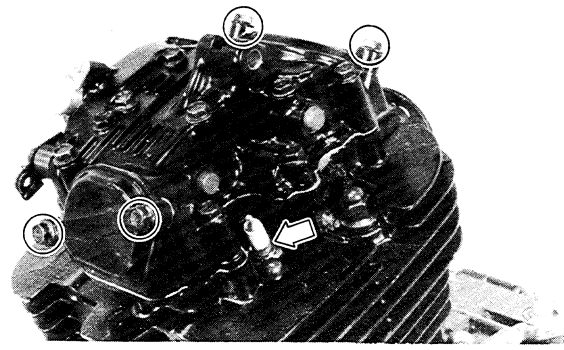


- Remove chain tensioner.

"T" type hexagon wrench (5 mm)	09911-73730

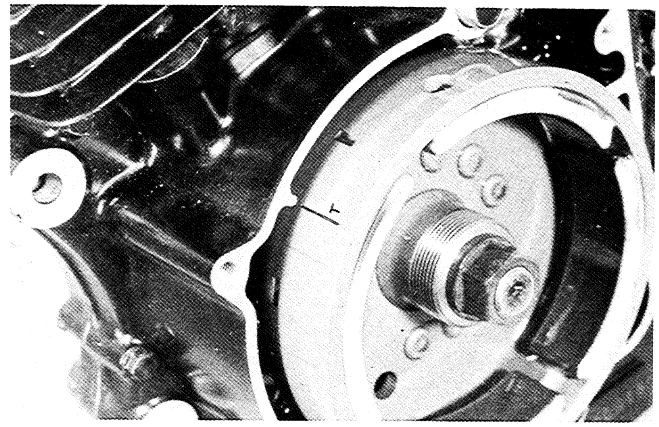


- Remove valve inspection caps and spark plug.



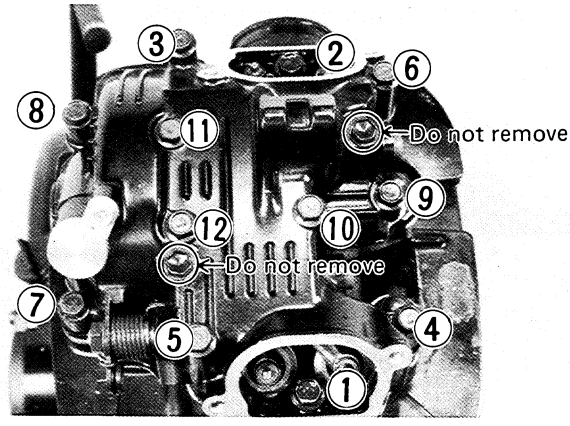
- Bring the piston to top dead center.

NOTE:
When removing cylinder head cover, piston must be at top dead center on compression stroke.



- First, remove the welch plug.
- Next, loosen the cylinder head cover bolts in the order indicated in the illustration and detach the cylinder head cover.

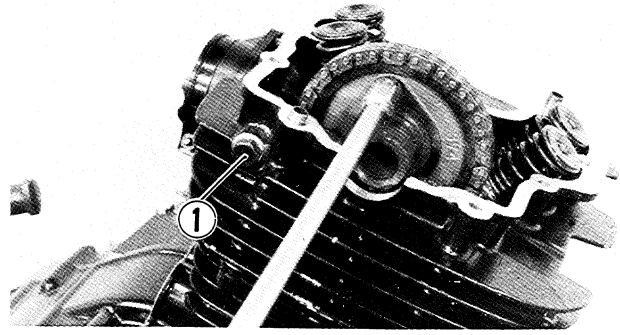
NOTE:
When removing cylinder head cover, do not remove conically recessed top bolts.



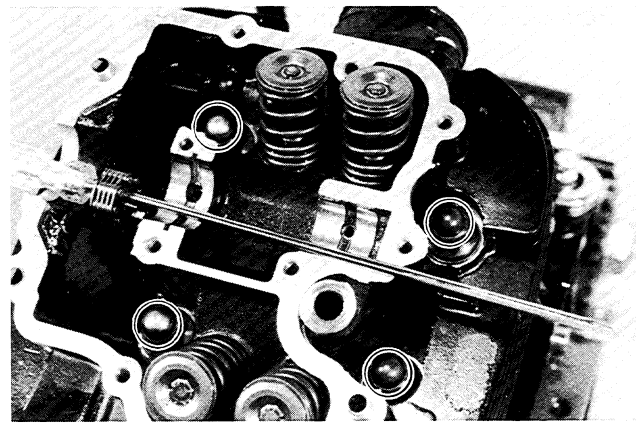
- Detach the camshaft end cap.
- Flatten camshaft sprocket lock washer.
- Remove camshaft sprocket bolts and detach the camshaft.

NOTE:
The cam chain tensioner bolt ① is to be removed only when disassembling the engine.

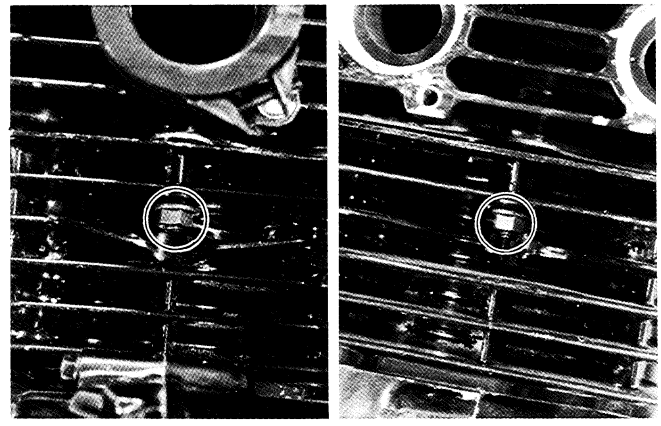
CAUTION:
Do not drop camshaft drive chain, pin and sprocket into the crankcase.



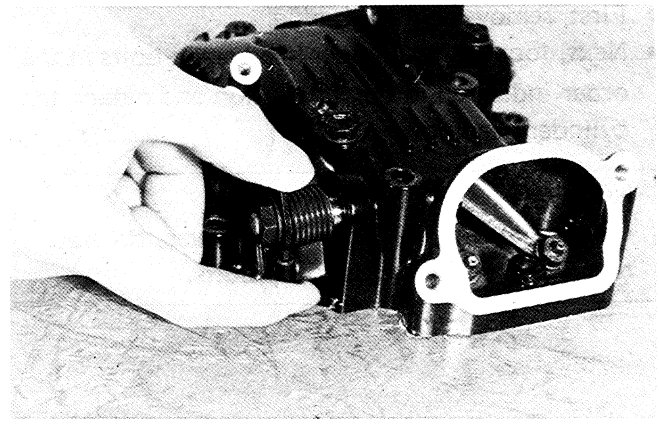
- Loosen the six cylinder head nuts diagonally, then detach the cylinder head.



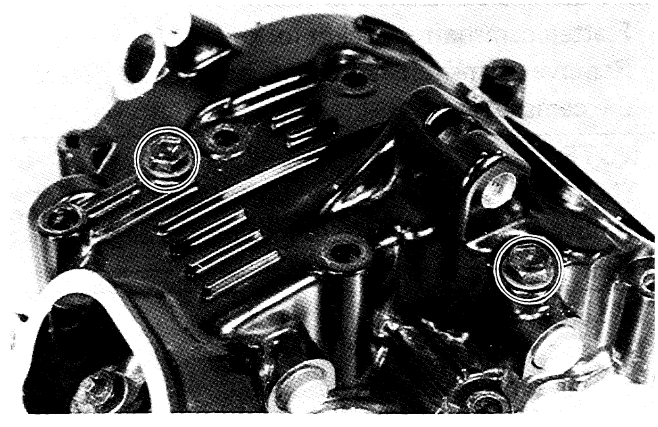
NOTE:
If it is difficult to remove the cylinder head, gently pry it off while tapping the finless portion of the cylinder head with a plastic hammer. Be careful not to break the fins.



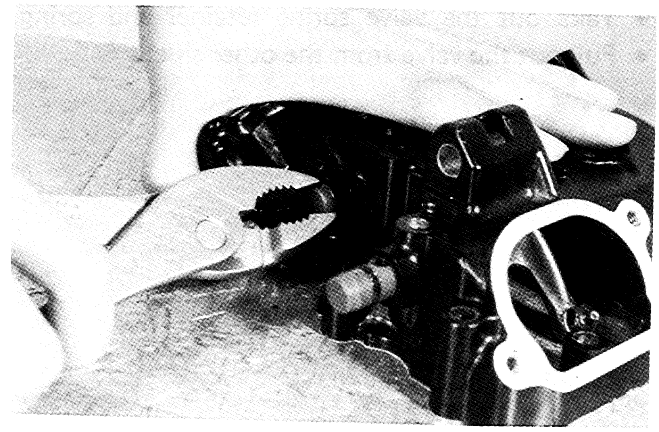
- Pull out the de-compression shaft.

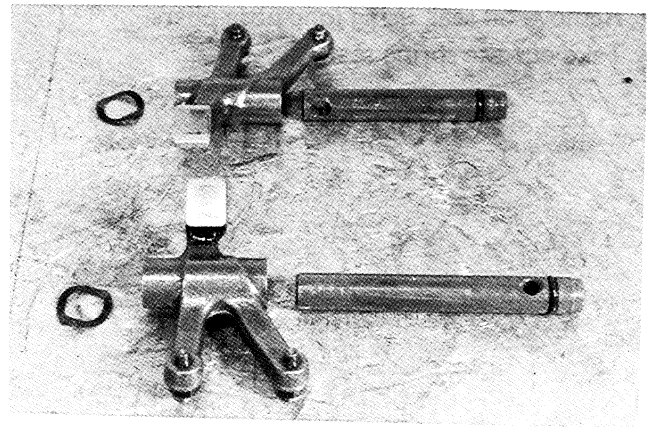


- Remove rocker arm shaft set bolts.



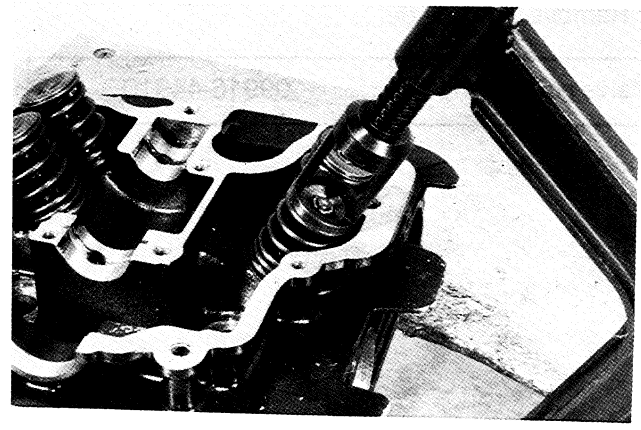
- Pull out the rocker arm shafts with pliers.





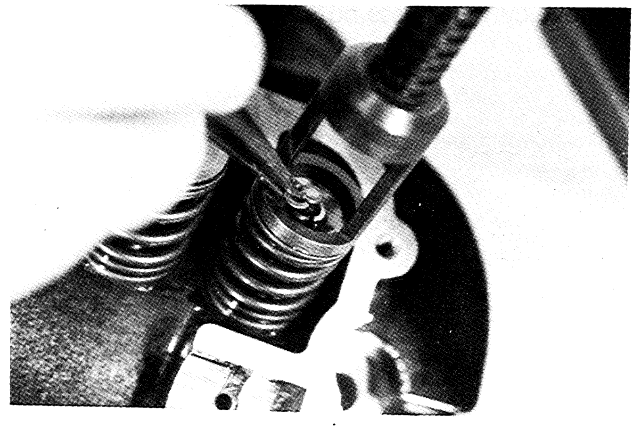
- Compress the valve spring.

Valve lifter	09916-14510

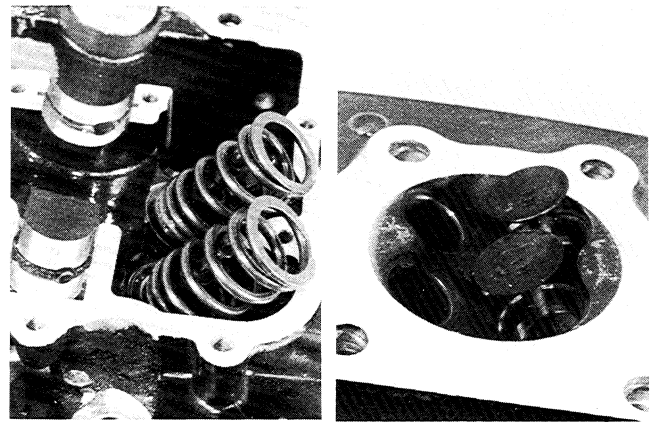


- Take off the valve cotters from valve stem.

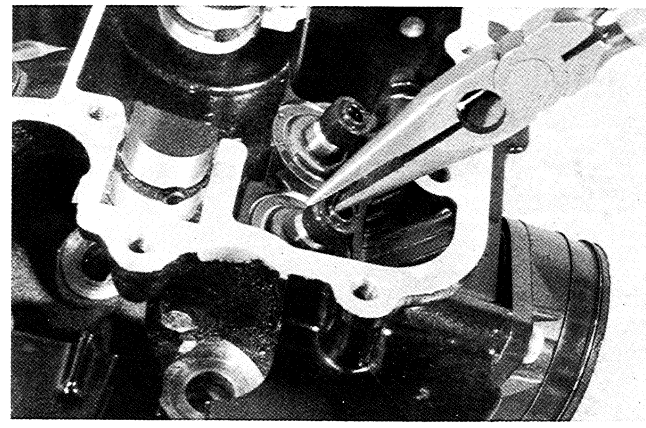
Tweezers	09916-84510



- Take out the valve spring retainer and spring.
- Pull out the valve from the other side.

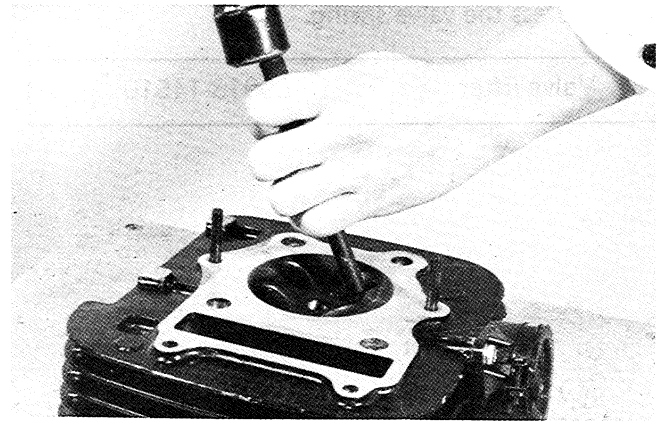


- Remove oil seal, using long-nose pliers.
- Take out the spring seat.



- Remove valve guide.

Valve guide remover	09916-44910

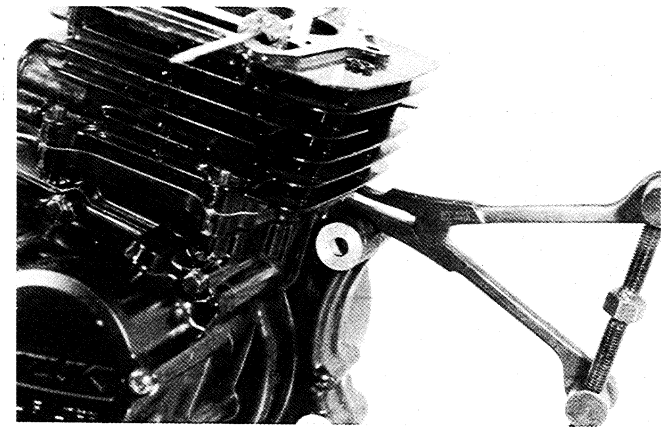


- Remove cylinder base nuts.

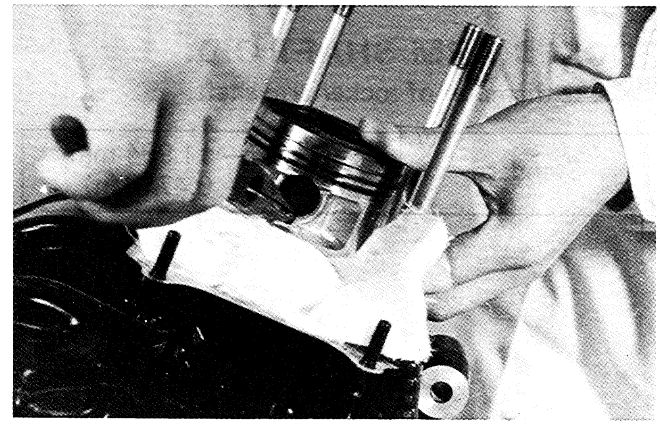
- Remove cylinder.

Cylinder disassembling tool	09912-34510

CAUTION:
If tapping with plastic hammer is necessary, do not break the fins.

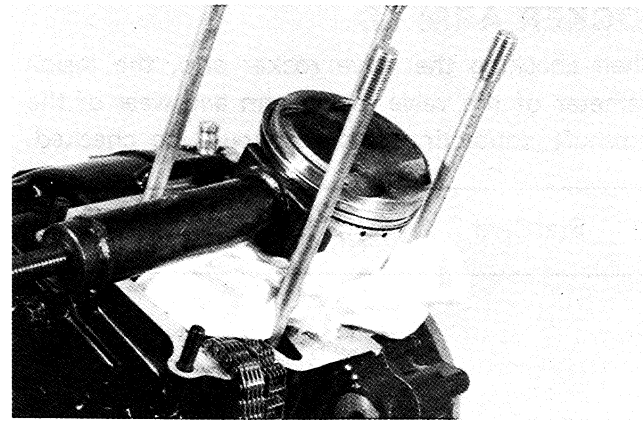


- Place a clean rag over the cylinder base to prevent piston pin circlip from dropping into crankcase and then, remove the piston pin circlip with long-nose pliers.



- Remove piston pin.

Piston pin puller	09910-34510



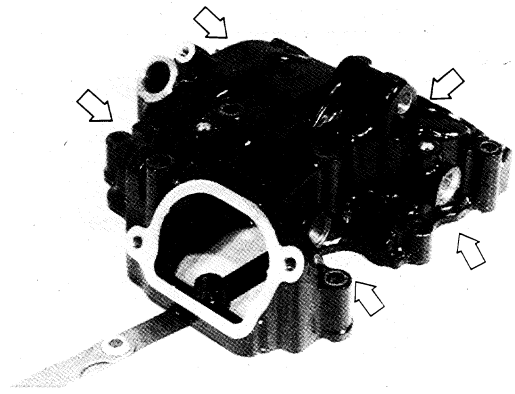
UPPER END COMPONENTS INSPECTION AND SERVICING

CYLINDER HEAD COVER DISTORTION

After removing sealant (SUZUKI BOND No. 1207B) from the fitting surface of the cylinder head cover, place the cylinder head cover on a surface plate and check for distortion with a thickness gauge. Check points are shown in illustration.

Service limit	0.05 mm (0.002 in)

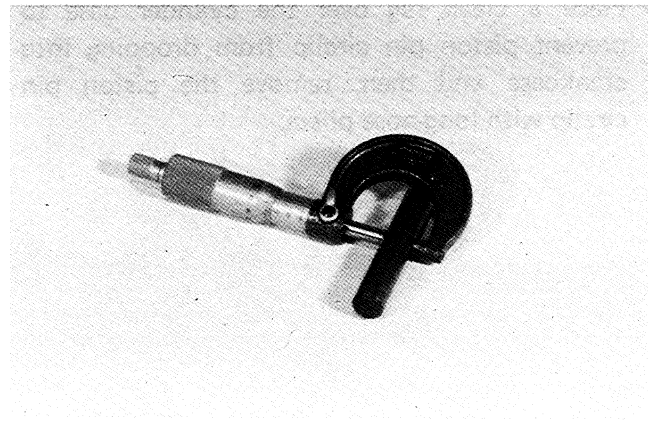
If the distortion exceeds the limit, replace the cylinder head cover.



ROCKER ARM SHAFT O.D.

Measure diameter of rocker arm shaft.

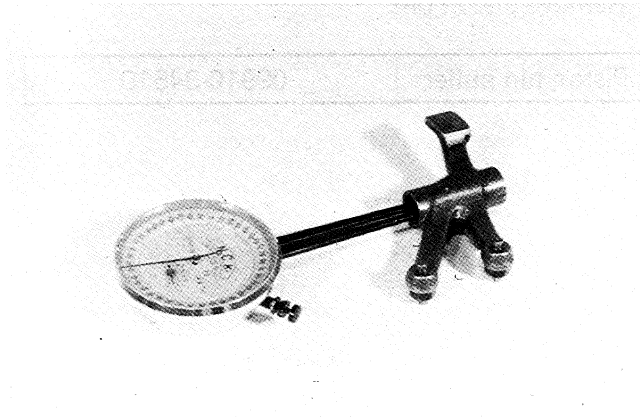
Standard	11.966 – 11.984 mm (0.4711 – 0.4718 in)



ROCKER ARM I.D.

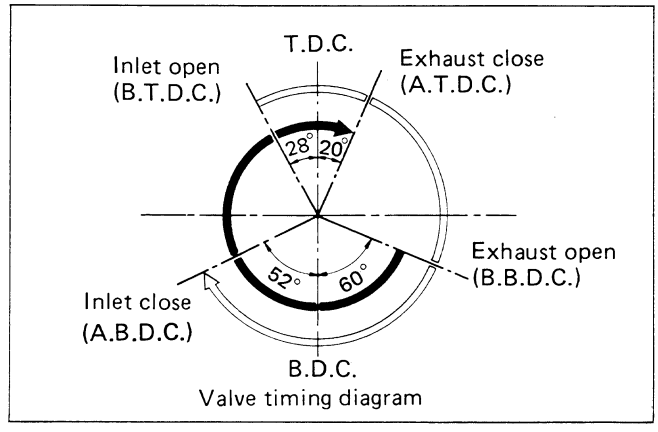
When checking the valve rocker arm, the inside diameter of the valve rocker arm and wear of the camshaft contacting surface should be checked.

Standard	12.000 – 12.018 mm (0.4724 – 0.4731 in)



CAMSHAFT

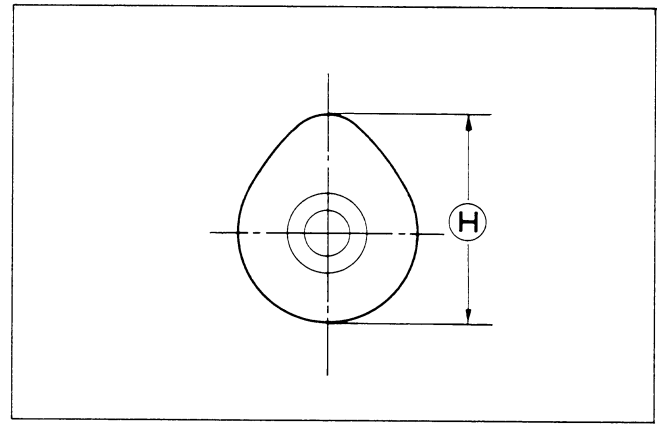
The camshaft should be checked for runout and also for wear of cams and journals if the engine has been noted to give abnormal noise or vibration or to lack output power. Any of these malconditions could be caused by camshaft worn down or distorted to the service limit.



Valve timing diagram

CAMSHAFT CAM WEAR

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



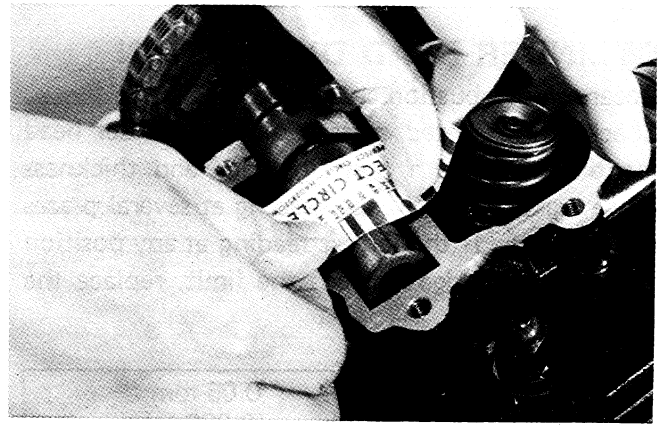
Micrometer (25 – 50 mm)	09900 – 20202

Cam height

Height Ⓗ	Service limit
Intake cam	34.690 mm (1.3657 in)
Exhaust cam	34.730 mm (1.3673 in)

CAMSHAFT JOURNAL WEAR

Determine whether each journal is worn down to the limit or not by measuring camshaft journal oil clearance with the camshaft installed. Use plastigauge to read the clearance, which is specified as follows:



Camshaft journal oil clearance

Service limit	0.15 mm (0.006 in)

Cylinder head cover tightening torque

Tightening Torque	9 – 10 N·m (0.9 – 1.0 kg-m) (6.5 – 7.0 lb-ft)

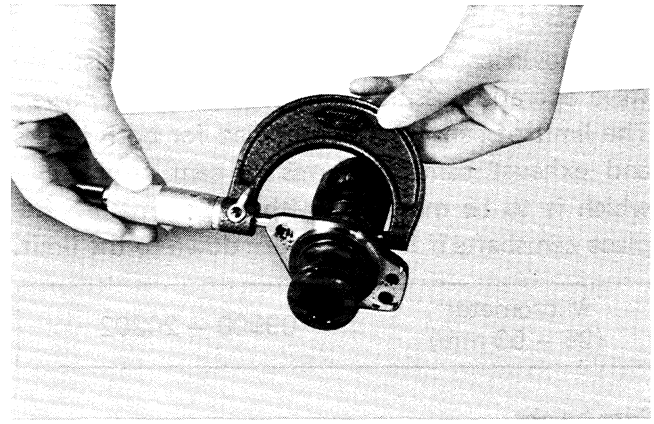
NOTE:
At the stage when gasket material has been removed from fitting surfaces of cylinder head and cover, and before SUZUKI BOND No.1207B has been applied, fit the cylinder head cover and tighten to the torque specified.

If the camshaft journal oil clearance measured exceeds the limit, measure the outside diameter of camshaft.
Replace either the cylinder head set or the cam shaft, if the clearance is incorrect.

Micrometer (0 – 25 mm)	09900 – 20205

Camshaft journal O. D. (R. side)	24.959 – 24.980 mm (0.9826 – 0.9835 in)

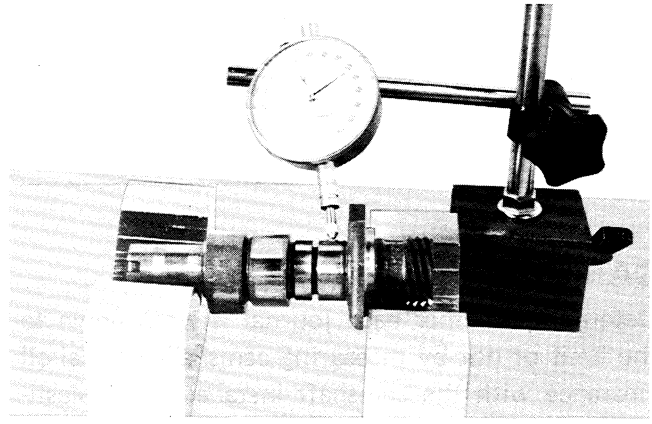
Camshaft journal O. D. (L. side)	19.959 – 19.980 mm (0.7858 – 0.7866 in)



CAMSHAFT RUNOUT

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

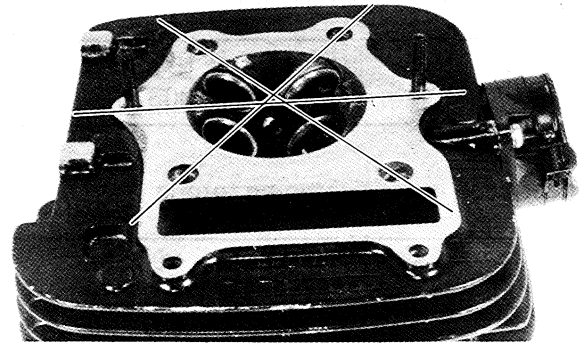
Service limit	0.10 mm (0.004 in)



CYLINDER HEAD DISTORTION

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

Service limit	0.05 mm (0.002 in)

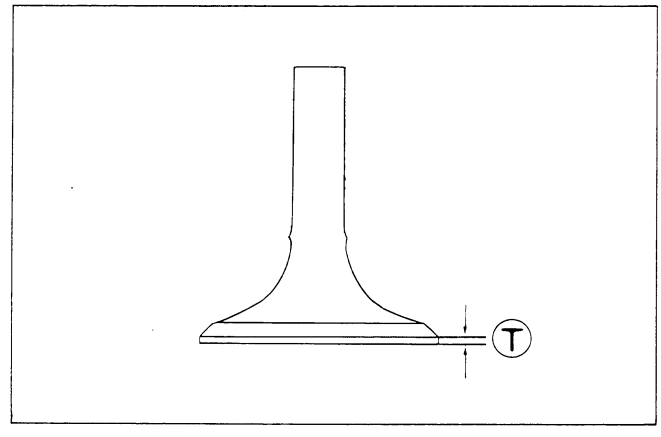


VALVE FACE WEAR

Measure the thickness Ⓣ and, if the thickness is found to have been reduced to the limit, replace the valve.

NOTE:
Visually inspect each valve for wear of its seating face. Replace any valve with an abnormally worn face.

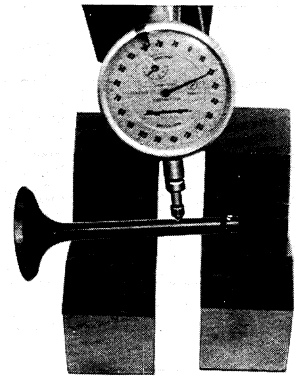
Service limit	0.5 mm (0.02 in)



VALVE STEM RUNOUT

Support the valve with "V" blocks, as shown, and check its runout with a dial gauge. The valve must be replaced if the runout exceeds the limit.

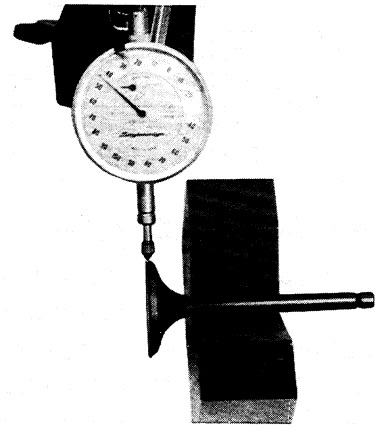
Service limit	0.05 mm (0.002 in)



VALVE HEAD RADIAL RUNOUT

Place the dial gauge at right angles to the valve head, and measure the valve head radial runout. If it measures more than limit, replace the valve.

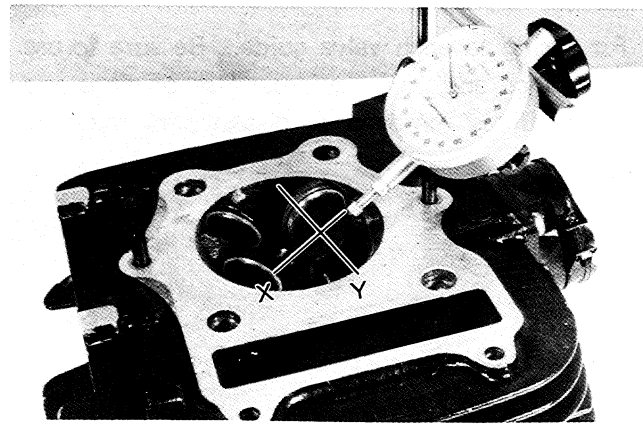
Service limit	0.03 mm (0.001 in)



VALVE GUIDE-VALVE STEM CLEARANCE

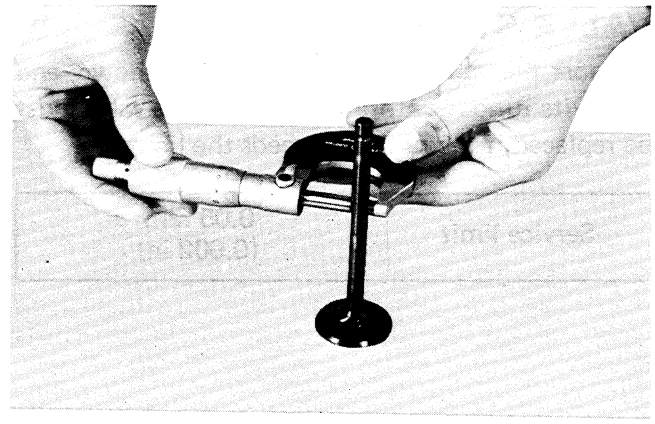
Measure the clearance in two directions, "X" and "Y", perpendicular to each other, by rigging up the dial gauge as shown. If the clearance measured exceeds the limit specified below, then determine whether the valve or the guide should be replaced to reduce the clearance to within the standard range:

	Standard	Service limit
IN.	0.025 – 0.052 mm (0.0010 – 0.0020 in)	0.35 mm (0.014 in)
EX.	0.040 – 0.067 mm (0.0016 – 0.0026 in)	0.35 mm (0.014 in)



VALVE STEM WEAR

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



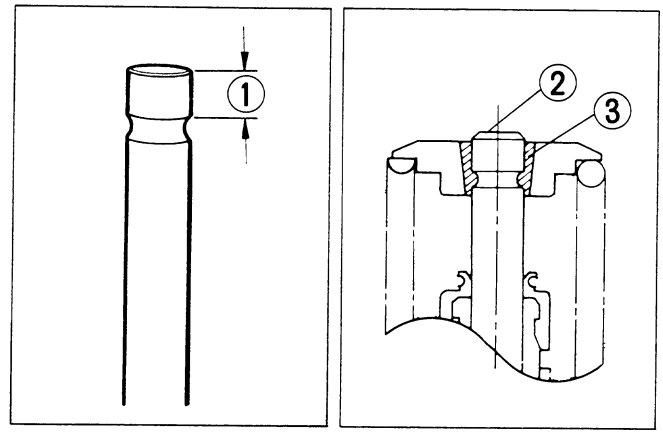
Micrometer (0 – 25 mm)	09900-20205

Valve stem O. D.

	Standard
IN.	5.460 – 5.475 mm (0.2150 – 0.2156 in)
EX.	5.445 – 5.460 mm (0.2144 – 0.2150 in)

VALVE STEM CONDITION

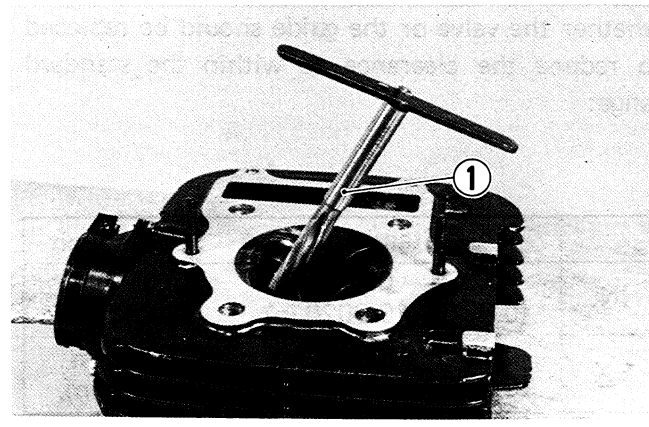
Inspect the valve stem end face for pitting and wear. If pitting or wear of the stem end face are present, the valve stem end may be resurfaced, providing that the length ① will not be reduced to less than 3.8 mm (0.15 in). If this length becomes less than 3.8 mm (0.15 in), the valve must be replaced. After installing a valve whose stem end has been ground off as above, check to ensure that the face ② of the valve stem end is above the cotters ③.



VALVE GUIDE INSTALLATION

- Re-finish the valve guide holes in cylinder head with a 11.3 mm reamer ① and handle.

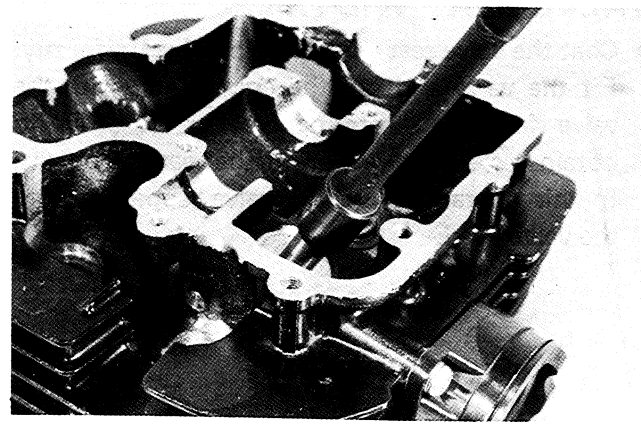
11.3 mm reamer	09916-34561
Handle	09916-34541



- Fit a ring to each valve guide. Be sure to use new rings and valve guides. Use of rings and valve guides removed in disassembly must be avoided.

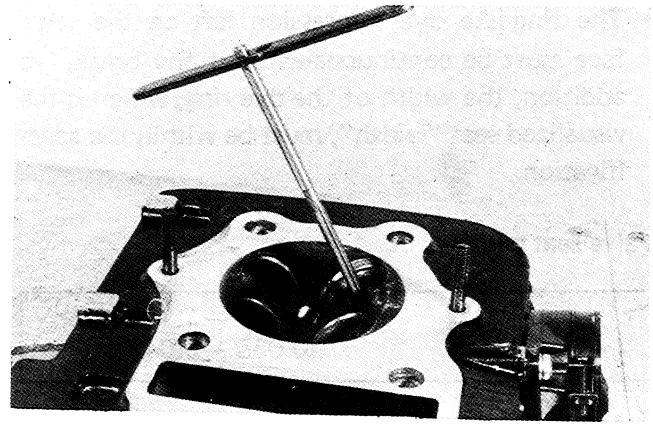
- Oil the stem hole, in each valve guide and drive the guide into the guide hole using the valve guide installer handle and valve guide installer attachment.

Valve guide installer and remover	09916-44910
Attachment	09916-44920

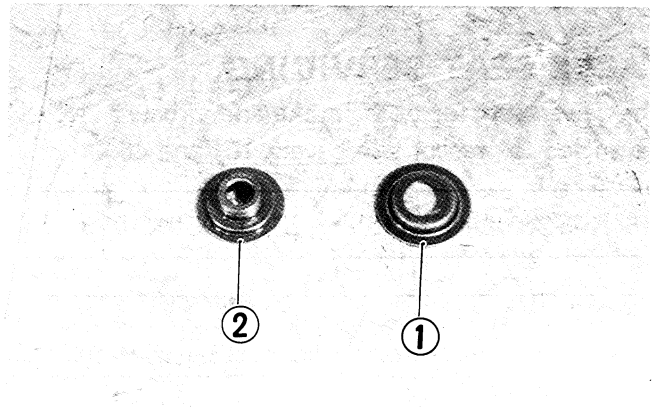


- After fitting all valve guides, re-finish their guiding bores with a 5.5 mm reamer. Be sure to clean and oil the guides after reaming.

5.5 mm reamer	09916-34550
Handle	09916-34541



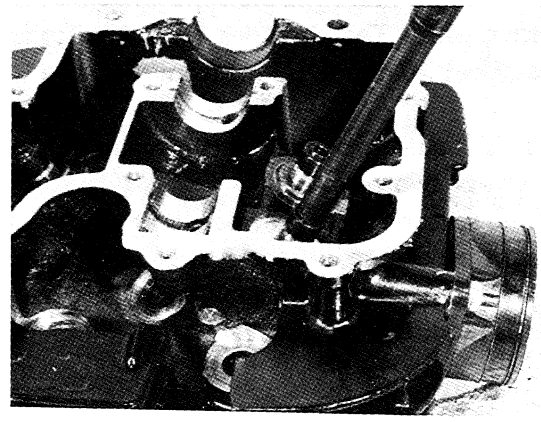
- Install valve spring lower seat ①. Be careful not to confuse the lower seat with the spring retainer ②.



- Oil each seal, and drive them into position with the valve stem seal installer.

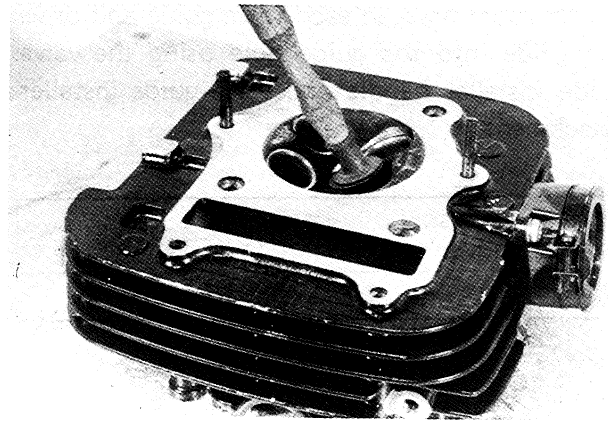
CAUTION:
Do not reuse the oil seals.

Valve guide installer and stem seal installer	09916-44910

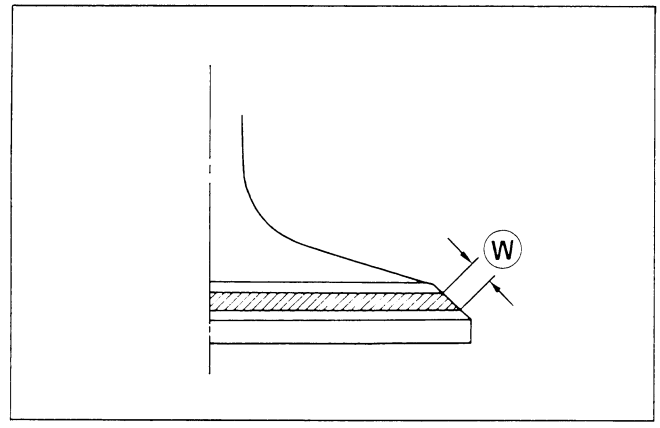


VALVE SEAT WIDTH

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



- The ring-like dye impression left on the valve face must be continuous-without any break. In addition, the width of the dye ring, which is the visualized seat "width", must be within the specification.



Valve seat width

STD. Ⓦ	0.9 – 1.1 mm (0.035 – 0.043 in)

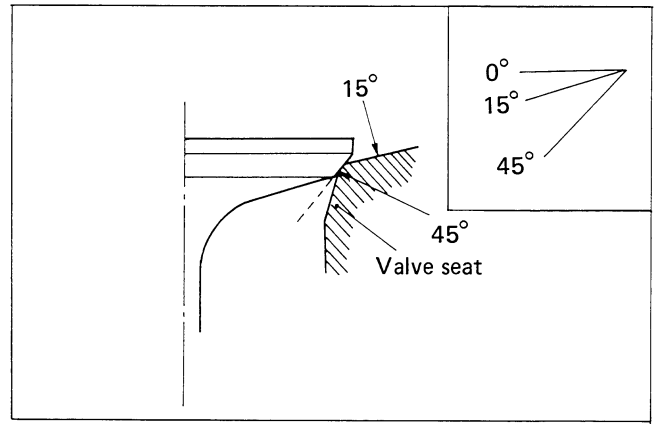
If either requirement is not met, correct the seat by servicing it as follows.

VALVE SEAT SERVICING

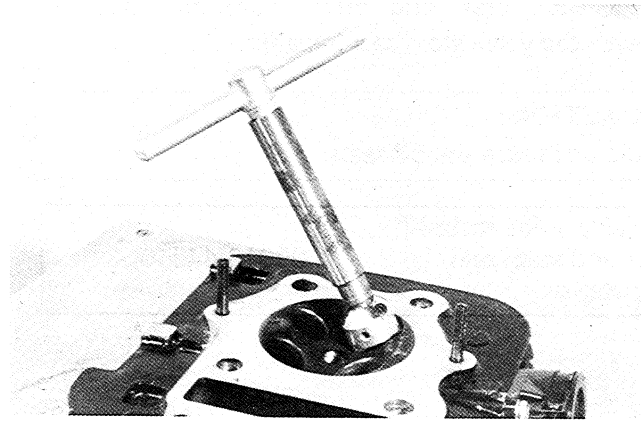
The valve seats for both intake and exhaust valves are angled to present two bevels, 15° and 45°.

15°X45° cutter (N-116)	99103-45012-003

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



1. Insert with a slight rotation, the solid pilot that gives a snug fit. The shoulder on the pilot should be about 10 mm (0.39 in) from the valve guide.
2. Using the 45° cutter, descale and cleanup the seat with one or two turns.
3. Inspect the seat by the previous seat width measurement procedure. If the seat is pitted or burned, additional seat conditioning with the 45° cutter is required.



CAUTION:
Cut the minimum amount necessary from the seat to prevent the possibility of the valve stem becoming too close to the rocker arm for correct valve contact angle.

If the contact area is too low or too narrow, use 45° cutter to raise and widen the contact area. If the contact area is too high or too wide, use 15° cutter to lower and narrow the contact area.

4. After the desired seat position and width is achieved, use the 45° cutter very lightly to clean up any burrs caused by the previous cutting operations. DO NOT use lapping compound after the final cut is made. The finished valve seat should have a velvety smooth finish and not a highly polished or shiny finish. This will provide a soft surface for the final seating of the valve which will occur during the first few seconds of engine operation.
5. Clean and assemble the head and valve components. Fill the intake and exhaust ports with gasoline to check for leaks. If any leaks occur, inspect the valve seat and face for burrs or other things that could prevent the valve from sealing.

WARNING:
Always use extreme caution when handling gasoline.

NOTE:
Be sure to adjust the valve clearance after ressembling the engine.

VALVE SPRINGS

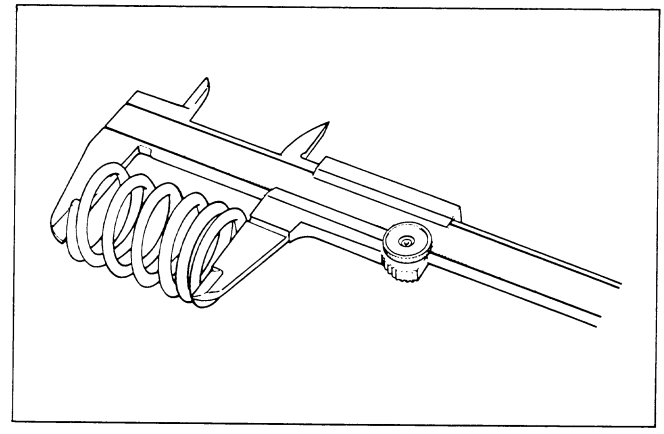
Check the springs for strength by measuring their free lengths and also the force required to compress them. If the limit indicated below is exceeded by the free length reading or if the measured force does not fall within the range specified, replace with a SUZUKI spring.

Valve spring free length

Service limit	39.8 mm (1.57 in)

Valve spring tension

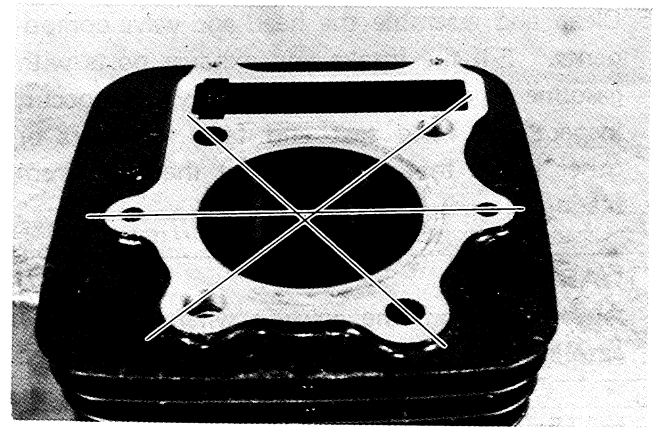
STD.	16.2 – 19.8 kg/35 mm (35.7 – 43.7 lbs/1.4 in)



CYLINDER DISTORTION

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

Service limit	0.05 mm (0.002 in)

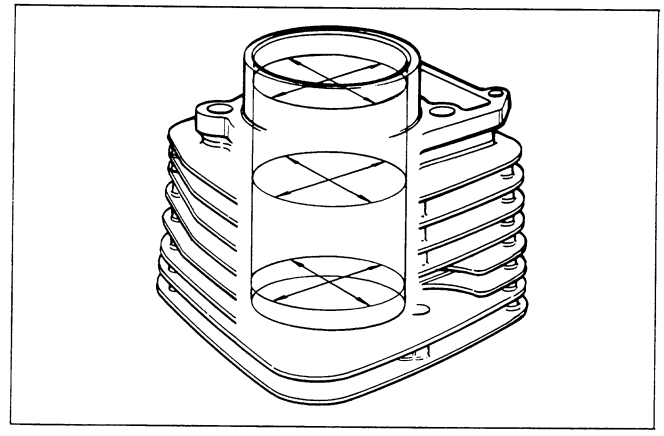


CYLINDER BORE

Measure the cylinder bore diameter at six places. If any one of the measurements exceeds the limit, overhaul the cylinder and replace the piston with an oversize, or replace the cylinder.

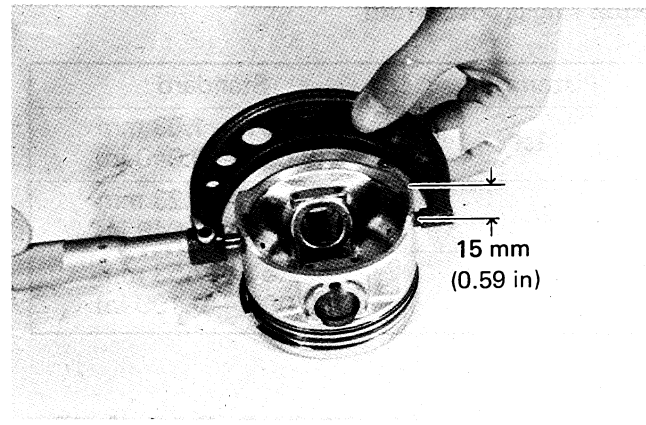
Cylinder gauge set	09900-20508

Service limit	72.085 mm (2.8380 in)



PISTON DIAMETER

Using a micrometer, measure the piston outside diameter at the place 15 mm (0.59 in) from the skirt end as shown in illustration. If the measurement is less than the limit, replace the piston.



Micrometer (50 – 75 mm)	09900-20203

Service limit	71.880 mm (2.8299 in)

Piston oversize	0.5, 1.0 mm

NOTE:
Using a soft-metal scraper, decarbon the crown of the piston. Clean the ring grooves similarly.

PISTON-CYLINDER CLEARANCE

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

Service limit	0.120 mm (0.0047 in)

PISTON RING-GROOVE CLEARANCE

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

Thickness gauge	09900-20803

Piston ring-groove clearance

Piston ring	Service limit
1st	0.18 mm (0.007 in)
2nd	0.15 mm (0.006 in)

Piston ring groove width

Piston ring	Standard
1st	1.01 – 1.03 mm (0.039 – 0.040 in)
2nd	1.21 – 1.23 mm (0.047 – 0.048 in)
Oil	2.51 – 2.53 mm (0.099 – 0.100 in)

Piston ring thickness

Piston ring	Standard
1st	0.975 – 0.990 mm (0.0384 – 0.0390 in)
2nd	1.170 – 1.190 mm (0.0461 – 0.0469 in)

PISTON RING FREE END GAP AND PISTON RING END GAP

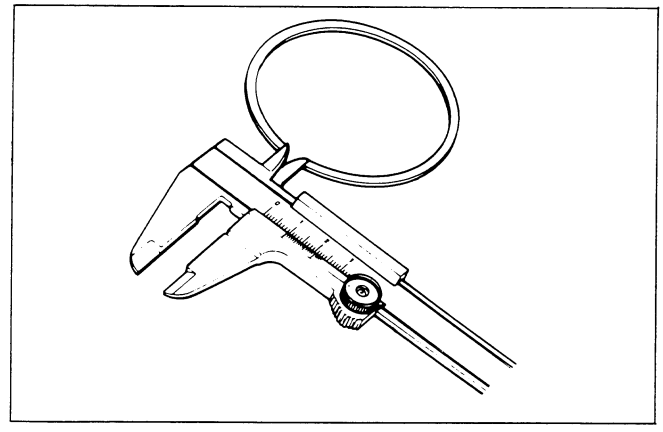
Before installing piston rings, measure the free end gap of each ring using vernier calipers.
Next, fit the ring in the cylinder, and measure each ring end gap using a thickness gauge.
If any ring has an excess end gap, replace the ring.

Piston ring free end gap

N: (NIPPON)
R: (RIKEN)

Piston ring		Service limit
1st	N	7.6 mm (0.30 in)
	R	8.4 mm (0.33 in)
2nd	N	8.8 mm (0.35 in)
	R	8.8 mm (0.35 in)

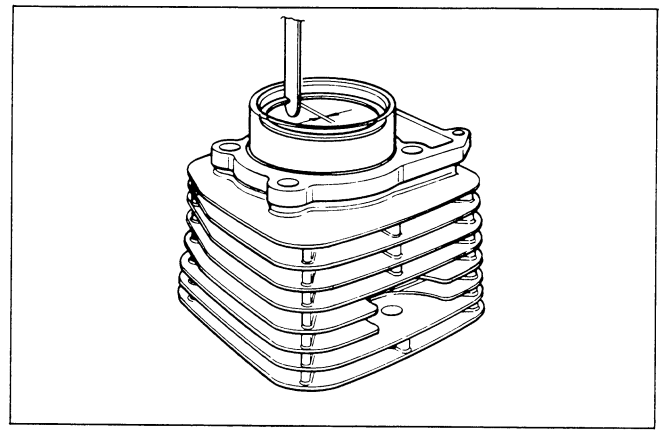
Vernier calipers (150 mm)	09900-20101



Piston ring end gap

Piston ring	Service limit
1st and 2nd	0.7 mm (0.03 in)

Thickness gauge	09900-20803



OVERSIZE RINGS

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

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

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

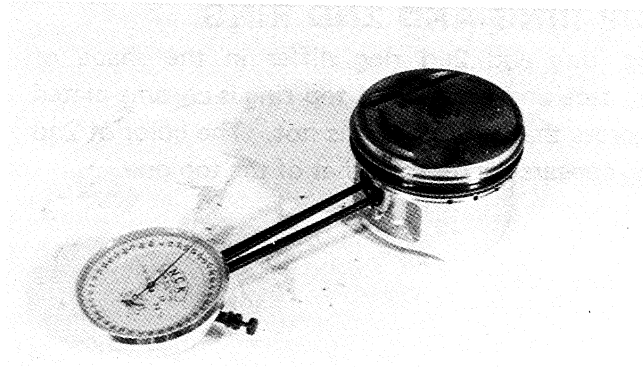
0.5 mm	Painted blue
1.0 mm	Painted yellow

- **Oversize side rail**
  Just measure outside diameter to distinguish the standard size from oversize.

PISTON PIN – PIN BORE

Using a caliper gauge, measure the piston pin bore inside diameter, and using a micrometer measure the piston pin outside diameter. If the difference between these two measurements is more than the limits, replace both piston and piston pin.

Micrometer (0 – 25 mm)	09900-20205

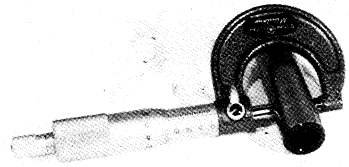


Piston pin bore

Service limit	18.030 mm (0.7098 in)

Piston pin O.D.

Service limit	17.980 mm (0.7079 in)

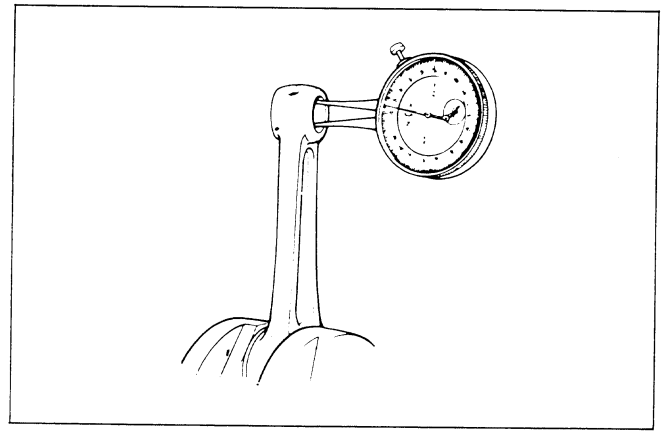


CONROD SMALL END I.D.

Using a caliper gauge, measure the conrod small end inside diameter.

Service limit	18.040 mm (0.7102 in)

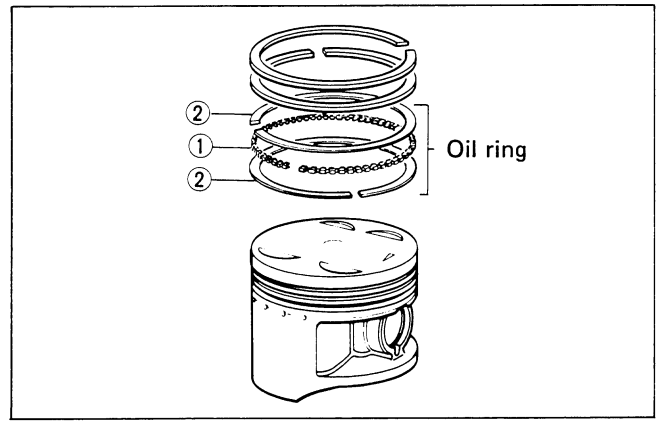
- If the conrod small end bore inside diameter exceeds the limit, replace conrod.



UPPER END COMPONENTS REASSEMBLY

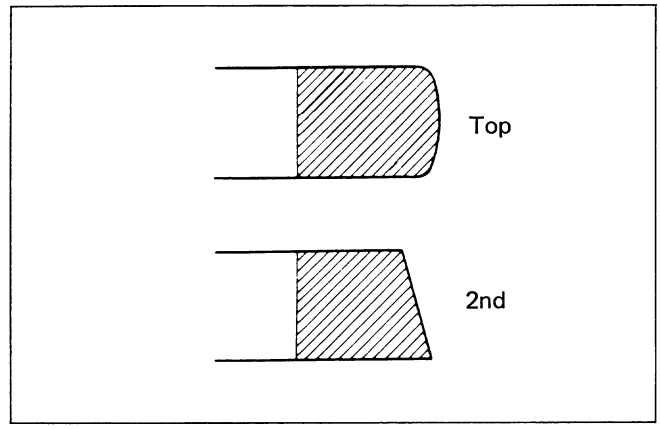
OIL RING

Install spacer ① into the bottom ring groove first. Then install both side rails ②, one on each side of the spacer. The spacer and side rails do not have a specific top or bottom when they are new. When reassembling used parts, install them in their original place and direction.

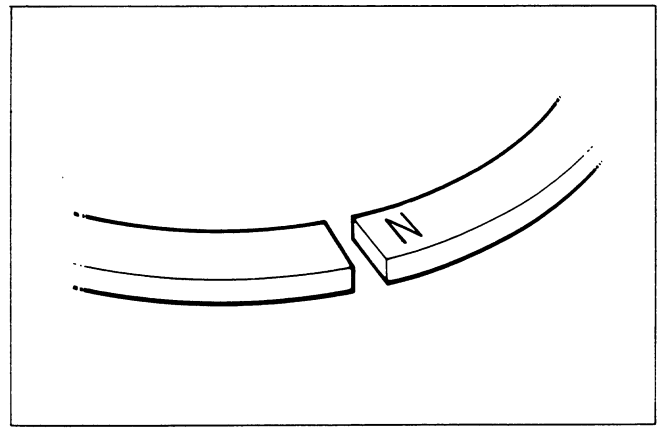


TOP RING AND 2ND RING

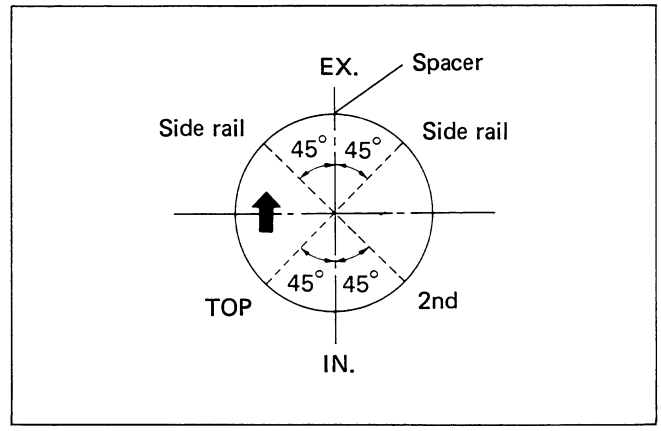
Top ring and 2nd ring differ in the shape of ring face and the face of top ring is chrome-plated whereas that of 2nd ring is not. The color of 2nd ring appears darker than that of the top one.



Top and 2nd rings have the letter "N" or "R" marked on the top. Be sure to bring the marked side to the top when fitting them to the piston.



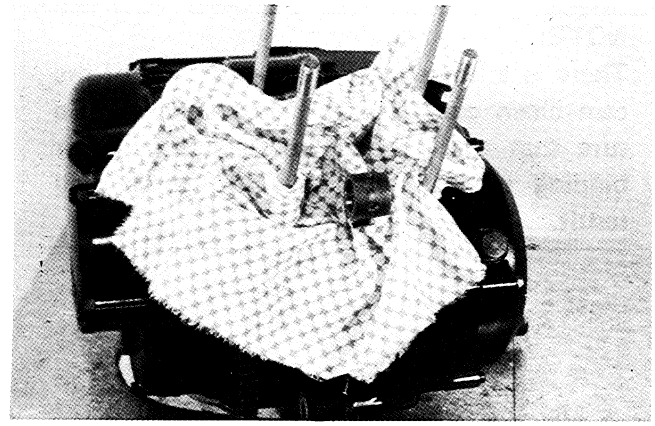
Position the gaps of the three rings as shown.
Before inserting piston into the cylinder, check that the gaps are so located.



PISTON

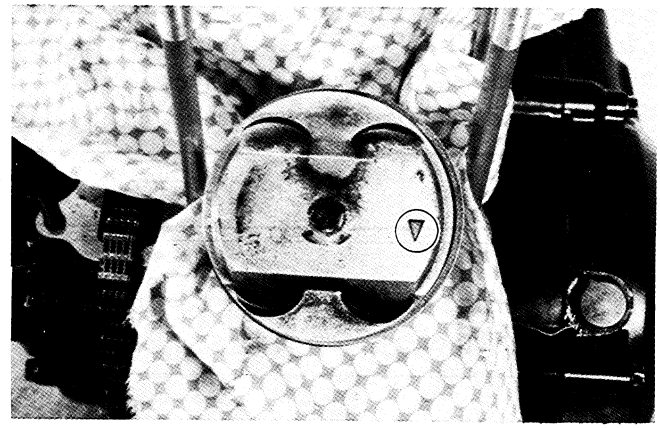
The following are reminders for piston installation:

- Rub a small quantity of SUZUKI MOLY PASTE onto the piston pin.
- Place a clean rag over the cylinder base to prevent piston pin circlip from dropping into crankcase, and then fit the piston pin circlip with long-nose pliers.



CAUTION:
Use a new piston pin circlip to prevent circlip failure which will occur with a bent one.

- When fitting the piston, face the triangle mark on the piston head to exhaust side.



CYLINDER

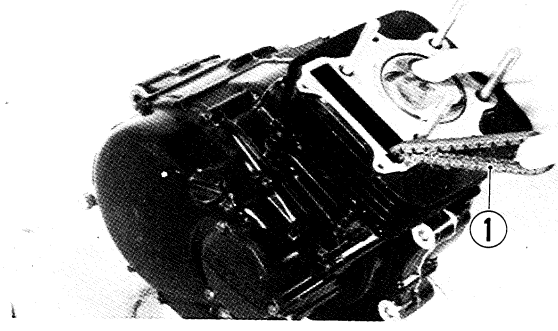
Before mounting the cylinder block, oil the big end and small end of the conrod and also the sliding surface of the piston.

- Fit dowel pins ① to crankcase and then fit gasket.

CAUTION:
To prevent oil leakage, do not use the old gasket again, always use new one.

- Hold each piston ring with the piston ring sections properly positioned and insert them into the cylinder.
  Check to insure that the piston rings are properly inserted into the cylinder skirt.

NOTE:
When mounting the cylinder, after attaching camshaft drive chain ①, keep the camshaft drive chain taut. The camshaft drive chain must not be caught between cam drive chain sprocket and crankcase when crankshaft is rotated.

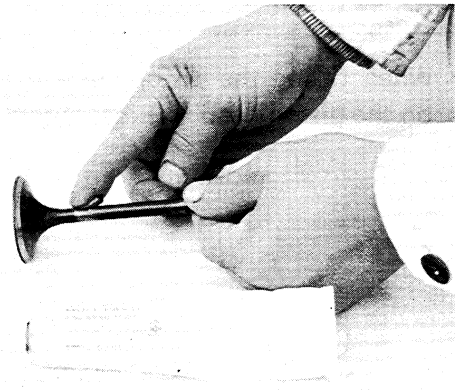


NOTE:
There is a holder for the bottom end of the cam chain guide cast in the crankcase. Be sure that the guide is inserted properly or binding of the cam chain and guide may result.

VALVE AND SPRING

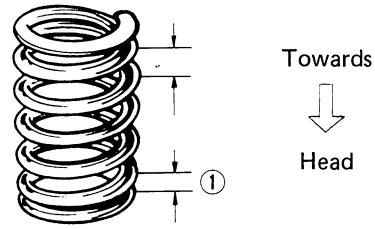
- Insert the valves, with their stems coated with (SUZUKI MOLY PASTE) all around and along the full stem length without any break.
  Similarly oil the lip of the stem seal.

Suzuki moly paste	99000-25140

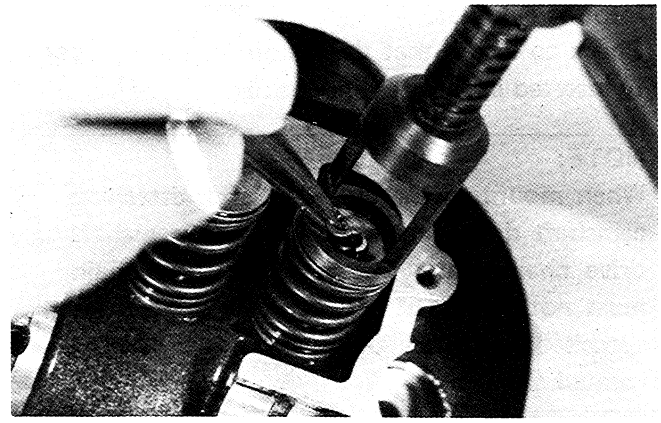


CAUTION:
When inserting each valve, take care not to damage the lip of the stem seal.

- Install valve springs, making sure that the close-pitch end ① of each spring goes in first to rest on the head. The coil pitch decreases from top to bottom, as shown below.

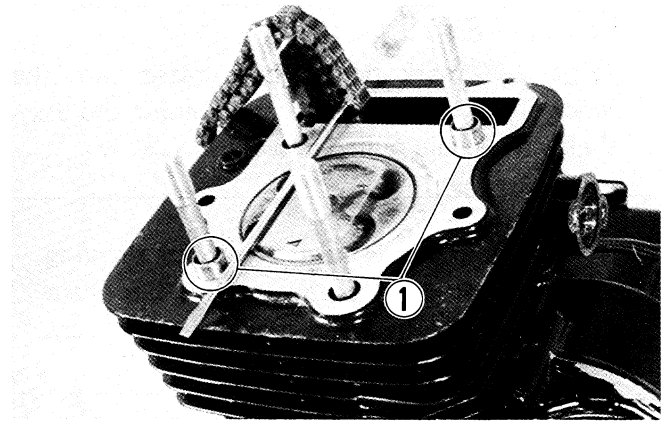


- Fit valve spring retainer, compress spring with a valve lifter and insert cotters.



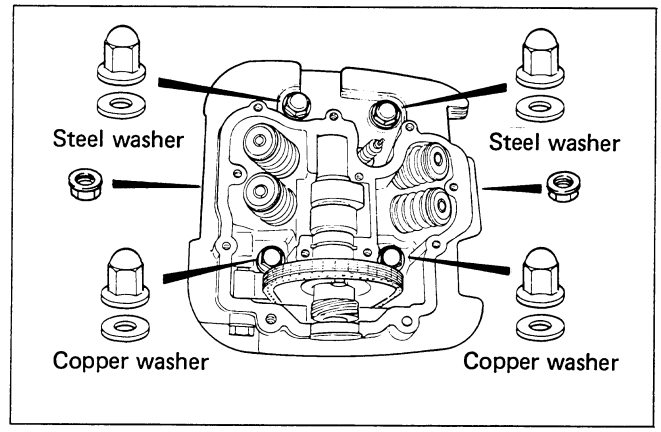
CYLINDER HEAD

- Fit dowel pins ① to cylinder head and then, attach new gasket to cylinder head.



CAUTION:
Use a new cylinder head gasket to prevent oil leakage. Do not use the old gasket.

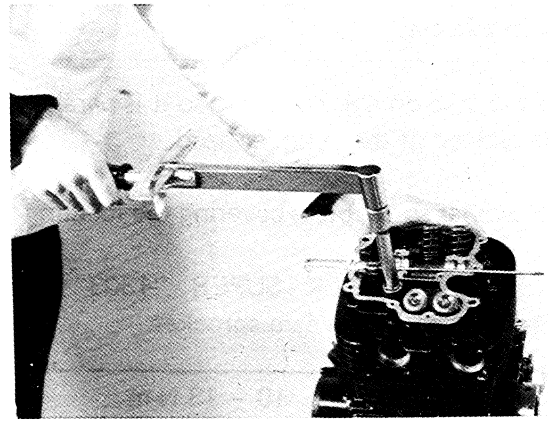
- Copper washers and cap nuts are used to secure the cylinder head. These parts must be fitted in the correct position.



- With the head snugly seated on the cylinder, secure it by tightening the nuts diagonally. Tighten each nut to the torque value specified below:

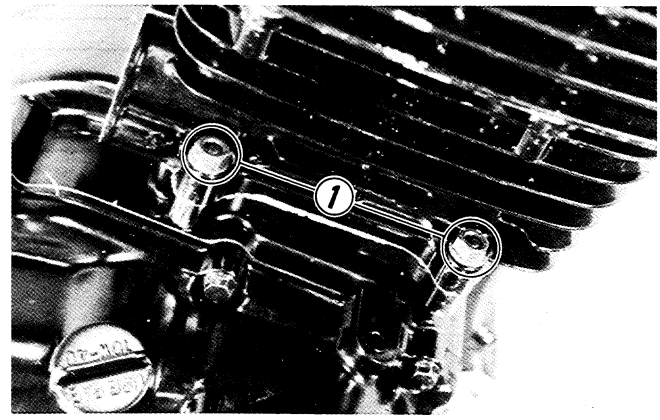
Cylinder head nuts tightening torque

10 mm Diam.	35 – 40 N·m (3.5 – 4.0 kg-m) (25.5 – 29.0 lb-ft)
6 mm Diam.	7 – 11 N·m (0.7 – 1.1 kg-m) (5.0 – 8.0 lb-ft)

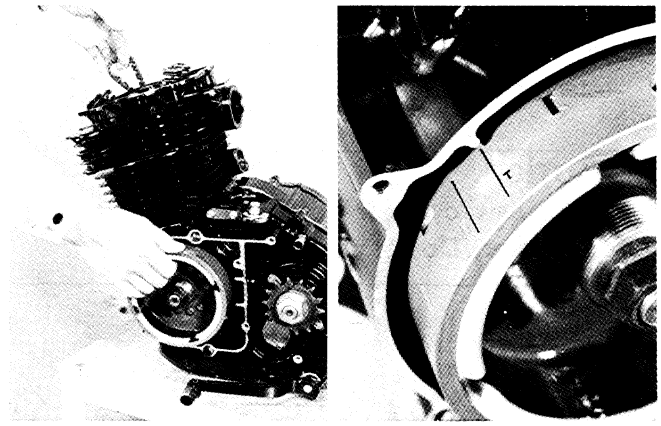


- After tightening the cylinder head nuts to the specified torque, tighten the cylinder base nuts ①.

Cylinder base nuts tightening torque	7 – 11 N·m (0.7 – 1.1 kg-m) (5.0 – 8.0 lb-ft)



CAMSHAFT



- Align "T" mark on magneto rotor with the index mark on the crankcase keeping the camshaft drive chain pulled upward.

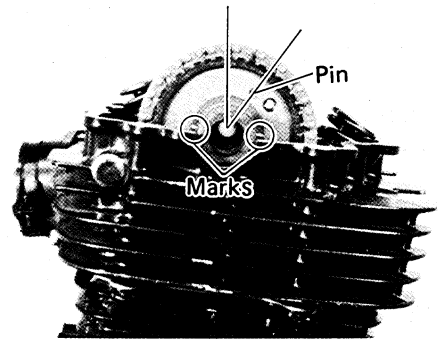
NOTE:
If the crankshaft is turned without drawing the camshaft drive chain upward, the chain will be caught between crankcase and cam chain drive sprocket.

NOTE:
Apply grease on the cam sprocket locating pin and install the pin into the camshaft.

- Engage the chain on the cam sprocket with the locating pin hole at the one o'clock position.

NOTE:
Do not rotate magneto rotor while doing this. When the sprocket is not positioned correctly, turn the sprocket. When installing the camshaft into the cam sprocket, pay attention not to dislodge the locating pin or it may fall into the crankcase.

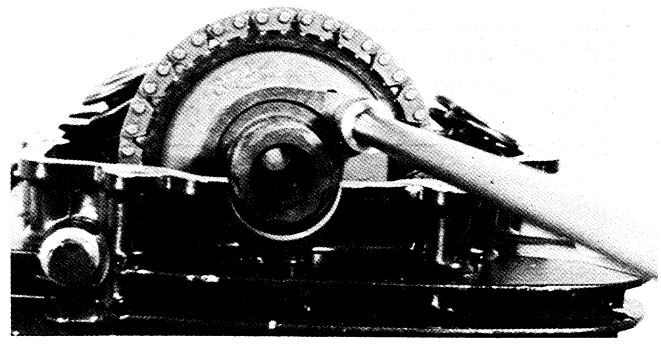
- Align the marks on the camshaft so it is parallel with the surface of the cylinder head.



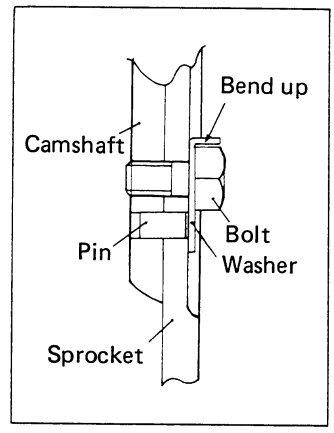
- Fit lock washer so that it is covering the locating pin.
- Apply THREAD LOCK SUPER "1303" to the bolts and tighten the cam sprocket.

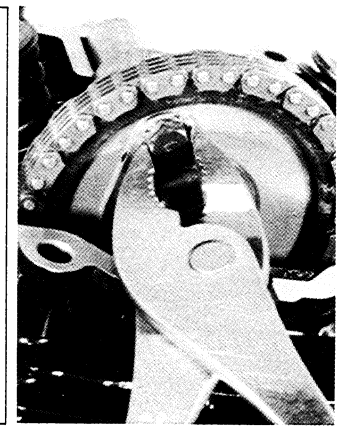
Tightening torque	10 – 13 N·m (1.0 – 1.3 kg-m) (7.0 – 9.0 lb-ft)

Thread lock super "1303"	99000-32030



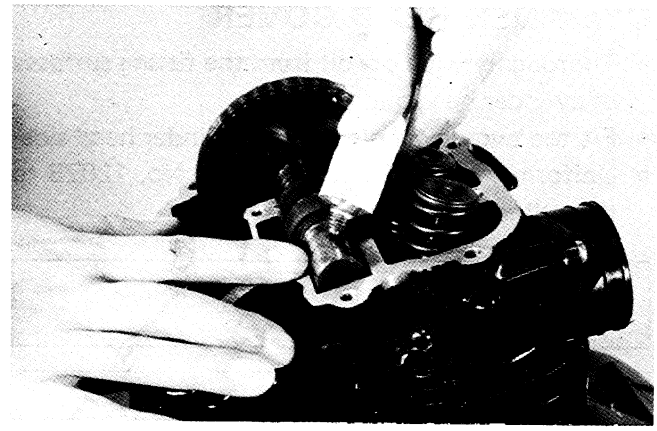
- Bend up the washer tongue positively to lock the bolts.





- Apply SUZUKI MOLY PASTE to the camshaft journal and place camshaft on cylinder head.

Suzuki moly paste	99000-25140

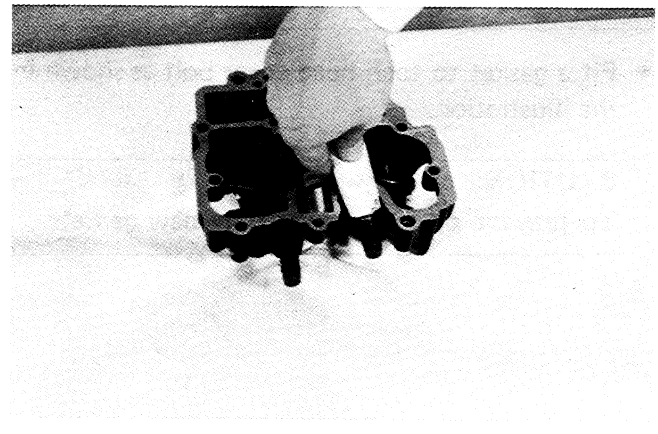


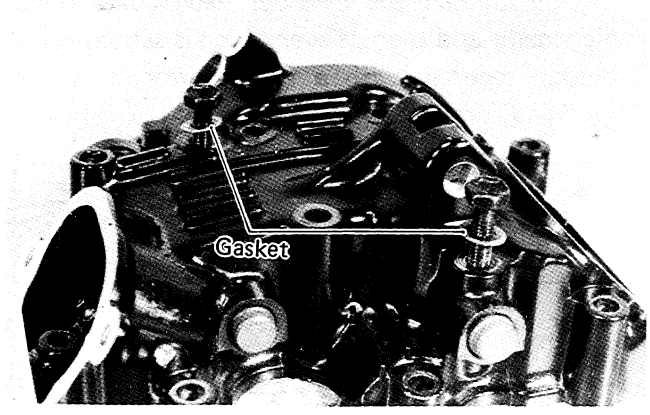
VALVE ROCKER ARM AND SHAFT

- Apply SUZUKI MOLY PASTE to the rocker arms and shafts.
- After inserting the shafts, tighten the set bolts.

NOTE:
Use a conically recessed top bolt to retain the shaft.

CAUTION:
*** Use a new O-ring on the rocker arm shafts to prevent oil leakage.**
*** Use a new gasket on the set bolts to prevent oil leakage.**





DE-COMPRESSION SHAFT

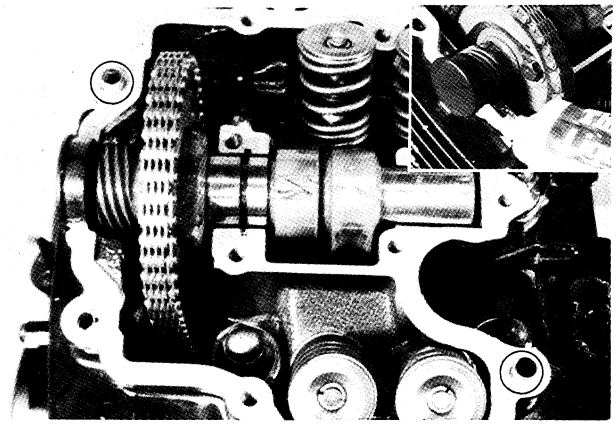
- Apply SUZUKI MOLY PASTE to the de-compression shaft, and then insert the de-compression shaft.

CYLINDER HEAD COVER

- Thoroughly wipe off oil from the fitting surfaces of cylinder head and cover.
- Fit the two dowel pins to the cylinder head side.
- Uniformly apply SUZUKI BOND No. 1207B to the cylinder head surface.

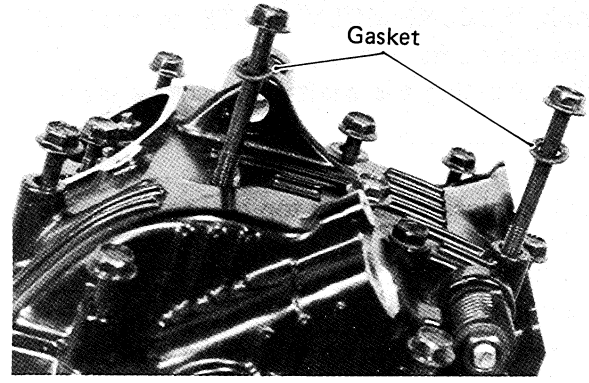
SUZUKI Bond No. 1207B	99104-31140

NOTE:
Do not apply SUZUKI BOND No. 1207B to the camshaft end cap.



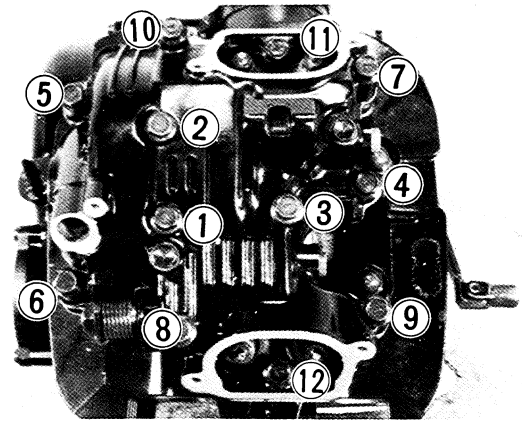
- Fit a gasket to each head cover bolt as shown in the illustration.

CAUTION:
To prevent oil leakage use only new gaskets.



- Lightly tighten the cylinder head cover bolts diagonally and then, if everything is satisfactory, tighten securely with a torque wrench to the specified torque.

Tightening torque	9 – 10 N·m (0.9 – 1.0 kg-m) (6.5 – 7.0 lb-ft)

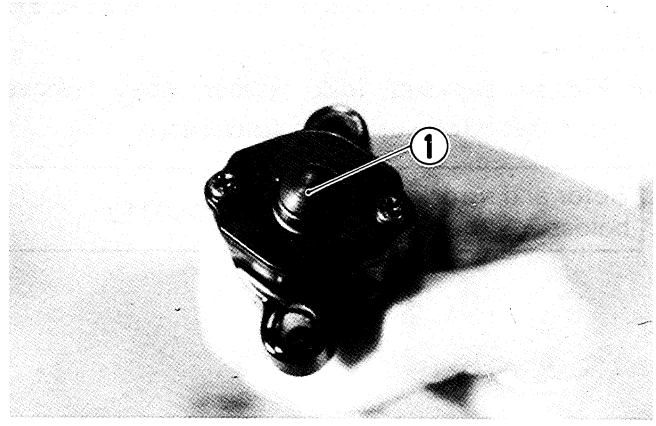


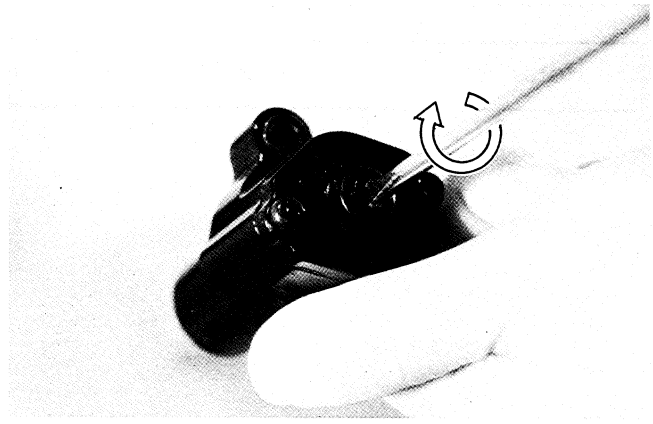
- After tightening the cylinder head cover bolts, insert the welch plug and tighten set screw.

CAM DRIVE CHAIN TENSIONER

Install cam drive chain tensioner following the procedure below.

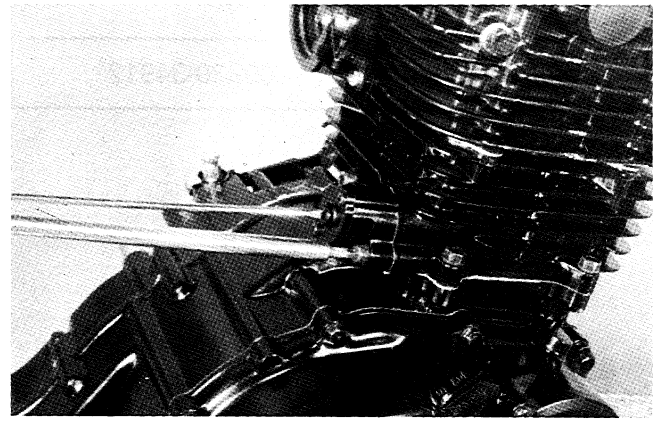
- Remove the cap ① and turn the slotted end of the cylinder shaft with a screw driver in the clockwise direction.





- Mount the chain tensioner on the cylinder.

"T" type hexagon wrench (5 mm)	09911-73730



- Remove the screw driver from the cylinder shaft. As the spring tension forces the cylinder to rotate, the tensioner rod pushes the tensioner blade against the cam drive chain.

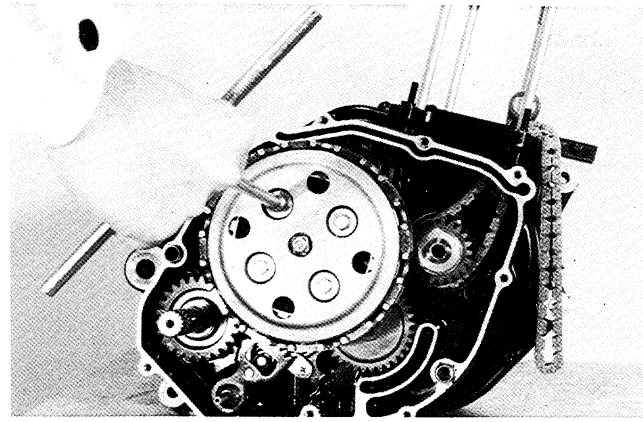
VALVE CLEARANCE

- After tightening the head cover bolts, check and adjust the valve clearance. Refer to page 2 – 6 for procedures.

- Remove clutch spring mounting bolts diagonally while holding the primary driven gear, and remove clutch pressure plate.

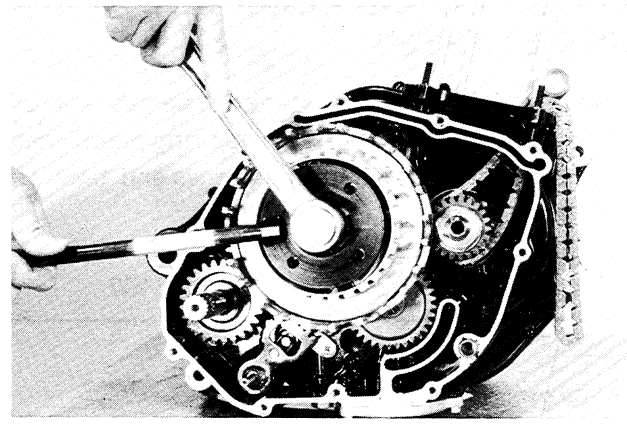
Conrod holder	09910-20116

NOTE:
Do not allow camshaft drive chain to be caught between crankcase and camshaft drive sprocket.

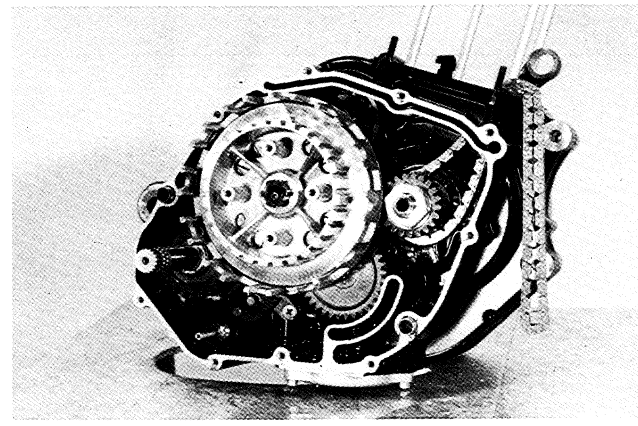


- After removal of clutch drive and driven plates, flatten the lock washer and remove the clutch sleeve hub nut by using the special tool.

Clutch sleeve hub holder	09920-53721



- Take off the sleeve hub with the primary driven gear ass'y.

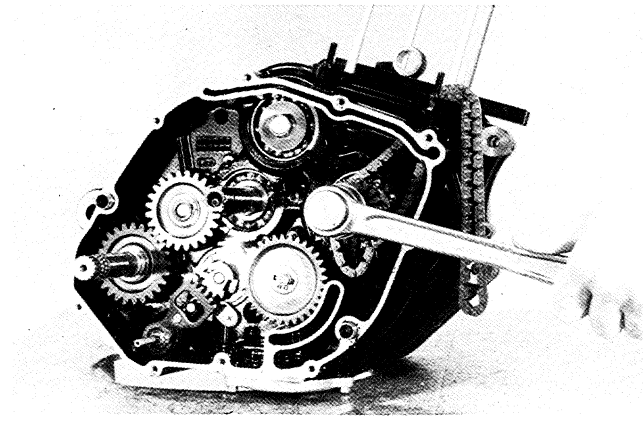


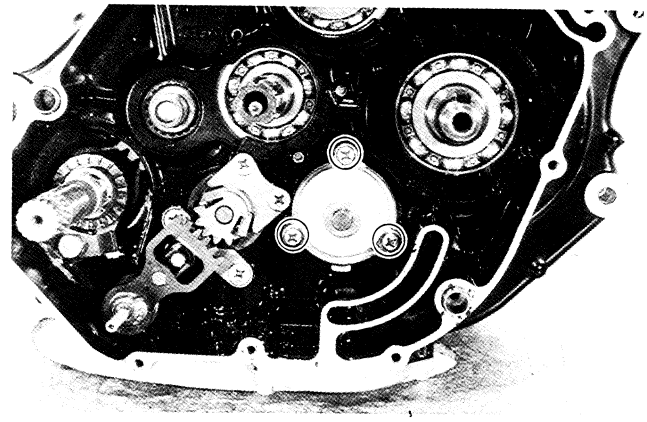
PRIMARY DRIVE GEAR AND CAMSHAFT DRIVE CHAIN

- Remove primary drive gear nut, then remove wave washer, primary drive gear and key.

