

FOREWORD

This manual contains an introductory description on SUZUKI DR200SE and procedures for its inspection/service and overhaul of its main components. Other information considered as generally known is not included.

Read GENERAL INFORMATION section to familiarize yourself with outline of the vehicle and MAINTENANCE and other sections to use as a guide for proper inspection and service.

This manual will help you know the vehicle better so that you can assure your customers of your optimum and quick service.

* This manual has been prepared on the basis of the latest specification at the time of publication.

If modification have been made since then, differences may exist between the content of this manual and the actual vehicle.

* Illustrations in this manual are used to show the basic principles of operation and work procedures.

They may not represent the actual vehicle exactly in detail.

* This manual is intended for those who have enough knowledge and skills for servicing SUZUKI vehicles. Without such knowledge and skills, you should not attempt servicing by relying on this manual only.

Instead, please contact your nearby authorized SUZUKI motorcycle dealer.

IMPORTANT

All street-legal Suzuki motorcycles with engine displacement of 50 cc or greater are subject to Environmental Protection agency emission regulations. These regulations set specific standards for exhaust emission output levels as well as particular servicing requirements. This manual includes specific information required to properly inspect and service DR200SE 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.

Further information concerning the EPA emission regulations and U.S. Suzuki's emission control program can be found in the U.S. SUZUKI EMISSION CONTROL PROGRAM MANUAL/SERVICE BULLETIN.

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SUPPLEMENTS

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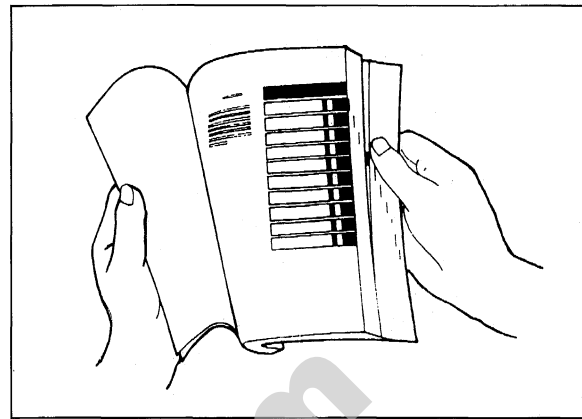
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HOW TO USE THIS MANUAL

TO LOCATE WHAT YOU ARE LOOKING FOR:

1. The text of this manual is divided into sections.
2. As the title of these sections are listed on the previous page as GROUP INDEX, select the section where what you are looking for belong.
3. Holding the manual as shown at the right will allow you to find the first page of the section easily.
4. On the first page of each section, its contents are listed. Find the item and page you need.



COMPONENT PARTS AND WORK TO BE DONE

Under the name of each system or unit, its exploded view is provided with work instruction and other service information such as the tightening torque, lubricating points and locking agent points.











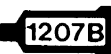





Example: Starter motor

ITEM	N·m	kg·m	lb·ft
Ⓐ	10	1.0	7.0
Ⓑ	2.5	0.25	1.8

- ① O-ring (2 pcs)
- ② O-ring
- ③ Housing end
- ④ O-ring (2 pcs)
- ⑤ Starter motor case
- ⑥ Armature
- ⑦ Brush holder
- ⑧ Housing end

SYMBOL

Listed in the table below are the symbols indicating instructions and other information necessary for servicing and meaning associated with them respectively.

SYMBOL	DEFINITION	SYMBOL	DIFINITION
	Torque control required. Data beside it indicates specified torque.		Apply THREAD LOCK SUPER "1303" 99000-32030
	Apply oil. Use engine oil unless otherwise specified.		Apply THREAD LOCK "1342" 99000-32050
	Apply SUZUKI SUPER GREASE "A". 99000-25030		Apply or use brake fluid.
	Apply SUZUKI SILICONE GREASE. 99000-25100		Measure in voltage range.
	Apply SUZUKI MOLY PASTE. 99000-25140		Measure in resistance range.
	Apply SUZUKI BOND "1207B". 99104-31140		Measure in current range.
	Apply THREAD LOCK SUPER "1322" 99000-32110		Use special tool.
	Apply THREAD LOCK SUPER "1360" 99000-32130		Use fork oil.

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GENERAL INFORMATION

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WARNING/CAUTION/NOTE

Please read this manual and follow its instructions carefully. To emphasize special information, the symbol and the words WARNING, CAUTION and NOTE have special meanings. Pay special attention to the messages highlighted by these signal words.

⚠ WARNING

Indicates a potential hazard that could result in death or injury.

⚠ CAUTION

Indicates a potential hazard that could result in vehicle damage.

NOTE:

Indicates special information to make maintenance easier or instructions clearer.

Please note, however, that the warnings and cautions contained in this manual cannot possibly cover all potential hazards relating to the servicing, or lack of servicing, of the motorcycle. In addition to the WARNINGS and CAUTIONS stated, you must use good judgement and basic mechanical safety principles. If you are unsure about how to perform a particular service operation, ask a more experienced mechanic for advice.

GENERAL PRECAUTIONS

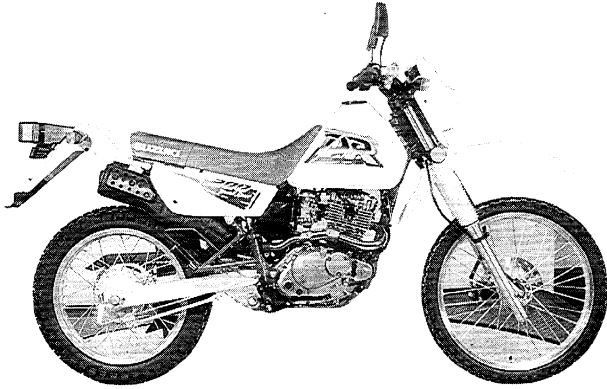
⚠ WARNING

- * Proper service and repair procedures are important for the safety of the service mechanic and the safety and reliability of the vehicle.
- * When 2 or more persons work together, pay attention to the safety of each other.
- * When it is necessary to run the engine indoors, make sure that exhaust gas is forced outdoors.
- * When working with toxic or flammable materials, make sure that the area you work in is well-ventilated and that you follow all of the material manufacturer's instructions.
- * Never use gasoline as a cleaning solvent.
- * To avoid getting burned, do not touch the engine, engine oil or exhaust system during or for a while after engine operation.
- * After servicing fuel, oil, exhaust or brake systems, check all lines and fittings related to the system for leaks.

▲ CAUTION

- * If parts replacement is necessary, replace the parts with SUZUKI Genuine Parts or their equivalent.
 - * When removing parts that are to be reused, keep them arranged in an orderly manner so that they may be reinstalled in the proper order and orientation.
 - * Be sure to use special tools when instructed.
 - * Make sure that all parts used in reassembly are clean, and also lubricated when specified.
 - * When use of a certain type of lubricant, bond, or sealant is specified, be sure to use the specified type.
 - * When removing the battery, disconnect the negative cable first and then the positive cable. When reconnecting the battery, connect the positive cable first and then the negative cable, and replace the terminal cover on the positive terminal.
 - * When performing service to electrical parts, if the service procedures not require use of battery power, disconnect the negative cable the battery.
 - * Tighten cylinder head and case bolts and nuts, beginning with larger diameter and ending with smaller diameter, from inside to outside diagonally, to the specified tightening torque.
 - * Whenever you remove oil seals, gaskets, packing, O-rings, locking washers, cotter pins, circlips, and certain other parts as specified, be sure to replace them with new ones. Also, before installing these new parts, be sure to remove any left over material from the mating surface.
 - * Never reuse a circlip. When installing a new circlip, take care not to expand the end gap larger than required to slip the circlip over the shaft. After installing a circlip, always ensure that it is completely seated in its groove and securely fitted.
 - * Do not use self-locking nuts a few times over.
 - * Use a torque wrench to tighten fasteners to the torque values when specified. Wipe off grease or oil if a thread is smeared with them.
 - * After reassembly, check parts for tightness and operation.
-
- * To protect environment, do not unlawfully dispose of used motor oil and other fluids: batteries, and tires.
 - * To protect Earth's natural resources, properly dispose of used vehicles and parts.

SUZUKI DR200SET ('96-MODEL)



RIGHT SIDE

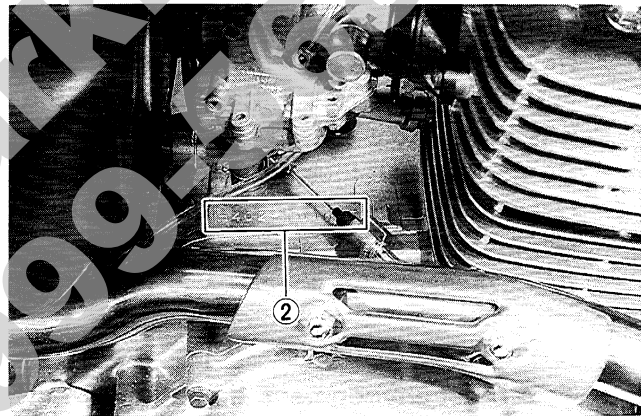
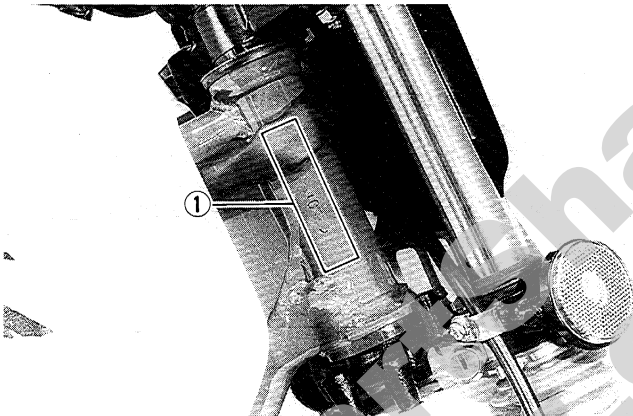


LEFT SIDE

*Difference between photographs and actual motorcycles depends on the markets.

SERIAL NUMBER LOCATION

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



FUEL AND OIL RECOMMENDATIONS

FUEL (For U.S.A. model)

1. Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$) method or 91 octane or higher rated by the research method.
2. Suzuki recommends that customers use alcohol free, unleaded gasoline whenever possible.
3. Use of blended gasoline containing MTBE (Methyl Tertiary Butyl Ether) is permitted.
4. Use of blended gasoline/alcohol fuel is permitted provided that it contains not more than 10% ethanol. Gasoline/alcohol fuel may contain up to 5% methanol if appropriate cosolvents and corrosion inhibitors are present.
5. If the performance of the vehicle is unsatisfactory while using blended gasoline/alcohol fuel, you should switch to alcohol free unleaded gasoline.
6. Failure to follow these guideline could possibly void applicable warranty coverage. Check with you fuel supplier to be sure that the fuel you intend to use meets the requirements listed above.

FUEL (For Canadian model)

Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$) method or 91 octane or higher rated by the research method.

FUEL (For the other models)

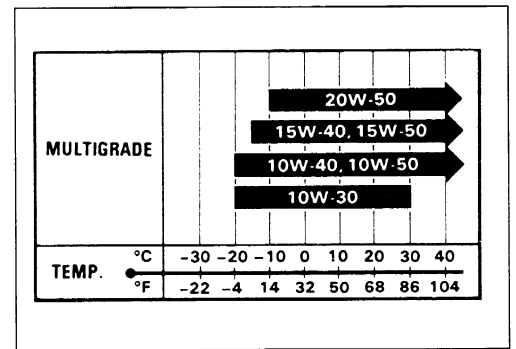
Gasoline used should be graded 85—95 octane (Research Method) or higher. An unleaded gasoline type is recommended.

ENGINE OIL (For U.S.A. model)

SUZUKI recommends the use of SUZUKI PERFORMANCE 4 MOTOR OIL or an oil which is rated SE, SF or SG under the API service classification. The recommended viscosity is SAE 10W/40. If an SAE 10W/40 motor oil is not available, select an alternate according to the right chart.

ENGINE OIL (For the other models)

Use a premium quality 4-stroke motor oil to ensure longer service life of your motorcycle. Use only oils which are rated SE, SF or SG under the API service classification. The recommended viscosity is SAE 10W/40. If an SAE 10W/40 motor oil is not available, select an alternative according to the right chart.



BRAKE FLUID



Specification and classification: DOT 4

⚠ WARNING

Since the brake system of this motorcycle is filled with a glycol-based brake fluid by the manufacturer, do not use or mix different types of fluid such as silicone-based and petroleum-based fluid for refilling the system, otherwise serious damage will result.

Do not use any brake fluid taken from old or used or unsealed containers.

Never re-use brake fluid left over from a previous servicing, which has been stored for a long period.

FRONT FORK OIL

Use fork oil # 10

BREAK-IN PROCEDURES

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

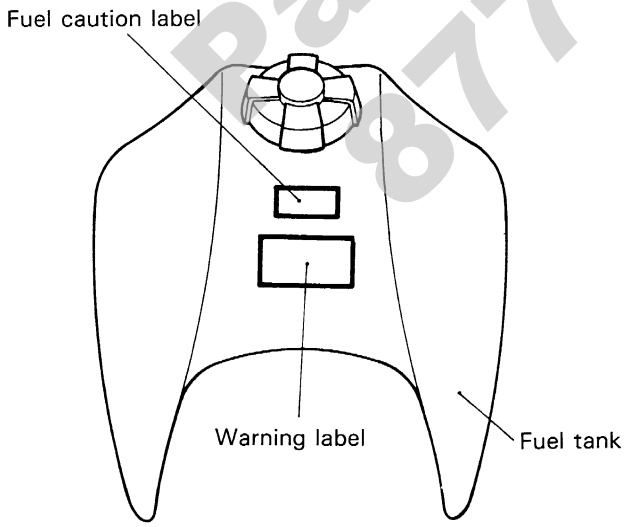
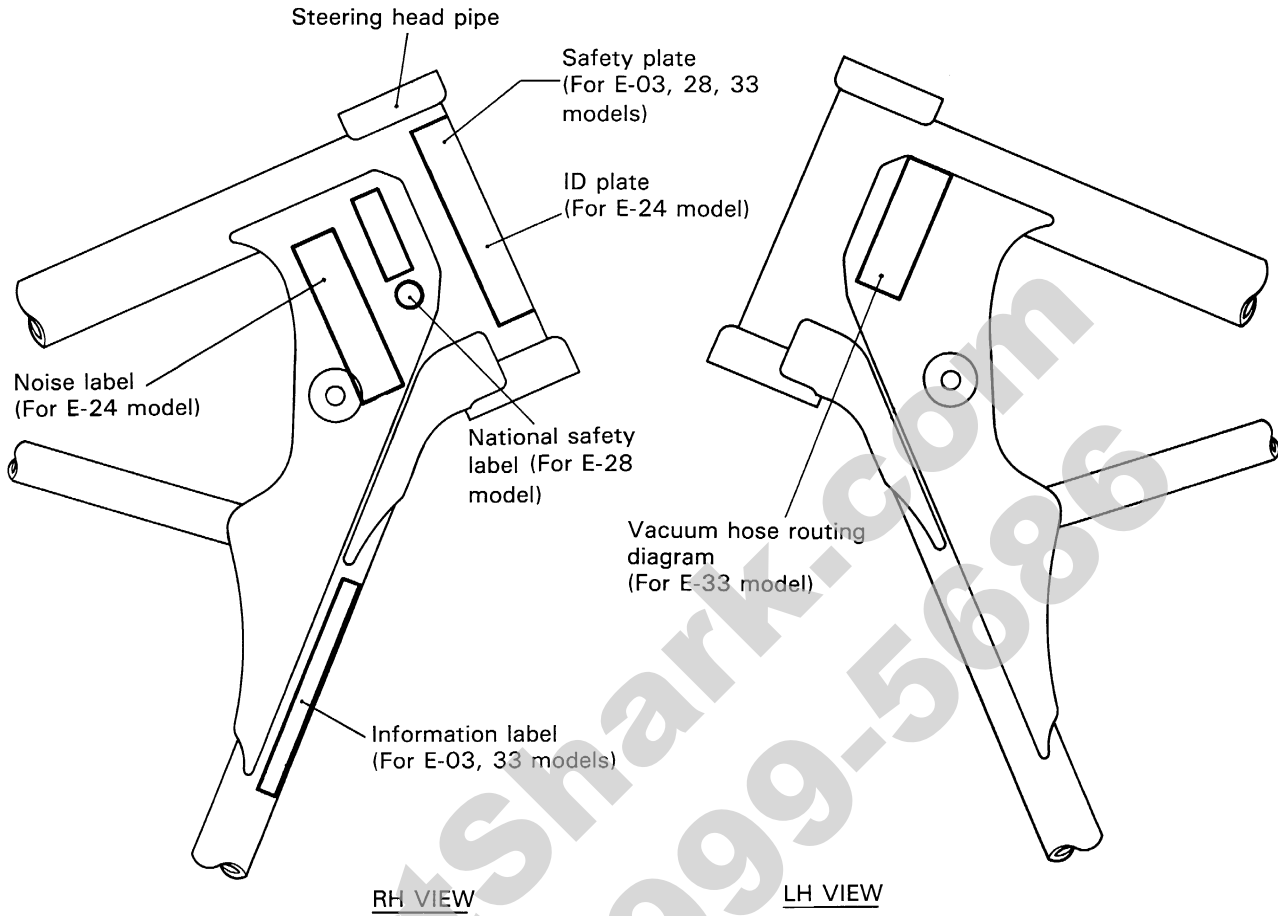
- Keep to this break-in throttle position.

Initial 800 km (500 miles): Less than 1/2 throttle

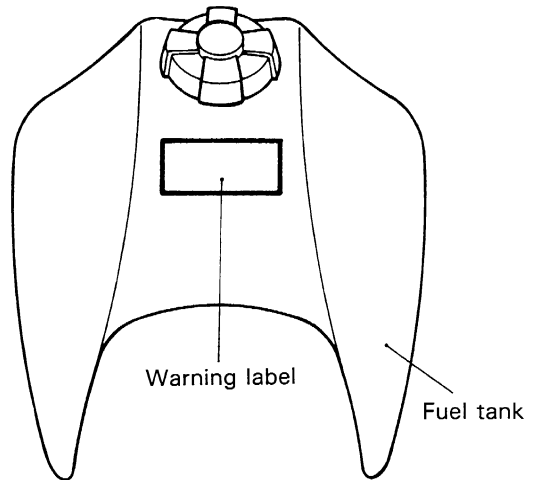
Up to 1 600 km (1 000 miles): Less than 3/4 throttle

- Upon reaching an odometer reading of 1 600 km (1 000 miles) you can subject the motorcycle to full throttle operation for short periods of time.

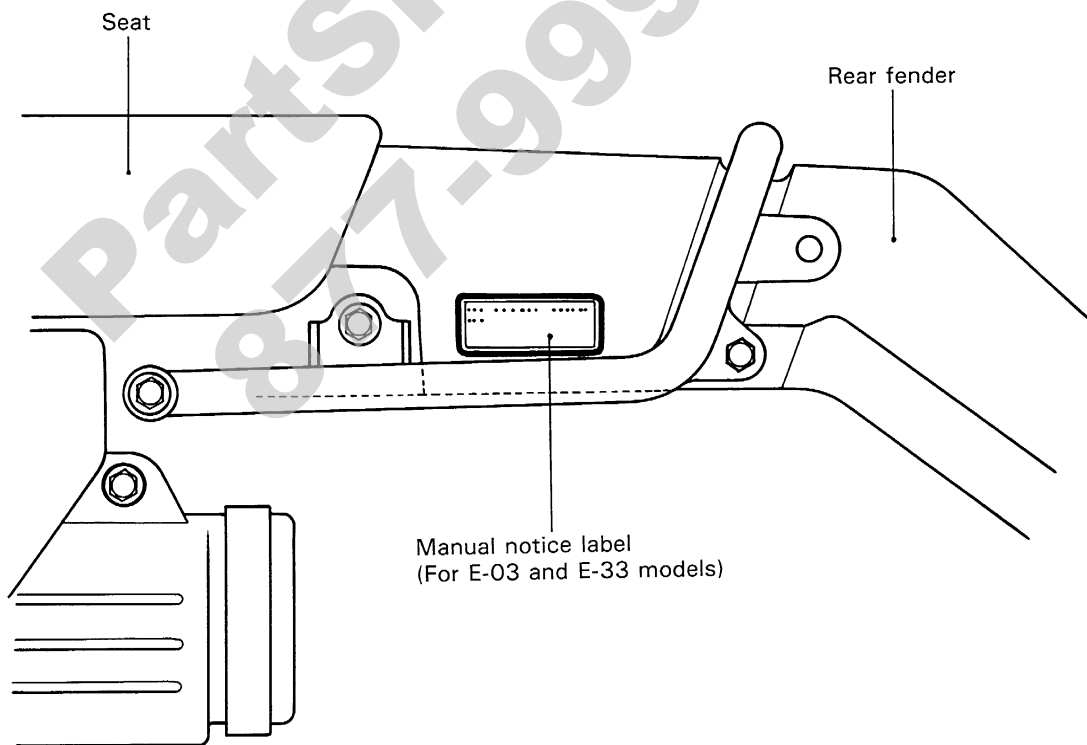
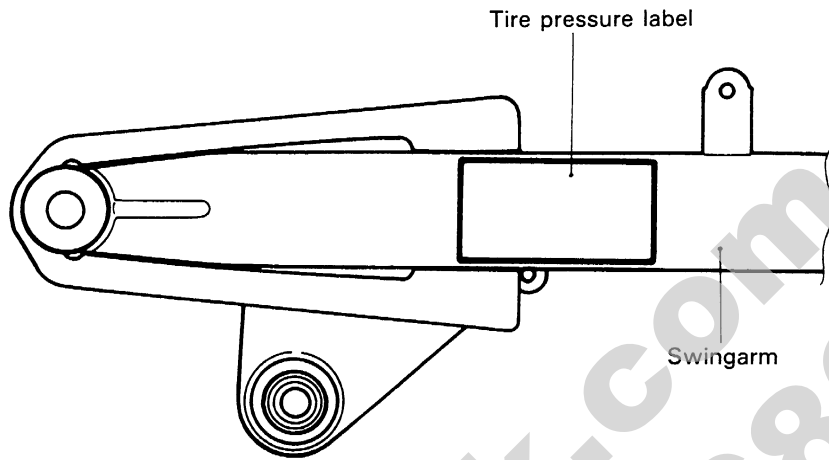
INFORMATION LABELS



For E-24 model



For the other models



SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2 150 mm (84.6 in)
Overall width	805 mm (31.7 in)
Overall height	1 185 mm (46.6 in)
Wheelbase	1 405 mm (55.3 in)
Ground clearance	260 mm (10.2 in)
Seat height	810 mm (31.8 in)
Dry mass	113 kg (249 lbs)

ENGINE

Type	Four-stroke, air-cooled, OHC
Number of cylinders	1
Bore	66.0 mm (2.598 in)
Stroke	58.2 mm (2.291 in)
Piston displacement	199 cm ³ (12.1 cu. in)
Compression ratio	9.4:1
Carburetor	MIKUNI BST31SS, single
Air cleaner	Polyurethane foam element
Starter system	Electric starter
Lubrication system	Wet sump

TRANSMISSION

Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction ratio	3.157 (60/19)
Final reduction ratio	3.000 (45/15)
Gear ratios, Low	3.000 (33/11)
2nd	1.933 (29/15)
3rd	1.437 (23/16)
4th	1.095 (23/21)
Top	0.913 (21/23)
Drive chain	DID520VC5, 112 links

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Link type, coil spring, spring pre-load fully adjustable
Steering angle	43° (right & left)
Caster	61°
Trail	112 mm (4.4 in)
Turning radius	2.3 m (7.5 ft)
Front brake	Disc brake
Rear brake	Internal expanding
Front tire size	70/100-21 44P
Rear tire size	100/90-18 56P
Front fork stroke	205 mm (8.1 in)
Rear wheel travel	205 mm (8.1 in)

ELECTRICAL

Ignition type	Electronic Ignition (Fully Transistorized)
Ignition timing	7° B.T.D.C. Below at 1 950 r/min and 38° B.T.D.C. Above at 4 400 r/min
Spark plug	DR8EA or X24ESR-U
Battery	12V 21.6 kC (6 Ah)/10 HR
Generator	Three-phase A.C. Generator
Fuse	20A
Headlight	12V 60/55W
Turn signal light	12V 21W
Taillight/Brake light	12V 5/21W
Speedometer light	12V 3.4W
Neutral indicator light	12V 3.4W
High beam indicator light	12V 1.7W
Turn signal indicator light	12V 3.4W

CAPACITIES

Fuel tank, including reserve	13.0 L (3.4/2.9 US/Imp gal)
reserve	12.5 L (3.3/2.7 US/Imp gal) ... For California
reserve	2.5 L (0.7/0.5 US/Imp gal)
Engine oil, oil change	850 ml (0.90/0.75 US/Imp qt)
with filter change	950 ml (1.00/0.84 US/Imp qt)
overhaul	1 300 ml (1.37/1.14 US/Imp qt)
Front fork oil	309 ml (10.4/10.9 US/Imp oz)

These specifications are subject to change without notice.

COUNTRY OR AREA

The series of symbols on the left stand for the countries or area on the right.

SYMBOL	COUNTRY or AREA
E-03	U.S.A.
E-24	Australia
E-28	Canada
E-30	Singapore
E-33	California (U.S.A.)

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PERIODIC MAINTENANCE

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PERIODIC MAINTENANCE SCHEDULE

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

NOTE:

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

PERIODIC MAINTENANCE CHART

Item	Interval	1 000	5 000	10 000	15 000
	km	600	3 000	6 000	9 500
	miles	3	15	30	45
Exhaust pipe nuts		—	T	T	T
Air cleaner		—	C	C	C
Valve clearance		I	I	I	I
Spark plug		—	I	R	I
Spark arrester		—	C	C	C
Fuel line (EVAP hose California model only)		—	I	I	I
		Replace every 4 years			
Engine idle rpm (Carburetor)		I	I	I	I
Throttle cable play (Carburetor)		I	I	I	I
Clutch		I	I	I	I
Engine oil		R	R	R	R
Engine oil filter		R	—	R	—
Drive chain		I	I	I	I
		Clean and lubricate every 1 000 km			
Brake		I	I	I	I
Brake hose		—	I	I	I
		Replace every 4 years			
Brake fluid		—	I	I	I
		Replace every 2 years			
Tire		—	I	I	I
Steering		I	—	I	—
Front fork		—	—	I	—
Rear suspension		—	—	I	—
Chassis bolts and nuts		T	T	T	T

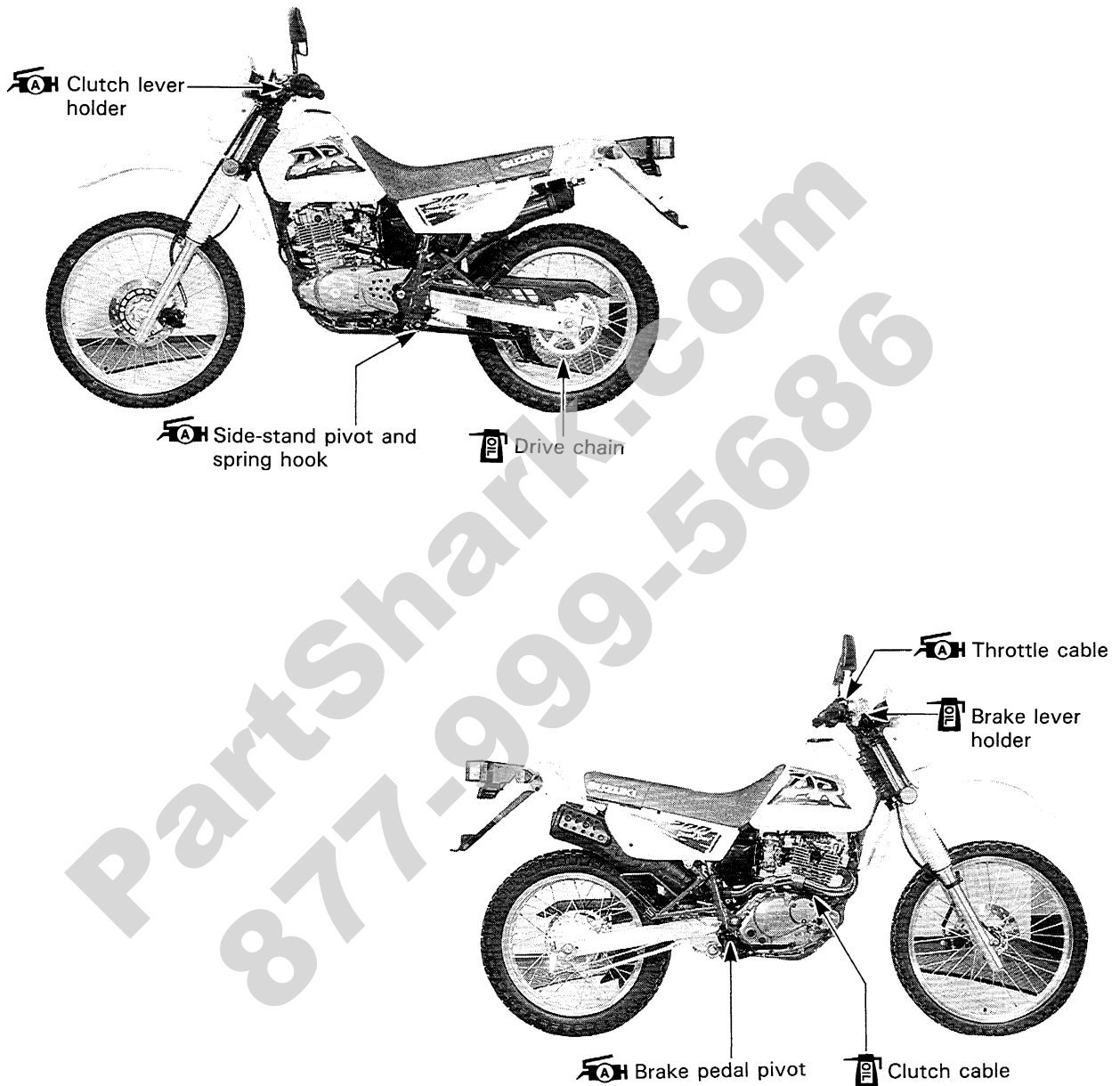
I = Inspect and adjust, clean, lubricate or replace as necessary

C = Clean R = Replace T = Tighten

LUBRICATION POINTS

Proper lubrication is important for smooth operation and long life of each working part of the motorcycle.

Major lubrication points are indicated below.



NOTE:

- * Before lubricating each part, clean off any rusty spots and wipe off any grease, oil, dirt or grime.
- * Lubricate exposed parts which are subject to rust, with a rust preventative spray whenever the motorcycle has been operated under wet or rainy conditions.

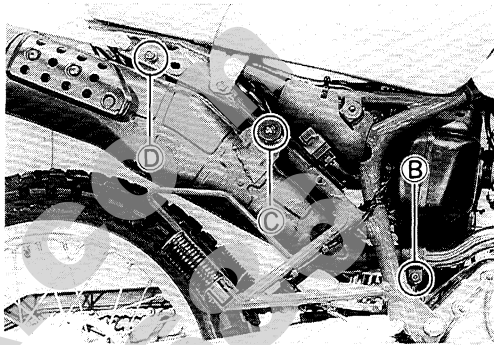
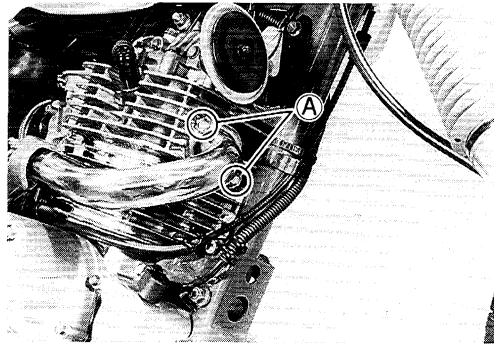
MAINTENANCE AND TUNE-UP PROCEDURES

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

EXHAUST PIPE NUTS

Tighten Every 5 000 km (3 000 miles, 15 months).

- Remove the right frame cover. (Refer to page 5-1.)
- Tighten the exhaust pipe nuts, muffler connection bolt and muffler mounting bolts to the specified torque with a torque wrench.

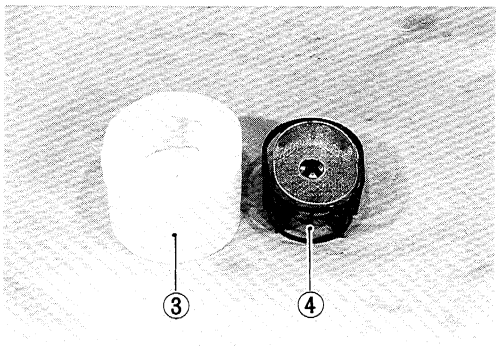
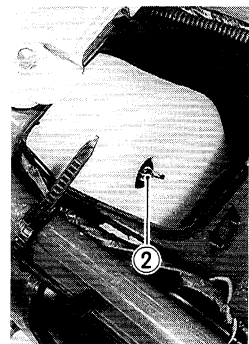
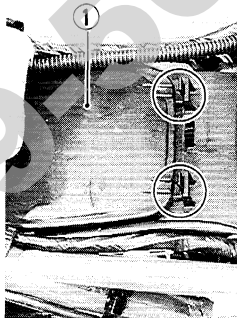


Ⓐ	Exhaust pipe nut	23 N·m (2.3 kg·m) (16.5 lb·ft)
Ⓑ	Muffler connection bolt	
Ⓒ	Muffler mounting bolt	
Ⓓ	Muffler mounting bolt	44 N·m (4.4 kg·m) (32.0 lb·ft)

AIR CLEANER

Clean Every 5 000 km (3 000 miles, 15 months).

- Remove the frame covers and seat. (Refer to page 5-1.)
- Remove the air cleaner case lid ①.
- Remove the air cleaner element by removing the wing bolt ②.
- Remove the polyurethane foam element ③ from its frame ④.
- 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.

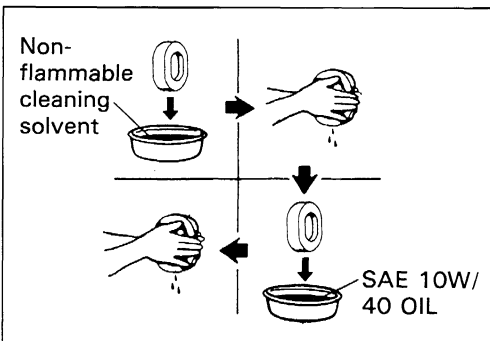


NOTE:

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

⚠ CAUTION

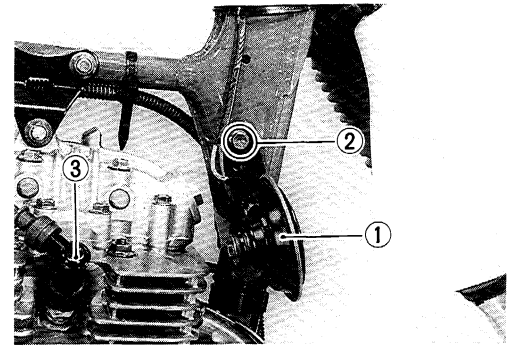
Inspect the element carefully for rips, torn seams, etc. If any damage is noted, replace the element. If driving under dusty condition, clean the air cleaner element more frequently. The surest way to accelerate engine wear is to use the engine without the element or to use a ruptured element. Make sure that the air cleaner is in good condition at all times. Life of the engine depends largely on this component!



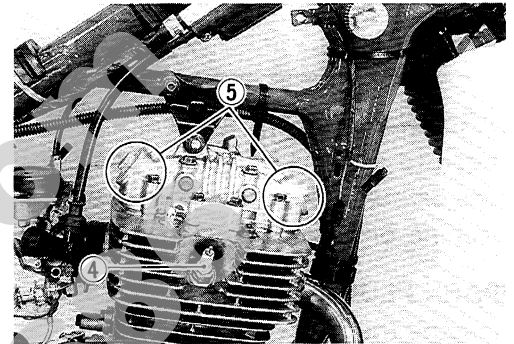
VALVE CLEARANCE

Inspect Initially at 1 000 km (600 miles, 3 months) and Every 5 000 km (3 000 miles, 15 months) thereafter.

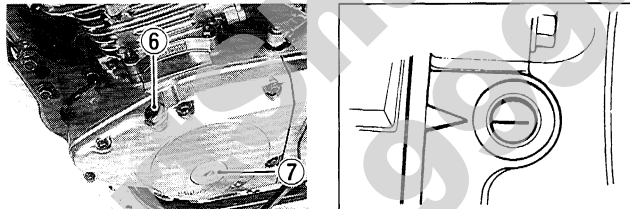
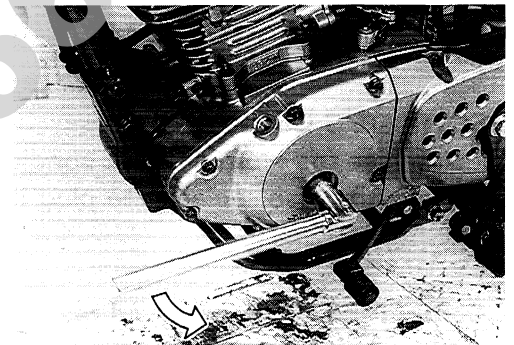
- Remove the frame covers, seat and fuel tank. (Refer to pages 5-1 and 4-1.)
- Remove the horn ① by removing its mounting bolt ② .
- Disconnect the spark plug cap ③ .



- Remove the spark plug ④ .
- Remove the valve inspection caps ⑤ .



- Remove the cam timing inspection cap ⑥ and generator cover cap ⑦ .
- Rotate the generator rotor with a 17 mm box wrench to set the piston at (TDC) on the compression stroke. (Align "Top" line on the generator rotor with the index mark on the generator cover.)



The valve clearance specification is the same for both intake and exhaust valves.

Valve clearance adjustment must be checked and adjusted, 1) at the time of periodic inspection, 2) when the valve mechanism is serviced, and 3) when the camshaft is disturbed by removing it for servicing.

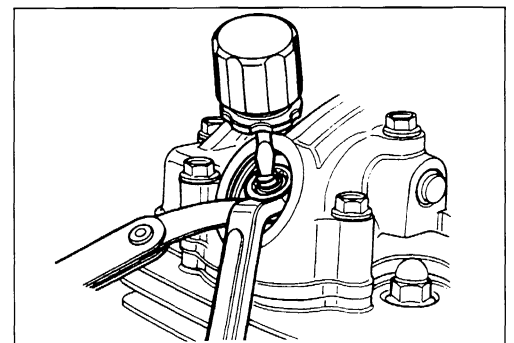
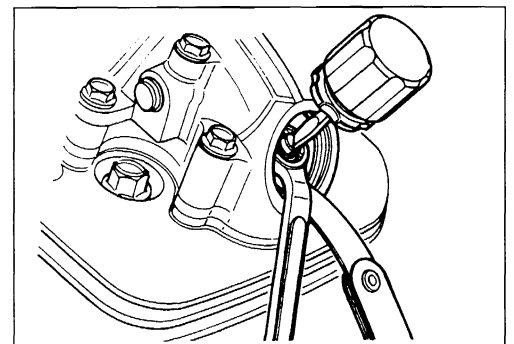
Valve clearance (when cold):

IN. & EX.: 0.08–0.13 mm (0.003–0.005 in)

- Insert the thickness gauge to the clearance between the valve stem end and the adjusting screw on the rocker arm.

TOOL 09900-20803: Thickness gauge

- If clearance is out the specification, bring it into the specified range by using a screw driver and offset wrench.
- Securely tighten the lock nut after adjustment is completed.
- Reinstall the spark plug, valve inspection caps, cam timing inspection cap and generator cover cap.



SPARK PLUG

Inspect Every 5 000 km (3 000 miles, 15 months) and Replace Every 10 000 km (6 000 miles, 30 months).

- Remove the spark plug.

TOOL 09900-20803: Thickness gauge

Standard	Cold type	Hot type
DR8EA	DR9EA	DR7EA
X24ESR-U	X27ESR-U	X22ESR-U

CARBON DEPOSIT

Check to see the carbon deposit on the plug. If the carbon is deposited, remove it with a spark plug cleaner machine or carefully using a tool with a pointed end.

SPARK PLUG GAP

Measure the plug gap with a thickness gauge if it is correct. If not, adjust it to the following gap.

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

ELECTRODE'S CONDITION

Check to see the worn or burnt condition of the electrodes. If it is extremely worn or burnt, replace the plug. And also replace the plug if it has a broken insulator, damaged thread, etc.

CAUTION

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

SPARK ARRESTER

Clean Every 5 000 km (3 000 miles, 15 months)

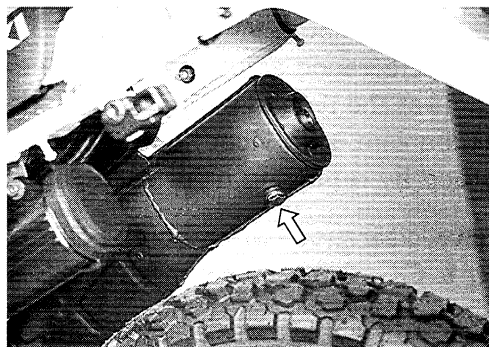
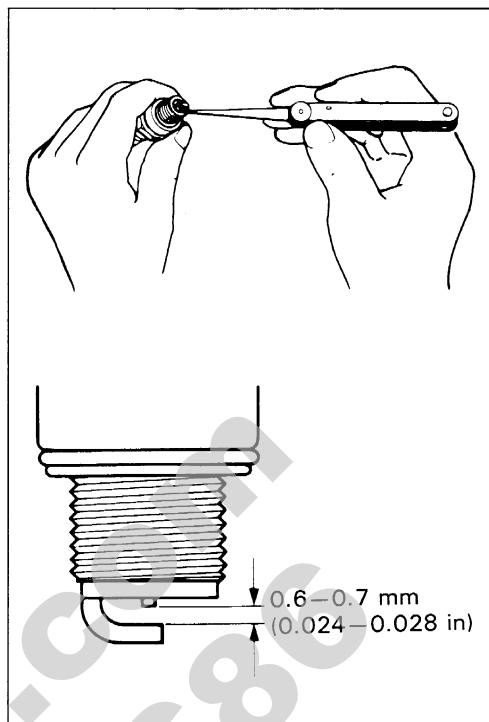
- Remove the drain bolt.
- Start the engine and rev it to blow out the accumulated carbon particles.
- Stop the engine, and install the drain bolt securely.

WARNING

Only clean the spark arrester in an open area away from combustible materials. Exhausted hot carbon particles can start a fire.

FUEL LINE (EVAP HOSE ... California model only)

Inspect Every 5 000 km (3 000 miles, 15 months).
Replace Every 4 years.



CARBURETOR

Inspect Initially at 1 000 km (600 miles, 3 months) and Every 5 000 km (3 000 miles, 15 months) thereafter.

IDLE RPM (Idling adjustment)

NOTE:

Make this adjustment when the engine is hot.

- Connect a tachometer.
- Start up the engine and set its speed at anywhere between 1 400 and 1 600 r/min by turning throttle stop screw ①.

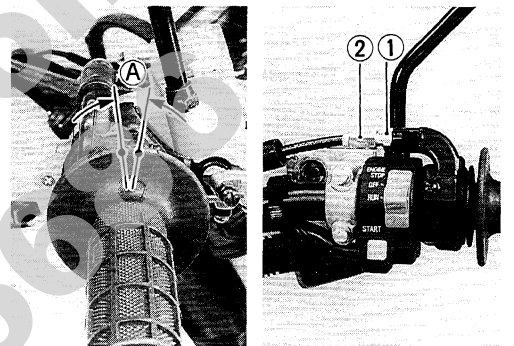
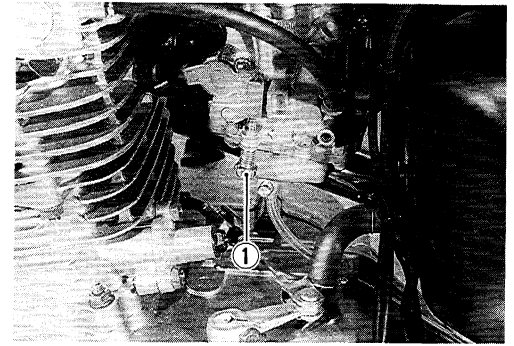
Engine idle speed: 1 500 ± 100 r/min

THROTTLE CABLE PLAY

Throttle cable play ① should be 3–6 mm as measured at throttle grip when turning the throttle grip lightly. If the play ① in the throttle cable is incorrect, adjust it in the following way:

- Loosen the lock nut ① and turn the adjuster ② in or out until the specified play is obtained.
- Tighten the lock nut ① while holding the adjuster ②.

Throttle cable play ①: 3–6 mm (0.1–0.2 in)



⚠ WARNING

After the adjustment is completed, check that handlebars movement does not raise the engine idle speed and that the throttle grip returns smoothly and automatically.

CLUTCH

Inspect Initially at 1 000 km (600 miles, 3 months) and Every 5 000 km (3 000 miles, 15 months) thereafter.

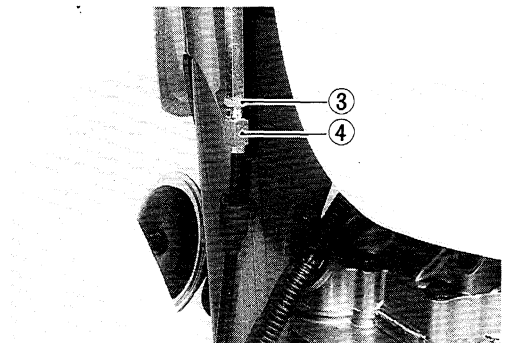
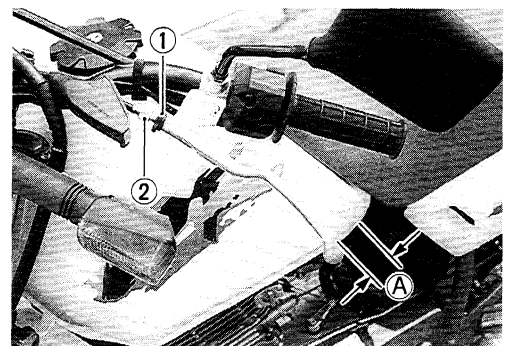
Clutch lever play ① should be 10–15 mm as measured at the clutch lever end when the clutch begins to disengage. If the play in the clutch is incorrect, adjust it in the following way:

- Loosen the cable adjuster lock nut ① and screw in the cable adjuster ②.
- Loosen the cable adjuster lock nut ③.
- Turn the cable adjuster ④ in or out to require the specified play.
- Tighten the cable adjuster lock nut ③ while holding the cable adjuster ④ in position.

Clutch lever play ①: 10–15 mm (0.4–0.6 in)

- After adjusting the play, tighten the cable adjuster lock nut ①.

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



ENGINE OIL AND OIL FILTER

(ENGINE OIL)

Replace Initially at 1 000 km (600 miles, 3 months) and Every 5 000 km (3 000 miles, 15 months) thereafter.

(OIL FILTER)

Replace Initially at 1 000 km (600 miles, 3 months) and Every 10 000 km (6 000 miles, 30 months) thereafter.

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

- Keep the motorcycle upright, supported by jack.
- Place an oil pan below the engine, and drain the oil by removing the drain plug ① and filler cap ②.
- Remove the oil filter cap ③ by removing the three nuts.
- Remove the oil filter ④ and install the new oil filter.
- Apply engine oil lightly to the O-ring ⑥ of the oil filter cap ③ before installation.
- Install the oil filter cap ③ and tighten the three nuts securely.

NOTE:

Before installing the oil filter and oil filter cap, check to be sure that the spring ⑤ and new O-rings (⑥ and ⑦) are installed correctly.

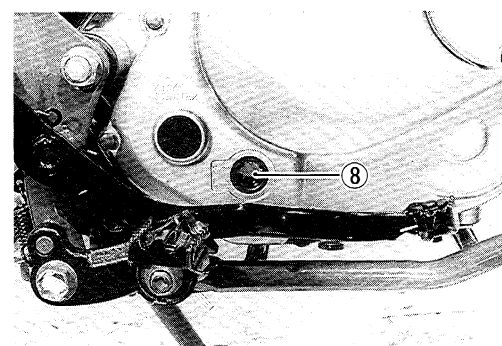
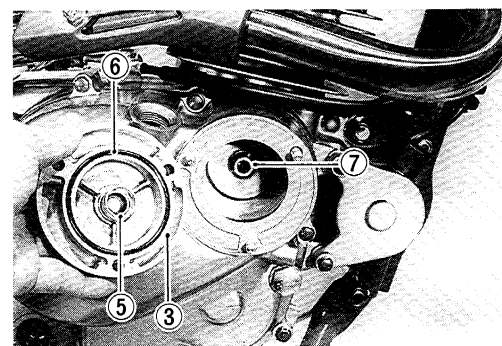
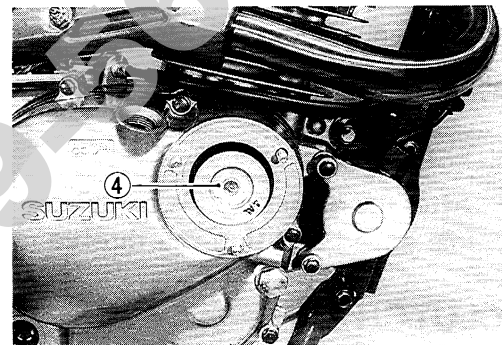
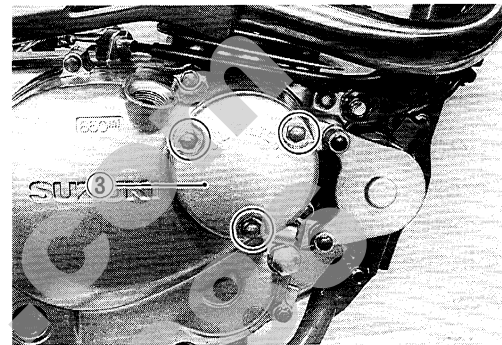
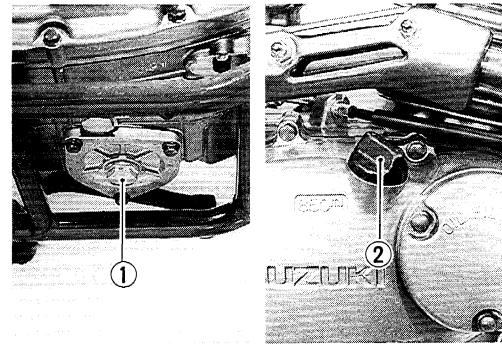
- Tighten the oil drain plug ① securely, and pour fresh oil through the oil filler. The engine will hold about 950 ml of oil.
Use an API classification of SE, SF or SG oil with SAE 10W/40 viscosity.
- Install the filler cap ②.
- Start up the engine and allow it to run for several seconds at idling speed.
- Turn off the engine and wait about one minute, then check the oil level through the inspection window ⑧. If the level is below mark "F", add oil to that level.

NECESSARY AMOUNT OF ENGINE OIL

Oil change : 850 ml (0.90/0.75 US/lmp qt)

Filter change : 950 ml (1.00/0.84 US/lmp qt)

Overhaul engine: 1 300 ml (1.37/1.14 US/lmp qt)



DRIVE CHAIN

Inspect Initially at 1 000 km (600 miles, 3 months) and Every 5 000 km (3 000 miles, 15 months) thereafter. Lubricate Every 1 000 km (600 miles).

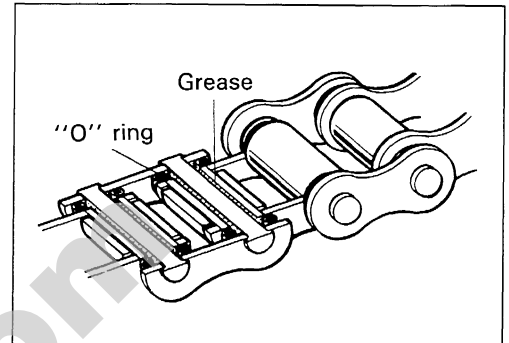
Visually check the drive chain for the possible defects listed below. (Support the motorcycle by a jack and a wooden block, turn the rear wheel slowly by hand with the transmission shifted to Neutral.)

- * Loose pins
- * Damaged rollers
- * Dry or rusted links
- * Kinked or binding links
- * Excessive wear
- * Improper chain adjustment
- * Missing O-ring seals

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

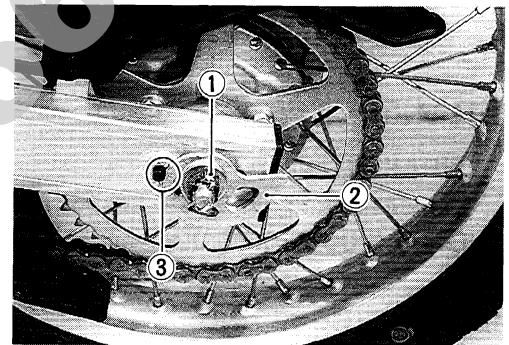
NOTE:

When replacing the drive chain, replace the drive chain and sprockets as a set.



CHECKING

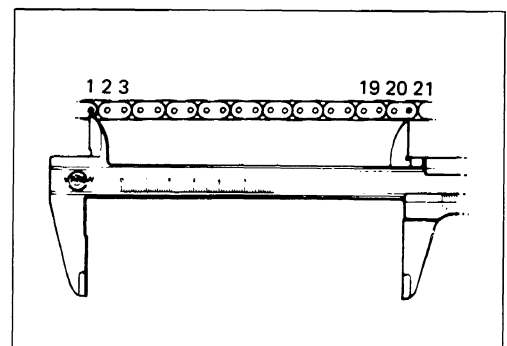
- Remove the axle cotter pin.
- Loosen the axle nut ① .
- Tense the drive chain fully by turning both chain adjusters ② .
- Count out 21 pins (20 pitches) on the chain and measure the distance between the two points. If the distance exceeds the service limit, the chain must be replaced.



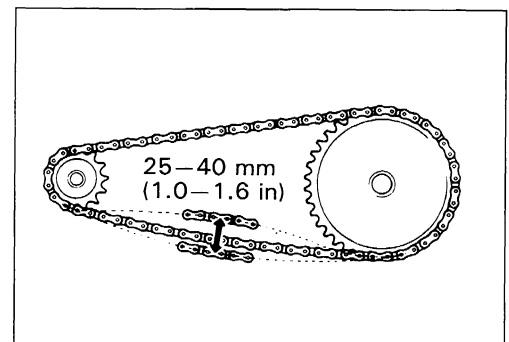
Drive chain 20-pitch length: 319.4 mm (12.57 in)

ADJUSTING

- Turn both chain adjusters ② until the chain has 25–40 mm (1.0–1.6 in) of slack in the middle between engine and rear sprockets. The mark ③ on both chain adjusters must be at the same position on the scale to ensure that the front and rear wheels are correctly aligned.
- Place the motorcycle on its side-stand for accurate adjustment.
- After adjusting the drive chain, tighten the axle nut ① securely.



Rear axle nut: 65 N·m (6.5 kg·m, 47.0 lb-ft)



CLEANING AND LUBRICATING

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

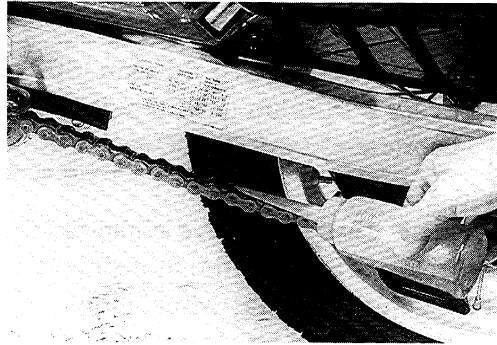
⚠ CAUTION

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

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

⚠ CAUTION

- * Do not use any oil sold commercially as "drive chain oil". Such oil can damage the "O"-rings (or seals).
- * The standard drive chain DAIDO DID520VC5. SUZUKI recommends that this standard drive chain should be used for the replacement.



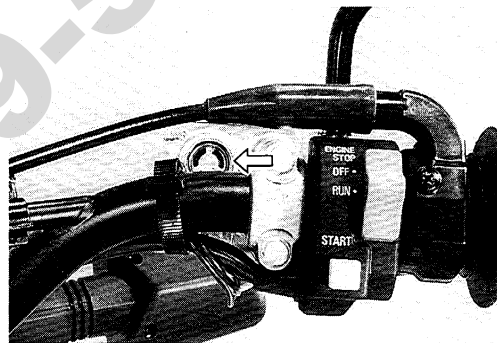
BRAKE

(BRAKE)

Inspect Initially at 1 000 km (600 miles, 3 months) and Every 5 000 km (3 000 miles, 15 months) thereafter.

(BRAKE HOSE AND BRAKE FLUID)

Inspect Every 5 000 km (3 000 miles, 15 months).
Replace hoses Every 4 years. Replace fluid Every 2 years.



BRAKE FLUID LEVEL

- Keep the motorcycle upright and place the handlebars straight.
- Check the brake fluid level by observing the lower limit line on the front brake fluid reservoir.
- When the level is below the lower limit line, replenish with brake fluid that meets the following specification.

BF Specification and Classification: DOT 4

⚠ WARNING

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

⚠ WARNING

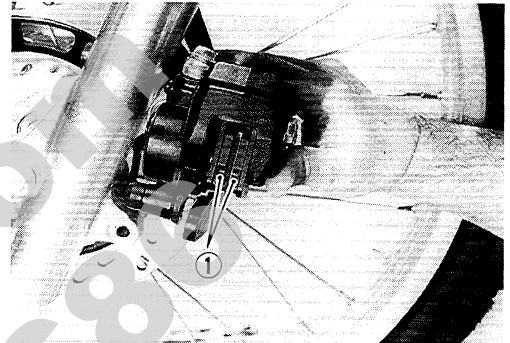
Brake fluid, if it leaks, will interfere with safe running and immediately discolor painted surfaces. Check the brake hoses and hose joints for cracks and oil leakage before riding.

BRAKE PADS

The extent of brake pad wear can be checked by observing the grooved limit line ① on the pad. When the wear exceeds the grooved limit line, replace the pads with new ones. (Refer to page 5-8.)

⚠ CAUTION

Replace the brake pad as a set, otherwise braking performance will be adversely affected.



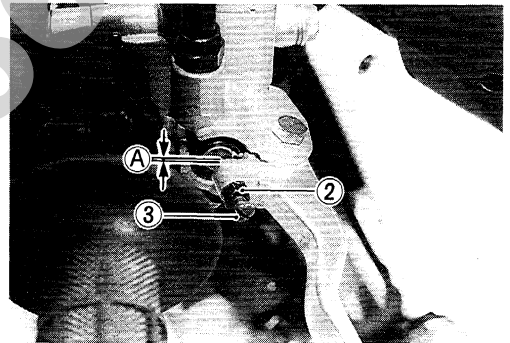
BRAKE LEVER PLAY

Adjust the front brake lever play as follows.

- Loosen the lock nut ② .
- Turn the adjuster ③ in or out to obtain the correct play ④.

Brake lever play ④ : 0.1–0.3 mm (0.004–0.010 in)

- Tighten the lock nut ② .



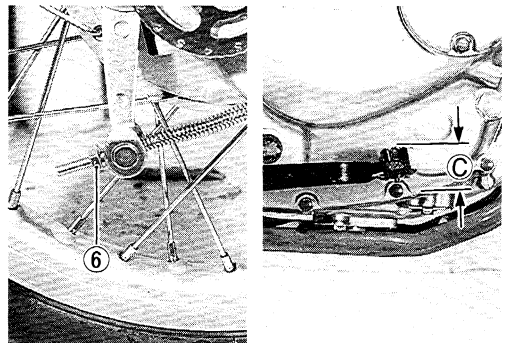
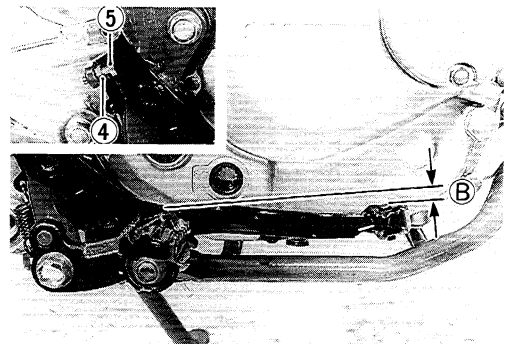
BRAKE PEDAL HEIGHT AND FREE TRAVEL

- Loosen the lock nut ④ and rotate the adjusting bolt ⑤ to locate brake pedal 2.5 mm (0.10 in) ⑥ below the top face of the footrest.
- Retighten the lock nut ④ to secure the adjusting bolt ⑤ in the proper position.

Brake pedal height ⑥ : 2.5 mm (0.10 in)

- By repositioning the adjusting nut ⑦ on the brake rod, set the pedal play to between 20 and 30 mm ⑧ as measured at pedal tip.

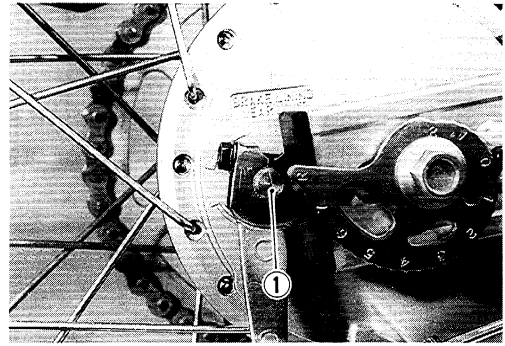
Brake pedal free travel ⑧ : 20–30 mm (0.8–1.2 in)



BRAKE SHOE WEAR

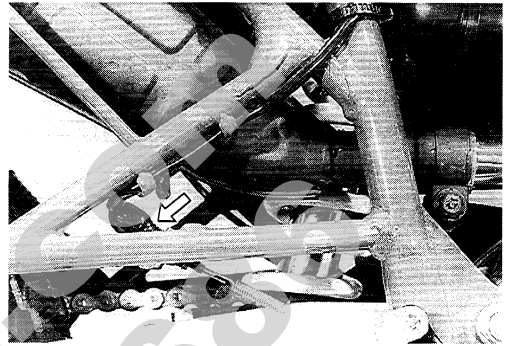
This motorcycle is equipped with brake lining wear limit indicator on the rear brake panel as shown in Fig. At the condition of normal lining wear, the extension line of the index mark ① on the brake cam shaft should be within the range embossed on the brake panel with brake on.

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



BRAKE LIGHT SWITCH

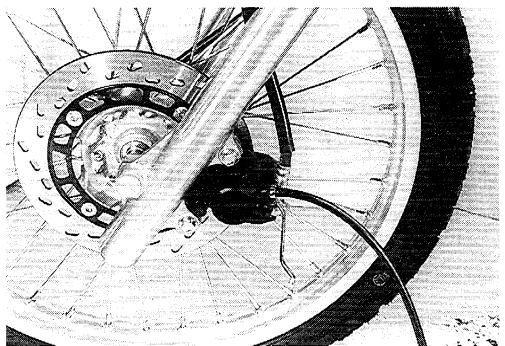
Adjust the rear brake light switch so that the brake light will come on just before pressure is felt when the brake pedal is depressed.



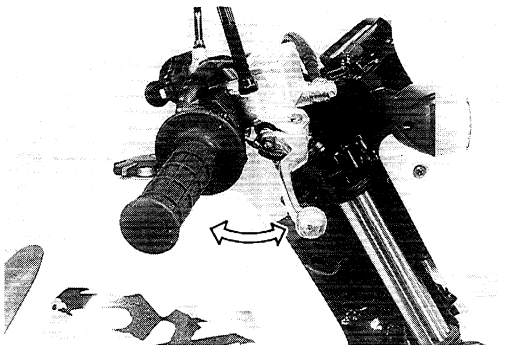
AIR BLEEDING THE BRAKE FLUID CIRCUIT

Air trapped in the fluid circuit acts like a cushion to absorb a large proportion of the pressure developed by the master cylinder and thus interferes with the full braking performance of the brake caliper. 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 re-mounting the brake and restoring the brake system to the normal condition, the brake fluid circuit be purged of air in the following manner:

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



 Air bleeder valve: 8 N·m (0.8 kg·m, 6.0 lb·ft)



NOTE:

Replenish the brake fluid in the 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 "UPPER" level.

CAUTION

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

TIRE

Inspect Every 5 000 km (3 000 miles, 15 months).

TIRE TREAD CONDITION

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

Tire tread depth limit

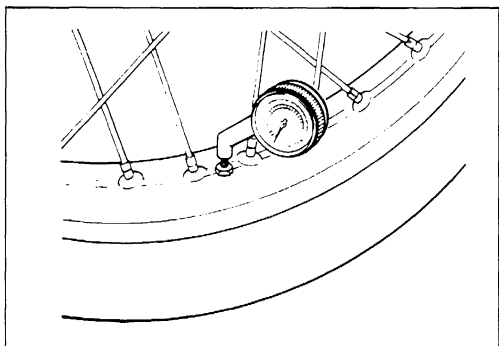
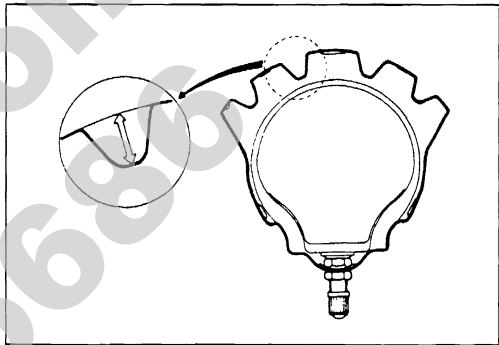
Front & Rear: 3.0 mm (0.12 in)

TIRE PRESSURE

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

Cold inflation tire pressure is as follows.

COLD INFLATION TIRE PRESSURE	SOLO RIDING		DUAL RIDING	
	kPa	kg/cm ²	kPa	kg/cm ²
FRONT	150	1.50	150	1.50
REAR	175	1.75	200	2.00



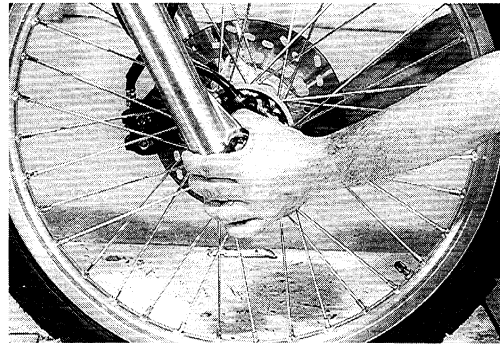
CAUTION

The standard tire fitted on this motorcycle is 70/100-21 44P for front and 100/90-18 56P for rear. The use of tires other than those specified may cause instability. It is highly recommended to use a SUZUKI Genuine Tire.

STEERING

Inspect Initially at 1 000 km (600 miles, 3 months) and Every 10 000 km (6 000 miles, 30 months) thereafter.

Taper roller type bearings are used on the steering system for better handling. Steering should be adjusted properly for smooth turning of handlebars and safe running. Overtight steering prevents smooth turning of the handlebars and too loose steering will cause poor stability. Check that there is no play in the front fork assembly by supporting the machine so that the front wheel is off the ground, with the wheel straight ahead, grasp the lower fork tubes near the axle and pull forward. If play is found, perform steering bearing adjustment as described in page 5-25 of this manual.



FRONT FORK

Inspect Every 10 000 km (6 000 miles, 30 months).

Inspect the front forks for oil leakage, scoring or scratches on the outer surface of the inner tubes. Replace any defective parts, if necessary. (Refer to page 5-15.)

REAR SUSPENSION

Inspect Every 10 000 km (6 000 miles, 30 months).

Inspect the rear shock absorber for oil leakage and check that there is no play in the swingarm assembly.

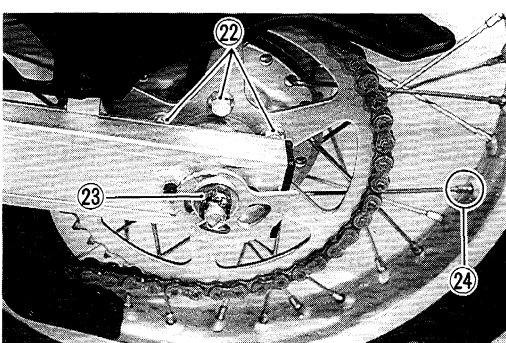
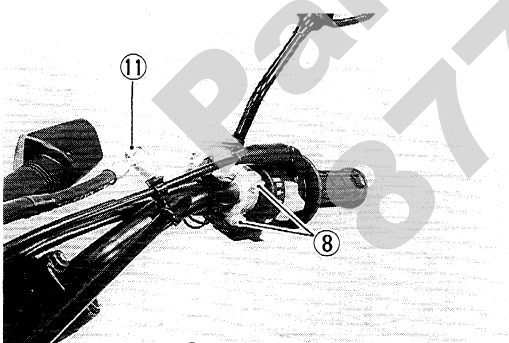
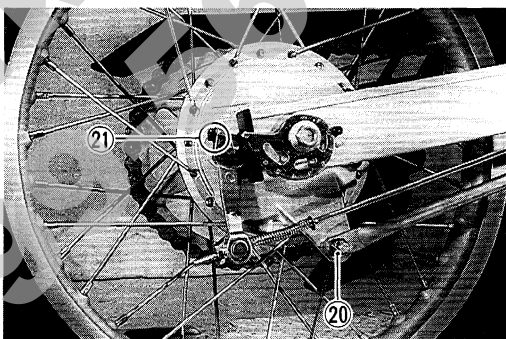
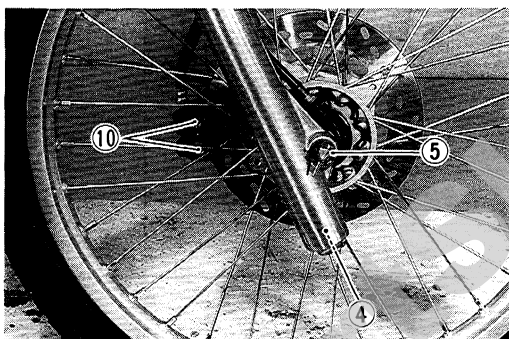
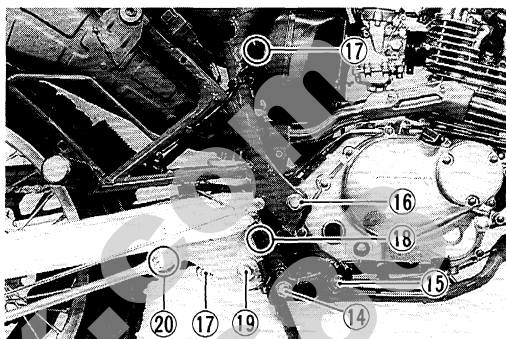
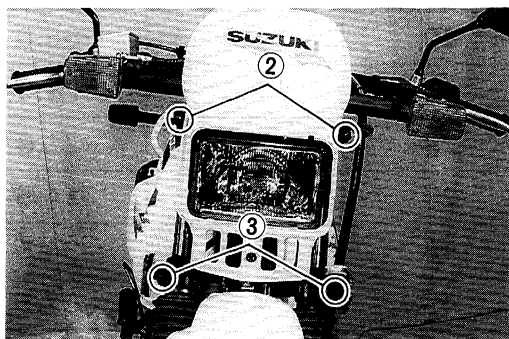
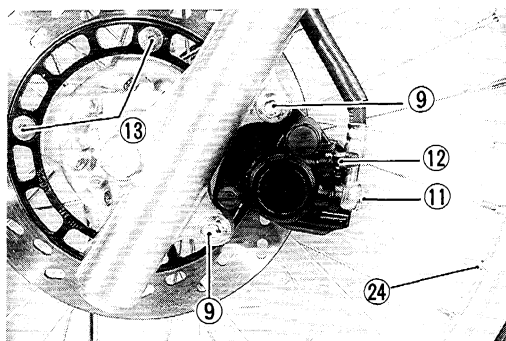
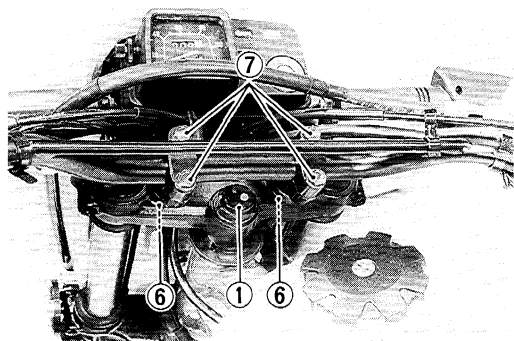
CHASSIS BOLTS AND NUTS

Tighten Initially at 1 000 km (600 miles, 3 months) and Every 5 000 km (3 000 miles, 15 months) thereafter.

The nuts and bolts listed below are important safety related parts. They must be retightened when necessary to the specified torque with a torque wrench. (Refer to page 2-15 for the locations of the following nuts and bolts on the motorcycle.)

Item	N·m	kg-m	lb-ft
① Steering stem head nut	90	9.0	65.0
② Front fork upper clamp bolt	29	2.9	21.0
③ Front fork lower clamp bolt	29	2.9	21.0
④ Front fork damper rod bolt	20	2.0	14.5
⑤ Front axle nut	48	4.8	34.5
⑥ Handlebars holder nut	45	4.5	32.5
⑦ Handlebars clamp bolt	25	2.5	18.0
⑧ Front brake master cylinder mounting bolt	10	1.0	7.0
⑨ Front brake caliper mounting bolt	26	2.6	19.0
⑩ Front brake pad mounting bolt	18	1.8	13.0
⑪ Brake hose union bolt	23	2.3	16.5
⑫ Air bleeder valve	8	0.8	6.0
⑬ Front disc mounting bolt	23	2.3	16.5
⑭ Front footrest bolt	94	9.4	68.0
⑮ Front footrest nut	42	4.2	30.5
⑯ Swingarm pivot nut	65	6.5	47.0
⑰ Shock absorber mounting nut (Upper & Lower)	60	6.0	43.5
⑱ Rear cushion lever nut	78	7.8	56.5
⑲ Rear cushion lever center nut	72	7.2	52.0
⑳ Rear torque link nut	13	1.3	9.5
㉑ Rear brake cam lever bolt	11	1.1	8.0
㉒ Rear sprocket mounting bolt	27	2.7	19.5
㉓ Rear axle nut	65	6.5	47.0
㉔ Spoke nipple	4.5	0.45	3.0

2-15 PERIODIC MAINTENANCE



COMPRESSION PRESSURE CHECK

The compression of a cylinder is a good indicator of its internal condition.

The decision to overhaul the cylinder is often based on the results of a compression test. Periodic maintenance records kept at your dealership should include compression readings for each maintenance service.

COMPRESSION PRESSURE SPECIFICATION

Standard	Limit
1 400 kPa (14 kg/cm ² , 199 psi)	980 kPa (9.8 kg/cm ² , 139 psi)

Low compression pressure can indicate any of the following conditions:

- * Excessively worn cylinder wall
- * Worn-down piston or piston rings
- * Piston rings stuck in grooves
- * Poor seating of valves
- * Ruptured or otherwise defective cylinder head gasket

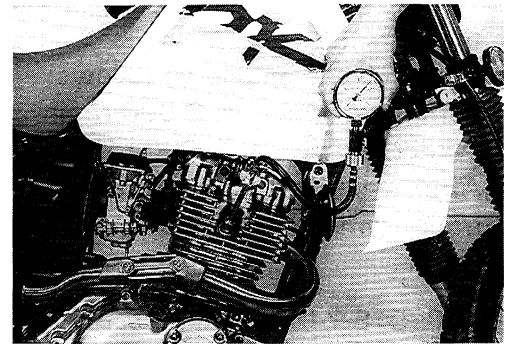
COMPRESSION TEST PROCEDURE

NOTE:

- * *Before testing the engine for compression pressure, make sure that the cylinder head nuts are tightened to the specified torque values and valves are properly adjusted.*
- * *Have the engine warmed up by idling before testing.*
- * *Be sure that the battery used is in fully-charged condition.*

Remove the parts concerned and test the compression pressure in the following manner.

- Remove the spark plug.
- Fit the compression gauge in the plug hole, while taking care that the connection tight.
- Keep the throttle grip in full-open position.
- While cranking the engine a few seconds with the starter, and record the maximum gauge reading as the compression of that cylinder.



- TOOL** 09915-64510: Compression gauge
09915-63210: Adaptor

OIL PRESSURE CHECK

Check periodically the oil pressure in the engine to judge roughly the condition of the moving parts.

OIL PRESSURE SPECIFICATION

Above 15 kPa (0.15 kg/cm², 2.1 psi) Below 35 kPa (0.35 kg/cm², 4.9 psi)	at 3 000 r/min., Oil temp. at 60°C
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If the oil pressure is lower or higher than the specification, the following causes may be considered.

LOW OIL PRESSURE

- * Clogged oil filter
- * Oil leakage from the oil passage way
- * Damaged O-ring
- * Defective oil pump
- * Combination of above items

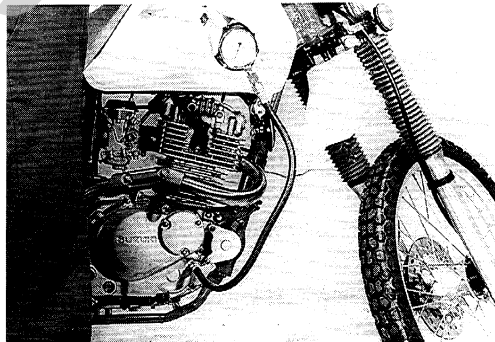
HIGH OIL PRESSURE


- * Used a engine oil which is too heavy a weight
- * Clogged oil passage way
- * Combination of above items

OIL PRESSURE TEST PROCEDURE

Check the oil pressure in the following manner.

- Connect a tachometer.
- Remove the main oil gallery plug.
- Install the oil pressure gauge in the position shown in the figure.
- Warm up the engine as follows:
Summer 10 min. at 2 000 r/min.
Winter 20 min. at 2 000 r/min.
- After warming up, increase the engine speed to 3 000 r/min. (with a tachometer), and read the oil pressure gauge.



 **09915-74510: Oil pressure gauge**

ENGINE

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ENGINE COMPONENTS REMOVABLE WITH THE ENGINE IN PLACE

The parts listed below can be removed and reinstalled without removing the engine from the frame. Refer to the page listed in this section for removal and reinstallation instructions.

ENGINE CENTER

	See page
Spark plug	3- 8
Exhaust pipe	3- 2
Starter motor	3- 3
Carburetor	3- 4
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ENGINE LEFT SIDE

	See page
Engine sprocket	3- 3
Generator cover	3-10
Generator rotor	3-10
Starter clutch	3-10, 31
Starter idle gear	3-10
Neutral switch	3-11

ENGINE RIGHT SIDE

	See page
Oil filter	3-29
Clutch cover	3-11
Clutch assembly	3-12
Primary driven gear assembly	3-12
Primary drive gear and oil pump drive gear	3-14
Oil pump driven gear	3-13
Oil pump assembly	3-13
Gearshift	3-13

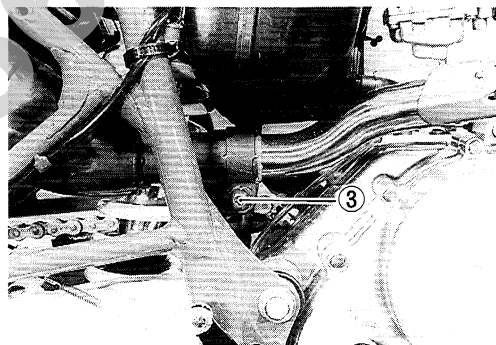
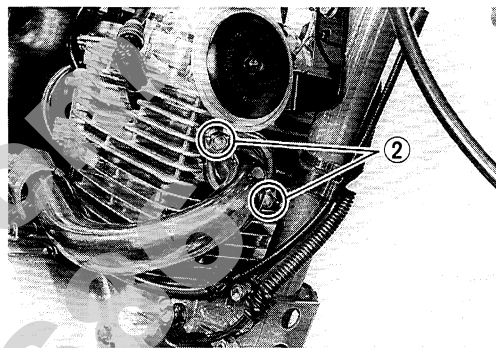
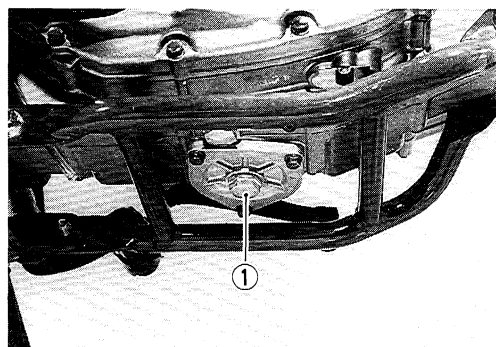
ENGINE REMOVAL AND REINSTALLATION

ENGINE REMOVAL

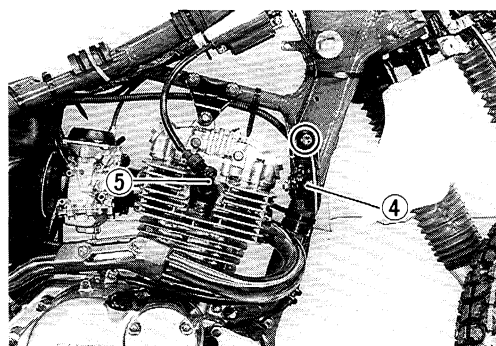
Before taking the engine out of the frame, wash the engine with a steam cleaner. The procedure of engine removal is sequentially explained in the following steps:

- Remove the left and right frame covers.
- Remove the seat. (Refer to page 5-1.)
- Remove the fuel tank. (Refer to page 4-1.)
- Drain out the engine oil by removing the oil drain plug ① .
- Remove the exhaust pipe by removing its clamp nuts ② and connector bolt ③ .

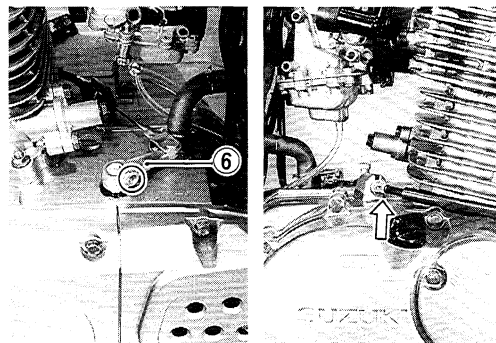
TOOL 09930-11920: Trox bit
09930-11940: Bit holder



- Remove the horn ④ by removing its mounting bolt.
- Disconnect the spark plug cap ⑤ .

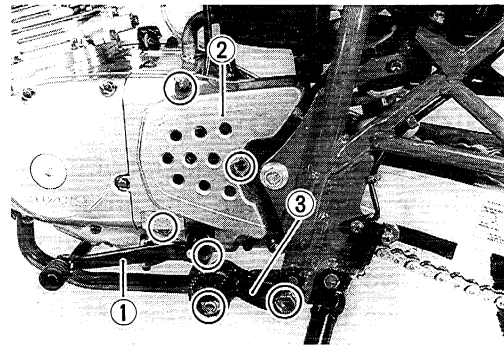


- Remove the clutch release lever ⑥ and disconnect the clutch cable.



3-3 ENGINE

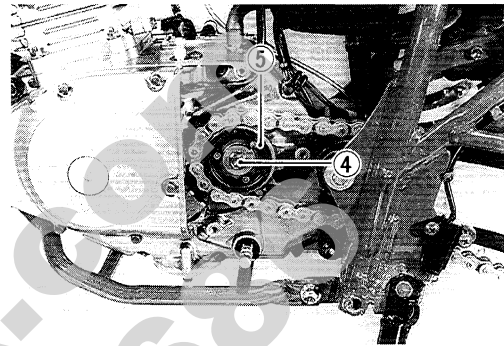
- Remove the gearshift lever ① .
- Remove the engine sprocket cover ② .
- Remove the left footrest ③ .



