# SUZUKI

# AN400

SERVICE MANUAL



# **FOREWORD**

This manual contains an introductory description on the SUZUKI AN400 and procedures for its inspection/service and overhaul of its main components. Other information considered as generally known is not included.

Read the GENERAL INFORMATION section to familiarize yourself with the motorcycle and its maintenance. Use this section as well as other sections to use as a guide for proper inspection and service. This manual will help you know the motorcycle better so that you can assure your customers of fast and reliable service.

- \* This manual has been prepared on the basis of the latest specifications at the time of publication. If modifications have been made since then, differences may exist between the content of this manual and the actual motorcycle.
- \* Illustrations in this manual are used to show the basic principles of operation and work procedures. They may not represent the actual motorcycle exactly in detail.
- \* This manual is written for persons who have enough knowledge, skills and tools, including special tools, for servicing SUZUKI motorcycles. If you do not have the proper knowledge and tools, ask your authorized SUZUKI motorcycle dealer to help you.

# A WARNING

Inexperienced mechanics or mechanics without the proper tools and equipment may not be able to properly perform the services described in this manual. Improper repair may result in injury to the mechanic and may render the motorcycle unsafe for the rider and passenger.

# **GROUP INDEX**

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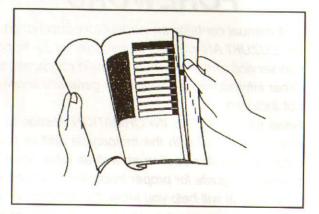
### SUZUKI MOTOR CORPORATION

Motorcycle Service Department

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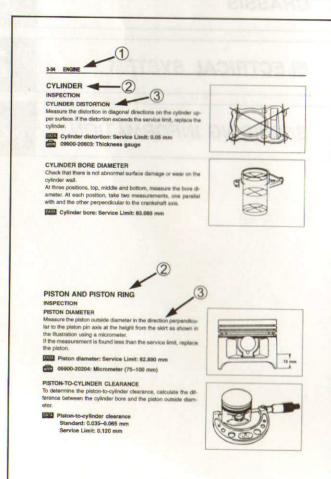
# HOW TO USE THIS MANUAL TO LOCATE WHAT YOU ARE LOOKING FOR:

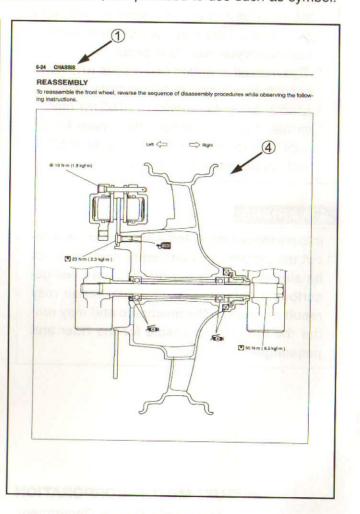
- 1. The text of this manual is divided into sections.
- 2. The section titles are listed in the GROUP INDEX.
- Holding the manual as shown at the right will allow you to find the first page of the section easily.
- 4. The contents are listed on the first page of each section to help find the item and page you need.



# PAGE LAYOUT

- The text of this manual is edited by using pictures and illustrations in order to understand easily.
- 1 : The section title
- 2: The contents in the section
- 3: Working order
- 4 : The component parts, work instruction and service information, are provided to use such as symbol.





# SYMBOL

Listed in the table below are the symbols indicating instructions and other information necessary for servicing. The meaning of each symbol is also included in the table.

SYMBOL	DEFINITION	SYMBOL	DEFINITION
U	Torque control required Data beside it indicates specified torque.	BF	Apply or use brake fluid.
	Apply oil. Use engine oil unless otherwise specified.	ŲV → →	Measure in voltage range.
M/O	Apply *Molybdenum oil solution (Mixture of engine oil and SUZUKI MOLY PASTE in a ratio of 1:1)	Ω	Measure in resistance range.
FAH	Apply SUZUKI SUPER GREASE "A". 99000-25010	A	Measure in current range.
FSH	Apply SUZUKI SILICONE GREASE. 99000-25100		Measure in diode test range.
₹MH	Apply SUZUKI MOLY PASTE. 99000-25140		Measure in continuity test range.
1215	Apply SUZUKI BOND "1215". 99000-31110	TOOL	Use special tool.
1216	Apply SUZUKI BOND "1216". 99000-31160	LLC	Use engine coolant. 99000-99032-11X
1303	Apply THREAD LOCK SUPER "1303". 99000-32030	FORK	Use fork oil. 99000-99044-10G
1322	Apply THREAD LOCK "1322". 99000-32110	DATA	Indication of service data.
1342	Apply THREAD LOCK "1342". 99000-32050	FGH	Apply THERMO GREASE "G". 99000-25300
1360	Apply THREAD LOCK SUPER "1360". 99000-32130		

<sup>\*</sup> How to make Molybdenum oil: Pour an engine oil and SUZUKI MOLY PASTE in a ratio of 1:1 by volume into such as oiler, and stir well.

# GENERAL INFORMATION

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COUNTRY AND AREA CODES

# GENERAL INFORMATION

### 1-

# 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.

# **A WARNING**

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

# **A** CAUTION

Indicates a potential hazard that could result in motorcycle 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 WARN-INGS 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**

# **A WARNING**

- \* Proper service and repair procedures are important for the safety of the service mechanic and the safety and reliability of the motorcycle.
- \* 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, radiator and exhaust system until they have cooled.
- \* After servicing the fuel, oil, water, exhaust or brake systems, check all lines and fittings related to the system for leaks.

# **A WARNING**

- \* 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. Lubricate them when specified.
- \* Use the specified lubricant, bond, or sealant.
- \* 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.
- \* When tightening the cylinder head and case bolts and nuts, tighten the larger sizes first. Always tighten the bolts and nuts diagonally from the inside working out and to the specified tightening torque.
- \* Whenever you remove oil seals, gaskets, packing, O-rings, locking washers, self-locking nuts, 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 surfaces.
- \* 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.
- \* Use a torque wrench to tighten fasteners to the specified torque. Wipe off grease and oil if a thread is smeared with them.
- \* After reassembling, check parts for tightness and proper operation.
- \* To protect the environment, do not unlawfully dispose of used motor oil, engine coolant and other fluids: batteries, and tires.
- \* To protect Earth's natural resources, properly dispose of used motorcycle and parts.

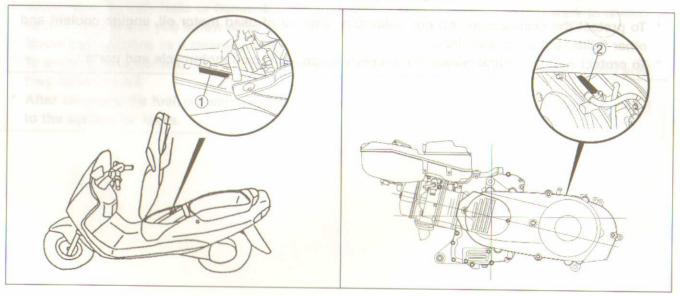
# SUZUKI AN400X ('99-MODEL)



\*Difference between photograph and actual motorcycle 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 frame tube. The engine serial number ② is located on the left side of the crankcase. These numbers are required especially for registering the machine and ordering spare parts.



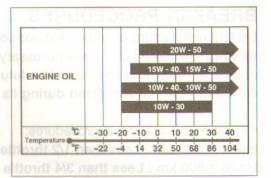
# FUEL, OIL AND ENGINE COOLANT RECOMMENDATION FUEL

Gasoline used should be graded 91 octane (Research Method) or higher. Unleaded gasoline is recommended.

# **ENGINE OIL**

Use a premium quality 4-stroke motor oil to ensure longer and service life of your motorcycle. Use only oils which are rated as a 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 following chart.



# **BRAKE FLUID**

Specification and classification: DOT 4

# **A 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.

# **ENGINE COOLANT**

Use an anti-freeze/engine coolant compatible with an aluminum radiator, mixed with distilled water only.

# WATER FOR MIXING

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

# ANTI-FREEZE/ENGINE COOLANT

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

Suzuki recommends the use of SUZUKI COOLANT anti-freeze/engine coolant. If this is not available, use an equivalent which is compatible with an aluminum radiator.

# LIQUID AMOUNT OF WATER/ENGINE COOLANT

Solution capacity (without reservoir): 1500 ml

Solution capacity (Reservoir): 250 ml

For engine coolant mixture information, refer to cooling system section, page 5-2.

# A CAUTION

Mixing of anti-freeze/engine coolant should be limited to 60%. Mixing beyond it would reduce its efficiency. If the anti-freeze/engine coolant mixing ratio is below 50%, rust inhabiting performance is greatly reduced. Be sure to mix it above 50% even though the atmospheric temperature does not go down to the freezing point.

# **BREAK-IN PROCEDURES**

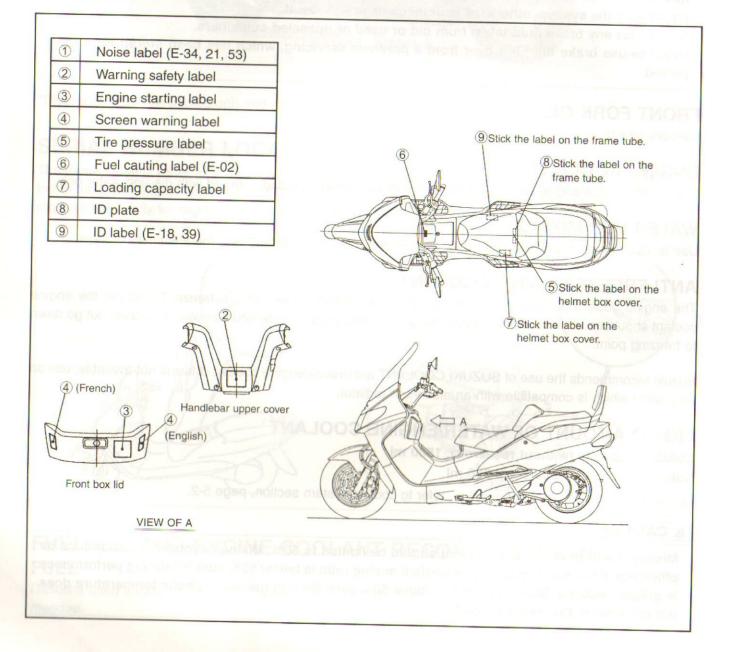
During manufacture only the best possible materials are used and all machined parts are finished to a very high standard but it is still necessary to allow the moving parts to "BREAK-IN" before subjecting the engine to maximum stresses. The future performance and reliability of the engine depends on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

Keep to these break-in procedures:

Initial 800 km : Less than 1/2 throttle Up to 1 600 km : Less than 3/4 throttle

- Upon reaching an odometer reading of 1 600 km you can subject the motorcycle to full throttle operation.
- Do not maintain constant engine speed for an extended time period during any portion of the break-in. Try to vary the throttle position.

# INFORMATION LABELS



# **SPECIFICATIONS**

# **DIMENSIONS AND DRY MASS**

Overall length	2 260 mm
Overall width	765 mm
Overall height	1 365 mm
Wheelbase	1 590 mm
Ground clearnce	120 mm
Dry mass	174 kg

# **ENGINE**

Four-stroke, OHC
1
83.0 mm
71.2 mm
385 cm <sup>3</sup>
10.2:1
KEIHIN CVK36, single
Plyurethane foam element
Electric starter
Wet sump

# **TRANSMISSION**

Clutch	Dry shoe, automatic, centrifugal type
Reduction ratio	Variable change (2.203-0.854)
Final reduction ratio	6.168 (31/14 × 39/14)
Drive system	V-belt drive

# **CHASSIS**

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Link type, coil spring, gas/oil damped, spring
	pre-load 34 way (17 revolutions) adjustable
Caster	26° 57'
Trail	106 mm
Steering angle	40° (left and right)
Turning radius	2.8 m
Front tire size	110/90-13M/C 55P
Rear tire size	130/70-13M/C 63P
Front brake	Disc brake
Combination brake	Disc brake

gnition type	Electronic ignition (Transistorized)
gnition timing	10° B.T.D.C. at 1 400 rpm
Spark plug	NGK CR7E or DENSO U22ESR-N
Battery	12V 28.8 kC(8 Ah)/10HR
Generator	Three-phase A.C. Generator
Fuse	30/15/15/10/15/10A
Headlight	12V 60/55W (H4)
Position light	12V 5W
Turn signal light	12V 21W×4
Brake light/taillight	12V 21/5W×2
Speedometer light	12V 1.7W×2
High beam indicator light	12V 1.7W
Turn signal indicator light	12V 1.7W×2
Coolant temperature gauge light	12V 1.7W
Fuel level gauge light	12V 1.7W
Brake-lock indicator light	
Trunk light	

# **CAPACITIES**

Fuel tank	
Engine oil, oil change	1 900 ml
with filter change	2 000 ml
Reduction gear oil	190 ml
Coolant (without reservoir)	1 500 ml

These specifications are subject to change without notice.

# **COUNTRY AND AREA CODES**

The following codes stand for the applicable country(-ies) and area(-s).

CODE	COUNTRY or AREA			
E-02	U.K.			
E-04	France			
E-18	Switzerland			
E-22	Germany			
E-34	Italy gea owner-neon r			
1	The second secon			

_	CONTENTS no bemotied ed year grade	od Ir in t	ı İ.
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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.

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

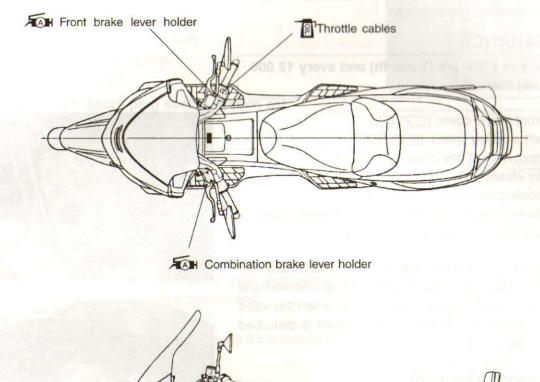
# PERIODIC MAINTENANCE CHART

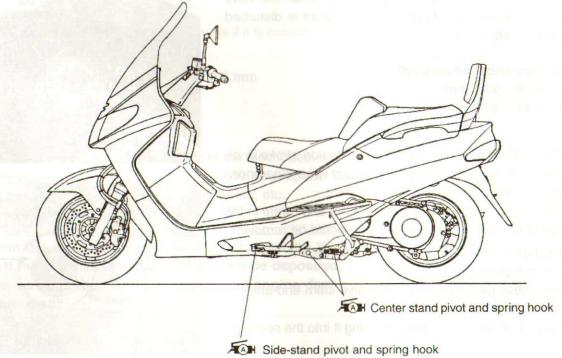
Interval	km	1 000	6 000	12 000	18 000	24 000
Branch & B	miles	600	4 000	7 500	11 000	15 000
Item	months	annda a	6	12	18	24
Valve clearance		Land of the land	max A	ı	_	1
Spark plug	ARRANGARASA	77 / 1	THE LOCAL PROPERTY OF THE PARTY	R	1	R
Exhaust pipe bolt and muffler bolt		Tevre	W	TUJ9	VIII 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Т
Air cleaner element	T1083	MUPPLE	Clean every	3 000 km (2	000 miles).	
Engine idle speed	***********	L		EANER	AJFI CL	1
Throttle cable play		1	1	udran	taa ka	1
Cooling fan filter			Clean every	3 000 km (2		
Radiator hoses		-	1	1		1
Raff and the control of the control			Replac	ce every 4 y	ears.	
Engine coolant	* F E V * * E * 2 5 00 0 0 0 0			ce every 2 y		
Fuel hose		_	TAPILLO	INALING	MOINS	1
The Company of the Subject in		Replace every 4 years.				
Engine oil		R	R	R	R	R
Engine oil filter		R	_	_	R	_
Brake		I	1	I	Ī	1
Brake hoses	(Tripwise)		1	1	1	1
On the state of th		Replace every 4 years.				
Brake fluid	***************************************		I.V/O	au (1 2 th	SABE	1
The Samuel of the same	TARTY COLOR	Replace every 2 years.				
Reduction gear oil		_	TAIN CHAIN	- La y		1
Steering		L	- Dian-	1	_	1
Front fork		_	- Catatata and	1	_	1
Rear suspension	RES. 0. 1 ( 1 ( 1 ( 1 ( 1 ( 1 ( 1 ( 1 ( 1 ( 1		1/4_1/63	MORSE		1
Tire 91-S		_	[493]	O Jansa	300	1
Chassis bolt and nut		T	T	UTO	Т	Т
Drive V-belt		II	nspect every	12 000 km (	7 500 miles)	

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.

# **VALVE CLEARANCE**

Inspect initially at 1 000 km (1 month) and every 12 000 km (12 months) thereafter.

- Remove the front frame cover. ( 6-2)
- Remove the left side leg shield. ( 6-2)
- Remove the front helmet box cover. ( 6-2)
- Remove the air cleaner box and carburetor. ( 3-3)
- Remove the cooling fan cover. ( 3-11)
- · Remove the timing inspection plug on the generator cover.
- Remove the cylinder head cover. ( 3-11)

The valve clearance specification is different for 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.

DATA Valve clearance (when cold):

IN.: 0.08 – 0.13 mm EX.: 0.17 – 0.22 mm

### NOTE:

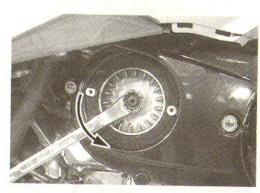
- \* The piston must be at (TDC) on the compression stroke in order to check the valve clearance or to adjust valve clearance.
- \* The clearance specification is for COLD state.
- \* To turn the crankshaft for clearance checking, and rotate in the normal running direction. The spark plug should be removed.
- Insert a thickness gauge between the valve stem end and the adjusting screw on the rocker arm.

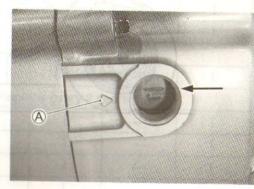
If the clearance is out of specification, bring it into the specified range.

09900-20803: Thickness gauge 09917-14910: Valve clearance adjusting driver

Install the cylinder head cover. ( 3-78)









# SPARK PLUG

Inspect at 6 000 km (6 and 18 months) and replace every 12 000 km (12 months) thereafter.

# REMOVAL

- Remove the frame cover. ( 6-2)
- · Disconnect the spark plug cap.
- · Remove the spark plug.

09930-10121: Spark plug socket wrench set 09930-14530: Universal joint

	Standard	Cold type
NGK	CR7E	CR9E, CR8E
DENSO	U22ESR-N	U27ESR-N, U24ESR-N

### 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.

DATA Spark plug gap: Standard: 0.7 - 0.8 mm

09900-20803 : Thickness gauge

# **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.

# **A CAUTION**

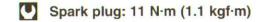
Confirm the thread size and reach when replacing the plug. If the reach is too short, carbon will be deposited on the screw portion of the plug hole and engine damage may result.

# INSTALLATION

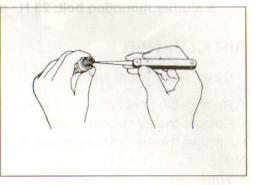
# **A CAUTION**

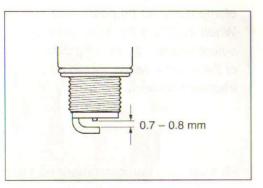
Before using a spark plug wrench, carefully turn the spark plug by finger into the threads of the cylinder head to prevent damage the aluminum threads.

 Install the spark plug to the cylinder head by finger tight, and then tighten it to the specified torque.









# **EXHAUST PIPE BOLT AND MUFFLER BOLT**

Tighten initially at 1 000 km (1 month) and every 12 000 km (12 months) thereafter.

- Remove the right side leg shield ( 6-2)
- Tighten the exhaust pipe bolts ①, exhaust pipe joint bolts ② and muffler mounting bolts 3 to the specified torque with a torque wrench.
- Exhaust pipe bolt, Exhaust pipe joint bolt & Muffler mounting bolt: 23 N · m (2.3 kgf·m)

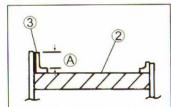
# AIR CLEANER

# Clean every 3 000 km.

- Remove the front helmet box cover ( 6-1)
- · Remove the air cleaner cover 1.
- Remove the air cleaner element ② and its retainer ③.

### NOTE:

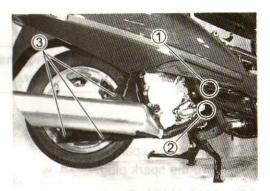
- \* When installing the air cleaner element, the letter mark on the element should be positioned outside.
- \* When installing the air cleaner element retainer 3, the long side A of the retainer flange should be positioned backward.



- · Fill a washing pan of a proper size with a non-flammable cleaning solvent. Immerse the element in the cleaning solvent and wash it.
- · Gently squeeze the element to remove the excess solvent: do not twist or wring the element or it will develop tears.
- Immerse the element in motor oil and squeeze out the excess oil. The element should be wet but not dripping.
- Reinstall the cleaned or new air cleaner element in the reverse order of removal.

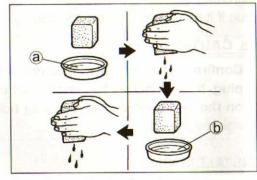
# **A CAUTION**

- \* Inspect the air cleaner element for tears. A torn element must be replaced.
- \* If driving under dusty conditions, 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 torn element. Make sure that the air cleaner is in good condition at all times. Life of the engine depends largely on this component!









 Non-flammable cleaning solvent Motor oil SAE #30 or SAE 10W/40

# CARBURETOR

Inspect initially at 1 000 km (1 month) and every 6 000 km (6 months) thereafter.

# IDLE RPM (Idling adjustment)

### NOTE:

Make this adjustment when the engine is hot.

- Remove the front helmet box cover. ( 6-2)
- Connect an electric tachometer.
- · Start up the engine and set its speed at anywhere between 1300 and 1500 r/min by turning throttle stop screw ①.

# DATA Engine idle speed:

- 1 400 ± 50 r/min ... For E-18
- 1 400 ± 100 r/min ... For the others





### THROTTLE CABLE PLAY

Adjust the throttle cable play (A) with the following three steps.

· Loosen the lock nut 3 of the throttle returning cable 1 and turn in the adjuster 4 fully into the threads.

# Second step:

- Loosen the lock nut ⑤ of the throttle pulling cable ②.
- . Turn the adjuster 6 in or out until the throttle cable play should be 2.0 - 4.0 mm at the throttle grip.
- Tighten the lock nut ⑤ while holding the adjuster ⑥.

### Third step:

- While holding the throttle grip at the fully closed position, slowly turn out the adjuster 4 of the throttle returning cable 1 to feel
- Tighten the lock nut ③ while holding the adjuster ④.

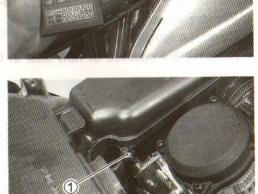
DATA Throttle cable play A: 2.0 - 4.0 mm

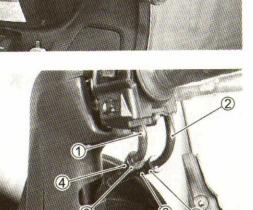
# A WARNING

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

### NOTE:

Major adjustment can be made by the carburetor side adjuster.





# **COOLING FAN FILTER**

# Clean every 3 000 km.

- Remove the front frame cover. ( 6-2)
- Remove the left side leg shield. ( 6-2)
- Remove the cooling fan cover. ( 3-11)
- · Remove the cooling fan filter 1.
- · Clean the fan filter.
- · Reinstall the cleaned or new filter in the reverse order of removal.

# A CAUTION

Do not apply oil or water to the fan filter.



# (RADIATOR HOSE)

Inspect every 6 000 km (6 months). Replace radiator hoses every 4 years.

# (ENGINE COOLANT)

Replace engine coolant every 2 years.

# **RADIATOR HOSES**

Check to see the radiator hoses for crack, damage or engine coolant leakage.

If any defects are found, replace the radiator hoses with new ones.

# **ENGINE COOLANT LEVEL CHECK**

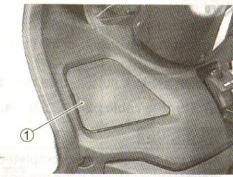
- · Keep the motorcycle upright.
- Remove the service lid ①.

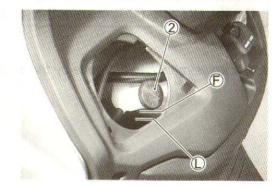


- · Check the engine coolant level by observing the full and lower lines on the engine coolant reserve tank.
  - F Full line
- Lower line
- If the level is below the lower line, remove the filler cap 2 and add engine coolant to the full line from the engine coolant reserve tank filler.









# Continued on next page

### **ENGINE COOLANT CHANGE**

- Remove the rear leg shield and frame covers. ( 6-2)
- · Remove the radiator cap.

# A WARNING

- \* Do not open the radiator cap when the engine is hot, as you may be injured by escaping hot liquid or vapor.
- \* Engine coolant may be harmful if swallowed or if it comes in contact with skin or eyes. If engine coolant gets into the eyes or in contact with the skin, flush thoroughly with plenty of water. If swallowed, induce vomiting and call physician immediately!
- Drain engine coolant by disconnecting the water hoses 1, 2 and 3.
- · Flush the radiator with fresh water if necessary.
- · Pour the specified engine coolant up to the radiator inlet.
- Bleed the air from the engine coolant circuit as following procedure.

### NOTE:

For engine coolant information: 5-2

# AIR BLEEDING THE ENGINE COOLANT CIRCUIT

- Bleed air from the air bleeder bolt 4.
- Tighten the air bleeder bolt 4 to the specified torque.

# Air bleeder bolt : 10 N·m (1.0 kgf·m)

- · Add engine coolant up to the radiator inlet.
- · Slowly swing the motorcycle, right and left, to bleed the air trapped.
- Add engine coolant up to the radiator inlet.
- · Start up the engine and bleed air from the radiator inlet completely.
- Add engine coolant up to the radiator inlet.
- · Repeat the above procedure until bleed no air from the radiator inlet.
- Close the radiator cap securely.
- After warming up and cooling down the engine several times, add the engine coolant up to the full level of the reserve tank.

# A CAUTION

Repeat the above procedure several times and make sure that the radiator is filled with engine coolant up to the reserve tank full level.

DATA Engine coolant capacity (without reservoir): 1 500 ml









# **FUEL HOSE**

Inspect every 6 000 km (6 months) thereafter. Replace every 4 years.

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

# **FUEL FILTER**

Visually check the fuel filter. If accumulation of sediment or clogging is found, replace the fuel filter with a new one.

# **ENGINE OIL AND OIL FILTER**

### (ENGINE OIL)

Replace initially at 1 000 km (1 month) and every 6 000 km (6 months) thereafter.

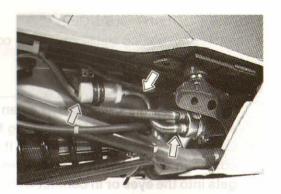
### (OIL FILTER)

Replace initially at 1000 km (1 month) and every 18 000 km (18 months) thereafter.

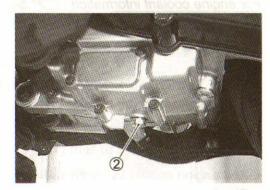
Oil should be changed while the engine is warm. Oil filter replacement at the above intervals, should be done together with the engine oil change.

- Keep the motorcycle upright.
- Place an oil pan below the engine, and drain the oil by removing the filler cap ① and drain plug ②.
- Remove the oil filter cap ③.
- · Remove the oil filter.

· Install the new O-ring 4 and new oil filter.

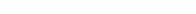












Continued on next page

Install the new O-ring ⑤ and spring ⑥ to the oil filter cap.

### NOTE:

- \* Before installing the oil filter cap, apply engine oil lightly to the new O-ring 5.
- \* The arrow mark on the oil filter cap should be positioned topward.
- · Place the motorcycle on the side-stand.
- Fit the drain plug ② securely, and pour fresh oil through the oil filler. The engine will hold about 2 000 ml of oil. Use an API classification of SF or SG oil with SAE 10W/40 viscosity.

# Drain plug: 23 N·m (2.3 kgf·m)

- Install the filler cap ①.
- Place the motorcycle on the center stand.
- Start up the engine and allow it to run for several minutes at idling speed.
- Turn off the engine and wait about one minute, then check the oil level by removing the filler cap ①. If the level is below mark "L", add oil to "F" level.

### NOTE:

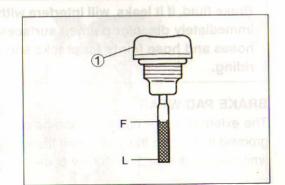
If the level is above mark "F", drain oil to "F" level.

# DATA NECESSARY AMOUNT OF ENGINE OIL:

Oil change : 1 900 ml Filter change : 2 000 ml Overhaul engine : 2 300 ml

# 5 6





# **BRAKE SYSTEM**

# (BRAKE)

Inspect initially at 1 000 km (1 month) and every 6 000 km (6 months) thereafter.

# (BRAKE HOSE AND BRAKE FLUID)

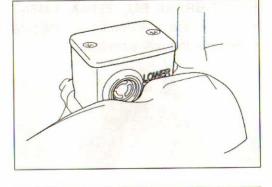
Inspect every 6 000 km (6 months). Replace hoses every 4 years. Replace fluid every 2 years.

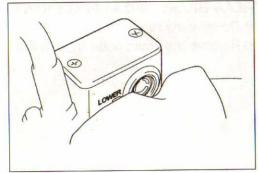
### BRAKE FLUID LEVEL CHECK

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



Specification and Classification: DOT 4





# A 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.

# A WARNING

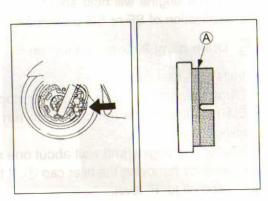
Brake fluid, if it leaks, will interfere with safe running and immediately discolor painted surfaces. Check the brake hoses and hose joints for cracks and oil leakage before riding.

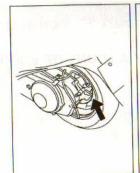
# **BRAKE PAD WEAR**

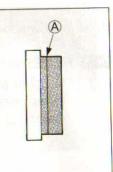
The extent of brake pad wear can be checked by observing the grooved limit (A) on the pad. When the wear exceeds the grooved limit, replace the pads with new ones.

# **A CAUTION**

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

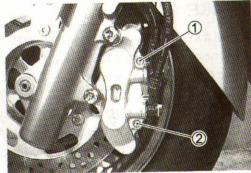






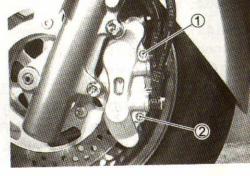
# FRONT BRAKE PAD REPLACEMENT

- Remove the brake pad mounting pins ① and ②.
- · Remove the brake pads.



# REAR BRAKE PAD REPLACEMENT

- Remove the rear wheel. ( 6-43)
- Remove the brake pads. ( 6-45)





# FRONT 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 new brake fluid.

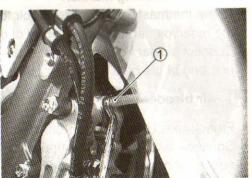
# Specification and classification: DOT 4

- · Connect a clear hose 1 to the air bleeder valve and insert the other end of the hose into a receptacle.
- · Loosen the air bleeder valve and pump the brake lever until the old brake fluid is completely out of the brake system.
- · Close the air bleeder valve and disconnect the clear hose. Fill the reservoir with new brake fluid to the upper end of the inspection window.



# Air bleeder valve: 7.5 N·m (0.75 kgf·m)







# COMBINATION BRAKE FLUID REPLACEMENT

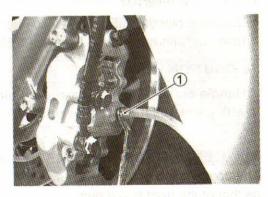
- · Place the motorcycle on a level surface and keep the handlebars straight.
- Remove the master cylinder reservoir cap and diaphragm.
- · Suck up the old brake fluid as much as possible.
- · Fill the reservoir with new brake fluid.



# Specification and classification: DOT 4

- Connect a clear hose 1 to the air bleeder valve and insert the other end of the hose into a receptacle.
- Loosen the air bleeder valve and pump the brake lever until the old brake fluid is completely out of the brake system.
- · Close the air bleeder valve and disconnect the clear hose. Fill the reservoir with new brake fluid to the upper end of the inspection window.
- Next, connect a clear hose ② to the air bleeder valve on the rear brake caliper. The rear brake fluid replacement is the same way as that of the front one.







### 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 remounting the brake and restoring the brake system to the normal condition, the brake fluid circuit be purged of air in the following manner:

- Fill up the master cylinder reservoir to the "UPPER" line. Place the reservoir cap to prevent entry of dirt.
- Connect a clear hose 1 to the air bleeder valve, and insert the free end of the pipe into a receptacle.

# Air bleeder valve: 7.5 N·m (0.75 kgf·m)

- Front brake: 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.

### NOTE:

Replenish the brake fluid in the reservoir as necessary while bleeding the brake system. Make ure that there is always some fluid visible in the reservoir.

 Close the bleeder valve, and disconnect the clear hose. Fill the reservoir with brake fluid to the "UPPER" line.

### A CAUTION

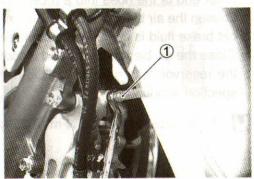
Handle brake fluid with care: the fluid reacts chemically with paint, plastics, rubber materials and so on.

# AIR BLEEDING FOR THE COMBINATION BRAKE

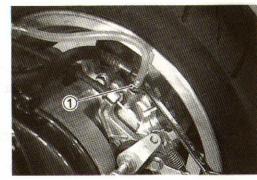
The combination brake system air bleeding is the same manner as that of the front brake one.

- · Bleed the air from the rear side first and then the front side.
- 1) Clear hose for rear brake
- 2) Clear hose for front brake







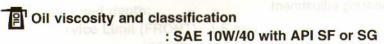




# REDUCTION GEAR OIL

# Inspect every 12 000 km (12 months) thereafter.

- Keep the motorcycle upright.
- Remove the left side leg shield. ( 6-2)
- Remove the clutch outer cover ①. ( 3-14)
- Place an oil pan below the mission case.
- · Remove the oil level plug 2 and inspect the oil level. If the level is below the level hole, add oil until oil flows from the level hole.



- Tighten the oil level plug 2 to the specified torque.
- Oil level plug: 12 N·m (1.2 kgf·m)

# NOTE:

If oil is dirty with sludge or used for a long period, drain the oil by removing the drain plug 3 and pour fresh oil through the oil level hole.

Drain plug: 12 N·m (1.2 kgf·m)

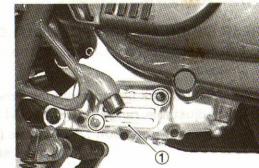
DATA NECESSARY AMOUNT OF REDUCTION GEAR OIL

Oil change: 190 ml Overhaul: 200 ml

# OIL SUMP FILTER

### CLEANING

- Drain the engine oil. ( 2-10)
- Remove the oil sump filter cover ①.
- · Remove the oil sump filter.
- · Clean the oil sump filter.



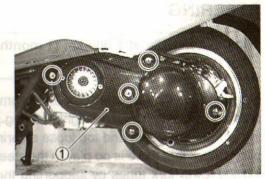
· Insert the oil sump filter.

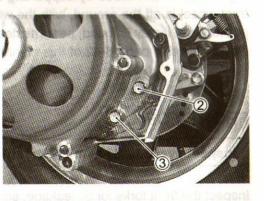
# NOTE:

The thinner side of the oil sump filter should be positioned inside.

- Fit a new O-ring 2 and install the oil sump filter cap.
- Pour fresh oil and check the oil level. ( 2-10)









# STEERING

Inspect initially at 1 000 km (1 month) and every 12 000 km (12 months) thereafter.

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 steering stem while grasping the lower fork tubes by supporting the machine so that the front wheel is off the ground, with the wheel straight ahead, and pull forward. If play is found, perform steering bearing adjustment as described in page 6-42 of this manual.



# FRONT FORK

Inspect every 12 000 km (12 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 pages 6-31 to -38.)

# REAR SUSPENSION

Inspect every 12 000 km (12 months).

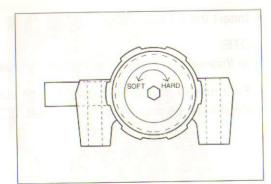
Inspect the rear shock absorber for oil leakage and mounting rubbers including engine mounting for wear and damage. Replace any defective parts, if necessary.

# REAR SHOCK ABSORBER SPRING ADJUSTMENT

· Turn the adjuster handle, adjust the rear shock absorber spring pre-load.

Rear shock absorber spring pre-load : Adjustable range: 17 turns (34 clicks) Standard position: 4-1/2 turns (9 clicks) out from most softest position





# TIRE

Inspect every 6 000 km (6 months) thereafter.

# 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.



09900-20805: Tire depth gauge

DATA Tire tread depth:

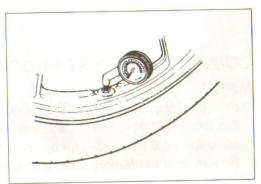
Service Limit (FRONT): 1.6 mm (REAR) : 2.0 mm

# TIRE PRESSURE

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

# DATA

COLD INFLATION	SOLO	RIDING	DUAL	RIDING
TIRE PRESSURE	kPa	kgf/cm <sup>2</sup>	kPa	kgf/cm <sup>2</sup>
FRONT	175	1.75	175	1.75
REAR	200	2.00	280	2.80



# A CAUTION

The standard tire fitted on this motorcycle is 110/90-13M/ C 55P for front and 130/70-13M/C 63P for rear. The use of tires other than those specified may cause instability. It is highly recommended to use a SUZUKI Genuine Tire.

### DATA TIRETYPE:

BRIDGESTONE (front: HOOP B03 G, rear: HOOP B02 G)

# CHASSIS BOLT AND NUT

Tighten initially at 1 000 km (1 month) and every 6 000 km (6 months) thereafter.

Check that all chassis bolts and nuts are tightened to their specified torque. ( 8-24)

# 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	
880 kPa	616 kPa	
(8.8 kgf/cm²) {410 rpm}	(6.16 kgf/cm <sup>2</sup> )	

# 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

- \* Before testing the engine for compression pressure, make sure that the cylinder head bolts 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.

- Support the motorcycle with the center stand.
- Remove the frame cover. ( 6-2)
- · 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.



09915-64510: Compression gauge 09915-63310: Adaptor





# **OIL PRESSURE CHECK**

Check the oil pressure periodically. This will give a good indication of the condition of the moving parts. OIL PRESSURE SPECIFICATION

Above 80 kPa (0.8 kgf/cm²) Below 160 kPa (1.6 kgf/cm²)

at 3 000 r/min., Oil temp. at 60°C (140°F)

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
- \* Damaged O-ring
- \* Defective oil pump
- \* Combination of above items

### HIGH OIL PRESSURE

- \* Engine oil viscosity is too high
- \* Clogged oil passage
- \* Combination of the above items

# OIL PRESSURE TEST PROCEDURE

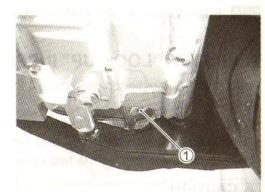
Check the oil pressure in the following manner.

- Support the motorcycle with the center stand.
- Remove the main gallery plug 1.
- · Install the oil pressure gauge with adaptor in the position shown in the figure.
- · Connect an electric tachometer.
- · 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 the electric tachometer), and read the oil pressure gauge.

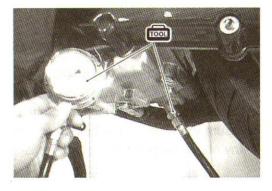


09915-74510: Oil pressure gauge

09915-74540: Adaptor 09900-26006: Tachometer







# **AUTOMATIC CLUTCH INSPECTION**

This motorcycle is equipped with an automatic clutch and variable ratio belt drive transmission. The engagement of the clutch is governed by engine RPMs and centrifugal mechanism located in the clutch.

To insure proper performance and longer lifetime of the clutch assembly it is essential that the clutch engages smoothly and gradually. The following inspections must be performed:

# 1. INITIAL ENGAGEMENT INSPECTION

- · Warm up the engine to normal operating temperature.
- Remove the frame cover. ( 6-2)
- · Connect an electric tachometer to the high-tension cord.
- · Seated on the motorcycle with the motorcycle on level ground, increase the engine RPMs slowly and note the RPM at which the motorcycle begins to move forward.

09900-26006: Tachometer

DATA Engagement r/min: 2 300-2 900 r/min



Perform this inspection to determine if the clutch is engaging fully and not slipping.

- · Apply the front and rear brakes as firm as possible.
- · Briefly open the throttle fully and note the maximum engine RPMs sustained during the test cycle.

# **A CAUTION**

Do not apply full power for more than 3 seconds or damage to the clutch or engine may occur.

DATA Lock-up r/min: 3 500-4 500 r/min

# **DRIVE V-BELT INSPECTION**

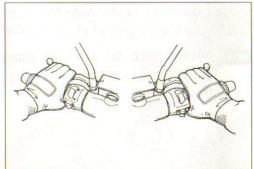
Inspect every 12 000 km (7 500 miles).

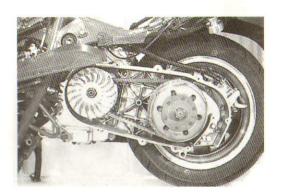
- Remove the left side leg shield. ( 6-2)
- Remove the clutch inner/outer cover. ( 3-14)
- · Check the contact surface for crack or other damage. Measure the width of the belt if necessary. (3-45)

If any abnormal point are found, replace it with a new one.



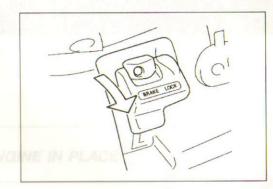






# **BRAKE-LOCK INSPECTION**

Inspect that the rear wheel is locked up when pulling the brakelock lever fully and moving the motorcycle forward.



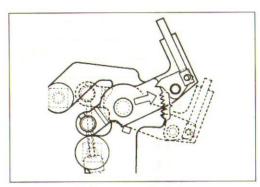


# BRAKE-LOCK ADJUSTMENT

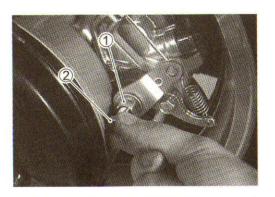
• Pull the brake-lock lever by one step (one notch).

NOTE:

The brake-lock lever have 6 steps (6 notchs) when pulling in full.



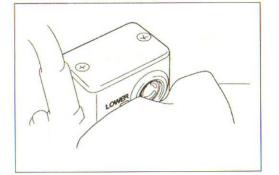
- With the lock nut 1 loosening, tighten the adjuster bolt 2 with hand as possible.
- Tighten the lock nut 1.



· Return the brake-lock lever to original position and inspect the brake-lock.

# A CAUTION

After the brake-lock adjustment, inspect the brake fluid level of combination brake.



# **ENGINE**

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# A CAUTION

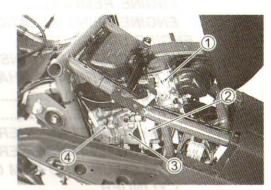
- \* Mark an identification of assembly location on each removed part so that each will be restored to the original position during reassembly.
- \* Wash clean and dry the removed parts before inspecting and measuring.
- \* Oil the rotating or sliding parts before assembly.
- \* Make sure to use the correct type of lubricant where specified.
- \* Check that each rotating or sliding part moves or operates smoothly after assembly.
- \* Make sure to follow the bolt tightening order where specified.
- \* If the correct length of the bolt is confused when tightening the crankcase or cover, insert all the bolts and check that the tightening margin is equal in each bolt.

# ENGINE COMPONENTS REMOVABLE WITH ENGINE IN PLACE

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

### **ENGINE CENTER**

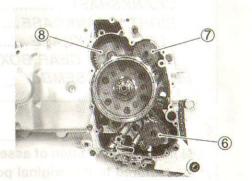
Carburetor ①	3	3-4
Cylinder head cover 2	3	3-11
Cylinder head 3	3	3-12
Camshaft	3	3-12
Valve	3	3-22
Cylinder 4	T	3-13
Piston	CF	3-13



# **ENGINE RIGHT SIDE**

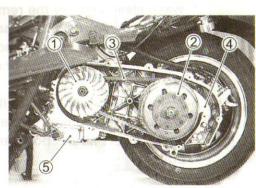
Muffler ①	3	3-5
Rear wheel ②	3	3-5
Rear brake caliper	3	3-5
Generator 3	3	3-47
Oil filter 4	3	2-10
Water pump ⑤	CF.	5-11
Oil pump 6	3	3-16
Starter idle gear 7	3	3-16
Crank balancer gear 8	3	3-17





# **ENGINE LEFT SIDE**

Fixed drive face 1)	3	3-15
Moval drive face	3	3-15
Clutch housing ②	CF	3-15
Clutch shoe	F	3-39
Drive belt ③	T	3-15
Reduction gear box cover 4	CF	3-58
Rear axle	3	3-58
Idle shaft		3-58
Drive shaft	3	3-58
Oil sump filter (5)	7	2-15



# ENGINE REMOVAL AND REINSTALLATION ENGINE REMOVAL

To remove the engine from the frame, follow the procedures as shown below.

- Drain engine oil. ( 2-10)
- Drain engine coolant. ( 2-8)

### NOTE:

If the engine is dirtied, wash the machine with a steam cleaner before removing the engine.

# **EXTERIOR PARTS**

- · Remove the following parts.
- \* Front frame cover and seat ( 6-2)
- \* Front helmet box, helmet box, backrest and center, left and right frame covers ( 6-2)
- \* Left and right side leg shields ( 6-2)
- Disconnect the battery terminals. ( 7- 31)

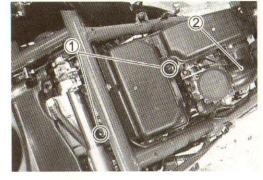
# **A CAUTION**

To disconnect the battery terminal, negative 

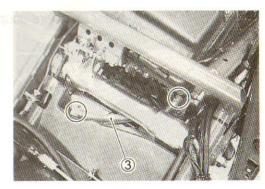
terminal must be removed first before ⊕ terminal.

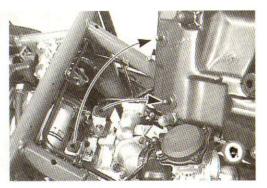
### AIR CLEANER BOX

- Loosen the air cleaner box mounting bolts 1.
- Remove the air cleaner pipe 2.



- Disconnect the breather hose 3.
- Disengage the hooks beneath the air cleaner box and remove the box.
- · Remove the air cleaner box.





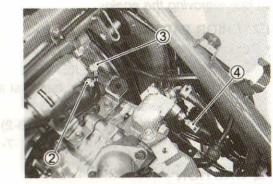
# CARBURETOR

• Loosen the intake pipe clamp screws and remove the carburetor ①. (CABURETOR DISASSEMBLY AND REINSTALLATION: ☐ 4-9)

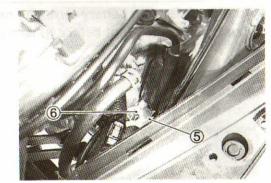


# **LEAD WIRES**

- Disconnect the starter motor lead wire ② and the engine ground lead wire ③.
- Disconnect the water temperature gauge lead wire coupler 4.



• Disconnect the ignition coil lead wire 5 and coupler 6.



• Disconnect the generator lead wire coupler ⑦ and the pick-up coil lead wire coupler ⑧.



# WATER HOSES

Remove the water hoses 9, 10 and 11.

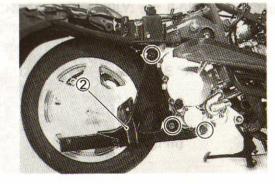




# **EXHAUST PIPE AND MUFFLER**

- Remove the exhaust pipe bolts.
- Remove the muffler mounting bolts and nuts, and then remove the muffler ①.
- Remove the washers from the muffler bracket.
- Remove the muffler bracket 2.

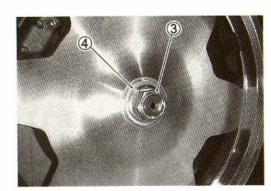




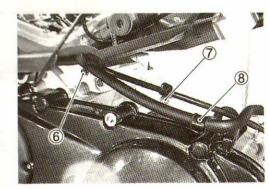


# **REAR WHEEL**

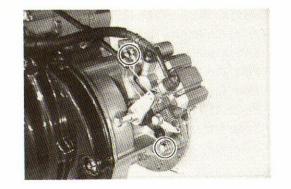
- Remove the rear wheel nut 3 and washer 4.
- · Remove the rear wheel.



- Remove the brake lock cable clamps 6 and 7.
- Remove the rear brake hose clamp 8.



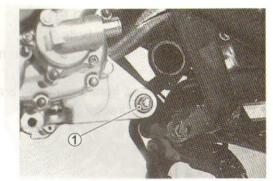
- · Remove the rear brake caliper mounting bolts.
- · Remove the rear brake caliper.
- · Remove the brake disc from the axle shaft.



# ENGINE 3-7

# **ENGINE MOUNTING**

- · Support the engine using an engine jack.
- Remove the cushion rod bolt and nut ① located on the front lower part of the engine.



- Remove the engine mounting bolt and nut 2.
- · Remove the engine from the frame.



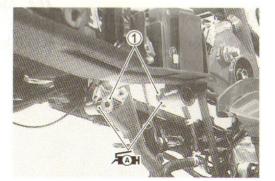
# **ENGINE REINSTALLATION**

 To reinstall the engine, reverse the sequence of the removal procedures taking care of the following instructions.

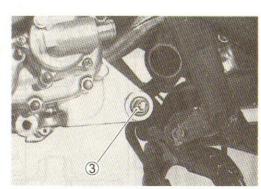
- CRANKCASE BRACKET REASSEMBLY: F 6-65
- Install the spacers 1 to the engine mounting brackets.
- Apply grease to the spacers and needle roller bearings.

