

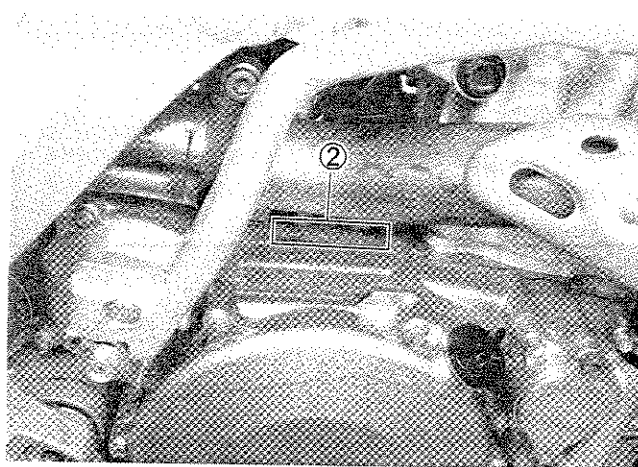
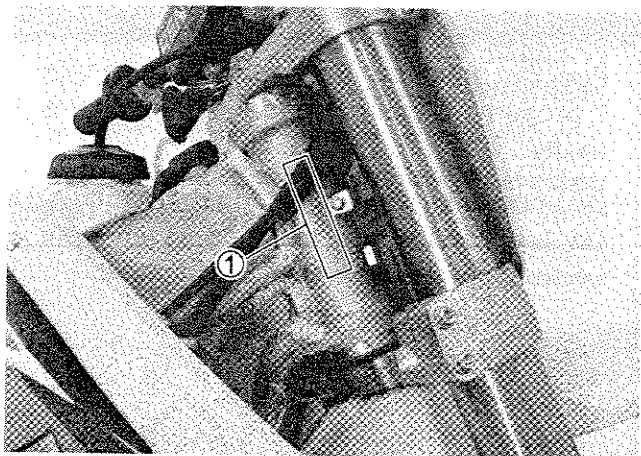
SUZUKI

RMZ450

M.Y 2005-2007

SERVICE MANUAL

SERIAL NUMBER LOCATION



The frame number ① is stamped on the steering head as shown in the photograph. The engine serial number ② is stamped on the right side of the crankcase assembly. Write down the serial numbers here for your future reference.

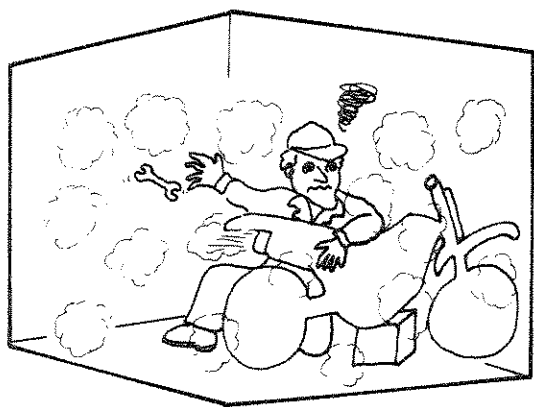
Frame No.	
Engine No.	

WARNINGS FOR SERVICING

▲ WARNING

Never run the engine indoors or in a garage. Exhaust gas contains carbon monoxide, a gas that is colorless and odorless and can cause death or severe injury.

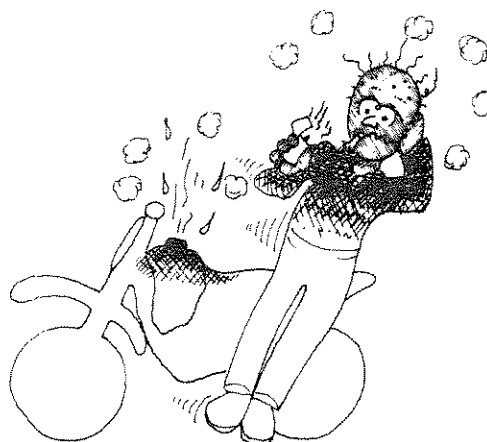
Only run the engine outdoors where there is fresh air.



▲ WARNING

Fuel can catch on fire if you do not handle it properly. Gasoline vapors can catch fire easily.

Do not smoke when servicing the machine. Do not service the machine in an area where there are open flames or sparks.



▲ WARNING

Hot engine and muffler can burn you.

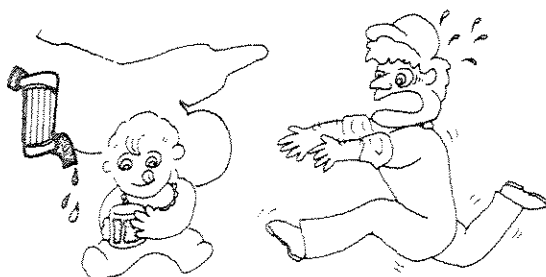
Wait until the engine and muffler cools before servicing.



▲ WARNING

Brake fluids and engine coolant can be hazardous to humans and pets. Brake fluid and engine coolant are harmful or fatal if swallowed, and harmful if it comes in contact with your skin or eyes.

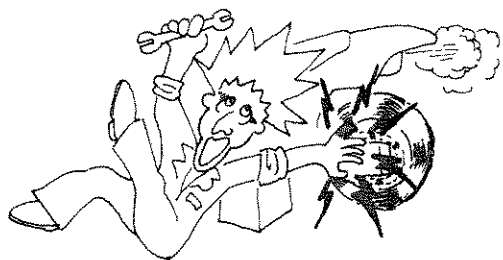
Keep brake fluid and engine coolant away from children. Call your doctor immediately if swallowed, and induce vomiting. Flush eyes or skin with water if either brake fluid or engine coolant gets in eyes or comes in contact with skin.



▲ WARNING

Servicing the machine with engine running can be hazardous. You can be caught in the moving parts such as the drive chain, sprockets etc.

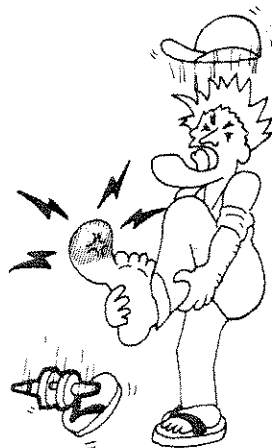
Be sure to stop the engine when servicing the machine.



▲ WARNING

Servicing the machine without proper clothes and protective gear can be hazardous. You can be injured if you do not wear proper clothes and protective gear.

Be sure to wear proper clothes and shoes for servicing and wear protective glasses, mask or gloves as necessary.



PRECAUTIONS FOR SERVICING

- Replace gaskets, snap rings, circlips, O-rings and cotter pins with new ones.
- Take care not to expand the end gap larger than required to slip the circlip over the shaft when installing a circlip.
- Use special tools where specified.
- Use genuine SUZUKI parts and recommended oil.
- When two or more persons work together, pay attention to the safety of each other.
- After reassembly, inspect parts for tightness and operation.

REPLACEMENT PARTS

Use only genuine SUZUKI replacement parts or their equivalent. Genuine SUZUKI parts are high quality parts which are designed and built specially for SUZUKI vehicles.

NOTE:

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

SYMBOL MARKS AND MATERIALS

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

SYMBOL	DEFINITION	SYMBOL	DEFINITION
	Torque control required. Data beside it indicates specified torque.		Apply THREAD LOCK SUPER "1360". 99000-32130
	Apply oil. Use engine oil or transmission oil unless otherwise specified.		Use SUZUKI FORK OIL SS-05 or equivalent fork oil. 99000-99001-SS5
	Apply molybdenum oil solution. (Mixture of engine oil and SUZUKI MOLY PASTE in a ratio of 1:1)		Use SUZUKI REAR SUSPENSION OIL SS-25 or equivalent rear suspension oil. 99000-99001-S25
	Apply SUZUKI SUPER GREASE "A". 99000-25030 (USA) 99000-25010 (Others)		Use engine coolant.
	Apply SUZUKI SILICONE GREASE. 99000-25100		Apply or use brake fluid. (DOT4)
	Apply SUZUKI MOLY PASTE. 99000-25140		Measure in voltage range.
	Apply SUZUKI BOND "1215". 99000-31110 (Except USA)		Measure in resistance range.
	Apply SUZUKI BOND "1207B". 99000-31140		Measure in diode test range.
	Apply THREAD LOCK SUPER "1303". 99000-32030		Use special tool.
	Apply THREAD LOCK SUPER "1322". 99000-32110 (Except USA)		Indication of service data.
	Apply THREAD LOCK "1342". 99000-32050		Replace a part with a new one when reassembling.

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GENERAL INFORMATION

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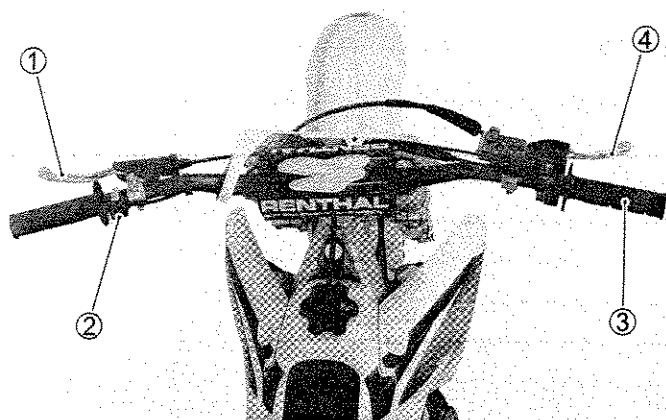
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COUNTRY AND AREA CODES

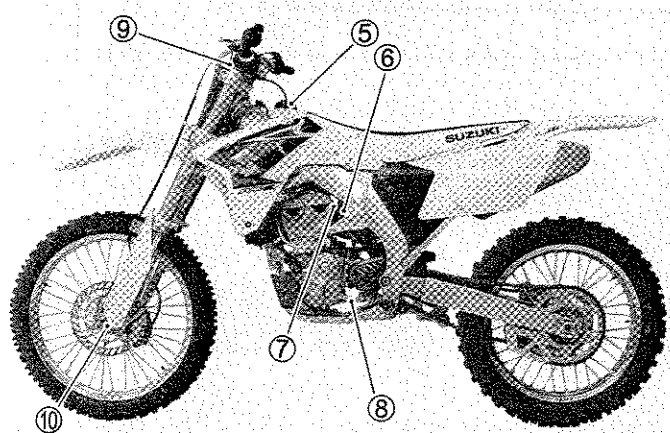
The following codes stand for the applicable country(-ies) and area(-s).

CODE	COUNTRY or AREA	EFFECTIVE FRAME NO.
000	Japan	JS1RL 41A000 500001 -
E-03	U. S. A.	JS1RL 41C 52 100001 -
E-28	Canada	JS1RL 41C 52 100001 -

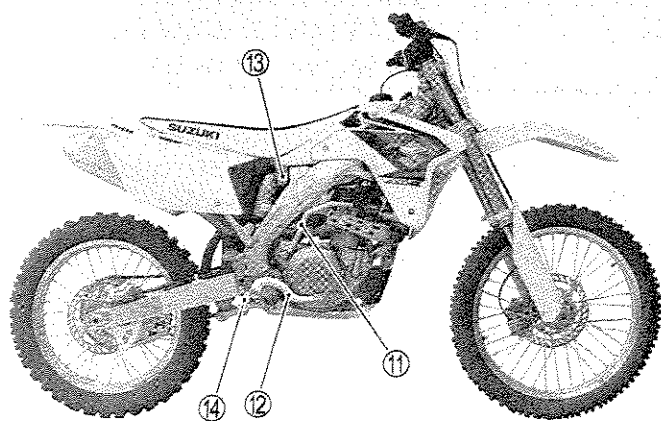
LOCATION OF PARTS



- ① Clutch lever
- ② Engine stop switch
- ③ Throttle grip
- ④ Front brake lever



- ⑤ Fuel tank cap
- ⑥ Carburetor starter knob
- ⑦ Hot starter knob
- ⑧ Gearshift lever
- ⑨ Front suspension compression damping adjuster
- ⑩ Front suspension rebound damping adjuster

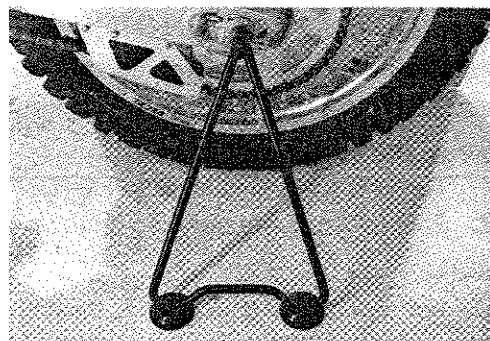


- ⑪ Kick starter lever
- ⑫ Rear brake pedal
- ⑬ Rear suspension compression damping adjuster
- ⑭ Rear suspension rebound damping adjuster

ACCESSORY

SIDE STAND

This motorcycle is not equipped with a side stand. To support the motorcycle for a short period of time, use the accessory side stand that comes supplied with the motorcycle. When servicing the motorcycle, use a service stand and support the underneath of the engine securely. When operating the motorcycle, make sure to remove the accessory side stand.



FUEL AND OIL RECOMMENDATION

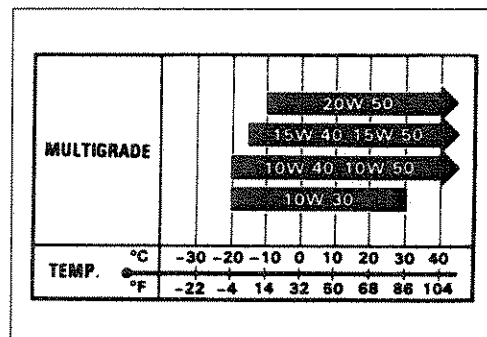
Gasoline: Use only unleaded gasoline of at least 90 pump octane (R/2 + M/2 method). For USA and Canada
Use only unleaded gasoline of at least 95 octane. (Research method) For other countries.

Engine oil: SUZUKI recommends the use of SUZUKI PERFORMANCE 4 MOTOR OIL or an oil which is rated SF or SG under the API (American Petroleum Institute) service classification. The recommended viscosity is SAE 10W-40. If an SAE 10W-40 oil is not available, select an alternative according to the right chart.

..... For USA
MOTUL V 300 10W-40 (recommendation) or use a premium quality 4-stroke motor oil to ensure longer service life of your motorcycle. Use only oils which are rated 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.

..... For other countries

Fuel tank capacity: 7.0 L (1.5/1.8 US/Imp gal)



▲ WARNING

Gasoline is a flammable material that can cause fire hazard or burns. When handling gasoline, make sure to stop the engine and keep away from fire or spark.

OPERATING INSTRUCTIONS

STARTING THE ENGINE

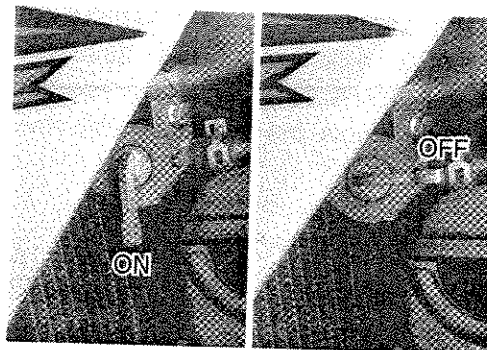
Inspect the engine oil level, coolant level and air cleaner condition before starting the engine.

When the engine is cold:

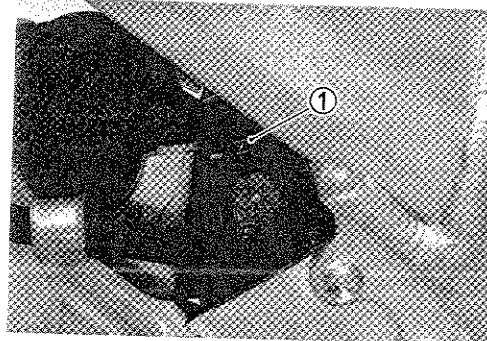
- 1) Turn the fuel valve lever to the "ON" position.
- 2) Shift the transmission into neutral.

NOTE:

Do not repeatedly operate the throttle with the engine starting, stopping and idling. The accelerator pump may foul the spark plugs with excess fuel.



- 3) Pull the starter knob ①.
- 4) Find the kick pedal position around the top so that the resistance to depress the kick pedal is fully felt by pushing down the kick pedal slowly.
- 5) Kick the engine over, leaving the throttle closed.



CAUTION

When kick-starting the engine, make sure to remove the side stand.

- 6) Return the starter knob when the engine revs at steady speed.

NOTE:

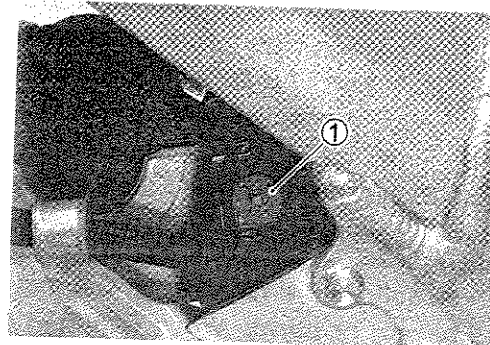
When the clutch lever is pulled, the motorcycle can be started with the transmission in any gear.

When the engine is already warm or restarts:

- 1) Pull the hot starter knob ①.
- 2) Kick the engine over, leaving the throttle closed without using the choke knob.
- 3) Return the hot starter knob back immediately after the engine starts.

NOTE:

If the engine fails starting, open the throttle fully and depress the kick pedal slowly about 4 – 5 times to clear too rich fuel mixtures in the engine. Then, kick the engine over, leaving the throttle closed with the hot starter knob pulled in.



CAUTION

Racing the engine in neutral will exceed the engine speed limit. Exceeding the engine speed limit can damage the engine moving parts.

Do not race the engine at high speed to avoid the engine damage.

Conditions when the hot starter knob or starter knob is used		
Engine Condition	Hot Starter Lever	Starter Knob
Already Warm	Pull in (ON)	Push back (OFF)
Restarting after falling	Pull in (ON)	Push back (OFF)
Cold	No use (OFF)	Use (ON)

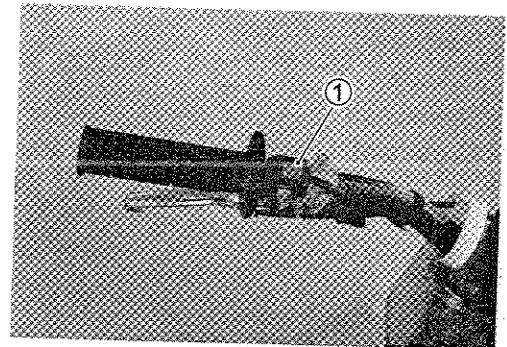
STOPPING THE ENGINE

- 1) Shift the transmission into neutral.
- 2) Turn the fuel valve lever to the "OFF" position.
- 3) Push the engine stop switch ① to stop the engine.

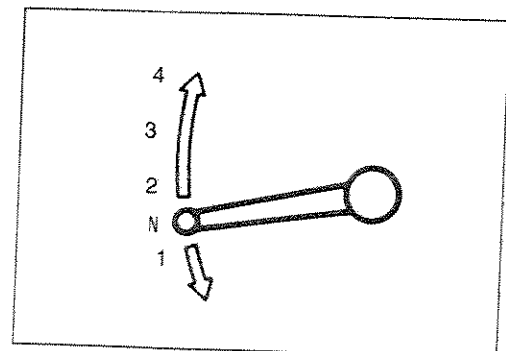
▲ WARNING

Leaving the fuel valve in the "ON" position may cause carburetor overflow. This can cause a fire or severe engine damage when you start the engine.

Always leave the fuel valve in the "OFF" position when the engine is not running.

**TRANSMISSION**

This motorcycle has a 4-speed transmission. Neutral is located between low and 2nd. Engage first gear by pressing the lever down from the neutral position. You can shift into higher gears by lifting on the shift lever once for each gear. When neutral is desired, press or lift the lever to a position halfway between low and 2nd gear.

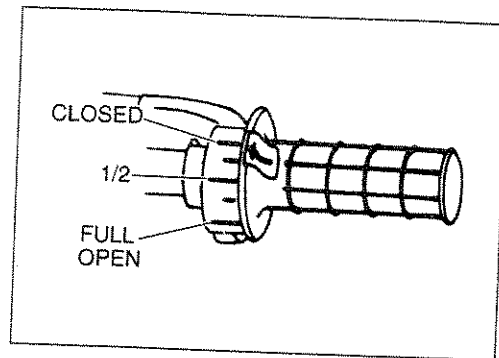


BREAK-IN (RUNNING-IN) WHEN THE MOTORCYCLE IS NEW

- 1) Warm up the engine before starting off.
- 2) Ride for 60 minutes using less than 1/2 throttle opening.
- 3) Ride for 60 minutes using less than 3/4 throttle opening.

NOTE:

- * The break-in (running-in) period is the period of greatest wear.
- * The bolts and nuts of the new machine can loosen quickly. Be sure to retighten the bolts and nuts during the break-in (running-in) period.

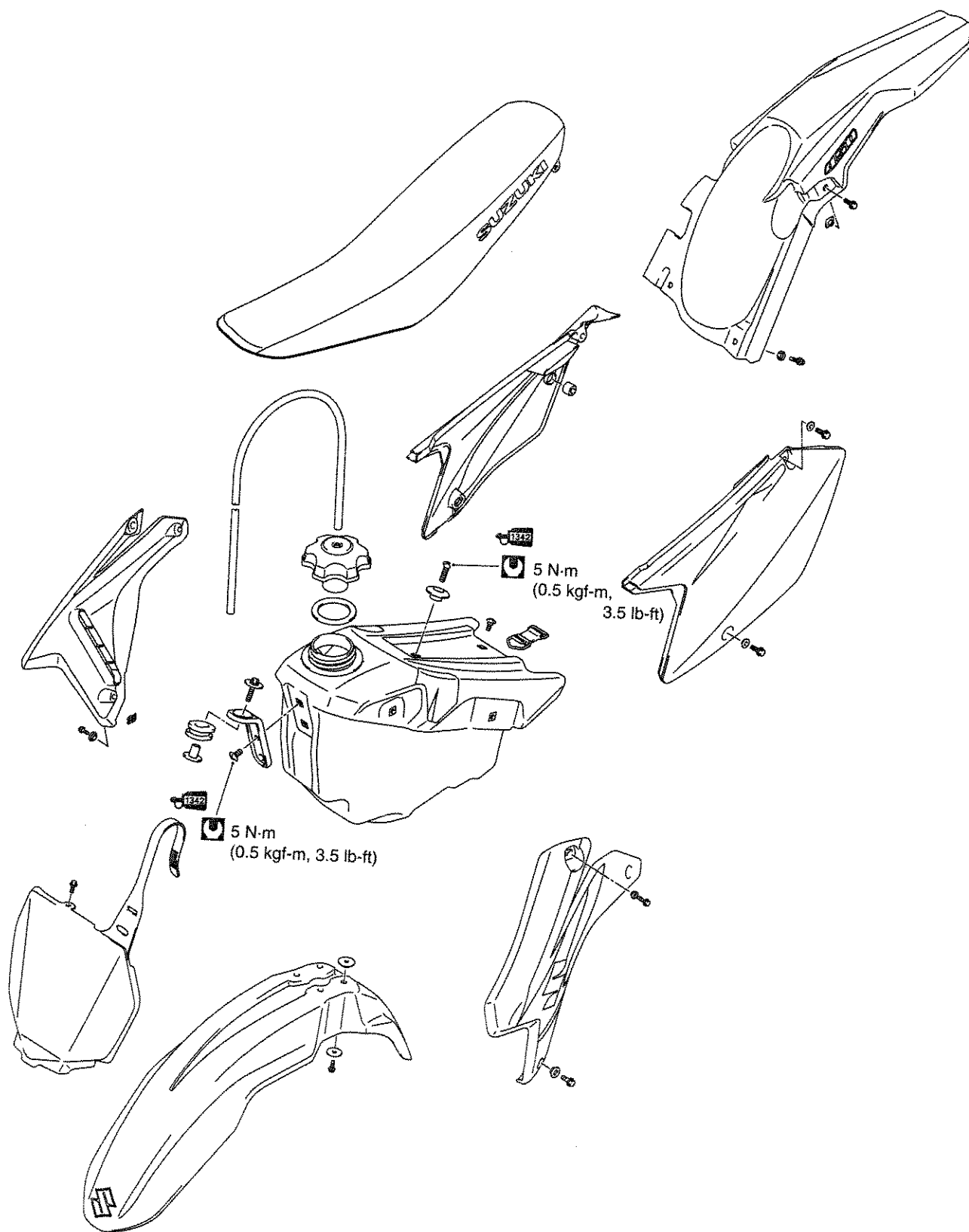


WHEN ENGINE PARTS ARE REPLACED

Follow the same procedure when any of the following parts are replaced:

- Piston
- Piston ring
- Cylinder
- Crankshaft
- Crankshaft bearing

EXTERIOR PARTS



PERIODIC MAINTENANCE

2

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PERIODIC MAINTENANCE INSPECTION BEFORE PRACTICE

WHAT TO CHECK	CHECK FOR
Spark plug	• Heat range, fouled electrode, tightness • Loose high-tension cord
Air cleaner element	• Dust • Lubrication
Engine oil	Oil level
Coolant	Coolant level
Cooling system	• Radiator hose damage • Engine coolant leak
Clutch	• Play • Smooth operation
Throttle	• Play • Smooth operation
Crankcase breather hose	Breather hose clogging and bend
Engine idle speed	Revolution speed
Brake fluid	Fluid level
Brakes	• Brake lever position • Brake pedal height • Operation
Drive chain	Slack, lubrication, chain joint clip condition
Drive chain guide/buffer	Wear, damage
Suspension	• Smooth operation • Front fork air pressure
Wheels	• Spoke tension • Rim lock tightness or damage
Tires	Tire pressure
Steering	Smoothness, play
Exhaust pipe and muffler	• Exhaust gas leakage • Tightening torque
Bolts and nuts	Tightening torque

INSPECTION BEFORE RACE**(All items of inspection before practice above plus)**

WHAT TO CHECK	CHECK FOR
Clutch	Clutch disc plates wear and distortion
Brake pads	Wear
Sprockets	Wear Cleanliness
Fuel tank	Leakage
Fuel hose	• Damage • Hoses are connected
Fuel filter	Fuel filter clogging and damage
Exhaust pipe and muffler	Damage
Cylinder head	Combustion chamber carbon deposit
Piston and Cylinder	• Combustion chamber carbon deposit • Piston head carbon deposit • Piston and cylinder wear
Air cleaner	• Damage • Loose outlet tube

PERIODIC MAINTENANCE CHART

It is very important to inspect and maintain the machine regularly. Follow the guideline in the chart. The life of parts varies depending on the riding conditions. Perform more often than shown in the chart if you use the motorcycle under severe conditions.

Service Item	Interval	Every race	Every 3 races	Every 6 races	Remarks
	hours	Every 2 hours	Every 6 hours	Every 12 hours	
Spark plug		I	—	—	
Air cleaner		C	—	—	Replace air cleaner element as necessary.
Engine oil		—	R	—	Change after 1st initial break-in.
Cooling-system		I	—	—	Replace radiator hose and engine coolant every year. Flushing for overhaul or storage.
Clutch		I	—	—	Replace clutch plates as necessary.
Throttle cable and clutch cable		I & L	—	—	
Carburetor		I	—	—	
Fuel hose		I	—	—	Replace every 4 years.
Piston		—	—	R	
Piston ring		—	—	R	
Cylinder head, cylinder		—	—	I	
Muffler		I	—	—	
Drive chain		I & L	R	—	Adjust slack every 30 minutes.
Engine sprocket		I	—	—	
Rear sprocket		I	—	—	Check and retighten sprocket bolts at initial and subsequent 10 minutes of riding and each race thereafter.
Drive chain buffer and guide		—	R	—	
Kick starter lever		I & L	—	—	
Brake		I	—	—	Replace brake hose and fluid every year.
Front fork oil		—	R	—	Change after 1st initial break-in.
Front fork		I	—	—	Check front fork inner tube frequently for abnormality. Check the air pressure.
Rear suspension		I	—	—	Check rear suspension system frequently and apply the grease to the pivoting portion as necessary.
Tire		I	—	—	
Spoke nipple		I	—	—	Inspect every 20 min. up to initial 2 hours then check before each ride.
Steering		I	—	—	
Bolts and nuts		T	—	—	Retighten every 1 hour.

2-6 PERIODIC MAINTENANCE

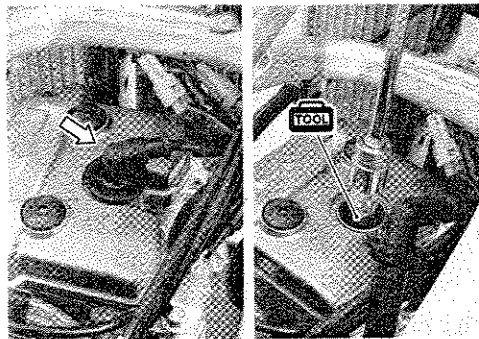
Service Item	Interval	Every race	Every 3 races	Every 6 races	Remarks
	hours	Every 2 hours	Every 6 hours	Every 12 hours	
Oil strainers				I	
Crankcase breather hose		I			
Valve clearance				I	
Silencer		I		R	
Engine oil filter				R	
Hot starter		I			
Cam chain tension			I		Check after 1 hour.

NOTE: R = Replace, C = Clean, T = Tighten, I = Inspect and clean, adjust lubricate or replace if necessary, L = Lubricate

SPARK PLUG

- Remove the seat. (☞ 5-2)
- Remove the radiator covers and fuel tank. (☞ 5-2)
- Disconnect the spark plug cap.
- Remove the spark plug.

 **09816-00141: Spark plug wrench**



- Inspect the spark plug condition, electrode color, carbon deposits, spark plug gap, and washer damage, after removing the spark plug.

NOTE:

Remove the dirt around the spark plug before removing the spark plug to prevent dirt from entering the combustion chamber.

- Inspect the porcelain tip color.

Porcelain tip color	Cause
White (overheated)	• Hot type spark plug • Advanced ignition timing • Lean air/fuel mixture • Deteriorated fuel
Black (fouled)	• Cold type spark plug • Retarded ignition timing • Rich air/fuel mixture • Rich oil/gasoline mixture

- Check the spark plug gap with a thickness gauge.

 **09900-20803: Thickness gauge**

 **Spark plug gap: 0.9 – 1.0 mm (0.035 – 0.039 in)**

 **Standard Spark plug**

NGK	CR8EIB-10
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CAUTION

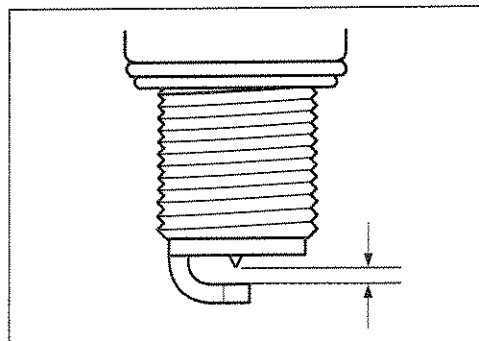
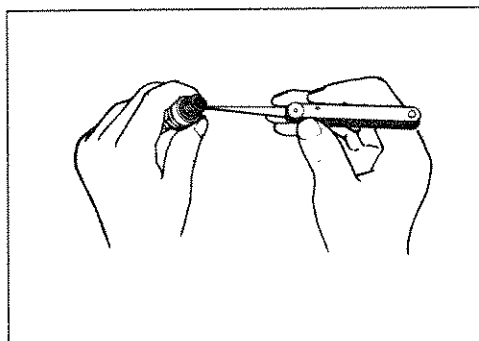
Changing the spark plug heat range improperly can damage the engine.

Select the spark plug heat range only after adjusting the carburetor setting.

- Tighten the spark plug with specified tightening torque after tightening the spark plug temporarily with fingers.

 **Spark plug: 13.0 N·m (1.30 kgf-m, 9.5 lb-ft)**

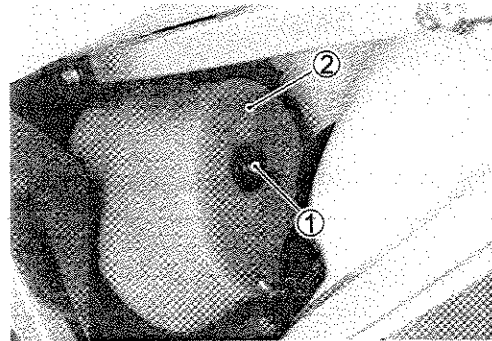
 **09816-00141: Spark plug wrench**



AIR CLEANER

AIR CLEANER ELEMENT REMOVAL

- Remove the left frame cover.
- Remove the wing nut ①.
- Remove the element ② from the element holder.



WASHING

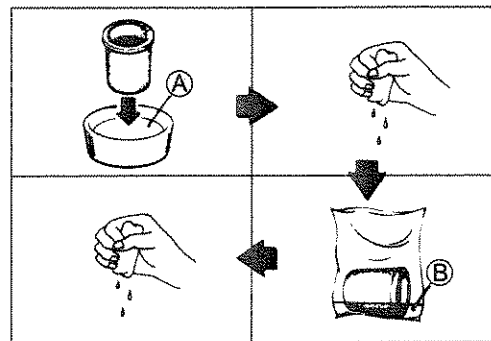
- Fill a washing pan large enough to hold the element with a non-flammable cleaning solvent ①. Immerse the element in the solvent and wash it.

①: MOTUL AIR FILTER CLEAN or equivalent cleaning solvent

- Squeeze the element by grasping it to remove excess solvent. Do not twist or wring the element or it will develop cracks.
- Dry the element in a plastic bag, pour in some foam filter oil ② and work the oil into the element.

②: MOTUL AIR FILTER OIL or equivalent filter oil

- Squeeze the element to remove excess oil.

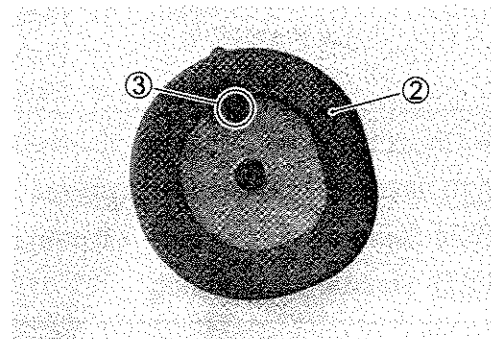


INSTALLATION

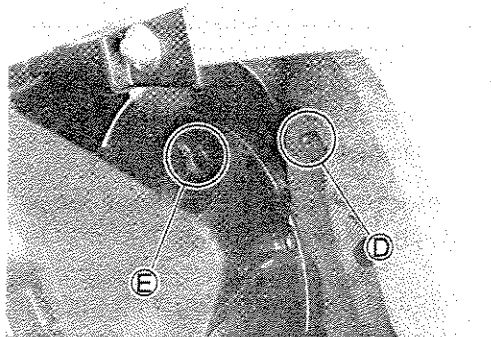
- Apply grease to the element base where it contacts the air cleaner box.
- Fit the element onto the element holder.

NOTE:

Fit the projection of the element holder ③ in the hole of the element base ②.



- Install them in the air cleaner box by engaging the projection ④ of the element holder with the hole ⑤ of the cleaner body.



CAUTION

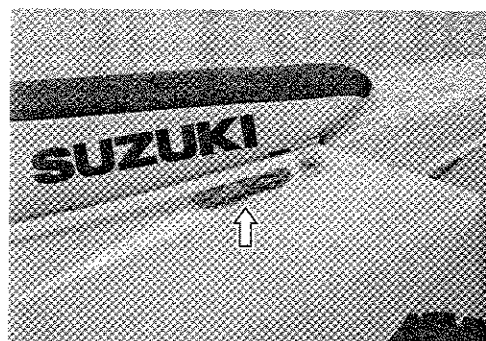
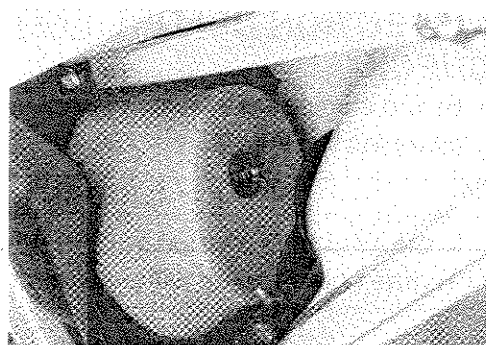
Improper element installation allows dust and dirt to enter the combustion chamber. It can result in piston and cylinder wear.

Be sure to check the element seals properly after installing the elements.

NOTE:

Follow the instructions below to keep the air cleaner element dry when cleaning the motorcycle.

- Cover the element with vinyl bag.
- Install the left frame cover.
- Cover the inlet hole on the frame cover in order to prevent water from coming into the air cleaner box.
- Do not spray high pressure water to the air cleaner box.



ENGINE OIL, OIL FILTER AND OIL STRAINERS

▲ WARNING

Engine oil and exhaust pipes can be hot enough to burn you.

Wait until the oil drain plug and exhaust pipes are cool enough to touch with bare hands before draining oil.

▲ WARNING

New and used oil and solvent can be hazardous. Children and pets may be harmed by swallowing new or used oil or solvent. Continuous contact with used engine oil has been found to cause skin cancer in laboratory animals. Brief contact with used oil or solvent may irritate skin.

- * Keep new and used oil and solvent away from children and pets.
- * Wear a long-sleeve shirt and waterproof gloves.
- * Wash with soap if oil or solvent contacts your skin.

NOTE:

Recycle or properly dispose of used oil and solvent.

INSPECTION BEFORE ENGINE OIL LEVEL CHECK

- Before starting the engine, check that there is sufficient oil for operating the engine.

CAUTION

If the engine is started with insufficient or no oil, the engine components will possibly be damaged.

NOTE:

The oil level measurement may become inaccurate unless the motorcycle is held upright as the vehicle inclination affects the oil level.

- During inspection, hold the motorcycle in an upright position on a level surface.
- Remove the oil check bolt ①. If, at this time, oil comes out from this bolt hole, proceed to "ENGINE OIL LEVEL INSPECTION" next page.

 Oil drain plug: 6.0 N-m (0.6 kgf-m, 4.5 lb-ft)



ENGINE OIL LEVEL INSPECTION

- During inspection, hold the motorcycle in an upright position on a level surface.

NOTE:

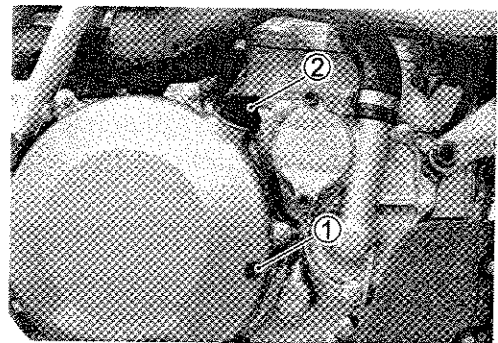
The oil level measurement may become inaccurate unless the motorcycle is held upright as the vehicle inclination affects the oil level.

- Start and run the engine at idle for three minutes.

NOTE:

Do not run the engine at a speed higher than idling, otherwise the oil level to be inspected may be affected.

- Stop and leave the engine standstill for two minutes. Thereafter if oil flows out when the oil check bolt ① is removed, the oil level is appropriate.
- If oil is excessive, let oil flows out of the oil level hole.
- If oil still does not come out, tighten the oil check bolt, remove the filler cap ② and pour an adequate amount of recommended oil.
- Repeat the above-mentioned procedure.
- Tighten the oil check bolt.



 Oil level bolt: 6.0 N·m (0.6 kgf-m, 4.5 lb-ft)

ENGINE OIL CHANGE

- During inspection, hold the motorcycle in an upright position on a level surface.
- Warm up the engine.
- Remove filler cap, TDC plug ① and drain plug ②. Drain oil thoroughly.
- Tighten the drain plug firmly.

 Oil drain plug: 12 N·m (1.2 kgf-m, 8.5 lb-ft)

- Pour specified amount of SAE 10W-40 motor oil.

DATA Oil change1 400 ml (1.5/1.2 US/Imp qt)

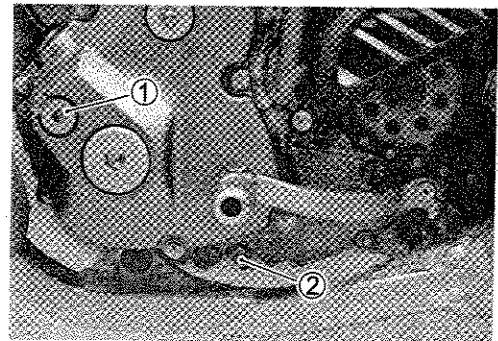
Filter change1 450 ml (1.5/1.3 US/Imp qt)

Overhaul1 500 ml (1.6/1.3 US/Imp qt)

- Tighten the filler cap and TDC plug ①.

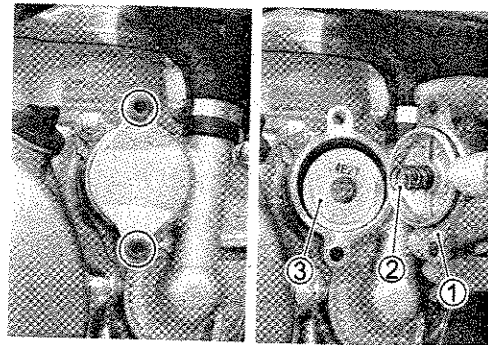
 TDC plug: 16 N·m (1.6 kgf-m, 11.5 lb-ft)

- Run the engine for a few minutes and stop it. Wait a few minutes.
- Inspect the oil level.



ENGINE OIL FILTER CHANGE

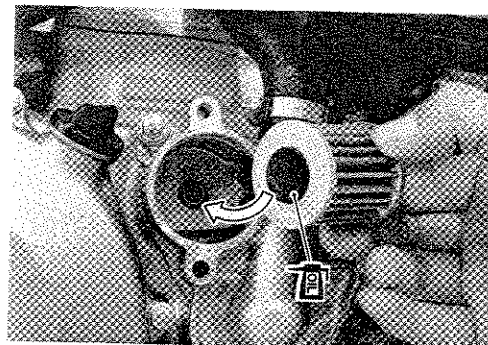
- Drain the engine oil as described in the engine oil replacement procedure.
- Remove the oil filter cap ①, spring ② and oil filter ③.



- Apply engine oil lightly to the gasket of the new oil filter before installation.
- Install the new oil filter.

CAUTION

Make sure that the oil filter is installed properly. If the filter is installed improperly, serious engine damage may result.



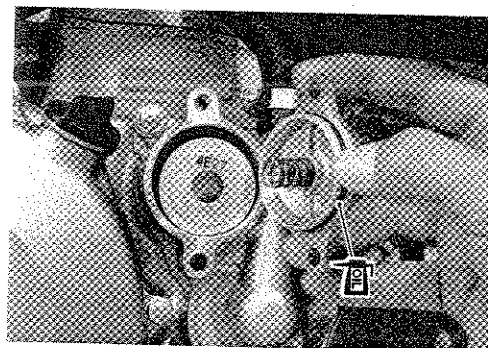
- Apply engine oil lightly to the new O-ring.

CAUTION

Use a new gasket to prevent oil leakage.

- Install the oil filter cap and tighten the bolts securely.
- Add new engine oil and check the oil level as described in the engine oil level inspection procedure.

DATA Oil change..... 1 400 ml (1.5/1.2 US/Imp qt)
 Filter change..... 1 450 ml (1.5/1.3 US/Imp qt)
 Overhaul..... 1 500 ml (1.6/1.3 US/Imp qt)



OIL STRAINERS

(11-3)

ENGINE COOLANT

ENGINE COOLANT LEVEL CHECK

⚠ WARNING

You can be injured by scalding fluid or steam if you open the radiator cap when the engine is hot.

Do not open the radiator cap when the engine is hot.
Wait until engine cools.

- Remove the radiator cap ①.
- Check that the engine coolant level is at the bottom of the inlet hole. If not, replenish the radiator with specified engine coolant.
- Tighten the radiator cap securely.

CAUTION

Improperly tightening the radiator cap will prevent the cooling system from reaching the specified operating pressure and will cause coolant overflow.

Tighten the radiator cap until it locks firmly.

NOTE:

- * This motorcycle does not have an overflow tank at the end of breather hose. Therefore, engine coolant level may decrease while riding. Check the engine coolant level every time before riding.
- * When replenishing engine coolant, be sure to use engine coolant mixed with distilled water at the ratio of 50:50. Adding only water will dilute engine coolant and it may decrease cooling performance.
- * If the motorcycle is to be exposed to temperatures below -31°C (-24°F), the percentage of antifreeze should be increased to 55% or 60%, according to figure 1.

Antifreeze density	Freezing point
50%	-31°C (-24°F)
55%	-40°C (-40°F)
60%	-55°C (-67°F)

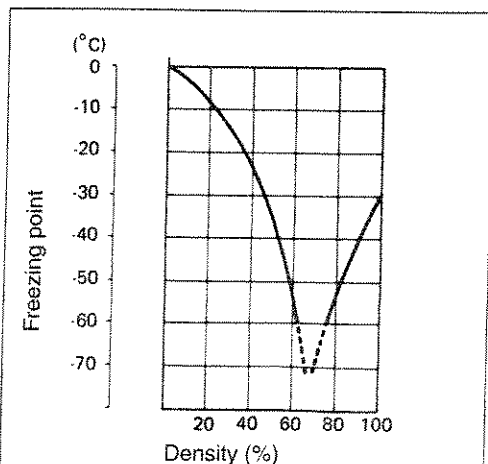
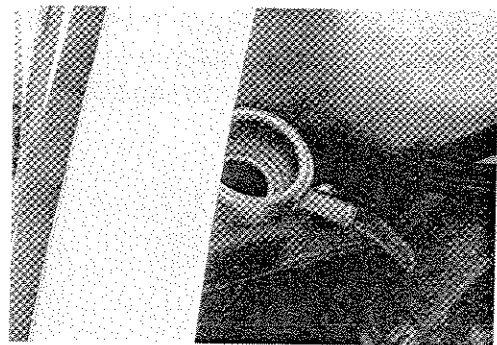
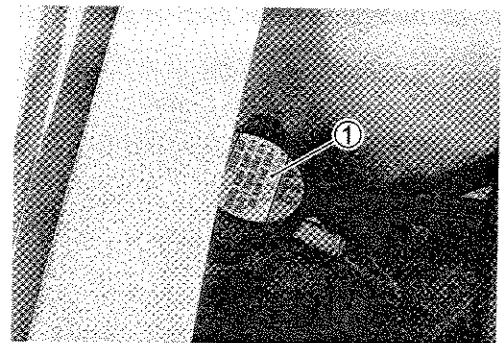
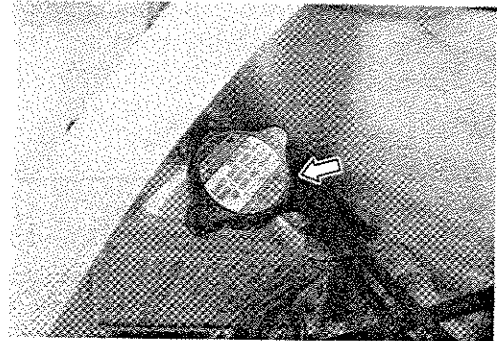


Fig. 1 Engine coolant density-freezing point

ENGINE COOLANT REPLENISHMENT

- Use an anti-freeze and Summer engine coolant which is compatible with aluminum radiator, mixed with distilled water at the ratio of 50:50.

NOTE:

The radiator, cylinder and cylinder head are made of aluminum alloy. Using non-recommended engine coolant may corrode aluminum alloy and may clog the coolant passageways.

⚠ WARNING

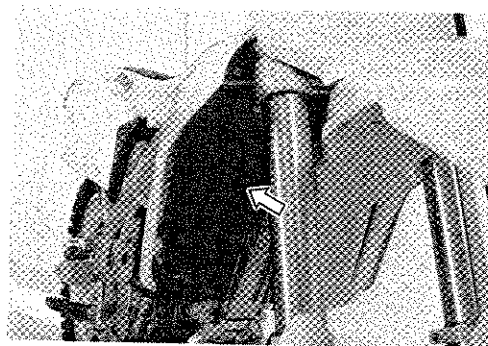
Engine coolant is harmful if swallowed or if it comes in contact with your skin or eyes.

Keep engine coolant away from children and pets. Call your doctor immediately if engine coolant is swallowed and induce vomiting. Flush eyes or skin with water if engine coolant gets in eyes or comes in contact with skin.

COOLING SYSTEM INSPECTION

Inspect the following items before practice and races.

- Engine coolant leakage
- Radiator hose cracks and deterioration
- Radiator mounting condition
- Radiator breather hose condition
- Radiator fin condition



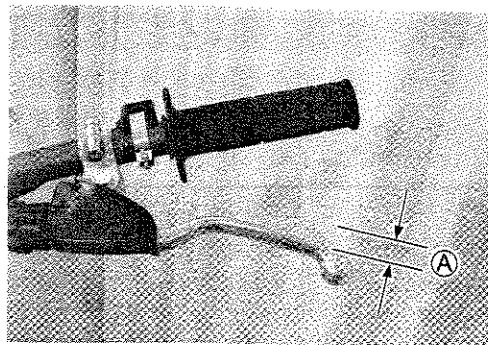
CLUTCH CABLE

Adjust the clutch cable play as follows:

MAJOR ADJUSTMENT

- Loosen locknut ①.
- Turn adjuster ② so the clutch lever has 10 – 15 mm (0.4 – 0.6 in) play at the clutch lever end before pressure is felt.
- Tighten locknut ①.

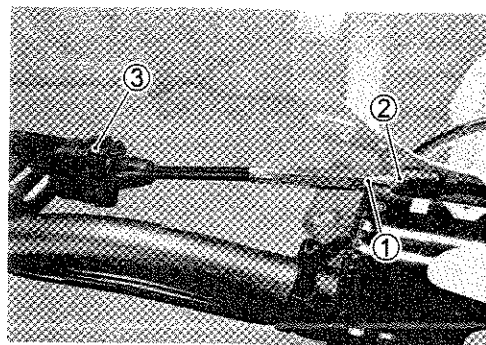
DATA Clutch lever play ①: 10 – 15 mm (0.4 – 0.6 in)



MINOR ADJUSTMENT

- Turn adjuster ③ so the clutch lever has 10 – 15 mm (0.4 – 0.6 in) play at the clutch lever end before pressure is felt.

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



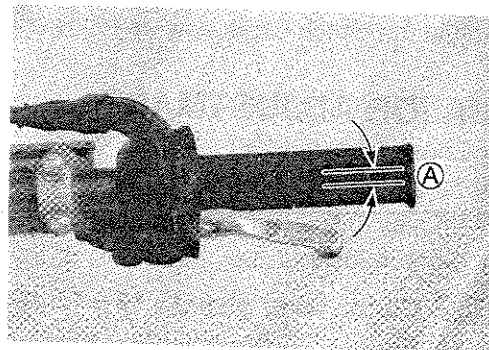
THROTTLE CABLE

▲ WARNING

Inadequate throttle cable play can cause engine speed to rise suddenly when you turn the handlebars. This can lead to loss of rider control.

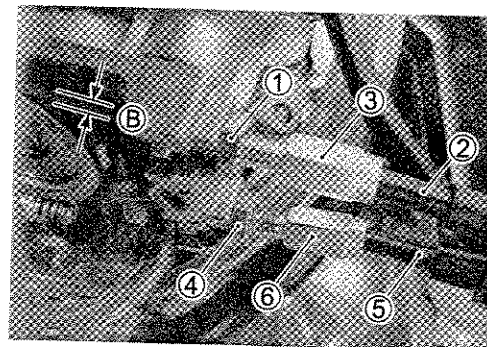
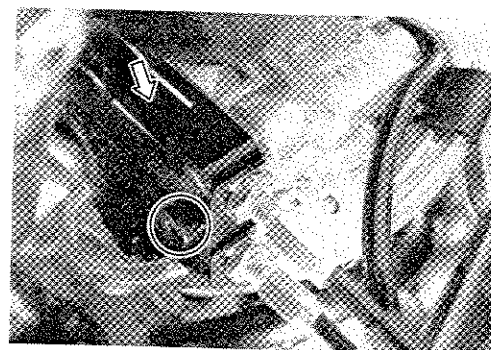
Adjust the throttle cable play so that engine speed does not rise due to handlebar movement.

Adjust the throttle cable play ① as follows:



MAJOR ADJUSTMENT

- Remove the seat. (☞ 5-2)
- Remove the fuel tank. (☞ 5-2)
- Remove the throttle pulley cover.
- Loosen the lock-nuts ① of the throttle returning cable ②.
- Turn the returning cable adjuster ③ to obtain proper cable play.
- Loosen the lock-nuts ④ of the throttle pulling cable ⑤.
- Turn the pulling cable adjuster ⑥ in or out until the throttle cable play ① should be 2.0 – 4.0 mm (0.08 – 0.16 in) at the throttle grip.
- Tighten the lock-nuts ④ securely while holding the adjuster ⑥.



DATA Throttle cable play ①: 2.0 – 4.0 mm (0.08 – 0.16 in)

- While holding the throttle grip at the fully closed position, slowly turn the returning cable adjuster ③ to obtain a cable slack ② of 1.0 mm (0.04 in).
- Tighten the lock-nuts ① securely.

▲ 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.

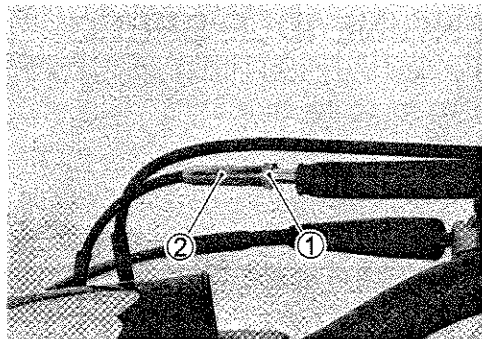
MINOR ADJUSTMENT

- Loosen locknut ①.
- Turn adjuster ② so the throttle grip has 2 – 4 mm (0.08 – 0.16 in) play in circumference.
- Tighten locknut ①.

DATA Throttle cable play **A**: 2 – 4 mm (0.08 – 0.16 in)

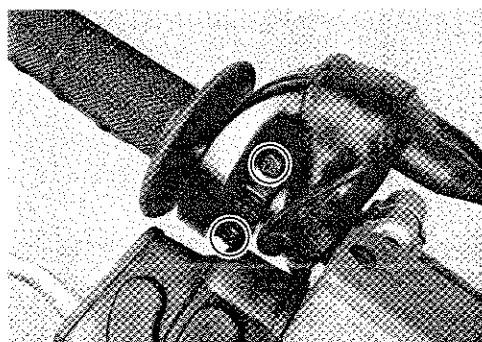
▲ WARNING

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

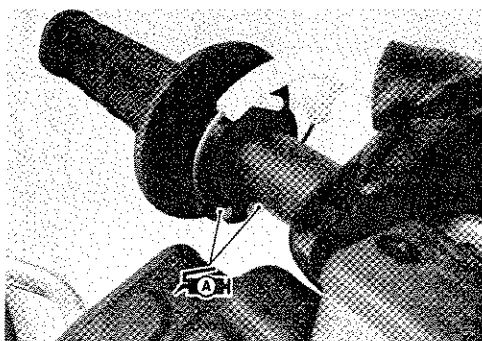


OIL SUPPLY

- Remove the throttle housing cover.

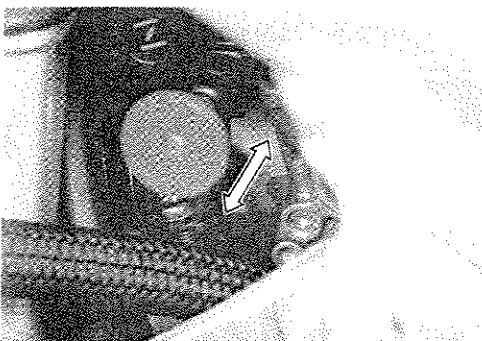


- Apply oil to the throttle cable.
- Apply grease to the throttle cable spool.



HOT STARTER

- Check that the hot starter lever moves smoothly from full open to close.



ENGINE IDLE SPEED

- Adjust the throttle cable play. (☞ 2-16)
- Warm up the engine.

NOTE:

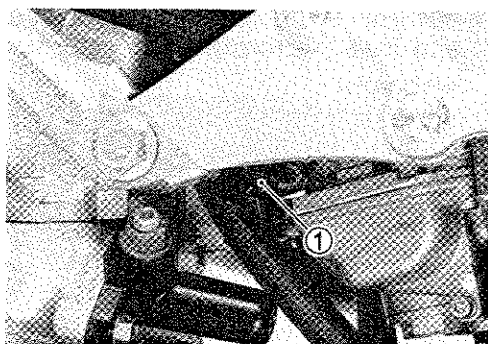
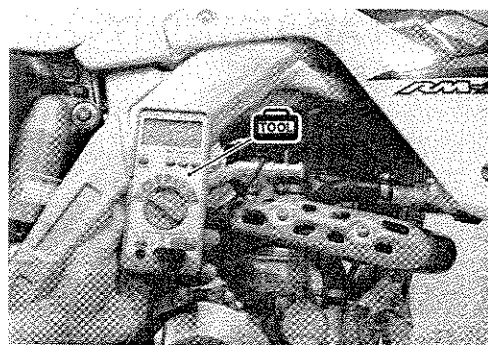
Make this adjustment when the engine is hot.

- Start the engine, turn the idle adjust screw ① and set the engine idle speed as follows.

- Connect the multi-circuit tester to the high-tension cord.
- Start the engine, turn the idle adjust screw ① and set the engine idle speed as follows.

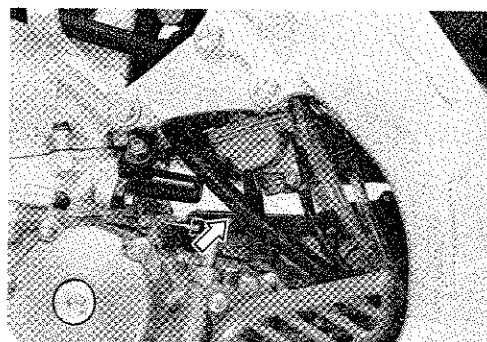
DATA Engine idle speed: $1\ 850 \pm 100$ r/min

TOOL 09900-25008: Multi-circuit tester set



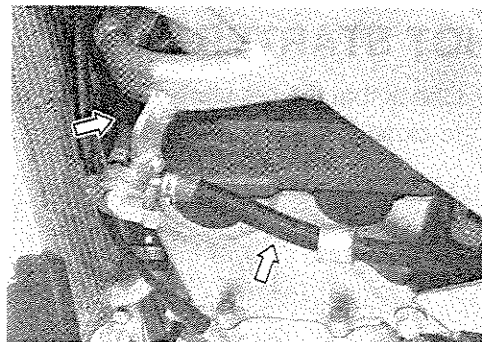
CRANKCASE BREATHER HOSE

- Inspect the crankcase breather hose ① for damage, clogging and bend. If any defects are found, the breather hose must be replaced.



FUEL HOSE

- Inspect the fuel hose for damage and fuel leakage. If any defects are found, the fuel hose must be replaced.
- Replace the fuel hose every four years.



FUEL FILTER

- Drain the fuel.
- Disconnect the fuel hose ① and remove the fuel valve mounting bolt.

⚠ WARNING

Gasoline is highly flammable and explosive.

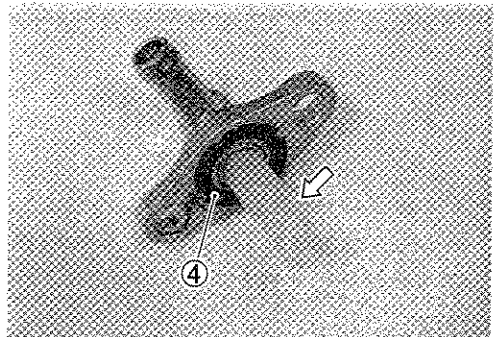
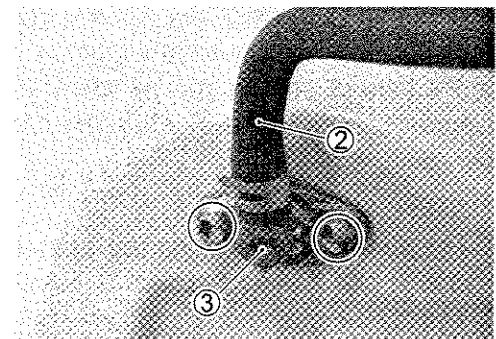
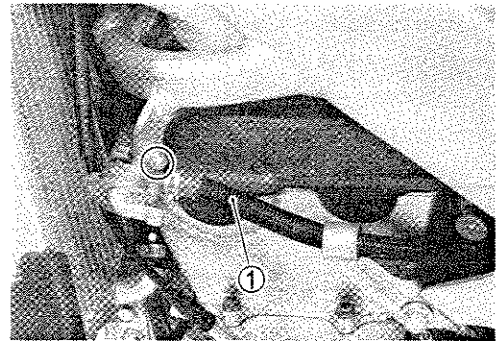
Keep heat, sparks and flames away from gasoline.

- Remove the fuel tank mounting bolt. (☞ 5-2)
- Remove the fuel tank with fuel valve. (☞ 5-2)
- Disconnect the fuel hose ② and remove the fuel filter ③.

- If the fuel filter is dirty with sediment, fuel will not flow smoothly.
- Clean the fuel filter with compressed air.

CAUTION

The O-ring ④ must be replaced with a new one to prevent fuel leakage.



TAPEET CLEARANCE

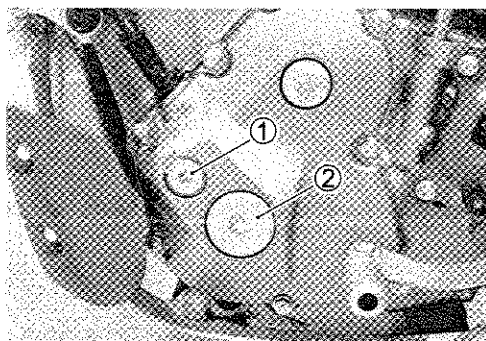
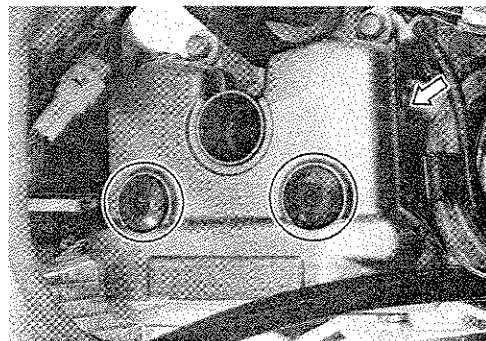
- Remove the seat. (☞ 5-2)
- Remove the radiator covers and fuel tank. (☞ 5-2)
- Disconnect the spark plug cap. (☞ 2-7)
- Remove the spark plug. (☞ 2-7)
- Remove the cylinder head cover and its cylinder head cover gasket.

The tappet clearance specification is different for both intake and exhaust valves.

Tappet clearance adjustment must be checked and adjusted: 1) at the time of periodic maintenance, 2) when the valve mechanism is serviced, and 3) when the camshafts are removed for servicing.

NOTE:

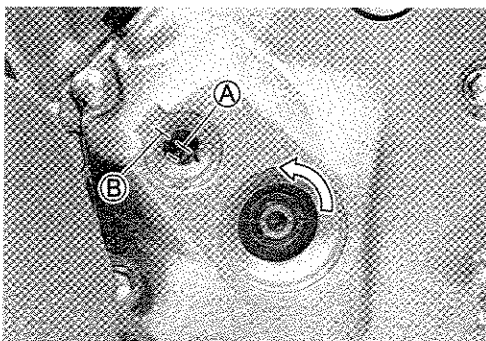
- * The piston must be at top dead center (TDC) on the compression stroke in order to check or adjust the tappet clearance.
- * The tappet clearance should only be checked when the engine is cold.
- Remove the TDC plug ① and magneto cover cap ②.



- Place a wrench over the crankshaft and turn it counter-clockwise to align the TDC mark (A) with the center of the groove (B) of the timing inspection hole.

NOTE:

The piston must be at TDC on the compression stroke.



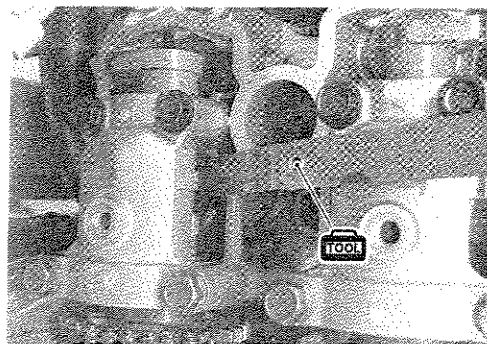
- Insert a thickness gauge between the tappet and the cam. If the clearance is out of specification, adjust it to specification as follows.

TOOL 09900-20803: Thickness gauge

DATA Valve clearance (when cold):

Standard: IN. : 0.15 – 0.20 mm (0.005 – 0.007 in)

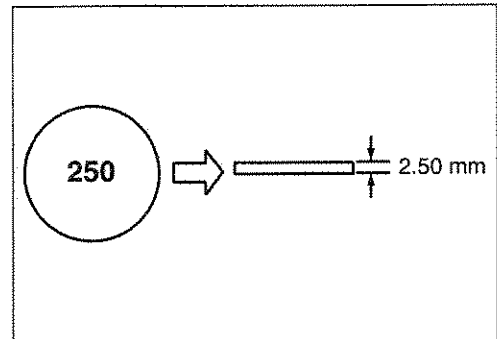
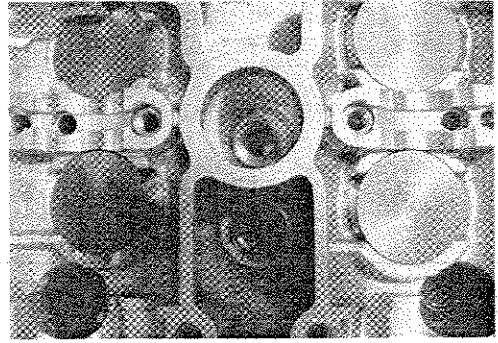
EX. : 0.17 – 0.23 mm (0.006 – 0.009 in)



VALVE CLEARANCE ADJUSTMENT

The clearance is adjusted by replacing the existing tappet shim by a thicker or thinner shim.

- Remove the intake or exhaust camshafts. (☞ 6-4)
- Remove the tappet and shim by fingers or magnetic hand.
- Check the figures printed on the shim. These figures indicate the thickness of the shim, as illustrated.
- Select a replacement shim that will provide a clearance within the specified range. For the purpose of this adjustment, tappet shim are available ranging from 1.500 to 3.500 mm in steps of 0.05 mm. Fit the selected shim to the valve stem end, with numbers toward tappet. Be sure to check shim size with micrometer to ensure its size. Refer to the tappet shim selection table (☞ 2-22, 2-23) for details.



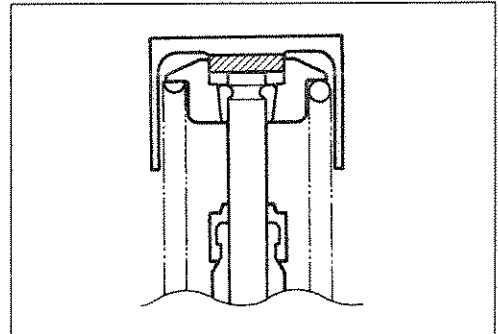
NOTE:

- * Be sure to apply engine oil to tappet shim top and bottom faces.
- * When seating the tappet shim, be sure the figure printed surface faces the tappet.

NOTE:

Reinstall the camshafts in the specified manner. (☞ 6-31)

- After replacing the tappet shim and camshafts, rotate the engine so that the tappet is depressed fully. This will squeeze out oil trapped between the shim and the tappet that could cause an incorrect measurement. Then check the clearance again to confirm that it is within the specified range.
- After finishing the valve clearance adjustment, reinstall the following items.
 - Cylinder head cover (☞ 6-33)
 - Spark plug and Spark plug cap (☞ 2-7)
 - Radiator covers and fuel tank
 - Seat
 - TDC plug and magneto cover cap



(EXHAUST SIDE)

TAPPET SHIM SELECTION TABLE [EXHAUST]

		TAPPET SHIM NO. (12892-35G00-XXX)															TAPPET SHIM NO. (12892-41C00-XXX)																											
		TAPPET SHIM SET (12800-35810)															TAPPET SHIM SET (12800-41810)																											
PRESENT SHIM SIZE (mm)	MEASURED VALVE CLEARANCE (mm)	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50		
0.00-0.01																																												
0.02-0.06																																												
0.07-0.11																																												
0.12-0.16																																												
0.17-0.23																																												
0.24-0.28																																												
0.29-0.33																																												
0.34-0.38																																												
0.39-0.43																																												
0.44-0.48																																												
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0.84-0.88																																												
0.89-0.93																																												
0.94-0.98																																												
0.99-1.03																																												
1.04-1.08																																												
1.09-1.13																																												
1.14-1.18																																												
1.19-1.23																																												
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1.39-1.43																																												
1.44-1.48																																												

HOW TO USE THIS CHART:

I.

Measure valve clearance. "ENGINE IS COLD"

II.

Measure present shim size.

III.

Match clearance in vertical column with present shim size in horizontal column.

EXAMPLE

Valve clearance is 0.28 mm

Present shim size 2.40 mm

HOW TO USE THIS CHART:

- Measure valve clearance. "ENGINE IS COLD"
- Measure present shim size.
- Match clearance in vertical column with present shim size in horizontal column.

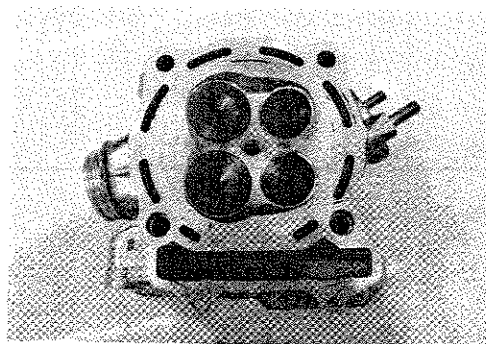
EXAMPLE

Valve clearance is 0.28 mm
 Present shim size 2.40 mm
 Shim size to be used 2.45 mm

CYLINDER HEAD, CYLINDER AND PISTON

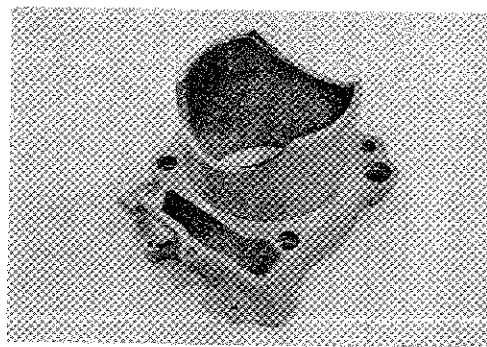
CYLINDER HEAD

- Remove the cylinder head. (☞ 6-4)
- Decarbonize the combustion chambers.
- Inspect for pinholes, cracks and other damage.



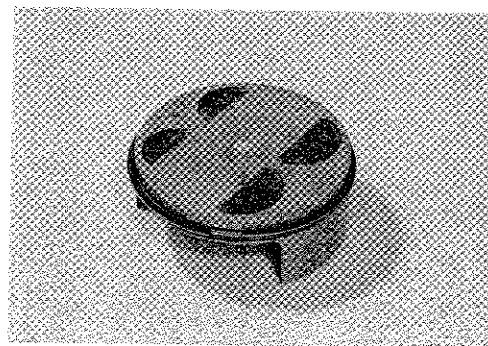
CYLINDER

- Remove the cylinder. (☞ 6-5)
- Inspect the cylinder wall for any scratches, nicks or other damage.



PISTON

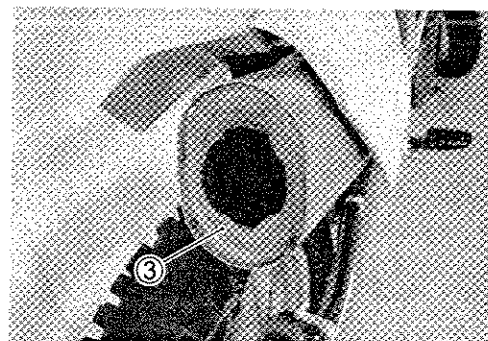
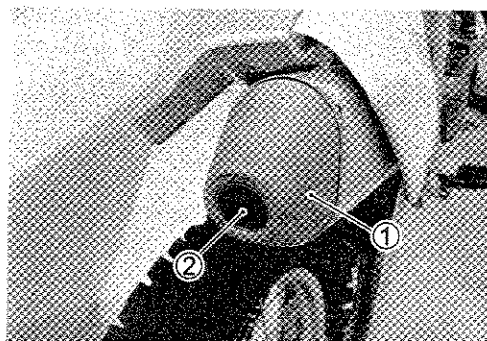
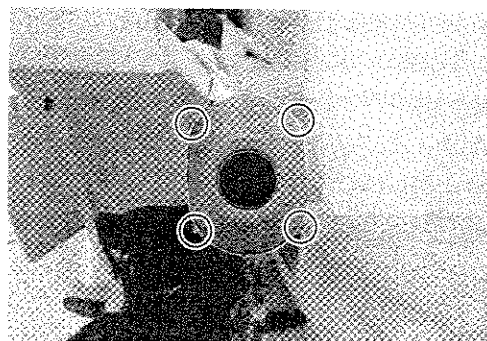
- Remove the piston. (☞ 6-6)
- Decarbonize the top surface of the piston.
- Check for scratches and cracks.
- Check piston ring wear. Remove carbon deposits from the piston ring groove.



EXHAUST SILENCER

SILENCER INSPECTION AND REPLACEMENT

- Remove the baffle mounting bolts.
- Remove the baffle ① and inner plate ②.
- Inspect the glass wool ③ for clogging with carbon deposit or tar.
- Replace the glass wool ③ with a new one if necessary.



SILENCER REASSEMBLY

- Install the baffle and diffuser.
- Tighten four bolts.

NOTE:

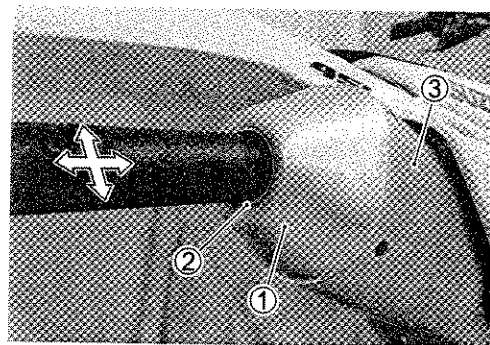
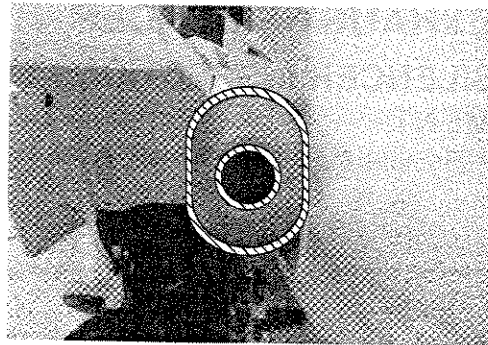
Apply **SUZUKI BOND** to the circumference of the silencer pipe and diffuser.

1207B 99000-31140: SUZUKI BOND "1207B"

- The baffle mounting bolt is of flanged type which tightens the body ③, baffle ① and inner plate ② together. When tightening, make sure to properly align the screw holes of these three parts to prevent the bolt from cross-threading or interfering with the screw holes.

NOTE:

To position the baffle ① and the inner plate ② in alignment with the body, use a rod which fits into the inner plate bore and move it as necessary.

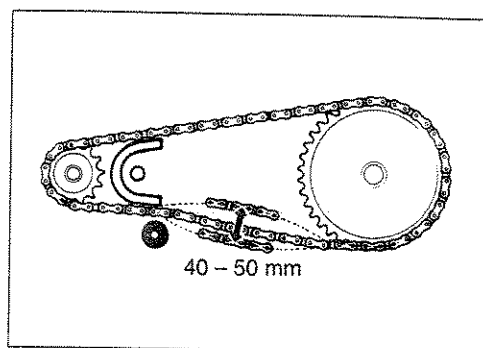


DRIVE CHAIN AND SPROCKETS

DRIVE CHAIN SLACK

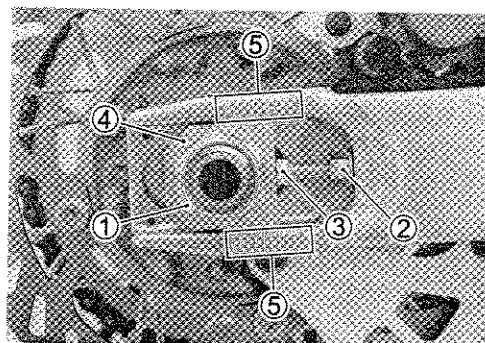
- Place the motorcycle on the side stand.
- Inspect the drive chain slack at the middle point between the two sprockets.

DATA Drive chain slack: 40 – 50 mm (1.57 – 1.97 in)



DRIVE CHAIN ADJUSTMENT

- Loosen the axle nut ①.
- Loosen the locknuts ② and adjust the drive chain slack to the specification by turning the adjusters ③. Make sure that the right and left adjuster plates ④ are at the same position on scales ⑤.
- With the adjusters ③ held in position, tighten the locknuts ②.
- Push the adjuster plates ④ to the adjusters ③ and tighten the axle nut ①.



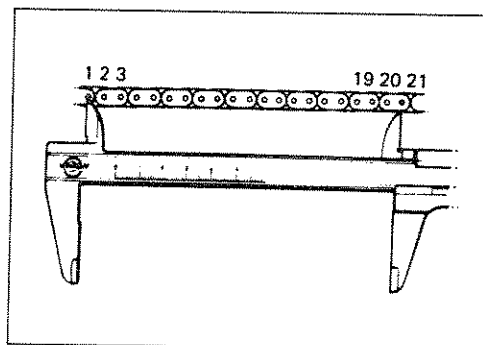
ⓘ Axle nut: 100 N·m (10.0 kgf-m, 72.5 lb-ft)

- Tighten the locknut ②.

20TH PITCH LENGTH

- Pull the drive chain tight and measure the 20th pitch length.

DATA Service Limit: 323.8 mm (12.7 in)



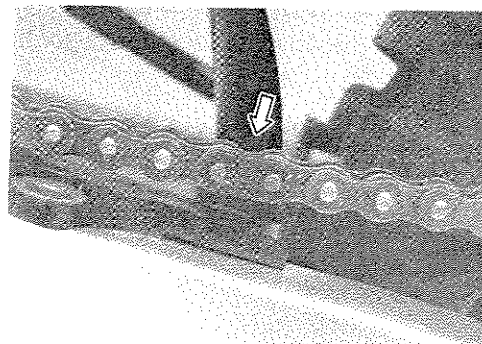
DRIVE CHAIN LUBRICATION

- Remove the chain clip and master link from the drive chain and remove the drive chain.

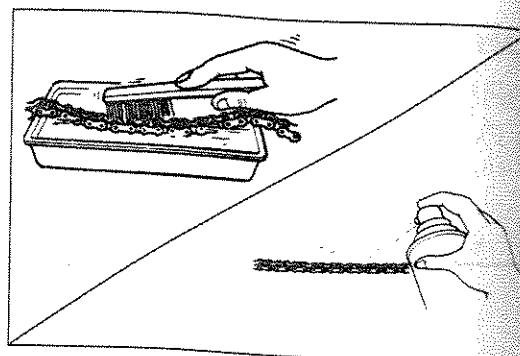
NOTE:

Be careful not to bend the chain clip.

- Inspect for wear and damage of the drive chain and replace it if necessary.



- Clean the drive chain with non-flammable cleaning solvent.
- Do not use gasoline to clean the drive chain.
- Dry the drive chain.
- Apply Suzuki Chain Lube or an equivalent to the link plates and rollers.

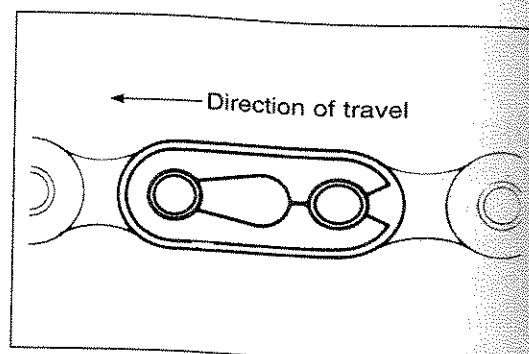


- Reassemble the drive chain.

NOTE:

Reassemble the drive chain clip so the slit end faces opposite the direction of rotation.

- Adjust the drive chain slack.

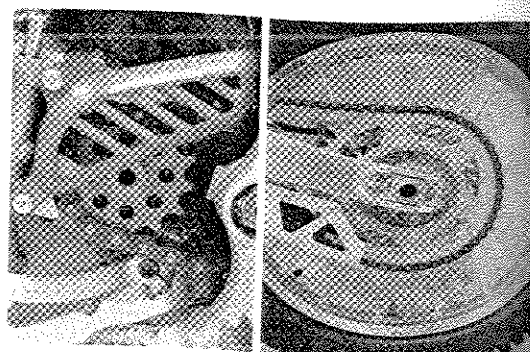


SPROCKET INSPECTION

- Inspect the engine sprocket and rear sprocket for wear and cracks. Replace the sprockets as necessary.

NOTE:

When replacing a worn sprocket, it is likely that the drive chain will need to be replaced as well.



DRIVE CHAIN GUIDE, BUFFER AND TENSIONER ROLLER

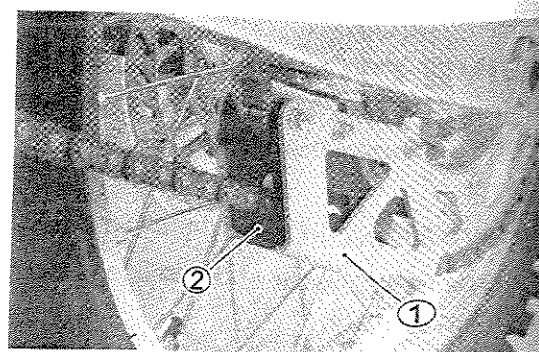
DRIVE CHAIN GUIDE

- Inspect the drive chain guide ① for bends and damage.

NOTE:

The drive chain can hit a bent guide causing noise and drive chain wear.

- Inspect the chain guide defense ② for wear.

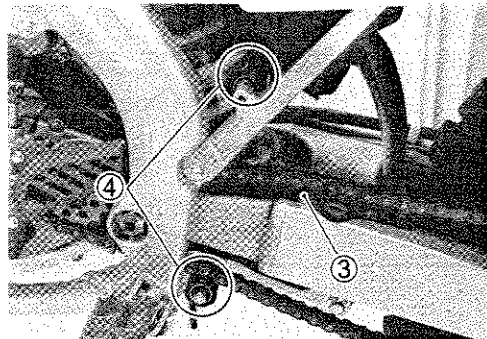


DRIVE CHAIN GUIDE BUFFER

- Inspect the drive chain guide buffer ③ for wear and cracks.

NOTE:

The drive chain can touch the swingarm directly if the chain guide buffer is worn out. This will cause drive chain and swing-arm damage.



DRIVE CHAIN TENSIONER ROLLER

- Inspect the drive chain tensioner rollers ④ for wear.
- Inspect the tensioner roller bolts for tightness.

Drive chain tensioner roller bolt:

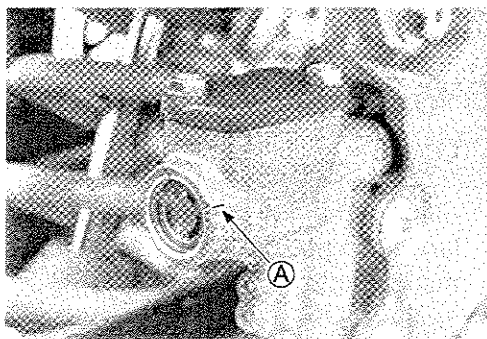
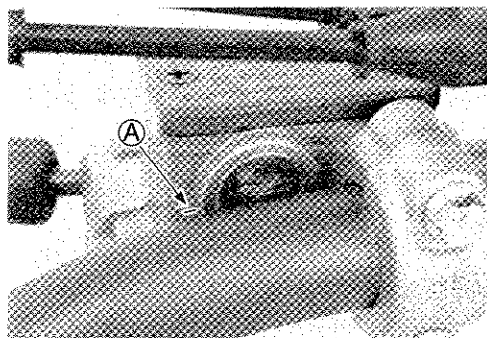
21 N·m (2.1 kgf-m, 15.0 lb-ft)

BRAKES

BRAKE FLUID LEVEL

- Inspect the brake fluid level in both front and rear reservoirs. If the brake fluid level is lower than LOWER mark ①, replenish the reservoir with the specified brake fluid to the UPPER level. Inspect brake pad wear and brake fluid leakage if the brake fluid level decreases.

Brake fluid: DOT 4



WARNING

Brake fluid can be hazardous to humans and pets. Brake fluid is harmful or fatal if swallowed, and harmful if it comes in contact with your skin or eyes.

Keep brake fluid away from children. Call your doctor immediately if brake fluid is swallowed, and induce vomiting. Flush eyes or skin with water if brake fluid gets in eyes or comes in contact with skin.

WARNING

The use of any fluid except DOT4 brake fluid from a sealed container can damage the brake system and lead to an accident.

Use only DOT4 brake fluid from a sealed container. Never use or mix different types of brake fluid.

CAUTION

Spilled brake fluid can damage painted surfaces and plastic parts.

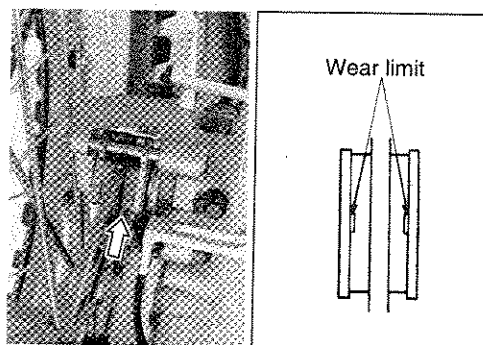
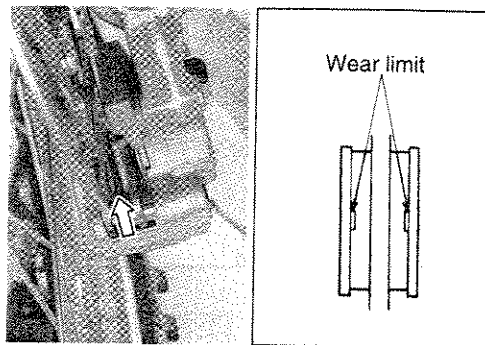
Be careful not to spill any fluid when filling the brake fluid reservoir. Wipe spilled fluid up immediately.

BRAKE PAD

- Inspect the brake pads for wear. If the brake pads are worn, replace them with new ones. (☞ 16-5)

NOTE:

- * Pump the brake lever/pedal several times to restore the brake pads after replacing the brake pads.
- * Replace both right and left pads together when replacing the brake pads.

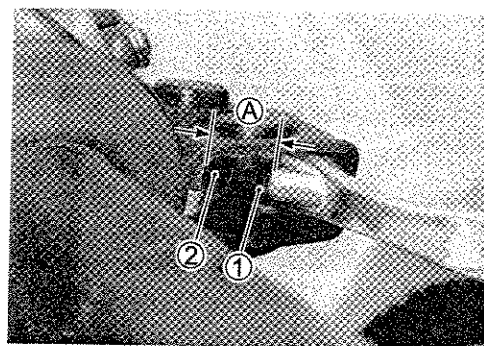


FRONT BRAKE LEVER ADJUSTMENT

Adjust the brake lever position as follows:

- Loosen locknut ①.
- Turn in or out adjuster ② to obtain the proper brake lever position.
- The standard adjuster length ③ is from 11 mm to 15 mm.
- Tighten the locknut ①.

DATA Adjuster length ③: 11 – 15 mm (0.4 – 0.6 in)

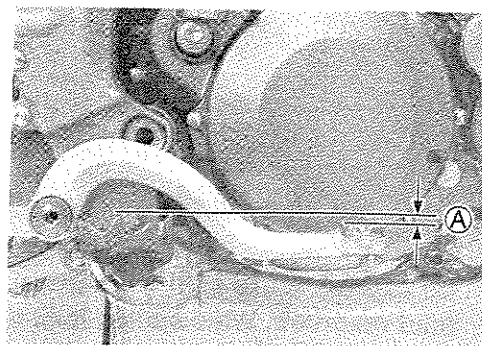
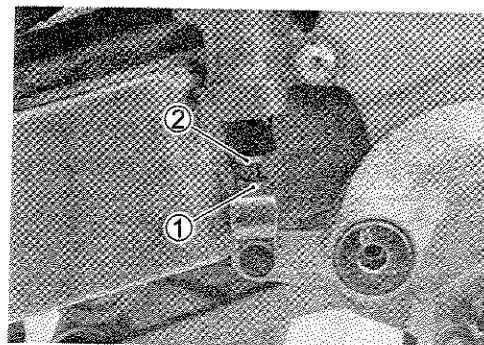


BRAKE PEDAL HEIGHT ADJUSTMENT

Adjust the rear brake pedal height as follows:

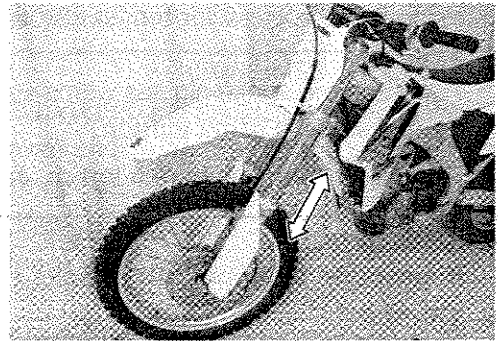
- Loosen locknut ①.
- Adjust the brake pedal height ② by turning the adjuster ③ to locate the pedal 0 – 10 mm (0 – 0.39 in) below the top face of the footrest.
- Tighten locknut ①.

DATA Brake pedal height ②: 0 – 10 mm (0 – 0.3 in)

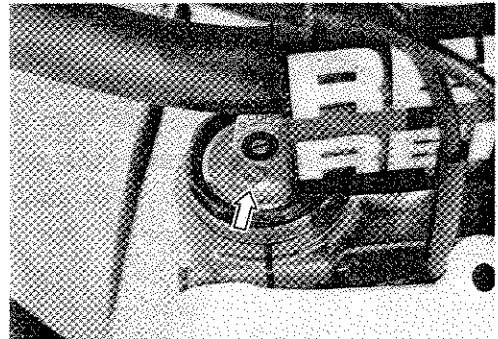


FRONT FORK

- Move the front fork up and down several times and inspect for smooth movement.
- Inspect for damage and oil leaks.
- Inspect the bolts and nuts for tightness.
- Place a stand under the chassis tube to lift the front wheel off the ground.

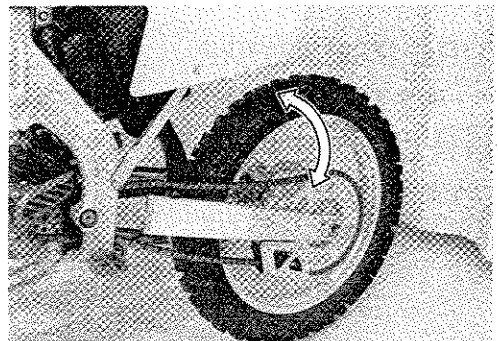


- Remove the air bleed screw and equalize the air pressure in the front forks to atmospheric pressure.
- Refit the air bleed screw.



REAR SUSPENSION

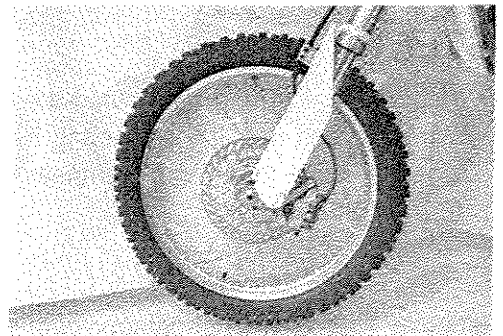
- Move the rear suspension up and down several times and inspect for smooth movement.
- Inspect for damage and oil leaks.
- Inspect the bolts and nuts for tightness.



WHEELS AND TIRES

WHEEL RIM

- Inspect the wheel bearing for rattles. Replace the bearings if necessary. (☞ 15-4)
- Inspect the wheel rim runout. (☞ 15-4)



SPOKE NIPPLE AND RIM LOCK

- Inspect the spokes for tension by squeezing the spoke nipples.
- Retighten the spoke nipples with a spoke nipple wrench so as all spokes have same tension.

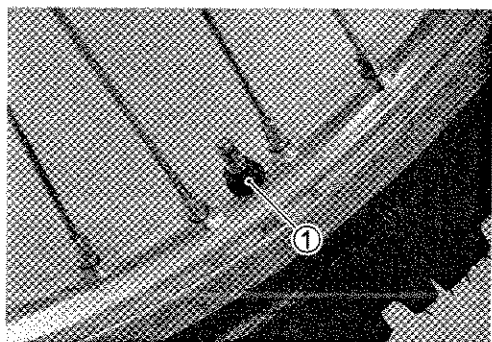
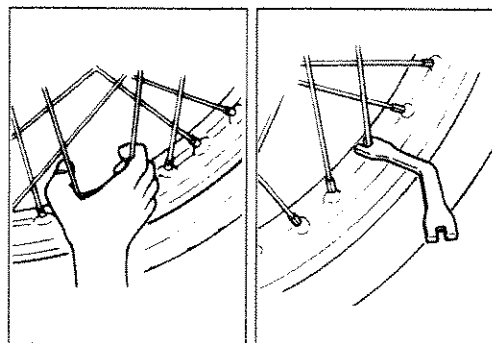
 **Spoke nipple: 6 N·m (0.6 kgf-m, 4.5 lb-ft)**

CAUTION

Improperly tightening the spoke nipples can damage the wheel.

Tighten the spoke nipples less than 1/2 turn at a time. Inspect the spoke tension and then retighten the spoke nipple.

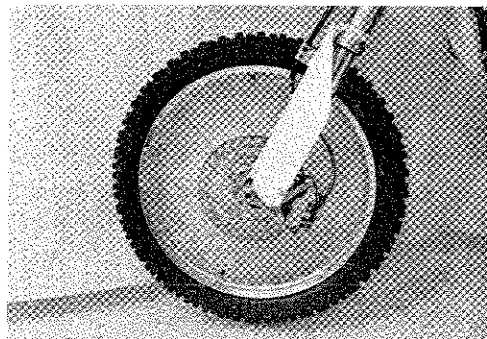
- Inspect the rim lock ① for tightness.



TIRE PRESSURE

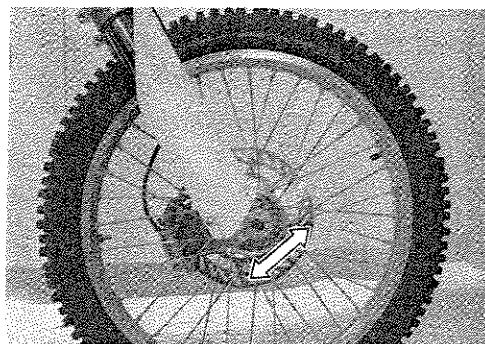
- Inspect front and rear tire pressure.

DATA Tire pressure (cold): 70 – 110 kPa
(0.7 – 1.1 kgf/cm², 9.9 – 15.6 psi)



STEERING

- Inspect the steering by moving the front fork up and down, and right and left. If the steering has play or binds, inspect steering stem head nut tightness and steering bearings. (17-20)



LUBRICATION

Apply grease or oil to the moving parts to increase durability and prevent wear.

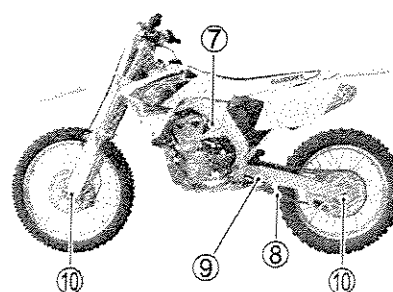
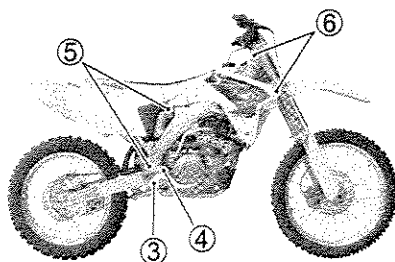
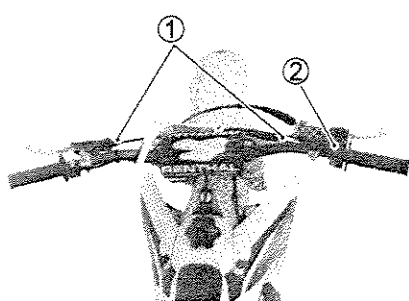
No.	ITEM	LUBRICANT	FREQUENCY	COMMENTS
①	Inner cable ends, lever	A	Pre-race and between every race	Run oil through cables until it exits the lower end. Lube the cable ends where they pivot.
②	Throttle grip, throttle housing, cable	A	Pre-race	Lightly grease the inside of throttle spool. Keep free from dirt.
③	Rear brake pedal	C	Pre-race	Grease the brake pedal pivot.
④	Swingarm	C	Every 3 races/More often according to conditions	Clean and pack the bearings. Keep seals fresh. Grease the seals.
⑤	Rear suspension linkage pivot points	C	Every 1 race/More often according to conditions	Clean and pack the bearings. Keep seals fresh. Grease the seals.
⑥	Steering stem bearings	C	Every 5 races/More often according to conditions	Clean and pack the bearings. Keep seals fresh.
⑦	Starter shaft	A	Pre-race	Lightly oil the plunger shaft.
⑧	Drive chain	B	Pre-race and between every race	Keep chain thoroughly lubed at all times. Always check wear and alignment.
⑨	Cushion lever dust seals	A	Pre-race	Grease the seals.
⑩	Front and rear wheels	A	Pre-race	Grease the bearing and seals.

The following materials are necessary:

A. Lightweight oil such as WD-40 or penetrating oil.

B. Aerosol type Chain Lube.

C. SUZUKI SUPER GREASE "A" or Water-proof wheel bearing grease.



Follow the schedule closely. The disassembly necessary to lubricate many components is in itself valuable preventative maintenance. It allows you to inspect for wear, fatigue, adjustment and fastener tightness and it allows you to clean out the grit which otherwise cannot be gotten out.

COMPRESSION PRESSURE CHECK

The compression pressure reading 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.

COMPRESSION PRESSURE SPECIFICATION

Standard
430 – 720 kPa (4.3 – 7.2 kgf/cm ² , 61 – 102 psi)

Low compression pressure can indicate any of the following conditions:

- * Excessively worn cylinder walls
- * Worn piston or piston rings
- * Piston rings stuck in grooves
- * Poor valve seating
- * Ruptured or otherwise defective cylinder head gasket
- * Decomp. trouble

COMPRESSION TEST PROCEDURE

NOTE:

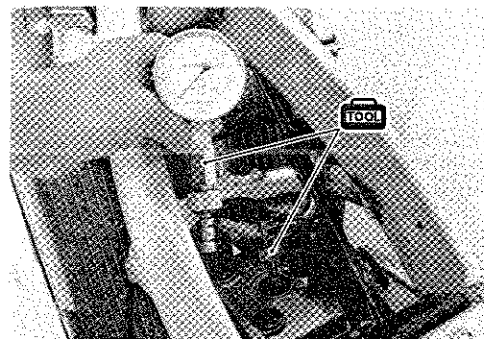
- * Before testing the engine for compression pressure, make sure that the cylinder head nuts are tightened to the specified torque values and the valves are properly adjusted.
- * Warm up the engine before testing.

Remove the related parts and test the compression pressure in the following manner:

- Remove the seat. (☞ 5-2)
- Remove the fuel tank. (☞ 5-2)
- Remove the spark plug. (☞ 2-7)
- Install the compression gauge and adaptor in the spark plug hole. Make sure that the connection is tight.
- Keep the throttle grip in the fully opened position.
- Kick energetically the kick starter about 5 times to turn the engine.
- Record the maximum gauge reading as the cylinder compression.

 **09915-64510: Compression gauge set**
09913-10750: Adaptor

- Install the spark plug, fuel tank and seat.



OIL PRESSURE CHECK

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

DATA Oil pressure:

50 kPa (0.5 kgf/cm²) at 1 850 r/min, oil temp. at 50 °C (122 °F)

Low or high oil pressure can indicate any of the following conditions:

LOW OIL PRESSURE

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

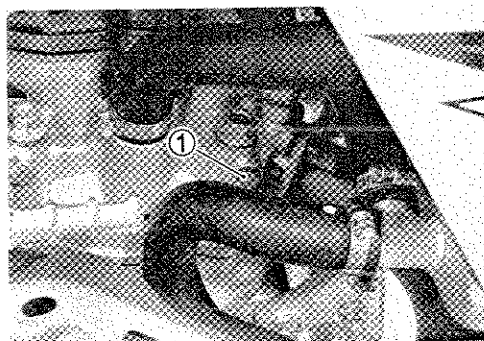
HIGH OIL PRESSURE

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

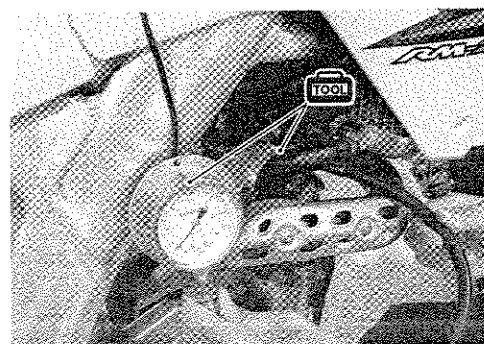
OIL PRESSURE TEST PROCEDURE

- Connect the multi-circuit tester to the high-tension cord.