Conrod holder	09910-20116

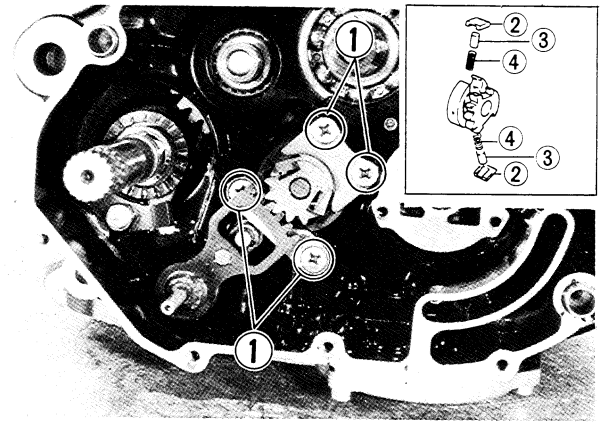
CAUTION:
This is a left-hand thread nut.





GEAR SHIFTER

- To remove cam driven gear, first remove gear shifting shaft and loosen pawl lifter and cam guide screws (1) with a impact driver.

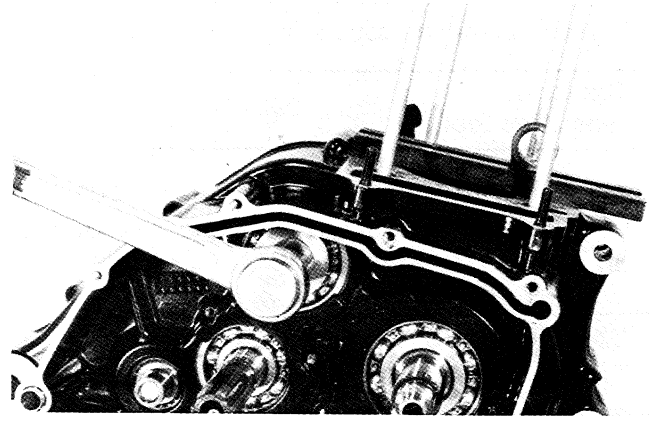


NOTE:
When removing cam driven gear, do not lose gear shifting pawl ②, pin ③ and spring ④.

BALANCER

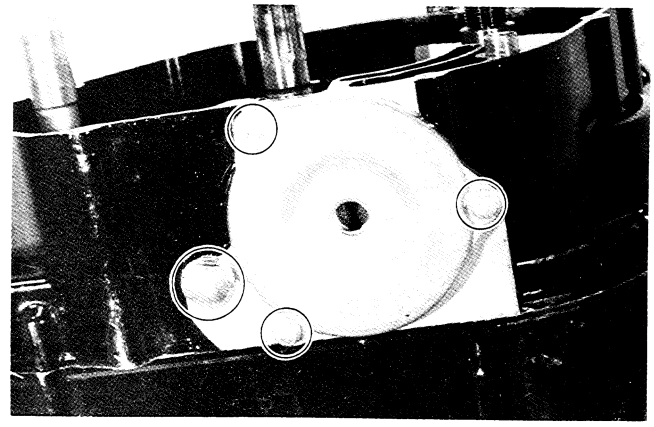
- Remove balancer setting bolt.

Conrod holder	09910-20116

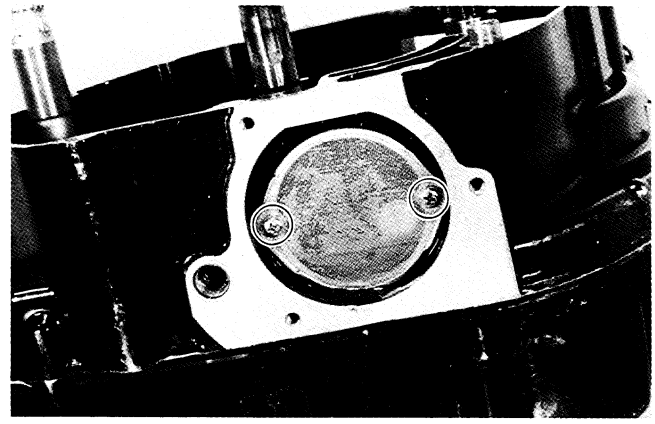


CRANKCASE

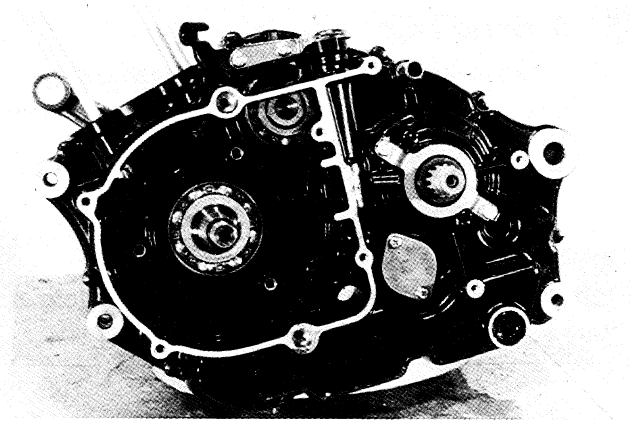
- Remove sump filter cap and neutral cam stopper.



- Remove sump filter.

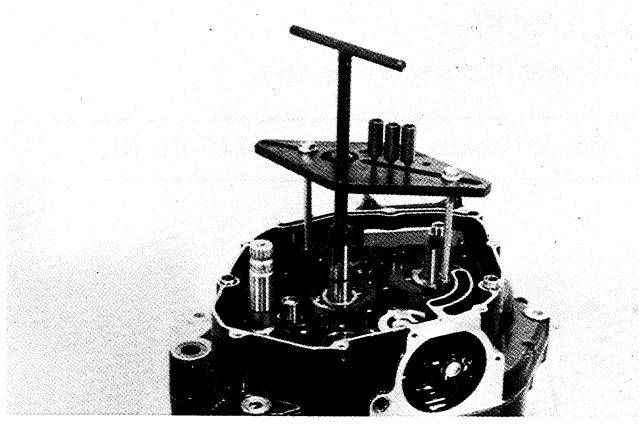


- Remove crankcase set bolts.



- Separate the crankcase into 2 parts, right and left with crankcase separating tool.

Crankcase separating tool	09920-13111

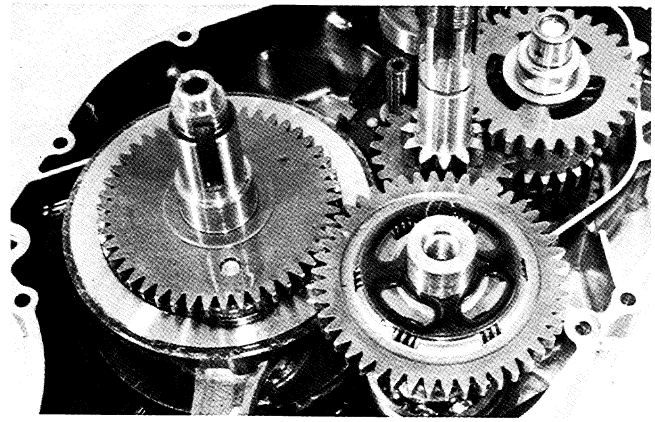


- Fit the crankcase separating tool, so that the tool plate is parallel with the end face of the crankcase.

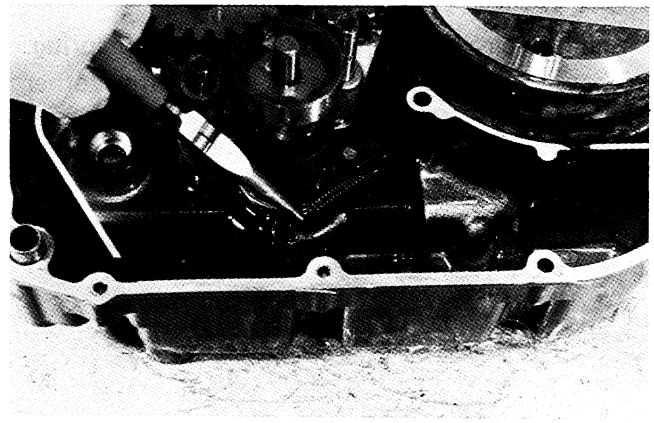
CAUTION:
The crankshaft and transmission components must remain in the left crankcase half. This is necessary because the gear shifting cam stopper is mounted on the left crankcase half and will be damaged if the transmission components remain in the right half.

TRANSMISSION AND BALANCERSHAFT

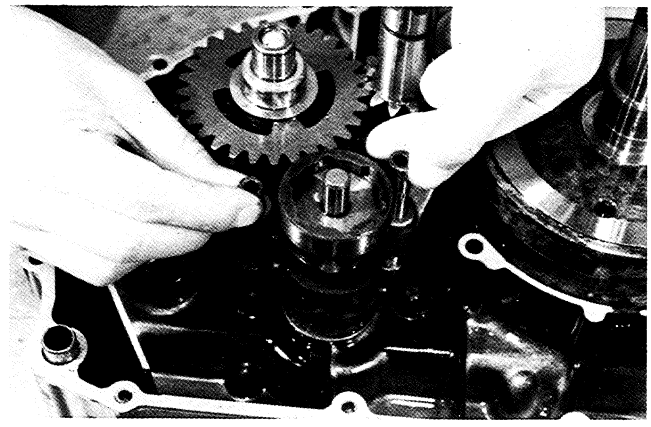
- Remove balancer drive gear.
- Remove balancer driven gear ass'y with balancer driven gear plates, outer and inner, then remove key.



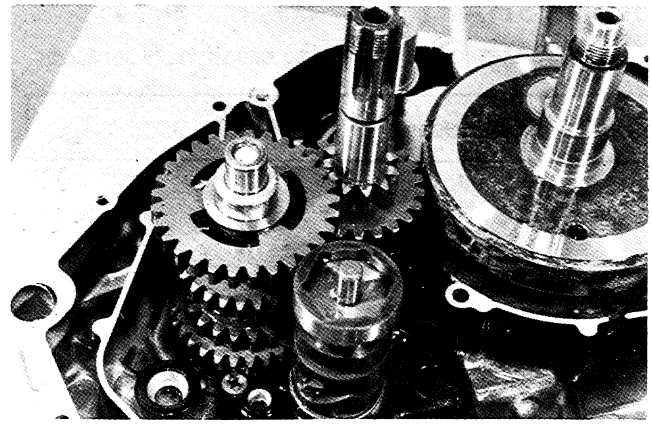
- Remove gear shifting cam stopper spring.



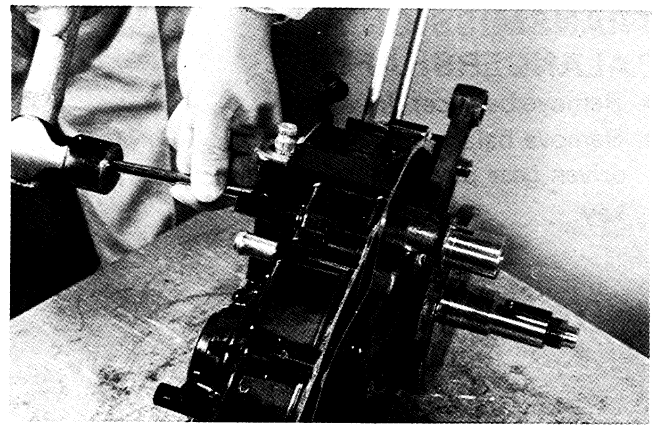
- Draw out gear shifting fork shafts and take off forks.



- Remove clusters of gears and gear shifting cam.

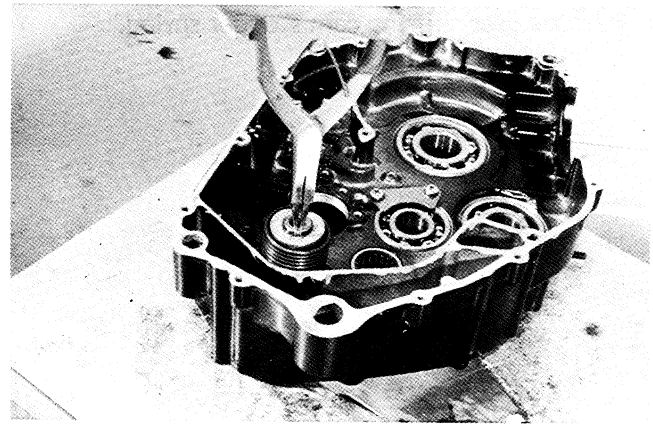


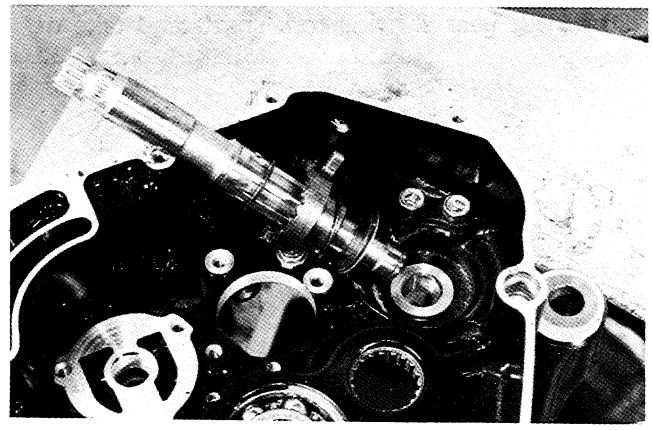
- Knock out balancershaft by using a soft drift.



KICK STARTER SHAFT

- Remove circlip, spring guide and return spring.
- Then, pull out the kick starter shaft from other side.

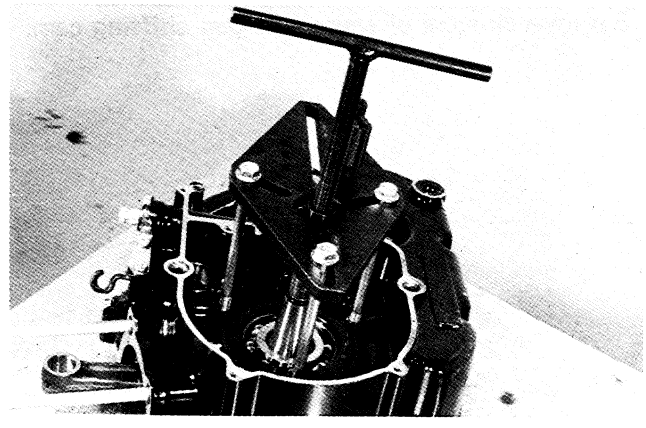




CRANKSHAFT

- Remove crankshaft by using crankshaft remover.

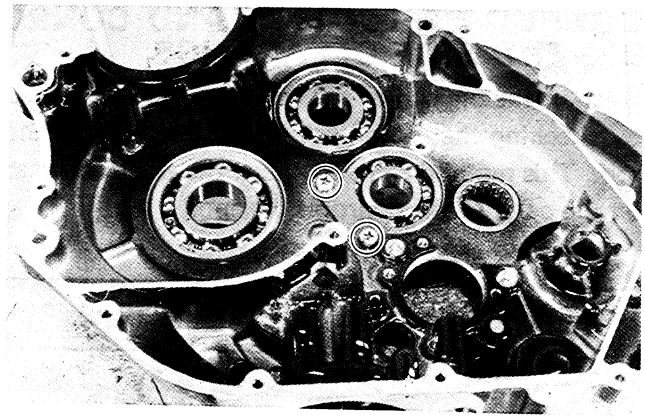
Crankshaft remover	09920-13111

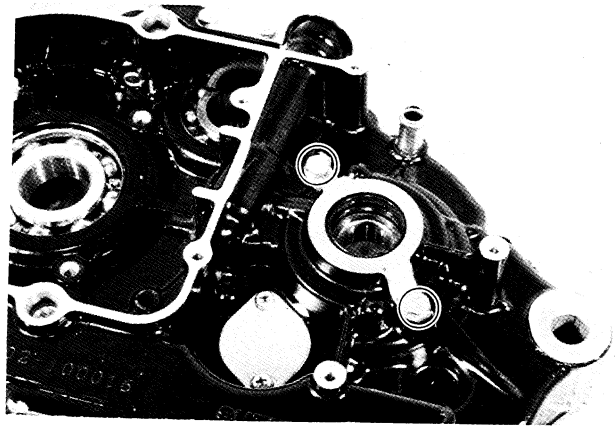


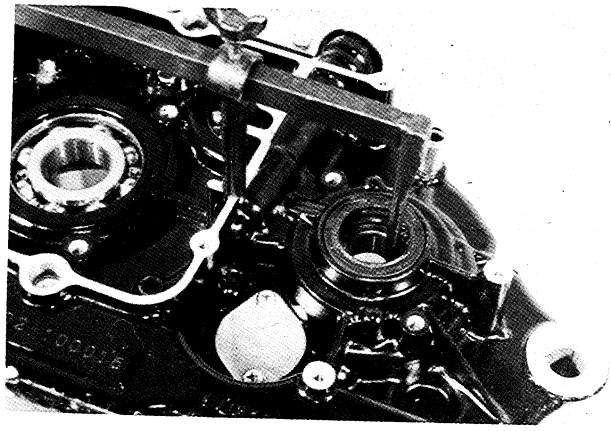
OIL SEAL AND BEARING

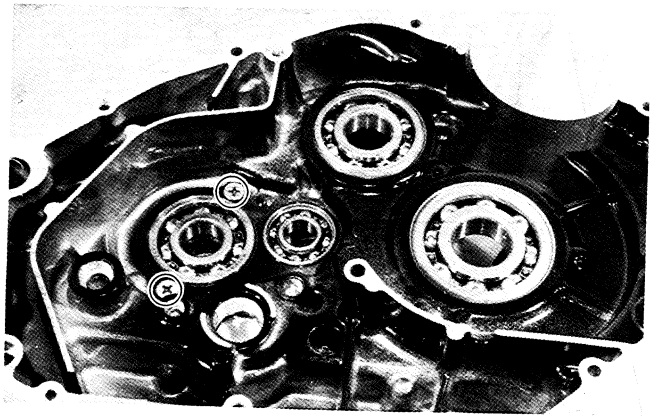
- Using the special tools, remove retainers, oil seals and bearings.

Oil seal remover	09913-50121





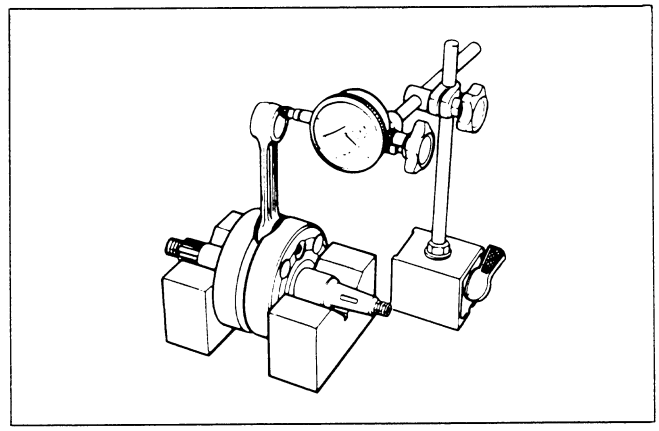




LOWER END COMPONENTS INSPECTION AND SERVICING

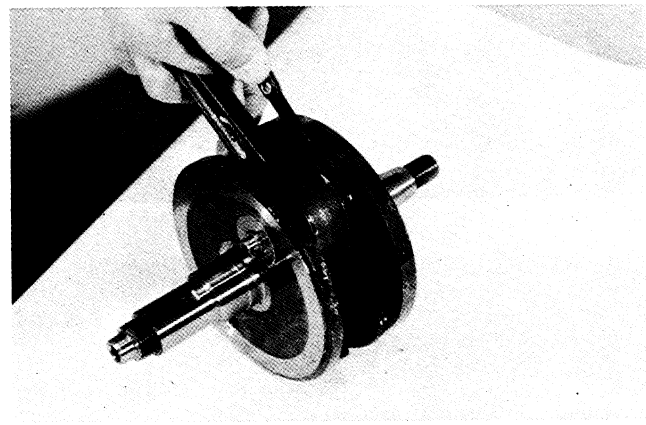
CONROD DEFLECTION AND CONROD BIG END SIDE CLEARANCE

Wear on the big end of the conrod 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 conrod's big end.



Service limit	3.0 mm (0.12 in)

Push the big end of the conrod to one side and measure its side clearance with a thickness gauge.



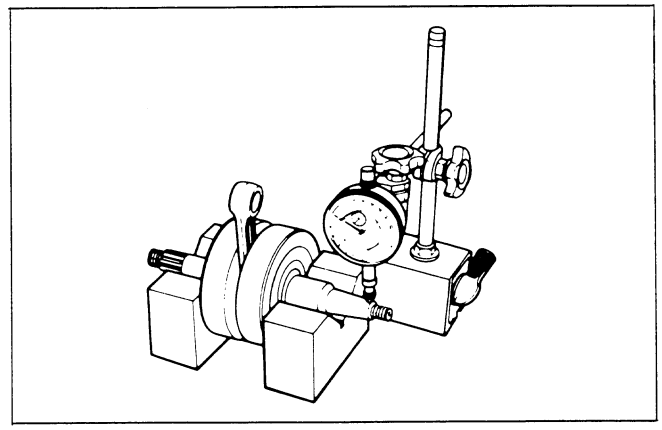
Standard	Service limit
0.10 – 0.65 mm (0.004 – 0.026 in)	1.00 mm (0.039 in)

Where the limit is exceeded, replace crankshaft assembly or reduce the deflection and the side clearance to within the limit by replacing the worn parts – conrod, big end bearing, crankpin and thrust washers, etc. (Refer to the SERVICE DATA)

CRANKSHAFT RUNOUT

Support the crankshaft with "V" blocks as shown, with the two end journals resting on the blocks. Position the dial gauge, as shown, and rotate the crankshaft slowly to read the runout.

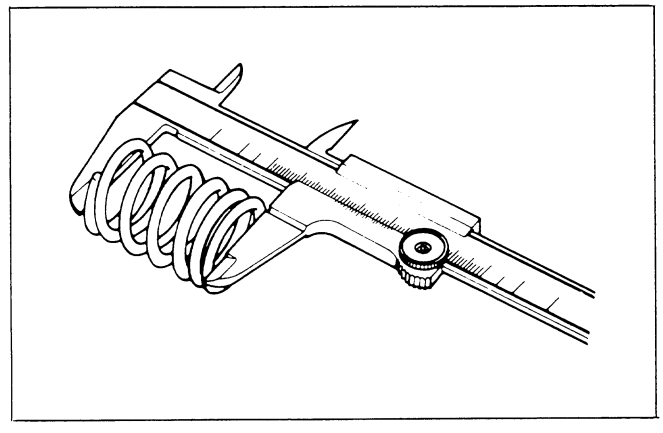
Correct or replace the crankshaft if the runout is greater than the limit.



Service limit	0.05 mm (0.002 in)

BALANCER SPRING FREE LENGTH

Measure the free length of each coil spring with a vernier calipers, and determine the elastic strength of each. Replace any spring not within the limit.



Vernier calipers	09900-20101

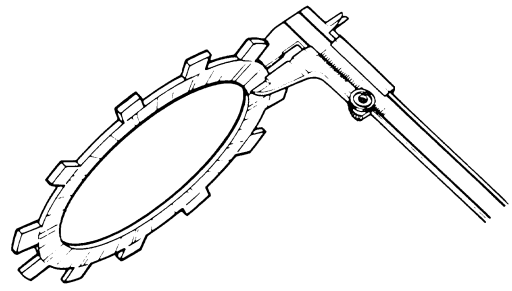
Service limit	9.9 mm (0.39 in)

CLUTCH DRIVE PLATE

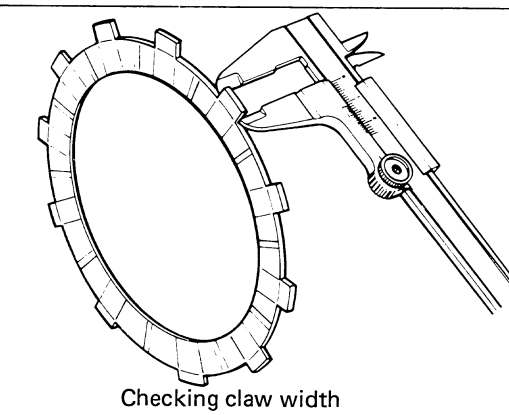
Measure the thickness and claw width of each drive plate with vernier calipers. Replace drive plates found to have worn down to the limit.

Vernier calipers	09900-20101

Item	Standard		Limit
Thickness	No. 1	2.90 – 3.10 mm (0.114 – 0.122 in)	2.60 mm (0.102 in)
	No. 2	3.45 – 3.55 mm (0.136 – 0.140 in)	3.15 mm (0.124 in)
Claw width	15.8 – 16.0 mm (0.62 – 0.63 in)		15.0 mm (0.59 in)



Checking thickness



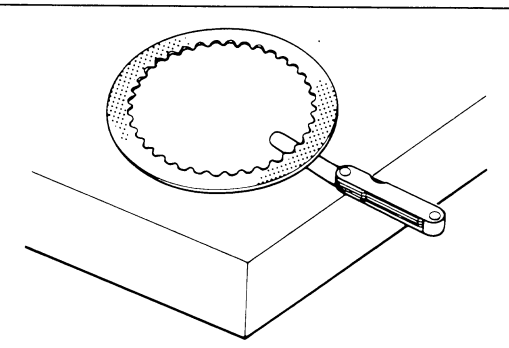
Checking claw width

CLUTCH DRIVEN PLATE

Measure each driven plate for distortion with a thickness gauge. Replace driven plates which exceed the limit.

Thickness gauge	09900-20803

Service limit	0.1 mm (0.004 in)



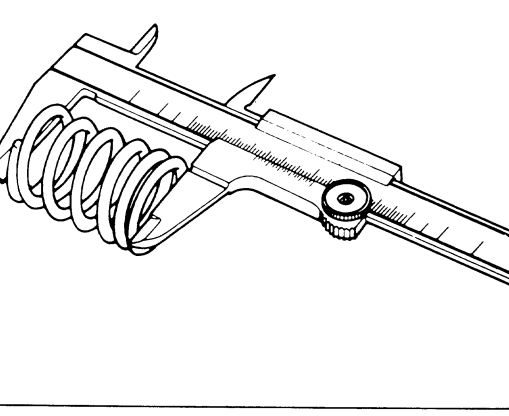
Checking distortion

CLUTCH SPRING FREE LENGTH

Measure the free length of each coil spring with a vernier calipers, and determine the elastic strength of each. Replace any spring not within the limit.

Vernier calipers	09900-20101

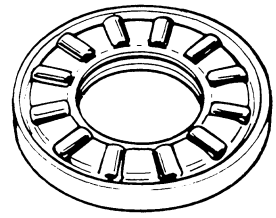
Service limit	34.0 mm (1.34 in)



CLUTCH RELEASE BEARING

Inspect the release bearing for any abnormality, particularly cracks, 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.



SHIFTING FORK AND GEAR

Using a thickness gauge, check the shifting fork clearance in the groove of its gear. If the clearance limit is exceeded by any of the three gears, determine whether the gear or the gear shifting fork should be replaced by measuring the thickness and groove width.

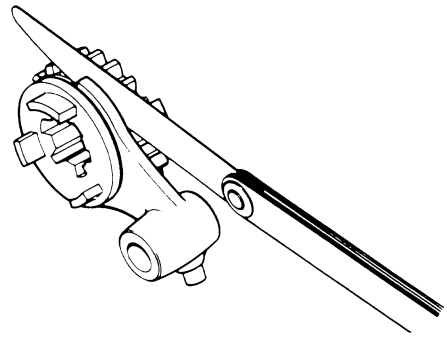
Thickness gauge	09900-20803

Vernier calipers	09900-20101

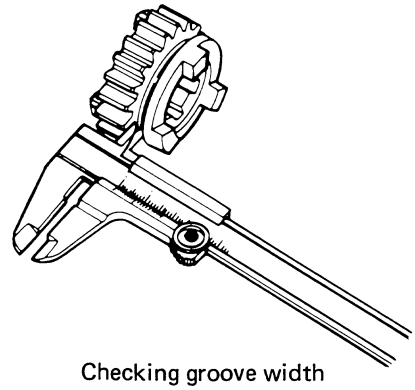
Item	Standard	Limit
Shifting fork to groove clearance	0.20 – 0.40 mm (0.008 – 0.016 in)	0.60 mm (0.023 in)

Shifting fork groove width	
Standard	4.25 – 4.35 mm (0.167 – 0.171 in)

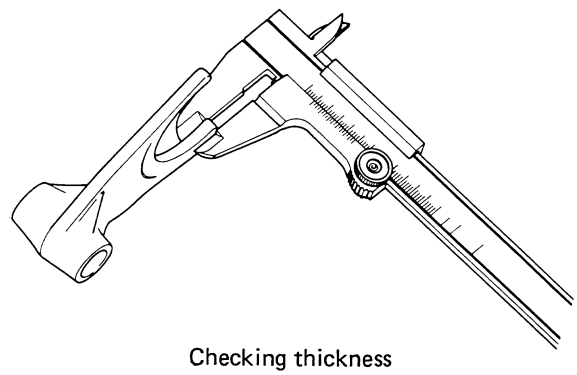
Shifting fork thickness	
Standard	3.95 – 4.05 mm (0.156 – 0.159 in)



Checking clearance



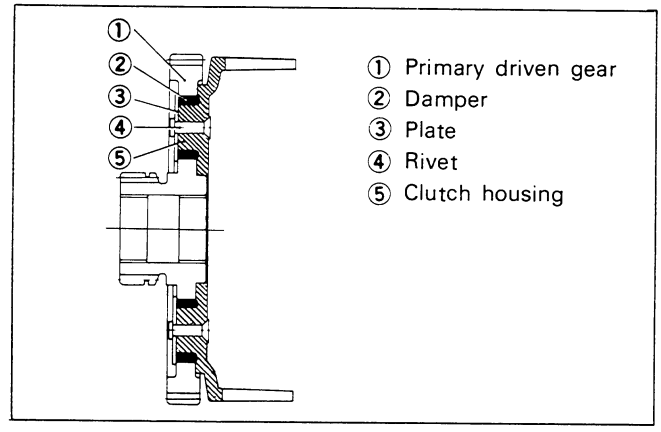
Checking groove width



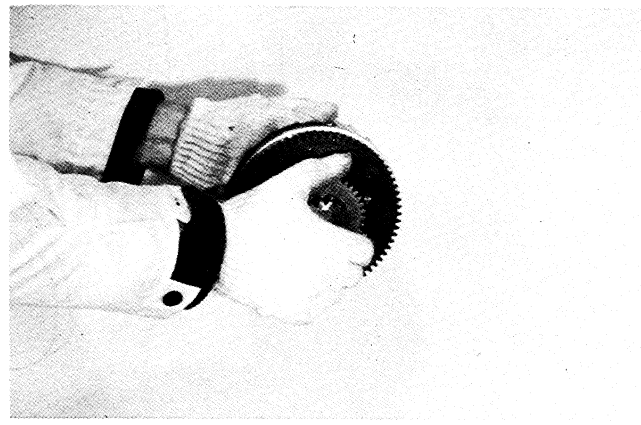
Checking thickness

PRIMARY DRIVEN GEAR

Primary driven gear is composed as shown.



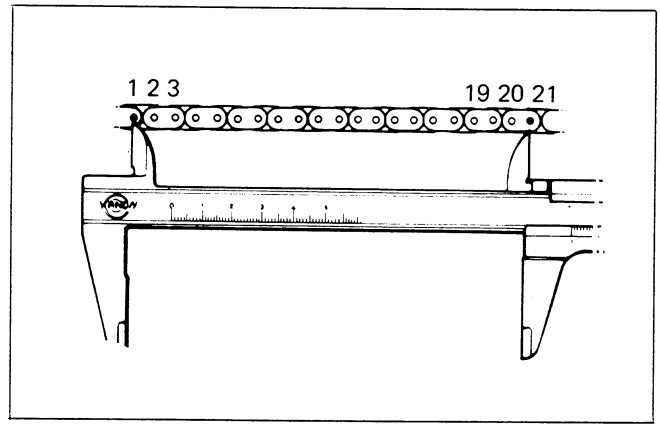
If the internal damper wears, play is generated between gear and housing, causing abnormal noise. If the play is extreme, replace the primary driven gear ass'y with a new one.



CAM CHAIN 20-PITCH LENGTH

Pull the chain tight to remove any slack, then using vernier calipers, measure the 20-pitch (21 pins) length of cam chain. If it measures more than the limit, replace the cam chain.

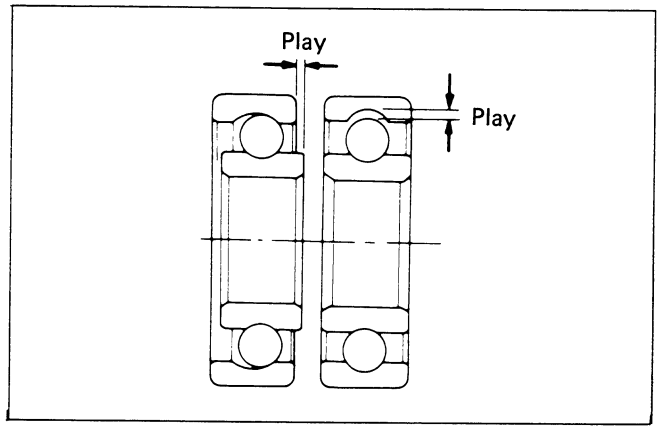
Service limit	128.90 mm (5.075 in)



CRANKCASE BEARING

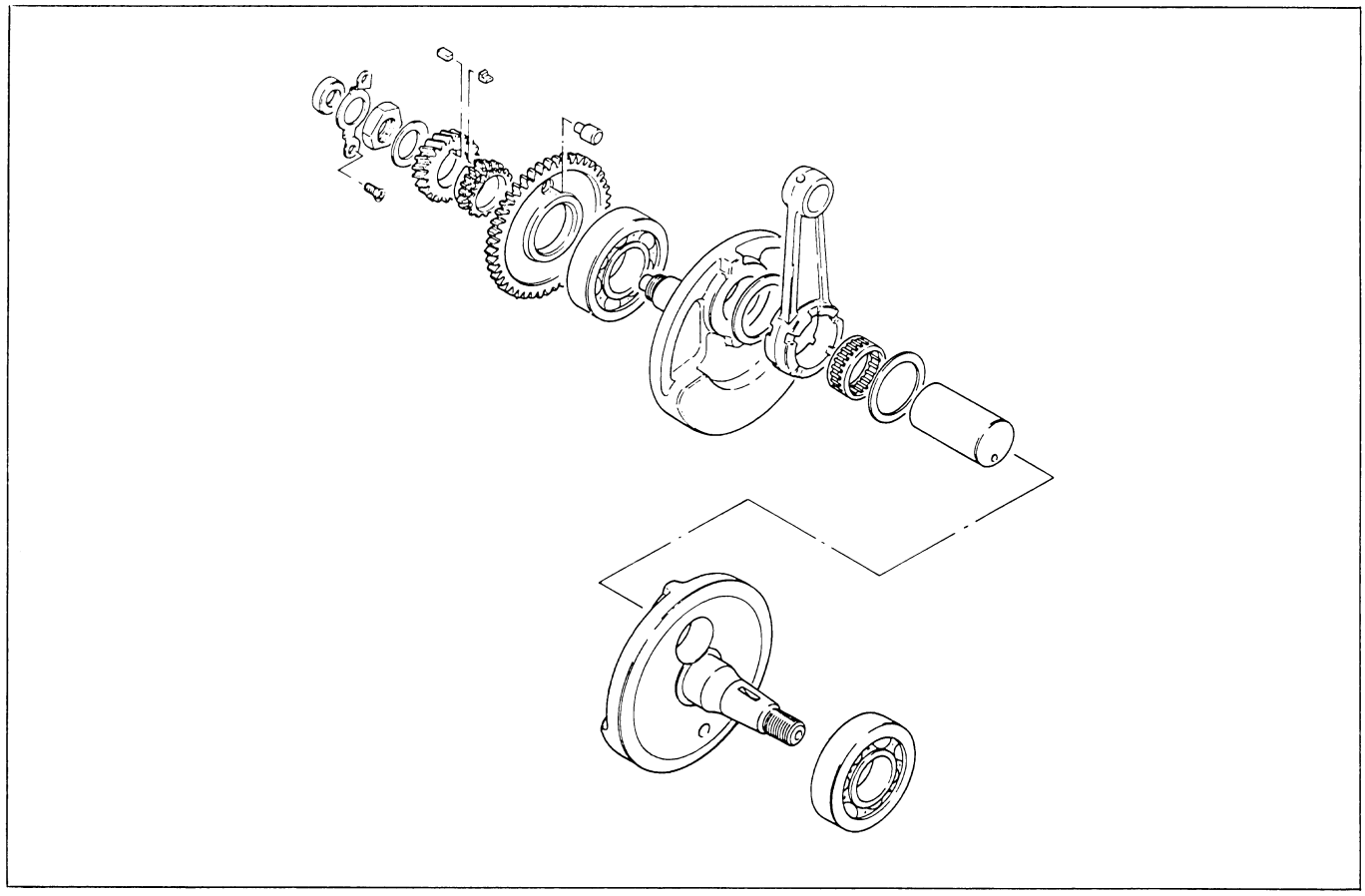
Inspect the play of crankcase bearing inner race by hand while fixing it in the case.

Rotate the inner race by hand to inspect for an abnormal noise and a smooth rotation. Replace the bearing if there is something unusual.



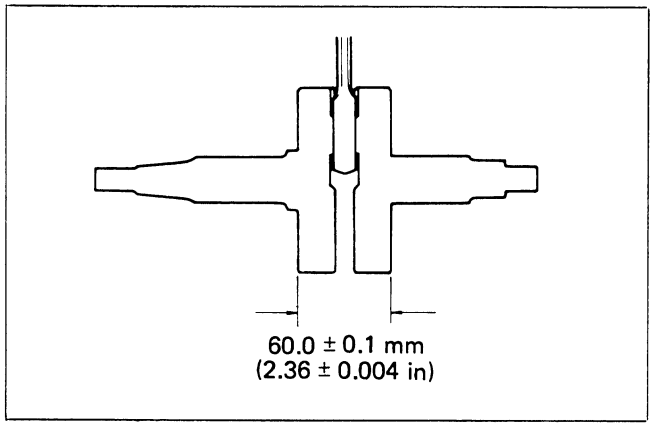
LOWER END COMPONENTS REASSEMBLY

CRANKSHAFT



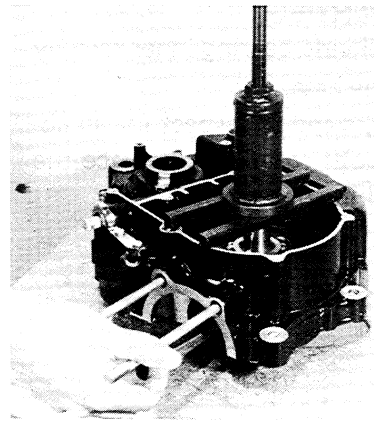
- Decide the width between the webs referring to the figure below when rebuilding the crankshaft.

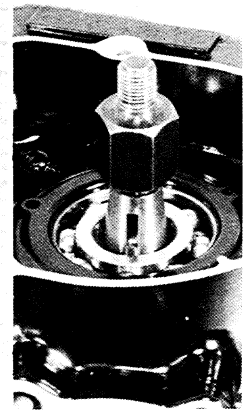
STD width between webs	60.0 ± 0.1 mm (2.36 ± 0.004 in)



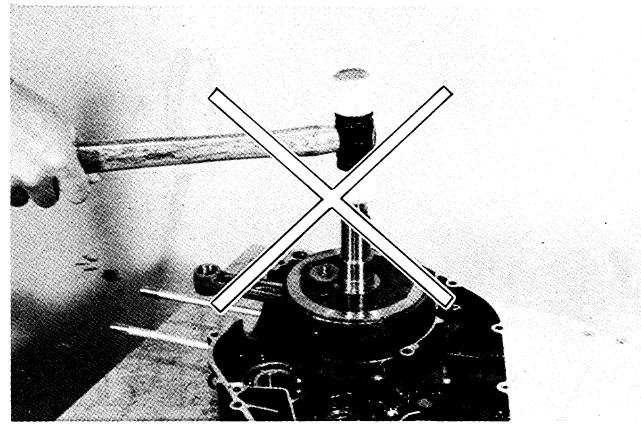
- When mounting the crankshaft in the crankcase, it is necessary to pull its left end into the crankcase.

Crankshaft installer	09910-32812
Conrod holder	09910-20116
Attachment	09930-33710

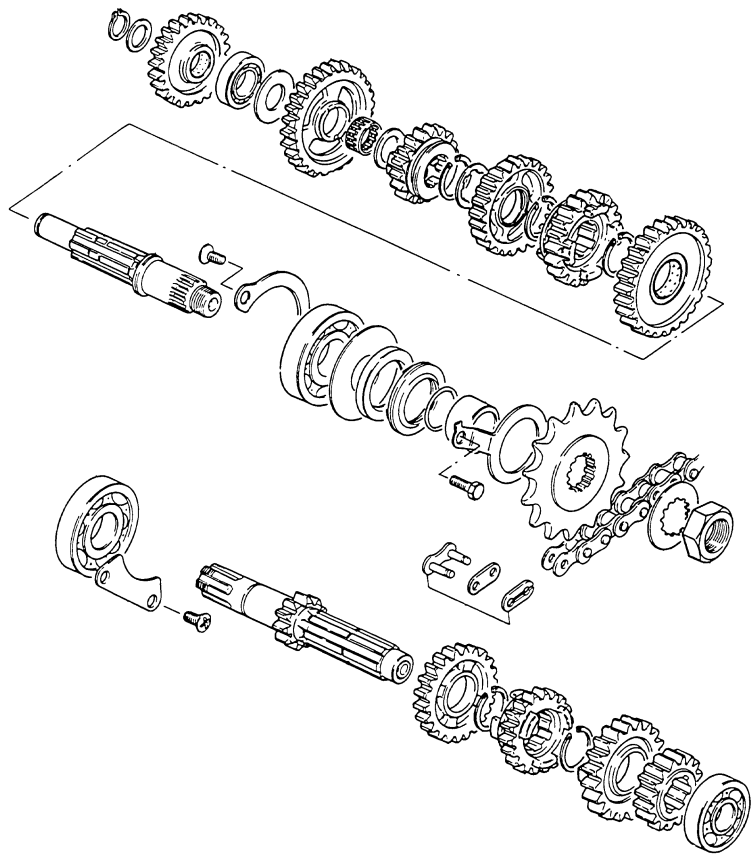




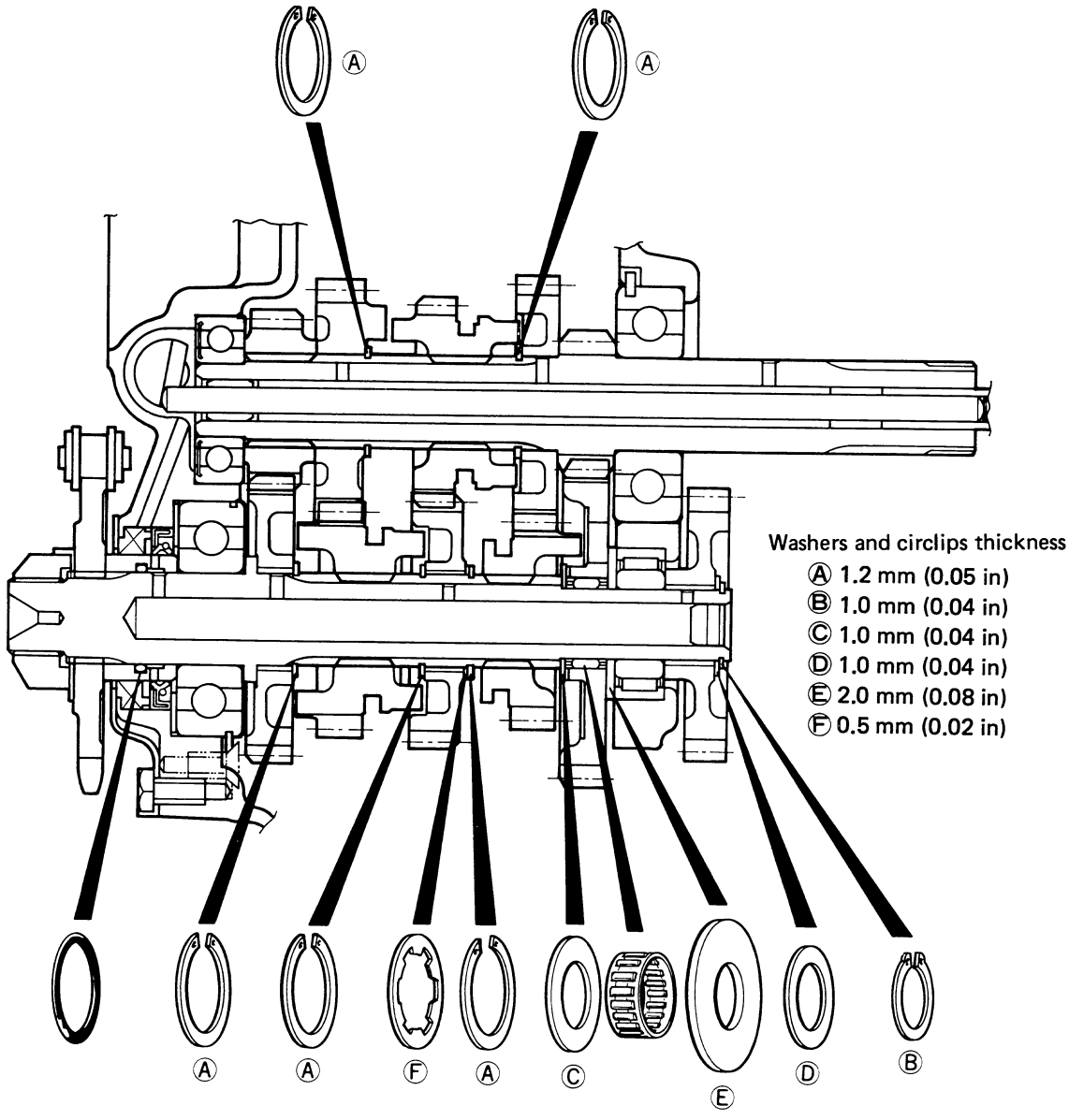
CAUTION:
Never fit the crankshaft into the crankcase by striking it with a plastic hammer.
Always use the special tool, otherwise crankshaft alignment accuracy will be affected.



TRANSMISSION



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

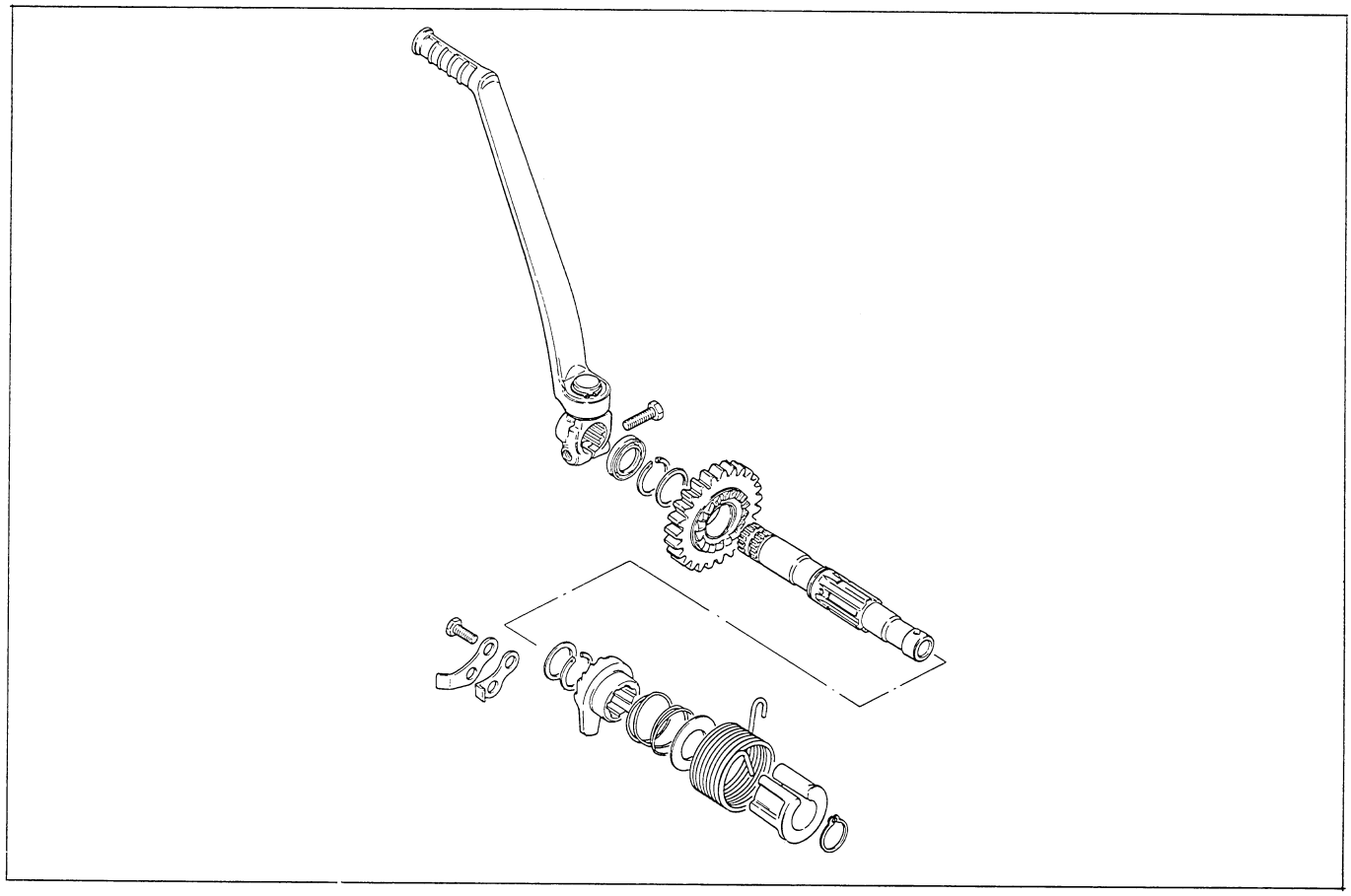


NOTE:

When reassembling the bearing retainer, apply a small quantity of THREAD LOCK "1342" to the threaded parts of the bearing retainer screws.

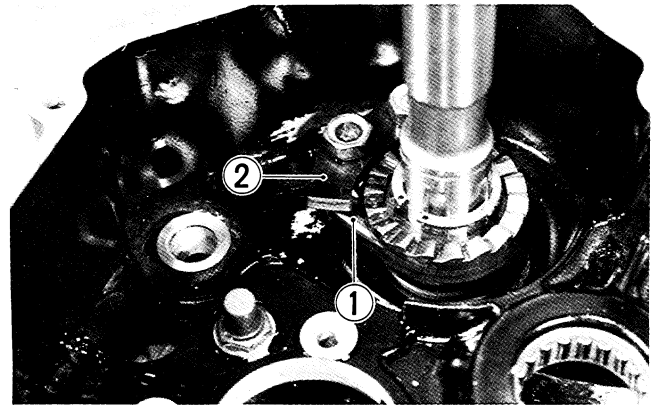
In reassembling the transmission, attention must be given to the locations and positions of washers and circlips. The cross sectional view given here will serve as a reference for correctly mounting the gears, washers and circlips.

KICK STARTER

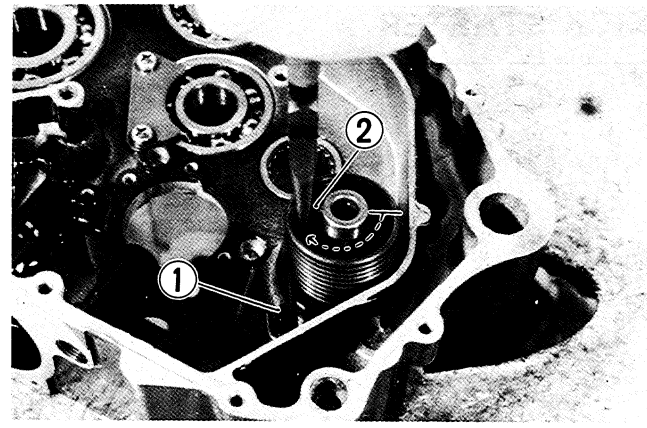


- When fitting the kick starter, be sure to align the punched marks.

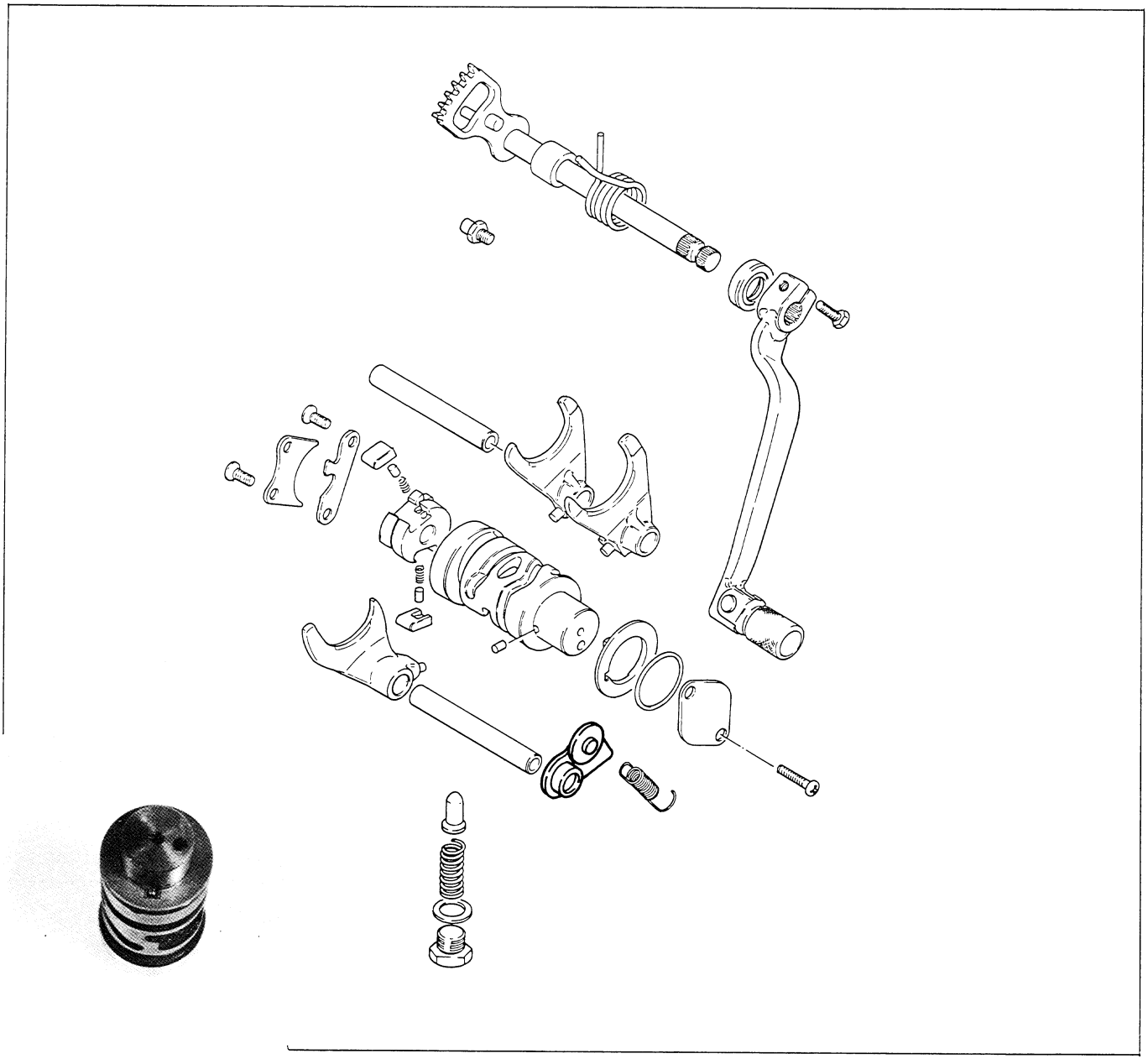
- Fit spring and washer. Then, insert the kick starter shaft into crankcase. Engage pawl ① of kick starter on starter guide ②.



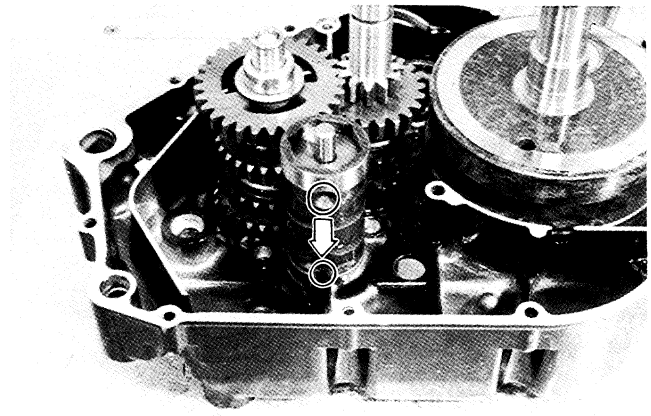
- When fitting kick return spring, hook part ① of return spring onto crankcase, turn it ½ a turn clockwise with pliers and fit part ② of return spring into hole of kick shaft. Then, fit spring guide and circlip.



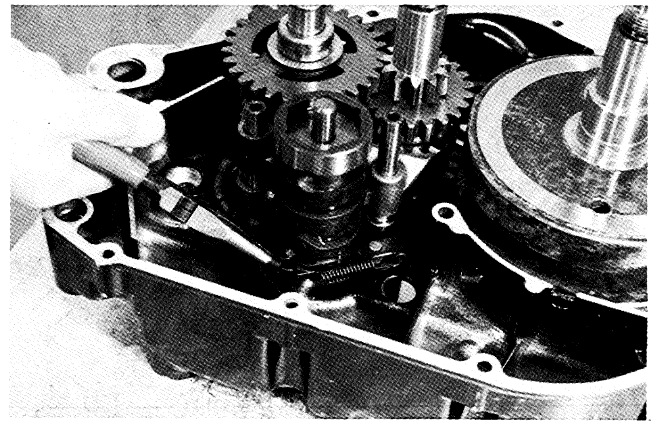
GEAR SHIFTING CAM AND FORK



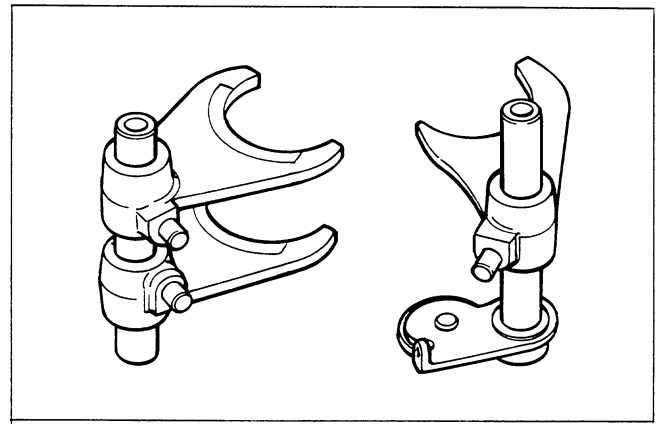
- Fit the gear shifting cam on the crankcase. Position the cam as shown in the illustration so that the gear shifting fork can be installed easily.



- After cam stopper and gear shifting forks have been fitted, hook cam stopper spring onto the crankcase.

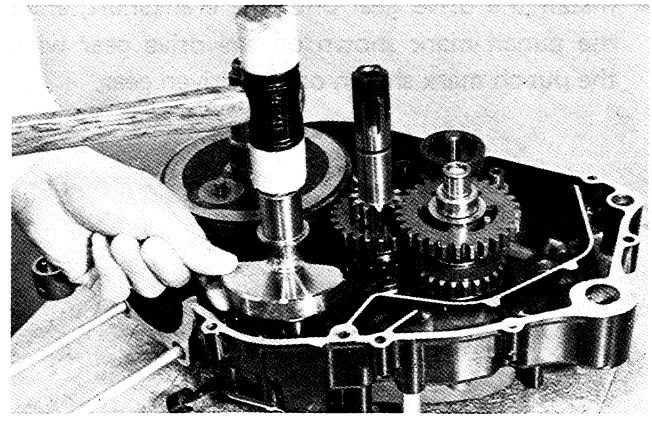


NOTE:
Three gear shifting forks are used. They resemble each other very closely in external appearance and configuration.
Carefully examine the illustration for correct installing positions and directions.

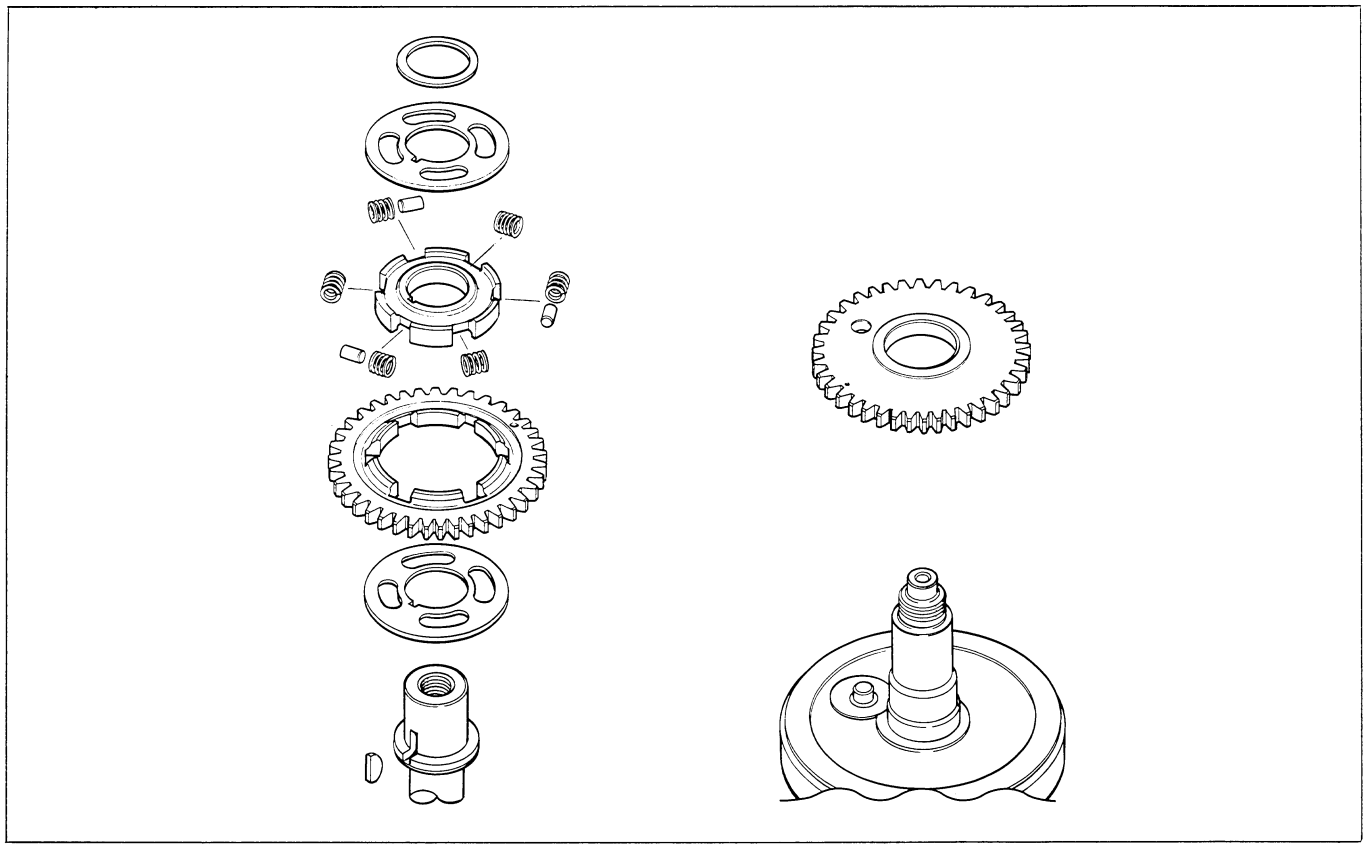


BALANCERSHAFT

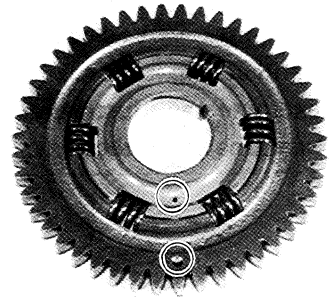
- Install the balancershaft into the left crankcase by plastic hammer, then fit the key.



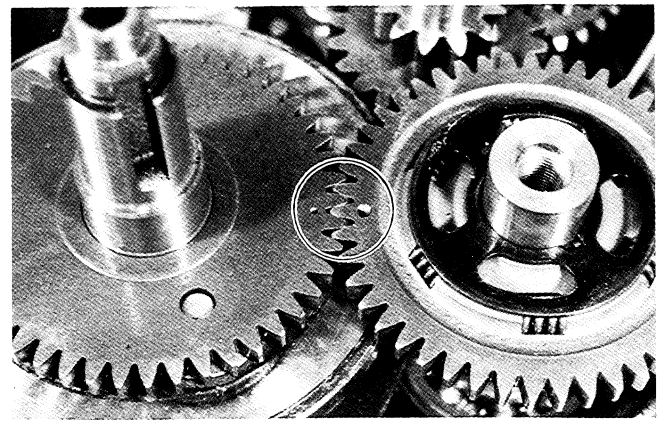
BALANCER DRIVE GEAR AND DRIVEN GEAR

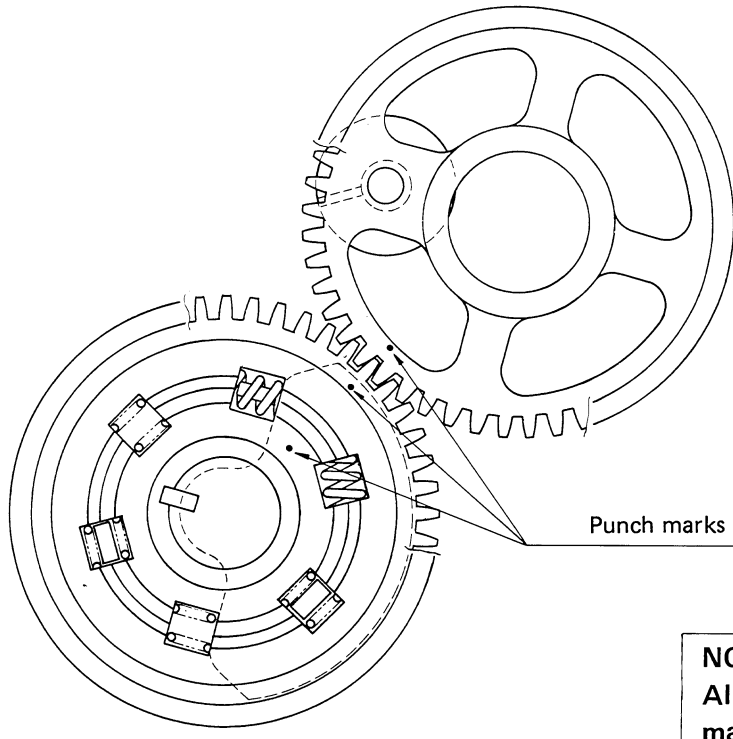


- Align the punch mark shown on the driven gear with the punch mark shown on the inner race, then fit the damper springs and pins.
- Install the driven gear plates and driven gear ass'y onto the balancershaft.



- Install the drive gear onto the crankshaft, align the punch mark shown on the drive gear with the punch mark shown on the driven gear.



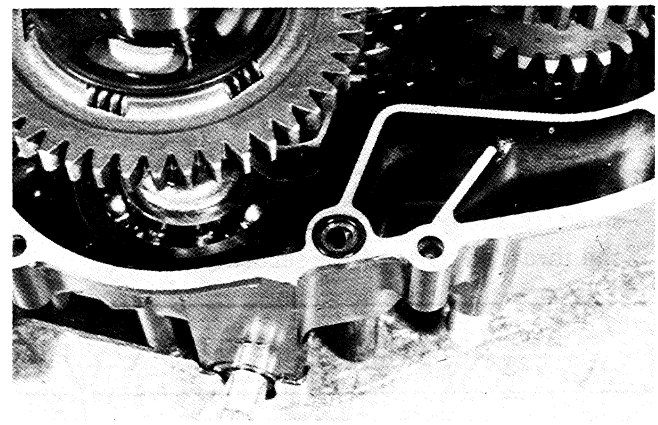


NOTE:
Aligh the three punch marks in line.

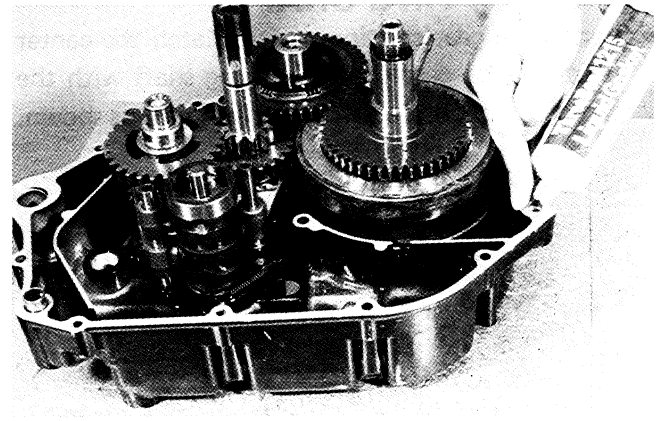
CRANKCASE

When reassembling the crankcase pay attention to the following.

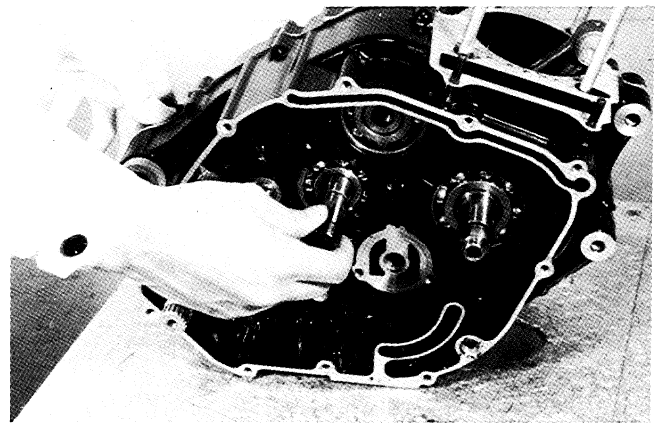
- Coat SUPER GREASE "A" to the lip of oil seals.
- Remove sealant material on the fitting surfaces of right and left halves of crankcase and thoroughly remove oil stains.
- Fit dowel pins on the left half.
- Fit O-ring the left half as shown in Fig.
- Apply engine oil to the big end of the crankshaft conrod and all parts of the transmission gears.



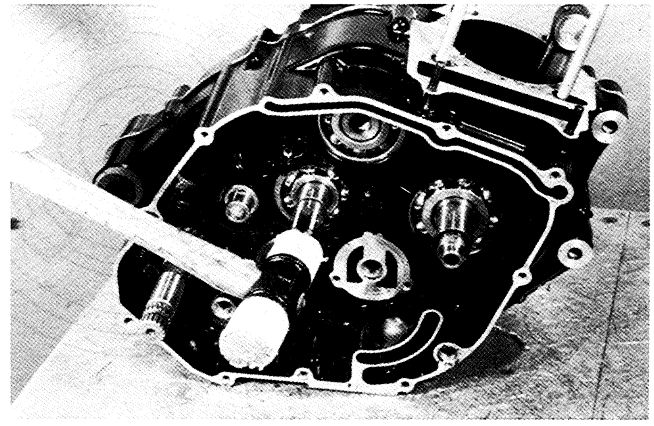
- Apply SUZUKI BOND No. 1207B (99104-31140) uniformly to the fitting surface of the left half of the crankcase, and after waiting a few minutes, fit the right half on the left half.



- After the crankcase bolts have been tightened, check if driveshaft and countershaft rotate smoothly.

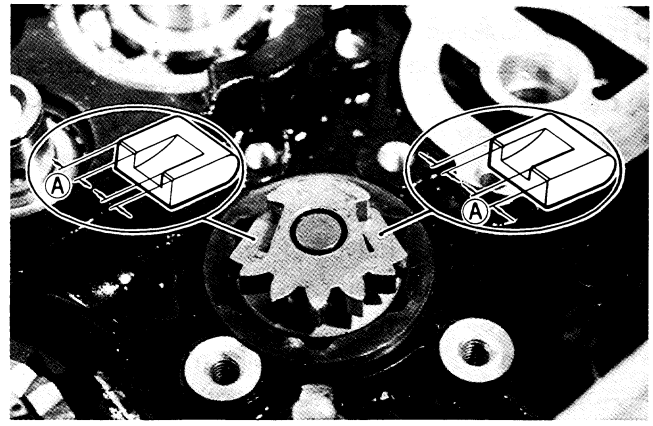


- If a large resistance is felt to rotation, try to free the shafts by tapping the driveshaft or countershaft with a plastic hammer as shown in Fig.



GEAR SHIFTING CAM DRIVEN GEAR

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

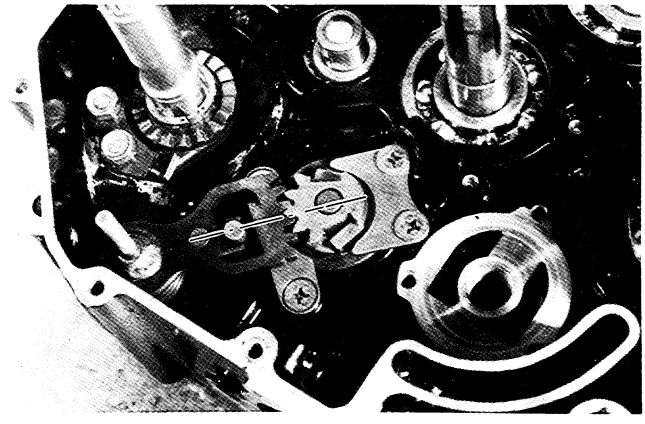


- Next, install cam guide and pawl lifter. Apply a small quantity of THREAD LOCK "1342" to the threaded parts of the securing screws.

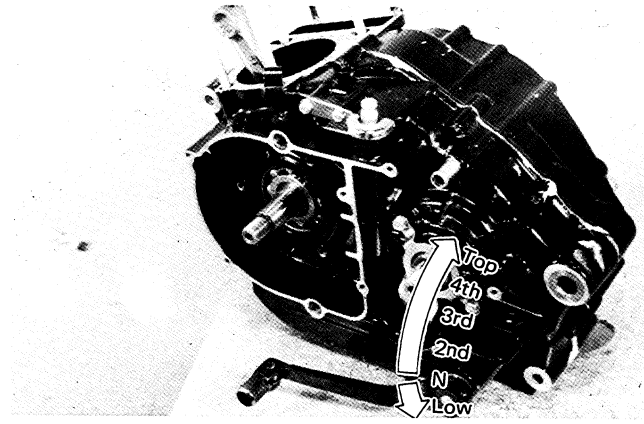
Thread lock "1342"	99000-32050

GEAR SHIFTING SHAFT

- Install the gear shifting shaft. Match the center teeth of the gear on the shifting shaft with the center teeth on the shifting driven gear as shown.



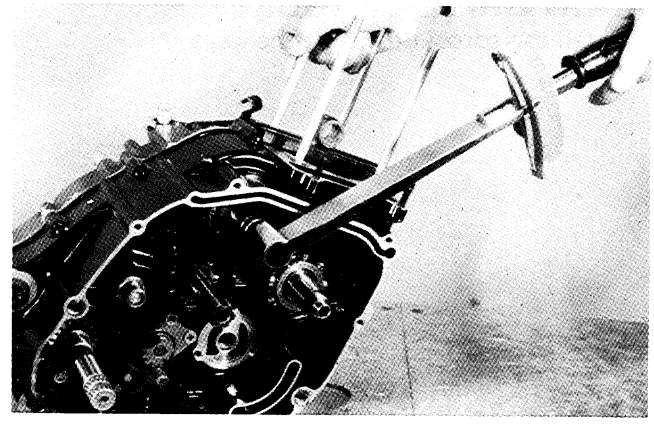
NOTE:
After the cam driven gear, cam guide, gear shifting shaft and neutral cam stopper have been fitted, confirm that gear change is normal while turning the countershaft and driveshaft. If gear change is not obtained, it means that assembly of gears or installation of gear shifting fork is incorrect. If this is the case, disassemble and trace the mistake.



BALANCER

- Tighten balancer setting bolt to the specified torque.

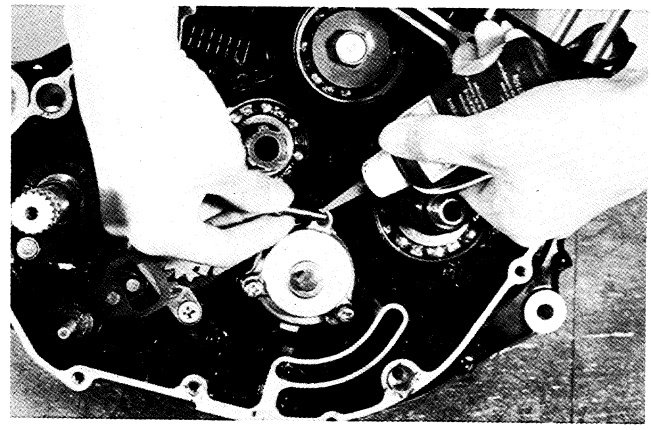
Tightening torque	34 – 45 N·m (3.4 – 4.5 kg-m 24.5 – 32.5 lb-ft)



OIL PUMP

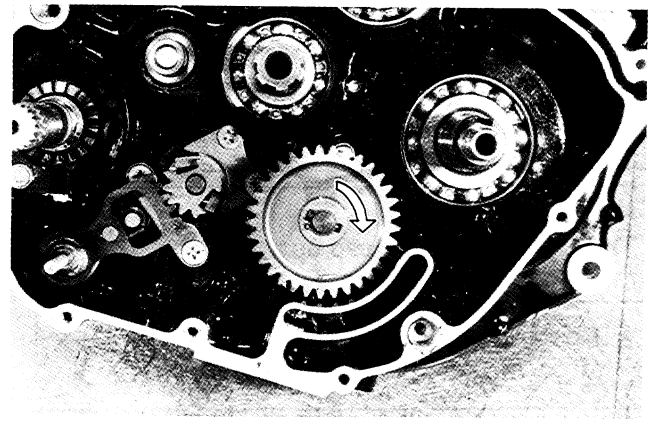
- Before mounting the oil pump, apply engine oil to the sliding surfaces of the case, outer rotor, inner rotor and shaft.
- Apply a small quantity of THREAD LOCK "1342" to the threaded parts of oil pump mounting screws.

Thread lock "1342"	99000-32050



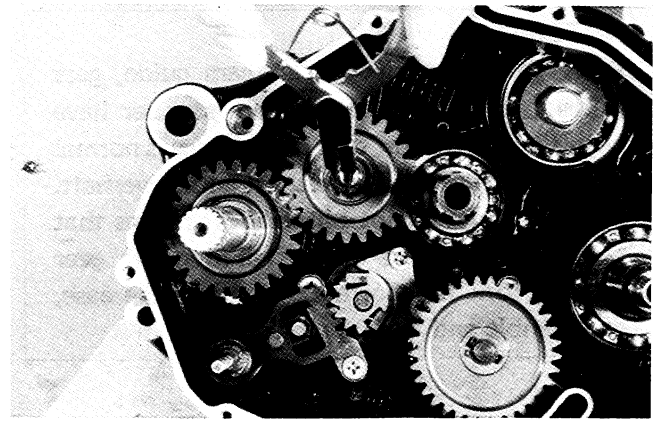
- Tighten the oil pump mounting screws.

NOTE:
After mounting the oil pump in the crankcase, rotate the pump gear by hand to see if it turns smoothly.



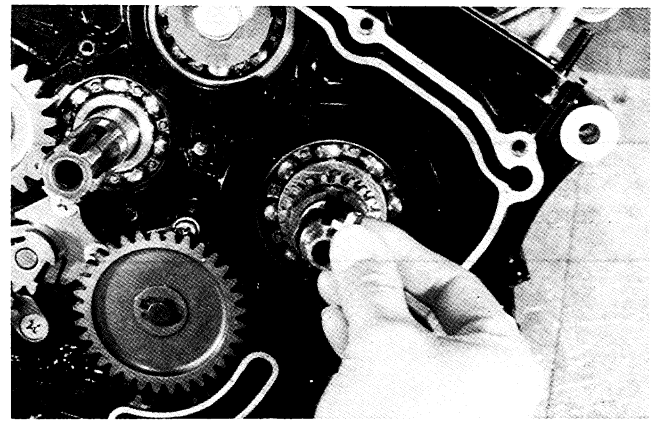
KICK STARTER DRIVE GEAR AND IDLE GEAR

- Install the kick idle gear and drive gear.

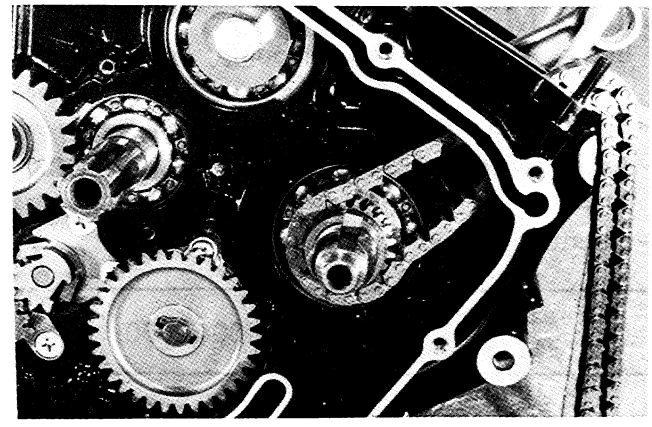


CHAIN DRIVE SPROCKET

- Install the sprocket and fit the keys.



- Engage the chain on the sprocket.



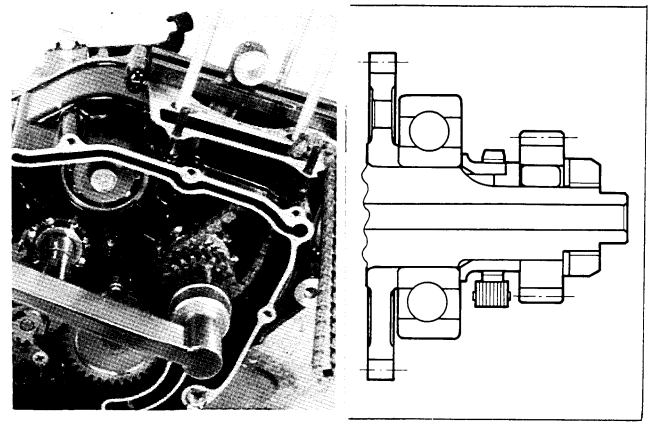
PRIMARY DRIVE GEAR

- Install the primary drive gear and wave washer, and tighten it with a torque wrench to the specified torque.

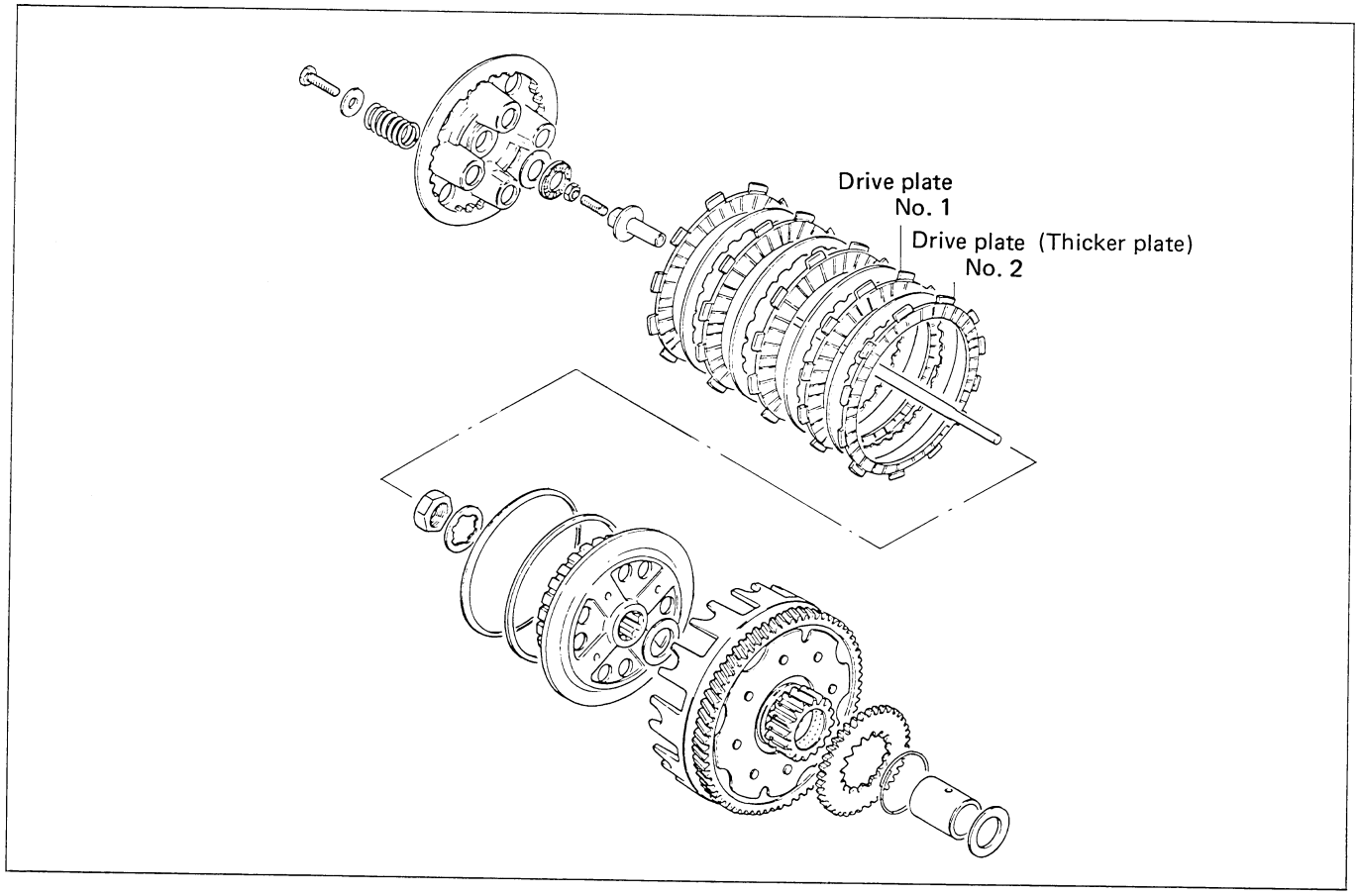
Conrod holder	09910-20116

NOTE:
This is a left-hand thread nut.

Tightening torque	90 – 110 N·m (9.0 – 11.0 kg-m 65.0 – 79.5 lb-ft)



CLUTCH



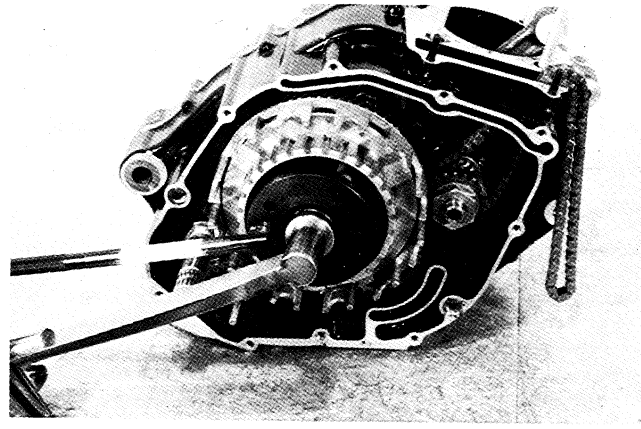
Assemble the clutch, in the reverse order of disassembly. Pay attention to the following points.

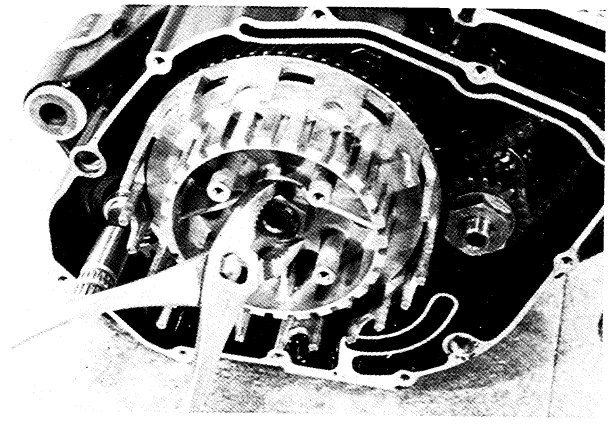
- When inserting spacer on countershaft, apply a small quantity of engine oil to both inside and outside of the spacer.
- Tighten clutch sleeve hub nut using the special tool to the specified torque.