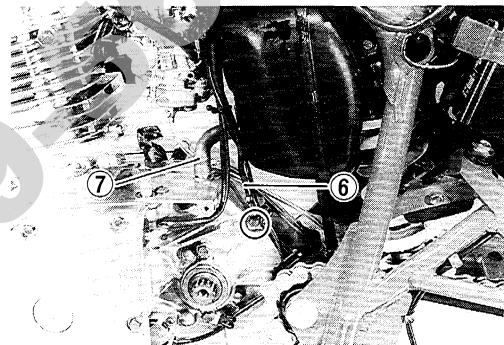
- Remove the engine sprocket bolt ④ while depressing the rear brake pedal.
- Remove the engine sprocket ⑤ .

NOTE:

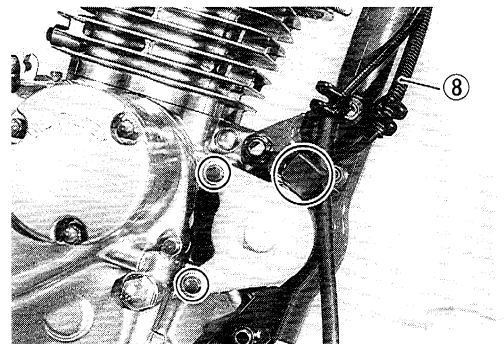
If it is difficult to remove the engine sprocket, loosen the rear axle nut and chain adjusters to provide additional chain slack.



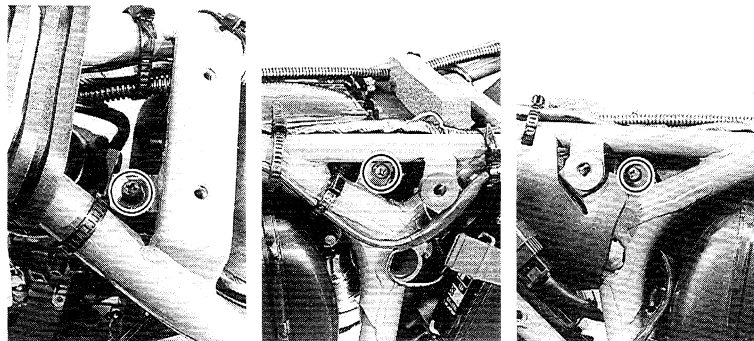
- Disconnect the engine ground lead wire ⑥ by removing the crankcase bolt.
- Disconnect the crankcase breather hose ⑦ .



- Disconnect the starter motor (+) lead wire ⑧ .
- Remove the starter motor.



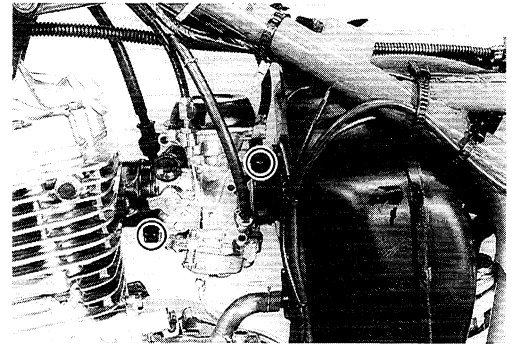
- Remove the air cleaner box mounting screws.



- Loosen the carburetor clamp screws and remove the carburetor.

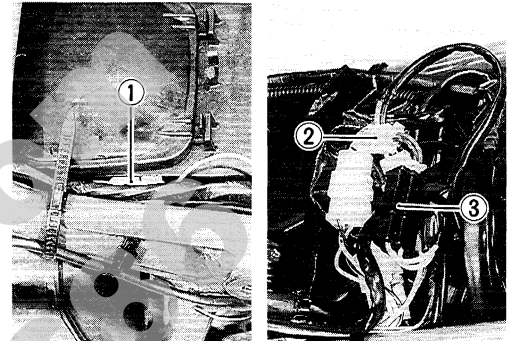
NOTE:

When removing the carburetor, shift the air cleaner box backwards.

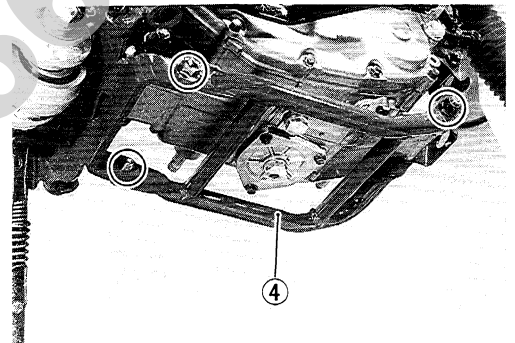


- Disconnect the various lead wires.

- ① Neutral switch lead wire
- ② Signal generator lead wires
- ③ Generator lead wires

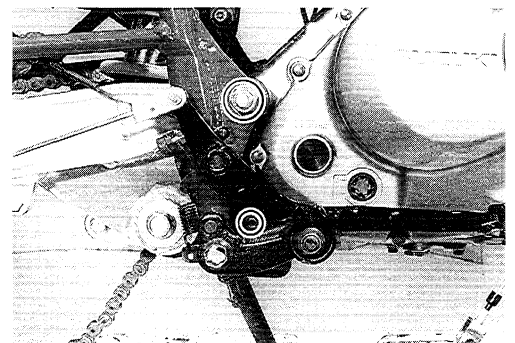
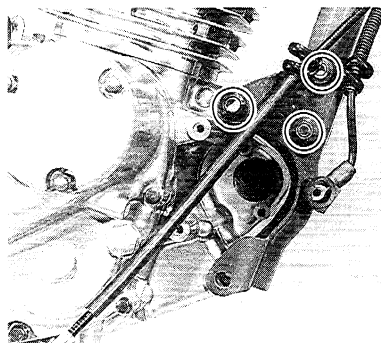
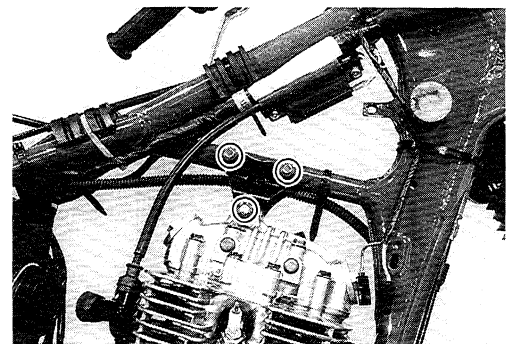


- Remove the engine under guard ④ .



- Support the engine with a proper engine jack.
- Remove the engine mounting bolts, nuts and brackets.
- Remove the swingarm pivot nut and pull out the swingarm pivot shaft.

(Continued on next page.)

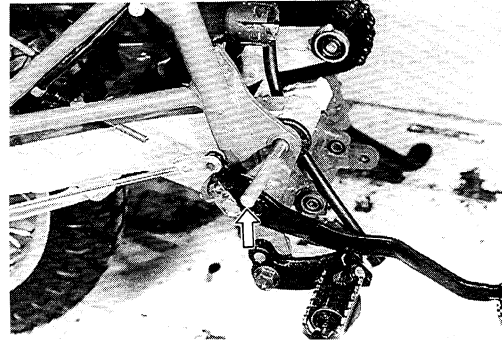


3-5 ENGINE

- Gradually lower the engine assembly on the left side.

NOTE:

Be careful not to draw out the swingarm pivot shaft completely from the left side swingarm pivot hole. Insert the shaft or rod into the right side pivot hole from right side of the frame holes and swingarm pivot holes.



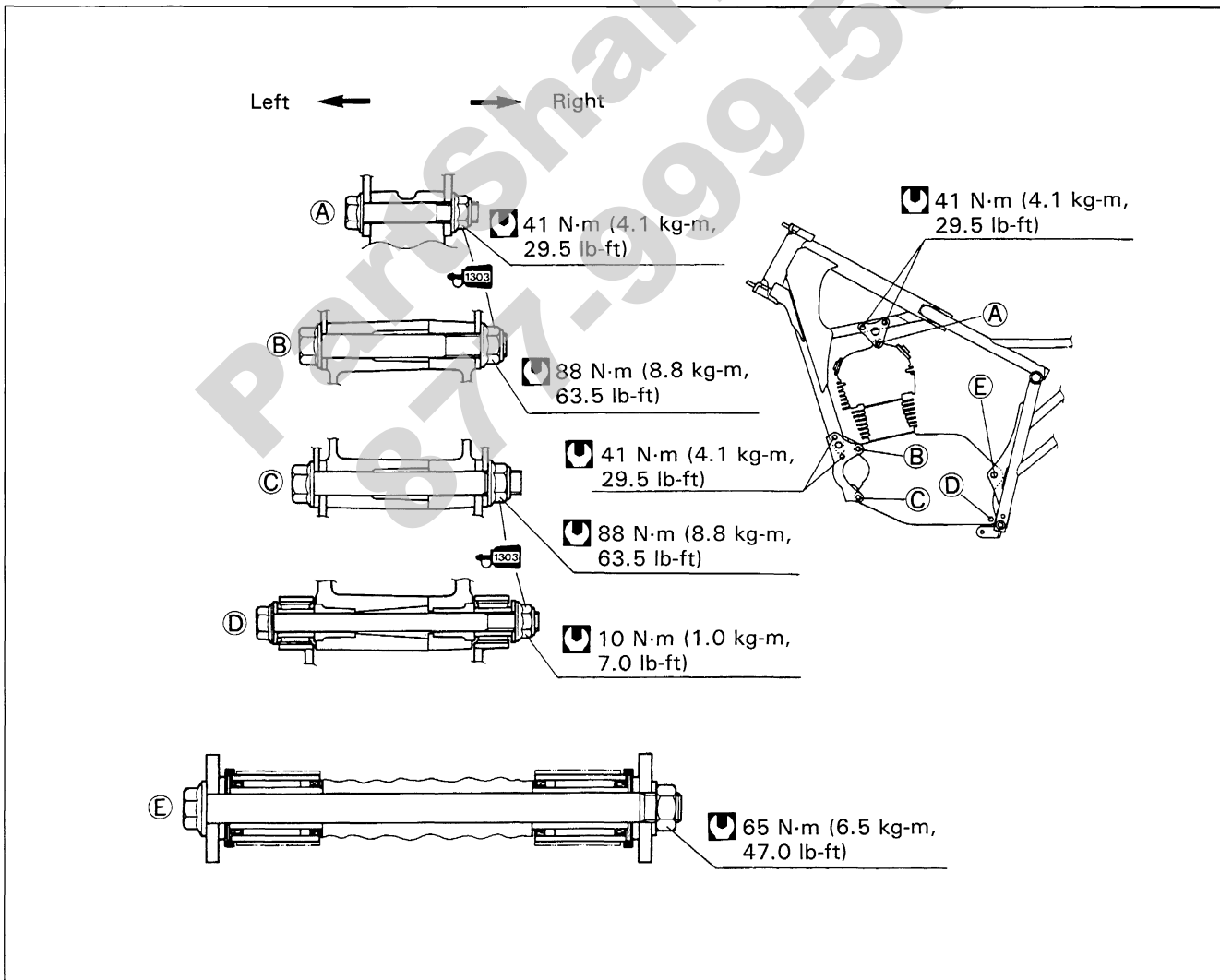
ENGINE REINSTALLATION

Reinstall the engine in the reverse order of engine removal.

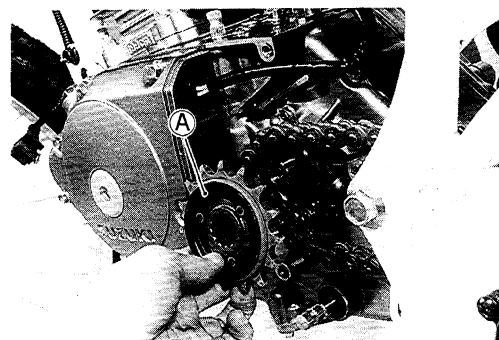
- Insert the engine mounting bolts and swingarm pivot shaft from left side. Install the brackets, bolts and nuts properly, as shown in the following illustration.

NOTE:

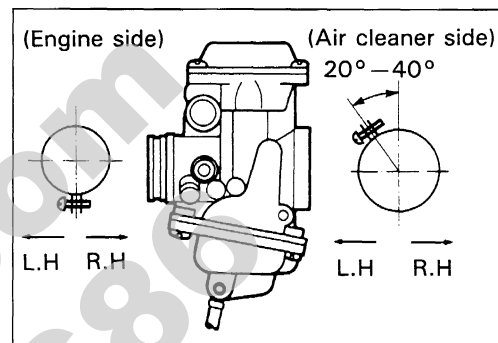
- * The engine mounting nuts are self-locking. Once the nut has been removed, it is no longer of any use. Be sure to use new nuts and tighten them to the specified torque.
- * These mounting bolts (spare parts) are pre-applied with a sealant except for position ⑤ bolt.
- * When reusing removed bolts which are located at position ① to ④, apply a small quantity of **THREAD LOCK SUPER "1303"** to their threads.



- When installing the engine sprocket, be sure to face the damper side **A** on the engine sprocket to the outside.



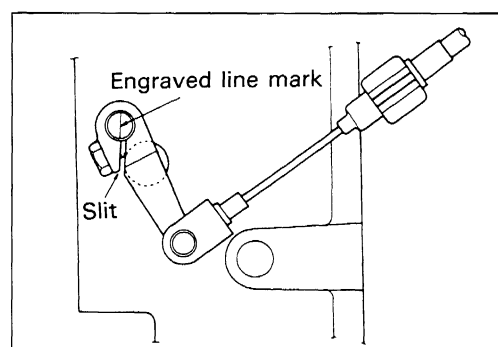
- Locate the carburetor clamps, as shown in the illustration.



- After remounting the engine, route wiring harness, cables and hoses properly by referring to the sections, for wire routing, cable routing and hose routing. (Refer to pages 7-8 through 12.)
- Adjust the following items to the specification.

	Page
* Clutch cable play	2-6
* Throttle cable play	2-6
* Idling adjustment	2-6
* Drive chain	2-8

- When installing the clutch release arm, be sure to align the slit surface with the engraved line mark.



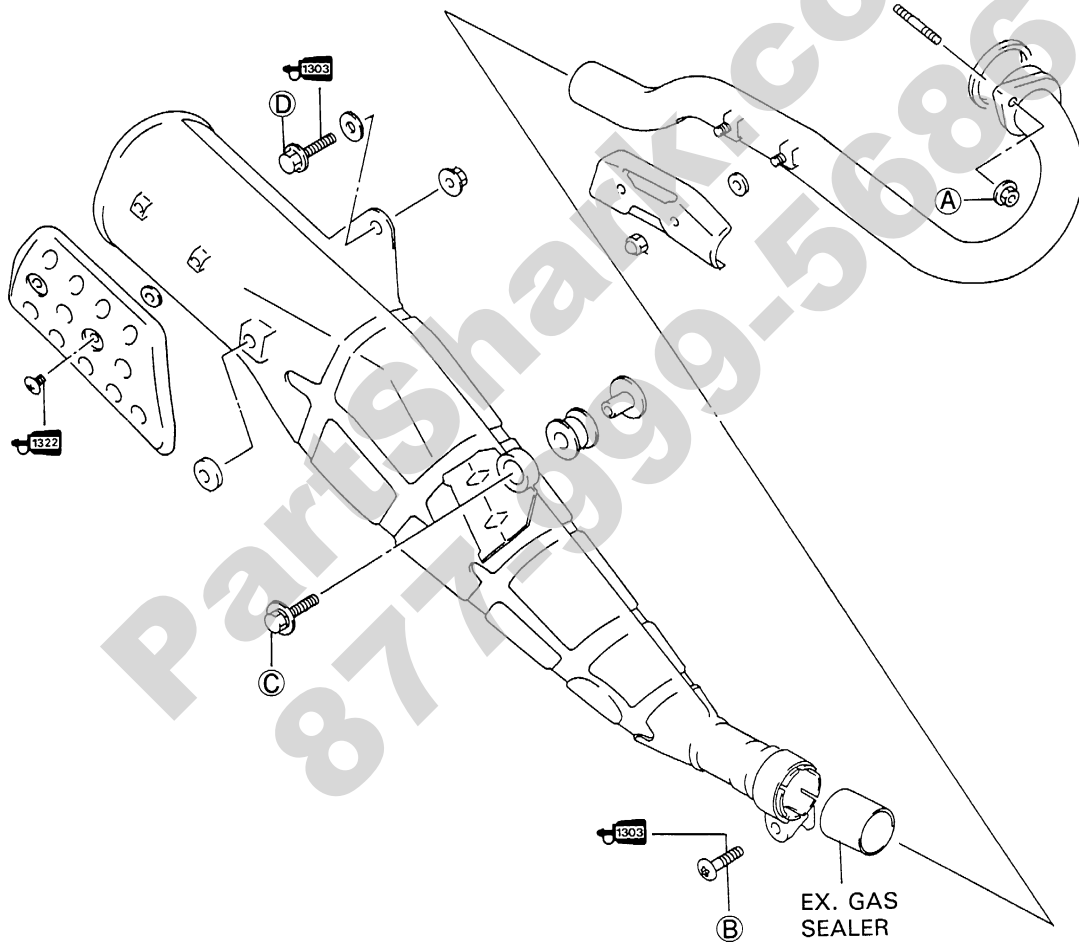
- Pour 1.3 L (1.37/1.14 US/Imp qt) of engine oil SAE 10W/40 graded SE or SF into the engine after overhauling engine.
- Start up the engine and allow it run for 3 minutes at idle speed. About one minute after stopping engine, check that oil level remains between the marks of oil level inspection window.

If the level is below the "F" mark, add oil until the level reaches the "F" mark.

Change	850 ml (0.90/0.75 US/Imp qt)
Filter change	950 ml (1.00/0.84 US/Imp qt)
Overhaul	1 300 ml (1.37/1.14 US/Imp qt)

TIGHTENING TORQUE

ITEM	N·m	kg-m	lb-ft
Exhaust pipe nut (A)	23	2.3	16.5
Muffler connection bolt (B)	23	2.3	16.5
Muffler mounting bolt (Front side) (C)	23	2.3	16.5
Muffler mounting bolt (Rear side) (D)	44	4.4	32.0



NOTE:

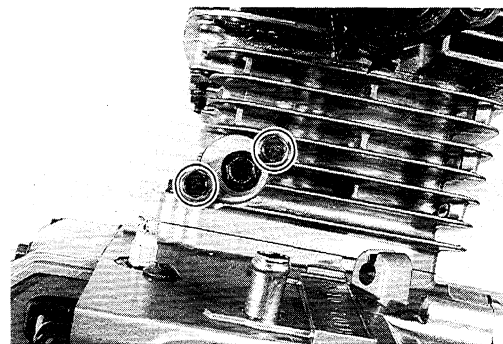
When installing a new exhaust pipe/muffler connector, clean any old dried sealer from the exhaust pipe and from inside the muffler and the exhaust gas sealer should be applied to both the inside and outside of the exhaust pipe/muffler connector.

EXHAUST GAS SEALER: PERMATEX 1372

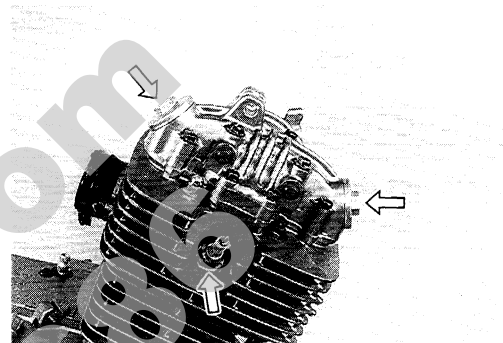
ENGINE DISASSEMBLY

CYLINDER HEAD

- Remove the cam chain tension adjuster.

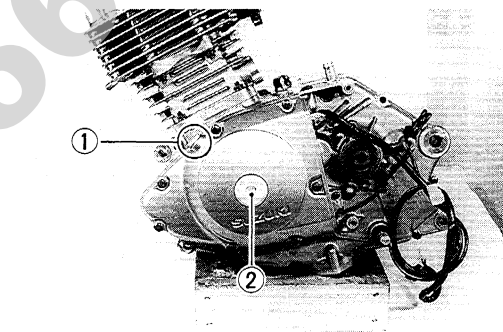


- Remove the valve inspection caps (Intake and Exhaust).
- Remove the spark plug.



- Remove the cam timing inspection cap ① and generator cover cap ② .

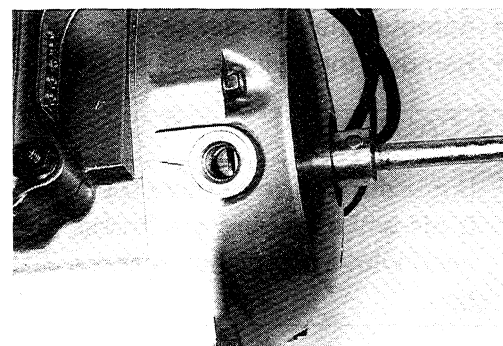
TOOL 09900-00401: Hexagon wrench set



NOTE:

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

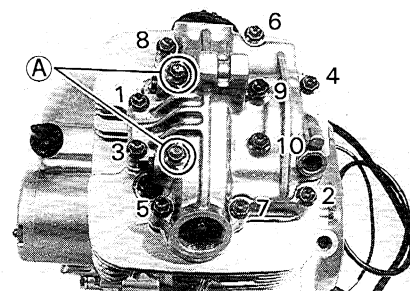
Align "Top" line on the generator rotor with the index mark on the generator cover.



- Loosen the cylinder head cover bolts in the ascending order numbers and detach the cylinder head cover.

NOTE:

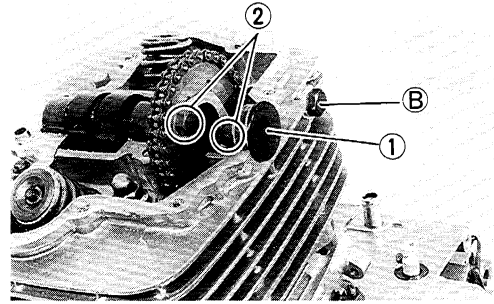
When removing the cylinder head cover, do not remove the conically recessed top bolts (A).



- Remove the camshaft end cap ① .
- Flatten the lock portion of washer and remove the cam sprocket bolts ② .

NOTE:

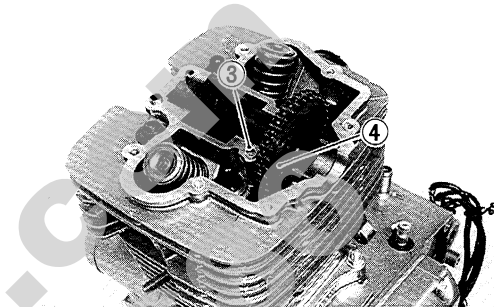
The cam chain tensioner set bolt ③ is to be removed only when disassembling the engine.



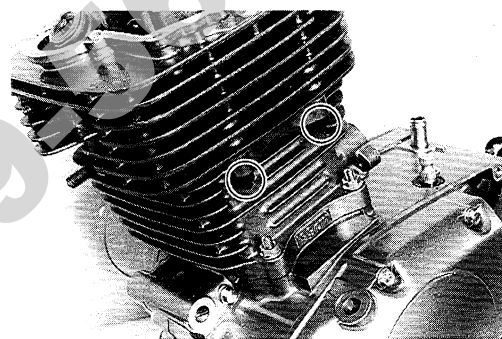
- Remove the camshaft and sprocket.
- Remove the C-ring ③ .

CAUTION

Do not drop cam sprocket locating pin ④ or C-ring ③ into the crankcase.



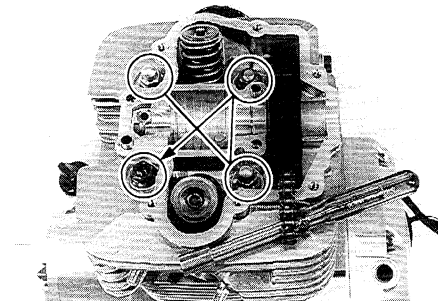
- Remove the cylinder head nuts (6-mm).



- Remove the cylinder head nuts (8-mm) diagonally.
- Remove the cylinder head and its gasket.

CAUTION

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.

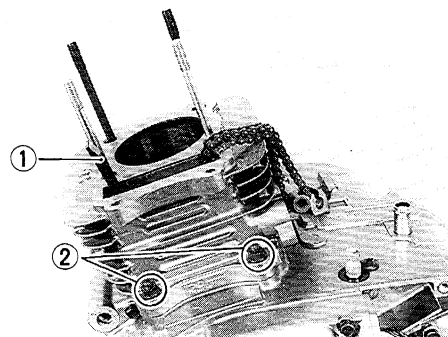


CYLINDER

- Remove the cam chain guide ① .
- Remove the cylinder base nuts ② .
- Remove the cylinder and its gasket.

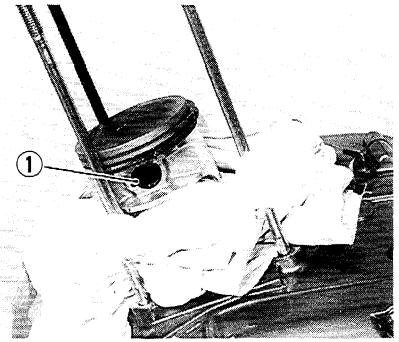
CAUTION

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



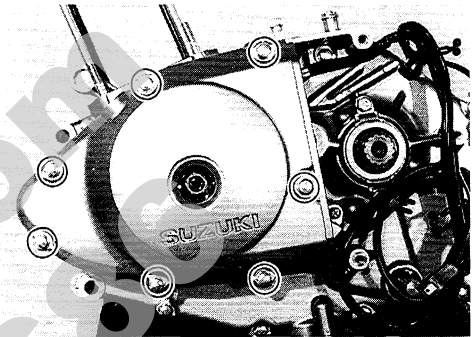
PISTON

- Place a clean rag over the cylinder base to prevent the piston pin circlips from dropping into crankcase.
- Remove the piston pin circlip ① with a long-nose pliers.



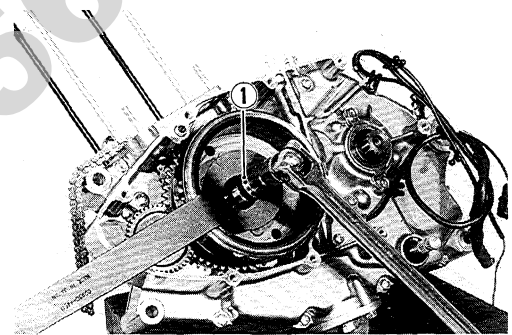
GENERATOR AND STARTER GEARS

- Remove the generator cover.



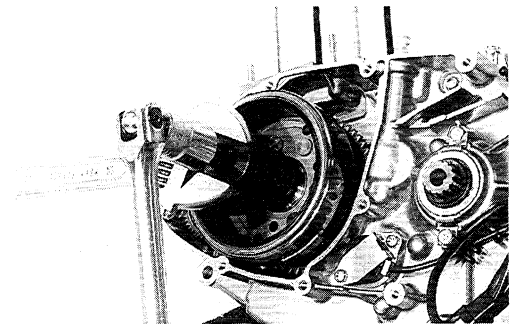
- Remove the generator rotor nut ① by using the special tool.

TOOL 09930-44511: Rotor holder

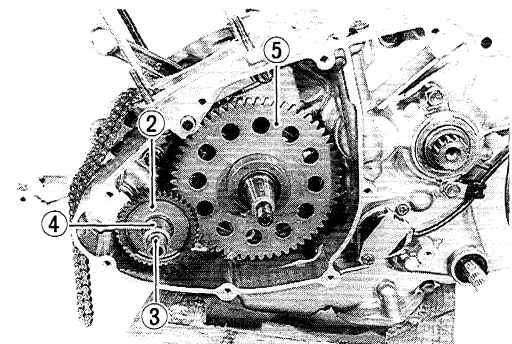


- Remove the generator rotor by using the special tool.

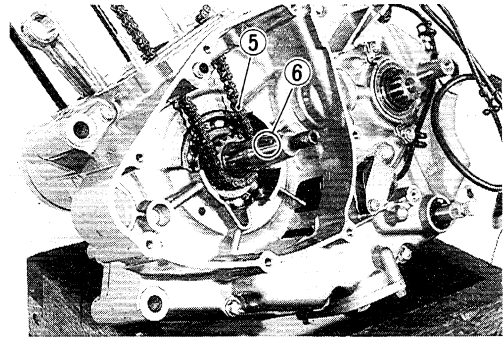
TOOL 09930-34932: Rotor remover



- Remove the starter idle gear ② and its shaft ③ and spacer ④ .
- Remove the starter driven gear ⑤ .

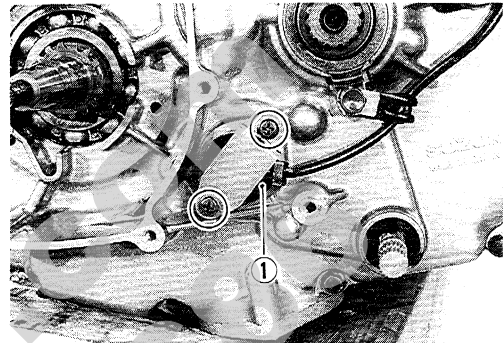


- Remove the cam drive chain ⑤ .
- Remove the key ⑥ .

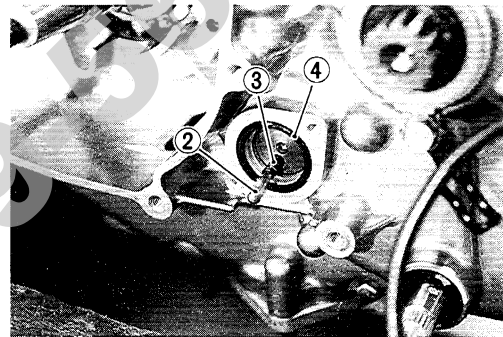


NEUTRAL SWITCH

- Remove the neutral switch ① .

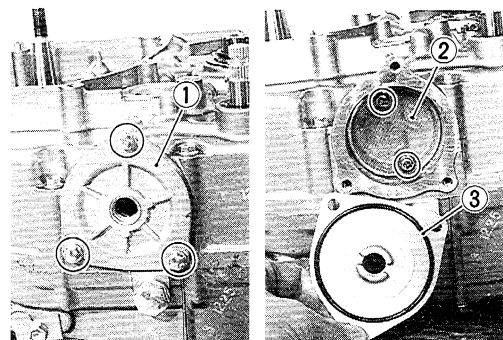


- Remove the neutral switch contact ② and its spring ③ .
- Remove the O-ring ④ .



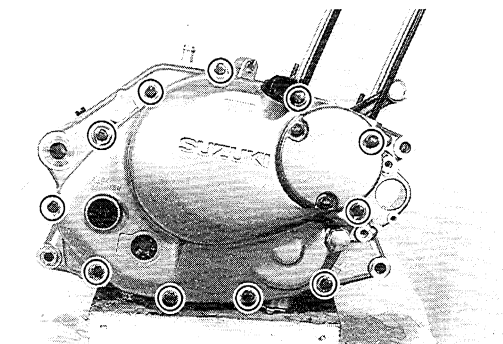
OIL SUMP FILTER

- Remove the oil sump filter cap ① and oil sump filter ② .
- Remove the O-ring ③ .



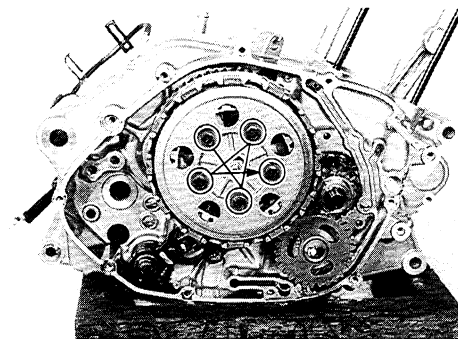
CLUTCH COVER

- Remove the clutch cover and its gasket.

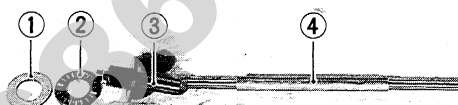
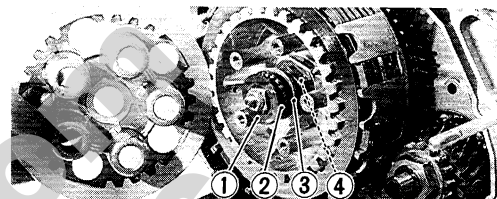


CLUTCH

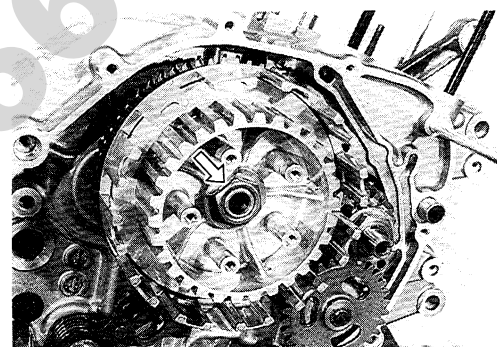
- Remove the clutch spring bolts diagonally.



- Remove the pressure plate.
- Remove the thrust washer ①, bearing ②, clutch push piece ③ and clutch push rod ④.
- Remove the clutch drive and driven plates.



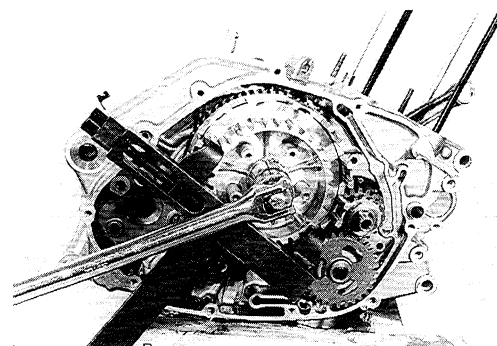
- Flatten the lock washer of the clutch sleeve nut.



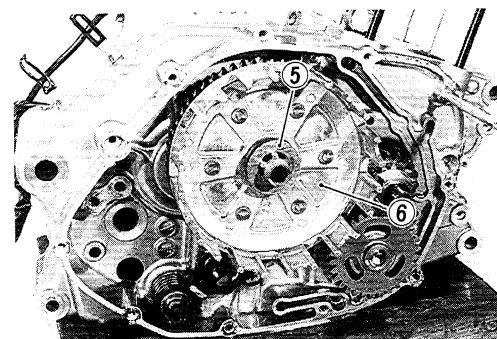
- Remove the clutch sleeve hub nut by using the special tool.

TOOL 09920-53740: Clutch sleeve hub holder

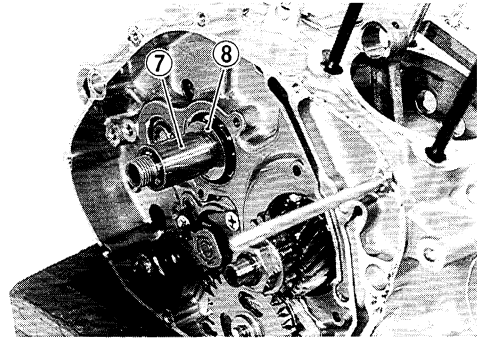
- Remove the clutch sleeve hub.



- Remove the thrust washer ⑤.
- Remove the primary driven gear assembly ⑥.

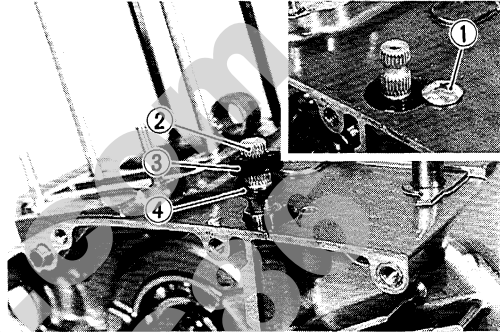


- Remove the spacer ⑦ and thrust washer ⑧ .



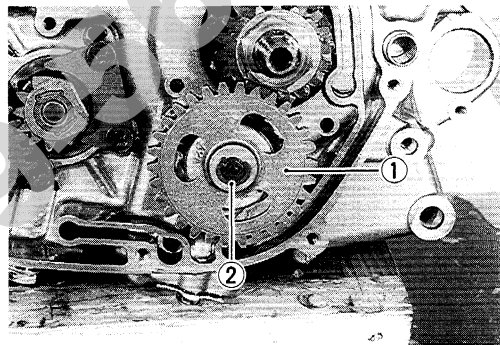
CLUTCH RELEASE CAMSHAFT

- Remove the oil seal retainer screw ① .
- Remove the clutch release camshaft ② , oil seal ③ and washer ④ .

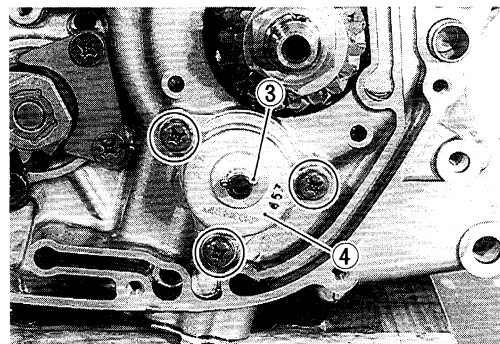


OIL PUMP

- Remove the oil pump driven gear ① by removing the circlip ② .



- Remove the pin ③ .
- Remove the oil pump ④ .

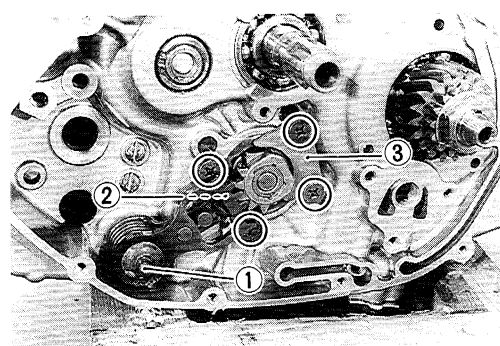



⚠ CAUTION

Do not attempt to disassemble the oil pump assembly.

GEARSHIFT

- Remove the gearshift shaft ① .
- Remove the cam guide ② and pawl lifter ③ by removing the screws.

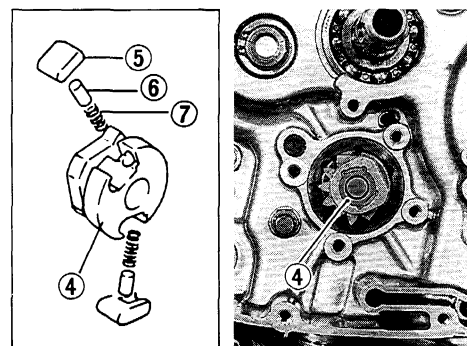


 09900-09003: Impact driver set

- Remove the cam driven gear ④ .

NOTE:

When removing the cam driven gear ④ , do not lose the pawl ⑤ , pin ⑥ and spring ⑦ .

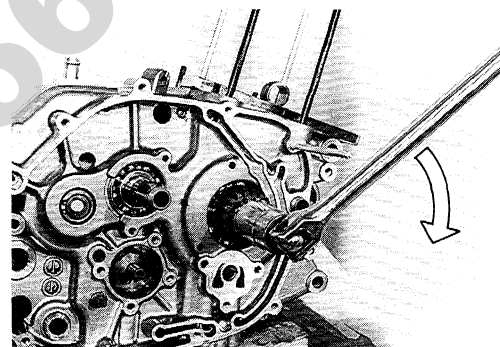
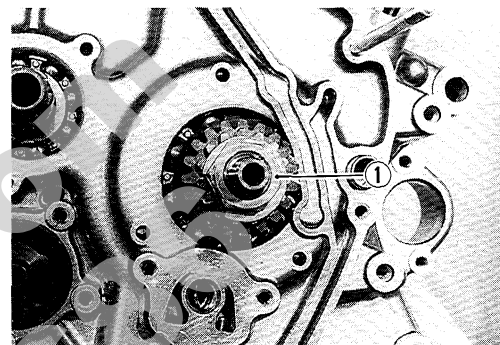
**PRIMARY DRIVE GEAR**

- Flatten the lock washer of the primary drive gear nut.
- Remove the primary drive gear nut ① while holding the conrod with the conrod holder.

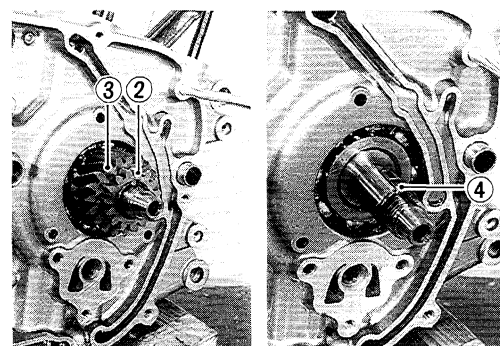
TOOL 09910-20116: Conrod holder

NOTE:

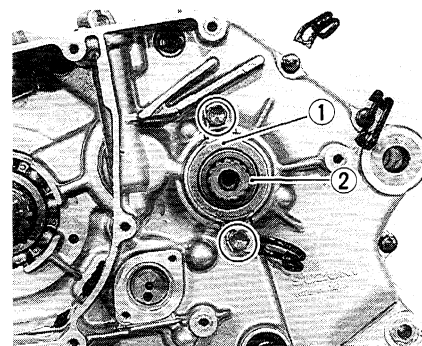
This nut has left-hand thread.



- Remove the oil pump drive gear ② and primary drive gear ③ .
- Remove the key ④ .

**CRANKCASE**

- Flatten the lock portions of the oil seal retainer ① and remove it by removing the bolts.
- Remove the engine sprocket spacer ② .



- Remove the crankcase tightening bolts.
- Separate the crankcase into 2 parts, left and right, with a crankcase separating tool.

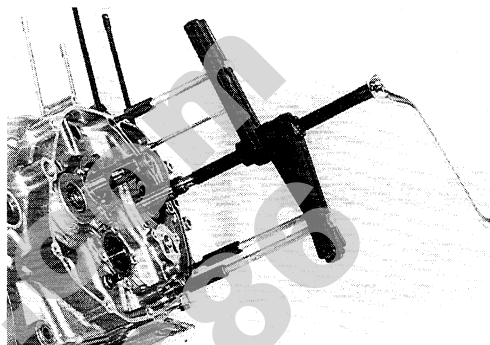
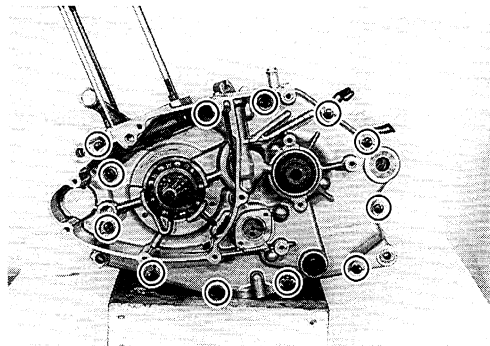
TOOL 09920-13120: Crankcase separator

NOTE:

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

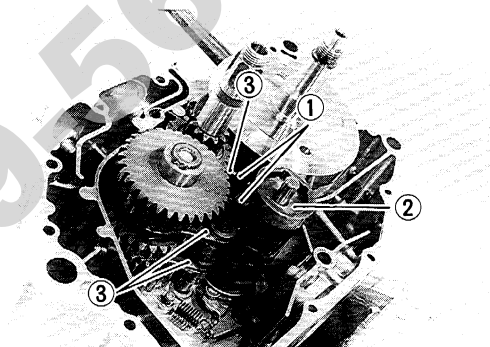
CAUTION

The crankshaft and transmission components must remain in the left crankcase half.

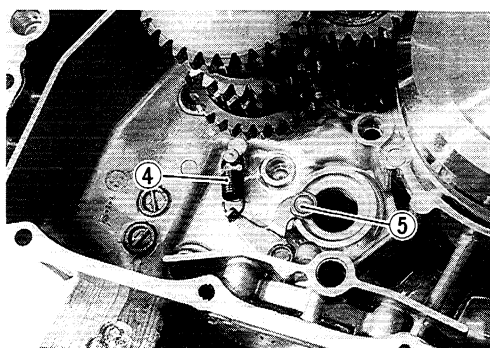


GEARSHIFT CAM

- Remove the gearshift fork shafts ① .
- Remove the gearshift cam ② .
- Remove the gearshift forks ③ .

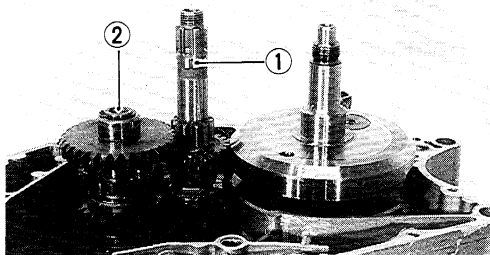


- Remove the spring ④ .
- Remove the gearshift cam stopper ⑤ by removing the bolt.



TRANSMISSION

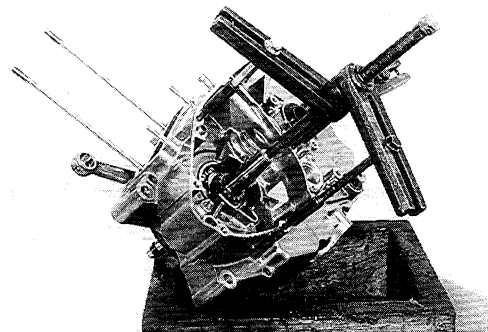
- Remove the countershaft assembly ① and driveshaft assembly ② .



CRANKSHAFT

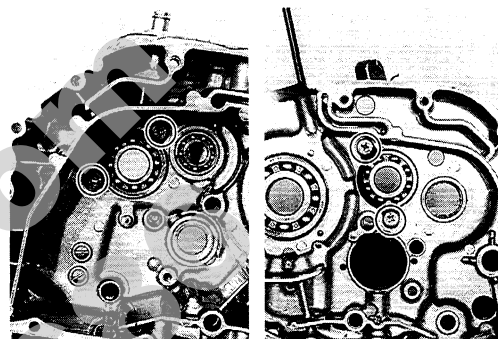
- Remove the crankshaft by using the special tool.

TOOL 09920-13120: Crankcase/crankshaft separator



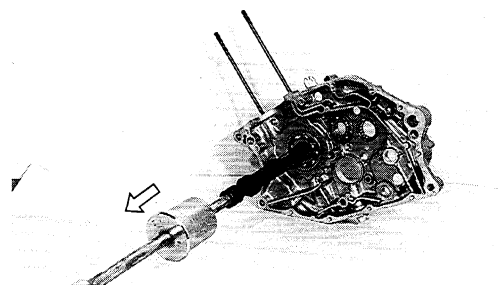
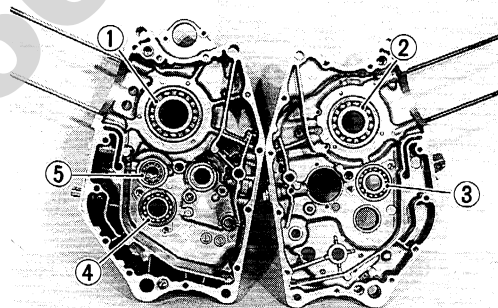
CRANKCASE BEARING/OIL SEAL

- Remove the bearing retainers.



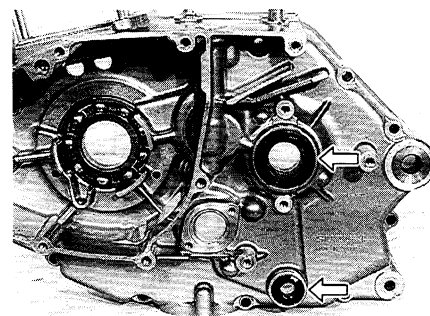
- Drive out the crankcase bearings by using the special tools.

TOOL 09941-64511: Bearing remover (Bearing: ①)
 09923-74510: Bearing remover (Bearing: ② ③ ④)
 09921-20210: Bearing remover (Bearing: ⑤)
 09930-30102: Sliding shaft



- Remove the oil seals by using the special tool.

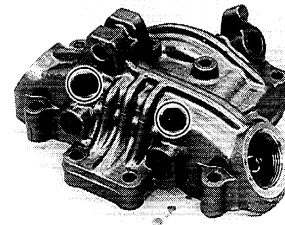
TOOL 09913-50121: Oil seal remover



ENGINE COMPONENTS INSPECTION AND SERVICE

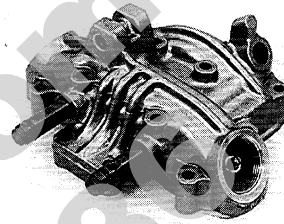
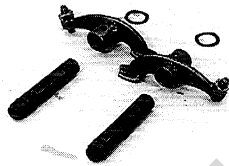
⚠ CAUTION

Be sure to identify each removed part as to its location, and lay the parts out in groups designated as "Exhaust", "Inlet", so that each will be restored to the original location during assembly.



CYLINDER HEAD COVER SERVICE

- Remove the rocker arm shaft set bolts.
- Pull out the intake and exhaust rocker arm shafts.

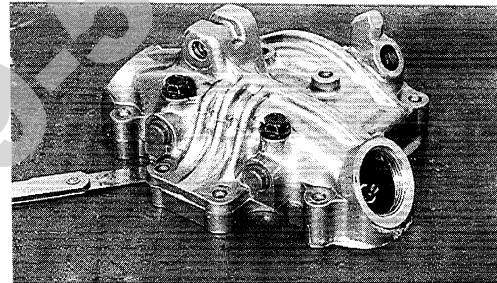


CYLINDER HEAD COVER DISTORTION

After removing sealant 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 Fig.

Service Limit: 0.05 mm (0.002 in)

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

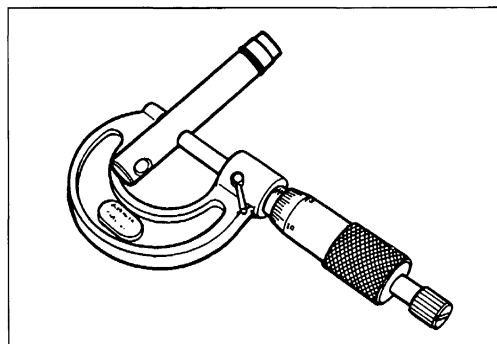


ROCKER ARM SHAFT O.D.

Measure the diameter of rocker arm shaft with a micrometer.

Standard: 11.977 – 11.995 mm (0.4715 – 0.4722 in)

TOOL 09900-20205: Micrometer (0 – 25 mm)

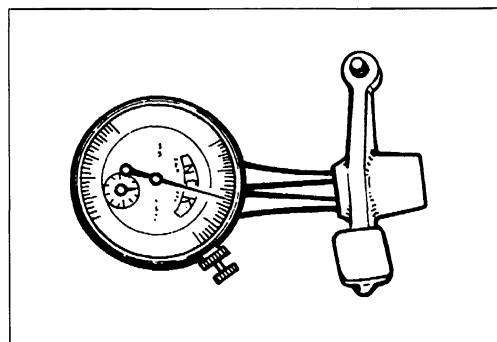


ROCKER ARM I.D.

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)

TOOL 09900-20605: Dial calipers



ROCKER ARM AND SHAFT REASSEMBLY

- Apply SUZUKI MOLY PASTE to the rocker arm shafts.

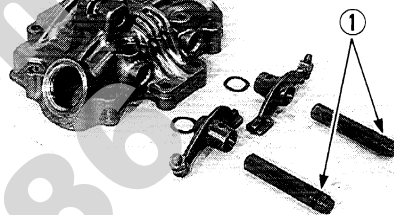
 99000-25140: SUZUKI MOLY PASTE



- Install the rocker arms and shafts.

CAUTION

Use a new O-ring ① on the rocker arm shafts to prevent oil leakage.

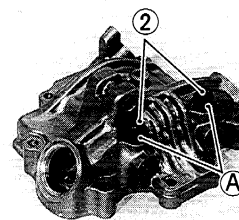


- Tighten each rocker arm shaft set bolt ② to the specified torque.

Set bolt ② : 10 N·m (1.0 kg-m, 7.0 lb-ft)

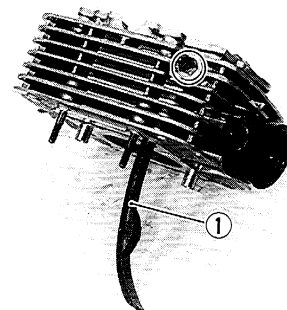
CAUTION

Use a new gasket A on the set bolts ② to prevent oil leakage.




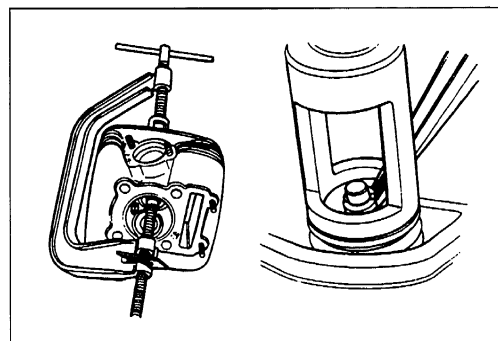
CYLINDER HEAD SERVICE

- Remove the cam chain tensioner ① .

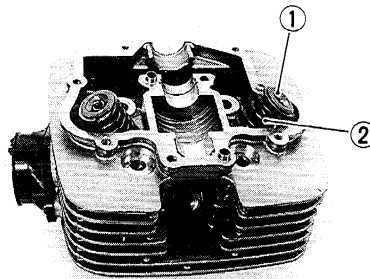


- Compress the valve springs with the valve spring compressor.
- Remove the valve cotters from the valve stem.

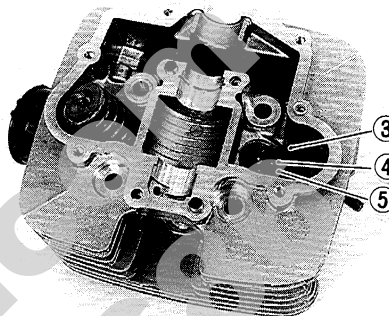
 09916-14510: Valve spring compressor
09916-14910: Attachment
09916-84511: Tweezers



- Remove the valve spring retainer ① .
- Remove the valve springs ② (Inner and outer).




- Remove the valve ③ from the other side.
- Remove the valve stem seal ④ by using a long-nose pliers.
- Remove the valve spring seat ⑤ .

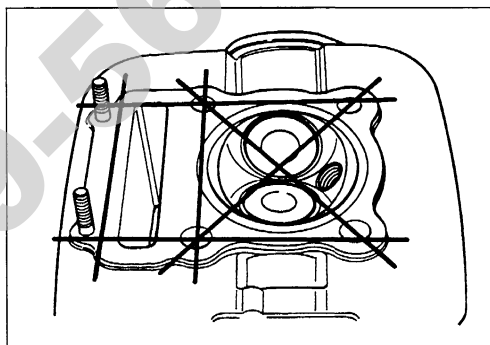


CYLINDER HEAD DISTORTION

Decarbon the 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)

 **09900-20803: Thickness gauge**



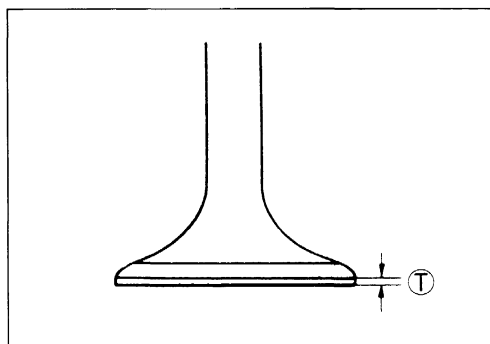
VALVE FACE WEAR

Measure the thickness ① 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)

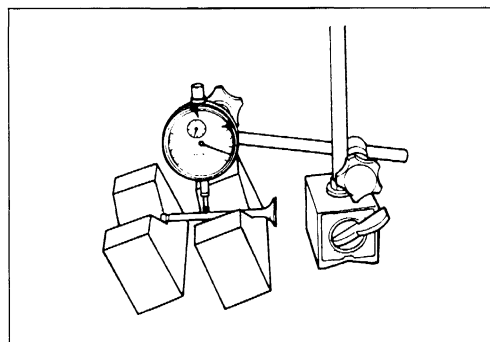


VALVE STEM RUNOUT

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)


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

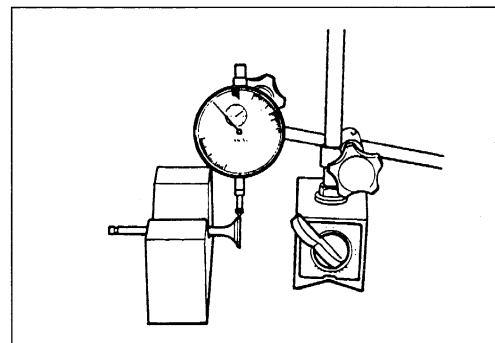


VALVE HEAD RADIAL RUNOUT

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)

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




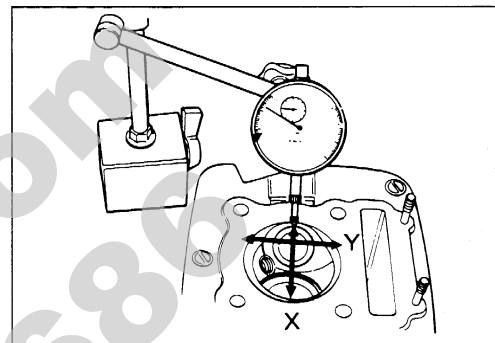
VALVE STEM DEFLECTION

Lift the valve about 10 mm (0.39 in) from the valve seat. Measure the valve stem deflection in two directions, "X" and "Y", perpendicular to each other, by positioning the dial gauge as shown. If the deflection measured exceeds the limit, (see below) then determine whether the valve or the guide should be replaced with a new one.

Service Limit

Intake and exhaust valves: 0.35 mm (0.014 in)

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



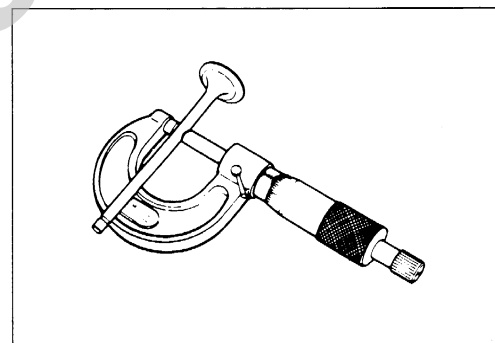
VALVE STEM WEAR

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 previously, replace the valve, if the stem is within the limit, then replace the guide. After replacing valve or guide, be sure to re-check the clearance.

Valve stem O.D.


Standard IN. : 5.475–5.490 mm (0.2146–0.2161 in)
EX.: 5.455–5.470 mm (0.2148–0.2154 in)

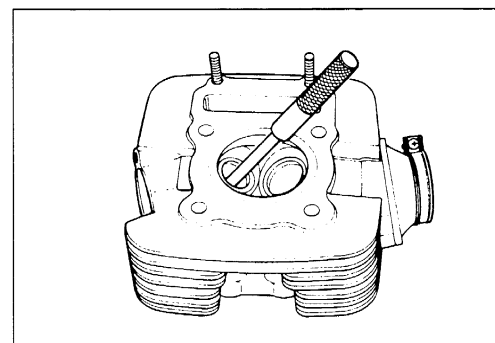
 **09900-20205: Micrometer (0–25 mm)**



VALVE GUIDE SERVICE

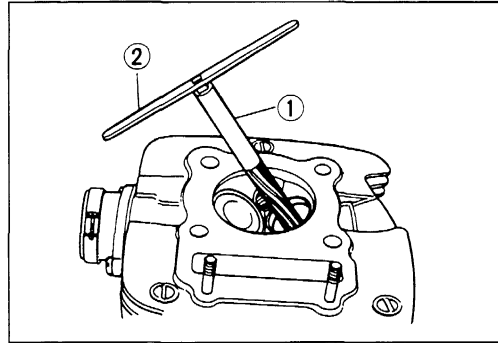
- Remove the valve guide with the valve guide remover.

 **09916-44910: Valve guide remover**



- Re-finish the valve guide holes in cylinder head with a 11.3 mm reamer ① and handle ② .

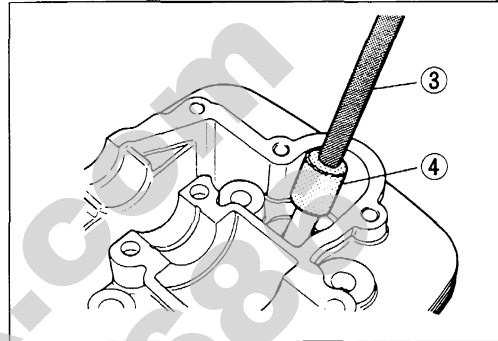
TOOL 09916-34561: 11.3 mm reamer
09916-34541: Handle



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

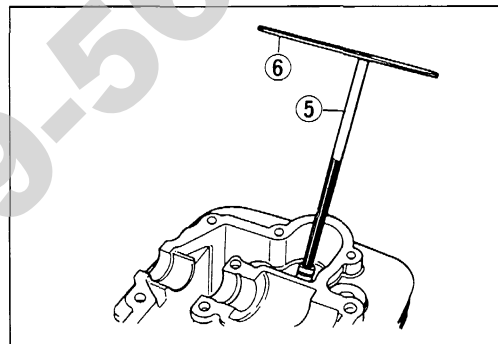
- Lubricate each valve guide with oil, and drive the guide into the guide hole with the valve guide installer handle ③ and valve guide installer attachment ④ .

TOOL 09916-44910: Valve guide installer handle
09916-44920: Attachment

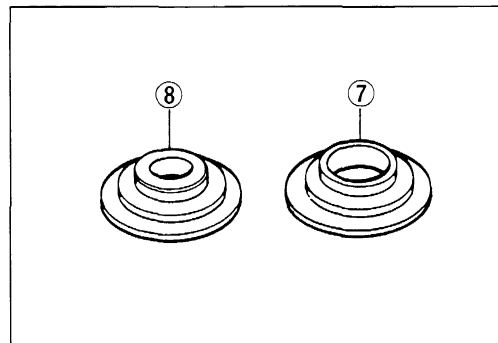


- After fitting the valve guides, re-finish their guiding bores with the 5.5 mm reamer ⑤ and handle ⑥ . Be sure to clean and oil the guides after reaming.

TOOL 09916-34550: 5.5 mm reamer
09916-34541: Handle



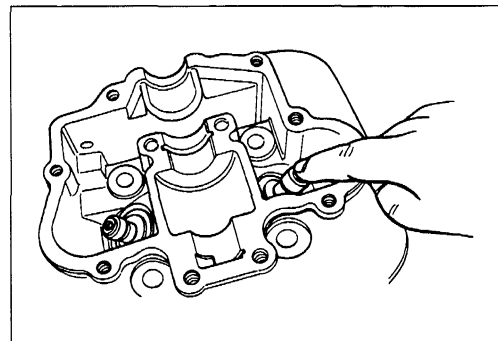
- Install the valve spring seat ⑦ . Be careful not to confuse the lower seat with the spring retainer ⑧ .



- Lubricate valve stem seal with oil, and press-fit the seal into position with the finger tip.

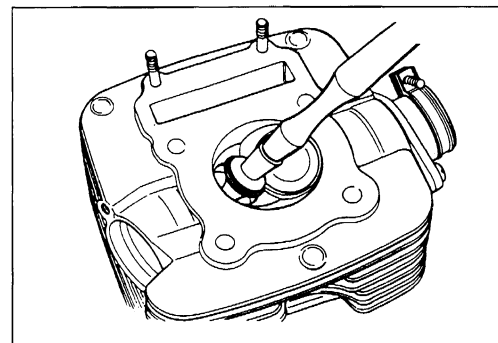
CAUTION

Do not reuse the oil seals.



VALVE SEAT WIDTH

Coat the valve seat uniformly with prussian blue. 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.

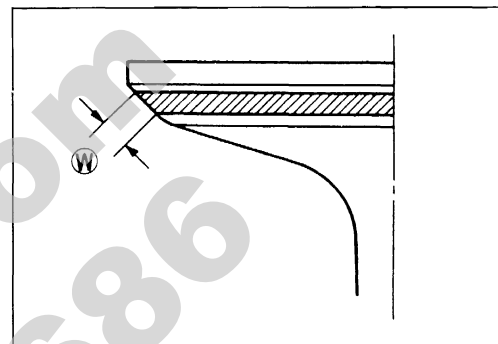


The ring-like dye impression left on the valve face must be continuous-without any break. In addition, the width of the dye ring, which is the visualized seat "width", must be within the specification.

Valve seat width

STD. $\text{\textcircled{W}}$: 0.9–1.1 mm (0.04–0.05 in)

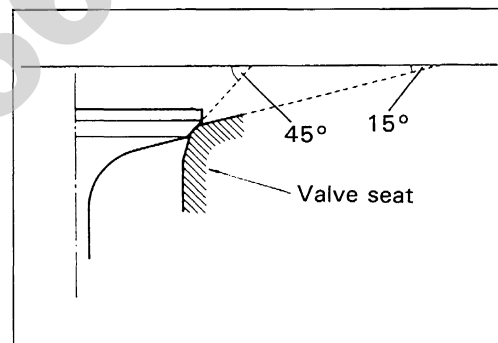
If either requirement is not met, correct the seat by servicing it as follows.



VALVE SEAT SERVICE

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

	INTAKE SIDE	EXHAUST SIDE
45°	N-615	N-116 or 122
15°	N-615	N-116 or 121



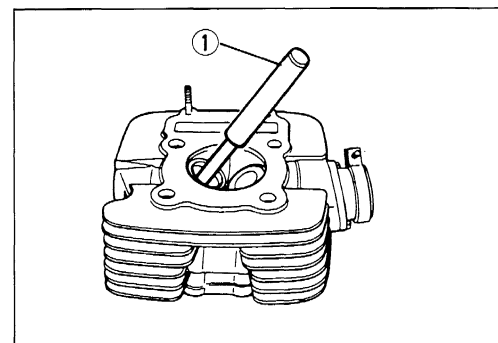
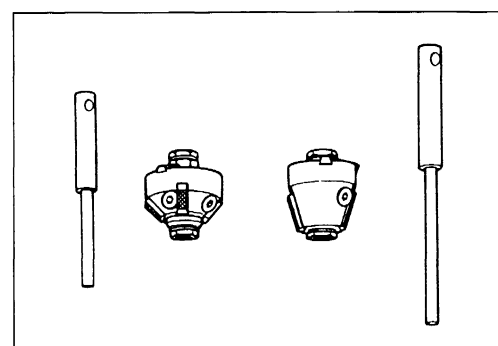
- TOOL** 09916-21110: Valve seat cutter set
 09916-20610: Cutter N-121
 09916-20620: Cutter N-122
 09916-24210: Cutter N-615
 09910-24480: Solid pilot N-140-5.5

NOTE:

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

1. Insert the solid pilot ① with a slight rotation. Seat the solid pilot snugly. Install the 45° cutter, attachment and T-handle.
2. Using the 45° cutter, descale and clean up the seat with one or two turns.
3. Inspect the seat by the previously described seat width measurement procedure. If the seat is pitted or burned, additional seat conditioning with the 45° cutter is required.

(Continued on next page.)



⚠ 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.

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

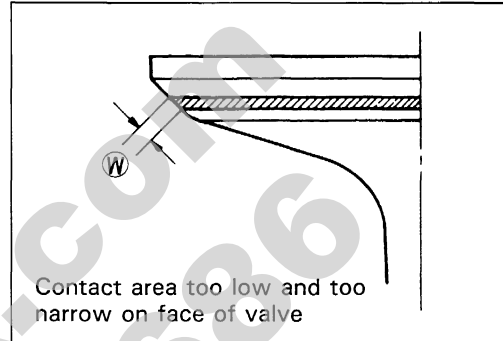
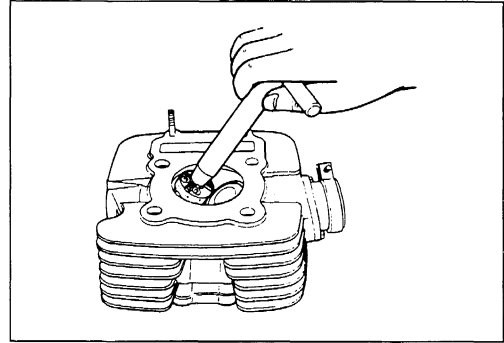
Always use extreme caution when handling gasoline.

NOTE:

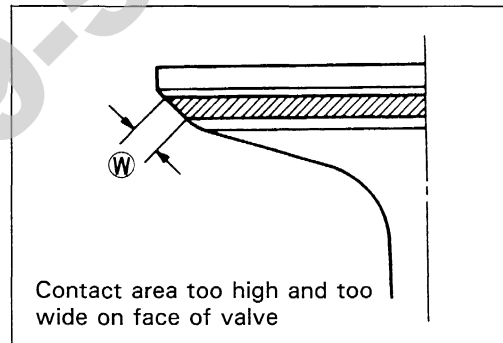
Be sure to adjust the valve clearance after reassembling the engine.

VALVE STEM END CONDITION

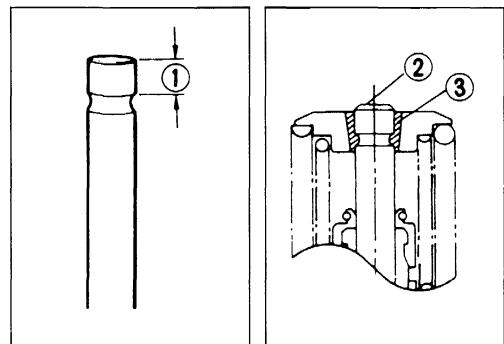
Inspect the valve stem end face for pitting and wear. If pitting or wear of the stem end face are present, the valve stem end may be resurfaced, providing that the length ① will not be reduced to less than 2.6 mm (0.1 in). If this length becomes less than 2.6 mm (0.1 in), the valve must be replaced. 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.



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



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



VALVE SPRING

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 both the inner and outer springs as a set.

Valve spring free length

Service Limit

INNER : 35.1 mm (1.38 in)

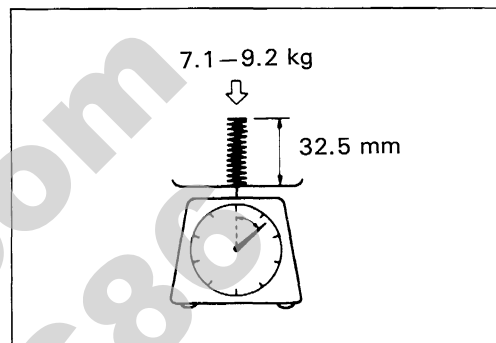
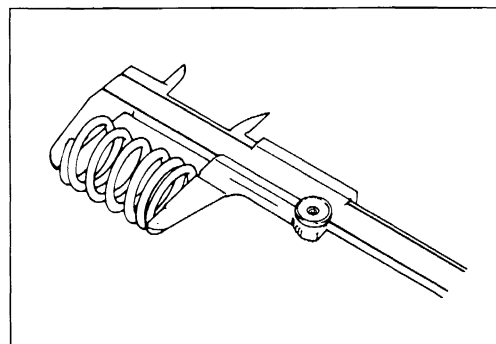
OUTER: 40.6 mm (1.60 in)

Valve spring tension

Standard

INNER : 7.1–9.2 kg/32.5 mm (15.7–20.3 lbs/1.28 in)

OUTER: 17.3–21.3 kg/36.0 mm (38.1–47.0 lbs/1.42 in)



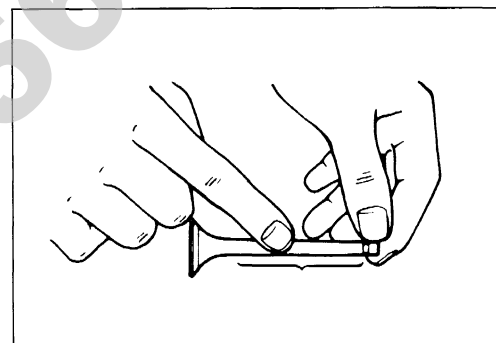
VALVE AND VALVE SPRING REASSEMBLY

- 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.

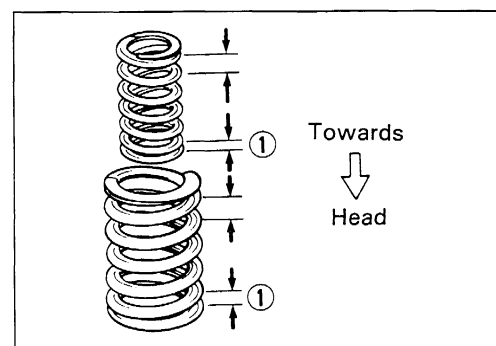
 99000-25140: SUZUKI MOLY PASTE

CAUTION

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

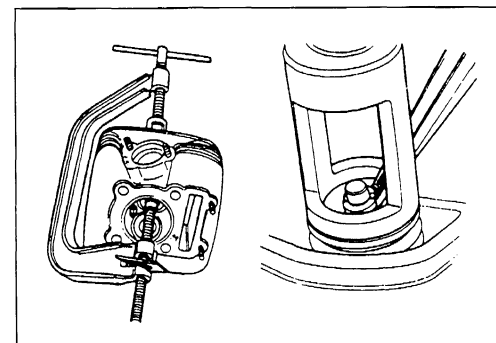


- Install the valve springs, making sure that the close-pitch end ① of each spring goes in first to rest on the head. The coil pitch of both inner and outer springs vary: the pitch decreases from top to bottom, as shown in the illustration.



- Fit a valve spring retainer, compress the springs with a valve spring compressor and fit the cotter halves to the stem end.

 09916-14510: Valve spring compressor
09916-14910: Attachment
09916-84511: Tweezers



CAMSHAFT CAM WEAR

Worn-down cams are often the cause of mistimed valve operation resulting in reduced output power.

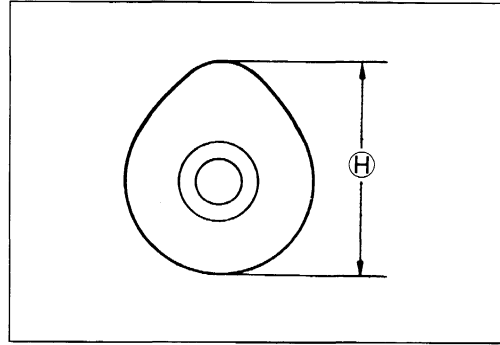
The limit of cam wear is specified for both intake and exhaust cams in terms of cam height H , which is to be measured with a micrometer.

Replace the camshaft if found it worn down to the limit.

Cam height H

Service Limit Intake cam : 33.870 mm (1.3335 in)
Exhaust cam: 33.500 mm (1.3189 in)

 **09900-20202: Micrometer (25–50 mm)**




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:

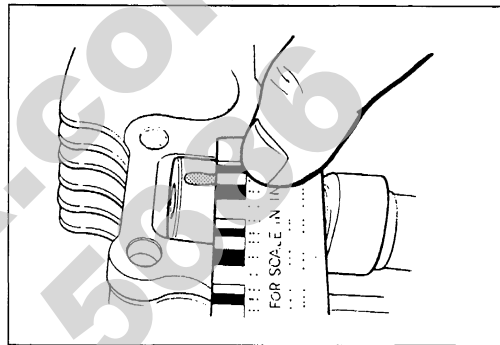
Camshaft journal oil clearance

Service Limit: 0.150 mm (0.0059 in)

- Tighten the cylinder head cover bolts evenly and diagonally to the specified torque.

 **Cylinder head cover bolt: 10 N·m (1.0 kg·m, 7.0 lb-ft)**

 **09900-22301: Plastigauge**



NOTE:

To properly measure the oil clearance with plastigauge, all gasket material must be removed from fitting surfaces of cylinder head and cover. Do not apply SUZUKI BOND No.1207B until after the oil clearance has been determined.

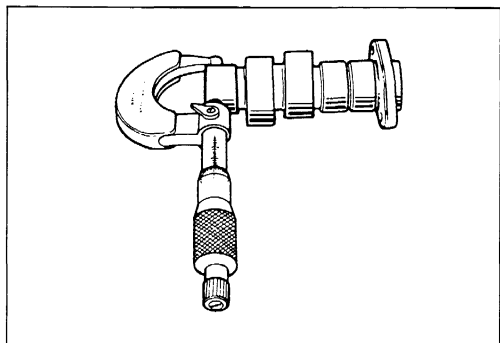
If the camshaft journal oil clearance measured exceeds the limit, measure the outside diameter of camshaft.

Replace either the cylinder head set or the camshaft if the clearance is incorrect.

Camshaft journal O.D.

Standard: 21.959–21.980 mm (0.8645–0.8654 in)


 **09900-20205: Micrometer (0–25 mm)**

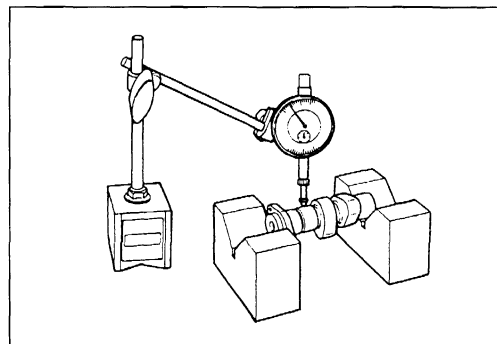


CAMSHAFT RUNOUT

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

Service Limit: 0.10 mm (0.004 in)


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

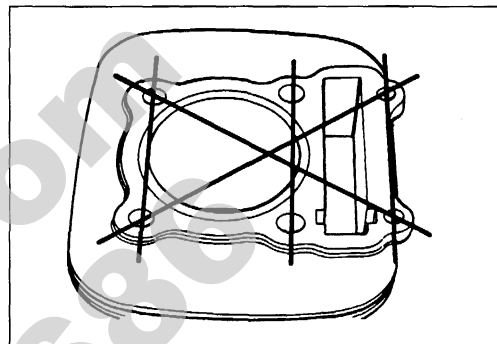


CYLINDER DISTORTION

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)

 **09900-20803: Thickness gauge**

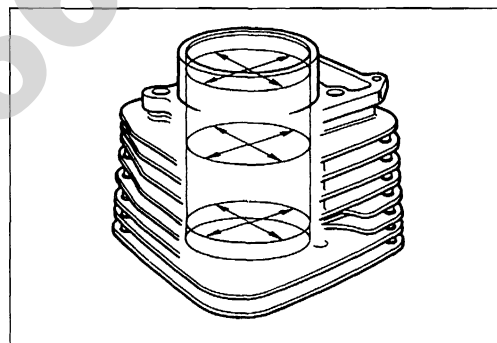


CYLINDER BORE

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.

Service Limit: 66.090 mm (2.6020 in)

 **09900-20508: Cylinder bore gauge set**



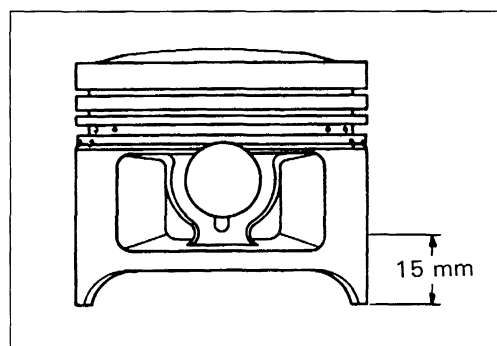
PISTON DIAMETER

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

Service Limit: 65.880 mm (2.5937 in)

Piston oversize: 0.5, 1.0 mm

 **09900-20203: Micrometer (50–75 mm)**



PISTON-CYLINDER CLEARANCE

As a result of the above measurement, if the piston to cylinder clearance exceeds the following limit, 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.

Piston ring-groove clearance

Service Limit

1st : 0.18 mm (0.007 in)

2nd: 0.15 mm (0.006 in)

Piston ring groove width

Standard

1st : 1.01–1.03 mm (0.040–0.041 in)

2nd: 1.21–1.23 mm (0.047–0.048 in)


Oil : 2.01–2.03 mm (0.079–0.080 in)

Piston ring thickness

Standard

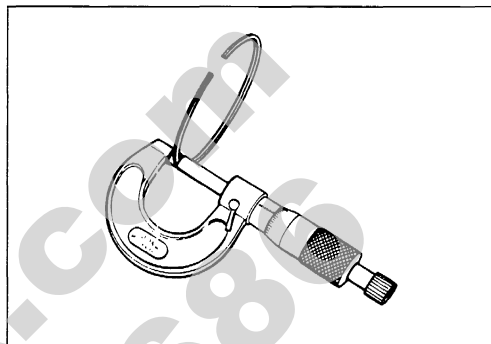
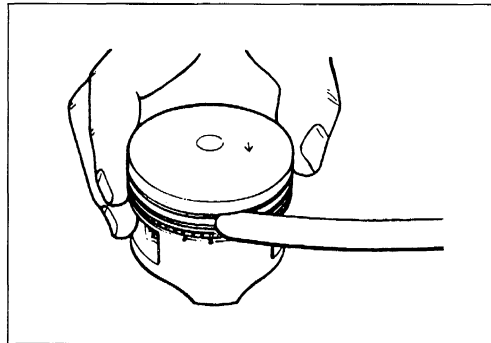
1st : 0.970–0.990 mm (0.038–0.039 in)

2nd: 1.170–1.190 mm (0.046–0.047 in)

 09900-20803: Thickness gauge

NOTE:

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



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

Service Limit

1st : 6.0 mm (0.24 in)


2nd: 7.5 mm (0.30 in)

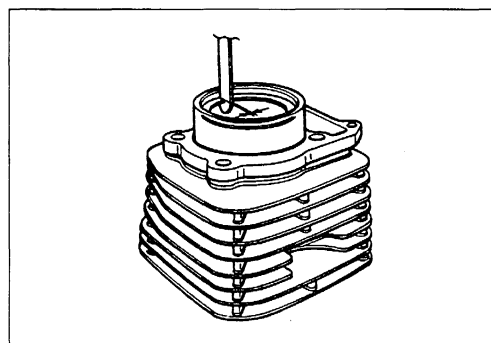
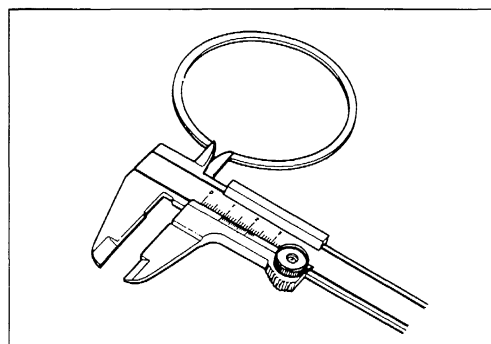
 09900-20102: Vernier caliper

Piston ring end gap

Service Limit

1st and 2nd: 0.5 mm (0.02 in)

 09900-20803: Thickness gauge



OVERSIZE RINGS

- **Oversize piston ring**

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

Piston ring 1st and 2nd

0.5 mm: 50

1.0 mm: 100

- **Oversize oil ring**

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

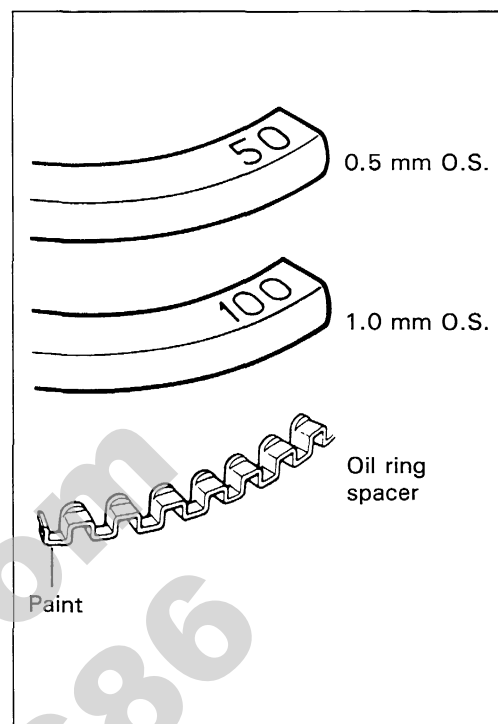
Oil ring

0.5 mm: Painted red

1.0 mm: Painted yellow

- **Oversize side rail**

Just measure outside diameter to identify the side rail as there is no mark or numbers on it.



PISTON PIN AND 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.