TOOL 09900-25008: Multi-circuit tester set



- Remove the main oil gallery plug ①.
- Install the oil pressure gauge and adaptor into the main oil gallery.
- Warm up the engine.
- After warming up the engine, increase the engine speed to 1 850 r/min (observe the tachometer), and read the oil pressure gauge.



▲ WARNING

Do not remove the oil pressure gauge adapter when the engine is hot. Wait until engine cools.

- Install the oil gallery plug ①.

Oil gallery plug: 10 N·m (1.0 kgf-m, 7.0 lb-ft)

TOOL 09915-74510: Oil pressure gauge
09915-40211: Adaptor

TROUBLESHOOTING

CONTENTS

ENGINE	3- 2
CHASSIS	3-11

ENGINE

Complaint	Possible Cause	Remedy
Engine does not start or hard to start	Engine will not turn	
	• Valve seizure	Replace
	• Tappet seizure	Replace
	• Cylinder, piston seizure	Replace
	• Crankshaft seizure	Replace
	• Conrod small end, big end seizure	Replace
	• Transmission gear or bearing seizure	Replace
	• Camshaft seizure	Replace
	• Kick shaft return spring broken	Replace
	• Kick ratchet gear not engaging	Adjust or replace
	No fuel flows	
	• No fuel in tank	Fill
	• Fuel tank cap air vent obstructed	Clean or replace
	• Fuel valve clogged	Clean or replace
	• Fuel valve turned to OFF	Turn to ON
	• Fuel line clogged	Clean or replace
	• Needle valve jammed with foreign matter	Clean or replace
	Engine flooded	
	• Fuel level in float chamber too high	Adjust
	• Float valve worn or jammed with foreign matter	Clean or replace
	Fuel/air mixture incorrect	
	• Starting technique faulty (When flooded, crank the engine with the hot start opened to allow more air to reach the engine.)	Retry after inspecting others.
	• Pilot screw/Idle adjust screw maladjusted	Adjust
	• Slow jet or air passage clogged	Clean or replace
	• Air cleaner clogged, poorly sealed or missing	Clean or correct
	• Starter jet clogged	Clean or replace
	No spark or spark weak	
	• Spark plug dirty, gap maladjusted or broken	Clean, adjust, replace
	• Spark plug cap or high tension wiring trouble	Replace
	• Spark plug cap shorted or not in good contact	Replace
	• Spark plug incorrect heat value	Replace
	• Faulty CDI unit	Replace
	• Crankshaft sensor trouble	Replace
	• Ignition coil trouble	Replace
	• Ignition switch, engine stop switch shorted	Replace
	• Neutral switch trouble	Replace
	• Wiring shorted or open	Repair or replace
	• Flywheel magneto damage	Replace

Complaint	Possible Cause	Remedy
Engine does not start or hard to start	Compression low • Spark plug loose • Cylinder head not sufficiently tightened down • Too little valve clearance • Cylinder, piston worn • Piston ring bad (worn, weak, broken, or sticking) • Piston ring/groove clearance excessive • Cylinder head gasket damaged • Cylinder head warped • Valve spring broken or weak • Valve not seating properly (valve bent, deformed, worn, or carbon accumulation on the seating surface) • Decomp. trouble	Tighten Tighten Adjust Replace Replace Replace Replace Replace Replace Replace Clean or replace
	Spark weak • Spark plug dirty, gap maladjusted or broken • Spark plug cap or high tension wiring trouble • Spark plug cap shorted or not in good contact • Spark plug incorrect heat value • Faulty CDI unit • Crankshaft sensor trouble • Ignition coil trouble • Flywheel magneto damaged • Wiring connector not in good contact	Clean, adjust, replace Replace Replace Replace Replace Replace Replace Replace Repair or replace
Poor running at low Speed	Fuel/air mixture incorrect • Pilot screw maladjusted • Slow jet or air passage clogged • Needle Jet or air passage clogged • Air cleaner clogged, poorly sealed, or missing • Starter plunger stuck open • Hot start stuck open • Fuel level in float chamber too high or too low • Fuel tank cap air vent obstructed • Fuel valve clogged • Carburetor clamp loose • Air cleaner duct loose	Adjust Clean or replace Clean or replace Clean or correct Close Close Adjust Clean or replace Clean or replace Tighten Tighten

Complaint	Possible Cause	Remedy
Poor Running at low Speed	Compression low	
	• Spark plug loose	Tighten
	• Cylinder head not sufficiently tightened down	Tighten
	• Too little valve clearance	Adjust
	• Cylinder, piston worn	Replace
	• Piston ring bad (worn, weak, broken, or sticking)	Replace
	• Piston ring/groove clearance excessive	Replace
	• Cylinder head gasket damaged	Replace
	• Cylinder head warped	Replace
	• Valve spring broken or weak	Replace
	• Valve not seating properly (valve bent, deformed, worn, or carbon accumulation on the seating surface)	Replace
	• Decomp. trouble	Clean or replace
	Other	
• Faulty CDI unit	Replace	
• Engine oil level too high	Adjust	
• Engine oil viscosity too high	Replace	
• Brake dragging	Repair or replace	
• Drive train trouble	Repair or replace	
• Clutch slipping	Repair or replace	
Poor running or less power at high speed	Firing incorrect	
	• Spark plug dirty, gap maladjusted or broken	Clean, adjust, replace
	• Spark plug cap or high tension wiring trouble	Replace
	• Spark plug cap shorted or not in good contact	Replace
	• Spark plug incorrect heat value	Replace
	• Faulty CDI unit	Replace
	• Crankshaft sensor trouble	Replace
	• Ignition coil trouble	Replace
	• Flywheel magneto damage	Replace
	• Wiring connector not in good contact	Repair or replace

Complaint	Possible Cause	Remedy
Poor running or less power at high speed	Fuel/air mixture incorrect • Starter plunger stuck open • Hot start stuck open • Main jet clogged or wrong size • Jet needle or needle jet worn • Air jet clogged • Fuel level in float chamber too high or too low • Needle Jet, or air passage clogged • Air cleaner clogged, poorly sealed, or missing • Air cleaner duct loose • Water or foreign matter in fuel • Carburetor clamp loose • Fuel tank cap air vent obstructed • Fuel valve clogged • Fuel line clogged	Close Close Clean or replace Replace Clean or replace Adjust Clean or replace Clean or correct Tighten Clean or correct Tighten Clean or replace Clean or replace Clean or replace
	Compression low • Spark plug loose • Cylinder head not sufficiently tightened down • Too little valve clearance • Cylinder, piston worn • Piston ring bad (worn, weak, broken, or sticking) • Piston ring/groove clearance excessive • Cylinder head gasket damaged • Cylinder head warped • Valve spring broken or weak • Valve not seating properly (valve bent, deformed, worn, or carbon accumulation on the seating surface) • Decomp. trouble	Tighten Tighten Adjust Replace Replace Replace Replace Replace Replace Replace Clean or replace
	Knocking • Carbon built up in combustion chamber • Fuel poor quality or incorrect • Spark plug incorrect heat value • Faulty CDI unit	Clean Replace Replace Replace
	Other • Throttle valve does not fully open • Air cleaner clogged • Brake dragging • Clutch slipping • Engine oil level too high • Engine oil viscosity too high • Drive train trouble • Water or foreign matter in fuel • Crankshaft bearing worn or damage	Replace Clean or replace Repair or replace Repair or replace Adjust Replace Repair or replace Replace Replace

Complaint	Possible Cause	Remedy
Engine overheating	Firing incorrect - Spark plug dirty, gap maladjusted or broken - Spark plug incorrect heat value - Faulty CDI unit	Clean, adjust, replace Replace Replace
	Fuel/air mixture incorrect - Main jet clogged or wrong size - Fuel level in float chamber too low - Carburetor clamp loose - Air cleaner clogged, poorly sealed, or missing - Air cleaner duct loose - Hot start stuck open	Clean or replace Adjust Tighten Clean or correct Tighten Close
	Compression high Carbon built up in combustion chamber	Clean
	Engine load faulty - Clutch slipping - Engine oil level too high - Engine oil viscosity too high - Brake dragging - Drive train trouble	Repair or replace Adjust Replace Repair or replace Repair or replace
	Lubrication inadequate - Engine oil level too low - Engine oil poor quality or incorrect	Adjust Replace
	Coolant incorrect - Coolant level too low - Coolant deteriorated	Adjust Replace
	Cooling system component incorrect - Radiator clogged - Radiator cap trouble - Water pump not rotating	Clean or replace Replace Replace

Complaint	Possible Cause	Remedy
Clutch operation faulty	Clutch slipping - No clutch lever play - Clutch inner cable sticking - Clutch cable damaged - Drive plate worn or warped - Driven plate worn or warped - Clutch spring broken or weak - Clutch release function trouble - Clutch hub or housing unevenly worn	Adjust Adjust or replace Replace Replace Replace Adjust Clean or correct
	Clutch not disengaging properly - Clutch lever play excessive - Clutch spring compression uneven - Engine oil deteriorated - Engine oil viscosity too high - Engine oil level too high - Clutch housing seized - Clutch hub spline damaged - Clutch release function trouble - Clutch hub nut loose - Clutch plate warped or rough	Adjust Adjust Replace Replace Adjust Replace Replace Replace Tighten Replace
Gear shifting Faulty	Does not go into gear, gearshift pedal does not return - Clutch not disengaging - Gearshift fork bent, worn or seized - Gear seized - Gearshift lever bent - Gearshift return spring pin loose - Gearshift return spring weak or broken - Gearshift lever spring weak or broken - Gearshift pawl guide plate worn - Gearshift pawl broken - Gearshift pawl spring tension lose - Gearshift drum broken	Adjust or replace Replace Replace Replace Replace Replace Replace Replace Replace Replace Replace
	Jumps out of gear - Shift fork worn, bent - Gear groove worn - Gear dog/dog hole worn - Shift drum groove worn - Gearshift lever spring weak or broken - Gearshift pawl spring tension lose - Gearshift fork guide pin worn - Countershaft, driveshaft, gear spline worn	Replace Replace Replace Replace Replace Replace Replace Replace
	Overshifts - Gearshift lever spring weak or broken - Gearshift pawl guide plate worn	Replace Replace

Complaint	Possible Cause	Remedy
Abnormal engine noise	Knocking	
	- Faulty CDI unit - Carbon built up in combustion chamber - Fuel poor quality or incorrect - Spark plug incorrect heat value	Replace Clean Replace Replace
	Piston slap	
	- Cylinder/piston clearance excessive - Cylinder, piston worn - Conrod bent - Piston pin, piston pin hole worn	Replace Replace Replace Replace
	Valve noise	
	- Valve clearance incorrect - Valve spring broken or weak - Cam face, journal or bearing worn	Adjust Replace Replace
	Other noise	
	- Conrod big end, small end clearance excessive - Piston ring worn, broken, or stuck - Piston seizure, damage - Cylinder head gasket leaking - Exhaust pipe leaking at cylinder head connection - Crankshaft runout excessive - Engine mounts loose - Crankshaft bearing worn - Camshaft chain tensioner trouble - Camshaft chain, sprocket, chain guide worn - Primary gear worn or damaged - Decomp. spring broken - Magneto flywheel loose	Replace Replace Replace Replace Tighten or replace Replace Tighten Replace Replace Replace Replace Replace Tighten

Complaint	Possible Cause	Remedy
Abnormal drive train noise	Clutch noise • Clutch housing/drive plate claw worn • Metal chips jammed in clutch housing gear teeth • Clutch housing gear worn	Replace Clean or replace Replace
	Transmission noise • Bearings worn • Transmission gears worn or chipped • Metal chips jammed in gear teeth • Engine oil insufficient or low viscosity • Kick ratchet gear not properly disengaging from kick gear • Kick idle gear worn or chipped	Replace Replace Clean or replace Fill or replace Adjust or replace Replace
	Drive chain noise • Drive chain maladjusted • Drive chain worn • Rear/engine sprocket worn • Drive chain lubrication insufficient • Rear wheel misaligned	Adjust Replace Replace Lubricate Adjust
Abnormal frame noise	Front fork noise • Fork oil insufficient or low viscosity • Spring weak or broken • Front fork air pressure high	Fill or replace Replace Adjust
	Rear shock absorber noise • Shock absorber trouble • Spring weak or broken	Replace Replace
	Brake noise • Disc warped • Caliper trouble • Pad installed incorrectly	Replace Replace Correct
	Other noise • Bracket, nut, bolt, etc., not properly mounted or tightened	Tighten

Complaint	Possible Cause	Remedy
Abnormal exhaust color	White smoke • Piston oil ring worn • Cylinder worn • Valve oil seal damaged • Valve guide worn • Engine oil level too high	Replace Replace Replace Replace Adjust
	Black smoke • Air cleaner element clogged • Main jet too large or fallen off • Starter plunger stuck open • Fuel level in float chamber too high	Clean or replace Replace Close Adjust
	Brown smoke • Main jet too small • Fuel level in float chamber too low • Air cleaner duct loose • Air cleaner poorly sealed or missing	Replace Adjust Tighten Correct

CHASSIS

Complaint	Possible Cause	Remedy
Handling/stability unsatisfactory	Handlebar hard to turn	
	• Cable, hose, wire routing incorrect	Correct
	• Steering stem nut too tight	Correct
	• Steering stem bearing damaged	Replace
	• Steering stem bearing lubrication inadequate	Lubricate
	• Steering stem bent	Replace
	• Tire air pressure too low	Adjust
	Handlebar shakes or excessively vibrates	
	• Tire worn	Replace
	• Swingarm pivot bearing worn	Replace
	• Rim warped, or not balanced	Adjust or replace
	• Spokes loose	Tighten
	• Wheel bearing worn	Replace
	• Handlebar clamp bolt loose	Tighten
	• Steering stem head nut loose	Tighten
	• Front, rear axle runout excessive	Adjust or replace
	Handlebar pulls to one side	
	• Frame bent	Repair or replace
	• Rear wheel misalignment	Adjust or replace
	• Swing arm bent or twisted	Replace
	• Swingarm pivot shaft bent	Replace
	• Steering maladjusted	Adjust
	• Steering stem bent	Replace
	• Front fork bent	Replace
	• Right and left front fork oil level uneven	Adjust
	Suspension operation trouble	
	(Too hard)	
	• Tire air pressure too high	Adjust
	• Front fork oil excessive	Adjust
	• Front fork oil viscosity too high	Replace
	• Rear shock absorber adjustment too hard	Adjust
	• Front fork bent	Replace
	• Front fork air pressure too high	Adjust
	(Too soft)	
	• Tire air pressure too low	Adjust
	• Front fork oil insufficient or leaking	Adjust or replace
	• Front fork oil viscosity too low	Replace
	• Rear shock absorber adjusted too soft	Adjust
	• Front fork, rear shock absorber spring weak	Replace
	• Front fork oil leaking	Repair or replace
	• Rear shock absorber oil or gas leaking	Repair or replace

Complaint	Possible Cause	Remedy
Brake Does not hold	• Air in brake system	Bleed air
	• Pad, disc worn	Replace
	• Brake fluid leakage	Repair or replace
	• Contaminated pad	Clean or replace
	• Brake fluid deteriorated	Replace
	• Brake master cylinder cups damaged	Replace
	• Master cylinder scratched inside	Replace
	• Disc warped	Replace

MACHINE TUNING

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CARBURETOR TUNING

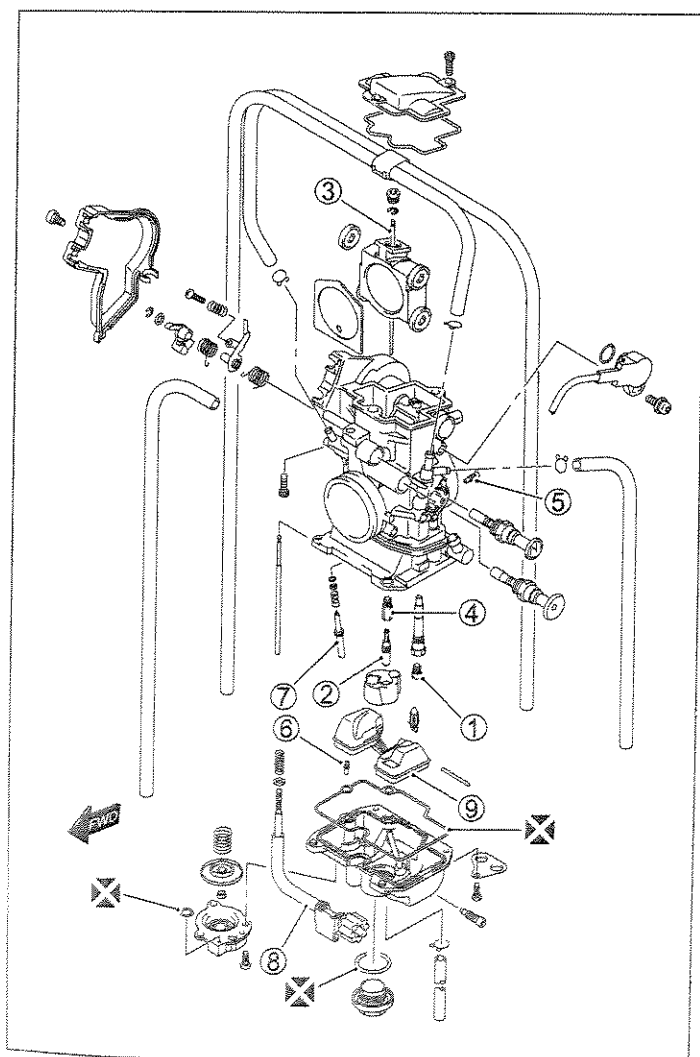
The carburetion of your motorcycle is carefully selected after extensive testing. You will find that the carburetion will function smoothly under many varied operating conditions. For best results we recommend that the adjustments and carburetion jetting be left "as is" from the factory.

Some riders may operate their motorcycle under extreme operating conditions such as; very high altitudes or extreme cold and hot temperatures. In these circumstances the jetting of the carburetor or other adjustments may need to be altered slightly. Riders who are not familiar with the operation and jetting procedures of the KEIHIN carburetor should have their local authorized Suzuki dealer perform these alterations. Mechanically experienced riders can alter the carburetor settings based on the following information and specifications.

PRINCIPLES OF CARBURETOR TUNING

CARBURETOR COMPONENTS AND FUNCTIONS

The carburetor consists of a number of parts as shown below. The asterisk (*) marked parts are precisely machined, which meter the intake air (oxygen) and fuel so that the air/fuel mixture ratio is controlled accurately. They can be divided by three operation-related groups; slow system, intermediate system and main system, and they achieve their functions in each corresponding throttle opening range. It is necessary to have a full understanding of them for proper carburetor tuning.



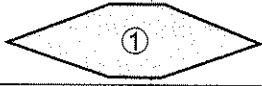
CARBURETOR SPECIFICATIONS

E-28

①	* Main jet (MJ)	#170
②	* Slow jet (SJ)	#42
③	* Jet needle (JN)	#NCYR-4th
④	Starter jet	#75
⑤	Slow air jet	#100
⑥	Leak jet	#35
⑦	* Pilot screw (PS)	1 and 1/4 turns out
⑧	Idle adjust screw	Adjust to the specified idle speed.
⑨	Float height	8 mm (0.315 in)

Setting parts		Parts No.
Main jet	#165	09491-33009
Main jet	#175	09491-35009
Jet needle	NCVR	13383-35G50

As shown below, each of the asterisk (*) marked parts is located between the air/fuel passage and has its own air/fuel mixture adjustable range in terms of the throttle valve opening. The chart indicates that the carburetor can supply correct air/fuel mixture to the engine in any range because of the overlapping adjustable range of the each part.

TUNING PARTS	THROTTLE VALVE OPENING
MAIN JET (MJ)	
JET NEEDLE (JN) CLIP POSITION	
JET NEEDLE (JN) O.D.	
SLOW JET (SJ) AND PILOT SCREW (PS)	
THROTTLE OPENING	1/4 1/2 3/4

① SLOW SYSTEM ② INTERMEDIATE SYSTEM ③ MAIN SYSTEM

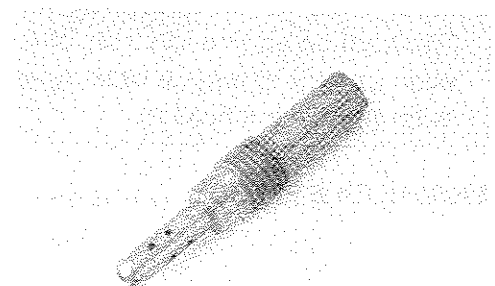
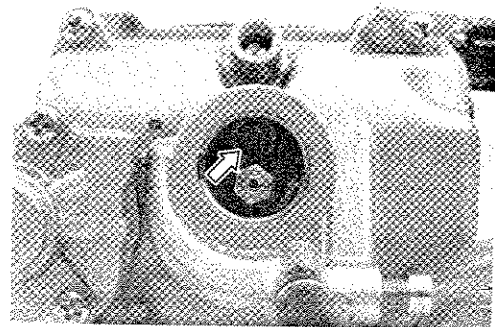
When performing carburetor tuning, first find out in what throttle opening range an improper air/fuel mixture is supplied, by checking the color of exhaust smoke, spark plug, throttle response, power, etc. Second, replace or adjust the part(s) related to the throttle opening range by referring to the following instructions. The sizes referred to in the illustrations are those of standard setting.

SLOW SYSTEM

SLOW JET (SJ)

The slow jet meters the fuel supplied to the slow system. Each jet size is indicated by a number. Larger number means a larger bore diameter and fitting a larger numbered slow jet enriches the air/fuel mixture.

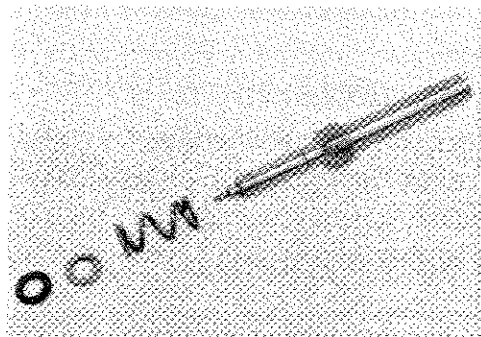
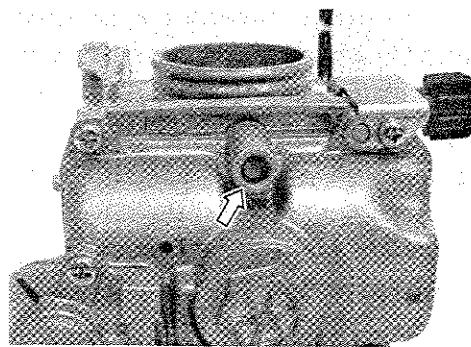
Air/fuel mixture	SIZE	P/NO.
Lean  Rich	#35	09492-35019
	#40	09492-40022
	#42	09492-42019
	#45	09492-45032
	#48	09492-48013
	#50	09492-50023
	#52	09492-52011
	#55	09492-55017
	#58	09492-58001
	#60	09492-60016



PILOT SCREW (PS)

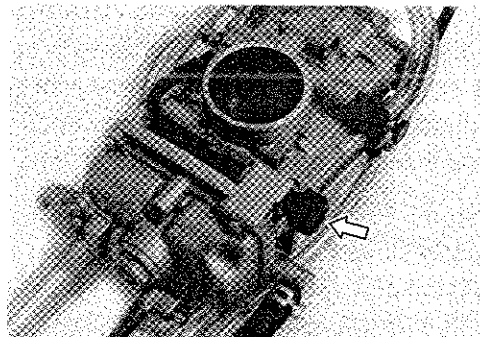
The pilot screw controls volume of the air/fuel mixture in slow range. Pilot screw specifications indicate the number of turns out from the lightly seated position.

Air/fuel mixture	Pilot screw turn out
Lean ↑ ↓ Rich	1/2 turn out
	3/4 turn out
	1 turn out
	1 and 1/4 turns out
	1 and 1/2 turns out
	1 and 3/4 turns out
	2 turns out

**IDLE ADJUST SCREW**

The idle adjust screw determines the full closed position of the throttle valve.

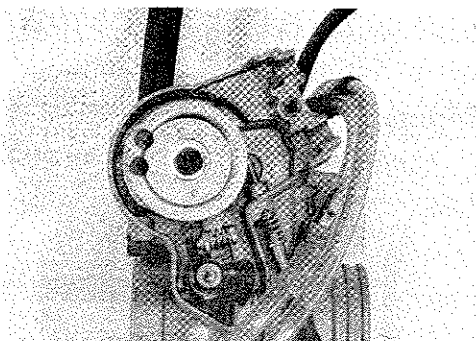
- Turn it clockwise to raise the throttle valve.
- Turn it counterclockwise to lower the throttle valve.

**DATA Throttle valve opening position**

Standard	After touching the idle adjust screw to the throttle pulley, turn in the screw 3 – 4 turns to raise the throttle valve.
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CAUTION

Too high an engine idle may cause driveability failure such as lack of engine braking and poor deceleration during brake application.



ENGINE IDLE SPEED..... 2-18

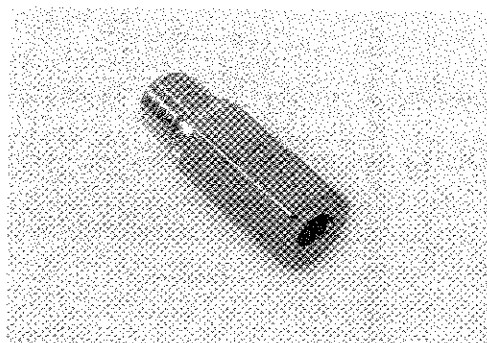
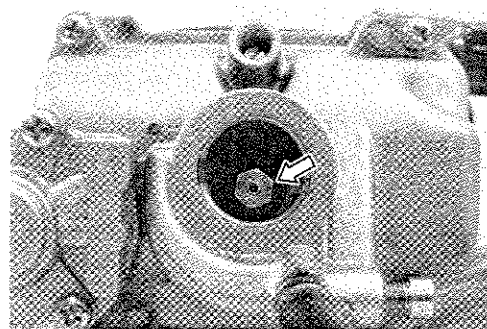
MAIN SYSTEM

MAIN JET (MJ)

The main jet, like the slow jet, meters fuel flow. Each jet size is indicated by a number. Larger number means a larger bore diameter and fitting a larger number main jet enriches the air/fuel mixture.

Air/fuel mixture	SIZE	P/NO.
Lean  Rich	#150	09491-30018
	#152	09491-30019
	#155	09491-31012
	#158	09491-31013
	#160	09491-32010
	#162	09491-32011
	* #165	09491-33009
	#168	09491-33010
	#170	09491-34010
	#172	09491-34011
	* #175	09491-35009
	#178	09491-35010
	#180	09491-36008
	#185	09491-37008
	#190	09491-38011

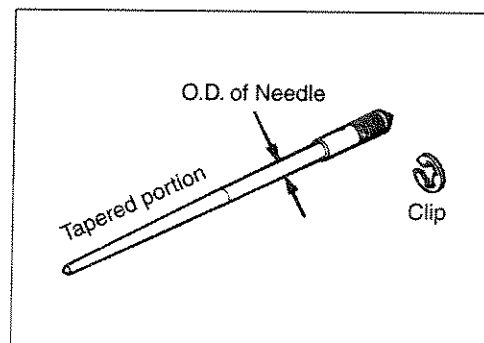
* Included alternated parts



INTERMEDIATE SYSTEM

JET NEEDLE (JN)

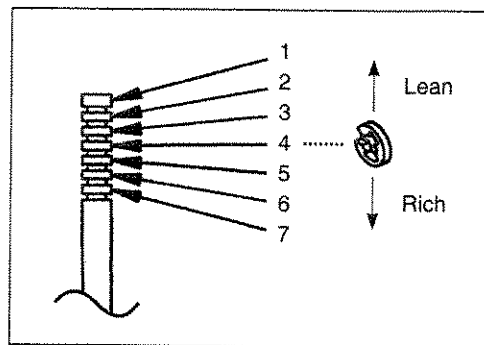
The jet needle is linked to the throttle valve by means of the needle clip. Its lower part is tapered and it has seven grooves cut in the upper part where the needle clip fits.



Jet needle clip position

To adjust the air/fuel mixture with the jet needle, change position of the needle clip which is set in the 4th groove. The lower groove the clip is moved to, the higher the jet needle rises and the larger the clearance with the needle jet becomes, resulting in a richer air/fuel mixture ratio.

Air/fuel mixture	Needle type and clip position
Lean ↑ ↓ Rich	NCVR-1st
	NCYR-1st
	NCVR-2nd
	NCYR-2nd
	NCVR-3rd
	NCYR-3rd
	NCVR-4th
	NCYR-4th
	NCVR-5th
	NCYR-5th
	NCVR-6th
	NCYR-6th
	NCVR-7th
	NCYR-7th

**Needle number**

NCYR
|
O.D.

Changing the needle itself controls air/fuel mixture ratio particularly on lower mid-throttle opening. The smaller the O.D., the richer the air/fuel mixture becomes.

Air/fuel mixture	Needle Number	Part No.	O.D.
Lean ↑ ↓ Rich	NCVT	13383-35G90	2.775
	NCYT	13383-35G80	
	NCVS	13383-35G70	
	NCYS	13383-35G60	2.765
	* NCVR	13383-35G50	2.755
	NCYR	13383-35G40	
	NCVQ	13383-35G30	2.745
	NCYQ	13383-35G20	
	NCVP	13383-35G10	2.735
	NCYP	13383-35G00	

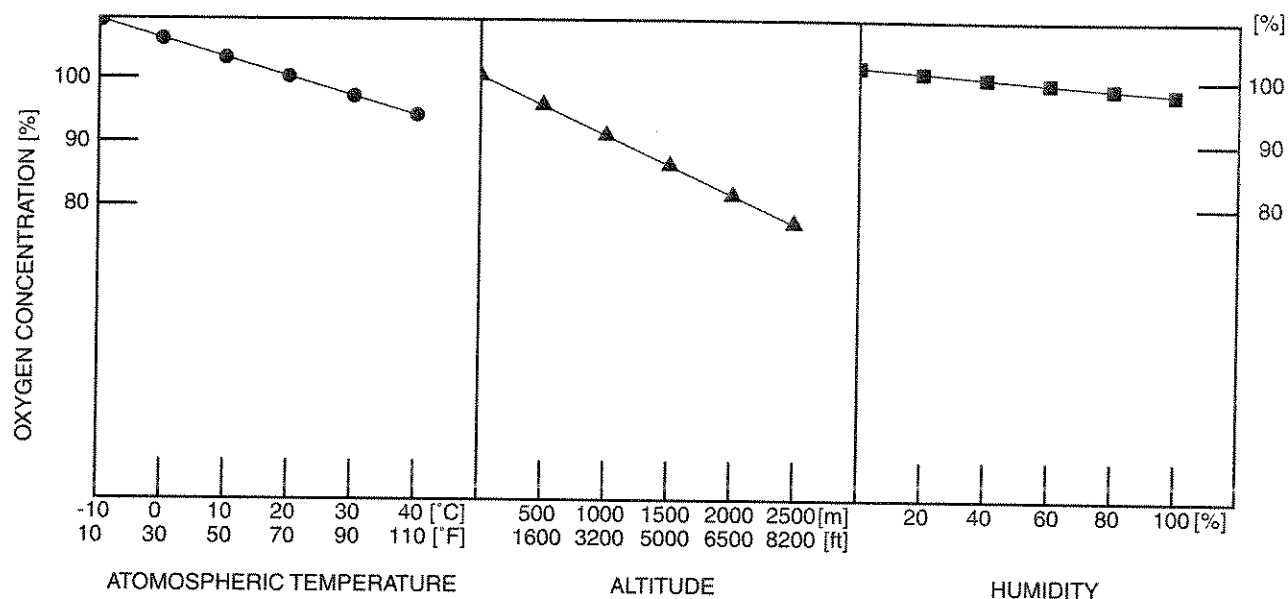
* Included alternated parts

CARBURETOR TUNING IN PRACTICE

In the previous section, basic principles of carburetor tuning have been discussed. Described in this section are the bases for carburetor tuning required when coping with variations in air (oxygen) concentration.

VARIATION IN AIR (OXYGEN) CONCENTRATION AND CARBURETOR CONDITIONS

As the air, affected by the temperature, altitude and humidity, gets expanded or compressed, air (oxygen) concentration varies accordingly. Each of these three factors affects the air in different ways, and the following graphs show their effects respectively in terms of the oxygen concentration.



In the above graphs, oxygen concentration is graduated on the vertical axis while the temperature, altitude and humidity are on the horizontal axis respectively. Oxygen concentration is set 100% under the conditions of 20 °C (68 °F), 0 m (0 ft) and 50% humidity. The standard carburetor setting is chosen to obtain the best engine performance under these conditions.

The graph at the left shows that the oxygen concentration changes about 10% in the 0 °C (32 °F) to 40 °C (104 °F) temperature difference, the one in the center shows about 20% change in the 0 to 2 000 m (6 562 ft) altitude difference and the one at the right shows about 5% change in the 0 to 100% humidity difference. As for humidity, its normal range is from 20 to 95%. Therefore the possible effect of humidity on the oxygen concentration is so little that it can be disregarded. Consequently, we can say that the oxygen concentration varies by as much as 20% depending on the temperature and altitude under normal riding conditions. On the other hand, different from the air, the fuel hardly changes in volume even when such environmental conditions change. Therefore, increase in oxygen concentration will make the air/fuel mixture richer and decrease will make it lean.

As the carburetor mixes gasoline and air, which are metered by each jet in varying proportions to suit throttle opening, the air/fuel mixture is affected if the air concentration itself varies as described above. Then proper engine power output can not be attained and, should the mixture become too lean, a piston seizure may result. To compensate for such change in the air concentration, it is required to carry out carburetor tuning beforehand. This requirement applies to all models of motorcycles and ATVs if they are used in areas where temperature and altitude range widely. The next section describes the procedure of the above tuning in detail.

JUDGING AIR/FUEL MIXTURE

For proper carburetor tuning, it is necessary to know how to judge the air/fuel mixture made in the carburetor; whether too rich, too lean or properly mixed. Given below are the symptoms observed when the engine is not supplied with the proper air/fuel mixture ratio from the carburetor. Check each item as reference for judging the air/fuel mixture condition.

When air/fuel mixture is too rich

- 1) The engine noise is dull and intermittent.
- 2) The engine condition becomes worse when the choke is applied.
- 3) The engine condition becomes worse as it is warmed up.
- 4) The engine condition improves when the air cleaner is removed.
- 5) The spark plug is fouled with carbon (wet and oily).
- 6) The exhaust gas produces heavy smoke.

When air/fuel mixture is too lean

- 1) The engine overheats.
- 2) The engine condition improves when the choke is applied.
- 3) Acceleration is poor.
- 4) The spark plug is burned white.
- 5) The speed of the engine fluctuates and lack of power is noticed.
- 6) Detonation and pinging are experienced.

Tuning Procedure

The following indicates the correct tuning procedure for this motorcycle. Understand the procedure by first riding the motorcycle where it will be used and adjust the engine to the best condition after judging the air/fuel mixture.

Carburetor standard setting

Main jet: #170
 Jet needle: NCYR-4th
 Slow jet: #42
 Pilot screw: 1 and 1/4 turns out

INCLUDED PARTS AND OPTIONAL PARTS**Main jet**

Air/fuel mixture	SIZE	P/NO.
Lean  Rich	#150	09491-30018
	#152	09491-30019
	#155	09491-31012
	#158	09491-31013
	#160	09491-32010
	#162	09491-32011
	* #165	09491-33009
	#168	09491-33010
	#170	09491-34010
	#172	09491-34011
	* #175	09491-35009
	#178	09491-35010
	#180	09491-36008
	#185	09491-37008
	#190	09491-38011

Slow jet

Air/fuel mixture	SIZE	P/NO.
Lean  Rich	#35	09492-35019
	#40	09492-40022
	#42	09492-42019
	#45	09492-45032
	#48	09492-48013
	#50	09492-50023
	#52	09492-52011
	#55	09492-55017
	#58	09492-58001
	#60	09492-60016

Jet needle

Air/fuel mixture	SIZE	P/NO.
Lean ↑ ↓ Rich	NCVT	13383-35G90
	NCYT	13383-35G80
	NCVS	13383-35G70
	NCYS	13383-35G60
	* NCVR	13383-35G50
	NCYR	13383-35G40
	NCVQ	13383-35G30
	NCYQ	13383-35G20
	NCVP	13383-35G10
	NCYP	13383-35G00

SHADED: STANDARD

* : INCLUDED ALTERNATE PARTS

NONE : OPTIONAL PARTS

① Adjustment of slow system

- 1) Set the pilot screw as specified.
- 2) See if the selected slow jet is correct or not by judging the air/fuel mixture. If air/fuel mixture is rich, replace it with smaller one. If air/fuel mixture is lean, replace it with larger one.

Ex. Slow jet #42

If air/fuel mixture is rich, replace it with #40 slow jet. If air/fuel mixture is lean, replace it with #45 slow jet.

② Adjustment of main system

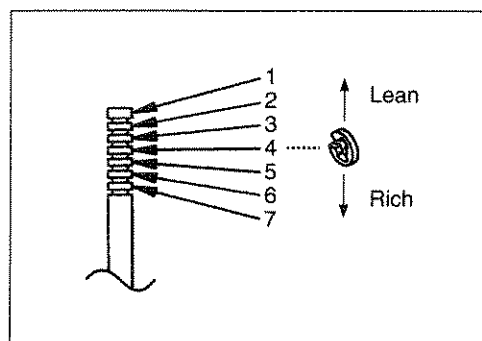
With the throttle opened 3/4 to full, make main system adjustment monitoring the air/fuel mixture condition after completion of slow system settings.

* Make sure to adjust the main system before adjusting the intermediate system.

Ex. Main jet #170

If air/fuel mixture is rich, replace it with #168 main jet. If air/fuel mixture is lean, replace it with #172 main jet.

③ Adjustment of intermediate system



Monitor the air/fuel mixture condition and adjust the intermediate system by changing the needle clip position.

④ Final adjustment of slow system

After a proper standard setting has been obtained by the procedure ① through ③, fine tune the carburetor according to the actual race conditions.

- 1) Adjust the air/fuel mixture by turning the pilot screw within 1/2 – 2 turns out.

Air/fuel mixture	Pilot screw turn out
Lean ↑ ↓ Rich	1/2 turn out
	3/4 turn out
	1 turn out
	1 and 1/4 turns out
	1 and 1/2 turns out
	1 and 3/4 turns out
	2 turns out

- 2) If the mixture can not be adjusted by the pilot screw within 1/2 – 2 turns out range, readjust the slow system ①.

⑤ Final adjustment of intermediate system

Fine tune the intermediate system by changing the needle type and clip position.

FRONT FORK TUNING

The front fork compression and rebound damping force, and oil level are adjustable for rider's preference, rider's weight and course condition.

NOTE:

- * Break-in new front forks before attempting adjustment.
- * Be sure to adjust both right and left front forks equally.
- * Inspect the following items before attempting adjustment.
 - * Front fork air pressure adjustment. (☞ 2-31)
 - * Front fork damage and oil leakage. (☞ 2-31)
 - * Tire pressure. (☞ 2-32)
 - * Tire and wheel damage. (☞ 2-31)
 - * Spoke nipple tension and rim lock tightness. (☞ 2-32)
 - * Steering movement. (☞ 2-32)

COMPRESSION DAMPING FORCE ADJUSTMENT

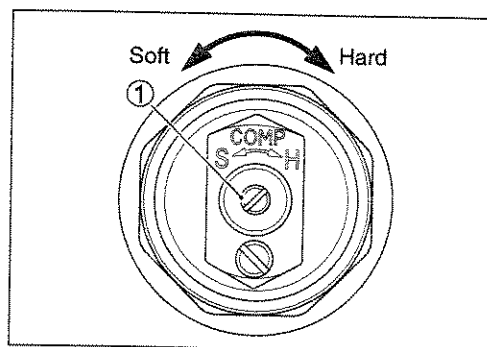
- Turn the adjuster screw clockwise until it stops (full hard position).

NOTE:

To set the adjuster, you must gently turn the adjuster screw clockwise until it stops, then back it out the recommended number of turns. Do not force the adjuster screw past the stopped position or you may damage the adjuster.

- Turn the adjuster screw ① counterclockwise and the 10th click is the standard position.

DATA Compression damping force adjuster
Standard setting: 10 clicks turn back



REBOUND DAMPING FORCE ADJUSTMENT

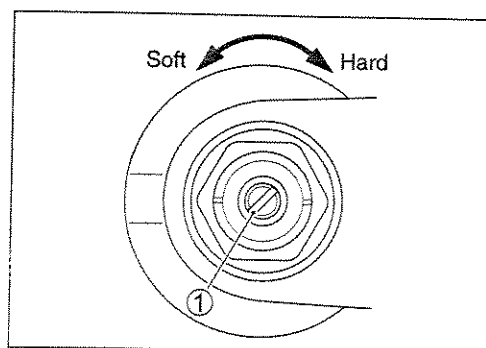
- Turn the adjuster screw clockwise until it stops (full hard position).

NOTE:

To set the adjuster, you must gently turn the adjuster screw clockwise until it stops, then back it out the recommended number of turns. Do not force the adjuster screw past the stopped position or you may damage the adjuster.

- Turn the adjuster screw ① counterclockwise and the 8th click is the standard position.

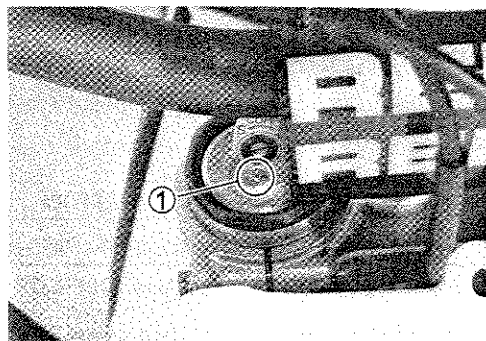
DATA Rebound damping force adjuster
Standard setting: 8 clicks turn back



OIL QUANTITY MINOR ADJUSTMENT

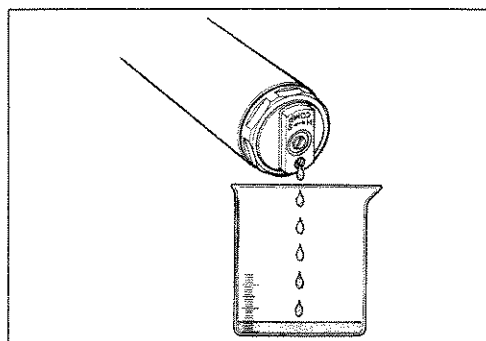
ADDING THE FORK OIL

- Remove the air bleed screw ①.
- Add the fork oil with a injector from the air bleed hole.



REDUCING THE FORK OIL

- Remove the front forks. (17-4)
- Remove the air bleed screw.
- Leaning the front fork, reduce the fork oil from the air bleed hole.



NOTE:

If 1 ml (0.34/0.35 US/Imp oz) of fork oil is added/reduced, the oil level raises/falls approx. 1.8 mm (0.07 in). Measure the fork oil quantity added/reduced and record it to know the oil quantity after adjustment.

CAUTION

The fork oil quantity must be adjusted equally on both fork legs to provide equal performance.

Operating the motorcycle with the fork oil quantity unevenly adjusted can cause handling instability.

Never mix different types of fork oil. Different oils may cause chemical reaction and deteriorate.

DATA Front fork oil quantity

Standard: 385 ml (13.013/13.556 US/Imp oz)

Oil quantity adjustable range:

310 – 395 ml

(10.478/10.915 – 13.351/13.908 US/Imp oz)

FORK 99000-99001-SS5: SUZUKI FORK OIL SS-05
or an equivalent fork oil

OIL CHANGE

(Only for outer tube oil chamber)

- Remove the front forks. (☞ 17-4)
- Thoroughly clean the fork before disassembly.

CAUTION

The fork oil quantity must be adjusted equally on both fork legs to provide equal performance.

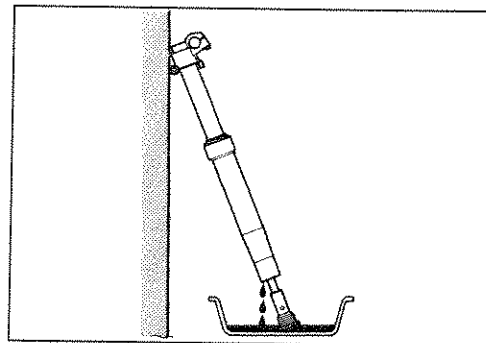
Scratches or other damage on the inner tube or on the oil seal lip will cause oil leak.

Avoid scratching or damaging the inner tube or the oil seal. Use a mild detergent or car wash soap and sponge out dirt with plenty of water.

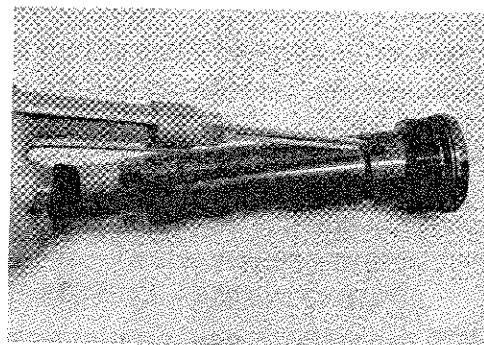
- Clamp the outer tube with a vise. Protect the outer tube with a rag when using a vise. (☞ 17-5)
- Loosen and remove the fork cap bolt (sub-tank) from the outer tube and slowly slide down the outer tube. (☞ 17-5)

TOOL 09941-53630: Front fork top cap wrench

- Hold the front fork inverted position for more than 20 minutes to allow the fork oil to fully drain.

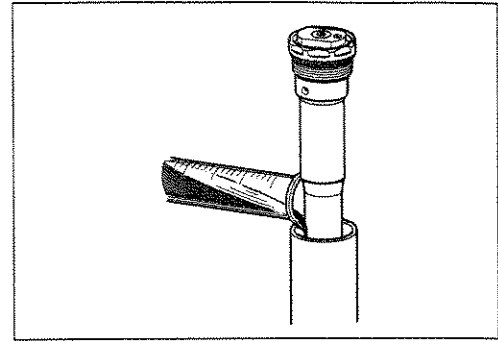


- Force out the remaining oil using compressed air completely.



- Slide down the outer tube.
- Pour the specified amount of fork oil into the outer tube.

FORK 99000-99001-SS5: SUZUKI FORK OIL SS-05
or an equivalent fork oil



	Parts No.	Spring rate	Identification (Slit mark on the spring end)	STD Oil quantity	Oil quantity adjustable range
Soft	51171-35G10	4.5 N/mm (0.45 kgf/mm)	II	382 ml (12.912/13.450 US/lmp oz)	310 – 395 ml (10.478/10.915 – 13.351/13.908 US/lmp oz)
STD	51171-35G00	4.7 N/mm (0.47 kgf/mm)	IIII	385 ml (13.013/13.556 US/lmp oz)	
Hard	51171-35G20	4.9 N/mm (0.49 kgf/mm)	III	380 ml (12.844/13.380 US/lmp oz)	

NOTE:

Be sure to adjust the fork oil quantity within the above-mentioned range.

- Raise the outer tube and temporarily tighten the fork cap bolt (sub-tank). (17-16)

TOOL 09941-53630: Front fork top cap wrench

- Install the front fork. (17-17)
- Install the handlebars. (17-21)

SPRING CHANGE

- Remove the front forks. (☞ 17-4)
- Thoroughly clean the fork before disassembly.

CAUTION

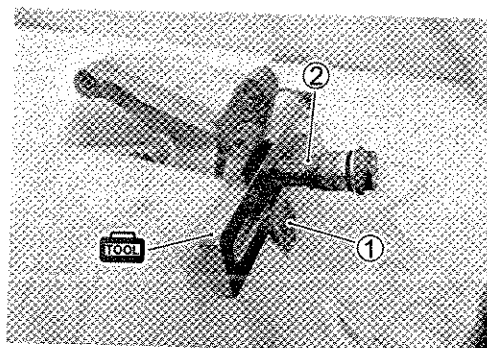
The fork oil quantity must be adjusted equally on both fork legs to provide equal performance.

Scratches or other damage on the inner tube or on the oil seal lip will cause oil leak.

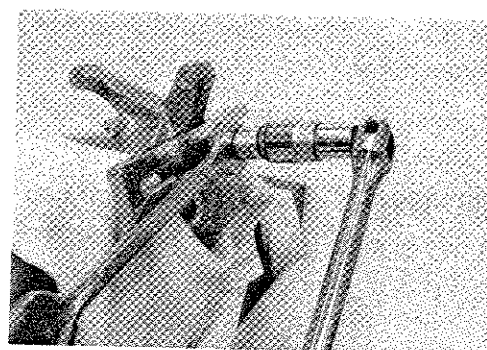
Avoid scratching or damaging the inner tube or the oil seal. Use a mild detergent or car wash soap and sponge out dirt with plenty of water.

- Remove the fork cap bolt and drain fork oil. (☞ 17-5)
- Loosen the center bolt completely. (☞ 17-6)
- Compress the outer tube by hands and install the conrod holder (special tool) between the axle holder bottom ① and locknut ②. (☞ 17-6)

 **09910-20115: Conrod holder**

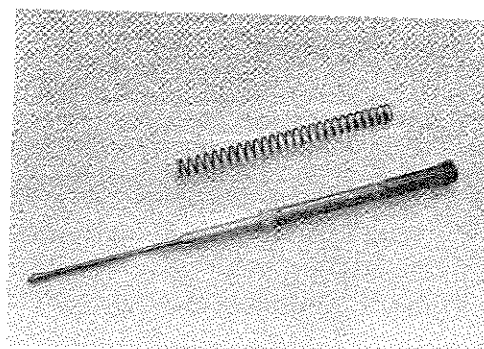


- Hold the locknut with a wrench and remove the center bolt. (☞ 17-6)
- Remove the push rod. (☞ 17-6)
- Remove the damper rod assembly and fork spring. (☞ 17-7)
- Hold the front fork inverted position for more than 20 minutes to allow the fork oil to fully drain. (☞ 4-12)
- Force out the remaining oil using compressed air completely. (☞ 4-12)

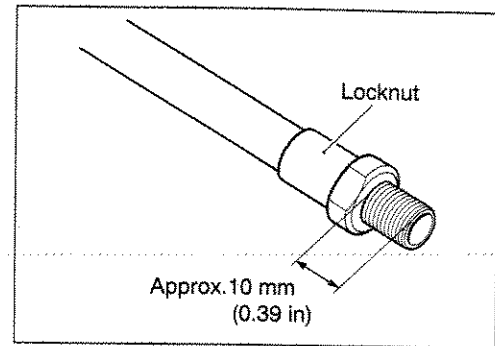


- Replace the spring.

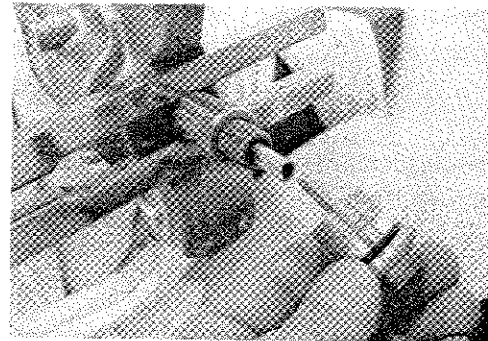
	SPRING/No.	SPRING RATE	Identification (Slit mark on the spring end)
Soft	51171-35G10	4.5 N/mm (0.45 kgf/mm)	II
STD	51171-35G00	4.7 N/mm (0.47 kgf/mm)	IIII
Hard	51171-35G20	4.9 N/mm (0.49 kgf/mm)	III



- Make sure approx. 10 mm (0.39 in) of inner rod thread is exposed on the end. (17-14)



- Install the damper rod assembly. (17-14)
- Insert the push rod into the inner rod.
- Insert the  shaped projection of center bolt into the push rod. (17-15)

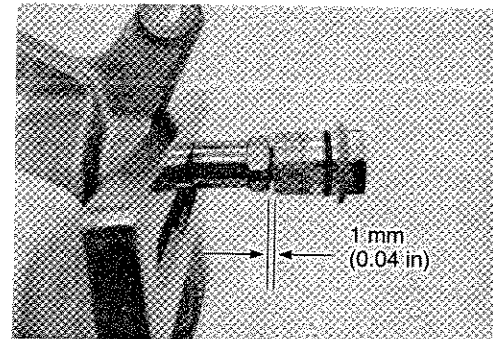


- Check or adjust the clearance between the locknut and center bolt to provide more than 1 mm (0.04 in). (17-15)
- Tighten the locknut/center bolt to the specified torque.

 **Locknut/center bolt: 22 N·m (2.2 kgf-m, 16.0 lb-ft)**

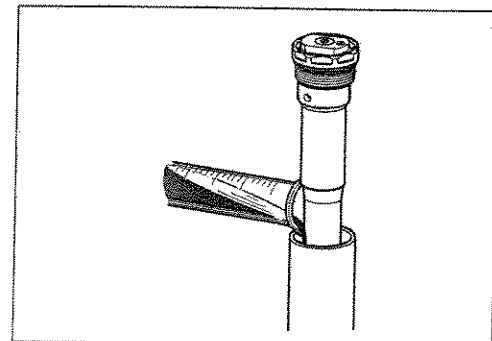
- Tighten the center bolt to the specified torque.

 **Center bolt: 70 N·m (7.0 kgf-m, 51.0 lb-ft)**



- Pour the specified amount fork oil into the outer tube in accordance with the following table.

	SPRING	STD OIL QUANTITY	OIL QUANTITY ADJ. RANGE
Soft	51171-35G10	382 ml (12.912/13.450 US/Imp oz)	310 – 395 ml (10.478/10.915 – 13.351/13.908 US/Imp oz)
STD	51171-35G00	385 ml (13.013/13.556 US/Imp oz)	
Hard	51171-35G20	380 ml (12.844/13.380 US/Imp oz)	



 **99000-99001-SS5: SUZUKI FORK OIL SS-05**
or an equivalent fork oil

FRONT FORK TUNING PROCEDURE

Test ride the motorcycle and find out how the front suspension reacts on various types of surface. According to the symptom noticed, adjust the front fork to the best setting for rider and race track conditions. To adjust, attempt changing fork oil capacity and compression/rebound damping following the instructions below.

SYMPTOM	SECTION	ADJUSTMENT PROCEDURE
Feels too hard overall	• Jump • Large bumps • Series of medium bumps	1. Adjust both the compression and rebound damping to a softer setting. 2. Decrease fork oil capacity. 3. Replace the spring with an optional softer one.
Feels too soft overall and bottoms	• Jump • Large bump • When braking	1. Adjust the compression damping to a stiffer setting. 2. Increase fork oil capacity. 3. Replace the spring with an optional stiffer one.
Feels too hard near end of travel	• Jump	1. Decrease fork oil capacity.
Feels too soft near end of travel and bottoms harshly	• Jump • Large bump	1. Adjust the compression damping to a stiffer setting. 2. Increase fork oil capacity.
Feels too hard in the beginning of stroke	• Jump • Large bump • Series of medium bumps • Series of small bumps	1. Adjust the compression damping to a softer setting.
Feels too soft and unstable	• Series of medium bumps • Series of small bumps	1. Adjust the rebound damping to a stiffer setting.
Bounces	• Jump • Large bump	1. Adjust the rebound damping to a stiffer setting.
Bounces	• Series of small bumps	1. Adjust the rebound damping to a softer setting.

NOTE:

When adjusting the front fork oil capacity, make sure that the oil level is within the specified range. Also, the capacity should be increased or decreased by 1 ml (0.034/0.035 US/Imp oz) [Approx. 1.8 mm (0.07 in)] at a time.

When adjusting the damping setting, attempt turning the adjuster 1 to 2 click stops at a time for each adjustment.

REAR SUSPENSION TUNING

The rear suspension compression and rebound damping force, and spring pre-load are adjustable for rider's preference, rider's weight and course condition.

NOTE:

- * Break-in the rear suspension when riding with a new rear cushion unit. (☞ 1-6)
- * Inspect the following items before attempting adjustment.
 - * Rear shock absorber damage and oil leakage. (☞ 2-31)
 - * Swingarm and links tightness. (☞ 2-31)
 - * Tire pressure. (☞ 2-32)
 - * Tire and wheel damage. (☞ 2-31)
 - * Spoke nipple tension and rim lock tightness. (☞ 2-32)

COMPRESSION DAMPING FORCE ADJUSTMENT

NOTE:

To set the adjuster, you must gently turn the adjuster screw or bolt clockwise until it stops, then back it out the recommended number of turns. Do not force the adjuster screw or bolt past the stopped position, or you may damage the adjuster.

Low-side

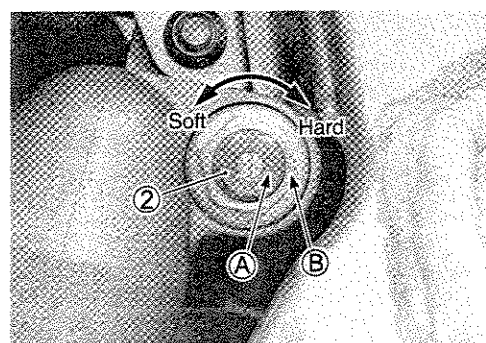
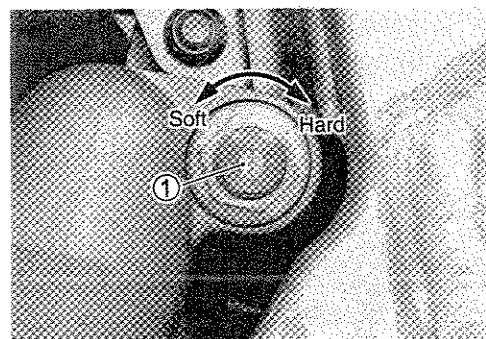
- Turn the adjuster screw ① clockwise until it stops (full hard position).
- Turn the adjuster screw ① counterclockwise about 8 clicks.

DATA Standard setting: (Lo-side) 8 clicks turn back

High-side

- Turn the adjuster bolt ② clockwise until it stops (full hard position).
- Turn the adjuster bolt ② counterclockwise about 2 turns where the punch mark (A) aligns with (B).

DATA Standard setting: (Hi-side) 2 clicks turn back



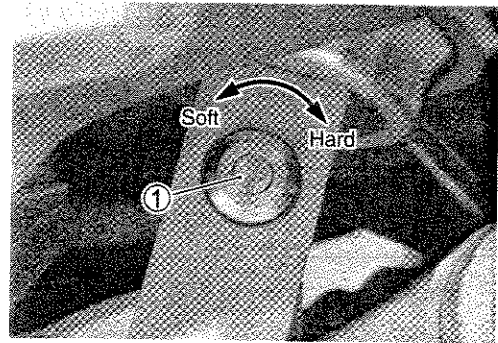
REBOUND DAMPING FORCE ADJUSTMENT

NOTE:

To set the adjuster, you must gently turn the adjuster screw clockwise until it stops, then back it out the recommended number of turns. Do not force the adjuster screw past the stopped position, or you may damage the adjuster.

- Turn the adjuster screw ① clockwise until it stops (full hard position).
- Turn the adjuster screw ① counterclockwise about 17 clicks.

DATA Standard setting: 17 clicks turn back



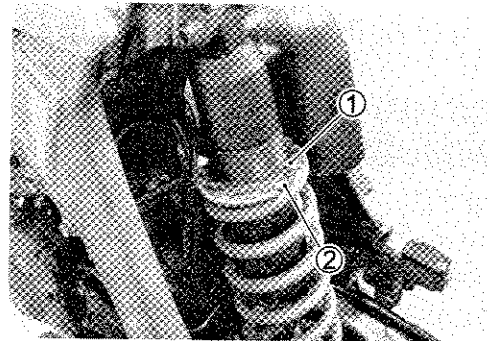
SPRING PRE-LOAD ADJUSTMENT

- Place a block under the chassis tube.
- Remove the silencer and rear frame assembly. (☞ 18-3)
- Loosen the locknut ① with the special tool.

TOOL 09910-60611: Universal clamp wrench

- Turn the adjuster ② clockwise or counterclockwise to change the spring pre-load.
- Tighten the locknut ①.

DATA Standard spring set length: 2.8 mm (0.11 in) compressed from spring free length
 Spring set length adjustable range:
 245 – 263 mm (9.646 – 10.354 in)
 [at spring free length 265 mm (10.443 in)]



NOTE:

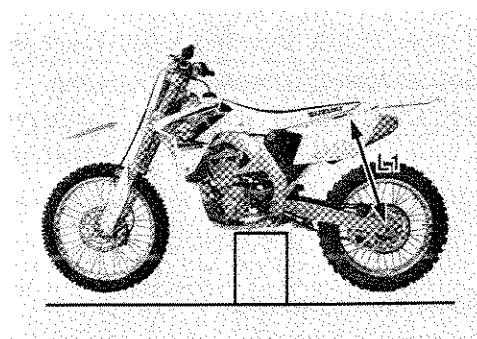
Turning the adjuster ② without loosening the locknut ① can damage the rear cushion unit.

REAR SUSPENSION TUNING PROCEDURE

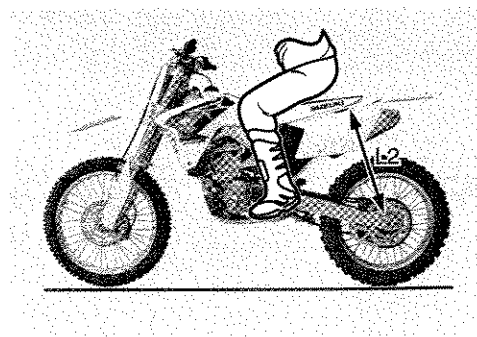
- Adjust the rear suspension according to the rider's weight and preference by referring to the table below.

Spring	Part No.	Spring rate	Marking paint	Set-length adjustable range
Soft	62211-37FE0	51 N/mm (5.1 kgf/mm)	Silver	245 – 263 mm (9.646 – 10.354 in) [at spring free length 265 mm (10.433 in)]
	62211-37FF0	53 N/mm (5.3 kgf/mm)	Orange	
Standard	62211-35600	55 N/mm (5.5 kgf/mm)	Brown	
Hard	62211-35G10	57 N/mm (5.7 kgf/mm)	Pink	
	62211-35G20	59 N/mm (5.9 kgf/mm)	Blue	

- Measure the distance L1 from the seat bolt to the chain adjuster locknut with the motorcycle on the stand and the rear wheel lifted off the ground.



- Measure the distance L2 from the seat bolt to the chain adjuster locknut with the motorcycle off the stand and riding the motorcycle normally in full riding gear.
- Find the sag by subtracting L2 from L1. Standard sag range is 106 mm (4.173 in).



When the sag measured is:	Adjustment procedure
Less than 106 mm (4.173 in)	Reduce spring pre-set length by turning the spring adjuster nut.
More than 106 mm (4.173 in)	Increase spring pre-set length by turning the spring adjuster nut.

After the sag measurement has been set 106 mm (4.173 in), test ride the motorcycle and adjust the suspension for the rider and track conditions referring to the guide below.

SYMPTOM	SECTION	ADJUSTMENT PROCEDURE
Feels too hard overall	• Jump • Series of bumps	1. Adjust the low speed compression damping to a softer setting. (See note below) 2. Adjust the rebound damping to a softer setting. (See note below) 3. Replace the spring with an optional softer one. (☐ 4-19) 4. Adjust the high speed compression damping to a softer setting. (See note below)
Kicks up	• Medium to large bumps	1. Adjust the low speed compression damping and rebound damping to a harder setting. (See note below) 2. Adjust the high speed compression damping to a harder setting. (See note below)
Bottom feeling or feels too soft and unstable	• Jump • Large bump • Series of bumps	1. Adjust the low speed compression damping to a harder setting. (See note below) 2. Adjust the rebound damping to a harder setting. (See note below) 3. Replace the spring with an optional stiffer one. (☐ 4-19)
Feels harsh and hits bumps too harshly	• Jump • Large bump • Series of bumps	1. Adjust the low speed compression damping to a harder setting. (See note below) 2. Adjust the rebound damping to a harder setting. (See note below) 3. If bottom feeling become after adjusting above mentions, adjust the high speed compression damping to a harder setting. (See note below)
Provides poor traction	• Accelerating • Series of small bumps	1. Adjust the rebound damping to a harder setting. (See note below) 2. If traction feeling does not improve after adjusting above mention, adjust the low speed compression damping to a softer setting. (See note below) 3. If bottom feeling become after adjusting above mentions, adjust the high speed compression damping to a harder setting. (See note below)
Tends to sink front than rear	• Decelerating or braking	1. Adjust the high speed compression damping to a softer setting. (See note below) 2. Adjust the rebound damping to a harder setting. (See note below)

NOTE:

When adjusting the damping setting, attempt turning the adjuster 1 to 2 click stops at a time for each adjustment.

SUSPENSION BALANCE

Balancing the front to rear suspension properly is the most critical adjustment for suspension performance. If the front forks are adjusted harder than the rear suspension, such as changing to heavier front fork oil, stiffer compression and rebound setting, air pressure build up in the forks and so on, the front forks will collapse less on bumps. This transfers more of the motorcycle and rider weight rearward, possibly causing the rear suspension to bottom, where as it felt fine before the front fork adjustment was made.

BALANCE TEST

Stand next to the motorcycle on level ground. Place one foot on the foot rest closest to you. Sharply push down. The front and rear suspensions should both collapse equally.

BALANCING TIPS

- Check for air pressure build-up in front forks. Heat and altitude will increase air pressure in the front forks.
- Always stay within sag measurement limits, 106 mm (4.173 in), when using spring pre-set to stiffen or soften rear suspension. If this is not possible, the next stiffer or softer accessory spring is needed.
- The rear shock compression damping can be used to fine tune suspension balance and is easy to access.

ENGINE REMOVAL AND INSTALLATION

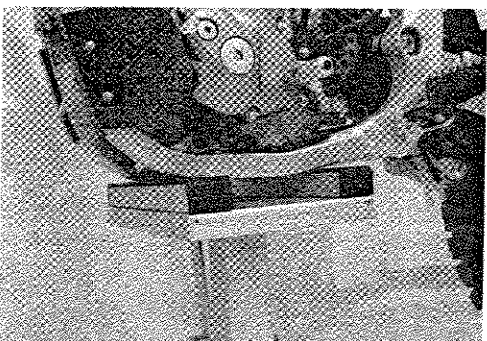
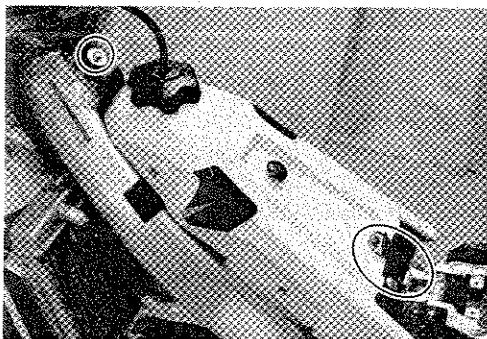
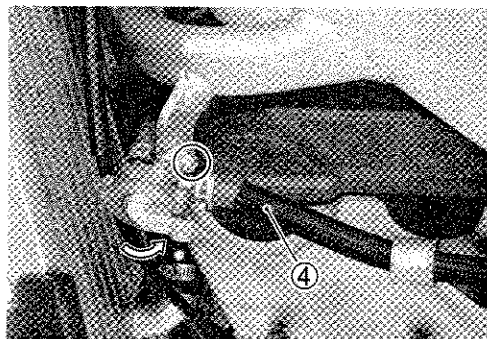
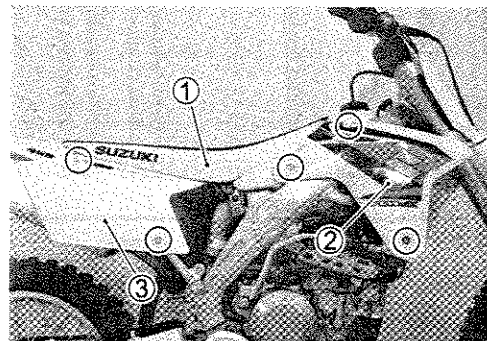
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ENGINE REMOVAL AND INSTALLATION

REMOVAL

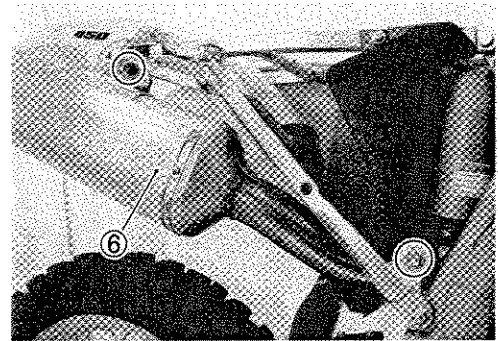
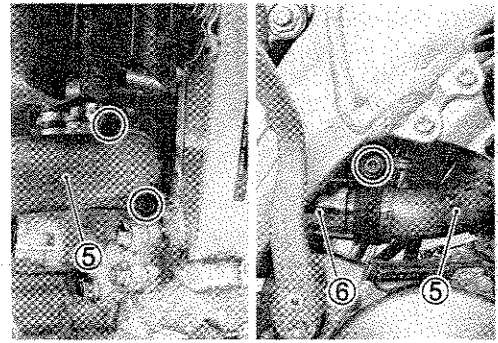
- Drain engine oil. (☞ 2-11)
- Drain engine coolant. (☞ 13-3)
- Remove the seat ①.
- Remove the radiator covers ②, left and right.
- Remove the right frame cover ③.
- Turn the fuel valve lever to the "OFF" position and disconnect the fuel hose ④.
- Remove the fuel valve mounting bolt.
- Remove the fuel tank with the fuel valve.
- Place the jack under the frame to support the motorcycle.



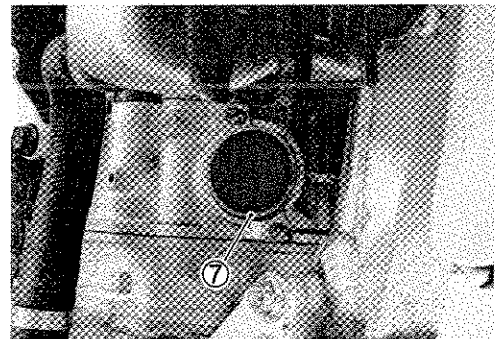
▲ WARNING

To prevent the motorcycle from falling, make sure to support the frame with a jack.

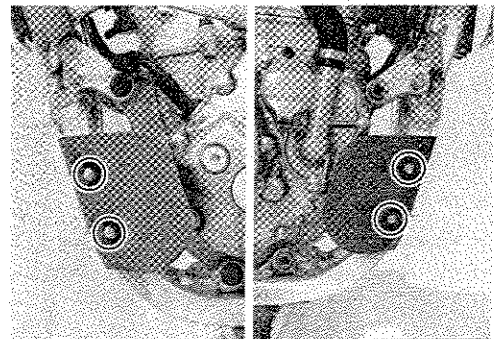
- Remove the exhaust pipe ⑤ and muffler ⑥.



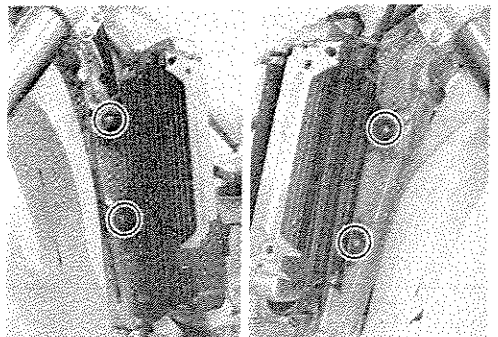
- Remove the exhaust pipe gasket ⑦.



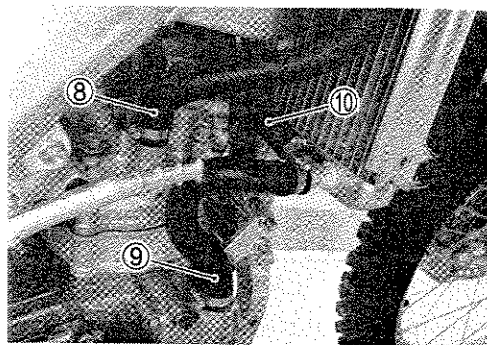
- Remove the engine protectors, left and right.



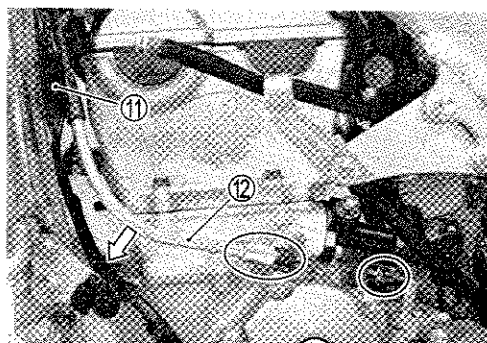
- Remove the radiator mounting bolts, left and right.



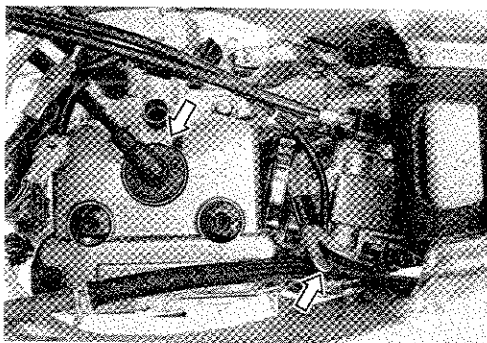
- Disconnect the radiator hoses ⑧, ⑨.
- Remove the radiator hose ⑩.



- Disconnect the magneto lead wire coupler ⑪ and clamp.
- Disconnect the clutch cable ⑫.



- Remove the carburetor. (12-5)
- Disconnect the spark plug cap.

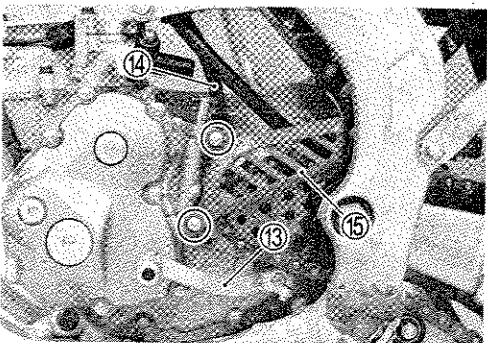


- Remove the gearshift lever ⑬.

NOTE:

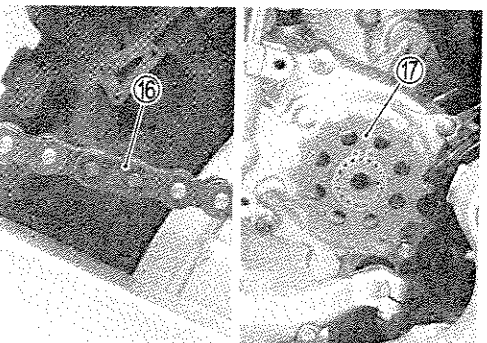
Mark the gearshift shaft head at which the gearshift lever slit set for correct reinstallation.

- Remove the crankcase breather hose ⑭.
- Remove the engine sprocket cover ⑮.

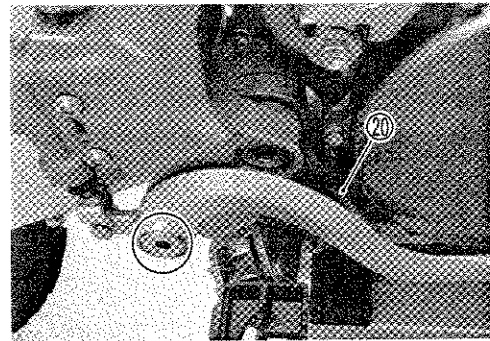
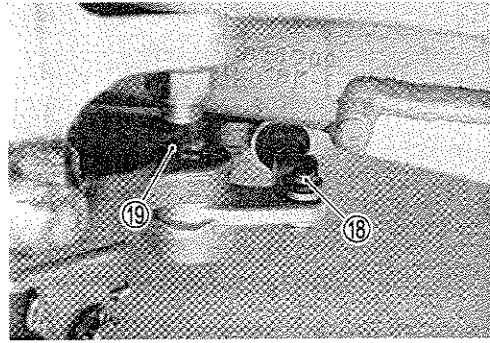


- Remove the drive chain clip ⑯ and release the drive chain.
- Remove the circlip and engine sprocket ⑰.

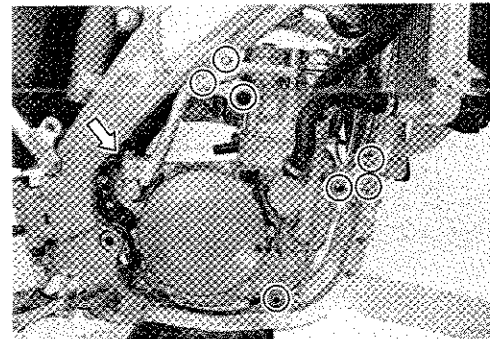
 09900-06107: Snap ring pliers



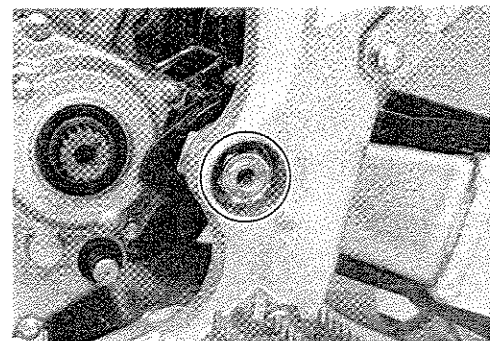
- Remove the cotter pin ⑱ and clip ⑲.
- Remove the brake pedal spring ⑳ and brake pedal.



- Remove the kick starter lever.
- Remove the engine mounting bolts/nuts and plates.



- Remove the swingarm pivot shaft nut and washer.

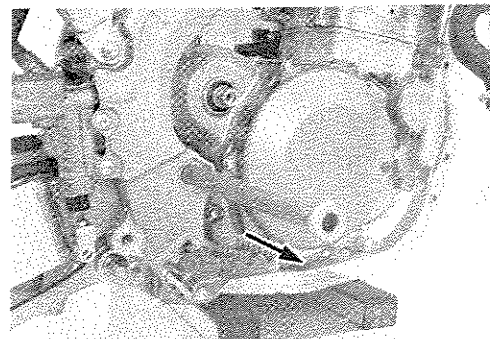


- Extract three quarters of the swingarm pivot shaft so as to keep the swingarm in position.

NOTE:

The swingarm will come off when the swingarm pivot shaft is completely removed.

- Remove the engine from the frame.



INSTALLATION

Reassemble the removed parts in the reverse order of removal.

- Fit the swingarm in its position and hold it with the swingarm pivot shaft.
- Mount the engine on the frame.
- Tighten the engine mounting bolts and nuts.

	Bolt Length
①	21 mm (0.8 in)
② (L)	43 mm (1.7 in)
② (R)	28 mm (1.1 in)
③	125 mm (4.9 in)
④	125 mm (4.9 in)
⑤	170 mm (6.7 in)

Tightening torque

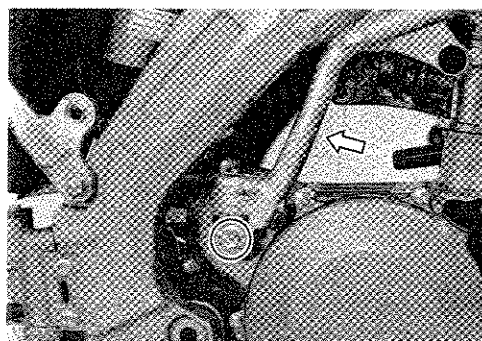
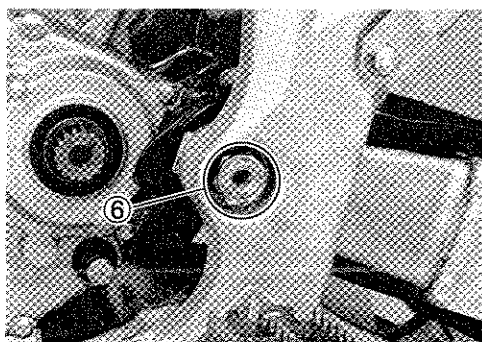
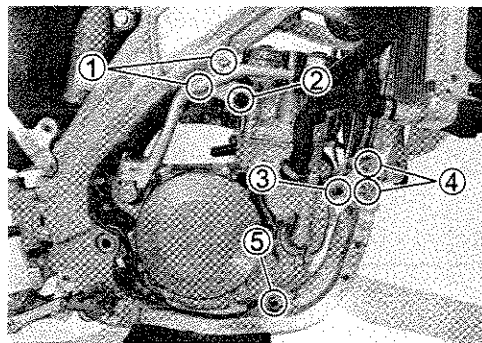
	N·m	kgf-m	lb-ft
①, ④ (Bolt, Nut)	40	4.0	29.0
②, ③, ⑤ (Bolt, Nut)	50	5.0	36.0
⑥ (Shaft, Washer, Nut)	70	7.0	50.5

NOTE:

Replace the self-locking nuts with new ones.

- Reassemble the kick starter lever correctly. (☞ 8-7)

 Kick starter lever bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)

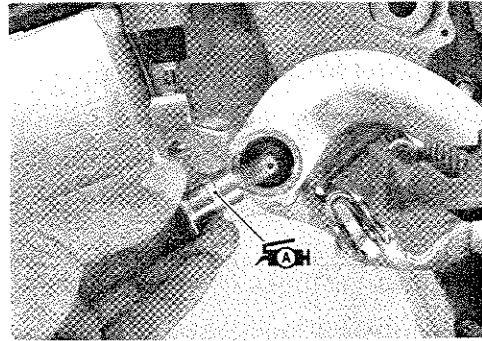


- Apply grease to the brake pedal pivot bolt.

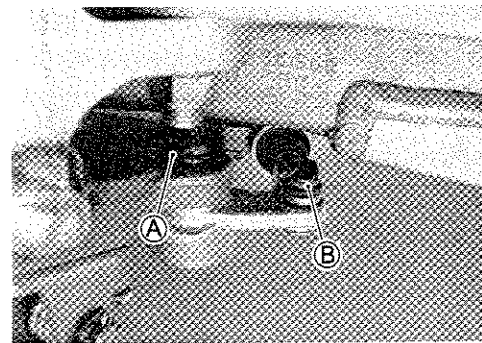
 **99000-25030: SUZUKI SUPER GREASE "A" (USA)**
99000-25010: SUZUKI SUPER GREASE "A" (Others)

- Install the brake pedal and brake pedal spring. ( 19-20)

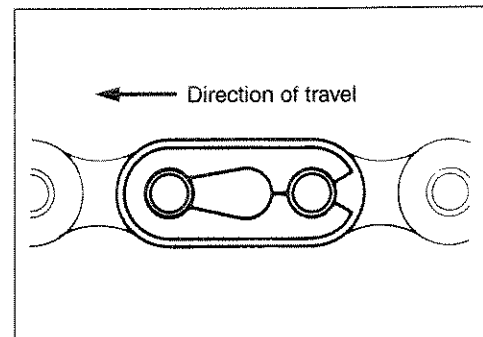
 **Brake pedal pivot bolt: 29 N·m (2.9 kgf-m, 21.0 lb-ft)**



- Install the clip .
- Replace the cotter pin  with a new one.

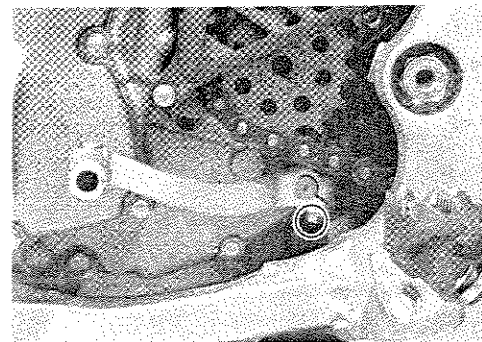


- Reassemble the drive chain clip so the slit end faces opposite the direction of travel.

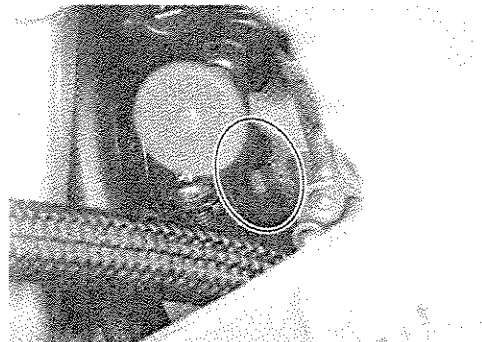


- Install the gearshift lever in the correct position.

 **Gearshift lever bolt: 10 N·m (1.0 kgf-m, 7.0 lb-ft)**

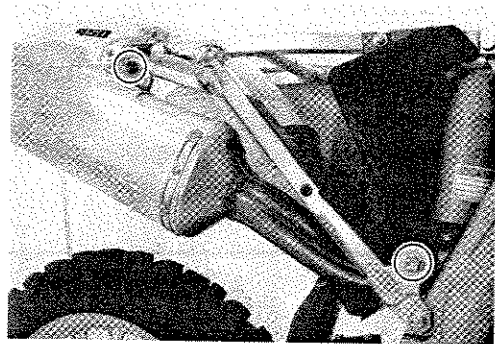


- Fit the projection of the carburetor to the depression of intake pipe.



- Install the muffler.

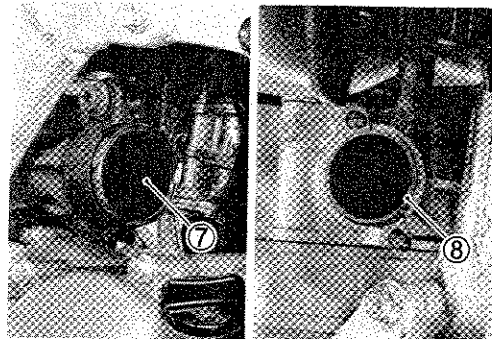
 **Muffler mounting bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)**



- Install a new exhaust muffler gasket ⑦ into the muffler lip.
- Install a new exhaust pipe gasket ⑧.

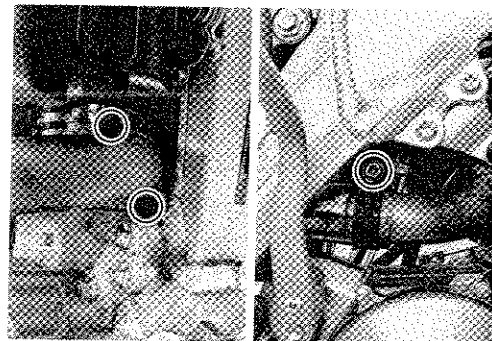
CAUTION

Use new gaskets to prevent exhaust gas leakage.



- Install the exhaust pipe.

 **Exhaust pipe bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)**
Muffler connecting bolt: 20 N·m (2.0 kgf-m, 14.5 lb-ft)



INSPECTION AFTER INSTALLATION

After mounting the engine, inspect the following items.

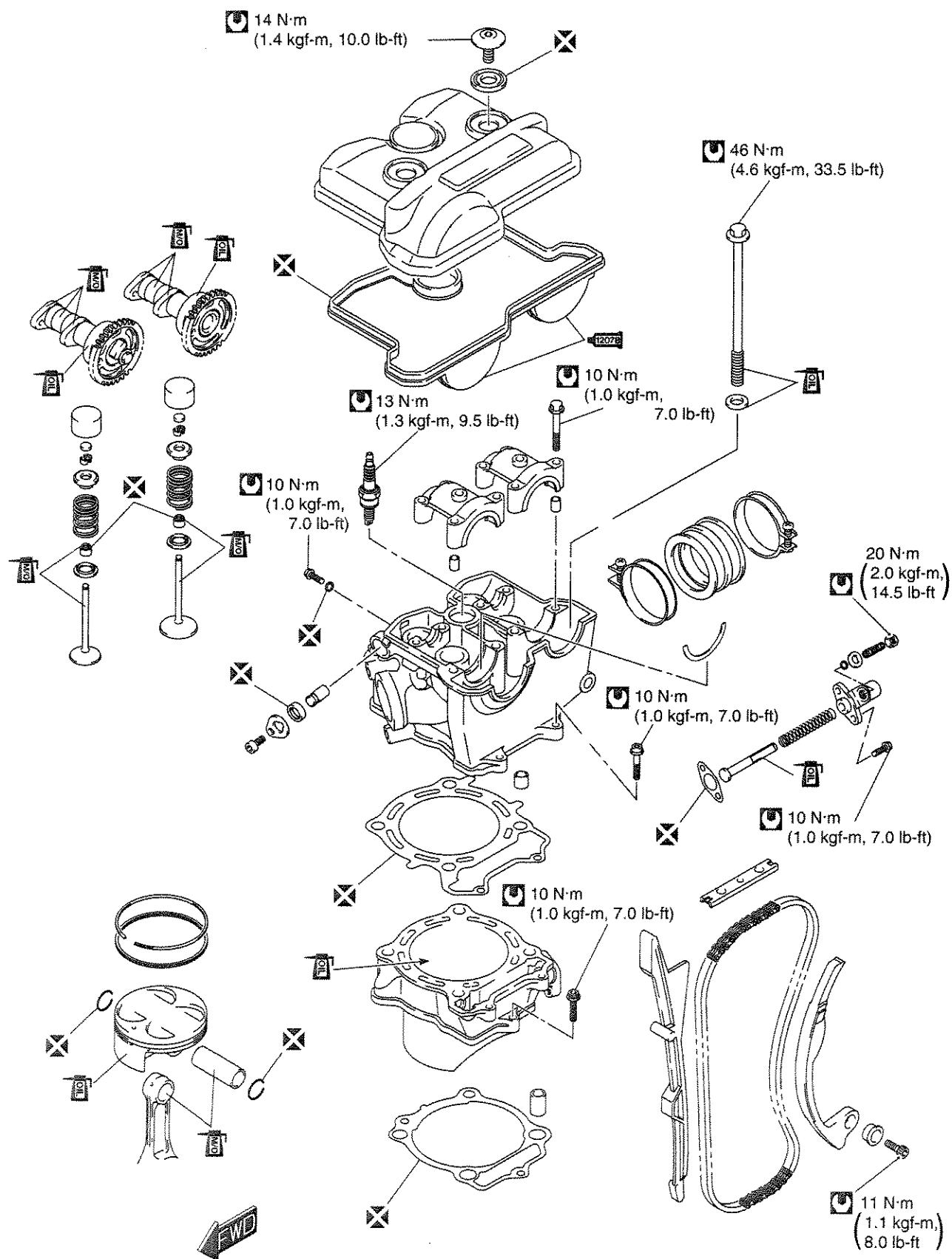
- Engine oil level (2-11)
- Engine coolant level and leakage (2-13, 14)
- Fuel leakage (2-18)
- Exhaust gas leakage
- Throttle cable play (2-16)
- Clutch cable play (2-15)
- Drive chain slack (2-27)
- Brake pedal height (2-30)
- Wire, cable and hose routing (19-17 to 19)

CYLINDER HEAD, CYLINDER AND PISTON

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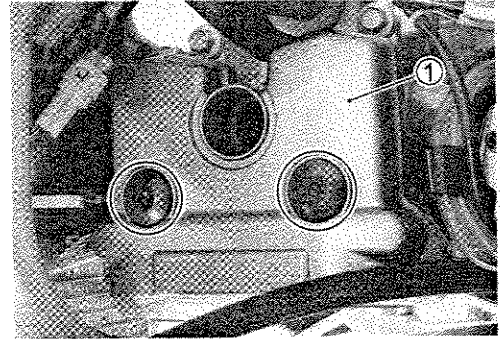
CONSTRUCTION CYLINDER HEAD, CYLINDER AND PISTON



ENGINE TOP SIDE

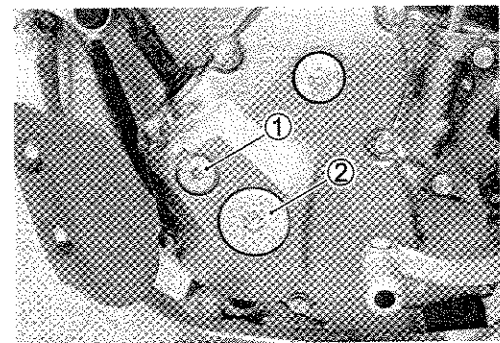
CYLINDER HEAD COVER REMOVAL

- Remove the seat. (☞ 5-2)
- Remove the radiator covers and fuel tank. (☞ 5-2)
- Disconnect the spark plug cap. (☞ 2-7)
- Remove the cylinder head cover ① and cylinder head cover gasket.



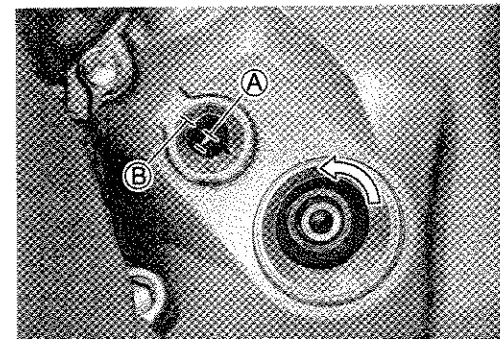
CAMSHAFTS (AUTOMATIC DE-COMP.) AND CAM CHAIN TENSION ADJUSTER REMOVAL

- Remove the cylinder head cover. (☞ above)
- Remove the TDC plug ① and magneto cover cap ②.
- Place a wrench over the crankshaft and turn it counter clockwise to align the TDC mark ① with the center of the groove ② of the timing inspection hole.

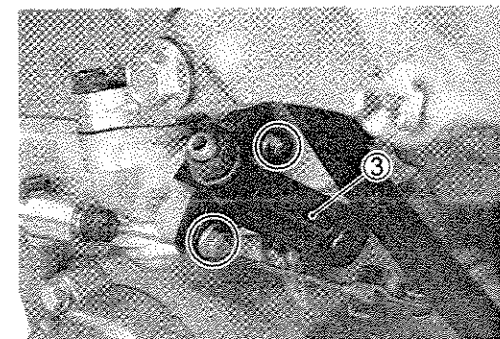


NOTE:

The piston must be at TDC on the compression stroke.



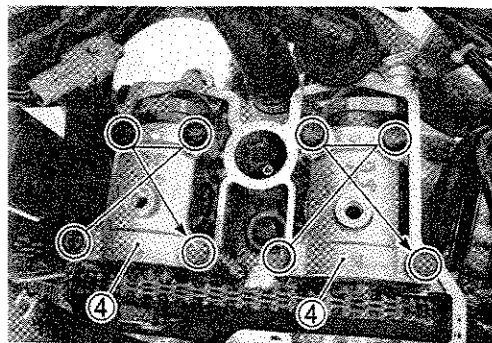
- Remove the cam chain tension adjuster ③ and its gasket.



- Remove the camshaft journal holders ④ and their dowel pins.

NOTE:

Loosen the camshaft journal holder bolts diagonally.

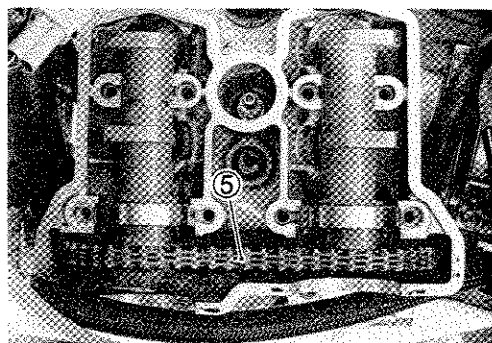


- Disengage the camshafts from cam chain ⑤.

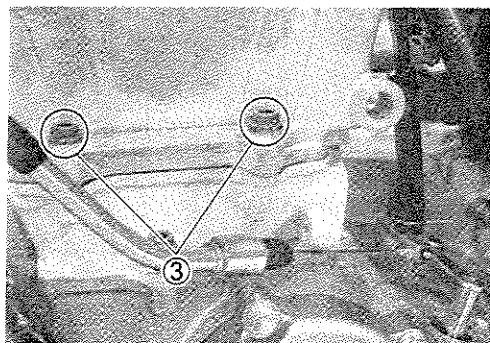
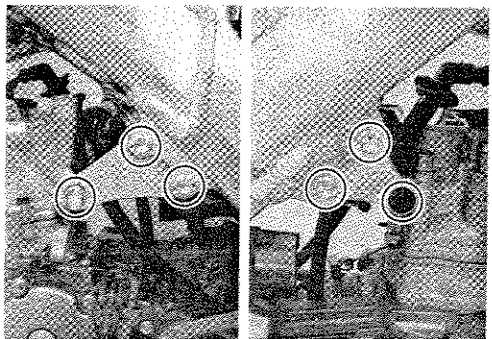
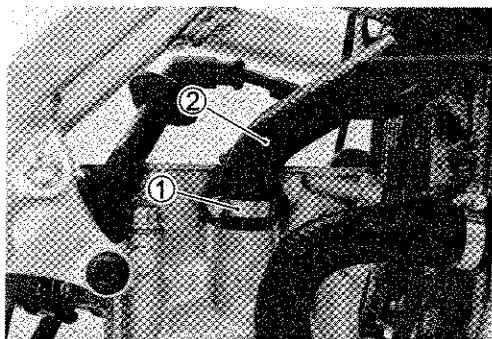
CAUTION

Do not drop the cam chain ⑤ into the crankcase.

If the crankshaft is turned without drawing the cam chain upward, the cam chain will catch between crankcase and cam chain drive sprocket.

**CYLINDER HEAD REMOVAL**

- Remove the camshafts. (☞ above)
- Remove the exhaust pipe. (☞ 5-3)
- Remove the spark plug. (☞ 2-7)
- Remove the carburetor. (☞ 12-5)
- Drain engine coolant. (☞ 13-3)
- Loosen the clamp ① and disconnect the radiator hose ②.
- Remove the engine mounting bolts and plates, left and right.
- Remove the cylinder head bolts ③.



- Remove the cylinder head bolts and washers.

NOTE:

When loosening the cylinder head bolts, loosen each bolt little by little diagonally.

- Remove the cylinder head ④.

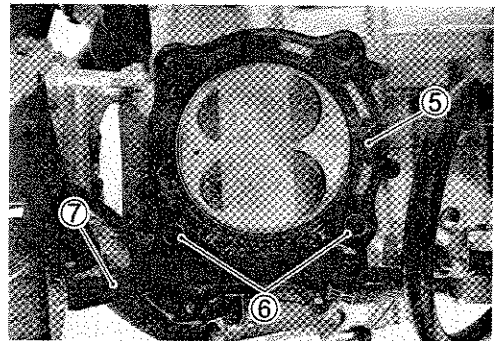
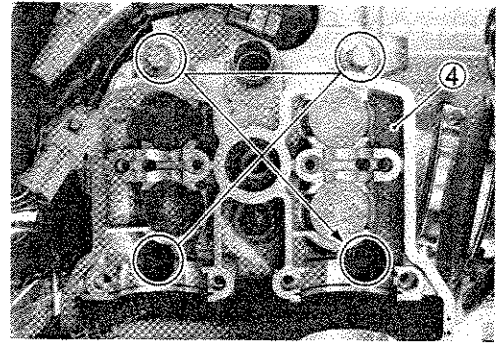
NOTE:

If the cylinder head does not come off, lightly tap on the finless portion of it with a plastic hammer.

- Remove the cylinder head gasket ⑤, dowel pins ⑥ and cam chain guide ⑦.

CAUTION

Do not drop the cam chain into the crankcase.



CYLINDER REMOVAL

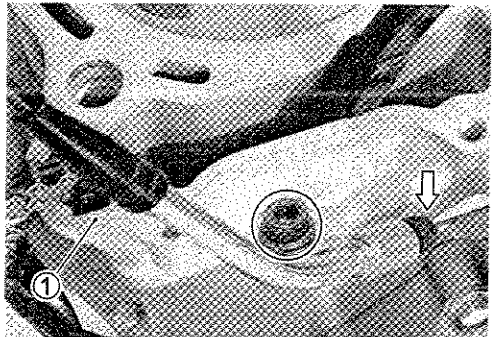
- Remove the cylinder head. (☞ above)
- Disconnect the clutch cable.
- Remove the cylinder ① by removing the cylinder base bolt and bracket.

NOTE:

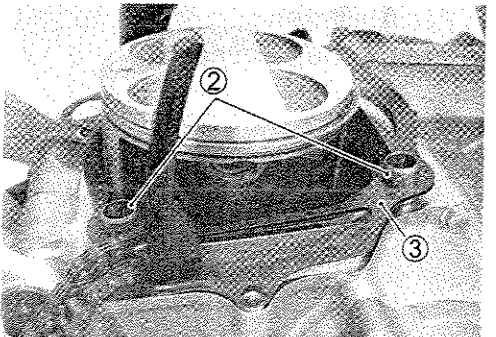
If the cylinder does not come off, lightly tap on the finless portion of it with a plastic hammer.

CAUTION

Do not drop the cam chain into the crankcase.

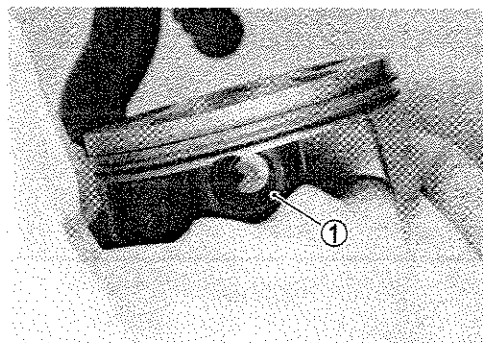


- Remove the cylinder gasket ② and dowel pins ③.

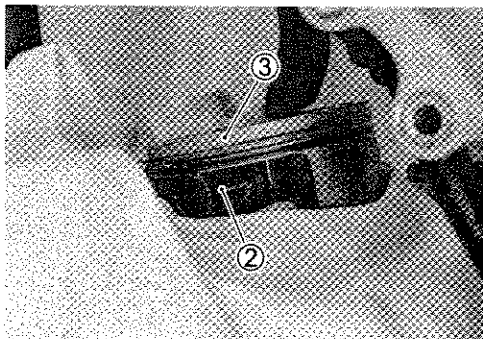


PISTON AND PISTON RING REMOVAL

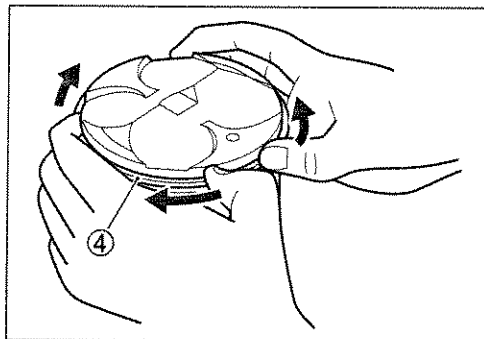
- Remove the cylinder. (☞ 6-5)
- Place a clean rag over the cylinder base to prevent the piston pin circlip ① from dropping into the crankcase.
- Remove the piston pin circlip ①.