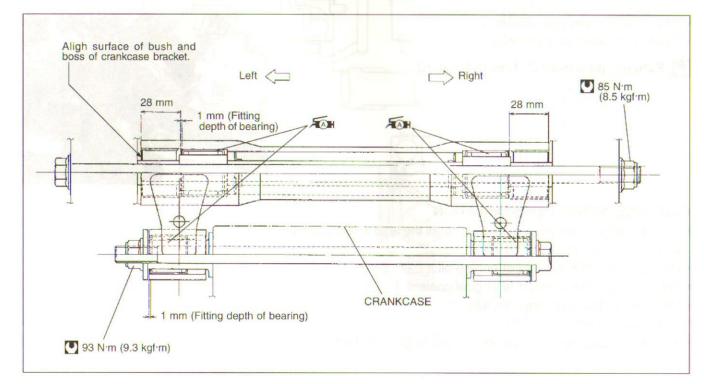


- Tighten the nuts to the specified torque.
- Engine mounting nut ②: 93 N·m (9.3 kgf·m)
  Rear cushion rod nut ③: 50 N·m (5.0 kgf·m)



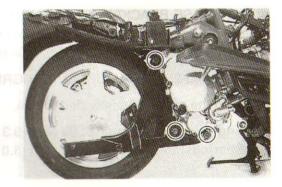




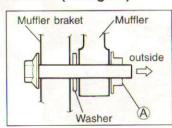


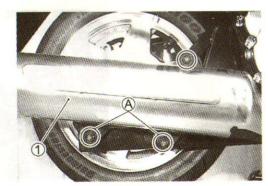
- Install the rear brake caliper. ( 6-51)
- Install the rear wheel. ( 6- 47)

- · Install the muffler bracket.
- Muffler bracket bolt: 50 N·m (5.0 kgf·m)



- Install the muffler mounting bolts and nuts.
- Muffler mounting bolt and nut: 23 N·m (2.3 kgf·m)



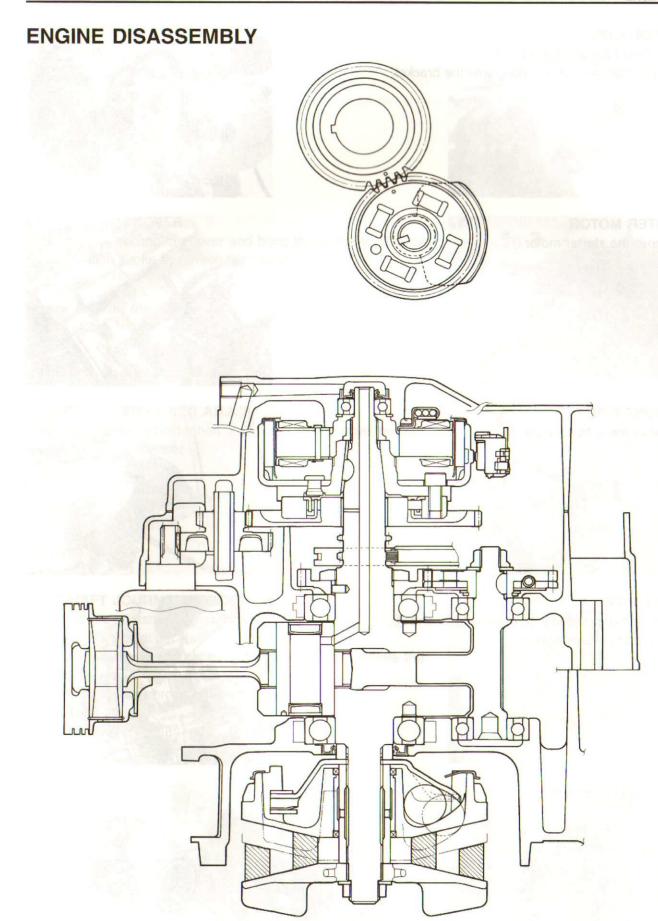


- Fit a new exhaust pipe gasket ①.
- Tighten the exhaust pipe bolts.
- Exhaust pipe bolt: 23 N·m (2.3 kgf·m)



# CAUTIONS AFTER REINSTALLATION

- After the engine has been mounted, install the lead wires, cables and hoses securely. ( 8-10)
- Pour the specified amount of engine oil. ( 2-10)
- Pour the specified amount of engine coolant. ( 2-8)
- Perform the following adjustments:
- \* Idle adjustment ( 2-7)
- · Check for leakage of the engine oil and engine coolant.



# IGNITION COIL

- Disconnect the spark plug cap.
- Remove the ignition coil along with the bracket.



# STARTER MOTOR

• Remove the starter motor 1.



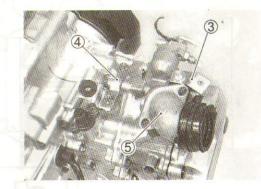
# **EXHAUST PIPE**

• Remove the exhaust pipe 2.



# INTAKE PIPE

- Remove the air cleaner box brackets 3 and 4.
- Remove the intake pipe ⑤.



• Remove the O-ring 6.



# CYLINDER HEAD COVER

• Remove the cylinder head cover.

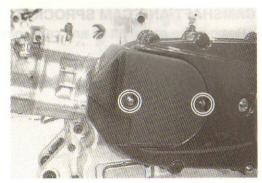


# COOLING FAN COVER

• Remove the cooling fan cover and bring the piston to TDC on compression stroke by turning the crankshaft. ( 2-4)

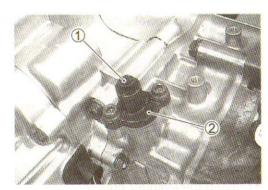
# NOTE:

Check that all the valves have clearance in this position. (2-2-4)



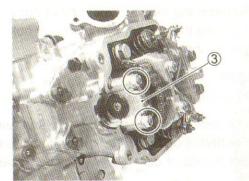
# **CAM CHAIN TENSIONER ADJUSTER**

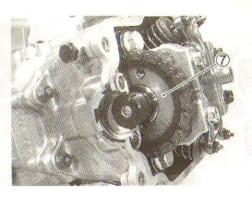
 Remove the spring holder bolt ① first and then remove the cam chain tensioner adjuster ②.

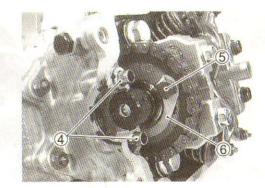


# **CAMSHAFT JOURNAL HOLDER**

- Remove the camshaft journal holder 3.
- Remove the dowel pin 4.
- Bend down the lock portions of the washer and remove the sprocket bolts ⑤ and washer ⑥.
- Remove the cam sprocket 7 from the cam chain.



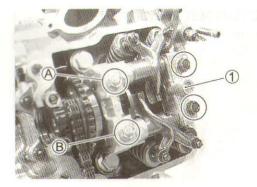




• Remove the camshaft journal holder 1.

# NOTE:

- \* The bolts, (A) and (B), are the stoppers of the rocker arm shafts.
- \* For details of rocker arm disassembly and reassembly: 3-21

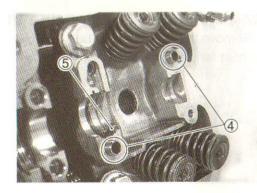


# CAMSHAFT AND CAM SPROCKET

Remove the camshaft 2 and cam sprocket 3.



• Remove the dowel pins 4 and C-ring 5.



# CYLINDER HEAD

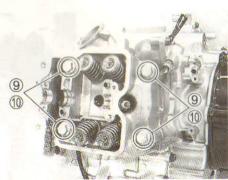
- Remove the 6-mm cylinder head nuts 6.
- Loosen the cylinder nuts ?.
- Remove the 8-mm cylinder head nuts 8.
- Remove the 10-mm cylinder head bolts (9) along with the copper washers (10).

# NOTE:

The cylinder head bolts must be loosened diagonally and evenly.

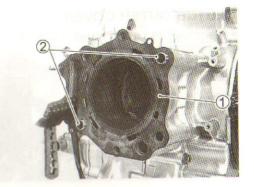
- For details of valve disassembly and reassembly: 3-22
- For details of thermostat disassembly and reassembly: 5-8
- For details of cam chain tensioner disassembly and reassembly: 3-22





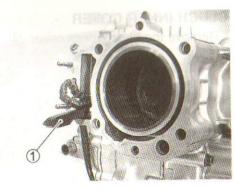


• Remove the cylinder head gasket ① and dowel pins ②.



# CAM CHAIN GUIDE

Remove the cam chain guide ①.

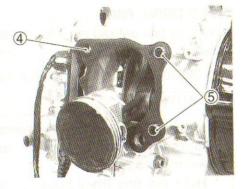


# CYLINDER

- Remove the cylinder nuts ②.
- Remove the cylinder ③.



• Remove the cylinder gasket 4 and dowel pins 5.



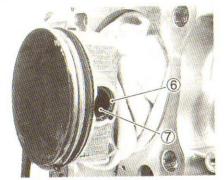
### **PISTON**

- Remove the piston pin circlip 6.
- Remove the piston pin ?.

### NOTE:

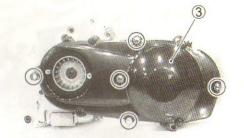
Use care not to drop the removed circlip into the crankcase.

· Remove the piston.



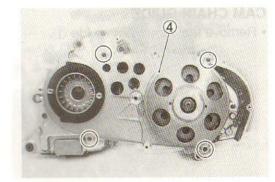
# CLUTCH OUTER COVER

• Remove the clutch outer cover 3.

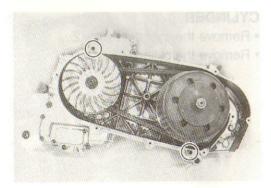


# **CLUCH INNER COVER**

• Remove the clutch inner cover 4.

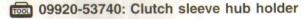


· Remove the dowel pins.



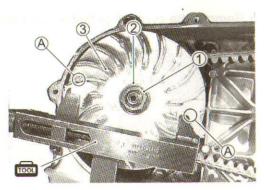
# **FIXED DRIVE FACE**

• With the fins of fixed drive face held immovable using the special tool, and loosen the fixed drive face nut ①.



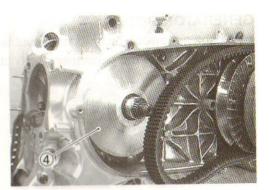
# A CAUTION

- \* Wrap the claws of the special tool using pieces of rag, fit its claws into the root of fins to prevent damage of fixed drive face.
- \* Hold the fins (they have reinforcements (A)) with the special tool.
- \* Be careful not to come off the special tool when loosening.
- Remove the washer 2 and the fixed drive face 3.



# MOVABLE DRIVE FACE ASSEMBLY

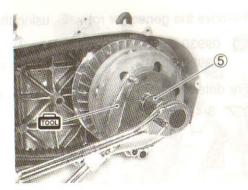
- Remove the movable drive face assembly 4.
- For details of movable drive face disassembly and reassembly:
   3-37



# CLUTCH HOUSING

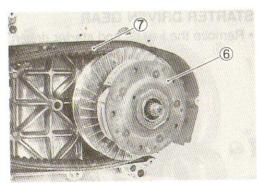
 With the clutch housing held immovable using the special tool, loosen the clutch housing nut ⑤.





# MOVABLE DRIVEN FACE ASSEMBLY

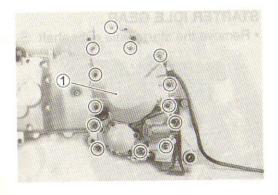
- Remove the clutch shoe/movable driven face assembly 6.
- · Remove the drive belt.
- For details of clutch shoe/movable driven face disassembly and reassembly: 3-39

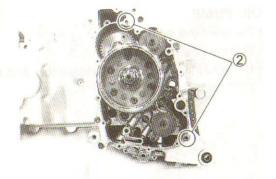


# GENERATOR COVER

- Remove the generator cover 1.
- For details of generator stator disassembly and reassembly:
   3-49 and 50
- For details of oil filter disassembly and reassembly: 2-10
- For details of water pump disassembly and reassembly:
   5-11



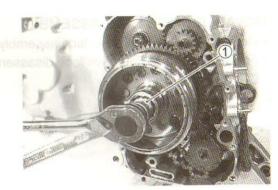




# ENGINE 3-17

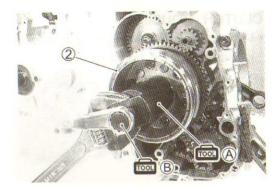
# GENERATOR ROTOR

• With the generator rotor held immovable using the offset wrench (30-mm), loosen the generator rotor nut ①.



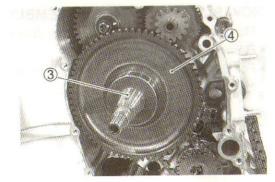
- Remove the generator rotor 2 using the special tools.
- 09930-31920: Rotor remover (A)
  09930-30721 (use only bolt): Rotor remover (B)
- For details of starter clutch disassembly and reassembly:





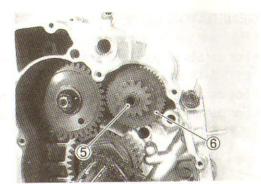
# STARTER DRIVEN GEAR

• Remove the key 3 and starter driven gear 4.



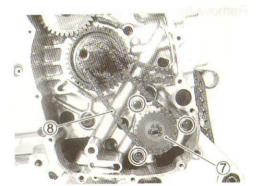
# STARTER IDLE GEAR

• Remove the starter idle gear shaft ⑤ and starter idle gear ⑥.



# OIL PUMP

- Remove the oil pump 7.
- Remove the oil pump chain 8.
- For details of oil pump disassembly and reassembly:
   3-50



# **CAM CHAIN**

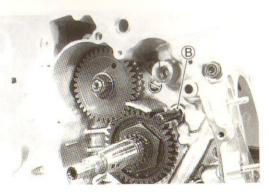
· Remove the cam chain.



With the crankshaft held immovable, loosen the balancer drive gear nut and the balancer driven gear nut, follow the procedures below:

- Insert a proper steel rod into the crankcase hole (B) and pass through the crankshaft web holes (A) in order to prevent the crankshaft from turning.
- Steel rod \_\_\_\_\_ \$10-12 mm

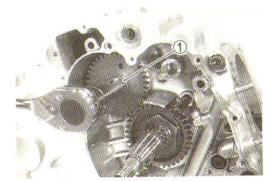
length: over 100 mm



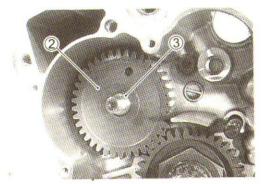
# B

# BALANCER DRIVEN GEAR

• Remove the balancer driven gear nut ① and washer.



- Remove the balancer driven gear ②.
- For details of balancer driven gear disassembly and reassembly: 3-51
- Remove the balancer shaft key 3.



# **BALANCER DRIVE GEAR**

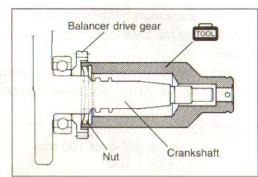
• With the crankshaft held immovable ( 3-17), loosen the balancer drive gear nut 1 using the special tool.



09922-21410: Long socket (46-mm)



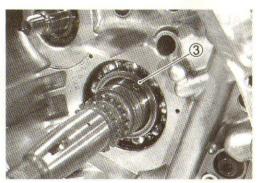




• Remove the balancer drive gear 2.



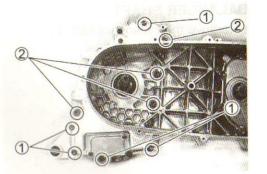
• Remove the pin 3.

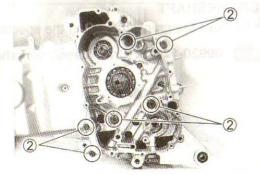


- Loosen and remove the 6-mm crankcase bolts ①.
- Loosen and remove the 8-mm crankcase bolts 2.

# NOTE:

Loosen the smaller diameter crankcase bolts first and then thicker ones diagonally and evenly.





# RIGHT CRANKCASE

· Separate the crankcase into left and right halves using the special tool.



09920-13120: Crankcase/crankshaft separator

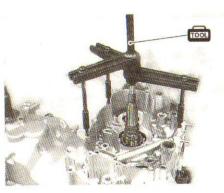
# NOTE:

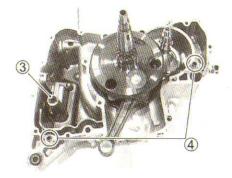
The crankcase separator plate is parallel with the end face of the crankcase.

# **A CAUTION**

The crankshaft must remain in the left crankcase half.

• Remove the O-ring 3 and dowel pins 4.





# BALANCER SHAFT

· Remove the balancer shaft 1.



# **CRANKSHAFT**

· Remove the crankshaft using the special tool.



09920-13120: Crankcase/crankshaft separator

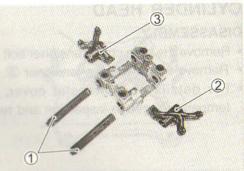


# **ENGINE COMPONENT INSPECTION AND** SERVICE

# **ROCKER ARM AND SHAFT**

# DISASSEMBLY

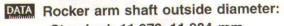
• Pull out the rocker arm shafts 1 and remove the exhaust and intake valve rocker arms (2 and 3).



# ROCKER ARM SHAFT OUTSIDE DIAMETER INSPECTION

On the sliding surface, take two measurements, at right angle to each other.

If the outside diameter measured is less than the standard value, replace the shaft.



Standard: 11.973-11.984 mm

09900-20205: Micrometer (0-25 mm)



Measure the rocker arm inside diameter in two directions at right angle to each other.

If the inside diameter measured exceeds the standard value, replace the shaft.

DATA Rocker arm shaft inside diameter:

Standard: 12.000-12.018 mm

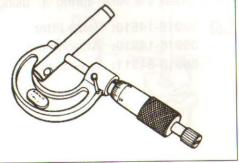
09900-20605: Dial calipers

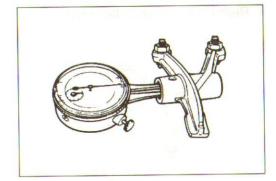
# REASSEMBLY

Apply engine oil to the rocker arm shafts sufficiently.

- The exhaust rocker arm is equipped with the oil hole A.
- · Aligh the cutaway B of roker arm shaft with the hole of camshaft jounal holder bolt.











# ENGINE 3-23

# CYLINDER HEAD

# DISASSEMBLY

- Remove the cam chain tensioner bolt ① and gasket washer ②.
- · Remove the cam chain tensioner 3.
- · For details of thermostat cover, thermostat and water temparature guage inspection and reassembly: 5-8



· Compress the valve spring 4 using the special tool.

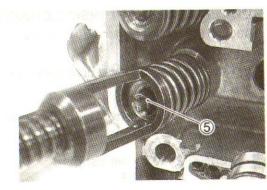


09916-14510: Valve lifter 09916-14910: Attachment

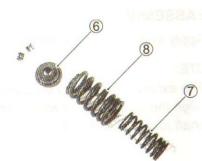
09916-84511: Tweezers



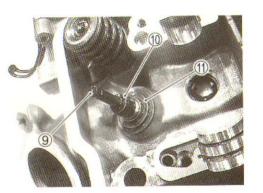
Remove the valve cotter halves ⑤.



- · Remove the valve spring retainer 6.
- Remove the inner spring ⑦ and outer spring ⑧.



- · Remove the valve 9 from the other side.
- · Remove the valve stem seal 10.
- Remove the spring seat ①.



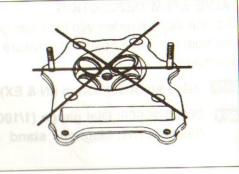
# CYLINDER HEAD DISTORTION

Check for distortion of the mating surface diagonally with a straightedge and thickness gauge as shown.

If distortion exceeds the service limit, repair or replace the cylinder head.

DATA Cylinder headb distortion: Service Limit: 0.05 mm

09900-20803: Thickness gaugee



# VALVE STEM RUNOUT

Check the valve stem for abnormal wear or bend. Place the valve on V-blocks and measure runout.

If the service limit is exceeded or abnormal condition exists, replace the valve.

DATA Valve stem runout: Service Limit: 0.05 mm

09900-20606: Dialgauge (1/100 mm)

09900-20701: Magnetic stand 09900-21304: V-block (100 mm)

# VALVE HEAD RADIAL RUNOUT

Place a dial gauge as shown and measure valve head radial runout.

If the service limit is exceeded, replace the valve.

DATA Valve head radial runout: Service Limit: 0.05 mm

09900-20606: Dialgauge (1/100 mm)

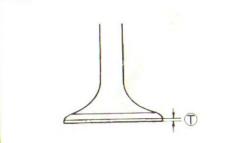
09900-20701: Magnetic stand 09900-21304: V-block (100 mm)

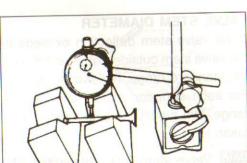
# VALVE FACE WEAR

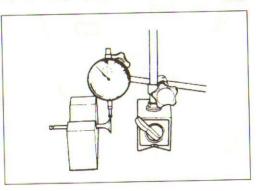
Visually inspect each valve face for wear. Replace any valve with an abnormally worn face. The thickness of the valve face decreases as the face wears. Measure the valve head ①. If it is out of specification replace the valve with a new one.

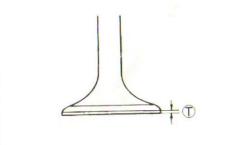
DATA Valve head thickness T Service Limit: 0.5 mm

09900-20102: Vernier calipers









### VALVE STEM DEFLECTION

With the valve inserted into the valve guide, lift the valve head 10 mm from the valve seat and measure the deflection in X and Y directions.

DATA Valve stem deflection (IN & EX): Service Limit: 0.35 mm

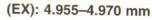


09900-20606: Dial gauge (1/100 mm) 09900-20701: Magnetic stand

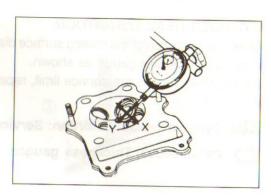
# VALVE STEM DIAMETER

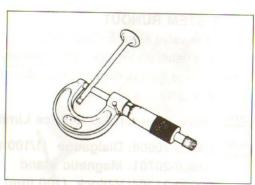
If the valve stem deflection exceeds the service limit, measure the valve stem outside diameter. If the diameter measured is within the standard range, replace the valve guide. ( 3-25) For each of upper, middle and lower sections within the sliding range, two measurements, each in crosswise direction must be taken.











# VALVE GUIDE SERVICING

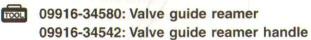
· Using the valve guide remover 1, drive the valve guide out toward the intake or exhaust camshaft side.

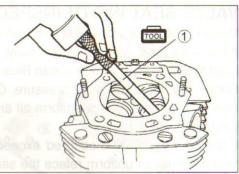


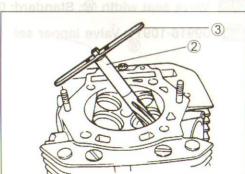
09916-44310: Valve guide remover/installer

### NOTE:

- \* Discard the removed valve guide subassemblies.
- \* Only oversized valve guides are available as replacement parts. (Part No. 11115-14D71)
- · Re-finish the valve guide holes in the cylinder head using the reamer 2 and handle 3.







· Apply engine oil to the stem hole of each valve guide and drive the guide into the guide hole using the valve guide installer.

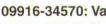


09916-44310: Valve guide remover/installer

# **A** CAUTION

Apply oil to the valve guide hole before driving the new guide into place may result in a damaged guide or head.

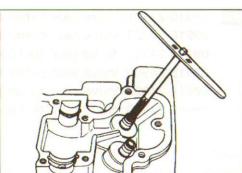
· After installing the valve guides, re-finish their guiding bores using the reamer. Be sure to clean and oil the guides after reaming.

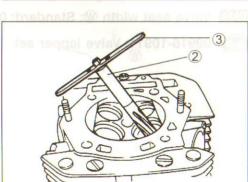


09916-34570: Valve guide reamer 09916-34542: Valve guide reamer handle

# NOTE:

Insert the reamer from the combustion chamber and always turn the reamer handle clockwise.







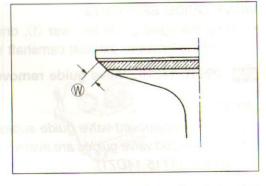
# VALVE SEAT WIDTH INSPECTION

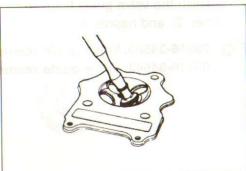
Visually check for valve seat width on each valve face. If the valve face has worn abnomally, replace the valve. Coat the valve seat with Prussian Blue and set the valve in place. Rotate the valve with light pressure. Check that the transferred blue on the valve face is uniform all around and in center of the valve face.

If the seat width W measured exceeds the standard value, or seat width is not uniform reface the seat using the seat cutter.

DATA Valve seat width W: Standard: 0.9-1.1 mm

09916-10911: Valve lapper set

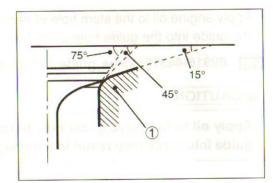




# VALVE SEAT SERVICING

The valve seats 1 for both the intake and exhaust valves are machined to three different angles. The seat contact surface is cut at 45°.

1 100 10	INTAKE	EXHAUST
45°	N-608	N-122
75°	N-212	N-125
15°		N-121





09916-21111: Valve seat cutter set (N-122, N-121)

09916-24820: Valve seat cutter (N-125) 09916-24311: Solid pilot (N-100-5.0)

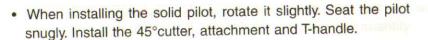
09916-24900: Valve seat cutter set (N-212)

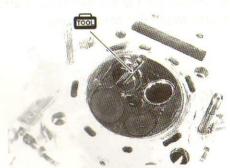
09916-24935: Valve seat cutter (N-608)

09916-22410: Solid pilot (N-140-5.0)

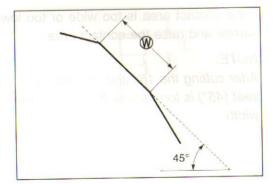
# NOTE:

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





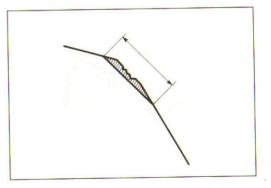
- Using the 45°cutter, descale and clean up the seat. Rotate the cutter one or two turns.



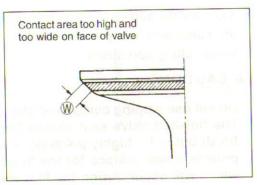
 If the valve seat is pitted or burned, use the 45°cutter to condition the seat some more.

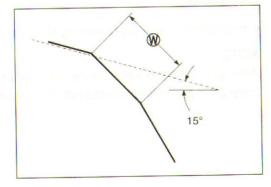
### NOTE:

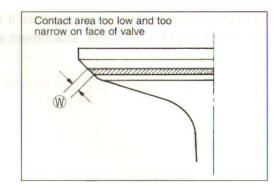
Cut only the minimum amount necessary from the seat to prevent the possibility of the valve stem becoming too close to the rocker arm for correct valve contact angle.



If the contact area is too high on the valve, or if it is too wide, use the 15° cutter to lower and narrow the contact area. vd bassis.



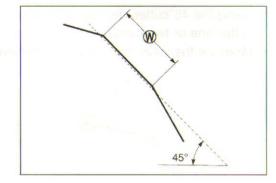


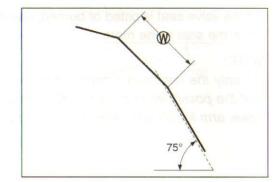


If the contact area is too wide or too low, use the 60° cutter to narrow and raise the contact area.

# NOTE:

After cutting the 15° and 75° angles, it is possible that the valve seat (45°) is too narrow. If so, re-cut the valve seat to the correct width.

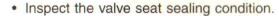




 After the desired seat position and width is achieved, use the 45° cutter very lightly to clean up any burrs caused by the previous cutting operations.

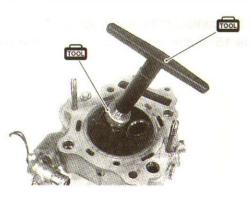
# **A** CAUTION

Do not use lapping compound after the final cut is made. The finished valve seat should have a velvety smooth finish but 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.



### NOTE:

After servicing the valve seats, be sure to check the valve clearance after the cylinder head has been reinstalled. ( 2-4)



# VALVE SEAT SEALING CONDITION INSPECTION

With the valve and valve spring assembled, pour a small quantity of gasoline into the intake or exhaust port.

Check that no gasoline leaks though the valve seat. If leakage is found, correct the sealing surface.

# **A WARNING**

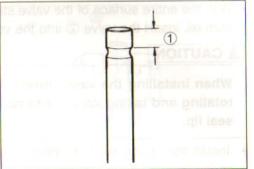
Always use extreme caution when handling gasoline.



# VALVE STEM END CONDITION

Inspect the valve stem end face for pitting and wear. If pitting or wear is present, resurface the valve stem end. Make sure that the length ① is not less than 1.8 mm. If this length becomes less than 1.8 mm, replace the valve.

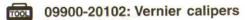
DATA Valve stem end length: Service Limit: 1.8 mm



### VALVE SPRING INSPECTION

The force of the coil spring keeps the valve seat tight. A weakened spring results in reduced engine power output and often accounts for the chattering noise coming from the valve mechanism.

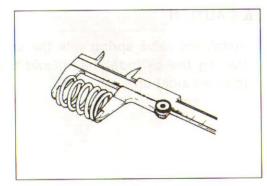
Check the valve springs for proper strength by measuring their free length and also by the force required to compress them. If the spring length is less than the service limit or if the force required to compress the spring does not fall within the specified range, replace both the inner and outer springs as a set.

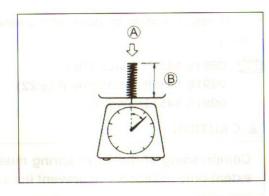


DATA Valve spring free length (IN & EX)
Service Limit: INNER: 34.9 mm
OUTER: 38.2 mm

DATA Valve spring tension (IN & EX)

Standard: INNER : 5.3-6.5 kg/28 mm OUTER: 13.1-15.1 kg/31.5 mm





### REASSEMBLY

 Apply molybdenum oil on the stem seal ① and install it onto the valve guide by hand.

# **A** CAUTION

Replace the stem seal with new one.



# MOLYBDENUM OIL

 With the entire surface of the valve stem coated with molybdenum oil, insert the valve ② into the valve guide.

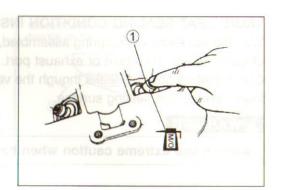
# **A** CAUTION

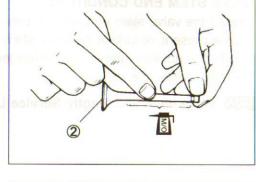
When installing the valve, insert the stem slowly while rotating and taking care not to cause damage to the oil seal lip.

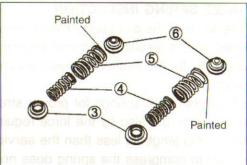
• Install the spring seat ③, inner valve spring ④, outer valve spring ⑤ and spring retainer ⑥.

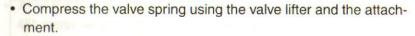
# **A CAUTION**

Install the valve spring with the small-pitch side down (facing the cylinder head) and the large-pitch side (painted side) up.











09916-14510: Valve lifter

09916-14910: Attachment (φ 22)

09916-84511: Tweezers

# **A CAUTION**

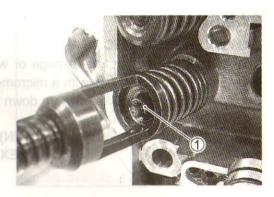
Compressing of the valve spring must be limited to the extent only necessary to prevent the spring from fatigue.



### Install the valve cotter halves 1.

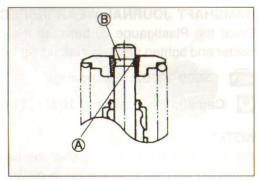
### NOTE:

To facilitate assembly, apply a little grease to the valve cotter when fitting into the valve stem groove.

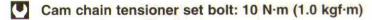


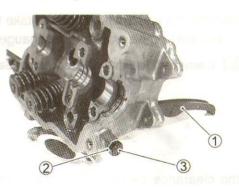
# A CAUTION

Check that the rounded lip (A) of the cotter is securely fitted in the groove (B) in the valve stem end.



- Install the cam chain tensioner ① on the cylinder head.
- Install the gasket washer ② to the bolt ③, and then tighten it to the specified torque.





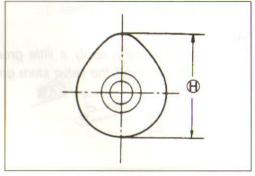
# CAMSHAFT

### **CAM WEAR INSPECTION**

Check for abnormal surface damage or wear on the cam face. Measure the cam height  $\oplus$  with a micrometer.

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

DATA Cam height (EX): Service Limit: (IN) 33.13 mm (EX): 33.20 mm



### CAMSHAFT JOURNAL WEAR INSPECTION

Place the Plastigauge ① between the camshaft and camshaft holder and tighten the camshaft holder bolt to the speified torque.

09900-22302: Plastigauge

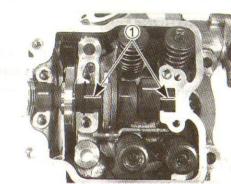
Camshaft holder bolt: 10 N·m (1.0 kgf·m)

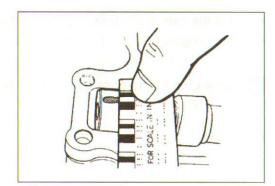
### NOTE:

Do not rotate the camshaft after the camshaft holder has been tightened with the Plastigauge in place.

 Remove the camshaft holder and take the measurement at the widest part of the crashed Plastigauge.

DATA Camshaft journal oil clearance: Service Limit: 0.150 mm





If the clearance exceeds the service limit, measure the inside diameter of camshaft journal holder using a cylinder gauge.

DATA Camshaft journal holder I.D.: Standard:

(φ 22) 22.012–22.025 mm (φ 17.5) 17.512–17.525 mm

09900-20602: Dial gauge (1/1000 mm) 09900-22401: Small bore gauge (10–18 mm)

09900-22403: Small bore gauge (18-35 mm)

Measure the outside diameter of camshaft journal using a micrometer.

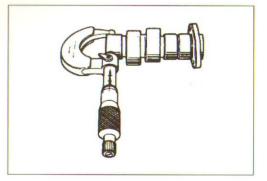
DATA Camshaft journal O.D.: Standard:

(φ 22) 21.959–21.980 mm (φ 17.5) 17.466–17.484 mm

09900-20205: Micrometer (0-25 mm)

Calculate from the measurement to determine if the clearance falls within the standard range when the camshaft is replaced with a new one. If the clearance does not come to the standard range, replace both the camshaft and cylinder head with new ones.





### **CAMSHAFT RUNOUT**

With the camshaft held on the V-blocks, measure the runout with a dial gauge. If the runout exceeds the service limit, replace the camshaft.

DATA Camshaft runout: Service Limit: 0.10 mm

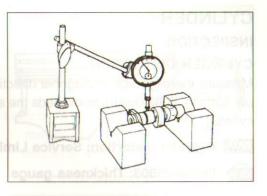
TOOL

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

09900-20701: Magnetic stand 09900-21304: V-block set (100 mm)

### AUTOMATIC-DECOMP

Check that decomp cam ① moves smoothly and pin ② rotates together. If any abnormal condition are found, replace the camshaft.





# **CAM CHAIN TENSIONER ADJUSTER**

### INSPECTION

Check that the push rod ① slides smoothly with the lock of the ratchet mechanism released. If it does not slide smoothly or the ratchet mechanism is worn or damaged, replace the cam chain tensioner adjuster with a new one.



# **CAM CHAIN TENSIONER**

### INSPECTION

Check the contacting surface of the cam chain tensioner. If it is worn or damaged, replace it with a new one.



# CAM CHAIN AND CAM CHAIN GUIDE

# INSPECTION

Check the cam chain for wear, damage and kinked or binding links. If any defects are found, replace it with a new one.

Check the cam chain guide for wear and damage. If it is found to be damaged, replace it with a new one.



# CYLINDER

### INSPECTION

### CYLINDER DISTORTION

Measure the distortion in diagonal directions on the cylinder upper surface. If the distortion exceeds the service limit, replace the cylinder.

DATA Cylinder distortion: Service Limit: 0.05 mm

09900-20803: Thickness gauge

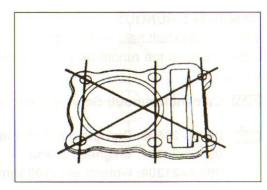
# CYLINDER BORE DIAMETER

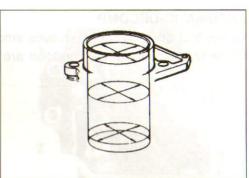
Check that there is no abnormal surface damage or wear on the cylinder wall.

At three positions, top, middle and bottom, measure the bore diameter. At each position, take two measurements, one parallel with and the other perpendicular to the crankshaft axis.

DATA Cylinder bore: Service Limit: 83.085 mm

09900-20508: Cylinder gauge set





# **PISTON AND PISTON RING**

# INSPECTION

### PISTON DIAMETER

Measure the piston outside diameter in the direction perpendicular to the piston pin axis at the height from the skirt as shown in the illustration using a micrometer.

If the measurement is found less than the service limit, replace the piston.

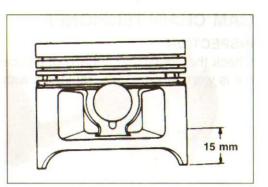
DATA Piston diameter: Service Limit: 82.880 mm

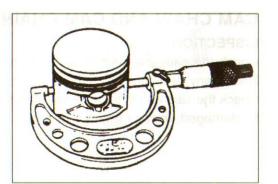
09900-20204: Micrometer (75-100 mm)

# PISTON-TO-CYLINDER CLEARANCE

To determine the piston-to-cylinder clearance, calculate the difference between the cylinder bore and the piston outside diam-

DATA Piston-to-cylinder clearance Standard: 0.035-0.065 mm Service Limit: 0.120 mm





### PISTON PIN BORE

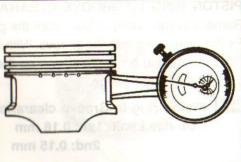
Using a small bore dial gauge, measure the piston pin bore both in the vertical and horizontal directions.

If the measurement exceeds the service limit, replace the piston.

DATA Piston pin bore: Service Limit: 20.030mm

09900-20602: Dial gauge (1/1000 mm, 1 mm)

09900-22403: Small bore gauge (18-35 mm)



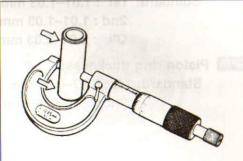
### PISTON PIN DIAMETER

Using a micrometer, measure the piston pin outside diameter at three positions, both the ends and the center.

If any of the measurements is found less than the service limit, replace the pin.

DATA Piston pin O.D.: Service Limit: 19.980 mm

09900-20205: Micrometer (0-25 mm)



### PISTON RING FREE END GAP

Before installing piston rings, measure the free end gap of each ring using vernier calipers. If the gap is less than the service limit, replace the ring.

DATA Piston ring free end gap:

Service Limit: (1st) 9.0 mm

(2nd) 6.2 mm

09900-20101: Vernier calipers

### PISTON RING END GAP

Insert the piston ring squarely into the cylinder using the piston head.

Measure the end gap with a thickness gauge.

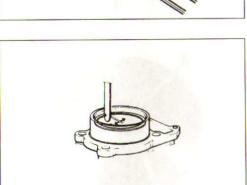
If the gap exceeds the service limit, replace the piston ring.

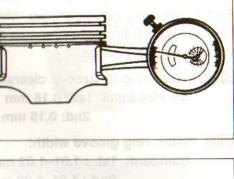
DATA Piston ring end gap:

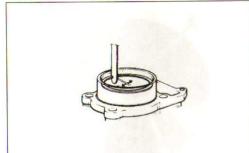
Service Limit: (1st) 0.70 mm

(2nd) 0.70 mm

09900-20803: Thickness gauge







# PISTON RING-TO-GROOVE CLEARANCE

Remove carbon deposit both from the piston ring and its groove. Fit the piston ring into the groove. With the ring compressed and lifted up, measure the clearance on the bottom side of the ring using a thickness gauge.

DATA Piston ring-to-Groove clearance:

Service Limit: 1st: 0.18 mm

2nd: 0.15 mm

DATA Piston ring groove width:

Standard: 1st : 1.01-1.03 mm

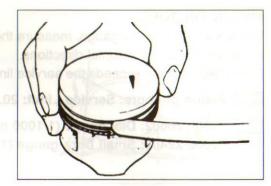
2nd: 1.01-1.03 mm

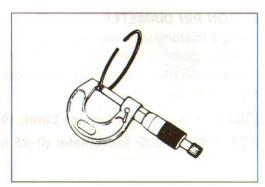
Oil : 2.01-2.03 mm

DATA Piston ring thickness:

Standard: 1st : 0.97-0.99 mm

2nd: 0.97-0.99 mm





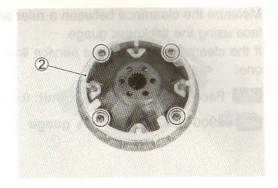
# MOVABLE DRIVE FACE

# DISASSEMBLY

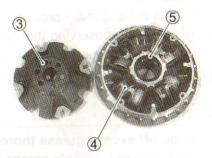
• Remove the spacer 1.



Remove the movable drive face cover 2.



- Detach the movable drive face plate 3.
- Pull out the eight rollers 4.
- Remove the oil seals ⑤ and ⑥.





# INSPECTION

# ROLLER

Check that there is no abnormal wear or damage on the roller. If any defects are found, replace the rollers as a set.



#### 3-30 ENGINE

# MOVABLE AND FIXED DRIVE FACE

Check the drive face for any abnormal condition such as stepped wear or discoloration caused by burning.

If any defects are found, replace them with a new one.

Check if any damage exists on the lip of oil seal.

If any defects are found, replace the oil seal with a new one.

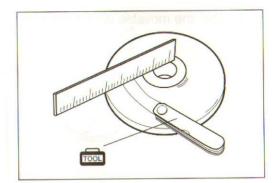


Measure the clearance between a ruler and the surface of drive face using the thickness guage.

If the clearance exceeds the service limit, replace it with a new

DATA Face abrasion: Service limit: 0.4 mm

09900-20803:Thickness guage



#### REASSEMBLY

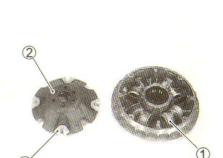
- Carry out the assembly procedure in the reverse order of disassembly while observing the following instructions.
- Apply a small amount of grease to the bore and oil seal lip.



99000-25010: SUZUKI SUPER GREASE "A"

#### A CAUTION

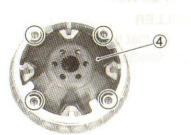
- \* Wipe off excess grease thoroughly.
- \* Take care not to apply grease to contact surface of the V-belt.
- · Position the eight rollers ① on the movable drive face.
- Mount the damper 3 on the movable drive face plate 2.
- Position the movable drive plate on the movable drive face.



- Install the movable drive face cover 4.
- Install the spacer.

#### NOTE:

Press down the movable drive face plate so as not to cause the roller to come out of the position when inserting the spacer.



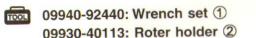
# MOVABLE DRIVEN FACE ASSEMBLY/

#### DISASSEMBLY

 Hold the clutch shoe with the special tool and loosen the clutch shoe nut.

#### **A CAUTION**

Do not remove the clutch shoe nut before attaching the clutch spring compressor.



- Attach the special tool to the movable driven face assembly and compress the movable driven face assembly by turning in the special tool handle.
- Remove the clutch shoe nut ①.



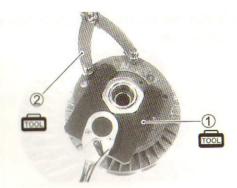
# **▲ CAUTION**

Since a high spring force applies to the clutch shoe assembly, care must be used so as not to cause the clutch shoe assembly and movable driven face to come off abruptly.

 Loosen the special tool handle slowly and remove the clutch shoe assembly.

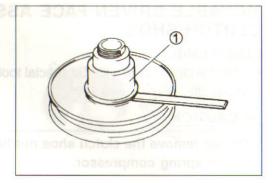
#### A CAUTION

Do not attempt to disassemble the clutch shoe assembly.



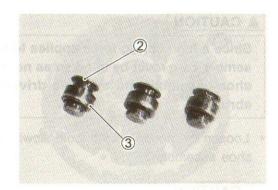






• Remove three pins 2 together with rollers 3.





Remove the movable driven face 4 from the fixed driven face
 5.



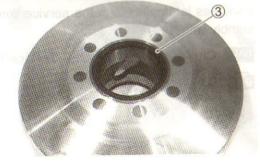
# A CAUTION

Do not reuse the o-rings ① to prevent grease leakage. The removed oil seals, ② and ③, should be replaced with new ones.

Check the oil seal ② and ③ for damage, if any defects are found replace them with a new one.

• Remove the O-rings ① and oil seals ② and ③ .





Remove the needle roller bearing 4 using the special tool.



NOTE:

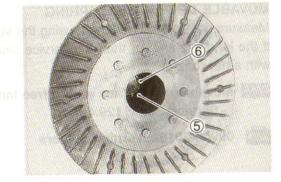
If no abnormal noise, bearing removal is not necessary.

# **A CAUTION**

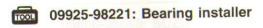
The removed bearings, (4) and (6), should be replaced with new ones.

· Remove the circlip ⑤.





• Remove the bearing ⑥ using the special tool.



NOTE:

If no abnormal noise, bearing removal is not necessary.



#### CLUTCH SHOE

Check the boss and centrifugal weight fulcrum sections for looseness, damage and operation.

Check the clutch shoe for damage and fouling with oil on the surface.



Measure the thickness of clutch shoe at the center position. If the thickness is smaller than the service limit, replace the shoe assembly with a new one.

DATA Clutch shoe thickness: Service Limit: 2.0 mm

09900-20102: Vernier calipers

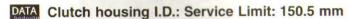


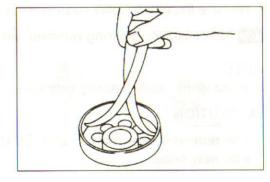
#### **CLUTCH HOUSING**

Check for any abnormal surface damage.

Measure the inside diameter of the clutch housing.

If the measurement exceeds the service limit, replace the housing with a new one.



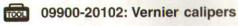


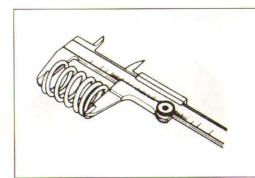
#### MOVABLE DRIVEN FACE SPRING

Measure the spring free length using the vernier calipers. If the length is shorter than the service limit, replace the spring with a new one.

DATA Movable driven face spring free lengh:

Service Limit: 129.4 mm





#### MOVABLE AND FIXED DRIVEN FACE

Check the driven face for any abnormal condition such as stepped wear or discoloration caused by burning.

If any defects are found, replace the movable driven face with a

Measure the abrasion of driven face in the same manner of drive face. ( 3-38)

DATA Face abrasion : Service Limit: 0.4 mm



#### REASSEMBLY

#### NOTE:

To assemble the clutch shoe assembly, reverse the sequence of the disassembly procedures taking care of the following instructions.

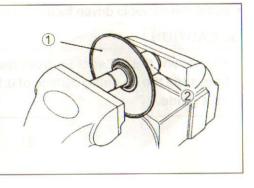
Install the bearing ② to the fixed driven face ①.

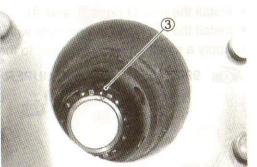


Install the circlip 3.

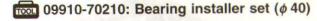
#### **A** CAUTION

Position the sealed side of the bearing toward out-





Fit the needle bearing ①.



#### A CAUTION

Position the needle bearing with its punch mark outside.

Apply sufficient grease both to the grease groove and needle bearing inside the fixed driven face.

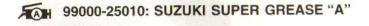
# 99000-25010: SUZUKI SUPER GREASE "A"

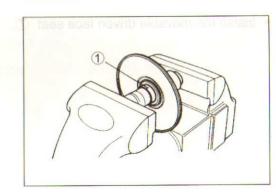
. Install the new oil seals 3 and 4 to both sides of the movable driven face 2.

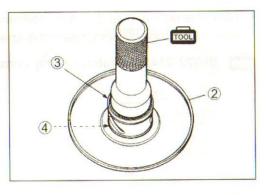
# 09913-76010: Bearing installer

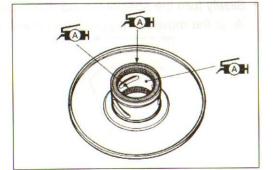
# A CAUTION

- \* Position the stamped code side outside.
- \* Apply sufficient grease to both the oil seal lips all around and the grease groove inside the movable driven face.





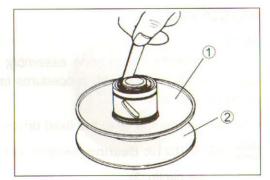




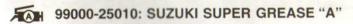
• Install the movable driven face ① onto the fixed driven face ②.

#### A CAUTION

To prevent the oil seal lip from damage during installation, slide the lip using a piece of 0.1 mm-thick steel sheet as a guide.



- . Install the new O-rings 3 and 4.
- Install the pin (5) to the pin hole with the roller (6) fitted.
- · Apply a small amount of grease to the O-ring and the pin hole.

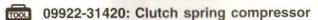




Install the movable driven face seat ?.



Install the spring ® and clutch shoe assembly 9 onto the movable driven face 10 and attach the special tool.





Slowly turn the special tool handle to tighten and align the flats
 A at the movable driven face end with clutch shoe plate hole.



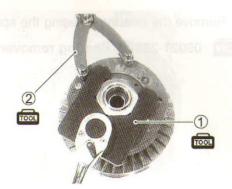
- Tighten the clutch shoe nut 1 temporarily.
- Remove the special tool from the movable driven face assembly.



 Hold the clutch shoe with the special tool ② and tighten the nut with the special tool ① to the specified torque.

09940-92440: Wrench set ① 09930-40113: Rotor holder ②

Clutch shoe nut: 105 N·m (10.5 kgf·m)



# V-BELT

#### INSPECTION CONTRACTOR OF THE PROPERTY OF THE P

Check that the V-belt is free from any greasy substance.

Check the contact surface for crack or other damage.

Measure the width of the belt using the vernier calipers.

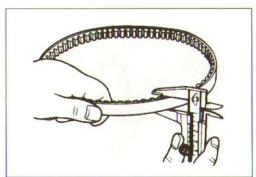
If the measurement exceeds the service limit or crack or other damage exists, replace the belt with a new one.