Clutch sleeve hub holder	09920-53721

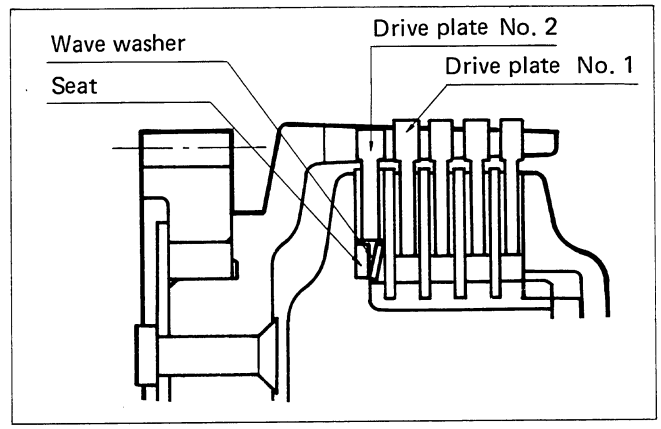
Tightening torque	40 – 60 N·m (4.0 – 6.0 kg-m 29.0 – 43.5 lb-ft)

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

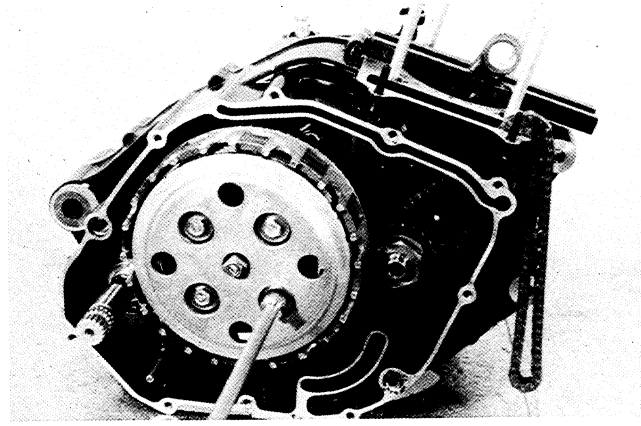




- Install wave washer seat, wave washer, drive plates and driven plates to the sleeve hub.
- Insert push rod into the countershaft.

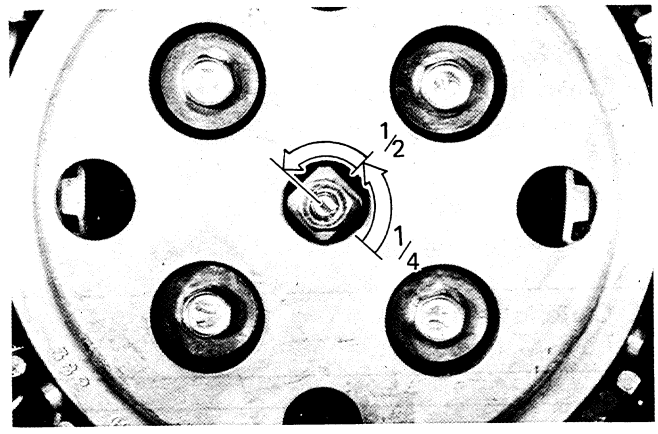


- Tighten clutch spring bolts diagonally.



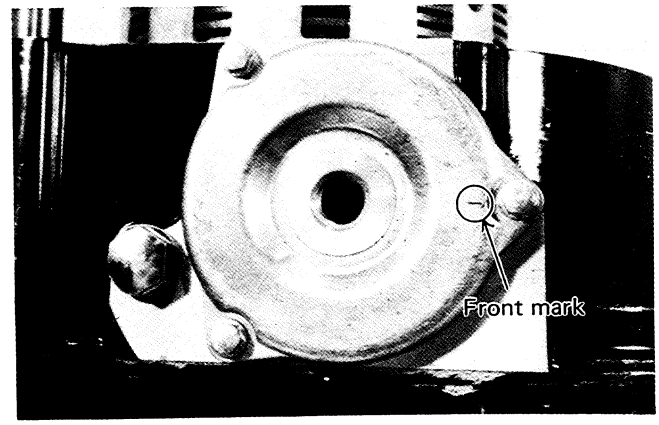
Clutch release screw adjustment

- Loosen the lock nut, and turn in the release screw to feel high resistance.
- From that position, turn out the release screw ¼ – ½ turn, and tighten the lock nut.



OIL SUMP FILTER

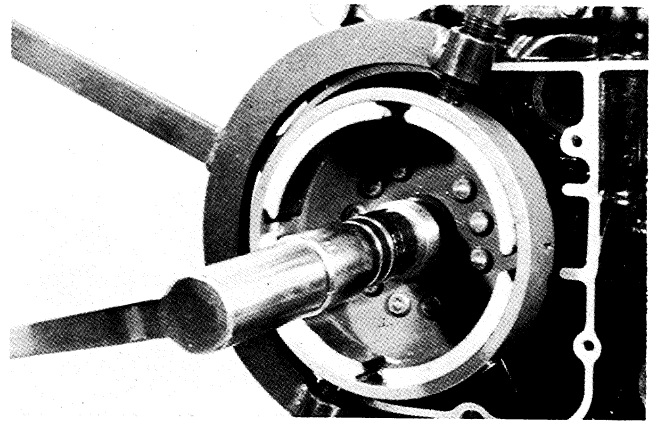
- Wash the sump filter with cleaning solvent, and then blow compressed air through it to dry off solvent.
- After mounting the sump filter, fit the cap and tighten it.



MAGNETO ROTOR

- Fit key in the key slot on the crankshaft.
- Install the magneto rotor.
- Apply a small quantity of THREAD LOCK SUPER "1303" to the threaded parts of crankshaft.
- Tighten magneto rotor nut to the specified torque.

Thread lock super "1303"	99000-32030
Rotor holder	09930-44911
Tightening torque	95 – 100 N·m (9.5 – 10.0 kg-m) (68.5 – 72.5 lb-ft)



DRIVESHAFT OIL SEAL AND ENGINE SPROCKET

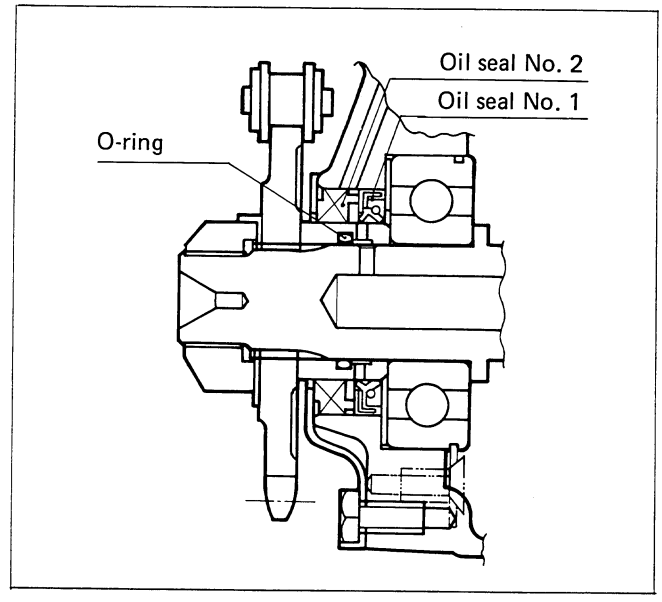
CAUTION:

*** Always replace the driveshaft oil seal with a new one every disassembly to prevent oil leakage. Also grease the oil seal lip. On installation, refer to Fig. for correct positions and directions.**

*** Replace "O" ring with a new one every disassembly.**

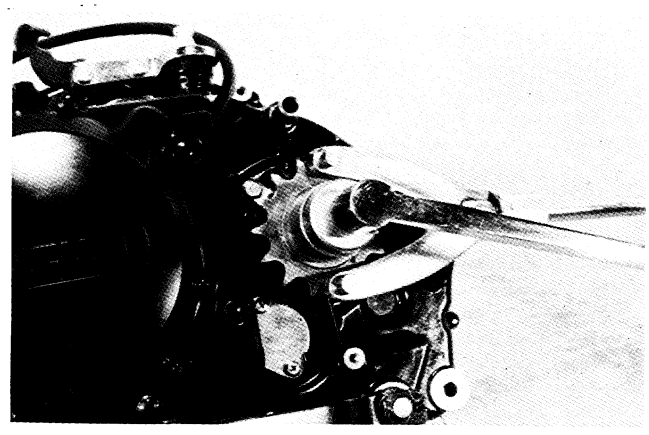
NOTE:

After reassembling the LOWER END COMPONENTS, install the O-ring and spacer.



- Tighten the engine sprocket nut to the specified torque and bend up the washer.

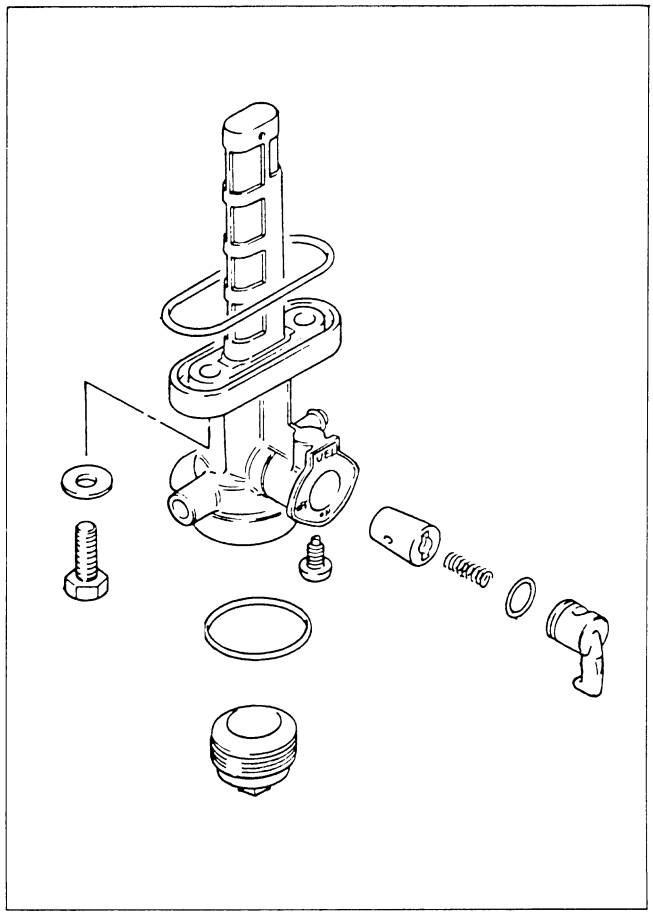
Tightening torque	80 – 100 N·m (8.0 – 10.0 kg-m) (58.0 – 72.5 lb-ft)



FUEL AND LUBRICATION SYSTEM

CONTENTS

FUEL COCK

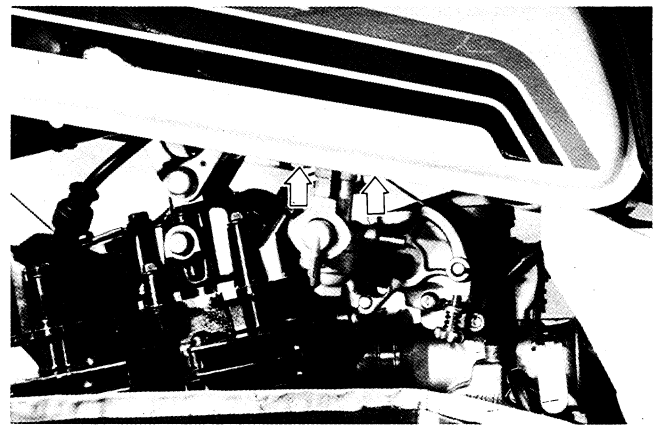


DISASSEMBLY

- Turn fuel cock to "OFF" position and disconnect fuel hose from the fuel cock.

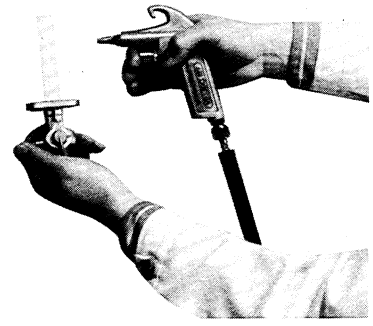
- Place a clean oil pan under the fuel cock assembly, turn fuel cock to "ON" position and drain the fuel.
- Unscrew the fuel cock securing bolts, and take off the fuel cock assembly.

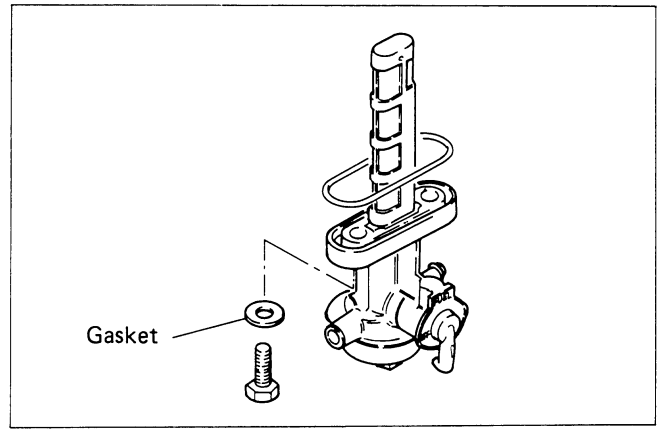
WARNING:
Gasoline is very explosive. Extreme care must be used.



CLEANING

Rust from the fuel tank tends to build up in the filter, which, when the filter has been neglected for a long period, inhibits the flow of fuel.
Remove the rust from the filter using compressed air.

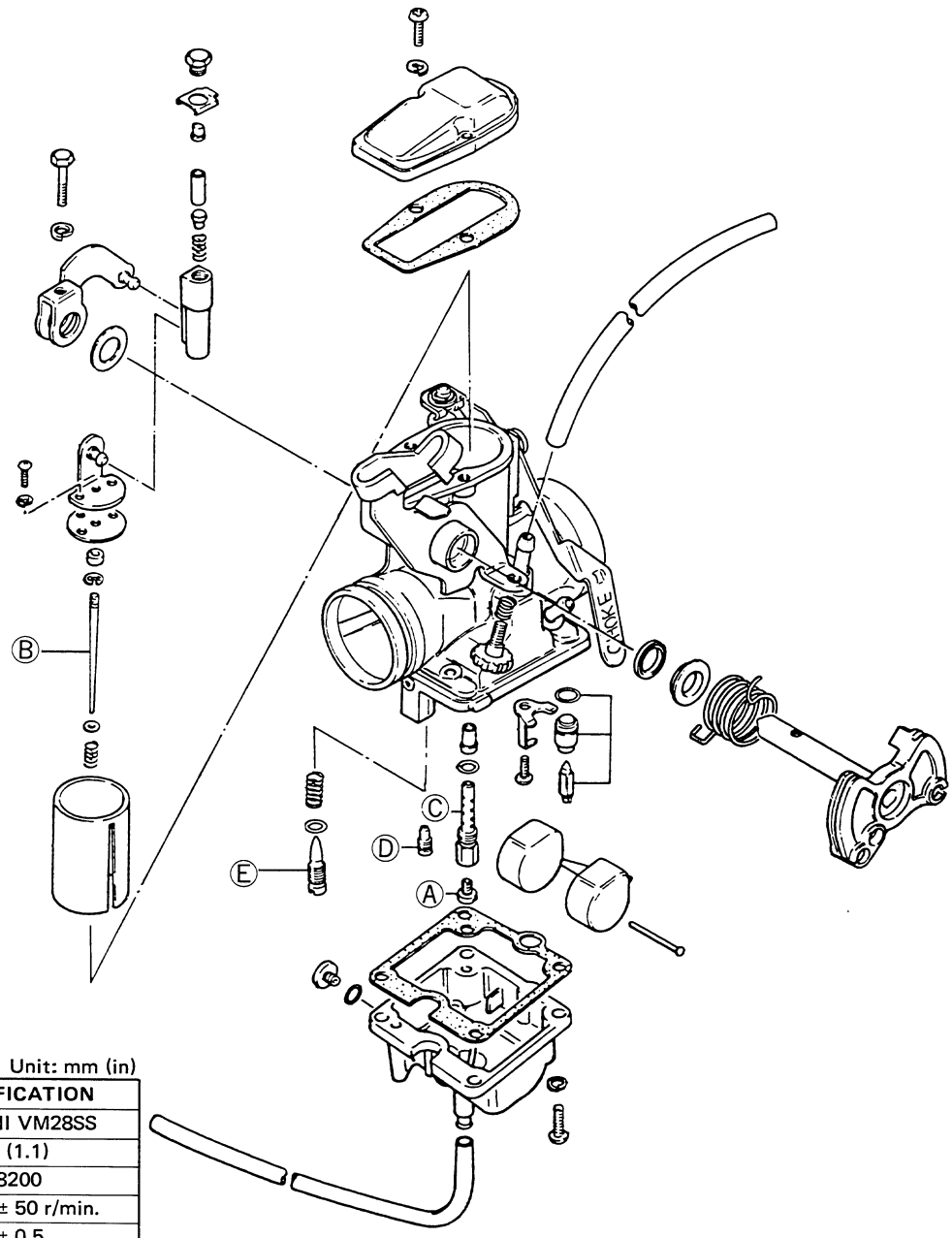




WARNING.
Gasket must be replaced with a new one to prevent leakage.

CARBURETOR

CARBURETOR CONSTRUCTION



Unit: mm (in)

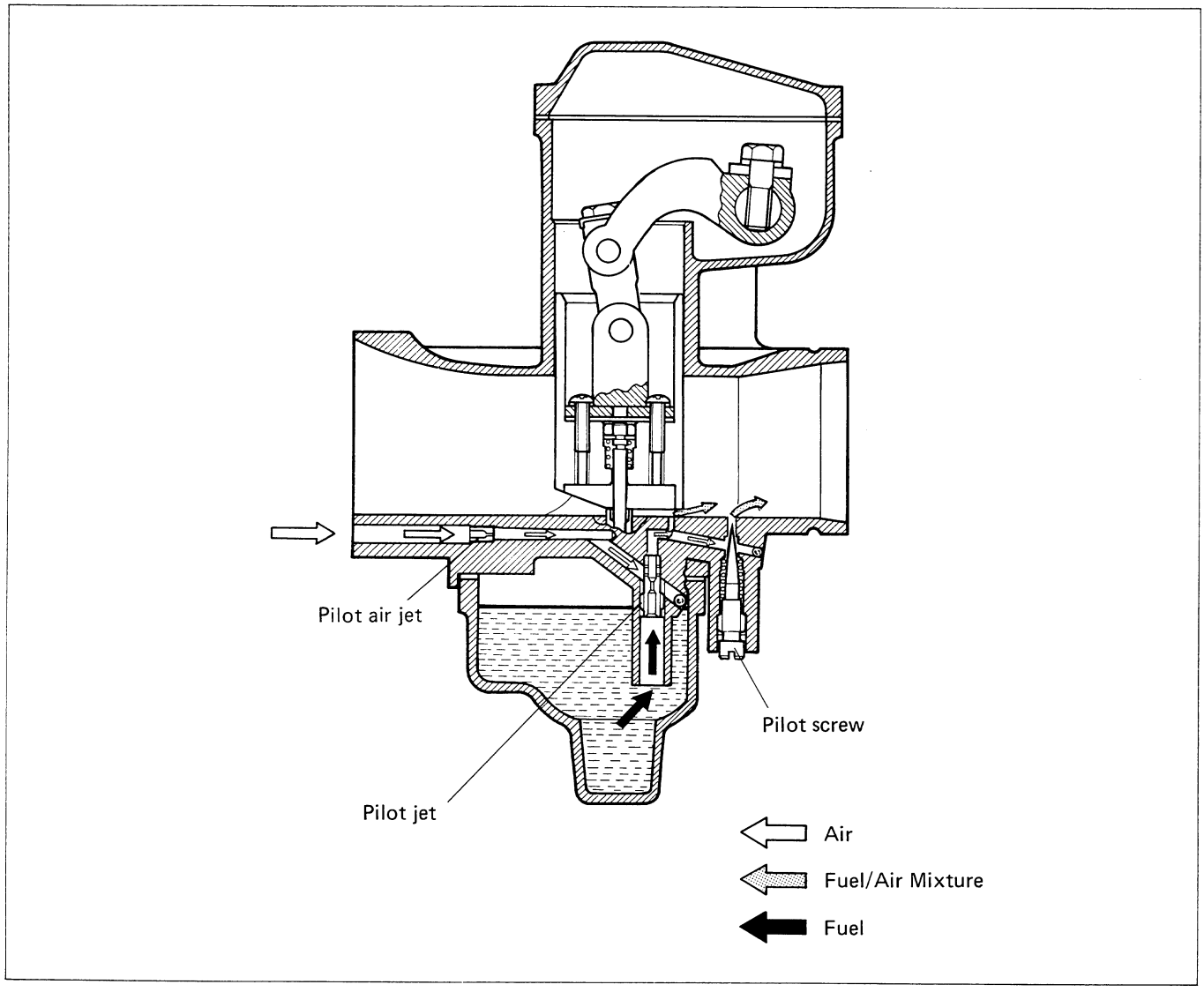
ITEM		SPECIFICATION
Carburetor type		MIKUNI VM28SS
Bore size		28 (1.1)
I.D. No.		38200
Idle r/min.		1250 ± 50 r/min.
Fuel level		3.5 ± 0.5 (0.14 ± 0.02)
Float height		22.5 ± 1.0 (0.89 ± 0.04)
Main jet	(M. J.)	Ⓐ #112.5
Main air jet	(M. A. J.)	1.0
Jet needle	(J. N.)	Ⓑ 6G1-3rd
Needle jet	(N. J.)	Ⓒ P–0
Cut-away	(C.A.)	2.5
Pilot jet	(P. J.)	Ⓓ #15
By pass	(B. P.)	0.8
Pilot outlet	(P. O.)	0.8
Valve seat	(V. S.)	2.8
Starter jet	(G. S.)	#55
Pilot screw	(P. S.)	Ⓔ 1½ turn out
Throttle cable play		0.5 – 1.0 (0.02 – 0.04)

SLOW SYSTEM

This system supplies fuel during engine operation with piston valve closed or slightly opened.

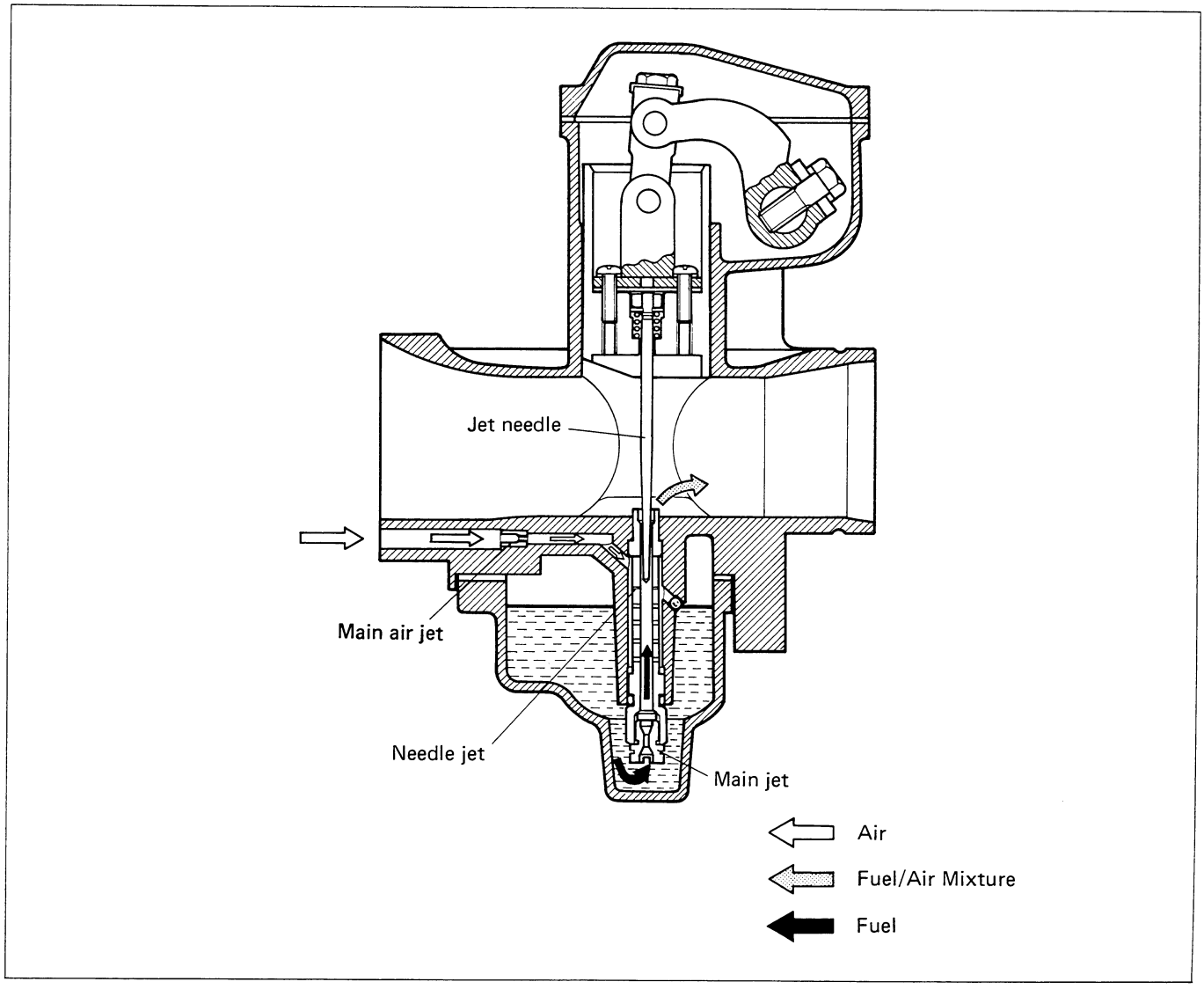
The fuel metered by the pilot jet is mixed with the proper amount of air metered by the air jet and is separated into fine particles. Mixture metered by pilot screw then exits into the main bore through the pilot outlet.

The pilot screw controls the amount of mixture. When the piston valve opens a little, the mixture jets through the by-pass and the pilot outlet.



MAIN SYSTEM

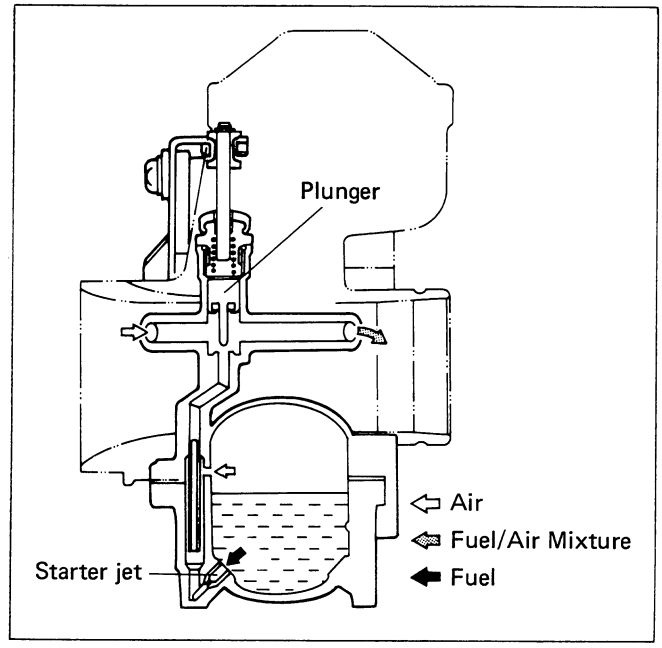
This system supplies fuel during engine operation when the piston valve is 1/4-Full open. The fuel passes through the main jet and mixes with air metered by the air jet. The mixture passes by the clearance between the needle jet and jet needle and then exits into the main bore after being metered by the jet needle.



STARTER SYSTEM

When the starter plunger is pulled up, the fuel metered by the starter jet is mixed with air coming from the float chamber. This mixture, rich with fuel, flows into the plunger area and mixes again with air coming from the starter air passage.

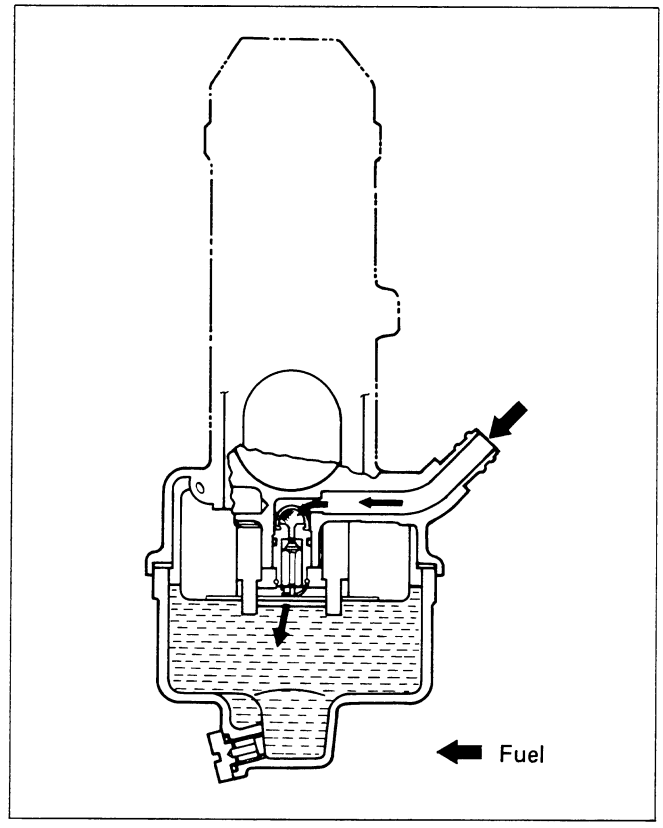
The two successive mixings of fuel with air are such that a proper fuel/air mixture for starting is produced when the mixture is sprayed out through starter outlet into the main bore.



FLOAT SYSTEM

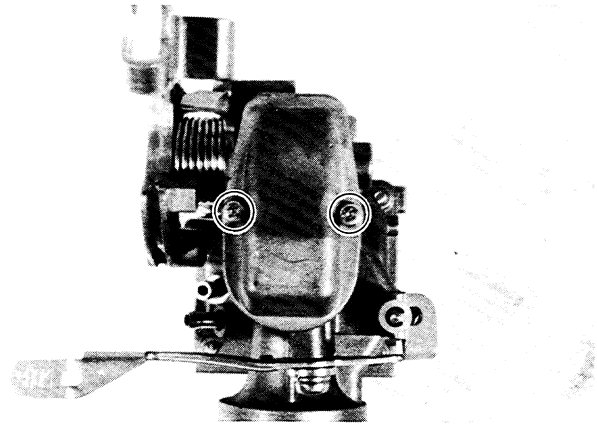
Floats and needle valve are associated with the same mechanism, so that, as the floats move up and down, the needle valve too moves likewise. When fuel level is up in float chamber, floats are up and needle valve remains pushed up against valve seat. Under this condition, no fuel enters the float chamber.

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



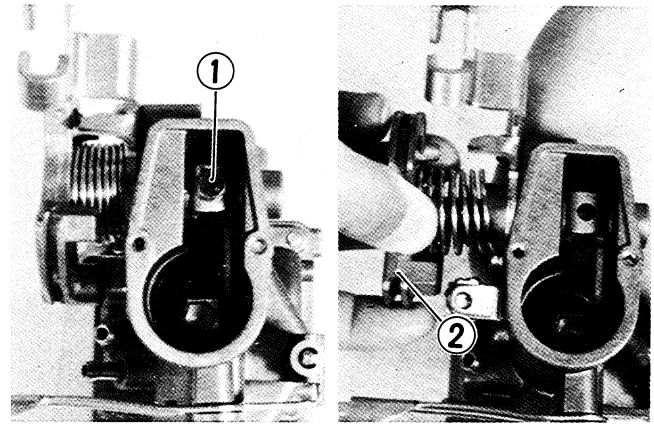
REMOVAL AND DISASSEMBLY

NOTE:
Before disassembling the carburetor, inspect the fuel level. (Refer to page 4-9.)

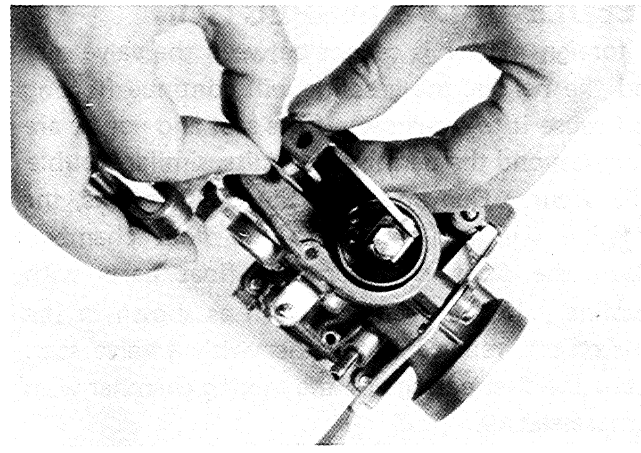


- Take off the carburetor. (Refer to page 3-2 and 3.)
- Remove the carburetor top cover.

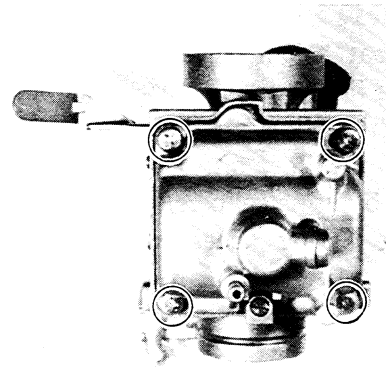
- Remove bolt ① , then pull out the throttle lever ②.



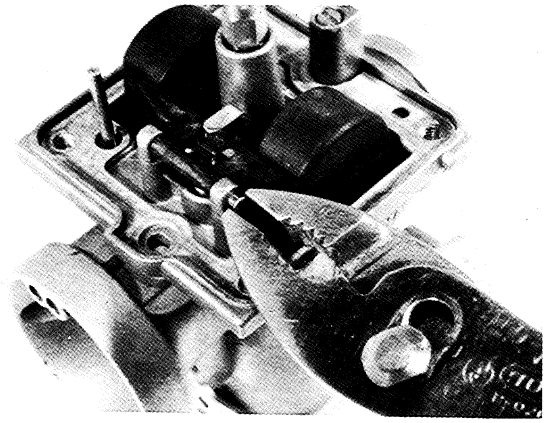
- Pull out the throttle valve.



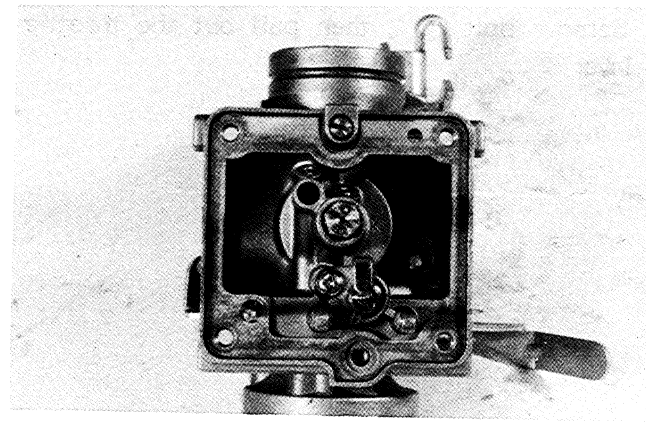
- Remove the float chamber body from the mixing chamber body.



- Pull out the float pin and remove the float.

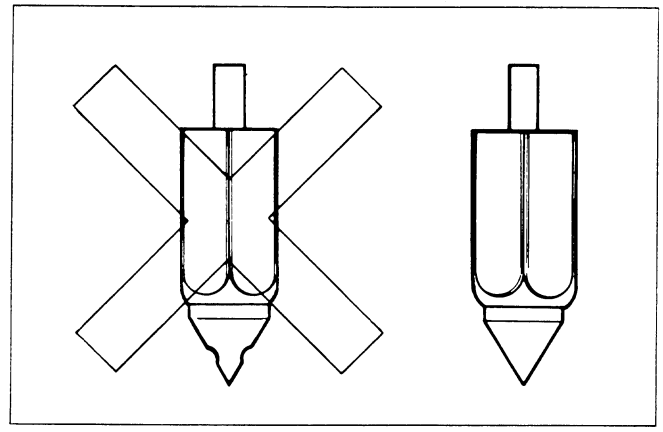


- Remove the jets.



NEEDLE VALVE INSPECTION

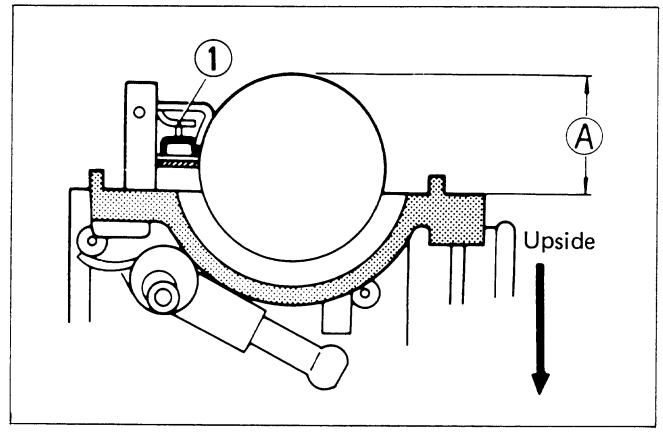
If foreign matter is caught between the valve seat and the needle, the gasoline will continue flowing and cause it to overflow. If the seat and needle are worn beyond the permissible limits, similar trouble will occur. Conversely, if the needle sticks, the gasoline will not flow into the float chamber.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



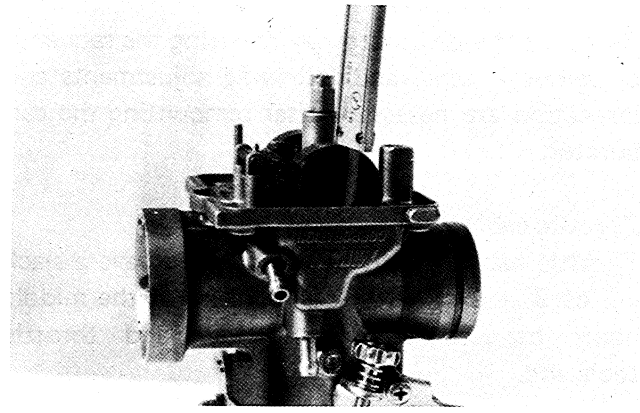
FLOAT HEIGHT ADJUSTMENT

To check the float height, invert the carburetor body, 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 calipers.
Bend the tongue ① as necessary to bring the height Ⓐ to this value.

Float height	22.5 ± 1.0 mm (0.89 ± 0.04 in)



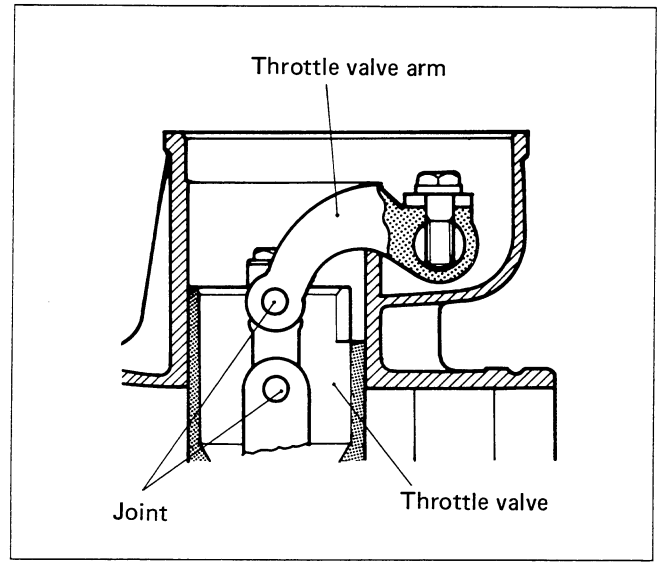
NOTE:
When measuring float height, be sure to remove the gasket.



REASSEMBLY

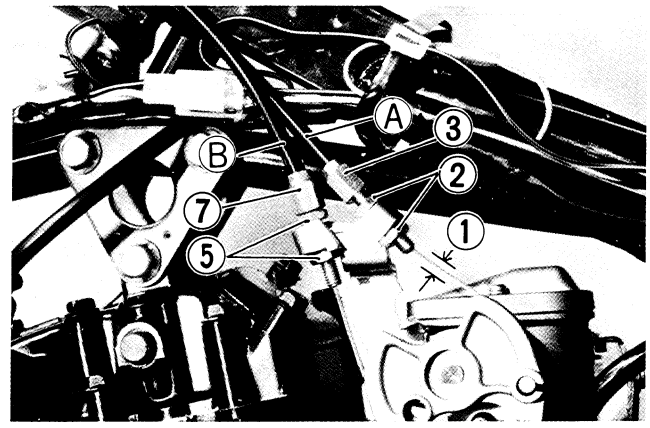
Reassemble the carburetor by reversing the sequence of disassembling steps.

NOTE:
Apply SUZUKI MOLY PASTE to the joint and then, insert the throttle valve.



REMOUNTING

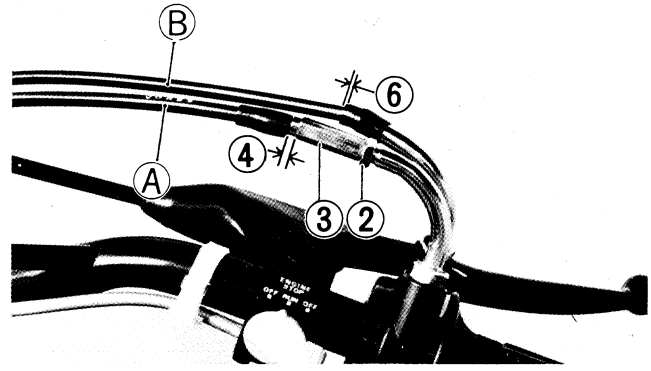
Remount the carburetor by reversing the sequence of removal steps, and following adjustments and inspection are necessary after remounting the carburetor.



Throttle cable play

Throttle cable should be adjusted to have a slack ① of 3 – 5 mm (0.12 – 0.20 in) at the middle point between adjusting holder and throttle cable end.

- Loosen lock nuts ②.
- Turn the adjuster nut ③ in or out to obtain the correct play ④ 0.5 – 1.0 mm(0.02 –0.04 in).
- Loosen lock nuts ⑤.
- Reduce the play ⑥ to zero by turning adjuster nut ⑦.
- After adjusting the play, tighten the lock nuts ② and ⑤.



Ⓐ Pulling cable.
Ⓑ Returning cable.

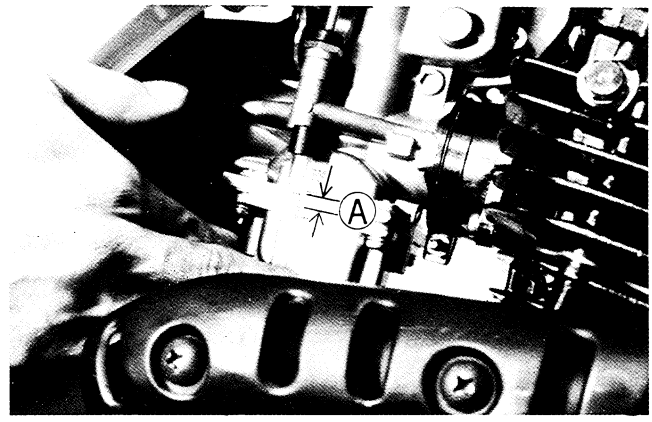
Idling adjustment
(Refer to page 2-9)

Fuel level inspection

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

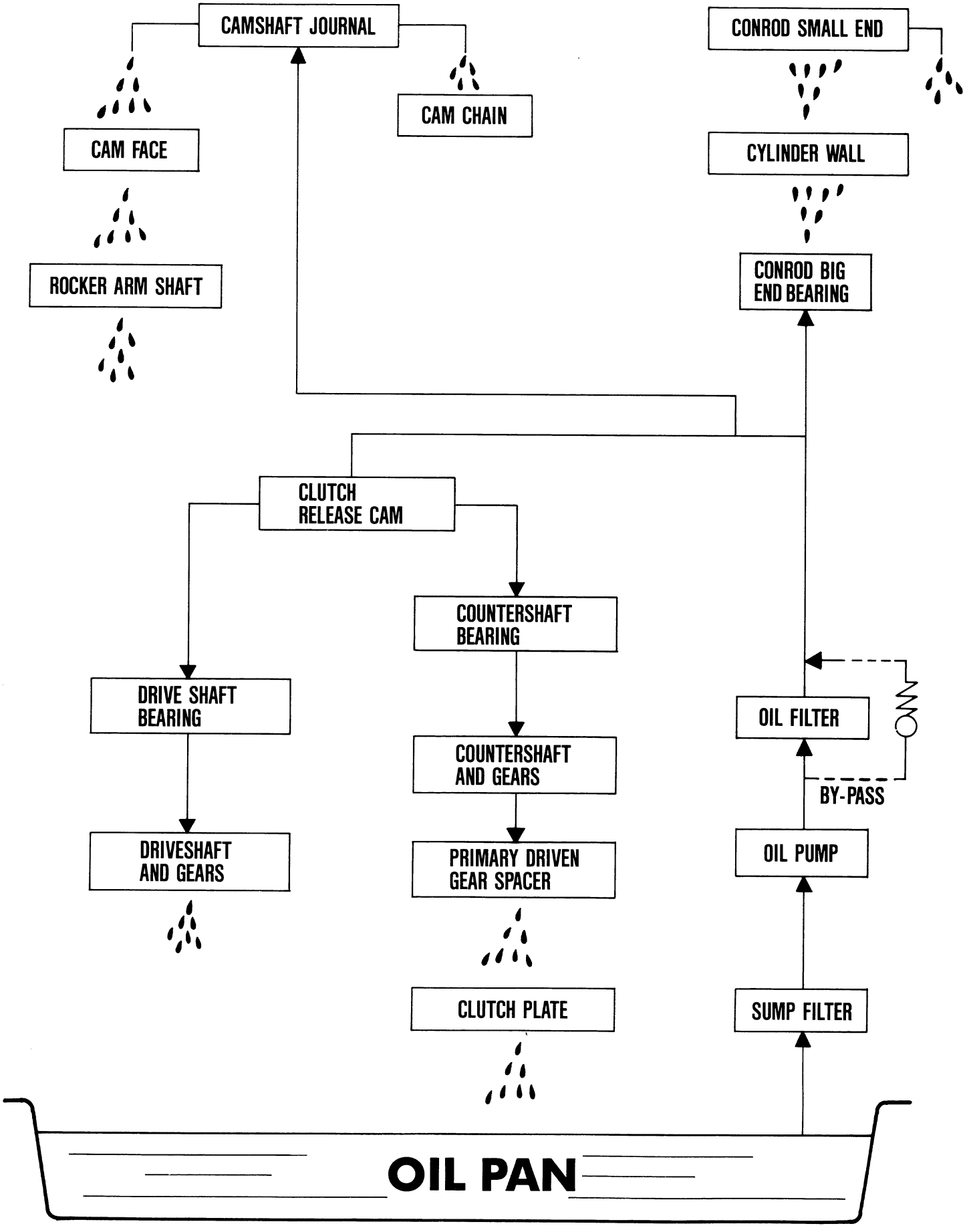
Fuel level gauge	09913-14511

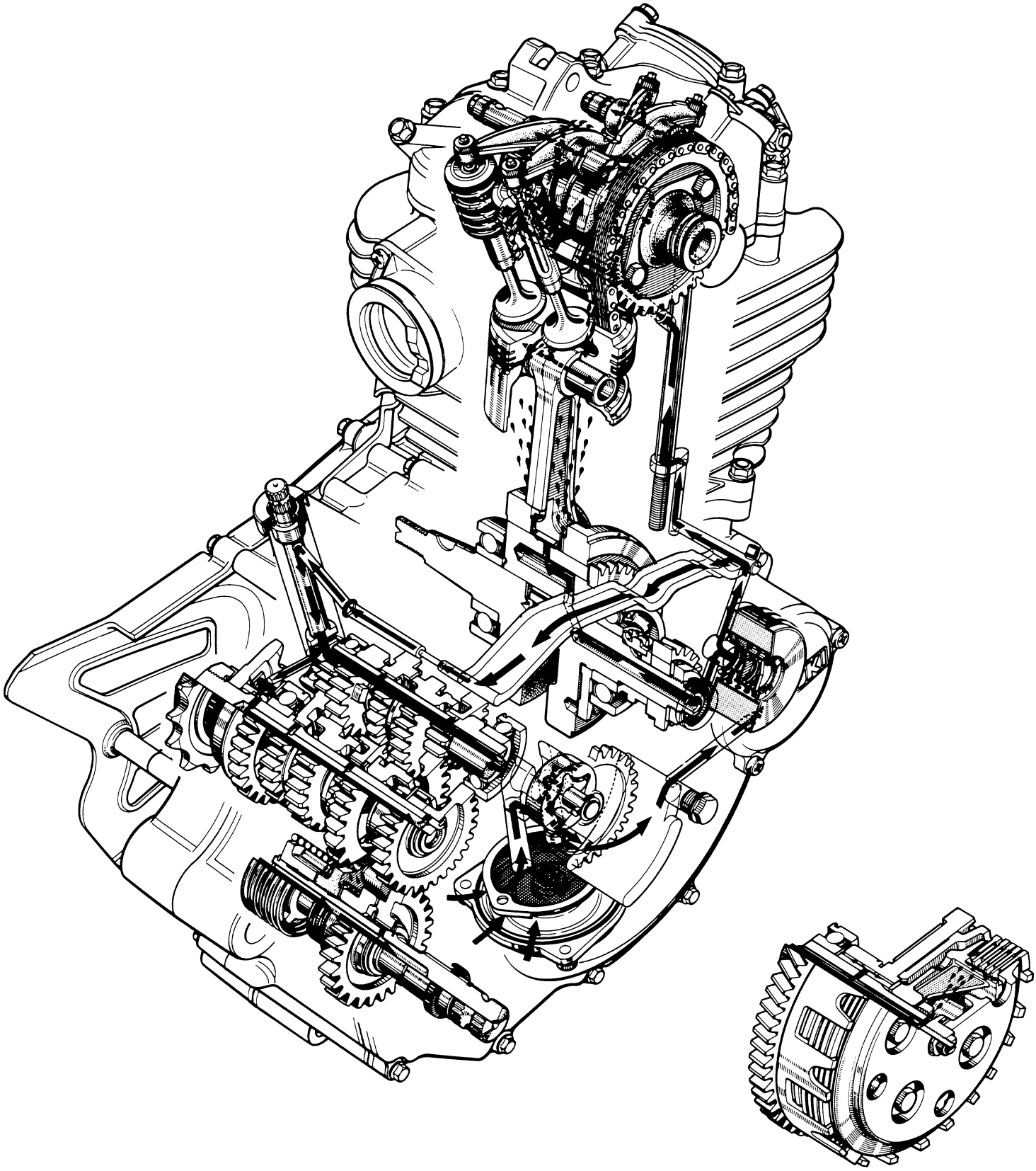
- Connect a tachometer.
- Run the engine at the idling speed (1200 – 1300 r/min), and measure the distance Ⓐ with the middle line of the level gauge aligned with the mating surface of float bowl as shown in photo. Ⓐ should be within the specified range.



Distance Ⓐ	3.5 ± 0.5 mm (0.14 ± 0.02 in)

LUBRICATION SYSTEM





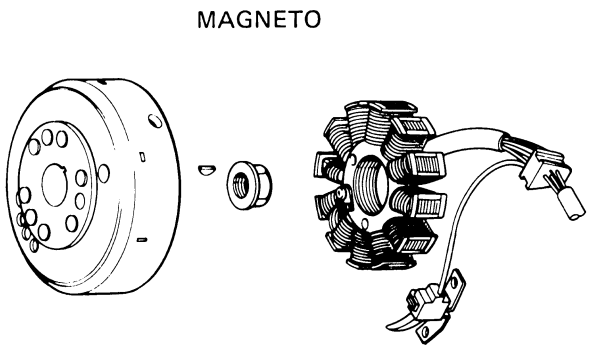
ELECTRICAL SYSTEM

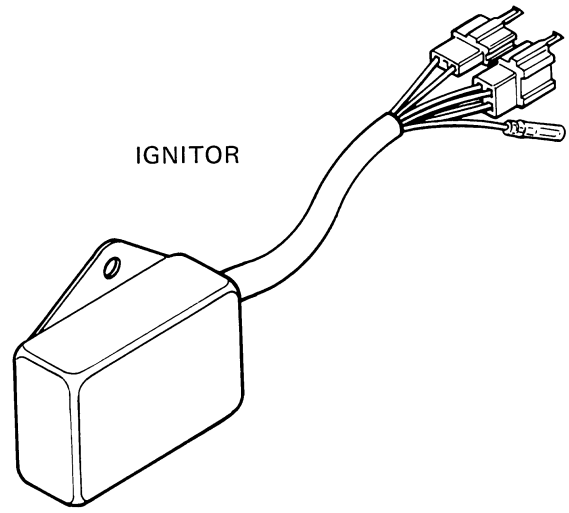
CONTENTS

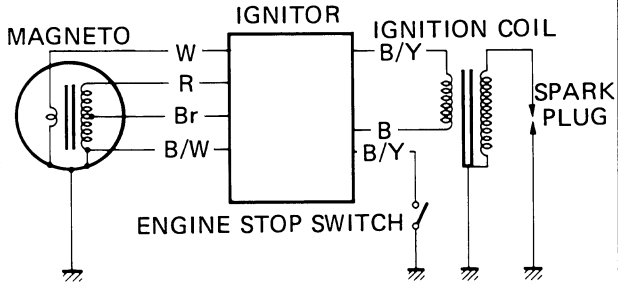
IGNITION SYSTEM

DESCRIPTION

In the magneto-transistorized ignition system, the electrical energy generated by the magneto flows to the transistor/ignition timing control circuit. This energy is released in a single surge at the specified ignition timing point, and current flows through the primary side of the ignition coil. A high voltage current is induced in the secondary windings of the ignition coil resulting in strong spark between the spark plug gap.

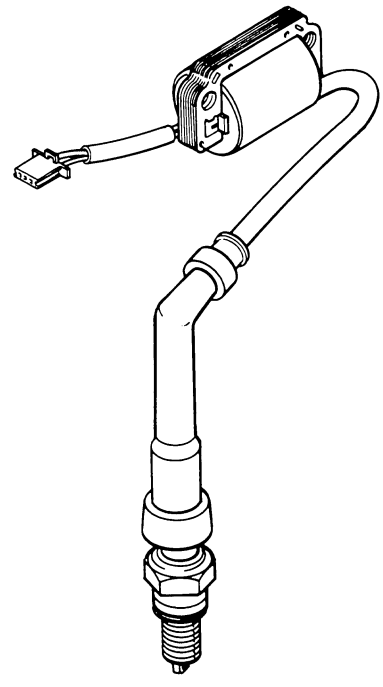






WIRE COLOR

B: Black B/W: Black with white tracer
Br: Brown B/Y: Black with Yellow tracer
R: Red
W: White



IGNITION COIL AND SPARK PLUG

INSPECTION

IGNITOR

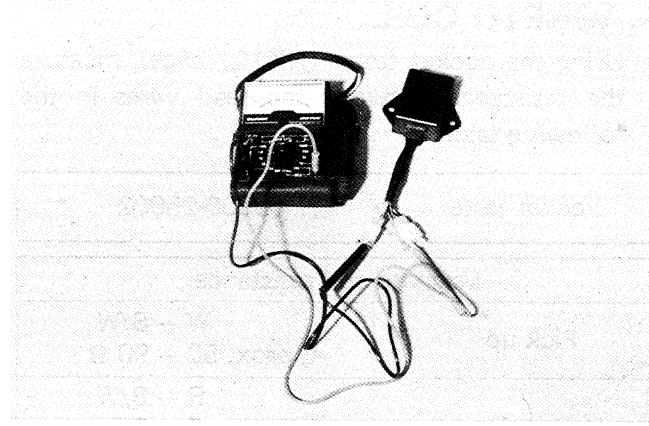
- Using the pocket tester (RX1kΩ range), measure the resistance between the lead wires in the following table.

Pocket tester	09900-25002

Unit: kΩ

⊖ Probe of tester \ ⊕ Probe of tester	R	W	Br	B/W	B	B/Y
R		OFF	OFF	OFF	OFF	ON
W	OFF		Approx. 5-7	Approx. 1.5-3.0	OFF	OFF
Br	OFF	OFF		OFF	OFF	OFF
B/W	OFF	Approx. 2-3	Approx. 2-4		*	OFF
B	OFF	Approx. 8-12	Approx. 13-19	Approx. 5.0-8.5		OFF
B/Y	ON	OFF	OFF	OFF	OFF	

* The dial pointer first deflects to a certain value and then to an infinite value.



WIRE COLOR

B : Black
Br : Brown
R : Red
W : White
B/W : Black with White tracer
B/Y : Black with Yellow tracer

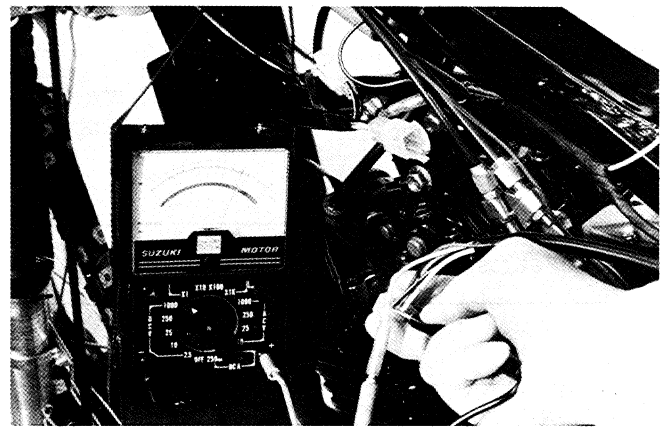
MAGNETO COIL

- Using the pocket tester (RX1Ω range), measure the resistance between the lead wires in the following table.

Pocket tester	09900-25002

Magneto coil resistance	
Pick up	W – B/W Approx. 50 – 90 Ω
Power source	R – B/W Approx. 5 – 9 Ω
	Br – B/W Approx. 3 – 6 Ω
Lighting	P – B/W Approx. 1 – 4 Ω

WIRE COLOR
Br : Brown
P : Pink
R : Red
W : White
B/W : Black with White tracer



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

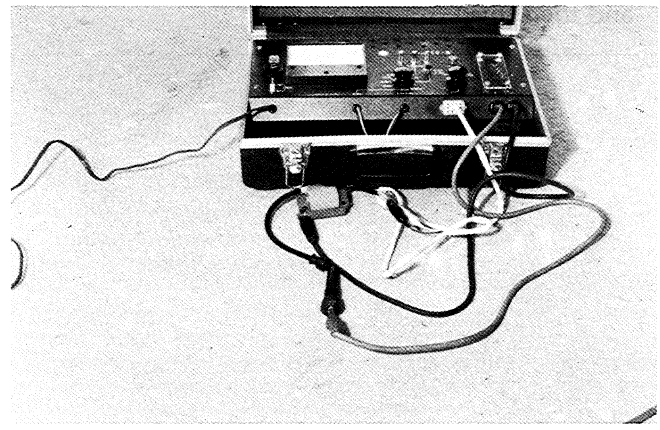
Thread Lock "1342"	99000-32050

IGNITION COIL

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

Electro tester	09900-28106

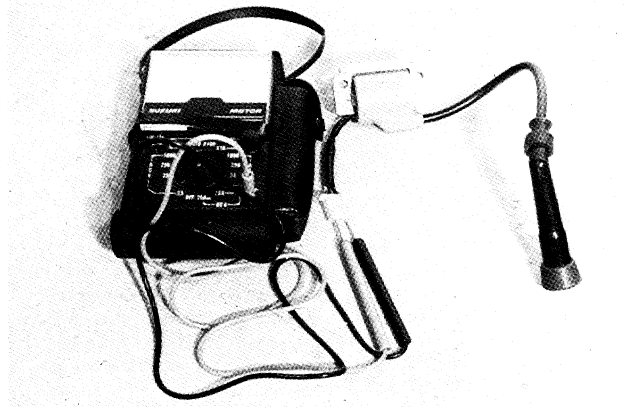
STD Spark performance	8 mm (0.3 in)



- Check the ignition coil with pocket tester.

Pocket tester	09900-25002

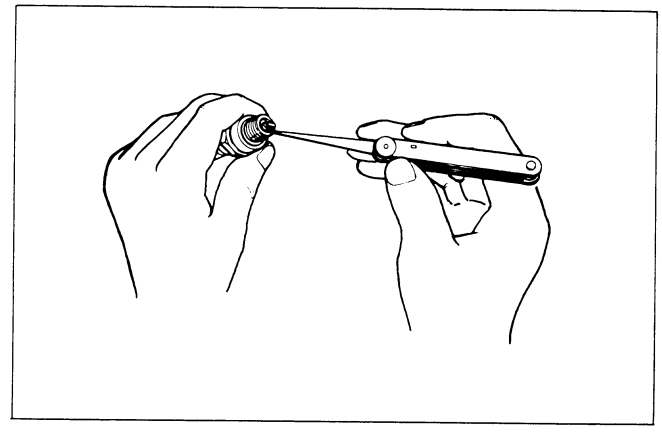
Ignition coil resistance	
Primary	B – B/Y Approx. 0.5 – 3.0 Ω
Secondary	Plug cap – Ground Approx. 15 – 25 kΩ



WIRE COLOR
B : Black
B/Y : Black with Yellow tracer

SPARK PLUG

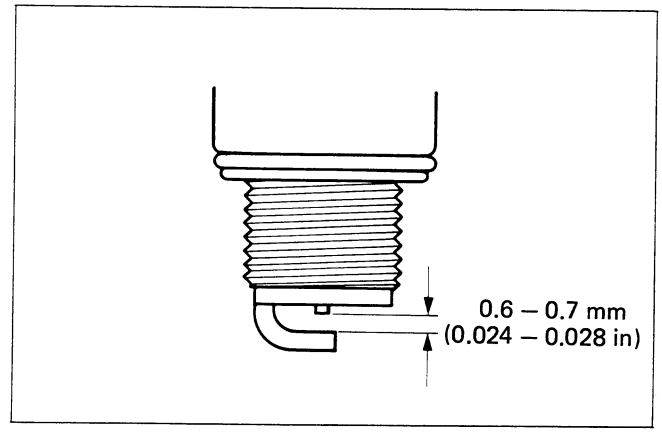
Clean the plug with a wire brush and pin. Use the pin to remove carbon, taking care not to damage the porcelain.



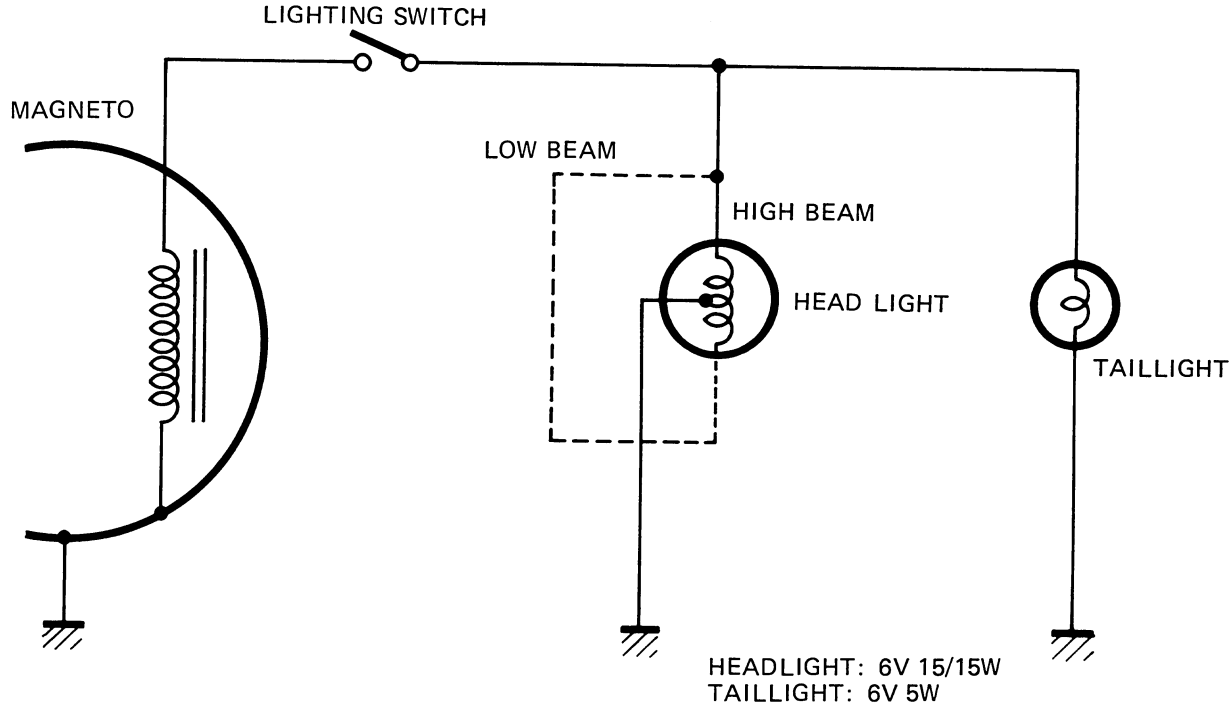
- Check the gap with a thickness gauge.

Thickness gauge	09900-20804

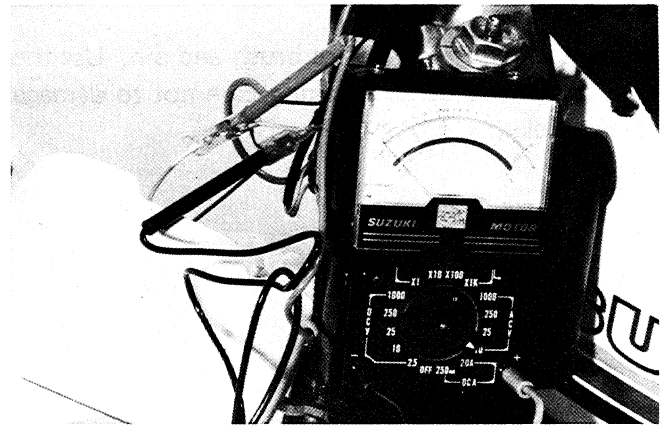
Spark plug gap	0.6 – 0.7 mm (0.024 – 0.028 in)



LIGHTING SYSTEM



INSPECTION



Lighting performance check

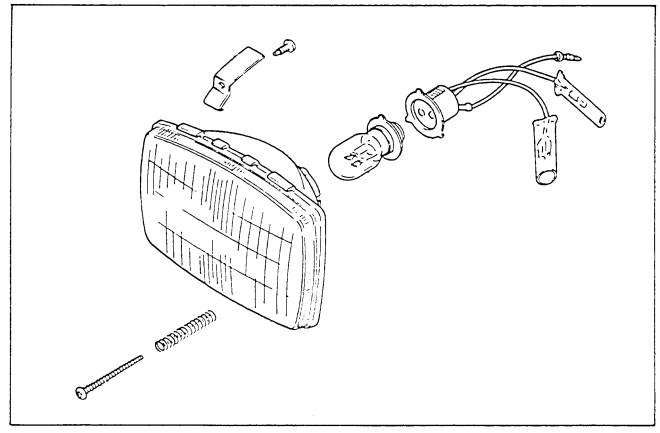
- Set the pocket tester knob to AC volt range 10V.
- Remove the headlight unit and connect the probe of the tester to high or low beam lead wire and to the ground while turning on the lighting switch.
- Connect a tachometer.
- Start the engine.
- Check that the voltmeter reads as follows.

Above 5.5V at 2 500 r/min. Below 8.0V at 8 000 r/min.

Pocket tester	09900-25002

NOTE:
Make this check when the engine is hot.

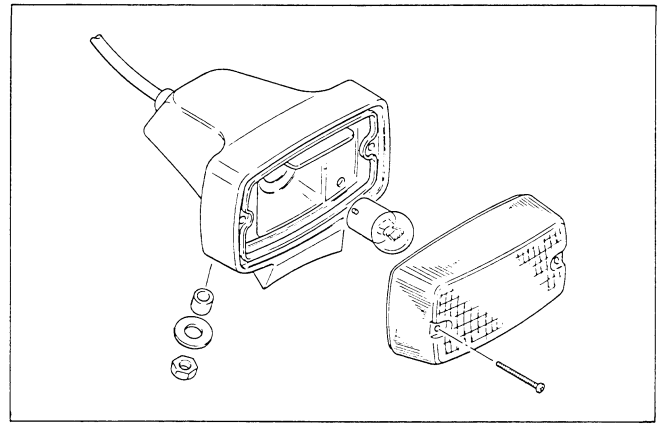
LIGHT BULB REPLACEMENT AND INSPECTION



- After installing a new bulb, check for continuity. If the bulb does not light, inspect the wiring for open or short circuits.

Bulb wattage

Headlight (HI/LO)	6V, 15/15W
Taillight	6V, 5W



SWITCHES

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

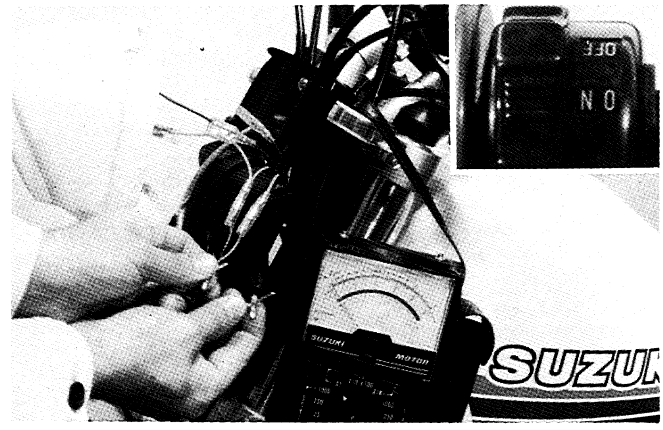
Pocket tester	09900-25002

ENGINE STOP SWITCH

COLOR / POSITION	B/Y	B/W
OFF	○——○	
RUN		
OFF	○——○	

LIGHTING SWITCH

COLOR / POSITION	Gr	Y/R
OFF		
ON	○——○	

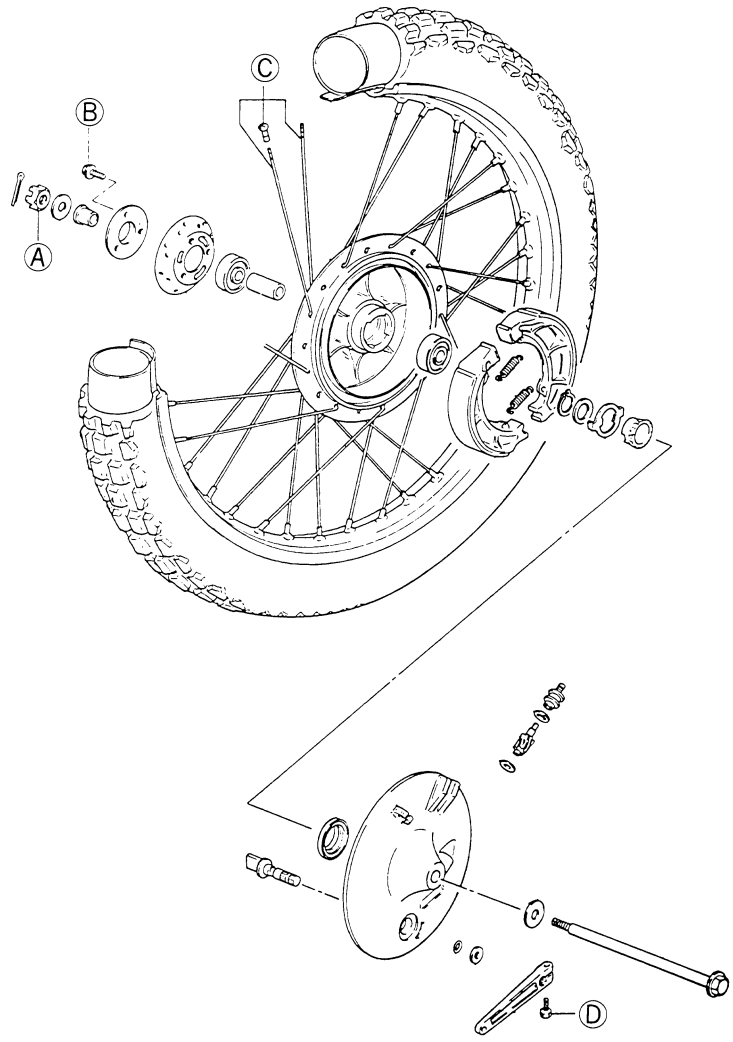


WIRE COLOR
Gr ..... Gray
B/Y ..... Black with Yellow tracer
B/W ..... Black with White tracer
Y/R ..... Yellow with Red tracer

CHASSIS

CONTENTS

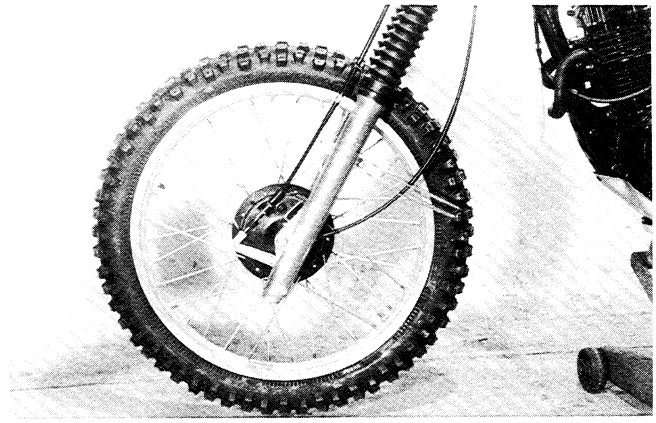
FRONT WHEEL AND FRONT BRAKE



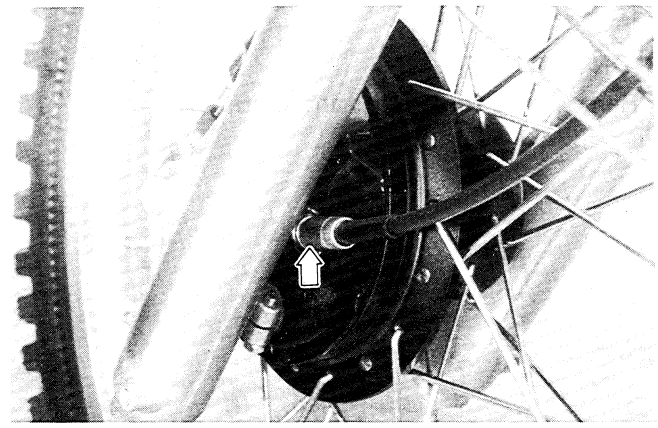
Tightening torque			
Item	N·m	kg-m	lb-ft
Ⓐ	36 – 52	3.6 – 5.2	26.0 – 37.5
Ⓑ	6 – 9	0.6 – 0.9	4.5 – 6.5
Ⓒ	4 – 5	0.4 – 0.5	3.0 – 3.5
Ⓓ	5 – 8	0.5 – 0.8	3.5 – 6.0

REMOVAL

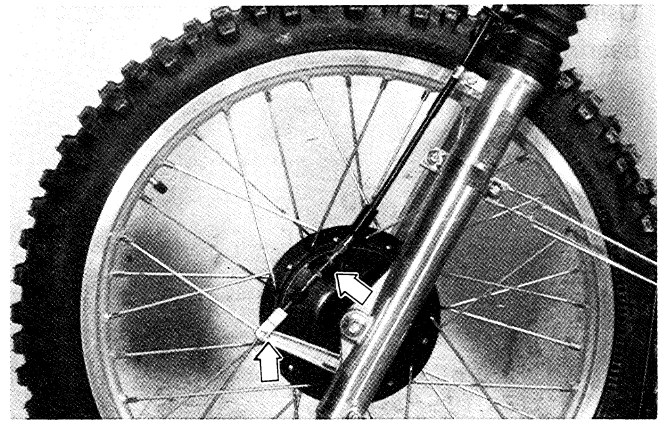
- Support the machine by jack or block.



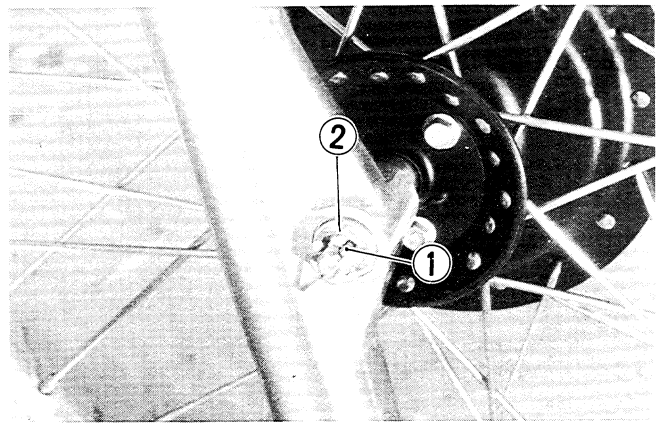
- Disconnect the trip meter cable.



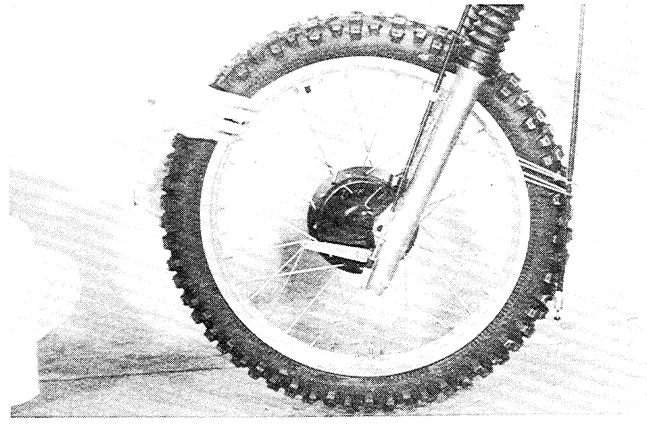
- Pull out the brake cam lever cotter pin and pin.
- Remove the brake cable after loosening adjuster lock nuts.



- Pull out the cotter pin ① and remove the axle nut ②.



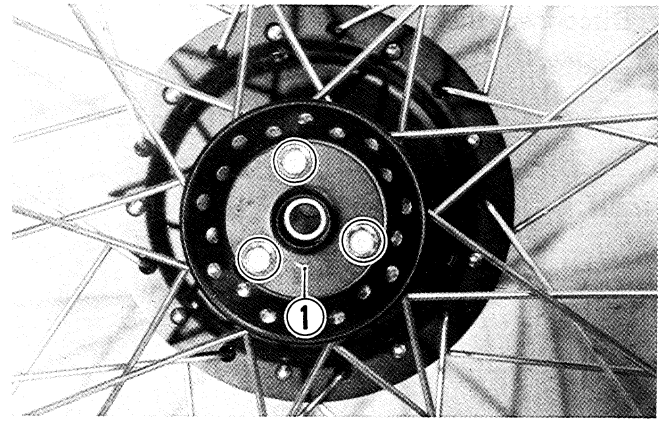
- Draw out the axle shaft and take off the front wheel with front brake panel.



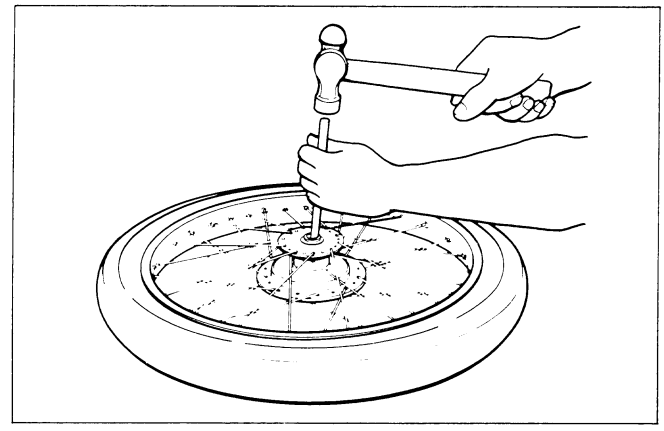
DISASSEMBLY

FRONT WHEEL

- Remove the three bolts and plate ①.

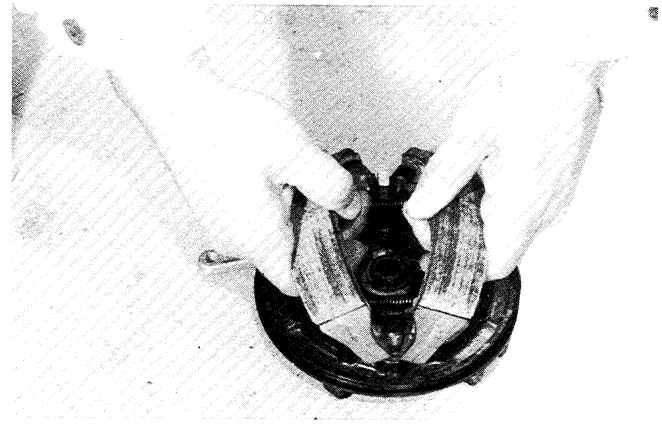


- Using appropriate drift, drive out the wheel bearings.

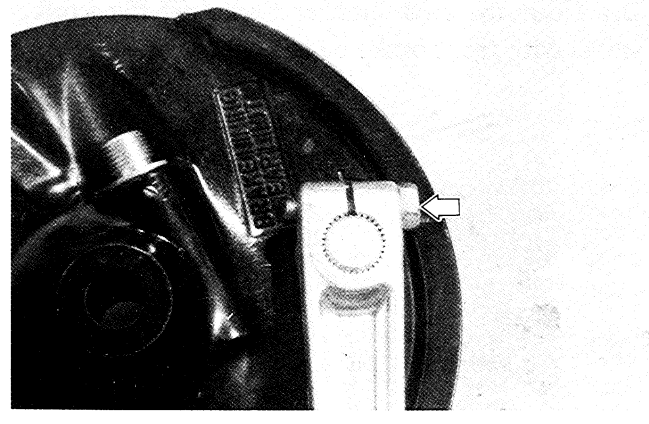


FRONT BRAKE

- Take off the brake shoes.

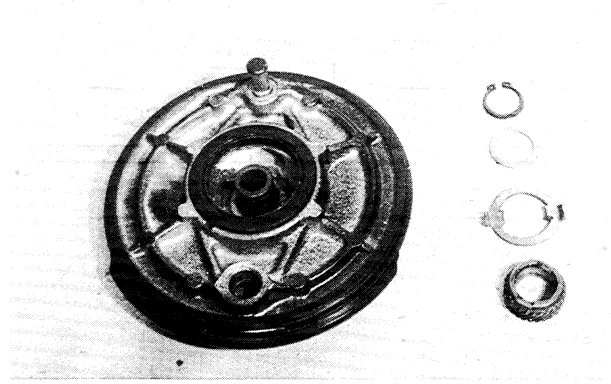


- Remove the fitting bolt and pull off cam lever.

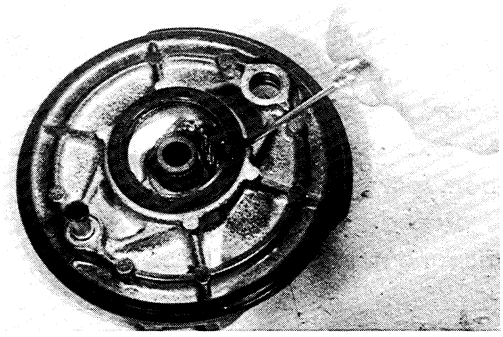


- Pull off the brake cam, O-ring and washer.
- Remove circlip and pull off washer, drive plate, and drive gear.

Snap ring pliers	09900-06107



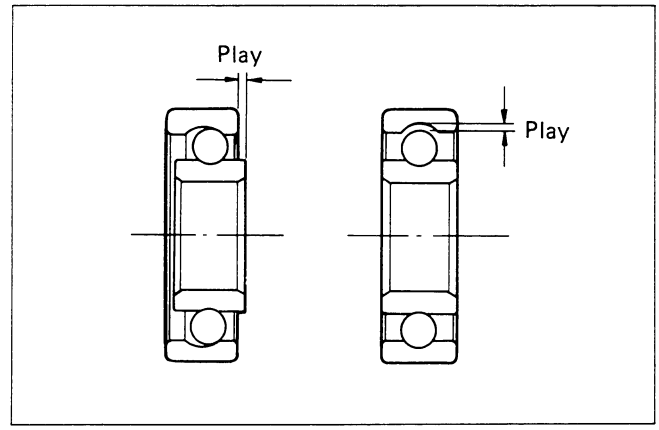
- Remove oil seal

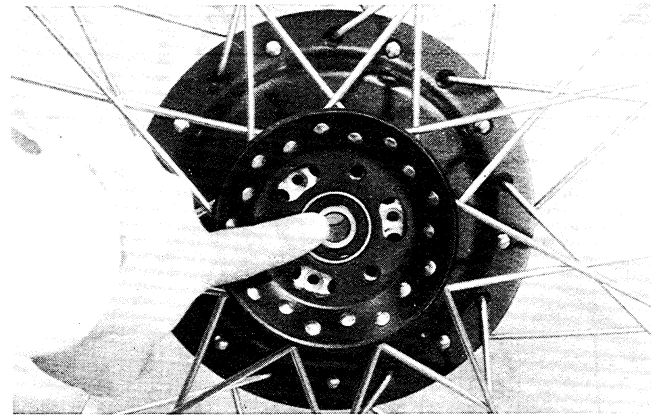


INSPECTION

WHEEL BEARING

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



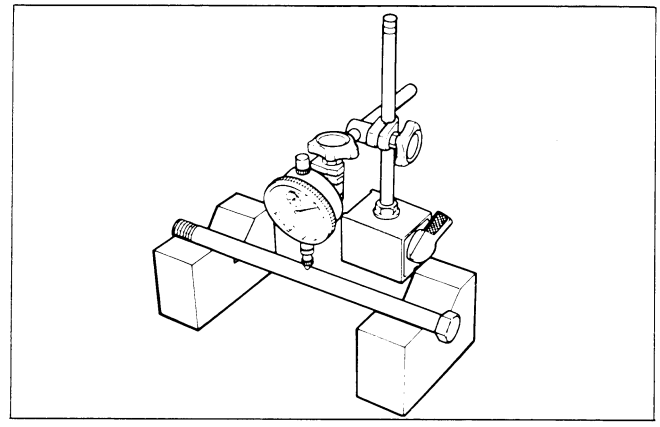


AXLE SHAFT

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

Dial gauge (1/100)	09900-20606

Service limit	0.25 mm (0.010 in)



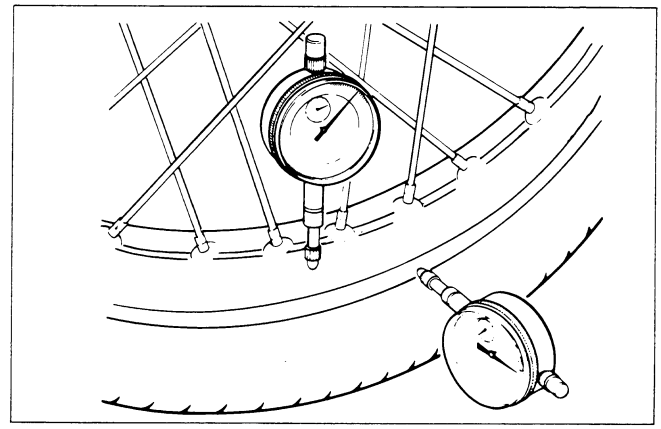
TIRE

(See page 2–14)

WHEEL RIM

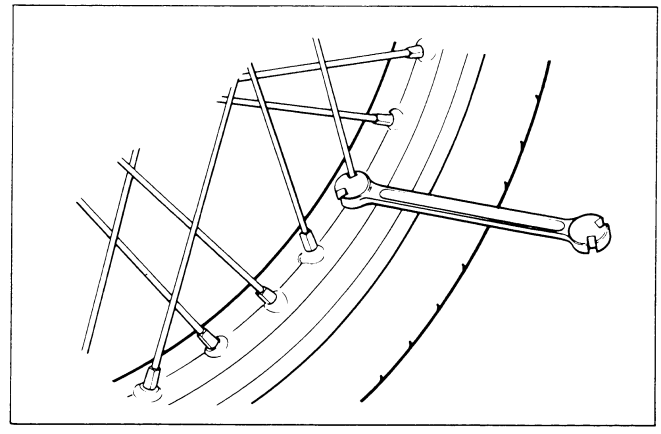
Make sure that the wheel rim runout does not exceed the service limit when checked as shown. An excessive amount of runout is usually due to loose spokes or bent rim.

If properly tightening the spokes will not correct the runout, replace the wheel rim.



NOTE:
Worn or loose wheel bearings must be replaced before attempting to true a wheel rim.

Service limit (Axial and Radial)	2.0 mm (0.08 in)



SPOKE NIPPLE

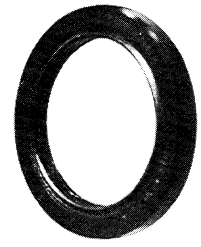
Check to be sure that all nipples are tight, and retighten them as necessary using the special tool.