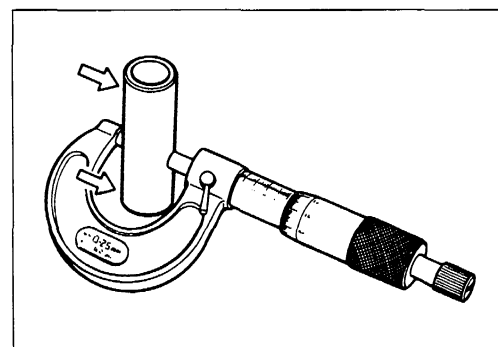
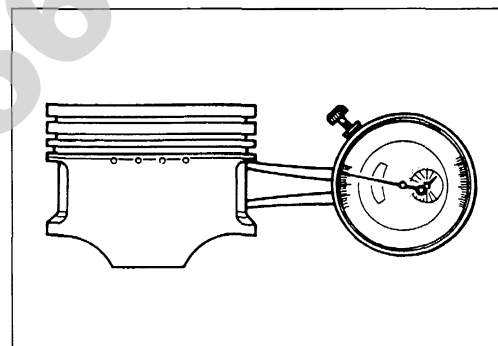
Piston pin bore

Service Limit: 16.030 mm (0.6311 in)

Piston pin O.D.

Service Limit: 15.980 mm (0.6291 in)


-  **09900-20605: Dial calipers**
09900-20205: Micrometer (0–25 mm)



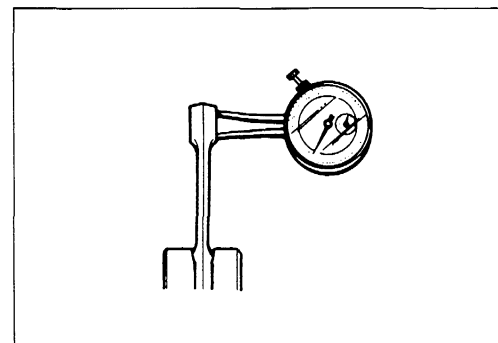
CONROD SMALL END I.D.

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

Service Limit: 16.040 mm (0.6315 in)

-  **09900-20605: Dial calipers**

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



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)

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

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

Standard: 0.10–0.45 mm (0.004–0.018 in)

Service Limit: 1.00 mm (0.039 in)

TOOL 09900-20803: Thickness gauge

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 and crank pin etc.

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: 0.08 mm (0.003 in)

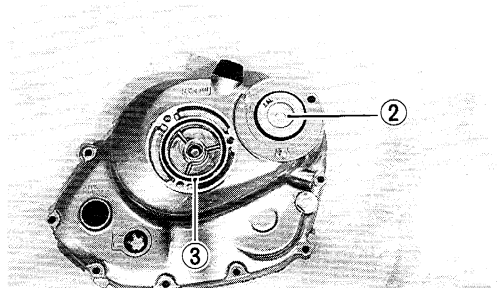
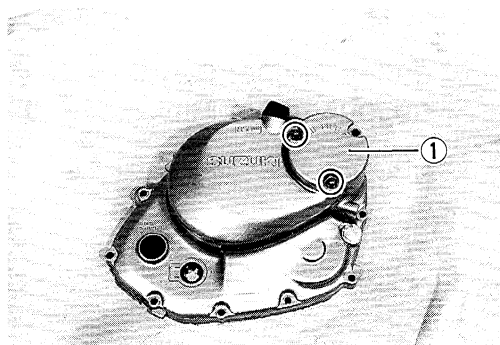
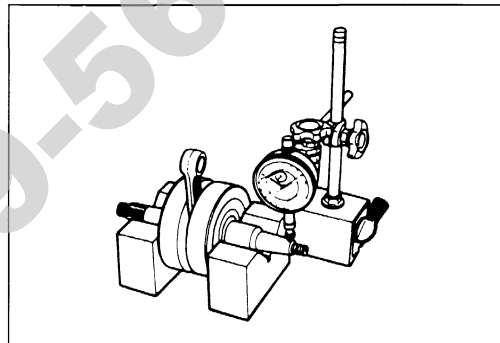
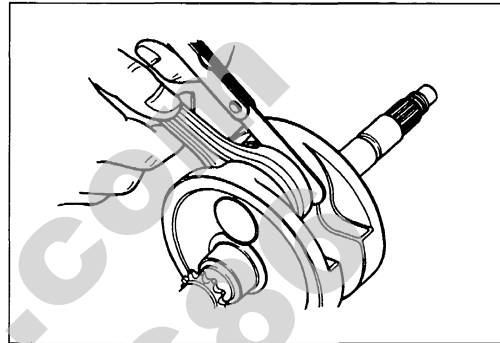
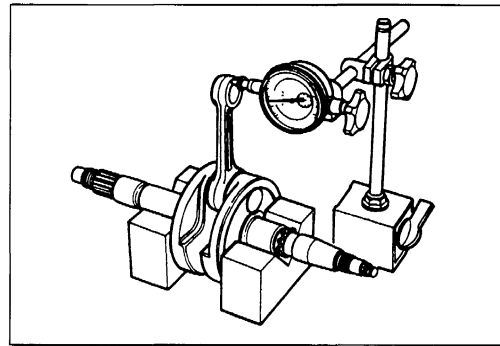
OIL FILTER

- Remove the oil filter cap ① .

- Remove the oil filter ② .

NOTE:

When installing the oil filter cap, apply engine oil lightly to the O-ring ③ .



CLUTCH DRIVE PLATE

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

Standard

Thickness (1 pc) : 2.9–3.1 mm (0.114–0.122 in)
(5 pcs): 2.95–3.15 mm (0.116–0.124 in)

Service Limit

Thickness: 2.6 mm (0.10 in)



09900-20102: Vernier calipers

CLUTCH DRIVEN PLATE

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

Service Limit: 0.10 mm (0.004 in)



09900-20803: Thickness gauge

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.

Service Limit: 31.0 mm (1.22 in)

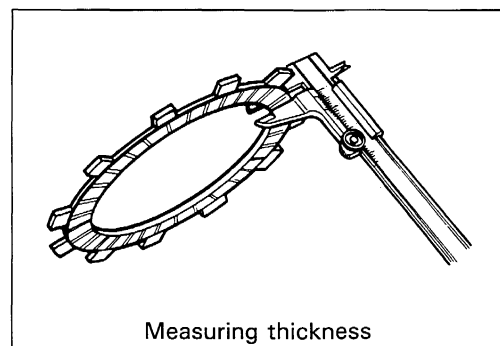


09900-20102: Vernier calipers

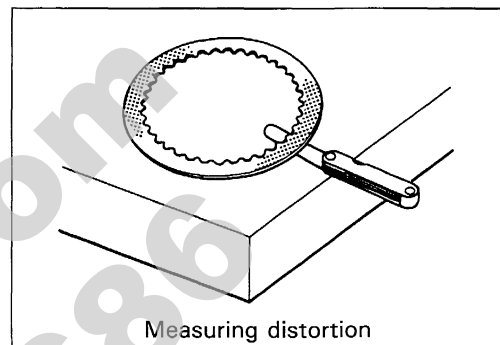
CLUTCH RELEASE BEARING

Inspect the release bearing for any abnormality, particularly cracks, to decide whether it can be reused or should be replaced.

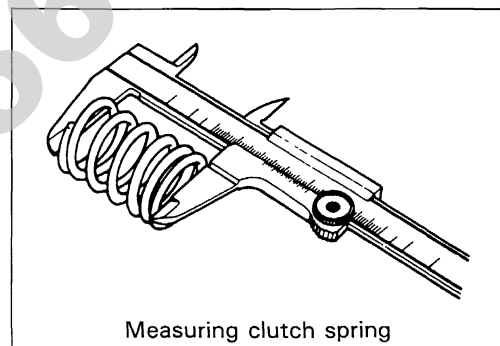
Smooth engagement and disengagement of the clutch depends much on the condition of this bearing.



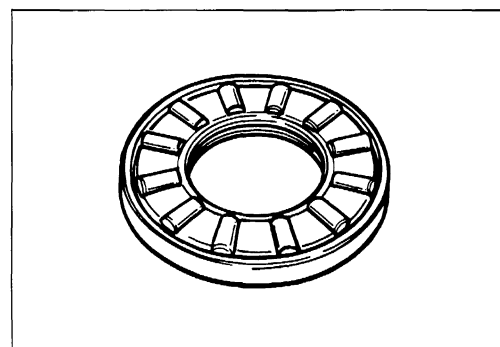
Measuring thickness



Measuring distortion



Measuring clutch spring



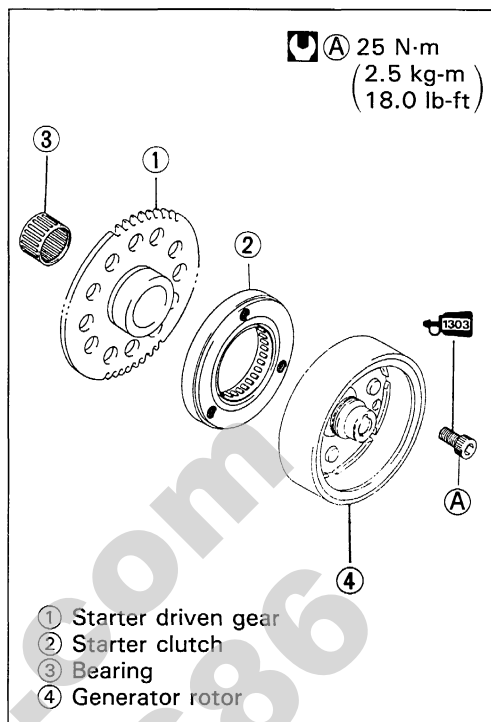
STARTER CLUTCH AND STARTER DRIVEN GEAR BEARING

STARTER CLUTCH

Install the starter driven gear onto the starter clutch and turn the starter driven gear by hand to inspect the starter clutch for a smooth movement. The gear turns one direction only. If a large resistance is felt to rotation, inspect the starter clutch for damage or inspect the starter clutch contacting surface of the starter driven gear for wear or damage. If they are found to be damaged, replace them with new ones.


STARTER DRIVEN GEAR BEARING

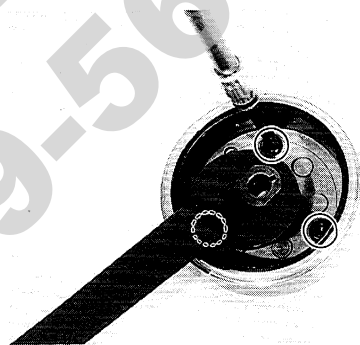
Install the starter driven gear onto the crankshaft and turn the starter driven gear by hand to inspect the starter driven gear bearing for a smooth rotation and abnormal noise. If it is found to be damaged, replace it with new one.



DISASSEMBLY

- Hold the generator rotor with the rotor holder and remove the starter clutch securing bolts.

 **09930-44511: Rotor holder**

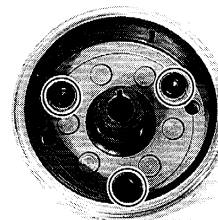


REASSEMBLY

- Apply a small quantity of THREAD LOCK SUPER "1303" to the starter clutch securing bolts and tighten them to the specified torque by holding the rotor holder.

 **99000-32030: THREAD LOCK SUPER "1303"**

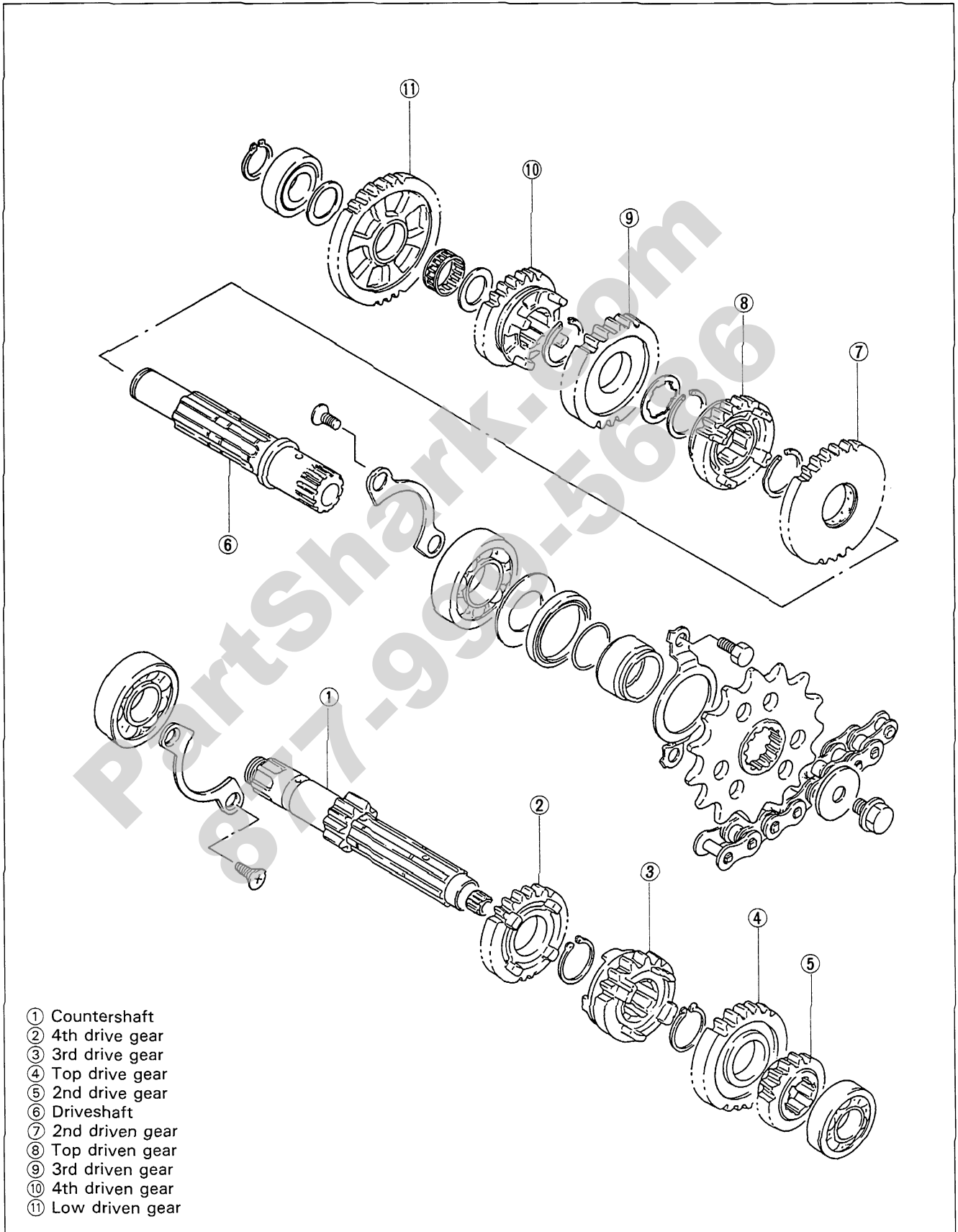
 **Starter clutch bolt: 25 N·m (2.5 kg-m, 18.0 lb-ft)**



TRANSMISSION

DISASSEMBLY

- Disassemble the transmission gears as shown in the illustration.



COUNTERSHAFT AND DRIVESHAFT

REASSEMBLY

Assemble the countershaft and driveshaft, in the reverse order of disassembly. Pay attention to following points:

NOTE:

Always use new circlips.

NOTE:

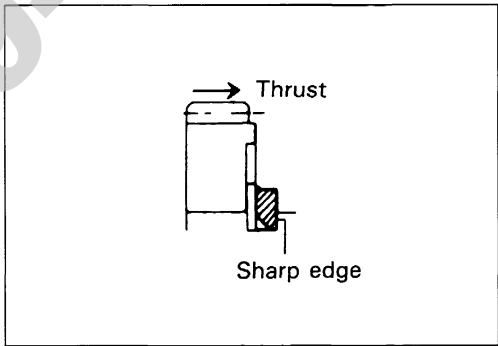
Before installing the gears, coat lightly MOLY PASTE or engine oil to the driveshaft and countershaft.

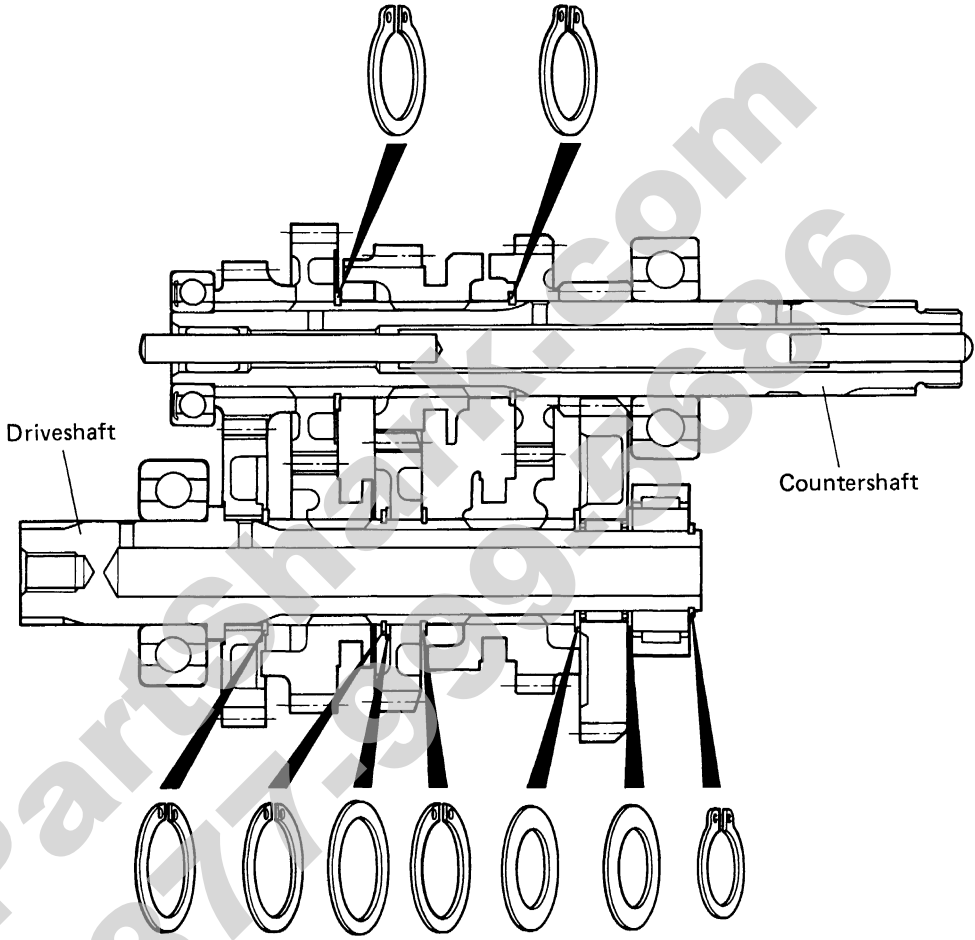
 99000-25140: SUZUKI MOLY PASTE

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.

- When installing a new circlip, pay attention to the direction of the circlip. Fit it to the side where the thrust is as shown in the figure.





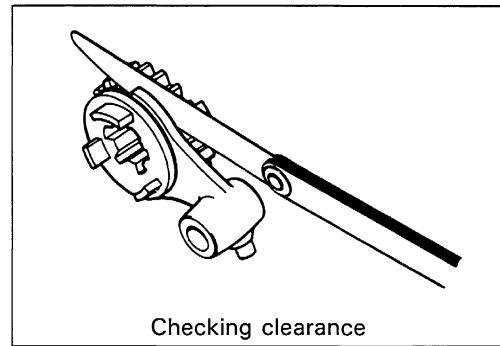
SHIFT FORK-GROOVE CLEARANCE

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

The clearance for each of the three shifting forks plays an important role in the smoothness and positiveness of shifting action.

Shift fork-Groove clearance

Standard: 0.10–0.30 mm (0.004–0.012 in)

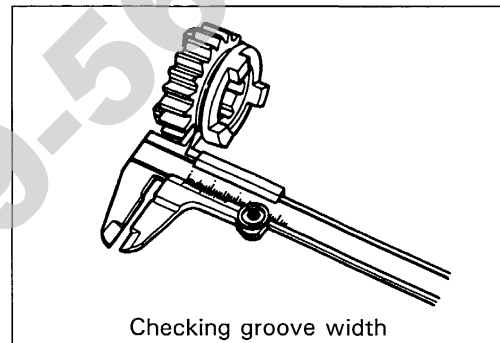


If the clearance checked is noted to exceed the standard range, replace the fork or its gear, or both.

TOOL 09900-20803: Thickness gauge
09900-20102: Vernier calipers

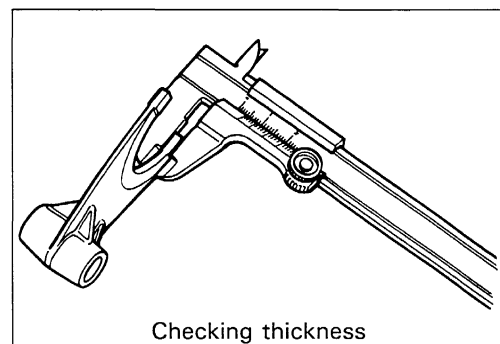
Shift fork groove width

Standard (No.1, 2 & 3): 5.0–5.1 mm (0.20–0.21 in)



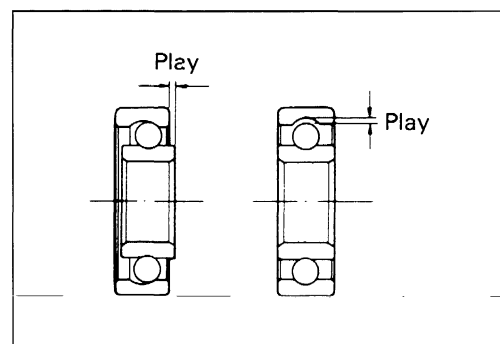
Shift fork thickness

Standard (No.1, 2 & 3): 4.8–4.9 mm (0.18–0.19 in)



CRANKCASE BEARING

Inspect the play of the crankcase bearings by hand while they are in the right and left crankcases. Rotate each crankcase bearing inner race by hand to inspect for abnormal noise and smooth rotation. Replace the bearing if there is anything unusual.



ENGINE REASSEMBLY

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

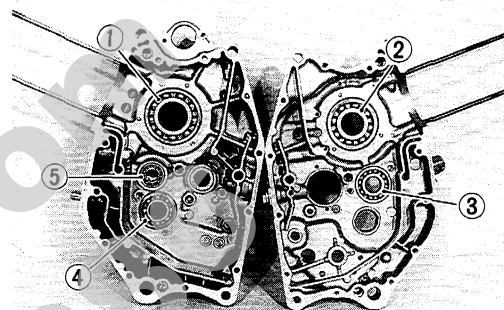
NOTE:

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

CRANKCASE BEARING

- Install the bearings to the crankcase by using the special tools.

- TOOL** 09913-75510: Bearing installer (① ②)
 09913-76010: Bearing installer (③ ④)
 09913-75821: Bearing installer (⑤)

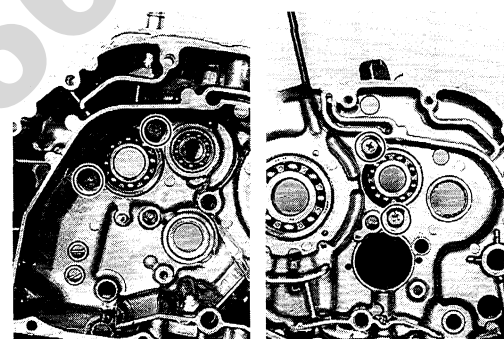


- Install the bearing retainers.

NOTE:

Apply a small quantity of THREAD LOCK SUPER "1322" to the bearing retainer screws.

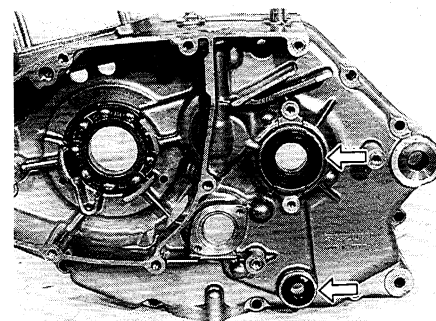
- 1322** 99000-32110: THREAD LOCK SUPER "1322"



OIL SEAL

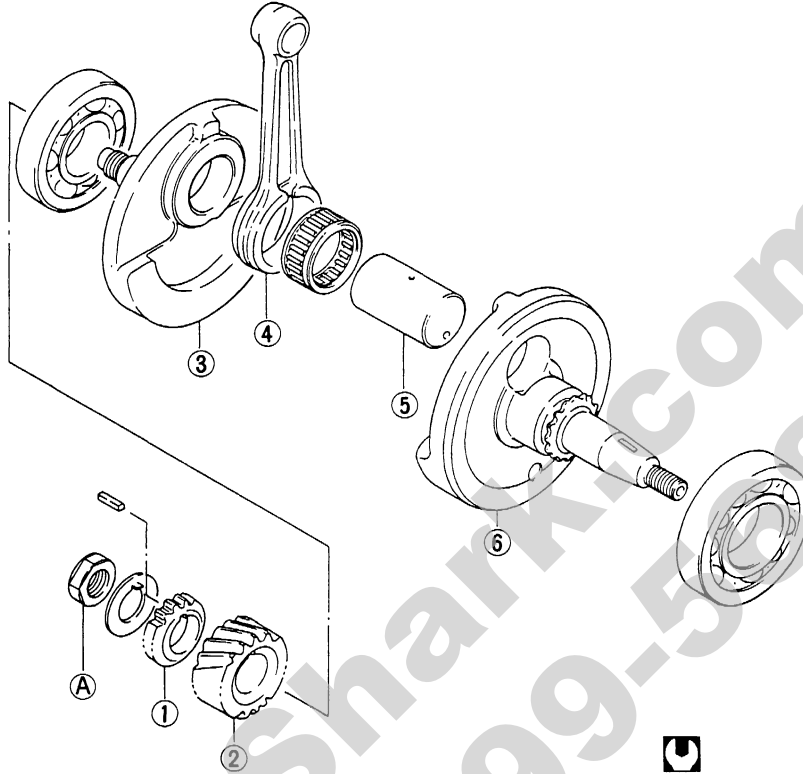
- Install the oil seals to the crankcase with a proper drift.
- Apply SUZUKI SUPER GREASE "A" to the oil seal lip.

- AH** 99000-25030: SUZUKI SUPER GREASE "A"



CRANKSHAFT

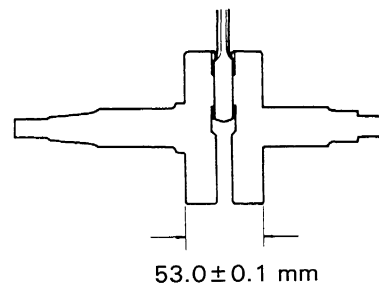
- ① Oil pump drive gear
- ② Primary drive gear
- ③ Right crankshaft
- ④ Conrod
- ⑤ Crank pin
- ⑥ Left crankshaft



ITEM	N·m	kg·m	lb·ft
Ⓐ	50	5.0	36.0

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

STD width between webs: 53.0 ± 0.1 mm
(2.09 ± 0.004 in)

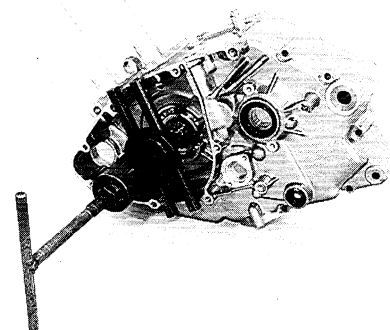


- When installing the crankshaft in the crankcase, it is necessary to pull its left end into the left crankcase by using the special tools.

TOOL 09910-32812: Crankshaft installer
09910-20116: Conrod holder

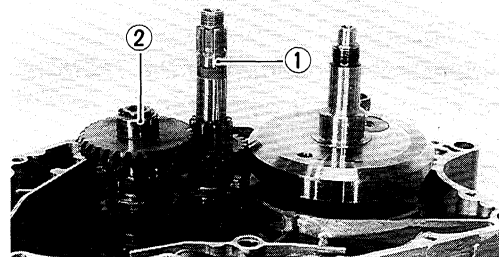
⚠ CAUTION

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



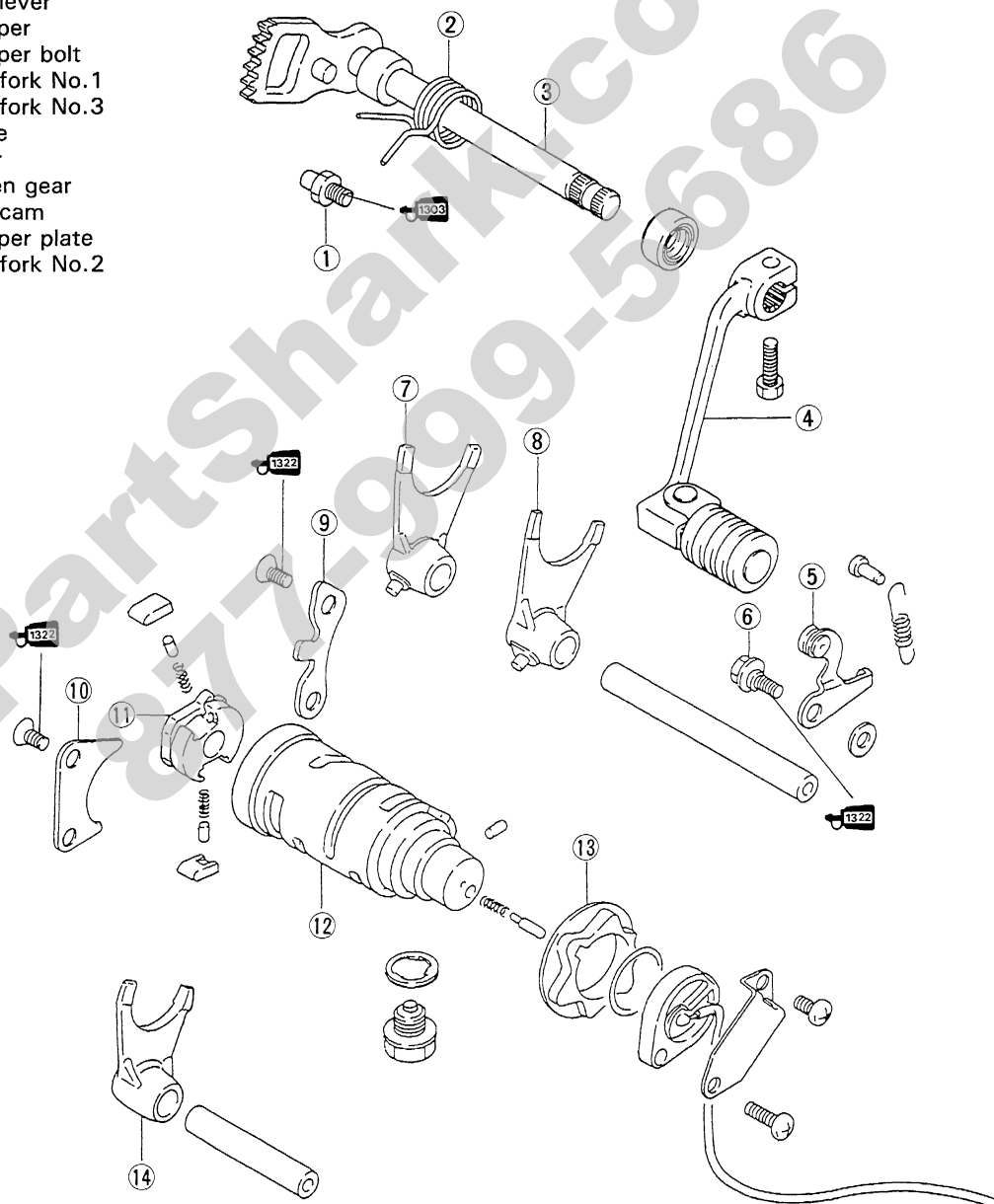
TRANSMISSION

- Install the countershaft assembly ① and driveshaft assembly ② into the left crankcase.



GEARSHIFT MECHANISM

- ① Gearshift arm stopper
- ② Gearshift shaft return spring
- ③ Gearshift shaft
- ④ Gearshift lever
- ⑤ Cam stopper
- ⑥ Cam stopper bolt
- ⑦ Gearshift fork No.1
- ⑧ Gearshift fork No.3
- ⑨ Cam guide
- ⑩ Pawl lifter
- ⑪ Cam driven gear
- ⑫ Gearshift cam
- ⑬ Cam stopper plate
- ⑭ Gearshift fork No.2



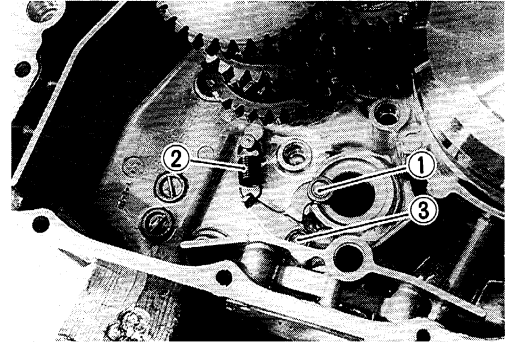
GEARSHIFT CAM

- Install the gearshift cam stopper ① and its spring ② .

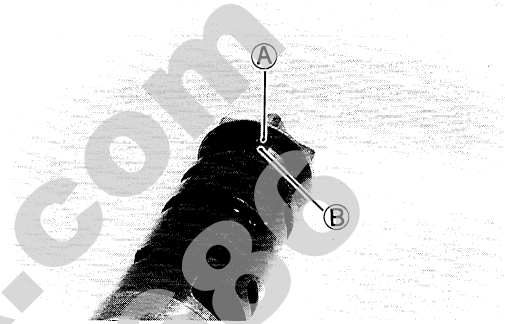
NOTE:

Apply a small quantity of the **THREAD LOCK SUPER "1322"** to the gearshift cam stopper bolt ③ .

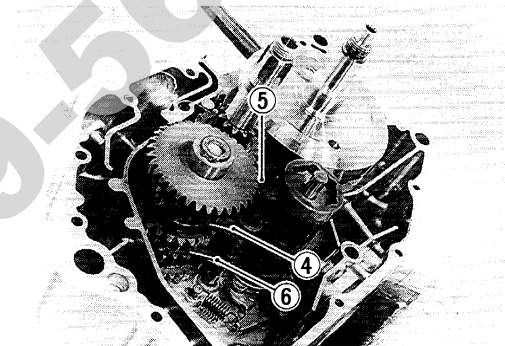
 **99000-32110: THREAD LOCK SUPER "1322"**



- Align the pin groove **A** of gearshift cam stopper plate with the pin **B** on the gearshift cam.



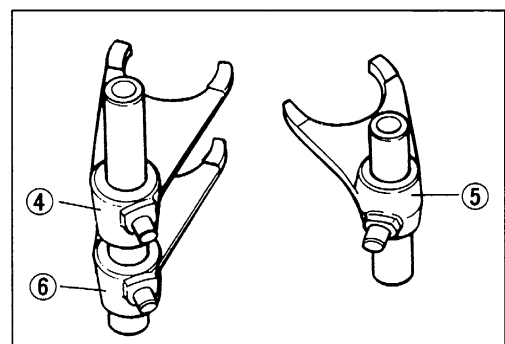
- Install the gearshift forks, ④ , ⑤ and ⑥ into the gearshift fork grooves.
- Install the gearshift cam.
- Install the gearshift fork shafts.



NOTE:

Three kinds of gearshift forks, ④ , ⑤ and ⑥ , are used. They resemble each other very closely in external appearance and configuration. Carefully examine the illustration for correct installing positions and directions.

- ④ : Gearshift fork No.1
- ⑤ : Gearshift fork No.2
- ⑥ : Gearshift fork No.3



CRANKCASE

When reassembling the crankcase, pay attention to the following.

- Remove sealant material on the mating surfaces of right and left halves of crankcase and thoroughly remove oil stains.
- Fit the two dowel pins ① on the left half as shown in Fig.
- Apply engine oil to the conrod big end of the crankshaft and all parts of the transmission gears.
- Apply SUZUKI BOND No. 1207B uniformly to the mating surface of the left half of the crankcase, and assemble the cases within few minutes.

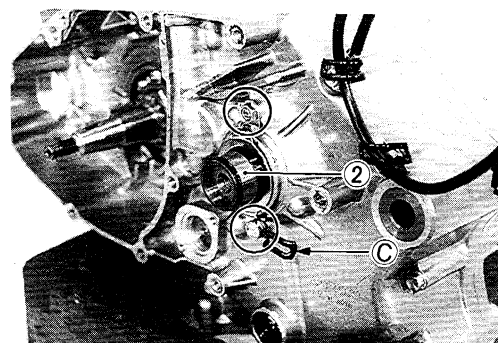
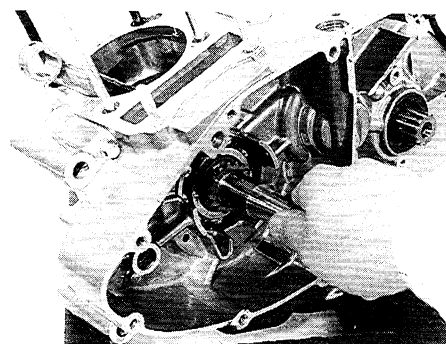
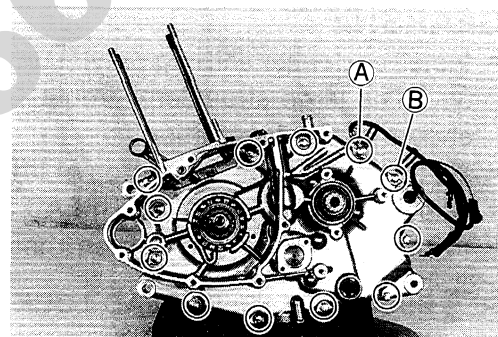
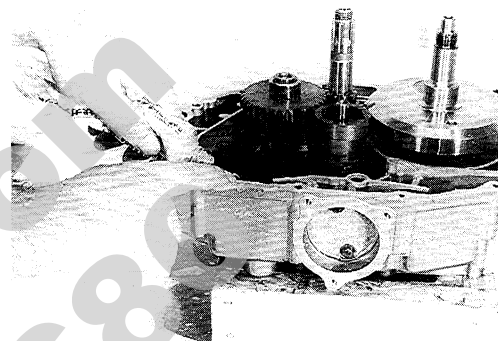
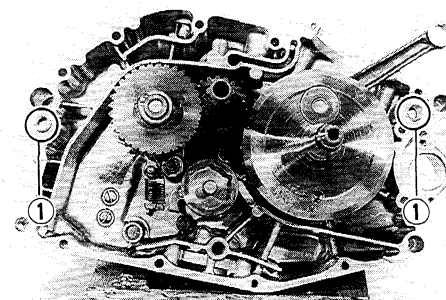
 99104-31140: SUZUKI BOND No. 1207B

- Fit the engine ground wire ④ and clamps ⑤ to the correct position.
- Tighten the crankcase bolts to the specified torque.

 Crankcase bolt: 11 N·m (1.1 kg-m, 8.0 lb-ft)

- After the crankcase bolts have been tightened, check if crankshaft, driveshaft and countershaft rotate smoothly.
- If a large resistance is felt to rotation, try to free the shafts by tapping the crankshaft, driveshaft or countershaft with a plastic hammer.

- Install the oil seal retainer, and positively bend the lock portion of the retainer.
- Fit the wire clamp ③ to the correct position.
- Install the spacer ② to the driveshaft in the correct direction.



PRIMARY DRIVE GEAR

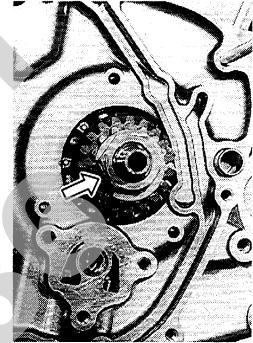
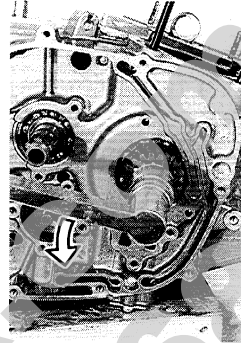
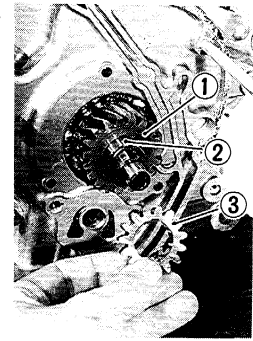
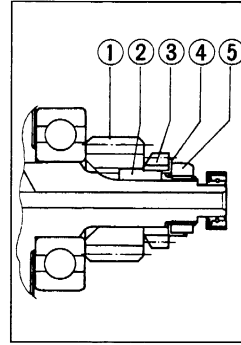
- Fit the key ① in the key slot on the crankshaft, and install the primary drive gear ② .
- Install the oil pump drive gear ③ .
- Install the lock washer ④ and nut ⑤ , then tighten the nut ⑤ to the specified torque by using the conrod holder and torque wrench.
- Bend up the lock washer ④ positively.

 **09910-20116: Conrod holder**

 **Primary drive gear nut: 50 N·m (5.0 kg-m, 36.0 lb-ft)**

NOTE:

This nut ⑤ has left-hand thread.



GEARSHIFT

- Install each gear shifting pawl ① into the cam driven gear ② . The large shoulder A must face to the outside as shown in the illustration.
- Fit the cam guide ③ and pawl lifter ④ correctly.
- Apply a small quantity of THREAD LOCK SUPER "1322" to the screws ⑤ and tighten them.

 **99000-32110: THREAD LOCK SUPER "1322"**

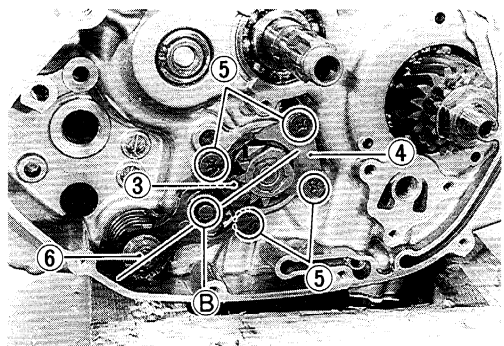
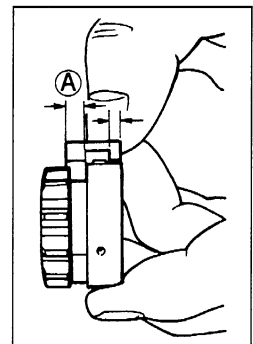
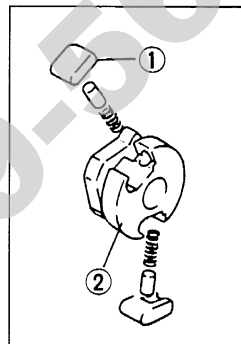
- Fit a spring to the gearshift shaft correctly.
- Install the gearshift shaft ⑥ . Match the center teeth of the gear on the gearshift shaft with the center teeth on the cam driven gear as shown.

NOTE:

When replacing the gearshift arm stopper B, apply a small quantity of THREAD LOCK SUPER "1303" to the threaded part of the stopper and tighten it to the specified torque.

 **99000-32030: THREAD LOCK SUPER "1303"**

 **Gearshift arm stopper: 19 N·m (1.9 kg-m, 13.5 lb-ft)**

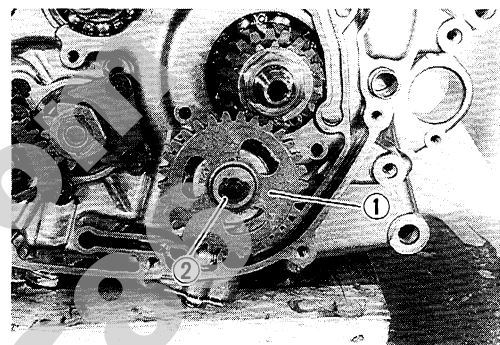
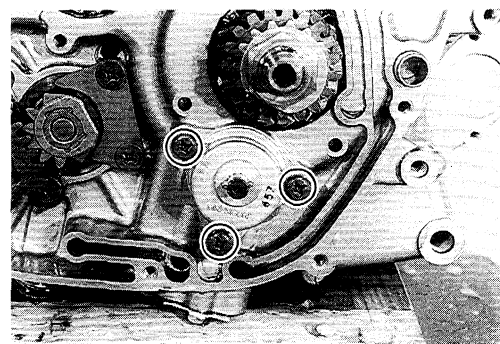


OIL PUMP

- 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 SUPER "1322" to the oil pump mounting screws.

 99000-32110: THREAD LOCK SUPER "1322"

- Tighten the oil pump mounting screws.
- Install the oil pump driven gear ① with the circlip ② .

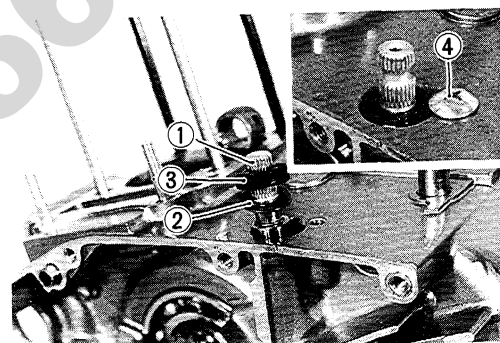


CLUTCH RELEASE CAMSHAFT

- Install the clutch release camshaft ① , washer ② and oil seal ③ .
- Install the oil seal retainer screw ④ .

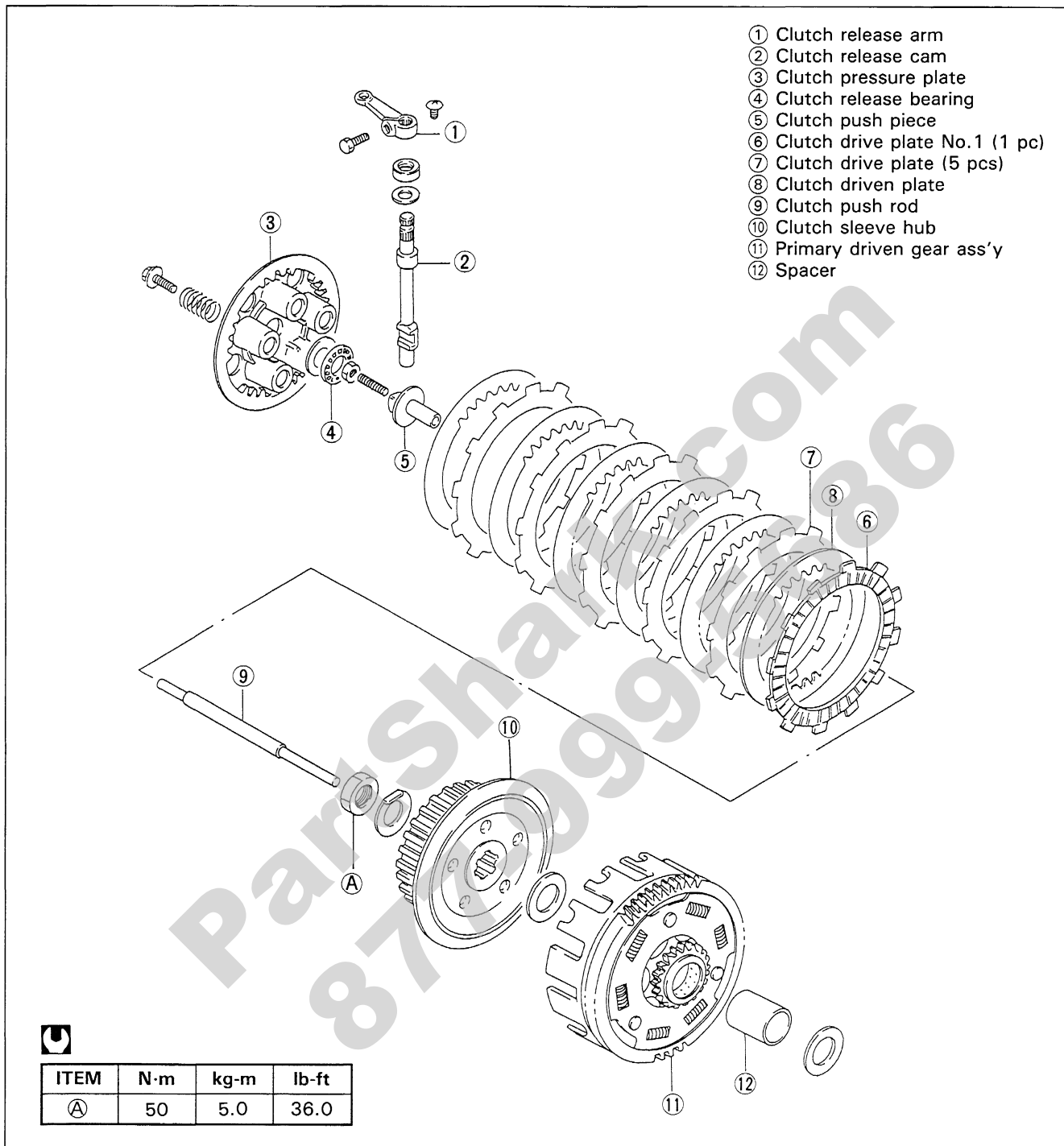
CAUTION

Use a new oil seal to prevent oil leakage.



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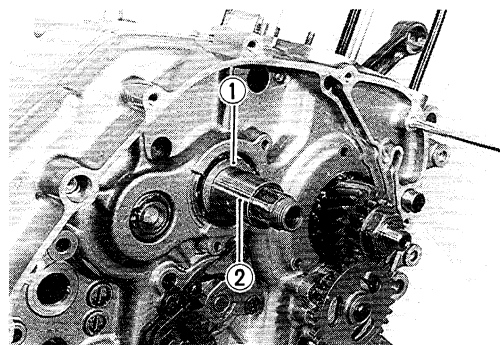
CLUTCH



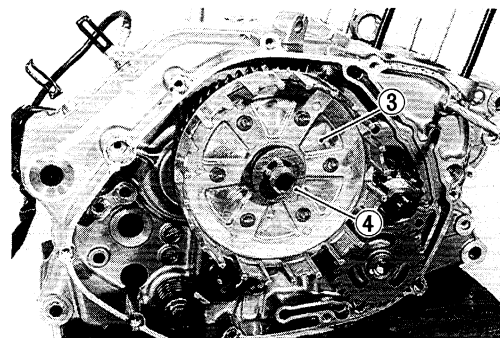
- Install the thrust washer ① and spacer ② .

NOTE:

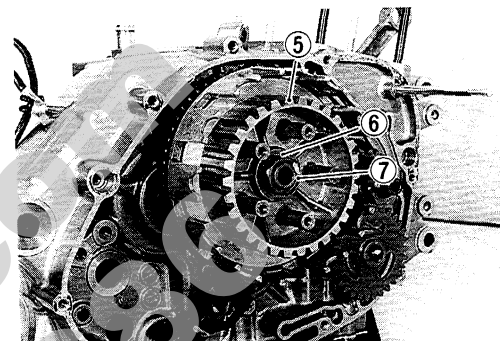
Apply a small quantity of engine oil to inside and outside surfaces of the spacer.



- Install the primary driven gear assembly ③ and thrust washer ④ .



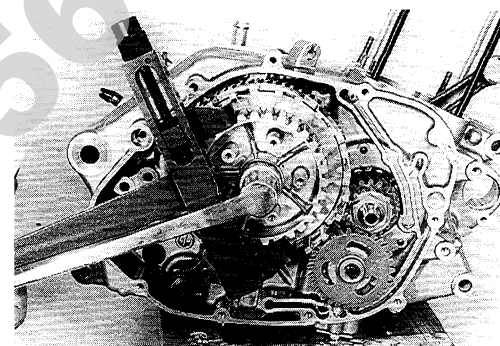
- Install the clutch sleeve hub ⑤ , lock washer ⑥ and nut ⑦ .



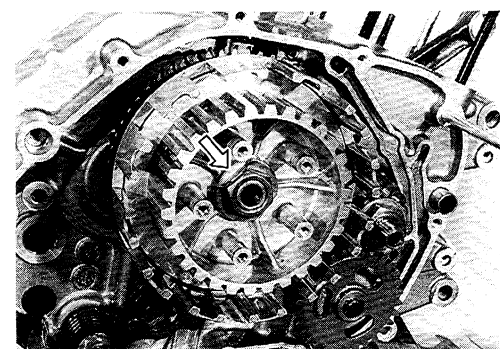
- Tighten the clutch sleeve hub nut to the specified torque.

TOOL 09920-53740: Clutch sleeve hub holder

U Clutch sleeve hub nut: 50 N·m (5.0 kg·m, 36.0 lb-ft)



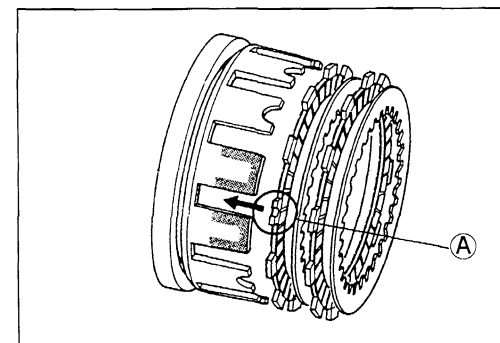
- Lock the clutch sleeve hub nut by firmly bending the tongue of the lock washer.



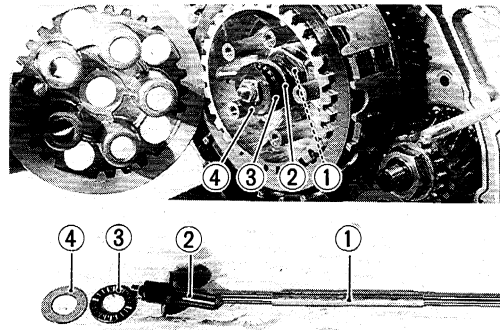
- Install the clutch drive plates and driven plates one by one into the clutch sleeve hub in the prescribed order, drive plate first. (Refer to page 3-43.)

CAUTION

When installing the clutch drive plate No.1, align the mark **A** on the drive plate with clutch housing as shown in the illustration.



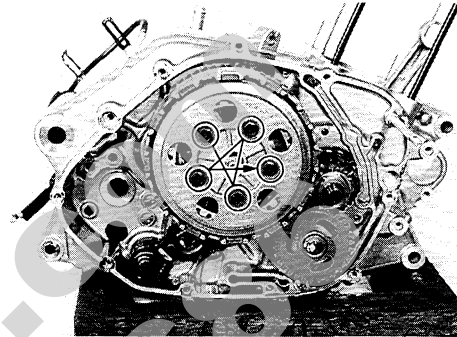
- Insert the clutch push rod ① into the countershaft, then install the clutch push piece ②, release bearing ③ and thrust washer ④.
- Put the clutch pressure plate onto the clutch sleeve hub.



- Put the clutch springs and its set bolts onto the clutch pressure plate.
- Tighten the clutch spring set bolts in the order.

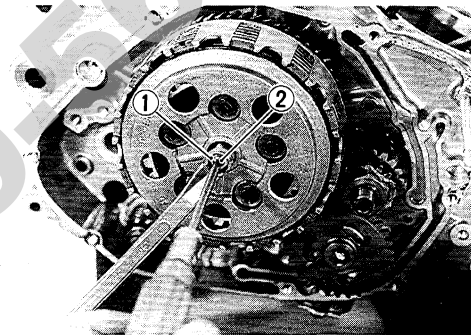
NOTE:

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



CLUTCH RELEASE SCREW ADJUSTMENT

- Loosen the lock nut ①, and turn in the release screw ② to feel resistance.
- From that position, turn out the release screw ② 1/4 turn, and tighten the lock nut ①.



- Install the dowel pins, a new gasket and clutch cover to the crankcase.

CAUTION

Use a new gasket to prevent oil leakage.

- Tighten the clutch cover bolts and nut to the specified torque.

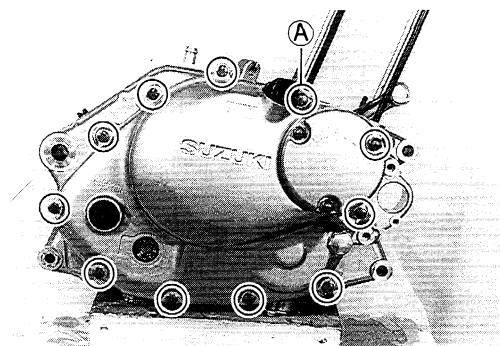
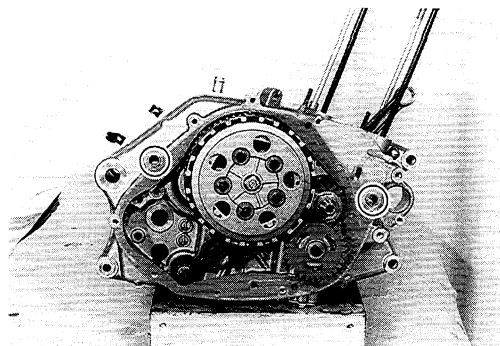
Clutch cover bolt: 10 N·m (1.0 kg·m, 7.0 lb·ft)

NOTE:

Fit the gasket to the clutch cover bolt (A) correctly.

CAUTION

Use a new gasket to prevent oil leakage.



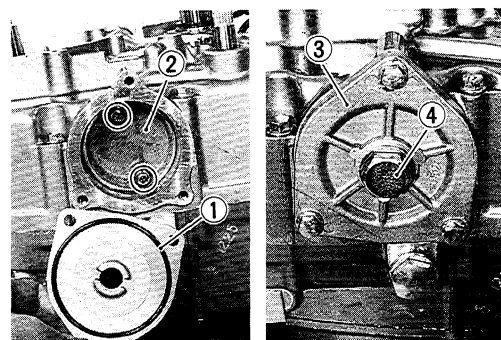
OIL SUMP FILTER

- Apply engine oil lightly to the O-ring ① .
- Install the oil sump filter ② .
- Install the oil sump filter cap ③ .
- Tighten the engine oil drain plug ④ to the specified torque.

 Oil drain plug: 28 N·m (2.8 kg-m, 20.0 lb-ft)

CAUTION

Use a new O-ring to prevent oil leakage.

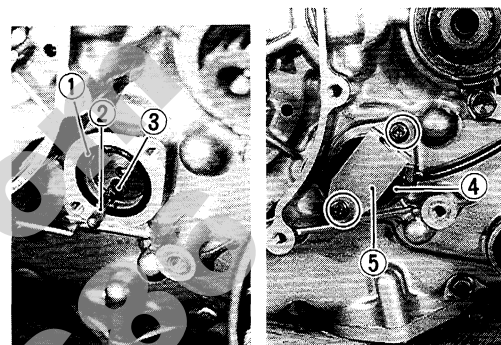


NEUTRAL SWITCH

- Fit a new O-ring ① , switch contact ② and spring ③ .
- Install the neutral switch ④ and its retainer ⑤ with the screws.

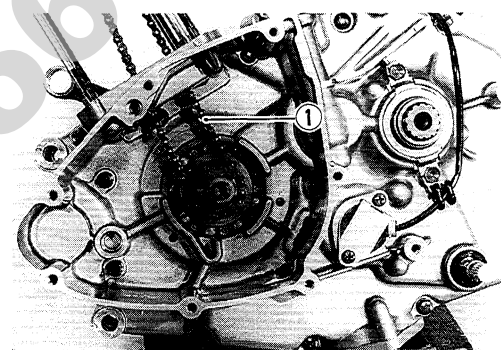
CAUTION

Use a new O-ring to prevent oil leakage.

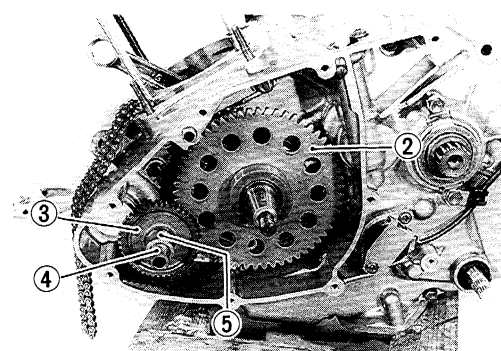


CAM DRIVE CHAIN, STARTER GEARS AND GENERATOR

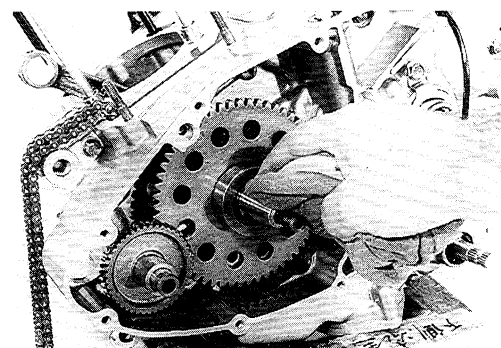
- Engage the cam drive chain ① onto the cam drive sprocket.



- Install the starter driven gear ② .
- Install the starter idle gear ③ , shaft ④ and spacer ⑤ .




- Degrease the tapered portion of the crankshaft and also the generator rotor.
- Fit the key in the key slot on the crankshaft, then install the generator rotor.

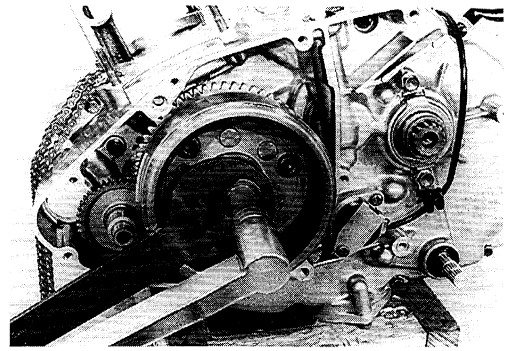


- Apply a small quantity of THREAD LOCK SUPER "1303" to the threaded part of rotor nut and tighten it to the specified torque by using the special tool and torque wrench.


 99000-32030: THREAD LOCK SUPER "1303"

 09930-44511: Rotor holder

 Generator rotor nut: 55 N-m (5.5 kg-m, 40.0 lb-ft)



- Install the dowel pin, a new gasket and generator cover.
- Tighten the generator cover bolts to the specified torque.

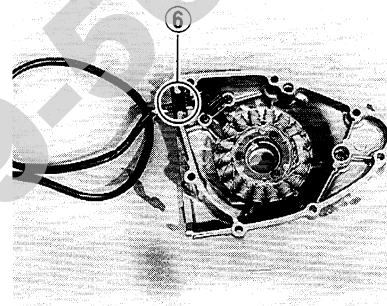
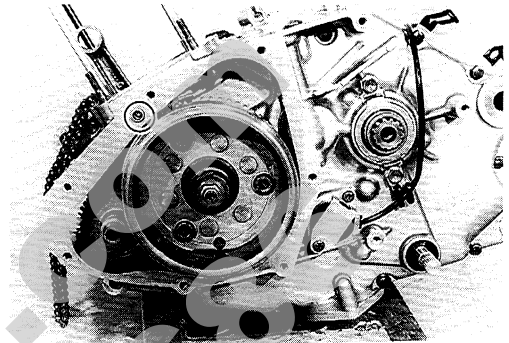
 Generator cover bolt: 10 N-m (1.0 kg-m, 7.0 lb-ft)

CAUTION

Use a new gasket to prevent oil leakage.

NOTE:

BOND No. 1207B should be applied to the groove of generator lead wire grommet ⑥ .

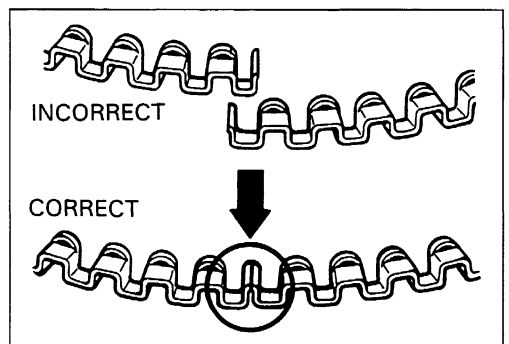
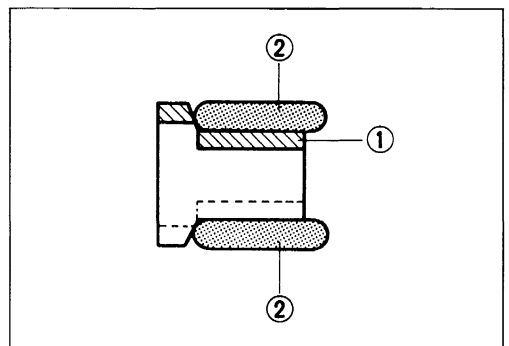


OIL RING

- Install the spacer ① into the oil 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.

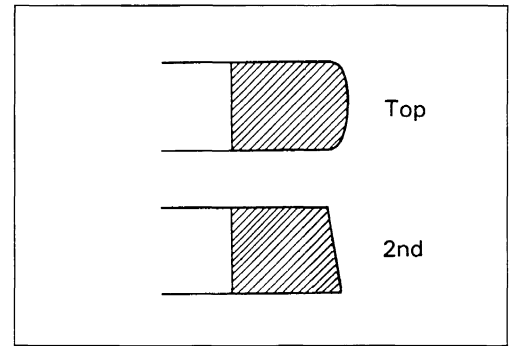
CAUTION

When installing the spacer, be careful not to allow its two ends to overlap in the groove.

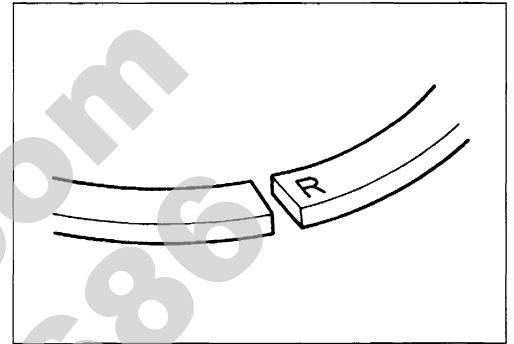


TOP RING AND 2ND RING

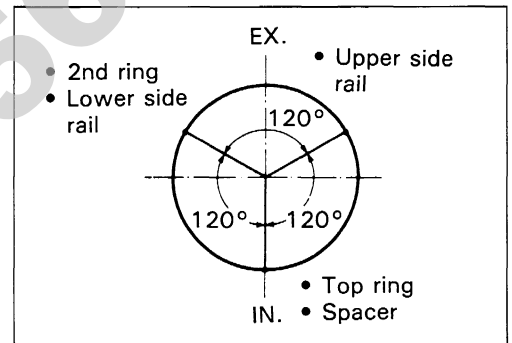
- Top ring and 2nd ring differ in the shape of ring face, and the face of top ring is chrome-plated whereas that of 2nd ring is not. The color of 2nd ring appears darker than that of the top one.



- Top and 2nd rings have the letter "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:

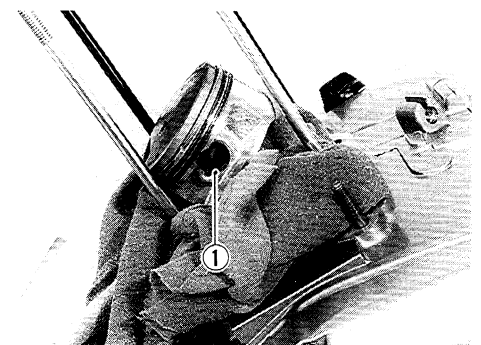
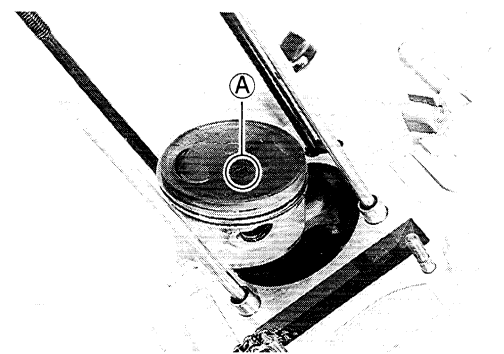
- Rub a small quantity of SUZUKI MOLY PASTE onto the piston pin.

H99000-25140: SUZUKI MOLY PASTE

- Place a clean rag over the cylinder base to prevent the piston pin circlips from dropping into the crankcase.
- When fitting the piston, turn arrow mark **A** on the piston head to exhaust side.
- Fit the piston pin circlips **1** with long-nose pliers.

CAUTION

Use a new piston pin circlip **1** to prevent circlip failure which will occur with a bent one.



CYLINDER

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

- Install the dowel pins and a new gasket.

⚠ CAUTION

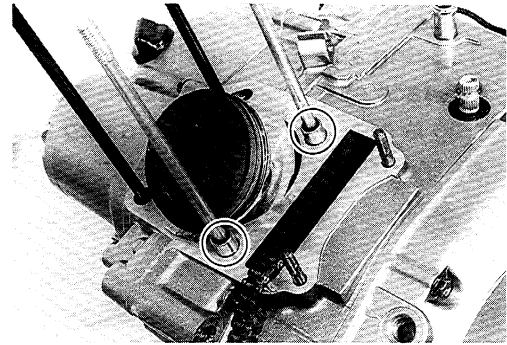
Use a new gasket to prevent oil leakage.

- Hold each piston ring with properly position, and insert the piston into the cylinder

NOTE:

When mounting the cylinder, 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.

There is a holder for the bottom end of the cam chain guide cast in the crankcase. Be sure that the cam chain guide ① is inserted properly.



CYLINDER HEAD

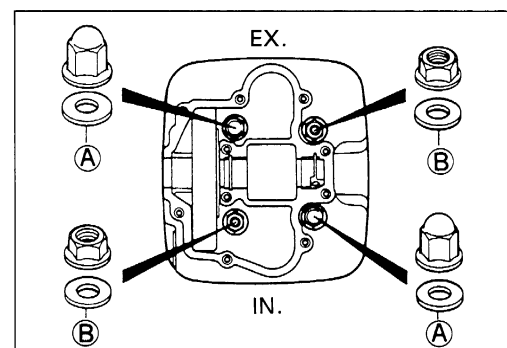
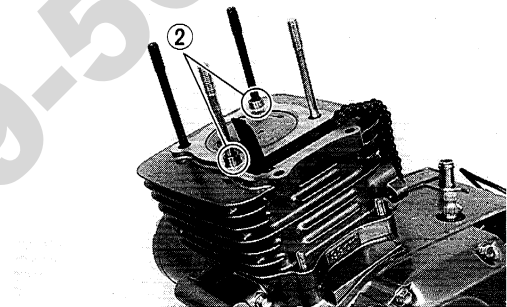
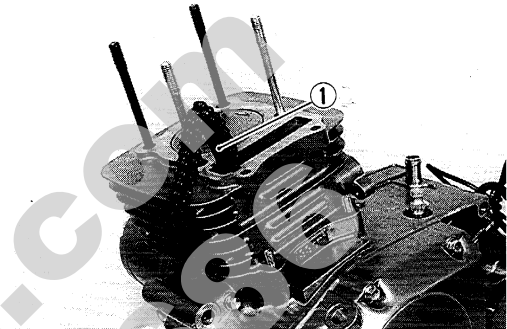
- Install the dowel pins ② and a new gasket.

⚠ CAUTION

Use a new cylinder head gasket to prevent gas leakage.

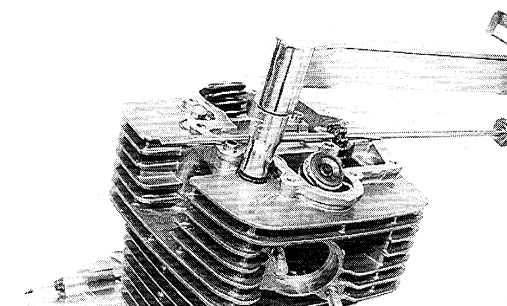
- Place the cylinder head on the cylinder.
- Cylinder head nuts and washers must be fitted in the correct position, as shown in the illustration.

- Ⓐ Copper washer
- Ⓑ Steel washer




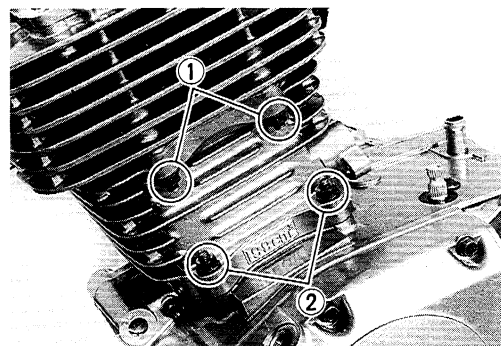
- Tighten the cylinder head nuts to the specified torque with a torque wrench diagonally.

 Cylinder head nut: 27 N·m (2.7 kg·m, 19.5 lb-ft)



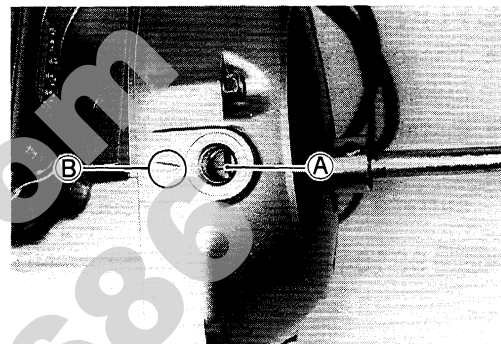
- After tightening the top side of the cylinder head nuts, tighten the bottom side of the cylinder head nuts ① and cylinder base nuts ② to the specified torque.

 **Cylinder head nut: 10 N·m (1.0 kg-m, 7.0 lb-ft)**
Cylinder base nut: 10 N·m (1.0 kg-m, 7.0 lb-ft)



CAMSHAFT

- Turn the generator rotor counterclockwise with the box wrench and align the "TOP" line ① on the generator rotor with the index mark ② on the generator cover keeping the camshaft drive chain pulled upward.



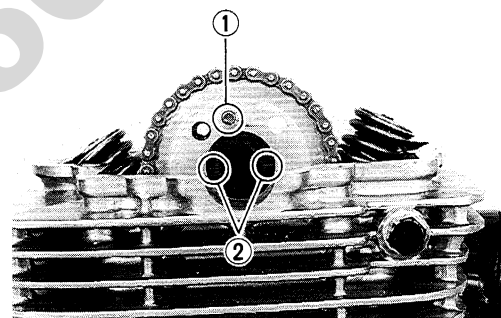
CAUTION

If 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 ① at just past top position.
- Align the engraved line marks ② on the camshaft so it is parallel with the surface of the cylinder head.
- Install the C-ring ③ into the ring groove of the cylinder head.



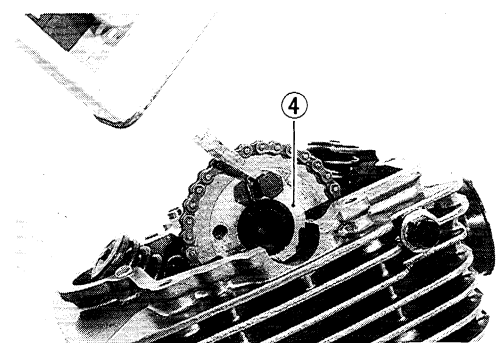
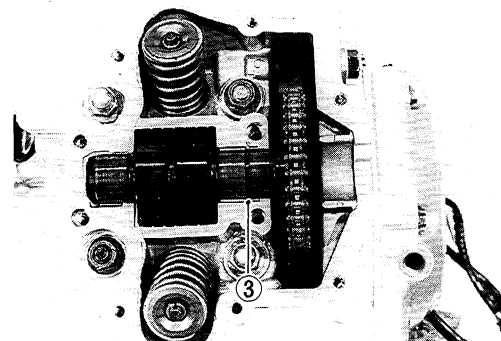
NOTE:

Do not rotate the generator 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.


- Fit the lock washer ④ so that it is covering the locating pin.
- Apply THREAD LOCK SUPER "1303" to the cam sprocket bolts and tighten them.

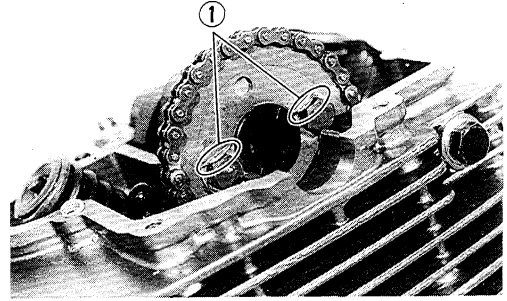
 **Cam sprocket bolt: 11 N·m (1.1 kg-m, 8.0 lb-ft)**

 **99000-32030: THREAD LOCK SUPER "1303"**



- Bend up the washer tongue ① positively to lock the bolts.
- Apply SUZUKI MOLY PASTE to the camshaft journals and cam faces.

 99000-25140: SUZUKI MOLY PASTE



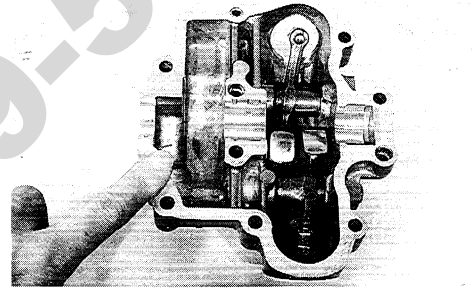
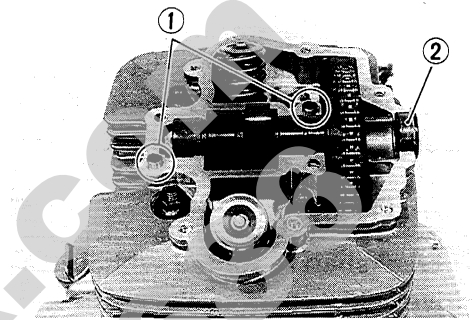
CYLINDER HEAD COVER

- Thoroughly wipe off oil from the mating surfaces of cylinder head and cover.
- Install the two dowel pins ① to the cylinder head side.
- Uniformly apply SUZUKI BOND No.1207B to the mating surface of the cylinder head cover.

 99104-31140: SUZUKI BOND No.1207B

NOTE:

Do not apply SUZUKI BOND No.1207B to the camshaft end cap ②.



- Fit the gasket ① to the head cover bolts correctly as shown in Fig.


CAUTION

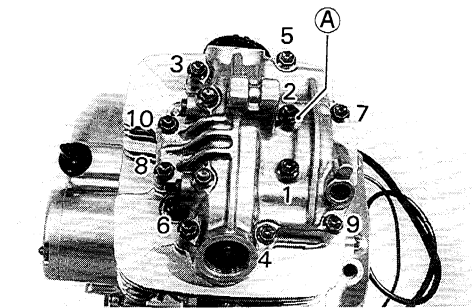
Use a new gasket to prevent oil leakage.

NOTE:

When tightening the cylinder head cover bolts, the piston must be at top dead center on the compression stroke.

- Lightly tighten the cylinder head cover bolts sequentially in the ascending order of numbers, and then if everything is satisfactory, tighten securely with a torque wrench to the specified torque.

 Cylinder head cover bolt: 10 N·m (1.0 kg·m, 7.0 lb-ft)



CAM DRIVE CHAIN TENSION ADJUSTER

Install the cam drive chain tension adjuster following the procedure below:

- Apply SUZUKI MOLY PASTE to the push rod ①.

MH 99000-25140: SUZUKI MOLY PASTE

- Unlock the ratchet mechanism ② and push in the push rod ① all the way before mounting the cam drive chain tension adjuster.
- Install the new gasket and cam drive chain tension adjuster to the cylinder and tighten its mounting bolts ③ to the specified torque.

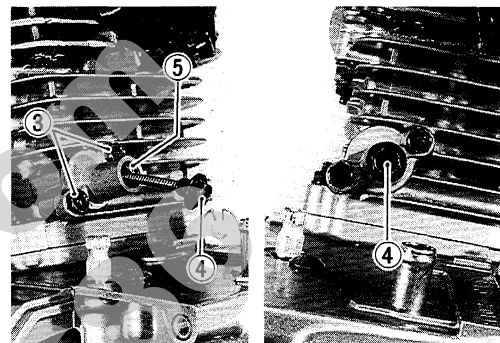
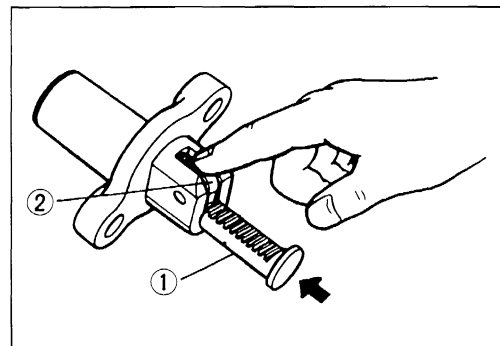
Cam chain tension adjuster bolt: 7 N·m (0.7 kg-m, 5.0 lb-ft)

- Insert the spring into the cam drive chain tension adjuster and tighten the spring holder bolt ④ to the specified torque.

Spring holder bolt: 8 N·m (0.8 kg-m, 6.0 lb-ft)

CAUTION

Always use a new gasket and O-ring ⑤ to prevent oil leakage.



VALVE CLEARANCE

- Check and adjust the valve clearance. Refer to page 2-4 for procedures.

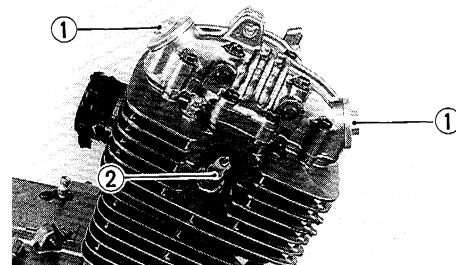
VALVE INSPECTION CAP AND SPARK PLUG

- Install the valve inspection caps ①.

NOTE:

Apply engine oil lightly to the O-rings.

- Install the spark plug ②.

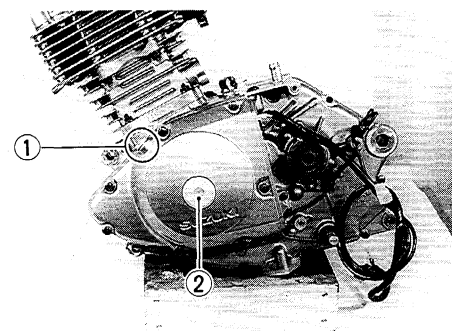


CAM TIMING INSPECTION CAP AND GENERATOR COVER CAP

- Install the cam timing inspection cap ① and generator cover cap ②.

NOTE:

Apply engine oil lightly to the O-ring.



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877-999-5686

FUEL AND LUBRICATION SYSTEM

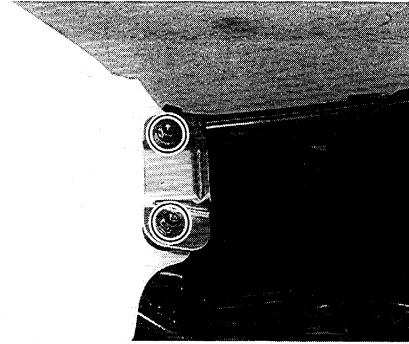
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FUEL TANK AND FUEL VALVE

FUEL TANK REMOVAL

- Remove the frame covers and seat. (Refer to page 5-1.)
- Turn the fuel valve to "ON" or "RES" position and disconnect the fuel hose and vacuum hose from the fuel valve.
- Remove the fuel tank by removing the bolts.

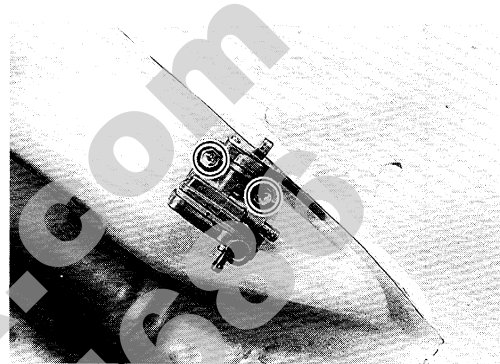


FUEL VALVE REMOVAL

- Remove the fuel tank.
- Drain fuel into a proper receptacle.
- Remove the fuel valve by removing the bolts.

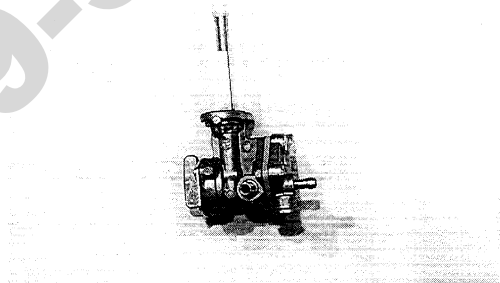
⚠ WARNING

Gasoline is very explosive. Extreme care must be taken. Gasket and O-ring must be replaced with new ones to prevent fuel leakage.