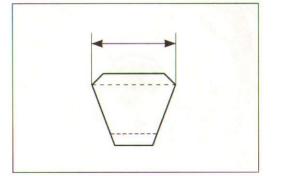
DATA V-belt width: Service Limit: 22.0 mm

09900-20102: Vernier calipers

# A CAUTION

If grease or oil is present on the surface, degrease the belt thoroughly.





# **CLUTCH INNER COVER**

#### DISASSEMBLY

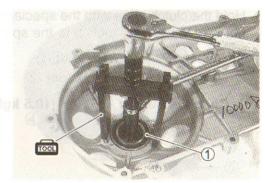
· Remove the bearing retainer.



Remove the bearing ① using the special tool.



09921-20220: Bearing remover set (φ 35)



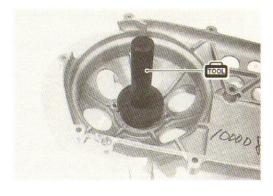
#### REASSEMBLY

· Install the bearing using the special tool.



09910-70210: Bearing installer set (φ 62)

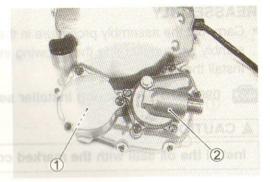
Install the bearing retainer.



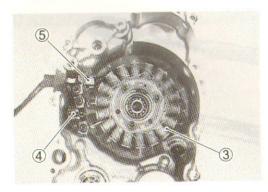
# **GENERATOR COVER**

#### DISASSEMBLY

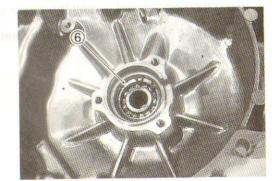
- For details of oil filter 1 disassembly and reassembly:
- For details of water pump ② disassembly and reassembly: F 5-11



- Remove the generator stator ③, signal generator ④ and lead wire guide 5.
- · For details of generator stator and signal generator inspection: 7-9, 21



· Remove the circlip 6.

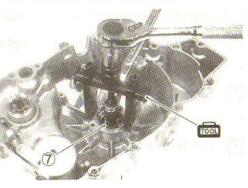


Remove the bearing ?.



09921-20220: Bearing remover set (φ 12)

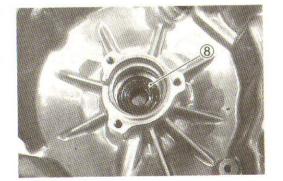
If abnormal noise does not occur, it is not necessary to remove the bearing.



· Remove the oil seal 8.

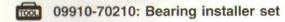
# **A CAUTION**

Replace the removed oil seal with a new one.



#### REASSEMBLY

- · Carry out the assembly procedure in the reverse order of disassembly while observing the following instructions.
- Install the oil seal ①.



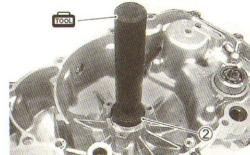
#### **A CAUTION**

Install the oil seal with the marked code toward outside.

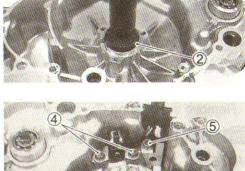


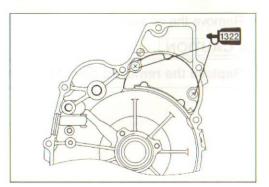


- Using the special tool, install the bearing 2.
- 09910-70210: Bearing installer set
- Install the circlip.



- Tighten the generator bolts 3 to the specified torque.
- Generator bolt: 10 N·m (1.0 kgf·m)
- Tighten the signal generator bolts 4 to the specified torque.
- Signal generator bolt: 5 N·m (0.5 kgf·m)
- Tighten the guide bolt 5 to the specified torque.
- Guide bolt: 10 N·m (1.0 kgf·m)
- Apply THREAD LOCK to the oil separator screws and tighten them.
- 99000-32110: THREAD LOCK "1322"





# STARTER CLUTCH

# INSPECTION OF STARTER CLUTCH OPERATION

Turn the starter driven gear by hand in the direction of arrow as shown and check that rotation is smooth. Also check that the gear is locked when attempted to turn in the other direction.

If a large resistance is felt or noise occurs when turning the gear, check the starter driven gear sliding surface for wear or damage. Check the bore 1 of starter driven gear for damage.

If any abnormal condition is found, replace the starter clutch with a new one.

#### DISASSEMBLY

· With the generator rotor held with a wrench (30 mm), loosen the starter clutch bolt.



 Remove the starter clutch guide ① and starter clutch ② from the generator rotor.

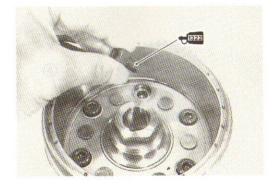


#### REASSEMBLY

- · Carry out the assembly procedure in the reverse order of disassembly while observing the following instructions.
- When inserting the starter clutch ② into the starter clutch guide 1), the flange side (A) must be positioned on the generator rotor side.



- Apply THREAD LOCK "1322" on the starter clutch bolts and tighten them to the specified torque.
- Starter clutch bolt: 25 N·m (2.5 kgf·m)
- 99000-32110: THREAD LOCK SUPER "1322"



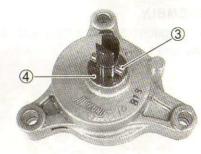
# **OIL PUMP**

## DISASSEMBLY

• Remove the circlip 1 and the oil pump driven gear 2.

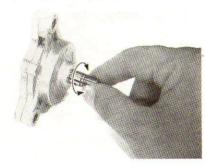


• Remove the pin 3 and the washer 4.



#### INSPECTION

Turn the oil pump shaft and check that rotation is smooth. If any abnormal condition is found, replace the oil pump with a new one.



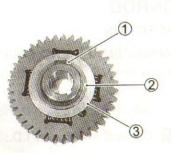
#### REASSEMBLY

· Carry out the assembly procedure in the reverse order of disassembly.

# BALANCER DRIVEN GEAR

#### DISASSEMBLY

- Remove the circlip 1.
- Remove the washer 2 and 3.

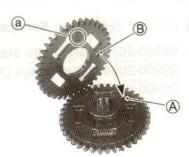


- Take out the springs 4.
- · Remove the scissors gear 5.

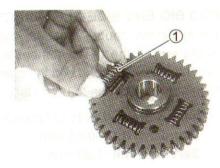


#### REASSEMBLY

- Carry out the assembly procedure in the reverse order of disassembly while observing the following instructions.
- Assemble the scissors gear with its stamp mark side (a) facing inside.
- When assembling, align the balancer driven gear hole (A) with the scissors gear hole B.



· Insert the springs 1



• Install the washer ② and ③, then fix them with the circlip ④.



## CONROD

### INSPECTION

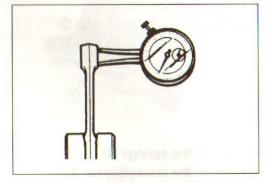
#### CONROD SMALL END INSIDE DIAMETER

Using a small bore dial gauge, measure the conrod small end inside diameter both in vertical and horizontal directions. If any of the measurements exceeds the service limit, replace the conrod.

DATA Conrod small end I.D.: Service Limit: 20.040 mm

09900-20602: Dial gauge (1/1000 mm, 1 mm)

09900-22403: Small bore gauge



### CONROD DEFLECTION

Move the small end sideways while holding the big end immovable in thrust direction.

Measure the amount of deflection.

Turn the conrod and see if it moves smoothly without play and noise.

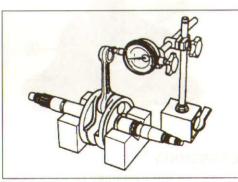
This method can check the extent of wear on the parts of the conrod's big end.

DATA Conrod deflection: Service Limit: 3.0 mm

09900-20701: Magnetic stand

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

09900-21304: V-block



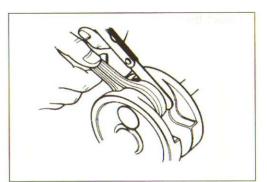
#### CONROD BIG END SIDE CLEARANCE

Using a thickness gauge, measure the side clearance at the conrod big end. If the measurement is out of standard value, measure the conrod big end and the crank pin widths individually to determine which one is to be replaced.

DATA Conrod big end side clearance:

Standard: 0.10-0.65 mm Service Limit: 1.00 mm

09900-20803: Thickness gauge



#### **CRANKSHAFT**

#### INSPECTION

#### CRANKSHAFT RUNOUT

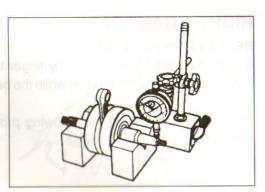
With the right and left crank journals supported with V-block, turn the crankshaft slowly. At this time, measure the crankshaft end runout using a dial gauge. If the runout exceeds the service limit, replace the crankshaft.

DATA Crankshaht runout: Service Limit: 0.08 mm

09900-20701: Magnetic stand

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

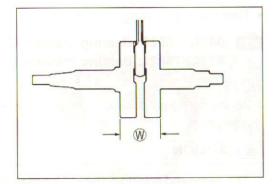
09900-21304: V-block



#### REASSEMBLY

· Decide the width between the webs referring to the figure below when rebuilding the crankshaht.

STD width between webs W: 59.9-60.1 mm

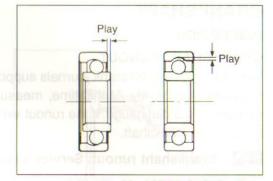


#### RIGHT CRANKCASE

#### BEARING INSPECTION

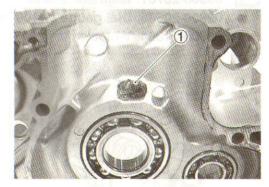
Rotate the bearing inner race by finger to inspect for abnormal play, noise and smooth rotation while the bearings are in the crank-

Replace the bearing in the following procedure if there is anything unusual.



#### DISASSEMBLY

Remove the oil nozzle 1.



• Remove the bearing 2 and 3.



09913-75520: Bearing installer ② 09913-75821: Bearing installer ③

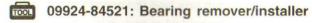
#### NOTE:

If abnormal noise does not occur, it is not necessary to remove the bearing.

#### **A** CAUTION

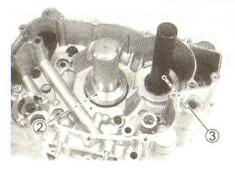
The removed bearing should be replaced with a new one.

· Remove the bushings 4 from left and right crankcase halves.

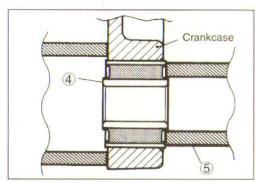


# NOTE:

- \* If abnormal condition are not found, it is not necessary to remove the bearing.
- \* To remove the bushing 4, use an appropriate size (\$\phi\$ 23.3) steel tube 5 such as a spacer.





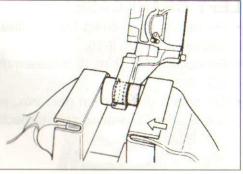


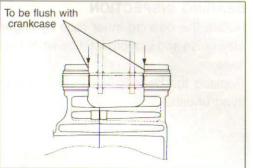
#### REASSEMBLY

· Press in the bushing.

#### NOTE:

- \* Using a vice and a tube of appropriate size (φ 23.3) for outside diameter of the mounting bushing, press in the bushing.
- \* Press in the mounting bushing so that the end of outside shell becomes flush with the inside face of crankcase.





#### LEFT CRANKCASE

• Drive in the bearings 1 and 2.



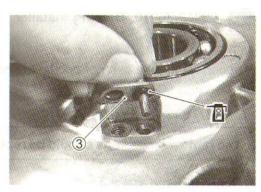
09913-75510: Bearing installer 1 09913-75810: Bearing installer ②



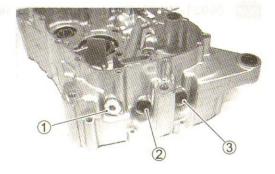
- · Apply the engine oil to the O-ring.
- Install the oil nozzle 3.

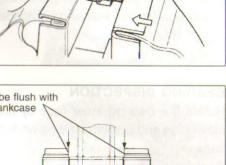
#### NOTE:

Before installing the oil nozzle, check or clean its oil passage.



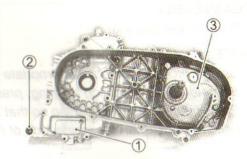
- · Tighten the oil plugs.
- Oil plug ①: 35 N·m (3.5 kgf·m)
  - Oil plug 2: 21 N·m (2.1 kgf·m)
  - Oil plug 3: 21 N·m (2.1 kgf·m)





#### LEFT CRANKCASE

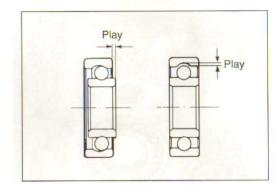
- · For details of oil sump filter 1 disassembly, inspection and reassembly: 2-15
- · For details of bushing ② disassembly and reassembly: 3-54
- · For details of reduction gear box, reduction gear box cover and bearing 3 disassembly, inspection and reassembly: 3-58



#### BEARING INSPECTION

Rotate the bearing inner race by finger to inspect for abnormal play, noise and smooth rotation while the bearings are in the crank-

Replace the bearing in the following procedure if there is anything unusual.



#### DISASSEMBLY

· Remove the oil seal 1.



09913-50121: Oil seal remover

#### A CAUTION

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

· Remove the bearing 2.



09913-76010: Bearing installer

#### NOTE:

If abnormal noise does not occur, it is not necessary to remove the bearings 2 and 3.

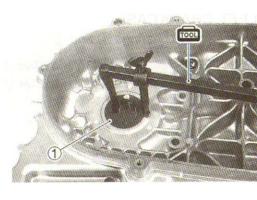
# A CAUTION

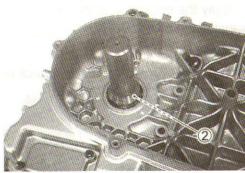
The removed bearings should be replaced with new ones.

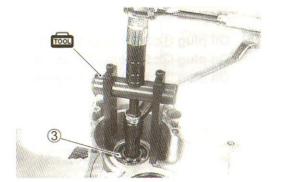
· Remove the bearing 3.



09921-20220: Bearing remover set (φ 20)







#### RIGHT CRANKCASE

Drive in the bearings ① and ②.



09913-75510: Bearing installer ① 09913-75810: Bearing installer ②



• Drive in the oil seal 3.

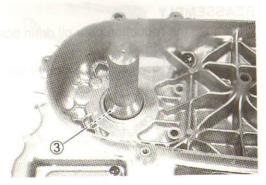


09913-75810: Bearing installer

· Apply grease on the lip of oil seal.



99000-25010: SUZUKI SUPER GREASE "A"

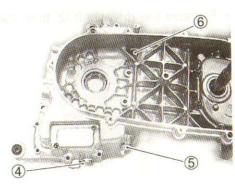


· Tighten the oil plugs.

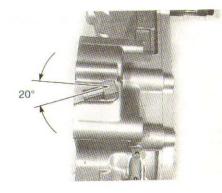


Oil drain plug 4: 23 N·m ( 2.3 kgf·m)

Oil plug 5: 21 N·m ( 2.1 kgf·m) Oil plug 6: 21 N·m ( 2.1 kgf·m)



· Press the breather pipe.

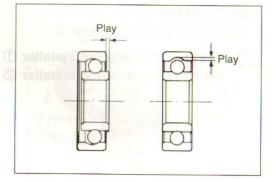


# REDUCTION GEAR BOX, COVER, BEARING

#### BEARING INSPECTION

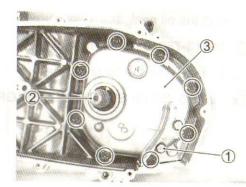
Rotate the bearing inner race by finger to inspect for abnormal play, noise and smooth rotation while the bearings are in the crank-

Replace the bearing in the following procedure if there is anything unusual.

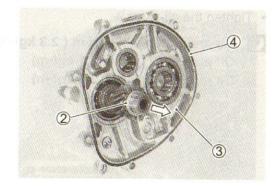


#### REASSEMBLY

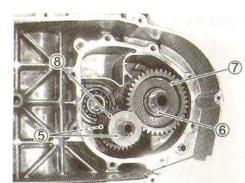
- Remove the reduction gear oil drain bolt 1 and drain reduction
- Remove the driveshaft ② together with the reduction gear box cover 3.



- · Remove the driveshaft ② from the reduction gear box cover 3.
- · Remove the O-ring 4.



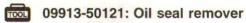
• Remove the washers 5, 6, the rear axle shaft 7 and the idle shaft 8.



· Remove the magnet 9 from the reduction gear box cover.

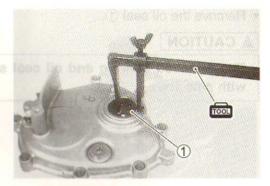


· Remove the oil seal 1 using the special tool.

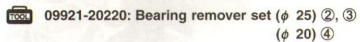


#### A CAUTION

Replace the removed oil seal with a new one.

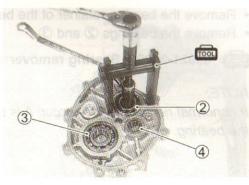


- Remove the bearing retainer of the bearing 4.
- Using the special tools, remove the bearings ②, ③ and ④.

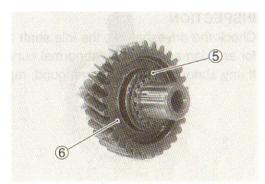


#### NOTE:

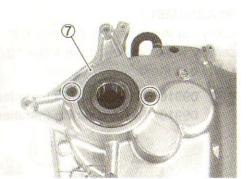
If abnormal noise does not occur, it is not necessary to remove the bearing.



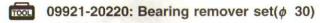
- · Remove the circlip ⑤.
- Remove the idle gear 6.

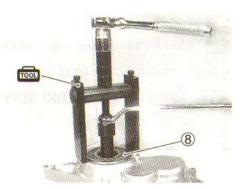


• Remove the bearing retainer 7.



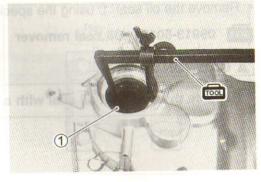
· Remove the bearing 8.



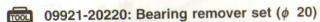


# A CAUTION

The removed bearing and oil seal should be replaced with new ones.



- Remove the bearing retainer of the bearing ②.
- Remove the bearings ② and ③.



#### NOTE:

If abnormal noise does not occur, it is not necessary to remove the bearing.



#### INSPECTION

Check the driveshaft ①, the idle shaft ② and rear axle shaft ③ for any damage and any abnormal curvature.

If any abnormal condition are found, replace it with a new one.



# REASSEMBLY

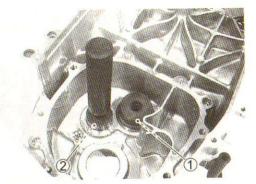
Carry out the assembly procedure in the reverse order of disassembly while observing the following instructions.

Drive in the bearings 1 and 2.

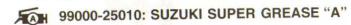


09910-70210: Bearing installer set (φ 47) ①

09910-70210: Bearing installer set (φ 35) ②



- Drive in the oil seal 3.
- 09913-75810: Bearing installer
- Apply grease on the lip of oil seal.





• Drive in the bearing 1.



09913-75510: Bearing installer



· Install the bearing retainer 2.

#### NOTE:

Install the bearing retainer toward the upper side.



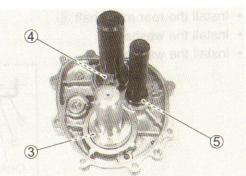
• Using the special tools, install the bearings ③, ④ and ⑤.



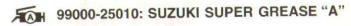
09913-75520: Bearing installer ③

09951-16080: Bearing installer 4

09913-75821: Bearing installer ⑤



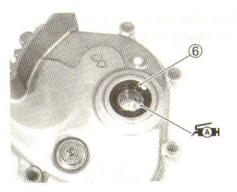
- Install the oil seal 6.
- · Apply grease on the lip of oil seal.



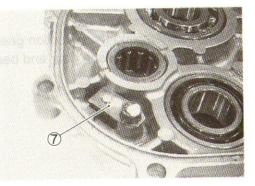
Install the magnet ?.

#### NOTE:

Before installing the magnet, clean it.

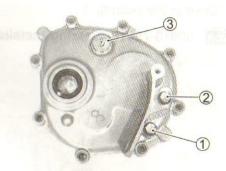






• Tighten the oil drain plug with gasket washer ①, oil level plug with washer 2, and oil filler plug with gasket washer 3.

Oil drain bolt: 12 N·m (1.2 kgf·m) Oil level bolt: 12 N·m (1.2 kgf·m) Oil filler bolt: 23 N·m (2.3 kgf·m)

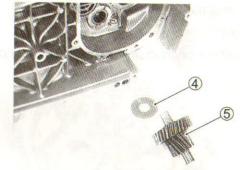


Install the washer 4 and the idle shaft 5 to the crankcase.

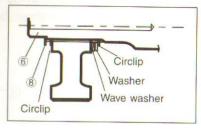
#### A CAUTION

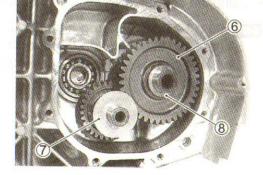
Take care that the finishing coat of washer ④ is different from washer 7.

- 4 (inside)..... Blackish color
- 7 (outside)..... Whitish color

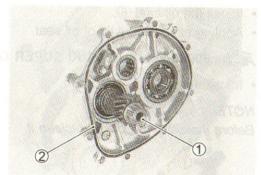


- · Install the rear axle shaft 6).
- Install the washer 7.
- · Install the washer (8).

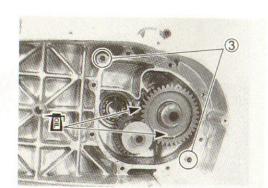




- Install the driveshaft 1 to the reduction gear box cover.
- Fit a new O-ring ②.



- Install the dowel pins 3.
- · Before assembling the reduction gear box cover, apply the reduction gear oil to each gear and bearing.



• Install the reduction gear box cover 2 together with the driveshaft

# A CAUTION

Also take care not to allow the O-ring to be pinched.

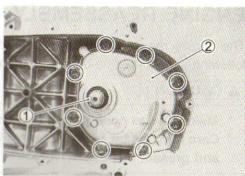
Reduction gear box cover bolt: 22 N·m (2.2 kgf·m)

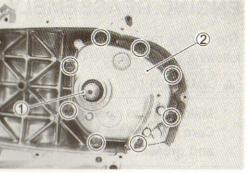
• Fill specified amount of reduction gear oil. ( 2-15)

DATA Amount of reduction gear oil: Overhaul: 200 ml

NOTE:

After assembly, check operation smoothly.





# **ENGINE REASSEMBLY**

The engine reassembly can be performed in the reverse order of disassembly procedures. However, the following points must be observed in the reassembly operation.

# **A CAUTION**

- \* Make sure to coat the rotating and sliding sections with engine oil.
- \* Care must be taken so that the drive belt, drive face and driven face are completely free from oil and grease.

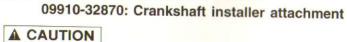
#### **CRANKSHAFT**

• Using the special tool, press in the crankshaft into the left crankcase.

#### NOTE:

Fit steel plates between the crankcase and the special tool when installing the crankshaft with the special tool.

09910-32812: Crankshaft installer

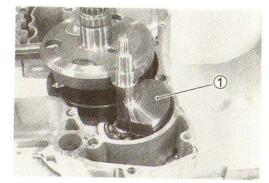


- \* Do not hit the crankshaft with a plastic hammer or the like to install it into the crankcase.
- \* Be careful not to cause damage to the oil seal lip when pressing the crankshaft into the crankcase.



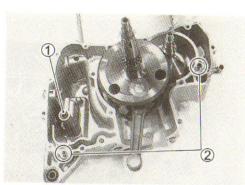
#### **BALANCER SHAFT**

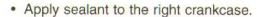
Install the balancer shaft ①.



# CRANKCASE

- · Clean and degrease the crankcase mating surfaces (both surfaces) with a cleanning solvent.
- Fit the O-ring 1.
- · Fit the dowel pins ② into the left crankcase.

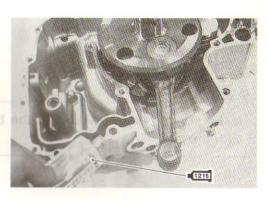


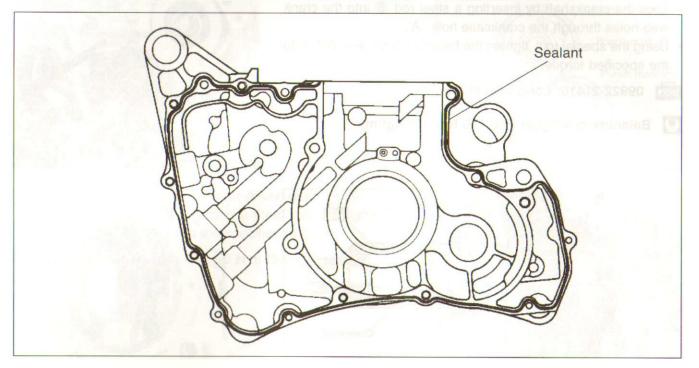


# 99000-31110: SUZUKI BOND "1215"

# A CAUTION

- \* Coat the sealant evenly without break.
- \* Application of sealant must be performed within a short period of time.
- \* Take extreme care not to let sealant enter into the oil hole or bearing.





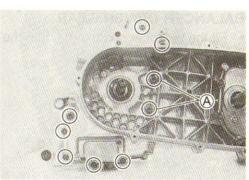
- Assemble the crankcases with in few minutes.
- · Fit the gasket washer to the left crankcase bolts.
- · Fit the gasket washer to the right crankcase bolt.
- · Tighten the crankcase bolts (8 mm) diagonally and evenly in two stages; initial tightening and final tightening.

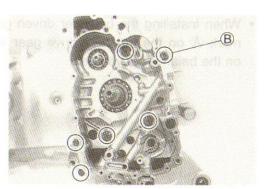
# Crankcase bolt:

Initial tightening: 8 mm 13 N·m (1.3 kgf·m) Final tightening: 8 mm 22 N·m (2.2 kgf·m) 6 mm 11 N·m (1.1 kgf·m)

#### NOTE:

After crankcase bolts have been tightened, check it crankshaft rotate smoothly.





#### **BALANCER DRIVE GEAR**

- Insert the pin ①.
- Install the balancer drive gear 2.

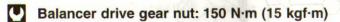
# **A CAUTION**

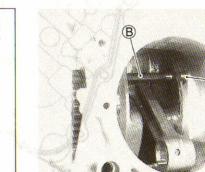
Make sure to align the slot of the balancer drive gear with the pin.

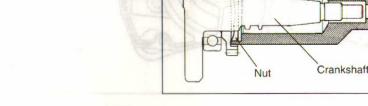
- · Lock the crankshaft by inserting a steel rod ® into the crank web holes through the crankcase hole A.
- Using the special tool, tighten the balancer drive gear nut 3 to the specified torque.

Balancer drive gear







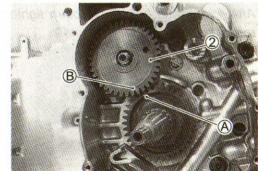


## **BALANCER DRIVEN GEAR**

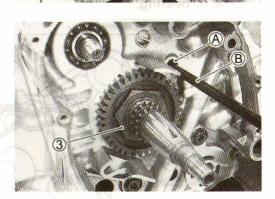
· Fit the balancer shaft key 1 into the key way.

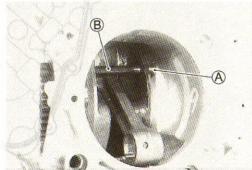


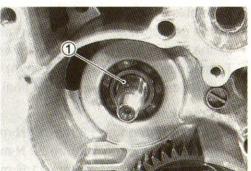
• When installing the balancer driven gear 2, align the punch mark (A) on the balancer drive gear with the punch mark (B) on the balancer driven gear.

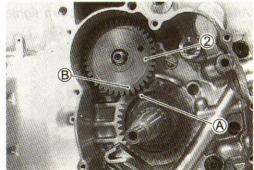








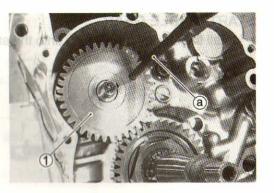


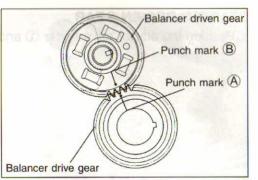


- Position the scissors gear 1 with its teeth meshed with the balancer drive gear.
- · Insert a steel rod @ into the scissors gear through the balancer driven gear and let the balancer driven gear teeth mesh with the balancer drive gear teeth.

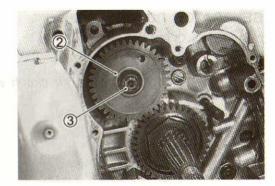
#### A CAUTION

Make sure that the punch mark (A) on the balancer drive gear is aligned with the punch mark (B) on the balancer driven gear.





- Install the washer ② and balancer driven gear nut ③.
- · Lock the crankshaft by inserting a steel rod and tighten the balancer driven gear nut to the specified torque.
- Balancer driven gear nut: 50 N·m (5.0 kgf·m)

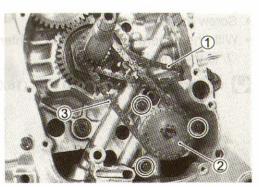


#### **CAM CHAIN**

• Fit the cam chain 1.

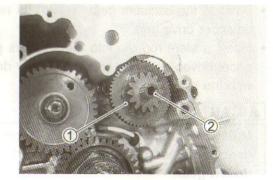
#### OIL PUMP

- Engage the oil pump chain 3 with the oil pump gear 2.
- · With the other side of the chain engaged with the crankshaft gear, install the oil pump on the crankcase.
- · Tighten the oil pump bolts.
- Oil pump bolt: 10 N·m (1.0 kgf·m)



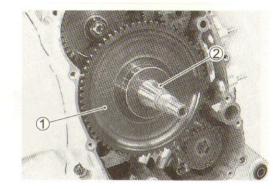
#### STARTER IDLE GEAR

Install the starter idle gear 1 onto the starter idle gear shaft 2.



#### STARTER DRIVEN GEAR

Position the starter driven gear 1 and the key 2 in place.

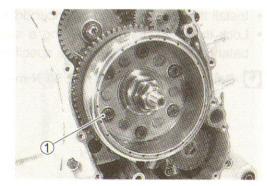


#### **GENERATOR ROTOR**

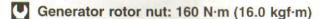
Install the generator rotor 1.

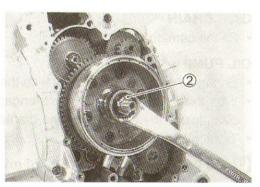
#### NOTE:

Make sure to engage the starter clutch with the starter driven



- Screw the generator rotor nut 2.
- · With the generator rotor locked, tighten the generator rotor nut 2 to the specified torque.



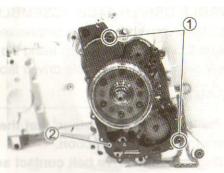


#### GENERATOR COVER

• Fit the dowel pins 1 and gasket 2.

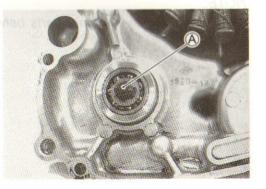
# A CAUTION

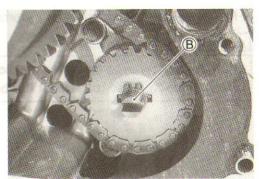
Make sure to replace the gasket with a new one.



# A CAUTION

Before installing the generator cover, align the flats (A) of the water pump shaft end with the slot (B) of the oil pump

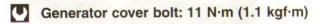


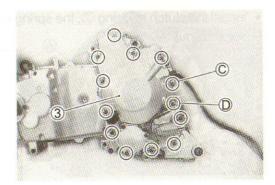


- Install the generator cover ③.
- Tighten the generator cover bolts to the specified torque.

# **▲** CAUTION

Fit the gasket washer to the bolts, © and D.





#### MOVABLE DRIVEN FACE ASSEMBLY/ V-BELT

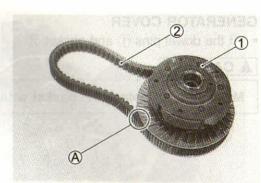
 With the clutch shoe spring compressed by pulling the movable driven face toward the clutch using the bearing remover, install the V-belt 2 to the movable driven face 1.

#### **A CAUTION**

- \* Position the drive belt so that the arrow (A) points the engine rotating direction.
- Degrease the drive belt contact surface (pulley face).

#### NOTE:

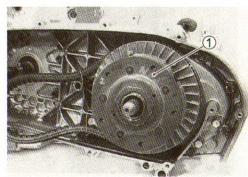
Install the V-belt to the inner parts between both faces as pos-



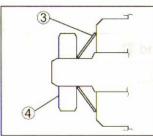
· Mount the movable driven face assembly 1.

#### **A CAUTION**

Pull the center area of upper and lower belt lines to be close to each other to prevent the belt from expanding.



• Install the clutch housing 2, the spring washer 3 and the clutch housing nut 4.



· Lock the clutch housing using the special tool and tighten the clutch housing nut 4 to the specified torque.

# A CAUTION

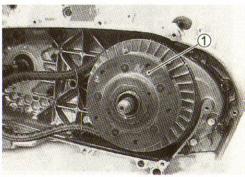
Degrease the inner surface of the clutch housing.

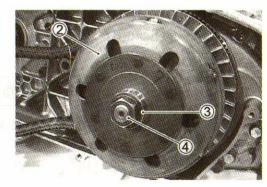


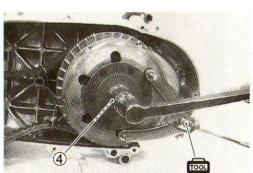
09930-40113: Rotor holder



Clutch housing nut: 85 N·m (8.5 kgf·m)







#### MOVABLE DRIVE FACE

- · Check that no roller inside the movable drive face is out of position from the slot.
- Install the movable drive face ① in position.

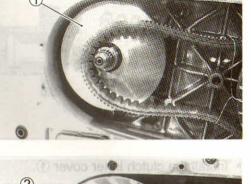
#### **A** CAUTION

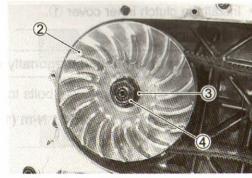
- \* The assembly work should be carefully performed so as not to allow the roller to dislocate.
- \* Degrease the drive belt contact surface (pulley face).
- · Install the fixed drive face 2.
- · Fit the washer 3 and nut 4.

#### **A CAUTION**

Check that the fixed drive face is not fouled with grease or other substance and if found, clean and degrease completely.

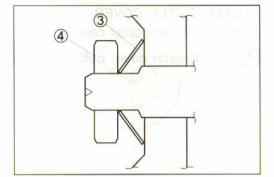
Check that the parts are properly engaged with the spline.





# **A** CAUTION

When tighten the fixed drive face nut 4, check the V-belt is not crushed between both faces.



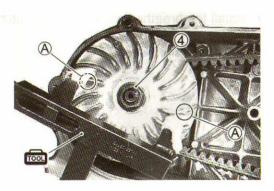
· Hold the fins of fixed drive face using the special tool and tighten the fixed drive face nut 4 to the specified torque.

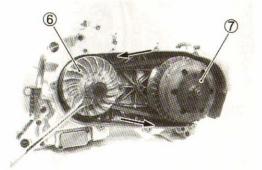
09920-53740: Clutch sleeve hub holder

Fixed drive face nut: 105 N·m (10.5 kgf·m)

# **A CAUTION**

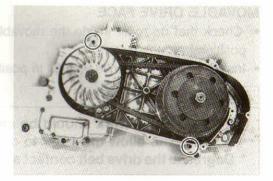
- \* Wrap the claws of the special tool using pieces of rag, fit its claws into the root of fins to prevent damage of fixed drive face.
- \* Hold the fins (they have reinforcements (A)) with the special tool.
- \* Be careful not to come off the special tool when tight-
- Be careful not to tighten the nut 4 over the specified torque.
- · To obtain proper contact of the drive belt, turn the fixed drive face 6 until the fixed drive face 7 and the fixed driven face can rotate synchronously.





#### **CLUTCH INNER COVER**

· Install the dowel pins.

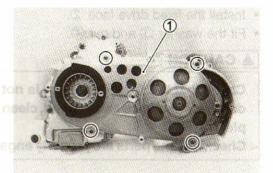


Install the clutch inner cover ①.

## **▲ CAUTION**

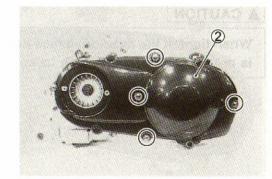
Bolts must be tightened diagonally and evenly.

- · Tighten the clutch inner cover bolts to the specified torque.
- Clutch inner cover bolt: 11 N·m (1.1 kgf·m)

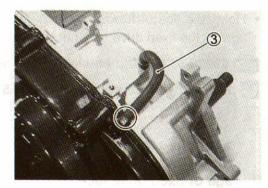


#### **CLUTCH OUTER COVER**

- . Install the clutch outer cover 2.
- Clutch outer cover bolt : 11 N·m (1.1 kgf·m)



Install the breather hose 3 to the clutch outer cover hole.

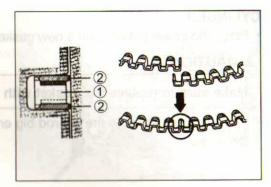


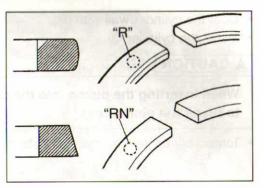
#### **PISTON RING**

- · Install the piston rings in the order of oil ring, 2nd ring and top
- . To install the oil ring, fit the spacer 1 first and then the side rails 2.

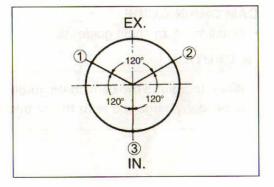
#### A CAUTION

- \* When inserting the spacer, take care not to have the ends overlapped.
- \* The top and 2nd rings have a stamped mark on the side. Be sure to bring the stamped mark side to the top when assembling to the piston.
- Be careful not to cause scratch on the piston when inserting the piston ring to the piston. Also, do not expand the piston ring more than necessary as the ring can break.





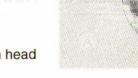
- · When all the piston rings have been assembled, check that each can turn smoothly.
- To minimize compression and oil leaks, locate each piston ring end gap in the position as shown in the right illustration.
  - 1 2nd ring/side rail (lower side)
  - 2 Side rail (upper side)
  - 3 Top ring/spacer



#### **PISTON**

- · Apply MORYBDENUM OIL to the piston pin.

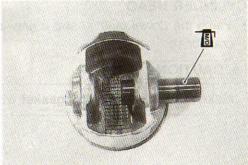
MORYBDENUM OIL

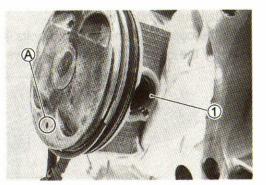


- to exhaust side.
- · After the piston pin has been inserted through the conrod, install the circlip 1.

### **A CAUTION**

- \* Replace the circlip with a new one.
- \* Place a piece of rag under the piston when installing the circlip to prevent it from falling into the crankcase.
- \* The circlip end gap must be positioned so as not to coincide with the piston pin bore cutaway.





#### CYLINDER

• Place the dowel pins 1 and a new gasket 2 on the crankcase.

## A CAUTION

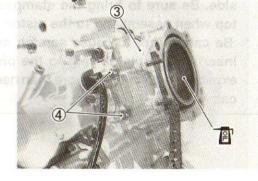
Make sure to replace the gasket with a new one.

- Apply the engine oil to the conrod big end, piston and the piston rings.
- and a
- Coat the cylinder wall with oil.
- Install the cylinder 3.

#### A CAUTION

When inserting the piston into the cylinder, use care not to break the piston ring.

• Temporary tighten the cylinder nuts 4.

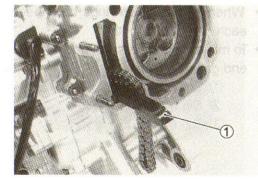


#### **CAM CHAIN GUIDE**

• Install the cam chain guide 1.

# **A CAUTION**

When installing the cam chain guide, check that the chain is properly engaged with the crankshaft sprocket.

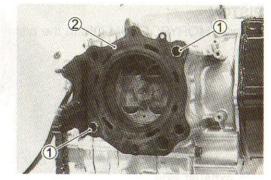


### CYLINDER HEAD

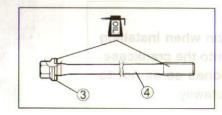
 Place the dowel pins ① and a new cylinder gasket ② on the crankcase.

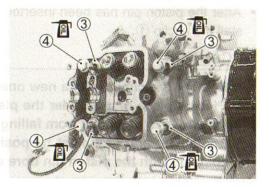
#### A CAUTION

Make sure to replace the gasket with a new one.

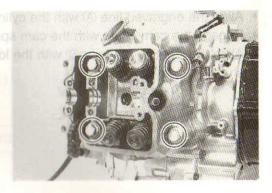


- Install the cylinder head.
- Fit the copper washers 3 and bolts 4.
- Apply the engine oil to the copper washers 3 and bolts 4.

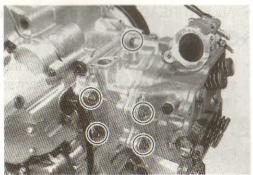


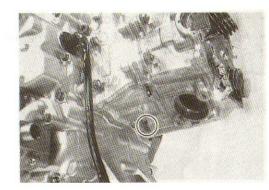


- Tighten the cylinder head bolts and nuts diagonally and evenly.
- The head bolt tightening must be performed in two stages; initial and final tightening.
- Cylinder head bolt (M10):
  Initial tightening: 20 N·m (2.0 kgf·m)
  Final tightening: 42 N·m (4.2 kgf·m)

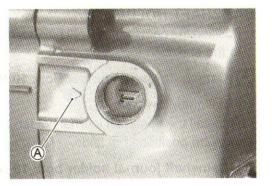


Cylinder head nut (M8): 25 N·m (2.5 kgf·m)
Cylinder head nut (M6): 10 N·m (1.0 kgf·m)





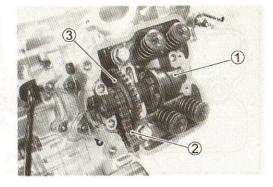
#### **CAMSHAFT**



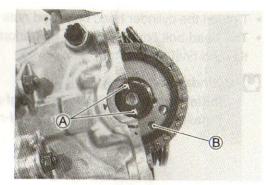
Position the camshaft ①, cam chain ② and cam sprocket ③.

# **A** CAUTION

Position the cam sprocket so that the stamped mark side faces outside.



- · Engage the cam chain with the cam sprocket.
- · Align the locating pin hole ® with the locating pin on the camshaft.



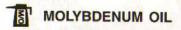
Apply THREAD LOCK to the cam sprocket bolts.

# 99000-32030: THREAD LOCK "1303"

· Position the lock washer 1 so that the locating pin on the camshaft is covered and tighten the cam sprocket bolts to the specified torque.

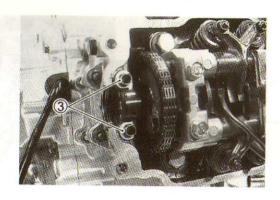
# Cam sprocket bolt: 15 N·m (1.5 kgf·m)

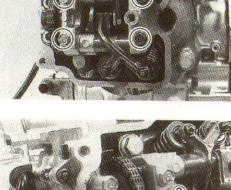
- · Bend up the lock washer to lock the bolts.
- Fit the C-ring 2 and dowel pins 3.
- · Apply MOLYBDENUM OIL to the camshaft journals and the cam faces.

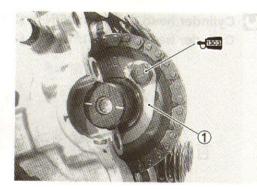


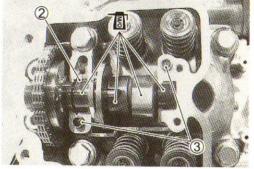
#### **CAMSHAFT HOLDER**

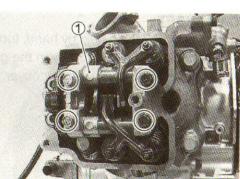
- Position the camshaft journal holders ①, then tighten their bolts to the specified torque.
- Camshaft journal holder bolt: 10 N·m (1.0 kgf·m)
- . Install the dowel pins 3.
- To install the camshaft journal holder ②, the protruded side A must be positioned outside.
- Camshaft journal holder bolt: 10 N·m (1.0 kgf·m)

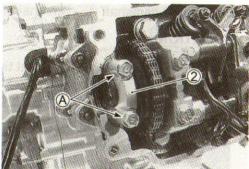






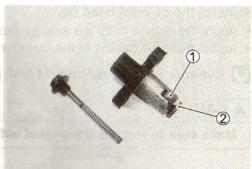






#### **CAM CHAIN TENSIONER ADJUSTER**

 With the spring holder bolt and spring removed from the cam chain tensioner adjuster, release locking of the ratchet mechanism 1) and push the push rod 2) all the way in.



 Position the cam chain tensioner adjuster 3 on the cylinder together with a new gasket and tighten the bolts to the speci-

Cam chain tensioner adjuster bolt: 10 N·m (1.0 kgf·m)

### A CAUTION

Make sure to replace the gasket with a new one.

- Fit the O-ring 4.
- · Insert the spring into the cam chain tensioner adjuster body and tighten the spring holder bolt 5 to the specified torque.
- Spring holder bolt: 8 N·m (0.8 kgf·m)

# **A** CAUTION

- \* When the cam chain tensioner adjuster has been installed, check for cam chain tension to determine if the tensioner adjuster is functioning properly.
- \* Turn the crankshaft and check that all the moving parts (e.g., camshaft and the rocker arm ) work properly.

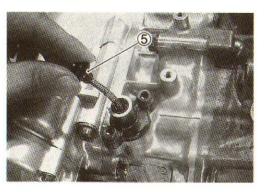
#### CYLINDER HEAD COVER

- · Fit a new gasket to the cylinder head cover.
- · Apply sealant to cam end cap.
- 99000-31160: SUZUKI BOND "1216"

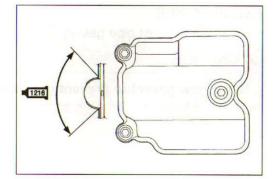
# **A** CAUTION

Make sure to replace the gasket with a new one.







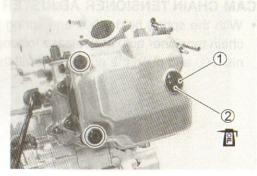


- · Install the cylinder head cover.
- Apply the engine oil to the seal gasket 2.
- Install the seal gasket to the cylinder head cover bolt ①.



### **A** CAUTION

Make sure to replace the gasket with a new one.



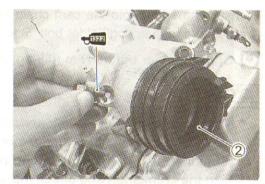
#### INTAKE PIPE

· Fit a new O-ring 1 on the intake pipe.



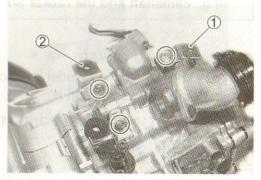
- · Position the intake pipe 2 on the cylinder head.
- · With thread lock applied, tighten the intake pipe bolts.





#### AIR CLEANER BRACKET

Install the air cleaner brackets ① and ②.

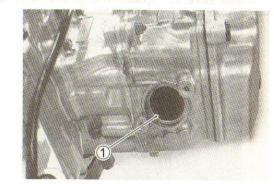


#### **EXHAUST PIPE**

• Fit a new exhaust pipe gasket 1.

## **A** CAUTION

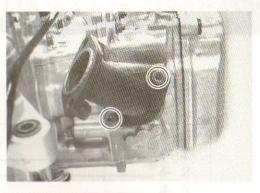
Use a new gasket to prevent gas leakage.



· With the thread lock applied, tighten the exhaust pipe bolts.

99000-32110: THREAD LOCK "1322"

Exhaust pipe bolt : 23 N·m (2.3 kgf·m)



#### STARTER MOTOR

Apply the grease to the O-ring.

99000-25010: SUZUKI SUPER GREASE "A"

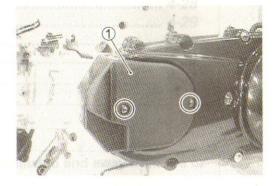


· Mount the starter motor on the engine.



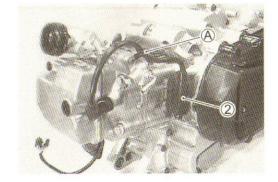
#### **COOLING FAN COVER**

• Install the cooling fan cover ①.



#### **IGNITION COIL**

- Install the ignition coil ② on the engine.
- · Connect the spark plug cap.
- Secure the high-tension cord with the clamp (A).



# FUEL AND LUBRICATION SYSTEM

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# **A WARNING**

Gasoline must be handled carefully in an area well ventilated and away from fire or sparks.

# **FUEL TANK**

# REMOVAL

The fuel tank is located in front of the engine (under floor).

- · Remove the following parts.
- \* Front leg shield ( 6-2)
- \* Lower leg shield ( 6-2)
- \* Rear leg shield ( 6-2)
- \* Front box ( 6-2)
- \* Front wheel ( 6-20)
- \* Front fender ( 6-32)
- \* Radiator ( 5-3)
- \* Rear shock absorber front bolt ( 6-58)



- Disconnect the fuel level gauge coupler 1.
- Disconnect the fuel hose 2 from the fuel filter 3.
- Remove the bolt and detach the fuel filter 3.

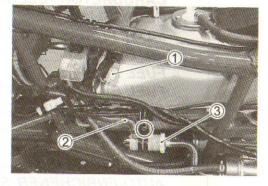
#### NOTE:

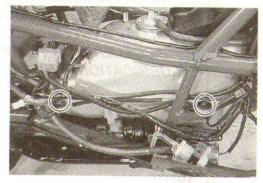
After disconnecting the fuel hose ②, insert a blind plug into the end to stop fuel leakage.

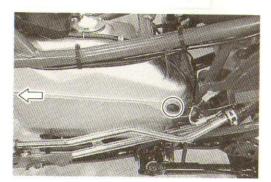
- · Remove the fuel tank bolts (3 pcs).
- Remove the fuel tank forward.