- Remove the piston pin ② and piston ③.

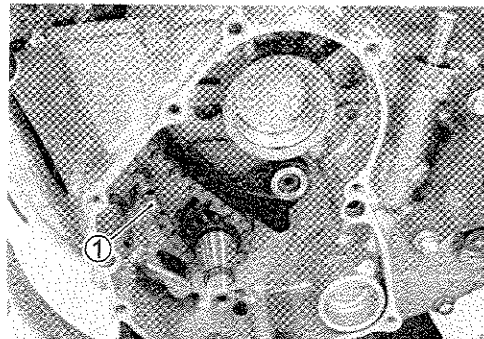


- Carefully spread the ring opening with your thumbs and then push up the opposite side of the ring ④ to remove it.
- Remove the oil ring in the same procedure.

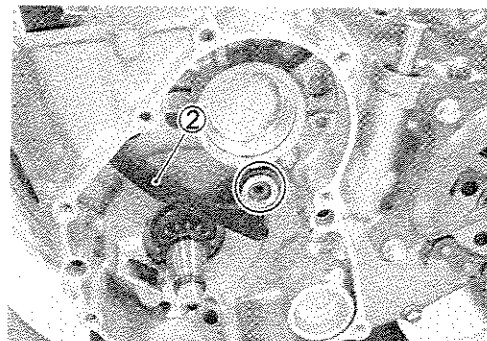


CAM CHAIN AND CAM CHAIN TENSIONER REMOVAL

- Remove the magneto cover and magnet rotor. (☞ 14-6)
- Remove the cam chain ①.



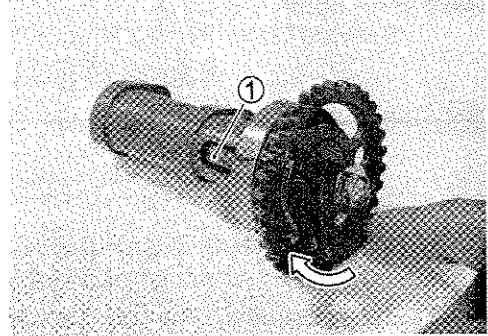
- Remove the cam chain tensioner ②.



ENGINE TOP COMPONENTS INSPECTION AND SERVICE

AUTOMATIC DECOMP. INSPECTION

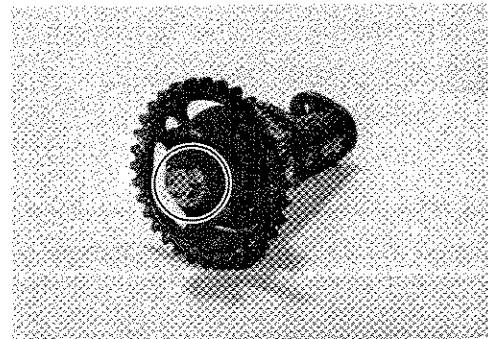
- Check the decomp. cam moves smoothly and shaft ① rotates together.
- If any abnormal condition are found, replace the camshaft assembly.



CAMSHAFT INSPECTION

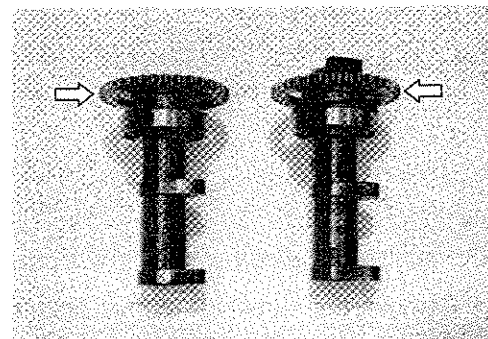
CAUTION

The camshaft assembly can not be disassembled except for the automatic decomp.



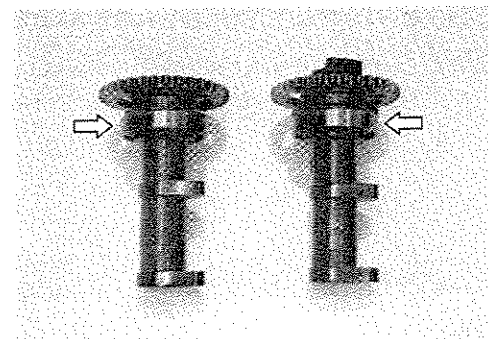
CAM SPROCKET

- Inspect the sprocket teeth for wear.
- If they are worn, replace the camshafts, crankshaft and cam chain as a set.



CAMSHAFT BEARING

- Inspect the bearings for play, discoloration, wear and seizure.
- Move the outer race by finger and inspect for smooth movement.
- If there is anything unusual, replace the camshaft assembly.



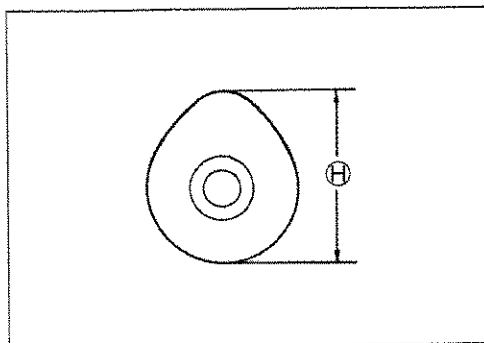
CAM WEAR INSPECTION

- Measure the cam height $\oplus$ using the micrometer.
- Replace a camshaft if the cams are worn to the service limit.

DATA Cam height $\oplus$

Service Limit IN.: 32.99 mm (1.30 in)
EX.: 32.20 mm (1.27 in)

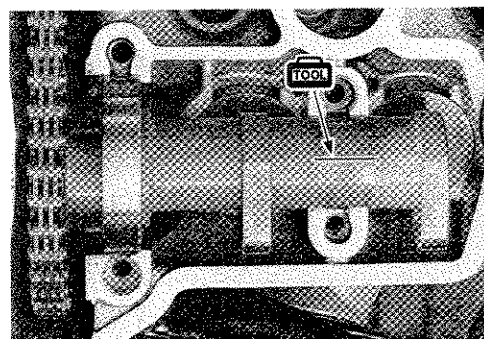
 09900-20202: Micrometer (25 – 50 mm)



CAMSHAFT JOURNAL WEAR INSPECTION

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

 09900-22301: Plastigauge
09900-22302: Plastigauge

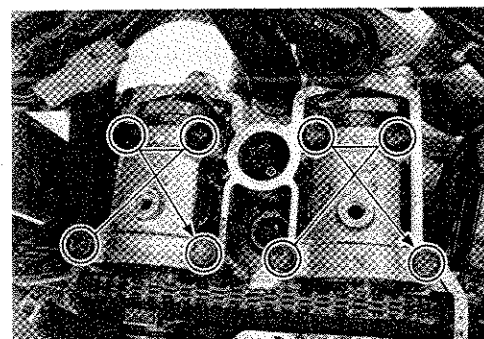


NOTE:

Install the camshaft journal holders to their original positions.
( 6-31)

- Tighten the camshaft journal holder bolts evenly and diagonally to the specified torque.

 Camshaft journal holder bolt:
10 N·m (1.0 kgf·m, 7.0 lb·ft)

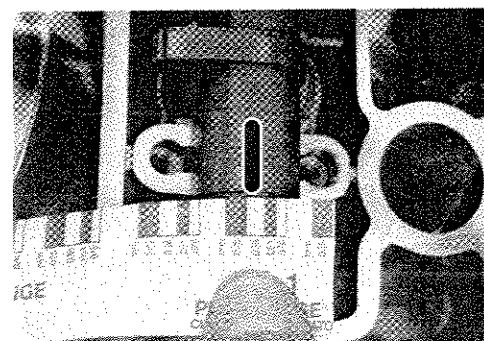


NOTE:

Do not rotate the camshaft with the plastigauge in place.

- Remove the camshaft journal holders, and read the width of the compressed plastigauge with envelope scale. This measurement should be taken at the widest part.

DATA Camshaft journal oil clearance:
Service Limit (IN. & EX.): 0.150 mm (0.006 in)



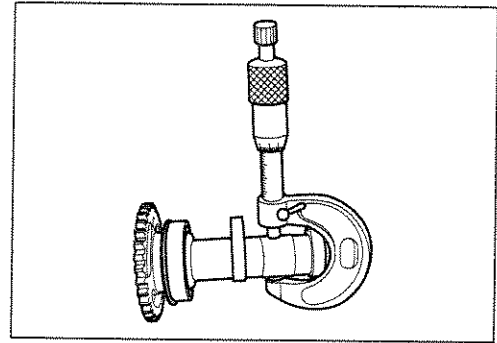
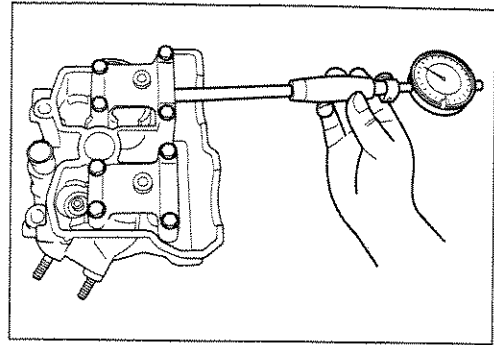
- If the camshaft journal oil clearance measured exceeds the limit, measure the inside diameter of the camshaft journal holder and outside diameter of the camshaft journal.
- Replace the camshaft or the cylinder head depending upon which one exceeds the specification.

DATA Camshaft journal holder I.D.:
 Standard (IN & EX): 22.012 – 22.025 mm
 (0.8667 – 0.8671 in)

TOOL 09900-20602: Dial gauge (1/1000, 1 mm)
 09900-22403: Small bore gauge (18 – 35 mm)

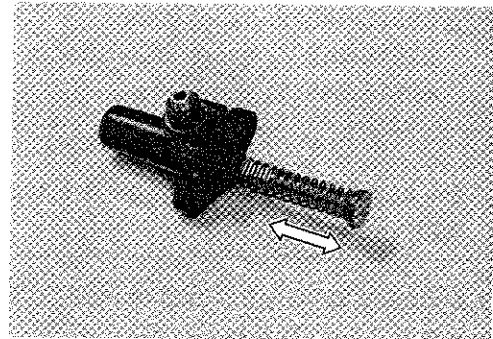
DATA Camshaft journal O.D.:
 Standard (IN & EX): 21.959 – 21.980 mm
 (0.8645 – 0.8653 in)

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



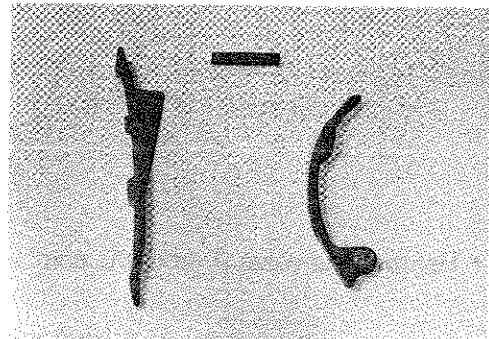
CAM CHAIN TENSION ADJUSTER INSPECTION

- Check that the push rod slides smoothly.



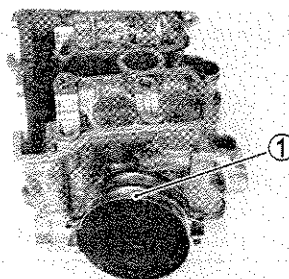
CAM CHAIN GUIDE AND CAM CHAIN TENSIONER INSPECTION

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



CYLINDER HEAD AND VALVE INSPECTION DISASSEMBLY

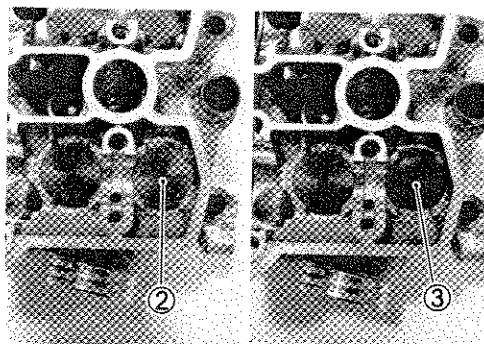
- Remove the intake pipe ①.



- Remove the tappet ② and shim ③ by fingers or magnetic hand.

CAUTION

Identify the position of each removed part. Organize the parts in their respective groups (i.e., intake or exhaust) so that they can be installed in their original locations.



- Using the special tools, compress the valve spring and remove the two cotter halves ④ from the valve stem.



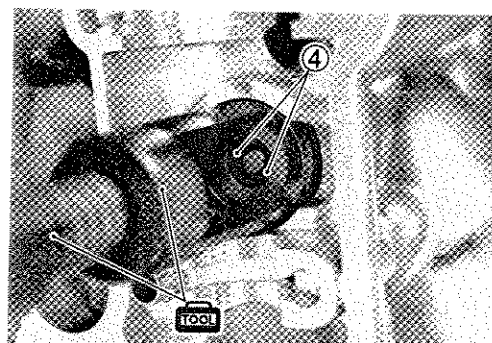
09916-14510: Valve lifter

09916-14521: Valve lifter attachment

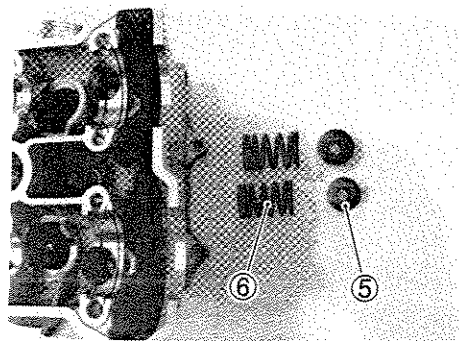
09916-84511: Tweezers

CAUTION

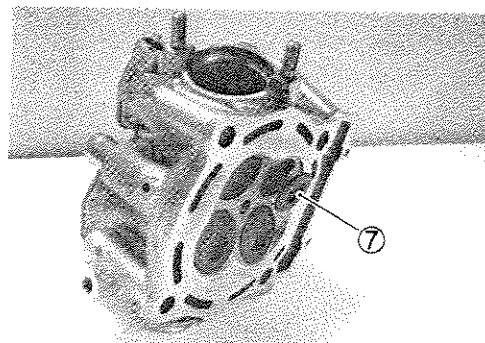
Be careful not to damage the tappet sliding surface with the special tool.



- Remove the valve spring retainer ⑤ and valve springs ⑥.



- Remove the valve ⑦ from the combustion chamber side.

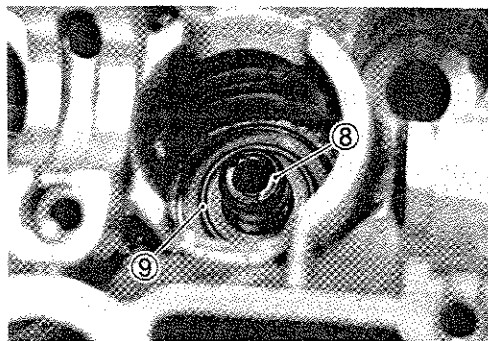


- Remove the valve stem seal ⑧ and spring seat ⑨.

CAUTION

Do not reuse the removed valve stem seal.

- Remove the other valves in the same manner as described previously.

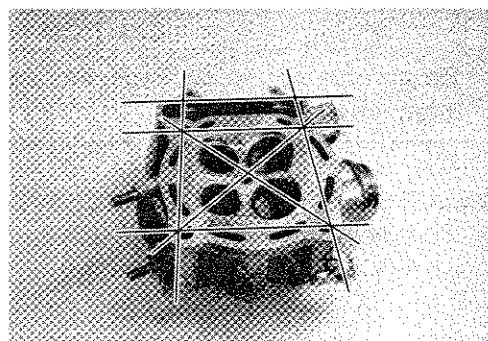


CYLINDER HEAD DISTORTION

- Decarbonize the combustion chambers.
- Check the gasket surface of the cylinder head for distortion with a straightedge and thickness gauge, taking a clearance reading at several places indicated.
- If the largest reading at any position of the straightedge exceeds the limit, replace the cylinder head.

DATA Cylinder head distortion:
Service Limit: 0.05mm (0.002 in)

TOOL 09900-20803: Thickness gauge



VALVE STEM RUNOUT

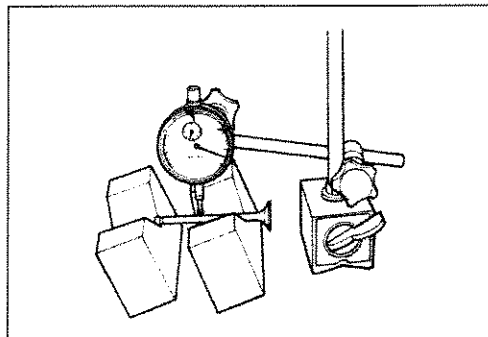
- Support the valve using V-blocks and check its runout using the dial gauge as shown.
- If the runout exceeds the service limit, replace the valve.

DATA Valve stem runout (IN & EX):
Service Limit: 0.05 mm (0.002 in)

TOOL 09900-20607: Dial gauge (1/100 mm)

09900-20701: Magnetic stand

09900-21304: V-block set (100 mm)



CAUTION

Be careful not to damage the valve head and valve stem when handling it.

VALVE HEAD RADIAL RUNOUT

- Place the dial gauge at a right angle to the valve head face and measure the valve head radial runout.
- If it measures more than the service limit, replace the valve.

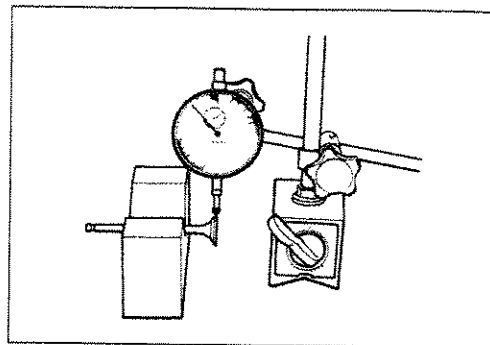
DATA Valve head radial runout (IN & EX):

Service Limit: 0.03 mm (0.001 in)

TOOL 09900-20607: Dial gauge (1/100 mm)

09900-20701: Magnetic stand

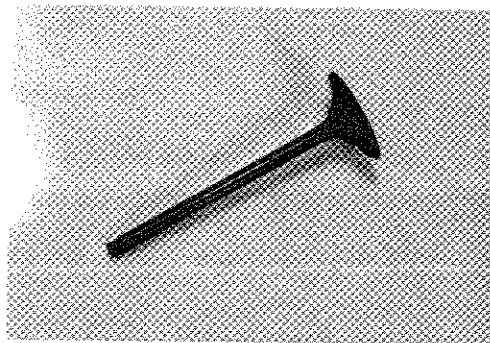
09900-21304: V-block set (100 mm)

**CAUTION**

Be careful not to damage the valve head and valve stem when handling it.

VALVE STEM AND VALVE FACE WEAR CONDITION

- Visually inspect each valve stem and valve face for wear and pitting.
- If it is worn or damaged, replace the valve with a new one.

**VALVE STEM DEFLECTION**

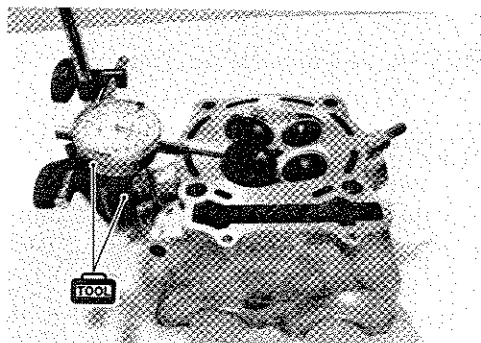
- Lift the valve about 10 mm (0.39 in) from the valve seat.
- Measure the valve stem deflection in two directions, perpendicular to each other, by positioning the dial gauge as shown.
- If the deflection measured exceeds the limit, then determine whether the valve or the guide should be replaced with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

DATA Valve stem deflection (IN & EX):

Service Limit: 0.35 mm (0.014 in)

TOOL 09900-20607: Dial gauge (1/100 mm)

09900-20701: Magnetic stand



VALVE STEM WEAR

- If the valve stem is worn down to the limit, as measured with a micrometer, replace the valve.
- If the stem is within the limit, then replace the guide.
- After replacing valve or guide, be sure to recheck the deflection.

DATA Valve stem O.D.:

Standard (IN) : 4.975 – 4.990 mm (0.1959 – 0.1965 in)
 (EX) : 4.955 – 4.970 mm (0.1951 – 0.1957 in)

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

NOTE:

If valve guides have to be removed for replacement after inspecting related parts, carry out the steps shown in valve guide servicing.

VALVE GUIDE SERVICING

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

 **09916-44310: Valve guide remover/installer**

NOTE:

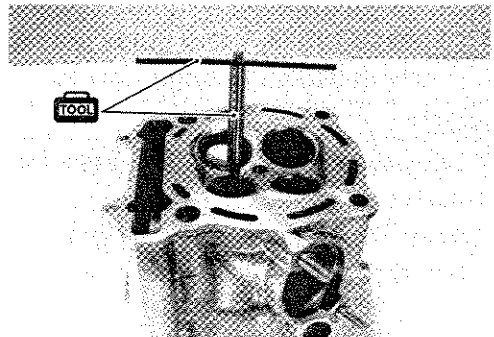
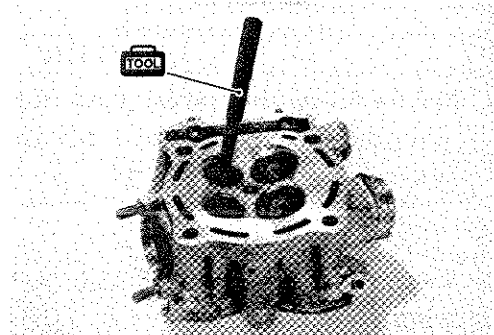
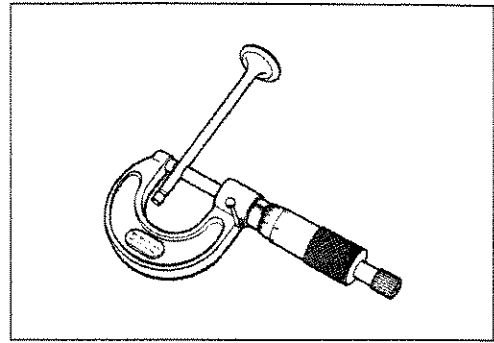
- * Discard the removed valve guide subassemblies.
- * Only oversized valve guides are available as replacement parts. (Part No. 11115-20E70)

- Re-finish the valve guide holes in cylinder head with the reamer and handle.

 **09916-34561: Valve guide reamer (11.3 mm)**
09916-34542: Reamer handle

CAUTION

When refinishing or removing the reamer from the valve guide hole, always turn it clockwise.



- Cool down the new valve guides in a freezer for about one hour and heat the cylinder head to 100 – 150 °C (212 – 302 °F) with a hot plate.

CAUTION

Do not use a burner to heat the valve guide hole to prevent cylinder head distortion.

- Apply engine oil to the valve guide hole.
- Drive the valve guide into the hole using the valve guide installer ① and attachment ②.

TOOL 09916-43310: Valve guide remover/installer ①
09916-53360: Attachment ②

NOTE:

Install the valve guide until the attachment contacts with the cylinder head ③.

CAUTION

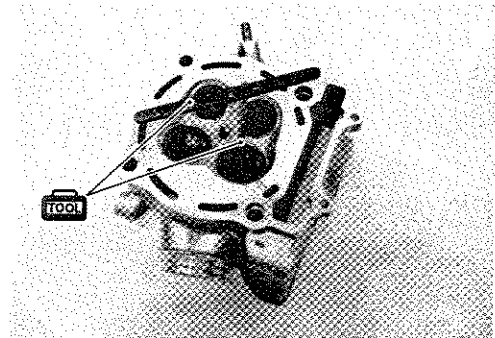
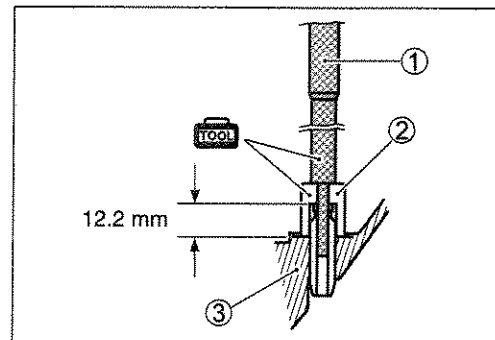
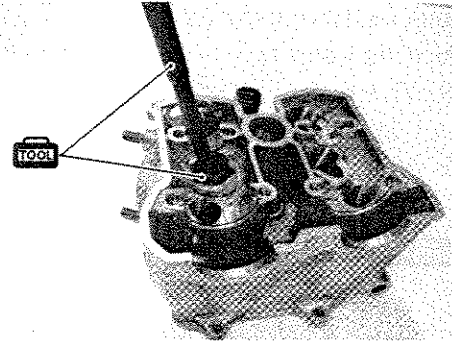
Failure to oil the valve guide hole before driving the new guide into place may result in a damaged guide or head.

- After installing the valve guides, re-finish their guiding bores using the reamer.
- Clean and engine oil the guides after reaming.

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

NOTE:

- * Be sure to cool down the cylinder head to ambient air temperature.
- * Insert the reamer from the combustion chamber and always turn the reamer handle clockwise.



VALVE SEAT WIDTH INSPECTION

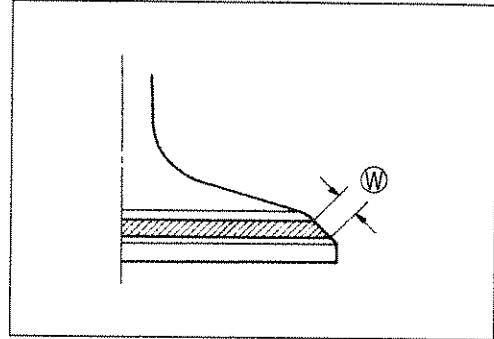
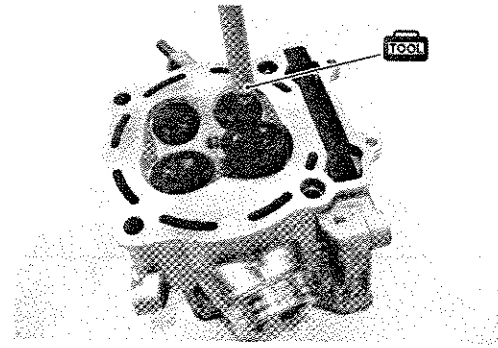
- Visually check for valve seat width on each valve face.
- If the valve face has worn abnormally, replace the valve.
- Coat the valve seat with Prussian Blue and set the valve in place. Rotate the valve with light pressure.
- Check that the transferred blue on the valve face is uniform all around and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

TOOL 09916-10911: Valve lapper set

- If the seat width $\textcircled{W}$ measured exceeds the standard value or seat width is not uniform, refuse the seat using the seat cutter.

DATA Valve seat width $\textcircled{W}$:

Standard: 0.9 – 1.1 mm (0.035 – 0.043 in)

**VALVE SEAT SERVICING**

- The valve seats ① for both the intake valve ② and exhaust valve ③ are machined to three different angles. The seat contact surface is cut at 45°.

	INTAKE	EXHAUST
15°		N-121
30°	N-128	
45°	N-128	N-122
60°	N-114	N-111

TOOL 09916-21111: Valve seat cutter set

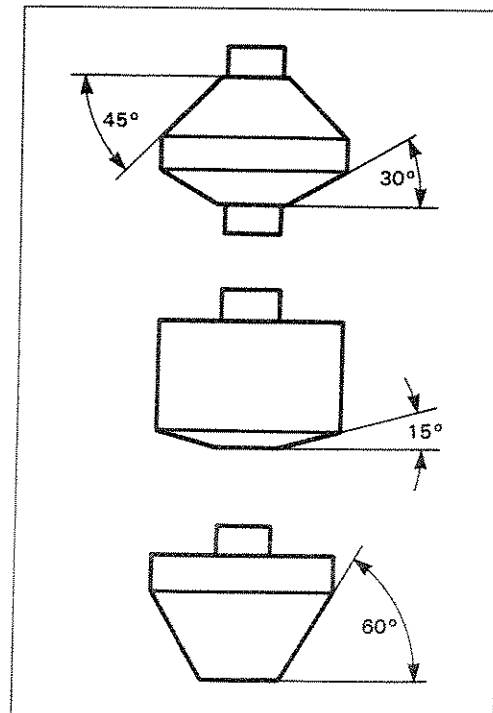
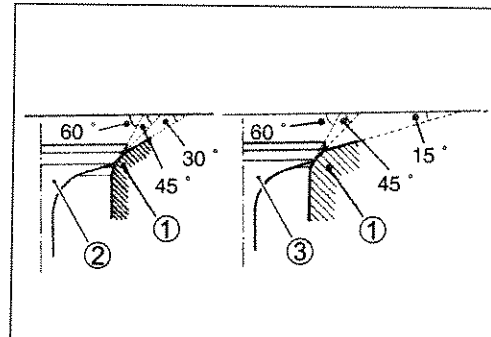
09916-22420: Valve seat cutter (N-114)

09916-22430: Valve seat cutter (N-128)

09916-24311: Solid pilot (N-100-5.0)

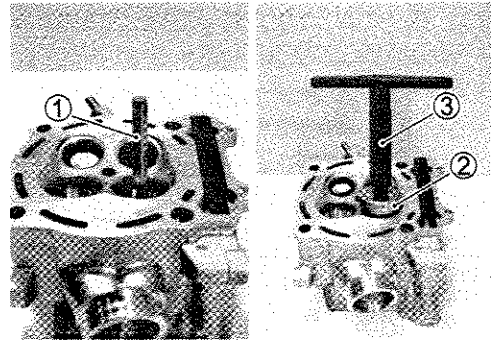
NOTE:

The valve seat cutters (N-121), (N-122) and (N-111) are included in the valve seat cutter set (09916-21111).

**CAUTION**

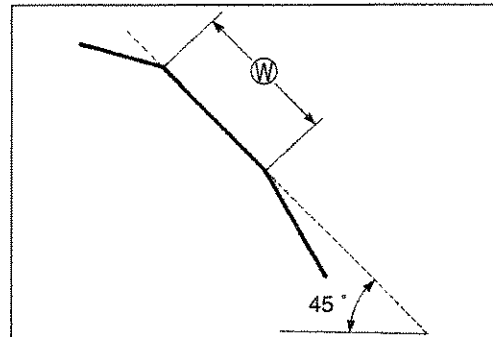
The valve seat contact area must be inspected after each cut.

- When installing the solid pilot ①, rotate it slightly. Seat the pilot snugly. Install the 45° cutter ②, attachment and T-handle ③.



INITIAL SEAT CUT

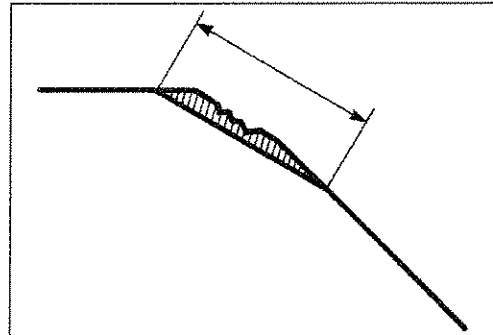
- Using the 45° cutter, descale and clean up the seat. Rotate the cutter one or two turns.
- Measure the valve seat width $\textcircled{W}$ after every cut.



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

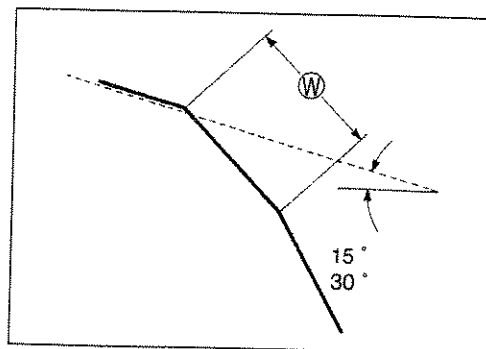
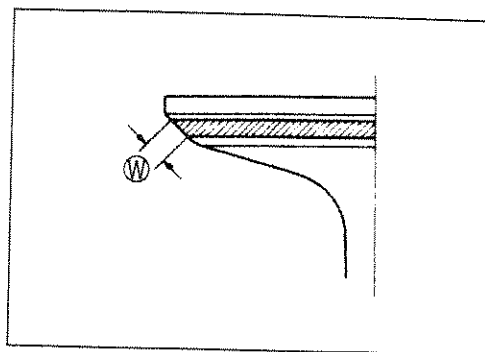
NOTE:

Cut only the minimum amount necessary from the seat to prevent the possibility of the valve stem becoming too close to the camshaft.

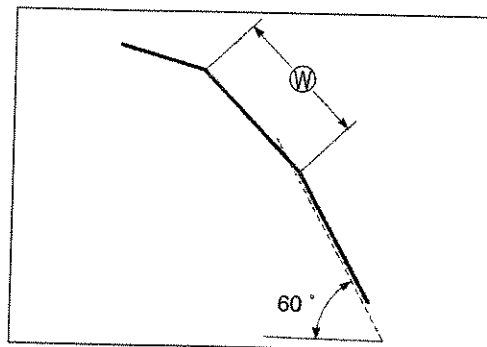


TOP NARROWING CUT

- If the contact area $\textcircled{W}$ is too high on the valve, or if it is too wide, use the 15° (for the exhaust side) and the 30° (for the intake side) to lower and narrow the contact area.

**BOTTOM NARROWING CUT**

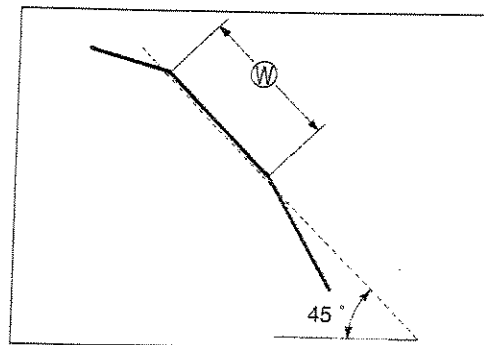
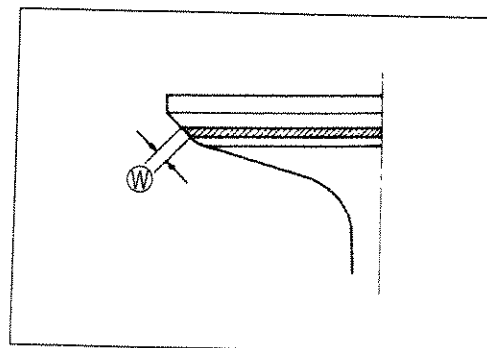
- If the contact area $\textcircled{W}$ is too wide or too low, use the 60° cutter to narrow and raise the contact area.

**FINAL SEAT CUT**

- If the contact area $\textcircled{W}$ is too low or too narrow, use the 45° cutter to raise and widen the contact area.

NOTE:

After cutting the 15° , 30° and 60° 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.

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.

CAUTION

The titanium valves are coated with an oxidized membrane treatment to resist wear but the membrane tend to be removed if lapped after valve seat servicing.

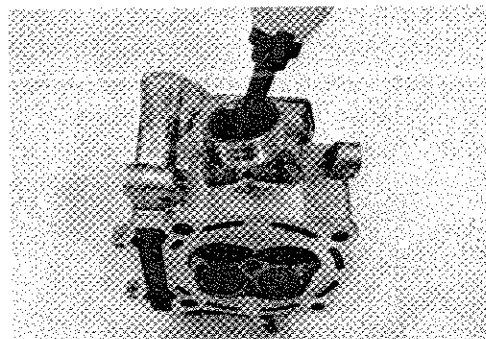
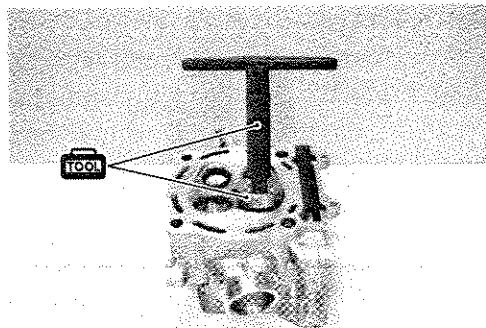
NOTE:

After servicing the valve seats, be sure to check the valve clearance after the cylinder head has been reinstalled. (☞ 2-21)

- Clean and assemble the head and valve components. Fill the intake and exhaust ports with gasoline to check for leaks.
- If any leaks occur, inspect the valve seat and face for burrs or other things that could prevent the valve from sealing.

⚠ WARNING

Always use extreme caution when handling gasoline.



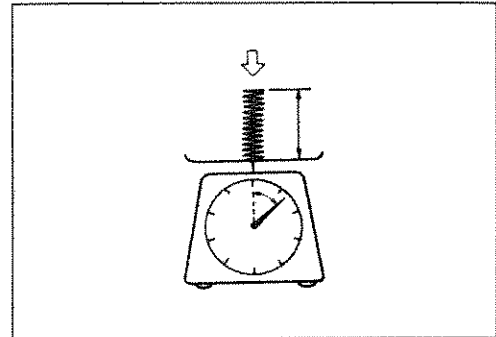
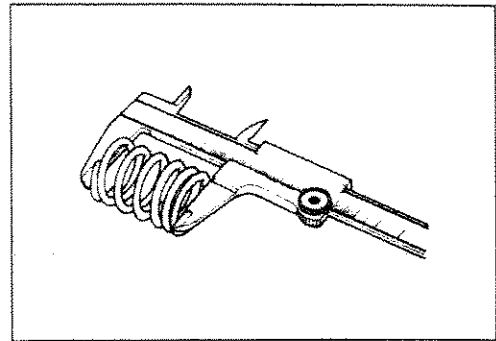
VALVE SPRING

- Check the valve spring for proper strength by measuring its free length and also by the force required to compress it.
- If the spring length is less than the service limit, or if the force required to compress the spring does not fall within the range specified, replace the spring.

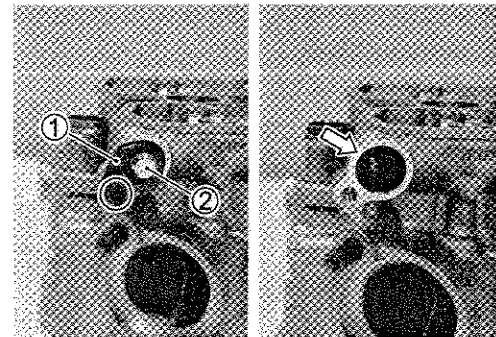
DATA Valve spring free length:

Service limit: (IN) : 34.0 mm (1.34 in)

(EX): 33.3 mm (1.31 in)

TOOL 09900-20102: Vernier calipers**DATA** Valve spring tension:Standard: (IN) : 128 N (13 kgf)/30.9 mm
(28.7 lbs/12.2 in)(EX): 78.5 N (8 kgf)/30.9 mm
(17.6 lbs/12.2 in)**OIL SEAL INSPECTION**

- Remove the bracket ① and shaft ②.
- Inspect the oil seal lip for wear and damage.



REASSEMBLY

- Install the valve spring seat.
- Apply MOLYBDENUM OIL SOLUTION to the stem seal ①, and press-fit it into position.

MOLYBDENUM OIL SOLUTION

CAUTION

Do not reuse the removed stem seal.

- Insert the valve, with its stem coated with MOLYBDENUM OIL SOLUTION all around and along the full stem length without any break.

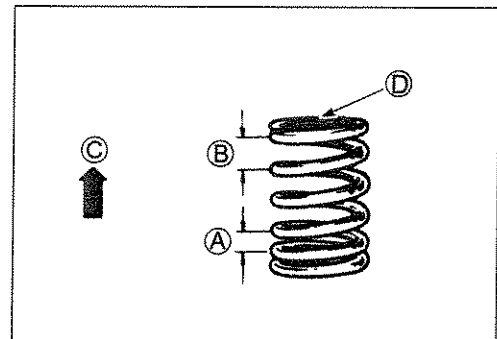
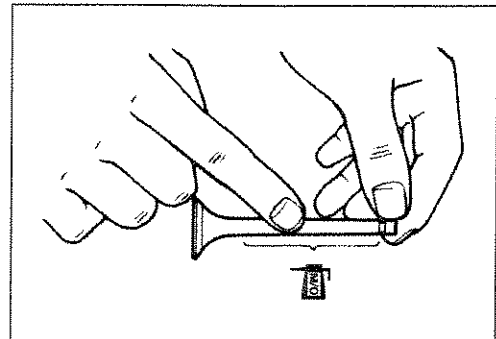
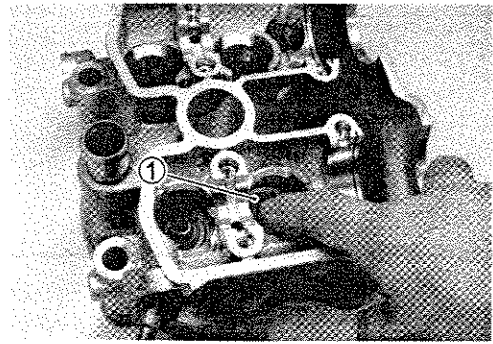
CAUTION

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

MOLYBDENUM OIL SOLUTION

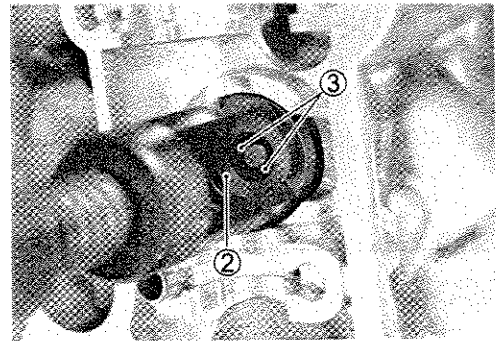
- Install the valve spring with the small-pitch portion ① facing cylinder head.

- ① Small-pitch portion
- ② Large-pitch portion
- ③ UPWARD
- ④ Paint



- Put on the valve spring retainer ②, and using the valve lifter, press down the spring, fit the valve cotter halves to the stem end, and release the lifter to allow the valve cotter ③ to wedge in between retainer and stem.

TOOL 09916-14510: Valve lifter
 09916-14521: Valve lifter attachment (Intake side)
 09916-84511: Tweezers



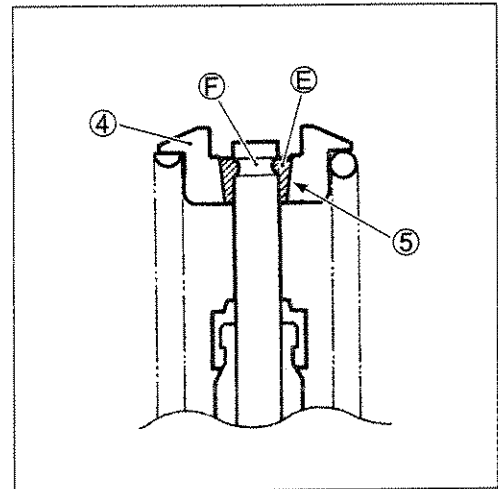
- Be sure that the rounded lip ⑤ of the cotter fits snugly into the groove ④ in the stem end.
- Install the other valves and springs in the same manner as described previously.

CAUTION

Be sure to restore each spring and valve to their original positions.

Be careful not to damage the valve and valve stem when handling it.

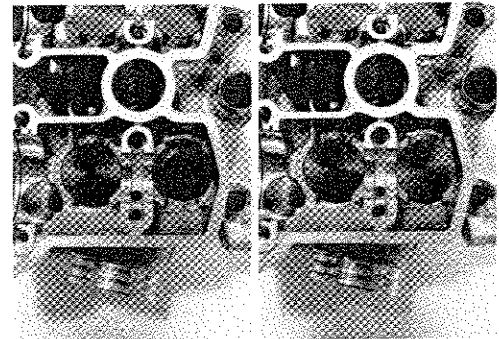
- ④ Valve spring retainer
- ⑤ Valve cotter



- Install the tappet shims and the tappets to their original positions.

NOTE:

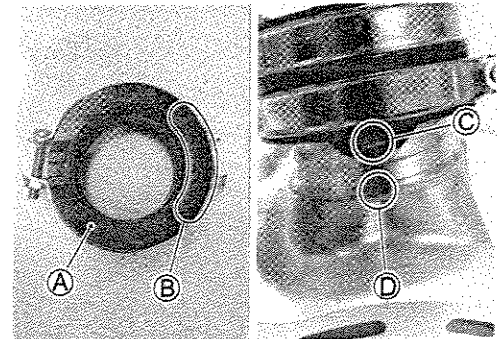
- * Apply engine oil to the stem end, shim and tappet before fitting them.
- * When seating the tappet shim, be sure the figure printed surface faces the tappet.



- Install the intake pipe.

NOTE:

- * The intake pipe ① with the marked ② side facing toward the cylinder head outside.
- * Fit the recess ③ of the intake pipe into the projection ④ of the cylinder head.



CYLINDER INSPECTION

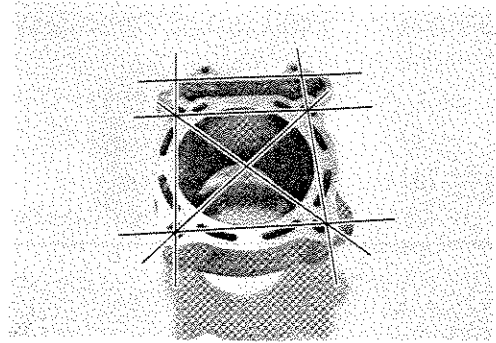
CYLINDER DISTORTION

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

DATA Cylinder distortion:

Service Limit: 0.05 mm (0.002 in)

TOOL 09900-20803: Thickness gauge



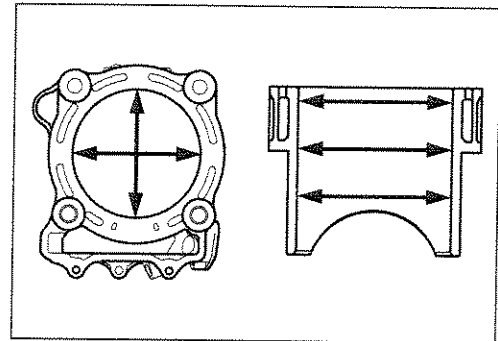
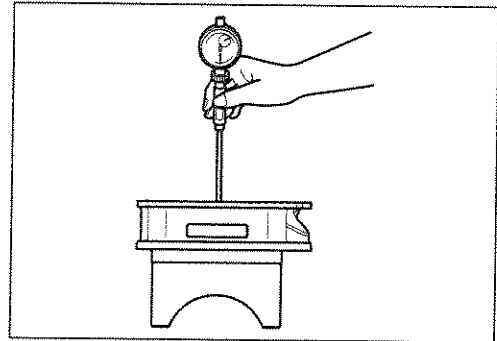
CYLINDER BORE

- Inspect the cylinder wall for any scratches, nicks or other damage.
- Measure the cylinder bore diameter at six places.

DATA Cylinder bore

Service Limit: 95.62 mm (3.765 in)

TOOL 09900-20508: Cylinder gauge set
09900-20513: Rod (94 mm)



PISTON AND PISTON RING INSPECTION

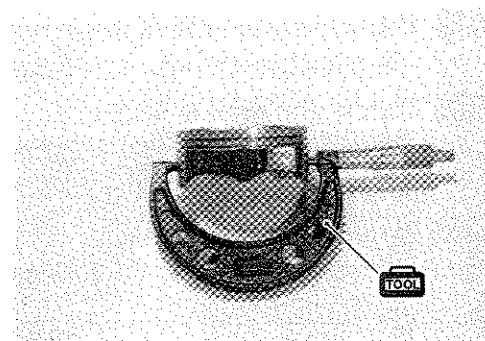
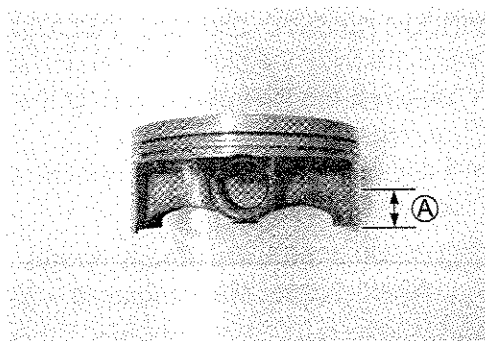
PISTON DIAMETER

- Using a micrometer, measure the piston outside diameter at 15 mm (0.6 in) $\text{\textcircled{A}}$ from the piston skirt end.
- If the measurement is less than the limit, replace the piston.

DATA Piston diameter:

Service Limit: 95.380 mm (3.7551 in)
at 15 mm (0.6 in) from the skirt end

TOOL 09900-20204: Micrometer (75 – 100 mm)



PISTON-TO-CYLINDER CLEARANCE

- Subtract the piston diameter from the cylinder bore diameter. (See above)
- If the piston-to-cylinder clearance exceeds the service limit, replace the cylinder or the piston, or both.

DATA Piston-to-cylinder clearance:

Service Limit: 0.120 mm (0.0047 in)

PISTON PIN AND PIN BORE

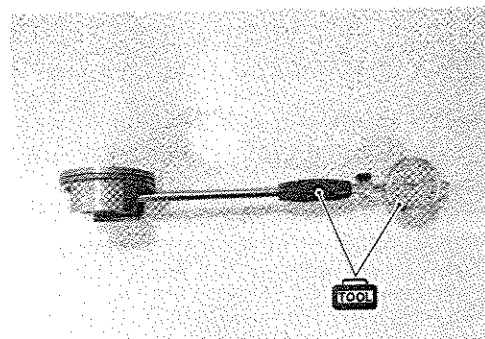
- Measure the piston pin bore inside diameter using the small bore gauge.
- If the measurement is out of specifications replace the piston.

DATA Piston pin bore I.D.:

Service Limit: 19.030 mm (0.7492 in)

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

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

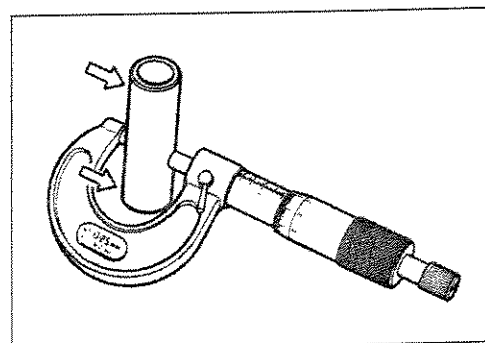


- Measure the piston pin outside diameter at three positions using the micrometer.
- If any of the measurements are out of specification, replace the piston pin.

DATA Piston pin O.D.:

Service Limit: 18.980 mm (0.7472 in)

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



PISTON RING-TO-GROOVE CLEARANCE

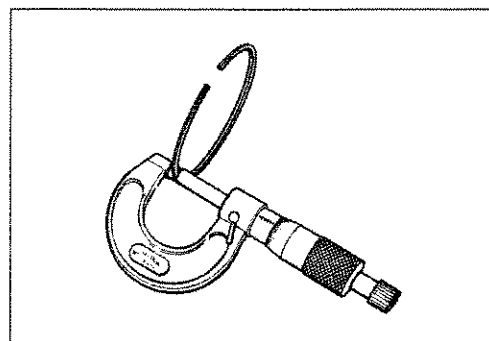
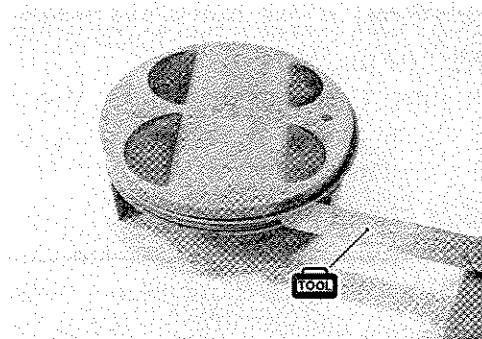
- Decarbonize the piston ring and piston ring groove.
- Measure the side clearances of the 1st piston ring using the thickness gauge.
- If any of the clearances exceed the limit, replace both the piston and piston ring.

TOOL 09900-20803: Thickness gauge
09900-20205: Micrometer (0 – 25 mm)

DATA Piston ring-to-groove clearance:
Service Limit (1st) : 0.180 mm (0.007 in)

DATA Piston ring groove width:
Standard (1st) : 1.21 – 1.23 mm (0.0476 – 0.0484 in)
(Oil) : 2.01 – 2.03 mm (0.0791 – 0.0799 in)

DATA Piston ring thickness:
Standard (1st) : 1.17 – 1.19 mm (0.0461 – 0.0469 in)



PISTON RING FREE END GAP AND PISTON RING END GAP

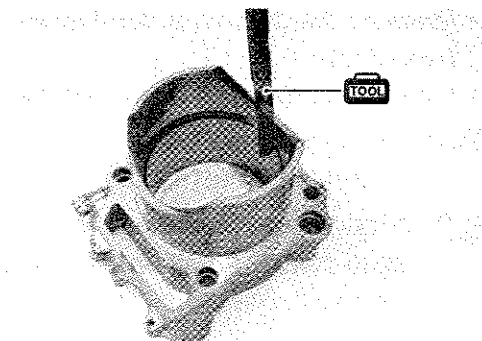
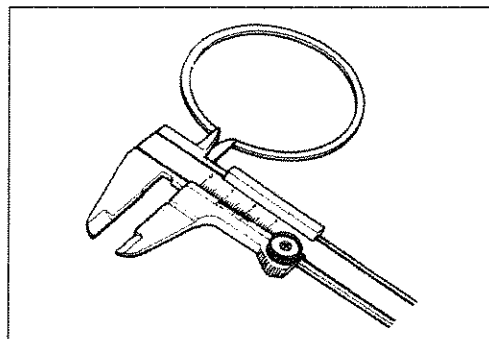
- Measure the piston ring free end gap using the vernier calipers.
- Next, fit the piston ring squarely into the cylinder and measure the piston ring end gap using the thickness gauge.
- If any of the measurements exceed the service limit, replace the piston ring with a new one.

DATA Piston ring free end gap:
Service Limit (1st) : 9.2 mm (0.36 in)

TOOL 09900-20102: Vernier calipers

DATA Piston ring end gap:
Service Limit (1st) : 0.50 mm (0.020 in)

TOOL 09900-20803: Thickness gauge



CRANKSHAFT AND CONROD INSPECTION

For inspection other than the following, refer to page 10-7.

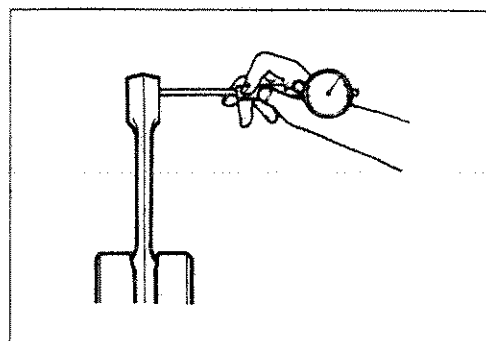
CONROD SMALL END I.D.

- Using a small bore gauge, measure the inside diameter of the conrod small end.
- If the inside diameter of the conrod small end exceeds the limit, replace the conrod. (☞ 10-5)

DATA Conrod small end I.D.:

Service Limit: 19.040 mm (0.7496 in)

TOOL 09900-20602: Dial gauge (1/1000 mm, 1 mm)
09900-22403: Small bore gauge (18 – 35 mm)



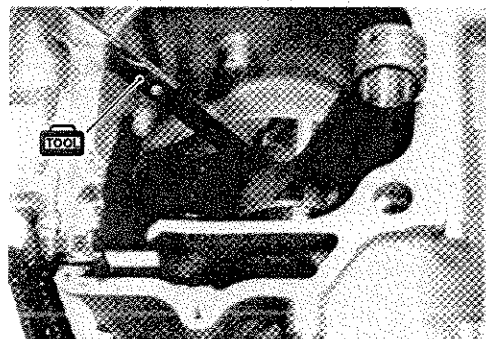
CONROD BIG END SIDE CLEARANCE

- Inspect the conrod side clearance by using a thickness gauge.
- If the clearance exceeds the service limit, replace crankshaft assembly or bring the deflection and side clearance into specification by replacing the worn parts. (e.g., conrod, big end bearing and crank pin)

DATA Conrod big end side clearance:

Service Limit: 1.0 mm (0.04 in)

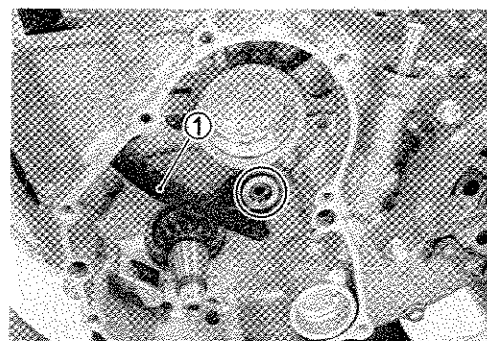
TOOL 09900-20803: Thickness gauge



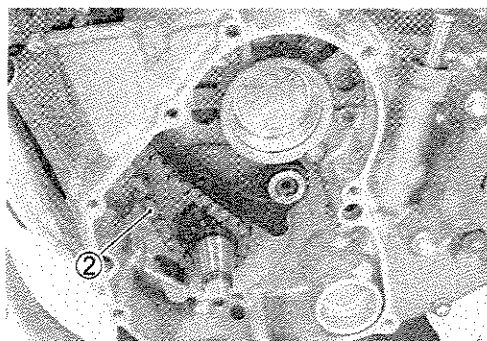
CAM CHAIN AND CAM CHAIN TENSIONER REASSEMBLY

- Install the cam chain tensioner ①.

Ⓢ Cam chain tensioner bolt: 11 N·m (1.1 kgf-m, 8.0 lb-ft)



- Install the cam chain ② to the crankshaft sprocket.
- Install the magneto cover and magnet rotor. (☞ 14-7)



PISTON RING AND PISTON RESSEMBLY

PISTON RING

- Install the piston rings in the order of oil ring and 1st ring.
- The first member to go into the oil ring groove is a spacer ①.
After placing the spacer, fit the two side rails ②.

NOTE:

Side designations, top and bottom, are not applied to the spacer and side rails: you can position each either way.

CAUTION

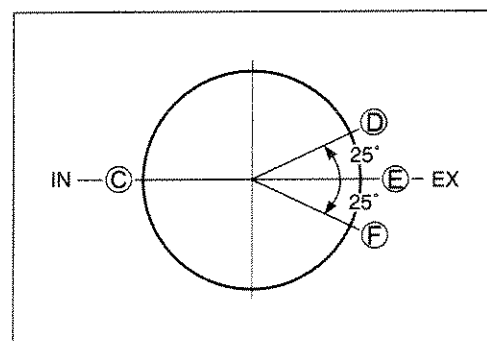
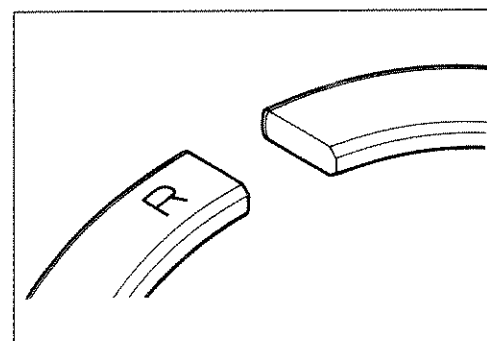
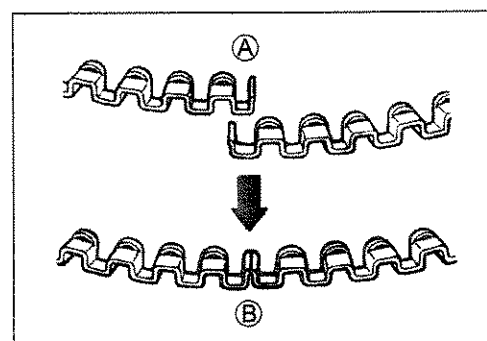
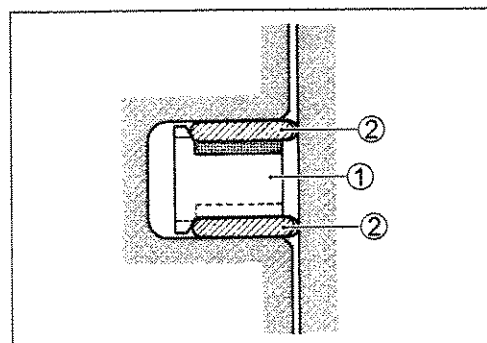
When installing the spacer ①, be careful not to allow its two ends to overlap in the groove.

- Ⓐ INCORRECT
Ⓑ CORRECT

- Install the 1st ring so that the "R" mark faces up.

- Position the gaps of the two ring as shown. Before inserting a piston into the cylinder, check that the gaps are so located.

- Ⓒ 1st ring
Ⓓ Upper side rail
Ⓔ Spacer
Ⓕ Lower side rail



PISTON

- Before installing the piston pin, apply molybdenum oil solution onto its surface.

** MOLYBDENUM OIL SOLUTION**

- Install the piston with the punch mark ① facing towards the exhaust side.

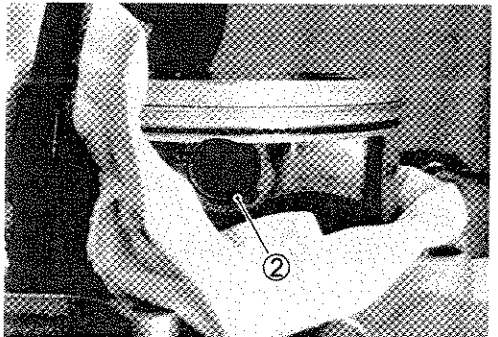
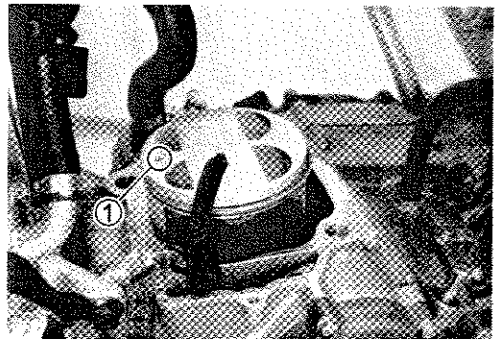
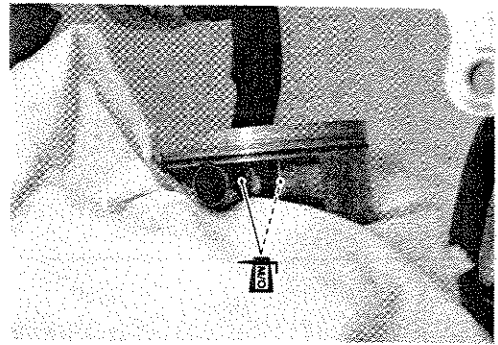
- Place a clean rag over the cylinder base to prevent the piston pin circlip from dropping into crankcase. Install the piston pin circlip ②.

NOTE:

End gap of the circlip should not be aligned with the cutaway in the piston pin bore.

CAUTION

Use a new piston pin circlip ② to prevent circlip failure.



CYLINDER AND CYLINDER HEAD REASSEMBLY

CYLINDER

- Thoroughly wipe off oil from the fitting surface of the crankcase.
- Apply SUZUKI BOND "1207B" or "1215" to the crankcase (A) as shown.

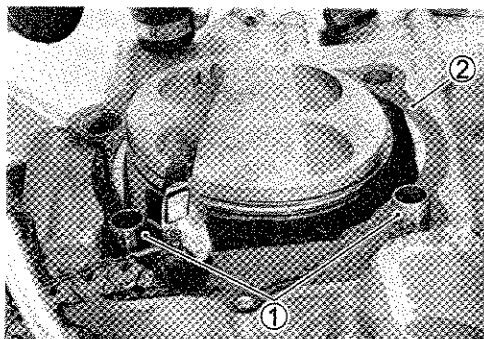
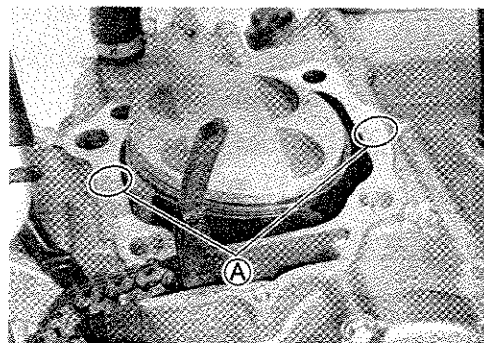
1207B 99000-31140: SUZUKI BOND "1207B" (USA)

1215 99000-31110: SUZUKI BOND "1215" (Others)

- Install the dowel pins (1) into the crankcase and then install the cylinder gasket (2).

CAUTION

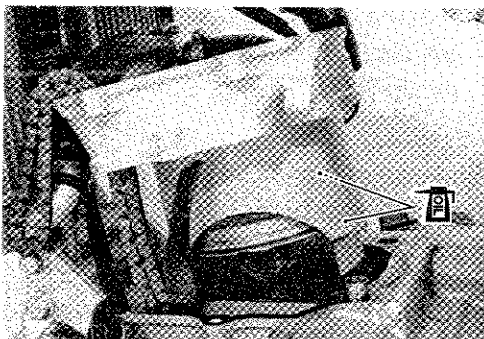
Use a new gasket to prevent oil leakage.



- Apply engine oil to the sliding surface of the piston and cylinder bore.
- Hold each piston ring with the piston ring sections positioned correctly and put it into the cylinder.
- Make sure that the piston rings are caught by the cylinder skirt.
- Place the cylinder on the crankcase.

CAUTION

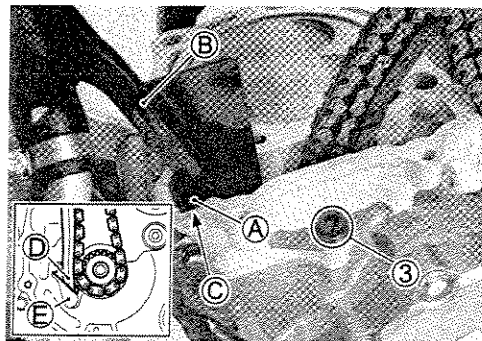
Do not drop the cam chain into the crankcase.



- Install the bracket to the cylinder bolt (3).
- Temporarily tighten the cylinder bolt (3).
- Insert the cam chain guide end (D) into the recess (E) of the crankcase securely.
- Fit the projection (A) of the cam chain guide (B) in the groove (C) of the cylinder.

CAUTION

Make sure that cam chain engages properly to the cam chain drive gear.

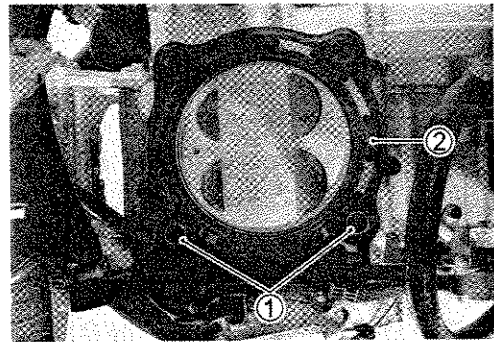


CYLINDER HEAD

- Install the dowel pins ① into the cylinder and then install the cylinder head gasket ② onto the cylinder.

CAUTION

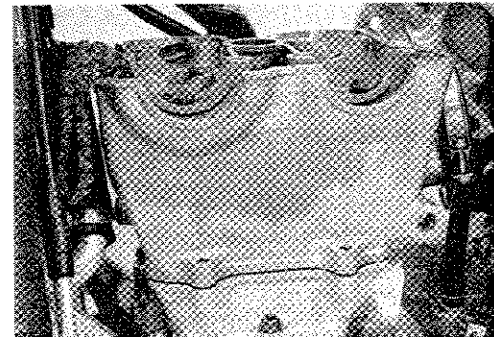
Use a new gasket ② to prevent gas leakage.



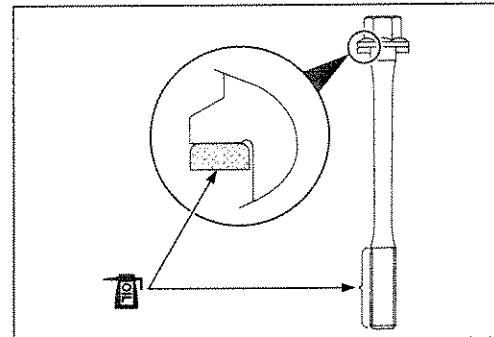
- Place the cylinder head on the cylinder.

CAUTION

Do not drop the cam chain into the crankcase.

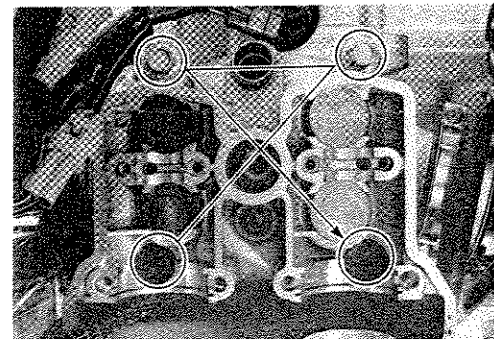


- Install the washers to the cylinder head bolts as shown.
- Apply engine oil to the washers and thread portion of the bolts before installing the cylinder head bolts.



- With the head snugly seated on the cylinder, secure it by tightening the bolts in diagonal stages.
- Tighten the cylinder head bolts to the specified torque.

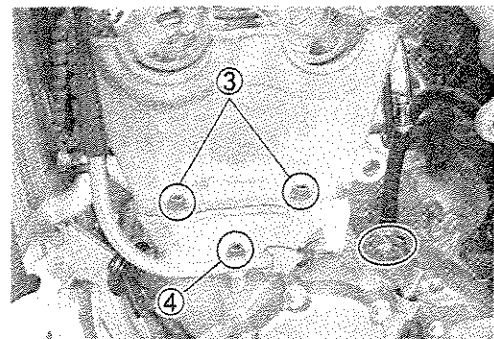
 **Cylinder head bolt: Initial 25 N·m (2.5 kgf-m, 18.0 lb-ft)**
Final 46 N·m (4.6 kgf-m, 33.5 lb-ft)



- Connect the clutch cable.
- After tightening the cylinder head bolts to specification, tighten the cylinder head side bolts ③ and cylinder bolt ④ to the specified torque.
- Tighten the cylinder head side bolt to the specified torque.

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

Cylinder bolt: 10 N·m (1.0 kgf-m, 7.0 lb-ft)



- Reassemble the exhaust pipe. (☞ 5-8)
- Reassemble the spark plug. (☞ 2-7)
- Reassemble the carburetor. (☞ 12-14)
- Connect the radiator hose and tighten the clamp.
- Pour engine coolant. (☞ 2-14)

CAMSHAFTS (AUTOMATIC DECOMP.) AND CAM CHAIN TENSION ADJUSTER REASSEMBLY

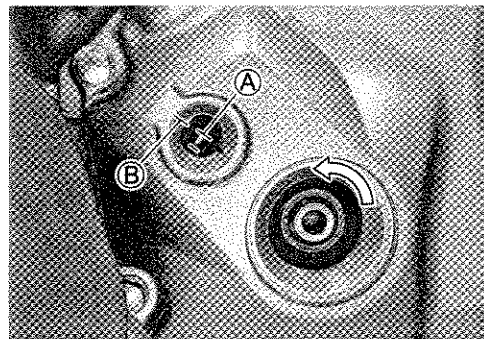
CAMSHAFT (AUTOMATIC DECOMP.)

- Place a wrench over the crankshaft and turn it counter-clockwise to align the TDC mark ① with the center of the groove ② of the timing inspection hole.

CAUTION

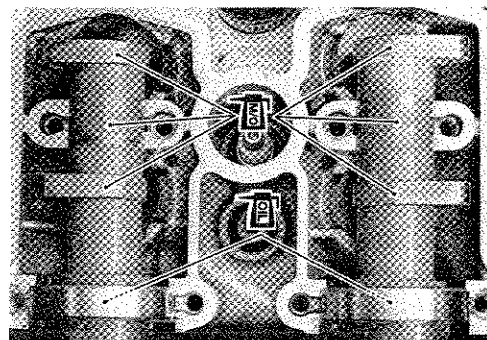
Pull the cam chain upward, or the chain will be caught between crankcase and cam drive sprocket.

To adjust the camshaft timing correctly, be sure to align the TDC mark ① with the index mark ② and hold this position when installing the camshafts.



- Install the C-ring and camshaft to the cylinder head.
- Just before installing the camshaft into the cylinder head, apply molybdenum oil solution to the camshaft journals and cam faces. Also, apply engine oil to the camshaft bearings.

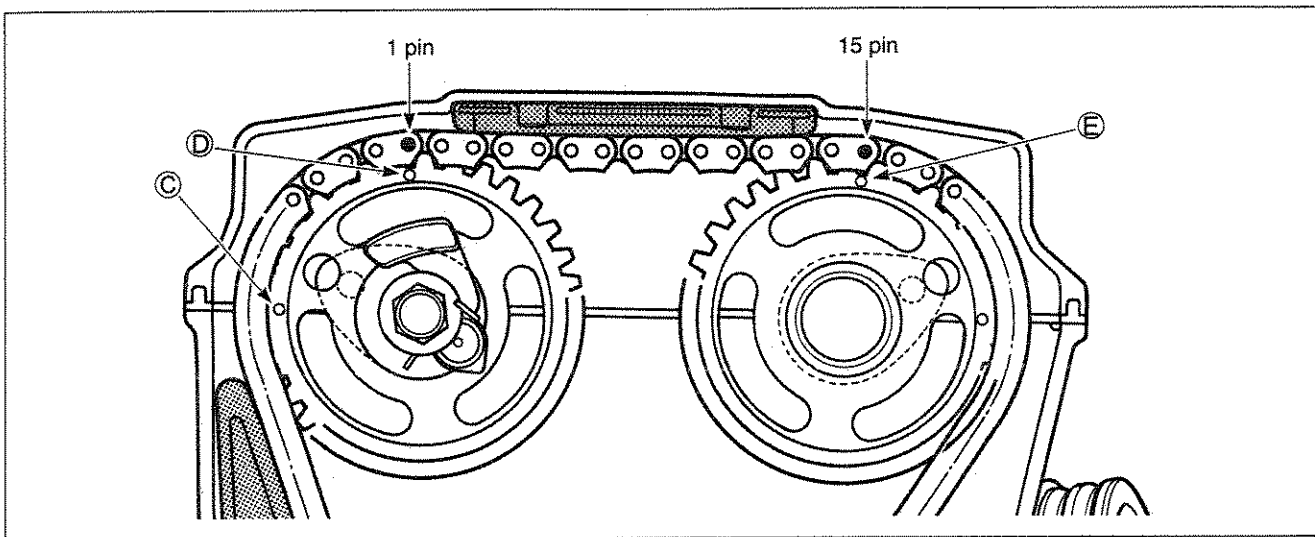
 MOLYBDENUM OIL SOLUTION



- Pull the exhaust side of the cam chain taut to install the camshaft sprocket (exhaust side).
- Turn the exhaust camshaft so that the timing mark ③ is aligned with the gasket surface of the cylinder head. Engage the cam chain with the exhaust camshaft sprocket.
- The other timing marked ④ should now be pointing straight up. Starting from the roller pin that is directly above the timing marked ④, count out 15 roller pins (from the exhaust camshaft side going towards the intake camshaft side).
- Engage the 15 roller pin on the cam chain with the timing marked ⑤ on the camshaft sprocket (intake side). Refer to the following illustrations.

NOTE:

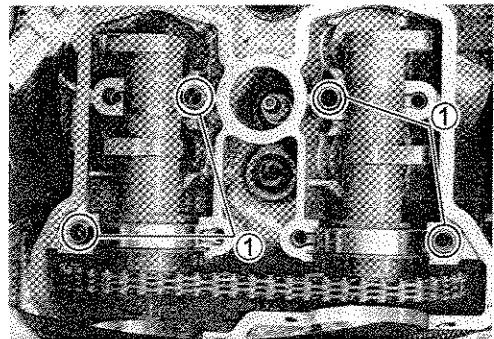
The cam chain should now be on all three sprockets. Be careful not to move the crankshaft until the camshaft journal holders and cam chain tension adjuster are secured.



- Install the dowel pins ①.
- Install the camshaft journal holders, intake and exhaust.
- Tighten the camshaft journal holder bolts to the specified torque in diagonal stages.

NOTE:

- * Camshaft journal holders marked "EX" are for the exhaust side and those marked "IN" are for the intake side.
- * When tightening the camshaft journal holder bolts, the piston position must be at TDC on the compression stroke.

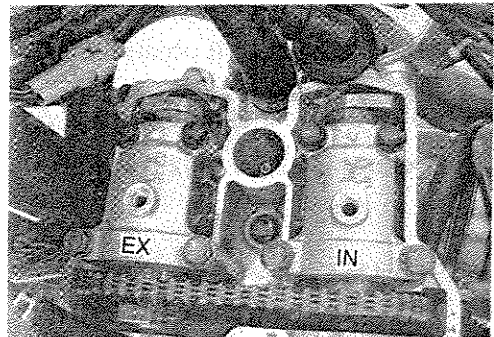


- Tighten the camshaft journal holder bolts to the specified torque.

NOTE:

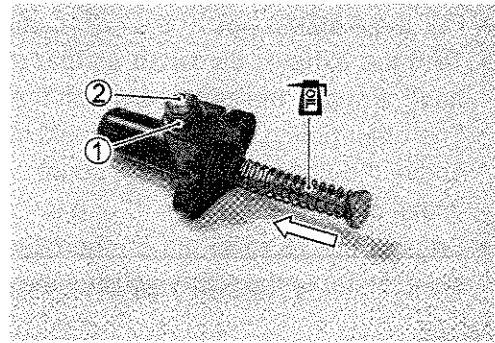
Tighten the camshaft journal bolts diagonally.

- 🔧 **Camshaft journal holder bolt: 10 N·m
(1.0 kgf-m, 7.0 lb-ft)**



CAM CHAIN TENSION ADJUSTER

- Loosen the locknut ① and stopper bolt ②.
- Apply engine oil to the push rod.
- Retract the push rod by tightening the stopper bolt ②.



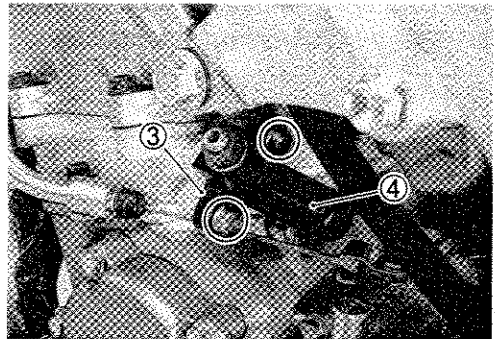
- Install the new gasket ③.

CAUTION

Use the new gasket to prevent oil leakage.

- Install the cam chain tension adjuster ④ and tighten the mounting bolt.

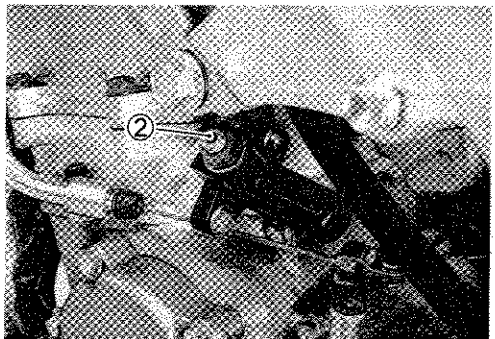
 **Cam chain tension adjuster mounting bolt:**
10 N·m (1.0 kgf·m, 7.0 lb-ft)



- Loosen the stopper bolt ②.

CAUTION

After installing the cam chain tension adjuster, check to be sure that the adjuster works properly by checking the slack of cam chain.



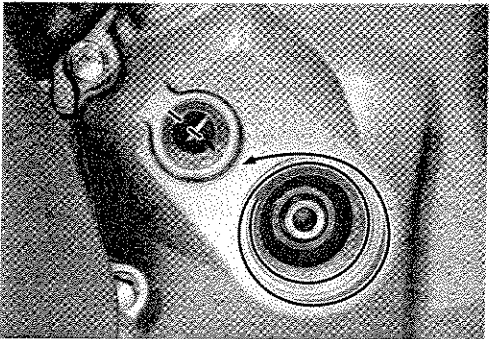
- After installing the cam chain tension adjuster, rotate the crankshaft (two turns), and recheck the positions of the camshafts. (☞ 6-31)

NOTE:

The piston must be at TDC on the compression stroke.

CAUTION

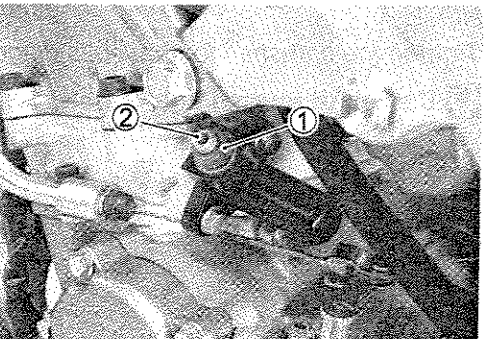
After this procedure, if any resistance is felt while turning over the crankshaft, stop immediately, and check the camshaft chain timing.



- Tighten the locknut ① and bolt ②.

 **Locknut ②: 20 N·m (2.0 kgf·m, 14.5 lb-ft)**

- Inspect the valve clearance. (☞ 2-21)



CYLINDER HEAD COVER REASSEMBLY

- Install the new gasket to the cylinder head cover.
- Apply SUZUKI BOND to the end caps of the cylinder head cover gasket as shown.

 99000-31140: SUZUKI BOND "1207B"

CAUTION

Use the new gaskets to prevent oil leakage.

- Place the cylinder head cover on the cylinder head.
- Install the new gaskets and cylinder head cover bolts.

CAUTION

Use the new gaskets to prevent oil leakage.

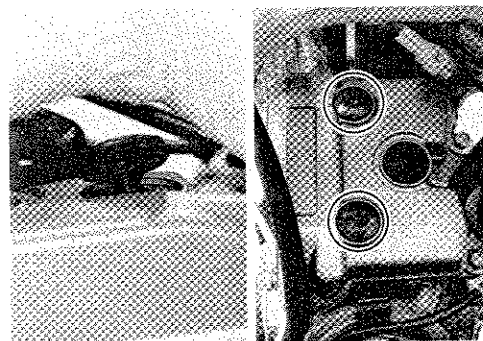
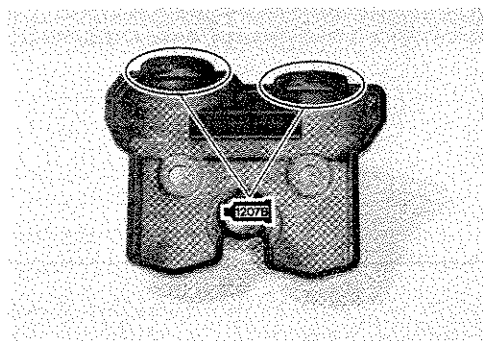
 Cylinder head cover bolt: 14 N·m (1.4 kgf-m, 10.0 lb-ft)

- Reassemble the spark plug cap. ( 2-7)
- Reassemble the radiator covers and fuel tank.
- Reassemble the seat.

INSPECTION AFTER REASSEMBLY

After reassembling the engine, inspect the following items.

- Engine oil leakage
- Engine coolant level and coolant leakage ( 2-14)
- Fuel leakage ( 2-18)
- Exhaust gas leakage
- Throttle cable play ( 2-16)
- Clutch lever play ( 2-15)
- Wire, cable and hose routing ( 19-17 to 19)

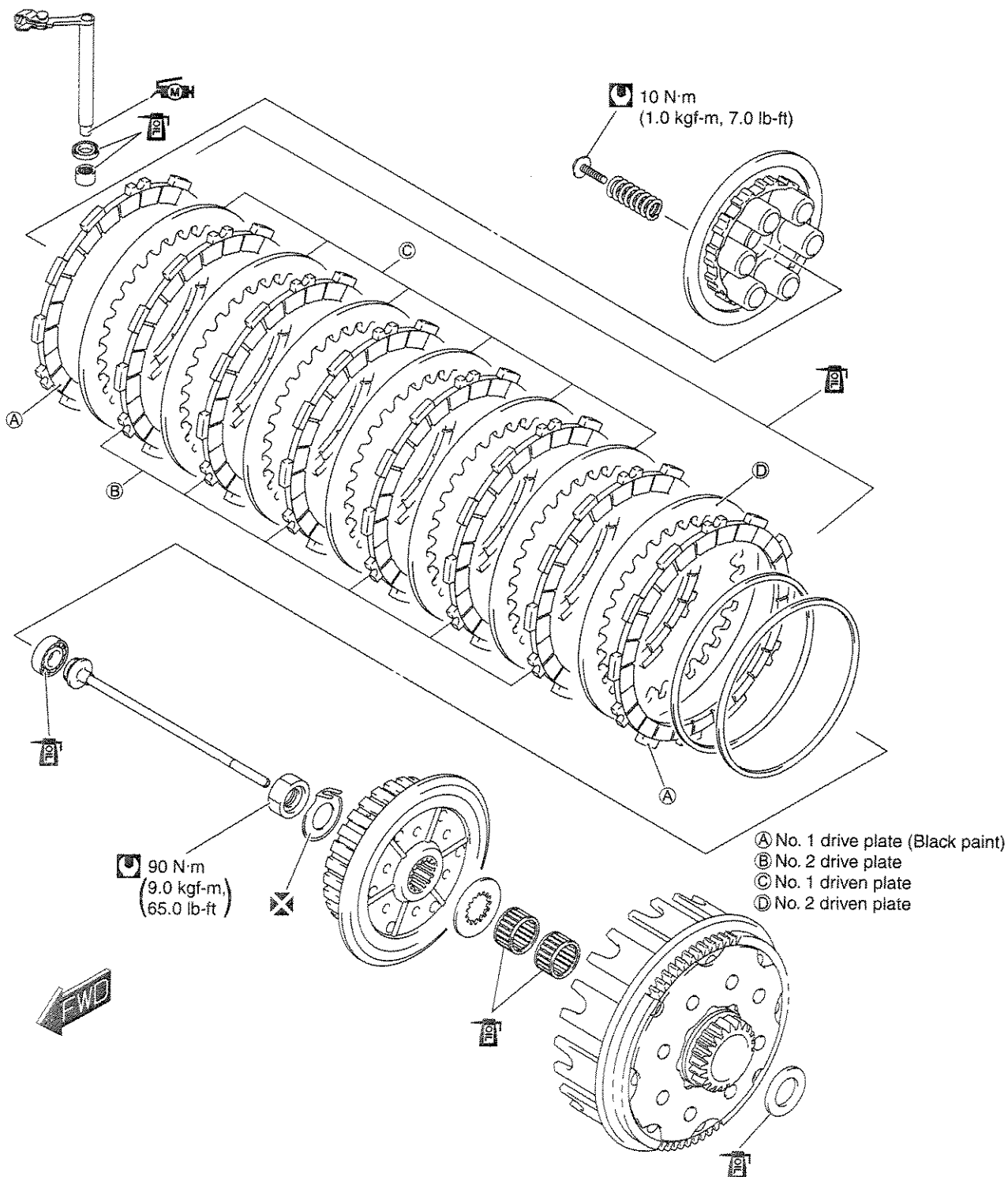


CLUTCH

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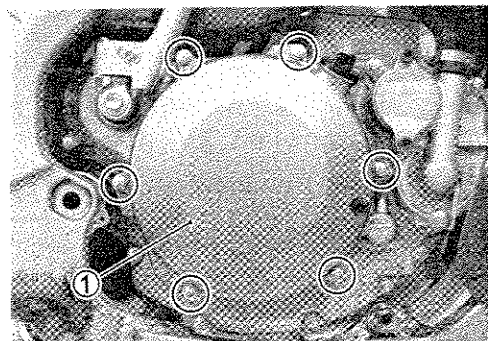
CONSTRUCTION CLUTCH



CLUTCH PLATE

REMOVAL

- Drain engine oil. (☞ 2-11)
- Remove brake pedal. (☞ 16-17)
- Remove the clutch cover ① and gasket.



- Hold the clutch housing with the special tool.

CAUTION

Be careful not to damage the clutch housing or clutch plates.

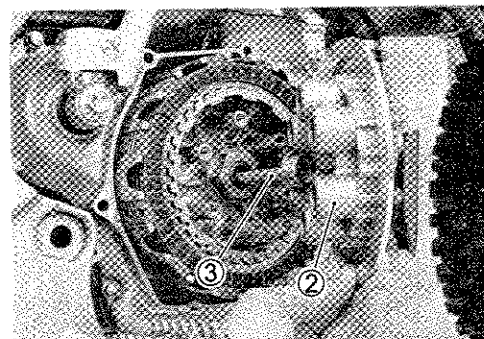
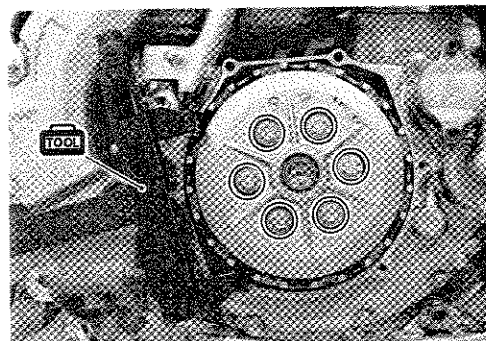
TOOL 09920-53740: Clutch sleeve hub holder

- Remove the clutch spring set bolts and clutch springs.

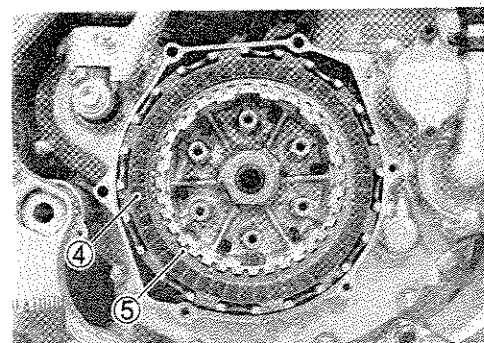
NOTE:

Loosen the clutch spring set bolts little by little and diagonally.

- Remove the pressure plate ② and push rod ③.



- Remove the drive plates ④ and driven plates ⑤.



INSPECTION

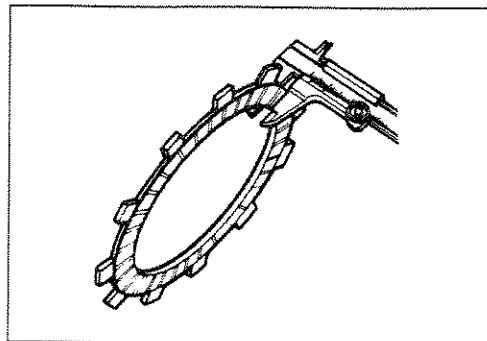
DRIVE PLATE

- Measure the drive plate thickness.

DATA Drive plate thickness
Service Limit: 2.77 mm (0.109 in)

TOOL 09900-20101: Vernier calipers

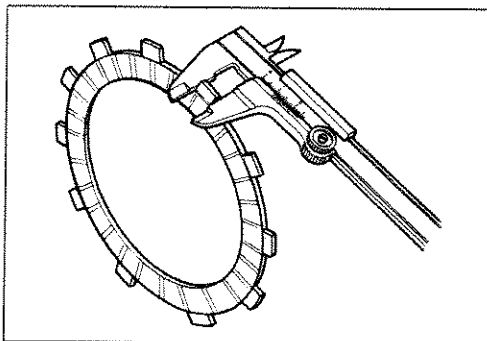
- Inspect the drive plates for wear, distortion and discoloration.



- Measure the driven plate claw width.

DATA Driven plate claw width
Service Limit: 13.35mm (0.526 in)

TOOL 09900-20101: Vernier calipers



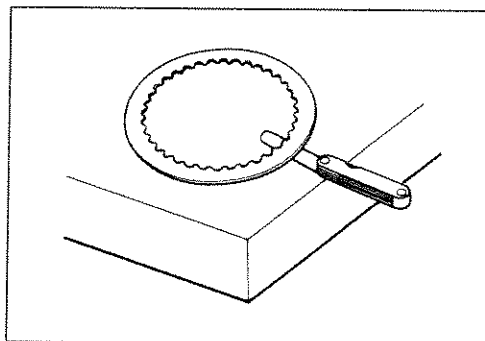
DRIVEN PLATE

- Measure the driven plate distortion.

DATA Driven plate distortion
Service Limit: 0.10 mm (0.004 in)

TOOL 09900-20803: Thickness gauge

- Inspect the driven plates for wear and discoloration.



CLUTCH SPRING

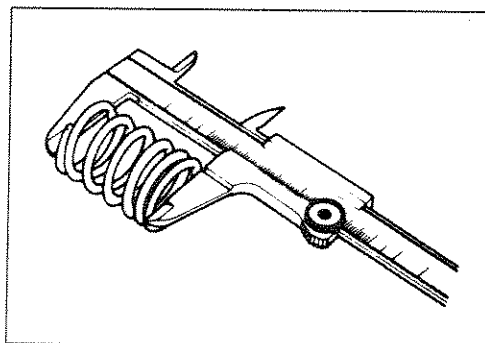
- Measure the clutch spring free length.

DATA Clutch spring free length
Service Limit: 48.1mm (1.89 in)

TOOL 09900-20101: Vernier calipers

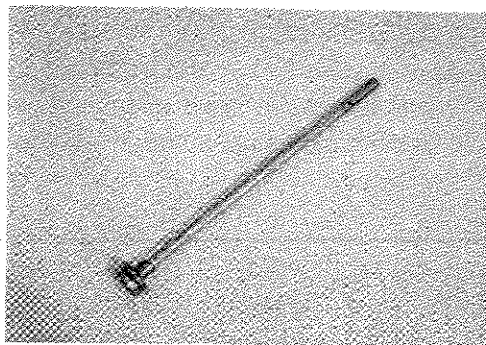
NOTE:

Replace five clutch springs together even if only one spring is beyond the service limit.

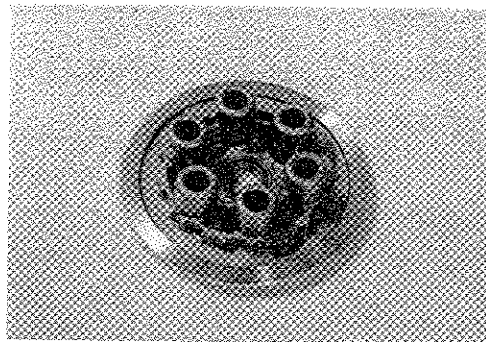


PUSH ROD

- Inspect the push rod for wear and damage.
- Inspect the release bearing for play, discoloration, wear and seizure.
- Move the inner race by finger and inspect for smooth movement.

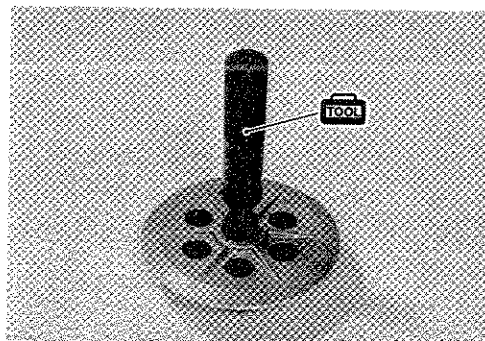
**RELEASE BEARING**

- Inspect the release bearing for play, discoloration, wear and seizure.
- Move the inner race by finger and inspect for smooth movement.

**RELEASE BEARING REMOVAL AND INSTALLATION****REMOVAL**

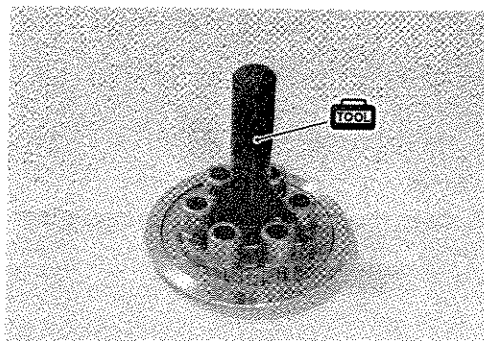
- Remove the release bearing with the special tools.
- Bearing: ϕ 25 Attachment

 09913-70210: Bearing remover/installer set

**INSTALLATION**

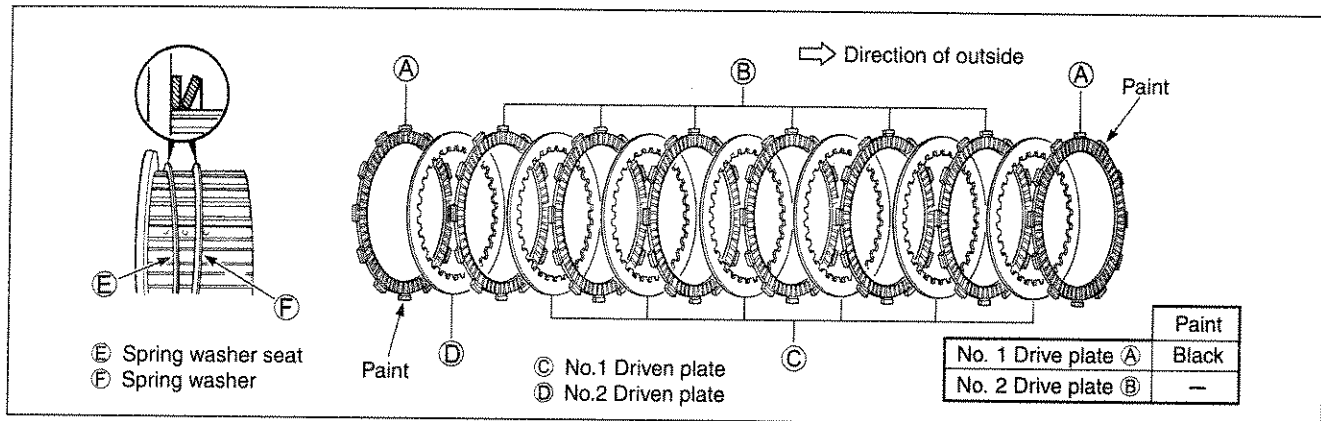
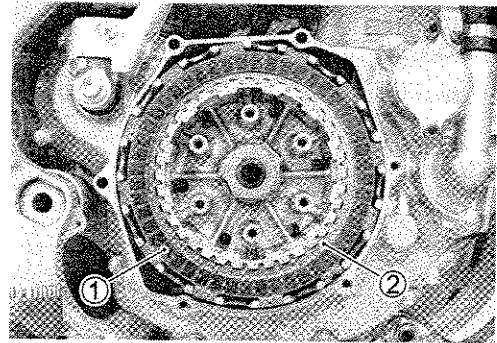
- Press the bearings with the special tools.
- Bearing: ϕ 32 Attachment

 09913-70210: Bearing remover/installer set



REASSEMBLY

- Apply engine oil to the drive plates ① and driven plates ②.
- Install the clutch drive plates and driven plates one by one into the clutch sleeve hub in the prescribed order as show in illustration.



- Apply engine oil to the release bearing ③.
- Install the clutch pressure plate ④ and push rod ⑤.
- Install the clutch springs and clutch spring set bolts.
- Hold the clutch housing with the special tool.

CAUTION

Be careful not to damage the clutch housing or clutch plates.

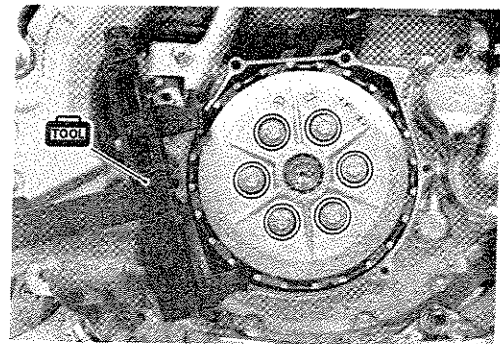
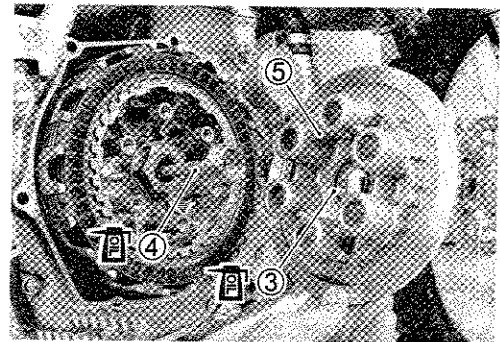
TOOL 09920-53740: Clutch sleeve hub holder

- Tighten the clutch spring set bolts to the specified torque.

NOTE:

Tighten the clutch spring set bolts diagonally.

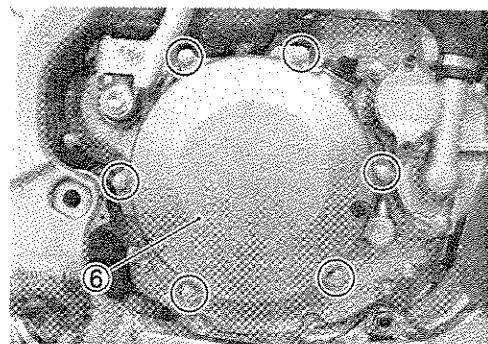
TOOL Clutch spring set bolt: 10 N·m (1.0 kgf-m, 7.0 lb-ft)



- Replace the gasket with a new one.
- Fit the clutch cover ⑥ and bolts. Tighten the clutch cover bolts diagonally.