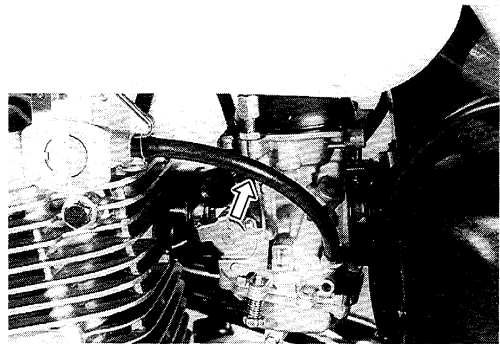
FUEL FILTER CLEANING

If the fuel filter is dirty with sediment or rust, fuel will not flow smoothly and loss in engine power may result. Clean the fuel filter with compressed air.

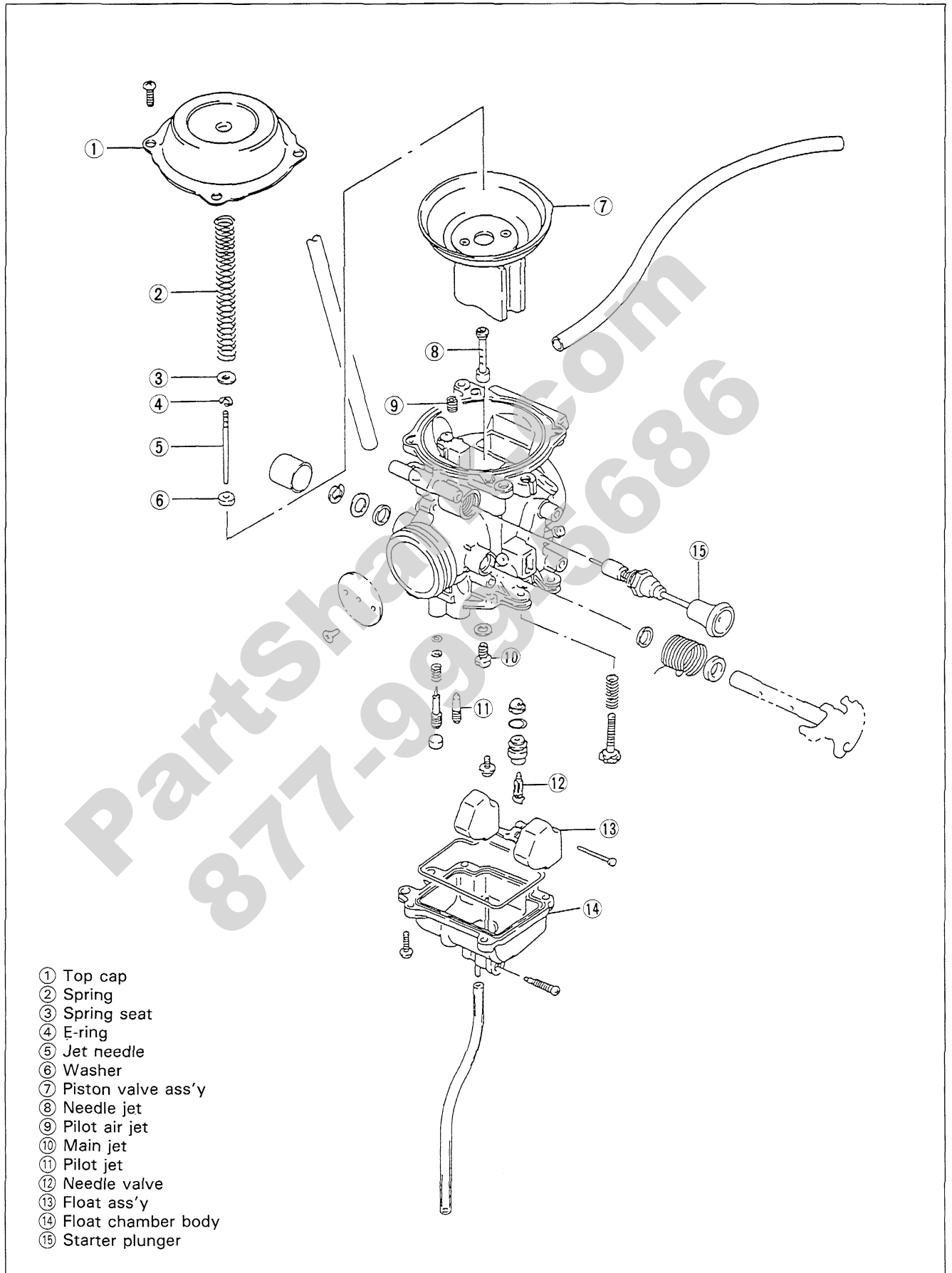


FUEL HOSE INSPECTION

Visually inspect the fuel hose for damage and fuel leakage. If it is found to be damaged, replace it with a new one.



CARBURETOR

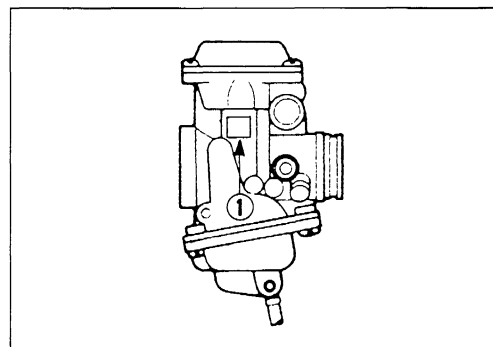


CARBURETOR SPECIFICATIONS

ITEM	SPECIFICATION	
	E-03	E-33
Carburetor type	MIKUNI BST31SS	←
Bore size	31 mm	←
I.D. No.	42AC	42AE
Idle r/min.	1 500 ± 100 r/min.	←
Float height	13.0 ± 1.0 mm (0.51 ± 0.04 in)	←
Main jet (M.J.)	# 125	←
Jet needle (J.N.)	5D77	←
Needle jet (N.J.)	P-5M	←
Throttle valve (Th.V.)	# 125	←
Pilot jet (P.J.)	# 35	←
Valve seat (V.S.)	1.5 mm	←
Starter jet (G.S.)	# 25	←
Pilot screw (P.S.)	PRE-SET	←
Throttle cable play	3–6 mm (0.1–0.2 in)	←

I.D. NO. LOCATION

Carburetor has I.D. Number ① printed on the carburetor body according to its specification.



CARBURETOR REMOVAL

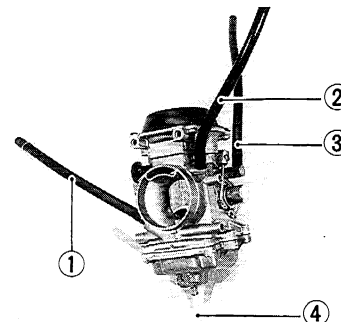
(Refer to page 3-3.)

CARBURETOR DISASSEMBLY

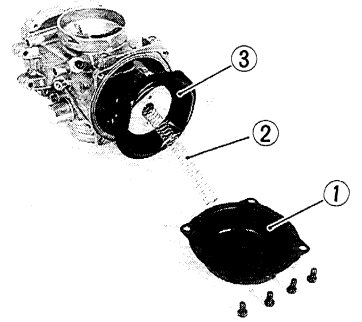
NOTE:

Before disassembly, prepare a clean and well lit work place where carburetor components can be layed out neatly and won't get lost.

- Disconnect the fuel hose ①, air vent hose ②, vacuum hose ③ and fuel drain hose ④.




- Remove the carburetor top cap ①.
- Remove the piston valve return spring ② and piston valve with diaphragm ③.



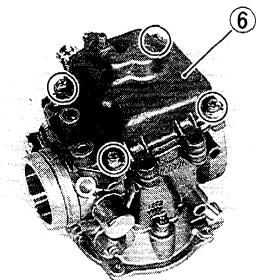
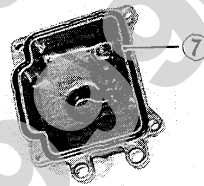
- Remove the jet needle ④ from the piston valve ⑤.



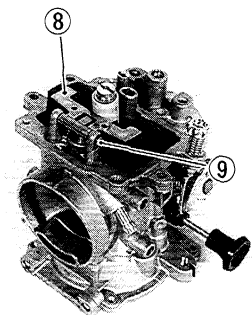
- Remove the float chamber body ⑥.

 09900-09003: Impact driver set

- Remove the O-ring ⑦.

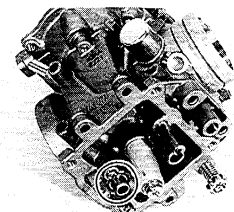
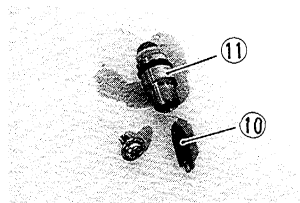


- Remove the float assembly ⑧ by removing the pin ⑨.



- Remove the needle valve assembly.

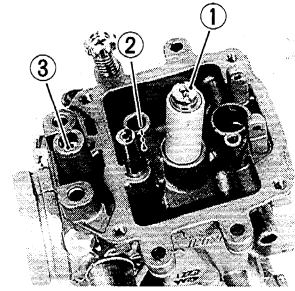
- ⑩ Needle valve
- ⑪ Valve seat



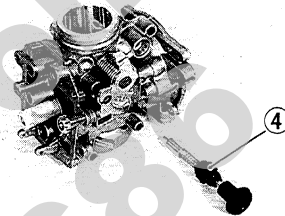
- Remove the main jet ①, pilot jet ② and pilot screw ③.

NOTE:

Refer to page 4-6 when removing the pilot screw ③.



- Remove the starter plunger assembly ④.



- Remove the throttle valve screws ⑤ and pull out the throttle valve plate ⑥.
- Remove the throttle valve shaft end cap ⑦.

⚠ CAUTION

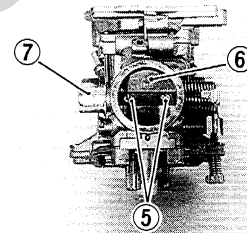
These two screws are locked by punching these ends.
Once removing the screws, they will be damaged.

- Remove the circlip and pull out the throttle valve shaft from the other side.

NOTE:

When reassembling the throttle valve, apply a small quantity of **THREAD LOCK SUPER "1322"** to its screws.

 99000-32110: **THREAD LOCK SUPER "1322"**



CARBURETOR CLEANING

⚠ WARNING

Some carburetor cleaning chemicals, especially dip-type soaking solutions, are very corrosive and must be handled carefully. Always follow the chemical manufacturer's instructions on proper use, handling, and storage.

NOTE:

Remove the pilot screw as described next page before cleaning.

- Clean all jets with a spray-type carburetor cleaner and blow dry with compressed air.
- Clean all circuits of the carburetor thoroughly - not just the perceived problem area. Clean the circuits in the carburetor body with a spray-type cleaner and allow each circuit to soak if necessary to loosen dirt and varnish. Blow the body dry with compressed air.

▲ CAUTION

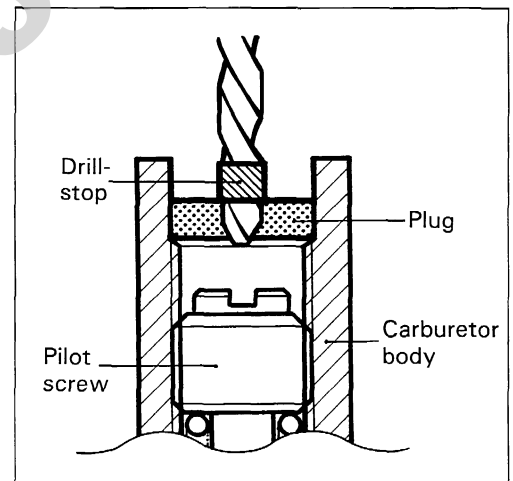
Do not use wire to clean jets or passageways. Wire can damage jets and passageways. If the components cannot be cleaned with a spray cleaner it may be necessary to use a dip-type cleaning solution and allow them to soak. Always follow the chemical manufacturer's instructions for proper use and cleaning of the carburetor components.

- After cleaning, reassemble the carburetor with new seals and gaskets. Reinstall the pilot screw to the original factory setting with a new O-ring seal. Install a new cap over the pilot screw opening.

PILOT SCREW REMOVAL

Because harsh cleaning solvents can damage the O-ring seals in the pilot system, the pilot system components should be removed before cleaning.

- Use a 1/8" size drill bit with a drill-stop to remove the pilot screw plug. Set the drill-stop 6 mm from the end of the bit to prevent drilling into the pilot screw. Carefully drill through the plug.
- Thread a self-tapping sheet metal screw into the plug. Pull on the screw head with pliers to remove the plug. Carefully clean any metal shavings from the area.
- Slowly turn the pilot screw in clockwise and count the number of turns until the screw is lightly seated. Make a note of how many turns were made so the screw can be reset correctly after cleaning.
- Remove the pilot screw with the spring, washer, and O-ring.
- After cleaning reinstall the pilot screw to the original setting by turning the screw in until it lightly seats, and then backing it out the same number of turns counted during disassembly.
- Install new plug by tapping it into place with a punch.



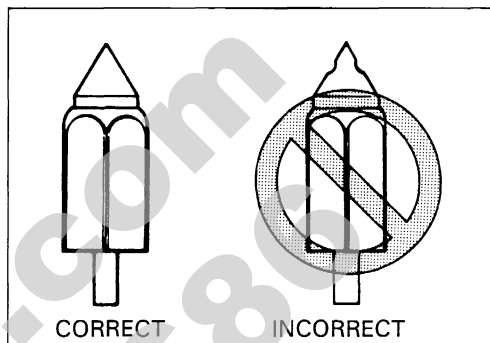
CARBURETOR JET INSPECTION

Check following items for any damage.

- * Pilot jet
- * Main jet
- * Main air jet
- * Pilot air jet
- * Needle jet air bleeding hole
- * Float
- * Needle valve
- * Starter jet
- * Gasket and O-ring
- * Throttle shaft oil seal
- * Diaphragm
- * Pilot outlet and by-pass holes

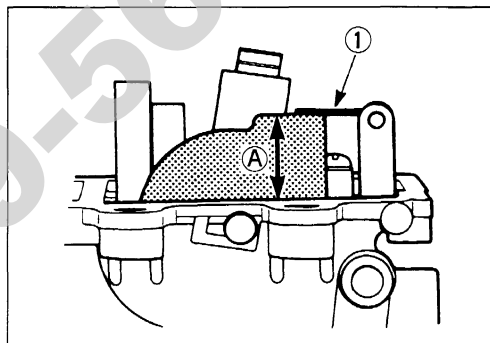
NEEDLE VALVE INSPECTION

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



Float height **A**: 13.0 ± 1.0 mm (0.51 ± 0.04 in)

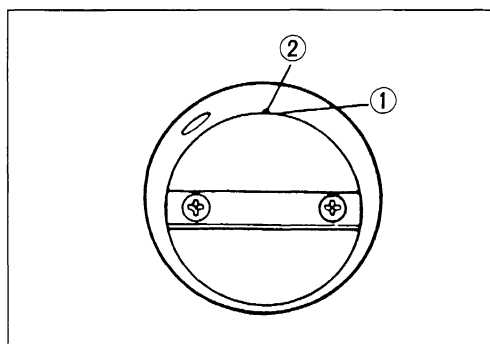
TOOL 09900-20102: Vernier calipers

REASSEMBLY AND REMOUNTING

Reassemble and remount the carburetor assembly in the reverse order of disassembly and removal.

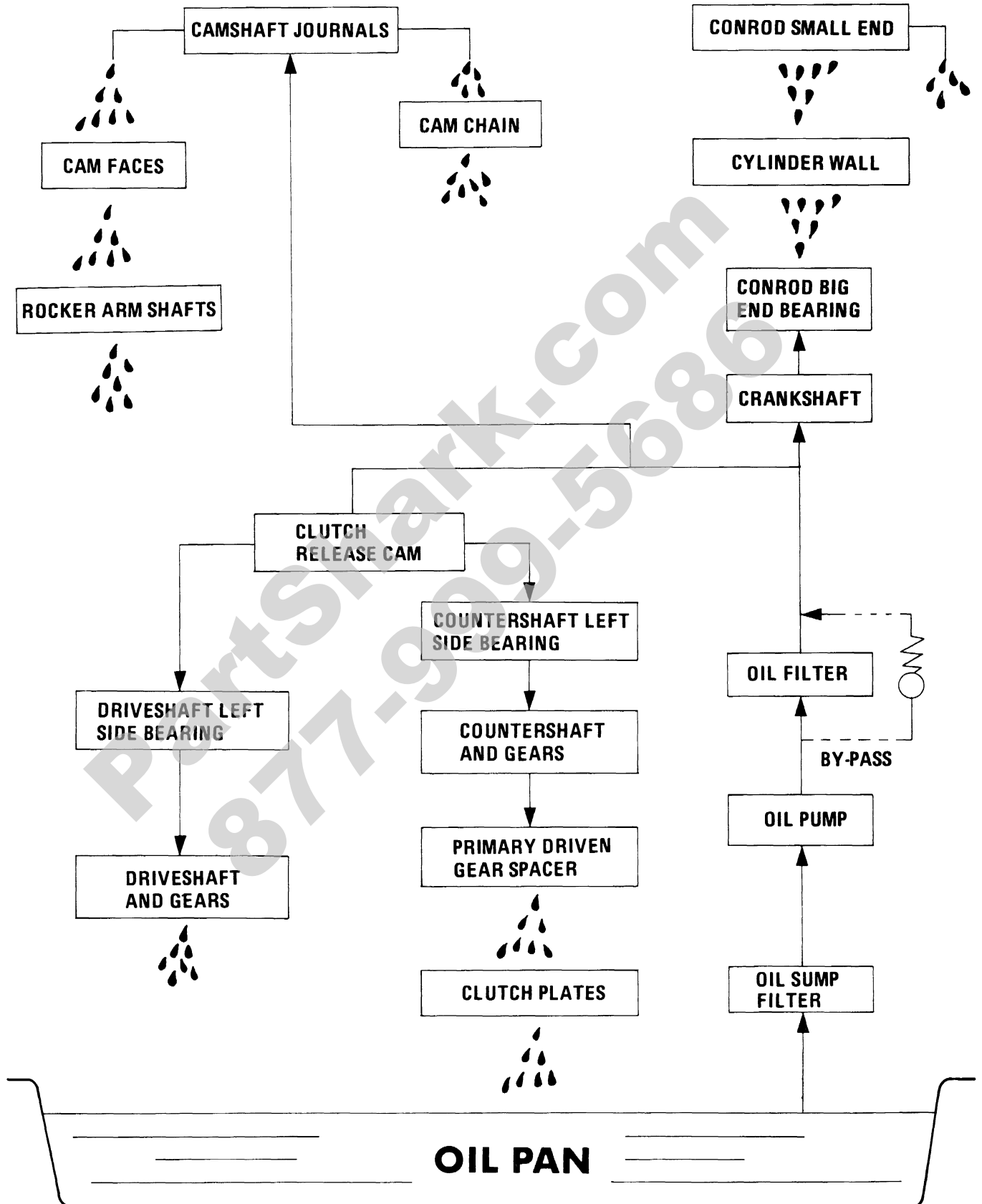
Pay attention to the following points:

- Set the throttle valve in such a way that its top end **1** meets the foremost by-pass **2**. This is accomplished by turning the throttle stop screw.
- Adjust the following items to the specification.
 - * Throttle cable play Page 2-6
 - * Engine idle r/min Page 2-6



LUBRICATION SYSTEM

ENGINE LUBRICATION SYSTEM CHART



OIL PRESSURE

(Refer to page 2-17.)

OIL FILTER

(Refer to page 2-7.)

OIL SUMP FILTER

Clean the oil sump filter in the following manner:

- Drain engine oil by removing the drain plug and filler cap. (Refer to page 2-7.)
- Remove the oil sump filter cap by removing the bolts. (Refer to page 3-11.)
- Remove the oil sump filter by removing the screws. (Refer to page 3-11.)
- Wash the oil sump filter with cleaning solvent, and then blow compressed air through it to dry off solvent. (Refer to page 3-46.)

REASSEMBLY

- Fit the O-ring to the O-ring groove. (Refer to page 3-46.)
- Apply engine oil lightly to the O-ring.

▲ CAUTION

Use a new O-ring to prevent oil leakage.

- Fit the drain plug securely, and pour fresh oil through the filler. (Refer to page 2-7.)

CHASSIS

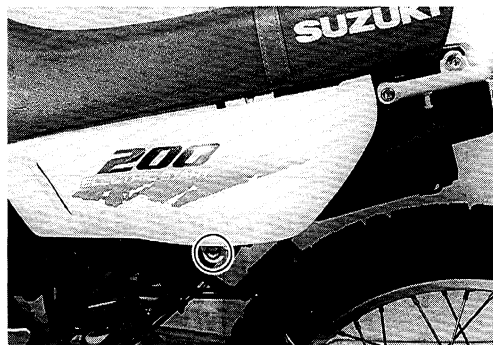
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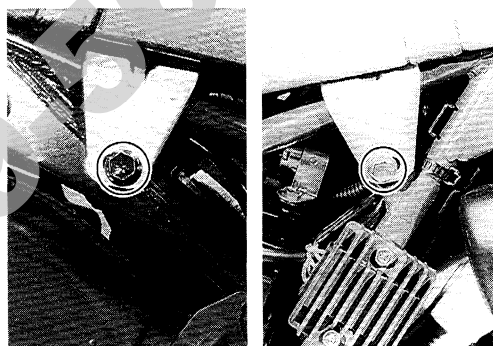
FRAME COVER AND SEAT

REMOVAL AND REMOUNTING

- Remove the right and left frame covers by removing the mounting screws.

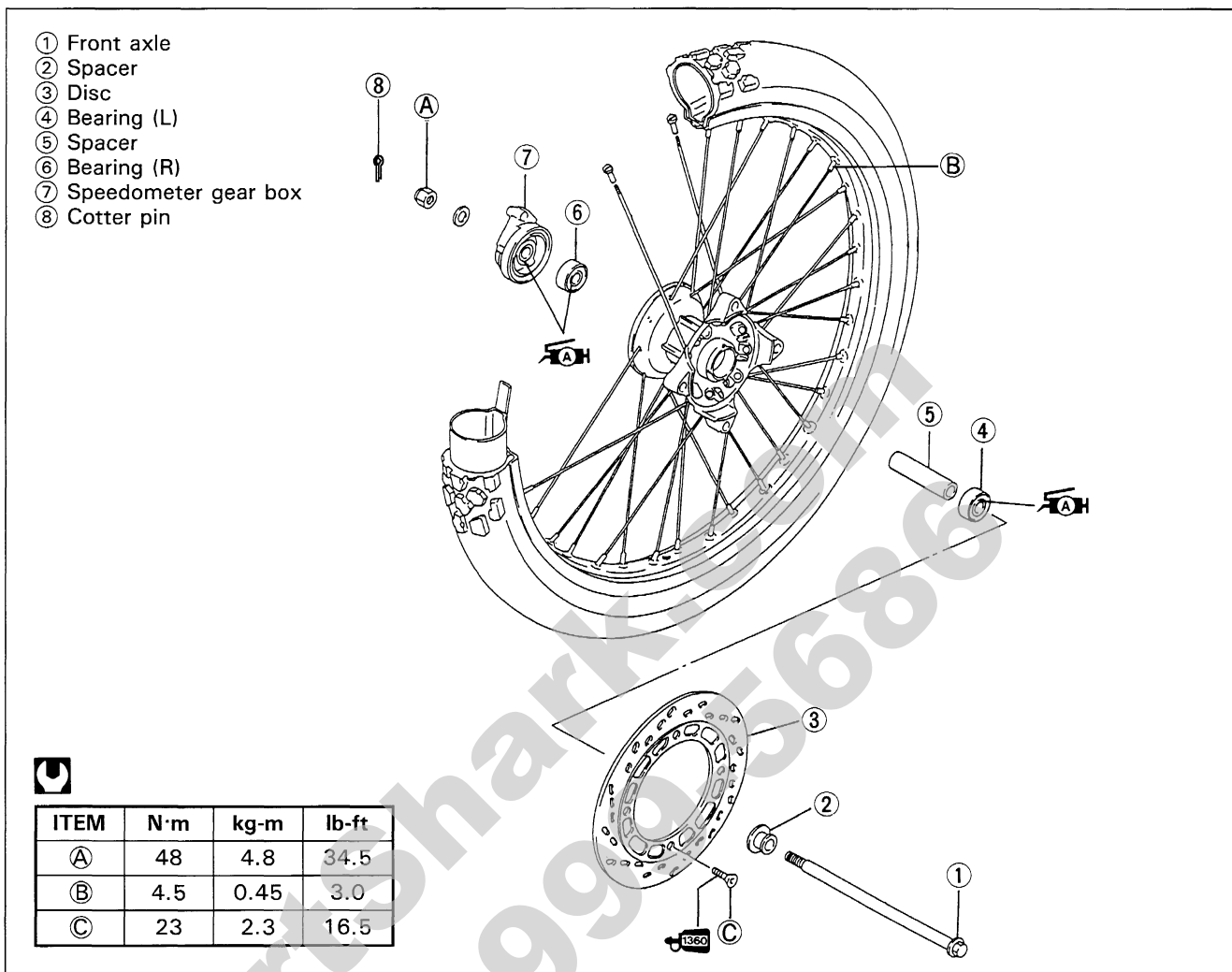


- Remove the seat by removing the mounting bolts.



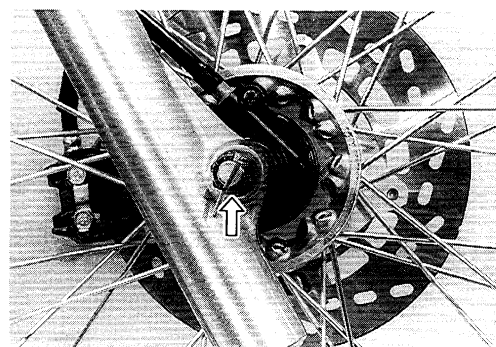
- Remount the seat and frame covers.

FRONT WHEEL



REMOVAL

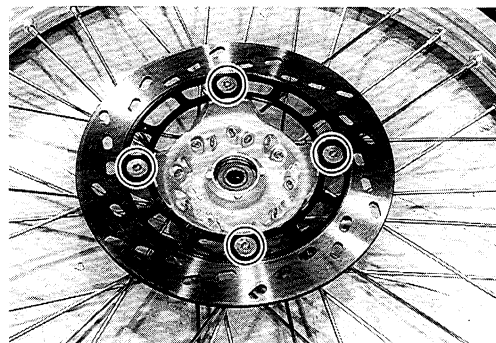
- Remove the cotter pin.
- Remove the axle nut.
- Support the motorcycle with jack or wooden block.
- Remove the front axle and front wheel.



NOTE:

Do not operate the brake lever while dismantling the front wheel.

- Remove the disc by removing the mounting bolts.



INSPECTION AND DISASSEMBLY

SPEEDOMETER GEARBOX DUST SEAL

Inspect the lip of dust seal for damage.

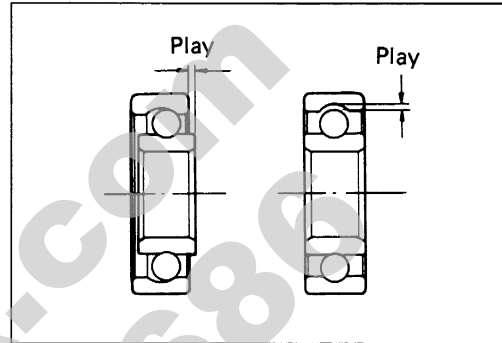
TIRE

Refer to page 2-12.



WHEEL BEARINGS


Inspect the play of the wheel bearings by hand while they are in the wheel. Rotate the inner race by hand to inspect for abnormal noise and smooth rotation. Replace the bearing if there is anything unusual.

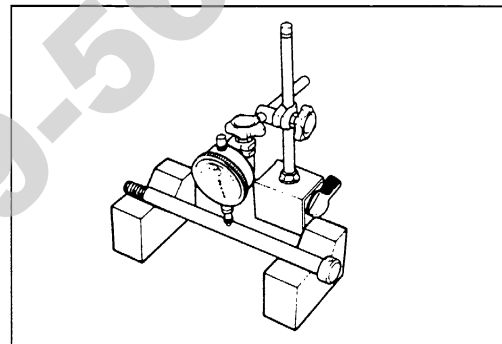


FRONT AXLE

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

Service Limit: 0.25 mm (0.010 in.)

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



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.

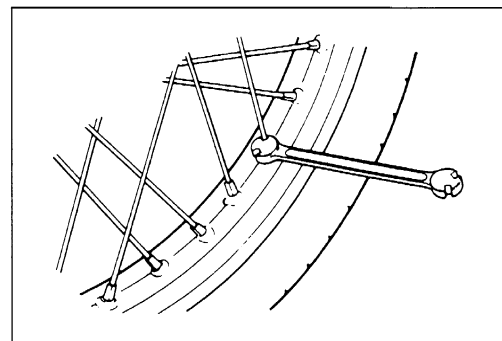
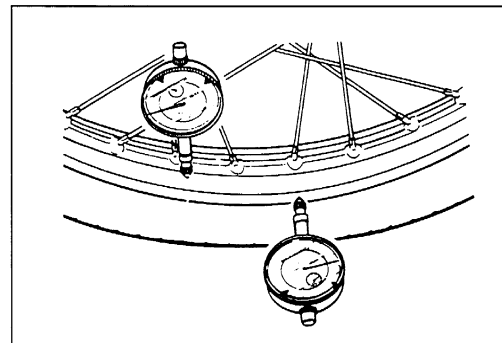
Service Limit: 2.0 mm (0.08 in)
(Axle and Radial)

SPOKE NIPPLE

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

-  **Spoke nipple: 4.5 N·m (0.45 kg·m, 3.0 lb·ft)**

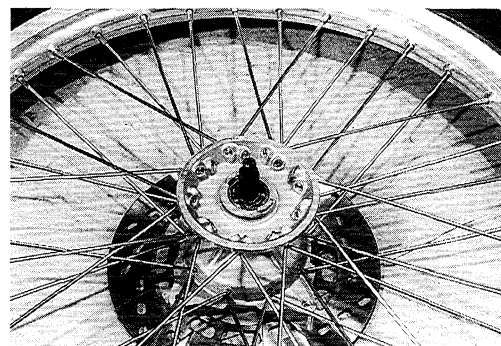
-  **09940-60113: Spoke nipple wrench**



- Drive out the wheel hub bearings with the special tool in the following procedures.

TOOL 09941-50111: Bearing remover

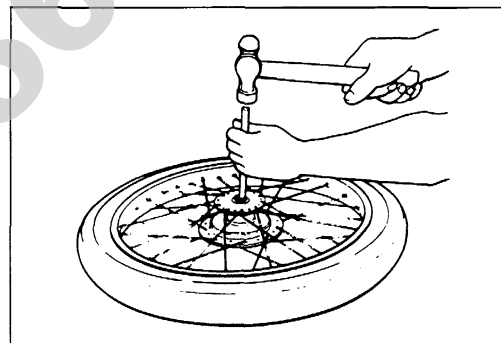
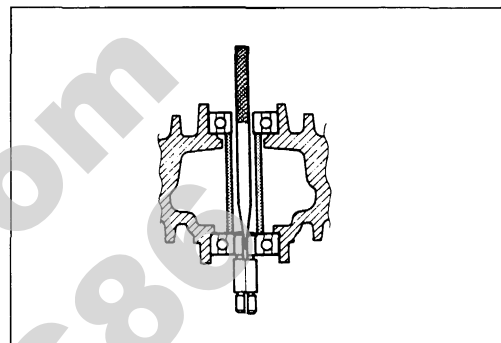
- Insert the special tool into the wheel hub bearing.



- After inserting the wedge bar from the opposite side, lock the wedge bar in the slit of the special tool.
- Drive out the wheel hub bearing by knocking the wedge bar.

CAUTION

The removed bearings should be replaced with new ones.



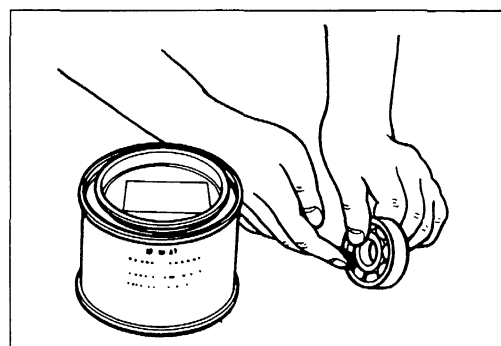
REASSEMBLY AND REMOUNTING

Reassemble and remount the front wheel in the reverse order of removal and disassembly. Pay attention to the following points.

WHEEL HUB BEARING

- Apply grease to the bearing before installing.

TOOL 99000-25030: SUZUKI SUPER GREASE "A"

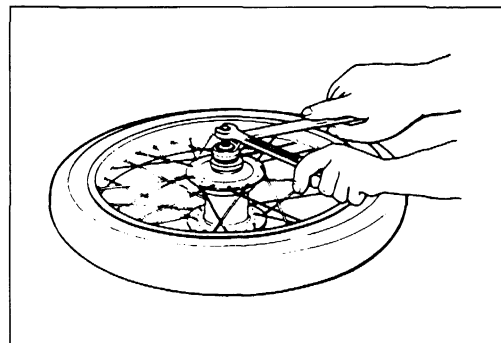


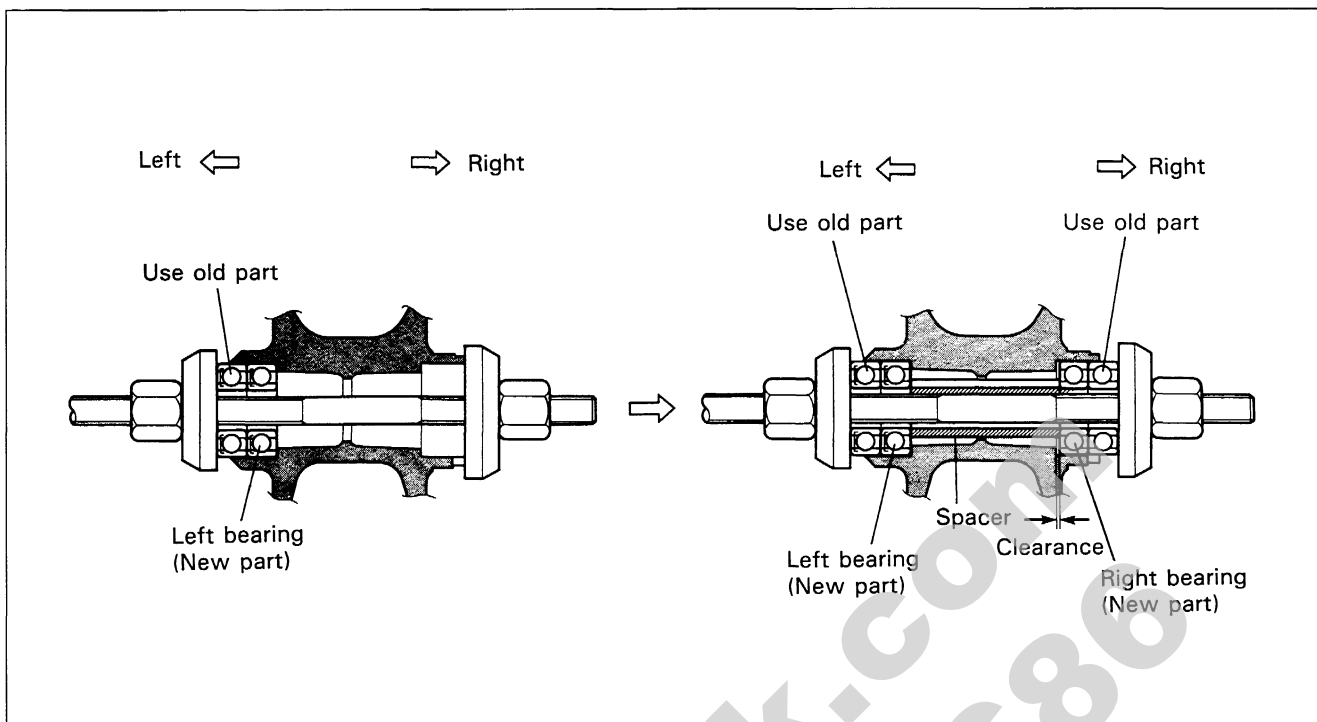
- Install the bearings as follows with the special tool.

TOOL 09924-84521: Bearing installer

NOTE:

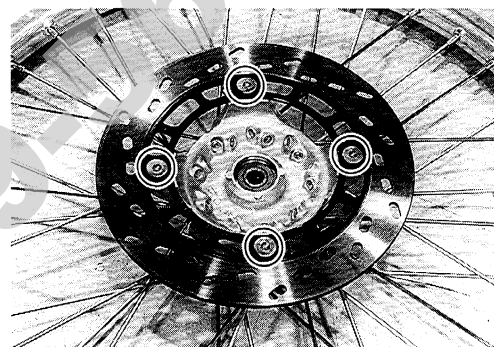
First install the left wheel hub bearing, then install the right wheel hub bearing. The sealed cover on the left wheel hub bearing is positioned outside.





BRAKE DISC

- Make sure that the brake disc is clean and free of any greasy matter. Apply THREAD LOCK SUPER "1360" to the disc mounting bolts and tighten them to the specified torque.

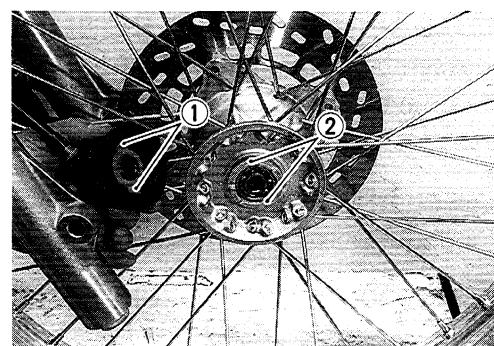


 99000-32130: THREAD LOCK SUPER "1360"

 Disc bolt: 23 N·m (2.3 kg·m, 16.5 lb·ft)

SPEEDOMETER GEARBOX

- Before installing the speedometer gearbox, apply grease to its gear and align the drive lugs ① to the recesses ② of the wheel hub and attach the speedometer gearbox to the wheel hub.

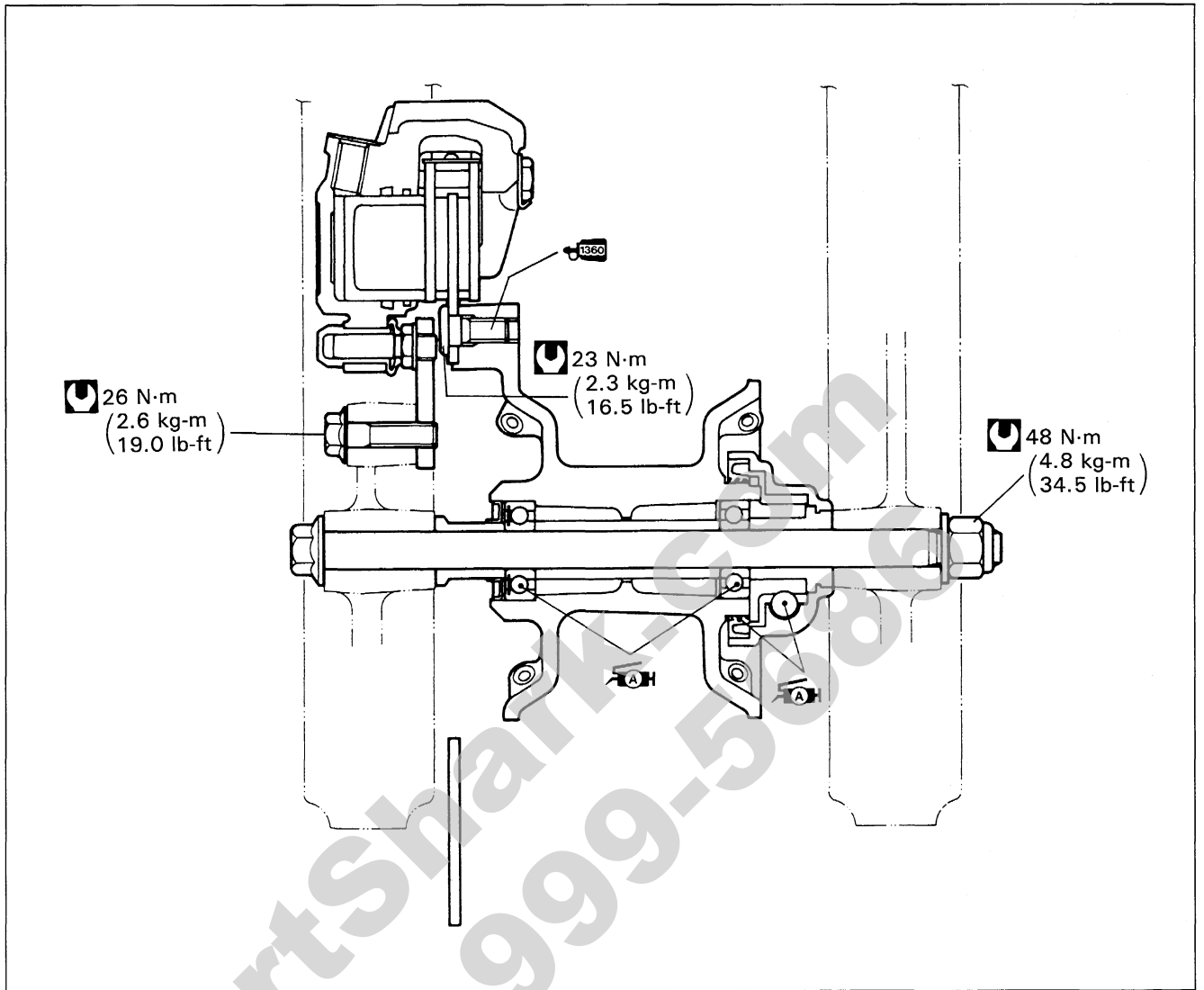


 99000-25030: SUZUKI SUPER GREASE "A"

FRONT AXLE NUT

- Tighten the front axle nut to the specified torque.

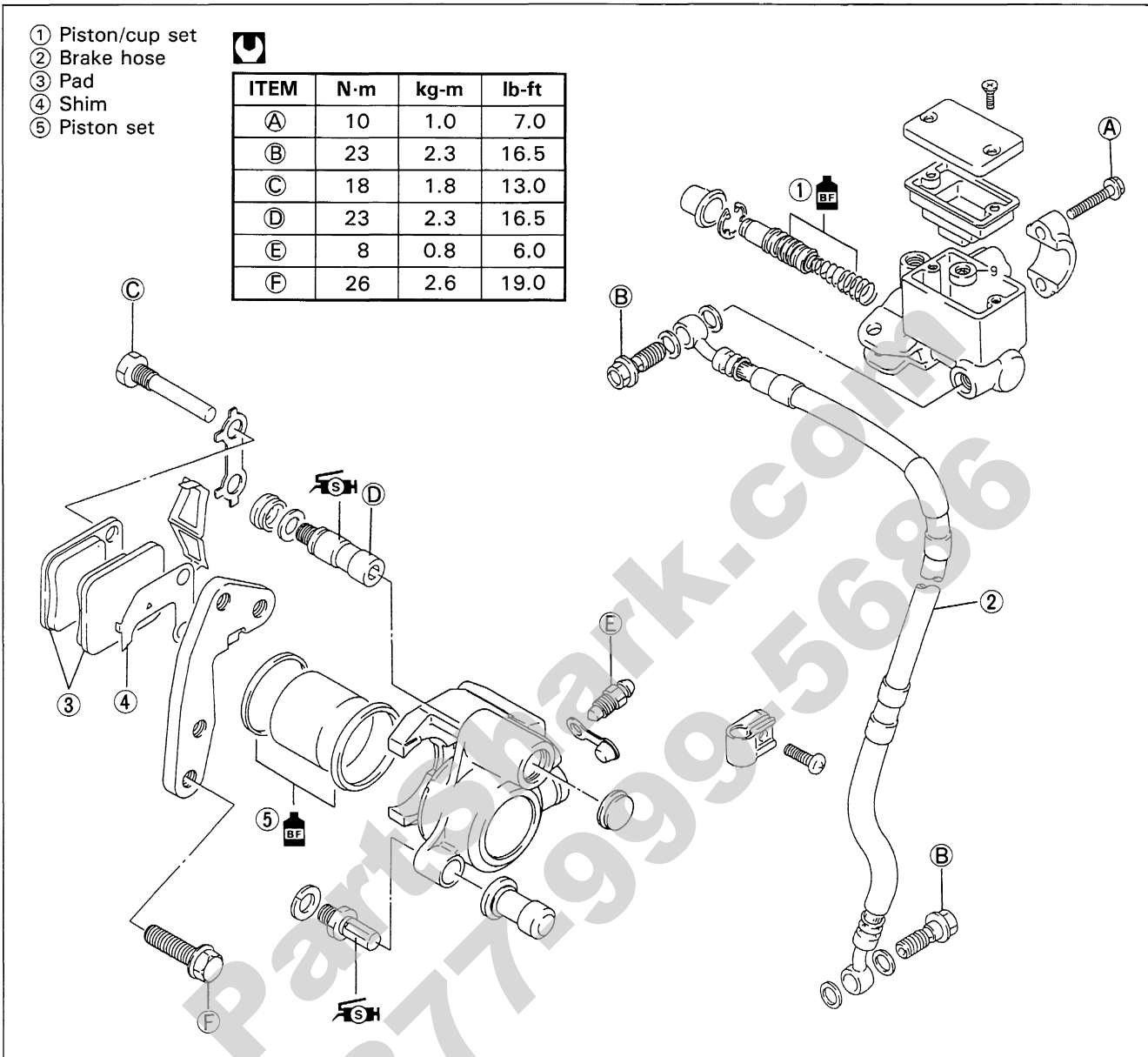
 Front axle nut: 48 N·m (4.8 kg·m, 34.5 lb·ft)



FRONT BRAKE

- ① Piston/cup set
- ② Brake hose
- ③ Pad
- ④ Shim
- ⑤ Piston set

ITEM	N·m	kg-m	lb-ft
(A)	10	1.0	7.0
(B)	23	2.3	16.5
(C)	18	1.8	13.0
(D)	23	2.3	16.5
(E)	8	0.8	6.0
(F)	26	2.6	19.0



⚠ WARNING

- * This brake system is filled with a ethylene glycol-based DOT 4 brake fluid. Do not use or mix different types of fluid such as silicone-based or petroleum-based.
- * Do not use any brake fluid taken from old, used or unsealed containers. Never reuse brake fluid left over from the last servicing or stored for long periods.
- * When storing the brake fluid, seal the container completely and keep away from children.
- * When replenishing brake fluid, take care not to get dust into fluid.
- * When washing brake components, use fresh brake fluid. Never use cleaning solvent.
- * A contaminated brake disc or brake pad reduces braking performance. Discard contaminated pads and clean the disc with high quality brake cleaner or neutral detergent.

⚠ CAUTION

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

BRAKE PAD REPLACEMENT

- Remove the caliper by removing the caliper mounting bolts ①.
- Flatten the lock portion of the lock washer and remove the pad mounting bolts ② and take out the pads with pad shim.


⚠ CAUTION

- * Do not operate the brake lever while dismantling the pads.
- * Replace the brake pad as a set, otherwise braking-performance will be adversely affected.

NOTE:

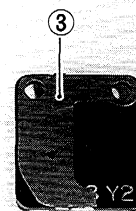
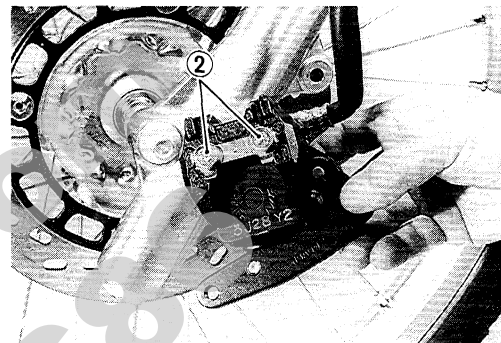
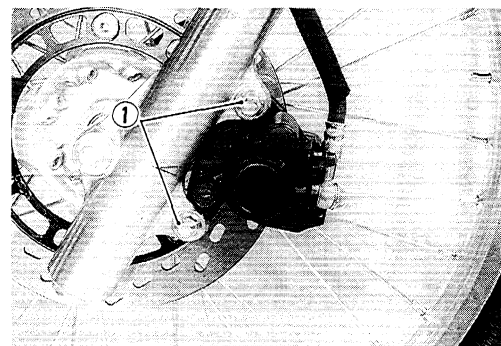
Push in the piston all the way to the caliper when remounting the caliper.

- When installing the pad shim ③, attach it to the piston side pad as shown in photo.
- Tighten the pad mounting bolts ② to the specified torque.

 Brake pad mounting bolt: 18 N·m (1.8 kg·m, 13.0 lb-ft)


- Bend the lock washer.
- Tighten the caliper mounting bolts ① to the specified torque.

 Brake caliper mounting bolt: 26 N·m
(2.6 kg·m, 19.0 lb-ft)



BRAKE FLUID REPLACEMENT

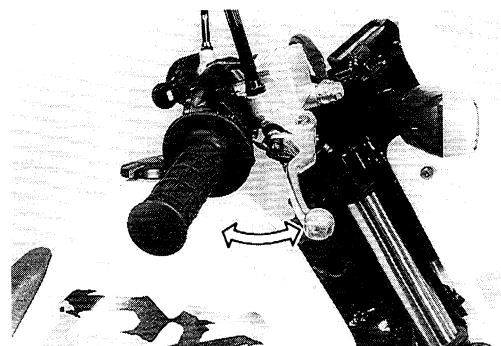
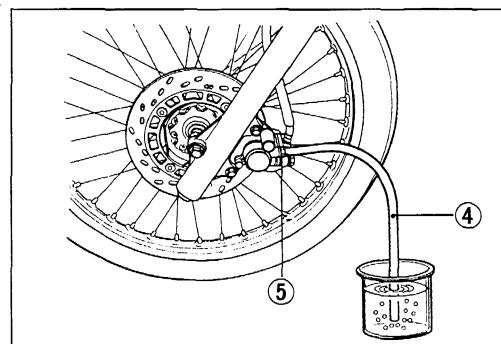
- Place the motorcycle on a level surface and keep the handlebars straight.
- Remove the master cylinder reservoir cap and diaphragm.
- Suck up the old brake fluid as much as possible.
- Fill the reservoir with fresh brake fluid.

 Specification and classification: DOT 4

- Connect a clear hose ④ to the air bleeder valve ⑤, and insert the free end of hose into a receptacle.
- Loosen the bleeder valve and pump the brake lever until no more old brake fluid flows out of the bleeder valve.
- Close the air bleeder valve, and disconnect a clear hose. Fill the reservoir with fresh brake fluid to the upper end of the inspection window.

⚠ CAUTION

Bleed air in the brake fluid circuit. (Refer to page 2-11.)



CALIPER REMOVAL AND DISASSEMBLY

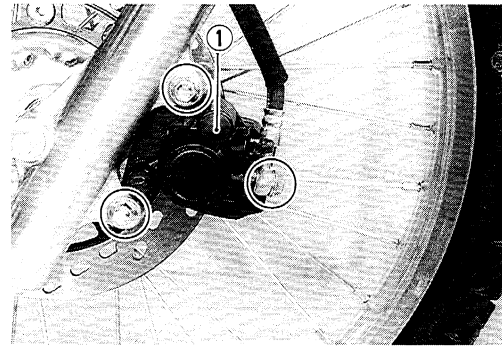
- Disconnect the brake hose by removing the union bolt and catch the brake fluid in a suitable receptacle.
- Remove the caliper by removing the caliper mounting bolts.

⚠ CAUTION

Never reuse the brake fluid left over from previous 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 joints for cracks and oil leakage.



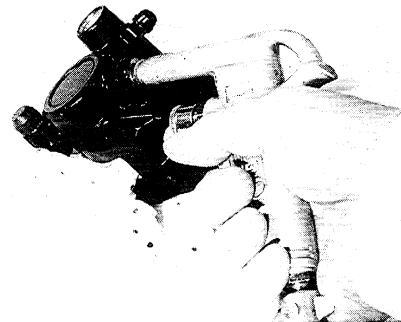
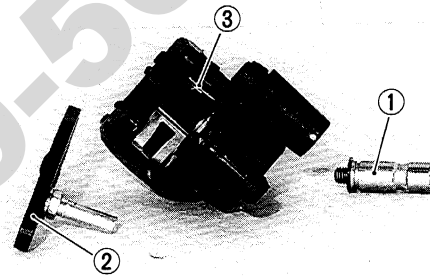
NOTE:

Slightly loosen the caliper axle bolt ① to facilitate later disassembly.

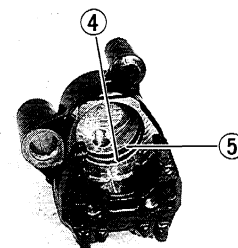
- Remove the pads. (Refer to page 5-8.)
 - Remove the caliper axle bolt ① .
 - Remove the caliper holder ② .
 - Remove the spring ③ .
-
- Place a rag over the piston to prevent its popping out and push out the piston with an air gun.

⚠ CAUTION

Do not use high pressure air to prevent piston damage.



- Remove the dust seal ④ and piston seal ⑤ .



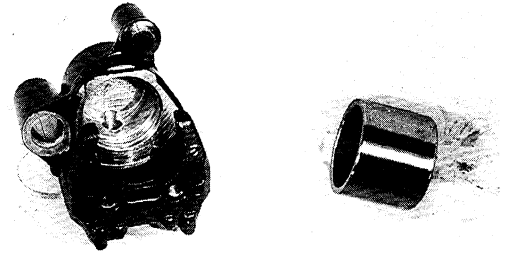
CALIPER INSPECTION

CALIPER

Inspect the caliper cylinder wall for nicks, scratches or other damage.

PISTON

Inspect the piston surface for any scratches or other damage.



RUBBER PARTS

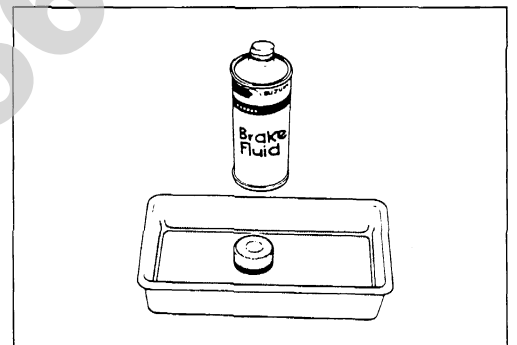
The removed rubber parts should be replaced with new ones.

CALIPER REASSEMBLY AND REMOUNTING

Reassemble the caliper in the reverse order of removal and disassembly. Pay attention to the following points.

⚠ CAUTION

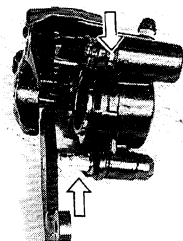
- * Wash the caliper components with fresh brake fluid before reassembly. Never use cleaning solvent or gasoline to wash them.
- * Apply brake fluid to the caliper bore and piston to be inserted into the bore.




 Specification and classification: DOT 4

- Apply SUZUKI SILICONE GREASE to the caliper axles.

 SH99000-25100: SUZUKI SILICONE GREASE



- Tighten each bolt to the specified torque.

-  Caliper axle bolt : 23 N·m (2.3 kg-m, 16.5 lb-ft)
- Brake pad mounting bolt: 18 N·m (1.8 kg-m, 13.0 lb-ft)
- Caliper mounting bolt : 26 N·m (2.6 kg-m, 19.0 lb-ft)
- Brake hose union bolt : 23 N·m (2.3 kg-m, 16.5 lb-ft)

NOTE:

Before remounting the caliper, push the piston all the way into the caliper.

⚠ WARNING

Bleed air from the system after reassembling the caliper.
(Refer to page 2-11.)

DISC SERVICING

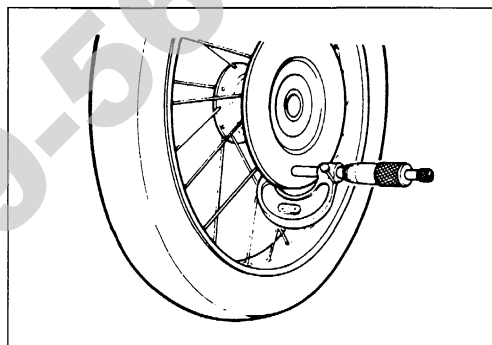
- Remove the front wheel. (Refer to page 5-2.)
- Remove the disc. (Refer to page 5-2.)
- Install the disc. (Refer to page 5-5.)

DISC INSPECTION

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

Service Limit: 3.0 mm (0.12 in)

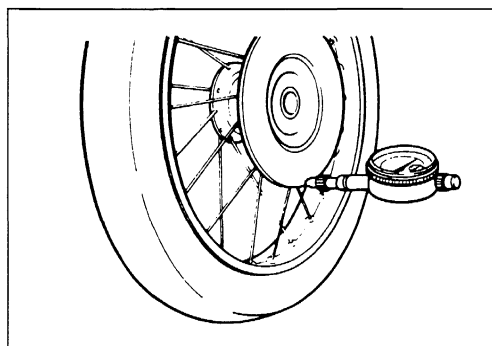
TOOL 09900-20205: Micrometer (0–25 mm)



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

Service Limit: 0.30 mm (0.012 in)

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



MASTER CYLINDER REMOVAL AND DISASSEMBLY

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

⚠ CAUTION


Immediately and completely wipe off any brake fluid contacting any part of the motorcycle. The fluid reacts chemically with paint, plastics and rubber materials, etc. and will damage them severely.

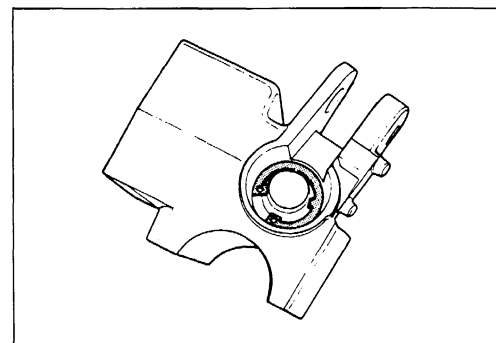
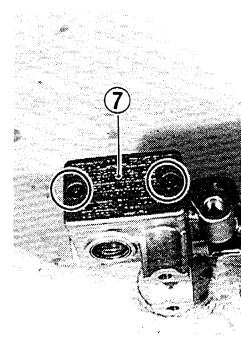
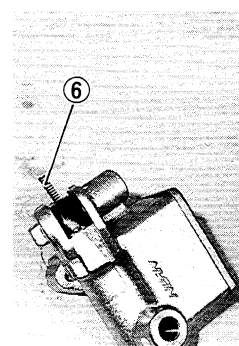
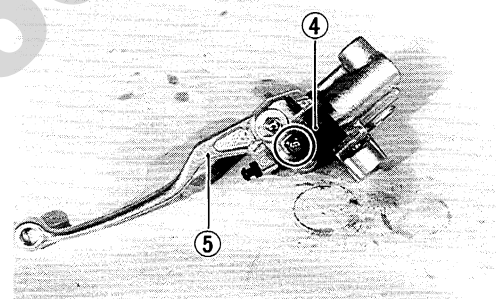
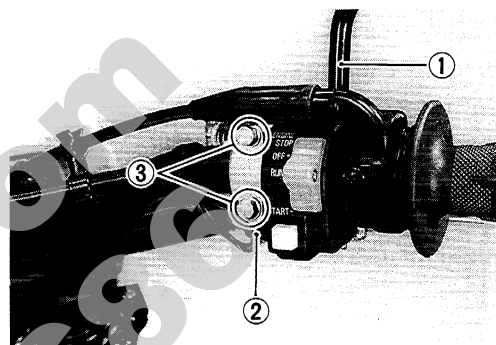
- Remove the rear view mirror ① .
- Disconnect the front brake light switch lead wires ② .
- Remove the master cylinder assembly by removing the clamp bolts ③ .

- Remove the brake light switch ④ .
- Remove the brake lever ⑤ .

- Remove the spring ⑥ .
- Remove the reservoir cap ⑦ and diaphragm.
- Drain brake fluid.

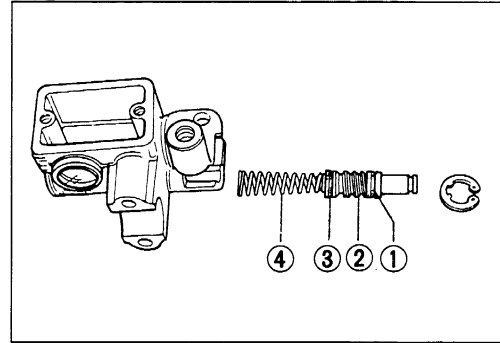
- Remove the dust seal, then remove the circlip by using the special tool.

 **09900-06108: Snap ring pliers**



- Remove the piston/secondary cup, primary cup and spring.

- ① Secondary cup
- ② Piston
- ③ Primary cup
- ④ Return spring

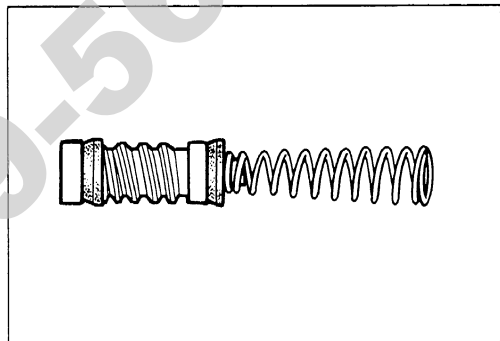
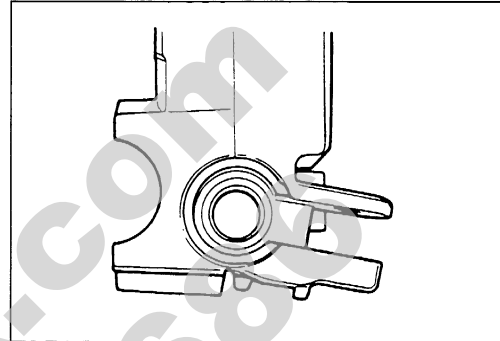


MASTER CYLINDER INSPECTION

Inspect the master cylinder bore for any scratches or other damage.

Inspect the piston surface for any scratches or other damage.

Inspect the primary cup, secondary cup and dust seal for wear or damage.

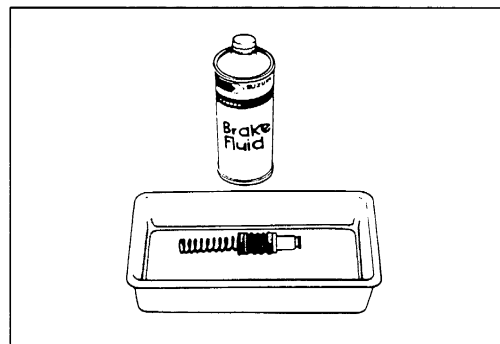



MASTER CYLINDER REASSEMBLY AND REMOUNTING

Reassemble the master cylinder in the reverse order of removal and disassembly. Pay attention to the following points:


⚠ CAUTION

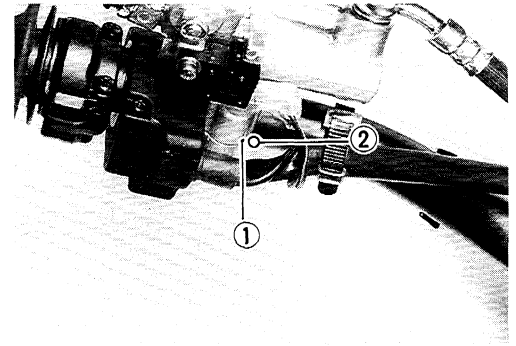
- * Wash the master cylinder components with fresh brake fluid before reassembly. Never use cleaning solvent or gasoline to wash them.
- * Apply brake fluid to the cylinder bore and all the component to be inserted into the bore.



 Specification and classification: DOT 4

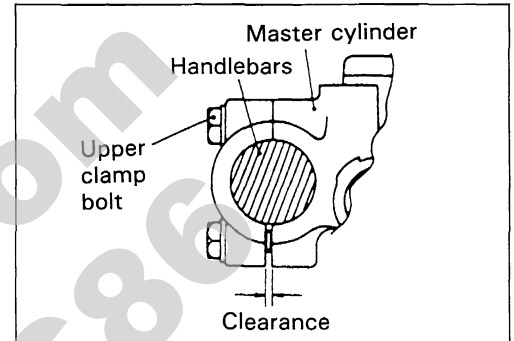
- When remounting the master cylinder on the handlebars, align the master cylinder holder's mating surface ① with punched mark ② on the handlebars and tighten the upper clamp bolt first as shown.

 **Front brake master cylinder**
mounting bolt: 10 N·m (1.0 kg·m, 7.0 lb·ft)



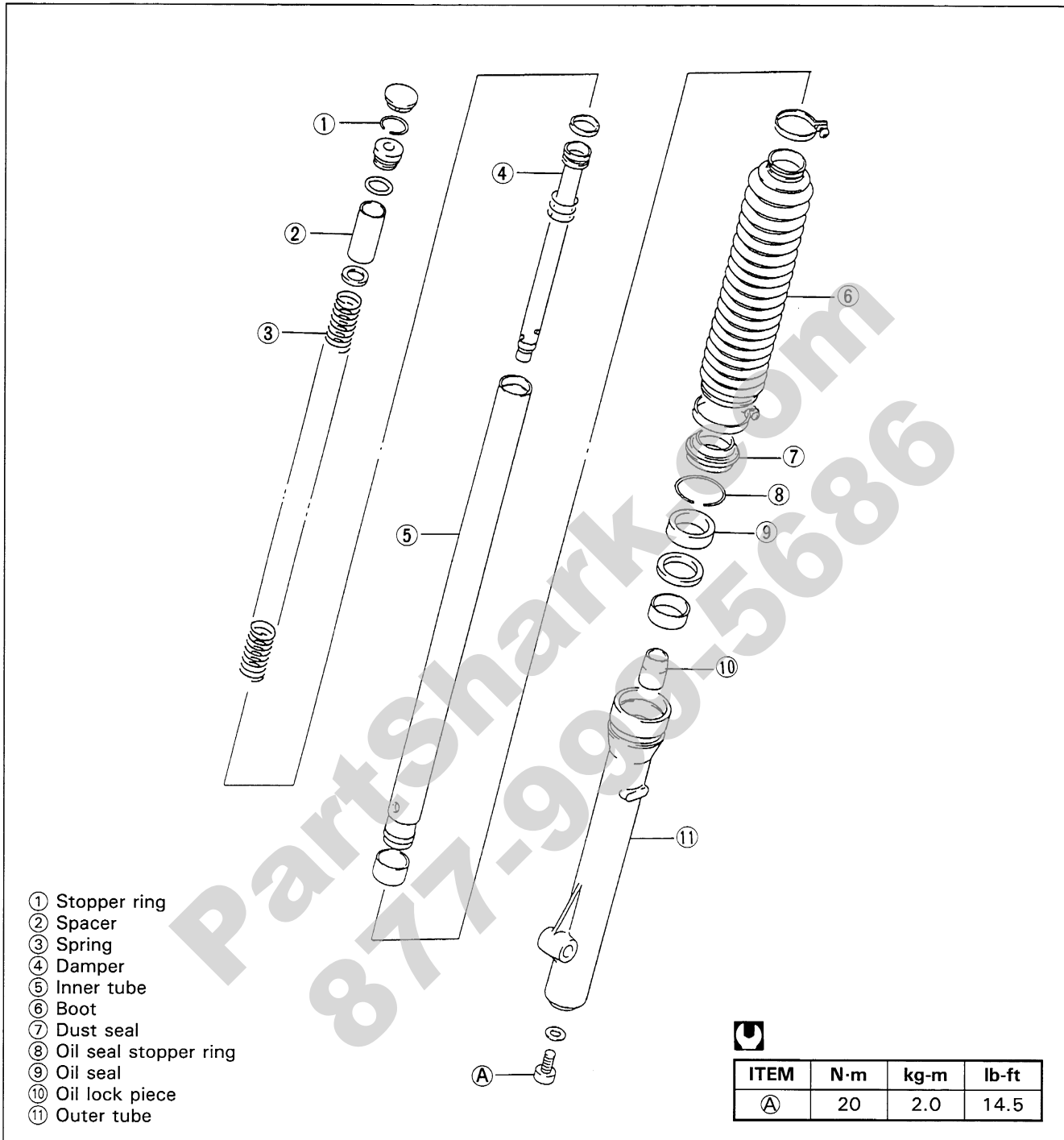
▲ WARNING

Bleed air from the system after reassembling master cylinder. (Refer to page 2-11.)



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FRONT FORK

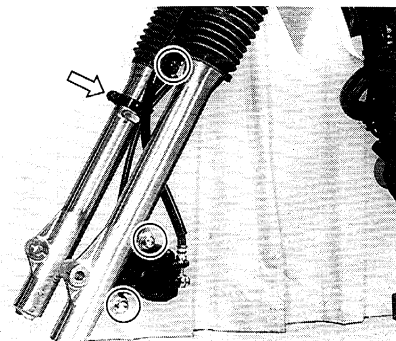


REMOVAL AND DISASSEMBLY

- Remove the front wheel. (Refer to page 5-2.)
- Remove the front brake caliper.
- Remove the front brake hose clamp and speedometer cable clamp by removing the screws.

⚠ CAUTION

Hang the caliper from the motorcycle frame by using the string, etc., taking care not to bend the brake hose.



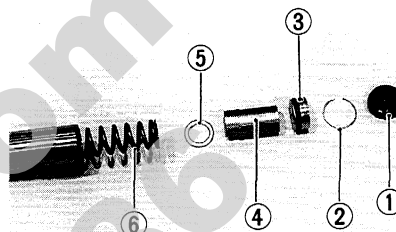
- Remove the front fork after loosening the front fork upper and lower clamp bolts.



- Remove the rubber cap ①, stopper ring ②, front fork cap ③, spacer ④, spring seat ⑤ and spring ⑥.

NOTE:

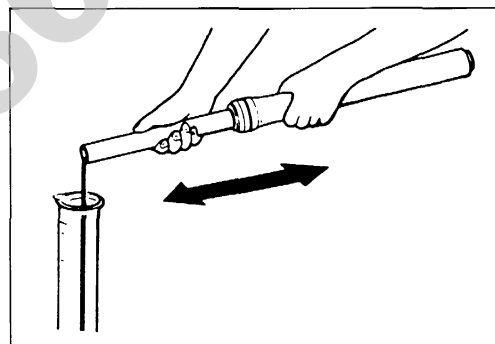
When removing the stopper ring ②, push the front fork cap ③ inward to remove spring pressure from the stopper ring ②.



CAUTION

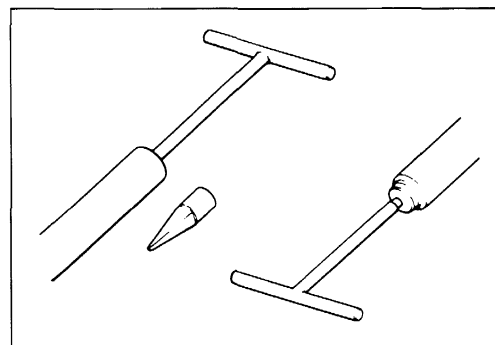
The removed stopper ring ② should be replaced with a new one.

- Invert the front fork and stroke it several times to let out fork oil. Under the inverted condition of front fork, drain oil to hold it for few minutes.

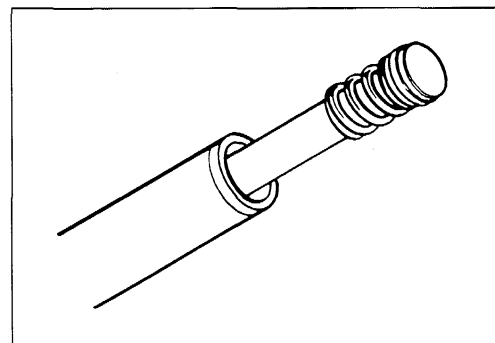


- Remove the damper rod bolt with the special tools and 6-mm hexagon wrench.

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



- Remove the damper rod with spring.



- Remove the boot by removing the clamps.

⚠ CAUTION

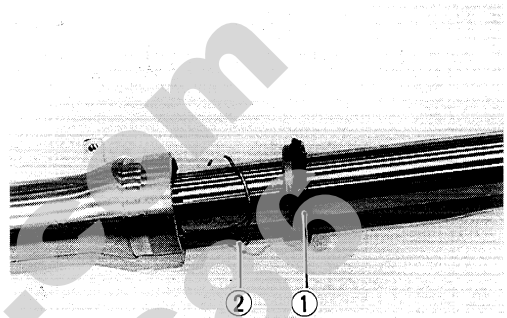
The removed lower clamp should be replaced with a new one.



- Remove the dust seal ① and oil seal stopper ring ② .

⚠ CAUTION

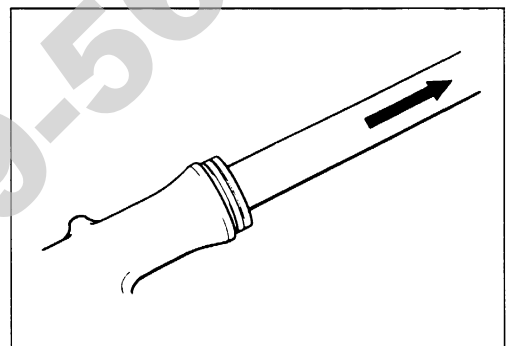
The removed dust seal should be replaced with a new one.



- Remove the inner tube.

NOTE:

When removing the inner tube from the outer tube, both anti-friction metals may be damaged and must be replaced with new ones.



- Remove the outer tube metal, oil seal retainer and oil seal with the special tools.

TOOL 09913-60710: Remover
09930-30102: Sliding shaft

⚠ CAUTION

The removed oil seal should be replaced with a new one.

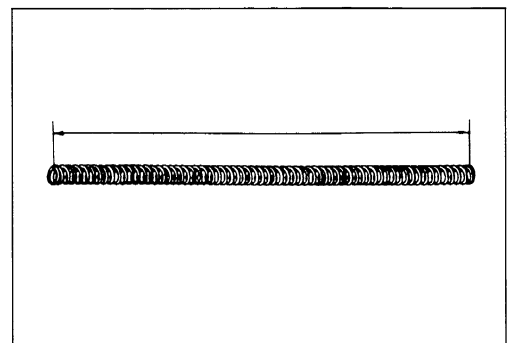


INSPECTION

FORK SPRING

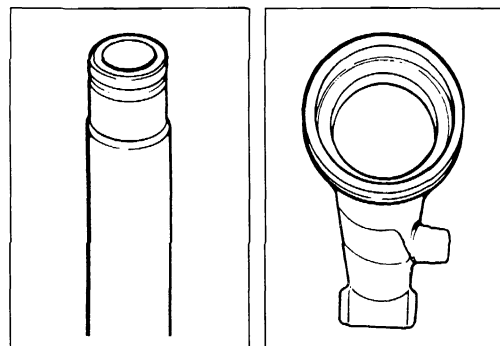
Measure the fork spring free length. If it is shorter than the service limit, replace it with a new one.

Service Limit: 561 mm (22.1 in)



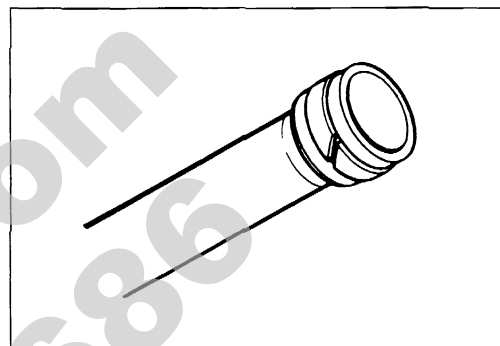
INNER AND OUTER TUBES

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



DAMPER ROD RING

Inspect the damper rod ring for wear or damage.

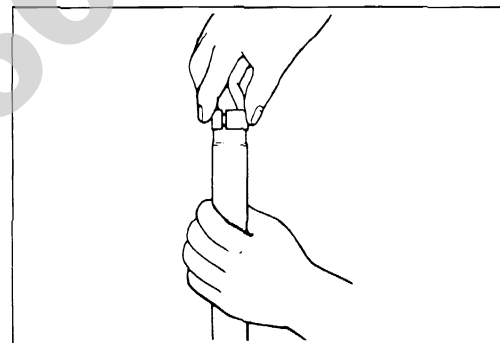


REASSEMBLY AND REMOUNTING

Reassemble and remount the front fork in the reverse order of removal and disassembly. Pay attention to the following points:

TUBE METALS AND SEALS

- Hold the inner tube vertically and clean the metal groove and install the ANTI-FRICTION metal by hand as shown.

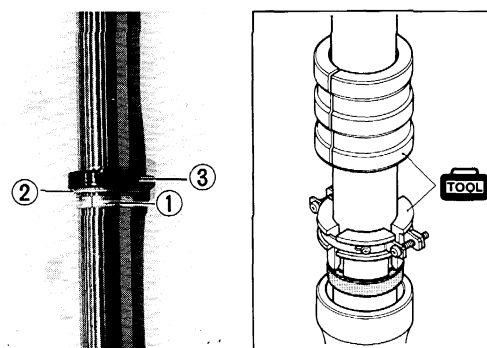


- Install the outer tube metal ①, oil seal retainer ② and oil seal ③ to the inner tube, and then install them to the outer tube with the special tool.

TOOL 09940-52860: Front fork oil seal installer

CAUTION

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

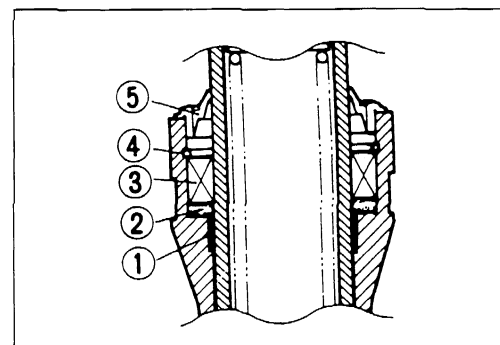


- Install the oil seal stopper ring ④.

CAUTION


Make sure that the oil seal stopper ring fitted securely.


- Install the dust seal ⑤.

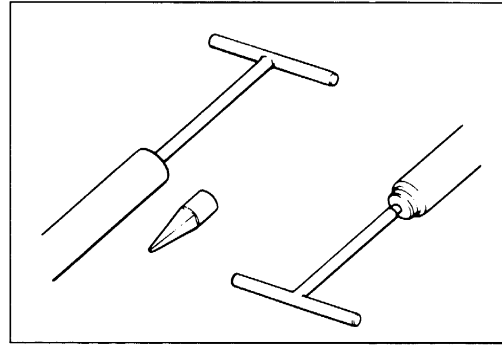


DAMPER ROD BOLT

- Tighten the bolt to the specified torque with the special tools and 6-mm hexagon wrench.

 Damper rod bolt: 20 N·m (2.0 kg·m, 14.5 lb-ft)

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



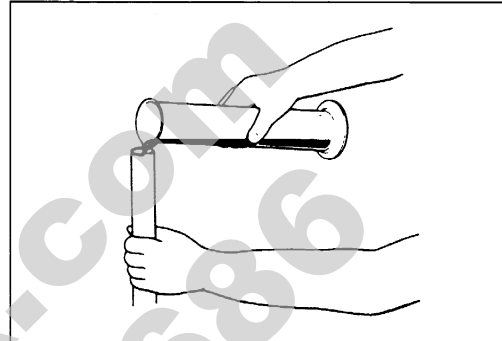
FORK OIL

- Pour specified fork oil into the inner tube.

 Fork oil type: Fork oil # 10

99000-99044-10G: SUZUKI FORK OIL # 10

Capacity (each leg): 309 ml (10.4/10.9 US/Imp oz)



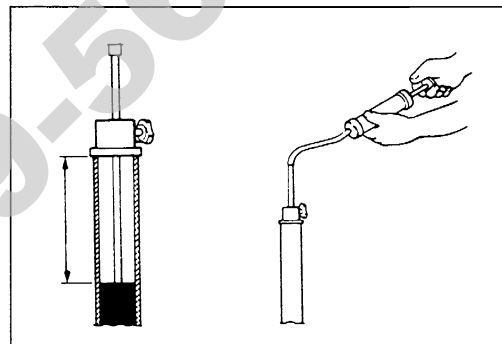
- Hold the front fork vertical and adjust fork oil level with the special tool.

 **09943-74111: Fork oil level gauge**

Oil level: 179.5 mm (7.07 in)

NOTE:

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



FORK SPRING

- Install the fork spring close pitch side to bottom as shown.



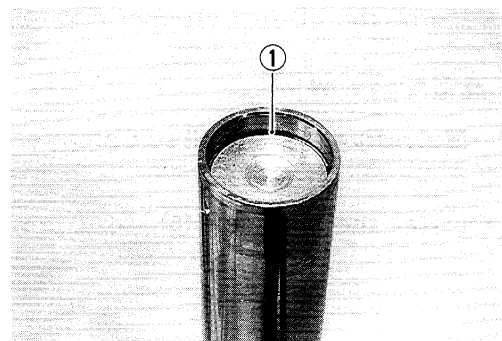
Bottom

STOPPER RING

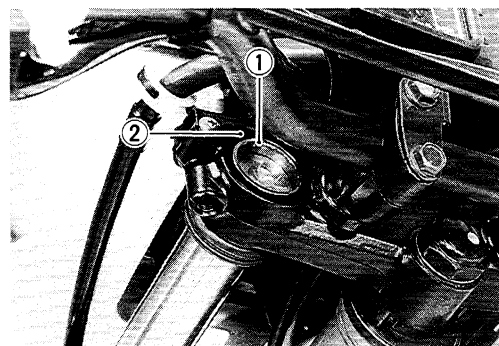
- Install the stopper ring ① into the ring groove.

CAUTION


- * Use a new stopper ring.
- * After installing the stopper ring, always insure that it is completely seated in its groove and securely fitted.

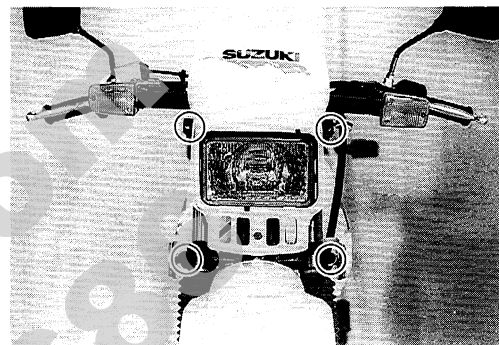


- When remounting the front fork assembly, align the upper surface ① of the inner tube with the upper surface ② of the steering stem upper bracket.

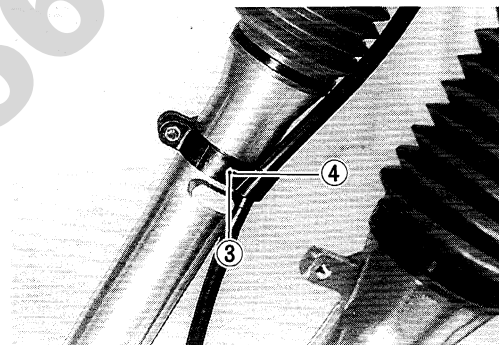


- Tighten the upper and lower fork clamp bolts to the specified torque.