# **▲ WARNING**

As gasoline leakage may occur in this operation, keep away from fire and sparks.

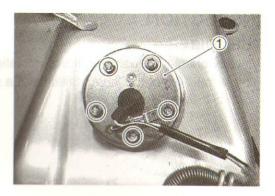






# **DISASSEMBLY**

Remove the fuel level gauge 1.



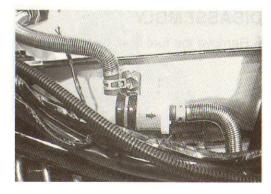
· Remove the fuel tank pressure control valve 2 and fuel cut valve 3.



# INSPECTION

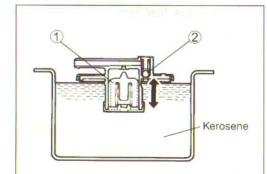
#### **FUEL FILTER**

Visually check the fuel filter. If accumulation of sediment or clogging is found, replace the fuel filter with a new one.



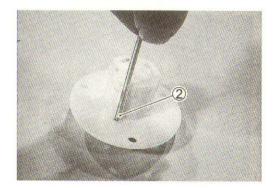
#### **FUEL CUT VALVE**

Immerse the fuel cut valve into kerosene as shown in the right illustration and check that the valve 1 operates smoothly and contacts the valve seat.



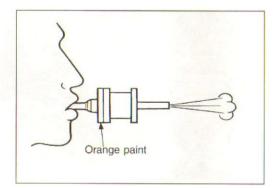
Check that the ball 2 moves smoothly when pushed with a thin

Should any defect be found, replace the fuel cut valve with a new



#### FUEL TANK PRESSURE CONTROL (TPC) VALVE

Check TPC valve if air can pass through smoothly when blown from the orange painted side and not from the other side. Should any abnormal condition be found, replace the valve with a new one.



#### **FUEL LEVEL GAUGE INSPECTION**

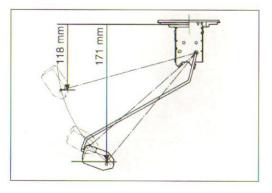
Measure resistance between the terminals when the float is at the position listed below.



# 09900-25008: Multi-circuit tester

Fuel level position	Resistance between terminals		
118 mm	1–5 Ω		
171 mm	103–117 Ω		

If the resistance measured is out of the specification, replace the gauge with a new one.



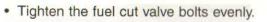
### REASSEMBLY

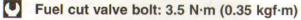
Carry out the assembly procedure in the reverse order of disassembly while observing the following instructions.

• Fit the gasket with its cutout ② engaged with a boss ① on the fuel cut valve.

## **A CAUTION**

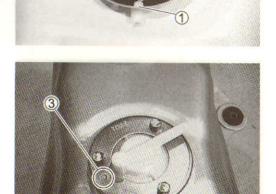
Always use a new gasket when reinstalling.





NOTE:

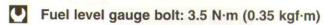
Align the boss 3 on the fuel cut valve with the hole of the cover.



· Fit the fuel level gauge gasket with its flanged side facing down and the hole 4 turned to rear left direction.

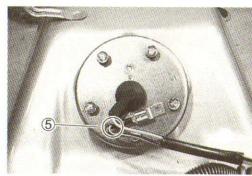


· Tighten the fuel level gauge bolts diagonally and evenly.

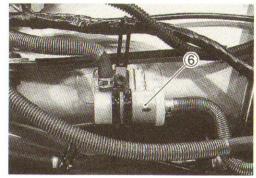


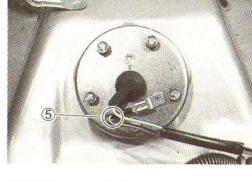
NOTE:

Align the mark 5 on the fuel level gauge with the gasket hole 4 when reinstalling.



· Install the fuel filter so that the arrow 6 points the direction of fuel flow.

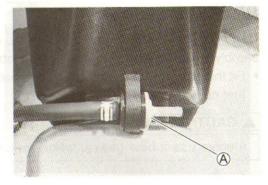




· Install the fuel tank pressure control valve.

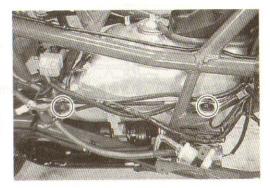
#### NOTE:

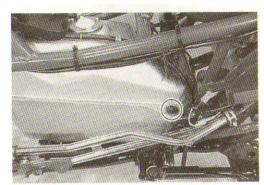
Orange painted side (A) of the fuel tank pressure control valve faces the reverse of the fuel cut valve side.



· Tighten the fuel tank bolts.

Fuel tank bolt: 10 N·m (1.0 kgf·m)





# **FUEL PUMP**

#### REMOVAL

- Remove the rear leg shield. ( 6-2)
- · Disconnect the fuel hose.
- Disconnect the fuel pump lead wire coupler 1.
- Remove the bolts and remove the fuel pump.



# INSPECTION

Measure resistance between the terminals of fuel pump lead wire coupler.

If the measurement is out of specification, replace the fuel pump.

09900-25008: Multi-circuit tester

DATA Fuel pump resistance: STD: 1.0–2.5  $\Omega$ 



As shown in the right illustration, connect the battery to the fuel pump and measure the pump discharge amount per minute using kerosene.

Battery ⊕ to Orange/white Battery ⊖ to Black/white

PATA Fuel pump discharge amount:
Limit: More than 600 ml/1 minute

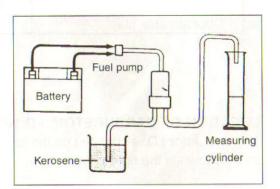
If the measurement is less than the standard value, replace the fuel pump with a new one.

# **▲** WARNING

Do not use gasoline in this test as it is highly combustible.

#### REASSEMBLY

 Carry out the assembly procedure in the reverse order of disassembly.

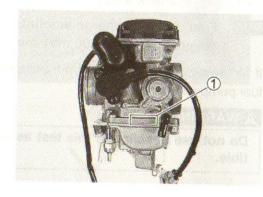


# CARBURETOR **SPECIFICATIONS**

ITEM		SPECIFICATION		
		E-02, 04, 34	E-22	E-18
Carburetor type		KEIHIN CVK36	<b>←</b>	<b>←</b>
Bore size		36.5 mm	<b>←</b>	<b>←</b>
I.D. No.		15F1	15F2	15F3
Idle r/min.		1400±100 r/min.	<b>←</b>	1400±50 r/min.
Fuel level		1.5±1 mm	<b>←</b>	←
Float height		17.0±1.0 mm	<b>←</b>	<b>←</b>
Main jet	(M.J.)	#108	<b>←</b>	<b>←</b>
Main air jet	(M.A.J.)	Press-fitted	<del>-</del>	<del>-</del>
Jet needle	(J.N.)	N8CA	<b>←</b>	<del></del>
Needle jet	(N.J.)	φ 3.8	<b>←</b>	+
Throttle valve	(Th.V.)	110		+
Pilot jet	(P.J.)	# 38	<b>←</b>	<u></u>
Pilot screw	(P.S.)	PRE-SET	Mar Provide China	
		(1-3/4 turns out)	<b>←</b>	<b>←</b>
Throttle cable play		2-4 mm	<b>←</b>	<b>→</b>

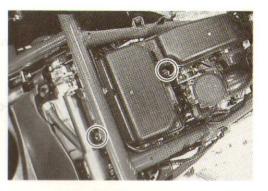
# LOCATION OF CARBURETOR I.D. NO.

The carburetor I.D. is stamped on the location ① on the carburetor as shown in the right photo.

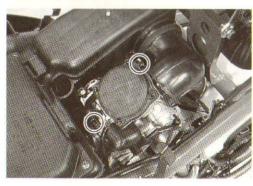


# REMOVAL

- · Remove the follwing parts.
- \* Front frame cover ( 6-2)
- \* Front helmet box cover ( 6-2)
- \* Helmet box ( 6-2)
- · Remove the air cleaner box mounting bolt.



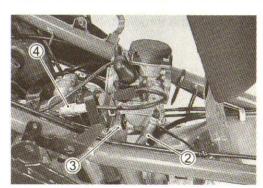
- · Loosen the air cleaner clamp screw.
- · Loosen the carburetor clamp screw.



• Remove the breather hose 1 and the air cleaner box.



- · Disconnect the fuel hose 2 and the carburetor heater ter-
- Disconnect the throttle position sensor lead wire coupler 4.



- · Disconnect the throttle cables.
- · With the auto-enrichener lead wire coupler 5 removed, remove the carburetor.

# REINSTALLATION

- Reinstallation can be performed in the reverse order of removal.
- · After the installation, perform the follwing adjustment.
- \* Throttle cable adjustment ( 2-6)
- \* Idle speed adjustment ( 2-6)



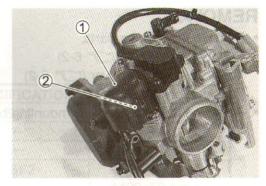


# DISASSEMBLY

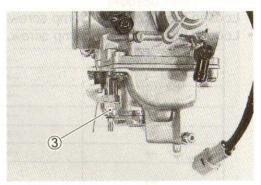
· With the auto-enrichener cover 1 removed, remove the autoenrichener assembly 2.

#### NOTE:

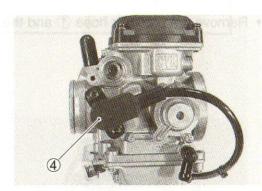
The auto-enrichener assembly is a non-disassemblable type.



· Remove the carburetor heater 3. (Except for E-18 and -22)



· Remove the torx bolts (T-20) and then take out the throttle position sensor 4.



· Remove the throttle cable bracket.



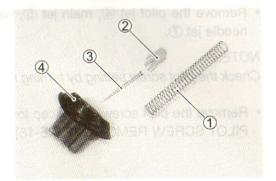
· Remove the throtlle stop screw bracket.



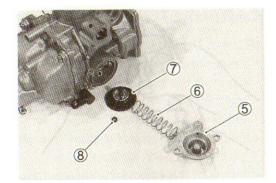
· Remove the top cap.



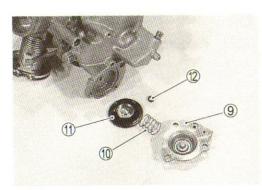
· Remove the spring ①, spring retainer ②, jet needle ③ and throttle valve 4.



· Remove the coasting enrichment valve cover ⑤ and then take out the spring ⑥, the coasting enrichment valve ⑦ and Oring



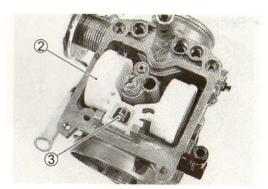
- Remove the coasting enrichment valve ② and O-ring ③.
- Remove the accelerating pump cover 
   and then take out the spring ①, the accelerating pump valve ① and Oring ②.



· Remove the float chamber.



• Remove the float chamber 2 and needle valve 3.

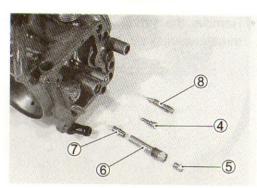


 Remove the pilot jet 4, main jet 5, needle jet holder 6 and needle jet 7.

#### NOTE:

Check the pilot screw setting by turning the screw before removal.

Remove the pilot screw ®. (Excep for E-18)
 PILOT SCREW REMOVAL [For E-18]: 7 4-20



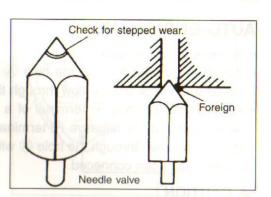
#### INSPECTION

Check the following parts for damage and clogging.

- \* Pilot jet
- \* Piston valve
- \* Main jet
- \* Starter jet
- \* Main air jet
- \* Gaskets and O-rings
- \* Pilot air jet
- \* Pilot outlet and by-pass
- \* Needle jet holder
- \* Coasting enrichement valve
- \* Float
- \* Needle valve
- \* Jet needle
- \* Valve seat

If any abnormal condition is found, wash the part clean.

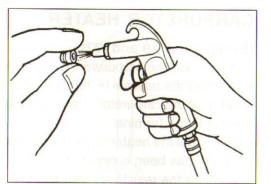
If damage or clogging is found, replace the part with a new



# CARBURETOR CLEANING

# **A WARNING**

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



- Clean all jets with a spray-type carburetor cleaner and dry them using 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 using compressed air.

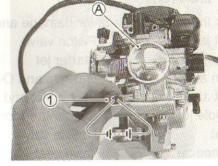
#### **A** CAUTION

Do not use a wire to clean the jets or passageways. A wire can damage the 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.

#### **AUTO-ENRICHENER**

- · Remove the carburetor.
- · Attach the proper hose to the hole (A) of the auto-enrichener circuit and check that air flow through this circuit.
- Connect the positive + terminal of a 12V battery to Yellow/ white lead and the negative - terminal to Black/white. Check that not air flow through the hole (A) within 5 minutes after the battery has been conneced.



# **A CAUTION**

Do not attempt to disassemble the auto-enrichener.

If any abnormal condition is found, replace it with a new one.

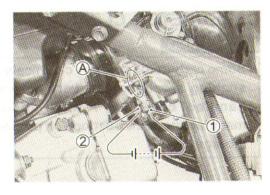
# CARBURETOR HEATER

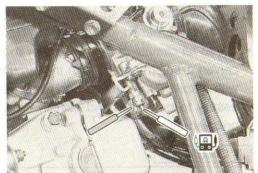
(Except for E-18 and -22)

- · Disconnect the carburetor heater terminal lead wires.
- · Connect the positive + terminal of a 12V battery to the terminal 1 of the carburetor heater and the battery negative - terminal to the terminal 2.
- Check that the heater section (A) is heated in 5 minutes after the battery has been connected.
- Measure the resistance between the terminals.

09900-25008: Multi-circuit tester

Carbaretor heater resistance: STD: 12-16Ω

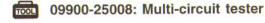




# THERMO-SWITCH INSPECTION

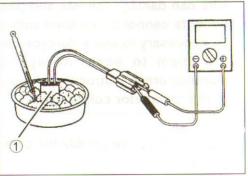
(Except for E-18 and -22)

· Cool the thermo-switch 1 with ice water and check for



DATA Thermo-switch continuity:

Below 3-9°C Above 10–16°C No



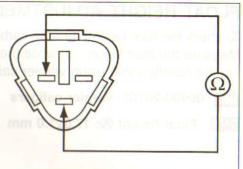
#### THROTTLE POSITION SENSOR

Measure the resistance between the terminals as shown in the

DATA Throttle position sensor resistance: Approx.  $5k\Omega$ 

NOTE:

When performing this test, it is not necessary to remove the throttle position sensor.



# **FUEL LEVEL**

#### **WARNING**

This inspection must be performed in an area well ventilated, away from fire or sparks since gasoline, an explosive fluid, is used in this operation.

- · Remove the carburetor.
- Install the special tool to the carburetor drain outlet.
- · Loosen the drain bolt 1.



· Adjust the carburetor to the proper angle holding the body with a vice or the like.

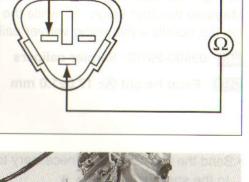
Carburetor set position: Lateral direction: Horizontal : Longitudinal direction: Horizontal

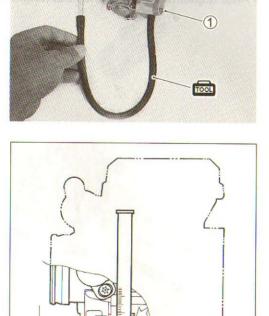
- · Fill gasoline in the carburetor.
- · Remove air completely from the fuel level gauge.
- With the level gauge held vertical, lower the gauge slowly and align the datum plane 2 (float damper upper face) with the gauge graduation.
- · Wait until the fuel level stabilizes.
- · Determine the zero point on the gauge graduation and after waiting again for level stabilization, measure the height from the datum plane.

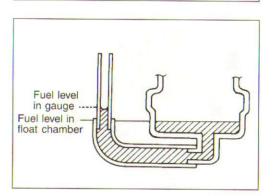
Fuel level: 1.5±1mm above from datum plane

#### NOTE:

The apparent fuel level measured in the level gauge is higher than the actual level in the float chamber because of meniscus effect. (Meniscus is approximately 1mm.)









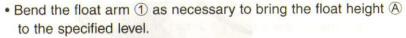


# FLOAT HEIGHT ADJUSTMENT

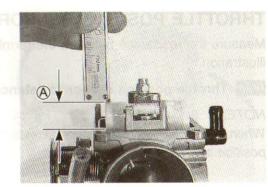
To check the float height, turn the carburetor upside down. Measure the float height (A) while the float arm is just contacting the needle valve using vernier cailpers.

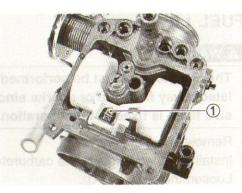
09900-20102: Vernier calipers

DATA Float height A: 17.0±1.0 mm



After adjustment, check the float height and the fuel level again.





# REASSEMBLY

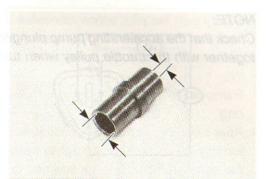
Carburetor reassembly can be performed in the reverse order of disassembly. When reassembling, carefully observe the following instructions.

#### A CAUTION

- \* Assemble the parts taking consideration of their func-
- \* Replace O-rings and seals with new ones.

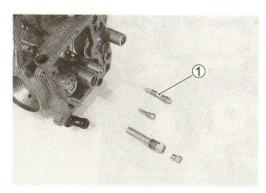
#### NOTE:

Face the bigger I.D. side of the needle jet holder upside.



• Reinstall the pilot screw 1 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 disassmbly.

DATA Pilot screw (P.S): PRE-SET 1-3/4 turns out

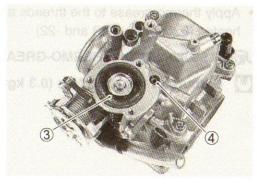


· Fit the gasket 2 securely to the float chamber.



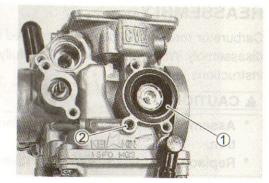
· Assemble the accelerating pump plunger 3/diaphragm and Oring 4.

- \* Position the rounded side of O-ring facing outside.
- \* Position the stamped mark side of the accelerating pump plunger facing outside.



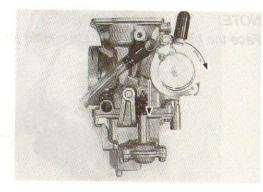
Assemble the coasting enrichment valve ① and O-ring ②.

Position the rounded side of O-ring 2 facing outside.

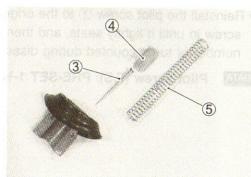


#### NOTE:

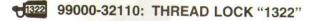
Check that the accelerating pump plunger operates smoothly and together with the throttle pulley when turned.

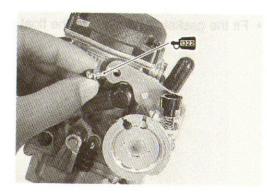


• Assemble the jet needie ③, spring retainer ④ and spring ⑤.

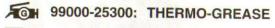


· Apply thread lock to the screw and tighten the throttle stop screw bracket.

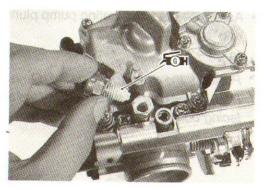




 Apply thermo-grease to the threads and tighten the carburetor heater. (Except for E-18 and -22)



Carburetor heater: 3 N·m (0.3 kgf·m)



#### THROTTLE POSITION SENSOR POSITIONING

 Install the throttle position sensor with the flats on the throttle shaft end securely engaged with the slot on the throttle position

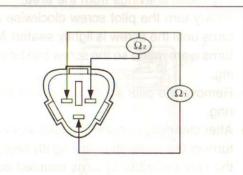


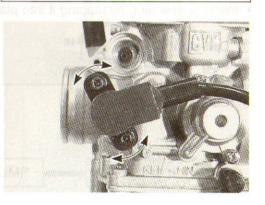
 Measure the resistance Ω) between the throttle position sensor terminals as shown in the illustration.

# DATA Throttle position sensor resistance $\Omega$ 1: Approx. 5 $\Omega$

- Measure the resistance (Ω2) between the throttle position sensor terminals as shown in the illustration.
- · Fully open the throttle valve with the throttle lever.
- Position the throttle position sensor until resistance (Ω2) is 3.09-4.63 kΩ.
- When the resistance (Q2) is within specification, tighten the throttle position sensor mounting screws (T-20).

DATA Throttle position sensor resistance  $\Omega$ 2: 3.09–4.63 k $\Omega$ 

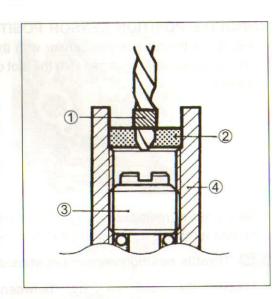




# PILOT SCREW REMOVAL (For E-18)

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 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 along with the spring, washer, and Oring.
- 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 a new plug by tapping it into place with a punch.
- 1 Drill-stop
- 2 Plug
- 3 Pilot screw
- 4 Carburetor body

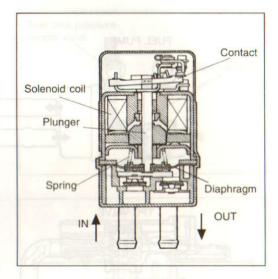


# **FUEL SYSTEM**

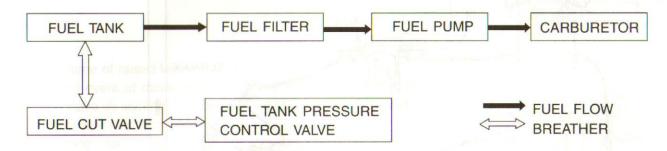
The fuel pump is operated by an electro-magnetic force and its electrical energy is supplied from the battery, The fuel sent under pressure by the fuel pump flows into the float chamber when the float of the carburetor has dropped and the needle valve is open. When the needle valve closes, the pressure of the fuel in the hose connecting the carburetor and the fuel pump increases, and when the set pressure is reached, the operation of the fuel pump is stopped by the fuel pressure to prevent excessive supply.

# **FUEL PUMP**

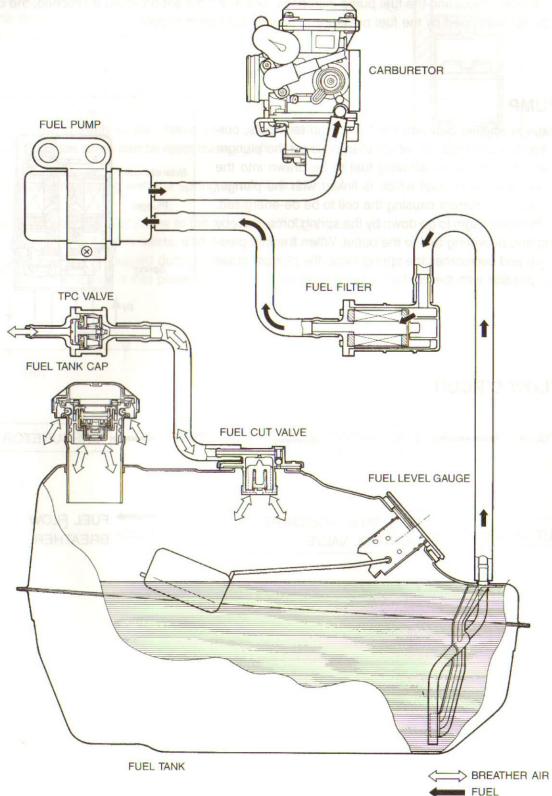
When voltage is applied between the fuel pump terminals, current flows into the solenoid coil which then pulls up the plunger together with the diaphragm allowing fuel to be drawn into the pump. At this time, the contact which is linked with the plunger opens and interrupts current causing the coil to be de-energized. This allows the diaphragm to go down by the spring force, thereby pressurizing and delivering fuel to the outlet. When the fuel pressure builds up and overcomes the spring force, the plunger stops at pulled up position with the contact in open position.



#### **FUEL FLOW CIRCUIT**



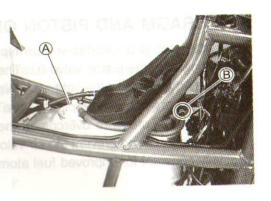




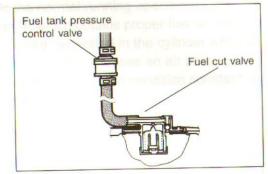
# FUEL CUT VALVE AND FUEL TANK PRESSURE CONTROL VALVE

The fuel cut valve (A) and fuel tank pressure control valve (B) are installed on the upper part of the fuel tank.

This system provides necessary air space inside the fuel tank and adjusts the internal pressure.

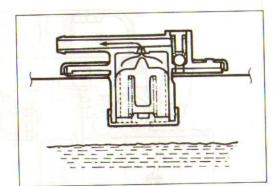


Fuel tank pressure control valve is designed to provide a resistance of air flow in the direction from fuel tank, white in the opposite direction, air can pass freely. Therefore, fuel evaporation is bled throught TPC gradually.



At the time of fuel filling:

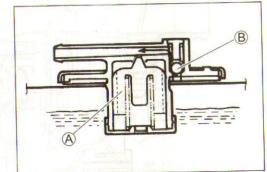
Because air can not flow easily in the direction from fuel tank to fuel tank pressure control valve, space above the fuel level inside the tank is secured even though fuel is topped up. Due to this provision, the fuel level in time goes down gradually.



At the time of raised level:

In the event of raised level due to overturning of motorcycle, the valve (A) ascends by flotation and shuts off the air passage to prevent fuel from leaking.

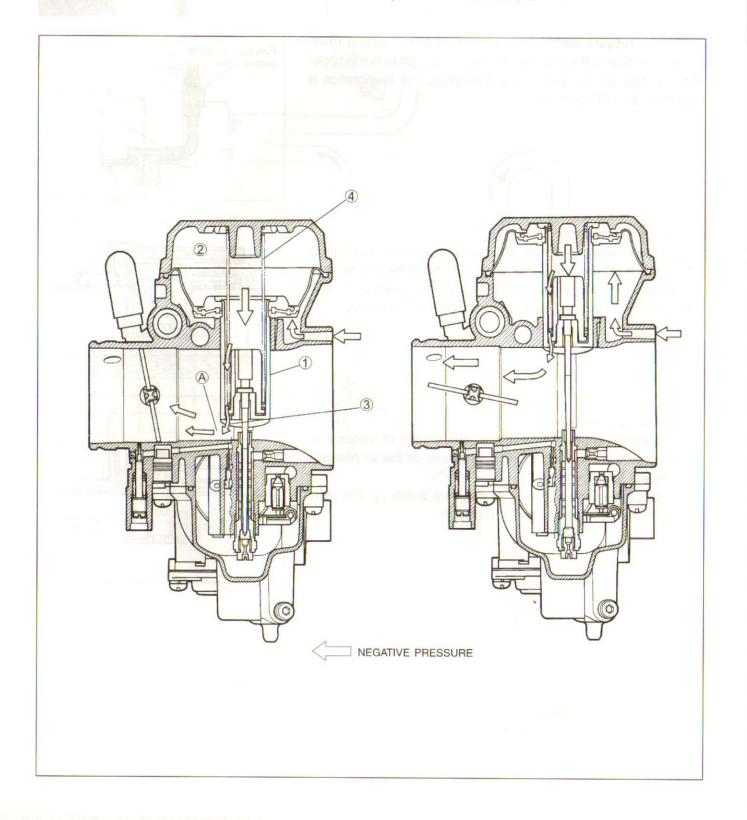
If, under this condition, the tank pressure builds up, the valve ® opens to relieve the internal pressure.



# **DIAPHRAGM AND PISTON OPERATION**

The carburetor is a variable-venturi type, whose venturi cross sectional area is increased or decreased automatically by the piston valve ① . The piston valve moves according to the negative pressure present on the downstream side of the venturi ②. Negative pressure is admitted into the diaphragm chamber ② through an orifice ③ provided in the piston valve ①.

Rising negative pressure overcomes the spring ④ force, causing the piston valve ① to rise into the diaphragm chamber and prevent the air velocity from increasing. Thus, air velocity in the venturi passage is kept relatively constant for improved fuel atomization and the precise air/fuel mixture.

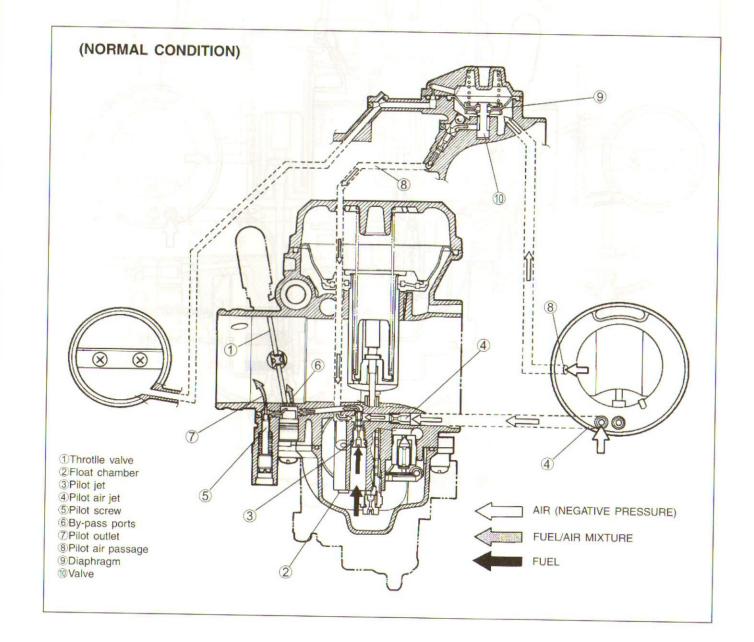


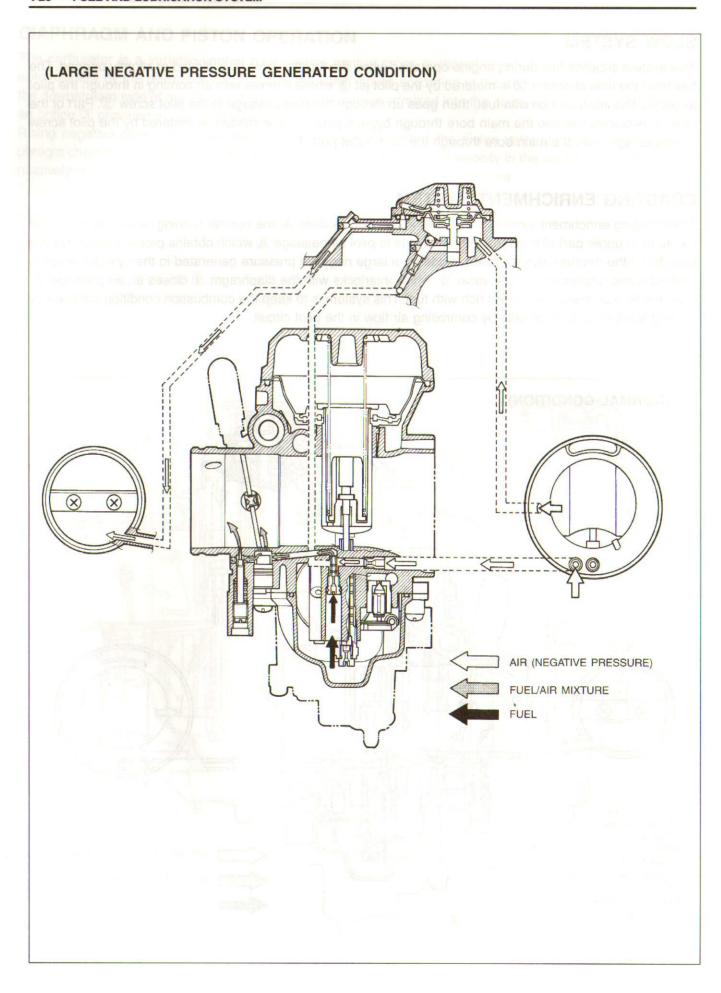
### SLOW SYSTEM

This system supplies fuel during engine operation when the throttle valve ① is closed or slightly opened. The fuel from the float chamber ② is metered by the pilot jet ③ where it mixes with air coming in through the pilot air jet ④. This mixture, rich with fuel, then goes up through the pilot passage to the pilot screw ⑤. Part of the mixture is discharged into the main bore through bypass ports ⑥. The mixture is metered by the pilot screw ⑤ and sprayed into the main bore through the pilot outlet port ⑦.

# COASTING ENRICHMENT SYSTEM

This coasting enrichment system is included in the slow system. At the normal running operation, joining of the air from upper part of the carburetor inlet side to pilot air passage ® which obtains proper fuel/air mixture ratio. But if the throttle valve is closed suddenly, a large negative pressure generated in the cylinder which is applied to the diaphragm ⑨. The valve ⑩ which interlocks with the diaphragm ⑨ closes an air passage ®, thus, the fuel/air mixture becomes rich with fuel. This system is to keep the combustion condition constant by varying the fuel/air mixture ratio by controlling air flow in the pilot circuit.





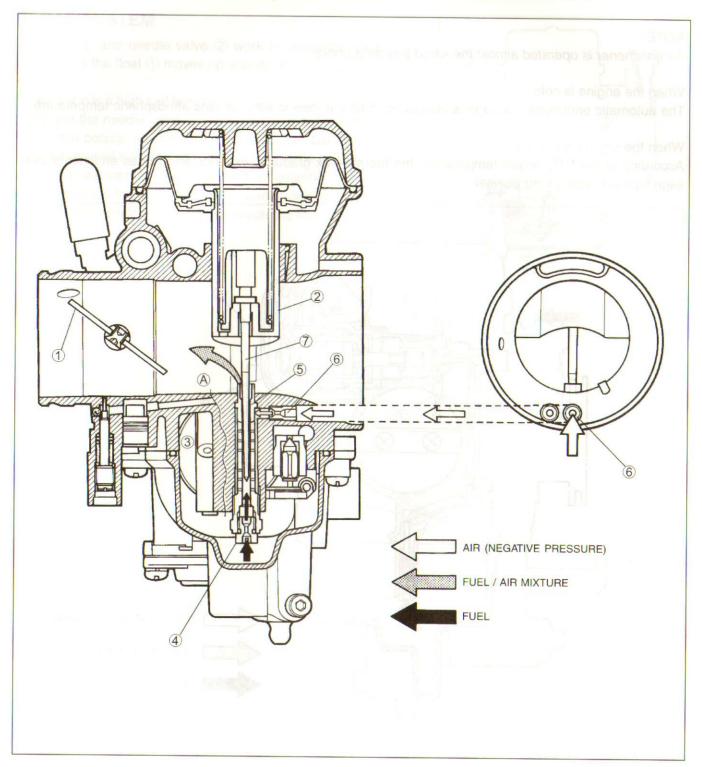
# MAIN SYSTEM

As the throttle valve ① is opened, engine speed rises and negative pressure in the venturi ④ increases. This causes the piston valve 2 to move upward.

The fuel in the float chamber ③ is metered by the main jet ④. The metered fuel enters the needle jet ⑤, mixes with the air admitted through the main air jet 6 and forms an emulsion.

The emulsified fuel then passes through the clearance between the needle jet (5) and jet needle (7) and is discharged into the venturi (A), where it meets the main air stream being drawn by the engine.

Mixture proportioning is accomplished in the needle jet (5). The clearance through which the emulsified fuel must flow ultimately depends on throttle position. If and office the property and the prope



# **AUTO-ENRICHENER (AUTO-CHOKE) SYSTEM**

The automatic enrichener (automatic choke) device consists of the PTC heater (A), the thermo-wax (B) and the plunger/needle. When the thermo-wax (B) is cold, the plunger/needle (1) moves upward, fuel is drawn into the enrichener circuit from the float chamber (2).

Enrichener jet ③ meters this fuel, which then flows into fuel pipe ④ and mixes with the air coming from the upper part of the float chamber ⑤. The mixture, rich in fuel content, reaches upper part of the fuel pipe and mixes again with the air coming through a passage extending from main bore ⑥.

The two successive mixings of fuel with air are such that proper fuel/air mixture for starting is produced when the mixture is sprayed out through outlet port ⑦ into the main bore.

#### NOTE:

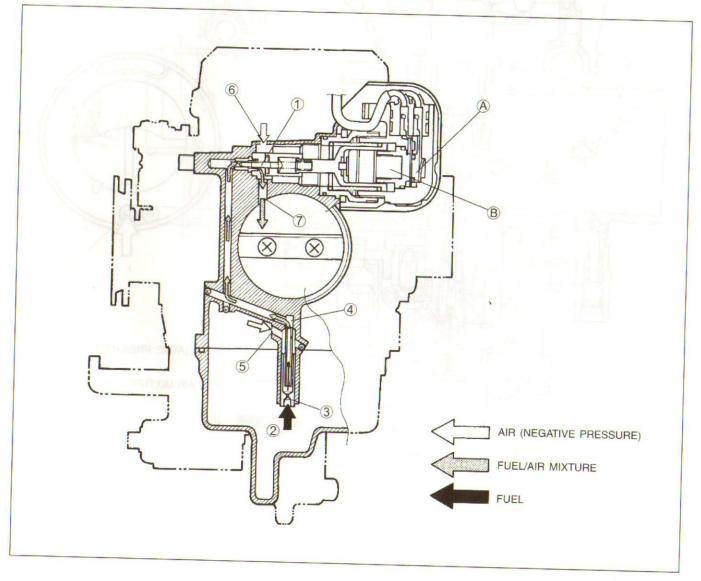
An enrichener is operated almost the same way as a choke.

# When the engine is cold:

The automatic enrichener passage is always open as the thermo-wax remains atmospheric temperautre.

# When the engine is started:

According to the PTC heater temperature, the thermo-wax gradually expands and closes enrichener passage by the needle of the plunger.



# CARBURETOR HEATING SYSTEM

Electric carburetor heater is equipped on the float chamber body. This device consists of the carburetor heater, the thermo-switch and the battery. The carburetor heater provides better fuel atomization when the atmospheric temperature is lower than the specified operating temperature.

Thermo-switch operating temperature: Below 3-9°C (Except for E-18 and 22)

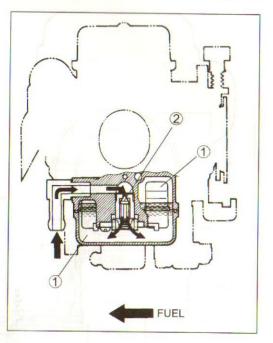
# FLOAT SYSTEM

The float ① and needle valve ② work in conjunction with one another. As the float ① moves up and down, so does the needle valve ②.

When there is a high fuel level in the float chamber ③, the float ① rises and the needle valve ② pushes up against the valve seat. When this occurs, no fuel enters the float chamber ③.

As the fuel level falls, the float ① lowers and the needle velve ② unseats itself; admitting fuel into the float chamber ③.

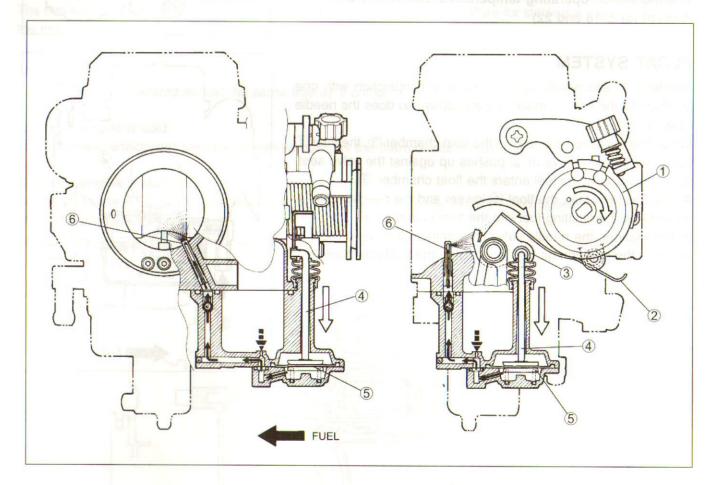
In this manner, the needle valve ② admits and shuts off fuel to maintain the appropriate fuel level inside the float chamber ③.



### ACCELERATOR PUMP SYSTEM

This system works only when the rider opens throttle grip quickly as pump send the necessary amount of fuel to the carburetor bore for correcting fuel/air mixture ratio. When the rider opens the throttle grip quickly, the intake air volume becomes large and air velocity at the bottom of the throttle valve (piston valve) is slow and sucking volume of fuel is less.

The throttle valve lever 1 pulls lever 2 with the cable, and lever 3 turns and pushes rod 4. The rod 4 pushes plunger 5. This plunger pushes out the fuel through outlet pipe 6, spraying fuel into the main bore.



# **LUBRICATION SYSTEM**

### **OIL PRESSURE**

See page 2-19.

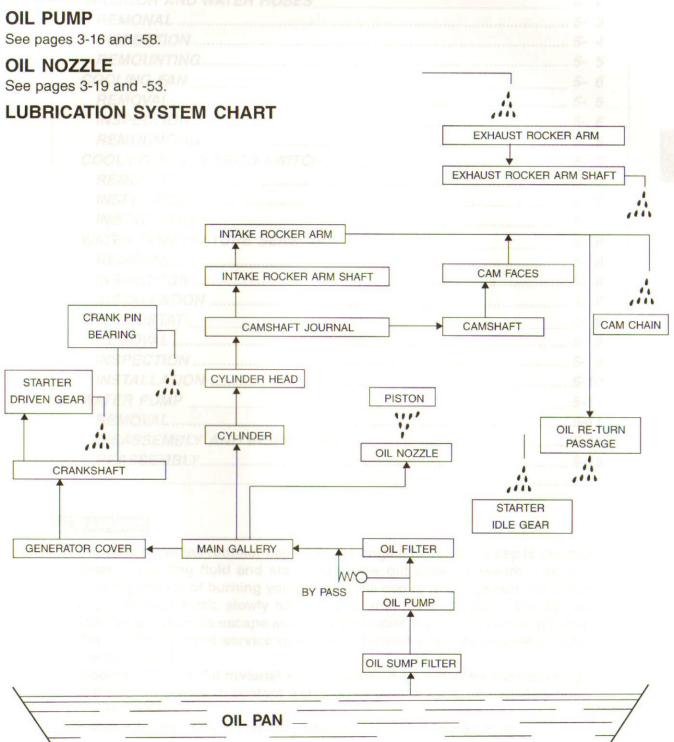
### OIL FILTER

See pages 2-10 and -11.

### OIL SUMP FILTER

See page 2-15.

### OIL PUMP



# **COOLING SYSTEM**

1	CONTENTS			_
	ENGINE COOLANT	5-	2	
	RADIATOR AND WATER HOSES	5-		
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	WATER PUMP			
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### **A WARNING**

- \* Do not remove the radiator cap while the engine is hot. If the cap is opened quickly, scalding fluid and steam can blow out under pressure, possibly causing danger of burning your hand. If the cap is to be opened, cover the cap with thick cloth, slowly turn the cap until the first stop is felt, let the radiator pressure to escape and thereafter open the cap by further turning.
- The cooling system service must be performed when the engine is sufficiently cooled.
- Coolant is a harmful material and therefore use caution for the following.
- · If coolant comes in contact with skin or gets in eyes, immediately flush
- · If swallowed, induce vomiting and call physician immediately.

# **ENGINE COOLANT**

At the time of manufacture, the cooling system is filled with a 50:50 of pure water and coolant. This 50:50 mixture will provide excellent heat protection, and will protect cooling system from freezing at temperature above -30°C.

If the motorcycle is to be exposed to temperature below -30°C, this mixture ratio should be increased up to 55% or 60%.

### **A WARNING**

- \* Coolant used should be of a high quality ethyleneglycol base mixed with distilled water.
- \* Do not use an alcohol base coolant.
- \* The mixture ratio should not be higher than 60% and lower than 50%.
- \* Do not use sealing additives in cooling solution.

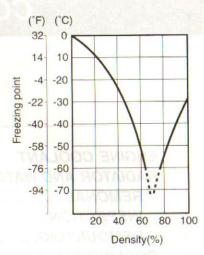


FIG.1 Engine coolant density-freezing point curve

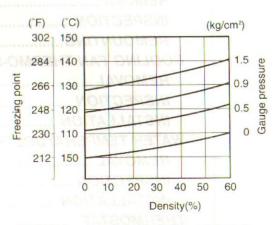


FIG.2 Engine coolant density-boiling point curve

# RADIATOR AND WATER HOSES

### REMOVAL

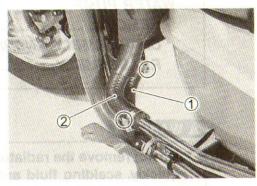
### DRAINING ENGINE COOLANT

- For the replacing procedure of coolant, refer to page 2-7.
- Remove the leg shield. ( 6-2)
- Place under the water hose a container large enough for receiving coolant.
- Remove the radiator cap.

### A WARNING

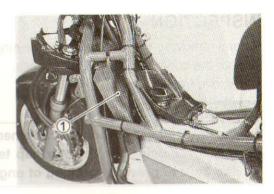
Do not remove the radiator cap when the radiator is hot.

- Disconnect the radiator hoses 1 and 2 to let coolant drain off.
- · Remove the hose ③ and drain coolant remaining inside the

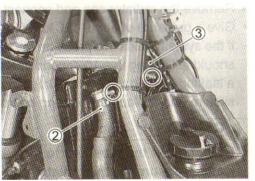




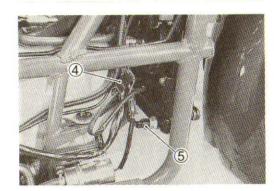
Remove the radiator hose 1



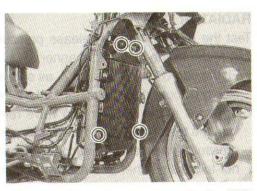
• Remove the radiator hose ② and the radiator cap hose ③.



· Remove the cooling fan lead wire coupler 4 and the cooling fan thermo-switch coupler 5.



· Remove the radiator.



· Remove the cooling fan.



### INSPECTION

Before removing the radiator and draining the engine coolant, inspect the cooling system for tightness.

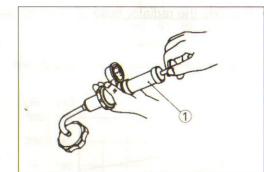
• Remove the front box. ( 6-2)

### A WARNING

- \* Do not remove the radiator cap when the engine is hot.
- \* When removing the radiator cap tester, put a rag on the filler to prevent spouting of engine coolant.
- Remove the radiator cap and connect the tester 1 to the filler.
- Give a pressure of about 120 kPa (1.2 kgf/cm², 17 psi) and see if the system holds this pressure for 10 seconds. If the pressure should fall during this 10-second interval, it means that there is a leaking point in the system. In such a case, inspect the entire system and replace the leaking component or part.

### A CAUTION

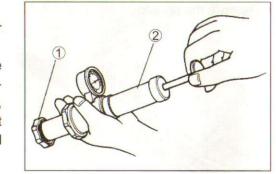
Do not allow the pressure to exceed the radiator cap release pressure, or the radiator can be damaged.



### RADIATOR CAP

Test the radiator cap for release pressure by using the radiator cap tester in the following manner.

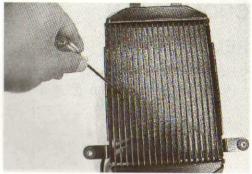
 Fit the cap 1 to the tester 2, as shown, and build up pressure slowly by operating the tester. Make sure that the pressure buildup stops at the radiator cap valve release pressure and that, with the tester held standstill, the cap is capable of holding that pressure for at leats 10 seconds. Replace the cap if it is found not to satisfy either of these two requirements.



PATA Radiator cap valve release pressure: 95-125kPa (0.95-1.25kgf/cm<sup>2</sup>)

### RADIATOR INSPECTION AND CLEANING

- Check the radiator for dirt or small bug stuck between the fins.
- Use compressed air for cleaning. If dirt is excessive, wash with
- · Fins bent or dented can be straightened using a small plane



### WATER HOSE INSPECTION

 If a crack or deformation is found with the water hose, replace it with a new one. Check for leaks from the joint and if found, retighten the clamp.



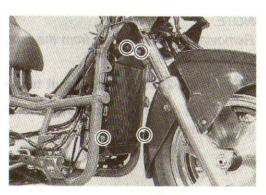
### REMOUNTING

The remounting can be performed by reversing the removal procedures while observing the following points.

Tighten the radiator mounting bolts to the specified torque.

## Radiator mounting bolt: 10 N·m (1.0 kgf·m)

- Install water hoses. ( 8-12)
- · After the radiator has been installed, fill coolant and perform air bleeding. ( 2-8)
- · Check that no coolant is leaking.



# **COOLING FAN**

### REMOVAL

- Remove the radiator. ( 5-3)
- Remove the cooling fan. ( 5-3)



### INSPECTION

- Remove the front box. ( 6-2)
- Disconnect the cooling fan lead wire coupler ①.
- · Connect an ammeter as shown in the right diagram and measure load current.

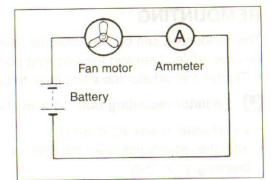


Removing the cooling fan from the motorcycle is not necessary in the above test.



09900-25008: Multi-circuit tester

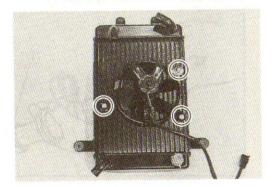
If current is out of specification or the fan does not turn, replace the fan with a new one.



### REMOUNTING

Remount the radiator and cooling fan in the reverse order of the removal procedure while observing the following instructions.

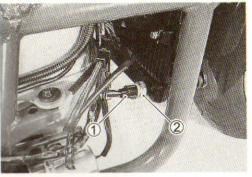
- Tighten the cooling fan mounting bolt to the specified torque.
- Cooling fan mounting bolt: 10 N·m (1.0 kgf·m) Radiator mounting bolt: 10 N·m (1.0 kgf·m)
- · After the radiator has been installed, fill cooant and perform air bleeding. ( 2-8)



# COOLING FAN THERMO-SWITCH

### REMOVAL

- Remove the front box. ( 6-2)
- Disconnect the cooling fan thermo-switch coupler ①.
- Remove the cooling fan thermo-switch ②.