 **Clutch outer cover bolt: 11 N·m (1.1 kgf-m, 8.0 lb-ft)**

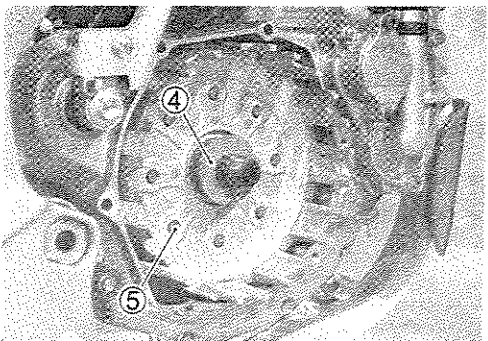
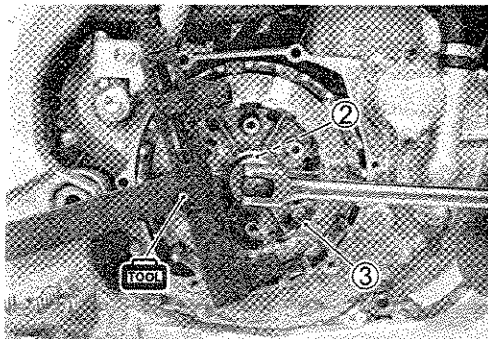
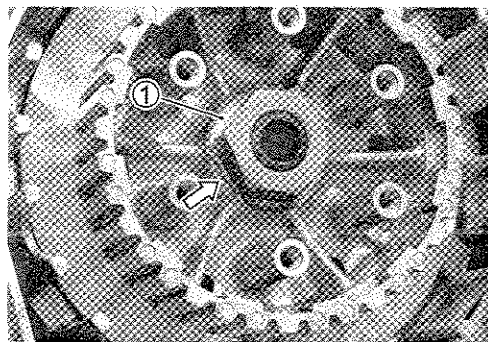
- Reassemble the rear brake pedal. ( 16-17)
- Refill engine oil. ( 2-11)
- Inspect the clutch cable play. ( 2-15)



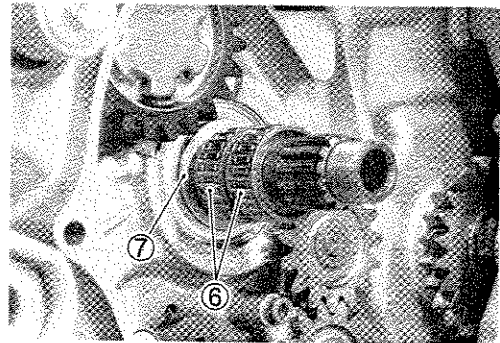
PRIMARY DRIVEN GEAR AND CLUTCH SLEEVE HUB

REMOVAL

- Remove the clutch cover. ( 7-3)
- Remove the pressure plate and clutch plates. ( 7-3)
- Flatten the lock washer ①.
- Hold the clutch sleeve hub with the special tool and loosen the nut ②.
-  **09920-53740: Clutch sleeve hub holder**
- Remove the clutch sleeve hub ③.
- Remove the washer ④ and primary driven gear ass'y ⑤.

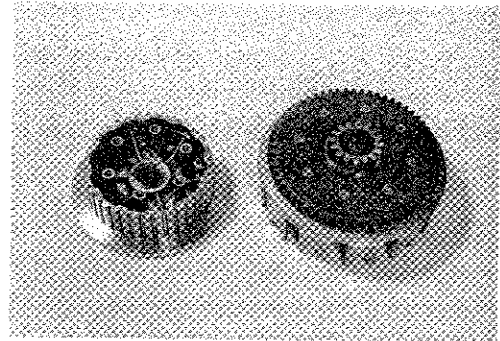


- Remove the needle bearings ⑥ and spacer ⑦.

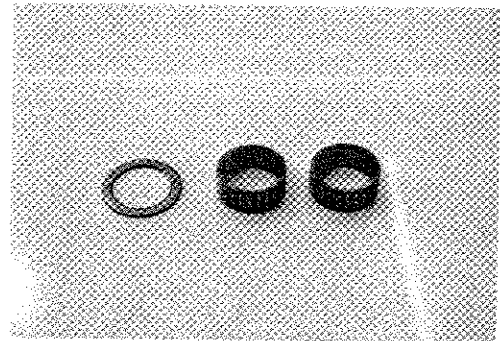


INSPECTION

- Inspect the clutch sleeve hub and primary driven gear ass'y for wear and cracks.

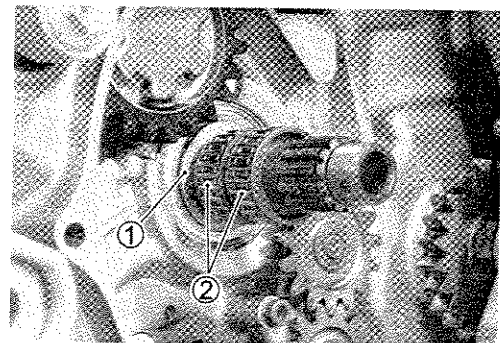


- Inspect the needle bearing and spacer for damage and wear.

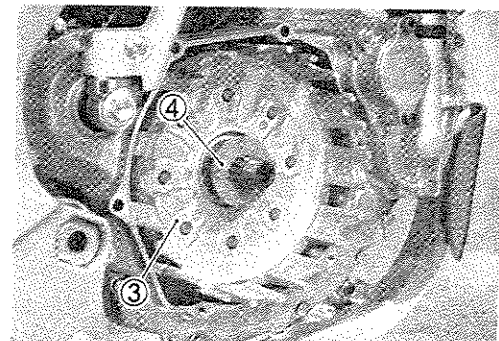


REASSEMBLY

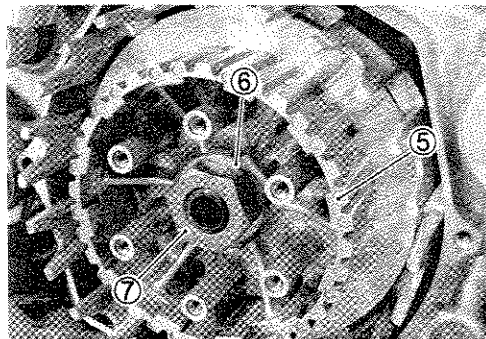
- Apply engine oil to the spacer ① and needle bearings ②.
- Install the spacer ① and needle bearings ②.



- Install the primary driven gear ass'y ③.
- Install the washer ④.



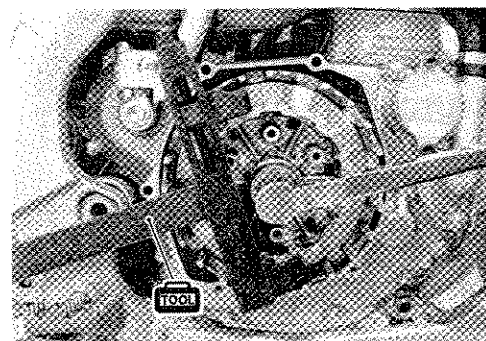
- Fit the clutch sleeve hub ⑤, new lock washer ⑥ and clutch sleeve hub nut ⑦.



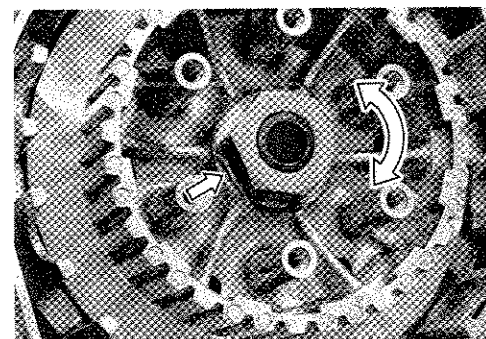
- Tighten the clutch sleeve hub nut with the special tool to the specified torque.

 **09920-53740: Clutch sleeve hub holder**

 **Clutch sleeve hub nut: 90 N·m (9.0 kgf-m, 65.0 lb-ft)**



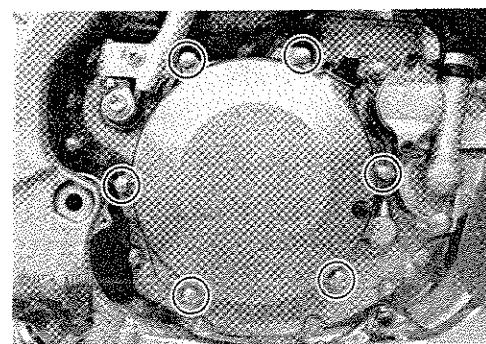
- Inspect the clutch sleeve hub for smooth movement.
- Bend the lock washer to secure the nut.



- Reassemble the clutch plates and pressure plate. (☞7-6)
- Replace the gasket with a new one.
- Fit the clutch cover and bolts. Tighten the clutch cover bolts diagonally.

 **Clutch outer cover bolt: 11 N·m (1.1 kgf-m, 8.0 lb-ft)**

- Reassemble the rear brake pedal. (☞16-17)
- Refill engine oil. (☞2-11)



CLUTCH RELEASE CAMSHAFT

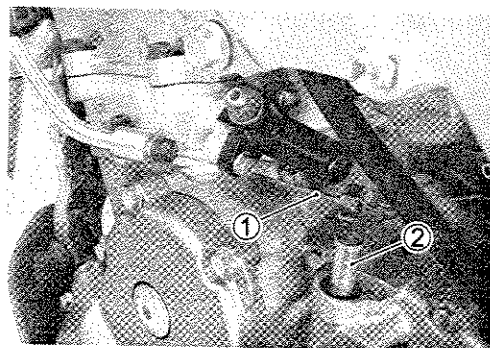
REMOVAL

- Disconnect the clutch cable ①.

NOTE:

Loosen the clutch cable adjuster when disconnecting.

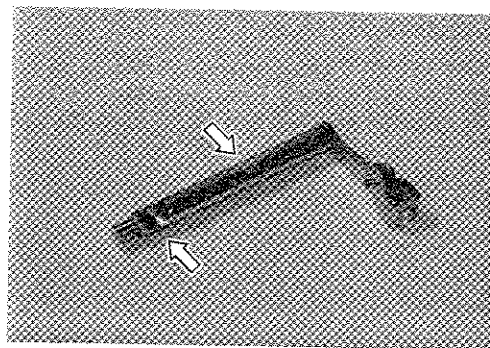
- Remove the pressure plate and push rod. (☞ 7-3)
- Pull the clutch release camshaft ② out of crankcase.



INSPECTION

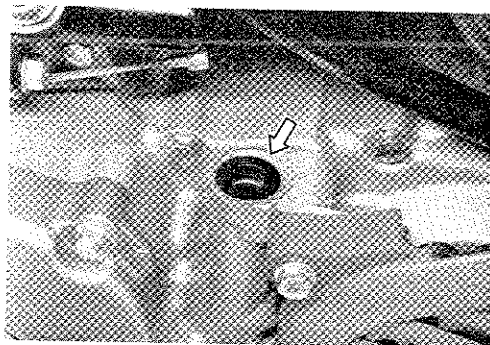
CLUTCH RELEASE CAMSHAFT

- Inspect the clutch release camshaft for abnormal deflection and damage.



OIL SEAL AND BEARING

- Inspect the oil seal for oil leakage and oil seal lip damage.
- Inspect the bearing for play and smooth movement. (☞ 10-10)

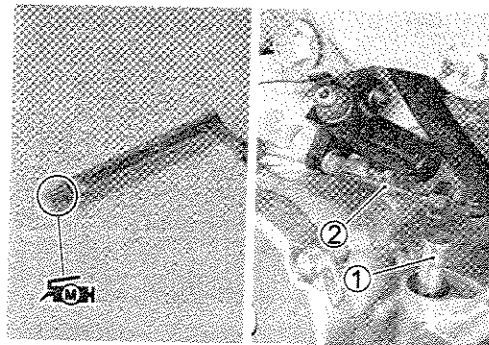


INSTALLATION

- Apply SUZUKI MOLY PASTE to the clutch release camshaft.

 99000-25140: SUZUKI MOLY PASTE

- Install the clutch release camshaft ①.
- Reassemble the pressure plate and push rod. (☞ 7-6)
- Install the clutch cable ②.
- Inspect the clutch cable play. (☞ 2-15)

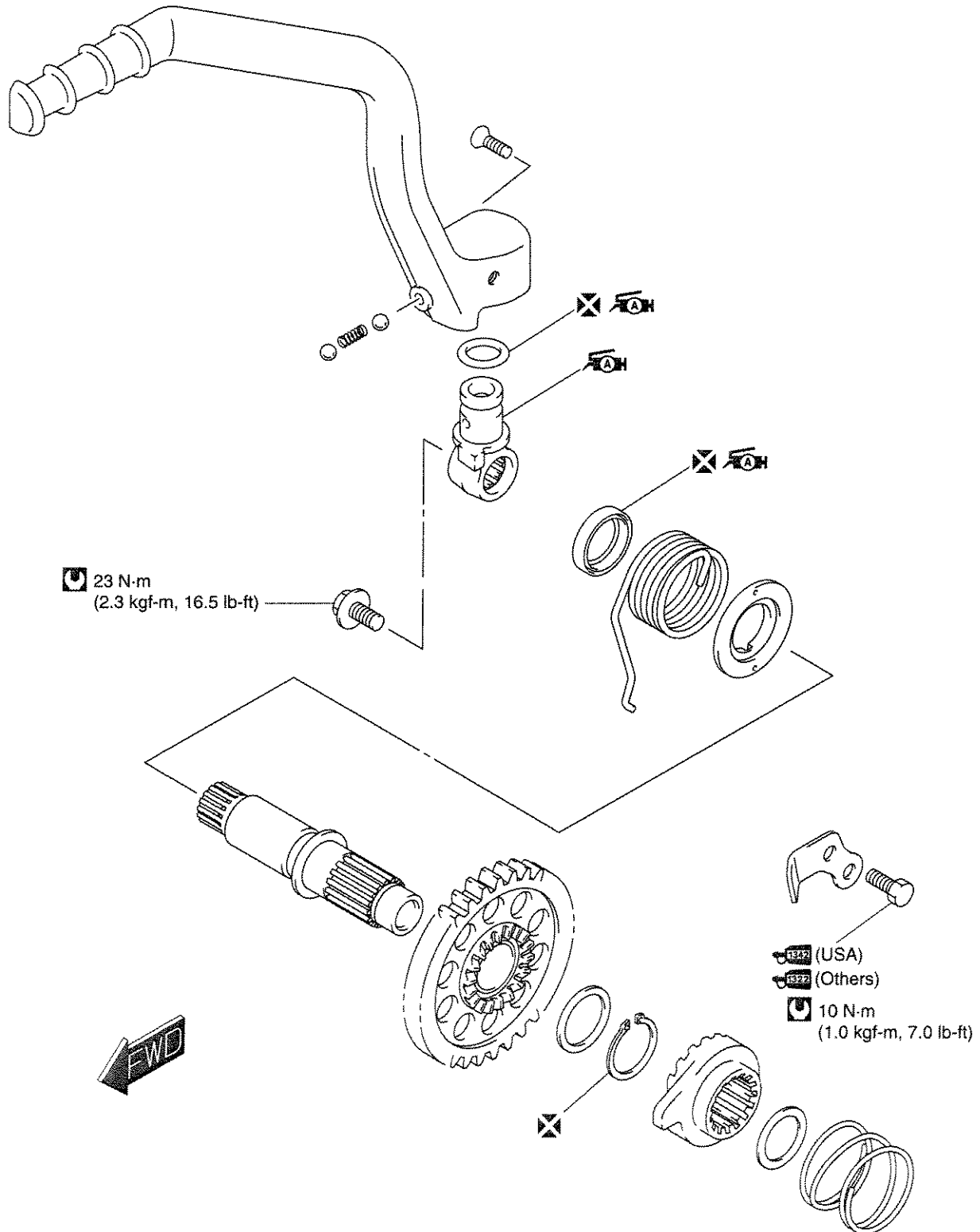


KICK STARTER

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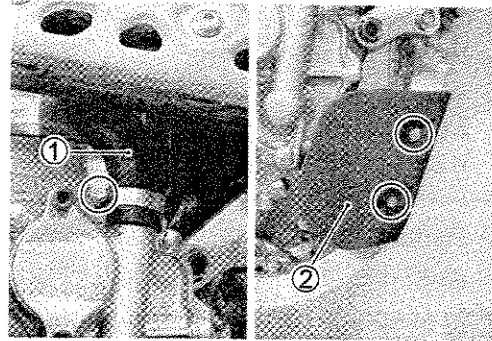
CONSTRUCTION KICK STARTER



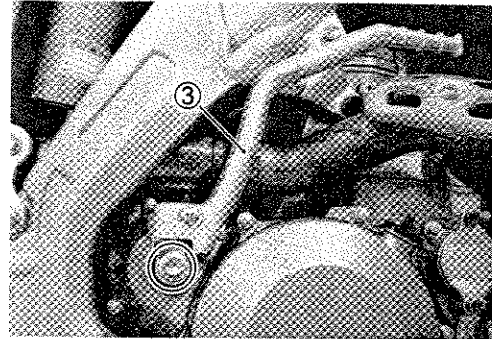
KICK STARTER

REMOVAL

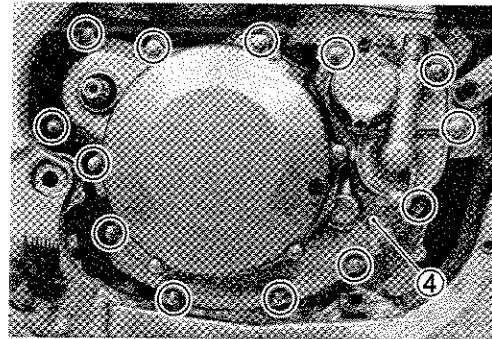
- Drain engine oil. (☞ 2-11)
- Drain engine coolant. (☞ 13-3)
- Remove the brake pedal. (☞ 16-17)
- Disconnect the radiator hose ①.
- Remove the right engine protector ②.



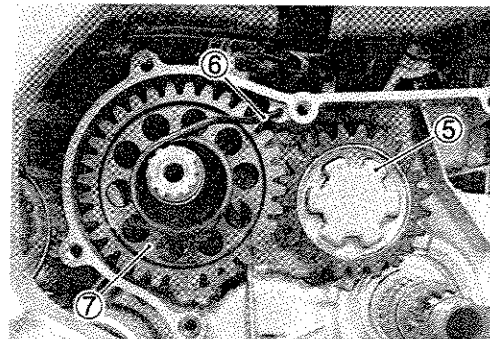
- Remove the kick starter lever ③.



- Remove the right crankcase cover ④, dowel pins and gasket.
- Remove the clutch. (☞ 7-3)
- Remove the primary driven gear ass'y. (☞ 7-7)



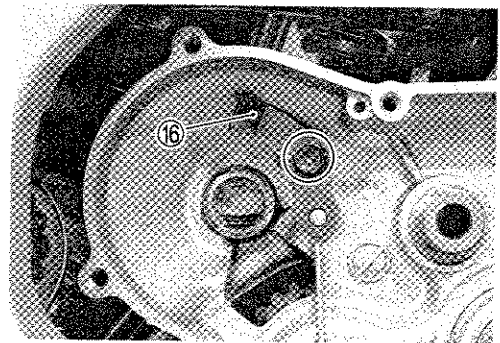
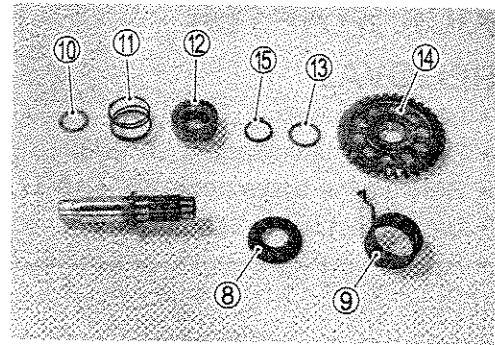
- Remove the kick idle gear ⑤.
- Unhook the kick return spring ⑥.
- Remove the kick starter shaft ⑦.



- Remove the following parts from the kick starter shaft:
Spring guide ⑧
Kick return spring ⑨
Washer ⑩
Spring ⑪
Kick starter ⑫
- Remove the washer ⑬ and kick drive gear ⑭ by removing the snap ring ⑮.

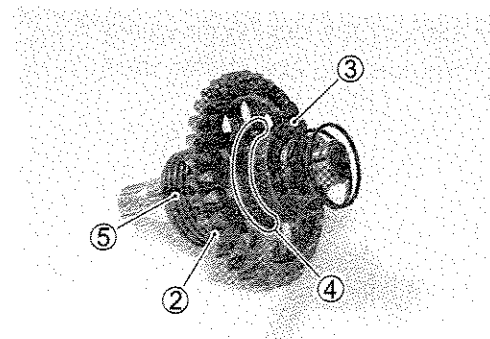
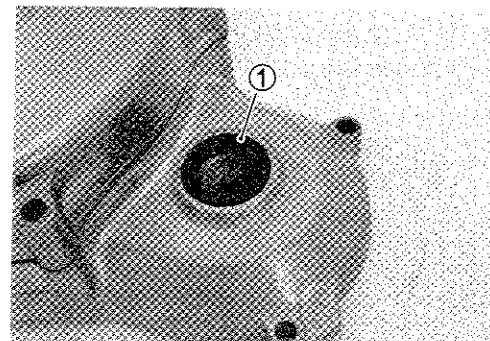
 09900-06107: Snap ring pliers

- Remove the stopper guide ⑯.

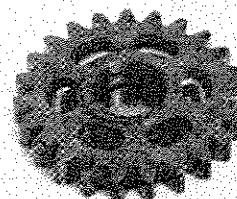


INSPECTION

- Inspect the oil seal ① for oil leakage and oil seal lip damage.
- Inspect the kick drive gear teeth ② for damage.
- Inspect the kick drive gear ratchet part ③ for wear and damage.
- Inspect the kick shaft and drive gear for contact surface ④ wear.
- Inspect the return spring ⑤ for damage.



- Inspect the kick idle gear teeth for damage.
- Inspect the kick idle gear bushing and its shaft contact surface for wear.



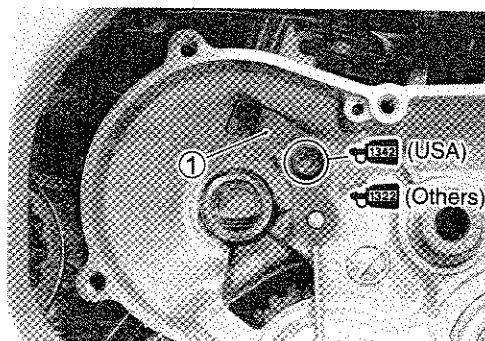
REASSEMBLY

- Apply a small quantity of THREAD LOCK to the stopper guide bolt and tighten it to the specified torque.
- Install the stopper guide ①.

 **1342 99000-32050: THREAD LOCK "1342" (USA)**

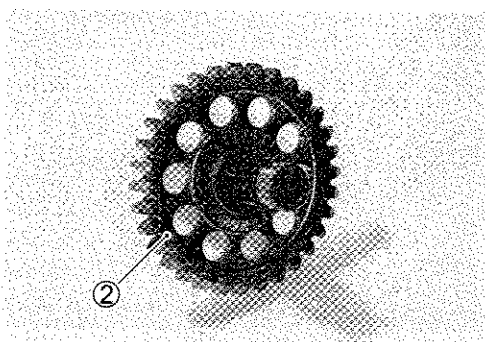
 **1322 99000-32110: THREAD LOCK SUPER "1322" (Others)**

 **Stopper guide bolt: 10 N·m (1.0 kgf·m, 7.0 lb·ft)**



- Apply grease to the kick starter shaft.
- Install the kick drive gear ② and washer to the kick shaft.
- Install the new snap ring.

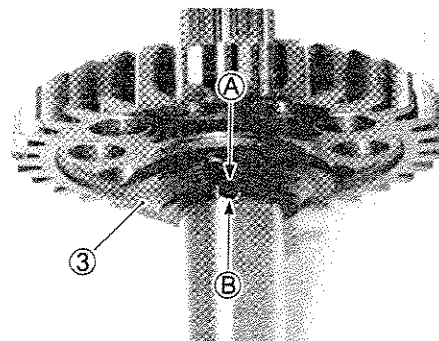
 **09900-06107: Snap ring pliers**



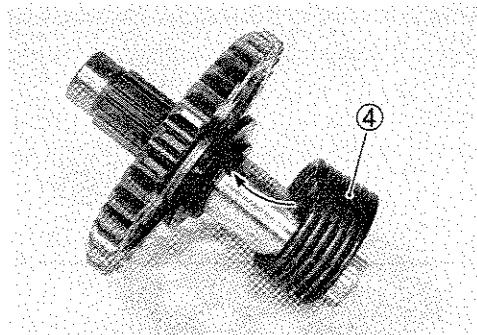
- Install the spring guide ③ to the kick starter shaft.

NOTE:

Align the spring guide ③ with kick starter shaft hole ④.



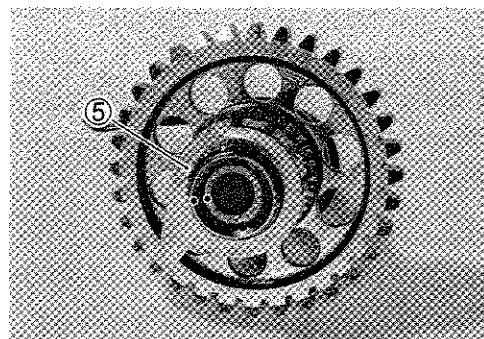
- Install the return spring ④ into the kick starter shaft hole.



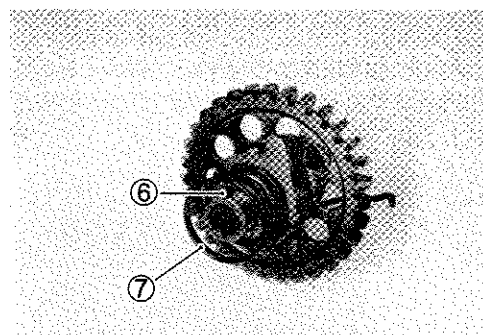
- Install the kick starter ⑤ to the kick starter shaft.

NOTE:

Be sure to align the punch marks on the kick starter and kick starter shaft when fitting the kick starter.



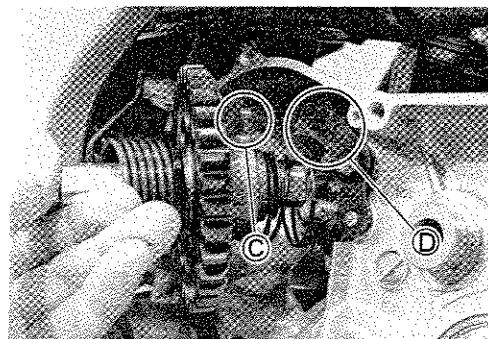
- Install the washer ⑥ and spring ⑦ to the kick starter shaft.



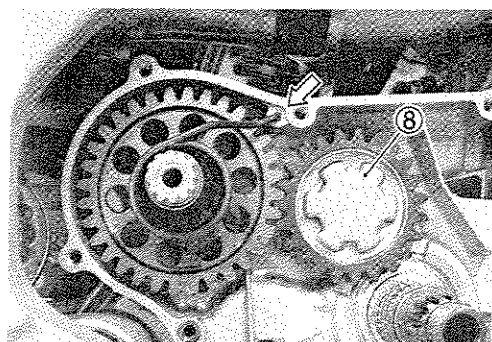
- Install the kick starter assembly to the crankcase.

NOTE:

Securely engage the stopper portion ③ of the kick starter with the stopper guide ①.



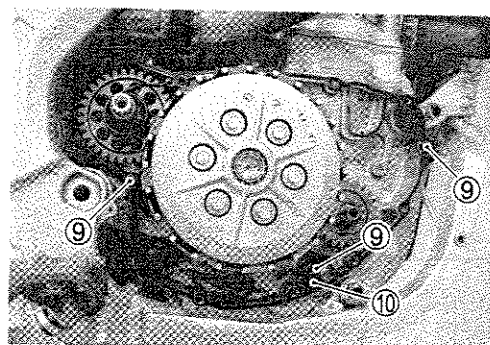
- Hook the return spring.
- Install the kick idle gear ⑧.
- Reassemble the primary driven gear ass'y and clutch.
(➡ 7-6, 8)



- Install the dowel pins ⑨ and gasket ⑩.

CAUTION

Use a new gasket ⑩ to prevent oil leakage.

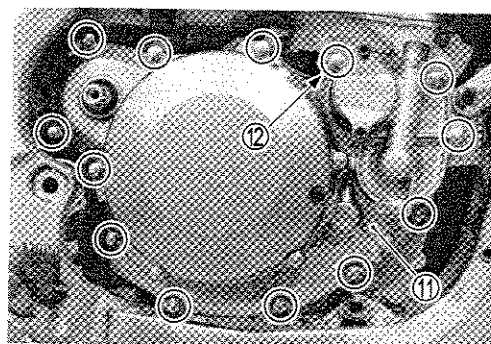


- Reassemble the right crankcase cover ⑪.

CAUTION

Use a new copper washer ⑫ to prevent oil leakage.

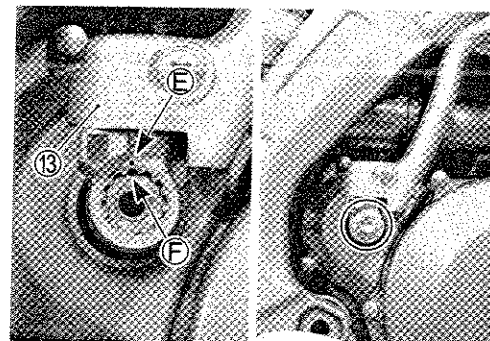
- Right crankcase cover bolt: 11 N·m (1.1kgf-m, 7.9 lb-ft)



- Install the kick starter lever ⑬ so that its punch mark ⑤ aligns with the truncated spline ⑥.

- Kick lever bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)

- Reassemble the brake pedal. (☞ 16-17)
- Connect the radiator hose.



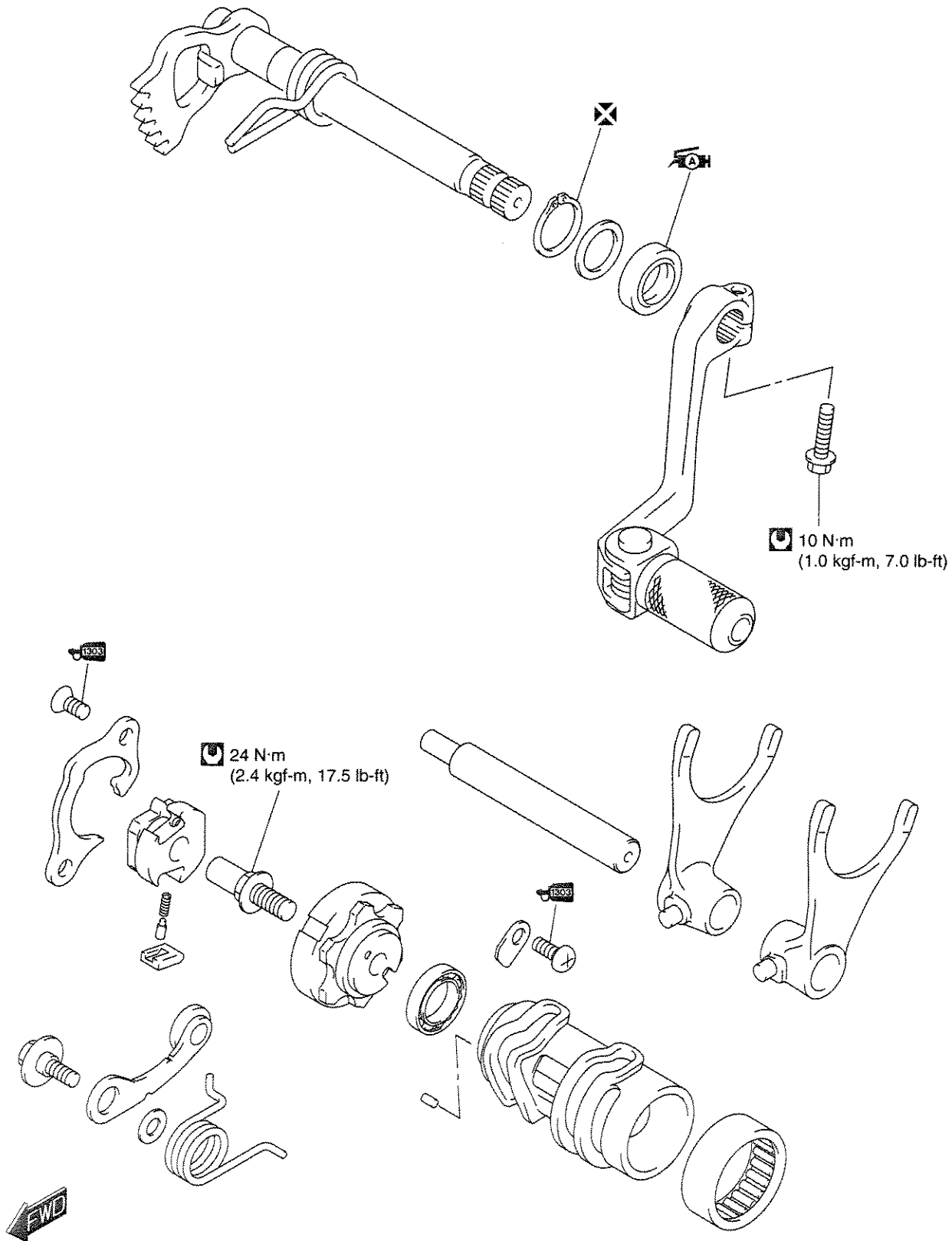
- Refill engine oil. (☞ 2-11)
- Refill engine coolant. (☞ 2-13)
- Inspect the kick starter for smooth movement.

GEARSHIFTING

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INSPECTION	9- 4
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CONSTRUCTION GEARSHIFT LINKAGE



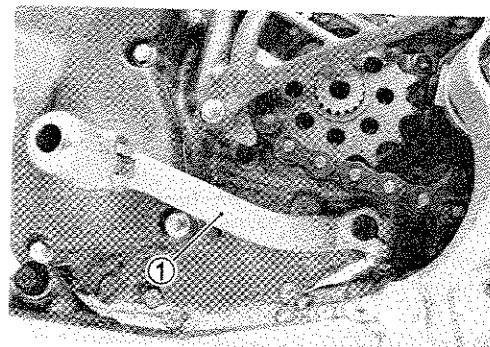
GEARSHIFT LINKAGE

REMOVAL

- Drain engine oil. (☞ 2-11)
- Drain engine coolant. (☞ 13-3)
- Remove the gearshift lever ①.

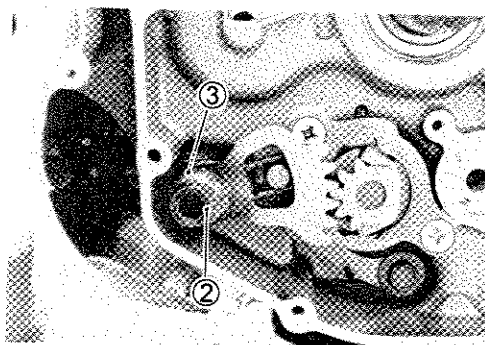
NOTE:

Mark the gearshift shaft head at which the gearshift lever slit set for correct reinstallation.



- Remove the right crankcase cover and clutch assembly. (☞ 7-7, 8-3)
- Remove the oil pump assembly (No.1). (☞ 11-3)

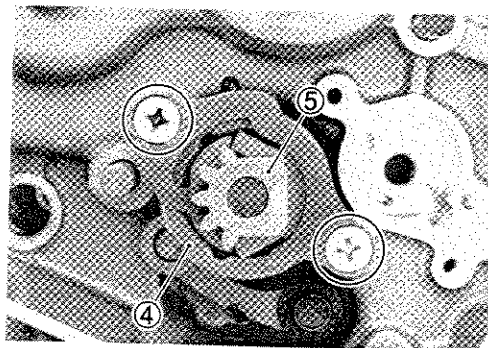
- Remove the gearshift shaft ② and washer ③.



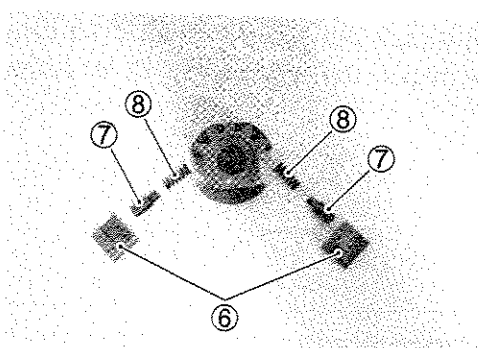
- Remove the pawl lifter ④.
- Remove the gearshift cam driven gear ⑤.

NOTE:

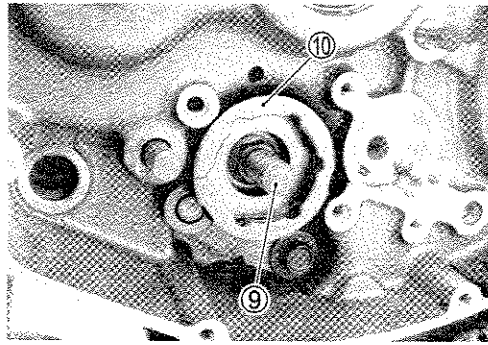
Be careful not to drop the pins and springs when removing the gearshift cam driven gear.



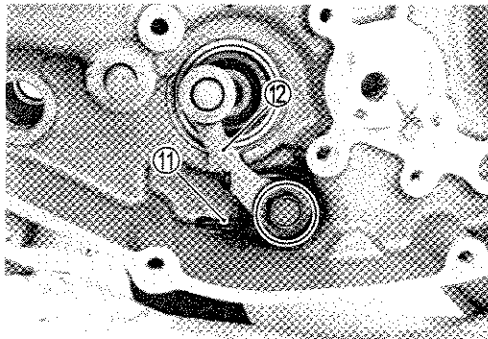
- Remove the gearshift pawls ⑥, pins ⑦ and springs ⑧.



- Remove the gearshift cam bolt ⑨ and stopper plate ⑩.

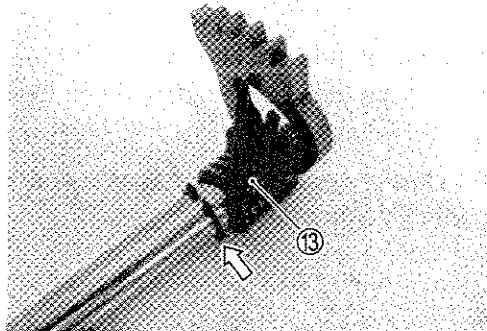


- Remove the spring ⑪.
- Remove the gearshift cam stopper ⑫.



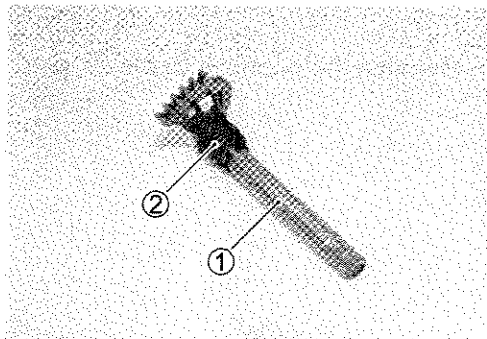
- Remove the gearshift return spring ⑬ by removing the snap ring.

 09900-06107: Snap ring pliers

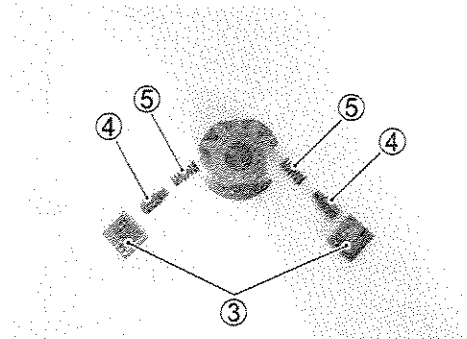


INSPECTION

- Inspect the gearshift shaft ① for bends and damage.
- Inspect the return spring ② for damage.

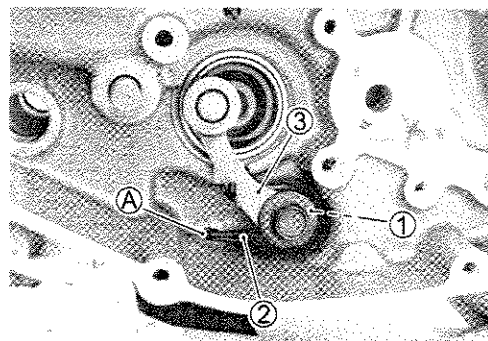


- Inspect the pawls ③, pins ④ and springs ⑤ for damage.

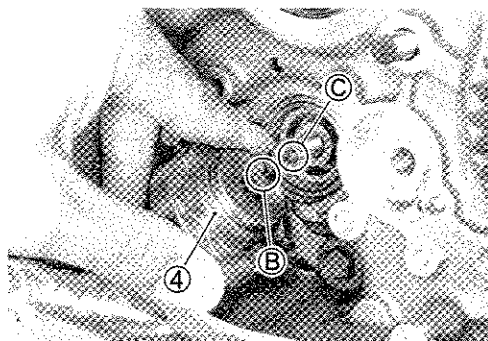


REASSEMBLY

- Reassemble the washer ①, spring ② and gearshift cam stopper ③. Hook the spring ② to the hole A.

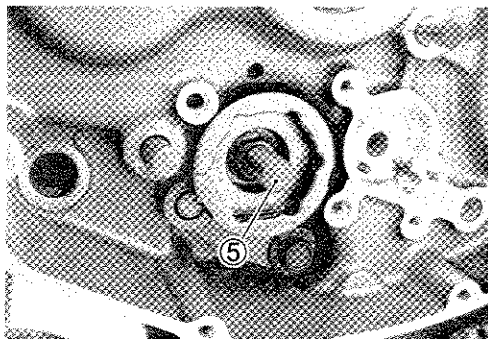


- Align the pin groove B with the pin C when installing the stopper plate ④.

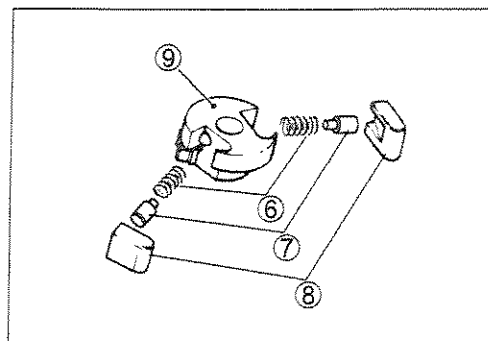
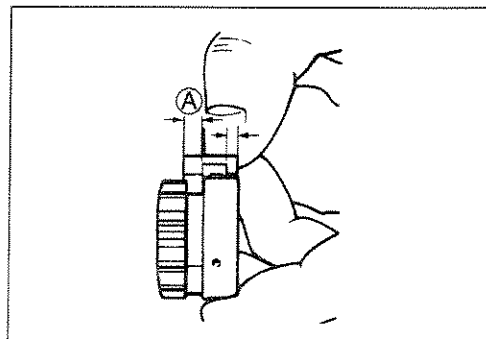


- Tighten the gearshift cam bolt ⑤.

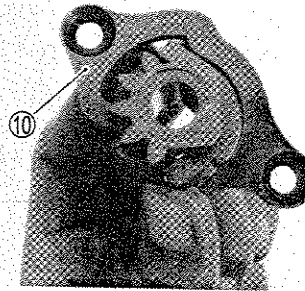
 Gearshift cam bolt: 24 N-m (2.4 kgf-m, 17.5 lb-ft)



- Fit the springs ⑥, pins ⑦ and pawls ⑧ to the gearshift cam driven gear ⑨. Wider side A of pawl should be positioned outside.

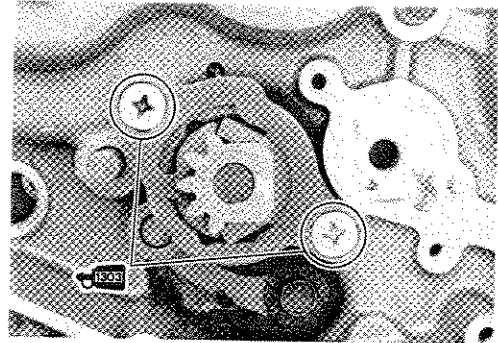


- With the pawls held in pushed position, install the pawl lifter ⑩.



- Reassemble the gearshift cam driven gear and pawl lifter.
- Apply THREAD LOCK SUPER to the screws.
- Tighten the screws.

1303 99000-32030: THREAD LOCK SUPER "1303"

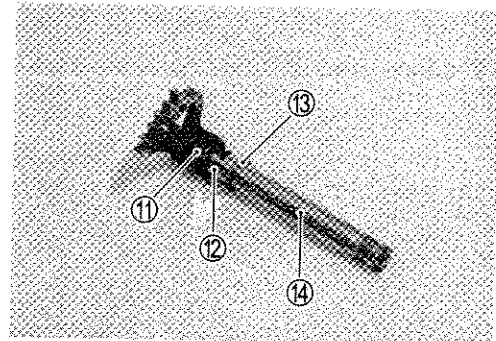


- Reassemble the gearshift return spring ⑪, snap ring ⑫ and washer ⑬ to the gearshift shaft ⑭ properly.

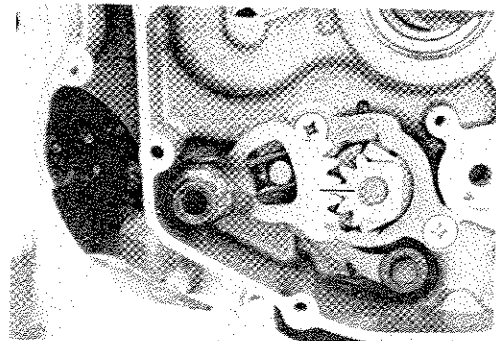
TOOL 09900-06107: Snap ring pliers

NOTE:

Replace the snap ring with a new one.



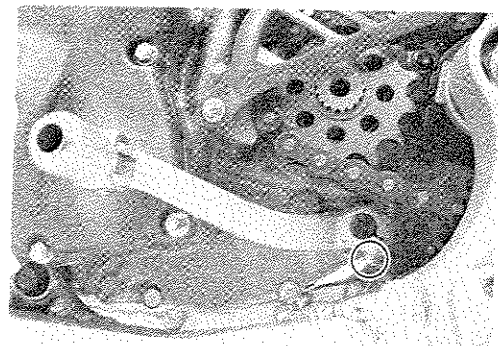
- Align the center teeth on the gearshift shaft with the center teeth on the gearshift cam shifter.
- Reassemble the clutch and right crankcase cover. (☞ 7-6, 8 and 8-7)
- Reassemble the oil pump assembly (No.1). (☞ 11-5)



- Install the gearshift lever.

⚙ Gearshift lever bolt: 10 N·m (1.0 kgf-m, 7.0 lb-ft)

- Refill engine oil. (☞ 2-11)
- Refill engine coolant. (☞ 2-13)
- Inspect the gearshift lever for smooth movement.

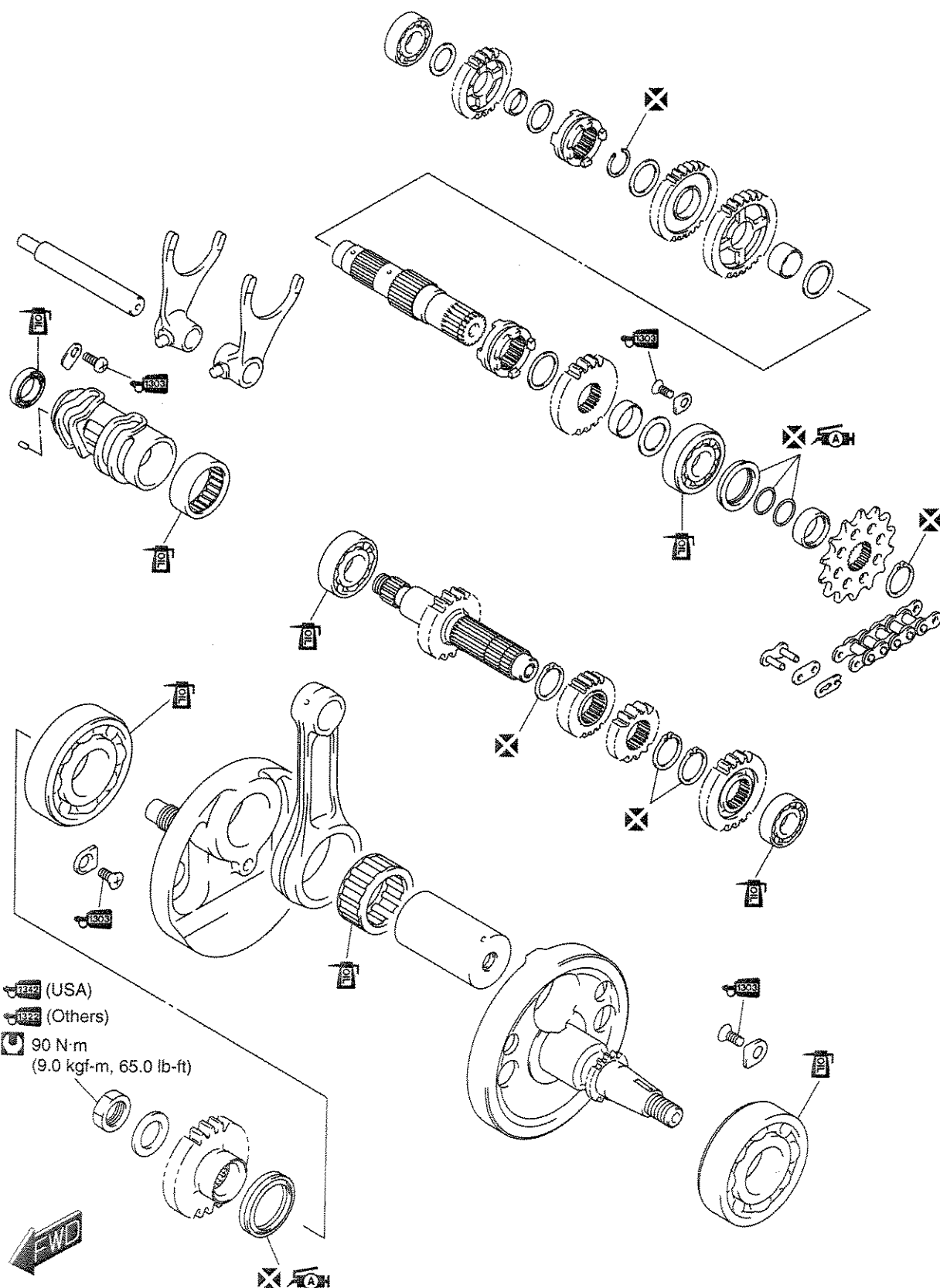


TRANSMISSION AND CRANKSHAFT

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CONSTRUCTION TRANSMISSION AND CRANKSHAFT



ENGINE BOTTOM SIDE

- Dismount the engine. (☞ 5-2)

NOTE:

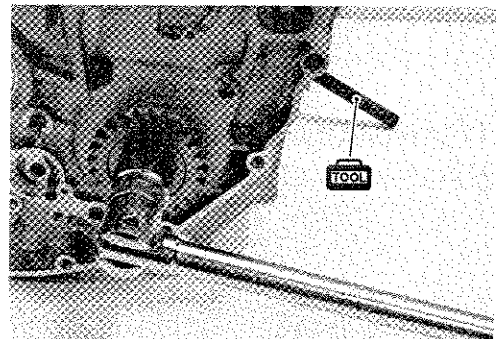
The following parts must be removed before disassembling the engine bottom side (crankcase).

- Remove the cylinder head, cylinder and piston. (☞ 6-4 to 6)
- Remove the magneto cover. (☞ 14-6)
- Remove the right crankcase cover and clutch. (☞ 7-7, 8-3)
- Remove the kick starter idle gear and kick starter shaft. (☞ 8-3)
- Remove the gearshift linkage. (☞ 9-3)
- Remove the oil pump assembly (No.1/No.2) and oil pump idle gear. (☞ 11-3)

PRIMARY DRIVE GEAR REMOVAL

- Hold the crankshaft immovable with the special tool.

 09930-44560: Rotor holder

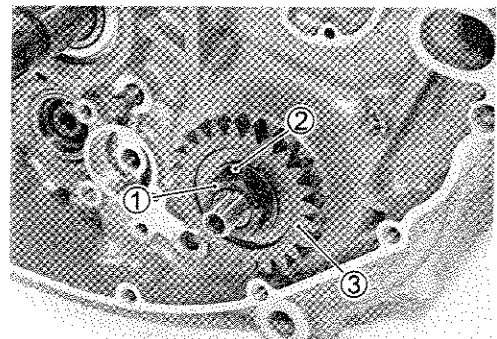


- Remove the primary drive gear nut ①, washer ② and primary drive gear ③.

CAUTION

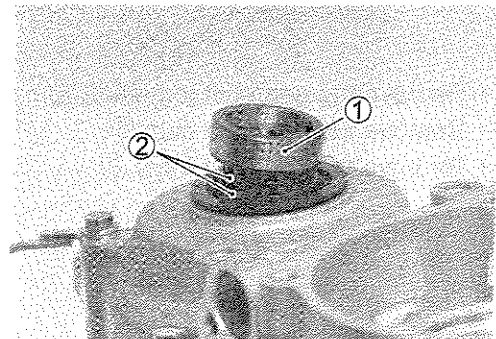
The primary drive gear nut ① has left-hand threads.

- Remove the magneto rotor, stator and key. (☞ 14-6)

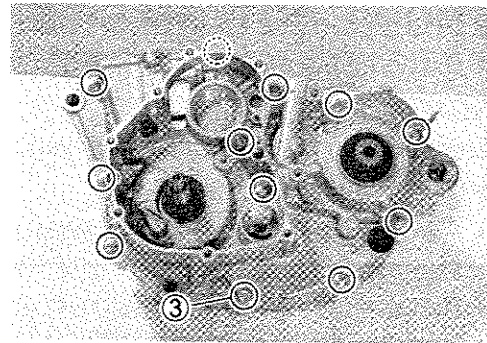


CRANKCASE SEPARATION

- Remove the engine sprocket spacer ① and two O-rings ②.



- Remove the crankcase bolts and engine oil drain plug ③.

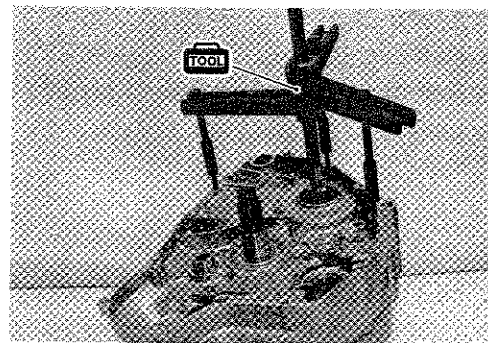


- Separate the crankcase with the special tool.

TOOL 09920-13120: Crankcase separating tool

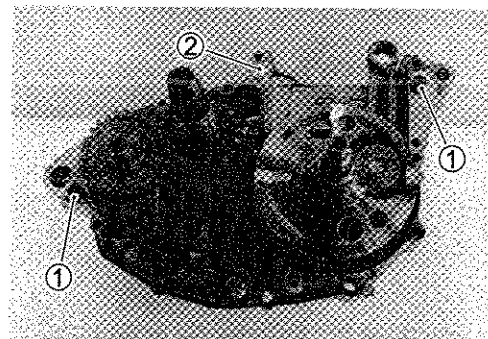
NOTE:

- * Set the crankcase separating tool to the clutch side of the crankcase.
- * Separate the crankcase gradually while hitting the crankcase boss and countershaft softly with a plastic hammer.

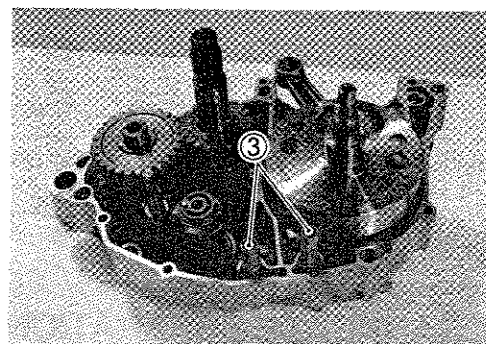


TRANSMISSION REMOVAL

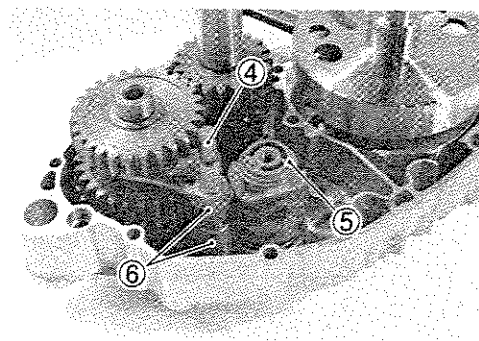
- Remove the dowel pins ① and gasket ②.



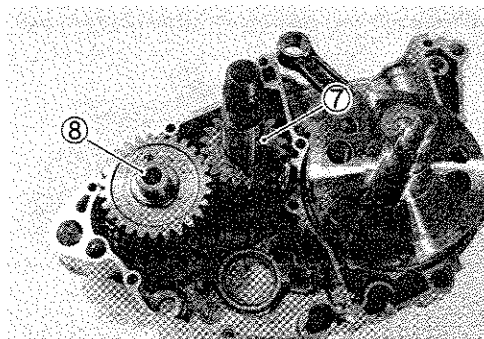
- Remove the oil strainers ③.



- Remove the gearshift fork shaft ④.
- Remove the gearshift cam ⑤.
- Remove the gearshift forks ⑥.



- Remove the countershaft ass'y ⑦ and driveshaft ass'y ⑧.



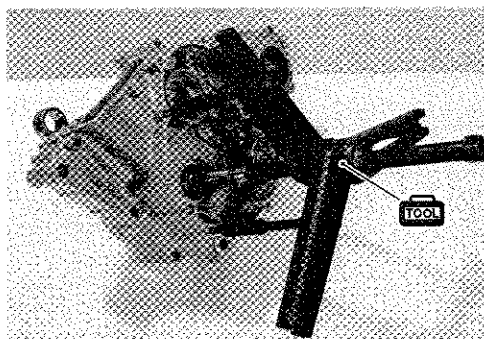
CRANKSHAFT REMOVAL

- Remove the crankshaft with the special tool.

TOOL 09920-13120: Crankcase separating tool

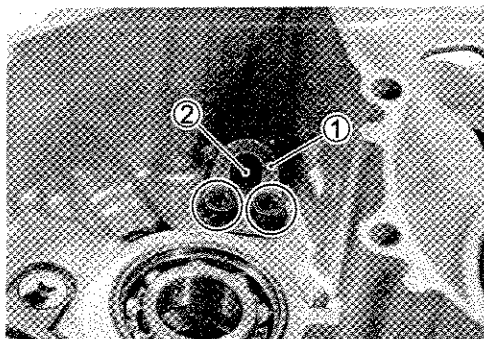
CAUTION

Be careful not to damage the thread part of the crankshaft.



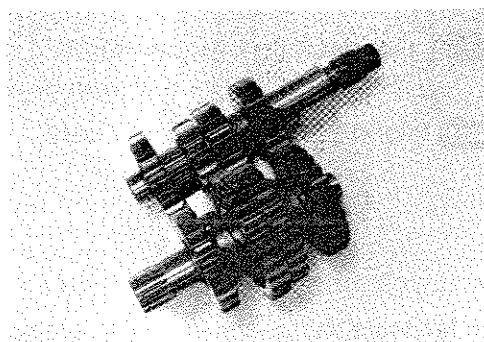
REED VALVE REMOVAL

- Remove the reed valve guide ① and reed valve ②.

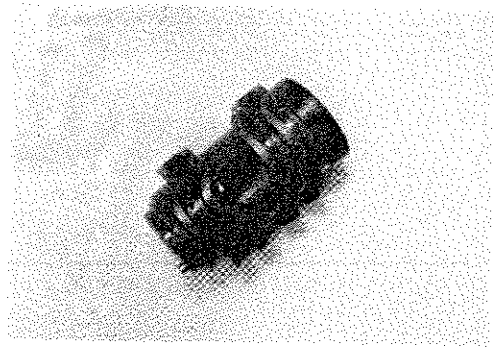


TRANSMISSION INSPECTION

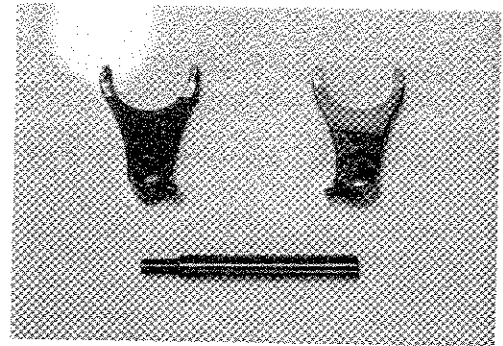
- Inspect the gear teeth, dogs, and gearshift grooves for abnormal wear and damage.
- Inspect the bushings and splines for abnormal wear and discoloration.



- Inspect the gearshift cam groove for abnormal wear and damage.



- Inspect the gearshift forks and shafts for wear and damage.

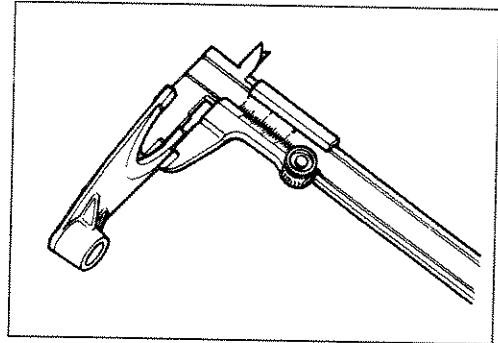


- Measure the gearshift fork thickness with a vernier calipers.

DATA Gearshift fork thickness

Standard: 4.80 – 4.90 mm (0.188 – 0.193 in)

TOOL 09900-20101: Vernier calipers

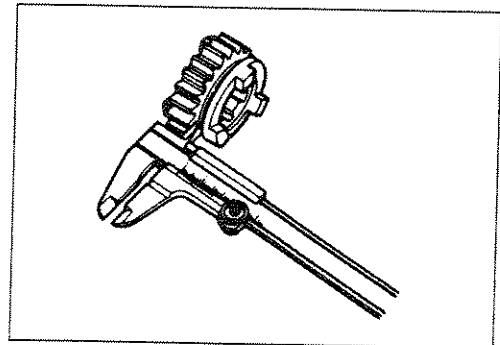


- Measure the gearshift fork groove width with a vernier calipers.

DATA Gearshift fork groove width

Standard: 4.95 – 5.05 mm (0.195 – 0.199 in)

TOOL 09900-20101: Vernier calipers

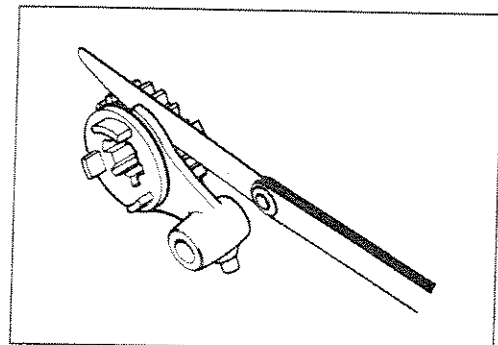


- Measure the gearshift fork to groove clearance with a thickness gauge.

DATA Gearshift fork to groove clearance

Service Limit: 0.45 mm (0.018 in)

TOOL 09900-20803: Thickness gauge



CRANKSHAFT INSPECTION

- Measure the conrod deflection with the special tools.

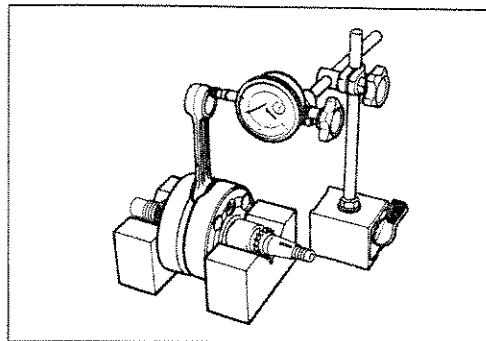
DATA Conrod deflection

Service Limit: 3.0 mm (0.12 in)

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

09900-20701: Magnetic stand

09900-21304: V-block

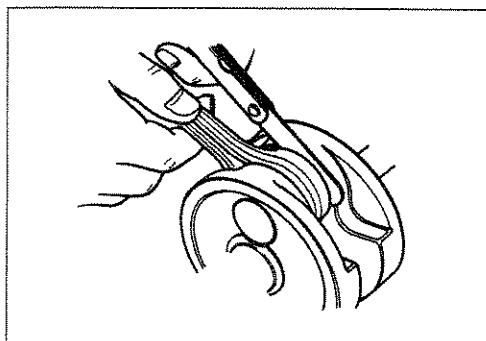


- Measure the conrod big end side clearance with the thickness gauge.

DATA Conrod big end side clearance

Service Limit: 1.0 mm (0.04 in)

TOOL 09900-20803: Thickness gauge



- Measure the crankshaft runout with V-blocks and dial gauge.

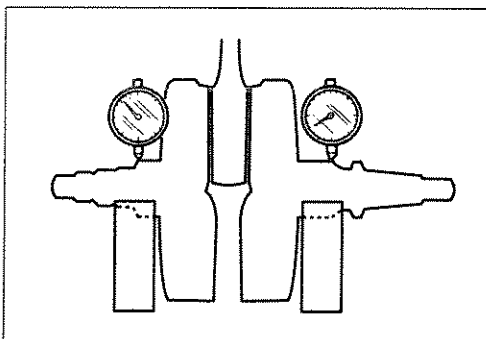
DATA Crankshaft runout

Service Limit: 0.08 mm (0.003 in)

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

09900-20701: Magnetic stand

09900-21304: V-block

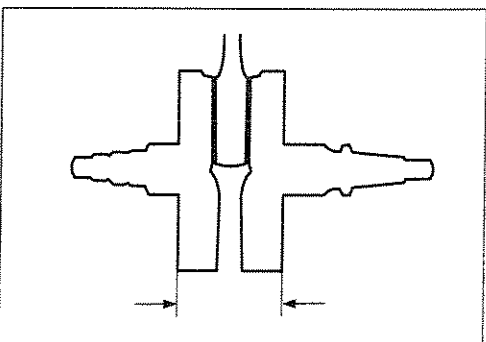


- Measure the crankshaft web to web width with a vernier calipers.

DATA Width between webs

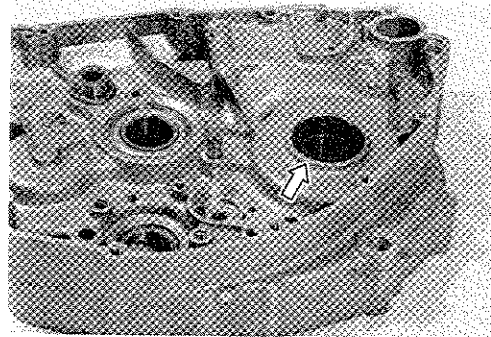
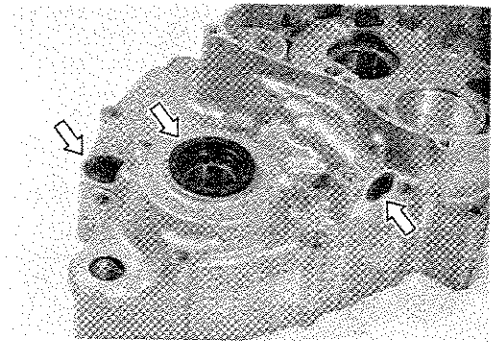
Standard: 62.0 ± 0.1 mm (2.4 ± 0.003 in)

TOOL 09900-20101: Vernier calipers



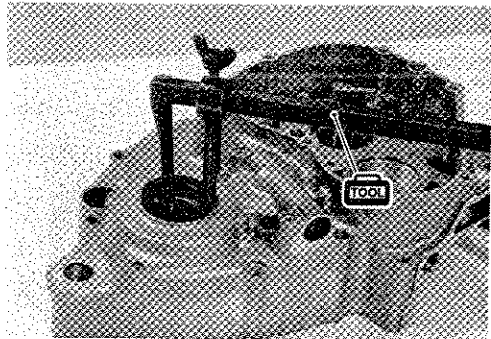
OIL SEAL INSPECTION, REMOVAL AND INSTALLATION

- Inspect each oil seal lip for wear and damage.



- Remove the oil seal with the special tool.

 **09913-50121: Oil seal remover**



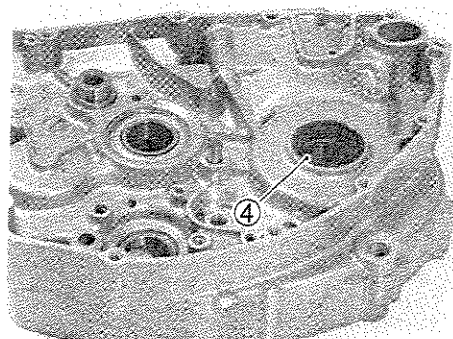
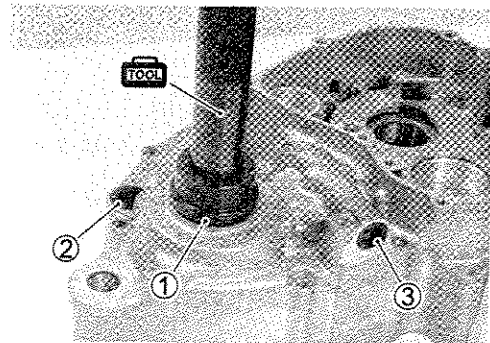
- Fit each new oil seal with the special tools.
- Apply grease to each oil seal lip.

 **09913-70210: Bearing installer set**

Oil seal ①, ④: ϕ 47 Attachment

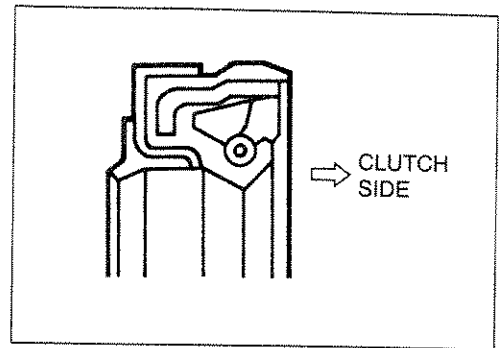
Oil seal ②: ϕ 25 Attachment

Oil seal ③: ϕ 20 Attachment

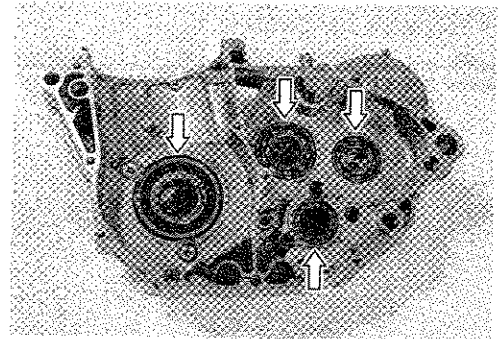
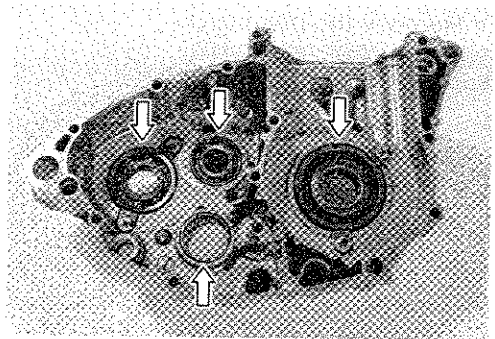
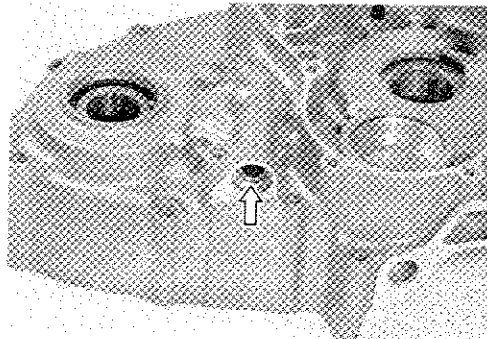


NOTE:

Be sure to check the direction of the crankshaft bearing oil seal before fitting them.

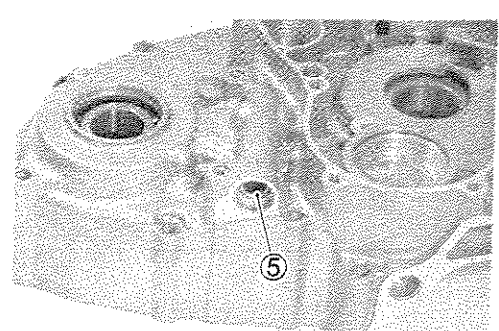
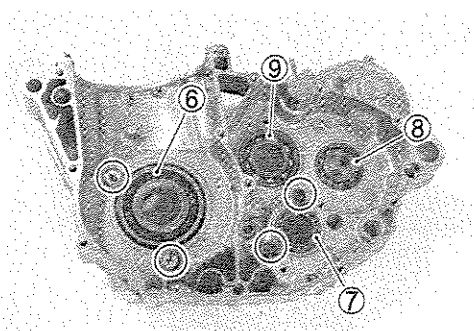
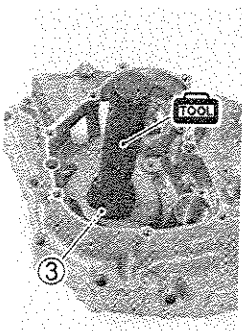
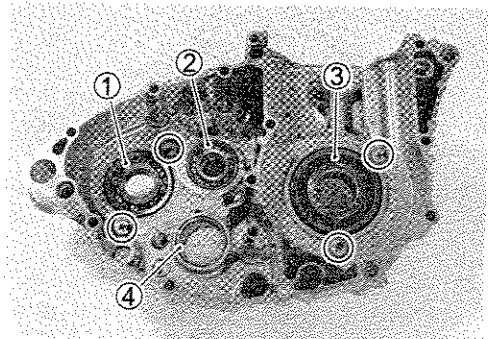
**BEARING INSPECTION**

- Inspect the bearings for play, discoloration, wear and seizure.
- Move the inner race by finger and inspect for smooth movement.

**BEARING REMOVAL AND INSTALLATION**
REMOVAL

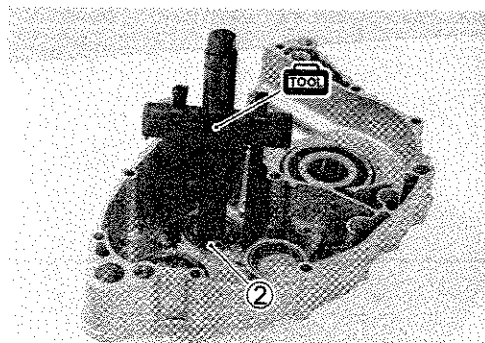
- Remove the bearing retainers.
 - Remove the bearings with the special tools.
- Bearing ①, ③, ⑥, ⑨: ϕ 40 Attachment
Bearing ⑦: ϕ 32 Attachment

 09913-70210: Bearing remover/installer set



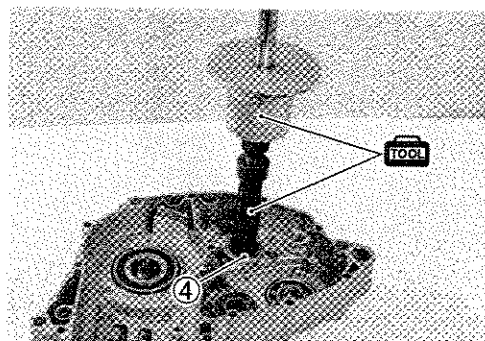
- Remove the bearings ②, ⑧.

 **09921-20240: Bearing remover set**



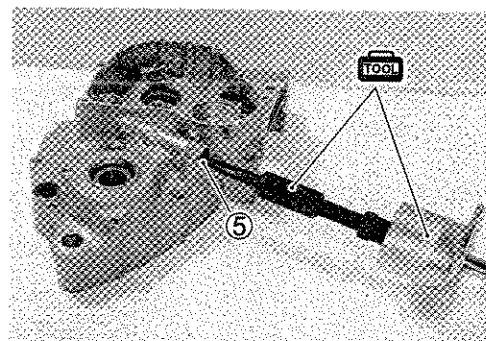
- Remove the bearing ④.

 **09941-64511: Bearing/Oil seal remover**
09930-30104: Sliding shaft



- Remove the bearing ⑤.

 **09921-20200: Bearing remover**
09930-30104: Sliding shaft



INSTALLATION

- Press the bearings with the special tools.

Bearing ①: ϕ 55 Attachment

Bearing ②, ⑧: ϕ 45 Attachment

Bearing ③, ⑥: ϕ 72 Attachment

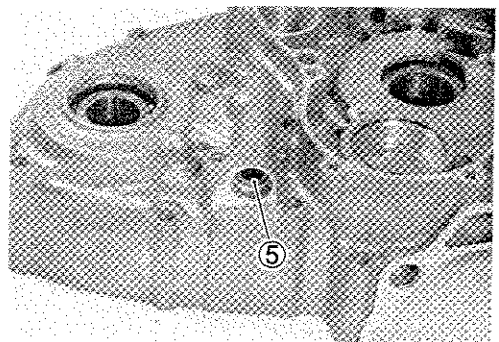
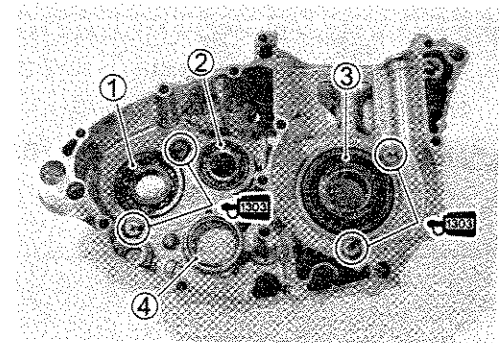
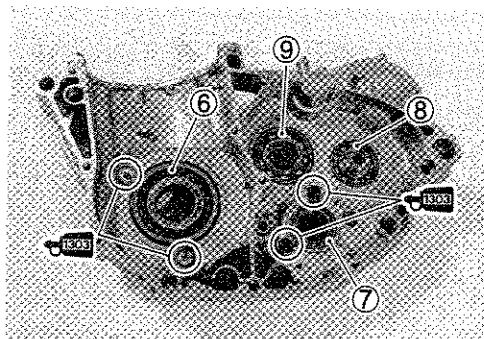
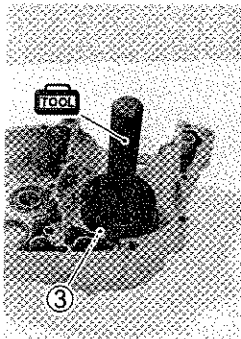
Bearing ④: ϕ 40 Attachment

Bearing ⑤: ϕ 15 Attachment

Bearing ⑦: ϕ 37 Attachment

Bearing ⑨: ϕ 52 Attachment

TOOL 09913-70210: Bearing remover/installer set



- Apply THREAD LOCK SUPER to the screws.

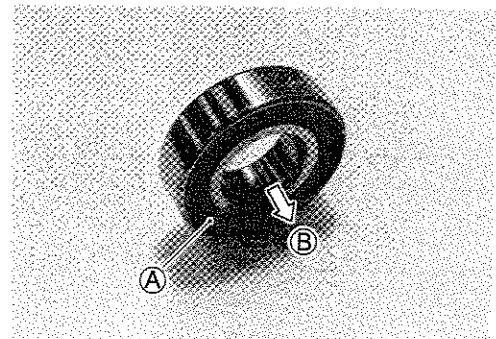
1303 99000-32030: THREAD LOCK SUPER "1303"

- Tighten the bearing retainer screws.

NOTE:

Press the bearings (② and ⑧) into the crankcase, so that the sealed side **A** faces outside of the crankcase.

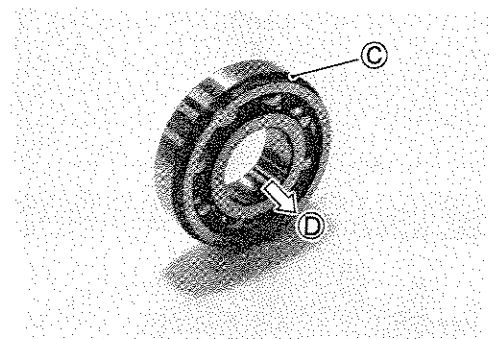
B Outside of the crankcase



NOTE:

Press the bearings (①, ③ and ⑥) into the crankcase, so that the stepped side **C** faces inside of the crankcase.

D Inside of the crankcase

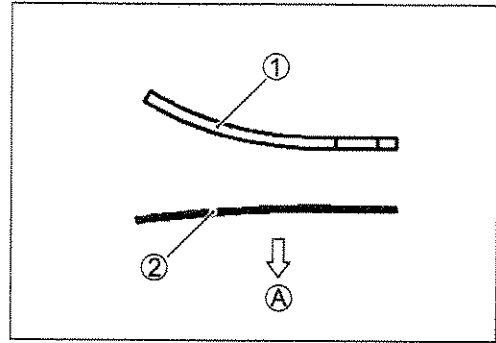


REED VALVE INSTALLATION

- Install the reed valve guide ① and reed valve ② direction as shown.

 Reed valve guide bolt: 4.5 N·m (0.45 kgf-m, 3.0 lb-ft)

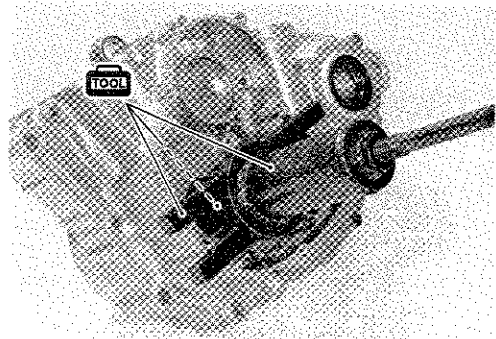
- ① Reed valve guide
- ② Reed valve
- Ⓐ Crankcase side



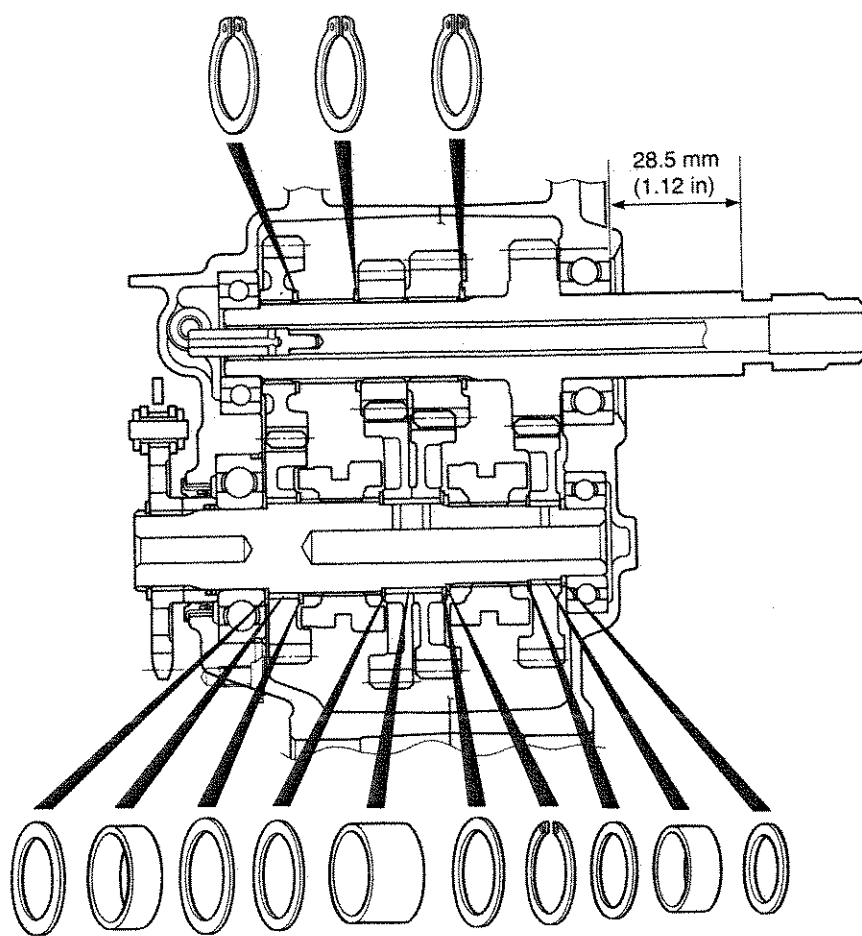
CRANKSHAFT INSTALLATION

- Fit the crankshaft into the left crankcase half with the special tool.

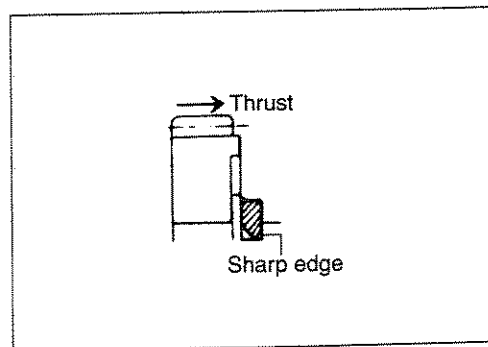
 09910-32812: Crankshaft installer
09911-11310: Crankshaft installer attachment
09910-20116: Conrod holder



TRANSMISSION REASSEMBLY

**NOTE:**

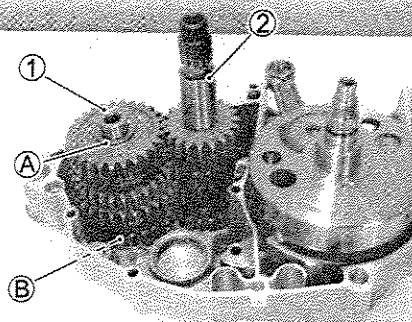
Seat the circlip in the groove and locate its end as shown in the illustration.



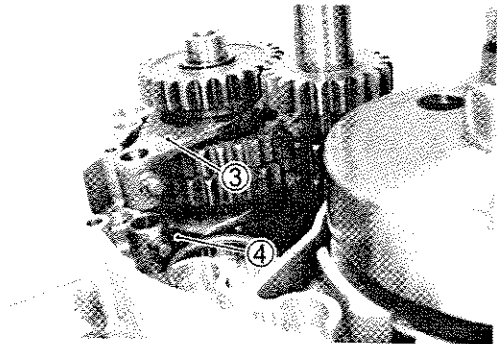
- Apply engine oil to the following parts: driveshaft, countershaft, transmission gears, bearings.
- Reassemble the driveshaft ① and countershaft ② with gears installed.

NOTE:

Install the washers ①, ② located in both ends of the driveshaft positively.



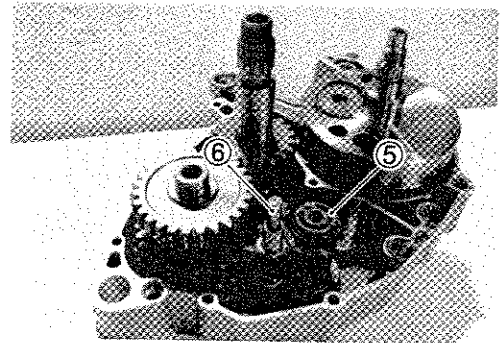
- Reassemble the gearshift forks ③, ④.



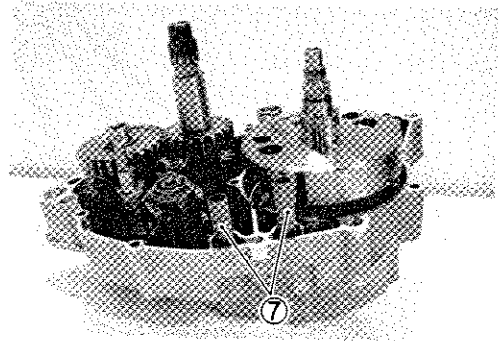
- Install the gearshift cam ⑤ and gearshift shaft ⑥.

NOTE:

Turn the gearshift cam to the neutral position and confirm that the driveshaft and countershaft turn without resistance.



- Install the oil strainers ⑦.



CRANKCASE REASSEMBLY

- Fit the dowel pins and new gasket.
- Fit the right crankcase half on the left crankcase half.
- Install the bracket to the bolt **A**. (19-21)
- Tighten the crankcase bolts and engine oil drain plug **1**.

🔧 Crankcase bolt: 11 N·m (1.1 kgf-m, 7.9 lb-ft)

🔧 Engine oil drain plug: 12 N·m (1.2 kgf-m, 8.6 lb-ft)

NOTE:

If it is hard to tighten the bolts, separate the crankcase and confirm that the transmission parts are assembled correctly.

- Check for protrusion length **B** of the countershaft.
- Adjust the length if it is out of the specification.

DATA Countershaft protrusion length **B**

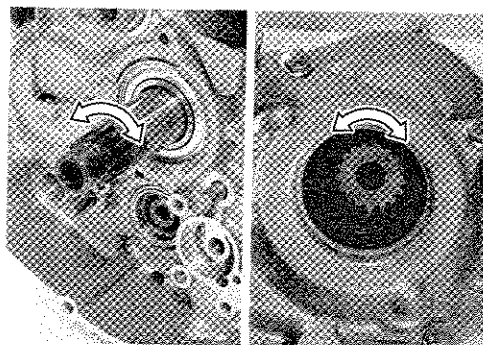
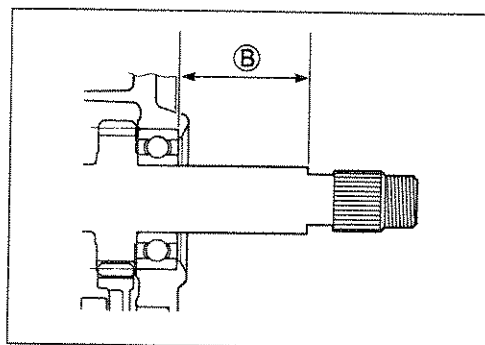
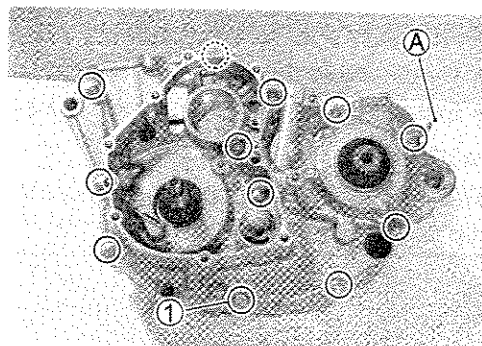
Specification: 28.5 mm (1.12 in)

🔧 09900-20101: Vernier calipers

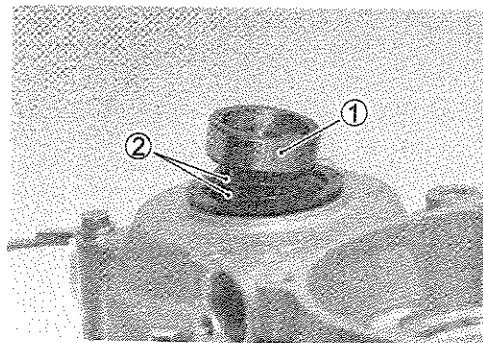
NOTE:

After the clutch sleeve hub has been installed, check that the countershaft can turn freely by hand.

- Inspect the crankshaft, countershaft and driveshaft for smooth movement.



- Apply grease to Oil seal and O-rings **1**. Fit the O-rings **1** and spacer **2** to the driveshaft.



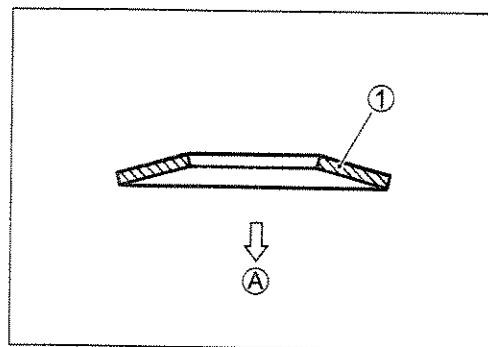
PRIMARY DRIVE GEAR REASSEMBLY

- Reassemble the stator and magneto rotor. (☞ 14-7)
- Install the washer and primary drive gear.

NOTE:

The washer is directional. Assemble the washer ① as shown in the illustration.

Ⓐ inner side



- Apply THREAD LOCK to the primary drive gear nut.

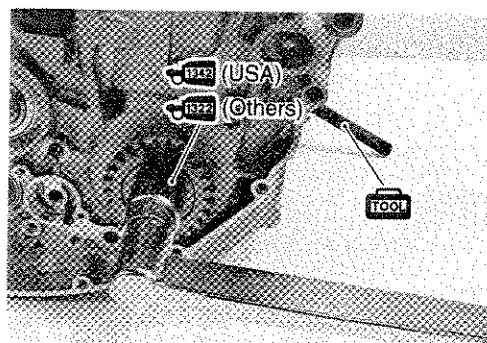
 **1342 99000-32050: THREAD LOCK "1342" (USA)**

 **1322 99000-32110: THREAD LOCK SUPER "1322" (Others)**

- Hold the magneto rotor with the special tool and tighten the primary drive gear bolt to the specified torque.

 **09930-44560: Rotor holder**

 **Primary drive gear nut: 90 N·m (9.0 kgf-m, 65.0 lb-ft)**



- Reassemble the kick idle gear and kick starter shaft. (☞ 8-5)
- Reassemble the gearshift linkage. (☞ 9-5)
- Reassemble the clutch and right crankcase cover. (☞ 7-6, 8 and 8-7)
- Reassemble the piston, cylinder and cylinder head. (☞ 6-27 to 33)
- Reassemble the magneto cover. (☞ 14-7)
- Remount the engine. (☞ 5-6)

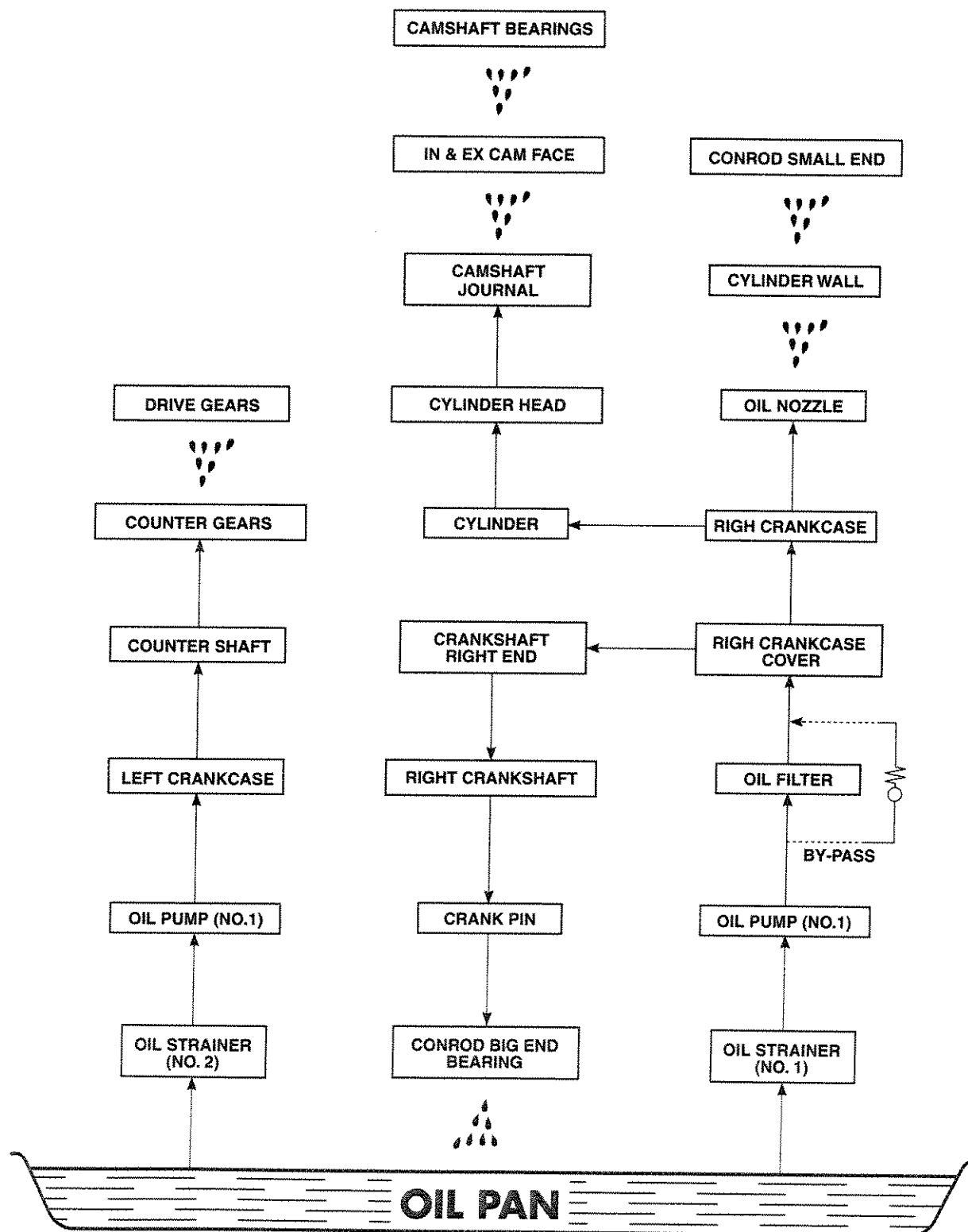
LUBRICATION SYSTEM

CONTENTS

ENGINE LUBRICATION SYSTEM	11- 2
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OIL FILTER INSPECTION	11- 3
OIL STRAINERS INSPECTION	11- 3
OIL SEAL INSPECTION	11- 3
OIL PUMP (No.1/No.2) REMOVAL	11- 3
OIL PUMP (No.1/No.2) INSPECTION	11- 4
OIL PUMP (No.1/No.2) REASSEMBLY	11- 5

ENGINE LUBRICATION SYSTEM

ENGINE LUBRICATION SYSTEM CHART



OIL PRESSURE INSPECTION

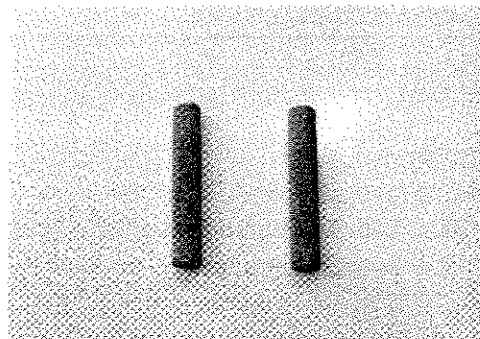
( 2-34)

OIL FILTER INSPECTION

( 2-12)

OIL STRAINERS INSPECTION

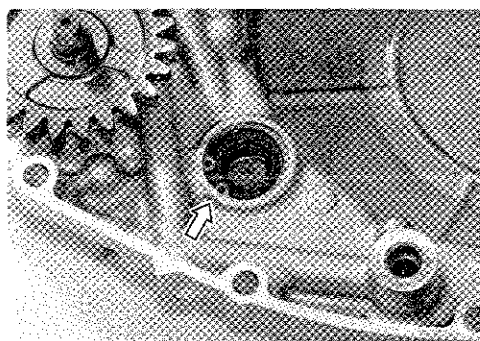
- Remove the oil strainers. ( 10-4)
- Check the oil strainers for any damage or clogs.
- If the oil strainers are clogged, clean the oil strainers with a compressed air.



OIL SEAL INSPECTION

For oil seal inspection other than the following, refer to page 10-8.

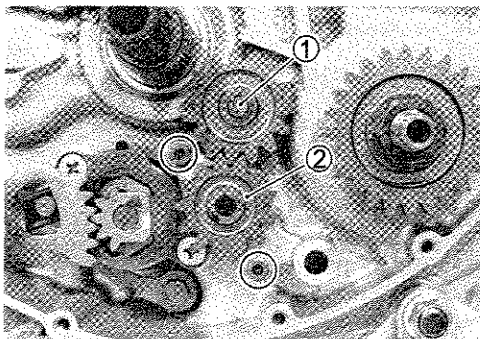
- Remove the right crankcase cover. ( 10-4)
- Inspect the oil seal lip for wear and damage.



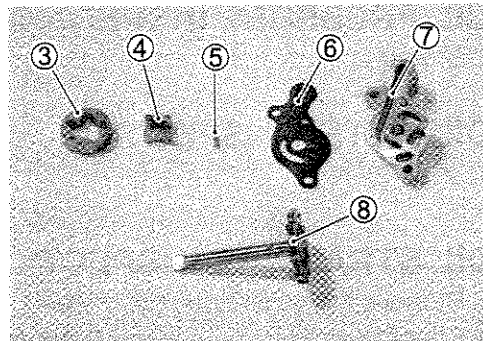
OIL PUMP (No.1/No.2) REMOVAL

OIL PUMP (No.1)

- Drain engine oil. ( 2-11)
- Drain engine coolant. ( 13-3)
- Remove the right engine protector. ( 5-3)
- Remove the brake pedal. ( 16-17)
- Remove the kick starter lever and right crankcase cover. ( 8-3, 10-4)
- Remove the clutch assembly. ( 7-3)
- Remove the oil pump idle gear ① and oil pump assembly ②.