 **Front fork clamp bolt,**
upper and lower: 29 N·m (2.9 kg-m, 21.0 lb-ft)



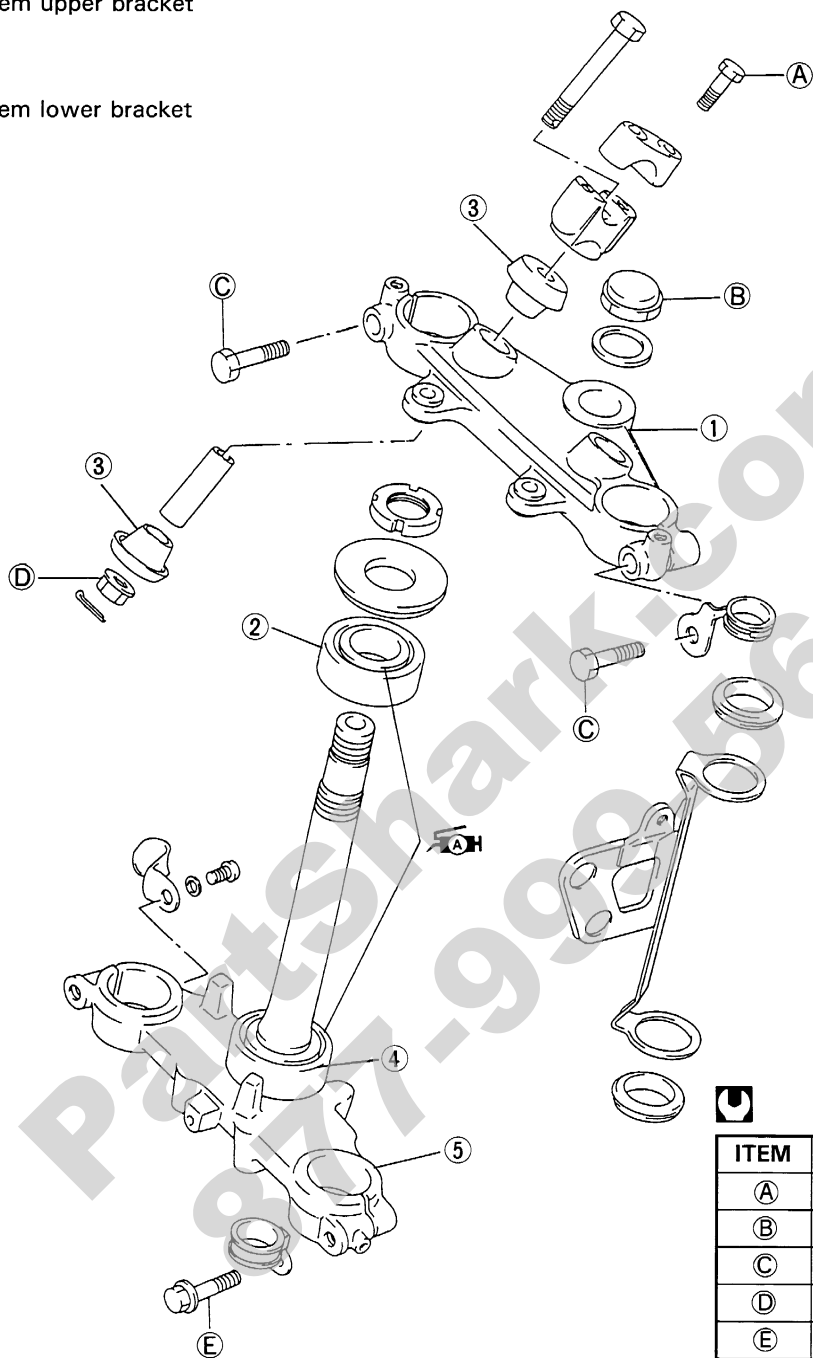
- When installing the speedometer cable clamp, align the protrusion ③ on the outer tube with the hole ④ of the clamp.
- Tighten the clamp screw.



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STEERING

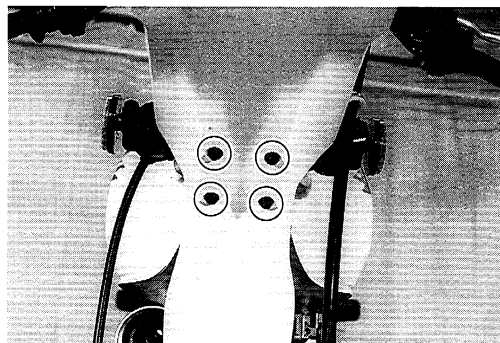
- ① Steering stem upper bracket
- ② Bearing
- ③ Damper
- ④ Bearing
- ⑤ Steering stem lower bracket



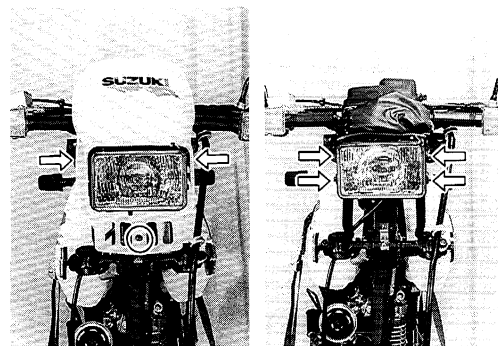
ITEM	N·m	kg·m	lb·ft
(A)	25	2.5	18.0
(B)	90	9.0	65.0
(C)	29	2.9	21.0
(D)	45	4.5	32.5
(E)	29	2.9	21.0

REMOVAL AND DISASSEMBLY

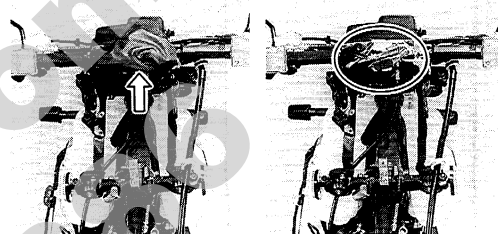
- Remove the front wheel. (Refer to page 5-2.)
- Remove the front fork. (Refer to page 5-15.)
- Remove the front fender.



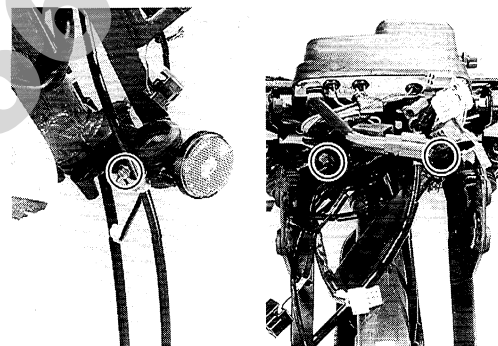
- Remove the headlight housing.
- Remove the headlight by removing the mounting bolts and disconnecting lead wire coupler.



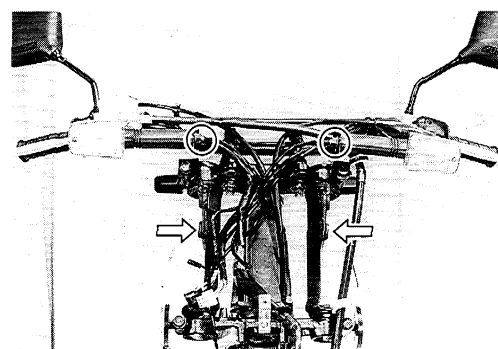
- Remove the lead wire cover.
- Disconnect the lead wires.



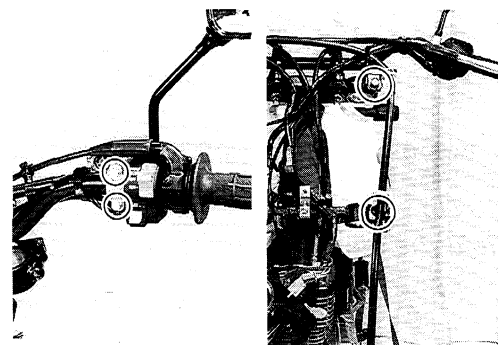
- Remove the speedometer cable guide.
- Remove the speedometer by removing its mounting nuts.



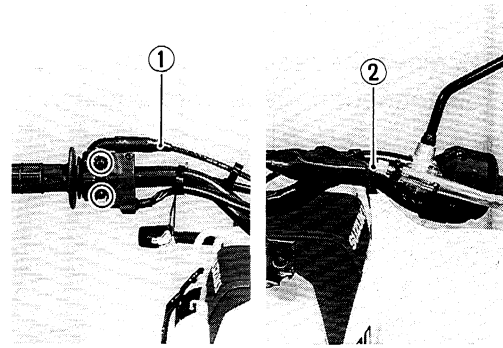
- Remove the headlight brackets.
- Remove the front turn signal lights.



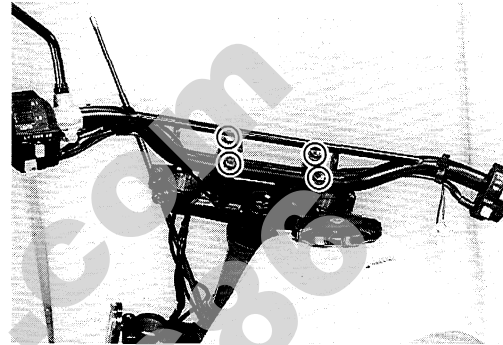
- Remove the front brake master cylinder mounting bolts and brake hose guide mounting bolts.
- Remove the front brake master cylinder with front brake caliper.



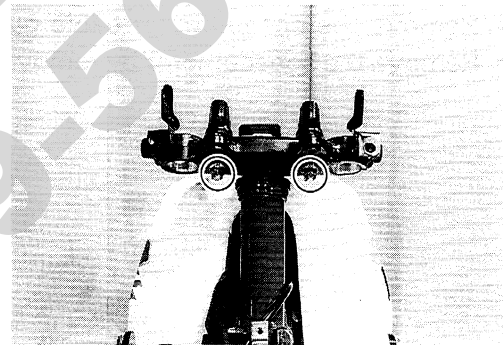
- Disconnect the throttle cable ① by removing the throttle grip case screws.
- Disconnect the clutch cable ② .



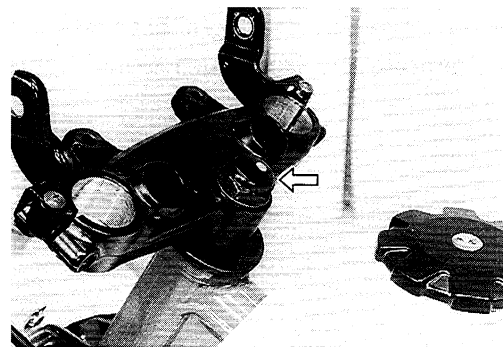
- Remove the handlebars by removing the clamp bolts.



- Remove the handlebar holder by removing the cotter pins and mounting nuts.



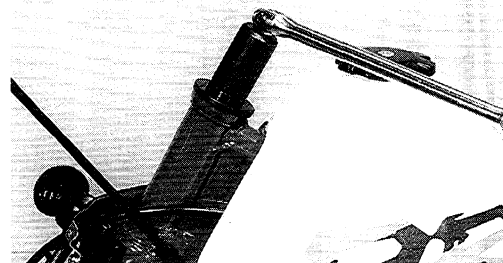
- Remove the steering stem upper bracket by removing the stem head nut.



- Remove the steering stem nut with the special tool.

 **09940-14920: Steering stem nut wrench**

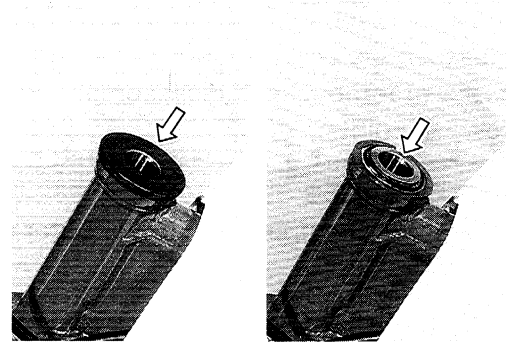
- Remove the steering stem lower bracket.



NOTE:

Hold the steering stem bracket by hand to prevent it from falling.

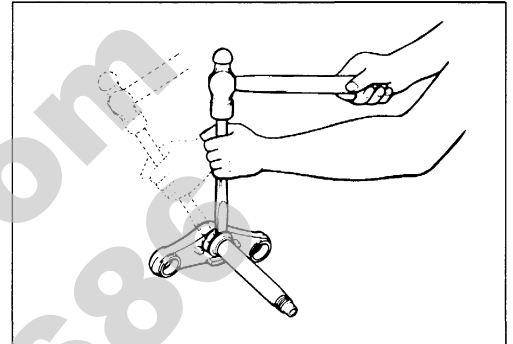
- Remove the dust seal.
- Remove the steering stem upper bearing.



- Remove the steering stem lower bearing with a chisel.

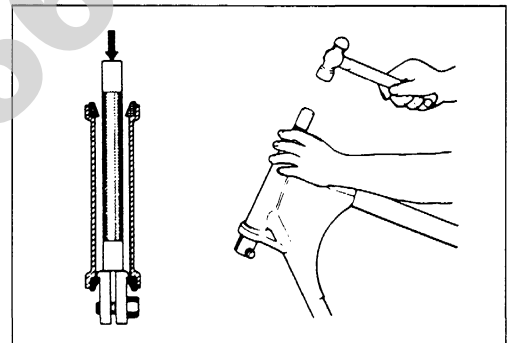
CAUTION

The removed bearing should be replaced with a new one.



- Drive out the steering stem bearing races, upper and lower, with the special tools.

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

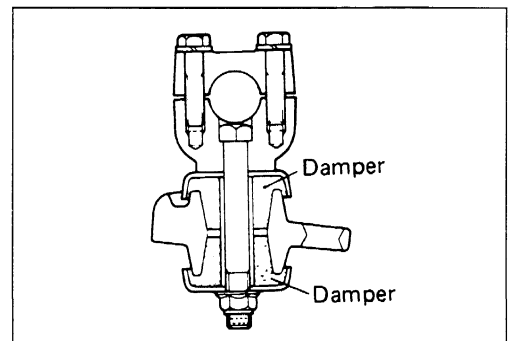


INSPECTION

Inspect the removed parts for the following abnormalities.

- * Handlebars distortion
- * Handlebar clamp wear
- * Race wear and brinelling
- * Bearing wear or damage
- * Abnormal noise of bearing
- * Distortion of steering stem

Inspect the play of dampers by hands fixing it in the steering stem upper bracket. If the play can be found, replace the dampers.



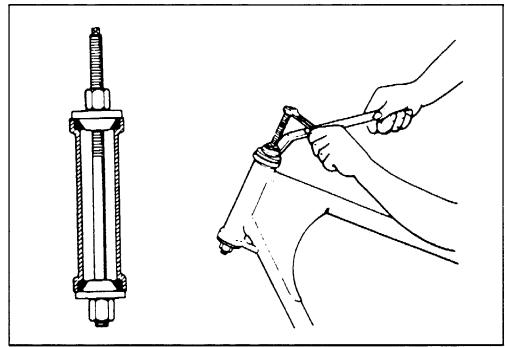
REASSEMBLY AND REMOUNTING

Reassemble and remount the steering stem in the reverse order of removal and disassembly. Pay attention to the following points:

OUTER RACES

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

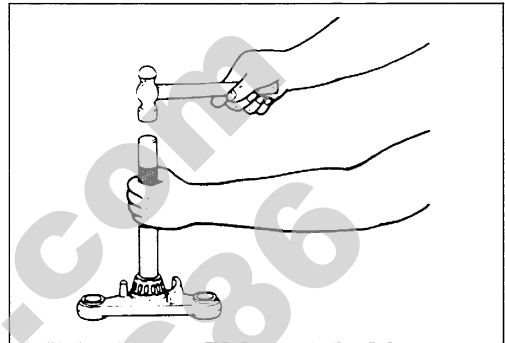
 **09941-34513: Steering outer race installer**



BEARING

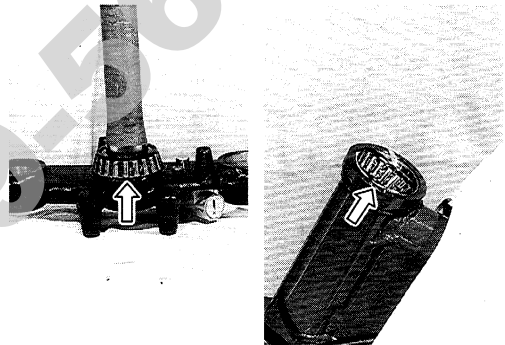
- Press in the lower bearing with the special tool.

 **09941-74910: Steering bearing installer**



- Apply grease to the upper and lower bearings before re-mounting the steering stem.

 **09900-25030: SUZUKI SUPER GREASE "A"**

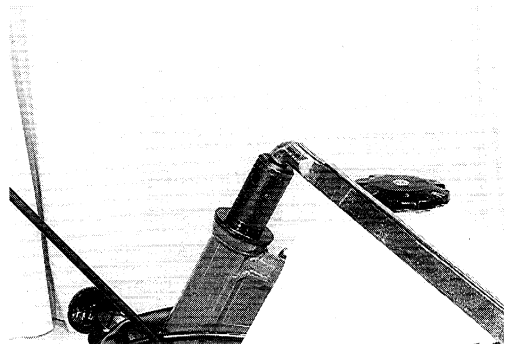


STEERING STEM NUT

- Tighten the steering stem nut to the specified torque with the special tool.

 **Steering stem nut: 45 N·m (4.5 kg-m, 32.5 lb-ft)**

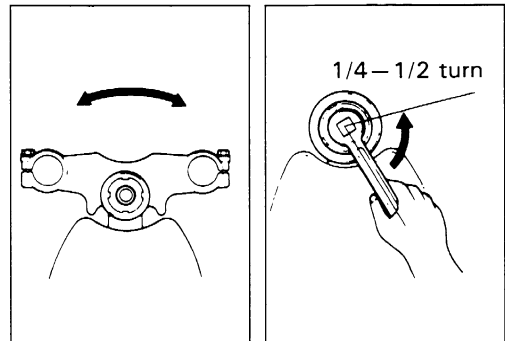
 **09940-14920: Steering stem nut wrench**




- Turn the steering stem lower bracket about five or six times to the left and right so that the taper roller bearing will be seated properly.
- Turn back the stem nut by $\frac{1}{4}$ – $\frac{1}{2}$ turn.

NOTE:

This adjustment will vary from motorcycle to motorcycle.

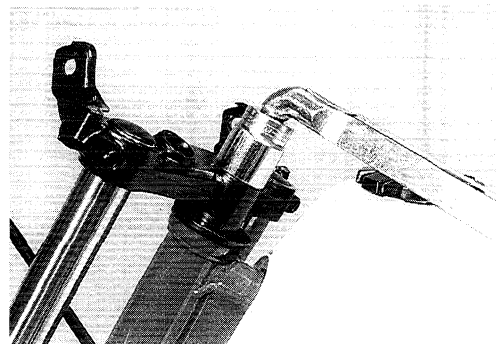


- Tighten the steering stem head nut to the specified torque.


 **Steering stem head nut: 90 N·m (9.0 kg-m, 65.0 lb-ft)**

NOTE:

Before tightening the steering stem nut, install the front fork temporarily.

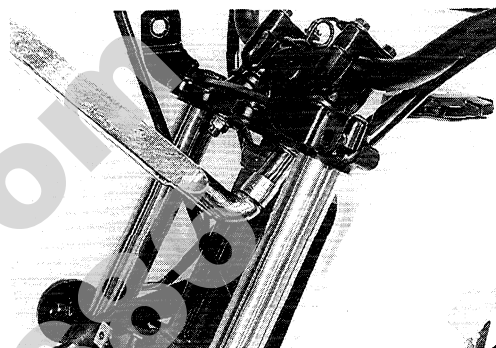


- Tighten the handlebar holder nuts to the specified torque.

 **Handlebar holder nut: 45 N·m (4.5 kg-m, 32.5 lb-ft)**

NOTE:

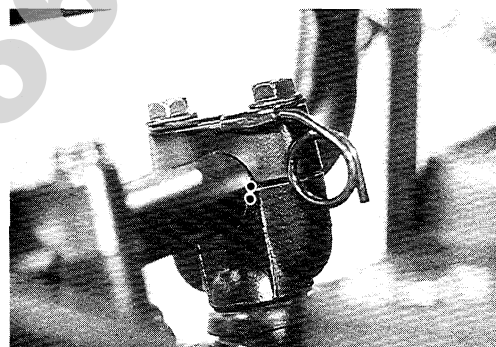
Before tightening the handlebar holder nuts, install the handlebars temporarily.



- Install the new cotter pins.

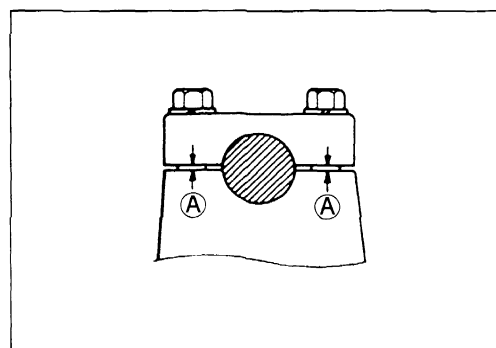
HANDLEBARS

- Set the handlebars to match its upper punched mark to the mating face of the holder as shown in the photograph.



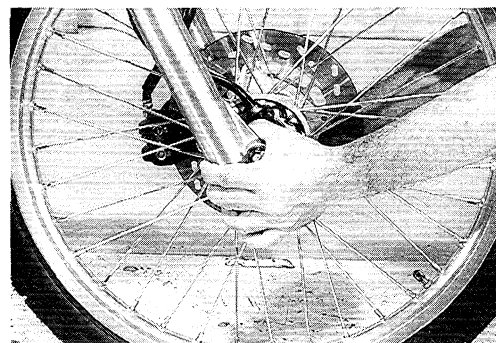
- Secure the each handlebar clamp in such a way that the clearances **A** ahead of and behind the handlebars are equalized.

 **Handlebar clamp bolt: 25 N·m (2.5 kg-m, 18.0 lb-ft)**

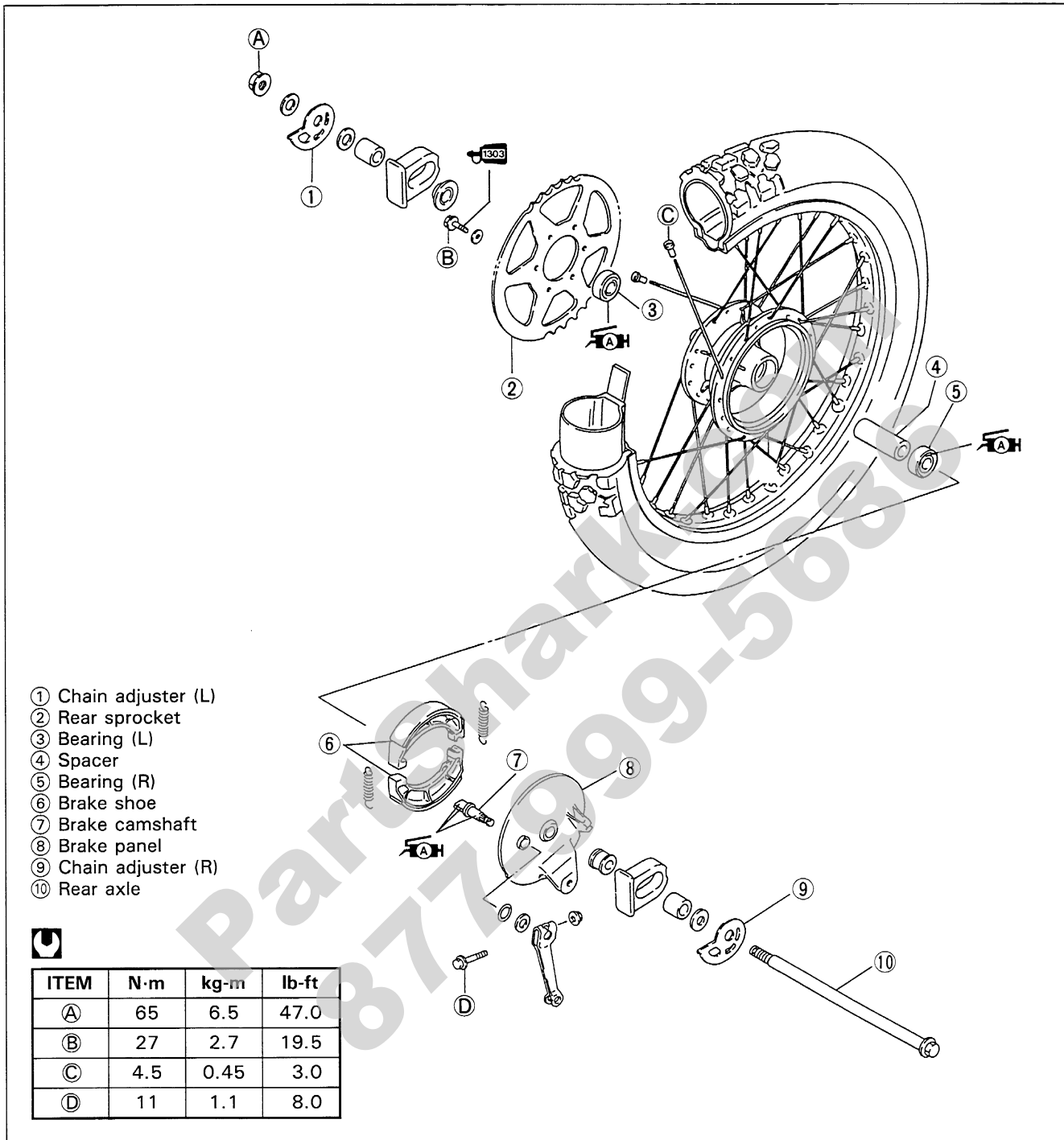


CAUTION

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. Finally check to be sure that the steering stem moves freely from left to right with its own weight. If play or stiffness is noticeable, readjust the steering stem nut.

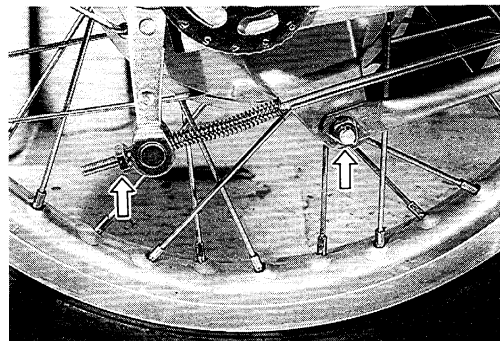


REAR WHEEL AND REAR BRAKE

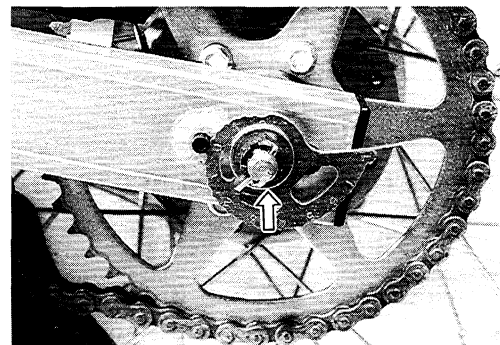


REMOVAL

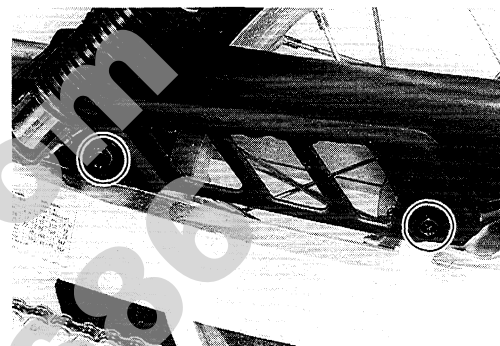
- Remove the rear brake adjusting nut.
- Remove the rear side of torque link by removing the cotter pin, nut and bolt.



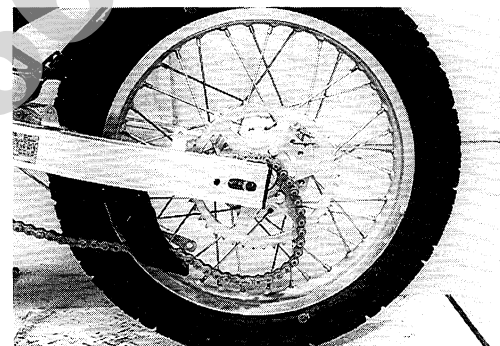
- Remove the rear axle cotter pin.
- Remove the rear axle nut.
- Support the motorcycle with a jack or wooden block.



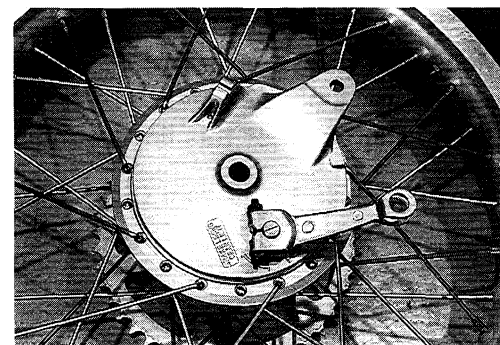
- Remove the drive chain case.



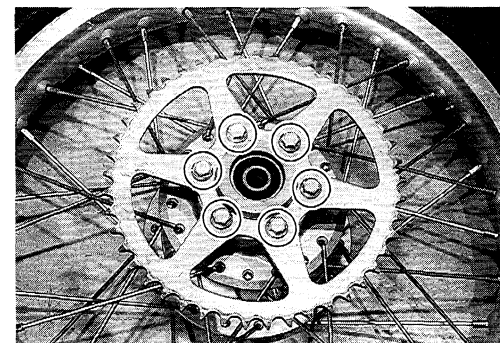
- Remove the rear axle and disengage the drive chain from the rear sprocket.
- Remove the rear wheel with the rear brake panel.



- Remove the rear brake panel.



- Remove the rear sprocket by removing the mounting bolts.



INSPECTION AND DISASSEMBLY

WHEEL BEARINGS Refer to page 5- 3.

REAR AXLE Refer to page 5- 3.

Service Limit: 0.25 mm (0.010 in)

WHEEL RIM Refer to page 5- 3.

Service Limit: 2.0 mm (0.08 in)
(Axial and Radial)

REAR TIRE Refer to page 2-12.

Service Limit: 3.0 mm (0.12 in)

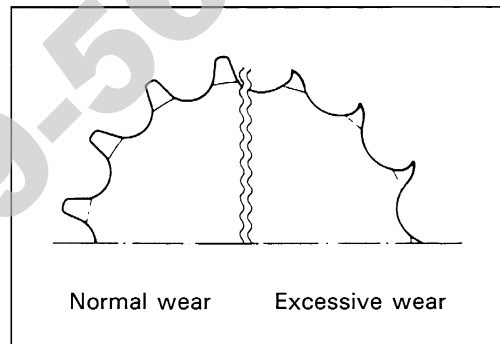
SPOKE NIPPLE Refer to page 5- 3.

 **Spoke nipple: 4.5 N·m (0.45 kg·m, 3.0 lb-ft)**

REAR SPROCKET

Inspect the rear sprocket teeth for wear.

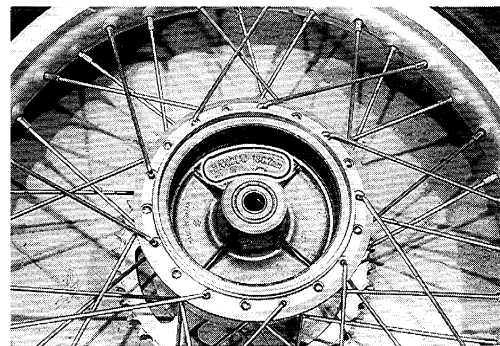
If they are worn as illustrated, replace the sprocket and drive chain.



REAR BRAKE DRUM

Measure the brake drum I.D. to determine the extent of wear. 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)



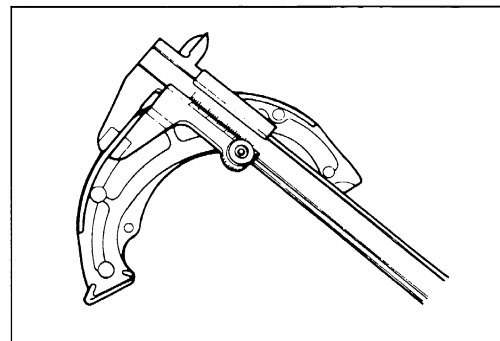
BRAKE SHOE

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

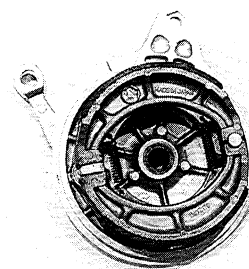
Service Limit: 1.5 mm (0.06 in)

CAUTION

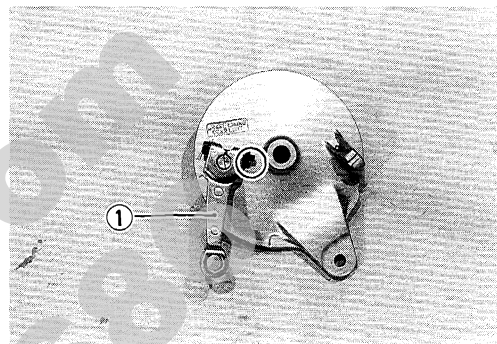
Replace the brake shoes as a set, otherwise braking performance will be adversely affected.



- Remove the brake shoes.



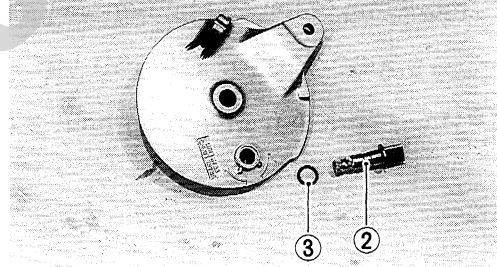
- Remove the brake cam lever ① by removing the nut and bolt.



- Remove brake camshaft ② and O-ring ③.

CAUTION

The removed O-ring should be replaced with a new one.



REASSEMBLY AND REMOUNTING


Reassemble and remount the rear wheel in the reverse order of removal and disassembly. Pay attention to the following points:

WHEEL BEARING

- Apply grease to the bearings before installing.

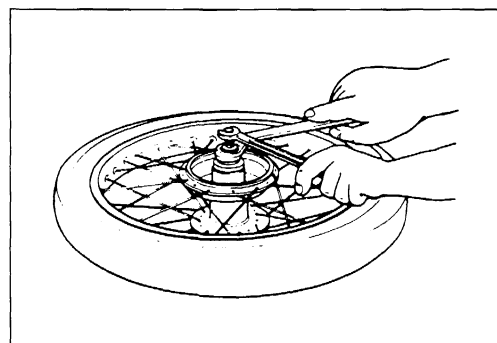
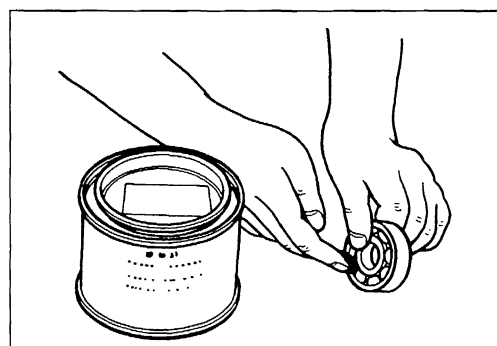
 99000-25030: SUZUKI SUPER GREASE "A"

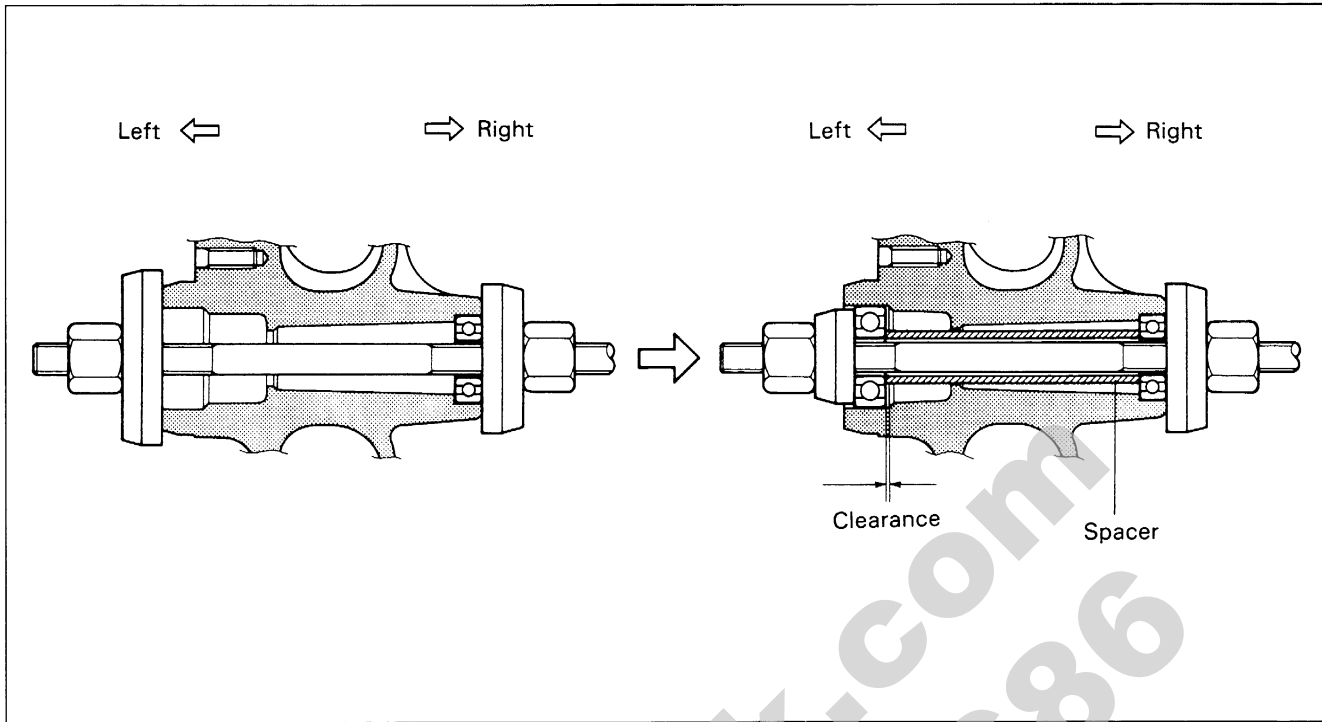
- Install the wheel hub bearings with the special tool.

 09941-34513: Bearing installer set

CAUTION

First install the right wheel hub bearing, then install the left bearing. The sealed cover on the left bearing is positioned outside.




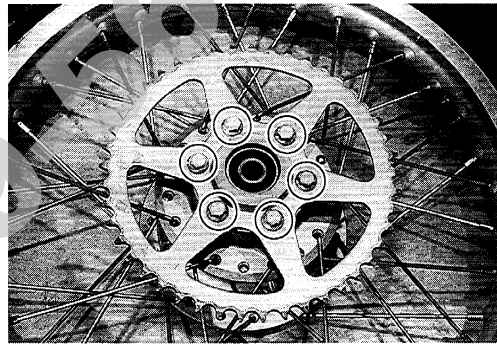


REAR SPROCKET

- Apply THREAD LOCK SUPER "1303" to the rear sprocket mounting bolts, and tighten them to the specified torque.

 **99000-32030: THREAD LOCK SUPER "1303"**

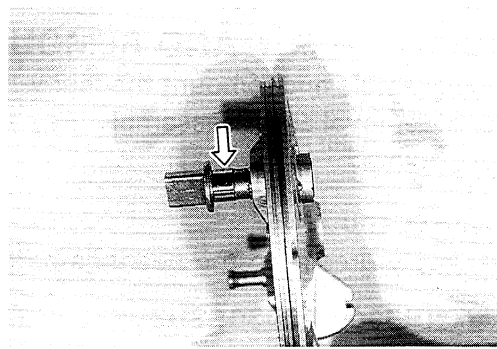
 **Rear sprocket mounting bolt: 27 N·m
(2.7 kg-m, 19.5 lb-ft)**



REAR BRAKE

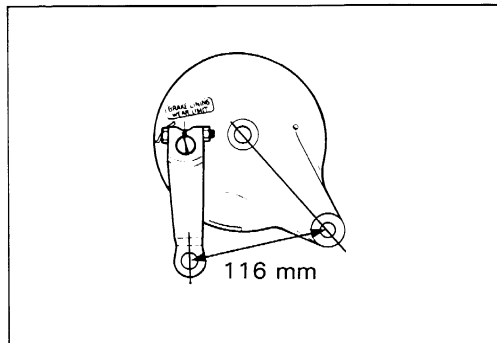
- When installing the brake camshaft, apply grease to the groove of camshaft.

 **99000-25030: SUZUKI SUPER GREASE "A"**



- Install the brake cam lever as shown in the illustration.
- Install the bolt and nut, and tighten the bolt to the specified torque.

 **Brake cam lever bolt: 11 N·m (1.1 kg-m, 8.0 lb-ft)**



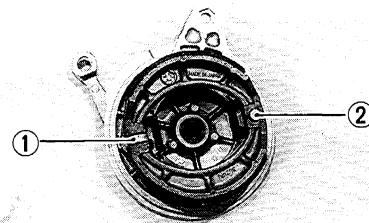
- Apply grease to the brake cam ① and pin ②.

 99000-25030: SUZUKI SUPER GREASE "A"

- Install the brake shoes.

⚠ WARNING

Be careful not to apply too much grease to the brake cam and pin. If grease gets on the lining, brake slip-page will result.



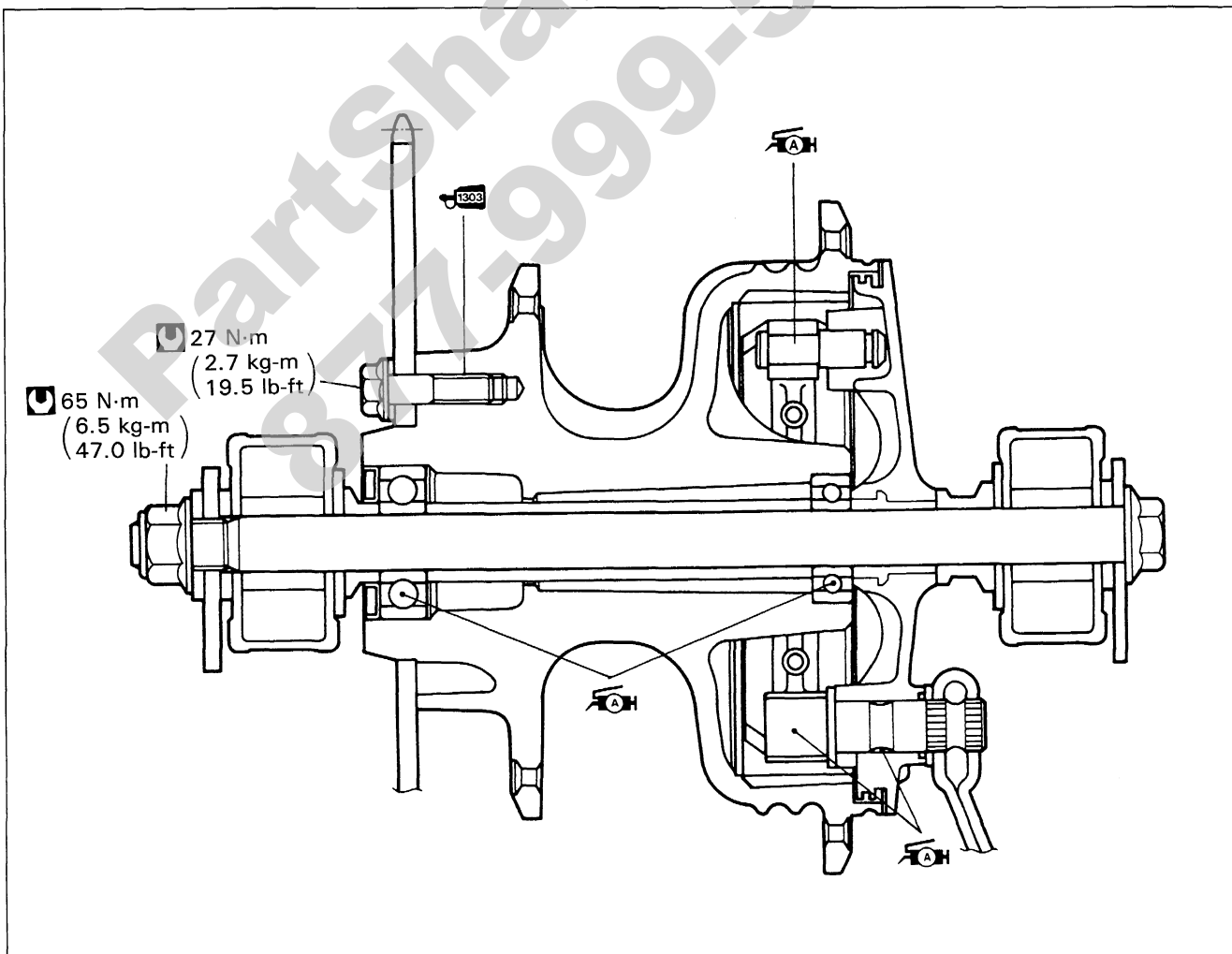
REAR AXLE

- Adjust the chain slack. (Refer to page 2-8.)
- Tighten the rear axle nut to the specified torque.

 Rear axle nut: 65 N·m (6.5 kg·m, 47.0 lb-ft)

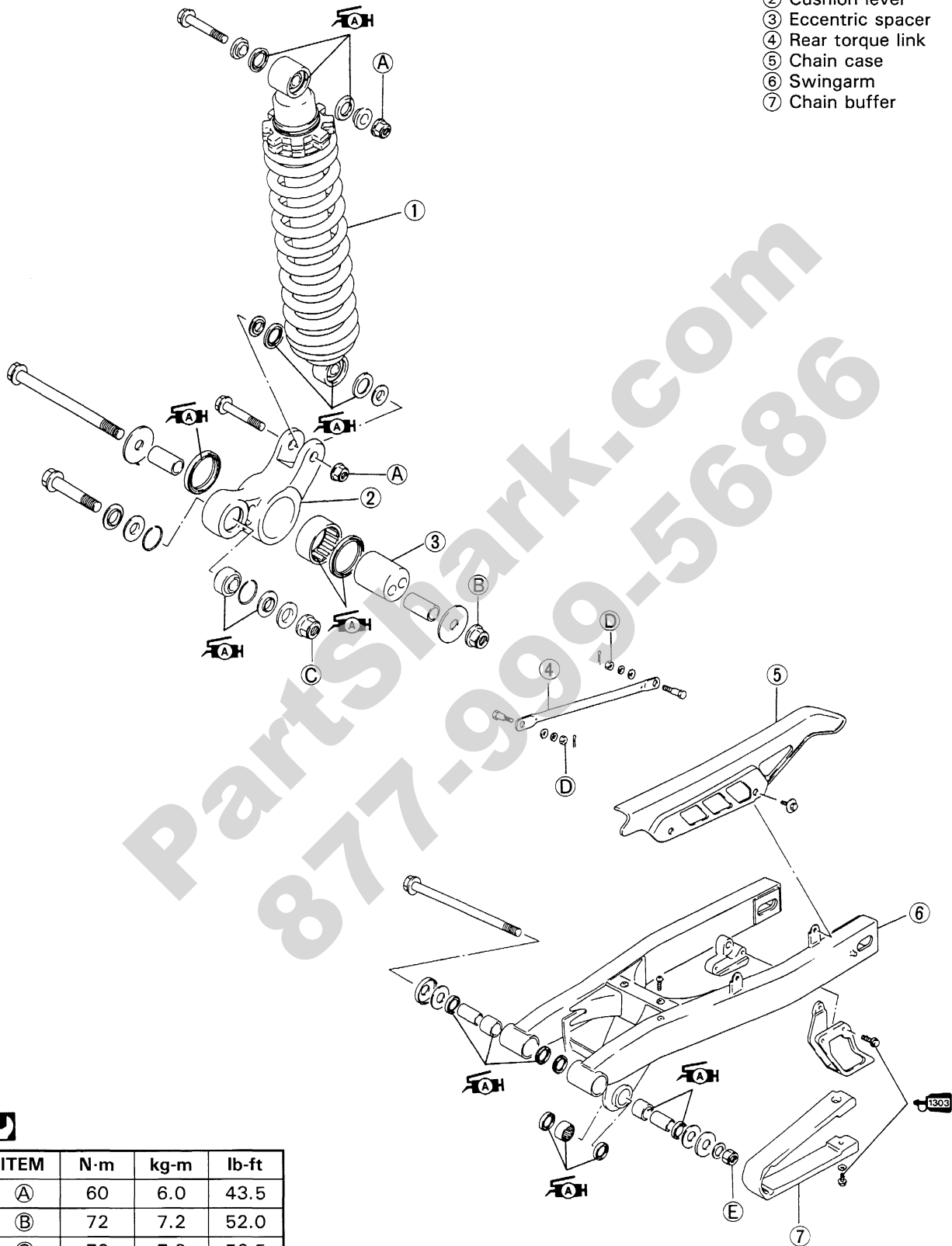
⚠ CAUTION

Adjust the rear brake pedal play after rear wheel installation. (Refer to page 2-10.)



REAR SUSPENSION

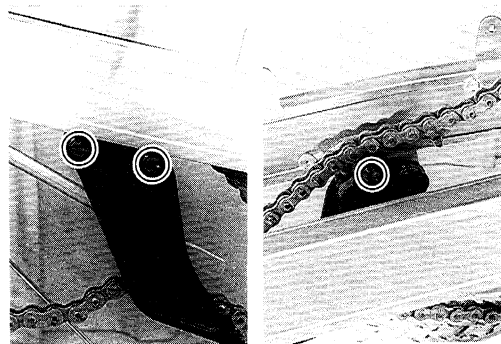
- ① Rear shock absorber
- ② Cushion lever
- ③ Eccentric spacer
- ④ Rear torque link
- ⑤ Chain case
- ⑥ Swingarm
- ⑦ Chain buffer



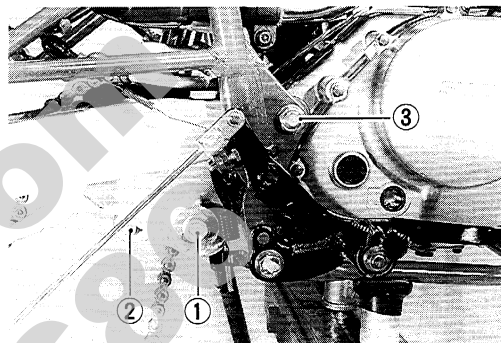
ITEM	N-m	kg-m	lb-ft
A	60	6.0	43.5
B	72	7.2	52.0
C	78	7.8	56.5
D	13	1.3	9.5
E	65	6.5	47.0

REMOVAL

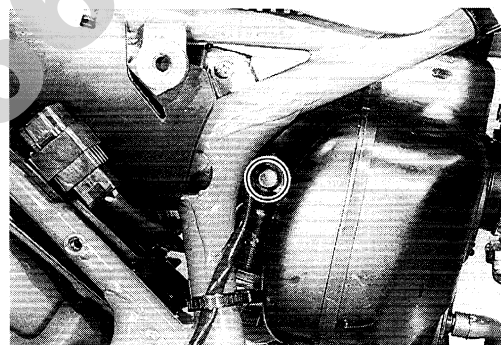
- Remove the rear wheel. (Refer to page 5-27.)
- Remove the right and left frame covers.
- Remove the drive chain guide by removing the bolts.



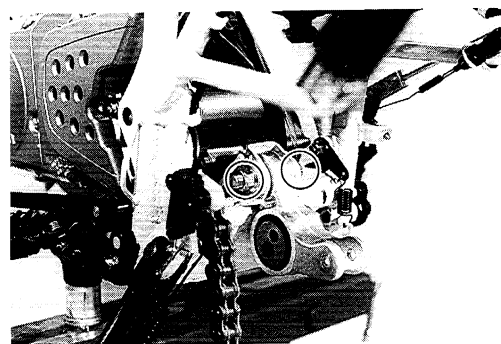
- Remove the cushion lever center nut and bolt ① .
- Remove the shock absorber lower nut and bolt ② .
- Remove the swingarm by removing the nut ③ and swingarm pivot shaft.



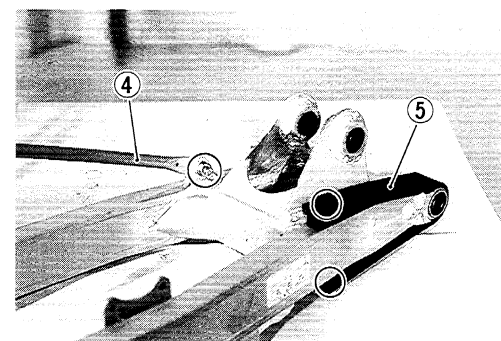
- Remove the rear shock absorber.



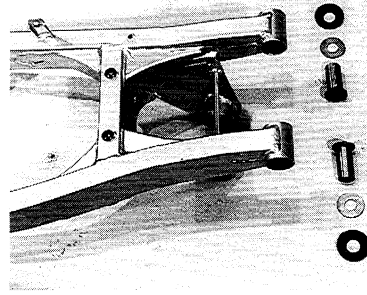
- Remove the cushion lever.



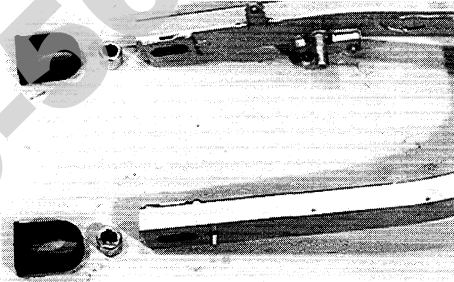
- Remove the rear torque link ④ and chain buffer ⑤.



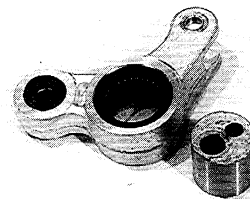
- Remove the dust seal, washers and spacers.



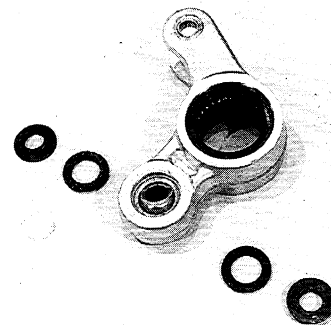
- Remove the dampers and spacers.



- Remove the eccentric spacer.



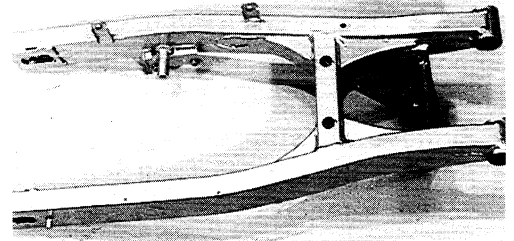
- Remove the spacers and dust seals.



INSPECTION AND DISASSEMBLY

SWINGARM

Inspect the swingarm for wear or damage.
Inspect the spacer for any flaws or other damage.
Insert the spacer into the bearing and bushing, and check the play to move the spacer up and down.
If excessive play is noted, replace the bearing or bushing with a new one.

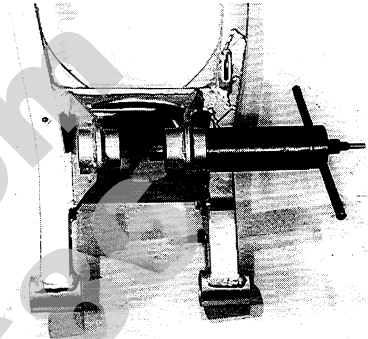


- Remove the swingarm bearings with the special tool.

TOOL 09941-44510: Swingarm bearing remover

⚠ CAUTION

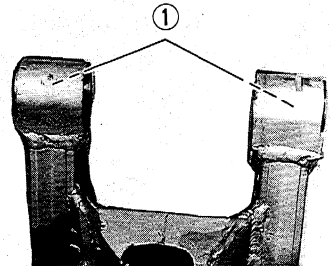
The removed bearing should be replaced with new ones.



- Remove the bushings ① with an appropriate steel bar.

⚠ CAUTION

The removed bearings should be replaced with new ones.



CUSHION LEVER

Inspect the eccentric spacer for any flaws or other damage.
Insert the eccentric spacer into the bearing, and check the play to move the spacer up and down.

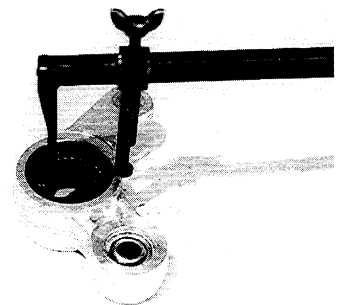
If excessive play is noted, replace the bearing with new one.

- Remove the dust seals with the special tool.

TOOL 09913-50121: Dust seal remover

⚠ CAUTION

The removed dust seals should be replaced with new ones.

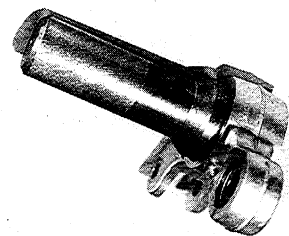


- Remove the bearing with the special tool.

TOOL 09913-76010: Bearing remover and installer

⚠ CAUTION

The removed bearing should be replaced with a new one.



Inspect the spherical ball bearing while it is in the absorber. Move the bearing by hand to inspect for abnormal noise and smooth movement. Replace the bearing if there is anything unusual.

- Remove the stopper rings ① .
- Remove the spherical ball bearing ② with an appropriate socket wrench.

▲ CAUTION

The removed stopper rings and bearing should be replaced with new ones.

SHOCK ABSORBER


Inspect the shock absorber body for damage and oil leakage. If any defects are found, replace the shock absorber with new one.

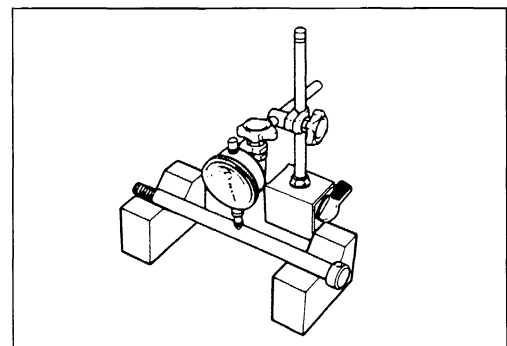
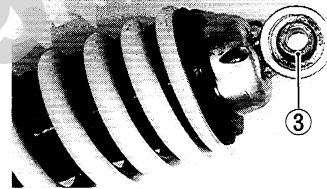
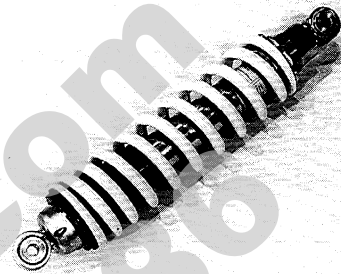
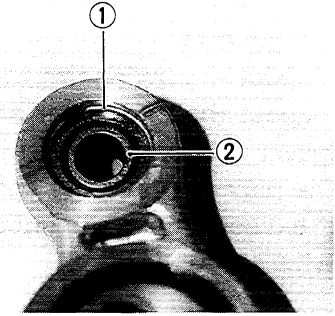
- Remove the spacers and dust seals.
- Inspect the spherical ball bearings ③ while it is in the absorber. Move the bearing by hand to inspect for abnormal noise and smooth movement. Replace the shock absorber if there is anything unusual.

SWINGARM PIVOT SHAFT

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

Service Limit: 0.6 mm (0.02 in)

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



REASSEMBLY AND REMOUNTING

Reassemble and remount the rear suspension in the reverse order of removal and disassembly. Pay attention to the following points:

CUSHION LEVER

- Install the cushion lever center bearing with the special tool.

 **09941-34513: Steering outer race installer**

NOTE:

Install the center bearing at 7 mm depth from the cushion lever surface.

- Install the spherical ball bearing with an appropriate socket wrench.
- Install the new stopper rings into the ring groove.


- Apply grease to the center bearing and spherical ball bearing.

 **99000-25030: SUZUKI SUPER GREASE "A"**

- Install the new dust seals.

SWINGARM

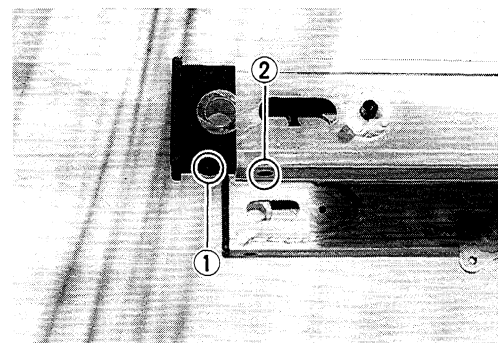
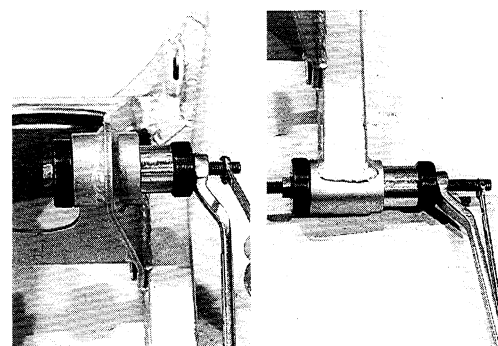
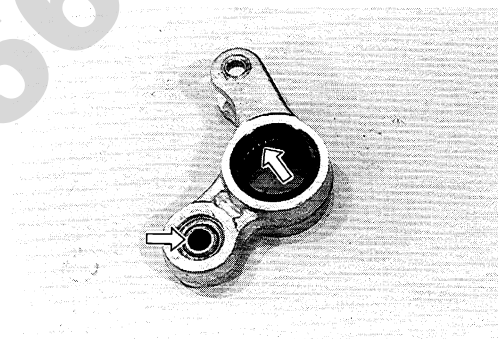
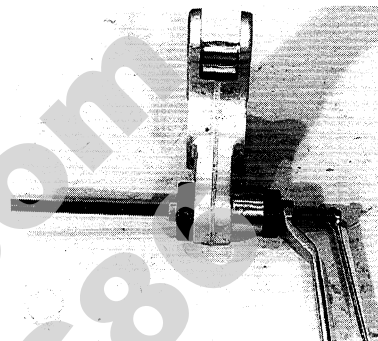
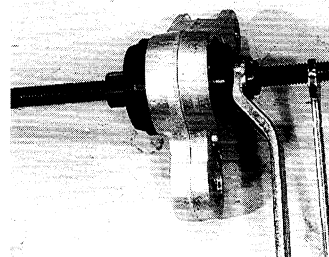
- Install the swingarm bearings and bushings with the special tool and appropriate socket wrench.

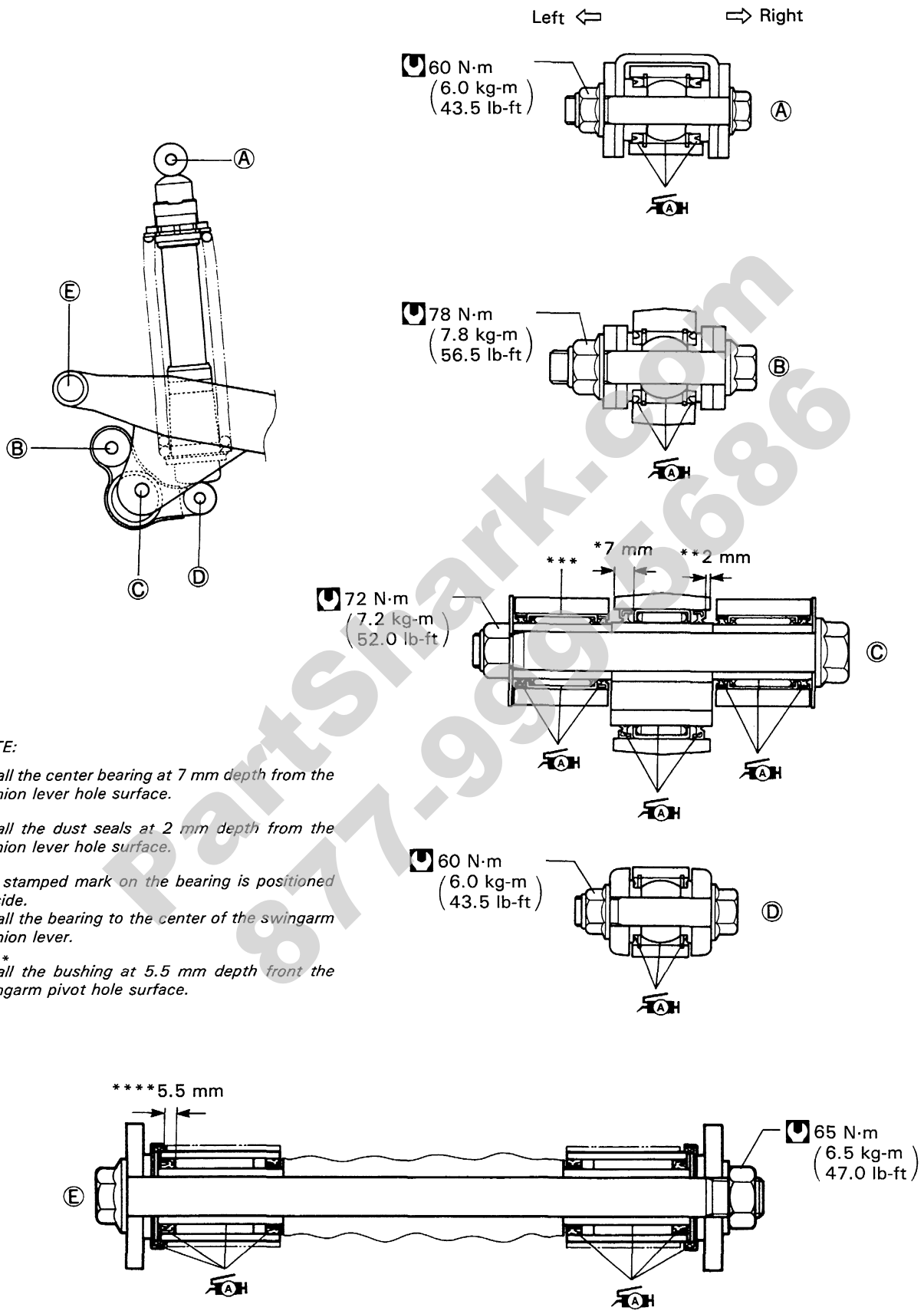
 **09924-84521: Bearing installer**

- Apply grease to the bearings, bushings and dust seals.

 **99000-25030: SUZUKI SUPER GREASE "A"**

- When installing the rear axle dampers, align the protrusion ① on the damper with the hole ② of the swingarm.





FINAL INSPECTION AND ADJUSTMENT

After installing the rear suspension and wheel, the following adjustments are required before driving.

- * Drive chain Page 2- 8.
- * Rear brake Page 2-10.
- * Tire pressure Page 2-12.

SHOCK ABSORBER SPRING PRE-LOAD ADJUSTMENT

Spring pre-load is adjustable by changing the spring adjuster ring position after removing the shock absorber. Turning the spring adjuster ring counterclockwise or clockwise as viewed from for increase or decrease the spring pre-load after loosening the adjuster lock ring. The standard set length is 231 mm.

After adjusting the pre-load, tighten the spring adjuster lock ring securely.

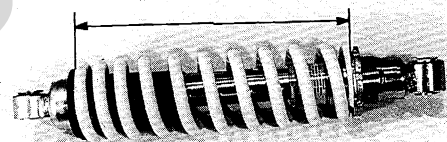
 09910-60611: Universal clamp wrench

CAUTION

Do not set the spring to the length less than 226 mm (8.9 in).

SPRING SETTING TABLE

	Spring pre-set length
Softest	236 mm (9.3 in)
Standard	231 mm (9.1 in)
Stiffest	226 mm (8.9 in)



PartShark.com
877-999-5686

ELECTRICAL SYSTEM

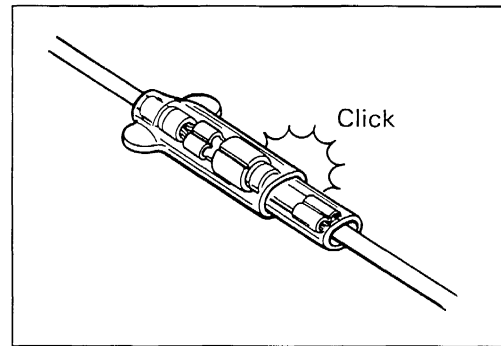
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CAUTIONS IN SERVICING

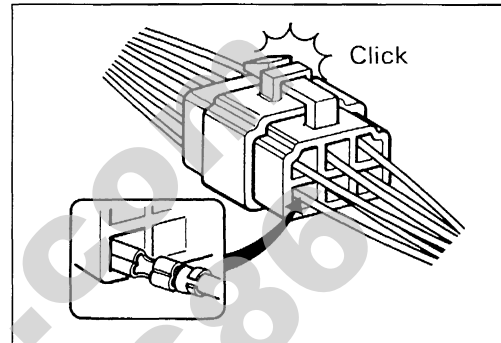
CONNECTOR

- When connecting a connector, be sure to push it in until a click is felt.
- Inspect the connector for corrosion, contamination and breakage in its cover.



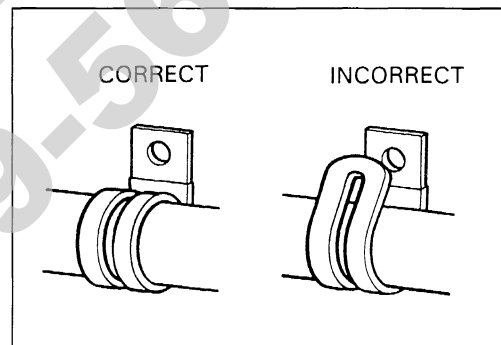
COUPLER

- With a lock type coupler, be sure to release the lock before disconnecting it and push it in fully till the lock works when connecting it.
- When disconnecting the coupler, be sure to hold the coupler itself and do not pull the lead wires.
- Inspect each terminal on the coupler for being loose or bent.
- Inspect each terminal for corrosion and contamination.



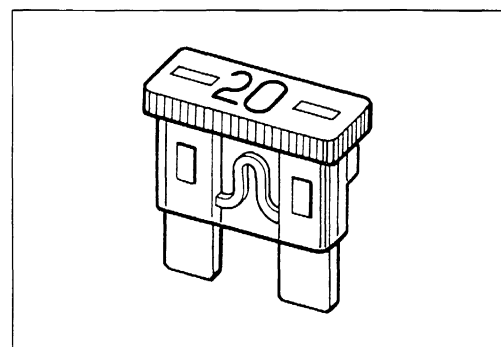
CLAMP

- Clamp the wire harness at such positions as indicated in "WIRE ROUTING" (Refer to page 7-8.).
- Bend the clamp properly so that the wire harness is clamped securely.
- In clamping the wire harness, use care not to allow it to hang down.
- Do not use wire or any other substitute for the hand type clamp.



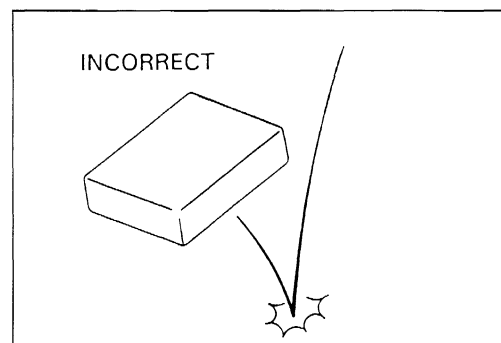
FUSE

- When a fuse blows, always investigate the cause, correct it and then replace the fuse.
- Do not use a fuse of a different capacity.
- Do not use wire or any other substitute for the fuse.



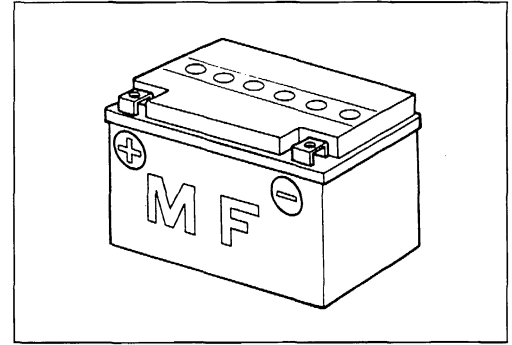
SEMI-CONDUCTOR EQUIPPED PART

- Be careful not to drop the part with a semi-conductor built in such as a ignitor unit.
- When inspecting this part, follow inspection instruction strictly. Neglecting proper procedure may cause damage to this part.



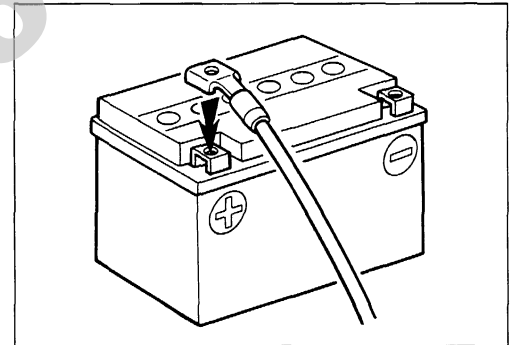
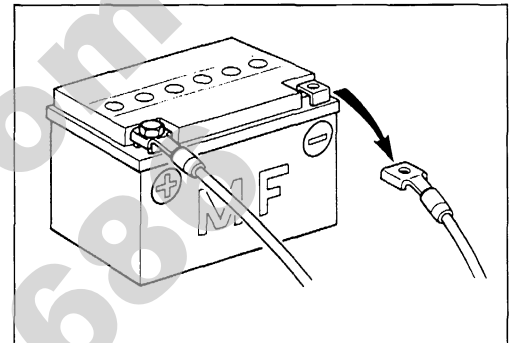
BATTERY

- The MF battery used in this vehicle does not require maintenance as inspection of electrolyte level and replenishment of water.
- No hydrogen gas is produced during normal charging of the battery, but such gas may be produced when it is overcharged. Therefore, do not bring fire near the battery while it is being charged.
- Note that the charging system for the MF battery is different from that of an ordinary battery. Do not replace with an ordinary battery.



CONNECTING BATTERY

- When disconnecting terminals from the battery for disassembly or servicing, be sure to disconnect the negative (\ominus) terminal first.
- When connecting terminals to the battery, be sure to connect the positive (\oplus) terminal first.
- If the terminal is found corroded, remove the battery, pour warm water over it and clean with a wire brush.
- Upon completion of connection, apply grease lightly.
- Put a cover over the positive (\oplus) terminal.

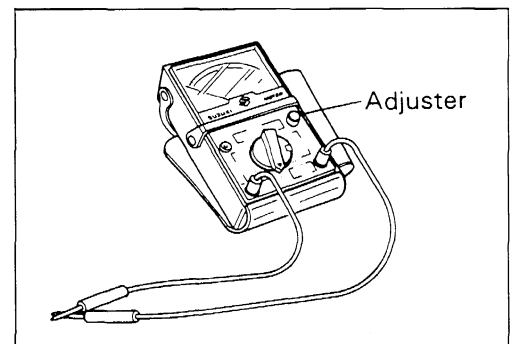


WIRING PROCEDURE

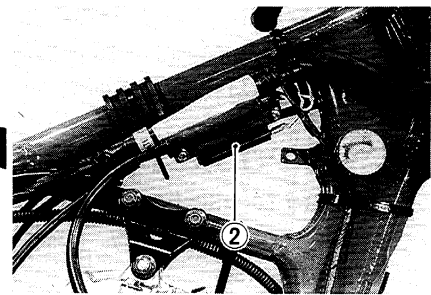
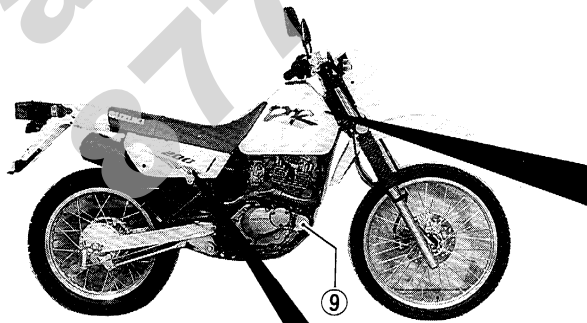
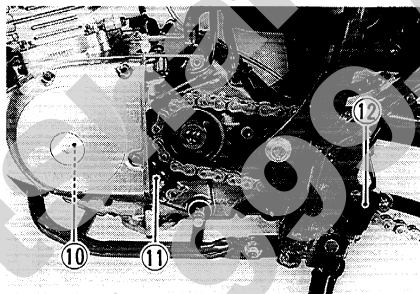
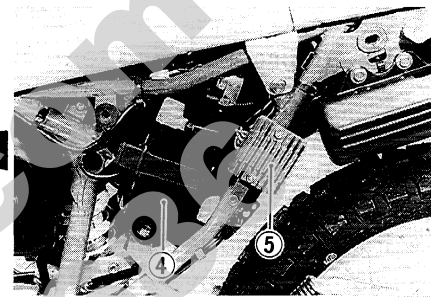
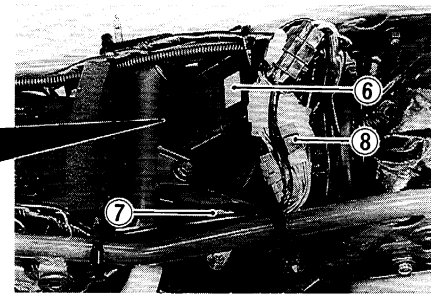
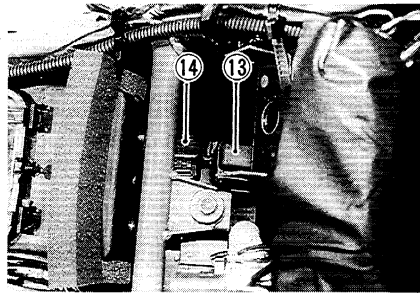
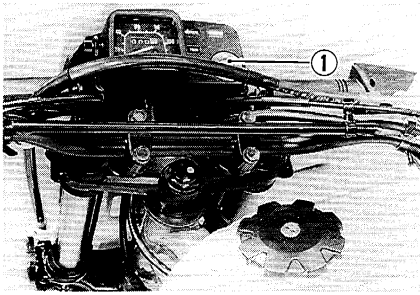
- Route the wire harness properly according to "WIRE HARNESS ROUTING" (Refer to page 7-8).

USING POCKET TESTER

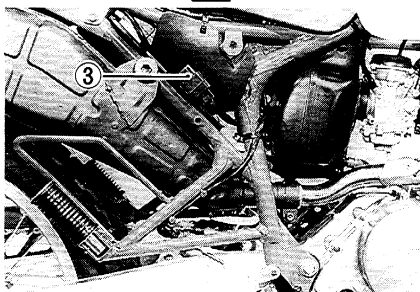
- Be sure to use positive (\oplus) and negative (\ominus) probes of the tester properly. Their false use may cause damage in the tester.
- If the voltage and current values are not known, start measuring in the higher range.
- Before measuring the resistance and after changing the resistance range, always perform 0Ω adjustment.
- Taking a measurement where voltage is applied in the resistance range may cause damage in the tester. When measuring resistance, check to make sure that no voltage is applied there.
- After using the tester, turn the switch to the OFF position.



LOCATION OF ELECTRICAL COMPONENTS



- ① : Ignition switch
- ② : Ignition coil
- ③ : Fuse box
- ④ : Battery
- ⑤ : Regulator/rectifier
- ⑥ : Ignitor
- ⑦ : Starter relay
- ⑧ : Diode
- ⑨ : Starter motor
- ⑩ : Generator
- ⑪ : Neutral switch
- ⑫ : Side-stand switch
- ⑬ : Side-stand relay
- ⑭ : Turn signal relay

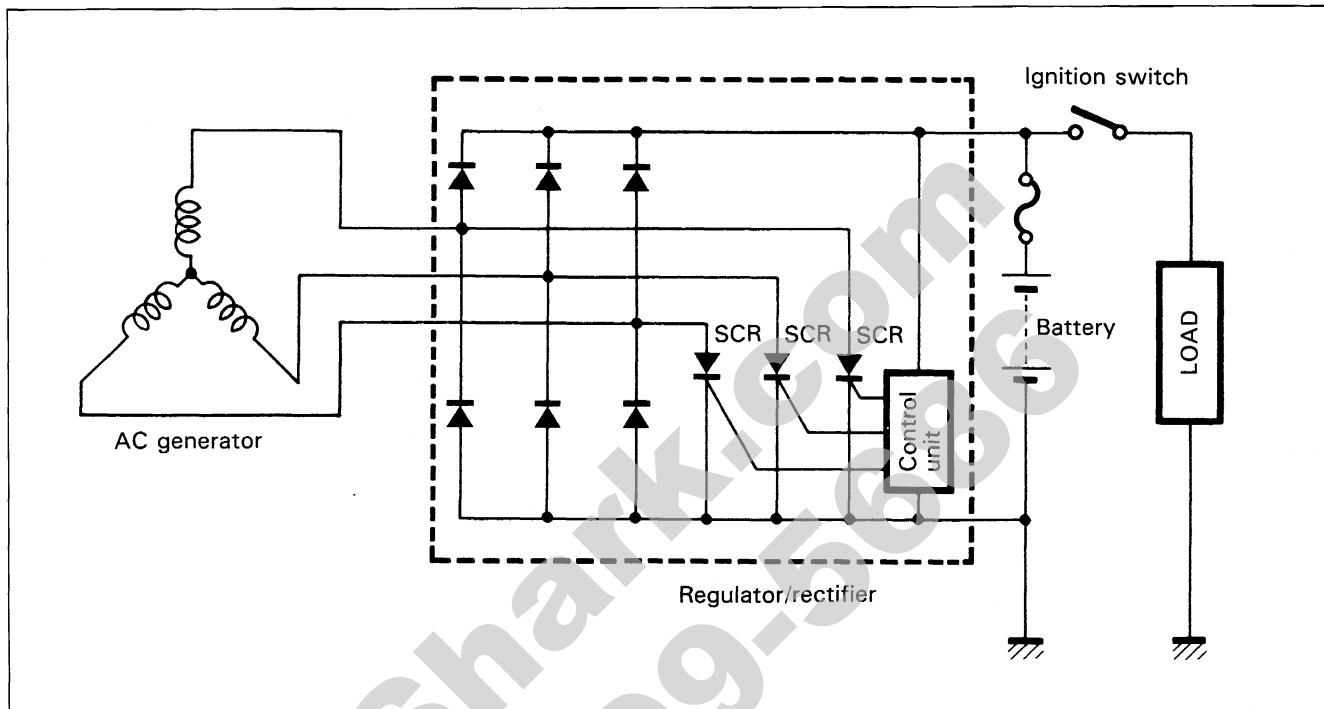


CHARGING SYSTEM

DESCRIPTION

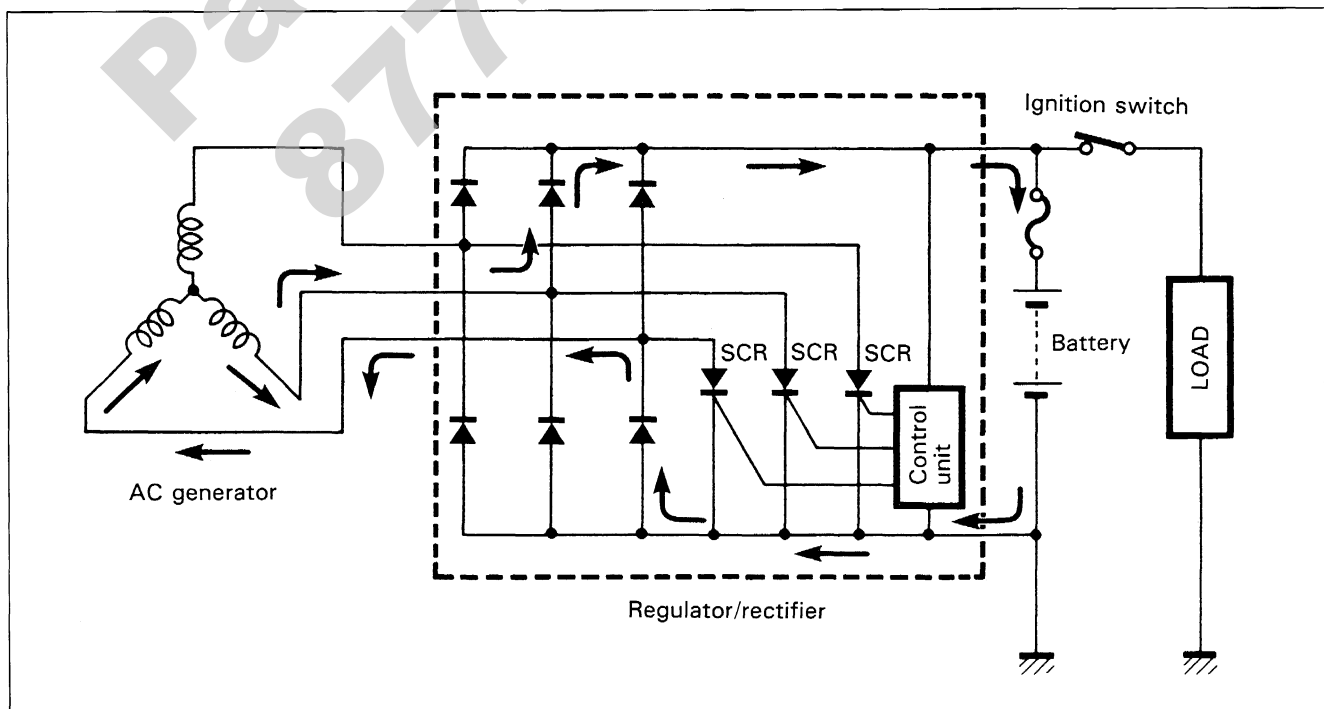
The circuit of the charging system is indicated in the figure, which is composed of an AC generator, regulator/rectifier unit and battery.