Tightening torque	4 – 5 N·m (0.4 – 0.5 kg-m) (3.0 – 3.5 lb-ft)

Spoke nipple wrench	09940-60113

OIL SEAL

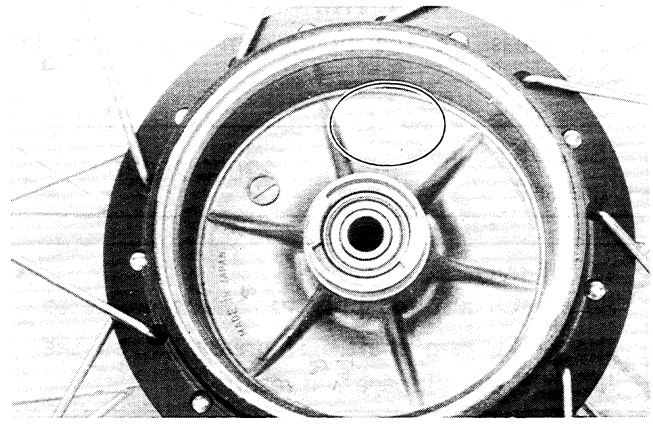
Inspect the lip of the oil seal for damage.



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.

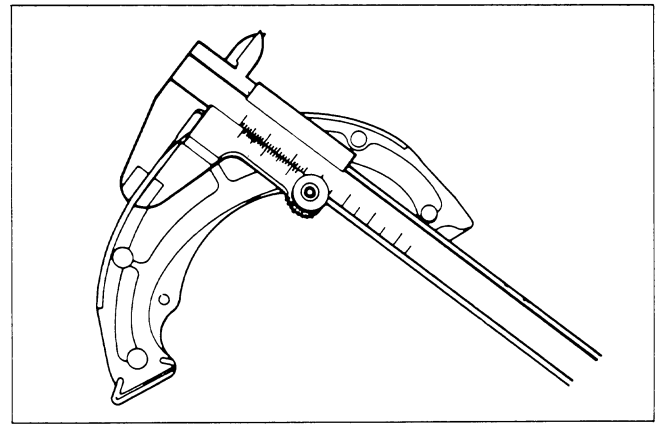
Service limit	130.7 mm (5.15 in)



BRAKE SHOE

Check the brake shoes and decide whether they should be replaced or not from the thickness of the brake shoe linings.

Service limit	1.5 mm (0.06 in)



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

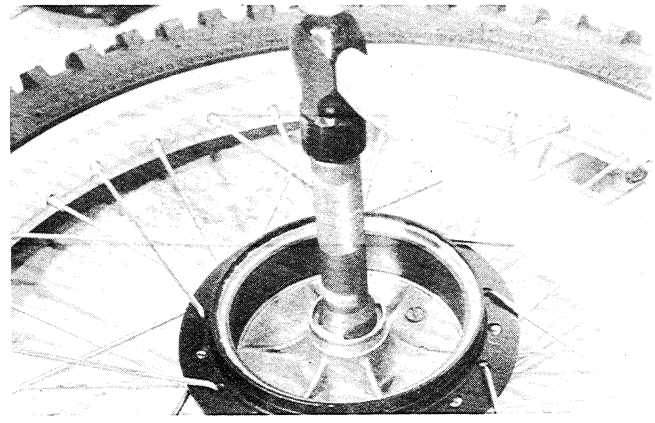
REASSEMBLY

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

WHEEL BEARING

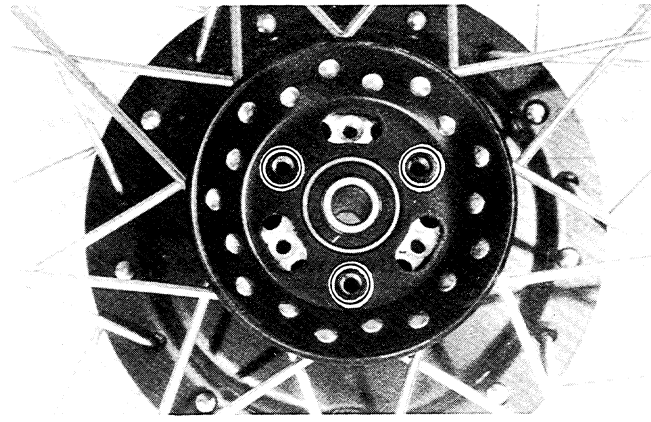
Apply grease to the bearings before installing.

Suzuki super grease "A"	99000-25030



- Install the wheel bearings by using the special tool.

Bearing installer	09913-75820



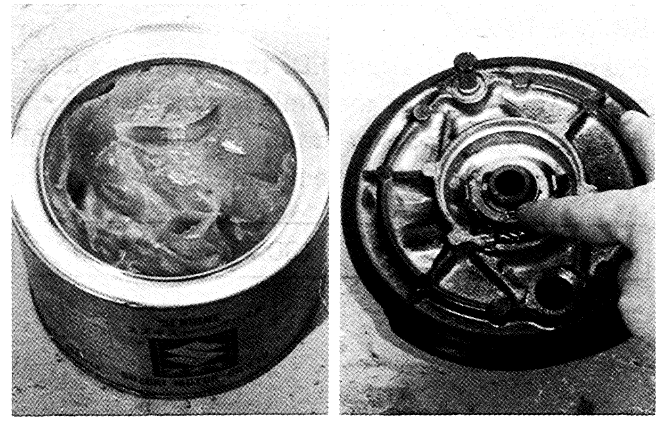
- Install the plate with three bolts as shown in photo.

BRAKE CAM AND TRIP METER GEAR

Apply grease to the brake cam and trip meter drive gear.

SUZUKI Super grease "A"	99000-25030

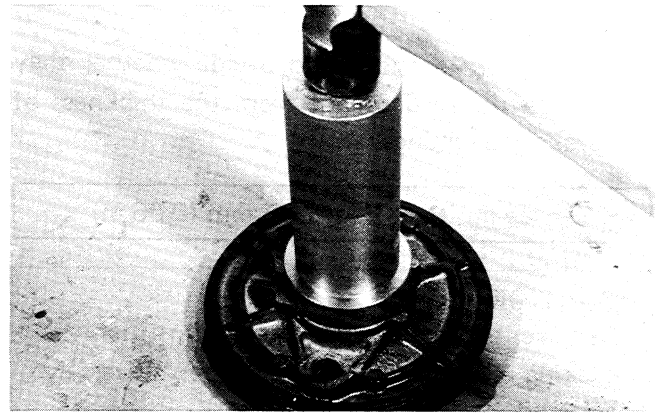
WARNING:
Be careful not to apply too much grease to the brake cam shaft. If grease get on the lining, brake slippage will result.



OIL SEAL

Install the oil seal and apply grease to lip of the oil seal.

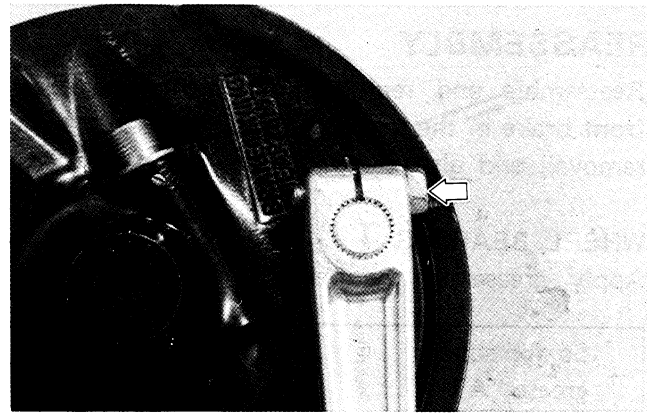
SUZUKI Super grease "A"	99000-25030



BRAKE CAM LEVER

Install the brake cam lever and tighten the bolt with specified torque.

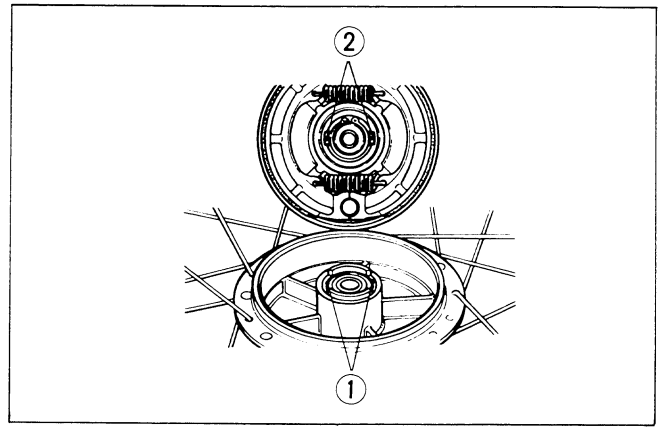
Tightening torque	5 – 8 N·m (0.5 – 0.8 kg-m) (3.5 – 6.0 lb-ft)



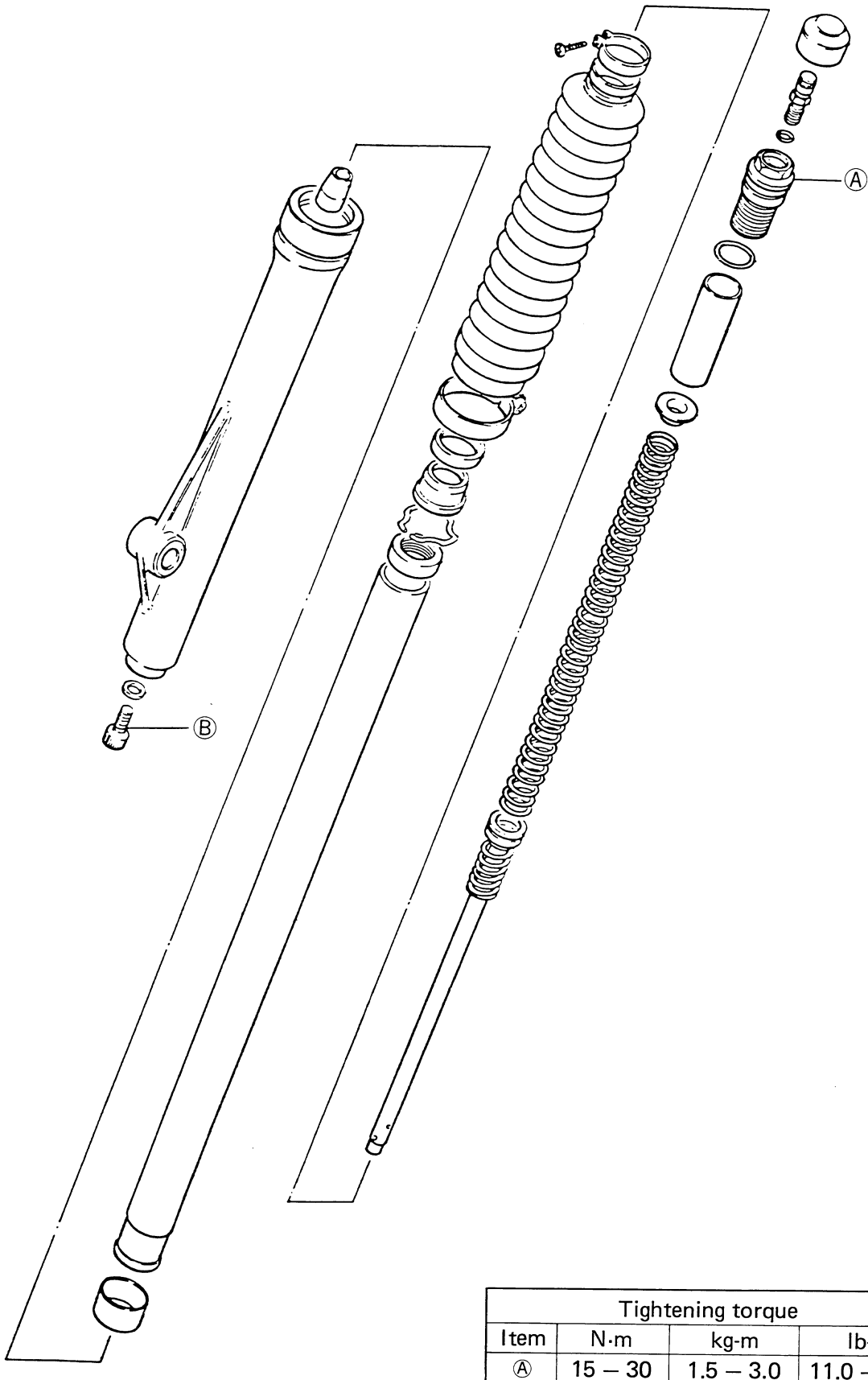
BRAKE PANEL

When installing the brake panel, align groove ① on the wheel hub and two drive pawls ② on trip meter gear box.

CAUTION:
Adjust the front brake lever play after installation of the front wheel. (See page 2-11).



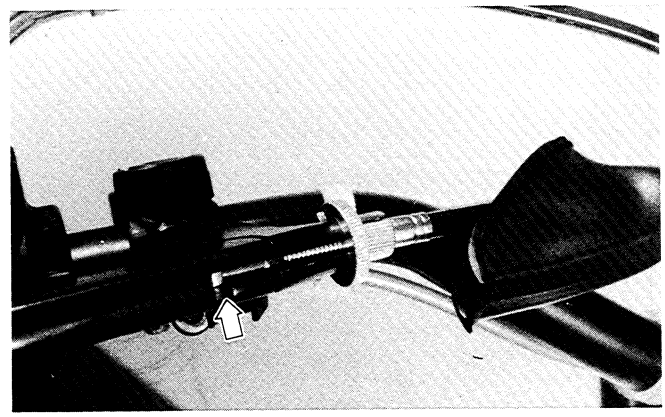
FRONT FORK



Tightening torque			
Item	N·m	kg-m	lb-ft
Ⓐ	15 – 30	1.5 – 3.0	11.0 – 21.0
Ⓑ	20 – 26	2.0 – 2.6	14.5 – 19.0

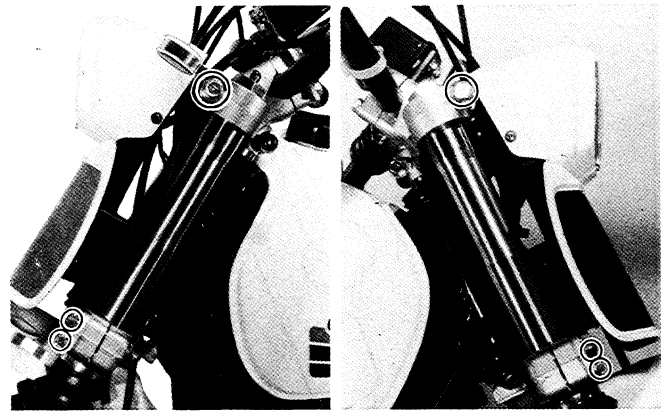
REMOVAL AND DISASSEMBLY

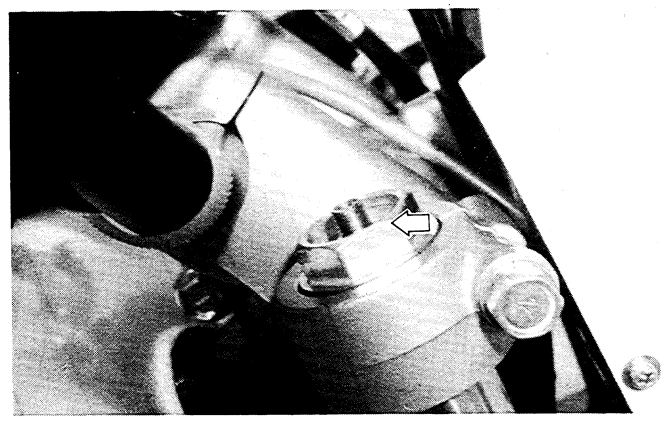
- Take off the front wheel (See page 6-1)
- Remove the brake cable clamp screw.
- Disconnect the front brake inner cable from the brake lever and remove the brake cable.



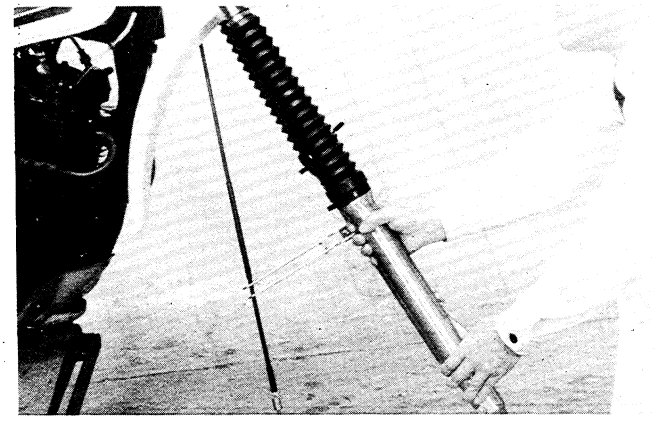
- Loosen the front fork upper and lower clamp bolts.

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

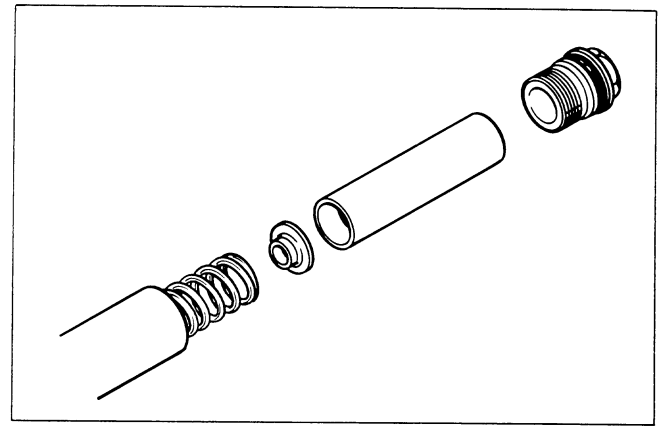




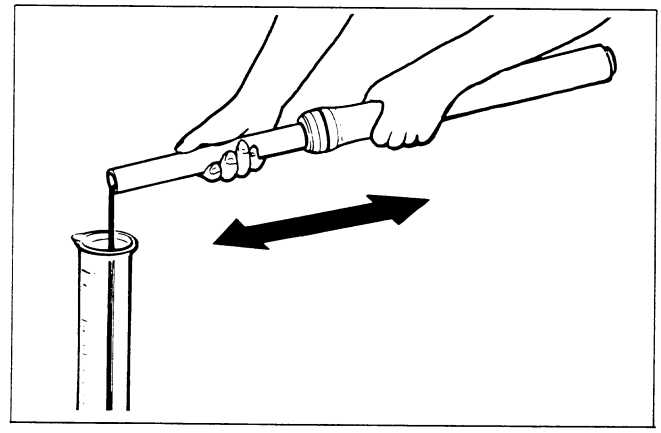
- Pull down right and left front forks.



- Remove cap bolt, and draw out the spacer, spring guide and spring.

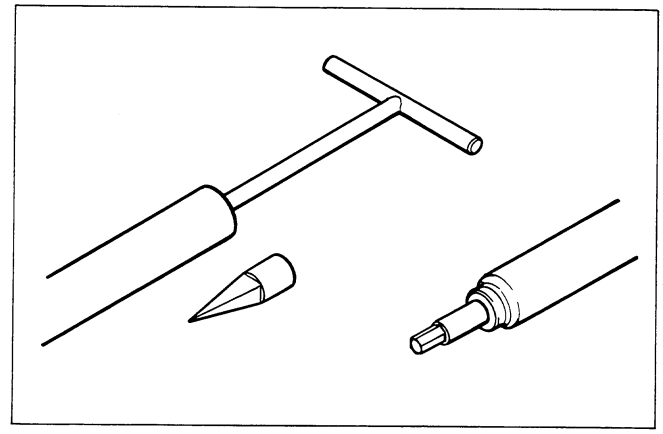


- Invert the fork and stroke it several times to remove the oil.
- Hold the fork inverted for a few minutes.

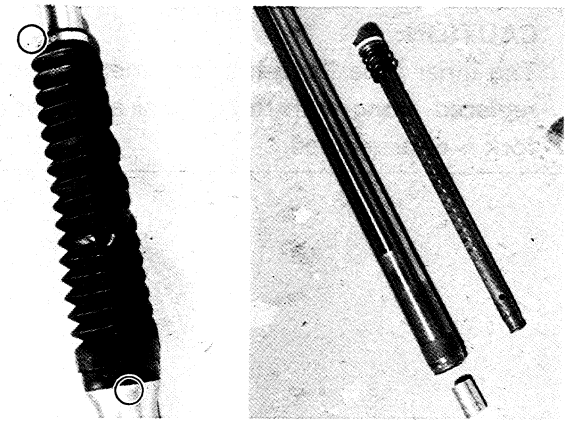


- Remove damper rod bolt by using the special tools.

"T" handle	09940-34520
Attachment "D"	09940-34561

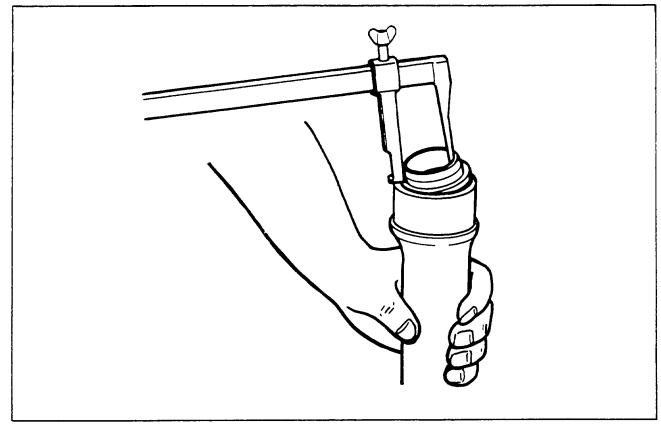


- Loosen upper and lower clamp screws, then pull off the boot.
- Separate the inner tube from outer tube.
- Remove oil lock piece and damper rod with rebound spring.

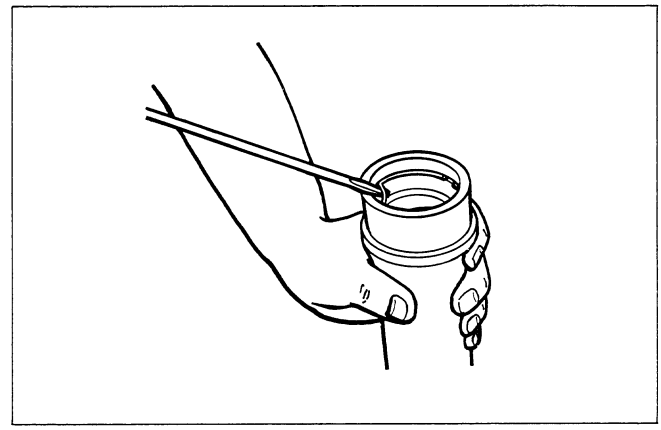


- Remove dust seal case and dust seal by using the special tool.

Oil seal remover	09913-50121



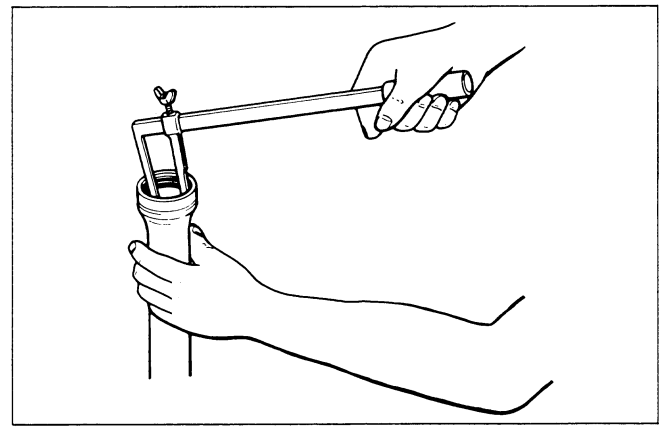
- Remove snapring.



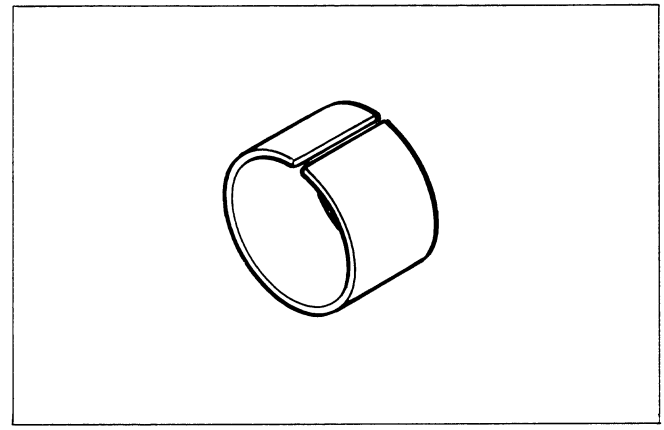
- Remove oil seal by using the special tool.

Oil seal remover	09913-50121

CAUTION:
The oil seal removed should be replaced with a new seal.



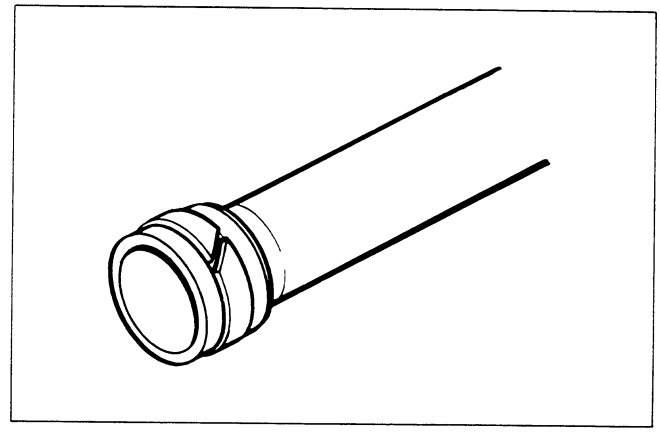
CAUTION:
The inner tube "anti-friction" metals must be replaced along with the oil seal any time the fork is disassembled.



INSPECTION

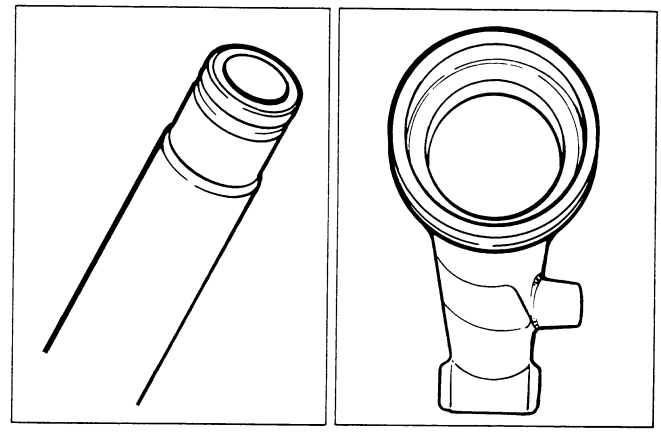
DAMPER ROD RING

Inspect damper rod ring for wear and damage.



INNER TUBE AND OUTER TUBE

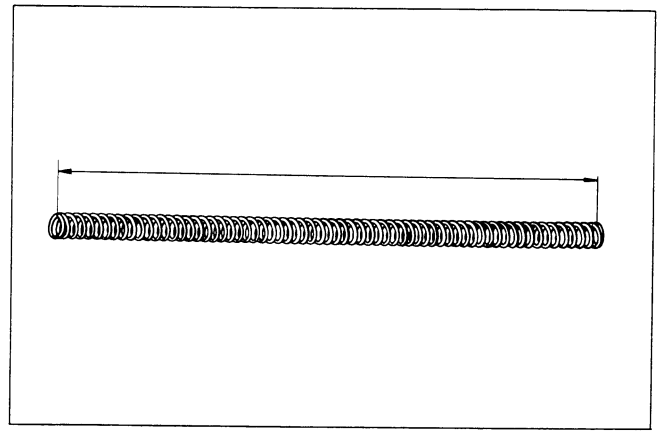
Inspect inner tube and outer tube sliding surfaces for any scuffing or flaws.



FORK SPRING

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

Service limit	546 mm (21.5 in)

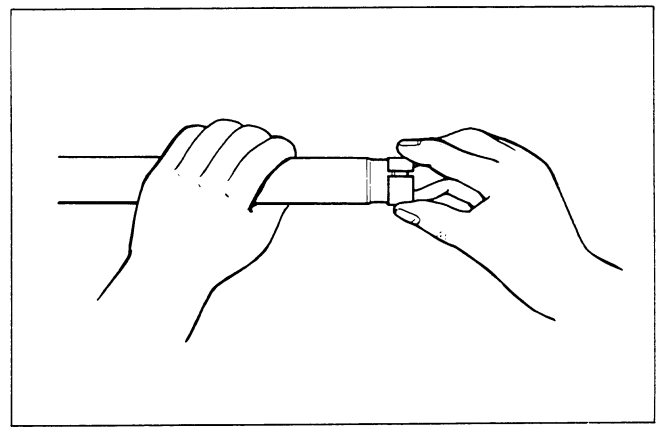


REASSEMBLY

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

INNER TUBE METAL

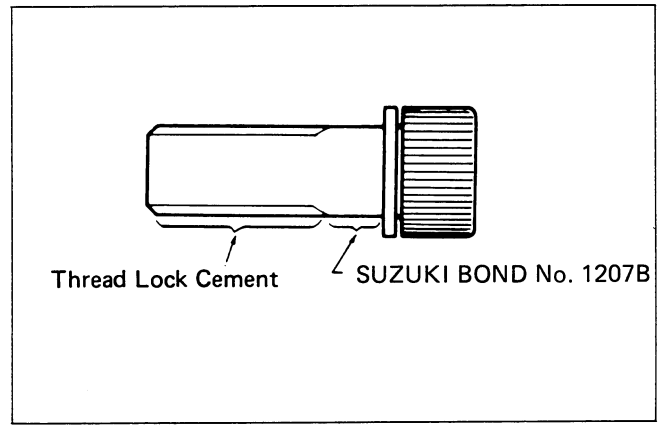
- Install the metal by hand as shown.



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

DAMPER ROD BOLT

- Apply SUZUKI Bond No. 1207B and Thread Lock Cement to the damper rod bolt and tighten with specified torque.



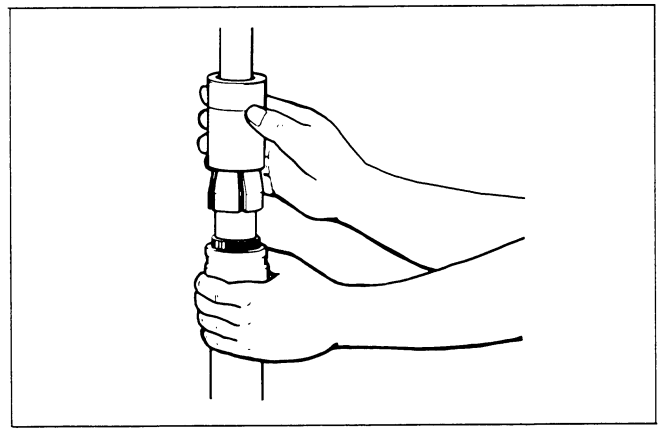
SUZUKI Bond No. 1207B	99104-31140
Thread Lock Cement	99000-32040

"T" handle	09940-34520
Attachment "D"	09940-34561

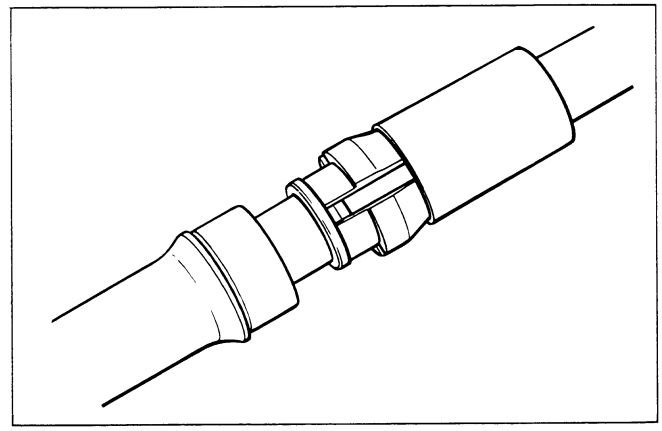
Tightening torque	20 – 26 N·m (2.0 – 2 6 kg-m 14.5 – 19.0 lb-ft)

OIL SEAL AND DUST SEAL

Install the oil seal and dust seal with dust seal case to the outer tube by using the special tool as shown.



Fork oil seal installer	09940-50111

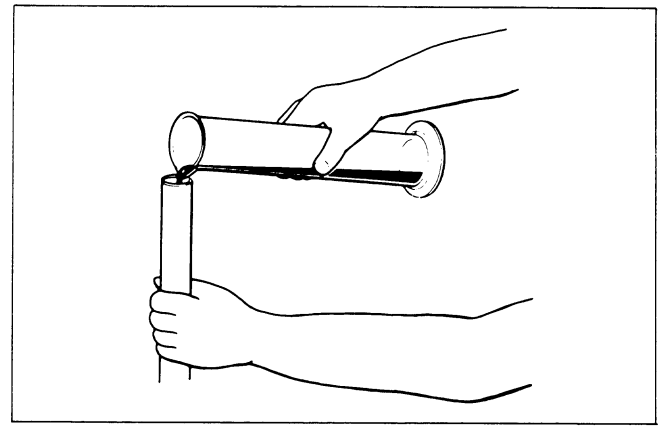


FORK OIL

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

Fork oil type	FORK OIL #10

Capacity (each leg)	298 ml (10.1 US oz)

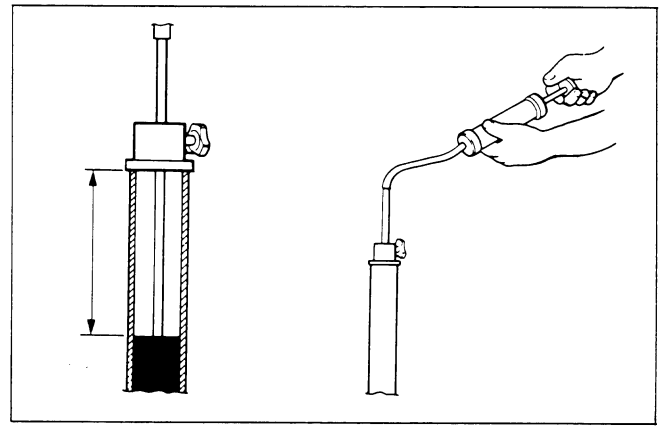


- Hold the front fork vertical and adjust the fork oil level with the special tool.

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

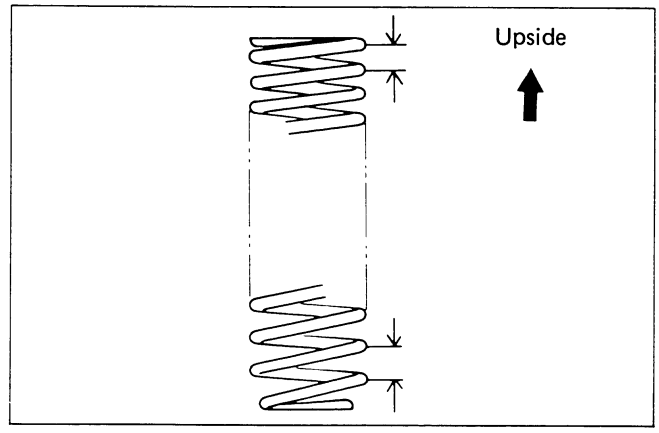
Fork oil level gauge	09943-74111

Oil level	180 mm (7.1 in)



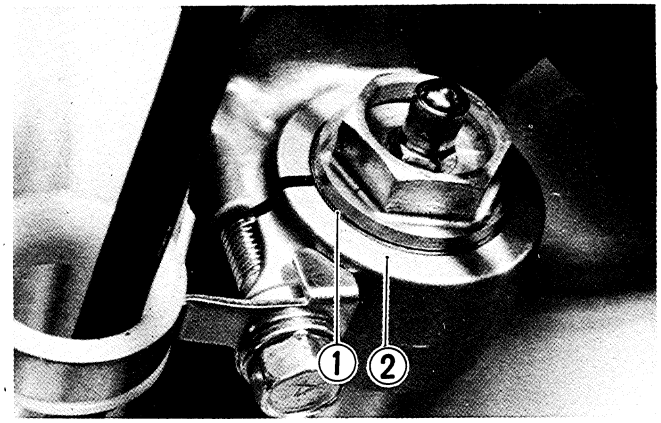
FORK SPRING

When installing the front fork spring, the close wound end should face upward.



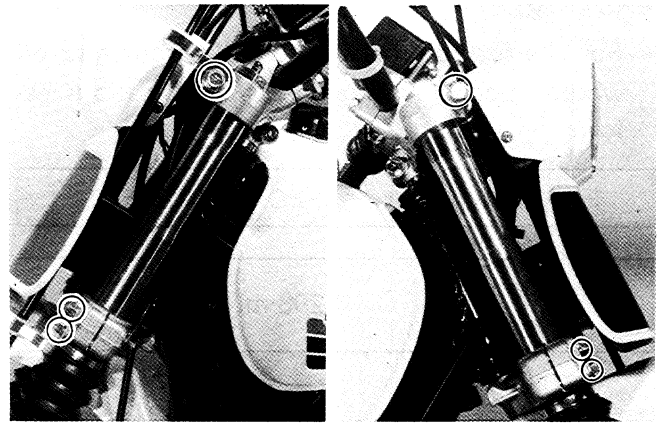
REMOUNTING

- When installing the front fork assembly, align the top ① of inner tube to the upper surface ② of the steering stem upper bracket.



- Tighten the upper and lower clamp bolts.

Tightening torque	Upper:	20 – 30 N·m 2.0 – 3.0 kg-m 14.5 – 21.5 lb-ft
	Lower:	15 – 25 N·m 1.5 – 2.5 kg-m 11.0 – 18.0 lb-ft

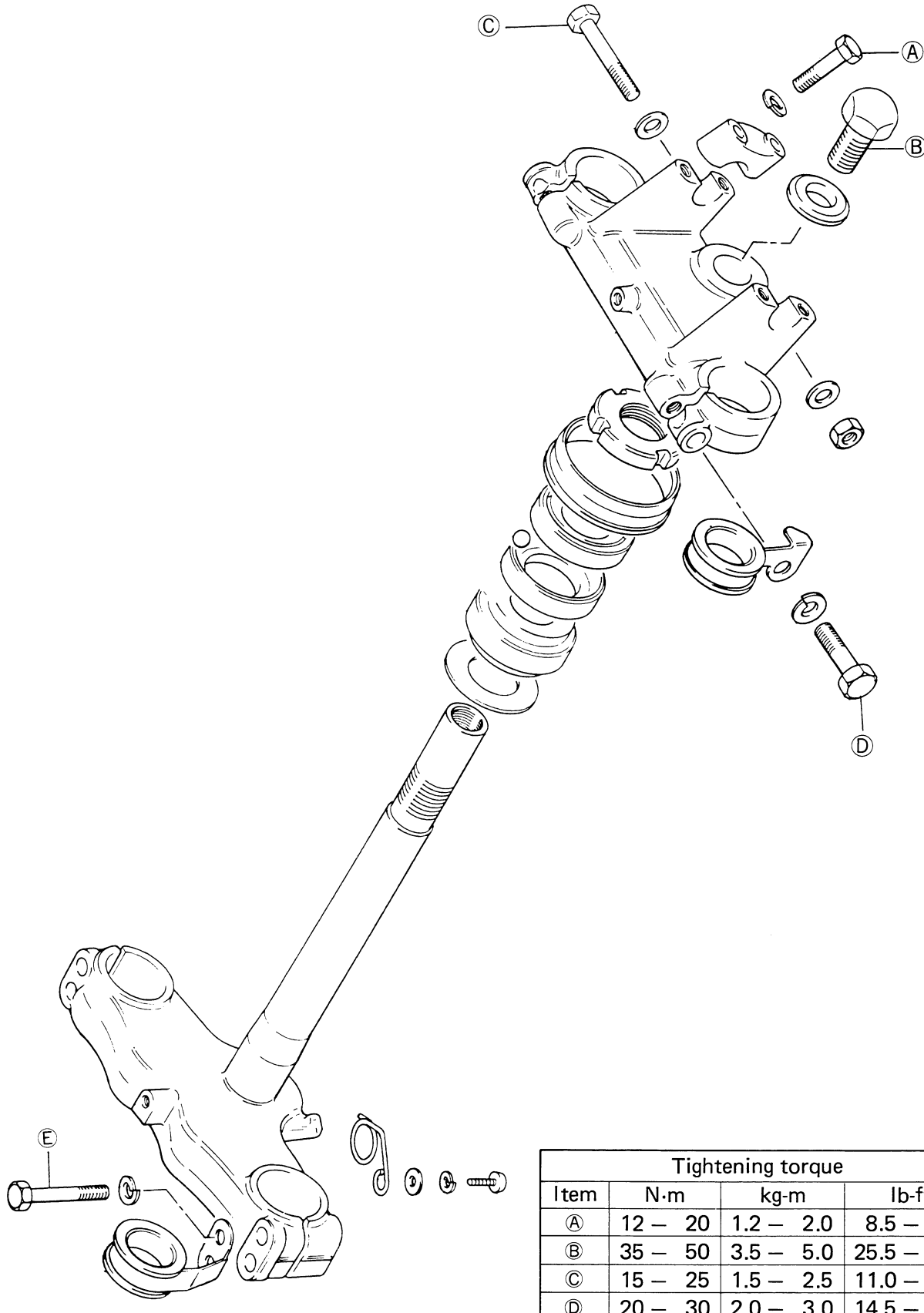


FORK AIR

The motorcycle should be placed on its side stand and all weight removed from the front end by jacking up the front of the chassis or engine. Remove the air valve protection caps and press the air valve to equalize the fork air with atmospheric pressure. This must be done when the forks are cold.

NOTE:
The specified front fork air pressure is 0 kg/cm^2 (0 psi) for both fork legs.

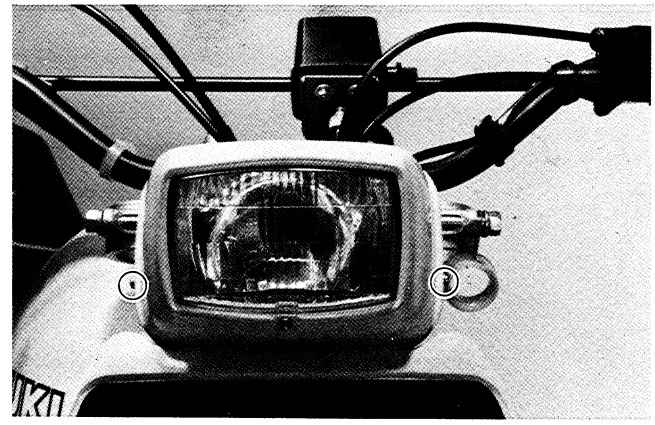
STEERING STEM



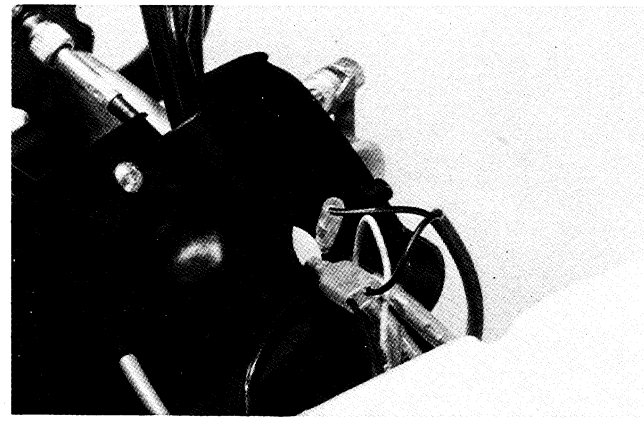
Item	Tightening torque		
	N·m	kg-m	lb-ft
Ⓐ	12 – 20	1.2 – 2.0	8.5 – 14.5
Ⓑ	35 – 50	3.5 – 5.0	25.5 – 36.0
Ⓒ	15 – 25	1.5 – 2.5	11.0 – 18.0
Ⓓ	20 – 30	2.0 – 3.0	14.5 – 21.5
Ⓔ	15 – 25	1.5 – 2.5	11.0 – 18.0

REMOVAL AND DISASSEMBLY

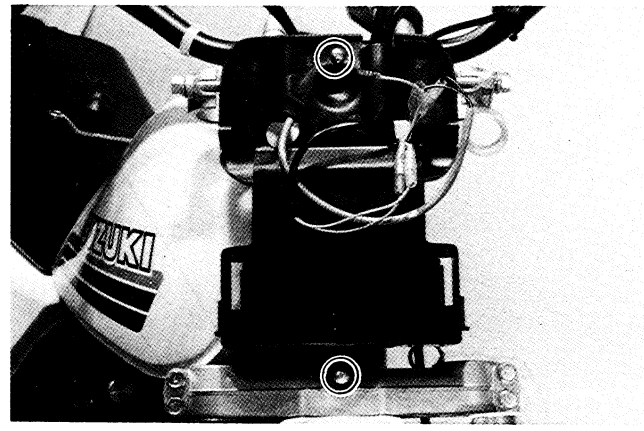
- Take off front wheel (see page 6-1).
- Take off front fork (see page 6-9).
- Remove the two screws and headlight housing.



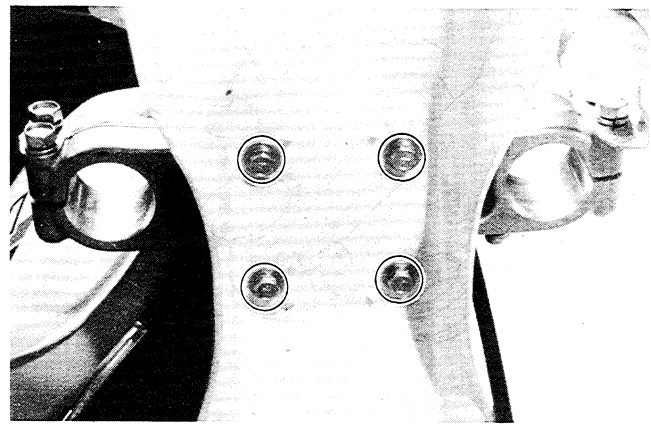
- Disconnect the lead wires.



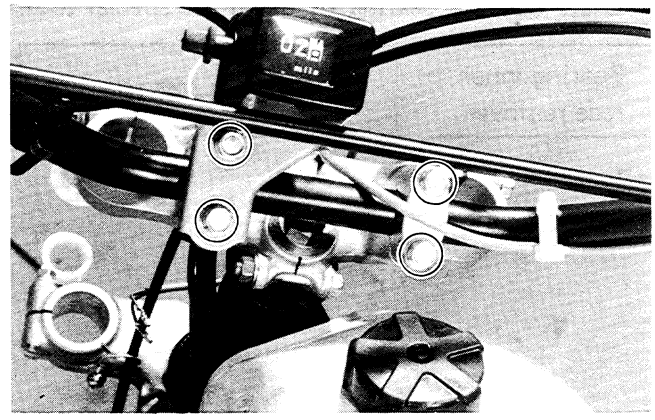
- Remove the two screws and headlight housing bracket.



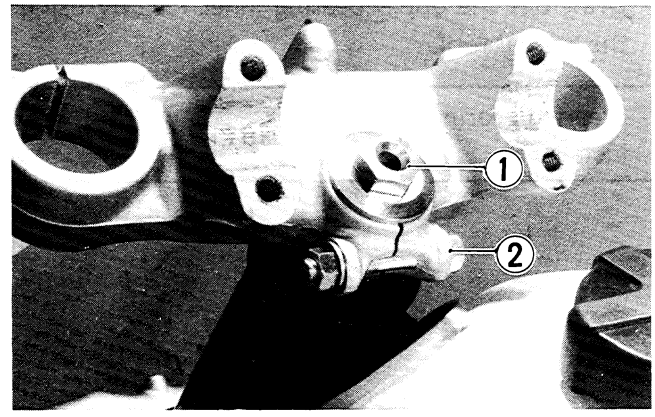
- Remove the four bolts and front fender.



- Remove the handlebers clamp bolts.



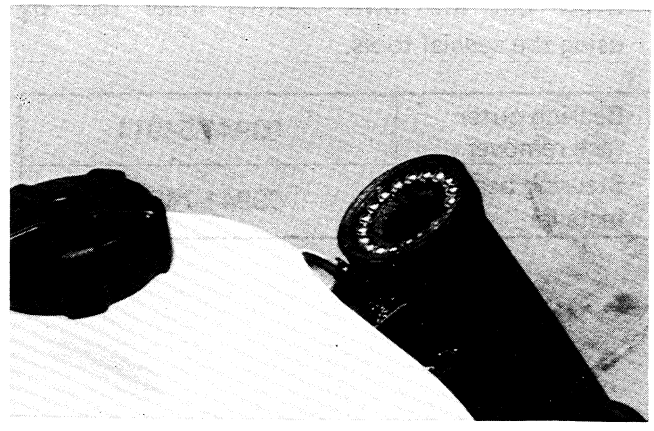
- Remove the steering stem head bolt ① and loosen clamp bolt ②, then take off steering stem upper bracket.



- Remove steering stem nut by using the special tool, then draw out steering stem.

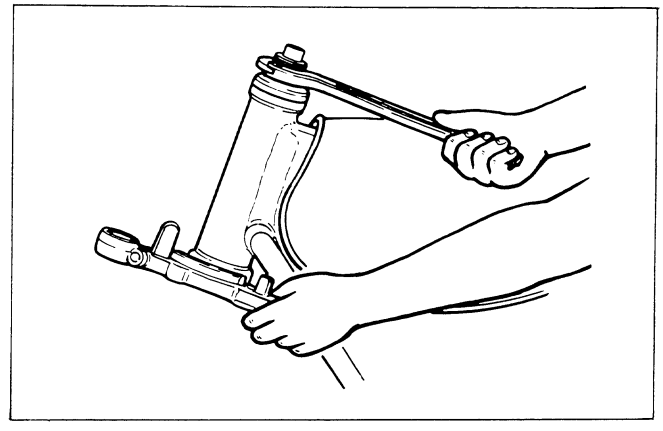
Universal clamp wrench	09910-60611

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



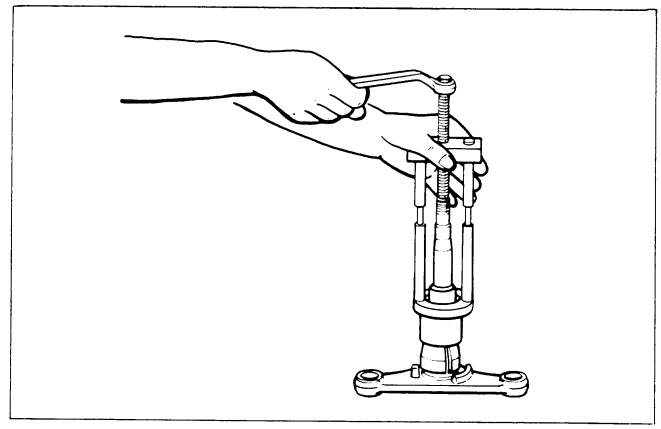
- Remove the bearing outer race and steel balls.

Number of balls	18 pcs



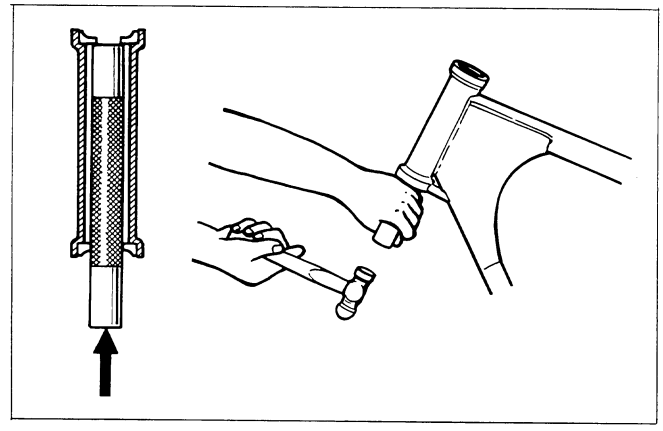
- Draw out the bearing by using the special tool.

Bearing inner race remover	09941-84510



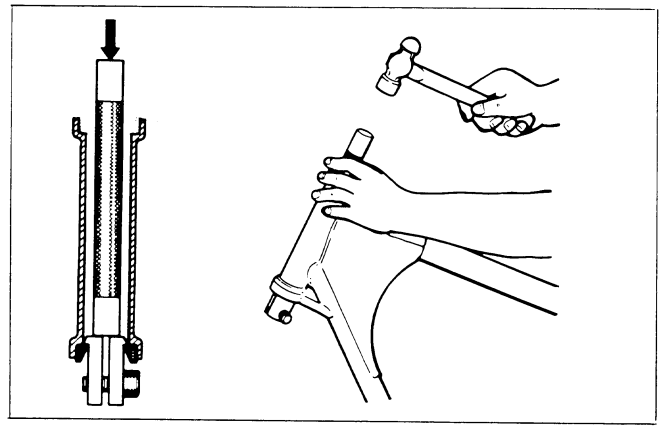
- Draw out the upper bearing inner race by using the special tool.

Steering bearing installer	09941-74910



- Draw out the lower bearing inner race by using the special tools.

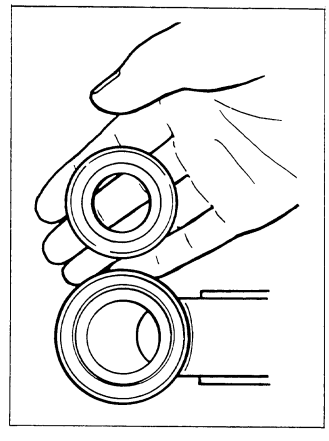
Bearing outer race remover	09941-54911
Steering bearing installer	09941-74910

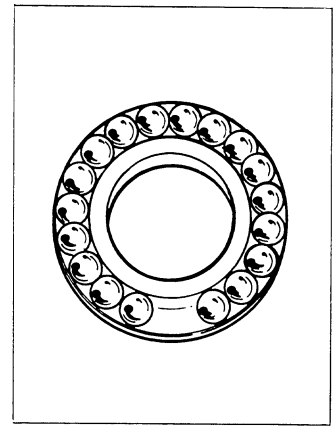


INSPECTION

Inspect and check the removed parts for the following abnormalities.

* Handlebars distortion
* Handlebars clamp wear
* Bearing race wear and brinelling
* Worn or damaged steel balls and bearing
* Distortion of steering stem





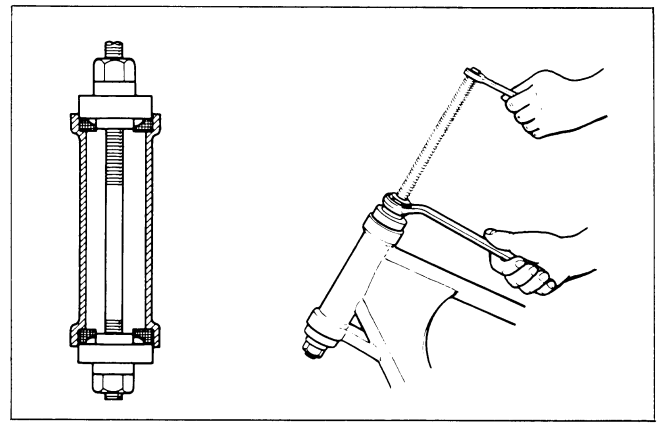
REASSEMBLY

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

OUTER RACES

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

Steering race installer	09941-34511

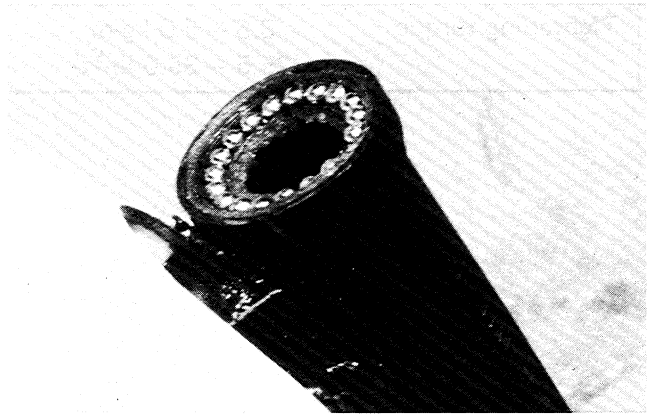


STEEL BALL

Apply grease to the bearing inner race when installing the steel balls.

SUZUKI Super Grease "A"	99000-25030

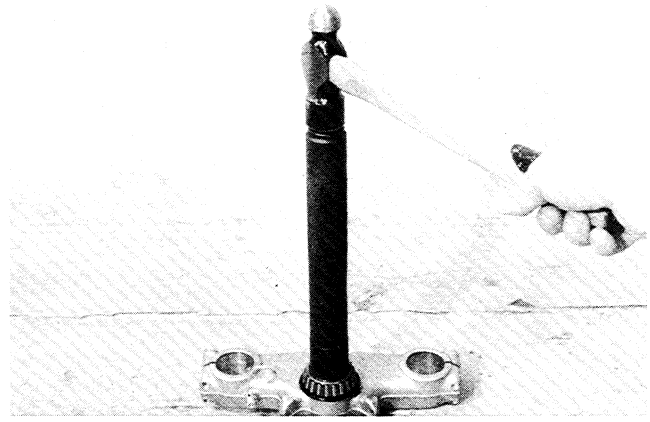
Number of balls	18 pcs



BEARING

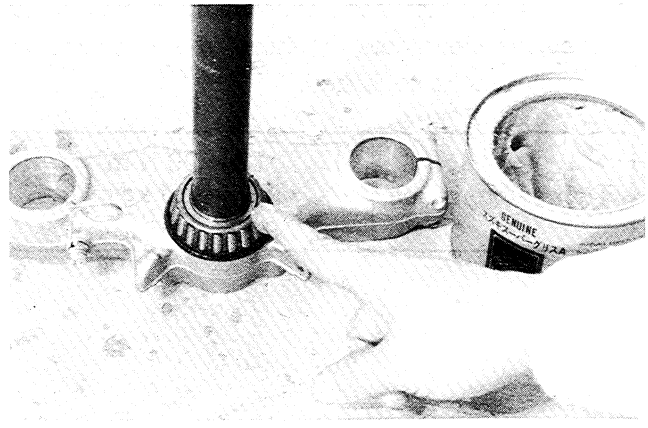
- Press in the lower bearing by using the special tool.

Steering bearing installer	09941-74910



- Apply grease to lower bearing before remounting the steering stem.

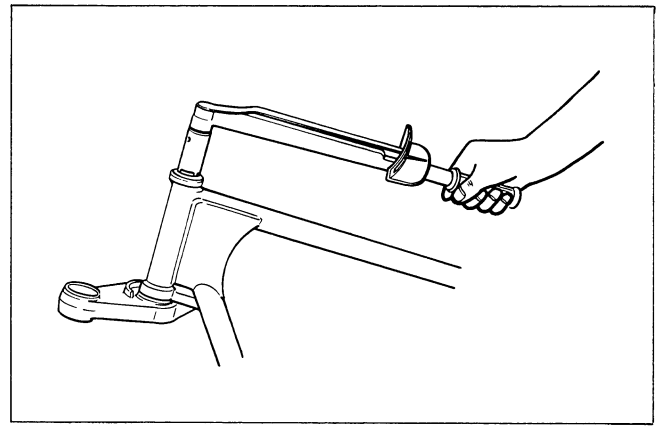
SUZUKI Super grease "A"	99000-25030



STEERING STEM NUT

- Tighten the steering stem nut with approximately 4.0 – 5.0 kg-m (29.0 – 36.0 lb-ft).
- Turn the steering stem right and left, lock-to-lock, five or six times to "seat" the steering stem bearings.
- Loosen the steering stem nut to 0 kg-m (0 lb-ft) and then retighten very lightly.
- Install the steering stem upper bracket and tighten the steering stem head bolt to the specified torque.

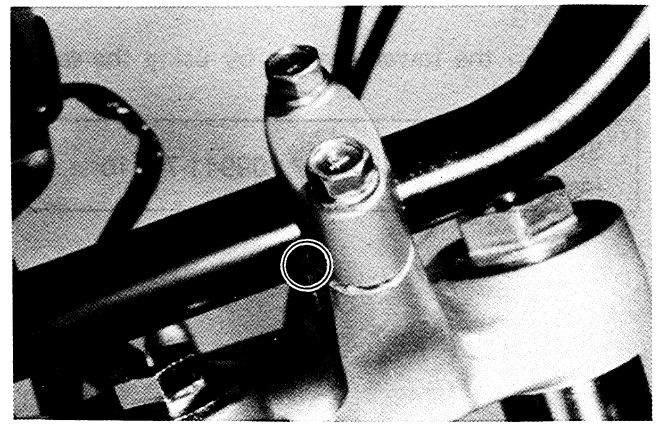
Tightening torque	35 – 50 N·m 3.5 – 5.0 kg-m (25.5 – 36.0 lb-ft)



CAUTION:
After performing the adjustment and installing the steering stem upper bracket, "rock" the front wheel assembly forward and backward to ensure that there is no play and that the procedure was accomplished correctly. If play is noticeable, re-adjust the steering stem nut.

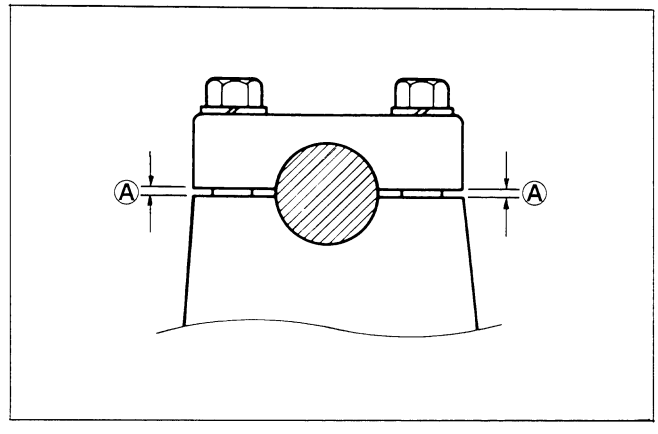
HANDLEBARS

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

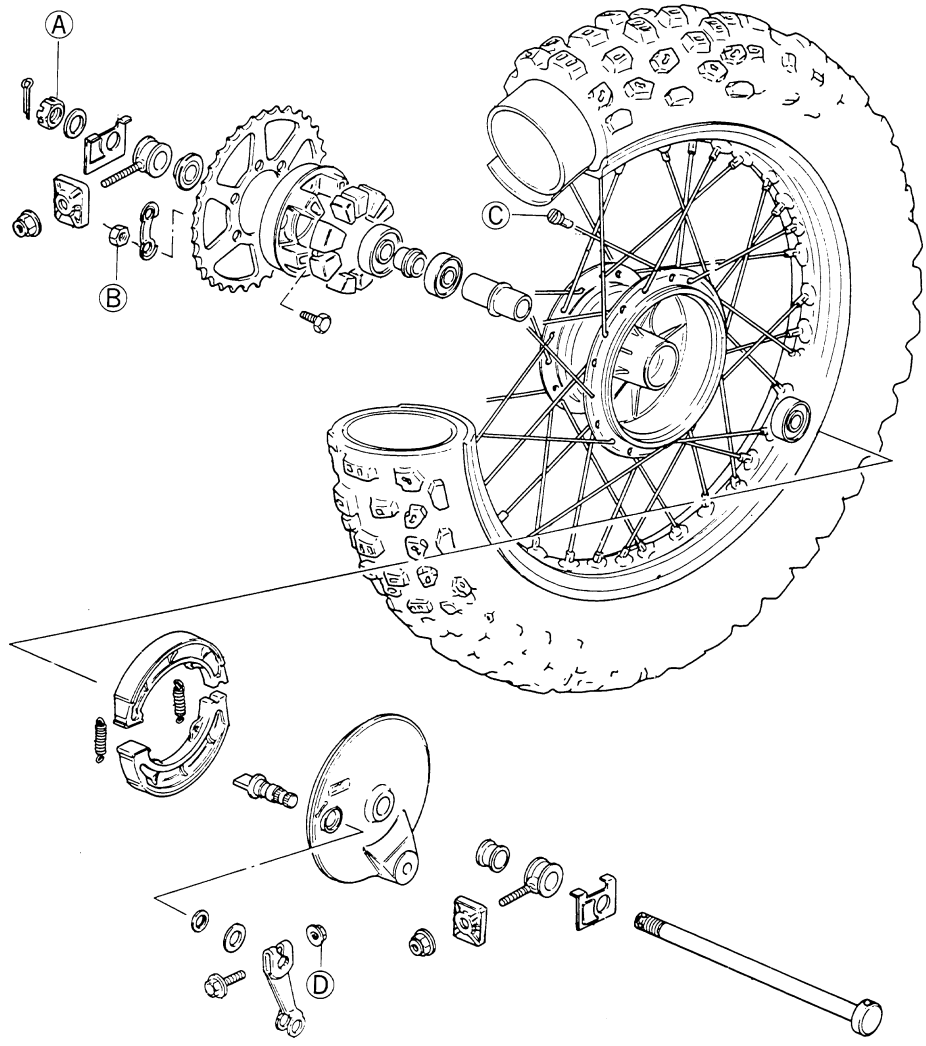


- Secure the each handlebar clamp in such a way that the clearances Ⓐ ahead of and behind the handlebars be equalized.

Tightening torque	12 – 20 N·m (1.2 – 2.0 kg-m) (8.5 – 14.5 lb-ft)



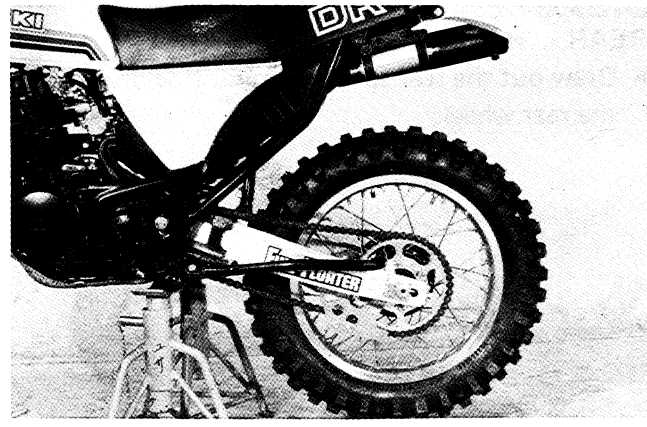
REAR WHEEL AND REAR BRAKE



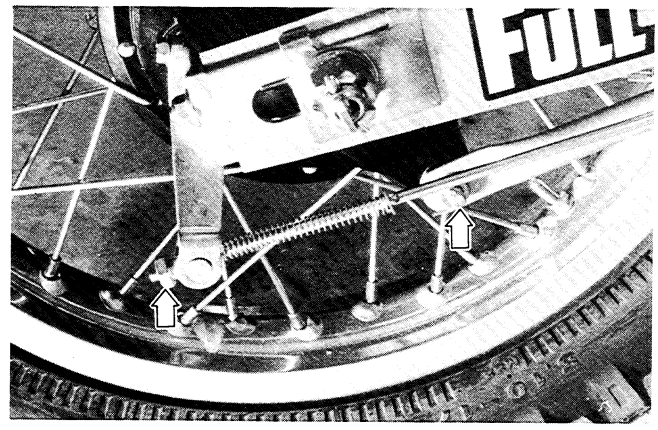
Tightening torque			
Item	N·m	kg-m	lb-ft
Ⓐ	50 – 80	5.0 – 8.0	36.0 – 58.0
Ⓑ	25 – 40	2.5 – 4.0	18.0 – 29.0
Ⓒ	4 – 5	0.4 – 0.5	3.0 – 3.5
Ⓓ	5 – 8	0.5 – 0.8	3.5 – 6.0

REMOVAL

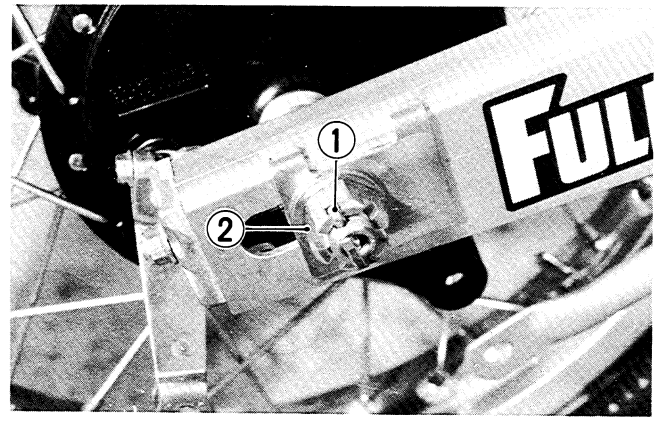
- Support the machine by jack or block.



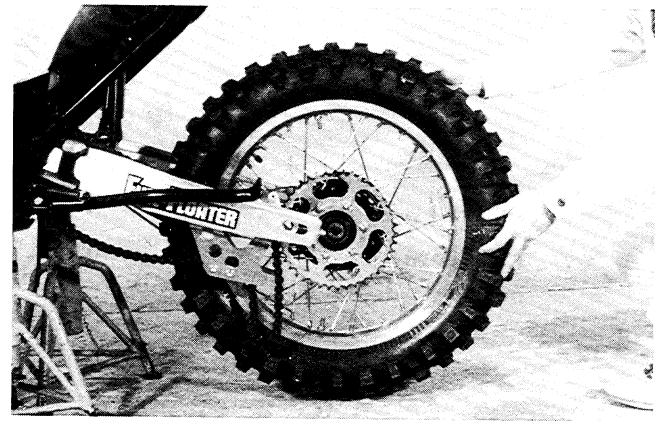
- Pull out the cotter pin and remove the torque link nut and bolt.
- Remove the rear brake adjuster nut.



- Pull out the cotter pin ① and remove the rear axle nut ②.
- Remove the chain case.



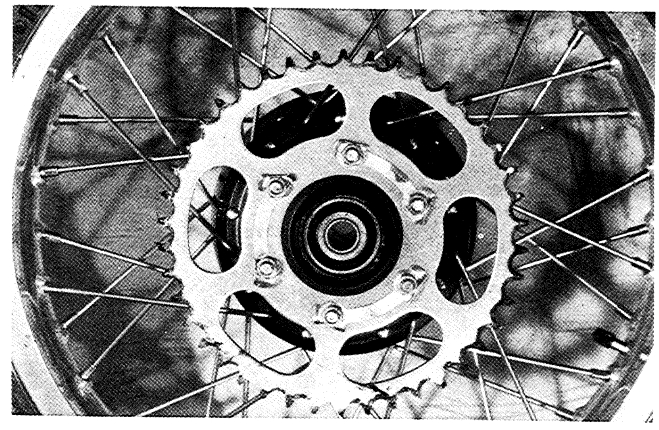
- Draw out the axle shaft and take off the rear wheel.
- Separate the rear wheel and rear brake panel.



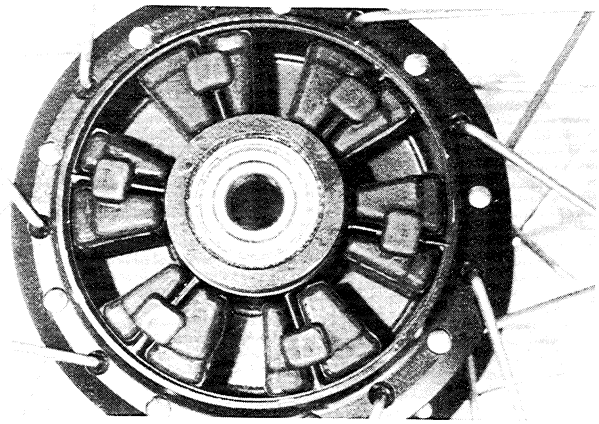
DISASSEMBLY

REAR WHEEL

- Draw out the rear sprocket mounting drum from the rear wheel.

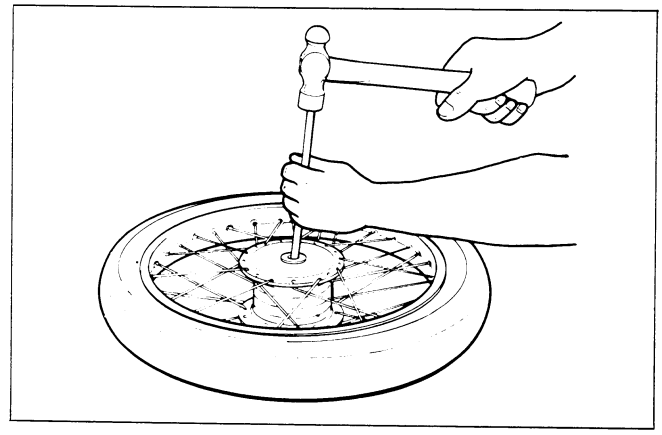


- Remove the six cushions.



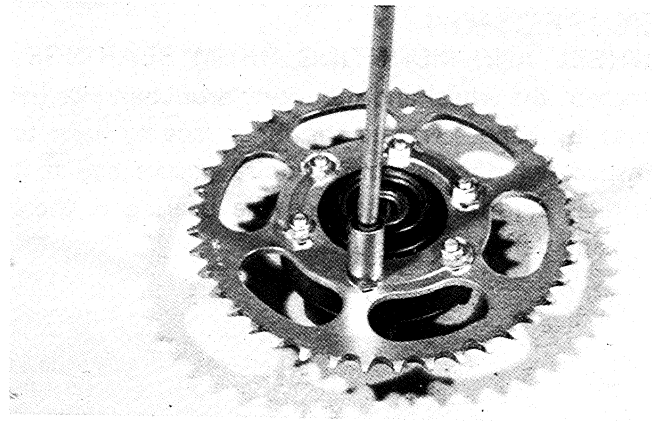
- Remove the right and left side wheel bearings.

NOTE:
Removing the left side bearing first, makes the job easier.



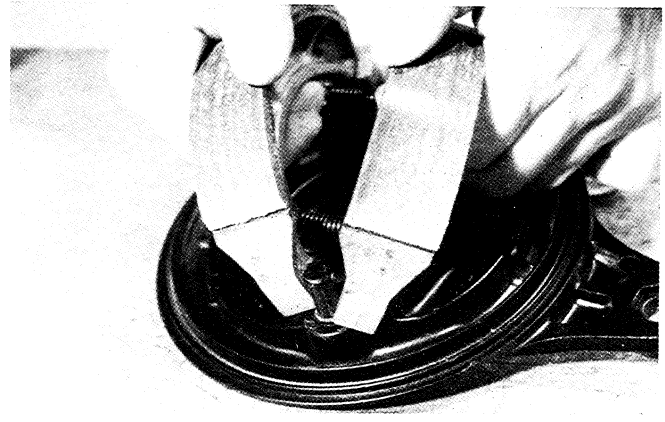
SPROCKET MOUNTING DRUM

- Flatten the washers and loosen the six nuts.
- Separate the rear sprocket and sprocket mounting drum.

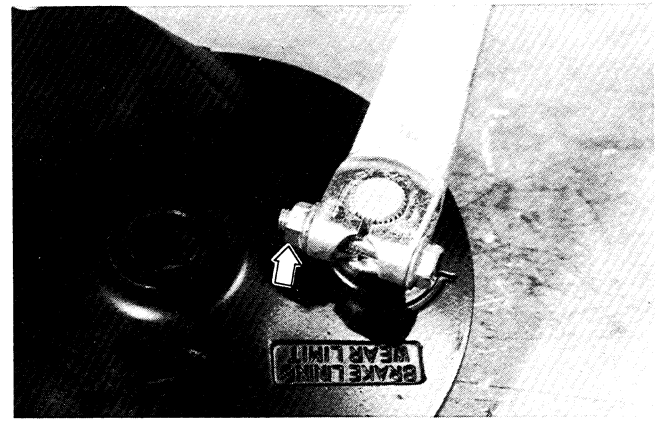


REAR BRAKE

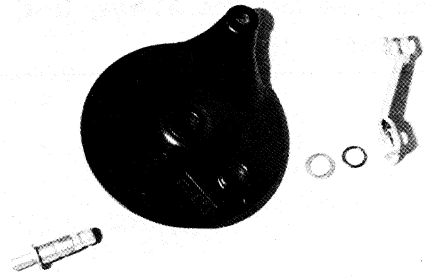
- Take off the brake shoes.



- Loosen the cam lever nut.



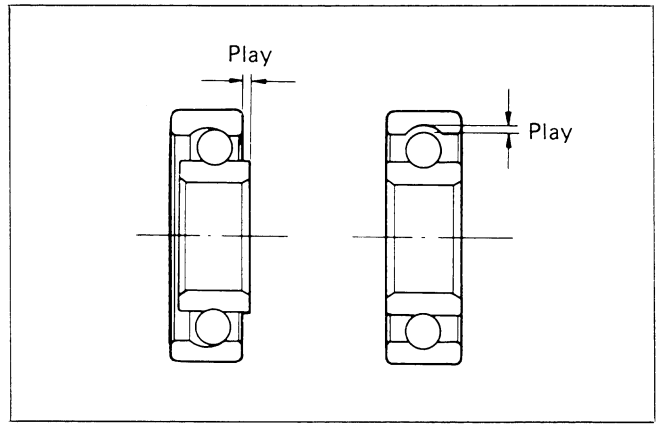
- Pull off the brake cam, washer, O-ring and cam lever.

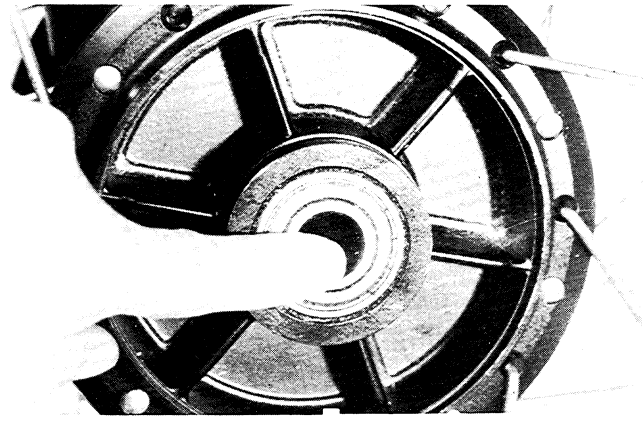


INSPECTION

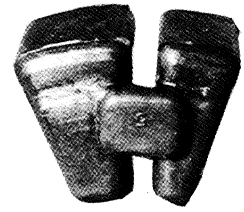
WHEEL AND MOUNTING DRUM BEARINGS

Inspect the wheel and mounting drum bearings for play by hand. Rotate the inner race by hand to inspect whether abnormal noise occurs and if it rotates smoothly. Replace the bearing if there are any defects.

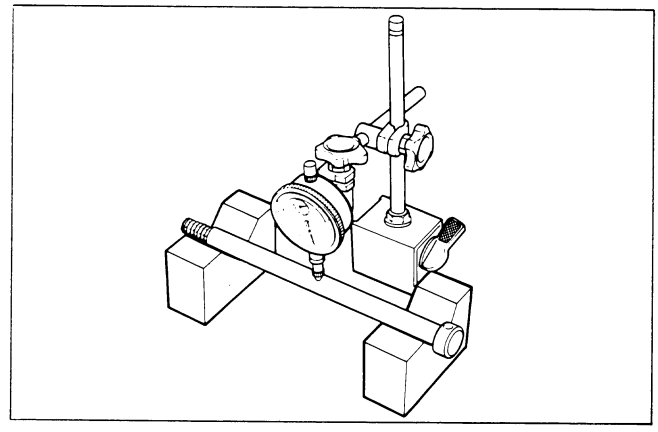




CUSHION
Inspect the cushion for wear and damage.



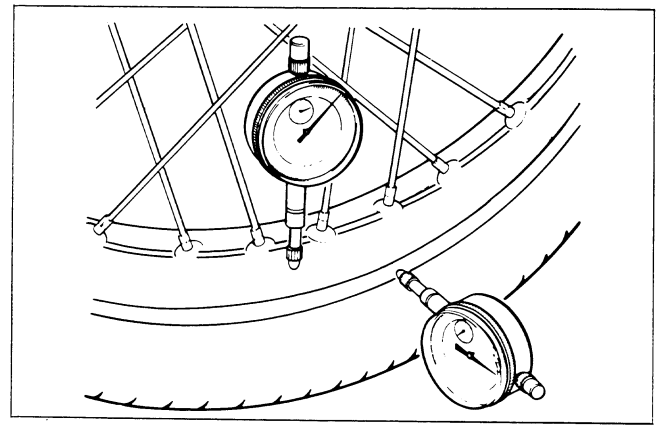
AXLE SHAFT
Using a dial gauge, check the axle shaft for runout and replace it if the runout exceeds the limit.



Dial gauge (1/100)	09900-20606

Service limit	0.25 mm (0.010 in)

WHEEL RIM
Make sure that the wheel rim runout does not exceed the service limit when checked as shown. An excessive amount of runout is usually due to loose spokes or bent rim.
If properly tightening the spokes will not correct the runout, replace the wheel rim.

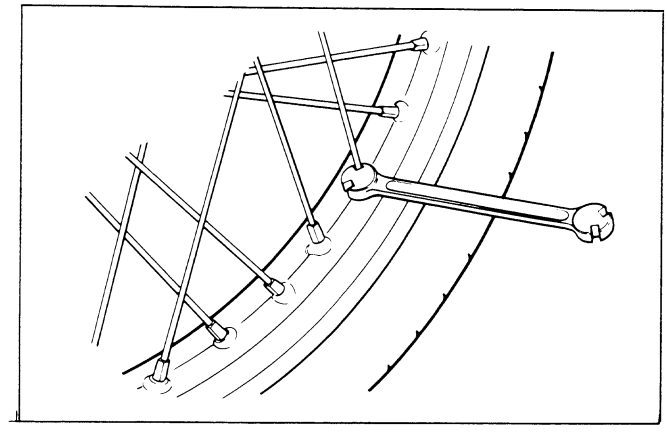


NOTE:
Worn or loose wheel bearings must be replaced before attempting to true a wheel rim.

Service limit (Axial and Radial)	2.0 mm (0.08 in)

TIRE (See page 2–14)

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

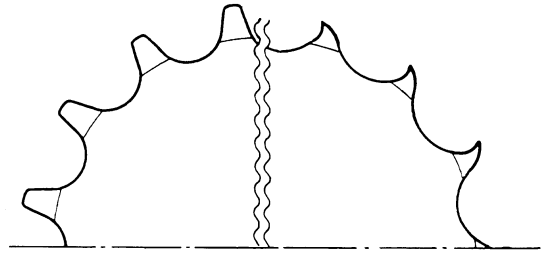


Tightening torque	4 – 5 N·m (0.4 – 0.5 kg-m / 3.0 – 3.5 lb-ft)

Spoke nipple wrench	09940-60113

SPROCKET

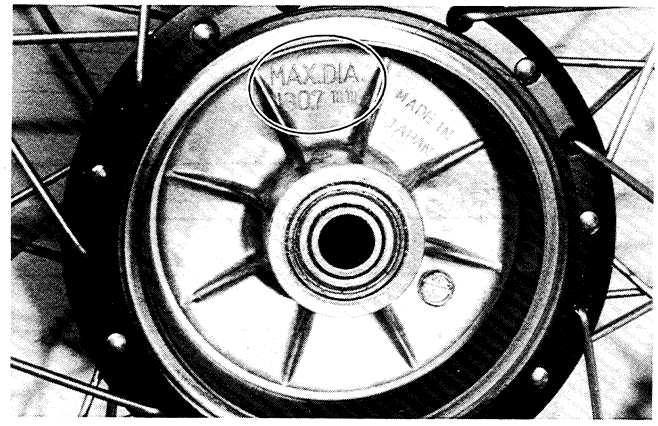
Inspect the sprocket teeth for wear. If they are worn as illustrated, replace the sprocket and drive chain.



Normal Worn down

REAR BRAKE DRUM

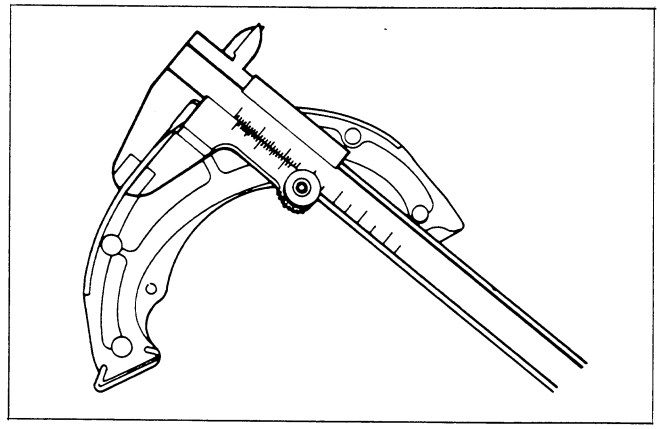
Measure the brake drum I. D. to determine the extent of wear and, if the limit is exceeded by the wear noted, replace the drum. The value of this limit is indicated inside the drum.



Service limit	130.7 mm (5.15 in)

BRAKE SHOE

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

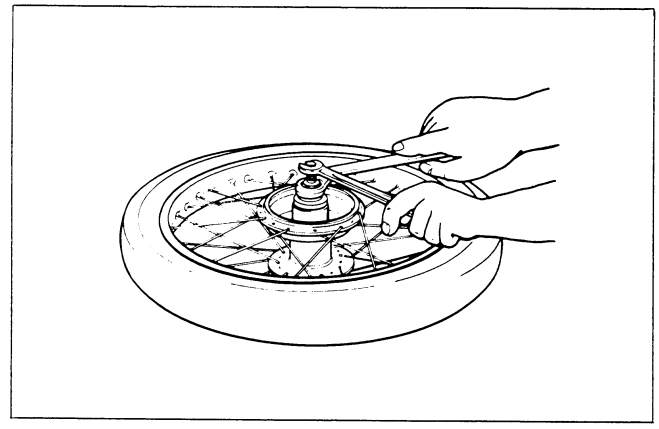


Service limit	1.5 mm (0.06 in)

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

REASSEMBLY

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



WHEEL BEARING

- Apply grease to the bearings before installing.

SUZUKI Super grease "A"	99000-25030

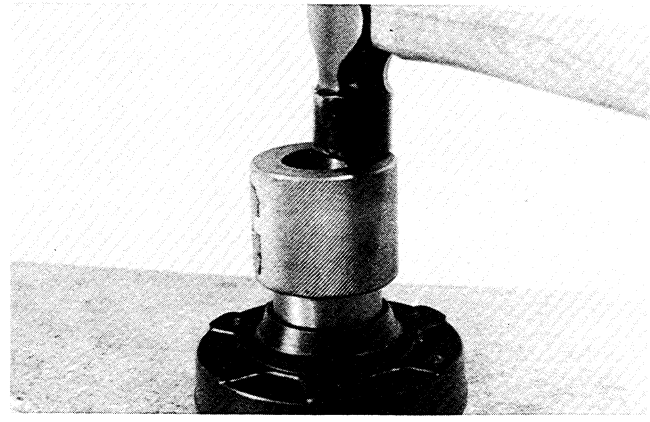
- Install the wheel bearings by using the special tool.

NOTE:
First install the wheel bearing for right side.

Bearing installer set	09924-84510

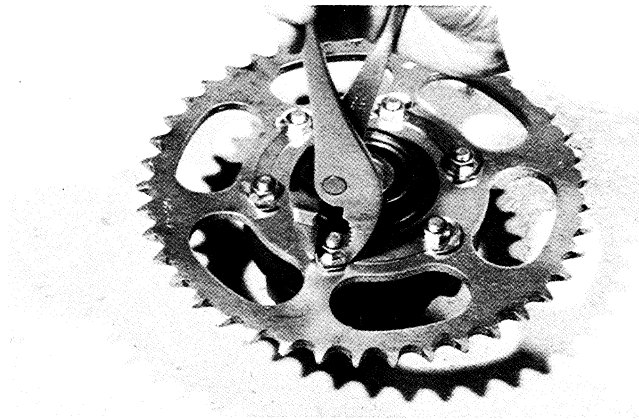
SPROCKET MOUNTING DRUM

- Insert the bearing.



- After tightening the six nuts to specification, bend the washers.

Tightening torque	25 – 40 N·m (2.5 – 4.0 kg-m 18.0 – 29.0 lb-ft)

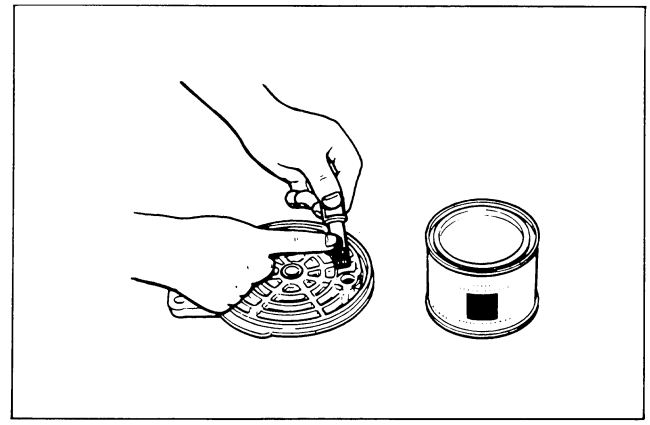


BRAKE CAM

Apply grease to the brake cam.