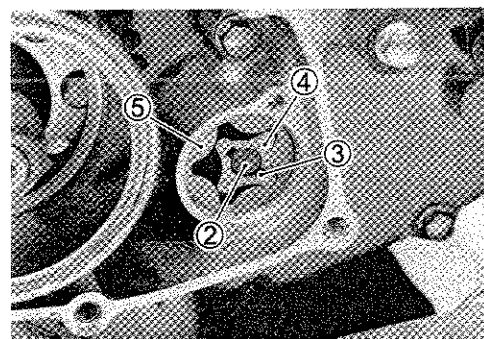
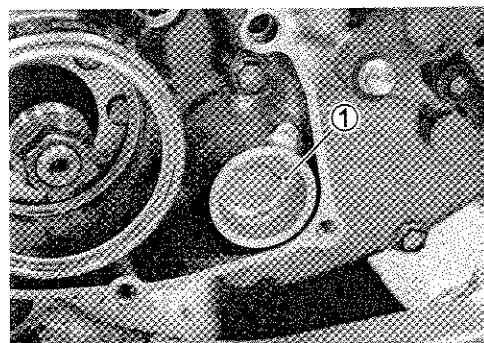


- Remove the following parts from the oil pump assembly.
Outer rotor ③
Inner rotor ④
Pin ⑤
Oil pump cover ⑥
Oil pump body ⑦
Oil pump gear shaft ⑧



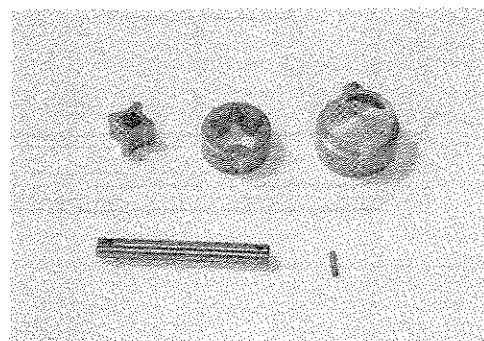
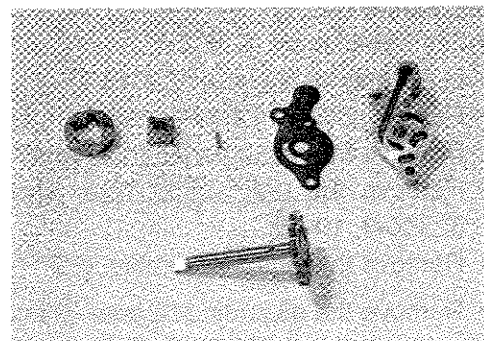
OIL PUMP (No.2)

- Drain engine oil. (P2-11)
- Remove the gearshift lever. (P9-3)
- Remove the left engine protector. (P5-3)
- Remove the magneto cover. (P14-7)
- Remove the oil pump body ①.
- Remove the oil pump shaft ②, pin ③, inner rotor ④ and outer rotor ⑤.



OIL PUMP (No.1/No.2) INSPECTION

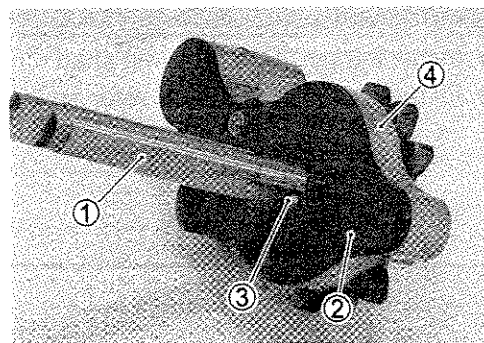
- Check the oil pump with each part for any damage or wear.



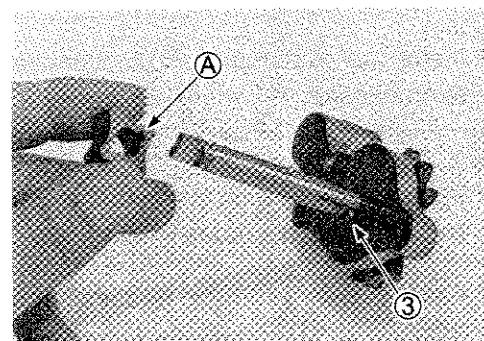
OIL PUMP (No.1/No.2) REASSEMBLY

OIL PUMP (No.1)

- Install the oil pump gear shaft ①, oil pump cover ② and pin ③ to oil pump body ④.



- Fit the slot (A) of the inner rotor on the pin (3).

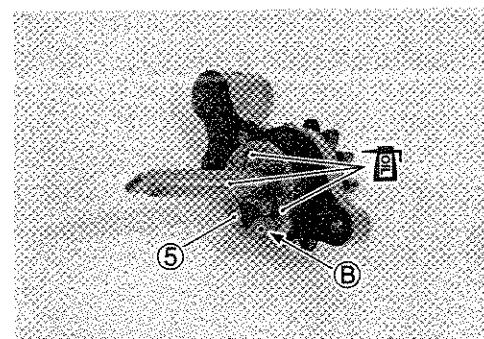


- Install the outer rotor (5).

CAUTION

Install the outer rotor with the punch mark (B) facing towards the crankcase side.

- Apply engine oil to the oil pump gear shaft, Outer rotor and Inner rotor.



- Install the oil pump assembly to crankcase.
- Apply THREAD LOCK to the bolts.

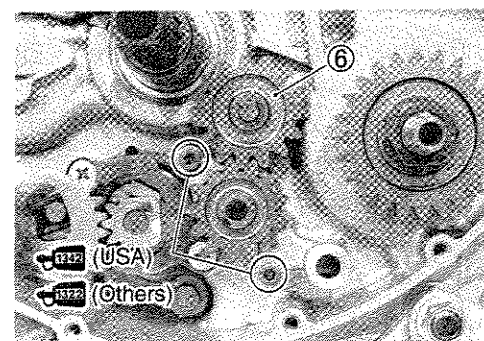
 99000-32050: THREAD LOCK "1342" (USA)

 99000-32110: THREAD LOCK SUPER "1322" (Others)

- Tighten the bolts.

 Oil pump mounting bolt: 4.5 N·m (0.45 kgf-m, 3.0 lb-ft)

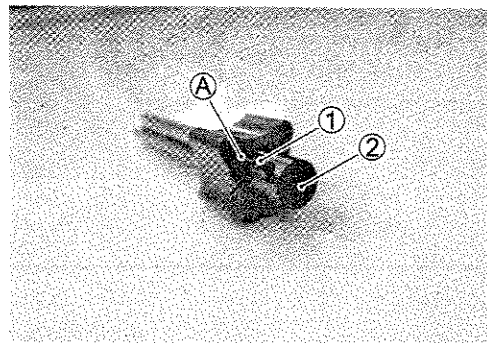
- Install the oil pump idle gear (6).



- Reassemble the clutch assembly. (☞ 7-6)
- Reassemble the kick starter lever and right crankcase cover. (☞ 5-6, 10-5)
- Reassemble the brake pedal. (☞ 5-7)
- Reassemble the light engine protector.
- Refill engine oil. (☞ 2-11)
- Refill engine coolant. (☞ 13-3)

OIL PUMP (No.2)

- Install the pin ① to oil pump shaft ②.
- Fit the slot ① of the inner rotor on the pin ①.

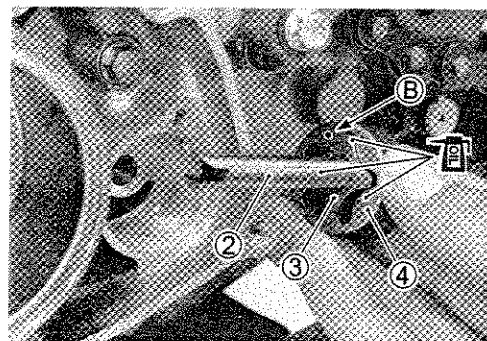


- Install the oil pump shaft ②, inner rotor ③ and outer rotor ④ to crankcase.

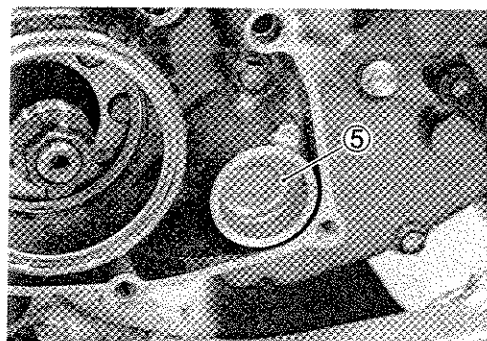
CAUTION

Install the outer rotor with the punch mark ⑥ facing towards the crankcase side.

- Apply engine oil to the oil pump shaft, outer rotor and Inner rotor.



- Install the oil pump body ⑤.



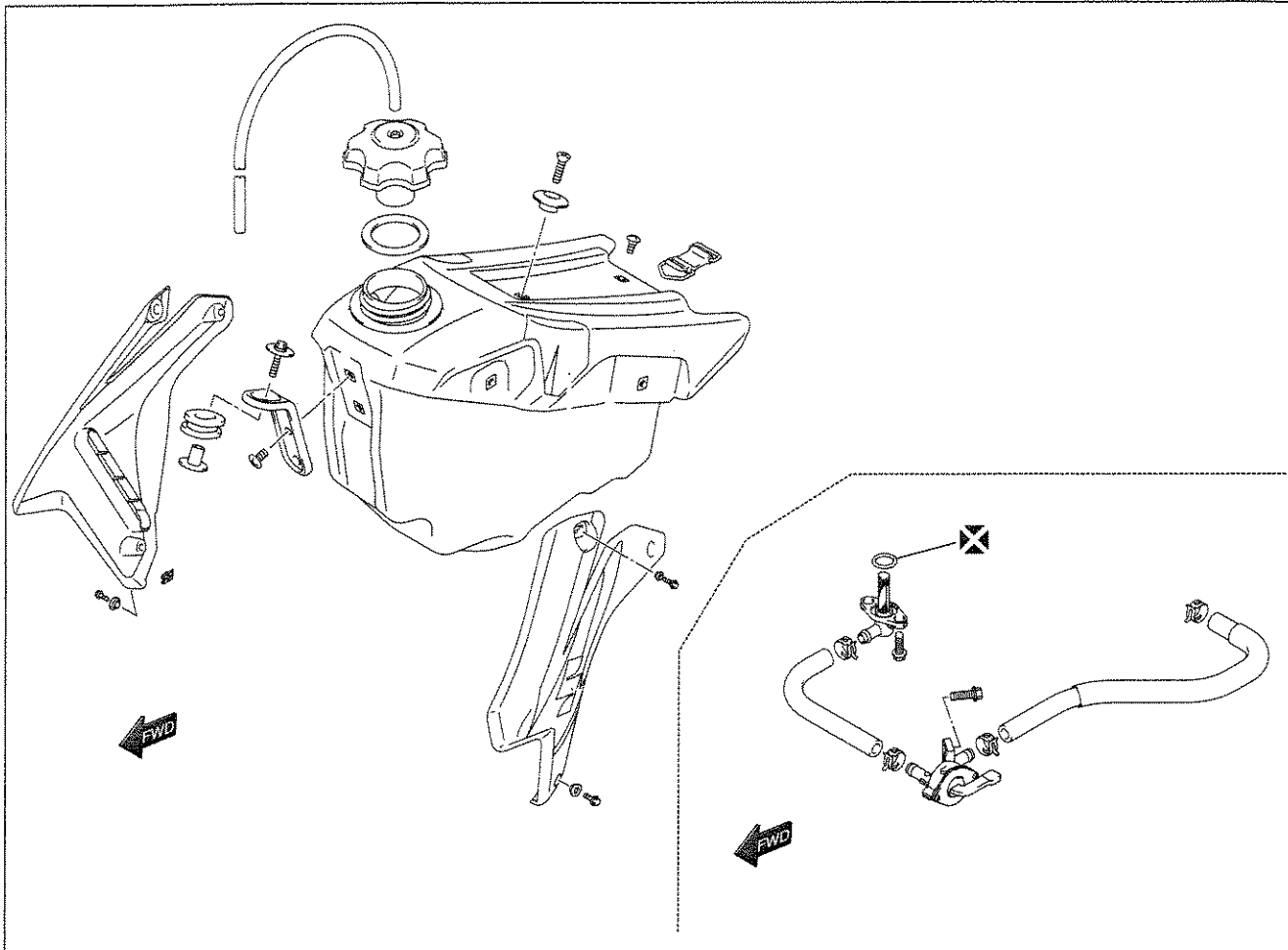
- Reassemble the magneto cover. (14-8)
- Reassemble the gearshift lever. (9-6)
- Reassemble the light engine protector.
- Refill engine oil. (2-11)

FUEL SYSTEM

CONTENTS

FUEL TANK AND FUEL VALVE	12- 2
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THROTTLE POSITION SENSOR	12-15
INSPECTION	12-15
REPLACEMENT	12-15

FUEL TANK AND FUEL VALVE CONSTRUCTION

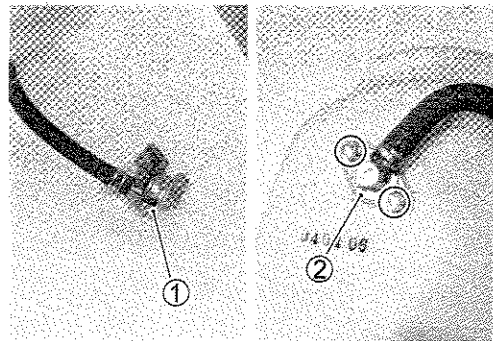


REMOVAL

⚠ WARNING

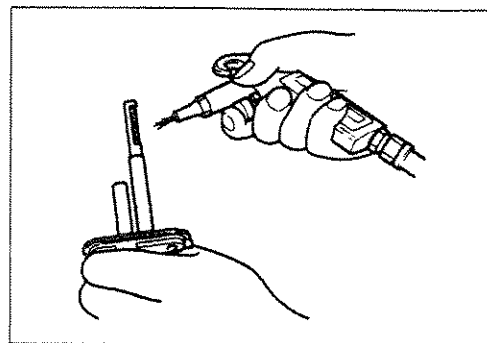
Gasoline is highly flammable and explosive.
Keep heat, spark and flame away.

- Remove the seat. (☞ 5-2)
- Remove the fuel tank. (☞ 5-2)
- Drain fuel.
- Remove the fuel valve ① and fuel strainer ②.



CLEANING AND INSPECTION

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

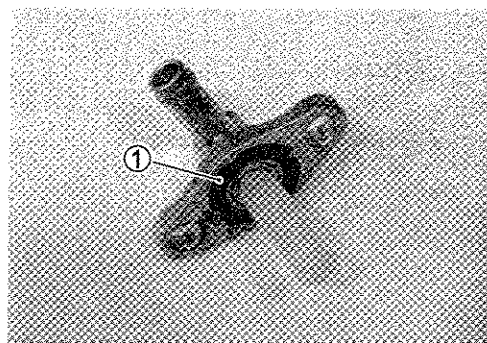


INSTALLATION

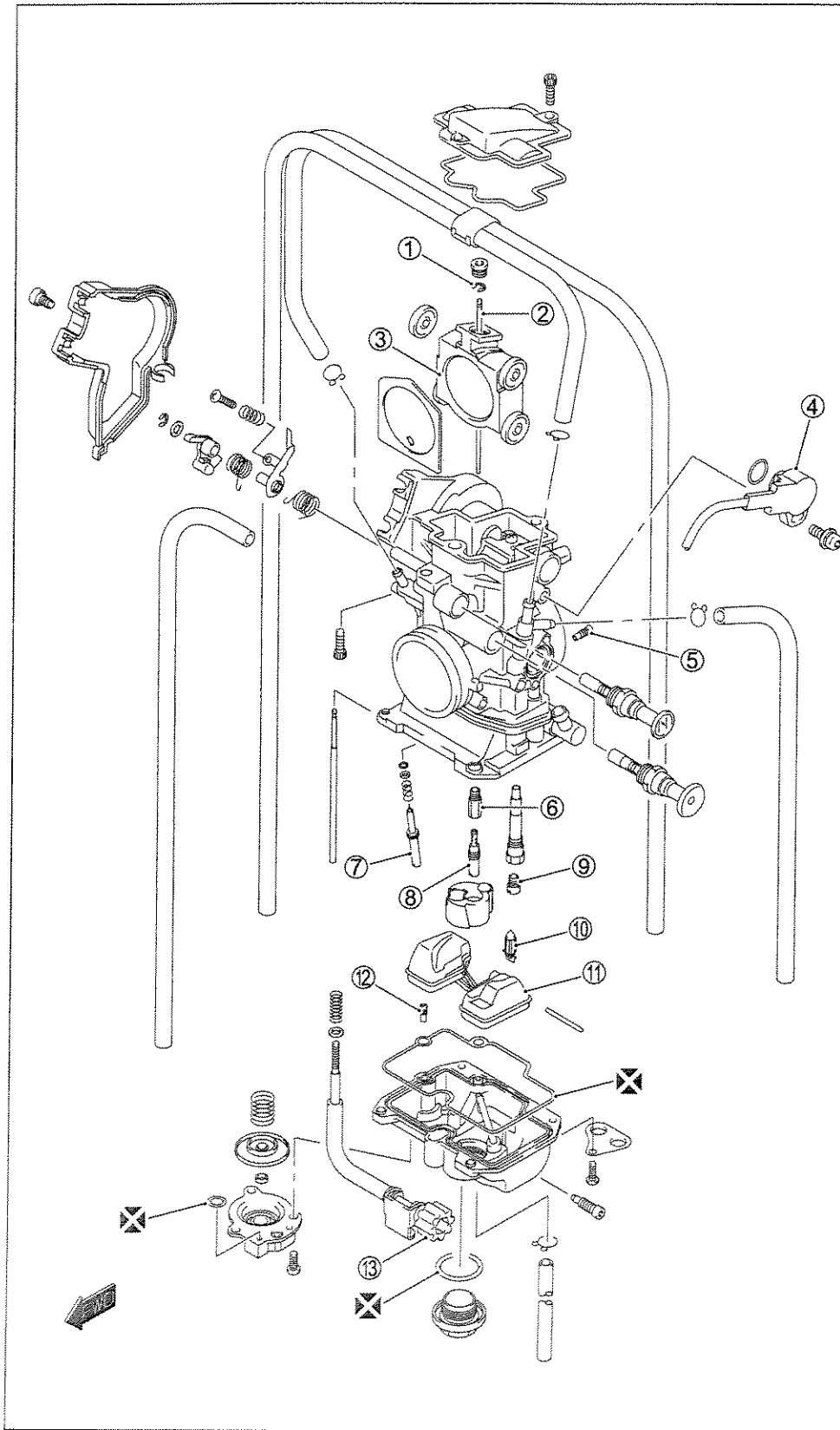
Install the fuel valve, fuel strainer and fuel tank in the reverse order of removal.

⚠ WARNING

Replace the O-ring ① with a new one to prevent fuel leakage.



CARBURETOR CONSTRUCTION



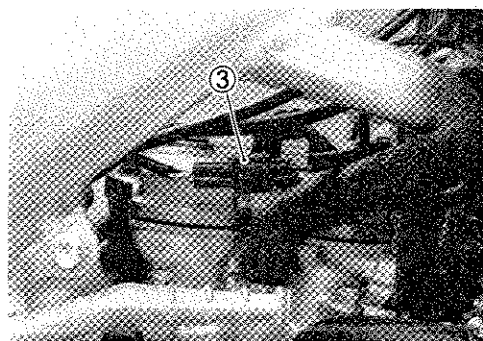
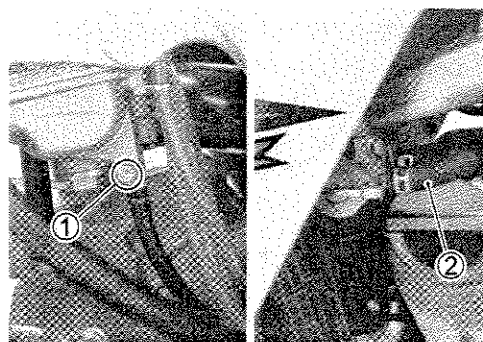
①	Jet needle clip
②	Jet needle
③	Throttle valve
④	Throttle position sensor
⑤	Slow air jet
⑥	Starter jet
⑦	Pilot screw
⑧	Slow jet
⑨	Main jet
⑩	Needle valve
⑪	Float
⑫	Leak jet
⑬	Idle adjust screw

REMOVAL AND DISASSEMBLY

⚠ WARNING

Gasoline is highly flammable and explosive.
Keep heat, spark and flame away.

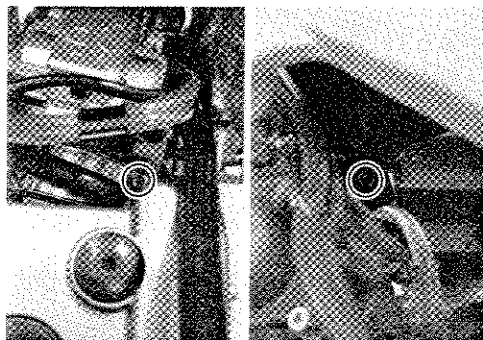
- Remove the seat. (☞ 5-2)
- Turn the fuel valve to the OFF position.
- Place a container beneath the drain hose, drain fuel from the float chamber by loosening the screw ①.
- Disconnect the fuel hose ② and remove the fuel tank. (☞ 5-2)
- Disconnect the throttle position sensor coupler ③.



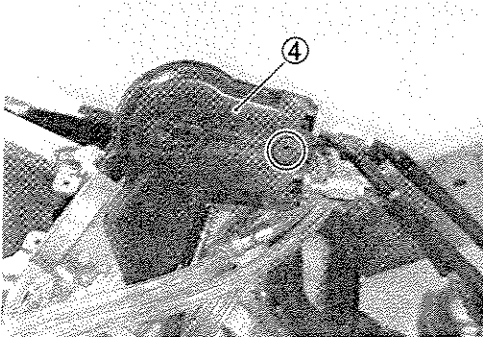
- Loosen the carburetor clamp screws and take out the carburetor from between the carburetor holder and air cleaner duct.

CAUTION

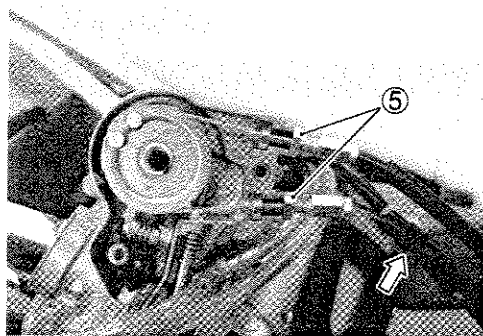
After taking out the carburetor, cover the intake pipe with clean cloth to prevent dust from entering to the engine.



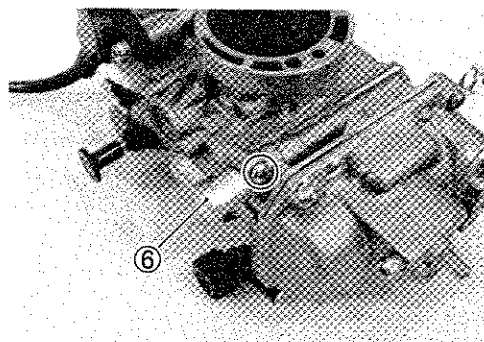
- Remove the throttle pulley cover ④.



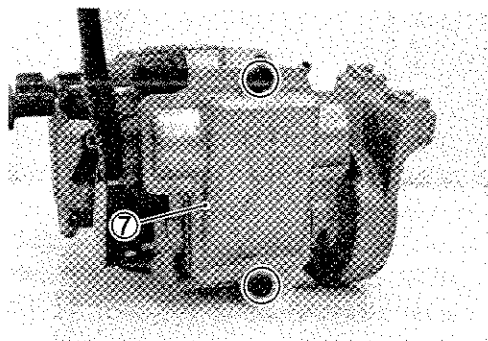
- Unclamp the throttle position sensor lead wire.
- Loosen the locknuts ⑤.
- Unhook the throttle cables from the pulley.



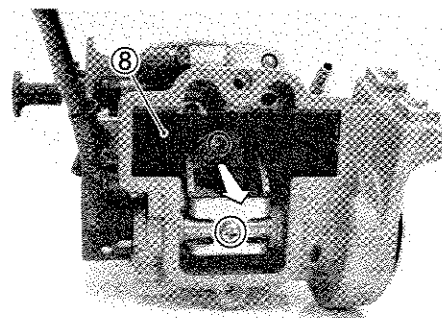
- Remove the hoses.
- Remove the fuel hose fitting ⑥.



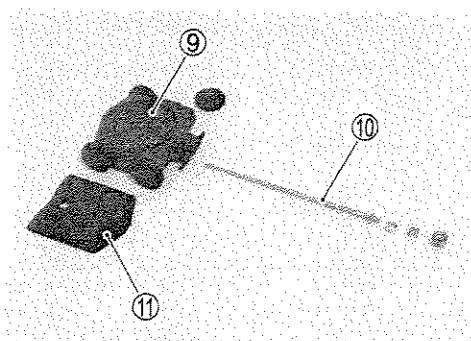
- Remove the top cap ⑦.



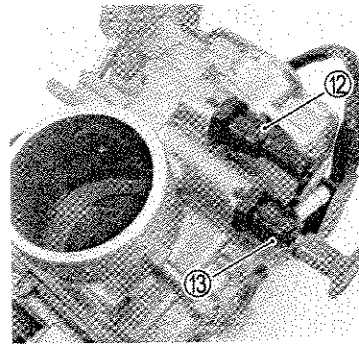
- Remove the throttle valve assembly ⑧.



- Disassemble the throttle valve assembly.
 - ⑨ Throttle valve
 - ⑩ Jet needle and clip
 - ⑪ Throttle valve plate and O-ring



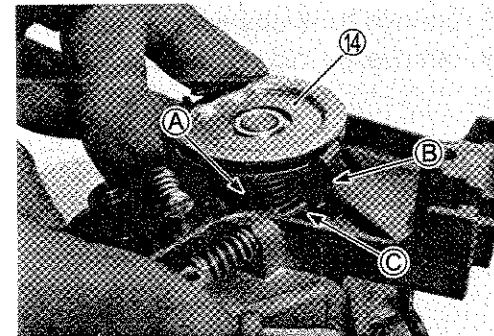
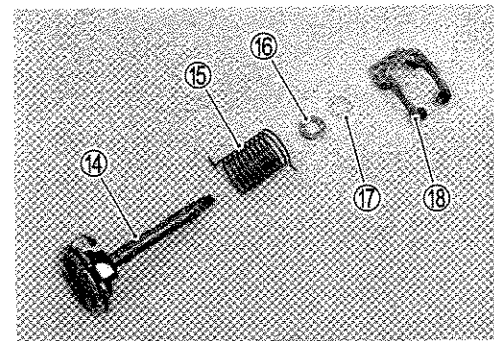
- Remove the choke knob ⑫ and hot start plunger ⑬.



- Remove the throttle pulley shaft ⑭ with the spring ⑮, steel washer ⑯, plastic washer ⑰ and throttle valve link ⑱.

NOTE:

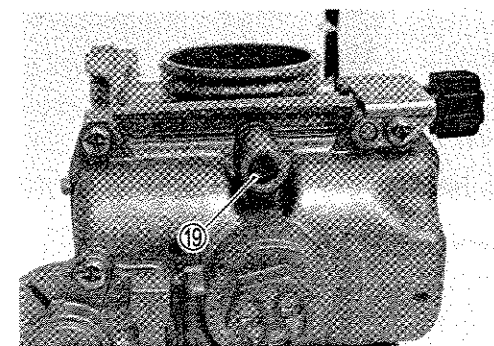
Turn the throttle pulley shaft ⑭ clockwise while holding down the acceleration pump lever A and clear the stopper B of the pulley from the idle adjust screw C.



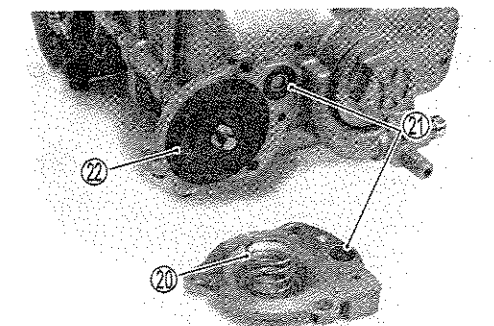
NOTE:

Before removing the pilot screw ⑲, Turn it clockwise until it lightly seats and record the number of turns.

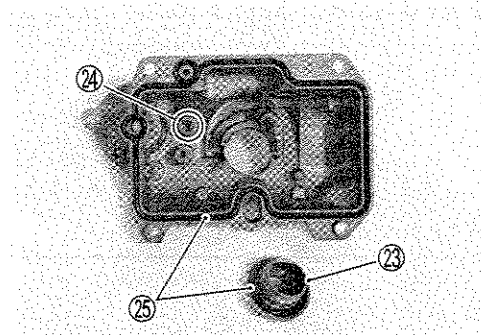
- Remove the pilot screw ⑲.



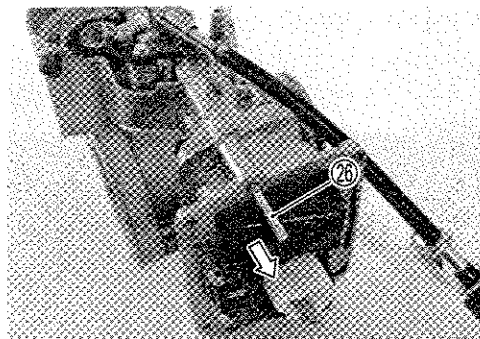
- Remove the acceleration pump cover.
- Remove the spring ⑳, O-rings ㉑ and diaphragm ㉒.



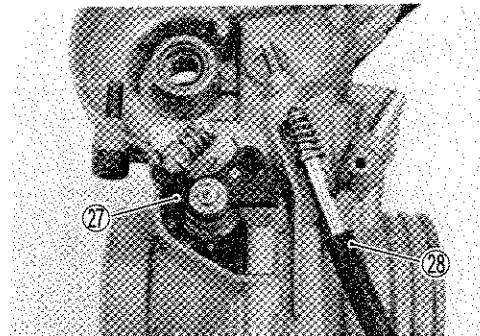
- Remove the float chamber from the carburetor body.
- Remove the drain plug (23) and leak jet (24).
- Remove the O-rings (25).



- Pull out the push rod (26) of acceleration pump.



- Remove the E-clip, washer and acceleration pump lever (27).
- Remove the idle adjust screw (28).

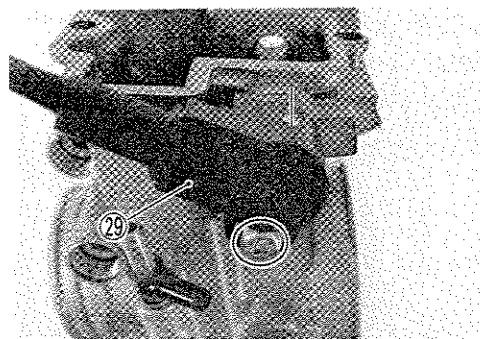


NOTE:

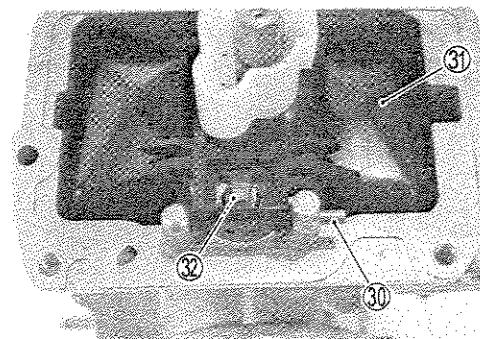
Before removing the throttle position sensor, mark the carburetor body and sensor so that it can be reinstalled in same position.

- Remove the throttle position sensor (29) using the special tool.

 **09930-11950: Torx wrench, T25**

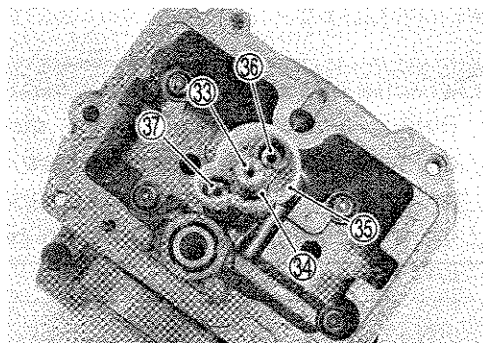


- Remove the pin (30).
- Remove the float (31) with needle valve (32).

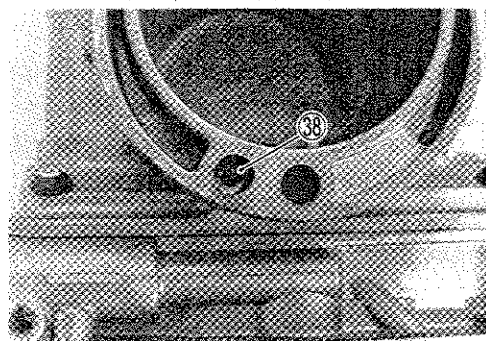


- Remove the following parts.

- ③③ Main jet
- ③④ Needle jet
- ③⑤ Baffle plate
- ③⑥ Starter jet
- ③⑦ Slow jet



- Remove the slow air jet ③⑧.



CLEANING

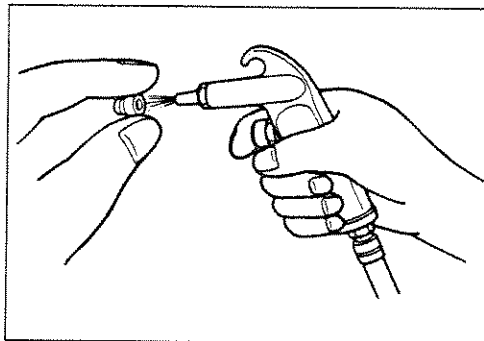
⚠ WARNING

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

- Clean all jets with a spray-type carburetor cleaner and dry them using compressed air.
- Clean all passageways of the carburetor thoroughly – not just the perceived problem area. Clean the passageways in the carburetor body with a spray-type cleaner. If necessary, soak carburetor body in a dip-type cleaning solution to loosen dirt and varnish.
- Dry the carburetor body using compressed air.

CAUTION

- * Do not use a wire to clean the jets or passageways. If wire is used, the jets and passageways may become damaged.
- * Replace the removed O-rings with new ones.



INSPECTION

- Inspect the following parts for damage.

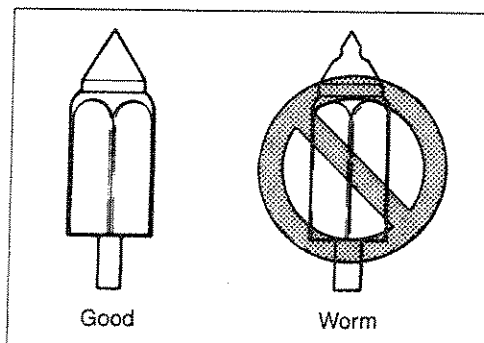
Jet needle	Diaphragm
Throttle valve	Pilot screw
Float	Springs

- Inspect the following parts for clogging.

Main jet	Needle jet
Slow jet	Starter jet
Slow air jet	Leak jet
Hoses	

NEEDLE VALVE

- Inspect the needle valve tip for wear.
- Inspect the needle valve rod for smooth movement.



FUEL LEVEL

- Connect the special tool to the carburetor drain.

TOOL 09913-10760: Fuel level gauge

- Hold the carburetor in the proper angle with a stand.

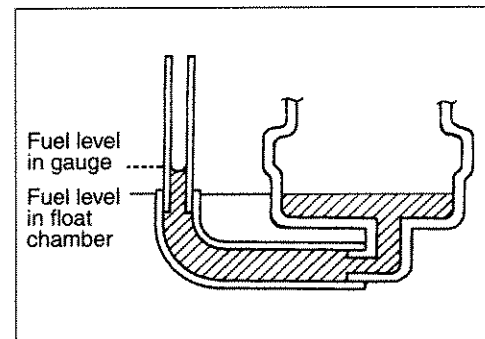
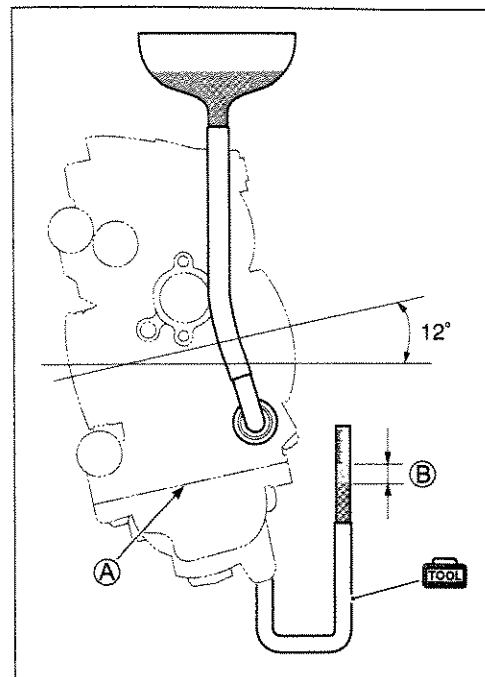
Carburetor set position	Lateral direction: Horizontal
	Longitudinal direction: 12 °

- Fill the float chamber with fuel.
- Remove air completely from the fuel level gauge.
- With the level gauge held vertical, lower the gauge slowly and align the datum point (A) (float chamber mating surface) 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 (B) from the datum point (A).

DATA Fuel level (B): 6.5 mm (0.256 in) above the datum point

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 1 mm (0.039 in).]

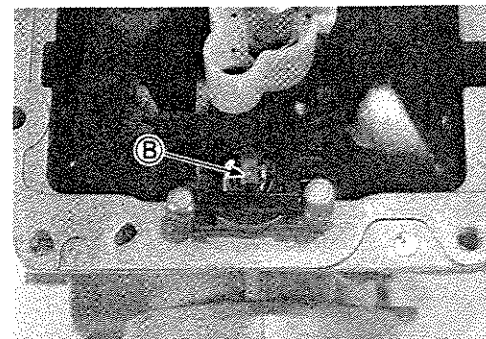
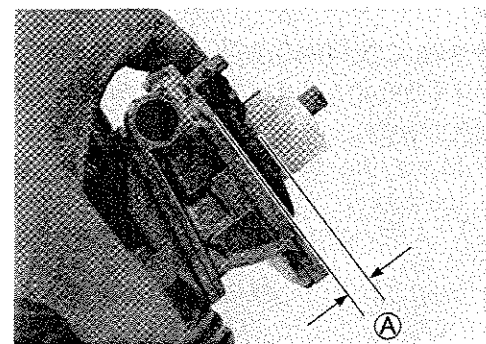
**FLOAT HEIGHT**

- Tilt the carburetor until the float arm (B) just touches the needle valve rod.
- Measure the float height (A).

DATA Standard float height: 8 mm (0.315 in)

TOOL 09900-20101: Vernier calipers

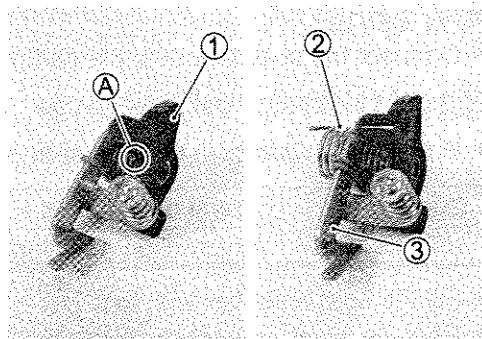
- If necessary, slightly bend the float arm (B) to change the float height.
- Recheck fuel level. (☞ Above)



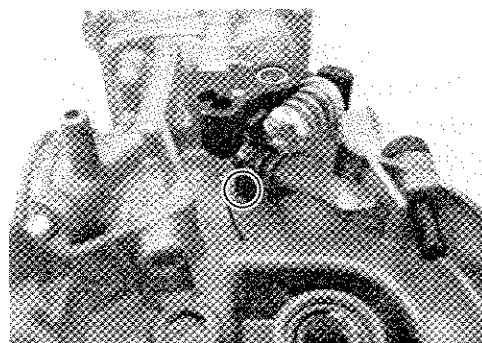
REASSEMBLY AND INSTALLATION

Pay attention to the following points:

- Fit the spring end on the stopper **A** of the push rod holder **①**.
- Hook the return spring **②** to the acceleration pump lever **③**.



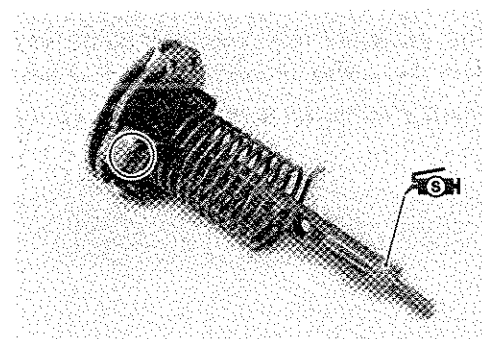
- Fit the end of the return spring into the recess on the carburetor body.



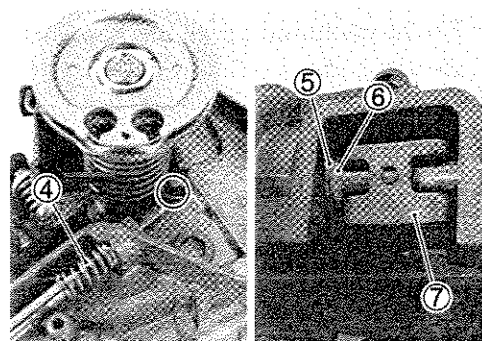
- Apply SUZUKI SILICONE GREASE to the throttle cable pulley shaft.

SH 99000-25100: SUZUKI SILICONE GREASE

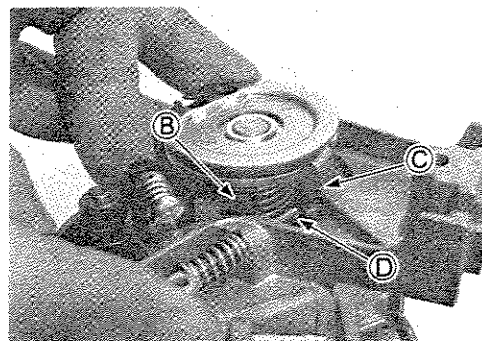
- Hook the return spring onto the stopper of the pulley.



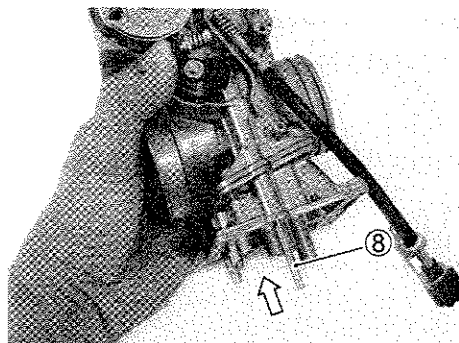
- Install the idle adjust screw **④**.
- Fit the end of the return spring into the recess of the carburetor body.
- Insert the throttle cable pulley shaft and install the steel washer **⑤**, nylon washer **⑥** and valve link **⑦**.



- Turn the throttle pulley shaft counterclockwise while holding down the acceleration pump lever **B** and clear the stopper **C** of the pulley from the idle adjust screw **D**.



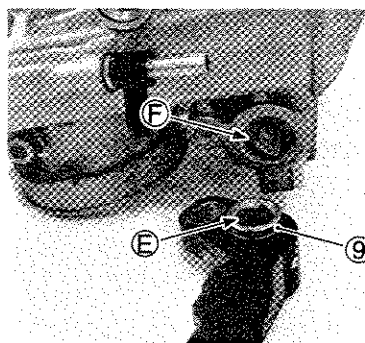
- Install the push rod ⑧ into the push rod holder.



- Apply SUZUKI SUPER GREASE to the O-ring ⑨.

99000-25030: SUZUKI SUPER GREASE "A" (USA)
99000-25010: SUZUKI SUPER GREASE "A" (Others)

- Fit the stopper ⑤ of the throttle position sensor to the projection ⑥ of the throttle pulley shaft.
- Align the marks given at removal and tighten the bolt to the specified torque.

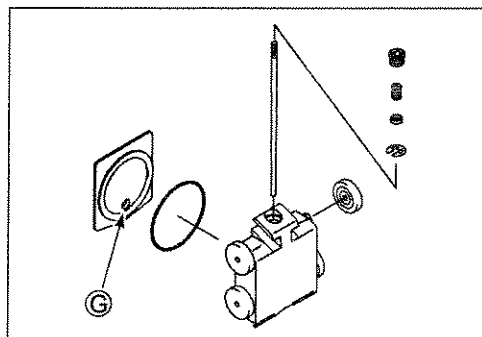


09930-11950: Torx wrench, T25

- Reassemble the throttle valve assembly as shown.

NOTE:

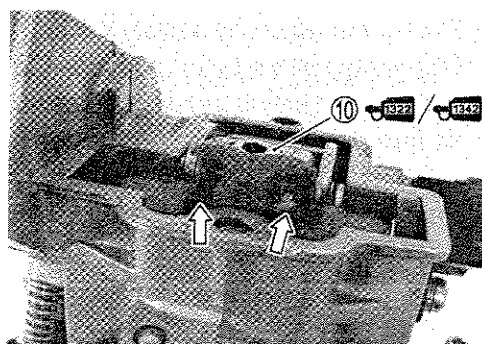
Assemble the valve plate so the hole ③ faces downward.



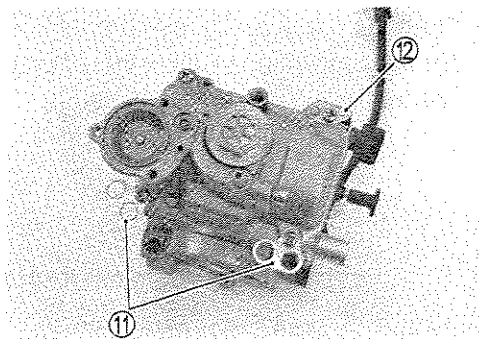
- Set the link rollers of the throttle link into the slits of the throttle valve.
- Insert the throttle valve assembly.
- Apply THREAD LOCK to the screw ⑩.

1342 99000-32050: THREAD LOCK "1342" (USA)

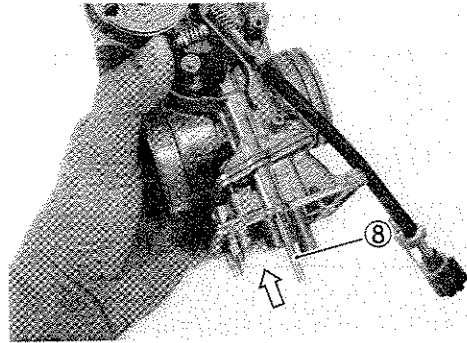
1322 99000-32110: THREAD LOCK SUPER "1322" (Others)



- Fit the float chamber.
- Tighten the screws with the hose clamps ⑪ and cable holder ⑫.



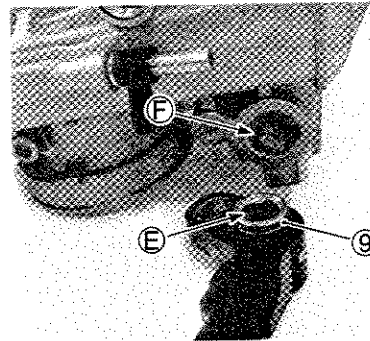
- Install the push rod ⑧ into the push rod holder.



- Apply SUZUKI SUPER GREASE to the O-ring ⑨.

99000-25030: SUZUKI SUPER GREASE "A" (USA)
99000-25010: SUZUKI SUPER GREASE "A" (Others)

- Fit the stopper ⑤ of the throttle position sensor to the projection ⑥ of the throttle pulley shaft.
- Align the marks given at removal and tighten the bolt to the specified torque.

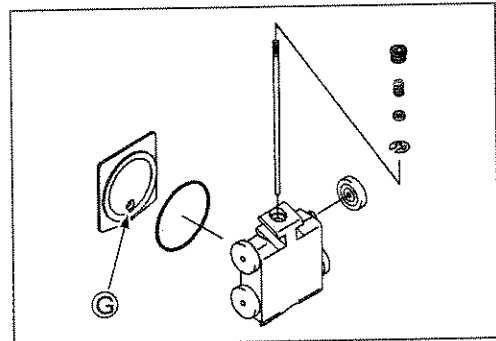


009930-11950: Torx wrench, T25

- Reassemble the throttle valve assembly as shown.

NOTE:

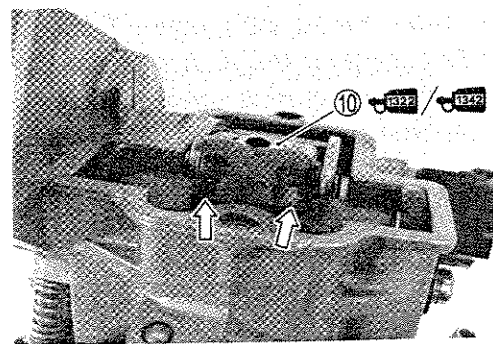
Assemble the valve plate so the hole ③ faces downward.



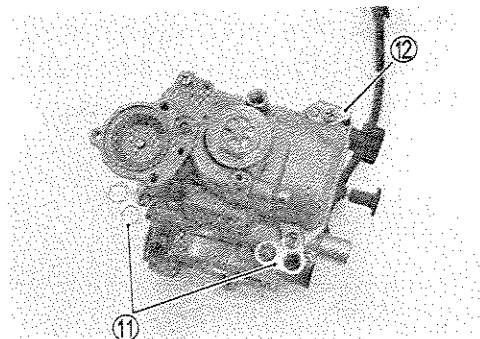
- Set the link rollers of the throttle link into the slits of the throttle valve.
- Insert the throttle valve assembly.
- Apply THREAD LOCK to the screw ⑩.

99000-32050: THREAD LOCK "1342" (USA)

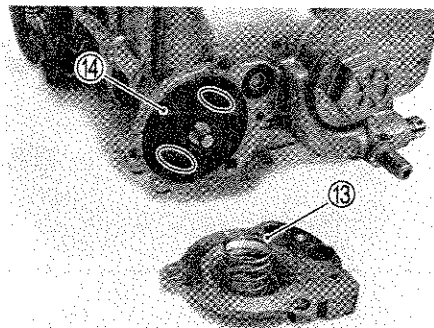
99000-32110: THREAD LOCK SUPER "1322" (Others)



- Fit the float chamber.
- Tighten the screws with the hose clamps ⑪ and cable holder ⑫.



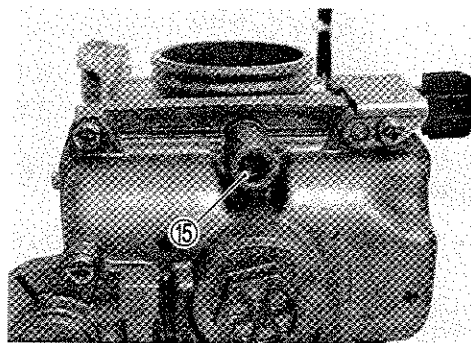
- Fit the spring ⑬.
- Install the diaphragm ⑭ so that the marks face outside.



- Install the pilot screw ⑮.

NOTE:

Turn in the pilot screw ⑮ until it lightly seats, then back it out the counted number of turns. (☞ 12-7)

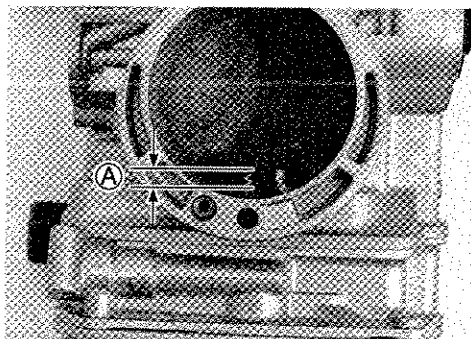


ACCELERATION PUMP TIMING

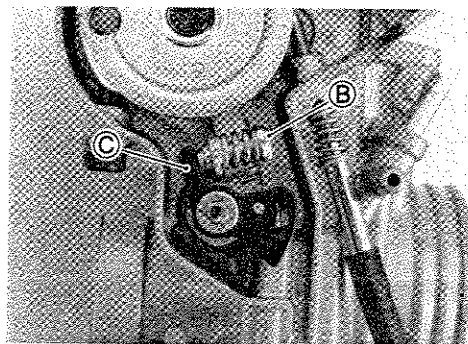
If turn the adjusting screw of the acceleration pump, adjust the acceleration pump timing after assemble the carburetor.

- Select a pin of the same diameter as the throttle valve height ① and insert it under the throttle valve.

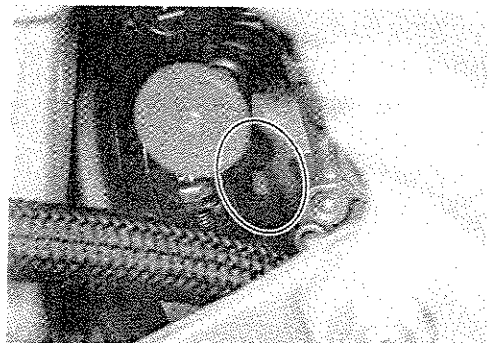
DATA Throttle valve height: 4.4 mm (0.173 in)



- Turn in the adjusting screw ② fully.
- Check play of the push rod holder ③.
- Turn the adjusting screw ② counterclockwise gradually until no free play is available on the push rod holder ③.



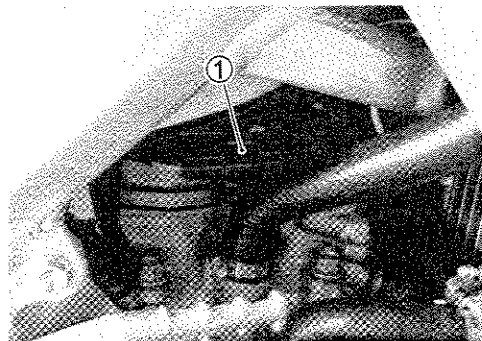
- Rout the cable and hoses properly. (☞ 19-17 to 19)
- Fit the projection on the carburetor body in the depression of the intake pipe.



THROTTLE POSITION SENSOR INSPECTION

THROTTLE POSITION SENSOR INPUT VOLTAGE

- Disconnect the throttle position sensor coupler ①.



- Shift the transmission into neutral.
- Start the engine.
- Measure the throttle position sensor input voltage using the multi circuit tester.

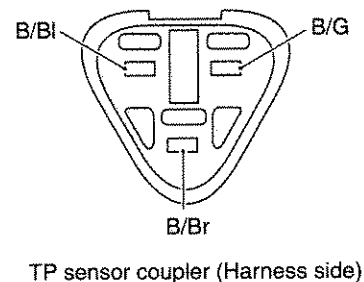
DATA Throttle position sensor input voltage:

B/G (+ probe) – B/Br (– probe) 4.5 – 5.5 V (1 850 r/min)

TOOL 09900-25008: Multi circuit tester set

Tester knob indication: Voltage (V)

- If the voltage is not within the specified value, replace the CDI unit.



THROTTLE POSITION SENSOR COIL RESISTANCE

- Measure the throttle position sensor coil resistance using the multi circuit tester.

DATA Throttle position sensor total of resistance:

BI (+ probe) – B (– probe) 4 – 6 kΩ

DATA Throttle position sensor resistance:

Y (+ probe) – B (– probe)

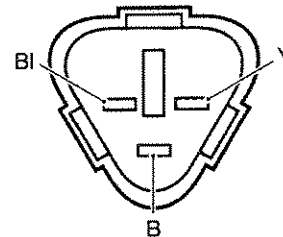
When the throttle fully closed 0.6 – 1.0 kΩ

When the throttle fully opened 3.2 – 5.0 kΩ

TOOL 09900-25008: Multi circuit tester set

Tester knob indication: Resistance (Ω)

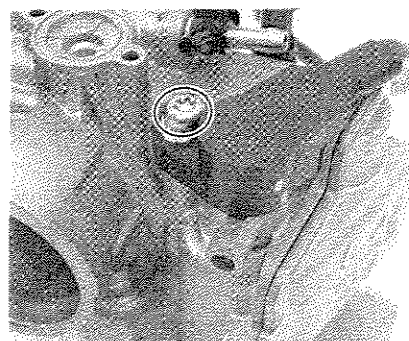
- If the resistance is not within the specified value, replace the throttle position sensor assembly.



REPLACEMENT

- Remove the carburetor. (12-5)
- Remove the throttle position sensor using the special tool.

TOOL 09930-11950: Torx wrench, T25

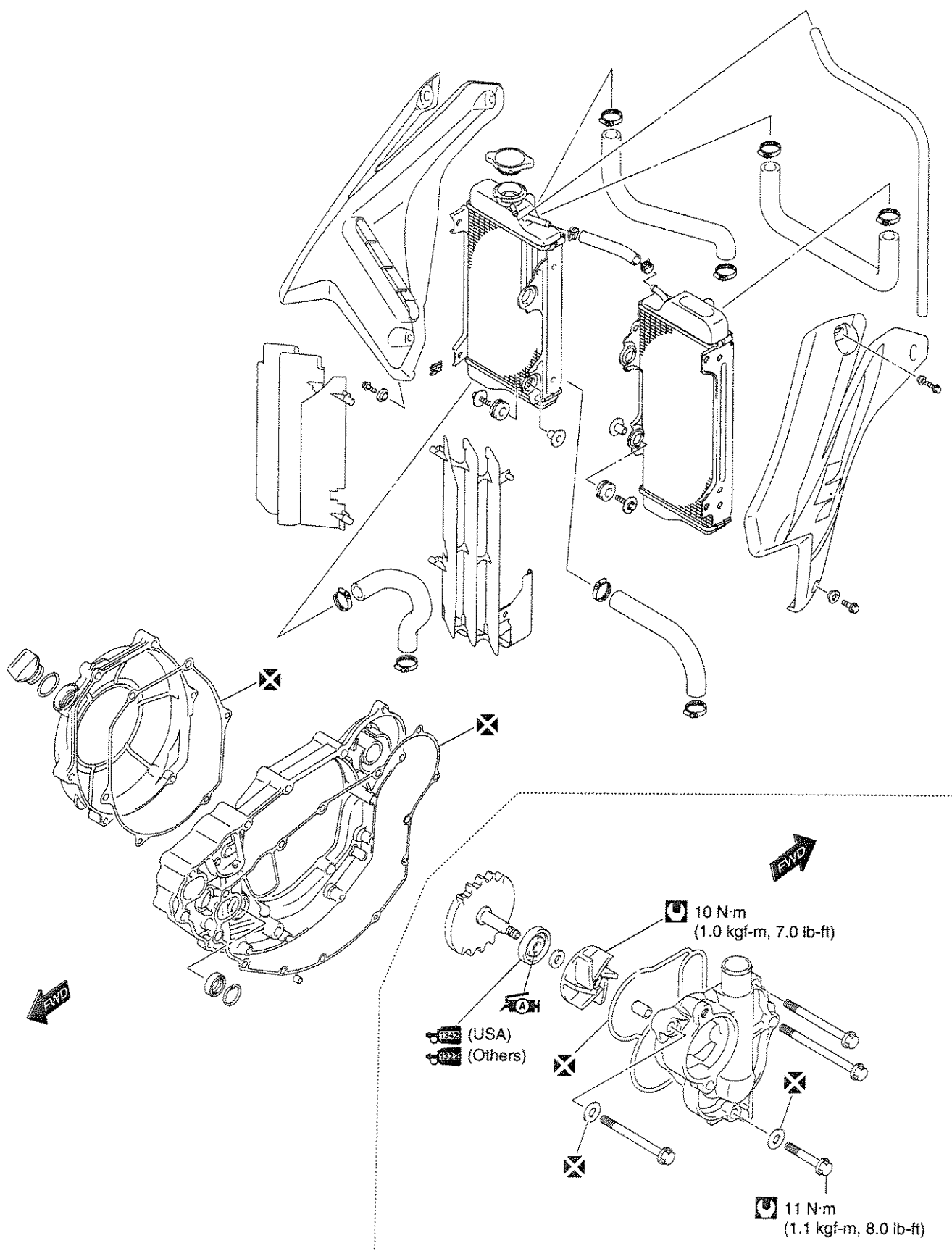


COOLING SYSTEM

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CONSTRUCTION



ENGINE COOLANT REPLACEMENT

⚠ WARNING

- * Engine coolant may be harmful if swallowed or if it comes in contact with the skin or eyes. If engine coolant gets into the eyes or contacts the skin, flush the eyes or wash the skin thoroughly, with plenty of water. If engine coolant is swallowed, induce vomiting and call a physician immediately.
- * Do not open the radiator cap when the engine is hot, as you may be injured by escaping hot liquid or vapor.

- Open the radiator cap.
- Remove the drain plug ① and drain engine coolant.
- Replace the gasket with a new one and tighten the drain plug ①.

 **Engine coolant drain bolt: 11 N·m (1.1 kgf-m, 8.0 lb-ft)**

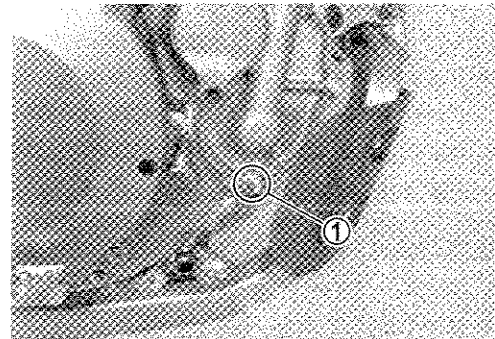
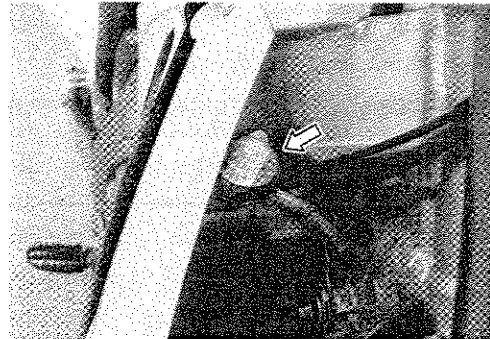
CAUTION

Use a new gasket to prevent engine coolant leakage.

- Pour specified engine coolant up to the bottom of filler hole.
( 2-13)

DATA Engine coolant capacity: 1 000 ml (1.1/0.9 US/Imp qt)

- Tighten the radiator cap firmly.
- Run the engine for a few minutes and recheck the coolant level.



COOLING CIRCUIT

INSPECTION

- Remove the radiator cap.

⚠ WARNING

- * Engine coolant may be harmful if swallowed or if it comes in contact with the skin or eyes. If engine coolant gets into the eyes or contacts the skin, flush the eyes or wash the skin thoroughly, with plenty of water. If engine coolant is swallowed, induce vomiting and call a physician immediately.
- * Do not open the radiator cap when the engine is hot, as you may be injured by escaping hot liquid or vapor.

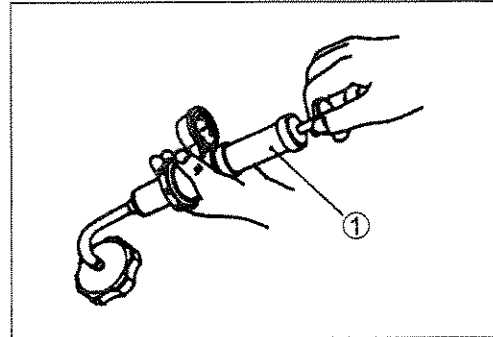
- Connect the tester ① to the filler.
- Give a pressure of about 120 kPa (1.2 kgf/cm², 17.0 psi) and see if the system holds this pressure for 10 seconds.
- If the pressure would fall during this 10-second interval, it means that there is a leaking point in the system. In such a case, inspect the entire system and replace the leaking component or part.

⚠ WARNING

When removing the radiator cap tester, put a rag on the filler to prevent spouting of engine coolant.

CAUTION

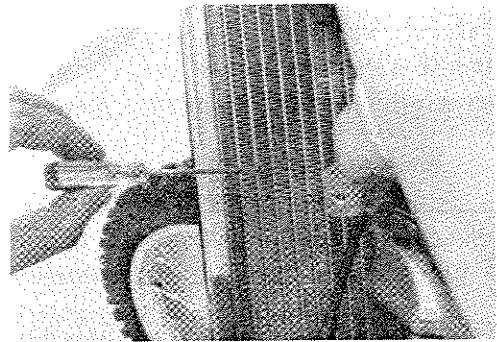
Do not allow the pressure to exceed the radiator cap release pressure, or the radiator can be damaged.



RADIATOR INSPECTION

RADIATOR

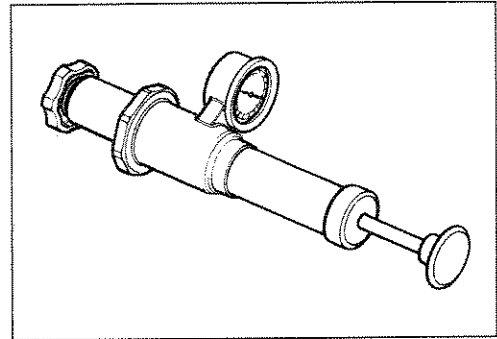
- Visually inspect the radiators and hoses for damage.
- Fins bent down or dented can be repaired by straightening them with the blade of a small screwdriver.



RADIATOR CAP

- Inspect the radiator cap for function with a radiator cap pressure gauge.

DATA Radiator cap valve release pressure:
95 – 125 kPa (0.95 – 1.25 kgf/cm², 14 – 18 psi)

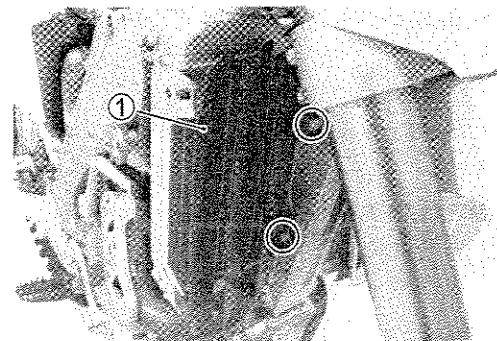
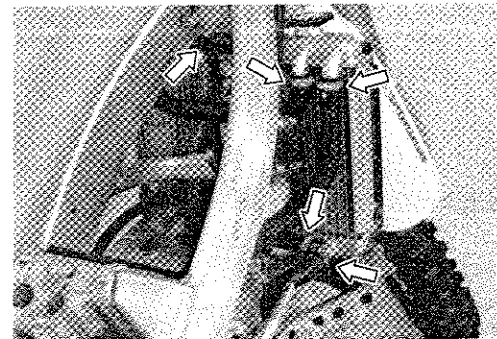


REMOVAL

⚠ WARNING

- * Engine coolant may be harmful if swallowed or if it comes in contact with the skin or eyes. If engine coolant gets into the eyes or contacts the skin, flush the eyes or wash the skin thoroughly, with plenty of water. If engine coolant is swallowed, induce vomiting and call a physician immediately.
- * The engine must be cool before servicing the cooling system.

- Remove the seat and fuel tank. (☞ 5-2)
- Drain engine coolant. (☞ 13-3)
- Remove the hoses.
- Remove the radiator cover ①. (LH & RH)
- Remove the radiators. (LH & RH)



INSTALLATION

Reverse the sequence of removal.

- Rout the radiator hoses correctly. (☞ 19-19)

WATER PUMP

REMOVAL

WATER PUMP COVER

▲ WARNING

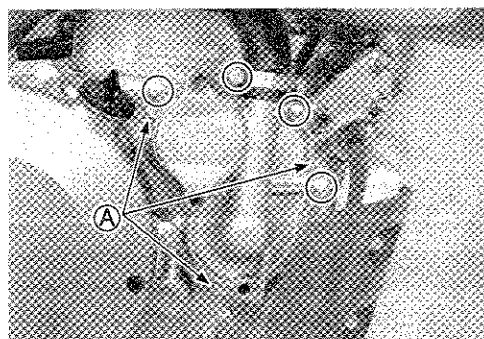
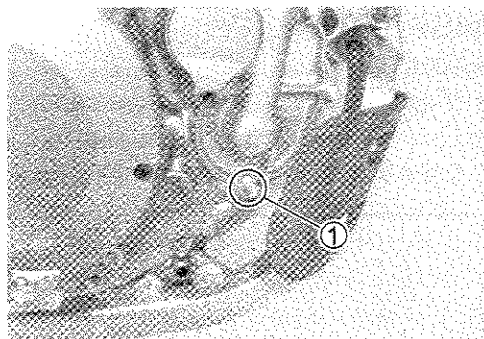
- * Engine coolant may be harmful if swallowed or if it comes in contact with the skin or eyes. If engine coolant gets into the eyes or contacts the skin, flush the eyes or wash the skin thoroughly, with plenty of water. If engine coolant is swallowed, induce vomiting and call a physician immediately.
- * The engine must be cool before servicing the cooling system.

- Drain engine coolant by removing the bolt ①.

- Remove the water pump cover.

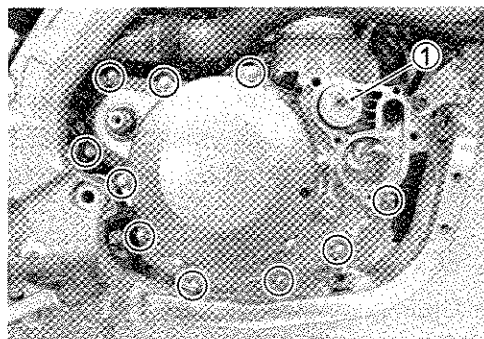
NOTE:

Use the pry points A to remove the cover.



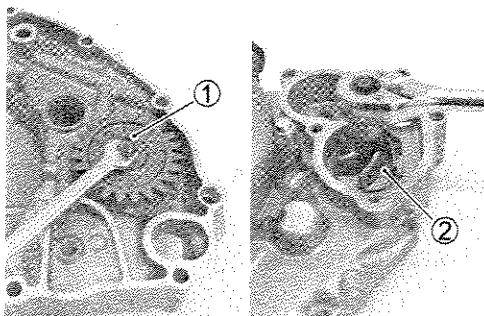
CRANKCASE COVER

- Drain engine oil. (☞ 2-11)
- Drain engine coolant. (☞ 13-3)
- Remove the right engine protector. (☞ 8-3)
- Remove the brake pedal. (☞ 5-5)
- Remove the kick starter lever. (☞ 8-3)
- Remove the water pump cover. (☞ Above)
- Remove the oil filter ①.
- Remove the crankcase cover.



IMPELLER AND GEAR SHAFT

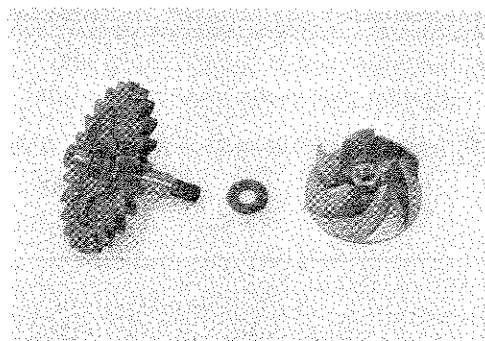
- With the gear shaft ① held immovable, remove the impeller ②.



INSPECTION

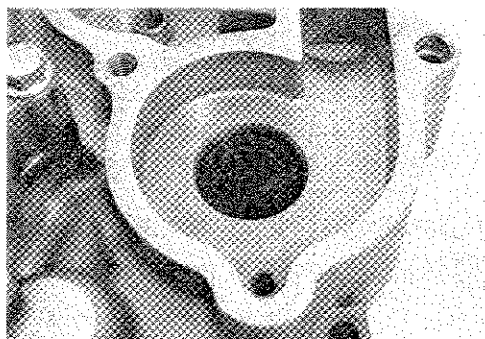
IMPELLER AND GEAR SHAFT

- Inspect the impeller and gear shaft for damage.



OIL SEAL

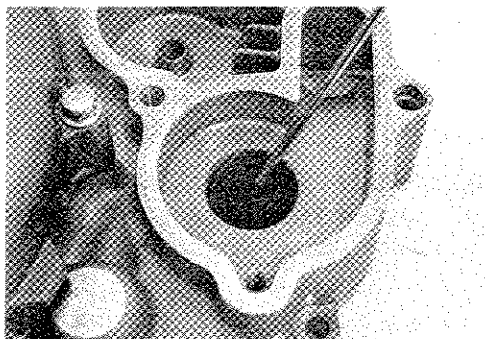
Visually inspect the oil seal for damage. If any damages are found, replace the oil seal with a new one.



- Remove the oil seal.

CAUTION

Replace the removed oil seal with a new one.
--



INSTALLATION

Installation is in the reverse order of removal. Pay attention to the following points:

OIL SEAL

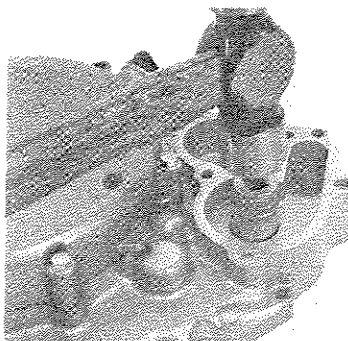
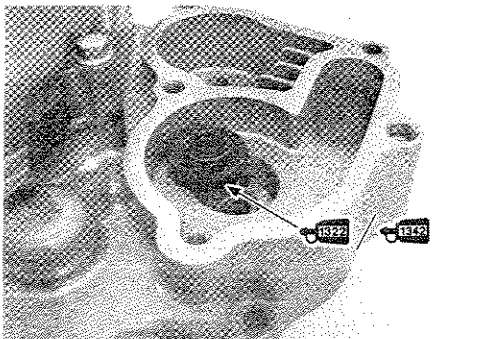
- Apply THREAD LOCK to the outer surface of the oil seal.

 99000-32050: THREAD LOCK "1342" (USA)

 99000-32110: THREAD LOCK SUPER "1322" (Others)

- Press the oil seal with the suitable size socket wrench.
- Apply SUZUKI SUPER GREASE to the oil seal lip.

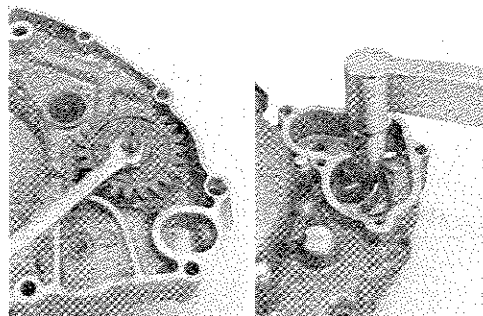
 99000-25030: SUZUKI SUPER GREASE "A" (USA)
99000-25010: SUZUKI SUPER GREASE "A" (Others)



IMPELLER AND GEAR SHAFT

- Hold the water pump shaft with a wrench and tighten the impeller bolt to the specified torque.

 **Impeller: 10 N·m (1.0 kgf-m, 7.0 lb-ft)**

**CRANKCASE COVER**

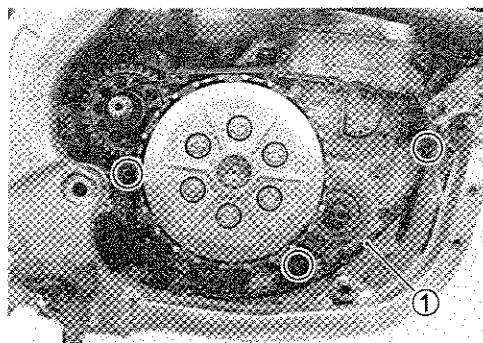
- Install the dowel pins and a new gasket ①.

CAUTION

Use a new gasket to prevent engine oil leakage.

- Tighten the crankcase cover bolts to the specified torque.

 **Crankcase cover bolt: 11 N·m (1.1 kgf-m, 8.0 lb-ft)**

**WATER PUMP COVER**

- Install the dowel pins and oil filter ①.
- Install the spring ② and a new O-ring ③.
- Apply SUZUKI SUPER GREASE to the O-ring ③.

 **99000-25030: SUZUKI SUPER GREASE "A" (USA)**
99000-25010: SUZUKI SUPER GREASE "A" (Others)

CAUTION

Use a new O-ring to prevent engine oil/coolant leakage.

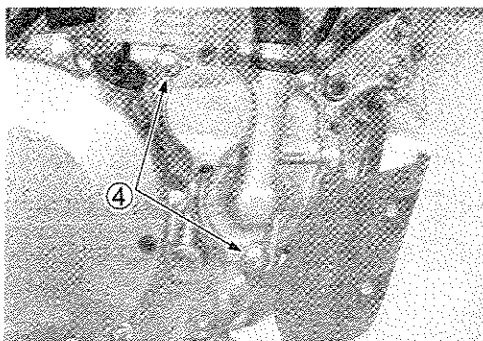
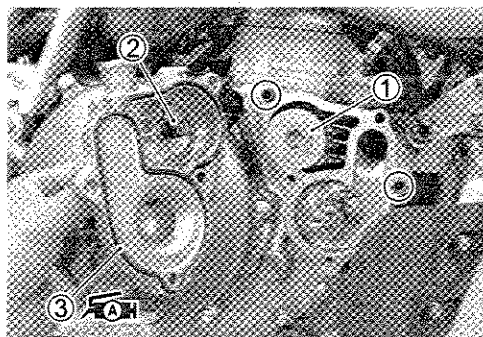
- Replace the gaskets ④ with new ones.

CAUTION

Use new gaskets to prevent engine oil/coolant leakage.

- Tighten the water pump cover bolts to the specified torque.

 **Water pump cover bolt: 11 N·m (1.1 kgf-m, 8.0 lb-ft)**

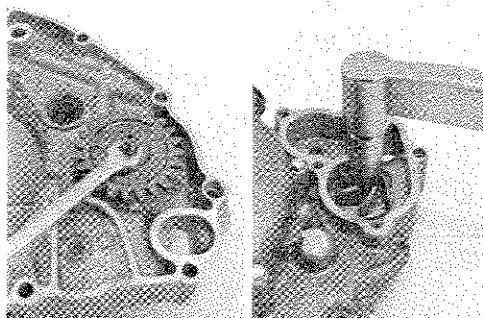
**INSPECTION AFTER INSTALLATION**

- Brake pedal (🔧 2-30)
- Engine oil level (🔧 2-11)
- Engine coolant level (🔧 2-13)

IMPELLER AND GEAR SHAFT

- Hold the water pump shaft with a wrench and tighten the impeller bolt to the specified torque.

 **Impeller: 10 N·m (1.0 kgf-m, 7.0 lb-ft)**

**CRANKCASE COVER**

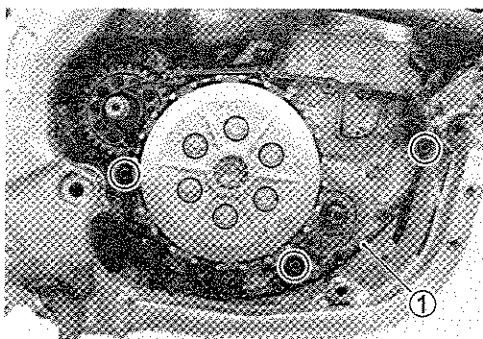
- Install the dowel pins and a new gasket ①.

CAUTION

Use a new gasket to prevent engine oil leakage.

- Tighten the crankcase cover bolts to the specified torque.

 **Crankcase cover bolt: 11 N·m (1.1 kgf-m, 8.0 lb-ft)**

**WATER PUMP COVER**

- Install the dowel pins and oil filter ①.
- Install the spring ② and a new O-ring ③.
- Apply SUZUKI SUPER GREASE to the O-ring ③.

 **99000-25030: SUZUKI SUPER GREASE "A" (USA)**
99000-25010: SUZUKI SUPER GREASE "A" (Others)

CAUTION

Use a new O-ring to prevent engine oil/coolant leakage.

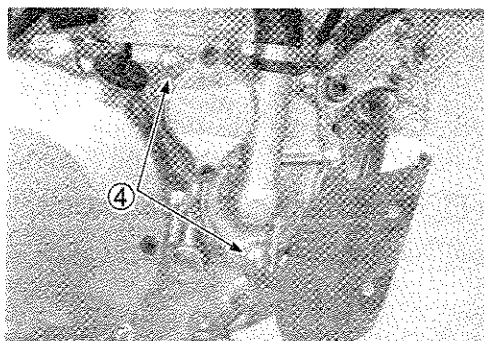
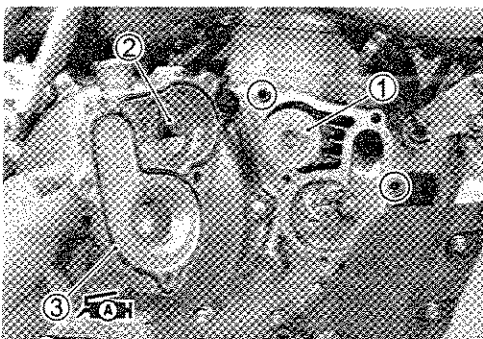
- Replace the gaskets ④ with new ones.

CAUTION

Use new gaskets to prevent engine oil/coolant leakage.

- Tighten the water pump cover bolts to the specified torque.

 **Water pump cover bolt: 11 N·m (1.1 kgf-m, 8.0 lb-ft)**

**INSPECTION AFTER INSTALLATION**

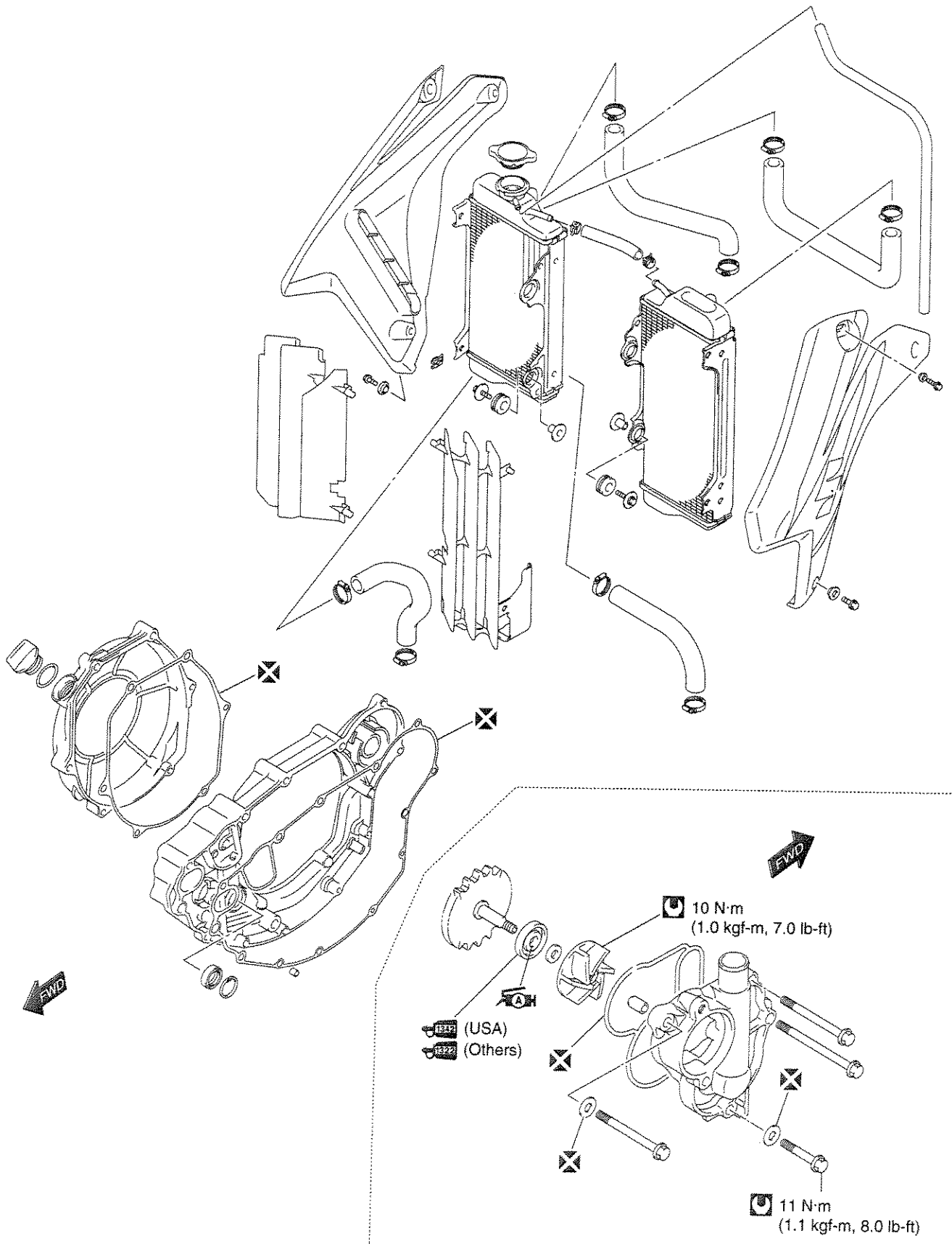
- Brake pedal (🔧 2-30)
- Engine oil level (🔧 2-11)
- Engine coolant level (🔧 2-13)

COOLING SYSTEM

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CONSTRUCTION	13- 2
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INSTALLATION	13- 5
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REMOVAL	13- 6
INSPECTION	13- 7
INSTALLATION	13- 7

CONSTRUCTION



ENGINE COOLANT REPLACEMENT

⚠ WARNING

- * Engine coolant may be harmful if swallowed or if it comes in contact with the skin or eyes. If engine coolant gets into the eyes or contacts the skin, flush the eyes or wash the skin thoroughly, with plenty of water. If engine coolant is swallowed, induce vomiting and call a physician immediately.
- * Do not open the radiator cap when the engine is hot, as you may be injured by escaping hot liquid or vapor.

- Open the radiator cap.
- Remove the drain plug ① and drain engine coolant.
- Replace the gasket with a new one and tighten the drain plug ①.

 **Engine coolant drain bolt: 11 N·m (1.1 kgf-m, 8.0 lb-ft)**

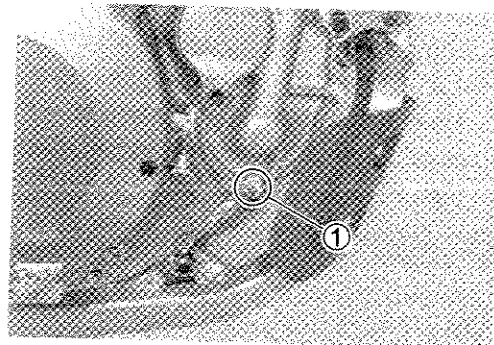
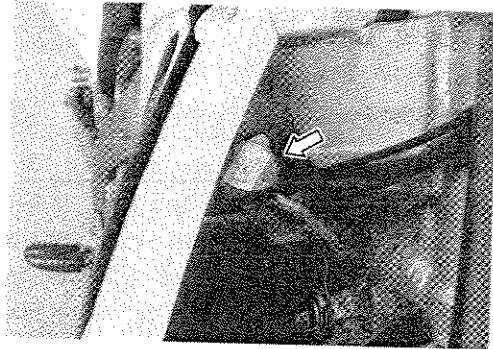
CAUTION

Use a new gasket to prevent engine coolant leakage.

- Pour specified engine coolant up to the bottom of filler hole.
( 2-13)

DATA Engine coolant capacity: 1 000 ml (1.1/0.9 US/Imp qt)

- Tighten the radiator cap firmly.
- Run the engine for a few minutes and recheck the coolant level.

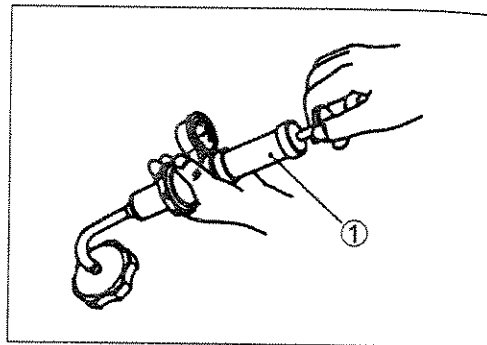


COOLING CIRCUIT INSPECTION

- Remove the radiator cap.

▲ WARNING

- * Engine coolant may be harmful if swallowed or if it comes in contact with the skin or eyes. If engine coolant gets into the eyes or contacts the skin, flush the eyes or wash the skin thoroughly, with plenty of water. If engine coolant is swallowed, induce vomiting and call a physician immediately.
- * Do not open the radiator cap when the engine is hot, as you may be injured by escaping hot liquid or vapor.



- Connect the tester ① to the filler.
- Give a pressure of about 120 kPa (1.2 kgf/cm², 17.0 psi) and see if the system holds this pressure for 10 seconds.
- If the pressure would 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.

▲ WARNING

When removing the radiator cap tester, put a rag on the filler to prevent spouting of engine coolant.

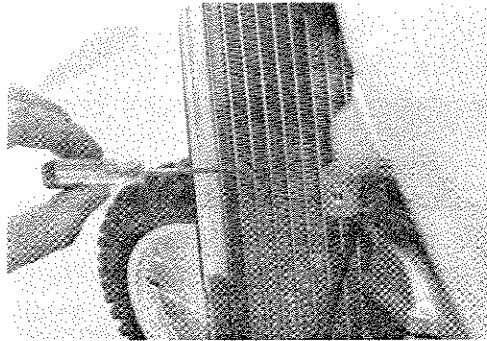
CAUTION

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

RADIATOR INSPECTION

RADIATOR

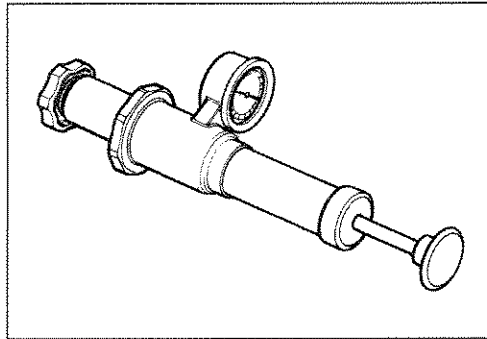
- Visually inspect the radiators and hoses for damage.
- Fins bent down or dented can be repaired by straightening them with the blade of a small screwdriver.



RADIATOR CAP

- Inspect the radiator cap for function with a radiator cap pressure gauge.

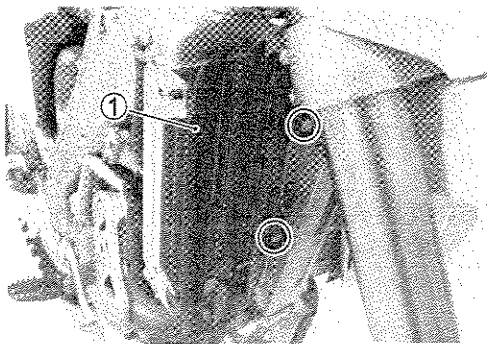
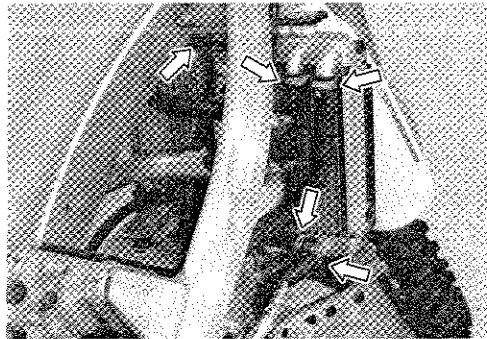
DATA Radiator cap valve release pressure:
95 – 125 kPa (0.95 – 1.25 kgf/cm², 14 – 18 psi)



REMOVAL

⚠ WARNING

- * Engine coolant may be harmful if swallowed or if it comes in contact with the skin or eyes. If engine coolant gets into the eyes or contacts the skin, flush the eyes or wash the skin thoroughly, with plenty of water. If engine coolant is swallowed, induce vomiting and call a physician immediately.
- * The engine must be cool before servicing the cooling system.



- Remove the seat and fuel tank. (☞ 5-2)
- Drain engine coolant. (☞ 13-3)
- Remove the hoses.
- Remove the radiator cover ①. (LH & RH)
- Remove the radiators. (LH & RH)

INSTALLATION

Reverse the sequence of removal.

- Rout the radiator hoses correctly. (☞ 19-19)

WATER PUMP

REMOVAL

WATER PUMP COVER

▲ WARNING

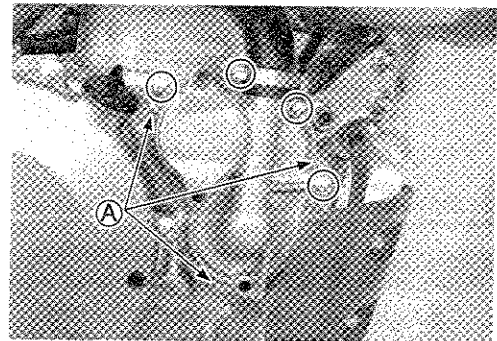
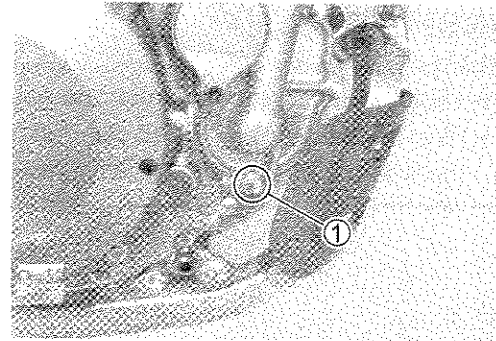
- * Engine coolant may be harmful if swallowed or if it comes in contact with the skin or eyes. If engine coolant gets into the eyes or contacts the skin, flush the eyes or wash the skin thoroughly, with plenty of water. If engine coolant is swallowed, induce vomiting and call a physician immediately.
- * The engine must be cool before servicing the cooling system.

- Drain engine coolant by removing the bolt ①.

- Remove the water pump cover.

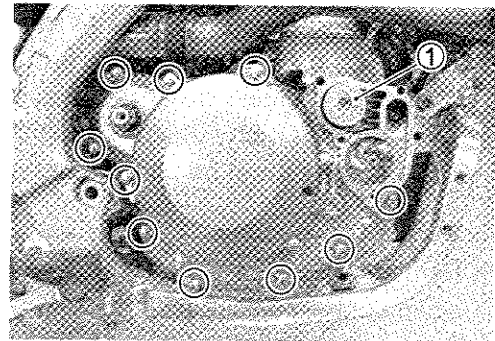
NOTE:

Use the pry points A to remove the cover.



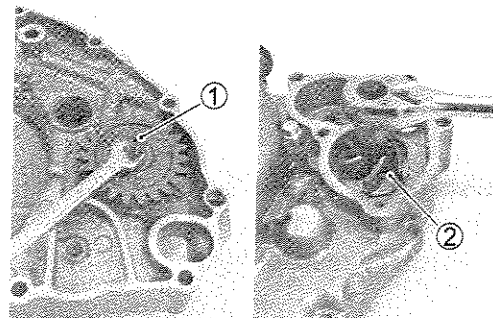
CRANKCASE COVER

- Drain engine oil. (☞ 2-11)
- Drain engine coolant. (☞ 13-3)
- Remove the right engine protector. (☞ 8-3)
- Remove the brake pedal. (☞ 5-5)
- Remove the kick starter lever. (☞ 8-3)
- Remove the water pump cover. (☞ Above)
- Remove the oil filter ①.
- Remove the crankcase cover.



IMPELLER AND GEAR SHAFT

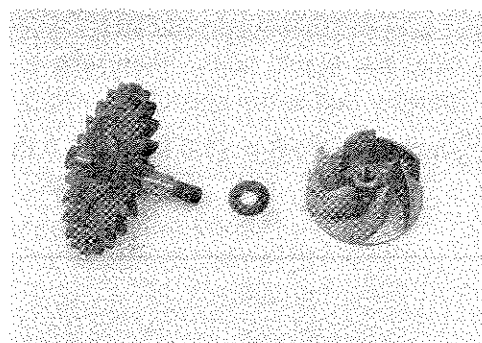
- With the gear shaft ① held immovable, remove the impeller ②.



INSPECTION

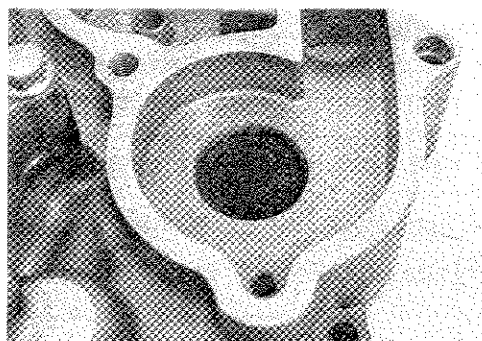
IMPELLER AND GEAR SHAFT

- Inspect the impeller and gear shaft for damage.



OIL SEAL

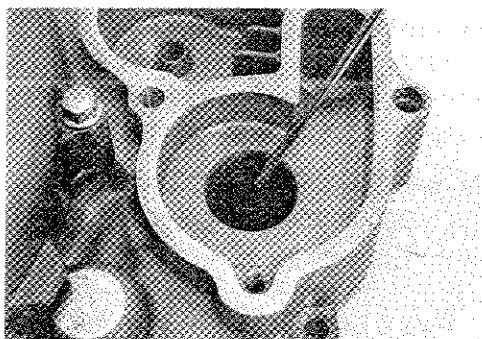
Visually inspect the oil seal for damage. If any damages are found, replace the oil seal with a new one.



- Remove the oil seal.

CAUTION

Replace the removed oil seal with a new one.



INSTALLATION

Installation is in the reverse order of removal. Pay attention to the following points:

OIL SEAL

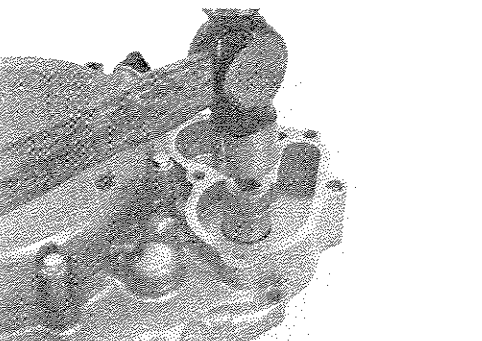
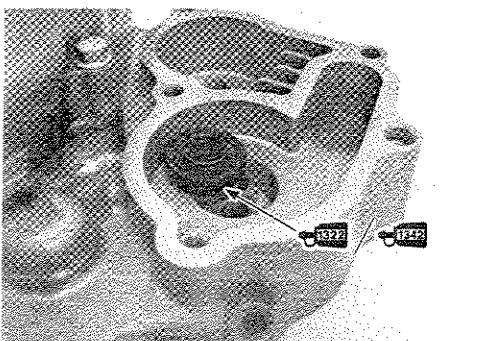
- Apply THREAD LOCK to the outer surface of the oil seal.

 99000-32050: THREAD LOCK "1342" (USA)

 99000-32110: THREAD LOCK SUPER "1322" (Others)

- Press the oil seal with the suitable size socket wrench.
- Apply SUZUKI SUPER GREASE to the oil seal lip.

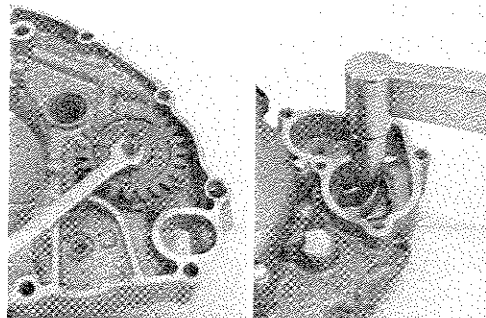
 99000-25030: SUZUKI SUPER GREASE "A" (USA)
99000-25010: SUZUKI SUPER GREASE "A" (Others)



IMPELLER AND GEAR SHAFT

- Hold the water pump shaft with a wrench and tighten the impeller bolt to the specified torque.

 **Impeller:** 10 N·m (1.0 kgf-m, 7.0 lb-ft)

**CRANKCASE COVER**

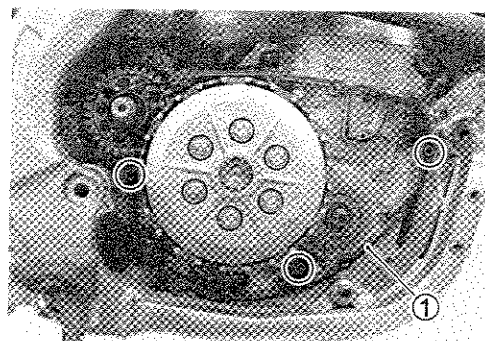
- Install the dowel pins and a new gasket ①.

CAUTION

Use a new gasket to prevent engine oil leakage.

- Tighten the crankcase cover bolts to the specified torque.

 **Crankcase cover bolt:** 11 N·m (1.1 kgf-m, 8.0 lb-ft)

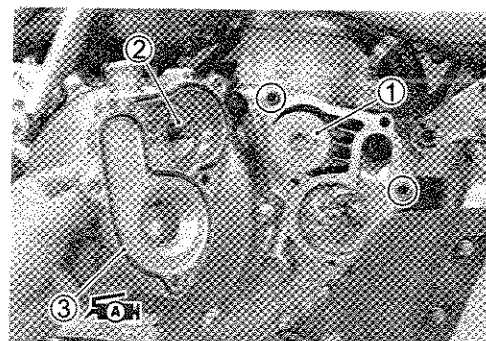
**WATER PUMP COVER**

- Install the dowel pins and oil filter ①.
- Install the spring ② and a new O-ring ③.
- Apply SUZUKI SUPER GREASE to the O-ring ③.

 **99000-25030: SUZUKI SUPER GREASE "A" (USA)**
99000-25010: SUZUKI SUPER GREASE "A" (Others)

CAUTION

Use a new O-ring to prevent engine oil/coolant leakage.



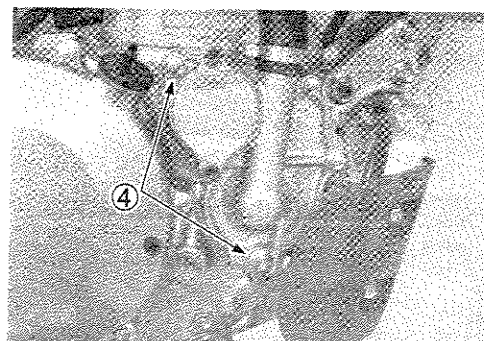
- Replace the gaskets ④ with new ones.

CAUTION

Use new gaskets to prevent engine oil/coolant leakage.

- Tighten the water pump cover bolts to the specified torque.