### INSPECTION

· Place the cooling fan thermo-switch in oil contained in a pan as shown and raise the oil temperature gradually to check for the temperature at which the switch starts to operate. If the switch operating temperature is not within the specified



range, replace the switch with a new one. 09900-25008: Multi-circuit tester

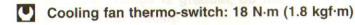
OFF→ON	93-103°C
ON→OFF	57–97°C

### **A CAUTION**

- \* Handle the cooling fan thermo-switch carefully as it is vulnerable to impact.
- \* Do not allow the cooling fan switch 1 and the thermometer 2 to come in contact with the bottom of the pan.

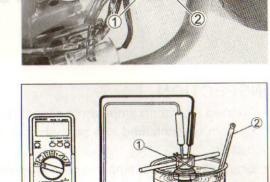
# INSTALLATION

- Fit the O-ring 1.
- Tighten the cooling fan thermo-switch to the specified torque.



### **A CAUTION**

- \* Replace the O-ring with a new one.
- \* Do not coat grease to the O-ring.
- · After the cooling fan thermo-switch has been installed, fill coolant and perform air bleeding. (2-8)

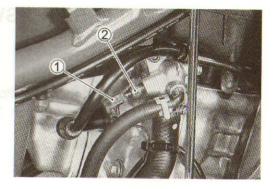




# WATER TEMPERATURE SENSOR HOTTING

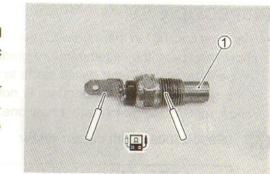
### REMOVAL

- Remove the frame cover. ( 6-2)
- Disconnect the lead wire connector 1.
- Remove the water temperature sensor 2.



### INSPECTION

- Connect the water temperature sensor ① to the ohmmeter and dip it in oil contained in a pan which is placed on an electric heater.
- · Gradually raise oil temperature while reading the thermometer in the pan and the ohmmeter connected. If the resistance measured is out of specification, replace the temperature gauge with a new one.



09900-25008: Multi-circuit tester

### TEMPERATURE SENSOR

Temperature	Standard resistance
50°C	140–310Ω
115°C	24.1–28.2Ω

### A CAUTION

- \* Handle the water temperature sensor carefully as it is vulnerable to impact.
- mometer to come in contact with the bottom of the pan.

\* Do not allow the water temperature sensor and the ther-

### INSTALLATION

- · With THREAD LOCK applied to the threaded part, tighten the water temperature sensor.
- 99000-32110: THREAD LOCK "1322"
- Water temperature sensor: 8 N⋅m (0.8 kgf⋅m)
- · After the water temp. sensor has been installed, fill coolant and perform air bleeding. ( 2-8)



# **THERMOSTAT**

### REMOVAL

- Remove the frame cover. ( 6-2)
- · Remove the thermostat case bolts 1.



Remove the thermostat 2.



### INSPECTION

Check for crack or break on the thermostat.

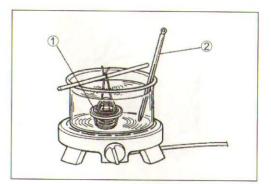
Immerse the thermostat in water contained in a pan as shown and measure the valve start-to-open temperature when water is heated gradually.

If the thermostat valve opening temperature is not within the specified range, replace the thermostat with a new one.

DATA Thermostat valve start-to-open temperature: 72-78°C

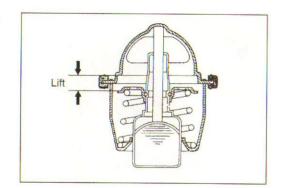
### **A** CAUTION

- \* Do not allow the thermostat 1 and thermometer 2 to come in contact with the bottom of the pan.
- \* As the thermostat operating response to water temperature change is gradual, do not raise water temperature too quickly.
- \* The thermostat with its valve open even slightly under normal temperature must be replaced.



 Continue to heat water until 90°C is exceeded and check for the thermostat valve lift when temperature is at 90°C. If the valve lift is out of specification or less then the specification, replace the thermostat with a new one.

DATA Thermostat valve lift: 3.0 mm



# INSTALLATION

 Position the thermostat with the air bleeder hole upside and downside.



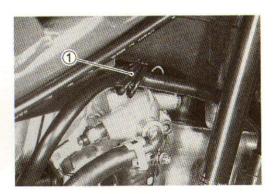
· Install the thermostat case.

# Thermostat case bolt: 10 N·m (1.0 kgf·m)

NOTE:

Tighten the bolt ① together with the clamp and secure the high-tension cord with the clamp.

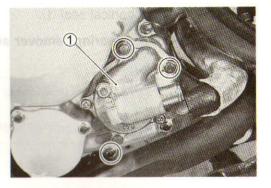
 After the thermostat has been installed, fill coolant and perform air bleeding. (2-8)



# WATER PUMP

### REMOVAL

- Drain engine coolant. ( 5-2)
- Drain engine oil. ( 2-10)
- · Disconnect the water hose.
- Remove the water pump case 1.

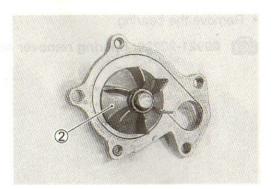


# DISASSEMBLY AND INSPECTION

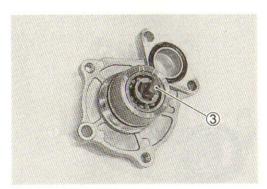
· Separate the water pump case.



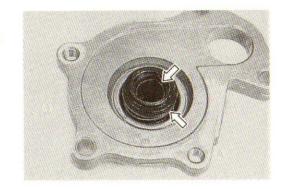
• With the bolt loosened, remove the impeller 2.



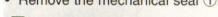
• Draw out the water pump shaft 3.



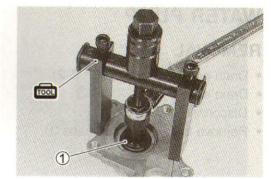
Visually check the mechanical seal surface for damage carefully. If any sign of leakage is noted, replace the mechanical seal and as necessary together with the oil seal and bearing.



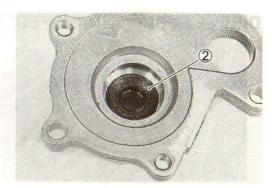
· Remove the mechanical seal 1.



09921-20220: Bearing remover set (φ 12)



· Remove the oil seal 2.



· Remove the bearing.

09921-20220: Bearing remover set (φ 10)



# REASSEMBLY

· Press-fit the bearing.



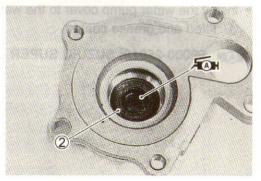
09925-98221: Bearing installer



- · Prior to installing the oil seal, apply grease to the lip.
- Press-fit the oil seal ② with the stamped mark side to face the mechanical seal side.



99000-25010: SUZUKI SUPER GREASE "A"



• To press-fit the mechanical seal into the water pump, use a pipe shape material of an appropriate size.

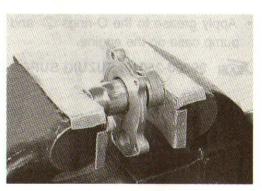
### **A** CAUTION

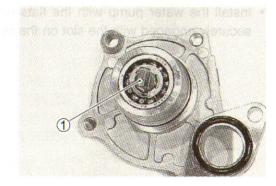
Replace the mechanical seal with a new one.

### NOTE:

The new mechanical seal is applied with a sealing agent at the factory.

· Install the water pump shaft 1.

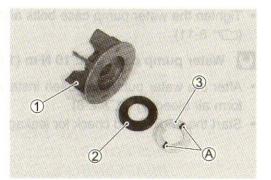




- Fit the seal ② and seal ring ③ on the impeller ①.
- · Before fitting to the impeller, apply a little coolant on the sliding surface of the seal ring 3.

### A CAUTION

Install the seal ring 3 with the marked side shown as A facing the impeller.

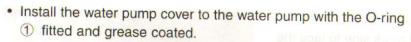


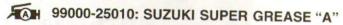
• Fit the gasket washer 4 and washer 5 and tighten the bolt.

Impeller tightening bolt: 10 N·m (1.0 kgf·m)

# A CAUTION

- \* The gasket washer 4 of sealing side (rubber) faces the impeller.
- \* Replace the gasket washer ④ with a new one.

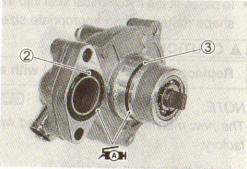




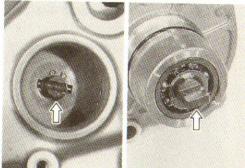


 Apply grease to the O-rings ② and ③, and install the water pump case on the engine.

99000-25010: SUZUKI SUPER GREASE "A"



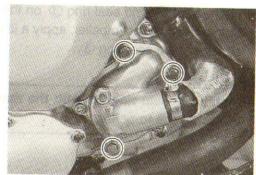
· Install the water pump with the flats on the pump shaft end securely engaged with the slot on the oil pump shaft.

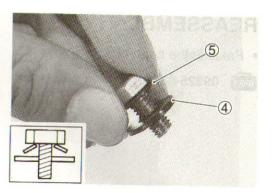


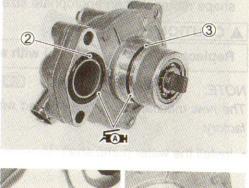
 Tighten the water pump case bolts and install the water hose. ( 8-11)

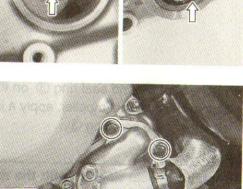
# Water pump case bolt: 10 N·m (1.0 kgf·m)

- · After the water pump has been installed, fill coolant and perform air bleeding. ( 2-8)
- · Start the engine and check for leakage of coolant and oil.









# 6

# CHASSIS

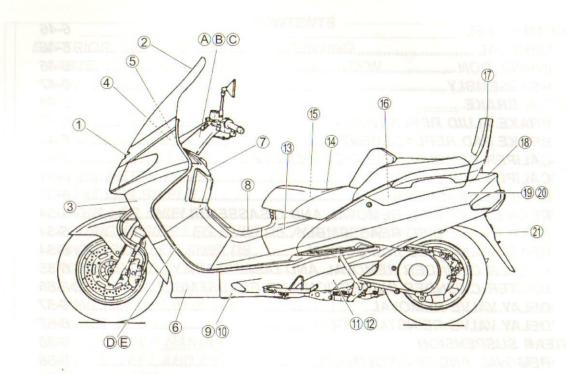
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INSPECTION	***
REASSEMBLY	•••
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BRAKE PAD REPLACEMENT	
CALIPER REMOVAL AND DISASSEMBLY	
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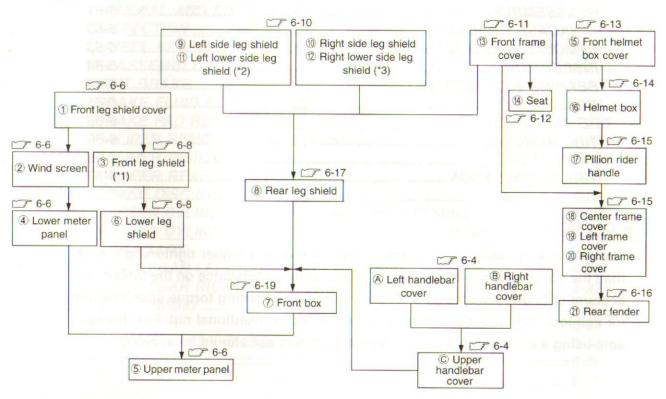
# **A CAUTION**

The self-lock nut used in many chassis parts requires higher tightening torque than the conventional nut because of higher sliding resistance on the thread. On account of this resistance as a torque value, the tightening torque specification for self-lock nut is made higher than that for the conventional nut. For this reason, using a conventional nut in place of self-lock nut should be avoided.

# **EXTERIOR PARTS REMOVAL/REMOUNTING**



### REMOVAL PROCEDURE FLOW CHART



- \*1: Also remove front floor mats D and E. ( 6-5)
- \*2: Also remove left floor mats (front and rear) (and (a). ( 6-5)
- \*3: Also remove right floor mats (front and rear) 

  and 

  and 

  and 

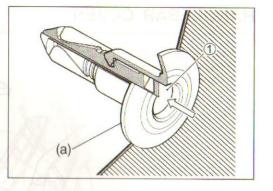
  6-5)

### **FASTENER REMOVAL AND REINSTALLATION**

### FASTENER(a)

### REMOVAL

- Depress the head of fastener center piece 1.
- · Pull out the fastener.

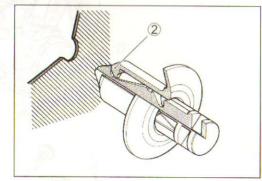


### INSTALLATION

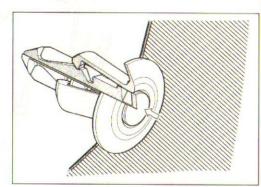
- Let the center piece stick out toward the head so that the pawls
   2 close
- · Insert the fastener into the installation hole.

### NOTE:

To prevent the pawl ② from damage, insert the fastener all the way into the installation hole.



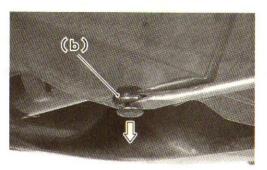
 Push in the head of center piece until it becomes flush with the fastener outside face.



### FASTENER (b)

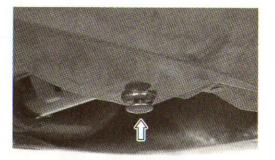
### REMOVAL

- · Pull the head of fastener center piece.
- Pull out the fastener.

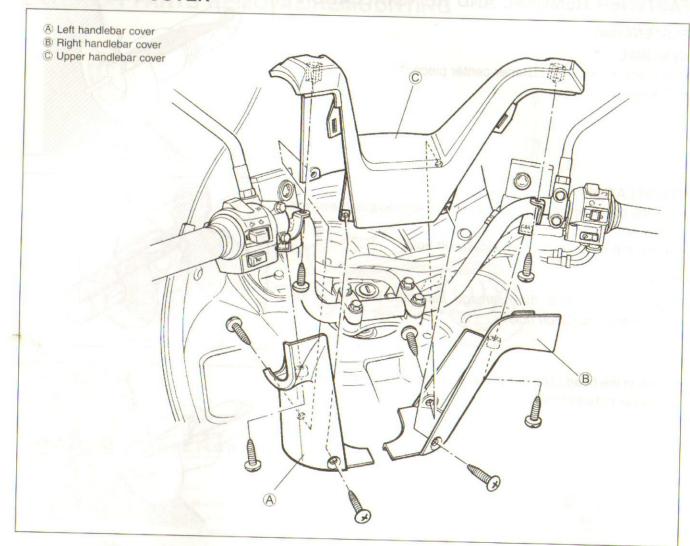


### INSTALLATION

- Let the center piece stick out toward the head so that the pawls close.
- Insert the fastener into the installation hole.
- · Push in the head of center piece.



# HANDLEBAR COVER

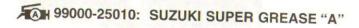


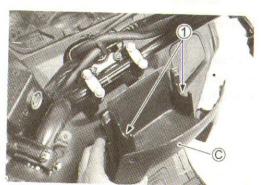
- Remove the left handlebar cover (A).
- · Remove the right handlebar switch case and disconnect the throttle cables.
- · Remove the right handlebar cover ® and upper handlebar cover C.



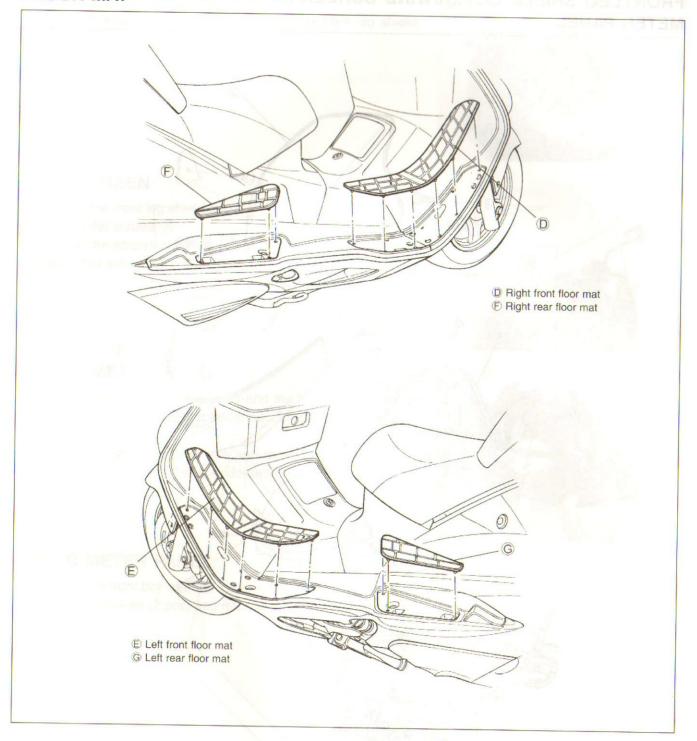
### NOTE:

- \* When installing the upper handlebar cover ©, engage the cutout 1 with the handlebars and route the cables, hoses and wires in the front area of the cutout 1.
- \* Apply grease to the throttle cables and assemble it to the pul-





# FLOOR MAT



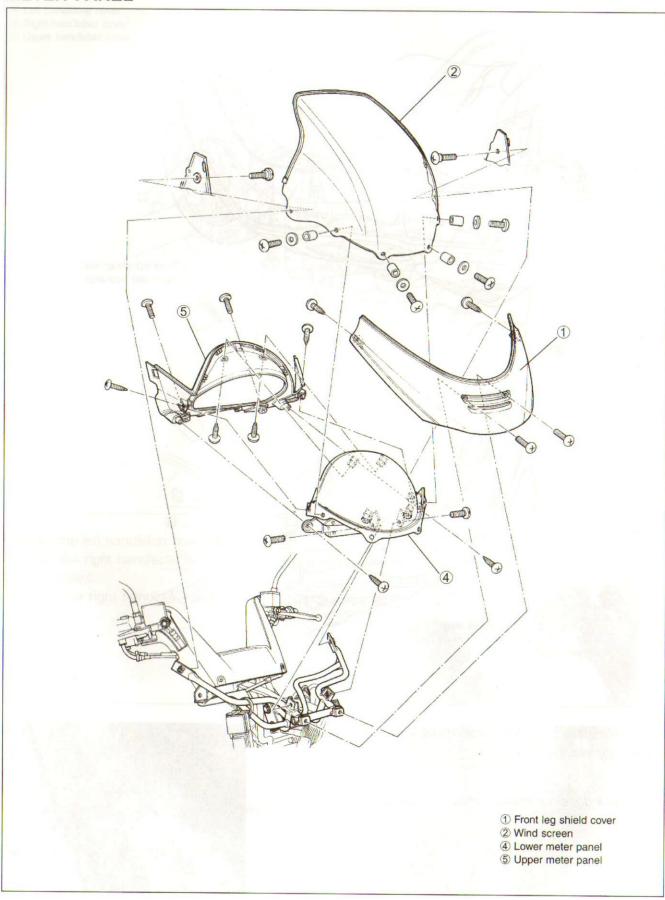
· When installing the floor mat, make sure to insert the hook securely into the cover hole.

### NOTE:

If the hook does not engage smoothly, apply soap suds.



# FRONTLEG SHIELD COVER/WIND SCREEN/LOWER METER PANEL/UPPER METER PANEL



# FRONT LEG SHIELD COVER

 Loosen the screws (4 pcs) and remove the front leg shield cover ①.



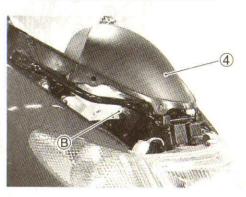
### WIND SCREEN

- Remove the front leg shield cover.
- Remove the screws A.
- Remove the screws and nuts (4 pcs).
- · Detach the wind screen 2.



### LOWER METER PANEL

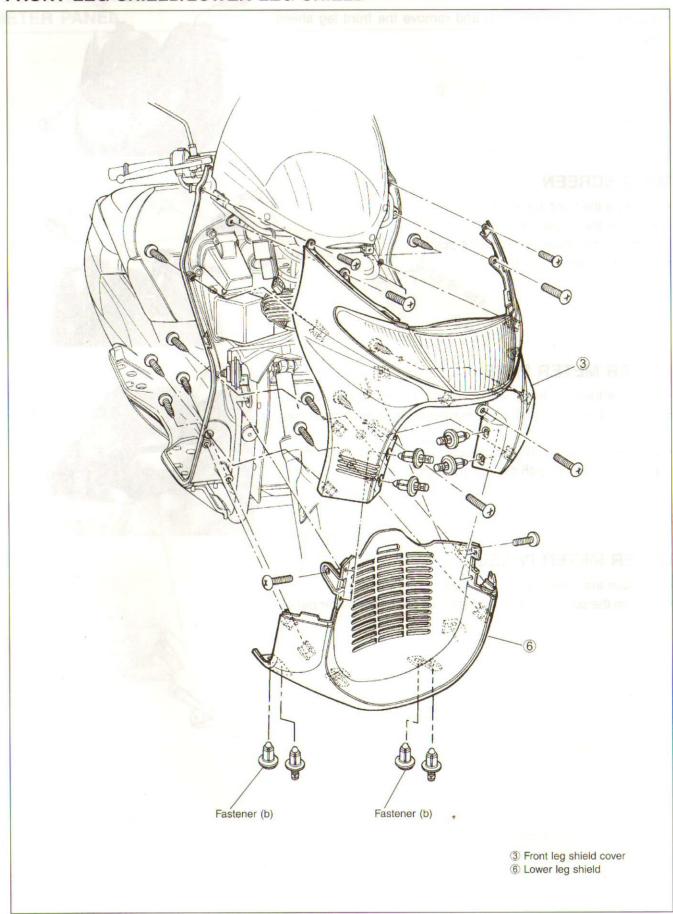
- · Remove the front leg shield cover and the front wind screen.
- Remove the rubber boot and disconnect the speedometer coupler (B).
- Loosen all the attaching screws and remove the lower meter panel 4 together with the speedometer.



### **UPPER METER PANEL**

- · Remove the front box and the lower meter panel.
- Loosen the screws (2 pcs) and remove the upper meter panel.

# FRONT LEG SHIELD/LOWER LEG SHIELD



# FRONT LEG SHIELD

- Remove the front leg shield cover and the wind screen.
- Disconnect the front combination light lead wire coupler.
- Remove the front floor mats.
- With all the attaching screws and fasteners removed, detach the front leg shield.

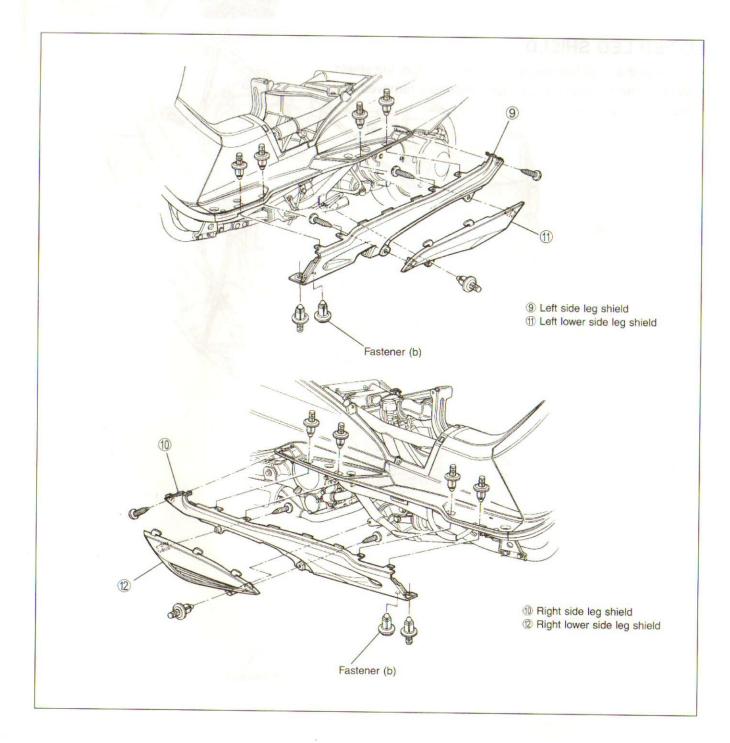


# LOWER LEG SHIELD

- Remove the front leg shield cover and the front leg shield.
- With all the attaching screws and fasteners removed, detach the lower leg shield.

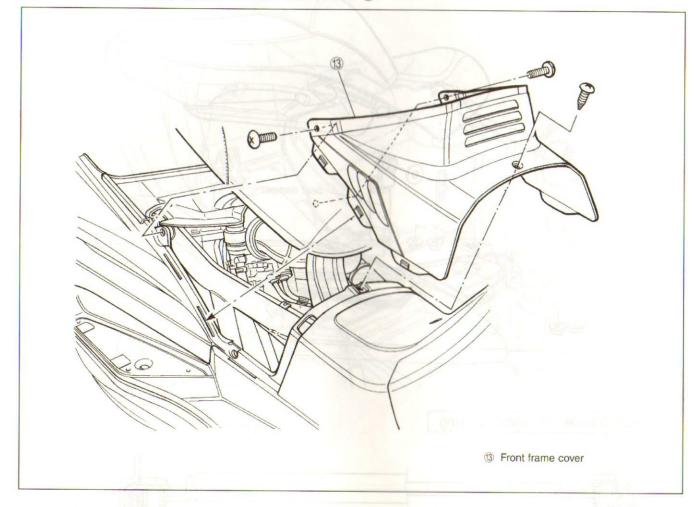
# LEFT/RIGHT SIDE LEG SHIELDS AND LEFT/ RIGHT LOWER SIDE LEG SHIELDS

- · Remove the front and rear floor mats.
- With all the attaching screws and fasteners removed, detach the left/right side leg shields (9) and (10).
- With all the attaching screws and fasteners removed, detach the left/right lower side leg shields ① and ②.



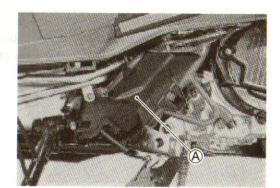
### FRONT FRAME COVER

- · Loosen and remove the screws.
- With the seat lowered, remove the front frame cover (3).



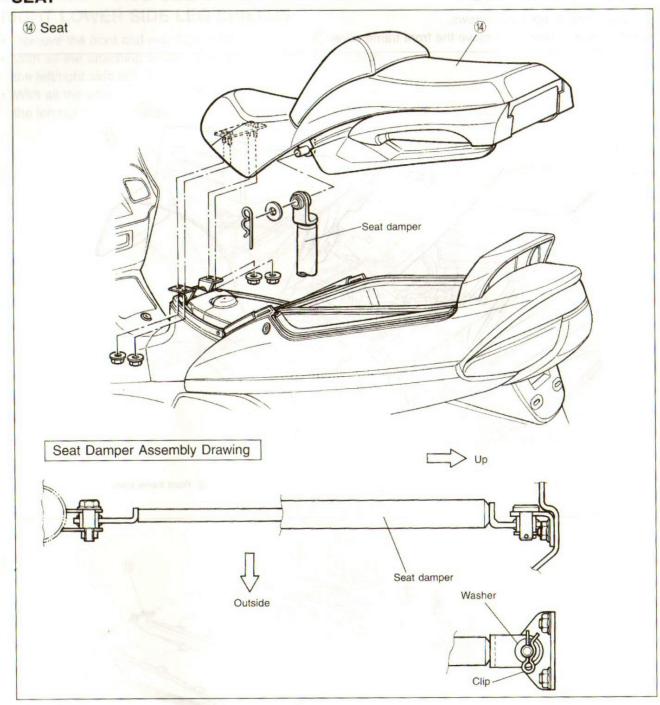
# **COOLING FAN FILTER DUST COVER**

- · Remove the left side leg shield.
- Remove the cooling fan filter dust cover A.



# CHASSIS 6-13

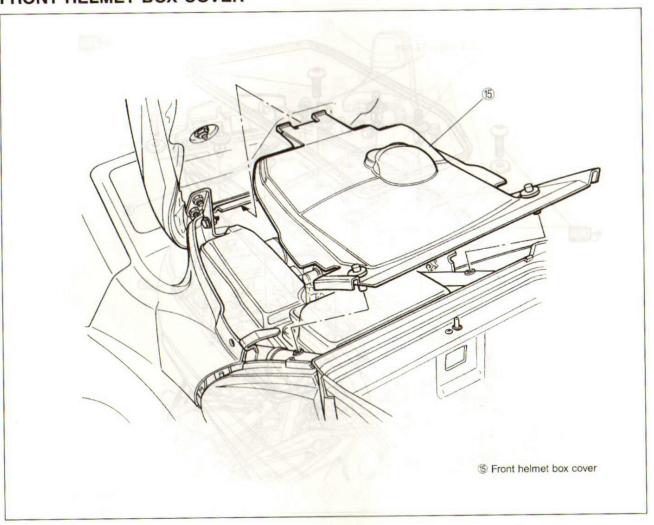
# SEAT



- Remove the front frame cover.
- · Disconnect the seat damper connection.
- Fold the seat forward, loosen the nuts (4 pcs) and detach the seat.



# FRONT HELMET BOX COVER



### REMOVAL

With the screws removed, detach the front helmet box cover
 .

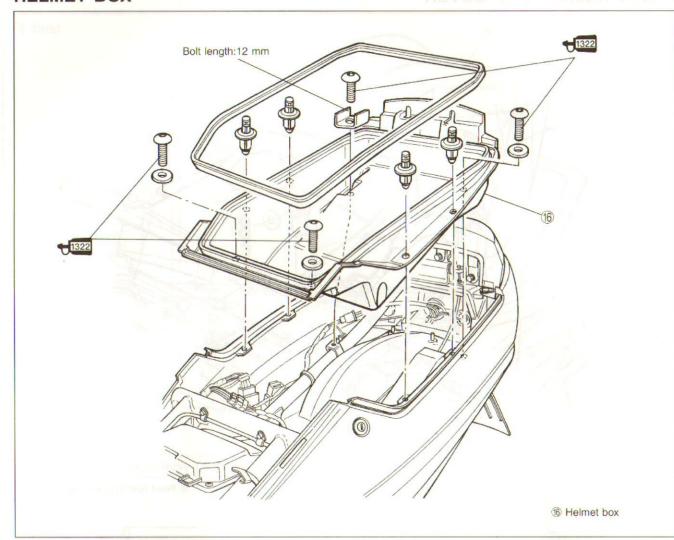


### INSTALLATION

- Fit the front end of front helmet box to the frame plate ①.
- Tighten the screws.



### HELMET BOX



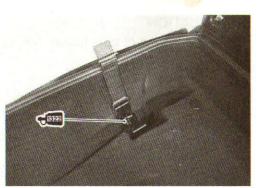
- · Remove the front helmet box cover.
- Remove the bolts and fasteners, and pull up the helmet box 16.
- · Disconnect the helmet box lead wire coupler.



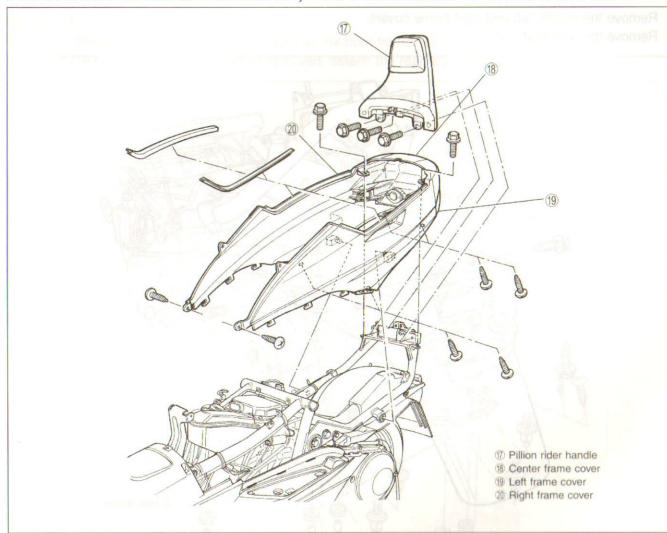
- When installing the helmet box, fit the rubber band hook to the tool bracket and tighten with the bolt.
- · Apply thread lock to the bolts before tightening.

99000-32130: THREAD LOCK "1322"

Helmet box bolt: 10 N·m (1.0 kgf·m)



# PILLION RIDER HANDLE/CENTER, LEFT AND RIGHT FRAME COVERS RABR



### PILLION RIDER HANDLE

- · Remove the front helmet box cover and the helmet box.
- Loosen the bolts (3 pcs) and remove the pillion rider handle
   ①.

# CENTER, LEFT AND RIGHT FRAME COVERS

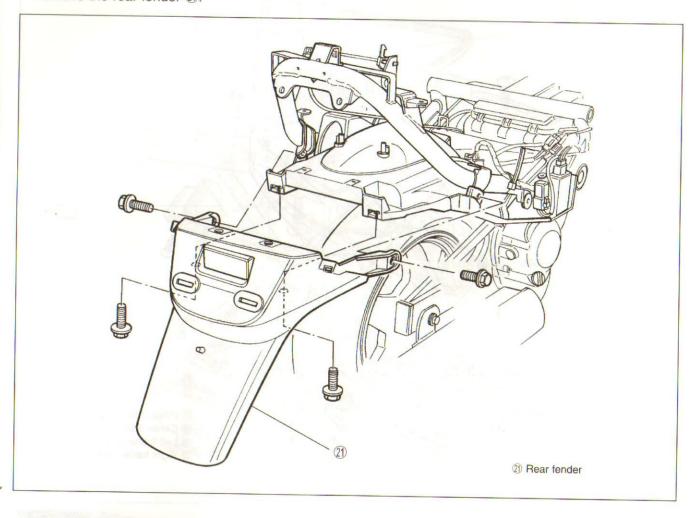
- Remove the front helmet box cover, helmet box, pillion rider handle and front frame cover.
- Disconnect the rear combination light lead wire coupler.
- · Disconnect the seat lock cable connection.
- With all the screws removed, remove the center ®, left ® and right ® frame covers and the rear combination light all together as an assembly.





# REAR FENDER HANDER THOSE THOSE AND RIGHT FRAME RADIAS RABAR

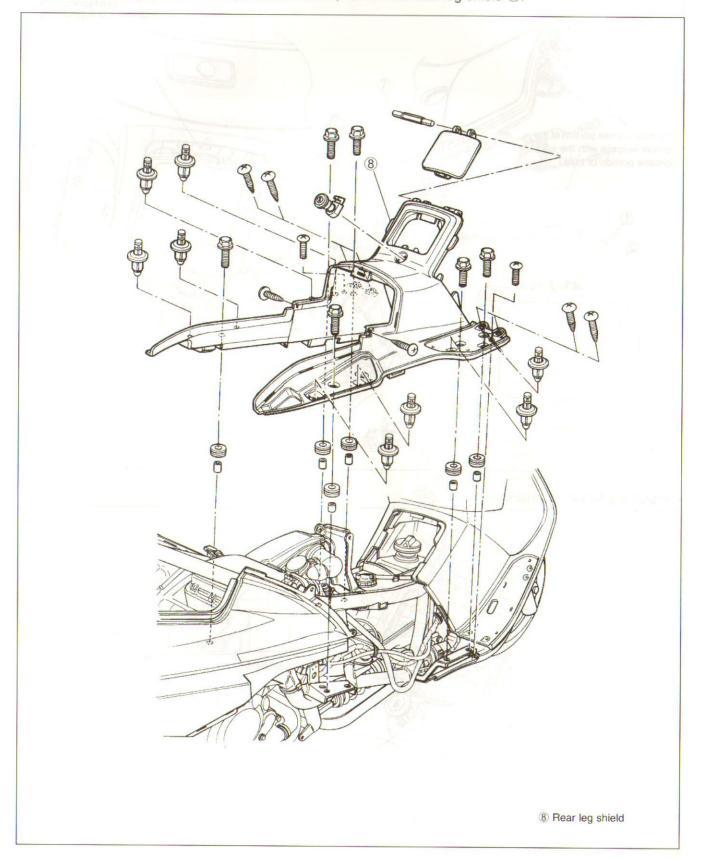
- · Remove the center, left and right frame covers.
- Remove the rear fender 21.



# **REAR LEG SHIELD**

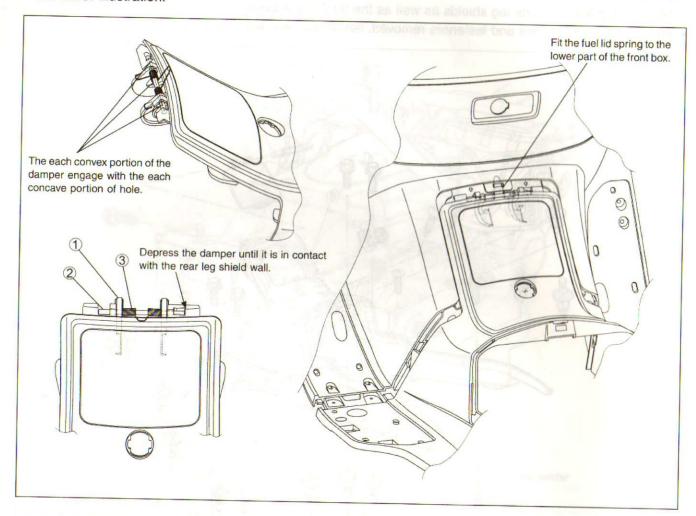
# REMOVAL

- Remove the left/right side leg shields as well as the front frame cover.
- With all the bolts, screws and fasteners removed, detach the rear leg shield ®.

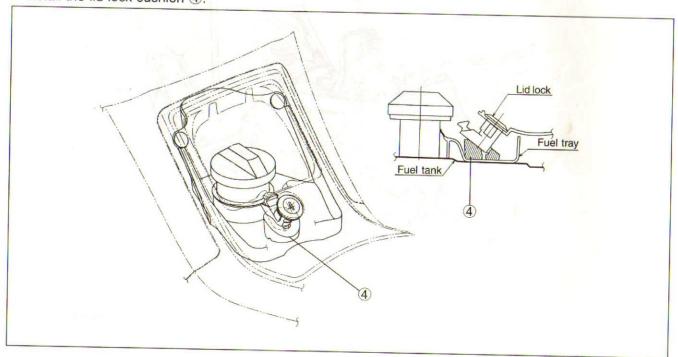


# INSTALLATION

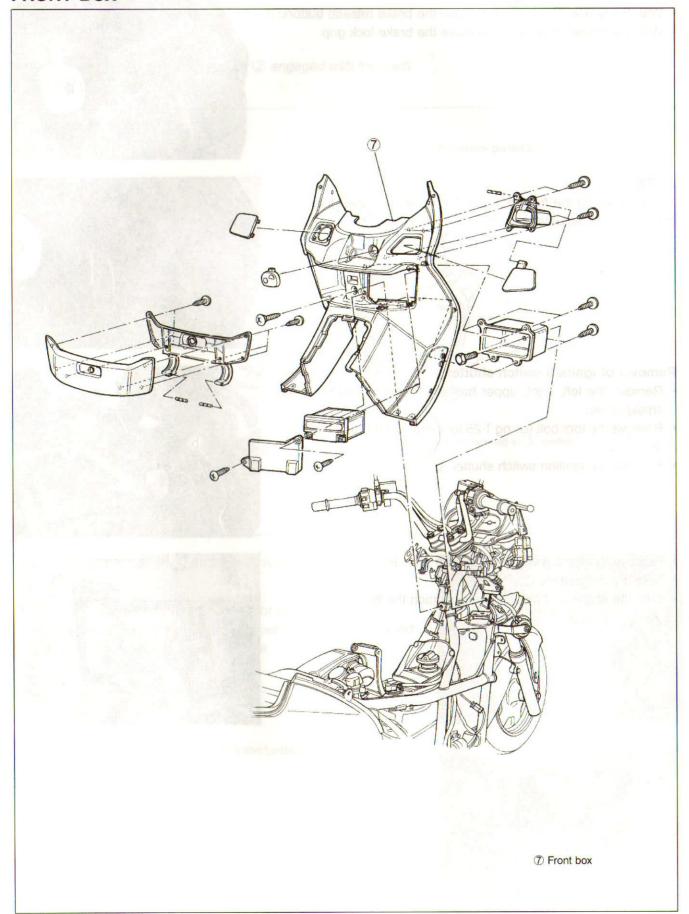
• Install the fuel lid ①, the damper ② and the spring ③, refer to the lower illustration.



Install the lid lock cushion 4.



# FRONT BOX



### CHASSIS 6-21

# Removal of brake lock grip:

- With the screw ① removed, remove the brake release button.
- With the screw 2 removed, remove the brake lock grip.



### NOTE:

When removing the front box, pull the brake lock lever fully with the brake lock adjuster loosen.



# Removal of ignition switch shutter:

- Remove the left, right, upper handlebar covers and front leg shield cover.
- Remove the torx bolt (using T-25 torx wrench) through the hole
   a.
- Remove the ignition switch shutter ⑤.



- · Remove the front, lower and rear leg shields.
- Take out the battery. ( 7-31)
- With the screw and bolt removed, detach the front box ?.

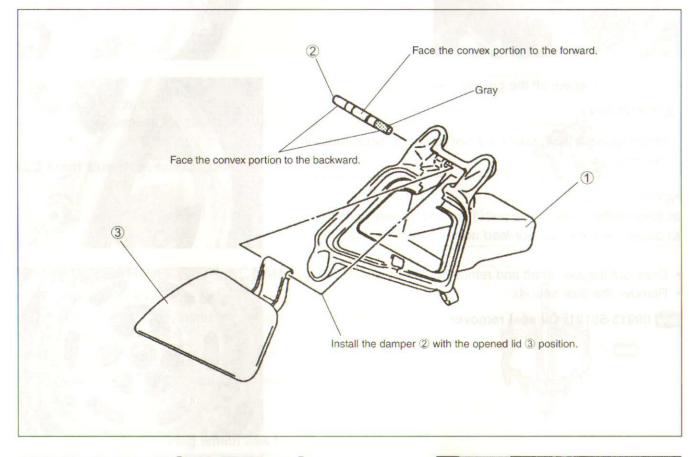


### INSTALLATION

Install the damper ② and lid ③ to the box body ①.

### NOTE:

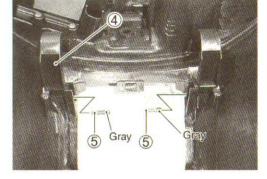
The each convex parts of the damper ② engaged with the each concavity parts of holes.



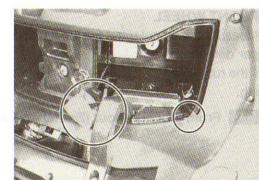
• Install the front box lid 4 and the damper 5.

### NOTE:

- \* Install the damper 5, refer to the right picture.
- \* The each convex portion of the damper ⑤ must be engaged with the each concave portion of hole.



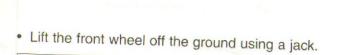
 When installing the front box, pass the battery lead wire through the front box.



# **FRONT WHEEL**

# REMOVAL AND DISASSEMBLY

Loosen the axle pinch bolt ① and then the axle shaft ②.



When using a jack, take care not to cause scratches on the chassis.

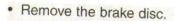
### NOTE:

A CAUTION

In this operation, the clamp bolt ③ should be removed so as not to cause the speed sensor lead wires to be pulled tight.

- Draw out the axle shaft and remove the front wheel.
- · Remove the dust seal 4.

09913-50121: Oil seal remover



# INSPECTION

### TIRE

For inspection of the tire: 2-16

### FRONT WHEEL

Measure the wheel runout using a dial gauge with the brake caliper detached.

If the runout is found to exceed the service limit, inspect the bearing.

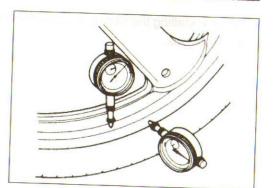
DATA Front wheel runout (Radial and Axial): Limit: 2.0 mm











### WHEEL BEARING

The wheel bearing inspection must be performed with the bearing installed in the wheel.

Turn the bearing inner race by hand to see if there is no abnormal play or noise. Also check for smoothness of turning.

If any abnormal condition is found, replace the bearing with a

If any abnormal condition is found, replace the bearing with a new one.

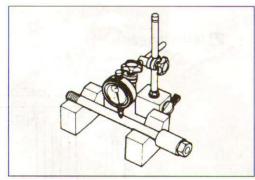


### AXLE SHAFT

Using a dial gauge, check the axle shaft for runout.

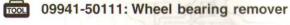
If the runout measured exceeds the service limit, replace the axle shaft.

PAIA Front axle shaft runout: Limit: 0.25 mm



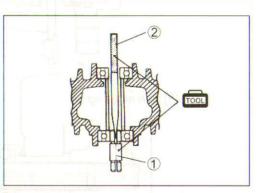
### WHEEL BEARING REPLACEMENT

- Insert the bearing remover adapter 1 into the wheel bearing.
- From the opposite side, insert the wedge bar ② into the slit of the adapter ①.
- · Hit the wedge bar ② using a hammer to remove the bearing.



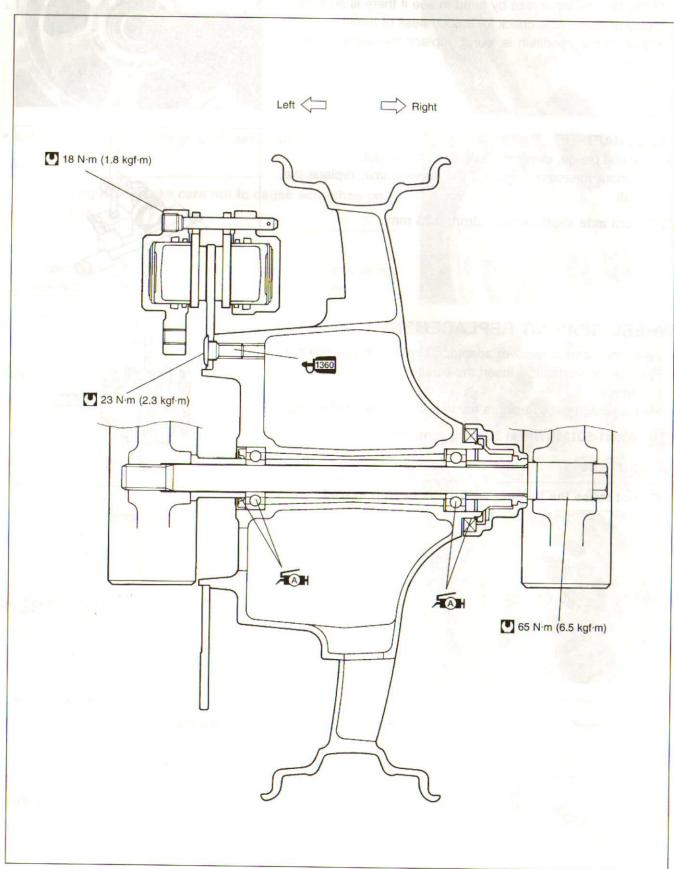
### A CAUTION

Do not reuse the bearing which has been removed.



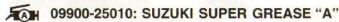
# REASSEMBLY

To reassemble the front wheel, reverse the sequence of disassembly procedures while observing the following instructions.



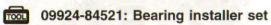
### WHEEL BEARING

· Apply grease to the wheel bearings.





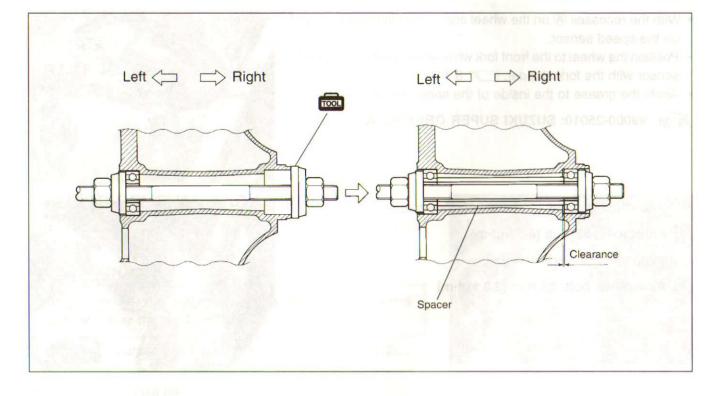
- · Using the special tool, press-fit the left bearing.
- Fit the spacer and press-fit the right bearing.



# **▲** CAUTION

- \* Position the sealed side of bearing facing outside.
- \* Use care not to allow the spacer to skew.





### BREAK DISC

· Apply thread lock super to the brake disc bolts and tighten them to the specified torque.

99000-32130: THREAD LOCK SUPER "1360"

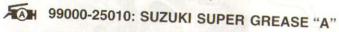
Brake disc bolt: 23 N·m (2.3 kgf·m)

# A WARNING

Keep the brake disc clean, free from dirt and grease.

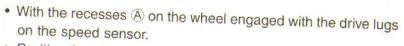
### DUST SEAL

- Press-fit the dust seal ①.
- Apply grease to the dust seal lip.



### SPACER

Fit the spacer 2.



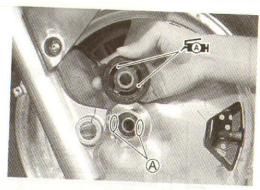
- Position the wheel to the front fork while also aligning the speed sensor with the fork stopper. ( 8-14)
- Apply the grease to the inside of the speed sensor.



- Tighten the axle shaft 1 to the specified torque.
- Front axle: 65 N·m (6.5 kgf·m)
- Tighten the axle pinch bolt 2.
- Axle pinch bolt: 23 N·m (2.3 kgf·m)









# FRONT BRAKE

### A WARNING

- \* Do not mix with brake fluid of different brand.
- \* Do not use a brake fluid kept in a open container or stored for long period of time.
- \* To store brake fluid, make sure to seal the container and keep it in a safe place to be out of reach of children.
- \* When filling brake fluid, take care not to allow water or dirt to enter the system.
- \* To wash the brake system parts, use brake fluid and not any other material.
- \* Do not allow dirt and fluids to contact the brake disc or pad.

### A CAUTION

Do not allow brake fluid to contact the paint surface, plastic or rubber parts, or its chemical reaction can cause discoloration or crack.