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



FUNCTION OF REGULATOR

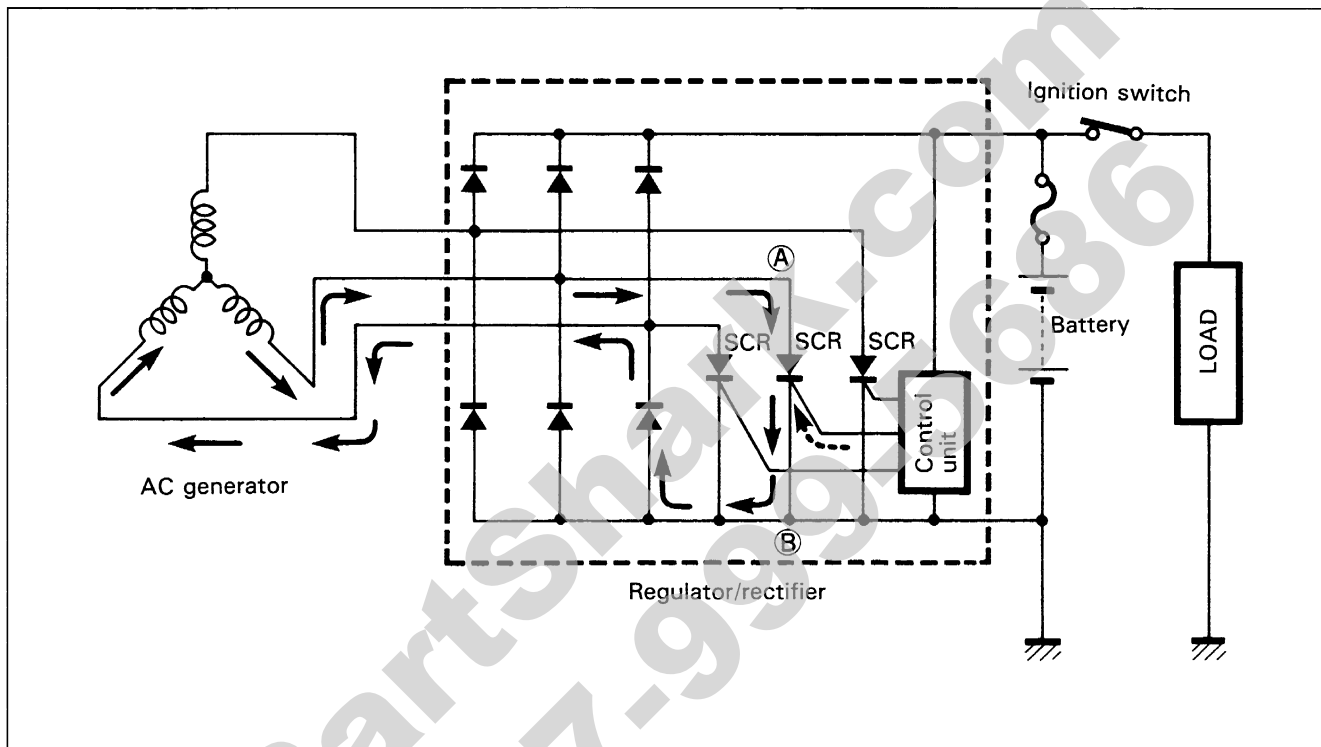
While the engine r/min is low and the generated voltage of the AC generator is lower than the adjusted voltage of regulator, the regulator does not function, incidentally the generated current charges the battery directly.



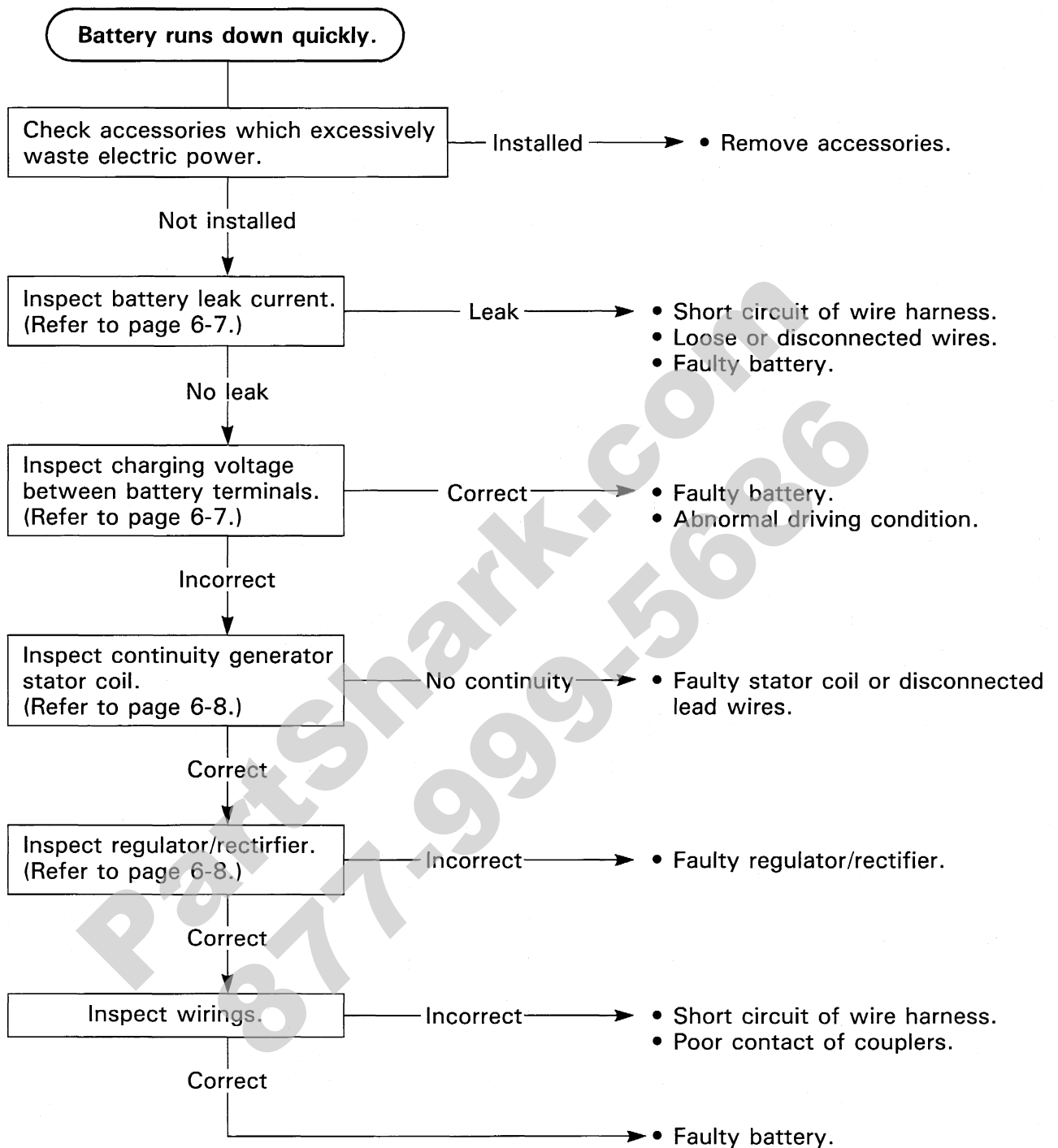
6-5 ELECTRICAL SYSTEM

When the engine r/min becomes higher, the generated voltage of AC generator also becomes higher and the voltage between battery terminals becomes high accordingly. When it reaches the adjusted voltage of control unit, control unit becomes "ON" condition consequently. On the "ON" condition of control unit, signal will be sent to the SCR (Thyristor) gate probe and SCR will become "ON" condition.

Then the SCR becomes conductive to the direction from point A to point B. Namely at the state of this, the current generated from the AC generator gets through SCR without charging the battery and returns to AC generator again. When the battery voltage falls, the signal to the SCR will be cut off, causing the SCR becomes "OFF". As a result, the generated voltage will start to charge the battery once again. Thus these repetitions maintain charging voltage to the battery constant and protect it from overcharging.



TROUBLESHOOTING

**Others**


Battery overcharge	<ul style="list-style-type: none"> • Faulty regulator/rectifier • Faulty battery • Poor contact of regulator/rectifier lead wire coupler
--------------------	---

INSPECTION

BATTERY LEAK CURRENT INSPECTION

- Turn the ignition switch to the OFF position.
- Remove the left frame cover.
- Disconnect the battery \ominus lead wire.

Note that leakage is indicated if the needle swings even a little when the milliampere meter of the pocket tester is connected between a \ominus terminal and the lead wire of the battery as shown.

 **09900-25002: Pocket tester**

CAUTION

- Because the leak current might be large, turn the tester to high range first when connecting an ammeter.
- Do not turn the ignition switch to the ON position when measuring current.

When leakage is found, look for the part where the needle does not swing through the couplers and connectors are removed one by one.

CHARGING OUTPUT CHECK

- Remove the frame covers and seat. (Refer to page 5-1.)

Start the engine and keep it running at 5 000 r/min. Measure the DC voltage between the battery terminal \oplus and \ominus with a pocket tester. If the tester reads under 13.0V or over 16.0V, check the AC generator no-load performance and regulator/rectifier.

NOTE:

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

 **09900-25002: Pocket tester**

 **Tester knob indication: DC 25V**

STD charging output: 13.0–16.0V (DC) at 5 000 r/min

AC GENERATOR NO-LOAD PERFORMANCE

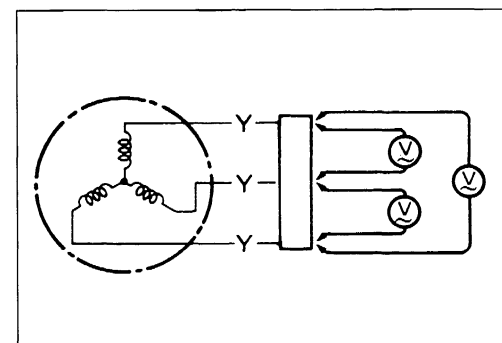
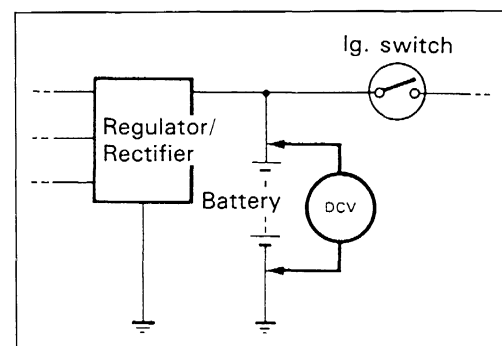
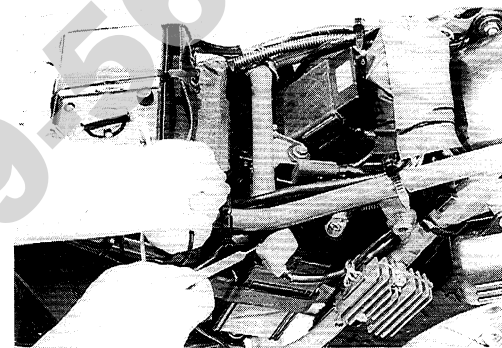
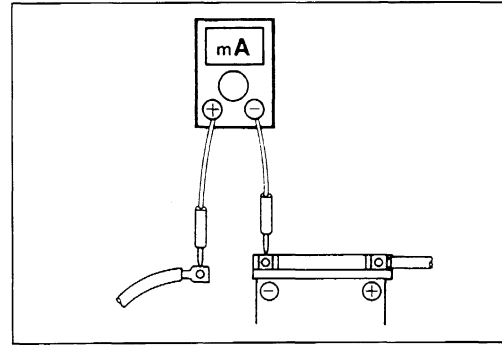
- Remove the frame covers and seat. (Refer to page 5-1.)
- Disconnect the AC generator lead wire coupler.

Start the engine and keep it running at 5 000 r/min. Measure the AC voltage between the three yellow lead wires with a pocket tester. If the tester reads under 60V, the magneto is faulty.

 **09900-25002: Pocket tester**


 **Tester knob indication: AC 250V**

**STD No-load performance: More than 60V (AC)
at 5 000 r/min**



GENERATOR STATOR COIL

Check the continuity between the lead wires with a pocket tester. Also check that the stator core is insulated.

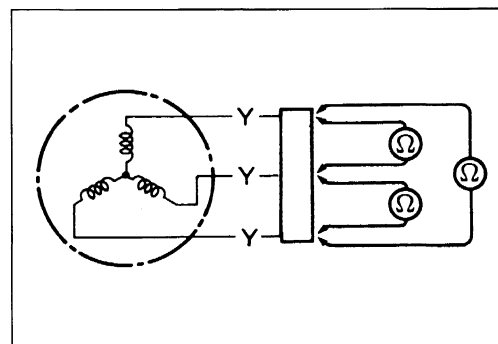
 **09900-25002: Pocket tester**

 **Tester knob indication: x 1Ω range**

STD resistance: 0.1 – 1.5Ω

NOTE:


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



REGULATOR/RECTIFIER

- Remove the frame covers and seat. (Refer to page 5-1.)
- Disconnect the regulator/rectifier couplers.

Measure the resistance between the lead wires in the following table with a pocket tester.

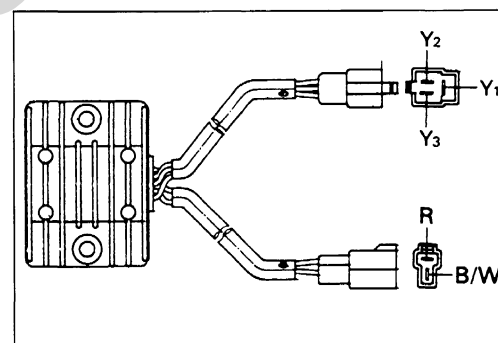
 **09900-25002: Pocket tester**

 **Tester knob indication: x 1 kΩ range**

Unit: kΩ



⊖ Probe of tester to:	⊕ Probe of tester to:				
	R	B/W	Y ₁	Y ₂	Y ₃
R		10–60	20–100	20–100	20–100
B/W	2–10		1–6	1–6	1–6
Y ₁	1–6	20–100		30–150	30–150
Y ₂	1–6	20–100	30–150		30–150
Y ₃	1–6	20–100	30–150	30–150	



WIRE COLOR

R : Red

Y : Yellow

B/W : Black with White tracer

CAUTION

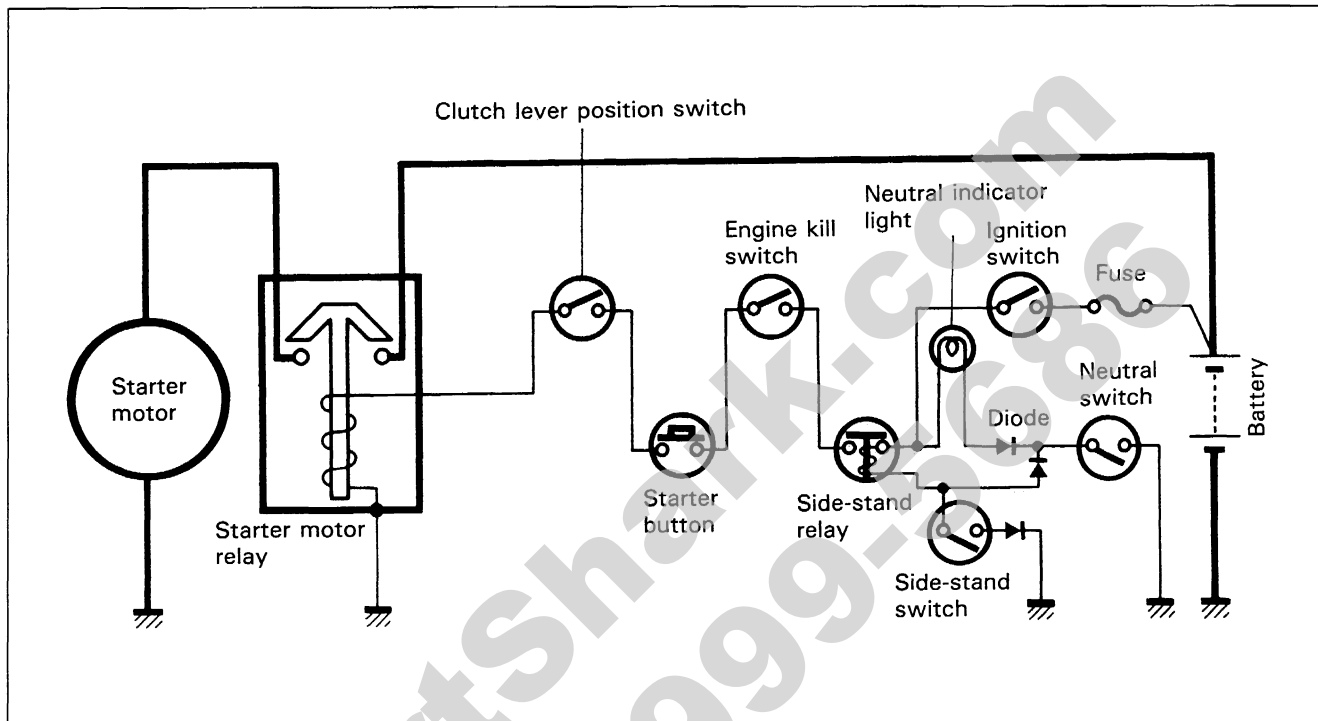
As SCR and diodes are used inside this regulator/rectifier unit, the resistance values will differ when an ohmmeter other than SUZUKI pocket tester is used.

STARTER SYSTEM

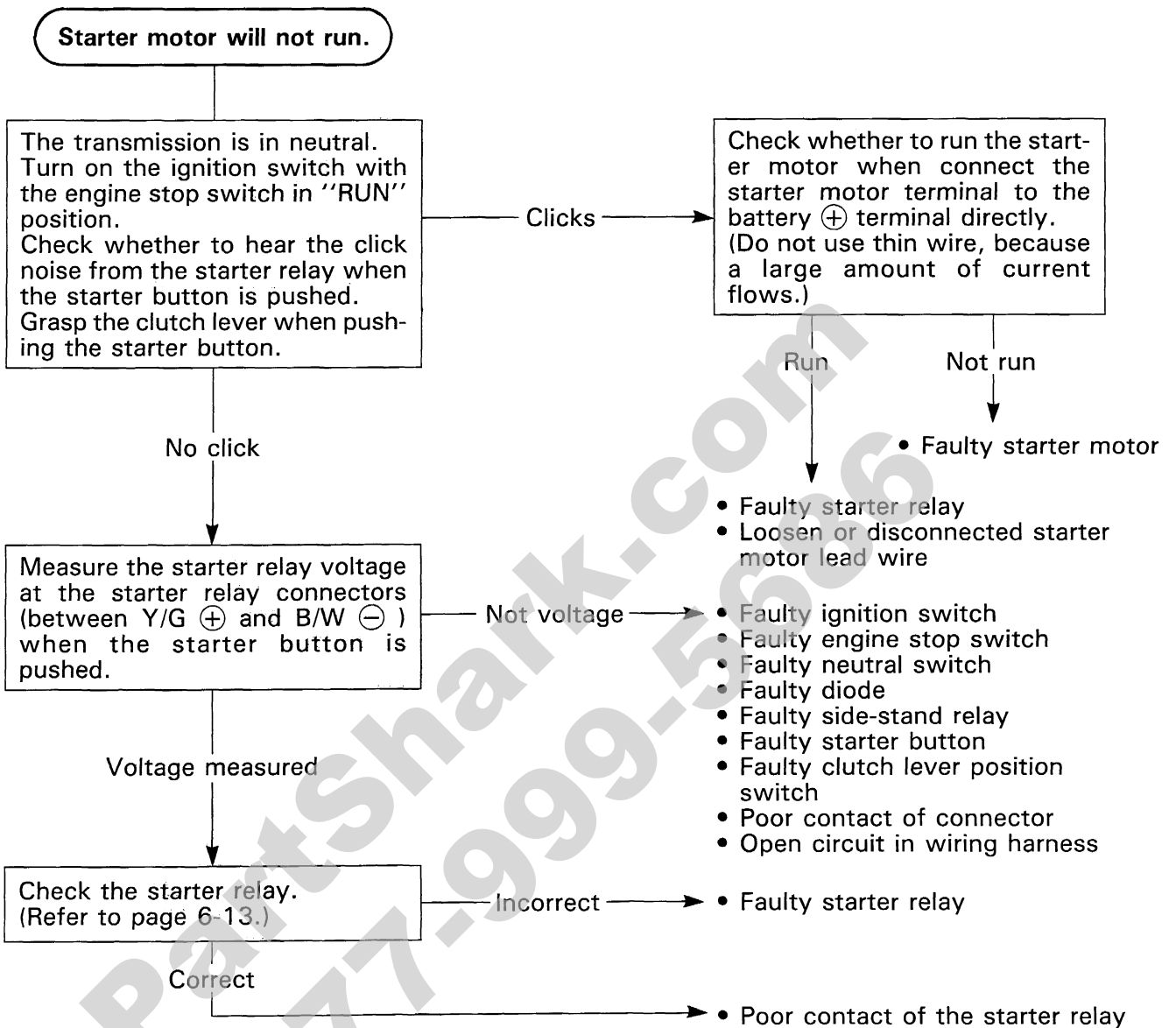
DESCRIPTION

The starter system is shown in the diagram below: namely, the starter motor, starter relay, side-stand relay, side-stand switch, neutral switch, clutch lever position switch, starter button, engine kill switch, ignition switch and battery.

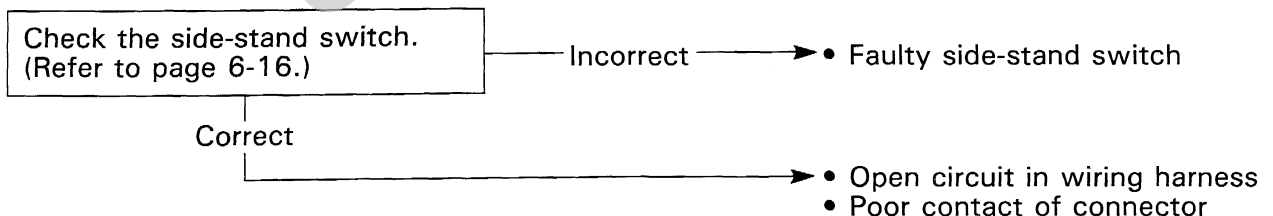
Depressing the starter (on the right handlebars switch box) energizes the relay, causing the contact points to close which connects the starter motor to the battery. The motor draws about 80 amperes to start the engine.



TROUBLESHOOTING



Starter motor runs when the transmission is in neutral, but does not run with the transmission in any position except neutral, with the side-stand up position

**Others**

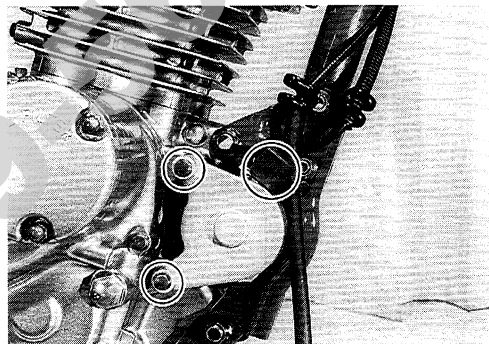
Engine does not turn though starter motor runs.	• Faulty starter clutch
---	-------------------------

STARTER MOTOR REMOVAL AND DISASSEMBLY

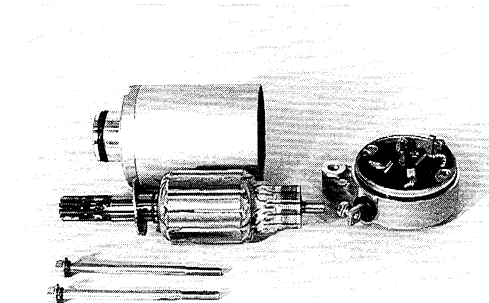
ITEM	N·m	kg·m	lb·ft
A	10	1.0	7.0
B	2.5	0.25	1.8

- ① O-ring (2 pcs)
- ② O-ring
- ③ Housing end
- ④ O-ring (2 pcs)
- ⑤ Starter motor case
- ⑥ Armature
- ⑦ Brush holder
- ⑧ Housing end

- Disconnect the starter motor lead wire and remove the starter motor by removing the mounting bolts.



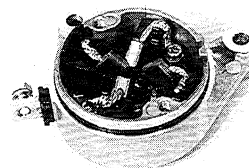
- Disassemble the starter motor.



STARTER MOTOR INSPECTION

CARBON BRUSH

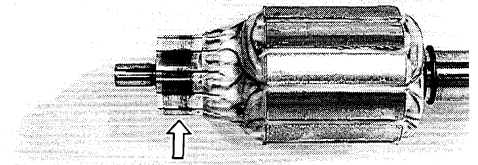
Inspect the brushes for damage or wear. If any damage is found, replace them.



COMMUTATOR

If the commutator surface is dirty, starting performance decreases. Polish the commutator with #400 or similar fine emery paper when it is dirty.

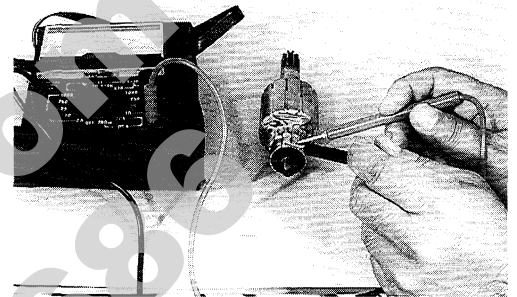
After polishing it, wipe the commutator with a clean dry cloth.




ARMATURE COIL

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

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



 **09900-25002: Pocket tester**

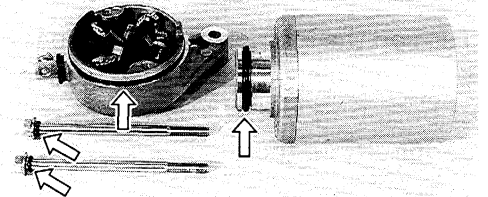
STARTER MOTOR REASSEMBLY

Reassemble the starter motor in the reverse order of disassembly. Pay attention to the following points:

O-RING

CAUTION

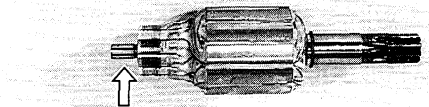
Replace the O-ring with new ones to prevent oil leakage and moisture.



ARMATURE

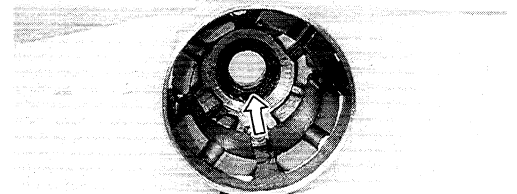
- Apply a small quantity of moly paste to the armature end.

 **99000-25140: SUZUKI MOLY PASTE**

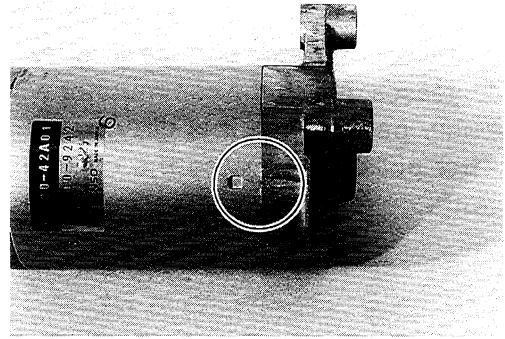


- Apply grease to the lip of oil seal.

 **99000-25030: SUZUKI SUPER GREASE "A"**

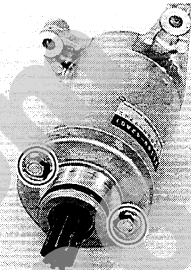


- When installing the starter motor housing to the brush holder, align the marks as shown in photo.



- Apply THREAD LOCK "1342" to the starter motor housing bolts and tighten them.


 **99000-32050: THREAD LOCK "1342"**



STARTER MOTOR RELAY INSPECTION

- Remove the seat. (Refer to page 5-1.)
- Disconnect the starter motor lead wire on the starter relay.


Turn on the ignition switch, inspect the continuity between the terminals, positive and negative, when pushing the starter button. If the starter motor relay is in sound condition, continuity is found.

 **09900-25002: Pocket tester**

 **Tester knob indication: X 1Ω range**

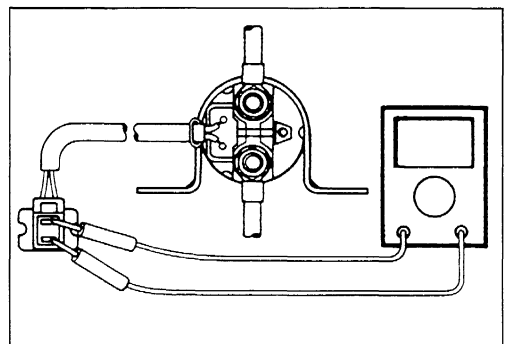
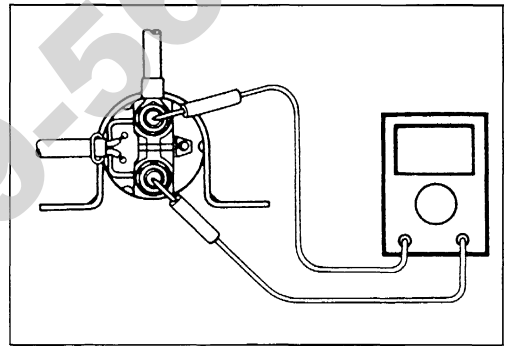
- Disconnect the starter motor relay lead wire coupler.

Measure the starter motor relay coil resistance between the lead wires with a pocket tester.

 **09900-25002: Pocket tester**

 **Tester knob indication: X 1Ω range**

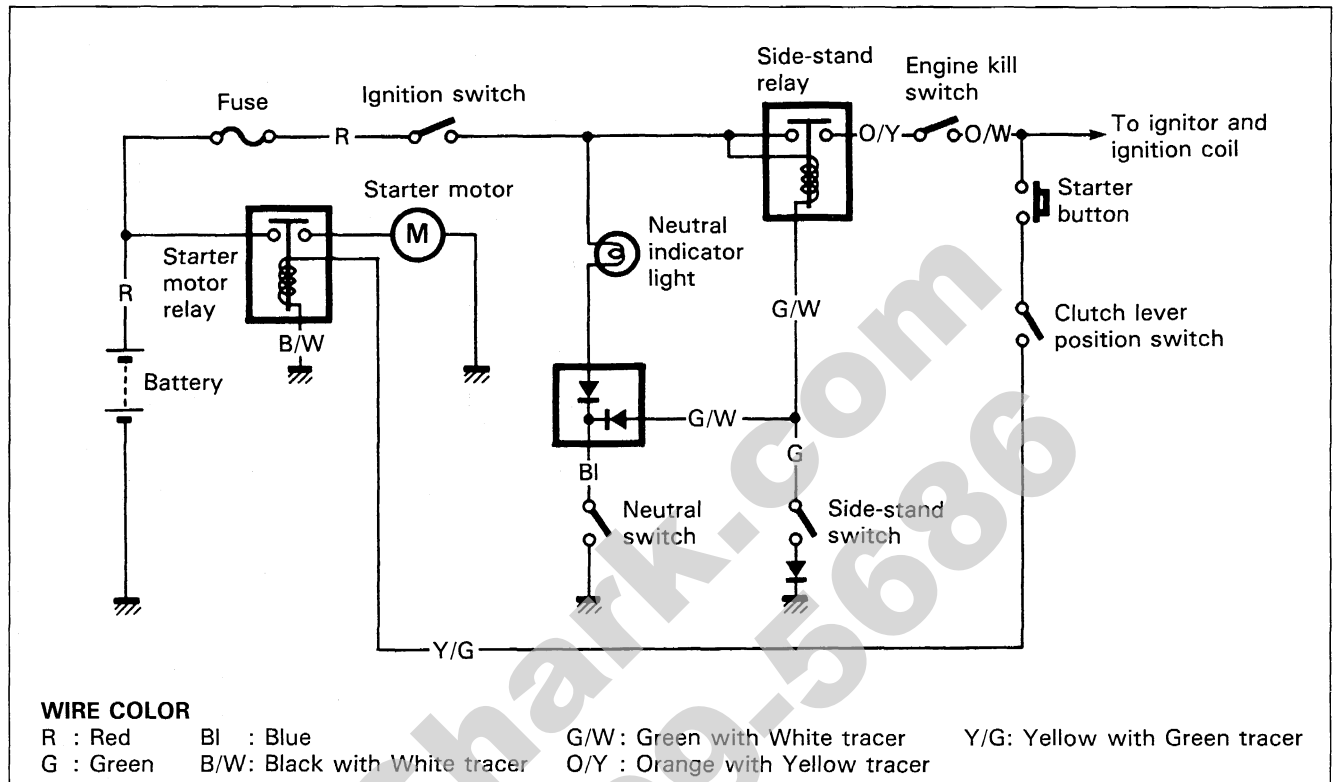
STD resistance: 2–6Ω



SIDE-STAND/IGNITION INTERLOCK SYSTEM

DESCRIPTION

This side-stand/ignition interlock system is to prevent starting the motorcycle with the side-stand left down. The system is operated by an electric circuit provided between the battery and ignition coil.

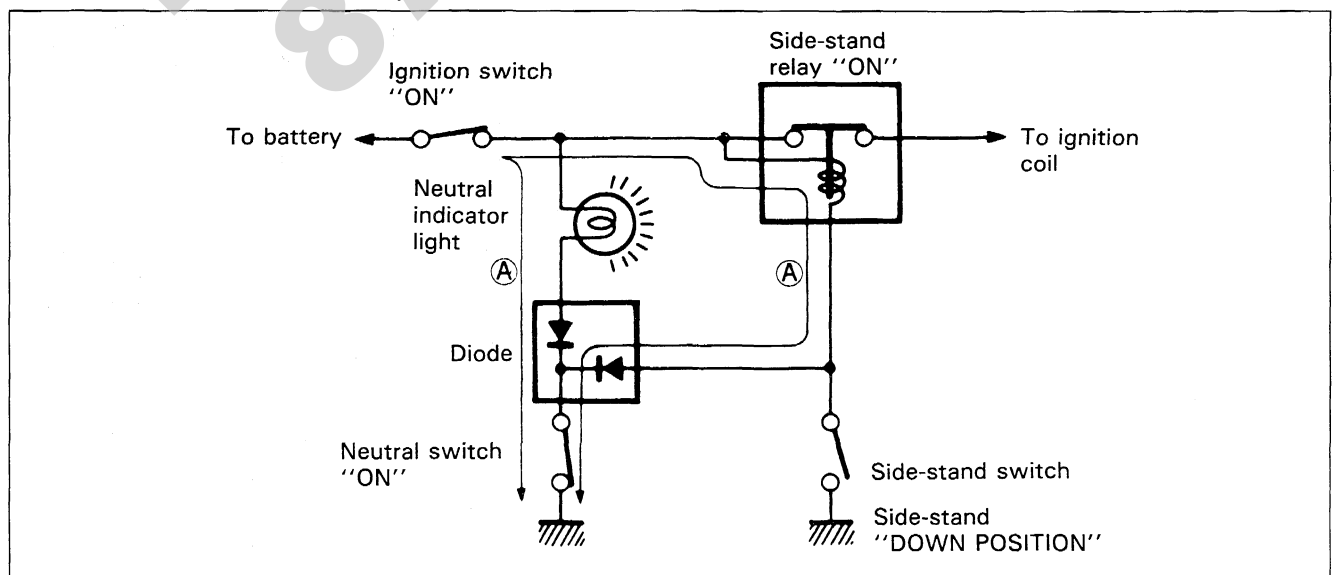


The circuit consists of relay, lamp, diode and switches and decides to live the ignition coil depending on the position of the TRANSMISSION and SIDE-STAND with the neutral and side-stand switches working mutually.

The ignition coil lives only in two situations as follows.

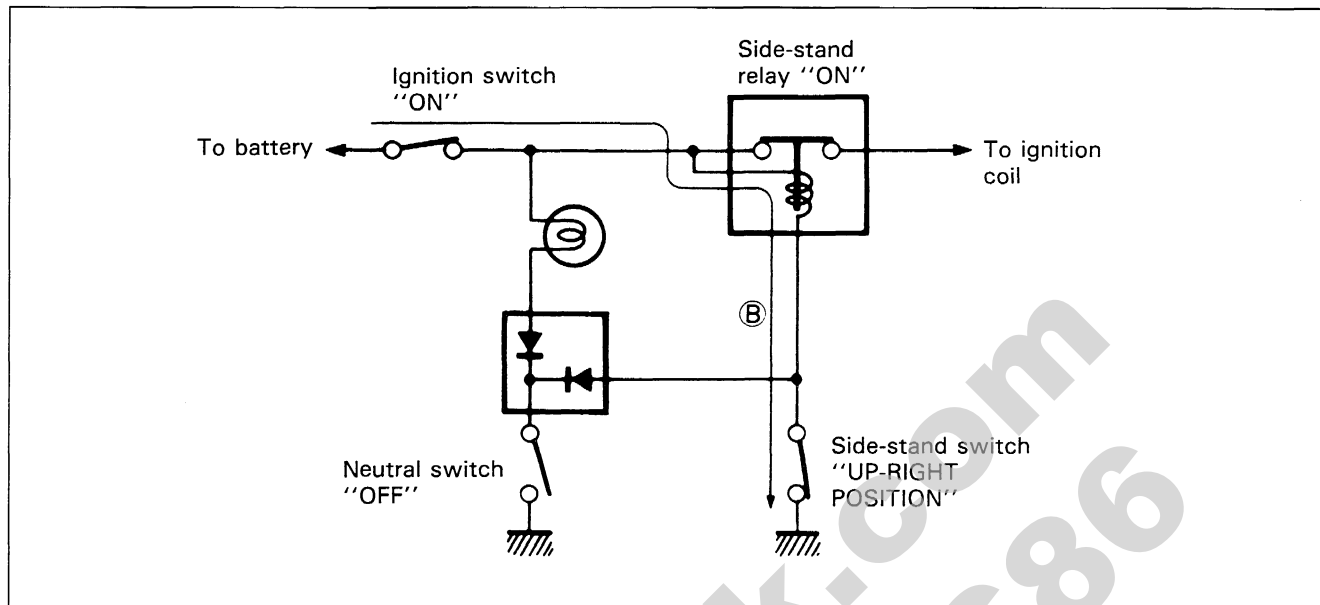
1. Transmission: "NEUTRAL (ON)" Side-stand: "DOWN (OFF)"

The current flow (A) turns "ON" the relay and the ignition coil lives even the side-stand is kept down. This is for warming up the engine.



2. Transmission: "Except NEUTRAL (OFF)", Side-stand: "UP-RIGHT (ON)"

The current flow (B) turns "ON" the relay and the ignition coil lives. The engine can be easily started at any transmission position.



INSPECTION

If the interlock system does not operate properly, check each component. If any abnormality is found, replace the component with a new one.

TOOL 09900-25002: Pocket tester

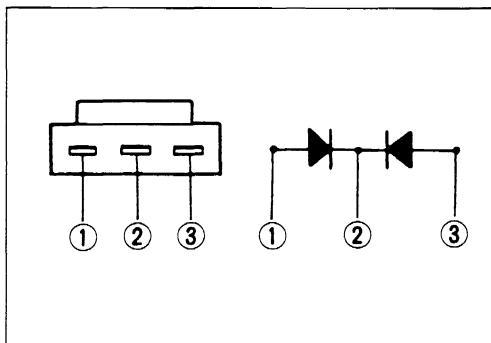
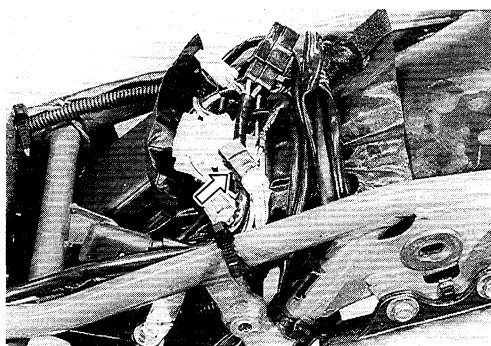
Diode

The diode is located under the seat.

The diode can pass current only in one direction.

- Check the continuity between ① and ② . If one way continuity the diode is in good condition.
- Also check the continuity between ② and ③ as required.

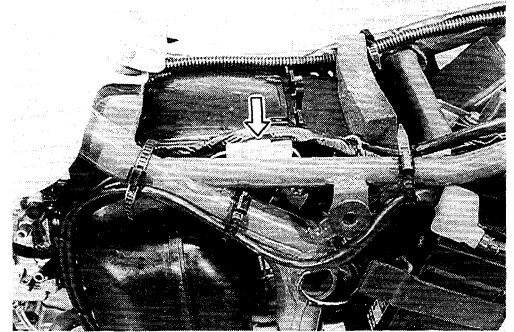
TOOL 09900-25002: Pocket tester



Neutral switch

The neutral lead wire coupler is located under the seat.

- Remove the seat.
- Disconnect the neutral switch lead wire coupler, and check the continuity between Blue lead wire and Ground with the transmission in "NEUTRAL".



Side-stand switch

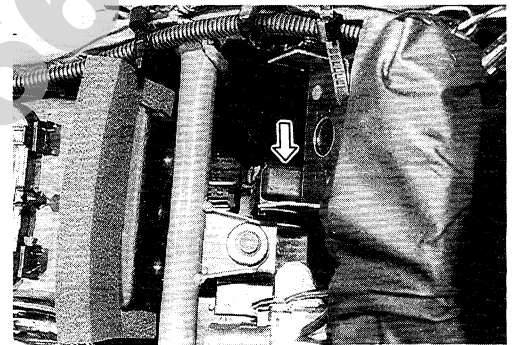
	Green	Black/White
ON (UP-right position)	○ ——— ○	○ ——— ○
OFF (Down position)		



Side-stand/ignition interlock relay


The side-stand/ignition interlock relay is located under the ignitor.

- Remove frame covers, seat and ignitor.

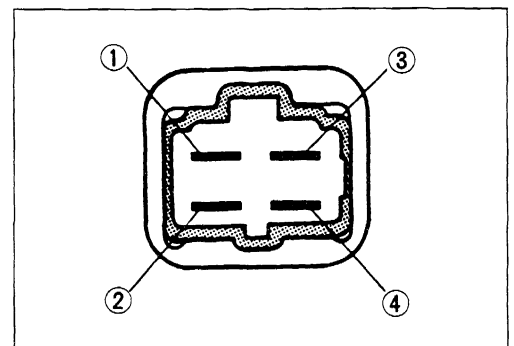


First, check the insulation between ① and ② terminals with pocket tester. Then apply 12 volts to ③ and ④ terminals, ⊕ to ③ and ⊖ to ④, and check the continuity between ① and ②.

If there is no continuity, replace it with a new one.

 **09900-25002: Pocket tester**

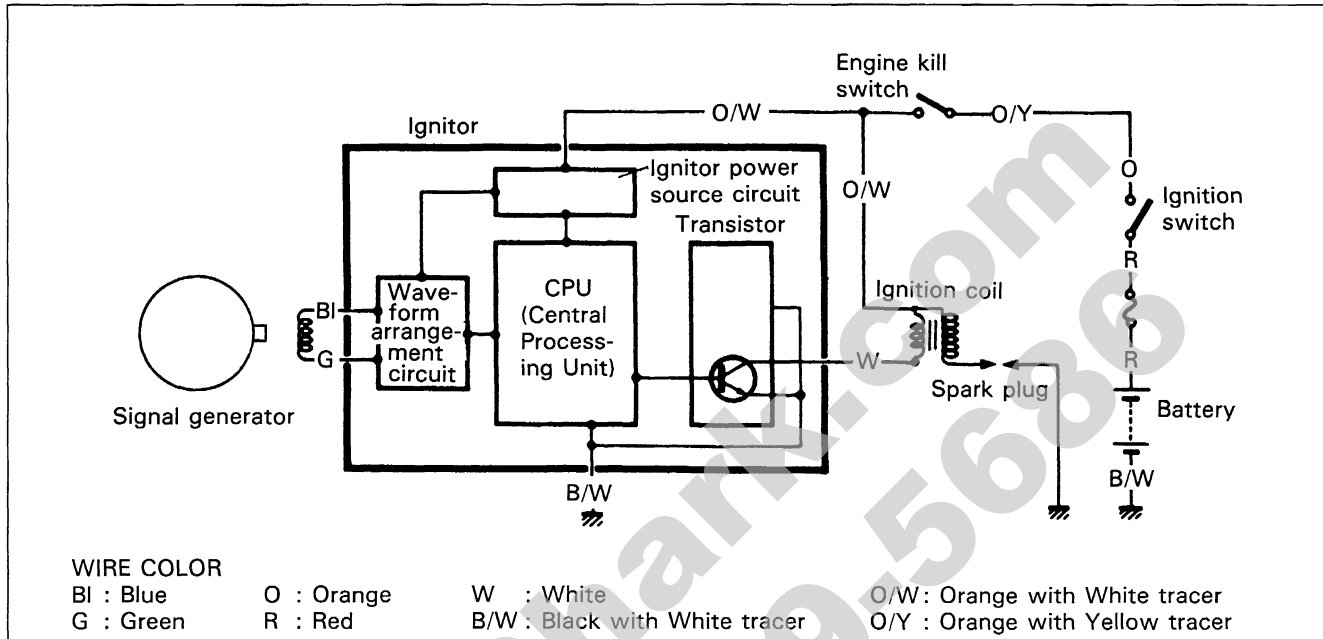
 **Tester knob indication: X 1Ω range**



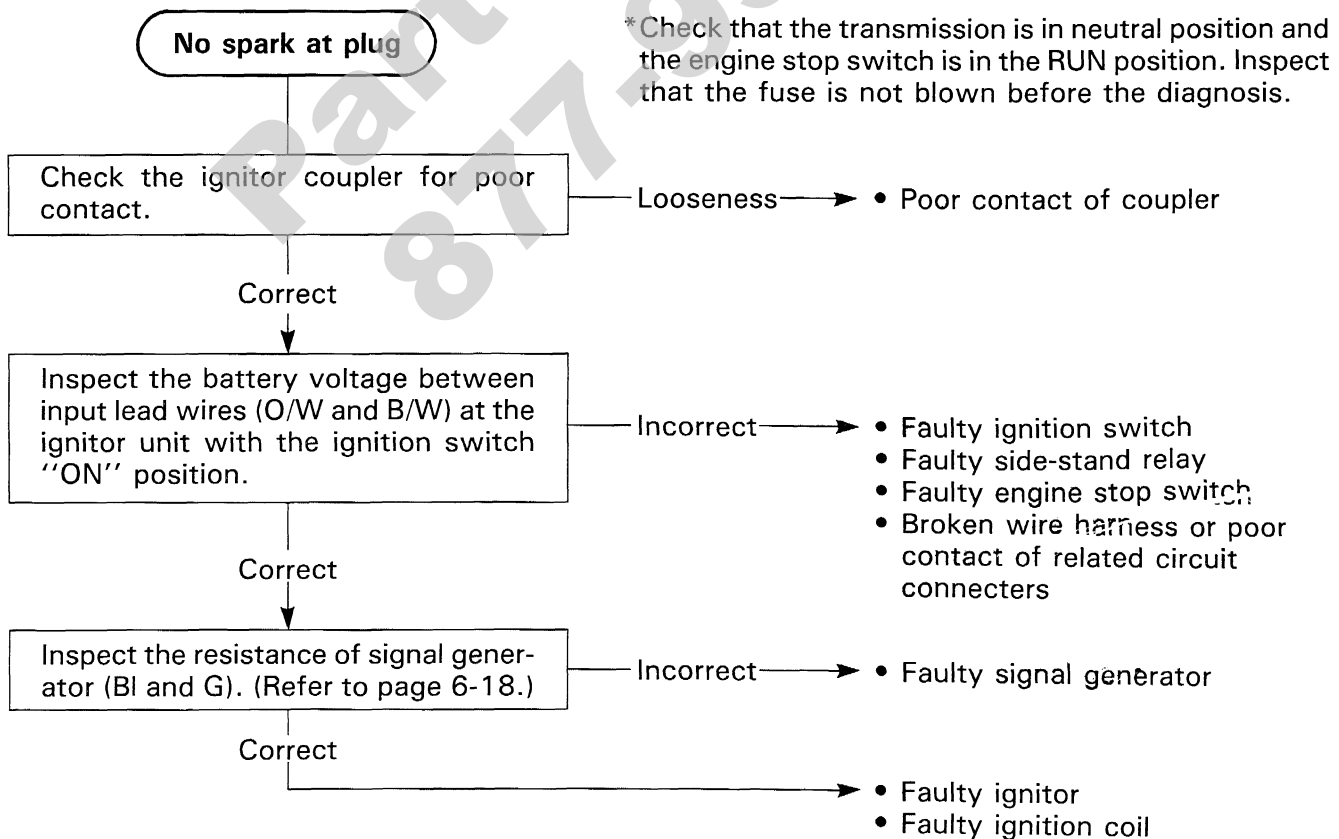
IGNITION SYSTEM

DESCRIPTION

In the electric ignition system, the electrical energy on the signal generator generated by the generator rotor tip flows to the ignitor unit. 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 gaps.



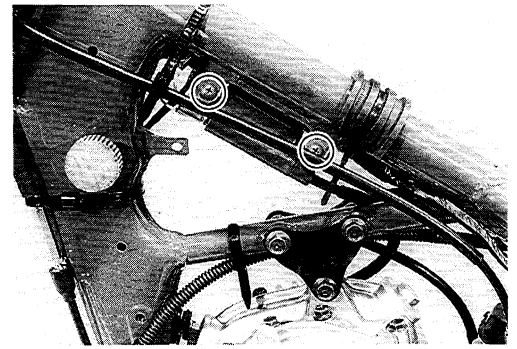
TROUBLESHOOTING



INSPECTION

IGNITION COIL (Checking with Pocket Tester)

- Remove the frame covers and seat. (Refer to page 5-1.)
- Remove the fuel tank. (Refer to page 4-1.)
- Disconnect the spark plug cap and lead wires.
- Remove the ignition coil.



Measure the ignition coil resistance with a pocket tester.

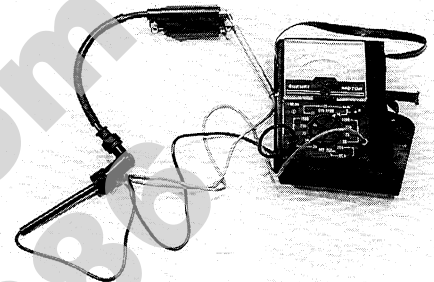
TOOL 09900-25002: Pocket tester

Tester knob indication: X 1 Ω range

Primary : 2–6 Ω (Terminal–Terminal)

Tester knob indication: x 1 k Ω range

Secondary: 20–30 k Ω (Plug cap–Terminal)



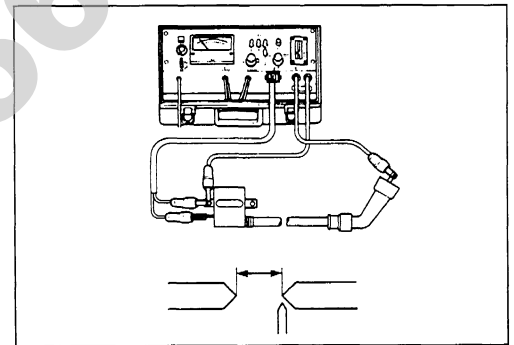
IGNITION COIL (Checking with Electro Tester)

- Remove the ignition coil.

Test the ignition coil for sparking performance.
Test connection is as indicated.

NOTE:

Make sure that the three-needle sparking distance of electro tester is set at 8 mm (0.3 in)



If no sparking or orange color sparking occurs in the above condition, it may be caused by defective coil.

TOOL 09900-28106: Electro tester

Spark performance: Over 8 mm (0.3 in)

SIGNAL GENERATOR COIL

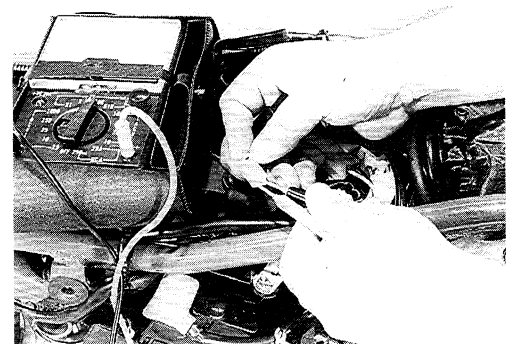
- Remove the frame covers and seat. (Refer to page 5-1.)
- Disconnect the signal generator lead wire coupler.

Measure the resistance between the lead wires with a pocket tester.

TOOL 09900-25002: Pocket tester

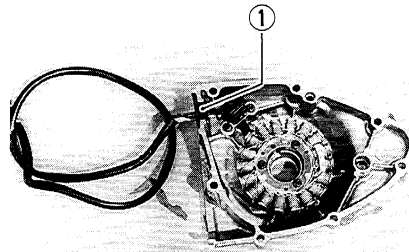
Tester knob indication: X 100 Ω range

Signal generator coil resistance: 100–140 Ω (G–BI)



CAUTION

BOND NO.1207B should be applied to the groove of generator lead wire grommet ①.



1207B 99104-31140: SUZUKI BOND NO.1207B

SPARK PLUG

- Remove the spark plug.

Carbon Deposit

Check to see the carbon deposit on the plug. If the carbon is deposited, remove it with a spark plug cleaner machine or carefully using a tool with a pointed end.

Spark Plug Gap

Measure the plug gap with a thickness gauge if it is correct. If not, adjust it to the following gap.

TOOL 09900-20803: Thickness gauge

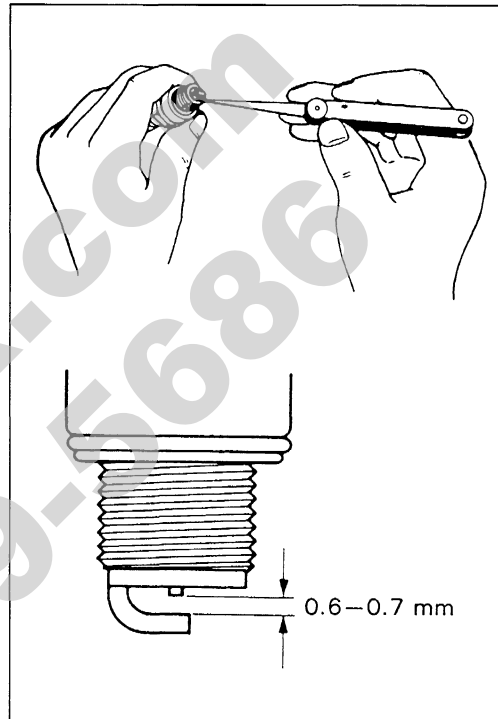
Spark plug gap (STD): 0.6—0.7 mm (0.024—0.028 in)

Electrode's Condition

Check to see a worn or burnt condition of the electrode. If it is extremely worn or burnt, replace the plug. Also replace the plug if it has a broken insulator, damaged thread, etc.

Heat Range

NGK or NIPPONDENSO should be used as the standard. However, the heat range of the spark plug should be selected to meet the requirements of speed, actual load, fuel and etc. Proper heat range would be indicated if insulator was LIGHT BROWN in color. If it is blacked white, it should be replaced by a cold type plug NGK DR9EA or NIPPONDENSO X27ESR-U and if blacked by carbon, by a hot type plug NGK DR7EA or NIPPONDENSO X22ESR-U.



	NGK	NIPPONDENSO
Hot type	DR7EA	X22ESR-U
Standard	DR8EA	X24ESR-U
Cold type	DR9EA	X27ESR-U

CAUTION


Confirm the thread size and reach when replacing the plug.

If the reach is too short, carbon will be deposited on the screw portion of the plug hole and engine damage may result.

IGNITOR UNIT (Checking with Digital Ignitor Checker)

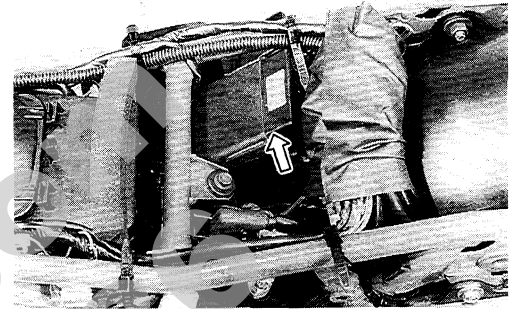
This section explains the checking procedure for the ignitor unit using Digital Ignitor Checker (special tool).

With this checker, the ignitor unit can be checked either on the machine or off the machine. The following explains the checking procedure on the machine.

-  **09931-94430: Digital ignitor checker**
09931-91710: MODE 4-B extension lead wire

WIRING PROCEDURE:

- Remove the frame covers and seat. (Refer to page 5-1.)
- Disconnect two ignitor lead wire couplers at the ignitor unit.
- Connect the ignitor checker lead wires ("MODE-4 ①" and "MODE 4-B ②") as shown in Fig. 1.
- Connect the power source leads ③ to the battery.

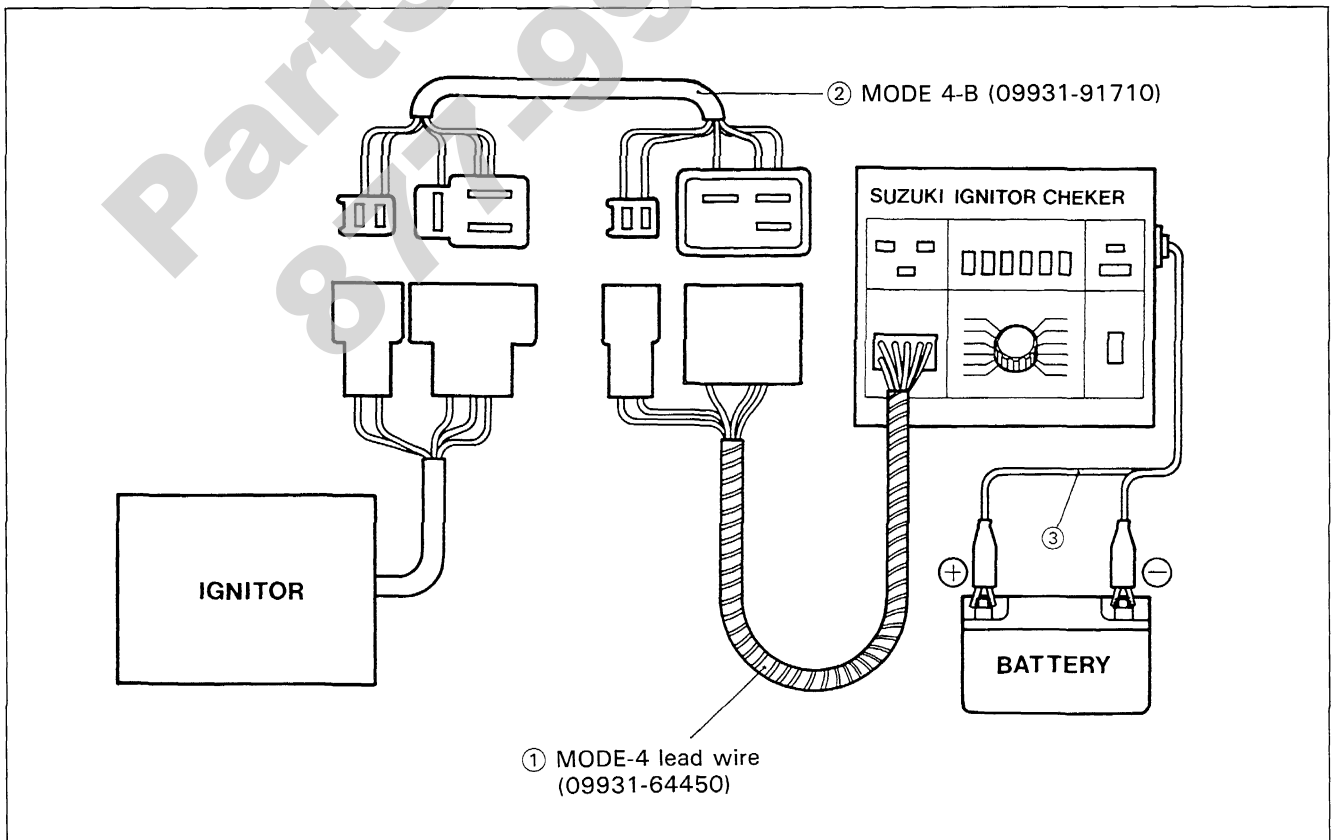
**CAUTION**

- * Be sure that the **BLACK** lead is connected to the battery \ominus terminal and **RED** lead to the \oplus terminal.
- * Before connecting the power source leads, make sure that both "POWER" button and "START" switch are in "off" position (POWER button not depressed).

NOTE:

Be sure that the battery used is in fully-charged condition.

Fig. 1

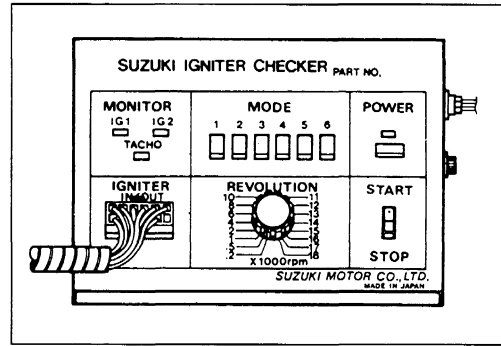


CHECK PROCEDURE:

With all the lead wires properly connected, check the ignitor unit in the following three steps.

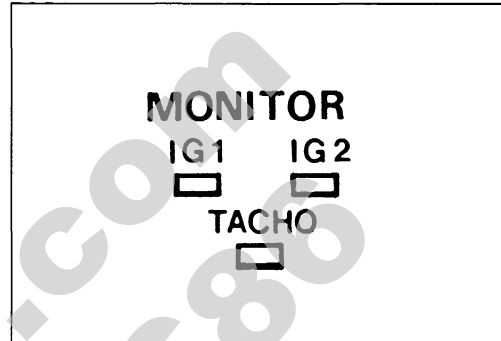
First Step:

Depress "MODE 4" button the "POWER" button. This time, "POWER" lamp should come on, if not, battery is undercharged.



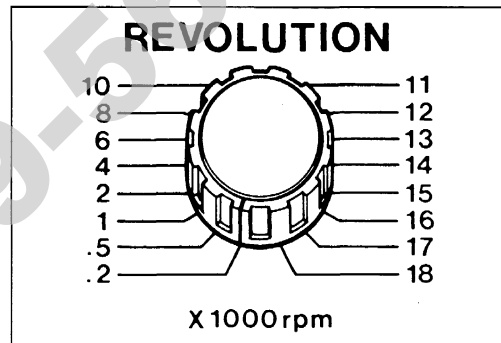
Second Step:

Set "REVOLUTION" dial pointer to ".2" position in which the checker produces the ignition primary current pulses simulating 200 r/min of engine revolution when "START" switch is turned on. With "START" switch turned to ON position, check "IG1" lamp of "MONITOR" turns on and off in slow frequency.



Third Step:

Turn "REVOLUTION" dial up gradually (assuming the engine gradually revved up) and check that the MONITOR lamp flash frequency as explained in the second step above increases. As the dial pointer passes beyond the graduation "2" (2 000 r/min), the lamp should show continuously lighted.



Fourth Step:

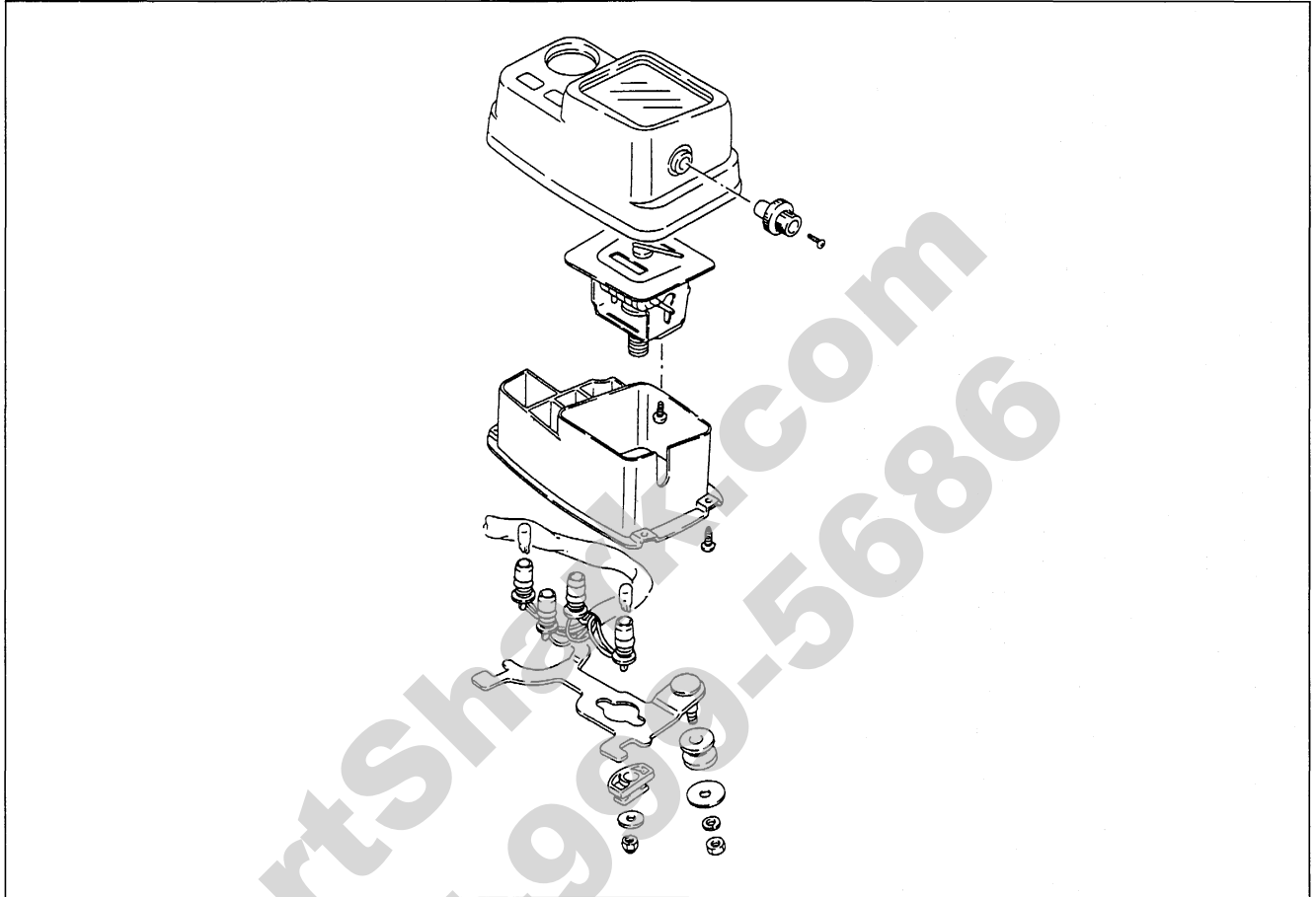
Turn "START" switch to STOP position. If the "IG1" lamp remain light more than 1 second, the ignitor unit must be replaced.

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SPEEDOMETER AND INDICATOR LIGHT


REMOVAL AND DISASSEMBLY

- Remove the speedometer. (Refer to page 5-22.)
- Disassemble the speedometer as follows.



INSPECTION

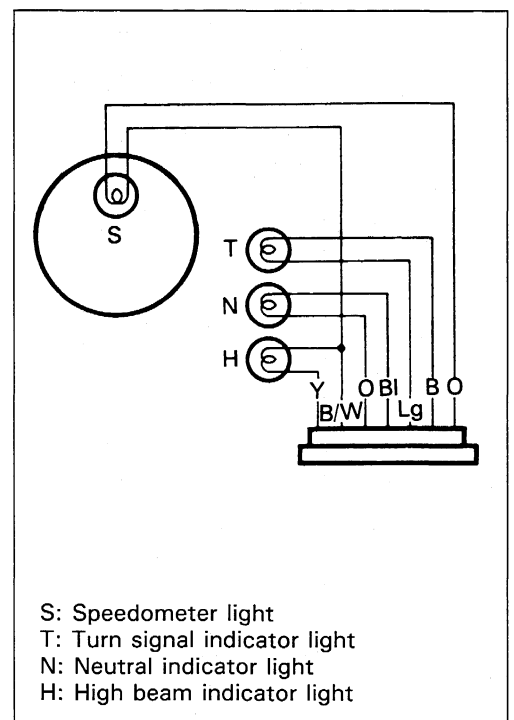
Check the continuity between lead wires in the diagram with a pocket tester. If the continuity measured is incorrect, replace the respective parts.

 **09900-25002: Pocket tester**

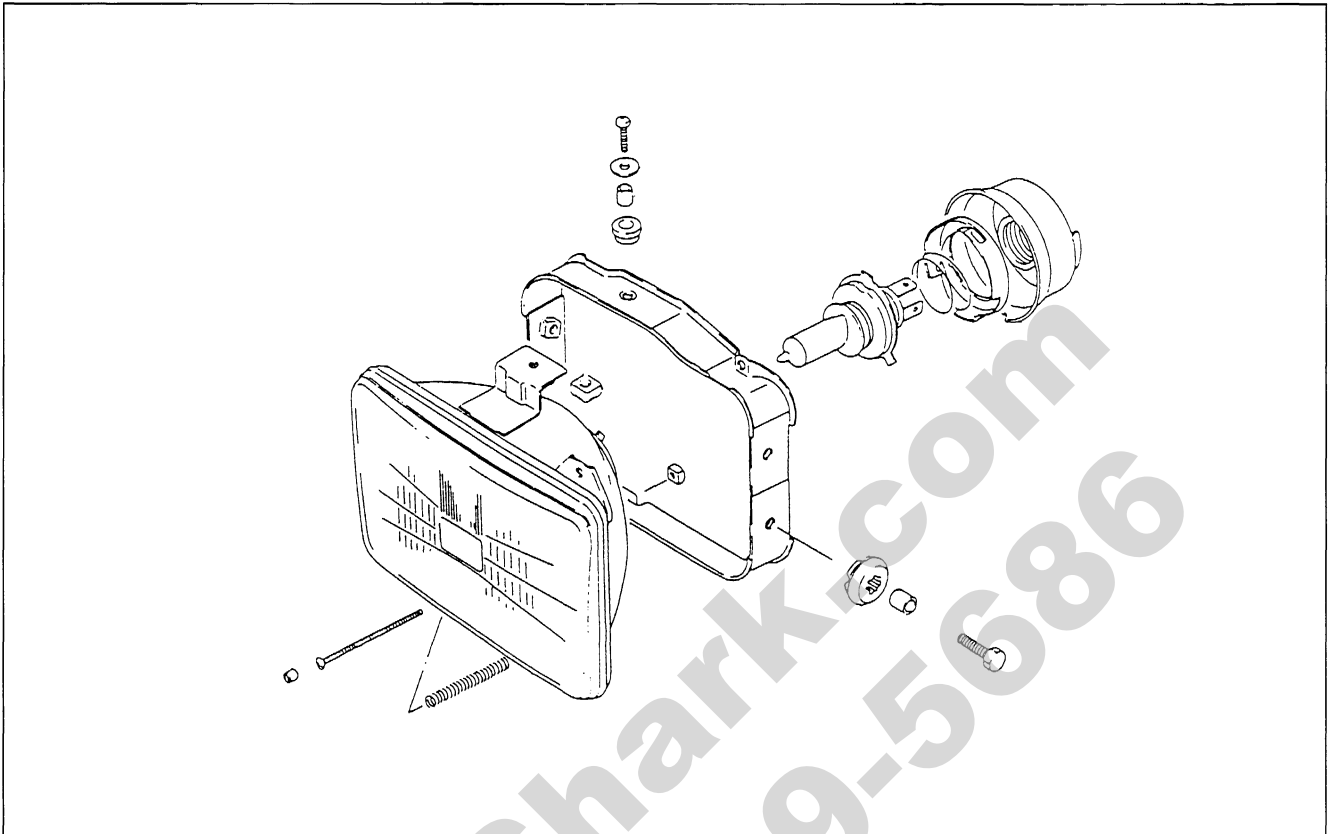
 **Tester knob indication: X 1Ω range**

NOTE:

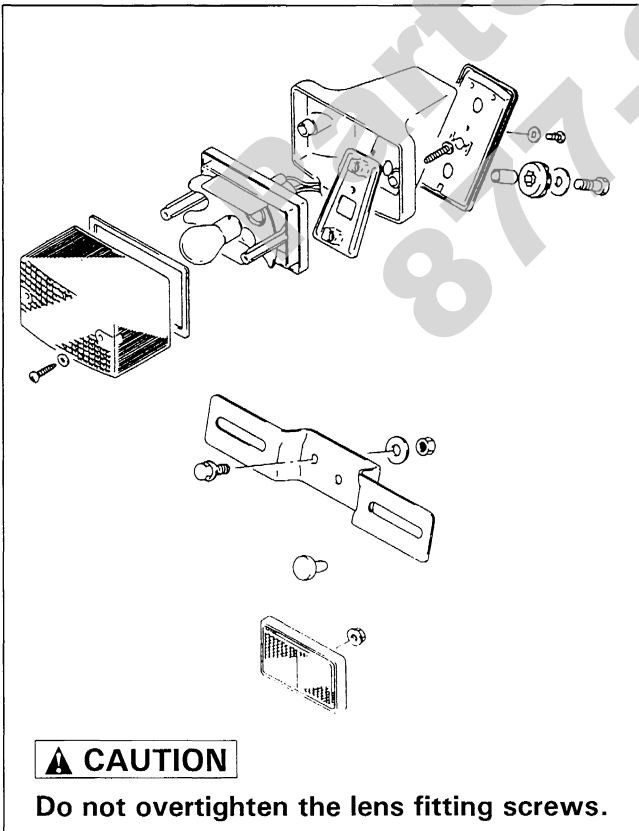
When making this test, it is not necessary to remove the speedometer.



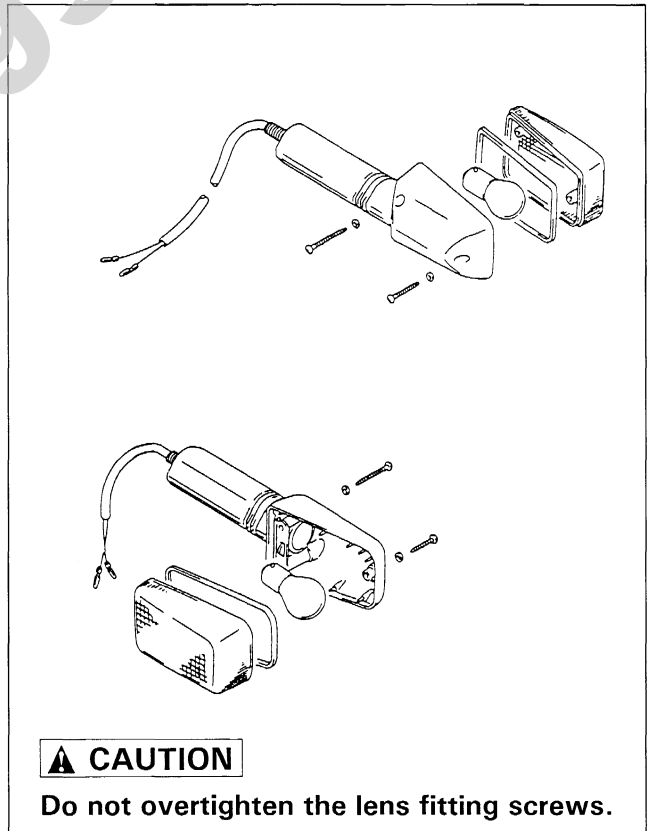
LAMPS HEADLIGHT



TAIL/BRAKE LIGHT




TURN SIGNAL LIGHT



SWITCHES

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

 **09900-25002: Pocket tester**

 **Tester knob indication: X 1Ω range**

IGNITION SWITCH

	R	O	Gr	Br
OFF				
ON	○	○	○	○
P	○			○

DIMMER SWITCH

	Y/W	W	Y
HI	○		○
LO	○	○	

TURN SIGNAL LIGHT SWITCH

	B	Lbl	Lg
L	○	○	
OFF (Push)			
R		○	○

ENGINE KILL SWITCH

	O	O/W
OFF		
RUN	○	○

STARTER BUTTON

	O/W	Y/G
OFF		
ON (Push)	○	○

CLUTCH LEVER POSITION SWITCH

	Y/G	Y/G
OFF		
ON	○	○

FRONT BRAKE LIGHT SWITCH

	O	B
OFF		
ON	○	○

REAR BRAKE LIGHT SWITCH

	O	W/B
OFF		
ON	○	○

NEUTRAL INDICATOR LIGHT SWITCH

	Bl	Ground
OFF		
ON	○	○

SIDE-STAND SWITCH

	G	B/W
OFF		
ON	○	○

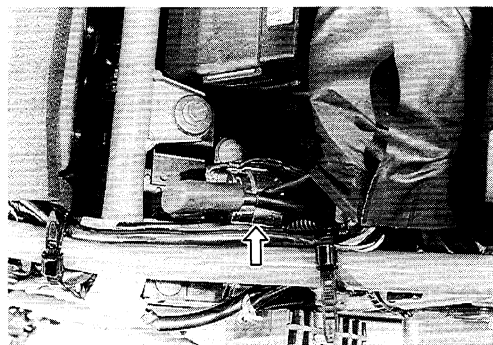
WIRE COLOR

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

RELAY

STARTER MOTOR RELAY

The starter motor relay is located under the seat.
Refer to page 6-13.



SIDE-STAND/IGNITION INTERLOCK RELAY

The side-stand/ignition interlock relay is located behind the right frame cover.
Refer to page 6-16.



TURN SIGNAL RELAY

The turn signal relay is located behind the right frame cover.
If the turn signal light does not light, inspect the bulb or repair the circuit connection.
If the bulb and circuit connection checked are correct, the turn signal relay may be faulty, replace it with a new one.

NOTE:

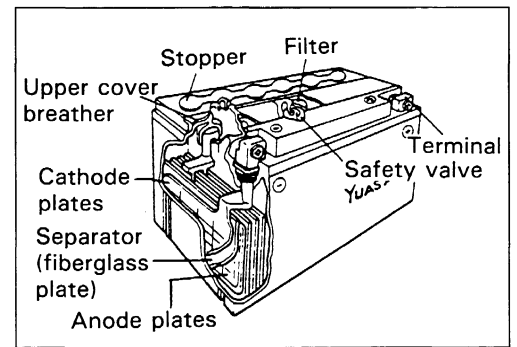
Be sure that the battery used is in full-charged condition.



BATTERY

SPECIFICATIONS

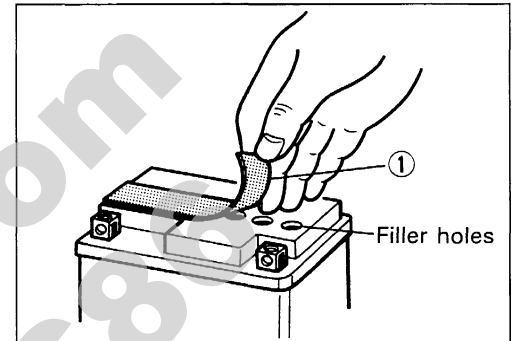
Type designation	YTX7L-BS
Capacity	12V, 21.6 kC (6 Ah)/10HR
Standard electrolyte S.G.	1.320 at 20°C (68°F)



INITIAL CHARGING

Filling electrolyte

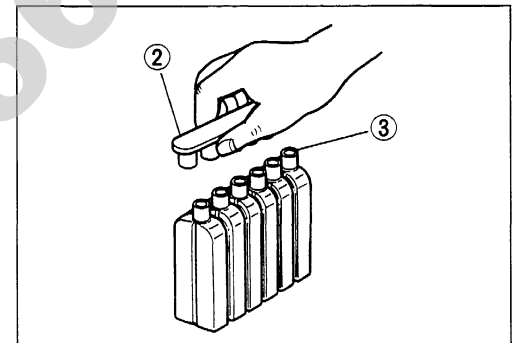
- Remove the aluminum tape ① sealing the battery electrolyte filler holes.



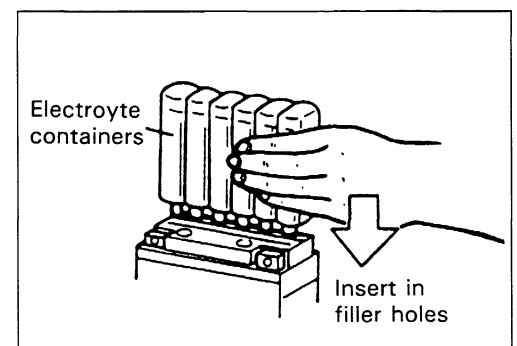
- Remove the caps ②.

NOTE:

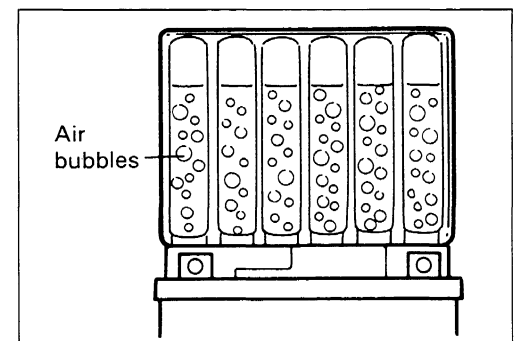
- * After filling the electrolyte completely, use the removed cap ② as the sealed caps of battery-filler holes.
- * Do not remove or pierce the sealed areas ③ of the electrolyte container.



- Insert the nozzle of the electrolyte container into the battery's electrolyte filler holes, holding the container firmly so that it does not fall. Take precaution not to allow any of the fluid to spill.

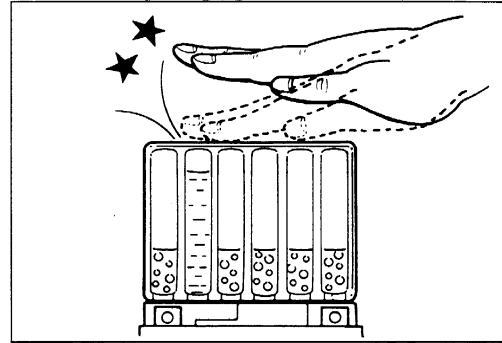


- Make sure air bubbles are coming up each electrolyte container, and leave in this position for about more than 20 minutes.