 **Water pump cover bolt:** 11 N·m (1.1 kgf-m, 8.0 lb-ft)

**INSPECTION AFTER INSTALLATION**

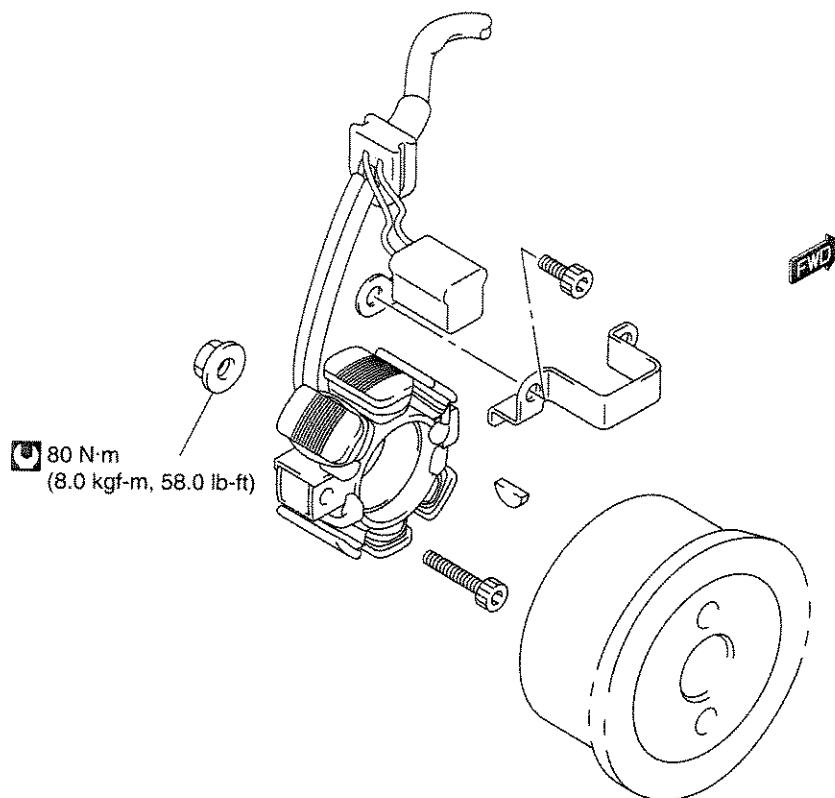
- Brake pedal ( 2-30)
- Engine oil level ( 2-11)
- Engine coolant level ( 2-13)

ELECTRICAL SYSTEM

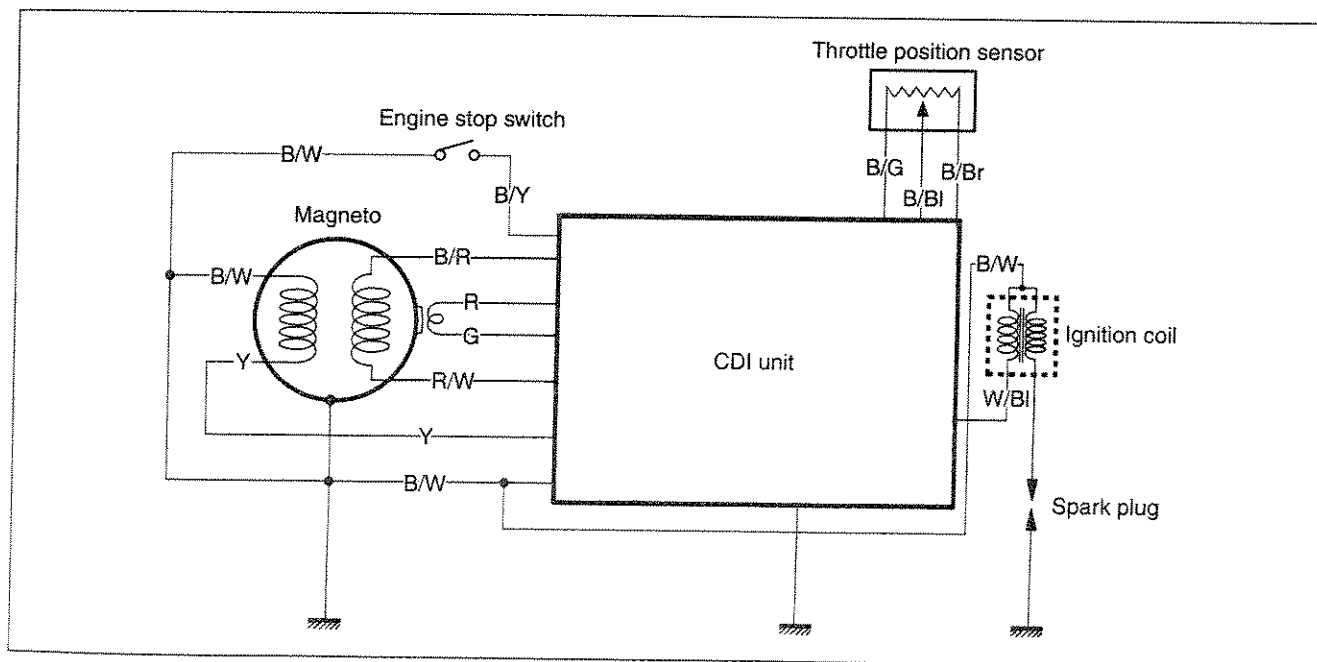
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IGNITION SYSTEM PEAK VOLTAGE INSPECTION	14- 3
IGNITION COIL INSPECTION	14- 4
CDI UNIT INSPECTION	14- 4
STATOR COIL INSPECTION	14- 6
MAGNETO ROTOR	14- 6
STATOR	14- 8

CONSTRUCTION ELECTRICAL SYSTEM



ELECTRICAL CIRCUIT



Wire color:

G: Green
R: Red
Y: Yellow

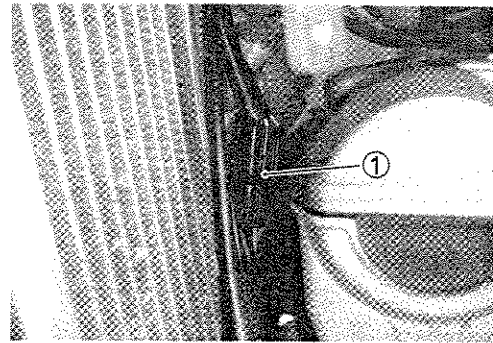
B/BI: Black with Blue tracer
B/Br: Black with Brown tracer
B/G: Black with Green tracer
B/R: Black with Red tracer

B/W: Black with White tracer
B/Y: Black with Yellow tracer
R/W: Red with White tracer
W/BI: White with Blue tracer

IGNITION SYSTEM

IGNITION SYSTEM PEAK VOLTAGE INSPECTION

- Remove the seat and fuel tank. (☞ 5-2)
- Remove the spark plug.
- Disconnect the magneto lead wire coupler ①.



Measure the ignition system peak voltage in the following procedure:

- Connect the multi circuit tester with peak volt adaptor as follows. (See table below.)
- Measure the highest peak voltage by depressing the kick starter lever several times forcefully.

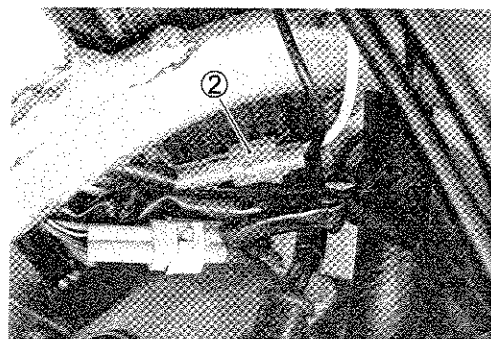
DATA Stator coil peak voltage

Exciter	⊕ Black/Red – ⊖ Red/White	25 V and more
Pick-up	⊕ Red – ⊖ Green	2 V and more
Phase signal	⊕ Yellow – ⊖ Black/White	8 V and more

TOOL 09900-25008: Multi circuit tester set

V Tester knob indication: Voltage (---)

- Connect the magneto lead wire coupler and disconnect the ignition coil lead wire coupler ②.
- Connect the multi circuit tester with peak volt adaptor between Black/White lead wire and White/Blue lead wire.
- Measure the highest peak voltage by depressing the kick starter lever several times forcefully.

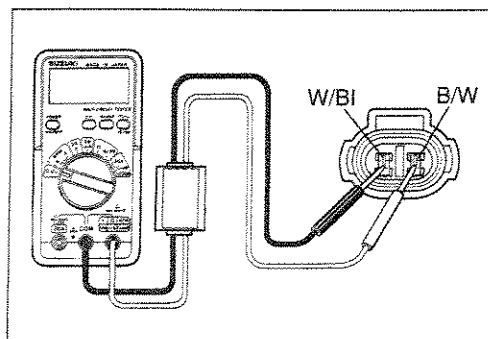
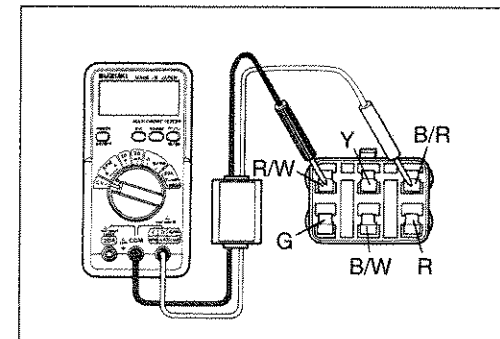


DATA Ignition coil peak voltage

⊕ Black/White – ⊖ White/Blue	200 V and more
------------------------------	----------------

NOTE:

Be sure the Red probe pin is connected to the Black/White lead wire and Black probe pin to the White/Blue lead wire.



IGNITION COIL INSPECTION

- Remove the seat and fuel tank. (→ 5-2)
- Disconnect the ignition coil lead wire coupler ① and spark plug cap.

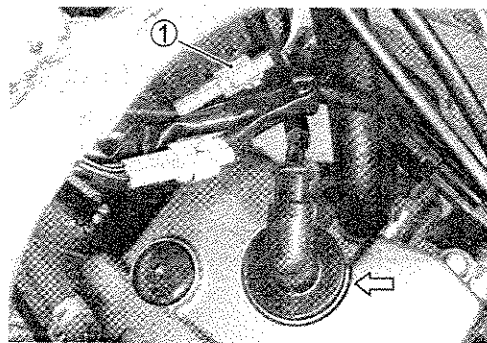
Measure the ignition coil electrical resistance.

DATA Ignition coil resistance

Primary	White/Blue – Black/White	0.17 – 0.70 Ω
Secondary	Plug cap – Black/White	9 – 14 k Ω

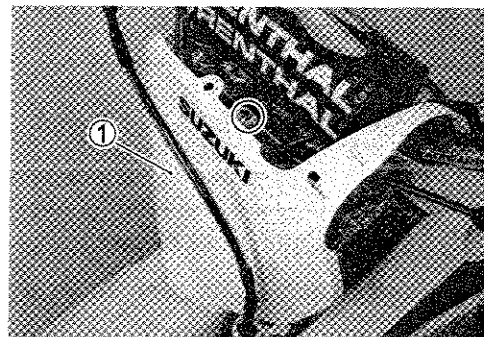
 09900-25008: Multi circuit tester set

 Tester knob indication: Resistance (Ω)



CDI UNIT INSPECTION

- Remove the front number plate ①.



- Remove the CDI unit ② from the frame.

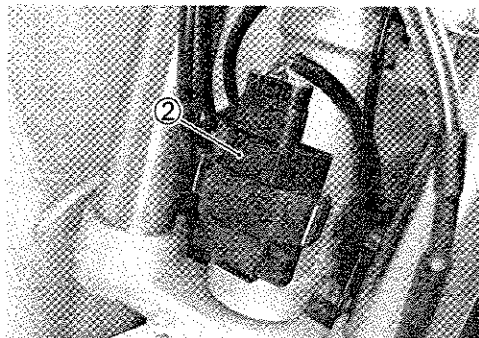
Measure voltage between the lead wires with the multi circuit tester.

 09900-25008: Multi circuit tester set

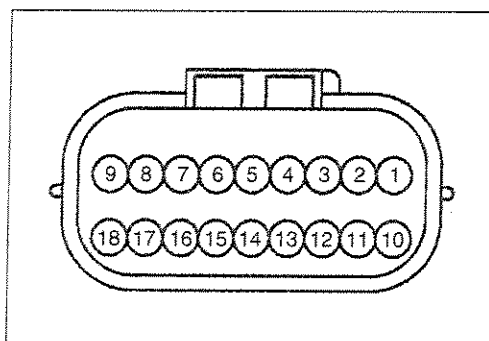
 Tester knob indication: Diode ($\rightarrow \leftarrow$)

NOTE:

The measurement may vary slightly depending on the tester used. The values below are provided for reference only.



CDI unit coupler terminal number



Unit: V

①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱
①	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
②	0.582 – 1.182	—	—	1.138 – 1.738	1.138 – 1.738	0.636 – 1.236	0.216 – 1.816	1.011 – 1.611	0.393 – 0.993	0.0 – 0.3	0.198 – 0.798	0.627 – 1.227	0.0 – 0.3	0.363 – 0.963	0.505 – 1.105	—	0.635 – 1.235
③	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
④	1.102 – 1.702	0.836 – 1.436	—	1.154 – 1.754	1.154 – 1.754	1.071 – 1.671	0.914 – 1.514	1.147 – 1.747	0.956 – 1.556	0.834 – 1.434	0.802 – 1.402	1.039 – 1.639	0.834 – 1.434	0.862 – 1.462	1.010 – 1.610	—	1.071 – 1.671
⑤	0.909 – 1.509	0.132 – 0.732	—	—	0.0 – 0.3	0.768 – 1.368	0.489 – 1.089	1.114 – 1.714	0.623 – 1.223	0.131 – 0.731	0.453 – 1.053	0.836 – 1.436	0.131 – 0.731	0.595 – 1.195	0.735 – 1.335	—	0.767 – 1.367
⑥	0.907 – 1.507	0.132 – 0.732	—	0.0 – 0.3	—	0.768 – 1.368	0.489 – 1.089	1.114 – 1.714	0.623 – 1.223	0.132 – 0.732	0.488 – 1.088	0.836 – 1.436	0.132 – 0.732	0.597 – 1.197	0.758 – 1.358	—	0.768 – 1.368
⑦	0.97 – 1.57	0.251 – 0.851	—	1.153 – 1.753	1.153 – 1.753	—	0.55 – 1.15	0.126 – 1.726	0.621 – 1.221	0.13 – 0.73	0.463 – 1.063	0.833 – 1.433	0.251 – 0.851	0.661 – 1.261	0.825 – 1.425	—	0.906 – 1.506
⑧	0.77 – 1.37	0.251 – 0.851	—	1.136 – 1.736	1.136 – 1.736	0.759 – 1.359	—	0.975 – 1.575	0.573 – 1.173	0.215 – 0.815	0.463 – 1.063	0.748 – 1.348	0.748 – 1.348	0.215 – 0.815	0.552 – 1.152	—	0.676 – 1.276
⑨	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
⑩	0.854 – 1.454	0.426 – 1.026	—	1.137 – 1.737	1.137 – 1.737	0.824 – 1.424	0.589 – 1.189	1.051 – 1.651	—	0.426 – 1.026	0.579 – 1.179	0.809 – 1.409	0.426 – 1.026	0.643 – 1.243	0.754 – 1.354	—	0.823 – 1.423
⑪	0.582 – 1.182	0.0 – 0.3	—	1.135 – 1.735	1.135 – 1.735	0.635 – 1.235	0.215 – 1.815	1.011 – 1.611	0.392 – 0.992	—	0.197 – 0.797	0.626 – 1.226	0.0 – 0.3	0.362 – 0.962	0.505 – 1.105	—	0.634 – 1.234
⑫	0.768 – 1.368	0.126 – 0.726	—	1.136 – 1.736	1.136 – 1.736	0.757 – 1.357	0.433 – 1.033	1.035 – 1.635	0.567 – 1.167	0.126 – 0.726	—	0.441 – 1.041	0.126 – 0.726	0.077 – 0.677	0.215 – 0.815	—	0.756 – 1.356
⑬	0.982 – 1.582	0.424 – 1.024	—	1.146 – 1.746	1.147 – 1.747	0.916 – 1.516	0.635 – 1.235	1.121 – 1.721	0.392 – 0.992	0.424 – 1.024	0.635 – 1.235	—	0.424 – 1.024	0.706 – 1.306	0.848 – 1.448	—	0.915 – 1.515
⑭	0.583 – 1.183	0.0 – 0.3	—	1.135 – 1.735	1.135 – 1.735	0.635 – 1.235	0.215 – 1.815	1.013 – 1.613	0.392 – 0.992	0.0 – 0.3	0.196 – 0.796	0.627 – 1.227	—	0.362 – 0.962	0.505 – 1.105	—	0.634 – 1.234
⑮	0.825 – 1.425	0.16 – 0.76	—	1.136 – 1.736	1.136 – 1.736	0.797 – 1.397	0.489 – 1.089	1.047 – 1.647	0.609 – 1.209	0.161 – 0.761	0.077 – 0.677	0.567 – 1.167	0.161 – 0.761	—	0.417 – 1.017	—	0.8 – 1.4
⑯	0.925 – 1.525	0.187 – 0.787	—	1.141 – 1.741	1.141 – 1.741	0.863 – 1.463	0.520 – 1.120	1.096 – 1.696	0.647 – 1.247	0.186 – 0.786	0.445 – 1.045	0.806 – 1.406	0.186 – 0.786	0.562 – 1.162	—	—	0.864 – 1.464
⑰	1.032 – 1.632	0.439 – 1.039	—	1.152 – 1.752	1.152 – 1.752	0.953 – 1.553	0.661 – 1.261	1.144 – 1.744	0.757 – 1.357	0.439 – 1.039	0.603 – 1.203	0.915 – 1.515	0.439 – 1.039	0.69 – 1.29	0.855 – 1.455	—	0.924 – 1.524
⑱	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

NOTE:

— is open circuit voltage (1.523 V).

STATOR COIL INSPECTION

- Remove the seat and fuel tank. (☞ 5-2)
- Disconnect the magneto lead wire coupler ①.

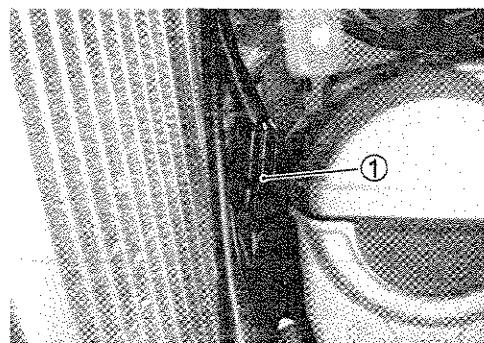
Measure the stator coils electrical resistance.

DATA Stator coil resistance

Exciter	Black/Red – Red/White	24 – 40 Ω
Pick-up	Red – Green	72 – 127 Ω
Phase signal	Yellow – Black/White	1.6 – 3.2 Ω

 09900-25008: Multi circuit tester set

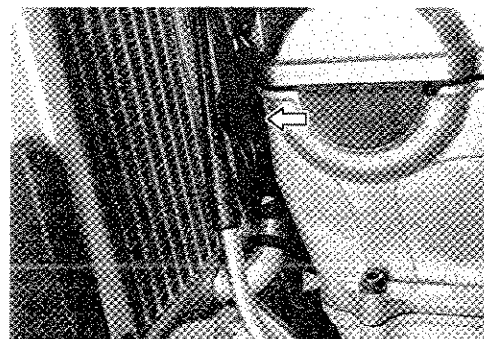
 Tester knob indication: Resistance (Ω)



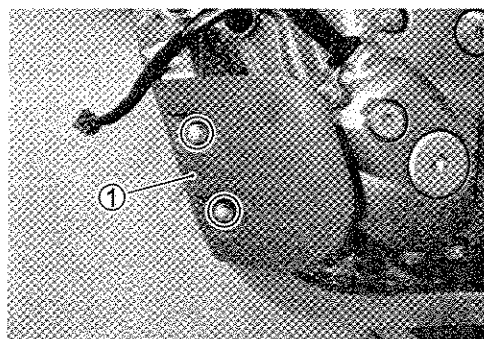
MAGNETO ROTOR

REMOVAL

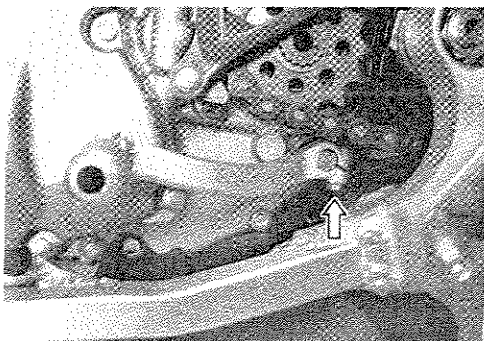
- Drain the engine oil. (☞ 2-11)
- Remove the seat and fuel tank. (☞ 5-2)
- Disconnect the magneto lead wire coupler and clamp.



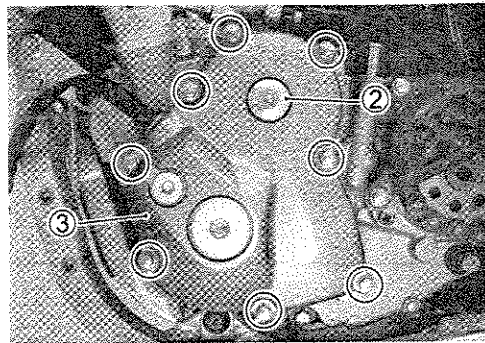
- Remove the engine protector ①.



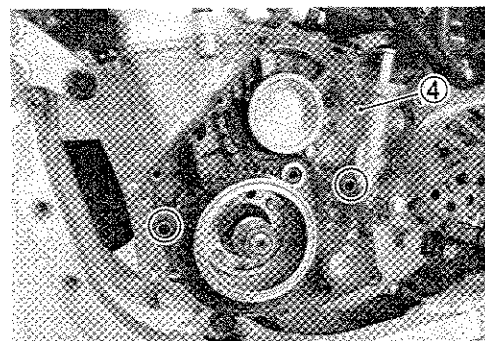
- Remove the gearshift lever. (☞ 9-3)



- Remove the magneto cover mounting bolt ② and magneto cover ③.

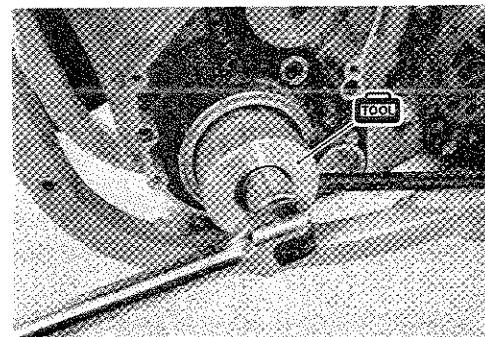


- Remove the gasket ④ and dowel pins.



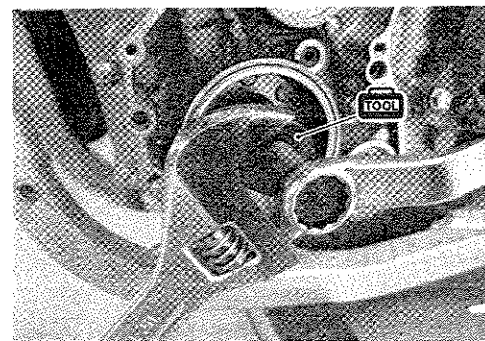
- Remove the magneto rotor nut with a special tool.

 09930-44560: Rotor holder



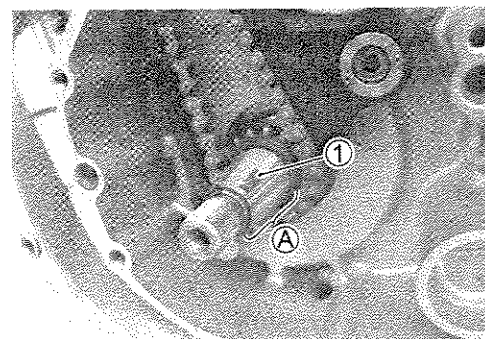
- Remove the magneto rotor with a special tool.

 09930-35020: Rotor remover



REASSEMBLY

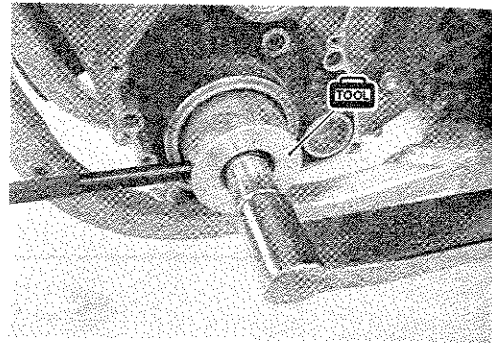
- Remove any grease from the tapered portion ① of the generator rotor and crankshaft.
- Fit the key ① into the crankshaft.



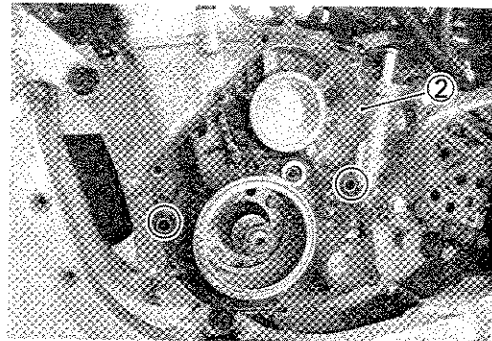
- Install the magneto rotor.
- Tighten the magneto rotor nut to the specified torque with a special tool.

 **Magneto rotor nut: 80 N·m (8.0 kgf-m, 58.0 lb-ft)**

 **09930-44560: Rotor holder**



- Install the dowel pins.
- Replace the gasket ② with a new one.



- Install the magneto cover ③.

 **Magneto cover mounting bolt:**

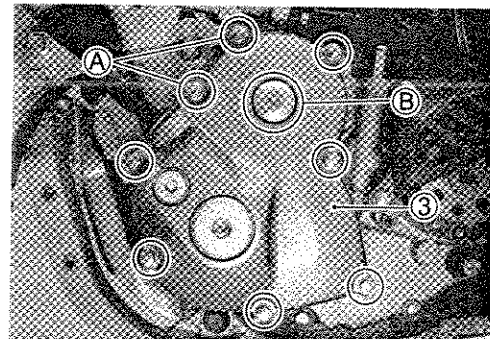
14 N·m (1.4 kgf-m, 10.0 lb-ft)

Magneto cover bolt: 11 N·m (1.1 kgf-m, 8.0 lb-ft)

CAUTION

Install the new gasket washers to the bolts ①.

Install the new oil seal to the magneto cover mounting bolt ②.

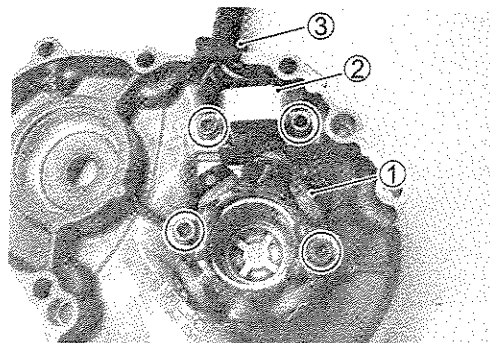


- Install the gearshift lever. (☞ 9-6)
- Install the engine protector.
- Pour the engine oil. (☞ 2-11)

STATOR

REMOVAL

- Remove the magneto cover. (☞ 14-7)
- Remove the stator ①.
- Remove the signal generator ②.
- Remove the grommet ③.



REASSEMBLY

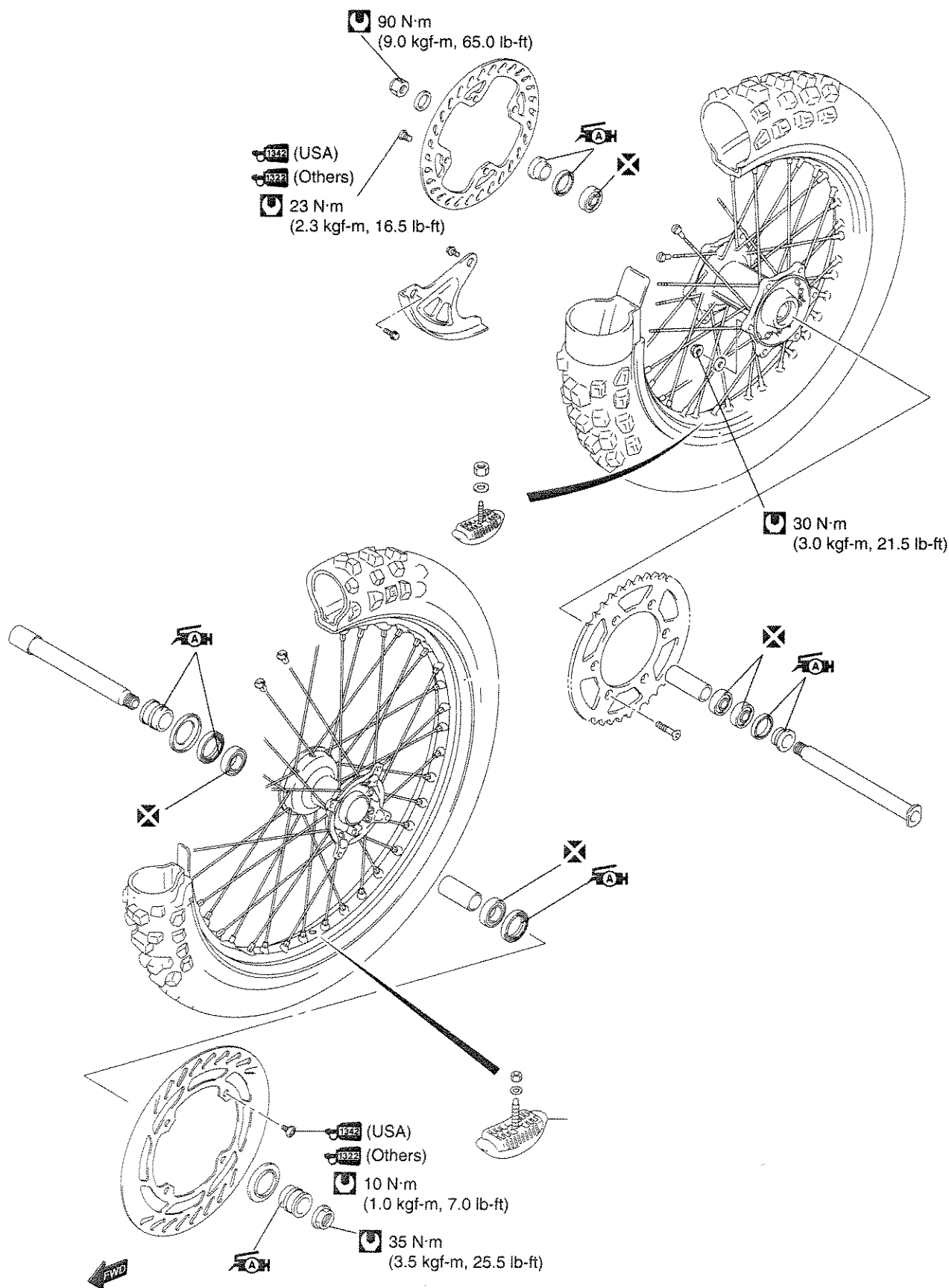
- Install the grommet, signal generator, stator. (☞ 19-21)
- Install the magneto cover. (☞ above)

FRONT AND REAR WHEELS

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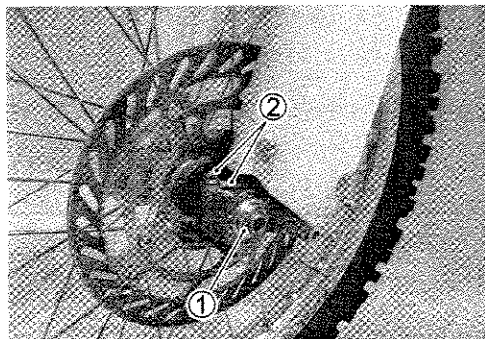
CONSTRUCTION



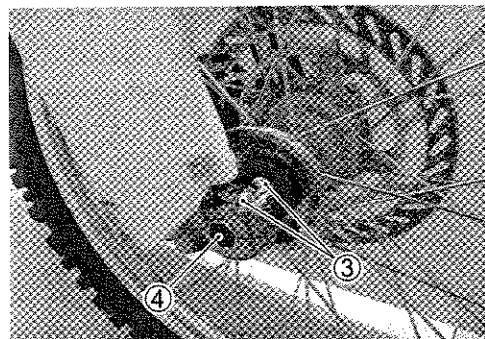
FRONT WHEEL

REMOVAL

- Place the motorcycle on a block to lift front wheel off the ground.
- Remove the front axle nut ①.
- Loosen the left axle holder bolts ②.



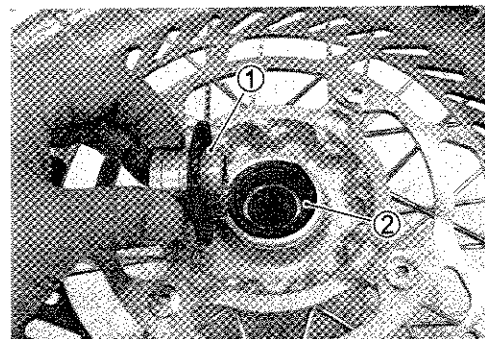
- Loosen the right axle holder bolts ③.
- Remove the front axle shaft ④.
- Remove the front wheel.



INSPECTION

SPACER AND DUST SEAL

- Inspect the right and left wheel spacers ① and dust seals ② for wear and cracks.
- If any damage is found, replace the spacer together with the dust seal.



NOTE:

Apply grease to the spacer and dust seal before reassembling.

AXLE SHAFT

- Support the axle shaft with the V-blocks and measure the axle shaft runout.

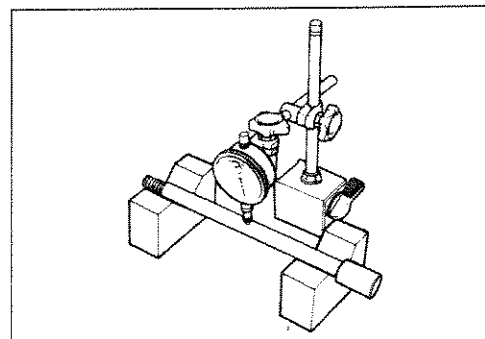
DATA Axleshaft runout

Service Limit: 0.25 mm (0.010 in)

TOOL 09900-20607: Dial gauge (1/100 mm)

09900-20701: Magnetic stand

09900-21304: V-block set (100 mm)



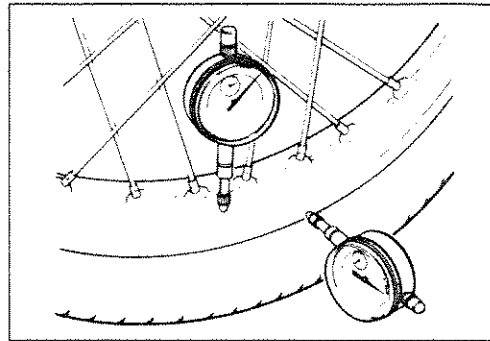
WHEEL RIM

- Measure the wheel rim runout with the dial gauge.

DATA Service Limit: 2.0 mm (0.08 in) ... axial and radial

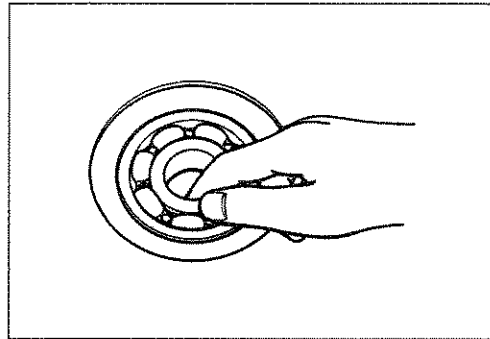
TOOL 09900-20607: Dial gauge (1/100 mm)

09900-20701: Magnetic stand



WHEEL BEARING

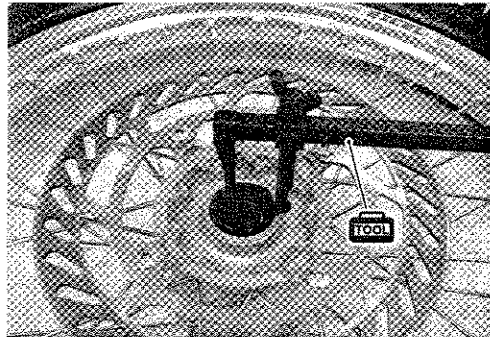
- Turn the inner race by finger and inspect it for smooth movement.
- Inspect for bearing damage.



BEARING REPLACEMENT

- Remove the dust seals with the special tool.

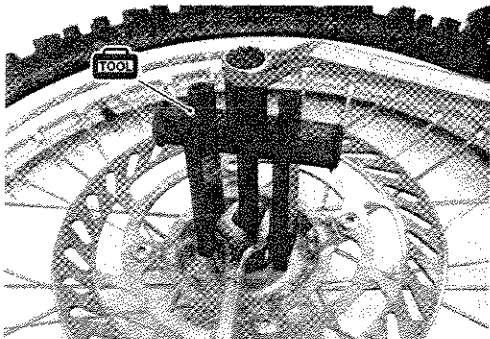
TOOL 09913-50121: Oil seal remover



- Remove the bearings with the special tools.

TOOL 09921-20240: Bearing remover set

- Remove the spacer.



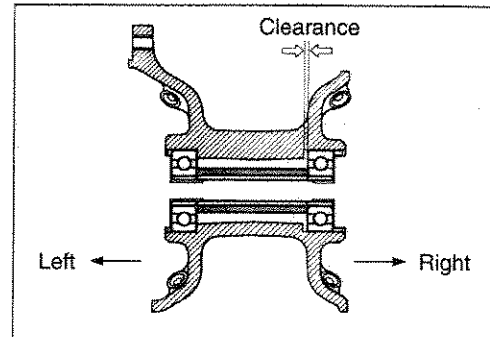
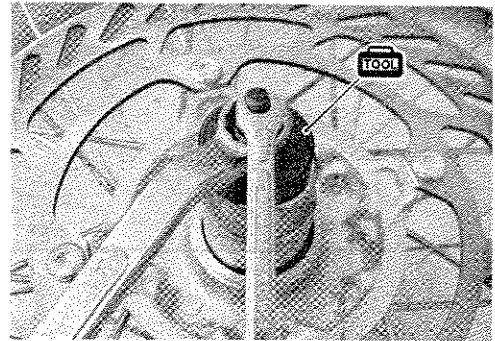
- Reassemble the bearings with the special tools, using the suitable spacer match for the outside dimension of a bearings.
- Fit the dust seals and apply grease to their lips.

 **09924-84521: Bearing installer set**

 **99000-25030: SUZUKI SUPER GREASE "A" (USA)**
99000-25010: SUZUKI SUPER GREASE "A" (Others)

NOTE:

- * Install the left side (disc side) bearing first and then the right side bearing.
- * After installing the bearings, inspect the bearings for smooth movement.
- * When installing the dust seal, place the manufacturer's code indicated side of the dust seal outside.



DISC PLATE REPLACEMENT

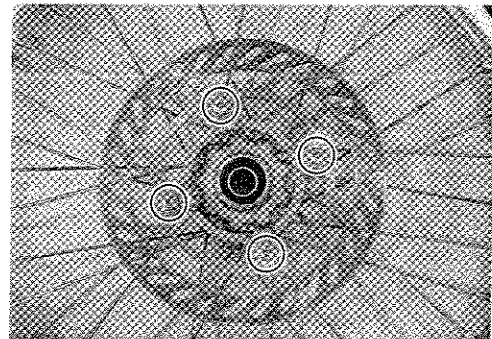
- Remove the disc plate.
- Apply THREAD LOCK to the bolts. (USA)
- Apply THREAD LOCK SUPER to the bolts. (Others)

 **1342 99000-32050: THREAD LOCK "1342" (USA)**

 **1322 99000-32110: THREAD LOCK SUPER "1322" (Others)**

- Tighten the bolts to the specified torque.

 **Disc plate bolt: 10 N·m (1.0 kgf-m, 7.0 lb-ft)**



INSTALLATION

- Hold the front axle shaft with the special tool and tighten the front axle nut temporarily.

 **09940-34581: Attachment (F)**



- Remove the block from under the chassis tube and move the front forks up and down several times.
- Tighten the front axle nut to the specified torque.

 **Front axle nut: 35 N·m (3.5 kgf-m, 25.5 lb-ft)**

- Tighten the left and right axle holder bolts to the specified torque.

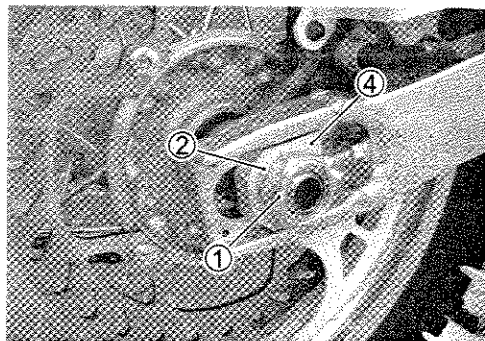
 **Axle holder bolt: 18 N·m (1.8 kgf-m, 13.0 lb-ft)**



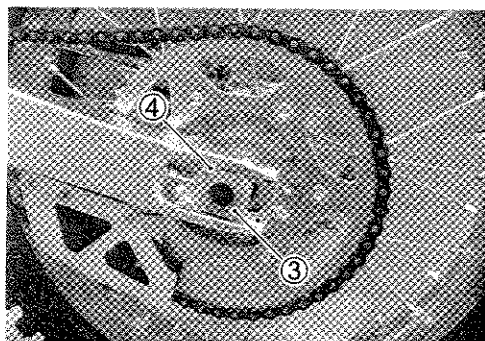
REAR WHEEL

REMOVAL

- Place the motorcycle on a block to lift the rear wheel off the ground.
- Remove rear axle nut ① and washer ②.



- Remove the rear axle shaft ③ and chain adjuster washers ④.
- Disengage the drive chain.
- Remove the rear wheel.



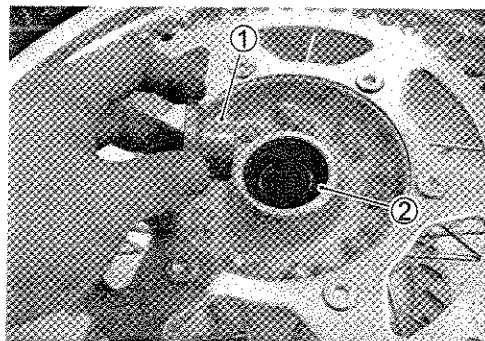
INSPECTION

WHEEL SPACER

- Inspect the rear wheel spacers ① and dust seals ② for wear and cracks.
- If any damage is found, replace the spacer together with the dust seal.

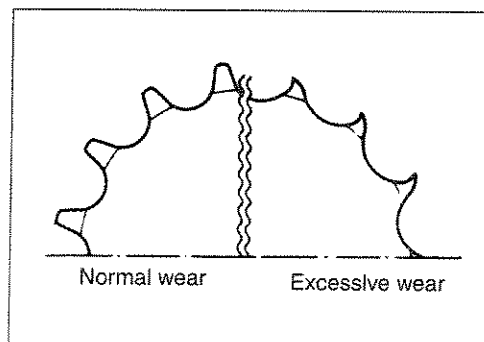
NOTE:

Apply grease on the spacer and dust seal before reassembling.



SPROCKET

Inspect the sprocket teeth for wear. If they are worn as shown, replace the two sprockets and drive chain as a set.



AXLE SHAFT (🔧 15-3)

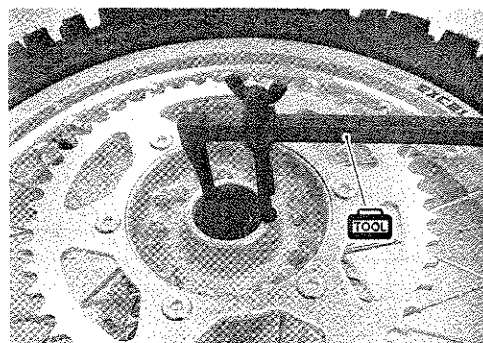
WHEEL RIM (🔧 15-4)

WHEEL BEARING (🔧 15-4)

BEARING REPLACEMENT

- Remove the dust seals with the special tool.

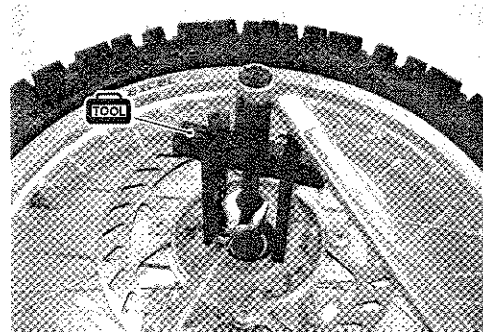
 **09913-50121: Oil seal remover**



- Remove the bearings with the special tools.

 **09921-20240: Bearing remover set**

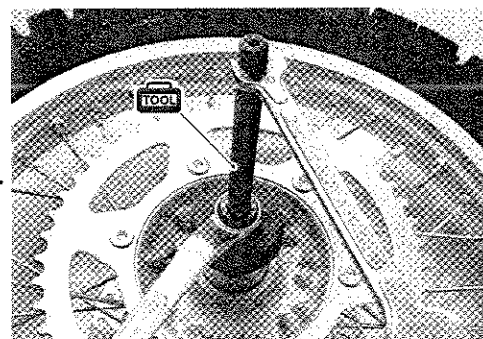
- Remove the spacer.



- The suitable spacer suitable for the outside dimension of a bearings is used, reassemble the bearings with the special tools.
- Fit the dust seals and apply grease to their lips.

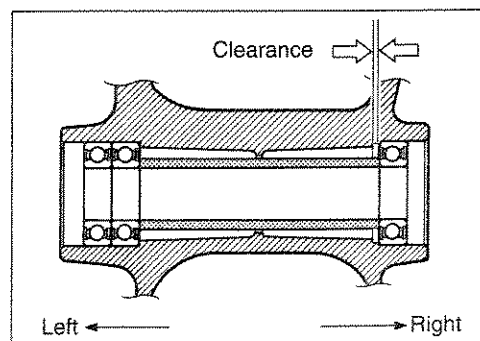
 **09941-34513: Steering race and swingarm bearing installer**

 **99000-25030: SUZUKI SUPER GREASE "A" (USA)**
99000-25010: SUZUKI SUPER GREASE "A" (Others)



NOTE:

- * Install the left side (sprocket side) bearing first and then the right side bearing.
- * After installing the bearings, inspect the bearings for smooth movement.
- * When installing the dust seal, place the manufacturer's code indicated side of the dust seal outside.



DISC PLATE REPLACEMENT

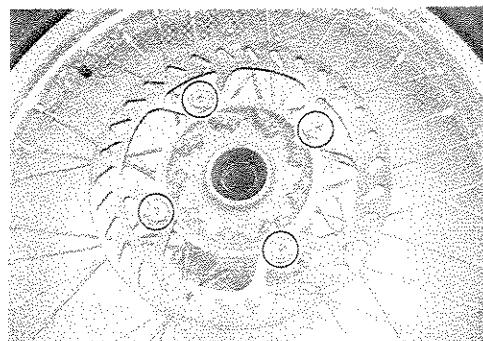
- Remove the disc plate.
- Apply THREAD LOCK to the bolts. (USA)
- Apply THREAD LOCK SUPER to the bolts. (Others)

 **99000-32050: THREAD LOCK "1342" (USA)**

 **99000-32110: THREAD LOCK SUPER "1322" (Others)**

- Tighten the bolts to the specified torque.

 **Disc plate bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)**

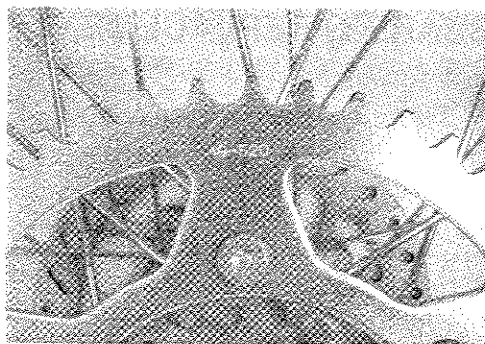


REAR SPROCKET REPLACEMENT

- Remove the rear sprocket.

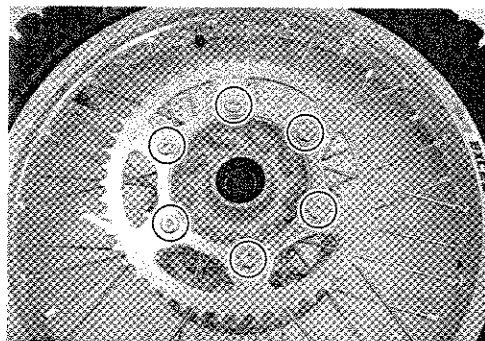
NOTE:

Install the rear sprocket as the letter on the sprocket surface faces outside.



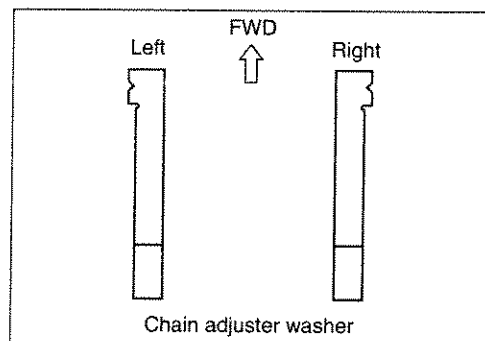
- Tighten the bolts/nuts to the specified torque.

 **Rear sprocket bolt/nut: 30 N·m (3.0 kgf-m, 21.5 lb-ft)**



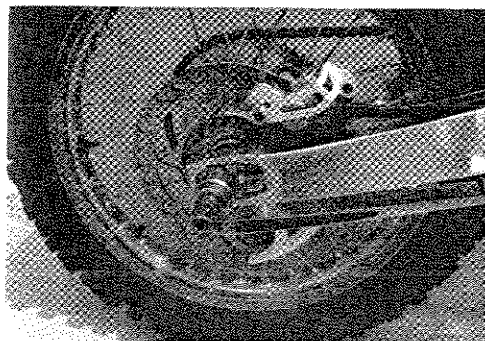
INSTALLATION

- Install the rear wheel, chain adjuster washers and axle shaft.
- Adjust the drive chain slack. ( 2-27)



- Tighten the rear axle nut to the specified torque.

 **Rear axle nut: 90 N·m (9.0 kgf-m, 65.0 lb-ft)**

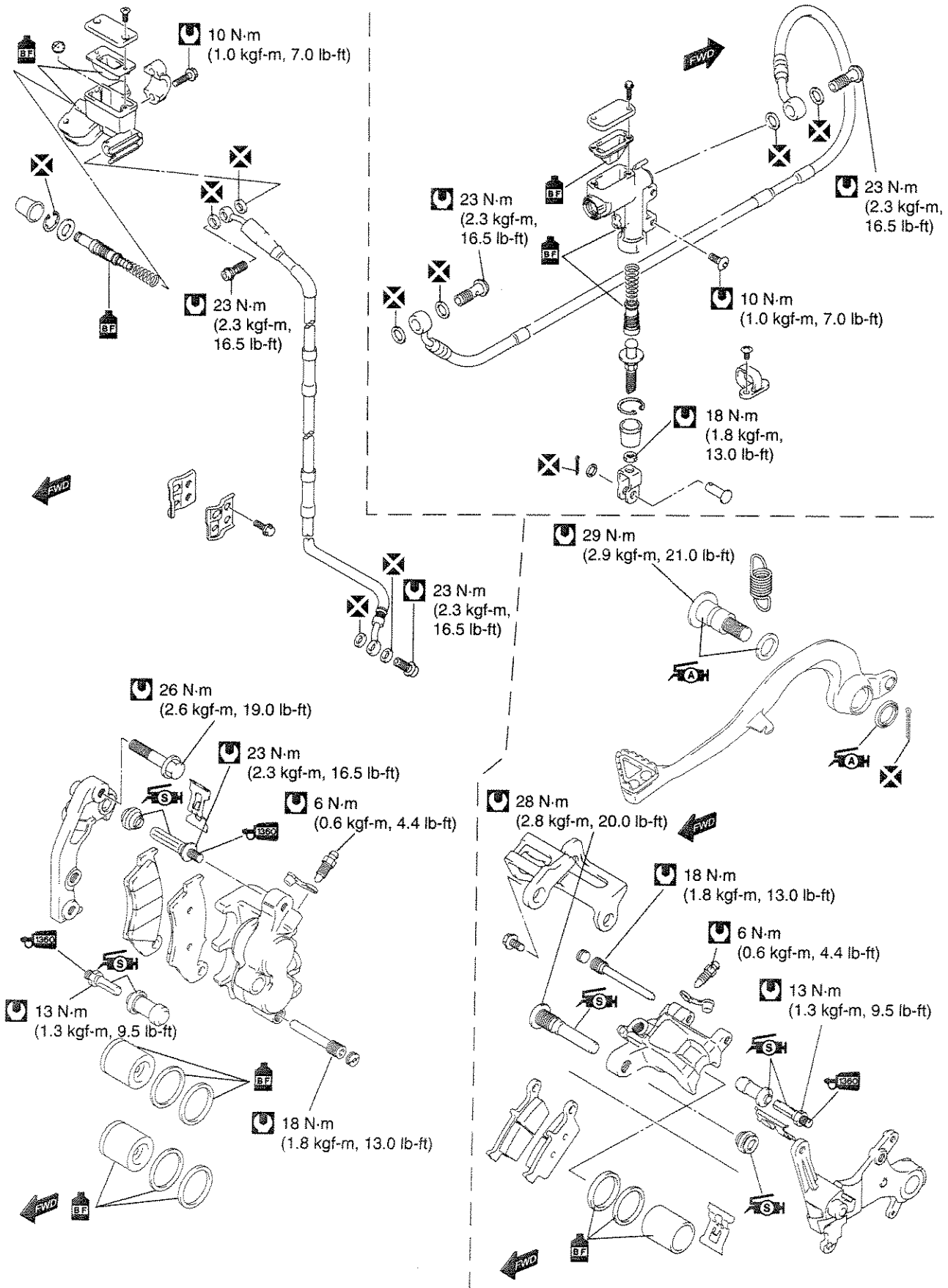


FRONT AND REAR BRAKES

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REASSEMBLY	16-17

CONSTRUCTION



BRAKE FLUID AIR BLEEDING

⚠ WARNING

Brake fluid can be hazardous to humans and pets. Brake fluid is harmful or fatal if swallowed, and harmful if it comes in contact with your skin or eyes.

Keep brake fluid away from children. Call your doctor immediately if brake fluid is swallowed and induce vomiting. Flush eyes or skin with water if brake fluid gets in eyes or comes in contact with skin.

⚠ WARNING

The use of any fluid except DOT4 brake fluid from a sealed container can damage the brake system and lead to an accident.

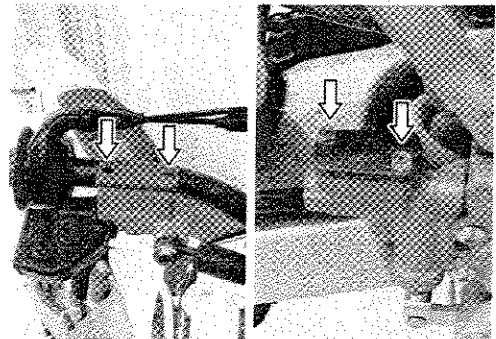
Use only DOT4 brake fluid from sealed container. Never use or mix different types of brake fluid.

CAUTION

Spilled brake fluid can damage painted surfaces and plastic parts.

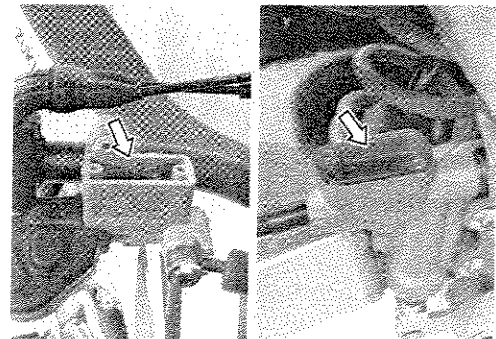
Be careful not to spill any brake fluid when servicing brake fluid. Wipe spilled fluid up immediately.

- Remove the reservoir cap.
- Connect a transparent tube to the bleeder valve and set the other end into a receptacle.



- Pour brake fluid up to the UPPER line.

 Specification and classification: DOT4



- Pump the brake lever/pedal until air bubbles stop coming out from the reservoir.
- Hold the brake lever/pedal in the squeezed position.
- Open the bleeder valve and tighten the bleeder valve.
- Release the brake lever/pedal.
- Repeat this sequence until air bubbles stop coming out from the bleeder valve.

NOTE:

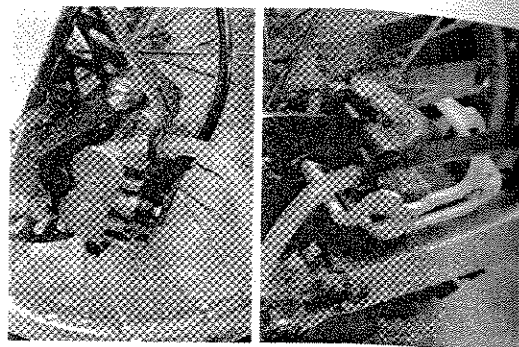
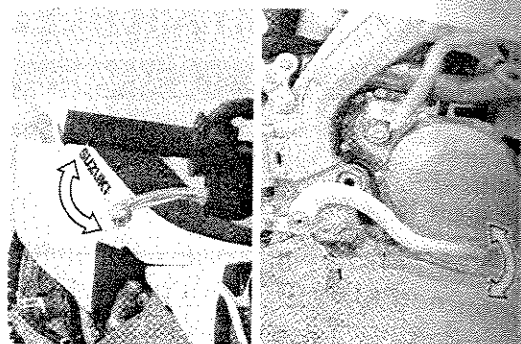
- Do not release the brake lever/pedal while the bleeder valve is opened.

Replenish brake fluid to the UPPER line when the brake fluid level drops below LOWER line.

- Tighten the air bleeder valve.

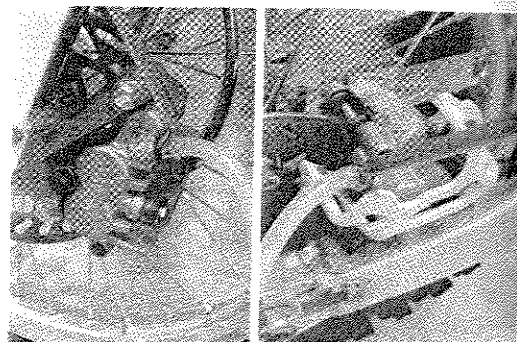
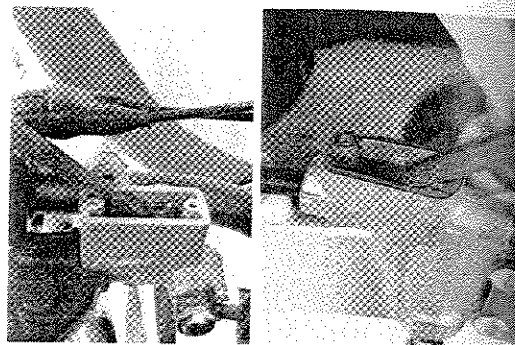
 Air bleeder valve: 6 N·m (0.6 kgf-m, 4.4 lb-ft)

- Pour brake fluid up to the UPPER line.
- Reassemble the reservoir cap.



BRAKE FLUID REPLACEMENT

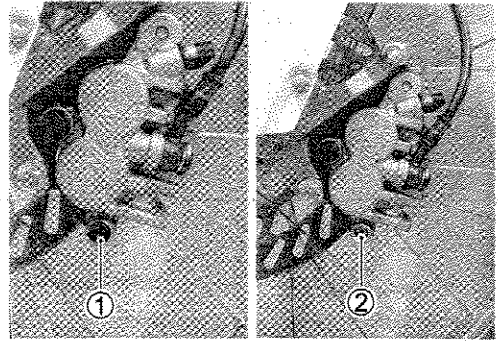
- Remove the reservoir cap. (16-3)
 - Suck up the brake fluid as much as possible.
 - Drain the old brake fluid as much as possible.
 - Fill the reservoir with new brake fluid.
-
- Connect a transparent tube to the bleeder valve and set the other end into a receptacle. (16-3)
 - Loosen the bleeder valve and pump the brake lever/pedal until old brake fluid is completely out of the brake system.
 - Bleed air from the brake system. (16-3)



BRAKE PADS REPLACEMENT

FRONT BRAKE PADS

- Remove the cap ① and pad mounting pin ②.



- Remove the brake pads.

NOTE:

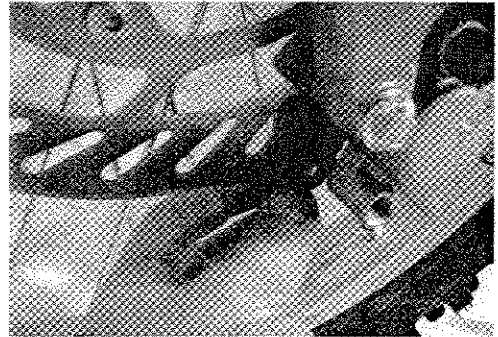
Replace the two brake pads as a set.

- Fit the new brake pads into the caliper.
- Tighten the pad mounting pin to the specified torque.

 **Brake pad mounting pin: 18 N·m (1.8 kgf-m, 13.0 lb-ft)**

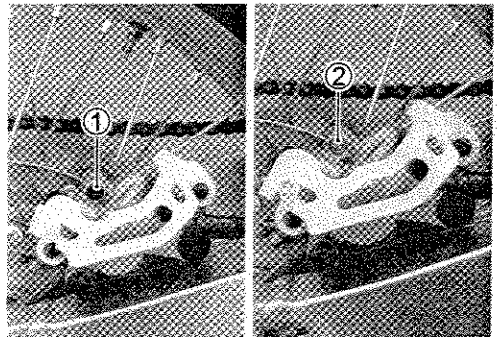
NOTE:

Pump the brake lever several times to seat the brake pads after reassembling.



REAR BRAKE PADS

- Remove the cap ① and pad mounting pin ②.



- Remove the brake pads.

NOTE:

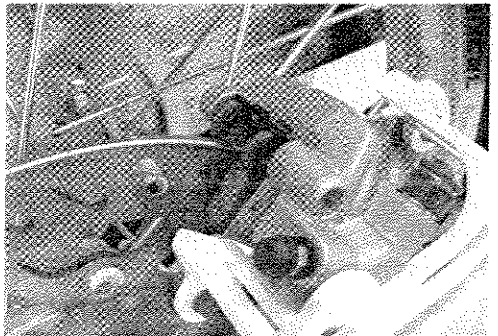
Replace the two pads as a set.

- Fit the new brake pads into the caliper.
- Tighten the brake pad mounting pin to the specified torque.

 **Brake pad mounting pin: 18N·m (1.8 kgf-m, 13.0 lb-ft)**

NOTE:

Pump the brake pedal several times to seat the brake pads after reassembling.



BRAKE DISC INSPECTION

- Inspect the brake disc for damage.
- Measure the front and rear brake disc thickness.

DATA Brake disc thickness

Service limit (Front): 2.5 mm (0.10 in)

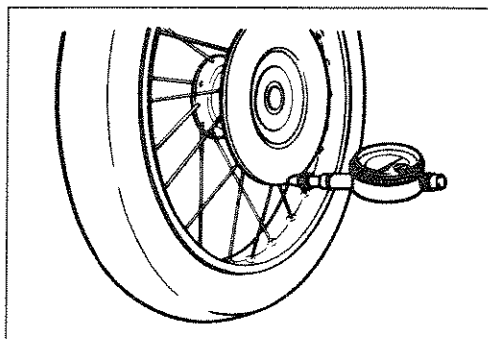
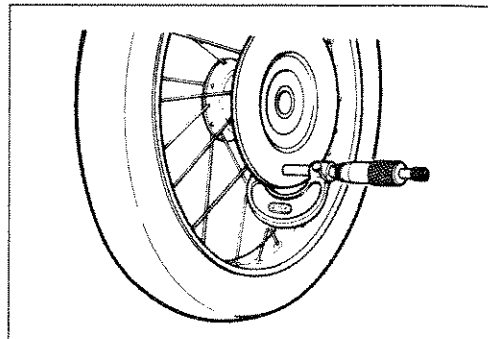
(Rear): 3.5 mm (0.14 in)

- Measure the front and rear brake disc runout.

DATA Brake disc runout

Service limit: 0.30 mm (0.012 in)

BRAKE DISC REPLACEMENT (15-5, 7)



CALIPER

▲ WARNING

The use of any brake fluid except DOT4 brake fluid from a sealed container can damage the brake system and lead to an accident.

Use only DOT4 brake fluid from a sealed container. Never use or mix different types of brake fluid.

▲ WARNING

Brake fluid can be hazardous to humans and pets. Brake fluid is harmful or fatal if swallowed, and harmful if it comes in contact with your skin or eyes.

Keep brake fluid away from children. Call your doctor immediately if brake fluid is swallowed, and induce vomiting. Flush eyes or skin with water if brake fluid gets in eyes or comes in contact with skin.

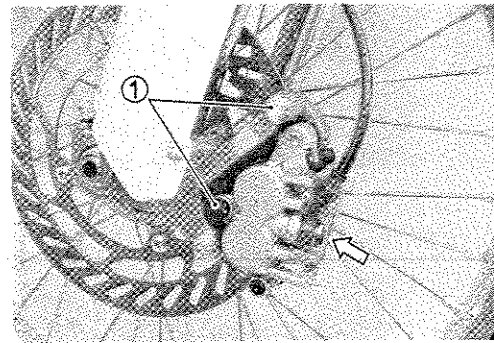
CAUTION

Spilled brake fluid can damage painted surfaces and plastic parts.

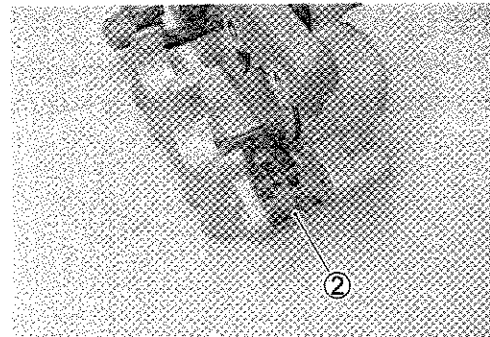
Be careful not to spill any fluid when servicing the caliper. Wipe spilled fluid up immediately.

FRONT CALIPER REMOVAL AND DISASSEMBLY

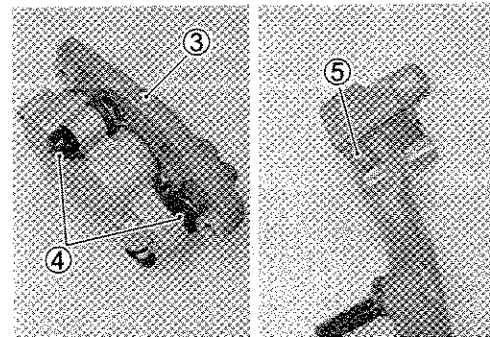
- Place a rag under the brake hose union bolt to catch spilled brake fluid.
- Disconnect the brake hose.
- Remove the caliper mounting bolts ①.
- Remove the caliper.



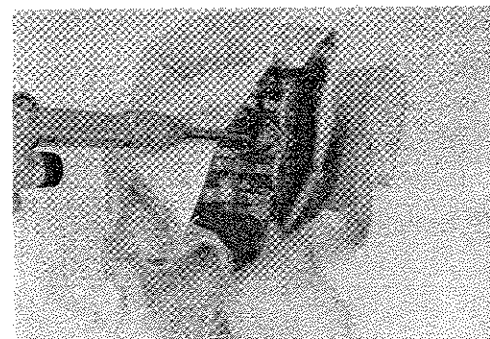
- Remove the brake pads (16-5)
- Remove the spring ②.



- Remove the caliper bracket ③ from the caliper.
- Remove the boots ④.
- Remove the spring ⑤.



- Wrap the caliper with a rag to prevent brake fluid scatter and piston pop-out.
- Apply low-pressure air into the caliper through the hole to remove the pistons.

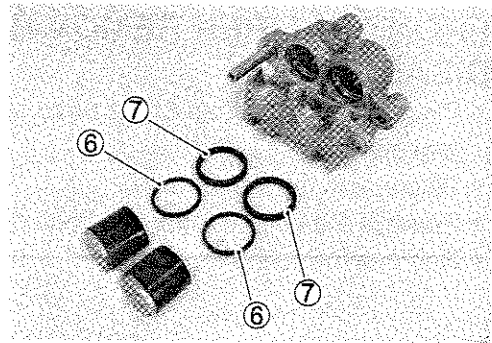


▲ WARNING

Fingers can get caught between piston and caliper body when removing the piston.

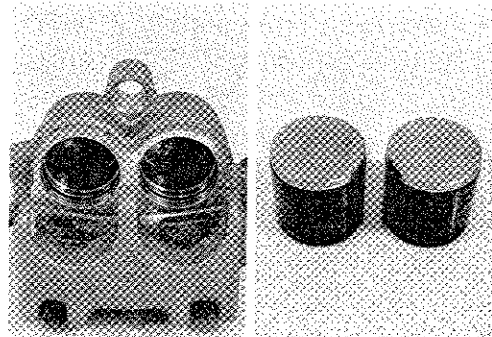
Do not place your fingers on the piston when removing the piston.

- Remove the dust seals ⑥ and piston seals ⑦.



CALIPER INSPECTION

- Inspect the caliper cylinder for scuffing, wear and damage.
- Inspect the piston for scuffing, wear and damage.



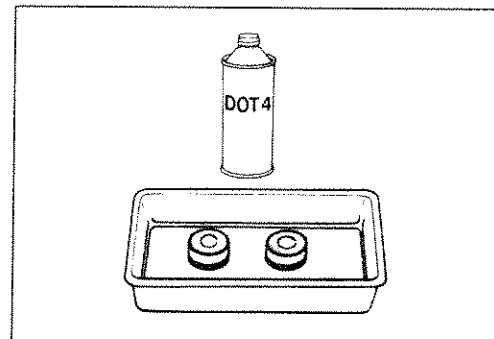
CALIPER CLEANING

- Flush the caliper ports with pressurized air.
- Wash the caliper piston and cylinder with fresh brake fluid.

Specification and classification: DOT4

NOTE:

Do not use gasoline or other cleaning solvents to wash the caliper parts.

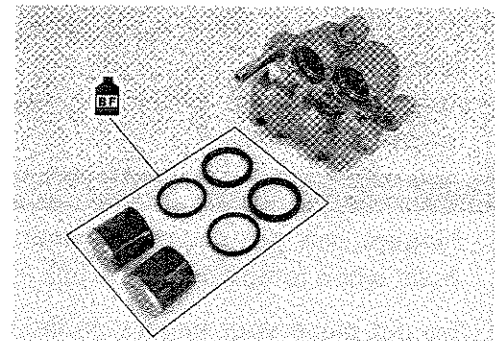


FRONT CALIPER REASSEMBLY

Reassemble and remount the brake caliper in the reverse order of removal. Pay attention to the following points:

- Apply brake fluid to the new piston seals, new dust seals and pistons and fit the piston seals, dust seals and pistons.

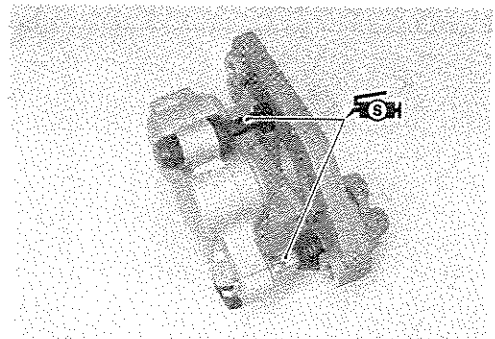
Specification and classification: DOT4



- Apply SUZUKI SILICONE GREASE to the caliper axles.

99000-25100: SUZUKI SILICONE GREASE

- Install the springs, boots and caliper bracket.
- Install the brake pads.
- Tighten the brake pad mounting pin temporarily.



- Tighten the caliper mounting bolts ① to the specified torque.

 Brake caliper mounting bolt:

26 N·m (2.6 kgf-m, 18.9 lb-ft)

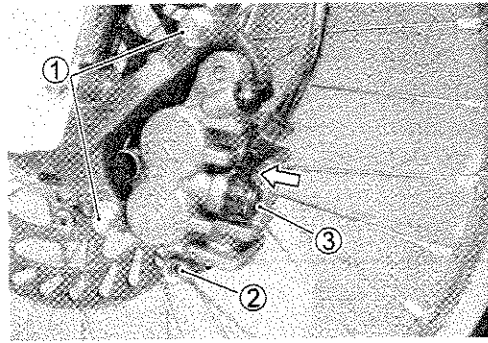
- Tighten the brake pad mounting pin ② to the specified torque.

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

- Set the brake hose end between the hose stopper, then tighten the brake hose union bolt ③ to the specified torque.

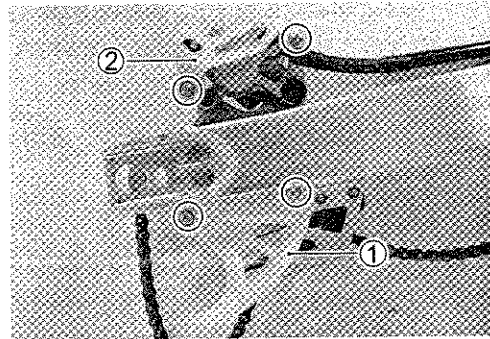
 Brake hose union bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)

- Install the pad mounting pin cap.
- Refill brake fluid and bleed air from the brake system.
( 16-4)

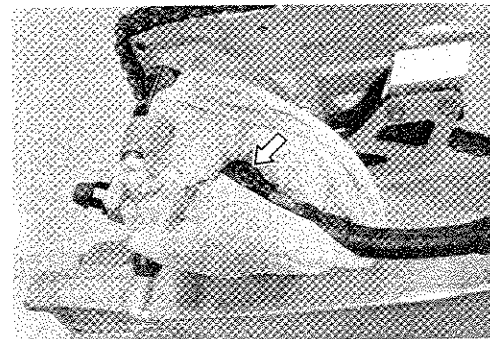


REAR CALIPER REMOVAL AND DISASSEMBLY

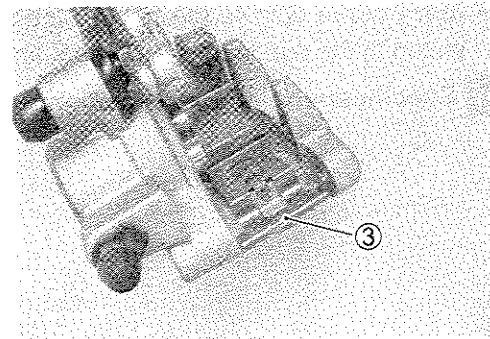
- Remove the rear wheel. ( 15-6)
- Remove the disc cover ① and caliper protector ②.



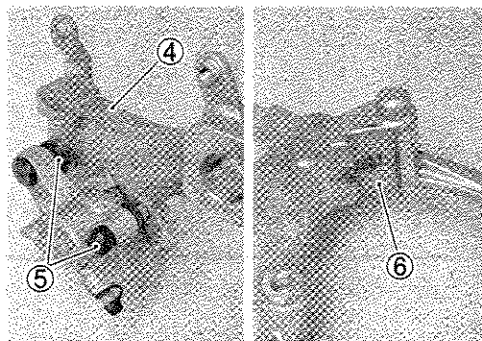
- Place a rag under the brake hose union bolt to catch spilled brake fluid.
- Disconnect the brake hose.
- Remove the caliper.



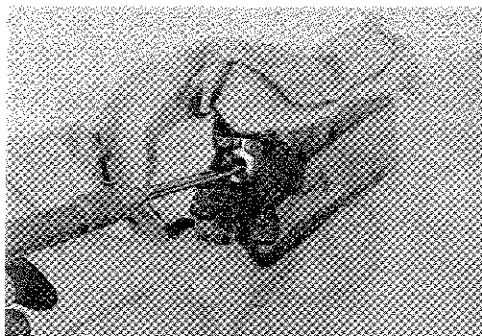
- Remove the brake pad. ( 16-5)
- Remove the spring ③.



- Remove the caliper bracket ④ from the caliper.
- Remove the boots ⑤.
- Remove the spring ⑥.



- Wrap the caliper with a rag to prevent brake fluid scatter and piston pop-out.
- Apply low-pressure air into the caliper through the hole to remove the piston.

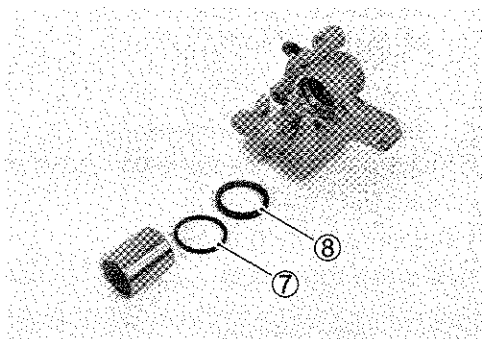


⚠ WARNING

Fingers can get caught between piston and caliper body when removing the piston.

Do not place your fingers on the piston when removing the piston.

- Remove the dust seal ⑦ and piston seal ⑧.
- Brake caliper inspection and cleaning. (16-8)

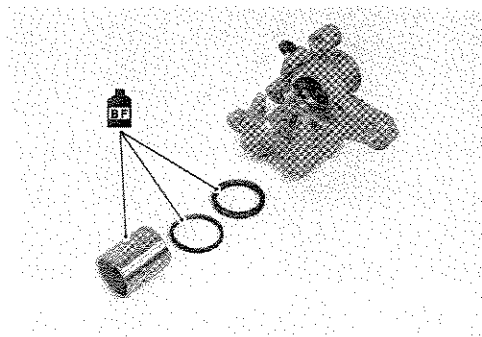


REAR CALIPER REASSEMBLY

Reassemble and remount the brake caliper in the reverse order of removal. Pay attention to the following points:

- Apply brake fluid to the new piston seal, new dust seal and piston fit the piston seal, dust seal and piston.

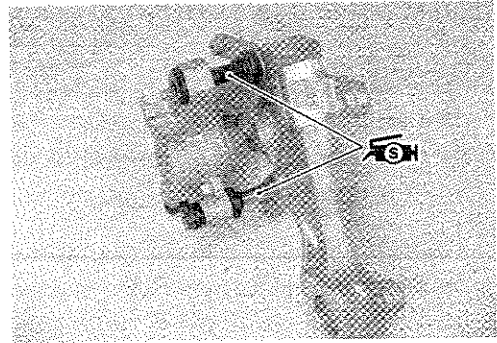
 Specification and classification: DOT4



- Apply SUZUKI SILICONE GREASE to the caliper axles.

 99000-25100: SUZUKI SILICONE GREASE

- Install the springs, boots and caliper bracket.
- Install the brake pads.
- Tighten the brake pad mounting pin temporarily.



- Tighten the brake pad mounting pin ① to the specified torque.

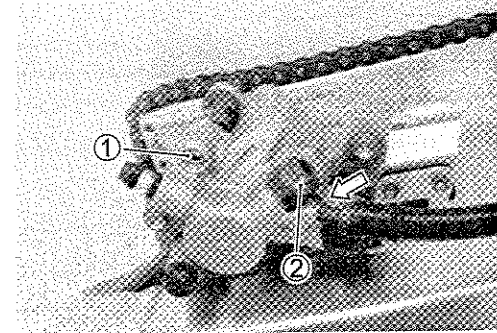
 Brake pad mounting pin:

18 N·m (1.8 kgf-m, 13.0 lb-ft)

- Set the brake hose end between the hose stopper, then tighten the brake hose union bolt ② to the specified torque.

 Brake hose union bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)

- Install the pad mounting pin cap.
- Install the disc cover and caliper protector.
- Install the rear wheel. ( 15-8)
- Refill brake fluid and bleed air from the brake system. ( 16-3)



MASTER CYLINDER

⚠ WARNING

Brake fluid can be hazardous to humans and pets. Brake fluid is harmful or fatal if swallowed, and harmful if it comes in contact with your skin or eyes.

Keep brake fluid away from children. Call your doctor immediately if brake fluid is swallowed, and induce vomiting. Flush eyes or skin with water if brake fluid gets in eyes or comes in contact with skin.

⚠ WARNING

The use of any fluid except DOT4 brake fluid from a sealed container can damage the brake system and lead to an accident.

Use only DOT4 brake fluid from a sealed container. Never use or mix different types of brake fluid.

CAUTION

Spilled brake fluid can damage painted surfaces and plastic parts.

Be careful not to spill any fluid when filling the brake fluid reservoir. Wipe spilled fluid up immediately.

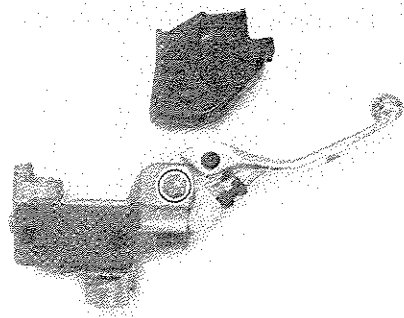
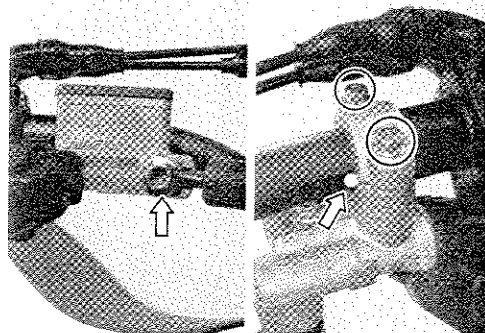
FRONT MASTER CYLINDER REMOVAL AND DISASSEMBLY

- Drain brake fluid. (➡ 16-4)
- Place a rag under the brake hose union bolt to catch spilled brake fluid.
- Disconnect the brake hose.
- Remove the master cylinder holder bolts.
- Remove the master cylinder.

NOTE:

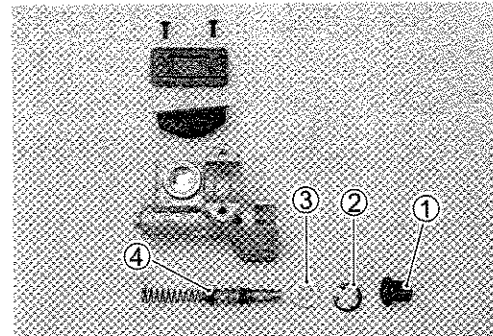
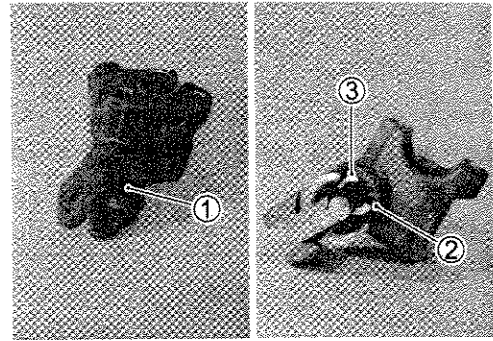
Align the matching mark on the handlebar and the master cylinder.

- Remove the bolt and brake lever.



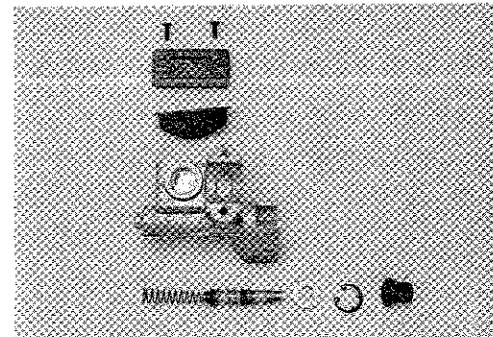
- Remove the master cylinder cap.
- Remove the diaphragm.
- Remove the dust boot ①.
- Remove the snap ring ② with snap ring pliers.
- Remove the washer ③ and piston/cup set ④.

 09900-06108: Snap ring pliers



MASTER CYLINDER INSPECTION

- Inspect the cylinder bore and piston for scuffing, wear and damage.
- Inspect the piston rod and spring for damage.



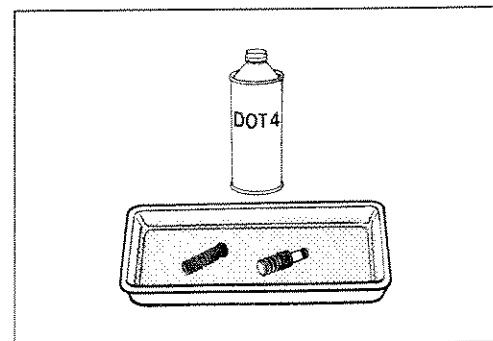
MASTER CYLINDER CLEANING

- Flush the master cylinder ports with pressurized air.
- Wash the master cylinder bore and piston with fresh brake fluid.

 **Specification and classification: DOT4**

NOTE:

Do not use gasoline or other cleaning solvents to wash the master cylinder parts.



FRONT MASTER CYLINDER REASSEMBLY

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

NOTE:

When remounting the master cylinder onto the handlebar, align the master cylinder holder's mating surface **A** with the matching mark **B** on the handlebar and tighten the upper bolt first.

- Tighten the master cylinder mounting bolts **①** to the specified torque.

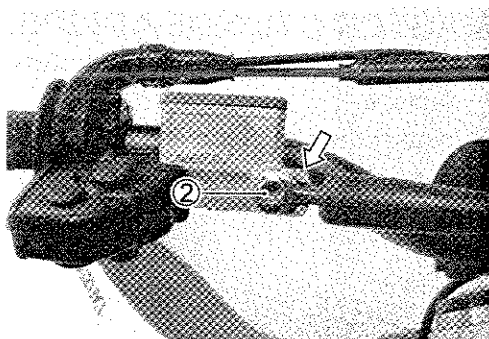
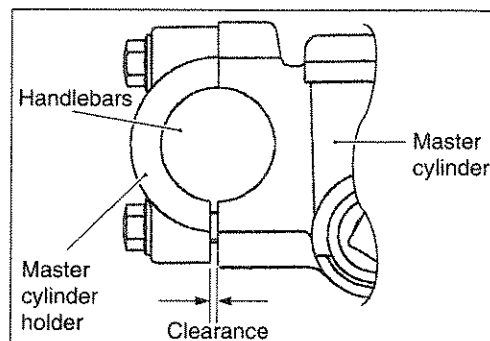
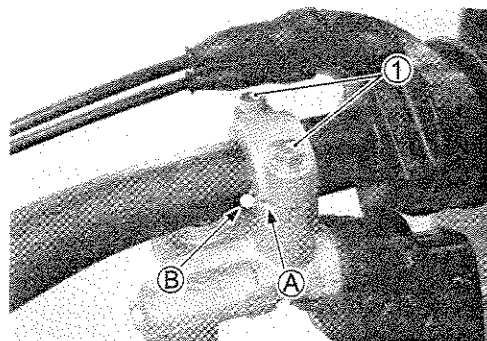
Master cylinder mounting bolt:

10 N·m (1.0 kgf-m, 7.0 lb-ft)

- Set the brake hose end between the hose stopper, then tighten the brake hose union bolt **②** to the specified torque.

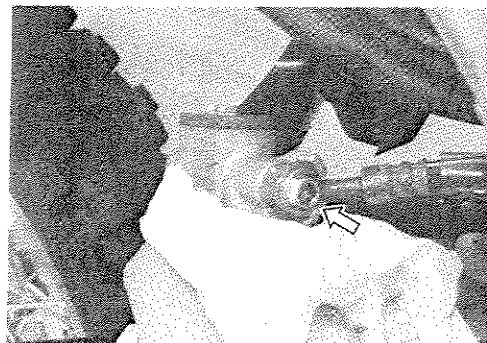
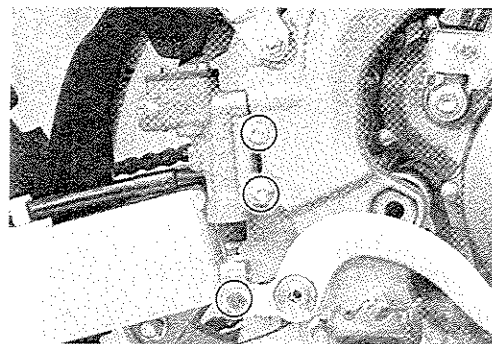
Brake hose union bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)

- Refill brake fluid and bleed air from the brake system. (16-3)



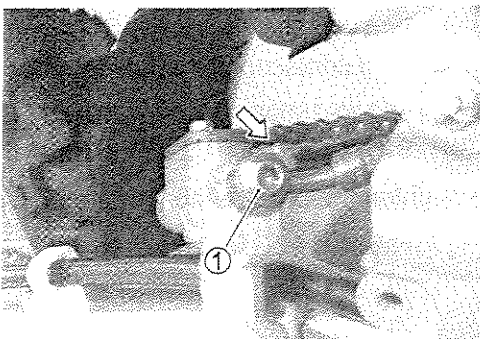
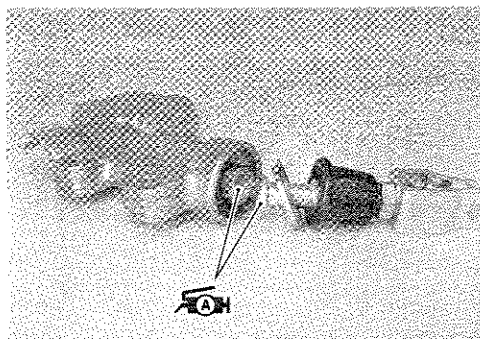
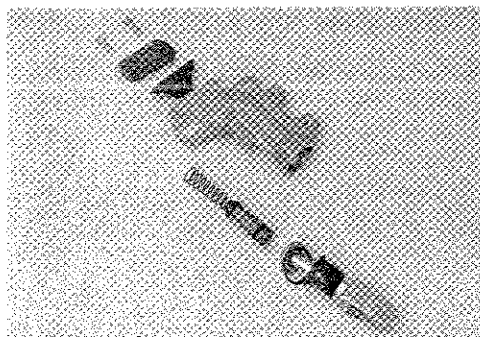
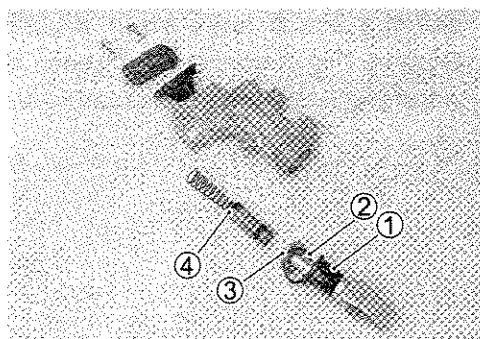
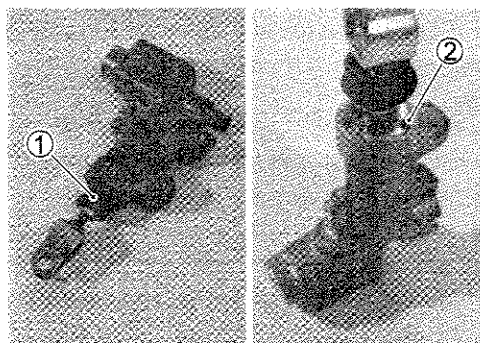
REAR MASTER CYLINDER REMOVAL AND DISASSEMBLY

- Drain brake fluid. (16-4)
- Remove the cotter pin and then master cylinder rod pin.
- Remove the master cylinder mounting bolts.
- Place a rag under the brake hose union bolt to catch spilled brake fluid.
- Disconnect the brake hose.
- Remove the master cylinder.



- Remove the master cylinder cap.
- Remove the diaphragm.
- Remove the dust boot ①.
- Remove the snap ring ② with snap ring pliers.
- Remove the push rod ③.
- Remove the piston/cup set ④.

 **09900-06108: Snap ring pliers**



MASTER CYLINDER INSPECTION

- Inspect the cylinder bore and piston for scuffing, wear and damage.
- Inspect the piston rod and spring for damage.
- Master cylinder cleaning. (16-13)

REAR MASTER CYLINDER REASSEMBLY

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

- Apply grease to the contact point between piston and push rod.

 **99000-25030: SUZUKI SUPER GREASE "A" (USA)**
99000-25010: SUZUKI SUPER GREASE "A" (Others)

- Set the brake hose end between the hose stopper, then tighten the brake hose union bolt ① to the specified torque.

 **Brake hose union bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)**

- Tighten the master cylinder mounting bolts ② to the specified torque.

 Master cylinder mounting bolt:

10 N·m (1.0 kgf-m, 7.0 lb-ft)

- Install the master cylinder rod pin.

CAUTION

Improper brake hose routing can damage the brake hose.

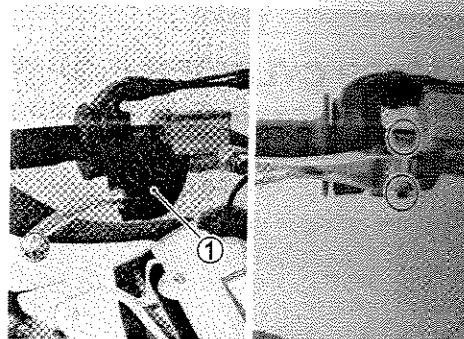
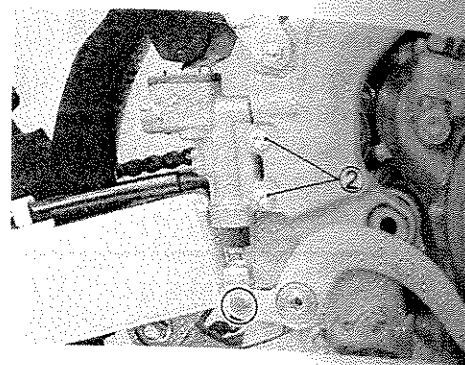
Set the brake hose so it touches the stopper and tighten the union bolt. Ensure the brake hose has enough clearance to the rear suspension spring.

- Refill brake fluid and bleed air from the brake system.
( 16-3)

BRAKE LEVER

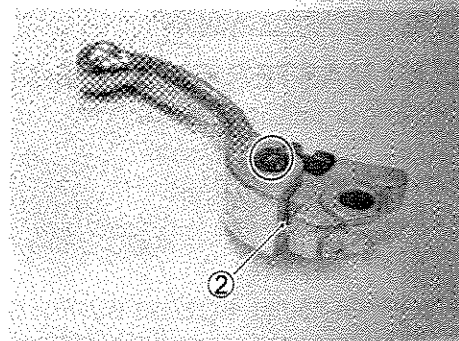
REMOVAL

- Remove the boot ① and brake lever.



- Remove the brake lever adjuster return spring ②.

 **09930-11960: Torx wrench, T20**



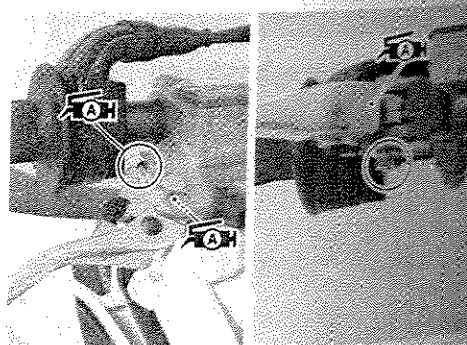
INSTALLATION

- Apply grease to the brake lever adjuster return spring, pivot bolt and contact point between piston and brake lever.

 **99000-25030: SUZUKI SUPER GREASE "A" (USA)**
99000-25010: SUZUKI SUPER GREASE "A" (Others)

- Tighten the pivot nut to the specified torque.

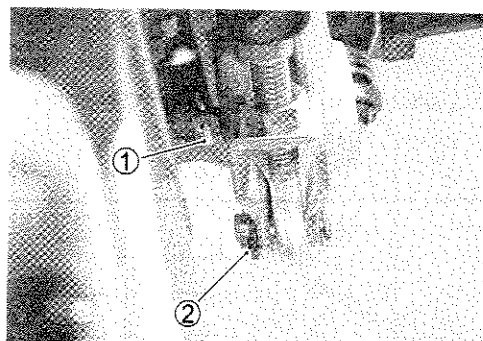
 **Pivot nut: 6 N·m (0.6 kgf-m, 4.4 lb-ft)**



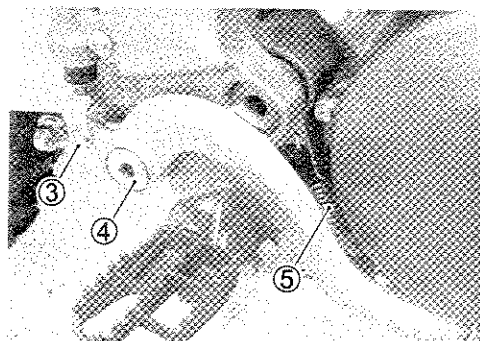
BRAKE PEDAL

REMOVAL

- Remove the cotter pin ①.
- Remove the cotter pin ②.



- Remove the washer and master cylinder rod pin ③.
- Remove the brake pedal pivot bolt ④ and return spring ⑤.

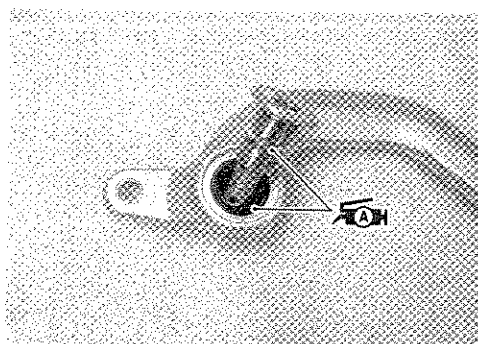


REASSEMBLY

- Apply SUZUKI SUPER GREASE to the oil seal and brake pedal pivot bolt.

 99000-25030: SUZUKI SUPER GREASE "A" (USA)
99000-25010: SUZUKI SUPER GREASE "A" (Others)

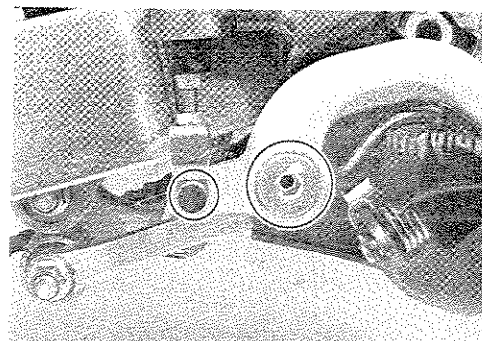
- Install the return spring properly. ( 19-20)



- Tighten the brake pedal pivot bolt to the specified torque.

 **Brake pedal pivot bolt: 29 N·m (2.9 kgf-m, 21.0 lb-ft)**

- Install new cotter pins.
- Adjust the brake pedal height. ( 2-30)

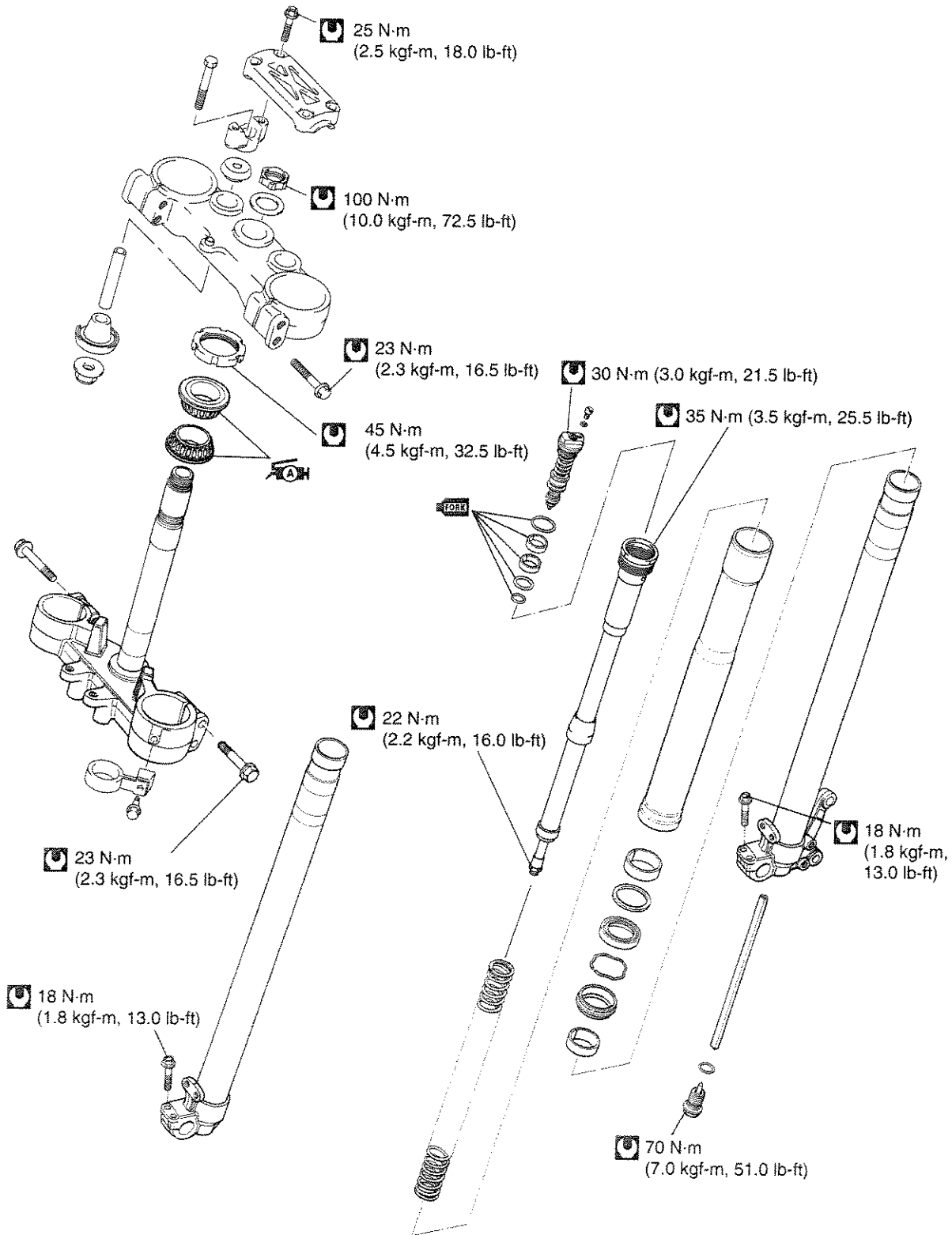


FRONT FORK AND STEERING

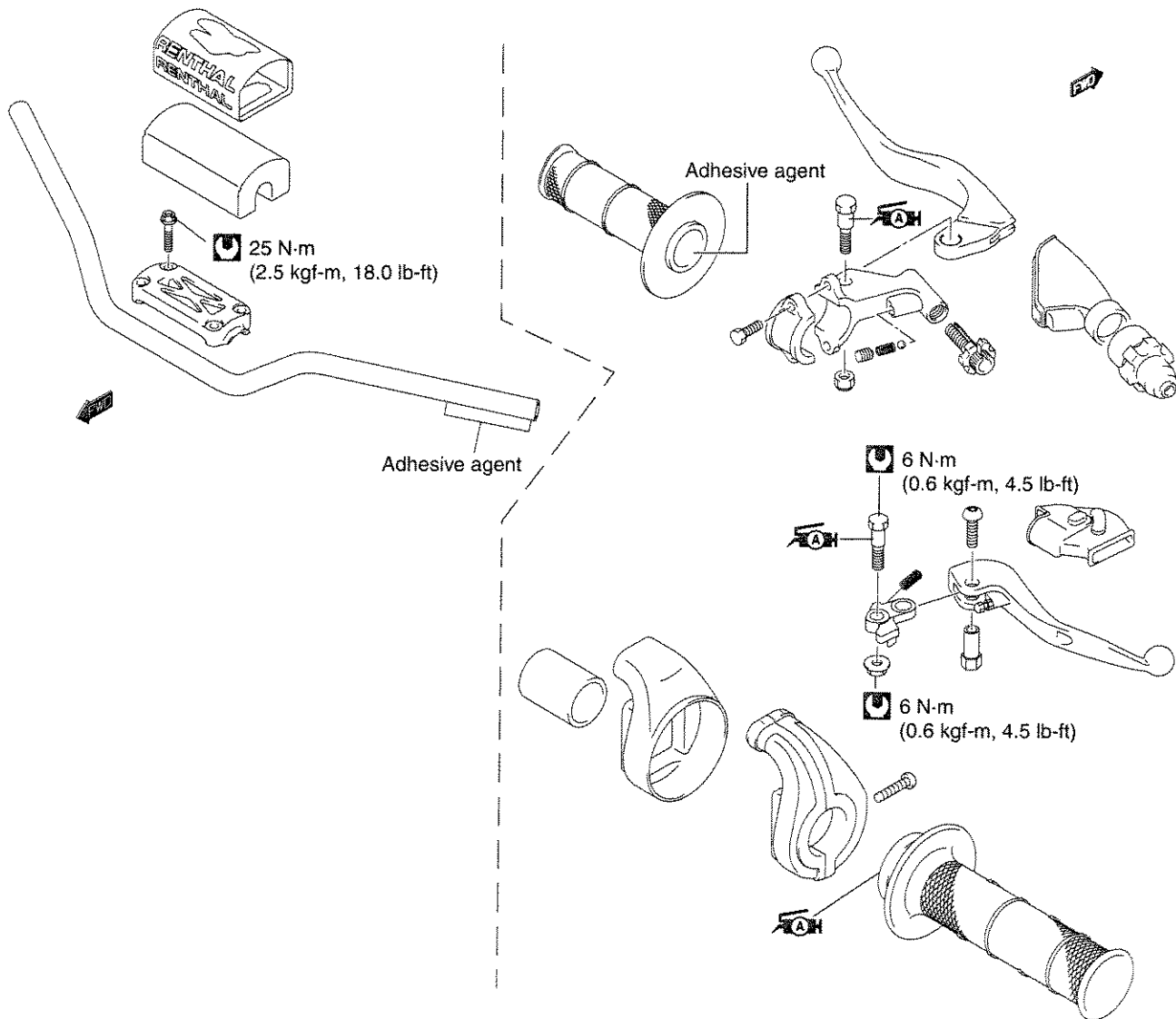
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CONSTRUCTION FRONT FORK, STEERING

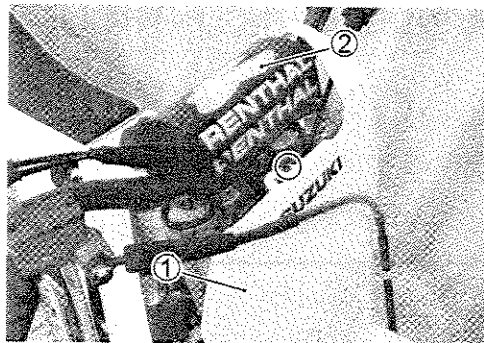


HANDLEBAR CONTROLS



REMOVAL

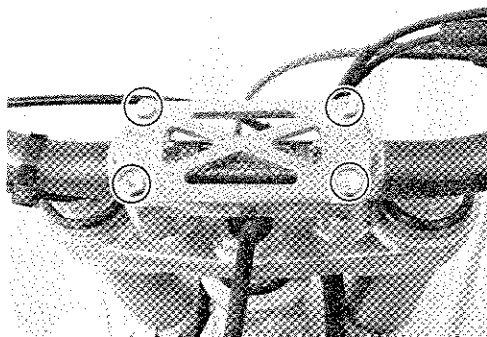
- Place the motorcycle on a block to lift front wheel off the ground.
- Remove the front wheel. (➡ 15-3)
- Remove the front number plate ①.
- Remove the protector ②.