### BRAKE FLUID REPLACEMENT

• For replacing procedure of brake fluid: 2-13

### BRAKE PAD REPLACEMENT

For replacing procedure of brake pad: 2-12

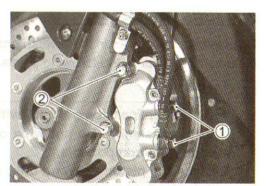
### CALIPER REMOVAL AND DISASSEMBLY

· Drain brake fluid of both the front brake side and the combination brake side. ( 2-13)

### **A** CAUTION

To prevent brake fluid from splashing on the parts nearby, cover the parts with cloth.

- Remove the union bolts 1 and caliper mounting bolts 2.
- Remove the brake pad. ( 2-12)
- Remove the caliper housing bolts 3.







· Using an air blow gun, pressurize the caliper fluid chamber to push out the piston.

# A WARNING

- \* Place a rag over the piston to prevent it from popping out and flying and keep hand off the piston.
- \* Be careful of brake fluid which can possibly splash.
- \* Do not use high pressure air but increase the pressure gradually.
- Remove the dust seals ① and piston seals ②.

# A CAUTION

- \* Use care not to cause scratch on the cylinder bore.
- \* Do not reuse the piston seal and dust seal that have been removed.



# **CALIPER INSPECTION**

Inspect the caliper cylinder wall and piston surface for scratch, corrosion or other damages.

If any abnormal condition is noted, replace the caliper.

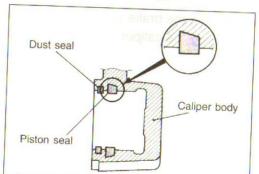


# CALIPER REASSEMBLY

Reassemble the caliper in the reverse order of disassembly procedures and observe the following points.

# **A CAUTION**

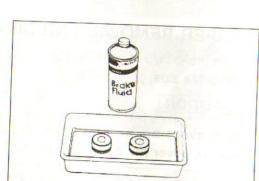
- \* Wash the caliper components with fresh brake fluid before reassembly. Do not wipe off brake fluid after washing the components.
- Replace the piston seal and dust seal with new ones with brake fluid applied.

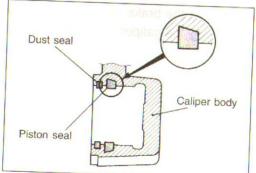




Brake fluid specification and classification: DOT 4







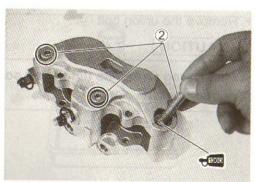
• Fit the O-rings 1.



- · With thread lock super applied to the threads, tighten the caliper housing bolts 2.
- Caliper housing bolt: 23 N·m (2.3 kgf·m)

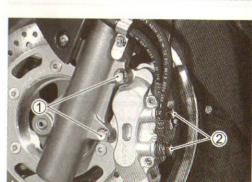
99000-32130: THREAD LOCK SUPER "1360"

Install the brake pads. ( 2-12)



- Tighten the caliper mounting bolts 1.
- · With the hose ends contacted to the stoppers, tighten the union bolts 2.
- ① Caliper mounting bolt: 25 N·m (2.5 kgf·m) 2 Union bolt: 23 N·m (2.3 kgf·m)
- For assembly procedure of brake hose: \$\sumset\$ 8-13

 Fill the system with brake fluid and bleed air. ( 2-14) INSPECTION AFTER REASSEMBLY Brake ( 2-12)

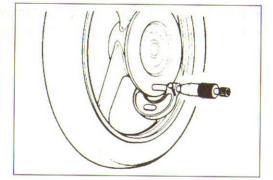


# **BRAKE DISC INSPECTION**

Check the brake disc surface for scratch, crack or abnormal wear. Measure the disc thickness at several positions using a micrometer.

If the measurement is less than the service limit or any abnormal condition is noted, replace the disc with a new one. ( 6-22 and 54)

DATA Brake disc thickness: Limit: Front: 4.0 mm Rear : 4.5 mm



# MASTER CYLINDER REMOVAL AND DISASSEMBLY

- Remove the right and upper handlebar covers. ( 6-2)
- Drain brake fluid from the front brake side reservoir.
   (2-13)
- · Disconnect the brake light switch lead wires.



Remove the union bolt ①.

## **A** CAUTION

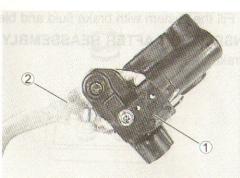
Place a rag under the union bolt so that brake fluid may not contact the parts.



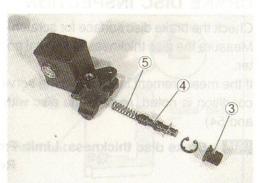
Remove the master cylinder.



Remove the brake light switch ① and brake lever ②.



- Detach the dust seal boot 3 and remove the circlip.
- Pull out the piston/cup set 4 and spring 5.



# MASTER CYLINDER INSPECTION AND REASSEMBLY

Check the cylinder inside wall, piston/cup set and spring for scratch, corrosion or other abnormal condition.

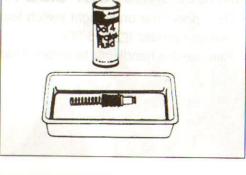
If any abnormal condition is found, replace the inner parts or master cylinder.

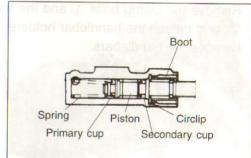


Reassemble the master cylinder in the reverse order of disassembly procedures while observing the following points.

### **A** CAUTION

- \* Wash each component with fresh brake fluid before reassembly. Do not wipe off brake fluid after washing the components.
- \* Replace the cup set (piston, primary cup, secondary cup and spring) with a new one with brake fluid applied.
- For assembly of the piston/cup set, refer to the right illustration.





- Aligh the lower mating face of the master cylinder holder with the punch mark A.
- Tighten the upper bolt first temporarily to provide clearance on the lower side and then tighten both the bolts to the specification.
- Master cylinder bolt: 10 N·m (1.0 kgf·m)
- Fit the brake hose ( 8-13) and tighten the union bolt.
- Union bolt: 23 N·m (2.3 kgf·m)
- Fill the system with brake fluid and bleed air. ( 2-14)

# INSPECTION AFTER REASSEMBLY

Front brake ( 2-11)



# **HANDLEBARS**

• Remove all the handlebar covers. ( 6-2)

### HANDLEBAR LEFT SIDE PARTS REMOVAL

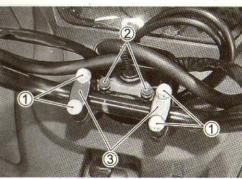
- · Remove the left handlebar switches 1.
- · Disconnect the brake light switch lead wires and remove the master cylinder. ( 6-55)
- Remove the handlebar balancer 2 and grip 3.

### HANDLEBAR RIGHT SIDE PARTS REMOVAL

- · Disconnect the brake light switch lead wires and remove the master cylinder. ( 6-30)
- Remove the handlebar balancer 1 and grip 2.



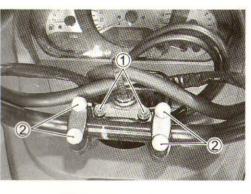
- · Remove the clamp bolts ① and the handlebar stopper bolts 2, and detach the handlebar holders 3.
- · Remove the handlebars.



### REASSEMBLY

Perform the reassembly work in the reverse order of the disassembly procedures while observing the following instructions.

- Tighten the handlebar stopper bolts 1.
- Handlebar stopper bolt: 10 N·m (1.0 kgf·m)
- Tighten the handlebar clamp bolts 2.
- Handlebar clamp bolt: 23 N·m (2.3 kgf·m)
- With the stopper ® engaged with the handlebar hole, assemble the handlebar switch.





- · Align the mating face of both the master cylinder holders with the respective punch marks (A) and tighten them with the bolts.
- Master cylinder bolt: 10 N·m (1.0 kgf·m)



After the handlebar have been assembled, inspect the following:

- \* Brake ( 2-11)
- \* Throttle operation and cable play ( 2-7)



# FRONT FORK

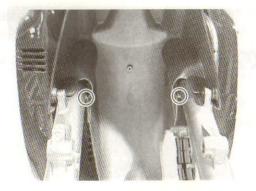
# REMOVAL AND DISASSEMBLY

- Remove the front leg shield. ( 6-2)
- Dismount the front wheel. ( 6-22)
- · Remove the speed sensor wire clamp.
- · Remove the brake caliper and brake hose clamp.





· Remove the front fender.

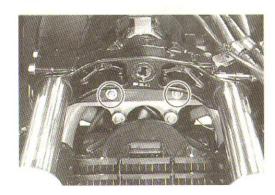






### NOTE:

When removing the right side front fork, remove the upper front fender tightening bolts and slide the upper front fender.

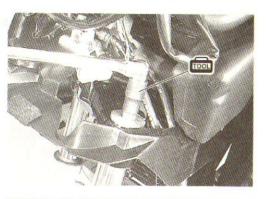


• Using the special tool, remove the front fork cap bolt.



### **A** CAUTION

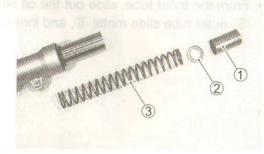
Use caution when removing the front fork cap bolt since the spring force is applied to the cap bolt.



 Loosen the front fork clamp bolts and remove the front forks, left and right.



- Draw out the spacer ①, retainer ② and front fork spring ③.
- · Drain front fork oil.



• Remove the damper rod bolt 4.



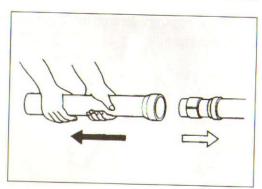
• Remove the damper rod ⑤ and the spring ⑥.



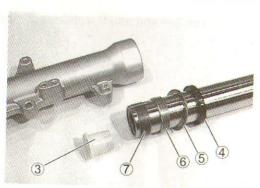
• Remove the dust seal 1 and oil seal stopper ring 2.



Pull out the inner tube from the outer tube.



- Remove the oil lock piece ③.
- From the inner tube, slide out the oil seal 4, oil seal retainer ⑤, outer tube slide metal ⑥, and inner tube slide metal ⑦.

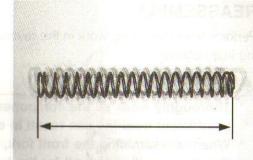


# INSPECTION

### FRONT FORK SPRING

Measure the free length of the front fork spring. If the length is found shorter than the service limit, replace the spring.

PATA Front fork spring free length: Limit: 251 mm



### INNER TUBE AND OUTER TUBE

Check the sliding surface of the inner tube, outer tube and damper rod ring for scratch, wear, bending, or other abnormal condition.



### REASSEMBLY

Perform the reassembly work in the reverse order of the disassembly procedures while observing the following instructions.

### **A** CAUTION

- \* Thoroughly wash all the component parts being assembled.
  Insufficient washing can result in oil leakage or premature wear of the parts.
- \* When reassembling the front fork, use new fork oil.
- \* Use the specified fork oil for the front fork.
- \* When reassembling, replace the slide metals, oil seal, dust seal and damper rod bolt gasket with new ones.
- \* Use care not to cause damage to the slide metal surfaces since the surfaces are TEFLON coated.

- · On the inner tube, assemble the following parts.
- 1 Dust seal
- 2 Oil seal stopper ring
- 3 Oil seal
- 4 Oil seal retainer
- Slide metal
- 6 Slide metal

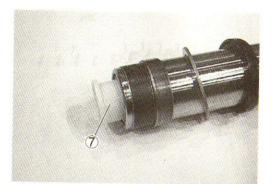
### **A CAUTION**

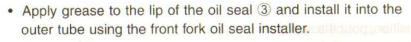
To prevent the lip of oil seal ③ from being damaged, cover the inner tube with vinyl sheet ④ during installation.

· Assemble the spring to the oil lock piece.



• With the oil lock piece ⑦ fitted to the inner tube, assemble the inner tube to the outer tube.







09940-52861: Front fork oil seal installer set

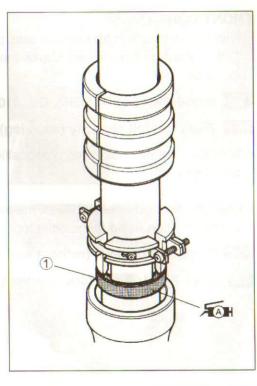
### **A** CAUTION

Wash clean the front fork oil seal installer before using. If dirt is on the installer, the inner tube may possibly be damaged during press-fitting work.

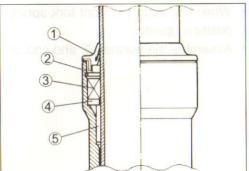
• Fit the stopper ring 2 and dust seal 1.

### A CAUTION

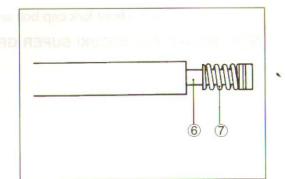
Make sure that the stopper ring is securely fitted into the groove on the outer tube.



- 1 Dust seal
- 2 Oil seal stopper ring
- 3 Oil seal
- 4) Oil seal retainer
- 5 Slide metal



• Fit the rebound spring ⑦ on the damper rod ⑥ and install them together to the inner tube.

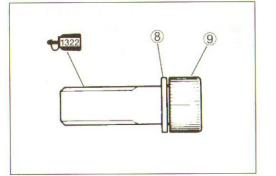


- Apply the thread lock to the damper rod bolt 9.
- · With the gasket ® fitted, tighten the damper rod bolt 9.
- Front fork end bolt: 30 N·m (3.0 kgf·m)



# A CAUTION

Replace the gasket with a new one.



# FRONT FORK OIL

 With the inner tube in fully compressed position, pour the specified amount of fork oil and stroke the tube several times to expel air.

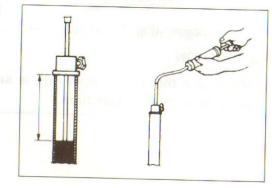
99000-99044-10G: FORK OIL #10

# PATA Front fork oil capacity (each leg): 275 ml

- With the front fork held in vertical position, compress the inner tube all the way.
- Wait until the fluid level stabilizes, measure and adjust the level to specification using the special tool.

PATA Front fork oil level (without spring): 102 mm

09943-74111: Front fork oil level gauge



- When installing the front fork spring, closed pitch end should position upside.
- Assemble the washer 2 and spacer 3.



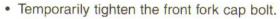
Fit the O-ring to the front fork cap bolt and apply grease.

99000-25010: SUZUKI SUPER GREASE "A"



- Insert the front fork inner tube top end into the steering stem all the way until the step of mounting hole has been contacted.
- Tighten the clamp bolts temporarily.

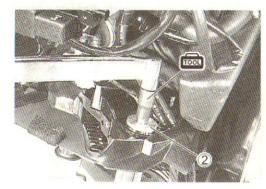




- Tighten the front fork clamp bolts 1 to the specified torque.
- Front fork clamp bolt: 23 N·m (2.3 kgf·m)



- Tighten the front fork cap bolt 2 to the specified torque.
- 09940-30230: Hexagon socket (17 mm)
- Front fork cap bolt: 45 N·m (4.5 kgf·m)



### **INSPECTION AFTER REASSEMBLY**

- Front fork ( 2-16)
- Speedometer lead wires and brake hoses routing ( 8-12 and -14)

CAUTION

washer 6) and steering stem.
- a steering stem.
-mab yna

tellos nut societ stem nut societ

# **STEERING**

# REMOVAL AND DISASSEMBLY

- · Remove the following parts.
- \* The handlebar covers and front box ( 6-2)
- \* The front wheel ( 6-22)
- \* The front fender and front fork ( 6-34)

### NOTE:

The front fork removal is not necessary unless the steering stem replacement or front fork disassembly work is required.

- Remove the cable guide ①.
- Remove the handlebar holder clamp bolts (2).



- · Remove the handlebar holder set bolt 3).
- · Remove the handlebar holder with handlebars.

### **A CAUTION**

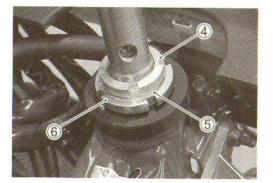
This operation must be performed without causing undue stress to the brake hose and wire.



 Remove the lock nut 4, washer 5 and steering stem nut 6 and draw out the steering stem.



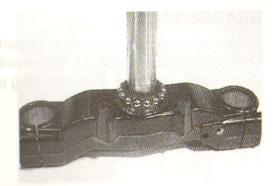
09940-14911: Steering socket wrench 09940-11420: Steering stem nut socket 09940-11430: Steering stem nut socket



· Remove the dust cover 7, upper inner race 8 and upper bearing 9.



· Remove the lower bearing.



· To remove the lower inner race, use a chisel like, plain head steel rod.

### **A CAUTION**

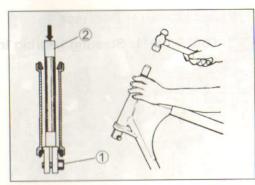
- \* Unless corrosion, damage or other abnormal condition is found, the bearing race need not be replaced.
- \* Once the lower inner race has been removed, replace it with a new one.



· Drive out the steering stem bearing outer races using the special tools 1 and 2.



09941-54911: Bearing outer race remover 1 09941-74910: Steering bearing installer 2



### INSPECTION

Check the steering stem and steering stem head for any dam-

Check the bearing and race for corrosion, nick or other damage.

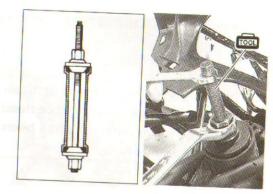


# REASSEMBLY

Reassembly and reinstallation can be performed in the reverse order of removal and disassembly procedures. However, operate the work taking care for the following points.

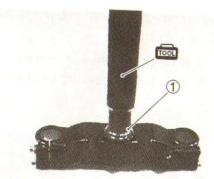
Press in the upper and lower outer race using the special tool.



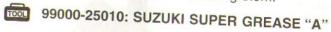


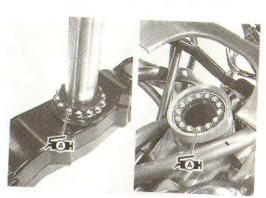
Press in the lower inner race ①.

09925-18011: Steering bearing installer



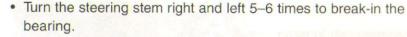
 Apply grease to the upper bearing, lower bearing and outer races prior to installing the steering stem.





- · Pass the steering stem through the upper front fender and install the stem.
- Tighten the steering stem nut.
- Steering stem nut: 45 N·m (4.5 kgf·m)
- 09940-14911: Steering socket wrench 09940-11430: Steering stem nut socket

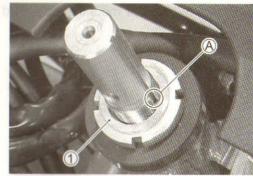




- Return the steering stem nut by 1/4 to 1/2 of a turn.
- · In this condition, check that the steering stem can turn smoothly with no rattle and stiffness.
- · If there is a rattle or heavy movement, adjust the tightness by the stem nut.



· Fit the washer ① with its tab A engaged with the steering stem groove.



Tighten the lock nut.

Lock nut: 30 N·m (3.0 kgf·m)

09940-14911: Steering socket wrench 09940-11420: Steering stem nut socket



Tightening the lock nut can affect the steering stem nut adjustment. Therefore, after tightening the lock nut, check the steering movement again and adjust if necessary.

 Tighten the handlebar holder set bolt ① and handlebar holder clamp bolts 2.

### NOTE:

Reassemble following order:

- 1. Tighten the bolt 1 temporarily.
- 2. Tighten the bolt 2 equally and evenly, and tighten them to the specified torque.
- 3. Tighten the bolt 1 to the specified torque.

Handlebar holder set bolt: 23 N·m (2.3 kgf·m) Handlebar holder clamp bolt: 55 N·m (5.5 kgf·m)

### INSPECTION AFTER INSTALLATION

Steering system ( 2-15)





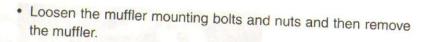


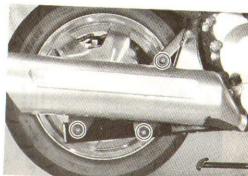


# **REAR WHEEL**

# REMOVAL

- Remove the right side leg shield. ( 6-2)
- · Remove the exhaust pipe bolts.





Remove the muffler bracket.



Remove the rear axle nut and take out the rear wheel.

### NOTE:

A self-lock nut is used for the rear axle nut. Limit the repeated usage of this nut to the maximum of 2-3 times.



# INSPECTION

### TIRE

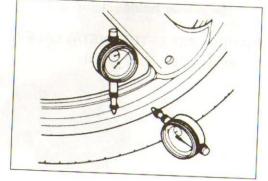
For inspection of tire: 2-17

# REAR WHEEL

Turn the rear wheel with the brake caliper removed and measure runout using a dial gauge.

If the runout measured exceeds the service limit, overhaul the rear axle and check for the cause. ( 3-43)



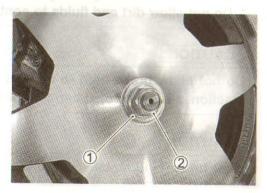


### REASSEMBLY

Reassemble the rear wheel in the reverse order of disassembly procedures while observing the following points.

not to allow water or dirt to enter the system.

- Position the rear wheel and install the washer ① and rear axle nut ②.
- Tighten the rear axle nut 2 to the specified torque.
- Rear axle nut: 100 N·m (10.0 kgf·m)



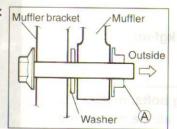
- Tighten the muffler bracket bolts to the specified torque.
- Muffler bracket bolt: 50 N·m (5.0 kgf·m)



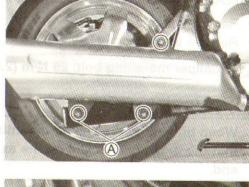
- Tighten the muffler mounting bolt and nuts to the specified torque.
- Muffler mounting bolt and nut:

  23 N·m (2.3 kgf·m)

  Muffler bracket



- Tighten the exhaust pipe bolts.
- Exhaust pipe bolt: 23 N·m (2.3 kgf·m)





# **REAR BRAKE**

### A WARNING

- \* Do not mix with brake fluid of different brand.
- \* Do not use a brake fluid kept in a open container or stored for long period of time.
- \* To store brake fluid, make sure to seal the container and keep it in a safe place to be out of reach of children.
- \* When filling brake fluid, take care not to allow water or dirt to enter the system.
- \* To wash the brake system parts, use brake fluid and not any other material.
- \* Do not allow dirt and fluids to contact the brake

### **A** CAUTION

Do not allow brake fluid to contact the paint surface, plastic or rubber parts, or its chemical reaction can cause discoloration or crack.

### **A CAUTION**

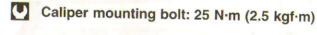
After brake fluid replacement and brake pad replacement, adjust the brake lock. ( 2-21)

# BRAKE FLUID REPLACEMENT

For details of brake fluid replacement: 2-13

# BRAKE PAD REPLACEMENT

- Remove the rear wheel. ( 6-46)
- · Remove the caliper mounting bolts.

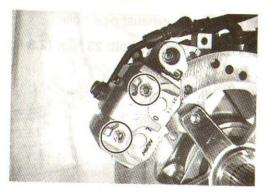


A CAUTION

When tightening the caliper mounting bolts, make sure that the brake disc is slid on the axle all the way to the end.

- · Remove the pad mounting pins.
- Pad mounting pin: 18 N·m (1.8 kgf·m)
- Remove the brake pads.
- To reassemble, follow the reverse order of the above procedures. On completion of assembly, inspect the brake system.
   (2-11)



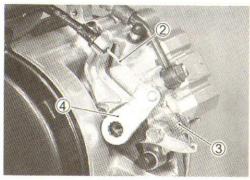


# CALIPER REMOVAL AND DISASSEMBLY

- Drain brake fluid from the combination brake reservoir.
   ( 2-13)
- Remove the rear wheel. ( 6-46)
- · Loosen the lock nut and remove the brake lock adjuster.



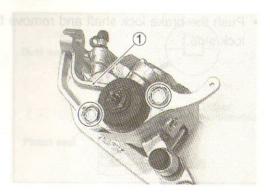
Remove the brake lock cable ②, the return spring ③ and brake lock arm ④.



- Remove the caliper mounting bolts and union bolt.
- · Remove the caliper.



Remove the bolts and take out the brake lock housing 1.



• Take out the brake lock shaft 2 from the brake lock housing.



• Remove the brake pads. ( 6-48)



Remove the caliper bracket 1 and pad spring 2.



 Using an air blow gun, pressurize the caliper fluid chamber to push out the front side piston.

### A WARNING

- \* Place a reg over the piston to prevent it from popping out and flying and keep hand off the piston.
- \* Be careful of brake fluid which can possibly splash.
- \* Do not use high pressure air but increase the pressure gradually.
- Push the brake lock shaft and remove the piston of the brake lock side.





• Remove the dust seals ① and piston seals ②.

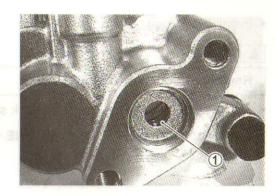
### **▲** CAUTION

- \* Use care not to cause scratch on the cylinder bore.
- \* Do not reuse the piston seal and dust seal that have been removed.



### CALIPER INSPECTION

- Inspect the brake fluid leakage from the oil seal ①, wear or damage on it.
- · Replace it, if any abnormal condition is found.



- Caliper ( 6-28)
- Piston ( 6-28)



### CALIPER REASSEMBLY

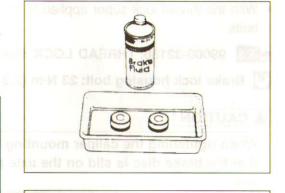
Reassemble the caliper in the reverse order of disassembly procedures and observe the following points.

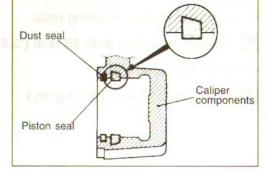
### **A** CAUTION

- Wash the caliper components with fresh brake fluid before reassembly. Do not wipe off brake fluid after washing the components.
- Replace the piston seal and dust seal with new ones with brake fluid applied.



Brake fluid specification and classification: DOT 4





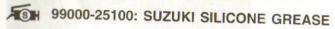
- Apply silicone grease to the caliper axles.
- 99000-25100: SUZUKI SILICONE GREASE
- · Assemble the pad spring.

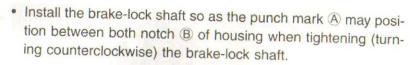


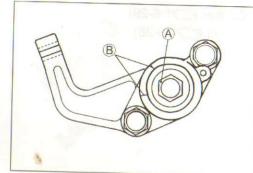
# A CAUTION

Replace the gasket with a new one.

Apply silicone grease to the brake-lock shaft.







- · With the thread lock super applied to the threads, tighten the bolts.
- 99000-32130: THREAD LOCK SUPER "1360"
- Brake lock housing bolt: 23 N·m (2.3 kgf·m)

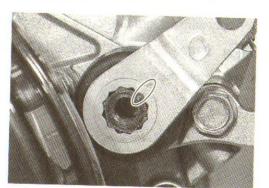
### A CAUTION

When tightening the caliper mounting bolts, make sure that the brake disc is slid on the axle all the way to the end.

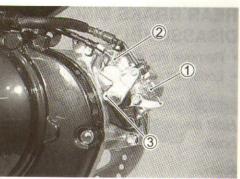
- Tighten the caliper mounting bolts.
- Caliper mounting bolt: 25 N·m ( 2.5 kgf·m )
- Tighten the union bolt.
- Union bolt: 23 N·m ( 2.3 kgf·m )
- Align the punch mark on the brake lock housing with the punch mark on the brake-lock lever.





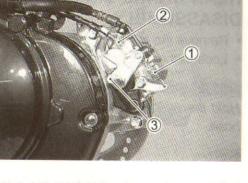


- Install the return spring ①, the brake-lock cable ② and the brake-lock adjuster 3.
- Adjust the brake-lock. ( 2-24)



# **INSPECTION AFTER REASSEMBLY**

- Rear brake inspection: 2-12
- Brake fluid inspection: 2-12
- Brake fluid replacement: 2-13



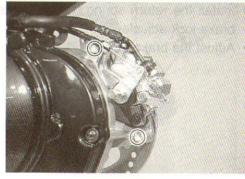
#### REAR BRAKE DISC REMOVAL AND DISASSEMBLY

- Remove the rear wheel. ( 6-46 )
- · Loosen the caliper mounting bolt and remove the caliper.

#### NOTE:

Hold the caliper so as not to cause undue stress on the brake hose.







· Loosen the bolt and disassemble the brake disc.



#### REAR BRAKE DISC REASSEMBLY

Perform the reassembly operation in the reverse order of disassembly procedures and observe the following points:

· With thread lock super applied to the threads, tighten the bolts.

99000-32130: THREAD LOCK SUPER "1360"

Brake disc bolt: 23 N·m (2.3 kgf·m)

#### **A CAUTION**

When tightening the caliper mounting bolts, make sure that the brake disc is slid on the axle all the way to the end.

Caliper mounting bolt: 25 N·m (2.5 kgf·m)

#### REAR BRAKE DISC INSPECTION

For details of the brake disc inspection: 6-29







# MASTER CYLINDER REMOVAL AND DISASSEMBLY

- Remove the left and upper handlebar covers. ( 6-2)
- · Drain brake fluid from the combination brake reservoir. ( 2-13)
- · Disconnect the brake light switch lead wires.



Remove the union bolt 1).

#### **A** CAUTION

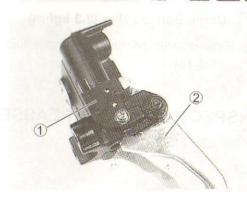
Place a rag under the union bolt so that brake fluid may not contact the parts.



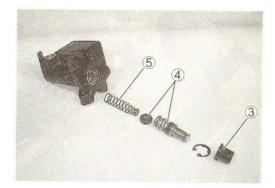
· Remove the master cylinder.



• Remove the brake light switch 1 and brake lever 2.



- Detach the dust seal boot 3 and remove the circlip.
- Take out the piston/cup set 4 and spring 5.



CHASSIS

# MASTER CYLINDER INSPECTION AND REASSEMBLY

Inspect the cylinder wall, piston/cup set and spring for scratch, corrosion or other damages.

If any abnormal condition is noted, replace the inner parts or master cylinder.



Reassemble the master cylinder in the reverse order of disassembly procedures and observe the following points.

#### A CAUTION

- \* Wash each component with fresh brake fluid before reassembly. Do not wipe off brake fluid after washing the components.
- Replace the cup set (piston, primary cup, secondary cup and spring) with a new one with brake fluid applied.
- · Aligh the lower mating face of the master cylinder holder with the punch mark A.
- · Temporarily tighten the upper side master cylinder bolt first to provide clearance on the lower side. Then, tighten each bolt to specification.

# Master cylinder bolt: 10 N·m (1.0 kgf·m)

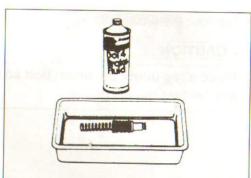
• Connect the brake hose ( 8-13 and 14) and tighten the union bolt.

# Union bolt: 23 N·m (2.3 kgf·m)

• Fill the master cylinder with brake fluid and bleed air. ( 2-14)

# INSPECTION AFTER REASSEMBLY

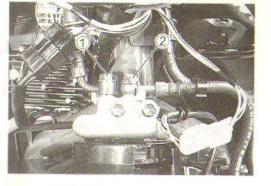
Brake ( 2-12)





#### **DELAY VALVE REMOVAL**

- · Drain brake fluid from the combination brake system. ( 2-13)
- Remove the front leg shield. ( 6-2)
- Remove the union bolts 1 and 2.



· Remove the brake pipe joint bolt.



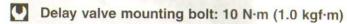
· Remove the delay valve mounting bolts.



#### **DELAY VALVE REINSTALLATION**

Reinstall the delay valve in the reverse order of removal procedures and observe the following points.

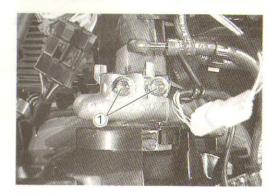
Tighten the delay valve mounting bolts ① together with the

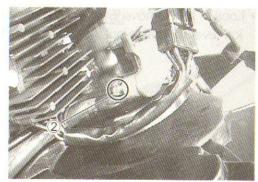


· With the brake hose end contacted to the stopper, tighten the union bolt.



- Tighten the brake pipe joint bolt 2.
- Brake pipe joint bolt: 16 N·m (1.6 kgf·m)

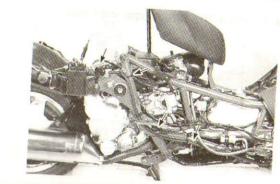




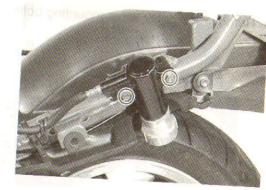
# **REAR SUSPENSION**

# REMOVAL AND DISASSEMBLY

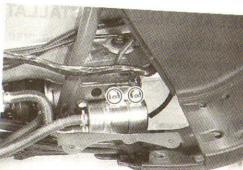
- · Remove the following parts.
- \* Side and lower leg shields ( 6-2)
- \* Helmet box ( 6-2)
- \* Frame covers ( 6-2)
- \* Rear leg shield ( 6-2)
- Remove the lower cover ① (by loosening four bolts).
- Remove all clamps fastening the rear shock absorber hose.



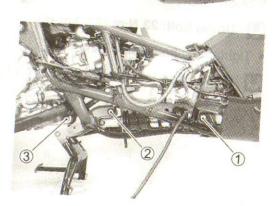
Remove the rear shock absorber adjuster bolts.



Remove the fuel pump mounting bolts.



• Loosen and remove the rear shock absorber front bolt ①, cushion lever mounting nut 2 and rear cushion rod nut 3.



· Remove the cushion lever nut 1 and cushion rod nut 2 and disassemble the rear suspension linkage.



#### **CUSHION LEVER INSPECTION**

Check the cushion lever body for crack, break or other abnormal

Attempt to move the spacer laterally to see that no play exists. Also, check the spacer for smooth turning.

If any abnormal condition is noted in the spacer movement, replace the bearing.



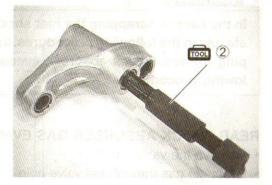
#### BEARING REPLACEMENT

· Remove the cushion lever bearings using the special tools.



09943-88211: Bearing installer 1 09923-73210: Bearing remover 2 09930-30102: Sliding shaft





· To install, press-in the bearings using the special tool.



09941-34513: Steering race and swingarm bearing installer

#### **A CAUTION**

When press-fitting the bearing, the bearing should be positioned so that its stamped mark side faces the tool.



# REAR SHOCK ABSORBER INSPECTION

Check the rear shock absorber, the hose and the adjuster body



Check the bushing for play and damage. Check the rear shock absorber spring for crack or other damage.



Rear shock absorber adjuster: Adjustable range: 17 revolutions (34 clicks) Standard position: 4-1/2 revolutions (9 clicks) back from the softest position



# REAR SHOCK ABSORBER SCRAPPING **PROCEDURE**

# **▲** WARNING

- \* Handle the rear shock absorber with caution since a high pressure nitrogen gas is contained.
- \* Avoid incineration, exposure to high pressure or over-

# **▲** WARNING

In the case of scrapping the rear shock absorber, evacuate gas in the following procedures. In the case of scrapping the rear shock absorber, evacuate gas in the following procedures.



- Remove the valve cap ①.
- Evacuate gas through the valve hole.

# **▲** WARNING

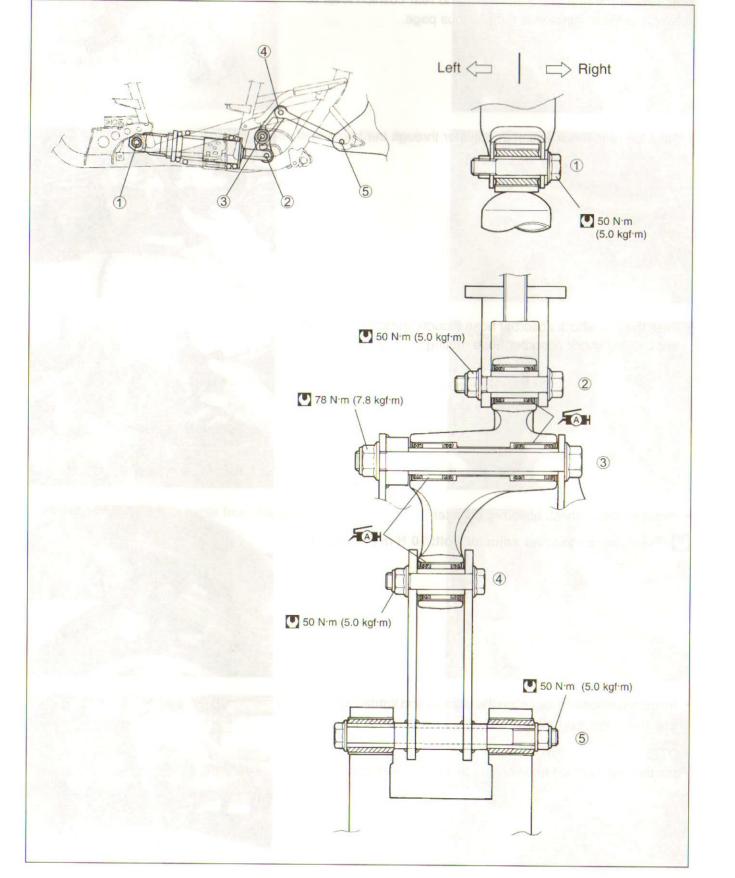
Keep your face away from the valve hole.





## REASSEMBLY

Reassemble the rear suspension in the reverse order of disassembly procedures and observe the following instructions.



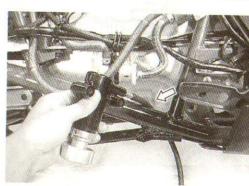
# · Prior to assembly, apply grease to each spacer and bearing.

# 99000-25010: SUZUKI SUPER GREASE "A"

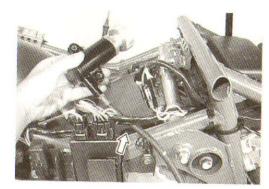
· Assemble the rear shock absorber and rear cushion lever referring to the illustration in the previous page.



· Pass the rear shock absorber adjuster through the frame.



 Pass the rear shock absorber hose though under the wire harness. (Rear shock absorber hose routing: 3-19)



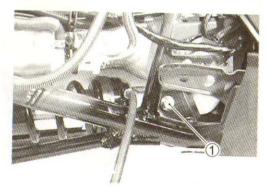
- · Install the rear shock absorber adjuster.
- Rear shock absorber adjuster bolt: 10 N·m (1.0 kgf·m)



 Install the rear suspension on the chassis and tighten with bolts and nuts referring to the illustration in the previous page.

#### NOTE:

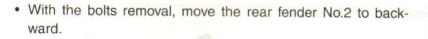
Pass the rear cushion lever bolt 1 before all other bolts insert.

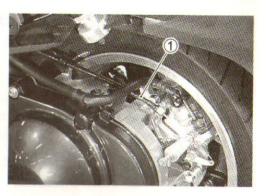


# CRANKCASE BRACKET

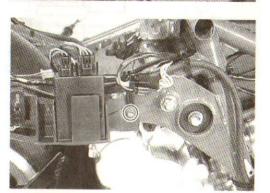
#### REMOVAL AND DISASSEMBLY

- · Remove the following parts.
- \* Helmet box ( 6-2)
- \* Frame covers ( 6-2)
- \* Brake lock cable ( 6-49)









• Pull out the brake lock cable from the cable guide.

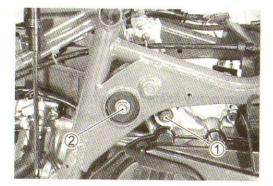


• Remove the engine mounting nut ①, and take out the engine mounting shaft.

#### NOTE:

Support the engine with a proper jack.

• Remove the left rubber damper bolt 2.

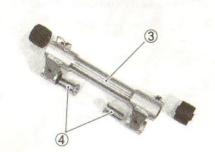


#### 6-64 CHASSIS

- Remove the right rubber damper bolt 1.
- · Remove the crankcase bracket nut 2.



· With the crankcase bracket shaft removal, take out the crankcase bracket 3 and the spacer 4.



#### INSPECTION

With the spacer inserted in the bearing, check that the spacer turns smoothly without vertical and horizontal play. Replace the component if any abnormal condition is noted. Check the rubber damper and bushing for crack and damage and replace if such a defect is noted.



#### BEARING REPLACEMENT

• Remove the bearings 1 and 2 using the special tools.



09921-20220: Bearing remover set (φ 20)



· Press in the bearing using the special tool.



09941-34513: Stearing race & swingarm bearing installer

#### NOTE:

When press-fitting the bearing, the bearing should be positioned so that its stamped mark side contacts the tool.

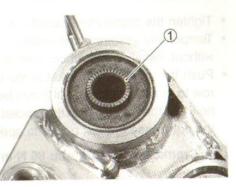


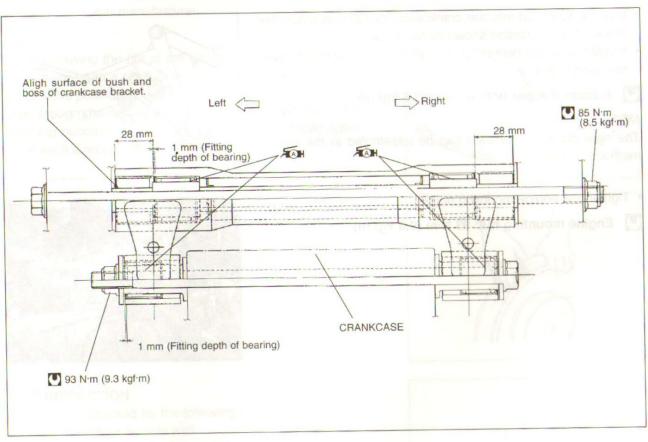
#### CHASSIS 6-65

#### REASSEMBLY

Perform the reassembly in the reverse order of the disassembly procedures while observing the following points.

Press in the bushing with its knurled end facing the frame.



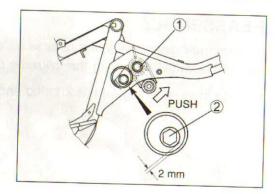


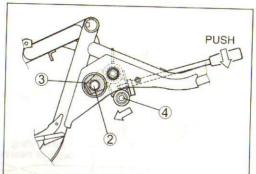
- Tighten the crankcase bracket nut 1 temporarily.
- Temporarily assemble the washer and rubber damper bolt 2 without installing the rubber damper.
- · Push the crankcase bracket in the direction shown by the arrow to provide clearance of 2 mm between the rubber damper hole and the washer, hold the bracket in that position and tighten the crankcase bracket nut ① to specification.
- Crankcase bracket nut: 85 N·m (8.5 kgf·m)
- · Insert a steel rod into the crankcase bracket and move the bracket to the direction shown by the arrow.
- Install the rubber damper 3 and washer and tighten the rubber damper bolt 2.
- Rubber damper bolt: 85 N·m (8.5 kgf·m)

NOTE:

The right crankcase bracket can be assembled in the similar method.

- Tighten the engine mounting nut 4.
- Engine mounting nut: 93 N·m (9.3 kgf·m)







#### TIRE AND WHEEL

#### TIRE REMOVAL

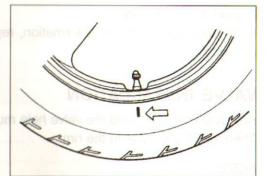
The most critical factor of a tubeless tire is the seal between the wheel rim and the tire bead. For this reason, it is recommended to use a tire changer that can satisfy this sealing requirement and can make the operation efficient as well as functional.

For operating procedures, refer to the instructions supplied by the tire changer manufacturer.

#### NOTE:

When removing the tire in the case of repair or inspection, mark the tire with a chalk to indicate the tire position relative to the valve position.

Even though the tire is refitted to the original position after repairing puncture, the tire may have to be balanced again since such a repair can cause imbalance.



#### INSPECTION

#### WHEEL INSPECTION

Wipe the wheel clean and check for the following:

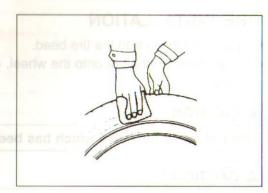
- · Distortion and crack
- Nick or scratch on bead

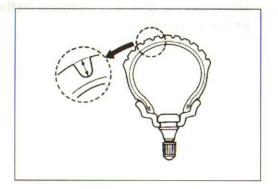


#### TIRE INSPECTION

Tire must be checked for the following points:

- · Nick and rupture on side wall
- Tread remaining depth ( 2-17)
- Separation of cord
- · Abnormal, uneven wear on tread
- Surface damage on bead
- Localized tread wear due to skidding (Flat spot)
- · Abnormal condition of inner liner





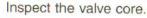
#### CHASSIS

#### VALVE INSPECTION

Inspect the valve after the tire is removed from the rim. Replace the valve with a new one if the seal rubber is peeling or has damage.

#### NOTE:

If the external appearance of the valve shows no abnormal condition, removing of the valve is not necessary.



If the seal has abnormal deformation, replace the valve with a new one.

#### VALVE INSTALLATION

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

#### NOTE:

To properly install the valve into the valve hole, apply a special tire lubricant or neutral soapy liquid to the valve.

#### **A** CAUTION

Be careful not to damage the lip of valve.

#### TIRE INSTALLATION

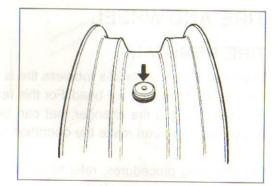
- Apply tire lubricant to the tire bead.
- When installing the tire onto the wheel, observe the following points.

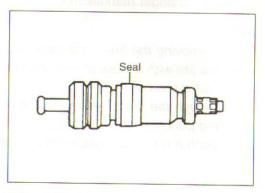
#### **A** CAUTION

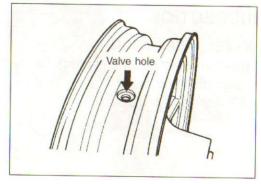
Do not reuse the valve which has been once removed.

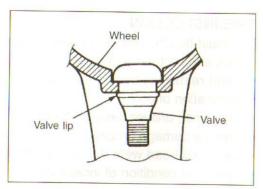
#### **A** CAUTION

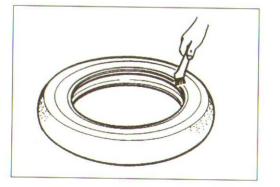
Never use oil, grease or gasoline on the tire bead in place of tire lubricant.



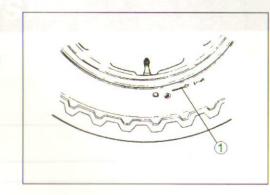








- When installing the tire, the arrow ① on the side wall should point the direction of wheel rotation.
- Align the chalk mark put on the tire at the time of removal with the valve position.



- For installation procedure of tire onto the wheel, follow the instructions given by the tire changer manufacturer.
- Bounce the tire several times while rotating. This makes the tire bead expand outward to contact the wheel, thereby facilitating air inflation.
- · Pump up the tire with air.

#### **▲** WARNING

- \* Do not inflate the tire to more than 400 kPa (4.0 kgf/cm²). If inflated beyond this limit, the tire can burst and possibly cause injury. Do not stand directly over the tire while inflating.
- \* In the case of preset pressure air inflator, pay special care for the set pressure adjustment.
- In this condition, check the "rim line" cast on the tire side walls. The line must be equidistant from the wheel rim all around. If the distance between the rim line and wheel rim varies, this indicates that the bead is not properly seated. If this is the case, deflate the tire completely and unseat the bead for both sides. Coat the bead with lubricant and fit the tire again.
- When the bead has been fitted properly, inflate air and adjust the pressure to specification.
- · As necessary, adjust the tire balance.

#### **A** CAUTION

Do not run with a repaired tire at a high speed.

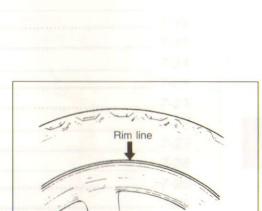
#### DATA Tire pressure:

Solo riding: Front: 175 kPa (1.75 kgf/cm²)

Rear: 200 kPa (2.00 kgf/cm²)

Dual riding: Front: 175 kPa (1.75 kgf/cm²)

Rear: 280 kPa (2.80 kgf/cm<sup>2</sup>)



# **ELECTRICAL SYSTEM**

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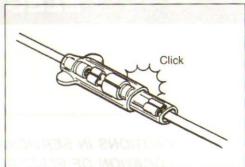
#### **A WARNING**

- \* To inspect the electrical equipment, use Suzuki multi-circuit tester set (09900-25008).
- \* The dry battery used in the tester should not be deteriorated.
- \* Take care not to confuse the tester measuring range.
- \* Since the resistance value varies depending on temperature, the measurement must be used for reference purpose only.

#### **CAUTIONS IN SERVICING**

#### SNAP CONNECTOR

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



INCORRECT

INCORRECT

#### COUPLER

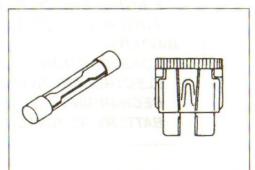
- In the case of a locking type coupler, be sure to release the lock before disconnecting. When connecting the coupler, push it in all the way until the lock is fastened.
- When disconnecting the coupler, be sure to hold the coupler body and do not pull the lead wires.
- · Inspect each terminal on the coupler for looseness or bending.
- · Inspect each terminal for corrosion and fouling.



- Clamp the wiring harness at the position indicated in "WIRING HARNESS ROUTING".
- Bend the clamp properly so that the wiring harness is securely fixed.
- In clamping the wiring harness, use care not to allow it to sag.
- Do not use wire or any other material as a substitute for band type clamp.

#### **FUSE**

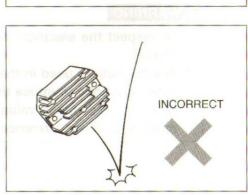
- When a fuse blows, always investigate the cause, correct the problem and then replace the fuse.
- · Do not use a fuse of a different capacity.
- · Do not use wire or any other substitute.



CORRECT

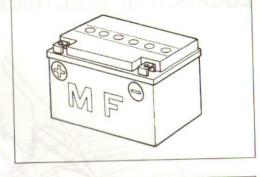
#### SEMI-CONDUCTOR EQUIPPED PART

- Be careful not to drop the part which has a semi-conductor built in such as a ignitor unit and regulator/rectifier.
- When inspecting these parts, follow the instructions carefully.
   Failure to follow the proper procedure can cause damage to these parts.