SUZUKI Super grease "A"	99000-25030

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

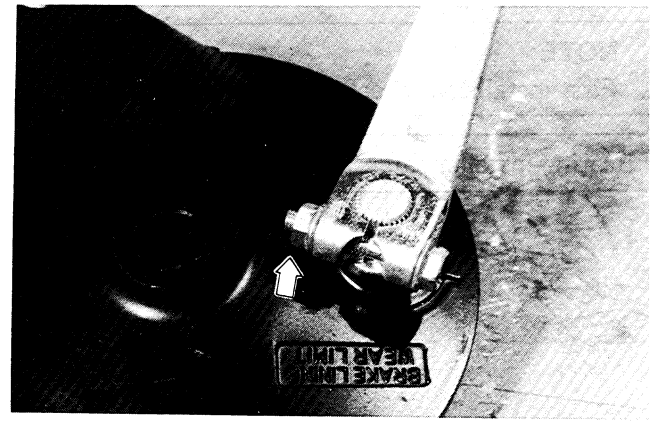


BRAKE CAM LEVER

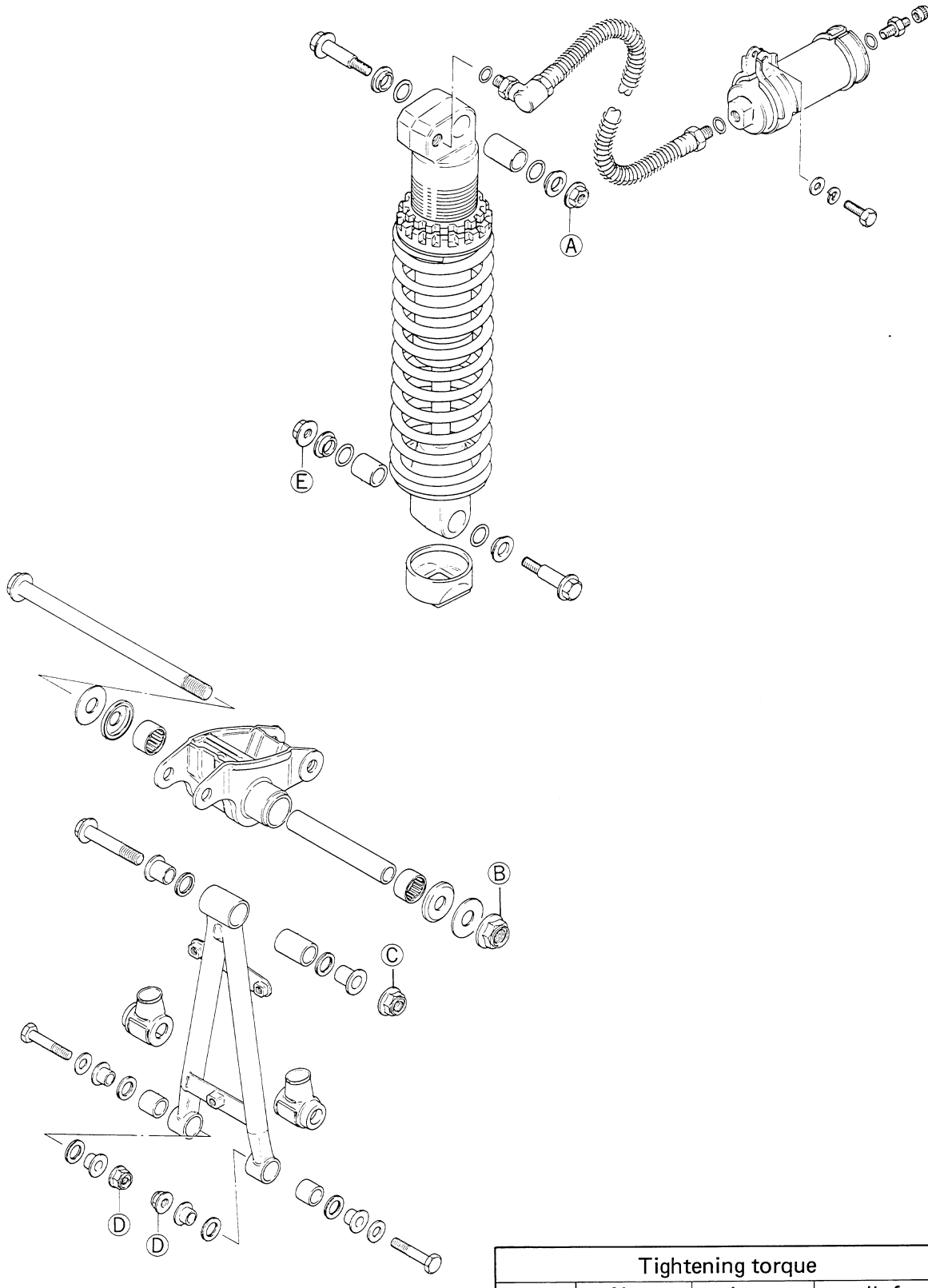
Install the brake cam lever and tighten the cam lever nut with specified torque.

Tightening torque	5 – 8 N·m (0.5 – 0.8 kg-m) (3.5 – 6.0 lb-ft)

See page 2-11/2-12 for brake adjustment.



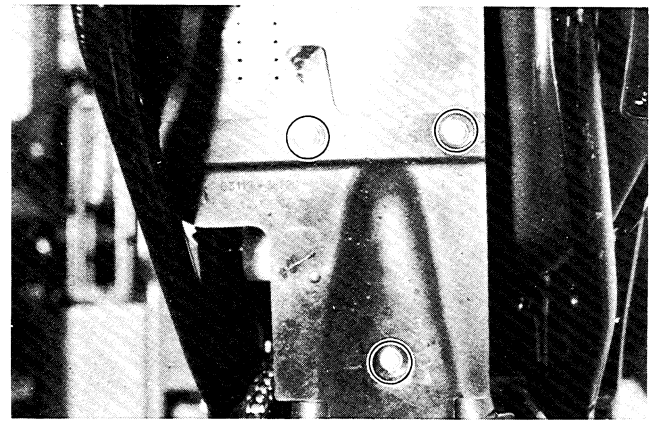
FULL-FLOATING SUSPENSION



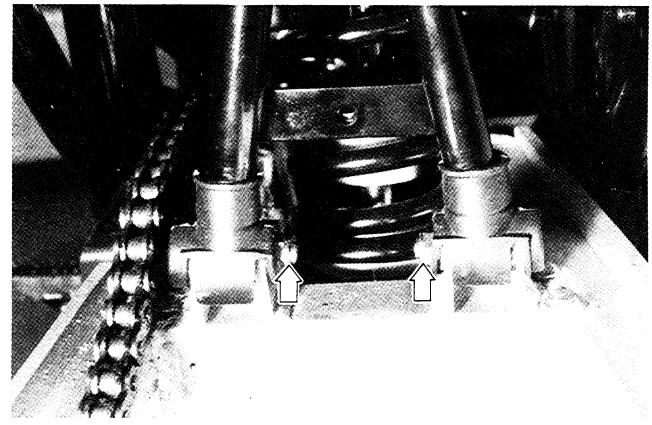
Tightening torque			
Item	N·m	kg-m	lb-ft
ⒶⒸⒺ	40 – 60	4.0 – 6.0	29.0 – 43.5
Ⓑ	45 – 70	4.5 – 7.0	32.5 – 50.5
Ⓓ	18 – 28	1.8 – 2.8	13.0 – 20.0

REMOVAL AND DISASSEMBLY

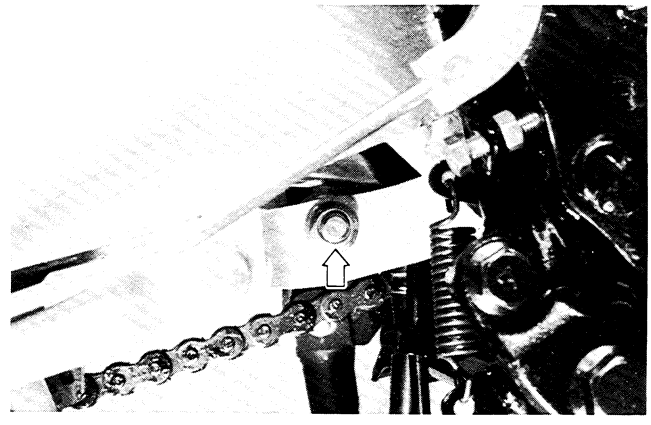
- Remove the seat and frame covers.
- Remove the rear wheel (See page 6-22)
- Loosen the three screws and remove the mud flap.



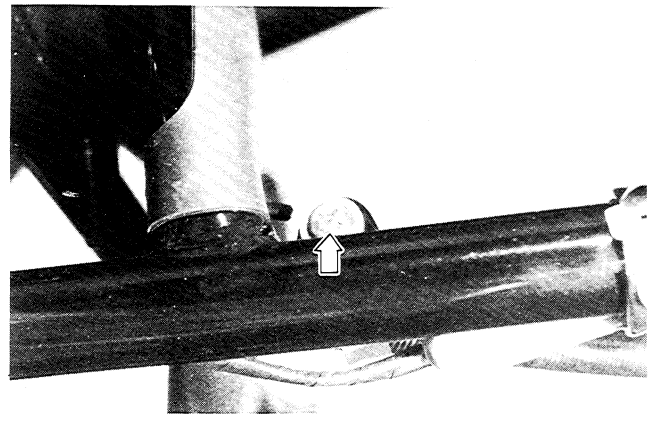
- Remove the rear cushion rod fitting nuts and bolts.



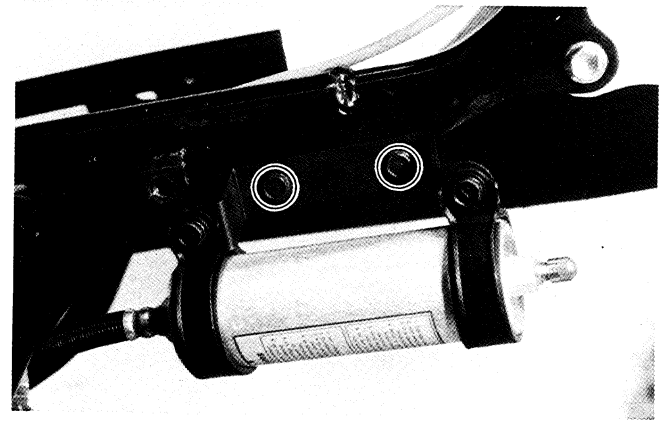
- Remove the rear shock absorber fitting nut and bolt.



- Remove the reservoir hose clamp screw.

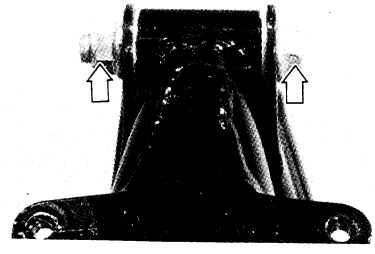


- Loosen the two bolts and remove the tank.

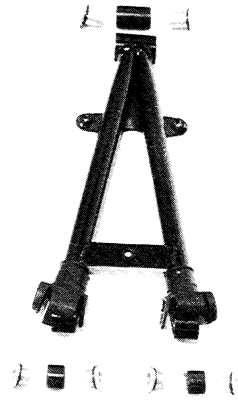


- Remove the rear cushion lever nut and bolt.
- Pull up the full-floating suspension from the chassis.

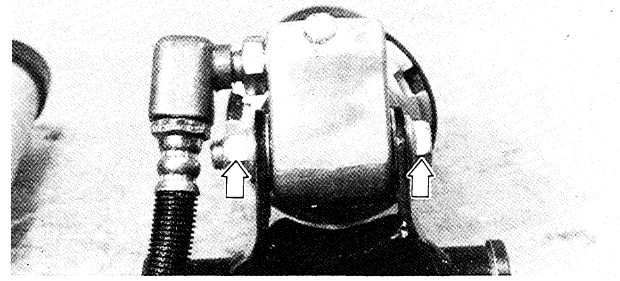
- Remove the rear cushion rod nut and bolt.



- Remove the spacers and bushings from the rear cushion rod.

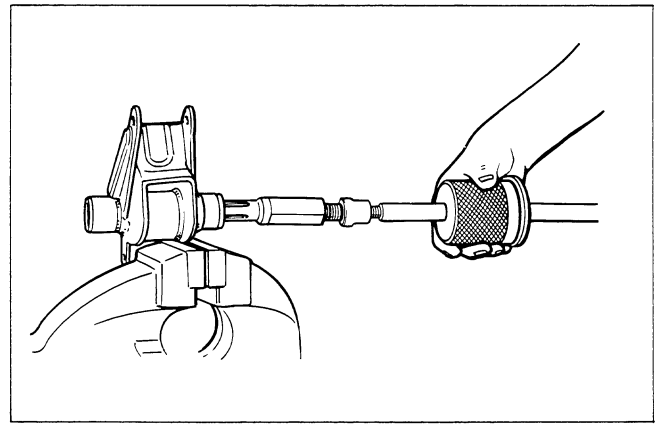


- Remove the nut, bolt and shock absorber assy. from the rear cushion lever.

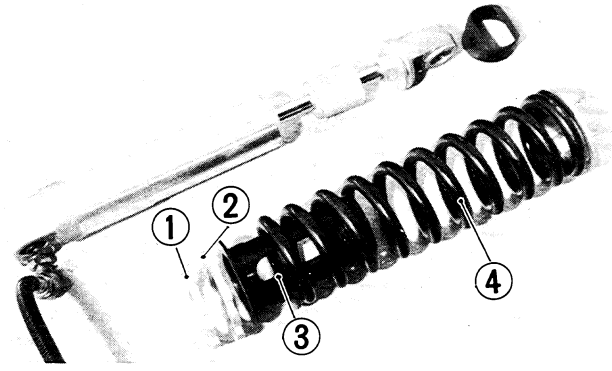


- After drawing out the spacer, remove the two bearings from the rear cushion lever by using the special tools.

Bearing puller	09923 – 73210
Rotor remover slide shaft	09930 – 30102



- Loosen the lock nut ① and adjuster nut ②, and take off the spring guide ③ and spring ④.



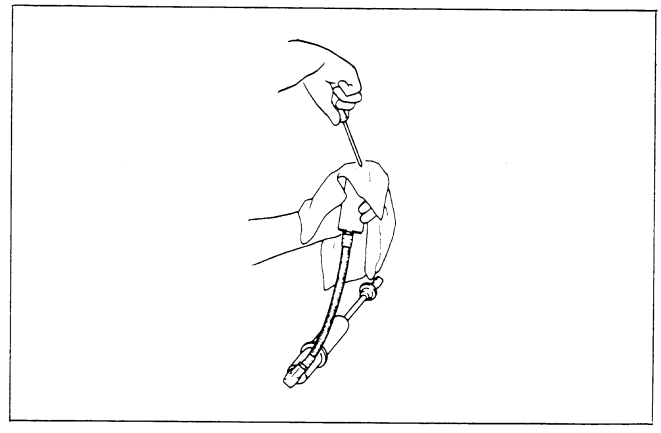
OIL AND NITROGEN GAS REPLACEMENT PROCEDURE

After extended usage the shock absorber oil will begin to deteriorate and lessen the shock damping performance. The corrective service procedure, while not complicated to perform, does require proper tools, special equipment and mechanical experience to be performed properly and safely.

WARNING:
If you elect to perform the servicing yourself, several important precautions must be adhered to. These precautions primarily concern the use, handling, and transportation of a high pressure nitrogen gas.

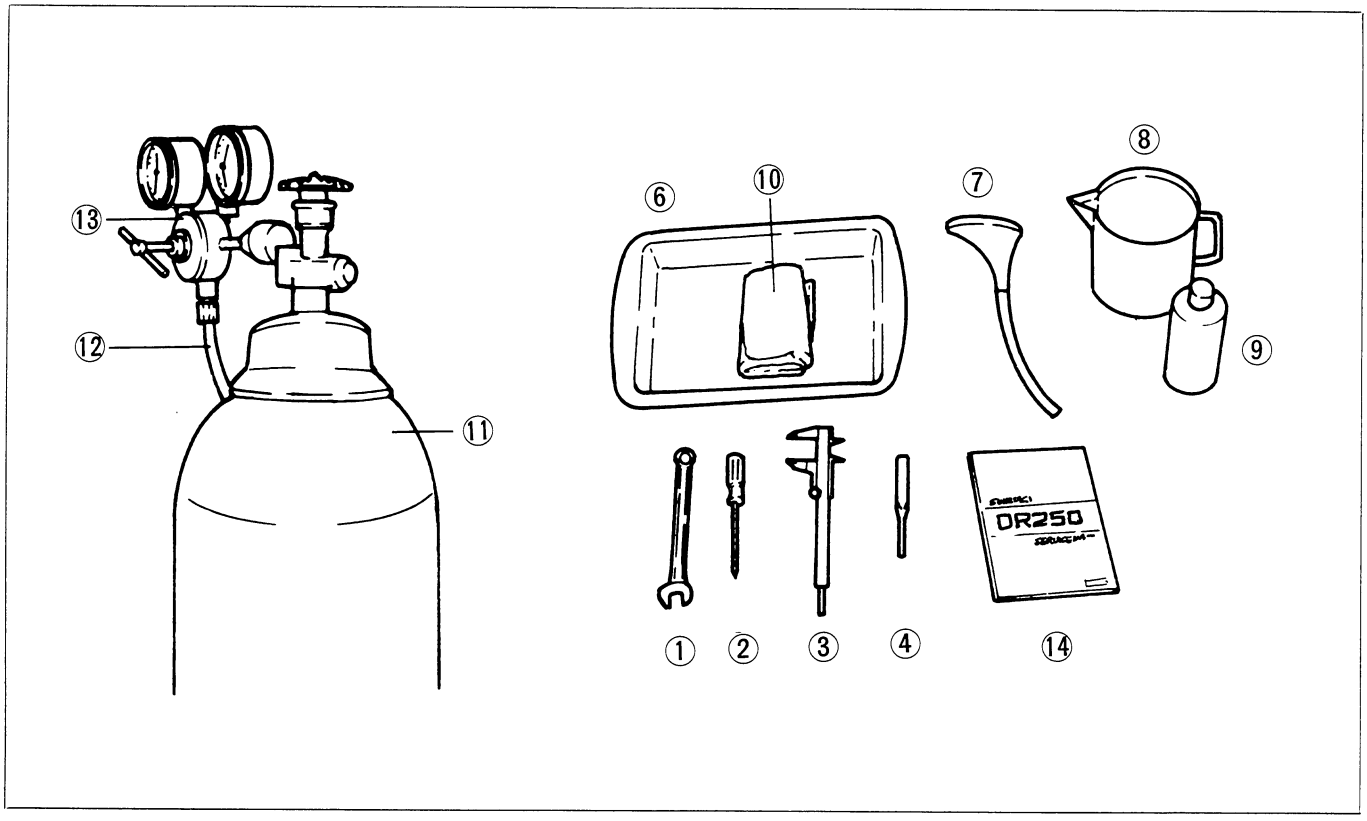
- The nitrogen tank must be tagged with a green tag indicating it holds a non-flammable gas.
- Always use either a single stage or two stage pressure-regulator for proper pressure reduction and regulation.
- Whenever transporting such a tank, the regulator assembly should be removed and the approved tank safety cap should be re-installed. A tank should not be stored unless the regulator assembly is removed and the protective cap is re-installed.
- During transportation, the tank should be securely fastened at all times so as to prevent damage to the tank in the event of an accident, etc.
- Certain cities and states prohibit the transportation of high pressure tanks over specific marked roadways, bridges, tunnels, etc.

WARNING:
Never perform any reservoir servicing until the nitrogen pressure is released from the shock absorber reservoir as directed below. When releasing the gas pressure, place a rag over the gas discharge nozzle and use the end of a screwdriver, etc. to depress the nozzle, and release the nitrogen gas. Do not use your finger to depress the gas nozzle. Direct the nozzle away from your face and body.



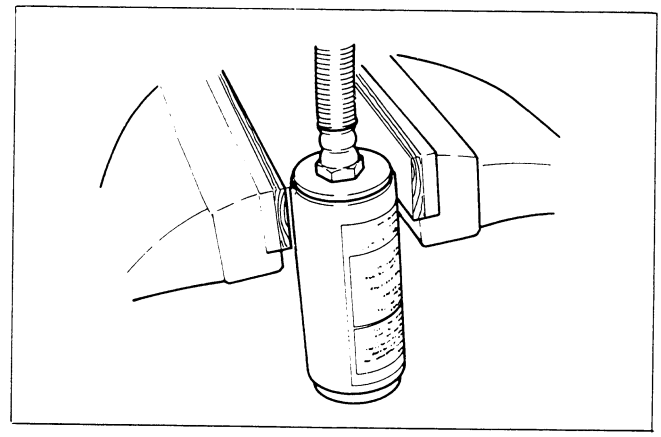
REQUIRED TOOLS AND SPECIAL EQUIPMENT

Shown below are the necessary tools and special equipment that are required to perform adjustments and servicing both correctly and safely.



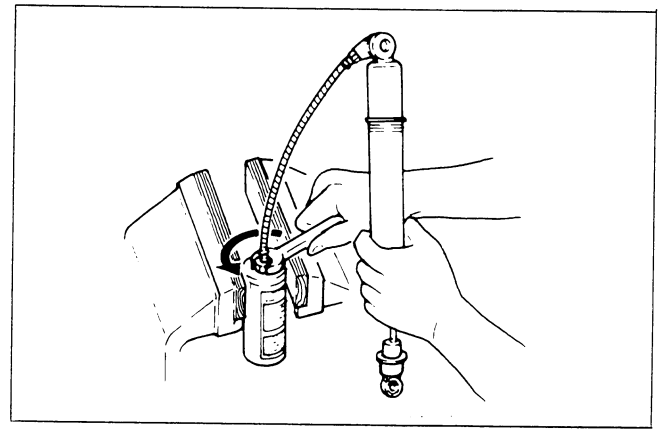
① 17 mm Open End Wrench
② Screwdriver or small punch
③ Vernier calipers or Depth Gauge
④ Blunt rod
⑤ *Vise
⑥ Drain Pan
⑦ Funnel and Filler Hose
*Not Shown in the illustration
⑧ Beaker
⑨ Specified Shock Oil
⑩ Rags
⑪ Nitrogen tank
⑫ Filler Hose and Nozzle
⑬ Regulator Assembly
⑭ Service Manual

Follow the procedure below to replace the oil and nitrogen.

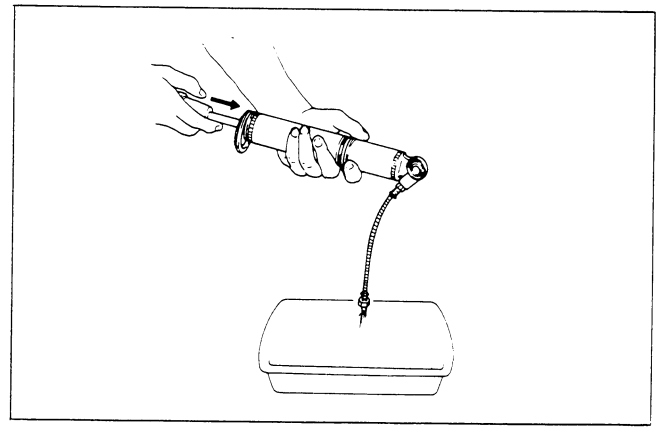


- Release the gas and remove the air valve.
- Mount the reservoir in a vise and tighten lightly.

CAUTION:
Position the reservoir as shown in the vise to avoid damage. The reservoir is easily distorted and permanently damaged.



- Place a drain pan beneath the vise.
- Push the piston rod and attach the cushion rubber and upper side of the main cylinder.
- Loosen and remove the reservoir hose at the reservoir fitting using a 17 mm wrench. Inspect the hose O-ring for cuts or other damage. The O-ring may be re-used if still in good condition.



- Tilt the shock body as illustrated and slowly pump all the old oil from the unit.

NOTE:
The unit may be drained overnight if time permits for more thorough purging of the oil.

- Flush the unit twice with fresh specified shock oil and again pump it all out. This will clean the unit thoroughly and remove the last remains of the old oil.

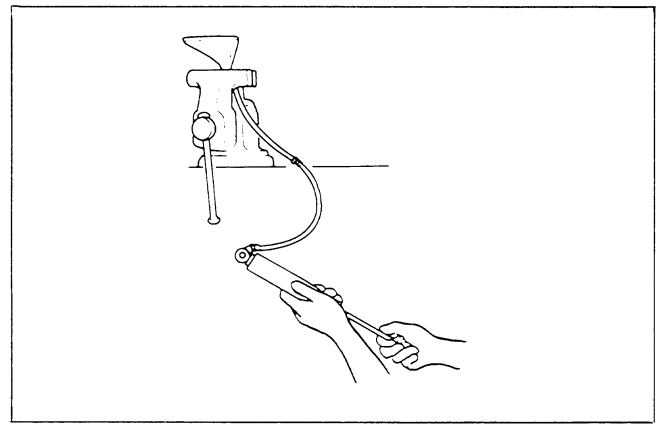
CAUTION:
The seals will be damaged if solvent or gasoline is used to flush the shock body or reservoir.

- Drain the old oil from the reservoir and flush with fresh, new oil.

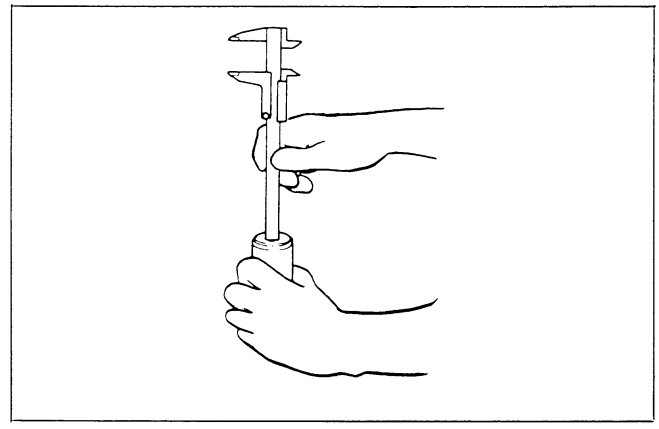
REASSEMBLY

- Using a funnel and filler hose, fill the shock body with fresh oil. Use recommended oil.

NOTE:
Shock absorber oil capacity is approximately 220 ml (7.4 US oz) per unit.



- Gently push the reservoirs floating piston down with a blunt rod, so that it is positioned exactly 94.0 mm (3.70 in) from the air valve mounting surface. A vernier caliper or a depth gauge is the most accurate method of measuring the piston position.

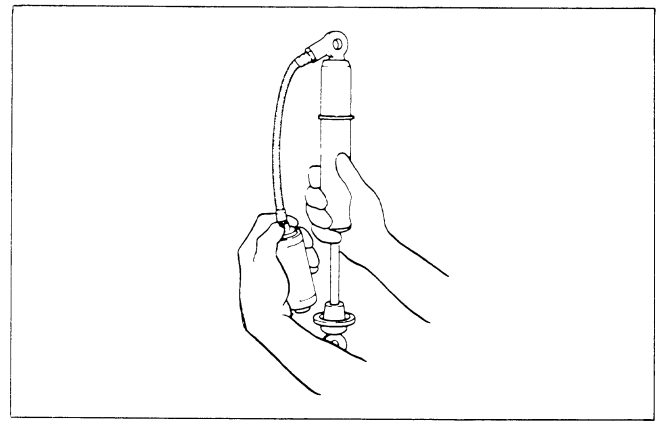


NOTE:
It may be necessary to apply nitrogen gas to the gas valve to push the piston into the correct position if the depth measurement is beyond 94.0 mm (3.70 in).

CAUTION:
Do not "tap" or "pound" the piston into position. Apply only steady, gentle pressure with a blunt rod or tool.

- Fill the reservoir completely with fresh oil. Tap the reservoir lightly to remove any air bubbles that may be trapped. Set the reservoir aside temporarily.
- Extend the piston rod fully.
- With the funnel and hose still attached slowly pump the rod in and out until all air is expelled. This pumping must be performed many times to insure that all air is expelled.
- Stop the pumping action with the rod fully extended. Remove the filler hose.

- Carefully and quickly tip the shock hose over into the threaded hole of the waiting reservoir. Tighten securely to 20 – 25 N·m, (2.0 – 2.5 kg-m, 14.5 – 18.0 lb-ft).



NOTE:
The reservoir must be positioned below the shock body while the shock hose is being connected.

- Adjust the two stage regulator to 10 kg/cm^2 (1 MPa, 142 psi) and carefully pressurize the reservoir with nitrogen gas.

WARNING:
Do not exceed 20 kg/cm^2 (2 MPa, 284 psi) or the reservoir may rupture.
After pressurizing the reservoir, the removal of the filler nozzle may cause some oil to be sprayed. Do not expose your face or body to the spray.

- Re-install the spring and mount the shock absorber.

WARNING:
Nitrogen gas has been found to deliver optimum performance and reliability. Do not use air or other gases which will lead to premature wear, rust, and substandard performance. Do not use oxygen, such as from a gas welding oxygen tank or any other flammable gases as they create a severe fire hazard.

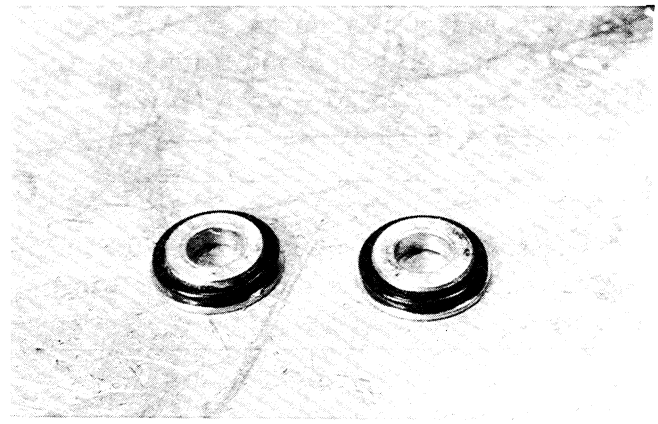
CAUTION:
* **The hose connecting the reservoir to the shock body should be visually inspected. After each ride for signs of wear or damage such as cuts, rubbed portions or dented areas.**
* **It is recommended that only Genuine Suzuki Shock Oil be used if available or an equivalent shock oil.**

WARNING:
When discarding the shock unit release the high pressure nitrogen gas. Keep the shock absorber assembly away from heat and fire. Do not loosen any fitting or perform any servicing on the shock assembly until the nitrogen gas has been released.

INSPECTION

DUST SEAL

Inspect the dust seals, if they are found to be damage, replace them.

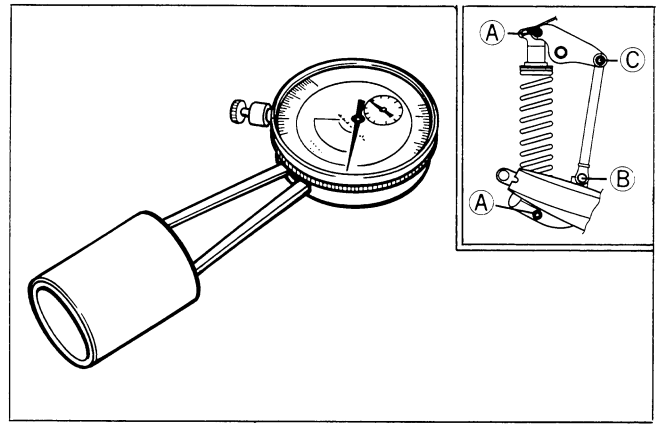


BUSHING

Measure the inside diameter of the bushing with dial calipers.

Dial calipers	09900 – 20605

Service limit	Ⓐ	14.20 mm (0.56 in)
	Ⓑ	13.20 mm (0.52 in)
	Ⓒ	15.20 mm (0.60 in)

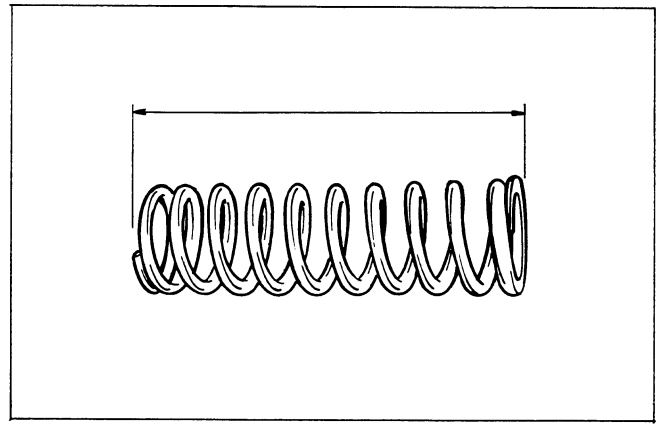


If the inside diameter of the bushing exceeds the service limit or flaws are discovered, replace the bushing and its O-rings.

REAR SHOCK ABSORBER SPRING

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

Service limit	257 mm (10.1 in)

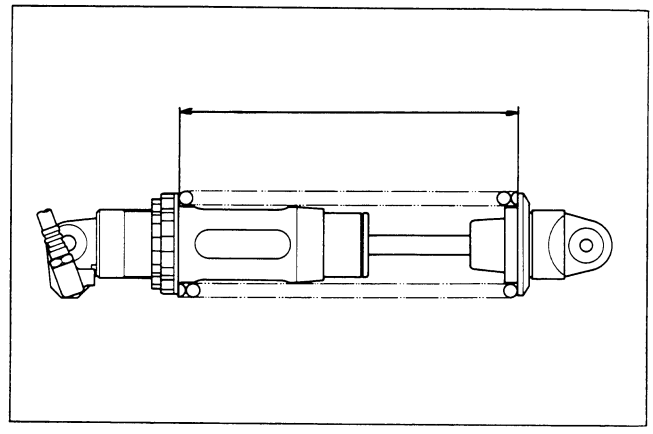


REASSEMBLY

Reassemble the full-floating suspension, in the reverse order of disassembly and removal, and also carry out the following steps:

- Spring preset length is as follows.

Item	Preset spring length
S.T.D. (Softest)	257 mm (10.1 in)
Stiffest	253 mm (10.0 in)

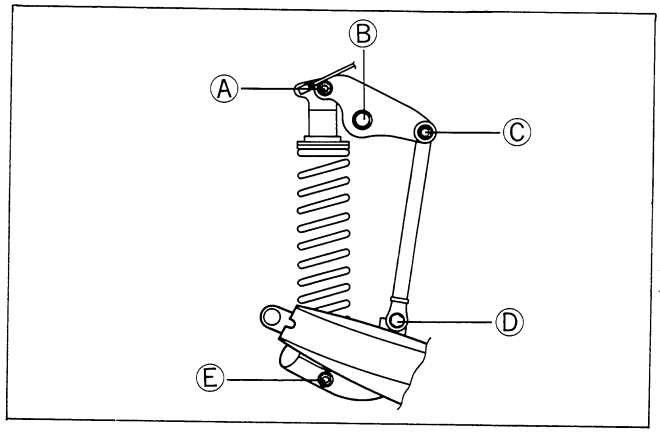


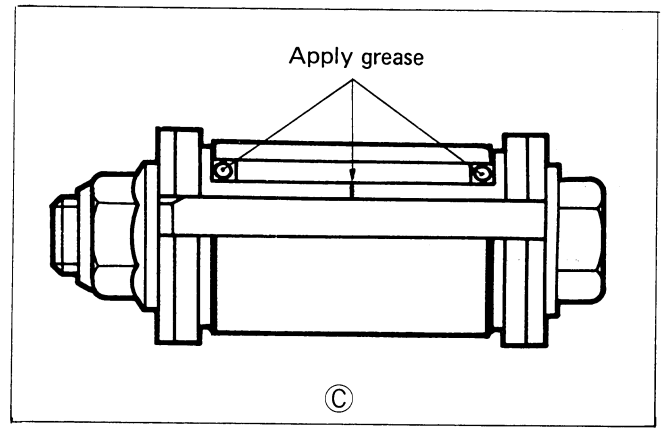
CAUTION:
Do not set the spring length under 253 mm (10.0 in).

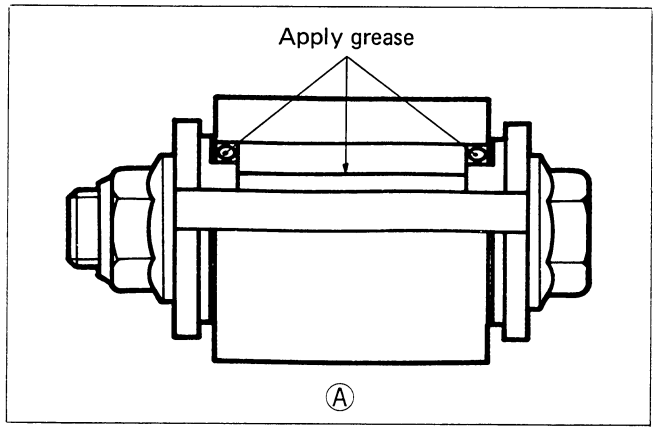
BUSHING, SPACER AND DUST SEAL

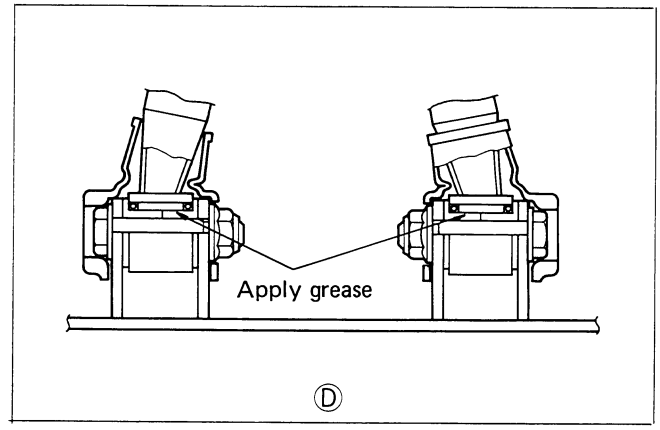
Apply grease to the bushing, spacer and dust seal before installing, as shown in the illustration.

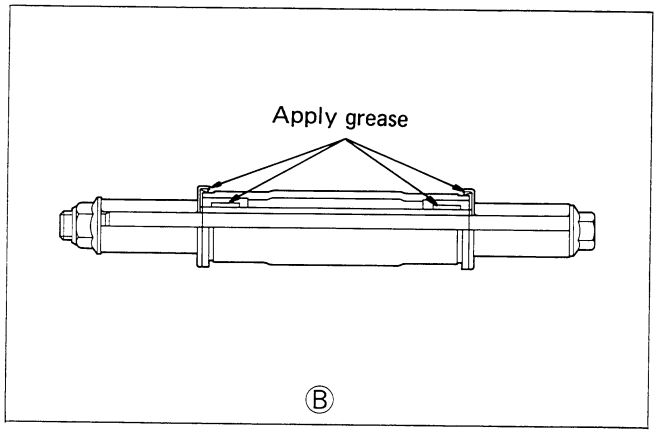
SUZUKI Super grease "A"	99000 – 25030

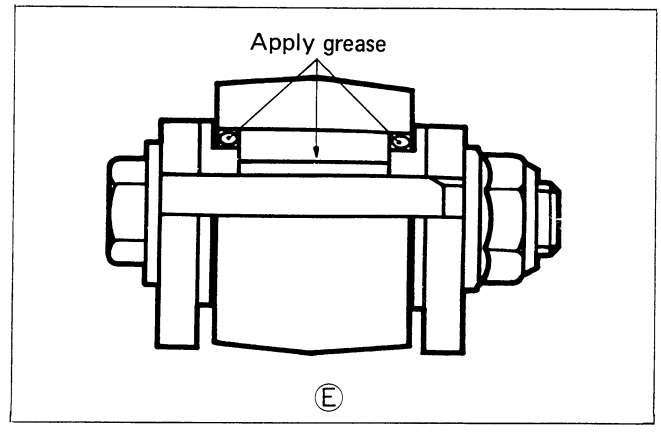










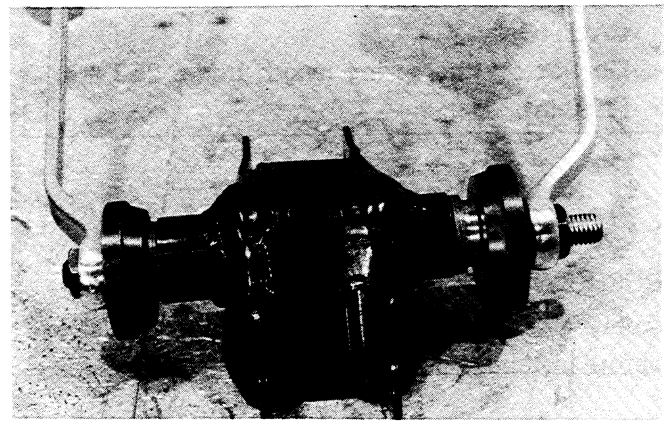


CUSHION LEVER BEARINGS

Install the bearings, right and left by using the special tool.

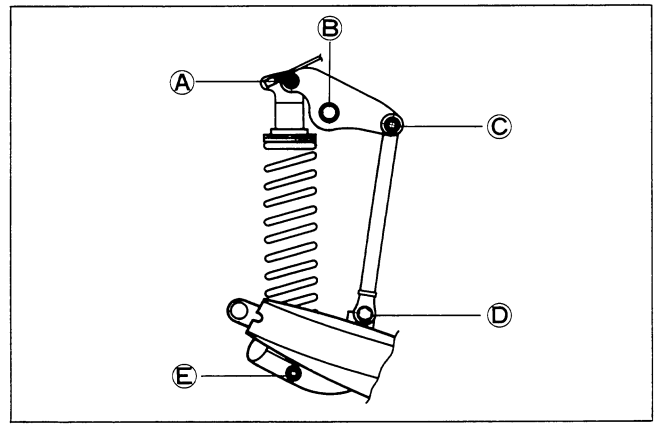
Bearing installer set	09924 – 84510

CAUTION:
When installing two bearings, punch marked side of bearing come on outside.



TIGHTENING TORQUE

Item	N·m	kg-m	lb-ft
Ⓐ	40 – 60	4.0 – 6.0	29.0 – 43.5
Ⓑ	45 – 70	4.5 – 7.0	32.5 – 50.5
Ⓒ	40 – 60	4.0 – 6.0	29.0 – 43.5
Ⓓ	18 – 28	1.8 – 2.8	13.0 – 20.0
Ⓔ	40 – 60	4.0 – 6.0	29.0 – 43.5

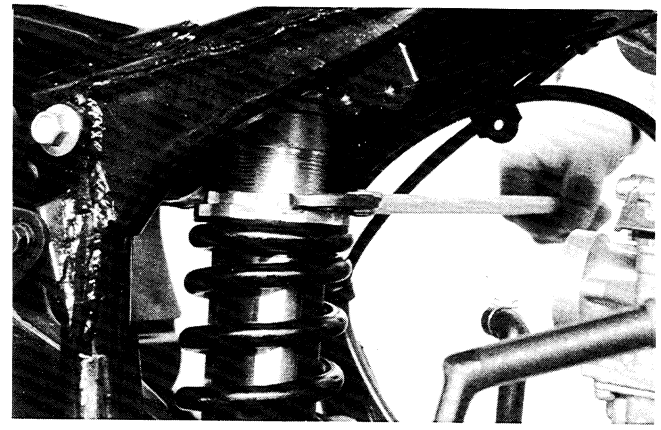


REAR SHOCK ABSORBER SPRING ADJUSTMENT PROCEDURE

The procedure for adjusting the spring pre-load is as follows.

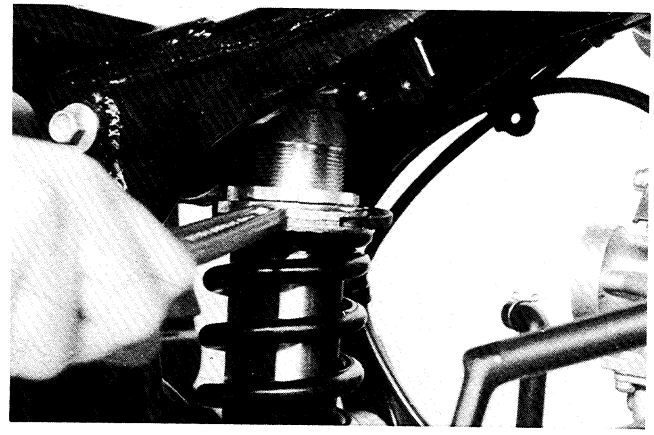
- Remove the seat and frame covers.
- Remove the carburetor (see page 3-3).
- Remove the air cleaner (see page 3-5).
- Loosen the lock nut by using the special tool.

Universal clamp wrench	09910-60611



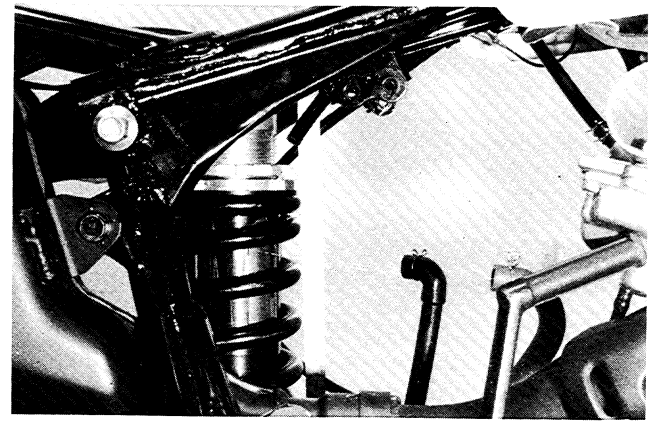
- Loosen or tighten the adjusting nut by using the special tool.

Universal clamp wrench	09910-60611

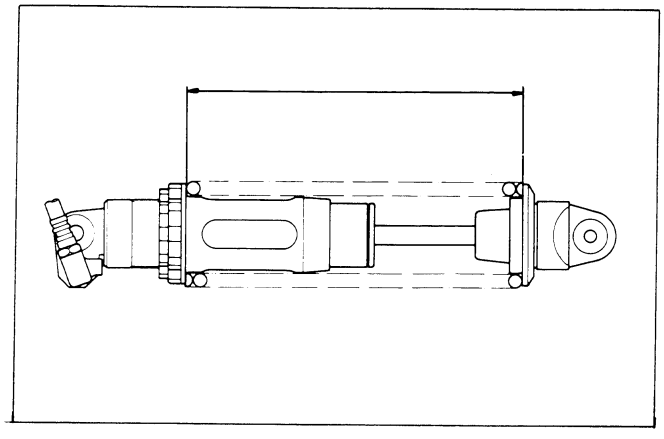


Item	Preset spring length
S.T.D. (softest)	257 mm (10.1 in)
Stiffest	253 mm (10.0 in)

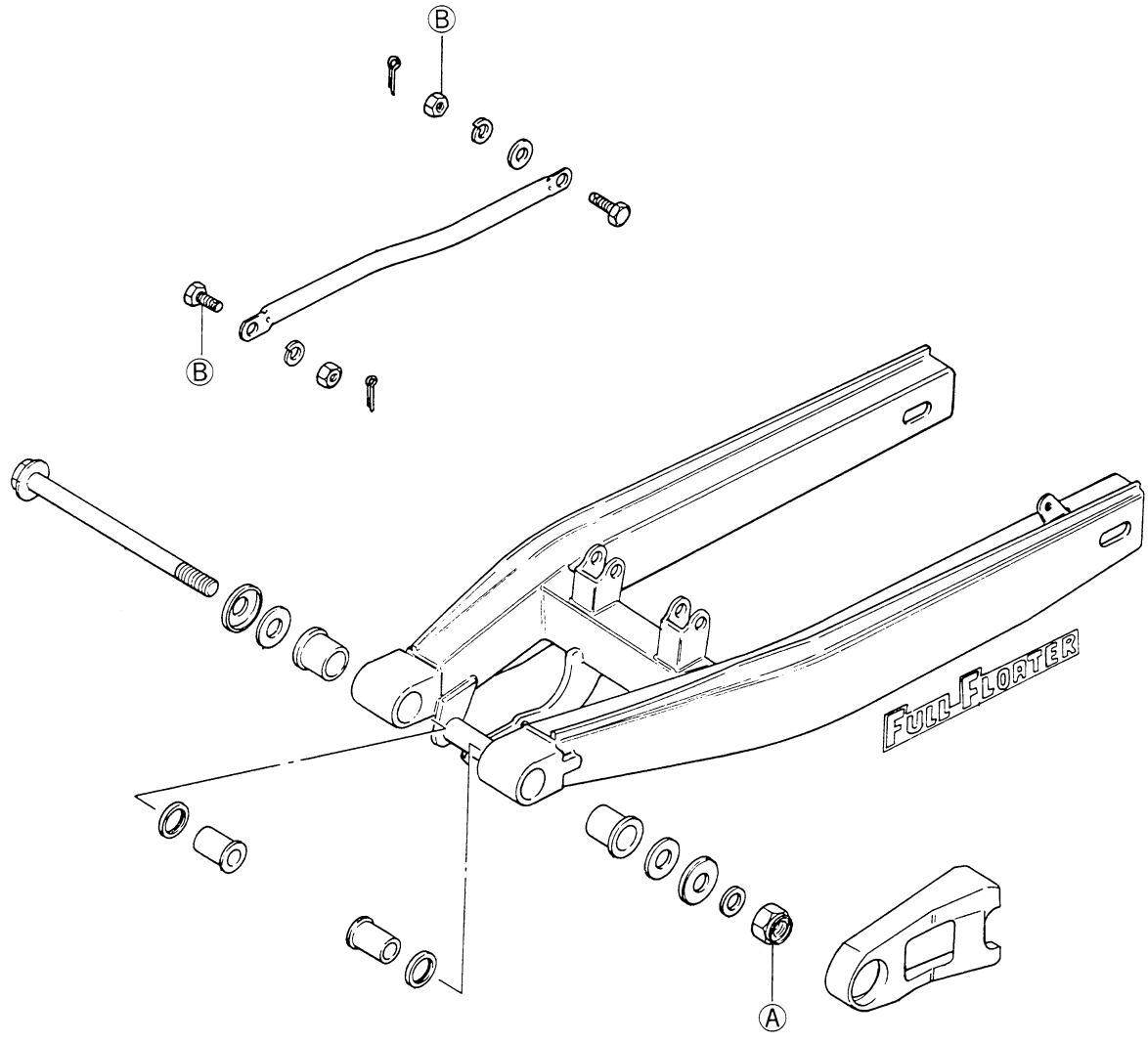
CAUTION:
Do not set the spring length under 253 mm (10.0 in)



- After adjusting the spring pre-load, tighten the lock nut.
- Remount the air cleaner, carburetor, seat and frame cover.



REAR SWING ARM

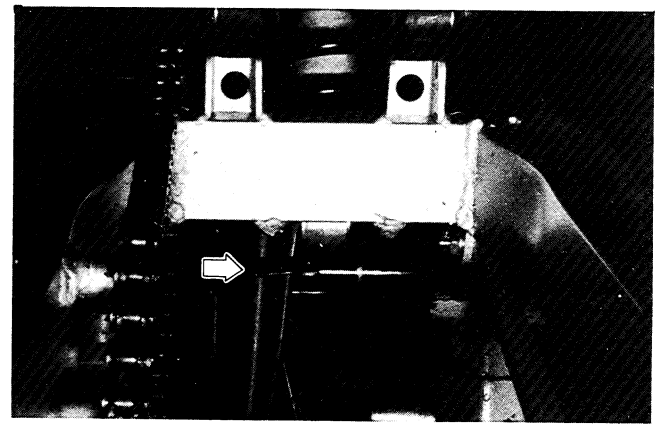


Tightening torque			
Item	N·m	kg-m	lb-ft
Ⓐ	50 – 80	5.0 – 8.0	36.0 – 58.0
Ⓑ	10 – 15	1.0 – 1.5	7.0 – 11.0

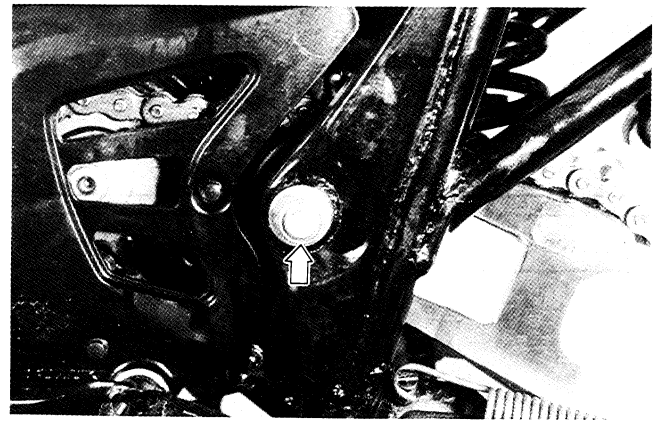
REMOVAL AND DISASSEMBLY

- Remove the rear wheel (See page 6-22).
- Loosen the three screws and remove the mud flap (See page 6-31).
- Remove the rear cushion rod fitting nuts and bolts (See page 6-31).
- Remove the rear shock absorber fitting nut and bolt (See page 6-31).

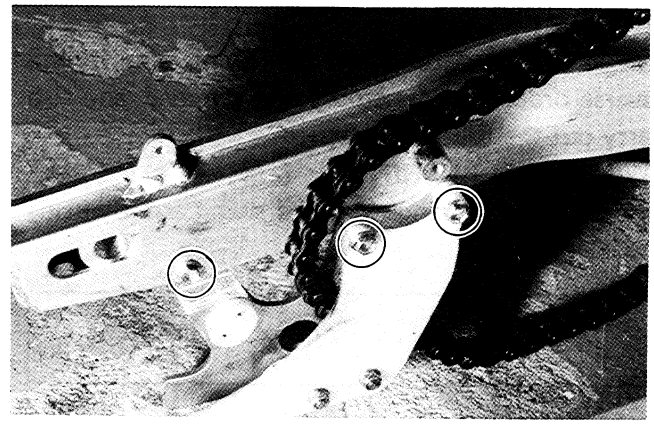
- Unclamp the two hoses and pull them up.



- Remove the swing arm pivot nut.
- Draw out the pivot shaft and take off the swinging arm.

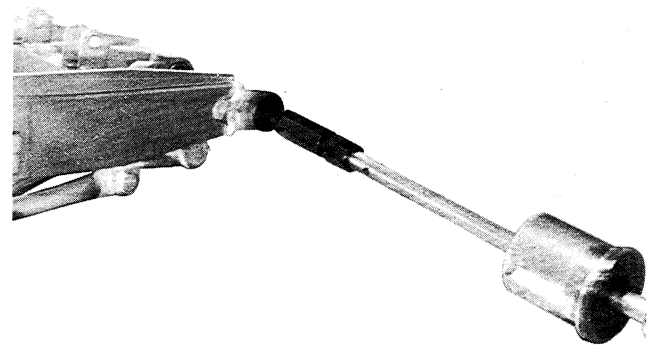


- Remove the chain guide bolts.



- Remove the two spacers.
- Remove the bushings by using the special tools.

Bearing puller	09923 – 73210
Rotor remover slide shaft	09930 – 30102

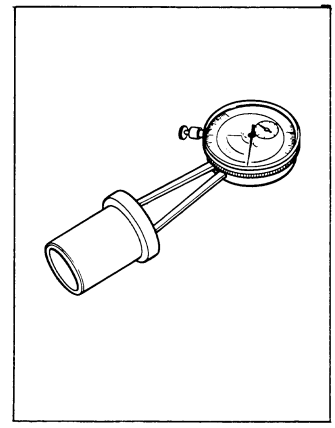


INSPECTION

BUSHING

Measure the inside diameter of the bushing with dial calipers. If the inside diameter exceeds the service limit or flaws are discovered, replace the bushing.

Service limit	20.20 mm (0.80 in)

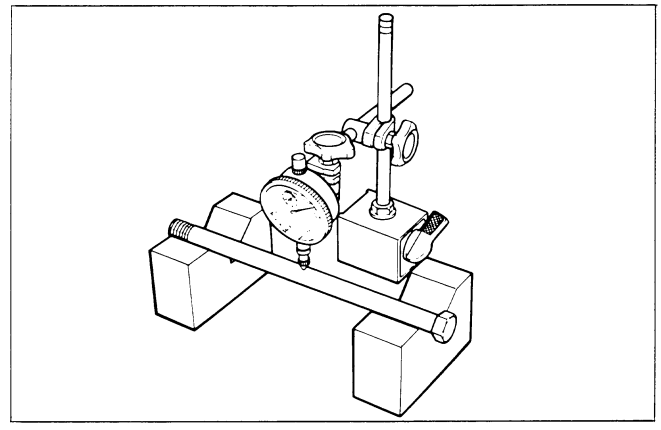


SWING ARM PIVOT SHAFT

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

Dial gauge (1/100)	09900 – 20606

Service limit	0.6 mm (0.02 in)



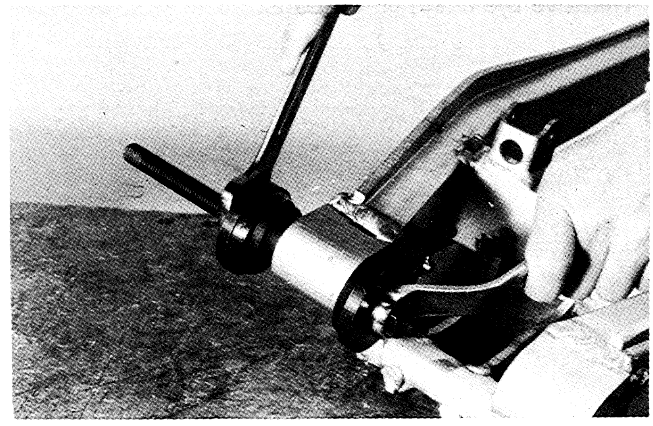
REASSEMBLY

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

SWING ARM BUSHINGS

Force-fit the bushings into the swing arm by using the special tool.

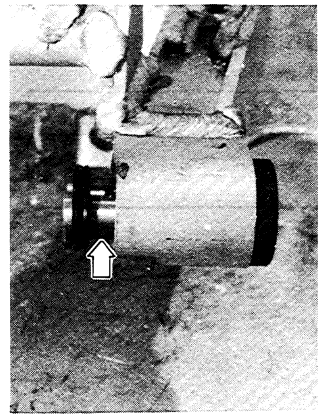
Bearing installer set	09924 – 84510

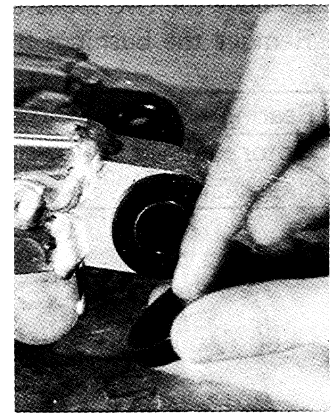


SPACER AND DUST SEAL COVER

Apply grease to the spacer and dust seal cover when installing.

SUZUKI Super grease "A"	99000 – 25030





SERVICING INFORMATION

CONTENTS

TROUBLESHOOTING

ENGINE

Complaint	Symptom and possible causes	Remedy
Engine will not start or is hard to start.	**Compression too low**	
	1. Valve clearance out of adjustment.	Adjust.
	2. Worn valve guides or poor seating of valves.	Repair or replace.
	3. Valves mistiming.	Adjust.
	4. Piston rings excessively worn.	Replace.
	5. Worn-down cylinder bore.	Replace or rebore.
	6. Poor seating of spark plug.	Retighten.
	Plug not sparking	
	1. Fouled spark plug.	Clean or replace
	2. Wet spark plug.	Clean and dry.
	3. Defective magneto.	Replace.
	4. Defective ignitor unit.	Replace.
	5. Defective ignition coil.	Replace.
	6. Open or short circuit in high-tension cord.	Replace.
	No fuel reaching the carburetor	
	1. Clogged hole in the fuel tank cap.	Clean.
	2. Clogged or defective fuel cock.	Clean or replace.
	3. Defective carburetor float valve.	Replace.
	4. Clogged fuel pipe.	Clean or replace.
Engine stalls easily.	1. Fouled spark plug.	Clean.
	2. Defective magneto.	Replace.
	3. Defective ignitor unit.	Replace.
	4. Clogged fuel pipe.	Clean.
	5. Clogged jets in carburetor.	Clean.
	6. Valve clearance out of adjustment.	Adjust.
Noisy engine.	**Excessive valve chatter**	
	1. Valve clearance too large.	Adjust.
	2. Weakened or broken valve springs.	Replace.
	3. Worn down rocker arm or rocker arm shaft.	Replace.
	Noise appears to come from piston	
	1. Piston or cylinder worn down.	Replace.
	2. Combustion chamber fouled with carbon.	Clean.
	3. Piston pin or piston pin bore worn.	Replace.
	4. Piston rings or ring groove worn.	Replace.
	Noise seems to come from timing chain	
	1. Stretched chain.	Replace.
	2. Worn sprockets.	Replace.
	3. Tension adjuster not working.	Repair or replace.
	Noise seems to come from clutch	
	1. Worn splines of countershaft or hub.	Replace.
	2. Worn teeth of clutch plates.	Replace.
	3. Distorted clutch plates, driven and drive.	Replace.
	4. Clutch dampers weakened.	Replace.
	Noise seems to come from crankshaft	
	1. Worn or burnt bearings.	Replace.
	2. Big-end bearings worn and burnt.	Replace.
	3. Thrust clearance too large.	Replace.

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

Complaint	Symptom and possible causes	Remedy
Engine lacks power.	1. Loss of valve clearance. 2. Weakened valve springs. 3. Valve timing out of adjustment. 4. Worn piston ring or cylinder. 5. Poor seating of valves. 6. Fouled spark plug. 7. Worn rocker arms or its shafts. 8. Spark plug gap incorrect. 9. Clogged jets in carburetor. 10. Float-chamber fuel level out of adjustment. 11. Clogged air cleaner element. 12. Too much engine oil.	Adjust. Replace. Adjust. Replace. Repair. Clean or replace. Replace. Adjust or replace. Clean. Adjust. Clean. Drain out excess oil.
Engine overheats.	1. Heavy carbon deposit on piston crown. 2. Not enough oil in the engine. 3. Defective oil pump or clogged oil circuit. 4. Fuel level too low in float chamber. 5. Air leak from intake pipe. 6. Use of incorrect engine oil.	Clean. Add oil. Repair or clean. Adjust. Retighten or replace. Change.

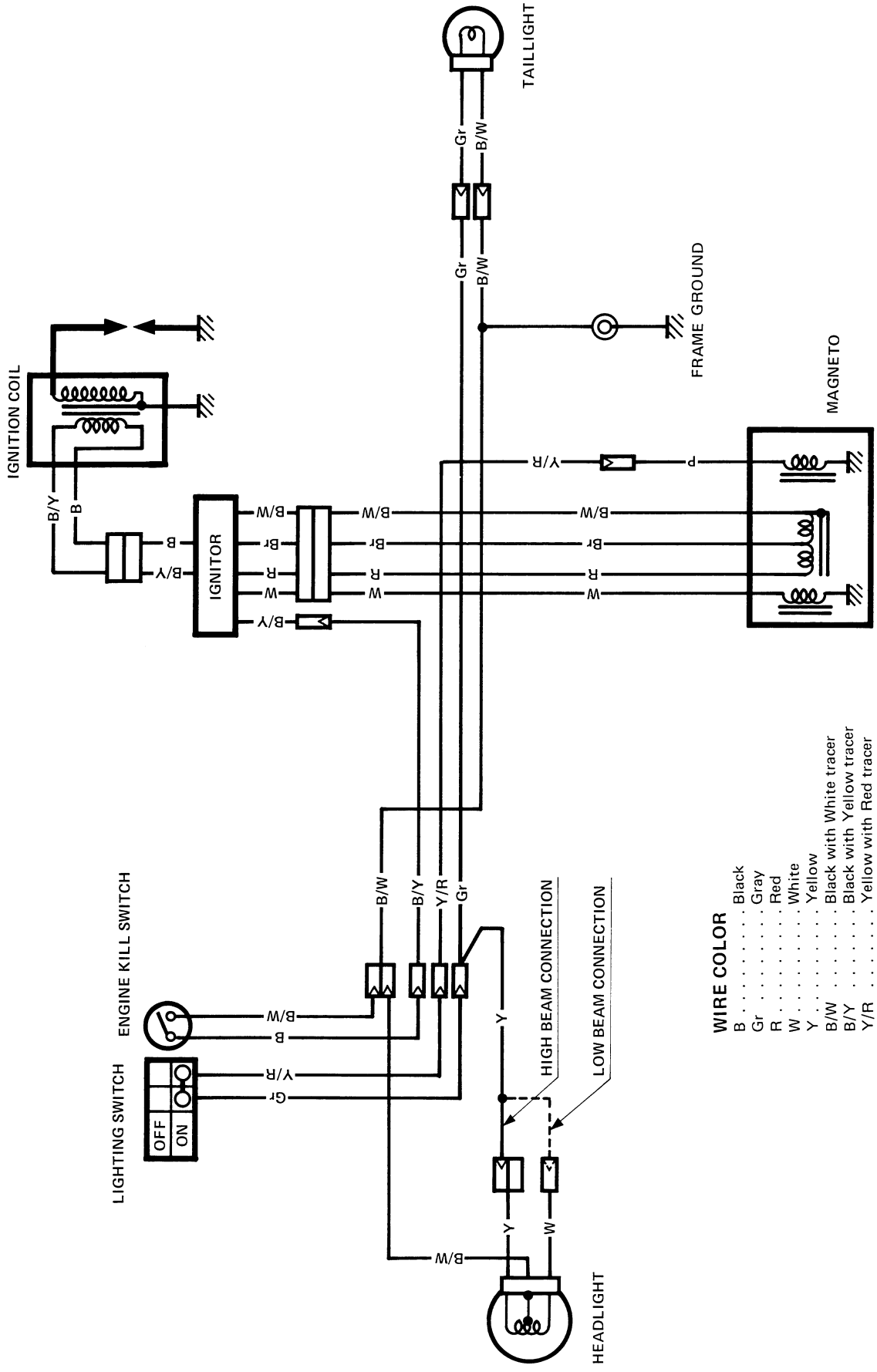
ELECTRICAL

Complaint	Symptom and possible causes	Remedy
No sparking or poor sparking.	1. Defective ignition coil. 2. Defective spark plug. 3. Defective magneto. 4. Defective ignitor unit.	Replace. Replace. Replace. Replace.
Spark plug soon becomes fouled with carbon.	1. Mixture too rich. 2. Idling speed set too high. 3. Incorrect gasoline. 4. Dirty element in air cleaner. 5. Spark plug too cold.	Adjust carburetor. Adjust carburetor. Change. Clean. Replace by hot type plug.
Spark plug becomes fouled with oil.	1. Worn piston rings. 2. Piston or cylinder worn. 3. Excessive clearance of valve stems in valve guides. 4. Worn stem oil seal.	Replace. Replace. Replace. Replace.
Spark plug electrodes overheat or burn.	1. Spark plug too hot. 2. The engine overheats. 3. Spark plug loose. 4. Mixture too lean.	Replace by cold type plug. Tune up. Retighten. Adjust carburetor.
Bulb does not light.	1. Blown bulb. 2. Open or short in lead wires, or loose lead connections. 3. Shorted, grounded or open magneto stator coil.	Replace. Repair or replace or retighten. Replace.

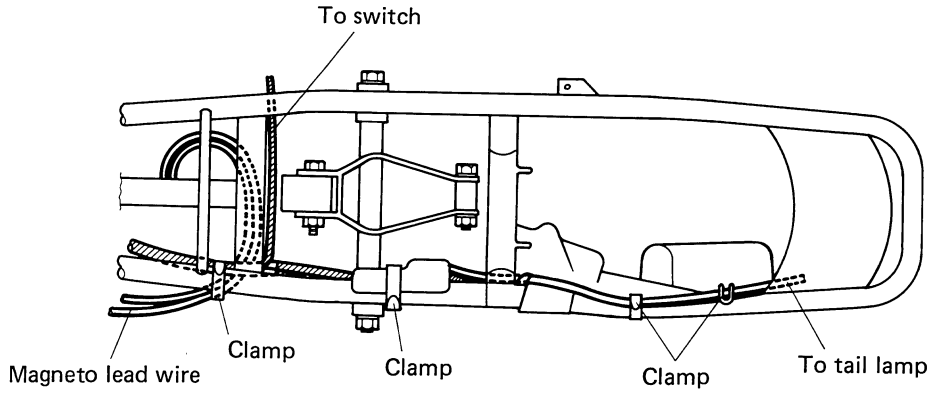
CHASSIS

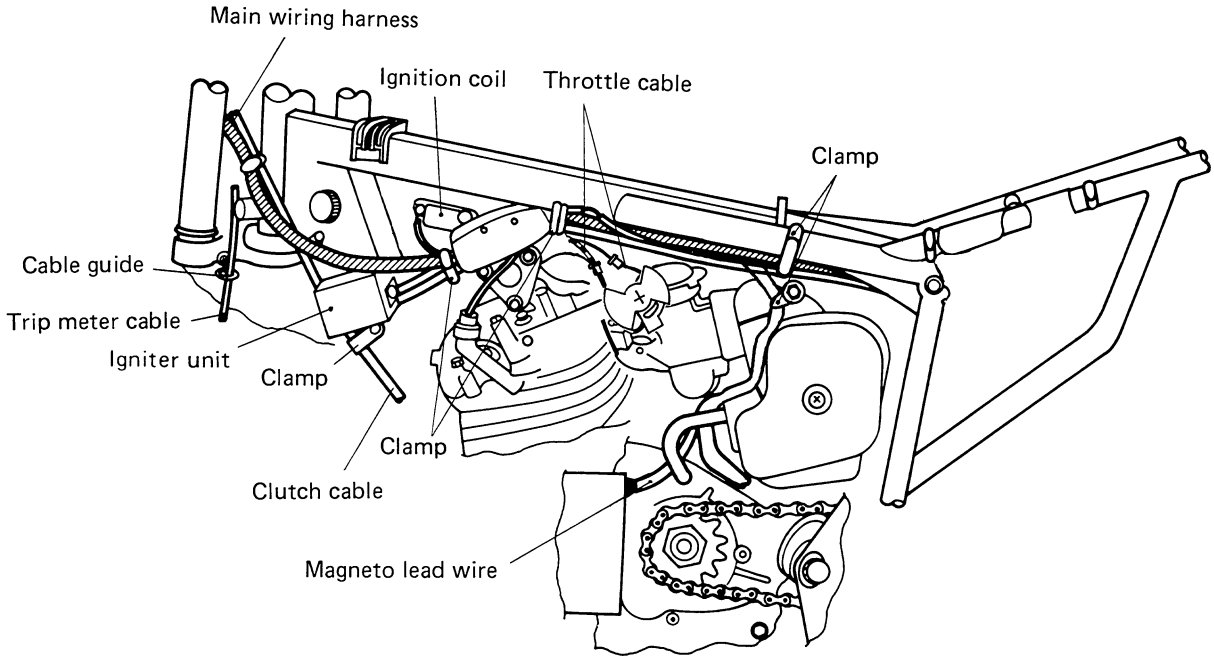
Complaint	Symptom and possible causes	Remedy
Handling feels too heavy or stiff.	1. Steering stem nut overtightened. 2. Worn bearing or race in steering stem. 3. Distorted steering stem. 4. Not enough pressure in tires.	Adjust. Replace. Replace. Adjust.
Wobbly handling.	1. Loss of balance between right and left front suspensions. 2. Distorted front fork. 3. Distorted front axle or crooked tire.	Adjust or replace. Repair or replace. Replace.
Wobbly front wheel.	1. Distorted wheel rim. 2. Worn or loose front wheel bearings. 3. Loose wheel spokes. 4. Defective or incorrect tire. 5. Loose nut on axle. 6. Loose nuts on the rear shock. 7. Worn swing arm bushings.	Replace. Replace. Retighten. Replace. Retighten. Retighten. Replace
Front suspension too soft.	1. Weakened springs. 2. Not enough fork oil.	Replace. Refill.
Front suspension too stiff.	1. Fork oil too thick. 2. Too much fork oil. 3. Too much air in front fork	Replace. Remove excess oil. Adjust
Noisy front suspension.	1. Not enough fork oil. 2. Loose nuts on suspension.	Refill. Retighten.
Wobbly rear wheel.	1. Distorted wheel rim. 2. Worn or loose rear wheel bearings. 3. Loose wheel spokes. 4. Defective or incorrect tire. 5. Worn swing arm bushings. 6. Loose nuts on rear shock.	Replace. Replace. Retighten. Replace. Replace. Retighten.
Rear suspension too soft.	1. Weakened springs. 2. Rear suspension adjuster improperly set.	Replace. Adjust.
Rear suspension too stiff.	Rear suspension adjuster improperly set.	Adjust.
Noisy rear suspension.	1. Loose nuts on shock. 2. Worn swing arm bushing.	Retighten. Replace.
Poor braking. (FRONT and REAR)	1. Linings worn down. 2. Too much play on brake lever or pedal.	Replace. Adjust.

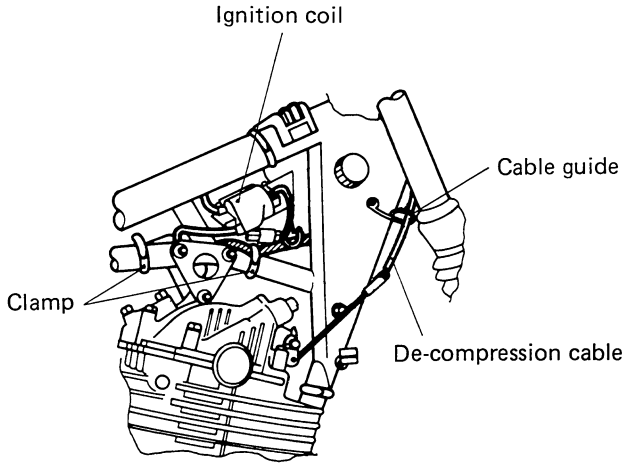
WIRING DIAGRAM

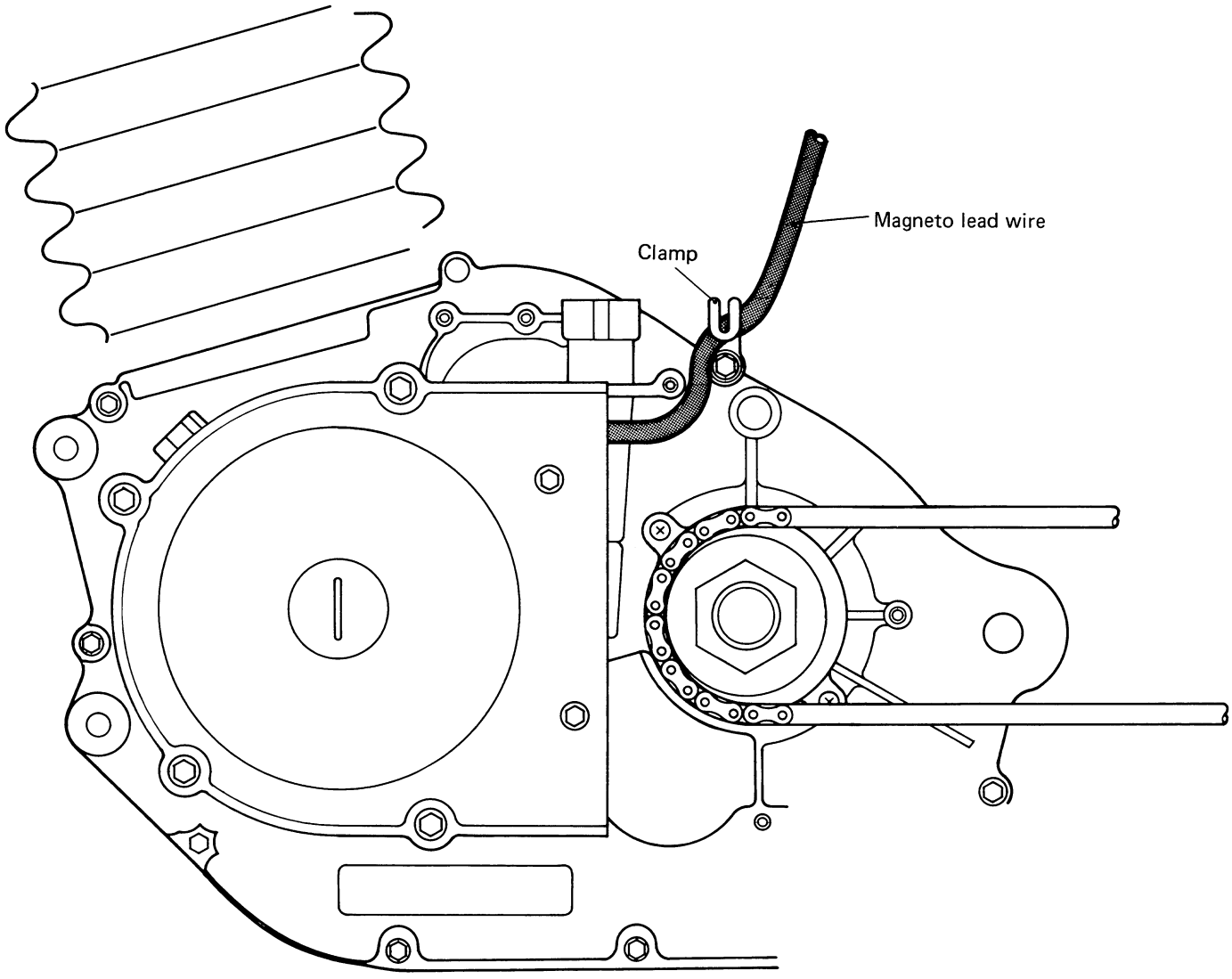


WIRE ROUTING

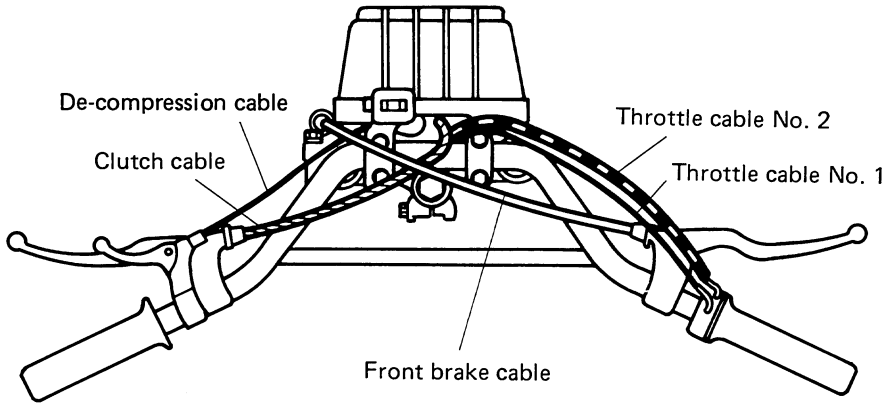


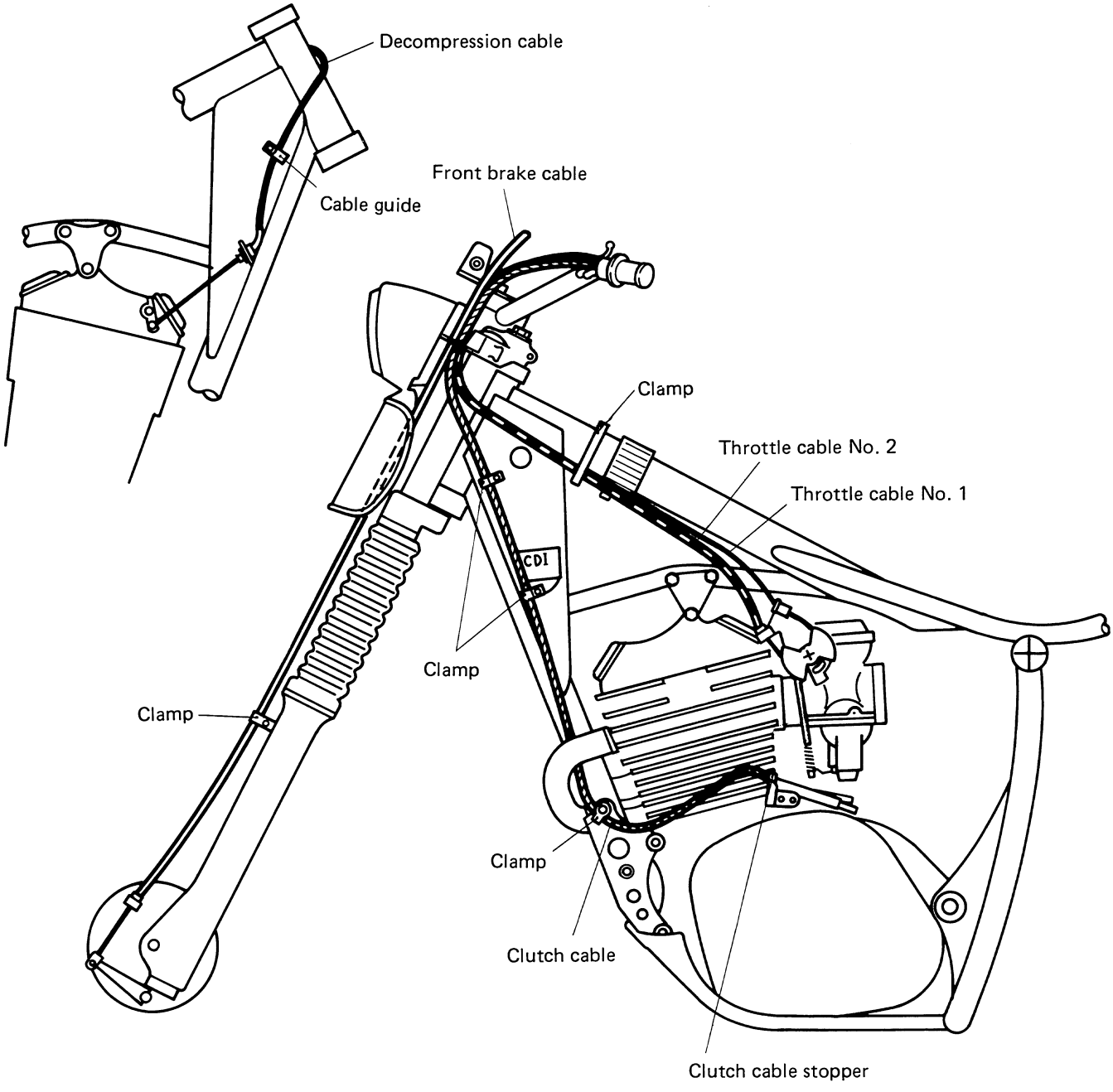


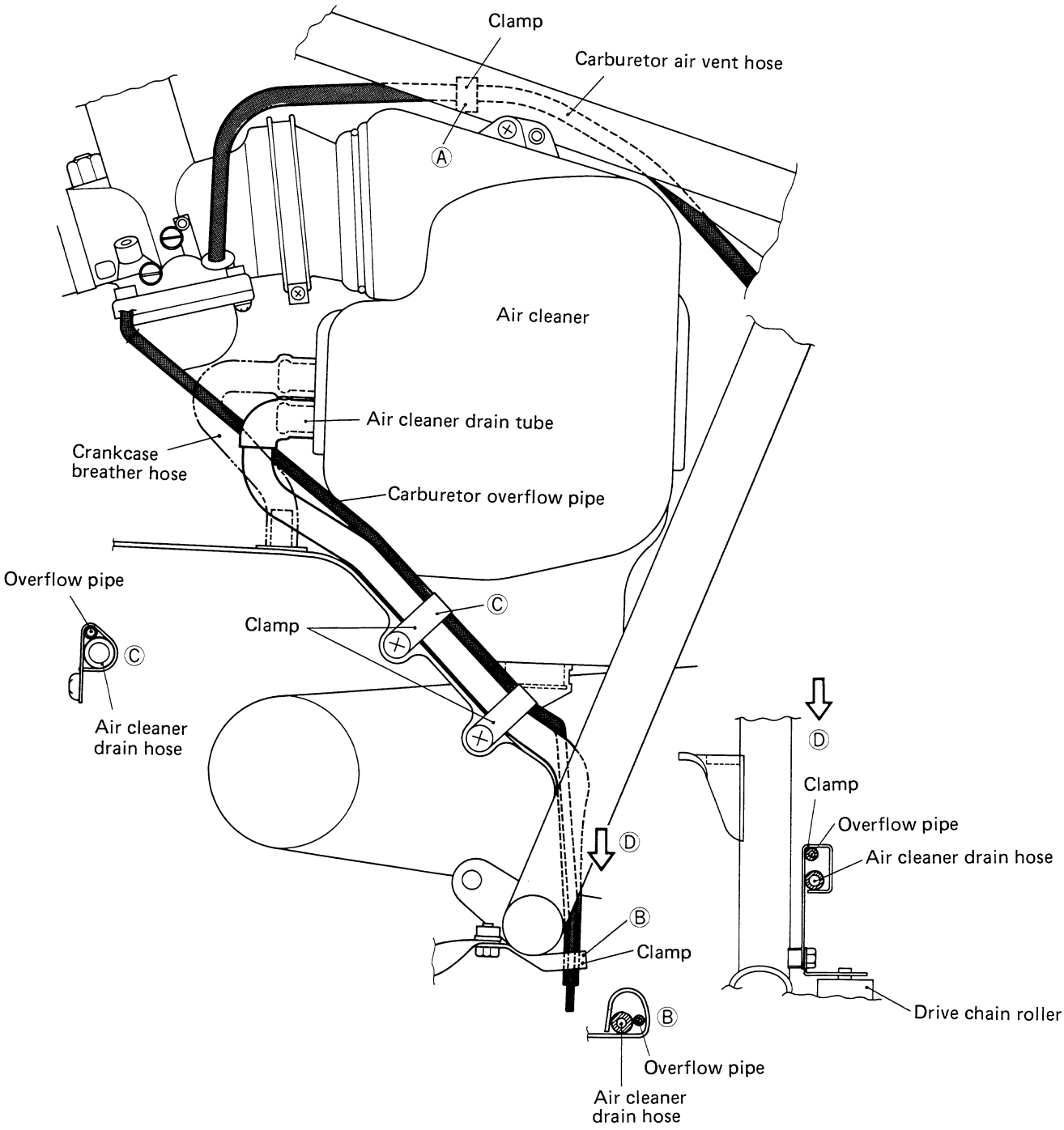



Magneto lead wire
Clamp

CABLE ROUTING






Clamp
Carburetor air vent hose
Ⓐ
Air cleaner
Air cleaner drain tube
Crankcase breather hose
Carburetor overflow pipe
Overflow pipe
Ⓒ
Clamp
Ⓒ
Air cleaner drain hose
Ⓓ
Clamp
Overflow pipe
Air cleaner drain hose
Drive chain roller
Ⓓ
Ⓑ
Clamp
Ⓑ
Overflow pipe
Air cleaner drain hose

SPECIAL TOOLS

ITEM	PART NO.	PART NAME
1	09900-06107	Snap ring pliers
2	09900-09003	Impact driver set
3	09900-20101	Vernier calipers (150 mm)
4	09900-20202	Micrometer (25 – 50 mm)
5	09900-20203	Micrometer (50 – 75 mm)
6	09900-20205	Micrometer (0 – 25 mm)
7	09900-20508	Cylinder gauge set
8	09900-20606	Dial gauge (1/100)
9	09900-20803	Thickness gauge
10	09900-25002	Pocket tester
11	09900-28106	Electro tester
12	09910-20116	Conrod holder
13	09910-32812	Crankshaft installer
14	09910-34510	Piston pin puller
15	09910-60611	Universal clamp wrench
16	09911-73730	T type hexagon wrench (5 mm)
17	09912-34510	Cylinder disassembling tool
18	09913-14511	Fuel level gauge
19	09913-50121	Oil seal remover
20	09915-63210	Compression pressure adapter
21	09915-64510	Compression gauge
22	09915-74510	Oil pressure gauge
23	09916-14510	Valve lifter
24	99103-45012-003	Valve seat cutter (15° x 45°: N-116)
25	09916-34540	Reamer handle
26	09916-34550	5.5 mm reamer
27	09916-34561	11.3 mm reamer
28	09916-44910	Valve guide installer and remover
29	09916-44920	Valve guide installer attachment
30	09916-84510	Tweezers
31	09917-14910	Tappet adjust driver
32	09920-13111	Crankcase separating tool/crankshaft remover
33	09920-53721	Clutch sleeve hub holder
34	09923-73210	Bearing puller
35	09924-84510	Bearing installer set
36	09930-30102	Rotor remover slide shaft
37	09930-33710	Attachment
38	09930-34912	Rotor remover
39	09930-40113	Rotor and sprocket holder
40	09930-44911	Rotor holder

ITEM	PART NO.	PART NAME
41	09940-34520	"T" handle
42	09940-34561	Attachment "D"
43	09940-50112	Fork oil seal installer
44	09930-60113	Spoke nipple wrench
45	09940-53311	Oil seal installer
46	09941-34511	Steering race installer
47	09941-54911	Bearing outer race remover
48	09941-74910	Steering bearing installer
49	09941-84510	Bearing inner race remover
50	09943-74111	Fork oil level gauge

TIGHTENING TORQUE

ENGINE

ITEM	N·m	kg-m	lb-ft
Cylinder head cover bolt	9 – 10	0.9 – 1.0	6.5 – 7.0
Camshaft sprocket bolt	10 – 13	1.0 – 1.3	7.0 – 9.5
Cylinder head nut 10 mm Diam.	35 – 40	3.5 – 4.0	25.5 – 29.0
Cylinder head nut 6 mm Diam.	7 – 11	0.7 – 1.1	5.0 – 8.0
Cylinder base nut	7 – 11	0.7 – 1.1	5.0 – 8.0
Magneto rotor nut	95 – 100	9.5 – 10.0	68.5 – 72.5
Balancer setting bolt	34 – 45	3.4 – 4.5	24.5 – 32.5
Primary drive gear nut	90 – 110	9.0 – 11.0	65.0 – 79.5
Clutch sleeve hub nut	40 – 60	4.0 – 6.0	29.0 – 43.5
Engine oil drain plug	18 – 20	1.8 – 2.0	13.5 – 14.5
Engine sprocket nut	80 – 100	8.0 – 10.0	58.0 – 72.5
Engine mounting bolt 8 mm Diam.	37 – 45	3.7 – 4.5	27.0 – 32.5
Exhaust pipe bolt	9 – 12	0.9 – 1.2	6.5 – 8.5
Muffler clamp bolt	9 – 12	0.9 – 1.2	6.5 – 8.5

CHASSIS

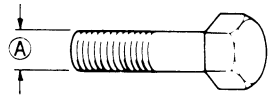
ITEM	N·m	kg-m	lb-ft
Front axle nut	36 – 52	3.6 – 5.2	26.0 – 37.5
Front fork damper rod bolt	20 – 26	2.0 – 2.6	14.5 – 19.0
Front fork lower clamp bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
Front fork upper clamp bolt	20 – 30	2.0 – 3.0	14.5 – 21.5
Front fork cap bolt	15 – 30	1.5 – 3.0	11.0 – 21.5
Steering stem clamp bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
Steering stem head bolt	35 – 50	3.5 – 5.0	25.5 – 36.0
Handlebars clamp bolt	12 – 20	1.2 – 2.0	8.5 – 14.5
Front brake cam lever bolt	5 – 8	0.5 – 0.8	3.5 – 6.0
Swing arm pivot nut	50 – 80	5.0 – 8.0	36.0 – 58.0
Front footrest bolt (R-side front)	36 – 52	3.6 – 5.2	26.0 – 37.5
Front footrest bolt (R-side rear)	27 – 43	2.7 – 4.3	19.5 – 31.0
Front footrest bolt (L-side)	36 – 52	3.6 – 5.2	26.0 – 37.5
Rear torque link nut	10 – 15	1.0 – 1.5	7.0 – 11.0
Rear shock absorber fitting nut	40 – 60	4.0 – 6.0	29.0 – 43.5
Rear cushion lever bolt	45 – 70	4.5 – 7.0	32.5 – 50.5
Rear cushion rod-upper bolt	40 – 60	4.0 – 6.0	29.0 – 43.5
Rear cushion rod-lower bolt	18 – 28	1.8 – 2.8	13.0 – 20.0
Rear axle nut	50 – 80	5.0 – 8.0	36.0 – 58.0
Rear sprocket nut	25 – 40	2.5 – 4.0	18.0 – 29.0
Rear brake cam lever bolt	5 – 8	0.5 – 0.8	3.5 – 6.0
Spoke nipple	4 – 5	0.4 – 0.5	3.0 – 3.5

TIGHTENING TORQUE CHART

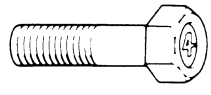
For other bolts and nuts who's torque is not listed, refer to this chart:

Bolt Diameter Ⓐ·(mm)	Conventional or "4" marked bolt			"7" marked bolt		
	kg-m	lb-ft	N·m	kg-m	lb-ft	N·m
4	0.1 – 0.2	0.7 – 1.5	1.0 – 2.0	0.15 – 0.3	1.0 – 2.0	1.5 – 3.0
5	0.2 – 0.4	1.5 – 3.0	2.0 – 4.0	0.3 – 0.6	2.0 – 4.5	3.0 – 6.0
6	0.4 – 0.7	3.0 – 5.0	4.0 – 7.0	0.8 – 1.2	6.0 – 8.5	8.0 – 12.0
8	1.0 – 1.6	7.0 – 11.5	10.0 – 16.0	1.8 – 2.8	13.0 – 20.0	18.0 – 28.0
10	2.2 – 3.5	16.0 – 25.5	22.0 – 35.0	4.0 – 6.0	29.0 – 43.5	40.0 – 60.0
12	3.5 – 5.5	25.5 – 40.0	35.0 – 55.0	7.0 – 10.0	50.5 – 72.5	70.0 – 100.0
14	5.0 – 8.0	36.0 – 58.0	50.0 – 80.0	11.0 – 16.0	79.5 – 115.5	110.0 – 160.0
16	8.0 – 13.0	58.0 – 94.0	80.0 – 130.0	17.0 – 25.0	123.0 – 181.0	170.0 – 250.0
18	13.0 – 19.0	94.0 – 137.5	130.0 – 190.0	20.0 – 28.0	144.5 – 202.5	200.0 – 280.0

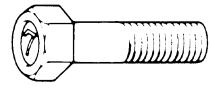
Conventional bolt



"4" marked bolt



"7" marked bolt



SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	26 (1.02)	———
	EX.	22 (0.86)	———
Valve lift	IN.	6.7 (0.26)	———
	EX.	6.7 (0.26)	———
Valve clearance (when cold)	IN.	0.03—0.08 (0.001—0.003)	———
	EX.	0.08—0.13 (0.003—0.005)	———
Valve guide to valve stem clearance	IN.	0.025—0.052 (0.0010—0.0020)	0.35 (0.014)
	EX.	0.040—0.067 (0.0016—0.0026)	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500—5.512 (0.2165—0.2170)	———
Valve stem O.D.	IN.	5.460—5.475 (0.2150—0.2156)	———
	EX.	5.445—5.460 (0.2144—0.2150)	———
Valve stem runout	IN. & EX.	———	0.05 (0.002)
Valve head thickness	IN. & EX.	———	0.5 (0.02)
Valve stem end length	IN. & EX.	———	3.8 (0.15)
Valve seat width	IN. & EX.	0.9—1.1 (0.035—0.043)	———
Valve head radial runout	IN. & EX.	———	0.03 (0.001)
Valve spring free length (IN. & EX.)		———	39.8 (1.57)
Valve spring tension (IN. & EX.)		16.2—19.8 kg (35.7—43.7 lbs) at length 35 mm (1.4 in)	———

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	34.990—35.030 (1.3775—1.3791)	34.690 (1.3657)
	EX.	35.030—35.070 (1.3791—1.3807)	34.730 (1.3673)
Camshaft journal oil clearance	R & L	0.032—0.066 (0.0013—0.0026)	0.15 (0.006)
Camshaft journal holder I.D.	R. Side	25.012—25.025 (0.9847—0.9852)	———
	L. Side	20.012—20.025 (0.7879—0.7884)	———
Camshaft journal O.D.	R. Side	24.959—24.980 (0.9826—0.9835)	———
	L. Side	19.959—19.980 (0.7858—0.7866)	———
Camshaft runout	IN. & EX.	———	0.10 (0.004)
Cam chain 20 pitch length		———	128.90 (5.075)
Rocker arm I.D.	IN. & EX.	12.000—12.018 (0.4724—0.4731)	———
Rocker arm shaft O.D.	IN. & EX.	11.966—11.984 (0.4711—0.4718)	———
Cylinder head distortion	———		0.05 (0.002)
Cylinder head cover distortion	———		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD	LIMIT
Compression pressure	12—16 kg/cm² (171—228 psi)	10 kg/cm² (142 psi)
Piston to cylinder clearance	0.045—0.055 (0.0018—0.0022)	0.120 (0.0047)
Cylinder bore	72.000—72.015 (2.8346—2.8352)	72.085 (2.8380)
Piston diam.	71.950—71.965 (2.8327—2.8332) Measure at 15 (0.59) from the skirt end.	71.880 (2.8299)
Cylinder distortion	———	0.05 (0.002)

Unit: mm (in)

ITEM	STANDARD			LIMIT
Piston ring free end gap	1st	N	Approx. 9.5 (0.37)	7.6 (0.30)
		R	Approx. 10.5 (0.41)	8.4 (0.33)
	2nd	N	Approx. 11.0 (0.43)	8.8 (0.35)
		R	Approx. 11.0 (0.43)	8.8 (0.35)
Piston ring end gap	1st		0.10—0.30 (0.004—0.012)	0.7 (0.03)
	2nd		0.10—0.30 (0.004—0.012)	0.7 (0.03)
Piston ring to groove clearance	1st		———	0.18 (0.007)
	2nd		———	0.15 (0.006)
Piston ring groove width	1st		1.01—1.03 (0.039—0.040)	———
	2nd		1.21—1.23 (0.047—0.048)	———
	Oil		2.51—2.53 (0.099—0.100)	———
Piston ring thickness	1st		0.975—0.990 (0.0384—0.0390)	———
	2nd		1.170—1.190 (0.0461—0.0469)	———
Piston pin bore	18.002—18.008 (0.7087—0.7089)			18.030 (0.7098)
Piston pin O.D.	17.996—18.000 (0.7085—0.7086)			17.980 (0.7079)

CONROD + CRANKSHAFT + BALANCER

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	18.006—18.014 (0.7089—0.7092)	18.040 (0.7102)
Conrod deflection	———	3.0 (0.12)
Conrod big end side clearance	0.10 — 0.65 (0.004 — 0.026)	1.00 (0.039)
Conrod big end width	20.95 — 21.00 (0.825 — 0.827)	———
Crankshaft web to web width	60.0 ± 0.1 (2.36 ± 0.004)	———
Crankshaft runout	———	0.05 (0.002)
Balancer spring free length	———	9.9 (0.39)

OIL PUMP

Unit: mm (in)

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	2.812 (68/21 x 33/38)	———
Oil pressure (at 60°C, 140°F)	Above 0.30 kg/cm² (4.26 psi) Below 0.70 kg/cm² (9.94 psi) at 3000 r/min.	———

CLUTCH

Unit: mm (in)

ITEM	STANDARD		LIMIT
Clutch cable play	4 (0.16)		———
Clutch release screw	1/4—1/2 Turn back		———
Drive plate thickness	No. 1	2.90—3.10 (0.114—0.122)	2.60 (0.102)
	No. 2	3.45—3.55 (0.136—0.140)	3.15 (0.124)
Drive plate claw width	15.8—16.0 (0.62—0.63)		15.0 (0.59)
Driven plate thickness	1.6 ± 0.05 (0.06 ± 0.002)		———
Driven plate distortion	———		0.1 (0.004)
Clutch spring free length	———		34.0 (1.34)

TRANSMISSION + DRIVE CHAIN

Unit: mm (in)

ITEM	STANDARD		LIMIT
Primary reduction ratio	3.238 (68/21)		———
Final reduction ratio	3.230 (42/13)		———
Gear ratios	Low	2.636 (29/11)	———
	2nd	1.750 (28/16)	———
	3rd	1.315 (25/19)	———
	4th	1.000 (20/20)	———
	Top	0.818 (18/22)	———
Shift fork to groove clearance	No.1,No.2 No.3	0.20—0.40 (0.008—0.016)	0.60 (0.023)
Shift fork groove width	No.1,No.2 No.3	4.25—4.35 (0.167—0.171)	———
Shift fork thickness	No.1,No.2 No.3	3.95—4.05 (0.156—0.159)	———
Drive chain	Type	D.I.D.: 520DS	———
	Links	104	———
	20 pitch length	———	324.2 (12.76)
Drive chain slack	40—50 (1.6—2.0)		———

CARBURETOR

Unit: mm (in)

ITEM	SPECIFICATION
Carburetor type	MIKUNI VM28SS
Bore size	28 (1.1)
I. D. No.	38200
Idle r/min.	1250 ± 50 r/min.
Fuel level	3.5 ± 0.5 (0.14 ± 0.02)
Float height	22.5 ± 1.0 (0.89 ± 0.04)
Main jet (M. J.)	# 112.5
Main air jet (M. A. J.)	1.0
Jet needle (J. N.)	6G1-3rd
Needle jet (N. J.)	P–0
Cut-away (C. A.)	2.5
Pilot jet (P. J.)	# 15
By pass (B. P.)	0.8
Pilot outlet (P. O.)	0.8
Valve seat (V. S.)	2.8
Starter jet (G. S.)	# 55
Pilot screw (P. S.)	1 1/2 turn out
Throttle cable play	0.5–1.0 (0.02–0.04)

ELECTRICAL

Unit: mm (in)

ITEM	SPECIFICATION		NOTE
Ignition timing	10 ° B.T.D.C. Below 1700 ± 100 r/min and 35 ° B.T.D.C. Above 3000 ± 100 r/min.		
Spark plug	Type	NGK D8EA NIPPON DENSO X24ES-U	
	Gap	0.6—0.7 (0.02—0.03)	
Spark performance	Over 8 (0.3) at 1 atm		
Ignition coil resistance	Primary	B—B/Y Approx. 0.5—3.0 Ω	
	Secondary	Plug cap — Ground Approx. 15—25 kΩ	
Magneto coil resistance	Pick-up	W—B/W Approx. 50—90 Ω	
	Power source I	R—B/W Approx. 5—9 Ω	
	Power source II	Br—B/W Approx. 3—6 Ω	
	Lighting	P—B/W Approx. 1—4 Ω	
Lighting coil output	Above Below	5.5 V at 2500 r/min. 8.0 V at 8000 r/min.	