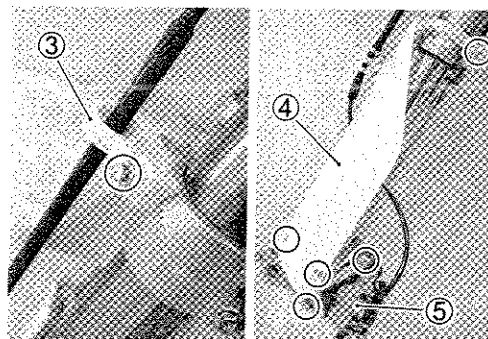
- Remove the handlebar.

NOTE:

Align the matching mark on the handlebar and the handlebar holder.



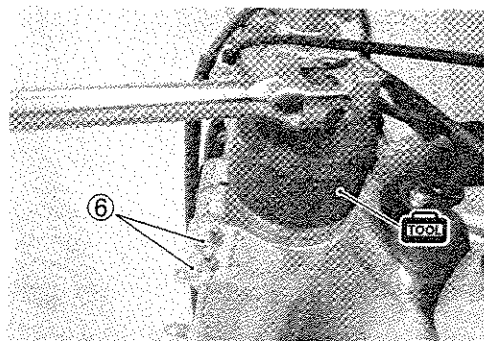
- Remove the brake hose guide ③ and fork protectors ④.
- Remove the front brake caliper ⑤.



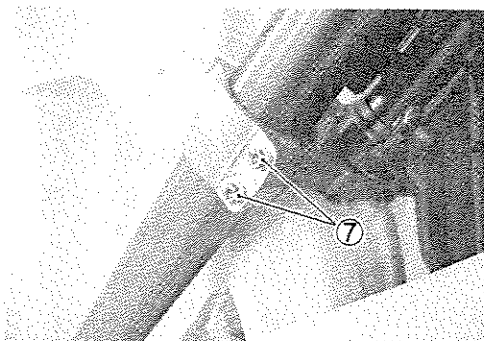
- Loosen the front fork cap bolt 1 – 2 turns to facilitate later disassembly.

 **09941-53630: Front fork top cap wrench**

- Loosen the front fork upper clamp bolts ⑥.



- Hold the fork body and loosen the fork lower clamp bolts ⑦.
- Remove the front fork.



DISASSEMBLY

- Set rebound and compression damper settings to the minimum settings (softest) before disassembling. Record the setting before turning the adjuster.
- Thoroughly clean the fork before disassembly.

CAUTION

Scratches or other damage on the inner tube or on the oil seal lip will cause oil leak.

Avoid scratching or damaging the inner tube or the oil seal. Use a mild detergent or car wash soap and sponge out dirt with plenty of water.

- Clamp the outer tube with a vise. Protect the outer tube with a rag when using a vise.
- Loosen and remove the fork cap bolt (sub-tank) from the outer tube and slowly slide down the outer tube.

 09941-53630: Front fork top cap wrench

WARNING

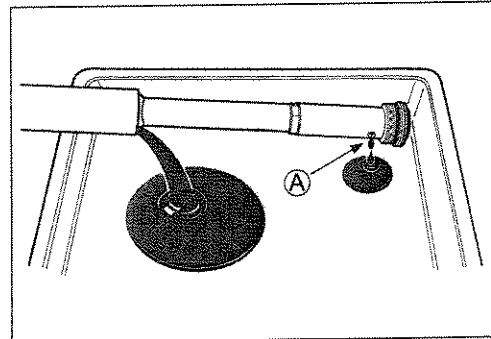
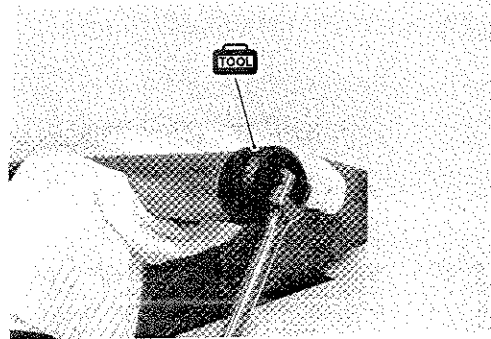
Clamping the outer tube too tight can damage it which will affect riding stability.

Do not clamp the outer tube too tight.

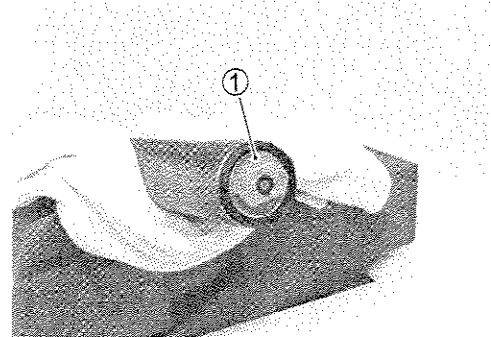
- Place a drain pan under the front fork and drain fork oil.

NOTE:

Face the oil hole  on the sub-tank downward.



- Raise the outer tube and temporarily install the fork cap bolt  (sub-tank) to the outer tube.

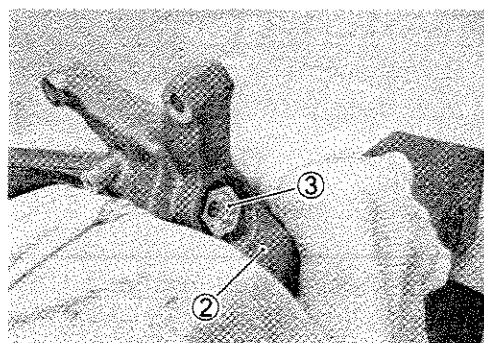


- Clamp the axle holder ② with a vise. Protect the axle holder with a rag when using a vise.
- Loosen the center bolt ③ completely with a 21 mm socket wrench.

⚠ WARNING

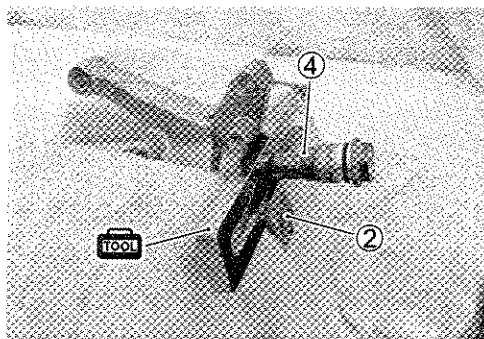
Clamping the axle holder too tight can damage it which will affect riding stability.

Do not clamp the axle holder too tight.

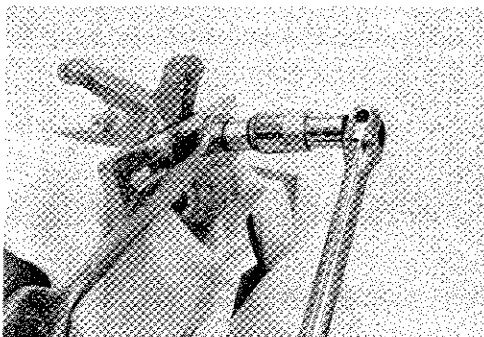


- Compress the outer tube by hands and install the conrod holder (special tool) between the axle holder bottom ② and locknut ④.

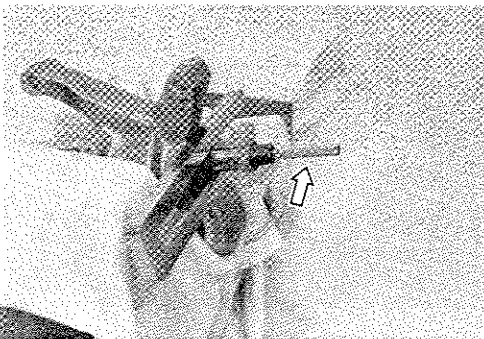
TOOL 09910-20115: Conrod holder



- Hold the locknut with a wrench and remove the center bolt.



- Remove the push rod.

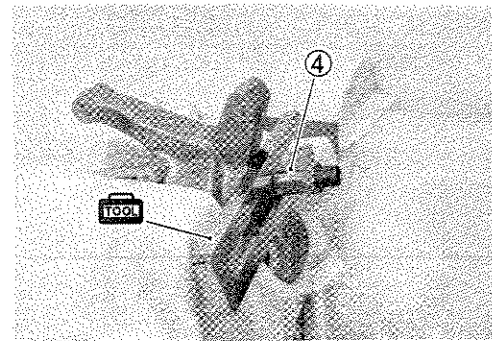


- With the outer tube compressed by hands, remove the special tool.

CAUTION

Removing the locknut ④ and pushing the inner rod thread into the damper rod will damage the inner rod oil seal.

Do not remove the locknut ④ from the inner rod.

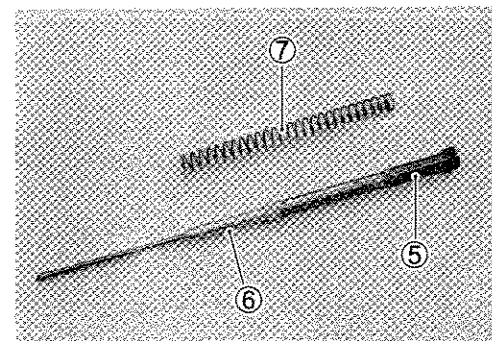
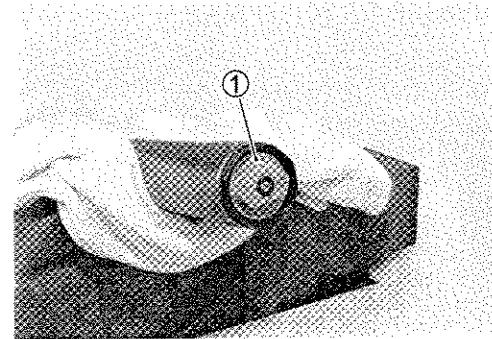


- Loosen the fork cap bolt ① (sub-tank) and remove the sub-tank ⑤ along with the damper rod assembly ⑥.
- Remove the fork spring ⑦.

CAUTION

Disassembling the damper rod assembly can lead to trouble.

Do not disassemble the damper rod assembly.
Do not separate the sub-tank and damper rod assembly.

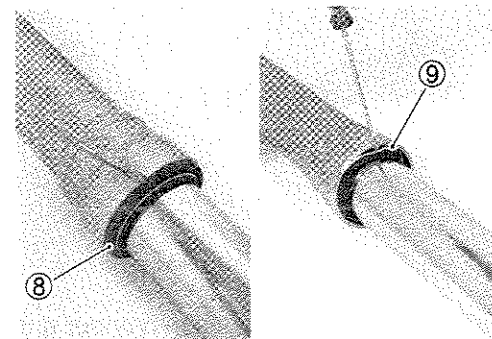


- Remove the dust seal ⑧ and the stopper ring ⑨.

CAUTION

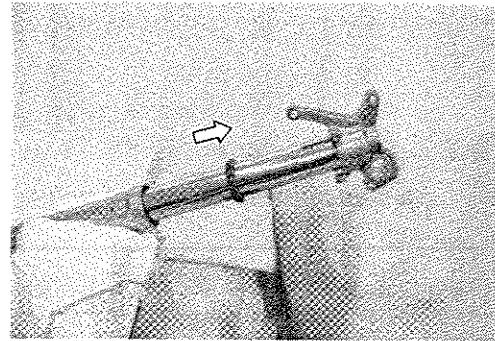
Scratches on the inner tube could cause oil leaks.

Avoid scratching when removing.

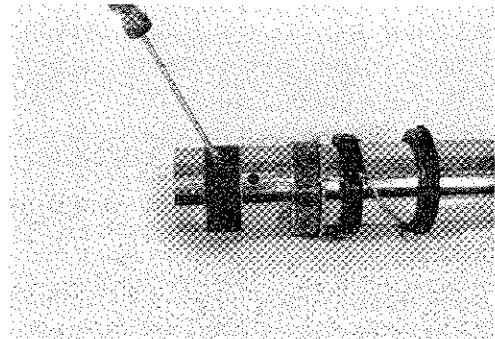


INNER TUBE

- Separate the inner tube out of the outer tube.



- Remove the slide bushing from the inner tube.



- Remove the following parts from the inner tube.

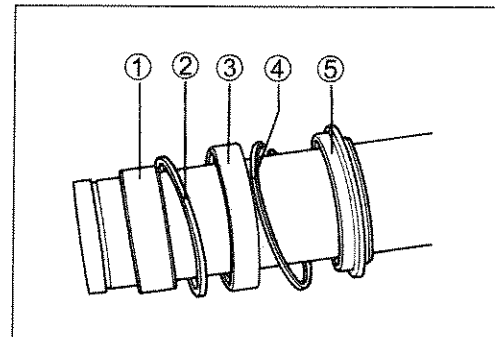
Guide bushing ①

Seal retainer ②

Oil seal ③

Stopper ring ④

Dust seal ⑤

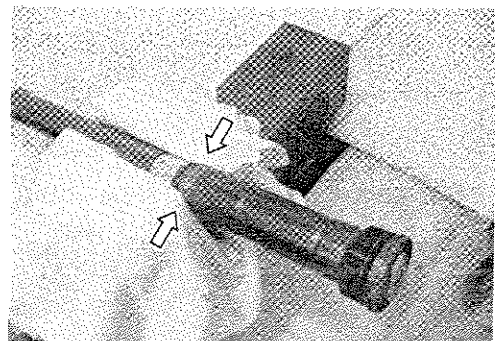


DAMPER ROD

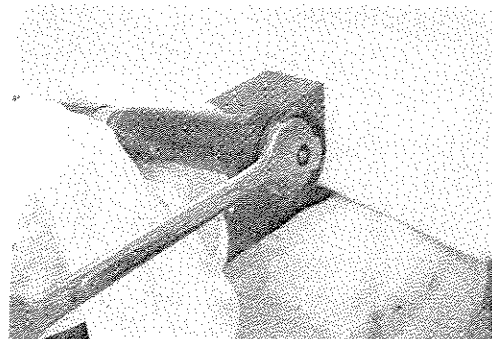
- Clamp the bottom (flat part) of the sub-tank with a vise.

CAUTION

Do not clamp the sub-tank too tight.



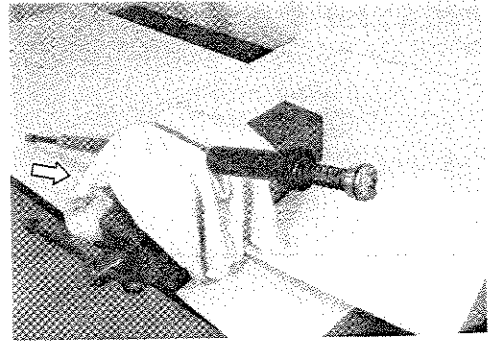
- Loosen the compression damper unit.



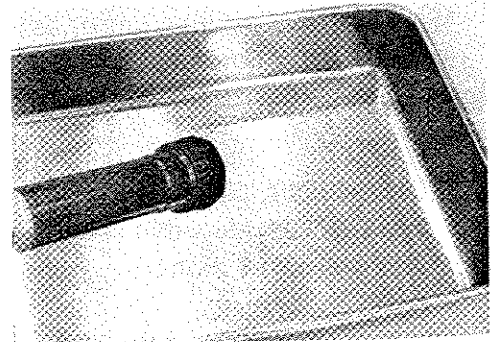
- Remove the compression damper unit from the sub-tank.

NOTE:

Slowly compress the inner rod until it stops so that the compression damper unit can be removed easily.



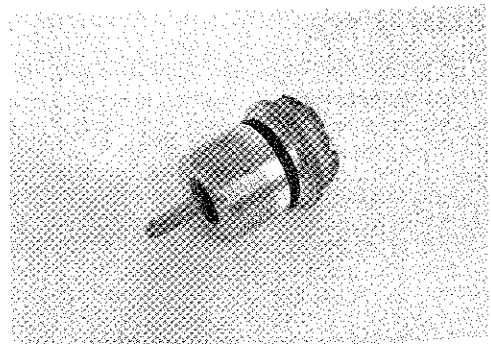
- Drain the fork oil from the damper rod assembly by moving the inner rod several strokes.



INSPECTION

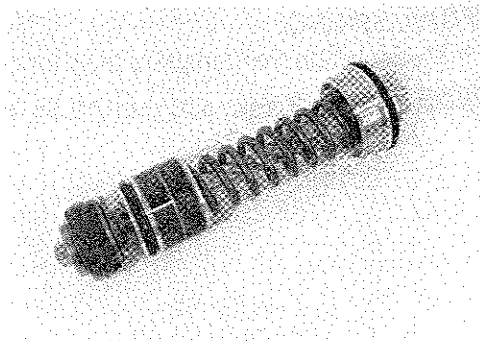
CENTER BOLT

- Inspect the adjuster rod of the center bolt for damage. If it is damaged, replace it with a new one.
- Replace the O-ring with a new one.



COMPRESSION DAMPER UNIT

- Inspect the compression damper unit for damage. If it is damaged, replace it with a new one.
- Replace the O-ring with a new one.



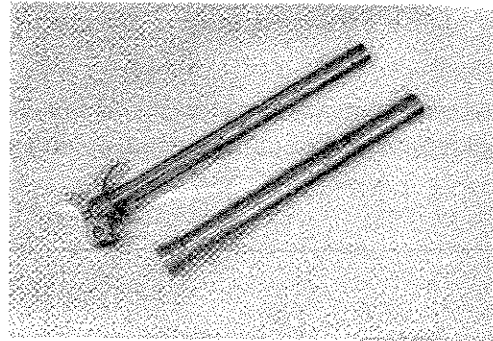
CAUTION

Disassembling the compression damper unit can lead to trouble.

Do not disassemble the compression damper unit.

INNER TUBE AND OUTER TUBE

- Inspect the inner tube for scratches. If it has scratches, replace it with a new one.
- Inspect the outer tube for dent. If it is dented all the way to the inner side, replace it with a new one.



- Measure the inner tube runout using the V-blocks and dial gauge.

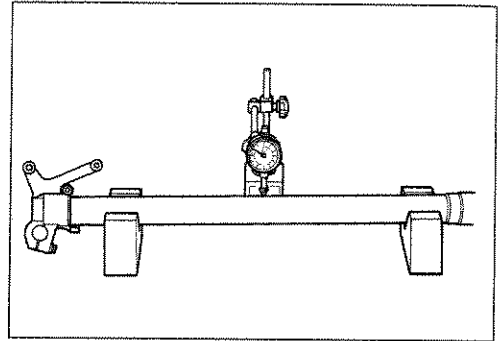
DATA Inner tube runout

Service Limit: 0.4 mm (0.02 in)

TOOL 09900-20607: Dial gauge (1/100 mm)

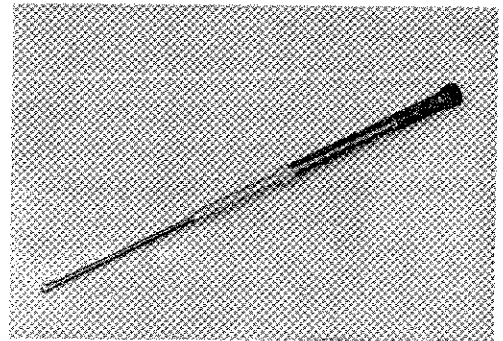
09900-20701: Magnetic stand

09900-21304: V-block



DAMPER ROD

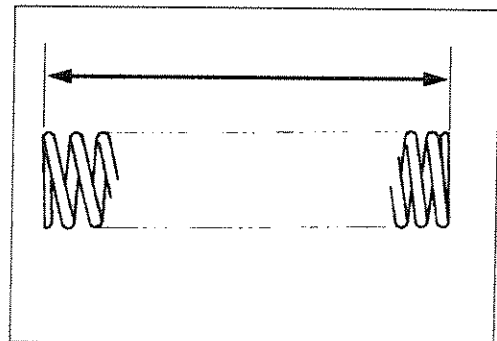
- Inspect the damper rod assembly for scratches or bending. If it has scratches or is bent, replace it with a new one.



FORK SPRING

- Measure the free length of front fork spring.

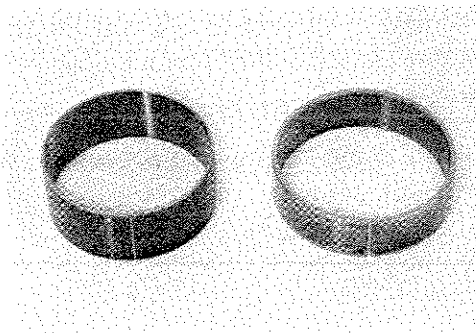
DATA Service Limit: 484 mm (19.06 in)



SLIDE BUSHING AND GUIDE BUSHING

Inspect the "teflon coating metals" (slide bushing and guide bushing) for wear or damage. If they are worn or damaged, replace them with new ones.

Inspect the metal particles on the "teflon coating metals". If they are not clean, clean them with a nylon brush and fork oil.



REASSEMBLY

NOTE:

- * Clean all fork parts before reassembling.
- * Replace the O-rings, oil seal and dust seal with the new ones.
- * Apply specified front fork oil when installing the O-rings, slide bushing, guide bushing, damper unit and other sliding parts.

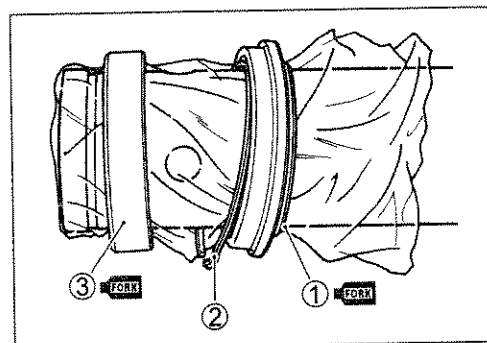
INNER TUBE

- Apply front fork oil to the oil seal lip and the dust seal.
- Cover the inner tube with a plastic film.
- Install the following parts to the inner tube:

New dust seal ①

Stopper ring ②

New oil seal ③



CAUTION

Scratches on the oil seal lip can cause oil leaks.

When installing the seals, place a plastic film over the bushing attachment groove and edges of the inner tube to avoid damaging the seals' lip.

NOTE:

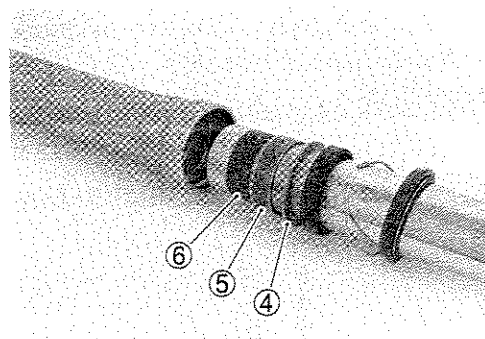
The side of the oil seal that has a mark should face the dust seal.

- Remove the plastic film and then install the seal retainer ④, guide bushing ⑤ and slide bushing ⑥.
- Clean the parts and keep them free from dust.

NOTE:

Inspect the bushings for burrs. If there is a burr, remove it with a knife, taking care not to peel off the teflon coating. If the bushings have a large crack or excessive play after installing them, replace them with new ones.

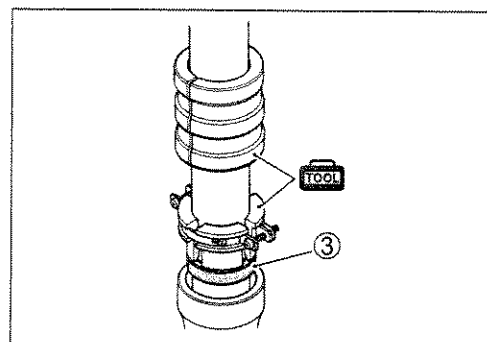
- Insert the inner tube into the outer tube.



- Install the new oil seal ③ with the special tool until the stopper ring groove of the outer tube can be seen.

TOOL 09940-52861: Front fork oil seal installer set

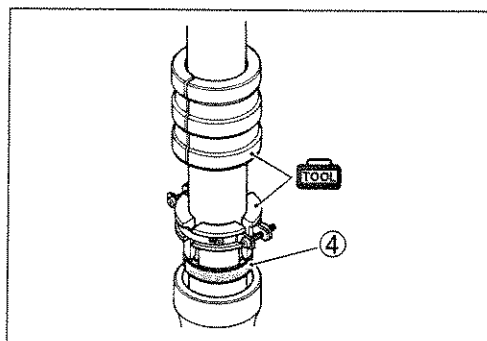
- Attach the stopper ring securely to the stopper ring groove of the outer tube.



- Attach the dust seal ④.

NOTE:

After attaching the dust seal, make sure that there are no cracks around the circumference of the seal. Cracks could allow water, mud and the like to enter and cause an oil leak.



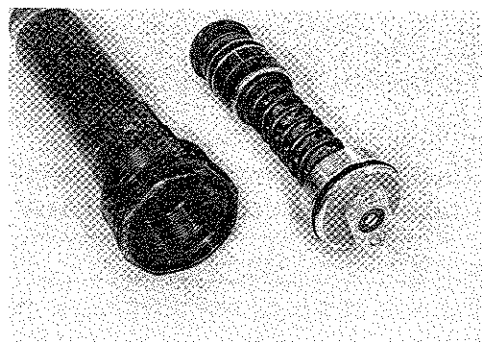
CAUTION

Use of grease as a substitute fork oil when installing the oil seal can result in an oil leak. Applying grease to the dust seal and oil seal can cause dirt to accumulate and damage the dust seal lip and oil seal lip.

Use only a thin coat of fork oil on the oil seal.

DAMPER ROD

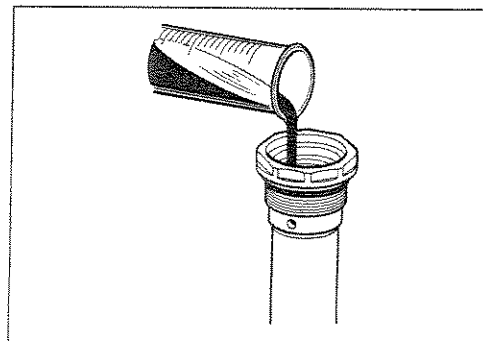
- Clean each threaded part before installing.



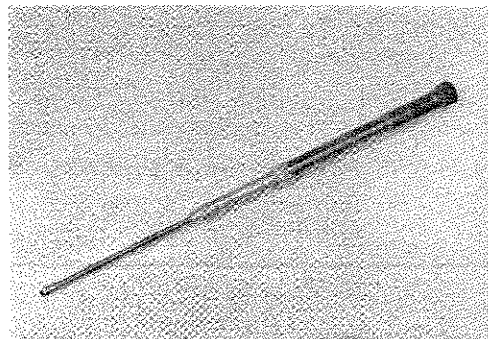
- With the damper rod in fully extended position, pour the specified amount of fork oil.

DATA Fork oil quantity (Inside the damper rod):
193 ml (6.52/6.80 US/Imp oz)

FORK 99000-99001-SS5: SUZUKI FORK OIL SS-05



- Apply fork oil to the O-rings and bushing on the compression damper unit.
- With the damper rod held immovable in fully extended position, gently install the compression damper unit to the sub-tank.



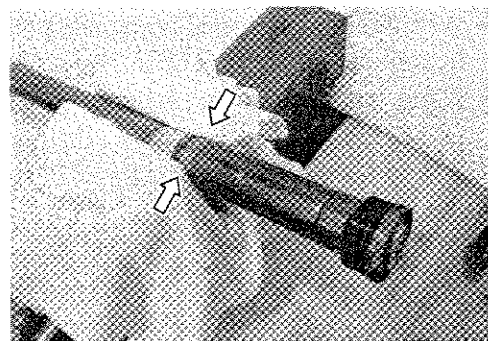
- Clamp the bottom (flat part) of the sub-tank with a vise.

CAUTION

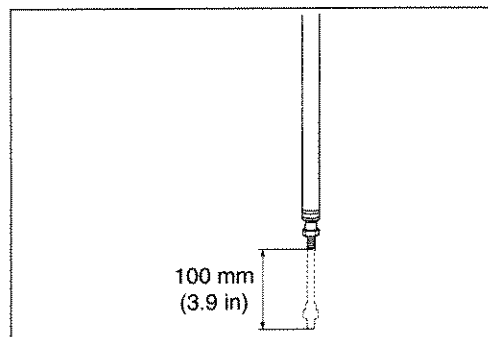
Do not clamp the sub-tank too tight.

- Tighten the compression damper unit to the specified torque.

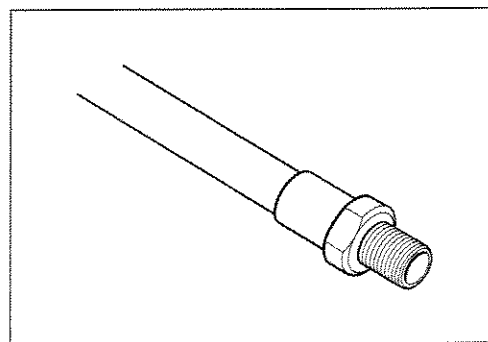
 **Compression damper unit: 30 N·m (3.0 kgf-m, 21.5 lb-ft)**



- With the damper rod held in vertical position, slowly move the inner rod several strokes.



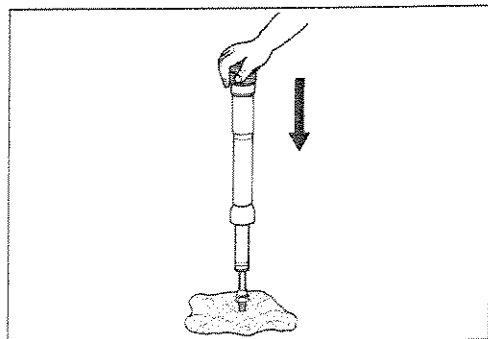
- Tighten the locknut by hand completely.



- With the damper rod held in vertical position, compress the damper rod fully to discharge an excess of oil.

CAUTION

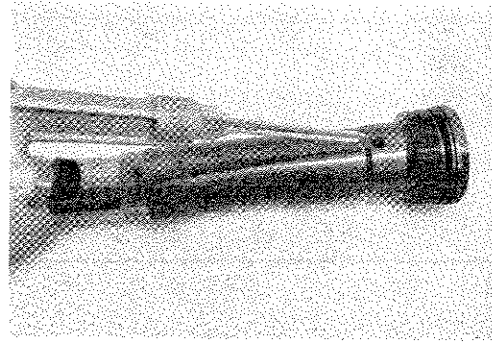
Protect the inner rod end with a rag when compressing the damper rod.



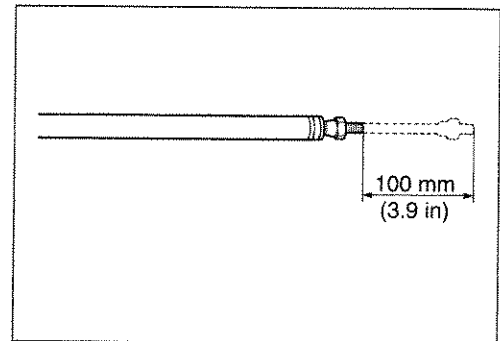
NOTE:

Set the compression damper setting to the softest.

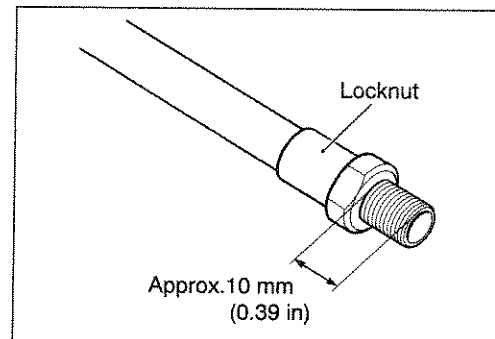
- Force out the remaining oil (discharged oil) using compressed air completely.



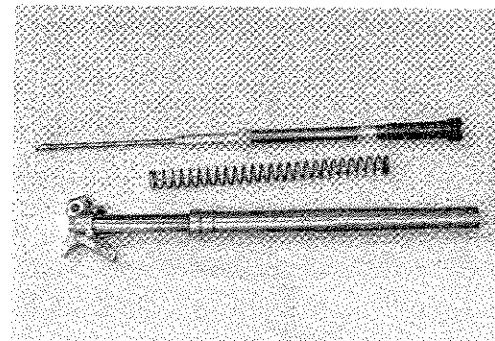
- With the damper rod in horizontal position, move the inner rod by hand to inspect it if operating smoothly.
- If the inner rod is not extend, repeat the "COMPRESSION DAMPER UNIT" procedures (Pour the specified amount fork oil and discharge an excess of oil). (17-12)



- Make sure approx. 10 mm (0.39 in) of inner rod thread is exposed on the end.

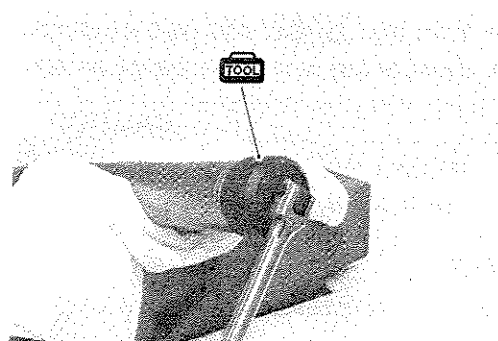


- Completely wipe off the fork oil from the spring and damper rod assembly.
- Insert the spring and damper rod assembly into the fork.



- Temporarily tighten the fork cap bolt (sub-tank).

 09941-53630: Front fork top cap wrench



- Clamp the axle holder with a vise. Protect the axle holder with a rag when using a vise.

⚠ WARNING

Clamping the axle holder too tight can damage it which will affect riding stability.

Do not clamp the axle holder too tight.

- Compress the outer tube by hands and install the conrod holder (special tool) between the axle holder bottom and locknut.

🔧 09910-20116: Conrod holder

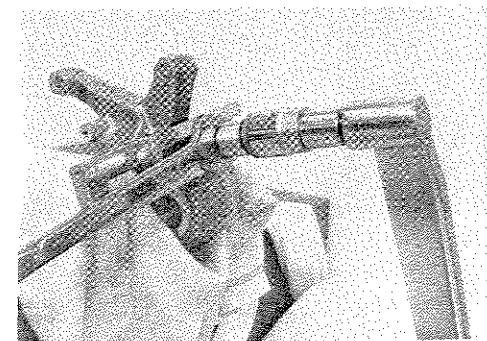
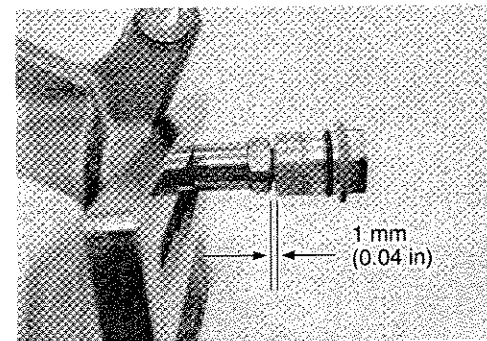
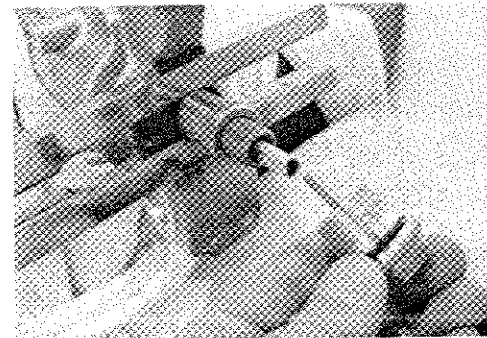
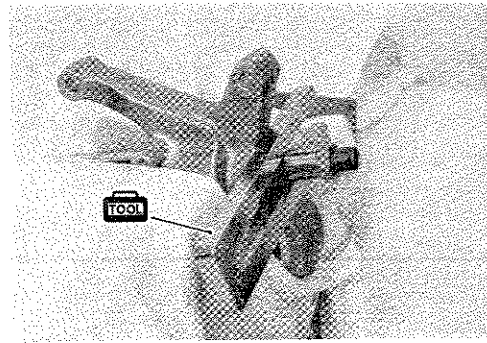
- Insert the push rod into the inner rod.
- Insert the  shaped projection of center bolt into the push rod.

- Slowly turn the center bolt clockwise until resistance is felt and check the clearance between the locknut and center bolt to provide more than 1 mm (0.04 in).

- Turn the locknut counterclockwise until it contacts with the center bolt.
- With the locknut held immovable using a wrench, tighten the locknut/center bolt to the specified torque.

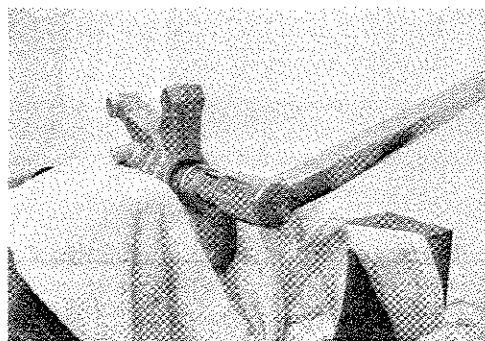
🔧 Locknut/center bolt: 22 N·m (2.2 kgf-m, 16.0 lb-ft)

- With the outer tube compressed by hands, remove the special tool.



- Tighten the center bolt to the specified torque.

 **Center bolt: 70 N·m (7.0 kgf-m, 51.0 lb-ft)**



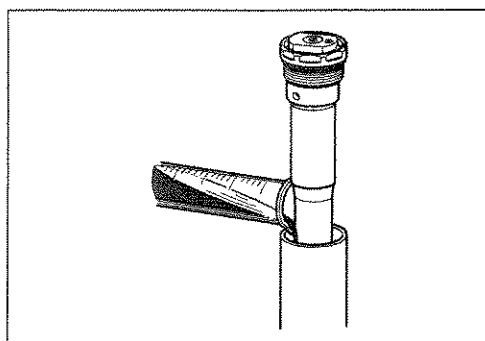
- Loosen and remove the fork cap bolt (sub-tank) from the outer tube and slowly slide down the outer tube.

 **09941-53630: Front fork top cap wrench**

- Pour the specified amount of fork oil into the outer tube.

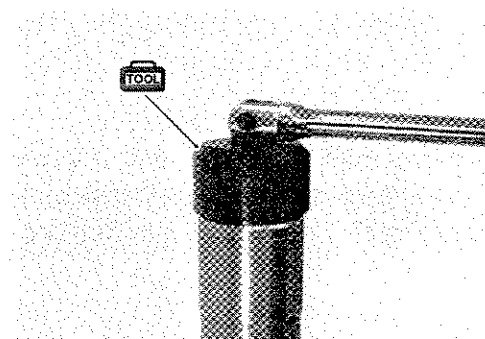
 **Oil quantity (When standard fork spring is used):**
352 ml (11.90/12.39 US/Imp oz)

 **99000-99001-SS5: SUZUKI FORK OIL SS-05**



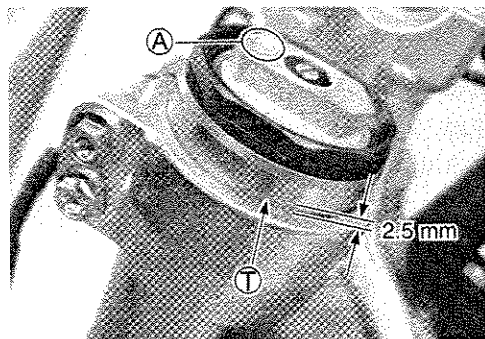
- Raise the outer tube and temporarily tighten the fork cap bolt (sub-tank).

 **09941-53630: Front fork top cap wrench**



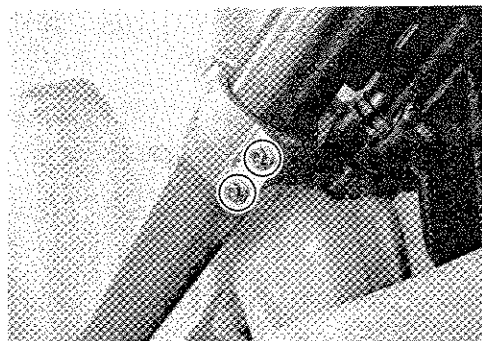
INSTALLATION

- Install the front fork with the line ① positioned 2.5 mm from the upper surface of the upper bracket.
- Check that the air valve ② is positioned at the front.



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

 **Fork lower clamp bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)**



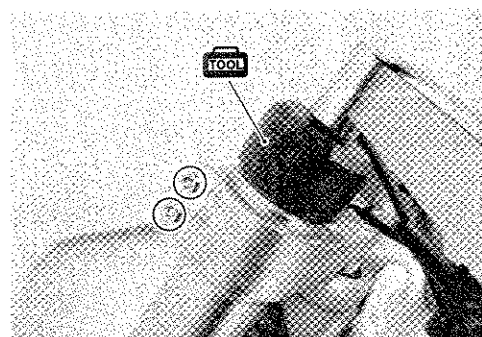
- Tighten the fork upper clamp bolts to the specified torque.

 **Fork upper clamp bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)**

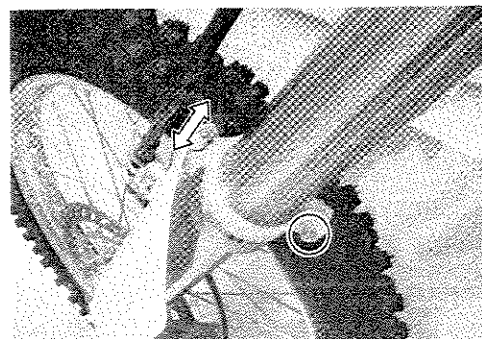
- Tighten the fork cap bolt (sub-tank) to the specified torque.

 **Fork cap bolt: 35 N·m (3.5 kgf-m, 25.5 lb-ft)**

 **09941-53630 : Front fork top cap wrench**



- Install the handlebars. (17-22)
- Install the front wheel. (15-5)
- Install the brake caliper. (16-9)



- Check that the front fork protectors move smoothly. If not, loosen and adjust the protector guide.

INSPECTION AFTER INSTALLATION

- Front fork (2-31)
- Steering (2-32)
- Wire, cable and hose routing (19-17, 23, 25)

STEERING

REMOVAL

HANDLEBARS

- Place the motorcycle on a block to lift front wheel off the ground.
- Remove the front number plate and protector. (17-4)
- Remove the clamps.
- Remove the clutch lever.
- Remove the engine stop switch ①.
- Remove the left handle grip ②.

NOTE:

Align the matching mark on the handlebar, left handle grip and the handlebar.

- Remove the front brake master cylinder.

NOTE:

Align the matching mark on the handlebar and the master cylinder.

- Remove the throttle assembly mounting screws.

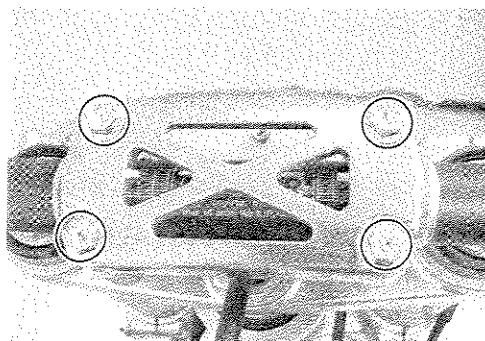
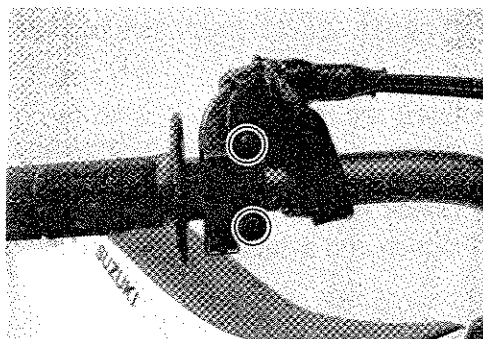
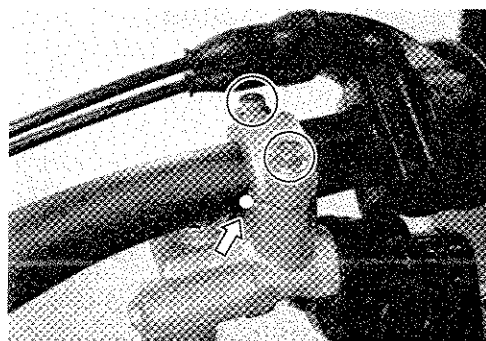
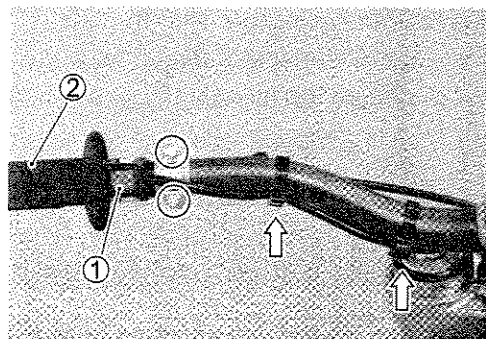
NOTE:

Align the matching mark on the handlebar and the throttle holder.

- Remove the handlebar holder bolts and remove the handlebars.

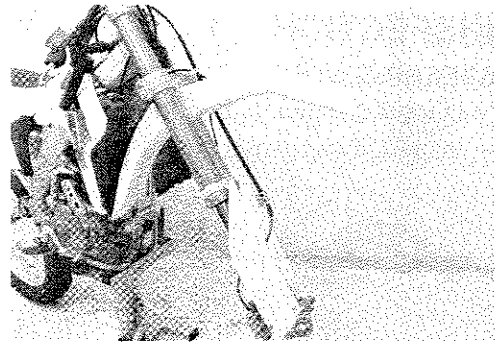
NOTE:

Align the matching mark on the handlebar and the handlebar holder.

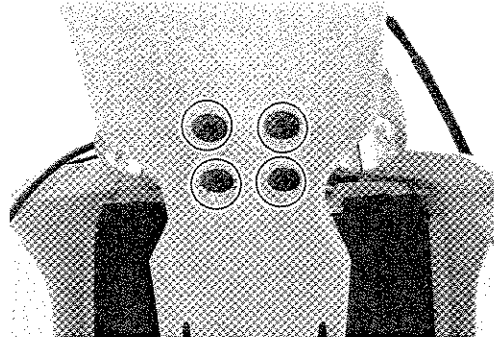


STEERING STEM

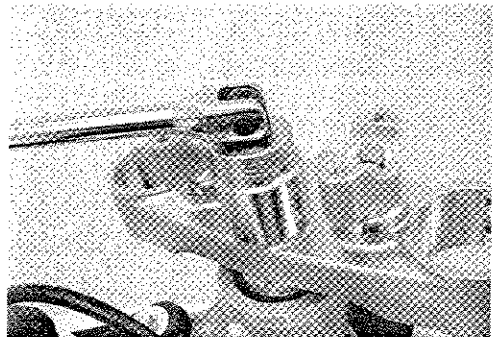
- Remove the front wheel. (15-3)
- Remove the front forks. (17-4)



- Remove the front fender.



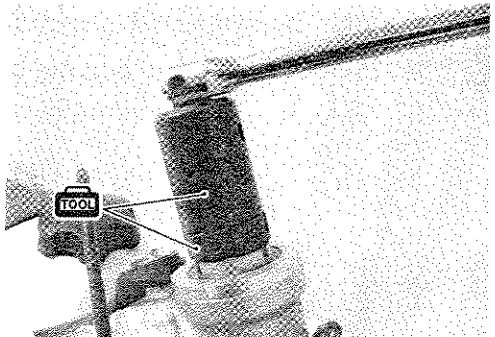
- Remove the steering stem head nut.
- Remove the steering stem upper bracket.



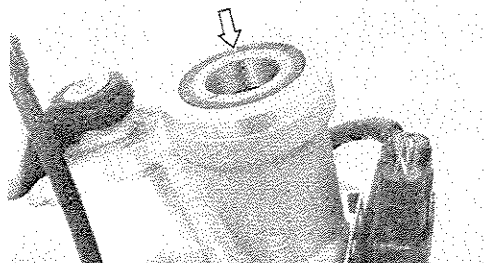
- Remove the steering stem nut with the special tools.

TOOL 09940-14911: Steering nut socket wrench
09940-14960: Attachment

- Remove the steering stem lower bracket.



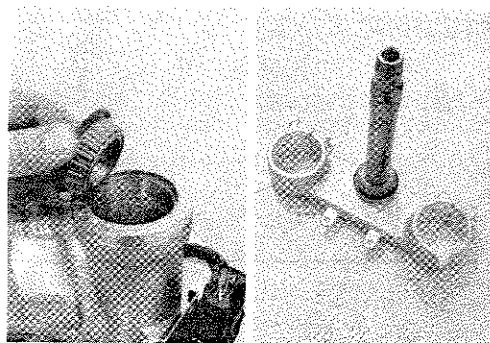
- Remove the upper bearing.



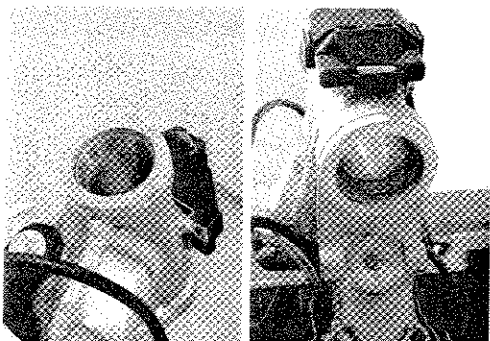
INSPECTION

STEERING STEM

- Inspect the needle bearings for wear.
- Inspect the steering stem for distortion.

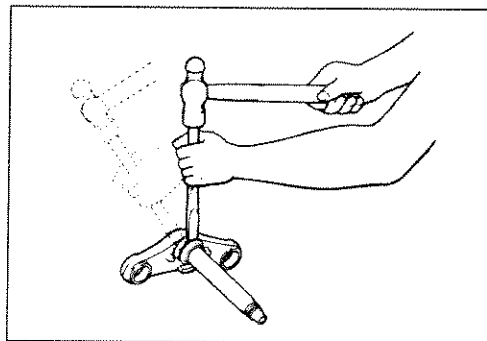


- Inspect the bearing outer races for wear.



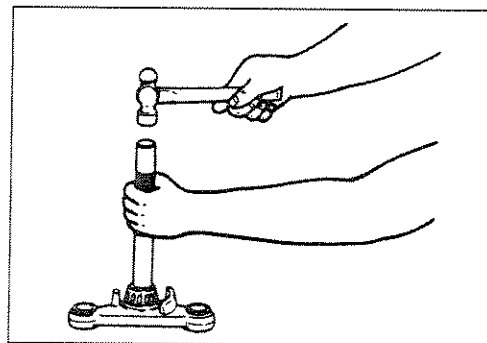
BEARING REPLACEMENT

- Remove the lower bearing.



- Fit the lower bearing with the special tool.

 **09925-18011: Steering bearing installer**

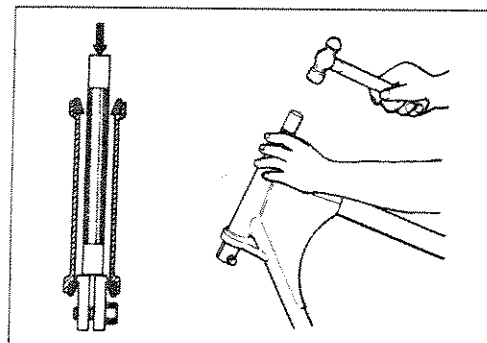


NOTE:

Replace the outer race and bearing as a set.

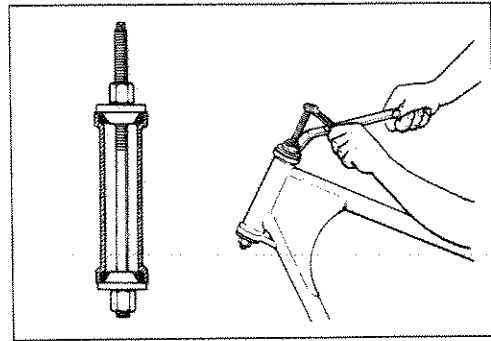
- Remove the upper and lower outer races with the special tools.

 **09941-54911: Steering race remover**
09941-74911: Steering bearing installer



- Fit the upper and lower outer races with the special tools.

TOOL 09941-34513: Steering outer race and swingarm bearing installer
09924-84510: Bearing installer

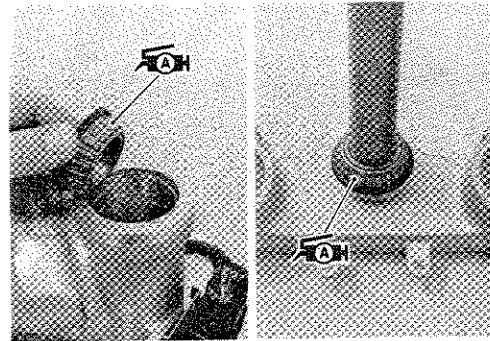


INSTALLATION

STEERING STEM

- Apply grease to the bearings.

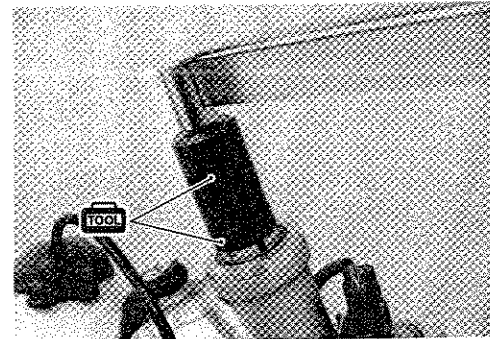
FAH 99000-25030: SUZUKI SUPER GREASE "A" (USA)
99000-25010: SUZUKI SUPER GREASE "A" (Others)



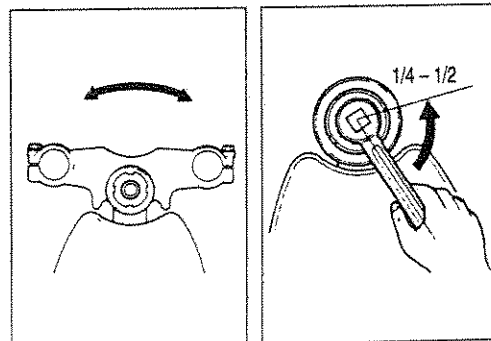
- Fit the steering stem lower bracket, upper bearing and steering stem nut.
- Tighten the steering stem nut with the special tools.

TOOL 09940-14911: Steering nut socket wrench
09940-14960: Attachment

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



- Move the steering stem right and left several times to seat the bearings.
- Turn back the steering stem nut by 1/4 to 1/2 turn.
- Fit the steering stem head nut and tighten it temporarily.
- Remount the front forks. (17-17)



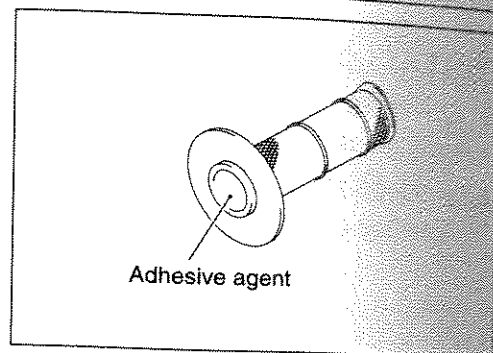
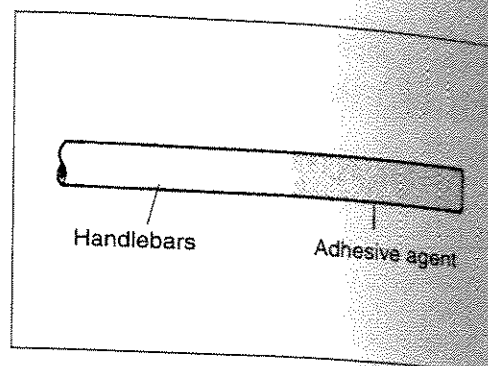
- Tighten the steering stem head nut to the specified torque.

W Steering stem head nut: 100 N·m (10.0 kgf-m, 72.5 lb-ft)

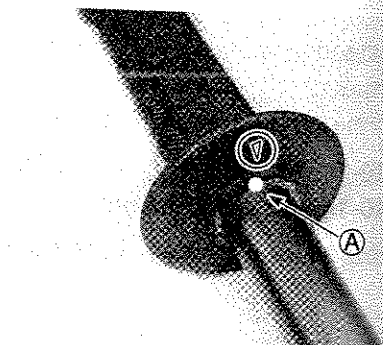


HANDLEBARS

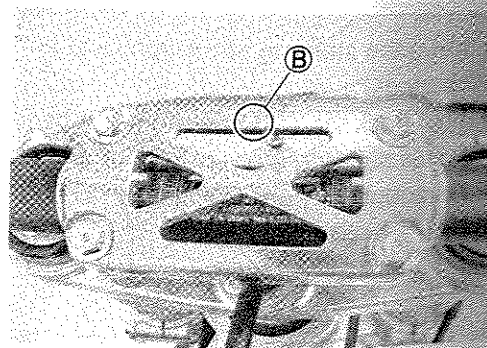
- Apply adhesive agent to the left handlebar end and inside of the left grip.



- Align the "△" mark on the left grip with the matching mark ① on the left handlebar end.



- Set the mark ③ on the handlebar holder forward.



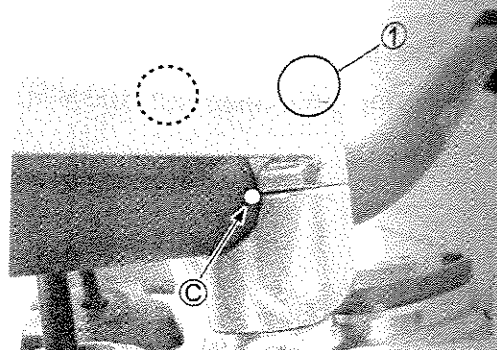
- Align the matching mark ④ on the handlebars with the matching surface of the handlebar holder.
- Tighten the handlebar clamp bolts to the specified torque.

Handlebar clamp bolt: 25 N·m (2.5 kgf·m, 18.0 lb·ft)

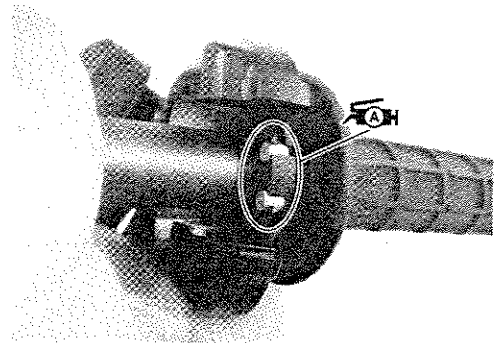
NOTE:

When tightening the handlebar clamp bolts, first tighten the bolts

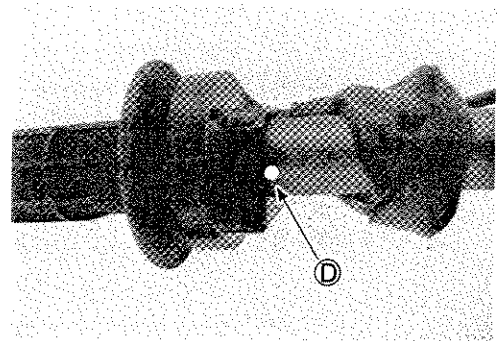
①.



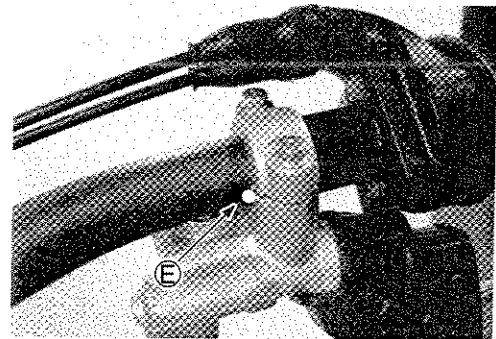
- Apply grease to the throttle cable and their hole.



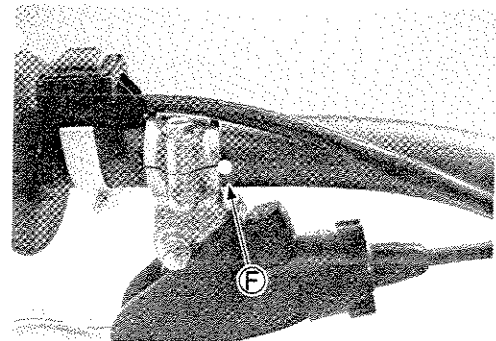
- Align the matching mark ① on the handlebars with the throttle holder matching surface.



- Align the matching mark ② on the handlebars with the front brake master cylinder matching surface.



- Align the matching mark ③ on the handlebars with the clutch lever holder matching surface.
- Install the engine stop switch.



Inspect the following items.

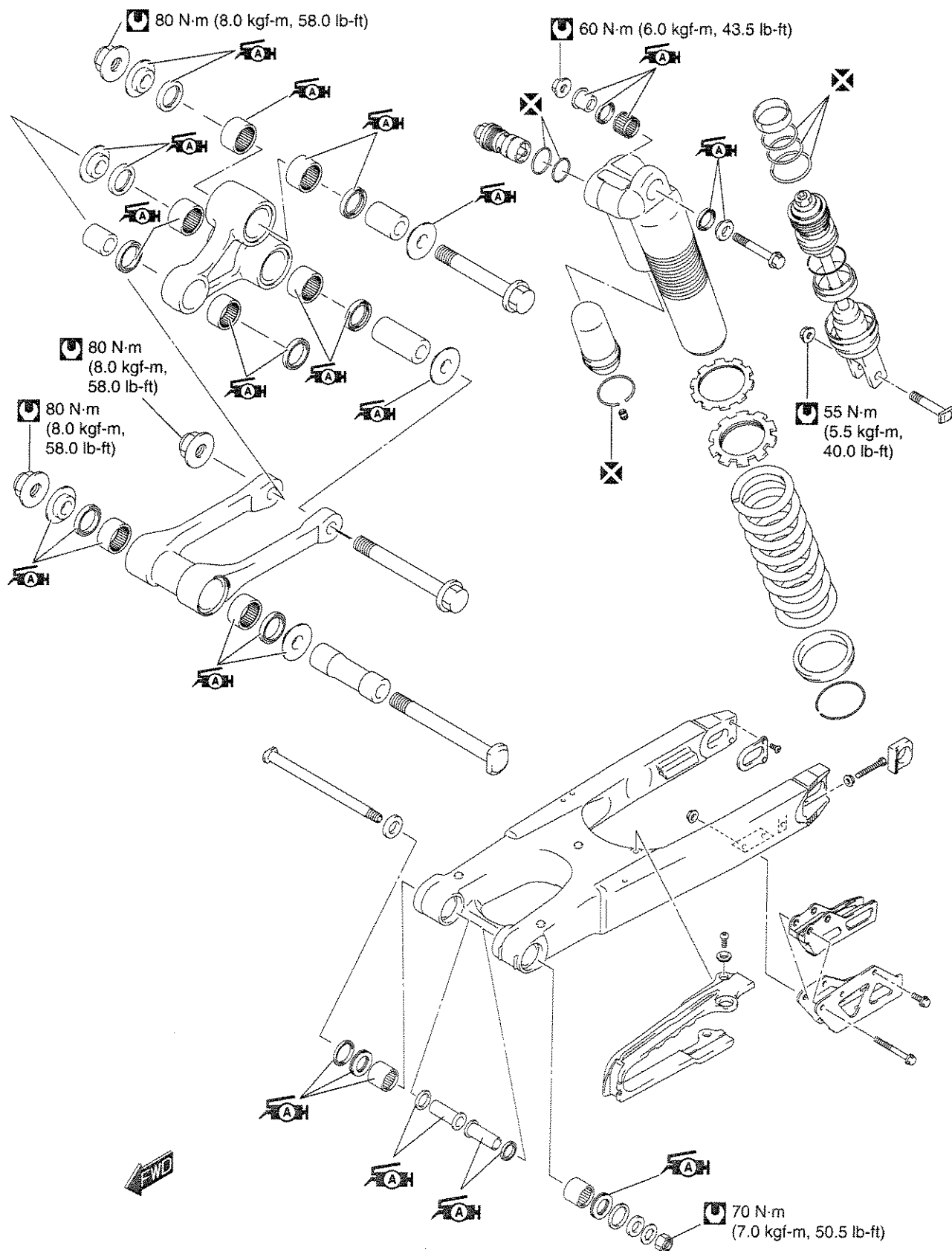
- Front fork (☞ 2-31)
- Steering (☞ 2-32)
- Wire, cable and hose routing (☞ 19-17, 18, 23, 25)

REAR SUSPENSION

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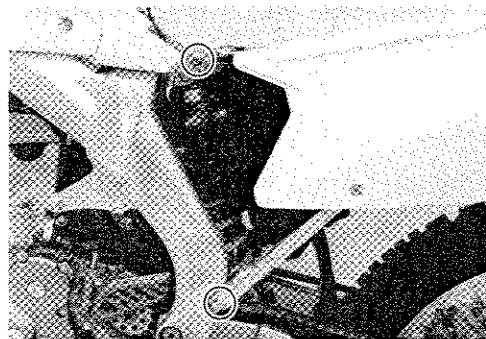
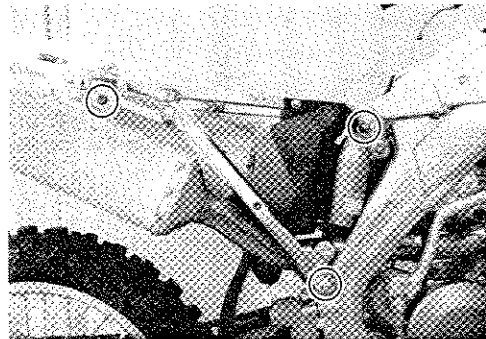
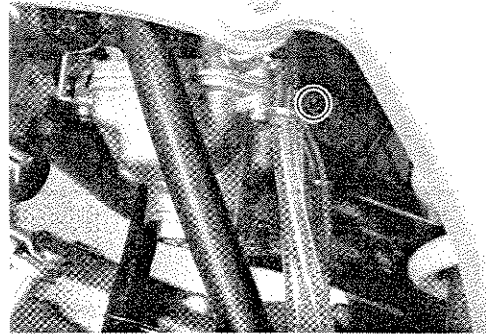
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CONSTRUCTION REAR SUSPENSION



REAR SHOCK ABSORBER REMOVAL

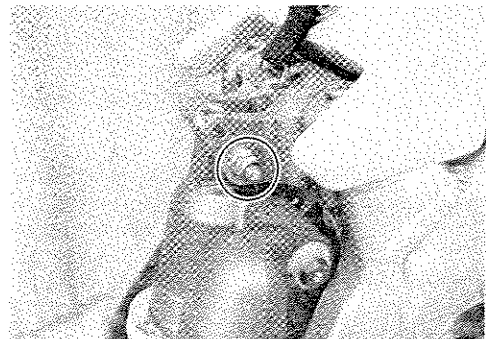
- Place a block under chassis tube.
- Remove the seat. (5-2)
- Loosen the air cleaner clamp screw.
- Remove the right frame cover. (5-2)
- Remove the silencer and rear frame assembly.



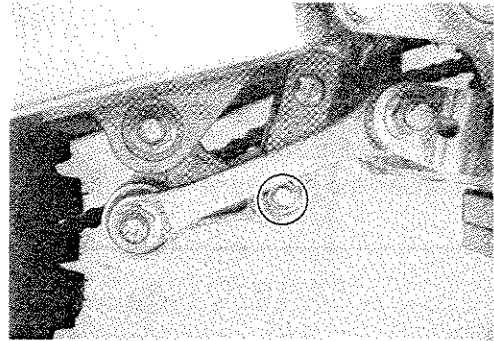
- Remove the rear shock absorber upper mounting bolt and nut.

NOTE:

If necessary, move the swingarm up or down to facilitate this mounting bolt/nut removal.



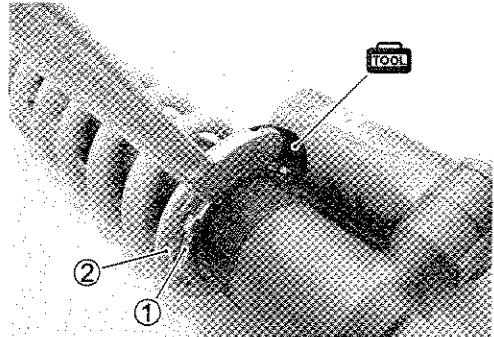
- Remove the rear shock absorber lower mounting bolt and nut.
- Remove the rear shock absorber.



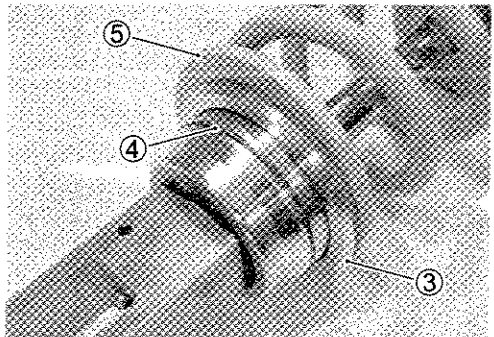
SPRING REPLACEMENT

- Loosen the locknut ① with the special tool and turn it fully to the end of the thread.
- Turn the adjuster ② as well as the locknut ①.

 09910-60611: Universal clamp wrench



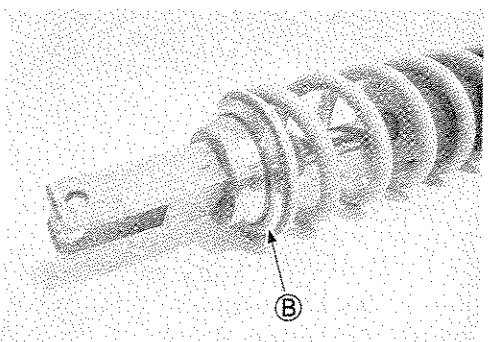
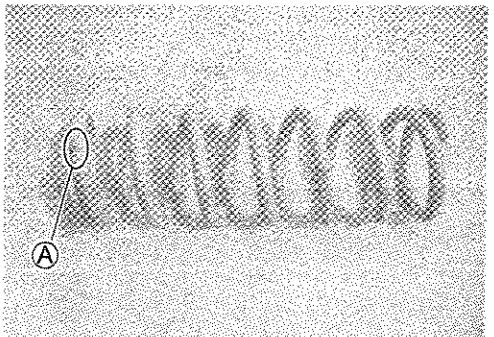
- Depress the spring seat ③ and remove the stopper ring ④.
- Remove the spring seat ③ and the spring ⑤ from the rear shock absorber.



- Install the locknut, adjuster, spring, spring seat and stopper ring.

NOTE:

- * Install the spring as its painted side (A) or small diameter side faces bottom.
- * When installing the spring seat, insert the tapered end (B) of the spring.



- Adjust the spring set length and tighten the locknut.



Standard spring set length:

3.5 mm (0.138 in) compressed from the free length

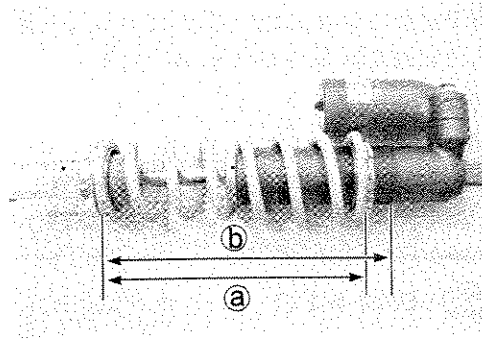
Spring set length adjustable range:

245 – 263 mm (9.646 – 10.354 in)

[at spring free length 256 mm (10.433 in)]

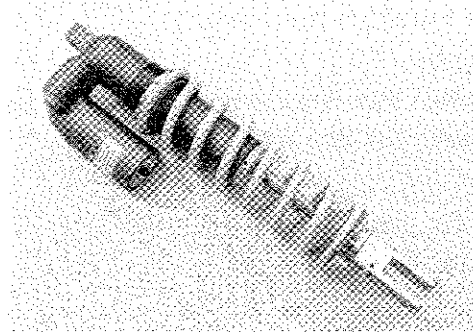
Ⓐ: Hardest spring setting

Ⓑ: Softest spring setting

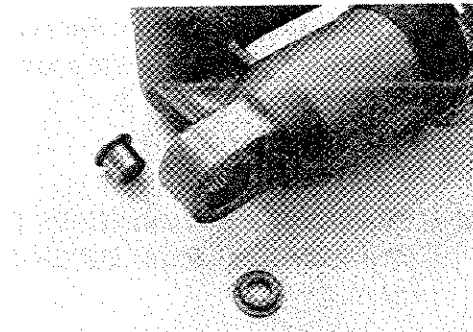


INSPECTION

- Inspect the rear shock absorber for oil leakage.
- Inspect the damper rod for bends and smooth movement.
- Inspect the bump rubber for deterioration and damage.
- Inspect the damper rod hidden by the bump rubber by moving the bump rubber.

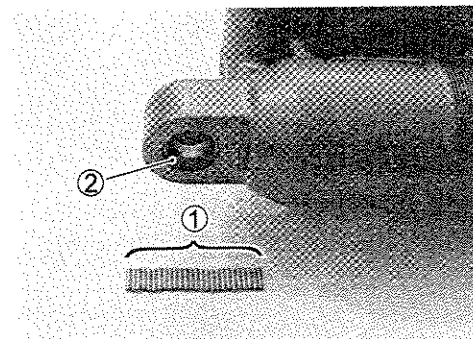


- Inspect the spacers and dust seals for damage.
- Inspect the bearing for excessive play and smooth movement.



BEARING REPLACEMENT

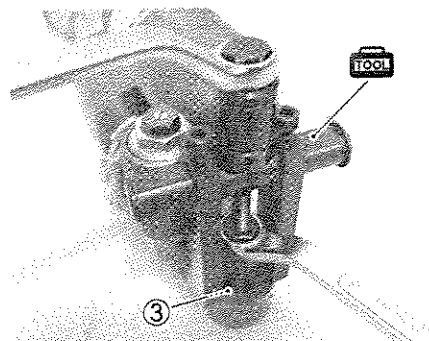
- Remove the spacers.
- Remove the needle roller bearings ①.
- Remove the dust seals ②.



- Remove the needle roller bearing cage ③ with the special tool.



09921-20240: Bearing remover set



- Press the needle roller bearing cage with the special tool and a suitable size socket wrench.

NOTE:

When installing the needle roller bearing cage, the stamped mark on the bearing must face left side.

Position the needle roller bearing cage by referring to the illustration of page 18-22.

 **09924-84521: Bearing installer set**

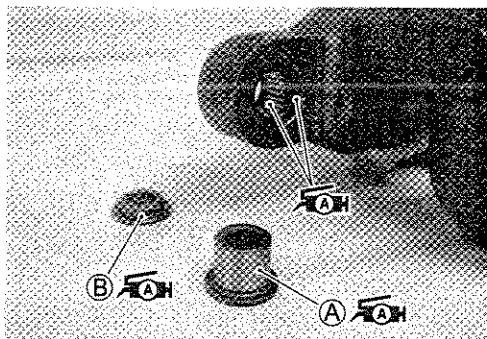
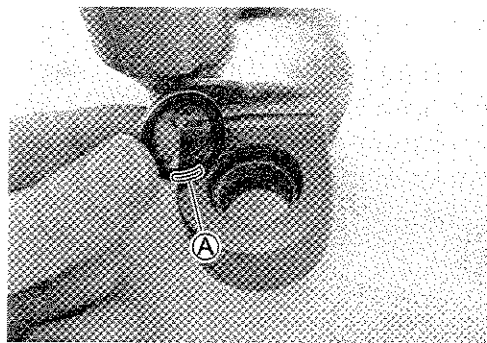
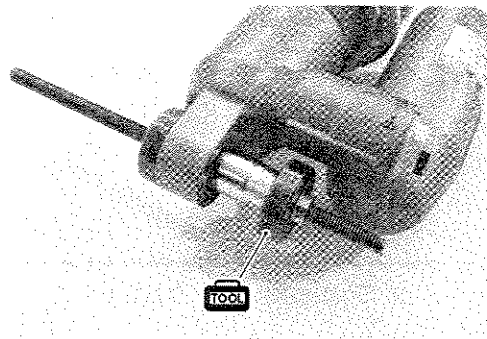
- Install the dust seals.

NOTE:

When installing the dust seal, the stamped mark (A) on the dust seal must face inside.

- Apply grease to the needle roller bearings and install them.
- Apply grease to the dust seals and spacers.
- Install the spacers (A) and (B).
 - (A) for Right side
 - (B) for Left side

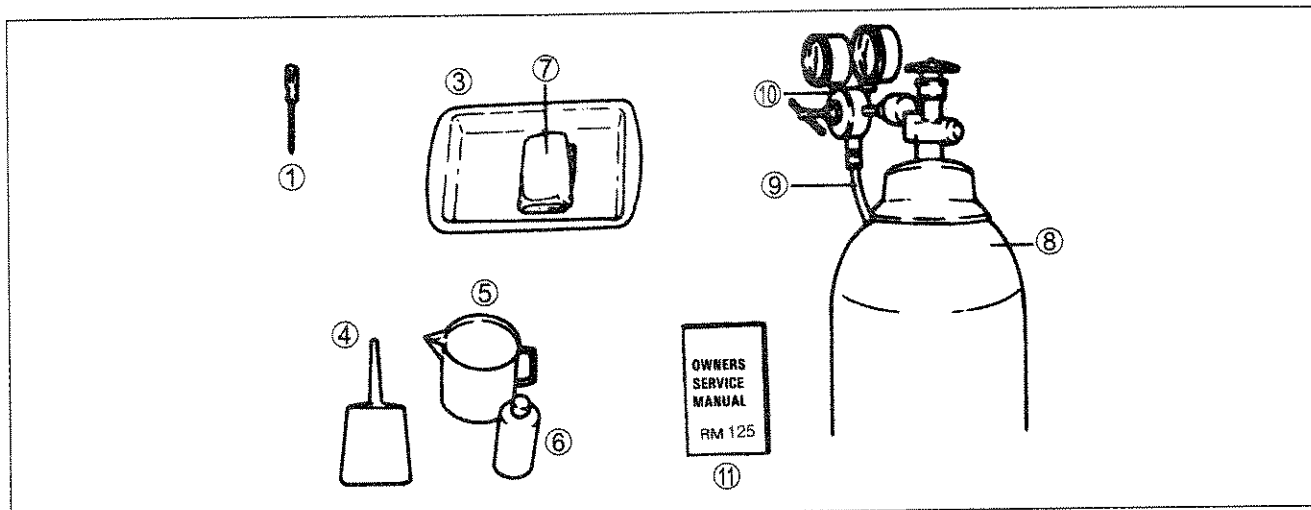
 **99000-25030: SUZUKI SUPER GREASE "A" (USA)**
99000-25010: SUZUKI SUPER GREASE "A" (Others)



OIL REPLACEMENT

TOOLS AND EQUIPMENT

- Following tools and equipment are required to perform oil replacement.



- | | |
|------------------------------|--------------------------|
| ① Screwdriver or small punch | ⑦ Rags |
| ② Vise* | ⑧ Nitrogen tank |
| ③ Drain Pan | ⑨ Filler Hose and Nozzle |
| ④ Oil can | ⑩ Regulator Assembly |
| ⑤ Beaker | ⑪ Owner's Service Manual |
| ⑥ Specified Shock Oil (SS25) | |

* Not Shown in the illustration

OIL REPLACEMENT PROCEDURE

- Remove the rear shock absorber unit from the frame (18-3), clean and dry it.
- Remove the spring from the rear shock absorber unit. (18-4)

NOTE:

Inspect the rear shock absorber unit for oil leak.

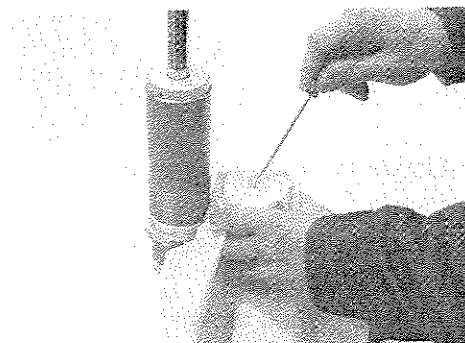
Turn the rebound damping force adjuster screw counterclockwise until it stops so that the rear suspension oil can be poured easily.

- Remove the valve cap. Press the valve with a screwdriver to bleed out nitrogen gas.

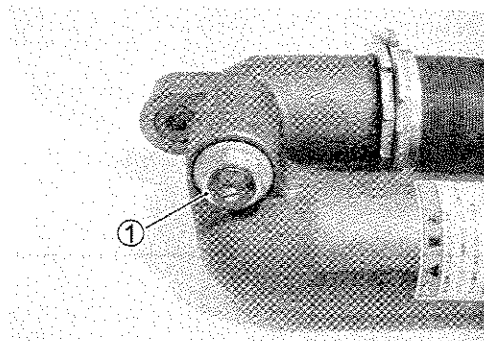
⚠ WARNING

Releasing high pressure gas from the rear shock absorber unit can be hazardous.

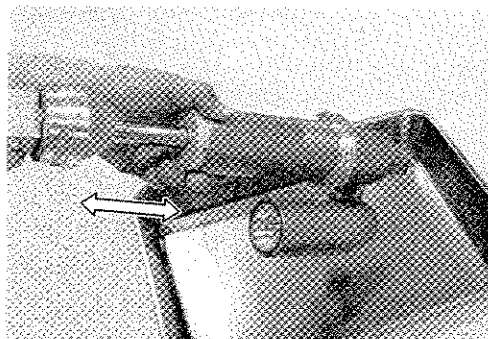
Never perform any servicing until the nitrogen gas pressure has been released from the rear shock absorber unit. When releasing the gas pressure, place a rag over the gas valve and use the tip of a screwdriver etc. to press the valve. Do not use your finger to depress the gas valve, and direct the valve away from your face and body.



- Remove the compression adjuster assembly ① from the rear shock absorber.



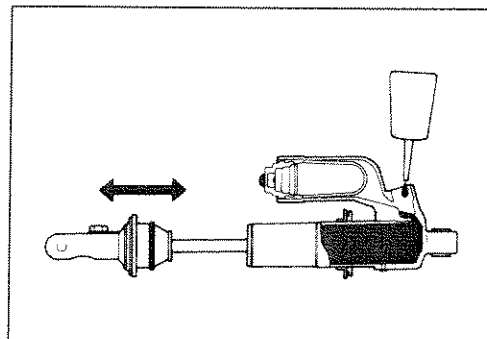
- Place a drain pan under the rear shock absorber unit.
- Move the rod and drain the oil completely.
- Push the valve core again to equalize the bladder to atmospheric pressure.



- Pour the fresh specified rear suspension oil as shown while moving the rod.

NOTE:

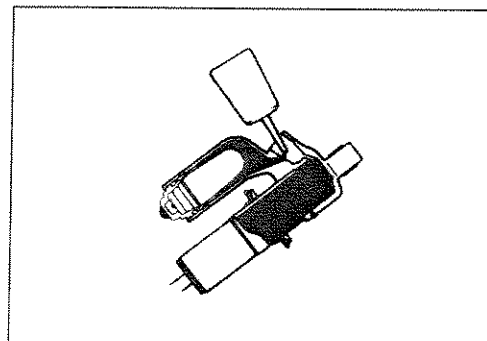
Be sure to extend the rod after filling the oil.



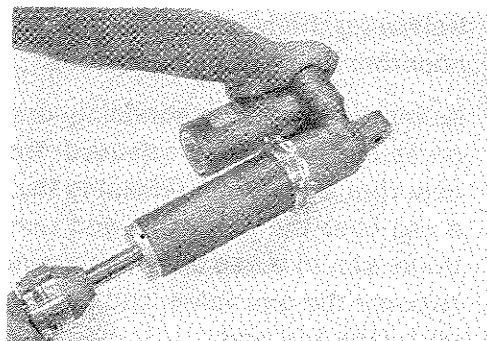
- Tilt the shock absorber unit as shown and pour the fresh rear suspension oil fully into the reservoir tank.

99000-99001-S25: SUZUKI REAR SUSPENSION OIL SS-25

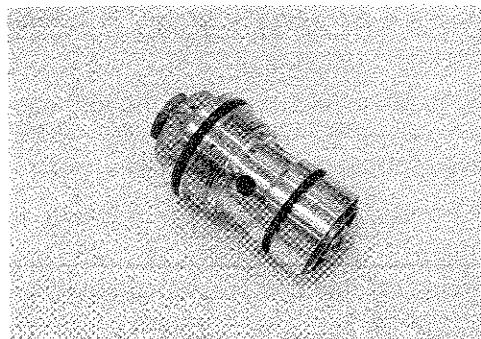
DATA Oil capacity: Approx. 380 ml (12.84/13.38 US/Imp oz)



- Cover the compression adjuster hole with the root of your thumb.
- Tilt and shake the rear shock absorber unit to fill the reservoir tank with the oil.
- Add the oil and repeat the above procedure until the reservoir tank is filled with the oil completely.



- Replace the O-rings on the compression adjuster assembly with new ones.

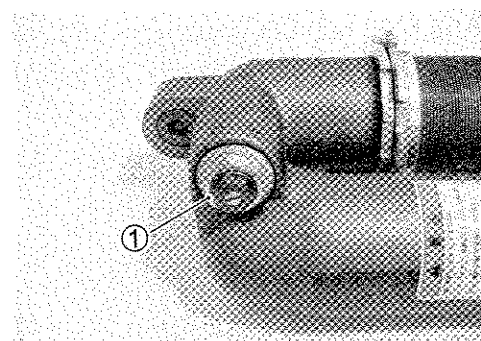


- Reinstall the compression adjuster assembly ①.

Compression adjuster assembly:

30 N·m (3.0 kgf-m, 21.5 lb-ft)

- Fill the rear shock absorber unit with nitrogen gas to 981 kPa (9.8 kgf/cm², 139.5 psi).
- Tighten the gas valve cap.
- Reinstall the spring. (18-4)



WARNING

Use of flammable gas for pressuring the rear shock absorber unit can be hazardous. Flammable gas such as gas welding oxygen can cause a fire hazard.

Use nitrogen gas. If nitrogen gas is not available, compressed air free from water can be substituted.

WARNING

Applying too much pressure to the rear shock absorber unit may rupture the rear shock absorber unit.

Be sure to fill the rear shock absorber unit to the specified pressure.

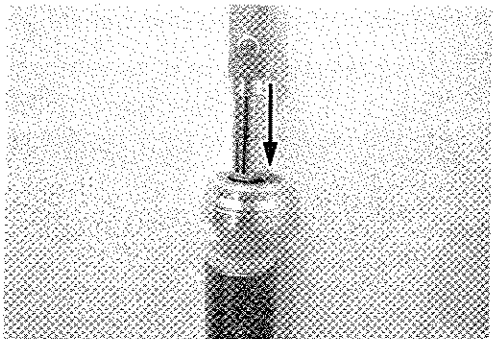
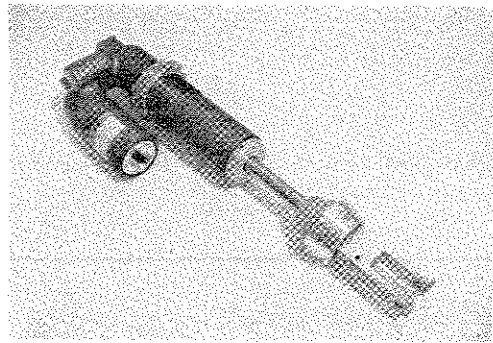
CAUTION

Riding the motorcycle with abnormal gas pressure can damage the rear shock absorber unit. Low gas pressure can result in oil leakage. Abnormal gas pressure cannot provide normal rear shock absorber unit performance.

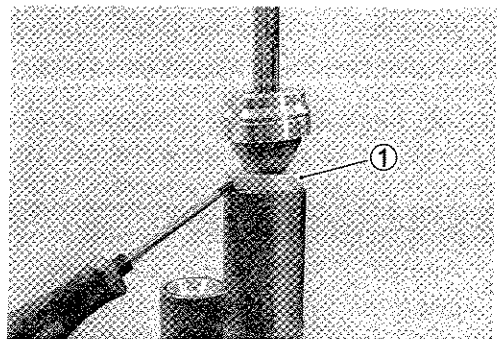
Be sure to fill the rear shock absorber unit to the specified pressure.

DISASSEMBLY AND INSPECTION

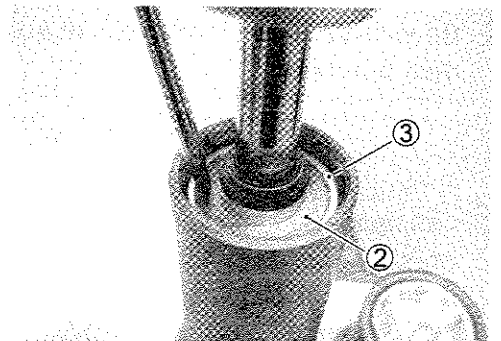
- Clean and dry the rear shock absorber.
- Remove the spring from the rear shock absorber. (18-4)
- Turn the rebound damping force adjuster to the softest position.
- Press the valve with a screwdriver to bleed out nitrogen gas. (18-7)
- Remove the compression adjuster assembly and drain the oil. (18-7)
- Vise the rear shock absorber unit in inverted position.
- Depress the bump rubber fully to protect the damper rod.



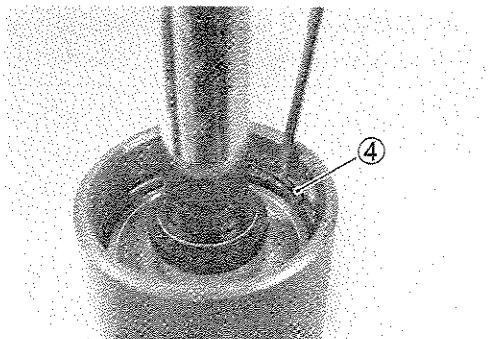
- Evenly hammer the stopper ① with a screwdriver or equivalent and remove it from the rear shock absorber body.



- Depress the seal case ② with a screwdriver until the circlip ③ is fully exposed.



- Remove the circlip ④.



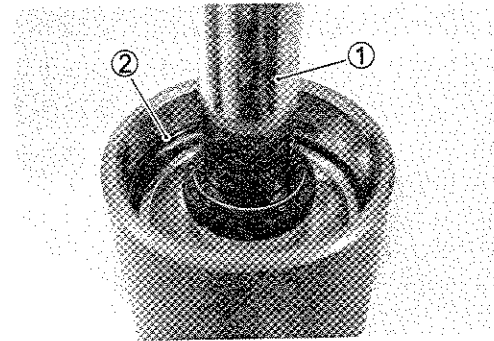
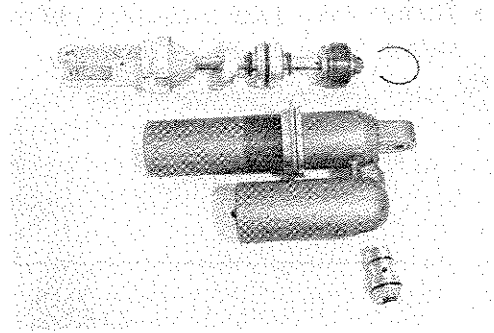
NOTE:

Do not scratch the inner surface of the shock absorber body to avoid oil leaks.

- Extract the damper rod assembly from the shock absorber body.
- Inspect the oil seal and O-rings.
- Inspect the damper rod for bends and scratches.
- Inspect the inner surface of the body.
- Inspect the "teflon coating metal" on the piston.
- Replace O-rings with new ones.
- Replace the "teflon coating metal" by cutting off the old one and putting a new one onto the piston if necessary.

REASSEMBLY

- Apply the rear suspension oil to the O-rings and the "teflon coating metal".
- Insert the damper rod assembly ① and fit a new circlip ②.
- Pull up the damper rod assembly ① until it is stopped by the circlip ②.
- Fit the stopper to the shock absorber body.
- Fill the specified rear suspension oil in the rear shock absorber. (18-8)



99000-99001-S25: SUZUKI REAR SUSPENSION OIL
SS-25

DATA Oil capacity: Approx. 380 ml (12.84/13.38 US/Imp oz)

- Reinstall the compression adjuster assembly. (18-8)
- Pressure the rear shock absorber unit with nitrogen gas to 981 kPa (9.8 kgf/cm², 139.5 psi). (18-9)
- Reassemble the spring and adjust the spring set length. (18-4)
- Tighten the valve cap.

INSTALLATION

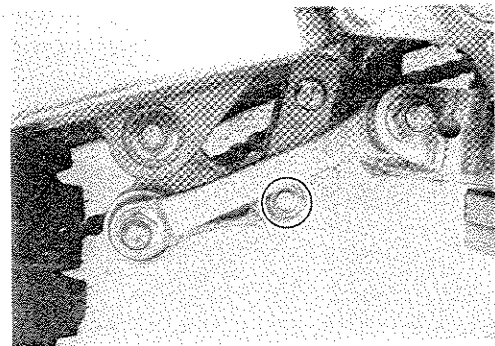
Install the rear shock absorber in the reverse order of removal. Pay attention to the following points:

- Tighten the rear shock absorber lower mounting bolt and nut to the specified torque.

NOTE:

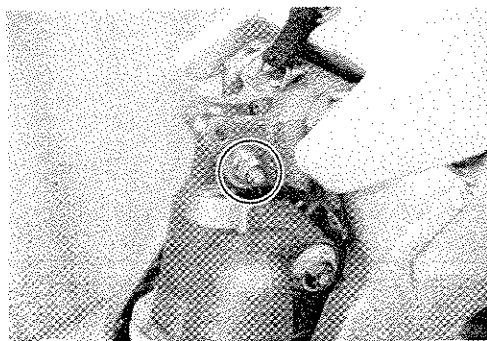
If necessary, move the swingarm up or down to facilitate this mounting bolt/nut tightening.

⚙️ Rear shock absorber lower mounting nut:
55 N·m (5.5 kgf-m, 40.0 lb-ft)



- Tighten the upper mounting bolt and nut to the specified torque.

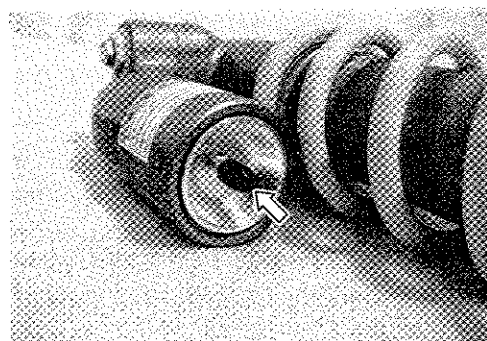
 **Rear shock absorber upper mounting nut:**
60 N·m (6.0 kgf-m, 43.5 lb-ft)



DISPOSAL

High pressure nitrogen gas is sealed in the rear shock absorber unit. Be sure to release gas before disposing the rear shock absorber unit.

- Remove the valve cap.

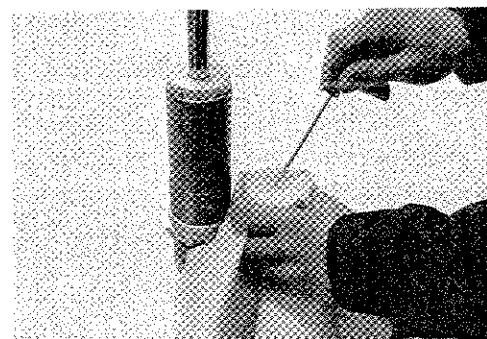


- Press the valve with a screwdriver.

WARNING

Releasing high pressure gas from the rear shock absorber unit can be hazardous.

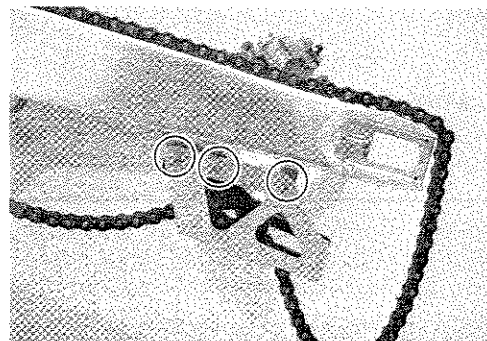
Place a rag over the valve and push the valve with a screwdriver to release nitrogen gas. Do not use your finger to push the valve, and direct the valve away from your face and body.



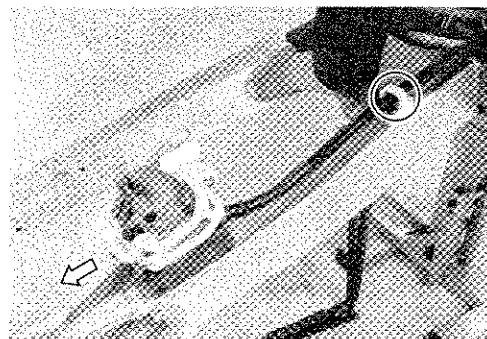
SWINGARM

REMOVAL

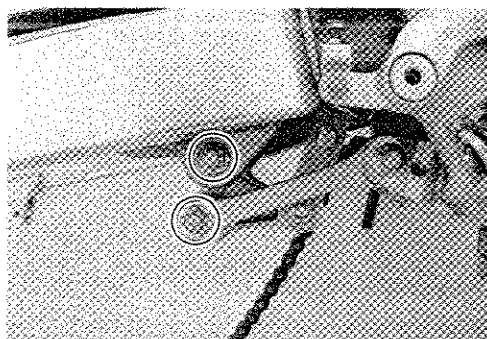
- Place the motorcycle on a block to lift rear wheel off the ground.
- Remove the rear wheel. (15-6)
- Remove the chain guide.