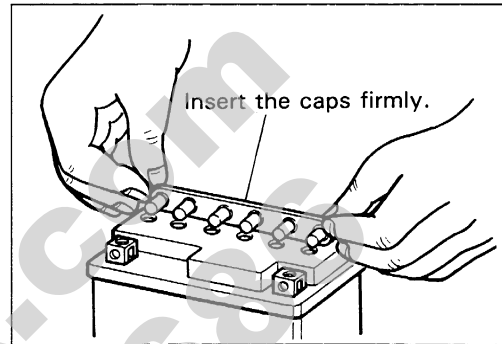


NOTE:

If no air bubbles are coming up from a filler port, tap the bottom of the container two or three times. Never remove the container from the battery.



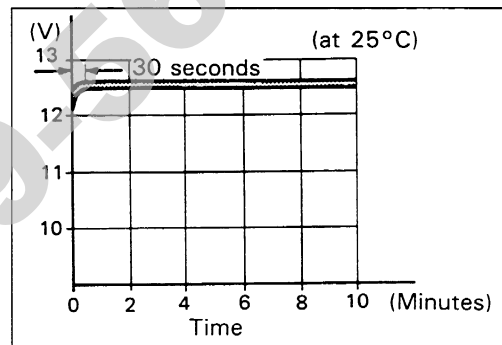
- After confirming that the electrolyte has entered the battery completely, remove the electrolyte containers from the battery. Wait for around 20 minutes.
- Insert the caps into the filler holes, pressing in firmly so that the top of the caps do not protrude above the upper surface of the battery's top cover.



CAUTION

- * Never use anything except the specified battery.
- * Once install the caps to the battery; do not remove the caps.

- Using SUZUKI pocket tester, measure the battery voltage. The tester should indicate more than 12.5V (DC) as shown in the Fig. If the battery voltage is lower than the specification, charge the battery with a battery charger. (Refer to the recharging operation on page 6-28.)



NOTE:

Initial charging for a new battery is recommended if two years have elapsed since the date of manufacture.

SERVICING

Visually inspect the surface of the battery container. If any signs of cracking or electrolyte leakage from the sides of the battery have occurred, replace the battery with a new one. If the battery terminals are found to be coated with rust or an acidic white powdery substance, then this can be cleaned away with sandpaper.

RECHARGING OPERATION

- Using the pocket tester, check the battery voltage. If the voltage reading is less than the 12.0V (DC), recharge the battery with a battery charger.

⚠ CAUTION

When recharging the battery, remove the battery from the motorcycle.

NOTE:

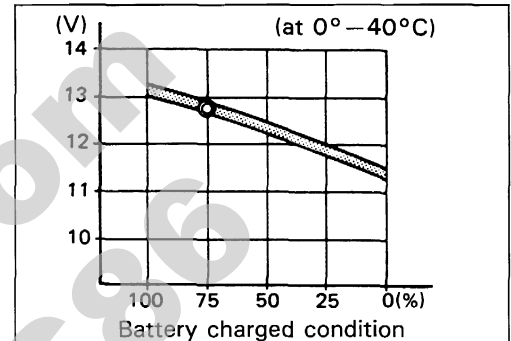
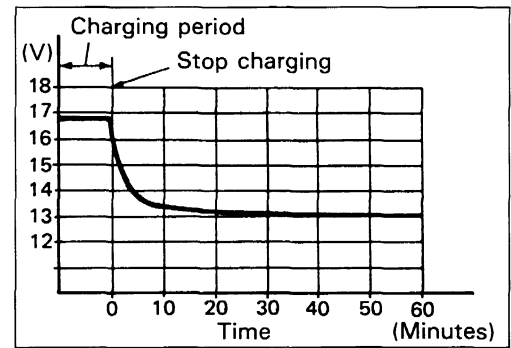
Do not remove the stoppers on the battery top while recharging.

Recharging time: 0.7A for 5 hours or 3A for one hour

⚠ CAUTION

Be careful not to permit the charging current to exceed 3A at any time.

- After recharging, wait for more than 30 minutes and check the battery voltage with a pocket tester.
- If the battery voltage is less than the 12.5V recharge the battery again.
- If battery voltage is still less than 12.5V after recharging, replace the battery with a new one.
- When a battery is left for a long term without using, it is subject to discharge. When the motorcycle is not used for more than 1 month (especially during the winter season), check the battery voltage once a month at least.



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SERVICING INFORMATION

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TROUBLESHOOTING

ENGINE

Complaint	Symptom and possible causes	Remedy
<p>Engine will not start, or is hard to start.</p>	<p>Compression too low</p> <ol style="list-style-type: none"> 1. Out of adjustment valve clearance. 2. Worn valve guides or poor seating of valves. 3. Mistiming valves. 4. Excessively worn piston rings. 5. Worn-down cylinder bore. 6. Too slowly starter motor cranks. 7. Poor seating of spark plug. <p>Plug not sparking</p> <ol style="list-style-type: none"> 1. Fouled spark plug. 2. Wet spark plug. 3. Defective signal generator or ignitor unit. 4. Defective ignition coil. 5. Open or short in high-tension cord. <p>No fuel reaching the carburetor</p> <ol style="list-style-type: none"> 1. Clogged fuel tank vent hose. 2. Clogged or defective fuel valve. 3. Defective carburetor needle valve. 4. Clogged fuel hose or fuel filter. 	<p>Adjust. Repair or replace. Adjust. Replace. Replace or rebore. See electrical section. Retighten.</p> <p>Clean or replace. Clean and dry. Replace. Replace. Replace.</p> <p>Clean. Clean or replace. Replace. Clean or replace.</p>
<p>Engine stalls easily.</p>	<ol style="list-style-type: none"> 1. Fouled spark plug. 2. Defective signal generator or ignitor unit. 3. Clogged fuel hose. 4. Clogged jets in carburetor. 5. Out of adjustment valve clearance. 	<p>Clean. Replace. Clean. Clean. Adjust.</p>
<p>Noisy engine.</p>	<p>Excessive valve chatter</p> <ol style="list-style-type: none"> 1. Too large valve clearance. 2. Weakened or broken valve springs. 3. Worn down rocker arm or rocker arm shaft. <p>Noise seems to come from piston</p> <ol style="list-style-type: none"> 1. Worn down piston or cylinder. 2. Fouled with carbon combustion chamber. 3. Worn piston or piston pin bore. 4. Worn piston rings or ring groove. <p>Noise seems to come from timing chain</p> <ol style="list-style-type: none"> 1. Stretched chain. 2. Worn sprockets. 3. Not working tension adjuster. <p>Noise seems to come from clutch</p> <ol style="list-style-type: none"> 1. Worn splines of countershaft or hub. 2. Worn teeth of clutch plates. 3. Distorted clutch plates, driven and drive. 4. Worn clutch release bearing. 5. Weakened clutch dampers. <p>Noise seems to come from crankshaft</p> <ol style="list-style-type: none"> 1. Worn or burnt bearings. 2. Worn or burnt big-end bearing. 3. Too large thrust clearance. 	<p>Adjust. Replace. Replace.</p> <p>Replace. Clean. Replace. Replace.</p> <p>Replace. Replace. Repair or replace.</p> <p>Replace. Replace. Replace. Replace. Replace the primary driven gear.</p> <p>Replace. Replace. Replace.</p>

Complaint	Symptom and possible causes	Remedy
Noisy engine.	Noise seems to come from transmission 1. Worn or rubbing gears. 2. Badly worn splines. 3. Worn or rubbing primary gears. 4. Badly worn bearings.	Replace. Replace. Replace. Replace.
Slipping clutch.	1. Out of adjustment or loss of play clutch control. 2. Weakened clutch springs. 3. Worn or distorted pressure plate. 4. Distorted clutch plates, driven and drive.	Adjust. Replace. Replace. Replace.
Dragging clutch.	1. Out of adjustment or too much play clutch control. 2. Some clutch springs weakened. 3. Distorted pressure plate or clutch plates.	Adjust. Replace. Replace.
Transmission will not shift	1. Broken gearshift cam. 2. Distorted gearshift forks. 3. Worn gearshift pawl.	Replace. Replace. Replace.
Transmission will not shift back.	1. Broken return spring on shift shaft. 2. Rubbing or sticky shift shaft. 3. Distorted or worn gearshift forks.	Replace. Repair. Replace.
Transmission jumps out of gear.	1. Worn shifting gears on driveshaft or countershaft. 2. Distorted or worn gearshift forks. 3. Weakened cam stopper spring of gearshift cam. 4. Worn gearshift pawl.	Replace. Replace. Replace. Replace.
Engine idles poorly.	1. Out of adjustment valve clearance. 2. Poor seating of valves. 3. Defective valve guides. 4. Worn rocker arms or arm shafts. 5. Defective ignition coil. 6. Defective signal generator or ignitor unit. 7. Too wide spark plug gap. 8. Defective ignition coil resulting in weak sparking. 9. Out of adjustment in carburetor float chamber fuel level. 10. Clogged jets in carburetor.	Adjust. Replace. Replace. Replace. Replace. Replace. Adjust or replace. Replace. Adjust. Clean.
Engine runs poorly in high speed range.	1. Weakened valve springs. 2. Out of adjustment valve timing. 3. Worn cams or rocker arms. 4. Too narrow spark plug gap 5. Defective ignition coil. 6. Defective signal generator or ignitor unit. 7. Ignition not advanced sufficiently due to poorly working timing advance circuit. 8. Too low float chamber fuel level. 9. Clogged air cleaner element. 10. Clogged fuel hose, resulting in inadequate fuel supply to carburetor.	Replace. Adjust. Replace. Adjust or replace. Replace. Replace. Replace ignitor unit. Adjust. Clean or replace. Clean and prime.

7-3 SERVICING INFORMATION

Complaint	Symptom and possible causes	Remedy
Dirty or heavy exhaust smoke.	<ol style="list-style-type: none"> 1. Too much engine oil in the engine. 2. Worn piston rings or cylinder. 3. Worn valve guides. 4. Scored or scuffed cylinder wall. 5. Worn valve stems. 6. Defective stem seals. 7. Worn oil ring or side rails. 	<p>Check with inspection window, drain out excess oil.</p> <p>Replace.</p> <p>Replace.</p> <p>Rebore or replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p>
Engine lacks power.	<ol style="list-style-type: none"> 1. Loss of valve clearance. 2. Weakened valve springs. 3. Out of adjustment valve timing. 4. Worn piston rings or cylinder. 5. Poor seating of valves. 6. Fouled spark plug. 7. Worn rocker arms or shafts. 8. Spark plug gap incorrect. 9. Clogged jets in carburetor. 10. Out of adjustment float-chamber fuel level. 11. Clogged air cleaner element. 12. Too much engine oil in the engine. 13. Sucking air from intake pipe. 	<p>Adjust.</p> <p>Replace.</p> <p>Adjust.</p> <p>Replace.</p> <p>Repair.</p> <p>Clean or replace.</p> <p>Replace.</p> <p>Adjust or replace.</p> <p>Clean.</p> <p>Clean.</p> <p>Adjust.</p> <p>Clean.</p> <p>Drain out excess oil.</p> <p>Retighten or replace.</p>
Engine overheats.	<ol style="list-style-type: none"> 1. Heavy carbon deposit on piston crown. 2. Not enough oil in the engine. 3. Defective oil pump or clogged oil circuit. 4. Too low in float chamber fuel level. 5. Sucking air from intake pipe. 6. Use of incorrect engine oil. 	<p>Clean.</p> <p>Add oil.</p> <p>Repair or clean.</p> <p>Adjust.</p> <p>Retighten or replace.</p> <p>Change.</p>

CARBURETOR

Complaint	Symptom and possible causes	Remedy
Trouble with starting.	<ol style="list-style-type: none"> 1. Clogged starter jet. 2. Clogged starter pipe. 3. Air leaking from a joint between starter body and carburetor. 4. Not operating properly starter plunger. 	<p>Clean.</p> <p>Clean.</p> <p>Check starter body and carburetor for tightness, adjust and replace gasket.</p> <p>Check and adjust.</p>
Idling or low-speed trouble.	<ol style="list-style-type: none"> 1. Clogged or loose pilot jet, pilot air jet. 2. Clogged pilot outlet or by-pass. 3. Not fully closed starter plunger. 	<p>Check and clean.</p> <p>Check and clean.</p> <p>Check and adjust.</p>
Medium- or high-speed trouble.	<ol style="list-style-type: none"> 1. Clogged main jet or main air jet. 2. Clogged needle jet. 3. Not operating properly throttle valve. 4. Clogged fuel filter. 	<p>Check and clean.</p> <p>Check and clean.</p> <p>Check throttle valve for operation.</p> <p>Check and clean.</p>
Overflow and fuel level fluctuations.	<ol style="list-style-type: none"> 1. Worn or damaged needle valve. 2. Broken spring in needle valve. 3. Not working properly float. 4. Foreign matter has adhered to needle valve. 5. Too high or low fuel level. 	<p>Replace.</p> <p>Replace.</p> <p>Check and adjust.</p> <p>Clean.</p> <p>Adjust float height.</p>

ELECTRICAL

Complaint	Symptom and possible causes	Remedy
No sparking or poor sparking.	<ol style="list-style-type: none"> 1. Defective ignition coil. 2. Defective spark plug. 3. Defective signal generator or ignitor unit. 	Replace. Replace. Replace.
Spark plug soon becomes fouled with carbon.	<ol style="list-style-type: none"> 1. Mixture too rich. 2. Idling speed set too high. 3. Incorrect gasoline. 4. Dirty element in air cleaner. 5. Too cold spark plug. 	Adjust carburetor. Adjust carburetor. Change. Clean. Replace by hot type plug.
Spark plug becomes fouled with oil.	<ol style="list-style-type: none"> 1. Worn piston rings. 2. Worn piston or cylinder. 3. Excessive clearance of valve stems in valve guides. 4. Worn stem oil seals. 	Replace. Replace. Replace. Replace.
Spark plug electrodes overheat or burn.	<ol style="list-style-type: none"> 1. Too hot spark plug. 2. Overheated engine. 3. Loose spark plug. 4. Too lean mixture. 	Replace with cold type plug. Tune up. Retighten. Adjust carburetor.
Generator does not charge.	<ol style="list-style-type: none"> 1. Open or short lead wires, or loose lead connections. 2. Shorted, grounded or open generator coils. 3. Shorted or punctured regulator/rectifier. 	Repair, replace or retighten. Replace. Replace.
Generator does charge, but charging rate is below the specification.	<ol style="list-style-type: none"> 1. Lead wires tend to get shorted or open-circuited or loosely connected at terminals. 2. Grounded or open-circuited stator coils. 3. Defective regulator/rectifier. 4. Defective cell plates in the battery. 	Repair or retighten. Replace. Replace. Replace the battery.
Generator overcharges.	<ol style="list-style-type: none"> 1. Internal short-circuit in the battery. 2. Damaged or defective resistor element in the regulator/rectifier. 3. Poorly grounded regulator/rectifier. 	Replace the battery. Replace the regulator/rectifier. Clean and tighten grounded connection.
Unstable charging.	<ol style="list-style-type: none"> 1. Lead wire insulation frayed due to vibration, resulting in intermittent shorting. 2. Internally shorted generator. 3. Defective regulator/rectifier. 	Repair or replace. Replace. Replace.
Starter button is not effective.	<ol style="list-style-type: none"> 1. Run down battery. 2. Defective switch contacts. 3. Not seating properly brushes on commutator in starter motor. 4. Defective starter relay/starter interlock switch. 	Repair or replace. Replace. Repair or replace. Replace.

BATTERY

Complaint	Symptom and possible causes	Remedy
“Sulfation”, acidic while powdery substance or spots on surfaces of cell plates.	<ol style="list-style-type: none"> 1. Cracked battery case. 2. Battery has been left in a run-down condition for a long time. 	<p>Replace the battery.</p> <p>Replace the battery.</p>
Battery run down quickly.	<ol style="list-style-type: none"> 1. Not correct the charging system. 2. Cell plates have lost much of their active material as a result of overcharging. 3. A short-circuit condition exists within the battery. 4. Too low battery voltage. 5. Too old battery. 	<p>Check the generator, regulator/rectifier and circuit connections and make necessary adjustments to obtain specified charging operation.</p> <p>Replace the battery, and correct the charging system.</p> <p>Replace the battery.</p> <p>Recharge the battery fully.</p> <p>Replace the battery.</p>
Battery “sulfation”.	<ol style="list-style-type: none"> 1. Too low or too high charging rate. (When not in use batteries should be checked at least once a month to avoid sulfation.) 2. Left unused the battery for too long in cold climate. 	<p>Replace the battery.</p> <p>Replace the battery, if badly sulfated.</p>
Battery discharges too rapidly.	Dirty container top and sides.	Clean.

CHASSIS

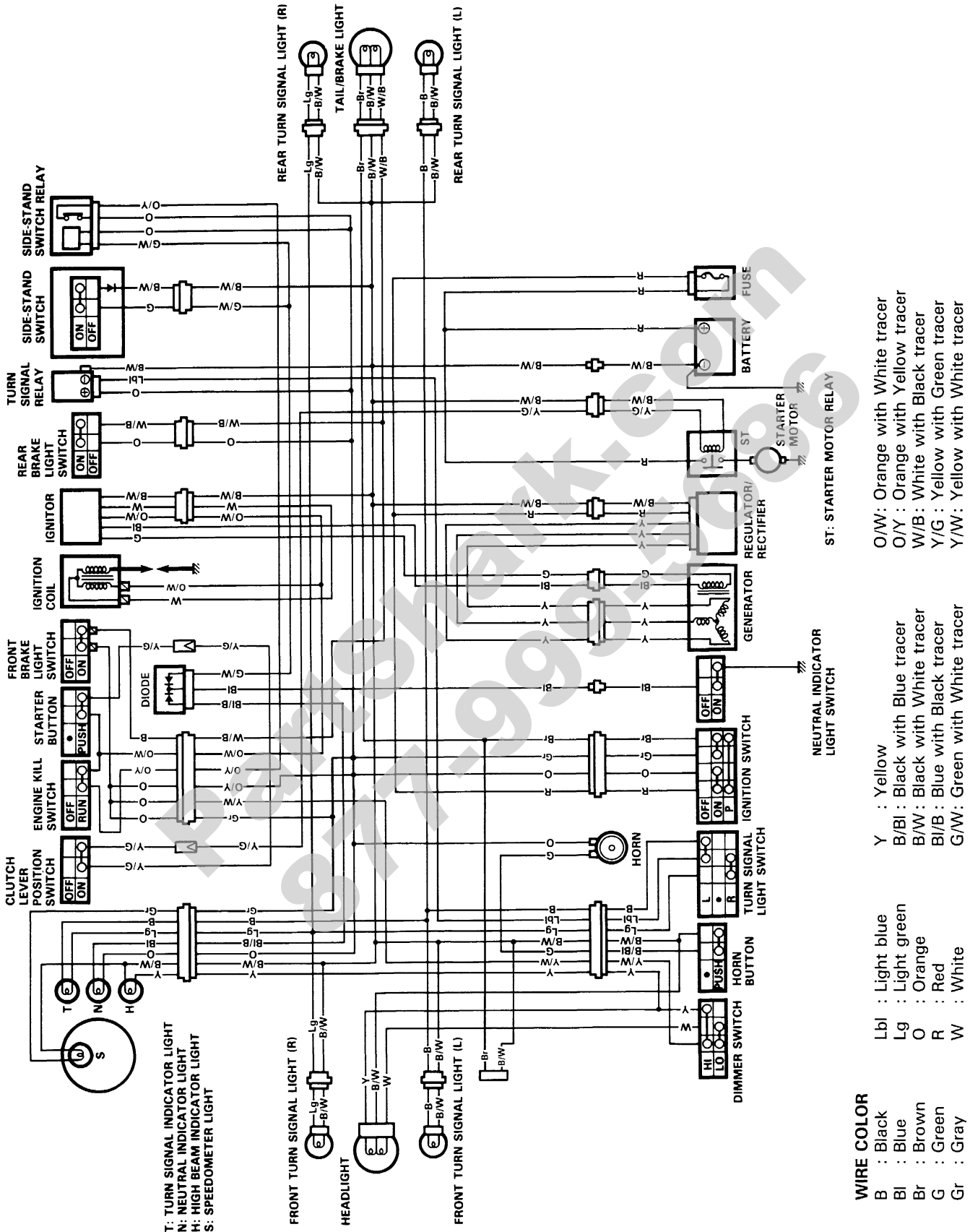
Complaint	Symptom and possible causes	Remedy
Heavy steering.	<ol style="list-style-type: none"> 1. Overtightened steering stem nut. 2. Broken bearing in steering stem. 3. Distorted steering stem. 4. Not enough pressure in tires. 	<p>Adjust.</p> <p>Replace.</p> <p>Replace.</p> <p>Adjust.</p>
Wobbly handlebars.	<ol style="list-style-type: none"> 1. Loss of balance between right and left front forks. 2. Distorted front fork. 3. Distorted front axle or crooked tire. 	<p>Replace.</p> <p>Repair or replace.</p> <p>Replace.</p>
Wobbly front wheel.	<ol style="list-style-type: none"> 1. Distorted wheel rim. 2. Worn-down front wheel bearings. 3. Defective or incorrect tire. 4. Loose axle nut 5. Incorrect front fork oil level. 	<p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Retighten.</p> <p>Adjust.</p>
Front suspension too soft.	<ol style="list-style-type: none"> 1. Weakened springs. 2. Not enough fork oil. 	<p>Replace.</p> <p>Replenish.</p>
Front suspension too stiff.	<ol style="list-style-type: none"> 1. Too viscous fork oil. 2. Too much fork oil. 	<p>Replace.</p> <p>Drain excess oil.</p>
Noisy front suspension.	<ol style="list-style-type: none"> 1. Not enough fork oil. 2. Loose bolts or nuts on suspension. 	<p>Replenish.</p> <p>Retighten.</p>
Wobbly rear wheel.	<ol style="list-style-type: none"> 1. Distorted wheel rim. 2. Worn-down rear wheel bearings or swingarm bushings. 3. Defective or incorrect tire. 4. Worn swingarm and rear cushion related bearings. 5. Loose nuts or bolts on rear suspension. 6. Loose axle nut. 	<p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Retighten.</p> <p>Retighten.</p>

Complaint	Symptom and possible causes	Remedy
Rear suspension too soft.	<ol style="list-style-type: none"> 1. Weakened shock absorber spring. 2. Improperly set shock absorber spring length. 3. Leakage oil of shock absorber. 	Replace the shock absorber. Adjust. Replace.
Rear suspension too stiff.	<ol style="list-style-type: none"> 1. Improperly set shock absorber spring length. 2. Bent shock absorber shaft 3. Bent swingarm. 4. Worn swingarm and rear cushion related bearings. 	Adjust. Replace. Replace. Replace.
Noisy rear suspension.	<ol style="list-style-type: none"> 1. Loose nuts or bolts on rear suspension. 2. Worn swingarm and rear cushion related bearings. 	Retighten. Replace.

BRAKES

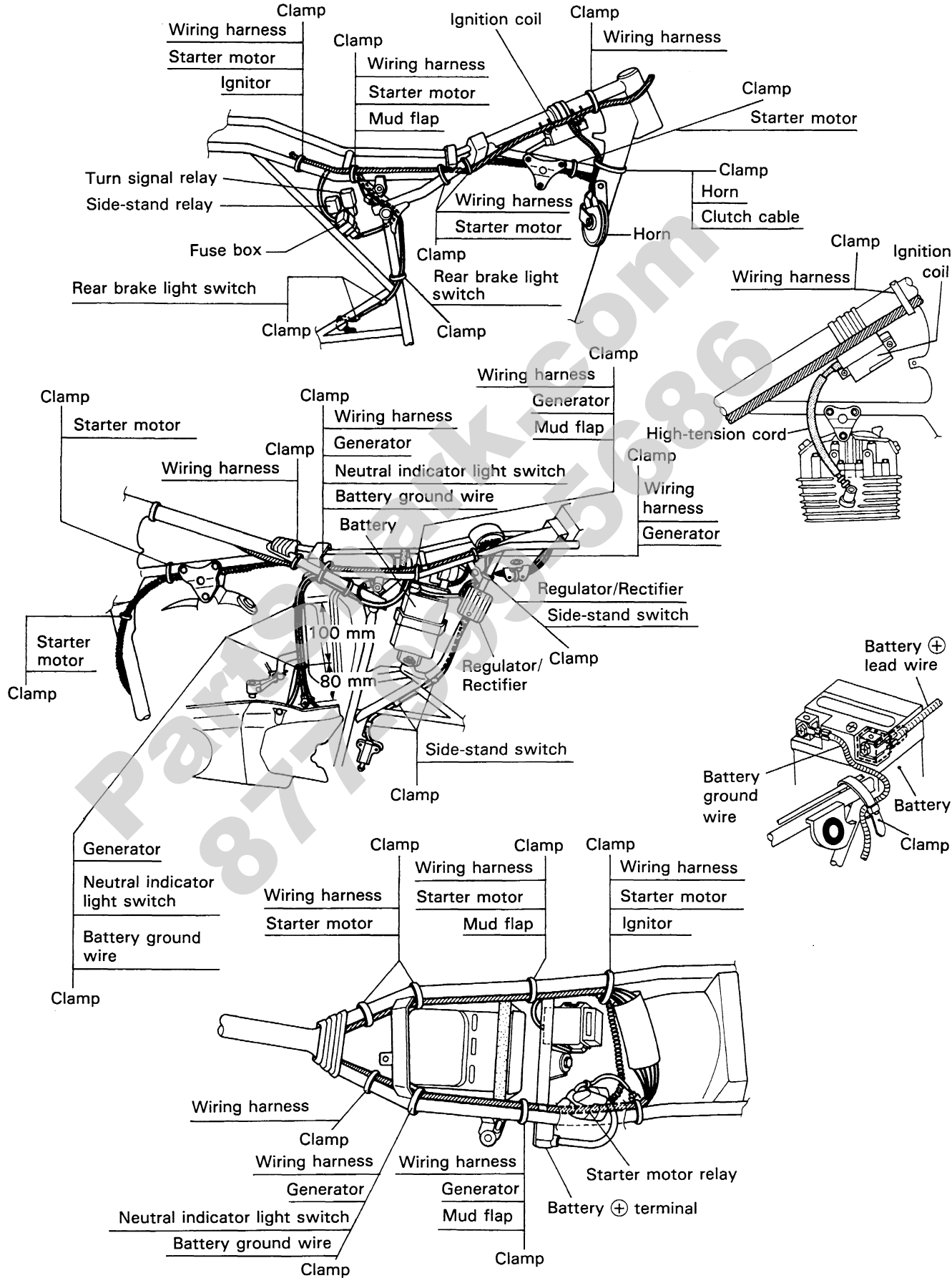
Complaint	Symptom and possible causes	Remedy
Poor braking. (FRONT)	<ol style="list-style-type: none"> 1. Not enough brake fluid in the reservoir. 2. Air trapped in brake fluid circuit. 3. Pads worn down. 	Refill to level mark. Bleed air out. Replace.
Poor braking. (REAR)	<ol style="list-style-type: none"> 1. Linings worn down. 2. Too much play on brake pedal. 	Replace. Adjust.
Insufficient brake power.	<ol style="list-style-type: none"> 1. Leakage of brake fluid from hydraulic system. 2. Worn pads. Worn lining. 3. Oil adhesion on engaging surface of pads. 4. Worn disc. Worn brake drum. 5. Air entered into hydraulic system. 	Repair or replace. Replace. Clean disc and pads. Replace. Bleed air.
Brake squeaking.	<ol style="list-style-type: none"> 1. Carbon adhesion on pad surface. Carbon adhesion on lining surface. 2. Tilted pad. 3. Damaged wheel bearings. 4. Loose front wheel axle or rear wheel axle. 5. Worn pads and linings. 6. Foreign material in brake fluid. 7. Clogged return port of master cylinder. 8. Wrongly fixed pad shim, retainer or spring. 9. Caliper binding on caliper axles. 	Repair surface with emery paper. Modify pad fitting. Replace. Tighten to specified torque. Replace. Replace brake fluid. Disassemble and clean master cylinder. Set correctly. Clean and lubricate.
Excessive brake lever stroke.	<ol style="list-style-type: none"> 1. Air entered into hydraulic system. 2. Worn brake lever cam. 3. Insufficient brake fluid. 4. Improper quality of brake fluid. 	Bleed air. Replace brake cam. Replenish fluid to specified level; bleed air. Replace with correct fluid.
Leakage of brake fluid.	<ol style="list-style-type: none"> 1. Insufficient tightening of connection joints. 2. Cracked hose. 3. Worn piston and/or cup. 	Tighten to specified torque. Replace. Replace piston and/or cup.

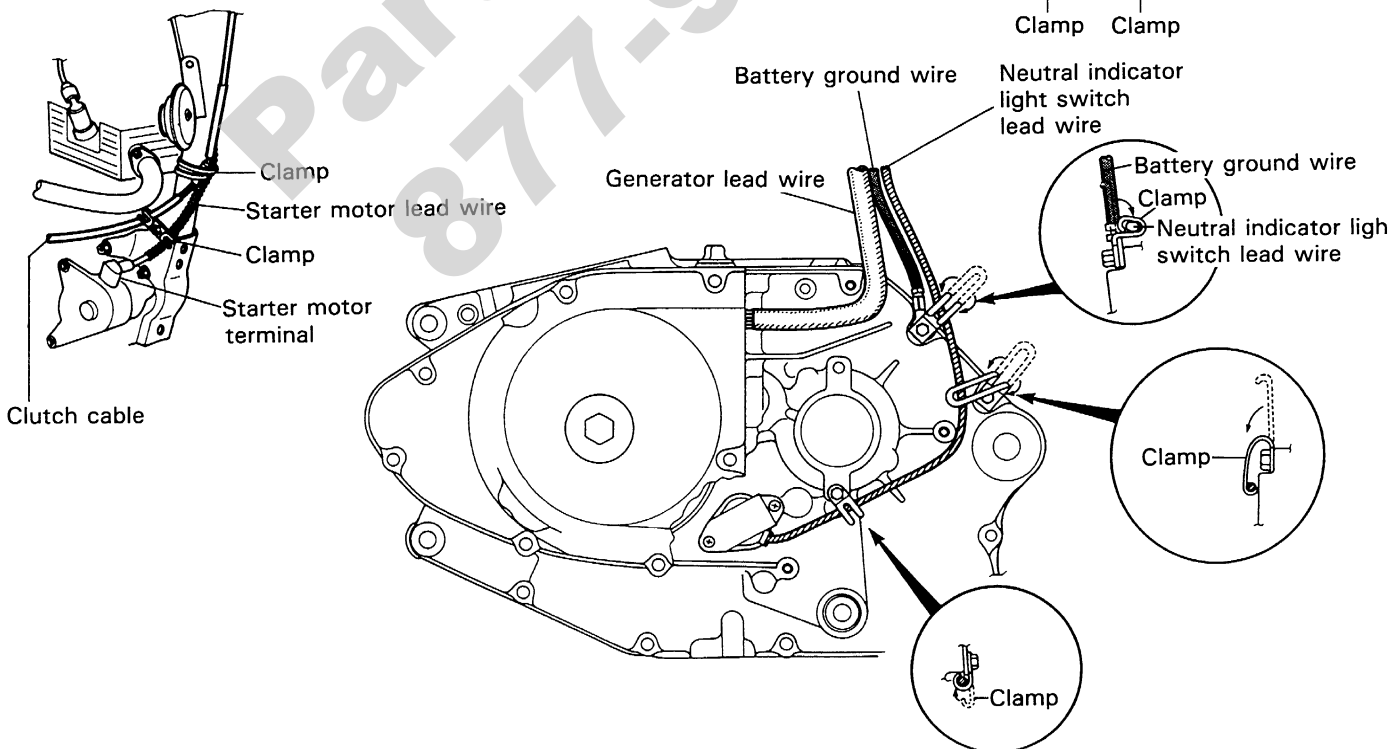
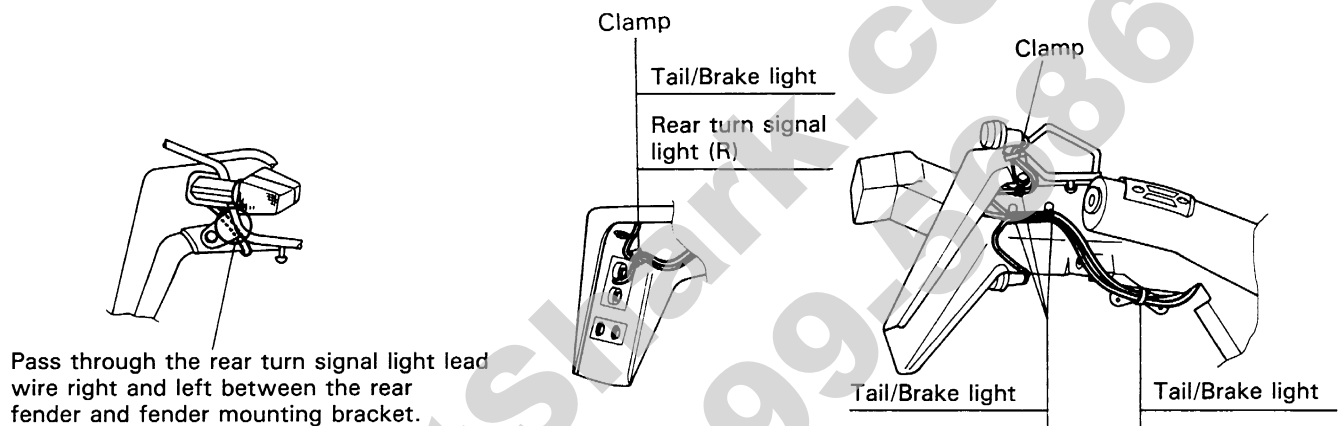
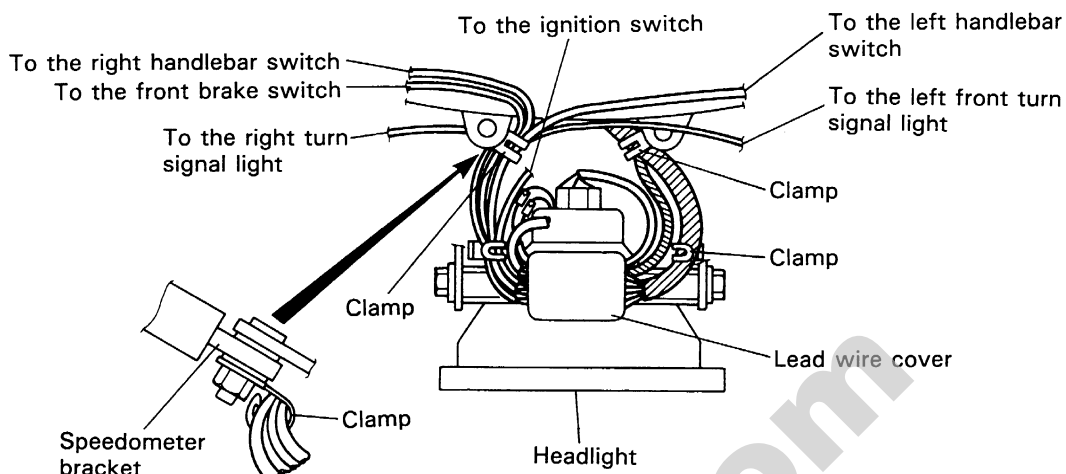
WIRING DIAGRAM



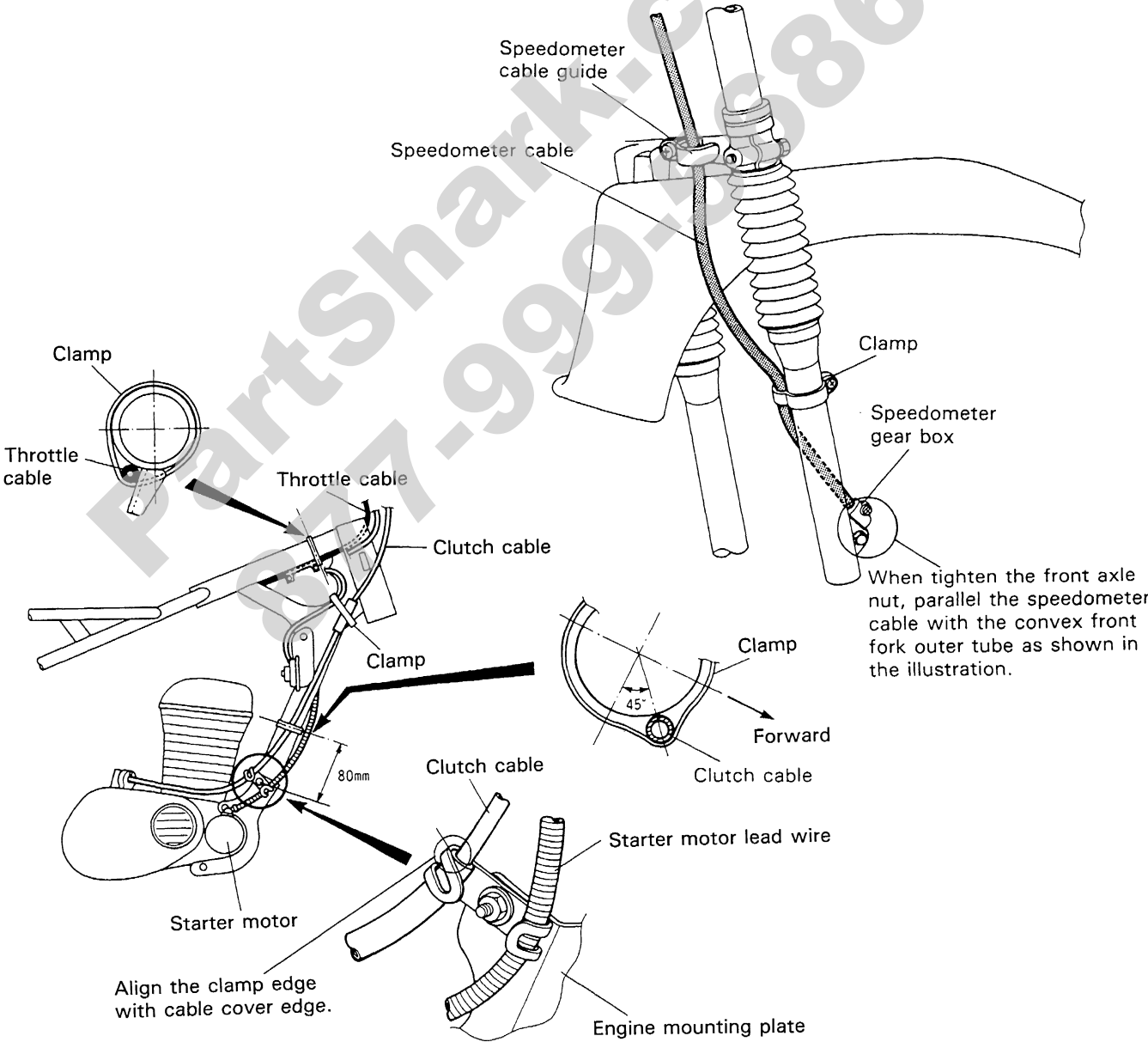
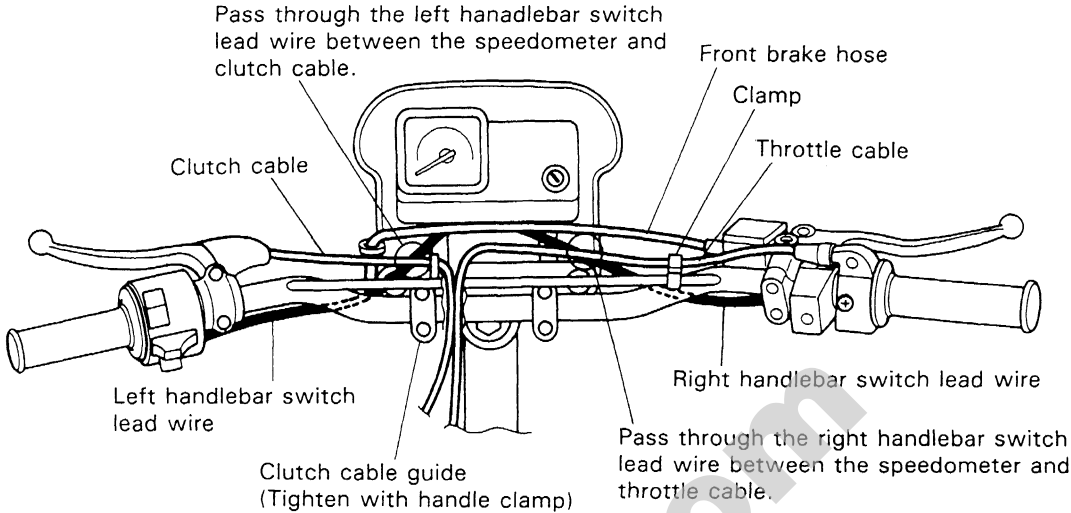
WIRE, CABLE AND HOSE ROUTING

WIRE ROUTING

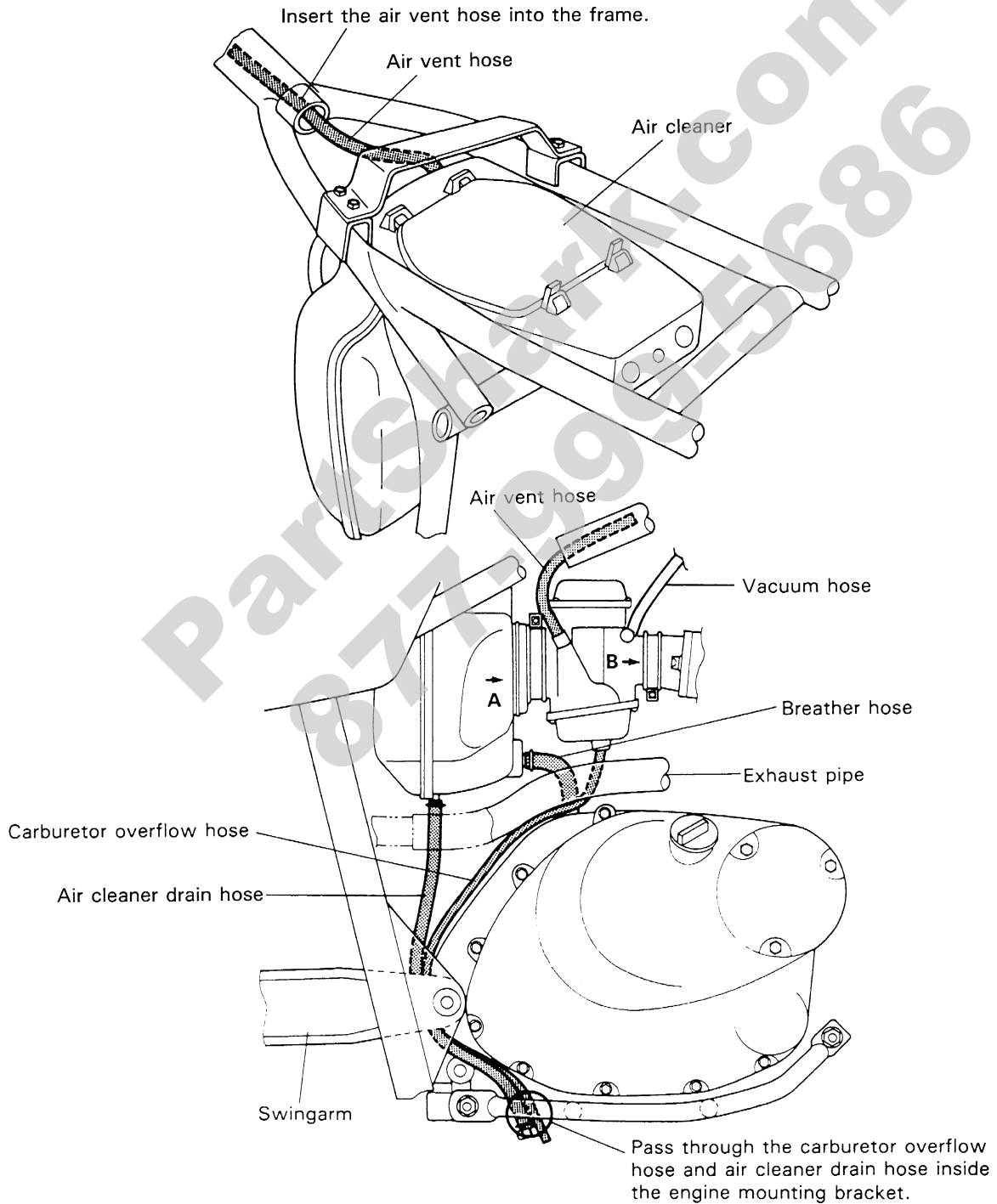
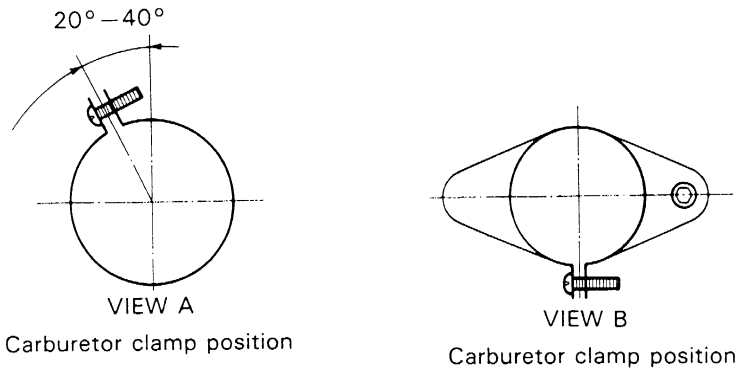




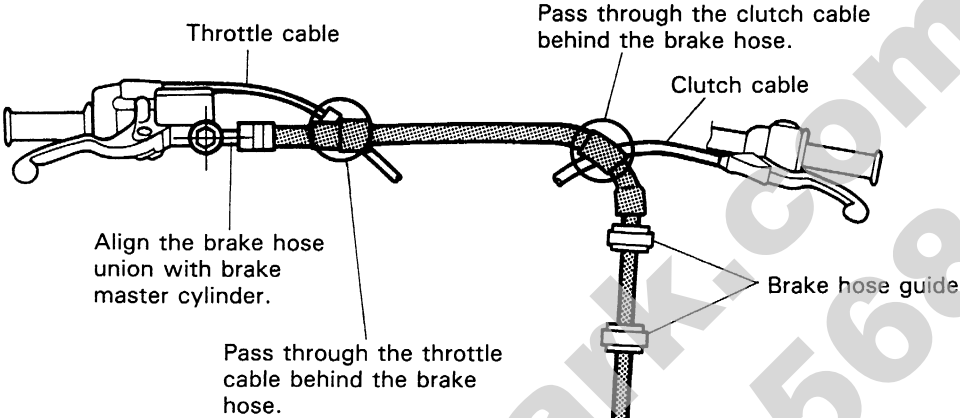
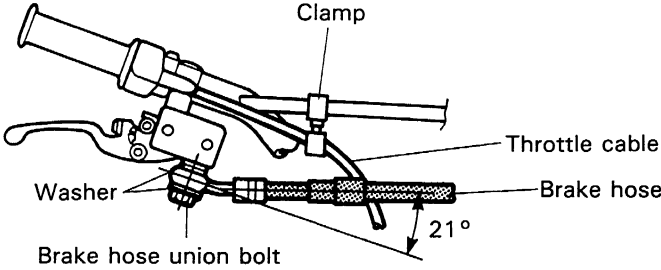
CABLE ROUTING



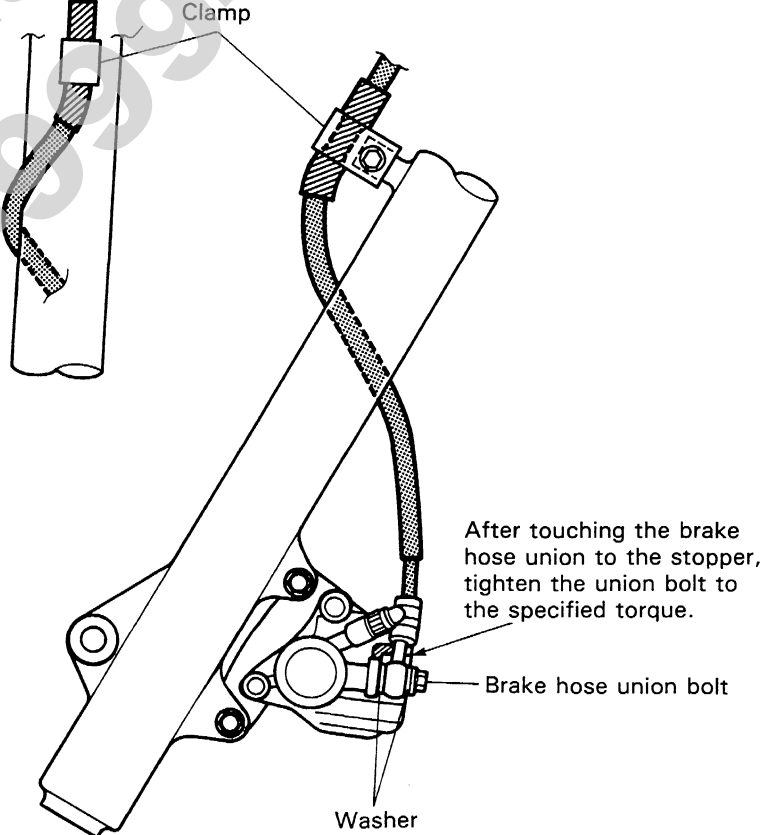
CARBURETOR AND AIR CLEANER HOSE ROUTING



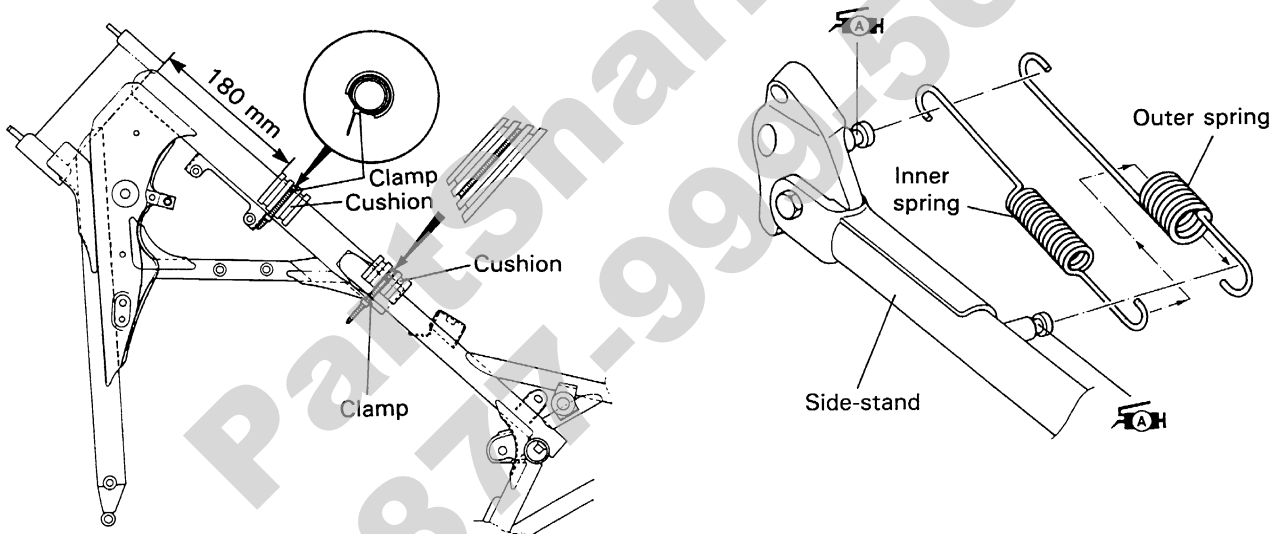
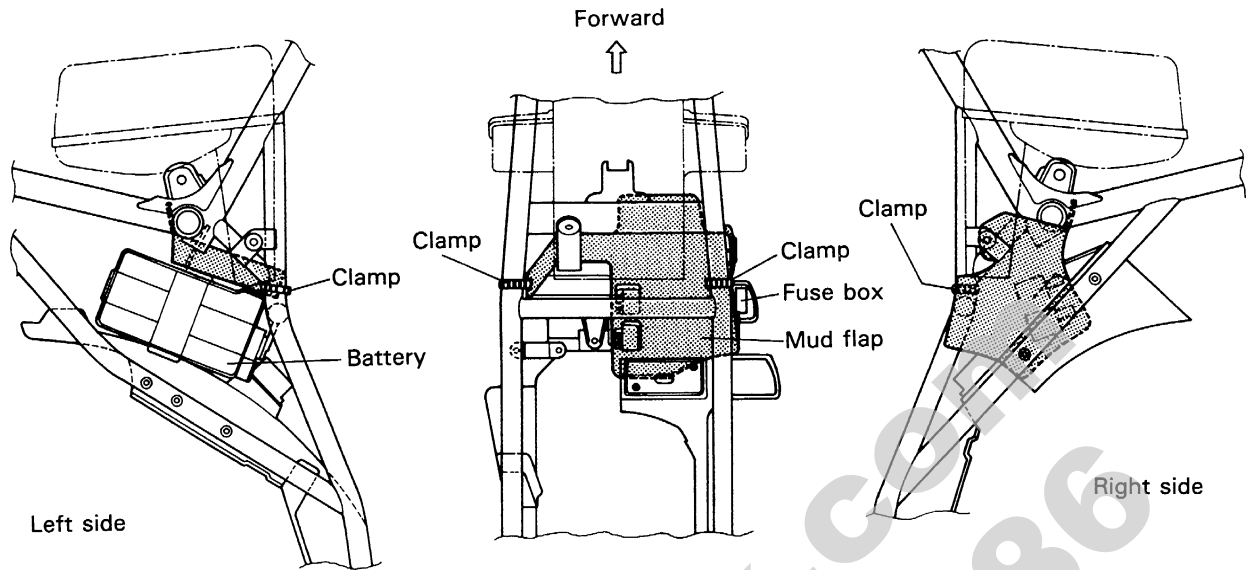
FRONT BRAKE HOSE ROUTING



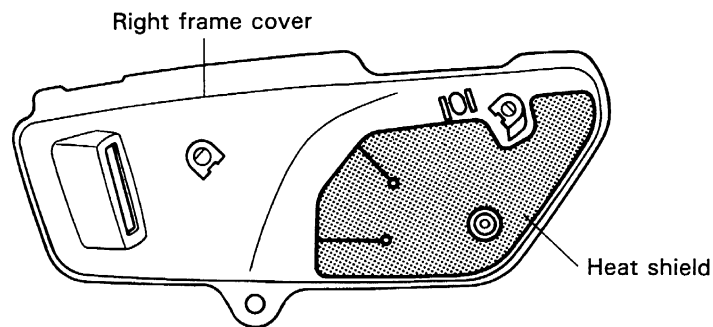
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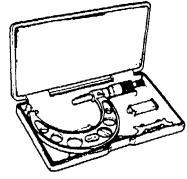
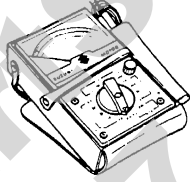



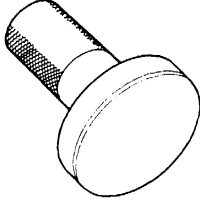
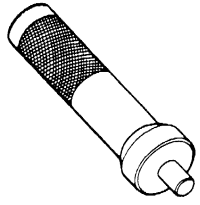
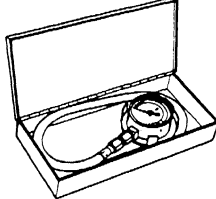
MUD FLAP, FUEL TANK CUSHION AND SIDE-STAND SPRING SET-UP



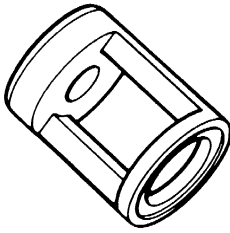
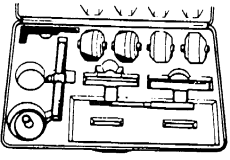
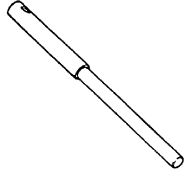


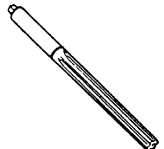

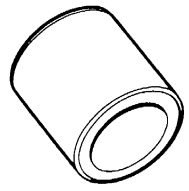
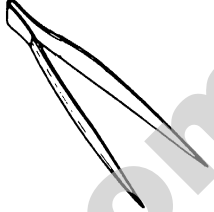

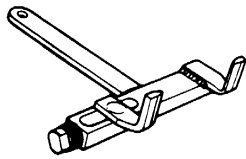



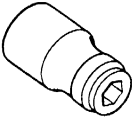
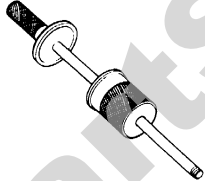
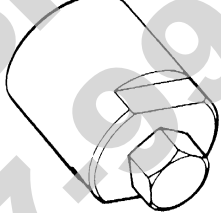

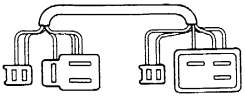
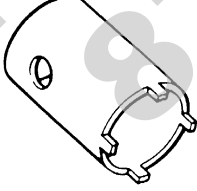
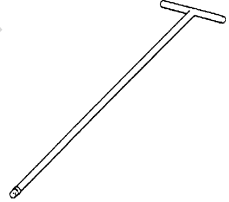
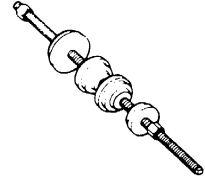
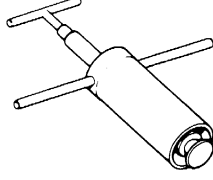
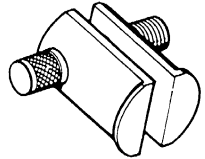
HEAT SHIELD ADHERING

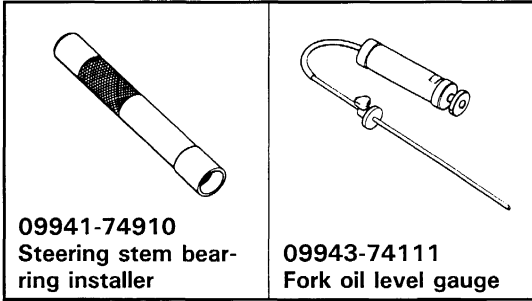


SPECIAL TOOL

 <p>09900-00401 "L" type hexagon wrench set</p>	 <p>09900-00410 Hexagon wrench set</p>	 <p>09900-06107 Snap ring pliers</p>	 <p>09900-06108 Snap ring pliers</p>	 <p>09900-09003 Impact driver set</p>
 <p>09900-20102 Vernier calipers (1/20 mm, 200 mm)</p>	 <p>09900-20202 Micrometer (1/100 mm, 25–50 mm)</p>	 <p>09900-20203 Micrometer (1/100 mm, 50–75 mm)</p>	 <p>09900-20205 Micrometer (1/1000 mm, 0–25 mm)</p>	 <p>09900-20508 Cylinder gauge set (1/100 mm, 40–80 mm)</p>
 <p>09900-20605 Dial calipers (1/100 mm, 10–34 mm)</p>	 <p>09900-20606 Dial gauge (1/100 mm, 10 mm)</p>	 <p>09900-20701 Magnetic stand</p>	 <p>09900-20803 Thickness gauge</p>	 <p>09900-21304 V-block set (100 mm)</p>
 <p>09900-22301 Plastigauge</p>	 <p>09900-25002 Pocket tester</p>	 <p>09900-28106 Electro tester</p>	 <p>09910-20116 Con-rod holder</p>	 <p>09910-32812 Crankshaft installer</p>
 <p>09910-60611 Universal clamp wrench</p>	 <p>09913-50121 Dust seal remover</p>	 <p>09913-60710 09941-64511 Remover</p>	 <p>09913-75510 Bearing installer</p>	 <p>09913-75821 Bearing installer</p>
 <p>09913-76010 Bearing installer</p>	 <p>09915-63210 Adapter</p>	 <p>09915-64510 Compression gauge</p>	 <p>09915-74510 Oil pressure gauge</p>	 <p>09916-14510 Valve spring compressor</p>

7-15 SERVICING INFORMATION

 <p>09916-14910 Attachment</p>	 <p>09916-21110 Valve seat cutter set (See page 3-22.)</p>	 <p>09916-24480 Solid pilot (N-140-5.5)</p>	 <p>09916-34541 Reamer handle</p>	 <p>09916-34550 5.5 mm reamer</p>
 <p>09916-34561 11.3 mm reamer</p>	 <p>09916-44910 Valve guide remover/ installer</p>	 <p>09916-44920 Attachment</p>	 <p>09916-84511 Tweezers</p>	 <p>09920-13120 Crankcase separating tool/crankshaft remove</p>
 <p>09920-53740 Clutch sleeve hub holder</p>	 <p>09921-20210 Bearing remover</p>	 <p>09923-74510 Bearing remover</p>	 <p>09924-84521 Bearing installer</p>	 <p>09930-11920 Torx bit</p>
 <p>09930-11940 Bit holder</p>	 <p>09930-30102 Sliding shaft</p>	 <p>09930-34932 Rotor remover</p>	 <p>09930-44511 Rotor holder</p>	 <p>09931-91710 MODE 4-B extension lead wire</p>
 <p>09931-94430 Digital igniter checker</p>	 <p>09940-14920 Steering stem nut socket wrench</p>	 <p>09940-34520 T handle</p>	 <p>09940-34561 Front fork attach- ment "D"</p>	 <p>09940-52860 Front fork oil seal installer</p>
 <p>09940-60113 Spoke nipple wrench</p>	 <p>09941-34513 Bearing installer</p>	 <p>09941-44510 Swingarm bearing remover</p>	 <p>09941-50111 Bearing remover</p>	 <p>09941-54911 Bearing outer race remover</p>



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TIGHTENING TORQUE**ENGINE**

ITEM	N·m	kg-m	lb-ft
Cylinder head cover bolt	10	1.0	7.0
Camshaft sprocket bolt	11	1.1	8.0
Cylinder head nut 8 mm Diam.	27	2.7	19.5
Cylinder head nut 6 mm Diam.	10	1.0	7.0
Cylinder base nut	10	1.0	7.0
Starter clutch securing bolt	25	2.5	18.0
Cam drive chain tension adjuster bolt	7	0.7	5.0
Generator rotor nut	55	5.5	40.0
Crankcase bolt	11	1.1	8.0
Primary drive gear nut	50	5.0	36.0
Clutch cover bolt and generator cover bolt	10	1.0	7.0
Starter motor lead wire connecting bolt	2.5	0.25	1.8
Starter motor mounting bolt	10	1.0	7.0
Clutch sleeve hub nut	50	5.0	36.0
Gearshift arm stopper	19	1.9	13.5
Engine oil drain plug	28	2.8	20.0
Oil filter cap nut and oil sump filter cap bolt	7	0.7	5.0
Engine sprocket bolt	25	2.5	18.0
Engine mounting bolt (Top side)	41	4.1	29.5
Engine mounting bolt (Front side)	88	8.8	63.5
Engine mounting bolt (Rear side)	10	1.0	7.0
Engine mounting bracket bolt	41	4.1	29.5
Exhaust pipe nut	23	2.3	16.5
Muffler connection bolt	23	2.3	16.5
Muffler mounting bolt (Front side)	23	2.3	16.5
Muffler mounting bolt (Rear side)	44	4.4	32.0

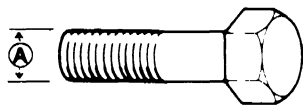
CHASSIS

ITEM	N·m	kg-m	lb-ft
Front axle nut	48	4.8	34.5
Front fork damper rod bolt	20	2.0	14.5
Front fork lower clamp bolt	29	2.9	21.0
Front fork upper clamp bolt	29	2.9	21.0
Steering stem head nut	90	9.0	65.0
Handlebar clamp bolt	25	2.5	18.0
Handlebar holder nut	45	4.5	32.5
Front brake master cylinder mounting bolt	10	1.0	7.0
Front brake caliper mounting bolt	26	2.6	19.0
Front brake pad mounting bolt	18	1.8	13.0
Front brake caliper axle bolt	23	2.3	16.5
Front brake hose union bolt	23	2.3	16.5
Air bleeder valve	8	0.8	6.0
Front brake disc bolt	23	2.3	16.5
Front footrest nut	42	4.2	30.5
Swingarm pivot nut	65	6.5	47.0
Front footrest bolt	94	9.4	68.0
Rear torque link nut	13	1.3	9.5
Rear shock absorber nut (Upper & Lower)	60	6.0	43.5
Rear cushion lever center nut	72	7.2	52.0
Rear cushion lever nut	78	7.8	56.5
Rear axle nut	65	6.5	47.0
Rear sprocket bolt	27	2.7	19.5
Rear brake cam lever bolt	11	1.1	8.0
Rear brake pedal nut	13	1.3	9.5
Spoke nipple	4.5	0.45	3.0

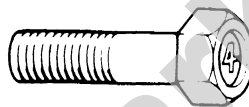
TIGHTENING TORQUE CHART

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

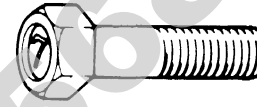
Bolt Diameter Ⓐ (mm)	Conventional or "4" marked bolt			"7" marked bolt		
	N·m	kg-m	lb-ft	N·m	kg-m	lb-ft
4	1.5	0.15	1.0	2.3	0.23	1.5
5	3	0.3	2.0	4.5	0.45	3.0
6	5.5	0.55	4.0	10	1.0	7.0
8	13	1.3	9.5	23	2.3	16.5
10	29	2.9	21.0	50	5.0	36.0
12	45	4.5	32.5	85	8.5	61.5
14	65	6.5	47.0	135	13.5	97.5
16	105	10.5	76.0	210	21.0	152.0
18	160	16.0	115.5	240	24.0	173.5



Conventional bolt



"4" marked bolt



"7" marked bolt

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SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	33 (1.3)	—
	EX.	28 (1.1)	—
Valve clearance (when cold)	IN. & EX.	0.08–0.13 (0.003–0.005)	—
Valve guide to valve stem clearance	IN.	0.010–0.037 (0.0004–0.0015)	—
	EX.	0.030–0.057 (0.0012–0.0022)	—
Valve stem deflection	IN. & EX.	—	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500–5.512 (0.2165–0.2170)	—
Valve stem O.D.	IN.	5.475–5.490 (0.2146–0.2161)	—
	EX.	5.455–5.470 (0.2148–0.2154)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
Valve stem end length	IN. & EX.	—	2.6 (0.1)
Valve seat width	IN. & EX.	0.9–1.1 (0.04–0.05)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length (IN. & EX.)	INNER	—	35.1 (1.38)
	OUTER	—	40.6 (1.60)
Valve spring tension (IN. & EX.)	INNER	7.1–9.2 kg (15.7–20.3 lbs) at length 32.5 mm (1.28 in)	—
	OUTER	17.3–21.3 kg (38.1–47.0 lbs) at length 36.0 mm (1.42 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	34.174–34.218 (1.3454–1.3472)	33.870 (1.3335)
	EX.	33.804–33.848 (1.3309–1.3326)	33.500 (1.3189)
Camshaft journal oil clearance	IN. & EX.	0.032–0.066 (0.0013–0.0026)	0.150 (0.0059)
Camshaft journal holder I.D.	IN. & EX.	22.012–22.025 (0.8666–0.8671)	—
Camshaft journal O.D.	IN. & EX.	21.959–21.980 (0.8645–0.8654)	—
Camshaft runout	IN. & EX.	—	0.10 (0.004)
Rocker arm I.D.	IN. & EX.	12.000–12.018 (0.4724–0.4731)	—
Rocker arm shaft O.D.	IN. & EX.	11.977–11.995 (0.4715–0.4722)	—
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	1 400 kPa (14 kg/cm ²) (199 psi)		980 kPa (9.8 kg/cm ²) (139 psi)	
Piston to cylinder clearance	0.040–0.050 (0.0016–0.0020)		0.120 (0.0047)	
Cylinder bore	66.000–66.015 (2.5984–2.5990)		66.090 (2.6020)	
Piston diam.	65.955–65.970 (2.5966–2.5972) Measure at 15 mm (0.59 in) from the skirt end.		65.880 (2.5937)	
Cylinder distortion	—		0.05 (0.002)	
Piston ring free end gap	1st	R	Approx. 7.5 (0.30)	6.0 (0.24)
	2nd	R	Approx. 9.4 (0.37)	7.5 (0.30)
Piston ring end gap	1st	0.10–0.25 (0.004–0.010)		0.5 (0.02)
	2nd	0.10–0.25 (0.004–0.010)		0.5 (0.02)
Piston ring to groove clearance	1st	—		0.18 (0.007)
	2nd	—		0.15 (0.006)

ITEM	STANDARD		LIMIT
Piston ring groove width	1st	1.01–1.03 (0.040–0.041)	—
	2nd	1.21–1.23 (0.047–0.048)	—
	Oil	2.01–2.03 (0.079–0.080)	—
Piston ring thickness	1st	0.970–0.990 (0.038–0.039)	—
	2nd	1.170–1.190 (0.046–0.047)	—
Piston pin bore	16.002–16.008 (0.6300–0.6302)		16.030 (0.6311)
Piston pin O.D.	15.996–16.000 (0.6298–0.6299)		15.980 (0.6291)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	16.006–16.014 (0.6302–0.6305)	16.040 (0.6315)
Conrod deflection	—	3.0 (0.12)
Conrod big end side clearance	0.10–0.45 (0.004–0.018)	1.00 (0.039)
Conrod big end width	17.95–18.00 (0.707–0.709)	—
Crank web to web width	53.0±0.1 (2.09±0.004)	—
Crankshaft runout	—	0.08 (0.003)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	2.000 (30/15)	—
Oil pressure (at 60°C, 140°F)	Above 15 kPa (0.15 kg/cm ² , 2.1 psi) Below 35 kPa (0.35 kg/cm ² , 4.9 psi) at 3 000 r/min.	—

CLUTCH

Unit: mm (in)

ITEM	STANDARD	LIMIT
Clutch lever play	10–15 (0.4–0.6)	—
Clutch release screw	¼ turn back	—
Drive plate thickness	1 pc	2.6 (0.10)
	5 pcs	
Driven plate distortion	—	0.10 (0.004)
Clutch spring free length	—	31.0 (1.22)

TRANSMISSION + DRIVE CHAIN

Unit: mm (in) Except ratio

ITEM		STANDARD		LIMIT
Primary reduction ratio		3.157 (60/19)		—
Final reduction ratio		3.000 (45/15)		—
Gear ratios	Low	3.000 (33/11)		—
	2nd	1.933 (29/15)		—
	3rd	1.437 (23/16)		—
	4th	1.095 (23/21)		—
	Top	0.913 (21/23)		—
Shift fork to groove clearance		0.10–0.30 (0.004–0.012)		—
Shift fork groove width		No. 1,2,3	5.0–5.1 (0.20–0.21)	—
Shift fork thickness		No. 1,2,3	4.8–4.9 (0.18–0.19)	—
Drive chain	Type	DID 520VC5		—
	Links	112 links, ENDLESS		—
	20-pitch length	—		319.4 (12.57)
Drive chain slack		25–40 (1.0–1.6)		—

CARBURETOR

ITEM	SPECIFICATION	
	E-03	E-33
Carburetor type	MIKUNI BST31SS	←
Bore size	31 mm	←
I.D. No	42AC	42AE
Idle r/min.	1 500 ± 100 r/min.	←
Float height	13.0 ± 1.0 mm (0.51 ± 0.04 in)	←
Main jet (M.J.)	# 125	←
Jet needle (J.N.)	5D77	←
Needle jet (N.J.)	P-5M	←
Throttle valve (Th.V.)	# 125	←
Pilot jet (P.J.)	# 35	←
Valve seat (V.S.)	1.5 mm	←
Starter jet (G.S.)	# 25	←
Pilot screw (P.S.)	PRE-SET	←
Throttle cable play	3–6 mm (0.1–0.2 in)	←

ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION	NOTE
Ignition timing		7° B.T.D.C. Below at 1 950 r/min. and 38° B.T.D.C. Above at 4 400 r/min.	
Spark plug	Type	ND: X24ESR-U NGK: DR8EA	
	Gap	0.6–0.7 (0.024–0.028)	
Spark performance		Over 8 (0.3) at 1 atm.	
Signal coil resistance		100–140 Ω	G–BI
Ignition coil resistance	Primary	2–6 Ω	Terminal– Terminal
	Secondary	20–30 kΩ	Plug cap– Terminal
Generator coil resistance		Charging 0.1–1.5 Ω	—
Generator no-load voltage		More than 60V (AC) at 5 000 r/min.	
Regulated voltage		13.0–16.0V at 5 000 r/min.	
Starter relay resistance		2–6 Ω	
Battery	Type designation	YTX7L-BS	
	Capacity	12V 21.6 kC (6 Ah)/10 HR	
	Standard electrolyte S.G.	1.32 at 20°C (68°F)	
Fuse size		20A	

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	60
	LO	55
Tail/Brake light		5/21
Turn signal light		21
Speedometer light		3.4
Turn signal indicator light		3.4
High beam indicator light		1.7
Neutral indicator light		3.4

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Brake lever play	0.1–0.3 (0.004–0.010)		
Rear brake pedal free travel	20–30 (0.8–1.2)		—
Rear brake pedal height	2.5 (0.10)		—
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 (0.12)
Brake disc runout	Front	—	0.30 (0.012)
Master cylinder bore	Front	12.700–12.743 (0.5000–0.5017)	—
Master cylinder piston diam.	Front	12.657–12.684 (0.4983–0.4994)	—
Brake caliper cylinder bore	Front	33.960–34.010 (1.3370–1.3390)	—
Brake caliper piston diam.	Front	33.878–33.928 (1.3338–1.3357)	—
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	70/100-21 44P	—
	Rear	100/90-18 56P	—
Tire tread depth	Front	—	3.0 (0.12)
	Rear	—	3.0 (0.12)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	205 (8.1)	—	
Front fork spring free length	—	561 (22.1)	
Front fork oil level	179.5 (7.07)	—	
Rear shock absorber spring pre-set length	231 (9.1)	—	
Rear wheel travel	205 (8.1)	—	
Swingarm pivot shaft runout	—	0.6 (0.02)	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	SOLO RIDING			DUAL RIDING		
	kPa	kg/cm ²	psi	kPa	kg/cm ²	psi
FRONT	150	1.50	22	150	1.50	22
REAR	175	1.75	25	200	2.00	29

FUEL + OIL

ITEM	SPECIFICATION		NOTE
Fuel type	<ul style="list-style-type: none"> • Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$) or 91 octane or higher rated by the research method. • Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible. 		
Fuel tank including reserve	13.0 L (3.4/2.9 US/Imp gal)		
	12.5 L (3.3/2.7 US/Imp gal)		For California
reserve	2.5 L (0.7/0.5 US/Imp gal)		
Engine oil type	SAE 10W/40, API SE, SF or SG		
Engine oil capacity	Change	850 ml (0.90/0.75 US/Imp qt)	
	Filter change	950 ml (1.00/0.84 US/Imp qt)	
	Overhaul	1 300 ml (1.37/1.14 US/Imp qt)	
Front fork oil type	Fork oil # 10		
Front fork oil capacity (each leg)	309 ml (10.4/10.9 US/Imp oz)		
Brake fluid type	DOT 4		

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EMISSION CONTROL INFORMATION

CONTENTS

EMISSION CONTROL CARBURETOR COMPONENTS	8- 1
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EMISSION CONTROL CARBURETOR COMPONENTS

DR200SE 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.

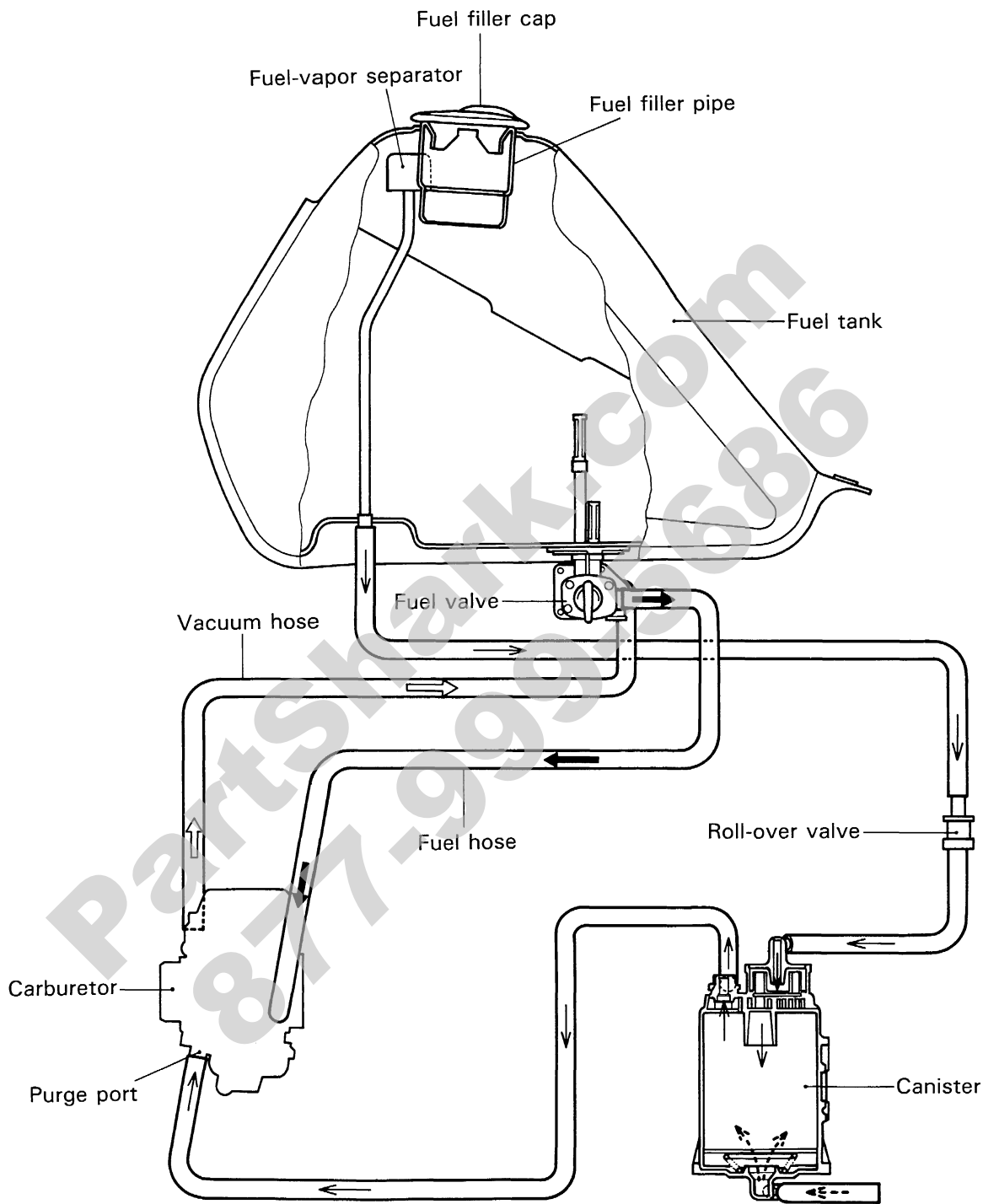
Conventional Figures Used on Standard Tolerance Jet Components	1 2 3 4 5 6 7 8 9 0
Emission Type Figures Used on Close Tolerance Jet Components	<i>1 2 3 4 5 6 7 8 9 0</i>

The carburetor specifications for the emission-controlled DR200SE are as follows.

Carburetor I.D. No.	Main Jet	Needle Jet	Jet Needle	Pilot Jet	Pilot Screw
42AE (California model only)	<i>#125</i>	<i>P-5M</i>	5D77	<i>#35</i>	PRE-SET DO NOT ADJUST
42AC					

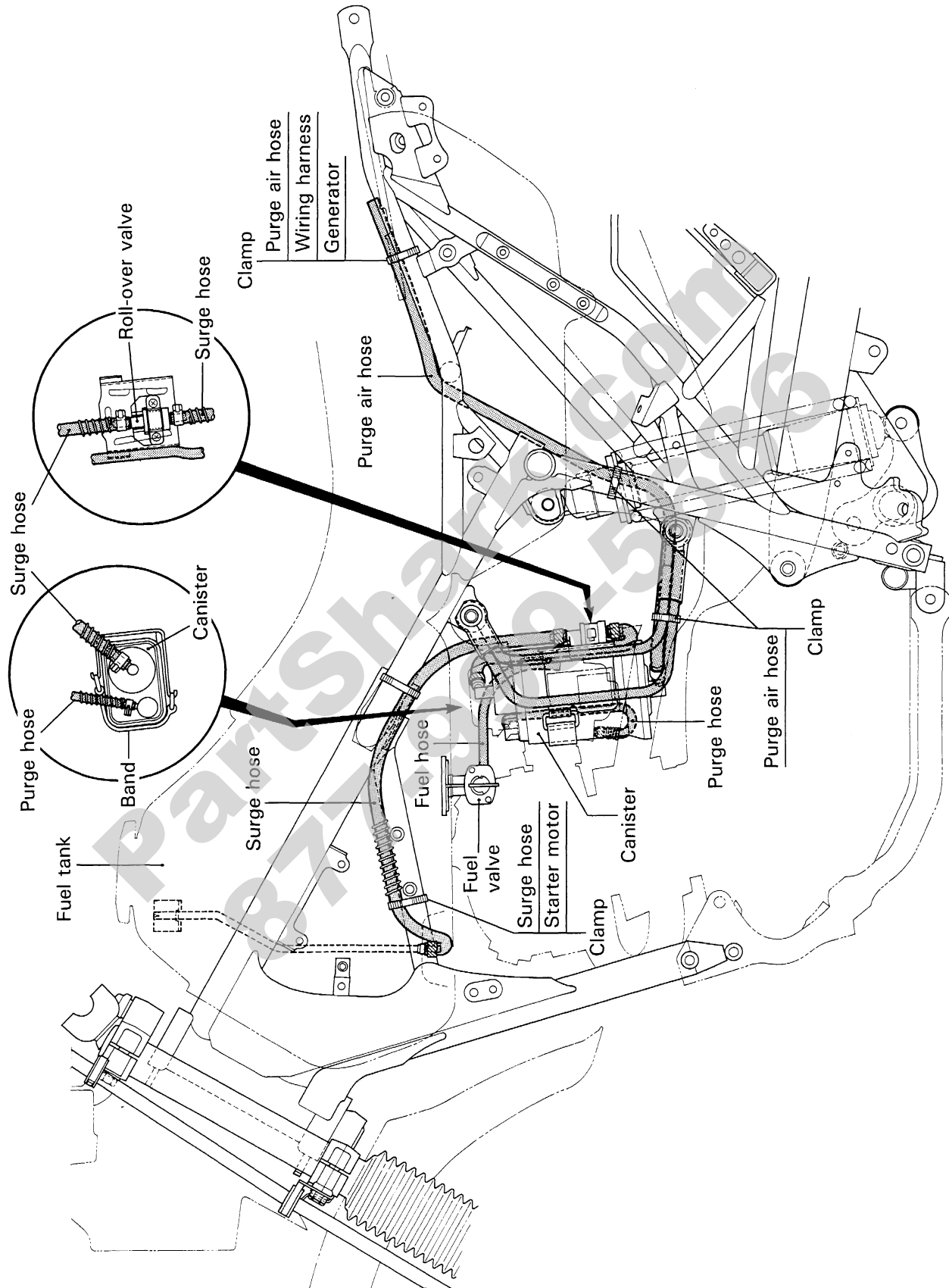
Adjusting, interfering with, improper replacement, or resetting of any of the carburetor components may adversely affect carburetor performance and cause the motorcycle to exceed the exhaust emission level limits. If unable to effect repairs, contact the distributors representative for further technical information and assistance.

EVAPORATIVE EMISSION CONTROL SYSTEM (California model only)



- ← HC VAPOR
- ← FUEL
- ← FRESH AIR
- ← VACUUM

CANISTER HOSE ROUTING (California model only)



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NOTE:

Please refer to the chapters 1 through 8 for details which are not given in this chapter.