## BAI

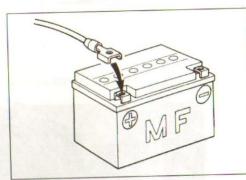
- The MF battery used in this vehicle does not require maintenance such as inspection of electrolyte level and filling of water
- No hydrogen gas is produced during normal charging of the battery, but such a gas can be produced when overcharged. Therefore, keep the battery away from spark or fire during charging.
- 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

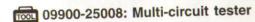
- When disconnecting terminals from the battery for disassembly or servicing purpose, be sure to disconnect the negative terminal first.
- When connecting terminals to the battery, be sure to connect the positive 

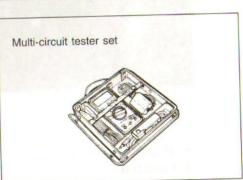
   terminal first.
- If the terminal is found corroded, remove the battery, wash with lukewarm water and clean with a wire brush.
- Upon completion of connection, apply a little grease on the terminals.
- Put the cover over the positive 
   terminal.



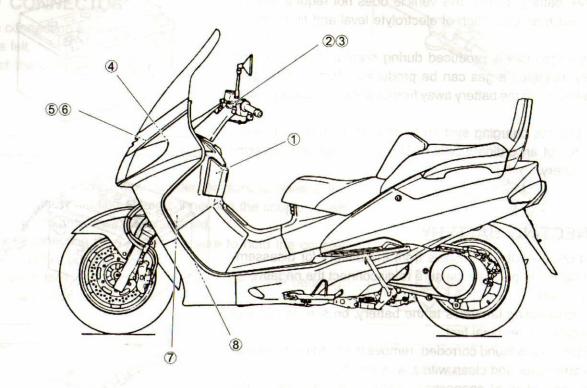
# **USING MULTI-CIRCUIT TESTER**

- Use caution not to confuse the positive 
   — probe from the negative 
   — probe of the tester. A wrong connection may cause damage to the tester.
- If the voltage and current values are not known, start measuring in a higher range.
- Connecting the tester in the resistance range where voltage is applied may cause damage to the tester. When measuring resistance, check to make sure that no voltage is applied.
- After using the tester, turn the switch to the OFF position.

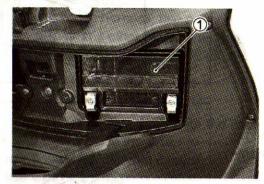




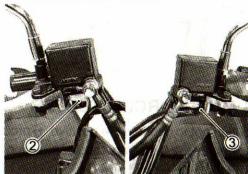
# LOCATION OF ELECTRICAL COMPONENTS



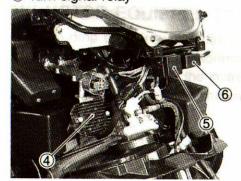
1 Battery



- ② Right brake lever switch
- 3 Left brake lever switch

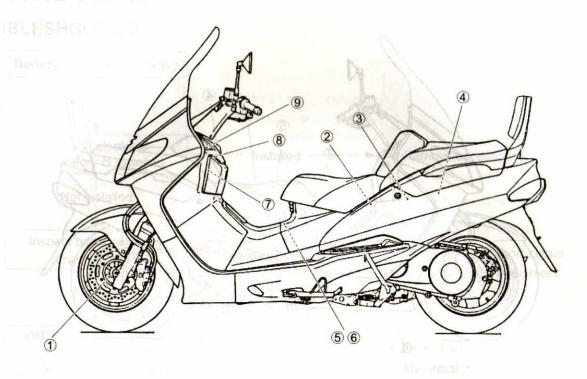


- 4 Regulator/rectifier
- 5 Fuse box
- 6 Turn signal relay



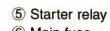
- 7 Cooling fan (5-6)
- ® Cooling fan switch ( 5-7)

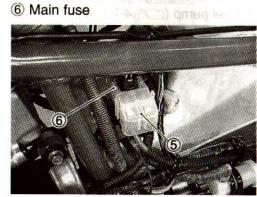




1 Speed sensor



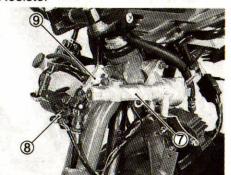


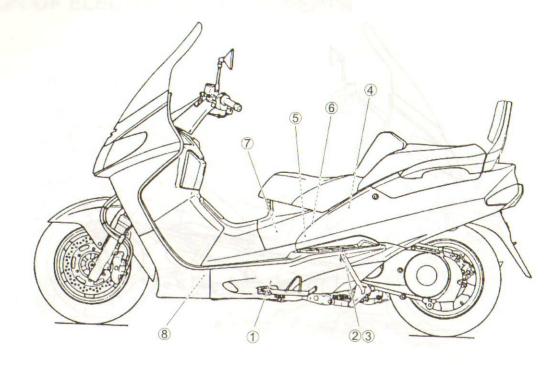


- 2 Ignitor unit
- 3 Safety relay
- 4 Thermo-switch ( 4-14)

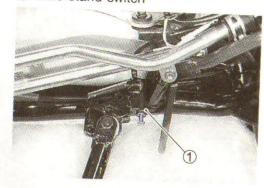


- 7 Ignition switch
- 8 Brake lock switch
- 9 Resistor





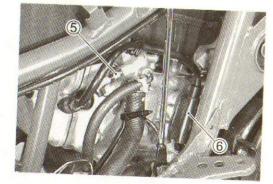
1 Side-stand switch



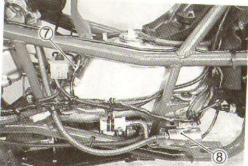
- 2 Generator
- 3 Pick-up coil
- 4 Starter motor



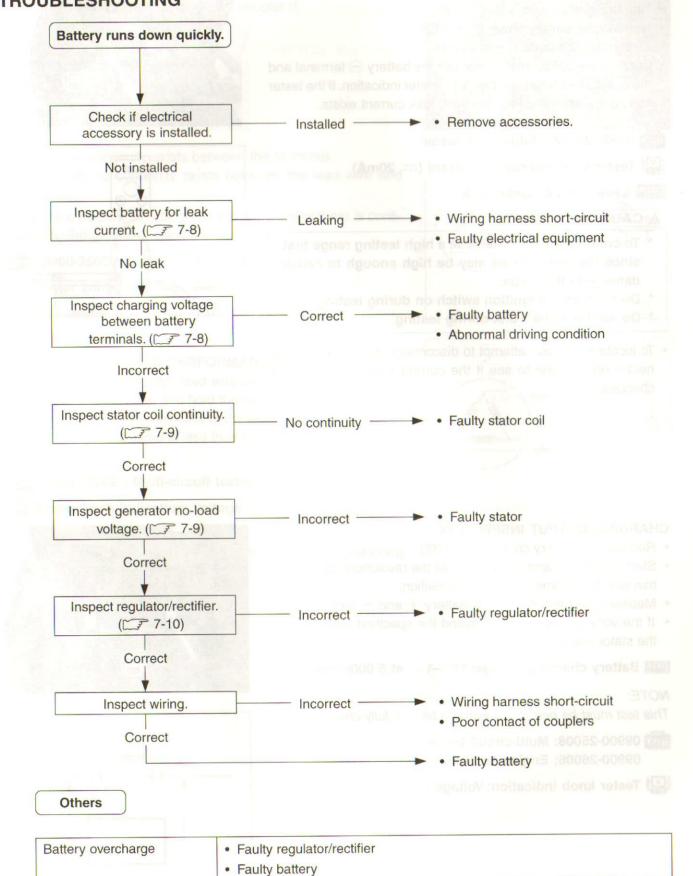
- ⑤ Water temperature gauge ( 5-8)
- 6 Ignition coil



- 7 Fuel level gauge ( 4-4)
- 8 Fuel pump ( 4-7 )



# CHARGING SYSTEM TROUBLESHOOTING



#### 7-8 ELECTRICAL SYSTEM

#### **INSPECTION (CHARGING SYSTEM)**

#### BATTERY LEAK CURRENT

- · Turn the ignition switch off.
- Remove the battery cover. ( 7-32)
- Disconnect the battery 

  lead wire.
- Connect the milliammeter between the battery 

  terminal and the 

  lead as shown and check for meter indication. If the tester needle swings more than the limit, leak current exists.



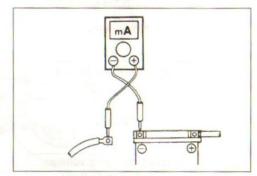
Tester knob indication: Current (---, 20mA)

DATA Leak current: under 3mA

#### A CAUTION

- \* To connect the ammeter, use a high testing range first since the leak current may be high enough to cause damage to the tester.
- \* Do not turn the ignition switch on during testing.
- \* Do not open the trunk during testing.
- To locate the cause, attempt to disconnect the coupler or connector one by one to see if the current shown in the tester changes.





#### CHARGING OUTPUT INSPECTION

- Remove the battery cover. ( 7-32)
- Start the engine and raise and hold the revolutions at 5 000 r/ min with the dimmer switch in HI position.
- Measure voltage between the battery ⊕ and ⊕ terminals.
- If the voltage measured is beyond the specified range, check the stator coil and rectifier.

#### DATA Battery charging voltage: 13.5-15V at 5 000r/min

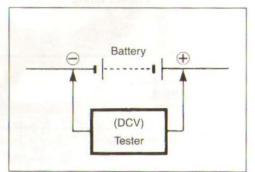
NOTE:

This test must be performed with the battery fully charged.

09900-25008: Multi-circuit tester 09900-26006: Engine tachometer

Tester knob indication: Voltage (==)





# GENERATOR COIL CONTINUITY INSPECTION

- Remove the helmet box. ( 6-2)
- Disconnect the generator lead wire coupler ①.



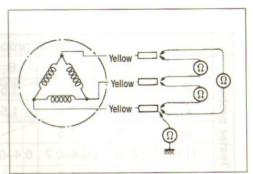
**ELECTRICAL SYSTEM 7-9** 

- · Check that continuity exists between the terminals.
- Check that no continuity exists between the lead wire and ground.
- If there is no continuity between the terminals or there is continuity to the ground, inspect the stator coil.

09900-25008: Multi-circuit tester

Tester knob indication: Resistance (Ω)

DATA Generator resistance: 0.15-0.45 Ω



#### GENERATOR NO-LOAD PERFORMANCE

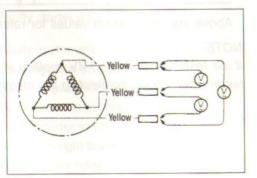
- Disconnect the generator lead wire coupler.
- Start the engine, raise and hold the revolutions at 5 000r/min.
- · Measure voltage between the terminals.
- If the voltage measured is less than the specified limit, replace the stator.

09900-25008 : Multi-circuit tester

Tester knob indication: Voltage (~)

DATA Generator no-load voltage

: More than 56V at 5 000r/min (with engine cold)



# REGULATOR/RECTIFIER INSPECTION

- Remove the front leg shield cover. ( 6-2)
- Disconnect the regulator/rectifier lead wire coupler ①.
- · Measure voltage between the terminals.
- · If the voltage measured is excessively out of specification, replace the regulator/rectifier.

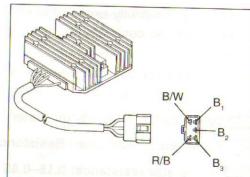
09900-25008: Multi-circuit tester

Tester knob indication: Diode test (┤◀-)



	-			
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			Teste	r probe+		
(1)		B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	R/B	B/W
be	B,		1.5	1.5	1.5	0.4-0.7
probe(	B <sub>2</sub>	1.5		1.5	1.5	0.4-0.7
	B <sub>3</sub>	1.5	1.5		1.5	0.4-0.7
Tester	R/B	0.4-0.7	0.4-0.7	0.4-0.7		0.5-1.2
	B/W	1.5	1.5	1.5	1.5	



Above are approximate values for reference purpose.

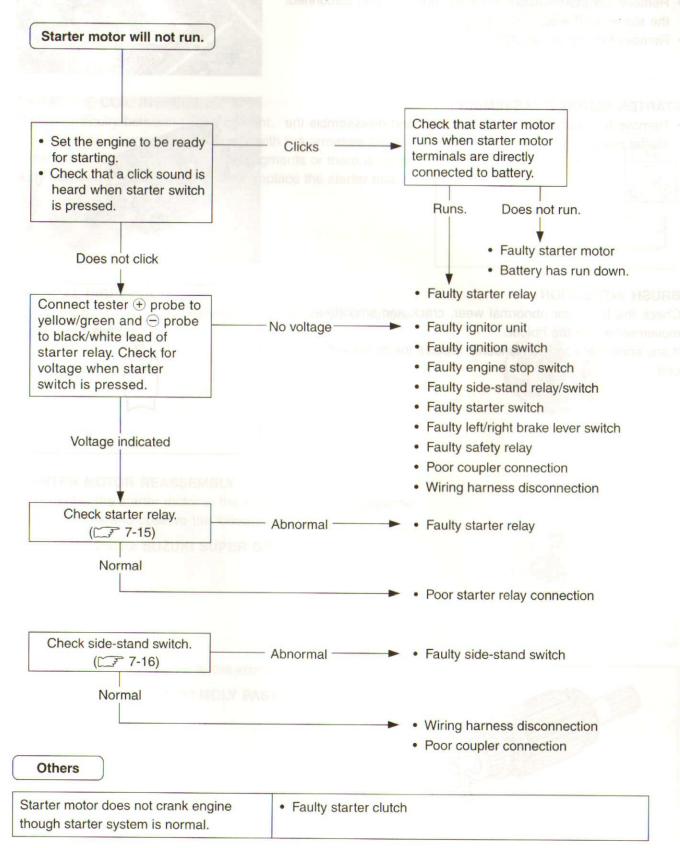
#### NOTE:

If the tester read under 1.4V, replace the battery of multi circuit tester when do not connecting the tester probes.

# STARTER SYSTEM TROUBLESHOOTING

NOTE:

Before troubleshooting, check the fuse and battery.



# **INSPECTION (STARTER SYSTEM)**

#### STARTER MOTOR REMOVAL

- Remove the center, left and right frame covers. ( 6-2)
- Remove the air cleaner. ( 3-3)
- Remove the starter motor mounting bolts ① and disconnect the starter lead wire.
- Remove the starter motor.



#### STARTER MOTOR DISASSEMBLY

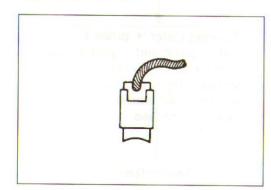
· Remove the starter motor housing bolts and disassemble the starter motor.



#### **BRUSH INSPECTION**

Check the brush for abnormal wear, crack and smoothness of movement inside the holder.

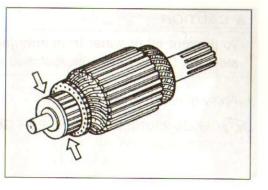
If any abnormal condition is found, replace the brush with a new one.



#### ARMATURE INSPECTION

Check the commutator surface for discoloration and abnormal wear.

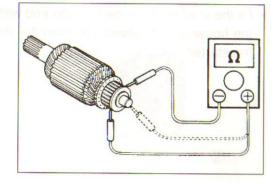
If abnormal wear is noted, replace the starter motor. If discolored, polish the surface with #400 polish paper and wipe clean with a dry cloth.



#### ARMATURE COIL INSPECTION

Check continuity between each segment.

Check that no segment has continuity with the armature shaft. If there is no continuity between the segments or there is continuity between the segment and shaft, replace the starter motor.



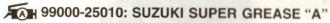
#### OIL SEAL INSPECTION

Check the oil seal lip for any damage. If damage is found, replace the housing end.



#### STARTER MOTOR REASSEMBLY national bas alled prisude reference and of

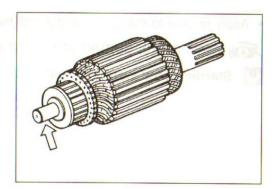
Reassemble the starter motor in the reverse order of disassembly procedures and observe the following points.





Apply a little MOLY PASTE to the armature shaft end.

99000-25140: SUZUKI MOLY PASTE



#### 7-14 ELECTRICAL SYSTEM

#### **A** CAUTION

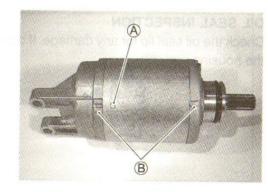
To prevent oil or water from entering into the motor inside, the O-rings must be replaced with new ones.

· Apply grease to the O-ring.

99000-25010: SUZUKI SUPER GREASE "A"

 Fit the washer ① to the housing end with the tab aligned with the housing end cutaway, position the shim ② and assemble the starter motor.





- Fit the O-rings to the starter motor housing bolts and tighten the bolts.
- Starter motor housing bolt: 3.7 N·m (0.37 kgf·m)

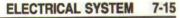


· Apply grease to the O-ring and install the starter motor.

99000-25010: SUZUKI SUPER GREASE "A"

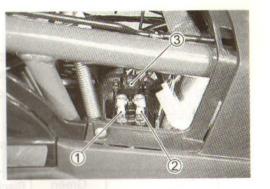
Starter motor mounting bolt: 7 N·m (0.7 kgf·m)





#### STARTER MOTOR RELAY

- Remove the frame cover. ( 6-2)
- · Disconnect the starter motor relay coupler 3.
- Disconnect the starter motor lead wire ① and battery ① lead wire ② from the starter motor relay.

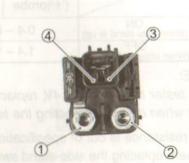


Check there is continuity between the terminals ① and ② when 12V battery voltage is applied to the terminals ③ and ④. At this time, if a click sound is heard and continuity exists, the relay coil is in normal condition.

In the case of no continuity, replace the relay.

09900-25008: Multi-circuit tester



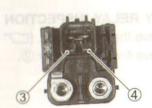


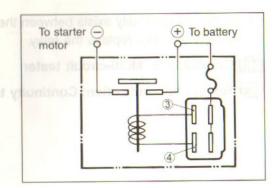
Measure resistance across the coil (between terminals ③ and ④).

09900-25008: Multi-circuit tester

Tester knob indication: Resistance  $(\Omega)$ 

DATA Starter relay resistance: 1-7 Ω





#### 7-16 ELECTRICAL SYSTEM

#### SIDE-STAND SWITCH

• Remove the frame cover. ( 6-2)

Disconnect the side-stand switch coupler ①.

Check for continuity with the tester ⊕ probe connected to green lead and the ⊖ probe to black/white lead.

09900-25008: Multi-circuit tester

Tester knob indication: Diode test (→

	Green (+)probe	Black/White (⊝)probe		
ON (When side-stand is up)	0.4 -	0.6 V		
OFF (When side-stand is down)				

#### NOTE:

If the tester read under 1.4V, replace the battery of multi circuit tester when do not connecting the tester probes.

If the resistance is out of specification, replace the switch.

 When replacing the side-stand switch, apply thread lock to the mounting screw threads.



## SAFETY RELAY INSPECTION

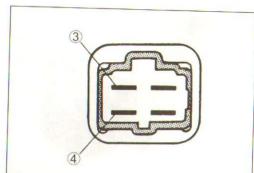
- Remove the helmet box. ( 6-2)
- Remove the safety relay 2.



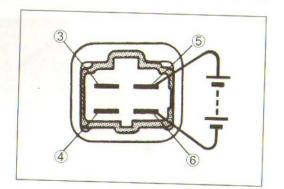
Check that no continuity exists between the terminals ③ and ④. If continuity is found, replace the relay.

09900-25008: Multi-circuit tester

Tester knob indication: Continuity test (\*1))



Check there is continuity between the terminals ③ and ④ when 12V battery voltage is applied; positive to the terminal ⑤ and negative to the terminal ⑥. If no continuity is noted, the relay must be replaced.





- Remove the front leg shield cover. ( 6-2)
- Remove the turn signal relay/side-stand relay ①.

#### TURN SIGNAL RELAY INSPECTION

If the turn signal light does not light, inspection the bulb ( 7-26), turn signal switch ( 7-28) and circuit connection.

If the bulb, turn signal switch and circuit connection checked are all right, the turn signal relay may be faulty, replace it with a new one.

#### NOTE:

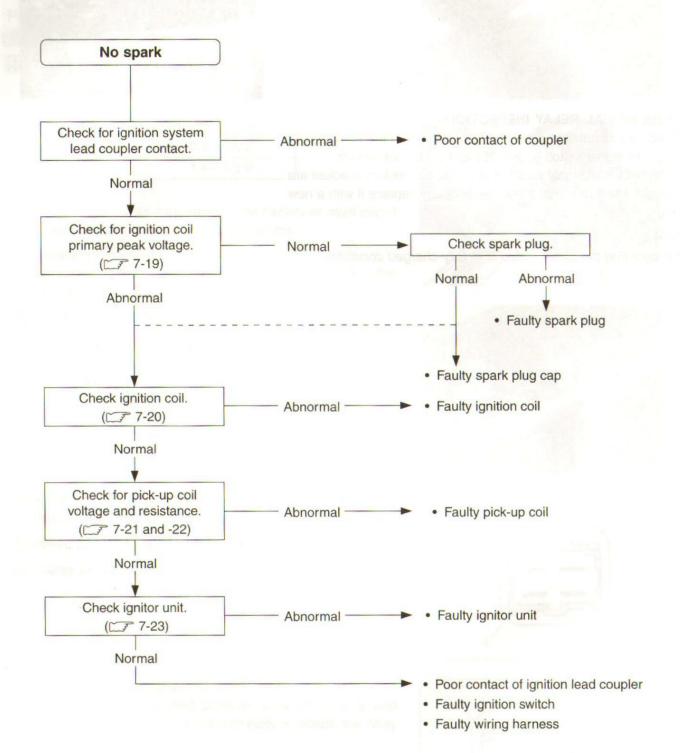
Be sure that the battery used is in fully-charged condition.



**ELECTRICAL SYSTEM** 

#### ELECTRICAL SYSTEM 7-19

# TROUBLESHOOTING



## INSPECTION (IGNITION SYSTEM)

#### IGNITION COIL PRIMARY PEAK VOLTAGE

- Remove the frame cover. ( 6-2)
- · Disconnect the spark plug cap.
- Remove the spark plug. ( 2-4)

#### NOTE:

- \* Check that all the couplers are connected.
- \* Check that the battery is fully chared.

Measure the ignition coil primary peak voltage in the following procedures.

 With the spark plug cap connected, place a new spark plug on the chassis or engine to ground it.





 Fit the peak volt adapter to Multi-circuit tester and connect the tester as follows.

Ignition coil :  $\bigoplus$  probe  $\rightarrow$  White :  $\bigoplus$  probe  $\rightarrow$  White

09900-25008: Multi-circuit tester

Tester knob indication: Voltage (---)

 Crank the engine for few seconds by pressing the starter button and measure ignition coil primary peak voltage.
 Repeat the above procedure a few times and measure the highest ignition coil primary peak boltage.

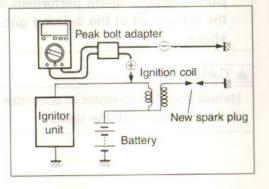
DATA Ignition coil primary prak voltage: More than 200 V (With fully charged battery)

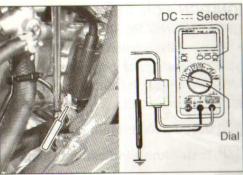


To prevent electric shock, avoid contacting the spark plug or tester probe.

#### NOTE:

If voltage is less than the specification, inspect the ignition coil, signal generator and ignitor unit.





# IGNITON COIL INSPECTION (USING ELECTRO-TESTER)

• Remove the frame cover. ( 6-2)

• Remove the ignition coil. ( 3-12)

Check for any damage on the high-tension cord, its connection and ignition coil.

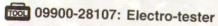


Check that the 3-prong gap is set to 8 mm.

Connect the tester as shown.

 $\oplus$   $\rightarrow$  Orange/white,  $\ominus$   $\rightarrow$  White

If, in this test, spark is not produced or is weak and reddish, replace the ignition coil.

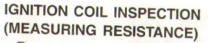


#### **A WARNING**

- \* Use caution not to cause external electrical leak.
- \* During testing spark performance, avoid contacting the metal part of the 3-prong gap to prevent electric shock.

#### **A** CAUTION

Handle the electro-tester in accordance with the instructions supplied with the tester.



Remove the ignition coil. ( 3-7)

Measure resistance between the primary coil terminals.

Measure resistance between the positive primary coil terminal and spark plug cap.

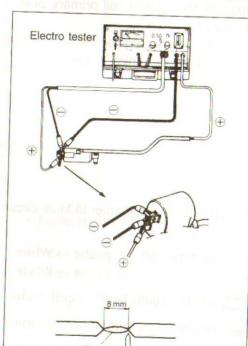
09900-25008: Multi-circuit tester

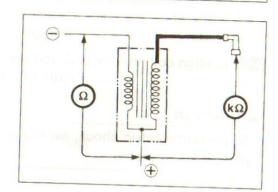
Tester knob indication: Resistance  $(\Omega)$ 

DATA Ignition coil resistance:

Primary: 3-5 Ω

Secondary coil: 17-30 kΩ





# SIGNAL GENERATOR

(USING MULTI-CIRCUIT TESTER)

- Remove the helmet box. ( 6-2)
- Disconnect the ignitor unit coupler ①.
- · Remove the spark plug.



 With the peak volt adapter fitted, connect the multi-circuit tester to the coupler.

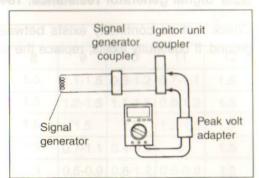
Connection: ⊕ probe → Black/white, ⊕ probe → Blue

09900-25008: Multi-circuit tester

 Crank the engine for a few seconds by pressing the starter button and measure the peak voltage of the signal generator.

Tester knob indication: Voltage (---)

Signal generator peak voltage: More than 2.4 V
(With fully charged battery)



#### NOTE:

If the measurement is out of specification, perform the same inspection at the signal generator coupler.

- Remove the helmet box. ( 6-2)
- Disconnect the signal generator coupler.
- · Measure the signal generator peak voltage.

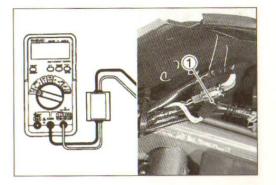
Connection: 

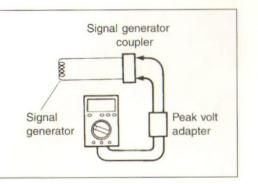
probe → Green, 

Probe → Blue

#### NOTE:

If the voltage is at the specification, the probable cause will be faulty wiring harness between signal generator and ignitor unit couplers. If the voltage is out of specification, replace the signal generator or redo the inspection.







## 7-22 ELECTRICAL SYSTEM

# SIGNAL GENERATOR RESISTANCE

• Remove the helmet box. ( 6-2)

· Disconnect the signal generator coupler.

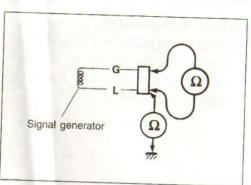
Measure resistance between the lead wires. (Blue  $\leftrightarrow$  Green) If the resistance measured is out of specification, replace the signal generator.

09900-250080: Multi-circuit tester

Tester knob indication: Resistance  $(\Omega)$ 

DATA Signal generator resistance: 184–276  $\Omega$ 

Check that no continuity exists between the lead wires and ground. If coutinuity exists, replace the signal generator.



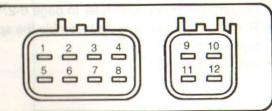
ELECTRICAL SYSTEM 7-23

#### IGNITOR UNIT (USING MULTI-CIRCUIT TESTER)

Rremove the helmet box. ( 6-2)
 Use Multi-circuit tester to measure voltage between the terminals.

09900-25008: Multi-circuit tester

Tester knob indication: Diode test (→



Unit: V

													OTIL.
	Walter Har		NO.			Test	er 🕀 pro	obe	meat to	milian n	an iron		
		1	2	3	4	5	6	7	8	9	10	11	12
	1		1.5	1.5	0.7-1.1	0.9-1.5	1.5	1.5	1.5	1.1-1.5	0.8-1.2	0.7-1.1	1.5
	2	1.5		1.5	0.8-1.2	1.0-1.4	1.5	1.5	1.5	1.2-1.5	1.1-1.5	0.8-1.2	1.5
	3	1.5	1.5		1.2-1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.2-1.5	1.5
e	4	1.0-1.4	1.5	1.2-1.5		0.5-0.9	1.2-1.5	1.0-1.4	1.5	0.7-1.1	0.4-0.8	0	1.5
probe	5	1.1-1.5	1.5	1.5	0.5-0.9		1.5	0.9-1.3	1.5	0.5-0.9	0.8-1.2	0.5-0.9	1.5
1	6	1.5	1.5	1.5	1.1-1.5	1.2-1.5		1.5	1.5	1.5	1.5	1.1-1.5	1.5
Tester	7	1.2-1.5	1.5	1.5	0.3-0.7	0.8-1.2	1.5		1.5	1.0-1.4	0.8-1.2	0.3-0.7	1.5
Tes	8	1.5	1.5	1.5	0.6-1.0	0.8-1.2	1.5	1.5		1.1-1.5	1.0-1.4	0.7-1.0	1.5
ŀ	9	1.5	1.5	1.5	1.5	1.5	1.5	0.5-0.9	1.5		1.5	1.5	1.5
	10	0.7-1.1	1.5	1.5	0.2-0.6	0.7-1.1	1.2-1.5	1.2-1.5	1.5	0.9-1.3		0.2-0.6	1.5
	11	1.0-1.4	1.5	1.5	0		1.2-1.5	1.0-1.4	1.5	0.7-1.1	0.4-0.8		1.5
	12	1.2-1.5	1.5	1.5		0.6-1.0		1.2-1.5	1.5	0.8-1.2	0.8-1.2	0.3-0.7	

#### SPEEDOMETER

# REMOVAL AND DISASSEMBLY

- · For removal procedure, refer to page 6-2.
- · Remove the screw and disassemble the speedometer assembly.
- · Remove the bulbs.



#### INSPECTION

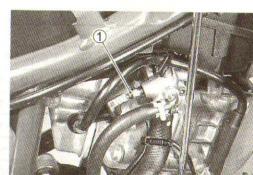
#### WATER TEMPERATURE GAUGE INSPECTION

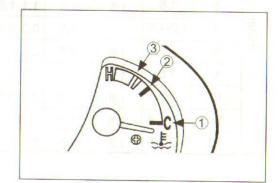
- For the inspection procedure: 5-7
- Remove the frame cover. ( 6-2)
- Disconnect the water temperature gauge terminal ①.

With the ignition switch turned on and a variable resister connected between the black/green lead and ground, check for the water temperature gauge needle indication when the resistance is adjusted to the specified values.

If the indication excessively deviates from the standard value, replace the water temperature gauge.

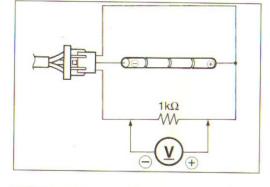
Water	temperature ga	uge needle indi	cation
Resistance $\Omega$	Approx. 152 Ω	Approx. 39 Ω	Approx. 18 Ω
Needle position	1	2	3
Water temperature	Approx. 60°C	Approx. 100°C	Approx. 124°C

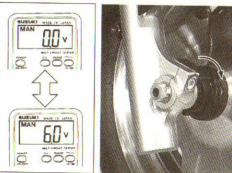




#### SPEED SENSOR INSPECTION

- Disconnect the speed sensor coupler.
- Connect four 1.5V dry cells,  $1k\Omega$  resistance and the tester to the speed sensor lead coupler as shown.
- 09900-25008: Multi-circuit tester
- Tester knob indication: Voltage (==)
- · Lift and turn the front wheel and check that voltage varies between 0-6 V.
- · If any abnormal condition is noted, replace the sensor.

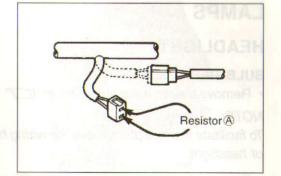




#### **FUEL LEVEL METER**

- Remove the rear leg shield. ( 6-2)
- Disconnect the fuel level gauge coupler. ( 5-2)

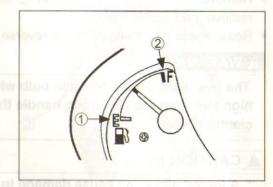
Check that the fuel level meter moves properly when the resistor is connected between the fuel level gauge coupler terminals.



#### NOTE:

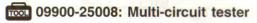
- \* Prior to this inspection, check that the fuel gauge is functioning properly.
- \* When reading the meter indication, wait at least for 20 seconds after the resistor has been connected.

Resistor A	Meter indication
Approx. 103 Ω	1
Approx. 5 Ω	2



#### **BRAKE LOCK SWITCH**

- Remove the front box. ( 6-2)
- · Check there is continuity between the terminals, when pulling the brake lock lever. If no continuity is noted, it must be replaced.



#### RESISTOR

- Remove the front box. ( 6-2)
- Disconnect the connector from the resistor 1, mesure resistance between the terminals.
- · If the resistance measure is out of specification, replace the new one.

DATA Resistor resistance: 7.2-8.8 Ω 09900-25008: Multi-circuit tester

Tester knob indication: Resistance ( $\Omega$ )





#### LAMPS

#### HEADLIGHT

#### **BULB REPLACEMENT**

• Remove the front leg shield cover. ( 6-2)

To facilitate the operation, move the wiring harnesses on the back of headlight.

- · Remove the headlight bulb socket ① and rubber boot, then remove the headlight bulb.
- · Reassemble the headlight in the reverse order of the above.

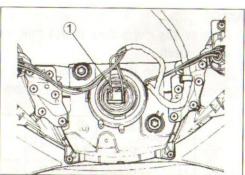
#### A WARNING

The headlight uses a halogen bulb which operates at a high temperature. Therefore, handle the bulb after sufficiently cooled.

#### **A** CAUTION

- \* A fouled glass can cause damage to the bulb when lit. If the bulb is contacted with bare hand, wipe clean with a cloth damped with alcohol or detergent.
- \* Do not use the bulb of a wattage other than specifica-
- \* When installing the rubber boot, turn its "TOP" mark pointing upward.

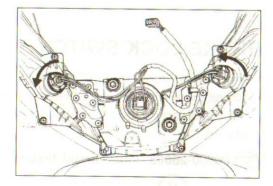


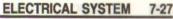


#### FRONT TURN SIGNAL LIGHT

#### **BULB REPLACEMENT**

- · Similar to the headlight replacement procedure, remove the front leg shield cover.
- · Turn the light socket and remove the front turn signal light bulb.





#### **REAR COMBINATION LIGHT/REAR TURN** SIGNAL LIGHT

#### **BULB REPLACEMENT**

- · Loosen the screws.
- · Remove the rear combination light lens and rear turn signal light lenses (2 pcs).
- · Remove the rear combination light bulbs ① and rear turn signal light bulbs 2.
- · To reassemble, reverse the above sequence.





## **SWITCHES**

#### **IGNITION SWITCH REMOVAL**

- Remove the front box. ( 6-2)
- · Disconnect the coupler.
- Loosen the bolt 1, nut 2 and Torx bolt 3.



09930-11930: Torx bit (JT30H) 09930-11940: Bit holder

Bolt, nut: 10 N·m (1.0 kgf-m)

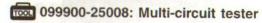
NOTE:

For removal procedure of ignition switch shutter, refer to "FRONT BOX REMOVAL". ( 6-2)



Check for continuity between each terminal.

If any abnormal condition is noted, replace the switch.



#### **IGNITION SWITCH**

Color	R	0	O/Y	B/W	Gr	Br
ON	0-	-0	0		0—	-0
OFF						
LOCK		15	144			
Р	0			000		-0

#### DIMMER SWITCH

Color	W	Υ	Y/W
HI(≣O)	7	0	0
LO(≦0)	0		0

#### PASSING LIGHT SWITCH

Color	O/R	Υ
•		
PUSH	0	

#### **ENGINE STOP SWITCH**

Color	O/B	O/W
OFF (XX)		
RUN(())	0	0

#### STARTER BUTTON

Color	B/L	Y/G
•		1500
PUSH (\$)	0	0

#### TRUNK BOX LIGHT SWITCH

Color	R	B/W
	0	0
PUSH		

#### HORN BUTTON

Color	B/L	B/W
•		
PUSH	0	

#### FRONT BRAKE SWITCH

Color	B/L	B/R
OFF		
ON	0	0

#### **REAR BRAKE SWITCH**

Color	B/R	B/G
OFF		1 7
ON	0	

#### BRAKE-LOCK SWITCH

Color	O/G	V
ON	0	
OFF		

#### LIGHTING SWITCH

Color	O/L	Gr	O/R	Y/W
OFF(●)				
(ED QE)	0			
ON (∹៉ू-)	0		0	

#### TURN SIGNAL SWITCH

Color	Lg	Sb	В
L (⇔)	The state of	0	
PUSH		1200	TO SHIP TO
R (⇔)	0		AN Ker

#### WIRE COLOR

В	: Black	Sb	: Light blu	ie	R	: Red	
Br	: Brown	Lg	: Light gre	en	Y	: Yellow	
Gr	: Gray	0	: Orange		W	: White	
B/L	: Black with Blu	e tra	acer		V	: Violet	
B/R	: Black with Re	d tra	cer	O/G	: Orange v	vith Green t	racer
B/Y	: Black with Yell	ow t	racer	O/Y	: Orange v	vith Yellow	
B/W	: Black with Wh	ite ti	racer	O/W	: Orange v	vith White tr	racer
G/Y	: Green with Ye	llow	tracer	W/B	: White wit	h Green tra	cer
O/B	: Orange with E	Black	tracer	Y/G	: Yellow wit	th Green tra	acer
O/L	: Orange with E	lue t	tracer	Y/W	: Yellow w	ith White tra	acer

#### **ELECTRICAL SYSTEM 7-29**

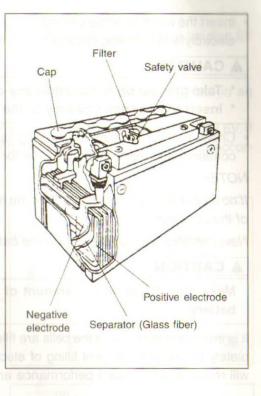
#### **BATTERY**

#### CONSTRUCTION

This motorcycle uses an MF (Maintenance Free) battery. As shown in the right illustration, the battery consists of electrodes, separators, safety valve, filter, etc. Fine glass fiber is used for constructing the separator which holds electrolyte inside.

When a discharged conventional open type battery is recharged fully, lead sulfate turns to lead dioxide and sponge-like lead. If recharging is further continued, charging current is consumed for electrolytic action producing oxygen gas from the positive and hydrogen gas from the negative electrodes. This causes electrolyte to be lost thereby requiring addition of water.

In an MF battery, however, no water loss is caused. In this battery, the negative electrode is designed not to fully turn to lead (sponge-like lead) even under fully charged condition. For this reason, the negative electrode remains always in non-complete charged condition producing no hydrogen gas. Oxygen gasses produced at the positive electrode will immediately react with an active material (lead) at the negative electrode to turn back to water, thus preventing water from losing.



#### PRECAUTION WHEN HANDLING BATTERY ELECTROLYTE

- Take utmost care so as not to cause battery acid to contact a person and the vehicle.
- If battery acid has contacted the skin, clothes or vehicle, immediately flush with plenty of water. If battery
  acid remains contacted, burns of skin, damage to clothes, peeling or discoloration of paint will occur.
- Should battery acid gets in eyes, immediately flush with plenty of water and call physician.

#### **ELECTROLYTE FILLING**

#### A CAUTION

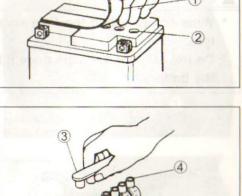
Make sure to use electrolyte specified for each battery type.

Using electrolyte designed for other battery type can cause electrolyte leak, performance deterioration or shortened life.

- Remove the aluminum tape ① sealing the battery electrolyte filler holes ②.
- Remove the cap ③ from the electrolyte container.

#### **▲ CAUTION**

- \* Handle the removed cap carefully after filling electrolyte as the cap is reused for sealing the battery filler holes.
- \* Do not remove or pierce the sealed areas ④ of the electrolyte container.



#### 7-30 ELECTRICAL SYSTEM

 Insert the nozzles of the electrolyte container into the battery's electrolyte filler holes, holding the container securely.

#### A CAUTION

- \* Take precaution not to allow any of the fluid to spill.
- \* Insert the nozzles squarely to the battery.
- Check that air bubbles are coming up from each electrolyte container and leave in this position for more than 20 minutes.

#### NOTE:

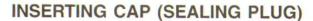
If no air bubbles are coming up from the filler port, tap the bottom of the container two or three times.

Never remove the container from the battery.

#### **A** CAUTION

Make sure to fill all the amount of electrolyte into the battery.

It is important to check all the cells are filled with electrolyte completely because insufficient filling of electrolyte in even one cell will result in deteriorated performance and shortened life.



#### A CAUTION

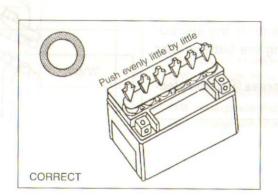
#### Fit the cap securely.

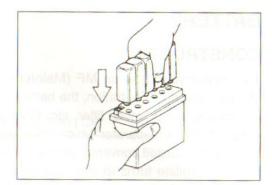
To install the cap, temporarily fit the cap to all the cells lightly, thereafter press the cap little by little into each filler hole evenly and horizontally.

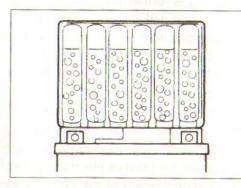
Inserting the cap at once in one cell and then in the next cell will cause the cap to deform resulting in poor sealing.

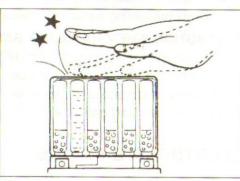
#### **A** CAUTION

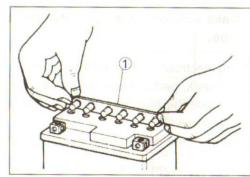
- \* Wipe completely if the filler hole is wet with electrolyte.
- \* Do not remove the caps once it has been installed to the battery.

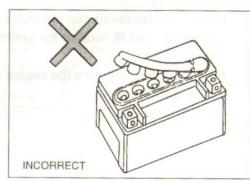












#### PRECAUTION FOR HANDLING BATTERY

The battery produces combustible gasses and therefore can explode if handled improperly. Use caution for the following in addition to general service precautions.

- Never allow the battery to short-circuit. Keep away from sparks and fire.
- Charging of the battery must be operated in an open and well ventilated area and never operate in an closed indoor.
- Using the tester, measure the battery terminal voltage. The tester should indicate more than 12.5–12.6V. If
  the battery voltage is lower than the specification, recharge the battery with a battery charger in accordance with the following instructions.

#### NOTE:

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

#### RECHARGING

- Using the tester, check the battery voltage. If the voltage reading is less than the 12.0V, recharge the battery with a battery charger.
- When recharging the battery, remove the battery from the motorcycle.
- · Practice the standard charging unless otherwise necessary.

Recharging		
Standard 0.9A × 5–10 hours		
Quick	4A ×1 hour	

- 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 in the same condition. If battery voltage is still less than 12.5V after recharging, replace the battery with a new one.

#### NOTE:

When the motorcycle is not used for a long period, check the battery every 1 month to prevent the battery from deterioration.

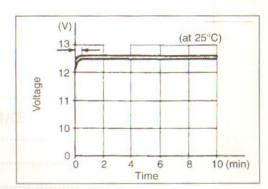
#### **A** CAUTION

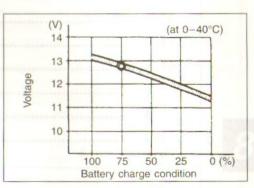
The charging system on this model is designed for MF battery and therefore do not use a battery of other specification.

#### BATTERY REMOVAL

- 1. Open the front trunk.
- 2. Remove the battery cover 1.
- 3. Disconnect the battery 

  lead first.
- 4. Disconnect the battery + lead.
- 5. Remove the battery.









# SERVICING INFORMATION

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#### 8-2 SERVICING INFORMATION

# **TROUBLESHOOTING**

# ENGINE

Complaint	Symptom and possible causes	Remedy
Engine will not start,	Compression too low	
or is hard to start.	Out of adjustment valve clearance.	Adjust.
	2. Worn valve guides or poor seating of valves.	Repair or replace.
	3. Mistiming valves.	Adjust.
	Excessively worn piston rings.	Replace.
	5. Worn-down cylinder bore.	Replace or rebore.
	<ol><li>Too slowly starter motor cranks.</li></ol>	See electrical section.
	7. Poor seating of spark plug.	Retighten.
	Plugs not sparking	10031940
	Fouled spark plug.	Clean.
	2. Wet spark plug.	Clean and dry.
	3. Defective ignition coil.	Replace.
	4. Open or short in high-tension cord.	Replace.
	<ol><li>Defective pick-up coil or ignitor unit.</li></ol>	Replace.
	No fuel reaching the carburetor	DITAPIB ALL
	1. Clogged hole in the fuel tank cap.	Clean or replace.
	Clogged or defective fuel tank pressure control valve.	Clean or replace.
	Defective carburetor needle valve.	Replace.
	Clogged fuel hose or fuel filter.	Clean or replace.
Engine stalls easily.	1. Fouled spark plug.	Clean.
	2. Defective to pick-up coil or ignitor unit.	Replace.
	3. Clogged fuel hose or fuel tank cap.	Clean or replace.
	Clogged jets in carburetor.	Clean.
	5. Out of adjustment valve clearance.	Adjust.
Noisy engine.	Excessive valve chatter	DOT LIVETON
tere, engine	Too large valve clearance.	Adjust.
	Weakened or broken valve springs.	Replace.
	Worn rocker arm or cam surface.	Replace.
	4. Worn and burnt camshaft journal.	Replace.
	Noise seems to come from piston	AMP BOILTINE
	Worn down piston or cylinder.	Poplace
	Fouled with carbon combustion chamber.	Replace.
	Worn piston pin or piston pin bore.	Replace.
	Worn piston rings or ring grooves.	Replace.
		riepiace.
	Noise seems to come from timing chain	D. J.
	Stretched chain.     Worn sprockets.	Replace.
	Worn sprockets.     Not working tension adjuster.	Replace.
		Repair or replace.
	Noise seems to come from clutch	
	Worn or slipping drive belt.	Replace.
	<ol><li>Worn rollers in the movable drive face.</li></ol>	Replace.
	Noise seems to come from crankshaft	
	Due to wear rattling bearings.	Replace.
	<ol><li>Worn and burnt big-end bearing.</li></ol>	Replace.
	<ol><li>Worn and burnt journal bearings.</li></ol>	Replace.
	Too large thrust clearance.	Replace.

Complaint	Symptom and possible causes	Remedy
Noisy engine.	Noise seems to come from transmission	Remembre entent
	1. Worn or rubbing gears.	Replace.
	2. Badly worn splines.	Replace.
	3. Badly worn bearings.	Replace.
Slipping clutch.	Worn or damaged clutch shoes	Replace.
	2. Weakened clutch shoe springs.	Replace.
	3. Worn clutch housing.	Replace.
	4. Worn or slipping drive belt.	Replace.
Engine idles poorly.	Out of adjustment valve clearance.	Adjust.
Remedy	2. Poor seating of valves.	Replace or repair.
	3. Defective valve guides.	Replace.
	4. Worn rocker arm or cam surface.	Replace.
	5. Too wide spark plug gap.	Adjust or replace.
	6. Defective ignition coil.	Replace.
	Defective lighthor coil.     Defective pick-up coil or ignitor unit.	Replace.
		Adjust.
2 11100000000	Out of adjustment in carburetor float-chamber fuel level.	
Engine runs poorly	1. Weakened valve springs.	Replace.
in high speed range.	2. Worn camshaft.	Replace.
	Valve timing out of adjustment.	Adjust.
	4. Too narrow spark plug gap.	Adjust.
	<ol><li>Ignition not advanced sufficiently due to poorly working timing advance circuit.</li></ol>	Replace ignitor unit.
	6. Defective ignition coil.	Replace.
	7. Defective pick-up coil or igntior unit.	Replace.
	8. Too low float-chamber fuel level.	Adjust.
	9. Clogged air cleaner element.	Clean.
	10. Clogged fuel hose, resulting in inadequate fuel supply	Clean and prime.
	to carburetor.	Tag
	11. Defective fuel tank cap.	Replace.
Dirty or heavy	1. Too much engine oil in the engine.	Check with inspection
exhaust smoke.	Check	window drain out
	near the second of the second	excess oil.
	2. Worn piston rings or cylinder.	Replace.
	3. Worn valve guides.	Replace.
	Scored or scuffed cylinder wall.	Rebore or replace.
	5. Worn valves or stems.	Replace.
	6. Defective stem seals.	Replace.
	7. Worn oil ring side rails.	Replace.
Engine lacks power.	1. Loss of valve clearance.	Adjust.
Lingine lacks power.	2. Weakened valve springs.	Replace.
	3. Out of adjustment valve timing.	Adjust.
	Worn piston rings or cylinder.	Replace.
	5. Poor seating of valves.	Repair.
	6. Fouled spark plug.	Clean or replace.
	7. Incorrect spark plug.	Adjust or replace.
		Clean.
	Clogged jets in carburetor.     Out of adjustment float chamber fuel level.	Adjust.
	Out of adjustment float-chamber fuel level.	
	10. Clogged air cleaner element.	Clean.
	11. Slipping or worn drive belt.	Replace.
	12. Sucking air from intake pipe.	Retighten or replace.
	13. Too much engine oil.	Drain out excess oil.
	14. Defective fuel pump or ignitor unit.	Replace.

SERVICING	INICODA	MOITA
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8-5

#### Complaint Symptom and possible causes Remedy 1. Heavy carbon deposit on piston crown. Engine overheats. Clean. 2. Not enough oil in the engine. Add oil. 3. Defective oil pump or clogged oil circuit. Replace or clean. 4. Too low in float chambers fuel level. Adjust. Sucking air from intake pipe. Retighten or replace. Use incorrect engine oil. Change. 7. Clogged air intake with dust. Clean.