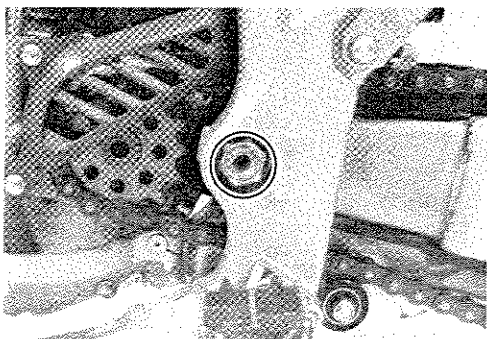
- Remove the rear brake hose guide.
- Remove the rear brake caliper from the swingarm.



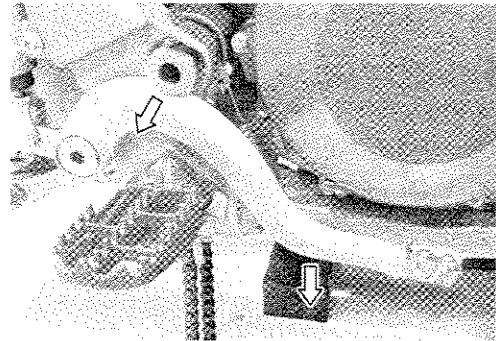
- Remove the rear cushion rod bolt and nut.
- Remove the rear cushion lever bolt and nut.



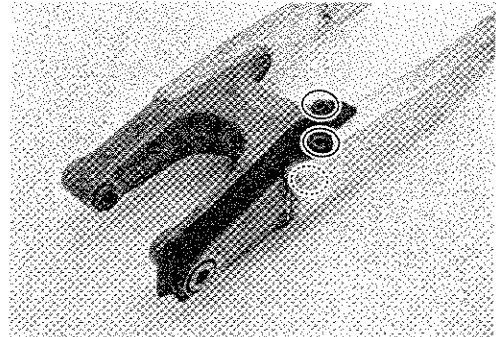
- Remove the swingarm pivot nut and washer.



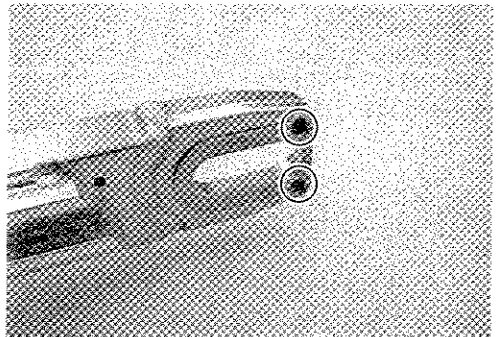
- Down the rear brake pedal, remove the pivot shaft.
- Remove the swingarm.



- Remove the chain buffer.

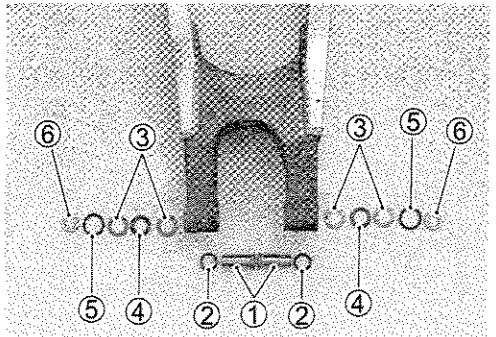


- Remove the plates.



- Remove the following parts from the swingarm.

- Spacer ①
- Oil seal ②
- Washer ③
- Thrust bearing ④
- Dust seal ⑤
- Spacer ⑥



INSPECTION

PIVOT SHAFT

- Measure the pivot shaft runout with the dial gauge and V-blocks.

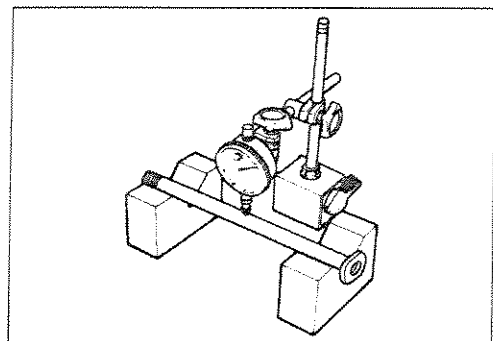
DATA Swingarm pivot shaft runout

Service Limit: 0.3 mm (0.01 in)

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

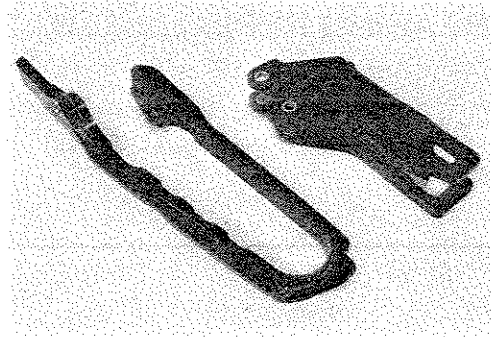
09900-20701: Magnetic stand

09900-21304: V-block set (100 mm)



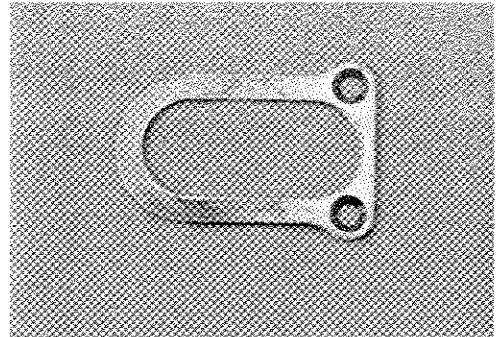
CHAIN BUFFER AND CHAIN GUIDE

- Inspect the chain buffer and chain guide for damage and excessive wear.



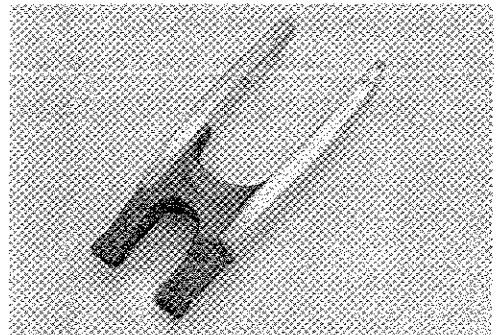
PLATE

Inspect the plate for damage and excessive bend.



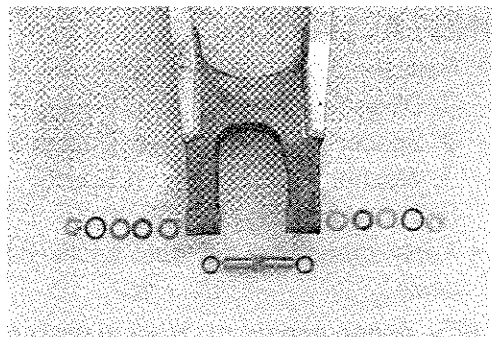
SWINGARM

- Inspect the swingarm for cracks and damage.

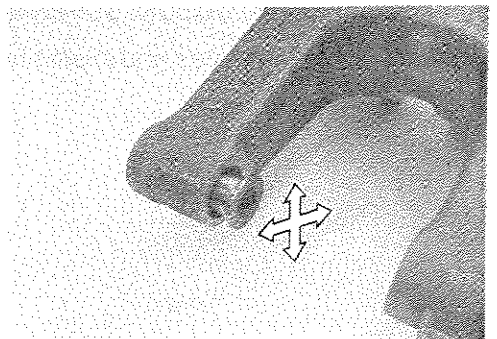


BEARING, SPACER, DUST SEAL, OIL SEAL

- Inspect the bearings, spacers, dust seals and oil seals for damage.



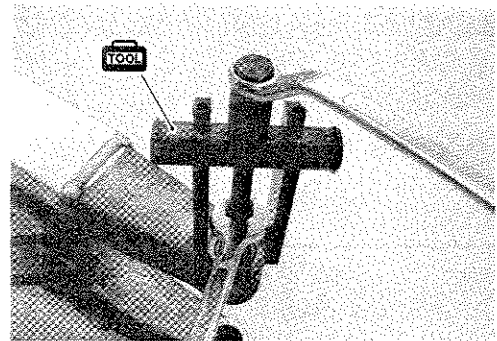
- Insert the spacer into the bearings and inspect them for play and smooth movement.



BEARING REPLACEMENT

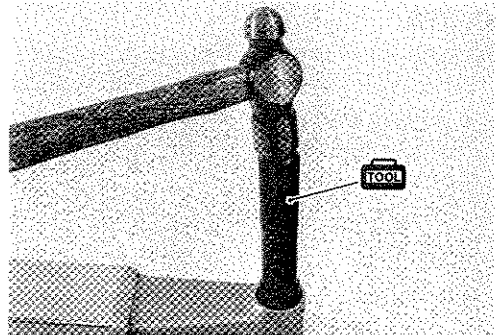
- Remove the bearings with the special tool.

 09921-20240: Bearing remover set



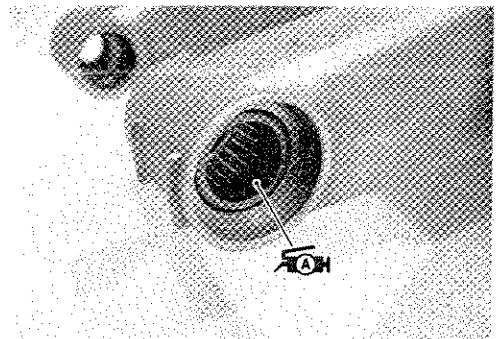
- Press fit the bearings with the special tool.

 09913-70210: Bearing installer set



- Apply grease to the bearings.

 99000-25030: SUZUKI SUPER GREASE "A" (USA)
99000-25010: SUZUKI SUPER GREASE "A" (Others)



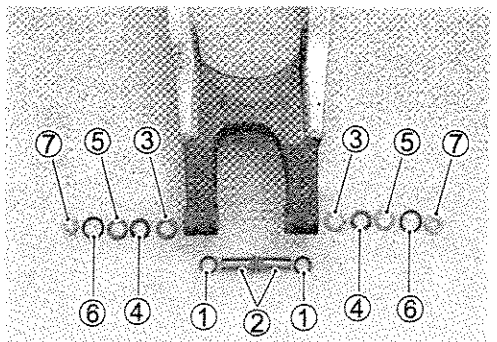
INSTALLATION

- Reassemble the following parts into the swingarm.

① Oil seal	⑤ Washer
② Spacer	⑥ Dust seal
③ Washer	⑦ Spacer
④ Thrust bearing	
- Apply grease to the dust seals, bearings, spacers and oil seals.

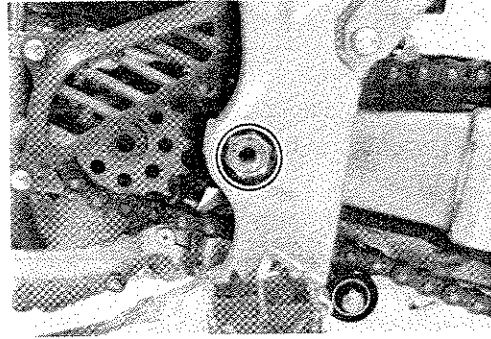
 99000-25030: SUZUKI SUPER GREASE "A" (USA)
99000-25010: SUZUKI SUPER GREASE "A" (Others)

- Reassemble the plates and chain buffer.



- Tighten the swingarm pivot nut to the specified torque.

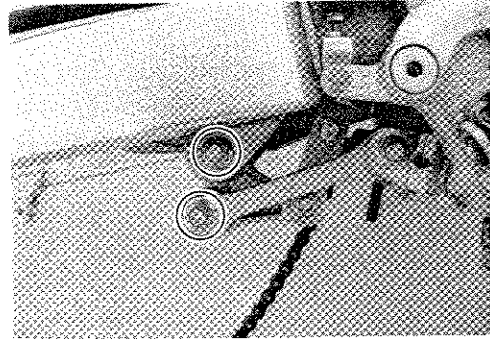
 **Swingarm pivot nut: 70 N·m (7.0 kgf-m, 51.0 lb-ft)**



- Tighten the rear cushion lever nut and rear cushion rod nut to the specified torque.

 **Rear cushion lever nut: 80 N·m (8.0 kgf-m, 58.0 lb-ft)**
Rear cushion rod nut: 80 N·m (8.0 kgf-m, 58.0 lb-ft)

- Install the rear brake caliper.
- Reassemble the chain guide.
- Install the rear wheel. ( 15-8)
- Adjust the drive chain slack. ( 2-26)



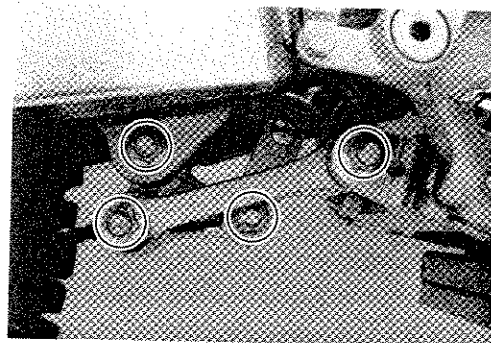
REAR SUSPENSION LINKAGE

REMOVAL

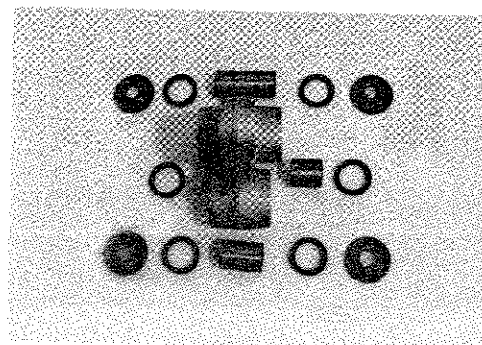
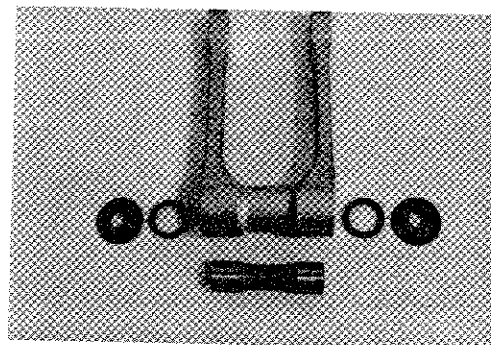
- Place a block under the chassis tubes.
- Remove the lower drive chain control roller ①.



- Remove the rear cushion rod bolt and nut.
- Remove the cushion lever bolt and nut.
- Remove the shock absorber lower bolt and nut.

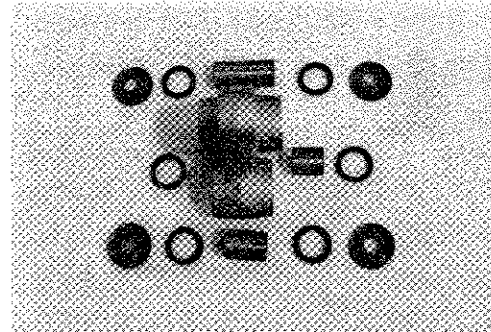
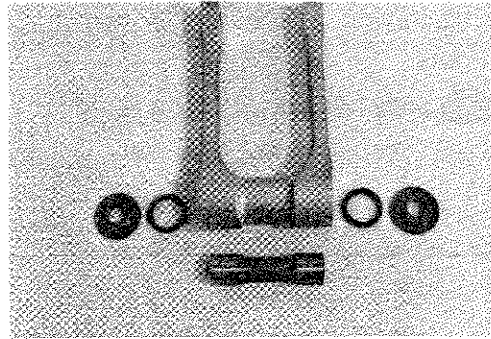


- Remove the collars, oil seals and spacers.

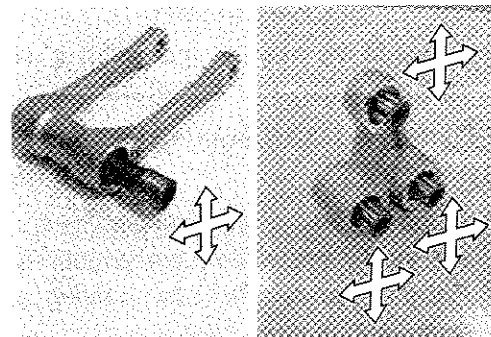


INSPECTION

- Inspect the cushion rod and cushion lever for damage.
- Inspect the dust seals, oil seals and spacers for damage.

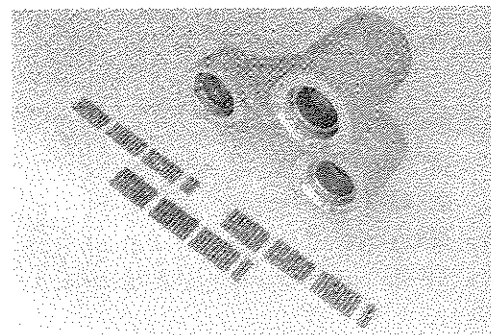
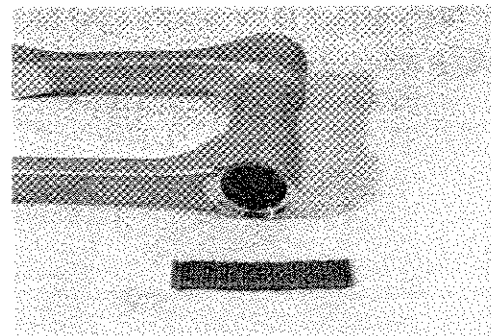


- Insert the spacers into the bearings and inspect them for excessive play and smooth movement.



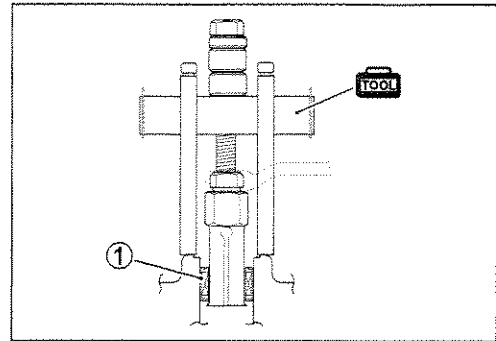
BEARING REPLACEMENT

- Remove the spacers and dust seals.
- Remove the needle roller bearings.



- Remove the needle roller bearing cages ① with the special tool.

 **09921-20240: Bearing remover set**



- Press fit the needle roller bearing cages with the special tool.

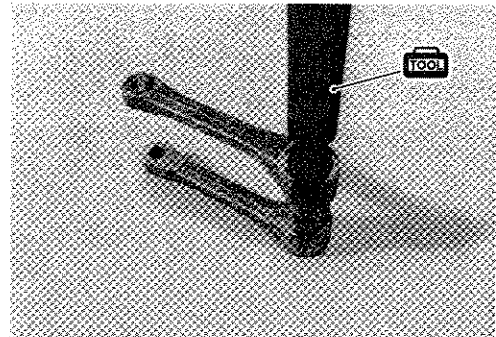
 **09913-70210: Bearing installer set**

NOTE:

When installing the needle roller bearing cages, the stamped mark on the bearing must face outside.

- Apply grease to the needle roller bearings and install them.

 **99000-25030: SUZUKI SUPER GREASE "A" (USA)**
99000-25010: SUZUKI SUPER GREASE "A" (Others)



- Press fit the needle roller bearing cages with the special tool and a suitable size socket wrench.

 **09924-84521: Bearing installer set**

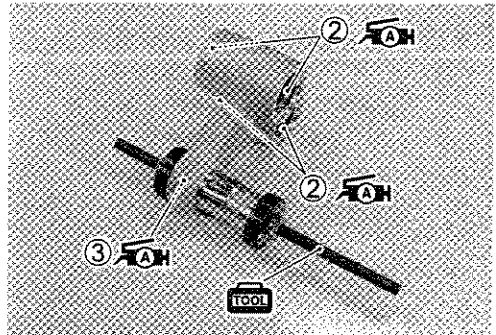
NOTE:

* When installing the needle roller bearing cages ②, the stamped mark on the bearing must face outside. (③: right side)

* Position the needle roller bearing cages by referring to the illustration of page 18-22.

- Apply grease to the needle roller bearings and install them.

 **99000-25030: SUZUKI SUPER GREASE "A" (USA)**
99000-25010: SUZUKI SUPER GREASE "A" (Others)

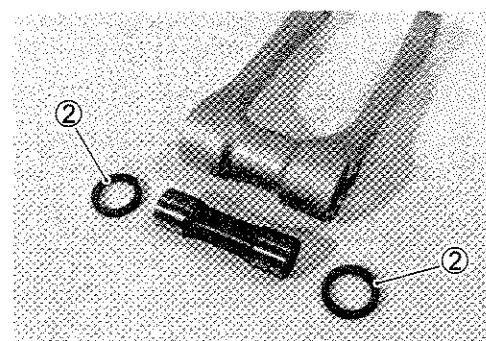
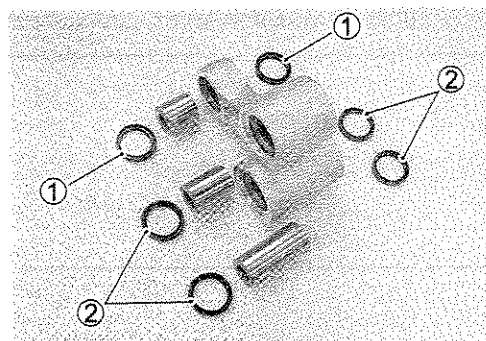


REASSEMBLY

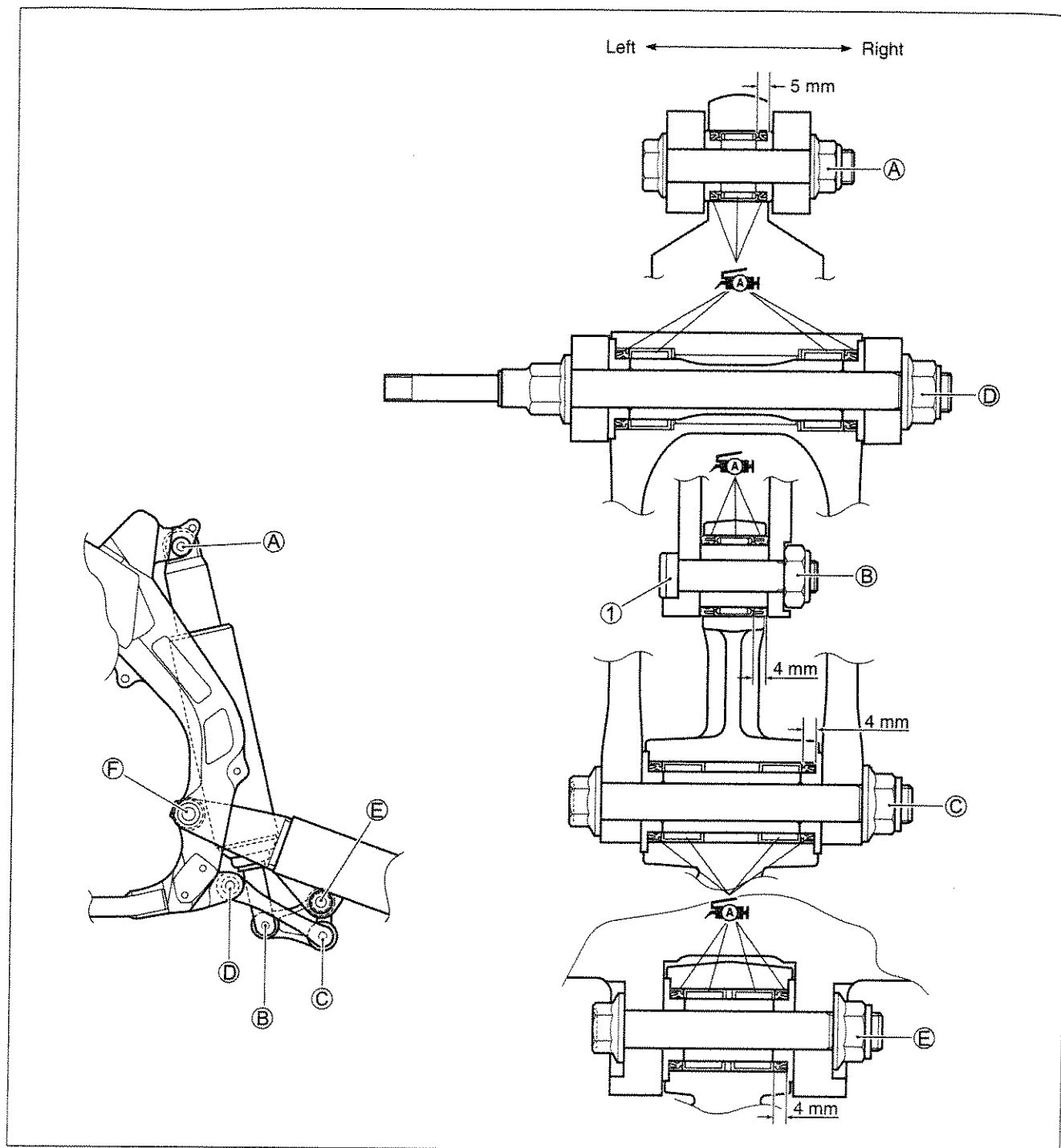
Reassemble and remount the rear suspension linkage in the reverse order of removal and disassembly. Pay attention to the following points:

- Position the dust seals ① so that the manufacturer's code indicated side of the seals face outside. (②: inside)
- Apply grease to the spacers and dust seals.

 99000-25030: SUZUKI SUPER GREASE "A" (USA)
99000-25010: SUZUKI SUPER GREASE "A" (Others)

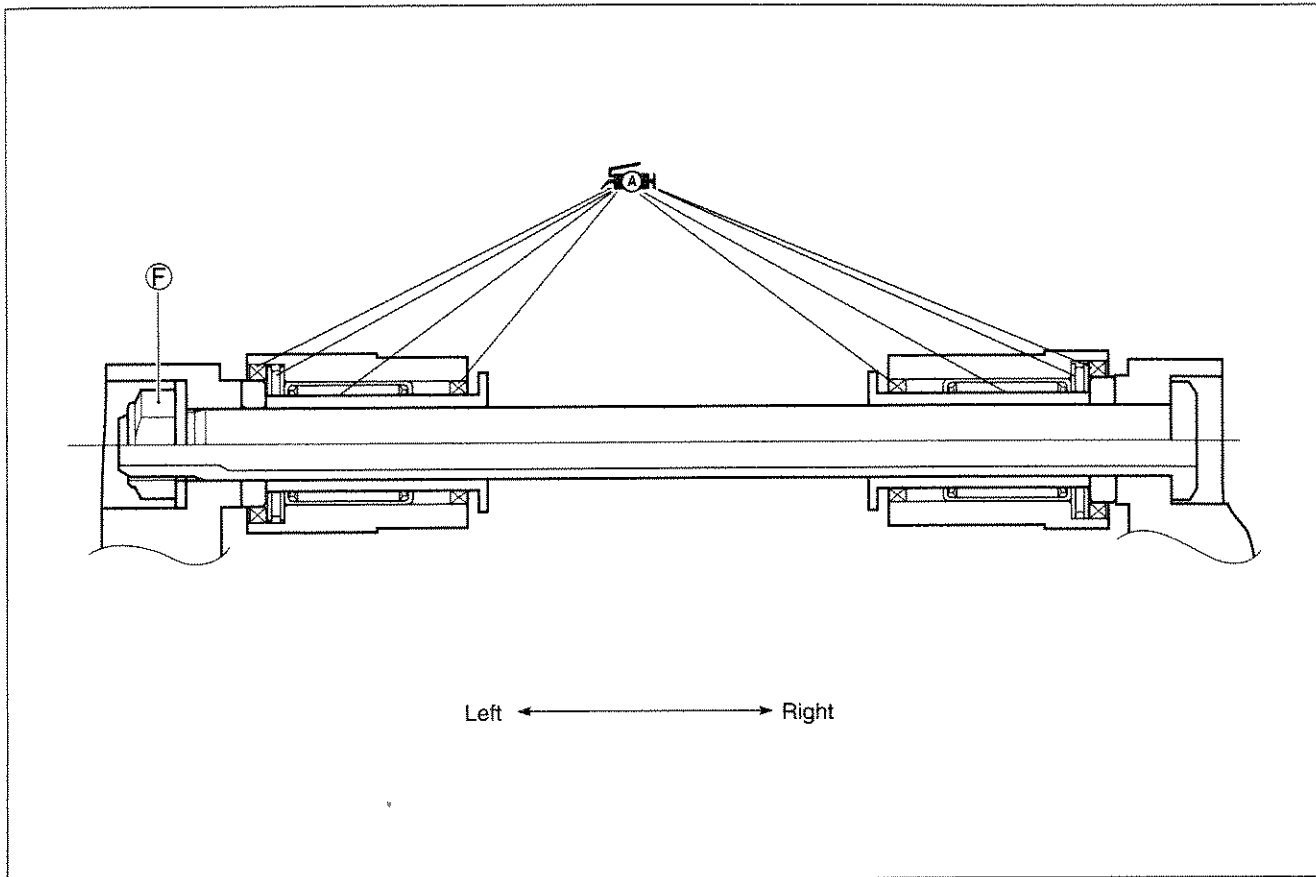


- Tighten the cushion lever, cushion rod and swingarm nuts to the specified torque.



Tightening torque:

- A: 60 N·m (6.0 kgf-m, 43.5 lb-ft)
- B: 60 N·m (6.0 kgf-m, 43.5 lb-ft)
- C: 80 N·m (8.0 kgf-m, 58.0 lb-ft)
- D: 80 N·m (8.0 kgf-m, 58.0 lb-ft)
- E: 80 N·m (8.0 kgf-m, 58.0 lb-ft)
- F: 70 N·m (7.0 kgf-m, 50.5 lb-ft)



CAUTION

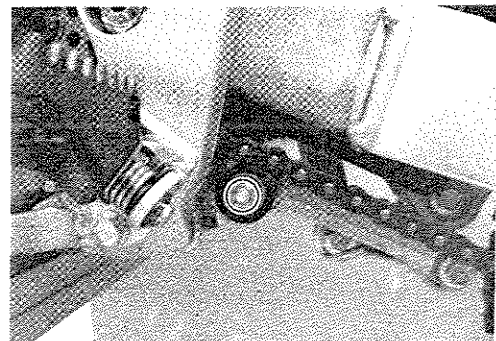
Improperly reassembled rear suspension linkage bolts can interfere with suspension movement and damage the rear suspension linkage.

- * Make sure that the rear shock absorber rebound damping adjuster on the bottom bracket of the rear shock absorber is located to the right side.
- * Insert the rear suspension linkage bolt ① from the left side. Make sure that the nut ② is in the recess of the rear shock absorber bottom bracket.

- Tighten the lower drive chain control roller bolt to the specified torque.

Drive chain control roller bolt:

21 N·m (2.1 kgf-m, 15.0 lb-ft)



SERVICING INFORMATION

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SERVICE DATA**VALVE + GUIDE**

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	36 (1.42)	—
	EX.	29 (1.14)	—
Tappet clearance (when cold)	IN.	0.15 – 0.20 (0.005 – 0.007)	—
	EX.	0.17 – 0.23 (0.006 – 0.009)	—
Valve guide to valve stem clearance	IN.	0.010 – 0.037 (0.0004 – 0.0015)	—
	EX.	0.030 – 0.057 (0.0012 – 0.0022)	—
Valve stem deflection	IN. & EX.	—	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.000 – 5.012 (0.1968 – 0.1973)	—
Valve stem O.D.	IN.	4.975 – 4.990 (0.1959 – 0.1965)	—
	EX.	4.955 – 4.970 (0.1951 – 0.1957)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
Valve stem end length	IN. & EX.	—	1.2 (0.05)
Valve seat width	IN. & EX.	0.9 – 1.1 (0.035 – 0.043)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length	IN.	—	34.0 (1.34)
	EX.	—	33.3 (1.31)
Valve spring tension	IN.	128 N (13 kgf, 28.7 lbs) at length 30.9 mm (12.2 in)	—
	EX.	78.5 N (8 kgf, 17.6 lbs) at length 30.9 mm (12.2 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	33.29 – 33.59 (1.31 – 1.32)	32.99 (1.30)
	EX.	32.50 – 32.80 (1.27 – 1.29)	32.20 (1.27)
Camshaft journal oil clearance	IN. & EX.	0.032 – 0.066 (0.001 – 0.002)	0.150 (0.0059)
Camshaft journal holder I.D.	IN. & EX.	22.012 – 22.025 (0.8667 – 0.8671)	—
Camshaft journal O.D.	IN. & EX.	21.959 – 21.980 (0.864 – 0.865)	—
Camshaft runout	—		0.10 (0.004)
Cam chain pin	15 th pin		—
Cylinder head distortion	—		0.05 (0.002)
Cylinder head cover distortion	—		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD		LIMIT
Compression pressure (Automatic de-comp. actuated)	430 – 720 kPa (4.3 – 7.2 kgf/cm ² , 61 – 102 psi)		—
Piston to cylinder clearance	0.030 – 0.040 (0.0012 – 0.0016)		0.120 (0.0047)
Cylinder bore	95.500 – 95.515 (3.7598 – 3.7604)		Nicks or scratches
Piston diam.	95.465 – 95.480 (3.7584 – 3.7590) Measure at 15 mm (0.6 in) from the skirt end.		95.380 (3.7551)
Cylinder distortion	—		0.05 (0.002)
Piston ring free end gap	1st	R Approx. 13.0 (0.51)	9.2 (0.36)
Piston ring end gap	1st	0.08 – 0.20 (0.003 – 0.008)	0.50 (0.020)
Piston ring to groove clearance	1st	—	0.180 (0.007)
Piston ring groove width	1st	1.21 – 1.23 (0.0476 – 0.0484)	—
	Oil	2.01 – 2.03 (0.0791 – 0.0799)	—
Piston ring thickness	1st	1.17 – 1.19 (0.0461 – 0.0469)	—
Piston pin bore	19.002 – 19.008 (0.7481 – 0.7483)		19.030 (0.7492)
Piston pin O.D.	18.995 – 19.000 (0.7478 – 0.7480)		18.980 (0.7472)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	19.010 – 19.018 (0.7484 – 0.7487)	19.040 (0.7496)
Conrod deflection	—	3.0 (0.12)
Conrod big end side clearance	0.014 – 0.027 (0.0005 – 0.0010)	1.0 (0.04)
Conrod big end width	18.75 – 19.80 (0.738 – 0.780)	—
Crank web to web width	62 ± 0.1 (2.44 ± 0.004)	—
Crankshaft runout	—	0.08 (0.003)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	2.099 (62/24 × 13/16)	—
Oil pressure (at 50°C, 122°F)	50 kPa (0.5 kgf/cm ² , 7.1 psi) at 1 850 r/min	—

CLUTCH

Unit: mm (in)

ITEM	STANDARD	LIMIT
Clutch cable play	10 – 15 (0.4 – 0.6)	—
Drive plate thickness (No.1 & No.2)	3.07 – 3.23 (0.121 – 0.127)	2.77 (0.109)
Drive plate claw width (No.1 & No.2)	13.85 – 13.95 (0.545 – 0.549)	13.35 (0.526)
Driven plate distortion	—	0.10 (0.004)
Clutch spring free length	50.83 (2.00)	48.1 (1.89)

RADIATOR + ENGINE COOLANT

ITEM	STANDARD/SPECIFICATION	LIMIT
Radiator cap valve opening pressure	95 – 125 kPa (0.95 – 1.25 kgf/cm ² , 14 – 18 psi)	—
Engine coolant type	Use an anti-freeze/coolant compatible with aluminum radiator, mixed with distilled water only, at the ratio of 50:50.	—
Engine coolant capacity	1 000 ml (1.1/0.9 US/Imp qt)	—

TRANSMISSION + DRIVE CHAIN

Unit: mm (in) Except ratio

ITEM		STANDARD	LIMIT
Primary reduction ratio		2.583 (62/24)	—
Final reduction ratio		3.500 (49/14)	—
Gear ratios	Low	2.000 (30/15)	—
	2nd	1.611 (29/18)	—
	3rd	1.350 (27/20)	—
	Top	1.136 (25/22)	—
Shift fork to groove clearance	No.1, No.2	0.05 – 0.25 (0.002 – 0.010)	0.45 (0.018)
Shift fork groove width	No.1, No.2	4.95 – 5.05 (0.195 – 0.199)	—
Shift fork thickness	No.1, No.2	4.8 – 4.9 (0.188 – 0.193)	—
Drive chain	Type	D.I.D 520DMA2	—
	Links	114	—
	20-pitch length	—	323.8 (12.7)
Drive chain slack		40 – 50 (1.57 – 1.97)	—

CARBURETOR

ITEM	SPECIFICATION	
	USA, 000	Others
Carburetor type	FCR40MX	←
Bore size	40 mm (15.7 in)	←
I.D. No	35G0	35G1
Idle r/min	1 850 ± 100 r/min	←
Float height	8 mm (0.31 in)	←
Fuel level	6.5 mm (0.26 in) (above the datum point)	←
Main jet (M.J.)	#165	#170
Jet needle (J.N.)	NCYR-4th	←
Slow jet (S.J.)	#42	←
Slow air jet (S.A.J.)	#100	←
Starter jet (S.J.)	#75	←
Pilot screw (P.S.)	1 and 1/4 turns back	←
Leak jet (L.J.)	#35	←
Idle adjust screw	Adjust to the specified idle speed.	←
Throttle cable play (pulling cable)	2 – 4 mm (0.08 – 0.16 in)	←

ELECTRICAL

Unit: mm (in)

ITEM	SPECIFICATION		NOTE
Ignition timing	8° B.T.D.C. at 1 850 r/min.		
Spark plug	Type	NGK: CR8EIB-10	
	Gap	0.7 – 0.8 (0.028 – 0.031)	
Spark performance	Over 8 (0.3) at 1 atm.		
Pick-up coil resistance	72 – 127 Ω		R – G
Exciter coil resistance	24 – 40 Ω		B/R – R/W
Phase signal coil resistance	1.6 – 3.2 Ω		Y – B/W
Pick-up peak voltage	2 V and more		⊕ R – ⊖ G
Exciter peak voltage	25 V and more		⊕ B/R – ⊖ R/W
Phase signal peak voltage	8 V and more		⊕ Y – ⊖ B/W
Ignition coil resistance	Primary	0.17 – 0.70 Ω	W/BI – B/W
	Secondary	9 – 14 k Ω	Plug cap – B/W
Ignition coil primary peak voltage	200 V and more		⊕ B/W – ⊖ W/BI

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Brake lever adjuster length	11 – 15 (0.4 – 0.6)		—
Rear brake pedal height	0 – 10 (0 – 0.4)		—
Brake disc thickness	Front	3.0 ± 0.2 (0.118 ± 0.008)	2.5 (0.10)
	Rear	4.0 ± 0.15 (0.157 ± 0.006)	2.5 (0.10)
Brake disc runout	Front & Rear	—	0.3 (0.012)
Master cylinder bore	Front	11.000 – 11.043 (0.4331 – 0.4348)	—
	Rear	11.000 – 11.043 (0.4331 – 0.4348)	—
Master cylinder piston diam.	Front	10.957 – 10.984 (0.4314 – 0.4324)	—
	Rear	10.957 – 10.984 (0.4314 – 0.4324)	—
Brake caliper cylinder bore	Front	27.000 – 27.050 (1.0630 – 1.0650)	—
	Rear	25.400 – 25.450 (1.0000 – 1.0020)	—
Brake caliper piston diam.	Front	26.900 – 26.950 (1.0591 – 1.0610)	—
	Rear	25.335 – 25.368 (0.9974 – 0.9987)	—
Brake fluid type	DOT 4		
Wheel rim runout	Axial	—	2.0 (0.08)
	Radial	—	2.0 (0.08)

ITEM	STANDARD		LIMIT
Wheel rim size	Front	1.60 × 21	
	Rear	2.15 × 19	
Wheel axle runout	Front	—	0.25 (0.010)
	Rear	—	0.25 (0.010)

TIRE

ITEM		STD/SPEC.	LIMIT
Cold inflation tire pressure	Front & Rear	70 – 110 kPa (0.7 – 1.1 kgf/cm ² , 10 – 16 psi)	—
Tire size	Front	90/100-21 57M	—
	Rear	120/80-19 63M	—
Tire type	Front	M401A (E-03), M201 (Others)	—
	Rear	M402A (E-03), M202 (Others)	—
Tire tread depth (Recommend depth)	Front & Rear	—	4.0 mm (0.16 in)

SUSPENSION

Unit: mm (in)

ITEM		STANDARD	LIMIT	NOTE
Front fork stroke		310 (12.2)	—	
Front fork inner tube O.D.		47 (18.5)	—	
Front fork spring free length		495 ± 2.5 (19.48 ± 0.10)	487 (19.17)	
Front fork damping force adjuster	Rebound	MAX- 8 clicks turn back	—	
	Compression	MAX- 10 clicks turn back	—	
Front fork air pressure		0 kPa (0 kgf/cm ² , 0 psi)	—	
Front fork spring rate		4.7 N/mm (0.47 kgf/mm)	—	
Rear shock absorber gas pressure		981 kPa (9.8 kgf/cm ² , 139.5 psi)	—	
Rear shock absorber spring set length		2.8 (0.11)	—	2.8 mm compressed from spring free length
Rear shock absorber spring rate		5.5 N/mm (0.55 kgf/mm)	—	
Rear shock absorber damping force adjuster	Rebound	MAX- 17 clicks turn back	—	
	Compression (High speed)	MAX-2 clicks turn back	—	
	Compression (Low speed)	MAX- 8 clicks turn back	—	
Rear wheel travel		310 (12.2)	—	
Swingarm pivot shaft runout		—	0.3 (0.01)	

FUEL + OIL

ITEM	SPECIFICATION		NOTE
Fuel type	Use only unleaded gasoline of at least 90 pump octane (R/2 + M/2 method).		E-03, 28
	Use only unleaded gasoline of at least 95 octane. (Research method)		The others
Fuel tank capacity	7.0 L (1.5/1.8 US/Imp gal)		
Engine oil type	SAE 10W-40, API SF or SG		E-03
	MOTUL V 300 10W-40 or SAE 10W-40, API SF or SG		The others
Engine oil capacity	Change	1 400 ml (1.5/1.2 US/Imp qt)	
	Filter change	1 450 ml (1.5/1.3 US/Imp qt)	
	Overhaul	1 500 ml (1.6/1.3 US/Imp qt)	
Air cleaner element oil type	MOTUL AIR FILTER OIL or equivalent filter oil		
Front fork oil type	SUZUKI fork oil SS-05 or an equivalent fork oil		
Front fork oil capacity (each leg)	385 ml (13.01/13.56 US/Imp oz)		Outer tube oil quantity
	193 ml (6.52/6.80 US/Imp oz)		Damper rod oil quantity
Rear shock absorber oil type	SUZUKI rear suspension oil SS-25 or an equivalent suspension oil		
Rear shock absorber oil capacity	380 ml (12.84 /13.38 US/Imp oz)		

TIGHTENING TORQUE

ENGINE

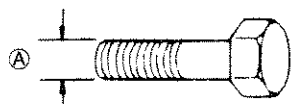
PART		N·m	kgf-m	lb-ft
Cylinder head cover bolt	(Initial)	10	1.0	7.0
	(Final)	14	1.4	10.0
Spark plug		13	1.3	9.5
Cylinder head bolt	M10	46	4.6	33.5
	M6	10	1.0	7.0
Cylinder bolt		10	1.0	7.0
Camshaft journal holder bolt		10	1.0	7.0
Primary drive gear nut		90	9.0	65.0
Magnetorotor nut		80	8.0	58.0
Clutch sleeve hub nut		90	9.0	65.0
Gearshift cam stopper		10	1.0	7.0
Gearshift cam driven gear bolt		24	2.4	17.5
Cam chain tension adjuster bolt		11	1.1	8.0
Cam chain tensioner mounting bolt		11	1.1	8.0
Engine oil drain plug		12	1.2	8.5
Engine oil level bolt		6	0.6	4.5
Crankcase bolt		11	1.1	8.0
Water pump drain plug		11	1.1	8.0
TDC plug		16	1.6	11.5
Magnetorotor cover mounting bolt	M7	14	1.4	10.0
Magnetorotor cover cap	M26	10	1.0	7.0
Engine mounting nut (upper)		45	4.5	32.5
Engine mounting nut (lower)	M10	50	5.0	36.0
Engine mounting nut (front)	M10	50	5.0	36.0
Engine mounting bracket nut (upper)		40	4.0	29.0
Engine mounting bracket nut (front)		40	4.0	29.0
Exhaust pipe nut		23	2.3	16.5
Muffler clamp bolt		20	2.0	14.5
Muffler mounting bolt		23	2.3	16.5

CHASSIS

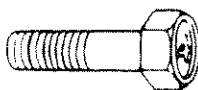
PART	N·m	kgf-m	lb-ft
Handlebar clamp bolt	25	2.5	18.0
Front fork upper clamp bolt (right and left)	23	2.3	16.5
Front fork lower clamp bolt (right and left)	23	2.3	16.5
Steering stem head nut	90	9.0	65.0
Front fork cap bolt	35	3.5	25.5
Front fork center bolt	70	7.0	50.5
Fork cylinder compression damper unit	30	3.0	21.5
Master cylinder mounting bolt (front and rear)	10	1.0	7.0
Rear brake master cylinder rod locknut	6	0.6	4.5
Brake pedal boss bolt	29	2.9	21.0
Brake hose union bolt (front and rear)	23	2.3	16.5
Brake caliper mounting bolt (front)	25	2.5	18.0
Brake pad mounting bolt (front and rear)	18	1.8	13.0
Brake caliper axle bolt (For bracket: rear)	28	2.8	20.0
Brake caliper axle bolt (For bracket and caliper: front)	23	2.3	16.5
Brake air bleeder valve (front and rear)	6	0.6	4.5
Disc plate bolt (front)	10	1.0	7.0
Disc plate bolt (rear)	23	2.3	16.5
Front axle nut	35	3.5	25.5
Front axle holder bolt	18	1.8	13.0
Rear axle nut	90	9.0	65.0
Rear sprocket nut	30	3.0	21.5
Drive chain tensioner roller bolt	21	2.1	15.0
Spoke nipple	6	0.6	4.5
Rear swingarm pivot nut (engine mounting)	70	7.0	50.5
Rear shock absorber mounting nut (upper)	60	6.0	43.5
Rear shock absorber mounting nut (lower)	60	6.0	43.5
Rear cushion lever nut (upper and lower)	80	8.0	56.0
Rear cushion rod nut	80	8.0	56.0
Seat rail bolt (upper and lower)	24	2.4	17.5
Footrest bolt	35	3.5	25.5

For other bolts and nuts not listed in the table, refer to this chart.

Bolt Diameter (mm)	Conventional or "4" marked bolt			"7" marked or crown headed bolt		
	N·m	kgf-m	lb-ft	N·m	kgf-m	lb-ft
4	2.0	0.2	1.5	2.0	0.2	1.5
5	3.0	0.3	2.0	5.0	0.5	3.5
6	6.0	0.6	4.5	10.0	1.0	7.0
8	13.0	1.3	9.5	23.0	2.3	16.5
10	29.0	2.9	21.0	50.0	5.0	36.0
12	45.0	4.5	32.5	85.0	8.5	61.5
14	65.0	6.5	47.0	135.0	13.5	97.5
16	105.0	10.5	76.0	210.0	21.0	152.0
18	160.0	16.0	115.5	240.0	24.0	173.5



Conventional bolt

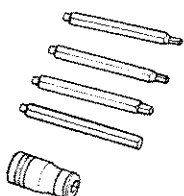
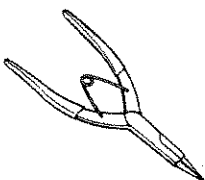
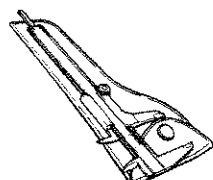
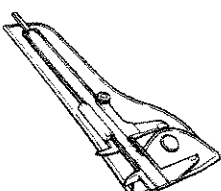
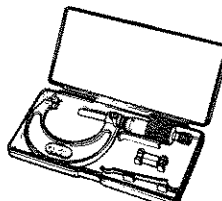
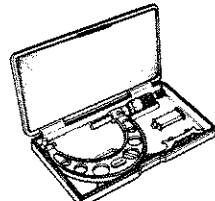
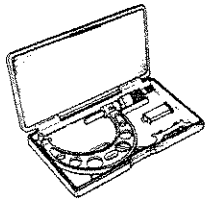
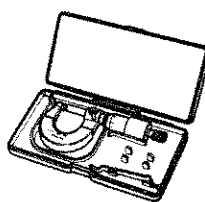
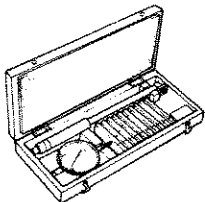
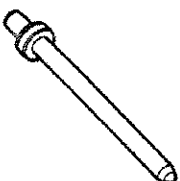
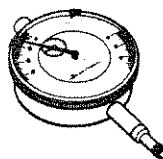
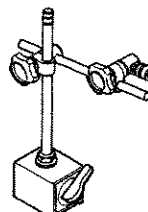
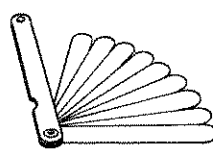
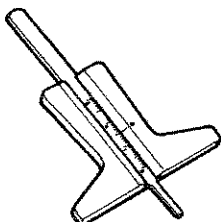
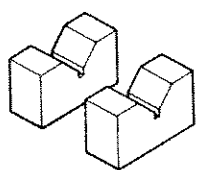
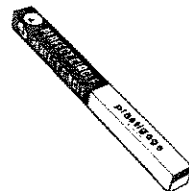
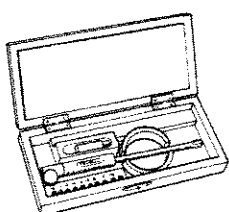
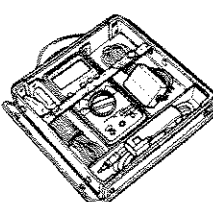
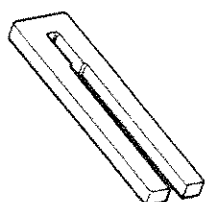
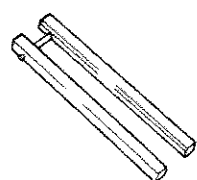
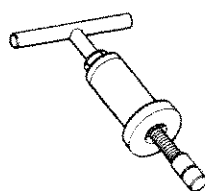
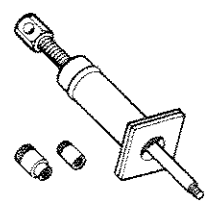


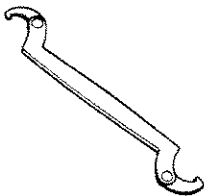
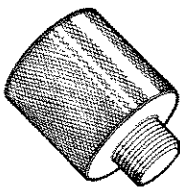
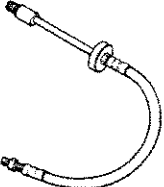
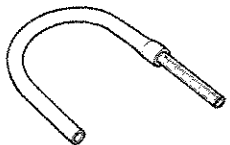
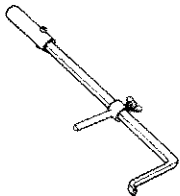
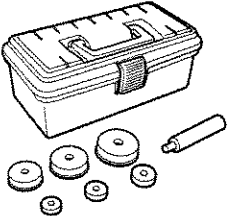
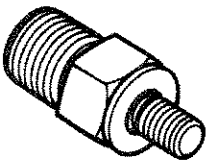
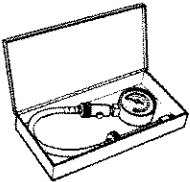
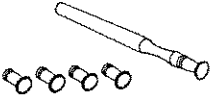
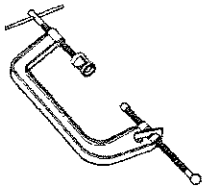
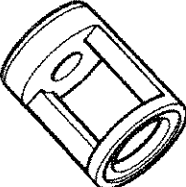
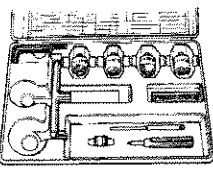
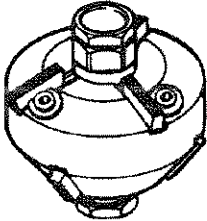
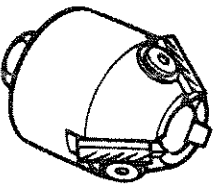
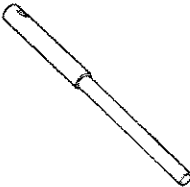
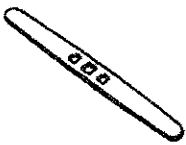
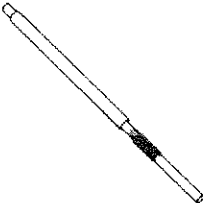
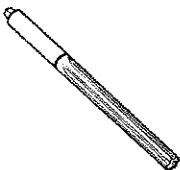
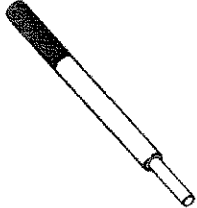
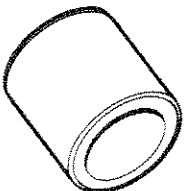
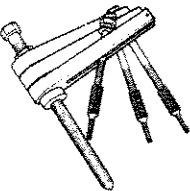
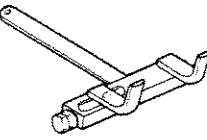
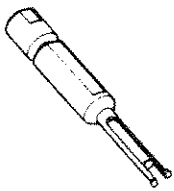
"4" marked bolt

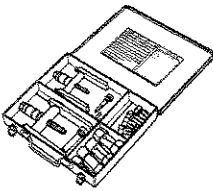
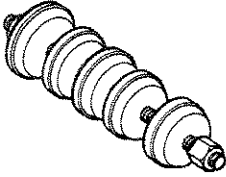
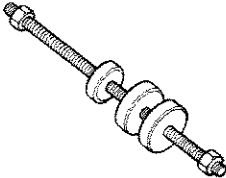
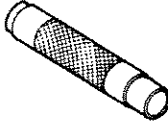
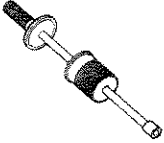
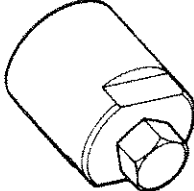
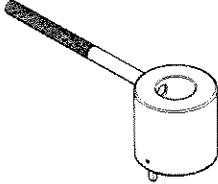
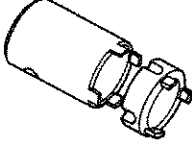
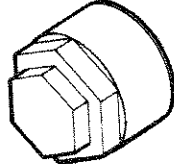
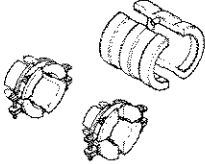
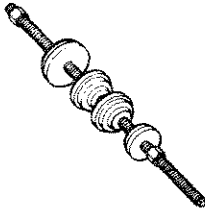
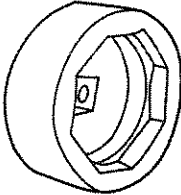
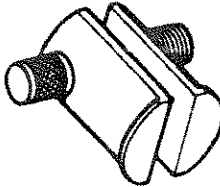
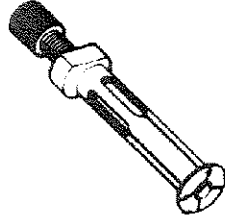
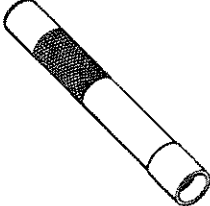


"7" marked bolt

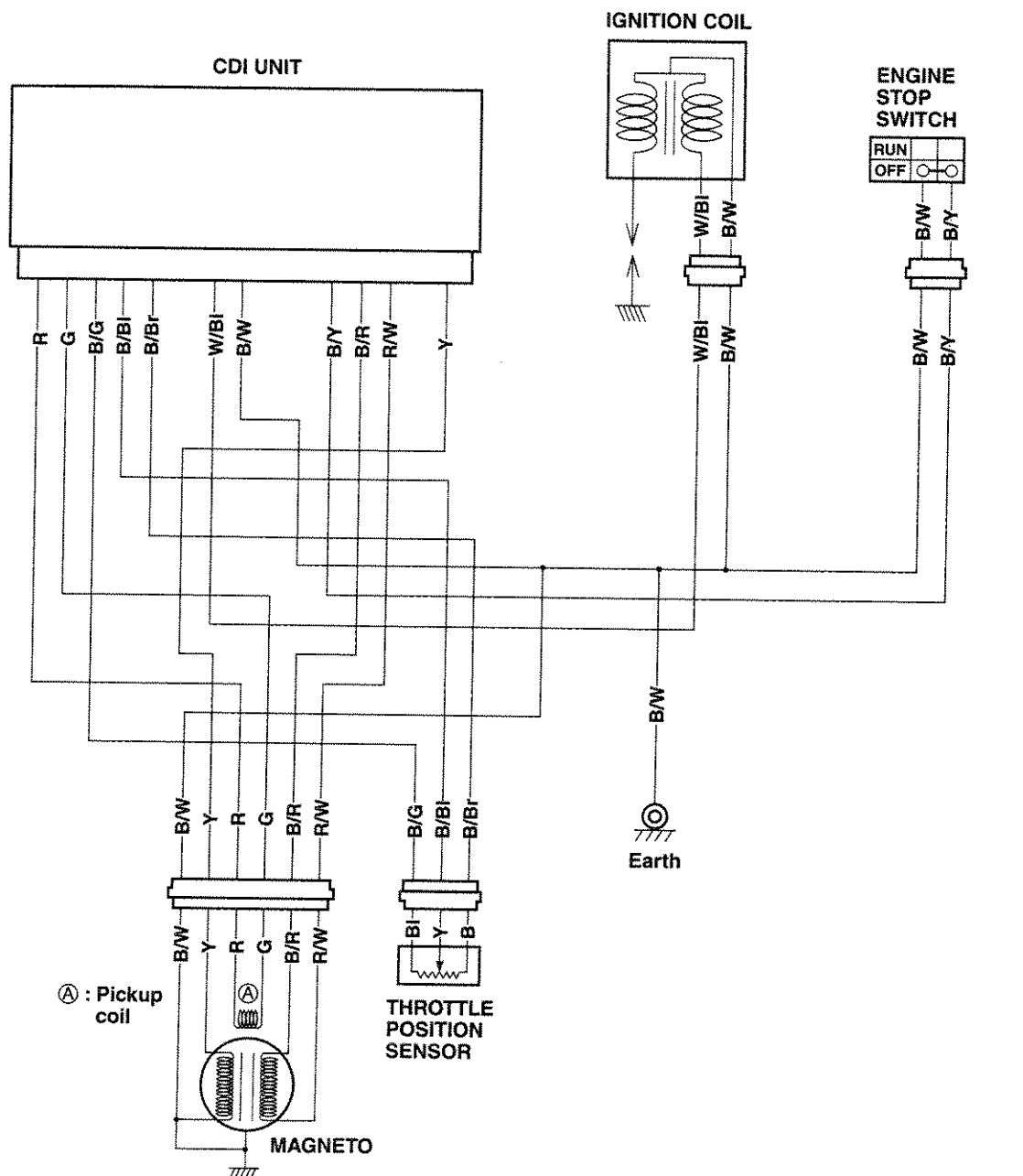
SPECIAL TOOLS

 09900-00410 Hexagon wrench set	 09900-06107 Snap ring pliers	 09900-09003 Impact driver set	 09900-20101 Vernier calipers (150 mm)	 09900-20102 Vernier calipers
 09900-20202 Micrometer (25 - 50 mm)	 09900-20203 Micrometer (50 - 75 mm)	 09900-20204 Micrometer (75 - 100 mm)	 09900-20205 Micrometer (0 - 25 mm)	 09900-20508 Cylinder gauge set
 09900-20513 Cylinder gauge rod	 09900-20602 Dial gauge (1/1000, 1 mm)	 09900-20607 Dial gauge (1/100, 10 mm)	 09900-20701 Magnetic stand	 09900-20803 Thickness gauge
 09900-20805 Tire depth gauge	 09900-21304 V-block (100 mm)	 09900-22301 Plastigauge	 09900-22302 Plastigauge	 09900-22403 Small bore gauge (18 - 35 mm)
 09900-25008 Multi circuit tester	 09910-20115 Conrod holder	 09910-20116 Conrod holder	 09910-32812 Crankshaft installer	 09910-34510 Piston pin puller

				
09910-60611 Universal clamp wrench	09911-11310 Crankshaft installer attachment	09913-10750 Compression gauge adaptor	09913-10760 Fuel level gauge	09913-50121 Oil seal remover
				
09913-70210 Bearing installer set	09915-40211 Adapter	09915-64510 Compression gauge set	09915-74510 Oil pressure gauge set	09916-10911 Valve lapper set
				
09916-14510 Valve filter	09916-14521 Attachment	09916-21111 Valve seat cutter set	09916-22420 Valve seat cutter (N-114)	09916-22430 Valve seat cutter (N-128)
				
09916-24311 Solid pilot (N-100-5.0)	09916-34542 Reamer handle	09916-34570 Valve guide reamer (5.0 mm)	09916-34561 Valve guide reamer (11.3 mm)	09916-44310 Valve guide reamer
				
09916-53360 Valve guide installer attachment	09916-84511 Tweezers	09920-13120 Crankcase separating tool	09920-53740 Clutch sleeve hub holder	09921-20200 Bearing remover

 09921-20240 Bearing remover set	 09924-84510 Bearing installer set	 09924-84521 Bearing installer	 09925-18011 Steering bearing installer	 09930-11950 09930-11960 Torx wrench (T20/T25)
 09930-30104 Rotor remover slide shaft	 09930-35020 Rotor remover	 09930-44560 Rotor holder	 09940-14911 09940-14960 Steering nut socket wrench	 09940-34581 Attachment F
 09940-52861 Front fork oil seal installer set	 09941-34513 Bearing installer set	 09941-53630 Front fork top cap wrench	 09941-54911 Bearing outer race remover	 09941-64511 Bearing remover
 09941-74911 Bearing installer				

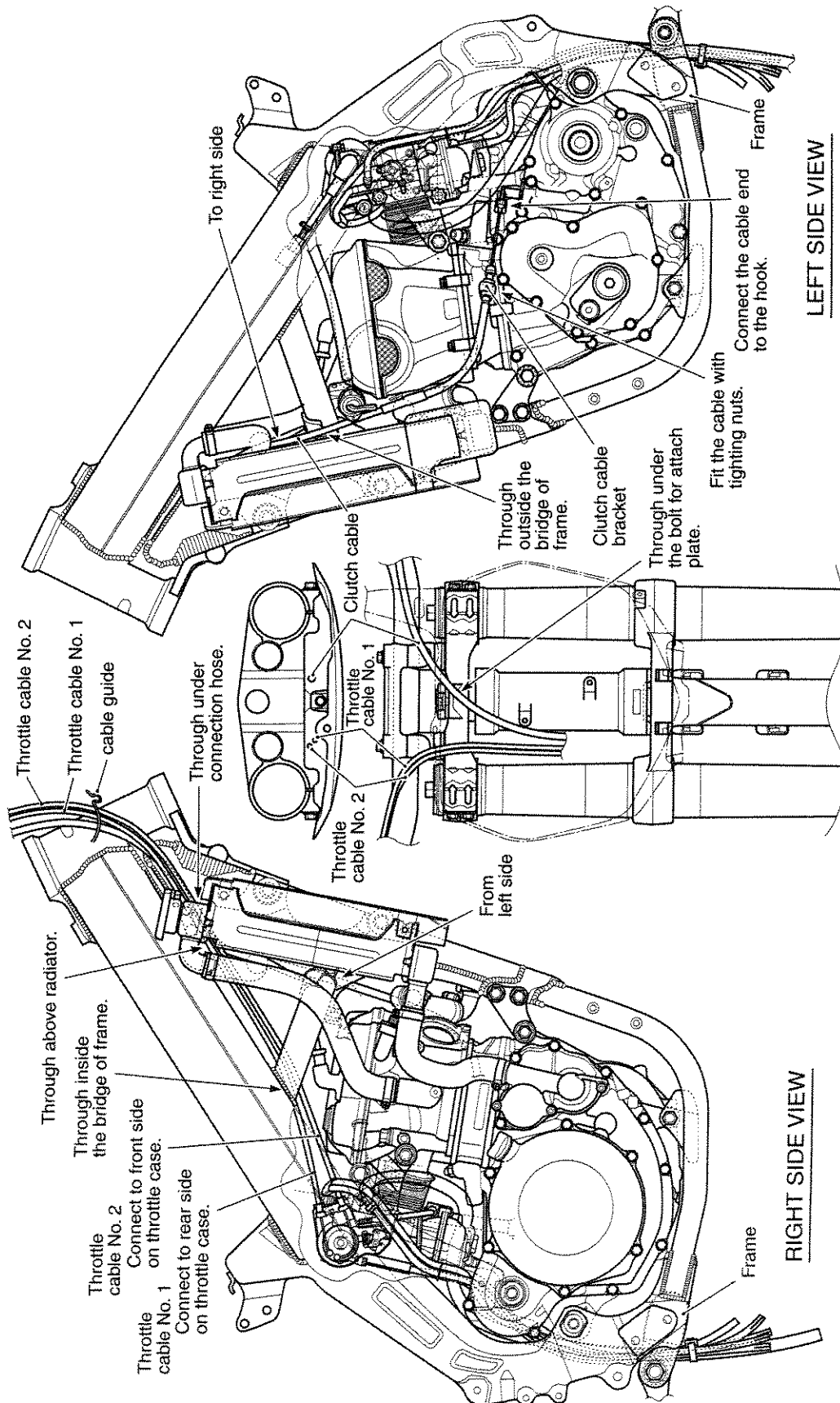
WIRING DIAGRAM



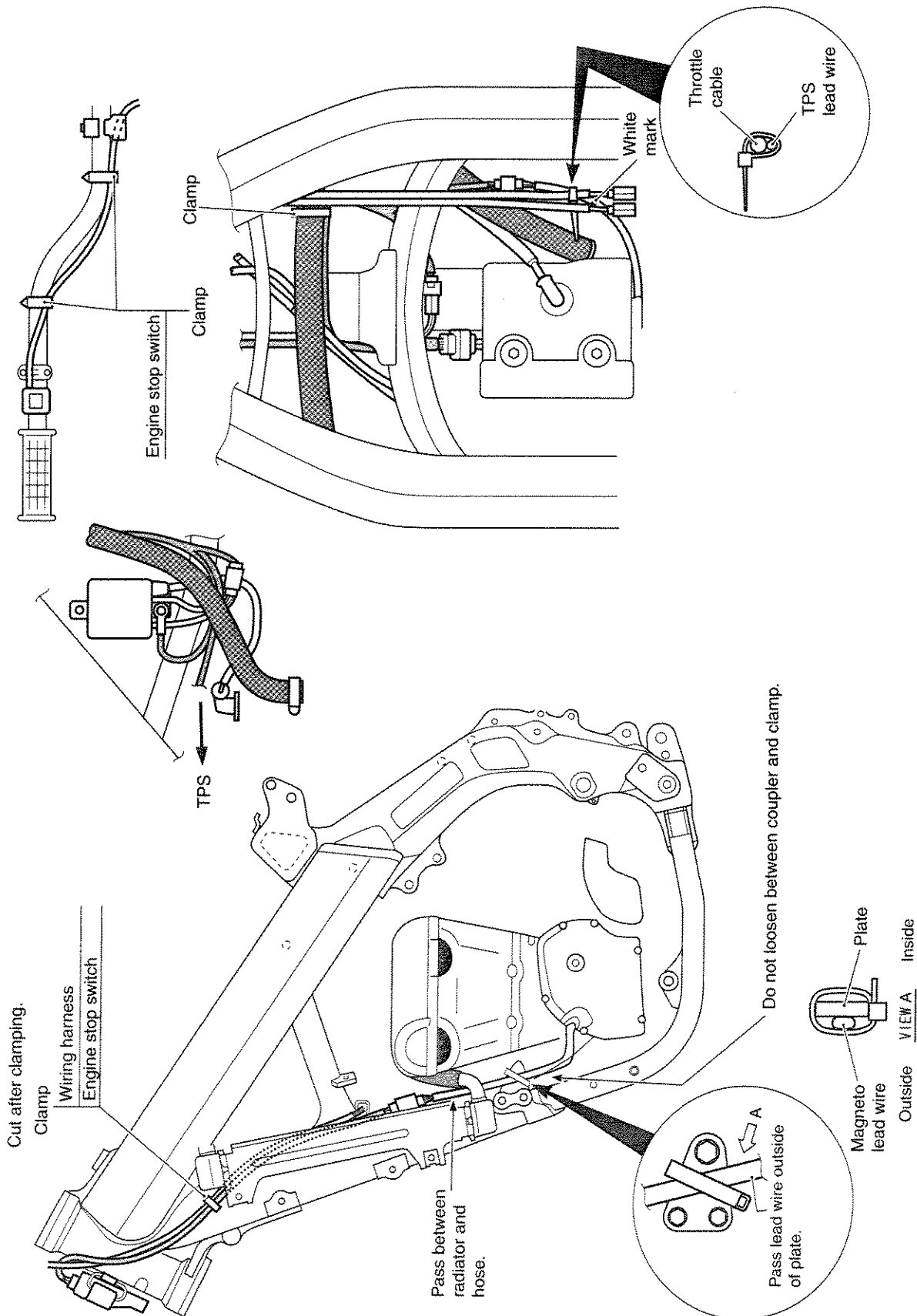
WIRE COLOR

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

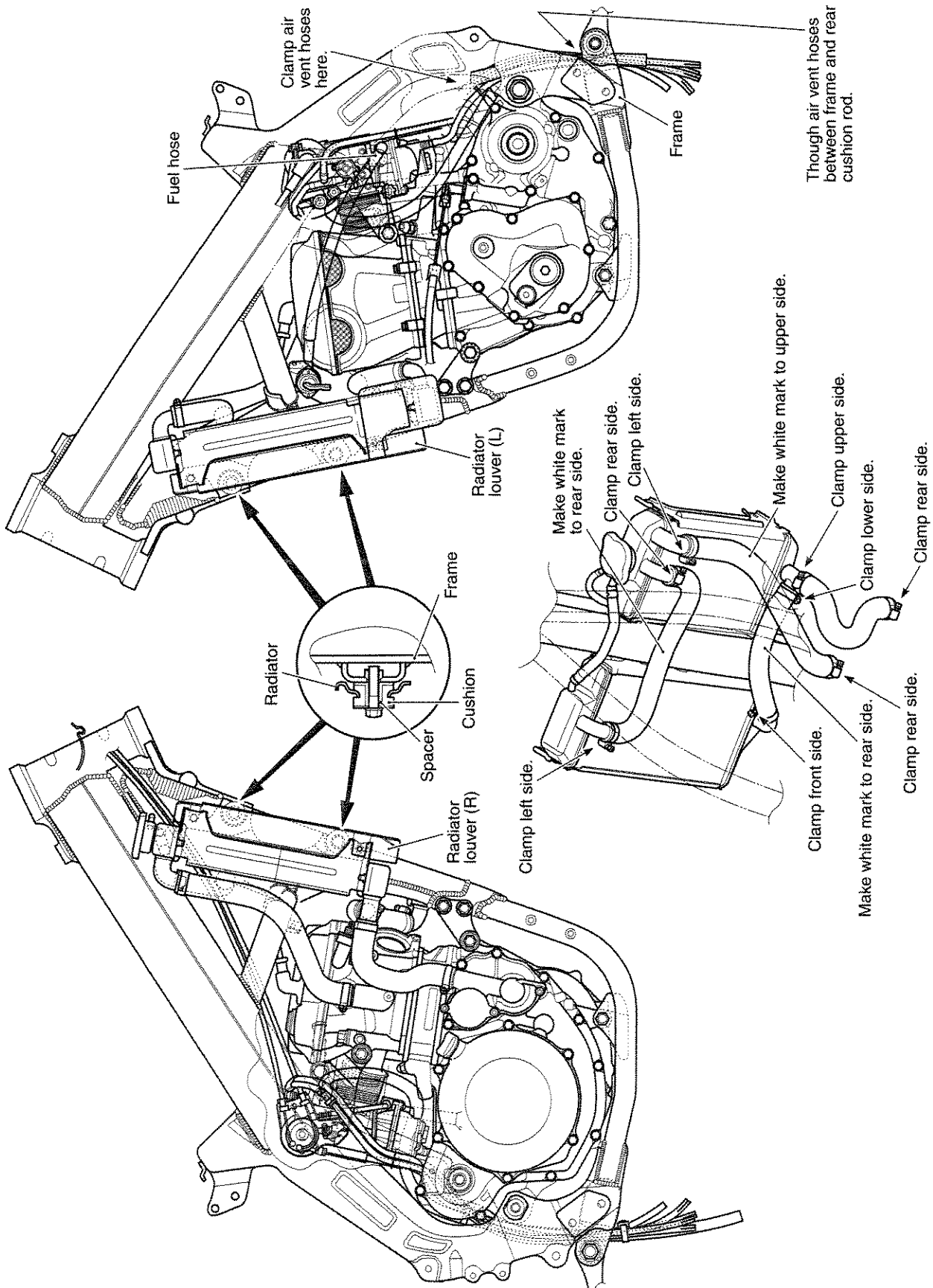
CABLE ROUTING



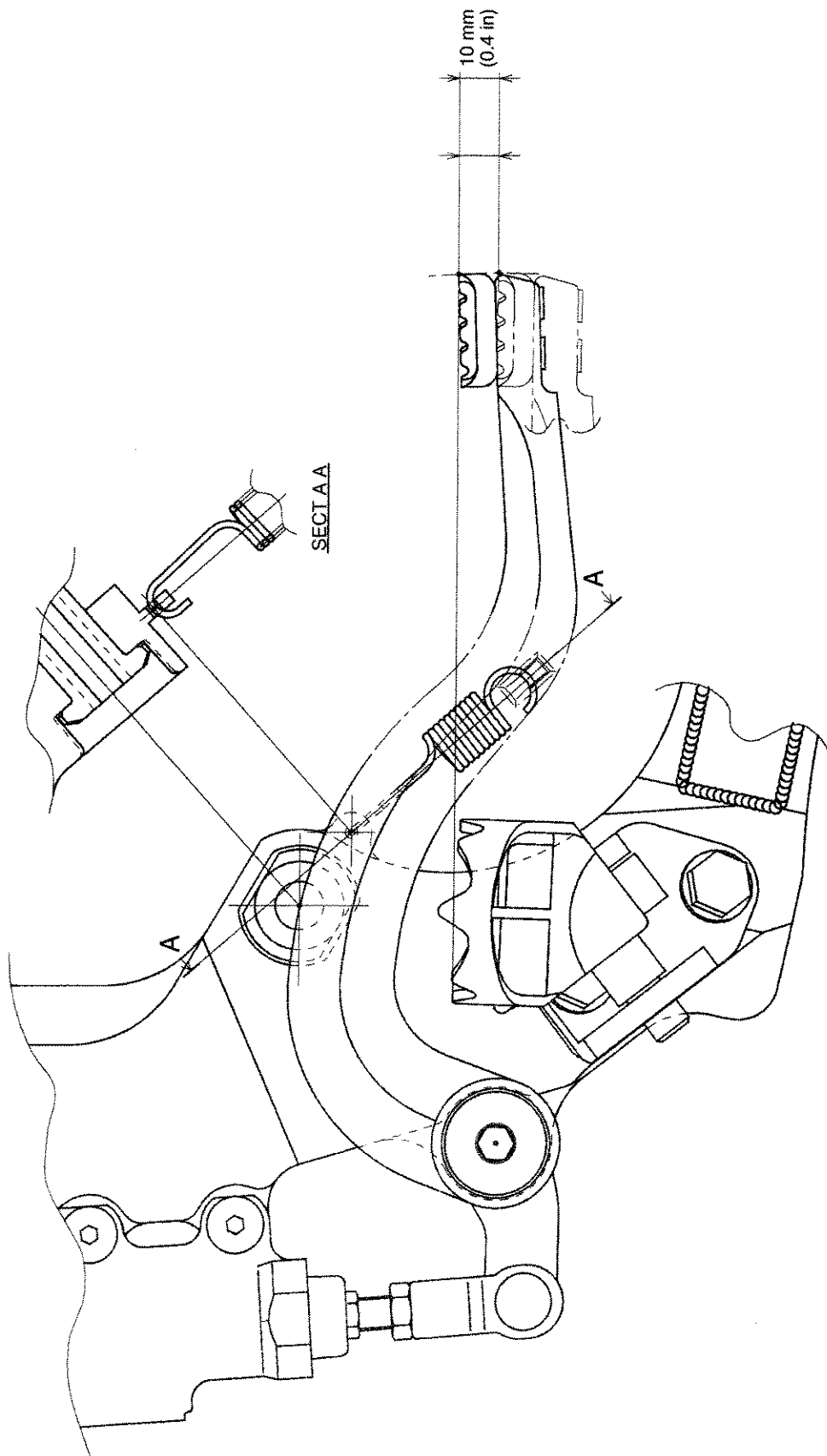
WIRE HARNESS ROUTING



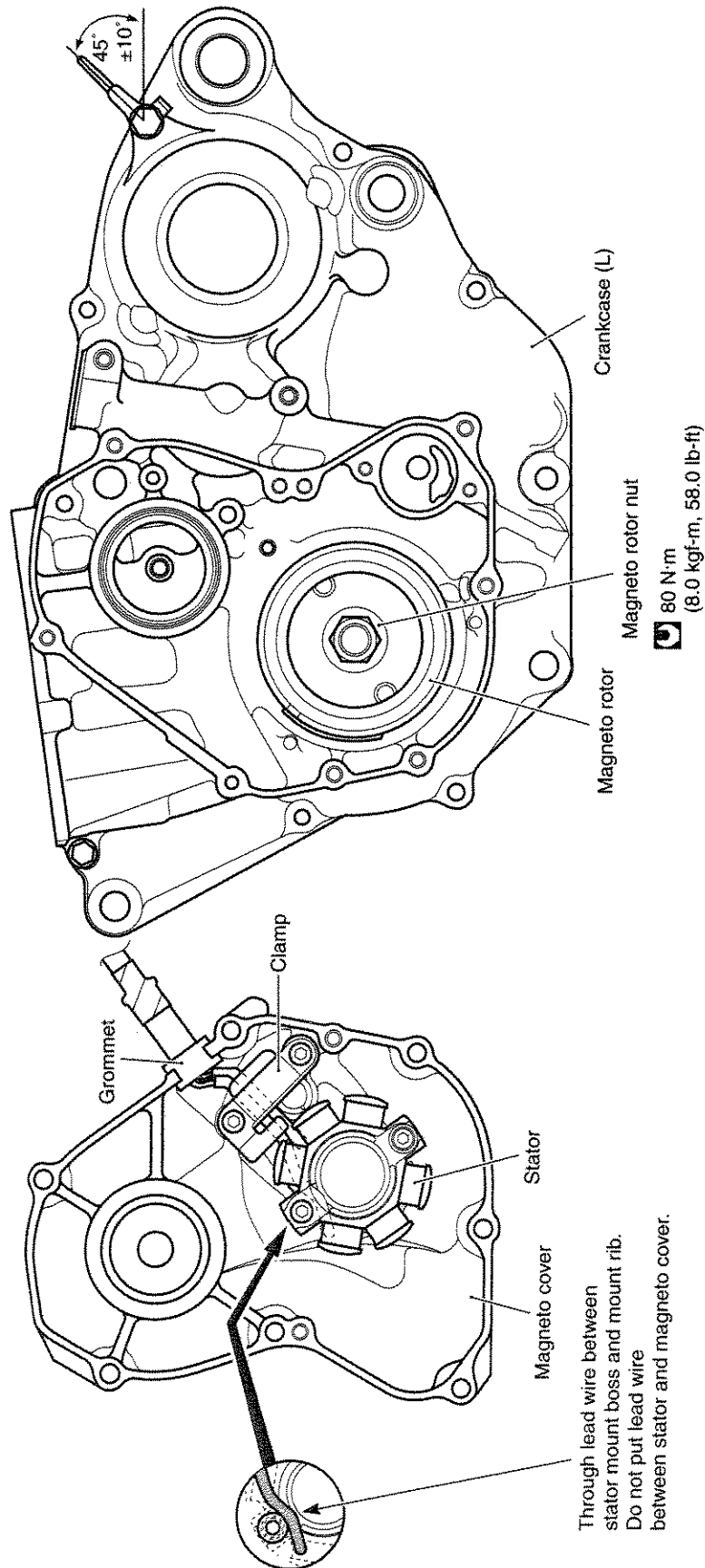
CARBURETOR HOSE AND WATER HOSE ROUTING



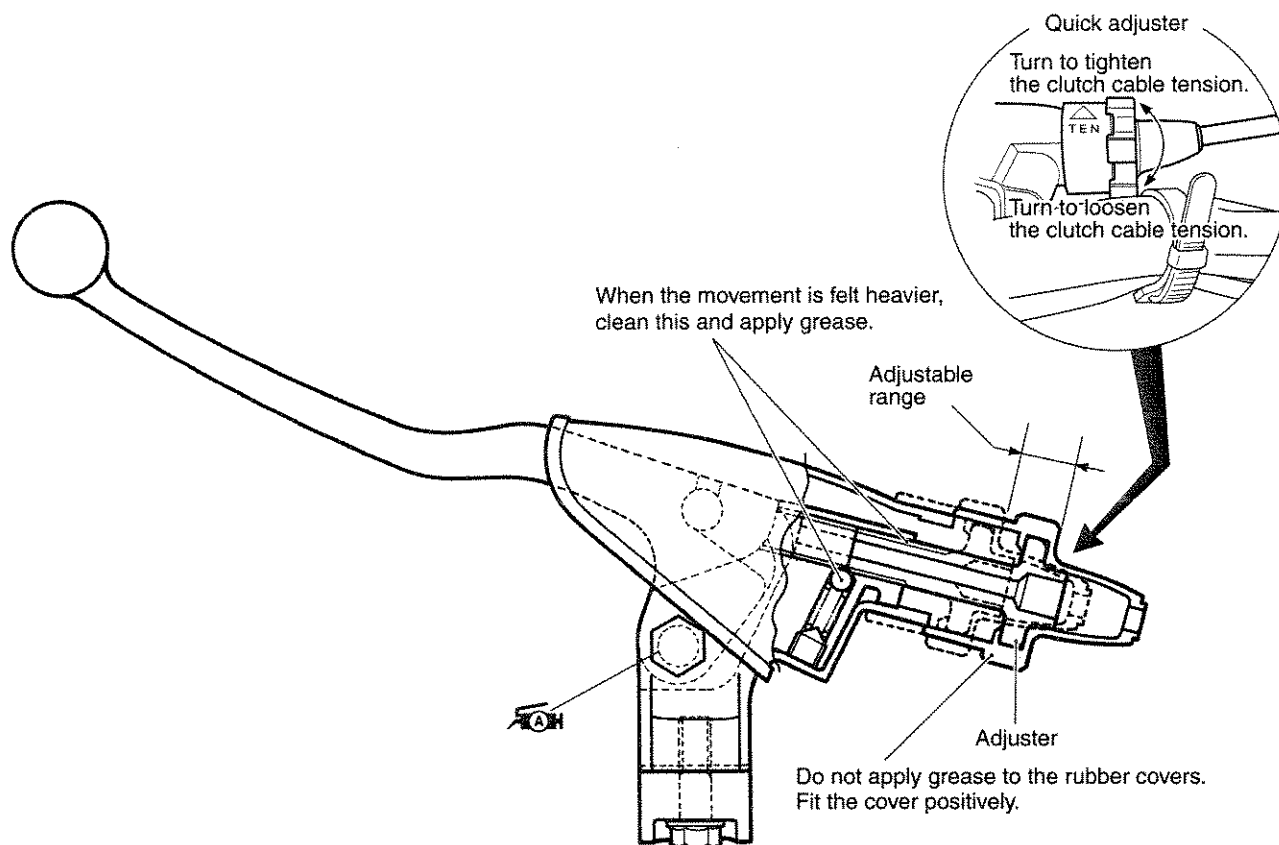
REAR BRAKE PEDAL SET-UP



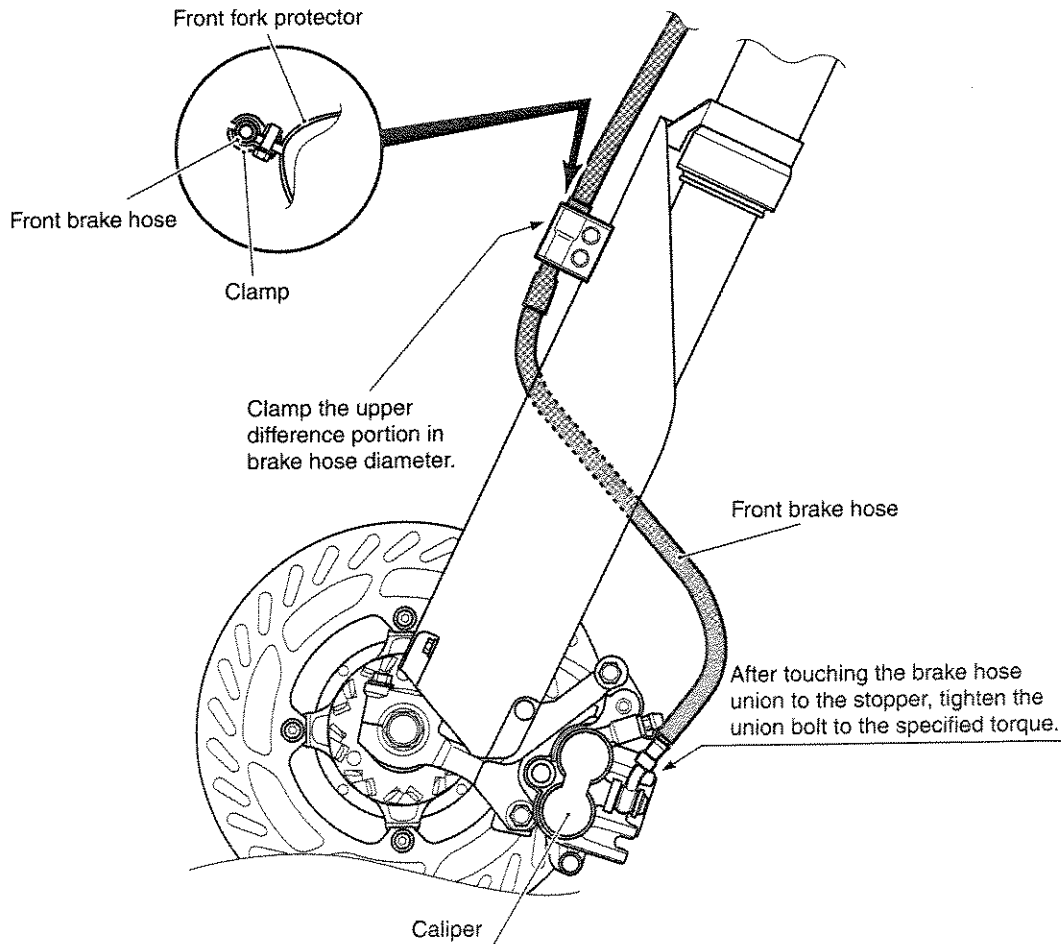
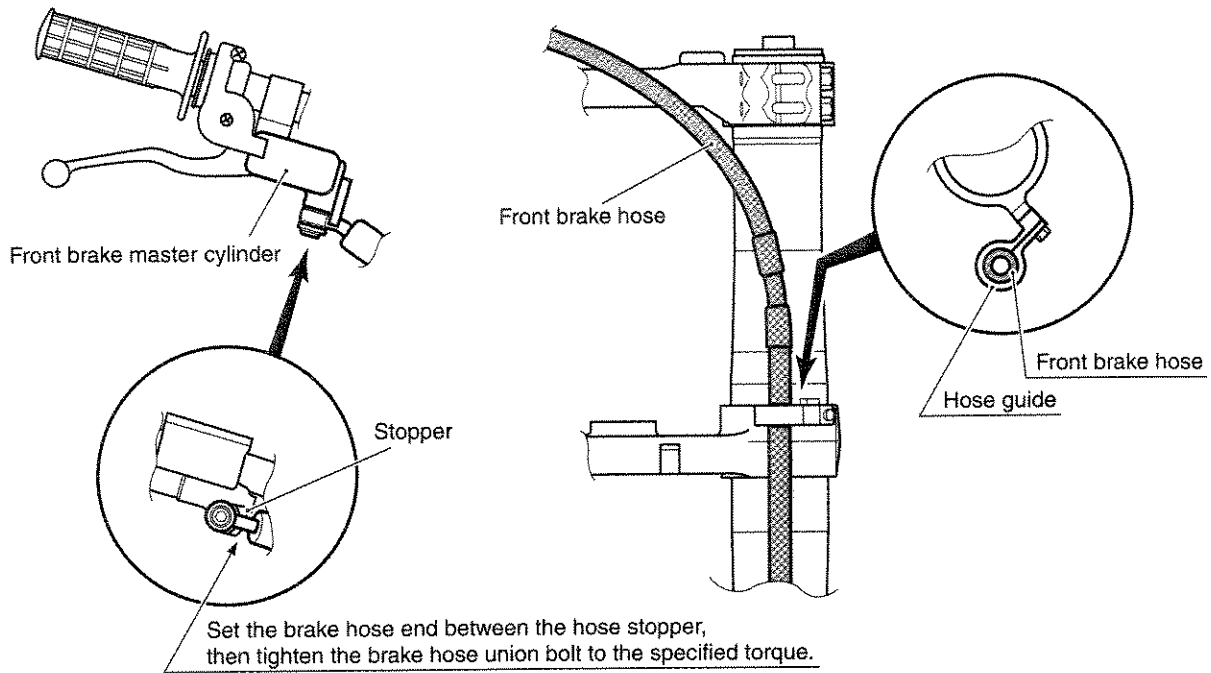
ENGINE ELECTRICAL PARTS INSTALLATION



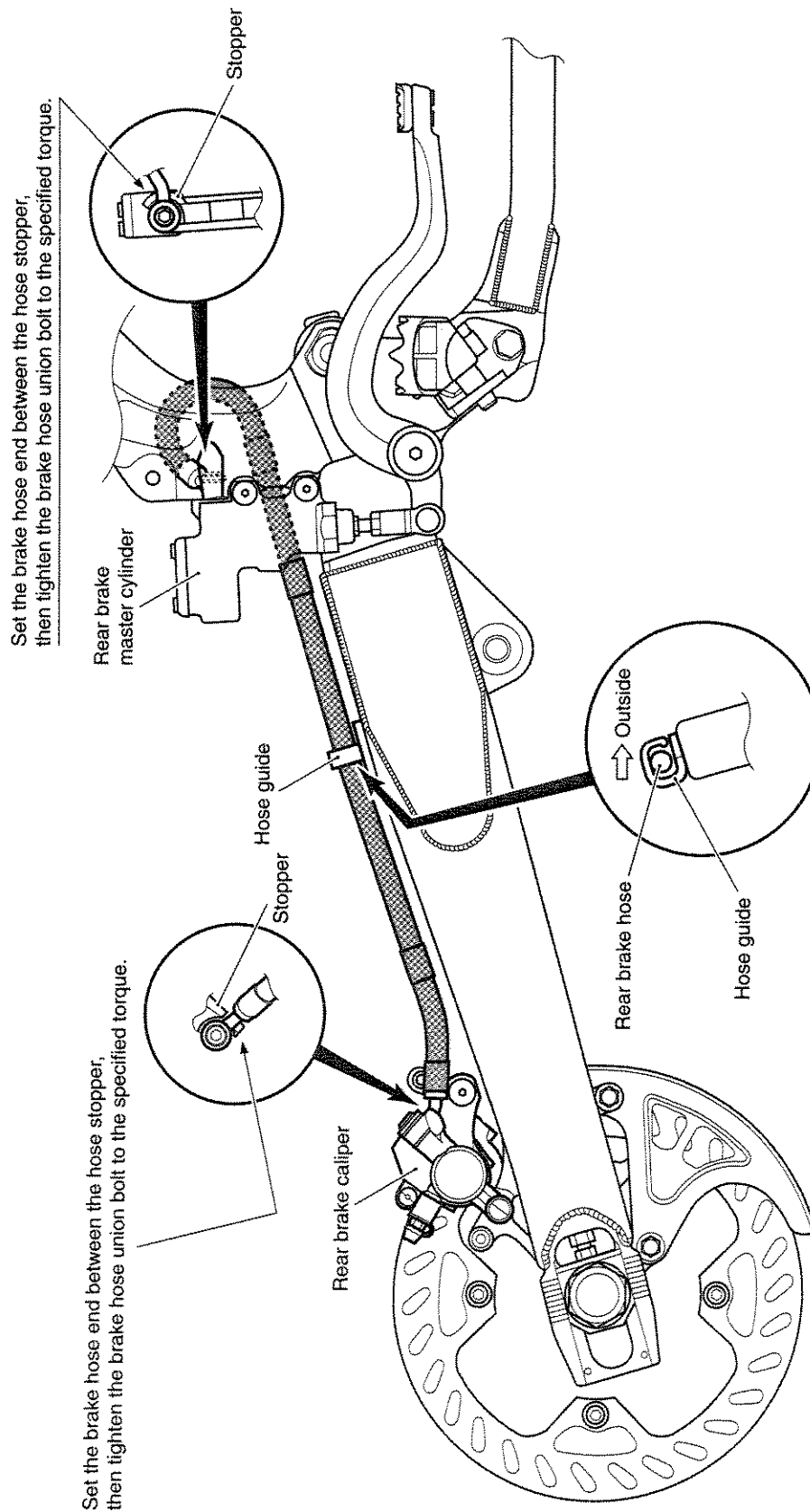
CLUTCH CABLE ADJUSTER



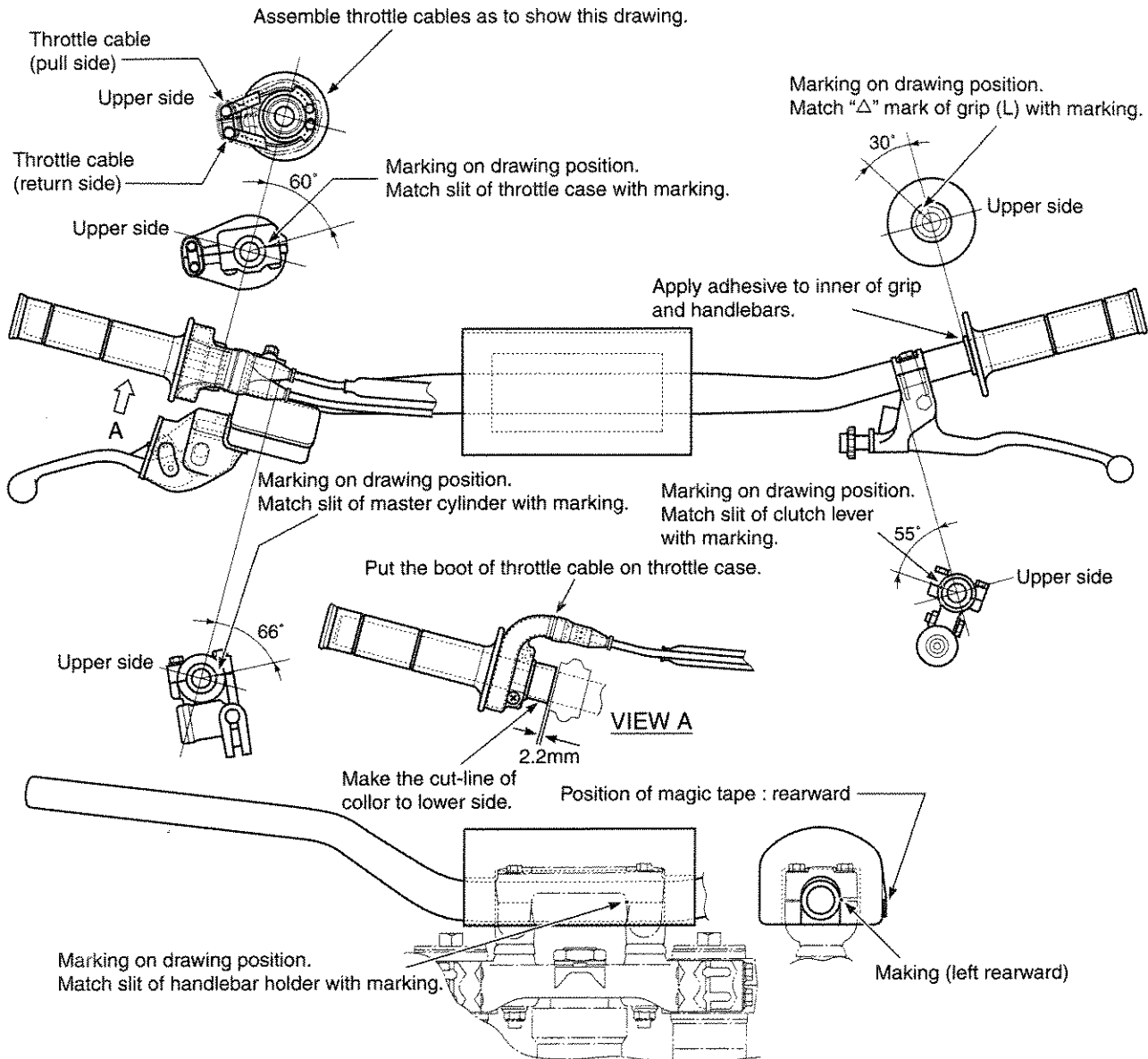
FRONT BRAKE HOSE ROUTING



REAR BRAKE HOSE ROUTING



HANDLEBAR SET-UP



SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2 185 mm (86.0 in)
Overall width	830 mm (32.7 in)
Overall height	1 260 mm (49.6 in)
Wheelbase	1 480 mm (58.3 in)
Ground clearance	350 mm (13.8 in)
Seat height	955 mm (37.6 in)
Dry mass	100 kg (220 lbs)

ENGINE

Type	Four-stroke, liquid-cooled, DOHC
Number of cylinders	1
Bore	95.5 mm (3.460 in)
Stroke	62.8 mm (2.472 in)
Piston displacement	449 cm ³ (27.4 cu. in)
Corrected compression ratio	11.9 : 1
Carburetor	KEIHIN FCR40MX
Air cleaner	Polyurethane foam element
Starter system	Primary kick
Lubrication system	Semi Dry sump
Idle speed	1 850 ± 100 r/min

TRANSMISSION

Clutch	Wet multi-plate type
Transmission	4-speed constant mesh
Gearshift pattern	1-down, 3-up
Primary reduction ratio	2.583 (62/24)
Gear ratios, Low	2.000 (30/15)
2nd	1.611 (29/18)
3rd	1.350 (27/20)
Top	1.136 (25/22)
Final reduction ratio	3.500 (49/14)
Drive chain	D.I.D 520DMA2, 114 links

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Link type, coil spring, oil damped
Front suspension stroke	310 mm (12.2 in)
Rear wheel travel	310 mm (12.2 in)
Caster	25.5 °
Trail	108 mm (4.25 in)
Steering angle	45° (right & left)
Turning radius	1.95 m (6.4 ft)
Front brake	Disc brake
Rear brake	Disc brake
Front tire size	90/100-21 57M
Rear tire size	120/80-19 63M

ELECTRICAL

Ignition type	Electronic Ignition (CDI)
Ignition timing	8° B.T.D.C. at 1 850 rpm
Spark plug	NGK CR8EIB-10

CAPACITIES

Fuel tank	7.0 L (1.8 / 1.5 US/Imp gal)
Engine oil (change)	1 400 ml (1.5 / 1.2 US/Imp qt)
(with filter change)	1 450 ml (1.5 / 1.3 US/Imp qt)
(overhaul)	1 500 ml (1.6 / 1.3 US/Imp qt)
Coolant	1 000 ml (1.1 / 0.9 US/Imp qt)

SPARE PARTS LIST

ITEM	PART NAME	PART NUMBER	Q'TY
1	PARTS SET, SPARE	19900-35G10	1
①	GASKET, MAGNETO COVER	11483-35G00	1
②	GASKET, CLUTCH COVER OUTER	11484-35G00	1
③	GASKET, EXHAUST, PIPE	14181-35G00	1
④	CONNECTOR, MUF JT	14771-29F00	1
⑤	FILTER COMP, ENGINE OIL	16510-35G00	1
⑥	O-RING, WATER PUMP CASE	17431-35G00	1
⑦	LEVER, BRAKE	57310-37F00	1
⑧	LEVER, CLUTCH	57621-28C40	1
⑨	O-RING, SPROCKET SPACER	09280-21010	2
⑩	O-RING, OIL FILTER CAP	09280-35006	1

OPTIONAL PARTS

	PARTS No.	NUMBER OF TEETH	COMMENTS
REAR SPROCKET	64511-37E00	48	112 L
	64511-28E00	49	112 L or 114 L
	64511-40261	51	114 L
FRONT WHEEL RIM	55311-37F00	—	20 × 1.85
FRONT WHEEL SPOKE SET	55320-37F00	—	20 inch
FRONT BRAKE DISC COVER	59231-36E20	—	—
RIM LOCK	65270-43D00	—	1.85

Carburetor:  4-2

Front fork spring:  4-14

Rear suspension spring:  4-19

SETTING DATA

EVENT	DATE/ LOCATION	DATE	/ /	/ /	/ /
		RACE/COURSE	/	/	/
		TEMP./HUMIDITY	/	/	/
		WEATHER			
		COURSE COUDITION			
ENGINE	CARBURETOR	MAIN JET			
		JET NEEDLE	/	/	/
		SLOW JET			
		AIR SCREW			
		FLOAT LEVEL			
	SPARK PLUG				
CHASSIS	FRONT FORK	OIL LEVEL	mm	mm	mm
		COMP. ADJ. POSITION			
		RE-BOUND ADJ. POSITION			
		SPRING			
	REAR SUSPENSION	SPRING			
		SPRING SET LENGTH	mm	mm	mm
		SUG	mm	mm	mm
		COMP. ADJ. POSITION LOW			
		COMP. ADJ. POSITION HIGH			
		RE-BOUND ADJ. POSITION			
	FINAL REDUCTION RATIO		/	/	/
	FRONT TIRE	MAKER/SIZE			
		PRESSURE	kPa	kPa	kPa
	REAR TIRE	MAKER/SIZE			
		PRESSURE	kPa	kPa	kPa
COMMENT:					

*MAKE COPIES.