BRAKE + WHEEL

Unit: mm (in)

ITEM		STANDARD	LIMIT
Front brake lever distance		20–30 (0.8–1.2)	———
Rear brake pedal free travel		20–30 (0.8–1.2)	———
Rear brake pedal height		10 (0.4)	———
Brake drum I.D.	Front	———	130.7 (5.15)
	Rear	———	130.7 (5.15)
Brake lining thickness		———	1.5 (0.06)
Wheel rim runout	Axial	———	2.0 (0.08)
	Radial	———	2.0 (0.08)
Wheel axle runout	Front	———	0.25 (0.010)
	Rear	———	0.25 (0.010)
Tire size	Front	3.00-21 4PR	———
	Rear	5.10-17 4PR	———
Tire tread depth	Front	———	4.0 (0.16)
	Rear	———	4.0 (0.16)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	250 (9.8)	———	
Front fork spring free length	———	546 (21.5)	
Front fork oil level	180 (7.1)	———	
Front fork air pressure	0 kPa (0 kg/cm², 0 psi)	———	
Rear shock absorber spring standard setting	257 (10.1)	———	
Rear shock absorber bushing I.D. (Upper and Lower)	———	14.20 (0.56)	
Rear cushion lever rod upper bushing I.D.	———	15.20 (0.60)	
Rear cushion lever rod lower bushing I.D.	———	13.20 (0.52)	
Swing arm pivot shaft bushing I.D.	———	20.20 (0.80)	
Rear wheel travel	250 (9.8)	———	
Swing arm pivot shaft runout	———	0.6 (0.02)	

FUEL + OIL

ITEM	SPECIFICATION	NOTE
Fuel type	Use only unleaded or low-lead type gasoline of at least 85-95 pump octane ($\frac{R+M}{2}$ method) or 89 octane or higher rated by the Research Method.	
Fuel tank including reserve	9.5 L (2.5 US gal)	
reserve	1.0 L (1.1 US qt)	
Engine oil type and grade	SAE 10W/40,SE or SF	
Engine oil capacity	Change 1200 ml (1.3 US qt)	
	Filter change 1300 ml (1.4 US qt)	
	Overhaul 1700 ml (1.8 US qt)	
Front fork oil type	Fork oil # 10	
Front fork oil capacity (each leg)	298 ml (10.1 US oz)	
Rear shock absorber oil capacity	Approx. 220 ml (7.4 US oz)	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	kPa	kg/cm²	psi
FRONT	100	1.00	14
REAR	100	1.00	14

WATTAGE

Unit: (W)

ITEM		SPECIFICATION
Headlight	HI	15
	LO	15
Taillight		5

FOREWORD

This section describes service data and servicing procedures which differ from those of the DR250 "Z" model.
This section has been written primarily for the experienced SUZUKI mechanic but will also be very useful even for the apprentice mechanic and do-it-yourself mechanic. The entire manual should be thoroughly reviewed before any servicing is performed.

Please also refer to the sections, 1 through 7, for all other areas of information not covered in this section.

IMPORTANT

All streat-legal SUZUKI motorcycles with engine displacement of 50cc or greater are subject to Environmental Protection Agency emission regulations.
These regulations set specific standards for emission control, and also set new servicing requirements. This manual includes specific information required to properly inspect and service the SP250 in accordance with all EPA regulations. It is strongly recommended that the chapter on Emission Control, Periodic Servicing and Carburetion be thoroughly reviewed before any type of service work is performed.

NOTE:
Specifications marked with asterisks (*) are exclusive to SP250Z.

CONTENTS

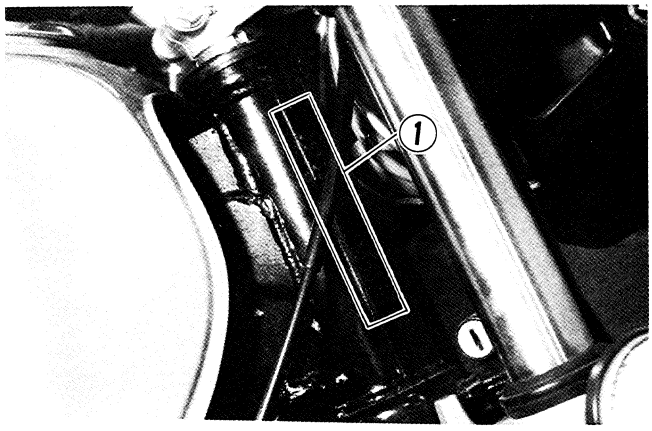
VIEW OF SUZUKI SP250Z

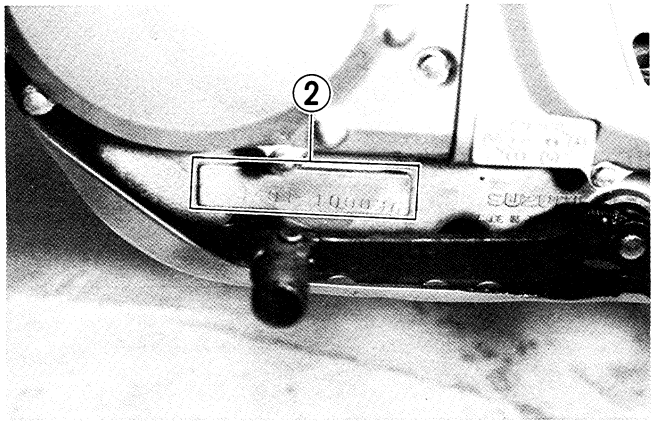
RIGHT SIDE

LEFT SIDE

VIN AND SERIAL NUMBER LOCATIONS

The VIN number ① is stamped on the steering head pipe. The engine serial number ② is located on the crankcase.
These numbers are required especially for registering the machine and ordering spare parts.





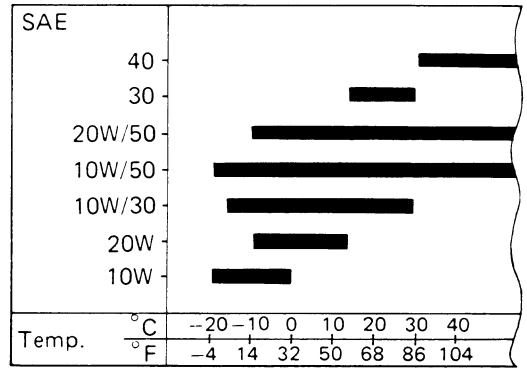
FUEL AND OIL RECOMMENDATIONS

FUEL

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

ENGINE OIL

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



FRONT FORK OIL

FORK OIL # 10

BREAK-IN PROCEDURE

During munufacture only the best possible materials are used and all machined parts are finished to a very high standard but it is still necessary to allow the moving parts to "BREAK-IN" before subjecting the engine to maximum stresses. The future performance and reliability of the engine depends on the care and restraint exercised during its early life. The general rules are as follows.

1. Keep to these break-in throttle positions.

Initial 500 miles (800 km)	Below ½ throttle
UP to 1000 miles (1600 km)	Below ¾ throttle
Over 1000 miles (1600 km)	Full throttle

2. After the engine has been operated for 1000 miles (1600 km) the motorcycle can be subjected to full throttle operation for short periods of time.

SPECIFICATIONS

DIMENSIONS AND DRY MASS

* Overall length	2 165 mm (85.2 in)
Overall width	860 mm (33.9 in)
* Overall height	1 200 mm (47.2 in)
* Wheelbase	1 375 mm (54.1 in)
* Ground clearance	260 mm (10.2 in)
* Dry mass	119 kg (262 lbs)

ENGINE

Type	Four-stroke, air-cooled, OHC
Number of cylinders	1
Bore	72.0 mm (2.834 in)
Stroke	61.2 mm (2.409 in)
Piston displacement	249 cm^3 (15.2 cu. in)
Compression ratio	8.9 : 1
* Carburetor	MIKUNI BS34SS, single
Air cleaner	Polyurethane foam element
Starter system	Primary kick
Lubrication system	Wet sump

TRANSMISSION

Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction	3.238 (68/21)
* Final reduction	2.800 (42/15)
Gear ratios, Low	2.636 (29/11)
* 2nd	1.687 (27/16)
* 3rd	1.263 (24/19)
4th	1.000 (20/20)
Top	0.818 (18/22)
* Drive chain	DAIDO D.I.D.520DS 102 links

Specifications marked with asterisks (*) are exclusive to SP250Z.

ELECTRICAL

Ignition type	SUZUKI "PEI"
Ignititon timing	10° B.T.D.C. below 1 700 r/min and 35° B.T.D.C. above 3 000 r/min
Spark plug	NGK D8EA or NIPPON DENSO X24ES-U
* Battery	6V 14.4 kC (4Ah)/10HR
* Generator	Flywheel magneto
* Fuse	15A
* Headlight	6V 35/35W
* Tail/Brake light	6V 5.3/25W
* Turn signal light	6V 17W
* Speedometer light	6V 3W
* Turn signal indicator light	6V 3W
* High beam indicator light	6V 1.7W
* Neutral indicator light	6V 3W

CHASSIS

Front suspension	Telescopic, pneumatic/coil spring, oil dampened
Rear suspension	Full-floating suspension system
* Steering angle	43° (Right & Left)
* Caster	61°30′
* Trail	118 mm (4.65 in)
* Turning radius	2.3 m (7.5 ft)
Front brake	Internal expanding
Rear brake	Internal expanding
Front tire size	3.00-21 4PR
* Rear tire size	4.60-17 4PR

CAPACITIES

Fuel tank including reserve	9.5 L (2.5 US gal)
reserve	1.0 L (1.1 US qt)
Engine oil	1.2 L (1.3 US qt)
* Front fork oil	258 ml (8.72 US oz)

Specifications marked with asterisks (*) are exclusive to SP250Z.

The specifications subject to change without notice.

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM		STANDARD	LIMIT
Valve diam.	IN.	26 (1.02)	———
	EX.	22 (0.86)	———
Valve lift	IN.	6.7 (0.26)	———
	EX.	6.7 (0.26)	———
Valve clearance (when cold)	IN.	0.03—0.08 (0.001—0.003)	———
	EX.	0.08—0.13 (0.003—0.005)	———
Valve guide to valve stem clearance	IN.	0.025—0.052 (0.0010—0.0020)	0.35 (0.014)
	EX.	0.040—0.067 (0.0016—0.0026)	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500—5.512 (0.2165—0.2170)	———
Valve stem O.D.	IN.	5.460—5.475 (0.2150—0.2156)	———
	EX.	5.445—5.460 (0.2144—0.2150)	———
Valve stem runout	IN. & EX.	———	0.05 (0.002)
Valve head thickness	IN. & EX.	———	0.5 (0.02)
Valve stem end length	IN. & EX.	———	3.8 (0.15)
Valve seat width	IN. & EX.	0.9—1.1 (0.035—0.043)	———
Valve head radial runout	IN. & EX.	———	0.03 (0.001)
Valve spring free length (IN. & EX.)		———	39.8 (1.57)
Valve spring tension (IN. & EX.)		16.2—19.8 kg (35.7—43.7 lbs) at length 35 mm (1.4 in)	———

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	34.990—35.030 (1.3775—1.3791)	34.690 (1.3657)
	EX.	35.030—35.070 (1.3791—1.3807)	34.730 (1.3673)
Camshaft journal oil clearance	R. & L.	0.032—0.066 (0.0013—0.0026)	0.15 (0.006)
Camshaft journal holder I.D.	R. Side	25.012—25.025 (0.9847—0.9852)	———
	L. Side	20.012—20.025 (0.7879—0.7884)	———
Camshaft journal O.D.	R. Side	24.959—24.980 (0.9826—0.9835)	———
	L. Side	19.959—19.980 (0.7858—0.7866)	———
Camshaft runout	IN. & EX.	———	0.10 (0.004)
Cam chain 20 pitch length		———	128.90 (5.075)
Rocker arm I.D.	IN. & EX.	12.000—12.018 (0.4724—0.4731)	———
Rocker arm shaft O.D.	IN. & EX.	11.966—11.984 (0.4711—0.4718)	———
Cylinder head distortion	———		0.05 (0.002)
Cylinder head cover distortion	———		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD	LIMIT
Compression pressure	12—16 kg/cm² (171—228 psi)	10 kg/cm² (142 psi)
Piston to cylinder clearance	0.045—0.055 (0.0018—0.0022)	0.120 (0.0047)
Cylinder bore	72.000—72.015 (2.8346—2.8352)	72.085 (2.8380)
Piston diam.	71.950—71.965 (2.8327—2.8332) Measure at 15 (0.59) from the skirt end.	71.880 (2.8299)
Cylinder distortion	———	0.05 (0.002)

Unit: mm (in)

ITEM	STANDARD			LIMIT
Piston ring free end gap	1st	N	Approx. 9.5 (0.37)	7.6 (0.30)
		R	Approx. 10.5 (0.41)	8.4 (0.33)
	2nd	N	Approx. 11.0 (0.43)	8.8 (0.35)
		R	Approx. 11.0 (0.43)	8.8 (0.35)
Piston ring end gap	1st		0.10—0.30 (0.004—0.012)	0.7 (0.03)
	2nd		0.10—0.30 (0.004—0.012)	0.7 (0.03)
Piston ring to groove clearance	1st		———	0.180 (0.0071)
	2nd		———	0.150 (0.0059)
Piston ring groove width	1st		1.01—1.03 (0.039—0.040)	———
	2nd		1.21—1.23 (0.047—0.048)	———
	Oil		2.51—2.53 (0.099—0.100)	———
Piston ring thickness	1st		0.975—0.990 (0.0384—0.0390)	———
	2nd		1.170—1.190 (0.0461—0.0469)	———
Piston pin bore	18.002—18.008 (0.7087—0.7089)			18.030 (0.7098)
Piston pin O.D.	17.996—18.000 (0.7085—0.7086)			17.980 (0.7079)

CONROD + CRANKSHAFT + BALANCER

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	18.006—18.014 (0.7089—0.7092)	18.040 (0.7102)
Conrod deflection	———	3.0 (0.12)
Conrod big end side clearance	0.10—0.65 (0.004—0.026)	1.00 (0.039)
Conrod big end width	20.95—21.00 (0.825—0.827)	———
Crankshaft web to web width	60.0 ± 0.1 (2.36 ± 0.004)	———
Crankshaft runout	———	0.05 (0.002)
Balancer spring free length	———	9.9 (0.39)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	2.812 (68/21 x 33/38)	———
Oil pressure (at 60°C, 140°F)	Above 0.30 kg/cm² (4.26 psi) Below 0.70 kg/cm² (9.94 psi) at 3000 r/min.	———

CLUTCH

Unit: mm (in)

ITEM	STANDARD	LIMIT
Clutch cable play	4 (0.16)	———
Clutch release screw	1/4 - 1/2 Turn back	———
Drive plate thickness	No.1 2.90—3.10 (0.114—0.122)	2.60 (0.102)
	No.2 3.45—3.55 (0.136—0.140)	3.15 (0.124)
Drive plate claw width	15.8—16.0 (0.62—0.63)	15.0 (0.59)
Driven plate thickness	1.6 ± 0.05 (0.06 ± 0.002)	———
Driven plate distortion	———	0.1 (0.004)
Clutch spring free length	———	34.0 (1.34)

TRANSMISSION + DRIVE CHAIN

Unit: mm (in)

	ITEM	STANDARD		LIMIT
	Primary reduction ratio	3.238 (68/21)		———
*	Final reduction ratio	2.800 (42/15)		———
	Gear ratios	Low	2.636 (29/11)	———
*		2nd	1.687 (27/16)	———
*		3rd	1.263 (24/19)	———
		4th	1.000 (20/20)	———
		Top	0.818 (18/22)	———
	Shift fork to groove clearance	No. 1,No. 2 No. 3	0.20—0.40 (0.008—0.016)	0.60 (0.023)
	Shift fork groove width	No. 1,No. 2 No. 3	4.25—4.35 (0.167—0.171)	———
	Shift fork thickness	No. 1,No. 2 No. 3	3.95—4.05 (0.156—0.159)	———
	Drive chain	Type	D.I.D.: 520DS	———
*		Links	102	———
		20 pitch length	———	324.2 (12.76)
*	Drive chain slack	30—40 (1.2—1.6)		———

Specifications marked with asterisks (*) are exclusive to SP250Z.

*CARBURETOR

Unit: mm (in)

ITEM	SPECIFICATION
Carburetor type	MIKUNI BS34SS
Bore size	34 (1.34)
I. D. No.	38210
Idle r/min.	1250 ± 50 r/min.
Fuel level	5.0 ± 0.5 (0.2 ± 0.02)
Float height	27.4 ± 1.0 (1.08 ± 0.04)
Main jet (M. J.)	# 125
Main air jet (M. A. J.)	0.8
Jet needle (J. N.)	5DT88
Needle jet (N. J.)	O-9
Pilot jet (P. J.)	# 42.5
By pass (B. P.)	1.0, 0.9, 0.8, 0.8
Pilot outlet (P. O.)	0.7
Valve seat (V. S.)	2.0
Starter jet (G. S.)	# 40
Pilot screw (P. S.)	PRE-SET
Pilot air jet (P. A. J.)	# 145
Throttle cable play	0.5 – 1.0 (0.02 – 0.04)

Specifications marked with asterisks (*) are exclusive to SP250Z.

ELECTRICAL

Unit: mm (in)

	ITEM	SPECIFICATION		NOTE
	Ignition timing	10° B.T.D.C. Below 1700 ± 100 r/min and 35° B.T.D.C. Above 3000 ± 100 r/min.		
	Spark plug	Type	NGK D8EA NIPPON DENSO X24ES-U	
		Gap	0.6–0.7 (0.02–0.03)	
	Spark performance	Over 8 (0.3) at 1 atm		
	Ignition coil resistance	Primary	B–B/Y Approx. 0.5–3 Ω	
		Secondary	Plug cap – Ground Approx. 15–25 kΩ	
	Magneto coil resistance	Pick-up	W–B/W Approx. 50–90 Ω	
		Power source I	R–B/W Approx. 5–9 Ω	
		Power source II	Br–B/W Approx. 3–6 Ω	
		Lighting	P–B/W Approx. 1–4 Ω	
*		Charging	Day: W/Bl–B/W Approx. 1–2 Ω	
			Night: W/G–B/W Approx. 0.5–1.5 Ω	
*	Generator no-load voltage	More than 50 V (AC) at 5000 r/min.		
*	Lighting coil output	Above 6.0 V at 2000 r/min. Below 9.0 V at 8000 r/min.		
*	Regulated voltage	7.0–8.5 V at 5000 r/min.		
*	Battery	Type designation	6N4B-2A	
		Capacity	6V14.4kC(4Ah)/10HR	
		Standard electrolyte S. G.	1.26 at 20°C (68°F)	
*	Fuse size	Main	15 A	

Specifications marked with asterisks (*) are exclusive to SP250Z.

BRAKE + WHEEL

Unit: mm (in)

ITEM		STANDARD		LIMIT
Front brake lever distance		20–30 (0.8–1.2)		———
Rear brake pedal free travel		20–30 (0.8–1.2)		———
Rear brake pedal height		10 (0.4)		———
Brake drum I.D.	* Front	———		140.7 (5.54)
	Rear	———		130.7 (5.15)
Brake lining thickness		———		1.5 (0.06)
Wheel rim runout	Axial	———		2.0 (0.08)
	Radial	———		2.0 (0.08)
Wheel axle runout	Front	———		0.25 (0.010)
	Rear	———		0.25 (0.010)
Tire size	Front	3.00-21 4PR		———
	* Rear	4.60-17 4PR		———
Tire tread depth	Front	———		4.0 (0.16)
	Rear	———		4.0 (0.16)

Specifications marked with asterisks (*) are exclusive to SP250Z.

SUSPENSION

Unit: mm (in)

	ITEM	STANDARD	LIMIT	NOTE
*	Front fork stroke	195 (7.7)	———	
*	Front fork spring free length	———	460 (18.1)	
*	Front fork oil level	165 (6.5)	———	
	Front fork air pressure	0 kPa 0 kg/cm², 0 psi	———	
	Rear shock absorber bushing I.D. (Upper and Lower)	———	14.20 (0.56)	
	Rear cushion lever rod upper bushing I.D.	———	15.20 (0.60)	
	Rear cushion lever rod lower bushing I.D.	———	13.20 (0.52)	
	Swing arm pivot shaft bushing I.D.	———	20.20 (0.80)	
*	Rear wheel travel	190 (7.5)	———	
	Swing arm pivot shaft runout	———	0.6 (0.02)	

FUEL + OIL

	ITEM	SPECIFICATION	NOTE
*	Fuel type	Use only unleaded or low-lead type gasoline of at least 85 - 95 pump octane ($\frac{R+M}{2}$ method) or 89 octane or higher rated by the Research Method.	
	Fuel tank including reserve	9.5 L (2.5/2.1 US/Imp gal)	
	reserve	1.0 L (1.1/0.9 US/Imp qt)	
	Engine oil type and grade	SAE 10W/40 SE or SF	
	Engine oil capacity — Change	1200 ml (1.3/1.1 US/Imp qt)	
	Engine oil capacity — Filter change	1300 ml (1.4/1.1 US/Imp qt)	
	Engine oil capacity — Overhaul	1700 ml (1.8/1.5 US/Imp qt)	
	Front fork oil type	Fork oil # 10	
*	Front fork oil capacity (each leg)	258 ml (8.72 / 9.08 US/Imp oz)	

Specifications marked with asterisks (*) are exclusive to SP250Z.

* TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	NORMAL RIDING					
	SOLO RIDING			DUAL RIDING		
	kPa	kg/cm²	psi	kPa	kg/cm²	psi
FRONT	150	1.50	22	150	1.50	22
REAR	175	1.75	24	200	2.00	28

* WATTAGE

Unit: (W)

ITEM		SPECIFICATION
Headlight	HI	35
	LO	35
Tail/Brake light		5.3/25
Turn signal light		17
Speedometer light		3
Turn signal indicator light		3
High beam indicator light		1.7
Neutral indicator light		3

Specifications marked with asterisks (*) are exclusive to SP250Z.

PERIODIC MAINTENANCE SCHEDULE

IMPORTANT: The periodic maintenance intervals and service requirements have been established in accordance with EPA regulations. Following these instructions will ensure that the motorcycle will not exceed emission standards and it will also ensure the reliability and performance of the motorcycle.

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

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

PERIODIC MAINTENANCE CHART

INTERVAL: THIS INTERVAL SHOULD BE JUDGED BY ODOMETER READING OR MONTHS WHICHEVER COMES FIRST					
	mile	600	3 000	6 000	9 500
	km	1 000	5 000	10 000	15 000
	month	3	15	30	45
Battery (Specific gravity of electrolyte)		–	I	I	I
Cylinder head nuts, exhaust pipe bolts		T	T	T	T
Air cleaner element		–	C	C	C
Valve clearance		I	I	I	I
Spark plug		–	C	R	C
Fuel line		I	I	I	I
		Replace every four years.			
Fuel strainer		C	–	C	–
Engine oil and oil filter		R	R	R	R
Carburetor idle rpm		I	I	I	I
Clutch		I	I	I	I
Drive chain		I	I	I	I
		Clean and lubricate every 600 miles (1 000 km).			
Brakes		I	I	I	I
Tires		I	I	I	I
Steering		I	I	I	I
Front fork		–	I	I	I
Chassis bolts and nuts		T	T	T	T

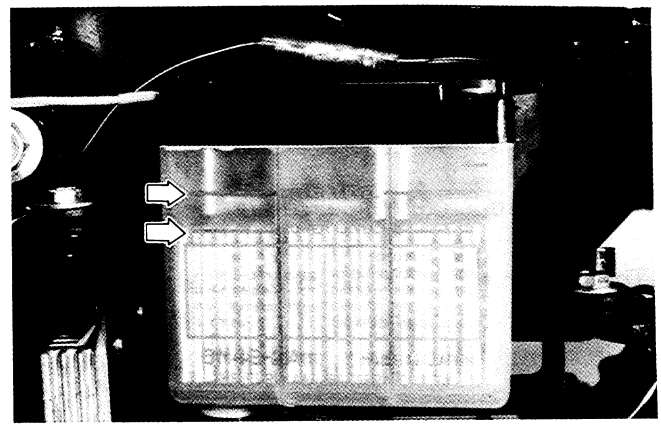
NOTE: T = Tighten, I = Inspect, R = Replace, C = Clean

MAINTENANCE PROCEDURES

BATTERY

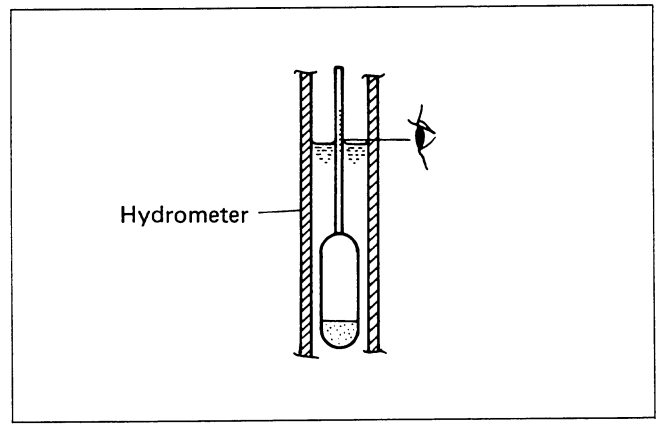
Inspect every 3 000 mi (5 000 km)

- Remove left side frame cover to check battery.
- Check level and specific gravity of electrolyte. Add distilled water, if necessary, to keep the surface of the electrolyte above the LOWER level line and below the UPPER level line. To determine state of charge, check specific gravity with a hydrometer.



Hydrometer	09900-28403

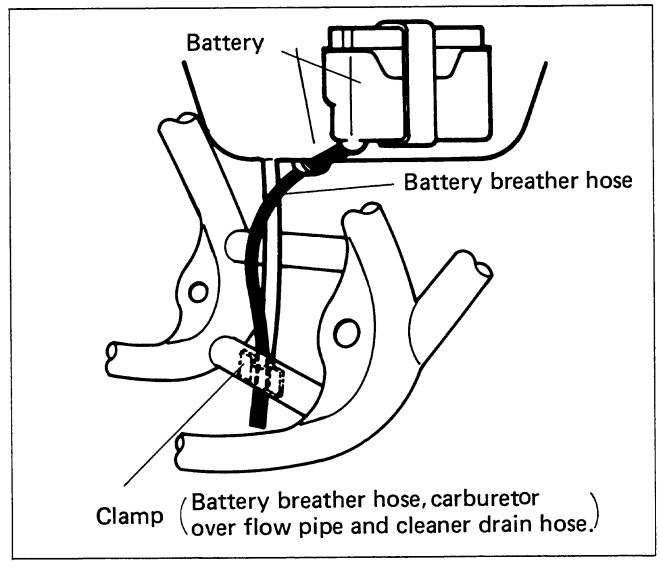
Standard specific gravity	1.26 at 20°C



A specific gravity reading of 1.20 (at 20°C) or under means that the battery needs recharging.

CAUTION:
Do not charge the battery while connected to the motorcycle. Charging the battery while connected into the circuit may damage the rectifier or other components.

- Confirm that the battery breather hose is routed properly, as shown in the Fig. and that it is not kinked or pinched.

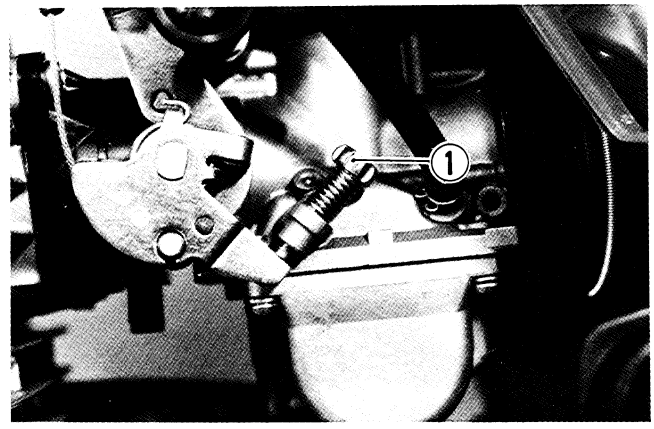


CARBURETOR IDLE RPM

Inspect at 600 mi (1 000 km), 3 000 mi (5 000 km, 6 000 mi (10 000 km, 9 500 mi (15 000 km).

Idling adjustment

- Connect a tachometer.
- Start up the engine and warm it up by running it at 2 000 r/min for 10 minutes in summer, (When ambient temperature is 30°C (86°F) of thereabout) or for 20 minutes in winter, (when ambient temperature is down to –5°C (23°F) or thereabout).

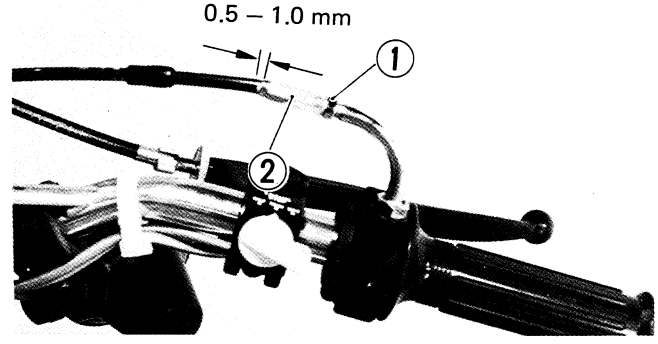


- After the engine warms up, turn the throttle stop screw ① in or out so that engine runs at 1200 – 1300 r/min.

CAUTION:
No adjustment except the procedure mentioned above is necessary because calibration is performed by carburetor manufacturer.

Throttle cable play

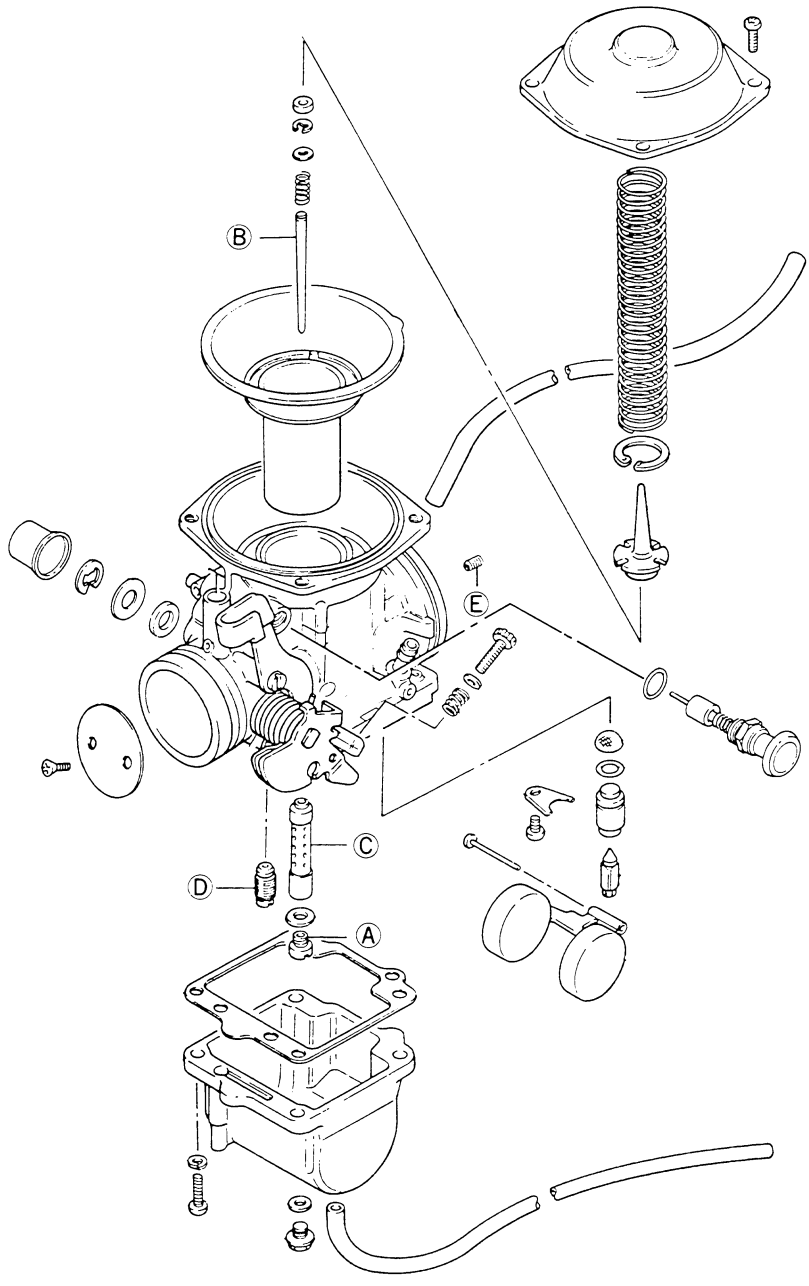
- Loosen lock nut ①.
- Adjust the cable play by turning adjuster ② in or out to obtain the correct play 0.5 – 1.0 mm (0.02 – 0.04).
- After adjusting the play, tighten the lock nut.



For other periodic maintenance procedures, refer to the section 2.

CARBURETOR

CARBURETOR CONSTRUCTION



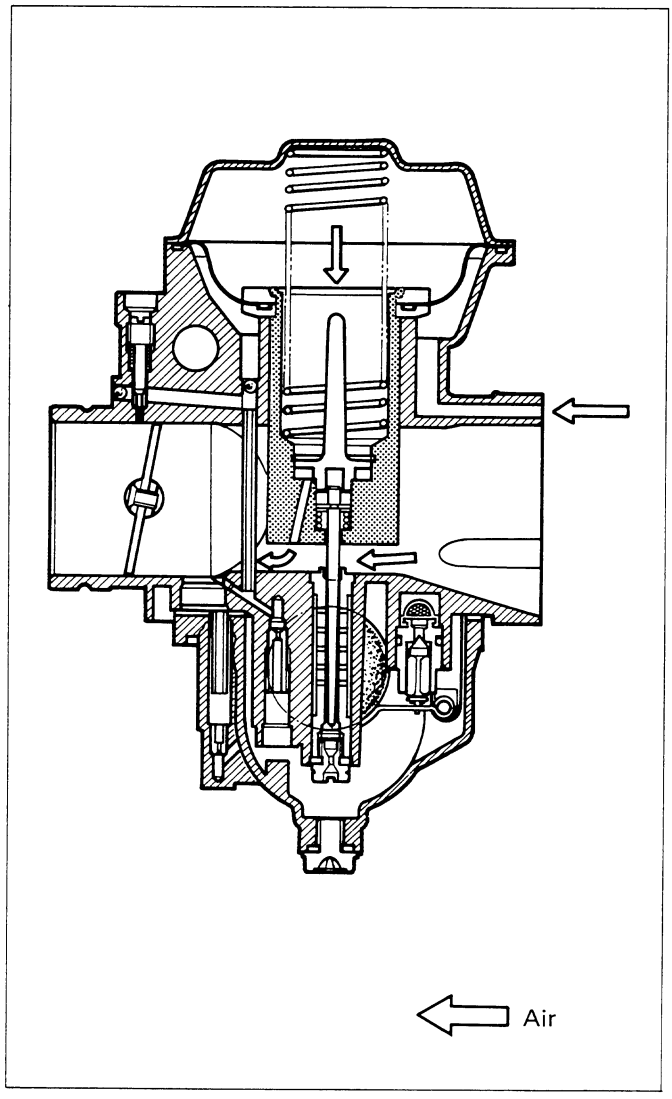
Unit: mm (in)

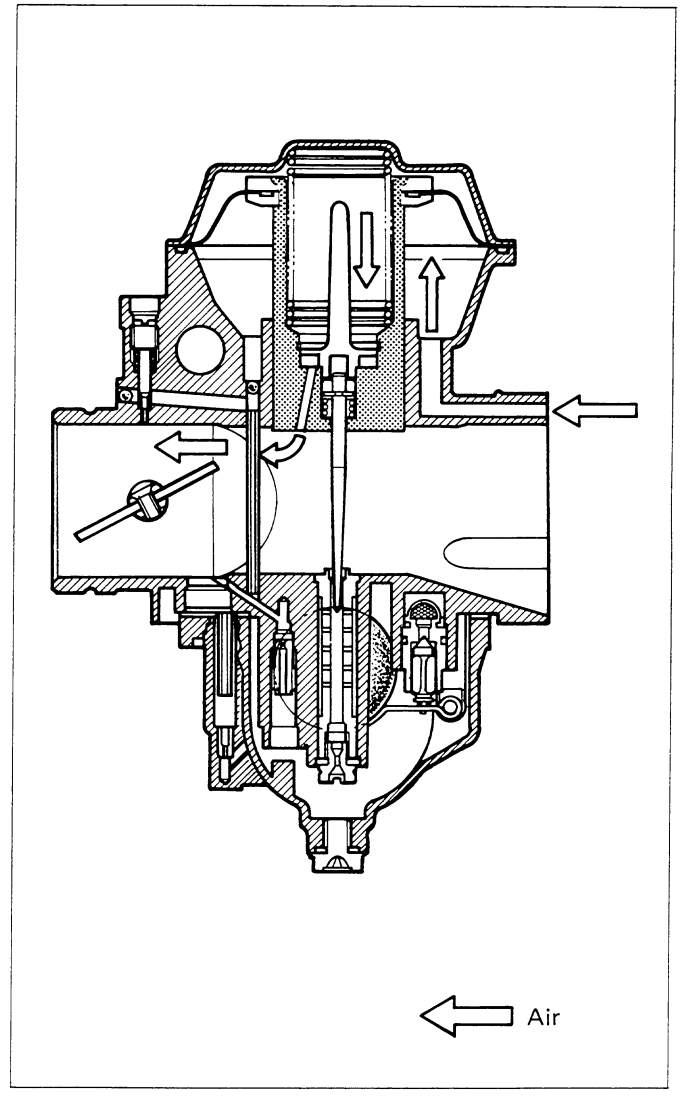
ITEM	SPECIFICATION	ITEM	SPECIFICATION
Carburetor type	MIKUNI BS34SS	Needle jet (N.J.)	Ⓒ O-9
Bore size	34 (1.34)	Pilot jet (P.J.)	Ⓓ #42.5
I.D. No.	38210	By pass (B.P.)	1.0, 0.9, 0.8, 0.8
Idle r/min	1 250 ± 50 r/min	Pilot outlet (P.O.)	0.7
Fuel level	5.0 ± 0.5 (0.2 ± 0.02)	Valve seat (V.S.)	2.0
Float heigh	27.4 ± 1.0 (1.08 ± 0.04)	Starter jet (G.S.)	# 40
Main jet (M.J.)	Ⓐ #125	Pilot screw (P.S.)	PRE – SET
Main air jet (M.A.J.)	0.8	Pilot air jet (P.A.J)	Ⓔ # 145
Jet needle (J.N.)	Ⓑ 5DT88	Throttle cable play	0.5 – 1.0 (0.02 – 0.04)

DIAPHRAGM AND PISTON OPERATION

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

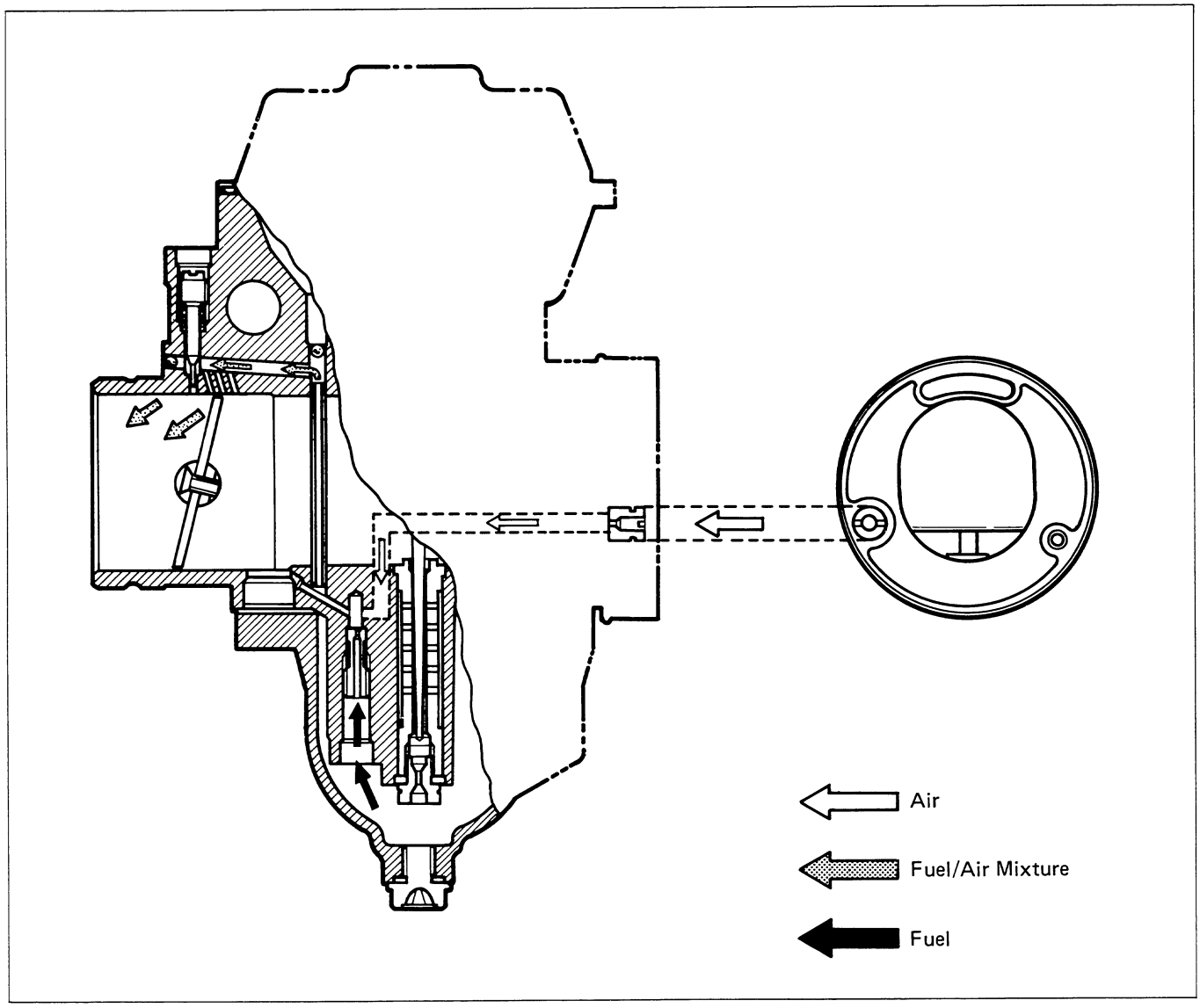
Rising vacuum overcomes the spring force, causing the piston to rise to increase the said area and thus prevent the air velocity from increasing. Thus, air velocity in the venturi passage is kept relatively constant for improved fuel atomization and for securing an optimum ratio of fuel to air in the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





SLOW SYSTEM

This system supplies fuel during engine operation with throttle valve closed or slightly opened.
The fuel in float chamber is metered by pilot jet where it mixes with air coming in through pilot air jet. This mixture, rich with fuel, then goes up through pilot pipe to pilot screw. A part of the mixture is discharged into the main bore out of bypass ports. The remainder is then metered by pilot screw and sprayed out into the main bore through pilot outlet.



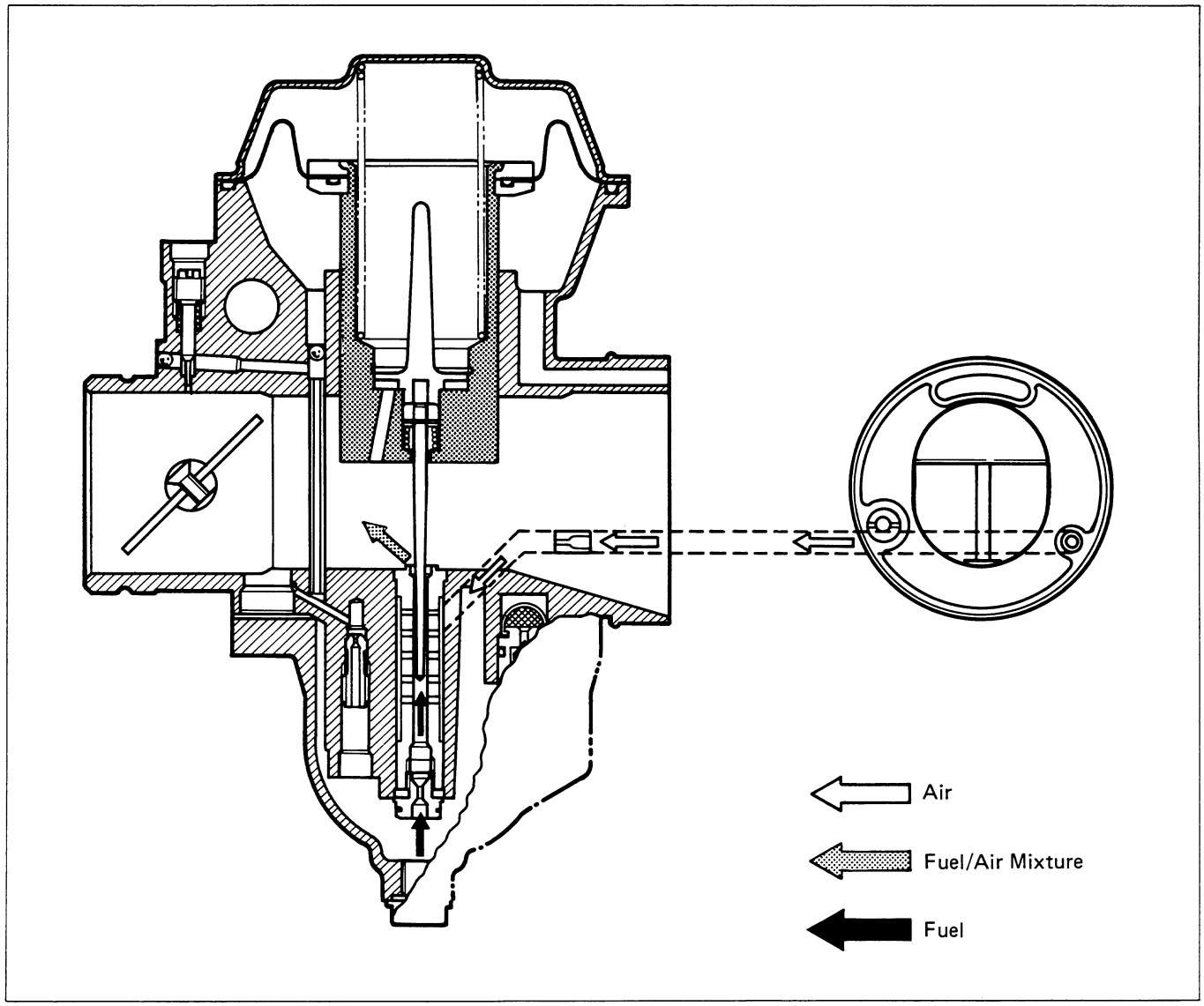
MAIN SYSTEM

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

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

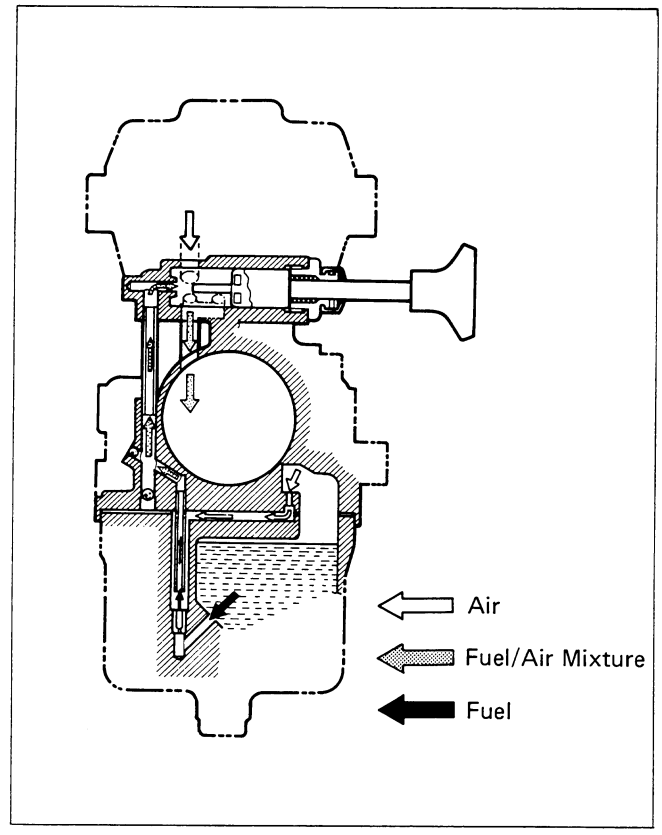
The emulsified fuel then passes through the clearance between needle jet and jet needle, and is discharged into the venturi, in which it meets main air stream being drawn by the engine.

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



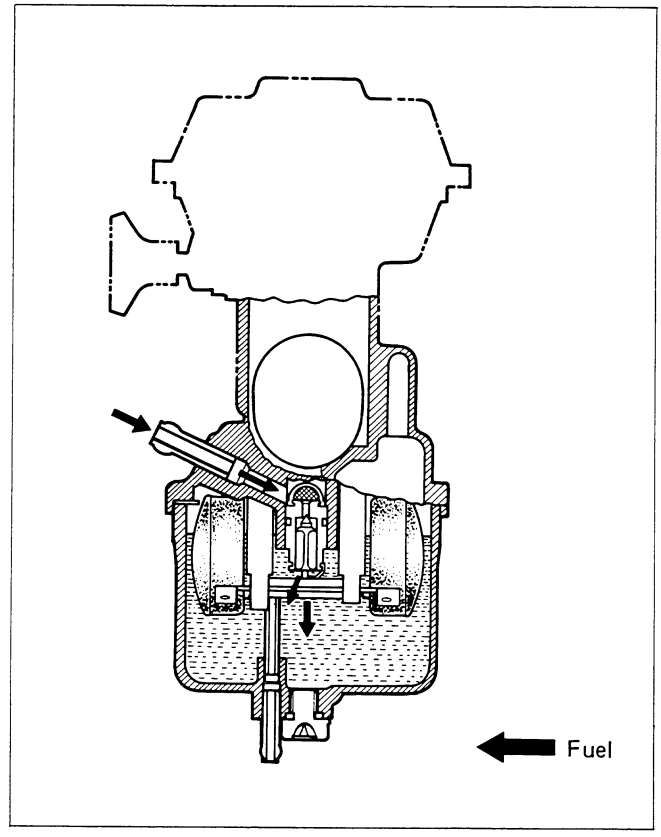
STARTER SYSTEM

Pulling the choke knob slides starting plunger to draw fuel into the starter circuit from the float chamber through starter jet.
Starter jet meters this fuel, which then flows into starter pipe and mixes with the air coming from the float chamber. The mixture, rich in fuel content, reaches starting plunger and mixes again with the air coming through a passage extending from behind the diaphragm.
The two successive mixings of fuel with air are such that a proper air/fuel mixture for starting is produced when the mixture is sprayed out through starter outlet into the main bore.



FLOAT SYSTEM

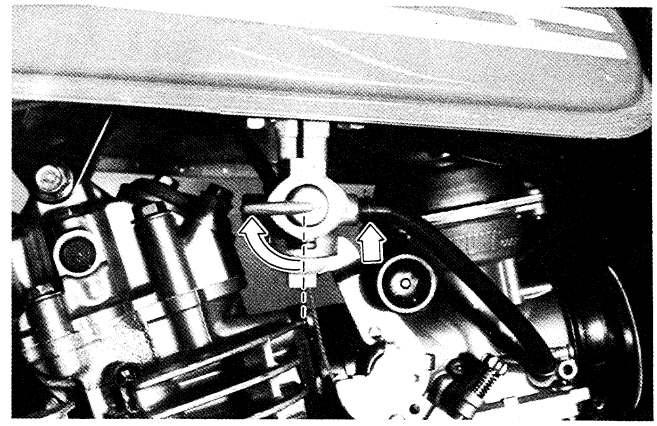
Floats and needle valve are associated with the same mechanism, so that, as the floats move up and down, the needle valve too moves likewise. When fuel level is up in float chamber, floats are up and needle valve remains pushed up against valve seat. Under this condition, no fuel enters the float chamber.
As the fuel level falls, floats go down and needle valve unseats itself to admit fuel into the chamber. In this manner, needle valve admits and shuts off fuel alternately to maintain a practically constant fuel level inside the float chamber.



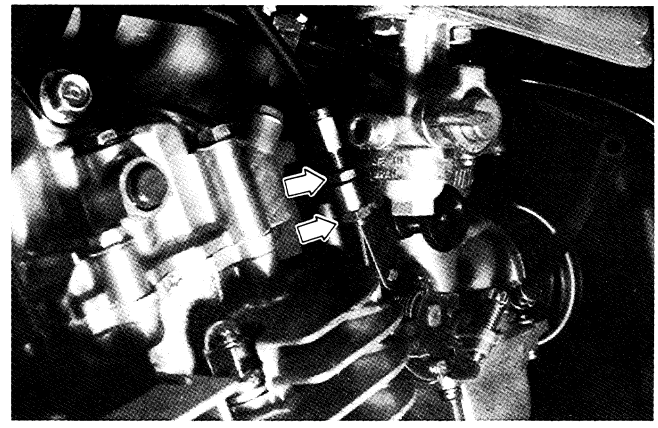
REMOVAL AND DISASSEMBLY

NOTE:
Before disassembling the carburetor, inspect the fuel level. (Refer to page 8-26)

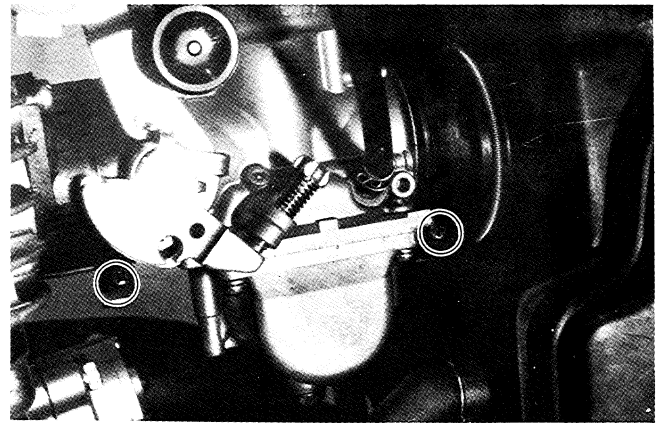
- Remove the left and right frame covers.
- Turn the fuel cock to the "OFF" position. Disconnect fuel hose from the fuel cock.

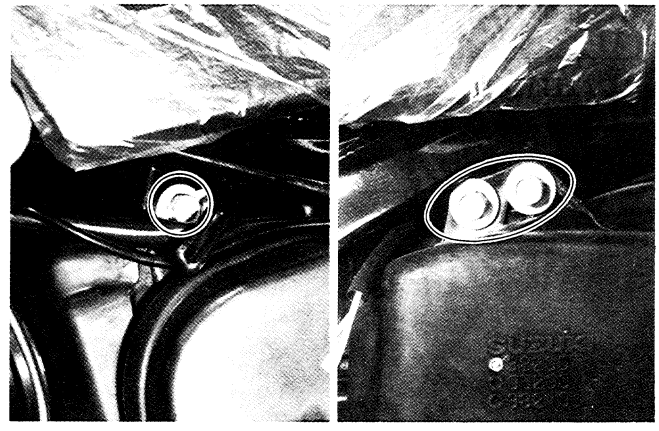


- Remove the throttle cable from the throttle lever.

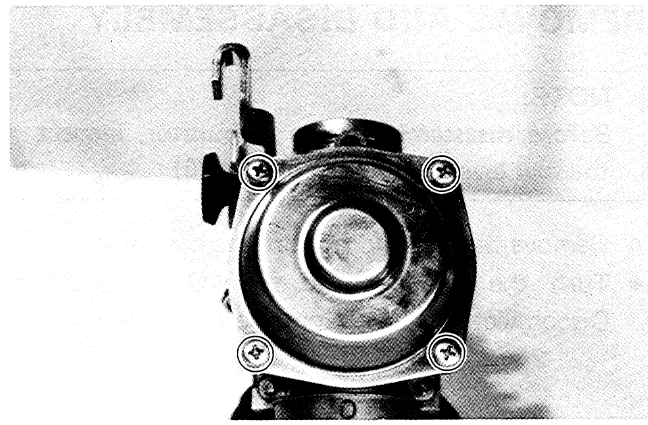


- Loosen inlet pipe clamp screws, and remove air cleaner case mounting bolts, then take off the carburetor.

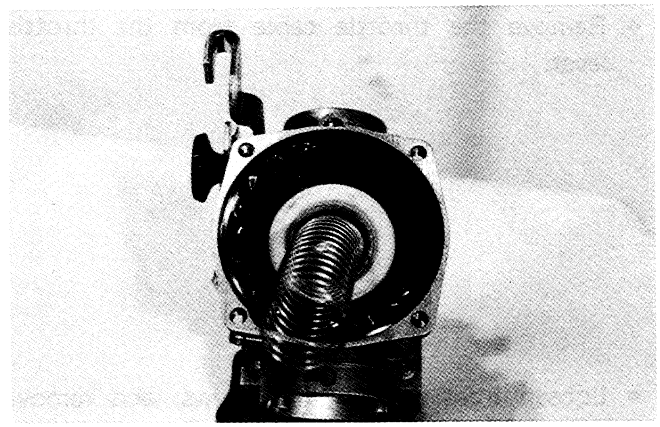




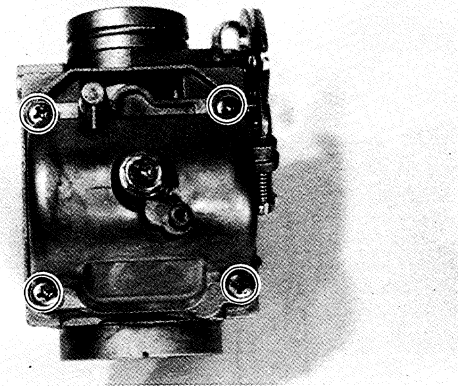
- Remove the carburetor top cover.



- Pull out the spring and diaphragm.

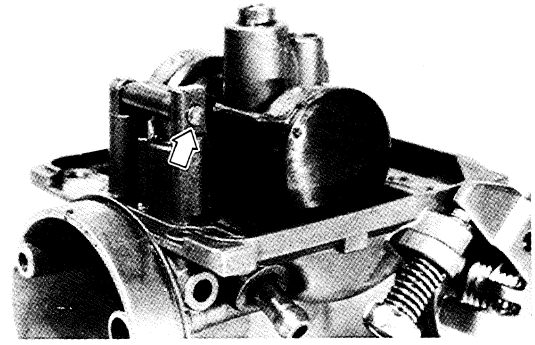


- Remove the float chamber body from the mixing chamber body.

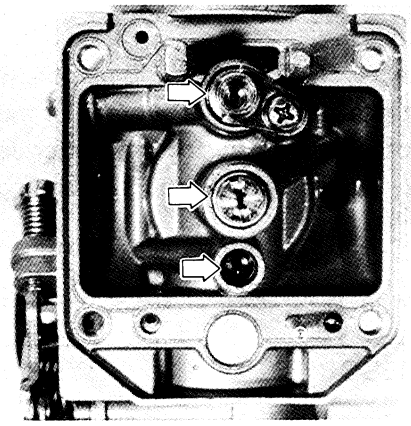


- Pull out the float pin and remove the float.

CAUTION:
When removing the float pin be careful not to damage the carburetor body.



- Remove the jets.

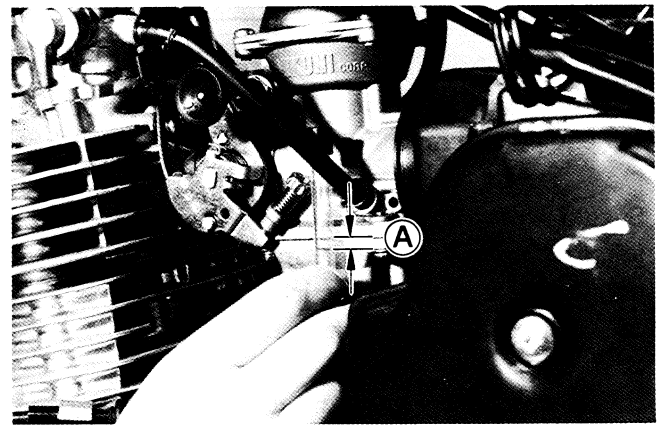


FUEL LEVEL INSPECTION

Fuel level gauge	09913-14511

Distance Ⓐ	5.0 ± 0.5 mm (0.2 ± 0.02 in)

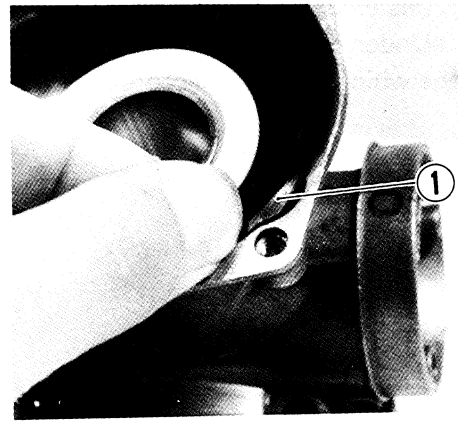
(Refer to Page 4-8)



REASSEMBLY

Reassemble the carburetor by reversing the sequence of disassembling steps.

NOTE:
Place tongue ① of diaphragm to carburetor body properly.



EMISSION CONTROL AND REGULATIONS

EMISSION REGULATIONS

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

1980 EMISSION LIMITS

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

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

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

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

EMISSION CONTROL CARBURETOR COMPONENTS

SP250 motorcycles are equipped with precision, manufactured carburetors for emission level control. These carburetors require special mixture control components and other precision adjustments to function properly.

There are several carburetor mixture control components in each carburetor assembly. Three (3) of these components are machined to much closer tolerances than standard machined carburetor jets. These three (3) particular jets – MAIN JET, NEEDLE JET, PILOT JET – must not be replaced by standard jets. To aid in identifying these three (3) jets a different design of letter and number are used. If replacement of these close tolerance jets becomes necessary, be sure to replace them with the same type close tolerance jets marked as in the examples shown below.

The jet needle is also of special manufacture. Only one clip position is provided on the jet needle. If replacement becomes necessary the jet needle may only be replaced with an equivalent performing replacement component. Suzuki recommends that Genuine Suzuki Parts be utilized whenever possible for the best possible performance and durability.

Conventional Figures Used on Standard Tolerance Jet Components	1 2 3 4 5 6 7 8 9 0
Emission Type Figures Used On Close Tolerance Jet Components	1 2 3 4 5 6 7 8 9 0

The carburetor specification for the emission-controlled SP250 are as follows.

Carburetor I.D. No.	Main Jet	Needle Jet	Jet Needle	Pilot Jet	Pilot Screw
38210	#125	0-9	5DT88	#42.5	PRE-SET DO NOT ADJUST

The pilot screw is pre-set by the factory utilizing specialized testing and adjusting procedures. The pilot screw is not adjustable as the idle circuit is "sealed" after factory adjustment. Adjusting, interferring with, improper replacement, or resetting of any of the carburetor components may adversely affect carburetor performance and cuase the motorcycle to exceed the exhaust emission level limits. If persons, who are unaware of these special carburetor servicing requirements tamper with the carburetor the Suzuki dealer should restore the carburetor to its original condition or if unable to effect repairs, contact the distributors representative for further technical information and assistance.

GENERAL EMISSION INFORMATION

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

Hydrocarbons (HC)
Carbon Monoxide (CO)
Oxides of Nitrogen (NOx)

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

Hydrocarbons (HC)
Carbon Monoxide (CO)

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

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

Total NOx emissions from all motorcycles is considered negligible. The EPA states that total NOx emission from motorcycles by 1990 will only amount to approximately 0.5%. NOx is formed during the combustion process at high combustion chamber temperatures.

CARBON MONOXIDE

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

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

CARBURETION MALFUNCTION

1. Air Cleaner – Dirty or over oiled.
2. Idle Mixture – Adjusted incorrectly.
3. Idle Speed – Too high or low.
4. Fuel Level – Sticking float, leaking needle, incorrect setting.
5. Choke – Leaking or linkage sticking.

ENGINE MALFUNCTIONS

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

HYDROCARBONS

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

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

IGNITION SYSTEM MALFUNCTIONS

1. Spark Plug – Fouled, dirty, improper type or improperly gapped.
2. Ignition Timing – Advanced or retarded.
3. Timing Advance – Too fast or too slow an advance rate.

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

MIXTURE-RELATED MALFUNCTIONS

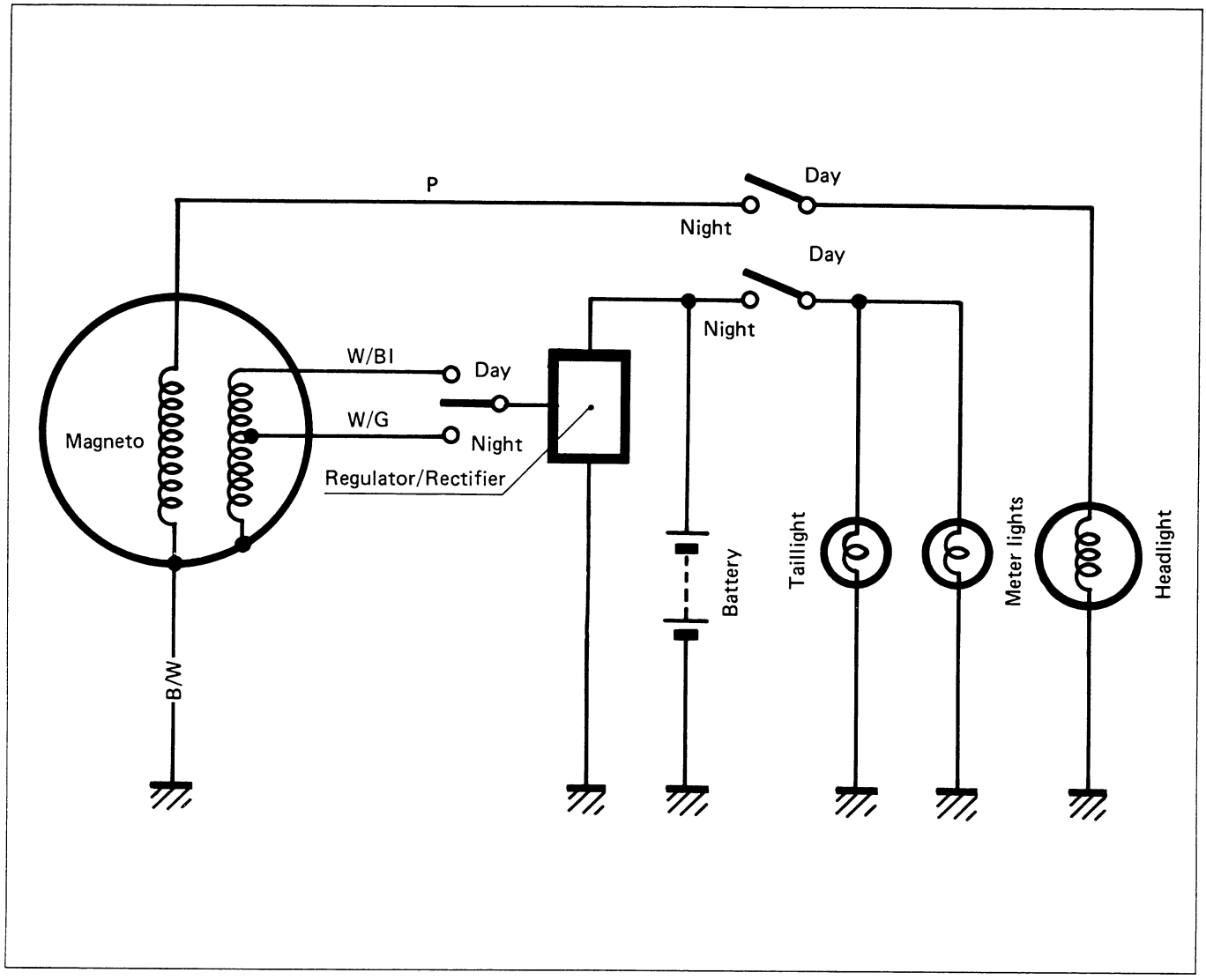
1. Air Cleaner – Dirty, over oiled or torn.
2. Jets – Clogged, restricted or incorrect size.
3. Float Level – Level too low (lean) or too high (rich).
4. Choke – Leaking choke plunger or sticking linkage.
5. Air Leaks – Intake manifolds, engine gaskets and other sealing surfaces.
6. Exhaust System –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

Engine wear or damage can also cuase high HC emissions.

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

ELECTRICAL

CHARGING AND LIGHTING SYSTEM



SERVICING

Charging coil check

- Using the pocket tester (RX1Ω range), measure the resistance between the lead wires in the following chart.

Pocket tester	09900-25002

WIRE COLOR

W: White	W/Bl: White with Blue tracer
R: Red	W/G: White with Green tracer
Br: Brown	B/W: Black with White tracer
P: Pink	

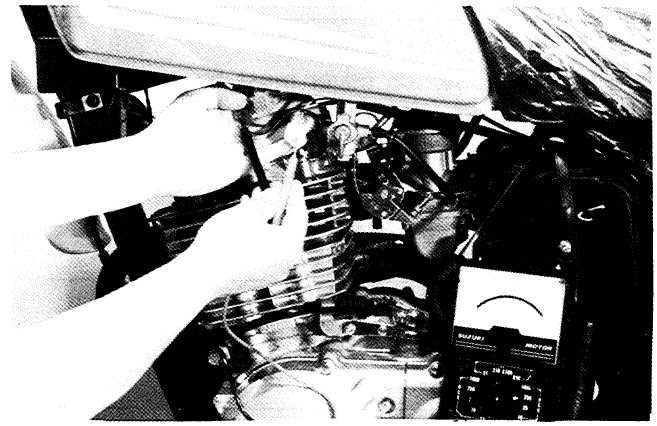
Magneto coil resistance			
Pick up		Approx.	W – B/W 50 – 90Ω
Power source		Approx.	R – B/W 5 – 9Ω
		Approx.	Br – B/W 3 – 6Ω
Lighting		Approx.	P – B/W 1 – 4Ω
* Charging	Day:	Approx.	W/Bl – B/W 1 – 2Ω
	Night:	Approx.	W/G – B/W 0.5 – 1.5Ω

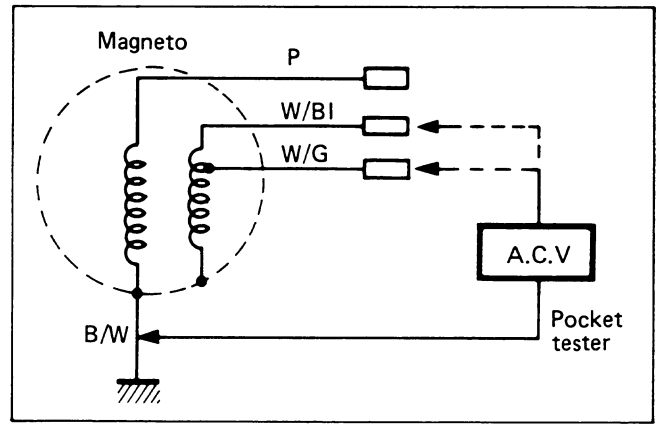
Charging coil performance check

- Disconnect lead wires coupler, (P, W/BI and W/G) from the magneto.
- Connect a tachometer.
- Start the engine and keep it running at 5 000 r/min.
- Set the pocket tester (range: AC 250V), measure the AC voltage between W/BI – B/W and W/G – B/W.

No-load voltage	More than 50 V (AC) at 5 000 r/min.

CAUTION:
Voltage measurement should be done as quickly as possible to prevent engine overheat.

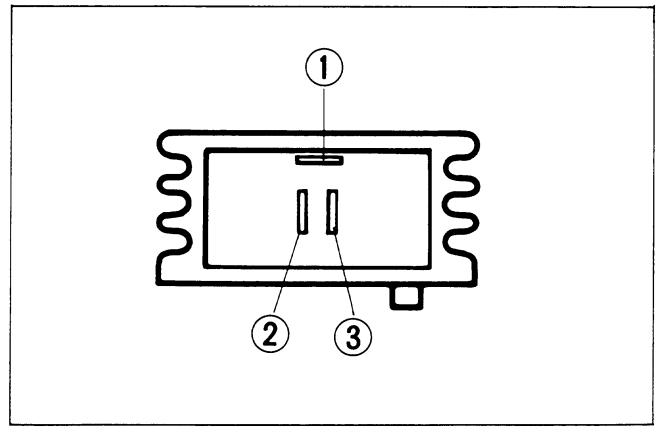




Regulator/Rectifier check

- Using the pocket tester (X1Ω range), measure the resistance between the terminals in the following table.
- If the resistance checked is incorrect, replace the regulator/rectifier.

⊖ Probe of tester \ ⊕ Probe of tester	①	②	③
①		OFF	Approx. 4 – 8 Ω
②	OFF		OFF
③	OFF	OFF	



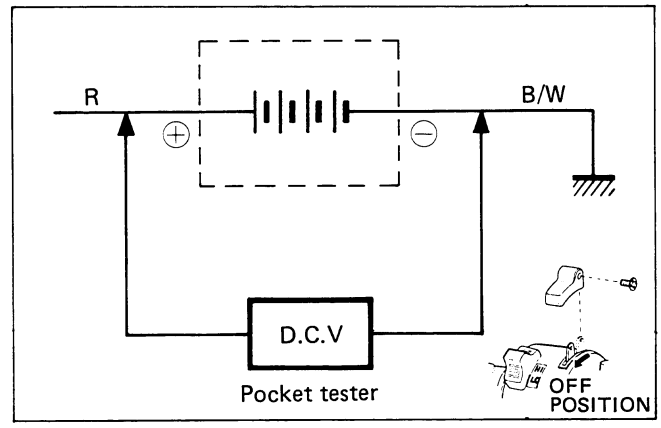
Regulator check

- Connect a tachometer.
- Start the engine and keep it running at 5 000 r/min with the lighting switch turned OFF position.
- Set the pocket tester (range: DC 10V)
- Contact the ⊕ lead probe of the tester to the ⊕ terminal of the battery, and contact the ⊖ lead probe to the ⊖ terminal, then measure the DC voltage.

NOTE:
The plastic switch cover must be removed to turn the light switch to the OFF position.

7.0 – 8.5V at 5 000 r/min.

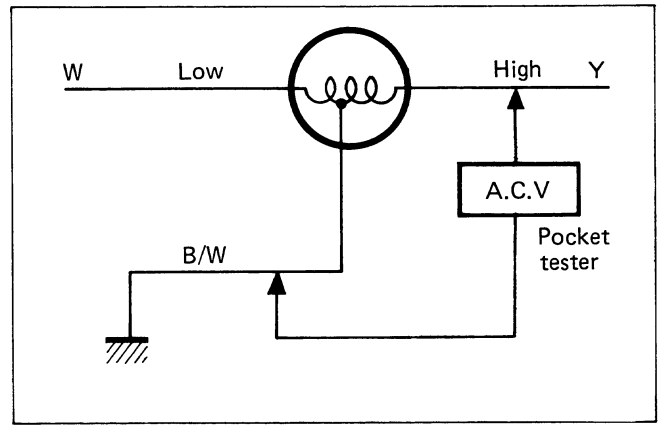
NOTE:
When making this test, be sure the battery is in a fully-charged condition.



Lighting coil performance check

- Set the pocket tester (range: AC 10V).
- Remove the headlight unit and connect the ⊕ probe of the tester to high or low beam lead wire and ⊖ probe to the ground while turning on the lighting switch.
- Connect a tachometer.
- Start the engine.
- Check that the voltmeter reads as follows.

Above 6.0V at 2 000 r/min.
Below 9.0V at 8 000 r/min.



BATTERY

- Visually inspect the surface of the battery container. If any signs of cracking or electrolyte leakage from the sides of the battery have occurred, replace the battery with a new one.
- If the battery terminals are found to be coated with rust or an acidic white powdery substance, then this can be cleaned away with sandpaper.
- Check the electrolyte level and add distilled water, as necessary, to raise the electrolyte to each cell's upper level.
- Check the battery for proper charge by taking an electrolyte S.G. reading. If the reading is 1.20 or less, as corrected to 20°C (68°F), it means that the battery is still in a run-down condition and needs recharging.

Hydrometer	09900-28403

- Check the reading (as corrected to 20°C) with Chart to determine the recharging time in hours by constant-current charging at a charging rate of 0.4 amperes (which is a tenth of the capacity of the present battery).