# **CARBURETOR**

Complaint	Symptom and possible causes	Remedy	
Trouble with tarting.	<ol> <li>Clogged enrichener (choke) jet.</li> <li>Clogged fuel pipe.</li> <li>Clogged enrichener (choke) air passage.</li> <li>Air leaking from carburetor's joint.</li> <li>Not operation properly enrichener (choke) plunger.</li> </ol>	Clean. Clean. Clean. Check and adjust. Check and adjust or replace.	
Idling or low-speed trouble.	<ol> <li>Clogged or loose pilot jet, pilot air jet.</li> <li>Air leaking from carburetor's joint or enrichener (choke).</li> <li>Clogged pilot outlet or bypass.</li> <li>Not fully closed enrichener (choke) plunger.</li> </ol>	Check and clean.  Check and adjust.  Check and clean.  Check and adjust.	
Medium- or high speed trouble.	ledium- or high  1. Clogged main jet or main air iet.		
Overflow and fuel level fluctuations.	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.	Replace.  Replace. Replace. Check and adjust. Clean. Adjust float height.	

# CHASSIS

Complaint	Symptom and possible causes	Remedy	
Heavy steering.	1. Overtightened steering stem nut. 2. Broken bearing in steering stem. 3. Distorted steering stem. 4. Not enough pressure in tires.		
Wobbly handlebars.	Loss of balance between right and left front forks.     Distorted front fork.     Distorted front axle or crooked tire.	Replace. Repair or replace. Replace.	
Wobby front wheel.	1. Distorted wheel rim. 2. Worn front wheel bearings. 3. Defective or incorrect tire. 4. Loose axle. 5. Incorrect front fork oil level.	Replace. Replace. Replace. Retighten. Adjust.	
Front suspension too soft.	Weakened springs.     Not enough fork oil.	Replace. Replenish.	
Front suspension too stiff.	Too viscous fork oil.     Too much fork oil.	Replace. Drain excess oil.	
Noisy front suspension.	Not enough fork oil.     Loose bolts on suspension.	Replenish. Retighten.	
Wobbly rear wheel.	1. Distorted wheel rim. 2. Worn rear wheel bearing. 3. Defective or incorrect tire. 4. Worn crankcase bushing. 5. Loose axle nut or engine mounting bolts/nuts.	Replace. Replace. Replace. Replace. Retighten.	
Rear suspension too soft.	Weakened shock absorber spring.     Leakage oil of shock absorber.	Replace.	
Rear suspension too stiff.	1. Worn crankcase bushing.	Replace.	
Noisy rear suspension.	Loose nuts or bolts on engine mounting.     Worn crankcase bushing.     Loose bolts on shock absorber	Retighten. Replace. Retighten.	

# BRAKES

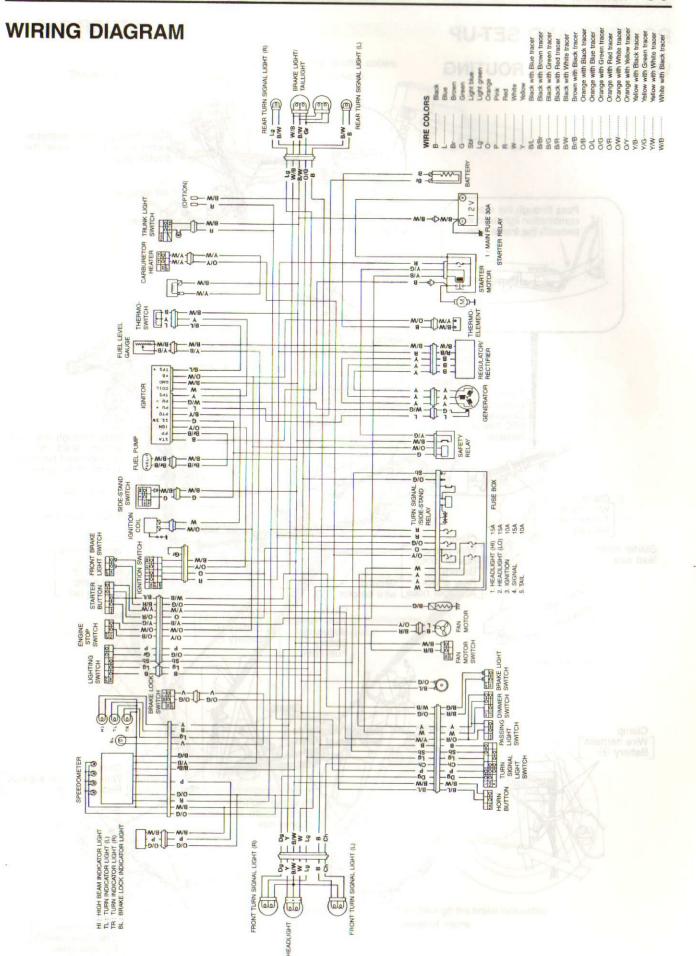
Complaint	Symptom and possible causes qmy8	Remedy
Insufficient brake power.	1. Leakage of brake fluid from hydraulic system. 2. Worn pads. 3. Oil adhesion of engaging surface of pads. 4. Worn disc. 5. Air in hydraulic system. 6. Worn shoe. 7. Friction surfaces of pads are dirty with oil or dust. 8. Excessively worn piston or cylinder. 9. Not working properly delay valve.	Repair or replace. Replace. Clean disc and pads. Replace. Bleed air. Replace. Replace. Replace. Replace. Replace. Replace. Replace.
Brake squeaking.		
1. Air in hydraulic system. 2. Insufficient brake fluid. 3. Improper quality of brake fluid.		Bleed air. Replenish fluid to specified level; bleed air. Replace with correct fluid.
Leakage of brake	<ol> <li>Insufficient tightening of connection joints.</li> <li>Cracked hose.</li> <li>Worn piston and/or cup.</li> </ol>	Tighten to specified torque. Replace. Replace piston and/or cup.

# ELECTRICAL

Complaint	Symptom and possible causes	Remedy		
No sparking or poor sparking.	1. Defective ignition coil or ignitor unit. 2. Defective spark plug. 3. Defective pick-up coil. 4. Loose connection of lead wire.	Replace. Replace. Replace. Connect/tighten.		
Spark plug soon become fouled with and carbon.	Mixture too rich.     Idling speed set too high.     Incorrect gasoline.     Dirty element in air cleaner.     Too cold spark plug.	Adjust carburetor. Adjust carburetor. Change. Clean. Replace with hot type plug.		
Spark plug become fouled too soon.	Worn piston rings.     Worn piston or cylinder.     Excessive clearance of valve stem in valve guide.     Worn stem oil seal.	Replace. Replace. Replace. Replace.		
Spark plug electrodes overheat or burn.	<ol> <li>Too hot spark plug.</li> <li>Overheated the engine.</li> <li>Loose spark plug.</li> <li>Too lean mixture.</li> </ol>	Replace.  Replace with cold type plug. Tune up. Retighten. Adjust carburetor.		
Generator does not charge.	<ol> <li>Open or short lead wires, or loose lead connections.</li> <li>Shorted, grounded or open generator coils.</li> <li>Shorted or panctured regulator/rectifier.</li> </ol>	Repair or replace or retighten. Replace. Replace.		
Generator does charge, but charging rate is below the specification.	Lead wires tend to get shorted or open-circuited or loosely connected at terminals.     Grounded or open-circuited stator coils or generator.     Defective regulator/rectifier.     Defective cell plates in the battery.	Repair or retighten.  Replace.  Replace.  Replace the battery.		
Generator overcharges.	Internal short-circuit in the battery.     Damaged or defective resistor element in the regulator/rectifier.     Poorly grounded regulator/rectifier.	Replace the battery. Replace.  Clean and tighten ground connection.		
Unstable charging.	Lead wire insulation frayed due to vibration, resulting in intermittent shorting.     Internally shorted generator.     Defective regulator/rectifier.	Repair or replace.  Replace.  Replace.		
Starter button is not effective.	arter button is not 1. Run down battery.			

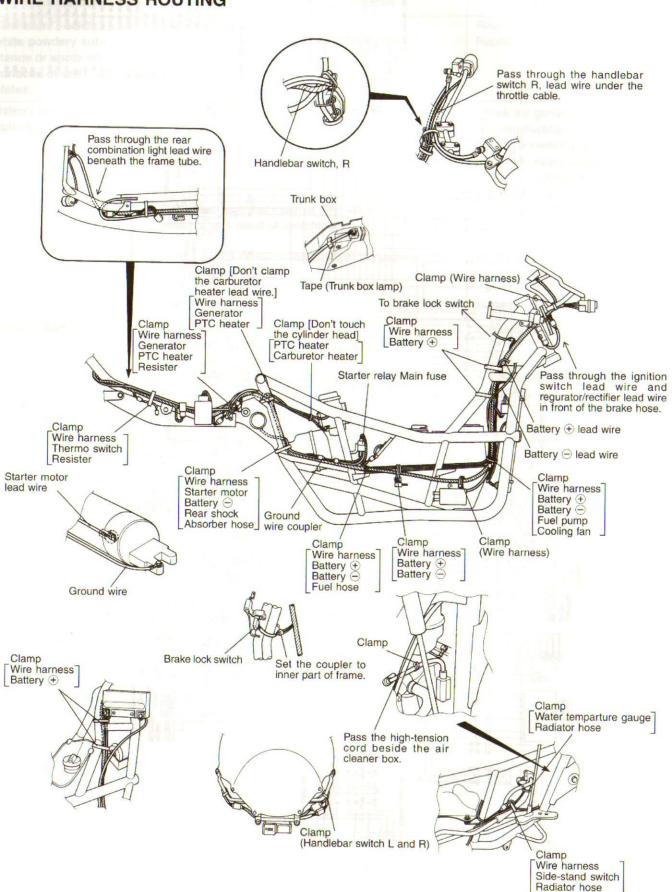
## BATTERY

Complaint	Symptom and possible causes any?	Remedy	
"Sulfation", acidic white powdery substance or spots on surfaces of cell plates.	Cracked battery case.     Battery has been left in a run-down condition for a long time.	Replace the battery. Replace the battery.	
Battery runs down quickly.	Not correct the charging system.      Cell plates have lost much of their active material as a result of overcharging.      A short-circuit condition exists within the battery.     Too low battery voltage.	Check the generator, regulator/rectifier and circuit connections and make necessary adjustments to obtain specified charging operation. Replace the battery, and correct the charging system. Replace the battery. Recharge the battery fully. Replace the battery.	
Battery "sulfation".	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.	Replace the battery.  Replace the battery, if badly sulfated.	
Battery discharges too rapidly.	Dirty container top and sides.	Clean.	

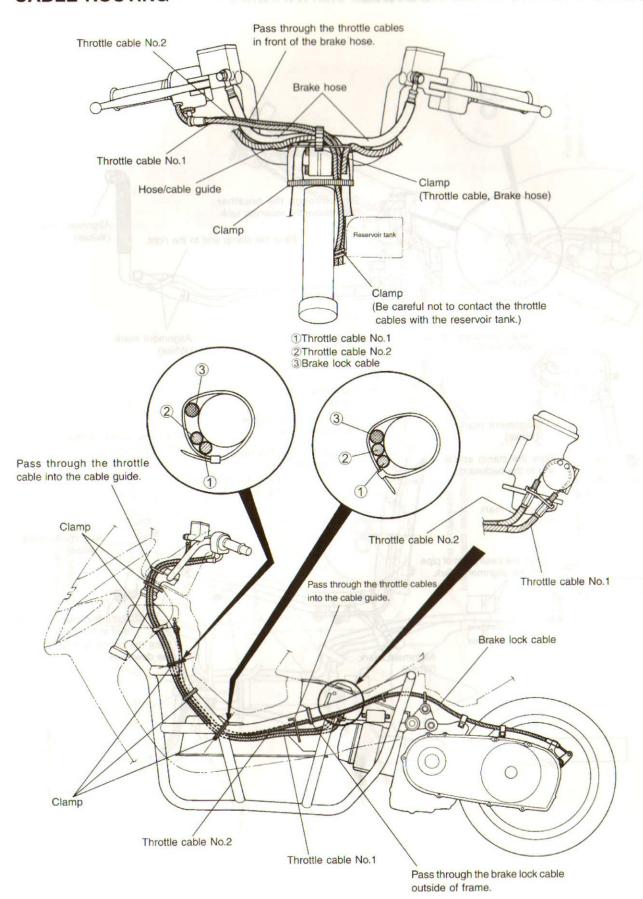


# **ROUTING AND SET-UP**

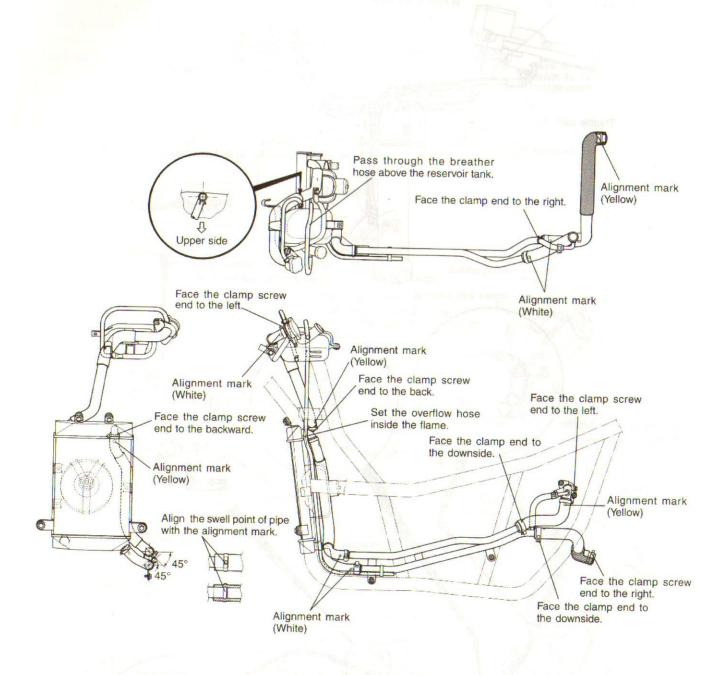
# WIRE HARNESS ROUTING



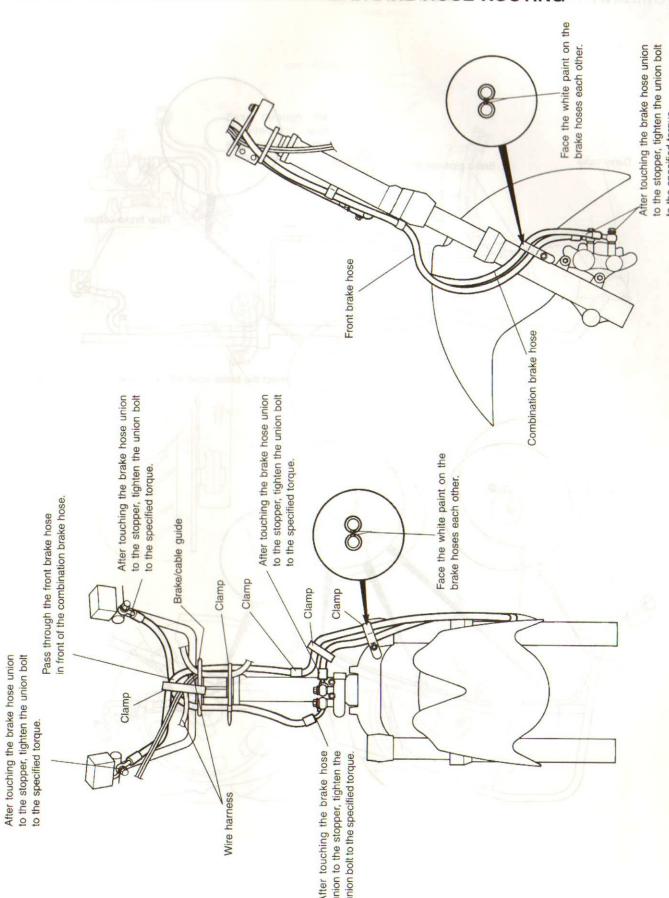
#### **CABLE ROUTING**



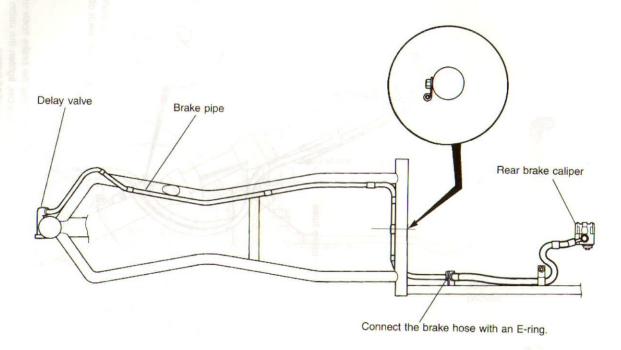
# **COOLING SYSTEM HOSE ROUTING**

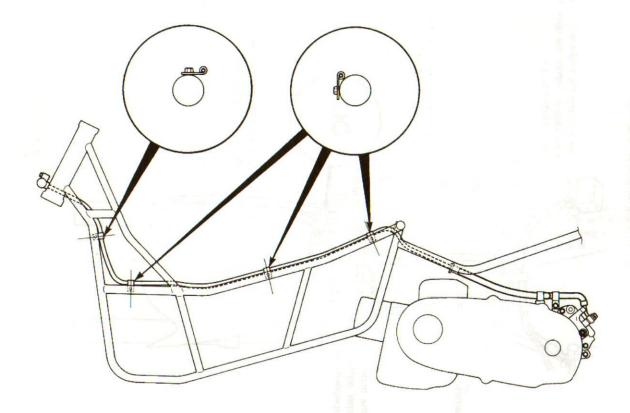


# FRONT BRAKE HOSE/COMBINATION BRAKE HOSE ROUTING

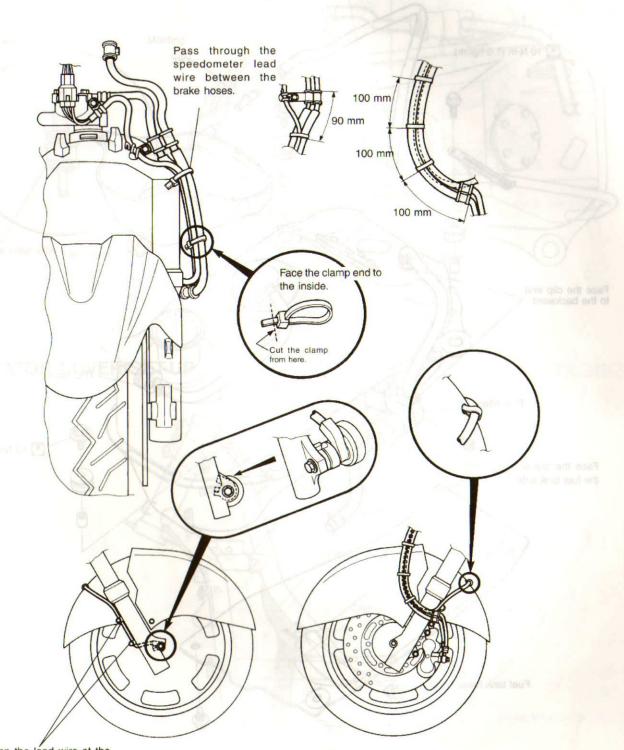


# COMBINATION BRAKE HOSE ROUTING





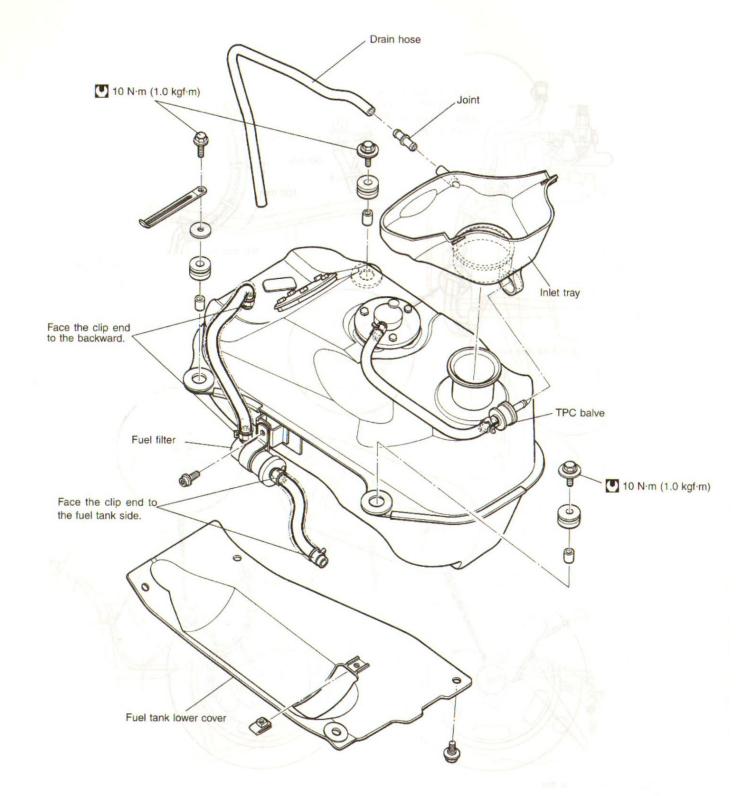
# SPEEDOMETER LEAD WIRE ROUTING

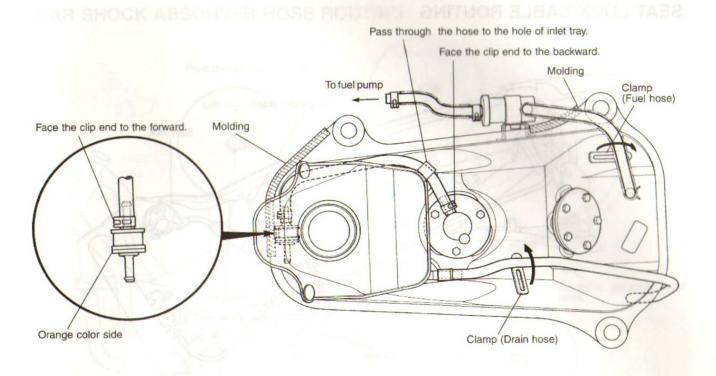


Clamp the lead wire at the yellow paint marked.

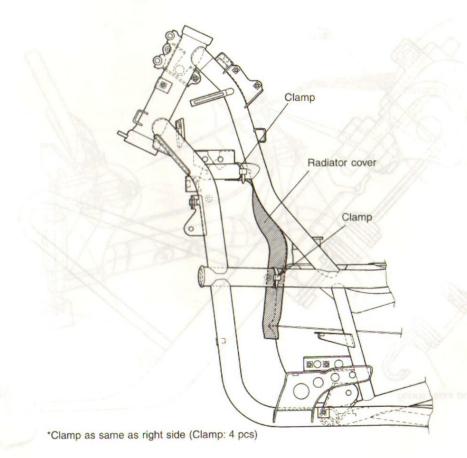
#### SERVICING INFORMATION 8-17

#### **FUEL TANK/HOSE ROUTING**

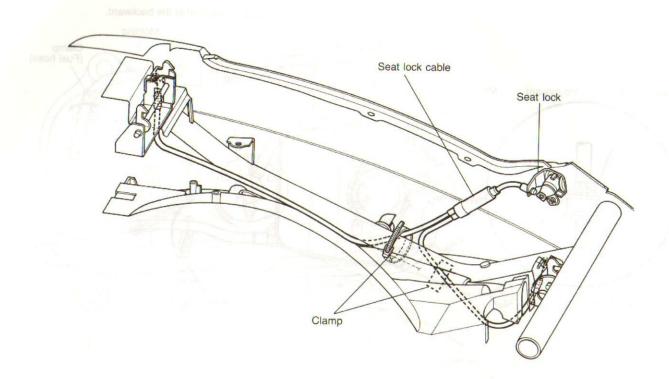




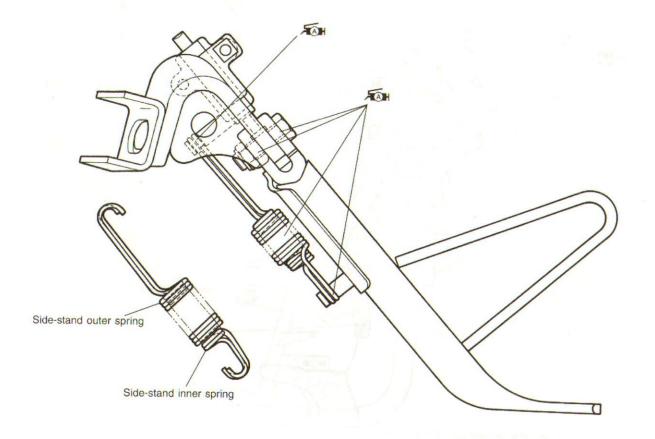
## **RADIATOR COVER SET-UP**



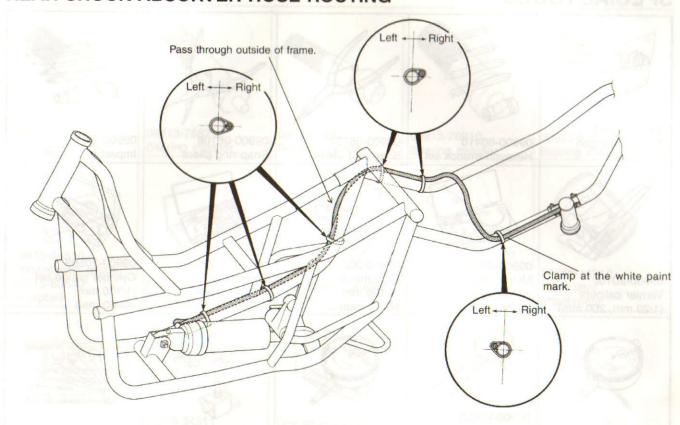
# SEAT LOCK CABLE ROUTING



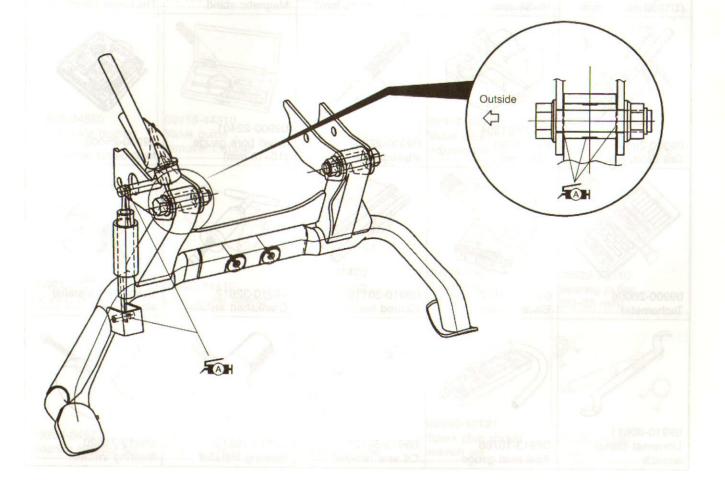
# SIDE-STAND SET-UP



# REAR SHOCK ABSORVER HOSE ROUTING

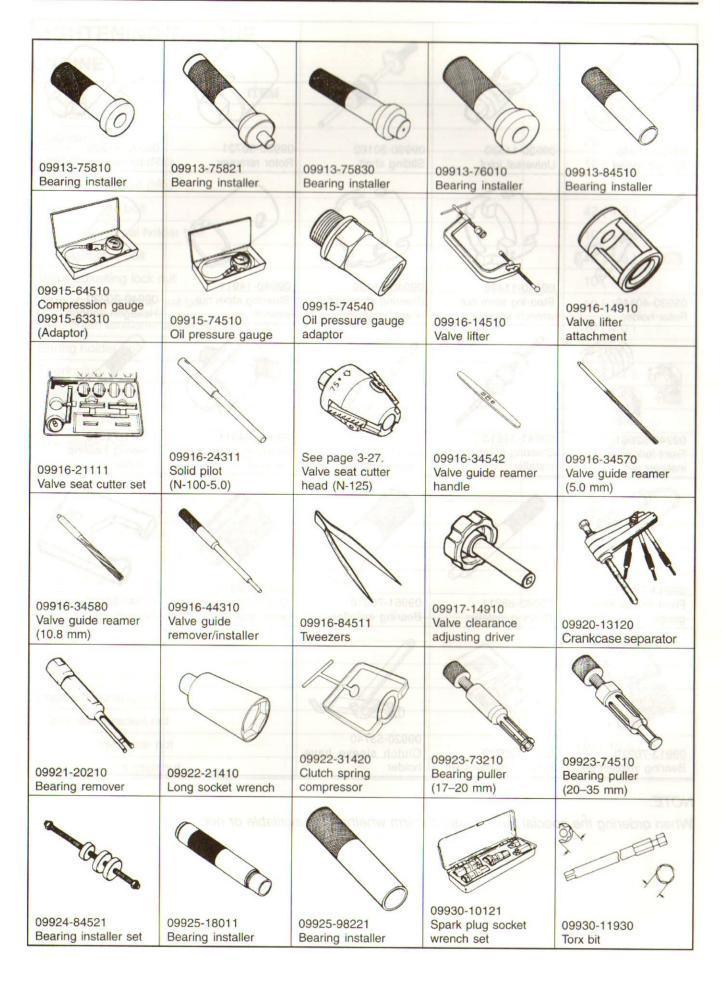


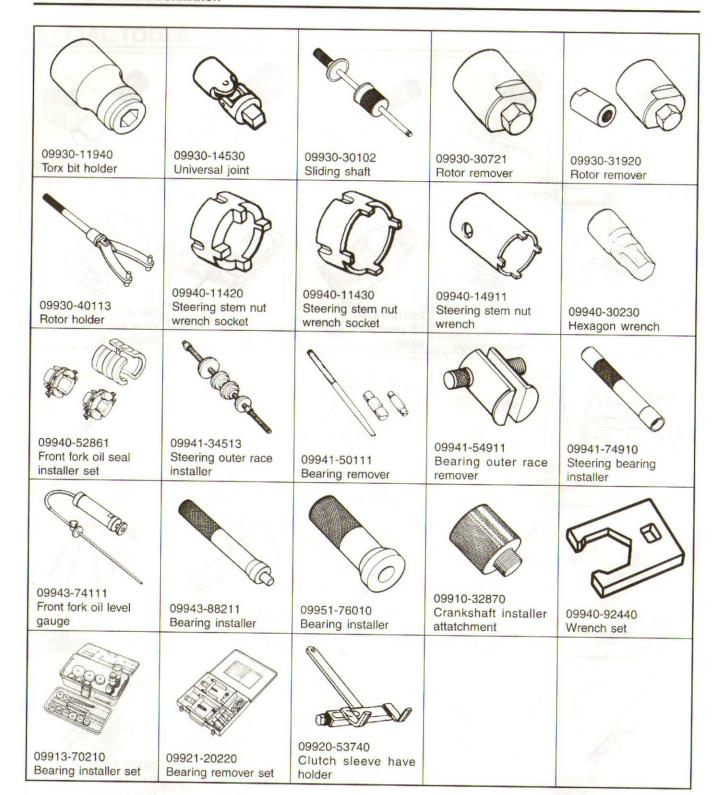
# STAND SET-UP



# SPECIAL TOOLS







#### NOTE:

When ordering the special tool, please confirm whether it is available or not.

SERVICING INFORMATION 8-23

# **TIGHTENING TORQUE**

#### ENGINE

ITEM	atwarts	N·m ( kgf·m)
Cylinder head cover bolt	30.530.7	14 ( 1.4 )
Cylinder head nut (M8)		25 ( 2.5 )
Cylinder head nut (M6)	2812.01	10 (1.0)
Cylinder base nut (M6)	A STATE OF	10 ( 1.0 )
Cylinder head bolt	A CONTRACTOR	42 ( 4.2 )
Camshaft journal holder bolt	0.00 0.00	10 (1.0)
Cam sprocket bolt		15 (1.5)
Valve adjusting lock nut		10 (1.0)
Cam chain tensioner set bolt	4.5	10 ( 1.0 )
Cam chain tensioner adjuster mounting bolt		10 (1.0)
Spring holder bolt	-	8 ( 0.8 )
Spark plug		11 ( 1.1 )
Starter clutch bolt		25 ( 2.5 )
Generator rotor nut		160 ( 16.0 )
Crankcase bolt	M8	22 ( 2.2 )
	M6	11 ( 1.1 ) nomen
Engine oil drain plug	The second secon	23 ( 2.3 )
Final gear oil drain plug	A burnillo Oli	12 ( 1.2 )
Final gear oil level plug	J. Inno Lylaboryong b	12 (1.2)
Final gear box cover bolt	Conventional or "4	22 ( 2.2 )
Clutch shoe nut	M-W	105 ( 10.5 )
Clutch housing nut	8.1	85 ( 8.5 )
Fixed drive face nut	STANDARDE	105 ( 10.5 )
Exhaust pipe bolt	39-430-83-47	23 ( 2.3 )
Muffler mounting bolt	38.50653.3-	23 ( 2.3 )
Engine mounting nut	0,05288.052	93 ( 9.3 )
Crankcase bracket nut	0,02085.000	85 ( 8.5 )
Balancer drive gear nut	22.012362	150 ( 15.0 )
Balancer driven gear nut	17-51-801	50 ( 5.0 )

CYLINDER - PISTON + PISTON RING

#### CHASSIS

ITEM	N·m (kgf·m)
Front axle	65 ( 6.5 )
Axle pinch bolt	23 (2.3)
Steering stem lock nut	30 (3.0)
Handlebar holder clamp bolt	55 (5.5)
Handlebar set bolt	23 (2.3)
Handlebar clamp bolt	23 (2.3)
Front fork cap bolt	45 (4.5) Rod Dagress
Front fork clamp bolt	23 (2.3) of Bonion Basen
Brake master cylinder bolt	10 (1.0)
Brake hose union bolt	23 ( 2.3 )
Brake caliper mounting bolt	25 ( 2.5 )
Brake air bleeder valve	flod printing 7.5 ( 0.75 )
Brake disc bolt	23 ( 2.3 )
Rear axle nut	100 ( 10.0 )
Rear shock absorber bolt	50 (5.0)
Cushion lever mounting nut	78 (7.8) tuo notes nelescular
Cushion lever nut	50 ( 5.0 )
Cushion rod nut	50 ( 5.0 )

# **TIGHTENING TORQUE CHART**

For other bolts and nuts listed previously, refer to this chart:

<b>Bolt Diameter</b>	Conventional or "4" marked bolt		"7" mai	ked bolt
<b>A</b>	N-m	kgf·m	N·m	kgf⋅m
4	1.5	0.15	2.3	0.23
5	3	0.3	4.5	0.45
6	5.5	0.55	10	1.0
8	13	1.3	23	2.3
10	29	2.9	50	5.0
12	45	4.5	85	8.5
14	65	6.5	135	13.5
16	105	10.5	210	21.0
18	160	16.0	240	24.0







Conventional bolt

"4" marked bolt

"7" marked bolt

# SERVICE DATA

1/4		-	11.6	01	-	-
VA	LV		-	GL		

Unit: mm

(TEM 40 Amon Orl.) (T	ikPa (8.8 kgf/km	STD/SPEC.	LIMIT
Valve diam.	IN.	30.5–30.7	Congression pre
0.120	EX.	26.9–27.1	Per vale sullinder
Valve clearance (when cold)	-001N.8	0.08-0.13	grant relative
965	EX.	0.17-0.22	Pation diam.
Valve guide to valve stem clearance	IN.	0.010-0.037	
11.504	EX.	0.030-0.057	Chorder distortion
Valve guide I.D.	IN. & EX.	5.000-5.012	Period that I can d
Valve stem O.D.	IN.	4.975–4.990	
Auton marious action	EX.	4.955–4.970	g brig gain nedar3
Valve stem deflection	IN. & EX.	DICE	0.35
Valve stem runout	IN. & EX.	tst tst	0.05
Valve head thickness	IN. & EX.		0.5
Valve stem end length	IN. & EX.	77 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	Piaton 8.15 grown
Valve seat width	IN. & EX.	0.9–1.1	
Valve head radial runout	IN. & EX.		0.03
Valve spring free length (IN. & EX.)	INNER	36.43	34.9
	OUTER	39.33	38.2
Valve spring tension (IN. & EX.)	111155	5.3–6.5 kg	Piston pin III
	INNER	at length 28	Platon pii 10
	OUTED	13.1–15.1 kg	
	OUTER	at length 31.5	+ COHMOS

# **CAMSHAFT + CYLINDER HEAD**

Unit: mm

ITEM	A STATE OF THE STA	STANDARD		
Cam height	IN.	33.43-33.47	33.13	
KI.	EX.	33.50-33.54	33.20	
Camshaft journal oil clearance	φ 22	0.032-0.066	0.150	
RANSMISSION + DRIVE	φ 17.5	0.028-0.059	0.150	
Camshaft journal holder I.D.	φ 22	22.012-22.025	THE WAY OF THE PARTY	
e clion rather	φ 17.5	17.512-17.525	in id-plue blo not	
Camshaft journal O.D.	φ 22	21.959–21.980	- VI CLUM NU	
	φ 17.5	17.466–17.484	STORY ARTERIO	
Camshaft runout	IN. & EX.		0.08	
Cam chain pin (at arrow "3")		eenvalre grim	ese lauris nanax	
Rocker arm I.D.	IN. & EX.	12.000-12.018	AL TRUMP PERSON	
Rocker arm shaft O.D.	IN. & EX.	11.973-11.984	ALEMAN TOTAL	
Cylinder head distortion			0.05	
Cylinder head cover distortion			0.05	

#### 8-26 SERVICING INFORMATION

## CYLINDER + PISTON + PISTON RING

Unit: mm

ITEM			STANDARD	LIMIT
Compression pressure	880 kPa (8.8 kgf/cm²) {410 rpm}			616 kPa (6.16 kgf/cm <sup>2</sup>
Compression pressure difference			23 ( 2 3	
Piston to cylinder clearance			0.035-0.065	0.120
Cylinder bore			83.000-83.015	83.085
Piston diam.	82.950–82.965 Measure at 15 mm from the skirt end.			82.880
Cylinder distortion				0.05
Piston ring free end gap	1st	R	Approx. 11.3	9.0
075-1-270	2nd	RN	Approx. 7.7	6.2
Piston ring end gap	1st		0.20 - 0.35	0.70
22.0	2nd		0.20 - 0.35	0.70
Piston ring to groove clearance	1st		X à S. M.	0.18
	2n	d	sels in Englished	0.15
Piston ring groove width	1s	t	1.01-1.03	
	2n	d	1.01-1.03	
	Oi	1	2.01-2.03	ladio meno
Piston ring thickness	1st		0.97-0.99	
	2nd		0.97-0.99	
Piston pin bore			20.002-20.008	20.030
Piston pin O.D.			19.966-20.000	19.980

# CONROD + CRANKSHAFT

Unit: mm

ITEM	STANDARD	<b>LIMIT</b> 20.040	
Conrod small end I.D.	20.006-20.014		
Conrod deflection		3.0	
Conrod big end side clearance	0.10-0.65	1.00	
Conrod big end width	21.95-22.00	a ha fenanafii	
Conrod pin width			
Crank web to web width	59.9-60.1	riches Instruction	
Conrod big end oil clearance			
Crank pin O.D.		CIC has	
Crankshaft journal oil clearance			
Crankshaft journal O.D.			
Crankshaft thrust bearing thickness	- 10 Type		
Crankshaft thrust clearance	hanne de la companya del companya de la companya del companya de la companya de l	11 m	
Crankshaft journal holder width			
Crankshaft journal width			
Crankshaft runout		0.08	

#### SERVICING INFORMATION 8-27

## **OIL PUMP**

ITEM	STANDARD	LIMIT
Oil pressure (at 60°C, 140°F)	Above 80 kPa (0.8 kgf/cm²)	
	Below 160 kPa (1.6 kgf/cm²)	
	at 3 000 r/min.	104 80

# CLUTCH

Unit: mm

ITEM	STANDARD	LIMIT
Clutch cable play	) Ballisaan (C.A.M.)	
Clutch release screw	ADRW	0108en Jul
Drive plate thickness	8.09	Jaj all dev
Driven plate claw width	1 P. W. (1987)	Evisiv Bistorici
Clutch spring free length	<u> </u>	lei rewe-
Clutch spring free length	509	3(100)
Clutch engagement		wole wole
Clutch lock-up	4	
Clutch wheel I.D.		
Clutch shoe thickness	7 A 1 A 2 A 3 A 3 A 3 A 3 A 3 A 3 A 3 A 3 A 3	- NP 2 10
Clutch engagement		
Clutch lock-up	· ·	EN NO. J SIL TO
Clutch wheel I.D.	150.0–150.2	150.5
Clutch shoe thickness	Approx. 3.0	2.0
Clutch engagement	2 300–2 900	
Clutch lock-up	3 500–4 500	

# TRANSMISSION + DRIVE CHAIN

Unit: mm Except ratio

ITEM ("mo'p) L1		STD/SPEC.	LIMIT	
Primary reduction ratio	0°601-66	1.000	Hava omiai <del>u nui pit</del> oeloa	
Reduction ratio		Variable change (2.203-0.854)	_enutraeqmet	
Secondary reduction		2.214	agyt trielogo enign	
Final reduction ratio		2.785		
Drive belt width		23.0	22.0	
Movable driven face spring fr	ee length	136.2	129.4	
Face abrasion			0.4	

#### 8-28 SERVICING INFORMATION

# CARBURETOR

ITEM			SPECIFICATION		
Compression pression		E-02, 04, 34	E-22	E-18	
Carburetor type	A	KEIHIN CVK36	<b>←</b>	<b>←</b>	
Bore size		36.5 mm	<b>←</b>	<b>←</b>	
I.D. No		15F1	15F2	15F3	
Idle r/min.		1 400±100 r/min.	<b>←</b>	1 400±50 r/min.	
Fuel level		1.5±1 mm	<b>←</b>	<b>←</b>	
Float height		17.0±1.0 mm	<b>←</b>	<b>←</b>	
Main jet	(M.J.)	#108	<b>←</b>	<b>←</b>	
Main air jet	(M.A.J.)	Press-fitted	<b>←</b>	<b>←</b>	
Jet needle	(J.N.)	N8CA	<b>←</b>	<b>←</b>	
Needle jet	(N.J.)	φ 3.8	<b>←</b>	<b>←</b>	
Throttle valve	(Th.V.)	11°	<b>←</b>	<b>←</b>	
Power jet	(P.W.J.)		<b>←</b>	<b>←</b>	
Pilot jet	(P.J.)	#38	<b>←</b>	<b>←</b>	
Slow jet	(S.J.)		<b>←</b>	<b>←</b>	
Pilot screw	(P.S.)	PRE-SET (1-3/4 turns back)	<b>←</b>	<b>←</b>	
Air screw	(A.S.)		<b>←</b>	<b>←</b>	
Throttle cable play		2.0–4.0 mm (0.08–0.12 in)	<b>←</b>	<b>←</b>	

# THERMOSTAT + RADIATOR + FAN + COOLANT

ITEM	STD/SPEC.		LIMIT
Thermostat valve opening temperature	Appr		
Thermostat valve lift	Over 3	mm at 90°C (194°F)	
Engine coolant temperature sensor	50°C (122°F)	140–310 Ω	455
resistence I mm dinij	115°C (239°F)	24.1-28.2 Ω	KGE SVENE
Radiator cap valve opening pressure	110		
Eclectic fan thermo-switch operating temperature	ON	93–103°C	monorum.
	OFF	87-97°C	
Engine coolant type	Use an antifreeze / coolant compatible with aluminum radiator, mixed with distilled water only, at the ratio of 50:50.		
Engine coolant including reserve	Reserve tank side	Approx. 250 ml	
	Engine side	Approx. 1 500 ml	

#### SERVICING INFORMATION 8-29

# **ELECTRICAL**

ITEM	STD/SPEC		STD/SPEC.	NOTE	
Firing order	08	1		fribilbe	
Spark plug	. 58	Туре	NGK: CR7E DENSO: U22ESR-N	militare a ser beauty	
		Gap	0.7–0.8 mm	leinitti myyteleit esi	
Spark performance	10		8mm (0.3 in) at 1 atm.	wield lamous m	
Signal generator peak voltage	e		184–276 Ω	Mini san	
Signal generator peak voltage			More than 2.4 V	trial esternaria	
Ignition coil resistance	1,7	Primary	3–5 Ω	sedometer light of mater light	
		Secondary	17–30 Ω	temp, mater lig rter temp, mate	
Ignition coil primary peak volt	tage	-	More than 200 V	n signat Indicat	
Generator coil resistance			0.15–0.45 Ω		
Lighting coil resistance			ofseron firm		
Generator Max. output				Tel Diversio	
Generator no-load voltage (When cold)		More	ands time		
Regulated voltage		13.5-	-15.0 V at 5 000 r/min.	to both in	
Resistor resistance	1.7		7.2–8.8 Ω	76 at 1507	
Starter relay resistance	2		1–7 Ω	ldgi	
Battery		Type designation	FTX9-BS		
		Capacity	12V 28.8 kC (8Ah)/10HR		
		Standard electrolyte S.G.			
Fuse size		Headlight	15A/15A		
		Signal	15A		
		Ignition	10A		
		Tail	BRIDGSTOM 10A		
		Power source	BRIDGEN		
		Main	30A	111111111111111111111111111111111111111	

#### 8-30 SERVICING INFORMATION

WATTAGE Unit: W

STON ITEM		12.0	STD/SPEC.	W MALL
Headlight	HI		60	107,4 ( 67.11)
Certainous type	LO		55	and mad
Parking or position light	N. Carlotte		5	
Brake light/taillight			21/5	
Turn signal light	THE RESERVE OF THE PROPERTY OF	S. Phys. Hersell and 17	21	63naiche e
License light		15 45	5	w heretor peak will
Tachometer light	4.5%	nent make		To keen toleranen
Speedometer light	11.19	1100	1.7	at the laid of the analysis
Fuel meter light	Hisa's	Prassifing	1.7	
Oil temp. meter light		Rinda		
Warter temp. meter light	HILLS-1	a i a v usbricca	1.7	
Turn signal indicator light	Varie	as in model 17	1.7	
High beam indicator light		(U-31.2	1.7	GEVICE:
Neutral indicator light				BORSTILLE IN THE
Oil pressure light				further voltes are
Side-stand check light				applied banks
Gear position indicator light				Shallow Baldi - Talli II
Hazard light	mm,00	30 1 5 0 T		Mary or payment
Brake lock indicator light	- 1	19-50	1.7	90/10/10/10 1
Trunk light			2	contribution comments

SERVICING INFORMATION 8-31

# **BRAKE + WHEEL**

Unit: mm

ITEM	539 FYOTE	STANDARD		LIMIT
Brake disc thickness	Front	Front 4.3–4.7		4.0
251	Rear		4.8-5.2	4.5
Brake disc runout	Front & Rear		Donnes tueres.	0.3
Master cylinder bore	Front	11.	000-11.043	n ned <del>- Alas</del> on
	Rear	14.	000-14.043	SOVI S
Master cylinder piston diam.	Front	10.	957-10.984	Basa <del>Torres</del> Lor
	Rear		957-13.984	D DOITE TO
Brake caliper cylinder bore	Frank	33.	960–34.010	retionus <del>tration -</del>
	Front	Conbination	22.650-22.700	
	Rear	25.400-25.450		Design of the state of the stat
Brake caliper piston diam.	Frank	33.	878–33.928	choods work as
	Front	Conbination	22.568-22.618	The second second
(Modern beauty)	Rear	25.	335–25.368	TO STATE SALE
Wheel rim runout	Axial	VI - II		2.0
	Radial	TO RESTRICT THE CORE IS		2.0
Wheel rim size	Front	13×MT3.00		- State
	Rear	13×MT3.00		La la Company
Wheel axle runout	Front	sagright-		0.25
	Rear	-		le naf

# TIRE

ITEM		STD/SPEC.	LIMIT
COLD INFLATION PRESSURE (SOLD/DUAL RIDING)	Front	175/175 kPa 1.75/1,75 kgf/cm <sup>2</sup>	
PANISH PANEL PLANTED	Rear	200/225 kPa 2.00/2.25 kgf/cm <sup>2</sup>	
Tire size	Front	110/90-13 M/C 55P	
	Rear	130/70-13 M/C 63P	
Tire type	Front	BRIDGSTONE:HOOP B03 G	
	Rear	BRIDGSTONE:HOOP B02 G	white a second
Tire tread depth {Recommend depth}	Front	egneri iodini	0.8 mm {1.6 mm}
45° 713.6	Rear	and lio x	0.8 mm {2.0 mm}

#### 8-32 SERVICING INFORMATION

# SUSPENSION

Unit: mm

ITEM	CHANGE ?	LIMIT				
Front fork stroke		100				
Front fork spring free length	P L	257	251			
Front fork oil level (without spring, inner/outer tube fully compressed)	-URL II	102	the state			
Front fork oil type	SUZUKI FOR	RK OIL G-10 (#10) or an equivalent fork oil				
Front fork oil capacity (each leg)	125.65	275 ml	io reheita			
Front fork spring adjuster	736.61	18-21-				
Front fork damping force adjuster	Rebound	कारण करी	uive ragilies on			
.650-22.700	Compress	Cont				
Front fork air pressure	25,400-	- Roar 25,400-				
Rear shock absorber gas pressure	93,674					
Rear shock absorber air pressure	e notesin	K / Continettors				
Rear shock absorber spring adjuster	STD: 4	4 1/2 turns out from softest position				
- um(0,S) - u - u -		17 revolutions adjustable	Lorent Commen			
Rear shock absorber spring pre-set length	W L					
Rear shock absorber damping force	Rebound					
adjuster	Compress	101	HOLE TO SERVE			
Rear wheel travel		100				
Swingarm pivot shaft runot						

# **FUEL + OIL + ENGINE COOLANT**

ITEM	STD/SPEC.  Gasoline used should be graded 91 octane or higher. An unleaded gasoline is recommended.		NOTE
Fuel type			THE LANGEVILLE
Final tank capacity	including reserve	13.0 L	9.0
	reserve		
Enigne oil type	SAE 10W/40, API SF or SG, TYPE 04		
Engine oil capacity	Change	1.9 L	
	Filter change	2.0 L	Men
	Overhaul	2.3 L	
Reduction gear box oil type	SAE 10W/40, API SF or SG		
Reduction gear box oil capacity	Change	190 ml	
	Overhaul	200 ml	

Prepared by

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Motorcycle Service Department

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