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SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2 150 mm (84.6 in)
Overall width	805 mm (31.7 in)
Overall height	1 185 mm (46.6 in)
Wheelbase	1 405 mm (55.3 in)
Ground clearance	260 mm (10.2 in)
Seat height	810 mm (31.8 in)
Dry mass	113 kg (249 lbs)

ENGINE

Type	Four-stroke, air-cooled, OHC
Number of cylinders	1
Bore	66.0 mm (2.598 in)
Stroke	58.2 mm (2.291 in)
Piston displacement	199 cm ³ (12.1 cu. in)
Compression ratio	9.4:1
Carburetor	MIKUNI BST31SS, single
Air cleaner	Polyurethane foam element
Starter system	Electric starter
Lubrication system	Wet sump

TRANSMISSION

Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction ratio	3.157 (60/19)
Final reduction ratio	3.000 (45/15)
Gear ratios, Low	3.000 (33/11)
2nd	1.933 (29/15)
3rd	1.437 (23/16)
4th	1.095 (23/21)
Top	0.913 (21/23)
Drive chain	DID520VC5, 112 links

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Link type, coil spring, spring pre-load fully adjustable
Steering angle	43° (right & left)
Caster	29°
Trail	112 mm (4.4 in)
Turning radius	2.3 m (7.5 ft)
Front brake	Disc brake
Rear brake	Internal expanding
Front tire size	70/100-21 44P
Rear tire size	100/90-18 56P
Front fork stroke	205 mm (8.1 in)
Rear wheel travel	205 mm (8.1 in)

ELECTRICAL

Ignition type	Electronic Ignition (Fully Transistorized)
Ignition timing	7° B.T.D.C. Below at 1 950 r/min and 38° B.T.D.C. Above at 4 400 r/min
Spark plug	DR8EA or X24ESR-U
Battery	12V 21.6 kC (6 Ah)/10 HR
Generator	Three-phase A.C. Generator
Fuse	20A
Headlight	12V 60/55W
Turn signal light	12V 21W
Brake light/Taillight	12V 21/5W
Speedometer light	12V 3.4W
Neutral indicator light	12V 3.4W
High beam indicator light	12V 1.7W
Turn signal indicator light	12V 3.4W

CAPACITIES

Fuel tank, including reserve	13.0 L (3.4/2.9 US/Imp gal)
reserve	12.5 L (3.3/2.7 US/Imp gal) ... For California
reserve	2.5 L (0.7/0.5 US/Imp gal)
Engine oil, oil change	850 ml (0.90/0.75 US/Imp qt)
with filter change	950 ml (1.00/0.84 US/Imp qt)
overhaul	1 300 ml (1.37/1.14 US/Imp qt)
Front fork oil	309 ml (10.4/10.9 US/Imp oz)

These specifications are subject to change without notice.

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	33 (1.3)	—
	EX.	28 (1.1)	—
Valve clearance (when cold)	IN. & EX.	0.08–0.13 (0.003–0.005)	—
Valve guide to valve stem clearance	IN.	0.010–0.037 (0.0004–0.0015)	—
	EX.	0.030–0.057 (0.0012–0.0022)	—
Valve stem deflection	IN. & EX.	—	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500–5.512 (0.2165–0.2170)	—
Valve stem O.D.	IN.	5.475–5.490 (0.2146–0.2161)	—
	EX.	5.455–5.470 (0.2148–0.2154)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
Valve stem end length	IN. & EX.	—	2.6 (0.1)
Valve seat width	IN. & EX.	0.9–1.1 (0.04–0.05)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length (IN. & EX.)	INNER	—	35.1 (1.38)
	OUTER	—	40.6 (1.60)
Valve spring tension (IN. & EX.)	INNER	7.1–9.2 kg (15.7–20.3 lbs) at length 32.5 mm (1.28 in)	—
	OUTER	17.3–21.3 kg (38.1–47.0 lbs) at length 36.0 mm (1.42 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	34.174–34.218 (1.3454–1.3472)	33.870 (1.3335)
	EX.	33.804–33.848 (1.3309–1.3326)	33.500 (1.3189)
Camshaft journal oil clearance	IN. & EX.	0.032–0.066 (0.0013–0.0026)	0.150 (0.0059)
Camshaft journal holder I.D.	IN. & EX.	22.012–22.025 (0.8666–0.8671)	—
Camshaft journal O.D.	IN. & EX.	21.959–21.980 (0.8645–0.8654)	—
Camshaft runout	IN. & EX.	—	0.10 (0.004)
Rocker arm I.D.	IN. & EX.	12.000–12.018 (0.4724–0.4731)	—
Rocker arm shaft O.D.	IN. & EX.	11.977–11.995 (0.4715–0.4722)	—
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	1 400 kPa (14 kg/cm ²) (199 psi)		980 kPa (9.8 kg/cm ²) (139 psi)
Piston to cylinder clearance	0.040–0.050 (0.0016–0.0020)		0.120 (0.0047)
Cylinder bore	66.000–66.015 (2.5984–2.5990)		66.090 (2.6020)
Piston diam.	65.955–65.970 (2.5966–2.5972) Measure at 15 mm (0.59 in) from the skirt end.		65.880 (2.5937)
Cylinder distortion	—		0.05 (0.002)
Piston ring free end gap	1st	R	Approx. 7.5 (0.30)
	2nd	R	Approx. 9.4 (0.37)
Piston ring end gap	1st	0.10–0.25 (0.004–0.010)	
	2nd	0.10–0.25 (0.004–0.010)	
Piston ring to groove clearance	1st	—	
	2nd	—	

ITEM	STANDARD		LIMIT
Piston ring groove width	1st	1.01–1.03 (0.040–0.041)	—
	2nd	1.21–1.23 (0.047–0.048)	—
	Oil	2.01–2.03 (0.079–0.080)	—
Piston ring thickness	1st	0.970–0.990 (0.038–0.039)	—
	2nd	1.170–1.190 (0.046–0.047)	—
Piston pin bore	16.002–16.008 (0.6300–0.6302)		16.030 (0.6311)
Piston pin O.D.	15.996–16.000 (0.6298–0.6299)		15.980 (0.6291)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	16.006–16.014 (0.6302–0.6305)	16.040 (0.6315)
Conrod deflection	—	3.0 (0.12)
Conrod big end side clearance	0.10–0.45 (0.004–0.018)	1.00 (0.039)
Conrod big end width	17.95–18.00 (0.707–0.709)	—
Crank web to web width	53.0±0.1 (2.09±0.004)	—
Crankshaft runout	—	0.08 (0.003)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	2.000 (30/15)	—
Oil pressure (at 60°C, 140°F)	Above 15 kPa (0.15 kg/cm ² , 2.1 psi) Below 35 kPa (0.35 kg/cm ² , 4.9 psi) at 3 000 r/min.	—

CLUTCH

Unit: mm (in)

ITEM	STANDARD	LIMIT
Clutch lever play	10–15 (0.4–0.6)	—
Clutch release screw	¼ turn back	—
Drive plate thickness	1 pc 2.9–3.1 (0.114–0.122)	2.6 (0.10)
	5 pcs 2.95–3.15 (0.116–0.124)	
Driven plate distortion	—	0.10 (0.004)
Clutch spring free length	—	31.0 (1.22)

TRANSMISSION + DRIVE CHAIN

Unit: mm (in) Except ratio

ITEM		STANDARD		LIMIT
Primary reduction ratio		3.157 (60/19)		—
Final reduction ratio		3.000 (45/15)		—
Gear ratios	Low	3.000 (33/11)		—
	2nd	1.933 (29/15)		—
	3rd	1.437 (23/16)		—
	4th	1.095 (23/21)		—
	Top	0.913 (21/23)		—
Shift fork to groove clearance		0.10–0.30 (0.004–0.012)		—
Shift fork groove width	No.1,2,3	5.0–5.1 (0.20–0.21)		—
Shift fork thickness	No.1,2,3	4.8–4.9 (0.18–0.19)		—
Drive chain	Type	DID 520VC5		—
	Links	112 links, ENDLESS		—
	20-pitch length	—		319.4 (12.57)
Drive chain slack	25–40 (1.0–1.6)		—	

CARBURETOR

ITEM	SPECIFICATION	
	E-03,28	E-33
Carburetor type	MIKUNI BST31SS	
Bore size	31 mm	
I.D. No	42AC	42AE
Idle r/min.	1 500 ± 100 r/min.	
Float height	13.0 ± 1.0 mm (0.51 ± 0.04 in)	
Main jet (M.J.)	#125	
Jet needle (J.N.)	5D77	
Needle jet (N.J.)	P-5M	
Throttle valve (Th.V.)	#125	
Pilot jet (P.J.)	#35	
Starter jet (G.S.)	#25	
Pilot screw (P.S.)	PRE-SET	
Throttle cable play	3–6 mm (0.1–0.2 in)	

ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Ignition timing		7° B.T.D.C. Below at 1 950 r/min. and 38° B.T.D.C. Above at 4 400 r/min.		
Spark plug		Type	DENSO: X24ESR-U NGK: DR8EA	
		Gap	0.6–0.7 (0.024–0.028)	
Spark performance		Over 8 (0.3) at 1 atm.		
Signal coil resistance		100–140 Ω		G–BI
Ignition coil resistance		Primary	2–6 Ω	Terminal– Terminal
		Secondary	20–30 kΩ	Plug cap– Terminal
Generator coil resistance		Charging	0.1–1.5 Ω	—
Generator no-load voltage		More than 60V (AC) at 5 000 r/min.		
Generator Max. output		150W at 5 000 r/min.		
Regulated voltage		13.0–16.0V at 5 000 r/min.		
Starter relay resistance		2–6 Ω		
Battery	Type designation	YTX7L-BS		
	Capacity	12V 21.6 kC (6 Ah)/10 HR		
	Standard electrolyte S.G.	1.32 at 20°C (68°F)		
Fuse size		20A		

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	60
	LO	55
Tail/Brake light		5/21
Turn signal light		21
Speedometer light		3.4
Turn signal indicator light		3.4
High beam indicator light		1.7
Neutral indicator light		3.4

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Brake lever play	0.1–0.3 (0.004–0.010)		
Rear brake pedal free travel	20–30 (0.8–1.2)		—
Rear brake pedal height	2.5 (0.10)		—
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 (0.12)
Brake disc runout	Front	—	0.30 (0.012)
Master cylinder bore	Front	12.700–12.743 (0.5000–0.5017)	—
Master cylinder piston diam.	Front	12.657–12.684 (0.4983–0.4994)	—
Brake caliper cylinder bore	Front	33.960–34.010 (1.3370–1.3390)	—
Brake caliper piston diam.	Front	33.878–33.928 (1.3338–1.3357)	—
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)
Wheel rim size	Front	J21 × 1.60	—
	Rear	J18 × 2.15	—
Tire size	Front	70/100-21 44P	—
	Rear	100/90-18 56P	—
Tire tread depth	Front	—	3.0 (0.12)
	Rear	—	3.0 (0.12)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	205 (8.1)	—	
Front fork spring free length	—	561 (22.1)	
Front fork oil level	179.5 (7.07)	—	
Rear shock absorber spring pre-set length	231 (9.1)	—	
Rear wheel travel	205 (8.1)	—	
Swingarm pivot shaft runout	—	0.6 (0.02)	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	SOLO RIDING			DUAL RIDING		
	kPa	kg/cm ²	psi	kPa	kg/cm ²	psi
FRONT	150	1.50	22	150	1.50	22
REAR	175	1.75	25	200	2.00	29

FUEL + OIL

ITEM	SPECIFICATION		NOTE
Fuel type	Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$) or 91 octane or higher rated by the research method. Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.		E-03,33
	Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$ method) or 91 octane or higher rated by the Research Method.		E-28
	Gasoline used should be graded 85-95 octane or higher. An unleaded gasoline is recommended.		E-24
Fuel tank including reserve	13.0 L (3.4/2.9 US/Imp gal)		E-03,24,28
	12.5 L (3.3/2.7 US/Imp gal)		E-33
	reserve	2.5 L (0.7/0.5 US/Imp gal)	
Engine oil type	SAE 10W/40, API SF or SG		
Engine oil capacity	Change	850 ml (0.90/0.75 US/Imp qt)	
	Filter change	950 ml (1.00/0.84 US/Imp qt)	
	Overhaul	1 300 ml (1.37/1.14 US/Imp qt)	
Front fork oil type	Fork oil # 10		
Front fork oil capacity (each leg)	309 ml (10.4/10.9 US/Imp oz)		
Brake fluid type	DOT 4		

DR200SEK4/K5 ('04, '05-MODELS)

This chapter describes service specifications and servicing procedures which differ from those of the DR200SEK3 ('03-MODEL).

NOTE:

* Any differences between the DR200SEK3 ('03-MODEL) and DR200SEK4/K5 ('04, '05-MODELS) in specifications are clearly indicated with an asterisk (*) mark.

* Please refer to the chapters 1 through 9 for details which are not given in this chapter.

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SPECIFICATIONS

For E-03, 28, 33

DIMENSIONS AND DRY MASS

Overall length	2 150 mm (84.6 in)
Overall width	805 mm (31.7 in)
Overall height	1 185 mm (46.7 in)
Wheelbase	1 405 mm (55.3 in)
Ground clearance	260 mm (10.2 in)
Seat height	810 mm (31.9 in)
Dry mass	113 kg (249 lbs)

ENGINE

Type	Four-stroke, air-cooled, OHC
Number of cylinders	1
Bore	66.0 mm (2.60 in)
Stroke	58.2 mm (2.29 in)
Displacement	199 cm ³ (12.1 cu. in)
Compression ratio	9.4 : 1
Carburetor	MIKUNI BST31SS, single
Air cleaner	Polyurethane foam element
Starter system	Electric
Lubrication system	Wet sump
Idle speed	1 500 ± 100 r/min

DRIVE TRAIN

Clutch	Wet multi-plate type
Transmission	5 speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction	3.157 (60/19)
Final reduction	3.000 (45/15)
Gear ratios, Low	3.000 (33/11)
2nd	1.933 (29/15)
3rd	1.437 (23/16)
4th	1.095 (23/21)
Top	0.913 (21/23)
Drive chain	D.I.D. 520VC.5, 112 links

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Link type, coil spring, oil damped
Steering angle	43° (right & left)
Caster	29° 00'
Trail	112 mm (4.4 in)
Turning radius	2.3 m (7.5 ft)
Front brake	Disk brake
Rear brake	Drum brake
Front tire size	70/100-21M/C 44P tube type
Rear tire size	100/90-18M/C 56P tube type

ELECTRICAL

Ignition type	Electronic ignition (Transistorized)
Ignition timing	7° B.T.D.C. at 1 500 r/min
Spark plug	NGK DR8EA or DENSO X24ESR-U
Battery	12V 21.6 kC (6 Ah/10 HR)
Generator	Three-phase A.C. generator
Fuse	20A
Headlight	12V 60/55W
Brake light/Taillight	12V 21/5W
Turn signal light	12V 21W
Speedometer light	12V 3.4W
Neutral indicator light	12V 3.4W
Turn signal indicator light	12V 3.4W
High beam indicator light	12V 1.7W

CAPACITIES

Fuel tank, including reserve	12.5 L (3.3/2.7 US/Imp gal) E-33
	13.0 L (3.4/2.9 US/Imp gal) Others
reserve	2.5 L (0.7/0.5 US/Imp gal)
Engine oil change	850 ml (0.9/0.7 US/Imp qt)
with filter change	950 ml (1.0/0.8 US/Imp qt)
overhaul	1 100 ml (1.2/1.0 US/Imp qt)

For E-06, 24

DIMENSIONS AND DRY MASS

Overall length	2 220 mm (87.4 in)
Overall width	805 mm (31.7 in) E-06
	940 mm (37.0 in) E-24
Overall height	1 185 mm (46.6 in)
Wheelbase	1 405 mm (55.3 in)
Ground clearance	260 mm (10.2 in)
Seat height	850 mm (33.5 in)
Dry mass	121 kg (266 lbs) E-06
	120 kg (264 lbs) E-24

ENGINE

Type	Four-stroke, air-cooled, OHC
Number of cylinders	1
Bore	66.0 mm (2.598 in)
Stroke	58.2 mm (2.291 in)
Displacement	199 cm ³ (12.1 cu. in)
Compression ratio	9.4 : 1
Carburetor	MIKUNI BST31SS, single
Air cleaner	Polyurethane foam element
Starter system	Electric and kick
Lubrication system	Wet sump
Idle speed	1 500 ± 100 r/min

DRIVE TRAIN

Clutch	Wet multi-plate type
Transmission	5 speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction ratio	3.157 (60/19)
Final reduction ratio	3.916 (47/12)
Gear ratios, Low	3.000 (33/11)
2nd	1.933 (29/15)
3rd	1.437 (23/16)
4th	1.095 (23/21)
Top	0.913 (21/23)
Drive chain	DID520V, 112 links

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Link type, coil spring, oil damped
Front fork stroke	205 mm (8.1 in)
Rear wheel travel	205 mm (8.1 in)
Steering angle	43° (right & left)
Caster	29°
Trail	112 mm (4.4 in)
Turning radius	2.3 m (7.5 ft)
Front brake	Disk brake
Rear brake	Drum brake
Front tire size	70/100-21 44M tube type
Rear tire size	90/100-18 54M tube type

ELECTRICAL

Ignition type	Electronic ignition (C.D.I.)
Ignition timing	7° B.T.D.C. at 1 500 rpm
Spark plug	NGK DR8EA or DENSO X24ESR-U
Battery	12V 21.6 kC (6 Ah) 10 HR
Generator	Three-phase A.C. generator
Fuse	20A
Headlight	12V 60/55W
Turn signal light	12V 15W E-06 only
Brake light/Taillight	12V 21/5W
Speedometer light	12V 1.7W
Neutral indicator light	12V 2W
Turn signal indicator light	12V 2W
High beam indicator light	12V 2W

CAPACITIES

Fuel tank, including reserve	13.0 L (3.4/2.9 US/Imp gal)
reserve	2.5 L (0.7/0.5 US/Imp gal)
Engine oil, oil change	950 ml (1.0/0.8 US/Imp qt)
with filter change	1 050 ml (1.1/0.9 US/Imp qt)
overhaul	1 200 ml (1.3/1.1 US/Imp qt)

SERVICE DATA**For E-03, 28, 33
VALVE + GUIDE**

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	33 (1.3)	—
	EX.	28 (1.1)	—
Valve clearance (when cold)	IN. & EX.	0.08 – 0.13 (0.003 – 0.005)	—
Valve guide to valve stem clearance	IN.	0.010 – 0.037 (0.0004 – 0.0015)	—
	EX.	0.030 – 0.057 (0.0012 – 0.0022)	—
Valve stem deflection	IN. & EX.	—	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500 – 5.512 (0.2165 – 0.2170)	—
Valve stem O.D.	IN.	5.475 – 5.490 (0.2146 – 0.2161)	—
	EX.	5.455 – 5.470 (0.2148 – 0.2154)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
Valve stem end length	IN. & EX.	—	2.6 (0.1)
Valve seat width	IN. & EX.	0.9 – 1.1 (0.04 – 0.05)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length (IN. & EX.)	INNER	—	35.1 (1.38)
	OUTER	—	40.6 (1.60)
Valve spring tension (IN. & EX.)	INNER	7.1 – 9.2 kgf (15.7 – 20.3 lbs) at length 32.5 mm (1.28 in)	—
	OUTER	17.3 – 21.3 kgf (38.1 – 47.0 lbs) at length 36.0 mm (1.42 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	34.174 – 34.218 (1.3454 – 1.3472)	33.870 (1.3335)
	EX.	33.804 – 33.848 (1.3309 – 1.3326)	33.500 (1.3189)
Camshaft journal oil clearance	IN. & EX.	0.032 – 0.066 (0.0013 – 0.0026)	0.150 (0.0059)
Camshaft journal holder I.D.	IN. & EX.	22.012 – 22.025 (0.8666 – 0.8671)	—
Camshaft journal O.D.	IN. & EX.	21.959 – 21.980 (0.8645 – 0.8654)	—
Camshaft runout	IN. & EX.	—	0.10 (0.004)
Rocker arm I.D.	IN. & EX.	12.000 – 12.018 (0.4724 – 0.4731)	—
Rocker arm shaft O.D.	IN. & EX.	11.977 – 11.995 (0.4715 – 0.4722)	—
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	1 400 kPa (14 kgf/cm ² , 199 psi)		980 kPa (9.8 kgf/cm ² , 139 psi)
Piston to cylinder clearance	0.040 – 0.050 (0.0016 – 0.0020)		0.120 (0.0047)
Cylinder bore	66.000 – 66.015 (2.5984 – 2.5990)		66.090 (2.6020)
Piston diam.	65.955 – 65.970 (2.5966 – 2.5972) Measure at 15 mm (0.59 in) from the skirt end.		65.880 (2.5937)
Cylinder distortion	—		0.05 (0.002)
Piston ring free end gap	1st	R	Approx. 7.5 (0.30)
	2nd	R	Approx. 9.4 (0.37)
Piston ring end gap	1st	0.10 – 0.25 (0.004 – 0.010)	
	2nd	0.10 – 0.25 (0.004 – 0.010)	
Piston ring to groove clearance	1st	—	
	2nd	—	

ITEM	STANDARD		LIMIT
Piston ring groove width	1st	1.01 – 1.03 (0.040 – 0.041)	—
	2nd	1.21 – 1.23 (0.047 – 0.048)	—
	Oil	2.01 – 2.03 (0.079 – 0.080)	—
Piston ring thickness	1st	0.970 – 0.990 (0.038 – 0.039)	—
	2nd	1.170 – 1.190 (0.046 – 0.047)	—
Piston pin bore	16.002 – 16.008 (0.6300 – 0.6302)		16.030 (0.6311)
Piston pin O.D.	15.996 – 16.000 (0.6298 – 0.6299)		15.980 (0.6291)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD		LIMIT
Conrod small end I.D.	16.006 – 16.014 (0.6302 – 0.6305)		16.040 (0.6315)
Conrod deflection	—		3.0 (0.12)
Conrod big end side clearance	0.10 – 0.45 (0.004 – 0.018)		1.00 (0.039)
Conrod big end width	17.95 – 18.00 (0.707 – 0.709)		—
Crank web to web width	53.0 ± 0.1 (2.09 ± 0.004)		—
Crankshaft runout	—		0.08 (0.003)

OIL PUMP

ITEM	STANDARD		LIMIT
Oil pump reduction ratio	2.000 (30/15)		—
Oil pressure (at 60 °C, 140 °F)	Above 15 kPa (0.15 kgf/cm ² , 2.1 psi) Below 35 kPa (0.35 kgf/cm ² , 4.9 psi) at 3 000 r/min		—

CLUTCH

Unit: mm (in)

ITEM	STANDARD		LIMIT
Clutch lever play	10 – 15 (0.4 – 0.6)		—
Clutch release screw	1/4 turn back		—
Clutch plate thickness	1 pc	2.9 – 3.1 (0.114 – 0.122)	2.6 (0.10)
	5 pcs	2.95 – 3.15 (0.116 – 0.124)	
Driven plate distortion	—		0.10 (0.004)
Clutch spring free length	—		31.0 (1.22)

TRANSMISSION + DRIVE CHAIN

Unit: mm (in) Except ratio

ITEM		STANDARD	LIMIT
Primary reduction ratio		3.157 (60/19)	—
Final reduction ratio		3.000 (45/15)	—
Gear ratios	Low	3.000 (33/11)	—
	2nd	1.933 (29/15)	—
	3rd	1.437 (23/16)	—
	4th	1.095 (23/21)	—
	Top	0.913 (21/23)	—
Shift fork to groove clearance		0.10 – 0.30 (0.004 – 0.012)	—
Shift fork groove width	No.1,2,3	5.0 – 5.1 (0.20 – 0.21)	—
Shift fork thickness	No.1,2,3	4.8 – 4.9 (0.18 – 0.19)	—
Drive chain	Type	DID 520VC5	—
	Links	112 links	—
	20-pitch length	—	319.4 (12.57)
Drive chain slack		25 – 40 (1.0 – 1.6)	—

CARBURETOR

ITEM	SPECIFICATION	
	E-03, 28	E-33
Carburetor type	MIKUNI BST31SS	←
Bore size	31 mm	←
I.D. No.	42AC	42AE
Idle r/min	1 500 ± 100 r/min	←
Float height	13.0 ± 1.0 mm (0.51 ± 0.04 in)	←
Main jet (M.J.)	#125	←
Jet needle (J.N.)	5D77	←
Needle jet (N.J.)	P-5M	←
Throttle valve (Th.V.)	#125	←
Pilot jet (P.J.)	#35	←
Starter jet (G.S.)	#25	←
Pilot screw (P.S.)	PRE-SET	←
Throttle cable play	2 – 4 mm (0.08 – 0.16 in)	←

ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Spark plug		Type	DENSO: X24ESR-U NGK: CR8EA	
		Gap	0.6 – 0.7 (0.024 – 0.028)	
Spark performance		Over 8 mm (0.3) at 1 atm.		
Signal coil resistance		100 – 140 Ω		G – BI
Ignition coil resistance		Primary	2 – 6 Ω	Terminal – Terminal
		Secondary	20 – 30 k Ω	Plug cap – Terminal
Generator coil resistance		Charging	0.1 – 1.5 Ω	
Generator no-load voltage		More than 60 V (AC) at 5 000 r/min		
Generator Max. output		150 W at 5 000 r/min		
Regulated voltage		13.0 – 16.0 V at 5 000 r/min		
Starter relay resistance		2 – 6 Ω		
Battery	Type designation	YTX7L-BS		
	Capacity	12 V 21.6 kC (6 Ah)/10 HR		
Fuse size		20 A		

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	60
	LO	55
Brake light/Taillight		21/5
Turn signal light		21
Speedometer light		3.4
Turn signal indicator light		3.4
High beam indicator light		1.7
Neutral indicator light		3.4

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Brake lever play	0.1 – 0.3 (0.004 – 0.010)		—
Rear brake pedal free travel	20 – 30 (0.8 – 1.2)		—
Rear brake pedal height	2.5 (0.10)		—
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 (0.12)
Brake disc runout	Front	—	0.30 (0.012)
Master cylinder bore	Front	12.700 – 12.743 (0.5000 – 0.5017)	—
Master cylinder piston diam.	Front	12.657 – 12.684 (0.4983 – 0.4994)	—
Brake caliper cylinder bore	Front	33.960 – 34.010 (1.3370 – 1.3390)	—
Brake caliper piston diam.	Front	33.878 – 33.928 (1.3338 – 1.3357)	—
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)
Wheel rim size	Front	J21 × 1.60	—
	Rear	J18 × 2.15	—
Tire size	Front	70/100-21 44P or 70/100-21 M/C 44P	—
	Rear	100/90-18 56P or 100/90-18 M/C 56P	—
Tire tread depth	Front	—	3.0 (0.12)
	Rear	—	3.0 (0.12)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	205 (8.1)	—	
Front fork spring free length	—	561 (22.1)	
Front fork oil level	179.5 (7.07)	—	
Rear shock absorber spring pre-set length	231 (9.1)	—	
Rear wheel travel	205 (8.1)	—	
Swingarm pivot shaft runout	—	0.6 (0.02)	

TIRE PRESSUER

COLD INFLATION TIRE PRESSURE	SOLO RIDING			DUAL RIDING		
	kPa	kgf/cm ²	psi	kPa	kgf/cm ²	psi
FRONT	150	1.50	22	150	1.50	22
REAR	175	1.75	25	200	2.00	29

FUEL + OIL

ITEM	SPECIFICATION	NOTE
Fuel type	Use only unleaded gasoline of at least 87 pump octane (R/2+M/2) or 91 octane or higher rated by the research method. Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.	
Fuel tank including reserve	13.0 L (3.4/2.9 US/lmp qt)	E-03, 28
	12.5 L (3.3/2.7 US/lmp qt)	E-33
reserve	2.5 L (0.7/0.5 US/lmp qt)	
Engine oil type	SAE 10W-40, API SF or SG	
Engine oil capacity	Change 850 ml (0.90/0.75 US/lmp qt)	
	Filter change 950 ml (1.00/0.84 US/lmp qt)	
	Overhaul 1 100 ml (1.2/1.0 US/lmp qt)	
Front fork oil type	Fork oil #10	
Front fork oil capacity (each leg)	309 ml (10.4/10.9 US/lmp oz)	
Brake fluid type	DOT 4	

For E-06, 24
VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	33 (1.3)	—
	EX.	28 (1.1)	—
Valve clearance (when cold)	IN. & EX.	0.08 – 0.13 (0.003 – 0.005)	—
Valve guide to valve stem clearance	IN.	0.010 – 0.037 (0.0004 – 0.0015)	—
	EX.	0.030 – 0.057 (0.0012 – 0.0022)	—
Valve stem deflection	IN. & EX.	—	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500 – 5.512 (0.2165 – 0.2170)	—
Valve stem O.D.	IN.	5.475 – 5.490 (0.2146 – 0.2161)	—
	EX.	5.455 – 5.470 (0.2148 – 0.2154)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
Valve stem end length	IN. & EX.	—	2.6 (0.1)
Valve seat width	IN. & EX.	0.9 – 1.1 (0.04 – 0.05)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length (IN. & EX.)	INNER	—	35.1 (1.38)
	OUTER	—	40.6 (1.60)
Valve spring tension (IN. & EX.)	INNER	7.1 – 9.2 kgf (15.7 – 20.3 lbs) at length 32.5 mm (1.28 in)	—
	OUTER	17.3 – 21.3 kgf (38.1 – 47.0 lbs) at length 36.0 mm (1.42 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	34.174 – 34.218 (1.3454 – 1.3472)	33.870 (1.3335)
	EX.	33.804 – 33.848 (1.3309 – 1.3326)	33.500 (1.3189)
Camshaft journal oil clearance	IN. & EX.	0.032 – 0.066 (0.0013 – 0.0026)	0.150 (0.0059)
Camshaft journal holder I.D.	IN. & EX.	22.012 – 22.025 (0.8666 – 0.8671)	—
Camshaft journal O.D.	IN. & EX.	21.959 – 21.980 (0.8645 – 0.8654)	—
Camshaft runout	IN. & EX.	—	0.10 (0.004)
Rocker arm I.D.	IN. & EX.	12.000 – 12.018 (0.4724 – 0.4731)	—
Rocker arm shaft O.D.	IN. & EX.	11.977 – 11.995 (0.4715 – 0.4722)	—
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	1 400 kPa (14 kgf/cm ² , 199 psi)		980 kPa (9.8 kgf/cm ² , 139 psi)
Piston to cylinder clearance	0.040 – 0.050 (0.0016 – 0.0020)		0.120 (0.0047)
Cylinder bore	66.000 – 66.015 (2.5984 – 2.5990)		66.090 (2.6020)
Piston diam.	65.955 – 65.970 (2.5966 – 2.5972) Measure at 15 mm (0.59 in) from the skirt end.		65.880 (2.5937)
Cylinder distortion	—		0.05 (0.002)
Piston ring free end gap	1st	R	Approx. 7.5 (0.30)
	2nd	R	Approx. 9.4 (0.37)
Piston ring end gap	1st	0.10 – 0.25 (0.004 – 0.010)	
	2nd	0.10 – 0.25 (0.004 – 0.010)	
Piston ring to groove clearance	1st	—	
	2nd	—	

ITEM	STANDARD		LIMIT
Piston ring groove width	1st	1.01 – 1.03 (0.040 – 0.041)	—
	2nd	1.21 – 1.23 (0.047 – 0.048)	—
	Oil	2.01 – 2.03 (0.079 – 0.080)	—
Piston ring thickness	1st	0.970 – 0.990 (0.038 – 0.039)	—
	2nd	1.170 – 1.190 (0.046 – 0.047)	—
Piston pin bore	16.002 – 16.008 (0.6300 – 0.6302)		16.030 (0.6311)
Piston pin O.D.	15.996 – 16.000 (0.6298 – 0.6299)		15.980 (0.6291)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	16.006 – 16.014 (0.6302 – 0.6305)	16.040 (0.6315)
Conrod deflection	—	3.0 (0.12)
Conrod big end side clearance	0.10 – 0.45 (0.004 – 0.018)	1.00 (0.039)
Conrod big end width	17.95 – 18.00 (0.707 – 0.709)	—
Crank web to web width	53.0 ± 0.1 (2.09 ± 0.004)	—
Crankshaft runout	—	0.08 (0.003)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	2.000 (30/15)	—
Oil pressure (at 60 °C, 140 °F)	Above 15 kPa (0.15 kgf/cm ² , 2.1 psi) Below 35 kPa (0.35 kgf/cm ² , 4.9 psi) at 3 000 r/min	—

CLUTCH

Unit: mm (in)

ITEM	STANDARD	LIMIT
Clutch lever play	10 – 15 (0.4 – 0.6)	—
Clutch release screw	1/4 turn back	—
Clutch plate thickness	1 pc	2.6 (0.10)
	5 pcs	
Driven plate distortion	—	0.10 (0.004)
Clutch spring free length	—	31.0 (1.22)

TRANSMISSION + DRIVE CHAIN

Unit: mm (in) Except ratio

ITEM		STANDARD	LIMIT
Primary reduction ratio		3.157 (60/19)	—
Final reduction ratio		3.916 (47/12)	—
Gear ratios	Low	3.000 (33/11)	—
	2nd	1.933 (29/15)	—
	3rd	1.437 (23/16)	—
	4th	1.095 (23/21)	—
	Top	0.913 (21/23)	—
Shift fork to groove clearance		0.10 – 0.30 (0.004 – 0.012)	—
Shift fork groove width	No.1,2,3	5.0 – 5.1 (0.20 – 0.21)	—
Shift fork thickness	No.1,2,3	4.8 – 4.9 (0.18 – 0.19)	—
Drive chain	Type	DID 520VC5	—
	Links	112 links, ENDLESS	—
	20-pitch length	—	319.4 (12.57)
Drive chain slack		25 – 40 (1.0 – 1.6)	—

CARBURETOR

ITEM	SPECIFICATION
Carburetor type	MIKUNI BST31SS
Bore size	31 mm
I.D. No.	42AA
Idle r/min	1 500 ± 100 r/min
Float height	13.0 ± 1.0 mm (0.51 ± 0.04 in)
Main jet (M.J.)	#122.5
Main air jet (M.A.J.)	0.8 mm
Jet needle (J.N.)	5D26-3rd
Needle jet (N.J.)	P-5
Throttle valve (Th.V.)	#125
Pilot jet (P.J.)	#40
Valve seat (V.S.)	1.5 mm
Starter jet (G.S.)	#25
Pilot screw (P.S.)	1 and 1/2 turns out
Throttle cable play	3 – 6 mm (0.1 – 0.2 in)

ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Ignition timing		7°B.T.D.C. Below at 1 500 r/min		
Spark plug		Type	DENSO: X24ESR-U NGK: CR8EA	
		Gap	0.6 – 0.7 (0.024 – 0.028)	
Spark performance		Over 8 mm (0.3) at 1 atm.		
Signal coil resistance		100 – 140 Ω		G – Bl
Ignition coil resistance		Primary	0.14 – 0.18 Ω	Terminal – Terminal
		Secondary	15 – 18 kΩ	Plug cap – Terminal
Signal coil peak voltage		3.0 – 4.6 V		⊕ G/W – ⊖ Bl/Y
Ignition coil primary peak voltage		125 – 195 V		⊖ White – ⊕ Ground
Generator coil resistance		Charging	0.1 – 1.5 Ω	—
Generator no-load voltage		More than 70 V (AC) at 5 000 r/min		
Regulated voltage		13.0 – 16.0 V at 5 000 r/min		
Starter relay resistance		2 – 6 Ω		
Battery	Type designation	YTX7L-BS		
	Capacity	12 V 21.6 kC (6 Ah)/10 HR		
	Standard electrolyte S.G.	1.32 at 20 °C (68 °F)		
Fuse size		20 A		

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	60
	LO	55
Brake light/Taillight		21/5
Turn signal light (For South Africa)		21
Speedometer light		1.7
Turn signal indicator light (Fpr South Afriaca)		2
High beam indicator light		2
Neutral indicator light		2

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Brake lever play	0.1 – 0.3 (0.004 – 0.010)		—
Rear brake pedal free travel	20 – 30 (0.8 – 1.2)		—
Rear brake pedal height	2.5 (0.10)		—
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 (0.12)
Brake disc runout	Front	—	0.30 (0.012)
Master cylinder bore	Front	12.700 – 12.743 (0.5000 – 0.5017)	—
Master cylinder piston diam.	Front	12.657 – 12.684 (0.4983 – 0.4994)	—
Brake caliper cylinder bore	Front	33.960 – 34.010 (1.3370 – 1.3390)	—
Brake caliper piston diam.	Front	33.878 – 33.928 (1.3338 – 1.3357)	—
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	70/100-21 44M	—
	Rear	90/100-18 54M	—
Tire tread depth	Front	—	40 (0.16)
	Rear	—	4.0 (0.16)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	205 (8.1)	—	
Front fork spring free length	—	561 (22.1)	
Front fork oil level	179.5 (7.07)	—	
Rear shock absorber spring pre-set length	231 (9.1)	—	
Rear wheel travel	205 (8.1)	—	
Swingarm pivot shaft runout	—	0.6 (0.02)	

TIRE PRESSUER**E-24**

COLD INFLATION TIRE PRESSURE	SOLO RIDING		
	kPa	kgf/cm ²	psi
FRONT	100	1.0	15
REAR	100	1.0	15

E-06

COLD INFLATION TIRE PRESSURE	SOLO RIDING			DUAL RIDING		
	kPa	kgf/cm ²	psi	kPa	kgf/cm ²	psi
FRONT	100	1.0	15	100	1.0	15
REAR	100	1.0	15	100	1.0	15

FUEL + OIL

ITEM	SPECIFICATION	NOTE
Fuel type	Gasoline used should be graded 85 – 95 octane or higher. An unleaded gasoline is recommended.	
Fuel tank including reserve	13.0 L (3.4/2.9 US/Imp qt)	
reserve	2.5 L (0.7/0.5 US/Imp qt)	
Engine oil type	SAE 10W-40, API SF or SG	
Engine oil capacity	Change 950 ml (1.0/0.8 US/Imp qt)	
	Filter change 1 050 ml (1.1/0.9 US/Imp qt)	
	Overhaul 1 200 ml (1.3/1.1 US/Imp qt)	
Front fork oil type	Fork oil #10	
Front fork oil capacity (each leg)	309 ml (10.4/10.9 US/Imp oz)	
Brake fluid type	DOT 4	

TIGHTENING TORQUE


ENGINE


ITEM	N-m	kgf-m	lb-ft
Cylinder head cover bolt	10	1.0	7.0
Camshaft sprocket bolt	11	1.1	8.0
Cylinder head nut 8 mm Diam.	27	2.7	19.5
Cylinder head nut 6 mm Diam.	10	1.0	7.0
Cylinder base nut	10	1.0	7.0
Starter clutch securing bolt	25	2.5	18.0
Cam drive chain tension adjuster bolt	7	0.7	5.0
Generator rotor nut	*80	8.0	58
Crankcase bolt	11	1.1	8.0
Primary drive gear nut	50	5.0	36.0
Clutch cover bolt and generator cover bolt	10	1.0	7.0
Starter motor lead wire connecting bolt	25	0.25	1.8
Starter motor mounting bolt	10	1.0	7.0
Clutch sleeve hub nut	50	5.0	36.0
Gearshift arm stopper	19	1.9	13.5
Engine oil drain plug	28	2.8	2.0
Oil filter cap nut and oil pump filter cap bolt	7	0.7	5.0
Engine sprocket bolt	25	2.5	18.0
Engine mounting bolt (Top side)	41	4.1	29.5
Engine mounting bolt (Front side)	88	8.8	63.5
Engine mounting bolt (Rear side)	10	1.0	7.0
Engine mounting bracket bolt	41	4.1	29.5
Exhaust pipe nut	23	2.3	16.5
Muffler connection bolt	23	2.3	16.5
Muffler mounting bolt (Front side)	23	2.3	16.5
Muffler mounting bolt (Rear side)	44	4.4	32.0

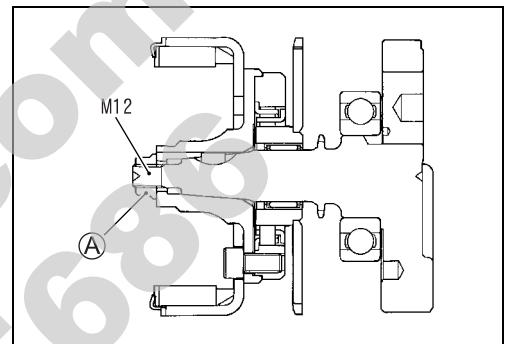
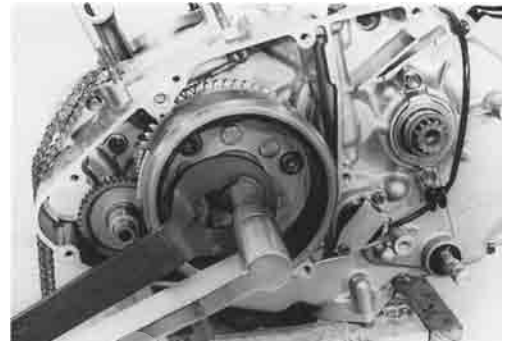
GENERATOR ROTOR NUT

REASSEMBLY

- Hold the generator rotor using the special tool, and tighten the generator rotor nut to the specified torque.

 **09930-44511: Rotor holder**

 **Generator rotor nut (A): 80 N·m (8.0 kgf-m, 58.0 lb-ft)**



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DR200SEK6 ('06-MODEL)

This chapter describes service specifications and servicing procedures which differ from those of the DR200SEK4/K5 ('04, '05-MODELS).

NOTE:

* Any differences between the DR200SEK4/K5 ('04, '05-MODELS) and DR200SEK6 ('06-MODEL) in specifications are clearly indicated with an asterisk (*) mark.

* Please refer to the chapters 1 through 10 for details which are not given in this chapter.

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SPECIFICATIONS

For E-03, 28, 33

DIMENSIONS AND DRY MASS

Overall length	2 150 mm (84.6 in)
Overall width	805 mm (31.7 in)
Overall height	1 185 mm (46.7 in)
Wheelbase	1 405 mm (55.3 in)
Ground clearance	260 mm (10.2 in)
Seat height	810 mm (31.9 in)
Dry mass	113 kg (249 lbs)

ENGINE

Type	Four-stroke, air-cooled, OHC
Number of cylinders	1
Bore	66.0 mm (2.60 in)
Stroke	58.2 mm (2.29 in)
Displacement	199 cm ³ (12.1 cu. in)
Compression ratio	9.4 : 1
Carburetor	MIKUNI BST31SS, single
Air cleaner	Polyurethane foam element
Starter system	Electric
Lubrication system	Wet sump
Idle speed	1 500 ± 100 r/min

DRIVE TRAIN

Clutch	Wet multi-plate type
Transmission	5 speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction	3.157 (60/19)
Final reduction	3.000 (45/15)
Gear ratios, Low	3.000 (33/11)
2nd	1.933 (29/15)
3rd	1.437 (23/16)
4th	1.095 (23/21)
Top	0.913 (21/23)
Drive chain	D.I.D. 520VC.5, 112 links

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Link type, coil spring, oil damped
Steering angle	43° (right & left)
Caster	29° 00'
Trail	112 mm (4.4 in)
Turning radius	2.3 m (7.5 ft)
Front brake	Disc brake
Rear brake	Drum brake
Front tire size	70/100-21M/C 44P tube type
Rear tire size	100/90-18M/C 56P tube type

ELECTRICAL

Ignition type	Electronic ignition (Transistorized)
Ignition timing	7° B.T.D.C. at 1 500 r/min
Spark plug	NGK DR8EA or DENSO X24ESR-U
Battery	12 V 21.6 kC (6 Ah/10 HR)
Generator	Three-phase A.C. generator
Fuse	20 A
Headlight	12 V 60/55 W
Brake light/Taillight	12 V 21/5 W
Turn signal light	12 V 21 W
Speedometer light	12 V 3.4 W
Neutral indicator light	12 V 3.4 W
Turn signal indicator light	12 V 3.4 W
High beam indicator light	12 V 1.7 W

CAPACITIES

Fuel tank, including reserve	12.5 L (3.3/2.7 US/Imp gal)..... E-33
	13.0 L (3.4/2.9 US/Imp gal)..... Others
reserve	2.5 L (0.7/0.5 US/Imp gal)
Engine oil change	850 ml (0.9/0.7 US/Imp qt)
with filter change	950 ml (1.0/0.8 US/Imp qt)
overhaul	1 100 ml (1.2/1.0 US/Imp qt)

For E-06, 24

DIMENSIONS AND DRY MASS

Overall length	2 220 mm (87.4 in)
Overall width	805 mm (31.7 in) E-06
	940 mm (37.0 in) E-24
Overall height	1 185 mm (46.6 in)
Wheelbase	1 405 mm (55.3 in)
Ground clearance	260 mm (10.2 in)
Seat height	850 mm (33.5 in)
Dry mass	121 kg (266 lbs) E-06
	120 kg (264 lbs) E-24

ENGINE

Type	Four-stroke, air-cooled, OHC
Number of cylinders	1
Bore	66.0 mm (2.598 in)
Stroke	58.2 mm (2.291 in)
Displacement	199 cm ³ (12.1 cu. in)
Compression ratio	9.4 : 1
Carburetor	MIKUNI BST31SS, single
Air cleaner	Polyurethane foam element
Starter system	Electric and kick
Lubrication system	Wet sump
Idle speed	1 500 ± 100 r/min

DRIVE TRAIN

Clutch	Wet multi-plate type
Transmission	5 speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction ratio	3.157 (60/19)
Final reduction ratio	3.916 (47/12)
Gear ratios, Low	3.000 (33/11)
2nd	1.933 (29/15)
3rd	1.437 (23/16)
4th	1.095 (23/21)
Top	0.913 (21/23)
Drive chain	DID520V, 112 links

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Link type, coil spring, oil damped
Front fork stroke	205 mm (8.1 in)
Rear wheel travel	205 mm (8.1 in)
Steering angle	43° (right & left)
Caster	29°
Trail	112 mm (4.4 in)
Turning radius	2.3 m (7.5 ft)
Front brake	Disc brake
Rear brake	Drum brake
Front tire size	70/100-21 44M tube type
Rear tire size	90/100-18 54M tube type

ELECTRICAL

Ignition type	Electronic ignition (C.D.I.)
Ignition timing	7° B.T.D.C. at 1 500 rpm
Spark plug	NGK DR8EA or DENSO X24ESR-U
Battery	12 V 21.6 kC (6 Ah) 10 HR
Generator	Three-phase A.C. generator
Fuse	20 A
Headlight	12V 60/55 W
Turn signal light	12 V 15 W E-06 only
Brake light/Tailight	12 V 21/5 W
Speedometer light	12 V 1.7 W
Neutral indicator light	12 V 2 W
Turn signal indicator light	12 V 2 W
High beam indicator light	12 V 2 W

CAPACITIES

Fuel tank, including reserve	13.0 L (3.4/2.9 US/Imp gal)
reserve	2.5 L (0.7/0.5 US/Imp gal)
Engine oil, oil change	950 ml (1.0/0.8 US/Imp qt)
with filter change	1 050 ml (1.1/0.9 US/Imp qt)
overhaul	1 200 ml (1.3/1.1 US/Imp qt)

SERVICE DATA**For E-03, 28, 33****VALVE + GUIDE**

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	33 (1.3)	—
	EX.	28 (1.1)	—
Valve clearance (when cold)	IN. & EX.	0.08 – 0.13 (0.003 – 0.005)	—
Valve guide to valve stem clearance	IN.	0.010 – 0.037 (0.0004 – 0.0015)	—
	EX.	0.030 – 0.057 (0.0012 – 0.0022)	—
Valve stem deflection	IN. & EX.	—	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500 – 5.512 (0.2165 – 0.2170)	—
Valve stem O.D.	IN.	5.475 – 5.490 (0.2146 – 0.2161)	—
	EX.	5.455 – 5.470 (0.2148 – 0.2154)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
Valve stem end length	IN. & EX.	—	2.6 (0.1)
Valve seat width	IN. & EX.	0.9 – 1.1 (0.04 – 0.05)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
	IN. & EX.	—	0.03 (0.001)
Valve spring free length (IN. & EX.)	INNER	—	35.1 (1.38)
	OUTER	—	40.6 (1.60)
Valve spring tension (IN. & EX.)	INNER	70 – 90 N (7.1 – 9.2 kgf, 15.7 – 20.3 lbs) at length 32.5 mm (1.28 in)	—
	OUTER	170 – 209 N (17.3 – 21.3 kgf, 38.1 – 47.0 lbs) at length 36.0 mm (1.42 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	34.174 – 34.218 (1.3454 – 1.3472)	33.870 (1.3335)
	EX.	33.804 – 33.848 (1.3309 – 1.3326)	33.500 (1.3189)
Camshaft journal oil clearance	IN. & EX.	0.032 – 0.066 (0.0013 – 0.0026)	0.150 (0.0059)
Camshaft journal holder I.D.	IN. & EX.	22.012 – 22.025 (0.8666 – 0.8671)	—
Camshaft journal O.D.	IN. & EX.	21.959 – 21.980 (0.8645 – 0.8654)	—
Camshaft runout	IN. & EX.	—	0.10 (0.004)
Rocker arm I.D.	IN. & EX.	12.000 – 12.018 (0.4724 – 0.4731)	—
Rocker arm shaft O.D.	IN. & EX.	11.977 – 11.995 (0.4715 – 0.4722)	—
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	1 400 kPa (14 kgf/cm ² , 199 psi)		980 kPa (9.8 kgf/cm ² , 139 psi)
Piston to cylinder clearance	0.040 – 0.050 (0.0016 – 0.0020)		0.120 (0.0047)
Cylinder bore	66.000 – 66.015 (2.5984 – 2.5990)		66.090 (2.6020)
Piston diam.	65.955 – 65.970 (2.5966 – 2.5972) Measure at 15 mm (0.59 in) from the skirt end.		65.880 (2.5937)
Cylinder distortion	—		0.05 (0.002)
Piston ring free end gap	1st	R	Approx. 7.5 (0.30)
	2nd	R	Approx. 9.4 (0.37)
Piston ring end gap	1st	0.10 – 0.25 (0.004 – 0.010)	
	2nd	0.10 – 0.25 (0.004 – 0.010)	
Piston ring to groove clearance	1st	—	
	2nd	—	

ITEM	STANDARD		LIMIT
Piston ring groove width	1st	1.01 – 1.03 (0.040 – 0.041)	
	2nd	1.21 – 1.23 (0.047 – 0.048)	
	Oil	2.01 – 2.03 (0.079 – 0.080)	
Piston ring thickness	1st	0.970 – 0.990 (0.038 – 0.039)	—
	2nd	1.170 – 1.190 (0.046 – 0.047)	—
Piston pin bore	16.002 – 16.008 (0.6300 – 0.6302)		16.030 (0.6311)
Piston pin O.D.	15.996 – 16.000 (0.6298 – 0.6299)		15.980 (0.6291)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	16.006 – 16.014 (0.6302 – 0.6305)	16.040 (0.6315)
Conrod deflection	—	3.0 (0.12)
Conrod big end side clearance	0.10 – 0.45 (0.004 – 0.018)	1.00 (0.039)
Conrod big end width	17.95 – 18.00 (0.707 – 0.709)	—
Crank web to web width	53.0 ± 0.1 (2.09 ± 0.004)	—
Crankshaft runout	—	0.08 (0.003)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	2.000 (30/15)	—
Oil pressure (at 60 °C, 140 °F)	Above 15 kPa (0.15 kgf/cm ² , 2.1 psi) Below 35 kPa (0.35 kgf/cm ² , 4.9 psi) at 3 000 r/min	—

CLUTCH

Unit: mm (in)

ITEM	STANDARD	LIMIT
Clutch lever play	10 – 15 (0.4 – 0.6)	—
Clutch release screw	1/4 turn back	—
Clutch plate thickness	1 pc. 2.9 – 3.1 (0.114 – 0.122)	2.6 (0.10)
	5 pcs. 2.95 – 3.15 (0.116 – 0.124)	
Driven plate distortion	—	0.10 (0.004)
Clutch spring free length	—	31.0 (1.22)

TRANSMISSION + DRIVE CHAIN

Unit: mm (in) Except ratio

ITEM		STANDARD	LIMIT
Primary reduction ratio		3.157 (60/19)	—
Final reduction ratio		3.000 (45/15)	—
Gear ratios	Low	3.000 (33/11)	—
	2nd	1.933 (29/15)	—
	3rd	1.437 (23/16)	—
	4th	1.095 (23/21)	—
	Top	0.913 (21/23)	—
Shift fork to groove clearance		0.10 – 0.30 (0.004 – 0.012)	—
Shift fork groove width	No.1, 2, 3	5.0 – 5.1 (0.20 – 0.21)	—
Shift fork thickness	No.1, 2, 3	4.8 – 4.9 (0.18 – 0.19)	—
Drive chain	Type	D.I.D. 520VC5	—
	Links	112 links	—
	20-pitch length	—	319.4 (12.57)
Drive chain slack		25 – 40 (1.0 – 1.6)	—

CARBURETOR

ITEM	SPECIFICATION	
	E-03, 28	E-33
Carburetor type	MIKUNI BST31SS	←
Bore size	31 mm	←
I.D. No.	42AC	42AE
Idle r/min	1 500 ± 100 r/min	←
Float height	13.0 ± 1.0 mm (0.51 ± 0.04 in)	←
Main jet (M.J.)	#125	←
Jet needle (J.N.)	5D77	←
Needle jet (N.J.)	P-5M	←
Throttle valve (Th.V.)	#125	←
Pilot jet (P.J.)	#35	←
Starter jet (G.S.)	#25	←
Pilot screw (P.S.)	PRE-SET	←
Throttle cable play	2 – 4 mm (0.08 – 0.16 in)	←

ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Spark plug	Type	DENSO: X24ESR-U NGK: CR8EA		
	Gap	0.6 – 0.7 (0.024 – 0.028)		
Spark performance		Over 8 mm (0.3) at 1 atm.		
Signal coil resistance		100 – 140 Ω		G – BI
Ignition coil resistance	Primary	2 – 6 Ω		Terminal – Terminal
	Secondary	20 – 30 k Ω		Plug cap – Terminal
Generator coil resistance		Charging	0.1 – 1.5 Ω	
Generator no-load voltage		More than 60 V (AC) at 5 000 r/min		
Generator Max. output		150 W at 5 000 r/min		
Regulated voltage		13.0 – 16.0 V at 5 000 r/min		
Starter relay resistance		2 – 6 Ω		
Battery	Type designation	YTX7L-BS		
	Capacity	12 V 21.6 kC (6 Ah)/10 HR		
Fuse size		20 A		

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	60
	LO	55
Brake light/Taillight		21/5
Turn signal light		21
Speedometer light		3.4
Turn signal indicator light		3.4
High beam indicator light		1.7
Neutral indicator light		3.4

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Brake lever play	0.1 – 0.3 (0.004 – 0.010)		—
Rear brake pedal free travel	20 – 30 (0.8 – 1.2)		—
Rear brake pedal height	2.5 (0.10)		—
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 (0.12)
Brake disc runout	Front	—	0.30 (0.012)
Master cylinder bore	Front	12.700 – 12.743 (0.5000 – 0.5017)	—
Master cylinder piston diam.	Front	12.657 – 12.684 (0.4983 – 0.4994)	—
Brake caliper cylinder bore	Front	33.960 – 34.010 (1.3370 – 1.3390)	—
Brake caliper piston diam.	Front	33.878 – 33.928 (1.3338 – 1.3357)	—
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)
Wheel rim size	Front	J21 × 1.60	—
	Rear	J18 × 2.15	—
Tire size	Front	70/100-21 M/C 44P	—
	Rear	100/90-18 M/C 56P	—
Tire tread depth	Front	—	3.0 (0.12)
	Rear	—	3.0 (0.12)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	205 (8.1)	—	
Front fork spring free length	—	561 (22.1)	
Front fork oil level	179.5 (7.07)	—	
Rear shock absorber spring pre-set length	231 (9.1)	—	
Rear wheel travel	205 (8.1)	—	
Swingarm pivot shaft runout	—	0.6 (0.02)	

TIRE PRESSUER

COLD INFLATION TIRE PRESSURE	SOLO RIDING			DUAL RIDING		
	kPa	kgf/cm ²	psi	kPa	kgf/cm ²	psi
FRONT	150	1.50	22	150	1.50	22
REAR	175	1.75	25	200	2.00	29

FUEL + OIL

ITEM	SPECIFICATION	NOTE
Fuel type	Use only unleaded gasoline of at least 87 pump octane (R/2 + M/2) or 91 octane or higher rated by the research method. Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.	
Fuel tank capacity including reserve	13.0 L (3.4/2.9 US/Imp qt)	E-03, 28
	12.5 L (3.3/2.7 US/Imp qt)	E-33
reserve	2.5 L (0.7/0.5 US/Imp qt)	
Engine oil type	* SAE 10W-40, API SF/SG or SH/SJ with JASO MA	
Engine oil capacity	Change 850 ml (0.90/0.75 US/Imp qt)	
	Filter change 950 ml (1.00/0.84 US/Imp qt)	
	Overhaul 1 100 ml (1.2/1.0 US/Imp qt)	
Front fork oil type	Fork oil #10	
Front fork oil capacity (each leg)	309 ml (10.4/10.9 US/Imp oz)	
Brake fluid type	DOT 4	

For E-06, 24
VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	33 (1.3)	—
	EX.	28 (1.1)	—
Valve clearance (when cold)	IN. & EX.	0.08 – 0.13 (0.003 – 0.005)	—
Valve guide to valve stem clearance	IN.	0.010 – 0.037 (0.0004 – 0.0015)	—
	EX.	0.030 – 0.057 (0.0012 – 0.0022)	—
Valve stem deflection	IN. & EX.	—	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500 – 5.512 (0.2165 – 0.2170)	—
Valve stem O.D.	IN.	5.475 – 5.490 (0.2146 – 0.2161)	—
	EX.	5.455 – 5.470 (0.2148 – 0.2154)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
Valve stem end length	IN. & EX.	—	2.6 (0.1)
Valve seat width	IN. & EX.	0.9 – 1.1 (0.04 – 0.05)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length (IN. & EX.)	INNER	—	35.1 (1.38)
	OUTER	—	40.6 (1.60)
Valve spring tension (IN. & EX.)	INNER	70 – 90 N (7.1 – 9.2 kgf, 15.7 – 20.3 lbs) at length 32.5 mm (1.28 in)	—
	OUTER	170 – 209 N (17.3 – 21.3 kgf, 38.1 – 47.0 lbs) at length 36.0 mm (1.42 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	34.174 – 34.218 (1.3454 – 1.3472)	33.870 (1.3335)
	EX.	33.804 – 33.848 (1.3309 – 1.3326)	33.500 (1.3189)
Camshaft journal oil clearance	IN. & EX.	0.032 – 0.066 (0.0013 – 0.0026)	0.150 (0.0059)
Camshaft journal holder I.D.	IN. & EX.	22.012 – 22.025 (0.8666 – 0.8671)	—
Camshaft journal O.D.	IN. & EX.	21.959 – 21.980 (0.8645 – 0.8654)	—
Camshaft runout	IN. & EX.	—	0.10 (0.004)
Rocker arm I.D.	IN. & EX.	12.000 – 12.018 (0.4724 – 0.4731)	—
Rocker arm shaft O.D.	IN. & EX.	11.977 – 11.995 (0.4715 – 0.4722)	—
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	1 400 kPa (14 kgf/cm ² , 199 psi)		980 kPa (9.8 kgf/cm ² , 139 psi)
Piston to cylinder clearance	0.040 – 0.050 (0.0016 – 0.0020)		0.120 (0.0047)
Cylinder bore	66.000 – 66.015 (2.5984 – 2.5990)		66.090 (2.6020)
Piston diam.	65.955 – 65.970 (2.5966 – 2.5972) Measure at 15 mm (0.59 in) from the skirt end.		65.880 (2.5937)
Cylinder distortion	—		0.05 (0.002)
Piston ring free end gap	1st	R	Approx. 7.5 (0.30)
	2nd	R	Approx. 9.4 (0.37)
Piston ring end gap	1st	0.10 – 0.25 (0.004 – 0.010)	
	2nd	0.10 – 0.25 (0.004 – 0.010)	
Piston ring to groove clearance	1st	—	
	2nd	—	

ITEM	STANDARD		LIMIT
Piston ring groove width	1st	1.01 – 1.03 (0.040 – 0.041)	
	2nd	1.21 – 1.23 (0.047 – 0.048)	
	Oil	2.01 – 2.03 (0.079 – 0.080)	
Piston ring thickness	1st	0.970 – 0.990 (0.038 – 0.039)	—
	2nd	1.170 – 1.190 (0.046 – 0.047)	—
Piston pin bore	16.002 – 16.008 (0.6300 – 0.6302)		16.030 (0.6311)
Piston pin O.D.	15.996 – 16.000 (0.6298 – 0.6299)		15.980 (0.6291)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	16.006 – 16.014 (0.6302 – 0.6305)	16.040 (0.6315)
Conrod deflection	—	3.0 (0.12)
Conrod big end side clearance	0.10 – 0.45 (0.004 – 0.018)	1.00 (0.039)
Conrod big end width	17.95 – 18.00 (0.707 – 0.709)	—
Crank web to web width	53.0 ± 0.1 (2.09 ± 0.004)	—
Crankshaft runout	—	0.08 (0.003)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	2.000 (30/15)	—
Oil pressure (at 60 °C, 140 °F)	Above 15 kPa (0.15 kgf/cm ² , 2.1 psi) Below 35 kPa (0.35 kgf/cm ² , 4.9 psi) at 3 000 r/min	—

CLUTCH

Unit: mm (in)

ITEM	STANDARD	LIMIT
Clutch lever play	10 – 15 (0.4 – 0.6)	—
Clutch release screw	1/4 turn back	—
Clutch plate thickness	1 pc. 2.9 – 3.1 (0.114 – 0.122)	2.6 (0.10)
	5 pcs. 2.95 – 3.15 (0.116 – 0.124)	
Driven plate distortion	—	0.10 (0.004)
Clutch spring free length	—	31.0 (1.22)

TRANSMISSION + DRIVE CHAIN

Unit: mm (in) Except ratio

ITEM		STANDARD	LIMIT
Primary reduction ratio		3.157 (60/19)	—
Final reduction ratio		3.916 (47/12)	—
Gear ratios	Low	3.000 (33/11)	—
	2nd	1.933 (29/15)	—
	3rd	1.437 (23/16)	—
	4th	1.095 (23/21)	—
	Top	0.913 (21/23)	—
Shift fork to groove clearance		0.10 – 0.30 (0.004 – 0.012)	—
Shift fork groove width	No.1, 2, 3	5.0 – 5.1 (0.20 – 0.21)	—
Shift fork thickness	No.1, 2, 3	4.8 – 4.9 (0.18 – 0.19)	—
Drive chain	Type	D.I.D. 520VC5	—
	Links	112 links, ENDLESS	—
	20-pitch length	—	319.4 (12.57)
Drive chain slack		25 – 40 (1.0 – 1.6)	—

CARBURETOR

ITEM	SPECIFICATION
Carburetor type	MIKUNI BST31SS
Bore size	31 mm
I.D. No.	42AA
Idle r/min	1 500 ± 100 r/min
Float height	13.0 ± 1.0 mm (0.51 ± 0.04 in)
Main jet (M.J.)	#122.5
Main air jet (M.A.J.)	0.8 mm
Jet needle (J.N.)	5D26-3rd
Needle jet (N.J.)	P-5
Throttle valve (Th.V.)	#125
Pilot jet (P.J.)	#40
Valve seat (V.S.)	1.5 mm
Starter jet (G.S.)	#25
Pilot screw (P.S.)	1 and 1/2 turns out
Throttle cable play	2 – 4 mm (0.08 – 0.16 in)

ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Ignition timing		7°B.T.D.C. Below at 1 500 r/min		
Spark plug		Type	DENSO: X24ESR-U NGK: CR8EA	
		Gap	0.6 – 0.7 (0.024 – 0.028)	
Spark performance		Over 8 mm (0.3) at 1 atm.		
Signal coil resistance		100 – 140 Ω		G – BI
Ignition coil resistance		Primary	0.14 – 0.18 Ω	Terminal – Terminal
		Secondary	15 – 18 kΩ	Plug cap – Terminal
Signal coil peak voltage		3.0 – 4.6 V		⊕ G/W – ⊖ BI/Y
Ignition coil primary peak voltage		125 – 195 V		⊖ White – ⊕ Ground
Generator coil resistance		Charging	0.1 – 1.5 Ω	—
Generator no-load voltage		More than 70 V (AC) at 5 000 r/min		
Regulated voltage		13.0 – 16.0 V at 5 000 r/min		
Starter relay resistance		2 – 6 Ω		
Battery	Type designation	YTX7L-BS		
	Capacity	12 V 21.6 kC (6 Ah)/10 HR		
	Standard electrolyte S.G.	1.32 at 20 °C (68 °F)		
Fuse size		20 A		

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	60
	LO	55
Brake light/Taillight		21/5
Turn signal light (For South Africa)		21
Speedometer light		1.7
Turn signal indicator light (For South Africa)		2
High beam indicator light		2
Neutral indicator light		2

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Brake lever play	0.1 – 0.3 (0.004 – 0.010)		—
Rear brake pedal free travel	20 – 30 (0.8 – 1.2)		—
Rear brake pedal height	2.5 (0.10)		—
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 (0.12)
Brake disc runout	Front	—	0.30 (0.012)
Master cylinder bore	Front	12.700 – 12.743 (0.5000 – 0.5017)	—
Master cylinder piston diam.	Front	12.657 – 12.684 (0.4983 – 0.4994)	—
Brake caliper cylinder bore	Front	33.960 – 34.010 (1.3370 – 1.3390)	—
Brake caliper piston diam.	Front	33.878 – 33.928 (1.3338 – 1.3357)	—
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	70/100-21 44M	—
	Rear	90/100-18 54M	—
Tire tread depth	Front	—	40 (0.16)
	Rear	—	4.0 (0.16)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	205 (8.1)	—	
Front fork spring free length	—	561 (22.1)	
Front fork oil level	179.5 (7.07)	—	
Rear shock absorber spring pre-set length	231 (9.1)	—	
Rear wheel travel	205 (8.1)	—	
Swingarm pivot shaft runout	—	0.6 (0.02)	

TIRE PRESSUER**E-24**

COLD INFLATION TIRE PRESSURE	SOLO RIDING		
	kPa	kgf/cm ²	psi
FRONT	100	1.0	15
REAR	100	1.0	15

E-06

COLD INFLATION TIRE PRESSURE	SOLO RIDING			DUAL RIDING		
	kPa	kgf/cm ²	psi	kPa	kgf/cm ²	psi
FRONT	100	1.0	15	100	1.0	15
REAR	100	1.0	15	100	1.0	15

FUEL + OIL

ITEM	SPECIFICATION	NOTE
Fuel type	Gasoline used should be graded 85 – 95 octane or higher. An unleaded gasoline is recommended.	
Fuel tank capacity	13.0 L (3.4/2.9 US/Imp qt)	
including reserve		
reserve	2.5 L (0.7/0.5 US/Imp qt)	
Engine oil type	* SAE 10W-40, API SF/SG or SH/SJ with JASO MA	
Engine oil capacity	Change 950 ml (1.0/0.8 US/Imp qt)	
	Filter change 1 050 ml (1.1/0.9 US/Imp qt)	
	Overhaul 1 200 ml (1.3/1.1 US/Imp qt)	
Front fork oil type	Fork oil #10	
Front fork oil capacity (each leg)	309 ml (10.4/10.9 US/Imp oz)	
Brake fluid type	DOT 4	

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DR200SEK7/K8 ('07&'08-MODELS)

NOTE:

* Any differences between the DR200SEK6 ('06-MODEL) and DR200SEK ('07-MODEL) in specifications are clearly indicated with an asterisk (*) mark.

* Please refer to the chapters 1 through 11 for details which are not given in this chapter.

For E-06, 24 service data are same as K6 MODEL.

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SPECIFICATIONS

For E-03, 28, 33

DIMENSIONS AND DRY MASS

Overall length	2 150 mm (84.6 in)
Overall width.....	805 mm (31.7 in)
Overall height	1 185 mm (46.7 in)
Wheelbase	1 405 mm (55.3 in)
Ground clearance.....	260 mm (10.2 in)
Seat height	810 mm (31.9 in)
Dry mass	113 kg (249 lbs)

ENGINE

Type.....	Four-stroke, air-cooled, OHC
Number of cylinders	1
Bore.....	66.0 mm (2.60 in)
Stroke	58.2 mm (2.29 in)
Displacement	199 cm ³ (12.1 cu. in)
Compression ratio	9.4 : 1
Carburetor	MIKUNI BST31SS, single
Air cleaner	Polyurethane foam element
Starter system	Electric
Lubrication system	Wet sump
Idle speed.....	1 500 ± 100 r/min

DRIVE TRAIN

Clutch	Wet multi-plate type
Transmission	5 speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction.....	3.157 (60/19)
Final reduction.....	3.000 (45/15)
Gear ratios, Low.....	3.000 (33/11)
2nd.....	1.933 (29/15)
3rd.....	1.437 (23/16)
4th.....	1.095 (23/21)
Top	0.913 (21/23)
Drive chain	D.I.D. 520V, 112 links

CHASSIS

Front suspension.....	Telescopic, coil spring, oil damped
Rear suspension	Link type, coil spring, oil damped
Steering angle	43° (right & left)
Caster.....	29° 00'
Trail.....	112 mm (4.4 in)
Turning radius.....	2.3 m (7.5 ft)
Front brake	Disc brake
Rear brake.....	Drum brake
Front tire size.....	70/100-21M/C 44P tube type
Rear tire size	100/90-18M/C 56P tube type

ELECTRICAL

Ignition type.....	Electronic ignition (Transistorized)
Ignition timing	7° B.T.D.C. at 1 500 r/min
Spark plug	NGK DR8EA or DENSO X24ESR-U
Battery.....	12 V 21.6 kC (6 Ah/10 HR)
Generator	Three-phase A.C. generator
Fuse	20 A
Headlight	12 V 60/55 W
Brake light/Taillight	12 V 21/5 W
Turn signal light	12 V 21 W
Speedometer light	12 V 3.4 W
Neutral indicator light.....	12 V 3.4 W
Turn signal indicator light.....	12 V 3.4 W
High beam indicator light.....	12 V 1.7 W

CAPACITIES

Fuel tank, including reserve	12.5 L (3.3/2.7 US/Imp gal)..... E-33
	13.0 L (3.4/2.9 US/Imp gal)..... Others
reserve	2.5 L (0.7/0.5 US/Imp gal)
Engine oil change	850 ml (0.9/0.7 US/Imp qt)
with filter change	950 ml (1.0/0.8 US/Imp qt)
overhaul.....	1 100 ml (1.2/1.0 US/Imp qt)

SERVICE DATA**For E-03, 28, 33
VALVE + GUIDE**

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	33 (1.3)	—
	EX.	28 (1.1)	—
Valve clearance (when cold)	IN. & EX.	0.08 – 0.13 (0.003 – 0.005)	—
Valve guide to valve stem clearance	IN.	0.010 – 0.037 (0.0004 – 0.0015)	—
	EX.	0.030 – 0.057 (0.0012 – 0.0022)	—
Valve stem deflection	IN. & EX.	—	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500 – 5.512 (0.2165 – 0.2170)	—
Valve stem O.D.	IN.	5.475 – 5.490 (0.2146 – 0.2161)	—
	EX.	5.455 – 5.470 (0.2148 – 0.2154)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
Valve stem end length	IN. & EX.	—	2.6 (0.1)
Valve seat width	IN. & EX.	0.9 – 1.1 (0.04 – 0.05)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length (IN. & EX.)	INNER	—	35.1 (1.38)
	OUTER	—	40.6 (1.60)
Valve spring tension (IN. & EX.)	INNER	70 – 90 N (7.1 – 9.2 kgf, 15.7 – 20.3 lbs) at length 32.5 mm (1.28 in)	—
	OUTER	170 – 209 N (17.3 – 21.3 kgf, 38.1 – 47.0 lbs) at length 36.0 mm (1.42 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	34.174 – 34.218 (1.3454 – 1.3472)	33.870 (1.3335)
	EX.	33.804 – 33.848 (1.3309 – 1.3326)	33.500 (1.3189)
Camshaft journal oil clearance	IN. & EX.	0.032 – 0.066 (0.0013 – 0.0026)	0.150 (0.0059)
Camshaft journal holder I.D.	IN. & EX.	22.012 – 22.025 (0.8666 – 0.8671)	—
Camshaft journal O.D.	IN. & EX.	21.959 – 21.980 (0.8645 – 0.8654)	—
Camshaft runout	IN. & EX.	—	0.10 (0.004)
Rocker arm I.D.	IN. & EX.	12.000 – 12.018 (0.4724 – 0.4731)	—
Rocker arm shaft O.D.	IN. & EX.	11.977 – 11.995 (0.4715 – 0.4722)	—
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	1 400 kPa (14 kgf/cm ² , 199 psi)		980 kPa (9.8 kgf/cm ² , 139 psi)
Piston to cylinder clearance	0.040 – 0.050 (0.0016 – 0.0020)		0.120 (0.0047)
Cylinder bore	66.000 – 66.015 (2.5984 – 2.5990)		66.090 (2.6020)
Piston diam.	65.955 – 65.970 (2.5966 – 2.5972) Measure at 15 mm (0.59 in) from the skirt end.		65.880 (2.5937)
Cylinder distortion	—		0.05 (0.002)
Piston ring free end gap	1st	R	Approx. 7.5 (0.30)
	2nd	R	Approx. 9.4 (0.37)
Piston ring end gap	1st	0.10 – 0.25 (0.004 – 0.010)	
	2nd	0.10 – 0.25 (0.004 – 0.010)	
Piston ring to groove clearance	1st	—	
	2nd	—	

ITEM	STANDARD		LIMIT
Piston ring groove width	1st	1.01 – 1.03 (0.040 – 0.041)	
	2nd	1.21 – 1.23 (0.047 – 0.048)	
	Oil	2.01 – 2.03 (0.079 – 0.080)	
Piston ring thickness	1st	0.970 – 0.990 (0.038 – 0.039)	—
	2nd	1.170 – 1.190 (0.046 – 0.047)	—
Piston pin bore	16.002 – 16.008 (0.6300 – 0.6302)		16.030 (0.6311)
Piston pin O.D.	15.996 – 16.000 (0.6298 – 0.6299)		15.980 (0.6291)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	16.006 – 16.014 (0.6302 – 0.6305)	16.040 (0.6315)
Conrod deflection	—	3.0 (0.12)
Conrod big end side clearance	0.10 – 0.45 (0.004 – 0.018)	1.00 (0.039)
Conrod big end width	17.95 – 18.00 (0.707 – 0.709)	—
Crank web to web width	53.0 ± 0.1 (2.09 ± 0.004)	—
Crankshaft runout	—	0.08 (0.003)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	2.000 (30/15)	—
Oil pressure (at 60 °C, 140 °F)	Above 15 kPa (0.15 kgf/cm ² , 2.1 psi) Below 35 kPa (0.35 kgf/cm ² , 4.9 psi) at 3 000 r/min	—

CLUTCH

Unit: mm (in)

ITEM	STANDARD	LIMIT
Clutch lever play	10 – 15 (0.4 – 0.6)	—
Clutch release screw	1/4 turn back	—
Clutch plate thickness	1 pc. 2.9 – 3.1 (0.114 – 0.122)	2.6 (0.10)
	5 pcs. 2.95 – 3.15 (0.116 – 0.124)	
Driven plate distortion	—	0.10 (0.004)
Clutch spring free length	—	31.0 (1.22)

TRANSMISSION + DRIVE CHAIN

Unit: mm (in) Except ratio

ITEM		STANDARD	LIMIT
Primary reduction ratio		3.157 (60/19)	—
Final reduction ratio		3.000 (45/15)	—
Gear ratios	Low	3.000 (33/11)	—
	2nd	1.933 (29/15)	—
	3rd	1.437 (23/16)	—
	4th	1.095 (23/21)	—
	Top	0.913 (21/23)	—
Shift fork to groove clearance		0.10 – 0.30 (0.004 – 0.012)	—
Shift fork groove width	No.1, 2, 3	5.0 – 5.1 (0.20 – 0.21)	—
Shift fork thickness	No.1, 2, 3	4.8 – 4.9 (0.18 – 0.19)	—
Drive chain	Type	* D.I.D. 520V5	—
	Links	112 links	—
	20-pitch length	—	319.4 (12.57)
Drive chain slack		25 – 40 (1.0 – 1.6)	—

CARBURETOR

ITEM	SPECIFICATION	
	E-03, 28	E-33
Carburetor type	MIKUNI BST31SS	←
Bore size	31 mm	←
I.D. No.	42AC	42AE
Idle r/min	1 500 ± 100 r/min	←
Float height	13.0 ± 1.0 mm (0.51 ± 0.04 in)	←
Main jet (M.J.)	#125	←
Jet needle (J.N.)	5D77	←
Needle jet (N.J.)	P-5M	←
Throttle valve (Th.V.)	#125	←
Pilot jet (P.J.)	#35	←
Starter jet (G.S.)	#25	←
Pilot screw (P.S.)	PRE-SET	←
Throttle cable play	2 – 4 mm (0.08 – 0.16 in)	←

ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Spark plug		Type	DENSO: X24ESR-U NGK: CR8EA	
		Gap	0.6 – 0.7 (0.024 – 0.028)	
Spark performance		Over 8 mm (0.3) at 1 atm.		
Signal coil resistance		100 – 140 Ω		G – BI
Ignition coil resistance		Primary	2 – 6 Ω	Terminal – Terminal
		Secondary	20 – 30 kΩ	Plug cap – Terminal
Generator coil resistance		Charging	0.1 – 1.5 Ω	
Generator no-load voltage		More than 60 V (AC) at 5 000 r/min		
Generator Max. output		150 W at 5 000 r/min		
Regulated voltage		13.0 – 16.0 V at 5 000 r/min		
Starter relay resistance		2 – 6 Ω		
Battery	Type designation	YTX7L-BS		
	Capacity	12 V 21.6 kC (6 Ah)/10 HR		
Fuse size		20 A		

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	60
	LO	55
Brake light/Taillight		21/5
Turn signal light		21
Speedometer light		3.4
Turn signal indicator light		3.4
High beam indicator light		1.7
Neutral indicator light		3.4

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Brake lever play	0.1 – 0.3 (0.004 – 0.010)		—
Rear brake pedal free travel	20 – 30 (0.8 – 1.2)		—
Rear brake pedal height	2.5 (0.10)		—
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 (0.12)
Brake disc runout	Front	—	0.30 (0.012)
Master cylinder bore	Front	12.700 – 12.743 (0.5000 – 0.5017)	—
Master cylinder piston diam.	Front	12.657 – 12.684 (0.4983 – 0.4994)	—
Brake caliper cylinder bore	Front	33.960 – 34.010 (1.3370 – 1.3390)	—
Brake caliper piston diam.	Front	33.878 – 33.928 (1.3338 – 1.3357)	—
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)
Wheel rim size	Front	J21 × 1.60	—
	Rear	J18 × 2.15	—
Tire size	Front	70/100-21 M/C 44P	—
	Rear	100/90-18 M/C 56P	—
Tire tread depth	Front	—	3.0 (0.12)
	Rear	—	3.0 (0.12)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	205 (8.1)	—	
Front fork spring free length	—	561 (22.1)	
Front fork oil level	179.5 (7.07)	—	
Rear shock absorber spring pre-set length	231 (9.1)	—	
Rear wheel travel	205 (8.1)	—	
Swingarm pivot shaft runout	—	0.6 (0.02)	

TIRE PRESSUER

COLD INFLATION TIRE PRESSURE	SOLO RIDING			DUAL RIDING		
	kPa	kgf/cm ²	psi	kPa	kgf/cm ²	psi
FRONT	150	1.50	22	150	1.50	22
REAR	175	1.75	25	200	2.00	29

FUEL + OIL

ITEM	SPECIFICATION	NOTE
Fuel type	Use only unleaded gasoline of at least 87 pump octane (R/2 + M/2) or 91 octane or higher rated by the research method. Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.	
Fuel tank capacity including reserve	13.0 L (3.4/2.9 US/lmp qt)	E-03, 28
	12.5 L (3.3/2.7 US/lmp qt)	E-33
reserve	2.5 L (0.7/0.5 US/lmp qt)	
Engine oil type	SAE 10W-40, API SF/SG or SH/SJ with JASO MA	
Engine oil capacity	Change 850 ml (0.90/0.75 US/lmp qt)	
	Filter change 950 ml (1.00/0.84 US/lmp qt)	
	Overhaul 1 100 ml (1.2/1.0 US/lmp qt)	
Front fork oil type	Fork oil #10	
Front fork oil capacity (each leg)	309 ml (10.4/10.9 US/lmp oz)	
Brake fluid type	DOT 4	

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DR200SEK9 ('09-MODEL)

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NOTE:

- * Differences between K9-MODEL and K8-MODEL specifications are indicated as an asterisk mark (*).
- * The service data are the same as the K8-MODEL.

SPECIFICATIONS

(E-03, 28, 33)

DIMENSIONS AND CURB MASS

Overall length	2 150 mm (84.6 in)
Overall width.....	805 mm (31.7 in)
Overall height	1 185 mm (46.7 in)
Wheelbase	1 405 mm (55.3 in)
Ground clearance.....	260 mm (10.2 in)
Seat height	810 mm (31.9 in)
* Curb mass	126 kg (278 lbs)

ENGINE

Type.....	Four-stroke, air-cooled, OHC
Number of cylinders	1
Bore.....	66.0 mm (2.60 in)
Stroke	58.2 mm (2.29 in)
Displacement	199 cm ³ (12.1 cu. in)
Compression ratio	9.4 : 1
Carburetor	MIKUNI BST31SS, single
Air cleaner	Polyurethane foam element
Starter system	Electric
Lubrication system	Wet sump
Idle speed.....	1 500 ± 100 r/min

DRIVE TRAIN

Clutch	Wet multi-plate type
Transmission	5 speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction	3.157 (60/19)
Final reduction.....	3.000 (45/15)
Gear ratios, Low	3.000 (33/11)
2nd	1.933 (29/15)
3rd	1.437 (23/16)
4th	1.095 (23/21)
Top	0.913 (21/23)
Drive chain	DID 520V, 112 links

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Link type, coil spring, oil damped
Front fork stroke	205 mm (8.1 in)
Rear wheel travel	205 mm (8.1 in)
Caster.....	29°
Trail.....	112 mm (4.4 in)
Steering angle	43° (right & left)
Turning radius.....	2.3 m (7.5 ft)
Front brake	Disc brake
Rear brake	Drum brake
Front tire	70/100-21M/C 44P, tube type
Rear tire	100/90-18M/C 56P, tube type

ELECTRICAL

Ignition type	Electronic ignition (Transistorized)
Ignition timing	7° B.T.D.C. at 1 500 r/min
Spark plug	NGK DR8EA or DENSO X24ESR-U
Battery	12 V 21.6 kC (6 Ah)/10 HR
Generator	Three-phase A.C. generator
Fuse	20 A
Headlight	12 V 60/55 W
Brake light/Taillight	12 V 21/5 W
Turn signal light	12 V 21 W
Speedometer light	12 V 3.4 W
Neutral indicator light.....	12 V 3.4 W
Turn signal indicator light.....	12 V 3.4 W
High beam indicator light.....	12 V 1.7 W

CAPACITIES

Fuel tank, including reserve	12.5 L (3.3/2.7 US/Imp gal)..... E-33
	13.0 L (3.4/2.9 US/Imp gal)..... Others
reserve	2.5 L (0.7/0.5 US/Imp gal)
Engine oil change	850 ml (0.9/0.7 US/Imp qt)
with filter change	950 ml (1.0/0.8 US/Imp qt)
overhaul.....	1 100 ml (1.2/1.0 US/Imp qt)