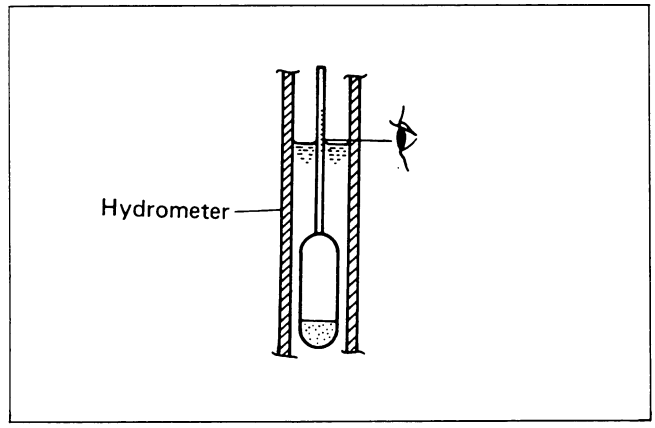
CAUTION:
Be careful not to permit the electrolyte temperature to exceed 45°C (113°F), at any time, during the recharging operation. Interrupt the operation, as necessary, to let the electrolyte cool down.

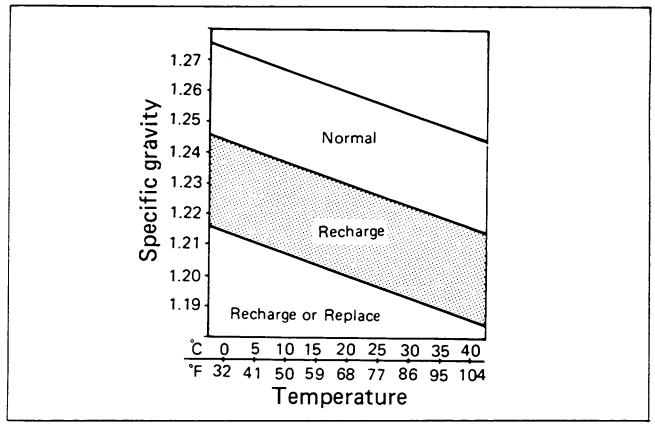
CAUTION:
Constant-voltage charging, otherwise called "quick" charging, is not recommendable for it could shorten the life of the battery.

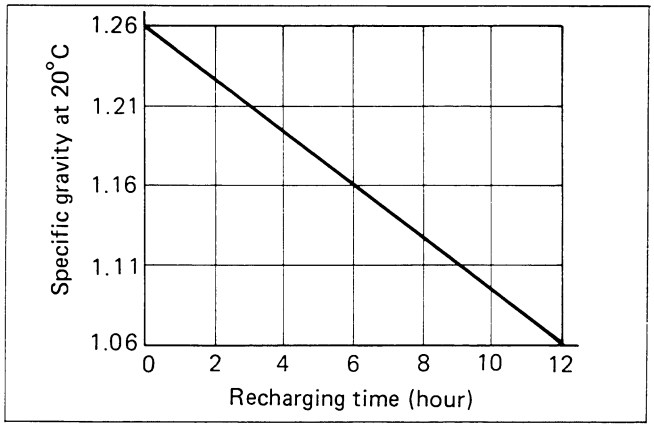
WARNING:
- **Before charging a battery, remove the seal cap from each cell.**
- **Keep fire and sparks away from a battery being charged.**
- **When removing a battery from the motorcycle, be sure to remove the ⊖ terminal first.**

Battery specification

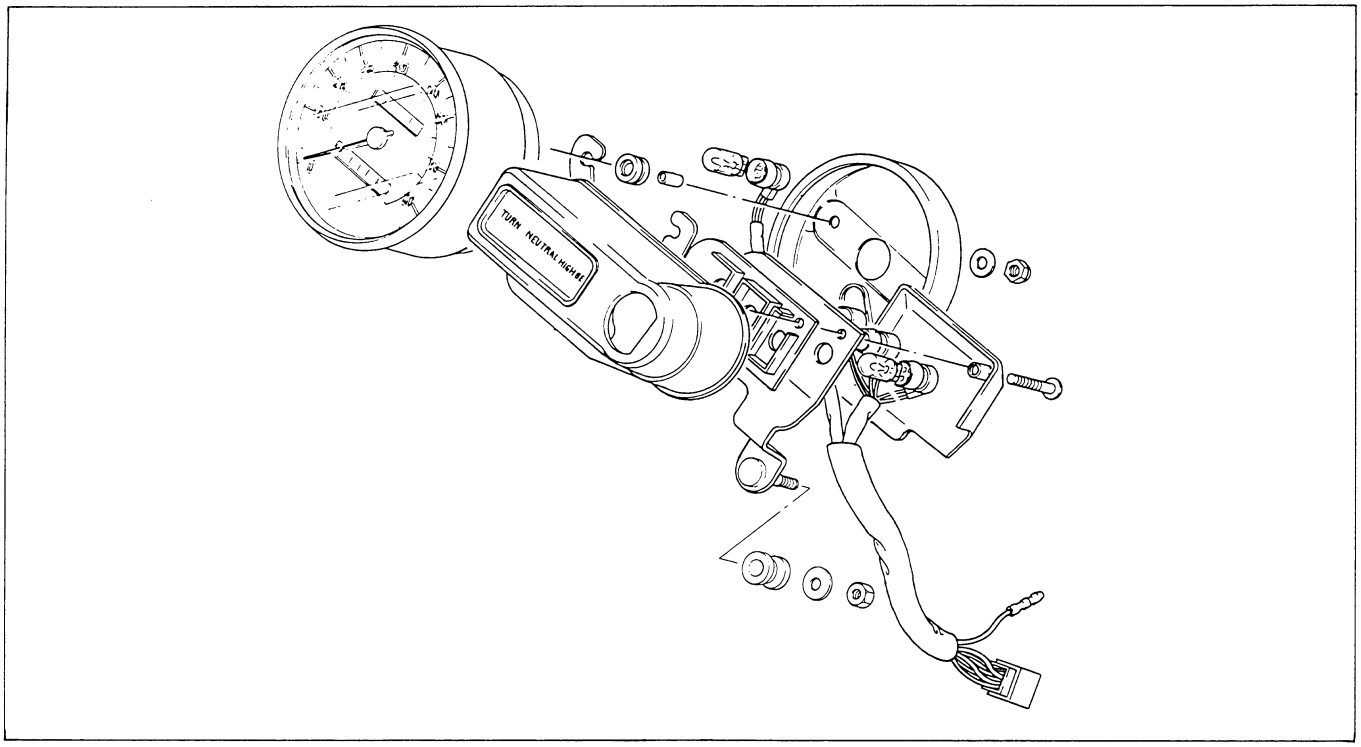
Type designation	6N4B-2A
Capacity	6V 14.4 kC (4 Ah)/10HR
Standard electrolyte S.G.	1.26 at 20°C (68°F)

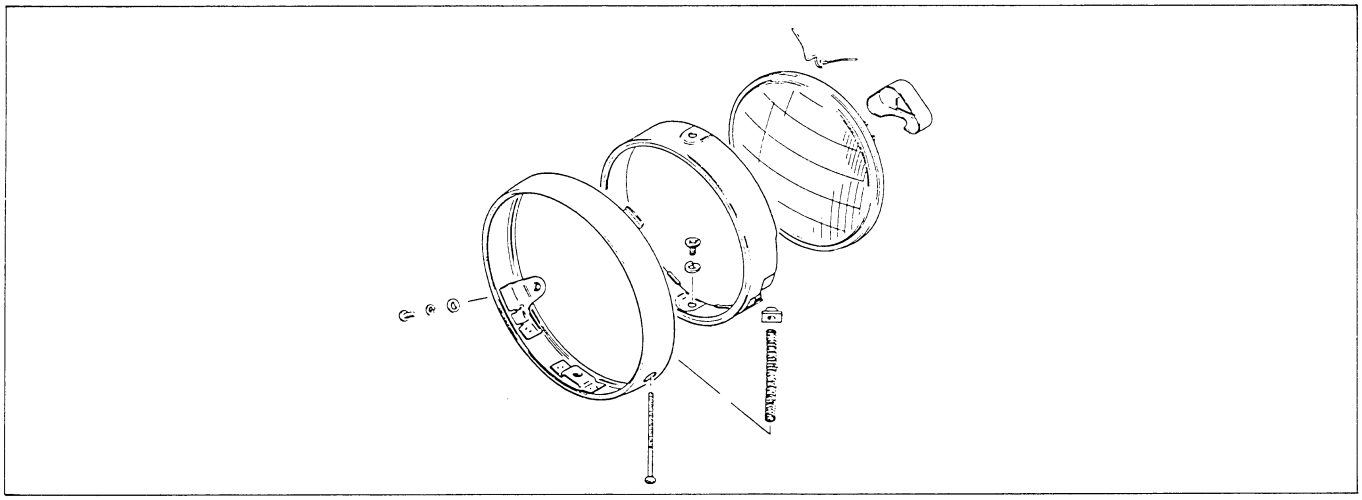


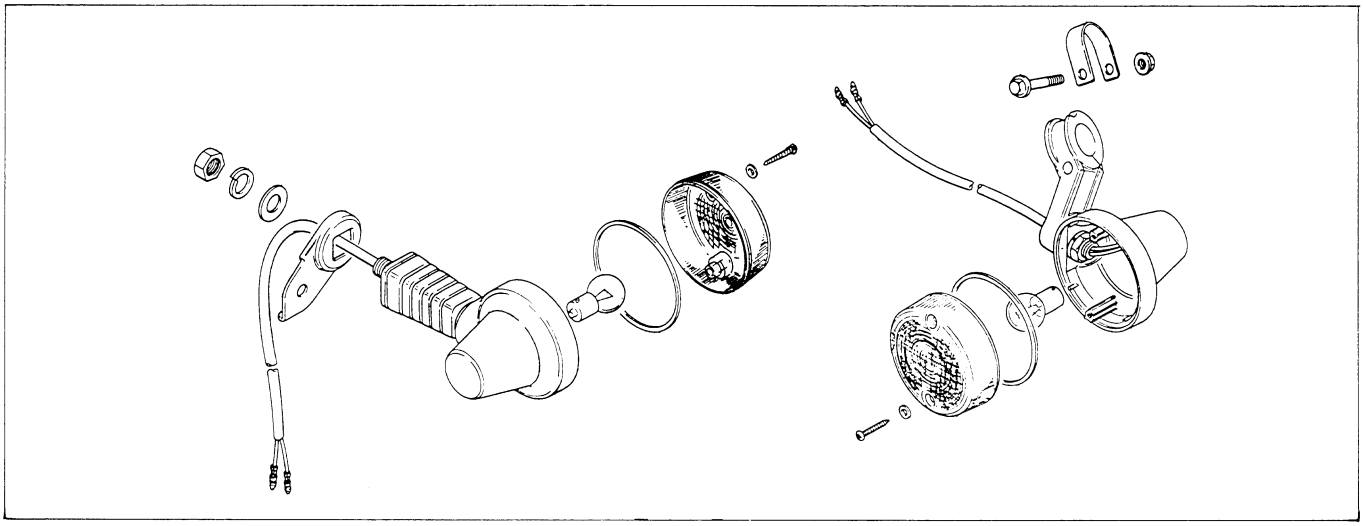


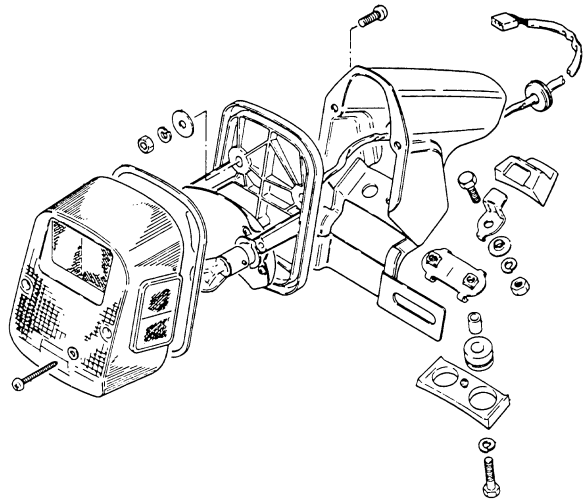


COMBINATION METER AND LIGHTS









LIGHT BULB REPLACEMENT AND INSPECTION

- After installing a new bulb, check for continuity. If the bulb does not light, inspect the wiring for open or short circuits.

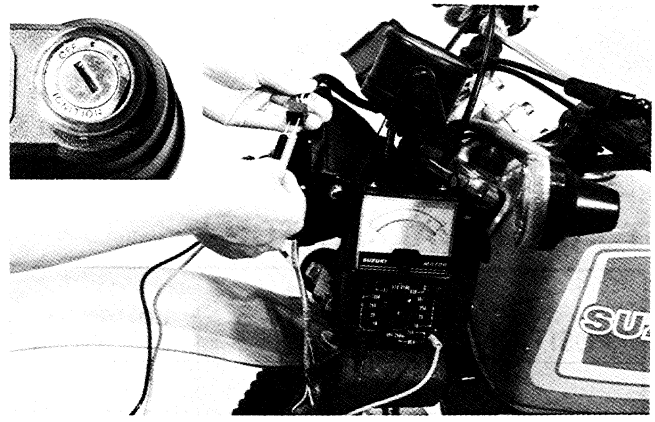
NOTE:
When removing the lower cover from the speedometer, be careful so that the meter cushions and nuts are not losts.

CAUTION:
Do not overtighten the lens fitting screws.

SWITCHES

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

Pocket tester	09900-25002

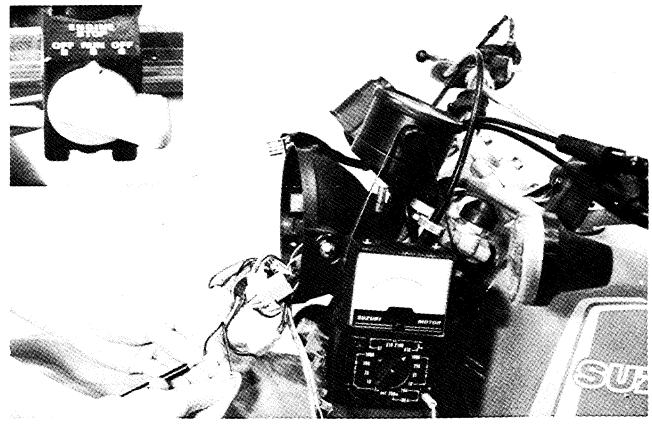


IGNITION SWITCH

COLOR / POSITION	B/Y	B/W	R	O	Gr	Br	R/W	O/W	Br/R
OFF	○—○								
ON			○—○		○—○		○—○		
P	○—○		○—○						

ENGINE STOP SWITCH

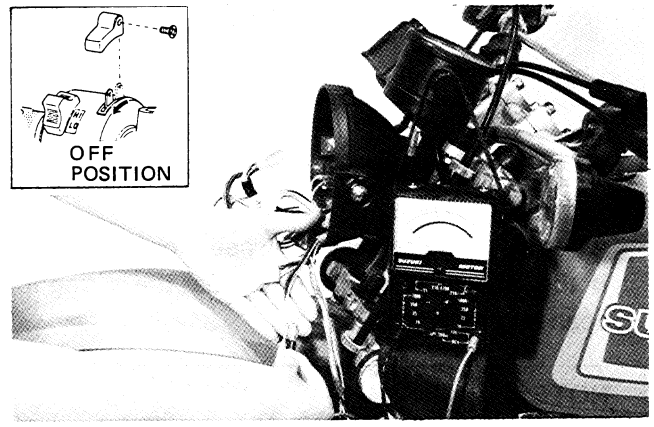
COLOR / POSITION	B/Y	B/W
OFF	○——	——○
RUN		
OFF	○——	——○



LIGHTING SWITCH

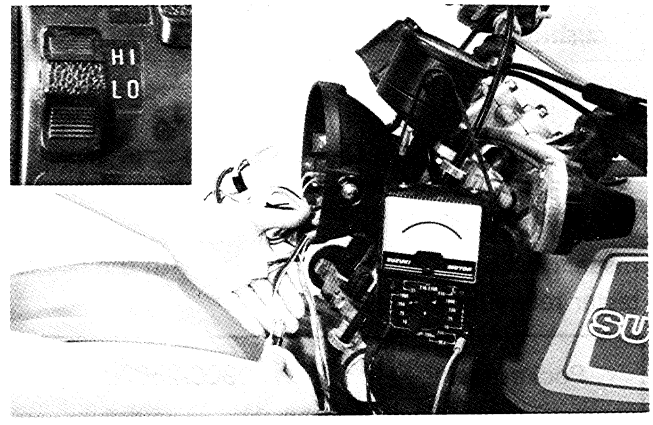
COLOR / POSITION	Y/W	W/R	G/W	Y/R	Gr	O	Br
ON	○——	——○		○——	——○	○——	——○
OFF		○——	——○				

NOTE:
Switch cover must be removed to turn the light switch to the OFF position.



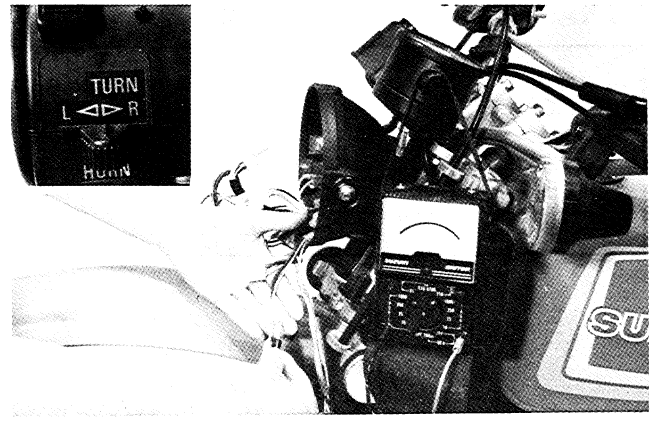
DIMMER SWITCH

COLOR / POSITION	W	Y	Gr
HI		○——	——○
LO	○——	———	——○



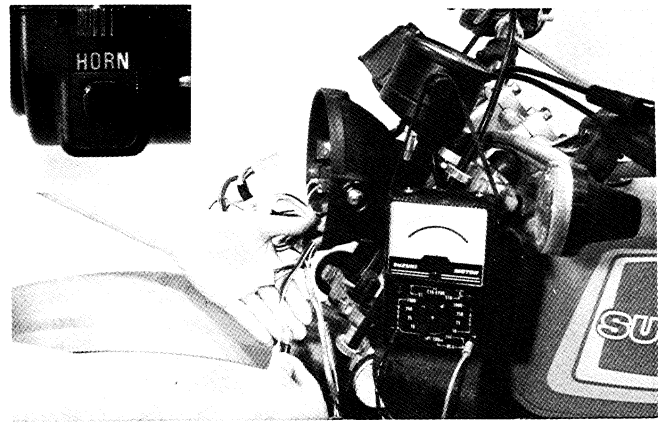
TURN SIGNAL SWITCH

COLOR / POSITION	B	Lbl	Lg
R		○——	——○
•			
L	○——	——○	



HORN SWITCH

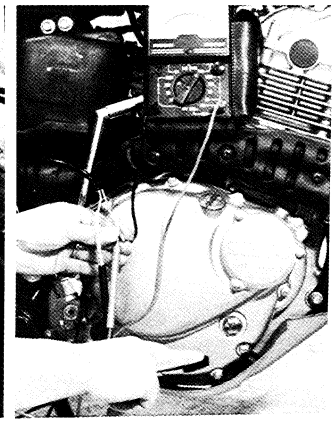
COLOR / POSITION	G	B/W
ON (Push)	○———	———○
OFF		



BRAKE LIGHT SWITCH

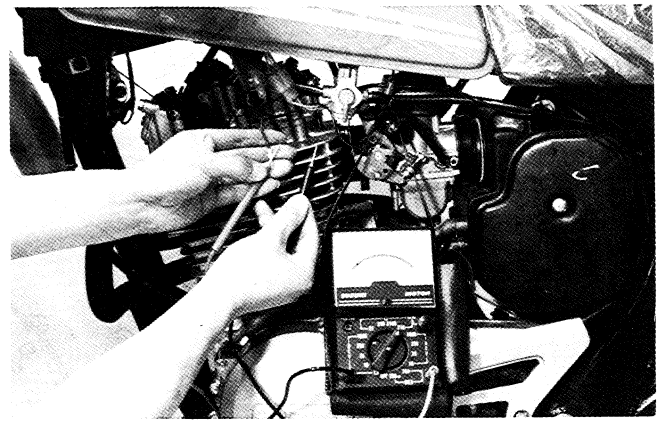
Front and Rear

COLOR / POSITION	O	W or W/B
ON	○———	———○
OFF		



NEUTRAL INDICATOR LIGHT SWITCH

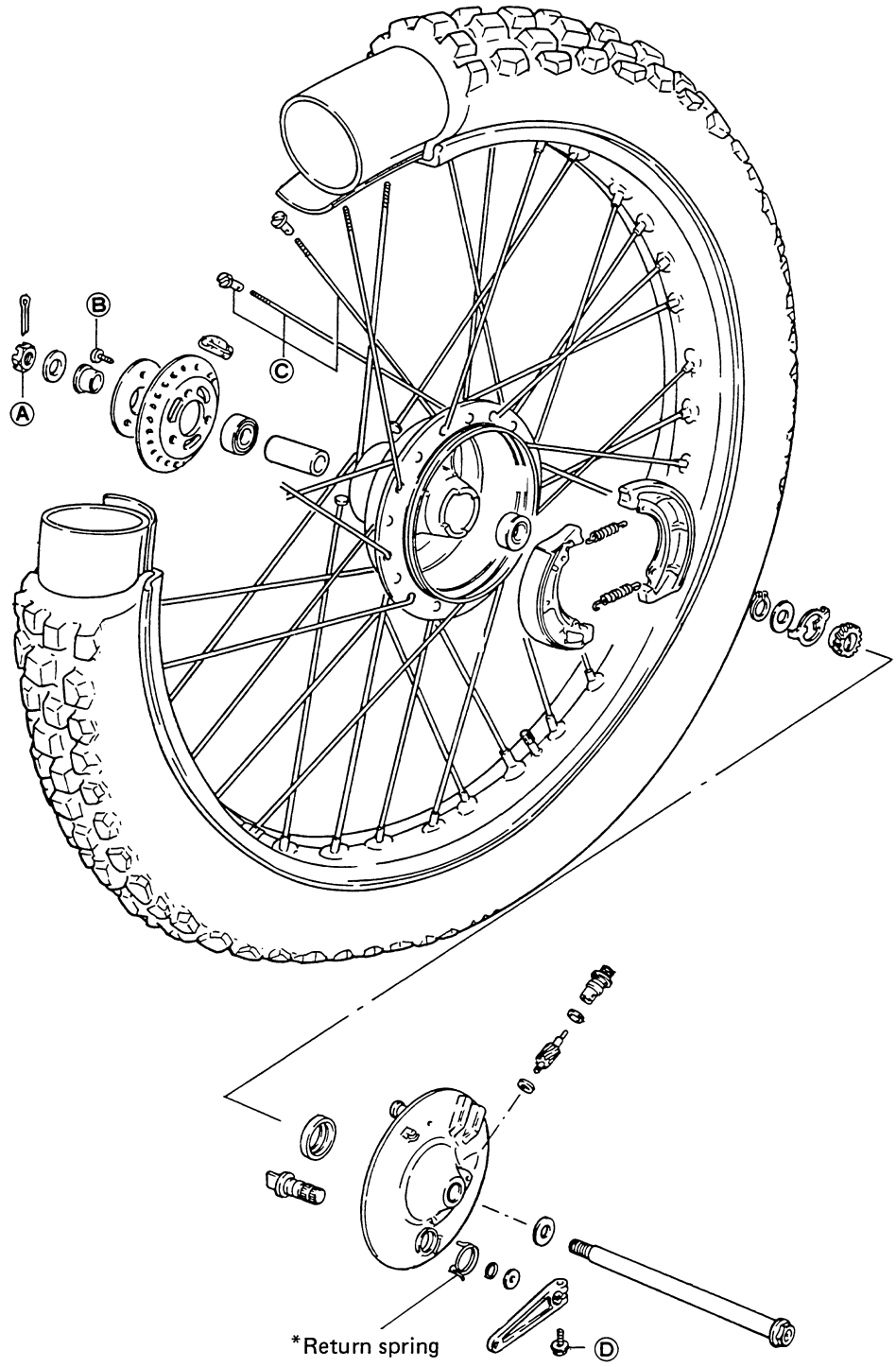
COLOR / POSITION	Bl	Ground
ON	○———	———○
OFF		



WIRE COLOR

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

FRONT WHEEL

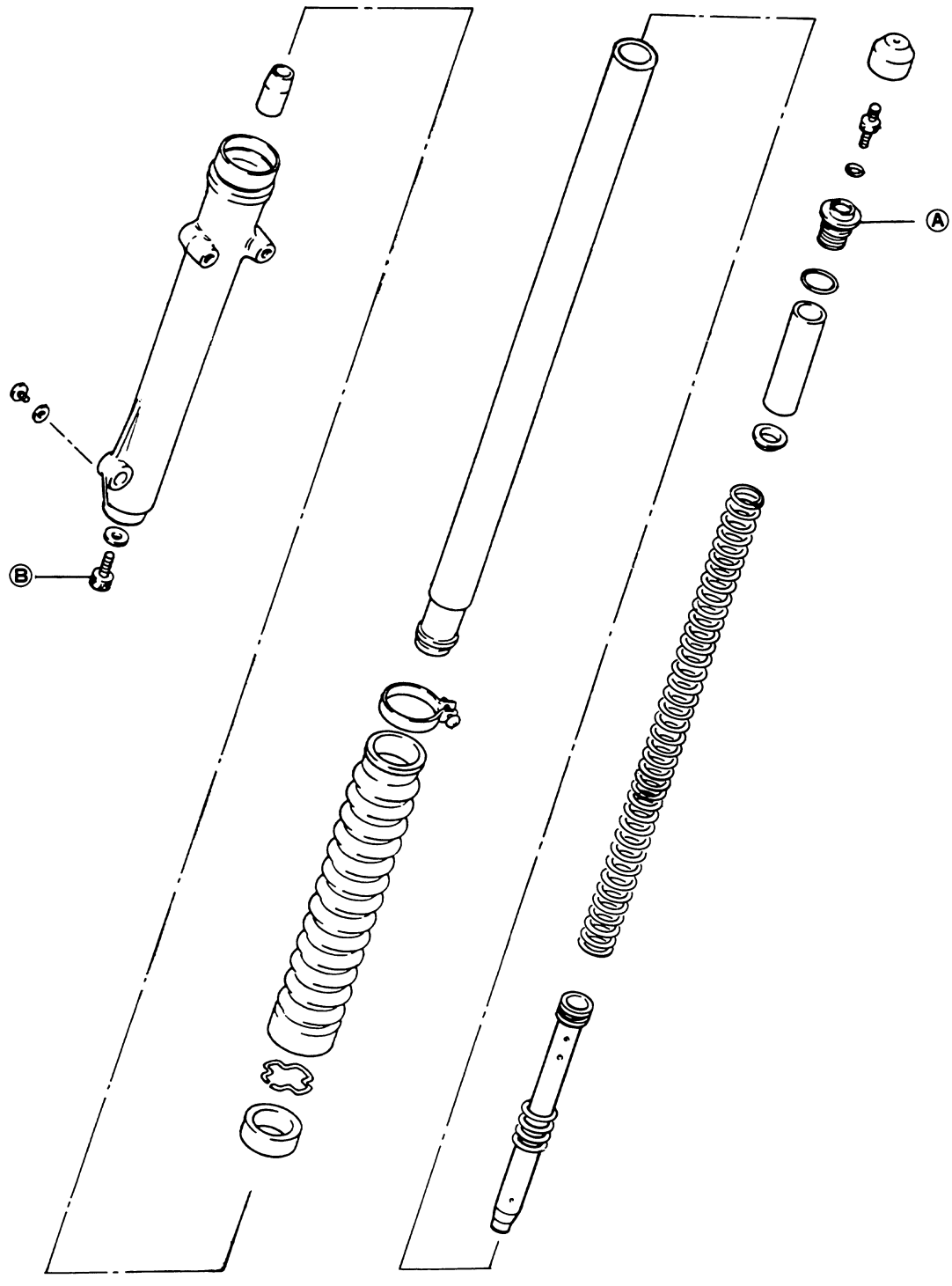


* Brake drum I.D. LIMIT
140.7 mm (5.54 in)

	Tightening torque		
Item	N·m	kg-m	lb-ft
Ⓐ	36 – 52	3.6 – 5.2	26.0 – 37.5
Ⓑ	6 – 9	0.6 – 0.9	4.5 – 6.5
Ⓒ	4 – 5	0.4 – 0.5	3.0 – 3.5
Ⓓ	5 – 8	0.5 – 0.8	3.5 – 6.0

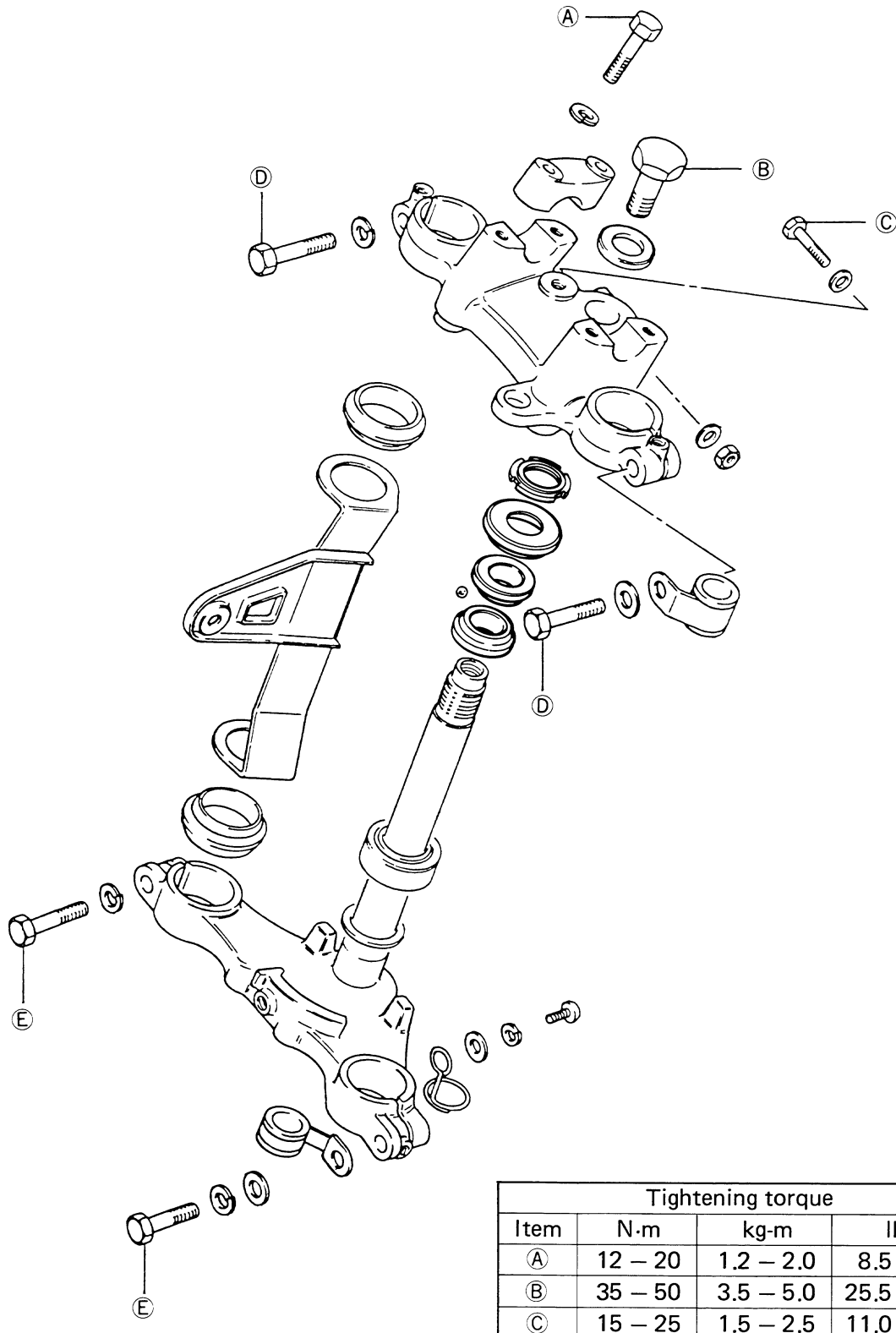
Specifications marked with asterisks (*) are exclusive to SP250Z.

FRONT FORK



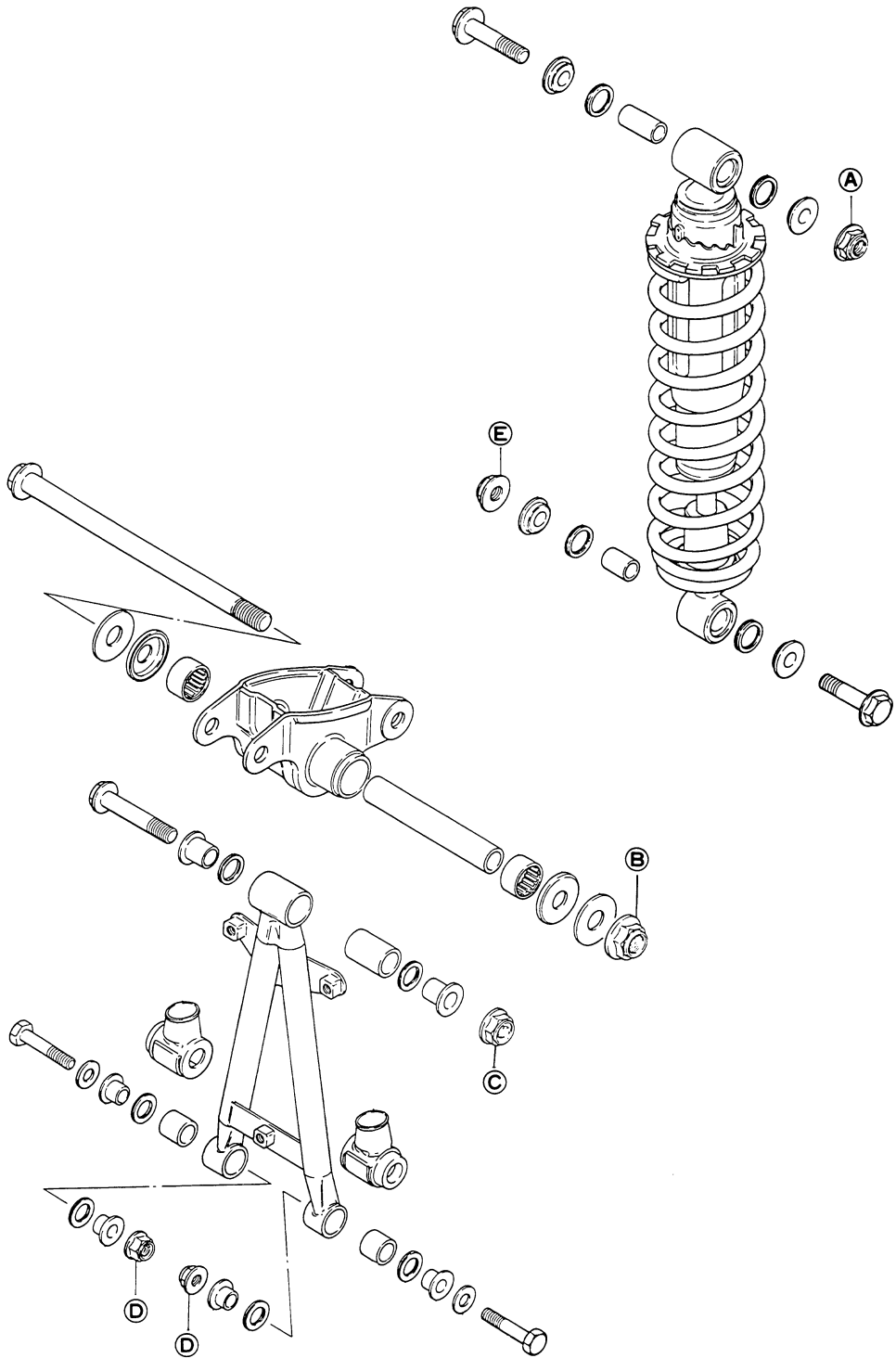
Item	Tightening torque		
	N·m	kg-m	lb-ft
Ⓐ	15 – 30	1.5 – 3.0	11.0 – 21.5
Ⓑ	20 – 26	2.0 – 2.6	14.5 – 19.0

STEERING STEM



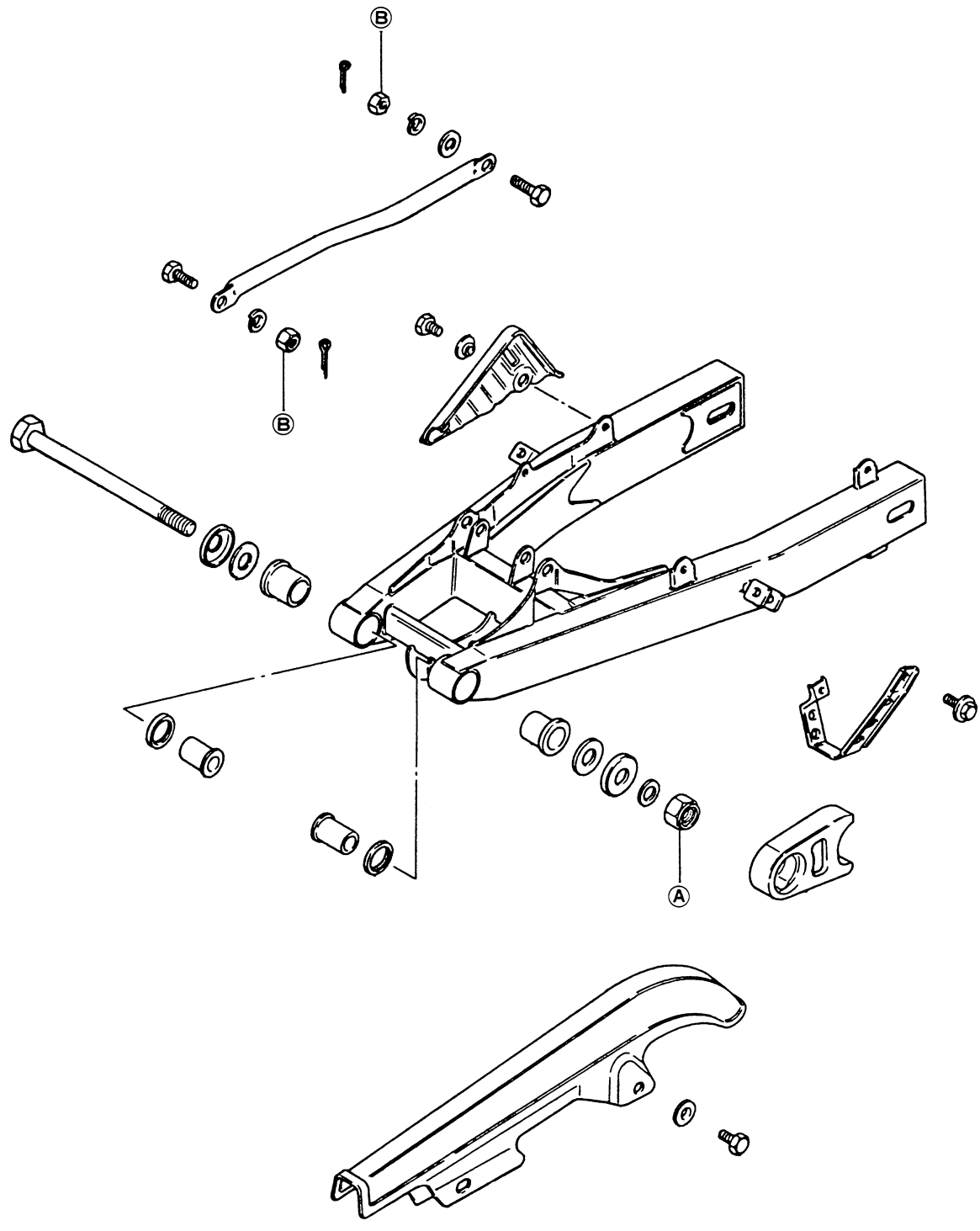
Tightening torque			
Item	N·m	kg-m	lb-ft
Ⓐ	12 – 20	1.2 – 2.0	8.5 – 14.5
Ⓑ	35 – 50	3.5 – 5.0	25.5 – 36.0
Ⓒ	15 – 25	1.5 – 2.5	11.0 – 18.0
Ⓓ	20 – 30	2.0 – 3.0	14.5 – 21.5
Ⓔ	25 – 35	2.5 – 3.5	18.0 – 25.5

FULL-FLOATING SUSPENSION



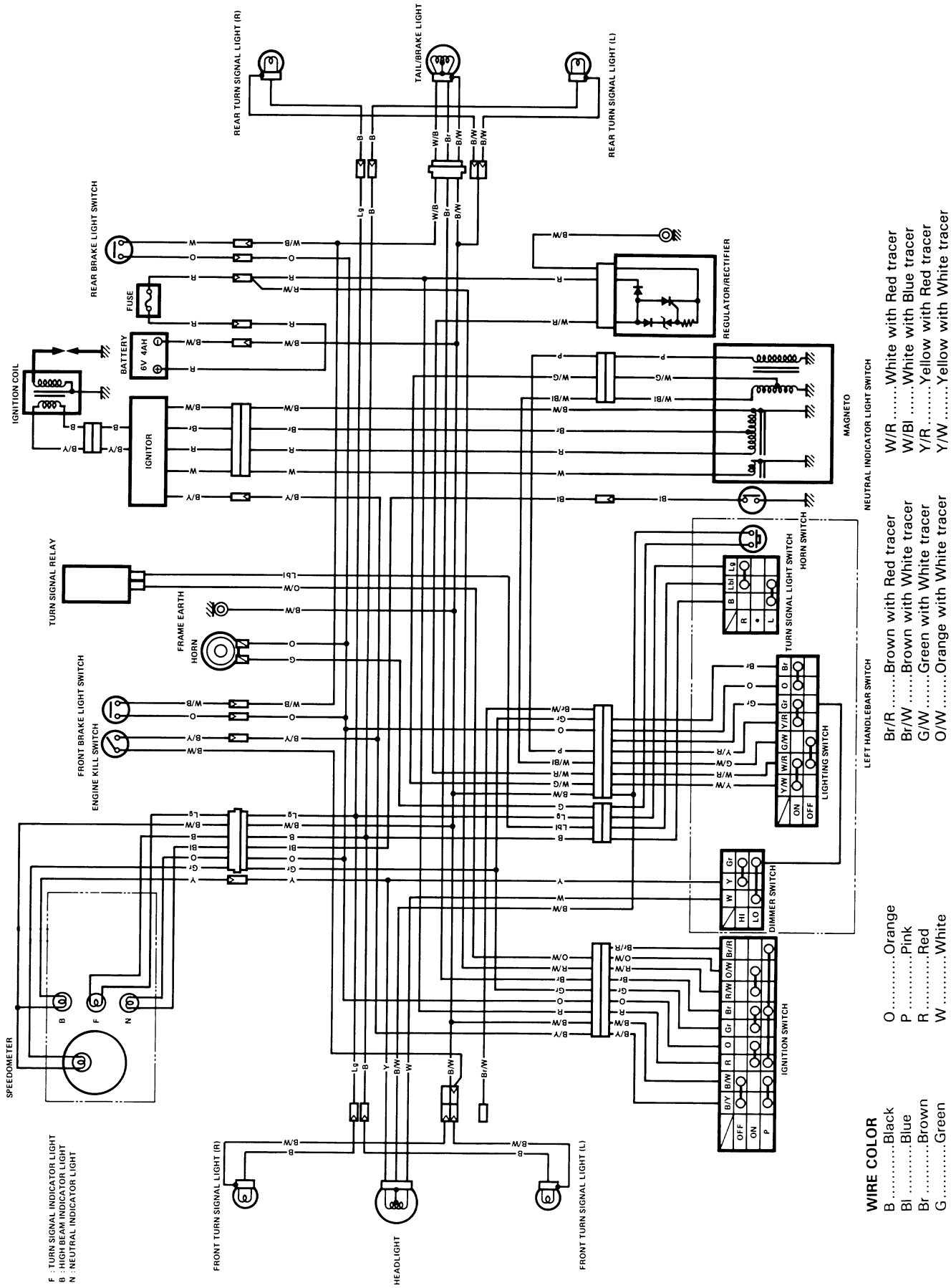
Tightening torque			
Item	N·m	kg-m	lb-ft
ⒶⒸⒺ	40 – 60	4.0 – 6.0	29.0 – 43.5
Ⓑ	45 – 70	4.5 – 7.0	32.5 – 50.5
Ⓓ	18 – 28	1.8 – 2.8	13.0 – 20.0

SWING ARM



Tightening torque			
Item	N·m	kg-m	lb-ft
Ⓐ	50 – 80	5.0 – 8.0	36.0 – 58.0
Ⓑ	10 – 15	1.0 – 1.5	7.0 – 11.0

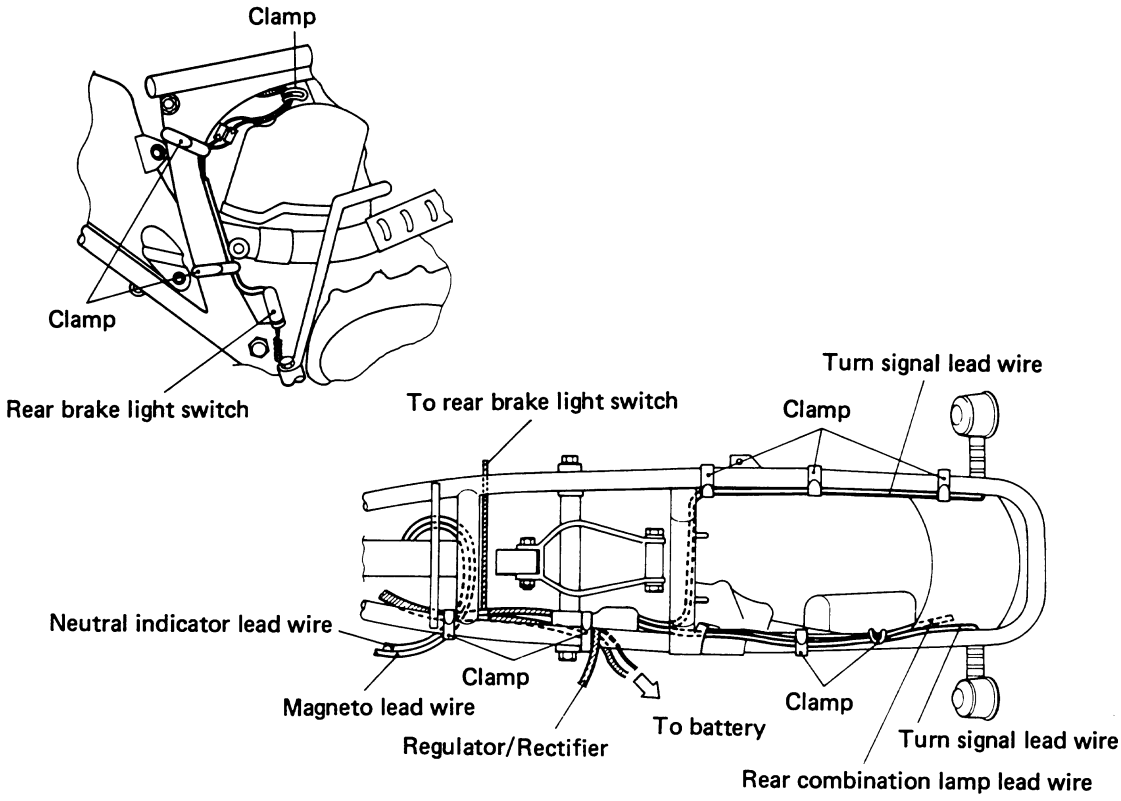
WIRING DIAGRAM

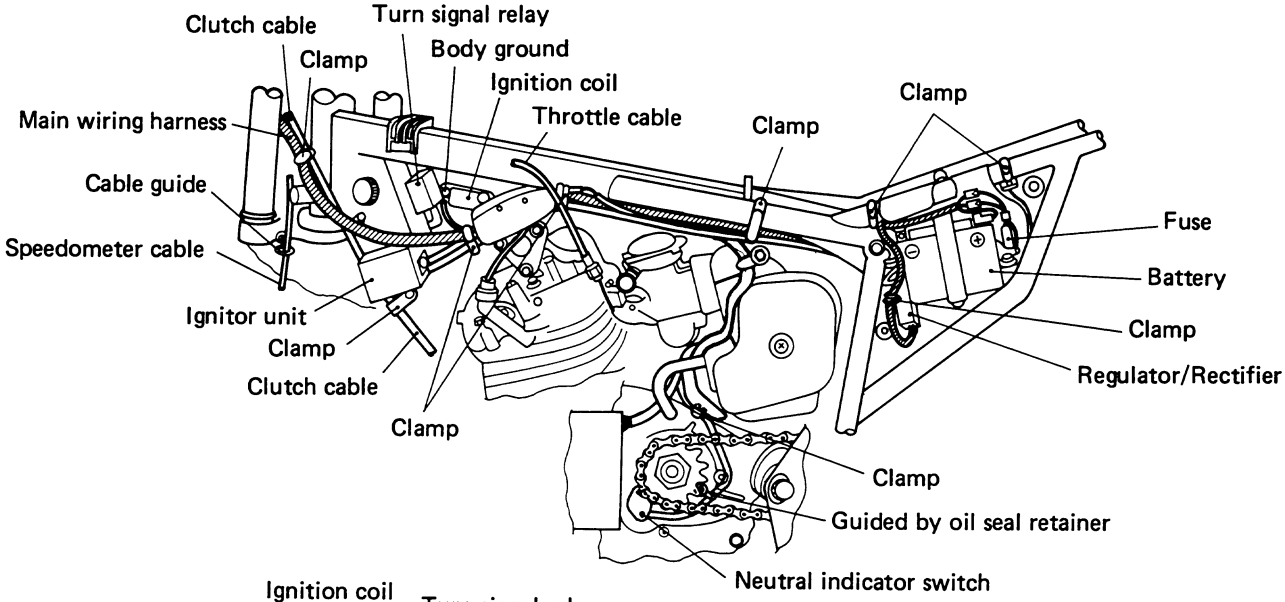


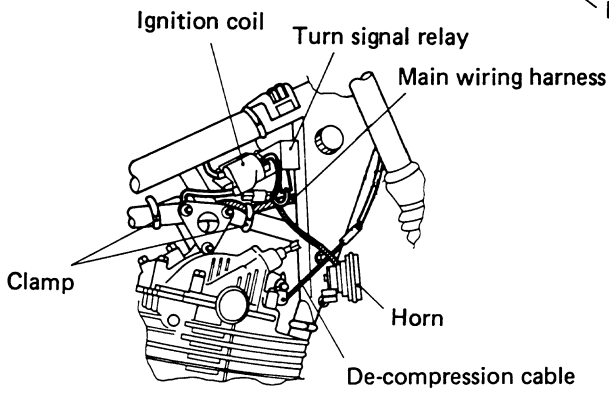
WIRE COLOR

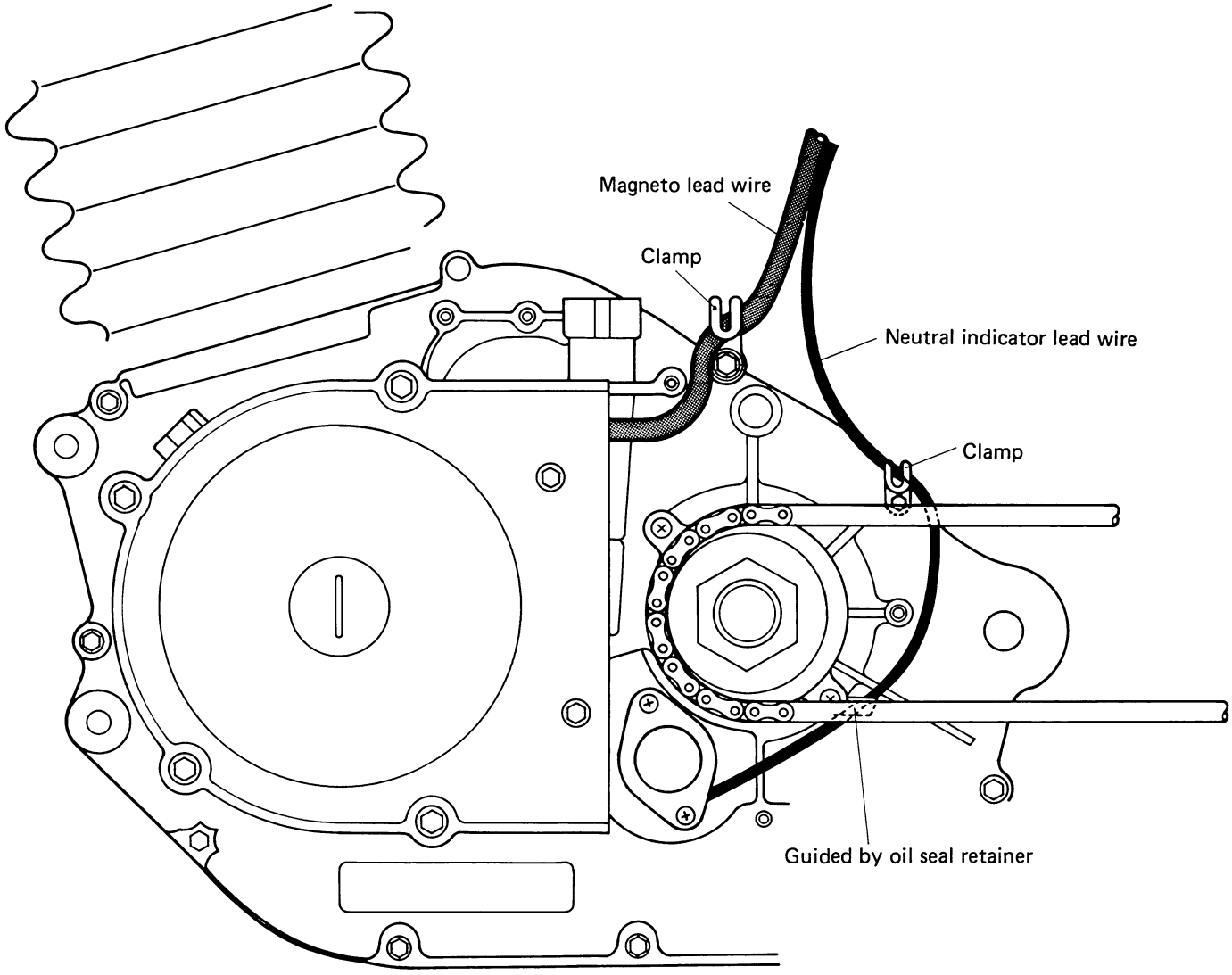
B.....Black	O.....Orange	Br/R.....Brown with Red tracer	W/R.....White with Red tracer
Bl.....Blue	P.....Pink	Br/W.....Brown with White tracer	W/Bl.....White with Blue tracer
Br.....Brown	R.....Red	G/W.....Green with White tracer	Y/R.....Yellow with Red tracer
G.....Green	W.....White	O/W.....Orange with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

WIRE ROUTING

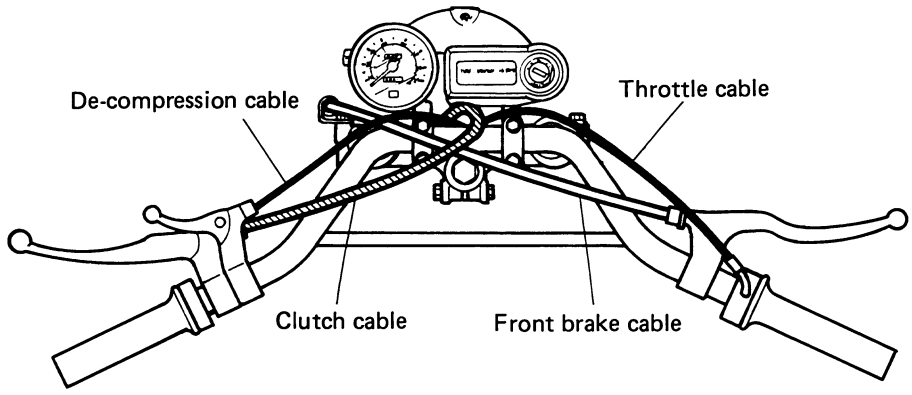


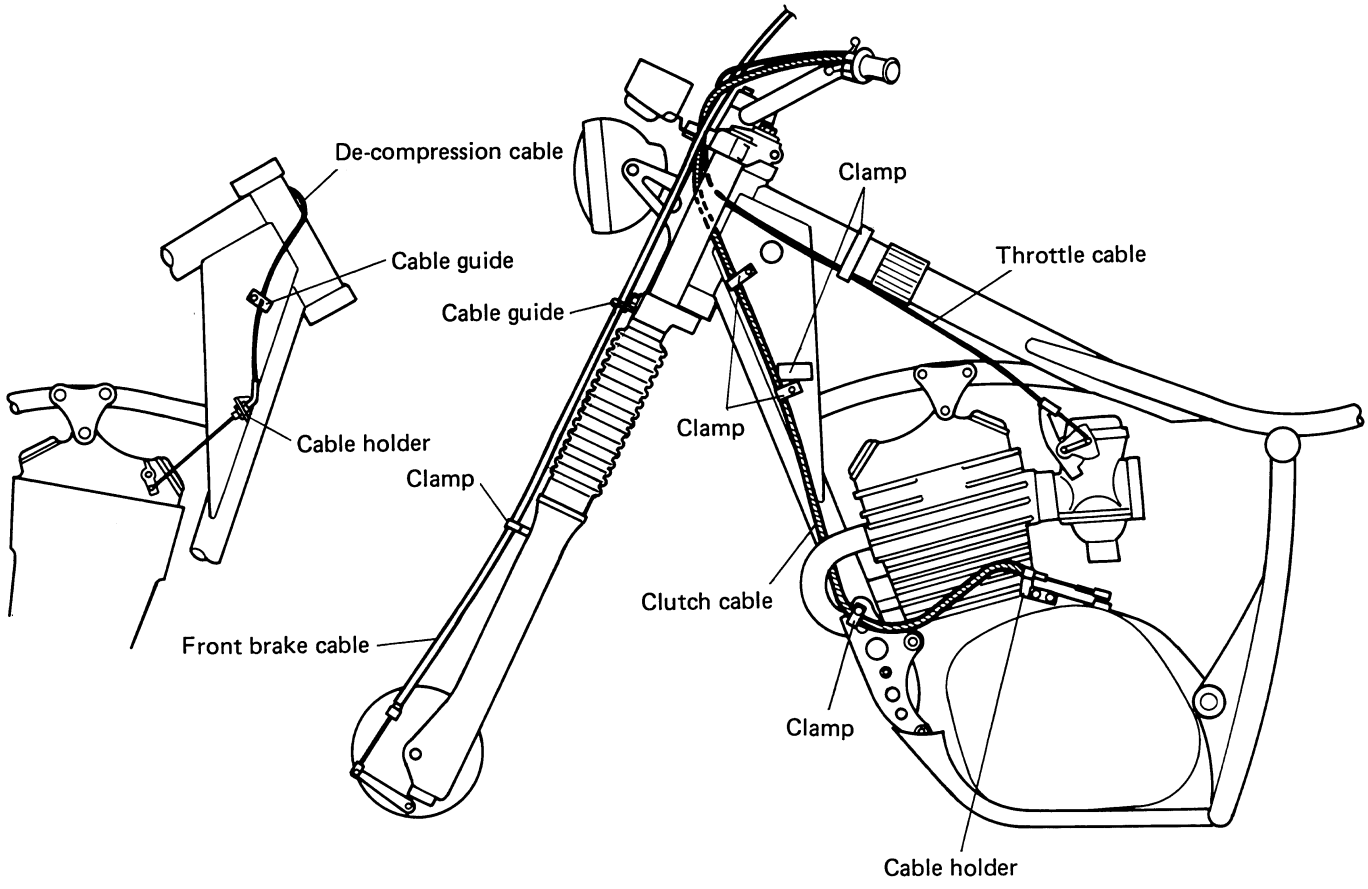





Magneto lead wire
Clamp
Neutral indicator lead wire
Clamp
Guided by oil seal retainer

CABLE ROUTING





DR250D AND SP250D ('83-MODEL)

This section gives service data which deffer from those of the DR250Z and SP250Z.

Please also refer to the sections, 1 through 8, for all other areas of information not covered in this section.

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

CONTENTS

SERVICE DATA

DR250D

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	26 (1.02)	———
	EX.	22 (0.86)	———
Valve lift	IN.	6.7 (0.26)	———
	EX.	6.7 (0.26)	———
Valve clearance (when cold)	IN.	0.03—0.08 (0.001—0.003)	———
	EX.	0.08—0.13 (0.003—0.005)	———
Valve guide to valve stem clearance	IN.	0.025—0.052 (0.0010—0.0020)	0.35 (0.014)
	EX.	0.040—0.067 (0.0016—0.0026)	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500—5.512 (0.2165—0.2170)	———
Valve stem O.D.	IN.	5.460—5.475 (0.2150—0.2156)	———
	EX.	5.445—5.460 (0.2144—0.2150)	———
Valve stem runout	IN. & EX.	———	0.05 (0.002)
Valve head thickness	IN. & EX.	———	0.5 (0.02)
Valve stem end length	IN. & EX.	———	3.8 (0.15)
Valve seat width	IN. & EX.	0.9—1.1 (0.035—0.043)	———
Valve head radial runout	IN. & EX.	———	0.03 (0.001)
Valve spring free length (IN. & EX.)		———	39.8 (1.57)
Valve spring tension (IN. & EX.)		16.2—19.8 kg (35.7—43.7 lbs) at length 35 mm (1.4 in)	———

CAMSHAFT + CYLINDER HEAD

Unit: mm (in) Except ratio

ITEM	STANDARD		LIMIT
Cam height	IN.	34.990–35.030 (1.3775–1.3791)	34.690 (1.3657)
	EX.	35.030–35.070 (1.3791–1.3807)	34.730 (1.3673)
Camshaft journal oil clearance	R & L	0.032–0.066 (0.0013–0.0026)	0.15 (0.006)
Camshaft journal holder I.D.	R. Side	25.012–25.025 (0.9847–0.9852)	———
	L. Side	20.012–20.025 (0.7879–0.7884)	———
Camshaft journal O.D.	R. Side	24.959–24.980 (0.9826–0.9835)	———
	L. Side	19.959–19.980 (0.7858–0.7866)	———
Camshaft runout	IN. & EX.	———	0.10 (0.004)
Cam chain 20 pitch length		———	128.90 (5.075)
Rocker arm I.D.	IN. & EX.	12.000–12.018 (0.4724–0.4731)	———
Rocker arm shaft O.D.	IN. & EX.	11.966–11.984 (0.4711–0.4718)	———
Cylinder head distortion	———		0.05 (0.002)
Cylinder head cover distortion	———		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD	LIMIT
Compression pressure	12–16 kg/cm² (171–228 psi)	10 kg/cm² (142 psi)
Piston to cylinder clearance	0.045–0.055 (0.0018–0.0022)	0.120 (0.0047)
Cylinder bore	72.000–72.015 (2.8346–2.8352)	72.085 (2.8380)
Piston diam.	71.950–71.965 (2.8327–2.8332) Measure at 15 (0.59) from the skirt end.	71.880 (2.8299)
Cylinder distortion	———	0.05 (0.002)

Unit: mm (in)

ITEM	STANDARD			LIMIT
Piston ring free end gap	1st	N	Approx. 9.5 (0.37)	7.6 (0.30)
		R	Approx. 10.5 (0.41)	8.4 (0.33)
	2nd	N	Approx. 11.0 (0.43)	8.8 (0.35)
		R	Approx. 11.0 (0.43)	8.8 (0.35)
Piston ring end gap	1st		0.10—0.30 (0.004—0.012)	0.7 (0.03)
	2nd		0.10—0.30 (0.004—0.012)	0.7 (0.03)
Piston ring to groove clearance	1st		———	0.18 (0.007)
	2nd		———	0.15 (0.006)
Piston ring groove width	1st		1.01—1.03 (0.039—0.040)	———
	2nd		1.21—1.23 (0.047—0.048)	———
	Oil		2.51—2.53 (0.099—0.100)	———
Piston ring thickness	1st		0.975—0.990 (0.0384—0.0390)	———
	2nd		1.170—1.190 (0.0461—0.0469)	———
Piston pin bore	18.002—18.008 (0.7087—0.7089)			18.030 (0.7098)
Piston pin O.D.	17.996—18.000 (0.7085—0.7086)			17.980 (0.7079)

CONROD + CRANKSHAFT + BALANCER

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	18.006—18.014 (0.7089—0.7092)	18.040 (0.7102)
Conrod deflection	———	3.0 (0.12)
Conrod big end side clearance	0.10 — 0.65 (0.004 — 0.026)	1.00 (0.039)
Conrod big end width	20.95 — 21.00 (0.825 — 0.827)	———
Crankshaft web to web width	60.0 ± 0.1 (2.36 ± 0.004)	———
Crankshaft runout	———	0.05 (0.002)
Balancer spring free length	———	9.9 (0.39)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	2.812 (68/21 x 33/38)	———
Oil pressure (at 60°C, 140°F)	Above 0.30 kg/cm² (4.26 psi) Below 0.70 kg/cm² (9.94 psi) at 3000 r/min.	———

CLUTCH

Unit: mm (in)

ITEM		STANDARD	LIMIT
Clutch cable play		4 (0.16)	———
Clutch release screw		1/4—1/2 Turn back	———
Drive plate thickness	No. 1	2.90—3.10 (0.114—0.122)	2.60 (0.102)
	No. 2	3.45—3.55 (0.136—0.140)	3.15 (0.124)
Drive plate claw width		15.8—16.0 (0.62—0.63)	15.0 (0.59)
Driven plate thickness		1.6 ± 0.05 (0.06 ± 0.002)	———
Driven plate distortion		———	0.1 (0.004)
Clutch spring free length		———	34.0 (1.34)

TRANSMISSION + DRIVE CHAIN

Unit: mm (in) Except ratio

ITEM	STANDARD		LIMIT
Primary reduction ratio	3.238 (68/21)		———
Final reduction ratio	3.230 (42/13)		———
Gear ratios	Low	2.636 (29/11)	———
	2nd	1.750 (28/16)	———
	3rd	1.315 (25/19)	———
	4th	1.000 (20/20)	———
	Top	0.818 (18/22)	———
Shift fork to groove clearance	No.1,No.2 No.3	0.20—0.40 (0.008—0.016)	0.60 (0.023)
Shift fork groove width	No.1,No.2 No.3	4.25—4.35 (0.167—0.171)	———
Shift fork thickness	No.1,No.2 No.3	3.95—4.05 (0.156—0.159)	———
Drive chain	Type	D.I.D.: 520DS	———
	Links	104 link	———
	20 pitch length	———	324.2 (12.76)
Drive chain slack	40—50 (1.6—2.0)		———

CARBURETOR

ITEM	SPECIFICATION
Carburetor type	MIKUNI VM28SS
Bore size	28 mm (1.1 in)
I. D. No.	38200
Idle r/min	1250 ± 50 r/min
Fuel level	3.5 ± 0.5 mm (0.14 ± 0.02 in)
Float height	22.5 ± 1.0 mm (0.89 ± 0.04 in)
Main jet (M. J.)	# 112.5
Main air jet (M. A. J.)	1.0
Jet needle (J. N.)	6G1-3rd
Needle jet (N. J.)	P–0
Cut-away (C. A.)	2.5
Pilot jet (P. J.)	# 15
By pass (B. P.)	0.8
Pilot outlet (P. O.)	0.8
Valve seat (V. S.)	2.8
Starter jet (G. S.)	# 55
Pilot screw (P. S.)	1 1/2 turn out
Throttle cable play	0.5–1.0 mm (0.02–0.04 in)

ELECTRICAL

Unit: mm (in)

ITEM	SPECIFICATION		NOTE
Ignition timing	10° B.T.D.C. Below 1700 ± 100 r/min and 35° B.T.D.C. Above 3000 ± 100 r/min.		
Spark plug	Type	NGK D8EA NIPPON DENSO X24ES-U	
	Gap	0.6—0.7 (0.02—0.03)	
Spark performance	Over 8 (0.3) at 1 atm		
Ignition coil resistance	Primary	B—B/Y Approx. 0.5—3.0 Ω	
	Secondary	Plug cap — Ground Approx. 15—25 kΩ	
Magneto coil resistance	Pick-up	W—B/W Approx. 50—90 Ω	
	Power source I	R—B/W Approx. 5—9 Ω	
	Power source II	Br—B/W Approx. 3—6 Ω	
	Lighting	P—B/W Approx. 1—4 Ω	
Lighting coil output	Above Below	5.5 V at 2500 r/min. 8.0 V at 8000 r/min.	

BRAKE + WHEEL

Unit: mm (in)

ITEM		STANDARD	LIMIT
Front brake lever distance		20–30 (0.8–1.2)	———
Rear brake pedal free travel		20–30 (0.8–1.2)	———
Rear brake pedal height		10 (0.4)	———
Brake drum I.D.	Front	———	130.7 (5.15)
	Rear	———	130.7 (5.15)
Brake lining thickness		———	1.5 (0.06)
Wheel rim runout	Axial	———	2.0 (0.08)
	Radial	———	2.0 (0.08)
Wheel axle runout	Front	———	0.25 (0.010)
	Rear	———	0.25 (0.010)
Tire size	Front	3.00-21 4PR	———
	Rear	5.10-17 4PR	———
Tire tread depth	Front	———	4.0 (0.16)
	Rear	———	4.0 (0.16)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	250 (9.8)	———	
Front fork spring free length	———	546 (21.5)	
Front fork oil level	* 171 (6.7)	———	
Front fork air pressure	0 kPa (0 kg/cm², 0 psi)	———	
Rear shock absorber spring standard setting	257 (10.1)	———	
Rear shock absorber bushing I.D. (Upper and Lower)	———	14.20 (0.56)	
Rear cushion lever rod upper bushing I.D.	———	15.20 (0.60)	
Rear cushion lever rod lower bushing I.D.	———	13.20 (0.52)	
Swing arm pivot shaft bushing I.D.	———	20.20 (0.80)	
Rear wheel travel	250 (9.8)	———	
Swing arm pivot shaft runout	———	0.6 (0.02)	

FUEL + OIL

ITEM	SPECIFICATION	NOTE
Fuel type	Use unleaded or low lead type gasoline of at least 85—95 pump octane ($\frac{R+M}{2}$ method) or 89 octane or higher rated by the research method. If "knocking" or "pinging" occurs, try a different brand of gasoline or a higher octane grade.	
Fuel tank including reserve	9.5 L (2.5 US gal)	
——— reserve	1.0 L (1.1 US qt)	
Engine oil type and grade	SAE 10W/40,SE or SF	
Engine oil capacity — Change	1200 ml (1.3 US qt)	
Engine oil capacity — Filter change	1300 ml (1.4 US qt)	
Engine oil capacity — Overhaul	1700 ml (1.8 US qt)	
Front fork oil type	Fork oil # 10	
Front fork oil capacity (each leg)	* 304 ml (10.3 US oz)	
Rear shock absorber oil capacity	Approx. 220 ml (7.4 US oz)	

* Asterisk indicates new D model specifications.

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	kPa	kg/cm²	psi
FRONT	100	1.00	14
REAR	100	1.00	14

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	15
	LO	15
Taillight		5

SERVICE DATA

SP250D

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	26 (1.02)	———
	EX.	22 (0.86)	———
Valve lift	IN.	6.7 (0.26)	———
	EX.	6.7 (0.26)	———
Valve clearance (when cold)	IN.	0.03—0.08 (0.001—0.003)	———
	EX.	0.08—0.13 (0.003—0.005)	———
Valve guide to valve stem clearance	IN.	0.025—0.052 (0.0010—0.0020)	0.35 (0.014)
	EX.	0.040—0.067 (0.0016—0.0026)	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500—5.512 (0.2165—0.2170)	———
Valve stem O.D.	IN.	5.460—5.475 (0.2150—0.2156)	———
	EX.	5.445—5.460 (0.2144—0.2150)	———
Valve stem runout	IN. & EX.	———	0.05 (0.002)
Valve head thickness	IN. & EX.	———	0.5 (0.02)
Valve stem end length	IN. & EX.	———	3.8 (0.15)
Valve seat width	IN. & EX.	0.9—1.1 (0.035—0.043)	———
Valve head radial runout	IN. & EX.	———	0.03 (0.001)
Valve spring free length (IN. & EX.)		———	40.1 (1.58)
Valve spring tension (IN. & EX.)		18.4—21.6 kg (40.6—47.6 lbs) at length 35 mm (1.4 in)	———

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	34.990–35.030 (1.3775–1.3791)	34.690 (1.3657)
	EX.	35.030–35.070 (1.3791–1.3807)	34.730 (1.3673)
Camshaft journal oil clearance	R. & L.	0.032–0.066 (0.0013–0.0026)	0.15 (0.006)
Camshaft journal holder I.D.	R. Side	25.012–25.025 (0.9847–0.9852)	———
	L. Side	20.012–20.025 (0.7879–0.7884)	———
Camshaft journal O.D.	R. Side	24.959–24.980 (0.9826–0.9835)	———
	L. Side	19.959–19.980 (0.7858–0.7866)	———
Camshaft runout	IN. & EX.	———	0.10 (0.004)
Cam chain 20 pitch length		———	128.90 (5.075)
Rocker arm I.D.	IN. & EX.	12.000–12.018 (0.4724–0.4731)	———
Rocker arm shaft O.D.	IN. & EX.	11.966–11.984 (0.4711–0.4718)	———
Cylinder head distortion	———		0.05 (0.002)
Cylinder head cover distortion	———		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD	LIMIT
Compression pressure	12–16 kg/cm² (171–228 psi)	10 kg/cm² (142 psi)
Piston to cylinder clearance	0.045–0.055 (0.0018–0.0022)	0.120 (0.0047)
Cylinder bore	72.000–72.015 (2.8346–2.8352)	72.085 (2.8380)
Piston diam.	71.950–71.965 (2.8327–2.8332) Measure at 15 (0.59) from the skirt end.	71.880 (2.8299)
Cylinder distortion	———	0.05 (0.002)

Unit: mm (in)

ITEM	STANDARD			LIMIT
Piston ring free end gap	1st	N	Approx. 9.5 (0.37)	7.6 (0.30)
		R	Approx. 10.5 (0.41)	8.4 (0.33)
	2nd	N	Approx. 11.0 (0.43)	8.8 (0.35)
		R	Approx. 11.0 (0.43)	8.8 (0.35)
Piston ring end gap	1st		0.10—0.30 (0.004—0.012)	0.7 (0.03)
	2nd		0.10—0.30 (0.004—0.012)	0.7 (0.03)
Piston ring to groove clearance	1st		———	0.180 (0.0071)
	2nd		———	0.150 (0.0059)
Piston ring groove width	1st		1.01—1.03 (0.039—0.040)	———
	2nd		1.21—1.23 (0.047—0.048)	———
	Oil		2.51—2.53 (0.099—0.100)	———
Piston ring thickness	1st		0.975—0.990 (0.0384—0.0390)	———
	2nd		1.170—1.190 (0.0461—0.0469)	———
Piston pin bore	18.002—18.008 (0.7087—0.7089)			18.030 (0.7098)
Piston pin O.D.	17.996—18.000 (0.7085—0.7086)			17.980 (0.7079)

CONROD + CRANKSHAFT + BALANCER

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	18.006—18.014 (0.7089—0.7092)	18.040 (0.7102)
Conrod deflection	———	3.0 (0.12)
Conrod big end side clearance	0.10—0.65 (0.004—0.026)	1.00 (0.039)
Conrod big end width	20.95—21.00 (0.825—0.827)	———
Crankshaft web to web width	60.0 ± 0.1 (2.36 ± 0.004)	———
Crankshaft runout	———	0.05 (0.002)
Balancer spring free length	———	9.9 (0.39)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	2.812 (68/21 x 33/38)	———
Oil pressure (at 60°C, 140°F)	Above 0.30 kg/cm² (4.26 psi) Below 0.70 kg/cm² (9.94 psi) at 3000 r/min.	———

CLUTCH

Unit: mm (in)

ITEM	STANDARD	LIMIT
Clutch cable play	4 (0.16)	———
Clutch release screw	1/4 - 1/2 Turn back	———
Drive plate thickness	No.1 2.90—3.10 (0.114—0.122)	2.60 (0.102)
	No.2 3.45—3.55 (0.136—0.140)	3.15 (0.124)
Drive plate claw width	15.8—16.0 (0.62—0.63)	15.0 (0.59)
Driven plate thickness	1.6 ± 0.05 (0.06 ± 0.002)	———
Driven plate distortion	———	0.1 (0.004)
Clutch spring free length	———	34.0 (1.34)

TRANSMISSION + DRIVE CHAIN

Unit: mm (in) Except ratio

ITEM	STANDARD		LIMIT
Primary reduction ratio	3.238 (68/21)		———
Final reduction ratio	2.800 (42/15)		———
Gear ratios	Low	2.636 (29/11)	———
	2nd	1.687 (27/16)	———
	3rd	1.263 (24/19)	———
	4th	1.000 (20/20)	———
	Top	0.818 (18/22)	———
Shift fork to groove clearance	No. 1,No. 2 No. 3	0.20—0.40 (0.008—0.016)	0.60 (0.023)
Shift fork groove width	No. 1,No. 2 No. 3	4.25—4.35 (0.167—0.171)	———
Shift fork thickness	No. 1,No. 2 No. 3	3.95—4.05 (0.156—0.159)	———
Drive chain	Type	D.I.D.: 520DS	———
	Links	102	———
	20 pitch length	———	324.2 (12.76)
Drive chain slack	30—40 (1.2—1.6)		———

CARBURETOR

ITEM	SPECIFICATION
Carburetor type	MIKUNI BS34SS
Bore size	34 mm (1.34 in)
I. D. No.	38210
Idle r/min.	1250 ± 50 r/min.
Fuel level	5.0 ± 0.5 mm (0.2 ± 0.02 in)
Float height	27.4 ± 1.0 mm (1.08 ± 0.04 in)
Main jet (M. J.)	# 125
Main air jet (M. A. J.)	0.8
Jet needle (J. N.)	5DT88
Needle jet (N. J.)	O-9
Pilot jet (P. J.)	# 42.5
By pass (B. P.)	1.0, 0.9, 0.8, 0.8
Pilot outlet (P. O.)	0.7
Valve seat (V. S.)	2.0
Starter jet (G. S.)	# 40
Pilot screw (P. S.)	PRE-SET
Pilot air jet (P. A. J.)	# 145
Throttle cable play	0.5 – 1.0 mm (0.02 – 0.04 in)

ELECTRICAL

Unit: mm (in)

ITEM	SPECIFICATION		NOTE
Ignition timing	10° B.T.D.C. Below 1700 ± 100 r/min and 35° B.T.D.C. Above 3000 ± 100 r/min.		
Spark plug	Type	NGK D8EA NIPPON DENSO X24ES-U	
	Gap	0.6—0.7 (0.02—0.03)	
Spark performance	Over 8 (0.3) at 1 atm		
Ignition coil resistance	Primary	B—B/Y Approx. 0.5—3 Ω	
	Secondary	Plug cap — Ground Approx. 15—25 kΩ	
Magneto coil resistance	Pick-up	W—B/W Approx. 50—90 Ω	
	Power source I	R—B/W Approx. 5—9 Ω	
	Power source II	Br—B/W Approx. 3—6 Ω	
	Lighting	P—B/W Approx. 1—4 Ω	
	Charging	Day: W/Bl—B/W Approx. 1—2 Ω	
		Night: W/G—B/W Approx. 0.5—1.5 Ω	
Generator no-load voltage	More than 50 V (AC) at 5000 r/min.		
Lighting coil output	Above 6.0 V at 2000 r/min. Below 9.0 V at 8000 r/min.		
Regulated voltage	7.0—8.5 V at 5000 r/min.		
Battery	Type designation	6N4B-2A	
	Capacity	6V14.4kC(4Ah)/10HR	
	Standard electrolyte S. G.	1.26 at 20°C (68°F)	
Fuse size	Main	15 A	

BRAKE + WHEEL

Unit: mm (in)

ITEM		STANDARD	LIMIT
Front brake lever distance		20–30 (0.8–1.2)	———
Rear brake pedal free travel		20–30 (0.8–1.2)	———
Rear brake pedal height		10 (0.4)	———
Brake drum I.D.	Front	———	140.7 (5.54)
	Rear	———	130.7 (5.15)
Brake lining thickness		———	1.5 (0.06)
Wheel rim runout	Axial	———	2.0 (0.08)
	Radial	———	2.0 (0.08)
Wheel axle runout	Front	———	0.25 (0.010)
	Rear	———	0.25 (0.010)
Tire size	Front	3.00-21 4PR	———
	Rear	4.60-17 4PR	———
Tire tread depth	Front	———	4.0 (0.16)
	Rear	———	4.0 (0.16)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	195 (7.7)	———	
Front fork spring free length	———	460 (18.1)	
Front fork oil level	165 (6.5)	———	
Front fork air pressure	0 kPa (0 kg/cm^2, 0 psi)	———	
Rear shock absorber bushing I.D. (Upper and Lower)	———	14.20 (0.56)	
Rear cushion lever rod upper bushing I.D.	———	15.20 (0.60)	
Rear cushion lever rod lower bushing I.D.	———	13.20 (0.52)	
Swing arm pivot shaft bushing I.D.	———	20.20 (0.80)	
Rear wheel travel	190 (7.5)	———	
Swing arm pivot shaft runout	———	0.6 (0.02)	

FUEL + OIL

ITEM		SPECIFICATION	NOTE
Fuel type		Use only unleaded or low-lead type gasoline of at least 85 - 95 pump octane ($\frac{R+M}{2}$ method) or 89 octane or higher rated by the Research Method.	
Fuel tank including reserve		9.5 L (2.5/2.1 US/Imp gal)	
——— reserve		1.0 L (1.1/0.9 US/Imp qt)	
Engine oil type and grade		SAE 10W/40 SE or SF	
Engine oil capacity	Change	1200 ml (1.3/1.1 US/Imp qt)	
	Filter change	1300 ml (1.4/1.1 US/Imp qt)	
	Overhaul	1700 ml (1.8/1.5 US/Imp qt)	
Front fork oil type		Fork oil # 10	
Front fork oil capacity (each leg)		258 ml (8.72 / 9.08 US/Imp oz)	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	NORMAL RIDING					
	SOLO RIDING			DUAL RIDING		
	kPa	kg/cm²	psi	kPa	kg/cm²	psi
FRONT	150	1.50	22	150	1.50	22
REAR	175	1.75	24	200	2.00	28

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	35
	LO	35
Tail/Brake light		5.3/25
Turn signal light		17
Speedometer light		3
Turn signal indicator light		3
High beam indicator light		1.7
Neutral indicator light		3

SP250E ('84-MODEL)

This section gives service data which deffer from those of the SP250D.

Please also refer to the sections, 1 through 9, for all other areas of information not covered in this section.

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

CONTENTS

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	26 (1.0)	———
	EX.	22 (0.9)	———
Valve lift	IN.	6.7 (0.26)	———
	EX.	6.7 (0.26)	———
Valve clearance (when cold)	IN.	0.03—0.08 (0.001—0.003)	———
	EX.	0.08—0.13 (0.003—0.005)	———
Valve guide to valve stem clearance	IN.	0.025—0.052 (0.0010—0.0020)	0.35 (0.014)
	EX.	0.040—0.067 (0.0016—0.0026)	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500—5.512 (0.2165—0.2170)	———
Valve stem O.D.	IN.	5.460—5.475 (0.2150—0.2156)	———
	EX.	5.445—5.460 (0.2144—0.2150)	———
Valve stem runout	IN. & EX.	———	0.05 (0.002)
Valve head thickness	IN. & EX.	———	0.5 (0.02)
Valve stem end length	IN. & EX.	———	3.8 (0.15)
Valve seat width	IN. & EX.	0.9—1.1 (0.035—0.043)	———
Valve head radial runout	IN. & EX.	———	0.03 (0.001)
Valve spring free length	IN. & EX.	———	40.1 (1.58)
Valve spring tension	IN. & EX.	18.4—21.6 kg (40.6—47.6 lbs) at length 35 mm (1.4 in)	———

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	34.990—35.030 (1.3775—1.3791)	34.690 (1.3657)
	EX.	35.030—35.070 (1.3791—1.3807)	34.730 (1.3673)
Camshaft journal oil clearance	R. & L.	0.032—0.066 (0.0013—0.0026)	0.15 (0.006)
Camshaft journal holder I.D.	R. Side	25.012—25.025 (0.9847—0.9852)	———
	L. Side	20.012—20.025 (0.7879—0.7884)	———

ITEM	STANDARD		LIMIT
Camshaft journal O.D.	R. Side	24.959—24.980 (0.9826—0.9835)	———
	L.Side	19.959—19.980 (0.7858—0.7866)	———
Camshaft runout	IN. & EX.	———	0.10 (0.004)
Cam chain 20-pitch length		———	128.9 (5.08)
Rocker arm I.D.	IN. & EX.	12.000—12.018 (0.4724—0.4731)	———
Rocker arm shaft O.D.	IN. & EX.	11.966—11.984 (0.4711—0.4718)	———
Cylinder head distortion	———		0.05 (0.002)
Cylinder head cover distortion	———		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD				LIMIT
Compression pressure	12—16 kg/cm²				10 kg/cm²
Piston to cylinder clearance	0.045—0.055 (0.0018—0.0022)				0.120 (0.0047)
Cylinder bore	72.000—72.015 (2.8346—2.8352)				72.085 (2.8380)
Piston diam.	71.950—71.965 (2.8327—2.8332) Measure at 15 (0.59) from the skirt end.				71.880 (2.8299)
Cylinder distortion	———				0.05 (0.002)
Piston ring free end gap	1st	N	Approx.	9.5 (0.37)	7.6 (0.30)
		R	Approx.	10.5 (0.41)	8.4 (0.33)
	2nd	N	Approx.	11.0 (0.43)	8.8 (0.35)
		R	Approx.	11.0 (0.43)	8.8 (0.35)
Piston ring end gap	1st & 2nd	0.10—0.30 (0.004—0.012)			0.7 (0.03)
Piston ring to groove clearance	1st	———			0.180 (0.0071)
	2nd	———			0.150 (0.0059)
Piston ring groove width	1st	1.01—1.03 (0.039—0.040)			———
	2nd	1.21—1.23 (0.047—0.048)			———
	Oil	2.51—2.53 (0.099—0.100)			———
Piston ring thickness	1st	0.975—0.990 (0.0384—0.0390)			———

ITEM	STANDARD		LIMIT
Piston ring thickness	2nd	1.170—1.190 (0.0461—0.0469)	———
Piston pin bore	18.002—18.008 (0.7087—0.7089)		18.030 (0.7098)
Piston pin O.D.	17.996—18.000 (0.7085—0.7086)		17.980 (0.7079)

CONROD + CRANKSHAFT + BALANCER

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	18.006—18.014 (0.7089—0.7092)	18.040 (0.7102)
Conrod deflection	———	3.0 (0.12)
Conrod big end side clearance	0.10—0.65 (0.004—0.026)	1.00 (0.039)
Crankshaft web to web width	60.0 ± 0.1 (2.362 ± 0.004)	———
Crankshaft runout	———	0.05 (0.002)
Balancer spring free length	———	9.9 (0.39)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	2.812 (68/21 x 33/38)	———
Oil pressure (at 60°C, 140°F)	Above 0.30 kg/cm^2 (4.26 psi) Below 0.70 kg/cm^2 (9.94 psi)at 3 000 r/min.	———

CLUTCH

Unit: mm (in)

ITEM		STANDARD	LIMIT
Clutch cable play		4 (0.16)	———
Clutch release screw		1/4-1/2 Turn back	———
Drive plate thickness	No.1	2.90—3.10 (0.114—0.122)	2.60 (0.102)
	No.2	3.45—3.55 (0.136—0.140)	3.15 (0.124)
Drive kplate claw width		15.8—16.0 (0.62—0.63)	15.0 (0.59)
Drive plate distortion		———	0.1 (0.004)
Clutch spring free length		———	34.0 (1.34)

TRANSMISSION + DRIVE CHAIN

Unit: mm (in) Except ratio

ITEM	STANDARD	LIMIT
Primary reduction ratio	3.238 (68/21)	———
Final reduction ratio	2.800 (42/15)	———

ITEM		STANDARD		LIMIT
Gear ratios	Low	2.636 (29/11)		———
	2nd	1.687 (27/16)		———
	3rd	1.263 (24/19)		———
	4th	1.000 (20/20)		———
	Top	0.818 (18/22)		———
Shift fork to groove clearance		0.20—0.40 (0.008—0.016)		0.60 (0.024)
Shift fork groove width		4.25—4.35 (0.167—0.171)		———
Shift fork thickness		3.95—4.05 (0.156—0.159)		———
Drive chain	Type	D.I.D.: 520DS		———
	Links	102		———
	20-pitch length	———		323.9 (12.75)
Drive chain slack		30—40 (1.2—1.6)		———

CARBURETOR

ITEM		SPECIFICATION
Carburetor type		MIKUNI BS34SS
Bore size		34 mm (1.34 in)
I.D.No.		38210
Idle r/min.		1 300 ± 100 r/min
Float level		5.0 ± 0.5 mm (0.20 ± 0.02 in)
Float height		27.4 ± 1.0 mm (1.08 ± 0.04 in)
Main jet	(M.J.)	#125
Main air jet	(M.A.J.)	0.8 mm (0.03 in)
Jet needle	(J.N.)	5DT88
Needle jet	(N.J.)	O-9
Pilot jet	(P.J.)	#42.5
By-pass	(B.P.)	1:0,0.7,0.8,0.8 mm (0.039,0.028,0.031,0.031 in)
Pilot outlet	(P.O.)	0.8 mm(0.03 in)
Valve seat	(V.S.)	2.0
Starter jet ,	(G.S.)	# 40
Pilot screw	(P.S.)	PRE-SET
Pilot air jet	(P.A.J.)	# 145
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)

ELECTRICAL

Unit: mm (in)

ITEM	SPECIFICATION			NOTE
Ignition timing	10° B.T.D.C. Below 1 700 ± 100 r/min and 35° B.T.D.C. Above 3 000 ± 100 r/min.			
Spark plug	Type	N.G.K: D8EA N.D.: X24ES-U		
	Gap	0.6—0.7 (0.024—0.028)		
Spark performance	Over 8 (0.3) at 1 atm.			
Ignition coil resistance	Primary	0.5—3 Ω		B—B/Y
	Secondary	15—25 kΩ		Plug cap—Ground
Magneto coil resistance	Pick-up	50—90 Ω		W—B/W
	Power source I	5—9 Ω		R—B/W
	Power source II	3—6 Ω		Br—B/W
	Lighting	1—4 Ω		P—B/W
	Charging	Day	1—2 Ω	W/Bl—B/W
		Night	0.5—1.5 Ω	W/G—B/W
Generator no-load voltage	More than 50 V (AC) at 5 000 r/min.			
Lighting coil output	Above 6.0 V at 2 000 r/min. Below 9.0 V at 8 000 r/min.			
Regulated voltage	7.0—8.5 V at 5 000 r/min.			
Battery	Type designation	6N4B—2A		
	Capacity	6V14.4kC(4Ah)/10HR		
	Standard electrolyte S.G.	1.26 at 20°C (68° F)		
Fuse size	Main	15 A		

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	35
	LO	35
Tail/Brake light		5.3/25
Turn signal light		17
Speedometer light		3
Turn signal indicator light		3
High beam indicator light		1.7
Neutral indicator light		3
* Side stand check light		3

* Asterisk mark indicates new E model specifictaion.

BRAKE + WHEEL

Unit: mm (in)

ITEM		STANDARD	LIMIT
Front brake cable play		3—7 (0.1—0.3)	———
Rear brake pedal free travel		20—30 (0.8—1.2)	———
Rear brake pedal height		10 (0.4)	———
Brake drum I.D.	Front	———	140.7 (5.54)
	Rear	———	130.7 (5.15)
Brake lining thickness		———	1.5 (0.06)
Wheel rim runout	Axial	———	2.0 (0.08)
	Radial	———	2.0 (0.08)
Wheel axle runout	Front	———	0.25 (0.010)
	Rear	———	0.25 (0.010)
Tire size	Front	3.00-21 4PR	———
	Rear	4.60-17 4PR	———
Tire tread depth	Front	———	3.0 (0.12)
	Rear	———	3.0 (0.12)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT
Front fork stroke	195 (7.7)	———
Front fork spring free length	———	460 (18.1)
Front fork oil level	165 (6.5)	———
Front fork air pressure	0 kg/cm^2, 0 psi	———
Rear shock absovber bushing I.D. (Upper and Lower)	14.00—14.04 (0.551—0.553)	———
Rear cushion lever rod upper bushing I.D.	15.03—15.10 (0.592—0.594)	———
Rear cushion lever rod lower bushing I.D.	13.03—13.10 (0.513—0.516)	———
Swing arm pivot shaft bushing I.D.	20.02—20.06 (0.788—0.790)	———
Rear wheel travel	190 (7.5)	———
Swing arm pivot shaft runout	———	0.6 (0.02)

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	NORMAL RIDING			
	SOLO RIDING		DUAL RIDING	
	kg/cm^2	psi	kg/cm^2	psi
FRONT	1.50	22	1.50	22
REAR	1.75	24	2.00	28

FUEL + OIL

ITEM	SPECIFICATION		NOTE
Fuel type	Use only unleaded or low-lead type gasoline of at least 85-95 pump octane ($\frac{R+M}{2}$ method) or 89 octane or higher rated by the Research Method.		
Fuel tank including reserve	9.5 L (2.5/2.1 US/Imp gal)		
reserve	1.0 L (1.1/0.9 US/Imp qt)		
Engine oil type and grade	SAE 10W/40, API SE or SF		
Engine oil capacity	Change	1 200 ml (1.3/1.1 US/Imp qt)	
	Filter change	1 300 ml (1.4/1.1 US/Imp qt)	
	Overhaul	1 700 ml (1.8/1.5 US/Imp qt)	
Front fork oil type	Fork oil # 10		
Front fork oil capacity (each leg)	258 ml (8.72/9.08 US/Imp oz)		

DR250F AND SP250F ('85-MODEL)

This section describes service data and servicing procedures which differ from those of the DR250D/SP250E model.

NOTE:
Any differences in service data and service specifications with those that apply to the DR250F/SP250F models are clearly indicated with an asterisk (*).
Refer to the sections 1 through 10 for details which are not given in this section.

DR250F

SP250F

CONTENTS

SPECIFICATIONS (DR250)

DIMENSIONS AND DRY MASS

Overall length	2 115 mm (83.3 in)
Overall width	860 mm (33.9 in)
Overall height	1 250 mm (49.2 in)
Wheelbase	1 420 mm (55.9 in)
Ground clearance	320 mm (12.6 in)
Dry mass	113 kg (249 lbs)

ENGINE

Type	Four-stroke, air-cooled, OHC
Number of cylinders	1
Bore	72.0 mm (2.834 in)
Stroke	61.2 mm (2.409 in)
Piston displacement	249 cm^3 (15.2 cu. in)
Compression ratio	8.9 : 1
Carburetor	MIKUNI VM28SS, single
Air cleaner	Polyurethane foam element
Starter system	Primary kick
Lubrication system	Wet sump

TRANSMISSION

Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction	3.238 (68/21)
Final reduction	3.230 (42/13)
Gear ratios, Low	2.636 (29/11)
2nd	1.750 (28/16)
3rd	1.315 (25/19)
4th	1.000 (20/20)
Top	0.818 (18/22)
Drive chain	DAIDO D.I.D. 520DS 104 links

ELECTRICAL

Ignition type	SUZUKI "PEI"
Ignition timing	10° B.T.D.C. below 1 700 r/min and 35° B.T.D.C. above 3 000 r/min
Spark plug	NGK D8EA or NIPPON DENSO X24ES-U
Headlight	6V 15/15W
Tail light	6V 5W

CHASSIS

Front suspension	Telescopic, pneumatic/coil spring, oil dampened
Rear suspension	Full-floating suspension system
Steering angle	45° (Right & Left)
Caster	65°50′
Trail	117 mm (4.61 in)
Turning radius	2.1 m (6.9 ft)
* Front brake	Disc brake
Rear brake	Internal expanding
Front tire size	3.00-21 4PR
Rear tire size	5.10-17 4PR

CAPACITIES

Fuel tank including reserve	9.5 L (2.5 US gal)
reserve	1.0 L (1.1 US qt)
Engine oil	1.2 L (1.3 US qt)
Front fork oil	304 ml (10.27 US oz)

** The specifications subject to change without notice.

(*) Asterisk indicates the new DR250F specification.

SPECIFICATIONS (SP250)

DIMENSIONS AND DRY MASS

Overall length	2 165 mm (85.2 in)
Overall width	860 mm (33.9 in)
Overall height	1 200 mm (47.2 in)
Wheelbase	1 375 mm (54.1 in)
Ground clearance	260 mm (10.2 in)
Dry mass	119 kg (262 lbs)

ENGINE

Type	Four-stroke, air-cooled, OHC
Number of cylinders	1
Bore	72.0 mm (2.834 in)
Stroke	61.2 mm (2.409 in)
Piston displacement	249 cm^3 (15.2 cu. in)
Compression ratio	8.9 : 1
Carburetor	MIKUNI BS34SS, single
Air cleaner	Polyurethane foam element
Starter system	Primary kick
Lubrication system	Wet sump

TRANSMISSION

Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction	3.238 (68/21)
Final reduction	2.800 (42/15)
Gear ratios, Low	2.636 (29/11)
2nd	1.687 (27/16)
3rd	1.263 (24/19)
4th	1.000 (20/20)
Top	0.818 (18/22)
Drive chain	DAIDO D.I.D. 520DS 102 links

(*) Asterisk indicates the new SP250F specification.

ELECTRICAL

Ignition type	SUZUKI "PEI"
Ignition timing	10° B.T.D.C. below 1 700 r/min and 35° B.T.D.C. above 3 000 r/min
Spark plug	NGK D8EA or NIPPON DENSO X24ES-U
Battery	6V 14.4 kC (4Ah)/10HR
Generator	Flywheel magneto
Fuse	15A
Headlight	6V 35/35W
Tail/Brake light	6V 5.3/25W
Turn signal light	6V 17W
Speedometer light	6V 3W
Turn signal indicator light	6V 3W
High beam indicator light	6V 1.7W
Neutral indicator light	6V 3W
Side stand check light	6V 3W

CHASSIS

Front suspension	Telescopic, pneumatic/coil spring, oil dampened
Rear suspension	Full-floating suspension system
Steering angle	43° (Right & Left)
Caster	61°30′
Trail	118 mm (4.65 in)
Turning radius	2.3 m (7.5 ft)
* Front brake	Disc brake
Rear brake	Internal expanding
Front tire size	3.00-21 4PR
Rear tire size	4.60-17 4PR

CAPACITIES

Fuel tank including reserve	9.5 L (2.5 US gal)
reserve	1.0 L (1.1 US qt)
Engine oil	1.2 L (1.3 US qt)
Front fork oil	258 ml (8.72 US oz)

(*) Asterisk indicates the new SP250F specification.

The specifications subject to change without notice.

PERIODIC MAINTENANCE SCHEDULE (DR250)

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

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

PERIODIC MANTENANCE CHART

ENGINE AND CHASSIS

Item \ Interval	Initial 5 Hrs	Every 30 Hrs	Every 60 Hrs
Cylinder head nuts and exhaust pipe bolts	T	T	–
Fuel line	I	I	–
	Replace every four years		
Fuel strainer	–	–	C
Air cleaner	Clean and oil each time motorcycle is ridden		
Spark plug	–	C	R
Valve clearance	I	I	–
Engine oil	R	R	–
Oil sump filter	–	–	C
Engine oil filter	–	R	–
Engine idle speed	A	A	–
Clutch cable adjustment	A	A	–
Brakes	A	A	–
*Brake hose	I	I	–
	Replace every four years		
*Brake fluid	Change every two years		
Drive chain and guide rollers	Clean, oil, and inspect each time motorcycle is ridden		
Tires and spokes	Check tire pressure and tighten spoke nipple each time motorcycle is ridden		
Steering	I	–	I
Chassis bolts and nuts	T	T	–
Engine mounting bolts	T	T	–

Note: T = Tighten, A = Adjust, I = Inspect, R = Replace, C = Clean.

PERIODIC MAINTENANCE SCHEDULE (SP250)

IMPORTANT: The periodic maintenance intervals and service requirements have been established in accordance with EPA regulations. Following these instructions will ensure that the motorcycle will not exceed emission standards and it will also ensure the reliability and performance of the motorcycle.

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

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

PERIODIC MAINTENANCE CHART

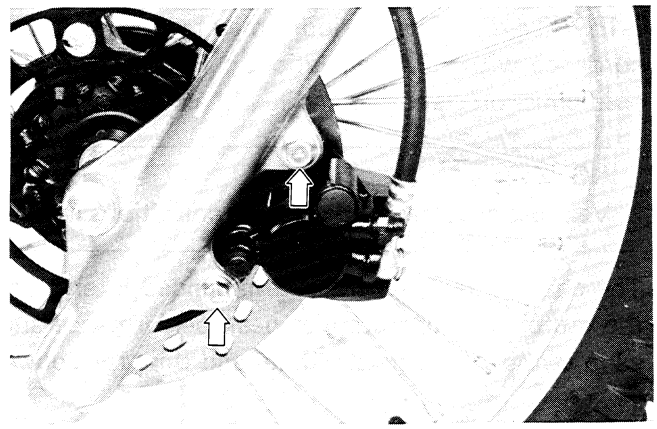
INTERVAL: THIS INTERVAL SHOULD BE JUDGED BY ODOMETER READING OR MONTHS WHICHEVER COMES FIRST					
	mile	600	3 000	6 000	9 500
	km	1 000	5 000	10 000	15 000
	month	3	15	30	45
Battery (Specific gravity of electrolyte)		–	I	I	I
Cylinder head nuts, exhaust pipe bolts		T	T	T	T
Air cleaner element		–	C	C	C
Valve clearance		I	I	I	I
Spark plug		–	C	R	C
Fuel line		I	I	I	I
		Replace every four years			
Fuel strainer		C	–	C	–
Engine oil and oil filter		R	R	R	R
Carburetor idle rpm		I	I	I	I
Clutch		I	I	I	I
Drive chain		I	I	I	I
		Clean and lubricate every 600 miles (1 000 km)			
Brakes		I	I	I	I
*Brake hose		I	I	I	I
		Replace every four years			
*Brake fluid		Change every two years			
Tires		I	I	I	I
Steering		I	I	I	I
Front fork		–	I	I	I
Chassis bolts and nuts		T	T	T	T

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

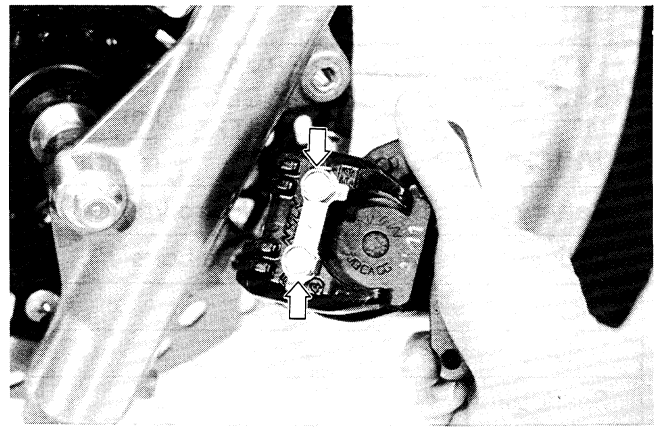
FRONT BRAKE

BRAKE PAD REPLACEMENT

- Remove two caliper mounting bolts.

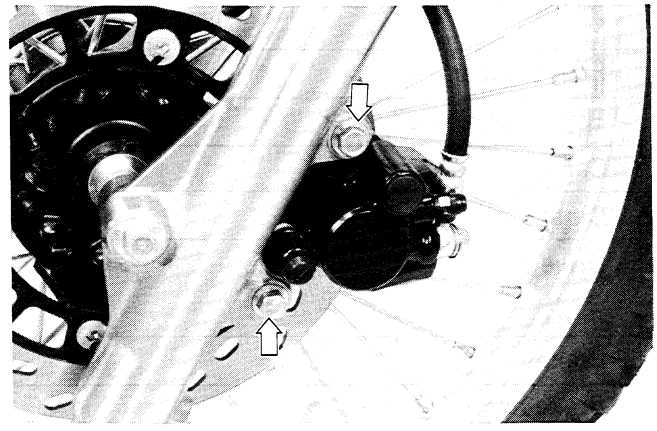


- Remove the brake pads mounting bolts after flattening the lock washer.
- Pull out the brake pads with pad shim.



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

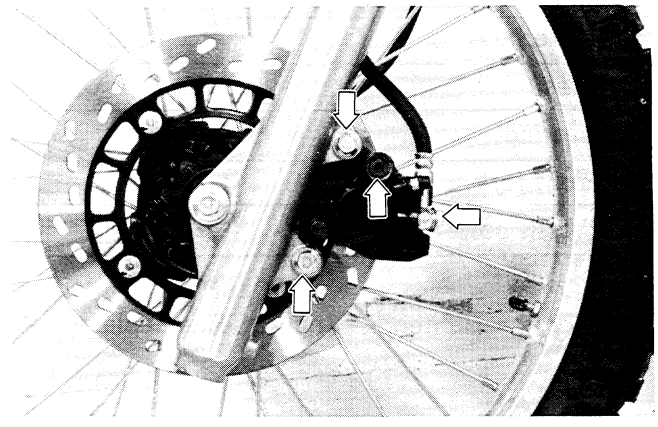
NOTE:
Push in the piston all the way to the caliper when remounting the caliper.



Caliper mounting bolts	15 – 25 N·m (1.5 – 2.5 kg-m 11.0 – 18.0 lb-ft)

CALIPER REMOVAL AND DISASSEMBLY

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

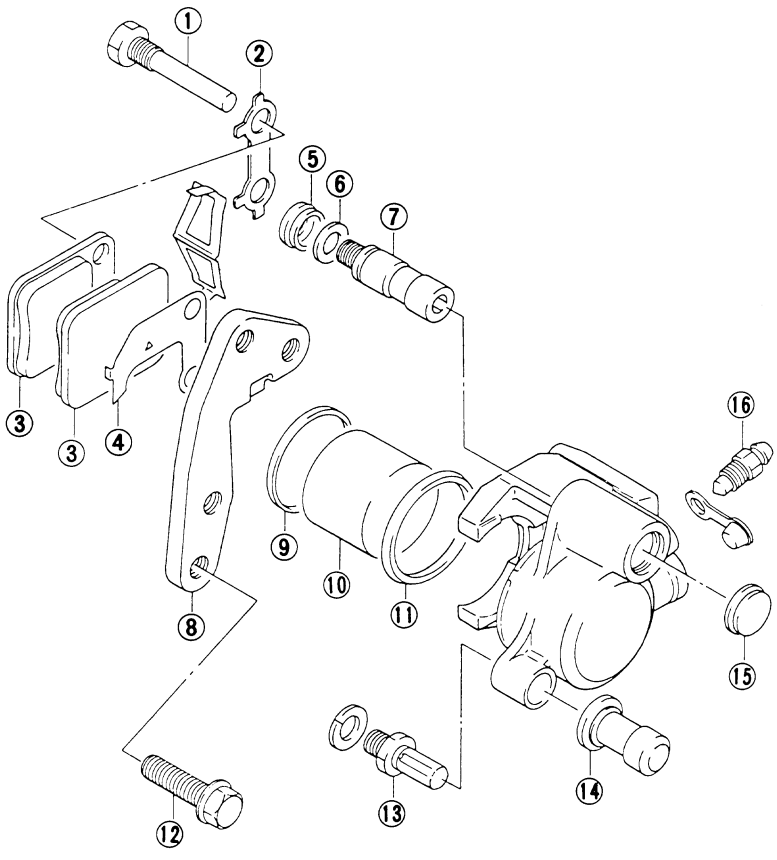


CAUTION:
Never re-use the brake fluid left over from the last servicing and stored for long periods.

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

- Remove the caliper mounting bolts and take off the caliper.

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

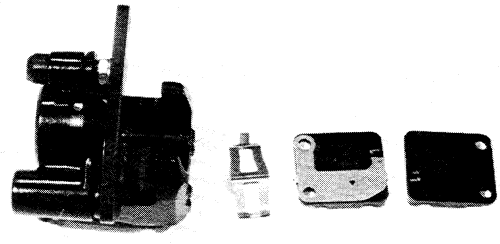


① Pad mounting bolt
② Lock washer
③ Pad
④ Shim
⑤ Dust boot
⑥ Washer
⑦ Caliper axle bolt
⑧ Caliper holder
⑨ Dust seal
⑩ Piston
⑪ Piston seal
⑫ Caliper mounting bolt
⑬ Caliper axle bolt
⑭ Axle boot
⑮ Cap
⑯ Air bleeder valve

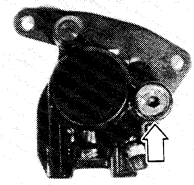
Tightening torque

Item	N·m	kg-m	lb-ft
①	15 – 20	1.5 – 2.0	11.0 – 14.5
⑦	20 – 25	2.0 – 2.5	14.5 – 18.0
⑫	15 – 25	1.5 – 2.5	11.0 – 18.0
⑬	15 – 20	1.5 – 2.0	11.0 – 14.5
⑯	6 – 9	0.6 – 0.9	4.5 – 6.5

- Remove the pads.

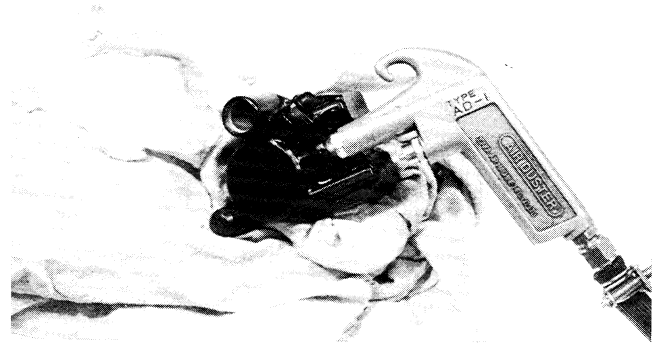


- Remove the caliper axle bolt and separate the caliper from the caliper holder.

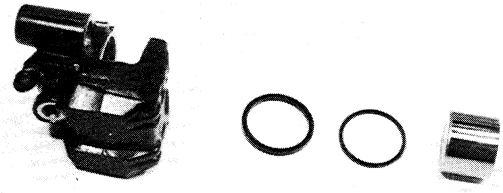


- Place a rag over the piston to prevent popping up. Force out the piston by using air gun.

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



- Remove the dust seal and piston seal.



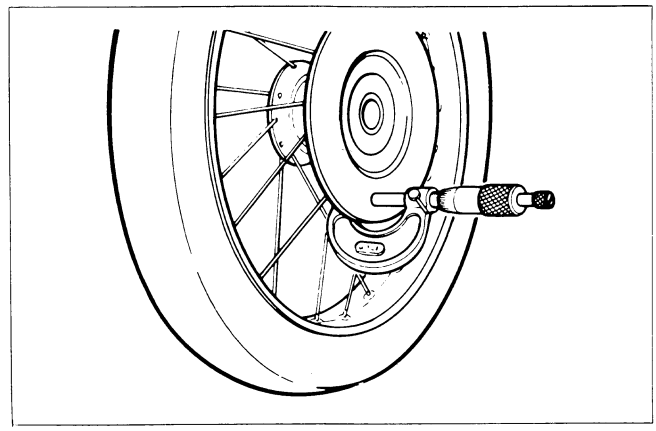
CALIPER AND DISC INSPECTION

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

- Check the disc for wear by using a micrometer. Its thickness can be checked with disc and wheel in place. Replace the disc if the thickness exceeds the service limit.

09900-20205	Micrometer (0–25 mm)

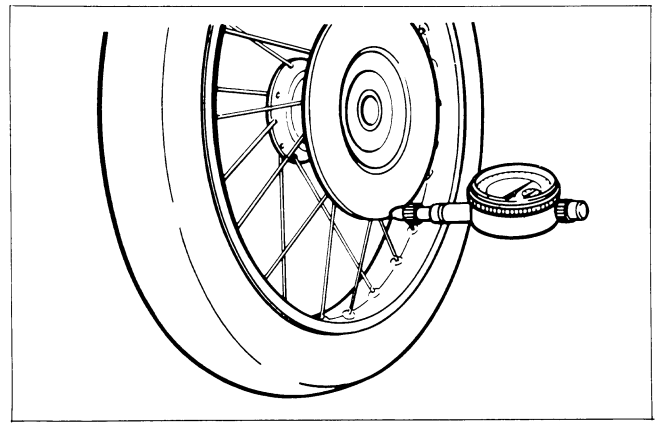
Service Limit	3.0 mm (0.118 in)



- With the disc mounted on the wheel, check the disc for face runout with a dial gauge, as shown. Replace the disc if the runout exceeds the service limit.

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

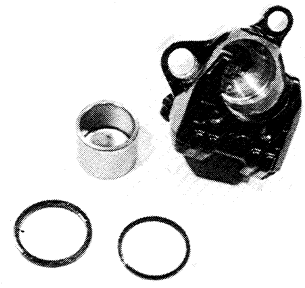
Service Limit	0.30 mm (0.012 in)



CALIPER REASSEMBLY

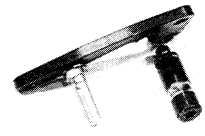
Reassemble the caliper in the reverse order of disassembly and removal, and also carry out the following steps:

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



- Apply SUZUKI silicone grease to the caliper axles.

99000-25100	SUZUKI silicone grease



WARNING:
Bleed the air after reassembling caliper.
(Refer to page 15)

Tightening torque:

	N·m	kg-m	lb-ft
Union bolt	20 – 25	2.0 – 2.5	14.5 – 18.0
Caliper mounting bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
Caliper axle bolt	15 – 20	1.5 – 2.0	11.0 – 14.5
	20 – 25	2.0 – 2.5	14.5 – 18.0

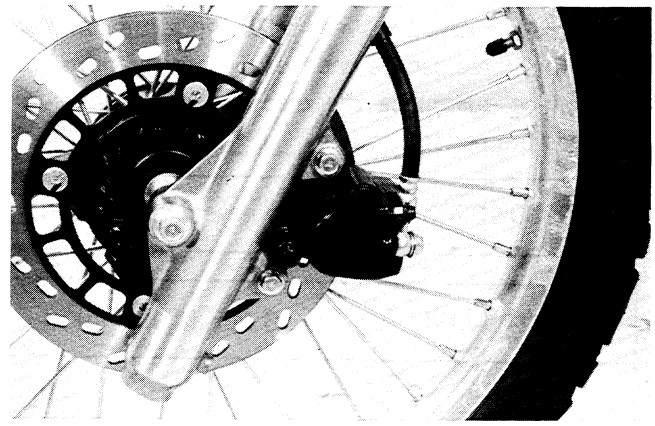
MASTER CYLINDER REMOVAL

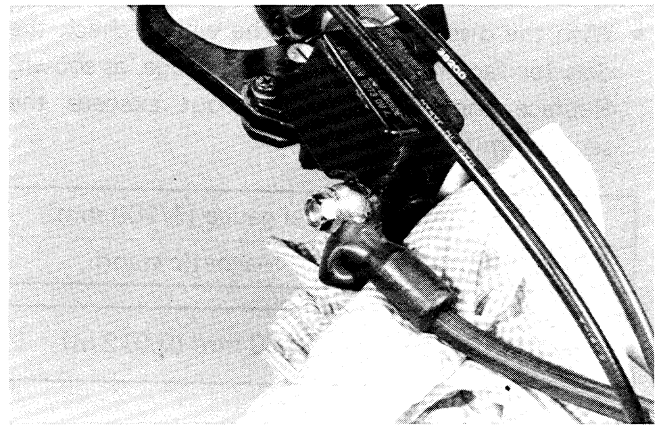
- Place a cloth underneath the union bolt on the master cylinder to catch spilled drops of brake fluid. Unscrew the union bolt and disconnect the brake hose/master cylinder joint.

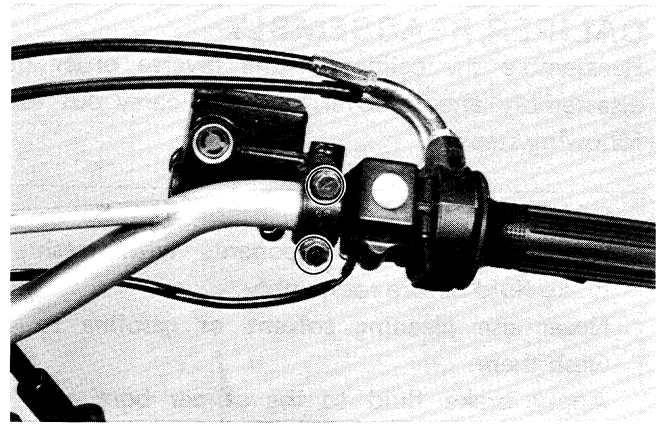
CAUTION:
Completely wipe off any brake fluid adhering to any part of motorcycle. The fluid reacts chemically with paint, plastics, rubber materials, etc.

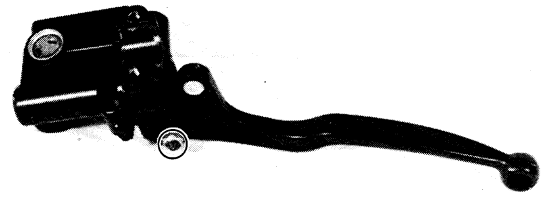
- Remove two clamp bolts and take off the master cylinder assembly.

- Separate the front brake lever by removing a bolt.

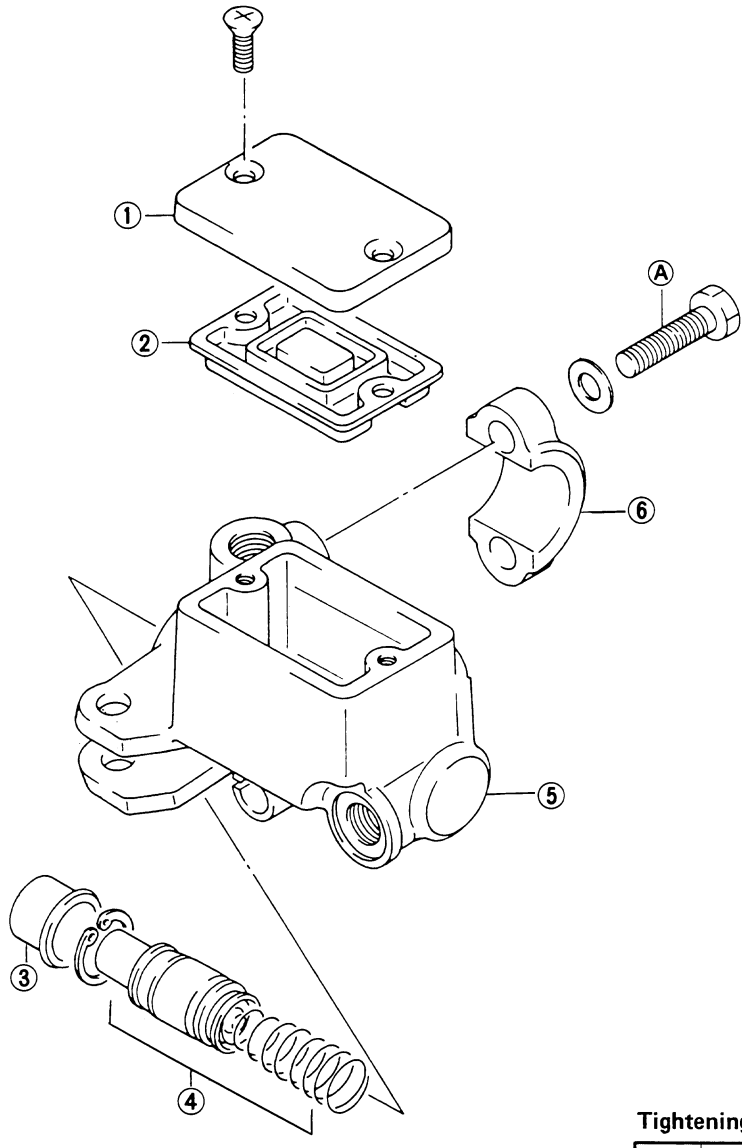








DISASSEMBLY

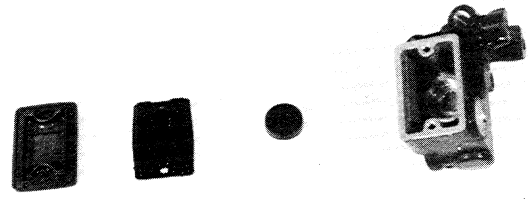


① Reservoir tank cap
② Diaphragm
③ Boot
④ Piston and cup set
⑤ Master cylinder body
⑥ Clamp

Tightening torque

Item	N·m	kg-m	lb-ft
Ⓐ	5 – 8	0.5 – 0.8	3.5 – 6.0

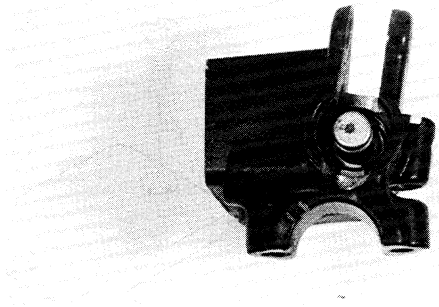
- Remove the reservoir cap and diaphragm.
- Drain the brake fluid.

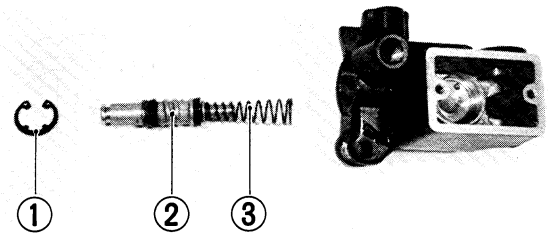


- Pull out the dust boot.
- Remove the circlip by using the special tool.
- Remove the piston and spring.

09900-06108	Snap ring pliers

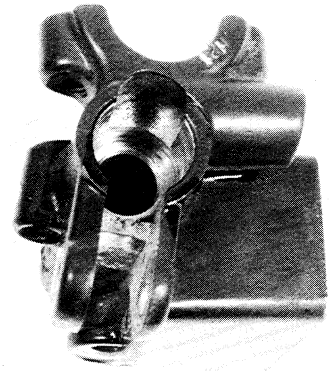
① Circlip
② Piston
③ Return spring





INSPECTION

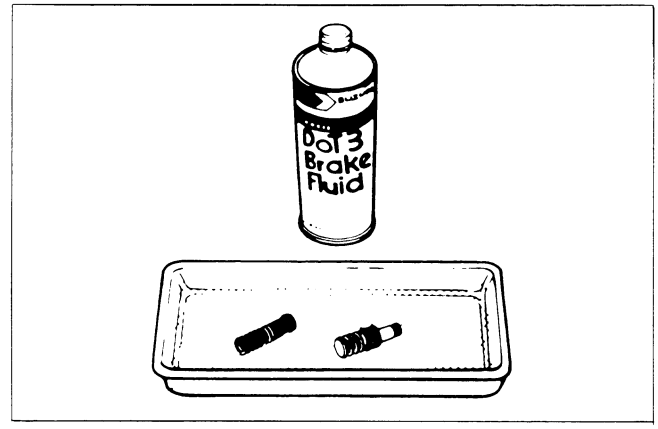
- Inspect the master cylinder bore for any scratches or other damage.
- Inspect the piston surface for scratches or other damage.
- Inspect the primary cup, secondary cup and dust boot for wear or damage.



REASSEMBLY

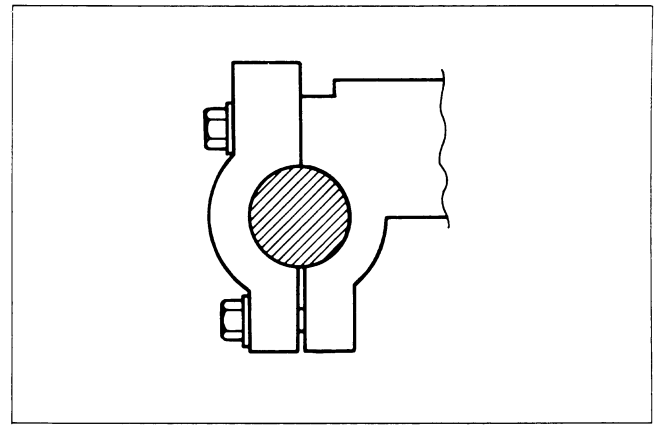
Reassemble the master cylinder in the reverse order of disassembly and also carry out the following steps:

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



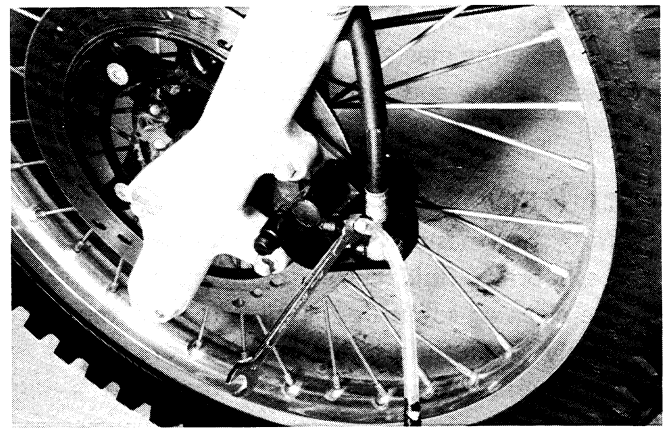
- Remount the master cylinder on the handlebar as shown in the illustration.
  Tighten the upper bolt first.

CAUTION:
Bleed the air after reassembling master cylinder. (Refer to page 15)



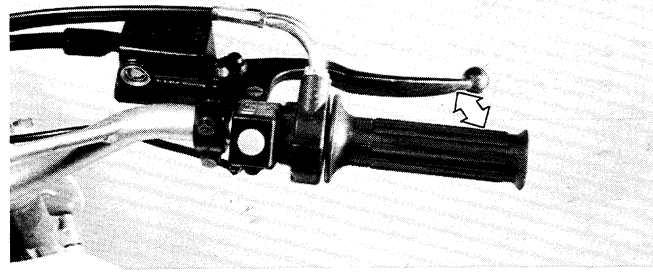
AIR BLEEDING THE BRAKE FLUID CIRCUIT

Air trapped in the fluid circuit acts like a cushion to absorb a large proportion of the pressure developed by the master cylinder and thus interferes with the full braking performance of the caliper brake. The presence of air is indicated by "sponginess" of the brake lever and also by lack of braking force. Considering the danger to which such trapped air exposes the machine and rider, it is essential that, after remounting the brake and restoring the brake system to the normal condition, the brake fluid circuit be purged of air in the following manner:

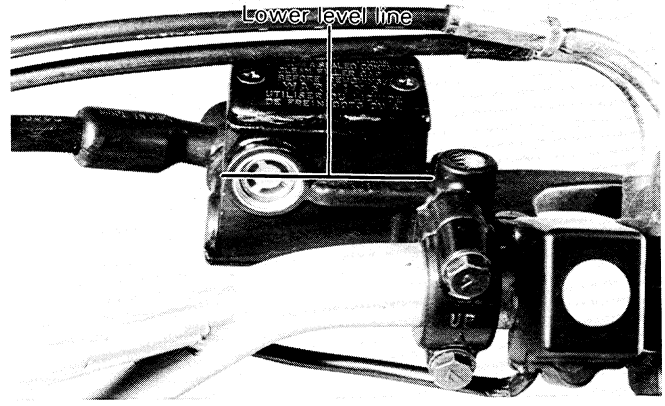


- Fill up the master cylinder reservoir to the more than lower level line. Replace the reservoir cap to prevent entry of dirt.
- Attach a pipe to the caliper bleeder valve, and insert the free end of the pipe into a receptacle.

Bleeder valve tightening torque	6 – 9 N·m (0.6 – 0.9 kg-m)



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



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

- Close the bleeder valve, and disconnect the pipe. Fill the reservoir to the more than lower level line.

Brake fluid specification and classification	DOT 3 or DOT 4

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

SERVISE DATA (DR250)

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	26 (1.0)	———
	EX.	22 (0.9)	———
Valve lift	IN.	6.7 (0.26)	———
	EX.	6.7 (0.26)	———
Valve clearance (when cold)	IN.	0.03—0.08 (0.001—0.003)	———
	EX.	0.08—0.13 (0.003—0.005)	———
Valve guide to valve stem clearance	IN.	0.025—0.052 (0.0010—0.0020)	0.35 (0.014)
	EX.	0.040—0.067 (0.0016—0.0026)	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500—5.512 (0.2165—0.2170)	———
Valve stem O.D.	IN.	5.460—5.475 (0.2150—0.2156)	———
	EX.	5.445—5.460 (0.2144—0.2150)	———
Valve stem runout	IN. & EX.	———	0.05 (0.002)
Valve head thickness	IN. & EX.	———	0.5 (0.02)
Valve stem end length	IN. & EX.	———	3.8 (0.15)
Valve seat width	IN. & EX.	0.9—1.1 (0.035—0.043)	———
Valve head radial runout	IN. & EX.	———	0.03 (0.001)
Valve spring free length	IN. & EX.	———	40.0 (1.57)
Valve spring tension	IN. & EX.	16.2—21.6 kg (35.7—47.6 lbs) at length 35 mm (1.4 in)	———

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	34.990—35.030 (1.3775—1.3791)	34.690 (1.3657)
	EX.	35.030—35.070 (1.3791—1.3807)	34.730 (1.3673)
Camshaft journal oil clearance	R. & L.	0.032—0.066 (0.0013—0.0026)	0.15 (0.006)
Camshaft journal holder I.D.	R. side	25.012—25.025 (0.9847—0.9852)	———
	L. side	20.012—20.025 (0.7879—0.7884)	———

Unit: mm (in)

ITEM	STANDARD		LIMIT
Camshaft journal O.D.	R. side	24.959–24.980 (0.9826–0.9835)	———
	L. side	19.959–19.980 (0.7858–0.7866)	———
Camshaft runout	IN. & EX.	———	0.10 (0.004)
Cam chain 20-pitch length		———	128.9 (5.08)
Rocker arm I.D.	IN. & EX.	12.000–12.018 (0.4724–0.4731)	———
Rocker arm shaft O.D.	IN. & EX.	11.966–11.984 (0.4711–0.4718)	———
Cylinder head distortion	———		0.05 (0.002)
Cylinder head cover distortion	———		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD			LIMIT
Compression pressure	12–16 kg/cm^2			10 kg/cm^2
Piston to cylinder clearance	0.045–0.055 (0.0018–0.0022)			0.120 (0.0047)
Cylinder bore	72.000–72.015 (2.8346–2.8352)			72.085 (2.8380)
Piston diam.	71.950–71.965 (2.8327–2.8332) Measure at 15 mm (0.59) from the skirt end.			71.880 (2.8299)
Cylinder distortion	———			0.05 (0.002)
Piston ring free end gap	1st	N	Approx. 9.5 (0.37)	7.6 (0.30)
		R	Approx. 10.5 (0.41)	8.4 (0.33)
	2nd	N	Approx. 11.0 (0.43)	8.8 (0.35)
		R	Approx. 11.0 (0.43)	8.8 (0.35)
Piston ring end gap	1st	N	0.10–0.30 (0.004–0.012)	0.70 (0.03)
		R	0.10–0.30 (0.004–0.012)	0.70 (0.03)
	2nd	N	0.10–0.30 (0.004–0.012)	0.70 (0.03)
		R	0.15–0.35 (0.006–0.014)	0.70 (0.03)
Piston ring to groove clearance	1st		———	0.180 (0.0071)
	2nd		———	0.150 (0.0059)

Unit: mm (in)

ITEM	STANDARD		LIMIT
Piston ring groove width	1st	1.01—1.03 (0.039—0.040)	———
	2nd	1.21—1.23 (0.047—0.048)	———
	Oil	2.51—2.53 (0.099—0.100)	———
Piston ring thickness	1st	0.975—0.990 (0.0384—0.0390)	———
	2nd	1.170—1.190 (0.0461—0.0469)	———
Piston pin bore	18.002—18.008 (0.7087—0.7089)		18.030 (0.7098)
Piston pin O.D.	17.996—18.000 (0.7085—0.7086)		17.980 (0.7079)

CONROD + CRANKSHAFT + BALANCER

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	18.006—18.014 (0.7089—0.7092)	18.040 (0.7102)
Conrod deflection	———	3.0 (0.12)
Conrod big end side clearance	0.10—0.65 (0.004—0.026)	1.00 (0.039)
Crankshaft web to web width	60.0 ± 0.1 (2.362 ± 0.004)	———
Crankshaft runout	———	0.05 (0.002)
Balancer spring free length	———	9.9 (0.39)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	2.812 (68/21 × 33/38)	———
Oil pressure (at 60°C, 140°F)	Above 0.30 kg/cm² (4.26 psi) Below 0.70 kg/cm² (9.94 psi) at 3 000 r/min.	———

CLUTCH

Unit: mm (in)

ITEM		STANDARD	LIMIT
Clutch cable play		4 (0.16)	———
Clutch release screw		1/4—1/2 turn back	———
Drive plate thickness	No.1	2.90—3.10 (0.114—0.122)	2.60 (0.102)
	No.2	3.45—3.55 (0.136—0.140)	3.15 (0.124)
Drive plate claw width		15.8—16.0 (0.62—0.63)	15.0 (0.59)

Unit: mm (in)

ITEM	STANDARD	LIMIT
Driven plate distortion	———	0.1 (0.004)
Clutch spring free length	———	34.0 (1.34)

TRANSMISSION + DRIVE CHAIN

Unit: mm (in) Except ratio

ITEM		STANDARD	LIMIT
Primary reduction ratio		3.238 (68/21)	———
Final reduction ratio		3.230 (42/13)	———
Gear ratios	Low	2.636 (29/11)	———
	2nd	1.750 (28/16)	———
	3rd	1.315 (25/19)	———
	4th	1.000 (20/20)	———
	Top	0.818 (18/22)	———
Shift fork to groove clearance		0.20—0.40 (0.008—0.016)	0.60 (0.024)
Shift fork groove width		4.25—4.35 (0.167—0.171)	———
Shift fork thickness		3.95—4.05 (0.156—0.159)	———
Drive chain	Type	D.I.D.: 520DS	
	Links	104	———
	20-pitch length	———	323.8 (12.75)
Drive chain slack		40—50 (1.6—2.0)	———

CARBURETOR

ITEM		SPECIFICATION
Carburetor type		MIKUNI VM28SS
Bore size		28 mm (1.10 in)
I.D. No.		38200
Idle r/min.		1 300 ± 100 r/min.
Fuel level		3.5 ± 0.5 mm (0.14 ± 0.02 in)
Float height		22.5 ± 1.0 mm (0.89 ± 0.04 in)
Main jet	(M.J.)	#112.5
Main air jet	(M.A.J.)	1.0 mm (0.04 in)
Jet needle	(J.N.)	6G1-3rd
Needle jet	(N.J.)	P-O
Pilot jet	(P.J.)	#15
By-pass	(B.P.)	0.8 mm (0.03 in)
Pilot outlet	(P.O.)	0.8 mm (0.03 in)
Valve seat	(V.S.)	2.8 mm (0.11 in)
Starter jet	(G.S.)	#55

ITEM		SPECIFICATION
Pilot screw	(P.S.)	PRE-SET (1 1/2 turn back)
Pilot air jet	(P.A.J.)	1.0 mm (0.04 in)
Cut-away	(C.A.)	2.5 mm (0.10 in)
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)

ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION	NOTE
Ignition timing		10° B.T.D.C. Below 1 700 ± 100 r/min. and 35° B.T.D.C. Above 3 000 ± 100 r/min.	
Spark plug	Type	N.G.K.: D8EA N.D.: X24ES-U	
	Gap	0.6—0.7 (0.024—0.028)	
Spark performance		Over 8 (0.3) at 1 atm.	
Ignition coil resistance	Primary	0.5—3 Ω	B—B/Y
	Secondary	25—35 kΩ	Plug cap-Ground
Magneto coil resistance	Pick-up	50—90 Ω	W—B
	Power source I	5—9 Ω	R—B
	Power source II	3—6 Ω	Br—B
	Lighting	1—4 Ω	P—B
Lighting coil output		Above 6.0 V at 2 000 r/min. Below 8.0 V at 8 000 r/min.	

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	15
	LO	15
Taillight		5

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Rear brake pedal free travel		20—30 (0.8—1.2)	———
Rear brake pedal height		10 (0.4)	———
Brake drum I.D.	Rear	———	130.7 (5.15)
Brake lining thickness	Rear	———	1.5 (0.06)
*Brake disc thickness	Front	3.5 ± 0.2 (0.138 ± 0.008)	3.0 (0.118)
*Brake disc runout	Front	———	0.30 (0.012)
*Master cylinder bore	Front	12.700—12.743 (0.500—0.502)	———

Unit: mm (in)

ITEM	STANDARD		LIMIT
*Master cylinder piston diam.	Front	12.657—12.684 (0.498—0.499)	———
*Brake caliper cylinder bore	Front	33.960—34.036 (1.337—1.340)	———
*Brake caliper piston diam.	Front	33.884—33.934 (1.340—1.336)	———
Wheel rim runout	Axial	———	2.0 (0.08)
	Rear	———	2.0 (0.08)
Wheel axel runout	Front	———	0.25 (0.010)
	Rear	———	0.25 (0.010)
Tire size	Front	3.00-21 4PR	———
	Rear	5.10-17 4PR	———
Tire tread depth	Front	———	3.0 (0.12)
	Rear	———	3.0 (0.12)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT
Front fork stroke	250 (9.8)	———
Front fork spring free length	———	546 (21.5)
Front fork oil level	171 (6.7)	———
Front fork air pressure	0 kg/cm², 0 psi	———
Rear shock absorber bushing I.D. (Upper and Lower)	10.00—10.02 (0.394—0.402)	———
Rear cushion level rod upper bushing I.D.	15.03—15.10 (0.592—0.594)	———
Rear cushion lever rod lower bushing I.D.	13.03—13.10 (0.513—0.516)	———
Swingarm pivot shaft bushing I.D.	20.02—20.06 (0.788—0.790)	———
Rear wheel travel	250 (9.8)	———
Swingarm pivot shaft runout	———	0.6 (0.02)

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	kPa	kg/cm²
FRONT	100	1.00
REAR	100	1.00

FUEL + OIL

ITEM	SPECIFICATION		NOTE
Fuel type	Use only unleaded or low-lead type gasoline of at least 85-95 pump octane ($\frac{R+M}{2}$ method) or 89 octane or higher rated by the Research Method.		
Fuel tank including reserve	9.5 L (2.5/2.1 US/Imp gal)		
reserve	1.0 L (1.1/0.9 US/Imp qt)		
Engine oil type and grade	SAE 10W/40, API SE or SF		
Engine oil capacity	Change	1 200 ml (1.3/1.1 US/Imp qt)	
	Filter change	1 300ml (1.4/1.1 US/Imp qt)	
	Overhaul	1 700 ml (1.8/1.5 US/Imp qt)	
Front fork oil type	Fork oil #10		
Front fork oil capacity (each leg)	304 ml (10.27/10.70 US/Imp oz)		

SERVICE DATA (SP250)

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	26 (1.0)	———
	EX.	22 (0.9)	———
Valve lift	IN.	6.7 (0.26)	———
	EX.	6.7 (0.26)	———
Valve clearance (when cold)	IN.	0.03—0.08 (0.001—0.003)	———
	EX.	0.08—0.13 (0.003—0.005)	———
Valve guide to valve stem clearance	IN.	0.025—0.052 (0.0010—0.0020)	0.35 (0.014)
	EX.	0.040—0.067 (0.0016—0.0026)	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500—5.512 (0.2165—0.2170)	———
Valve stem O.D.	IN.	5.460—5.475 (0.2150—0.2156)	———
	EX.	5.445—5.460 (0.2144—0.2150)	———
Valve stem runout	IN. & EX.	———	0.05 (0.002)
Valve head thickness	IN. & EX.	———	0.5 (0.02)
Valve stem end length	IN. & EX.	———	3.8 (0.15)
Valve seat width	IN. & EX.	0.9—1.1 (0.035—0.043)	———
Valve head radial runout	IN. & EX.	———	0.03 (0.001)
Valve spring free length	IN. & EX.	———	40.0 (1.57)
Valve spring tension	IN. & EX.	16.2—21.6 kg (35.7—47.6 ibs) at length 35 mm (1.4 in)	———

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	34.990—35.030 (1.3775—1.3791)	34.690 (1.3657)
	EX.	35.030—35.070 (1.3791—1.3807)	34.730 (1.3673)
Camshaft journal oil clearance	R. & L.	0.032—0.066 (0.0013—0.0026)	0.15 (0.006)
Camshaft journal holder I.D.	R. side	25.012—25.025 (0.9847—0.9852)	———
	L. side	20.012—20.025 (0.7879—0.7884)	———

Unit: mm (in)

ITEM	STANDARD		LIMIT
Camshaft journal O.D.	R. side	24.959—24.980 (0.9826—0.9835)	———
	L. side	19.959—19.980 (0.7858—0.7866)	———
Camshaft runout	IN. & EX.	———	0.10 (0.004)
Cam chain 20-pitch length		———	128.9 (5.08)
Rocker arm I.D.	IN. & EX.	12.000—12.018 (0.4724—0.4731)	———
Rocker arm shaft O.D.	IN. & EX.	11.966—11.984 (0.4711—0.4718)	———
Cylinder head distortion	———		0.05 (0.002)
Cylinder head cover distortion	———		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD			LIMIT
Compression pressure	12—16 kg/cm²			10 kg/cm²
Piston to cylinder clearance	0.045—0.055 (0.0018—0.0022)			0.120 (0.0047)
Cylinder bore	72.000—72.015 (2.8346—2.8352)			72.085 (2.8380)
Piston diam.	71.950—71.965 (2.8327—2.8332) Measure at 15 mm (0.59) from the skirt end.			71.880 (2.8299)
Cylinder distortion	———			0.05 (0.002)
Piston ring free end gap	1st	N	Approx. 9.5 (0.37)	7.6 (0.30)
		R	Approx. 10.5 (0.41)	8.4 (0.33)
	2nd	N	Approx. 11.0 (0.43)	8.8 (0.35)
		R	Approx. 11.0 (0.43)	8.8 (0.35)
Piston ring end gap	1st	N	0.10—0.30 (0.004—0.012)	0.70 (0.03)
		R	0.10—0.30 (0.004—0.012)	0.70 (0.03)
	2nd	N	0.10—0.30 (0.004—0.012)	0.70 (0.03)
		R	0.15—0.35 (0.006—0.014)	0.70 (0.03)
Piston ring to groove clearance	1st		———	0.180 (0.0071)
	2nd		———	0.150 (0.0059)

Unit: mm (in)

ITEM	STANDARD		LIMIT
Piston ring groove width	1st	1.01—1.03 (0.039—0.040)	———
	2nd	1.21—1.23 (0.047—0.048)	———
	Oil	2.51—2.53 (0.099—0.100)	———
Piston ring thickness	1st	0.975—0.990 (0.0384—0.0390)	———
	2nd	1.170—1.190 (0.0461—0.0469)	———
Piston pin bore	18.002—18.008 (0.7087—0.7089)		18.030 (0.7098)
Piston pin O.D.	17.996—18.000 (0.7085—0.7086)		17.980 (0.7079)

CONROD + CRANKSHAFT + BALANCER

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	18.006—18.014 (0.7089—0.7092)	18.040 (0.7102)
Conrod deflection	———	3.0 (0.12)
Conrod big end side clearance	0.10—0.65 (0.004—0.026)	1.00 (0.039)
Crankshaft web to web width	60.0 ± 0.1 (2.362 ± 0.004)	———
Crankshaft runout	———	0.05 (0.002)
Balancer spring free length	———	9.9 (0.39)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	2.812 (68/21 × 33/38)	———
Oil pressure (at 60°C, 140°F)	Above 0.30 kg/cm² (4.26 psi) Below 0.70 kg/cm² (9.94 psi) at 3 000 r/min.	———

CLUTCH

Unit: mm (in)

ITEM		STANDARD	LIMIT
Clutch cable play		4 (0.16)	———
Clutch release screw		1/4—1/2 turn back	———
Drive plate thickness	No.1	2.90—3.10 (0.114—0.122)	2.60 (0.102)
	No.2	3.45—3.55 (0.136—0.140)	3.15 (0.124)
Drive plate claw width		15.8—16.0 (0.62—0.63)	15.0 (0.59)

Unit: mm (in)

ITEM	STANDARD	LIMIT
Driven plate distortion	———	0.1 (0.004)
Clutch spring free length	———	34.0 (1.34)

TRANSMISSION + DRIVE CHAIN

Unit: mm (in) Except ratio

ITEM		STANDARD	LIMIT
Primary reduction ratio		3.238 (68/21)	———
Final reduction ratio		2.800 (42/15)	———
Gear ratios	Low	2.636 (29/11)	———
	2nd	1.687 (27/16)	———
	3rd	1.263 (24/19)	———
	4th	1.000 (20/20)	———
	Top	0.818 (18/22)	———
Shift fork groove clearance		0.20—0.40 (0.008—0.016)	0.60 (0.024)
Shift fork groove width		4.25—4.35 (0.167—0.171)	———
Shift fork thickness		3.95—4.05 (0.156—0.159)	———
Drive chain	Type	D.I.D.: 520DS	———
	Links	102	———
	20-pitch length	———	323.9 (12.75)
Drive chain slack		30—40 (1.2—1.6)	———

CARBURETOR

ITEM		SPECIFICATION
Carburetor type		MIKUNI BS34SS
Bore size		34 mm (1.34 in)
I.D. No.		38210
Idle r/min.		1 300 ± 100 r/min.
Fuel level		5.0 ± 0.5 mm (0.20 ± 0.02 in)
Float height		27.4 ± 1.0 mm (1.08 ± 0.04 in)
Main jet	(M.J.)	#125
Main air jet	(M.A.J.)	0.8 mm (0.03 in)
Jet needle	(J.N.)	5DT88
Needle jet	(N.J.)	O-9
Pilot jet	(P.J.)	#42.5
By-pass	(B.P.)	1.0, 0.7, 0.8, 0.8 mm (0.039, 0.028, 0.031, 0.031 in)
Pilot outlet	(P.O.)	0.8 mm (0.03 in)
Valve seat	(V.S.)	2.0
Starter jet	(G.S.)	#40

ITEM		SPECIFICATION
Pilot screw	(P.S.)	PRE-SET
Pilot air jet	(P.A.J.)	#145
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)

ELECTRICAL

Unit: mm (in)

ITEM			SPECIFICATION	NOTE
Ignition timing			10° B.T.D.C. Below 1 700 ± 100 r/min. and 35° B.T.D.C. Above 3 000 ± 100 r/min.	
Spark plug	Type		N.G.K.: D8EA N.D.: X24ES-U	
	Gap		0.6—0.7 (0.024—0.028)	
Spark performance			Over 8 (0.3) at 1 atm.	
Ignition coil resistance	Primary		0.5—3 Ω	B—B/Y
	Secondary		25—35 kΩ	Plug cap—Ground
Magneto coil resistance	Pick-up		50—90 Ω	W—B
	Power source I		5—9 Ω	R—B
	Power source II		3—6 Ω	Br—B
	Lighting		1—4 Ω	P—B
	Charging	Day	1—2 Ω	W/Bl—B
		Night	0.5—1.5 Ω	W/G—B
Generator no-load voltage			More than 50 V (AC) at 5 000 r/min.	
Lighting coil output			Above 6.0 V at 2 000 r/min. Below 9.0 V at 8 000 r/min.	
Regulated voltage			7.9—8.9 V at 5 000 r/min.	
Battery	Type designation		6N4B-2A	
	Capacity		6V 14.4 kC (4Ah)/10HR	
	Standard electrolyte S.G.		1.28 at 20°C (68°F)	
Fuse size	Main		15 A	

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	35
	LO	35
Tail/Brake light		5.3/25
Turn signal light		17
Speedometer light		3
Turn signal indicator light		3
High beam indicator light		1.7
Neutral indicator light		3
Side stand check light		3

BRAKE + WHEEL

Unit: mm (in)

ITEM		STANDARD	LIMIT
Rear brake pedal free travel		20—30 (0.8—1.2)	———
Rear brake pedal height		10 (0.4)	———
Brake drum I.D.	Rear	———	130.7 (5.15)
Brake lining thickness	Rear	———	1.5 (0.06)
*Brake disc thickness	Front	3.5 ± 0.2 (0.138 ± 0.008)	3.0 (0.118)
*Brake disc runout	Front	———	0.30 (0.012)
*Master cylinder bore	Front	12.700—12.743 (0.500—0.502)	———
*Master cylinder piston diam.	Front	12.657—12.684 (0.498—0.499)	———
*Brake caliper cylinder bore	Front	33.960—34.036 (1.337—1.340)	———
*Brake caliper piston diam.	Front	33.884—33.934 (1.340—1.336)	———
Wheel rim runout	Axial	———	2.0 (0.08)
	Rear	———	2.0 (0.08)
Wheel axel runout	Front	———	0.25 (0.010)
	Rear	———	0.25 (0.010)
Tire size	Front	3.00-21 4PR	———
	Rear	4.60-17 4PR	———
Tire tread depth	Front	———	3.0 (0.12)
	Rear	———	3.0 (0.12)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT
Front fork stroke	195 (7.7)	———
Front fork spring free length	———	459.5 (18.1)
Front fork oil level	165 (6.5)	———
Front fork air pressure	0 kg/cm^2, 0 psi	———
Rear shock absorber bushing I.D. (Upper and Lower)	14.00—14.04 (0.551—0.553)	———
Rear cushion level rod upper bushing I.D.	15.03—15.10 (0.592—0.594)	———

Unit: mm (in)

ITEM	STANDARD	LIMIT
Rear cushion lever rod lower bushing I.D.	13.03—13.10 (0.513—0.516)	———
Swingarm pivot shaft busing I.D.	20.02—20.06 (0.788—0.790)	———
Rear wheel travel	190 (7.5)	———
Swingarm pivot shaft runout	———	0.6 (0.02)

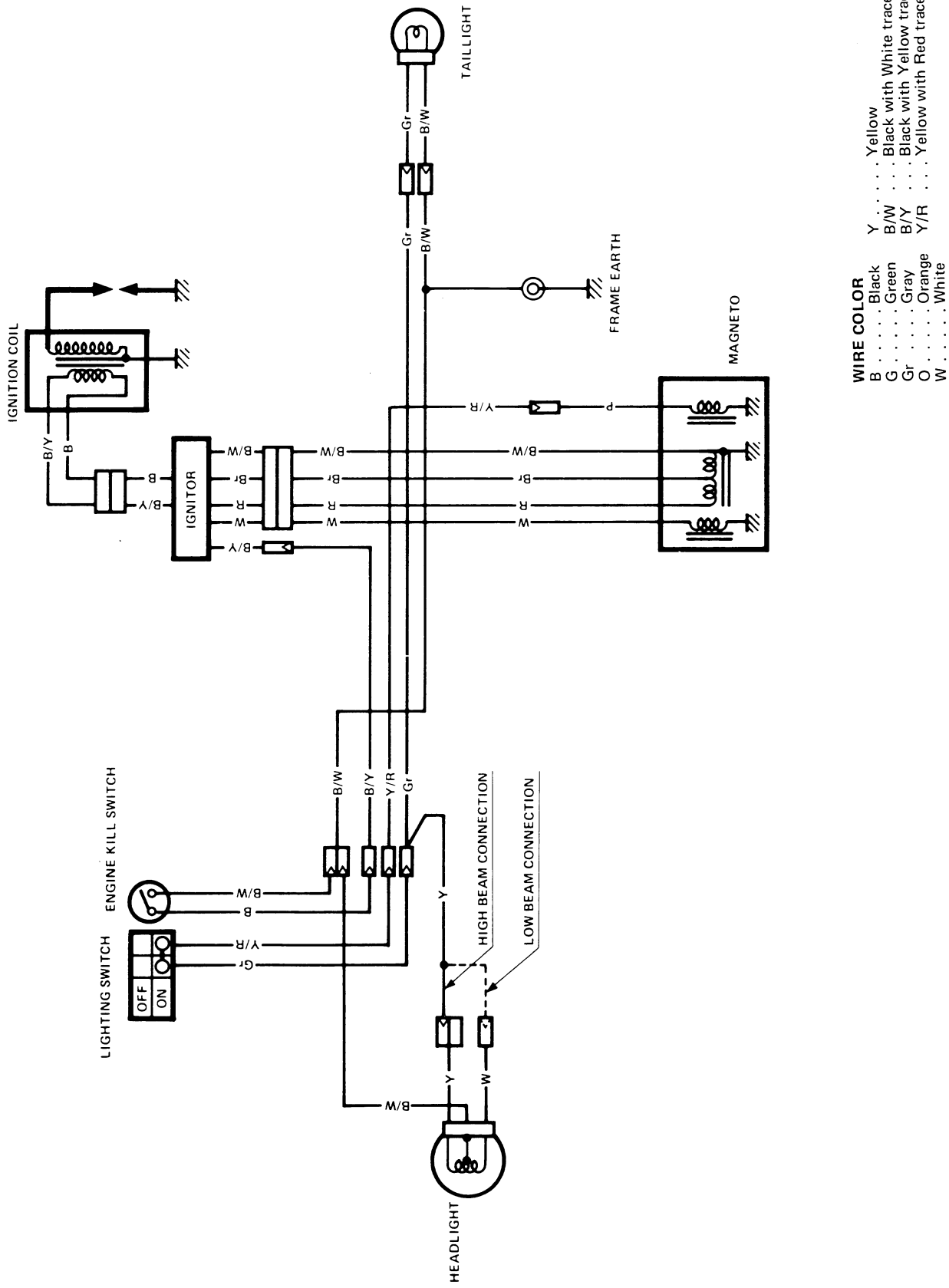
TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	NORMAL RIDING			
	SOLO RIDING		DUAL RIDING	
	kg/cm^2	psi	kg/cm^2	psi
FRONT	1.75	24	1.75	24
REAR	2.00	28	2.25	32

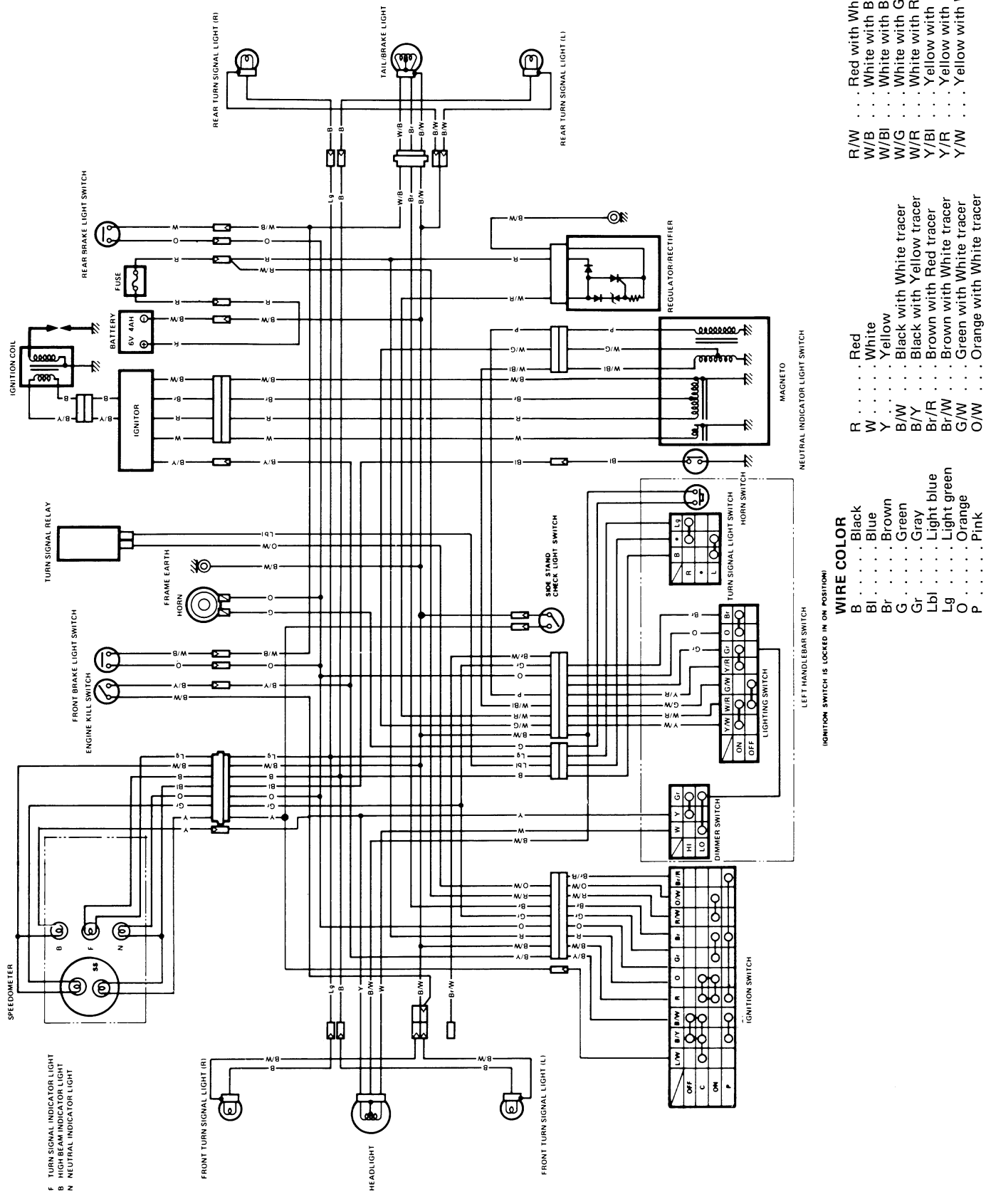
FUEL + OIL

ITEM	SPECIFICATION		NOTE
Fuel type	Use only unleaded or low-lead type gasoline of at least 85-95 pump octane ($\frac{R+M}{2}$ method) or 89 octane or higher rated by the Research Method.		
Fuel tank including reserve	9.5 L (2.5/2.1 US/Imp gal)		
reserve	1.0 L (1.1/0.9 US/Imp qt)		
Engine oil type and grade	SAE 10W/40, API SE or SF		
Engine oil capacity	Change	1 200 ml (1.3/.1 US/Imp qt)	
	Filter change	1 300ml (1.4/1.1 US/Imp qt)	
	Overhaul	1 700 ml (1.8/1.5 US/Imp qt)	
Front fork oil type	Fork oil #10		
Front fork oil capacity (each leg)	258 ml (8.72/9.08 US/Imp oz)		

WIRING DIAGRAM (DR250)

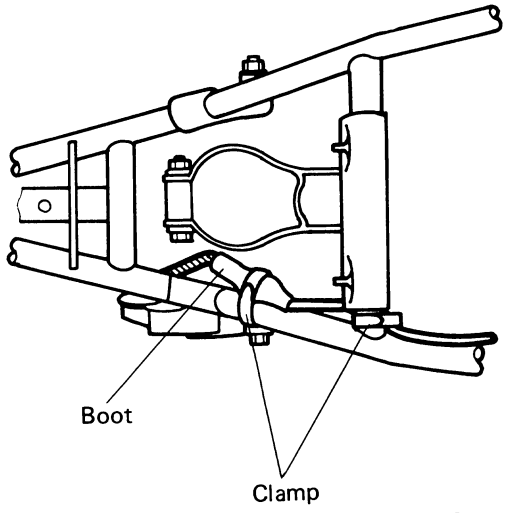


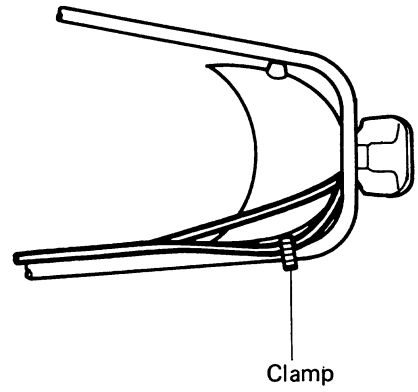
WIRING DIAGRAM (SP250)

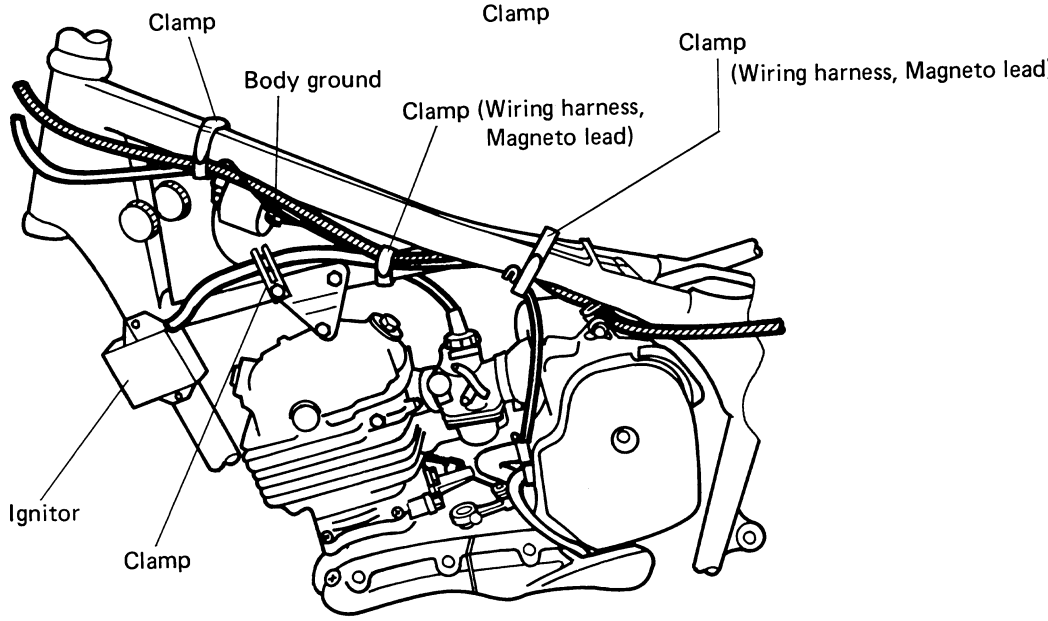


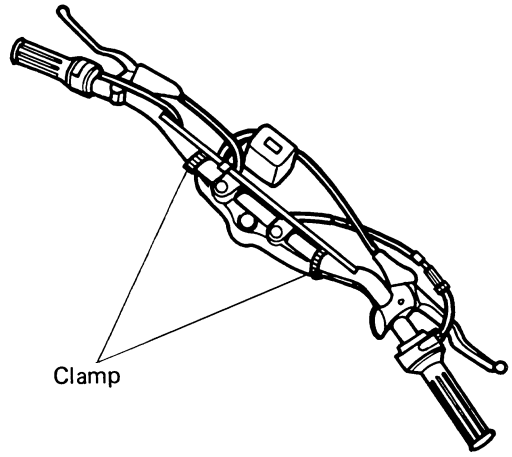
HARNESS, CABLE AND HOSE ROUTING

HARNESS ROUTING (DR250)

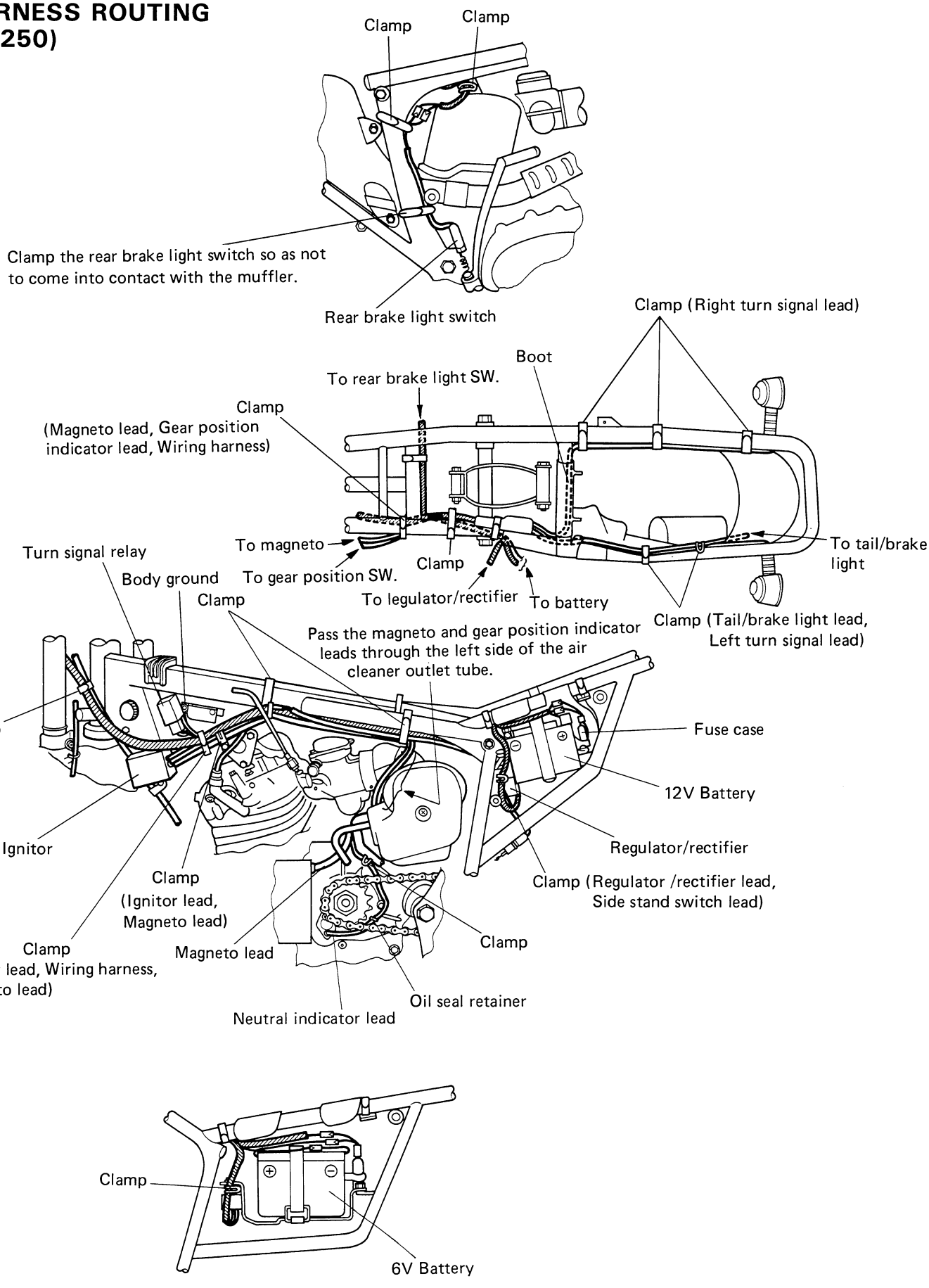




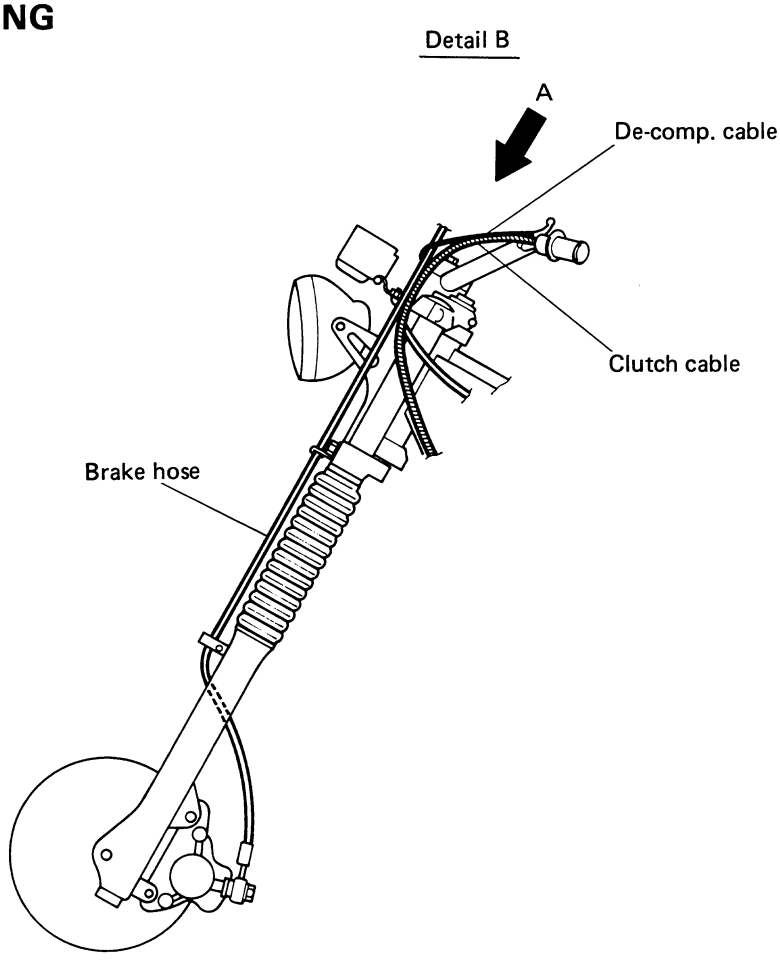


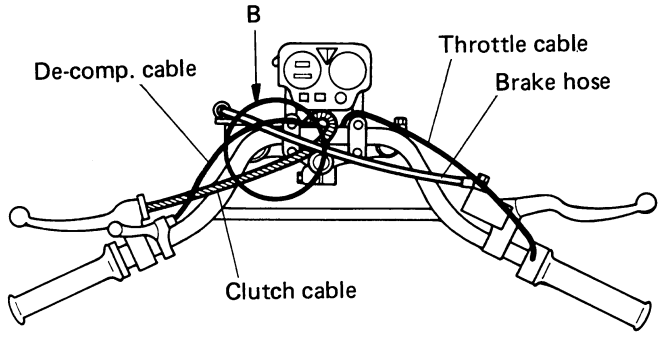


HARNESS ROUTING (SP250)

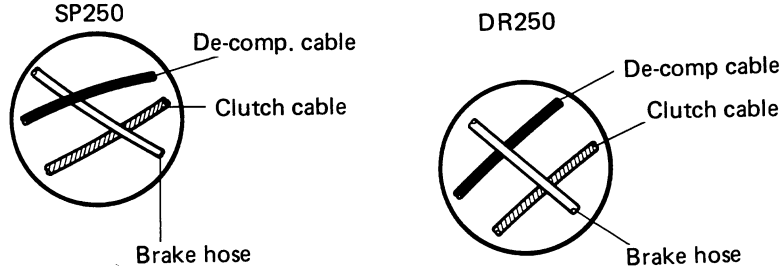


CABLE ROUTING (DR/SP250)

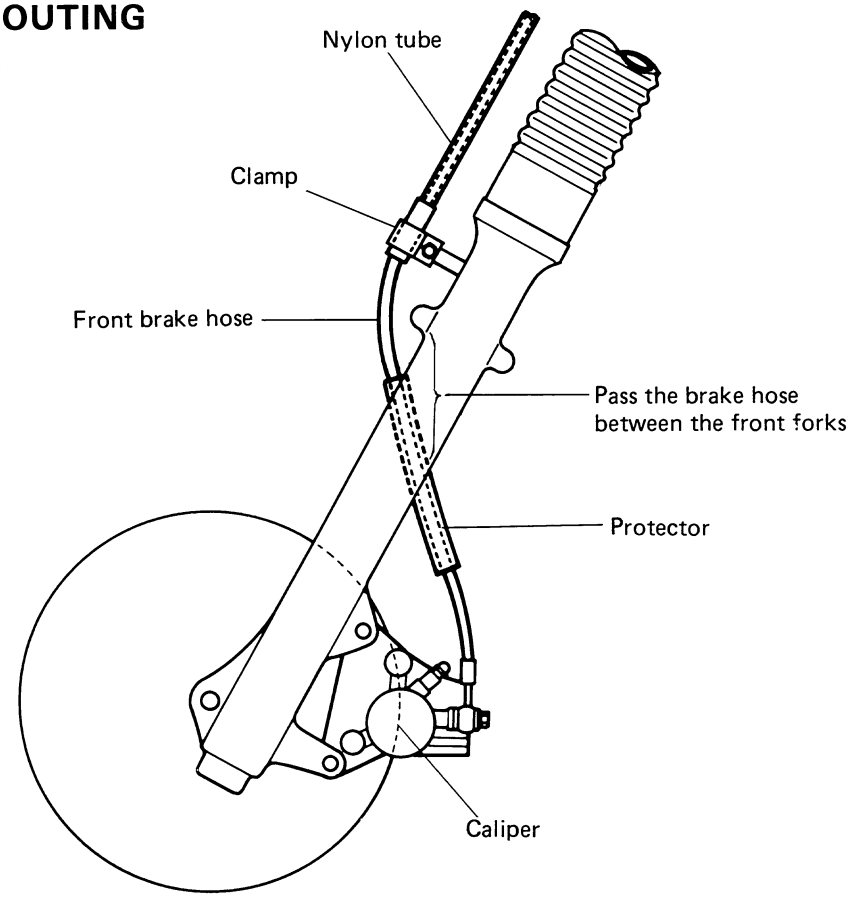




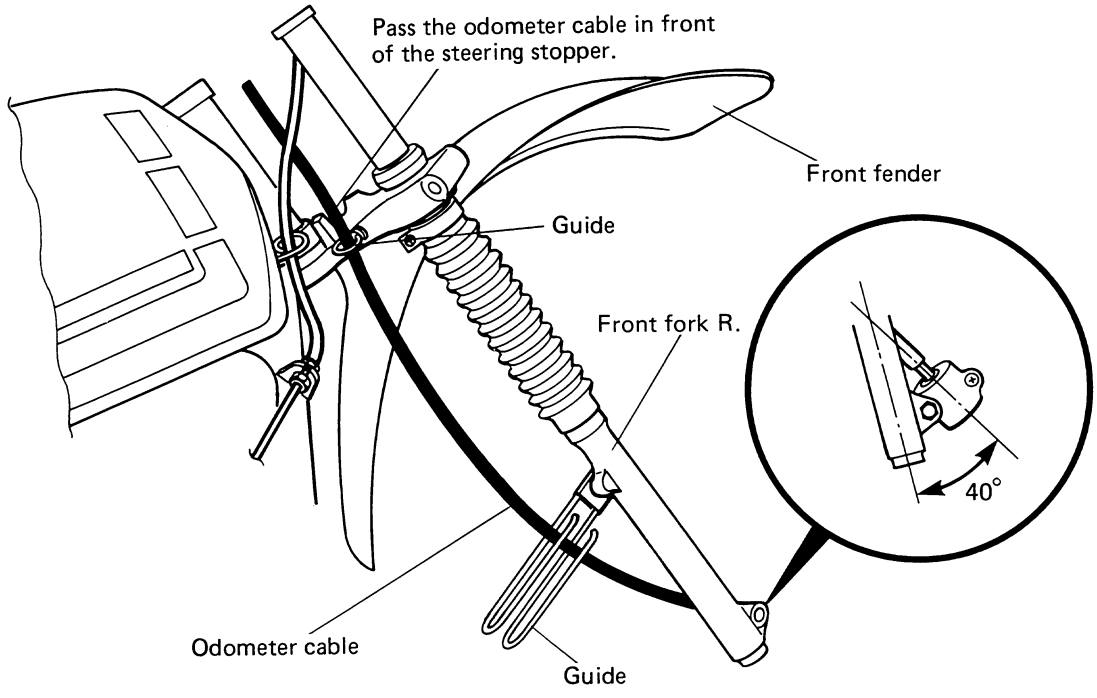
VIEW A



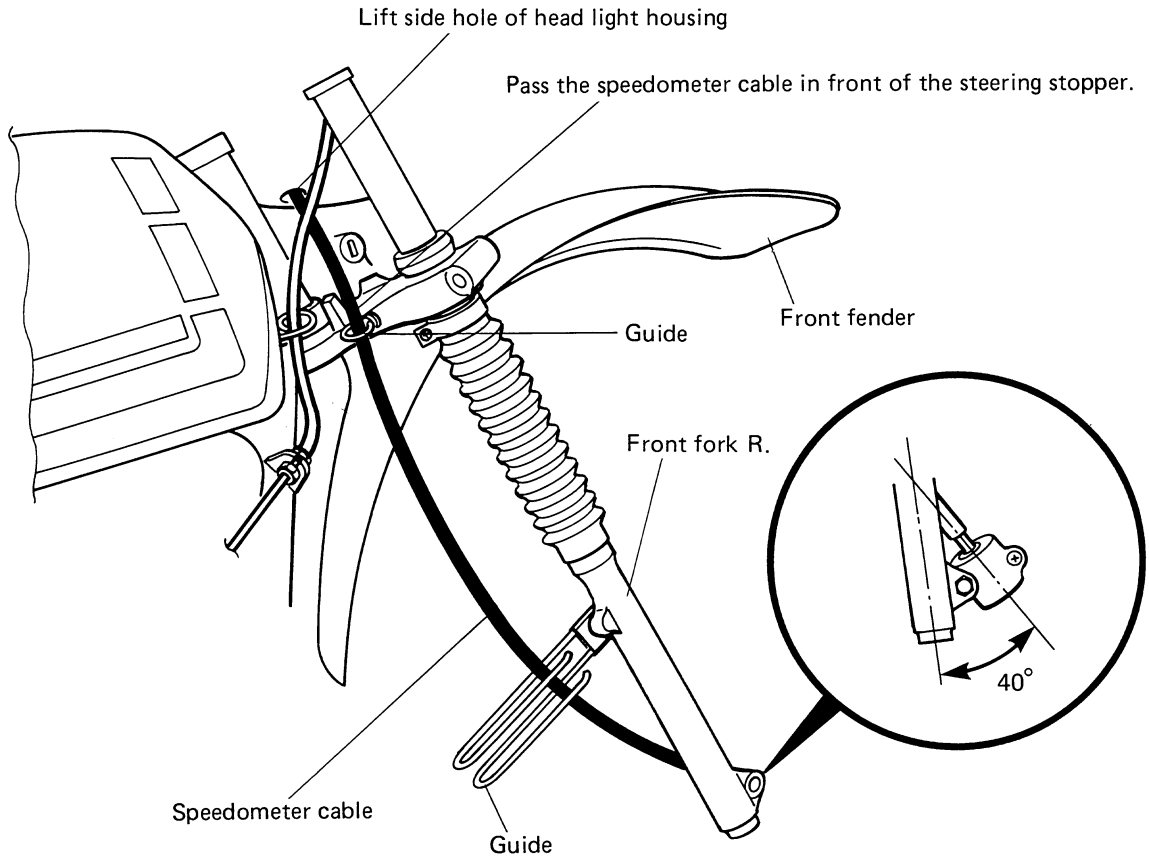
BRAKE HOSE ROUTING (DR/SP250)



ODOMETER CABLE ROUTING (DR250)



SPEEDOMETER CABLE ROUTING (SP250)



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